AFTER-SALES TECHNICAL MATERIAL OF LAFANX60

02.10.2012

USER MANUAL OF LIFANX60

02.10.2012

Welcome to use LF6430. To assist you for better use and maintenance of LIFAN, please read this manual carefully.

All the dealers of LIFAN know the performances of this model very well and they are ready to serve you. If you need anything, please contact with the nearest Lifan service station. We will answer any questions and provide good service for your car.

LF6430 use electronic fuel engines with complicated circuit structure of the entire vehicle. Please do not add or install electrical equipment like burglar alarms, central door locks, power window regulators, radios, etc. Otherwise, the fault generated will not be covered by the warranty of the company.

If you resell the car, please pass this manual on to the new buyer so that he or she can know the right way to drive and maintain this car. All the information in this manual is important, but some of extreme importance is highlighted as follows:

Warning
Personal injury may be caused if ignore the Warning. In order to reduce the injury of oneself or others, this is to inform what must do or can not do.

Note
Ignore the Notice, vehicles and equipment may be damaged. In order to reduce the damage of vehicles and equipment, this is to inform you things you must do or can not do.

Safety mark



The safety mark in above picture means “can not do”, “can not do this” or “can not make this happen”

The pictures in this manual are all illustrations, only for reference. For this manual is the general description of this vehicle model which covers various schemes of the model, part of

the description features might not be applicable for your specific vehicle. For vehicle purchase, please consult the real product. Chongqing Lifan Passenger Vehicle Co., Ltd. maintains the modification right of the technical features and content of this manual without any restriction and giving prior notice.

Thanks for choosing LIFAN. Any precious idea and suggestion are welcomed.

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Main technical specification of LF6430

Vehicle technical parameter

Exterior Dimension

Light

Vehicle identification

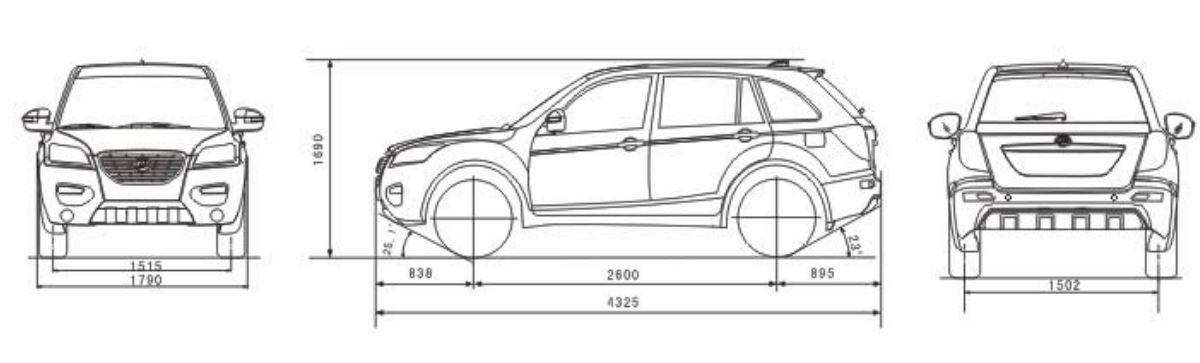
Indicator and warning sign

Vehicle technical parameter

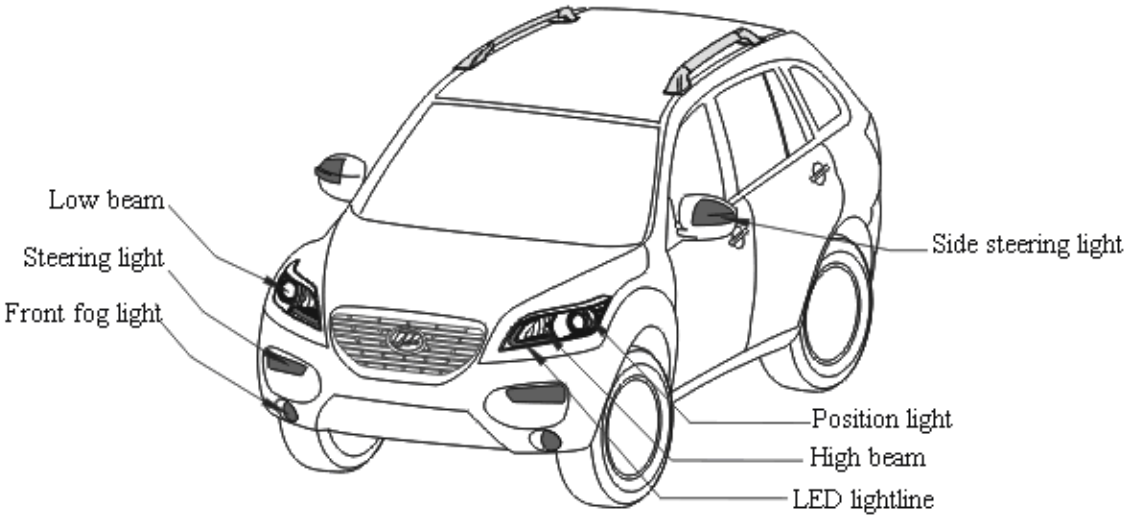
Product model and name		LF6430
Exterior dimension	Length mm (millimeter)	4325
	Width mm (millimeter)	1790
	Height mm (millimeter)	1690
Wheel base	mm (millimeter)	2600
Track	Front mm (millimeter)	1515
	Rear mm (millimeter)	1502
Curb weight	kg (kilogram)	1330
Full load weight	kg (kilogram)	1705
Tire specification		215/65R16
Approach angle	° (degree)	25.1
Departure angle	° (degree)	23
Front suspension	mm (millimeter)	830
Rear suspension	mm (millimeter)	895
Seats	person	5
Maximum speed	km/h (kilometer/hour)	170
Engine model		LFB479Q
Model		4-stroke, water-cooling, straight-4-cylinder, dual overhead camshaft, multi-point electronic injection, 16-valve (L4 DOHC 16V)
Displacement	ml (milliliter)	1794

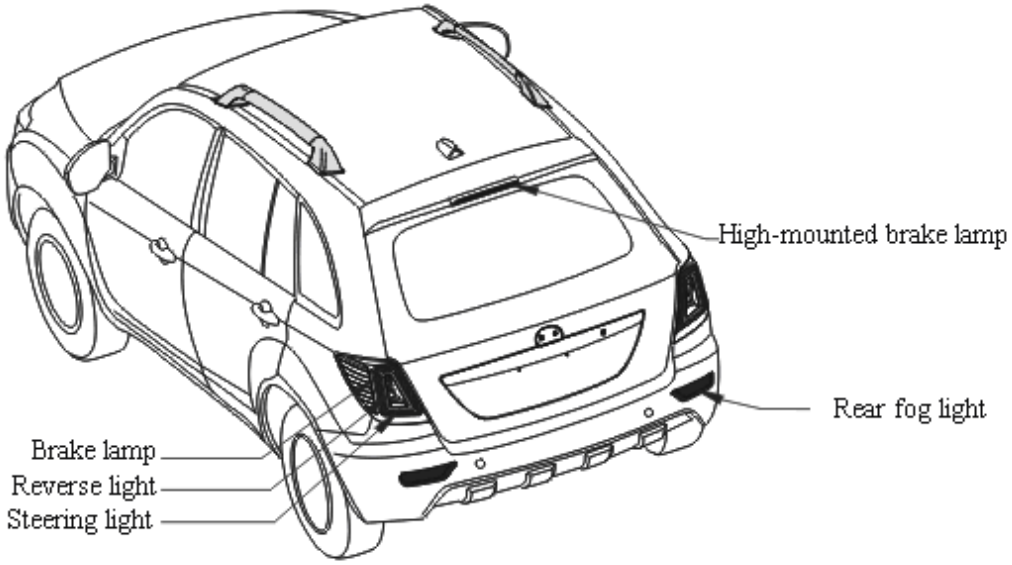
Maximum rated power	KW(kilowatt)	98
Maximum torque	N·m (Newton meter)	168
Idle speed	r/min (revolution/minute)	750±50
Fuel consumption of comprehensive operation mode	(Liter/100 kilometers)	8.2
Grade ability	%	≥32
Emission standard		GB18352.3-2005 IV
Wheel location	Front wheel camber	-1°12′±30′(no-load)
	Front wheel toe-in	-7.52～-3.52（-0°43′±30′）(no-load)
	Kingpin inclination	11º2′±30′(no-load)
	Kingpin caster	2°44′±30′(no-load)
	Rear wheel camber	-0° 57′ ±30′ （no-load）
	Rear wheel toe-in	-1.16～2.84（0°6′±30′）(no-load)
	Steering angle	(+35°31′)～(+39°31′) (+29°18′)～+33°18′) Left steering angle for left wheels:(+35°31′)～(+39°31′) Left steering angle for right wheels:(+29°18′)～+33°18′) (-29°18′)～(-33°18′) (-35°31′)～(-39°31′) Right steering angle for left wheels: (-29°18′)～(-33°18′) Right steering angle for right wheels: (-35°31′)～(-39°31′)
Emission standard		GB18352.3-2005 IV

Exterior dimension



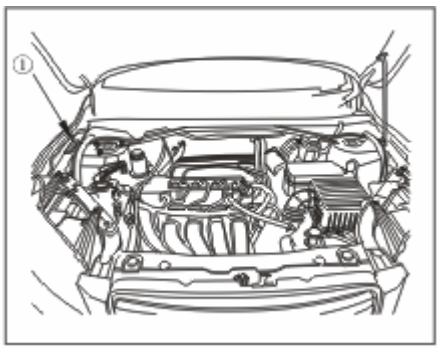
Light



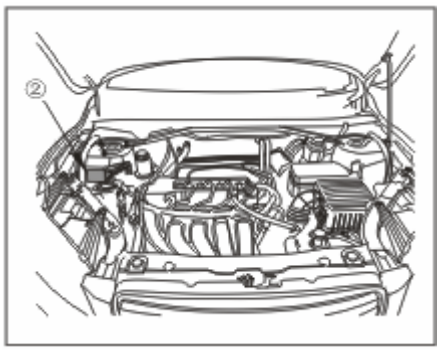


Vehicle identification of LF6430

Vehicle identification number (VIN)



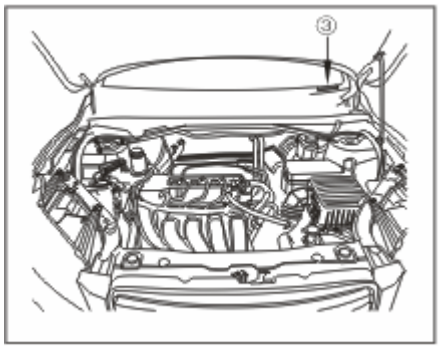
Vehicle identification number is used to register cars and to recognize the identification of the car, locating in Position ① of the engine room and Position ③ of the upper left of the dash board. The nameplate locates in Position ② of the engine room which contains vehicle identification number too (VIN).



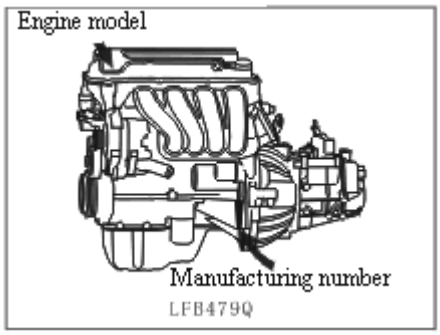
1. VIN of the vehicle body

2. Car nameplate

3. VIN of the vehicle

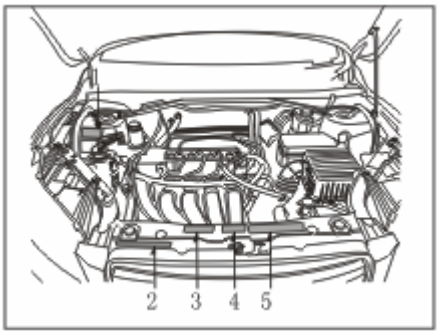


Engine model & manufacturing number



As shown in the figure, the engine model and the manufacturing number locate on the engine cylinder.

Indicator and warning sign



1. Cleaning solution warning sign.

2. A/C refrigerant warning sign.

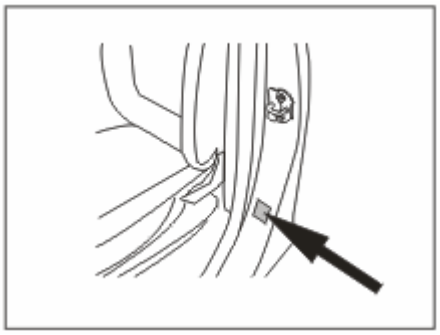
3. Engine oil warning sign.

4. Power-assisted steering fluid warning sign.

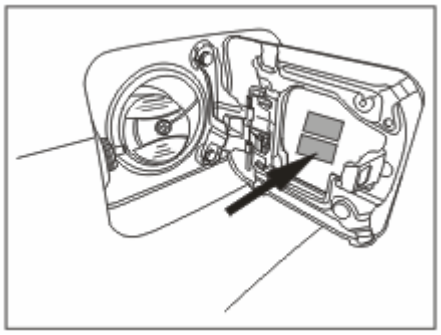
5. Engine coolant warning sign



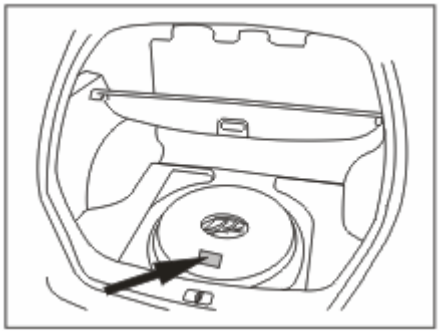
Door child lock warning sign



As shown in the figure, tire charge warning sign, locating on the Pillar A of the left side.



Fuel filling warning sign, locating in the inner side of the oil filler cover



Spare tire warning sign

Operation of Instrument and Controller chapter 1

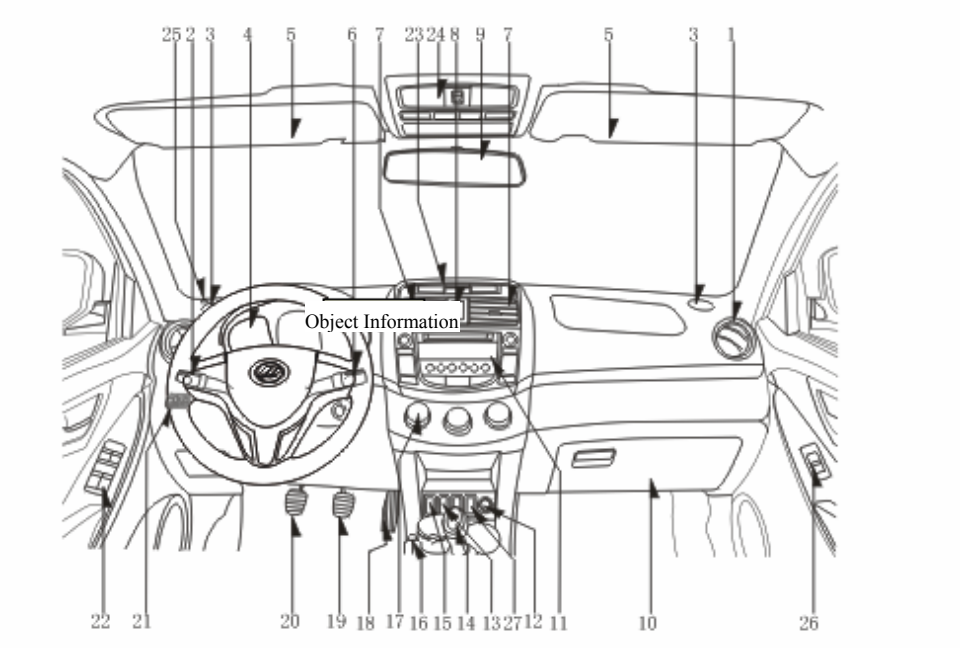
1-1 Appearance of instrument and controller

Overall graph

Appearance of instrument cluster

Indicator on instrument cluster

Overall graph



1. Side vent
2. Light combination switch
3. High-pitch amplifier cover
4. Instrument cluster
5. Left and right sunshades
6. Windshield wiper combination switch
7. Central vent
8. Danger warning lamp switch
9. Interior rear view mirror
10. Sundries box
11. Vehicle audio
12. Cigarette lighter
15. Driver’s seat heater switch (optional)
16. Parking brake
17. Air conditioning controller
18. Accelerator pedal
19. Brake pedal
20. Clutch pedal
21. Switch component
22. Left front door window regulator switch
23. On-board multifunction display
24. Front roof light
25. Ambient light sensor (as per scheme)

Ambient light solar sensor (as per

13. Rear door lock switch

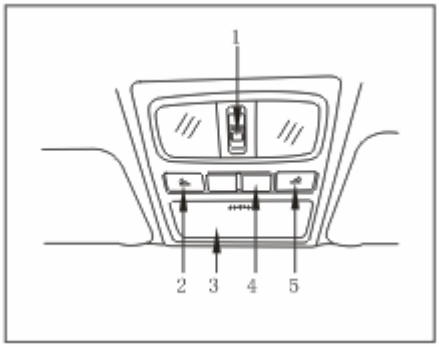
14. Shift knob

scheme)

26. Right front door window regulator switch

27. Front passenger seat heater switch (optional)

Front roof light



1. Front roof light switch

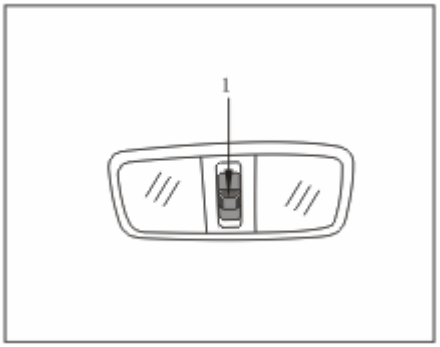
2. Reading lamp switch (left)

3. Spectacle case

4. Sunroof switch (optional)

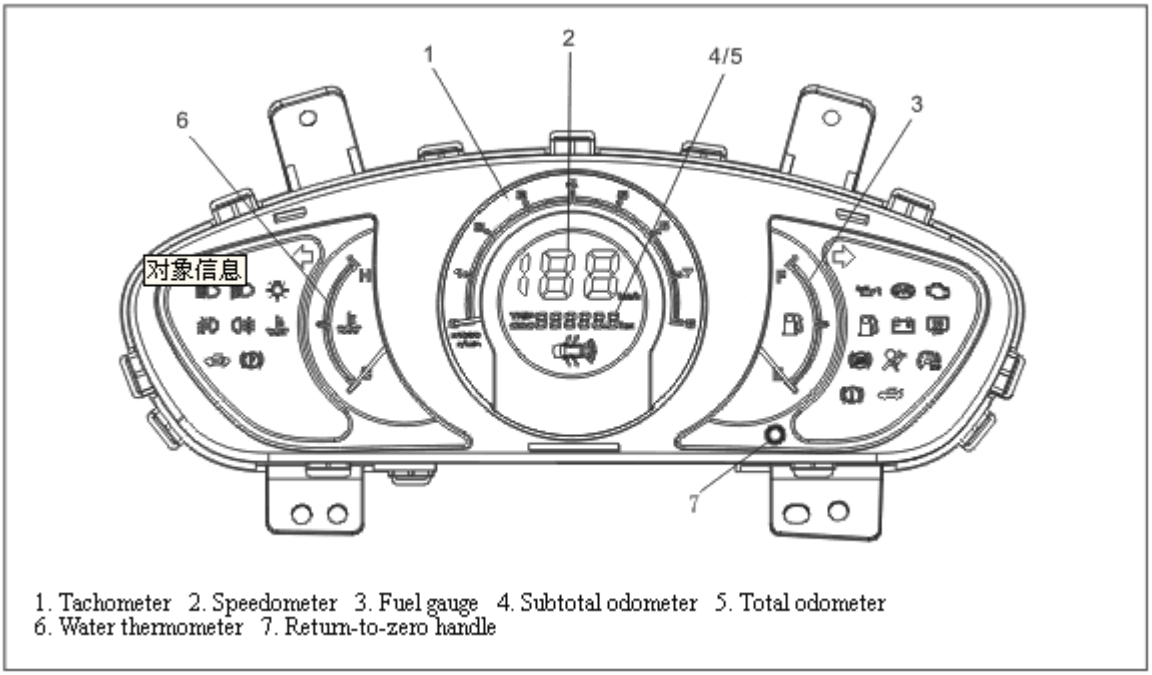
5. Reading lamp button switch (right)

Middle/Rear roof light



1. Middle/Rear roof light switch

Appearance of instrument cluster



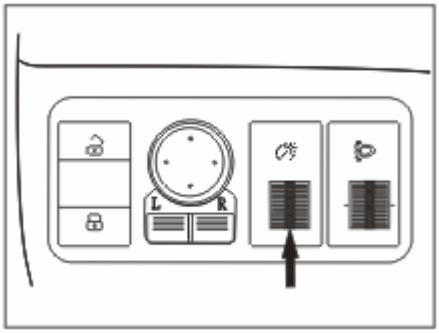
1. Tachometer 2. Speedometer 3. Fuel gauge 4. Subtotal odometer 5. Total odometer
6. Water thermometer 7. Return-to-zero handle

Indicator on the instrument cluster

	High beam indicator
	Low beam indicator
	Master lighting switch indicator
	Front fog light indicator
	Rear fog light indicator
	Water temperature warning lamp

	Anti-theft warning indicator
	Parking brake indicator
	Engine oil under-pressure alarm lamp
	Door ajar and car reverse radar indicator
	Engine fault (except the OBD) warning indicator
	Engine exhaust & observation indicator
	Fuel warning indicator
	Steering indicator (lightened separately)
	Danger warning indictor ((lightened simultaneously)
	Battery charging indicator
	Rear windshield defroster indicator
	ABS warning lamp
	SRS indicator
	Brake system indicator
	Over speed warning indicator (optional)
	Luggage boot ajar indicator

Background light dimmer switch



When the position light is on, if you turn the background light dimmer switch knob, you can adjust the background light of the instrument cluster, the audio panel, switches, etc.

1-2 Operation of instrument and controller

Key and door

Key

Door lock

Central door locking system

Rear door children protective device

Trunk lid

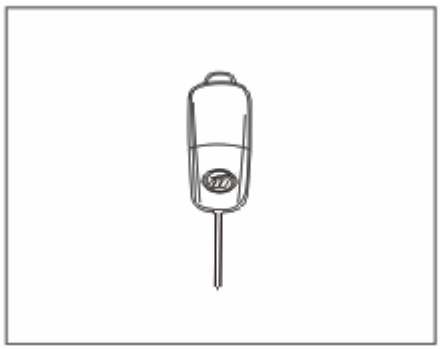
Power window

Engine room cover

Fuel tank cap

Power sunroof

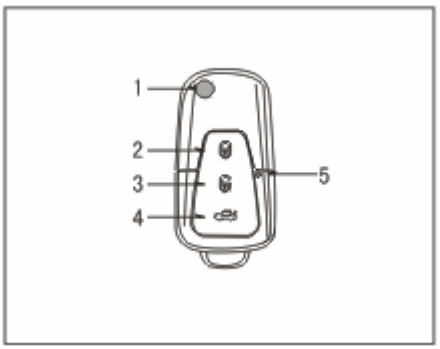
Key



Each vehicle has 2 keys, used for ignition and opening all the doors.

Put spare keys in safe places except the car to avoid the car being stolen.

Wireless remote controller



1. Key button

2. Locking switch

3. Unlocking switch

4. Rear door lock switch
5. Indicator

For sufficient power supply of the wireless remote controller, the control distance is no less than 15m.

Wireless remote controller is an electronic component; please follow the following instruction to avoid controller damage.

- Do not put the remote controller at places with high temperature like dash board.

- Do not disassemble it.

- Avoid severe hit on other objects or dropping on the ground.

- Avoid placing it in water.

For failed door operation by wireless remote controller or failed operation in correct distance, or dim or unlit indicator of remote controller:

- Check the existence of radio station or radio transmitting set of an airport which have interference effect on the normal operation of the controller in the neighborhood.

- The battery power might be depleted. Check the battery of remote controller. For battery replacement, please refer the “Remote Controller Battery Replacement” of this section.

For loss of remote controller, please contact with Lifan service station as soon as possible to avoid any theft and accident.

Locking operation



Unlocking operation



For locking or unlocking all doors of the vehicle, please press the switch of remote controller slowly and accurately.

Locking: press the locking switch, and all doors of the vehicle are locked simultaneously. At the moment, turn signal lamp flashes once and burglar alarm rings once. (flashing but no alarm)

Check whether the doors are locked.

If any door is not locked, locking switch can not be applied to lock the door.

Unlocking: press unlocking switch, all the doors are unlocked simultaneously. At the moment, turn signal lamp flashes twice and burglar alarm rings twice.

After using unlocking function of wireless remote controller, doors can be opened in 30s. If door is not opened within this period, all the doors will be locked again automatically (if the turn signal lamp does not flash, the burglar alarm will not ring).

For press locking or unlocking switch continuously, locking or unlocking can not be operated repeatedly. Please loose the switch and press it again.

After making central door locking, control module will accept a feedback signal from the

actuator. For wrong feedback signal (e.g.: burglar alarm does not ring), turn signal lamp flashes 10 seconds to remind the owner that the door is not locked; the condition disappears, turn signal lamp will stop flashing.

Vehicle anti-theft system

Door locking with remote controller can set the anti-theft system of LF6430.

Press the locking switch of controller can make the controller enter anti-theft condition.

Under anti-theft condition, pressing unlocking switch can disable anti-theft condition and enter normal condition; anti-theft indicator goes out; turn signal lamp flashes twice and burglar alarm rings twice, unlocked simultaneously.

Under non-anti-theft condition, press locking switch to lock the doors, steering signal lamp flashes once and burglar alarm rings once. If door is not locked, turn signal lamp flashes 10 seconds. front and rear interior light ON.

While under anti-theft condition, if the key is at the ignition lock, the ignition switch is shorted, and all the doors and hood are open, then, the oil line output will not be available, the alarm will send out continuous warning and the steering lamp will flash. The alarm will stop yet keep flash after 20 seconds. Ten seconds later, the flash will stop. The warning can be released only by pressing the unlocking key and then the oil line can be recontroled by the ignition key.

Within 30 seconds after disabling anti-theft condition, if the door is not opened and the ignition switch is not at ON, the control system will recover anti-theft condition automatically.

Under anti-theft condition, anti-theft indication LED is in slow flashing, engine can not be started.

Remote controller battery replacement

Battery model: CR2016/3V

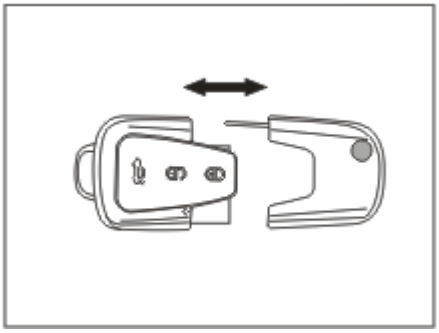
Warning
Great attention shall be paid to remote controller battery or component replaced to avoid being swallowed by children.

Note
● Do not lose any component during remote controller battery replacement.

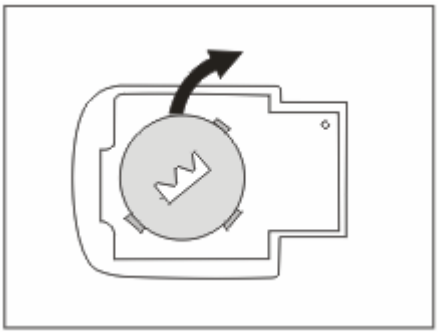
● Can only apply battery of the same model recommended by Lifan service station for the replacement.

● Do not leave waste remote controller battery around. Please send waste battery to recycling collection site with approval.

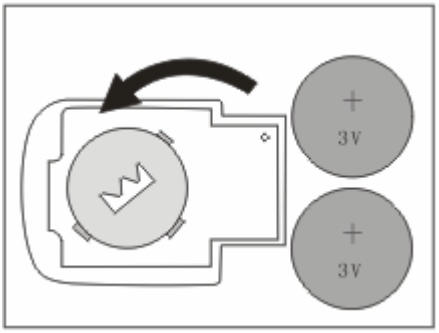
Replace remote controller battery in the following procedures:



1. Separate remote controller and key.



2. Open remote controller and remove waste battery.



3. Put new battery into remote controller with positive side upwards. The controller cover must be closed tightly.

Note

● Do not bend connector.

● Confirm remote controller is installed with correct positive and negative poles.

● Do not replace battery with wet hand. Water can cause accident rust.

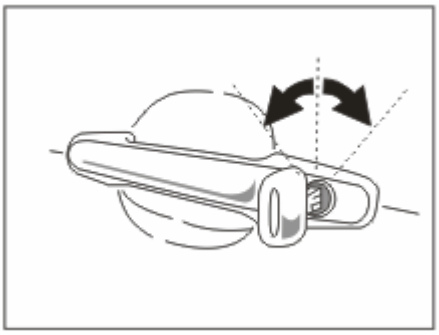
● Do not touch or move any component of remote controller. Or correct operation will be interfered.

● Please pay attention not to bend electrode or leave dust or oil in remote controller box when putting in battery.

After battery replacement, check whether remote controller can work normally. If it still can not work normally, please contact with Lifan service station.

Door lock

Side door



Locking and unlocking with key

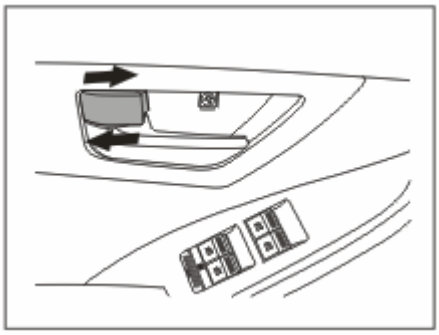
Put the key into keyhole and turn it.

Locking left door: turn the key clockwise

Unlocking left door: turn the key anticlockwise

Locking right door: turn the key anticlockwise

Unlocking right door: turn the key clockwise



Door inner handle lock button

Toggle locking button

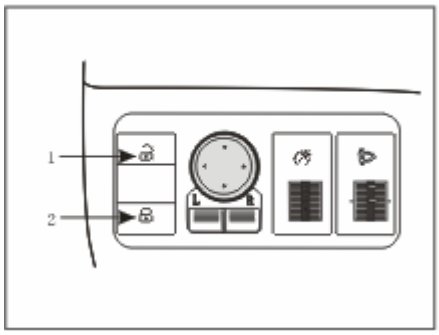
Unlocking: press the button backward.

Locking: press the button forward.

For demand of door locking from the outside, key remote controller can be applied to lock the doors.

Warning
Do not pull inside door handle in drive, or it may cause serious injury and death by opening door and throwing passengers out of the car. Even though the inside locking button is at locked position, be cautious about driver's door. The door may be opened. Lifan strongly recommends not to let children sit on rear seats and do lock the child lock.

Central door locking system



Locking and unlocking with power door lock

Press the switch (as shown in figure)

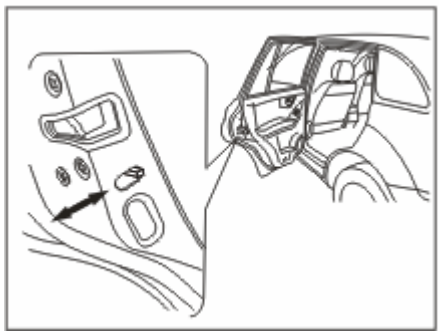
1. Unlocking: press the switch

2. Locking: press the switch

Under locking condition, pressing the locking switch for the first time only unlocks left front door, and pressing again can unlock the other three doors.

After using wireless remote controller and starting system to lock driver's door outside the car and before using key, inner locking button, wireless remote controller or starting system to unlock driver's door, power door locking switch does not work.

Rear door children protective device



As shown in the figure, move the lock bar to “Lock” position.

When the children protective device is locked, the rear door can not be opened with inside door handle. This function is recommended at any time with child in your car.

Warning
Confirm all the doors are locked before driving, especially with child in your car. Correctly using safety belt and locking the doors can protect you from serious injury when crash occurs and prevent the doors opening accidentally.

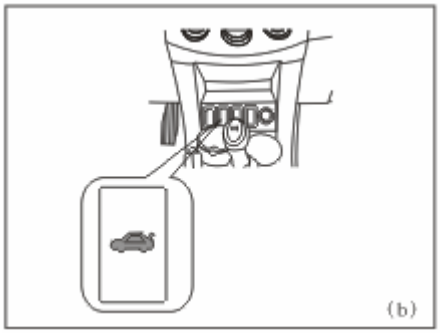
Trunk lid

Unlocking of trunk lid

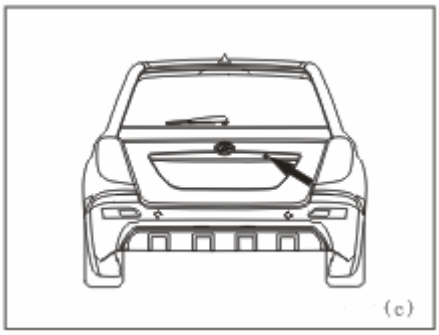
1. Unlocking of trunk lid. Three ways as follows:



(a) To open the trunk lid of the car, press trunk lid switch on the wireless remote controller, then the trunk lid lock is unlocked.

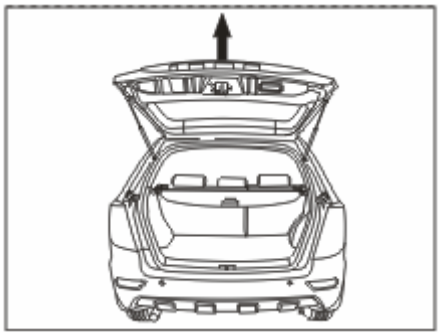


(b) Pressing trunk lid switch inside the cab can also unlock the trunk lid lock.



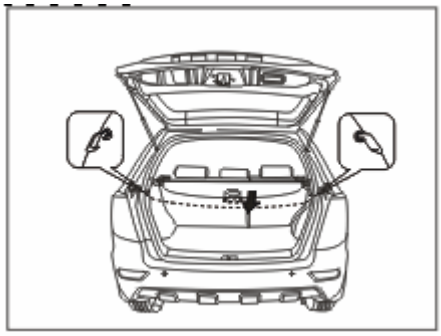
(c) Putting the key into the trunk lid lock hole and turning the key anticlockwise can unlock it.

2. Open trunk lid.



Press down trunk lid handle and pull it up, then the trunk lid is opened.

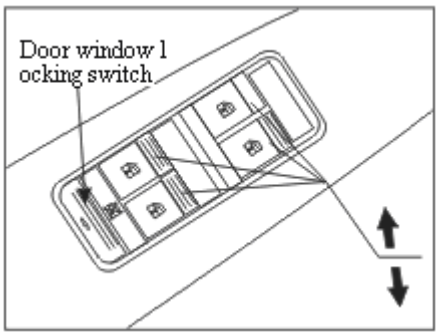
Use of rack curtain



Pull backward the handle of rack curtain, and fix its two ends onto the fixing anchor locating on two sides of luggage boot.

Note
Load-bearing of rack curtain is or less than 1 kg.

Power window



Operation of switch on door

Ignition key must be put at position “ON”.

Operation of driver’s side window

Using switch on driver’s door can regulate all door glass.

Normal operation:

Close: raising controller switch of window glass, the related window glass will ascend; releasing the switch, it will stop rising.

Open: pressing down controller switch of window glass for more than 0.3 s, the related window glass will descend; releasing the switch, it will stop descend.

Automatic work:

Ascend: raising controller switch of window glass, the related window glass will ascend to top and the frame riser goes off. If detected signal loses when at top, the frame riser stops after working for 8s to protect motor. If the window is operated to ascend and descend again when ascending, it will stop ascend and the regulator goes off to top. (Only for luxury scheme)

Descend: pressing down controller switch of window glass for 0.3s or less, the related window glass will descend automatically, and to the bottom the regulator goes off. If detected signal loss when at the bottom, the regulator stops after working for 8s to protect motor. If the window is operated to ascend and descend again when descending, it will stop descend and the regulator goes off to the bottom.

Work for time delay

Window regulator system can work within 60s after turning off the ignition switch and can not work after 60s; if close door and lock the car in 60s, time delay stops immediately.

Close window automatically

Repressing the remote control locking button after locking the car by remote controller, the open windows will close as left front to right front to left rear to right rear at an interval of 0.5s. If the condition is not met, remote controller can not close windows. Low level signal is passed to sunroof controller for 2s after closing windows for 1s, close sunroof. Press any key on the remote controller when windows close automatically and the window will stop descend immediately.

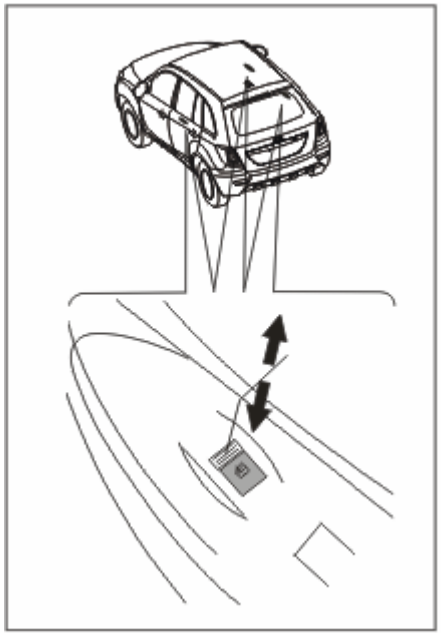
Passenger's side window operation

Any switch on passenger's side door or switch on driver's door can control passenger's side window.

Open: press down the switch

Close: pull up the switch

If the window locking switch of driver's door side is pressed, operation of passenger's side window is invalid and only the switch of driver's door can be operated.



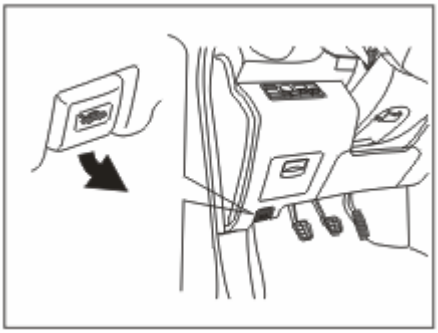
Note
● The power window has no anti-trap function, please be cautious to use it. ● When children are in the vehicle, you must use locking switch on the driver's window to

prevent them using power window switch.

● Please confirm taking down the ignition key when leaving the car.

● Motor of the power window can be powered off for over heat. Stopping working for a short time due to frequent use is normal; if it can not work for a long time, contact with Lifan service station.

Engine room cover

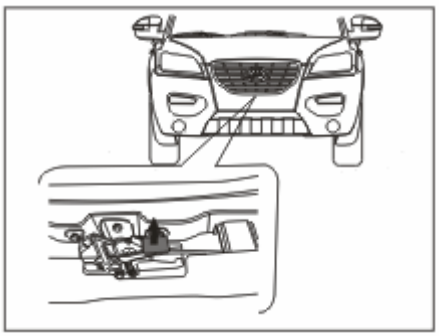


Open engine hood:

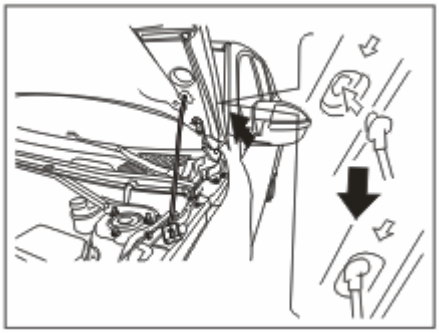
1. Pull out the handle of hood, the engine hood will jump upwards slightly

Warning

● Before driving, please confirm engine hood is closed and locked tightly. Otherwise, in driving, the possible sudden open of engine hood can cause accidents.



2. Pull up the auxiliary handle of engine hood lock in front of the car.



3. Put engine hood brace rod into hole shown in the picture and open engine hood.

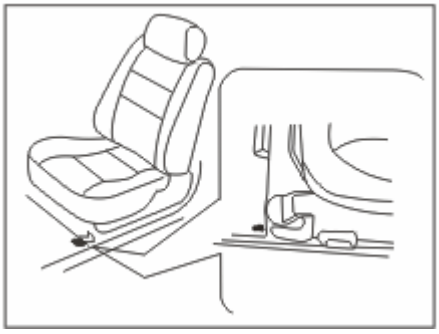
Put brace rod into hole and keep moving it up. If slot is moved to side or inside the car, may not support engine hood.

Before closing engine hood, must check whether tool or tatter, etc, are left in the engine hood. Put brace rod to its original holder. Then put engine hood down and confirm it is locked.

Warning
● After putting engine hood brace rod into the hole, confirm the brace rod is supporting the engine hood firmly to avoid head or body injury.

Warning
● Before closing engine hood, put brace rod into its holder. Closing engine hood with brace rod supporting will cause engine hood curve.

Fuel tank cap

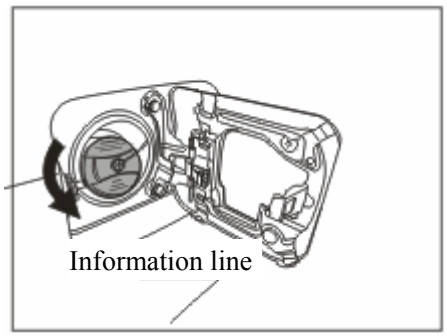


1. Pull up the inner control handle of oil filler cover and open it.

When refilling fuel, engine must be shut down.

Warning
● No cigarette, spark or flame in fuel refilling. Fuel steam can burn easily.

● When opening fuel tank cap, do not put it down immediately. If do it suddenly, fuel under certain pressure can push out and cause injury.



2. Turn fuel tank cap anticlockwise and you can put down it. Pause for seconds when putting it down.

It is normal if you hear swoosh when opening fuel tank cap. When installing, turn the cap clockwise until hearing a clicking sound to screw it down. Loosen after closing it and fuel tank cap will slew slightly but it will not cause any fault.

Warning

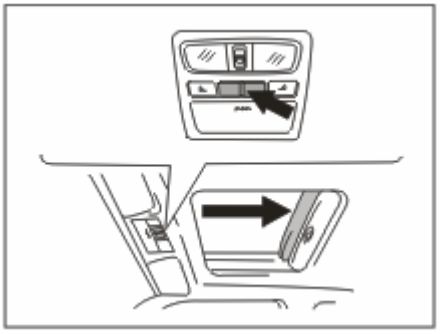
● Confirm fuel tank cap screwed down tightly to prevent fuel from overflowing when accidents happen.

● When changing fuel tank cap, use genuine original one of Lifan LF6430 and it can adjust the pressure of fuel tank.

Note

To avoid damage the cap, only turn in the turning direction. No puling or prying fuel tank cap.

Power sunroof (optional)



Open sliding operation illustration

When operating sunroof, you can use switch beside front roof light.

Ignition key should be placed at position “ACC/ON”

Sunroof sunshade can be opened or closed manually.

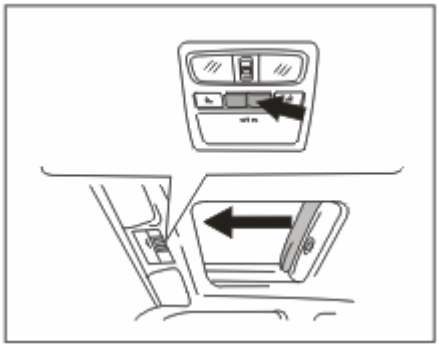
Sliding operation:

Open: press “OPEN” on switch

Sunroof sunshade will be opened with sunroof.

Automatic model: loosen button after its effective judgment of less than 0.5s and sunroof will move automatically to alignment; if press any controlling button when moving, sunroof stops and no pressing the controlling button for more than 0.5s, the next controlling order can be accepted.

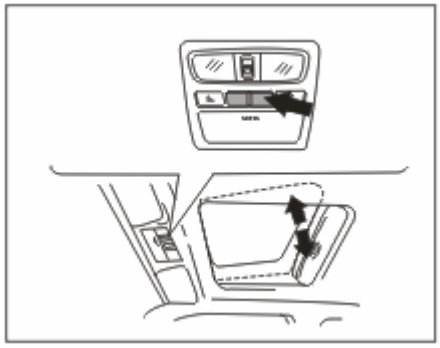
Manual model: after effective judgment of button for 0.5s, enter manual model; sunroof will stop turning when loosening the button (manual model has no anti-trap protection function)



Close sliding operation illustration

Slightly touch built-in open/lifting close switch (side “close” of the switch) (for less than 0.3s), then sunroof will open to the largest built-in or entire closed position; if it do not get to the largest built-in or entire closed position during sliding, sunroof will stop sliding when pressing any sunroof operation button again.

Keep pressing built-in open/close switch (for more than 0.3s), sunroof will slide to be built in or closed; loosen button then sunroof will stop sliding.



Tilt operation illustration

Tilt operation:

Touch slightly built-in close/lifting open switch (side “TILT UP” of the switch) (for less than 0.3s), then sunroof will open to the largest built-in or entire closed position; if it do not get to the largest built-in or entire closed position during opening, sunroof will stop operating when pressing any sunroof operation button again.

Keep pressing lifting open/close switch (for more than 0.3s), sunroof will lift or close; loosen button then sunroof will stop moving.

Sunroof calibration

If the vehicle goes off (changing an accumulator, etc.), the sunroof should be reset.

Methods:

a) Operate sunroof to the soft lifting position and open it to the largest place by inching or manual.

b) Keep pressing and hold on; when the pressing time is more than 15s, sunroof moves from largest position of soft lifting to that of hard one until motor stops and sunroof will always whip.

c) Loosen sunroof lifting open button;

d) Press down sunroof lifting open button for more than 1s in 5s, then sunroof starts executing reinitialization procedures as follows: sunroof lifting closes => sunroof built-in opens to the largest position => sunroof built-in closes. Sunroof stills after actions above and reinitialization of sunroof control unit completes. When sunroof reinitializes, sunroof lifting switch button should be kept pressing.

Operation note:

I) If the above-stated operation d) timeout, this electriferous reinitialization ends; sunroof control unit still retain the original information and then can execute the operation again.

ii) If loosen sunroof lifting switch button during sunroof reinitialization, sunroof operation will stop immediately and this reinitialization operation fails; at the time sunroof control unit comes back to initialization condition and sunroof button function only recovers when executing initialization operation again.

iii) If ignition switch gear shifts (from gear ON/ACC to LOCK/START), sunroof action stops immediately and this reinitialization operation fails; at the time sunroof control unit comes back to uninitialization condition and sunroof button function only recovers when executing initialization operation again.

Anti-trap protection:

Slightly touch built-in close or lifting close switch (for less than 0.3s), sunroof will close automatically.

Translation close: for barriers during translation close (except close by touching), sunroof will be back to the completely opened point and be back slightly when it is on the upwarp. If keeping pressing the close button (for more than 0.5s), sunroof has no anti-trap protection.

Automatic close: when the vehicle is under alert condition, repress down the locking button and then sunroof will close automatically in 10s. It will close normally when there is no foreign material or it will anti-trap 5 times (delay 3s every time) automatically and close in the last time to the position trapping the foreign material and then retract 5mm.

Set alert condition: ignition switch is closed and draw out the key, then four doors and the luggage boot close.

Anti-trap detection zone: 4mm-200mm in front of the completely closed sunroof is anti-trap zone. The anti-trap function starts continuously for 5 times (no normal close) and it will be under inching model.

Inching model:

1. Press down control button continuously for only 2s every time and then can make it to the needing position.

2. After entering inching model, it is also in the model even if the car restarts after misfire.

3. Verification function can recover normal operation of sunroof.

Automatic close function:

When sunroof is at any opening position, pull out key, close the door and press down locking button on the key. Press locking button again after setting alert successfully and then sunroof will close automatically after all doors and windows close.

Warning

● Do not extend heads or any other body parts out of sunroof when it opens, or serious injury will be caused when car is in emergency brake or closed.

● Make sure no other things near sunroof before closing it, or things will be trapped and damage sunroof.

●Do not leave children without care in the car alone when ignition key is put into, or it may cause injury due to use sunroof switch.

● No opening sunroof when there are ices on it to avoid damage of its components due to over load.

● No closing sunshade when sunroof opens.

● Drive for some time and open sunroof after seeper on roof blows away to prevent it from entering the car.

Note

● If necessary, clean sunroof glass surface with glass cleanser. No using sticky cleanser.

● After using for some time, sunroof skid and gap will be dusty. If no cleaning timely, sunroof components will be damaged or sunshade will be opened difficultly. Sunshade skid and slider need adding lubricants once when using for every two months. Never use butter or viscous grease.

● Clean foreign materials in sunroof drainage system timely to prevent it from blocking and causing unsmooth drainage.

● Spray a little talc powder to glass sealing strip to reduce wear and avoid water leakage. Never use butter or viscous grease and avoid ageing and cracking of the sealing strip.

Note

● Glass frame structure will loose after using sunroof for some time. Without timely maintenance sunroof tightness will be seriously affected and even damaged when open and close. Timely adjustment should be made to setting surface gap of sunroof gap and check locking force of glass setting screw to avoid such problems.

1-3 Operation of instrument and controller

Seat, safety belt and rear view mirror

Seat

Safety belt

Air bag

Children protective device

Steering wheel

Rearview mirror

Vanity mirror

Seat

In driving, passenger of the vehicle shall adjust the seat back pad to a comfortable position and use safety belt correctly.

Warning
● Do not drive before passengers sitting correctly. Prohibit any passenger from sitting on folded seat back pad or in luggage or on goods or it will cause severe personal injury on emergency brake or collision. ● In driving, any passenger is not allowed to stand up or move between seats. Otherwise, severe injury can be caused on emergency brake or collision.

Front seat

Precautions for seat adjustment

Adjust driver’s seat and make pedal, steering wheel and dash board controller in the control of driver.

Note
● Do not adjust seat when vehicle is still moving, which could make driver lose control of the vehicle. ● Attention shall be paid to ensure no collision between seat and passenger or seat and luggage. ● After seat adjustment, try to slide the seat forward and backward to check whether the seat is

locked in due position.

● After seat back pad adjustment, lean forward the body to check whether the seat is locked in due position.

● Do not put things under seat. Otherwise, seat locking structure can be influenced or seat position regulator handle can be pushed upwards accidentally which can cause sudden seat move and make driver lose control of the vehicle.

● For seat adjustment, do not put hand under seat or near parts which are in operation. Otherwise, hand or finger might be injured.

Front seat adjustment



1. Seat position regulator handle（forward & backward）

Hold the middle of handle and pull upward. Then make use of slight body pressure to slide the seat to the needed position; release the handle.

2. Seat height regulator button (optional)

Turn regulator button to the suitable position.

3. Seat back pad angle regulator handle

Pull the handle upward to the needed angle then release the handle.

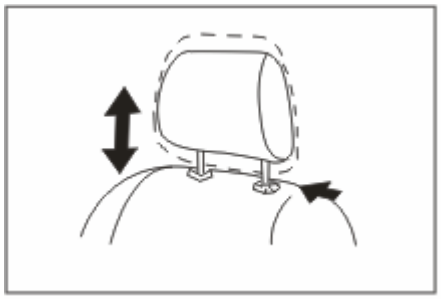
4. Seat waist support regulator handle (optional)

Move the handle forward or backward to adjust waist support.

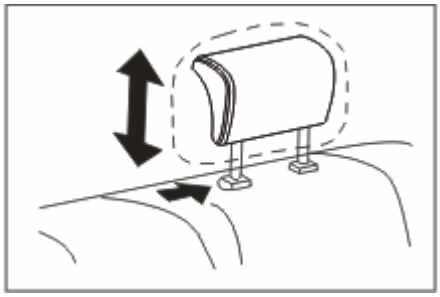
Warning
● Avoid over lean of seat back pad. When driver and passenger sitting straight against the seat, seat belt can provide maximum protection for front or rear collision accident. If lean on the seat, safety belt part of waist can slide to breech and press pressure on abdomen, or neck will touch the safety part of shoulder. On front collision accident, the over lean of seat can increase the danger of personal injury or death.

Headrest

Front



Rear



For security and comfort, headrest must be adjusted before driving.

Lift: pull headrest upward.

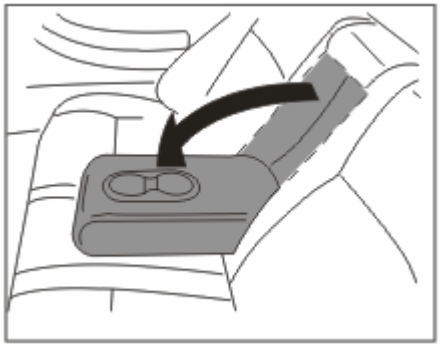
Lower: press down lock release button, press down headrest.

The closer to the head position, the better protective effect will the headrest have. Therefore, it is unnecessary to use cushion on the seat back pad.

Note
● Adjust, make the central part of headrest close to the upper side of ears. ● After adjustment, confirm it is locked on the position. ● Do not drive without headrest.

Rear seat

Rear seat middle armrest



As shown in picture above, pull out rear seat middle armrest if use it.

Precautions for rear seat

Warning

● No seat adjustment in driving.

●No collision between seat and passenger or seat and luggage when adjusting seat.

● Adjust two cushions to the same position and make all seats in the same angle when passengers sit in the middle of rear seat. Otherwise, passengers can not wear seat belt correctly and severe injury may be caused in collision.

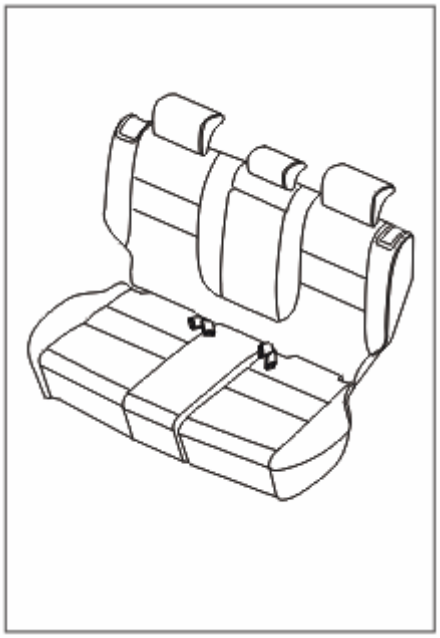
● After seat adjustment, try to slide the seat forward and backward and lean backward the body against the seat to check whether the seat is locked in due position.

● For recovering seat to the original position to prevent passengers from severe injury or death in collision or emergency brake, please abide by the following precautions:

Push back and forth the upper part of seat back pad to confirm seat is locked tightly. Otherwise the normal operation of seat belt will be influenced.

Confirm seat belt is not twisty or jammed under the seat. Put it in the right position for use preparation.

Rear seat adjustment



Seat back pad unlocking switch

Pull upward the unlocking switch then lean backward the body to make the back pad in needed angle and loose the switch.

Adjust all seat back pads in the same angle when passengers sit in the middle of rear seat.

Warning

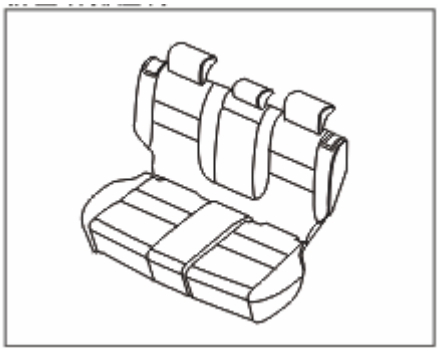
● No seat adjustment in driving.

● Adjust two cushions to the same position and make all seats in the same angle when passengers sit in the middle of rear seat. Otherwise, passengers can not wear seat belt correctly and severe injury may be caused in collision.

● Avoid over lean of seat back pad. When driver and passenger sitting straight against the seat, seat belt can provide maximum protection for front or rear collision accident. If lean on the seat, safety belt part of waist can slide to breech and press pressure on abdomen, or neck will touch the safety part of shoulder. On front collision accident, the over lean of seat can increase the danger of personal injury or death.

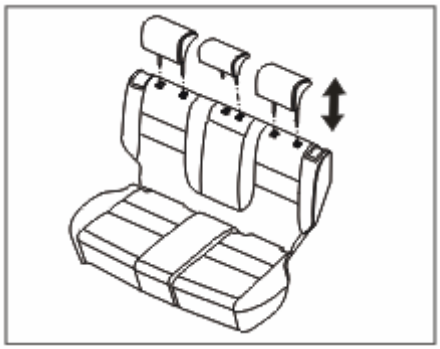
● After seat back pad adjustment, lean forward the body to check whether the seat is locked in due position.

Fold rear seat



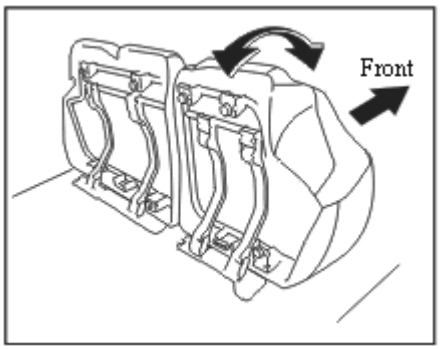
1. If middle seat belts still connect, unfold it to avoid damage.

Note
Place seat belt head well before folding seat back pad.

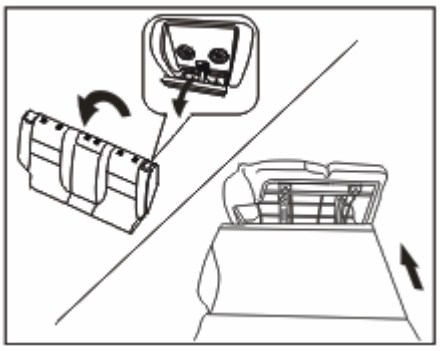


2. Take off the headrest of rear seat back pad.

Warning
Do not fold seat back pad with passengers or luggage on rear seat. Confirm no passengers or luggage on rear seat when folding.

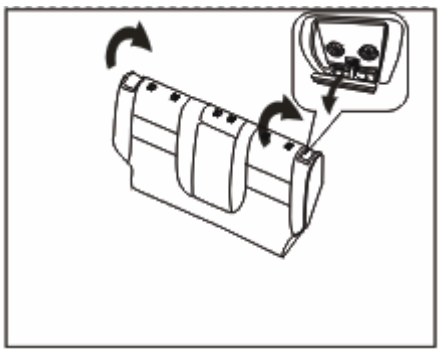


3. Fold cushion forward

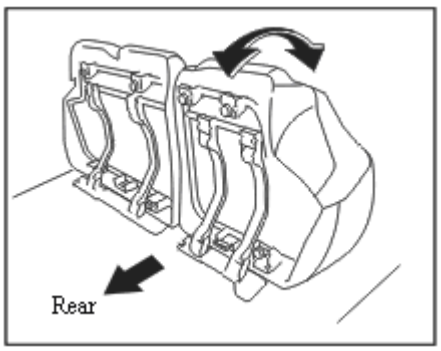


4. Pull up switch assembly of angle adjuster and pull forward back pad. Loose the switch assembly when the back pad is folded to the position.

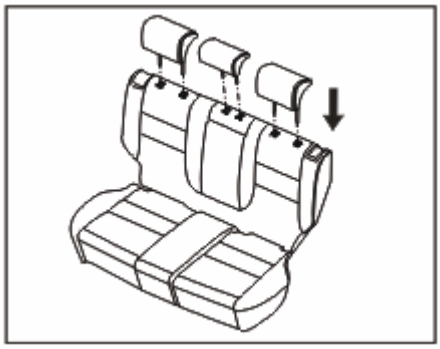
Recover rear seat



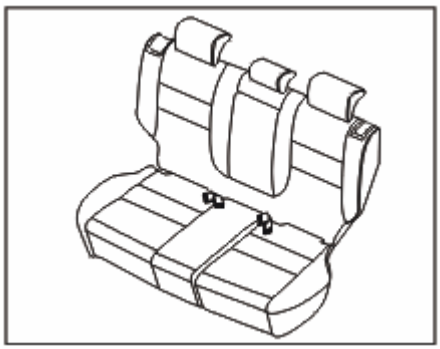
1. Pull up switch assembly of angle adjuster and lift back pad until rear sear to the suitable position then loose the switch.



2. Recover cushion forward.



3. Install headrest of rear seat back pad.



4. Check the lock catch of seat belt and confirm its normal use.

Warning

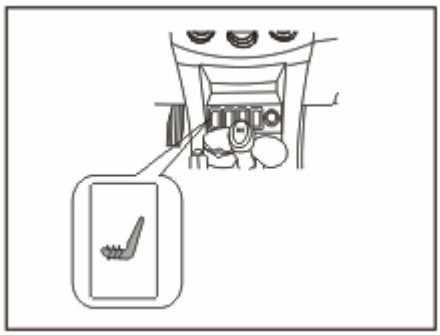
Passengers are not allowed to sit on folded seats or luggage boot in driving; please use seat normally.

When recover seat back pad to vertical position, to prevent personal injury or death in collision or emergency brake, the following protective measures must be followed:

● Push and pull the upper part of seat back pad forward and backward to confirm the seat back pad is locked tightly. Otherwise the normal operation of seat belt will be influenced.

● Confirm seat belt is not twisty or jammed in the seat back pad. Put it in the right position for use preparation.

Driver’s seat cushion heater (optional)



Press switch and then seat cushion heater can be opened. At the time indicator is alight meaning that the heater is working. Press switch again and then the heater can be closed.

Engine switch should be placed at “ON” and then the heater can be operated.

The seat cushion heater parameter as follows:

Type: uniflow heating

Cushion heating temperature: 20°

Voltage: 13.5V

Power: 36W

Warning

Great attention should be paid when using seat cushion heater, for this device will make passengers feel scorching hot and even burns them (erythema and chicken pox appear on the skin). The following passengers should special attention:

- Infants, children, the elderly or the disabled
- People with skin allergy
- The overfatigue
- The drowsihead due to drinking or taking pills (sleeping pills, cold medicine, etc.)

No blanket, cushion or other thermal insulation articles when using seat heater to avoid overheat of seat.

Note
● Do not put uneven articles on seat nor sharp things (needles, nails etc.). ● No using organism (paint thinner, benzene, naphtha or strong dissolvent); Otherwise, poisoning or damage will be caused. ● Close the switch when engine is not operated to prevent battery power supply from discharging.

Seat belt

Precautions for seat belt

The safety belts of the vehicle are designed for adults, and a child can sit on a rear seat with protection of the safety belt. According to accident statistics, a child sitting in back seat with proper protection are much safer than whom sitting in front seat.

If a child has to sit in the front seat, safety belt must be applied correct. For improper application of safety belt in accident, the rapid extension of air bag can cause severe injury or death to the child.

No matter in front seat or rear seat, do not allow child to stand up or kneel on the seat. For emergency brake or collision, the unprotected child can suffer severe injury or even death. Besides, do not put child on the adult's leg and holding a child in arms can not provide sufficient protection to the child.

Pregnant women should ask doctors about relevant precautions. Buckle waist safety belt tightly lower than hip rather than at the waist.

When using safety belt, the wounded should first ask the doctor about relevant precautions based on the condition of wound.

Note
Lifan reminds that driver and passengers on the vehicle shall buckle safety belts at any time. Otherwise injury possibility may be added in accidents.

Warning
In driving, passengers must sit on the seat with

safety belt correctly applied. Otherwise, severe body injury or death can be caused much easier in emergency brake or collision accident.

Use safety belt following instructions below:

● A safety belt can only be applied by one person alone. It is not allowed to use one safety belt by 2 or more people jointly, even for children.

● Avoid over lean of seat back pad. When the pad is vertically straight against the seat, safety belt can provide maximum protection (refer to instructions for seat adjustment).

● Note that do not damage belt or hardware of safety belt. Do not make them seized or jammed in the seat or door.

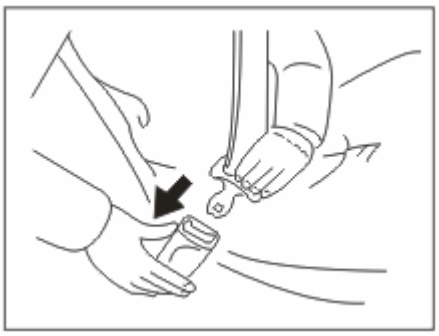
Warning

● Check safety belt system regularly. Check for the existence of parts with incision, abrasion or loose and replace the damaged parts. Do not disassemble or modify the system.

● Keep safety belt clean and dry. For cleaning necessity, apply neutral soap water or mild warm water. No using bleaching agent, fuel liquid or abrasive for cleaning. Otherwise, safety belt can be greatly damaged (refer to “Inner cleaning” in Chapter 5).

● For severe collision accident, safety belt devices (including bolts) must be replaced. The entire device must be replaced even though the damage is not obvious.

Three-point Safety Belt



Adjust seat according to requirement. For need to buckle safety belt, pull it out from the retractor and put the belt head into the lock catch.

After putting belt head into the lock catch, a clatter can be heard.

The length of safety belt can be adjusted automatically according to the passenger figure and seat position.

For emergency brake or collision, retractor will lock safety belt. It will also lock up for too rapid forward lean. Safety belt can stretch out for slow and stable move for free action. For failed safety belt pulling from the retractor, safety belt can be pulled out from the retractor smoothly by pulling it tightly first and then releasing it.

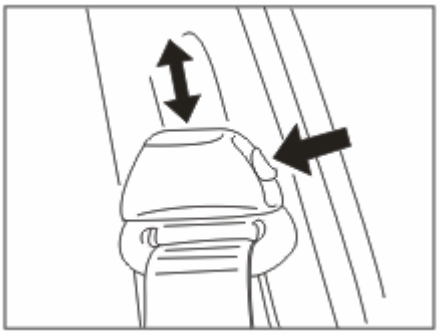
When the shoulder safety belt of rear passengers is fully stretched, slight shrinkage can lock safety belt and it can not stretch any more. Release the safety belt again for full shrinkage, then it can be pulled out again.

Warning

● After putting in the belt head, please confirm the belt and lock catch are locked firmly and safety belt is not twisty.

● Do not put things like coin and clip into the lock catch to prevent blockage on the correct buckle of belt head and lock catch.

● For abnormal safety belt function, inform Lifan service station immediately. Before safety belt repair, do not use the seat, for its failed protection to passenger or child can cause injury.



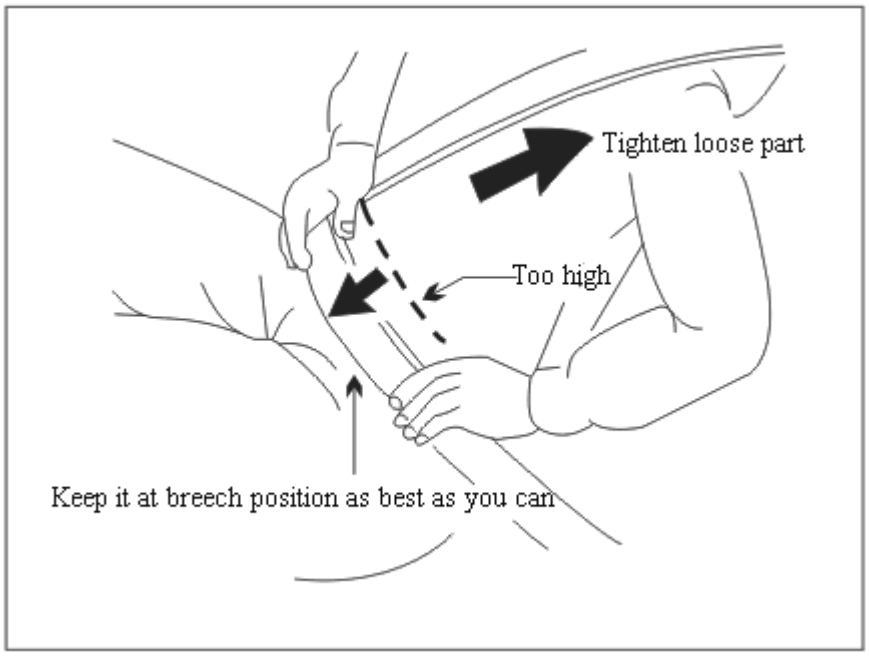
Safety belt with high-low adjustment device

Adjust high-low adjustment device to the right position.

Lift: press down button of high-low adjustment device and slide up the device.

Lower: press down button of high-low adjustment device and slide down the device.

After adjustment, confirm high-low adjustment device is locked.



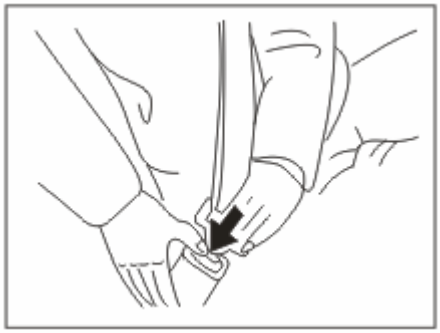
Adjust position of waist and shoulder safety belt parts.

Keep waist safety belt buckle at breech position as much as possible — do not keep it at waist part. Then pull the shoulder part upward by the bar plate, adjust safety belt to a proper position.

Warning

● For collision or other accidents, waist safety belt at high position and loose safety belt can cause severe injury for slide of waist safety belt. Keep waist safety belt at breech position as much as possible.

● For security shoulder safety belt can not be positioned under arms.



For safety belt release, press the open button on lock catch, safety belt will automatically retract.

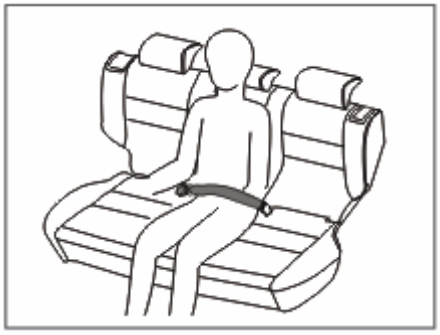
For unsmooth automatic safety belt retraction, pull safety belt out to check for possible tie or twist and confirm no twisty in retraction.

Rear middle seat belt

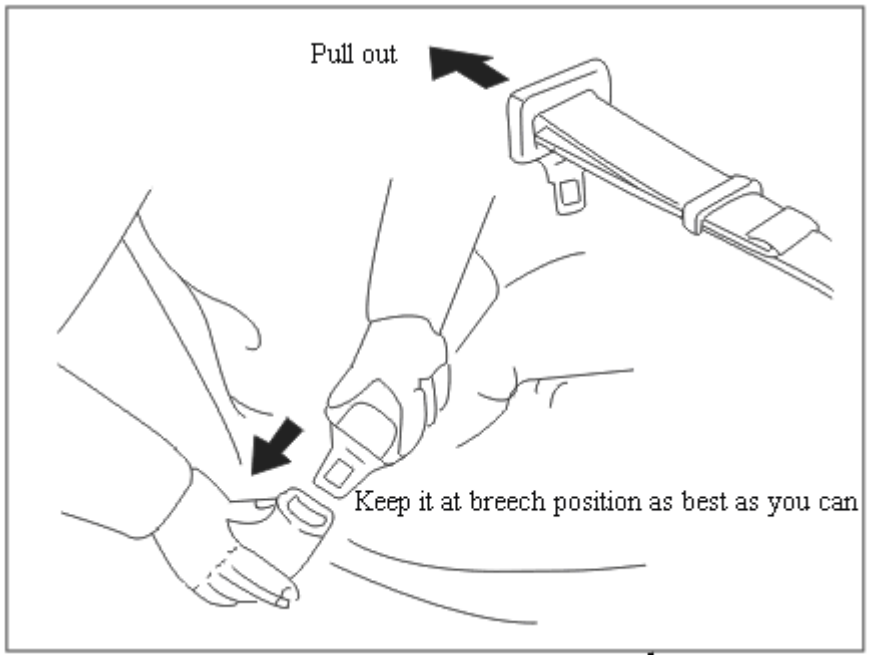
Two types of rear middle seat belt as follows:

1. Two-point safety belt

2. Three-point safety belt



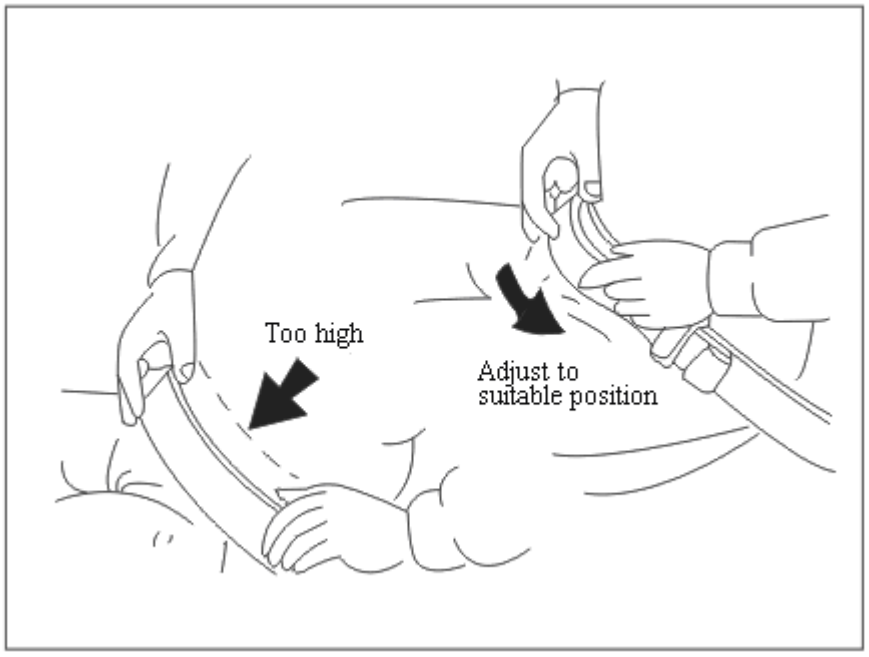
Two-point safety belt



Tighten safety belt buckle and put belt head into lock catch

After putting belt head into the lock catch, you can hear a clatter.

For improper length of safety belt, make belt head and safety belt at right angle, then pull the belt head.



Retract the overlong safety belt, adjust the safety belt position.

For safety belt retraction, pull the unfixed end of the safety belt.

Please keep the waist safety belt at the breech position as much as possible, no locking at the waist position; then adjust safety belt to suitable position.

Warning

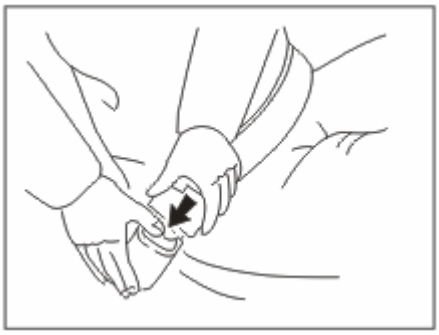
For accidents, waist safety belt at high position and loose safety belt can cause severe injury for slide of waist safety belt. Keep waist safety belt at breech position as much as possible.

Warning

● After putting in belt head, please confirm that belt head and the lock catch are locked firmly and safety belt is not twisty.

● Do not put things like coin and clip into the lock catch to prevent blockage on the correct buckle of belt head and lock catch.

● For abnormal safety belt function, inform LIFAN service station immediately. Before safety belt repair, do not use the seat.



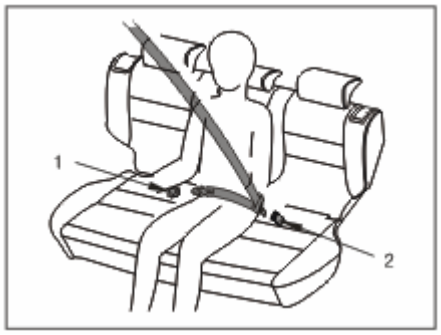
For safety belt release, press the open button on lock catch.

Three-point safety belt (optional)



Rear middle seat belts are two-point or three-point protection devices with two lock catches. For normal use two lock catches of seat belts must be put into and locked firmly and correctly.

Make sure the lock catch 1 of middle seat belts is put in firmly for use preparations.

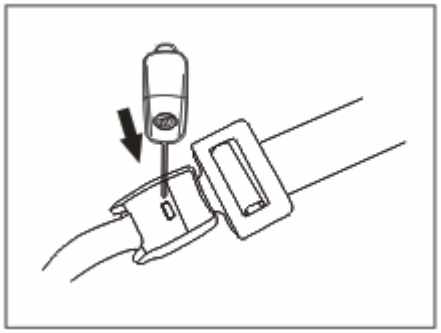


Two lock catches and belt heads of rear middle seat belt

The shapes of two belt heads are different to avoid putting belt heads into the unmatched lock catches.

Lock catch 1

Lock catch 2



For belt head release, put the key into the lock catch 1 and make safety belt retract.

Warning

Confirm two lock catches are put into correctly and locked firmly. For car accidents or collision, severe injury or death may be caused due to wrong insertion of lock catches and belt heads.

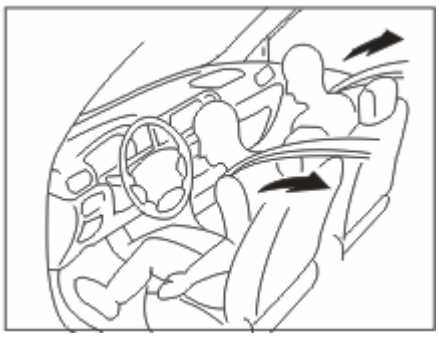


Warning

- No using rear middle seat belt when the lock

catch is loose. For emergency brake or collision, only tightening shoulder or waist safety belt may cause severe injury or death.

Front seat belt pretensioner

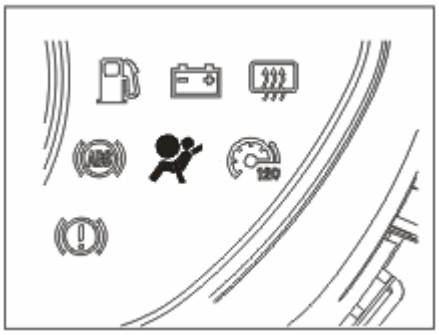


Safety belt pretensioner of driver and front passengers work in front collision.

For air bag sensor's detection of collision, the retractor pulls forward the safety belt then safety belt can limit front passengers tightly.

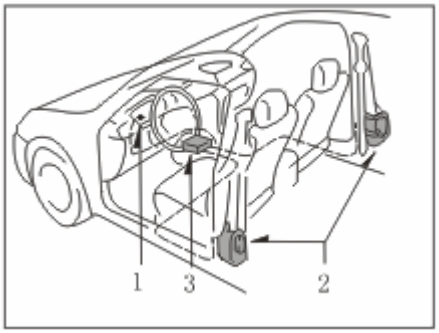
Front safety belt pretensioner can still work even though nobody sits on the seat.

In collision at a certain speed and angle, safety belt pretensioner and SRS air bag may not work at the same time.



SRS warning lamp is lighted when turning the ignition key to "ON" and then it goes out after about 5s, which indicates the front safety belt pretensioner works normally.

The warning lamp system is applied to monitor the air bag ECU, safety belt pretensioner assembly, air charging device, warning lamp, connection and power supply.



Then front air bag system includes the following components. As for position, refer to the figure.

1. SRS warning lamp

2. Safety belt pretensioner assembly

3. Air bag ECU (Electronic Control Unit)

Front safety belt pretensioner assembly is controlled by air bag ECU.

When the front safety belt pretensioner in operation, operation noise can be heard and a little smoke like gas will be given out. This gas neither is harmless nor indicates fire.

Once the front safety belt pretensioner is working, safety belt retractor will be kept under its locking state.

For many collisions of the car, seat belt is activated in the first collision but no activation in the second and the following collisions.

Warning
No retrofitting, removing, knocking or opening the front safety belt pretensioner assembly or air bag sensor or its surrounding wiring. Otherwise, it will result in a sudden operation of the front safety belt pretensioner or cause an ineffective system, and finally cause an accident. Please contact with Lifan service station for any repair and retrofit,

Warning
Any of the following alterations is not allowed before consulting the personnel at Lifan service station. Such alteration may influence the normal operation of the front safety belt pretensioner

under some circumstances.

● Install such electronic devices as movable two-way radio communication device, cassette photograph or small disc photograph.

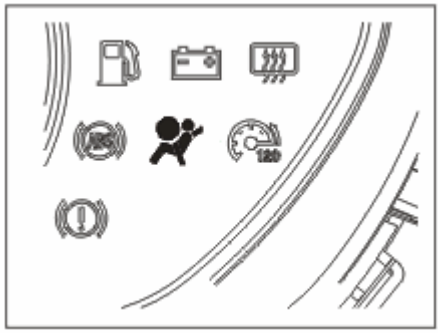
● Repair on or near the front safety belt retractor assembly.

● Retrofit the suspension device.

● Retrofit the front structure.

● Install grid protection device or other supplementary equipment in front part.

● Repair on or near the front fender, front structure or bracket.

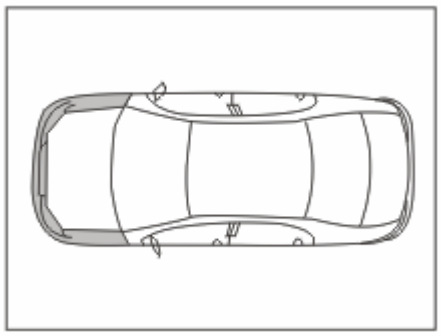


The maintenance indicator in the front safety belt pretensioner system is used to indicate the operation trouble happening to the driver. Any of the following situations indicates the abnormality of air bag or pretensioner. Repair the vehicle at Lifan service station as soon as possible.

● The maintenance indicator is not lighted or kept on when turning the ignition key to "ON".

● The maintenance indicator will light up or twinkle in driving.

● Abnormality or activation of the front safety belt pretensioner will cause the safety belt not to be retracted or pulled out.

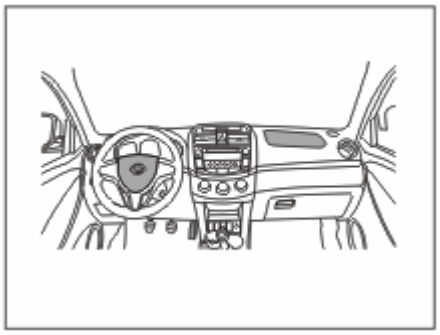


Inspect and repair the vehicle at Lifan service station at once in case of the following situations.

● An accident in the front part of the vehicle (shaded portion in the figure) does not make the front safety belt pretensioner work.

● Front safety belt pretensioner component or its surrounding part is scratched, split or damaged due to other reasons.

Supplemental Restraint System of driver's seat and front passenger seat (SRS)-Air bag



Please read carefully the instructions of this chapter before using this system to guarantee the driving safety.

Use instructions for SRS and air bag:

Read this manual carefully and check air bags installed in the vehicle (driver side air bag and passenger side air bag)

Front passenger SRS includes two air bags:

● Driver side air bag

● Passenger side air bag

Driver side air bag is installed in the center of the steering wheel hub. Passenger side air bag

is installed in the dash board under a cap marked “SRS/AIR BAG” which is over the sundries box beside the dash board. Air bag has a high-speed impact force when popping. They work together with kneecap board in the dash board and seat belt to protect the safety of the driver and the front passenger.

This system includes main components:

- Steering wheel assembly
- Steering wheel side air bag module assembly/ passenger side air bag module assembly
- Passenger side module cap
- Clock spring
- Air bag module control unit (ECU)
- Air Bag wiring harness
- Other accessories like steering wheel rear cover plate, ECU bracket connection screw, etc.

Designing SRS is to provide supplemental restraint protection for the front passenger under special situations. Without using safety belt, air bag can not provide enough protection in accidents.

Using safety belt is very important under the following situations:

- Limit passengers’ move and prevent they from approaching to the charging air bag.
- Reduce the injury possibility in accidents with unneeded air bag deployment like turnover or rear collision.
- Reduce the injury possibility before the ignition of air bag due to front collision.
- Reduce the possibility of being threw out of the vehicle.
- Reduce the injury possibility of the lower part of the body and legs for front air bag can not protect them.

- Limit the driver’s position to control the vehicle better.

Important safety warnings

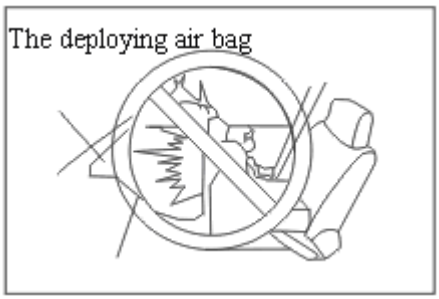
Warning
Electronic air bag system is a part of the front passenger restraint system and it can be made full use only working with seat belt. It can not provide protection alone. Electronic air bag system can not work in all accidents. For rear collision, turnover or front collision with low impact force, it will not work and only seat belt can protect you on such occasion. Passengers inside can be protected by the seat belt. Air bag system can work only under great impact force and the protection effect will be reduced for the wrong sitting position. Using seat belt can make passengers keep normal sitting position and make electronic air bag system work more effectively.

Warning
No putting children at the front passenger seat, otherwise it may cause severe results.

It is danger to put a child at or under 12. Children will be hit by the unfolded air bag and the severe injury or death may be caused. If possible, please put a child at or under 12 at rear seats and adopt proper children restraint system which fits for her age and size.

Warning
Children restraint system facing backward: extreme danger!

No using the children restraint system which faces backward on rear passenger seat. Children restraint system will be hit by unfolded air bag and move backward greatly then cause severe injury or death of children. Never use children restraint system which faces backward on front seat when the air bag can open.



Warning

In front of air bag setting position: it is extremely dangerous to put hands or feet near air bag setting position.

Front air bag opens at a high speed with great power. If approaching to it too much, severe injury may be caused. Driver' hands must always put at the flange of steering wheel and front passenger must put feet on the floor. Front passenger must adjust seat backward as far as possible and adjust backrest as normal sitting position and fasten the safety belt.

Warning

No putting anything especially children between the front passenger and the inflatable materials of air bag inside the vehicle.

Electronic air bag system will work in a second to protect passengers from injury in accidents. Air bag system needs great open force to achieve the aim. The driver and front passenger should try to seat backward and make themselves
feel comfortable. A space for an air bag should be spared between seats of the driver and front passenger. Do not put any object between the front passenger and the inflatable materials, especially children. If the front passenger approaches to the inflatable materials too much or any object is put between the front passenger, driver and inflatable materials, the unfolded bag may cause injury of the front passenger or driver. If a child seats between the front passenger and the inflatable materials, the child may suffer greater injury.

Warning

It is dangerous to adjust car suspension. If the height of the car or suspension is changed, the car can not detect collision correctly then cause abnormal fire of air bag. Accidental air bag deployment may cause severe injury of passengers.

Warning

No putting any sign or label on the steering wheel and front passenger air bag, otherwise it may influence the unfolding of the bag in

deployment and cause accidental injury of passengers inside, for these signs and labels may throw at passengers when bag is unfolding and then increase the possibility of passengers' injury.

Warning

Do not try to maintain or move any part of electronic air bag system by yourself (these should be operated by qualified technicians).

The sensor device of triggering electronic air bag system is installed on the vehicle chassis and it is electronic, therefore it is connected with every part by harness (the removal of some interfaces needs special techniques). The gas generator in the system contains some chemical materials and it is deployed through electric signal. Therefore, only the personnel with systematic training of electronic air bag system installment can remove some parts of the system when maintaining it, otherwise, unnecessary maintenance and removal of nonprofessionals may cause unnecessary faults of the system even influence its normal operation in the future.

Any alternation of any part of this system at any time is prohibited unless allowed by professional technicians, for the position of any part of this system and the connection between parts are designed professionally and alternation of any part may cause malfunction of some parts or the whole system in collision or even cause personal injury due to wrong deployment of the system.

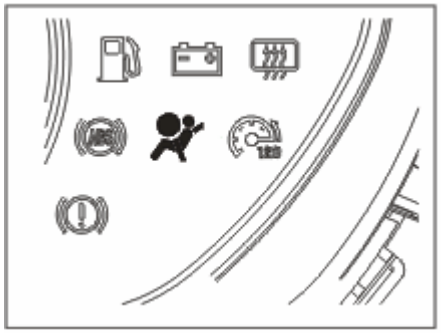
Any part of the air bag system of the vehicle is designed for the vehicle model and do not remove it to other models. Otherwise, failed air bag system and personal injury might be caused.

Warning

Avoid contacting the center of bag bracket or inside of air bag after the system working.

The deployment of gas generator will produce a great deal of heat after the system working, therefore the parts contacting it will become hot and the hot air bag gas generator is dangerous. The steering wheel and dash board will be very hot and you may be burned at the moment of unfolding air bag. After the air bag unfolding, do not contact the parts in the unfolded area of air bag and it may contain chemical materials left. Therefore, please try to avoid contacting these areas after the system working and clean the exposed skin with neutral soap.

Air bag indicator in the dash board



This air bag system does not need maintenance. The air bag indicator in the dash board indicates whether air bag system works normally. The indicator will be alight or twinkle for 6s to 8s when starting the vehicle and it goes out indicating the normality of this air bag system.

Appearance of the following situations indicates abnormality when starting the vehicle; please repair it at Lifan service station at once:

- The indicator does not light or twinkle for 6s to 8s;
- The indicator keeps lighting or flashing in driving.

Precautions for bag deployment

The bag of electronic air bag system expands and shrinks too fast to see how it works. It is designed to shrink quickly after expansion, (A) for absorbing the forward force of passenger's head (B) for no barrier of passengers' view or effect of the driver's driving ability after hit. Do not touch system components after deployment to avoid burns. It is normal for special smell and smog on the passengers' seats and the gas generated by this is harmless. These particles will sting skin, eyes, nose or throat. If skin or eyes are stung, please wash them with cold water; if nose or throat is stung, please move to an airy area. If the irritation keeps on, please see the doctor at once. For particles sticking to clothes, please clean it referring to clothes sign.

Nylon materials of air bag may cause scratch and/or redness of front passenger's skin when gas rushes out from the center of steering wheel and the upper right of dash board in the deployment of air bag. Like scratches caused by ropes or rolling over carpet or gym floor, this kind of scratch is not caused by contacting chemical materials. It usually can be cured quickly and won't last long. If it does not turn better or even blister appears, please see the doctor at once.

When air bag unfolds, all generant that produce gas will be used up, but traces may be left in air bag and on the sides of the bag. Do not touch these exposed chemical materials or cut off the used-up air bag but replace a new one, which should be tackled by qualified air bag system technicians. Meanwhile, clean hands and face with neutral soap after the bag working.

After the deployment of the bag, if the vehicle driving function stills exists, the vehicle can be driven. Meanwhile, air bag of the driver's seat can be put into the protective cap of steering wheel to keep drive. The air bag of front passenger's seat can be put into the upper right cover plate of dash board. But it will not protect you if it is hit again then.

Once electronic air bag system works, it can not be used any more. For your safety, the vehicle should be repaired in a normal way and the electronic air bag system should be disassembled completely (except wire harness if possible). Abnormal repair or no repair of the damaged parts will negatively affect the whole set of bag system. Please drive the vehicle to Lifan service station after the openness of the bag and let technicians replace a new set of electronic air bag for you, then technicians will deal with properly and take back the used air bag system. If you do not replace a new set of air bag system (wire harness may be excepted if it is not damaged), the injury possibility will be increased in the next collision.

Maintenance and service life of electronic air bag system

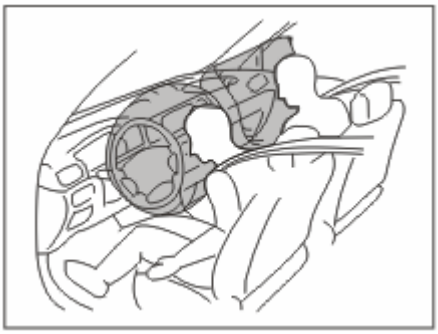
Electronic air bag system needs not frequent maintenance if no fault appears (it will check itself in every starting of the system). Its design ensures that it can work normally in 10 years from the installation date of the system. After 10 years, a new set of system should be replaced by the professional technicians of electronic air bag system.

Please send your vehicle to Lifan service station if it is under the following conditions:

- Air bag system indicator keeps flashing.
- Air bag system indicator keeps being alight.
- Air bag system indicator does not illuminate when ignition switch opens.
- Air bag expands.

Note
Driving violently and intentionally on rough roads or removing snow by the vehicle with electronic air bag system will cause wrong deployment or malfunction of the system. The air bag system of the vehicle is designed for the vehicle model and any alteration of the original components may negatively affect the bag system.

How air bag works



The collision sensor of air bag detects a front or side collision signal with over medium power, then it will generate a current.

Gas is produced to fill up air bag, and then the air bag will deflate after being filled up.

Air bag can be used only one time. It will not work any more and should be replaced after being used.

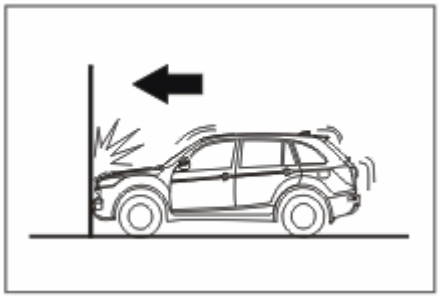
Only professional technicians can replace air bag system.

Air bag activates/not activates

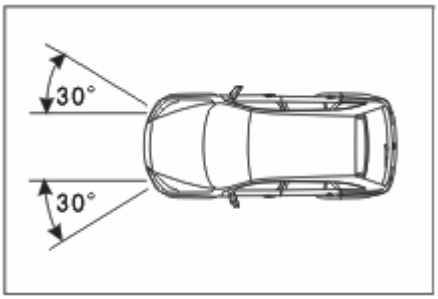
Front air bag activates

Over medium collisions under the following situations will cause the expansion of air bag:

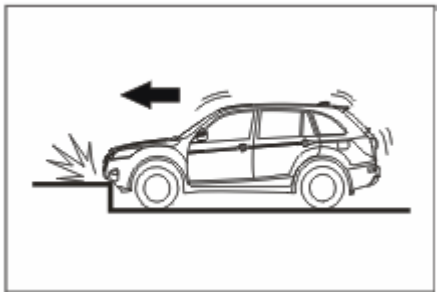
Front collision with solid walls at the speed of over 22km\h (14mph).



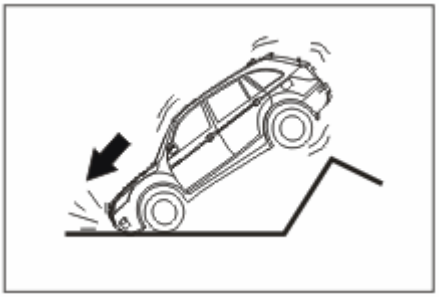
Front collision with vehicles in the 30 angles in front.



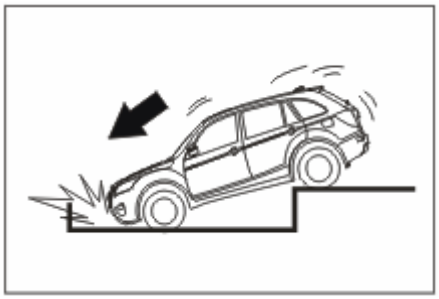
Collision with roadside stone, pavement step or hard objects.



Hard landing or vehicle falling.



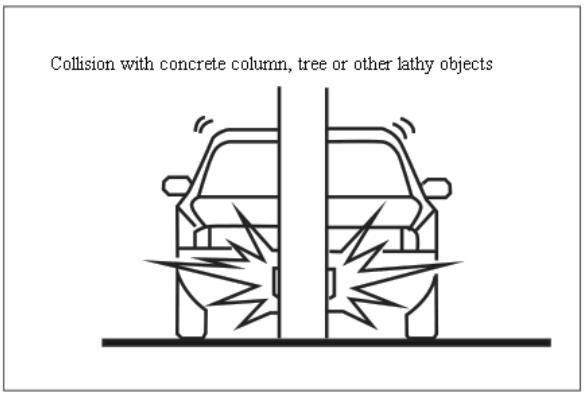
Driving into a big hole or collision with the far side of a hole.



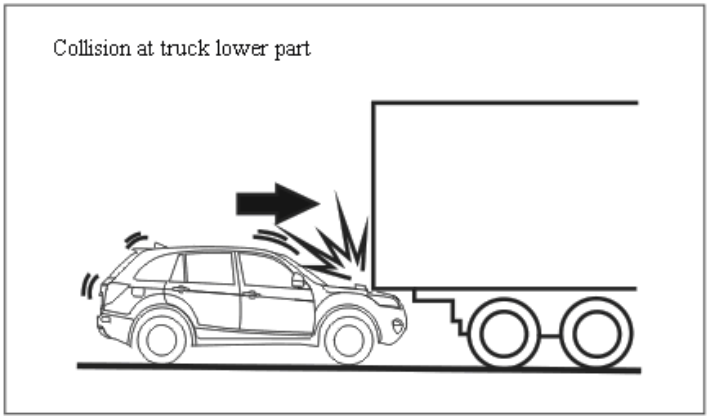
Activation limit of front air bag

Depending on the impact strength, air bag may not expand under the following situations:

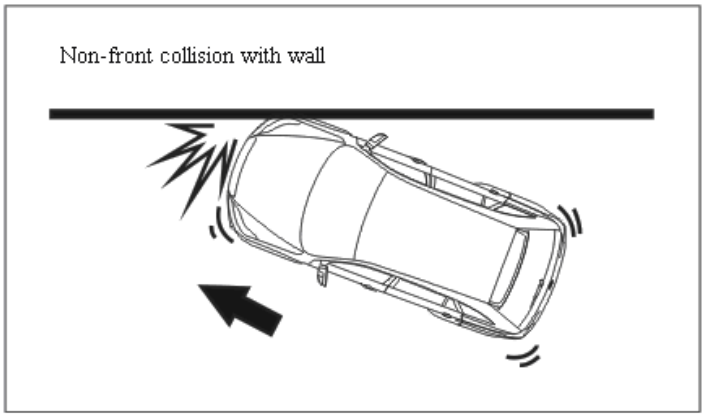
The air bag may not deploy for severe cap damage due to collision with tree or pole.



The air bag may not deploy for the resistance caused by rear collision or collision with truck lower part.

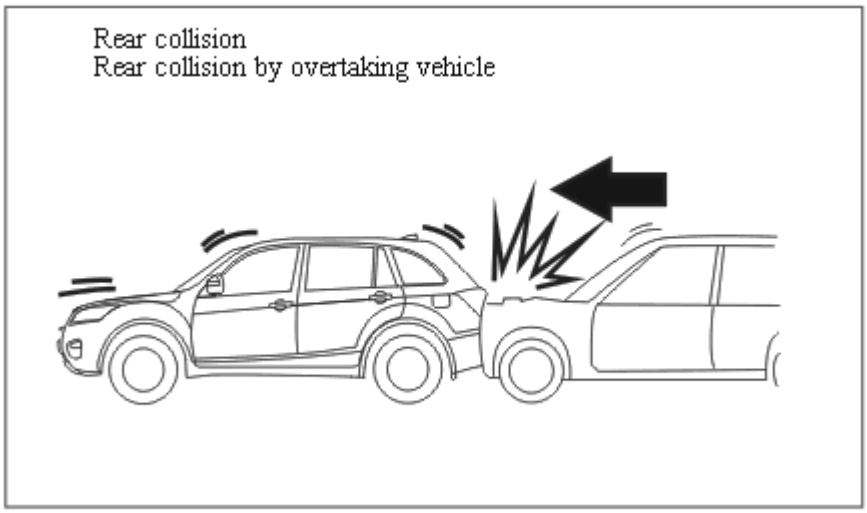


The air bag may not deploy for resistance caused by non-front angle collision.

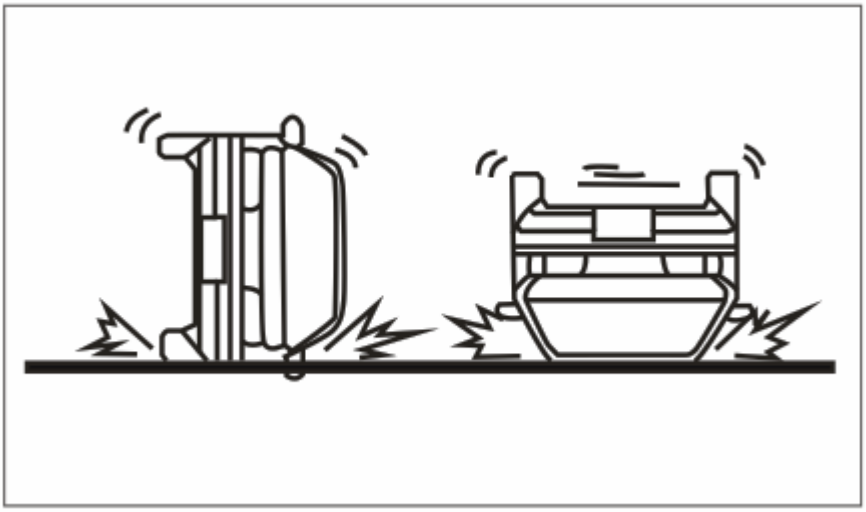


Inactivation of front air bag

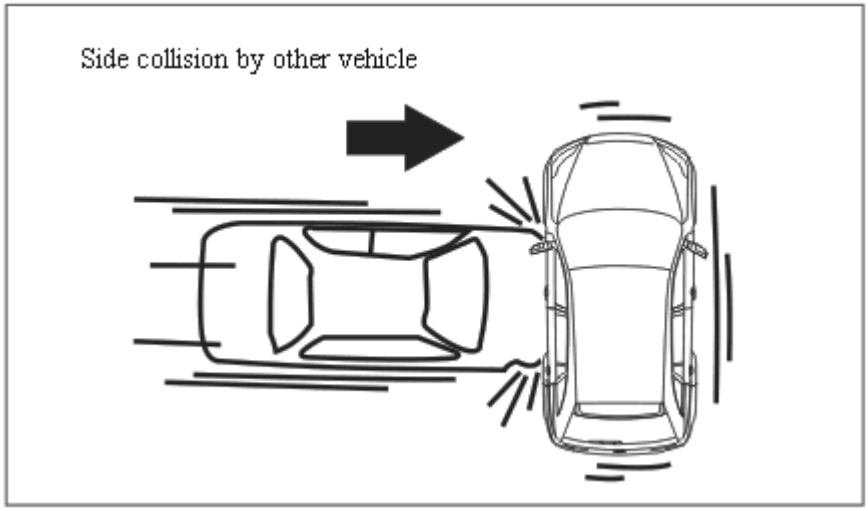
Air bag may not deploy in the following conditions:



The air bag may not deploy due to side turnover.



The air bag may not deploy due to side collision.



Real time monitoring

Components of air bag system are monitored by diagnostic system:

- ECU unit
- Air bag module
- Front seat belt device
- Other circuits
- Air bag cutting system

A diagnostic module in ECU keeps monitoring system read-in. When ignition switch is at position “ON”, it starts working and keeps in driving.

The warning sign of air bag/ safety belt system is:



If air bag/safety belt system is good, the warning light is alight when ignition switch is at position “ON” or after the starting of engine, then it goes out after 6s.

After the openness of ignition switch, the warning light keeps flashing or being alight or not light indicate that the system has faults. If any such situation appears, please check it in Lifan service station at once. The system may stops working occasionally.

Maintenance

Air bag system does not need regular maintenance, but under the following situations please send the vehicle to Lifan service station.

- Air bag system indicator keeps flashing.
- Air bag system indicator keeps being alight.
- When ignition switch opens, air bag system indicator does not light.
- Air bag expands.

Air bag brake system indicator will be on in the following situations:

● Children restraint system is not installed on the front passenger seat.

● Passengers sit on the front passenger seat or things are put on it.

● Children restraint system designed for air bag brake system is installed on the front passenger seat but the air bag brake system is not alight.

Warning

Damaged air bag sensor:
It is dangerous to drive a vehicle with a damaged air bag sensor. Small collision or collision that can not open air bag can damage sensor. In continuous collision, the damaged sensor will not make the air bag expand. After collision, please remember to check the air bag system by professional technicians.
Dismantle inner components:
Dismantle air bag parts and sensor. It is extremely dangerous of front seats, front dash board, components, steering wheel, parts and components on front and rear window pillars and vehicle roof sides. These contain key parts of air bag. The occasional staring of air bag will cause a series of results. Before removing these things, please consult professional technicians.
Air bag dispose:
It is extremely dangerous to improper dispose of air bag or vehicle with acting air bag. Unless following all safety precautions, otherwise it will cause injury. Please ask professional technicians about how to dispose air bag safely or how to scrap a vehicle installed air bag.

Warning

Repair air bag safety system yourself:
It is dangerous to repair or alter the system. Worse damage may be caused by occasional work or complete damage of air bag system. Never alter the system yourself. Repair must be done after consulting professional technicians.

Children protective device

Precautions for children protective device

Lifan strongly recommend children to use proper children protective device.

If the children's figure is too big to use children protective device, children should sit on the rear seats and use vehicle seat belt for protection. For details, please refer to "seat belt" in this chapter.

Warning

● Use correctly seat belt or children protective device in accordance with the age and figure of children to restrict and protect them effectively in collision or emergency brake. Putting a child in arms can not replace the protection of children protective device. In collision, children may be hit by windshields or pressed between passengers and compartment.

● Lifan strongly recommends to use children protective device fitting the children figure correctly and install it on rear seats. Statistics of accident investigation show that children's sitting on rear seats and protecting them correctly is safer than sitting on front seats.

● Do not install children protective device facing backward on the front passenger seat. If so, children will suffer severe injury or death caused by strong force generated in the front passenger air bag's fast deployment in collision.

● Under inevitable situations, children protective device facing backward can be installed on front passenger seat. The front air bag will deploy with a huge force rapidly, therefore seats should be removed backward. Otherwise children may suffer severe injury or even death.

● All installment instructions provided by children protective device factories should be followed and the device should be installed correctly. If not, children may suffer severe injury or even death in emergency brake or collision.

● Do not let children play the safety belt with locking function of children protective device. If

a child's neck is twined by the safety belt, the belt may not be pulled out and then cause stifling or death. In such situation and the buckle can not be unfastened, use scissors to cut off the safety belt.

Note

For children protective device used for infants, use the waist safety belt or three-point safety belt to fix the device on the seat. Install it strictly followed the instructions of children protective device factories.

For proper protection, factories' instructions of a child's age and figure fitting the children protective device should be followed when using the device.

Install children protective device correctly according to instructions provided by children protective device factories. Ordinary installment instructions are marked in the following figure.

Children protective device should be installed on rear seats. Statistics of accident investigation show that children's sitting on rear seats and protecting them correctly is safer than sitting on front seats.

Warning

When children protective device is not used:

● Even though children protective device is not used, fix it on the seats. Do not put unfixed children protective device in the passenger compartment.

● In need of dissembling children protective device, dissemble it down from the vehicle or putting it in luggage boot. By doing so, personal injury may be prevented in emergency brake or accidents.

Types of three-point seat belt

Confirm the safety belt type before installing children protective device.

ALR/ELR (automatic locking retractor/emergency locking retractor) safety belt-the belt is locked when pulling it out rapidly. Moreover, this kind of safety belt has an additional full

stretch locking model; shoulder safety belt retracts slightly after its full stretch, then safety belt is locked by the retractor at the position and it can not stretch any more. When installing children protective device, stretch the safety belt fully and make it be in locking model. ALR/ELR safety belt is installed on rear seats.

Types of children protective device

According to the children age and figure, children protective device is divided into the following 3 types:

（A）Infant seat

（B）child (convertible) seat

（C）Teenager (supplemental) seat

Install children protective device in accordance with instructions provided by factories.



（A）Infant seat

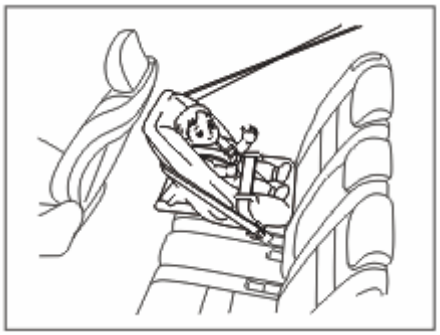


（B）child (convertible) seat



（C）Teenager (supplemental) seat

Install children protective device (ALR/ELR safety belt) with three-point safety belt.



（A）Installment of infant seat

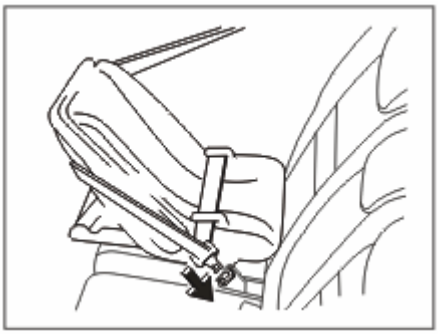
Infant seat should be used facing backward.



Warning

● If installing children protective device will influence locking mechanical device, do not install it on rear seats. Otherwise, children or the front passenger may suffer severe injury or even death in emergency brake or collision.

● Do not touch front seat back pad when installing children protective device on rear seat.



Install infant seat

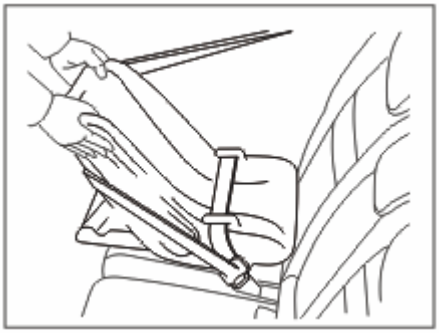
Put or pass the three-point safety belt through infant seat according to instructions provided by factories; put the belt head into the belt buckle and do not make safety belt twisty. Keep waist safety belt tightly.

Warning

● After putting in belt head, please confirm that belt head and lock catch are locked firmly and waist and shoulder safety belt is not twisty.

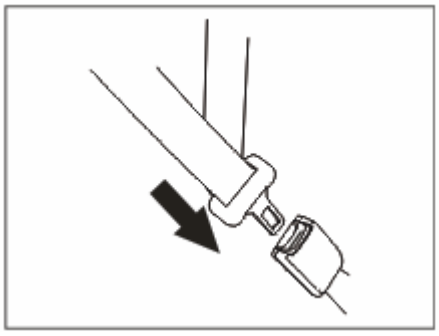
● Do not put things like coin and clip into the lock catch to prevent blockage on children correct putting belt head and lock catch.

● For abnormal use of seat belt, it can not prevent children from severe injury or even death. Please contact with Lifan service station immediately. Before seat belt repair, do not install children protective device.



Warning

Push and pull children protective device in different directions to confirm it is installed firmly. Install it according to instructions provided by factories.



Dissemble infant seat

Press down the lock catch, release the button and retract the safety belt fully. Safety belt can stretch freely for adults or elderly children.



（B）child (convertible) seat

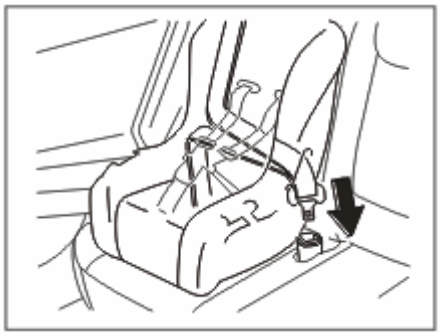
Use child seat (convertible) facing forward or backward according to a child's age and figure. Factories' instructions of a child's age and figure fitting the children protective device and of directions should be followed when installing the device.



Warning

● If installing children protective device influences locking mechanical device, do not install it on rear seats. Otherwise, children or the front passenger may suffer severe injury or even death in emergency brake or collision.

● Do not touch front seat back pad when installing children protective device on rear seat.



Install child (convertible) seat

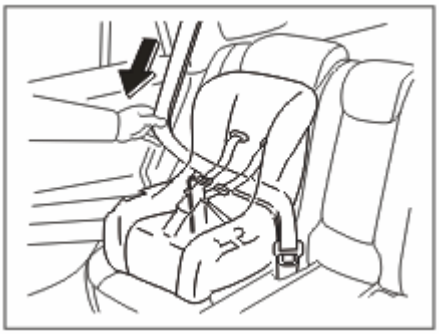
1. Put or pass the three-point safety belt through infant seat according to instructions provided by factories; put the belt head into the belt buckle and do not make safety belt twisty. Keep waist safety belt tightly.

Warning

● After putting in belt head, please confirm that belt head and lock catch are locked firmly and waist and shoulder safety belt is not twisty.

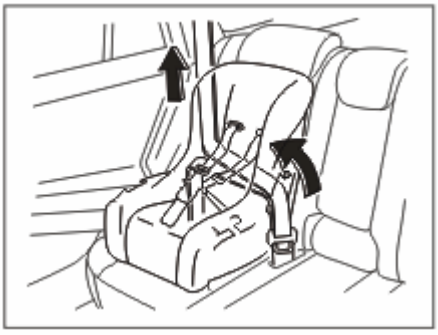
● Do not put things like coin and clip into the lock catch to prevent blockage on children correct putting belt head and lock catch.

● For abnormal use of seat belt, it can not prevent children from severe injury or even death. Please contact with Lifan service station immediately. Before seat belt repair, do not install children protective device.



2. Stretch waist safety belt fully and set it in locking model. The safety belt can not stretch after its slight retraction.

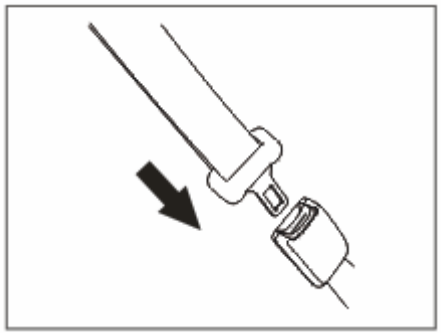
Tighten child (convertible) seat and confirm the safety belt in locking model before retracting safety belt.



3. When turning the child (convertible) seat to cushion and seat back pad, retract shoulder safety belt to tighten child (convertible) seat.



Warning
Push and pull children protective device in different directions to confirm it is installed firmly. Install it according to instructions provided by factories.



Dissemble child (convertible) seat

Press down the lock catch, release the button and retract the safety belt fully. Safety belt can stretch freely for adults or elderly children.



（C）Teenager (supplemental) seat

Teenager (supplemental) seat should be used facing forward.



Install teenager (supplemental) seat

Let children sit on the teenager (supplemental) seat. Put or pass the three-point safety belt through teenager (supplemental) seat and over children according to instructions provided by factories, and then put the belt head into the lock catch and do not make safety belt twisty.

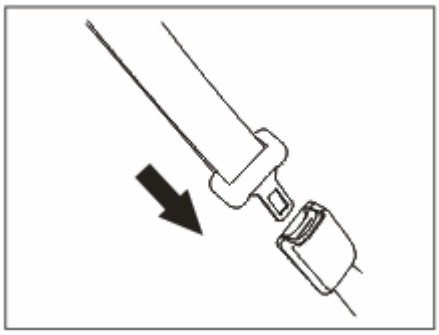
Confirm shoulder safety belt correctly put across the children's shoulders and keep waist safety belt under children's hips as much as possible. For details, please refer to "seat belt" in this chapter.

Warning

● Confirm shoulder safety belt is set through the middle of children's shoulders. Safety belt should be put far away from their necks but not under the shoulders. Otherwise, children may suffer severe injury or even death in emergency brake or collision.

● In collision or accident, over height of shoulder safety belt and over loose of safety belt can cause severe injury or even death due to body slide. Keep waist safety belt at children's hips as much as possible.

● For children's safety, do not put shoulder safety belt under their arms.
● After putting in belt head, please confirm that belt head and lock catch are locked firmly and waist and shoulder safety belt is not twisty.
● Do not put things like coin and clip into the lock catch to prevent blockage on children correct putting belt head and lock catch.
● For abnormal use of seat belt, it can not prevent children from severe injury or even death. Please contact with Lifan service station immediately. Before seat belt repair, do not install children protective device.



Dissemble teenager (supplemental) seat

Press down the lock catch; release the button and retract safety belt completely.

Install children protective device with ISOFIX rigid fixed anchor (ISOFIX children protective device).

Install special fixed link of children protective device meeting ISO standard on rear seats.

The fixed link is located in the gap between cushions of two rear side seats and seat back pad.

Special fixed link can fix children protective device meeting ISO standard. In such situation, there is no need of fixing children protective device with seat belt.

Note
Consult children protective device factories about whether the device suits the vehicle model.



Installment of children protective device

1. Widen the gap between cushion and seat back pad slightly and confirm the position of special fixed link beside the button on seat back pad.

2. Adjust the position of front seats to make sure that the distance between front and rear seats does not influence the installment and use of children protective device.

3. Put the lock catch of safety belt on fixing anchor.

If children protective device has a roof drawstring, the drawstring needs being fixed on the fixed anchor on the back of rear seat back pad. As shown in the following figure.



For details, please refer to instructions attached to products.

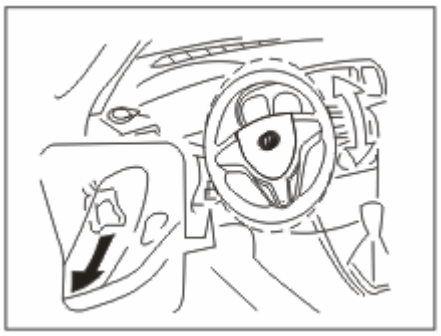
Warning
● When using the special fixed link of children protective device, confirm no irregular objects or no jamming the seat belt around the link. ● Push and pull children protective device in different directions to confirm it is installed firmly. Install it according to instructions provided by factories. ● When using the special fixing link of children protective device, make sure to move the seat to its fully rearward position and the seat

back pad close to children protective device.

● Do not slide or lean seats after fixing children protective device.

● If installing children protective device influences locking mechanical device, do not install it on rear seats. Otherwise, children or the front passenger may suffer severe injury or even death in emergency brake or collision.

Steering wheel



For changing the up-down angle of steering wheel, hold the steering wheel, press down steering pipe regular handle, turn the steering wheel to the needed angle and then lock the regular handle.

Warning

● Do not regulate steering wheel in driving. Otherwise, this action may cause driver to operate the vehicle by mistake, thus accident happens.

● After regulating steering wheel, move it up and down to confirm the position is locked.

Power steering system

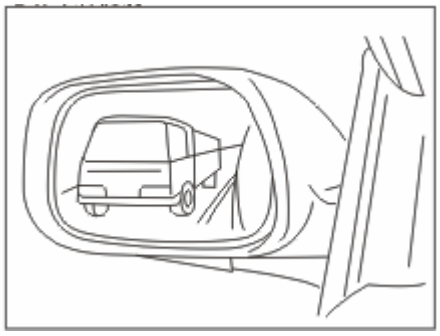
In case of a misfire of the engine, power steering device does not work, therefore a larger operating force is needed to operate steering wheel. Do not make the engine misfire in driving. Check power-assisted steering fluid level of power steering device.

Note

Do not turn steering wheel to the bottom in a vehicle with power steering. Otherwise power steering fuel pump will be damaged due to poor lubrication.

Rearview mirror

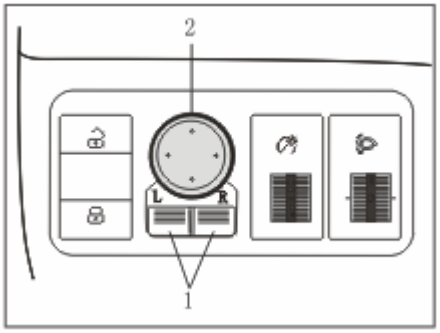
Electric exterior rearview mirror (optional)



Adjust the electric exterior rearview mirror to the position that you can see the side of vehicle in the rearview mirror.

Warning
Do not adjust the rearview mirror when driving. This action may cause driver to steer the vehicle by mistake, thus accident happens.

Electric exterior rearview mirror switch



Adjust exterior rearview mirror with this switch.

1. Selection switch, used to select the exterior rearview mirror which needs adjusting. Press switch to “L” (left) or “R" (right).

2. Control switch is used to adjust exterior rearview mirror. Press the switch as per the direction required.

The mirror can be adjusted when the key is at “ACC” or “ON”.

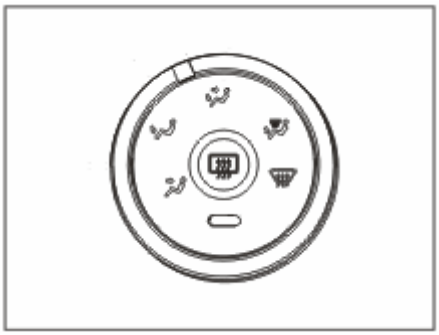
Exterior rearview mirror with extra defrost function（Optional）

Adjust exterior rearview mirror with this switch.

1. Selection switch, used to select the exterior rearview mirror which needs adjusting. Press switch to “L” (left) or “R" (right).

2. Control switch is used to adjust exterior rearview mirror. Press the switch as per the direction required.

The mirror can be adjusted when the key is at “ACC” or “ON”.



1. Press this button to defrost the exterior rearview mirror.

2. The key must be at “ON”.

3. The LED light is on when defrosting, the heater will make the mirror clear.

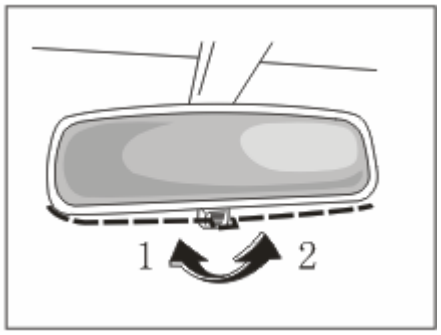
4. Press the button again to end the defrosting.

5. Defrosting will stop automatically after 15 min.

Note
Do not operate the switches or scrape the surface of rearview mirror if the mirror is frosted. Adjust it after the deicing with spray deicer or other methods.

Warning
● Do not touch the rearview mirror when moving, avoiding injuries and rearview mirror fault. ● Do not drive the vehicle when the rearview mirror is folded backward. Unfold and correctly adjust the rearview mirror at driver and passenger side.

Interior rearview mirror



Adjust the interior rearview mirror to a proper position so that you can see the rear part of vehicle in the mirror.

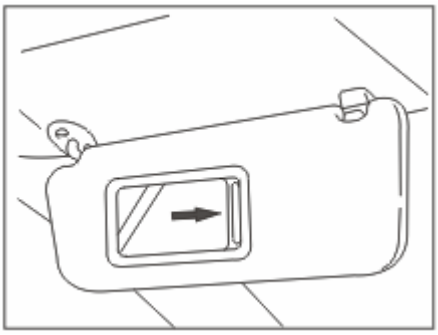
Adjust the interior rearview mirror as per the direction 2 shown in the figure above to weaken the light from the headlight of vehicles behind it and prevent against dazzle when driving at night.

Joystick at Position 1 in daytime: Rearview mirror boasts a good definition at this position.

Joystick at Position 2 at night: Bear in mind that to decrease glare, the definition of rearview mirror will be reduced.

Warning
Do not adjust the rearview mirror when driving. Otherwise, this action may cause driver to steer the vehicle by mistake, thus accident happens.

Vanity mirror



The sunshade of the driver and the front passenger is installed with vanity mirror. Fold down the sunshade and open the cover when using the mirror.

1-4 Operation of Instrument and Controller

Illumination, wiper and demister

Headlight and turn signal lamp

Emergency lamp

High-mounted brake lamp

Front fog light

Rear fog light

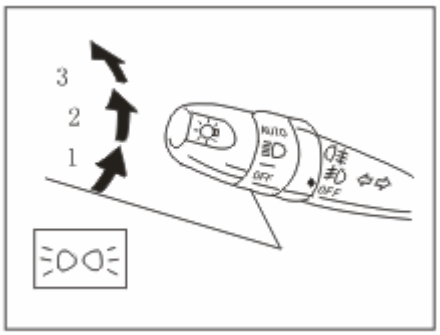
Middle roof light and rear roof light

Ignition key indicator

Front windshield wiper and cleaner

Defroster switch of rear windshield

Headlight and turn signal lamp



Headlight

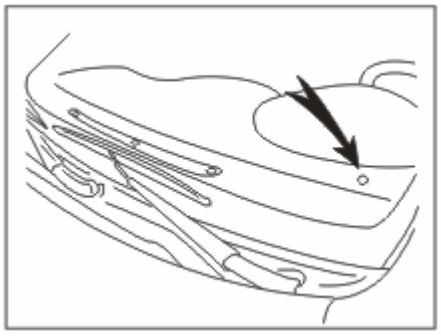
Headlight

Position 1 — Turn on the position light. LED lightline, license plate lamp, dash board and taillight are on.

Position 2 — Turn on the headlight and all the above lights.

Under the environment of in need of turning on lamps like in dark tunnels or parking garages, turn the button to the Position 2 and turn on the headlight.

Position 3 (“AUTO”) --- turn on the headlight. The indicators on position light, license plate lamp, instrument cluster and taillight are on. These lamps turn on or off according to the lightness and darkness of the surroundings. (optional)

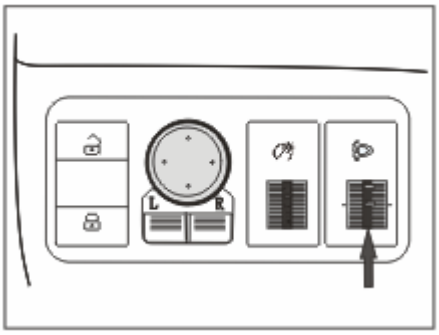


Ambient light sensor is located at the roof of the driver's side dash board.

Do not put any object on instrument cluster or stick any object on windshields, otherwise the sensor's normal operation will be interfered.

If automatic light control acts too fast or too slow, please adjust the sensor in the local sales service store of Lifan or the special repair station.

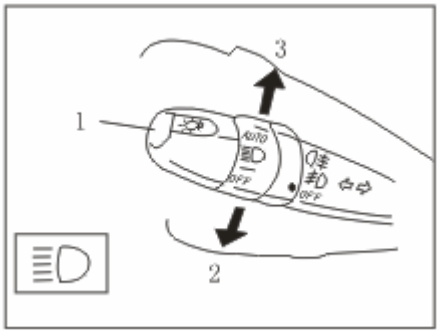
Headlight optical axis up-down adjustment switch



Turn headlight leveling adjustment knob to adjust the levelness of headlight beam.

Headlight will go out automatically when ignition key is shifted from "ON" to gear "ACC" or "LOCK". For turning on the headlight again, turn the ignition key to gear "ON".

Note
To avoid the battery discharging, do not keep the lights on for a long time when the engine is not in operation.

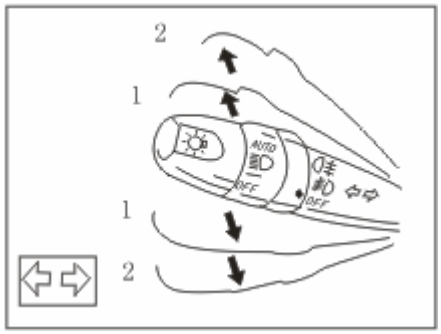


High/low beam --- Turn the left combination switch to the headlight position and push the switch handle forward (Position 2) when using high beam. And turn the switch handle to Position 1 when using low beam.

Headlight high beam indicator (blue) on instrument cluster indicates high beam is on.

Overtaking signal (Position 3) --- Uplift the switch handle, and then the headlight beam twinkles. When releasing the lever, the headlight high beam glitters and then is turned off.

Turn signal lamp



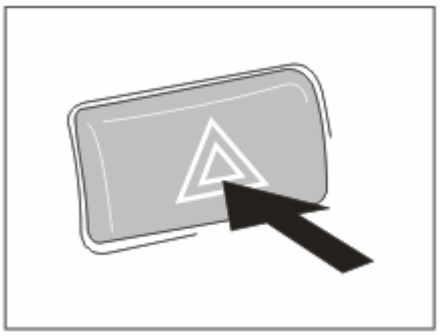
Press the left combination switch forward or backward to Position 1 before sending the turn signal.

Key should be located at “ON”.

The switch handle will be returned to its original position automatically after the vehicle turns. But after changing lanes the handle should be returned to its original position manually. Move the switch handle forward or backward to pressure point (Position 2) and keep this action when sending the lane change signal.

The turn signal lamp indicator (green) on the instrument cluster flashes faster than usual, which indicates the bulb of front or rear turn signal lamp or of headlight is blew out.

Emergency lamp



Press this switch and all turn signal lamps will twinkle if you want to turn on the emergency lamp. Repress it if you want to turn off the lamp.

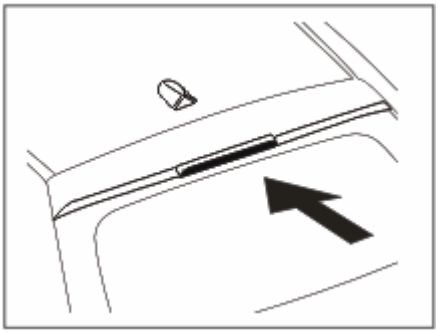
The emergency lamp should be turned on to caution other drivers if the vehicle stops at the place where a traffic accident may occur.

Try to stop the vehicle at the safety zone far away from the main lane.

When emergency lamp is alight, turn signal lamp switch does not work.

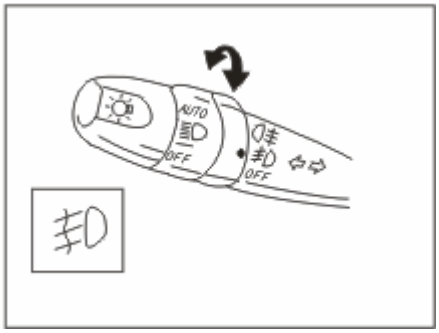
Note
To avoid the battery discharging, do not keep the lights on for a long time when the engine is not in operation.

High-mounted brake lamp



This lamp will light up with rear brake lamp when stepping down the brake pedal, warning other drivers that the vehicle brakes, and avoiding accident.

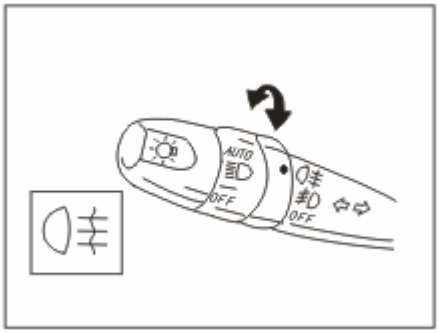
Front fog light



To turn on front fog light, turn the knob on the left combination switch.

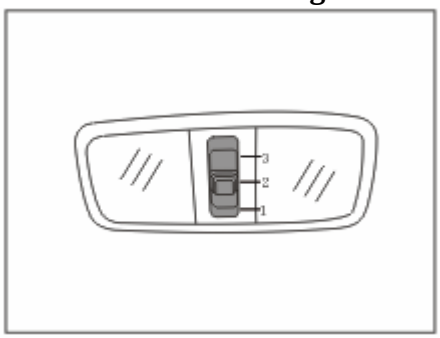
The front fog light indicator on the instrument cluster indicates that the front fog light is on.

Rear fog light



To turn on rear fog light, light switch should be at gear AUTO or gear headlight. When rear fog light switch is on, front and rear fog light turn on at the same time.

Middle and rear roof light



Slide the switch as shown in the figure when turning on the middle/rear roof light.

The middle/rear roof light switch has the following locations:

Position 1: “OFF”--- Roof lights are off.

Position 2: “DOOR”--- Roof light are turned on when opening any door. They will be turned off after all doors are closed for 13s.

Position 3: “ON”--- Roof lights are on.

In lighting system

When switch is at “DOOR” position, middle/rear roof light will be turned on if open any door. The light begins weakens linearly after about 8s and goes out gradually in 5s after all doors are closed.

But middle roof light will goes out immediately in the following situations:

- All doors are closed when ignition key is at “NO” position.
- Close and lock all doors with remote controller.

Middle/rear roof light and ignition key indicator go out after 30s when using remote controller to unlock all doors but not opening the doors.

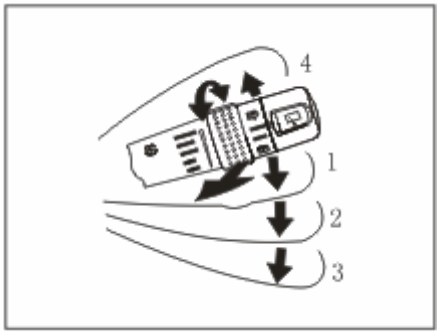
Ignition key indicator



To see ignition switch, ignition key indicator is alight for 30s when the left front door opens.

- The light is on for 15s after the key is pulled out.
- The light goes out immediately after the key is put in ignition lock.
- The light will be turned on for 30s when using remote controller to open doors even though the door is not opened.

Front windshield wiper and cleaner



As shown in the figure, move the control lever to the set position needed when using the front

windshield wiper.

Ignition key must be at position “ON”.

Lever position	Mark	Speed setting
Position 1	INT	Internuttent
Position 2	LO	Slow speed
Position 3	HI	High speed
Position 4	MIST	Inching

Position 4: For the one-time wiping on the windshield, uplift and then release the control lever.

When the control level is at position 1 (INT), turn the right button to adjust the interval time of windshield wiper’s wiping.

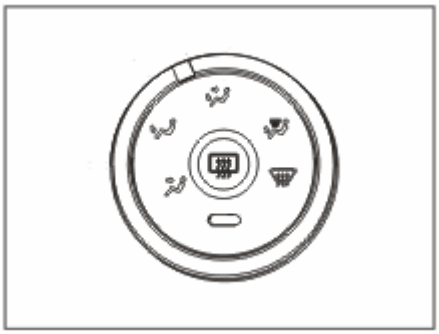
Push up the control lever when spraying cleaning solution.

Release the control lever immediately after spraying cleaning solution. However, the wiper will still work for several times.

In the chilly days, use defroster to warm the windshield before cleaning, this can prevent the cleaning solution against freezing on the windshield. Otherwise, clear vision will be affected.

Note
Do not use the wiper when the windshield is dry. Otherwise, the shield will be scratched and the service life of the wiper will be reduced.

Defroster switch of rear windshield



Press this switch when demisting or defrosting the rear windshield.

The ignition key must be at position “ON”.

Heating cord at the inner side of rear windshield will quickly make the rear windshield

surface clear. The indicator will be on, indicating defroster is in operation.

Defogger will be closed when pressing the switch again.

The system will stop automatically about 15 minutes after the defogger operation start.

Note
● Power air-conditioning controller: To avoid the battery discharging, the switch closes automatically when engine stops working. ● Do not scratch or damage the heating coil or connector when cleaning the inner side of the rear window.

1-5 Operation of instrument and controller

Instrument and maintenance indicator

Fuel gauge

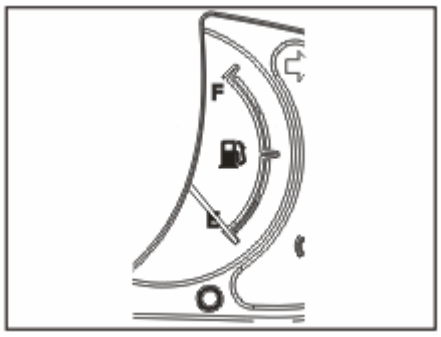
Engine coolant temperature gauge

Tachometer

Milometer and short-distance odometer

Warning indicator and warning buzzer

Fuel gauge



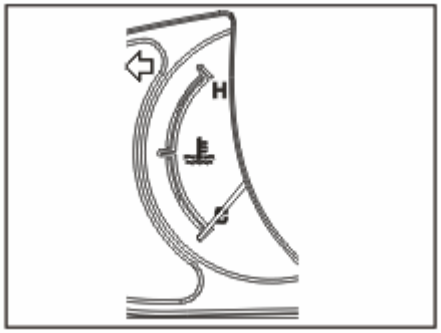
The gauge indicates the oil volume in the oil tank when the ignition switch is at “ON”.

Close to fill up --- beam near “F”

Close to use up --- beam near “E”

Caution to fill fuel --- the yellow fuel warning lamp illuminates.
The cursor of fuel gauge will sway when braking, accelerating, driving on a slope or turning, which is caused by the sloshing fuel in the tank.

Water thermometer



The gauge indicates the temperature of engine coolant when the ignition switch is at “ON”.

--- Coolant temperature warns (red light is alight, indicating that engine is in bad operation and it needs stopping and checking)

H--- Hot (high temperature)

C--- Cold (low temperature)

If pointer is close to “H”, it indicates that the engine temperature is too high and the vehicle should be stopped to cool the engine.

The engine may be too hot in the following working conditions, such as:

● Climbing for a long distance on a hot day.

● Slow down or stop in driving at a high speed.

● Open air-conditioning and make engine run for a long time as well in a stop-and-go traffic situation.

● Idle rotation speed is too high.

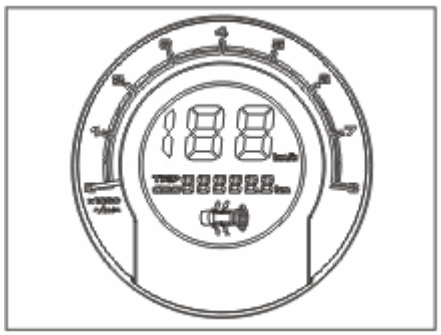
Even though the pointer of engine coolant temperature gauge returns to “C” when ignition switch is turned at position “START”, it does not indicate faults.

Note
● Do not take off thermostat in the engine cooling system, otherwise it will cause engine

over hot. The thermostat is used to control coolant flow and keep the engine temperature in the ruled operation limit.

● Do not continue driving when engine is over hot. Refer to “If the vehicle is overheated” in Chapter 4.

Tachometer



Tachometer shows the rotation speed of engine with 1,000 times of “rpm” (round per minute). Its function is to select the right shift time to prevent the engine from lugging down and overrunning.

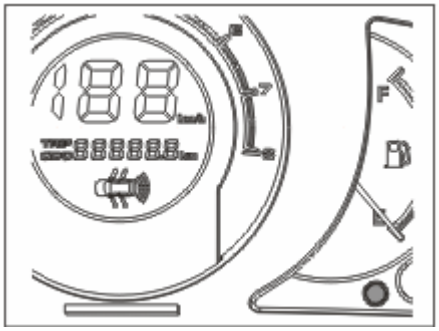
The engine will be abraded excessively and waste the fuel if driving the vehicle when the engine overruns.

Even though the pointer of tachometer returns to the bottom position when ignition switch is turned at position “START”, it does not indicate faults.

Warning

Do not let the cursor turn into the red zone, which may cause a serious damage to engine.

Milometer and trip odometer



The display shows the following information.

1. TRIP/ODO stands for subtotal mileage and total mileage.

2. Subtotal mileage and total mileage shift by return-to-zero handle.

3. To clear subtotal mileage, show it with s TRIP first, and then keep pressing return-to-zero handle for more than 1s.

Waning indicator and warning tone

If the indicator illuminates or the loudspeaker generates warning tone		Please do as the sign instruction
（a）		For no using parking brake, please stop at once and contact with Lifan service station.
（b）	 (Indicator and warning tone)	Driver’s safety belt buckles up.
（c）	 (Indicator and warning tone)	Assistant driver’s safety belt buckles up. (optional)
（d）		Stop and check.
（e）		Stop and check.
（f）		Send the car to Lifan service station or sales service store for check and repair.
（g）		Send the car to Lifan service station for check and repair. If the warning lamp also illuminates, stop the car immediately and contact with Lifan service station.
（h）		Close all doors.
If the indicator illuminates or the buzzer rings		Please do as per the sign instruction
（i）		Send the vehicle to Lifan service station for check and repair at once
（j）		Control reverse distance
（k）		Water temperature of engine coolant warning (stop the vehicle for check)

（l）		Fuel warning (need filling fuel)
（m）		Send the vehicle to Lifan service station at once

(a) Warning lamp of brake system

When the ignition key is at position “NO”, the brake fluid is not sufficient or EBD is with malfunctions, this lamp illuminates.

Warning
If the brake fluid level is low, it will be dangerous to drive normally and continuously.

When the ignition key is at position “ON” or the vehicle drives normally, the lamps illuminates, and then please check the vehicle in Lifan service station.

During the operation, the fact that the warning lamp illuminates for a short while doesn’t mean any problem.

Warning
Upon any of the following circumstances, stop the car at a safe place immediately and contact with Lifan service station. ● This lamp does not illuminate when the engine is running even though release the parking brake. Under such circumstance, the brake probably is in malfunction, which may result in a longer braking distance. Step on the brake pedal forcibly to make an emergency brake. ● While the “ABS” warning lamp is illuminating, the warning lamp of brake system also illuminates. ● Under such circumstance, when a braking is made, the ABS does not serve, moreover, the car is extremely unstable as well.

(b) Driver’s safety belt unfastened indicator and chime

This light will call drivers’ attention to fasten the safety belt.

Once the ignition key is turned to “ON”, if the driver doesn’t buckle up, the indicator will illuminate. Unless the driver buckles up, the indicator will continue to illuminate. The

warning tone rings when the vehicle speed is 25km/h or above (it will stop after three circles)

(c) Assistant driver's safety belt unfastened indicator and chime(optional)

This light will call assistant drivers' attention to fasten the safety belt.

Once the ignition key is turned to "ON", if the assistant driver doesn't buckle up, the indicator will illuminate. Unless the driver buckles up, the indicator will continue to illuminate. The warning tone rings when the vehicle speed is 25km/h or above (it will stop after three circles)

(d) Battery charge indicator

The lamp is used to warn for the discharge state of battery.

If it illuminates in driving, it means that something goes wrong in the charge system. Turn off the electrical equipment like A/C, fan, radio, etc. immediately, and send the car to the nearest Lifan service station for check and repair.

(e) Oil pressure warning lamp

The lamp is used to warn for over low oil pressure.

If the lamp flickers or continues to illuminate in driving, it is necessary to stop the car at a safe place and stop the engine immediately. Contact with Lifan service station for help.

When the engine idles, the lamp may flicker now and then or it illuminates for a short while after an emergency brake. During the gradual acceleration of engine, if the lamp is out, it is normal.

The oil level should be within the top and bottom limitation of oil dip rod.

Warning
No driving when the warning lamp illuminates, even if just a short distance, or else the engine will be damaged.

(f) Engine OBD indicator

It illuminates when the electronic injection system of engine is at fault.

When it illuminates, it is necessary to contact with Lifan service station for check and repair as soon as possible.

(g) "ABS" indicator

When the ignition key is turned to position "ON", the "ABS" indicator will illuminate for about 3s. After that, if the system goes wrong, the lamp will continue to illuminate.

When the "ABS" indicator illuminates (the warning lamp of brake system goes out), the ABS system doesn't work, but the brake system works normally.

When the "ABS" indicator illuminates (the warning lamp of brake system goes out), the wheel may be blocked since the ABS system doesn't work when an emergency brake is made or braking on slippery road and try to avoid such operation.

If any of the following circumstances occurs, it means the part monitored by the warning lamp is at fault. It is necessary to send the car to Lifan service station for check.

● When the ignition key is turned to position "ON", the lamp does not illuminate or continues to illuminate.

● The lamp illuminates in driving.

During the operation, the fact that the warning lamp illuminates for a short while doesn't mean any problem.

Warning
While the warning lamp of brake system is illuminating and the "ABS" indicator illuminates as well, stop the car at a safe place immediately and contact with Lifan sales service store and Lifan service station. Under such circumstance, when a braking is made, the ABS doesn't serve, moreover, the car is extremely unstable as well.

(h) Door ajar warning lamp

The lamp keeps illuminating until all doors close completely.

(i) SRS indicator

When the ignition key is turned to position "ON", the indicator will illuminate for about 5s, which indicates that air bag and front safety belt pretensioner work normally.

The warning lamp system is used to monitor air bag ECU, safety belt pretensioner assembly, air charging device, warning lamp, connection and power supply.

If any of the following situations occurs, it means the part monitored by the indicator is at fault or closed down. Please contact with Lifan sales service store or service station for check.

● When the ignition key is turned to position “ON”, the indicator does not illuminate or continues to illuminate.

● The indicator illuminates or flickers during driving.

(j) Reverse radar instruction

When the key is at position “ON”, transmission controlling lever is at reverse position (R), and the distance between the vehicle rear and barriers is less than 1.5m as well, this indicator illuminates and produces chime.

(k) Engine coolant temperature warning

Used to warning for overheated engine coolant, if the lamp flickers or keeps illuminating in driving, it is necessary to stop the car at a safe place and stop the engine immediately.

Check the quantity of engine coolant and refill; meanwhile, check the working state of electronic fan.

(l) Insufficient fuel level warning

Please fill fuel as soon as possible.

(m) SVS warning

When the engine has faults except OBD, this lamp illuminates. Special fault code reader should be used to read fault code and diagnose it.

Warning indicator for checking and maintenance

1. Pull parking brake.

The indicator for parking brake system should illuminate.

2. Open any of the doors.

The door ajar warning lamp will illuminate.

3. Close doors.

The door ajar warning lamp goes out.

4. Turn the ignition key to “ON”, but not start the engine.

All warning lamps except the door ajar warning lamp will illuminate. After about 3s, the “ABS” indicator goes out. And after illuminating for 5s, the SRS indicator goes out.

When any of the indicators or warning buzzers for maintenance doesn’t work as per the procedures above, it is necessary to send the car to Lifan service station for check.

1-6 Operation of instrument and controller

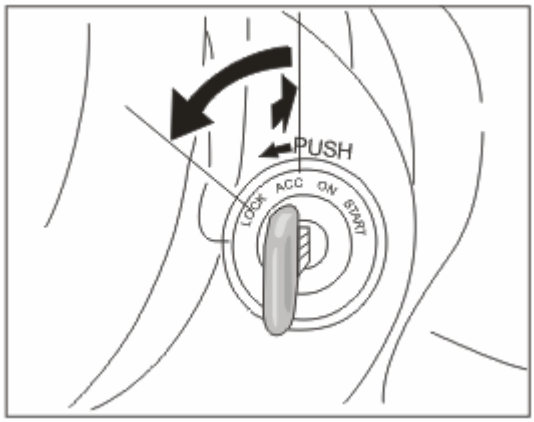
Ignition switch, manual transmission and parking brake

Ignition switch equipped with steering wheel self-locking mechanism

Manual transmission

Parking brake

Ignition switch with steering wheel self-locking mechanism



“START”-Turn the ignition key to position “START”, the engine will be started. When released, the key will return to position “ON”.

Please refer to Chapter 3 for means to start the engine.

When the ignition switch is turned to “START” position, the pointer of tachometer, fuel gauge or thermometer for engine coolant returning to zero doesn’t mean anything goes wrong with the car.

“ON”-Once the ignition key is turned to “ON”, the engine is ready to start and all auxiliary equipment is powered on.

When the ignition switch is turned to “ON”, the pointer of speedometer may move, which doesn’t mean something goes wrong.

“ACC”-Once the ignition key is turned to “ACC”, auxiliary equipments like radio are powered on, but the engine isn’t.

The buzzer will remind the driver to pull out the key if the driver opens the door when the key is at position “ACC” or at position “LOCK”.

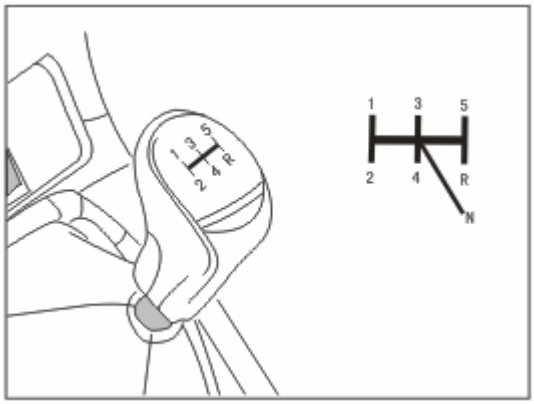
“LOCK”-The engine is not connected to the power and the steering wheel is locked. The key can only be inserted or drawn out at this position.

It is necessary to insert the key completely to turn the key from “ACC” to “LOCK”.

When the engine starts, it seems that the key is blocked at “LOCK” position. To release it, at first it is necessary to make sure that the key is inserted completely, then turn the key while joggling the steering wheel.

Note
When the engine is not running, the key is not allowed to be at “ON” position, to avoid that the battery discharges and igniter is damaged.

Manual transmission



The gear of manual transmission is shown at the shift button head, refer to the fig. above.

During gear shift, slam the clutch pedal to end, operate the shift lever, and then release the pedal slowly.

Warning

Don't shift between reverse and other gears in driving so as to prevent the gear box from damage. It is necessary to confirm the vehicle comes to a full stop before practicing transmission reverse speed shift.
Please do not step your foot on the clutch pedal; or the clutch will be worn out or damaged.

Note

If it is difficult to shift, step on the clutch pedal again, and it will get easier.
Low speed gears should be selected when steering or descending driving， and do not release the clutch to slide.
When the vehicle stops at the neutral gear,do not force to shift directly with the synchronizers to start the vehicle,or it will cause damage to the synchronizers.
If some exceptional situation occur when driving ,such as abnormal noise or difficult operation, Stop the vehicle immediately to check and remove failures.
Please shift gear by gear from low-speed to high-speed, or it will cause damage to the synchronizers.

Select proper gear position

Select proper gear position according to the speed of car and the rotation speed of engine, which will save fuel, protect the engine and lengthen its service life.

It will result in engine lug down if shifting to higher gear too quickly or to lower gear too slowly, possibly bring about knock as well. Frequently operating the engine at the maximum rotation speed at all gears will result in over abrasion of engine and fuel waste.

Warning

When shifting during driving on slippery road, be careful. A sudden gear shift will result in slip or spin of the car.

Economical driving speed

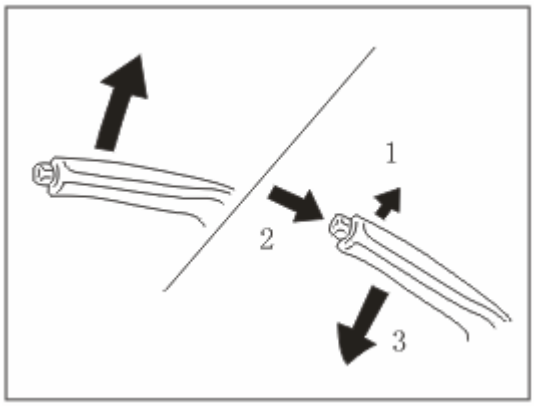
The following instruction on gears aims at helping you reduce fuel consumption. Select the proper gear according to actual conditions.

Gear	Speed limit: km / h
From gear 1 to gear 2	15
From gear 2 to gear 3	30
From gear 3 to gear 4	45
From gear 4 to gear 5	70

Gear 5 is the overdrive transmission gear. Engine speed at gear 5 is lower than that at gear 4. Drive the vehicle at gear 5 as far as possible so as to reduce fuel consumption.

Note
Please control the speed within legal limits.

Parking brake



When stop the car, pull up the parking brake, to avoid car slip.

Setting: pull the handle of parking brake. For better retentiveness, first keep stepping on the brake pedal till the parking brake is pulled up.

Release:

(1) Pull up the parking brake handle 1;

(2) Press down the lock release button 2;

(3) And then release the parking brake 3.

For indicating that the parking brake is set, the warning lamp of brake system on the instruments illuminates till the parking brake is released.

Note
● Before driving, it is necessary to confirm if the parking brake is completely released and the indicator of the parking brake system goes out. ● If the parking brake does not be completely released in driving, the brake will be overheated, which will result in poor braking or braking failure, and increase fuel consumption.

Operation of Instruments & Controllers 1-7

Audio system

Utilization of vehicle-mounted CD player

Utilization of vehicle-mounted CD player

Functions and features

1. Able to play CD/MP3/WMA

2. With built-in AM/FM radio

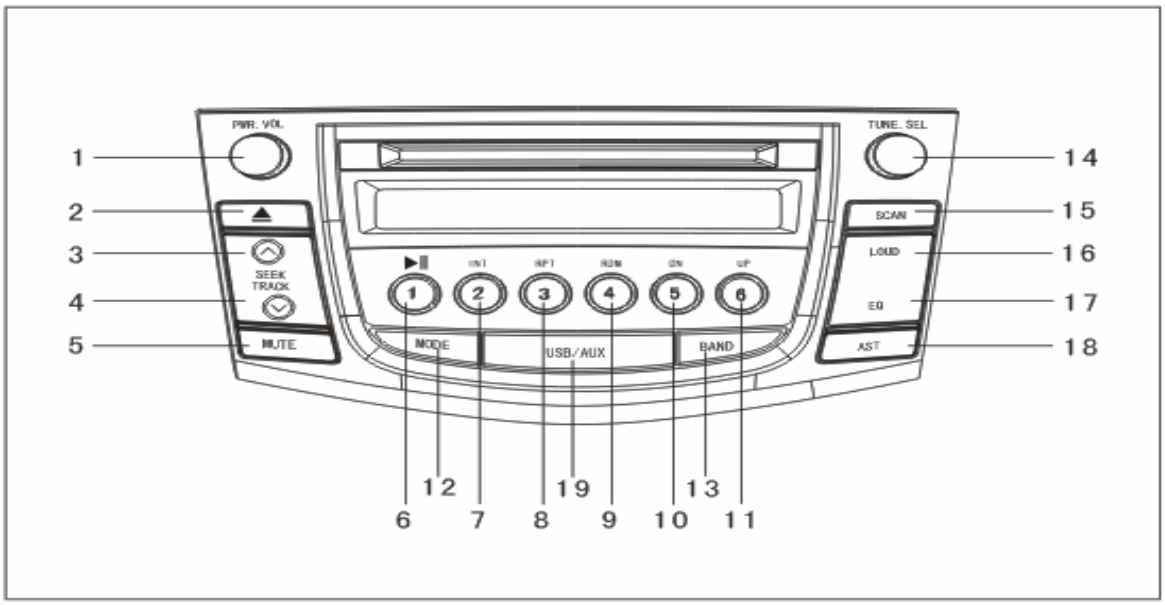
3. Shockproof structure

4. With output power of 25W×4

5. Able to be connected to UBS/AUX

6. Reverse gear reminding

Instruction for plate function of vehicle-mounted CD player



1. Left knob (PWR•VOL)

2. CD ejection button

3. ∧ button

4. ∨ button

5. MUTE button

6. Number key 1/play (pause)

7. Number key 2/search

8. Number key 3/RPT

9. Number key 4/RDM

10. Number key 5/DN

11. Number key 6/UP

12. MODE button

13. BAND button

13. Right knob/TUNE SEL

15. SCAN button

16. LOUD button

17. EQ button

18. AST button

19. USB/AUX socket

Introduction to plate function buttons/knobs

1. Left knob (PWR•VOL)

Press down the knob to turn on/off the audio; turn the knob towards the left/right to adjust the volume; long down the knob for 5 seconds to reset the audio to its factory-default setting.

2. CD ejection button

Press down the button to eject the CD. When the CD is ejected, press down the button to draw the CD in.

3. ∧ button

When in RADIO mode, shortly press the button to search radio stations forwards (the number increases). When in CD or MP3 mode, shortly press the button to advance to the next song, and long press the button to advance fast forward (release the button to stop the action).

4. ∨ button

When in RADIO mode, shortly press the button to search radio stations backwards (the number decreases). When in CD or MP3 mode, shortly press the button to return to the previous song, and long press the button to retreat fast backward (release the button to stop the action).

5. MUTE button

When in RADIO / AUX mode, press down the button to mute sounds, and when in CD / USB mode, press down the button to pause.

6. Number key 1/play (pause)

When in FM/AM mode, press the button to memorize the radio station (long press the button for 2 seconds to store the station/ shortly press the button to read the station). When in CD/USB mode, press the button to play/pause.

7. Number key 2/search

When in FM/AM mode, press the button to memorize the radio station (long press the button for 2 seconds to store the station/ shortly press the button to read the station). When in CD/USB mode, press the button to search by playing each song for 10 seconds.

8. Number key 3/RPT

When in FM/AM mode, press the button to memorize the radio station (long press the button for 2 seconds to store the station/ shortly press the button to read the station). And when in CD/USB mode, shortly press the button to repeat the song.

9. Number key 4/RDM

When in FM/AM mode, press the button to memorize the radio station (long press the button for 2 seconds to store the station/ shortly press the button to read the station). And when in CD/USB mode, shortly press the button to play randomly.

10. Number key 5/DN

When in FM/AM mode, press the button to memorize the radio station (long press the button for 2 seconds to store the station/ shortly press the button to read the station). And when in MP3 mode, shortly press the button to select the data folder backwards.

11. Number key 6/UP

When in FM/AM mode, press the button to memorize the radio station (long press the button for 2 seconds to store the station/ shortly press the button to read the station). And when in MP3 mode, shortly press the button to select the data folder forwards.

12. MODE button

Press the button to shift among modes including RADIO, CD/USB, AUX, etc.

13. BAND button

Press the button to shift among RADIO storage platforms (AM1/AM2/FM1/FM2/FM3). When in CD/USB/AUX mode, press the button to shift to RADIO mode.

14. Right knob/TUNE SEL

When in RADIO mode, turn the knob towards the left/right to adjust the frequency. When in CD/MP3 mode, turn the knob to select songs. And when in SEL/SET mode, turn the knob to

adjust numerical values. (BASS, TREBLE, Balance, Fader, and RADIO)

15. SCAN button

When in RADIO mode, press the button to search by playing each radio station for 10 second.

16. LOUD button

Press the button to realize Loudness function, and press it again to end the function.

17. Eq button

Press the button repeatedly to set EQ (JAZZ/VOCAL/POP/CLASSIC/ROCK/USER).

18. AST button

Press the button in any FM storage platform mode to search and store radio stations automatically. During the procedure, the upper area of the screens shows “AS”, and the 6 stations with the strongest signals that are searched out will be respectively stored at number keys 1 to 6 according to the signal strengths.

19. USB/AUX socket

Basic operation and function setup

Operation of the radio

RADIO

1. Press the button repeatedly to shift among the storage platforms (FMl/FM2/FM3/AMl/AM2). This will be displayed on the left side of the screen in front of the frequency.

2. When in CD/USB/AUS mode, press the button to shift to RADIO mode.

3. In case the CD is ejected from the CD player when in CD mode, the operation mode will automatically shift to FM mode. (It will start to play if FM has been recently tuned in.)

4. Long press number keys (1 to 6) for 2 seconds to save the radio stations. The storage locations will be displayed on the left side of the screen.

5. Search: shortly press the ∧ button to search radio stations forwards (the number increases). Shortly press the ∨ button to search radio stations backwards (the number decreases). Search operation stops when a radio station is searched out. And if the stations that are searched out

are stored at the number keys, the storage location will be displayed on the left side of the screen.

6. Manual frequency adjustment: turn the knob on the right side clockwise and the frequency will rise; turn the knob on the right side counterclockwise and the frequency will drop.

7. Automatic search: press down SCAN button to search the stations. The letters “SCN” will be displayed in the upper area of the screen.

8. Automatic storage: press down AST button in any FM storage platform mode, automatic search will be started, and the stations that are searched out will be stored. The letters “AS” will be displayed in the upper area of the screen.

CD/MP3/USB/AUX

1. Insert a CD, USB or AUX into the player when in any operation mode (FM/AM/USB/AUX), the operation mode will automatically shift to CD, USB or AUX mode respectively.

2. Song selection: turn the right knob to select songs. Turn the knob clockwise to advance to the next song, and counterclockwise to retreat to the previous song. Or shortly press the audio panel and then press ∧ button to advance to the next song and ∨ button to retreat to the previous song.

3. Fast forward/fast backward: long press the ∧ button to advance fast forward/∨ button to retreat fast backward. Playing time of the song will change accordingly.

4. Scan: press down INT button to scan. Letters “SCN” will be displayed in the upper area of the screen,

5. Random play: press down the number key 4 RDM button to start play randomly.

6. Cycle play: press down the number key 3 RPT to play circularly.

7. CD ejection: press down the button to eject the CD. Letters “EJECT” will be displayed on the main area of the screen until the CD is completely ejected.

8. Date folder backward/forward: when the player is reading MP3-CD, press down DN button to search the folder backwards, and press down UP button to search the folder forwards.

Audio setting and RADIO area setting

1. Press down the right knob to start related settings. The order is BASS/TREBLE/BALAN/FADER/RADIO; turn the knob towards left or right to adjust the

numerical values:

(1) BAS: within -7 and +7

(2) TREBLE: within -7 and +7

(3) BALAN: from L9 to 0 and then from 0 to R9

(4) FADER: from F9 to o and then from 0 to R9

(5) RADIO region would be set as EUROPE, AMERICA, LATAM (Latin America), ASIA or OIRT (Eastern Europe). Standard option turner

2. Turn the knob towards right to increase the numerical value, and towards left to reduce the value.

3. Set values of BASS and TREBL will be automatically set in USER mode.

Note
When the operation system goes wrong or the buttons get out of control in any mode, long press the left knob for more than 5 seconds to reset the system. Then the system will return to its initial state, and you need to set the system again.

Reverse gear reminding

If the shift lever is moved to reverse position (R) when the CD player is on, CD player will automatically shift to “Pause/Mute” mode and the letters “TEL” will be displayed on the screen to remind the driver that the vehicle is in a reverse state.

Maintenance of CD

●Do not leave your fingerprint on the CD.

●Put the CD in a CD box when it is rejected to avoid damage and dust;

●Avoid heat and exposure to the sun;

●When handling a CD, touch only the central and marginal part.

Note
●Do not dismantle or refit the audio system.

●Adjust the volume to a reasonably degree so that the driver could hear the traffic information (such as the siren, police whistle, etc.)

Note
The CD player is not able to guarantee the reading quality of non-genuine CDs. It will be regarded as normal if a non-genuine CD could not be read satisfactorily. Such case is not covered in the guarantee scope (non-genuine CDs refer to the pirated CDs, self-programmed CDs, etc.) ●The audio might be damaged or go wrong if components that are not produced by its original factory are added to it. And this is not covered in the guarantee scope. ●Do not use the audio for too long when the engine is not running, or else the battery will be exhausted. ●The audio system will generate noise if someone is using a digital mobile phone or CB radio in or near the vehicle. This does not indicate any damage.

Common faults and maintenance

Fault	Cause	Solution
The mainframe does not work or display anything.	The mainframe does not work or display anything.	Wire the mainframe again.
	Fuse blown	Replace fuse of the same specification.
The mainframe works, but the sound is weak or there's no sound.	The volume is turned down too much.	Turn up the volume.
Turn up the volume.	Antenna is not connected properly.	Check the antenna and connect it properly.
The left or right track does not sound.	The left and right track balance is adjusted to one end.	Adjust the balance/volume mode correctly.
	The cable is not correctly connected.	Connect it correctly.
The expected station is not found during automatic search.	Station signal is too low.	Select the station manually.

The CD can not be played.	The CD is dirty.	Type of the CD does not fit the CD player.
	Type of the CD inserted does not fit the CD player.	Check the CD type.
Check the CD type.	Improper connection	Check the connection.
CD is put into the cabin but there's no sound.	The CD is inserted upside down.	Insert the CD with its identification side facing upwards.
	The CD is dirty or scratched.	Clean the CD.
Sound quality is not good.	The CD is dirty or scratched.	Clean the CD.
The CD can not be ejected.	The CD can not be ejected.	Press ⏏ button (EJECTION). If the CD still can not be ejected, contact Lifan service station.

Operation of Instruments & Controller 1-8

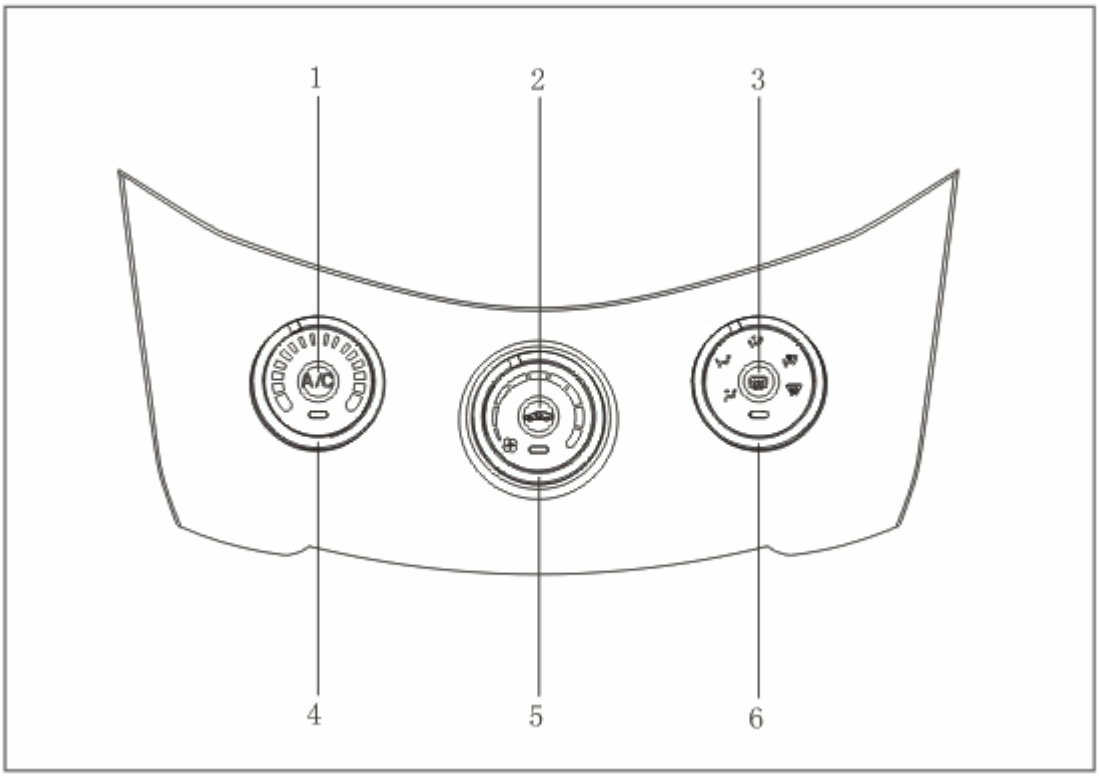
A/C system

Control plate

Air vent mode setting

Operating essentials

Electrical A/C control plate



1. “A/C” switch

2. Selector button for inner and outer circle mode

3. Defroster switch of rear windshield

4. Cold/warm air switch knob

5. Air volume adjustment knob

6. Selector knob for blow mode

Air volume adjustment knob

Turning the knob to adjust the air vent volume: clockwise for increase, counterclockwise for decrease.

Cold/warm air switch knob

Turn the knob to adjust the temperature: clockwise for increase, counterclockwise for decrease.

Select knob for blow mode



Turn the knob to select blow direction

1. Up ventilation: the air flow blows to the face of passengers through the central vent at dashboard and the side vent.

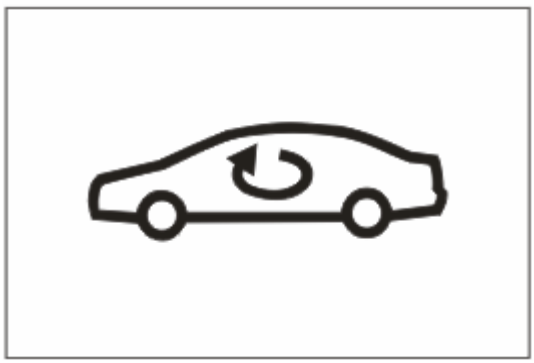
2. Up and down ventilation: the air flow blows to both the face and feet of passengers through the central vent at dashboard, side vent and down vent.

3. Down ventilation: the air flow blows to the feet of passengers through down vent.

4. Defrost, demist and down ventilation: the air flow blows to the feet of passengers and the windshield through the down vent and defrost vent. Apply when the selector button for inner and outer circle mode is at outer circle position.

5. Defrost and demist: the air flow blows to the windshield through the defrost vent. Apply when the selector button for inner and outer circle mode is at outer circle position.

Selector button for inner and outer circle mode



Press keys to select air source

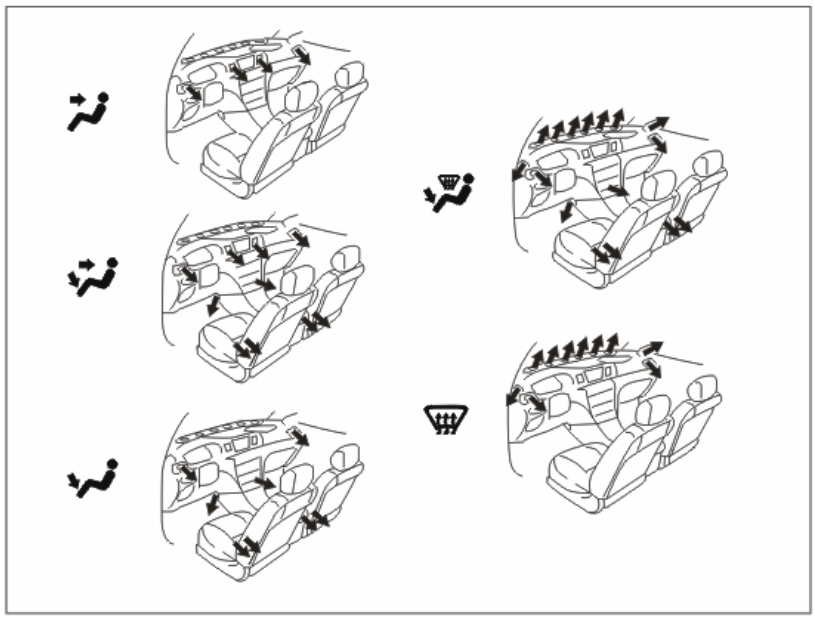
Press the button and the indicator will be illuminated to recycle the air in the car. Press it again, and the indicator will go out to take in the air outside of the car.

“A/C” switch

To start the A/C system, turn on the air volume adjustment knob, then press the “A/C” switch,

indicator illuminating. To shut down the A/C system, press the “A/C” switch again and reset the air volume adjustment knob to zero.

Air vent mode setting setting



Operating essentials

● To quickly cool down the car which has parked under hot sunshine, drive it for several minutes with window open.

● In wet weather, don’t let cold air blow to the windshield, since the temperature difference inside and outside of it will help mist growing.

● The lower part of front seats should be kept as open space to ensure full air circulation in the car.

● Make sure that the inlet grille in front of the windshield is not blocked by things like leaves or snow.

● In cold weather, it is necessary to set a high rotation speed of blower for one minute to clean the snow or moisture in the air inlet passage, thus to reduce the mist growing on windows.

● It is recommended to temporarily set the selector button for inner and outer circle mode at inner circle when driving the car on dusty road after another car, or when driving the car under windy or dusty condition.

Heating

In order to gain the perfect effect, please set the controller at:

Air volume adjustment-air volume switch is not at “0” position. Temperature-toward warm zone (red zone) Inlet-outer circle (air outside) Air flow-down vent A/C-shut down

● For a quick temperature increase, turn on the inner circle for several minutes. To avoid mist growing on windows, after the temperature rises to certain degree, turn on the outer circle.

● During defrost or demist of windshield, select defrost, demist and down vent for temperature increase in the car.

Cooling

Air volume adjustment-air volume switch is not at “0” position. Temperature-towards cold zone (blue zone) Inlet-outer circle (air outside) Air flow-central and side vents A/C-start up

● For a quick temperature decrease, press down the selector button for inner and outer circle mode for several minutes.

Venting

In order to gain the perfect effect, please set the controller at:

Air volume adjustment-air volume switch is not at “0” position. Temperature-towards cold zone (blue zone) Inlet-outer circle (air outside) Air flow-central and side vents A/C-shut down

Demist

Inside of windshield

In order to gain the perfect effect, please set the controller at:

Air volume adjustment-air volume switch is not at “0” position. Temperature-towards warm zone (red zone) to raise the temperature towards cold zone (blue zone) to decrease the temperature Inlet-outer circle (air outside) Air flow- defrost, demist A/C-start up

● In wet weather, don’t let cold air blow to the windshield, since the temperature difference inside and outside of the vehicle will help mist growing.

Defrosting

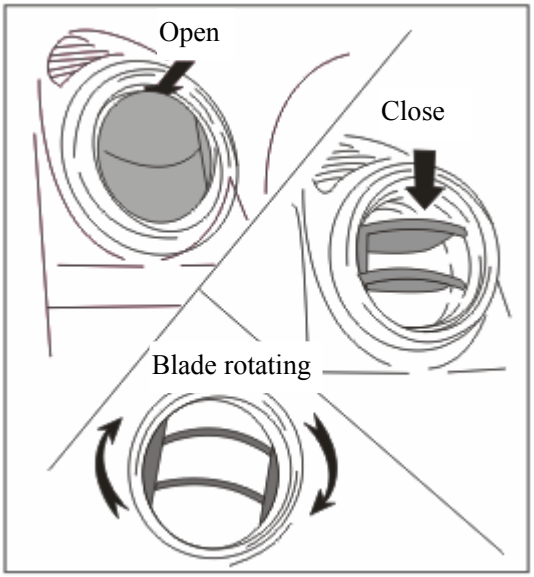
Outside of windshield

In order to gain the perfect effect, please set the controller at:

Air blower speed-air volume switch is not at “0” position. Temperature-towards warm zone (red zone) Inlet-outer circle (air outside) Air flow-defrost, demist A/C-shut down

● To defrost the windscreen, temperature in the cab should be raised. The controller could be set at Defrost, Demist and Down Ventilation.

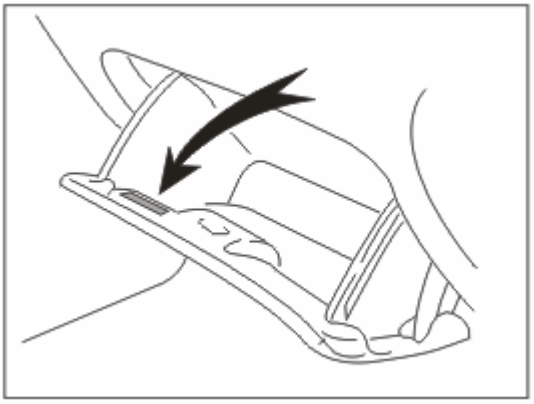
Side vent



Side bent is closed or opened as shown above. If the flow controlling effect is not good, check the side vent.

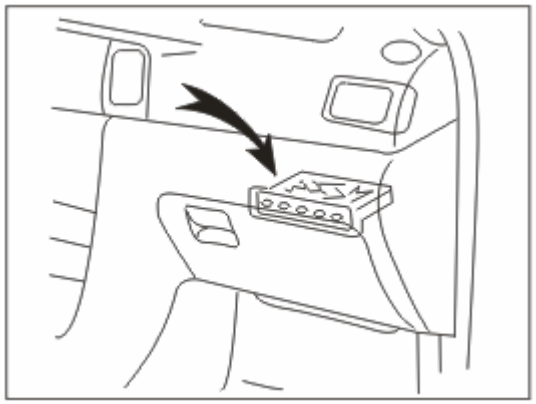
The vane of the side vent is capable of rotating for 360°. Rotate the vane to meet your demand.

Check and replace the air filter



Name plate of air filter is on the inner side of the sundries box as shown above.

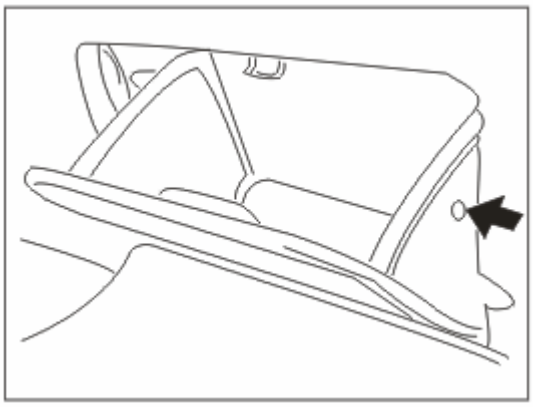
Air filter prevents dust from entering the vehicle through A/C vent.



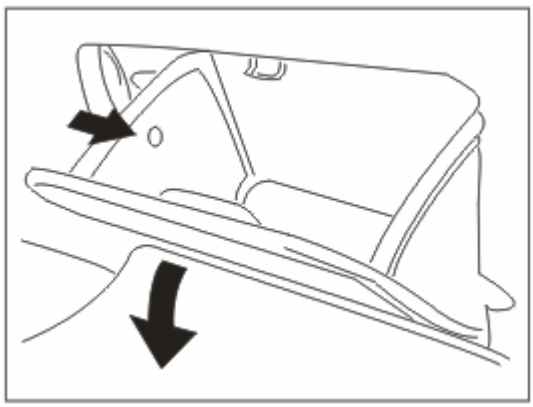
Air filter locates behind the sundries box.

Air filter will be blocked after a long time of use. Replace the air filter when you notice that the A/C flow gets weaker and the windscreen fogs easily.

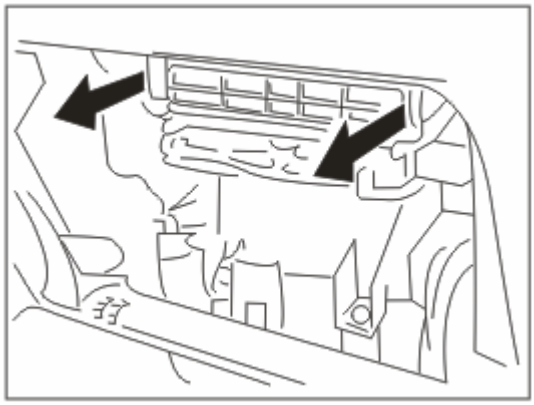
Check and replace the air filter according to the maintenance schedule to ensure working effect of A/C.



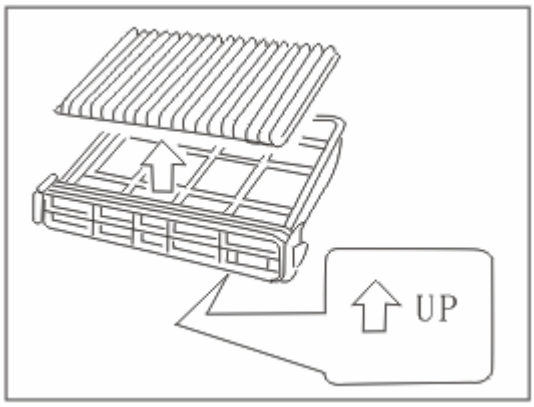
1. Take down the limiting stopper at the right end of the sundries box.



2. Press down the release hook on the left side of the sundries box to take down the sundries box.



3. Take out the filter box from the air filter vent.



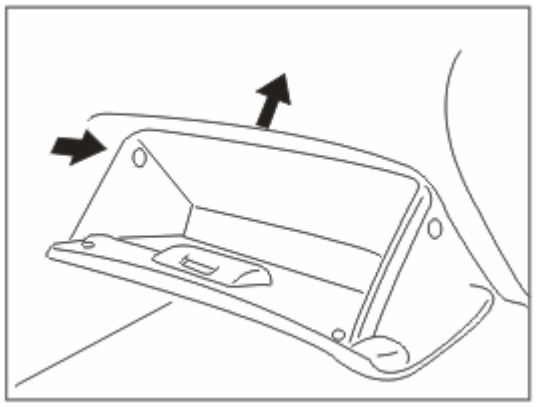
4. Take out the filter screen from the filter box.

5. Check the filter surface.

Replace the filter if it is dirty or blocked.

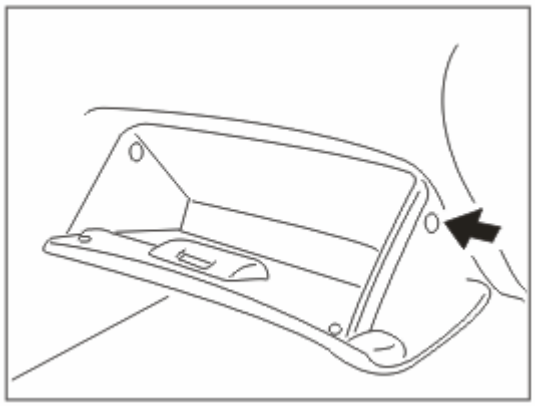
When installing filter and filter screen, keep the arrow upward.

Note
Install the air filter in a correct manner. The dustproof effect will be weakened and the performance of A/C will be affected if the A/C is used when air filter is taken down.



Install sundries box

1. Press the left end of the sundries box and install it in the instruments panel body.



3. Install the limiting stopper at the left end of the sundries box and close the box.

Operation of instruments & controller 1-9

Other equipment

Multifunction display

Cigarette lighter and ashtray

Bill box

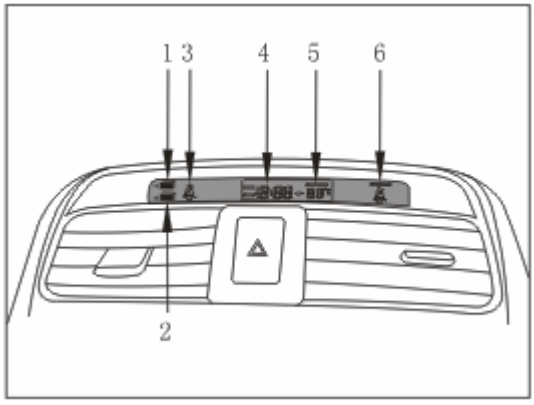
Sundries box

Auxiliary fascia console sundries box

Cup stand

Car reverse radar system

Multifunction display



1. Clock regulating button H: press the button once to increase the “hour” by 1; and press down the button for more than 0.5 second, the “hour” will be increased at the speed of 1/0.25 second.

2. Clock regulating button M: press the button once to increase the “minute” by 1; and press down the button for more than 0.5 second, the “minute” will be increased at the speed of 1/0.25 second.

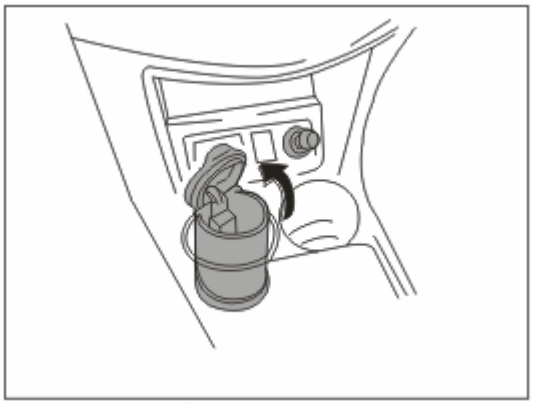
3. Driver safety belt indicator

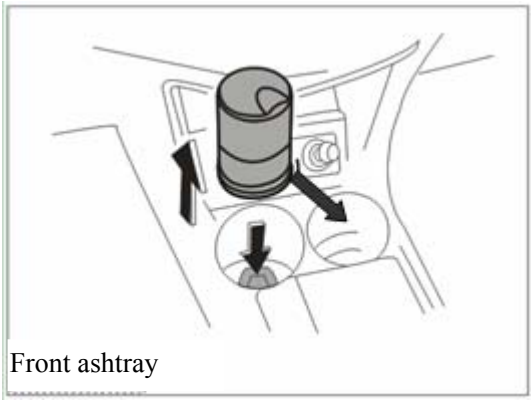
4. Clock display: 12-hour system is adopted. AM indicates morning; PM indicates afternoon. (The clock will start from “AM 1:00” after the battery is replaced.)

5. Outdoor temperature display: it indicates the outdoor temperature, with a range of －35℃—50℃.

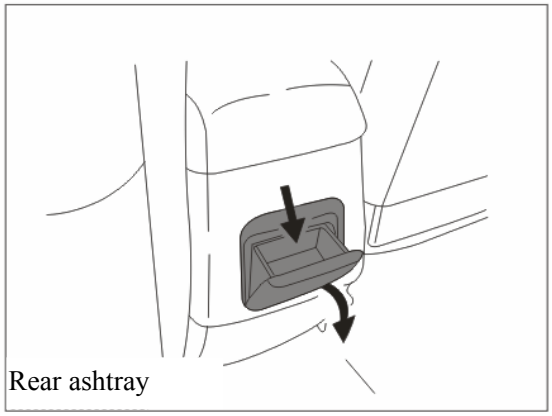
6. Assistant driver safety belt indicator (option)

Cigarette lighter and ashtray





Front ashtray



Rear ashtray

Cigarette lighter

Press lightly to use the cigarette lighter, which will then spring out automatically to be at service.

If the engine is not running, the key should be at “ACC” position.

It is strictly prohibited to press the cigarette lighter for long.

When changing for another lighter, use the kind designated by LIFAN.

Ashtray

To use the ashtray, pull it out.

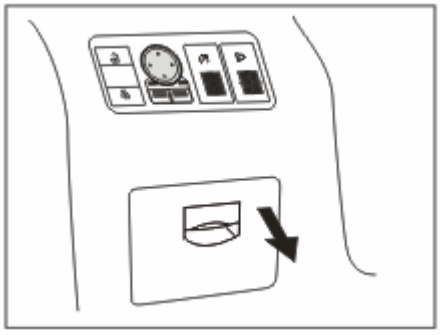
After enjoying a cigarette, it is necessary to crash out the stub in the ashtray completely, for avoiding a fire. Make sure that the stub is crashed out before push the tray back.

Front: take out the ashtray from the auxiliary fascia console(both container can do), and open the cover for use.

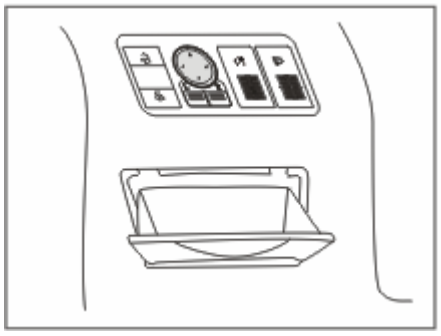
Rear: clamp both sides of the ashtray and pull it out to take it down.

Warning
Completely close the ashtray after use, to reduce the possibility of personal injury due to accidents or emergency brake during driving.

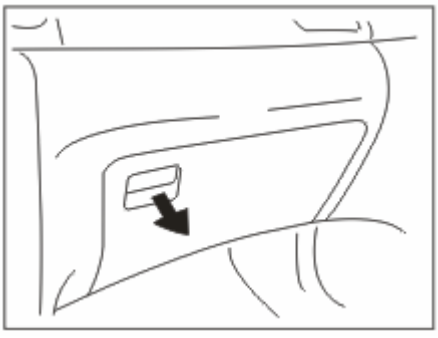
Bill box



Pull the handle outward to use the bill box.

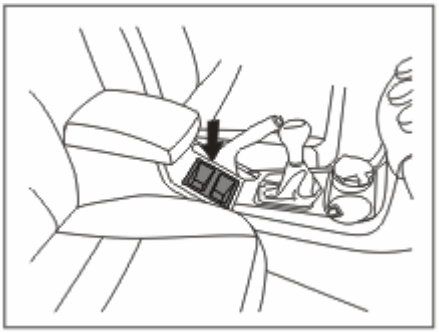


Sundries box

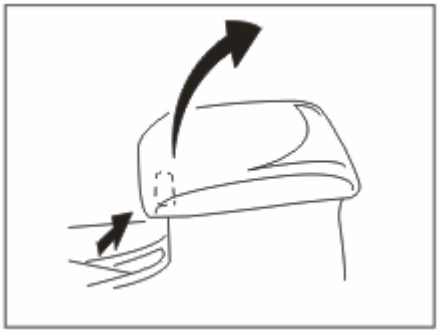


Pull the handle outward to use the sundries box.

Small sundries box

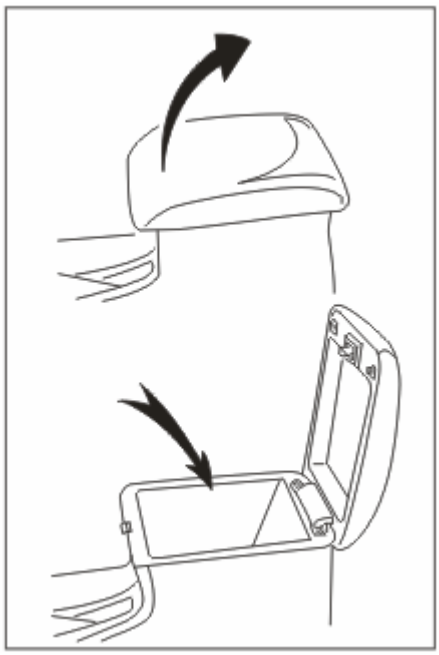


Auxiliary fascia console sundries box

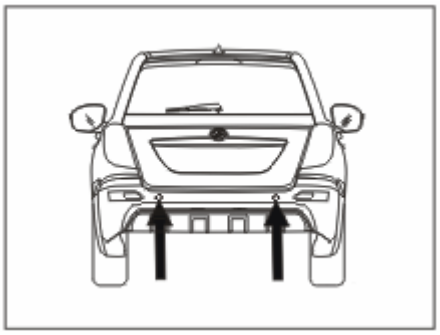


Pull the lock handle upward and raise the outer cover of the auxiliary fascia console to open the sundries box.

Warning
To decrease the accidents in driving or possibility of injury caused by emergency brake, close the sundries box after utilization.



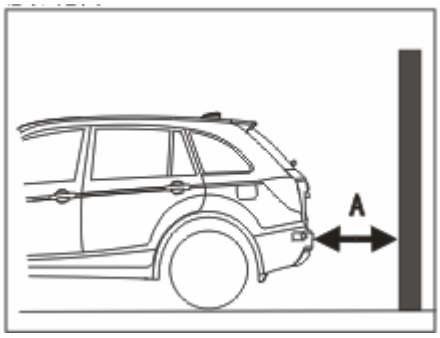
Car reverse radar system



When backing the car, the car reverse radar system can tell the driver the distance between the car and any barrier by display on the instruments cluster display unit and the warning sound from the speaker.

When ignition key is at position “ON” and the shift lever is at the reverse position, the system is running.

Sensing scope



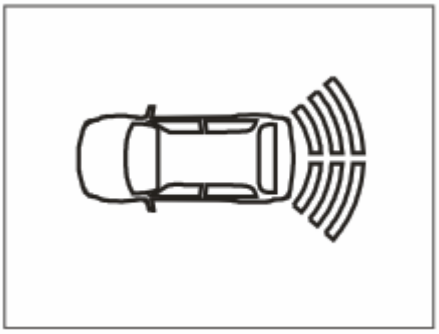
This system could remind the driver of the distance between the vehicle and any obstruction by the display on the instruments cluster display unit and the alarm from the speaker.

When reversing the vehicle, two ultrasonic probes (active probe) will start to detect the distance between the vehicle tail and any obstruction, and then the instruments module will process the data and transmit it to the acoustics. Afterwards, the acoustics and instruments module will give alarm level by level and display the approaching light.

Sensing scope of the sensor: A (maximum value of A is 1,500mm)

A (mm)	Indicator	Alarm
1,500-900	The third row lightened	Interrupted alarm
900-600	The second and third rows lightened	Interrupted alarm in a quick manner

600 or less than 250	All lightened	Constant alarm



Warning
Do not stick any accessory or other object to the sensor, otherwise the system might go wrong and cause unexpected accident.

The system will not function properly under the following conditions:

●There's ice, snow, mud or other matters on the sensor;

●The vehicle has been parked in a high temperature or a low temperature for a long time;

●The vehicle is running on bumpy, muddy or grassy road.

●The vehicle is near to the horn of other vehicle, motorcycle engine or any other objects that generate ultrasonic wave;

●The vehicle is installed with radio antenna or buffer rod;

●Gravity center of the vehicle is biased.

●The vehicle is covered by hands;

●The sensor is too close to other objects.

●The sensor is hit heavily;

The system might not function properly when the sensor gets close to the following objects:

●Metal lead, rope or other thin objects;

●Cotton, snowflake or other absorptive objects;

●Small objects;

●Objects with sharp edges;

●Tall and bulgy objects;

Contact Lifan service station for system check under the following conditions:

●The bumper is depressed;

●The indicator keeps illuminating while the buzzer keeps quiet;

Note
The radar system could only be used as an assistant. Please do not rely too much on the system, and watch carefully when reversing the vehicle.

Lifan LF6430 Driving Guide **Chapter 2**

Notes for SUV

Run-in time

Fuel

Three-way catalytic converter

Engine exhaust warning

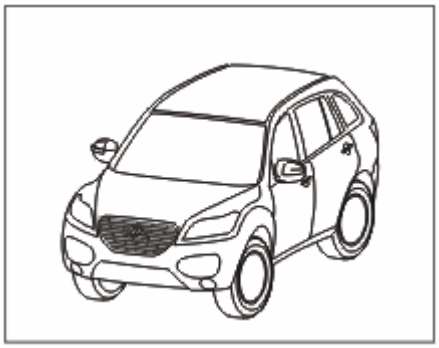
Oil consumption

Brake system

Notes for luggage loading

Suspension and chassis

Notes for SUV



LF6430 vehicle falls into the category of SUV, and is characterized by its high gravity center, large ground clearance and small track. The vehicle is able to run under various outdoor conditions. However, the special design makes the vehicle easier to get turned over than sedans, and turnover rate of the vehicle is much higher than that of other types of vehicles. The large ground clearance enables a better view, and thus problems are quickly discovered. To optimize the cross-country performance, the turning performance of the vehicle is not as good as the sedans and low-suspension vehicles with the same speed. Therefore, the vehicle might be turned over if it runs too fast while turning.

Warning

Always stick to the following advice, so as to minimize the possibility of severe injury, death, and any damage to the vehicle:

●The driver and passengers should fasten safety belts properly when the vehicle is running, as the ones who do not fasten safety belts are more likely to be killed or severely injured during turnover accident.

●Avoid turning or operating the vehicle abruptly. Improper operation might cause turnover or make the vehicle out of control, and finally leads to severe injury or even death.

●Cargos on the roof rack will raise the gravity center of the vehicle, and if there are cargos on the rack, avoid high speed, abrupt start, sharp turning, emergent braking and abrupt operating, otherwise those improper operation may cause turnover or make the vehicle out of control. And if possible, avoid loading heavy cargos on the roof rack.

●Slow down when there's side gust. An LF6430 has a large section and a high gravity center, and is quite sensitive about side gust. Slow down the vehicle to make it easier to control.

●Do not overspeed, jump, take a sudden turn, or

hit any objects during road driving or when driving the vehicle on bumpy roads, otherwise turnover will occur or the vehicle will get out of control and finally cause severe injury or even death. Moreover, this might also lead to serious damage to the suspension and chassis.
●Do not drive cross abrupt slopes, as this might cause turnover of the vehicle (or any like vehicles). It is better to drive directly downwards or upwards.

Run-in time

Your LF6430 vehicle enjoys an excellent performance. However, this performance will reach the best state only after a proper run-in time and the first maintenance. The effect for this run-in time mainly relies on the driving way within the first 2,500km.

No high-speed driving:

No driving at full speed within the initial mileage of 2,500km.

Maximum driving speed for all gears during run-in time:

Gear	Speed (km/h)
Gear 1	15
Gear 2	30
Gear 3	45
Gear 4	70
Gear 5	100

The maximum rotation speed allowed for the engine within the mileage of 0 ~ 800km is 3,000r/min, and that within the mileage of 800km to 2,000km is 4,500r/min.

No overloading:

Make sure that the loading weight mileage of 0 ~ 800km will not reach the 70% of the maximum load, and that within the mileage of 800km to 2,000km will not reach 70% of the maximum load, otherwise, damage will be caused to those components which have not been run in well.

No driving for a long distance:

No driving for a long distance during run-in time; otherwise, it will extend the continuous working hour of the engine and cause damage to the engine parts.

Avoid emergency brake:

Reduce the emergency brake times as possible as you can; otherwise the brake system will be impacted, and the engine will suffer from a bigger impact load from the chassis. Do not carry out emergency brake within the initial mileage of 300km except for necessary situations.

No trailering

When any problems arise, only platform trailer could be applied as the means of transport. An incorrect trailering may cause damage to the vehicle.

The first maintenance

The first maintenance during run-in time should be implemented after the first mileage of 2,500-3,500km, to ensure a good using state of the vehicle. This maintenance is available at the special repair station of LIFAN.

Note
The first maintenance should be carried out at the special repair station of LIFAN to ensure a good maintenance quality and the best performance of your vehicle.

Fuel

The correct selection of fuel is the base for the full performance of the engine.

The damage to the engine due to the improper fuel will not be included in the guarantee scope of LF6430.

Fuel type

Unleaded gasoline 93# in conformity with the standard of GBl7930—1999 should be used.

Warning
Forbid using the leaded gasoline. The utilization of the leaded gasoline will lead to inefficiency of the waste gas cleaning device and the venting pollution control device as well as increase the maintenance cost.

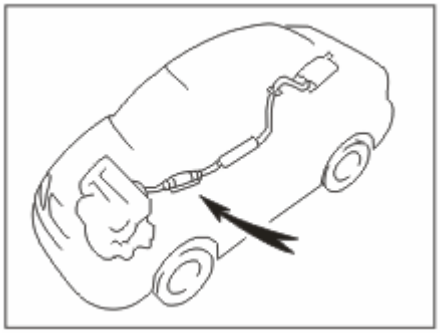
In case of engine knock

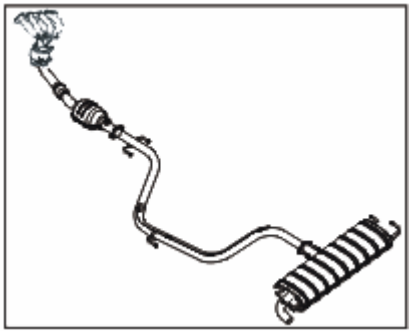
Please contact the special repair station of LIFAN for check, in case of a knock or regular knocking in a good road condition at a stable speed under the condition of using the recommended fuel.

Fuel tank capacity

55L(liter)

Three-way catalytic converter





The three-way catalytic converter is an emission control device installed in the emission system with an aim to reduce the pollutants in the exhaust.

Warning
●When the engine runs, the high-temperature gas will be exhausted. Therefore, any person and flammable materials should be kept away from the exhaust pipe.

Warning
Lots of incompletely burnt gas entering the three-way catalytic converter will cause the converter to be over-heated and even a fire. Please abide by the following precaution measures to prevent any danger: Only unleaded gasoline above specified grade can be used. ●Do not drive the vehicle with an extremely low oil level so as not to increase the over-load of the three-way catalytic converter. ● Do not run the engine at a high or low idle speed for a long time. ● Avoid running the engine at over-speed. ● No starting the vehicle by trailering or pushing. ● Do not close the ignition switch during

driving.
● Maintain a good operation state of the engine. The abnormal function in the electrical system, ignition system or fuel system of the engine will cause an abnormally high temperature in the three-way catalytic converter.
● Immediately check the vehicle, in case of a hard start or frequent running stop of the engine.
● Please carry out a regular check and maintenance for the vehicle according to the maintenance scheme of LIFAN so as to guarantee the normal operation of the three-way catalytic converter and the entire emission control device. (See Chapter 6)

Warning

Do not park the vehicle on grassland or dry places; otherwise the high temperature of the exhaust pipe may cause spontaneous combustion of the vehicle or fire.
Be careful when driving past withered grass land or other road surface made of inflammable materials, and make sure they don't adhere to the vehicle bottom, as they might also cause spontaneous combustion of the vehicle or fire.

Engine exhaust warning

Warning

●The exhaust gas contains harmful gas carbon monoxide which is colorless and odorless. Therefore inhaling the exhaust from the engine may impair our bodies severely or even cause death.
● Always check the exhaust system and make sure there is no leakage or looseness in the exhaust system. Immediately check the vehicle in case of a collision during driving or any abnormal exhaust sound.
● Do not operate the engine in a garage or a close place to avoid the danger due to an unsmooth exhaust of the engine.
● Do not park the vehicle for a long time in case of a running engine. If necessary, please park it

at an open place to let the fresh air flow into the vehicle.
● The luggage boot cover should be closed during driving. An open or unclosed luggage boot will cause a flow of exhaust gas into the vehicle.
● In case of an exhaust gas smell in the vehicle, please open the vehicle window. Large amount of exhaust gas in the vehicle may befuddle the driver, and leads to accidents, which may cause severe injury or even death. In such a case, please contract Lifan service station for check.

Oil consumption

Oil function

The oil mainly works for lubricating and cooling the inside of the engine to keep a normal working state.

Oil consumption

The engine will consume some oil during a normal operation. In a normal case, the engine consumes oil due to the following causes:

● Lubricating the piston, piston ring and cylinder: When the piston moves down in the cylinder, it will leave a layer of oil film. When the vehicle decelerates, the high negative pressure will absorb such oil into the combustion chamber. Like part of oil film left on the cylinder wall, this oil will be combusted by the high-temperature combustion gas.

● Lubricating the intake valve stem: The oil and the inlet air will be together absorbed into the combustion chamber and combust with the fuel. The high-temperature waste gas will also combust the oil used for lubricating the exhaust valve stem.

The consumption of oil is related with its viscosity, quality and the vehicle use state.

The oil consumption will increase with a high-speed driving, frequent acceleration or deceleration.

More oil will be consumed due to the piston, piston ring and cylinder wall of a new engine, all of which have not been run in.

Importance for checking the oil level

Keeping the oil level at the best level is one of the key points for the normal maintenance for a vehicle, which will not weaken the function of the oil. Therefore, it is very important to check the oil level regularly. You are recommended to check the oil level every time you fill oil.

Warning
If a regular check at the oil level can not be achieved, a severe trouble will be caused to the engine due to a relatively low oil level.

Brake system

It is a two-circuit brake system. In case that one brake system loses effect, the other one will still work. Meanwhile, it is harder than usual to step down the brake pedal and the brake distance will also increase.

Warning
Do not drive the vehicle for a long distance in case of only a brake circuit working. Please immediately repair the ineffective brake system.

Vacuum booster

It is used to assist the braking by the inlet negative pressure of engine. In case the engine stops during driving, a pedal force bigger than usual is required to stop the vehicle.

Warning
● In case of a misfire of the engine, do not step on the brake pedal repeatedly, because every stepping will consume parts of vacuum pressure. ● The brake will still be effective even if the vacuum power is entirely lost. However, the force to step on the brake pedal will be much bigger than usual and the brake distance will also increase.

If the braking device is immersed in water

Seeper, heavy rain or cleaning, water film will be formed on the brake drum or brake disc will affect the braking effect. Therefore, if the braking device is immersed in water, please take extra attention to vehicles ahead or at the back, and drive it at low speed and meanwhile lightly step down the brake for times to dry the brake pads until the brake effect resumes to a normal state.

Anti-lock brake system (with ABS warning lamp)

This system is used to prevent the wheel from being locked during braking on a wet and slippery road. It is helpful for ensuring the stability and steering function of the vehicle under the above-stated situation.

When the anti-lock system operates, you can feel the impulsive motion of the brake pedal and also hear a noise. Under this situation, you can step down the brake pedal with bigger force than usual, and then the anti-lock brake system will work.

The anti-lock brake system will start working when driving speed reaches above 20Km/h and stops working when the speed drops below 20Km/h.

When the engine starts or after the vehicle starts, you may hear a click sound or motor noise from the engine compartment for several seconds continuously. That means the anti-lock brake system is under self-checking.

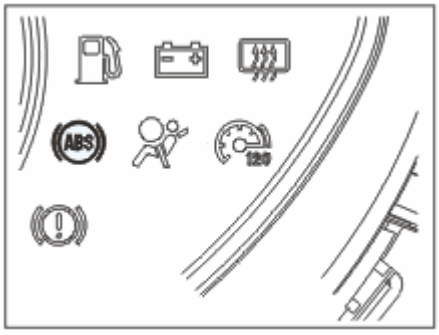
When the anti-lock brake system works, the following situation may occur. They do not represent faults in the system.

● Hearing the operation sound of the anti-lock brake system and feeling the impulsive motion of the brake pedal together with the vibration of the vehicle body and steering wheel. The motor noise from the engine compartment will be heard even if the vehicle has been parked.

● The brake pedal may move forward a little at the end of the operation of the anti-lock brake system.

Warning
Do not overrate the anti-lock brake system: It is significant to abide by all notes and keep proper vehicle speed and vehicle spacing, although this system is helpful for controlling the vehicle; because, even if it performs, the effect for the stability of vehicle and the operation of steering wheel is limited. When driving in rainy days, the anti-lock brake system will be unable to maintain a control to the vehicle if the non-skid performance of the tire exceeds the admissible ability or in case of a wheel spin. The anti-lock brake system is not used to shorten the brake distance. Compared with vehicles without anti-lock brake system, a longer brake distance may be needed under the following

situations:
● Driving on a bumpy road and road covered with small stones or snow.
● Vehicles with tire chains.
● Driving on the steps at the junction of roads.
Install tires with specified specifications on all wheels: The anti-lock brake system uses the speed sensor to measure the vehicle speed to get the rotation speed of each wheel. Other undesignated tires can not measure the correct rotation speed and will extend the brake distance.



ABS warning lamp

If the ignition key is turned to the position “ON”, the light will illuminate. If the anti-lock brake system works normally, it will go out after several seconds. Then, it will illuminate again in case of any trouble.

When ABS warning lamp illuminates, the anti-lock brake system will not work, but the brake system will still work normally.

When ABS warning lamp illuminates (and brake system warning lamp goes out), the anti-lock brake system will not work. Therefore, the wheels may be locked in case of an emergency brake or braking on slippery roads.

Any of the following cases indicates a faulty component monitored by the warning lamp system. You must immediately contact the special service station of LIFAN for check.

● In case that the ignition key is turned to the position “ON”, the light will not illuminate or illuminate continuously.

● It will illuminate during driving.

A short illumination of the warning lamp indicates no trouble.

Warning
In case of an illuminating warning lamp of brake system together with illuminating ABS warning lamp, please park the vehicle at a safe place and contact Lifan service station. In this case, the anti-lock brake system will not be effective and the vehicle will also become extremely unstable during braking.

Brake alarm

A disc brake has an in-built over-wear alarm which will produce warning sound when the brake pads are overworn and need to be replaced.

In case of scream or friction noise during driving, please immediately drive to the closest special service station of LIFAN for check or replacing the brake pads. No driving the vehicle continuously in case of alarm sound.

Notes for Luggage Loading

When loading luggage or goods, please abide by the following instructions:

● Put the luggage or goods into the luggage boot as possible as you can and make sure that all objects have been fixed tightly.

● Keep the balance of the vehicle and put the weight forward as possible as you can to achieve balance.

● Do not load unnecessary heavy objects to save fuel.

Suspension and Chassis

Warning
Do not refit the suspension or chassis randomly, because that will change the operation performance and then cause the vehicle to lose control.

Starting and Driving **Chapter 3**

Before Starting the Engine

Engine Starting Ways

Safety-check before Driving

Driving Guide under Different Situations

Driving Tips in Winter

How to Save Fuel and Extend the Service Life

Before Starting the Engine

1. Check the situation around the vehicle before entering the vehicle.

2. Adjust the position of the seat, the angle of seat backrest, the height of headrest and the angle of the steering wheel.

3. Adjust the rearview mirrors inside and outside the vehicle.

4. Tighten the safety belt.

5. Close all vehicle doors.

If you have set the vehicle anti-theft system by pressing the button “ ” on the remote control, you must cancel this system before starting the engine by pressing the same button; otherwise the engine can not be started.

Engine Starting Ways

(a) Before starting

1. Check the parking brake.

2. Turn off all lights and accessory electrical equipments.

3. Set the shift lever at neutral position.

4. Release the anti-theft system.

(b) Starting the engine

Please make sure that all steps in “(a) Before starting” have been processed, before starting the engine.

Normal starting

Turn the key to “START” and start the engine. Release the key after the engine starts.

In case of a misfire of the engine:

Carry out another starting according to the correct starting process.

If the engine can not start:

Refer to “If the vehicle can not start” in Chapter 4.

Safety-check before Driving

You’d better carry out a safety-check before driving the vehicle. A check for minutes will be beneficial for your safe and enjoyable driving.

Warning
In case of a check in a closed garage, make sure that the garage is well ventilated. The waste gas exhausted from the engine is harmful.

Check before Starting the Engine

The outer vehicle

Tire: Check the tire pressure with a tire pressure gauge and check carefully if there is cut, damage or excessive wear. (See page 172)

Wheel nuts: Make sure no looseness or loss of nuts.

Leakage: Check if there is leakage of oil or liquid under the vehicle after the vehicle stops for a while. (It is normal in case of drips from A/C in operation.)

Illumination: Make sure that the headlight, brake lamp, position lamp, steering signal indicator lamp and other illumination all work.

The outer vehicle

Spare tire, jack and wrench for wheel nuts: Check the pressure of the spare tires and make sure there is a jack and wrench for wheel nuts.

Safety belt: Check if the buckle can be tightly fixed and make sure there is no wear nor scratch on the belt.

Instruments and controller: Specially make sure that indicator, instruments illumination and

defroster work normally.

Brake: Make sure that there is enough free clearance for the pedal and ensure a normal braking.

The inside of the engine compartment

Spare fuse: Make sure there are fuses of all specifications for rating carrying capacity in the fuse box.

Coolant level: Make sure that the coolant level is correct (sea specifications in Chapter 7-2)

Battery and cable: Check if there is any corrosion, looseness or crack at the harness connector and check if the cable and connection is good.

Harness: Check if there is damage or looseness to the harness.

Fuel pipe: Check if there is leakage and looseness at the pipeline joint.

Oil level: Park the vehicle on flat ground and check if the oil level is correct. (See specifications in Chapter 7-2)

After the engine starts

Exhaust system: Check if there is gas leakage. In case of a leakage, immediately repair it. (See "Engine exhaust warning" in Chapter 2).

During driving

Instrument: Make sure that indicators and gauges of all kinds in the instruments cluster work normally.

Brake: Find a safe place and make sure that the vehicle does not pull to one side when braking.

Pay attention to the initial stage and check carefully if there is abnormal noise.

Warning
When the engine runs, the high-temperature gas will be exhausted. Therefore, any person and flammable materials should be kept away from the exhaust pipe. ●Do not drive the vehicle at idle speed or park the vehicle on grounds with inflammables such

as withered grass, fallen leaves, paper and cloth.

Driving Guide under Different Situations

1. Stopping the vehicle

The vehicle should not be stopped at once when the engine is working, especially at a high rotation speed with high load. It should be stopped after 3-5 minutes low-speed run.

2. Rainy day or wading through water

Make sure that the air cleaner has been sealed well when running on the road with seeper in rainy days or wading through water in normal times; otherwise, the water may enter the engine cylinder and cause damage to the components such as engine connecting rod.

3. Warming the engine in winter

In winter with relatively low temperature, the viscosity of oil will increase and its lubrication effect is worse than that in summer. Therefore, the engine should not work under large load at high speed immediately after it is started. It should be warmed for minutes at idle speed to increase the temperature of the oil and coolant. Only after the engine is fully lubricated, can you drive the vehicle. In case of driving when the engine is not well lubricated, the components of the engine may suffer from over wear or even be locked.

● Drive slowly against the wind. It is convenient for controlling vehicle.

● Drive slowly on the ashlar at the side of street and keep the correct angle as possible as you can. Avoid driving on high and sharp-edged objects or other road barriers; otherwise the tire will be damaged abnormally.

● Decelerate when driving on a bumpy road; otherwise the tire or wheel will be seriously damaged.

● If the vehicle is parked on the hillside, rotate the front wheels to make them contact the roadside and use the parking brake to make them not slip. If necessary, place a crosstie under the wheels.

● The brake will become damp in case of cleaning or passing by water. Check if the brake is normal under a safe condition. If the brake is abnormal due to the dampness, you can lightly step on the brake pedal while driving carefully under a condition of using the parking brake. If it still can not work normally, please stop the vehicle and contact Lifan service station.

Note
● Before driving, make sure that the parking

brake has been fully released and the parking brake indicator has gone out.
● The engine should work at idle speed for minutes for warm-up.
● In case of a long-distance driving down on a steep hill, please decelerate the vehicle and shift to a low-speed gear. Remember that too many times of stepping on the brake will cause over-heating and result in abnormal working of the brake.
● Be careful in case of accelerating, shifting to a high-speed gear or low-speed gear or braking on a slippery road surface. An abrupt acceleration or braking may cause a skid or spin.
● Do not continue to drive the vehicle normally when the brake is damp. In case of a damp brake, a relatively long brake distance is needed and the vehicle may be pulled to one side when braking. Likewise, the parking brake also can not stop the vehicle urgently.

Driving Tips in Winter

Make sure that the coolant has the right function of freeze protection.

Only coolant designated by LIFAN can be used. Fill the coolant with proper type according to the ambient temperature into the cooling system.

An improper coolant will damage the cooling system.

Note
No use of clean water.

Inspect the battery and cable

A cold weather will decrease the charge capacity of the battery. Therefore, the battery should keep a sufficient charge capacity to be helpful for starting in winter. (See Chapter 7-3 for means of battery visual check). And the inspection of charge level can be carried out at Lifan service station.

Make sure that the oil viscosity is suitable for driving in winter.

See Chapter 7-2 for recommended oil viscosity. In winter, use of summer oil will cause difficulty in starting the engine.

Prevent the door lock from being frozen

Spray the deicing agent or glycerin into the door lockhole to avoid freezing.

Use the cleaning solution with antifreeze.

This kind of product is available at Lifan service station.

Warning
Do not use the antifreeze or other substitute as cleaning solution; otherwise the paint of the vehicle will be damaged.

In winter the parking brake may be frosted. Therefore do not use it in such a case.

When parking, set the shift knob at the first gear and block the rear wheels. Don't use the parking brake; otherwise the parking brake device will be frosted by seeper or snow, and then cause a hard release to the parking brake.

Avoid ice and snow accumulated under the mudguard

The ice and snow accumulated under the mudguard will cause difficulty in steering. When driving in cold winter, please always check if there is ice and snow under the mudguard.

You are recommended to take some necessary instruments according to different driving conditions, such as tire chain, window scraper, a bag of sand or salt, signal flash device, small shovel and connecting cables.

How to Save Fuel and Extend the Service Life of the Vehicle

It is simple and easy to save fuel. It is also helpful for extending the service life of a vehicle. The following are tips for saving fuel and repair expense:

● **Maintain a correct tire pressure:** An insufficient tire pressure will cause wear to the tire and waste fuel. Refer to Section 7-2 for instruction.

● **No unnecessary loads on the vehicle:** Excessive weight will increase the load of the engine and cause an increase of oil consumption.

● **Avoid warm-up idling for a long time:** Start driving the vehicle once the engine operates stably, but it must be stable. Be careful, it will take a longer time for the warm-up of the engine in winter.

● **Slow and stable acceleration:** Avoid rapid starting. You should drive at a high-speed gear as quickly as possible.

● **Avoid engine idling for a long time:** In case of parking to wait for someone for a long time in a place with no busy traffic, you'd better stop the engine and restart it later.

● **Avoid lug down or over-speed rotation of the engine:** Select a proper gear according to the road conditions.

● **Avoid continuous acceleration and deceleration:** A driving with frequent stops will increase the oil consumption.

● **Avoid unnecessary parking or braking:** Keep a stable vehicle speed. Coordinate with the traffic light to achieve minimum parking times; or keep space to avoid emergency brake when driving on the road without traffic light, which will also reduce the wear of brake.

● Avoid passing by area with busy traffic or traffic congestion as possible as you can.

● **Do not rest your foot on the clutch pedal or brake pedal,** for this will cause premature ware, overheat and fast fuel consumption.

● **Keep proper vehicle speed on the expressway:** The higher the vehicle speed is, the more oil will be consumed.

● **Maintain a correct alignment of the front wheels:** Avoid colliding with the road edge and drive slowly on bumpy road. An incorrect alignment of the front wheels will result in a fast wear to the tires and also increase the load of the engine, namely expand the oil consumption.

● **The chassis should be kept clean without slurry**: That will not only ease the load of vehicle body but also prevent corrosion.

● **Adjust the vehicle and maintain it under the best working state**: The performance of the engine will be affected and the oil consumption will also be increased by the unclean air cleaner, improper valve clearance, unclean spark plug, oil and lubricant and unadjusted brake. A regular maintenance should be carried out for a longer service life of all components and a reduction in operation expense. In case of frequent driving under extreme condition, a more frequent maintenance should be implemented. (See Chapter 6)

Warning
No stopping the engine when driving down the slope. Once the engine is stopped, the power steering and vacuum booster will not fully display their performance. Likewise, emission

control device can work correctly only when the engine is running.

Urgent Trouble Treatment **Chapter 4**

If the vehicle can not start

If the engine misfires during driving

If the vehicle is over-heated

If the tire leaks

If the vehicle gets stuck

If the vehicle needs trailering

If the vehicle can not start

(a) Simple inspection

Firstly, make sure if you have started the engine according to the correct starting procedures described in “Engine Starting Ways” in Chapter 3, and check if the fuel is sufficient.

If the engine can not rotate or rotate too slowly

1. Check if the battery connector is tightly screwed down and clean.

2. Turn on the rear interior light and check the battery for any problem.

3. The battery has been used up if the light does not illuminate or illuminate dimly or the vehicle can not start. See the specifications in “(c) Jump-starting”.

If the light illuminates, but the engine can not start, a repair or adjusting is needed. Please contact Lifan service station or Lifan sales store.

Warning

No starting the vehicle by trailering or pushing. Otherwise, damage or collision may be caused to the vehicle when the engine starts. Meanwhile, the three-way catalytic converter will be over-heated to cause a fire.

If the engine rotates at a normal speed but can not start:

1. Turn the ignition key to “ACC” or “LOCK”, and then restart the engine.

2. When the engine can not start, “engine flooding” may be caused due to restarting repeatedly. See “(b) Starting “flooded engine”.

3. If the engine still can not start, a repair or adjusting is needed. You may contact Lifan service station.

(b) Starting “flooded engine”

When the engine can not start, “engine flooding” may be caused due to restarting repeatedly.

In that case, step down the accelerator pedal to the bottom and meanwhile turn the key to “START”, and retain the accelerator pedal and the key and then release them 5 seconds later; and then restart the engine when the accelerator pedal is under a free state.

If the engine still can not start after 5-second starting, release the key and restart the engine several minutes later.

If the engine still can not start, an adjusting or repair is needed. You can contact Lifan service station or Lifan sales store.

Note
Each starting period should not exceed 3 to 5 seconds, otherwise the engine and circuit will be over-heated. The second attempt shall be at least 15 seconds later.

(C) Jump-starting

The following instructions must be abode by to avoid serious personal injury as well as damage to vehicle or electrical fittings due to battery explosion, sulphuric acid corrosion and electrical combustion.

You are strongly recommended to seek help from the service station of LIFAN, if you are not clear about the process.

Warning
● The battery contains corrosive and toxic sulphuric fluid. Therefore, you must wear protective goggles during jump-starting. Avoid sulphuric acid spattering on your skin, clothes or

the vehicle body.
● In case of sulphuric fluid spattering on your body or into eyes due to carelessness, immediately take off the clothes with electrolyte and clean the affected part with clear water and then seek medical help.
● The gas discharged by the battery will explode in case of flame or spark around. During the jump-starting, you must use standard jumper cable and must not smoke or light a match.

Note
The rechargeable battery must be 12V. Do not carry out the jump-starting before confirming the correct rechargeable battery.

Jump-starting process

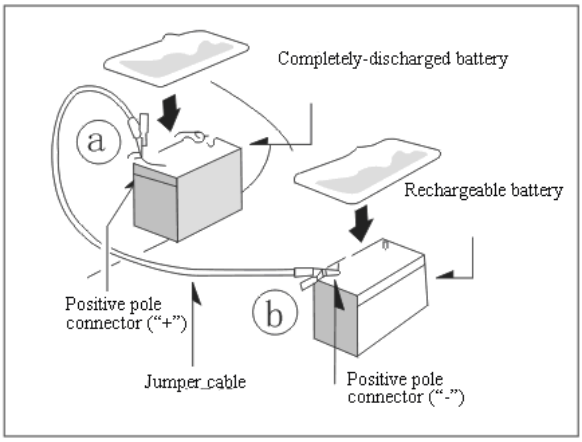
1. In case that the rechargeable battery is installed in another vehicle, you must confirm that the vehicles have no contact with each other and turn down all unnecessary lights and accessory equipments.

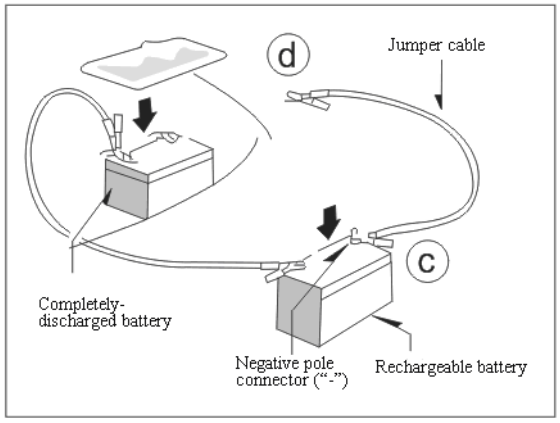
3. In case that the engine of the vehicle with rechargeable battery does not rotate, start it and run for several minutes. During jump-starting, lightly step on the accelerator pedal and operate the engine at a rotation speed of 2,000 rpm (round/minute).

3. Connect the cable according to the process in a, b, c and d.

a. Connect the clip of the positive pole (red) of the jumper cable to the equivalent connector (+) of the completely-discharged battery.

b. Connect the clip of the other end of the positive pole (red) of the jumper cable to the equivalent connector (+) of the rechargeable battery.

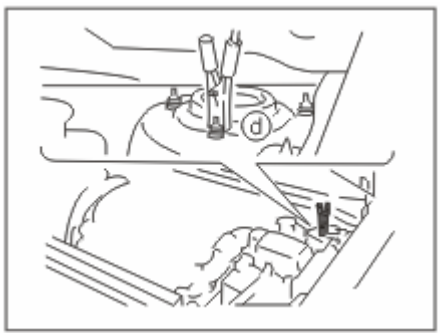




c. Connect the clip of the negative pole (black) of the jumper cable to the equivalent connector (-) of the rechargeable battery.

d. Connect the clip of the other end of negative pole (black) of the jumper cable to an unpainted metal fixed point in the vehicle with a completely-discharged battery.

Connection points are shown as below:



Connection points of jump-starting engine

Do not contact the jumper cable to any movable components during starting the engine.

Note
During connecting, do not lean on the battery, or contact the jumper cable or clip with any objects other than the proper battery connector or earth point so as to void severe injury.

4. Start the engine in the normal way. Before starting the engine, lightly step on the accelerator pedal and make the engine rotate at a speed of 2,000 rpm.

5. Carefully dismantle the cable reverse to the installation procedure; firstly dismantle the negative pole cable and then the positive pole cable.

In case that the battery discharges due to unclear reasons (e.g. the battering charging indicating light still illuminates), you should contact LIFAN authorized service station for check.

If the engine misfires during driving:

If the Engine Misfires during Driving:

1. Slowly decelerate the vehicle and carefully drive the vehicle off the road to a safe place.

2. Open the emergency light.

3. Turn the ignition key to “ACC” “LOCK”, and restart the engine.

If the engine still can not start, refer to “If the Vehicle Can Not Start”.

Note
In case that the engine does not run, the power assisting device of the brake and steering gear will not fully work. Therefore, it is much difficult than usual to carry out the steering and braking.

If the vehicle is over-heated

The engine may be over-heated in case of overheat indication from the engine coolant temperature gauge, or loss of power, or a knocking sound or bang noise. Please take the following treatment procedures…

1. Drive the vehicle safely off the road, park it and open the emergency light. Set the shift knob at neutral position and pull up the parking brake. In case of using A/C, close it.

2. Stop the engine in case of coolant or steam ejecting from the radiator or overflow can. Open the engine hood after the steam fades away. Keep engine working and close the ignition switch in case of no coolant or steam ejection.

Warning
To avoid personal injury, keep the engine hood closed until there is no steam any more. The flowing of steam or coolant indicates a rather high pressure.

3. Check if there is an evident leakage in the radiator, hose and underside of the vehicle. However, it is normal in case of drips from A/C in use.

Warning
Your hands and clothes should keep a certain distance with the fan and engine belt in operation when the engine runs.

4. Immediately stop the engine in case of a leakage of coolant. Contact the special service station of LIFAN for help.

5. Check the coolant overflow can in case of no evident leakage. In case that the overflow can is dry, fill it with coolant to the standard scale during the engine runs.

6. Recheck the coolant level in the overflow can when its temperature decreases to normal. If necessary, refill the coolant to half of the tank. A serious loss of coolant indicates a leakage in the system. In that case, contact LIFAN authorized service station for immediate check.

Warning
Do not dismantle the radiator cap when the engine and radiator are in a high-temperature state. The hot steam ejected due to high pressure may cause severe injury to human body.

If the Tire Leaks

1. Slowly decelerates the vehicle and drive it off the road to a safe place far away from traffic. Avoid parking the vehicle on the central turnout track.

2. Stop the engine and open the emergency lamp.

3. Pull up the parking brake and turn the shift knob to the neutral position.

4. All persons on the vehicle must get off to a safe place.

5. Set the Emergency triangle,about 50 m behind the vehicle.

6. Please read the following instructions carefully.

Warning

Please follow the instructions below when raising the vehicle by a jack to avoid severe personal injury:
● Follow the instructions about jacking.
● Do not make any part of your body under the vehicle supported by a jack to avoid personal injury.
● Do not start or run the engine when the vehicle is supported by a jack.
● Park the vehicle on flat and firm ground, pull up the parking brake tightly and turn the transmission to the neutral position. If necessary, set a baffle plate under the tire in the diagonal direction of the replaced tire.
● Make sure that the jack has been set on the correct jacking point. An incorrect jacking position will cause damage to the vehicle or make the vehicle drop from the jack and cause personal injury.
●Any person should not be under the vehicle supported only by a jack.
●The vehicle can be supported by a jack only when replacing the tire.
● No jacking the vehicle in case of anybody in the vehicle.
● Do not place any object on or under the jack when raising the vehicle.
● Only raise the vehicle to a height at which the tire can be taken off and replaced.

Note

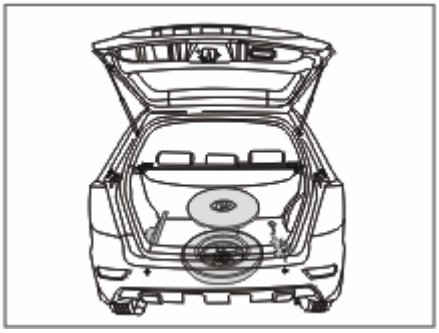
Never drive a vehicle with a flat tire, because even a short distance driving will result in a tire damaged too badly to be repaired.

Warning

Do not drive too long or at high speed with spare tires (the maximum speed is 90km/h, and the

mileage should be controlled within 50km.)or other suitable tyre or rim.Go to Lifan service station for tire replacement, otherwise severe injury or even death may occur.

Tools required and spare tires



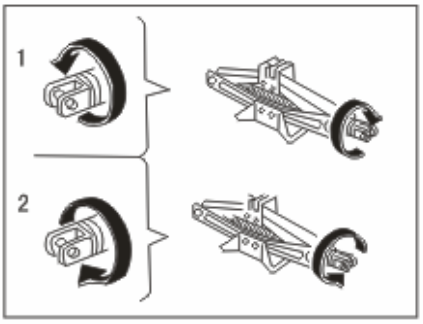
Take out the tools required and spare wheel

(1) Jack

(2) Wrench for wheel nuts

(3) Jack crank

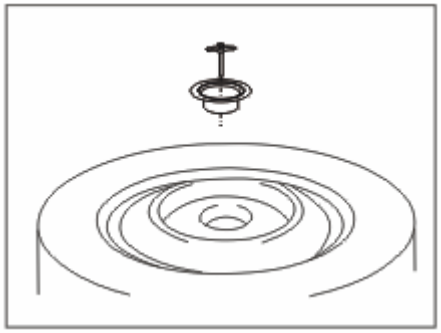
If you have to repair the vehicle by yourself under an urgent state, you must be familiar with the usage and storage place of the jack and various tools.



Turn the jack joint

Removal: Turn the joint according to direction 1 until the jack becomes loose.

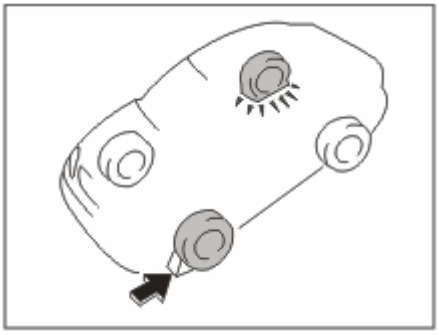
Storage: Turn the joint according to direction 2 until the jack is fixed tightly to prevent the jack from being thrown forward in case of a collision or an emergent brake.



Screw off the bolts and remove the spare wheel, and then take off the spare tire from the vehicle.

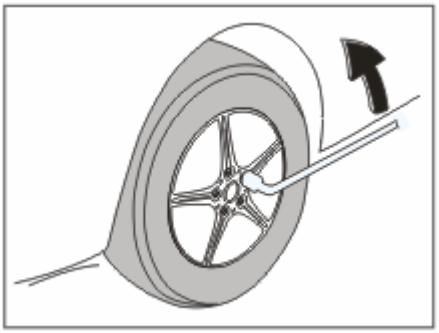
Put the spare wheel with the inside up into the storage compartment when storing the spare tire. And then fix it; reverse to the above removal procedures to prevent the tire from being thrown forward in case of an emergent brake or collision.

Block the wheels



Set a baffle plate under the tire in the diagonal direction of the replaced tire when using a jack, to avoid vehicle slide. When blocking the wheel, put the baffle plate in front of the front wheel or behind the rear wheel.

Screw off the wheel nuts

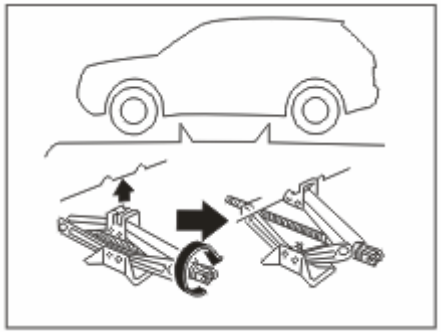


Screw off all wheel nuts of the flat tires. Screw off the wheel nuts before lifting the vehicle.

Turn the wheel nuts counter-clockwise and screw them off. To get a maximum torque, put the wrench into the nut according to the fig. above and make the wrench knob at right. Hold the end of wrench knob and pull it up. Be noted that the wrench should not slip out from the nut.

Do not remove the nut, only screw it off for one and a half turns.

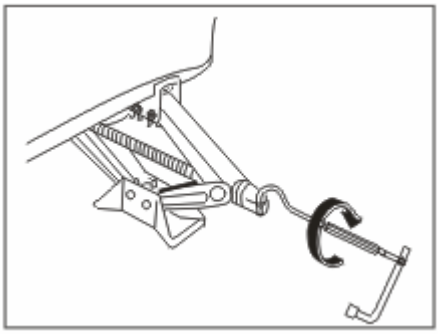
Jack alignment



Put the jack at the correct jacking point according to this fig.

Make sure that the jack is put on flat and firm ground.

Lifting the vehicle



Raise the vehicle by a jack to the proper height at which the spare wheel can be installed.

Before lifting the vehicle, insert the jack knob into the jack (loose contact), and then turn it clockwise. When the jack contacts the vehicle and starts rising, recheck if it is at the correct position.

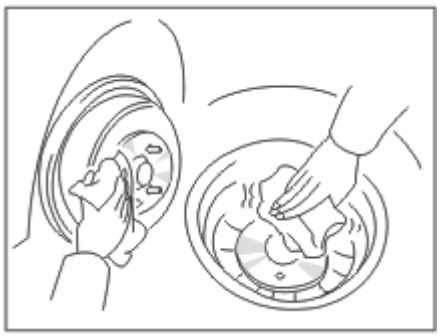
Warning
Personnel should not be under the vehicle supported by a jack only.

Replace the wheel



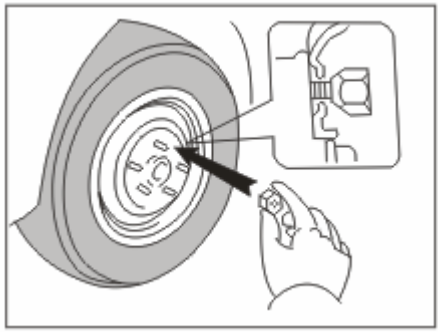
Remove the wheel nuts and then replace the wheel

Roll the spare wheel to the installation position.left the wheel and align the bolts to the wheel hole. Then raise the wheel until the bolt at the uppermost goes through the screw. Rotate the tire and push it backwards until other bolts go through the screw.



Brush all the corrosives on the installation surface by a wire brush before installing the wheels. A bad contact between the installation surfaces during the installation will make the wheel nuts loose and cause the wheel to fall off during driving.

Reinstall the wheel nuts



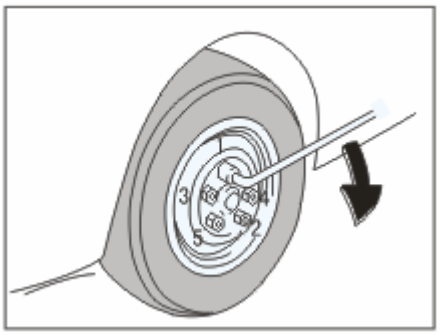
Reinstall all wheel nuts.

When reinstalling the wheel nuts, screw down the nuts to full, push the wheel inward to see if it can be further screwed down.

Warning
Do not apply oil or lubricant onto the bolt or nut,

because that may cause the nut to be screwed down over-tightly and even damage the bolt. The nut will become loose for that, which will cause the wheel to fall off and bring severe accidents. In case of oil or lubricant on the bolt or nut, clean them out.

Lower the vehicle



Completely lower the vehicle and screw down the wheel nuts.

Rotate the jack knob counter-clockwise to lower the vehicle.

Only the wheel nut wrench can be used to screw down the nuts. No use of other tools or any other lever except your hands. Make sure that the wrench has been tightly set on the nuts.

Screw down the nuts according to the order shown in the fig., and screw them tighter each time. Repeat this process until all nuts are screwed down tightly.

Warning

● When lowering the vehicle, please make sure that all people have left to avoid any injury due to the vehicle descending.

● Immediately use a torque wrench with 120N•m torque to screw down the wheel nuts after replacing the wheel. Otherwise, the nuts will become loose and cause the wheel to fall off, and then cause a serious accident.

● Do not drive too long or at high speed with spare tires (the maximum speed is 90km/h, and the mileage should be controlled within 50km.)or other suitable tyre or rim.

After replacing the wheel

Check the tire pressure after replacement.

Adjust the tire pressure to the value regulated in Section 8. In case of an air pressure lower than the regulated value, drive the vehicle slowly to the close service station for inflation to make the air pressure reach the correct value.

Remember to install the valve cork, otherwise the dust and moisture will enter the valve core and may cause a leakage. In case the valve cork is lost, immediately replace a new one.

Please store all tools, jack and flat tires properly.

After wheel replacement, use the torque wrench to screw down the wheel nuts to the torque value regulated in Section 8. The flat tires should be repaired by the professional personnel.

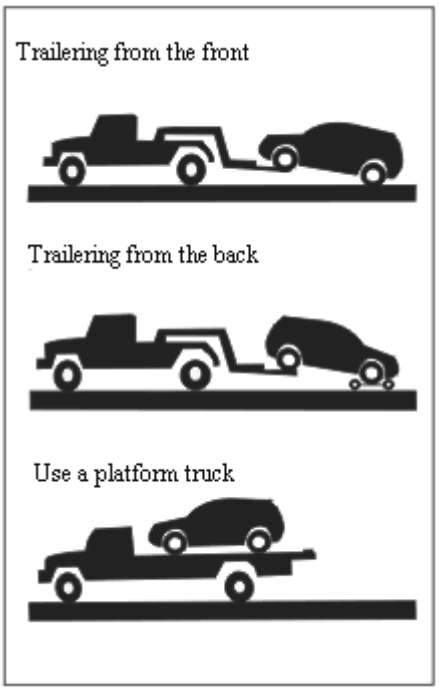
Warning
Before driving, make sure that all tools, jack and flat tires are fixed at the storage place to reduce the possibility of personal injury in case of emergent brake or collision.

If the Vehicle Gets Stuck

Try to push the vehicle back and forth to release it from the trouble if the vehicle is stuck in snow, mud basin and sands.

Warning
When driving a stuck vehicle, do not push the vehicle back and forth to let it move if there is people or object near the vehicle, because the vehicle, when it is being pushed, will suddenly move forwards or backwards after escaping from the trap, which may cause an injury to the people or damage to objects around.

If the Vehicle Needs Trailering



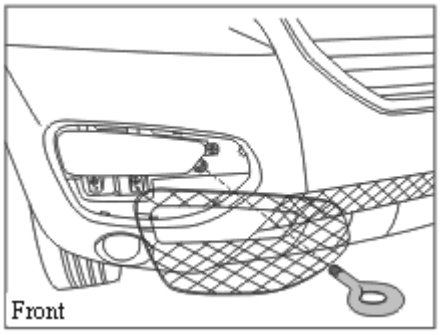
The application of proper trailering equipments during trailering process will ensure no damage to the vehicle.

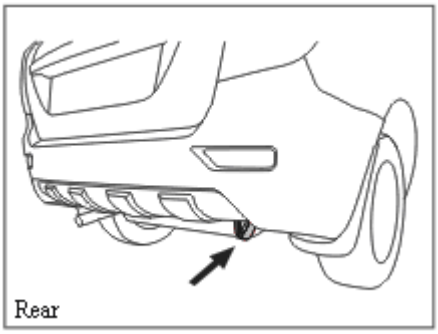
Wrong towing methods will cause damage to the vehicle. Mistakes may always occur although most of towing personnel are familiar with the correct methods. Therefore, the following precautions must be abided by to protect the vehicle from damage.

Precaution measures for trailering:

All trailering should use a safety chain system and abide by the laws of the state/province or municipality and the local government. The wheels and axle contacting the ground should be at a good state. In case of any damage, apply a platform truck.

Urgent trailering

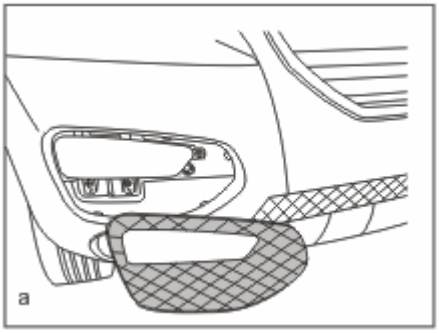




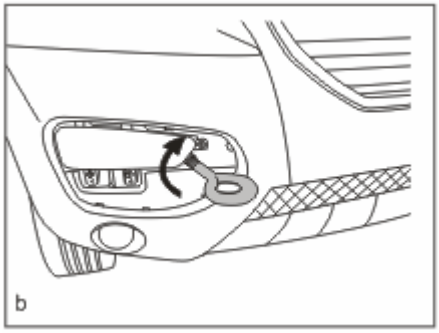
In case of a need for trailering, the special repair station of LIFAN is recommended to handle that for you.

In case that a trailer company can not be found during an urgent trouble, you can fasten the towing cable or chain at the urgent towing pothook and trailer the vehicle temporarily. Extra care must be paid during trailering.

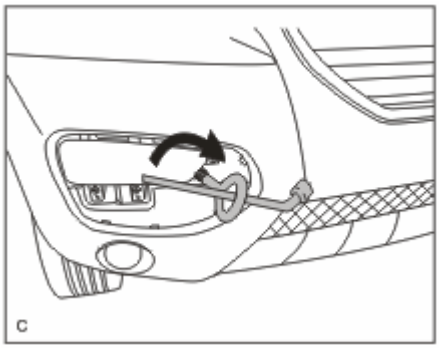
Install emergency towing pothook



a. Take down the right steering light cover plate;



b. Screw the pothook into the pothook mounting hole;



c. Screw down the pothook with a jack lever.

Note
● Only the specified towing pothook can be used, otherwise the vehicle may be damaged. ● Do not trailer the vehicle backwards in case of four wheels on ground; Otherwise the vehicle may be damaged.

The driver must sit in the vehicle for driving and operating the brake.

This trailering way can be used only on hard ground at low speed for a short distance. Meanwhile, the wheel, axles, transmission system, steering wheel and brake must be at a good state.

Warning
Special care should be taken when trailering a vehicle. Avoid abrupt starting or unstable driving operation, because these will cause huge pressure on the urgent towing pothook and towing cable or chain. The pothook and towing cable or chain may be broken and then cause severe injury to people or damage to the vehicle.

Note
Only use the special towing cable or chain and fasten them at the towing pothook.

Before trailering, release the parking brake and turn the shift knob to the neutral position. And the key should be at “ACC” (engine closed) or “ON” (engine running).

Note
In case that the engine does not run, the power assisting device of the brake and steering gear will not work. Therefore, it is much difficult than

usual to carry out the steering and braking.

Anti-corrosive and Outer Maintenance of the Vehicle **Section 5**

Anti-corrosive on vehicle body

Vehicle cleaning and waxing

Inner cleaning

Anti-corrosive on Vehicle Body

A correct maintenance of the vehicle can protect it from corrosion for long.

Most common causes for vehicle corrosion:

●The underside of vehicle is covered with salt and alkali, dust and moisture.

●Protective paint cover scratched by a light collision or stone and grit.

It is essential to take an extra care in case of living in a special region or operating the vehicle under special environment.

●The salt and alkali or dust with chemical materials on the road will accelerate the corrosion. Even in the coastal area or industrial pollution region, there is still salinity in the air.

●A high humidity will accelerate the corrosion, especially in case of a temperature barely above zero.

●A certain part of the vehicle being wet or damp for a long time will be corroded, although other parts keep dry.

●A high room temperature will cause corrosion to the vehicle components which can not get dry fast due to the lack of correct ventilation.

●A high room temperature will cause corrosion to the vehicle components which can not get dry fast due to the lack of correct ventilation.

Follow the rules below to prevent LF6430 from corrosion:

Always clean the vehicle: A regular cleaning may keep the vehicle body clean. Please abide by the following rules to avoid corrosion.

● Clean the running part of the vehicle at least once each month to avoid corrosion in case of driving on the road with salt and alkali in winter or at coastal areas.

● High-pressure or steam is very effective for cleaning the chassis and wheel cover. It is hard to see all the slurry and dirt in those two places. Therefore, an extra attention must be paid. It will cause more serious danger in case of only roughly moistening but not cleaning the slurry and chips. The drain holes of door lower brim, doorsill plate and the vehicle frame must not be obstructed by dust; otherwise the seeper in those parts will cause corrosion;

●Completely clean the chassis after winter.

Please see “Vehicle Cleaning and Waxing” for more information.

Check the paint and trims: In case of any fragment or crack on the paint layer, please immediately go to the service station of LIFAN for repair to prevent corrosion. In case of fragment or crack falling off the metal surface, please go to the service station of LIFAN for repair.

Check the inner vehicle compartment: The moisture and dust covering the floor mat will cause corrosion. Please always check the place under the mat and make sure it is dry. Take an extra care during the transportation of chemicals, cleanser, fertilizer, salt and other materials which should be transported by proper containers. In case of any spill or leakage, please immediately clean and keep it dry.

Application of mudguard: The mudguard can protect the vehicle in case of driving in salty and alkali region or on gravel roads. It is better if the mudguard is bigger and closer to the ground. The wheel house mudguards on Lifan sedans are optional, and Lifan service station is willing to offer users the mudguard installation service.

Park the vehicle in a fully-ventilated garage or a place with roof. Do not park it in a damp and airproof garage. The garage will become damp due to cleaning vehicle in it or the vehicle driving through a seeper or snow road, resulting in corrosion. Although the garage is very dry, bad ventilation will also cause corrosion to a damp vehicle.

Vehicle Cleaning and Waxing

Cleaning LF6430

Clean the car in normal way.

The following cases will cause the paint layer to fall off or result in corrosion to the vehicle body and components. Please immediately clean the vehicle and repair that.

●Driving in the coastal region

●Driving on the road covered with antifreeze

●Stuck by coal tar, resin, ornithocopros and dead insects

●Driving in a region with a great deal of soot, coal ash, dust, scrap iron or chemical materials

●Being evidently dirtied by dust and slurry

Manual cleaning of LF6430

Clean the vehicle after its body feels not hot in a shady place.

Note
Be careful not to hurt your hands when cleaning the underside of the floor or the chassis.

1. Wash away the loose dirt by a water pipe, and wash away all the slurry on the vehicle bottom and depressed part of the wheel or the salt and alkali on the road.

Warning
Do not install the seriously damaged plastic wheel trims; otherwise, the wheel trims will fly off the wheel and cause an accident during driving.

2. Clean the vehicle with neutral cleaning solution. The mixture of cleaning solutions should be carried out according to the instructions of the manufacturer. Dip a soft cloth with cleaning solution and wipe away the dirt by suds and clean water. Do not wipe it forcefully.

Plastic wheel trims: The plastic wheel trims are easily damaged by organism. In case of any organism spattering on the trim, do wipe it away by clean water and check if the trim is damaged.

Aluminum-quality wheel: Only use neutral suds or neutral cleaning solutions.

Plastic bumper: Take care of cleaning the bumper. No wiping it with cleaning solution containing abrasive.

Asphaltum: Clean it by turpentine or the cleanser labeled no harm to the paint.

Warning
No using organism (petrol, kerosene, naphtha or strong dissolvent); otherwise, poisoning or damage will be caused.

3. Wash away the suds completely; otherwise, it will become speckles when it is dry. In case

of cleaning in summer, clean each part with clean water correctly.

4. Use a clean soft towel to dry the vehicle body to avoid water marks. Do not wipe or press the vehicle forcefully; otherwise the paint surface will be damaged.

Waxing of LF6430

Polishing and waxing for the vehicle body is recommended for maintaining a shining outlook of the vehicle.

A waxing should be implemented for once each month or anytime when the vehicle surface can not be well water-resistant.

1. Before waxing, do wash the vehicle first and dry its body, even if using the compound of cleanser and car wax.

2. Use high-quality polish agent and car wax. In case that the car polishing has seriously effloresced, use the cleaning polish agent separately from waxing. Follow the instructions and precaution measures from the manufacturer carefully; the chrome plating and paint surface both need polishing and waxing too.

3. If the water on a large contact surface does not form into droplets but stays on the surface, then the vehicle should be waxed again.

Note
In case redoing the waxing and parking the vehicle in a painting workroom at high temperature, take off the plastic bumper; otherwise, it will be damaged due to the high temperature.

Inner Cleaning

Note
Do not clean the inner floor by water or make water flow into the floor when cleaning the inner or outer vehicle. Water may enter the carpet (or mat) or the acoustics components or other electrical components on and below the carpet and cause a malfunction, and even result in corrosion on the vehicle.

Carpet

Clean the carpet with high-quality foam cleaning solution.

Use a dust collector to wipe away the dust possibly. There is various foam cleaning solutions for use. Some is stored in an aerosol can; others are powder or fluids which produce foams when mixed with water. Clean the carpet by a sponge or brush immersed with foams. Wipe it in a circle way.

Safety belt

The safety belt can be cleaned by neutral suds or lukewarm water.

Use sponge or soft cloth for cleaning. Do check if the belt is excessively worn, frazzled or has shear mark.

Note
●The safety belt should not be cleaned by a staining agent or bleaching agent which will weaken the strength of the belt. ●No using the belt before it is dry.

Door and window

The door and window can be cleaned by any cleanser for home-use

Note
Take care not to scratch or damage the heating wire or connectors when cleaning the inside of rear window.

A/C control plate, acoustics, dashboard, control plate and switch

Clean them with a moist soft cloth.

Moisten a clean soft cloth in water or lukewarm water, and then wipe away the dust lightly.

Note
● No using organism (dissolvent, kerosene, alcohol, petrol etc.) or acid and alkali solution, which will result in fading, staining or peeling of the surface. ● Confirm that the components do not have the above-stated materials in case of using cleanser or polish agent. ● Do not spatter the fluid into the inner surface

of the vehicle in case of using a new-type cleaning solution, because it may contain the above-stated components. Clean all the spattered fluid immediately in the above-stated way.

Leather trims inside the vehicle body

The leather trims can be cleaned by neutral cleanser applied to woolen textiles.

Wipe the dust by a soft cloth immersed with solution with 5% neutral cleanser applied to woolen textiles. And then wipe away the residual cleanser completely by a clean moist cloth.

In case of any moistened part of the leather or after cleaning, clean it with a clean cloth and lay it at a ventilated and shady place for drying.

Note

● In case that the dirt can not be wiped away by the neutral cleanser, a cleanser not containing organic solvent can be applied.
● No using organism such as naphtha, alcohol, petrol or acid and alkali solution for cleaning the leather, because these materials will result in color fading.
●The nylon brush or synthetic fiber cloth will scratch the good texture on the leather surface.
● Dirty leather trim will produce mildew. Be extremely careful to avoid oil stain and always keep the trim clean.
● A long-time exposure to the sunshine will result in surface hardening or shrinkage of leather. Therefore, park the vehicle at a shady place, especially in summer
●Since the temperature of the inner vehicle becomes high easily in hot summer; you should avoid placing any object made of vinyl plastic, plastic or material containing wax, because these objects will stick to the leather under a high temperature.
● A wrong cleaning of the leather trim will result in color fading or stain.

In case of any question about cleaning, please contact with the special repair station.

Maintenance Instructions **Section 6**

Maintenance

Whether the Vehicle Needs to Be Repaired

Notes for Maintenance

Regular Maintenance Items

Severe Using Conditions

Maintenance

It is important and necessary to carry out a regular maintenance.

LIFAN strongly advises you to carry out a regular maintenance according to the maintenance scheme, which will be helpful for:

- Saving fuel
- Extending the service life of the vehicle
- Enjoying the fun in driving
- Safe driving
- Stable traveling

● Meeting the guarantee regulation
● Conform to the government regulations

Where to get maintenance?

Routine maintenance could be done in the repair station of LIFAN or any Lifan service station.

Whether the Vehicle Needs to Be Repaired?

Pay attention to the change in performance and sound of the vehicle. Some important cases as below:

● The engine misfires, is unstable or sounds bang noise
● Power decreases evidently
● Abnormal noise from engine
● Oil and water leakage under the vehicle (the drip from the A/C is normal)
● Change in exhaust sound (That may be due to the leakage of dangerous CO. Drive with the window open and immediately check the exhaust system)
● Leakage of tire; excessive tire noise when turning; uneven tire wear
● The vehicle pulls to one side for more than 5 meters during a straight-line running for 1000 meters on flat ground.
● Abnormal noise relevant with the movement of suspension equipments
● Ineffective brake; stepping on the brake pedal or clutch pedal feels like on a sponge; the pedal nearly contacts the floor; the vehicle pulls to one side when braking
● Continuously high temperature of engine coolant

Warning
No continuing to drive an unchecked vehicle; otherwise, that may cause damage to the vehicle and injury to persons.

Notes for Maintenance

Regular maintenance can ensure less accidents as well as safe, stable and economical driving.

The rubber hose (for A/C and heating system, brake system and fuel system) is an especially important maintenance item. In case of any problems like aging, crazing or damage, the hose should be replaced immediately.

Note
The rubber hose will be aging and crazing as time goes by, resulting in bulging, abrasion or cracking.

If mainly driving under one or more of the harsh conditions below, then some maintenance items need to be carried out more frequently.

A. Road Condition
1. Always driving on uneven, muddy road or the road with melting snow.
2. Driving on dusty road.

B. Driving Condition
1. Carry out repetitive short driving within 8km under the temperature below zero degree.
2. The car is always under idle or driving at low speed for long, e.g. police wagon, taxi or delivery car.

Regular maintenance items

R=replace, I=check, correct or replace when necessary, C=clean

Time interval / Item	Calculated as per the reading of odometer or month, whichever earlier should apply											
	X1000Km	3	8	13	18	23	28	33	38	43	48	53	58
	Month	3	9	15	21	27	33	39	45	51	57	63	69
Driving belt (engine, power steering, and air compressor)	I	I	I	I	I	I	I	I	I	I	I	I
	R: every 80,000km or every 2 years											
Engine oil and engine oil filter element	R	R	R	R	R	R	R	R	R	R	R	R
Cooling system hose and joint	I	I	I	I	I	I	I	I	I	I	I	I
Engine coolant	I		R		R		R		R		R	
	Add as required											
Fuel cleaner	I		R		R		R		R		R	
Fuel pipe and joint	I		I		I		I		I		I	
Spark plug	I	I	I	R	I	I	I	R	I	I	I	R

Time interval / Item	Calculated as per the reading of odometer or month, whichever earlier should apply											
	X1000Km	3	8	13	18	23	28	33	38	43	48	53	58
	Month	3	9	15	21	27	33	39	45	51	57	63	69
Transmission gear oil	I	R	R: every 40,000km or every 2 years										
Throttle body			C		C		C		C		C	
Injection nozzle			C		C		C		C		C	
Timing chain of engine	I		I		I		I		I		I	
Air cleaner		R		R		R		R		R		R

Exhaust pipe joint and bracket	I	I	I		I		I		I		I	
Brake fluid/clutch fluid	I	I	I	I	I	I	I	I	I	I	I	I
	R: every 40,000km or every 2 years											

Time interval / Item	Calculated as per the reading of odometer or month, whichever earlier should apply											
	X1000Km	3	8	13	18	23	28	33	38	43	48	53	58
	Month	3	9	15	21	27	33	39	45	51	57	63	69
Brake pads and brake disc		I	I	I	I	I	I	I	I	I	I	I	I
Brake pipe joint and hose	I		I		I		I		I		I	
Parking brake mechanism	I	I	I	I	I	I	I	I	I	I	I	I
Power-assisted steering fluid	I	I	I	I	R	I	I	I	R	I	I	I
A/C air cleaner	I	C	R	C	R	C	R	C	R	C	R	C
Fastening and tightening of chassis and body chassis nuts and bolts	I	I	I	I	I	I	I	I	I	I	I	I
Electrical connectors and earth points	I	I	I	I	I	I	I	I	I	I	I	I

Severe Using Conditions

Vehicles that usually run under severe conditions should have a shorter maintenance cycle. Severe conditions include the following ones:

(1)Driving in dusty areas or costal areas, or often exposed to salty air;

(2)Driving on bumpy roads, mountain roads or roads with impoundment;

(3)Driving in cold areas;

(4)The engine runs at idle speed for a long time, or the vehicle often runs short distance in cold seasons.

(5 Frequent braking and emergency brake.

(6)Used as tractor-trailer.

(7) Used as a taxi or rental car.

(8) In the temperature above 32℃, driving in crowded city proper, and the driving time of which surpasses 50％ of its total driving time.

(9) In the temperature above 30℃, driving at 120km／h or higher speed, and the driving time of which surpasses 50％ of its total driving time.

(10) Overloaded driving.

Maintenance DIY Chapter 7

Maintenance DIY

Engine and Chassis

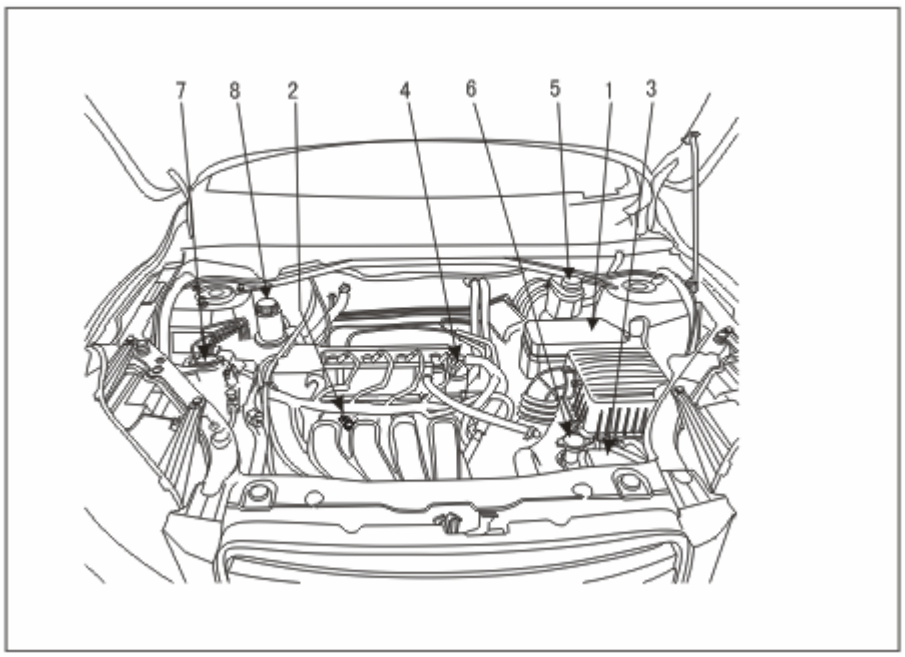
Electrical components

Maintenance DIY **Chapter 7-1**

Engine Compartment Appearance

Notes for Maintenance DIY

Engine Compartment Appearance



1. Distribution box assembly

2. Oil rule

3. Engine coolant overflow can

4. Oil filler cap

5. Brake fluid pot

6. Radiator filler cap

7. Washing pot

8. Power-assisted steering oil can

Notes for Maintenance DIY

To carry out maintenance DIY, it is necessary to do as per correct procedures in this section. Be careful, incorrect or incomplete maintenance work will lead to operation trouble.

This section is just for some maintenance work which is easy to carry out for users. As mentioned in Chapter 6, some items should be carried out by professional technicians using special tools.
During maintenance work, be especially careful to avoid incidental injuries. The following prevention measures should be abided by especially.

Warning

●When engine runs, hands, clothes and tools should be far away from the running fan and engine belt. (Better to take off things like ring, watch and tie.)
●When the car has exactly finished a driving, the temperature of engine compartment—engine, radiator, exhaust pipe, power-assisted steering fluid storage tank, spark plug etc. is very high. So be careful not to touch. The temperature of oil, coolant and spark plug is also very high.
●If the engine is too heated, then don't take off the radiator cap or loose the drainage plug, for avoiding burns.
●Never leave behind such flammable articles as paper, cloth in the engine compartment.
●Before working around the grille plate of cooling fan or radiator, it is necessary to make sure that the ignition switch is turned off. When the ignition switch is turned on, if the temperature of engine coolant rises or the A/C is turned on, the electrical cooling fan of engine will run automatically.
●Not fire is allowed near the fuel tank and battery so as not to cause fire.
●When disposing the battery, be especially careful, for the battery contains corrosive electrolyte.

Warning

●When the car is only jacked by body jack, people don't come under the car, do support the car with support frame or other strong strut.
●Whether working above or below the car, goggles are to be worn, for avoiding falling or

dropping articles and spattering fluid.

Note
●Remember that both battery and ignition coil bear high current or voltage. Be careful to prevent accidents resulting in short circuit. ●If the coolant is overflowing, it is necessary to clean it with water, for avoiding damaging components or paint coat. ●Prevent any miscellany from dropping into the spark plug hole. ●Strictly prohibit from prying the outer electrode beside the central electrode of spark plug. ●Only use the spark plug of designated model. ●If the brake fluid is overflowing, it is necessary to clean it with water, for avoiding damaging components or paint coat.

Note
●Strictly prohibit from driving when the air cleaner is taken off, or it will result in excessive wear of engine. ●Be careful not to scratch the windshield by the wiper. ●When closing the engine hood, check whether there is anything like tools, cloth etc left behind the engine compartment.

Check the oil level

Check the engine coolant level

Check the radiator and condenser

Check the tire pressure

Check and replace the tire

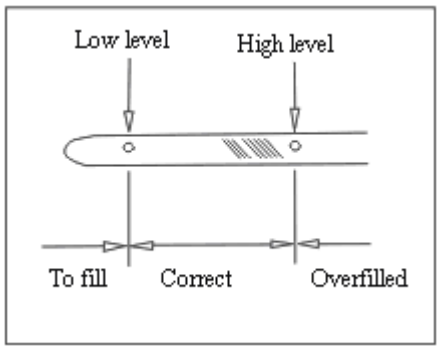
Change tires

Install tire chain

Tires replacement

Notes for aluminums alloy wheel

Check the oil level



When the engine is under working temperature, shut down the engine, check the oil level with oil rule.

1. To obtain correct reading, it is necessary to park the car at flat ground, shut down the engine and wait for several minutes, let the oil gather at the bottom of engine.
2. Pull out the oil rule and clean its end.
3. Insert the oil rule again, and try to stick it to the bottom, or else the reading is inaccurate.
4. Pull out the oil rule and check the oil level.

Note
Noted that not drop any oil on the components of the car.

If the oil level is below or just a little above the low level, it is necessary to fill the oil of the same type.

Take off the oil filler cap, fill small quantities of oil every time and check the oil rule.

When the oil level reaches the right range, put on the filler cap and screw it down.

Note
●Avoid overfilling, or the engine will be damaged. ●When the filling is finished, recheck the oil level on the oil rule. ●Insufficient oil will cause under-pressure of engine oil, resulting in poor lubrication, bringing about intensified wear and poor cooling of engine, causing frequent troubles and affecting the service life of engine.

Check the engine coolant level

When the engine is under cooling state, check the coolant level in the overflow can, if it is between the marking lines of “FULL” and “LOW”, it conforms to the requirements. If the oil level is on the low side, it is necessary to fill coolant. (For the type of engine coolant, refer to the “selection of coolant type” below.)

The coolant level in the overflow can will change along with the temperature variation, however, if the level is at or below the “LOW” line, it is necessary to fill coolant, to make the level reach the “FULL” line.

After filling coolant, if the level of coolant declines within a short time, then some leakage exists in the system. It is necessary to check the radiator, hose, radiator cap, drain plug and water pump.

If no leakage is found, it is necessary to test the cap pressure and check whether there is any leakage at the special repair station of LIFAN.

Warning
To avoid burns, when the engine is at hot condition, don’t take off the radiator cap.

Coolant selection

Only use the coolant designated by LIFAN. It is necessary to fill proper type of coolant into the cooling system as per the ambient temperature.

Note
Don’t use clean water.

Use of improper coolant will damage the cooling system of engine.

For details, contact the service station of LIFAN.

Warning
It is necessary to obtain enough coolant for the cooling system to ensure the normal operation of engine, or “boiling” of car will occur. When the engine is working under overheated condition, the service life will be affected, so much as resulting in bad accidents like engine scraping.

Check the radiator and condenser

When either radiator or condenser has already extremely dirty or their condition can’t be made sure, it is necessary to send the car to be checked and repaired at service station of LIFAN.

Note
To avoid burns, when the engine is under hot condition, be careful not to touch the radiator or condenser.

Note
To avoid the damage of radiator and condenser, don’t carry out operation by yourself.

Check the tire pressure

Maintain a correct tire pressure.

For the recommended cold tire pressure and tire size, refer to Chapter 8.

It is necessary to check the tire pressure once every two weeks or at least every month. Don’t forget to check the pressure of spare tire.

Incorrect tire pressure will lead to oil waste, lowered driving comfort, shortened tire service life and lowered driving safety.

If the tire needs to be charged too frequently, it is necessary to demand service station of

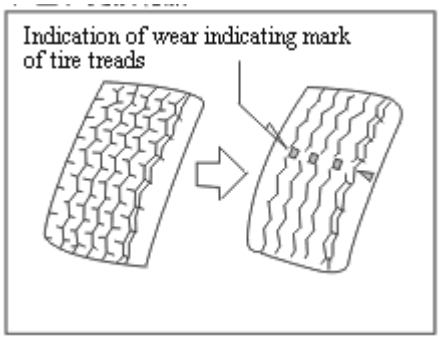
LIFAN for checking.

Warning
Maintain a correct tire pressure, or else, the following circumstances or even serious injuries will occur. Low tire pressure (insufficient charge) ●Excessive wear ●Supernormal wear ●Hard to control ●Leakage resulting from overheated tire ●Weakened sealing performance at the hoop of tire ●Deformed wheel and/or tire separation High tire pressure (overcharge) ●Hard to control ●The central of tread pattern is over worn ●The hard part of road will more likely cause tire damage.

When checking the tire pressure, it is necessary to abide by the following instructions:

●Check the tire pressure only when the car is cold. Only when the car has been parked for at least 3h or drives less than 1.5km, can the reading of tire pressure be correct.
●Do use tire pressure gauge, since to judge the tire pressure by experience may lead to error. Although the variation of tire pressure may be tiny, it will also reduce the driving comfort and operating stability.
●After driving, don't deflate the tire or reduce the tire pressure randomly. The tire pressure after driving is always high, which is normal.
●Make sure the valve cork is installed. Without valve cork, dust or moisture will enter the valve core, and result in leakage. If the valve cork is lost, it is necessary to install a new one.

Check the tire



Check the tire

The wear indicating mark is used to help check the tire tread.

The tire of LF6430 is embedded with wear indicating mark for indicating the time for tire replacement. When the wear depth of tire tread reaches the wear indicating mark, the tire should be replaced. The thinner the tire tread is, the greater the risk or slipping and tire burst is.

If damages like cut, rupture, crack which is so deep that cord fabric is exposed, and bulging occur to the tire, which indicates the inner damage of tire, it is necessary to replace the tire.

If tire leakage is frequently experienced or the size and location of cut and other damages are not proper for correct repair, then it is necessary to replace the tire. If you're not sure, contact service station of LIFAN.

If leakage occurs in driving, don't drive any more, because just a little more driving will cause unrepairable damages.

If any tire serves more than 6 years, although no obvious damage is seen, it is necessary to be checked by professional technicians.

Although the tire is unused or seldom used, the aging will lead to quality decline.

These are suitable to spare tires as well.

Replacement of tires

In case of replacing the tire, use a tire of the same specification and model with the replaced one and whose carrying capacity is equal to or larger than that of a common one.

Use of a tire of any other model will cause a serious impact to the vehicle driving and riding, calibration of the speedometer/odometer, ground clearance and the space between the vehicle body and the tire or the tire chain.

Warning
Follow the instructions below; otherwise, a serious injury or even death will be caused. ●Radial tire, bias belted tire and diagonal-ply tire can not be mixed in a vehicle; otherwise a typical operation danger will be resulted in and then cause the vehicle to lose control. ●Do not use any tire with a size not

recommended by LIFAN; otherwise a typical operation danger will be resulted in and then cause the vehicle to lose control.

No using any old tire on LF6430.

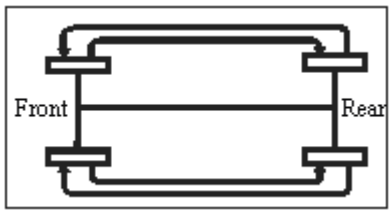
It is very dangerous to use tires without clear identification.

You are advised to replace the four tires at the same time, or two front tires or two rear ones at least.

Refer to “If the Tire Leaks” in Chapter 4 for steps of tire replacement.

Unbalanced wheels will effect the vehicle operation and the service life of the tires. The wheels may loose balance in case of a normal use. Therefore, carry out a regular check-up to keep them balanced.
此处有删除部分

Tires rotation (rotation figure)



You are recommended to rotate the tires after each mileage of 10,000km so as to maintain the same wear of the tires and extend their service life. However, the proper time for that should be determined according to the habit of the driver and also the road conditions.

Refer to “If the Tire Leaks” in Chapter 4 for steps of tire replacement.

Check if there is uneven wear and damage on the tires when rotating them. The tire will be abnormally worn due to the incorrect tire pressure, improper wheel alignment and unbalanced wheel or frequent braking.

Install tire chain

Selection of tire chain

Use the tire chain of correct size.
The use rules of tire chain will change according to different places or roads, therefore, make sure the local rules before installing the tire chain.

Installation of tire chain

Try to install the tire chain at the front tires as tight as possible. Don't use tire chains at rear tires. After driving for 0.5～1.0km, tighten the tire chain again.

When installing the tire chain to the tire, be careful to abide by the guide of the tire chain manufacturer.
When the wheel house is used, it may be scratched by the tire chain, so it is necessary to take off the wheel house before installing the tire chain.

Warning
●When using tire chain, the driving speed should not exceed 50km/h or the lower speed limit specified by the tire chain manufacturer. ●When using tire chain, be careful in driving to note the ridge, hole and sharp turn of the road, which may result in the jump of car. ●When using tire chain, avoid sudden turn or wheel lock brake, which may bring about bad effect to the operation of the car. ●When the car is installed with tire chain, the driver should be careful to decelerate before making a turn, for avoiding losing the control over the car, or accident will occur.

Replace wheel

When to replace the wheel

If there are damages like twist, crazing or severe corrosion in the wheel, it is necessary to make a replacement.

If not replace the damaged wheel, then the tire may separate from the wheel or it will make the car lose control.

Selection of wheel
In case of replacing the wheel, be sure to use a wheel of the same specification and model with the replaced one.
The service station of LIFAN can carry out correct wheel replacement.
Wheels of different sizes or types will bring about bad effect to the control, service life of wheel and bearing, cooling of brake, calibration of the speedometer/odometer, brake performance, headlight aiming, height of bumper, car height above the ground and the space between the tire or tire chain and the vehicle body and chassis.

Don’t use old wheels for replacement, because these wheels may be treated or serve a long mileage, and may go wrong without any warning. Meanwhile, the twisted wheels having undergone alignment always have structural damages, so don’t use them either.

Warning
Since wheels of different sizes will cause typical operation danger which in turn makes the car lose control, therefore, do not use any wheel with a size not recommended by the manufacturer. Otherwise, accident will occur.

Notes for aluminum alloy wheel

●The car installed with aluminum wheels, after the initial 1,600km, it is necessary to check whether the nut is screwed.

●In case of the exchange, repair or replacement of tires, check whether the nut is screwed after driving for 1,600km.

●When using the tire chain, be careful not to damage the aluminum alloy wheel.

●Only use the wheel nut and wrench specially designed for aluminum wheel.

●When using the tire chain to adjust the wheel balance, only use balancer or tools equal to it and plastic hammer or rubber hammer.

●Like all vehicles, it is necessary to check whether there is damage of aluminum wheels timely. If damages are found, it is necessary to replace it for a new one immediately.

Maintenance DIY **Chapter 7-3**

Electrical components

Check the battery

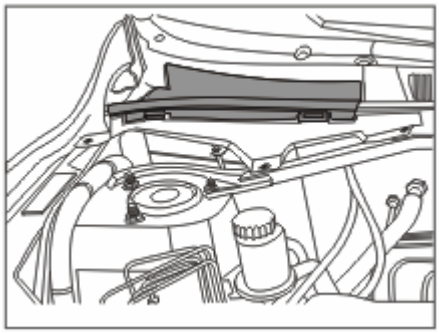
Check and replace fuse

Check the battery

Notes

Warning

Check the external part of battery



Check whether there is any corrosion or loose joint, crazing or loose hold-down of battery.

a. If the battery joint has been corroded, it is necessary to clean it with the mixture of warm water and saleratus. Lubricate the outside of joint with grease to prevent further corrosion.

b. If the connection of joints is loosened, screw the nut.

c. Screw down the hold-down to the extent that the battery is firmly fixed. Do not screw down too much so as not to damage the battery box.

Note

●Before carrying out the maintenance, it is necessary to make sure that the engine and all auxiliary equipment have been shut down.
●To check the battery, it is necessary to take off the ground cable connected to the negative pole ("—" marking) first and install it last.
●Be careful, do not cause short circuit when using tools.
●To clean the battery, be careful not to let the washing liquid enter the battery case.

Check the internal part of battery

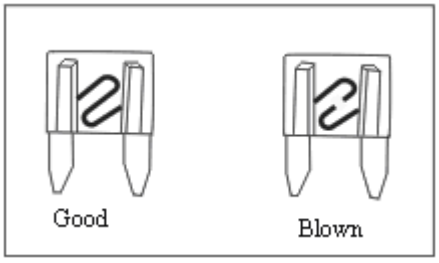
Check the internal part of the battery according to the specification on the battery case and the status indicating light of the battery.

Green: good

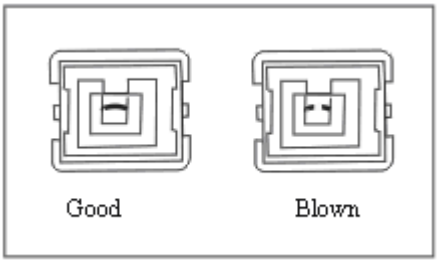
White: Charging required

Red: insufficient electrolyte, battery replacement required

Check and replace fuse



Type A



Type B

If the headlight or other electrical components don't work, it is necessary to check the fuse. If the fuse has been blown, replace it for a new one.

See Chapter "Fuse and Relay" for position of fuse.

Shut down the ignition switch and corresponding components, and vertically pull out the possible blown fuse for check.

Find out which fuse is in trouble. The circuit name for each fuse is identified on the cover of the fuse box. See Chapter 8 for the control function of each circuit.

Pull out type A fuse with a picker. See 37 "picker" in a figure in Chapter 8 "Engine compartment" for position of the pulling tool.

If it is impossible to confirm whether the fuse has been burned or not, replace the fuses possible in trouble.

Install new fuse for the jacket if the old fuse has been burned.
Install the fuse with the amperage specified on the cover of the fuse box.

If the specified fuse is not available, the fuse with relatively low amperage should be adopted.

However, the fuse with lower amperage than the specified amperage may be burned again, which is not an essential problem. Renew correct fuse as soon as possible, and place the temporary fuse back to the original jacket.

Prepare a set of spare fuse in your car for emergent application.

The electrical system may have trouble if the renewed fuse is burned immediately. Then, go to the repair station of LIFAN for maintenance.

Warning
Using the fuse with overhigh amperage or making any other subject as the fuse is forbidden. Otherwise, serious damage or fire may occur.

Component Specification

Chapter 8

Maintenance specification

Fuse and relay

Maintenance Specification

Type and Amount for Fluid Filled

S/N	Item	Amount	Specification & Type
1	Braking fluid	0.7-0.8L	DOT4 brake fluid
2	Coolant	4.1-4.9L	Ethylene glycol type, the ice point should be chosen according to the temperature.
3	Oil	3.3L	W/30 for 4 seasons should be no lower than SG-class, and 5W/30 engine oil used in winter should be no lower than SG-class (Oil make should be selected according to local conditions.)
4	Transmission gear oil	2.0L	
5	Steering fluid	1.5-1.65L	
6	Fuel	55L	
7	A/C refrigerant	500g	
8	Washing liquid	6.4L	

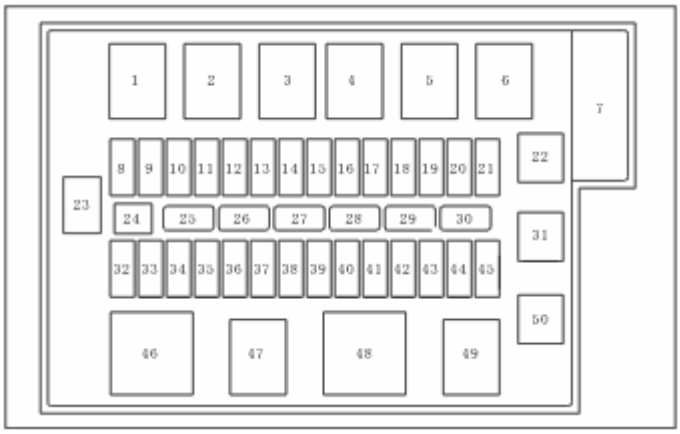
Instructiions
1、The amount of the fluid filled comes from Lifan vehicle factory. 2、Fill the brakeing fluid, steering fluid, coolant from vacuum to over-mark, then make the fluid level stay between the two level-line of the reservoir. Fill the coolant till it can be seen from the radiator filler. 3、Besides the radiator, coolant is also filled into the expansion tank, of which amount should between the two level-line, too. 4、Fill the washing liquid till it can be seen from the reservoir filler.

Tire size
215 / 65R16 102H

Pressure of the tire Kpa (kg/cm)
Front/rear 250(2.5)/250（2.5）

Wheel nut torque N•m (kgf•m)
120(12)

Fuse and Relay



Left Junction Box of Dash Board (Lower Side)

1. Vacant

2. Rear fog light relay

3. Defroster relay

4. Vacant

5. Vacant

6. Blower relay

7. Fault diagnostor

8. Multi-function display screen
CD/DVD

9. Instruments cluster

10. Anti-theft ECU diagnostor

11. Vacant

12. Power supply to BCM

13. Power supply to sunroof

14. Rear-view mirror defroster

15. Rear defroster

16. Central control lock

17. Vacant

18. Reversing light

19. Multi-function displaying screen

Instruments cluster/sunroof

20. Heater of the main seat

21. Power supply to A/C

22. Blower

23. Relay

24. Picker

25. Spare fuse (5A)

26. Spare fuse (10A)

27. Spare fuse (15A)

28. Spare fuse (20A)

29. Spare fuse (25A)

30. Spare fuse (30A)

31、 AM 1
31. AM 1

32. Air bag

33. Front wiper

34. Anti-thief ECU diagnostor

35. Vacant

36. Cigarette lighter

37. Rear-view mirror

38. CD/DVD

39. Roof light

40. Rear wiper

41. Steering light

42. Brake light

43. Backup power supply

44. Vacant

45. Window regulator

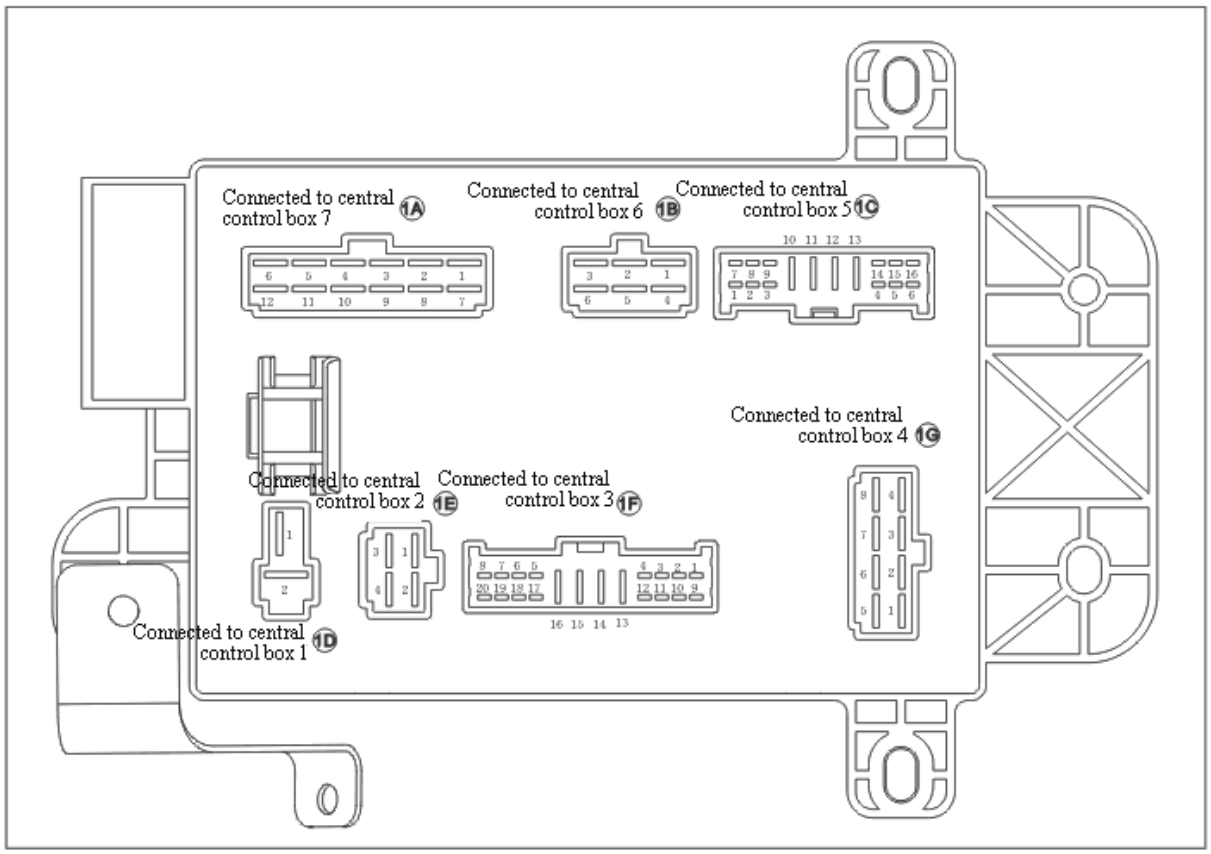
46. Vacant

47. Vacant

48. Vacant

49. Vacant

50. AM 2



Central control box of electrical appliances in cab

Connected to central control box 1 (1D)

1. Ignition switch 3

2. Ignition switch 5

Connected to central control box 2 (1E)

1. Vacant

2. Backup power supply

3. Vacant

4. Power supply to BCM window regulator

Central control box 3 (1F)

1. Cigarette lighter

2. Cigarette lighter

3. Vacant

4. Vacant

5. Vacant

6. Vacant

7. Brake switch

8. Vacant

9. Power rear-view mirror switch

10. Vacant

Central control box 3 (1F)

11. Vacant

12. Vacant

13. Vacant

14. CD/DVD

15. Power supply to roof light

16. Power supply to rear wiper

17. Vacant

18. Vacant

19. Vacant

20. Power supply to BCM steering light

Connected to central control box 4 (1G)

1. Front wiper motor

2. Air bag

3. 1G1

4. ACC

5. Vacant

6. Anti-thief ECU

7. Vacant

8. Vacant

Connected to central control box 5 (1C)

1. Sunroof control box

2. Sunroof control box

3. Rear-view mirror defroster

4. CD/DVD

5. Instruments cluster

6. Anti-thief ECU

7. Vacant

8. Vacant

9. Vacant

10. Vacant

11. Power supply to BCM controller

12. Vacant

13. Vacant

14. Vacant

15. Vacant

16. Vacant

Connected to central control box 6 (1B)

1. Defroster

2. A/C dash board

3. Vacant

4. Engine electrical box

5. Power supply to central control lock

6. Vacant

Connected to central control box 7 (1A)

1. Vacant

2. Multi-function display screen

3. Main seat heater switch

4. GND

5. A/C system

6. Blower

7. Vacant

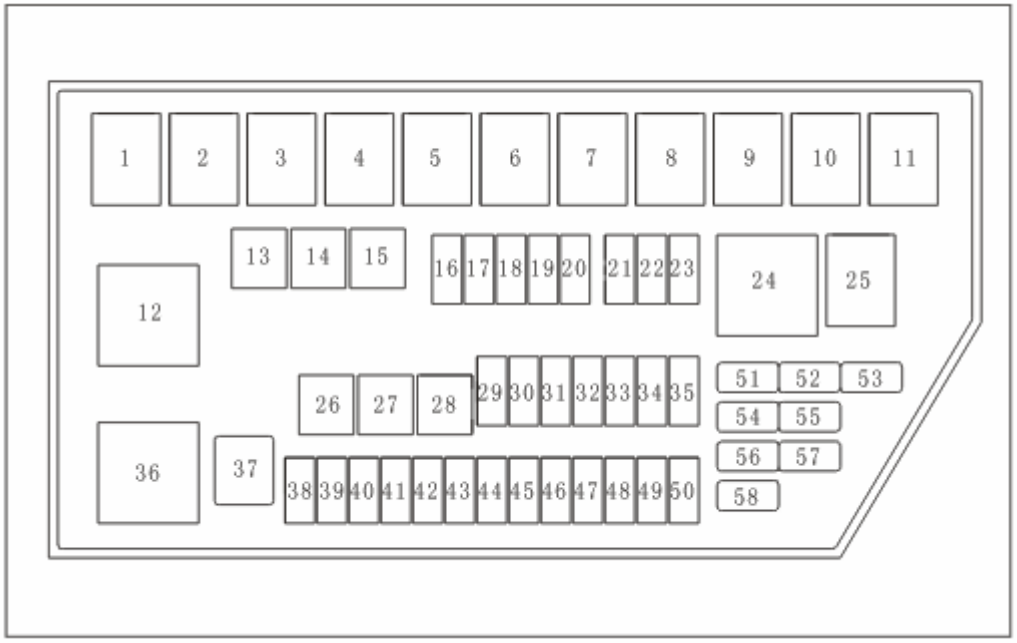
8. Reversing switch

9. Vacant

10. Combination switch

11. Rear fog light

12. 1G2



1. Auxiliary fan relay

2. Compressor relay

3. Oil pump relay

4. Horn relay

5. Lamplet relay

6. Front fog light relay

7. Overtaking lamp relay

8. High beam lamp relay

9. Low beam lamp relay

10. Vacant

11. Vacant

12. Main fan relay

13. Vacant

14. Main fan

15. Assistant fan

16. Fan

17. Compressor

18. Oil pump

19. Vacant

20. Vacant

21. Vacant

22. Vacant

23. Vacant

24. Main relay

25. Vacant

26. Vacant

27 Vacant

28 Vacant

29. Lamplet

30. Horn

31. Front fog light

32. Overtaking lamp/high beam lamp

33. Low beam lamp

34. Main relay

35. Vacant

36. Vacant

37. Picker

38. Electronic ejection ECU

39. Power supply to IG1

40. Power supply to IG2

41. Vacant

42. Vacant

43. Vacant

44. Vacant

45. Vacant

46. Vacant

47. Vacant

48. Vacant

49. Vacant

50. Vacant

51. Spare fuse (5A)

52. Spare fuse (10A)

53. Spare fuse (15A)

54. Spare fuse (20A)

55. Spare fuse (20A)

56. Spare fuse (25A)

57. Spare fuse (25A)

58. Spare fuse (30A)

SERVICE MANUAL OF LIFANX60

02.10.2012



Lifan SUV

Workshop Manual

Lifan Industry (Group) Co., Ltd.

Preface

To help users learn and correctly use Lifan SUV and improve maintenance level, we make this Manual concerning common faults handling.

The Manual details the structural characteristics, use and maintenance of Lifan SUV, with high practicality and readability, for the reference of SUV users and maintenance staff related. Please use this Manual along with *Lifan SUV Spare Parts Catalogue* as necessary. Please contact the service network of Chongqing Lifan Passenger Vehicle Co., Ltd. in case of any doubts.

The texts, pictures, instructions and specifications in the Manual are all effective when approved for recording. Chongqing Lifan Co., Ltd. reserves the right to amend specifications or designs and terminate production at any time without prior notification.

If there is any problem or omission, please feel free to make a comment. Chongqing Lifan Passenger Vehicle Co., Ltd. shall not be responsible for any mistakes or omissions in the Manual.

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We hereby acknowledge all professional research institutes of the Company for their support and assistance in the compiling process.

Compiler

January 2011

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Complete Vehicle Performance

Overview

LF6430 is a kind of double-drive urban sports utility vehicle and the first SUV model of Lifan Motor (Group) Co., Ltd.

I. Engine Assembly

It adopts LFB479Q engine, which is a 16-valve double overhead camshaft (DOHC) multipoint electronic fuel injection (EFI) engine adopting independent sequential ignition and VVT-i.

II. Chassis

1. Suspension: the MacPherson type independent suspension is applied in the front suspension while the spatial 3-linkage trailing arm independent suspension is applied in the rear suspension.

2. Clutch: Clutch pedal unit and hydraulic clutch operating device.

3. Transmission: 5-speed manual transmission.

4. Steering gear: Hydraulic power rack and pinion steering gear; the steering column is provided with impact absorption ability.

5. Brake: Both the front and rear brakes are vented disc brakes, equipped with anti-lock brake system (ABS) and electronic brake-force distribution (EBD) system.

6. The tire is 215/65 R16 102 H XL tire, while the wheel rim is 6.5J×16.

III. Vehicle Body

1. The vehicle body adopts high-clearance integral body construction. The cage-shaped body frame is equipped with laser welded stiff steel plate of variable thickness. Both the rear and the front of the vehicle body are provided with impact absorption functions.

2. The inner trim parts adopt fire-retardant and recyclable engineering plastics and textiles with high strength and environment-friendly odor.

3. A/C system: Manual adjustment type A/C with outer circulation air intake filter layer replaceable periodically.

4. Rearview mirror: Anti-dazzling type interior rearview mirror and electric exterior rearview mirror.

IV. Electrical Equipment

The electrical equipment of LF6430 adopts negative earth DC single wire system of 12V rated voltage.

1 Engine and electronic fan

The electronic cooling fan of engine adopts the arrangement of two-stage speed regulation dual fan.

2 Power start and charging system

Battery: 80 Ah maintenance free lead-acid battery; Generator: 14V/90A integral alternator with built-in voltage regulator; Starter: 1.2kw permanent magnetic starter.

3 Ignition EFI system

① Ignition switch: Electric type.

② The electronic fuel injection (EFI) system of engine adopts the MT22.1 EFI system of Delphi Corp., so the standards of EFI shall prevail. The main components of EFI system include: engine control unit (ECU); sensors: intake pressure temperature sensor, knock sensor, oxygen sensor, camshaft position sensor, crankshaft position sensor, coolant temperature sensor, accelerator pedal position sensor, throttle position sensor and weak acceleration sensor; and actuators: electronic throttle valve assembly (throttle regulator motor), CanCV Canister Control Valve, fuel rail and fuel injector assembly, ignition coil, fuel pressure regulator, three-way catalytic converter, OCV valve, etc.

4 Warning sign

The warning sign system of Lifan SUV can send out warning and direction signals to the ambience. It mainly involves horn, steering light signal, emergency light switch, reverse light and brake lamp and their switches, as well as front and rear fog lights.

5 Instrument and display screen

1) Instrument cluster: The instrument cluster of electronic odometer, which comprises water thermometer, engine tachometer, speedometer and fuel gauge.

2) Indicator lights: Battery charge indicator light, engine oil pressure indicator light, brake fluid level indicator light, engine fault detection indicator light, hand brake indicator light, air bag indicator light, fuel alarm indicator

light, instrument light, high beam indicator light, low beam indicator light, steering (emergency light) indicator light, ABS indicator light, “door is not secured” indicator light, reverse radar display, “safety belt unbuckled” indicator light, low brake fluid level indicator light, position lamp indicator light, front and rear fog lights indicator light, rear defrosting indicator light, electronic burglar indicator light, etc.

3) Multi-functional display screen: Safety belt indicator light, environment thermometer and electronic clock display.

6 Electrical auxiliary devices

1) Front windshield wiper system: Controlled by combination switch handle, with wiper motor and connecting rod arranged in the front of dash panel.

2) CD audio system: Single disc CD player (DVD optional) of 6 speakers installed on the dash board, with functions like radio reception, disc playing, time display, etc. In addition, both CD player and DVD are provided with USB interfaces, which can be connected with removable storage devices as per customer needs.

3) Cigarette lighter: 1 cigarette lighter, which can also be used as onboard external power supply.

4) Rear defroster: The rear window adopts heating glass and is controlled by switch.

5) Close 4-door car windows: Four doors’ layout, master control of the driver’s door, and independent control of the 4 doors and windows, with operating switch arranged on the door armrest.

6) Central locking: Unified switch for the installation of the 4 doors, with remote control function and adopting BCM centralized control.

7) Electronic anti-theft devices: Centrally controlled by BCM for electronic anti-theft.

8) A/C system: It adopts WXH-106-AP scroll compressor with displacement of 120ml/r and good refrigeration effect. It consists of condenser, evaporator, thermostat, sensor, pressure switch, air fan, etc.

7 Anti-theft safety devices

1) Air bags: Electronic dual air bags respectively located at the steering wheel and the dash board of the vice cab.

2) ABS safety devices.

3) Anti-theft devices (optional)

The anti-theft system is mainly controlled by the BCM of the body controller and is connected with the ECU of engine by a communication line. After the ignition key is put in place, if the detected signal is correct, the ignition system will work normally, otherwise the engine will not start. This is a commonly used anti-theft system.

8 Other electrical parts:

Other electrical parts include: wire harness, center control box, relay, safety plate, connector clip, switch, corresponding fixing supports and ties. The operating requirements must be in conformity with QC/T420-1999. Fusing function must be provided.

Main Technical Parameters

I. Basic Performance Parameters

1. Complete vehicle's main parameters (see Table I-1 Complete Vehicle's Main Parameters)

2. Complete vehicle's performance parameters (See Table I-2 Complete Vehicle's Performance Parameters)

Table I-1 Complete Vehicle's Main Parameters

Item			LF6430
Basic model			2-compartment and 5-door SUV model
Drive type			Transverse front engine; front wheel drive
Overall dimension	Length	mm	4325
	Width	mm	1790
	Height (no load)	mm	1690
Wheel base		mm	2600
Track	Front (no load)	mm	1515
	Rear (no load)	mm	1502
Front suspension		mm	830
Rear suspension		mm	895
Trafficability	Approach angle	(°)	25.1
	Departure angle	(°)	23
	Minimum ground clearance	mm	179
	Minimum turning radius	m	10.8
Capacity of luggage boot		L	405
Weight	Curb weight	kg	1330
	Axle load distribution (front and rear)	kg	734/596
	Full load weight	kg	1705
	Axle load distribution (front and rear)	kg	830/875
	Full load axle load percentage (front and rear)	%	49/51
	Centroid height (no load/full load)	mm	674/686

Table I-2 Complete Vehicle's Performance Parameters

Item			LF6430
Performance parameters	Maximum speed	km/h	170
	Acceleration performance (0-100km)	s	≤14.5
	Fuel consumption of comprehensive operation mode	L/100km	8.2
	Maximum grade ability	(%)	≥32
Seats		Person(s)	5

II. Main Assemblies' Structure and Parameters

1 Main technical parameters of engine assembly (See Table I-3 Main Technical Parameters of Engine Assembly)

Table I-3 Main Technical Parameters of Engine Assembly

Items	Parameters
Engine type	Four-cylinder inline, four-stroke, double overhead camshaft, 16-valve, sequential fuel injection independent ignition, VVT-i electronic fuel injection gasoline engine
Displacement	1794ml
Engine type	Four-cylinder inline engine
Camshaft type	Double overhead camshaft, with intake camshaft turning angle variable continuously.
Combustion chamber	Weir type
Cylinder bore × stroke	79mm × 91.5mm
Compression ratio	10:1
Feed system	Oil supply system without oil return; electronic throttle system
EFI system type	Delphi MT22.1
Maximum power	98kw/5600 rpm
Maximum torque	168Nm/4200 rpm
Minimum fuel consumption	265 g/kw.h
No-load stable speed (idle speed)	750±50 r/min
Ignition order	1-3-4-2
Ignition advance angle (idle speed)	5±3º
Intake valve clearance (cold)	0.21～0.25 mm
Exhaust valve clearance	029～0.35 mm

(cold)	
Capacity of lubricant	3.3—3.5L
Fuel model	93# unleaded gasoline
Engine oil model	At least SG class (GB11121-1995)
Start method	Electric start
Lubrication method	Pressure and splash compound method
Cooling method	Compulsory water cooling circulation
Overall dimension (excluding transmission)	650×605×640mm

2 Main chassis assembly types and parameters (See Table I-4 Main Chassis Assembly Types and Parameters)

Table I-4 Main Chassis Assembly Types and Parameters

Name	Structure and parameters	
Air intake system	Intake pipeline and air cleaner	
Fuel supply system	Electric fuel pump, fuel filter, pressure regulator, fuel tank, etc.	
Exhaust system	2 of three-way catalytic converter and 1 muffler	
Cooling system	Ribbon-tubular radiator and double speed dual electronic fan	
Clutch model	Single diaphragm spring friction clutch	
Transmission model	Manual 5th gear constant mesh gear transmission	
Drive shaft	Model	Three-pin drive shaft for the inner side while ball-cage drive shaft for the outer side
Suspension	Front suspension	MacPherson type independent suspension
	Rear suspension	Special 3-connecting rod trailing arm independent suspension
Tire	Tire type	Radial tire
	Tire specification	215/65 R16 102 H XL
	Wheel rim specification	6.5J×16
	Tire pressure	0.25Mpa
Wheel location	Front wheel camber	-1°12′±30′ (no load)
	Front wheel toe-in	-7.52～-3.52（0°43′±30′）Add distance description
	Kingpin inclination	11º2′±30′ (no load)
	Kingpin caster	2°44′±30′ (no load)
	Rear wheel camber	-0°57′±30′ (adjustable)
	Rear wheel toe-in	-1.16～2.84（0°6′±30′）Add

		distance description
	Steering angle	Left steering angle for left wheels:(+35°31′)～(+39°31′) Left steering angle for right wheels:(+29°18′)～+33°18′) Right steering angle for left wheels: (-29°18′)～(-33°18′) Right steering angle for right wheels: (-35°31′)～(-39°31′)
Steering system	Steering gear type	Rack and pinion hydraulic power steering gear
	Steering system	Adjustable tubular column angle; O.D. of steering wheel: 378mm
Brake system	Structure type	Hydraulic dual vacuum booster equipped with ABS and EBD devices
	Driving brake	Disc brake for both front and rear wheels
	Parking brake	Mechanical rope-type rear wheel drum brake

3 Vehicle body structure type and parameters (see Table I-5 Vehicle Body and Interior & Exterior Trimming)

Table I-5 Vehicle Body and Interior & Exterior Trimming

Name		Structure and parameters
Vehicle body	Model	Integral 2-compartment and 5-door vehicle body
	White body	All-metal cage type structure
	Door assembly	Integral, with four counterclockwise-opening doors; clip door key, with side door beam; hatchback rear door, with air spring for balance.
	Engine hood	Open backward, with curved hinge
	Front and rear bumpers	Injection molding
Interior and exterior trimming	Interior trimming	Injection molding structure with surface texture
	Dash board	Injection molding structure with surface texture
	A, B, C pillars and inside door board	Injection molding frame with needled velvet finish
	Windshield	Front windshield: laminated glass; rear windshield: tempered glass
	Rearview mirror	Exterior rearview mirror: convex mirrors for both right and left sides, with electric control
		Interior rearview mirror: anti-dazzling type

	Seat	Front seats: independent seats, with front and rear positions, backrest angle and headrest adjustable, and without safety belts; Rear seats: dependent seats with safety belts, which is foldable in certain proportion.
A/C	Structure type	Scroll compressor for refrigeration and engine warm water for heating
	Operation	Knob-type control, which can control airflow direction, select and adjust air speed, temperature and air circulation, with electric control adopted for luxury ones.
	Refrigerant	Type: R134a; filling capacity: 500g±50g

4 Structure and parameters of electrical system (see Table I-6 Structure and Parameters of Electrical System)

Table I-6 Structure and Parameters of Electrical System

Name	Structure and parameters	
Power and engine electrical appliances	Wiring	Single wire system, negative earth, DC 12V
	Generator	Integral, AC, built-in voltage regulator, spec. 14V/90A
	Battery	60 Ah maintenance free lead-acid battery
	Starter	1.2kw permanent magnetic starter
	Electronic fan	Two-stage speed regulation dual fan
Body lighting and signal	Front group lamps	Headlamp (55/55W, white, 2), position lamp (0.8W, LED, white), steering light (21W, amber, 2, with combination switch)
	Side turning lamp	12V, 0.6W, amber, 2
	Front and rear fog lights	Front fog light (55W, white, 2), rear fog light (3W, LED, red, with combination switch), rear position lamp (1W, LED red)
	Rear group lamps	Brake lamp (1.2W, red, 2, with contact closed type switch), reverse light (21W, white, 2), steering light (21W, amber, 2, with combination switch), rear position lamp (0.8W, LED, red)
	Rear license plate lamp	5W, white, 2
	High-mounted brake lamp	LED, red, 1
	Interior grouped roof lights	5W, white, 4
	Door lamp	6.2W, white, 4
Instrument system	Instrument cluster	Instrument cluster with electronic odometer, including LCD water thermometer, fuel gauge, speedometer, engine tachometer, etc.
	Indicator lights	Including battery charge indicator, engine oil pressure

		indicator, fuel alarm, brake fluid level indicator, engine fault detection indicator, hand brake indicator, anti-theft indicator, safety belt indicator, electronic air bag indicator, instrument light, high beam indicator, fog light indicator, steering light (emergency light) indicator, ABS indicator light, “door is not secured” indicator light, etc.
Electrical auxiliary service		Including CD player (or DVD), cigarette lighter, rear defroster, wiper washer, remote door lock, anti-theft device, air bag, window regulator, etc.

5 Lubricant, fuel, steering fluid, brake fluid, coolant, A/C refrigerant and their capacity

1) Lubricant (See Table I-7 Lubricant)

Table I-7 Lubricant

Item	Lubricant	Model	Weight
Bearing and ball pin	Lithium base grease	7022	0.34kg

2) Fuel (See Table I-8 Fuel Model and Fuel Tank Capacity

Table I-8 Fuel Model and Fuel Tank Capacity

Item	Performance index
Fuel model	93# unleaded gasoline or that above 93#
Fuel tank capacity (L)	55L

3) Steering fluid, brake fluid, coolant, A/C refrigerant (See Table I-9 Steering Fluid, Brake Fluid, Coolant, A/C Refrigerant)

Table I-9 Steering Fluid, Brake Fluid, Coolant, A/C Refrigerant

Item	Model	Capacity/Weight
Power steering fluid	ESSO ATED	1.16L
Brake fluid	DOT4	1.1L
Coolant	Antifreeze G11	6.3L
A/C refrigerant	R134a	500g
Windshield washer fluid	NFC-60	5.3L

Maintenance Regulations

LF6430 Maintenance Program can ensure driving stability, reduce failures, and realize safe and economical driving. Please see the Schedule for the maintenance interval based on the readings or time intervals of the odometer. The maintenance projects over the deadline shall also be maintained as per the same interval. Rubber hoses (for cooling and heating system, brake system and fuel system) shall be maintained as per the maintenance regulations of Lifan. The hoses suffering from aging, crack or damage should be replaced immediately. Please ask professional technicians to check in accordance with LF6430 Maintenance Program.

I. Basic Maintenance Items

i. Electrical Equipment

1. Check the vehicle's interior and exterior lighting and electrical equipment: dash board indicator light, headlight, front fog light, rear fog light, front position lamp, rear position lamp, front steering light, rear steering light, brake lamp, reverse light, license plate lamp, luggage boot lamp, cigarette lighter, horn, power window regulator, electric exterior rearview mirror, and ventilation system.

2. Air bag: Visual check the appearance for damage.

3. Self-diagnosis: Use Lifan's special diagnostic equipment to read the fault information of each system in the memory.

ii. Exterior

1. Door limiter, fixed pin, door lock, engine hood, luggage hood hinge and lock catch: Lubricate and check their functions.

2. Window: Check its function, clean the guide and coat it with special grease.

3. Wiper/cleaning devices: Add cleaning solution, check function and adjust the nozzle as necessary.

iii. Engine Room

1. Visually check each part for damage and leakage.

2. Cooling system: Check and add antifreeze as necessary. Standard value: -25℃ (-35℃ in cold areas)

3. Power steering system: Check for leakage, check the steering hydraulic fluid level and add power steering fluid as necessary.

4. Brake system: Check the brake pipeline for leakage, check the brake fluid level and add brake fluid as necessary.

5. Replace brake fluid: Replaced every 2 years or every 50,000km.

6. Air cleaner: Clean the filter element for 5,000km and replace the filter element for 10,000km.

7. Engine oil filter: Replace the filter element every 5,000km.

8. Gasoline filter: Replace the filter every 10,000km.

9. Battery: Check if the positive and negative connections of the battery are firm. Check the inspection hole.

iv. Engine and Underbody

1. Underbody: Check the fuel pipe, brake oil pipe and underbody protection layer for damage; check the exhaust pipe for leakage and check if the fixing is firm.

2. Steering tie rod: Check the interval and check if

the connection is firm (i.e. check if the dustproof cap is worn).

3. Brake friction plate: Check its thickness.

4. Parking brake devices: Check and adjust the cable length as necessary.

5. Tire (including spare tire): Check tire wear and tire pressure.

6. Wheel alignment check: With wheel aligner.

7. Wheel fixed bolt: Check as per torque regulations.

8. Headlight: Check and adjust as necessary.

9. Commissioning: Performance check.

II. Maintenance Schedule

Table I-10 Maintenance Schedule

Interval / Maintenance items	Odometer readings or months, whichever first											
	×1000Km	3	8	13	18	23	28	33	38	43	48	53	58
	Months	3	9	15	21	27	33	39	45	51	57	63	69
Transmission belt (generator, power steering and A/C compressor)		I	I	I	I	I	I	I	I	I	I	I	I
		It must be replaced every 2 years or every 80,000km.											
Engine oil and engine oil filter element		R	R	R	R	R	R	R	R	R	R	R	R
Cooling system hose and connector		I	I	I	I	I	I	I	I	I	I	I	I
Engine coolant		I		R		R		R		R		R	
		Add engine coolant as necessary.											
Fuel filter		I		R		R		R		R		R	
Fuel pipe and connector		I		I		I		I		I		I	
Spark plug		I	I	I	R	I	I	I	R	I	I	I	R
Transmission gear oil		I	R	It must be replaced every 2 years or every 40,000km.									
Throttle body				C		C		C		C		C	
Injection nozzle				C		C		C		C		C	
Engine timing chain		I		I		I		I		I		I	
Air cleaner element			R	I	R	I	R	I	R	I	R	I	R
Exhaust pipe connector and support		I	I	I		I		I		I		I	
Brake/clutch fluid		I	I	I	I	I	I	I	I	I	I	I	I
		It must be replaced every 2 years or every 40,000km.											
Brake pad and brake disc			I	I	I	I	I	I	I	I	I	I	I
Brake pipe connector and hose		I		I		I		I		I		I	
Parking brake system		I	I	I	I	I	I	I	I	I	I	I	I
Power steering fluid		I	I	I	I	R	I	I	I	R	I	I	I
A/C air filter		I	C	R	C	R	C	R	C	R	C	R	C
Fastening/fixing of chassis and chassis bolts and nuts		I	I	I	I	I	I	I	I	I	I	I	I
Three-way catalytic converter		It must be replaced every 80,000km.											
Electrical connectors and grounding points		I	I	I	I	I	I	I	I	I	I	I	I

R: Replace I: Inspect, adjust, clean and replace as necessary C: Clean

Engine

Electronic Fuel Injection (EFI) System

Introduction to System Control Logic

I. Fuel Supply System Control Logic

1. Fuel pump logic

(1) Fuel pump “on” logic

After the ignition switch is turned on, the fuel pump will run for 2 seconds, if no effective 58X signal is detected, the fuel pump will stop running;

The engine starts to run, as soon as effective 58X signal is detected by ECM, the fuel pump will start running.

(2) Fuel pump “off” logic

The fuel pump will stop running if the rotation speed signal is lost or the burglar alarm requires closing the fuel pump.

2. Start pre-injection

Start pre-injection only once in the normal start process, with start conditions as follows:

(1) The engine start to run (at least 58 effective tooth signals are detected by ECM).

(2) The actuation of fuel pump relay.

(3) The fuel pump running time is over the accumulating delay time.

(4) Pre-injection has not been carried out.

(5) Once the above conditions are met, pre-injection shall be started at the same time in all cylinders.

3. Calculation of fuel injection pulse width

(See Fig. II-1 Calculation of Fuel Injection Pulse Width)

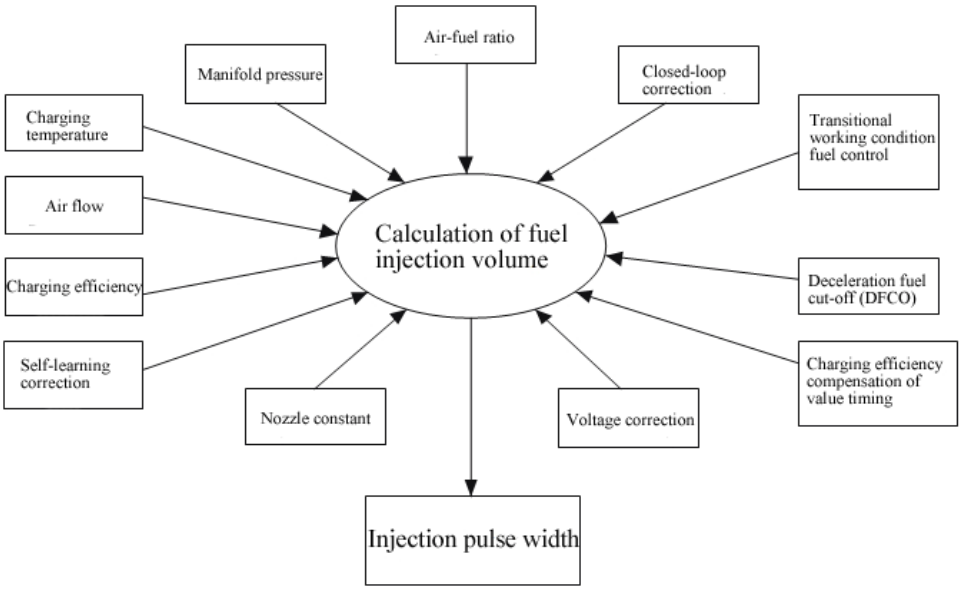


Fig. II-1 Calculation of Fuel Injection Pulse Width

(1) Air-fuel ratio

The air-fuel ratio for start, air-fuel ratio for normal start, air-fuel ration for removal of flooded cylinder, air-fuel ratio during engine running, air-fuel ratio at clod engine state, air-fuel ratio at warm engine state, theoretical air-fuel ratio, power enriched air-fuel ratio, air-fuel ratio for catalyst overheating

protection, and air-fuel ratio for engine overheating protection.

(2) Intake manifold absolute pressure

The manifold absolute pressure is directly read through intake pressure temperature sensor MAP installed on the intake manifold.

(3) Charging efficiency

The charging efficiency means the ratio between the actual air flow in cylinder and the air flow computed as per ideal state.

(4) Charging efficiency compensation of value timing

The change of value timing will influence engine's charging efficiency. The basic charging efficiency table is made when the value timing control system has no motion while the relevant positions of camshaft and crankshaft are in original positions. After the value timing control system moves, the system will make corresponding charging efficiency compensation to ensure accurate calculation of air intake flow.

(5) Self-learning

Self-learning is used to correct the slow change of engine resulting from the increase of running time and the production aberration of engine and complete vehicle.

(6) Closed-loop feedback correction

Closed-loop feedback correction is to control actual air-fuel ratio around theoretical air-fuel ratio through the feedback signals from oxygen sensor.

(7) Transitional working condition fuel control

The system adopts a complicated calculation method, establishes the evaporation model of fuel film to calculate the air-fuel mix, takes engine's water temperature, air intake temperature and engine's working condition into full account, reaches the best fuel injection volume, and greatly improves the fuel control performance of each transitional working condition, including (emergency) acceleration and deceleration working conditions.

(8) Protective fuel cut

The system will stop fuel injection in the following conditions:

· Fuel will be cut off when engine speed is higher than 6,500rpm and recover when lower than 6,300rpm.

· Fuel will be cut off when ignition failure is detected by the system.

· When the system voltage is higher than 18V, the system will turn into electronic throttle body functional restriction mode (forced idling mode).

· Fuel will be cut off during deceleration.

(9) Basic fuel injection constant

The basic fuel injection constant is to provide system with engine displacement and nozzle flow.

(10) Battery voltage correction

When battery voltage changes, voltage correction will ensure correct fuel injection volume.

II. Ignition Control Logic

1. Coil magnetization control

Ignition coil magnetization time determines the ignition energy of spark plug. If the magnetization time is too long, it will damage coil or coil drive; if the magnetization time is too short, it may cause a fire.

2. Start mode

In start mode, the system will adopt a fixed ignition angle to ensure the gas mixture in the cylinder has been ignited and to provide positive torque: after the engine starts, its speed will rise; after it goes into self-running, the ignition angle will quit start mode.

3. Calculation of ignition advance angle

(See Fig. II-2 Calculation of Ignition Advance Angle)

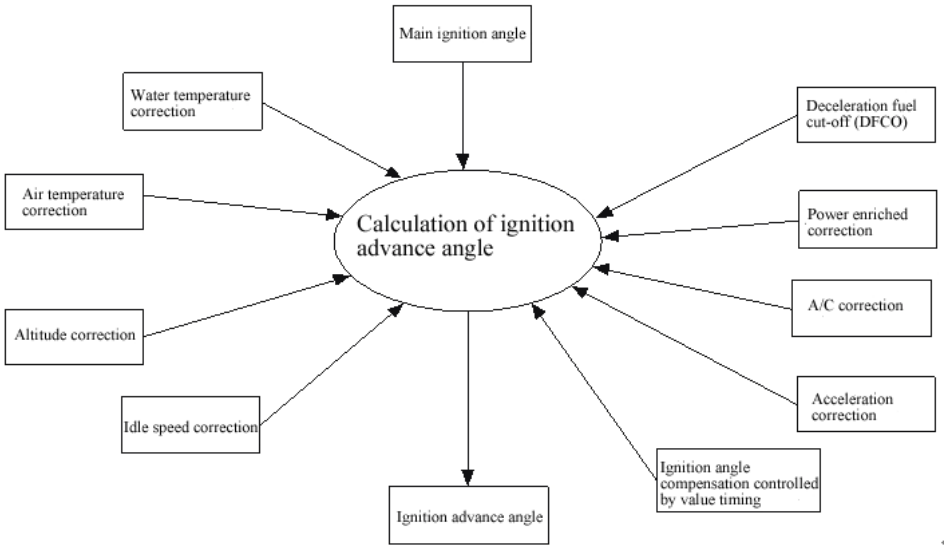


Fig. II-2 Calculation of Ignition Advance Angle

(1) Main ignition advance angle

When engine water temperature returns to normal, generally, the main ignition advance angle when the throttle opens is the minimum ignition angle for the best torque point (MBT) or the knock critical point (KBL). At idle speed, the ignition angle should be lower than MBT point for idle stability. Provided that no influence on cold-state driving, to ignite catalytic converter as soon as possible, during the heating process of catalytic converter, the basic ignition angle may not be the MBT or KBL ignition angle, and it may be delayed as much as possible in the case of no influence on driving.

(2) Correction of ignition advance angle

Water temperature correction, intake air temperature correction, altitude compensation correction, idle speed correction, acceleration correction, power enriched correction, deceleration fuel cut-off correction, A/C control correction, and exhaust gas recirculation correction.

(3) Acceleration correction

Ignition advance angle acceleration correction is to alleviate engine speed fluctuation caused by drive system twist shock and eliminate knock shock that may take place during acceleration.

(4) Power enriched correction

To get better power and torque, the air-fuel ratio will be enlarged to the best torque and the lowest air-fuel ratio point (LBT) nearby the outer characteristic point, so as to correct ignition angle to reach MBT point.

(5) Ignition angle compensation controlled by value timing

After value timing control system is actuated, engine intake and exhaust overlap angle will change and

influence internal exhaust gas recirculation rate and in-cylinder temperature. For different value timings, it is required to correct ignition advance angle, so as to ensure the best ignition advance angle under current value timing.

(6) Deceleration fuel cut-off correction

When stopping deceleration fuel cut-off, ignition angle may be corrected to make throttle close and exit smoothly.

(7) A/C control correction

Close A/C and correct the ignition advance angle when the engine is at idle speed so as to make engine speed transit smoothly.

III. Electronic Throttle Body Functional Restriction Mode

1. Forced flameout mode: ECM reported faults mean that air intake system or throttle body cannot control air intake flow well. The countermeasure is to cut off fuel, ignition and throttle, stall engine and no longer output power.

2. Power management mode of forced idle speed: When the engine is at idle speed, the ETC system cannot reliably use throttle to control engine power, at this moment, the ETC will cancel its control for throttle and its opening will return to default status. The power of engine can only be controlled by switching on/off a cylinder's fuel injection and delaying ignition angle.

3. Forced idle speed mode: When there is no reliable access to catch a driver's intent, for instance, all pedal signals fail, the engine can only work at idle speed to maintain its cooling, heating, power supply and lighting functions. The engine will make no response when the accelerator pedal is depressed, so it is unable to drive a vehicle under this mode.

4. Restricted power management mode: The ETC system cannot use throttle properly to control engine power. Under this mode, the system will judge idle speed or acceleration as per pedal signals. The engine will control its power output by switching on/off a cylinder's fuel injection and delaying ignition angle, so the output fluctuation of engine is comparatively obvious and staying in this mode for a long time will cause damage to engine and exhaust system. In this mode, vehicles can be driven but cannot be driven in normal flow of traffic or climb steep slopes.

5. This mode is used when detection reliability on driving intent declines or no high power can be output: for instance, when two-way pedal has signal input but with great difference, the output torque of engine will be restricted and the response of engine to pedal change will slow down, the driver will obviously feel the weakening of engine output but can also drive the vehicle in normal flow of traffic.

6. Normal mode: The vehicle can be driven completely in accordance with the driver's intent.

IV. Variable Value Timing Control Logic

1. Actuation condition of variable value timing control system

When the following conditions are met, the value timing control system can move as per the requirements of the engine management system and control the relative positions of camshaft and crankshaft to make the engine achieve the best economy, power and emission performance.

(1) The system voltage must be 10.5-16V.

(2) The water temperature of engine must not be higher than 115℃.

(3) The engine speed must be 900-7,000rpm.

(4) No value timing control system faults detected. (Detailed fault codes see fault list)

2. When the above condition are met, the variable

value timing control system will run to determine proper value timing in accordance with the current working condition (speed and load) of engine (see Table II-1 Corresponding Value Timing Table Under Each Working Condition).

Table II-1 Corresponding Value Timing Table under Each Working Condition

Speed Load	800	1200	1600	2000	2400	2800	3200	3600	4000	4400	4800	5200	5600	6000	6400
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
200	0	0	0	25	20	0	0	0	0	0	0	0	0	0	0
300	0	30	30	25	24	15	10	5	5	5	0	0	0	0	0
400	0	30	30	25	24	24	15	10	10	20	0	0	0	0	0
500	0	25	25	25	24	24	20	20	20	18	5	0	0	0	0
600	5	25	24	25	24	24	22	20	25	18	10	0	10	5	5
700	5	20	21	25	24	24	24	24	25	18	15	10	10	5	5
800	5	20	21	25	24	24	25	25	25	18	15	15	10	5	5
900	3	20	21	25	24	24	25	27	25	18	20	15	12	5	5
1000	3	20	21	25	24	24	25	28	25	18	20	14	14	5	5
1100	3	20	20	25	24	24	27	28	25	18	17	14	12	10	10
1200	3	20	20	25	24	26	28	28	25	18	15	14	12	10	10
1300	3	20	20	25	24	26	28	28	25	18	15	14	12	10	10
1400	3	20	20	25	24	26	28	28	25	18	15	14	12	10	10
1500	3	20	20	25	24	26	28	28	25	18	15	14	12	10	10
1600	3	20	20	25	24	26	28	28	25	18	15	14	12	10	10

Note: (1) The load in the above table means the indicated mean effective pressure (IMEP) of engine.

(2) The values in the above table mean the camshaft positions relative to idle speed, under such working conditions the camshaft positions shall be in advance.

When the value timing changes, the charging efficiency and the best ignition angle of engine will also change: the compensation for the charging efficiency will be automatically calculated by formulas; the compensation for ignition angle will be found in the table below. (See Table II-2 Ignition Angle Compensation Table)

Table II-2 Ignition Angle Compensation Table

Load / Speed	800	1200	1600	2000	2400	2800	3200	3600	4000	4400	4800	5200	5600	6000	6400
0.00	0.0	0.0	0.0000	0.0000	0.5625	3.0703	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
0.00	0.0	0.0	0.0000	2.4609	1.8750	3.7734	0.1250	0.1875	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
0.00	0.0	1.0	0.0000	5.6797	3.5313	5.0000	1.8203	1.1250	1.3828	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
0.00	0.0	2.0	3.6172	5.0000	7.1250	6.7891	5.0000	5.8438	3.9297	4.7109	1.7109	0.3516	0.0000	0.0000	0.0000
0.00	0.0	3.0	5.5234	4.8281	5.1250	5.4141	8.3516	8.0000	7.0000	5.0000	1.8906	1.4297	3.0000	3.0000	0.0000
0.00	0.0	3.0	4.8906	6.0000	6.5156	6.8906	6.5234	8.0000	7.0000	3.3594	0.7734	2.6953	3.9531	3.0000	0.0000
0.00	5.0	2.5	4.7188	4.0000	6.1563	5.9219	6.1328	7.5000	7.0000	3.1016	2.7734	3.5469	5.2031	4.0000	0.0000
0.00	5.0	0.0	5.0000	4.0000	3.4688	4.5781	5.5000	7.5000	6.0000	4.4922	4.2891	5.0000	3.1016	7.0000	0.0000
0.00	5.0	0.0	5.5625	4.0000	3.0938	2.0000	3.9453	6.0000	4.0000	5.5625	3.2109	5.0000	2.5000	6.0000	0.0000
0.00	3.0	0.0	5.5078	5.0000	3.0625	2.5625	5.0000	6.0000	4.0000	3.5938	3.8516	4.0000	0.7031	4.0000	0.0000
0.00	3.0	3.0	4.0234	5.0000	3.0000	5.0625	5.0000	5.5000	3.0000	3.2891	3.0000	3.2969	0.1016	3.0000	0.0000
0.00	3.0	3.0	1.1016	1.7578	1.5703	4.0000	4.0000	3.0000	3.0391	2.7031	3.0000	3.7734	-2.0234	3.0000	0.0000
0.00	3.0	3.0	1.0000	1.4297	0.0000	1.7266	1.5000	1.5000	3.0000	2.7031	2.7500	1.8594	-2.0000	0.0000	0.0000
0.00	3.0	3.0	1.0000	0.0000	0.0000	1.7734	1.5000	1.0000	3.0000	2.6875	2.3281	0.3750	-2.0000	0.0000	0.0000
0.00	3.0	3.0	1.0000	0.0000	0.0000	1.6172	1.5000	0.0000	0.0000	1.0000	2.1016	0.0000	-2.0000	0.0000	0.0000
0.00	3.0	3.0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.5781	0.0000	-2.0000	0.0000	0.0000
0.00	3.0	3.0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	-2.0000	0.0000	0.0000

V. Idle Speed Control Logic

Idle speed air flow control enables the engine control system to maintain target speed when throttle fully closed and keep steady speed when engine load changes at idle speed.

1. Calculation of target idle speed

(1) Basic target idle speed

Basic target idle speed setting at different coolant temperatures:

Vehicle speed compensation and deceleration adjustment

To improve driving performance during oil recovery and parking, keep target idle speed during driving 50rpm higher than that during parking, and gradually decrease to the target idle speed under parking condition during deceleration and parking.

(2) A/C compensation

Start A/C during parking at idle speed to compensate power consumption of compressor (See Table II-3 A/C Power Compensation at Each Water Temperature).

Table II-3 A/C Power Compensation at Each Water Temperature

Water temperature (℃)	-40	-30	-20	-10	0	10	20	30	40	50	60	70	80	90	100
Speed (rpm)	20	20	20	20	20	20	20	20	20	30	40	55	70	80	100

(3) Voltage compensation

Under two conditions

1) Increase the control target idle speed by 300rpm when the system voltage is lower than 12V and the system recovers in 10s, so as to increase the generating capacity of the generator.

(2) When the system receives impact transient voltage fluctuation from external electrical load at idle speed, the system will automatically compensate for air intake flow, so as to restrict the transitional fluctuation of engine speed.

VI. Knock Control Logic

Knock control function is used to eliminate possible knock during combustion, so as to optimize engine power and fuel economy. MT22.1 system will carry out independent knock control on different engine cylinders.

1. Knock control working conditions

The knock control system will start when the following conditions are met:

(1) The vehicle is equipped with a knock sensor and will start knock control functions.

(2) The engine runs and the running time is more than 2s.

(3) The water temperature of engine is higher than 70°.

(4) The engine speed is higher than 600rpm.

2. Knock control mode

After knock or in the case of possible knock, the system will rapidly and properly delay ignition advance angle. The system basic ignition advance angle is provided with normal ignition advance angle table and safe ignition advance angle table. The adjustment of knock control will be carried out between the two tables.

The control program mainly include following modes:

(1) Steady knock control

During normal operation of engine, the ECM will collect and analyze the sound during engine combustion through the knock sensor, after filtering, the knock will be detected. If the knock intensity is over the permitted limit, the system will rapidly delay the ignition advance angle of the cylinder suffering from knock. The knock will be eliminated during subsequent combustion cycle and the ignition advance angle will gradually return to normal.

(2) Transient knock control

Knock will happen easily during urgent acceleration or sharp change of engine speed. When possible knock is detected, the system will automatically delay the ignition advance angle to avoid overrun (strong) knock. When knock is detected, the system will rapidly delay 3-5° of ignition advance angle in

accordance with engine speed and then return to normal control in the subsequent 2-3s.

(3) Adaptability adjustment of ignition angle

There is difference between engines due to manufacturing error and long-term wear. When the system and engine adopt the initial or the ECM is recharged, there may be knocking during engine operation, and the system will record this. After a period of running-in, the system will automatically generate an adaptive ignition adjustment correction value (self-learning value). When the engine turns into the same working condition, the system will automatically carry out adaptive adjustment on ignition advance angle to avoid strong knock. The adaptability learning of system will be continuously updated during engine operation.

VII. A/C Control Logic

The ECM will monitor A/C request input and A/C evaporator temperature sensor input, and control A/C compressor clutch through A/C relay. The system will automatically identify A/C system based on plug and play.

1. A/C working conditions

The A/C system will start when the following conditions are met:

(1) The engine runs and the running time is more than 7s.

(2) The A/C switch is connected.

(3) All A/C cut-off modes do not work.

2. A/C cut-off mode

In some cases, to ensure power or protect engine or protect A/C system, the ECM must cut off A/C compressor or prohibit start of A/C system. Meanwhile, in order to avoid frequent on-off of compressor clutch, once the A/C turns into cut-off mode, the ECM must leave certain time to re-pull A/C clutch by means of delay, etc.

The following modes are mainly included:

(1) A/C cut-off mode when engine speed is too high: to protect A/C system

When A/C is off, it is required to start compressor when engine speed is lower than 5,800rpm.

When A/C is working, it is required to cut off A/C compressor when engine speed is higher than 6,000rpm.

(2) A/C cut-off mode when engine cooling water temperature is too high: to protect engine

When A/C is off, it is required to start compressor when cooling water temperature is below 102℃.

When A/C is working, it is required to cut off A/C compressor when cooling water temperature is above 104℃.

VIII. Three-way Catalytic Converter Protective Control Logic

The system will forecast the working temperature of three-way catalytic converter during engine operation. When the predicted temperature is higher than the protective temperature, it will start timing; if the working temperature of catalytic converter is always higher than the protective temperature in the given time, the system will control fuel supply and enrich air-fuel ratio to reduce the working temperature of catalytic converter. Later, when the predicted temperature of catalytic converter is reduced, the previous air-fuel ratio will recover and it is required to continuously forecast the working temperature of catalytic converter to prepare for protection.

The canister solenoid will control the switching time and timing of the dypass between the charcoal canister and the air intake pipe to control the fuel steam intake flow and time into the cylinder, so as to reduce the vehicle’s evaporative emission to the hilt and reduce the influence on engine performance as much as possible.

1. Canister solenoid’s working conditions

To reduce the influence of fuel steam on the normal combustion of engine, the following conditions must be met before the canister solenoid is started:

(1) The system voltage is between 8V and 18V;

(2) The water temperature of engine is above 0℃;

(3) The air intake temperature of engine is above 0℃;

(4) No related system failures (failure list as below):

Fuel system failure
Fuel pump failure
Idle speed failure (too high/too low)
Air intake pressure sensor failure
Engine misfire
Front oxygen sensor heating failure
Front oxygen senor signal failure
System voltage failure (too high/too low)

Crankshaft position sensor failure

2. Canister solenoid's working mode

The opening of canister solenoid is determined by the ECM on the basis of duty ratio (PWM) signal based on engine conditions. In the case of non-idle speed, the maximum opening of canister solenoid is determined by closed-loop air flow, with the maximum of 100%.

IX. Control Logic of Fan

The cooling fans of engine and A/C will be controlled by the system. The ECM will determine whether open each fan in accordance with the engine coolant temperature and based on if the conditions for starting an A/C are met. The system at most can support two switch-control fans and a PWM (pulse-width modulation)-control fan.

Fan's working way and working conditions:

· When A/C is off:

The engine fan will be turned off when the coolant temperature is below 91℃.

The engine fan will run at a low speed when the coolant temperature is above 94℃.

The engine fan will run at a high speed when the coolant temperature is above 98℃.

The engine fan will run at a low speed again when the coolant temperature falls below 94℃.

The engine fan will be turned off when the coolant temperature falls below 89℃.

· When A/C is on:

The engine fan will run at a low speed when the coolant temperature is below 96℃.

The engine fan will run at a high speed when the coolant temperature is above 96℃.

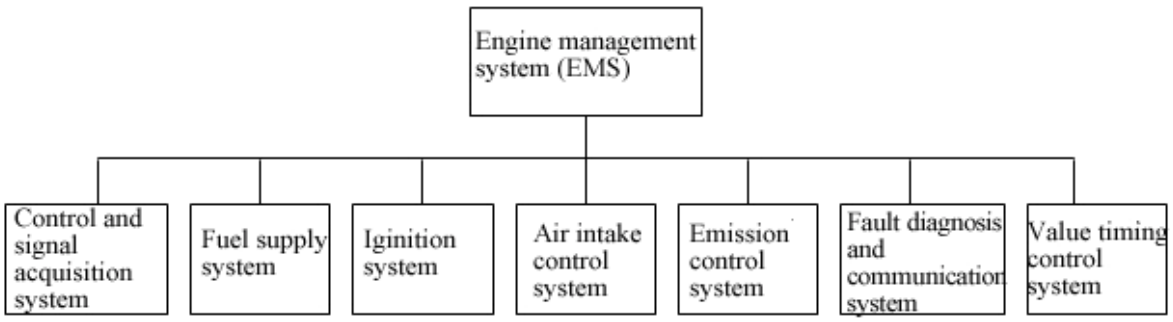
The engine fan will run at a low speed again when the coolant temperature falls below 92℃.

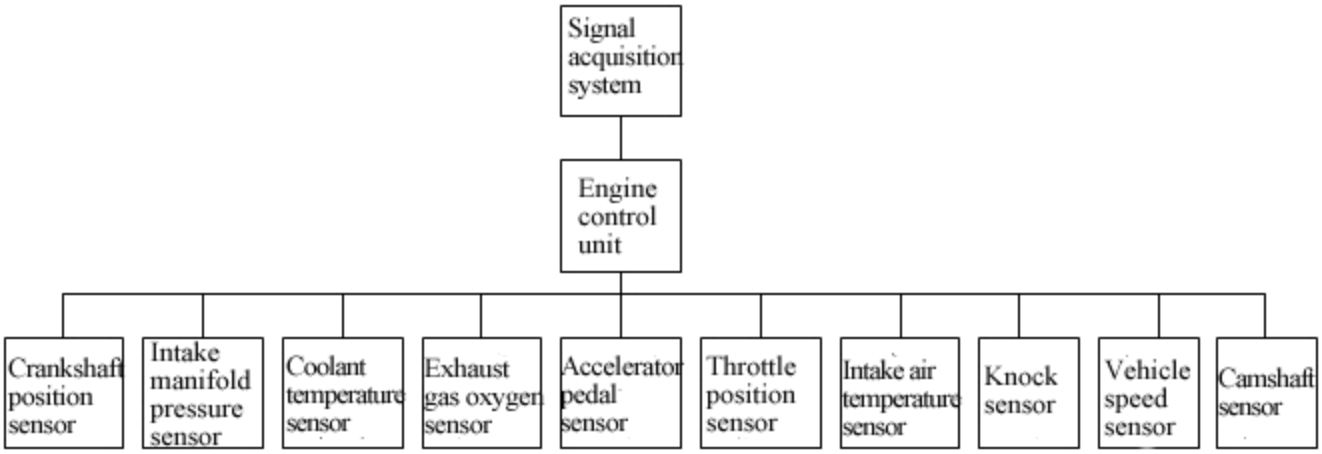
When A/C is on, in spite of coolant temperature, when the medium-voltage switch of A/C is turned on, the engine fan will run at a high speed.

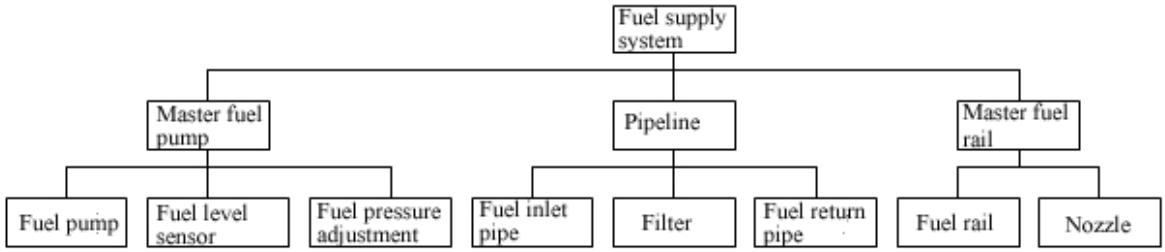
System Components

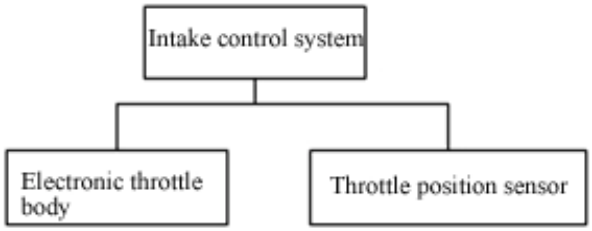
The hardware of engine management system works under the control of the engine control unit (ECM), which consists of control and signal acquisition, fuel supply, ignition, air intake control, exhaust control, fault diagnosis and communication sub-system. (See Fig. II-3 Engine Management System)

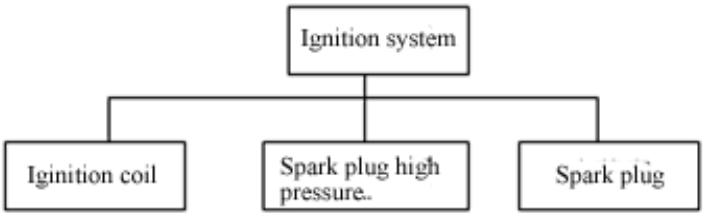
Table II-4 MT22.1 Basic Functional Component List of Engine Management System

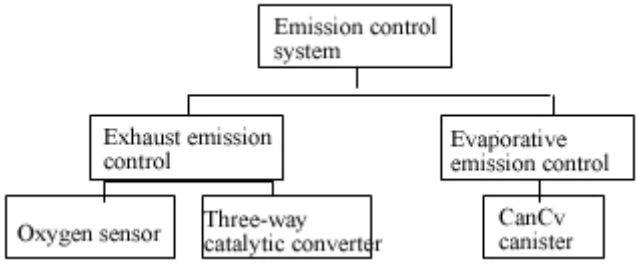


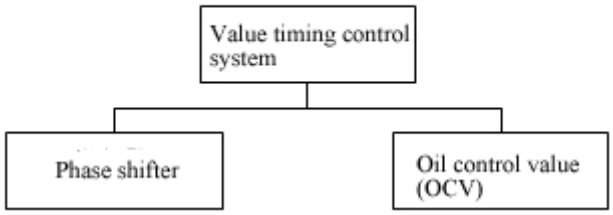

Signal acquisition system
Engine control unit
Crankshaft position sensor
Intake manifold pressure sensor
Coolant temperature sensor
Exhaust gas oxygen sensor
Accelerator pedal sensor
Throttle position sensor
Intake air temperature sensor
Knock sensor
Vehicle speed sensor
Camshaft sensor


Fuel supply system
Master fuel pump
Pipeline
Master fuel rail
Fuel pump
Fuel level sensor
Fuel pressure adjustment
Fuel inlet pipe
Filter
Fuel return pipe
Fuel rail
Nozzle


Intake control system
Electronic throttle body
Throttle position sensor


Ignition system
Iginition coil
Spark plug high pressure..
Spark plug


Emission control system
Exhaust emission control
Evaporative emission control
Oxygen sensor
Three-way catalytic converter
CanCv canister


Value timing control system
Phase shifter
Oil control value (OCV)

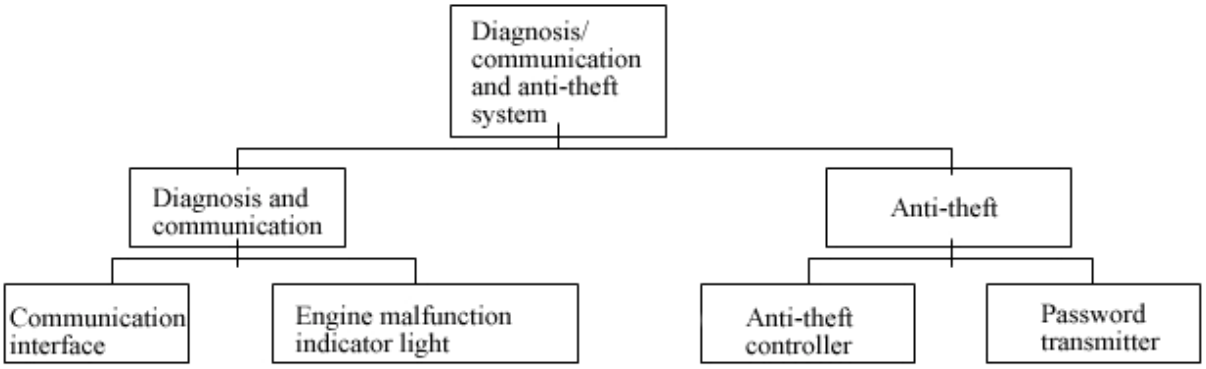


Fig. II-3 Engine management system

Table II-4 MT22.1 Basic Functional Component List of Engine Management System

S/N	Part Name	Qty.
1	Engine electronic control module	1
2	Intake air pressure and temperature sensor	1
3	Knock sensor	1
4	Oxygen sensor	2
5	Fuel distributor assembly	1
6	Ignition coil	4
7	Coolant temperature sensor	1
8	Crankshaft position sensor	1
9	Camshaft position sensor	1
10	Electronic control throttle body assembly	1
11	Weak acceleration sensor	1
12	Pedal sensor	1

I. Engine Control Module (ECM)

1. Function

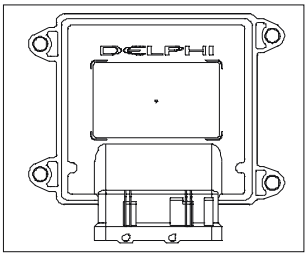


Fig-1 ECM

The engine control module (see Fig. II-4 ECM) is a single-chip microprocessor. Its function is to process the sensor data from different parts of the complete vehicle, judge the working condition of the engine, and then accurately control the engine through the actuator.

2. CPU parameters

· 16-bit main chip;
· 40MHz clock frequency;
· 512K FLASH chip storage;
· 12K RAM memory;
· 4K EEPROM memory.

3. Working parameters

· Working voltage range

(1) Normal working voltage range: **9.0V-16V**
(2) Overvoltage and reversed polarity voltage protection: **+2.4V/-14V < 60s**

· Installation

MT22.1 ECM is designed to be installed in the engine room (not on the engine block), where is easily accessible for repair. ECU housing and fixed bolts should be directly connected to the electrical system of chassis.

· Temperature
— Storage temperature: -40-125℃;
— Working temperature: -40-105℃;

II Crankshaft Position Sensor

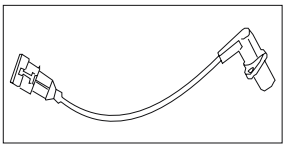
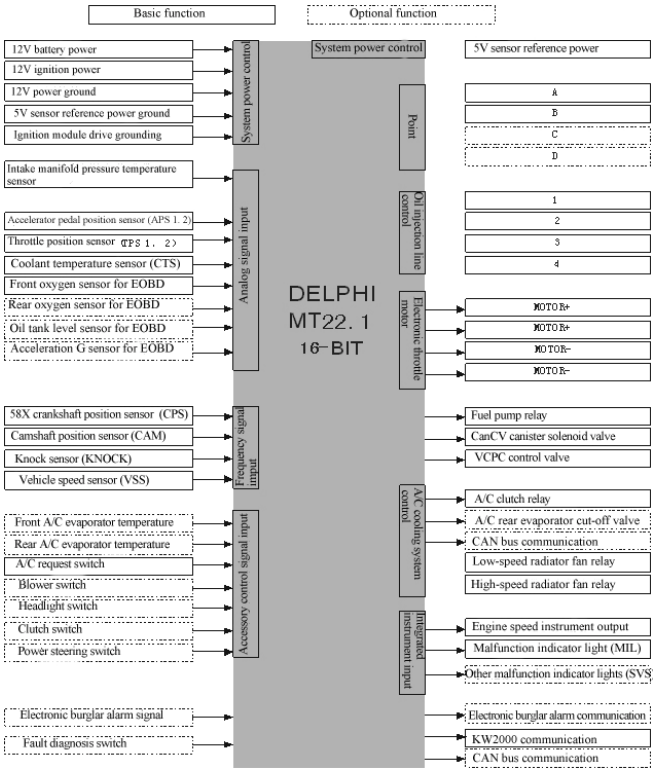
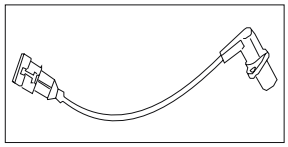


Fig. II-6 Crankshaft Position Sensor

1. Function



II-5 Delphi Schematic Diagram



The output of the crankshaft position sensor (see *Fig. II-6 Crankshaft Position Sensor*) can be used to determine the rotation position and speed of the crankshaft. The engine speed and crankshaft position sensor is a magnetoelectric sensor which is installed near the crankshaft and works together with the 58X gear ring on the crankshaft. During crankshaft rotation, the top gear box tooth gap of 58X will pass through the sensor in different distances, and the sensor should sense the change of magnetic resistance, this alternating magnetic resistance generates alternating output signals, but the gap position on the 58X gear ring should correspond to the upper dead center of engine. At the upper dead center of the first cylinder, the sensor will aim at the falling edge of the 20th tooth of the 58X gear ring, and the ECM will use this signal to determine the rotation position and speed of the crankshaft.

2. Performance

· No power supply required;
· Temperature range: -40-150℃;
· Output voltage: increase with rotation speed (400mV/60rpm)
· Clearance to 58X gear ring: 0.3-1.5mm
· Coil resistance: 560Ω±10%/25±5℃
· Coil inductance: 240mH±15%/1kHZ

3. Installation position

The sensor is installed in a position perpendicular to the crankshaft, which will work together with the 58 gear ring installed on the crankshaft.

4. Connectors

· Connection terminals

With tail: A-signal+, B-signal-, and C-shield;
Without tail: A-signal+ and B-signal-.

III. Intake Manifold Pressure/Temperature Sensor

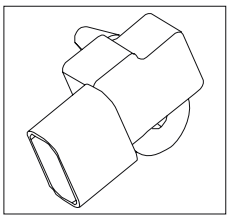
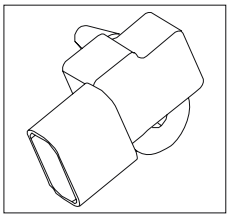


Fig. II-7 MAP/MAT

1. Function



The intake manifold absolute pressure/temperature (MAP/MAT) sensor (see *Fig. II-7 MAP/MAT*) integrates the function of intake manifold absolute pressure sensor and the function of intake manifold absolute temperature sensor into the same sensor to simultaneously feed back the function of intake manifold absolute pressure and temperature. The absolute pressure sensor will measure the air intake flow of engine, which is an important element of the measurement method of speed density air flow. The intake manifold absolute pressure (MAP) sensor consists of a sealed elastic diaphragm and an iron magnetic core that are accurately placed in the coil. When pressure is sensed, it will generate an input signal in direct proportion to input pressure and reference voltage; the sensor will directly sense the absolute pressure condition in the engine intake manifold, and the engine control module (ECM) will refer to other engine condition parameters based on this reference signal and adjust the fuel supply into

the engine.

The temperature sensor will adopt a quick-response NTC (negative temperature coefficient) thermistor sensor. The ECM will measure the air temperature into the engine cylinder through this sensor.

2. Working parameters

1) Manifold pressure sensor

· Pressure range: 10kPa～110kPa;
· Working temperature: -40～125℃;
· Working voltage: 5V±0.1 V;
· Working current: 12mA (maximum);
· Output voltage: -100～100mV;
· Output impedance: <10Ω;
· DC load: 30kΩ (minimum), 51kΩ (recommended);
· Pressure sensor output function:
· Typical working voltage: 5V DC;
· Working temperature: -40～135℃;
· Dissipation constant: 9mW/℃;
· Thermal response time: <15s.

The unit of pressure (P) is kPa, see *Table II-5 Manifold Pressure Sensor Pressure and Output Voltage Comparison* for **reference values (only for reference):**

Table II-5 Manifold Pressure Sensor Pressure and Output Voltage Comparison

Pressure (Kpa)	**15**	40	94	102
Output voltage (V)	0.12～0.38	1.52～1.68	4.44～4.60	4.86～5.04

2) Intake air temperature sensor (see Table II-6 Intake Air Temperature Sensor No-load Resistance-Temperature Characteristics):

Table II-6 Intake Air Temperature Sensor No-load Resistance-Temperature Characteristics

Temperature	Resistance	Temperature	Resistance	Temperature	Resistance	Temperature	Resistance
-40	48,153	5	4,707	50	851	95	214
-35	35,736	10	3,791	55	721	100	186
-30	26,885	15	3,075	60	612	105	162
-25	20,376	20	2,511	65	522	110	142
-20	15,614	25	2,063	70	446	115	125
-15	12,078	30	1,715	75	383	120	110
-10	9,428	35	1,432	80	329	125	97
-5	7,419	40	1,200	85	284	130	85
0	5,887	45	1,009	90	246		

3. Installation position

It is installed on the voltage regulation cavity of engine.

4. Connectors

Connection terminals: 4-pressure signal, 1- +5V, 2-temperature signal, and 3-signal ground.

5. Use and maintenance instructions

This sensor is installed with an angle less than 30° in the vertical direction, so as to avoid condensate water on the wiring terminal flowing into the sensor, which will directly influence the reliability and durability of the sensor. When necessary, the sensor can be cleaned with isopropanol and then wait for air dry. The soak time in isopropanol should not be more than 1 minute. There must be no cleaning solution flowing into the sensor during cleaning.

IV. Coolant Temperature Sensor

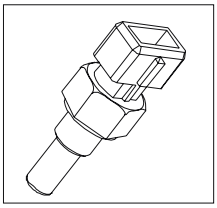
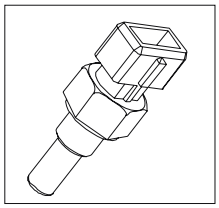


Fig. II-8 Coolant Temperature Sensor

1. Function



The coolant temperature sensor (see Fig. II-8 Coolant Temperature Sensor) is used to check the working temperature of the engine. The ECM will provide the engine with the best control scheme in accordance with different temperatures.

The coolant temperature sensor adopts a NTC (negative temperature coefficient) thermistor sensor. When the coolant temperature rises, the resistance will decrease. The coolant temperature sensor is ordinarily installed on the main channel of engine.

2. Performance

· Working voltage: 5V DC
· Working temperature: -40～135℃
· Dissipation coefficient: 25mW/℃
· Thermal response time: 17～27s

3. Mechanical property

· Hexagon nut: 18.90mm
· Screw thread dimension: M12×1.5
· Effective sealing pressure: 145kpa
· Installation torque: 20NM

4. Installation position

· The coolant temperature sensor is ordinarily installed on the main channel of engine.

5. Connectors

· Connection terminal: C-5V power and A-temperature signal

V Camshaft Position Sensor

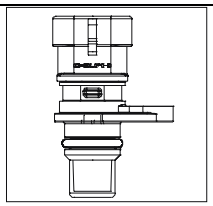
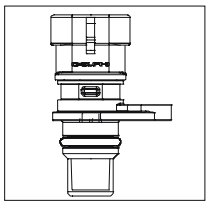


Fig. II-9 Camshaft Position Sensor

1. Function



The camshaft position sensor (see *Fig. II-9 Camshaft Position Sensor*) is a Hall Effect sensor, which is installed near the camshaft of the cylinder head and works together with the signal round on the camshaft. The signal round is corresponding to the specific position of engine. The ECM will measure and get the digital voltage signals through this sensor, so as to determine engine's working cylinder and carry out one-to-one control.

2. Performance

· Working temperature: -40～150℃
· Working voltage: 4.5～13V
· Working clearance: 0.3～2mm

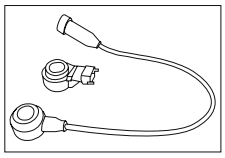
3. Installation position:

· It is installed near the camshaft.

4. Connectors:

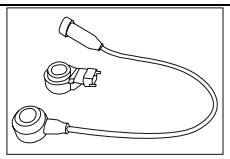
· Connection terminals: A-signal, C-signal ground, and B- +5V.

VI. Knock Sensor



II-10 Knock Sensor

1. Function



This system adopts a frequency response type knock sensor (see *II-10 Knock Sensor*) installed in the engine part sensitive to knock to sense the knock generated from the engine. The ECM will detect the knock intensity through the knock sensor and optimize the engine power, fuel economy and emission level.

2. Performance

· Output signals:

Frequency	Output signals
5kHz	17～37mV/g
8kHz	+15% to that at 5kHz
13kHz	+30% to that at 5kHz
18kHz	Twice as much as that at 13kHz

Under any circumstances 〉17Mv/g
· Frequency range: 3～18kHz
· Capacitance: 1,480～2,220pf (under 25℃ and 1,000Hz)
· Resistance: ＞1mΩ (under 25℃)
Working temperature: -40～150℃

3. Installation position

· The knock sensor is installed in the engine part sensitive to knock；

· Because the sensor signal is comparatively weak, the lead wire should adopt a shielded wire.

4. Connectors:

· Connection terminals: A-signal and B-grounding through the shielding layer.

VII. Oxygen Sensor

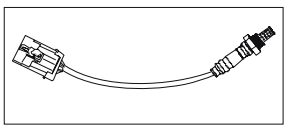
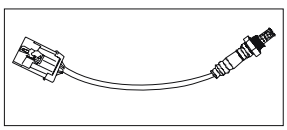


Fig. II-11 Oxygen Sensor

1) Function



The oxygen sensor (see *Fig. II-11 Oxygen Sensor*) is an important symbolic part of the closed-loop fuel control system, which adjusts and keeps an ideal air-fuel ratio to make the three-way catalytic converter reach the best

conversion efficiency. When the air-fuel ratio participating in engine combustion becomes thin, the oxygen content in the exhaust will increase and the output voltage of the oxygen sensor will decrease, and vice verse, thus to feed back air-fuel ratio condition to the ECM.

The sensitive material of the oxygen sensor is zirconia, with hollow part and external sensitive part. When zirconia components are activated by heating (>300℃), the reference air will go into the hollow part of the zirconia component through the lead, the exhaust air will pass through the zirconia outside electrode, and the oxygen ions will move from the zirconia center to the outside electrode, thus a simple atomic battery is formed, which will generate voltage between the two poles; the zirconia can change this output voltage according to the oxygen concentration in the exhaust air, so as to judge the oxygen content in the exhaust air. Generally speaking, the oxygen sensor is designed to change a voltage amplitude near the theoretical air-fuel ratio (14.7:1), which will help the ECM accurately judge the air-fuel ratio.

2) Performance

1. Performance parameters (see *Table II-7 Oxygen Sensor Performance Parameters*):

Table II-7 Oxygen Sensor Performance Parameters

Temperature	260℃	450℃	595℃
Thick output voltage (mV)	＞800	＞800	＞750
Thin output voltage (mV)	＜200	＜200	＜150
Thin-to-thick response time (ms)	＜75	＜75	＜50
Thick-to-thin response time (ms)	＜150	＜125	＜90
Internal resistance (Ω)	＜100K		

· Maximum operating temperature (continuous):
Exhaust temperature: <930℃;
Mounting seat: <600℃;
Shell's hexagon area: <500℃;
Lead and protective sleeve: <275℃;
Lead sealing pad: <250℃;
Plug connector: <125℃;
Storage temperature: -40～100℃.

2. Recommended operating conditions

Exhaust temperature: 200～850℃;
Permitted fuel impurity content must be less than:
Lead-0.005 g/l
Phosphorus-0.0002 g/l
Sulfur-0.04％ (proportion by weight)
Silicon-4ppm
MMT-0.0085 g/l
- Oil consumption is not more than 0.02 l/h

3. Installation position:

- The oxygen sensor is installed between the exhaust valve and the three-way catalytic converter.

4. Connectors:

A-low signal, B-high signal, C-heating power negative, and D-heating power positive

VIII Fuel Rail

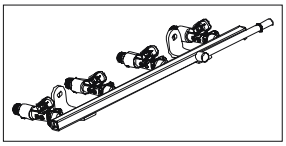
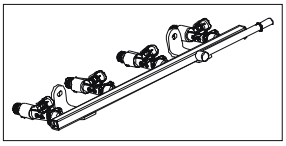


Fig. II-12 Fuel Rail Assembly with Fuel Injection Nozzle

1. Function



The fuel rail assembly (see *Fig. II-12 Fuel Rail Assembly*) consists of fuel distribution pipe, fuel injector and some fixed components. Its function is to provide storage space for certain pressure fuel, provide pipeline for flowing to each nozzle, and provide support for fixing nozzle.

2. Working parameters

· Working temperature: -30～115℃;
· Installed on the intake manifold..

IX. Fuel Injector

1. Function

The nozzle adopts a ball valve device with magnetic switch. The coil leads to the two poles through the engine wire harness to connect with the ECM and power. When the coil completes the ground conductivity of system under the control of ECM, it will generate magnetic force to overcome spring force, fuel pressure and manifold vacuum suction. When the valve core is sucked up, the fuel will pass through the valve seat hole and spray out of the pilot hole to the intake valve in mist status. After the

power is off, the magnetic force will disappear, under the spring force and the fuel pressure, the nozzle will be closed.

The upper part of the fuel injector adopts the reliable pressure fuel seal formed from rubber seal and fuel guide rail interface; the lower part of the fuel injector also adopts the rubber seal and engine intake manifold to seal air.

2. Product characteristics:

· Working temperature: -40～130℃;
· Minimum working voltage: 4.5V;
· Coil resistance: 12.0±0.4Ω.

3. Installation position

· It is fastened to the intake manifold through the fuel rail.

4. Connectors:

·A—+12V、B—ECM。
· A- +12V and B-ECM

X. Ignition Coil

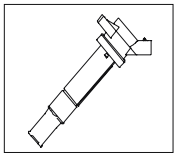
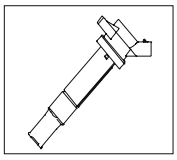


Fig. II-13 Pencil Ignition Coil

1. Function



Delphi pencil ignition coil (see *Fig. II-13 Pencil Ignition Coil*) consists of a black shell and a columnar coil with a three-terminal electrical plug. The coil is a high-energy-conversion device formed from low-voltage primary coil, secondary high-voltage coil and iron core mutually insulated, which is finally coated with epoxy resin. See the Fig. below for details.

2. Working principle

A Delphi pencil ignition coil is only for a cylinder. Under the control of the ECM, the primary coil should be charged to save magnetic energy, the secondary coil winding should sense high voltage, so as to make the spark plug connected to the coil spark over and orderly control the output high voltage energy from the ignition coil of each cylinder to the spark plug.

Delphi pencil ignition coil is connected with the engine control parts on the vehicle, so as to control ignition time, dwell time and spark progress. The ignition function is carried out along with the current of the primary coil in the electronic ignition system flowing to the integrated coil. The switch will be controlled by the electronic spark timing signal from the pulse code modulation. When the electronic spark timing signal falls to or below a specific critical voltage level, the primary current will be cut off to make the electricity rotate from the primary winding to the secondary winding. The electricity generated in the secondary winding will be directly transmitted to the spark plug.

3. Technical parameters:

· Voltage range: 6～16V
· Primary charging time: 2.15msec
· Primary operating current peak: 7.5Amp
· Minimum ignition duration: 1.0msec
· Minimum ignition energy: 35mj

4. Connectors:

Connection terminals: B+ -ignition switch power positive, GND-ground wire, and C-to ignition module (inserted into the ECM).

XI. Electronic Throttle Body

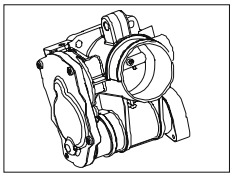
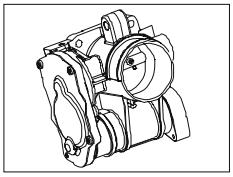


Fig. II-14 Electronic Throttle Body Assembly

1. Function



The throttle opening of the electronic throttle body assembly (see *Fig. II-14 Electronic Throttle Body Assembly*) should be determined by the ECM. The ECM will calculate the required engine output power of the vehicle at this moment and under this condition based on the throttle pedal control input signals controlled by the driver and other sensor input signals, and thus control the fuel supply (injection) of the engine and correct the control parameters in accordance with the feedback

signals, so as to ensure the best control condition of the engine. The electronic throttle body is newly provided with drive motor, gear drive mechanism, as well as throttle position sensor with better function and higher reliability.

2. Product characteristics:

· Valve hole diameter: Φ57mm
· Maximum air flow for wide open throttle
· (Under standard atmospheric pressure) > 67 g/s
· Minimum air flow when throttle fully closed: 1.7 g/s

3. Installation position and notes:

· The throttle body is installed in front of the intake manifold.

· Carefully install the wire harness, avoid damage to the terminal, and avoid unnecessary plug.

· Do not let any throttle body fall from a height above 500mm to the solid ground.

XII. CanCv Canister Solenoid Valve

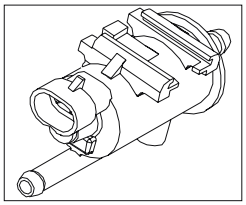


Fig. II-15

1. Function

The ECM will control the gasoline vapor into the intake manifold from the canister through the CanCV canister purge control solenoid value; the ECM will output pulse square wave, and the duty ratio of the ventilatory capacity and the control pulse square wave should be in a linear relationship.

The ECM will change the work time and speed of canister purge in accordance with the engine speed and load. The function of idle speed control valve is to control the circulation area of the throttle bypass air passage.

2. Product characteristics

· Rated working voltage: +12V
· Working voltage range: 8～16V
· Limit voltage: 25V (＜60′S)
· Working temperature: -40～120℃
· Coil resistance: 19～22Ω
· Coil inductance: 12～15mH

3. Installation position

The CanCV canister solenoid valve is installed in the engine room between the fuel vapor canister and the intake manifold.

4. Connectors

· Connection terminals: A-ECM and B- +12V.

XIII. Weak Acceleration Sensor

1. Function

The weak acceleration sensor is used to detect and judge the complete vehicle vibration so as to avoid mistaken misfire judgment and mistaken ignition and effectively control engine operation. When driving on bumpy roads, due to fluctuation of crankshaft rotation speed, the angular velocity vector of crankshaft will be influenced by wheel vibration. The result caused by fluctuation of crankshaft rotation speed is similar to the result of mistaken ignition of engine. In order to avoid ignition failure due to the mistaken judgment of the engine electronic control system on ignition when driving on bumpy roads, it is necessary to record the peak acceleration of the vehicle body with auxiliary sensors and avoid mistaken ignition on these occasions.

2. Product characteristics:

· Working temperature: -40～125℃

European On-Board Diagnostics (EOBD)

I. Instructions on EOBD

When the system goes into working condition and the engine runs, the ECM will control the work of all parts and monitor the parts directly connected with it in real time. When a part (or several parts) in the system works abnormally, the system will alarm automatically. Each fault is provided with an unique code. Once there is a fault, the system will output the code (i.e. fault code) through the diagnostic interface and turn on the “engine malfunction indicator light” to remind the driver of timely maintenance. The fault code will indicate the potential fault position.

When there is a fault detected, the system can also use the temporary emergency program to control the operation of the engine, so as to make the driver drive the vehicle to the repair station instead of breaking down by the road

II. Instructions on Malfunction Indicator Light (MI)

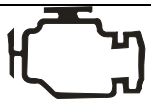
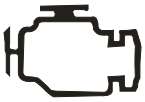


Fig. II-16 Malfunction Indicator Light



The malfunction indicator light (see *Fig. II-15 Malfunction Indicator Light*) is the indicator connected to the OBD system, which is used to remind the drive when any parts associated with emission and the OBD system have faults. See the fig. below:

III. Working Criteria of Malfunction Indicator Light

When component or system faults make vehicle emission surpass regulated requirements, the malfunction indicator light must be activated at the required time. Please activate the malfunction indicator lights as per the following criteria in accordance with whether the fault has influence on emission and its severity:

Fault codes influencing emission:

Type A: Activate MI indicator light and record fault codes when happen a time;

Type B: Activate MI indicator light and record fault codes when respectively happen a time in two continuous travels;

Type E: Activate MI indicator light and record fault codes when respectively happen a time in three continuous travels;

Fault codes without influence on emission:

Type C: Record fault codes but not activate MI indicator light when faults take place. The manufacturer may activate the SVS light as required.

Type D: Record fault codes but not activate any indicator lights when faults take place.

Turn off malfunction indicator (MI):

If the detection system in charge of activating MI detects no malfunction or other faults that may separately activate MI in three continuous travels, the MI will be turned off.

Removal of fault codes:

If the same fault does not take place again in 40 or over 40 engine warm-up cycles, the on-board diagnostic system will eliminate this fault code and the driving distance when this fault takes place to verify each data information.

Note: A travel means the drive cycle that all OBD tests can be carried out, which can follow the testing program (Part I + Part II) of GB 4 emission.

IV. Fault Code Details

Delphi MT22.1 Engine Management System Fault Code Table (See *Table II-8 Delphi MT22.1 Fault Codes*)

Table II-8 Delphi MT22.1 Fault Codes

Component/System	Fault Code	Details	Type
Catalytic converter	P0420	Catalytic converter deterioration diagnosis	A
Front oxygen sensor	P0031	Front oxygen sensor heater low voltage	A
	P0032	Front oxygen sensor heater high voltage	A
	P0131	Front oxygen sensor short circuit to low voltage	E
	P0132	Front oxygen sensor short circuit to high voltage	E
	P0133	Front oxygen sensor response is too slow	E
	P0134	Front oxygen sensor open circuit	A
	P1167	Diagnose if the front oxygen sensor is thick during deceleration and fuel cut-off	E
	P1171	Diagnose if the front oxygen sensor is thin during acceleration and concentrating	E
Rear oxygen sensor	P0037	Rear oxygen sensor heater low voltage	A
	P0038	Rear oxygen sensor heater high voltage	A
	P0137	Rear oxygen sensor short circuit to low voltage	E
	P0138	Rear oxygen sensor short circuit to high voltage	E
	P0140	Rear oxygen sensor open circuit	E

Fire	P0300	Single-cylinder or multi-cylinder fire	B (Emission damage) A (Catalytic converter damage)
Bumpy road test	P0317	Bumpy road signal source diagnosis	C
	P1396	Wheel speed signal fluctuation overrun diagnosis	C
	P1397	No wheel speed signal	C
Intake air pressure sensor	P0105	Intake air pressure sensor signal clamped	E
	P0106	Intake air pressure/throttle position reasonable fault	E
	P0107	Intake air pressure sensor line low voltage, open circuit	A
	P0108	Intake air pressure sensor line high voltage	A
Intake air temperature sensor	P0112	Intake air temperature sensor line low voltage	A
	P0113	Intake air temperature sensor line high voltage or open circuit	A
Coolant temperature sensor	P0117	Coolant temperature sensor line low voltage	A
	P0118	Coolant temperature sensor line high voltage or open circuit	A
Electronic throttle	P0122	Throttle position sensor 1 low voltage	A
	P0123	Throttle position sensor 1 high voltage	A
	P0222	Throttle position sensor 2 low voltage	A
	P0223	Throttle position sensor 2 high voltage	A
	P2135	Throttle position sensor relationship	A
	P2119	Throttle restores default position	C
	P2122	Accelerator pedal position sensor 1 low voltage	A
	P2123	Accelerator pedal position sensor 1 high voltage	A
	P2127	Accelerator pedal position sensor 2 low voltage	A
	P2128	Accelerator pedal position sensor 2 high voltage	A
	P2138	Accelerator pedal position sensor relationship	A
	P0068	Air flow executive diagnosis	A
	P2101	Electronic throttle drive secondary diagnosis	A
	P1516	Electronic throttle steady drive diagnosis	A
	P0641	Reference voltage A diagnosis	A
	P0651	Reference voltage B diagnosis	A
	P2104	Forced idling	A
	P2106	Limit performance	A
	P2110	Power management	A
	P2105	Forced flameout	A
	P060B	Accelerator pedal two-way analog/digital input signal relativity diagnosis	A
	P060D	Electronic throttle dual-path consistency diagnosis	A
	P0504	Brake switch correlation fault	C
	P0571	Brake light troubleshooting	C
Nozzle	P0201	1# nozzle fault	A
	P0202	2# nozzle fault	A
	P0203	3# nozzle fault	A
	P0204	4# nozzle fault	A
Knock sensor	P0324	Knock control system failure	C
	P0325	Knock sensor failure	C
Crankshaft position sensor	P0336	Crankshaft position sensor line signal interference	E
	P0337	No crankshaft position sensor line signal	A
	P1336	58-tooth gear error not learnt	A
Camshaft position sensor	P0340	Camshaft position sensor state diagnosis	A
	P0341	Camshaft H standard wheel diagnosis	A
	P0016	Camshaft offset diagnosis	B
	P0012	Variable camshaft phase error diagnosis	A
	P0011	Variable camshaft phaser response diagnosis	B
	P0026	Hydraulic control valve clamped	A

Variable cam phase	P0076	Hydraulic control valve coil low voltage	A
	P0077	Hydraulic control valve coil high voltage	A
Ignition coil output	P0351	Ignition coil 1# output fault	A
	P0352	Ignition coil 2# output fault	A
	P0353	Ignition coil 3# output fault	A
	P0354	Ignition coil 4# output fault	A
Vehicle speed sensor	P0502	No vehicle speed sensor signal	E
System voltage	P0562	Low system voltage	C
	P0563	High system voltage	C
A/C clutch	P0646	A/C clutch line output low voltage	C
	P0647	A/C clutch line output high voltage	C
Fuel pump relay	P0230	Fuel pump relay failure	C
Power steering	P0551	Power steering failure	C
Malfunction indicator light	P0650	Malfunction indicator light fault	C
CanCV canister solenoid valve	P0458	CanCV canister solenoid valve low voltage	E
	P0459	CanCV canister solenoid valve high voltage	E
Cooling fan	P0480	Low-speed fan failure	C
	P0481	High-speed fan failure	C
Main relay	P0685	Main relay failure	A
Fuel system	P0171	The fuel system is too thin under non-idling working conditions	E
	P0172	The fuel system is too thick under non-idling working conditions	E
	P2187	The fuel system is too thin under idling working conditions	E
	P2188	The fuel system is too thick under idling working conditions	E
Clutch	P0807	Clutch switch line low voltage	A
	P0808	Clutch switch line high voltage	A
Cruise	P0564	Cruise control input line fault	C
	P0565	Cruise "On/Off" signal fault	C
	P0566	Cruise "Cancel" signal fault	C
	P0567	Cruise "Resume" signal fault	C
	P0568	Cruise "sel" signal fault	C
Computer self-diagnosis	P0606	Computer self-diagnosis	A
Burglar alarm	P0633	Burglar alarm not learning fault	C
	U0167	Burglar alarm no response	C
	U0426	Burglar alarm authentication failure	C

When there is a fault, the system can also adopt temporary emergency measures to control the work of engine, so as to ensure the driver to drive the vehicle to the service station for repair rather than stop by the road.

V. Fault Code Instruction

P0113
A DTC will appear when there is an open circuit of the intake air temperature sensor or a short circuit of the 5V reference voltage.

P0112
A DTC will appear when the intake air temperature sensor is short-circuited to the ground and the MAT voltage signal changes to 0.

P0420
When the coolant temperature is higher than 70℃ and the fuel system is in closed loop, the vehicle shall be made to drive at a constant speed for a certain distance and then to drive at idle speed after it stops. The system will compare the signals of front and rear oxygen sensors and calculate the oxygen amount difference of the catalytic converter. If the oxygen amount is less than the set value, the system will report this fault.

P0118
A DTC will appear when there is an open circuit of the signal line of the coolant temperature sensor or a short circuit of the 5V reference voltage. Then the coolant temperature shall be the calibration value changing with the driving time by default. The engine operates steadily and the vehicle can be

driven.

P0117
A DTC will appear when the signal line of the coolant temperature sensor is short-circuited to the ground. Then the coolant temperature shall be the calibration value changing with the driving time by default. The engine operates steadily and the vehicle can be driven.

P0336
If the clearance between the crankshaft position sensor and the flywheel teeth tip is unsuitable or they two interfere with each other seriously, which may weaken the signal of the crankshaft position sensor and mix it with the background noise signal, the engine shall be started. When the number of teeth identified by the system is quite different from 58 teeth, a DTC will appear. On the basis of different faults, a fire, back fire or shutdown may happen to the engine.

P0337
When the crankshaft position sensor is disconnected or short-circuited to the ground or the 12V voltage during the rotation of the crankshaft and the camshaft of the engine, the fault timer of the crankshaft position sensor will begin to work. After the accumulated time of the timer exceeds 2s, a fault will be reported and the engine can not be started.

P0351、P0353，P0354、P0352
If the ignition coil control end is disconnected or short-circuited to the ground or the 12V voltage, a DTC will appear and the cylinder with the DTC will stop injecting fuel. Then the rotation speed of the engine will fluctuate. If the DTC is not eliminated for a long time, there may be a fire fault.

P0171
If the non-idle study module value of the fuel closed-loop control is much higher than the normal value, the fuel shall be too thin.

P0172
If the non-idle self-study module value of the fuel closed-loop control is much lower than the normal value, the fuel shall be too thick.

P2187
If the idle self-study module value of the fuel closed-loop control is much higher than the normal value, the fuel shall be too thin.

P2188
If the idle self-study module value of the fuel closed-loop control is much lower than the normal value, the fuel shall be too thick.

P0201～P0204
If the nozzle control end is disconnected or short-circuited to the ground or the 12V voltage, a DCT will appear. The rotation speed of the engine is unstable for abnormal fuel supply. If the DTC is not eliminated for a long time, a fire fault may happen.

P0325
Under the conditions of 1,600 rpm or higher and some load, the signal of the knock sensor is disconnected and then a DTC appears. The engine operates steadily and the vehicle can be driven.

P0324
Under the conditions of 1,600 rpm or higher and some load, any circuit of the knock sensor signal line is grounded and then a DTC appears. The engine operates steadily and the vehicle can be driven.

P0108
When the MAP sensor is short-circuited to the power supply or the 5v reference voltage under the idle speed, a DTC will appear. The engine operates steadily and the vehicle can be driven.

P0107
When the MAP sensor is open-circuited or it is short-circuited to the ground under the idle speed, a DTC will appear. The rotation speed of the engine will fluctuate slightly and then recover to the stable and the vehicle can be driven.

P0106
The water temperature is higher than 60℃ during the operation of the engine and there are no faults of the intake air pressure sensor, water temperature sensor, electronic throttle position sensor, fuel injector, or ignition coil. If the corrected value of the atmospheric pressure is higher than the maximum or lower than the minimum for more than 15s, a fault will be reported.

P0105
When the engine starts with the rotation speed of higher than 350rpm and the difference between the intake air pressure and the intake air pressure during the start is lower than 2kPa, which lasts more than 1s, a fault will be reported. Then the intake air pressure shall be the calibration value changing with the engine working conditions by default. The engine operates steadily and the vehicle can be driven.

P0650
If the status of the fault indicator output circuit does not follow the expectancy of the ECM, a fault will be reported.

P0300
Under stable working conditions, the fluctuation of

the crankshaft revolving speed monitored by the ECM exceeds the value set by the system. If the fire is small, which only affects the emission, and there is no emergency control plan, only the DTC shall be recorded and the data stream shall be frozen; then the fault MI light will be lit. If the fire is big, which may overheat the catalytic converter, the working conditions of the fuel open-loop control will be entered forcibly and the correction study of the rear oxygen sensor will be prohibited. Then the fault indicator will flash at the frequency of 1Hz to remind the driver to reduce the engine rotation speed and load immediately and drive to the service station as soon as possible.

P0031
If the heater of the front oxygen sensor is grounded or open-circuited, a DTC will appear. The engine operates steadily and the vehicle can be driven.

P0032
If the heater of the front oxygen sensor is short-circuited to the 12V power supply, a DTC will appear. The engine operates steadily and the vehicle can be driven.

P1171
When the engine enters the power enrichment (PE) condition and the voltage of the oxygen sensor signal, detected by the ECM, is lower than 0.35V, which lasts more than 12s, a fault will be reported and the closed-loop fuel control will be stopped.

P0134
A DTC will appear when the engine operates for over 60s, the water temperature is higher than 70℃ and the front oxygen sensor control line is disconnected for more than 80s. The engine operates relatively steadily and the vehicle can be driven.

P0133
The coolant temperature is higher than 70℃ and the engine operates for more than 60s at the speed between 1700RPM and 2300RPM. The response time of the oxygen sensor to the concentration changes of oxygen in exhaust exceeds the limit set by the system.

P1167
When the engine enters the deceleration fuel cut off (DFCO) condition and the voltage of the oxygen sensor signal, detected by the ECM, is lower than 0.55V, which lasts more than 12s, a fault will be reported and the closed-loop fuel control will be stopped.

P0132
The engine operates for over 60s, the water temperature is higher than 70℃ and the front oxygen sensor signal is short-circuited to the power supply. If this situation lasts more than 13s, a DTC will appear. The engine operates relatively steadily and the vehicle can be driven.

P0131
The engine operates for over 60s, the water temperature is higher than 70℃ and the front oxygen sensor is short-circuited to the ground. If this situation lasts more than 13s, a DTC will appear. The engine operates relatively steadily and the vehicle can be driven.

P0037
If the heater of the rear oxygen sensor is grounded or open-circuited, a DTC will appear. The engine operates steadily and the vehicle can be driven.

P0038
If the heater of the rear oxygen sensor is short-circuited to the 12V power supply, a DTC will appear. The engine operates steadily and the vehicle can be driven.

P0140
The engine operates for over 60s, the water temperature is higher than 70℃ and the rear oxygen sensor signal value exceeds the reasonable scope. If this situation lasts more than 165s, a DTC will appear. The engine operates relatively steadily and the vehicle can be driven.

P0138
The engine operates for over 60s, the water temperature is higher than 70℃ and the rear oxygen sensor signal is short-circuited to the power supply. If this situation lasts more than 13s, a DTC will appear. The engine operates relatively steadily and the vehicle can be driven.

P0137
The engine operates for over 60s, the water temperature is higher than 70℃ and the rear oxygen sensor is short-circuited to the ground. If this situation lasts more than 25s, a DTC will appear. The engine operates relatively steadily and the vehicle can be driven.

P0563
If the ignition switch is placed at the electrification position and the system voltage is higher than 16V, which lasts 40s, a fault will be reported.

P0562
If the ignition switch is placed at the electrification position and the system voltage is lower than 11V, which lasts 40s, a fault will be reported.

P1336

If the engine operates, the gear study is not carried out and the gear study mark is not set, a fault will be reported.

P0502
Drive the vehicle at the 3rd gear low speed under the engine hot status and disconnect the signal line of the vehicle speed sensor. Fiercely press down the accelerator to speed up to above 4,000 rpm and release the accelerator. Then the rotation speed of the engine, the vehicle speed and the MAP value begin to decrease. When the fault judgment window is entered, a DTC will be reported; at this moment the driving is slightly influenced. Drive the vehicle at the 4th gear low speed under the engine hot status and disconnect the signal line of the vehicle speed sensor. Press down the accelerator to reach a medium speed. Then the rotation speed of the engine, the vehicle speed and the MAP value enter the fault judgment window and a DTC is reported; at this moment the driving is slightly influenced.

P0571
The brake lamp switch signal is disconnected, the vehicle is locked and the diagnosis window is entered. A DTC will appear after the brake is applied several times. The engine operates relatively steadily and the vehicle can be driven.

P0504
The brake switch signal is disconnected. When the vehicle is locked, the switch signal does not change. A DTC will appear after the brake is applied several times. The engine operates relatively steadily and the vehicle can be driven.

P2138
Signals of APSl and APS2 are different. If the difference of the input signals is higher than 8%, a DTC will appear. The engine operation is based on ETCMODE.

P2123
When the APSl signal end is short-circuited to the power supply and the input signal is higher than 97.5%, a DTC will appear. The engine operation is based on ETCMODE.

P2122
When the APSl signal end is grounded or disconnected and the input signal is lower than 3.5%, a DTC will appear. The engine operation is based on ETCMODE.

P2128
When the APS2 signal end is short-circuited to the power supply and the input signal is higher than 55%, a DTC will appear. The engine operation is based on ETCMODE.

P2127
When the APS2 signal end is grounded or disconnected and the input signal is lower than 2.5%, a DTC will appear. The engine operation is based on ETCMODE.

P060D
If the throttle positions are not the same via the calculation by the two paths of the computer, a DTC will appear. The engine operation is based on ETCMODE.

P2104
When some faults happen to the throttle, the accelerator pedal, and the brake sensor, the idle speed mode shall be entered forcibly and a fault will be determined.

P2105
When some faults happen to the accelerator pedal, the brake sensor, and the ECM, the engine will be stopped forcibly and a fault will be determined.

P2106
When some faults happen to the throttle or the accelerator pedal sensor, the performance limitation mode shall be entered forcibly and a fault will be determined.

P2110
When some faults happen to the throttle or the accelerator pedal sensor, the power management mode shall be entered forcibly and a fault will be determined.

P1516
If the actual throttle position is quite different from the expectancy of the system under the stable working conditions, a DTC will appear. The engine operation is based on ETCMODE.

P2101
If there's a big difference between the expected position of the system of the throttle and the actual position, the fault code will appear and operation condition of the engine depends on ETCMODE.

P0123
Short connect the TPS1 signal end to power supply, and the fault code will appear if the input signal is higher than 96.5%. Operation condition of the engine depends on ETCMODE.

P0122
Connect the TPS1 signal end to the ground or disconnect the end, and the fault code will appear if the input signal is lower than 3.5%. Operation condition of the engine depends on ETCMODE.

P0223
Short connect the TPS1 signal end to power supply, and the fault code will appear if the input signal is higher than 96.5%. Operation condition of the engine depends on ETCMODE.

P0222
Connect the TPS1 signal end to the ground or disconnect the end, and the fault code will appear if the input signal is lower than 3.5%. Operation condition of the engine depends on ETCMODE.

P2135
Short connect the TPS1 or TPS2 signal end to power supply or connect them to the ground to dissimilate signals from the two sides. The fault code will appear if the input signal difference is higher than 12%. Operation condition of the engine depends on ETCMODE.

P2119
If opening of the throttle fails to meet the requirement for return test during several times of Key off, the fault code will appear. Operation condition of the engine depends on ETCMODE.

P0641 and P0651
Self-diagnosis of interior chips

P0480
If the circuit at the controlling end of fan 1 is open or short connected, the fault code will appear. The engine will be operating stably, and you may drive the vehicle.

P0481
If the circuit at the controlling end of fan 2 is open or short connected, the fault code will appear. The engine will be operating stably, and you may drive the vehicle.

P1397
No wheel speed signal is detected under working condition of the vehicle, and the default code appears. The engine will be operating stably, and you may drive the vehicle.

P1396
Monitor the wheel speed signal changes. If there's a big difference between the front wheel speed and the precious sampling value of wheel speed, a fault is confirmed. The engine will be operating stably, and you may drive the vehicle.

P0317
If the signal received by the monitoring ECM is not the same as the design signal source, a fault is confirmed. The engine will be operating stably, and you may drive the vehicle.

P0551
If the power-assisted steering signal is detected under certain working condition, a fault is confirmed. The engine will be operating stably, and you may drive the vehicle.

P060B
Compare the two way A/D sampling values of the accelerator pedal position sensor. If the difference between the two values exceeds the specified limit, a fault is confirmed. Operation condition of the engine depends on ETCMODE.

P0068
The engine is running, no fault is detected in the intake pressure sensor and the intake temperature sensor, and the difference between the estimated air flow at the electronic throttle position and the air flow calculated using speed density method is more than 200g/second, and it last for more than 4 second, a fault will be reported. Operation condition of the engine depends on ETCMODE.

P0606
Self-diagnosis of the computer

P0230
When controlling circuit of the oil pump relay is open, or is short connected to the power supply/ground, a fault will be reported.

P0685
State of the controlling circuit of the main relay is different from the ECM expected state, a fault is confirmed.

P0647
Controlling end of the A/C relay is short connected to 12V power supply, the fault code will appear. The engine will be operating stably, and you may drive the vehicle.

P0646
If the controlling end of the A/C relay is opened or connected to the ground, the fault code will appear. The engine will be operating stably, and you may drive the vehicle.

P0077
If the hydraulic control valve is short connected to 12V power supply, a fault will be confirmed. VVT function can not be started. The engine will be operating comparatively stably, and you may drive the vehicle.

P0076
If the hydraulic control valve coil is disconnected or connected to the ground, a fault is confirmed. VVT function can not be started. The engine will be

operating comparatively stably, and you may drive the vehicle. In the case of short connection to the ground, the vehicle may be difficult to start or stop when idling, as the OCV valve is always open and VVT opening is big.

POOl2
If the phaser is in a comparatively stable condition, and the duty ratio of the hydraulic control valve is higher than the upper limit or lower than the lower limit; or the difference between the actual phase opening and the target opening is bigger than 15° crank angle, a fault is confirmed. You may drive the vehicle.

POOll
If the response ratio of the phaser is lower than the specified limit, a fault is confirmed. You may drive the vehicle.

POOl6
If the opening of the phaser is 0, and drifting of the corresponding 58X polarization of the camshaft is higher than the specified limit, a fault is confirmed, and you may drive the vehicle.

P0341
If the number of target wheel measuring events during each turn of the camshaft is different from the specified number, a fault is confirmed. You may drive the vehicle.

P0026
If the actual phase of the camshaft is higher or lower than the target, and the phase error exceeds the specified value, a fault is confirmed. You may drive the vehicle.

P0340
Position sensor of the camshaft is disconnected, or is connected the ground or short connected to power supply, the fault will appear. You may drive the vehicle.

P0807
Disconnect the clutch switch or short connect the switch to high voltage, start the vehicle and speed up to more than 52km/h, or slow down from above 52km/h to below 3km/h. After the fault code appears several times, the engine will be operating comparatively stably, and you may drive the vehicle.

P0808
Short connect the clutch switch or connect the switch to the ground, start the vehicle and speed up to more than 52km/h, or slow down from above 52km/h to below 3km/h. After the fault code appears several times, the engine will be operating comparatively stably, and you may drive the vehicle.

P0564
When the cruising function is enabled, disconnect the input circuit for cruising control, or short connect it to high voltage for more than 7.5 seconds, then the fault code appears. The engine will be operating comparatively stably, and you may drive the vehicle, but the cruising function may not be enabled.

P0565
When the cruising function is enabled, the cruising On/Off switch keeps making noise for a long time, or keeps open for more than 300 seconds, and then the fault code appears. The engine will be operating comparatively stably, and you may drive the vehicle, but the cruising function may not be enabled.

P0566
When the cruising function is enabled, the cruising Cancel switch keeps making noise for a long time, or keeps open for more than 300 seconds, and then the fault code appears. The engine will be operating comparatively stably, and you may drive the vehicle, but the cruising function may not be enabled.

P0567
When the cruising function is enabled, the cruising Resume switch keeps making noise for a long time, or keeps open for more than 300 seconds, and then the fault code appears. The engine will be operating comparatively stably, and you may drive the vehicle, but the cruising function may not be enabled.

P0568
When the cruising function is enabled, the cruising Set switch keeps making noise for a long time, or keeps open for more than 300 seconds, and then the fault code appears. The engine will be operating comparatively stably, and you may drive the vehicle, but the cruising function may not be enabled.

P0633
For vehicles with burglar alarms, when Key On, and the burglar alarms does not study or fails in study, a fault will be reported, and the vehicle can not be started.

U0167
For vehicles with burglar alarms, when Key On, and the burglar alarms does not respond, a fault will be reported, and the vehicle can not be started.

U0426
For vehicles with burglar alarms, when Key On, and the burglar alarms requires failure verification, a fault will be reported, and the vehicle can not be started.

Daily Usage and Maintenance

I. Fuel and Lubricant

No. 93 unleaded gasoline shall be used during the system development. For fuel difference in different areas, the vehicle user can use fuel of a higher level to ensure the normal operation of the system, the engine and the complete vehicle. Lead and heavy metal content in the unleaded gasoline shall meet the requirements of the current national standards. Lead and heavy metal in fuel will poison the oxygen sensor and the three-way catalytic converter and make them lose effects permanently. Sulfur content in fuel shall also meet the requirements of the national standards because sulfur may cause the oxygen sensor and the three-way catalytic converter to lose effects temporarily. If sulfur poisoning happens, the vehicle shall be driven at the speed of 70km/h, which may reduce the harm of sulfur poisoning. Generally, the color of the gasoline with high sulfur content shall be dark brown. The consumption of engine oil shall be normal. If engine oil enters the cylinder for combustion, the phosphorus in the oil will make the oxygen sensor and the three-way catalytic converter to lose effects permanently.

II. Daily Usage and Maintenance

1 Do not operate any mechanism on the engine (including accelerator) when starting the engine. Cut the clutch in cold weather;

2 Make the complete vehicle operate at a high speed periodically to eliminate the possible carbon deposits in the engine and the exhaust system;

3 If the check light of the engine is lit during the operation of the engine, find out causes and solve the problem as soon as possible;

4 The unburned mixture will burn in the exhaust manifold, which may damage the oxygen sensor and the three-way catalytic converter quickly. Therefore, the vehicle shall be stopped and checking and elimination shall be carried out if one cylinder is on fire. If the fault of the ignition is not eliminated immediately, the fuel supply nozzle plug of the cylinder on fire can be disconnected temporarily and the vehicle shall be driven to the service station at a medium or low speed for service;

5 If the system is powered on, the fuel injection will begin as soon as the engine gets the rotation signal. As a result, the engine can not be started by outside force when the voltage of the accumulator is insufficient or a fault happens to the starter. If the engine does not work for a long time, the unburned fuel will be saved in the three-way catalytic converter, which may damage the catalytic converter once the engine begins to work.

6 The valve clearance shall not be too small. If the exhaust valve is not tightly closed, the exhaust temperature may be too high to shorten the life of the three-way catalytic converter.

7 During the long-term storage, the engine or the complete vehicle shall be operated every two months to avoid the glue solidification of the nozzle and the fuel pump.

8 The gasoline filter shall be replaced every 7,000～10,000km. Based on the normal usage conditions, the throttle body and the nozzle shall be cleaned every year or every 20,000km. When the removal-free method is used to clean the fuel injector, the used additive shall be confirmed not to contain materials harmful to the oxygen sensor and the three-way catalytic converter;

9 During the twin-idle emission check, the engine and the three-way catalytic converter shall be warmed up. The high idle speed shall be measured first and then the low idle speed shall be measured.

Recommended methods for warming up the engine and the catalytic converter:

· Drive the vehicle with the 3rd gear and at the speed of 70km/h for 5 minutes or more and check the emission within 8 minutes.

· Press down the accelerator, race the engine with the rotation speed of 4,500RPM or higher for more than 2 minutes and check the emission within 2 minutes.

Service Tools

I. Basic Service Tools

1 Removal and installation of parts and components of the electric control system---removal and installation tools for common auto machinery parts and components:

2 Circuits of the electric control system and electric signal of the system---digital multimeter (with a buzzer):

3 Square and pulse signals of the system---oscilloscope

4 Fuel pressure---manometer with the measuring range of 0-1 Mpa

5 Diagnosis of the electric control system faults and detection of the engine working conditions---diagnostic scanner of the electric control system faults or Delphi PCHud computer testing-controlling software

II. Engine Fault Indicator

When a fault happens to the system or some part during the operation of the engine, the engine fault indicator will be lit automatically to remind the

driver to do checking and repair in time.

Note: After the fault is removed, the diagnostic scanner shall be used to eliminate DTCs to avoid affecting fault judgment during the next repair.

III. Diagnostic Scanner

A diagnostic scanner shall be provided with main functions like reading the working data stream of the system and the system information, controlling and detecting the system parts and components, and reading or eliminating DTCs. Because of easy operation, it becomes the current main tool for judging the faults of a complete vehicle and detecting the status of the system.

Typical Faults and Service Methods

I. Notes for Service

1 Preparations before service:

· The vehicle can not be serviced at a gas station;

· The fuel system shall not be serviced near a combustion source;

· Smoking is prohibited during repair.

2 When components of the fuel system are removed (like replacement of the filter, removal of the fuel pump or fuel rail inlet/outlet pipeline)

· The negative pole of the accumulator shall be disconnected to prevent fuel steam from being ignited by discharge spark for accidental short circuit;

· The fuel pipe joint shall be covered by a piece of cloth and then be loosened carefully to relieve the fuel pressure in the pipeline;

· Fuel shall be kept from falling to the engine and its high-temperature exhaust pipeline during the operation;

· Keep gasoline away from rubber or leather parts;

3 When parts and components of the electronic control system are removed and serviced:

· For reliable parts and components of the electronic injection system, in case of abnormalities of the complete vehicle or the engine, the relevant machinery parts and components shall be checked first and then the system interfaces and harnesses, grounding wires, high-voltage line connectors of the spark plug, and vacuum pipes of fuel pressure regulator; the substitution tests shall be done repeatedly to check if the electronic injection parts are damaged.

· When the voltage of the accumulator is insufficient or a fault happens to the starter, the engine can not be always started by outside force to avoid damaging the three-way catalytic converter.

· If service is necessary, the ignition switch or the negative pole of the accumulator shall be first disconnected. Electronic parts and components shall not be removed or installed during electrification;

· The electric signal of the system shall not be checked through needling the harness;

· The accumulator connector shall not be pulled out rashly during the operation of the engine;

· The accumulator and ECM connectors shall be disconnected during electric welding, for which, outside electric system tools are used.

· The method of pulling the spark plug lead shall not be used to check if the ignition system works, because the nozzle is still working and gasoline injected but un-used will burns in the three-way catalytic converter and damage it;

· It shall be noted whether the vehicle is equipped with a computer burglar alarm or not when ECM is replaced. If it is, the burglar alarm shall be powered off and then the ECM shall be replaced, or the new ECM to be locked by the burglar alarm can not work on other vehicles;

· The parts shall not be knocked furiously during removal and installation;

· The ECM cover shall not be opened;

· The oxygen sensor shall not touch water or other liquids during its removal and installation;

· Without fuel, the fuel pump can not operate for a long time; with gasoline, it can not operate in air;

· Many electronic injection parts can not be repaired so the damaged ones shall be replaced generally;

· The system shall use anti-interference spark plug and high-voltage line. The non-resistance spark plug and the high-voltage line not only release interference wave but also have bad influence on the ignition coil drive module inside ECM and even damage ECM.

4 Completion:

· Confirm all the joints and the fuel pipelines are

connected well and fixed;

· The broken part of a line shall be wrapped during service;

· The high-voltage lead must be connected well;

· Do not reverse the positive and the negative poles when connecting the accumulator connector and make sure the connector is fixed.

II. Check Procedure for Complete Vehicle Off Production Line

Check points for complete vehicles off production line or after-sales service stations can detect the operation of vehicles by virtue of computers with PCHUD monitoring software or diagnostic scanner. The operation parameters under the normal condition of the vehicle and the fault causes for abnormal condition are listed in Attachment 1: Typical Data Stream of Delphi Electronic Injection System.

III. DTC Fault Diagnosis and Elimination Methods

If the fault indicator is lit, the diagnostic scanner shall be used to read DTCs and the service shall be carried out following Section III Fault Description of Chapter III. The service station shall confirm the fault is completely repaired through the test run of the vehicle in accordance with the following procedure (see Fig II-17 Test Procedure After DTC Repair).

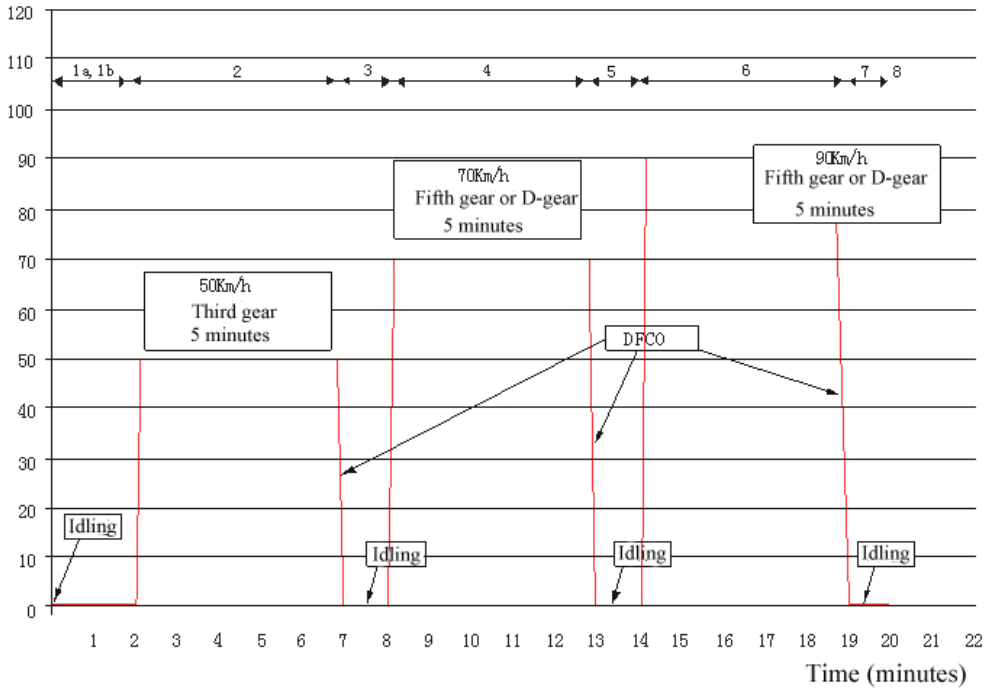


Fig. II-17 Test Steps after Fault Code Recovery

IV. Fault Diagnosis and Elimination Method of Fault-free Code

Table II-9 Fault Diagnosis and Elimination Method of Fault-free Code

Fault 01: The diagnostic scanner fails to communicate with the system.	
Potential causes	Reference elimination methods
1) The connection of the diagnostic wire is not firm.	1) Re-connect the diagnostic connection wire.
2) The function of the diagnostic scanner is not in conformity with the system.	2) Use the diagnostic scanner in line with the model and the system
3) Diagnostic scanner fault	3) Eliminate the diagnostic scanner fault.
4) The diagnostic interface is not in line with the ECM connector terminal.	4) Repair the wire harness.
5) Open circuit of Diagnostic interface related lead	5) Repair the wire harness.

S) ECM communication fault	6) Replace the ECM.
Fault 02: Fails to start	
Potential causes	Reference elimination methods
Malfunction indicator light: 1) Flicker Security key error Anti-theft system line fault Burglar alarm damage 2) “OFF” Fuse/fusible link Ground wire open circuit ECM connector Bulb and line ECM fault 3) “ON”—check with the diagnostic apparatus With fault code Without fault code	 1) Check if the key is right or damaged. Re-learn the key. Check the line and reconnect the plug. Replace the burglar alarm and learn the procedures. 2) Replace Check and repair Re-connect Repair the wire harness and the bulb. Replace the ECM. 3) Check with the diagnostic apparatus. Eliminate the fault detected. Check the system power, signal acquisition system and oil supply. The system, the ignition system, the idle speed control system, the engine and the complete vehicle mechanical system
System power: 1) The system voltage during the operation of starter <8 V >8 V	 1) Check with the diagnostic apparatus. Replace or charge the battery. Check other systems.
Signal acquisition system: 1) Data stream without rotation speed Open circuit of crankshaft position sensor wire harness Reverse connector terminal of crankshaft position sensor The clearance between the sensor and the 58X target gear is incorrect. Impurities flow into the sensor. Magnetic degradation or damage of the sensor 2) Data stream with rotation speed The 58x gear is not in line with the top dead center.	 1) Repair the wire harness. Repair the wire harness. Adjust the clearance: 0.3—1.5mm. Clean the sensor. Replace the sensor. 2) Data stream with rotation speed Check: the falling edge of the #20 tooth should be the top dead center of 1-4 cylinders.
Fuel supply system 1) Intake/fuel return pipe reverse 2) Fuel pump line open circuit 3) Flooded engine 4) The nozzle is blocked.	1) Connect in the right way. 2) Repair the complete vehicle wire harness and reconnect the fuel pump plug. 3) Slightly flooded: full open the throttle and start the starter. Severely flooded: remove the spark plug and start the starter, which shall recover after the cylinder and spark plug residual oil becomes dry. 4) Replace the nozzle.
Ignition system:	1) Reconnect the connector.

1) Ignition coil connectors 2) Incorrect cylinder sequence 3) The spark plug is damaged. 4) The ignition coil is damaged.	2) Connect the coil and spark plug as per the coil tips. 3) Replace the spark plug. 4) Replace the ignition coil.
Fault 03: The engine is turned on but cannot be started.	
Potential causes	Reference elimination methods
Fuel supply system: 1) The fuel inlet pipe pressure is <350 kPa 2) Fuel shortage of fuel tank 3) The fuel filter is blocked 4) Fuel inlet pipe leakage 5) The fuel pressure regulator is damaged 6) The fuel pump pressure is insufficient.	 1) 2) Add fuel. 3) Replace the fuel filter. 4) Replace the fuel inlet pipe. 5) Replace the fuel pressure regulator. 6) Replace the fuel pump.
Intake/exhaust system: 1) The air filter is blocked. 2) The three-way catalytic converter is blocked. 3) The catalytic converter is broken. 4) Combustion is blocked by impurities.	 1) Clean the air inlet and replace the filter element. 2) 3) Replace the three-way catalytic converter. 4) Repair the engine and replace the three-way catalytic converter.
Fault 04: Abnormal idling	
Potential causes	Reference elimination methods
1) The complete vehicle is power off and the system is power on for the first time. 2) The ECM uninterrupted power supply is cut off during parking.	1) Turn off the ignition switch and restart it 10s later. 2) Recover the ECM UPS.
Fault 05: Unstable idling	
Potential causes	Reference elimination methods
1) Poor connection of spark plug leads 2) The clearance of spark plugs is different. 3) The fuel pressure regulator vacuum pipe is separated or damaged. 4) Several fuel injectors are blocked. 5) 58x gear ring dislocation	1) Reconnect 2) Adjust to 10-12mm. 3) Check, repair or replace the vacuum pipe. 4) Clean or replace the fuel injectors with fault. 5) Ensure that the falling edge of the #20 tooth is the top dead center of 1-4 cylinders.
Fault 06: Engine stalls during normal operation.	
Potential causes	Reference elimination methods
1) Poor connection of the power system 2) Fuel shortage of fuel tank 3) Fuel inlet pipe leakage	1) Check all the connectors in the power positive/negative lines. 2) Add fuel. 3) Replace the fuel inlet pipe.
Fault 07: Slow acceleration	
Potential causes	Reference elimination methods
1) Unsmooth air intake system 1) The intake manifold pressure sensor hole is blocked. 3) The throttle cannot be full opened.	1) Clean the air inlet and replace the filter element. 2) Clean the intake manifold pressure senor probe hole and replace the sensor when necessary. 3) Adjust the throttle limit screw to make the throttle full open.

4) The fuel injector is blocked. 5) The exhaust system is not smooth.	4) Clean or replace the fuel injector with fault. 5) Check and repair the exhaust system and the three-way catalytic converter.
Fault 08: Insufficient engine power	
Potential causes	Reference elimination methods
1) Unsmooth air intake system 2) The throttle cannot be full opened. 3) Unsmooth exhaust system 4) The resistance of the power transmission system is too large. 5) Engine overheating 6) The fuel injector is blocked.	1) Clean the air inlet and replace the filter element. 2) Adjust the throttle limit screw to make the throttle full open. 3) Check and repair the exhaust system and the three-way catalytic converter. 4) Check and repair the power transmission system and the relevant parts. 5) Check and repair the engine and the cooling system. 6) Clean or replace the fuel injector with fault.
Fault 09: Driving joggling	
Potential causes	Reference elimination methods
1) Current leakage of the ignition system high-voltage line 2) The fuel injector is blocked.	1) Reconnect all connectors and replace the parts damaged. 2) Clean or replace the fuel injector with fault.
Fault 10: Acceleration joggling	
Potential causes	Reference elimination methods
1) Current leakage of the ignition system high-voltage line	1) Reconnect all connectors and replace the parts damaged.
Fault 11: Knock	
Potential causes	Reference elimination methods
1) Unqualified fuel 2) Engine overheating 3) 58x gear ring dislocation	1) Use fuel with octane rating higher than #90. 2) Check and repair the engine cooling system. 3) Ensure that the falling edge of the #20 tooth is the top dead center of 1-4 cylinders.
Fault 12: Afterburning (parallel temperature is too high)	
Potential causes	Reference elimination methods
1) Engine ignition system lack of cylinder 2) Engine exhaust valve fault 3) 58x gear ring dislocation	1) Recover the ignition lack of cylinder. If it is unable to recover for the time being, the cylinder nozzle connector should be disconnected to protect the three-way catalytic converter. 2) Repair the engine. 3) Ensure that the falling edge of the #20 tooth is the top dead center of 1-4 cylinders.
Fault 13: Excessive emission test by means of working condition	
Potential causes	Reference elimination methods
1) Abnormal engine status 2) Abnormal control of EFI system 3) Air leakage at the connection between the cylinder head and the three-way catalytic converter 4) Oxygen sensor thread air leakage 5) Disconnection of the fuel pressure regulator vacuum pipe	1) Check and repair the engine. 2) Check and repair the EFI system as per 462/465 Complete Vehicle Commissioning Procedure and Test Technical Condition. 3) Fix the relevant bolts and change the washer as necessary. 4) Fix the oxygen sensor. 5) Check, repair or replace

6) Fuel pressure regulator fault	6) Replace the fuel pressure regulator.
7) Extended use of the three-way catalytic converter and the oxygen sensor	7) The life is higher than 80,000km under standard condition. Replace it as necessary.
8) Heavy metal poisoning or overheating damage of the three-way catalytic converter and the oxygen sensor	8) Replace the catalytic converter and the oxygen sensor.
9) Sulfur poisoning of the three-way catalytic converter and the oxygen sensor	9) Run for 10 minutes at 70km/h (third gear).
10) Poor grounding of ECM and EFI system	10) Improve the ground wire position of the system.
11) ECM case ground	11) Insulate ECM case.
12) 58x gear ring dislocation	12) Ensure that the falling edge of the #20 tooth is the top dead center of 1-4 cylinders.
Fault 14: Excessive emission test by means of simple working condition	
Potential causes	Reference elimination methods
1) The complete vehicle has not been fully preheated.	1) Preheat the engine.
2) Others	2) See “excessive emission test by means of working condition”.
Fault 15: High CO and Hc concentration at idle speed	
Potential causes	Reference elimination methods
1) The complete vehicle has not been fully preheated.	1) Preheat the engine and carry out test at high idle speed.
2) Others	2) See “excessive emission test by means of working condition”.
Fault 16: Abnormal fuel evaporative emission	
Potential causes	Reference elimination methods
1) The canister connecting pipe is broken.	1) Replace the connecting pipe.
2) The canister is damaged.	2) Replace the canister.
3) The canister is too small.	3) Use proper canister.
4) The connector has not been firmly connected.	4) Reconnect
5) ECM fault	5) Replace the ECM.
Fault 17: Abnormal fuel consumption	
Potential causes	Reference elimination methods
1) Incorrect measuring method	1) Adopt reliable measuring methods.
2) Complete vehicle status	2) Check and repair the vehicle.
3) Engine status	3) Check and repair the engine.
4) The thermostat is damaged.	4) Replace the thermostat.
5) Coolant temperature sensor fault	5) Replace the coolant temperature sensor.
6) EFI system status	6) Check and repair the EFI system as per the Complete Vehicle Commissioning Procedure and Test Technical Condition.
7) Oil leakage of nozzle	7) Replace the nozzle damaged.
8) The fuel pressure regulator is damaged.	8) Replace the regulator.
9) Oxygen sensor fault	9) Replace the oxygen sensor.
10) ECM fault	10) Replace the ECM.
Fault 18: A/C system’s relevant faults take place in the vehicle without A/C	
Potential causes	Reference elimination methods
1) The standby plug of the EFI system for A/C equipment is polluted.	1) Clean the standby plug for A/C and carry out proper dust-proof and water-proof protection. Turn off the ECM power for 10 minutes.
Fault 19: ECM is locked by the burglar alarm.	

Potential causes	Reference elimination methods
1) Burglar alarm relevant wire harness fault 2) The connection of connectors is not firm. 3) The security key is damaged. 4) Deblocking required 5) Others	1) Repair the wire harness. 2) Reconnect 3) Replace and re-learn the new security key. 4) Send ECM back to Delphi for decoding. 5) Contact the supplier of the burglar alarm for corresponding service.
Fault 20: The security key is lost or the burglar alarm is damaged.	
Potential causes	Reference elimination methods
1) The security key is lost or the burglar alarm is damaged.	1) Contact the supplier of the burglar alarm for corresponding service: send ECM back to Delphi for decoding.
Fault 21: Irregular ON/OFF of malfunction indicator light during vehicle operation	
Potential causes	Reference elimination methods
1)接插件接插不良 1) Poor connection of connectors	1) Check and reconnect all the terminals of the EFI system.

Attachment 1 Typical Data Stream of Delphi EFI System

IV. Routine Check

· Wire harness connectors are reliably connected;
· Oil line and vacuum line are fixed reliably;
· Fix the interface end bolts of the oxygen sensor and the three-way catalytic converter to ensure seal of joint surface: check the exhaust system with 1.3 atmospheric pressure when necessary and there should be no obvious leakage.

1. System initialization settings

· Initialization of EFI control system: rotate the ignition switch to running gear, cut it off 3s later, and then the system initialization setting will be completed 10s later.

· Initialization of fuel supply system: rotate the ignition switch to running gear, cut it off 3s later, restart it 1s later, repeat the steps for 5 times, and then the initialization setting of the fuel supply system will be completed.

2. System and vehicle status check

Step 1: Cold, rotate the key switch to "ON", and keep engine still (about 30s, see *Table II-10 "ON" Static Check*)

Table II-10 "ON" Static Check

Items	
1. Display fault codes	No
2. Engine fault indicator light	On
3. Battery voltage	11.5～13V
4. Coolant temperature sensor	Normal temperature
5. Intake air temperature sensor	Ambient temperature
6. Intake manifold absolute pressure sensor	Ambient atmospheric pressure (about 100kPa)
7. Throttle position sensor operating range	0-100％

Step 2: Rotate the key switch to "OFF" (See *Table II-11 "OFF" Static Check*)

Table II-11 "OFF" Static Check

Items	
1. Whether the ECM power is cut off?	Suspended
2. Engine fault indicator light	OFF

Step 3: Idle check (fully preheat the engine to the normal coolant temperature after it is started, see *Table II-12 Idle Dynamic Check.*)

Table II-12 Idle Dynamic Check

Parameter name	Min.	Working value of idling heating	Max.
Current fault code	0	0	65535
Status bit - idling	0	1	5
Status bit - indicator light SVS/MIL	0	0	2
Battery voltage	6.3 V	13～15V	16V
Engine speed	0 rpm	700～800 rpm	6500 rpm
Vehicle speed	0 kph	0 kph	200kph
Coolant temperature	-40℃	80～100℃	140℃
Intake air temperature	-30℃	20～80℃	130℃
Intake air pressure	10kPa	30～40kPa	101.7 kPa

Air intake flow	0 g / s	1.3～4.2 g / s	215 g / s
Throttle position	0%	4～8%	100%
Ignition coil closure time	0 MS	2.5～4.3ms	1024ms
Fuel injection pulse width	0 MS	1.5～3.5ms	1024ms
Cylinder 1 ignition advance angle	-48℃A	-15～10℃A	48℃A
Knock sensor 1 signal - H	0V	0.005～0.11	5V
Cylinder 1 knock point ignition delay control	-10℃A	0℃A	0℃A
Cylinder 2 knock point ignition delay control	-10℃A	0℃A	0℃A
Cylinder 3 knock point ignition delay control	-10℃A	0℃A	0℃A
Cylinder 4 knock point ignition delay control	-10℃A	0℃A	0℃A
Air-fuel ratio closed-loop control adjustment value (short term)	0.7	0.9～1.1	1.5
Oxygen sensor 1 voltage	0 V	0.1～0.85 V	3.3 V
Air-fuel ratio closed-loop control self-learning value (long term)	0.7	0.9—1.1	1.5

Step 4: A/C system check

· At normal idle speed, the A/C system will be closed (see *Table II-13 Dynamic A/C Check*).

Table II-13 Dynamic A/C Check

Items	
A/C request signals	NO

· 10s later after staring A/C (see *Table II-14 Dynamic Check after A/C Start*)

Table II-14 Dynamic Check after A/C Start

Items	
1. Engine idling	850±50rpm
2. A/C request signals	ON
3. A/C relay	ON
4. A/C system	ON
5. Fan 1	ON

Step 5: Driving check (see *Table II-15 Driving Check*)

The following operation must be carried out during driving check:

The opening of throttle is above 10% for successive 15s;

Direct gear; when the vehicle speed reaches 80km/h, the time for throttling down the engine is above 5s.

Table II-15 Driving Check

Items	
1. Engine fault indicator light	OFF
2. Fault code	NO
3. Coolant temperature	80～100℃
4. Battery voltage	13.5～14.5V
5. Intake manifold absolute pressure sensor	15 kPa～atmospheric pressure
6. Throttle position sensor operating range	0～100%

V. Description

1 Routine check

· Loosen interface shall make signal delivery and control out of correctness;

· The inlet/outlet fuel pipe can not be reversed. The pressure balancing vacuum pipe of the fuel pressure regulator shall be connected. If not, the abnormal emission and fuel consumption may be increased;

· The canister can not be reversed and shall be connected. If not, idle speed may become abnormal;

· If the sealing is bad between the cylinder cover of the engine and the three-way catalytic converter, outside air will enter the engine which is operating to break the balance of air/fuel ratio and reduce the efficiency of the three-way catalytic converter.

2 Initialization settings of the system

· After ECM is installed and electrified for the first time and then disconnected, ECM will initialize the settings of the system;

· The fuel pump will work for 1.5s every time when the key switch is turned on. When the vehicle is off the production line, the fuel pipeline provided with no fuel shall be filled with fuel.

3 Check the status of the system and the vehicle

1) When the key switch is rotated to the operation gear, the engine shall stop

· The engine fault indicator is lit but there shall be no DTCs.

· The absolute pressure sensor of the intake manifold shall display the local current atmospheric pressure value;

· The accumulator cable and the pedal screws shall be adjusted to ensure that the closing and the opening of the throttle;

· When the oxygen sensor is being heated, it shall display that the value will descend from above 1000mV; after it is heated, the value shall fluctuate between 100mV---800mV;

· During the idle speed, the opening of the ETC (electronic throttle) shall be small under hot engine and be big under cold engine.

2) Key switch is rotated to “STOP”

· After the key switch is turned off and the idle speed control valve does not operate, the ECM power shall be cut off to check if the ECM mains are mistakenly connected to the ignition switch. It may be difficult for the engine to restart, make the engine stop and affect the emission performance.

3) Start the engine

· In case of bad start performance, check if the initialization operations are completed, if there is fuel in the fuel pipeline and if the fuel pipeline is unblocked; check parts of the fuel supply system and its connections, parts of the ignition system and its connections;

· If there is no problem above, the idle-speed control valve shall be checked to confirm if instructions work.

4) Idle-speed check

· If the engine fault indicator goes off and there is no DTC;

· If the accumulator voltage means the generator works normally;

Too high: it may be the fault of the generator regulator;

Too low: it may be the improper connections of the generator or the fault of the engine;

· The intake manifold pressure can show if there is leakage and the valve clearance.
If the valve clearance is too small, it means the value is too high, which may affect the drive of the engine or increase the exhaust temperature to shorten the life of the oxygen sensor and the three-way catalytic converter because the exhaust valve opens too early;

In addition, the blocking of the exhaust system (foreign materials in the exhaust line or the breakdown of the inner three-way catalytic converter) will make this value too high;

· If the electronic throttle position value is too low, it shall mean there is leakage in the intake system; if it is too high, it shall mean part of the throttle is blocked.

· Too few jumps of the oxygen sensor mean the oxygen sensor loses effect.

5) A/C check

· When the A/C is started, the target idle speed will increase by 50～100RPM.

6) Driving check

· Faults of the vehicle speed and the oxygen sensor are diagnosed during this process and the alternate control plan will take effect after the faults are detected.

Attachment 2 Gear Study Procedure of EOBD System

V Target Gear Teeth Error Study of Crankshaft Position Sensor

1) When the vehicle with a new computer does not carry out gear study and starts and then the fault indicator is lit, the diagnostic scanner will display the fault of P1336;

2) The vehicle starts and the water temperature reaches 60℃. After the vehicle operates for more

than 10s, other loads on the vehicle shall be closed;

3) The diagnostic scanner sends an instruction of starting gear study (instruction 30 2c 07ff);

4) When the accelerator is pressed to the end quickly and held, the ECM shall carry out the gear study. The engine repeats 2-5 cycles from 1300 to 4500 and vibrates around 4500rpm and then the study ends;

(The above are the typical characteristics of the engine rotation speed when the gear study is carried out, based on which, it can be judged if the gear study is carried out and ends).

5) The diagnostic scanner sends an instruction of stopping gear study (instruction 30 2C 00);

6) The engine stops and starts after 15s. Then DTCs are eliminated and the engine is stopped;

7) Start the engine after 15s and use the diagnostic scanner to check if P1336 passes.

Air Cleaner Assembly

I. Removal and Installation

Note: The filter element is made of paper material, please pay attention to the following items during operation:

1. After assembly and removal, do not impose large impact and load.

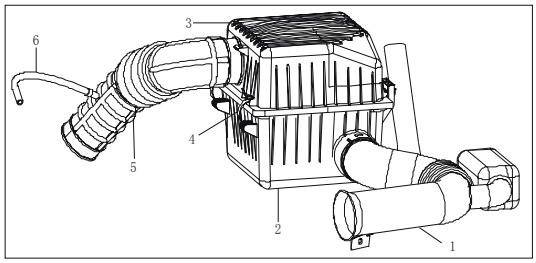
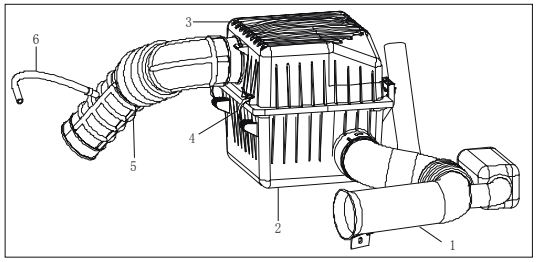


Fig. II-18 Air Cleaner Assembly



Keep good cooperation with the lower shell of the air cleaner during assembly (see *Fig. II-18 Air Cleaner Assembly*).

1-Air cleaner intake pipe assembly, 2-Air cleaner lower cover, 3-Air cleaner upper cover, 4-Spring clip, 5-Engine intake pipe, 6-Crankshaft ventiduct

Removal and Installation of Exhaust Pipe and Muffler

I. Removal and Installation

Warning: When the engine works, the temperature of the exhaust pipe is very high, this may cause burn. Please turn off the engine during check and repair, and remove the exhaust system till the engine and the exhaust system cools down.

II Notes

1. Disconnect the battery negative wire harness.

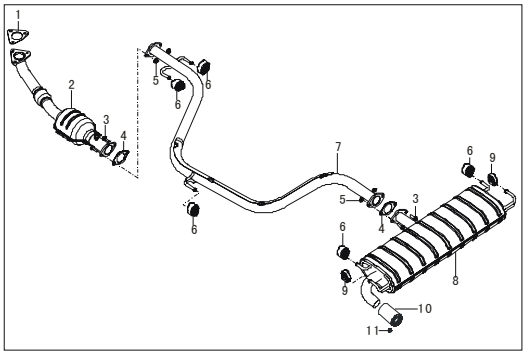
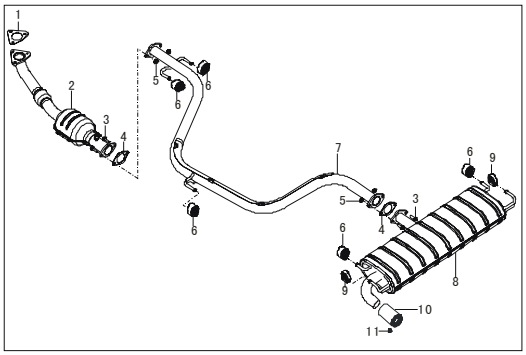


Fig. II-19 Removal Order of Exhaust Pipe and Muffler



Removal order (See *Fig. II-19 Removal Order of Exhaust Pipe and Muffler*)

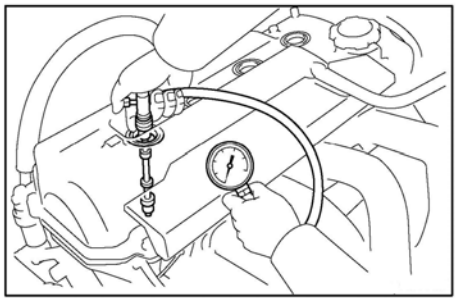
1-Sealing pad assembly, 2-Catalytic converter assembly, 3-Connecting bolt, 4-Small sealing pad, 5-Retaining nut, 6-Rear muffler rubber suspension block, 7-Connecting pipe assembly, 8-Rear muffler assembly, 9-Muffler suspension block, 10-Tail pipe cover, 11-Hexangular head bolt and taper spring gasket assembly

2. Carry out as per the reverse order of removal.

III. Check

Start the engine to check each assembly component of the exhaust system for leakage, if there is leakage, it must be repaired or replaced as necessary. Check each component or assembly, if harmful defects such as break and damage are detected, it must be replaced as required.

Cylinder Pressure Check



Check the compression pressure of the 4 cylinders as below (see *Fig. II-20 Cylinder Pressure Check*).

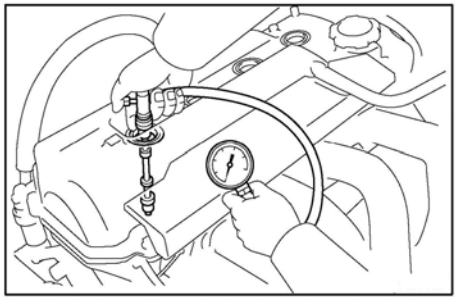


Fig. II-20 Cylinder Pressure Check

1. Preheat the engine.

2. Turn off the engine after preheating.

Note:

Put the transmission shift level into the "neutral" position, fix the parking brake and support the driving wheel after engine preheating.

3. Disconnect the wire harness connectors of the fuel injector.

4. Remove all ignition coil assemblies and spark plugs.

5. Put special tools into the spark plug holes.

6. For manual transmission, depress the clutch (reduce the engine starting load) and depress the accelerator pedal to the maximum to make the throttle open.

7. Start the engine with the battery and read the maximum pressure on the compression pressure gauge.

8. Repeat above steps in a short time to measure the rest cylinders' pressure and get each cylinder's readings (see Table II-16 Normal Cylinder Pressure Value).

Table II-16 Normal Cylinder Pressure Value

	Compression pressure
Standard	1300 Kpa (13.3kg/cm², 189psi)
Minimum pressure	1000 Kpa (10.2kg/cm², 145psi)
Maximum pressure difference among cylinders	100 Kpa (1.0kg/cm², 15psi)

9. Install the spark plug and the ignition coil assembly after check.

10. Connect the wire harness connectors of the fuel injector.

Note:

◎ Fully charged battery must be used to start the engine to make the rotation speed reach above 250rpm.

◎ If the compression pressure of a cylinder or several cylinders is too low, it is feasible to fill a small amount of engine oil into the cylinder through the spark plug hole and repeat the steps 5-7 for the cylinder with low compression pressure. If the engine oil can improve the compression pressure, the piston ring and/or the cylinder wall may be worn or damaged. If the pressure is still low, the valve may be stuck, the closure may be unsealed, or there may be leakage at cylinder head gaskets.

Engine Oil Pressure Check

Note:

The following items should be checked before engine oil pressure check:

◎ Oil level in the oil dish

In case of low oil level, it is required to add oil to the full mark of the oil scale.

◎ Quality of engine oil

The engine oil should be replaced in case of discoloration or deterioration.

◎ Oil leakage

It should be repaired in case of oil leakage.

Remove the engine oil pressure alarm from the cylinder block (see *Fig. II-21 Oil Pressure Alarm Position*).

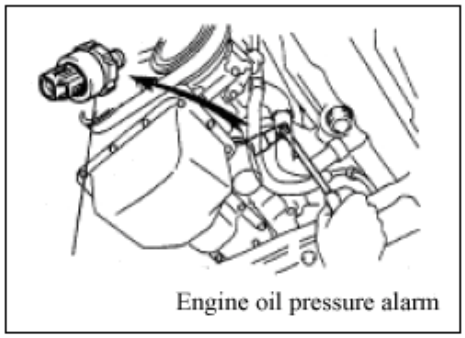


Fig. II-21 Oil Pressure Alarm Position

1. Install the special tool (oil pressure gauge) into the empty screw hole.

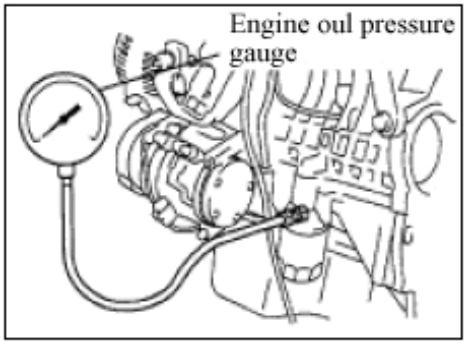


Fig. II-22 Engine Oil Pressure Gauge Connection

2. Start the engine and preheat it to the normal working temperature.

3. Increase the engine speed to 4,000rpm and measure the oil pressure after preheating.

Oil pressure standard:
330-430kpa (3.3～4.3kg/cm^2, 46.9～61.1psi)
at 4,000r/min (rpm)

4. Turn off the engine and remove the oil pressure gauge after oil pressure check.

It is required to coat the screw thread of the engine oil pressure alarm with anaerobic pipe thread sealant (see *Fig. II-23 Anaerobic Pipe Thread Sealant*) and screw down the engine oil pressure alarm as per the specified torque before re-installing the engine oil pressure alarm. (Torque: 15±4 N·m)

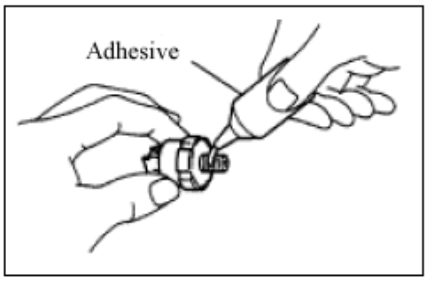


Fig. II-23 Anaerobic Pipe Thread Sealant

6. Start the engine and check the engine oil pressure alarm for leakage.

7. Turn off the engine and connect the terminal to the terminal of the engine oil pressure alarm.

Check and Adjustment of CO Concentration

Note: This check is only used to determine whether the emission of carbon monoxide (CO) meets the regulation.

I. Starting Conditions

1. The engine is under normal working temperature.

2. It is equipped with air cleaner.

3. All accessory equipment have been turned off.

4. All vacuum pipelines are connected properly.

5. All the wire connectors of the electronic fuel injection (EFI) system have been connected well.

6. The setting of ignition time is right.

7. The transmission is in neutral position.

8. The A/C has been turned off.

9. The tachometer and the carbon monoxide tester have been calibrated by hand.

II. Check and Adjustment of CO Concentration at Idle Speed

Note: It is required to use CO tester to adjust the idle mixture. If there is no CO tester available, it is prohibited to adjust the idle mixture.

1. Connect the TE1 and E1 terminals of the check connector with special service tools (see *Fig. II-24 Connection*).

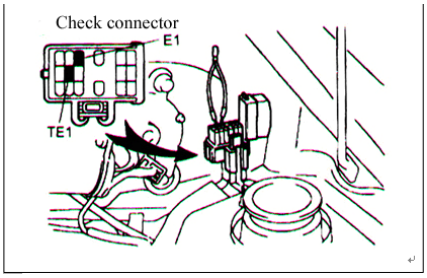


Fig. II-24 TE1 and E1 Connecting Check Connector

2. Run the engine for about 3 minutes at the speed of 2,500rpm.

3. Insert the tester probe into the tail pipe for 40cm (see *Fig. II-25 CO Tester Probe into Tail Pipe*).

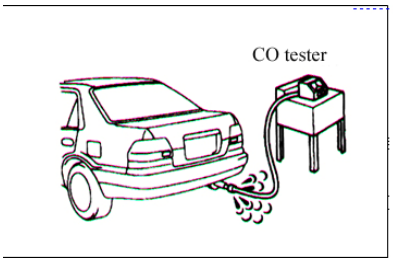


Fig. II-25 CO Tester Probe into Tail Pipe

4. Wait for at least a minute to make the concentration stable prior to measurement. The measurement should be completed in 3 minutes.

CO concentration at idle speed: 0.5%

III. Troubleshooting (see *Table II-17 Fault Diagnosis*)

Table II-17 Fault Diagnosis

carbon monoxide (CO)	Phenomena	Causes
High	Unstable idling (there is black smoke in the exhaust)	Air cleaner blocked; PCV valve blocked; EFI system failure; Fuel pressure regulator failure; Water temperature sensor failure; Intake air temperature & pressure sensor failure; Engine electronic control module (ECU) fault; Fuel injection nozzle failure; Throttle position sensor failure.

Check and Adjustment of Valve Clearance

I. Disconnect the battery negative wire.

II. Remove the cylinder head hood (see the cylinder head hood).

III. Set #1 cylinder as the top dead center of the compression stroke (TDC, see *Fig. II-26 Align Timing at #1 Cylinder TDC*).

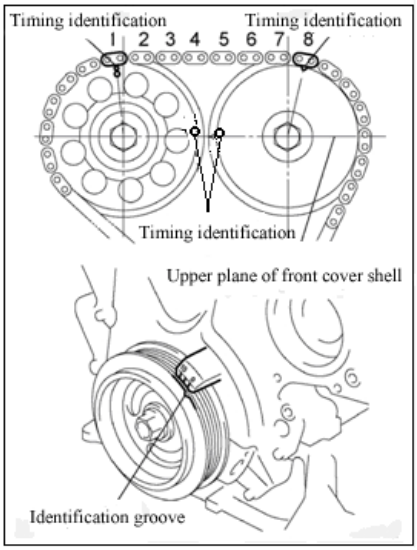


Fig. II-26 Align Timing at #1 Cylinder TDC

1. Rotate the crankshaft pulley, the groove on the pulley should be in line with the "0" timing identification on the front cover shell.

2. Check if the camshaft timing sprocket identification is in line with the timing chain identification shown in the Fig. If not, please rotate the crankshaft till the identification is aligned.

IV. Check the valve clearance.

1. Measure the clearance between the valve tappet and the camshaft with feeler gauge. (See *Fig. II-27 #1 Cylinder TDC Measurable Valve Clearance*)

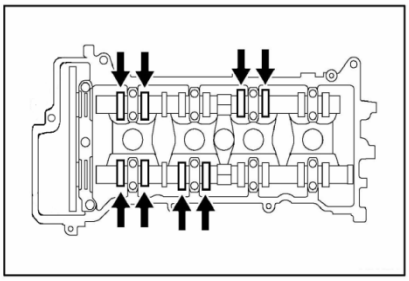


Fig. II-27 #1 Cylinder TDC Measurable Valve Clearance

Note:

◎ Record the measured valve clearance value unqualified.

These data will be used to determine which

tappet should be replaced.

Valve clearance (cold):
Intake: 0.20-0.25mm
Exhaust: 0.30-0.35mm

2. Rotate the crankshaft pulley for a cycle and set #4 cylinder as the top dead center (TDC) of the compression stroke.

3. Measure the clearance between the valve tappet and the camshaft with feeler gauge. (See *Fig. II-28 #4 Cylinder TDC Measurable Valve Clearance*)

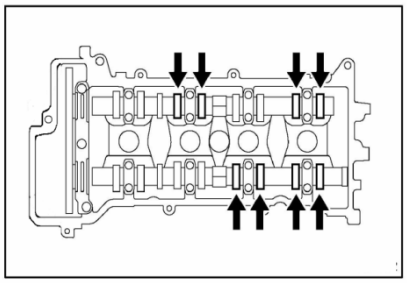


Fig. II-28 #4 Cylinder TDC Measurable Valve Clearance

Note:

◎ Record the measured valve clearance value unqualified.

These data will be used to determine which tappet should be replaced.

Valve clearance (cold):
Intake: 0.20-0.25mm
Exhaust: 0.30-0.35mm

V. Remove the generator and the water pump belt. (See *Fig. II-29 Remove the generator and the water pump belt*)

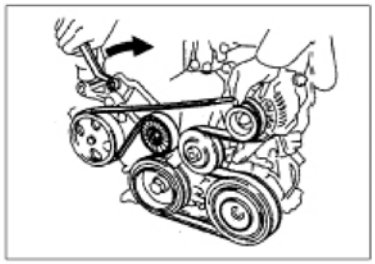


Fig. II-29 Remove the generator and the water pump belt.

VI. Remove the belt tensioner assembly.

VII. Adjust the valve clearance.

1. Set #1 cylinder as the top dead center (TDC) of the compression stroke.

2. Align the timing identification of the timing chain with the timing identification of the camshaft.

3. Remove two nuts and remove the chain tensioner assembly. (See *Fig. II-30*)

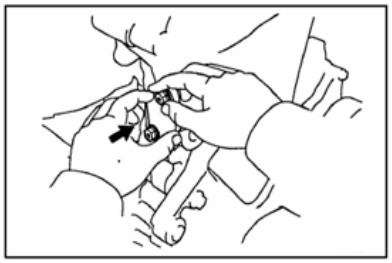


Fig. II-30

4. Fix the exhaust camshaft with monkey wrench and then unscrew the timing sprocket bolt of the exhaust camshaft and remove the exhaust timing sprocket.

Note: Do not hurt valve tappet.

5. Unscrew and remove 11 bearing cover bolts evenly in accordance with the order shown in the Fig. below (see *Fig. II-31*).

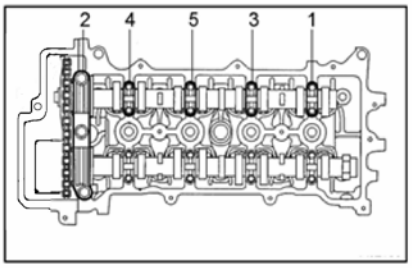


Fig. II-31

6. Remove the bearing cover of the exhaust camshaft and the camshaft.

7. Unscrew and remove 8 bearing cover bolts in proper order (see *Fig. II-32*).

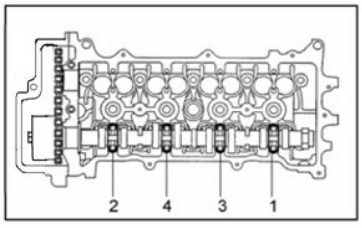


Fig. II-32

8. Remove the bearing cover of the intake camshaft.

9. Fix the timing chain by hand as shown in the Fig. and

remove the intake camshaft. (See *Fig. II-33*)

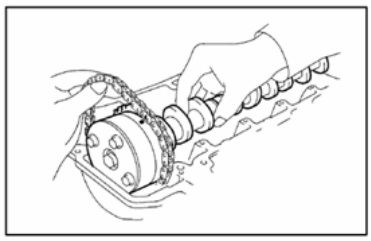


Fig. II-33

10. Fix the timing chain with rope as shown in the Fig. (See *Fig. II-34*).

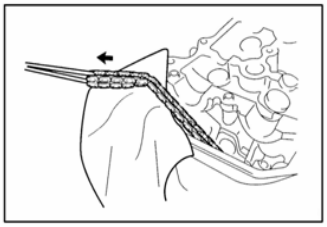


Fig. II-34

11. Remove the valve tappet.

12. Measure the thickness of the removed valve tappet with micrometer. (See *Fig. II-35*)

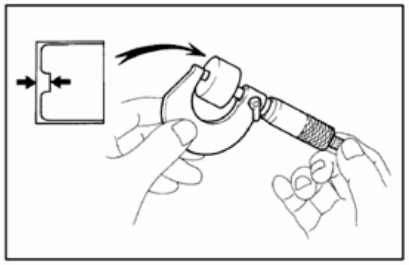


Fig. II-35

13. Calculate the thickness of the new valve tappet (see *Table II-18*) to make the valve clearance stay in the specified range.

Table II-18

A	Thickness of new valve tappet
B	Thickness of old valve tappet
C	Valve clearance

Calculate valve clearance:
Intake valve: A = B + (C-0.20mm)
Exhaust valve: A = B + (C-0.30mm)

14. Select the new valve tappet with thickness close to the calculated value as much as possible.

Note:

There are valve tappets of 35 kinds of thickness, with dimension varying from 5.06mm to 5.74mm (difference: 0.02mm).

15. Install the timing chain on the intake timing sprocket as shown in *Fig. II-36* to make the chain and link identification be in line with the identification on the intake timing sprocket.

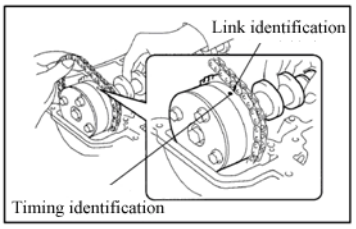


Fig. II-36

16. Check if the camshaft bearing cover "forward" identification and sequence are right, and screw down the bearing cover bolts as shown in *Fig. II-37*.

Torque: 13 N·m

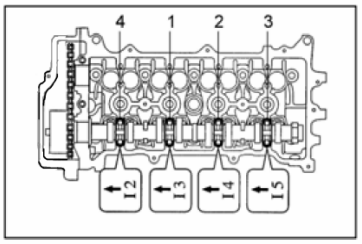


Fig. II-37

17. Install the timing chain on the exhaust timing sprocket as shown in *Fig. II-38* to make the chain and link identification be in line with the identification on the exhaust timing sprocket.

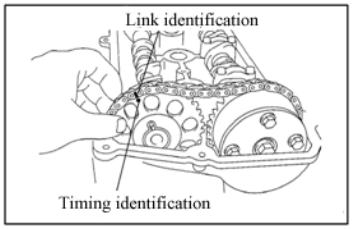


Fig. II-38

18. Install the exhaust timing sprocket bolts (see *Fig. II-39*).

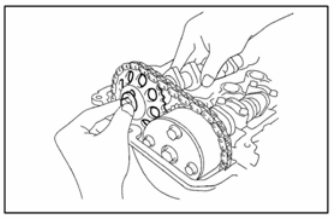


Fig. II-39

19. Check if the camshaft bearing cover "forward" identification and sequence are right, and screw down the bearing cover bolts as shown in *Fig. II-40*.

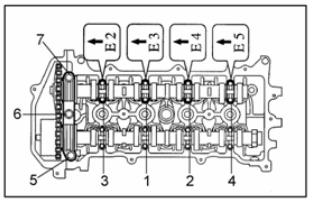


Fig. II-40

Torque: 13 N·m

20. Install the 3 bolts of #1 camshaft bearing cover.

Torque: 23 N·m

21. Fix the exhaust camshaft with monkey wrench (see *Fig. II-41*) and then screw down the exhaust camshaft bolts.

Torque: 54 N·m

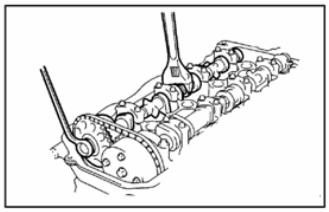


Fig. II-41

Note:

Do not hurt the valve tappet in the process of screwing down.

22. Check if the camshaft timing sprocket identification is in line with the timing chain identification shown in the Fig. and if the groove on the pulley is in line with the "0" timing identification on the front cover shell.

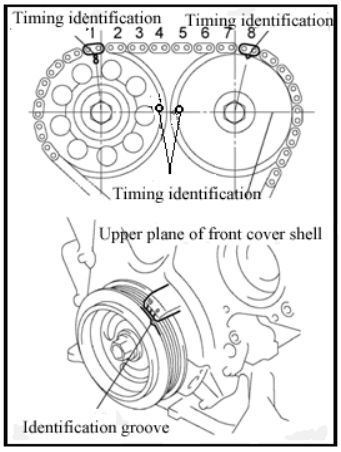


Fig. II-42

23. Connect the locating pin of the tensioner to the hasp as shown in *Fig. II-43*.

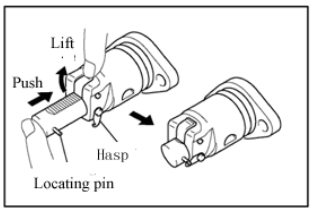


Fig. II-43

24. Install the tensioner assembly with two nuts (see *Fig. II-44*).

Torque: 11 N·m

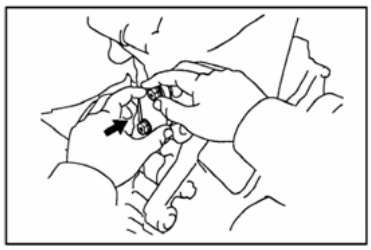


Fig. II-44

25. Rotate the crankshaft counterclockwise to remove the locating pin from the hasp. (See *Fig. II-45*)

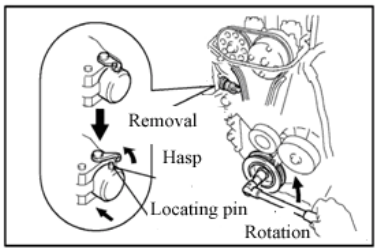


Fig. II-45

26. Rotate the crankshaft clockwise to check if the slide block has been pushed in the device by the plunger. (See *Fig. II-46*)

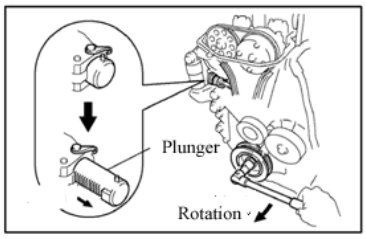


Fig. II-46

VIII. Install the belt tensioner assembly with 2 bolts (see *Fig. II-47*).

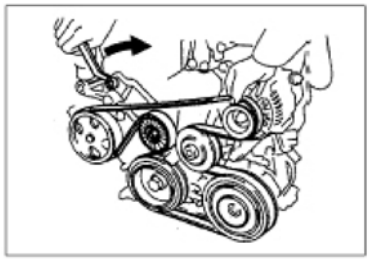


Fig. II-47

Torque: 29N·m (nut A)
Torque: 69 N·m (bolt B)

IX. Coat the sealant as shown in the Fig. and install parts like cylinder head hood, etc. (See *Fig. II-48*)

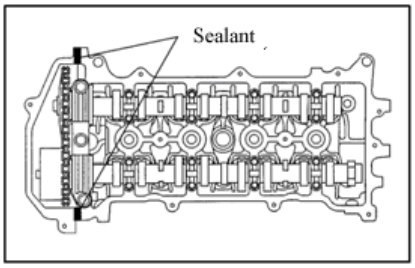


Fig. II-48

See "Cylinder head hood" section for details.

Removal and Installation of Thermolator Assembly

I. Removal

1. Drain all engine coolant.

2. Cut off the battery negative power.

3. Remove the water inlet pipe and connectors.

4. Remove the thermolator.

II. Installation of Thermolator

1. Install new thermolator sealing pads.

1. Install and place the inching valve upwards as shown in the Fig. (See *Fig. II-49*)

Note:

If the plunger cannot spring back, please press the slide block into the chain tensioner by fingers or screwdriver to separate the hasp and the locating pin, as a result, the plunger will spring back.

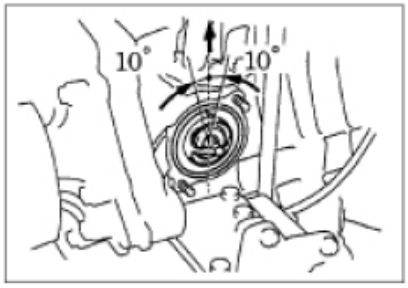


Fig. II-49

2. Install the water inlet pipe and connectors.

Torque: 11 N·m

3. Connect the battery negative power.

4. Add engine coolant and drain all air in the cooling system.

5. Check if there is leakage of coolant.

Cylinder Head Hood

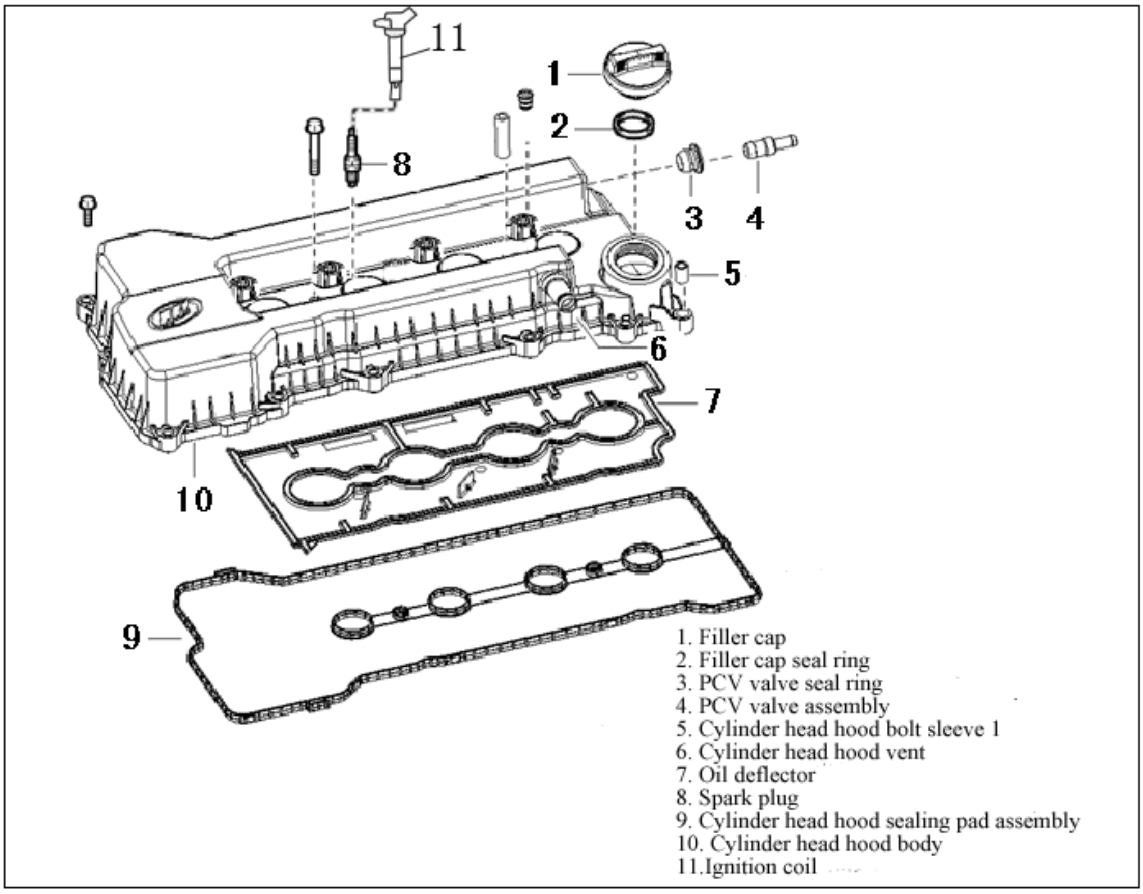


Fig. II-50 Cylinder Head Hood and Relevant Assembly

I. Removal

1. Disconnect the battery positive and negative wires, remove the battery, and remove the engine wire harness. (See *Fig. II-51*)

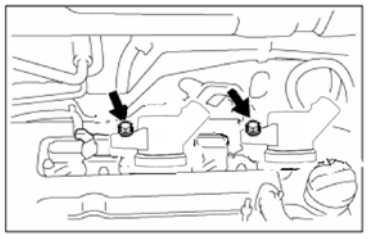


Fig. II-51

2. Remove 4 ignition coils.

3. Disconnect the PCV valve ventilation hose. (see *Fig. II-52*)

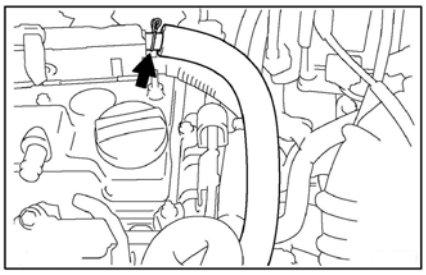


Fig. II-52

4. Disconnect the long ventilation hose. (See *Fig. II-53*)

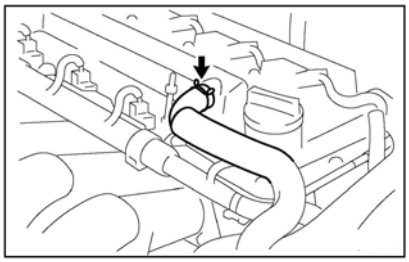


Fig. II-53

5. Remove the filler cap. (See *Fig. II-54*)

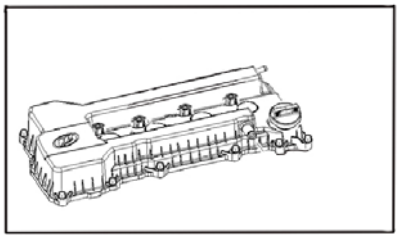


Fig. II-54

6. Remove the PVC valve seal ring and the PCV valve from the cylinder head hood (see *Fig. II-55*).

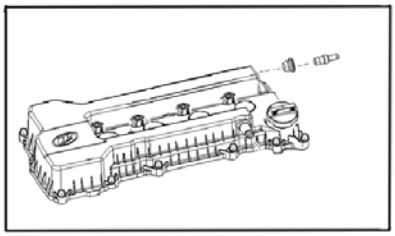


Fig. II-55

7. Remove the spark plug with special tools.

8. Remove 15 bolts and 2 bolt sealing pads from the cylinder head hood. (See *Fig. II-56*)

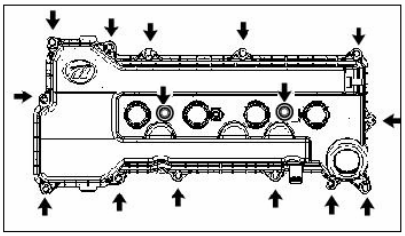


Fig. II-56

9. Remove the cylinder head hood with sealing pad. (See *Fig. II-57*)

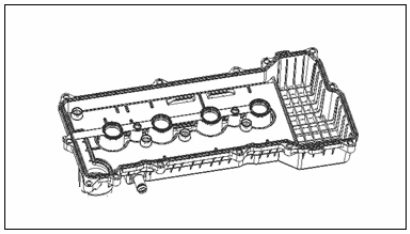


Fig. II-57

II Installation

1. Install the cylinder head hood sealing pad into the cylinder head hood (see *Fig. II-58*).

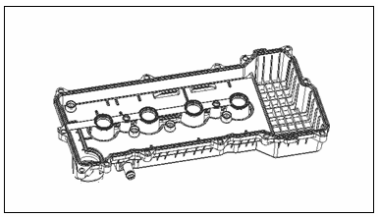


Fig. II-58

2. Install the cylinder head hood on the cylinder head with 15 bolts (see *Fig. II-59*).

Torque: 11N·m

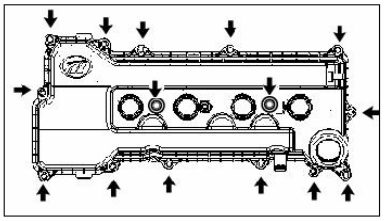


Fig. II-59

3. Install the spark plug with special tools (see *Fig. II-60*).

Torque: 30 N·m

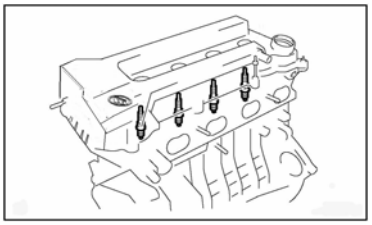


Fig. II-60

4. Install the ignition coil with 4 bolts.

Torque: 11 N·m

5. Install the PCV valve seal ring and the PCV valve (see *Fig. II-61*).

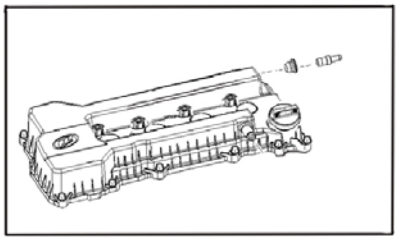


Fig. II-61

6. Install the filler cap (see *Fig. II-62*).

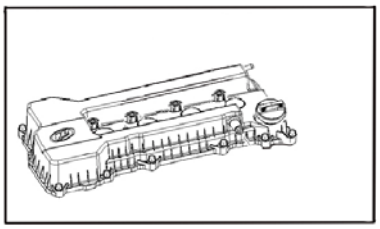


Fig. II-62

7. Connect the long ventilation hose to the cylinder head hood (see *Fig. II-63*).

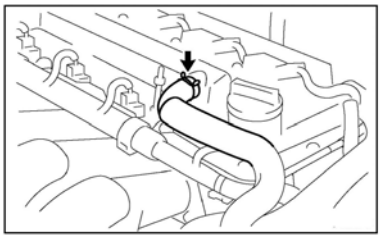


Fig. II-63

8. Connect the PCV valve ventilation hose to the cylinder head hood (see *Fig. II-64*).

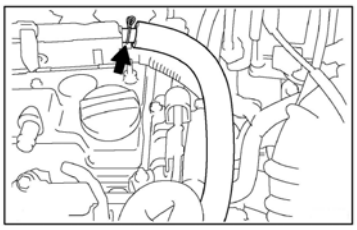


Fig. II-64

9. Install the ignition coil (see *Fig. II-65*).

Torque: 11 N·m

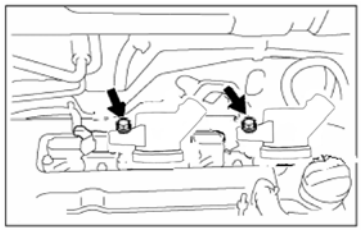


Fig. II-65

10. Install the engine wire harness and connect each plug/socket.

11. Connect the battery positive and negative wires.

Note:

Check each part carefully for deterioration or damage prior to installation and replace it if there are any defects.

Carefully prevent the cylinder head hood seal ring from removal during the installation of the cylinder head hood.

Throttle Body and Intake Manifold

I. Removal

1. Disconnect the battery negative wire.

2. Disconnect the electrical wire.

3. Remove the intake manifold.

4. Remove the following hoses:

◎ Remove the vacuum booster hose from the intake manifold.
◎ Remove the PCV valve hose from the intake manifold and the throttle body.
◎ Remove the CanCV canister solenoid valve hose from the intake manifold.

5. Remove 4 bolts, 2 nuts (see *Fig. II-66*), 2 fixed supports, as well as the intake manifold and the throttle body assembly.

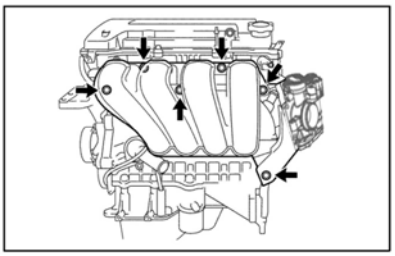


Fig. II-66

6. Remove the sealing pad from the intake manifold.

II. Installation

Install as per the reverse order of removal and pay attention to the following items (see *Fig. II-67*):

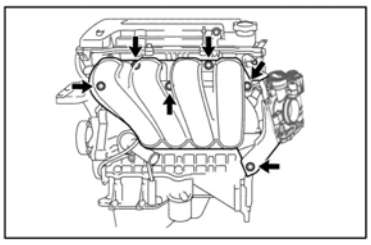


Fig. II-67

1. Install new sealing pads on the intake manifold.

2. Screw down bolts and nuts as per the specified torque.

Torque: Intake manifold-30N.m, support bolt-23

N.m.

Exhaust Manifold

Warning:

Do not maintain the exhaust manifold when it is at thermal state, so as to avoid burn. Repair it when the system cools down.

I. Removal

1. Disconnect the battery negative wire.

2. Remove the 3 bolts under the exhaust manifold and remove the exhaust manifold support (see *Fig. II-68*).

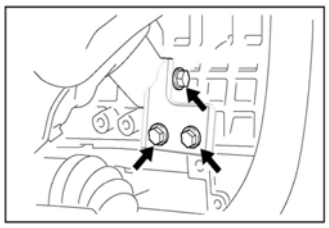


Fig. II-68

3. Remove 6 bolts and then remove the upper thermal insulation cover of the exhaust manifold (see *Fig. II-69*).

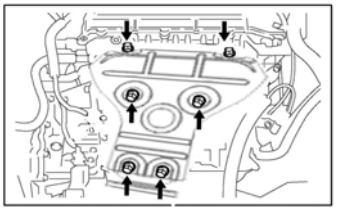


Fig. II-69

4. Remove 5 nuts and the exhaust manifold and the heat-insulating pad (see *Fig. II-70*).

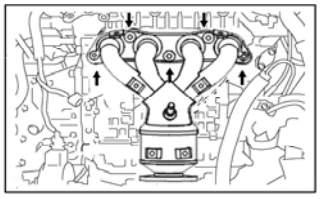


Fig. II-70

5. Remove 4 bolts and then remove the lower thermal insulation cover of the exhaust manifold.

II. Installation

Install the lower thermal insulation cover of the exhaust manifold with 4 bolts.

Torque: 18N.m

1. Install the exhaust manifold sealing pad and the exhaust manifold assembly with 5 bolts (see *Fig. II-71*). It is required to check the heat-insulating pad for deformation or damage before the installation of the exhaust manifold sealing pad. If any, it should be replaced and the relevant nuts should be screwed down as per the given torque.

Torque: 37N.m

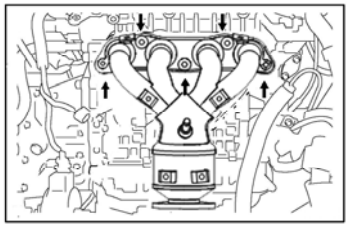


Fig. II-71

2. Install the upper thermal insulation cover of the exhaust manifold with 6 bolts (see *Fig. II-72*).

Torque: 18N.m

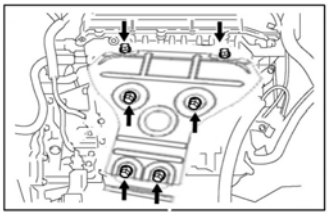


Fig. II-72

3. Install the exhaust manifold support with 3 bolts (see *Fig. II-73*).

Torque: 30N.m

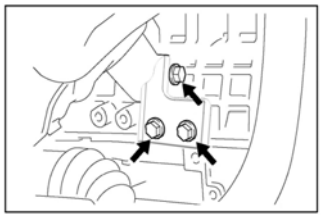


Fig. II-73

4. Connect the battery negative wire.

5. Check the exhaust system for leakage.

Timing Part

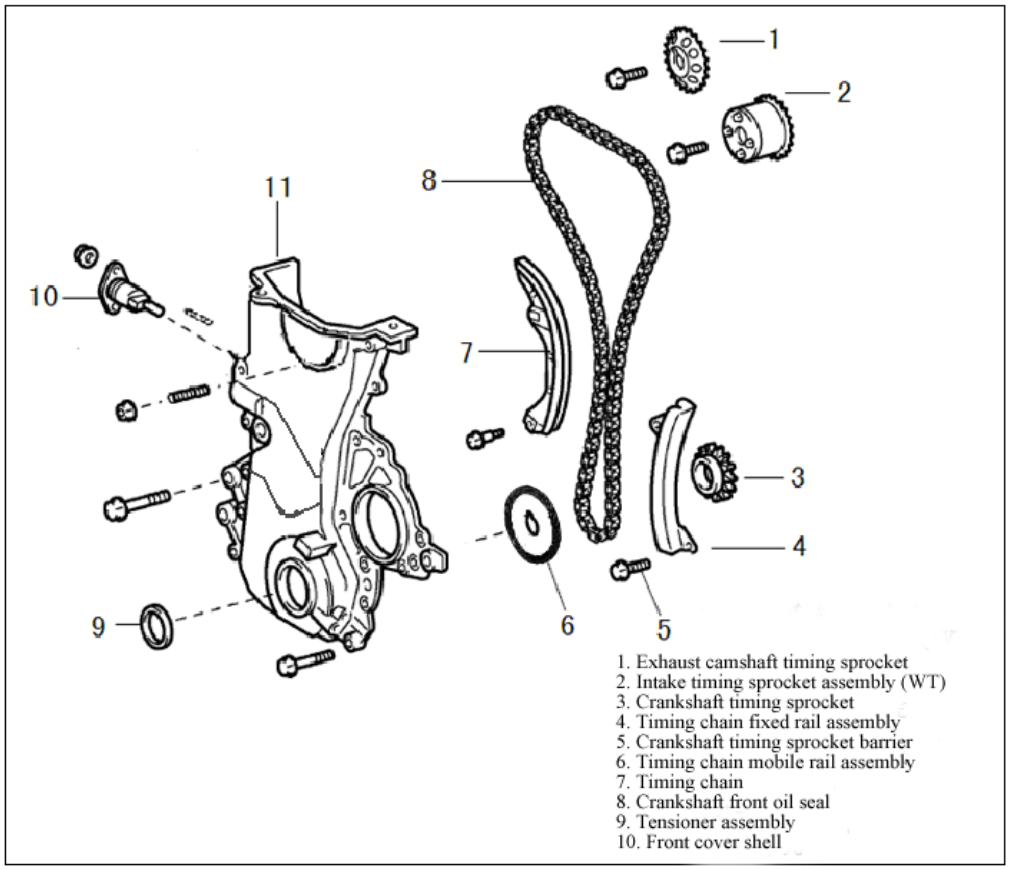


Fig. II-74 Timing Part and Relevant Components

I.

II. Removal

1. Disconnect the battery negative wire.

2. Discharge the engine coolant.

3. Remove the water pump generator belt.

4. Remove the tensioner assembly, the tension wheel assembly, the A/C compressor and the power steering oil pump assembly.

5. Remove the cylinder head hood and see the cylinder head hood for details.

6. Remove 3 bolts and then remove the right suspension of the engine (see *Fig. II-75*).

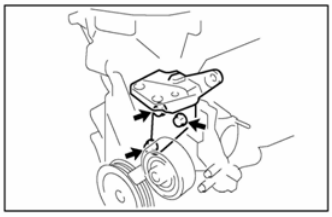


Fig. II-75

7. Remove 5 bolts and then remove the water pump (see *Fig. II-76*).

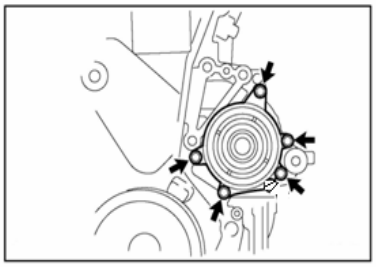


Fig. II-76

8. Remove the O-ring seal of the water pump (see *Fig. II-77*).

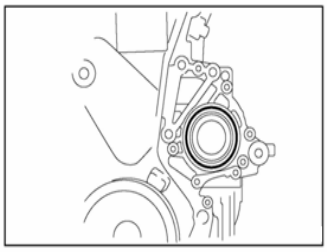


Fig. II-77

9. Remove the pulley bolts with special tools and remove the crankshaft pulley. (See *Fig. II-78*)

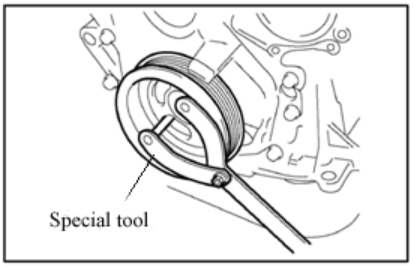


Fig. II-78

10. Rotate the crankshaft pulley and make the groove on the pulley keep in line with the "0" timing identification on the front cover shell.

11. Check if the camshaft timing sprocket identification is in line with the timing chain identification shown in the Fig. If not, please rotate the crankshaft till the identification is aligned. (See *Fig. II-79*)

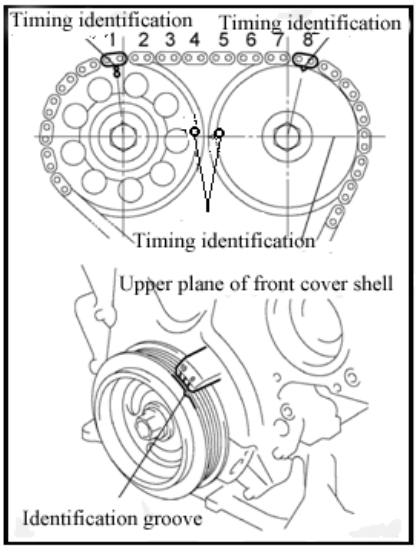


Fig. II-79

12. Remove 11 bolts and a nut (see *Fig. II-80*).

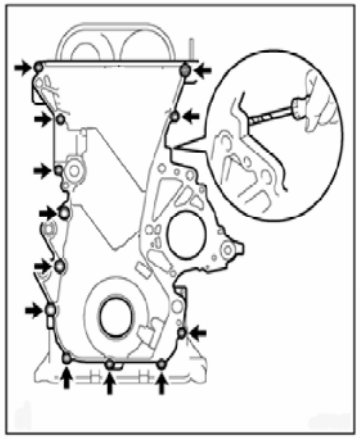


Fig. II-80

13. Pry the chimb between the cylinder head and the crankcase with screwdriver as shown in the Fig. and remove the front cover shell.

Note:

Take care not to hurt the joint surface of the front cover shell, the cylinder head and the crankshaft.

14. Place the front cover shell on the board and then remove the crankshaft front oil seal with screwdriver (see *Fig. II-81*).

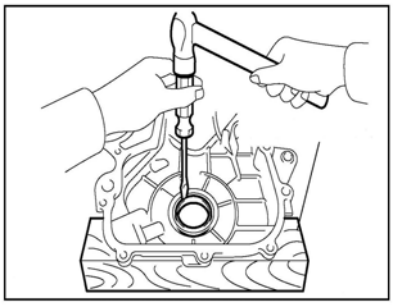


Fig. II-81

15. Remove the crankshaft timing sprocket barrier from the crankshaft (see *Fig. II-82*).

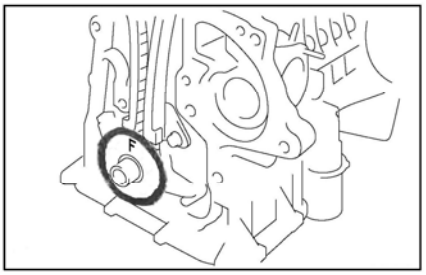


Fig. II-82

16. Remove the set bolts of the mobile rail assembly (see *Fig. II-83*).

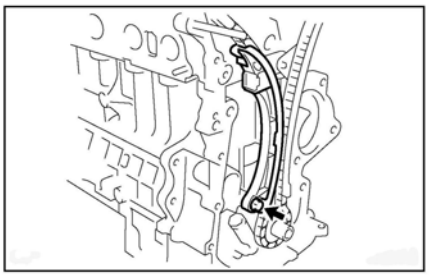


Fig. II-83

17. Pry out the crankshaft timing chain with 2 screwdrivers as shown in the Fig. (See *Fig. II-84*)

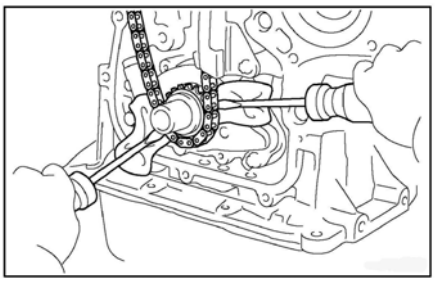


Fig. II-84

18. Remove 2 bolts and then remove the fixed rail of the timing chain (see *Fig. II-85*).

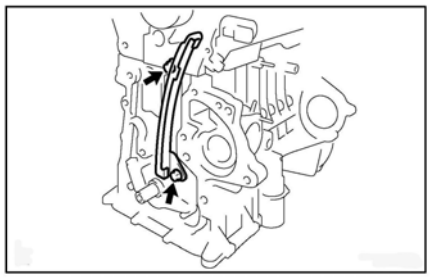


Fig. II-85

19. Remove a bolt and then remove the camshaft engine oil control valve (see *Fig. II-87*).

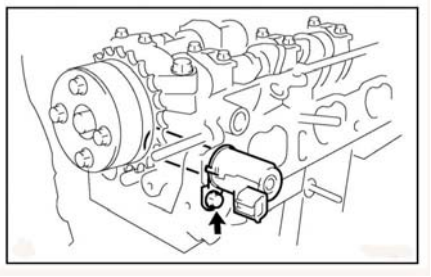


Fig. II-86

20. Check the VVT drive assembly.

1) Check the locking status of the timing sprocket.

Clamp the camshaft with jaw vice and confirm that the VVT drive has been locked.

2) Release the locking pin.

a. Seal the 5 oil ducts of the intake camshaft with vinyl tape, as shown in the Fig. (See *Fig. II-87*)

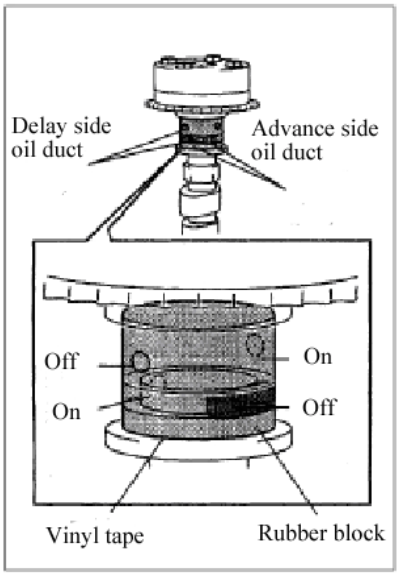


Fig. II-87

b. On the relative groove side, cut a hole on the surface vinyl tape of the advance side oil duct and the delay side oil duct.

c. Put into the 2 oil ducts (advance side oil duct and delay side oil duct) with surface tape cut under the pressure of about 150KPa. (See *Fig. II-88*)

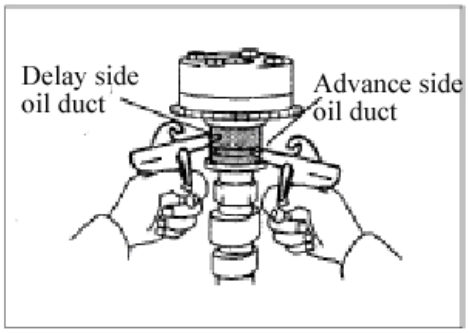


Fig. II-88

d. Check if the timing sprocket of the VVT drive will rotate to the advance timing position when the pressure of the timing delay side oil duct declines. (See *Fig. II-89*)

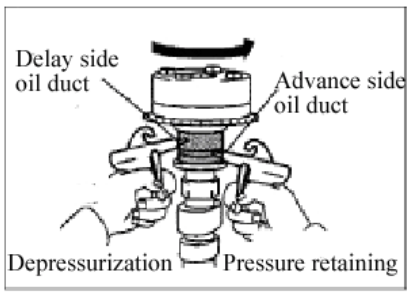


Fig. II-89

e. When the camshaft timing sprocket rotates to the maximum advance timing position, please release the air pressure in the timing delay side oil duct, and then release the air in the timing advance side oil duct.

3) Check the rotation for balance.

Rotate the VVT drive assembly in the rotatable range except for the maximum delay position and check if the rotation is smooth.

4) Check the fixing state of the maximum delay position.

Confirm that the camshaft timing sprocket assembly is fixed at the maximum delay position.

21. Remove the VVT drive assembly.

1) Clamp the camshaft with jaw vice and confirm that the VVT drive has been locked.

2) Seal the 5 oil ducts of the camshaft bearing journal with vinyl tape, as shown in the Fig.

3) On the relative groove side, cut a hole on the surface vinyl tape of the advance side oil duct and the delay side oil duct (see *Fig. II-90*).

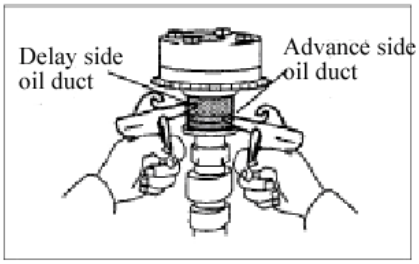


Fig. II-90

4) Put into the 2 oil ducts (advance side oil duct and delay side oil duct) with surface tape cut under the pressure of about 150KPa.

5) Check if the timing sprocket of the VVT drive will rotate to the advance timing position when the pressure of the timing delay side oil duct declines. (See *Fig. II-91*)

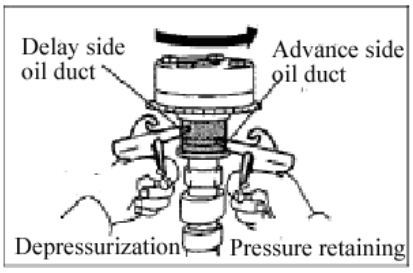


Diagram II-91

6) When the camshaft timing sprocket rotates to the maximum advance timing position, please release the air pressure in the timing delay side oil duct, and then release the air in the timing advance side oil duct.

7) Remove the fixed bolts of the VVT drive (see *Fig. II-92*).

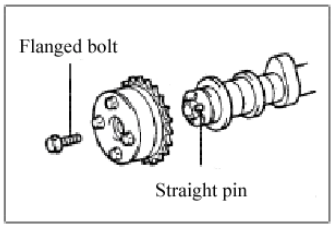


Fig. II-92

III. Check

1. Check the tensioner assembly (see *Fig. II-93*).

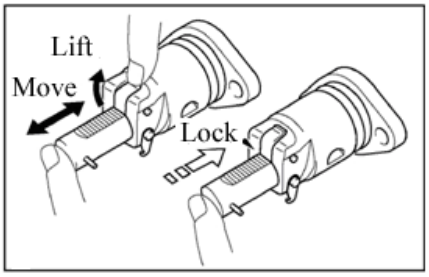


Fig. II-93

2. Check the timing chain.

Apply force of 140N to the timing chain using spring pressure gauge and the measure the length of chain with vernier caliper (see *Fig. II-94*).

Maximum extension of chain: 122.6mm

If the maximum length exceeds the maximum extension of the chain, the chain should be replaced.

Note:

Select 3 or more than 3 points at random as per the above method to check the length of chain.

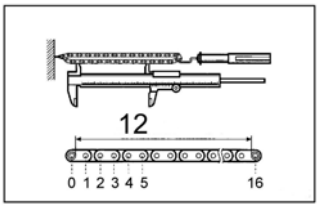


Fig. II-94

3. Check the timing sprocket of the exhaust camshaft.

1) Wind the chain on the timing sprocket of the exhaust camshaft as shown in the Fig.

2) Measure the diameter of the camshaft timing sprocket with timing chain using vernier caliper (see *Fig. II-95*).

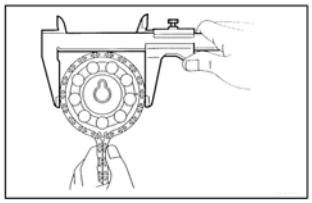


Fig. II-95

Minimum diameter of sprocket (with chain): 97.3mm

If the sprocket diameter is less than the minimum sprocket diameter, it is required to replace the camshaft timing sprocket.

Note:

The two measurement feet of the vernier caliper must be close to the chain roller during measurement.

4. Check the crankshaft timing sprocket.

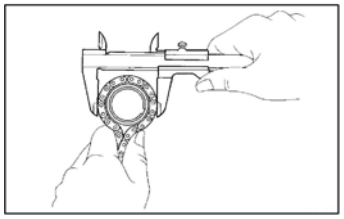


Fig. II-96

1) Wind the chain on the crankshaft timing sprocket as shown in *Fig. II-96*.

2) Measure the diameter of the crankshaft timing sprocket with timing chain using vernier caliper

Minimum diameter of sprocket (with chain): 51.6mm

If the sprocket diameter is less than the minimum sprocket diameter, it is required to replace the crankshaft timing sprocket.

Note:

The two measurement feet of the vernier caliper must be close to the chain roller during measurement.

5. Check the timing chain mobile rail assembly.

Measure the thickness of the timing chain mobile rail with vernier caliper (see *Fig. II-97*).

Maximum thickness: 1.0mm

If the thickness of the guide rail is higher than the maximum thickness, the timing chain mobile rail assembly should be replaced.

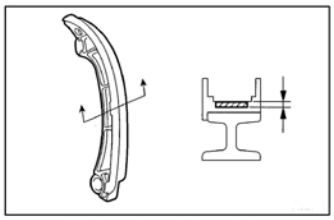


Fig. II-97

IV. Installation

1. Install the camshaft oil control valve.

1) Coat the new O-ring seal with engine oil and install it to the camshaft oil control valve.

2) Install the camshaft oil control valve with bolts (see *Fig. II-98*).

Torque: 9 N·m

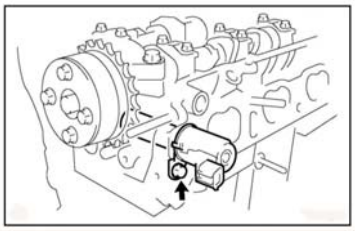


Fig. II-98

2. Install the timing chain fixed rail assembly with 2 bolts (see *Fig. II-99*).

Torque: 13 N·m

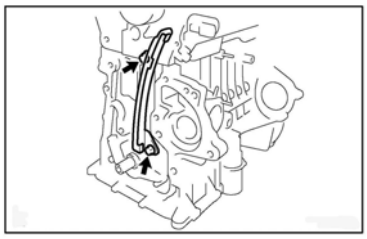


Fig. II-99

3. Install the timing chain to the crankshaft timing sprocket, align the two identifications, and then install it to the crankshaft along the keyway direction. (See *Fig. II-100*)

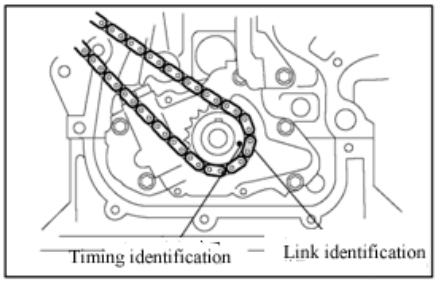


Fig. II-100

4. Install the crankshaft timing sprocket with special tools and make the link identification of the timing chain keep in line with the timing identification of the crankshaft timing sprocket. (See *Fig. II-101*)

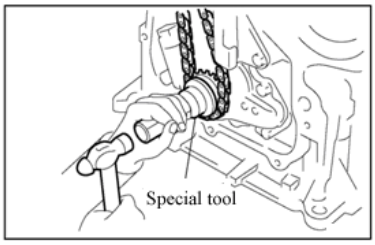


Fig. II-10

5. Install the timing chain and make the link identification of the timing chain keep in line with the timing identification of the camshaft (see *Fig. II-102*).

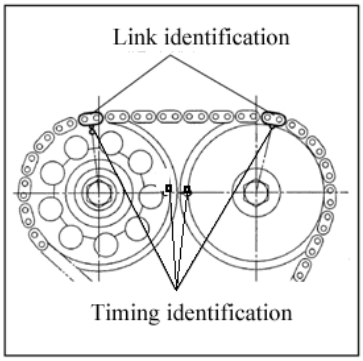


Fig. II-102

6. Install the timing chain mobile rail assembly with bolts (see *Fig. II-103*).

Torque: 18 N·m

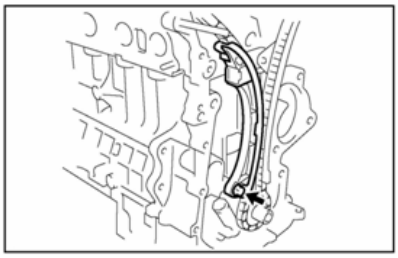


Fig. II-103

7. Install the crankshaft timing sprocket barrier along the keyway direction (see *Fig. II-104*).

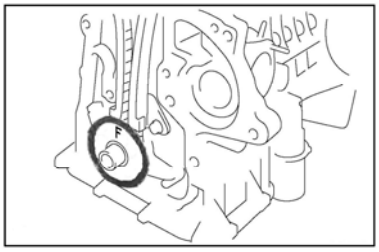


Fig. II-104

8. Install the crankshaft front oil seal.

a) Place the front cover shell on the board.

b) Hammer the crankshaft front oil seal into the front cover shell assembly with the special tool and make the oil seal end surface keep in line with the front cover shell end surface. (See *Fig. II-105*)

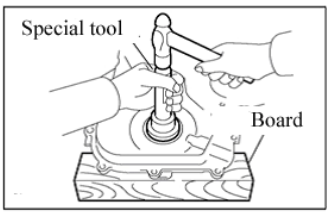


Fig. II-105

Note:

Please coat the oil seal lip with grease prior to installation.

9. Coat plane sealant as shown in *Fig. II-106*.

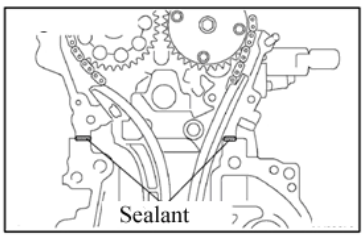


Fig. II-106

10. Install the front cover shell assembly.

1) Remove all the old fillings and prevent the installation surface from engine oil leakage.

2) Coat the front cover shell end surface with sealant as shown in *Fig. II-107*.

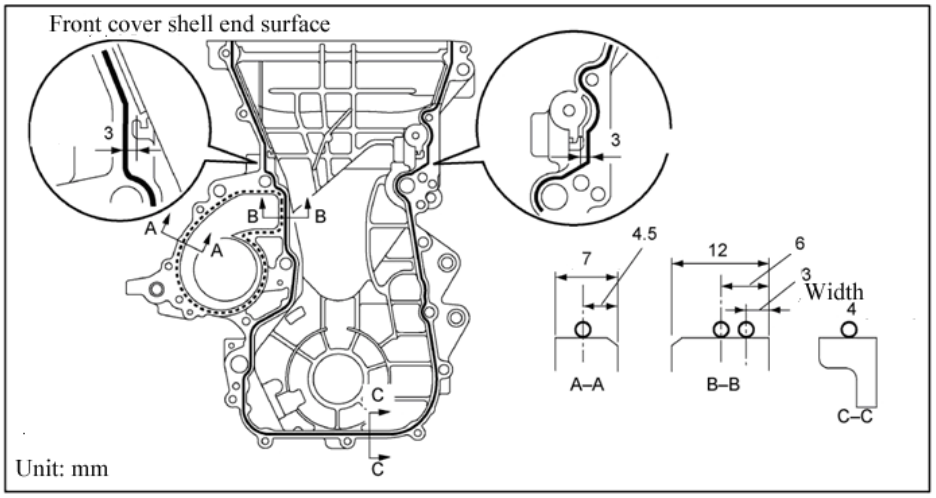


Fig. II-107

Note:
◎ Clean the oil stain on the installation surface.
◎ Complete the installation of the front cover shell in 3 minutes after the sealant is coated.
◎ Do not add engine oil in 2 hours after the front cover shell is installed.

3) Install the front cover shell assembly with 12 bolts and 1 nut (see *Fig. II-108*).

Torque: 11 N·m (bolt A and nut A)
Torque: 23 N·m (bolt B and bolt C)

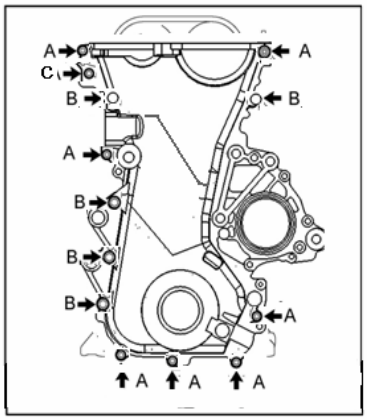


Fig. II-108

11. Connect the locating pin to the hasp as shown in *Fig. II-109*.

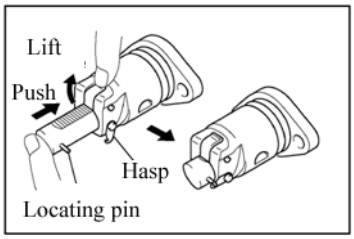


Fig. II-109

12. Install the tensioner assembly with 2 nuts (see *Fig. II-110*).

Torque: 11 N·m

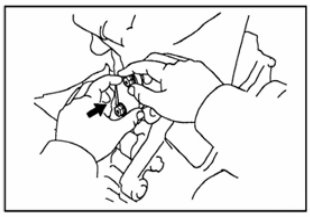


Fig. II-110

13. Install the crankshaft pulley.

1) Install the crankshaft pulley with the special tool (see *Fig. II-111*).

Torque: 138 N·m

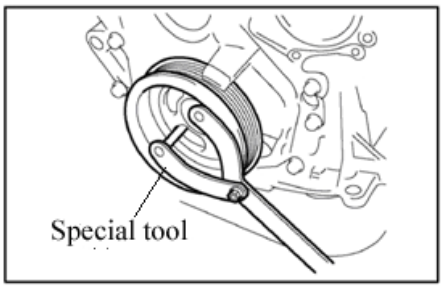


Fig. II-111

2) Rotate the crankshaft counterclockwise to remove the locating pin from the hasp. (See *Fig. II-112*)

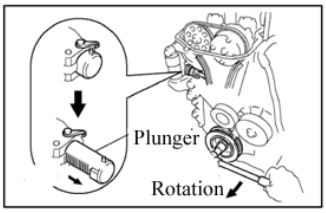


Fig. II-112

3) Rotate the crankshaft clockwise to check if the slide block has been pushed in the device by the plunger.

Note:

If the plunger cannot spring back, please press the slide block into the chain tensioner by fingers or screwdriver to separate the hasp and the locating pin, as a result, the plunger will spring back.

14. Install a new water pump O-ring seal (see *Fig. II-113*).

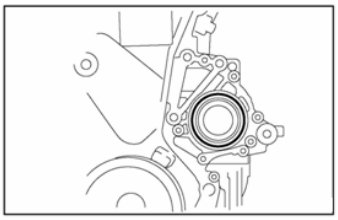


Fig. 11-113

15. Install the water pump by tightening 5 bolts as shown in the Fig. (See *Fig. II-114*)

Torque: 9 N·m (bolt A)
Torque: 11 N·m (bolt B)

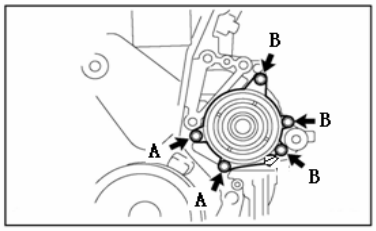


Fig. II-114

16. Install the engine right suspension with 3 bolts (see *Fig. II-115*).

Torque: 52 N·m

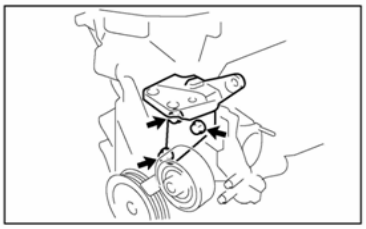


Fig. II-115

17. Install the cylinder head hood.

18. Install the tension wheel assembly, the generator, the A/C compressor and the power steering pump.

19. Install and adjust the water pump generator belt.

20. Add coolant into the cooling system and drain the air in the system.

21. Install the battery and connect the negative wire.

22. Confirm that there is no coolant leakage at the hose connection.

Oil Dish and Oil Strainer

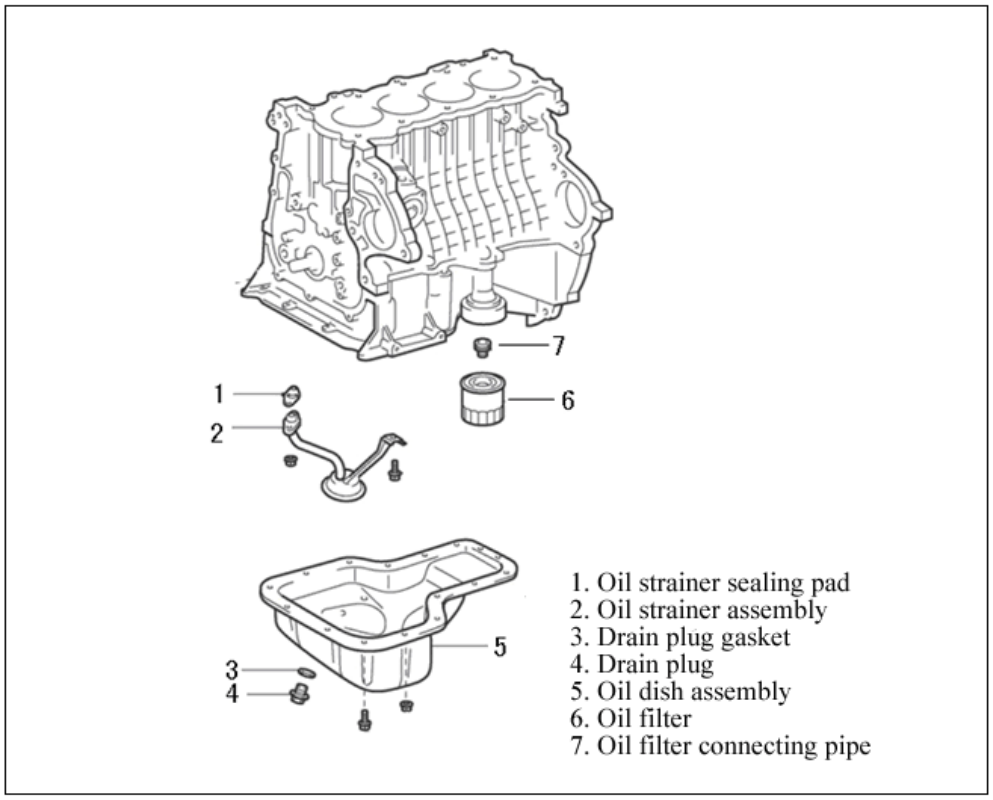


Fig. II-116

I. Removal

1. Remove the drain plug and the washer from the oil dish and drain the engine oil (see *Fig. II-117*).

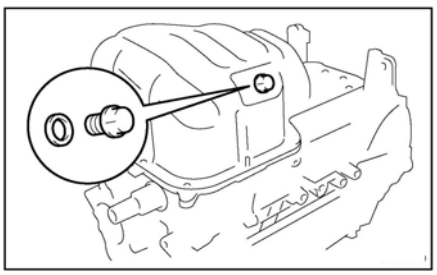


Fig. II-117

2. Remove 14 bolts and 2 nuts (see *Fig. II-118*).

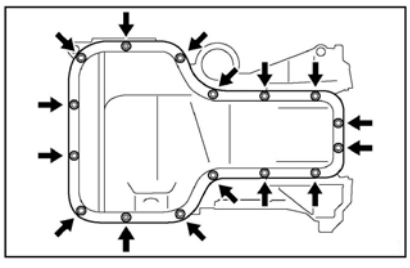


Fig. II-118

3. Insert the blade of the special service tool between the cylinder body and the oil dish (see *Fig. II-119*), cut open the coated sealant and remove the oil dish.

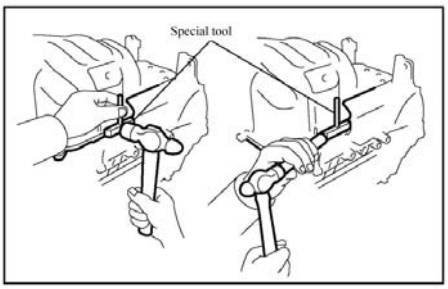


Fig. II-119

Note:
Do not hurt the joint plane of the cylinder block and the oil dish.

4. Remove a bolt and 2 nuts (see *Fig. II-120*).

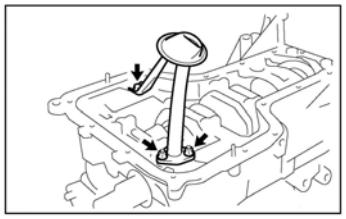


Fig. II-120

5. Remove the oil strainer (see *Fig. II-121*).

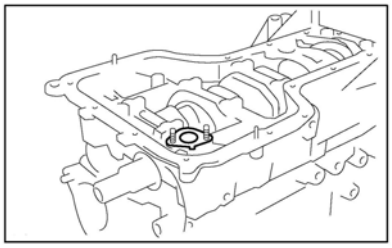


Fig. II-121

6. Remove the oil strainer sealing pad from the lower part of the engine block (see *Fig. II-122*).

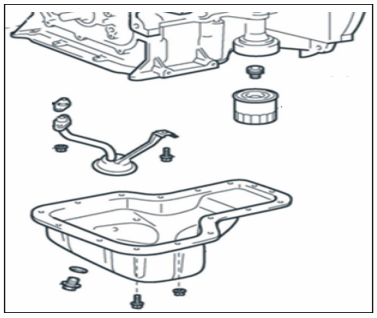


Fig. II-122

II. Cleaning

1. Clean the joint surface of the oil dish and the cylinder block. Clean the engine oil, old sealant and stain on the fitting surface and clean the inside of the oil dish.

2. Clean the oil strainer.

III. Installation

1. Install oil strainer sealing pads on the positions shown in *Fig. II-121*.

2. Install the oil strainer with 2 nuts and a bolt (see *Fig. II-120*).

Torque: 11N·m

3. Clean the fitting surface of the oil dish and the cylinder block.

4. Remove all the old fillings from the washer and the seal groove with blade and washer cleaner.

5. Thoroughly clean all parts and remove all loose materials.

6. Coat the sealant as shown in *Fig. II-123*.

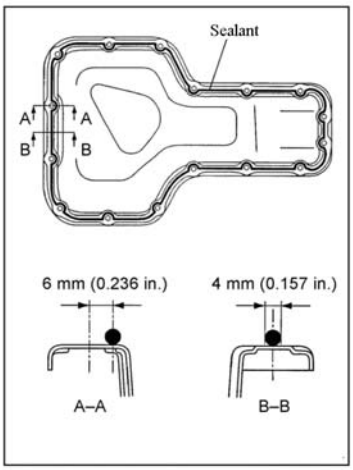


Fig. II-123

Note:

◎ Clean the oil stain on the contact surface.

◎ Complete the installation of the oil pan in 3 minutes after the sealant is coated.

◎ Do not add engine oil in 2 hours after the oil pan is installed.

7. Install the oil dish assembly with 14 bolts and 2 nuts (see *Fig. II-118*).

Torque: 11 N·m

8. Install the drain plug and the washer on the oil dish (see *Fig. II-117*).

Torque: 30 N·m

9. Add new oil into the engine and confirm that there is no engine oil leakage at each connection.

Engine Oil Pump

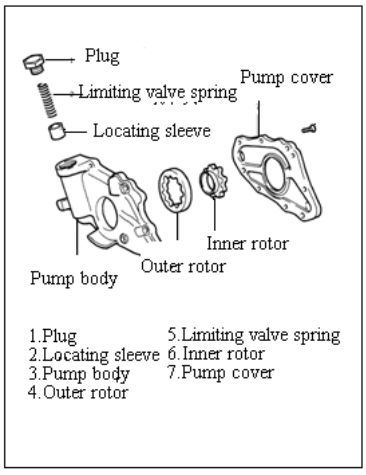


Fig. II-124

I. Removal

1. Disconnect the battery negative wire.

2. Remove the timing chain as mentioned above.

3. Take out the crankshaft timing sprocket (see *Fig. II-125*).

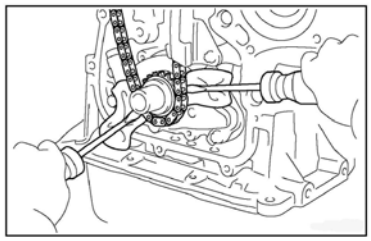


Fig. II-125

4. Remove the oil dish and the oil strainer as mentioned above.

5. Remove 5 bolts and then remove the oil pump assembly (see *Fig. II-126*).

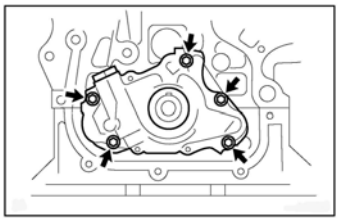


Fig. II-126

II. Disassembly

1. Remove the engine oil pump pressure-limiting valve plug, spring and locating sleeve (see *Fig. II-127*).

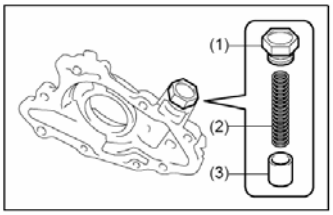


Fig. II-127

2. Remove 3 cross screws and then remove the oil pump cover (see *Fig. II-128*).

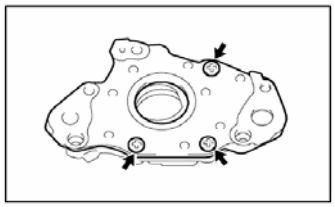


Fig. II-128

III. Check

1. Check the oil seal lip for defect or damage. Replace it as required.

2. Coat the oil seal lip with grease prior to installation.

Note: It is required to press the assembly during the installation of the oil seal till the oil seal end surface is in line with the pump cover surface.

3. Coat the engine oil pump with engine oil and check if the engine oil can flow into the pump body by its own weight (see *Fig. II-129*).

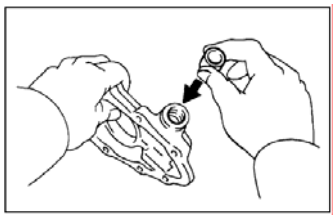


Fig. II-129

4. Check the inner rotor, outer rotor, pump cover and pump body for excessive wear or damage (see *Fig. II-130*).

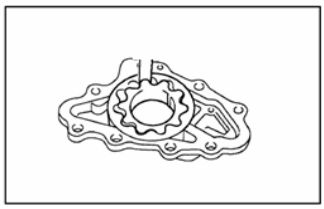


Fig. II-30

IV. Measurement

1. Radial clearance

Check the radial clearance between the outer rotor and the pump body with feeler gauge (see *Fig. II-131*).

If the clearance is higher than the maximum value, the outer rotor and the pump body should be replaced.

Standard radial clearance: 0.260-0.325mm

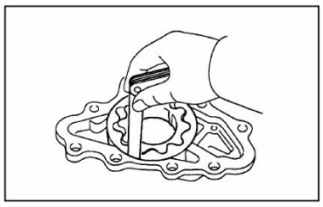


Fig. II-131

2. Backlash

Measure the backlash with ruler and feeler gauge (see *Fig. II-132*).

Standard backlash: 0.025—0.071mm

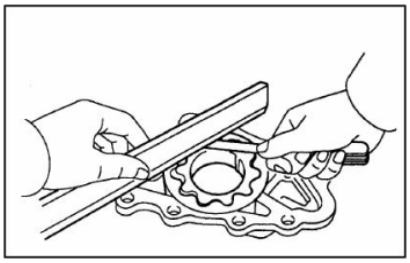


Fig. II-132

V. Assembly

1. Clean and dry all the parts removed.

2. Coat the inner rotor, outer rotor, pump body and pump cover with a layer of engine oil.

3. Install the inner and outer rotors into the pump body as shown in *Fig. II-133*.

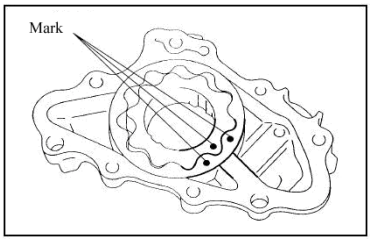


Fig. II-133

4. Install the pump cover with 3 bolts (see *Fig. II-134*).

Torque: 11N·m

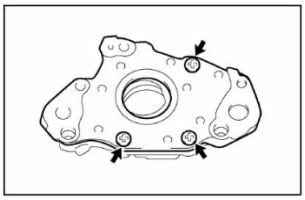


Fig. II-134

Check the rotation of gears by hand after the pump cover is installed.

5. Install the engine oil pump pressure-limiting valve locating sleeve, spring and plug (see *Fig. II-127*).

Torque: 37 N·m

VI. Installation

1. Install 2 engine oil pump locating pins and new sealing pads to the cylinder block.

2. Install the engine oil pump to the crankshaft with special tools (see *Fig. II-135*).

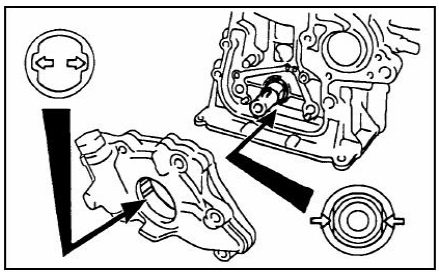


Fig. II-135

3. Install the engine oil pump with 5 bolts (see *Fig. II-126*).

Torque: 11N·m

4. Install the oil strainer, oil dish and other parts as mentioned above.

5. Check and ensure that all parts removed have been reinstalled. Install other parts required.

6. Add new oil into the engine after the installation is completed.

7. Add new coolant into the cooling system and drain the air in the system.

8. Start the engine and check the oil pressure.

Section XII Valve, Camshaft and Cylinder Head

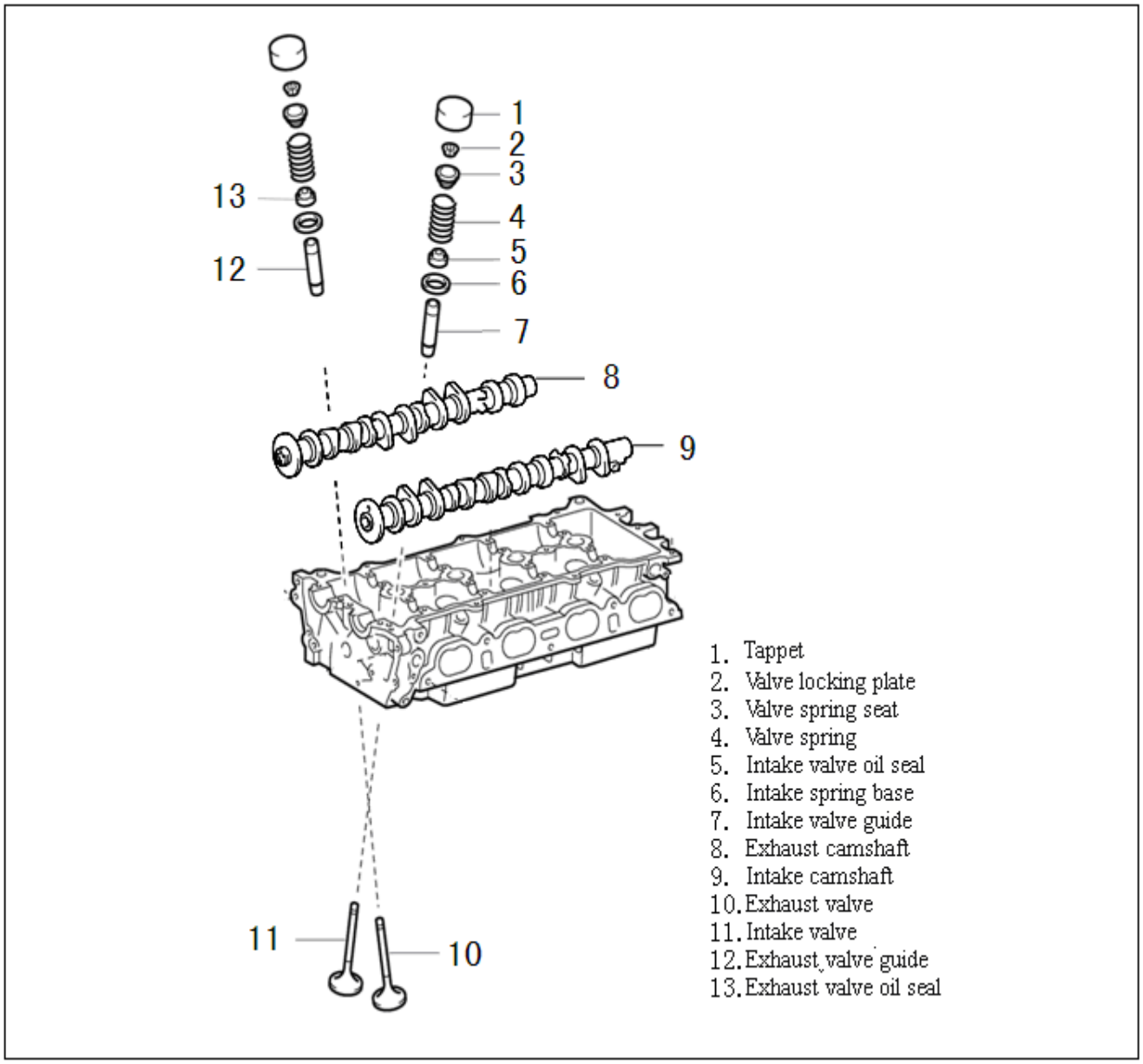


Fig. II-136

I Removal

1. Disconnect the lead from the battery and remove the battery.

2. Evacuate the cooling system.

3. Remove the intake pipe.

4. Remove the harness.

5. Remove the following hoses.

◎ Disconnect the vacuum booster hose from the intake manifold.

◎ Disconnect the PCV valve hose from the intake manifold and the throttle.

◎ Disconnect the canister solenoid valve hose from the intake manifold.

◎ Disconnect the long ventilation hose from the cylinder head cover.

6. Remove the intake and exhaust manifolds as above mentioned.

7. Remove the ignition coil and the cylinder head cover as above mentioned.
8. Remove the timing part as above mentioned.
9. Screw off 19 bolts one by one as per the figure and take

down 9 main bearing covers. (*See Fig. II-137*)

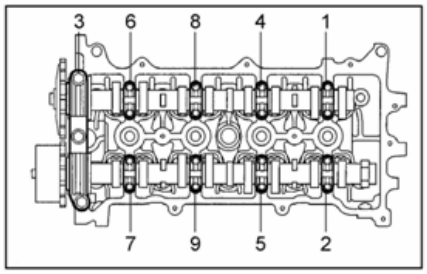


Fig. II-137

10. Use a stock vice to clip the exhaust camshaft and remove the bolt and the exhaust timing chain wheel. *(See Fig. II-138)*

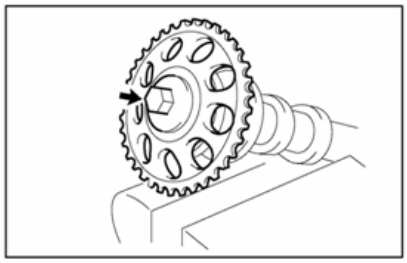


Fig. II-138

11. Use a stock vice to clip the intake camshaft and remove the bolt and intake timing chain wheel. *(See Fig. II-139)*

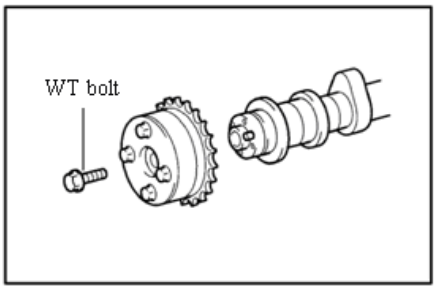


Fig. II-139

12. As per the order shown in the figure, screw off the cylinder head bolt and remove them. *(See Fig. II-140)*

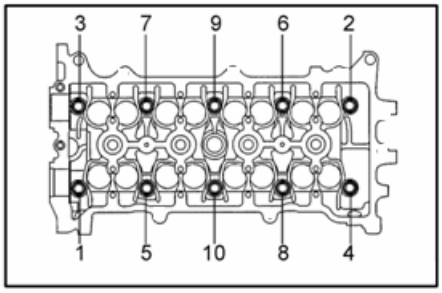


Fig. II-140

13. Check if there is any components require moving or removing near the cylinder head; if necessary, move or remove those things.
14. Remove the cylinder head.

15. Use internal hexagonal wrench 10 to remove the waterway blockage of the cylinder head and its washer. (*See Fig. II-141*)

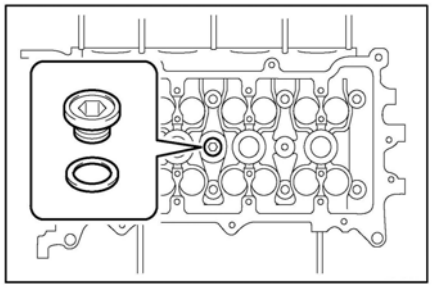


Fig. II-141

16. Take out the valve tappet from the cylinder head. *(See Fig, II-142)*

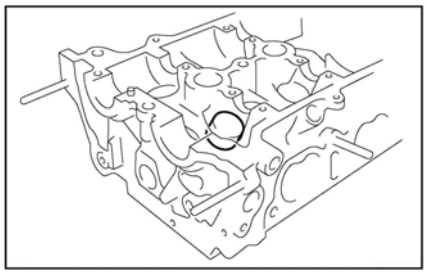


Fig. II-142

17. Place the cylinder head assembly on the wood board.

18. Use special assembly and disassembly tools of the valve to press down the valve spring and take out the valve lock clip. *(See Fig. II-143)*

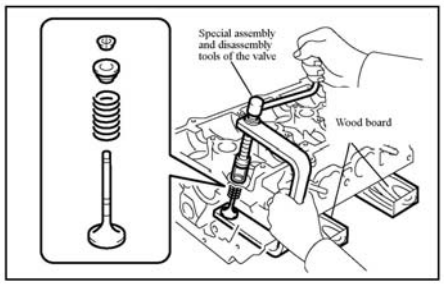


Fig. II-143

19. Take out the valve spring seat, the valve spring and the valve orderly.

20. Remove the valve oil seal with a clamp *(See Fig. II-144)*

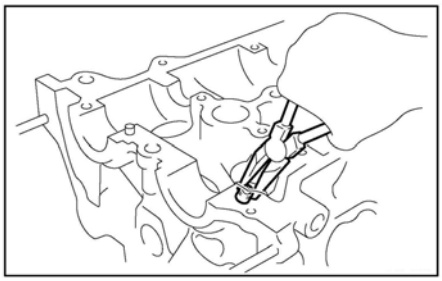


Fig. II-144

Note:

◎ Once the oil seal was removed; it should not be used again. While assembly, new oil seal must be used.

21. Use a compressed air gun and magnetic needle to take out the valve spring base. (*See Fig. II-145*)

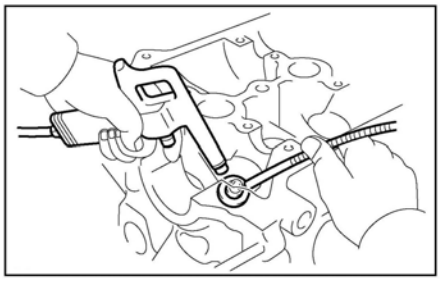


Fig. II-145

22. Use a thread sleeve wrench to remove 8 double end studs. (*See Fig. II-146*)

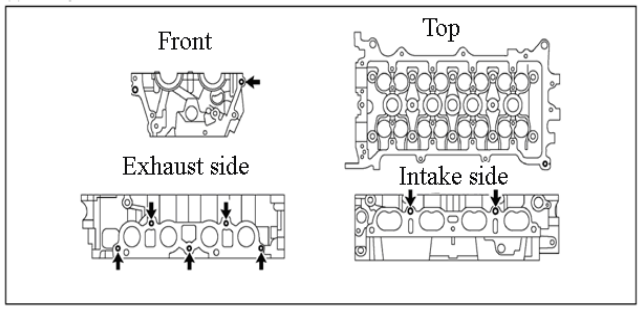


Fig. II-146

II Check

Cylinder head

Clean the carbon deposit in the combustion chamber.

Note:

◎ Never scrape the carbon deposit with any sharp tool. Pay attention that never scratch or damage the metal surface while cleaning the carbon deposit. It's the same for the valve and the valve seat.

1. Flatness of the cylinder head:

Use a precise straight edge and a feeler gauge to check the flatness of the cylinder joint surface and the exhaust side.

Maximum flatness:

Cylinder joint surface: 0.05mm

Intake side: 0.10mm

Exhaust side: 0.10mm

If the flatness exceeds the maximum, replace the cylinder head. *(See Fig. II-147)*

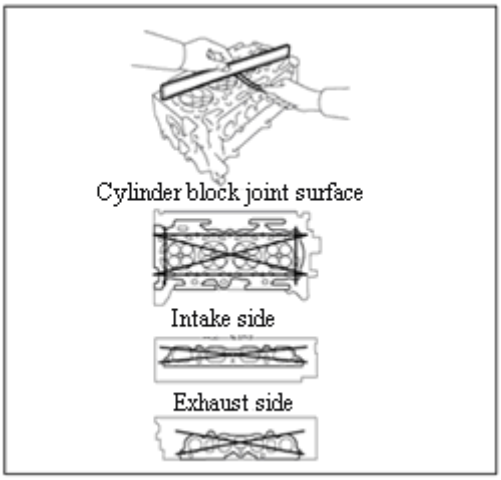


Fig. II-147

2. Check crack:

Use color paint to check the combustion chamber, intake and exhaust seat ring and the cylinder head surface for crack. *(See Fig. II-148)*

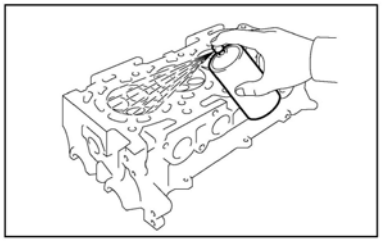


Fig. II 148

3. Contact width of the valve seat. *(See Fig. II-149)*

Usually mark the contact trace on the valve.

For example:

Apply a layer of mark film evenly to the valve seat and rotate the valve seat and the valve head to check them. Valve grinding tool must be used (for valve grinding).

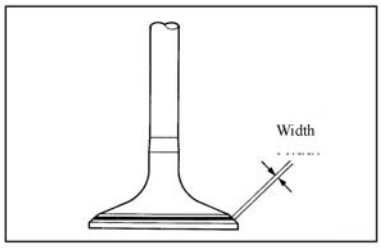


Fig. II-149

The mark shape on the valve mating surface must be continuous ring mark and its width must be in the specified range. (*See Table II-19 and Fig. II-150*)

Table II-19

Standard width of the mark on the valve surface	Intake	1.0-1.4mm
	Exhaust	

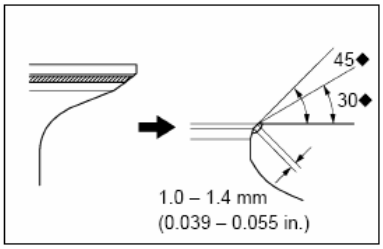


Fig. II-150

4. Maintenance of the valve seat:

If the mark generated by the valve seat contacting the valve is uneven or its width exceeds the specified range, regrind, or cut or accurately grind and polish it.

Intake valve seat: repair it twice with a valve seat reamer. Two reamers must be used for repairing: one for 15° and one for 45°. The required valve seat width must be obtained after the second repairing. (*See Fig. II-151*)

Width of the intake valve seat: 1.0-1.4mm

Exhaust valve seat: The recovery procedure is the same as that of the exhaust valve.

Width of the exhaust valve seat: 1.0-1.4mm

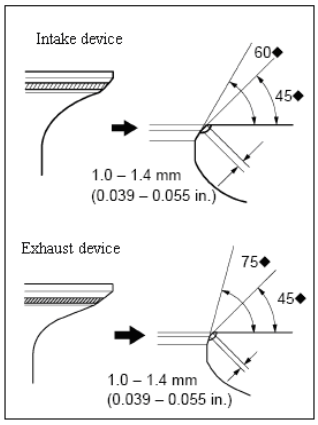


Fig. II-151

Valve grinding: apply the primary grinding paste to the end surface to grind it and use the fine grinding paste to grind it. Use the valve grinding tool to grind it as per the normal methods.

5. Check the camshaft

1) Place the camshaft on the V-plate to check its radius run-out.

Measure the circumference radius run-out with a micrometer at the middle shaft neck. (See Fig. II 152)

Maximum circumference radius run-out: 0.03mm

If the circumference radius run-out exceeds the maximum, replace the camshaft.

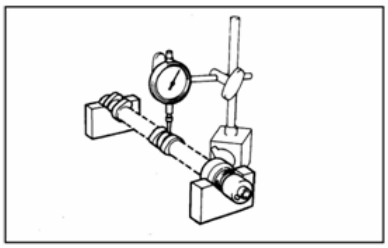


Fig. II-152

2) Check the cam angle

Use a spiral micrometer to measure the height of the cam angle.

Standard height of the cam angle:

Intake: 44.168～44.268mm

Exhaust: 43.705—43.805mm

If the height of the cam angle fails to meet the regulation, replace the camshaft. (*See Fig. II-153*)

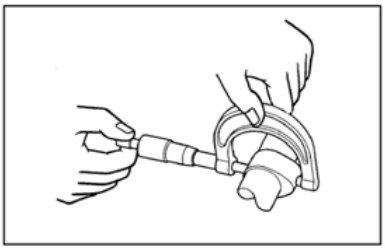


Fig. II-153

3) Check the camshaft shaft neck

Check the shaft neck and bearing cover of the camshaft for iron mold, slide mark, abrasion or damage. If any abnormal condition is found, replace the camshaft or cylinder head or camshaft cover.

Use a spiral micrometer to measure the diameter of the shaft. (See Fig. II 154)

No. 1 exhaust: 24.949—24.965mm

Others: 22.949～22.965mm

If the diameter of the shaft neck fails to meet the regulation, check the clearance of the oil film.

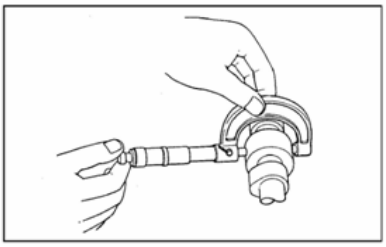


Fig. II-154

4) Axial clearance of the camshaft

Install intake and exhaust camshafts.

Move the camshaft back and forth and check the axial clearance of the camshaft with a micrometer. *(See Fig. II-155)*

Standard axial clearance: 0.040-0.095mm

Maximum axial clearance: 0.0110mm

If the axial clearance exceeds the maximum, replace the cylinder head. If there is scratch on the camshaft surface, replace the camshaft.

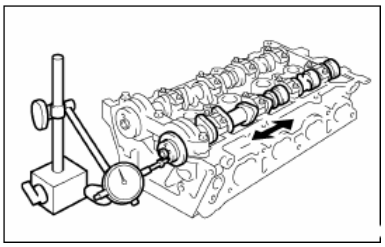


Fig. II-155

6. Check the valve tappet

Use a micrometer to measure the diameter of the valve tappet. *(See Fig. II-156)* The diameter of the valve tappet is 30.966-30.976 mm.

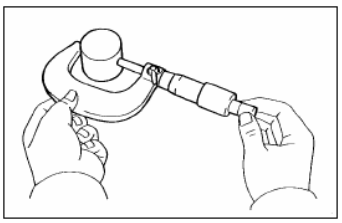


Fig. II-156

7. Check the oil clearance of the valve tappet

Use an inner diameter dialgauge to measure the diameter of the valve tappet hole on the cylinder head. *(See Fig. II-157)*

Diameter of the valve tappet hole: 31.000-31.025mm

The diameter of the valve tappet hole deducts the diameter of the valve tappet to get the oil clearance.

Standard oil clearance: 0.024-0.059mm

Maximum oil clearance: 0.079mm

If the oil clearance exceeds the maximum, replace the valve tappet.

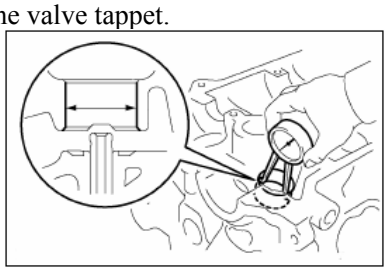


Fig. II-157

8. Check the valve spring

1) Use a vernier caliper to measure the length of the valve spring in the free state. (See Fig. II-158)

Free length: 43.40mm

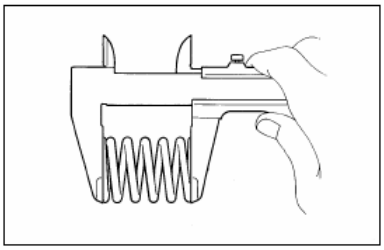


Fig. II-158

2) Use a spring dynamometer to measure the elastic force of the spring in the standard compressed length. (*See Fig. II-160*)

Elastic force of the installation: 153-169N（33.88mm）

Maximum working elastic force: 335.3-370.7N（24.1mm）

If the elastic force of the installation is beyond the specified range, the spring must be replaced.

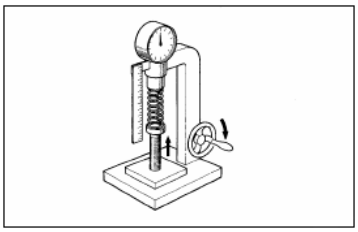


Fig. II-159

3) Verticality of the valve spring:

Use a straight edge and a flat to check the verticality of each spring as per the gap between the end of the valve spring and the straight edge. (See Fig. II-161)

If the gap is beyond the maximum below, the valve spring must be replaced.

Maximum deviation value: 1.6mm

Maximum deviation angle: 2°

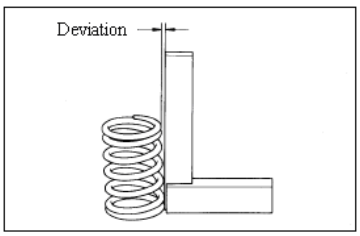


Fig. II-160

9. Check the valve:

Clean all the carbon deposit on the valve and check the working surface of the valve and the valve stem for abrasion, burning loss or deformation; if necessary, replace the valve.

1) Measure the thickness of the valve edge. (*See Fig. II-161*)

Standard thickness: 1.0mm

Minimum thickness: 0.7mm

If the measured value is lower than the minimum thickness, replace the valve.

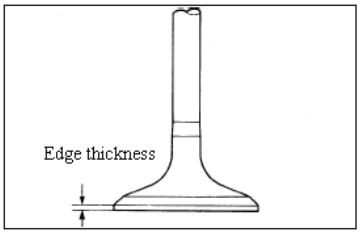


Fig. II-161

2) Use a height gauge to measure the total length of the valve. (*See Fig. II-162*)

Standard total length:

Intake valve: 88.65 mm Exhaust valve: 88.69 mm

Minimum total length:

Intake valve: 88.35 mm Exhaust valve: 88.39 mm

If the total length of the valve is lower than the minimum, replace the valve.

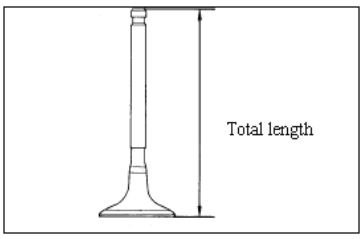


Fig. II-162

3) Measure the diameter of the valve stem with a micrometer. (*See Fig. II-163*)

Diameter of the stem:

Intake valve: 5.470-5.485 mm

Exhaust valve: 5.465-5.480 mm

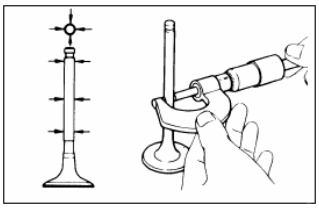


Fig. II-163

10. Check the oil clearance of the valve guide:

a) Use an inner diameter dial indicator to check the inner diameter of the valve guide. (*See Fig. II-164*)

Inner diameter of the valve guide: 5.510-5.530mm

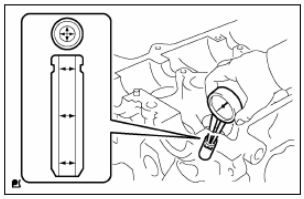


Fig. II-164

b) The inner diameter of the valve guide deducts the diameter of the valve stem to get the oil clearance of the valve guide.

Standard oil clearance:

Intake valve: 0.025-0.060mm

Exhaust valve: 0.030-0.065mm

Maximum oil clearance:

Intake valve: 0.08mm

Exhaust valve: 0.10mm

If the oil clearance exceeds the maximum, replace the valve and the valve guide.

11. Valve guide:

1) Heat the cylinder head to 80-100℃. (*See Fig. II-165*)

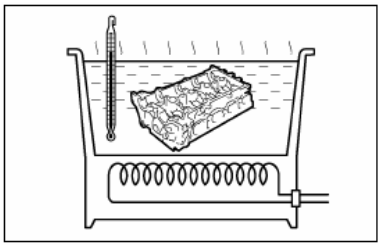


Fig. II-165

2) Place the cylinder head on the wood board.
3) Use a special tool to remove the valve guide from the cylinder head. (*See Fig. II-166*)

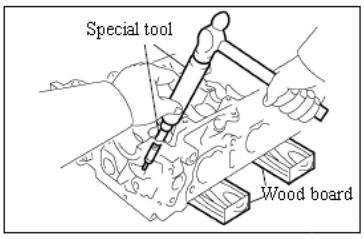


Fig. II-166

Notes:

The valve guide can not be used again once it's dismantled.

Install a new valve guide (a larger one).

4) Use a special tool to measure the inner diameter of the valve guide hole. (*See Fig. II-167*)

Inner diameter: 10.285-10.306mm

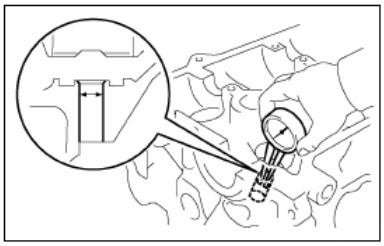


Fig. II-167

If the inner diameter of the guide hole exceeds the maximum, process the guide hole of the cylinder head to 10.335-10.350mm for installing a larger valve guide.

Tip: (*See Table II-20*)

Table II-20

Diameter of the valve guide	Inner diameter of the valve guide (mm)
STD	10.285-10.306
O/S0.05	10.335-10.356

III Assembly

1. Heat the cylinder head to 80-100℃. (*See Fig. II-165*)

2. Place the cylinder head on the wood board. (*See Fig. II-166*)
3. Ream a guide hole with a special tool (11mm reamer) to remove the burr before installing the valve guide on the cylinder head.

4. Press the new valve guide into the valve guide hole to the specified pressing depth with a special tool till the special tool contacts the cylinder head.

Specified pressing depth: 8.7-9.1mm

5. Use a special tool (5.5mm reamer) to ream the inner hole of the valve guide to the standard oil clearance. (*See Fig. II-168*)

Standard oil clearance:

Intake valve: 0.025-0.060mm

Exhaust valve: 0.030-0.065mm

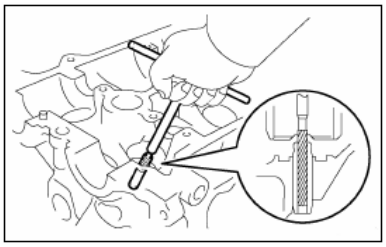


Fig. II-168

6. Install the valve oil seal:

Fill the oil into the oil seal and the main shaft of the special tool, install the oil seal on the main shaft, and use a special tool to install the oil seal on the valve guide. (*See Fig. II-169*)

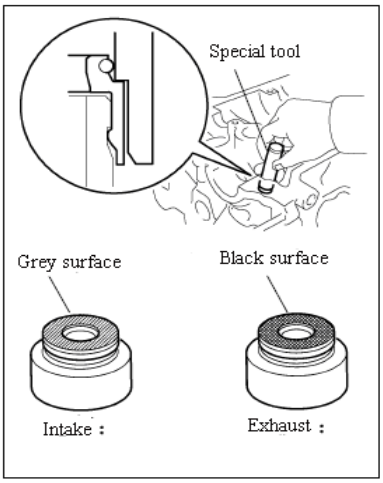


Fig. II-169

Notes:

◎ The oil seal of the intake valve is grey and that of the exhaust valve is black.

◎ The oil seal can not be used again once it is removed. A new oil seal must be used for installation.

◎ In the installation, never lightly knock or beat the special tool with a hammer or other things. Only push and press the special seal to install the oil seal on the guide. To lightly knock or beat the special tool may cause oil seal damage.

7. Install the valve spring on the cylinder head. (*See Fig. II-170*)

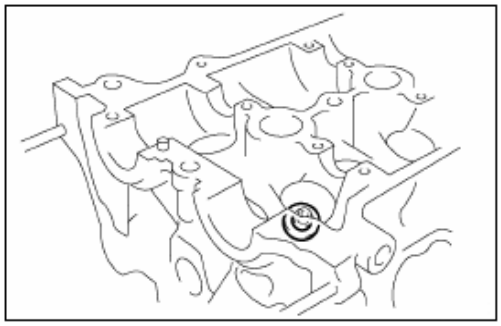


Fig. II-170

8. Install the valve

1) Place the cylinder head on the wood board.

2) Install the valve, the valve spring and the valve spring seat.

3) Use a special tool to press the valve spring and press the two valve lock clips into the valve lock clip groove. (*See Fig. II-143*)

4) Use 5# sharp puncher to slightly knock the end surface of the valve stem to reliably install the valve lock clip. (*See Fig. II-171*)

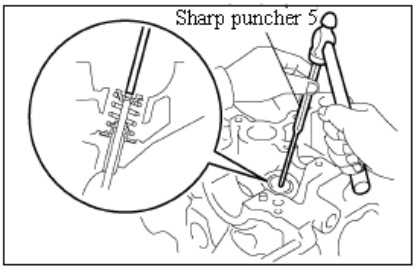


Fig. II-171

Note:

◎ Never damage the end surface of the valve stem.

9. Install the valve tappet

1) Apply a little engine lubricant to the surface of the valve tappet.

2) Install the valve tappet on the cylinder head. (*See Fig. II-142*)

10. Install the waterway blockage of the cylinder head. (*See Fig. II-141*)

Use 10# internal hexagonal sleeve to install the waterway blockage of the cylinder head.

Torque: 44N.m

11. Place the new sealing washer on the cylinder block. (*See Fig. II-172*)

Note:

◎ The surface with marker (letter) should be up in the installation.

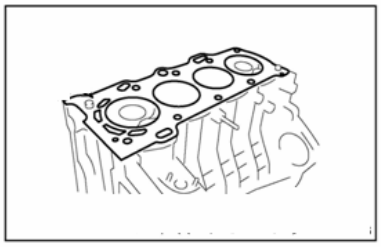


Fig. II-172

12. Install the cylinder head assembly. (*See Fig. II-173*)

1) Place the cylinder head on the cylinder head washer.

2) Apply a thin layer of oil to the mounting bolt thread of the cylinder head.

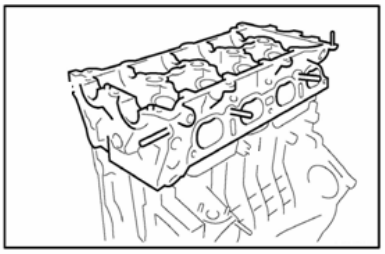


Fig. II-173

3) Screw down 10 cylinder head bolts evenly as per the order shown in the figure. (See Fig. II-174)

Torque: 49N.m for the first time and 90 N.m for the 2nd time

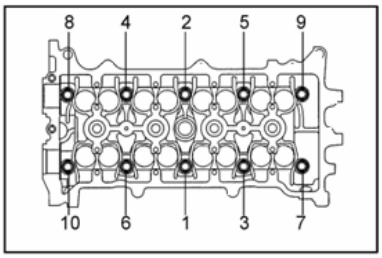


Fig. II-174

13. Install the intake camshaft timing chain wheel

1) Install the camshaft positioning pin to the intake timing chain wheel groove.

2) Install the intake camshaft timing chain wheel bolt.

Torque: 60N.m

Note:

◎Apply a thin layer of oil to the thread while installing the intake timing chain wheel assembly. (*See Fig. II-175*)

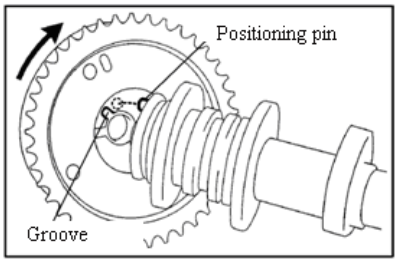


Fig. II-175

14. Use a stock vice to clip the intake camshaft and install the bolt and exhaust timing chain wheel. (*See Fig. II-176*)

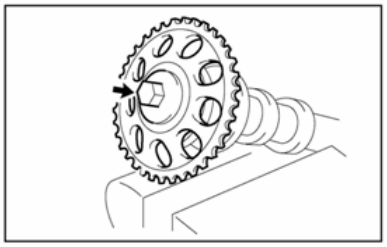


Fig. II-176

15. Install the camshaft

1) Place the intake camshaft and exhaust camshaft respectively on the cylinder head and then apply a thin layer of oil to the shaft neck of the camshaft.

2) See *Fig. II-177* for the direction of the intake camshaft and the exhaust camshaft angle of the 1st cylinder.

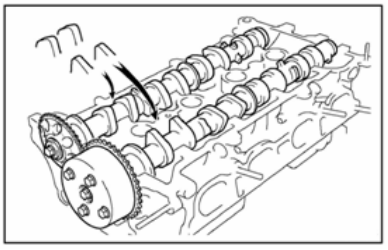


Fig. II-177

3) Check the forward mark and the order of the camshaft

bearing cover for correctness. Screw down the bearing cover bolt in the order shown in *Fig. II-178*.

Torque: 13N·m

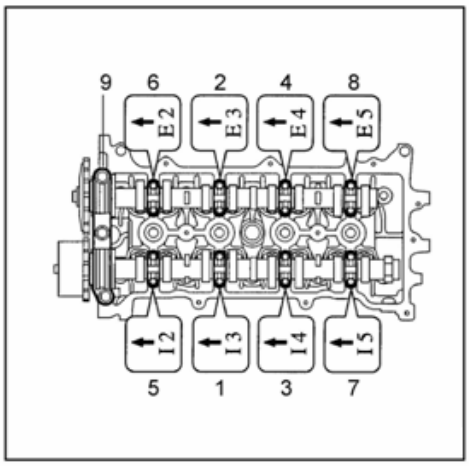


Fig. II-178

4) Install 3 bolts of 1# camshaft bearing cover.

Torque: 23N·m

16. Adjust the clearance between the intake valve and the exhaust valve as above mentioned.
17. Install the timing part as above mentioned.
18. Install the cylinder head cover assembly as above mentioned.

19. Install the intake manifold and the exhaust manifold as above mentioned.

20. Adjust the water pump generator belt tension.

21. Check and confirm if the removed parts have been moved back. Reinstall all the components failing to be installed.

22. Fill up the coolant again to exhaust in the system.

23. Install the battery and connect the lead of the battery.

Section XIII Piston, Piston ring, Connecting Rod and Crankshaft

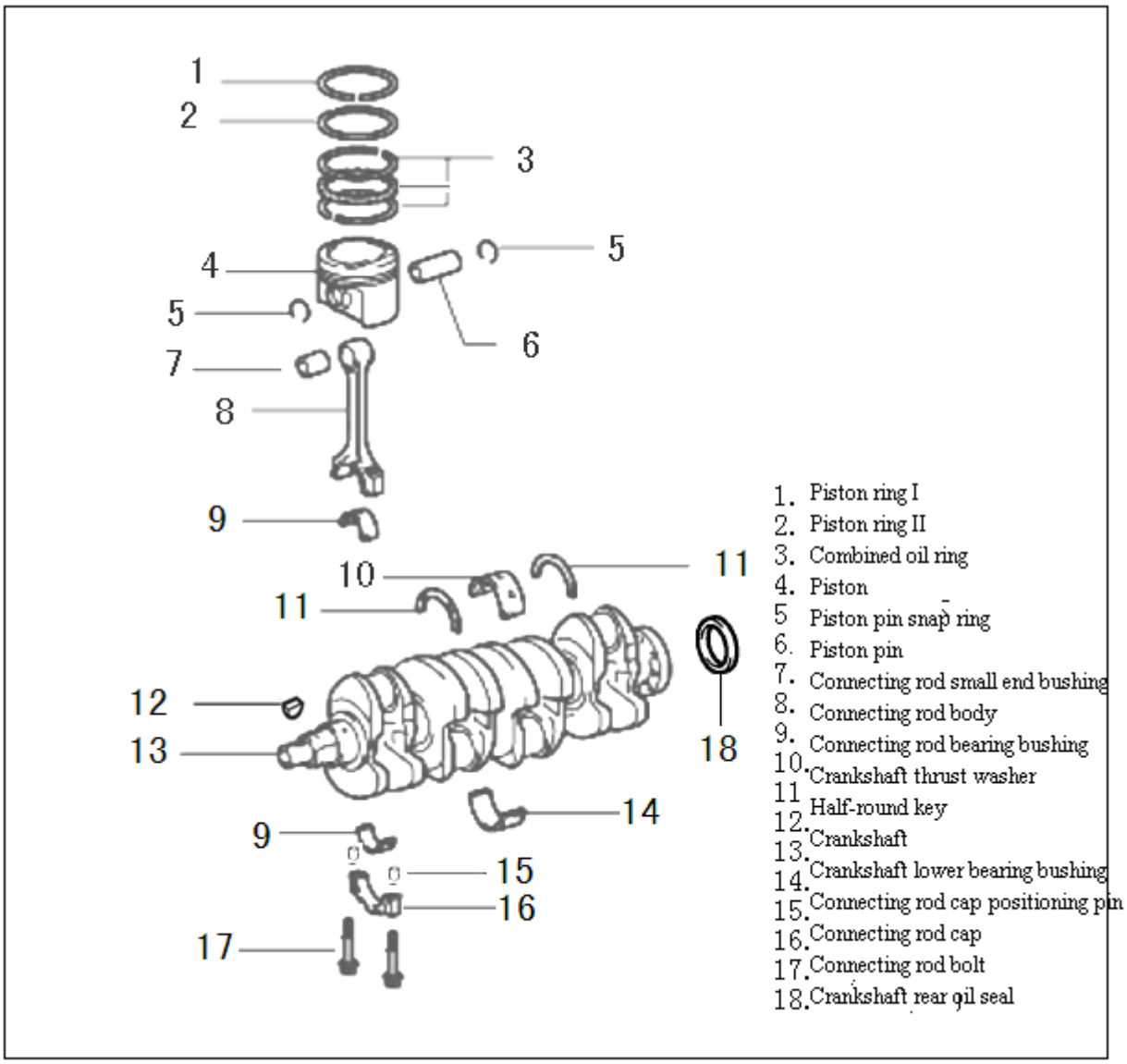


Fig. II-179 Piston, piston ring, connecting rod and crankshaft assembly

I Removal and check

1. Remove the cylinder head from the crankcase body as the above mentioned.

2. Discharge the engine oil.

3. Dismantle the oil pan and the oil strainer as the above mentioned.

4. Mark the cylinder number on all pistons with quick-drying paint.

5. Dismantle the drain bolt and lean the cylinder block to empty it. (*See Fig. II-180*)

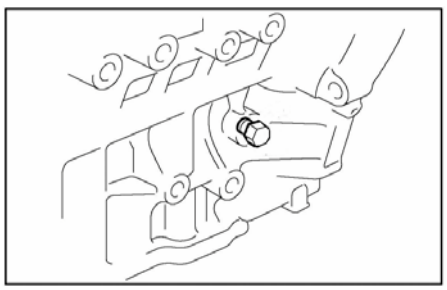


Fig. II-180

6. Move the connecting rod back and forth and measure its axial clearance with a micrometer. (*See Fig. II-181*)

Standard axial clearance: 0.16mm～0.34mm

Maximum axial clearance: 0.34mm

If the axial clearance exceeds the maximum, replace the connecting rod component.

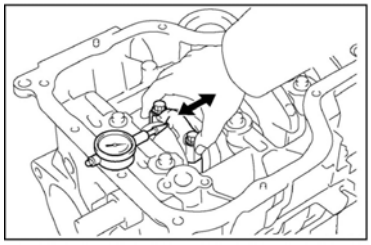


Fig. II-181

7. Check the match mark of the connecting rod and the cover to ensure the correct re-assembly. (*See Fig. II-182*)

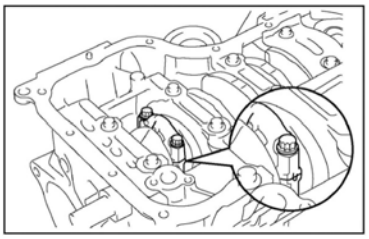


Fig. II-182

8. Remove the connecting rod cover bolt. (*See Fig. II-183*)

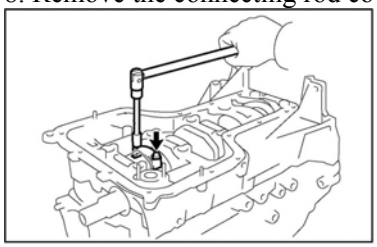


Fig. II-183

9. Clean the connecting rod cap and the connecting rod bearing bushing.

10. Check the connecting rod cap and the connecting rod bushing for pockmark and scratch. If the connecting rod cap and the connecting rod bushing are damaged, replace the connecting rod bearing bushing. If necessary, polish or replace the crankshaft.

11. Check the oil film clearance. (*See Fig. II-185*):

1) Insert a plastic oil clearance gauge into a crankshaft connecting rod neck.

2) Install the connecting rod cap and screw down the connecting rod bolt with a torque wrench. (*See Fig. II-184*)

Torque: 50N·m

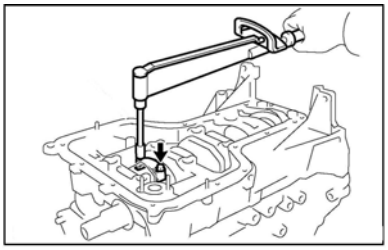


Fig. II-184

3) Check the match mark of the connecting rod and the connecting rod cap. (*See Fig. II-185*)

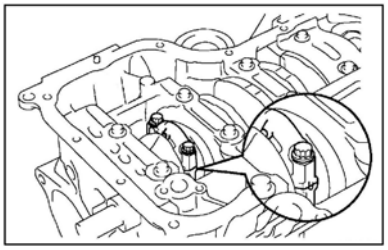


Fig. II-185

4) Dismantle the connecting rod cap.

5) Measure the oil clearance of the plastic at the widest point.

Standard oil film clearance: 0.030mm ～ 0.054mm

Maximum oil film clearance: 0.08mm

If the oil film clearance exceeds the maximum, replace the bearing bushing.

If necessary, polish or replace the crankshaft. (*See Fig. II-187*)

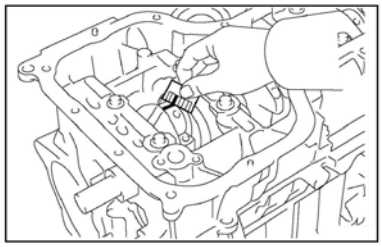


Fig. II-187

Tip: If the bushing number is not clear or re-matching the bushing is required after replacing a new crankshaft and a connecting rod, the numbers on the connecting rod and the crankshaft together add and deduct one to match the bushing, thus to choose correct bearing bushing. (*See Fig. II-188 and Table II-21*)

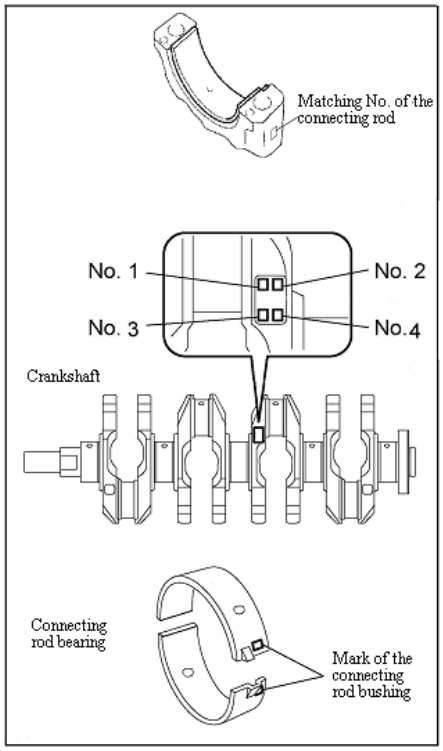


Fig. II-188

Table II-21

	Mark No.					
Connecting rod body	1		2		3	
Crankshaft	1	2	1	2	1	2
Matched bearing bushing	1	2	2	3	3	4

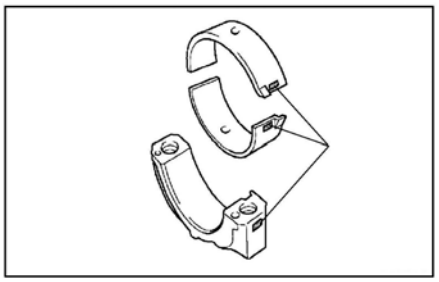
Central wall thickness of the standard size bearing bushing (*See Fig. II-189*):

Mark No. "1":
1.481mm～1.485mm

Mark No. "2":
1.485mm～1.489mm

Mark No. "3":
1.489mm～1.493mm

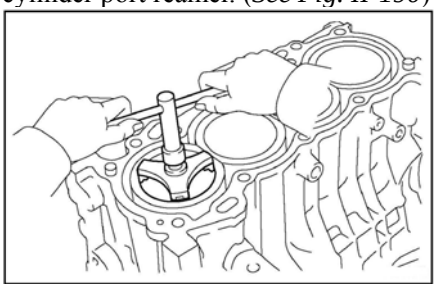
Mark No. "4":
1.493mm～1.497mm


Fig. II-189

6) Take out all the plastic oil clearance gauges.

12. Remove the piston and the connecting rod assembly.

1) Clean all the carbon deposits on the top of the cylinder with a cylinder port reamer. (*See Fig. II-190*)

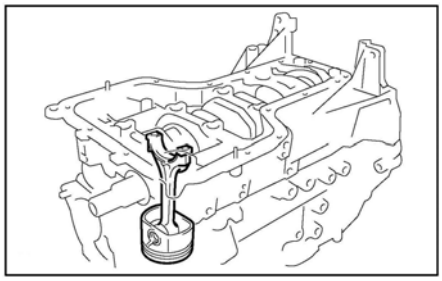

Fig. II-190

2) Push the piston, the connecting rod assembly and the upper bearing bushing through the top of the cylinder block. (*See Fig. II-191*)

Note:

◎ Place the bearing bushing, the connecting rod and the connecting rod cap together.

◎ Place the piston and the connecting rod assembly in a correct order.


Fig. II-191

13. Remove the connecting rod bearing bushing

1) Remove the connecting rod bushing from the connecting rod cap. (*See Fig. II-192*)

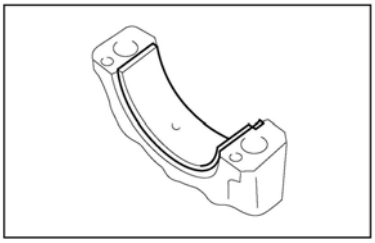


Fig. II-192

2） Remove the connecting rod bearing bushing from the connecting rod body. (*See Fig. II-193*)

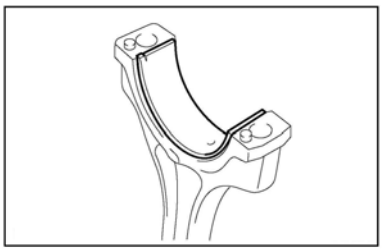


Fig. II-193

14. Remove the piston ring

1) Dismantle two compression rings with a piston ring expander. (*See Fig. II-194*)

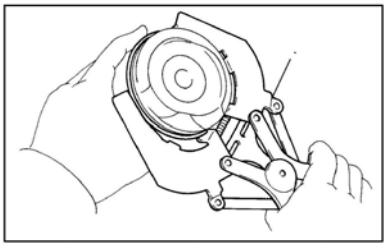


Fig. II-194

2) Remove 2 piece rings and bushing rings.

Note:

◎ Place the piston ring in a correct order.

15. Remove the piston pin snap ring and the piston pin

1) Use a clamp to take out 2 piston pin snap rings. (See Fig. II-195)

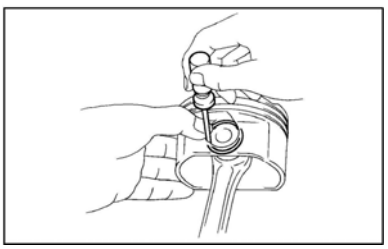


Fig. II-195

2) Place the copper sheet under the end surface of the piston pin, slightly hammer the piston pin with a plastic hammer and a round rod and take out the connecting rod. (*See Fig. II-196*)

Note:

◎ The connecting rod, the pin and the piston are accessories.

◎ Place piston, pin, ring, connecting rod and bearing in a correct order.

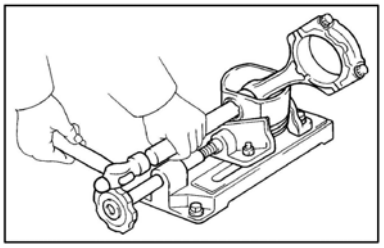


Fig. II-196

16. Remove the crankshaft

1) Remove 10 upper and lower body connecting bolts of the crankcase (*See Fig. II-197*)

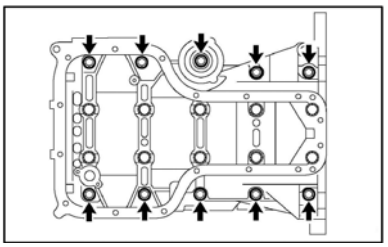


Fig. II-197

2) Screw off and dismantle the retaining bolt of the crankcase main bearing cover evenly as per the order shown in *Fig. II-198*.

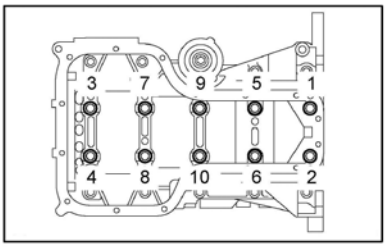


Fig. II-198

3) Use a screw driver to pry the crankcase lower body assembly as per *Fig. II-199* and take down the crankcase lower body assembly.

Note:

◎ Never damage the mating surface of the upper body and the lower body of the crankcase and the bearing bushing surface.

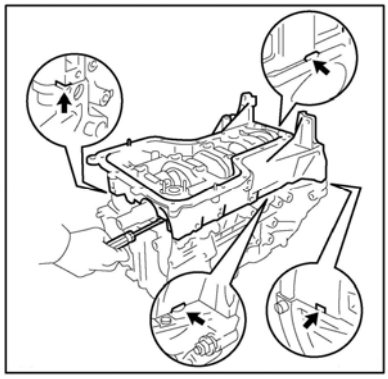


Fig. II-199

4) Remove the crankshaft from the crankcase upper body assembly. (See Fig. II-200)

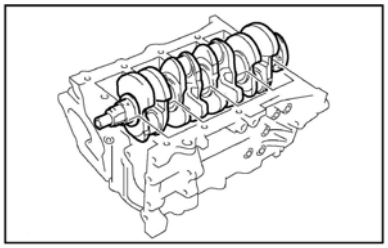


Fig. II-200

17. To check the axial clearance of the crankshaft, pry the crankshaft back and forth with a flat screw driver and measure the axial clearance with a micrometer. (*See Fig. II-201*)

Standard axial clearance: 0.04mm-0.30mm

Maximum axial clearance: 0.30mm

If the axial clearance exceeds the limit, replace the whole set of thrust washer.

Thickness of the thrust washer: 2.43mm-2.48mm

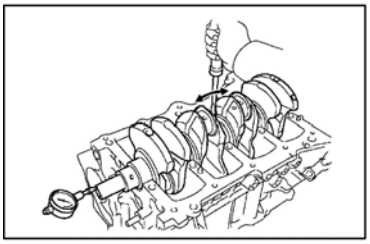


Fig. II-201

18. Remove the crankshaft thrust washer

Remove 2 crankshaft thrust washers from the crankshaft upper body assembly. (*See Fig. II-202*)

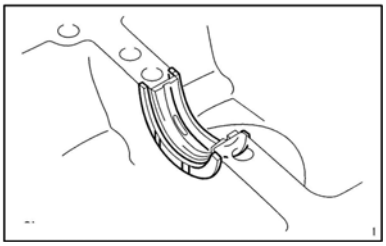


Fig. II-202

19. Remove the upper and lower bearing bushings of the crankshaft

1) Take down 5 upper bearing bushings of the crankshaft from the crankcase upper assembly.

Note:

◎ Place the upper bearing bushing of the crankshaft orderly. (*See Fig. II-203*)

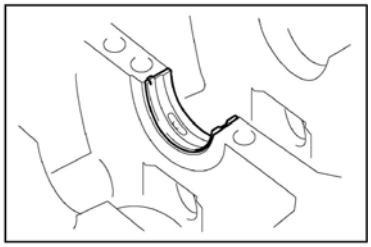


Fig. II-203

2) Dismantle 5 lower bearing bushings of the crankshaft from the crankcase lower body assembly. (*See Fig. II-204*)

Note:

◎ Place the upper bearing bushing of the crankshaft orderly.

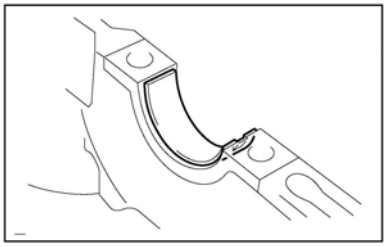


Fig. II-204

20. Remove the stud bolt

Take down 8 stud bolts at the position shown in *Fig. II-205*.

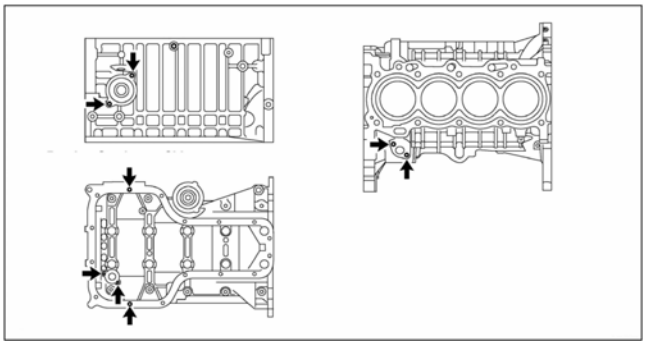


Fig. II-205

21. Check the top surface of the crankcase upper body for warpage

1) Clean out all the washer materials from the top surface of the cylinder block with a washer scraper.

2) Clean the cylinder block with a soft brusher and some solvent.

3) Measure the warpage of the top surface of the crankcase with a precise ruler and a feeler gauge.

Maximum warpage: 0.05mm

If the warpage exceeds the maximum, replace the cylinder block. (*See Fig. II-206*)

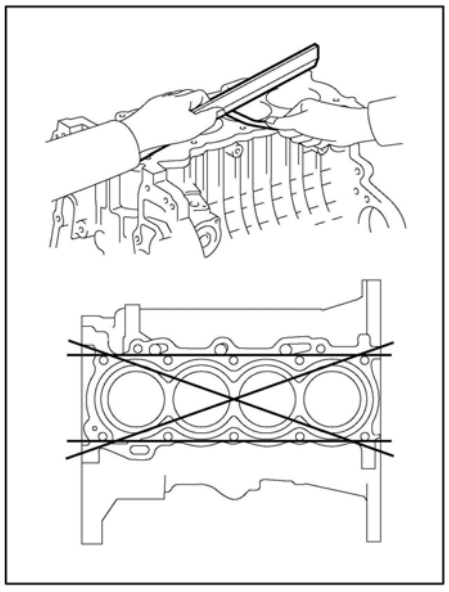


Fig. II-206

22. Check the diameter of the cylinder bore of the crankcase upper body.

1) Measure the diameter of the cylinder bore at A, B and C in the thrust direction and axial direction with a cylinder bore gauge. (*See Fig. II-207*)

Standard diameter: 79.00mm-79.13mm

2) Calculate the differential value between the maximum and the minimum of the 6 measured values.

Maximum differential value: 0.10mm

Note:

If it exceeds the maximum, replace the crankcase body.

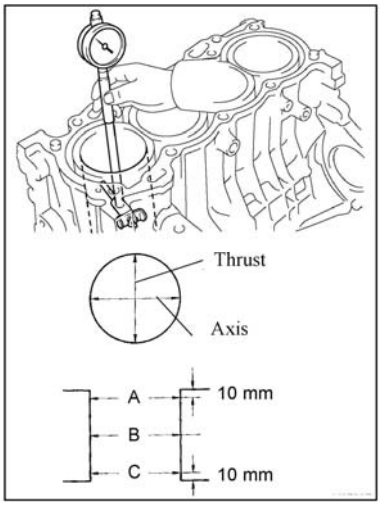


Fig. II-207

23. Check the piston

1) Check the diameter of the piston

Measure the diameter of the piston at right angles to the centerline of the piston pin with a micro-micrometer at 25.6mm to the top of the piston. (*See Fig. II-208*)

Diameter of the piston:

Standard: 78.925mm-78.935mm

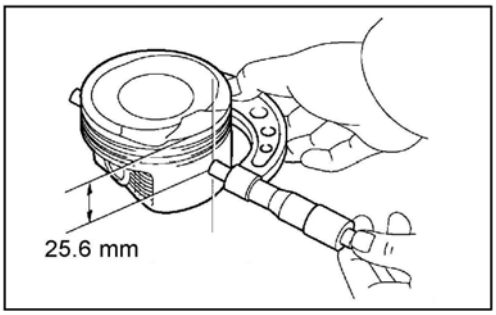


Fig. II-207

2) Check the oil film clearance of the piston

The measured inner diameter of the cylinder bore deducts the measured diameter of the piston.

Standard oil film clearance: 0.065mm-0.085mm

Maximum oil film clearance: 0.085mm

If the oil film clearance exceeds the maximum, replace all 4 pistons and re-bore the 4 cylinders.

If necessary, replace the cylinder block.

Note (for new cylinder block):

Mark the piston with the same number for the diameter of the cylinder bore.

24. Check the oil film clearance of the piston pin

1) Measure the diameter of the piston pin bore with a caliper. (*See Fig. II-209 and Table II-22*)

。

Diameter of the piston pin bore: 20.006mm-20.015mm

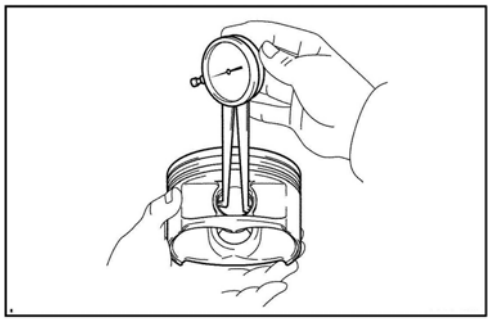


Fig. II-209

Table II-22

Mark	Size (mm)
White	20.006～20.009
Green	＞20.009～20.012
Yellow	＞20.012～20.015

2) Measure the diameter of the excircle of the piston pin with a micro-micrometer. (*See Fig. II-210 and Table II-23*)

Diameter of the excircle of the piston pin: 20.004mm～20.013mm

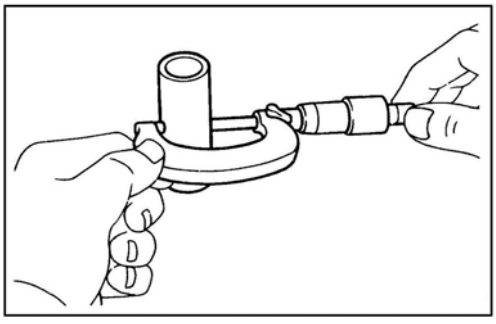


Fig. II-210

Table II-23

Mark	Size (mm)
A	20.004～20.007
B	＞20.007～20.010
C	＞20.010～20.013

3) Measure the inner diameter of the connecting rod small end hole with a caliper. (*See Table II-24 and Fig. II-211*)

Inner diameter of the small end hole of the connecting rod: 20.012mm～20.021mm

Table II-24

Mark	Size (mm)
A	20.012～20.015
B	＞20.015～20.018
C	＞20.018～20.021

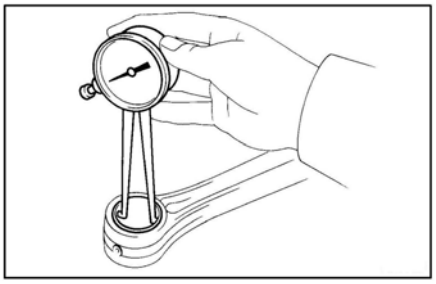


Fig. II-211

4) The diameter of the inner circle of the piston pin hole deducts the diameter of the excircle of the piston pin.

Standard oil film clearance: 0.002mm-0.011mm

Maximum oil film clearance: 0.011mm

If the oil film clearance exceeds the maximum, replace the piston pin; if necessary, replace the piston.

5) The diameter of the inner circle of the connecting rod small end deducts the diameter of the excircle of the piston pin.

Standard oil film clearance: -0.001mm-0.017mm

Maximum oil film clearance: 0.017mm

If the oil film clearance exceeds the maximum, replace the connecting rod; if necessary, replace the piston and the connecting rod. (*See Fig. II-212*)

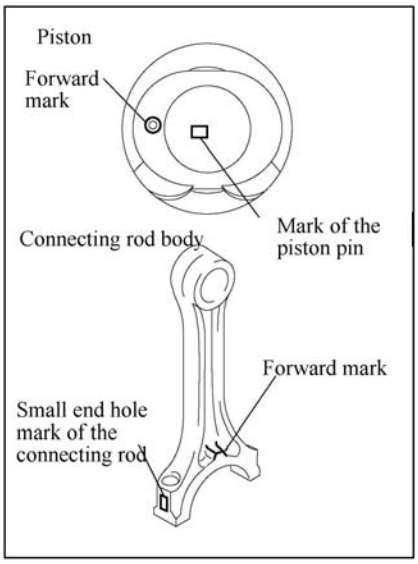


Fig. II-212

25. Check the clearance of the piston groove

1) Measure the clearance between the new piston ring and the ring wall with a thickness gauge. (*See Fig. II-213*)

Ring groove clearance:

1st ring groove: 0.03mm-0.08mm

2nd ring groove: 0.03mm-0.07mm

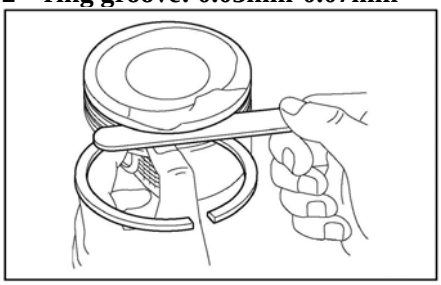


Fig. II-213

2) If the clearance exceeds the maximum, replace the piston.

26. Check the open clearance of the piston ring.

1) Insert the piston ring in the cylinder bore.

2) Push the piston ring to a position exceeding the bottom of the ring travel. (See Fig. II-214)

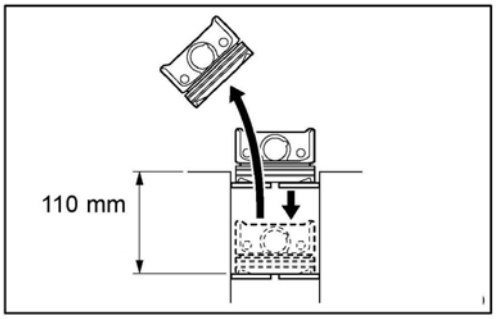


Fig. II-214

3) Measure the open clearance with a thickness gauge. (*See Fig. II-215*)

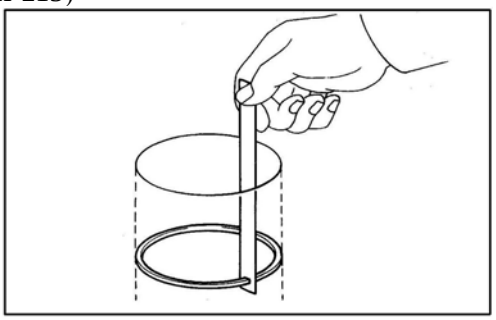


Fig. II-215

Standard open clearance:

1st ring: 0.20mm-0.35mm

2nd ring: 0.40mm-0.55mm

Wafer ring: 0.20mm-0.70mm

Maximum open clearance:

1st ring: 1.05mm

2nd ring: 1.20mm

Wafer ring: 1.10mm

If the open clearance exceeds the maximum, replace the piston ring. If new piston ring is used, but the open clearance is still beyond the maximum, re-bore the 4 cylinders or replace the cylinder block.

27. Check the connecting rod

1) Check the torsion resistance (*See Fig. II-216*)

Maximum torsion resistance: 0.05mm/100mm

If the torsion resistance exceeds the maximum, replace the connecting rod component.

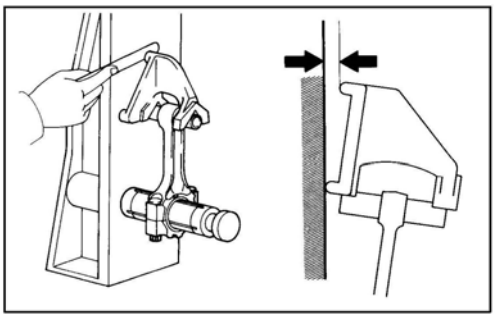


Fig. II-216

2) Check the alignment condition of the connecting rod with a collimator and a thickness gauge. (See *Fig. II-217*)

Maximum misalignment degree: 0.05mm/100mm

If the misalignment exceeds the maximum, replace the connecting rod component.

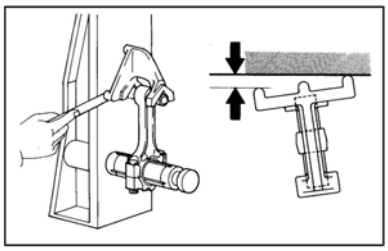


Fig. II-217

28. Check the diameter of the connecting rod bolt.

Measure the outer diameter of the connecting rod bolt with a vernier caliper. (*See Fig. II-218*)

Standard outer diameter: 7.30mm-7.40mm

Minimum outer diameter: 7.20mm

If the outer diameter exceeds the minimum, replace the whole set of connecting rod bolts and nuts.

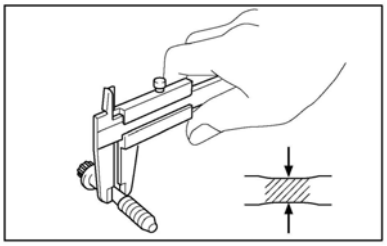


Fig. II-218

29. Check the radius run-out of the crankshaft

1) Place the crankshaft on the V-block.

2) Measure the radius run-out of the intermediate journal with a micrometer. (See Fig. *II-219*)

Maximum radius run-out: 0.03mm

If the radius run-out exceeds the maximum, replace the crankshaft.

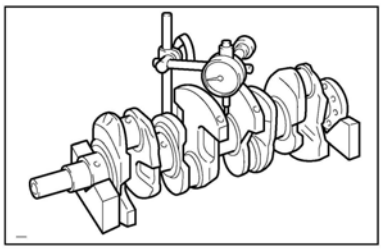


Fig. II-219

3) Measure the diameter of each main journal with a micrometer.

Diameter of main journal:

Standard diameter: 47.982-48.000mm

If the diameter is disqualified, check the oil film clearance; if necessary, polish or replace the crankshaft.

4) As shown in *Fig. II-220*, check the taper of each main journal and the connecting rod journal.

Maximum taper and out-of-roundness: 0.02mm

If the taper and out-of-round exceed the maximum, replace the crankshaft.

5) Measure the diameter of each connecting rod journal with a micrometer.

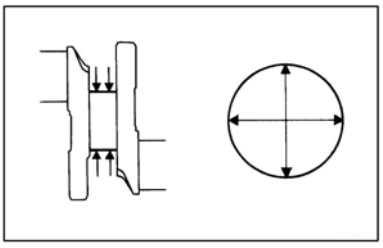


Fig. II-220

Diameter of the connecting rod journal:

Standard diameter: 43.992-44.000mm

If the diameter is disqualified, check the oil film clearance. If necessary, polish or replace the crankshaft.

6) As shown in *Fig. II-221*, check the taper and out-of-roundness of each connecting rod journal.

Maximum taper and out-of-roundness: 0.02mm

If the taper and out-of-roundness exceed the maximum, replace the crankshaft.

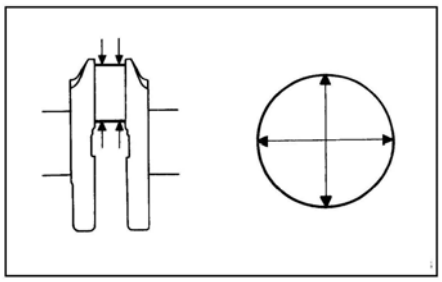


Fig. II-221

30. Check the retaining bolt of the crankcase main bearing cover.

Measure the outer diameter of the retaining bolt of the crankcase main bearing cover with a vernier caliper. (See Fig. II-222)

Standard outer diameter: 8.80mm-9.00mm

Minimum outer diameter: 8.70mm

If the outer diameter is lower than the minimum, replace the whole set of crankcase main bearing cover retaining bolts.

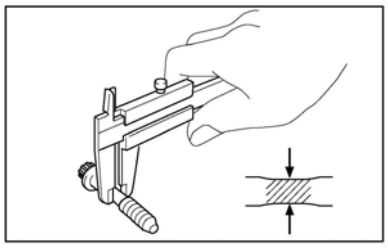


Fig. II-222

31. Check the oil film clearance of the crankshaft

1) Clean all the crankshaft journal and crankshaft bearing bushing.

2) Install the crankshaft on the upper body of the crankcase.

3) Insert a part of the plastic oil gap gauge in the main axial diameter of the crankshaft. (*See Fig. II-223*)

Note: Never turn the crankshaft.

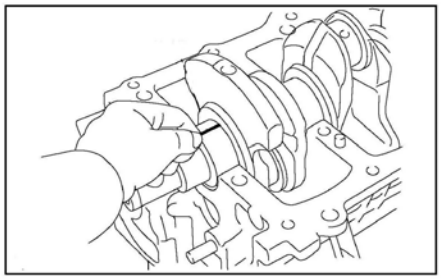


Fig. II-223

4) Install the lower body assembly of the crankcase, as shown in *Fig. II-224*; screw down 10 retaining bolts of the crankcase main bearing cover.

Torque: 40N.m for the 1st time and 60N.m for the 2nd time

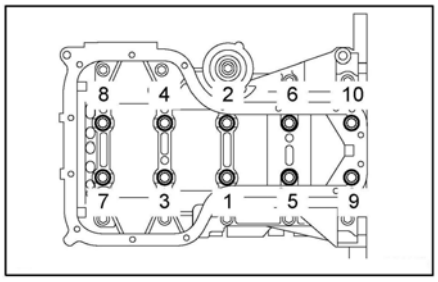


Fig. II-224

5) Dismantle 10 bolts from the upper and lower body of the crankcase. (*See Fig. II-225*)

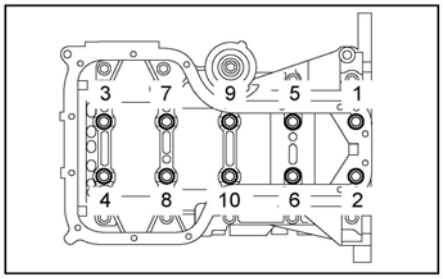


Fig. II-225

6) Dismantle the retaining bolt of the crankcase main bearing cover orderly as shown in *Fig. II-226*.

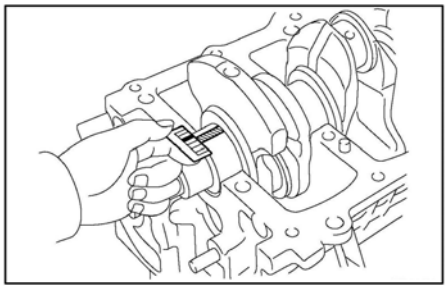


Fig. II-226

7) Measure the plastic oil gap gauge at the widest place.

Standard oil film clearance: 0.014mm-0.032mm

Maximum oil film clearance: 0.10mm

Note:

◎ In case of replacing the cylinder block component, the standard clearance of the bearing bushing should be 0.014mm-0.032mm.

◎ If the oil film clearance exceeds the maximum, replace the bearing bushing. If necessary, polish or replace the crankshaft.

◎ If a standard bearing bushing is used, replace it with the bearing bushing with the same number.

◎ If the number of the bearing bushing is undefined, use the numbers on the cylinder block and the crankshaft to add or deduct 1 to match the bushing, and then choose the bearing bushing with the same number as the summation number to ensure correct bushing match. There are 5 standard bearing bushing sizes: 1, 2, 3, 4 and 5. (*See Fig. II-227 and Table II-25*)

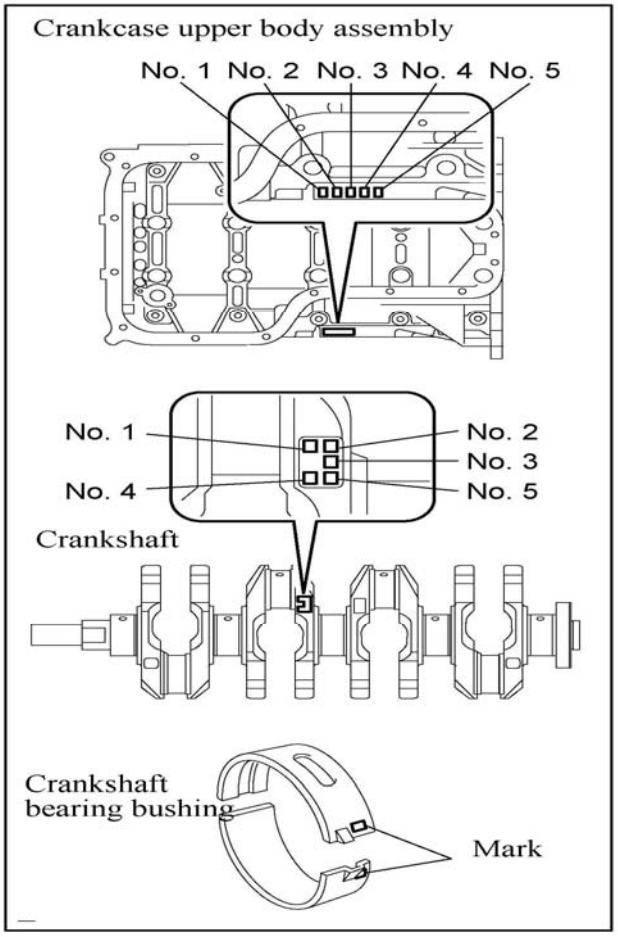


Fig. II-227

Table II-25

	Mark No.								
Cylinder block	1			2			3		
Crankshaft	1	2	3	1	2	3	1	2	3
Matched bearing bushing	1	2	3	2	3	4	3	4	5

Example:

3 (No. 3 cylinder block) +1 (No. 1 crankshaft)-1=3 (adopted No. 3 bearing bushing)

Reference table of standard bearing bushing (see *Table II-26*)

Table II-26

	Mark No.	mm
Inner diameter of the cylinder block main journal	"1" "2" "3"	52.000～52.006 ＞52.006～52.012 ＞52.012～52.018
Diameter of the crankshaft	"1" "2" "3"	47.994～48.000 ＞47.988～47.994 ＞47.982～47.988

journal		
Central thickness of the standard bearing bushing	“1” “2” “3” “4” “5”	1.990～1.993 ＞1.993～1.996 ＞1.996～1.999 ＞1.999～2.002 ＞2.002～2.005

ii. Assembly

1. Install the positioning pin

Install 9 positioning pins on the crankcase with a plastic hammer as shown in the figure. (*See Fig. II-228*)

Standard extension length:

A: 5mm

B: 7.5mm

C: 12mm

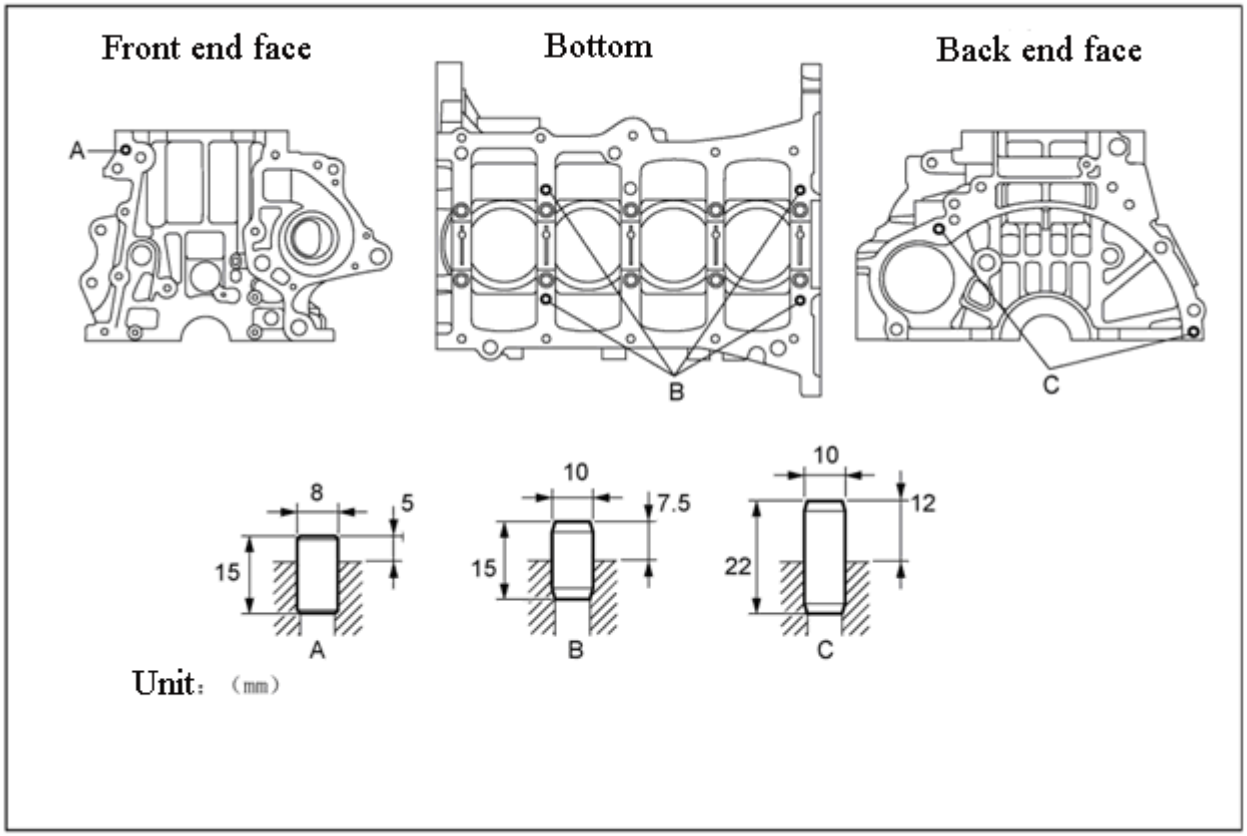


Fig. II-228

2. Install the ring pin

Install 5 ring pins on the crankcase with a plastic hammer as shown in the figure. (*See Fig. II-229*)

Standard extension length:

A: 6mm

B: 7mm

C：10mm
C: 10mm

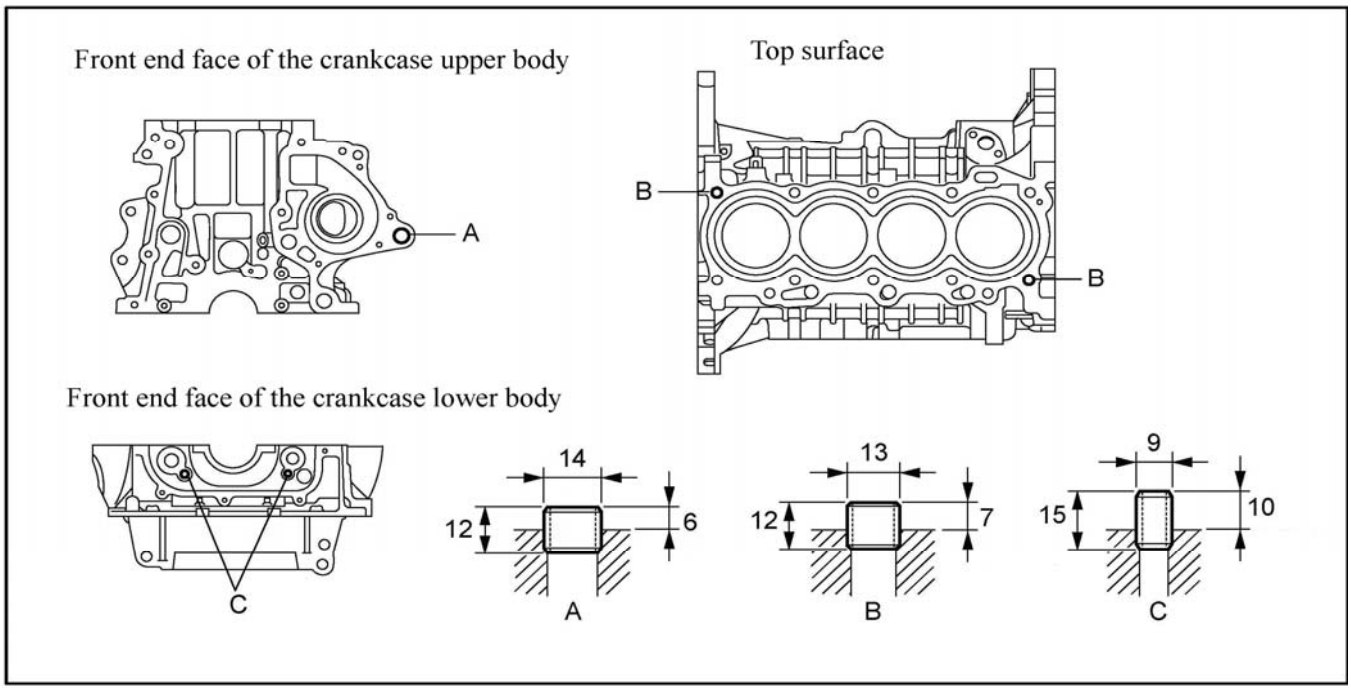


Fig. II-229

3. Install the stud bolt

Install the stud bolt at position 8 with a special tool as shown in the figure. (*See Fig. II-230*)

Torque:

9N.m at A, C, D and E and 11N.m at B

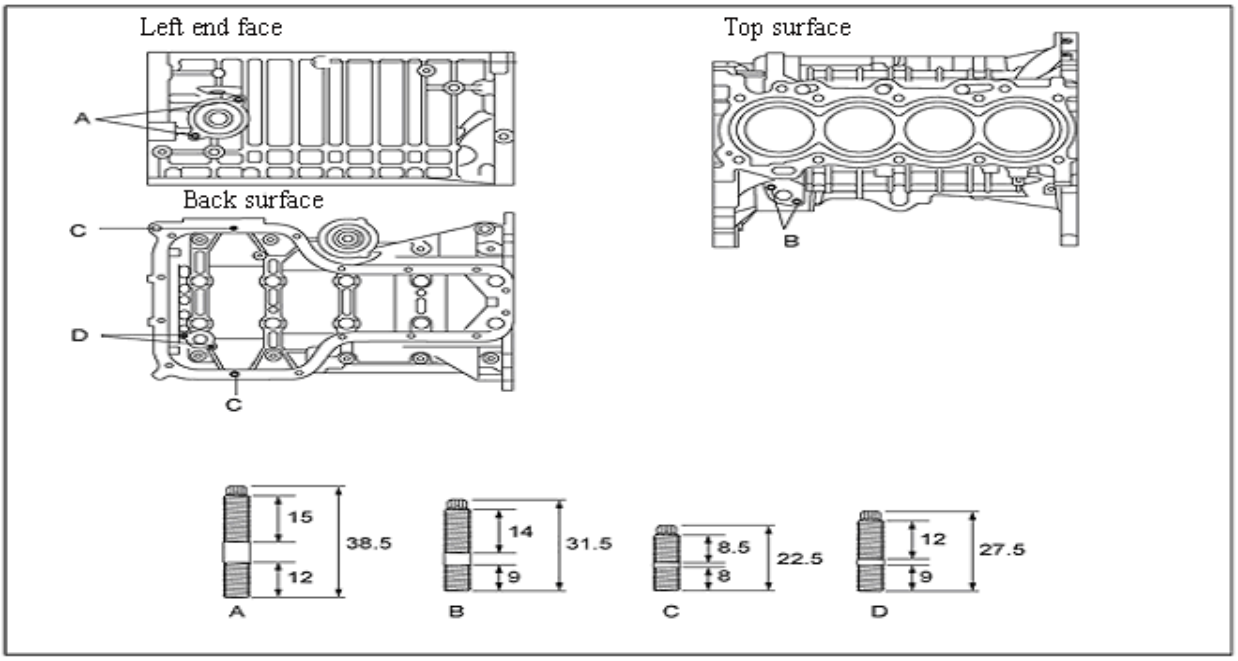


Fig. II-230

4. Install the piston pin snap ring

1) Install the piston pin snap ring at one side of the piston pin hole with a caliper. (*See Fig. II-231*)

Note:

◎ Keep the end of the piston pin snap ring at the opening of the piston pin hole.

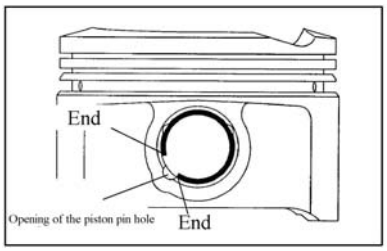


Fig. II-231

2) Align the piston with the forward mark of the connecting rod, and install the piston pin. (*See Fig. II-232*)

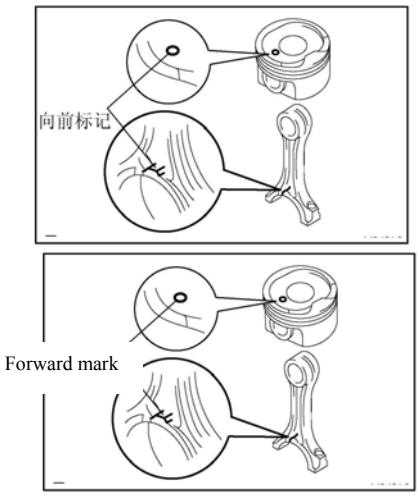


Fig. II-232

3) Install the piston pin snap ring on the other side of the piston pin hole with a caliper. (*See Fig. II-233*)

Note:

Keep the end of the piston pin snap ring at the opening of the piston pin hole.

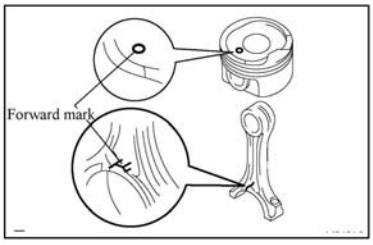


Fig. II-233

5. Install the piston ring

1) Manually install the wafer ring and the backing ring.

2) Install 2 gas rings with a piston ring expander with the code facing up. (See Fig. II-234)

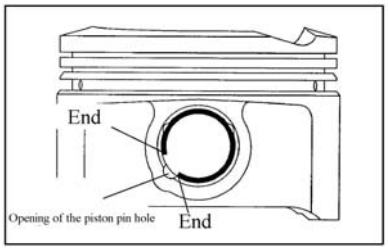


Fig. II-234

3) Keep the open end at the piston ring position as shown in *Fig. II-235*.

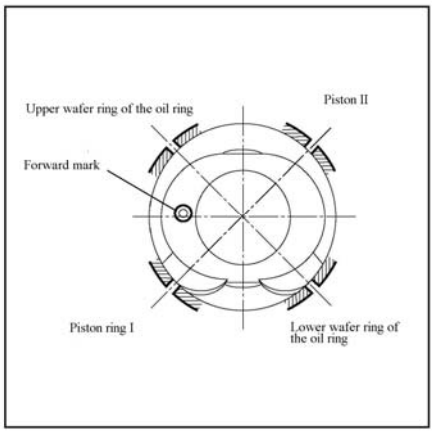


Fig. II-235

6. Install the bearing bushing

1) Align the upper bearing bushing of the crankshaft with the oil hole and install it to the crankcase upper body assembly. (*See Fig. II-236*)

Note:

Never apply engine oil to the contact surface of the bearing bushing and the crankcase.

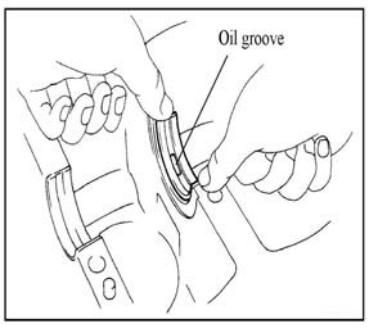


Fig. II-236

2) Install the lower bearing bushing of the crankshaft on the

crankcase lower body assembly. (See Fig. II-237)

Tips:

Never apply engine oil to the contact surface of the bearing bushing and the crankcase.

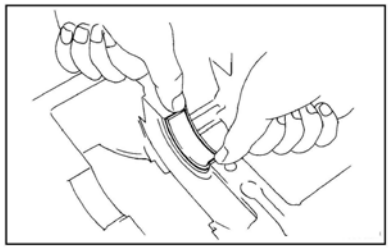


Fig. II-237

7. Install the crankshaft

1) Install 2 thrust washers below No. 3 journal of the cylinder block and keep the oil groove outward. (*See Fig. II-238*)

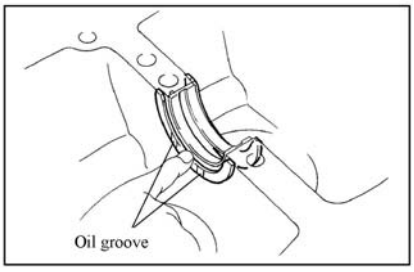


Fig. II-238

2) Apply a thin layer of engine oil to the bearing bushing surface.

3) Apply a thin layer of engine oil to the bolt head and the thread of the main bearing cover bolt.

4) Install the crankshaft to the crankcase upper body assembly. (See Fig. II-239)

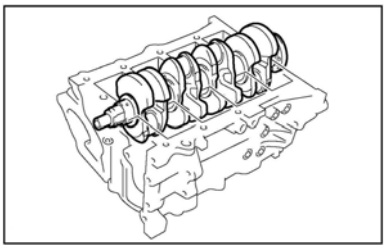


Fig. II-239

8. Install the crankcase lower body assembly

1) Evenly apply plane sealant (thickness of 2.5mm-3mm) to the position shown in the figure. (See Fig. II-240)

Note:

◎ Keep no oil on the gluing surface.

◎ Install the crankcase lower body assembly within 3 minutes after gluing.

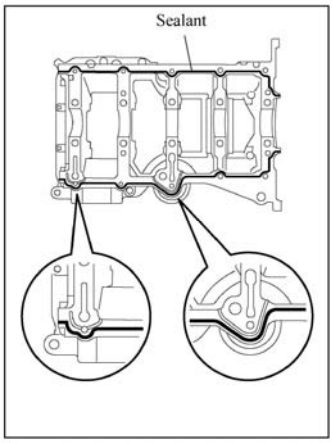


Fig. II-240

2) As shown in the figure, screw down 10 retaining bolts of the crankcase main bearing cover. (*See Fig. II-241*)

Torque: 40N.m for the 1st time and 60N.m for the 2nd time

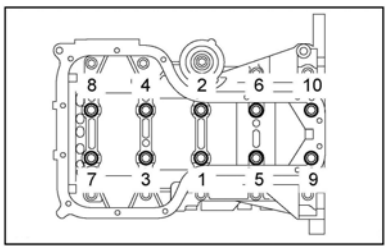


Fig. II-241

3) Install 10 bolts of the crankcase upper and lower body. (*See Fig. II-197*)

Torque: 18N.m

9. Install the connecting rod bushing

1) Align the raised part of the bearing bushing with the groove of the connecting rod cover.

2) Install the bearing bushing to the connecting rod and the connecting rod cover. (See Fig. II-242)

Note:

Never apply engine oil to the contact surface of the bearing bushing and the connecting rod cover.

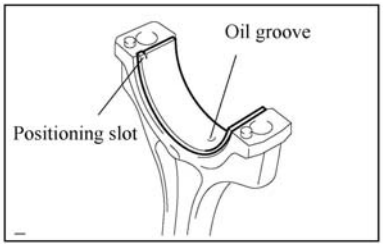


Fig. II-242

3) Align the raised part of the bearing bushing with the groove of the connecting rod body.

4) Install the bearing bushing to the connecting rod and the connecting rod cover.

Tip:

Never apply engine oil to the bearing bushing and the connecting rod body.

10. Install the piston and the connecting rod component

1) Apply a thin layer of engine oil to the surface of the cylinder barrel, the piston and the connecting rod bearing.

2) Check the piston ring opening at the position shown in *Fig. II-243*.

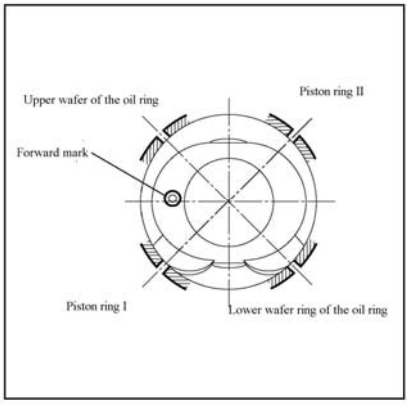


Fig. II-243

3) Push the piston and the connecting rods with the same number as each cylinder in each cylinder with a piston ring compressor to keep the forward mark of the piston forward. (See Fig. II-244)

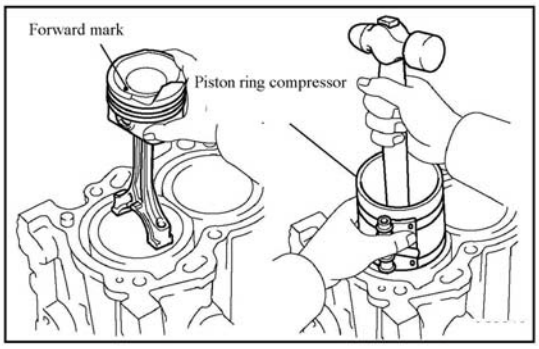


Fig. II-244

Clean the impurities on the surface of the connecting rod, apply a thin layer of engine oil to the surface and install the connecting rod cover on the connecting rod.

Note:

◎ Match the connecting rod cover with relevant connecting rod as per the number.

◎ Install the connecting rod cover and keep the forward mark forward.

4) Screw down the connecting rod cover bolt. (*See Fig. II-245*)

Torque: 50N.m

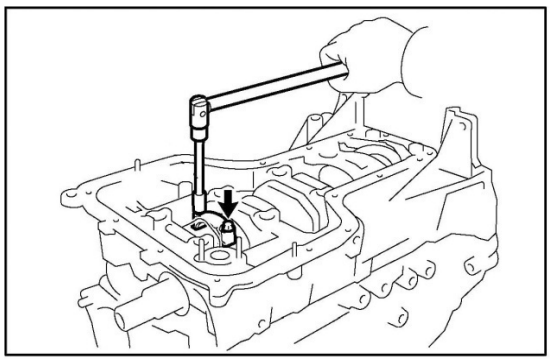


Fig. II-245

11. Install the drain bolt. (See Fig. II-246)

Apply 2-3 layers of sealant to the middle of the bolt thread and install the drain bolt within 3 minutes.

Torque: 23 N.m

12. Installation should obey the reverse order of the removal.

13. Check the gap between the intake valve and the exhaust

valve.

14. Make sure that all removed components have been returned to the original positions. Reinstall all new components.

15. Re-fill engine oil as per the regulations of engine oil replacement.

16. Connect the negative wire of the battery.

17. Check and verify all the joints for gasoline leakage, engine oil leakage and air leakage.

iii. Tightened torque table for LFB479Q engine

Name of fasteners	Tightening torque
No. 1 camshaft bearing cover and cylinder head	23 N. m
Other camshaft bearing covers and cylinder heads	13 N. m
Exhaust manifold and cylinder head	37 N. m
Exhaust manifold upper and lower heat shield bolt	18 N. m
Cylinder head and cylinder block	90±4 N. m (49 N. m for the 1st time)
Exhaust timing sprocket and camshaft	54 N. m
VVT, camshaft	60 N. m
Main bearing cover and cylinder block	60N. m
Flywheel---crankshaft	88 N. m (49 N. m for the 1st time)
Knock sensor---cylinder block	18 N. m
Engine lifting lug---engine	38 N. m
Intake manifold and cylinder block	30 N. m
Ignition coil and cylinder head cover	11N. m
Belt tensioner bolt/nut	69/29 N. m
Crankshaft pulley bolt	138 N. m
Chassis bolt	30 N. m
Motor start-up bolt	37 N. m
Engine right mounting bracket (suspending) bolt	52 N. m
Connecting rod bolt	50 N. m
Crankcase upper and lower body connecting bolt (peripheral) 1	18 N. m
Dynamic rail bolt	19 N. m
Retaining bolt for rail	13 N. m
Cylinder head cover bolt	11 N. m
Water temperature sensor---cylinder head	20 N. m
Chain tensioner nut	11 N. m
Water pump bolt	Long bolt of 11 N. m and short bolt of 9 N. m
Belt tensioner	Bolt of 69 N. m and nut of 29 N. m
Engine oil pressure alarm	15 N. m
Front hood cover	M8 bolt of 23 N. m and others of 13 N. m
Drain plug	30 N. m
Throttle body bolt and nut	11 N. m
Fuel rail bolt	11 N. m
Throttle body reinforced plate	23 N. m
Water channel blockage	23 N. m
Oil duct blockage	23 N. m
Transmission bolt	Long bolt of 64 N. m, middle bolt of 47 N. m and short bolt

	of 23 N. m
Generator bolt	Short bolt of 25 N. m and long bolt of 54 N. m
Power steering oil pump bolt	45 N. m
Air compressor bolt	25 N. m
Exhaust manifold bracket bolt	30 N. m

Part III Chassis

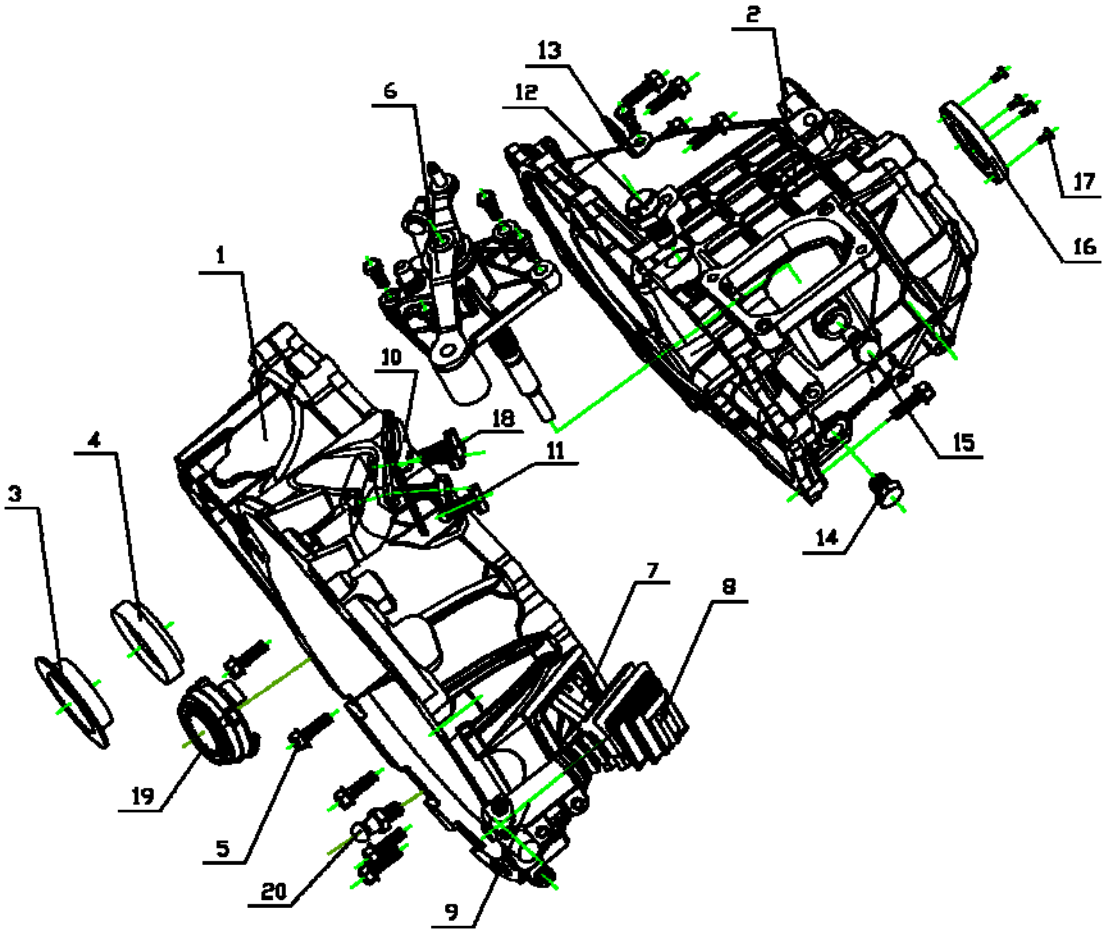
Chapter I Transmission

Section I Main Technical Parameters of 1.8L Transmission

Model of transmission	1.8L
Transmission ratio: Z2/Z1 main transmission	55:14=3.928
Gear I	35:11=3.182
Gear II	36:19=1.895
Gear III	35:28=1.250
Gear IV	30:33=0.909
Gear V	26:37=0.703
Reverse gear	37:12=3.133
Rated power	100 KW
Rated torque	170Nm
Rated rotation speed	6000r/min
Lubricant quantity	2.0L
Model of lubricant	SAE 80W-90 (API GL-4) gear oil
Overall dimension	498×455×345mm
Clutch release way	Hydraulic pressure

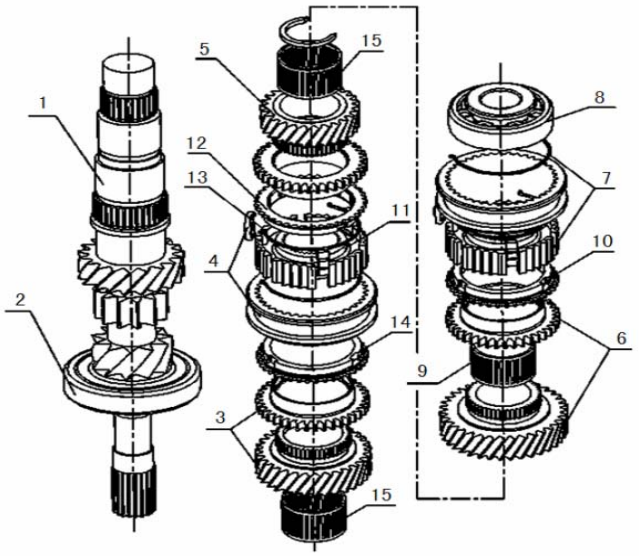
Section II 1.8L Transmission Assembly

I Structural analysis of 2.1 1.8L transmission clutch and transmission housing assembly



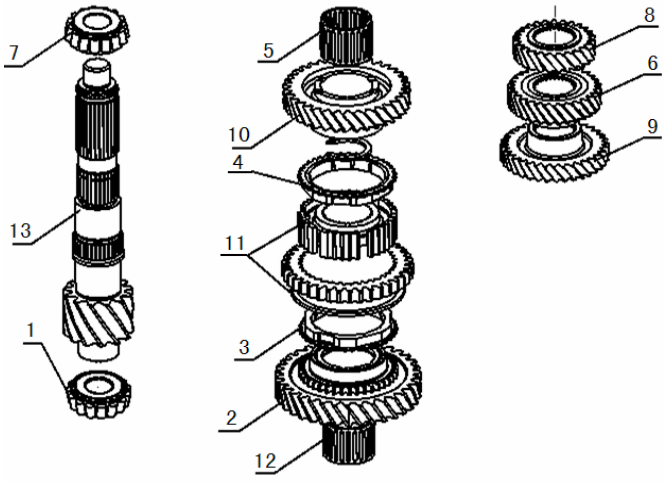
1. Clutch housing, 2. Clutch housing, 3. Differential protection sleeve, 4. Differential rear oil seal, 5. Hexagon flange bolt, 6. Shifting guide shaft assembly, 7. Disengaging yoke, 8. Disengaging yoke protection sleeve, 9. Hydraulic cylinder, 10. Shifting rocker arm cable support, 11. Hexagon flange bolt, 12. Reverse lamp switch, 13. Oil pipe support, 14. Magnetic plug, 15. Shift locator assembly, 16. Output shaft rear end cap, 17. Rear end cap connecting bolt, 18. Shifting rocker arm cable support, 19. Release bearing, 20. Disengaging yoke supporting nail

II Analysis of input shaft



1. Output shaft, 2. Output shaft front bearing, 3. 3rd gear drive gear assembly, 4. 3rd & 4th gear synchronizer assembly, 5. 4th gear

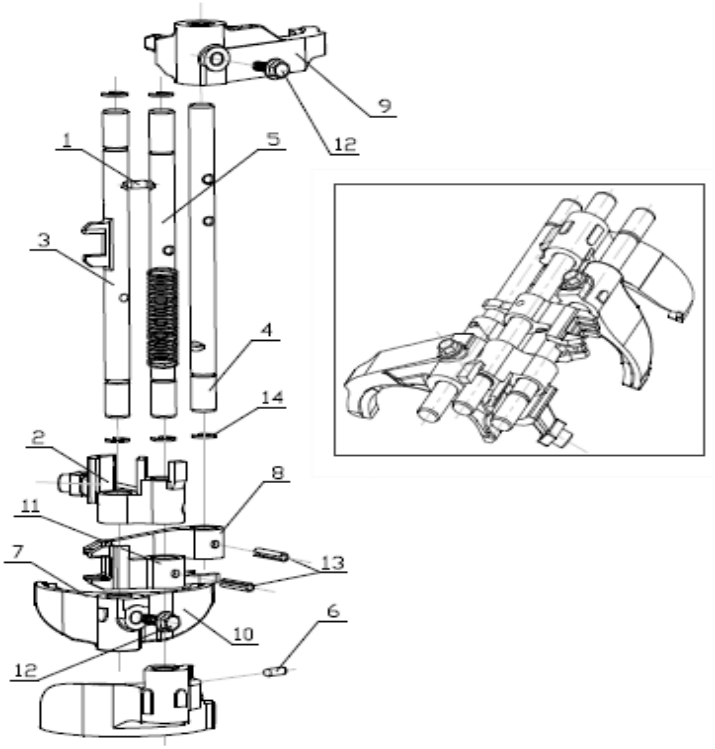
drive gear assembly, 6. 5th gear drive gear assembly, 7. 5th gear synchronizer assembly, 8. Input shaft rear bearing, 9. 5th gear needle bearing, 10. 5th gear synchronizer assembly, 11. 4th gear thrust washer, 12. 4th gear synchronizer, 13. Synchronizer hub retaining ring, 14. 3rd gear synchronizing ring, 15. 3rd and 4th gear needle bearing, 16. Input shaft assembly, 17. Rear end cap connecting bolt



III Structure analysis of output shaft

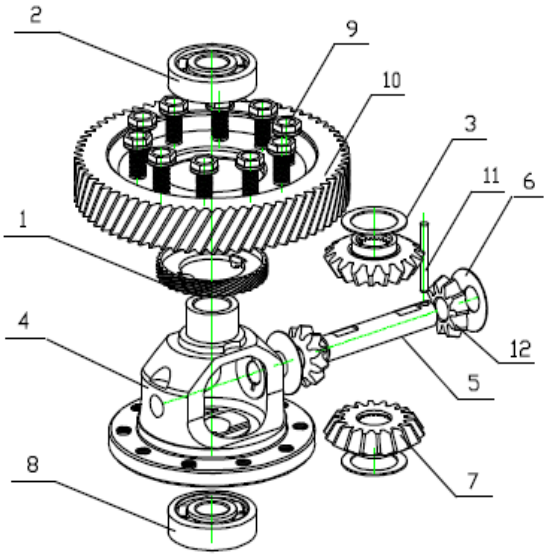
1. Output shaft front bearing, 2. 1st gear driven gear assembly, 3. 1st gear synchronizing ring, 4. 2nd gear synchronizing ring, 5. 2nd gear needle bearing, 6. 4th gear driven gear, 7. Output shaft rear baring, 8. 5th gear driven gear, 9. 3rd gear driven gear, 10. 2nd gear driven gear assembly, 11. 1st gear and 2nd gear synchronizer assembly, 12. 1st gear needle bearing, 13. Output shaft

IV Structure analysis of 1.8L transmission fork shaft assembly



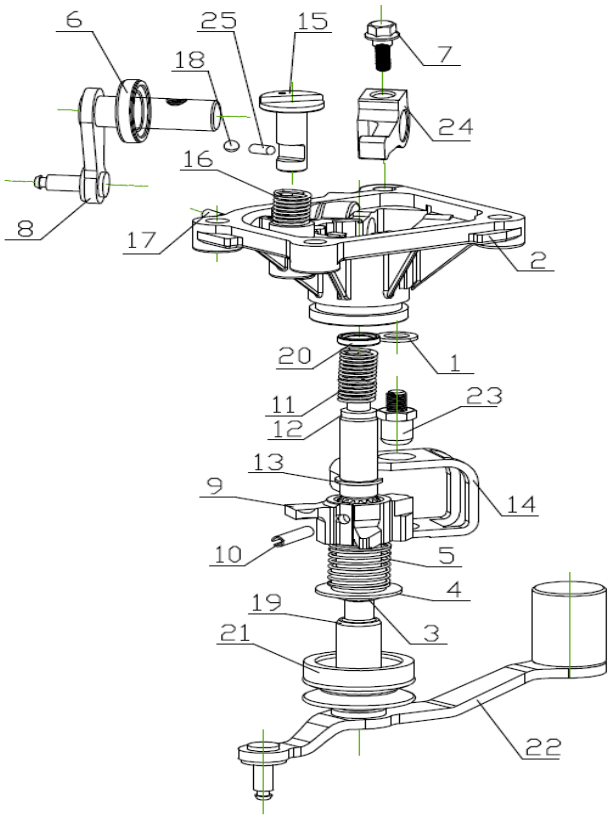
1. Interlock pin, 2. Guide block of reverse gear and shift gear, 3. 3rd and 4th gear fork shaft, 4. 1st and 2nd gear fork shaft, 5. 5th gear reverse gear fork shaft, 6. Interlock pin, 7. 3rd and 4th gear reverse gear fork, 8. 1st and 2nd gear reverse gear guide block, 9. 1st and 2nd gear reverse gear fork, 10. 5th gear reverse gear fork, 11. 5th gear reverse gear guide block, 12. Fork retaining bolt, 13. Spring-type cylindrical pin, 14. Fork shaft retaining ring

V Structure analysis of 1.8L transmission differential assembly



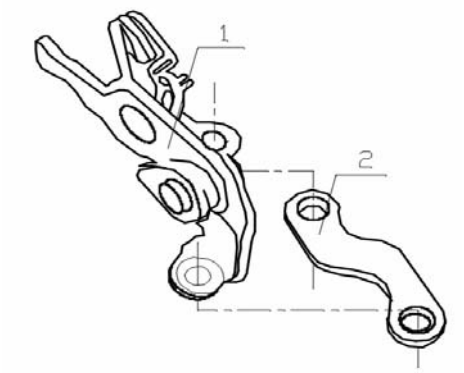
1. Odometer gear ring, 2. Differential front bearing, 3. Half shaft gear washer, 4. Differential housing, 5. Planet gear shaft, 6. Planet gear washer, 7. Half shaft gear, 8. Differential rear bearing, 9. Differential gear ring retaining bolt, 10. Main reducing driven gear, 11. Spring-type cylindrical pin, 12. Planet gear

VI Structure analysis of 1.8L transmission shift mechanism assembly



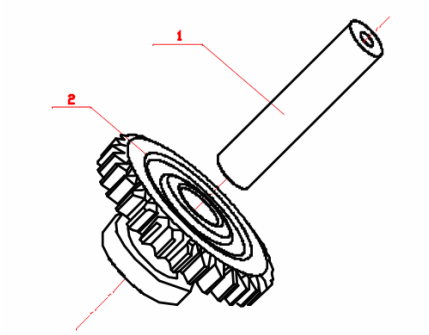
1. Breather valve washer, 2. Shift knob housing, 3. Retaining ring of shift guide shaft, 4. Spring seat, 5. Pull-back spring, 6. Gear-selecting shaft oil seal, 7. Switchover swing link retaining bolt, 8. Gear-shifting shaft assembly, 9. Switchover swing link, 10. Spring-type cylindrical pin, 11. Pull-back spring, 12. Nylon pad, 13. Retaining ring of shift guide shaft, 14. Interlock plate, 15. 5th reverse gear interlock cam, 16. 5th reverse gear interlock cam pull-back spring, 17. Positioning pin of shift housing, 18. Steel ball, 19. Alignment spacer ring of shift guide shaft, 20. Shift shaft oil seal, 21. Dustproof cap, 22. Shift guide shaft component, 23. Breather valve assembly, 24. Switchover swing link, 25. 5th reverse gear interlock cam pin

VII 1.8L transmission reverse gear swing arm bracket assembly



1. Reverse gear swing arm bracket assembly, 2. Reverse gear swing arm bracket pad

VIII 2.7 1.8L transmission reverse gear middle gear assembly



1. Reverse gear middle gear shaft, 2. Reverse gear middle gear

Section III Common Fault Diagnosis of 1.8L Transmission

As the increase of driving range and improper operation, the auto transmission parts may suffer abrasion and deformation, thus causing common faults of transmission like abnormal noise, gear engaging difficulty, trip stop, gear mis-engaging, heating, oil leakage, etc. The following methods for diagnosing the common faults of 1.8L transmission are provided for reference.

I Abnormal noise of transmission

The abnormal noise of transmission is mainly subject to the bearing looseness due to abrasion and the improper engagement of gears, including noise at the neutral position and the engaged position.

i. Noise at the neutral position

1. Phenomenon:

There is abnormal noise when the engine is running idly and the transmission is at the neutral position. Step down the clutch pedal and the noise may disappear.

2. Cause:

① In the installation of the transmission and the engine, the 1st shaft centerlines of the crankshaft and the transmission aren't concentric, or the transmission housing is deformed.

② Abrasion, dirt and fluff of the 2nd shaft front bearing.

③ Abrasion of normally engaged gear of the transmission, too big gap between gears or gear teeth breakage of individual gear.

④ Constant mesh gear isn't changed in pairs or engaged properly.

⑤ Looseness, damage of the bearing and too big axial clearance of the gear

⑥ Too large gap between the fork and the joint sleeve.

a) Noise after engagement

i. Phenomenon:

① Noise after transmission gear engagement.

② When the vehicle is driving at a speed over 40Km/h, there is an abnormal noise. The faster the vehicle is, the louder the noise is. The noise may drop or be eliminated when the vehicle is sliding or running at a low speed.

ii. Cause:

① Flexural deformation of the shaft, and looseness of the connection between the shaft spline and the sliding gear hub.

② Improper gear engagement or looseness of the bearing.

③ Connection looseness of the operation mechanism and deformation of the shift fork.

④ Too big clearance of the connection between the drive and the driven taper gear of the differential.

Diagnosis:

The noise of the transmission is from the vibration of the gear or the shaft and other sources, which is spread to the transmission housing wall to form resonance. The diagnosis steps are:

① When the engine is idle running, there is abnormal noise of the transmission at the neutral position. Step down the clutch pedal, the noise disappears, mainly caused by gear poor engagement.

② In each gear of the transmission, there is noise; because the basic part, the shaft, the gear and the spline abrasion cause the form and position exceed the limit.

③ When there is heavy noise while engaging a gear, the gear has been severely damaged.

④ After start-up, there is noise when the gear isn't engaged yet and heavy noise while changing the vehicle speed, showing that the

front and rear shaft of the output shaft make a noise.

2. Trip stop of transmission

i. Phenomenon:

In the driving, the shifting lever automatically turns to the neutral position. (Suddenly change in the middle and high speed load or the vehicle moves strenuously.)

Essence of trip stop: axial thrust>selflocking force+friction force.

Time of trip stop: commonly at the direct gear, in the filling and vibration.

ii. Cause:

As the gear is tapered due to abrasion, there is axial force in the engagement. And the vibration and rotation speed change in the operation cause the meshing gear disconnect from the transmission along the shaft. The specific performances are as follows:

① Abrasion of the shift fork shaft groove and the positioning ball invalidates the self-locking device.

② Abrasion and looseness of the transmission shaft and the bearing or too big axial clearance cause run-out and axial run-out due to poor engagement of gear in the rotation.

3. Gear engagement difficulty of transmission

i. Phenomenon:

Gear engagement difficulty and knock noise from synchronizer gear.

ii. Cause:

① Bend and deformation of the shift fork shaft;

② Crack and blockage of self-locking or interlock steel ring;

③ Improper adjustment or damage of the shift connecting rod;

④ Abrasion or defection of the synchronizer;

⑤Deformation of the transmission shaft or damage of the spline.

In addition to the transmission fault, halfway release of the clutch and improper specification of the gear oil also may cause gear engagement difficulty.

4. Gear mis-engagement of transmission

i. Phenomenon:

When the vehicle starts or shifts gear in the driving, the engaged gear should be complied with the required gear. Or the required gear is engaged but it's unable to return or engage two gears at one time.

ii. Cause:

① Looseness and damage of the shift lever and the shift lever prod end excessive abrasion of the inner hole of the shift lever prod end.

② The compression amount of the transmission shift return spring fails to meet the requirement.

③ Too serious abrasion of the shift sliding rod interlock pin hole and the interlock pin invalidate the interlocking function.

5. Transmission overheating

i. Phenomenon:

After driving a certain distance, touch the transmission, you may feel hot.

ii. Cause

① Too tight bearing assembly.

② Too small gear engagement gap.

③ Shortage of gear oil or too low viscosity of gear oil.

6. Oil leakage of transmission

i. Phenomenon:

The gear oil in the transmission leaks from the bearing cover or the mating part.

ii. Cause:

① Poor seal of each seal liner, oil seal damage or looseness of retaining bolt of transmission.

② Breakage of the transmission housing.

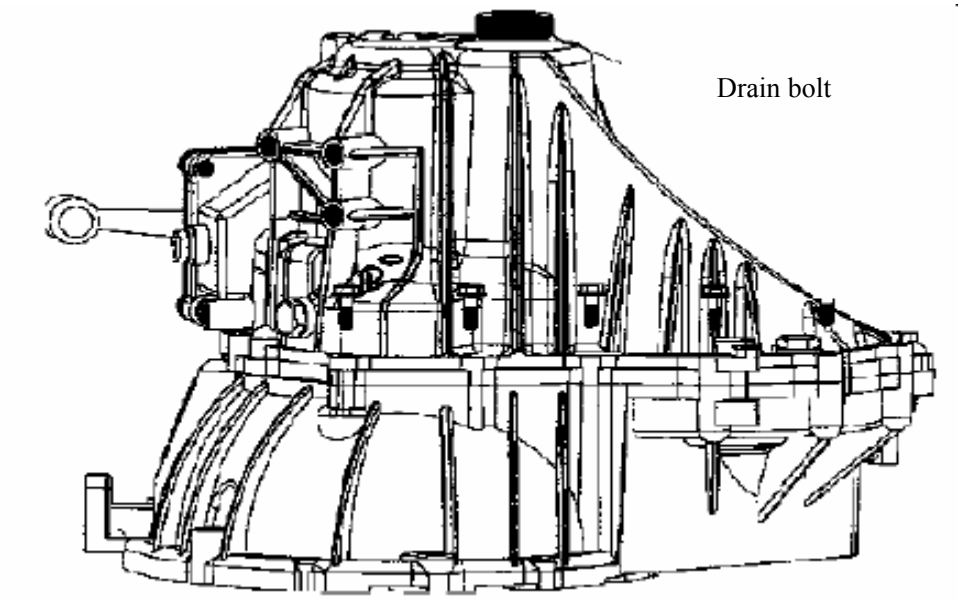
③ Too much gear oil.

④ Blockage of transmission drain bolt or breather hole.

ii. Removal, assembly and maintenance of transmission

1. Disassembly and assembly

i. Place the transmission on the drain oil stand, screw off the drain oil screw plug on the transmission and drain the oil.

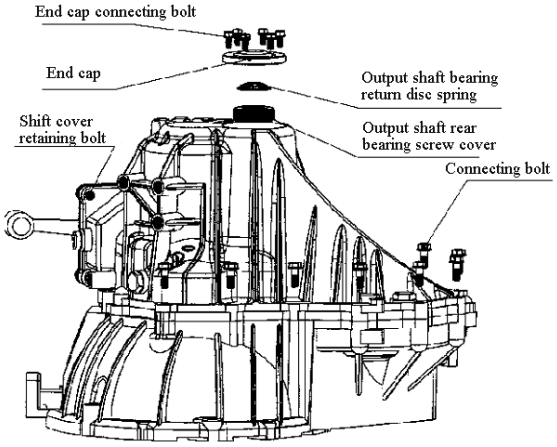


i.

i. Take out the clutch release bearing, disengaging yoke and disengaging yoke dustproof cap.



ii. Screw down the shift cover retaining bolt, take out the gear-selecting and shift mechanism assembly and the reverse lamp switch, and remove the reverse gear shaft locking screw with a special tool.

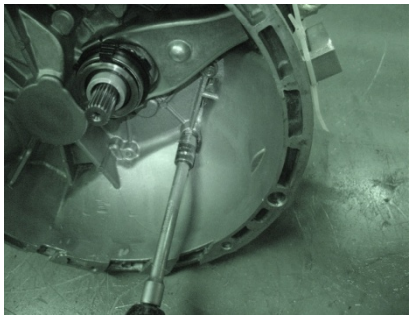




iii. Firstly loosen the end cap connecting bolt, take out the end cap and send it out.

iv. And then, place the bearing return disc spring in 4 holes of the output shaft rear bearing screw cover with a special wrench with 4 bulges on the end face, and screw it out. Loosen the shift cover retaining bolt to take out the shift cover assembly. Loosen the connecting bolt of the transmission, screw off the retaining bolt of the transmission housing and the clutch housing and take

down the transmission housing.



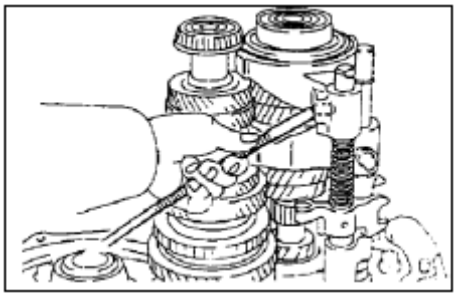
v. Screw off the retaining bolt on the reverse gear swing arm bracket mechanism and take out the reverse gear swing arm bracket and the reverse gear intermediate gear shaft.



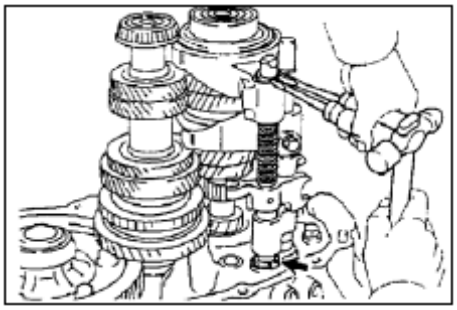
vi. Slightly knock out the differential, input and output shaft assembly with a special tool. Firstly take down the differential assembly, the fork shaft assembly, the output shaft assembly and the input shaft assembly, and then disassemble each assembly with a special tool.



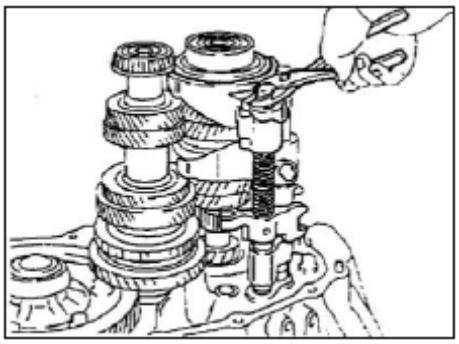
vii. Take out the lock pin with a magnetic bar.



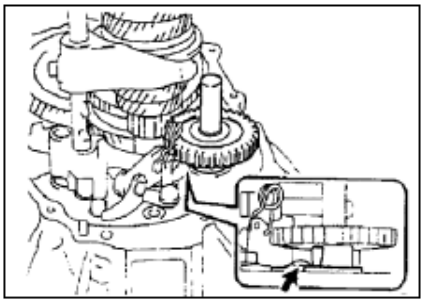
viii. As shown in the figure, take down the fork shaft snap ring.



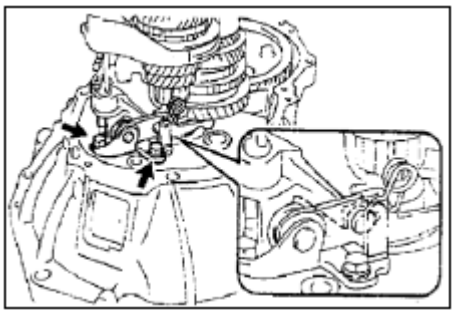
ix. Clamp the upper part of the fork shaft packed with a cloth and pull out the fork shaft.



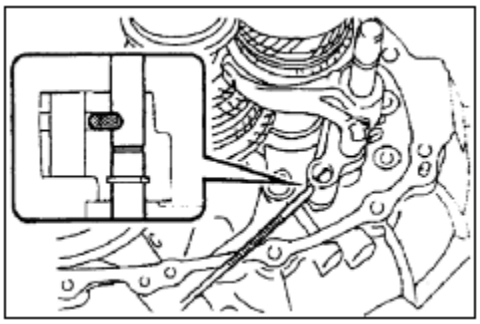
x. Take out the reverse gear and the reverse gear shaft



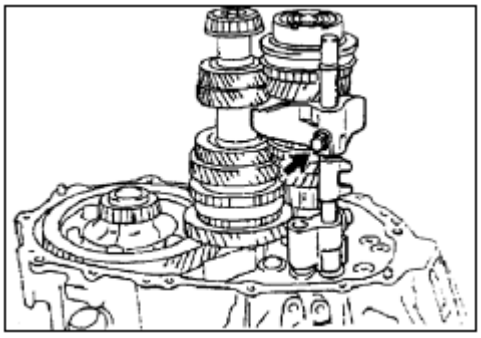
xi. As shown in the figure, remove 2 bolts and reverse gear swing arm bracket.



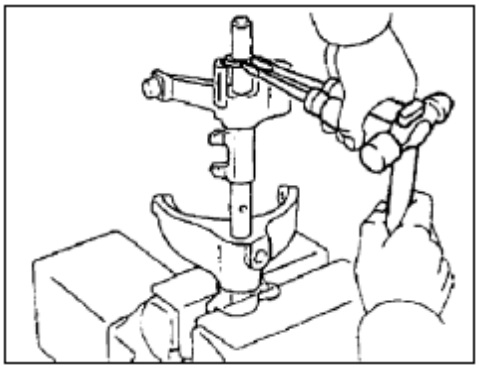
xii. Remove the interlock pin with a magnetic bar and pull out the fork shaft and the fork.



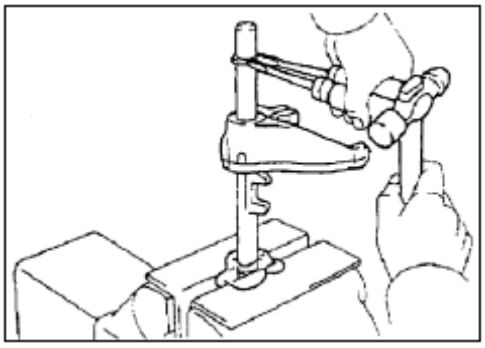
xiii. As shown in the figure, remove the bolt and the fork shaft.



xiv. As shown in the figure, remove the snap ring.

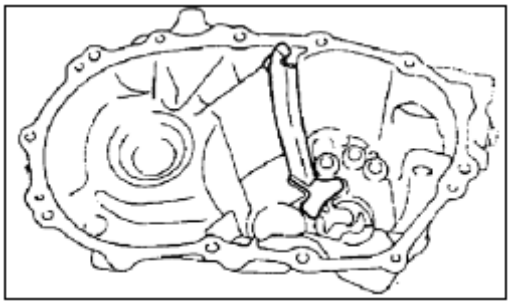


xv. Remove the snap ring and take out the pin.

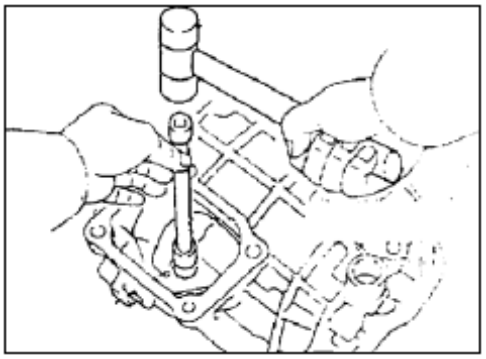


xvi. Remove the lubricating pipe.

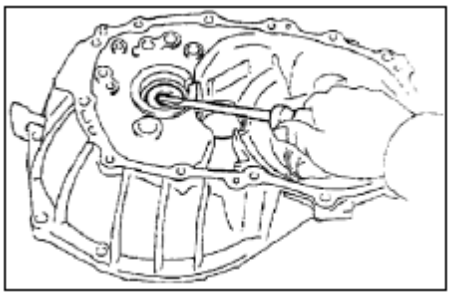
xix. Take out the bearing outer ring with a tool.

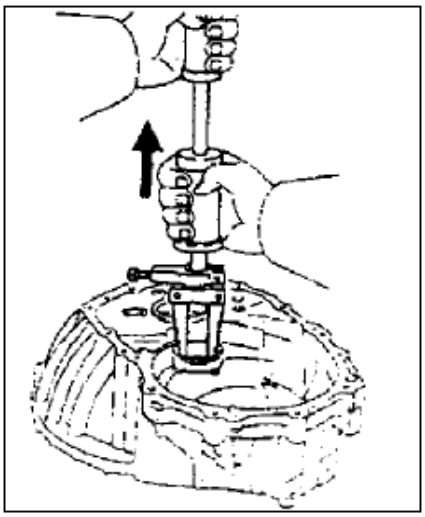


xvii. As shown in the figure, take out the bushing.

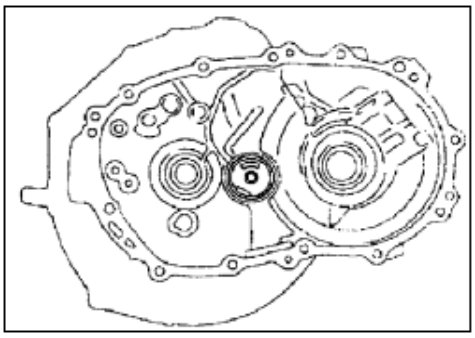


xviii. Take out the oil seal.

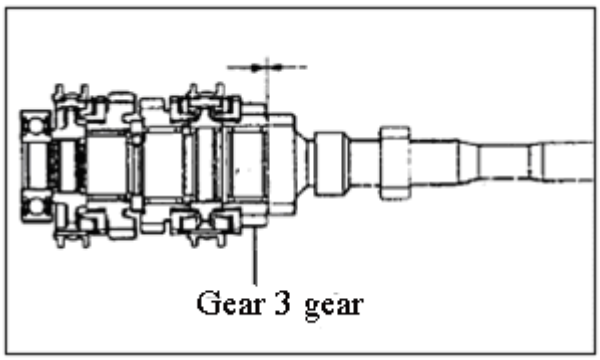




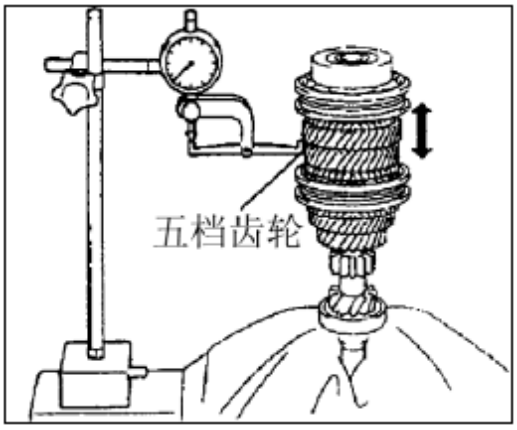
xx. Remove the oil guide end cover.

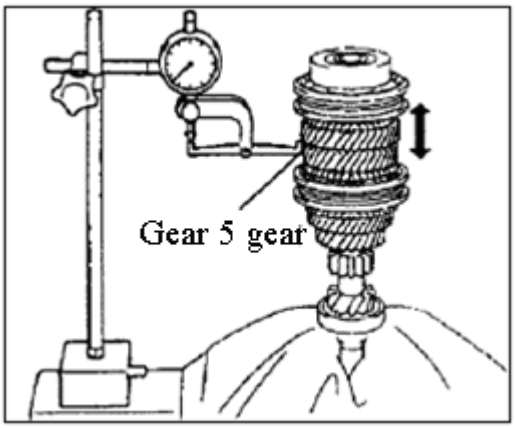


xxi. Measure gear 3 gear shaft clearance with a feeler gauge. The standard value is 0.1-0.35mm.

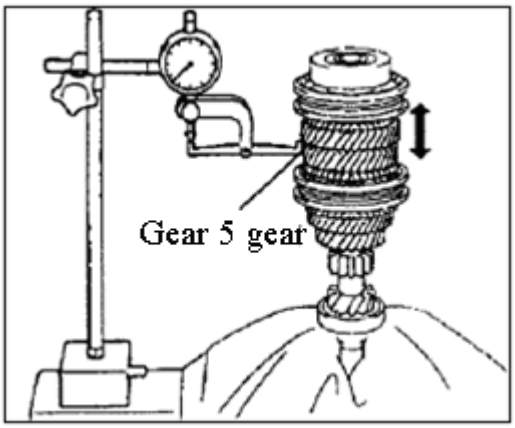


xxii. Measure the axial clearance of gear 5 gear shaft. The standard value is 0.1-0.5mm.

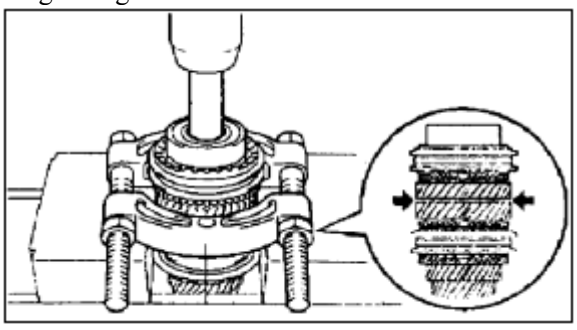




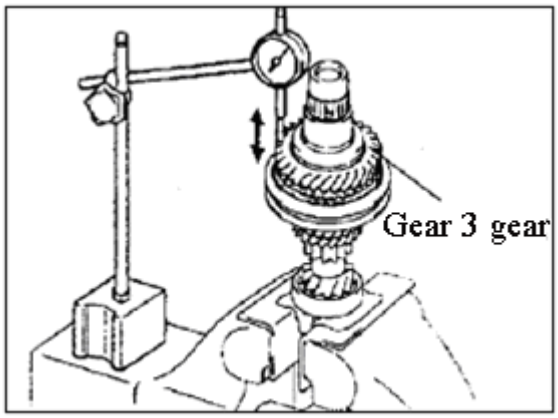
xxiii. As shown in the figure, measure the clearance between gear 4 gear and gear 5 gear. The standard value is lower than 0.058mm.



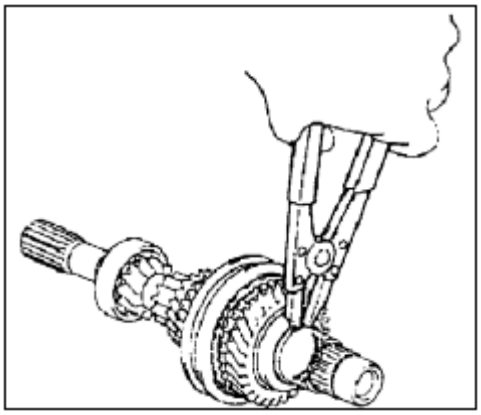
xxiv. As shown in the figure, position the input shaft assembly with a press machine, hold the bottom of the input shaft with one hand, and remove the gear sleeve, hub and gear 5 gear.



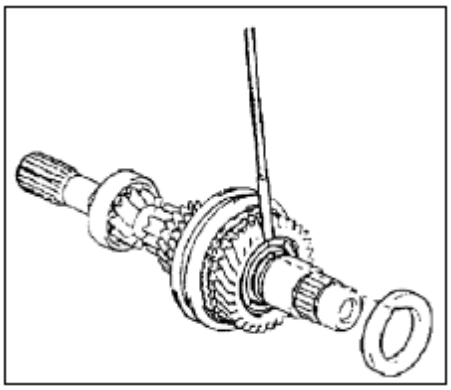
xxv. Measure the axial clearance of gear 4 gear. The standard value is 0.1-0.55mm.



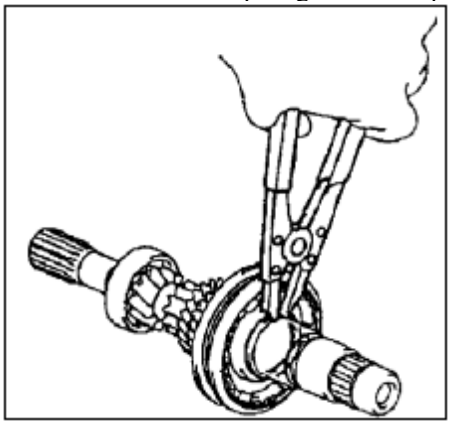
xxvi. Take down the snap ring for shaft with a snap ring.



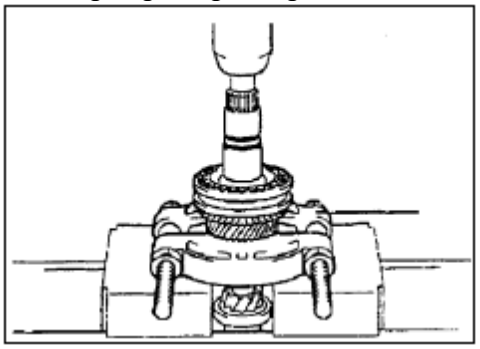
xxvii. Take out the positioning ball with a magnetic bar, and dismantle gear 3 and gear 4 synchronizer gear rings.



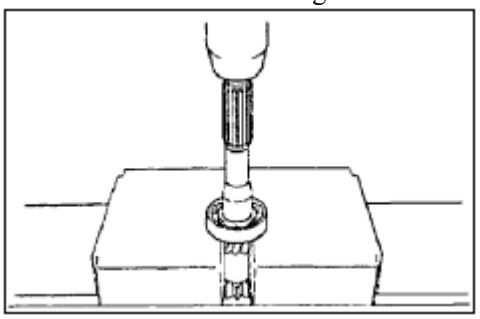
xxviii. Take down the snap ring with a snap ring.



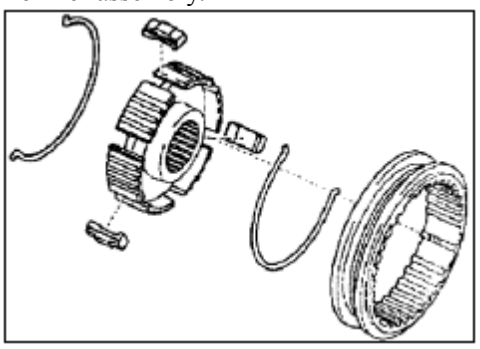
xxix. As shown in the figure, remove the synchronizer, synchronizing ring and gear 3 gear.



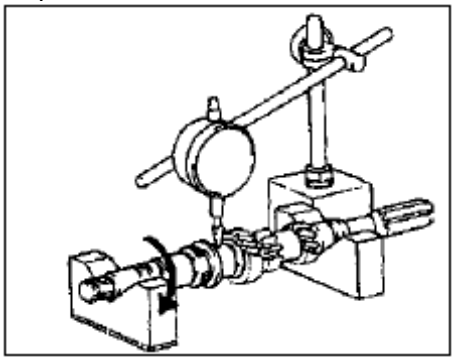
xxx. Take down the radial bearing.



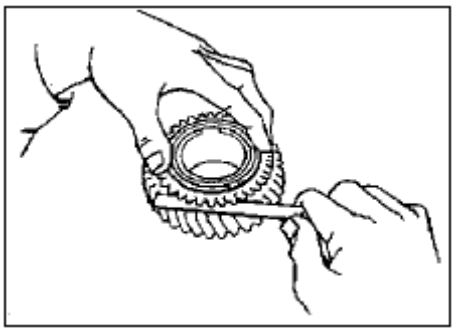
xxxi. As shown in the figure, disassemble the synchronizer assembly.



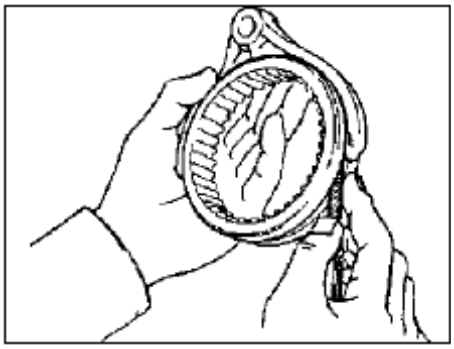
xxxii. As shown in the figure, check the radius run-out of the input shaft. The maximum is 0.03mm.



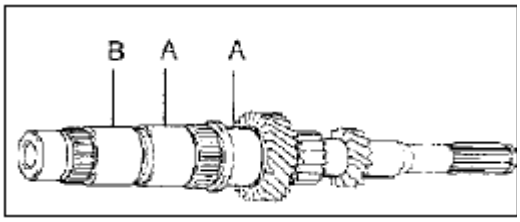
xxxiii. Measure the clearance between the synchronizing ring and the gear end face with a feeler gauge. The minimum is 0.8mm. Otherwise, replace the synchronizing ring.



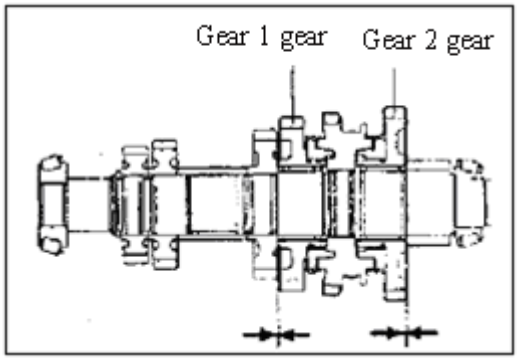
xxxiv. Check the distance between the gear sleeve and the shift fork with a feeler gauge. The maximum is 0.35mm. Otherwise, replace the gear sleeve or shift fork.



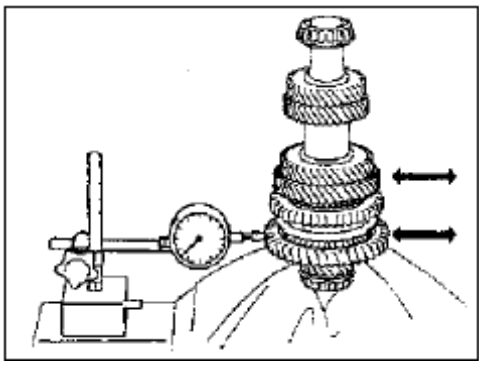
xxxv. Measure the abrasion of the input shaft with a micrometer. The minimum diameter of surface A is 33.985mm. If exceeding the limit, replace the input shaft.



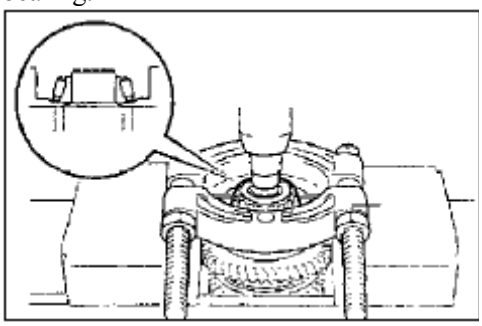
xxxvi. Measure the axial clearance of gear 1 and gear 2 gears of the output shaft with a feeler gauge: 0.1-0.35mm (gear 1) and 0.1-0.35mm (gear 2).



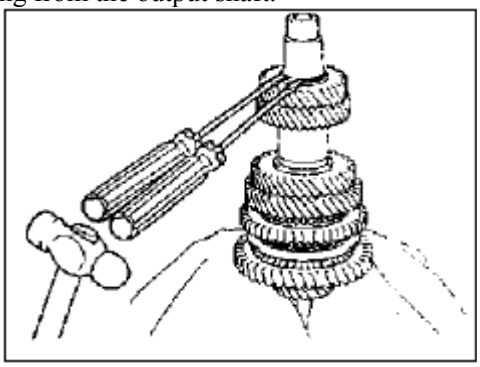
xxxvii. As shown in the figure, measure the radius run-out of gear 1 and gear 2 gears. The maximum is 0.056mm.



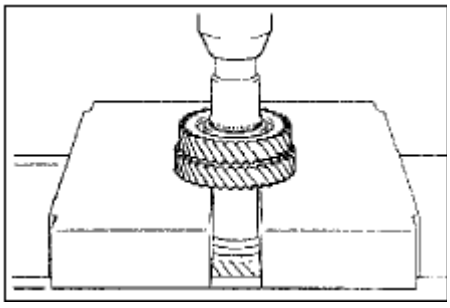
xxxviii. As shown in the figure, take down the conical bearing.



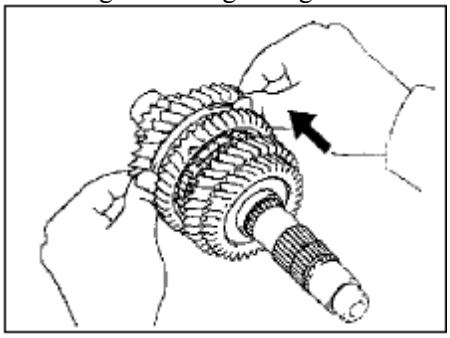
xxxix. As shown in the figure, remove the spring snap ring from the output shaft.



xl. Take down gear 4 and gear 5 gears with a press machine.

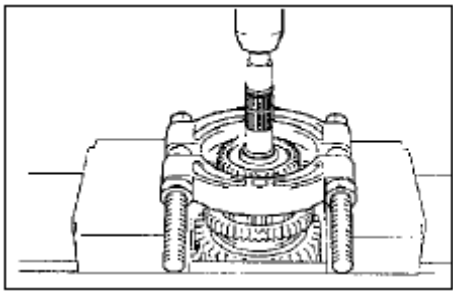


xli. Move gear 1 and gear 2 gear sleeves to gear 1 gear.

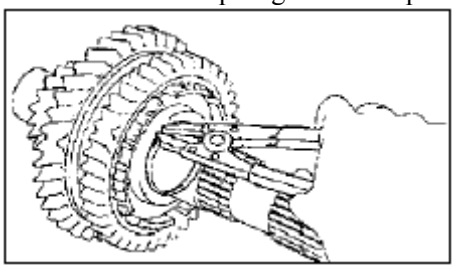


xlii. Remove gear 3 gear, needle bearing, synchronizing ring and gear 2 gear with a press

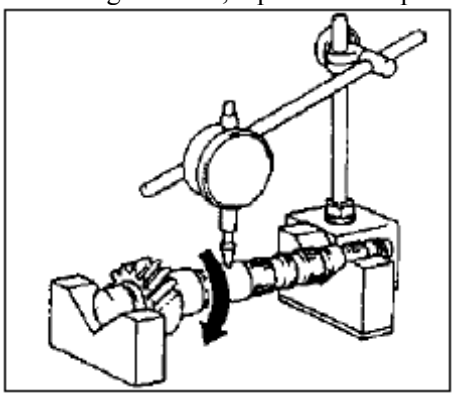
machine.



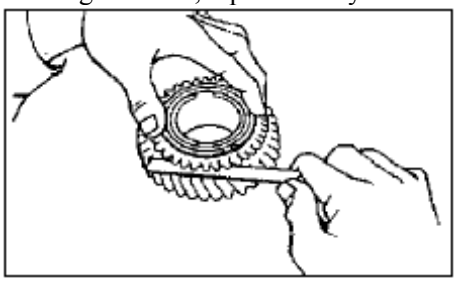
xliii. Remove the snap ring with a snap ring.



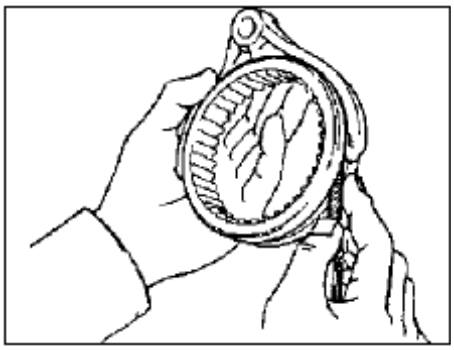
xliv. As shown in the figure, measure the circular run-out of the output shaft. The maximum is 0.03mm. If exceeding the limit, replace the output shaft.



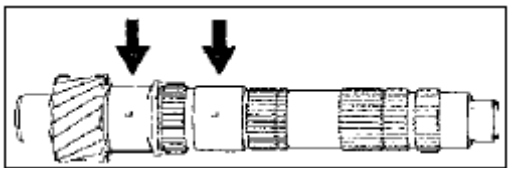
xlv. Check the clearance between the back of the synchronizing ring and the gear spline end face with a feeler gauge. The minimum clearance is 0.8mm. If exceeding the limit, replace the synchronizing ring.



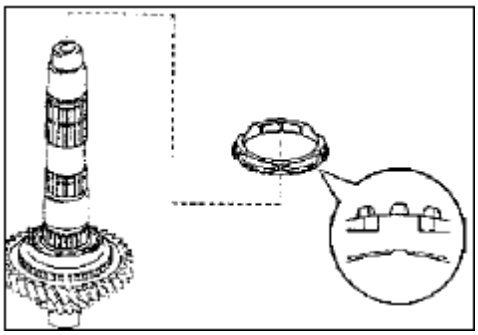
xlvi. Check the distance between the gear sleeve and the shift fork with a feeler gauge. The maximum is 0.35mm. Otherwise, replace the gear sleeve and shift fork.



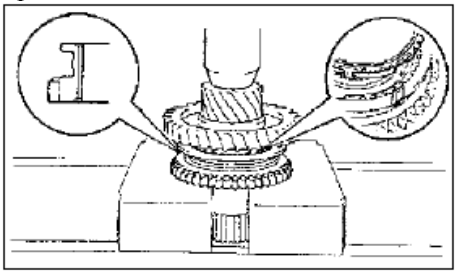
xlvii. Measure the abrasion of the output shaft with a micrometer. The minimum diameter of the surface is 30.985mm. If exceeding the limit, replace the output shaft.



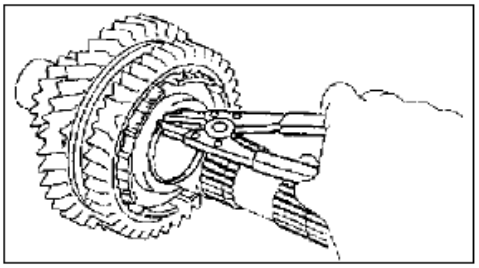
xlviii. Install the output shaft. Install gear 1 gear and the synchronizing ring in the direction shown in the figure.



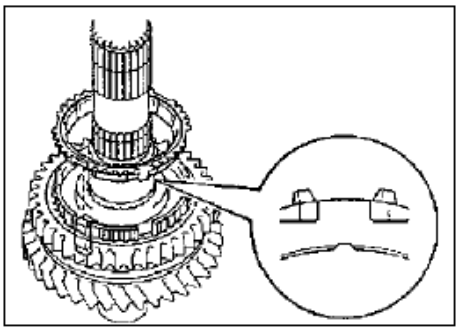
xlix. Install gear 1 and gear 2 synchronizers in the output shaft in the direction shown in the figure.



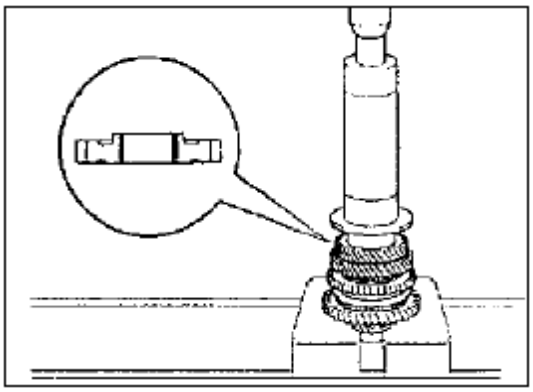
l. Replace the stretching spring with a new snap ring for shaft.



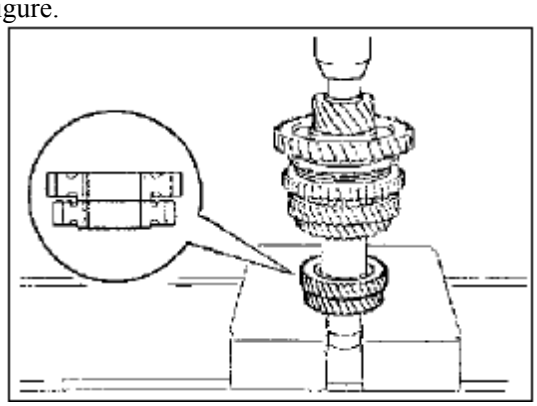
li. Install the synchronizer, the needle bearing and gear 2 gear.



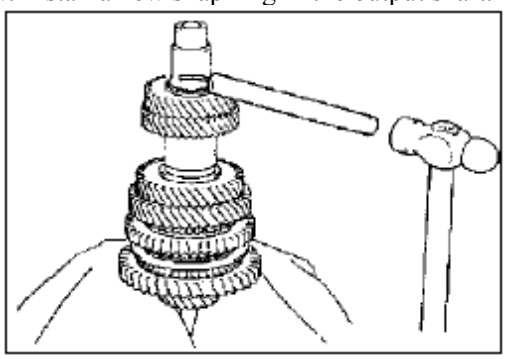
lii. As shown in the figure, press gear 3 gear in the output shaft with a press machine in the direction shown in the figure.



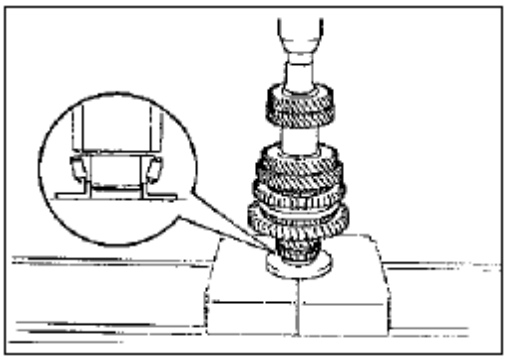
liii. Press gear 4 and gear 5 gears in the output shaft with a press machine in the direction shown in the figure.



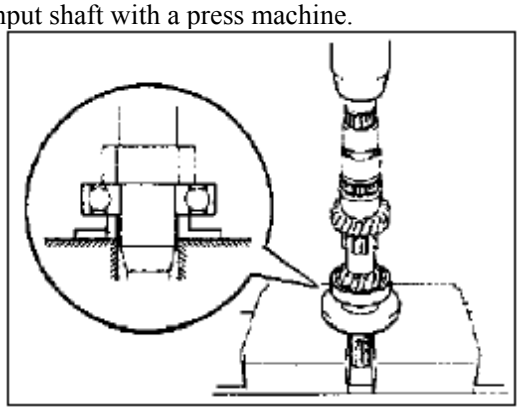
liv. Install a new snap ring in the output shaft.



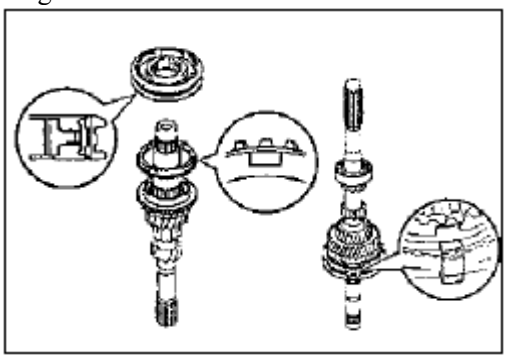
lv. Press the taper bearing in the output shaft.



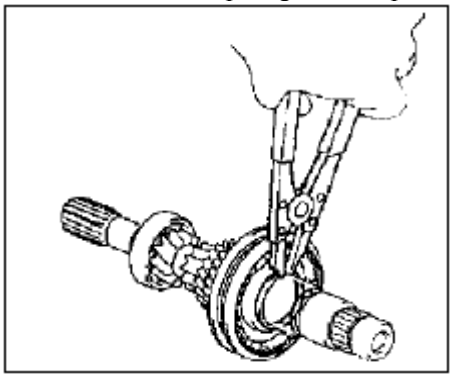
lvi. Install input shaft. Press the taper bearing in the input shaft with a press machine.



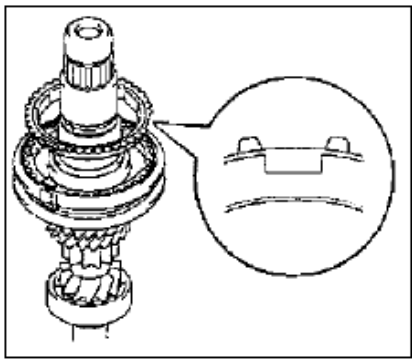
lvii. As shown in the figure, install the needle bearing, gear 3 gear and 3rd gear synchronizing ring and install the synchronizer assembly in the direction shown in the figure.



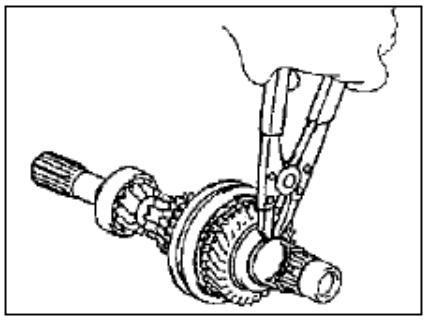
lviii. Install a new snap ring in the input shaft.



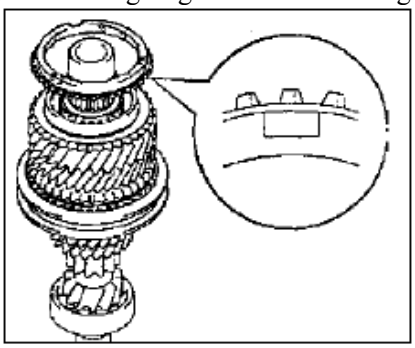
lix. Install the needle bearing, 3rd gear and 4th gear synchronizer assembly in the direction shown in the figure, gear 4 gear in the input shaft and the positioning ball and pass the 5th gear thrust washer smoothly through the ball and to the input shaft.



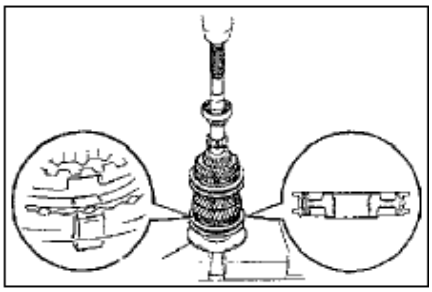
lx. Install the snap ring with the above-mentioned method.



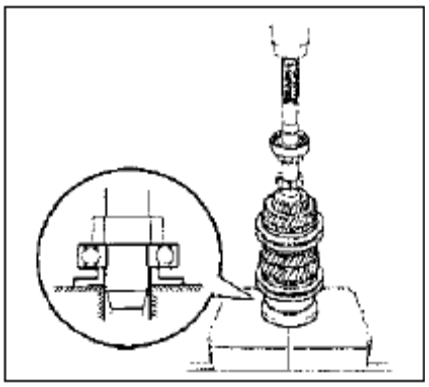
lxi. Install the needle bearing, gear 5 gear, 5th gear synchronizing ring as shown in the figure.



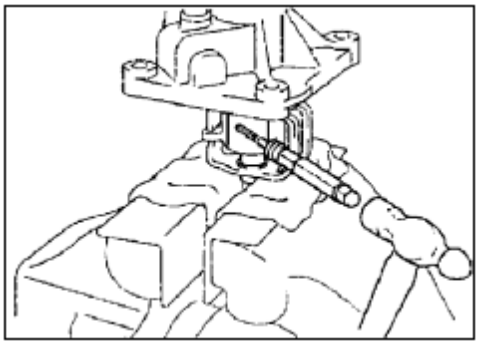
lxii. Install the synchronizer assembly in the direction shown in the figure.



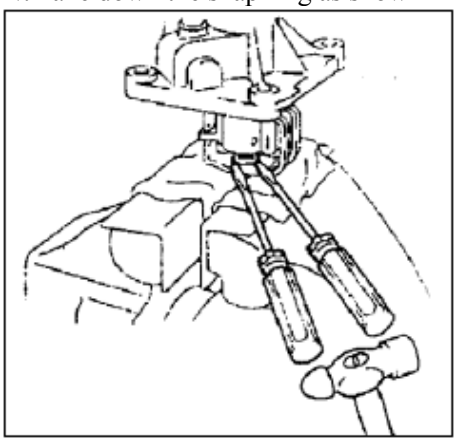
Press the bearing in the input shaft with a press machine.



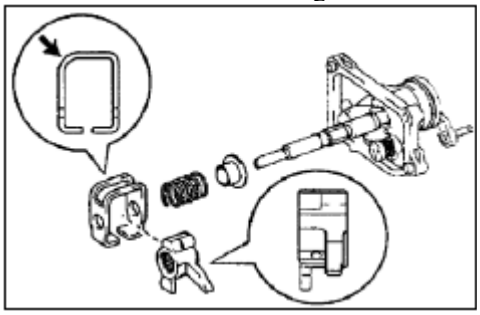
lxiii. Remove the shift mechanism: Take down the elastic cylindrical pin from the shift swing link with a pin remover and a hammer.



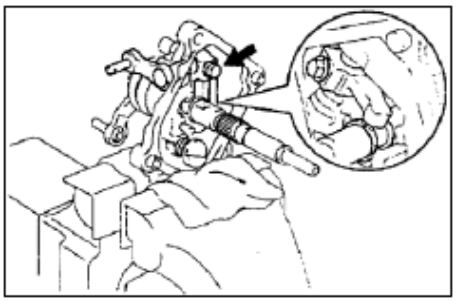
lxiv. Take down the snap ring as shown in the figure.



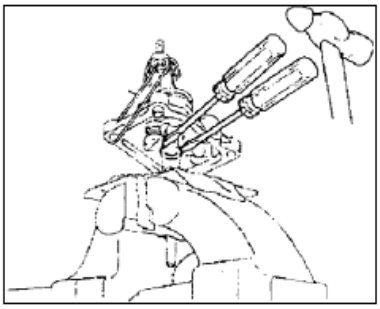
lxv. Disassemble the interlock bracket, shift swing link and washer as shown in the figure.



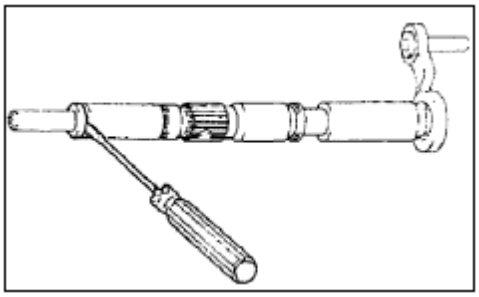
lxvi. Remove the shift swing link and the bolt.



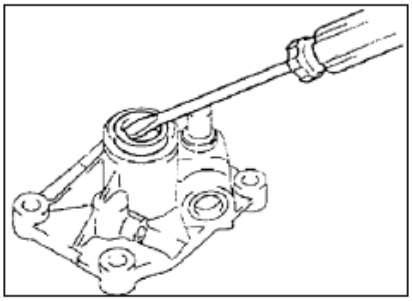
lxvii. Remove the snap ring as shown in the figure.

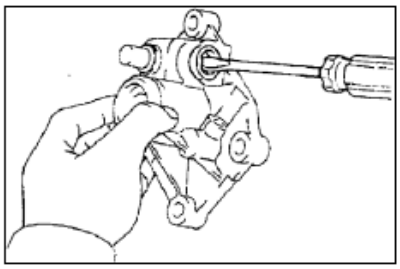


xviii. Remove the shift shaft and dustproof cap from the shift cover and take down the washer as shown in the figure.

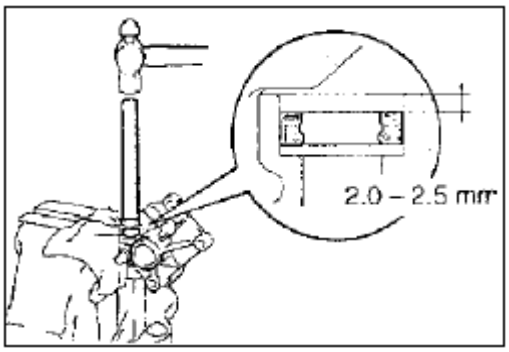


lxix. Take down the shift cover oil seal with a screw driver as shown in the figure.

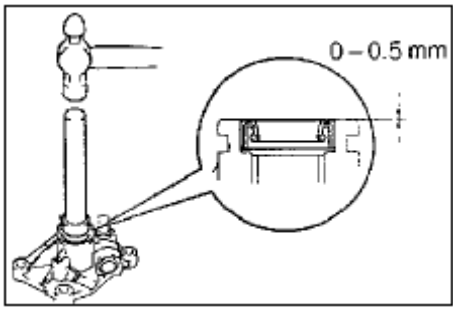




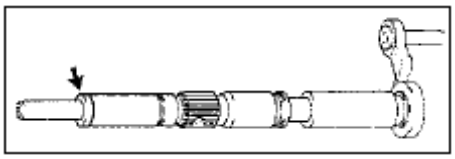
lxx. Installation. Press down the shift cover oil seal as shown in the figure. After that, the distance between the oil seal end face and the oil seal hole end face is 2.0-2.5mm.



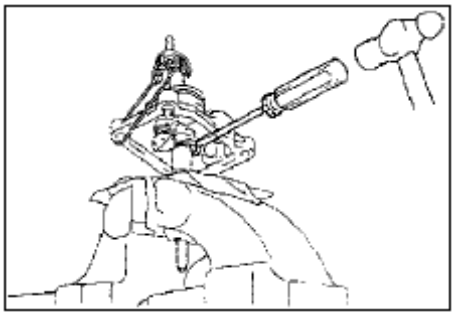
lxxi. Press down another oil seal as shown in the figure. After that, the distance between the oil seal end face and the oil seal hole end face is 0-0.5mm.



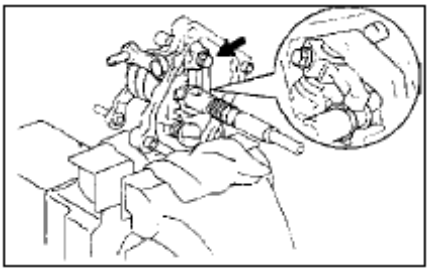
lxxii. Install the washer into the shift guide shaft, and the dustproof cap on the guide shaft and then the shift cover.



lxxiii. Press a new snap ring in the shift guide shaft.

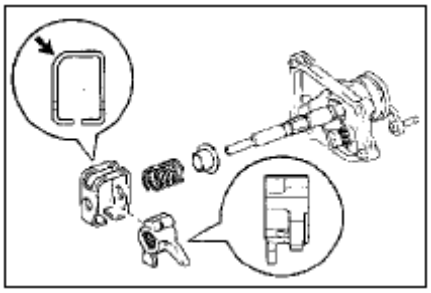


lxxiv. Apply the fastening sealant to the bolt, and then connect the switchover swing link shaft with the switchover cover with a bolt. The torque is 16N.m.

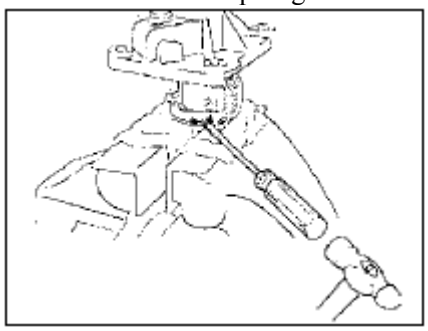


lxxv. Install A washer, spring, interlock frame and shift swing link on the shift guide shaft orderly in the direction shown in the figure, and then install the elastic cylindrical pin in the shift swing link. After that,

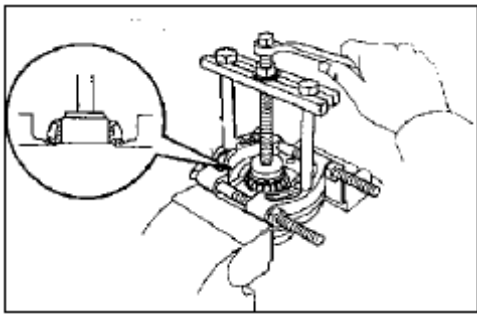
the distance between the rear end and the hole mouth is 0-0.5mm.



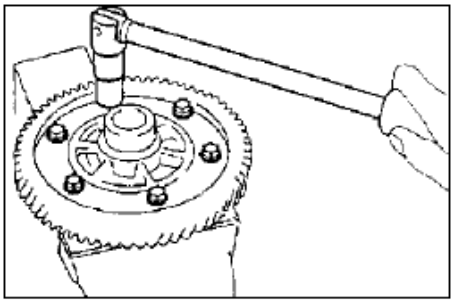
lxxvi. Install a new snap ring as shown in the figure.



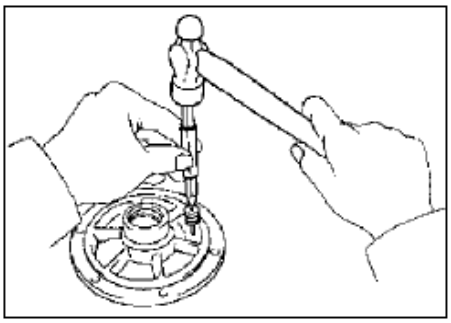
lxxvii. Disassemble the differential: Remove the differential housing bearing as shown in the figure.



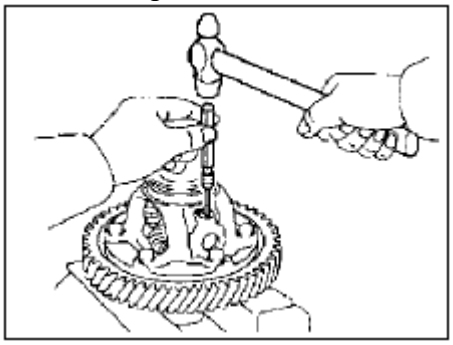
lxxviii. Orderly remove the retaining bolt of the differential and main reduction gear



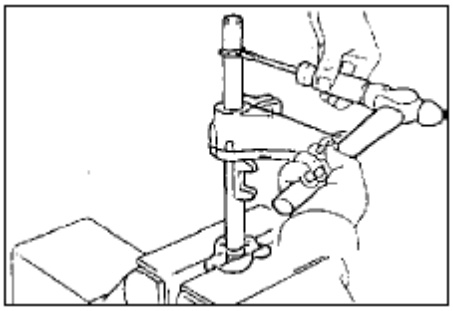
lxxix. Take out the elastic cylindrical pin with a pin remover, and orderly take out two planet gears and washers, two semi-cycle gears and washers and gear shafts.



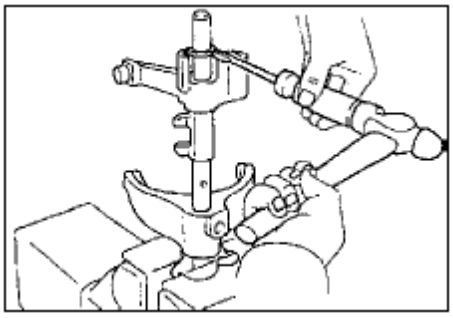
lxxx. Installation: Orderly press two half-shaft gears and washers differential housing, and two planet gears and washers in the differential housing, insert the planet gear shaft and a new elastic cylindrical pin as shown in the figure.



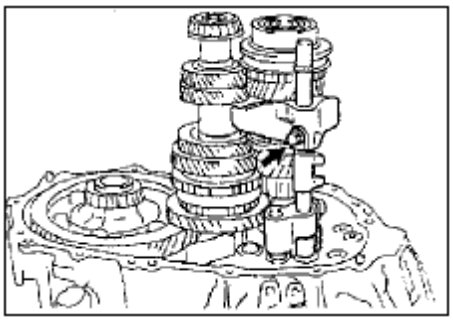
lxxxi. Installation: Install gear 3 and gear 4 fork shafts as shown in the figure and press in a new fork shaft snap ring.



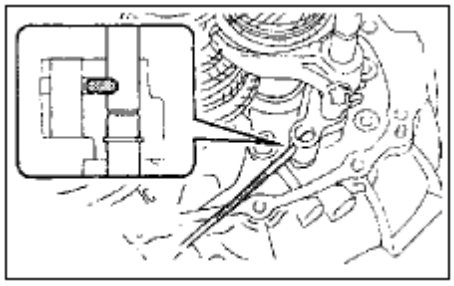
lxxxii. As shown in the figure, install the reverse gear piece and fork shaft spring.



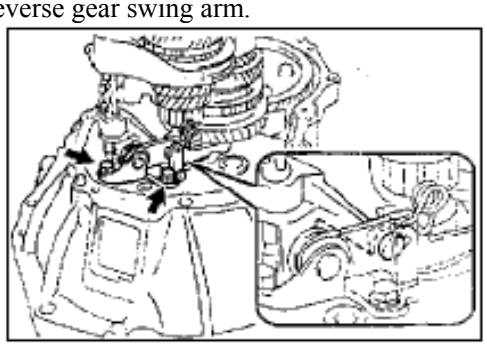
lxxxiii. Install gear 3 and gear 4 fork shafts in the clutch housing end face, and gear 3 and gear 4 shift fork in the gear sleeve groove and screw down the bolt. The torque is 16N.m.



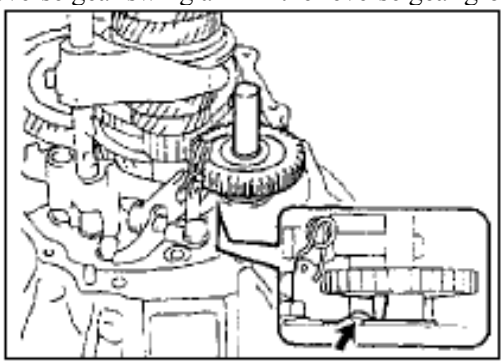
lxxxiv. As shown in the figure, install the interlock pin in the reverse gear shift.



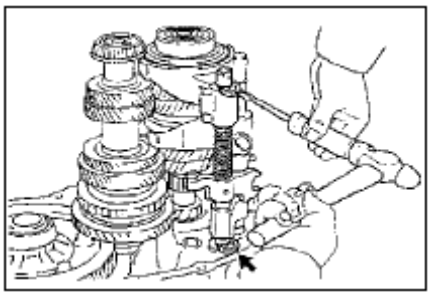
lxxxv. As shown in the figure, use two bolts to install reverse gear swing arm bracket. The torque is 17N.m. And put the reverse gear head in relevant hole of the reverse gear swing arm.



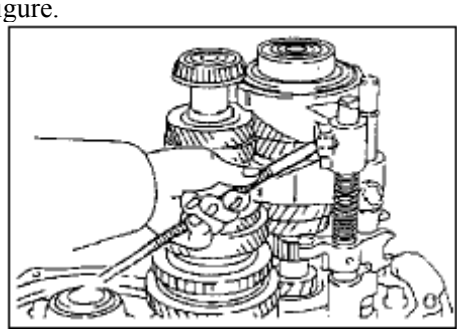
lxxxvi. As shown in the figure, put the head of the reverse gear swing arm in the reverse gear groove.



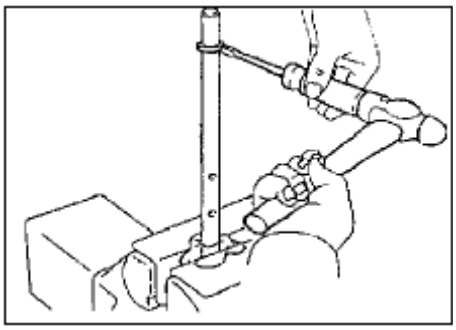
lxxxvii. As shown in the figure, install the reverse gear fork, spring and 5th gear reverse gear guide block on the 5th gear reverse gear fork shaft, and put 5th gear reverse gear fork in the gear 5 gear sleeve, and then install them to the clutch housing end face.



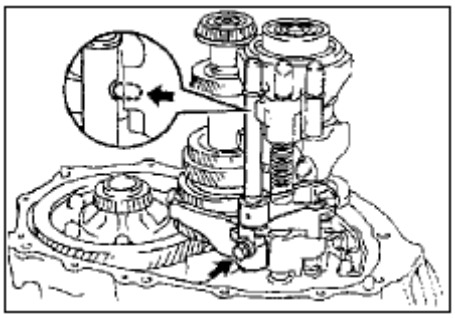
lxxxviii. Install two new fork shaft snap rings and install the interlock pin in the position shown in the figure.



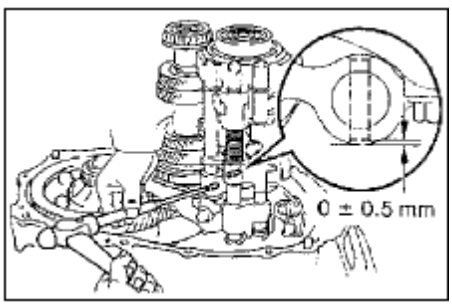
lxxxix. Install two new fork shaft snap rings.



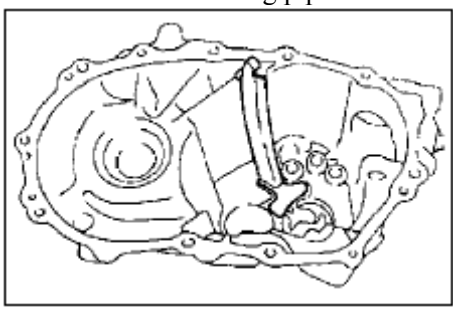
xc. Install gear 1 and gear 2 reverse gear forks to the fork shaft and put the fork claw in gear 1 and gear 2 gear sleeves and put them in gear 1 and gear 2 guide blocks. Screw down the bolt. The torque is 16N.m.



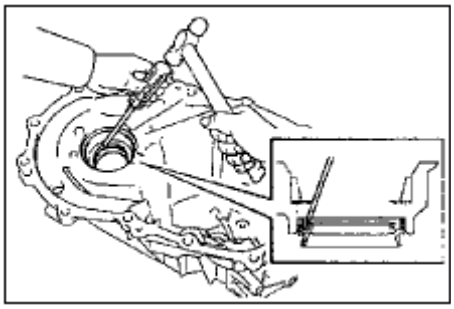
xci. As shown in the figure, install the elastic cylindrical pin to the guide block.



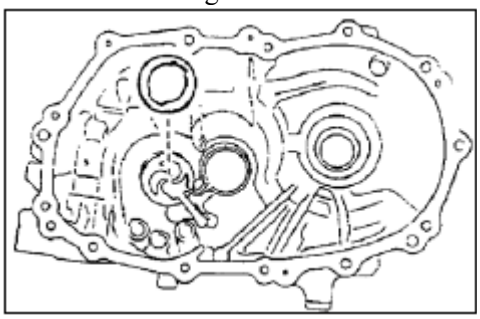
xcii. Install the lubricating pipe as shown in the figure.



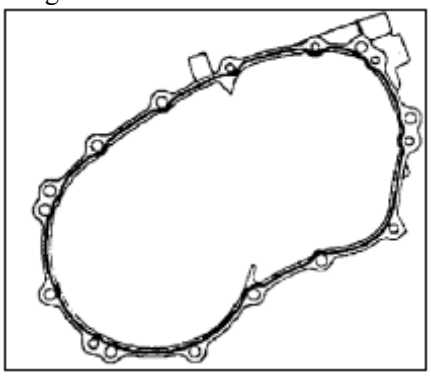
xciii. Take out the oil seal as shown in the figure, and install a new oil seal to the transmission housing.



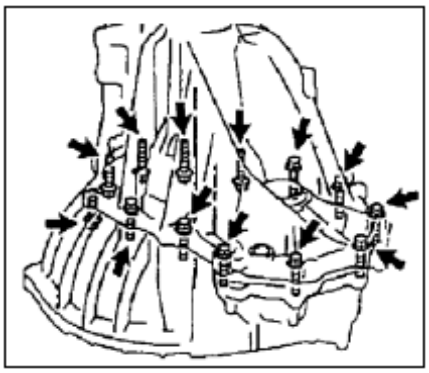
xciv. Install the selected regulation washer to the transmission housing.



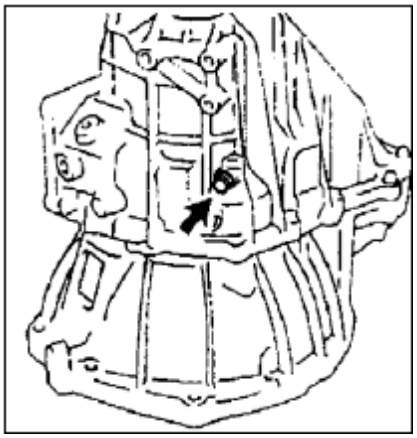
xcv. As shown in the figure, apply sealant to the house mating surface.



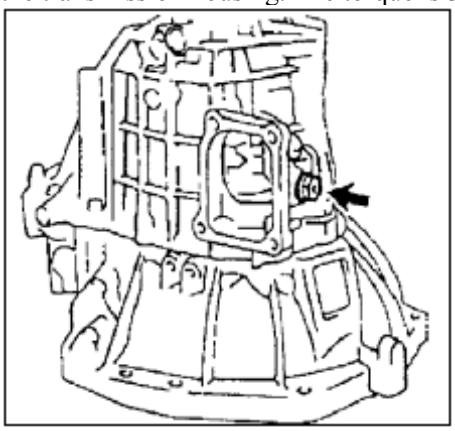
xcvi. As shown in the figure, screw down relevant bolts connecting the clutch. The torque is 29N.m.



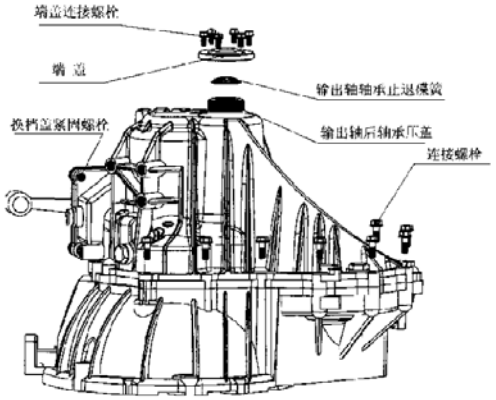
xcvii. Apply the fastening glue of bolt to the connecting bolt of the reverse gear shaft, cover the washer and fasten the reverse gear shaft on the transmission housing. The torque is 29 N.m.

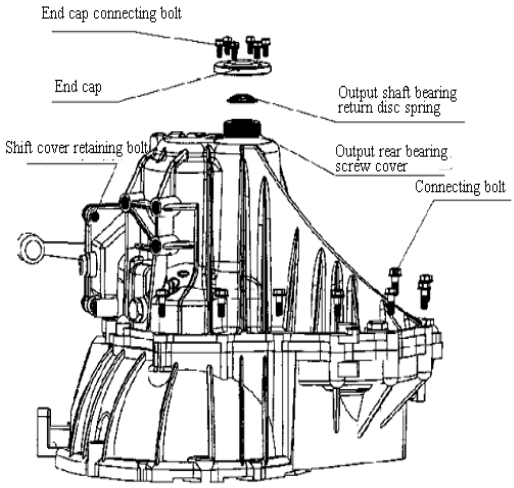


xcviii. Install the shift lever positioning assembly on the transmission housing. The torque is 37N.m.



xcix. Press the output shaft rear bearing cover in the transmission housing. The torque is 40N.m. Put the output shaft bearing return disc spring in the output rear bearing screw cover in the direction shown in the figure. Screw down the screw cover with a bolt. The torque is 12N.m.





2. Assembly Instruction

The transmission assembly should obey the reverse order of the removal and must comply with the following notes:

i. Clean the parts before assembly to maintain the cleanness of the case and ensure the lifetime of the transmission.

ii. In the installation, be careful to avoid oil leakage due to oil seal scratch and use special protection sleeve.

iii. Clean the mating face before applying the sealant to avoid oil leakage.

iv. Tightening torque of all screws should comply with the values shown in Attached Table I.

v. When installing the input shaft oil seal and the differential oil seal, apply the lubricating grease to the lip mouth of the oil seal and press the oil seal in the transmission housing with a special tool.

vi. Installation of the bearing stopper ring and the needle bearing. Pay attention to the direction of the bearing stopper ring and contact the inner diameter of the bearing stopper ring with the bearing seat.

vii. Keep the side with tooth face the 1st gear driven gear in the installation of 1st gear and 2nd gear synchronizers.

viii. Install the reverse idler and idler shaft into the clutch housing. Keep the idler shaft screw hole outward.

ix. Install 2nd gear needle bearing, the needle bearing, the synchronizer and 2nd gear driven gear. Keep the side with boss face the 2nd gear driven gear in the installation of 3rd gear driven gear.

x. Firstly put the fork shaft balance spring in the fork shaft hole of the clutch housing in the installation of the fork shaft. Install the fork assembly in the proper position.

xi. In the installation of the gear-selecting and shift mechanisms, turn each gear of the transmission to the neutral position, put the shift return spring in the mounting hole of the shift guide shaft. After adjusting the position of the gear-selecting and shift mechanism, align them and install them to the gear-selecting and shift positioning seat.

ii. Repair and Adjustment

To ensure the repair quality of the driver, carefully operate it and keep it clean. Try to use special repair tools.

General basic safety rules are also suitable for repairing LF481Q1 transmission. To avoid repeating, generally list a series of same instructions in the maintenance as follows:

1. Sealant

The sealant must be replaced after the transmission is disassembled. Clean the contact surface before replacing. The sealant should be even and suitable.

2. Oil seal

Before installation, apply a thin layer of lubricant to the outer circumference and fill up the opening of the oil seal with lubricating grease.

After installation, check the lubricant quantity of the driver and refill lubricant.

3. Snap ring

Never overextend the snap ring to avoid deformation; otherwise replace it. Keep the snap ring completely in the ring groove.

4. Bolt and nut

Loosen and screw down the bolts and nuts on the end cap and the housing of the driver diagonally. Tightening torque is suitable for oil-free bolt and nut.

5. Bearing

In the installation of the needle bearing, keep the thicker side toward the mounting tool. Before installation, heat the inner ring of the cone needle bearing to 100ºC. The same size inner ring and outer ring are irreplaceable.

Replace the cone needle bearings on the same shaft at the same time. The bearing models are the same.

6. Adjusting washer

Repeatedly measure the thickness of the adjusting washer at several positions with a caliper. Check the adjusting washer for burr or damage. If so, replace it.

7. Synchronizing ring

Use the synchronizing ring corresponding to the original gear. Lubricate it with transmission lubricant in the installation.

8. Gear

Clean and heat the gear to about 100ºC before installation.

9. Transmission lubricant level

Lean leftward 5º in the installation of the transmission assembly. At that time, check the oil level. Even if the oil volume is normal, the lubricant may still overflow in the observation. The remaining lubricant may get weak lubricating effect.

To ensure normal lubricant of 1.8L transmission, the following notes must be obeyed:

a) The transmission is always sealed. So check the outer tightness of the transmission rather than the lubricant level (not opening the lubricant filling bolt).

b) After disassembly and repair of the transmission, refill 2.1L lubricant before reassembly.

c) Check the oil level on the removed transmission. Place the transmission at plane position, screw off the drain plug of the lubricant and keep the oil level parallel with drain plug hole.

d) In case of checking the oil level or replacing the sealing ring, carefully screw off the drain plug in a short time and reinstall it immediately.

Regulation of the tightening torque

Name	Assembly torque (Nm)
Shift locking ball pressure plate M6×16	6.9--9.8
Shift lever and shift swing link licking nut M10×1.25	19.6—29
Shift lever and shift swinging link locking nut M10×1.25	39—49
Shift swinging link bracket assembly M6×20	6.9—9.8
Release lever assembly M8×25	29.4—39.2
Transmission housing and rear ed cap closer bolt M6×14	6.9—9.8
Input shaft assembly locking nut M22×1.5	98.1—137.3
Output shaft assembly locking nut M22×1.5	98.1—137.3
Output shaft bearing locking plate bolt M6×16	6.9—9.8
Input shaft bearing locking plate bolt M8×16	14.7—21.5
Clutch housing and transmission housing closer M8 ×40	14.7—21.5
Odometer locking plate bolt M6×16	6.9—9.8
Air plug M10	9.8—12.7
Reverse gear switch assembly M16	29.4—49
Inlet plug M16×1.5	29.4—49
Drain plug M16×1.5	29.4—49
Differential assembly M10	93.2—104.9

iii. Transportation, safekeeping and operation

1. Transportation and safekeeping of 1.8L transmission

i. Take anti-rust measures to avoid rust in the transportation and safekeeping of the transmission.

ii. Before transportation, pack the transmission and place it on the transportation rack to avoid damaging the transmission in the normal transportation.

iii. Store the transmission in the dry and ventilated warehouse.

2. Notes for 1.8L transmission operation

i. Completely step down the clutch pedal in the shift to

make the transmission rapidly control the gear lever without the engine torque.

ii. Select the low speed gear while climbing and turning, and never slide while the clutch is disengaged.

iii. When it's difficult to operate the gear lever, stop to check the cause with slight push power.

b) Suspension system

i. Fault diagnosis

1. Check and confirm

i. Confirm the customers' problems.

ii. Visually check the following devices for obvious mechanical fault.

Tire pressure, wheel and tire, steering knuckle, tie rod end, front suspension lower arm ball joint, front suspension lower arm bush.

Front pillar and spring assembly, front/rear stabilizer bar, rear spring, rear damper, rear suspension lower arm.

iii. Solve the observed or complaint problems before moving forward (if possible).

iv. If failing to check the cause visually, confirm the fault phenomenon and refer to the fault phenomenon table.

2. Fault phenomenon table

Condition	Possible reasons	Measures
Deflect toward one side	Incorrect height of the vehicle (front or back is too high or low).	Check if the load is abnormal, the coil-shaped spring is snagging or the spring isn't standard.
	Abrasion or damage of the steering gear or connecting rod	Check the steering system. Refer to the general information of the steering system.
	Brake system.	Check the brake. Refer to general information of the brake system.
	Improper wheel alignment.	Adjust the wheel alignment.
	Abrasion of front wheel bearing.	Check the front wheel bearing. Refer to the wheel bearing part of this chapter.
	Wheel and tire.	Deflection test towards one side.
Steering wheel misalignment	Incorrect height of the vehicle (front or back is too high or low).	Check if the load is abnormal, the coil-shaped spring is snagging or the spring isn't standard.
	Steering gear and connecting rod.	Check the steering system. Refer to wheel and tire.
	Suspension lower arm ball joint	Test the ball joint in this chapter.
	Improper wheel alignment	Adjust the wheel alignment.
Incorrect track	Incorrect caster angle	Test for incorrect track.
	Damage of rear suspension.	Test for incorrect track.
Uncomfortable ride	Front or rear stabilizer connecting rod, joint or bush.	Check or install new suspension component as required. Refer to front and rear suspension.
Deflect towards one side	Incorrect height of the vehicle (front or back is too high or low).	Check if the load is abnormal, the coil-shaped spring is snagging or the spring isn't standard.
	Abrasion or damage of the steering gear or the connecting rod	Check the steering system. Refer to general information of the steering system.
	Brake system	Check the brake. Refer to the general information of the brake system.
	Improper wheel alignment	Adjust the wheel alignment
	Abrasion of front wheel bearing	Check the front wheel bearing. Refer to the wheel bearing of this chapter.
	Wheel and tire	Deflection test towards one side.
Steering wheel misalignment	Incorrect height of the vehicle (front or back is too high or low).	Check if the load is abnormal, the coil-shaped spring is snagging or the spring isn't standard.
	Steering gear or connecting rod	Check the steering system. Refer to wheel and tire.。
	Suspension lower arm ball joint	Ball joint component test.
	Improper wheel alignment	Adjust the wheel alignment
Incorrect track	Incorrect caster angle	Test for incorrect track.
	Damage of rear suspension	Test for incorrect track.
Uncomfortable ride	Front or rear stabilizer connecting rod, joint or bush.	Check or install new suspension component as required. Refer to front and rear suspensions.

3. Pinpoint test

i. Pinpoint test A: deflect towards one side

Warning: To avoid personal injury due to out of control. Two persons do the check together to maintain safe driving. Suitably control the steering wheel. Otherwise, it may cause personal injury.

Note: Evaluate the vehicle as per the following conditions.

Note: Tire exchange procedure is only suitable for two-way rotating tire.

Condition	Contents/Results/Measures
A1: Exchange front wheel and tire assembly	
	Lift and support the vehicle. - Exchange the left/right front wheel assembly. - Do road test. Whether the vehicle is drifting? →Yes To A2 →No The problem has been corrected.
A2: Exchange rear wheel and tire assembly	
	Lift and support the vehicle. - Exchange left/right rear wheel - Do road test Whether the vehicle is drifting? →Yes To A3 →No The problem has been corrected.
A3: Exchange left wheel and tire assembly	
	Lift and support the vehicle. - Exchange left front/rear wheel assembly. - Do road test. Whether the vehicle is drifting? →Yes To A4 →No The problem has been corrected.
A4: Exchange right wheel and tire assembly	
	Lift and support the vehicle. - Exchange right front/rear wheel assembly. - Do road test. Whether the vehicle is drifting? →Yes To A5 →No The problem has been corrected.
A5: Exchange left front wheel and tire assembly	
	Lift and support the vehicle. - Exchange left front wheel and rear wheel assembly. - Do road test. Whether the vehicle is drifting? →Yes To A6 →No The problem has been corrected.
A6: Exchange right front wheel and tire assembly	
	Lift and support the vehicle. - Exchange right front wheel and left rear wheel - Do road test. Whether the vehicle is drifting? →Yes To A7 →No The problem has been corrected.
A7: Install new tire	
Note: Install new tire only once.	
	Install new tires for 4 wheels. Check the system for normal operation. Whether the vehicle is drifting? →Yes Confirm possible reason and refer to fault phenomenon table. →No The problem has been corrected.

ii. Pinpoint test B: incorrect track

Condition	Contents/Results/Measures
B1: Check the caster angle：	
	Check the vehicle wheel alignment. Whether the caster angle meets the requirement? →Yes To B2 →No Install new suspension component as required. Adjust the corrected value to the specified range. Check the system for normal operation.
B2: Check the rear suspension	
	Measure the left/right shaft distance of the vehicle. - Compare the measured value. Are the measured values the same? →Yes Confirm the customers' problems. →No Check the rear suspension component for abrasion or damage. Install new component as required. Refer to rear suspension part. Check the system for normal operation.

iii. Pinpoint test C: uncomfortable ride

Condition	Contents/Results/Measures
C1: Check the front pillar and spring assembly	
	Lift and support the vehicle. - Check the front pillar and spring assembly for oil leakage or damage? Check the front pillar and spring assembly for oil leakage or damage →Yes Install new components. Refer to front suspension. Check the system for normal operation. →No To C2
C2: Check the rear shock damper	
	Lift and support the vehicle. - Check the rear shock damper for oil leakage or damage. Check the rear shock damper for oil leakage or damage. →Yes Install new components. Refer to front suspension. Check the system for normal operation. →No Confirm the customers' problems.

iv. Pinpoint test D: too loud noise

Condition	Contents/Results/Measures
D1: Check the suspension	
	Lift and support the vehicle. - Check the suspension retaining bolt. Whether the retaining bolt is loosed or cracked →Yes Lock and install new suspension retaining bolt. Refer to suspension (front and rear). Check the system for normal operation. →No To D2
D2: Check the spring	
	Check the spring for damage? • Whether the spring is damaged? →Yes Install a new spring. Refer to suspension (front and rear). Check the system for normal operation. →No To D3
D3: Check the front suspension lower arm	
	Check the front suspension lower arm bushing for excessive abrasion or damage. Whether the front suspension lower arm bushing is abraded or damaged? →Yes Install new lower arm. Refer to suspension. Check the system for normal operation. →No To D4
D4: Check the tire	
	Check the wheel for uneven abrasion. Uneven abrasion? →Yes Install a new tire and adjust it to specified value. Check the system for normal operation. →No Confirm the customers' problems.

v. Pinpoint test E: vibration

Condition	Contents/Results/Measures
E1: Check the tire	
	Lift and support the vehicle. - Check the tire for damage or excessive abrasion. Whether the tire is damaged or abraded? →Yes Install a new tire. Check the system for normal operation. →No To E2
E2: Measure the wheel and tire for deflection on the vehicle.	

Condition	Contents/Results/Measures
	Measure the wheel and tire for deflection on the vehicle with a proper equipment. Whether the measured value is qualified? →Yes To E8 →No To E3
E3: Measure the wheel and tire for deflection under the vehicle.	
	Measure the wheel and tire. Before removing the wheel, mark the wheel bolt and corresponding bolt hole to ensure that the wheel would be installed at the original position. Place the removed wheel on the balancer. Whether the measured value is qualified. →Yes To E6 →No To E4
E4: Suitable mounting position	
	Mark the high deflection of the tire and the wheel. Evacuate the air in the tire and rotate it 180 degree. Inflate the tire and measure the deflection. Whether the wheel and the tire are balanced? →Yes Install the wheel into the vehicle and check the system for normal operation. →No To E5
E5: Measure the wheel deflection	
	Remove the tire and place the vehicle on the wheel balancer. Measure the 2nd flange deflection. Whether the deflection is qualified? →Yes Find out and mark the low point on the wheel and install the wheel suitable for the high point of the wheel. Balance the wheel and tire assembly. Check the system for normal operation. →No Install a new wheel and check the new wheel deflection. If the new wheel is within the limit, find out and mark the low point on the wheel. Install the tire and adjust the high point and low point of the wheel. Balance the wheel and tire assembly. Check the system for normal operation.
E6: Rear wheel hub and bolt circle diameter deflection	
	Remove the rear wheel, the brake drum or the brake disc. - If the measured value is correct? →Yes To E7 →No Install a new wheel hub.
E7: Front wheel hub and bolt circle diameter deflection	
	Remove the front wheel and the brake disc. - Measure the deflection of the bolt circle. If the measured value is correct? →Yes To E8 →No Install a new wheel hub. Refer to front suspension.
E8: Wheel balance	
	Balance all wheels and do road test. If there is vibration? →Yes Refer to noise, vibration and unflatness. →No Confirm the customers' problems.

4. Specification

Master pin caster angle	2°44′±30′
Front wheel outer caster angle	-1°12±30′

Front wheel front toe-in	0°21′±15′
Master pin inner caster angle	11°2′±30′

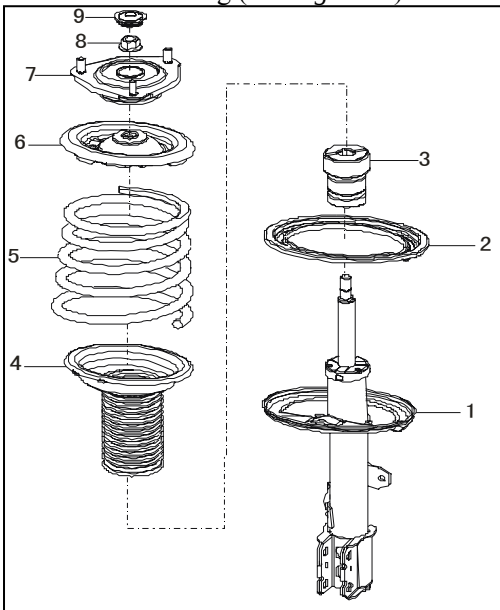
5. Tightening torque

Tie rod end locking nut	40 Nm

ii. Removal and installation of front shock damper

1. Appearance identification

Breakdown drawing (*see Fig. III-1*)



1. Front shock damper assembly 2. Front spring lower washer 3. Front limit buffer stopper
4. Shock damper dustproof cover 5. Front spring Front spring upper abutment component
7. Front pillar upper mounting support component 8. Complete metal hexagon flange face lock nut
9. Front shock damper upper abutment plug

Fig. III-1

2. Removal and installation of front shock damper

Removal procedures:

i. Lift the vehicle with a jack and remove the front wheel.

ii. Remove the hose and ABS speed sensor lead from the shock damper (with ABS system).
iii. Remove the steering knuckle with brake disc assembly from the shock damper.

1. Dismantle 2 nuts and bolts of the shock damper and the steering knuckle with brake disc assembly (*see Fig. III-2*).

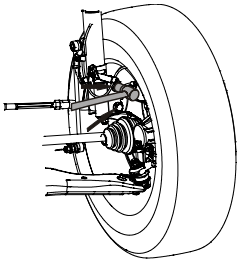


Fig. III-2

2. Remove the bolt connecting the tie rod ball joint pin and the steering knuckle with brake disc assembly and loosen the ball joint pin (*see Fig. III-3*).

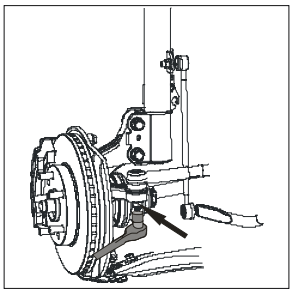


Fig. III-3

3. Remove the bolt connecting the front connecting rod and the shock damper and loosen the connecting rod (*see Fig. III-4*).

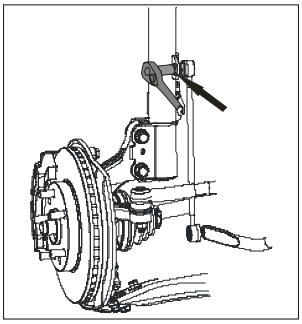


Fig. III-4

4. Remove the bolt connecting the steering knuckle brake disc assembly and the control arm ball joint.

5. Remove the drive shaft bolt of the front wheel (*see Fig. III-5*).

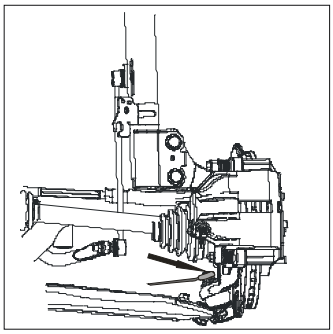


Fig. III-5

6. Remove the steering knuckle brake disc assembly from the shock damper. Installation tips: apply engine oil to the thread of the nut.

iv. 4. Remove the shock damper and the spiral spring together.

1. Remove 3 bolts connecting the shock damper and the vehicle body (see Fig. III-6).

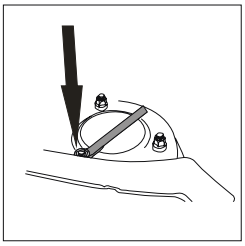


Fig. III-6

2. Remove the shock damper and the spiral spring together.

3. Installation procedure:

i. Installation should comply with the removal procedure.

ii. Notes:

1. The retaining bolt under the torque and the angle controlled by yield strength must be replaced after it's loosed each time.

2. Fasten each bolt to the specified torque after installation.

3. Please check the four-wheel alignment after installation.

4. Removal and installation of the shock damping pillar component and/or spring

a) Removal procedure

i. If the assembly fixture couldn't be fixed on the work

bench, fix it in the standing vice. (*See Fig. III-7*)

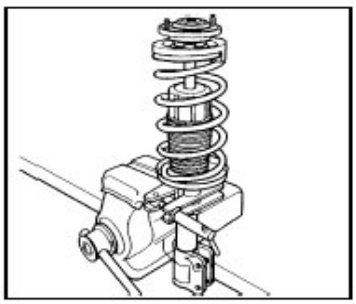


Fig. III-7

ii. Install a pair of claws corresponding to the spring diameter into the spring compressor.

iii. Loosen the spring compressor and the claw is between the top and the bottom of the spring (as shown by arrow). (*See Fig. III-8*)

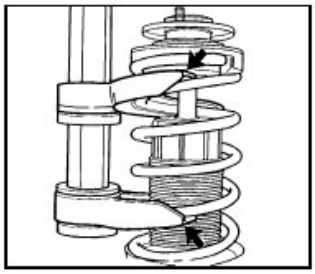


Fig. III-8

iv. Compress the spring till the spring separates from the upper and the lower spring seats.

Use a locknut ratchet wrench (as shown in Fig. III -9) to remove the shock damping pillar bracket with limiter and the washer from the piston connecting rod.

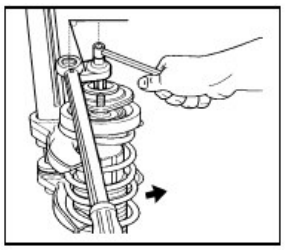


Fig. III-9

v. Remove the upper spring seat with a shock damping block. (*See Fig. III-10*)

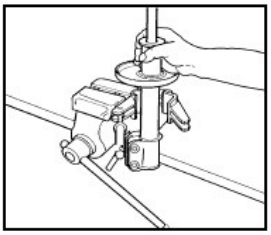


Fig. III-10

vi. Remove the spring compressor with spring and dustproof cover. (See Fig. III-11)

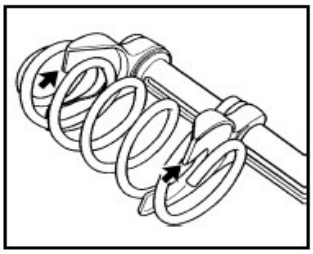


Fig. III-11

vii. Remove the buffer stopper

viii. Check the following components as per the damage and abrasion degree.

Buffer stopper

Dustproof cover

Vibration stopper

Shock damping pillar seat

Upper spring seat with bearing and limiter

If the old shock damper requires changing, remove the shock damper, remove the wheel speed sensor speed limit bracket from the shock damper and install it on the new shock damper. (Directly replace the shock damper if there is no wheel speed sensor harness bracket.)

Installation procedure

Install a new shock damper into the assembly fixture.

Loosen the spring and take out the old spring from the spring compressor to replace the old spring.

Insert a new spring in the spring compressor. Leave a circle at the upper part of the spring and a circle and half at the lower part. (As shown by arrow in *Fig.* III-12)

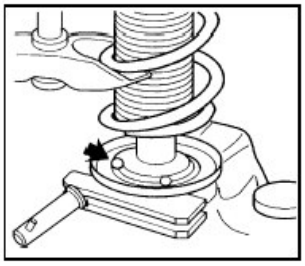


Fig. III-12

Compress the spring to keep the distance between two claws ≤120 mm. Confirm the position of the buffer stopper limiter. (See 1 in Fig. III-13)

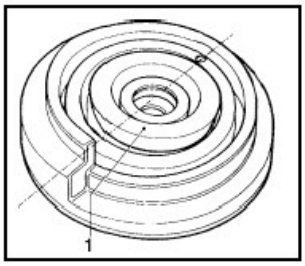


Fig. III-13

ix. Install the buffer stopper and pull the piston rod to the end

Place the spring on the spring seat.

It's very important that the spring end should be in the limit hole.

Install the upper spring seat with shock damping block and keep the hole deflects 180° from the lower spring pillar fastening position. (As shown by arrow.) (See *Fig. III-14*)

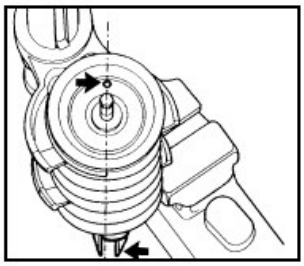


Fig. III 14

x. Install the spacer bush bearing and the aligner.

xi. Fasten it with a new lock nut.

xii. Fasten the new lock nut

Important notes

Vertically use the torque wrench (see Fig. III-15)

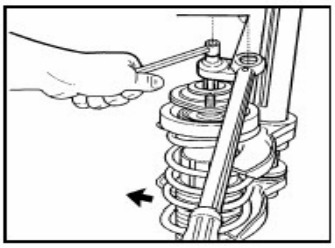


Fig. III-15

5. Check of the shock damper

i. Check of the shock damper

Check the shock damper for oil leakage, if so, replace it. Check the damping force of the shock damper, if disqualified, replace it. Check the thrust bearing for excessive abrasion, abnormal noise and blockage. Check the spring lower seat for crack or deformation. Check the limitation stop for damage. Check the suspension spring limitation pad for abrasion, crack or deformation. Replace all defective parts.

Note: Discard the shock damper as per the following procedures.

ii. Discard the front shock damper

1. Stretch the shock damper rod as long as possible. (See *Fig. III-16*)

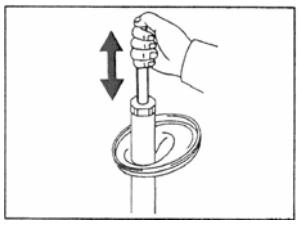


Fig. *III-16*

2. Use a drill to drill a hole on the cylinder as shown in the figure to evacuate the air in the shock damper cylinder. (See *Fig. III-17*)

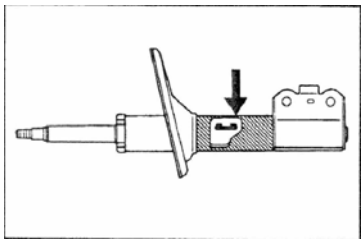
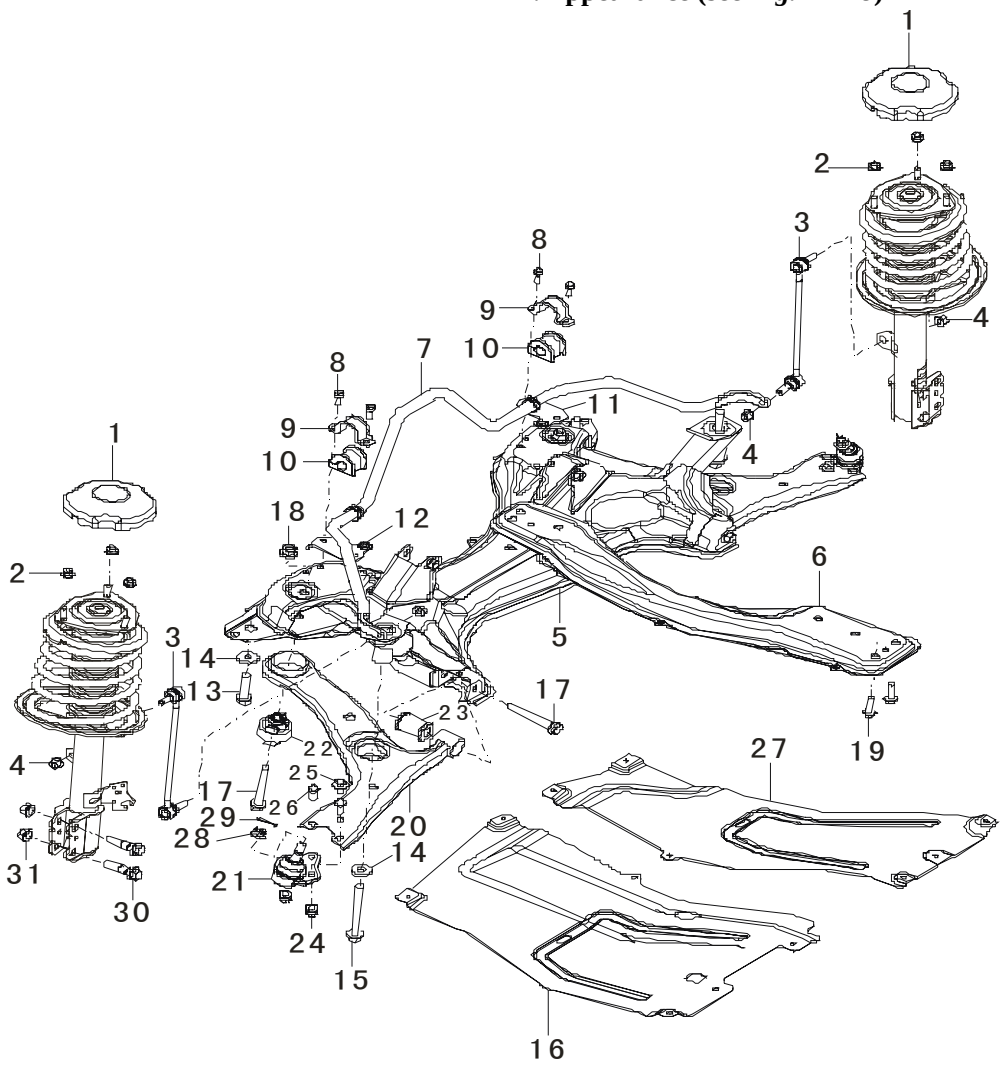


Fig. III-17

Caution: The exhausted air is no harmful but with scrap iron in the drilling.

iii. Front axle and front suspension

1. Appearance (see *Fig. III-18*)



1. Front pillar upper dustproof cover 2. Metal hexagon flange face lock nut
3. Front lateral stabilizer bar connecting rod component 4. Non-metal inserts hexagon flange face luck nut
5. Front supporting bracket component 6. Front supporting bracket and joist component
7. Front lateral stabilizer bar component 8. Hexagon head bolt and spring washer component
9. Front lateral stabilizer bar fixed block 10. Front lateral stabilizer bar buffer sleeve
11. Left fixed block washer 12. Right fixed block washer 13.Hexagon head flange face bolt
14. Flat washer 15.Hexagon flange face bolt 16. Engine right lower steel plate guard panel
17. Hexagon flange face bolt 18. Hexagon flange face bolt 19. Hexagon flange face bolt
20. Left and right front swing arm component 21. Ball pin component
22. Left front swing arm bushing component I 23. Left front swing arm bushing component II
24. Nut 25. Hexagon flange face bolt 26. Ball pin mounting bolt
27. Engine left lower steel plate guard panel 28. Hexagon flange face slotted nut 29. Cotter
30. Hexagon flange face bolt 31. Hexagon flange face nut

Fig. III-18

2. Removal and installation of the control arm assembly **a) Removal procedure:**

i. Remove the connecting bolt of the control arm and the sub-frame. (See *Fig. III 19*)

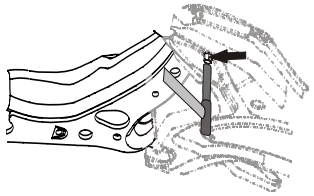


Fig. III-19

ii. Remove the connecting bolt of the control arm ball pin and the steering knuckle with brake disc assembly.

iii. Remove the connecting bolt of the control arm rear rubber sleeve and the sub-frame.

iv. Remove the control arm from the vehicle.

b) Installation procedure:

i. Installation should comply with the removal procedure.

ii. Notes:

1. The retaining bolt should be replaced once it's loosened.

2. Fasten each bolt to specified torque after installation.

3. Removal and installation of the control arm ball pin

a) Removal procedure:

i. Remove the control arm assembly. (Refer to the removal and installation of the control arm assembly.)

ii. Remove the connecting bolt of the control arm and the control arm ball pin. (See *Fig. III-20*)

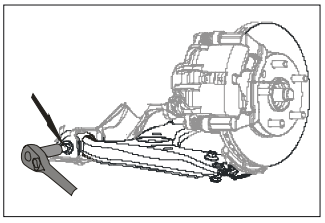


Fig. III-20

iii. Take down the control arm ball pin.

b) Installation procedure:

i. Installation should comply with the removal procedure.

ii. Notes:
1. The retaining bolt must be replaced after it's loosened.

2. Fasten each bolt to specified torque after installation.

4. Removal and installation of the front connecting rod

a) Removal procedure:

i. Remove the connecting bolt of the front connecting rod and the shock damper. (See *Fig. III-21*)

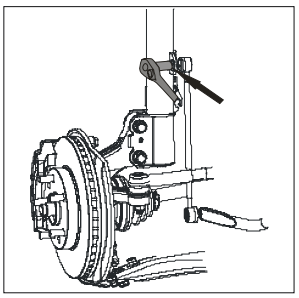


Fig. III-21

ii. Remove the connecting bolt of the front connecting rod and the front stabilizer bar. (See *Fig. III-22*)

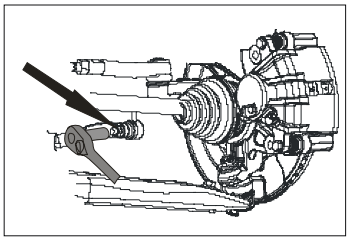


Fig. III-22

b) Installation procedure:

i. Installation should comply with the removal procedure.

ii. Notes:

1. The retaining bolt under the torque and the angle controlled by yield strength must be replaced after it's loosed each time.

2. Fasten each bolt to the specified torque after installation.

5. Removal and installation of the front stabilizer bar bushing

a) Removal procedure:

i. Remove the retaining bolt of the left and right connecting rod bushing. (See *Fig. III-23*)

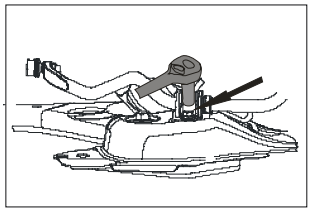


Fig. III-23

ii. Loosen the fixed clip of the stabilizer bar bushing and move the stabilizer bar forward to take out the bushing.

b) Installation procedure:

i. Installation should comply with the removal procedure.

ii. Notes:

1. The retaining bolt under the torque and the angle controlled by yield strength must be replaced after it's loosed each time.

2. Fasten each bolt to the specified torque after installation.

6. Removal and installation of the sub-frame assembly

b) Installation procedure:

i. Installation should comply with the removal procedure.

ii. Notes:

1. The retaining bolt under the torque and the angle controlled by yield strength must be replaced after it's loosed each time.

2. Fasten each bolt to the specified torque after installation.

7. Removal and installation of the front stabilizer bar

a) Removal procedure:

i. Remove the sub-frame assembly. (Refer to the removal and installation of the sub-frame.)

ii. Remove the front stabilizer bar bushing. (Refer to the removal and installation of the front stabilizer bar bushing.)

iii. Remove the stabilizer bar.

b) Installation procedure:

i. Installation should comply with the removal procedure.

ii. Notes:

a) Removal procedure:

i. Remove the left and right control arms. (See the removal and installation of the control arm.)

ii. Remove the connecting bolt of the connecting bar and the stabilizer bar. (See the removal and installation of the connecting rod.)

iii. Remove 2 connecting bolts of the steering gear box and the sub-frame.

iv. Remove the connecting bolt and nut of the sub-frame assembly and the girder welding assembly.

v. Remove 4 connecting bolts of the sub-frame and the vehicle body.

1. Remove the connecting bolt of the sub-frame and the vehicle body.

2. Take down the sub-frame assembly.

Note: Hang the engine in the front engine room to avoid dropping before removing the sub-frame.

1. The retaining bolt under the torque and the angle controlled by yield strength must be replaced after it's loosed each time.

2. Fasten each bolt to the specified torque after installation.

8. Removal and installation of the girder welding assembly

a) Removal procedure:

i. Remove the connecting bolt of the engine front suspension and the front suspension bracket.

ii. Remove 2 connecting bolts of the girder welding assembly and the vehicle body.

iii. Remove the connecting bolt of the engine rear suspension and the rear suspension bracket.

iv. Remove the connecting bolt of the girder welding assembly and the sub-frame.

v. Remove the girder welding assembly.

b) Installation procedure:

i. Installation should comply with the removal procedure.

ii. Notes:

1. The retaining bolt under the torque and the angle controlled by yield strength must be replaced after it's loosed each time.

2. Fasten each bolt to the specified torque after installation.

iv. Removal and installation of the rear shock damper

1. Appearance of the rear shock damper

Disassembly view:

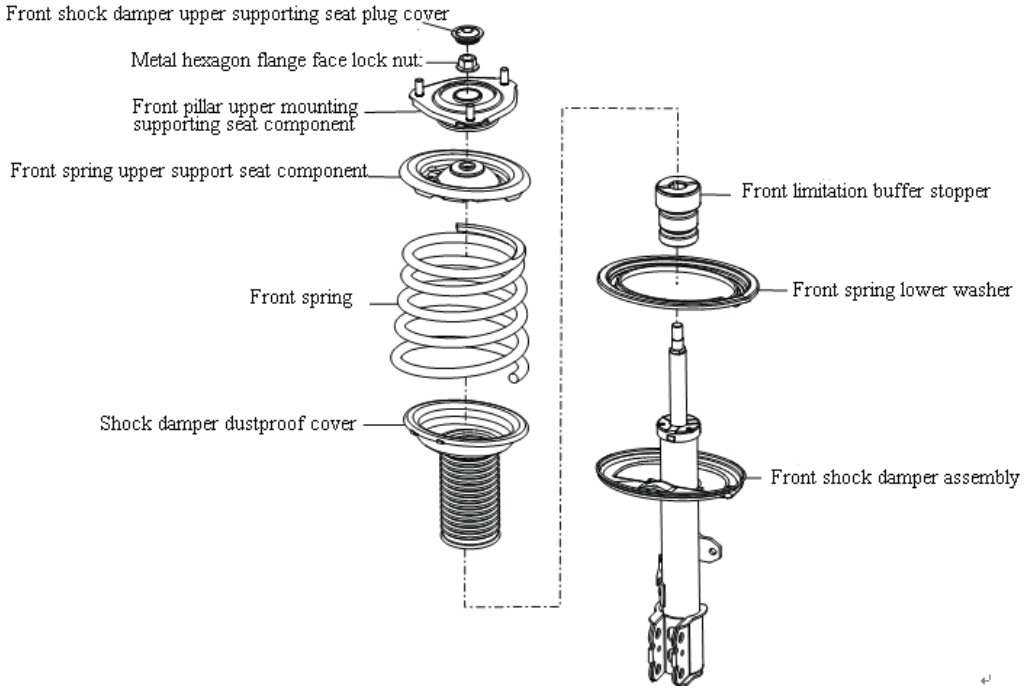


Fig. III-24

1.

3. Removal and installation of the rear shock damper

a) Removal procedure:

i. Remove the shock damper protection cover on the C pillar lower guard panel.

ii. Remove the retaining bolt of the rear shock damper and the vehicle body.

iii. Remove the retaining bolt of the rear shock damper and the rear trailing arm.

iv. Take down the rear shock damper.

V. Remove the shock damper spiral spring.

1. Take down the rear shock damper.

2. Remove the rear connecting rod. (Refer to the removal and installation of the rear connecting rod.)

3. Press the rear trailing arm with a hand to take out the spiral spring.

b) Installation procedure:

i. Installation should obey the reverse order of the removal.

ii. Notes

1. The retaining bolt under the torque and the angle controlled by yield strength must be replaced after it's loosed each time.

2. Fasten each bolt to the specified torque after installation.

3. Please check the four-wheel alignment after installation.

4. In the assembly, install the spiral spring firstly, and the shock damper. (Lift up the trailing arm in the installation of the shock damper and the rear trailing arm.)

4. Check of the shock damper

i. Check the shock damper

1. Check the shock damper for oil leakage, if so, replace

it. Check the damping force of the shock damper, if disqualified, replace it.

2. Check the thrust bearing for excessive abrasion, abnormal noise and blockage. Check the spring lower seat for crack or deformation. Check the limitation stop for damage. Check the suspension spring limitation pad for abrasion, crack or deformation. Replace all defective parts.

Note: Discard the shock damper as per the following procedures.

ii. Discard

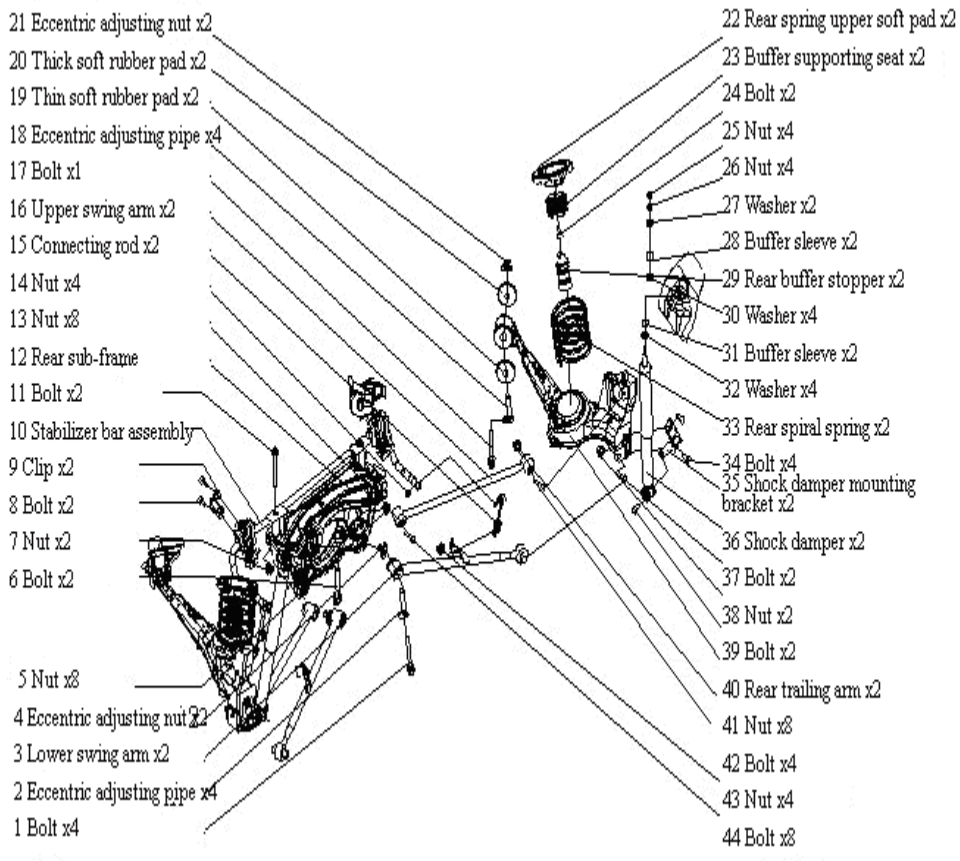
1. Stretch the shock damper rod as long as possible.
2.
3. Use a drill to drill a hole on the cylinder as shown in the figure to evacuate the air in the shock damper cylinder. (*See Fig. III-17*)

Caution: The exhausted air is no harmful but with scrap iron in the drilling.

V. Removal and installation of the rear axle and rear suspension

1. Appearance

Breakdown drawing



——Use bolt 44 and nut 14 to connect the upper swing arm assembly 16 with the upper part of the rear sub-frame assembly 12. It's the same for right and left. Don't screw it down.

——Use bolt 1, eccentric adjusting pipe 2 and eccentric adjusting nut 4 to connect the lower swing arm assembly with the rear sub-frame assembly 12 lower part. Don't screw it down. It's the same for right and left.

——Use bolt 8 and clip 9 to connect the stabilizer bar assembly 10 with the vehicle body. It's the same for right and left.

——Use bolt 23 to connect the shock damper mounting bracket 24 and the rear trailing arm assembly 40. It's the same for right and left.

——Use bolt 42 and nut 41 to connect the upper swing arm assembly 16 with the rear trailing arm assembly 40. It's the same for right and left. Don't screw it down.

——Use bolt 37 and nut 38 to connect the lower swing arm assembly 3 with the rear trailing arm assembly 40. It's the same for right and left. Don't screw it down.

——Use washer 32 (keep opening upward), buffer sleeve 31, washer 30 (keep opening upward and place it above the vehicle body), buffer sleeve 28 (upper and lower end with gear), washer 27 (keep opening downward), nut 26 and nut 25 to connect with the vehicle body. It's the same for right and left. Don't screw it down.

——Use bolt 24 to fix the rear spring upper soft pad 22 and the buffer stopper supporting seat 23 on the vehicle body rear spring mounting seat. It's the same for right and left. Screw the rear buffer stopper 29 into the buffer stopper

supporting seat 23.

——Use bolt 11 (front, anti-rotation, insert it in the vehicle body), nut 7 (front, 120±1 ONm) and bolt 6 to connect the rear sub-frame and the vehicle body to the specified torque.

——Use bolt 14 and nut 43 to connect the connecting rod upper and lower end, stabilizer bar 1O and lower swing arm. It's the same for right and left. Don't screw it down.

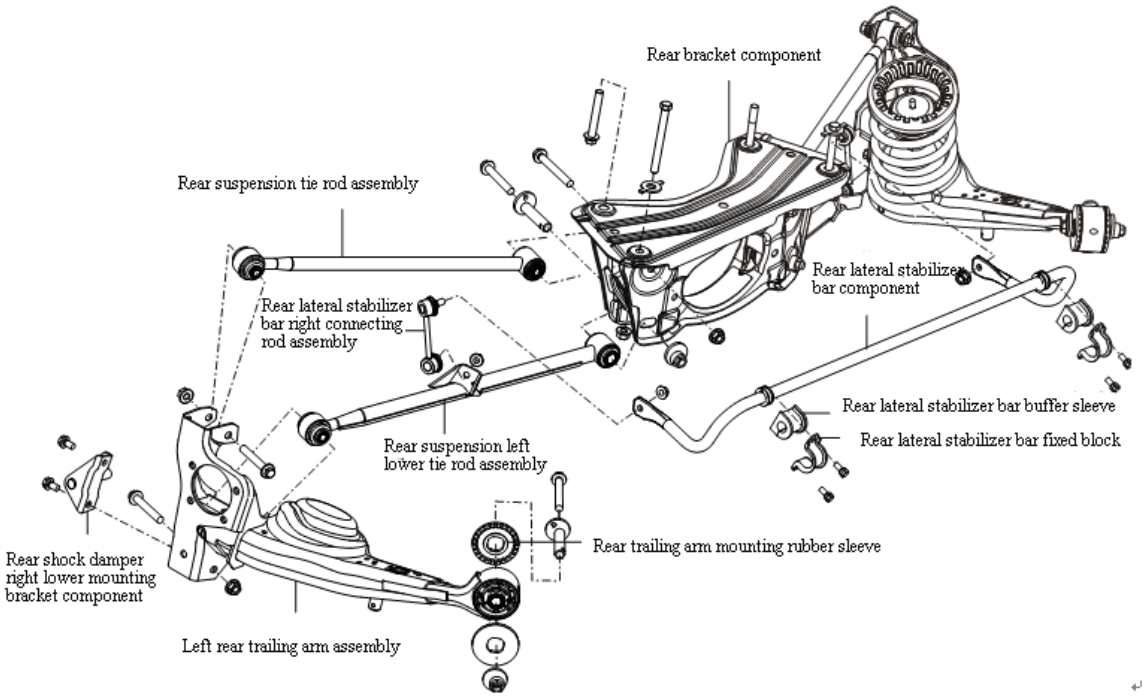
——Use bolt 39 to connect the rear shock damper 36 with the shock damper mounting bracket 35. It's the same for right and left. Don't screw it down.

——Place the rear spiral spring 33 on the mounting seat of the rear trailing arm 40. Use bolt 17, eccentric adjusting pipe 18, thin and thick soft rubber pad 1 9/20 and adjusting nut 21 to connect the rear trailing arm assembly with the vehicle body. Screw down the torque.

——Screw down the above unscrewed bolts and nuts orderly to the specified torque.

2. Structure of the rear axle

Disassembly view:



3. Removal and installation of the rear connecting rod assembly

a) Removal procedure:

i. Remove the connecting bolt of the rear connecting rod and the rear suspension lower swing arm.

ii. Remove the connecting bolt of the rear connecting rod and the rear stabilizer bar.

iii. Take down the rear connecting rod.

b) Installation procedure:

i. Installation should comply with the removal procedure.

ii. Notes:

1. The retaining bolt under the torque and the angle controlled by yield strength must be replaced after it's loosed each time.

2. Fasten each bolt to the specified torque after installation.

4. Removal and installation of the rear suspension lower swing arm assembly

a) Removal procedure:

i. Remove the connecting bolt of the rear suspension lower swing arm and the rear trailing arm.

ii. Remove the connecting bolt of the rear suspension lower swing arm and the connecting rod.

iii. Remove the connecting rod of the rear suspension lower swing arm and the rear sub-frame welding assembly.

iv. Take down the rear suspension lower swing arm.

b) Installation procedure:

i. Installation should comply with the removal procedure.

ii. Notes:

1. The retaining bolt under the torque and the angle controlled by yield strength must be replaced after it's loosed each time.

2. Fasten each bolt to the specified torque after installation.

5. Removal and installation of the rear suspension upper swing arm assembly

a) Removal procedure:

i. Remove the connecting bolt of the rear suspension upper swing arm and the rear trailing arm.

ii. Remove the connecting bolt of the rear suspension upper swing arm and the rear sub-frame welding assembly.

iii. Take down the rear suspension upper swing arm.

b) Installation procedure:

i. Installation should comply with the removal procedure.

ii. Notes:

1. The retaining bolt under the torque and the angle controlled by yield strength must be replaced after it's loosed each time.

2. Fasten each bolt to the specified torque after installation.

6. Removal and installation of the rear trailing arm assembly

a) Removal procedure:

i. Remove the connecting bolt of the rear trailing arm and the shock damper rubber chain bracket.

ii. Remove the connecting bolt of the rear trailing arm and the upper swing arm.

iii. Remove the connecting bolt of the rear trailing arm and the lower swing arm.

iv. Remove the connecting bolt of the rear trailing arm and the hand brake cable bracket.

v. Remove the connecting bolt of the rear trailing arm and the brake pipe bracket.

vi. Remove the connecting bolt of the rear trailing arm and the vehicle body.

vii. Take down the rear trailing arm.

b) Installation procedure:

i. Installation should comply with the removal procedure.

ii. Notes:

1. The retaining bolt under the torque and the angle controlled by yield strength must be replaced after it's loosed each time.

2. Fasten each bolt to the specified torque after

installation.

7. Removal and installation of the rear sub-frame

a) Removal procedure:

i. Remove the connecting pipe

ii. Remove the rear suspension lower swing arm. (Refer to the removal and installation of the rear suspension lower swing arm.)

iii. Remove the rear suspension upper swing arm. (Refer to the removal and installation of the rear suspension upper swing arm.)

iv. Remove 4 bolts of the rear sub-frame and the vehicle body.

v. Take down the sub-frame.

b) Installation procedure:

i. Installation should comply with the removal procedure.

ii. Notes:

1. The retaining bolt under the torque and the angle controlled by yield strength must be replaced after it's loosed each time.

2. Fasten each bolt to the specified torque after installation.

8. Removal and installation of the rear stabilizer bar

a) Removal procedure:

i. Remove the connecting pipe.

ii. Remove the fuel tank assembly. (Refer to the removal and installation of the fuel tank,.)

iii. Remove the bolt of the rear stabilizer bar and the rear connecting rod. (Refer to the removal and installation of the rear connecting rod.)

iv. Remove the bolt of the rear brake pipe and the bracket and take down the brake pipe. (One for right and one for left)

v. Remove the bolt of the rear stabilizer bar and the vehicle body. (One for right and one for left)

b) Installation procedure:

i. Installation should comply with the removal procedure.

i. 注意事项：

ii. Notes:

1. The retaining bolt under the torque and the angle controlled by yield strength must be replaced after it's loosed each time.

2. Fasten each bolt to the specified torque after installation.

c) Four-wheel alignment

i. Adjustment before check

1. Check before wheel alignment

i. Check the tire pressure and adjust it to specified value: standard inflation pressure of the tire of 250 (kpa). (*See Table III-1 and Fig, III-25*)

Table III-1

Item	215 / 65R16 102H	Spare tire
Front wheel	250	250
Rear wheel	250	

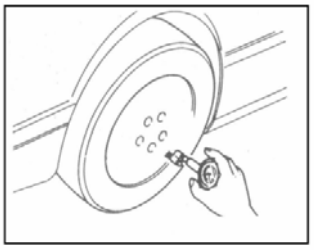


Fig. III-25

ii. Check the height of the vehicle body

Measure the height of the vehicle. Firstly add tire pressure to standard value. (Note: Keep the same tire pressure at both side.)

Front measurement point (*see Fig. III-26*)

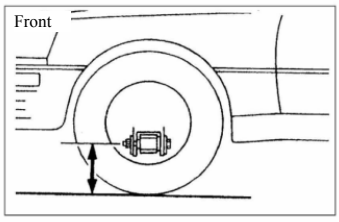


Fig. III-26

Measure the center height from the ground to the connecting bolt of the lower control arm and front steering knuckle. Keep the same height at both sides.

Rear measurement point (see Fig. III-27).

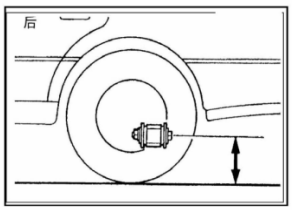


Fig. III-27

Check the center height from the ground to the connecting bolt of the rear axle and the shock damper. Keep the same height at both sides.

Note: Adjust the vehicle to the specified height before measuring the wheel alignment. If the vehicle height fails to meet the requirement, check the front and rear suspension for damage or deformation.

iii. Check the wheel bearing clearance, if necessary, replace the front wheel bearing.

iv. Check the wheel hub and the tire condition.

v. Check the looseness degree of the steering linkage and the ball joint.

v. Place the vehicle on the flat ground without luggage or personnel.

vii. Shake the wheel to check the looseness degree of the front suspension.

ii. Check the shock damper for normal operation.

1. Check it for oil leakage.

2. Check the assembly bushing for abrasion.

3. Check the damping force of the shock damper, if disqualified, replace it.

Note: The oil tank is half full and the water tank cooling water and the engine oil are within the specified height. The tire jack and the basic hand tool are at the specified position.

2. Rim and tire

i. Visual inspection

Check the tire and the rim.

If the rim or the tire is cracked, damaged, deformed or with other problems, replace them. See Fig. III-28.

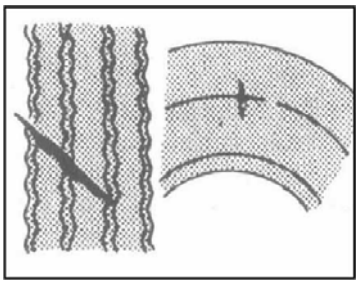


Fig. III-28

ii. Tire abrasion

(1) Check the depth of the rest tread. See Fig. III-29 for standard tread.

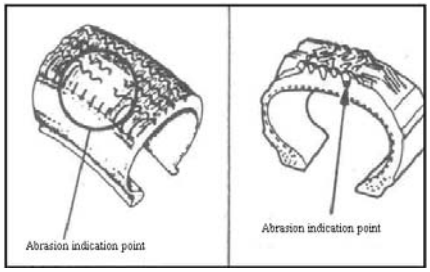


Fig. III-29

At least 1.6mm

Tire for snow place: 50% tread

(2) If the abrasion indication area emerges, replace the tire. (See Fig. III-30)

iii. Abnormal abrasion of tire

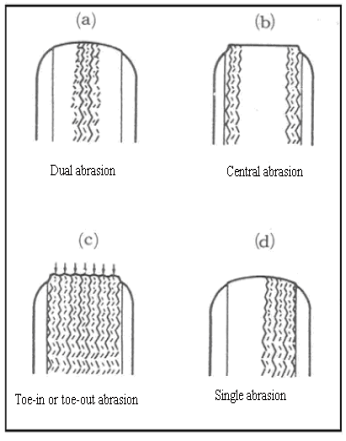


Figure Tyre abrasion

Fig. III-30

iv. Notes for rim and tire

1. Never use disqualified rim and tire.

In case of abnormal abrasion of tire as shown in the right figure, refer to the following possible reasons and measures. (*See Table III-2*)

Table III-2

Fault phenomenon	Possible reasons	Measures
(a)	*Insufficient tire pressure (dual abrasion)	*Measure and adjust the tire pressure
	*High speed turn	*Reduce the speed
	*Improper tire position	*Adjust the tire position
(b)	*Too high tire pressure (central abrasion)	*Measure and adjust the tire pressure
	*Improper tire position	*Adjust the tire position
(c)	*Incorrect toe-in	*Adjust the toe-in
(d)	*Incorrect camber angle and caster angle	*Adjust, repair or replace the vehicle shaft and suspension system part.
	*Suspension system fault	*Repair or replace
	*Tire unbalance	* Do dynamic balance of the tire or replace it.
	*Brake drum or disc out-of-roundness	*Rectify or replace
	*Other mechanical problems	*Correct or replace
	*Improper tire position	*Adjust the tire position

2. Clean the aluminum alloy steering rim with soft cloth rather than steel brush. In case of using steam to wash the vehicle, the rim shouldn't contact with the boiled water.

3. If corrosive compound (such as muddy water and road mud) are attached to the aluminum alloy steel rim, clean it with neutral cleaner as quick as possible to avoid damaging the rim.

v. Replace the tire

1. Check the valve hole on the wheel for smoothness without burr before assembling the valve cork. And then apply glycerol to the valve cork rubber body surface or dip the valve cork in the glycerol. Install the locating ring on the valve cork through the wheel hole with a special tool with 24N force. (The glycerol can be replaced by soap suds.)

2. Apply glycerol or soap stud to the edge of the rim before assembling the tire. If there is a dub mark on the rim, align the mark of the tire evenness test with the dub mark of the rim. If there isn't a dub mark, align the mark of the tire dynamic balance test with the valve cork position. If there isn't a dub mark or dynamic balance test mark, but a static balance test mark, align the valve cork with the static balance test mark.

3. Tire pressure.

Check the pressure of all tires (including spare tires) with an air gauge, if necessary, adjust them. Strictly comply with the specified pressure to inflate the tire. The pressure shouldn't exceed 10% of the rated value. In the disassembly of the spare tire assembly, the rated pressure is 2.5bar. Before the four-wheel alignment, check the pressure of the four wheels and adjust them. Front wheel: 2.5bar and rear wheel: 2.5 bar. See *Fig. III-31.*

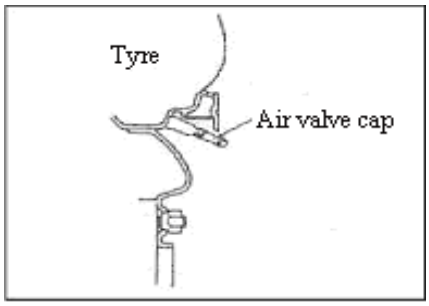


Fig. III-31

vi. Air leakage

Check the valve for air leakage. *See Fig. III-32.*

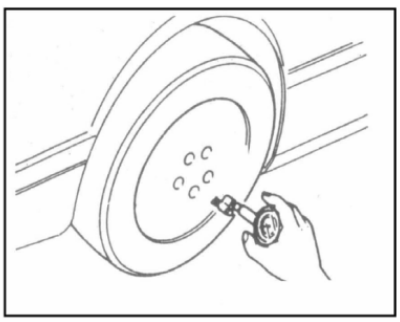
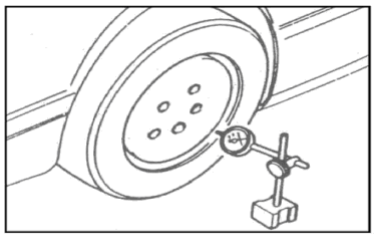


Fig. III-32

vii. Check the tire unevenness

1. Jack and support the vehicle.

2. Fix a multimeter with a cylindrical contact on the rim edge to measure the unevenness depth. See Fig. III-33.



Check of tyre unevenness

Fig. III-33

3. If necessary, replace the rim.

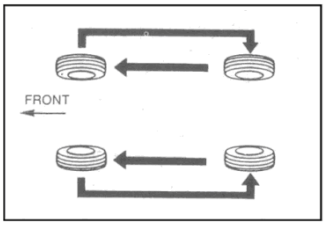
Note: Allowable deformation of rim:

Within the maximum allowable mean of the unevenness depth on both edges of the rim.

Steel rim: 5mm

Aluminum alloy rim: 3mm

viii. Tire change (see Fig. III-34)



Tyre change

Fig. III-34

To extend the lifetime of the tire and make sure the tire abrasion, change the tire after driving 6,000km. (See Fig. III 36)

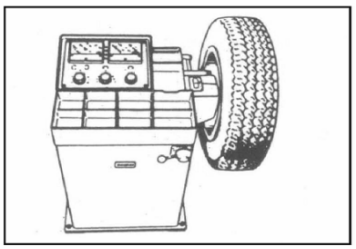


Fig. III-35

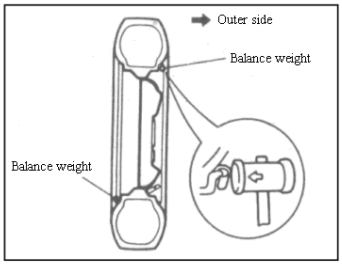


Fig. III-36

Note:

* Use best tire for front wheels.

*Adjust the tire pressure to specified value after changing the tire position.

ix. Wheel balance adjustment

After the tire inflation, screw on the valve mouth protection cover to test the motion balance. Paste proper weight balancing weight on the rim as required. The dynamic imbalance quality at both sides should be lower than 10g and the quality at single side should be lower than 75g. In the assembly, try to avoid heavy attack on the balancing weight, otherwise, replace the balancing weight. The removed balancing weight couldn't be used again.

x. Removal and installation of the wheel

Removal procedure:

1. Remove the wheel ornamental cap. (See Fig. III-37)

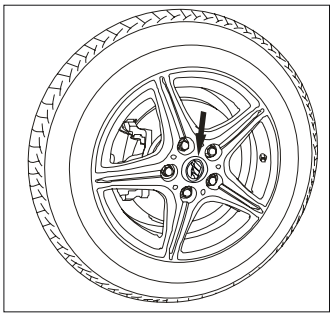


Fig. III-37

2. Remove the wheel retaining bolt. (See Fig. *III-38*)

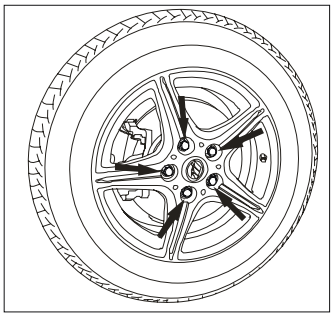


Fig. III-38

3. Take down the wheel

b) Installation procedure:

i. In the installation of wheel and tire assembly, screw down the wheel bolt into the hub with hand to pre-tighten it, and then diagonally screw it down with a special tool. The tightening torque is 120±10N.m. Never use a impact wrench to avoid damaging the wheel or screw it down too loosely or tightly. (After the installation of the wheel and the tire assembly, fasten the wheel bolt to ensure the tightening torque after initial driving for 100km.)

One of the daily maintenance contents is to check the wheel bolt tightening torque.

ii. Crossly screw down the bolt with similar tightening degree. Freely turn the wheel. Place the wheel on the road surface to tighten it.

iii. Install the ornamental cap or place it as per the requirement. Tap the clip-type ornamental cap with hand or knock it with a rubber tool.

ii. Rear wheel alignment

1. Install the wheel aligner and alignment tester into the wheel. (See Fig. III-39)

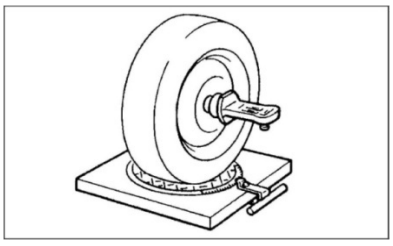


Fig. III-39

i. Installation should obey the specific instruction of the equipment manufacturer.

ii. Check and adjust the vehicle as per the equipment requirement. The wheel alignment requirements are as follows (see Table III-40)

Table II 3

Rear wheel toe-in	50′±30′
Rear wheel outer caster angle	-0°57′±30′

2. Rear wheel toe-in adjustment:

—— If the rear wheel toe-in fails to meet the requirement, adjust it with eccentric adjusting pipe 4 and eccentric adjusting nut 6. Loosen bolt 3 and prevent eccentric adjusting pipe 4 and eccentric adjusting nut 6 releasing from the groove. Turn eccentric adjusting pipe 4 and eccentric adjusting nut 6 to change rear wheel toe-in till meeting the requirement. Screw down bolt 3 to the specified torque. (Right and left are the same.) (See Fig. III-40.)

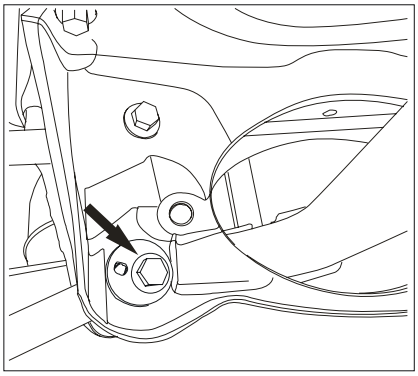


Fig. III-40

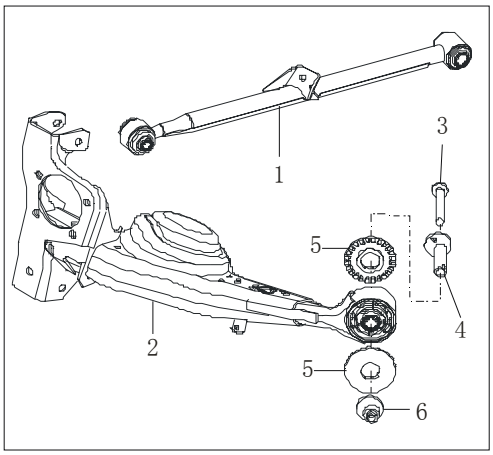


Fig. III-41

1-rear suspension left lower tie rod assembly, 2-left rear trailing arm assembly, 3-hexagon flange face bolt, 4-rear wheel toe-in adjusting eccentric wheel, 5-rear trailing arm installation rubber sleeve, 6-rear wheel toe-in adjusting nut

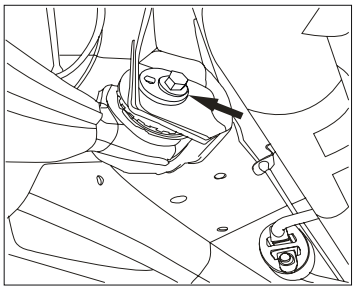


Fig. III-42

3. Adjustment of the rear wheel extraversion

It's the same as the rear wheel toe-in adjustment

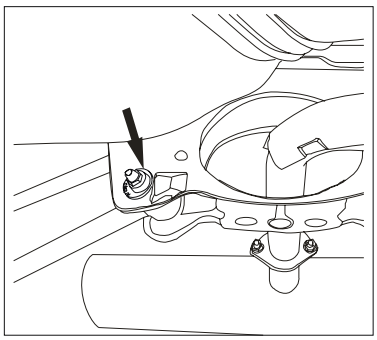


Fig. III-43

iii. Front wheel alignment

1. Install the wheel aligner or alignment tester into the wheel.

Installation should obey the specific instructions of the manufacturer.

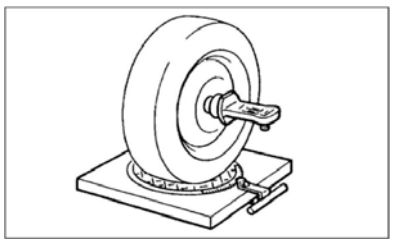


Fig. III-44

2. Measure and adjust the front wheel Master pin caster angle, the front wheel caster angle, and the front wheel toe-in angle and steering angle.

Specification: Requirements for the front wheel alignment are as follows:

Table III-4

Master pin caster angle	2°44′±30′
Front wheel Camber angle	-1°12±30′
Front wheel front toe-in angle	0°21′±15′
Master pin inner caster angle	11°2′±30′

i. Master pin caster angle

Master pin rear angle is designed to ensure the structure and doesn't require adjusting.

Influence of the caster angle

The caster angle is mainly to keep the vehicle drive right forward. If the caster angle is right, the vehicle inside may drop and the chassis may rise when the front wheels are rotating, which may increase load to the steering knuckle. If the caster angles of two wheels are the same, the vehicle may return to the right front after steering. Increasing the right caster angle may increase the stability of the steering wheel. But the force may rise in the steering. Decreasing the right caster angle may decrease the stability of the steering wheel, but the steering force may drop. The caster angle may not influence the tire abrasion, but stabilize the driving direction of the vehicle and automatically return after steering. If the vehicle is equipped with traditional mechanical steering, the caster angle is very small and near to minus, which facilities the steering. If the vehicle is equipped with power steering, the caster angle is usually set as larger one, which facilities the steering. The caster angle increasing may increase the steering force and improve the stability of the straight driving.

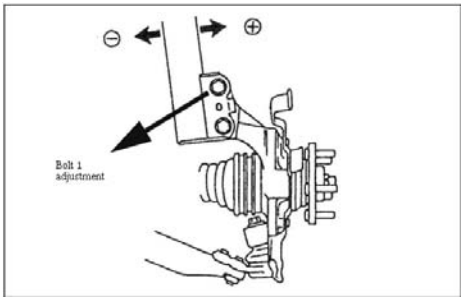
ii. Camber angle

In normal condition, it's not necessary to adjust the caster angle after independent suspension and wheel steering knuckle assembly. If the Camber angle defects over the tolerance due to other reasons, rectify it with independent suspension and the steering knuckle connecting bolt.

1. Check (visually) the driving components for damage and replace the damaged components before correction.

2. If the front wheel camber angle exceeds the tolerance, loosen the connecting bolt ① of the front shock damper and the steering knuckle and move the wheel to rectify it.

Fig. III-45



iii. Front the wheel toe-in

Check and adjust the toe-in with a special four-wheel alignment tester.

1. Make good preparation for adjusting the wheel alignment as per the requirement of the tester. Fix the steering wheel at straight forward position with a steering wheel limiter available in the market. (The steering wheel must be at the central position ±5 and the steering shaft lower clamping flange bolt must be horizontal.)

2. Loosen the steering tie rod lock nut.

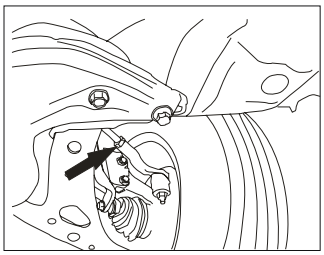


Fig. III-46

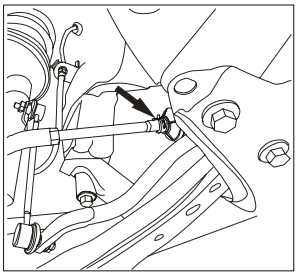


Fig. III-47

3. Remove the elastic protection sleeve snap ring with a clamp.

Note: Replace the snap spring with insufficient spring force.

4. Adjust the length of the toe-in adjusting rod to specified value if necessary.

5. Fasten the lock nut, re-install the protection sleeve elastic snap ring, and check the lock nut for tightness and the protection sleeve at correct position.

6. After adjusting the front wheel toe-in, check (the

steering wheel for level). Otherwise loosen the steering wheel lock nut, adjust the steering wheel to level position, screw down the steering wheel lock nut to torque requirement (30±3) Nm.

vi. Check of the front wheel steering angle

After replacing the tie rod joint and adjusting the toe-in, check the steering angle. If the front wheel steering angle fails to meet the standard, check and adjust the right and left tie rod length.

iv. Instructions for fault elimination

Table III-5

Problems	Possible reasons	Measures
Excessive abrasion or uneven abrasion of tire	As shown below.	
Early abrasion of tire	Incorrect tire pressure	Adjust
	Incorrect wheel alignment parameter	Adjust
Tire noise	Incorrect tire pressure	Adjust
	Tire abrasion	Check, adjust and replace
Road noise or vehicle body vibration	Insufficient tire pressure	Adjust
	Tire unevenness	Adjust
	Deformation of hub and tire	Repair and replace
	Uneven abrasion of tire	Check, adjust and replace
Steering wheel vibrates upward and downward	Excessive deflection of tire and rim	Replace
	Looseness of wheel nut or shaft head	Lock
	Uneven tire	Adjust
	Engine suspension rubber breakage or abrasion	Replace
	Rubber breakage or damage of transmission bracket	Replace
Steering wheel circumference vibration	Excessive deflection of tire and rim	Replace
	Looseness of wheel nut or shaft head	Lock
	Tire imbalance	Adjust
	Uneven abrasion of tire	Check
	Insufficient tire pressure	Adjust
	Damage or abrasion of front wheel bearing	Replace
	Steering system fault	Check
	Suspension system fault\	Check
Steering wheel deflects toward one side	Incorrect tire pressure	Adjust
	Excessive abrasion or uneven abrasion of tire	Check
	Steering system fault	Check
	Brake system fault	Check
	Suspension system fault	Check
Unstable driving	Uneven tire pressure at both sides	Adjust
	Deformation of rim or tire	Repair or replace
	Looseness of wheel nut	Lock
	Steering system fault	Check
	Suspension system fault	Check
Brake deflects toward one side	Uneven tire pressure at both sides	Adjust
	Brake system fault	Check
Heavy steering wheel	Insufficient tire pressure	Adjust
	Steering system fault	Check
	Suspension system fault	Check
	Incorrect wheel alignment parameter	Check
Poor returnability of	Insufficient tire pressure	Adjust

	Steering system fault	Check
	Suspension system fault	Check
	Incorrect front wheel Master pin rear caster	Adjust

d) Steering System

i. Introduction

The power steering system for LF6430 is hydraulic power steering system, consisting of steering pump, steering mechanism, steering pipeline, steering reservoir, etc.

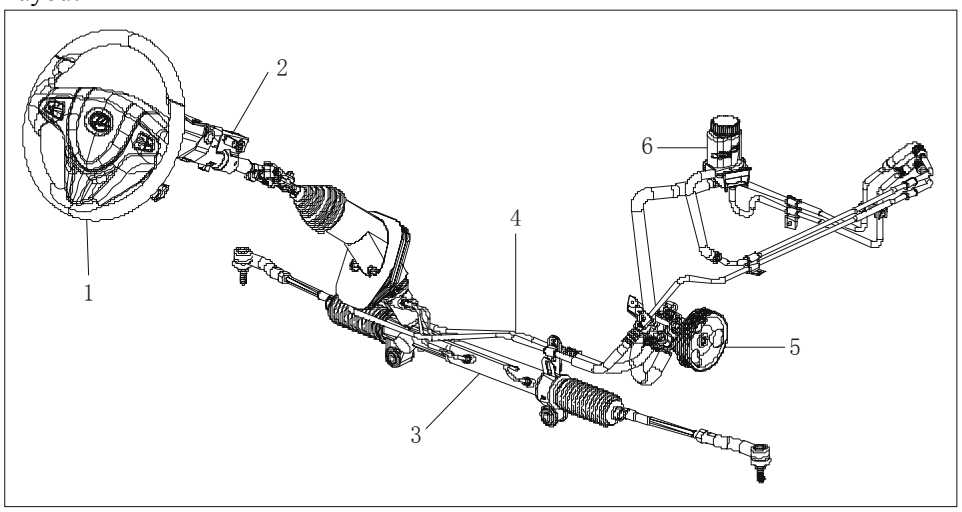
The steering mechanism is gear rack power steering gear, with shift valve structure and two-end output. There is a dustproof cover on the connection of the rod and the rack. The piston rod and the rack are integrated. Properly adjust the rod length to match with the toe-in. Connect the steering mechanism rod outer ball joint and the steering knuckle with a self-locking nut, without nut anti-loose pin.

The rotating pump is constant flow lamella pump, with maximum working pressure of 8Mpa. The flow declines between 1,250 rpm and 3,000 rpm but doesn't increase above 3,000 rpm. To ensure smooth road condition in high speed and improve the safety in high speed driving, try not to turn the steering wheel to the end for over 10s in the operation.

The steering oil pipe is to transport the steering fluid. As per the distances among assembly components and different characteristics, the steering oil pipe for LF6430 is made from steel pipe and hose. Connect the steel pipe and the hose with cutting sleeve for high pressure oil pipe assembly to ensure reliable tightness. Connect the oil pipe and the steering mechanism with bolt and O-ring to ensure reliable tightness.

Main functions of the steering reservoir: store the oil, supply oil to the oil pump and the system, radiate the heat, lower the oil temperature, filtrate the impurities, and clean the oil. The oil type is ATF3 auto transmission oil.

Layout



1-steering wheel, 2-steering column, 3-steering gear, 4-steering pipeline, 5-steering oil pump, 6-steering oil can

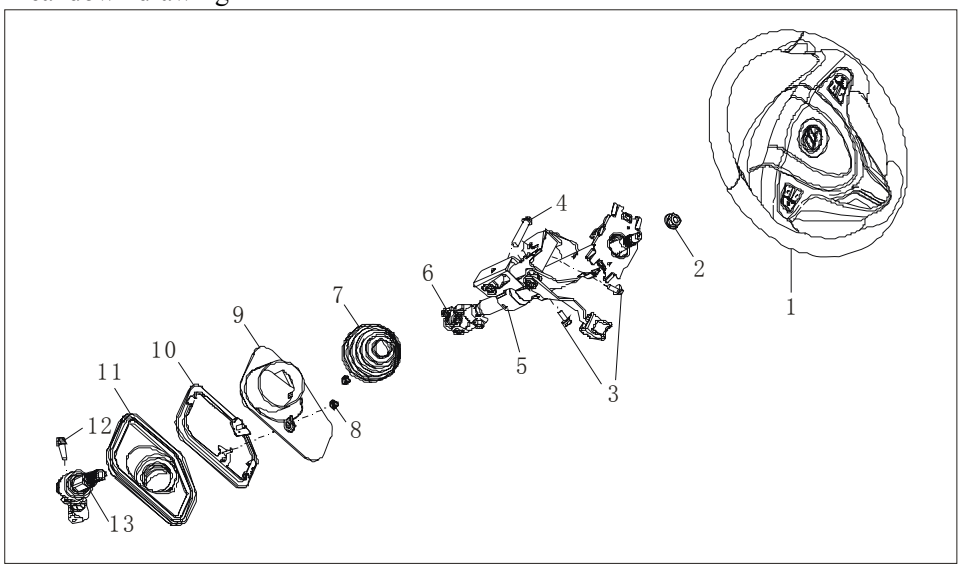
Tightening specification for fasteners

Application	Specification	Tightening torque
Steering wheel retaining nut	M12×1.25	45～50Nm
Steering column upper bracket retaining bolt	M8×25	20～26Nm
Steering column lower bracket retaining bolt	M8×50	20～26Nm
Steering column mandrel and universal joint retaining bolt	M8×30	20～26Nm
Middle steering universal joint spline retaining bolt	M8×30	20～26Nm
Middle and lower universal joint retaining bolt	M8×30	20～26Nm
Steering mechanism input shaft retaining bolt	M8×30	20～26Nm

Power steering mechanism mounting bolt	M12×65	70～80Nm
Steering mechanism tie rod and rack retaining nut	M18×1.5	122～142Nm
Steering mechanism tie rod and steering joint retaining nut	M12×1.5	70～80Nm
Steering pump and bracket	M8×1.25	20～26Nm
Steering pump and engine cylinder body	M1O×1.5	70～80Nm
Tension wheel lock nut	M1O×1.25	55～65Nm

Joint tightening specification		
Application	Specification	Tightening torque
Joint of the power steering high pressure hard tube and the steering mechanism	M18×1.5	40～50Nm
Power steering high-pressure oil pipe and steering pump		40～50 Nm
Steering mechanism and oil pipe joint	M16×1.5	40～50 Nm

Breakdown drawing



1-steering wheel assembly, 2-steering wheel nut, 3, 4-mounting bolt, 5-upper steering shaft assembly, 6-universal joint, 7-steering column dustproof cover III, 8-dustproof cover mounting nut, 9-steering column dustproof cover, 10-dustproof cover mounting bracket, 11-steering column dustproof cover I, 12-retaining bolt, 13-lower steering shaft assembly

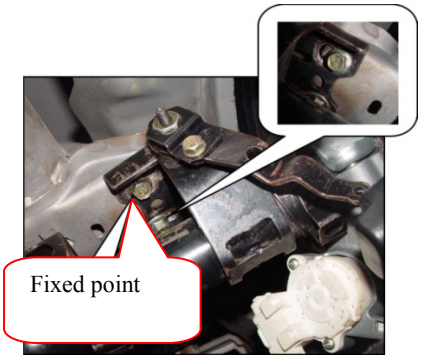
ii. Removal and installation of the steering system

1. Steering column

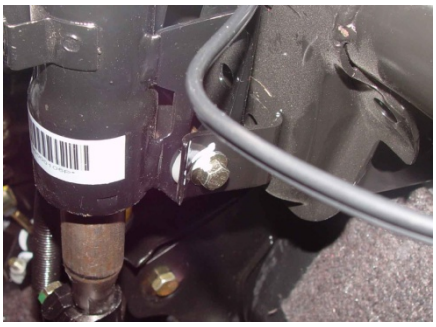
i. Remove the steering wheel. (Refer to appendix for removal and installation.)

ii. Remove the dashboard left lower guard panel. (Refer to appendix for removal and installation.)

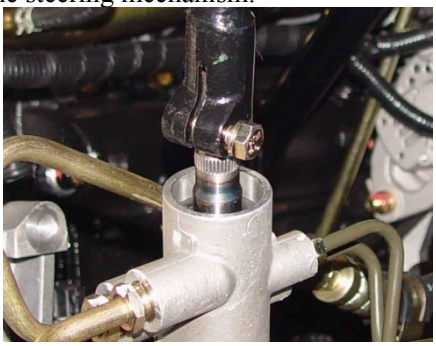
iii. Loosen the upper retaining bolt of the steering column.



iv. Loosen the lower retaining bolt of the steering column.



v. Loosen the lock nut connecting the middle shaft and the steering mechanism.



vi. Remove the upper and the lower guard panels on the steering mechanism.

vii. Take down the steering column assembly.

viii. Installation should obey the reverse order.

Torque:

Steering wheel nut: 45~50 Nm

Upper retaining bolt: 20-26 Nm

Middle shaft and the steering mechanism input shaft: 20-26 Nm

2. Steering mechanism

i. Drain the power steering fluid

1. Lift the vehicle and the wheel from the ground.

2. Remove the power steering oil return hose from the power steering reservoir tank.

3. Place the oil return hose in a big container that is available to contain the drained steering fluid.

4. Start the engine and run it idly.

5. Turn the steering wheel to the right end and the left end.

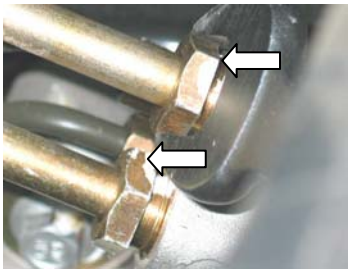
Note: Never keep still while turning the steering wheel to the end; otherwise, the hydraulic system may be damaged.

6. Ensure that the engine stops after the steering fluid is drained out.

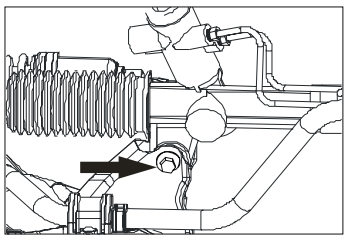
ii. Lift the vehicle.

iii. Loosen the upper and the lower protection sleeve of the steering mechanism.

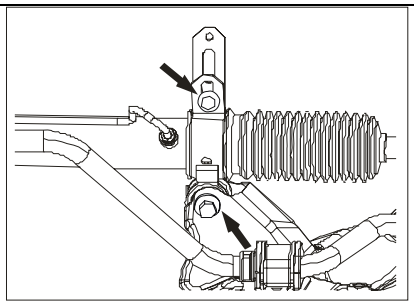
iv. Loosen the high-voltage oil pipe.



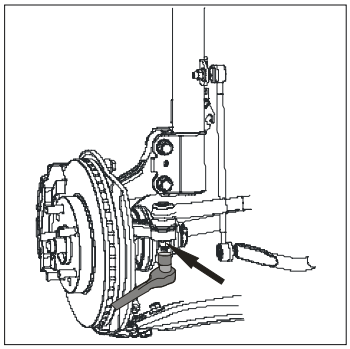
v. Loosen the left retaining bolt of the steering mechanism.



vi. Loosen the right retaining bolt of the steering mechanism.



vii. Loosen the right and the left tie rod connection steering knuckle.



iii. Take down the steering mechanism assembly.
ix. Installation should obey the reverse order.

Torque:

Power steering mechanism mounting bolt: 7.0-8.0 Nm

Steering tie rod connection steering knuckle: 4-5Nm

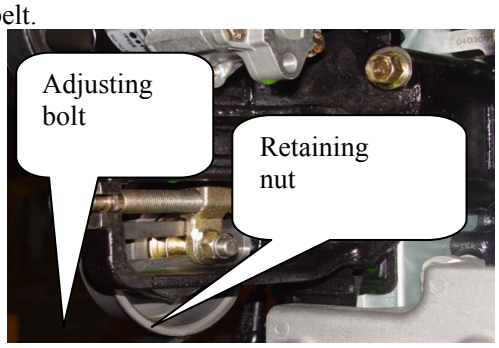
3. Steering oil pump

i. Drain the power steering fluid.

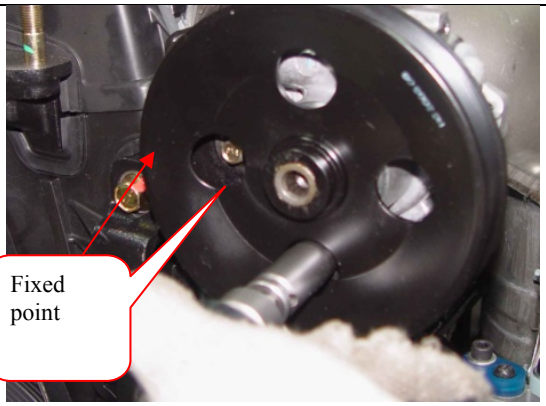
ii. Loosen the oil pump belt.

1. Loosen the tension wheel retaining bolt.

2. Rotate the adjusting bolt anticlockwise to loosen the belt.



iii. Loosen two retaining bolts under the belt pulley.



iv. Loosen the retaining bolt at the other side.

v. Take down the oil pump.
vi. Installation should obey the reverse order.

Torque:

Fixed steering oil pump: 20-26 Nm

Tension wheel lock nut: 55-65 Nm

Steering oil pump and high voltage oil pipe: 40-50 Nm

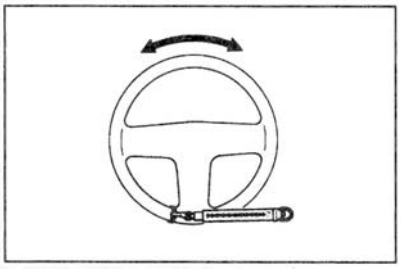
iii. Maintenance instructions

1. Check of the steering wheel clearance

1. When the engine (the hydraulic system) is running, keep the front wheels straightly forward.

2. Before slightly rotating the steering wheel leftward and right forward and the steering wheel starts rotating, measure the circumference clearance of the steering wheel. Limit: 40mm.

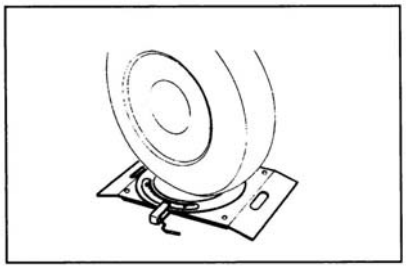
3. When the clearance exceeds the limit, check the clearance between the steering shaft joint and the steering linkage, and adjust or replace relevant spare parts accordingly. If the clearance exceeds the limit, keep the steering wheel right forward when the engine stops, apply 5N load to the steering wheel circumference and check the clearance. If the clearance exceeds the standard, remove the steering gear housing and check the total torque of the pinions.



2. Check of the steering angle

1. Place the front wheels on the radius testing device of the turning to measure the steering angle.

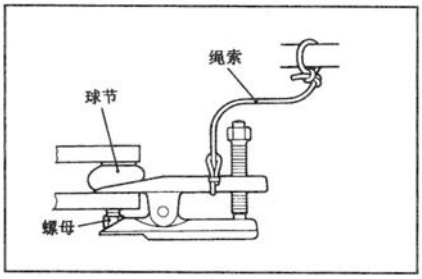
Standard: inner wheel of 31°18′±2° and outer wheel of 37°31′±2°.



2. The steering angle fails to meet the standard range, which may be caused by incorrect toe-in. Adjust the toe-in and re-check the steering angle.

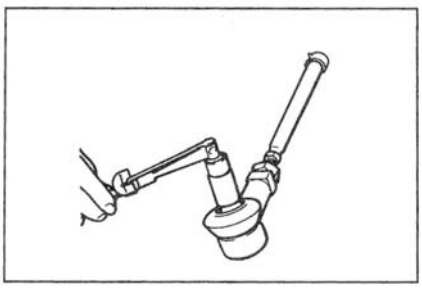
3. Check of the start-up torque of the steering tie rod end ball joint

1. Disconnect the steering tie rod from the steering knuckle with a special tool.



2. When the start-up torque exceeds the standard, replace the steering tie rod end.

3. When the start-up torque is lower than the standard, check the ball joint for axial clearance or mesh. If there isn't abnormal, the ball joint is OK.



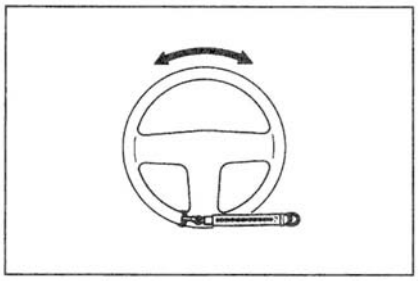
4. Check of the static steering force

1. Park the vehicle on the flat road and rotate the steering wheel to up front position. Start the engine and adjust the rotation speed to 1,000±100r/min.

Note: After checking the rotation speed of the engine, make it return to the standard idle.

2. Connect the spring balance with the outer circumference of the steering wheel to measure the steering force required for the steering wheel facing right forward to turn leftward and rightward (within 1.5 rings). In addition, check if there is obvious fluctuation of the required steering force.

Standard: steering force below 34N, allowed fluctuation below 5.9N.



3. If the measured force exceeds the standard, please refer to the fault elimination for check and adjustment.

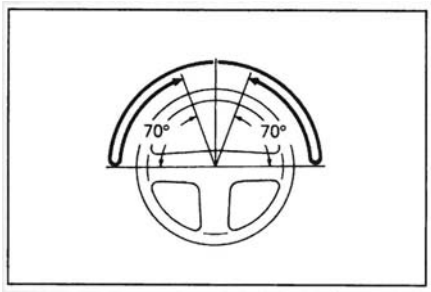
5. Check of the returnability of the steering wheel

Do this test in the driving test on the road and check the following items.

Take a gentle turn and a sudden turn to check the driving and ensure that there is no difference between the steering force required for turning left and turning right and the steering wheel returning to the center.

When the vehicle is running at 20-30Km/h, rotate the steering wheel 90° and release it after 1 or 2 seconds. If the steering wheel returns above 70°, it enjoys sound returnability.

Remark: There is temporary heaviness while rapidly rotating the steering wheel, which isn't abnormal (but oil shortage of the oil pump in the idling).

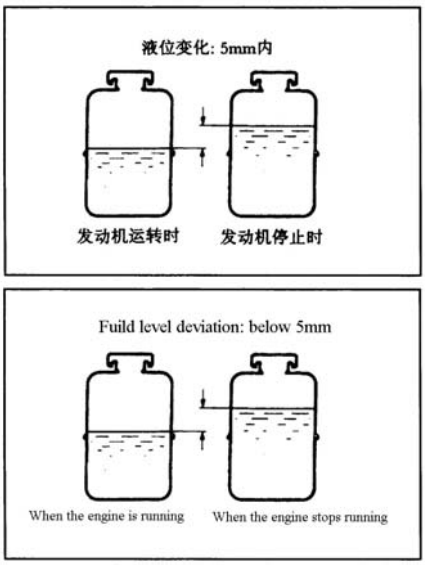


6. Check of the fluid level

Park the vehicle on the flat road, start the engine, and rotate the steering wheel for several times to heat the oil temperature to nearly 50°C-60°C.

1. When the engine is running, repeatedly turn the steering wheel to the right end and the left end for several times.

2. Check the oil in the oil chamber for bubble or milkiness. Check the fluid level difference when the engine stops running and is running. If it's above 5mm, exhaust the air.

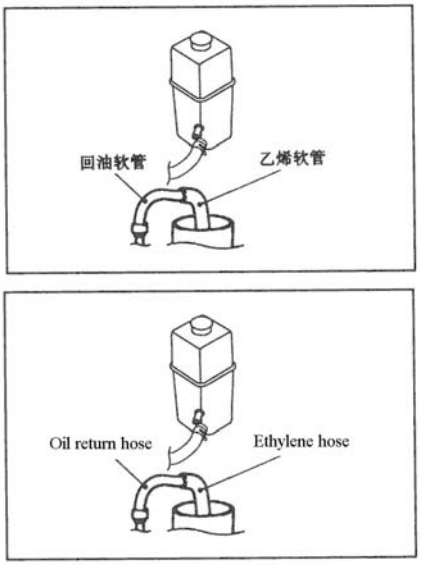


7. Replacement of the steering gear oil

1. Lift the front wheels with a jack and support them with a rigid frame.

2. Disconnect the joint of the oil return hose.

3. Connect the ethylene hose with the oil return hose and drain the oil to a container.



4. Disconnect the high-voltage cable, discontinuously operate the start-up motor, and rotate the steering wheel to the right end and the left end. Repeatedly do it for several times to drain all the steering gear oil.

Note: Never place the high-voltage cable near the carburetor or the oil outlet pipe.

5. Firmly connect the oil return hose and fasten it with a toggle clip.

6. Fill the oil chamber with specified steering gear oil till the low fluid level position of the filter and then evacuate the air. The specified steering gear oil is auto transmission oil ATF III.

e) Brake system

i. Brake system

1. Technical parameter

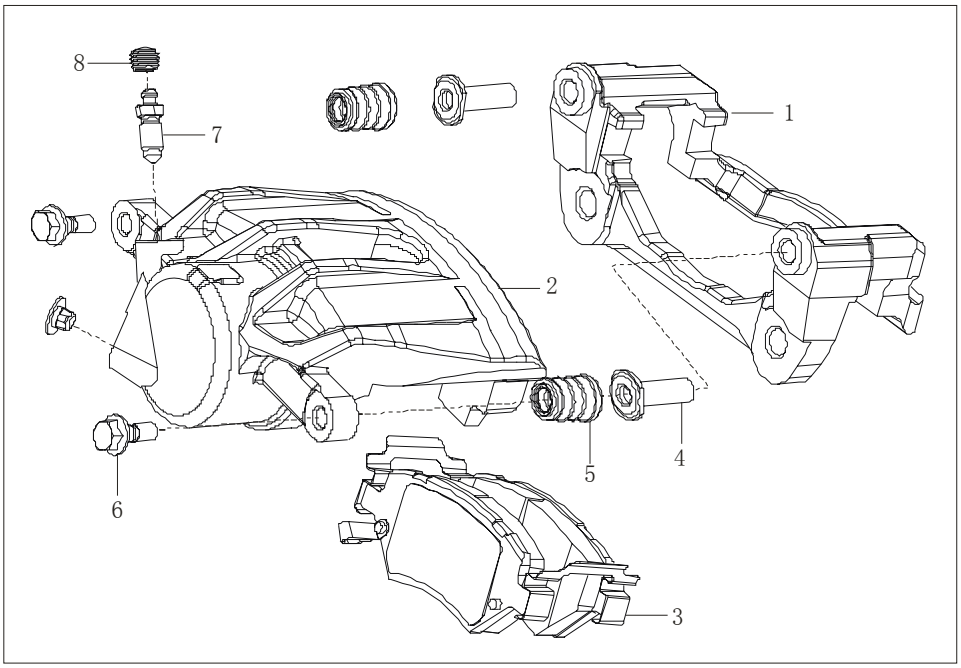
2. Front brake assembly

3. Specification of the front brake

Application	Specification
Diameter of the brake caliper piston	57mm
Diameter of the brake disc	300mm
Minimum thickness of the brake disc	23mm
Thickness of the brake disc	25mm
Maximum run-out	0.1mm
Thickness of the front brake lining	11mm

4. Inspection, disassembly and assembly of the front wheel brake

i. Structure of the brake caliper



1-brake caliper bracket, 2-brake caliper body, 3-brake lining assembly, 4-positioning guide bar, 5-dustproof cap, 6-brake caliper connecting bolt, 7-vent screw, 8-dustproof cover

ii. Remove the brake caliper

Procedures

Note: Never move the vehicle in case of no stable brake pedal travel to avoid personal injury.

1. Discharge a little brake fluid in the master pump.

2. Jack and suitable support the vehicle.

3. Mark relative positions of the wheel and the wheel hub.

4. Refer to the removal and install the tire and the wheel to remove the front wheel tire and the wheel assembly.

5. Remove the brake caliper retaining bolt.

6. Install a big C-clip on the top of the brake caliper supporting the back of the outer brake liner.

7. Fasten the C-clip till the caliper piston reaching a certain depth in the caliper cylinder sleeve to make the brake caliper roll out from the brake disc.

8. Refer to the replacement of the brake liner.

9. Remove the dustproof cap from the oil cylinder with a screw driver.

10. Remove the piston

(1) Prepare a wood board to ward off the piston, place the wood plate between the pistons and insert the liner from one side.

(2) Press out the piston with compressed air through the connecting hole. Place a guard board (hard wood, etc.) at the notch of the brake caliper to protect the piston.

Warning---Never hold the piston with fingers.

11. Inspection of guide bearing

Push the guide sleeve with a hand flexibly. Replace the guide sleeve in case of any blockage or inflexibility.

Note: Apply lubricating grease to the guide sleeve in the assembly.

12. Carefully take down the sealing ring with a plastic needle.

Clean the brake cylinder and component with alcohol and dry them with compressed air. Carefully check the brake cylinder, the piston and the flange faces. Never machine the brake cylinder and the piston.

13. Installation instruction

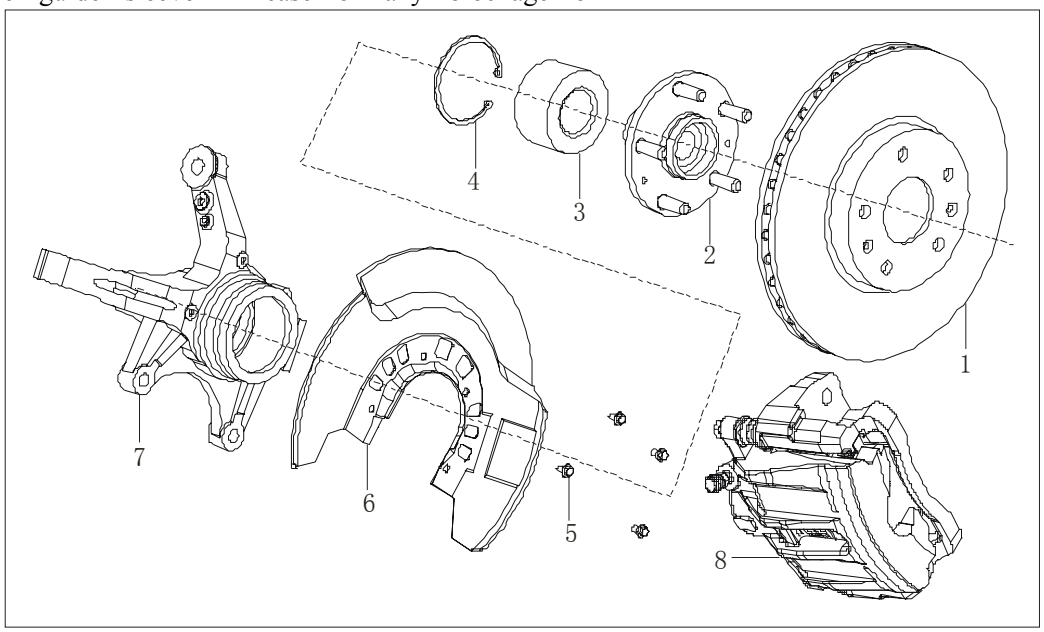
Apply a thin layer of the brake cylinder grease to the cylinder, the piston and the seal sleeve and install a seal ring in the ring groove at the back of the brake cylinder. Install the dustproof seal ring into the front ring groove and completely press it into the ring groove. Keep the dustproof seal ring and the brake caliper housing areas dry. Never touch the brake cylinder grease or the brake fluid to keep the dustproof seal ring at the proper position.

14. Fix the brake piston with an elongthening part sold in the market, slightly press it in the dustproof seal ring and blow the dustproof ring with compressed air (maximum 3bar). Cover the brake piston with a piston ring.

Installation instruction:

Soak the dustproof seal ring and the brake piston with the brake fluid to facilitate the pass of the dustproof seal ring.

iii. Assembly drawing of the front brake



1-front brake disc, 2-front wheel hub assembly, 3-wheel hub bearing, 4-bearing retainer ring, 5-left front brake bottom

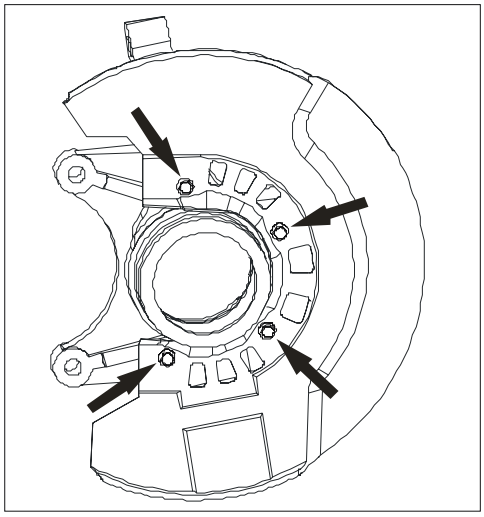
plate mounting bolt, 6-left front brake bottom plate, 7-left front steering knuckle

iv. Specification of the front brake fasteners

Brake caliper guide bolt	31～38 N.m
Brake caliper positioning bolt	120～128 N.m
Vent screw	9～11 N.m
Dustproof plate bolt	7.5±1 N.m
Brake disc positioning bolt	9±3 N.m

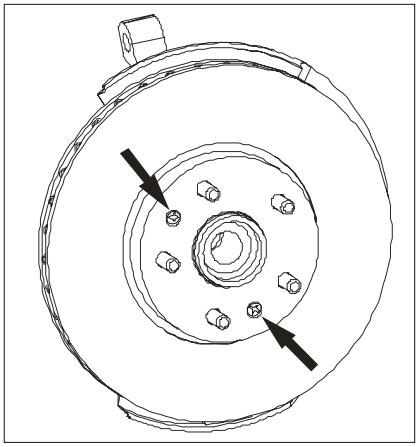
v. Installation of the front brake assembly

1. Install the front brake bottom plate on the steering knuckle and screw it down with a bolt. The tightening torque is 9-11N.m.

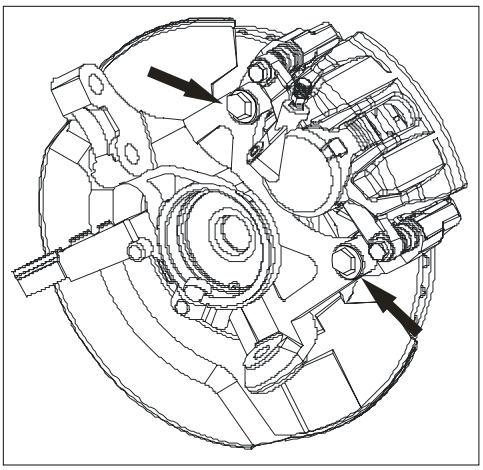


2. Press the wheel hub bearing and the wheel hub in the steering knuckle and install the bearing retainer ring.

3. Fasten the brake disc on the front wheel hub bearing unit with a screw. The tightening torque is 7-9N.m.



4. Use two bolts to connect the brake caliper assembly with the steering knuckle. The tightening torque is 85±5N.m.



Note: The brake disc and the brake lining should be free of grease.

vi. Diagnostic information of the brake liner

1. Check the brake liner once after driving 10,000km.

2. Check the brake liner once the wheel tire is removed and replaced.

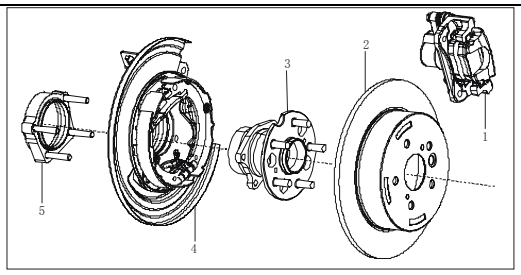
3. Check the brake caliper at both ends of the caliper for abrasion.

4. Check the thickness of the inner brake liner to ensure that the brake liner isn't abraded. Check the brake liner through the caliper sightglass.

5. When the thickness of the brake liner is less than 7mm after abrasion, replace the brake liner. If the brake liner is fixed by a rivet, replace the brake liner when the thickness of the rivet head is less than 5mm after abrasion.

Rear wheel brake

Assembly drawing of the rear wheel brake



1-rear brake caliper assembly, 2-rear brake disc, 3-rear wheel hub, 4-rear brake bottom plate assembly, 5-connecting plate

vii. Check and replace the brake liner

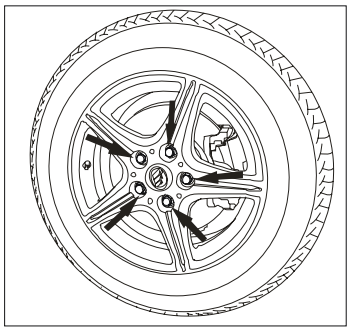
Replace the brake lining of the vehicles of Lifan Motor Company with that of the original company to avoid that the brake lining may change the brake performance of the vehicle.

1. Jack and suitably support the vehicle to remove the decorative plate.

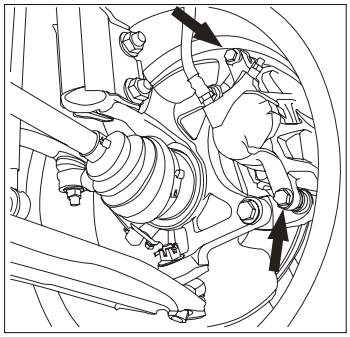
Note: After removal, pay attention that the front side of the decorative plate never abrades with the floor to avoid scratch.

2. Take down 5 retaining bolts from the wheel and remove the wheel.

Torque: 120N.m



3. Loosen the guide bolt on the brake caliper and the guide bolt below the brake caliper, and take out the brake caliper. The brake caliper shouldn't connect with the brake hose to avoid damaging the brake hose.



Installation instruction:

Only clean the guide bolt, but never apply grease to it.

Check the thread to ensure the guide bolt is sound. Swing the brake caliper from the top to the bottom to remove it. Remove the brake lining thickness sensor harness bracket and the brake caliper bracket.

4. Remove the brake lining

Note: Mark the lining which has experienced running in. Do not replace the brake plate if the lining at one side is

worn.

Replace the lining with a new one only when the thickness of the brake disc is ≤ the minimum thickness. Pay attention to the minimum thickness of the lining and clean the lining. Do not apply grease to the backup plate of the lining.

5. Check the damage condition of the dustproof seal ring; if necessary, replace it. Clean the contact surface of the brake piston.

Note: The dustproof seal ring never contacts the noise damping grease to avoid the expansion of the dustproof seal ring.

6. Clean the contact surface of the brake caliper.

7. Clean the hammer head-shaped guide parts of the brake caliper.

Installation procedure

Installation should obey the reverse order of the removal.

Notes for the above operations:

1. Grind the new brake surface after changing the brake liner.

2. Grind the new brake surface after polishing the surface or changing the brake disc.

3. Keep the vehicle speed below 40-60 Km/t and brake for 15 times to grind the new brake plate.

4. Step on the brake pedal with medium or heavier force to avoid over-heating of the brake.

viii. Diagnostic information of the brake disc

1. Check the thickness deviation of the brake disc.

Randomly choose 4 or above points on the brake disc and measure their thicknesses with a micrometer. Measure all the values at the same distance to the edge of the brake disc. If the thickness deviation of the brake disc exceeds 0.013mm, which causes the pulse or front vibration of the brake pedal, replace the above-mentioned disqualified brake disc.

2. Check the lateral run-out of the brake disc.

Remark: Once the brake disc is separated from the bearing flange, clean the rust or foreign objects on the mating face of the brake disc and the flange, otherwise, it may cause lateral run-out and brake vibration of the brake disc.

Keep the wheels on the vehicle to check the lateral run-out, thus to get more precise general indicating run-out in the actual brake. If the wheel inspection isn't made on the vehicle, remove the wheel and maintain the caliper's position to get more accurate reading.

Removal procedure

(1) Jack and suitably support the vehicle. Refer to the vehicle lifting in the general information.

(2) Mark the relative positions of the wheel and the wheel hub.

(3) Remove the tire and the wheel. Refer to the removal and the installation of the tire and the wheel.

(4) Clean the surface of the brake disc.

(5) Re-install the wheel nut to fasten the brake disc.

(6) Fasten the micrometer component on the steering knuckle to ensure that the contact surface of the indicator

button and the brake disc is about 13mm to the edge.

(7) Zero the micrometer.

(8) Rotate the wheel around to check the run-out of the micrometer. If the TIR general indicating run-out exceeds 0.08mm, precisely adjust or replace the brake disc.

In some cases, mark the position of the brake disc on the wheel hub to leave one to two bolts' distance and improve the excessive lateral run-out of the brake disc. If marking the brake disc fails to adjust the lateral run-out, check if the lateral run-out of the wheel hub is too big or too loose. If the lateral run-out of the wheel hub exceeds 0.04mm, replace the wheel hub. If the lateral run-out is qualified, finish the surface or replace the brake disc as necessary.

3. Tolerance of the brake disc

Strictly keep the brake surface tolerance in manufacturing the brake disc.

Flatness

Parallelism

Lateral run-out

Keep the shape tolerance of the brake surface to avoid abrasion or pulse of the brake. The surface precision must be below the regulated radius 60 degrees' roughness. New brake discs meet the above specification. The brake discs which are subject to surface finishing adjustment also meet the above specification. Adjust the brake disc to control the precision of the brake surface to eliminate the following faults.

The pedal is too hard.

The brake performance is degraded.

Driving deviation

Abnormal performance

Control the precision of the brake surface to extend the lifetime of the liner. Slight scratch (no more than 1.5mm) of the brake disc may not cause adverse influence on the brake performance. Normal operation may also cause slight scratch.
ix. Install or replace 2 front brake discs

1. Remove the wheel

If necessary, remove and clean the brake lining.

Note: If it's less than the minimum thickness of the brake disc, replace the brake disc. (For the same axle), the brake disc should be replaced in pairs. In case of replacing the brake disc, re-install the brake lining.

2. Loosen the retaining bolt of the brake caliper component, remove the brake caliper and tie it at one side.

Tip: Keep the brake pipe in connection.

3. Loosen the positioning screw to remove the brake disc.

Note: Loosen the brake disc. In any cases, never knock the friction ring with a hammer or similar objects. If necessary, carefully knock the disc body of the brake disc with a rubber hammer.

Installation instruction: Replace the retaining bolt of the brake disc and thoroughly clean the contact surface of the wheel hub. If necessary, clean the corrosion marks. The unevenness of the contact surface may cause the deformation of the brake disc. See the technical data for the tightening torque. Installation should obey the reverse order of the removal.

5. Spare parts of the rear brake

Inspection and maintenance

i. Measure the thickness of the brake pad.

Measure the thickness of the brake pad with a ruler. If the thickness of the pad is ≤ the minimum, or the abrasion is severely uneven, replace the pad.

ii. Measure the thickness of the brake disc.

If the thickness of the brake disc is ≤ the minimum, replace the brake disc. If there is scratch or uneven abrasion on the brake disc, polish and grand the machine or replace it.

iii. Measure the deflection of the brake disc.

1. Screw down the brake disc with 2 hub nuts.

Top: Clamp the brake disc with a special tool in the measurement. The torque is 120N.m.

2. Measure the deflection value of the brake disc with a dialgage at the position 10mm to the outer edge of the brake disc. If the deflection value ≥ the maximum, check the axial clearance of the bearing and the deflection of the axle hub. If the end play of the bearing and the deflection of the axle hub are normal, adjust the deflection of the brake disc.

6. Specification of the rear brake

Diameter of the brake disc	305 mm
Thickness of the brake disc	10 mm
Minimum used thickness of the brake disc	8 mm
Thickness of the brake lining	10.2 mm
Minimum thickness of the brake lining	2 mm
Thickness of the brake lining	2.5 mm
Minimum thickness of the brake lining	1.5 mm

Brake caliper alignment long bolt	63±3 N.m
Brake caliper alignment short bolt	63±3 N.m
Brake caliper guide bolt	80～110 N.m
Vent screw	9～11 N.m
Bearing retaining bolt	78±5 N.m
Hand brake cable retaining bolt	9±3 N.m

7. Specification of the rear brake fasteners

8. Removal and installation of rear brake lining

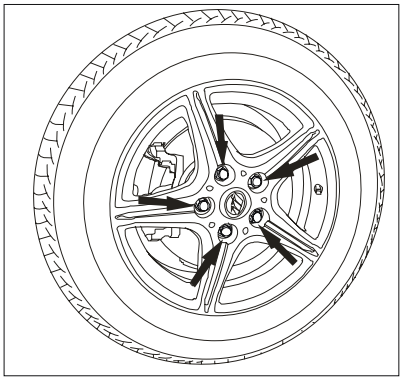
Tip: After the operation, step on the brake for several times to make the brake lining run in the brake disc and ensure the safety.

After replacing the rear axle brake lining, check if the brake fluid level is between MIN and MAX.

1. Remove the decorative plate

Note: After removing the decorative plate, make sure that its front side never abrades with the floor to avoid scratch.

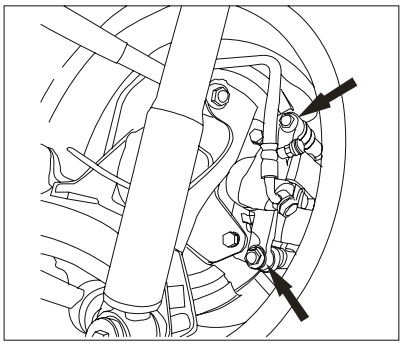
2. Remove five retaining bolts of the wheel and take down the tire. The torque is 120N.m.



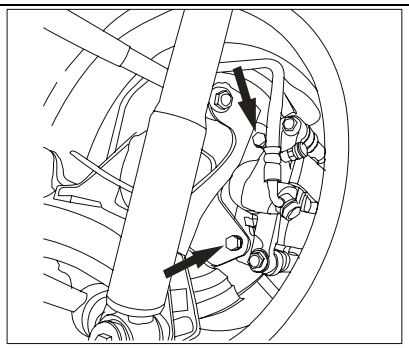
3. Loosen the retaining bolt of the guide bolt and the brake hose.

Installation instruction: Only clean the guide bolt, but never apply any grease.

Check the thread and renew the not intact guide bolt. Swing the brake caliper from the bottom to the top, remove it and hang it with metal wire.



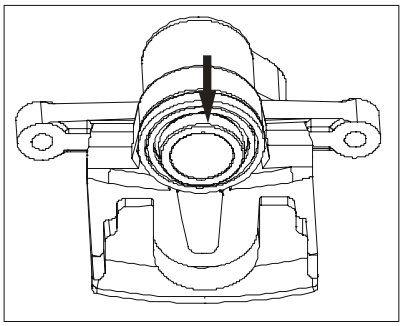
4. Remove the retaining bolt of the brake caliper and pull outward the brake caliper.



5. Remove the brake lining

Note: Mark the lining which has experienced running in. Do not replace the brake plate if the lining at one side is worn. Replace the lining with a new one only when the thickness of the brake disc is equal to or less than the minimum thickness. Pay attention to the minimum thickness of the lining and clean the lining. Do not apply grease to the backup plate of the lining.

6. Inspect if the dustproof sealing ring is worn and replace it if necessary. Clean the contact surface of the brake piston.



Note: Do not try to seize or protect the piston of the caliper with fingers when using compressed air, to keep the piston flying by force from damaging the vehicle body.

7. Remove the piston and blow the compressed air into the inlet of the caliper to get rid of the piston from its protector.

8. Replace the piston if there is scratch, crack, or corrosion on the piston or the piston coating is worn or damaged.

Tips:

The installation procedure of the lining is opposite to the removal procedure!!!

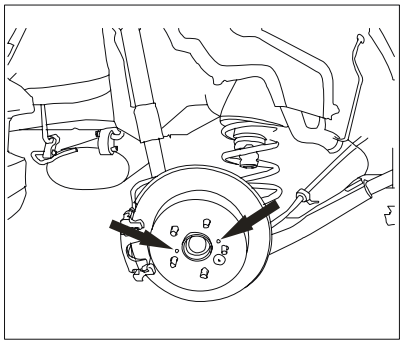
I Replacement of Rear Brake Disc

1. Lift the vehicle, choose suitable pivots and remove tires.

2. Loosen the retaining bolts of the brake caliper assembly, remove the brake caliper and tie it to one side.

Tips: Keep the brake pipelines connected.

Fasten two bolts into the two technical holes on the brake disc and remove the brake disc.



Note: Do not hit the friction ring with a hammer or similar thing when removing the brake disc.

Installation instructions:

Replace the retaining bolts of the brake disc with new ones. Completely clean the contact surface of the wheel hubs and get rid of the corrosion marks if necessary. Uneven contact surface may distort the brake disc!

Note: Do not finish the brake disc surface only for the following:

1. Noise of the brake, such as boom and scream;

2. Early wear of the brake lining;

3. Corrosion on the brake disc surface;

4. Color fading of the brake disc.

Only finish the brake disc surface for one or more conditions below:

1. Serious scratch on the brake surface of the brake disc exceeding the prescribed;

2. Run-out of the brake may be caused by:

(1) Lateral run-out beyond the range;

(2) The brake disc thickness tolerance exceeding the specified;

(3) Corrosion or pitting depth exceeding the brake surface of the brake disc.

Remarks: Follow the examination and repair for the front-wheel brake disc to examine and repair the brake disc.

Installation of Parking Brake

I Replacement of Parking Brake Shoe

Removal procedure

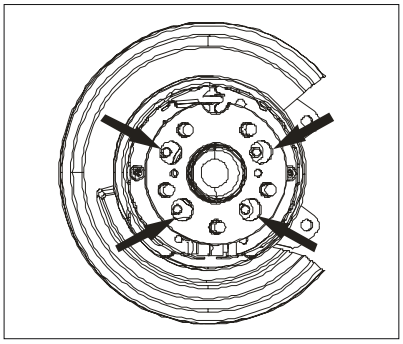
1. Lift the vehicle, choose suitable pivots and remove tires.

2. Refer to the replacement of the brake caliper bracket in “Disc Brake” and remove the brake caliper.

3. Refer to the replacement of the brake disc in “Disc Brake” and remove the rear brake disc.

4. Remove the rear wheel hub unit.

Remarks: Align the four technical holes on the brake hub unit with the corresponding retaining bolts of the brake unit.



5. Remove the parking brake actuator.

6. Remove the brake shoe.

Installation procedure

1. Install the brake shoe and lining.

Note: Make sure the brake shoe and the parking brake are engaged.

2. Install the parking brake actuator.

3. Refer to the replacement of the wheel bearing/hub in “Rear Suspension” and install the rear wheel hub.

4. Regulate the parking brake shoe.

5. Refer to the replacement of the brake disc in “Disc Brake” and install the rear brake disc.

6. Refer to the replacement of the brake caliper bracket in “Disc Brake” and install the rear caliper bracket.

7. Regulate the parking brake.

II Regulation of Parking Brake Shoe

1. Refer to the replacement of the brake caliper bracket in “Disc Brake” and remove the brake caliper bracket.

2. Remove the brake disc.

Pull the brake disc out of the wheel hub and slowly rotate the brake disc.

3. Loosen the parking brake cable adjustment nuts and make the rod at “Stop”.

4. Make the inner diameter measuring tool contact the inner diameter of the brake disc.

5. Place the inner diameter measuring tool at the widest gap between the brake shoe and the lining.

6. Rotate the regulator bolts until the brake shoe and lining 1 exactly contact the inner diameter measuring tool.

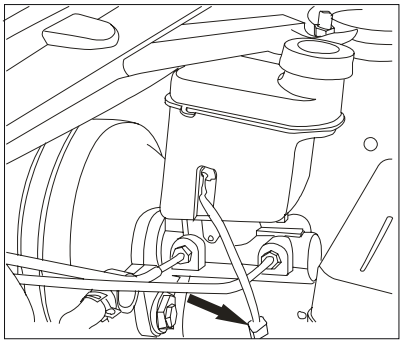
7. Repeat step 2-5 for the brake disc at the other side.

8. Regulate the rear parking brake cable adjustment nuts and install the brake disc and the brake caliper.

Removal of Brake Master Cylinder

I Removal of Brake Master Cylinder

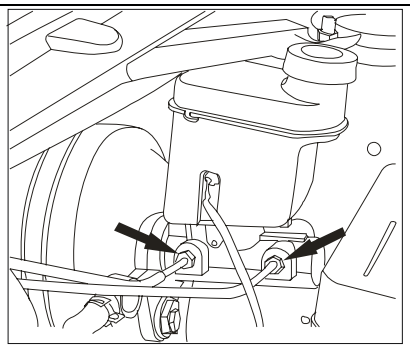
1. Disconnect the electrical connector of the fluid level sensor.



2. Use a suction tube to draw the brake fluid.

Remarks: Take care! Do not spatter corrosive brake fluid on skin or paintwork!

Loosen the brake pipeline on the brake master pump.



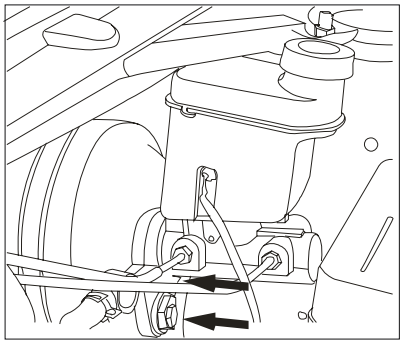
4. Remove the reservoir

Remarks: Push up the reservoir body vertically to get it down from the master pump and remove the O-ring seal from the groove of the reservoir. Replace the reservoir if it cracks or is distorted and clean it with denatured alcohol. Use compressed air without lubricant to dry the reservoir.

5. Remove the retaining nuts of the brake master pump.

II Disassembly of Brake Master Cylinder

1. Remove the brake master cylinder



2. Clean the reservoir cover

3. Remove the reservoir cover and the diaphragm

4. Replace the reservoir cover and the diaphragm if one or more of the following happens:

a. Cut

b. Crack

c. Scratch

d. Distortion

5. Remove the master pump reservoir

6. Remove the holder, press down the primary piston and avoid damaging:

a. Piston

b. Cylinder liner

c. Holder groove

7. Send the unlubricated low-pressure compressed air into the upper outlet of the closed end when other external connectors are blocked and follow the above operation when replacing

a. Primary piston

b. Accessory piston

c. Spring

d. Spring retainer

8. Remove the seal and the spring retainer from the secondary piston

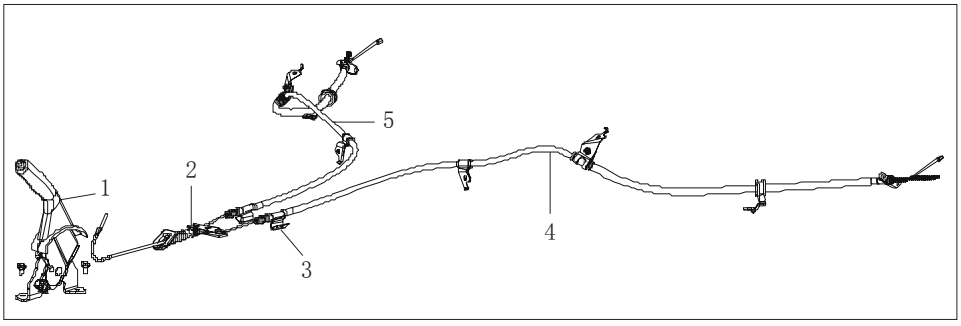
9. Replace the master pump if there is scratch, corrosion or damage. Do not apply abrasive to the hole

10. Use clean denatured alcohol to clean all the components

11. Use compressed air without lubricant to dry the components

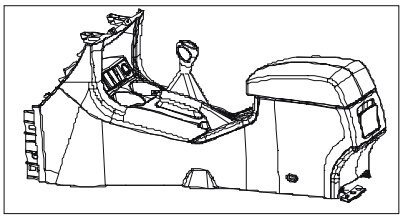
Remarks: The installation procedure is opposite to the removal procedure!

III Replacement of Parking Brake Cable

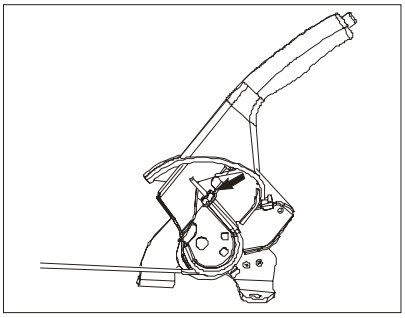


1-Brake control lever assembly 2-Parking brake cable front section assembly 3-Fastener 4-Left parking brake cable rear section 5-Right parking brake cable rear section

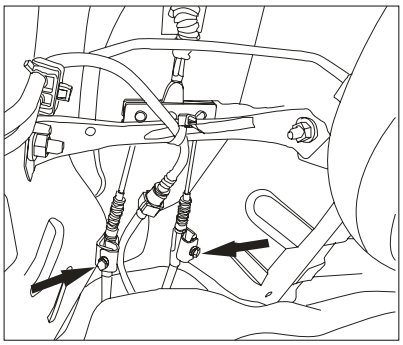
1. Remove the auxiliary fascia console



2. Loosen the retaining bolts of the handbrake



3. Loosen the retaining bolts of the left and right cables



4. Loosen the handbrake cable

6. Remove the retaining bolts of the left and right handbrake cables

7. Remove the hand cable from the brake actuator

Tips: The installation procedure is opposite to the removal procedure!

Remarks: It is necessary to regulate the parking brake when the brake shoe or the handbrake cable is being replaced.

1. Let go the parking brake lever

2. Press down the brake pedal forcibly once

3. Pull up the parking brake lever and go by four teeth.

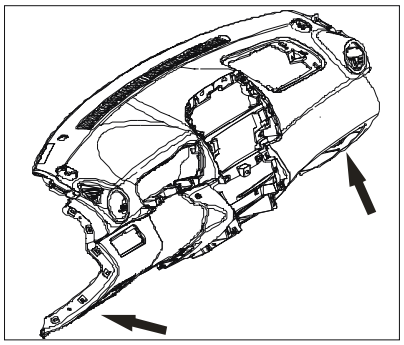
4. Tighten the adjustment nuts until the two wheels can not be rotated by hand

5. After the above steps, let go the parking brake and check if the two rear wheels can turn freely, or repeat the above steps.

Brake Booster and Brake Pedal

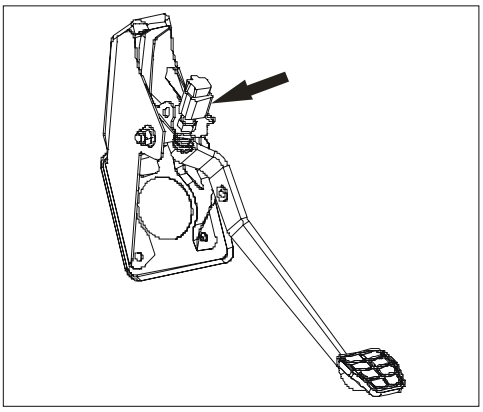
I. Removal of Brake Pedal and Vacuum Booster

1. Remove the two retaining bolts on the left lower shield of the dash board.

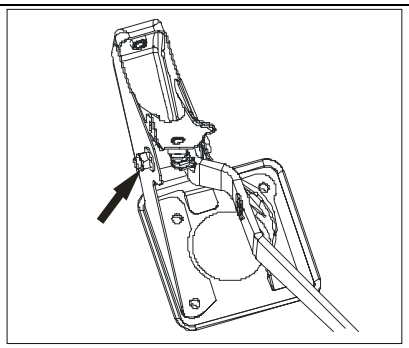


2. Remove the front engine hood handle assembly, disconnect the 4 switch plugs and remove the dash board shield.

3. Disconnect the stoplamp switch plug and remove the stoplamp switch.



4. Remove the connecting pin between the vacuum booster pump and the brake pedal.

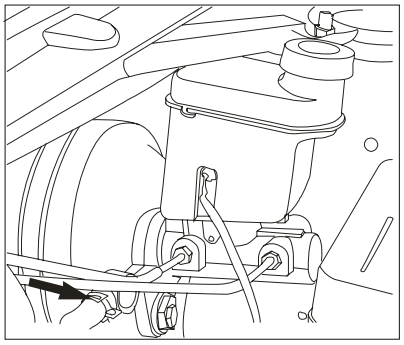


5. Remove the 4 retaining bolts of the brake pedal bracket

6. Remove the brake pedal bracket

Remarks: Do not repair the inner components of the booster or disassemble the housing. Disassembling the housing may cause permanent distortion and improper force application.

7. Remove the vacuum tube



8. Replace the vacuum booster check valve

Note: It is unnecessary to remove the booster from the vehicle for checking the vacuum check valve and the sealing ring.

(1) Disconnect the brake booster vacuum hose at the vacuum check valve

(2) Disconnect the brake booster vacuum check valve from the booster

(3) Remove the sealing ring of the brake booster vacuum check valve from the booster

9. Loosen the adjustment bolts and regulate the brake pedal to the standard height

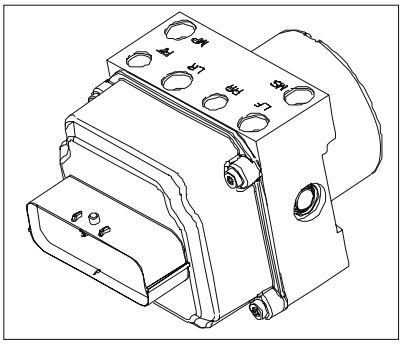
Remarks: The installation procedure of the vacuum booster and the brake pedal is opposite to the removal procedure.

Installation and Removal of Brake Pipelines

Replace the brake pipe and fix the new brake pipe at the orginal position.

Note: The brake pipelines must be two-wall steel brake pipelines to avoid causing the fault of the brake system. Improper arrangement may lead to bad brake effects or faults.

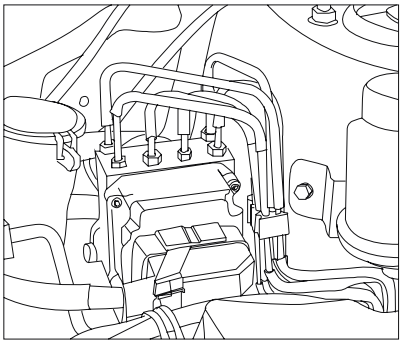
1. Remove the pipeline from the brake master pump to the ABS controller assembly



Pipeline definition:

MS: 1st cavity MP: 2nd cavity

LF: Left front RR: Right rear LR: Left rear RF: Right front



2. Remove the brake pipelines

(1) Loosen the connecting bolts to the ABS hydraulic unit

(2) Remove the retaining bolts of the fixing clip and the brake pipelines connected to the vehicle body.

3. Remove the brake hose

(1) Lift the vehicle and remove tires

(2) Use a supporting wrench to clip the hose joint and remove the pipeline from the brake hose bracket. Do not bend the brake pipeline or the bracket.

(3) Remove the holder clip from the hose assembly bracket

(4) Remove the hose from the bracket

(5) Remove the following components from the caliper:

Brake hose bolts

Hose

Two washers (remarks: replace them with new ones during the installation)

Note: Do not move the vehicle before getting the reliable brake pedal travel. Air in the pipelines may result in bad brake effects or faults.

Remarks: Do not suspend components on the flexible brake hose because such an action may damage the hose. Do not bend any part of the brake hose to keep the brake fluid from flowing away from any component.

Remarks: No pipelines can intervene in the vehicle body and the brake joint bolts are respectively provided with the following tightening torque:

The tightening torque of M12×1 shall be 18±2N.m.

The tightening torque of M10×1 shall be 12±2N.m.

Brake Fluid Filling and Exhaust

Tips: If air enters the brake system during the repair or the replacement of the brake components, the exhaust procedure shall be carried out completely. Before the exhaust of the brake, the front and rear exhaust cylinder pistons shall return to the highest positions. The best method is to use a diagnostic scanner to carry out the return procedure. Without any diagnostic scanner, a second procedure can be adopted and the operation shall be done strictly following the specified steps.

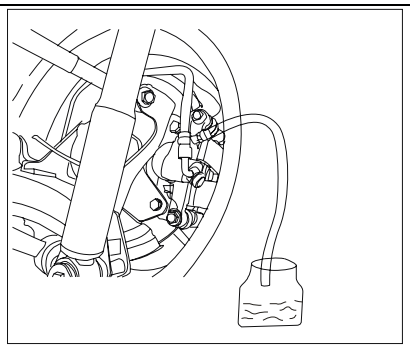
Exhaust all the 4 brake hydraulic systems if air enters because the fluid level is too low or the master pump brake pipelines are disconnected. If the brake hose or the brake is disconnected at a certain wheel, only exhaust the caliper of this wheel. If the brake pipe or hose is disconnected at any joint between the master pump and the brake, only exhaust the brake system related to the disconnected pipeline or hose.

1. Exhaust the brake system

(1) Lift and support the vehicle suitably

(2) Attach the transparent plastic exhaust hose to the exhaust valve of the brake caliper

(3) Dip the other end of the transparent plastic exhaust hose into the clean container with clean brake fluid



(4) Slowly open the exhaust vale to make the brake fluid flow

(5) Close the exhaust valve when there are no bubbles in the brake fluid

(6) Remove the transparent plastic exhaust hose from the exhaust valve

Remarks: The above steps apply to the exhaust of each brake pipeline.

2. The exhaust order of the brake system is Rear Left---Front Right---Rear Right---Front Left. If there is an ABS, connect a diagnostic scanner and start the fluid filling and exhaust procedure to exhaust the air in the ABS.

3. Exhaust the brake circuit

Connect the exhaust hose with a container to the fluid discharge & exhaust valve of the rear left brake caliper. Open the fluid discharge & exhaust valve and press down the brake pedal to the end several times. The brake fluid flowing out must be clean and without bubbles. Keep the brake pedal at the end, close the fluid discharge & exhaust valve and then release the brake pedal. Similar operation can be carried out for the brakes of other wheels.

4. Fill brake fluid

To ensure the reliable brake of a driving vehicle, check the brake fluid level after the exhaust of the brake system. Fill brake fluid when it is insufficient.

Note：

(1) The brake fluid shall conform to the standards set by the Ministry of Transport (only DOT4) and the brake fluid can not be mixed with brake fluid of other types.

(2) The brake fluid has strong water absorbability so it must be kept in the original sealed container when recycled.

(3) The brake fluid has strong causticity. Immediately wipe the brake fluid spattered on skin with wet cloth

and wash the skin with soap and water completely. Wash the vehicle body immediately if the brake fluid is spattered on the body paintwork.

(4) Observe the fluid level in the brake fluid reservoir during the exhaust and fill some brake fluid if the level is too low.

(5) Repeat manual exhaust again and again until the air in the brake system is exhausted completely.

(6) Check if there is leakage at the brake system after fluid filling and exhaust end. Repair the leakage in time to ensure driving safety.

Anti-lock Brake System

The ABS of LF6430 is a dry product with four-passage control. The electronic control unit of the ABS collects the rotation speed information of each wheel and independently controls the brake pressure of each wheel. Then fault diagnosis and repair can be done via a diagnostic scanner when the warning lamp of the ABS is on.

I ABS Working Principles

The rotation speed sensor installed on a wheel collects the rotation speed signal of each wheel and sends the signal to the electronic control unit where the rotation speed can be calculated and then the deceleration of the vehicle and the slip rate of wheels can be calculated. Based on the calculated parameters, the electronic control unit of the ABS can lock the vehicle via the hydraulic control unit regulating the brake pressure during brake. When the ABS doesn't work, the electronic brake force distribution system can still regulate the brake force of the rear wheels and then the rear wheels will not be locked earlier than the front wheels, to ensure driving safety. Every time when the ignition switch is put through, the ABS will do self-check. If any fault is found, the electronic control unit will interrupt the functioning of the ABS automatically and turn on the warning lamp of the ABS and then the brake system will work as if there were no ABS.

II ABS Regulation

The wheel brake pressure is regulated as follows:

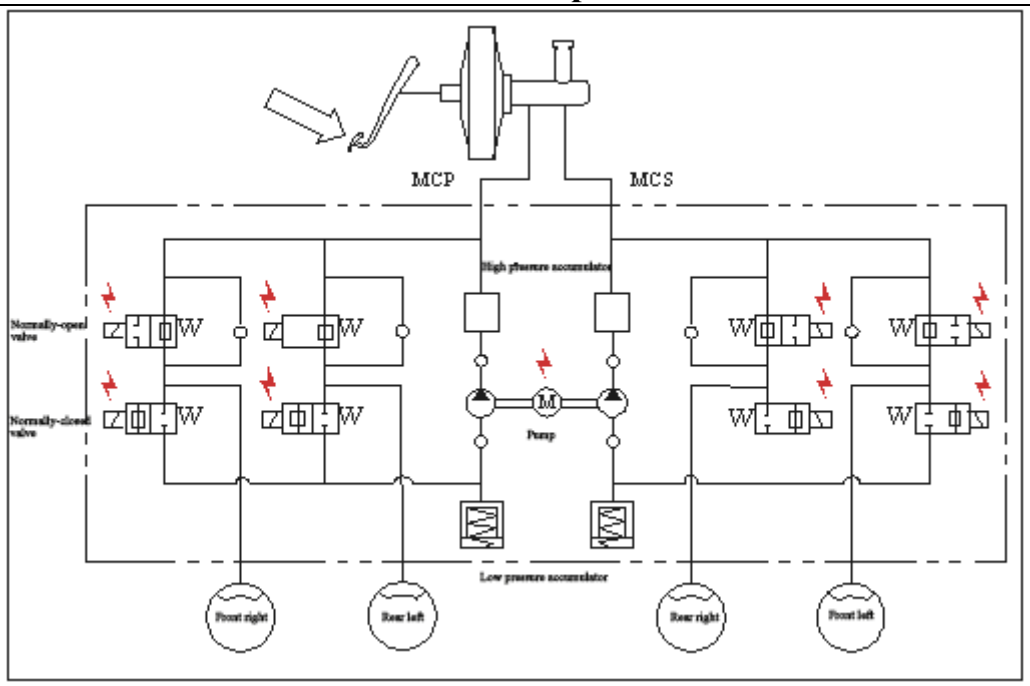
1. Pressure build-up: Pressure is built up via the vacuum booster and the master pump during brake. At this moment, the normally-open valve is open and the normally-closed valve is closed. Then the brake pressure enters into the wheel brake and the wheel speed decreases quickly until the electronic control unit of the ABS gets a signal via the rotation speed sensor and recognizes that the wheels are going to be locked.

2. Pressure maintaining: The electronic control unit of the ABS gets a signal via the rotation speed sensor and recognizes that the wheels are going to be locked. Then the normally-open valve is closed by the ABS control unit and the normally-closed valve is still closed.

3. Depressurization: If the wheels are still going to be locked during the pressure maintaining, the ABS will go to the depressurization stage. As required by the electronic control unit, the normally-open valve is open and the normally-closed valve is closed. Then the hydraulic pump begins to work and the brake fluid is returned from the wheel cylinder to the brake master pump, passing by the low pressure accumulator. After that, the brake pressure decreases and the brake pedal shakes. Then the wheel lock degree drops and the wheel rotation speed starts to increase.

4. Pressure boosting: To achieve the best brake effect, the electronic control unit of the ABS opens the normally-open valve and closes the normally-closed valve again when the wheel rotation speed reaches a certain level. As the pressure is boosted, the wheels brake again and the wheel speed decreases. The anti-lock brake system regulates the pressure at 2-4 cycles/second.

III ABS Brake Principles



IV ABS DTC (Omitted)

V Removal of ABS Assembly

1. Turn off the ignition switch and disconnect the negative cable of the battery;

2. Remove the harness plug from the ABS control unit assembly;

3. Press down the pedal (>60mm) and fix it with the pedal bracket, which can make the center valve of the master pump closed. Therefore the brake fluid will not flow out from the outlet;

4. Remove the brake hard pipe from the HCU, mark it and block the outlet with a plug at once;

5. Loosen the bolts of the ABS control unit bracket.

VI Installation of ABS Assembly

Note: Remove the plug of the hydraulic opening on the ABS assembly only when the brake hard pipe is installed, to prevent foreign material entering the brake system.

1. Install the ABS assembly on the bracket and tighten it with the torque of 20±4Nm;

2. Remove the plug of the hydraulic opening, install the brake hard pipe and confirm that the hard pipe connection is correct.

3. Install the brake hard pipe to the master pump and tighten the brake hard pipe with the torque of 12±4Nm and 15±3Nm;

4. Fill the fluid reservoir with new brake fluid until the level reaches the maximum and exhaust the air as required;

5. Turn the ignition switch to ON. The ABS warning lamp will be on for 3.7 seconds and then go off;

VII Exhaust and Fluid Filling After HECU Replacement

1. Replace the HECU with a HECU (wet-type) for after-sales service, place the ignition switch at ON and use a diagnostic scanner to detect if there are DTCs.

◆ If there are DTCs, eliminate them with a diagnostic scanner.

◆ If a DTC can not be eliminated, refer to “Badness Maintenance”.

2. Step on the brake pedal and do exhaust operation for all the wheels through loosening the brake caliper or the exhaust bolts on the drum brake.

◆ Connect the fluid reservoir of the master pump to the device which can continuously supplies brake fluid to keep the fluid reservoir full.

◆ The exhaust operation shall not be completed until the air in the brake fluid is exhausted through loosening the exhaust bolts and the brake pedal is suitably hard, which is similar to the exhaust/fluid filling of the brake system without ABS.

3. Measure the travel of the pedal and repeat the operations in the above Clause 2 if the travel does not meet the requirement.

◆ If the brake pedal travel still does not meet the requirement after the operations in the above Clause 2 are repeated more than 10 times, do the operations again after the HECU is replaced with a HECU (wet-type) for after-sales service.

◆ Exhaust and fluid filling shall be completed when the brake pedal travel meets the requirement.

4. Instructions for exhaust and fluid filling

If a sponge phenomenon happens to the brake pedal during ABS operation, use a diagnostic scanner to do operations in exhaust mode. If there is no reacting force after the brake pedal is stepped on, step on/release the brake pedal repeatedly until the exhaust mode ends.

◆ Exhaust mode: Within one minute, start/stop the normally-closed solenoid valve of the HECU repeatedly with the interval of 2S and then continuously drive the motor.

◆ Carry out the operations in the above Clause 2 and Clause 3 after the operations of the exhaust mode.

VIII Instructions on Disassembly

1. Use a diagnostic scanner to find out fault causes before repair;

2. Open the package of spare parts only before installation;

3. Only use OEM parts;

4. Only use non-plush cloth to do cleaning during repair;

5. Use cleanser without mineral oil to clean the surface before repair;

6. Do not use compressed air or move the vehicle when the system is opened;

7. Block each hydraulic outlet with a plug as soon as possible after the removal of the ABS assembly;

8. Remove other components which may hinder work;

9. Please use DOT4 brake fluid but not mineral oil;

10. Use brake fluid to wet the seal and the O-ring and do not use oil or brake factice;

11. Check if the general brake functions of the brake system and the ABS are normal after repair;

12. Check if there is leakage at any joint of the hydraulic pipes.

IX Instructions on Repair

1. Disconnect the harness plug from the electronic brake control module before electric welding.

2. Pay attention to locations, installations, orientations, wirings, joints, clamps, and brackets of all the ABS components and parts because they are quite sensitive to EMI (electromagnetic interference).

3. Do not use a quick charger to charge up the battery starting the engine or being connected, to avoid battery failure or damaging ABS parts and components.

4. Turn off the ignition switch and disconnect the battery.

5. Disconnect the harness plug from the electronic brake control module.

6. Do not repair but only replace the ABS parts and components.

7. Do not hang the suspension parts and components on the wheel speed sensor harness to prevent the harness being damaged.

8. Do not put the electronic brake control module in a place where the temperature is higher than 85℃ (184℉)。

9. Do not use oil-based fluid in the brake master cylinder or a container which has been used to hold oil-based fluid before, because oil may make the rubber parts and components in the hydraulic brake system swell and be distorted, and then water will enter the system and the fluid boiling point will be lowered.

X EBD Working Process

When part of wheels brakes, the electronic brakeforce distribution (EBD) will function especially at the turning. Based on the rotation speed signals of the four wheels sent by the speed sensor, the electronic control unit calculates the rotation speed and the slip rate of the wheels. If the slip rate of the rear wheels is higher than some set value, the hydraulic control unit will regulate the brake pressure of the rear wheels to ensure the rear wheels will not be locked earlier than the front wheels. Compared with the traditional

proportional valve brakeforce distribution, the electronic brakeforce distribution ensures a strong adhesion of wheels and a reasonable brakeforce distribution. When the ABS functions, the electronic control distribution will stop working. The pressure boosting and maintaining of the EBD is the same as that of the ABS while its depressurization is different from that of the ABS. When the rear wheels are likely to be locked, the normally-open valve of the rear wheels will be closed and the normally-closed valve will be opened. Then the wheel brake pressure will decrease. At this moment, the hydraulic pump will not work and the brake fluid discharged via depressurization will be kept in the low pressure accumulator temporarily, which differs from the ABS. After brake ends and the brake pressure inside the pedal master cylinder is released, the normally-open valve and the normally-closed valve will be opened again, through which, the brake fluid in the low pressure accumulator will return to the master cylinder. The low pressure accumulator will be exhausted for the next ABS or EDS.

Fuel Supply System

I Removal and Installation

1. Before removal

① Pump fuel

② Prevent fuel from flowing to the ground

2. After installation

① Fill fuel

② Confirm there is no leakage

3 Removal steps (see Fig. 1)

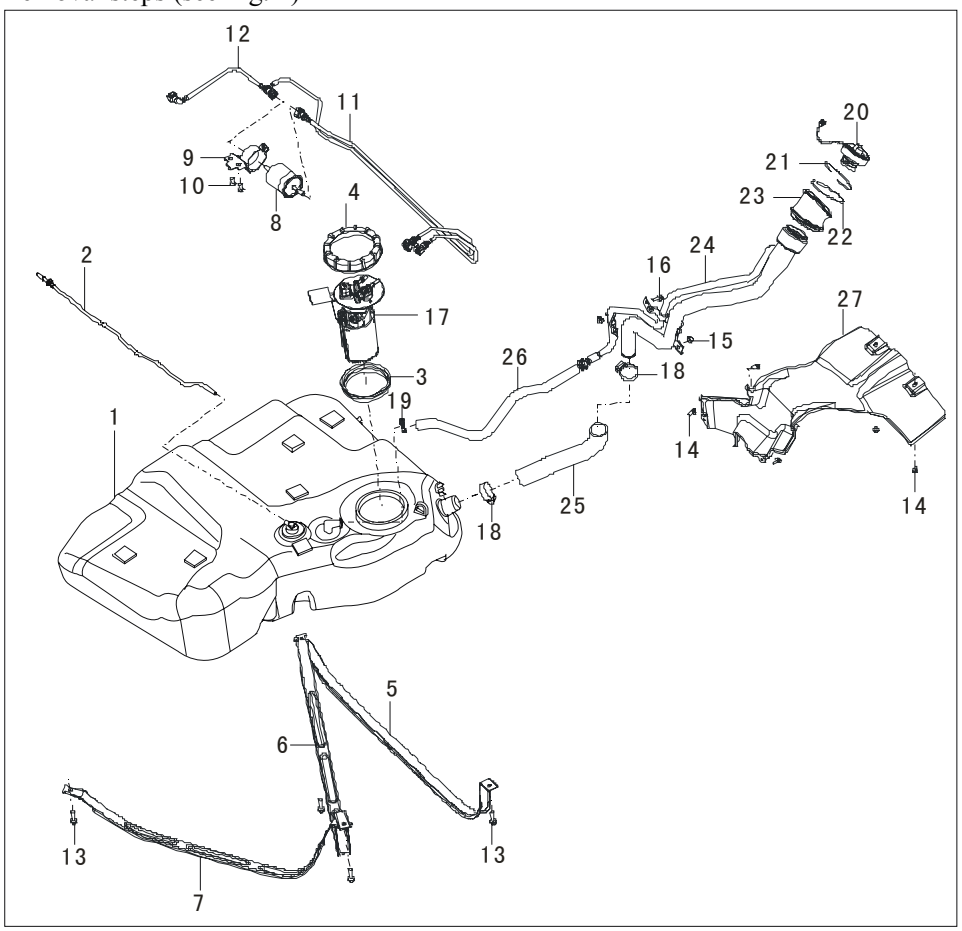


Fig. X-1 Fuel tank assembly

1-Fuel tank assembly 2-Fuel vaporization connecting pipe 3-Fuel pump cover sealing pad 4-Fuel pump cover 5-Right bracket of fuel tank 6-Bracket inside fuel tank 7-Left bracket of fuel tank 8-Fuel filter assembly 9-Filter support 10-Support bolts 11-Outlet pipe assembly of fuel tank 12-Outlet pipe assembly of filter 13-Bracket bolts 14-Filler pipe shroud bolts 15-Filler pipe support nuts 16-Filler pipe support bolts 17-Fuel pump assembly 18-A-type worm-driven hose hoop I 19-A-type worm-driven hose hoop II 20-Filler cap assembly 21-Upper snap ring of filler shield 22-Lower snap ring of filler shield 23-Filler shield 24-Upper section assembly of filler pipe 25-Lower section assembly of filler pipe 26-Air return pipe 27 Filler pipe shroud

(1) Remove 14-filler pipe shroud bolts and 27-filler pipe shroud.

(2) Loosen 18-A-type worm-driven hose hoop I and 19-A-type worm-driven hose hoop II and remove 25-lower section assembly of filler pipe and 26-air return pipe from fuel tank.

(3) Remove 11-outlet pipe assembly of fuel tank and 12-outlet pipe assembly of filter from 17-fuel pump assembly.

(4) Pull out plug connector of fuel pump, unscrew 4-fuel pump cover and take out 17-fuel pump assembly.

(5) Pull out 2-fuel vaporization connecting pipe.

(6) Unscrew 13-bracket bolts and remove 5-right bracket of fuel tank, 6-bracket inside fuel tank and 7-left bracket of fuel tank.

(7) Remove 1-fuel tank assembly

4. When removing the fuel tank,

(1) Support the vehicle with a lift and jack the fuel tank with auxiliaries to prevent the fuel tank from turning over.

(2) Do not repair a certain section of a rubber or nylon pipe but replace the entire pipe.

(3) Cover accessories and block holes during the operation of the fuel system to prevent dust and others entering the fuel system through open pipelines or other passages.

(4) Keep the components of the fuel system clean.

Note:

(1) Re-install the four M8 fixing bolts of the fuel tank and tighten them with the torque of 23N.m.

(2) Tighten the snap rings and replace them when necessary.

(3) Check and confirm each hose is not wound or damaged during removal and installation.

(4) Make the ignition switch be on for 2s and off for 10s. Then turn on the ignition switch again and check if there is leakage.

II Fuel Filter

1. Replace the fuel filter

Remove the fuel filter

(1) Release the pressure of the fuel system

(2) Discharge superfluous fuel into a suitable container.

(3) Remove the fuel hoses on the two ends of the fuel filter. See the fuel filter after removal in the Fig. below.

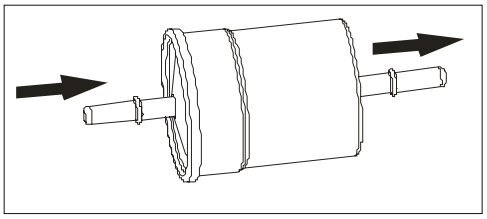


Fig. X—2 Fuel filter

2. Install a new fuel filter

(1) Remove the protective cap of the new fuel filter.

(2) Connect the fuel hoses at the two ends of the fuel filter.

(3) Tighten the filler pipe cover of the fuel tank.

(4) Connect the negative cable of the battery again.

(5) Make the ignition switch be on for 2s and off for 10s. Then turn on the ignition switch again and check if there is leakage.

Note:

Pull the high pressure pipe connected to check if it has been mounted. Make sure there is a clearance about 3mm.

III Electric Fuel Pump

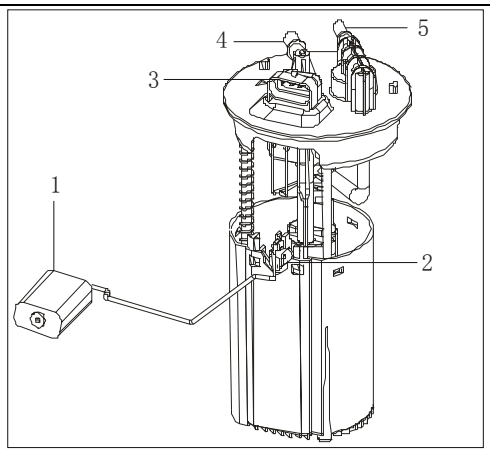


Fig. X—3 Fuel pump

1-Fuel float 2-Fuel level sensor 3-Fuel pump socket 4-Outlet pipe joint 5-Return pipe joint

1-

Electrical

Starting System

Note: Check the following before operating the starter

Connections

Removal of Starter

I Removal of Magnetic Switch

1 Remove the nuts and the lead of the magnetic switch connection. Check the voltage at the lead end with a high-resistance multimeter, which shall not be less than 10.5V (Do not make the end contact the engine body to avoid danger caused by electric discharge).

2 Loosen the 2 nuts for fixing the magnetic switch on the starter housing.

3 Remove the magnetic switch.

II Removal of Field Frame and Armature

1 Remove the lines between the solenoid switch and the motor and the nuts and disconnect the cable from the terminal.

Torque: 5.9N.m

2. Remove the 2 through bolts. Torque: 5.9N.m for 1.2kW type

3. Take out the field frame and the armature from the solenoid switch.

4. Remove the O-ring.

Note:

A new O-ring shall be used.

Align the convex of the field frame with the concave of the solenoid switch.

III Removal of Starter Housing, Clutch Assembly and Gear

1. Remove the 2 screws. Torque:

1.2kW type: 5.9N.m

1.4kW: 5.9N.m

2. Remove the following components from the solenoid switch assembly:

Starter housing, return spring, bearing, and clutch assembly

3. Remove the steel ball. Use a magnetic needle to attract the ball out of the clutch shaft hole.

IV Removal of Brush Holder

1. Remove the 2 screws and the end cap in the field frame.

1.2kW type: 1.5N.m
1.4kW type: 1.5N.m

2. Remove the O-ring from the field frame (Note: A new O-ring shall be used).

3 Use a screwdriver to press down the spring and remove the brushes from the brush holder. Disconnect the 4 brushes and remove the brush holder.

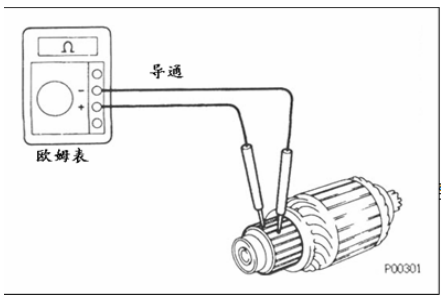
V Removal of Armature from Field Frame

VI Armature Solenoid

1. Check the passage of the commutator.

Use an ohmmeter to check the two commutator segments which shall be conducted.

Replace the armature winding if either commutator segment is not conducted (see *Fig. IV-1*).



IV-1

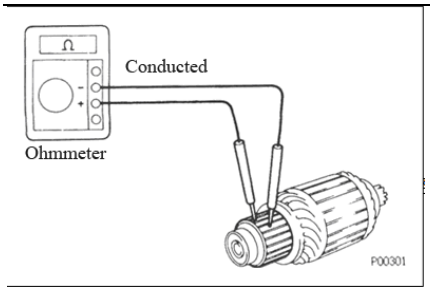


Fig. IV-1

2 Check the grounding of the commutator

Use an ohmmeter to check the commutator and the armature solenoid, between which there shall be no passage. Replace the armature winding if there is a passage (see *Fig. IV-2*).

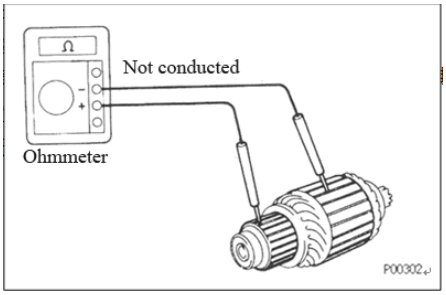


Fig. IV-2

VII Commutator

1 Check contamination and burn on the commutator surface.

Use sand paper to deal with the contaminated or burnt surface on a lathe.

2 Check the run-out difference of the ring gear

1) Place the commutator on a V-shaped stow-wood.

2) Use a dial indicator to measure the run-out difference of the ring gear (see *Fig. IV-3)*.

The maximum run-out difference of the ring gear: 0.05mm

Correct the run-out difference of the ring gear on a lathe if it is higher than the maximum.

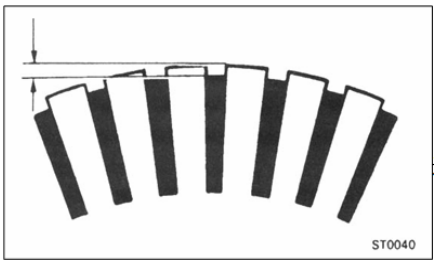


Fig. IV-3

3 c) Check the diameter of the commutator

Use a vernier caliper to measure the diameter of the commutator (see *Fig. IV-4*).

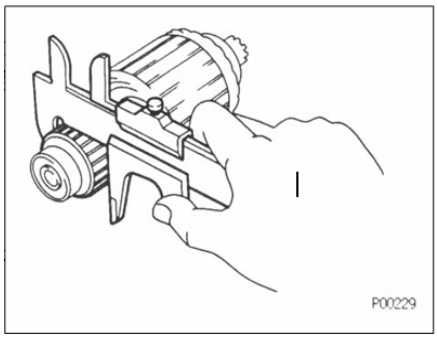


Fig. IV-4

Standard diameter:

1.2kW type: 30mm
1.4kW type: 30mm

Minimum diameter:

1.2kW type: 29mm
1.4kW type: 29mm
2.0kW type: 34mm

Replace the armature if the diameter is smaller than the minimum.

4 Check the undercut depth

Confirm the undercut part is clean, without any impurity and with smooth edge.

Standard undercut depth:

1.2kW type: 0.6mm
1.4kW type: 0.6mm

Minimum undercut depth:

0.2mm

Use a hacksaw blade to correct the undercut depth if it is smaller than the minimum.

VIII Field Frame (Excitation Winding)

1 Check the disconnection of the excitation winding

Use an ohmmeter to check the lead and the carbon brush of the excitation winding, which shall be conducted (see *Fig. IV-5*).

Replace the field frame if they are not conducted.

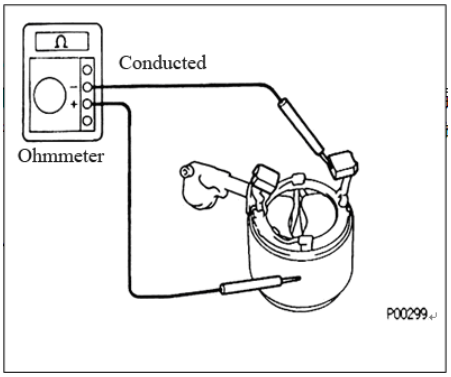


Fig. IV-5

2 Check the grounding of the excitation winding

Use an ohmmeter to check the end of the excitation winding and the field frame, which shall not be conducted (see *Fig. IV-6*).

Repair or replace the field frame if they are conducted.

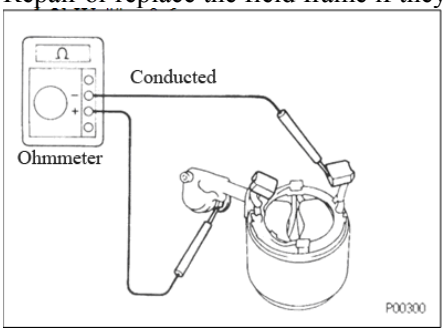


Fig. IV-6

IX Brush

1. Check the length of the brush

1) Use a vernier caliper to measure the length of the brush (see *Fig. IV-7*).

Standard length:

1.2kW type: 15.5mm
1.4kW type: 15.5mm

Minimum length:

1.2kW type: 10.0mm
1.4kW type: 10.0mm

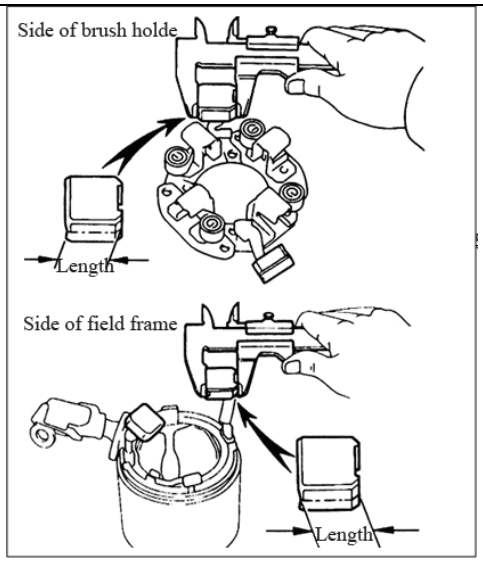


Fig. IV-7

2) Replace the brush holder and the field frame if the length is smaller than the minimum.

X Brush Spring

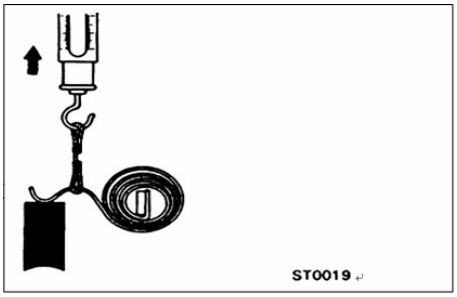


Fig. IV-8

XI Brush Holder

Use an ohmmeter to check the positive pole and the negative pole of the brush holder, which shall not be conducted. Repair or replace the brush holder if the positive pole and the negative pole are conducted (see *Fig. IV-9*).

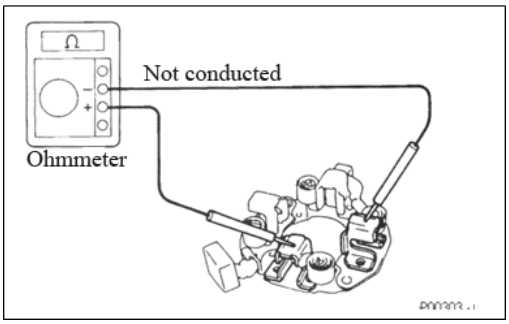


Fig. IV-9

XII Clutch and Gear

1 Check the gear teeth

Check if the gear teeth of the planetary pinion and the clutch assembly are damaged. Replace the gear or the clutch assembly if they are damaged. Check if the ring gear of the flywheel is damaged.

2 Check the planetary pinion of the clutch

Hold the starter clutch and rotate the planetary pinion clockwise to check if the planetary pinion can be rotated freely. Then rotate the planetary pinion counterclockwise which can not be rotated.

Replace the clutch assembly if necessary (see *Fig. IV-10*).

It is suggested that the whole motor assembly shall be replaced in the after-sales market.

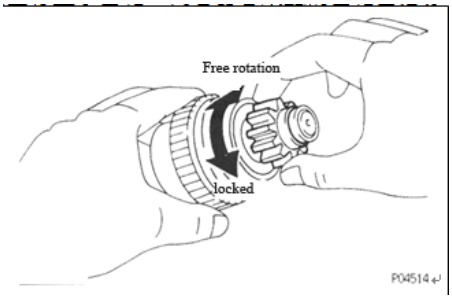


Fig. IV-10

Power Supply System

Disassembly and Assembly of AC Generator Components

Removal of AC Generator

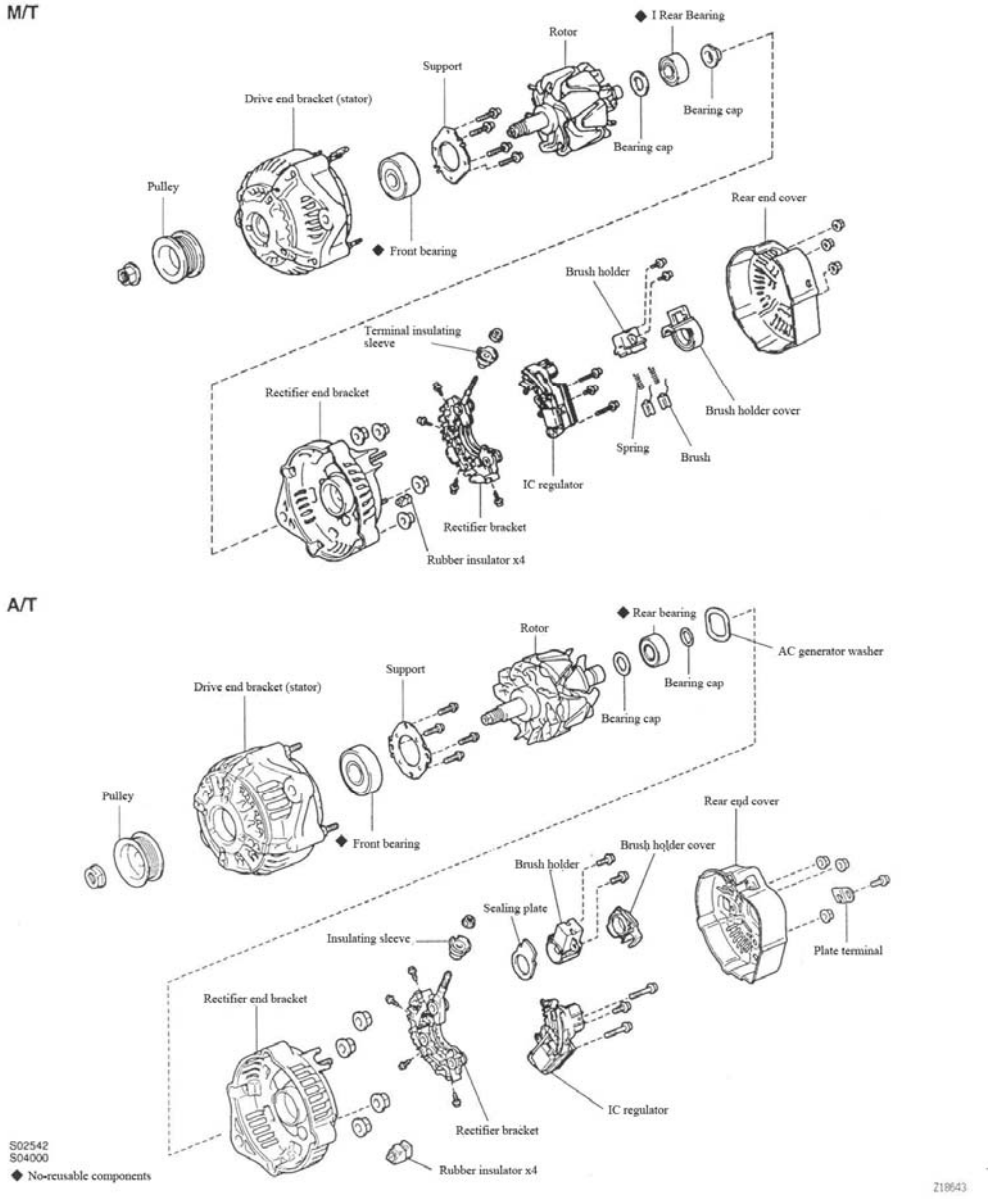


Fig. IV-11

II Removal of Rear End Cover

1 Remove the nuts and the terminal insulating sleeve.

M/T：

Remove 3 nuts and the end cover (see Fig. *IV-12*).

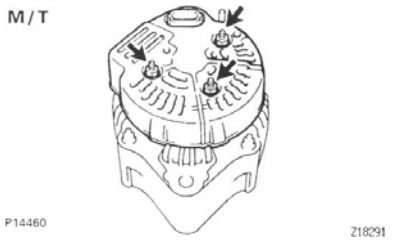


Fig. IV-12

III Removal of Brush Holder

M/T：

1) Remove 2 screws and the brush holder (see Fig. *IV-13*).

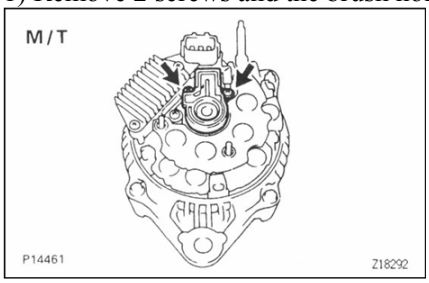


Fig. IV-13

2) Remove the brush holder cover from the brush holder (see Fig. IV-14).

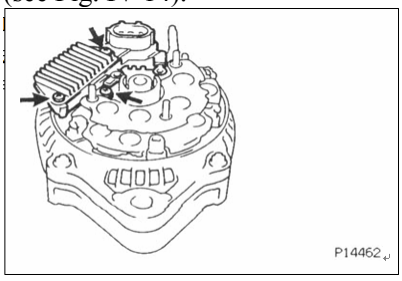


Fig. IV-14

IV Removal of IC Regulator

Remove 3 screws and the IC regulator (see Fig. IV-15).

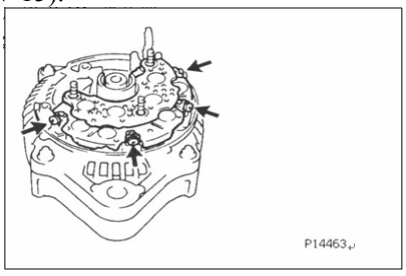


Fig. IV-15

V Removal of Rectifier Bracket

1 Remove 4 screws and the rectifier bracket.

2 Remove 4 rubber insulators.

VI Removal of Pulley

1 Use a torque wrench to hold special tool (A) and tighten special tool (B) in a clockwise direction to the required torque (see Fig. IV-16).

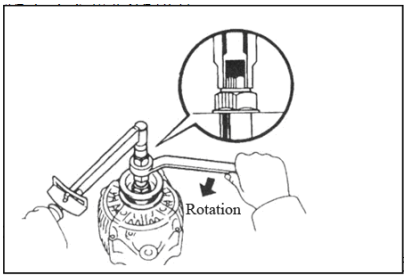


Fig. IV-16

Torque: 39N.m

Check special tool (A) which shall be fixed on the rotor shaft tightly.

2 Put special tool (C) in a vise (see Fig. IV-17).

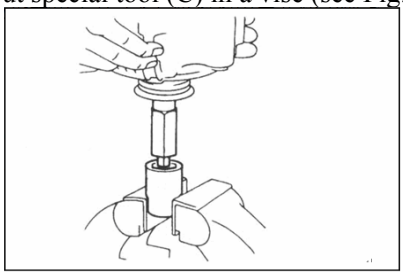


Fig. IV-17

3 Install the generator to special tool (C).

4 Loosen the pulley nut and rotate special tool (A) as shown in the figure. (see Fig. IV-18)

Note: Do not loosen the pulley nut more than half a circle to avoid damaging the rotor shaft.

5 Remove the generator from special tool (C).

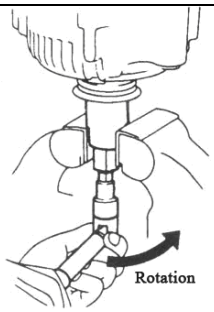


Fig. IV-18

6 Rotate special tool (B) and remove special tool (A) and special tool (B). (See Fig. IV-19)

7 Remove the pulley nut and the pulley.

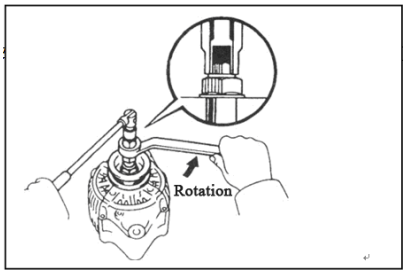


Fig. IV-19

转动
Rotation

VII Removal of Rectifier End Bracket

1 Remove 4 nuts (see Fig. IV-20).

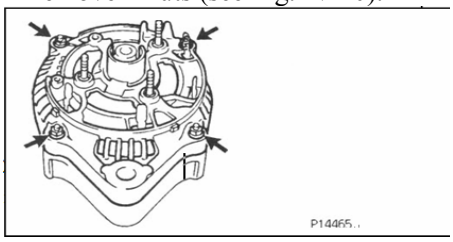


Fig. IV-20

2 Remove the rectifier end bracket with a special tool (see Fig. IV-21).

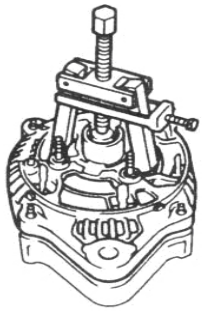


Fig. IV-21

VIII Removal of Rotor from Drive End Bracket

Check and Repair of AC Generator

I Check and Repair of Rotor

1 Check the rotor is conducted or disconnected (see Fig. IV-22).

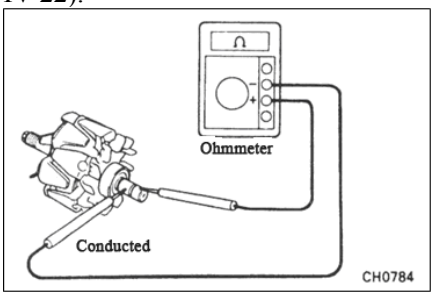


Fig. IV-22

Use an ohmmeter to check if the slip ring is conducted.

Standard resistance (cold): : 2.1-2.5Ω

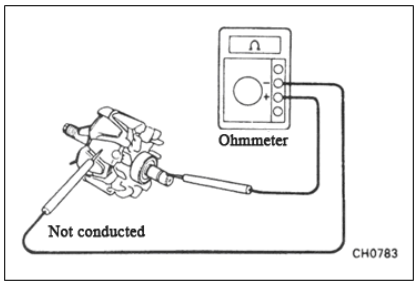


Fig. IV-23

Replace the rotor if it is not conducted (see IV-23).

2 Check the grounding of the rotor.

Use an ohmmeter to check the slip ring and the rotor which shall not be conducted (see Fig. IV-24).

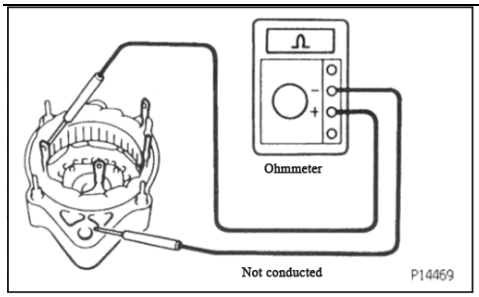


Fig. IV-24

Replace the rotor if they are conducted (see Fig. IV-25).

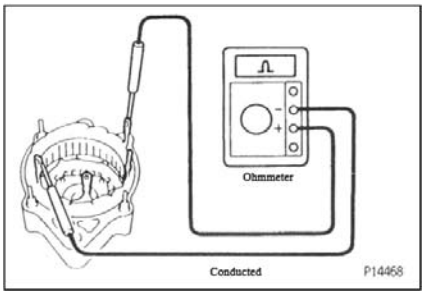


Fig. IV-25

3 Check the slip ring
1) Check if the slip ring is rough or if there is scratch on the slip ring.

Replace the rotor if the slip ring is rough or there is scratch.
2) b. Measure the diameter of the slip ring with a vernier caliper (see Fig. IV-26).

Standard diameter: 14.2-14.4mm

Minimum diameter: 12.8mm

Replace the rotor if the diameter measured is smaller than the minimum.

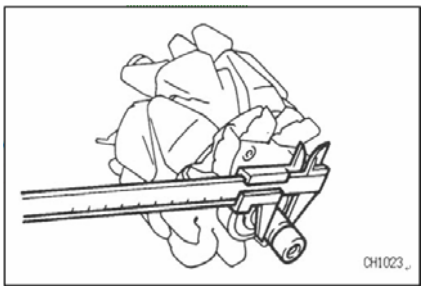


Fig. IV-26

II Check and Repair of Stator (Drive End Bracket)

1 Check the disconnection of the stator.

Use an ohmmeter to check the coil lead which shall be conducted.

Replace the drive end bracket assembly if the lead is not conducted.

2 Check the grounding of the stator

Use an ohmmeter to check the coil lead and the drive end bracket which shall not be conducted.

Replace the drive end bracket assembly if they are conducted.

III Check and Repair of Brush

1 Check the exposed length of the brush

Use a vernier caliper to measure the exposed length of the brush.

Standard exposed length: 10.5mm

Minimum exposed length: 1.5mm

Replace the brush if the exposed length is smaller than the minimum (M/T).

M/T: Replace the brush if necessary.

2 Unsolder and remove the brush and the spring.

3 Pull a new brush harness through the hole of the brush holder and insert the spring and the brush.

4 Weld the brush on the brush holder, with the exposed length as stipulated (see Fig. IV-27)

Harness. Exposed length: 10.5mm

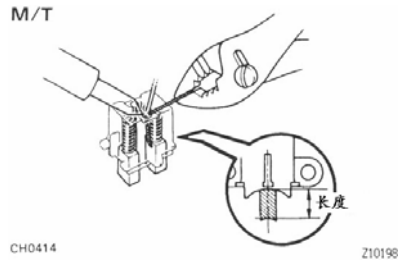


Fig. IV-27

5 Check if the brush can slide smoothly at the brush holder (see Fig. IV-28).

6 Cut unwanted harness and apply insulating paint to the welding area.

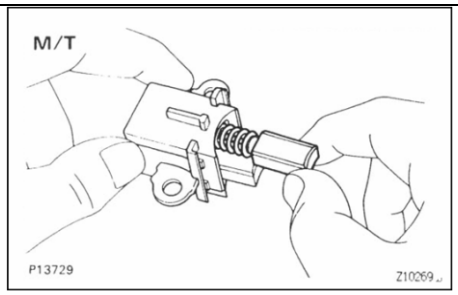


Fig. IV-28

IV Check and Repair of Rectifier (Rectifier Bracket)

1 Check the forward rectified current (see Fig. IV-29).

. Connect one probe of the detector of an ohmmeter to the positive pole (+) and the other probe to the terminal of each rectifier.

. Exchange the poles of the detector probes and repeat the above step.

. Check the two probes of the ohmmeter, one of which shall be conducted and the other of which shall not be conducted. Replace the rectifier bracket if the conduction is not the same as the afore-mentioned.

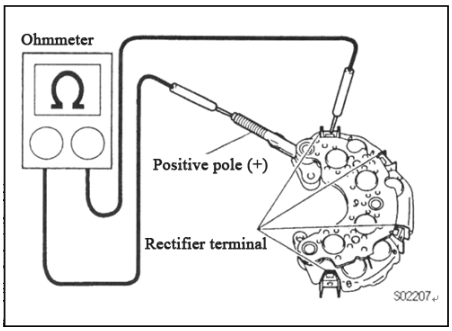


Fig. IV-29

2 Check the negative pole of the rectifier (see Fig. IV-30).

1) . Connect one probe of the detector of an ohmmeter to each negative pole (+) and the other probe to the terminal of each rectifier.

2) . Exchange the poles of the detector probes and repeat step (1).

3) . Check the two probes of the ohmmeter, one of which shall be conducted and the other of which shall not be conducted. Replace the rectifier if the conduction is not the same as the afore-mentioned.

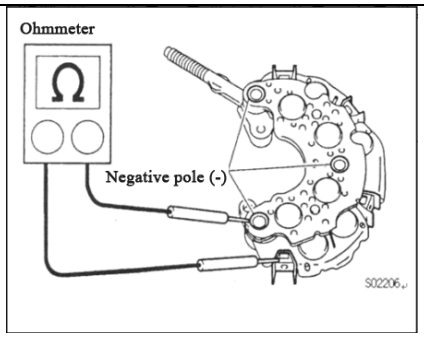


Fig. IV-30

V Check and Repair of Bearings

1 Check the front bearing

Check roughness or abrasion of the bearing.

2 Replace the front bearing if necessary.

Remove 4 screws, the bearing support and the bearing (see Fig. IV-31).

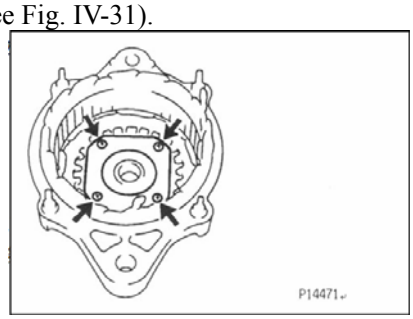


Fig. IV-31

. Use a special tool and a pressing device to force out the bearing (see Fig. IV-32).

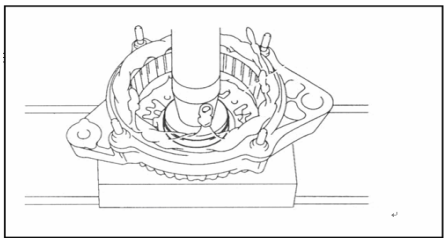


Fig. IV-32

. Use a special tool and a pressing device to press in a new bearing (see Fig. IV-33).

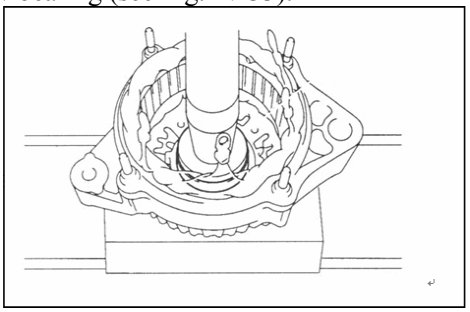


Fig. IV-33

. Install the bearing support and 4 screws (see Fig. IV-34).

Torque: M/T: 2.6N.m

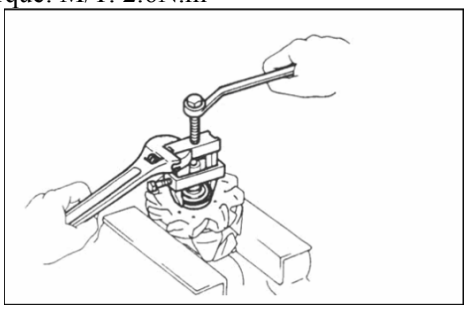


Fig. IV-34

3 (3) Install the rear bearing

Check roughness and abrasion of the bearing.

Replace the rear bearing if necessay.

. Remove the bearing cap and the bearing with a special tool (see Fig. IV-35)

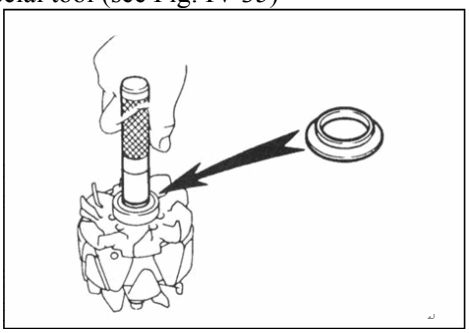


Fig. IV-35

Note: Do not damage the fan.

. Place the bearing cap on the rotor.

4 Use a special tool and a pressing device to press in a new bearing (see Fig. IV-36).

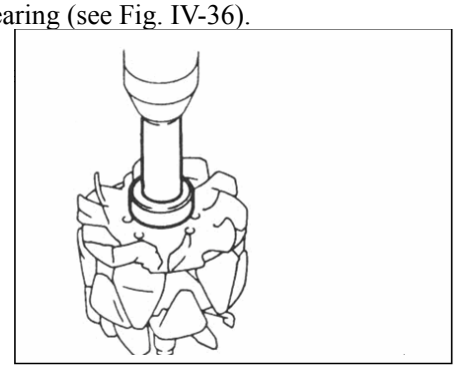


Fig. IV-36

5 . Push in the bearing cap with a special tool (see Fig. IV-37).

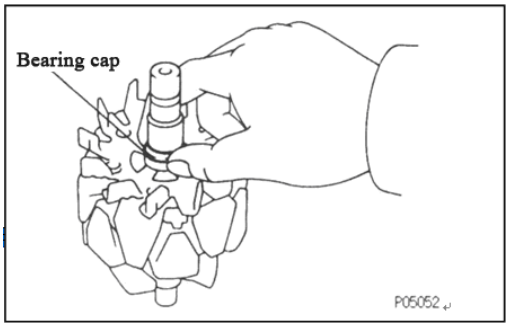


Fig. IV-37

VI AC Generator Assembly

1 Place the drive end bracket on the pulley (see Fig. IV-38)

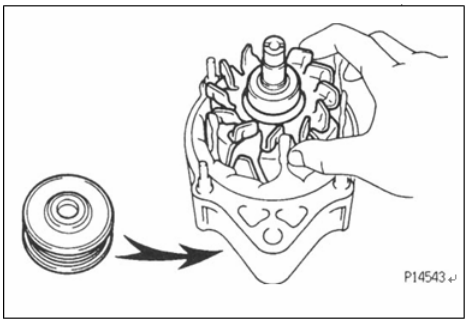


Fig. IV-38

2 Install the rotor to the drive end bracket (see Fig. IV-39).

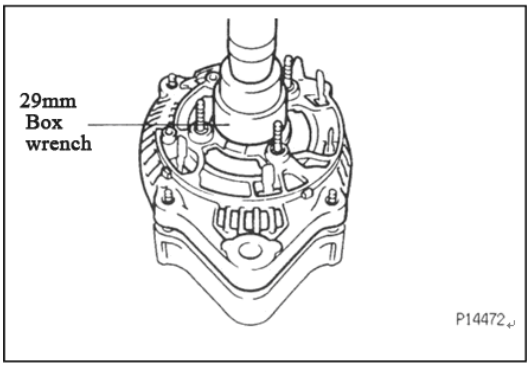


Fig. IV-39

3 Install rectifier end bracket

. Use a 29-mm box wrench and a pressing device to press in the rectifier end bracket (see Fig. IV-40).

. Install 4 nuts.

Torque: 4.5N.m

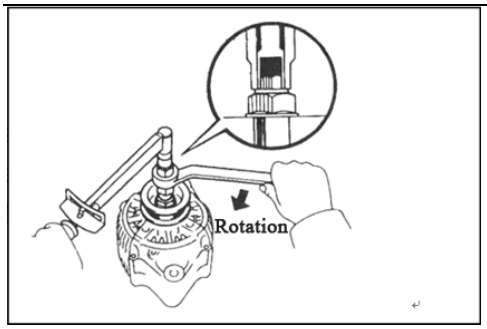
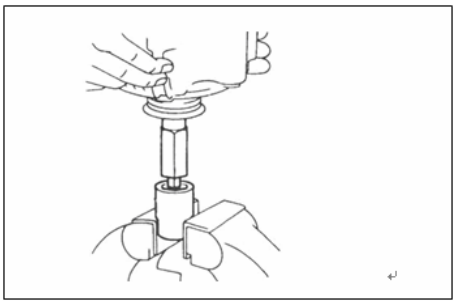


Fig. IV-40

4 Install the pulley

1) . Manually tighten the pulley nuts and install the pulley to the stator shaft.
2) . Use a torque wrench to hold special tool (A) and tighten special tool (B) in a clockwise direction to the required torque (see Fig. IV-41).


Fig. IV-41

Torque: 39N.m

3) . Check special tool (A) which shall be fixed on the pulley shaft (see Fig. IV-42).

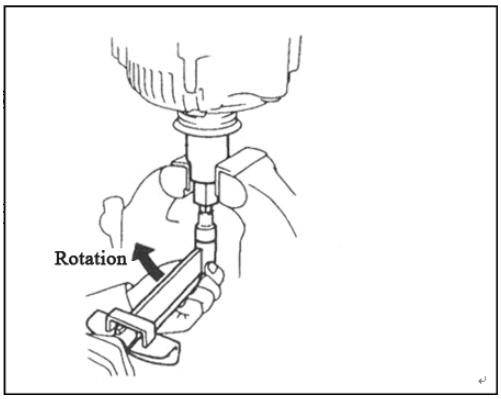


Fig. IV-42

4) . Install special tool (C) into a vise.

5) . Install the AC generator to special tool (C).

6) Rotate special tool (A) as shown in the figure and make the pulley nut turn.

Torque: 110.5N.m

7) Remove the AC generator from special tool (C).

8) Rotate special tool (B) and remove special tool (A) and special tool (B). (See Fig. IV-43)

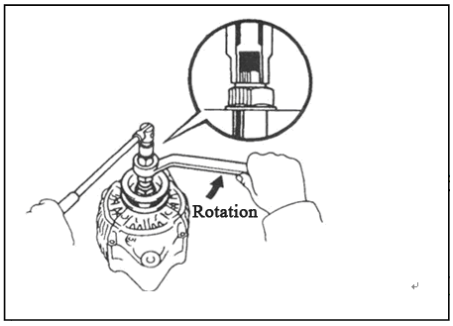


Fig. IV-43

5 Install the rectifier bracket

. Install 4 rubber insulators on the lead (see Fig. IV-44).

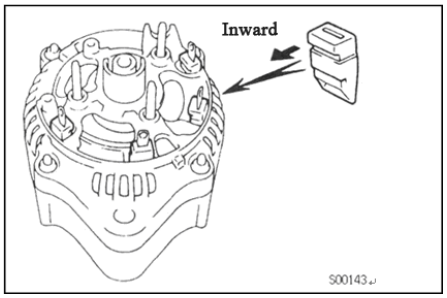


Fig. IV-44

Note: Pay attention to the installation direction of the rubber insulators.

. Install the rectifier bracket and 4 screws (see Fig. IV-45).

Torque: M/T: 2.0N.m

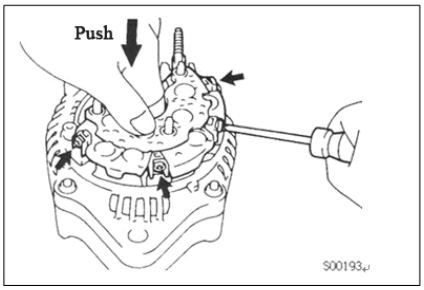


Fig. IV-45

6 Install IC regulator and brush bracket.

M/T：

. Install the brush holder cover on the brush holder.

Note: Please pay attention to the installation direction of the brush holder.

. Put the IC regulator and the brush holder together horizontally (see Fig. IV-46).

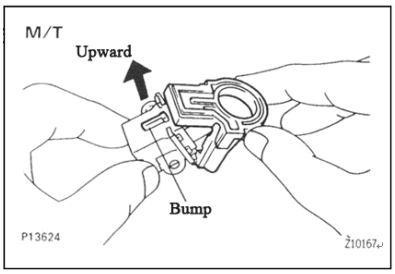


Fig. IV-46

. Install 5 screws and make the clearance between the brush holder and the connector about 1mm (0.04im). (See Fig. IV-47)

Torque: 2.0N.m

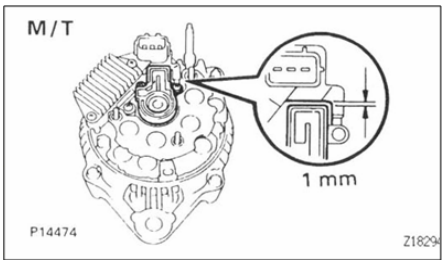


Fig. IV-47

. Install the brush holder cover. (See Fig. IV-48)

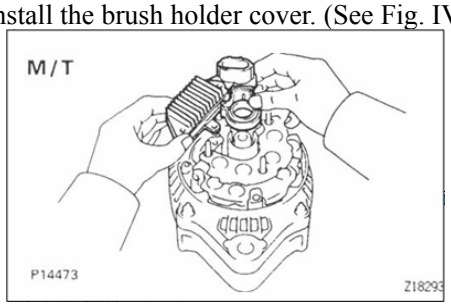


Fig. IV-48

7 Install the rear end cover.

A. M/T：

Install the end cover and 3 nuts.

Torque: 4.4N.m

B. Install the terminal insulating sleeve and nuts.

Torque: 4.1N.m

VII Repair Specification

Repair Data

Battery	Proportion	At 20℃	1.25-1.29
Drive belt	Skewness	New	5-7mm
		Old	7-8mm
	Tensity	New	685-785N
		Old	295-440N
AC generator	Rated output	M/T	12 V 7A
	Rotor coil resistance	M/T	2.1-2.5Ω
	Slip ring diameter	STD	14.2-14.4mm
		Minimum	12.8mm
	Exposed length of brush	STD	10.5mm
		Minimum	1.5mm
IC regulator	Regulating voltage		13.2-14.8V

Torque Specification

Components to be tightened		N.m
Bearing support × Drive end bracket	M/T	2.6
Rectifier end bracket × Drive end bracket		4.5
AC generator belt × Rotor		110.5
Rectifier end bracket × Brush holder and IC regulator		2.0
Rectifier bracket × Coil lead on the rectifier end bracket	M/T	2.0
Rear end cover × Rectifier bracket		4.4
Plate terminal × Rectifier bracket	Bolt	3.8
Terminal insulator × Rectifier bracket		4.1

Battery

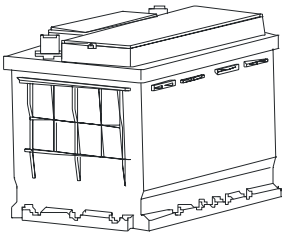


Fig. 4-104

I Note

1 Please use a 12V auxiliary accumulator if an auxiliary accumulator and a jumper cable are needed to start the generator.

2 Please make sure that the battery cable is clamped to the battery electrode for good contact after the cable is connected.

How to use the battery

①: Keep the surface (especially the top) of the battery clean and dry. Electrolysis or wetness will cause the discharging of the battery.

②: Pick off the negative cable of the battery if the vehicle is not used during a certain period.

Note: Do not let electrolyte contact skin, eyes, textile or paintwork. Immediately wash what is contacted by electrolyte for 15 minutes and then go to see a doctor.

③: If the battery is not used for a long time and the proportion of its electrolyte is less than 1.1, there will be discharging which may result in sulfating of a single battery plate. In the primary charging process, the voltage of the sulfated battery is higher and its current is unstable, compared with those of an ordinary battery.

The battery is maintenance-free, which shall be kept in a good charging status.

Note: Do battery maintenance following “Instructions” on the battery.

Power Distribution System

Replace the blown fuse with a new one only after the blowing causes are excluded.

Do use a fuse with specified specifications.

Do not install the fuse at a tilt and install it into the fuse box correctly.

Relay: There are normally-open, normally-closed and mixed relays.

Air Conditioning

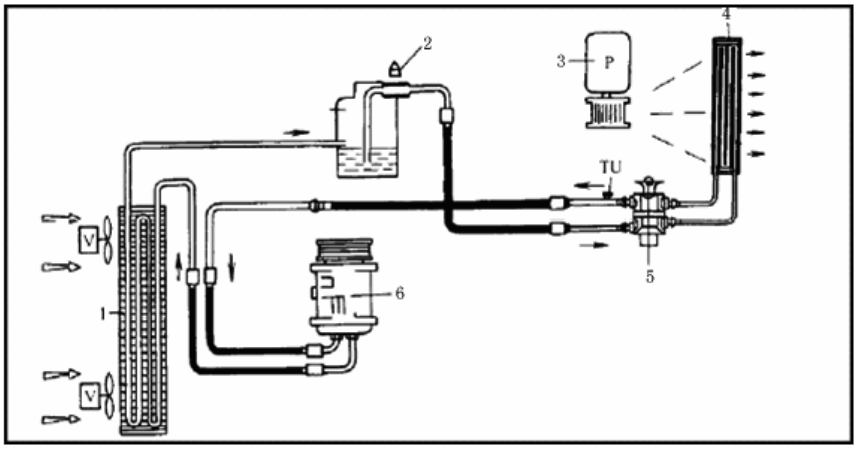
Introduction

Sedans of this series are provided with air conditioning systems with refrigeration, heating, and ventilation. The air

conditioning can be used to lower the temperature inside the vehicle in summer and for heating and defrosting & demisting of windshields in winter. This system of a compact structure can be easily operated and equipped with complete functions.

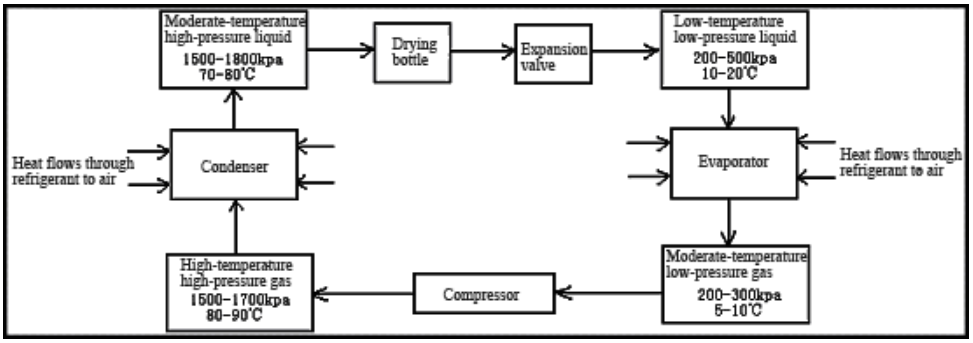
I Refrigeration Principle

The refrigeration system consists of a compressor, evaporator, condenser with a dry reservoir, expansion valve, blower, and control mechanism.



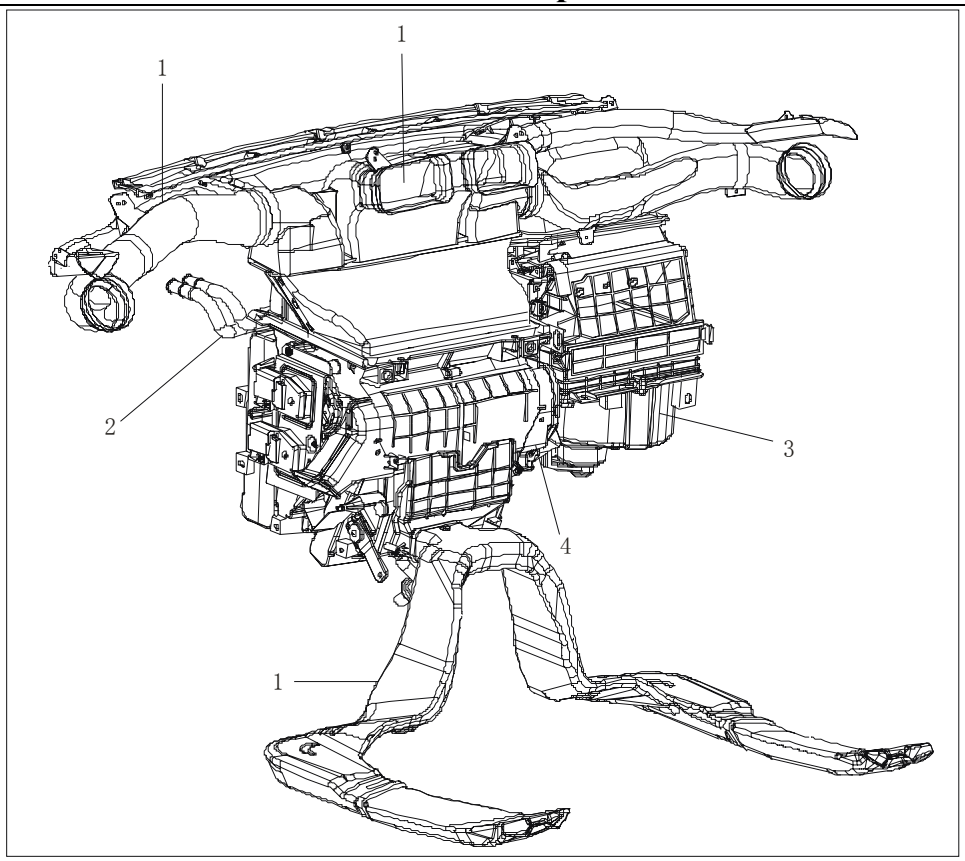
1. Condenser with a dry reservoir 2. Pressure switch 3. Blower 4. Evaporator 5. Expansion valve 6. Compressor

Refrigeration principle of the refrigeration system is shown in the below figure. The engine-driven compressor draws the gaseous refrigerant from the evaporator and presses it into the condenser, through which, the high-pressure gaseous refrigerant is liquefied for heat exchange (releasing heat taken away by air outside the vehicle). The high-pressure liquid refrigerant will be depressurized via the throttling of the expansion valve and then the low-pressure liquid refrigerant is gasified in the evaporator for heat exchange (absorbing heat). The cooled air nearby the evaporator is blown into the inner vehicle by the blower and the gaseous refrigerant is carried away by the compressor and pumped into the condenser. In such a way, the refrigerant flowing in a closed circle discharges the heat inside the vehicle into the outside and lowers the temperature inside the vehicle to a suitable one.



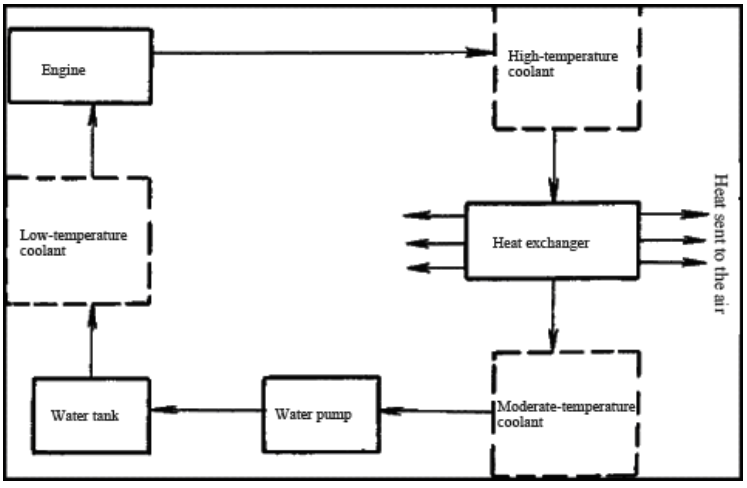
II Heating Principle

The heating system adopts a water-heated method with heat source from the coolant of the engine. It mainly consists of heat exchanger, coolant pipeline, blower, air-guide duct, air duct, and control mechanism. The heater unit adopts the housing which is integrated with that of the evaporator while the blower and the air duct use the very housing of the refrigeration system.



1. Air duct 2. Coolant pipeline 3. Blower 4 Heat exchanger

When the engine operates, the coolant heated by the engine, driven by the water pump of the engine cooling system, enters the heat exchanger, passing through the water inlet. Then the blower sends the heat dissipated by the coolant to the inner vehicle or the windshield to heat, defrost and demist the inner vehicle. When passing through the return pipe, the coolant through heat dissipation in the heat exchanger is drawn by the water pump. In such a way, the heating is realized.



III Control System

The A/C control system includes power control circuit, compressor clutch control circuit, safety protection control circuit, and data communication circuit. Its components are A/C controller (electric A/C system),

coolant temperature sensor, pressure switch, magnetic valve, and temperature controller. This system functions to ensure the efficient work of the A/C system in any case and the safe operation of the A/C system and the engine.

1. Refrigeration temperature control

The refrigeration temperature control is realized by the circuits related to the evaporator temperature sensor and the A/C controller. The resistance of the sensor changes with the temperature inside the evaporator, which provides the A/C controller with a voltage signal corresponding to the temperature. This signal to be amplified by the amplifying circuit inside the controller is used to control the relay of the electromagnetic clutch: along with the connection of the relay of the electromagnetic clutch, the electromagnetic clutch of the compressor is engaged, the compressor works and then the temperature drops; with the disconnection of the relay of the electromagnetic clutch, the electromagnetic clutch of the compressor is released, the compressor stops and then the temperature rises. The A/C control system controls the compressor to keep the refrigeration temperature within the pre-set scope.

2. To reduce the load under some special working conditions, the electronic injection engine also controls the compressor: the A/C compressor can stop working at the start, urgent acceleration and overspeed rotation of the engine.

3. Safety protection control

To ensure the normal operation of the system, the pressure and the temperature of the system is monitored via the pressure switch installed on the high-pressure hard pipe, which realizes the safety protection control. The safety protection control functions are as follows:

(1) Low-pressure protection: When the pressure is lower than 0.196±0.02 MPa, the pressure switch will be disconnected, the compressor clutch will be powered off and the compressor will stop.

(2) Overpressure protection: When the pressure is higher than 3.14±0.2 MPa, the pressure switch will be disconnected, the compressor clutch will be powered off and the compressor will stop.

(3) High-pressure control: When the pressure is higher than or equals to 1.77±0.08 MPa, the pressure switch (between 2-A4 and 4-A4) will be connected to send the engine ECM a triggering signal to rotate the electronic fans at a high speed.

(4) Low-temperature protection: When the temperature sensed by the evaporator temperature sensor is lower than 3.5℃, the compressor clutch will be powered off and the compressor will stop.

(5) High-temperature protection: When the temperature sensed by the coolant temperature sensor is higher than 110.25℃, for overheating protection, the compressor clutch will be powered off and the compressor will stop.

4. Control for the cooling system of the engine (electronic fans) will be realized by the coolant temperature sensor, engine ECM, 1#, 2# and 3# fan control relays, cooling fan, condensation fan, and relevant circuits. Via the relevant temperature sensors and switch signals, the engine ECM can control the circuits of the relevant fan control relays as follows:

(1) When the coolant temperature is 93℃~96℃, the engine ECM will make the 1# and 3# relays powered on and the two electronic fans with motors in series turn at a low speed simultaneously.

(2) When the coolant temperature is 98℃~100℃, the engine ECM will make the 2# relay powered on and the two electronic fans turn at a low speed.

(3) When the coolant temperature reaches 110℃, the water temperature warning lamp on the instrument cluster will light.

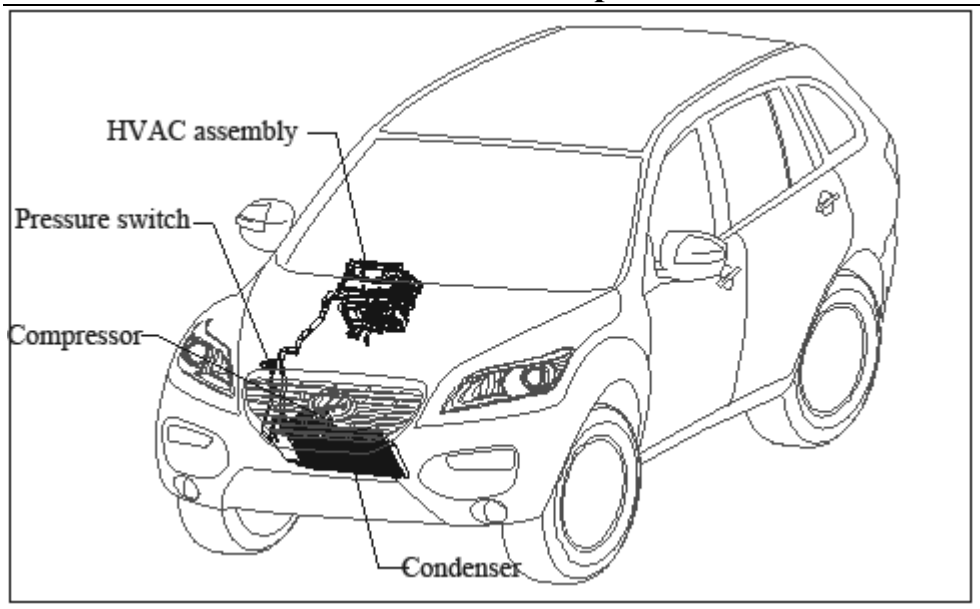
(4) After the compressor begins to work, the electronic fans will turn at a low speed no matter when the coolant temperature is high or low.

(5) When the pressure of the A/C refrigeration system is higher than or equals to 1.77±0.08MPa, the electronic fans will turn at a high speed.

(6) If the signal of the coolant temperature sensor is abnormal (the coolant temperature sensor is broken), the engine ECM will consider the engine is provided with a heavy load and make the electronic fans turn at a high speed.

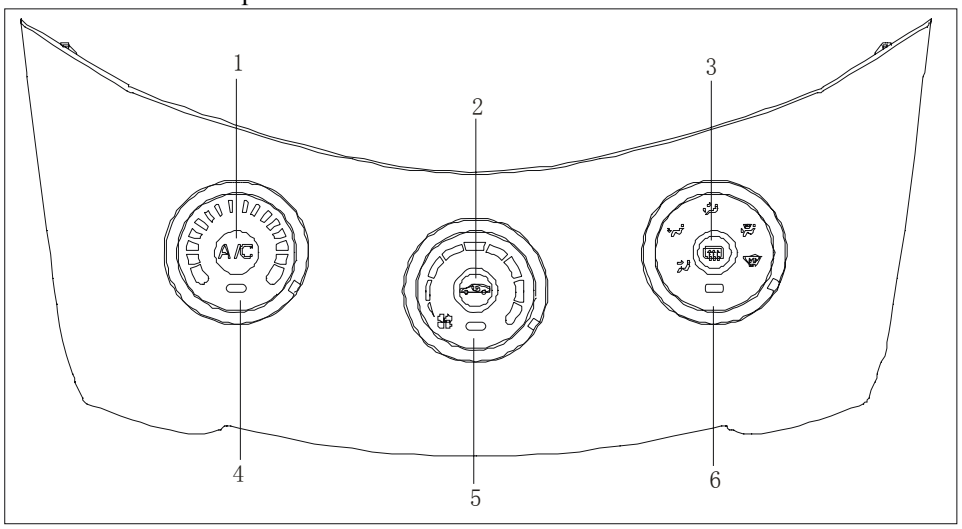
A/C System Layout

Heater & A/C electronic control system layout 1



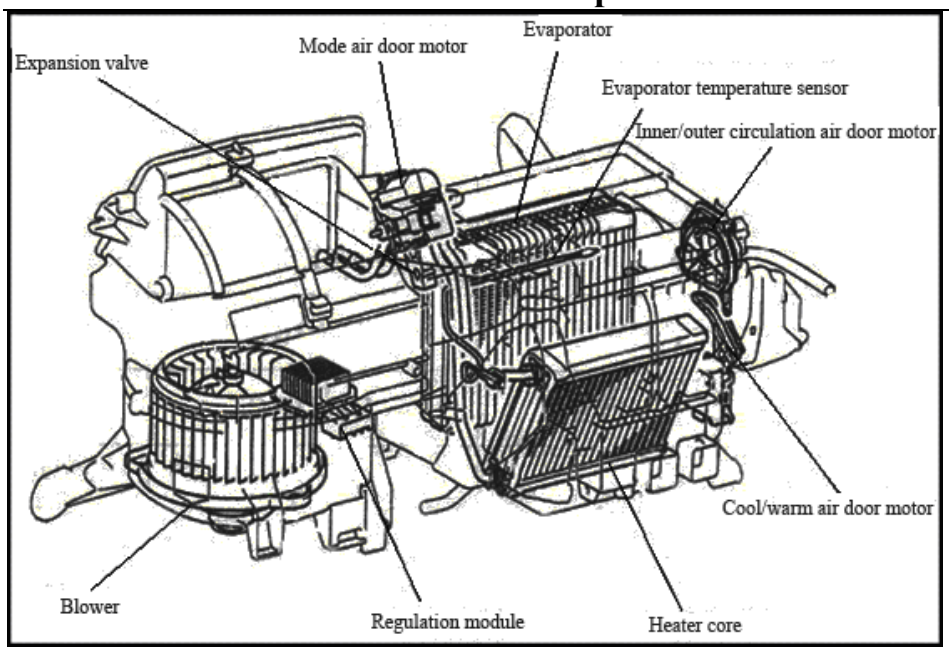
Heater & A/C electronic control system layout 2

Electronic A/C control plate

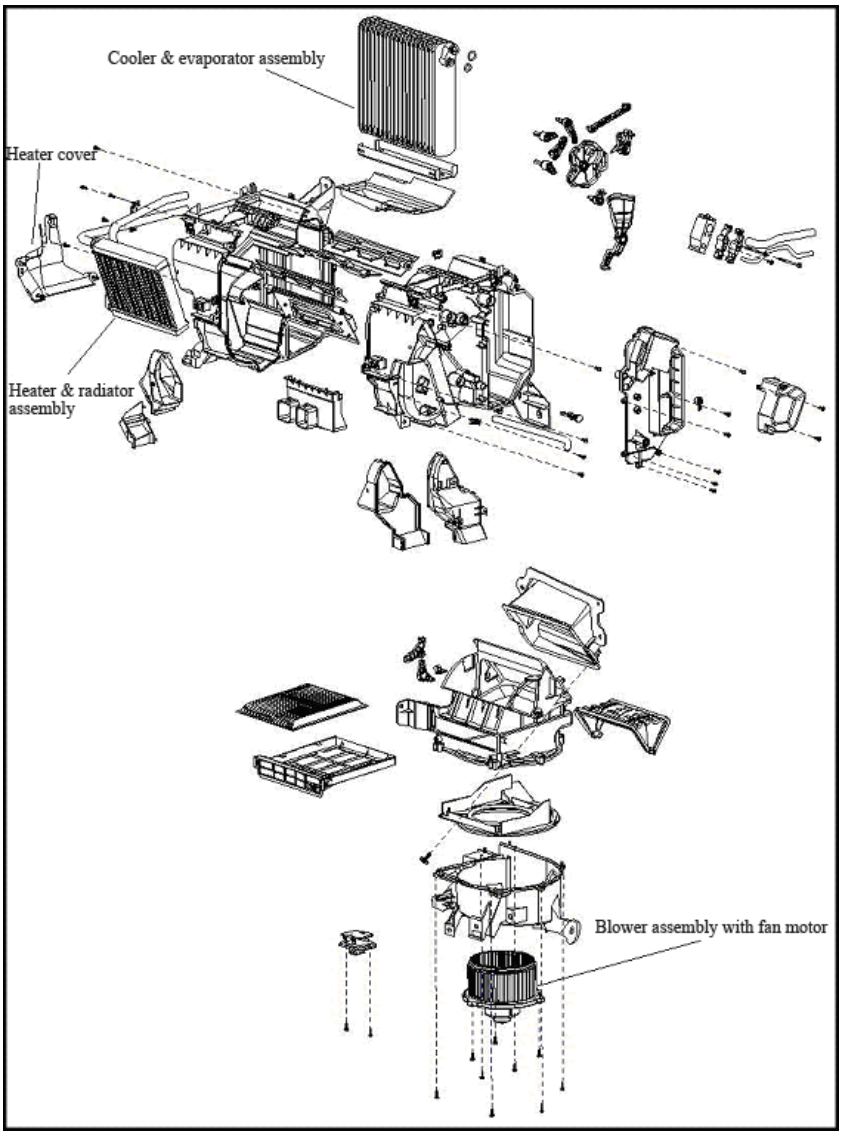


1. A/C switch 2. Button for inner & outer circulation modes 3. Defrosting/demisting button
4. Temperature regulation knob 5. Air regulation knob 6. Button for air-out modes

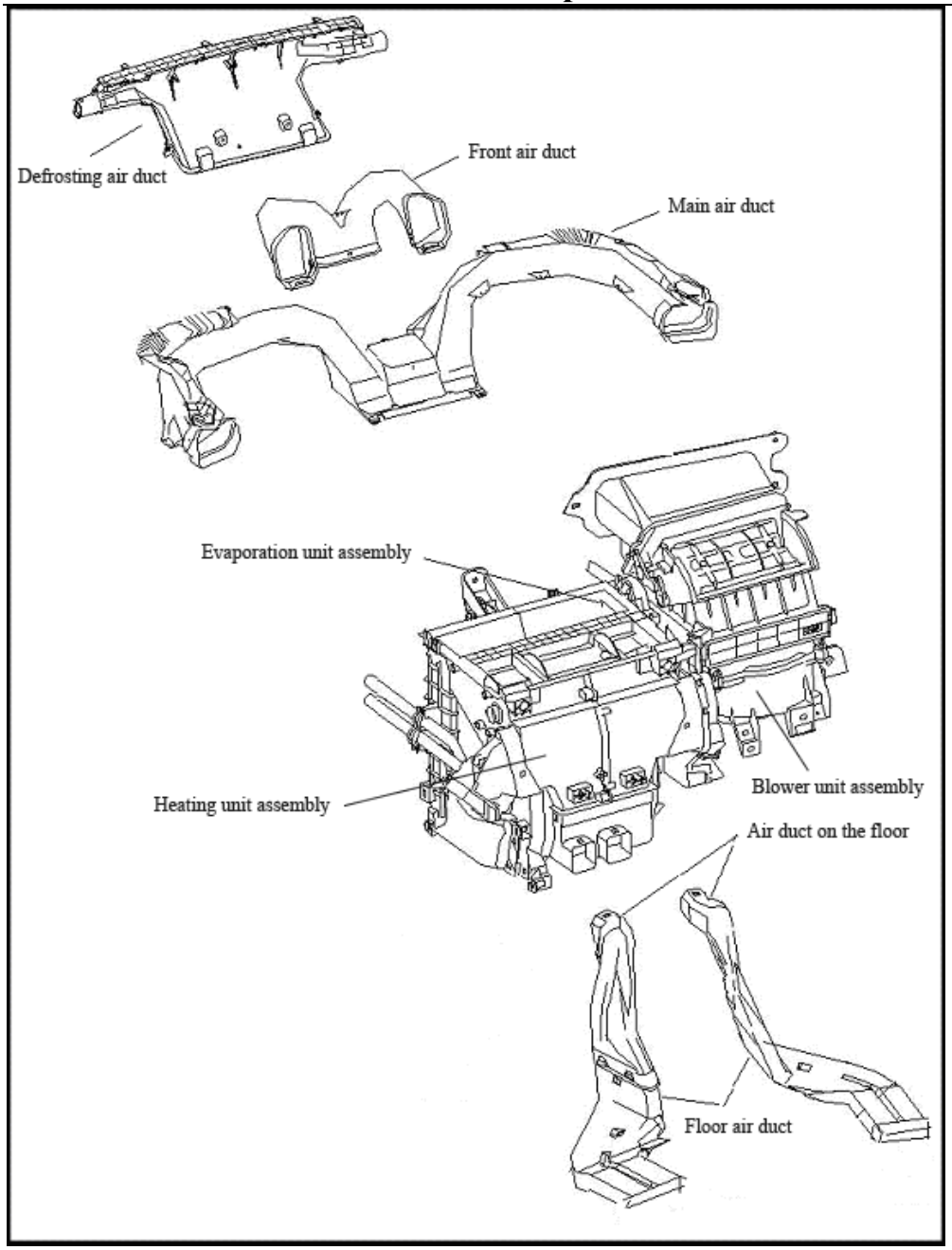
Heater & A/C electronic control system layout 2



Parts of A/C



Parts of A/C


Defrosting air duct
Front air duct
Main air duct
Evaporation unit assembly
Heating unit assembly
Blower unit assembly
Air duct on the floor
Floor air duct

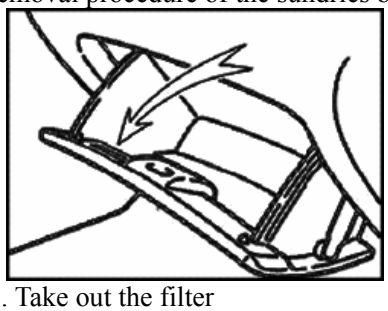
Repair of A/C System Parts and Components

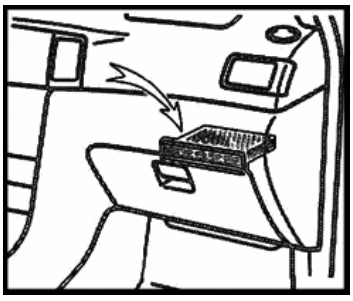
I LF6430 A/C System Performance Parameters

Compressor	Model		WXH-106-AP
Condenser assembly	Type		Parallel flow
	Specifications L×W×D mm		625×397×16mm
	Heat exchanged		≥4.5m/s; face velocity: 13.1KW
HVAC assembly	Evaporation core	Type	Cascading
		Specifications D×H×W mm	58×255×255
		Refrigerating output	Inlet air amount (m^3/h) 423; refrigerating output ≥4.2Kw
	Radiator core	Type	Cascading
		Specifications D×H×W mm	27×220×180
		Heating output	6L/h flow and 350 m^3/h air, collection ≥4.5Kw
	Air regulation		8 gear
	Maximum air		Refrigeration for face ≥423m^3/h
			Heating for feet ≥300 m^3/h
Refrigerant	Type		R134a
	Filling amount		500g±50g
Lubricant	Type		PAG56
	Filling amount		120ml
A/C system	Maximum refrigeration output		≥4.8Kw when compressor completes 1,800 revolutions
	Temperature regulation scope		18℃～32℃

II Check and Repair of Air Filter

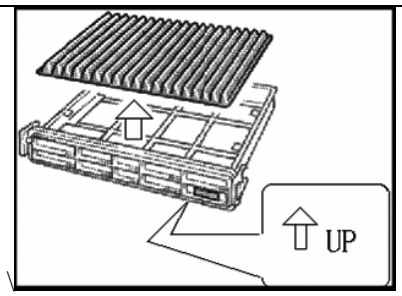
1. Remove the sundries box and see details in the removal procedure of the sundries box.





2. Take out the filter

3. Take out the filter element upward and check the breathability. Replace the filter element if the breathability is bad.



III Check and Repair of Evaporator Case

1. Remove the air ducts

(1) Remove the upper air ducts of the case

① Remove the steering wheel, combination switch, instrument cluster, A/C control plate, medium air outlet assembly, CD player, and sundries box.

② Remove the retaining bolts of the case and the duct beams.

③ Remove the dash board (see the removal procedure of the dash board) and the left and right shield assemblies of the A/C.

④ Remove the middle transitional air duct assembly

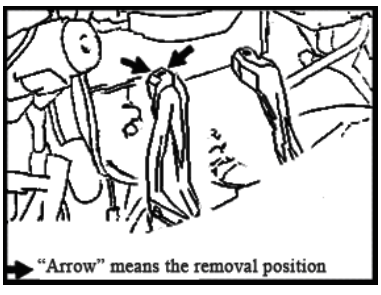
⑤ Remove the new air duct

(2) Remove the lower ducts of the case

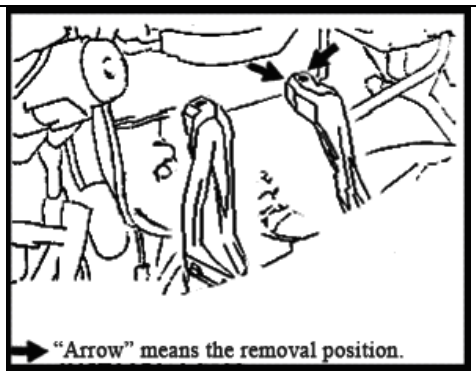
① Move the seats backwards

② Lift the carpet, remove the rear left and right air nozzles and the rear middle air duct and take all the air ducts.

Disconnect the rear air duct on the left floor. Loosen the air duct on the left floor by shaking it left and right as shown in the figure.



Disconnect the rear air duct on the right floor. Loosen the air duct on the right floor by shaking it left and right as shown in the figure.

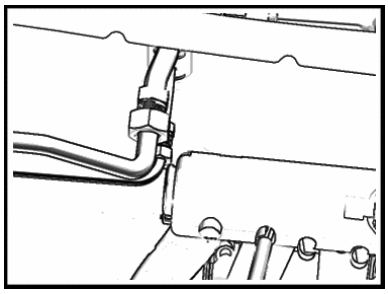


Disconnect the rear middle air duct. Loosen the air duct by shaking it left and right as shown by the "Arrow".

2. Remove the case

(1) Discharge the refrigerant.

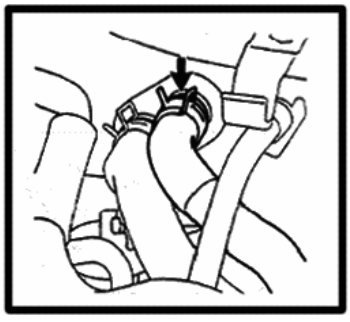
(2) Disconnect the A/C pipeline assembly.



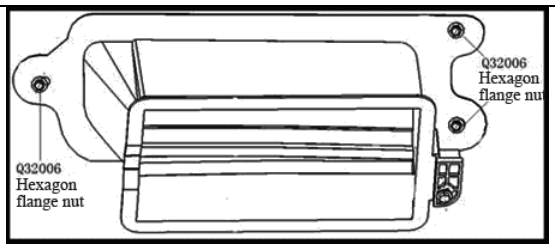
Use two wrenches respectively with opening of 24 and 27 to clip the two ends of the M16 pipe and two respectively with opening of 17 and 19 to clip the two ends of the M18 pipe, remove the nuts and disconnect the A/C pipeline assembly.

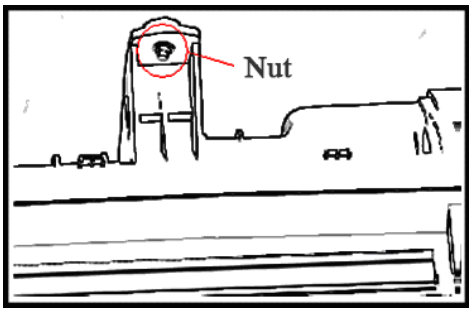
(3) Remove the clamps from the A/C pipeline assembly.

Remove the ring clamps of the heater inlet and outlet pipes from the heater unit.



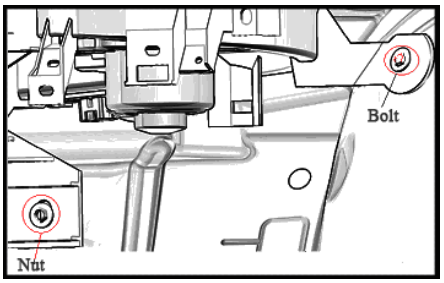
(10) Remove the 3 nuts in the figure.



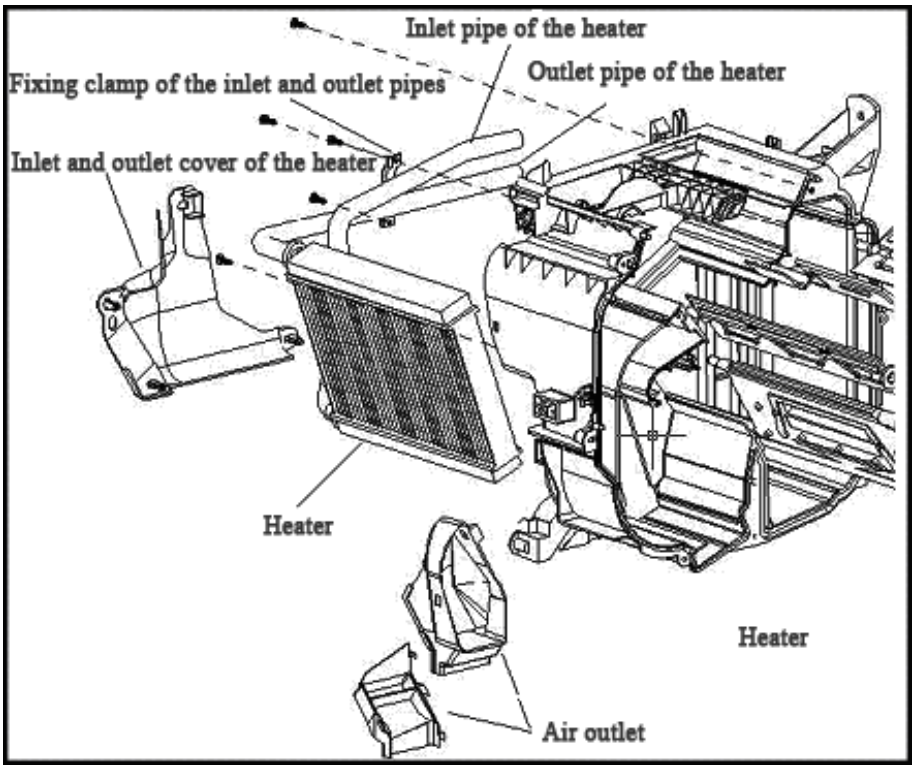


(11) Remove the nut in Fig. 6-21.

(12) Remove the bolt and the nut in the following figure and then take out the A/C case.



(13) Remove the A/C evaporator unit assembly.



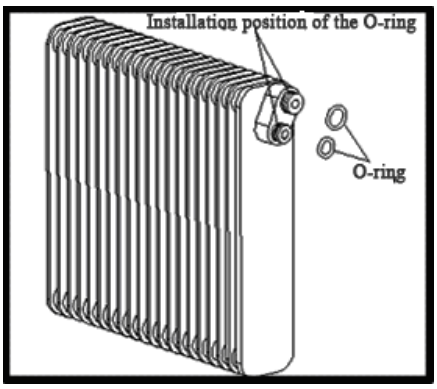
1) Remove the evaporator inlet/outlet cover

2) Pull off the inlet/outlet pipes, the fixing clamp and the expansion valve.

3) Remove the right pipe plate of the evaporator.

4) Remove the evaporator.

5) Remove the two O-rings from the evaporator core.



(14) Remove the heater unit.

1) Remove the cover of the heater inlet/outlet pipes and the lower air distributor of the main cab.

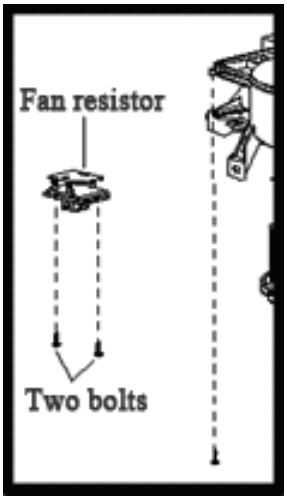
2) Remove the two bolts on the fixing clamp of the heater core and then take down the fixing clamp.

(15) Remove the cooler connection and disconnect the joint.

(16) Remove the fan resistor, the two screws and the blower resistor.

(17) Remove the blower assembly with a fan resistor and remove the 3 screws and the blower assembly with a motor, as shown in Fig. 6-25.

(18) Remove the evaporator temperature sensor.



(1) Draw out the evaporator, as shown in Fig. 6-26.

(2) Remove the evaporator temperature sensor from the plunger of the right case of the evaporator.

3. Note

(1) Install the evaporator assembly.

1) Apply sufficient compressor oil to the surface of the two new O-rings and the interface of the expansion valve; compressor oil: PAG56

2) Install the two new O-rings on the evaporator assembly.

(2) Install the inlet/outlet pipes, the fixing clamp and the expansion valve. Use a 5.0mm hexagon wrench to install the 2 hexagon bolts.

Tightening torque: 3.5N·m

IV Check and Repair of Compressor Assembly

1. Removal and installation

Discharge the refrigerant before removing the compressor. Check the tensity of the compressor drive belt after filling refrigerant.

(1) Remove the A/C pipeline

A plunger shall be used to seal the removed joint between the pipeline and the evaporator, to prevent dust and foreign material from entering pipes, or the compressor lubricant and the receiver drier will absorb vapor.

(2) Remove the compressor drive belt.

Loosen the fixing bolts of the steering pump (refer to the removel procedure of the steering pump) and the regulating bolts. Remove the drive belt.

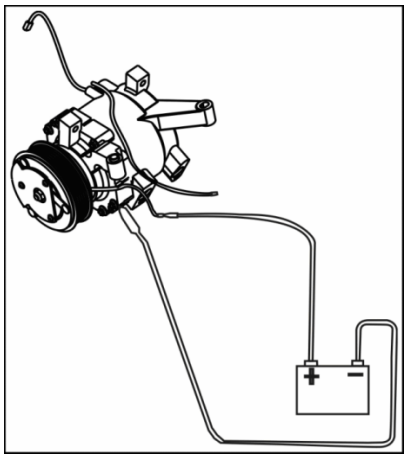
(3) Remove the compressor

Do not spill compressor lubricant.

Check:

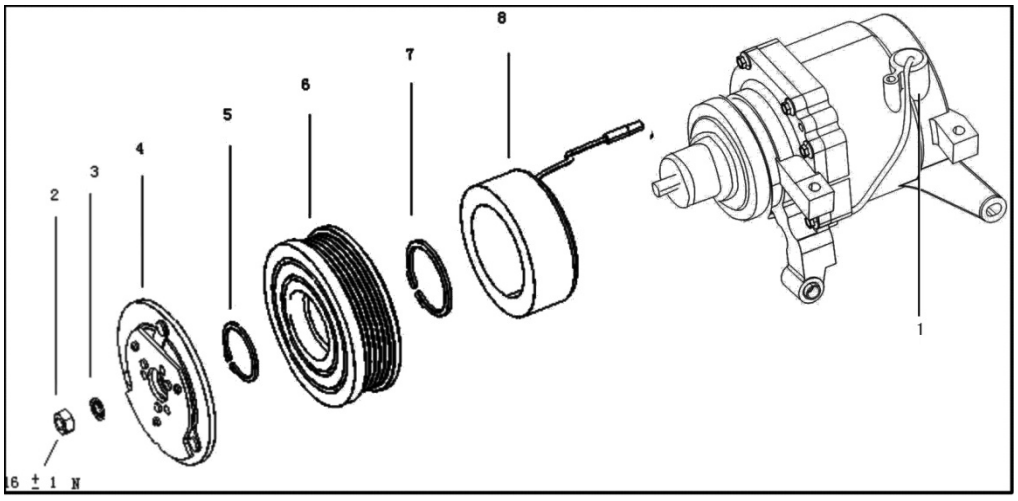
Check the action of the electromagnetic clutch.

Directly connect the positive terminal of the battery to the plug connector of the electromagnetic clutch and the negative terminal to the compressor. If the electromagnetic clutch is normal, the armature plate will pick up the clutch. If it does not happen, there may be a fault.



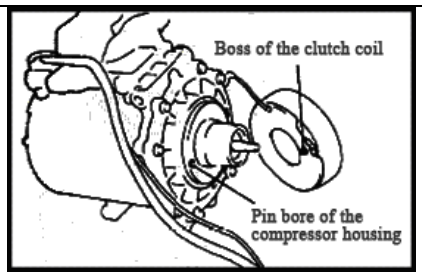
2. Disassembly and assembly:

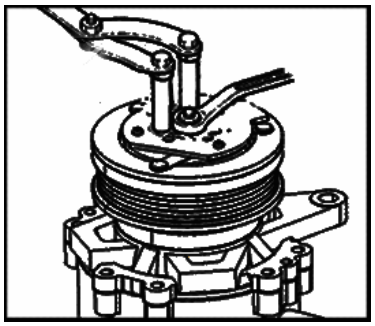
Do disassembly as shown in the following figure.



1. Compressor overheating protection switch 2. Self-locking nut 3. Washer 4. Armature plate 5. Snap ring 6. Rotor 7. Snap ring 8. Clutch coil

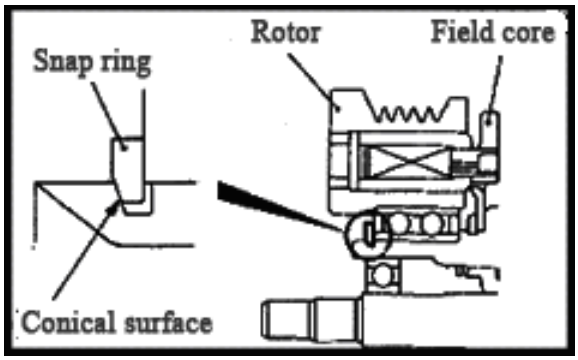
Assemble the clutch coil as shown in the below figure.





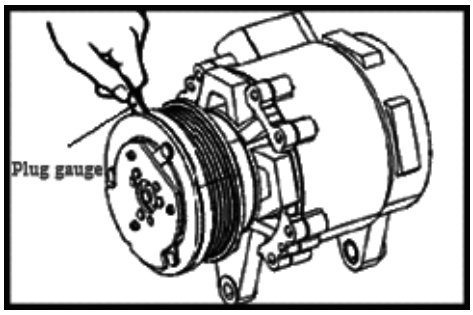
Align the pin bore of the compressor housing with the boss of the clutch coil when installing the clutch coil to the compressor housing.

Assemble the snap ring.

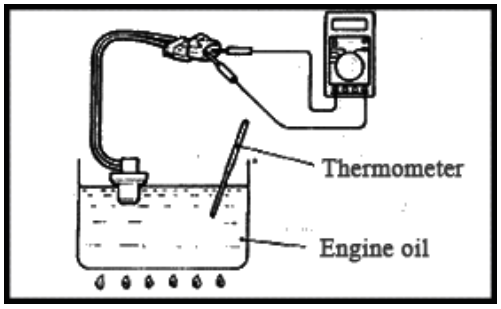


Note: Install the snap ring and make its conical surface outside.

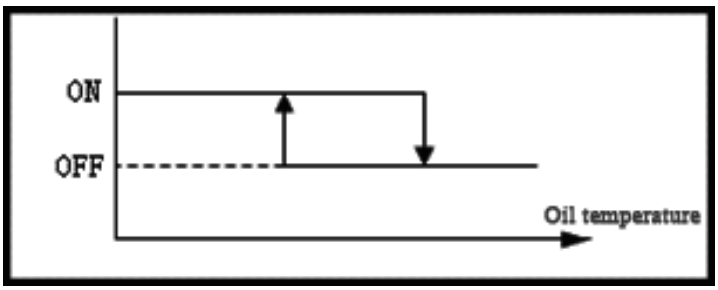
Use a special tool to clamp the electromagnetic clutch and run down the self-locking nuts in the same way as removal. Regulate the clutch clearance as shown in the figure.



Check if the clearance deviation of the electromagnetic clutch is within the standard valve scope. If not, use a washer to regulate the clearance. Standard value: 0.3-0.5mm. Check the compressor overheating protection switch.



Put the metal part of the engine overheating protection switch into engine oil, use a gas-fired furnace to make the temperature standard valve and check if the switch terminals are conducted (see Fig. 6-34).



Compressor overheating protection switch

Conducted: ＜105℃

Disconnected: ＞130℃ (in OFF status, the minimum is 125℃)

Note: The temperature can not exceed the ignition temperature of the engine oil brand during the heating.

V Check and Repair of Condenser Assembly with Fluid Reservoir

1. Check the condenser of a vehicle

(1) Check the condenser assembly

1) Check if the cooling fin of the condenser is dirty. If it is dirty, use a soft bristled brush to clean it. Do not use a hydraulic giant to wash the cooling fin, to prevent damage. Note: The damaged cooling fin of the condenser assembly may influence the refrigeration effect.

2) Use a screwdriver or a pair of pinchers to correct the bent cooling fin of the condenser.

(2) Check if there is leakage of the condenser refrigerant.

1) Use a halogen leak detector to check if there is leakage at the pipeline joints.

2) If there is leakage at a joint, check if the O-ring seal is broken. During the assembly, tighten the joints as required.

2. Remove the condenser from the vehicle

(1) Refer to the removal procedure of the water tank and remove the water tank.

(2) Remove the two pipelines connected with the condenser, remove the two screws and take out the condenser.

(3) Apply sufficient compressor oil to the joint between the cover and the O-ring. Compressor oil: PAG56.

(4) Install the cover and the filter on the condenser assembly with a Φ10 hexagon wrench. Tightening torque: 12N·m.

(5) Install the condenser assembly with a fluid reservoir.

(6) Install the A/C pipeline assembly.

1) Open the plug on the pipeline and connect each part of the condenser assembly;

2) Install a new O-ring seal at the pipeline joint and apply sufficient compressor oil to the pipeline joint; compressor oil: PAG56

3) Use bolts to connect the A/C pipeline assembly and the condenser assembly with a fluid reservoir. Note: Tighten the bolts as required.

4) Fill refrigerant. Specified amount: 500g±50g

5) Warm up the engine.

6) Check if there is refrigerant leakage.

VI Removal and Repair of Refrigeration Pipeline

1. Common fault of the pipeline of the refrigeration system: blocking or leakage of the pipeline of the refrigeration system results in insufficient refrigeration or no refrigeration.

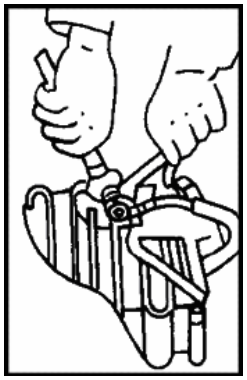
(1) Bent or distorted pipes may partly or completely block the refrigerant.

(2) Damaged or loose pipe joints may cause leakage.

2. Remove the pipeline of the refrigeration system

Note:

(1) Use two wrenches to loosen the pipeline in case of damage.



(2) Immediately use a plug or clean cloth to seal any pipe joint removed, to prevent contamination from entering the pipeline.

3. Check and repair the pipeline of the refrigeration system:

(1) Check if any pipeline joint is loose or leaks. If a joint leaks, please tighten it; if it still leaks after tightened as required, please check whether the O-ring seal or the pipe is broken.

(2) Replace any sunken, bent, distorted, or cracked pipe or pipe with damaged screw thread at the joint.

(3) Wash the dirty pipeline with absolute alcohol and install the pipeline after it becomes dry.

Note: Do not use compressed air to clean pipes.

4. Install the pipeline of the refrigeration system: use two wrenches to install the pipeline of the refrigeration system and tighten the pipe joints as required. If the joints are too loose, the pipeline will not be sealed well; if they are too tight, the screw thread at the pipe joints may be easily damaged.

Other installation instructions:

(1) Use a suitable O-ring seal and take care not to drop the O-ring or damage it;

(2) Apply some compressor oil to the O-ring seal during installation;

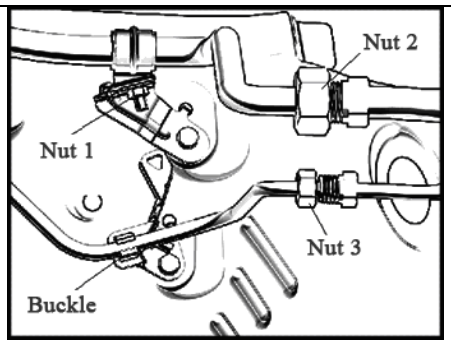
(3) Apply some compressor oil to the pipe joints before connecting the pipes.

(4) Check if the pipeline is correctly installed and if other components and parts will hit the pipeline. Vacuumize the pipeline after it is installed and no leakage is confirmed. Then fill refrigerant and detect the performance of the A/C system.

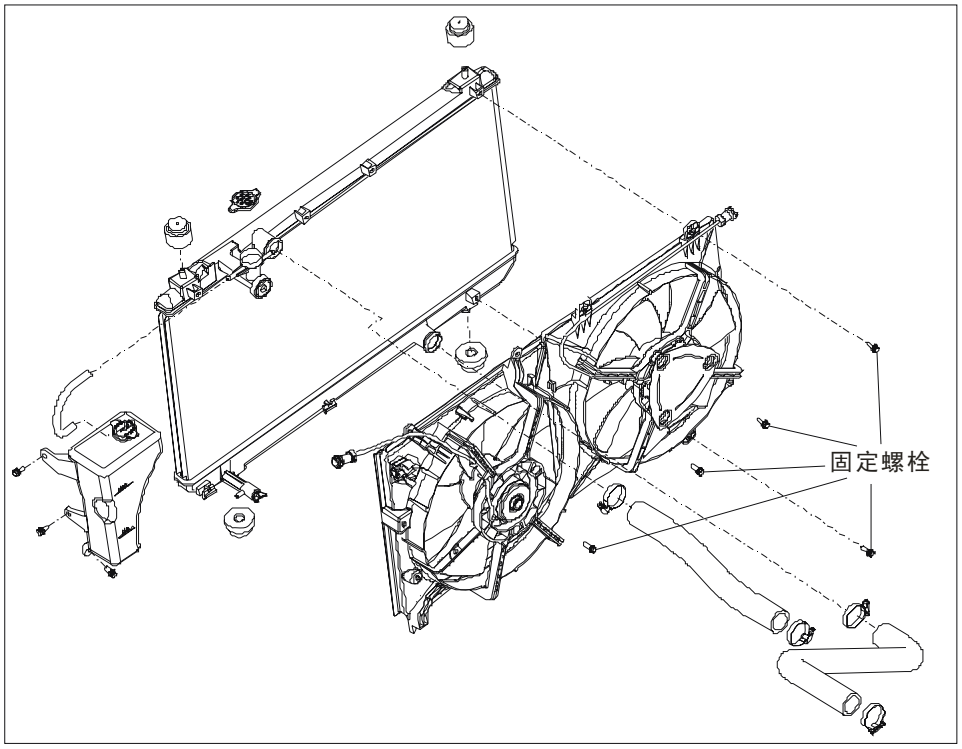
Note:

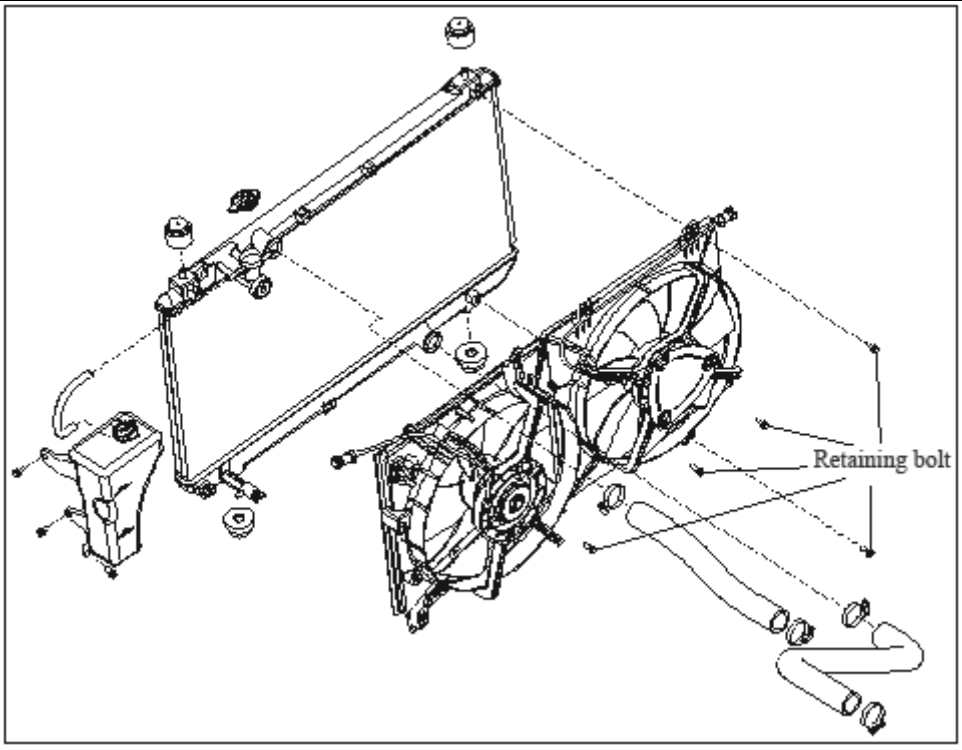
(1) Seal the two ends of a joint when disconnecting the pipeline. Do not use R134a corrosive sealing material to prevent water and impurity from entering the pipeline.

(2) Install buckles and clips in place when installing the pipeline.



VII Removal and Repair of Condenser Fan





1. Remove the connecting pipe between the swelling water kettle and the water tank.

2. Remove the 5 retaining bolts shown in the figure and then remove the fan assembly.

3. The installation sequence is opposite to the removal sequence.

Diagnosis of A/C System Faults

I Diagnosis of System Faults

i Direct observation and check

1. If the A/C system does not operate or operate abnormally, there may be some appearance abnormalities. Faults can be judged and eliminated accurately and easily by direct check of eyes, hands and/or ears.

(1) Carefully observe if the pipeline is broken and if there is crack or oil stain on the appearance of the condenser and the evaporator. If there is oil stain at the condenser, evaporator or pipeline, soap bubble can be used to check whether there is leakage. The following parts shall be checked:

① The joints of the pipeline and the connections of the valve;

② Hose and its joints;

③ Compressor oil seal, front and rear covers, and sealing pad;

④ Scratch and distortion on the surface of the condenser and the evaporator;

(2) Check the refrigerant through the inspection window. Before observation, start the engine, turn on the A/C system and operate the engine at a high idle speed (1500~2000r/min) for 5 min. And then observe the circulatory flow of the refrigerant through the inspection window:

① The refrigerant is normal if the fluid flows normally and sometimes a bubble appears.

② No bubble means the refrigerant is full or there is no refrigerant. If the air outlet is cold, the refrigerant is normal; if the air outlet is not cold, the refrigerant may leak out.

③ Many bubbles mean the refrigerant is not enough.

(3) Carefully check if there is bad contact or disconnection of the relevant electrical circuits.

2. Check faults by hand

(1) Check the high-pressure end of the A/C refrigeration system, press down the A/C switch and touch the pipeline and the components of the high-pressure end of the A/C system by hand after the compressor works for 10~20 min. Along the line compressor outlet → condenser → drier → expansion

valve inlet, the hand-feel shall be hot-warm. If a certain part in the middle is too hot, this part may be blocked. If some components are cool, the A/C refrigeration system may be blocked or has no refrigerant or may not operate well.

(2) Check the low-pressure end of the A/C refrigeration system, press down the A/C switch and touch the pipeline and the components of the low-pressure end of the A/C system by hand after the compressor works for 10~20 min. From the evaporator to the compressor inlet, the hand-feel shall be cold-cool. If some part is not cool or frosted, the refrigeration system may be abnormal.

(3) Check the temperature difference between the inlet and the outlet of the compressor, press down the A/C switch and touch the inlet and the outlet of the compressor by hand after the compressor works for 10~20 min. The temperature difference between the high-pressure and the low-pressure ends of the compressor shall be obvious. Unobvious or no temperature difference means insufficient or no refrigerant.

(4) Check the line and if the plug connector of the lead is connected well and the plug connector on each line of the A/C system is loose or hot. If the plug connector is loose or hot, the contact inside the plug connector may be poor.

3. Check faults by ear

Listen carefully, check if the compressor has abnormal sound and if it operates and judge whether no refrigeration or poor refrigeration of the A/C system is caused by faults of the compressor or the control circuit of the compressor.

4. Common faults and measures

(1) The A/C system does not do refrigeration and the compressor and the blower do not operate.

1) The fuse of the control circuit is blown---replace it with a new fuse of the same specifications after finding out the cause;

2) The control line or earth line is disconnected---check if each terminal or earth is loose and fix the loose;

3) The blower relay is damaged---check if the blower relay coil and the contact are damaged and repair/replace the damaged;

4) The electromagnetic clutch coil burns out---check if there is current flowing through the clutch coil and repair/replace the coil without current;

5) The electronic temperature control is damaged---check if the thermistor temperature sensor is damaged and if the characteristic of the thermistor is normal, check the amplified part and repair/replace the damaged temperature control;

6) A fault happens to the pressure switch---fill the refrigeration system with 300KPa (G) refrigerant. If the refrigeration system resumes work, the low-pressure switch shall be in a normal status; if it doesn't, some fault may happen to the low-pressure switch, which may be caused by the short circuit of the pressure switch. Short circuit can be also used to judge whether the high-pressure switch is good or not. The pressure switch with a fault shall be replaced;

7) The blower doesn't rotate---check if the blower circuit is normal, if the blower blade gets stuck and if the blower motor burns out.

(2) The A/C refrigerant is insufficient.

1) Refrigerant is too little---both high pressure and low pressure are on the low side. Do leakage detecting and repair and fill refrigerant until the pressure becomes normal;

2) Refrigerant is too much---both high pressure and low pressure are on the high side and the manometer shakes sharply. Discharge the refrigerant, create vacuum and fill refrigerant of a fixed amount;

3) There is moisture in the system---after the A/C works for a certain time, the low-pressure side is in a vacuum status, the expansion valve is frosted, ice appears and the air-out is not cold. Stop the A/C for a moment and then start it again. The A/C can work normally but it repeats the above fault before long. This may be caused by damp air or too much moisture in the refrigerant/refrigerant oil. Replace the drier, extend vacuumizing time, fill drying refrigerant and lubricant;

4) There is filth in the system---the low-pressure side is in a vacuum status, the pressure of the high-pressure side is on the low side and the front and rear pipes of the drier or the expansion valve are frosted or congealed and the air out is not cold. Turn off the system, which can not improve this condition. There must be filth blockage. Then replace the drier and the components of filth blockage.

5) The compressor is damaged, with internal leakage ---the low pressure is too high while the high pressure is too low; sometimes there may be abnormal knock of the compressor. Then the compressor shall be replaced;

6) The drive belt of the compressor is too loose---the rotation speed of the compressor is too low, the air-out is not cold and there is belt slipping sound. The drive belt shall be tensioned or replaced;

7) The compressor clutch slips---the compressor can not operate normally. The clutch shall be removed and repaired/replaced;

8) The cooling air of the condenser is a little---the high pressure and the low pressure are both too high. Check if the rotation speed of the blower is normal;

9) The fin of the condenser is blocked by dust---the high pressure is too high and the cooling effect is not good. The dust on the condenser shall be cleaned;

10) The fin of the evaporator is blocked by dust---air output decreases. The dust on the evaporator shall be blown away by nitrogen or compressed air;

11) The air filter of the evaporator is blocked by dust or others---air output decreases. The air filter shall be cleaned or replaced;

12) The opening of the expansion valve is too big---the high pressure and the low pressure are both too high and too much refrigerant flowing through the evaporator can not be vaporized completely. Then the expansion valve shall be replaced.

13) The power head of the expansion valve leaks---the expansion valve is completely blocked and the high pressure and the low pressure are both low. The expansion valve shall be replaced;

14) The thermostat is regulated improperly---frequent startup is caused, which influences the effect of the A/C. The thermostat shall be replaced or regulated again;

15) The lubricant in the system is too much---the high pressure and the low pressure are both too high and there is muddy stripe in the level glass. Surplus lubricant shall be discharged;

16) The fresh air door of the A/C is not closed tightly---much high-temperature air outside the vehicle enters. The fresh air door shall be closed tightly;

17) The cold/warm air door of the HVAC is not closed tightly---air is heated. The cold/warm air door shall be closed tightly;

18) The air supply pipe of the A/C is blocked---air output decreases and noise increases. The obstruction in the pipe shall be removed;

3. The temperature of the A/C intermittently drops.

It is mainly caused by ice barrier of the system, faults of the temperature control and the relay, slipping of the compressor clutch, and bad contact of the coil:

1) There are the faults of the control and the relay, the slipping of the compressor clutch, the bad contact of the coil, etc.

2) Poor contact, bad earth and loose connection happen to the compressor clutch coil---the clutch is separated too early during the operation. The joints shall be tightened.

3) The temperature control operates abnormally---the surface of the evaporator is frosted heavily and no cold air is supplied. The temperature control shall be replaced.

4. Noise of the A/C is too loud.

1) Noise of the blower, the compressor, the drive belt, the collision of the parts and the components;

2) Noisy operation of the expansion valve.

5. The warm air of the A/C is insufficient.

1) The blower motor is damaged---the blower motor shall be checked and repaired/replaced.

2) Air leakage happens to the heater---the sealing washer shall be replaced;

3) The opening of the cold/warm air door is abnormal---check the working mode of the cold/warm air door;

4) Fouling or distortion happens to the fin of the heater and ventilation is poor----the heater shall be cleaned or replaced;

5) The hot water pipe of the heater is blocked by fouling---the heater shall be replaced;

6) The coolant of the engine is insufficient---check if there is leakage inside the cooling system, repair the leakage and fill coolant;

7) The thermostat of the engine does not work---replace the thermostat;

8) There is air inside the core pipe of the heater, which shall be exhausted.

ii Diagnosis of A/C system faults

Table IV-1

Phenomenon & status	Causes	Measures
The high pressure and the low pressure are too high	1. Air enters the system.	Create vacuum and re-fill refrigerant.
	2. Refrigerant is too much.	Discharge surplus refrigerant.
	3. Lubricant is too much.	Discharge surplus lubricant or replace lubricant.
	4. Cooling effect of the condenser is bad.	Clean the fouling on the condenser surface or replace the condenser.
	5. The cooling fan shared by the condenser and the water tank can not work normally.	Repair or replace the condenser fan.
The high pressure and the low pressure are too low	1. Refrigerant is insufficient.	Fill refrigerant.
	2. Refrigerant leaks.	Check and replace the leaking components.
	3. The O-ring is damaged.	Replace the O-ring.
The high pressure is normal while the low pressure is too high.	1. The opening of the expansion valve is too big or the expansion valve is damaged.	Regulate the opening of the expansion valve or replace the expansion valve.
	2. Refrigerant is too much.	Discharge surplus refrigerant.
	3. There is something wrong with the compressor.	Replace the compressor.
The high pressure is normal while the low pressure is too low.	1. Refrigerant is insufficient.	Fill refrigerant.
	2. There is ice	Replace the

		barrier at the expansion valve.	drying bottle
		3. There is dust on the surface of the evaporator or blockage inside the evaporator.	Clean the surface of the evaporator or replace the evaporator.
The high pressure is low while the low pressure is high.		1. The efficiency of the compressor decreases.	Repair or replace the compressor.
		2. The air duct is blocked.	Regulate the opening of the expansion valve or replace the expansion valve.
The high pressure is low while the low pressure is negative.		1. The low pressure increases quickly after the A/C stops working---ice barrier appears in the system.	Replace the drying bottle.
		2. The low pressure increases slowly after the A/C stops working---ice barrier appears in the system.	Clean the system.
Air is insufficient.	Normal voltage	1. The inlet filter is blocked.	Replace the inlet filter element.
		2. The air duct is blocked.	Clean the air duct.
		3. There is dust on the surface of the evaporator.	Clean the surface of the evaporator.
		4. The operation of the blower motor is hindered.	Repair or replace the blower motor.
	Under voltage	1. The power voltage of the complete vehicle is unstable.	Do check and repair.
		2. There is something wrong with the power	

	grounding.	
The high pressure only reaches a certain value.	The clutch or the belt slips.	Repair or replace the clutch or the belt.
The evaporator is frozen.	1. Something happens to the evaporator temperature sensor.	Replace the sensing head or check if it is located correctly.
	2. There is something wrong with the evaporator temperature sensor harness and insert.	Do check and repair.
	3. Refrigerant is too much.	Discharge some refrigerant.
	4. The air flowing through the evaporator is insufficient.	Check if the blower operates normally.
	5. The expansion valve does not work.	Do replacement.

iii Check the refrigerant

1. Check the refrigerant and observe the inspection window on the A/C pipe.

Note: If the refrigerant is enough and the ambient temperature is higher than the normal, the bubbles seen from the inspection window can be considered to be normal.

Test results:

① Engine rotation speed: 1500r/min;

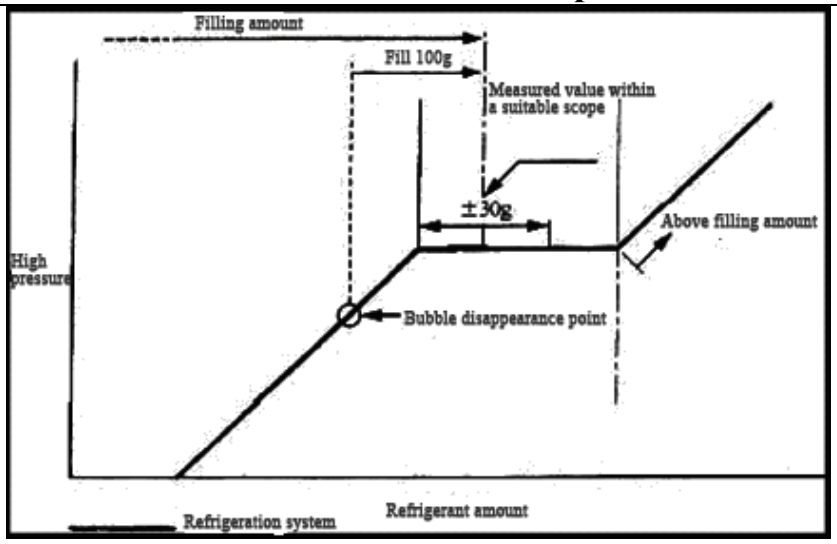
② Blower rotation control switch: HI “HIGH”;

③ A/C switch: ON;

④ Temperature control panel: MAX COLD “MAX REFRIGERATION”;

⑤ Vehicle doors are all closed.

iv Fill refrigerant, as shown in Fig. 6-38.



1. Discharge the refrigerant in the system.

① Turn on the A/C switch.

② Make the engine operate at the speed of about 1000r/min and the A/C compressor work for 5-6 min, circulate the refrigerant and draw the residual oil in each part as much as possible to the compressor.

③ The engine stops.

④ Discharge the refrigerant.

Note: Gently press down the non-return valve of the filler and slowly release it when discharging the refrigerant to avoid bringing out the compressor oil.

2. Fill refrigerant.

① Use a vacuum pump to do vacuumizing.

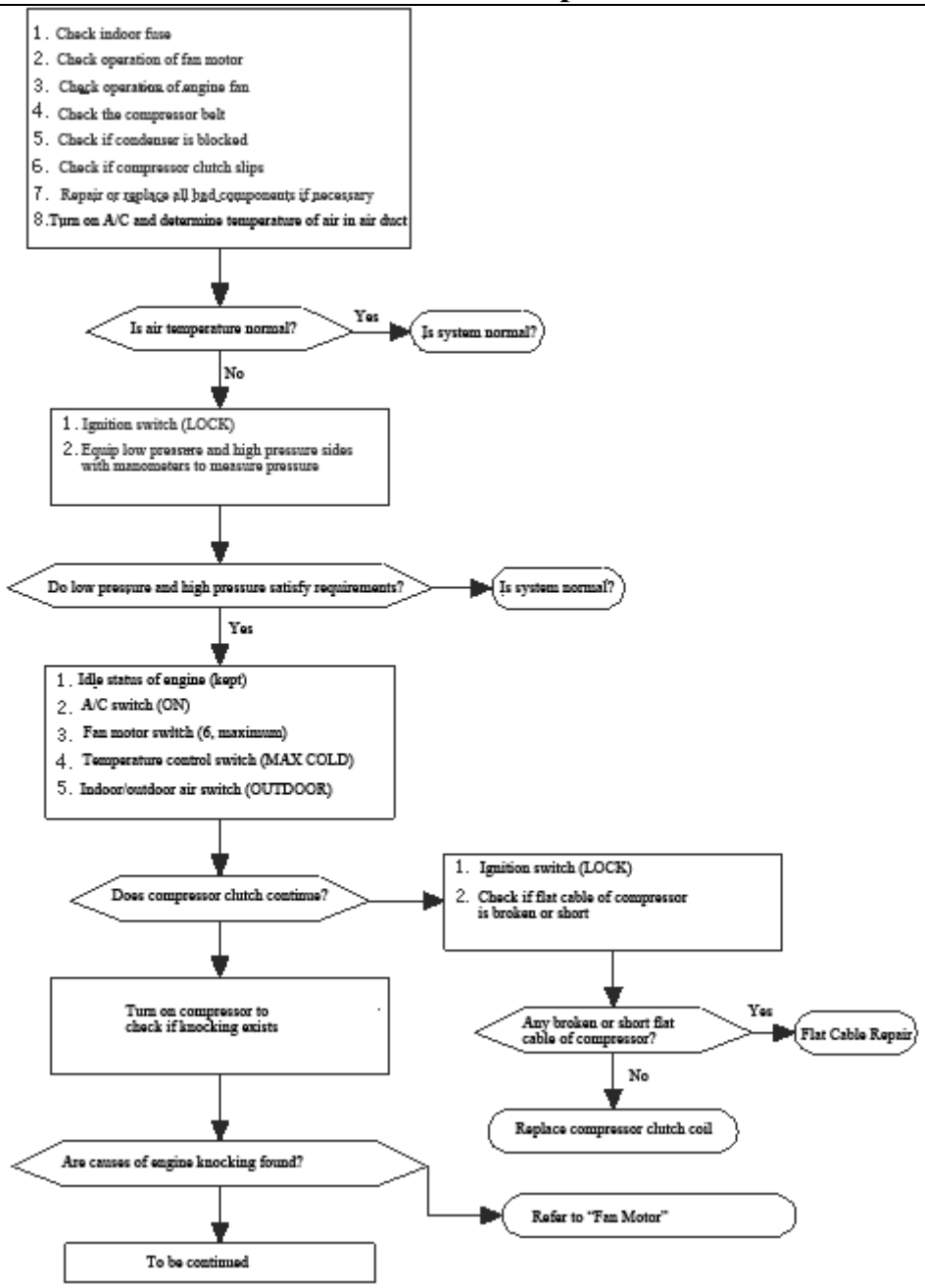
② Fill HFC-134a (R134a). Standard: 500g±50g.

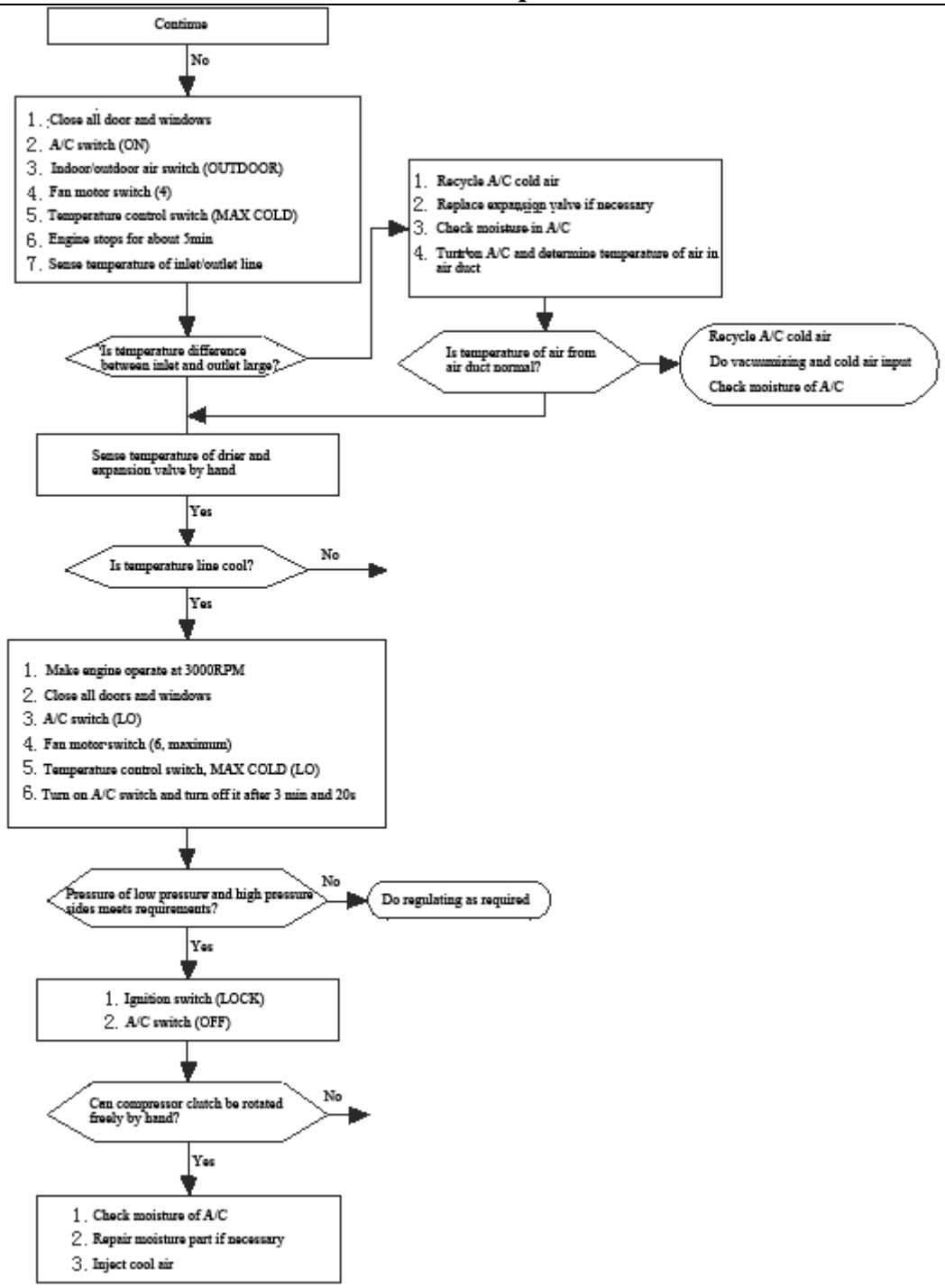
3. Warm up the engine.

4. Use an air leak detector to check if the refrigerant leaks.

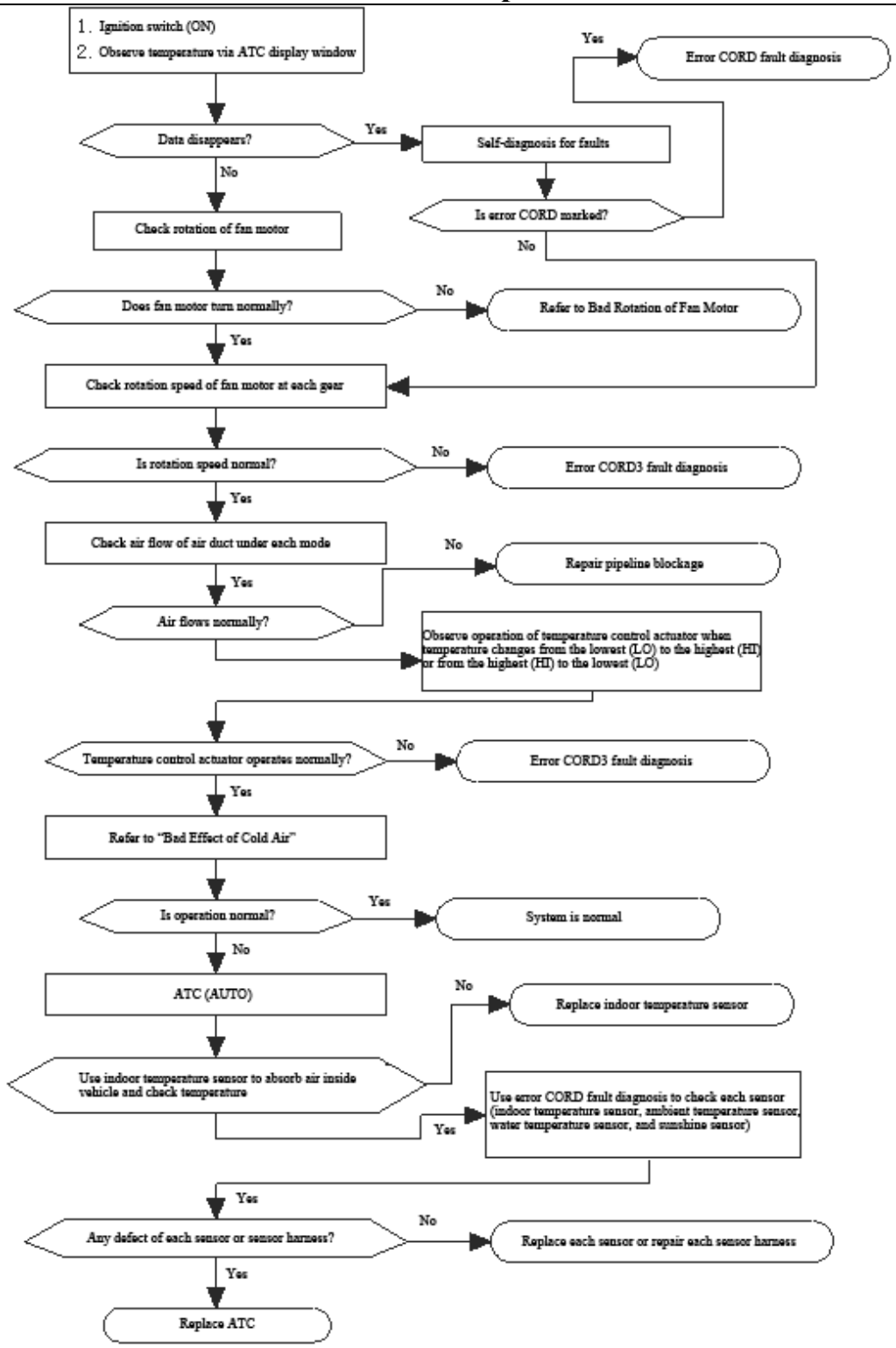
II Diagnosis Procedure of A/C Faults

Bad refrigeration effect (see the following figure)

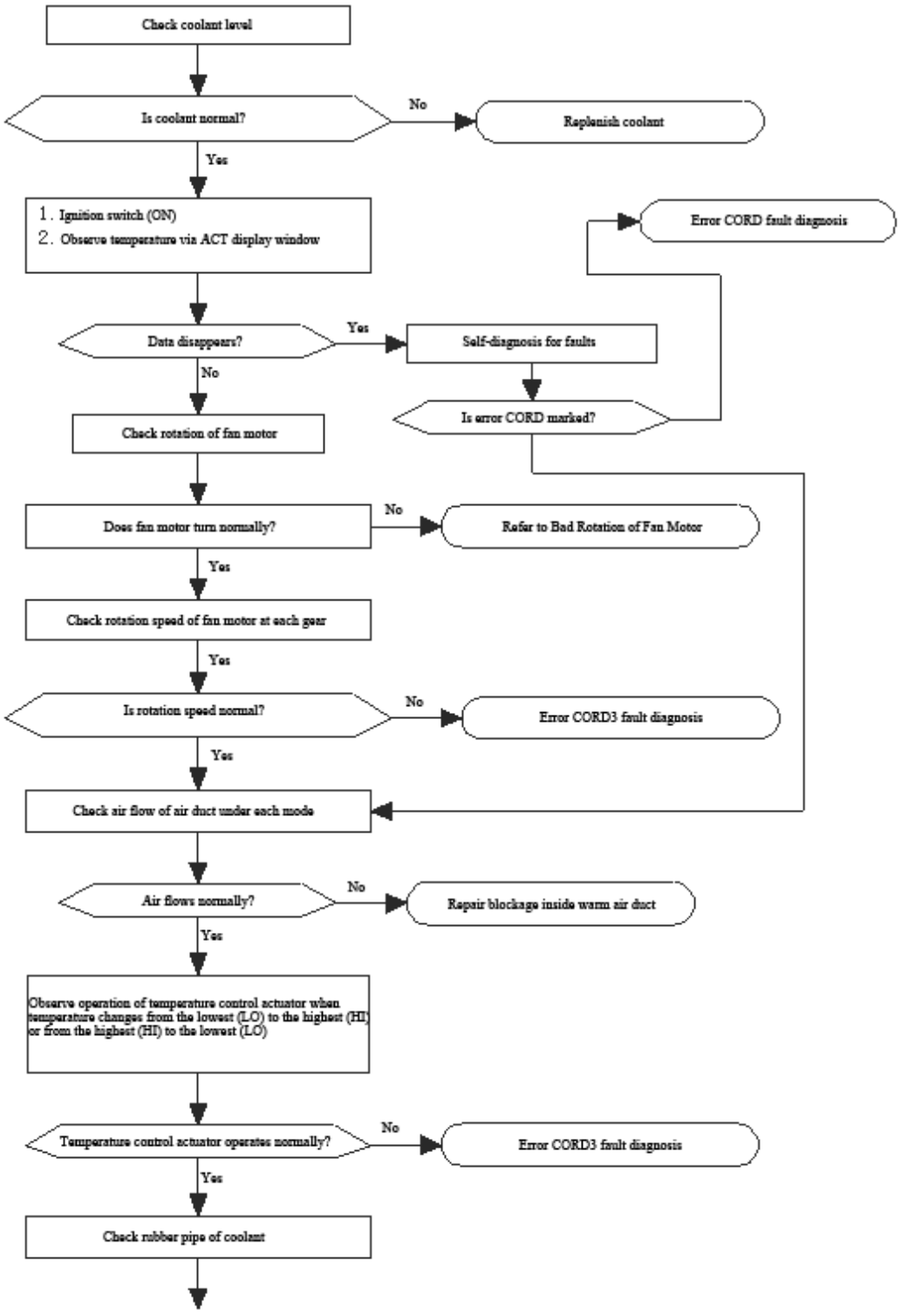

1. Check indoor fuse
2. Check operation of fan motor
3. Check operation of engine fan
4. Check the compressor belt
5. Check if condenser is blocked
6. Check if compressor clutch slips
7. Repair or replace all bad components if necessary
8.Turn on A/C and determine temperature of air in air duct
Is air temperature normal?
Yes
Is system normal?
No
1. Ignition switch (LOCK)
2. Equip low pressure and high pressure sides with manometers to measure pressure
Do low pressure and high pressure satisfy requirements?
Is system normal?
Yes
1. Idle status of engine (kept)
2. A/C switch (ON)
3. Fan motor switch (6, maximum)
4. Temperature control switch (MAX COLD)
5. Indoor/outdoor air switch (OUTDOOR)
Does compressor clutch continue?
1. Ignition switch (LOCK)
2. Check if flat cable of compressor is broken or short
Turn on compressor to check if knocking exists
Any broken or short flat cable of compressor?
Yes
Flat Cable Repair
No
Replace compressor clutch coil
Are causes of engine knocking found?
Refer to "Fan Motor"
To be continued

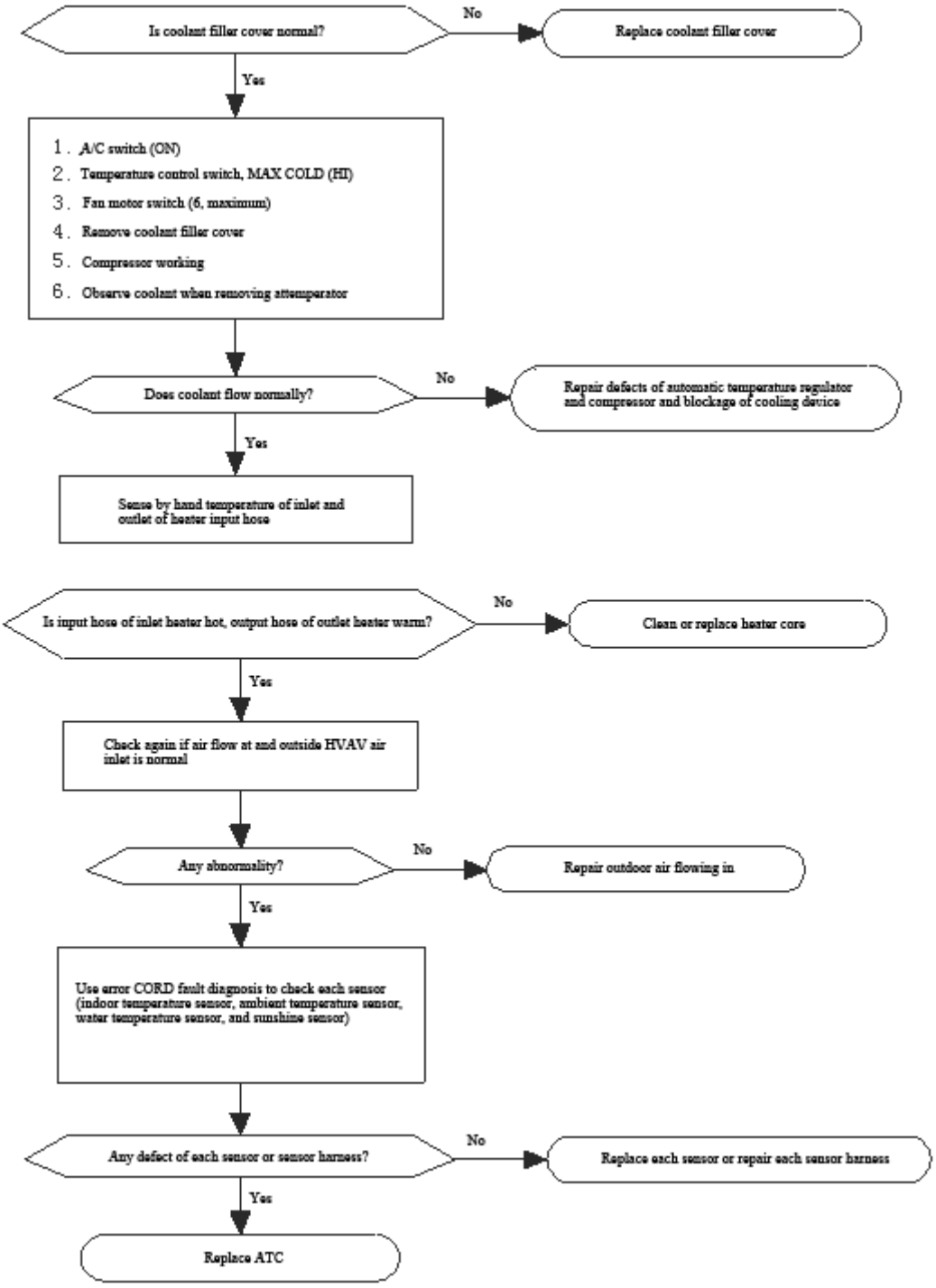


Abnormal ATC (see the figure below)


1. Ignition switch (ON)
2. Observe temperature via ATC display window
Data disappears?
Yes
Self-diagnosis for faults
Is error CORD marked?
Yes
Error CORD fault diagnosis
No
Check rotation of fan motor
Does fan motor turn normally?
No
Refer to Bad Rotation of Fan Motor
Yes
Check rotation speed of fan motor at each gear
Is rotation speed normal?
No
Error CORD3 fault diagnosis
Yes
Check air flow of air duct under each mode
No
Repair pipeline blockage
Yes
Air flows normally?
Observe operation of temperature control actuator when temperature changes from the lowest (LO) to the highest (HI) or from the highest (HI) to the lowest (LO)
Temperature control actuator operates normally?
No
Error CORD3 fault diagnosis
Yes
Refer to "Bad Effect of Cold Air"
Is operation normal?
Yes
System is normal
No
ATC (AUTO)
No
Replace indoor temperature sensor
Use indoor temperature sensor to absorb air inside vehicle and check temperature
Yes
Use error CORD fault diagnosis to check each sensor (indoor temperature sensor, ambient temperature sensor, water temperature sensor, and sunshine sensor)
Yes
Any defect of each sensor or sensor harness?
No
Replace each sensor or repair each sensor harness
Yes
Replace ATC

Bad heating effect




Is coolant filler cover normal?
No
Replace coolant filler cover
Yes
1. A/C switch (ON)
2. Temperature control switch, MAX COLD (HI)
3. Fan motor switch (6, maximum)
4. Remove coolant filler cover
5. Compressor working
6. Observe coolant when removing attemperator
Does coolant flow normally?
No
Repair defects of automatic temperature regulator and compressor and blockage of cooling device
Yes
Sense by hand temperature of inlet and outlet of heater input hose
Is input hose of inlet heater hot, output hose of outlet heater warm?
No
Clean or replace heater core
Yes
Check again if air flow at and outside HVAV air inlet is normal
Any abnormality?
No
Repair outdoor air flowing in
Yes
Use error CORD fault diagnosis to check each sensor (indoor temperature sensor, ambient temperature sensor, water temperature sensor, and sunshine sensor)
Any defect of each sensor or sensor harness?
No
Replace each sensor or repair each sensor harness
Yes
Replace ATC

Notes About A/C System

I Usage of Pure R-134a Refrigerant

(1) R-134a refrigerant which meets the requirements for all the indexes of composition, water content, impurity, and non-condensable air must be used. The service stations shall use 13.6-kg canned refrigerant;

(2) Refrigerant must be filled as required by the complete vehicle factories. Too much or too little refrigerant may affect the refrigeration of the A/C.

(3) Check if the sealing ring of each pipe joint is in good condition and if there is leakage of each component before filling refrigerant;

(4) Refrigerant shall be filled at the low pressure and the high pressure sides simultaneously before the compressor works; if the compressor begins to work, refrigerant shall be only filled at the low pressure side (see Fig. 6-42).

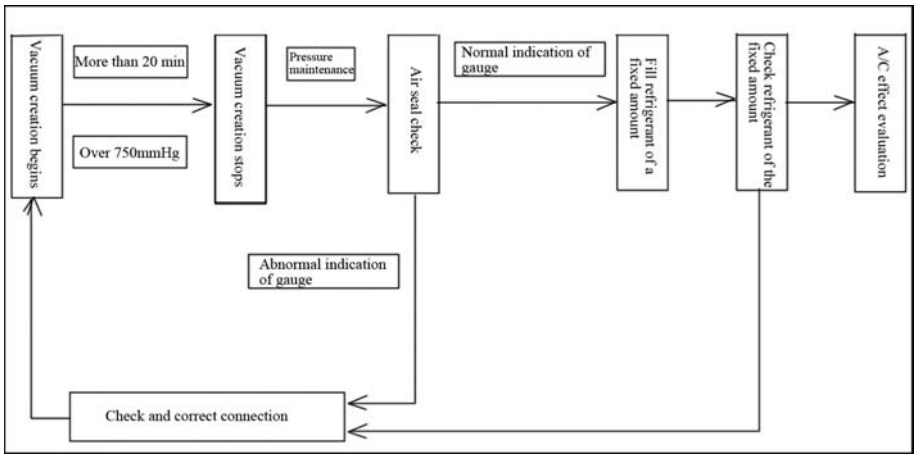


Fig. IV-49

(5) Use an electronic leak detector to check if leakage exists after filling R-134a refrigerant.

II Correct Filling of Lubricant

1. Use the lubricant of the type and the brand as required by the compressor manufacturer. Lubricant of different types and brands can not be mixed, or the compressor may be damaged.

2. Lubricant shall be filled as required. As lubricant hinders heat exchanging, too much will seriously affect the A/C effect; generally speaking, it is unnecessary to fill lubricant which is filled by the compressor manufacturer; lubricant of the same type shall be added suitably when components are replaced; condenser (20ml); drying bottle (30ml); evaporator (30ml); pipeline (10ml/m).

3. Lubricant shall be kept from air because it absorbs water easily.

4. Check the quality of the lubricant in the pipe before filling. Completely clean the whole A/C system and replace all the lubricant if lubricant is blackened or carbon article is separated out. Note: Water, corrosive solvent or flammable & combustible solvent are prohibited and cleaning agents like R-141b and methane are recommended.

5. Lubricant shall be filled at the air outlet of the compressor before vacuum is created.

III Enough Vacuum Creation Time and Vacuum

1. Use a powerful vacuum pump to create vacuum for more than 20min;

2. Keep the absolute pressure of the system below 1000Pa;

3. Maintain the pressure for at least 5min and check air tightness before filling refrigerant. Create vacuum for 5min if air tightness is qualified.

Lamps

Bulb Standards

Type	Specification
Headlight	12V 55W
Steering light Rear fog light Reverse light	12V 21W
License plate lamp Side steering light High-mounted brake lamp	12V 5W
Brake lamp	12V 21W
Position lamp	12V 5W
Front fog light	12V 55W
Front and rear roof lights	12V 8W

Removal and Installation of Headlight

I Removal and Installation of Assembly

1. Open the engine hood.

2. Take down high/low beam insert.

3. Unscrew the 3 retaining bolts of the headlight.

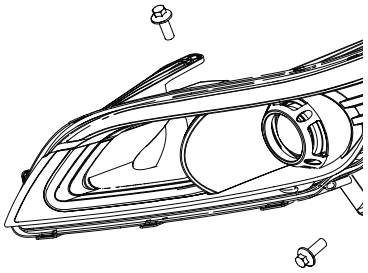


Fig. IV-50

4. Carefully pull out the headlight assembly.

5. The installation procedure is opposite to the removal procedure.

Torque: 6±1N.m for fixing the headlight (3)

Replace bulbs.

II Replacement of High/Low Beam Bulb

1. Remove the headlight cover.

2. Loosen the bulb clip.

3. Take out high/low beam bulb.

4. Install a new bulb.

Replace the bulb of the front steering light

1. Anticlockwise screw the front steering light bulb holder from the headlight assembly.

2. Screw off the bulb.

3. Install a new bulb to the holder.

4. Install the holder to its original place.

Removal and Installation of Front Fog Lights

1. Remove the front bumper

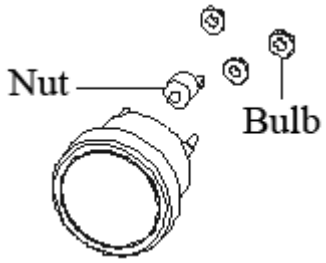
A. Remove the retaining bolts under the front bumper.

B. Remove the retaining bolts at the sides of the front bumper.

C. Remove the connecting screws of the front wheel covers at the two sides.

D. Remove the 3 retaining bolts on the front bumper.

E. Pay attention to the clips at the upper left and right sides and then take down the bumper. Pull out the harnesses and the inserts of the two front fog lights.



Note: Pay attention not to damage the harnesses and the inserts of the front fog lights.

2. Remove the front fog lights from the bumper.

Use an open-end wrench to remove the 3 nuts shown in the figure and take the fog light assembly out of the

front bumper.

3. The installation procedure is opposite to the removal procedure.

Torque: 2.O±O.2 N.m for fixing front fog lights (3)

Replace the bulbs

1. Hold the bulb holder by hand and anticlockwise screw off the bulb.

2. Screw in a new bulb clockwise.

3. Screw in the new fog light bulb.

Tail Lamp

Removal and installation

1. Open the rear door.

2. Remove the lower guard panel of pillar C.

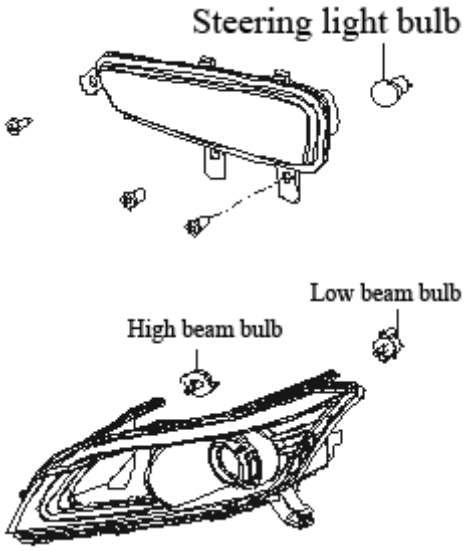
a. Remove the self-tapping screws under the lower guard panel.

b. Remove the self-tapping screws in the cover stem of the sundries box.

c. Take down the back door sill plate and remove the screws below.

d. Take down the lower guard panel of pillar C.

3. Remove the 3 retaining nuts from the reserved bores in the vehicle body.



4. Unplug the tail lamp insert.

5. Pull out the tail lamp gently.

6. The installation procedure is opposite to the removal procedure.

Torque:

3 retaining nuts of the tail lamp: 5±1N.m

Replace the bulbs

1. Open the cover stem of the sundries box in the rear luggage boot.

2. Use a screwdriver to unclench the inner protective cover and stretch a hand through the cover gap to anticlockwise screw off the position light bulb, the reverse light bulb, the steering light bulb and the brake lamp bulb.

3. Install new bulbs.

License Plate Lamp

Removal and installation

1. The license plate lamp is fixed on the rear bumper by the flexible clamps at its two ends.

2. During removal, use a flared tip screwdriver to hold the clamps, take down the license plate lamp slowly and pull out the insert.

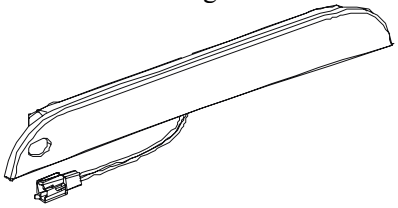
3. During installation, locate the insert well and press the license plate lamp in.

Removal and Installation of High-mounted Brake Lamp

1. Remove the lampshade of the high-mounted brake lamp.

2. Remove the retaining screws.

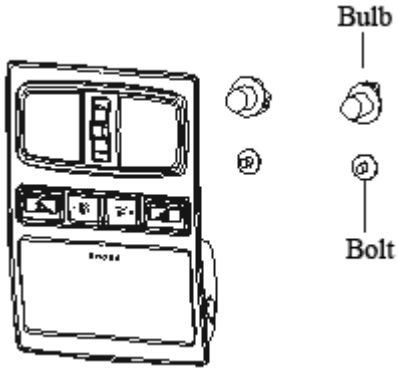
3. Take down the high-mounted brake lamp.



4. The installation procedure is opposite to the removal procedure.

Torque: 3±O.5Nm for tightening self-tapping bolts.

Indoor Front Roof Light



Removal and installation

1. Open the glasses case.

2. Use a cross screwdriver to loosen the self-tapping bolts.

3. Slowly take down the indoor front roof light assembly and the harness and the insert.

4. The installation procedure is opposite to the removal procedure.

Torque: 3±O.5Nm for tightening self-tapping bolts.

Replace the bulb

1. Use a flared tip screwdriver to unclench the housing.

2. Take down the old bulb and install a new one.

Indoor Middle Roof Light

Removal and installation

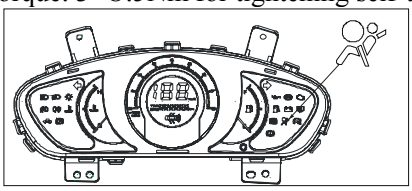
1. Insert the flared tip screwdriver into a place between the lamp housing and the lampshade to gently unclench the lampshade.

2. Loosen the retaining bolts.

3. Take down the roof light.

4. The installation procedure is opposite to the removal procedure.

Torque: 3±O.5Nm for tightening self-tapping bolts.



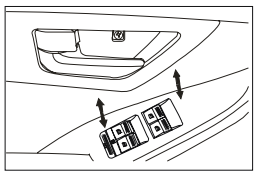
Indoor Rear Roof Light

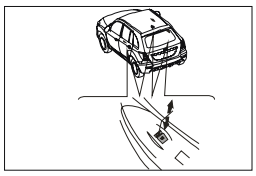
Refer to “Indoor Middle Roof Light”.

Electric Windows

I Introduction

The electric windows can be controlled by the switches on the door trim panels (see the following figure) while these switches can be controlled by the master switch on the front door trim panel of the driver side. The safety switch of the electric windows is located on the front door trim panel of the driver side. The driver can forbid all the passengers to use the window switches via key A. the electric window system can not work until the ignition switch is placed at “ON”.





(1) Electric rise

EX type: Lift a window switch for no less than 300ms to make the corresponding window rise. Release the switch to stop the rising of the window.

LX/DX type: Lift a window switch to make the corresponding window rise. Release the switch to stop the rising of the window.

(2) Electric fall.

EX/LX/DX type: Press down a window switch for no less than 300ms to make the corresponding window fall. Release the switch to stop the falling of the window.

⑶ 自动上升
(3) Automatic rise

EX 型：上掀车窗玻璃控制器开启时间≤300ms，相应的车窗玻璃将自动上升，上升到顶摇机断电。若到顶检测信号丢失，则摇窗机一次工作 8 秒后停止，以保护电机。上升过程中如有该窗的再次升、降操作则停止上升，上升到顶摇机断电。
EX type: Lift a window switch for no more than 300ms to make the corresponding window rise automatically. After the window rises to the end, the regulator will be powered off. If the signal is lost after the window rises to the end, the regulator will work for 8 seconds and then stop to protect the motor. If the window is made to rise or fall again during its rising, the rising of the window shall be stopped. After the window rises to the end, the regulator will be powered off.

If the window meets some foreign material during its rise, stop the rising of the window and make it fall automatically. All the operations will be of no effect. If the window falls to the end, the regulator will be powered off.

(4) Automatic fall

EX/LX/DX type: Press down a window switch for no more than 300ms to make the corresponding window fall automatically. After the window falls to the end, the regulator will be powered off. If the signal is lost after the window falls to the end, the regulator will work for 8 seconds and then stop to protect the motor. If the window is made to rise or fall again during its falling, the falling of the window shall be stopped. After the window falls to the end, the regulator will be powered off.

The electric window system has some functions controlled by its electronic modules which are integrated in the left front door window regulator switch assembly and the BCM.

Components of the electric window system:

(1) Electric window switch

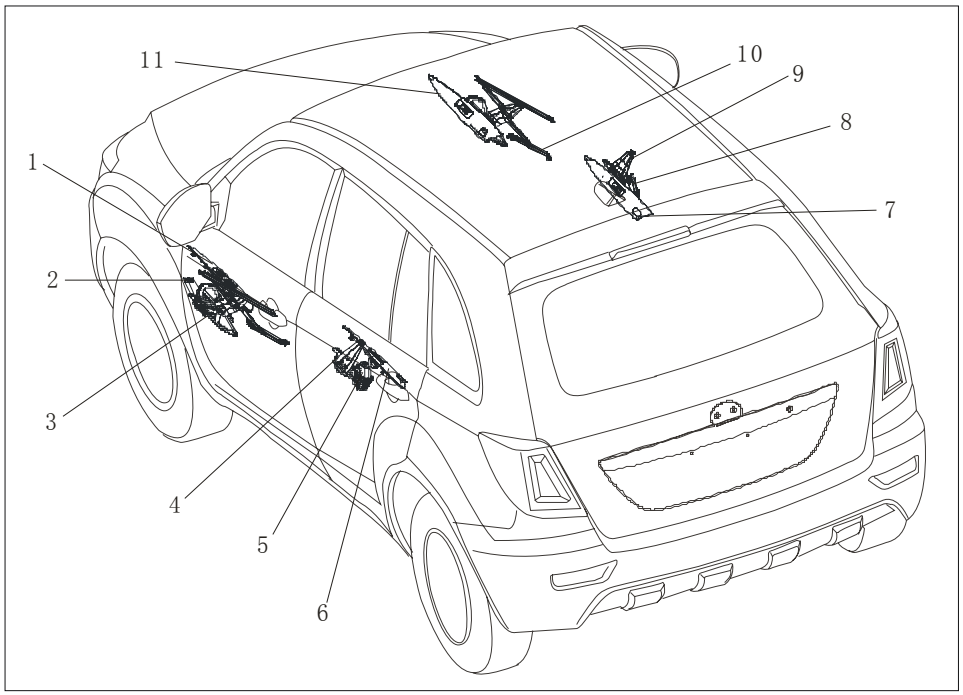
(2) Electric window motor

(3) Body control module (BCM)

The electric window motor adopts new technologies and materials, e.g., for watertightness, the complete sealing design and the breathable film are used (the motor produces temperature rise during its operation, which may create pressure difference inside and outside the motor, as a result, the thinnest seal will be broken. Then the motor needs a respiratory organ to balance the pressure difference inside and outside and prevent impact on the thinnest seal. The breathable film can not only balance the pressure difference inside and outside via air but also prevent water from flowing into the motor to realize the complete sealing and waterproof design); for overheating protection, the polymer PTC over-current protector is used to quickly and efficiently protect the motor from being burnt by external faults (like switch fault); for motor noise handling, wear-resistant damping material is adopted at the rotation axis of the motor to ensure that the motor will not produce metal impact and noise during its high-speed rotation. For motor power connection, the terminal interface is directly applied to avoid poor contact caused by power lead wire; Adopting DC double-pole permanent magnet and bidirectional rotation, the motor is provided with inner overheating protector to avoid outer protection; after the motor is powered on, because of the magnetic field force, the motor will revolve and then be slowed down by a big turbine reducing mechanism and then a large low-speed torque will be gained at the output gear. When the motor is stuck or the circuit has some problem, the overheating protector can cut off the power immediately to protect the

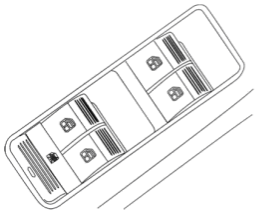
motor. To keep the motor from being damaged by the overheating caused by continuous operations of electric windows, the circuit will do self-protection to stop the operations for 5 minutes and will return to the normal automatically.

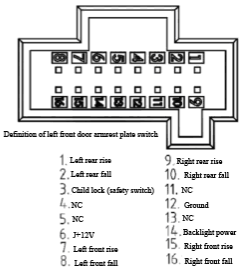
II Layout of Electric Windows



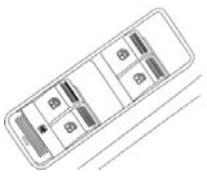
1-Left front door armrest plate switch 2-Left front door window regulator motor 3-Left front door window regulator support 4-Left rear door window regulator support 5-Left rear door window regulator motor 6-Left rear door armrest plate switch 7-Right rear door armrest plate switch 8-Right rear door window regulator support 9-Right rear door window regulator motor 10-Right front door window regulator support 11-Right front armrest plate switch

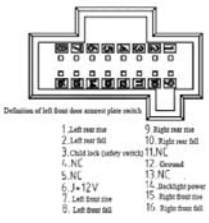
1. Left front door window regulator switch



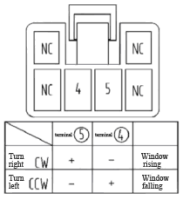


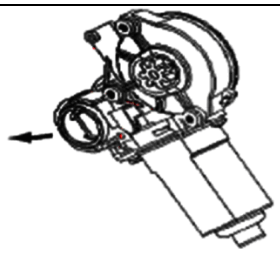
2. Definition of right front, left rear and right rear door armrest plate switches

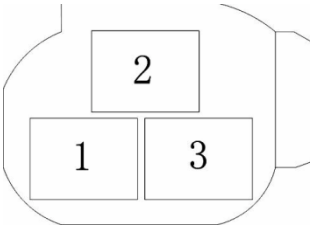




3. Definition of window regulator interface



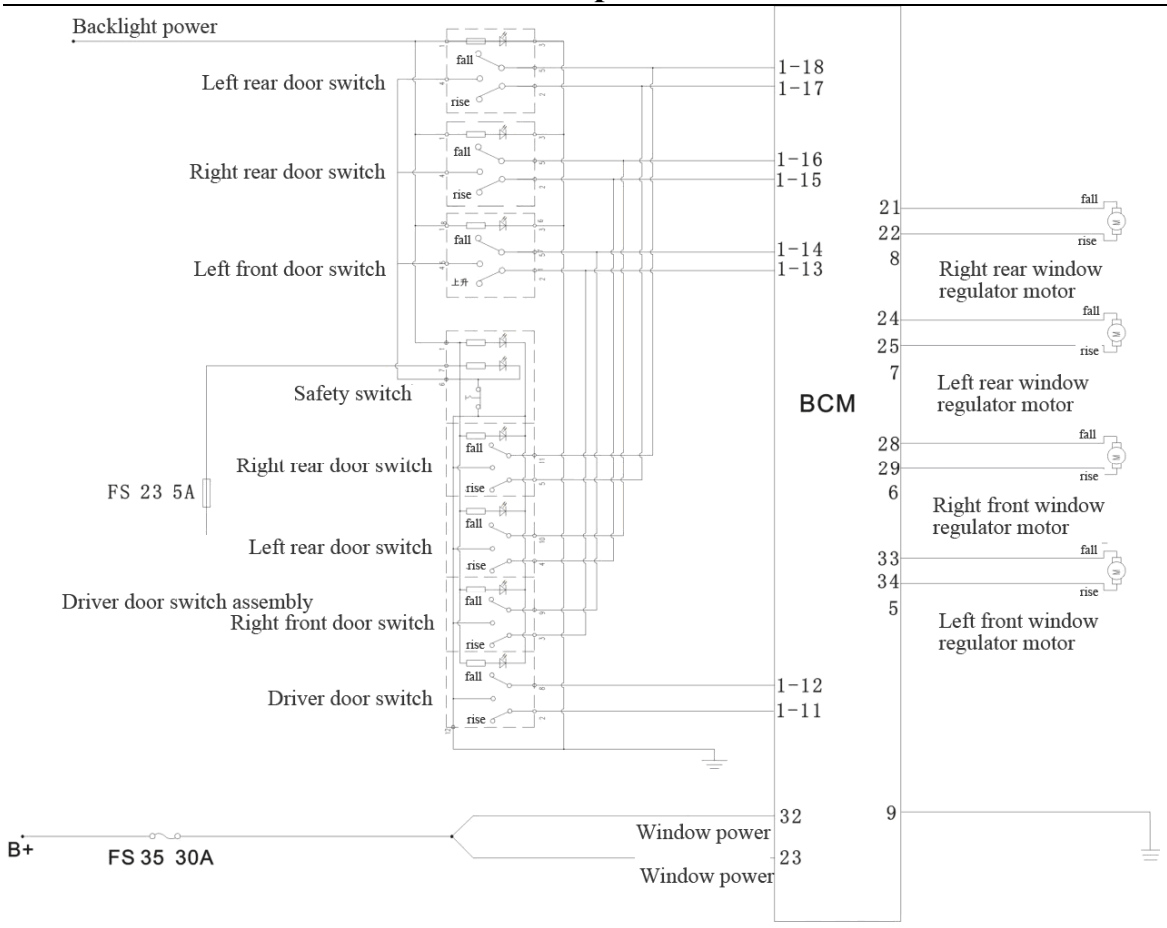




4. Left front door regulator switch

Testing terminal	Wiring color	Terminal description	Testing conditions	Nominal value
1—Body	P/B	Left rear door window regulator motor rising	Ignition switch ON; window RISE-STOP	4～5V →less than 1V
2—Body	P	Left rear door window regulator motor falling	Ignition switch ON; window FALL-STOP	4～5V →less than 1V
3—Body	G	Safety switch	Press down safety switch (Kept)	10～14V
6—Body	W/R	Common power input B+	Kept	10～14V
7—Body	N/B	Left front door window regulator motor rising	Ignition switch ON; window RISE-STOP	4～5V →less than 1V
8—Body	N	Left front door window regulator motor falling	Ignition switch ON; window FALL-STOP	4～5V →less than 1V
9—Body	Y/B	Right rear door window regulator motor rising	Ignition switch ON; window RISE-STOP	4～5V →less than 1V
10—Body	Y	Right rear door window regulator motor falling	Ignition switch ON; window FALL-STOP	4～5V →less than 1V
12—Body	B	Electric grounding	Kept	less than 1Ω
14—Body	R	Backlight power	Lamplet ON; backlight WEAK-STRONG	Pulse signal produced
15—Body	U/G	Right front door window regulator motor rising	Ignition switch ON; window RISE-STOP	4～5V →less than 1V
16—Body	U/Y	Right front door window regulator motor falling	Ignition switch ON; window FALL-STOP	4～5V →less than 1V

5. Electric window circuit



6. Faults of electric windows

Faults	Causes
All the electric windows do not work	BCM fault Fault of window regulator power fuse Wiring fault
A single electric window system does not work	Fault of this door window regulator switch Fault of window regulator motor Wiring fault
The locking system of the windows does not work	Fault of the safety switch in the left front door regulator switch Wiring fault

III Check of Electric Window Components

1. Check the left front door armrest plate switch and the left front door window regulator switch (see the above table). Other doors: Check the conductivity among each terminal of the window regulator switch connectors.

(1) Check if the window regulator switch is normal.

Press down the safety switch on the left front door armrest plate switch and place the left front door window regulator switch at “UP”. Then terminal 3 and terminal 12 shall be conducted and so shall terminal 7 and terminal 12. If it is placed at

"DOWN", terminal 3 and terminal 12 shall be conducted and so shall terminal 8 and terminal 12. Other window regulator switches shall be checked in the same way as the above. If conductivity does not meet the requirement, window regulator switches shall be replaced.

(2) Check if the safety switch is normal

If only the safety switch on the left front door armrest plate switch is pressed down, terminal 3 and terminal 12 shall be conducted; if the safety switch is not pressed down, terminal 3 and terminal 12 shall not be conducted. If conductivity does not meet the requirement, the window regulator switch shall be replaced.

(3) Check if the backlight of the left front door armrest plate switch is normal

Make terminal 14 connected with power (10-14V) and terminal 12 grounded and observe if the backlight is on. If it is on, it shall be qualified; if not, the backlight shall be disqualified.

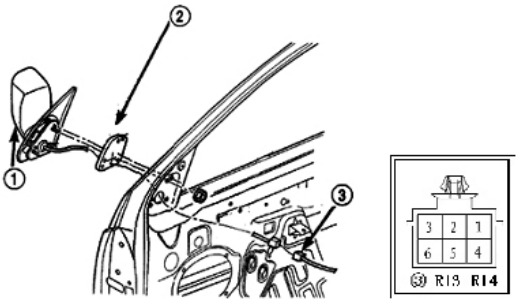
2. Check the window regulator motor

If the positive pole of the battery is connected with terminal 5 of the window regulator motor and the negative pole with terminal 4, the window will rise; if the positive pole of the battery is connected with terminal 4 of the window regulator motor and the negative pole with terminal 5, the window will fall.

Exterior Electric Rearview Mirror

I Introduction

The electric rearview mirrors can be regulated up and down or left and right (the regulating angle at each direction can reach 7 degrees) by the electric switch on the left dash board of the driver side. When parking the vehicle, the driver can fold the rearview mirrors (the maximum folding angle is higher than 85 degrees) to prevent the mirrors from being damaged. If a rearview mirror is hit by something, its case will be folded outwards. To avoid damage, the maximum folding angle outwards shall be 105 degrees. If the mirror is broken, the fragments will stay in the mirror carrier, which may be much safer.



1-Exterior electric rearview mirror 2-Sealing pad 3-Electric interface

The electric rearview mirror system includes:

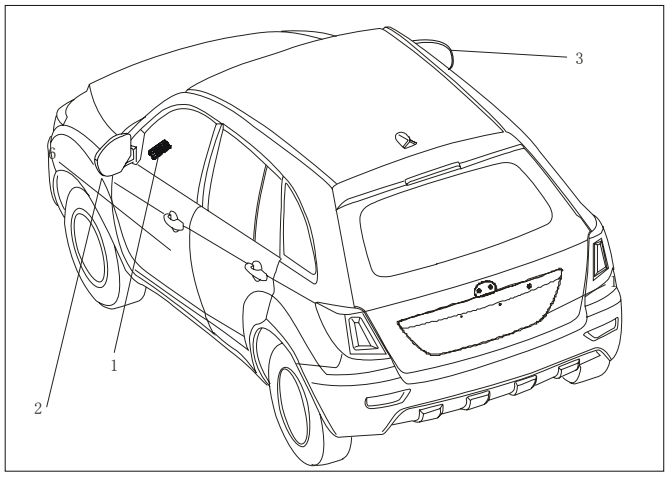
(1) Left and right exterior electric rearview mirrors;

(2) Exterior electric rearview mirror switch assembly

二 电动外后视镜位置布置图

II Layout of Exterior Electric Rearview Mirrors

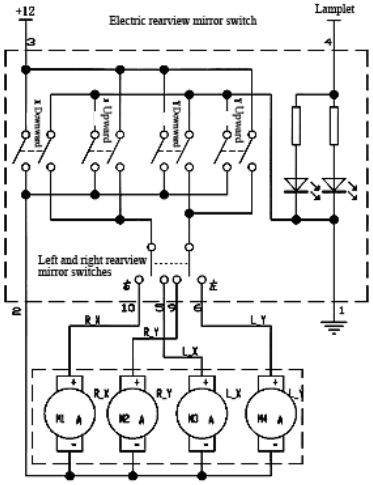
1 电动外后视镜位置布置
1 Layout of exterior electric rearview mirrors

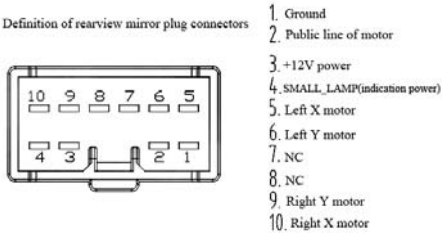


1-Exterior electric rearview mirror switch 2-Left exterior electric rearview mirror 3-Right exterior electric rearview mirror

III Terminal Voltage of Exterior Electric Rearview Mirrors

1 Exterior electric rearview mirror switch (see the following figure)





Ignition switch ACC; choose the left electric rearview mirror and regulate it left and right

Left: 2-3 connected, resistance less than 1Ω; 5-1 connected, resistance less than 1Ω

Right: 5-3 connected, resistance less than 1Ω; 2-1 connected, resistance less than 1Ω

Ignition switch ACC; choose the left electric rearview mirror and regulate it up and down

Up: 6-3 connected, resistance less than 1Ω; 1-2 connected, resistance less than 1Ω

Down: 2-3 connected, resistance less than 1Ω; 1-6 connected, resistance less than 1Ω

Ignition switch ACC; choose the right electric rearview mirror and regulate it left and right

Left: 3-2 connected, resistance less than 1Ω; 1-10 connected, resistance less than 1Ω

Right: 3-10 connected, resistance less than 1Ω; 1-2 connected, resistance less than 1Ω

Ignition switch ACC; choose the right electric rearview mirror and regulate it up and down

Up: 9-3 connected, resistance less than 1Ω; 1-2 connected, resistance less than 1Ω

Down: 2-3 connected, resistance less than 1Ω; 1-9 connected, resistance less than 1Ω

2 Exterior electric rearview mirror motor

(1) Ignition switch ACC; choose the electric rearview mirrors and regulate them left and right via the electric rearview mirror switch

5 (+) 1 (-) motor turns left

5 (-) 1 (+) motor turns right

(2) Ignition switch ACC; choose the electric rearview mirrors and regulate them up and down via the electric rearview mirror switch

4 (-) 5 (+) motor goes down

4 (+) 5 (-) motor goes up

IV Faults of Exterior Electric Rearview Mirrors

Table 4-12

Faults	Causes	Faults	Causes
The exterior rearview mirrors do not work	1. Fuse fault 2. Fault of the rearview mirror switch 3. Fault of the rearview mirror motor 4. Wiring fault	The exterior rearview mirrors work abnormally	1. Fault of the rearview mirror switch 2. Fault of the rearview mirror motor 3. Wiring fault

V Check of Exterior Electric Rearview Mirrors

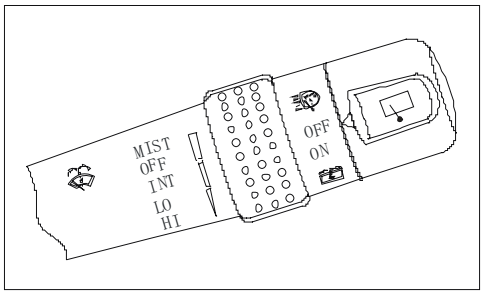
1 Check the electric rearview mirror switch following the above items. If the conductivity does not meet the requirement, the electric rearview mirror switch shall be replaced.

2 Check the electric rearview mirrors following the above items. If the requirements are not satisfied, the electric rearview mirror motor and the motor wiring connector ③ shall be replaced.

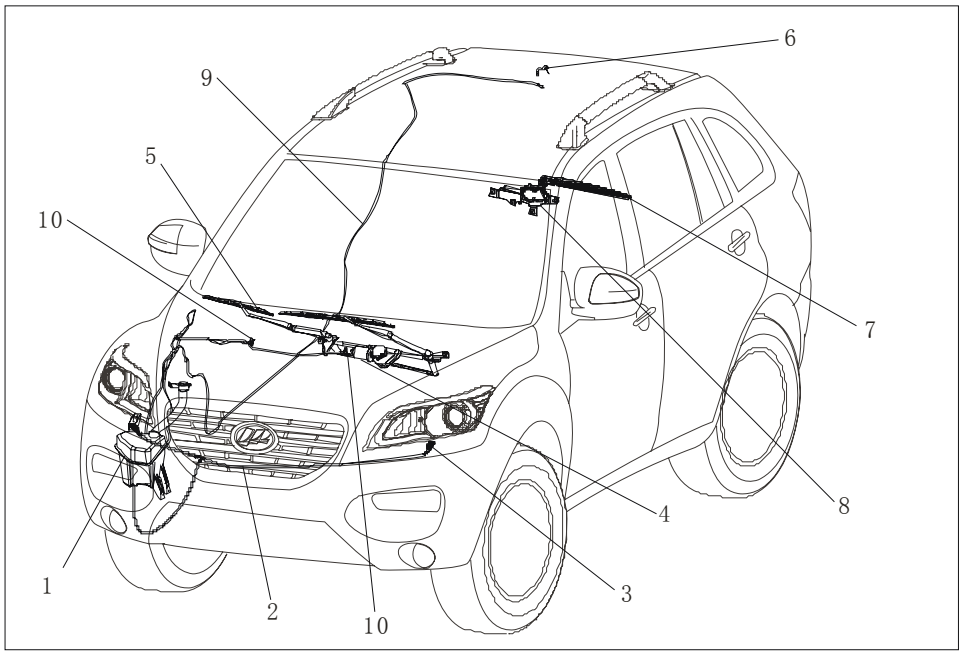
Wiper and Washer

Introduction

The wiper system, consisting of wiper arm assembly, connecting rod mechanism, and wiper motor, is provided with functions of single wipe, intermittent wipe, slow wipe, and fast wipe. The washer system is mainly composed of washing pump, reservoir, filler pipe, and nozzle. The wiper and washer system aims to provide a convenient, safe and reliable method for the driver to ensure the view of the windshield. Each component of this system transforms the energy produced by the circuit system of the vehicle into the mechanical movement of the wiper blade to wipe out water drops on the surface of the glass and also into the liquid movement of the washer to inject the washer fluid in the fluid reservoir onto the glass which needs to be washed. Under the integrated application of these functions, these components can wipe out rain, snow, bugs, mud, and other small materials to provide a clear view for the driver in a hostile environment. The driver can start all the functions of the wiper and washer system via the combination switch at the right side of the steering column under the steering wheel. For the wiper system, the driver can choose high-speed/low-speed continuous wipe or intermittent wipe. If the right combination switch lever is pushed forwards and then released, the defogging mode of the wiper system will be chosen to carry out a complete wiping circle. If the right combination switch lever is pulled upwards, the washer system will be started to inject washer fluid into the windshield via the nozzle.



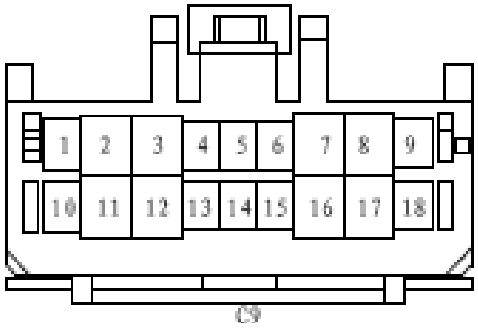
Layout o f Wiper and Washer System



1-Washing pot assembly 2-Headlight washer hose assembly 3-Headlight washer nozzle 4-Wiper connecting rod mechanism and motor assembly 5-Wiper assembly 6-Rear windshield washer nozzle 7-Back door wiper 8-Rear wiper motor assembly 9-Front section of rear windshield hose 10-Front windshield washer nozzle

Check and Repair of Wiper and Washer System Circuit

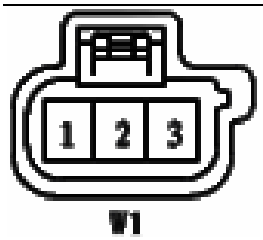
1. Harness interface (see the following figure).



Testing terminal	Wiring color	Terminal description	Testing conditions	Nominal value
1－Body	B/U	High gear power output of wiper motor	Ignition switch ON; right combination switch placed at HIGH GEAR of wiper (Kept)	10～14V
2－Body	Y/U	Low gear power output of wiper motor	Ignition switch ON; right combination switch placed at LOW GEAR of wiper (Kept)	10～14V
3－Body	G/B	Washer motor power output	Ignition switch ON; right combination switch placed at WASHING (Kept)	10～14V
8－Body	B	Grounding signal of right combination switch	Kept	Less than 1Ω
10- Body	Y/G	Return control of right combination switch	Right combination switch placed at OFF or INT (Kept)	Less than 1Ω
11－Body	R/B	Right combination switch power input	Ignition switch ON (Kept)	10～14V

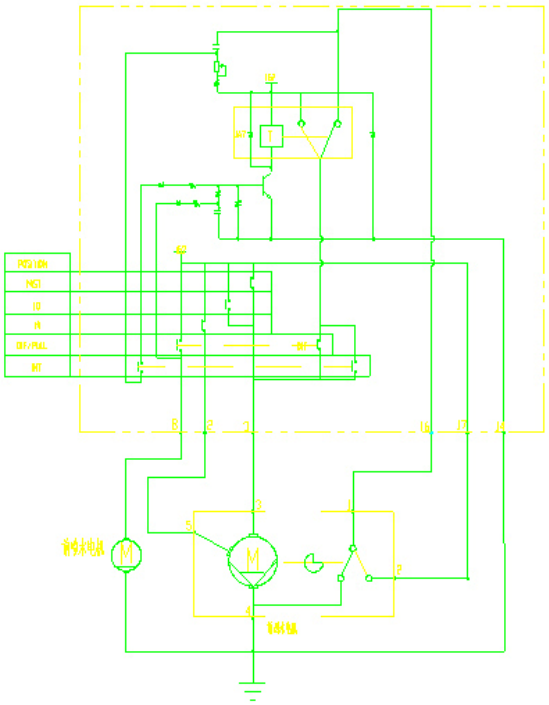


Testing terminal	Wiring color	Terminal description	Testing conditions	Nominal value
1	Y/U	Low gear input of wiper motor	1 (+) 5 (-), (Kept)	Motor revolves at low speed
2	U	Wiper motor power input	Ignition switch ACC (Kept)	10～14V
3	Y/G	Wiper motor return signal	Motor returns to the end (Kept)	Less than 1Ω
4	B/U	High gear input of wiper motor	4 (+) 5 (-), Kept	Motor revolves at high speed
5	B	Motor grounding signal	Kept	Less than 1Ω



Testing terminal	Wiring color	Terminal description	Testing conditions	Nominal value
1－Body	G/B	Washer motor power input	Ignition switch ON; right combination switch placed at WASHING (Kept)	10～14V
2－Body	B	Washer motor grounding	Kept	Less than 1Ω

2 Check and repair the circuit



Faults of Wiper and Washer System

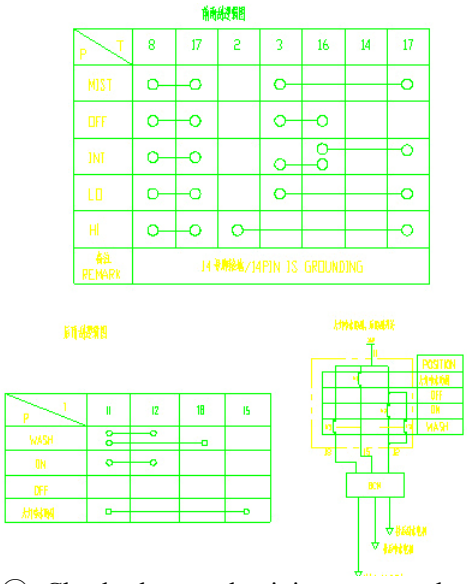
Faults	Causes	Faults	Causes
Wiper and washer do not work	1 Fault of accessory relay 2 Fault of wiper fuse 3 Fault of wiper combination switch assembly 4 Wiring fault	At LO or HI, the wiper does not work	1 Fault of wiper combination switch assembly 2 Fault of wiper motor 3 Wiring fault
At INT, the wiper does not work	1 Fault of wiper combination switch assembly 2 Fault of wiper motor 3 Wiring fault	The washer motor does not work	1 Fault of wiper combination switch assembly 2 Fault of washer motor 3 Wiring fault
When the combination switch assembly is placed at	1 Fault of wiper combination switch assembly 2 Fault of wiper motor	The washer does not inject fluid	1 Fault of washer hose 2 Fault of washer nozzle

MIST, the wiper does not work	3 Wiring fault		
When the right combination switch is at OFF, the wiper blade does not return or returns to the wrong position	1 Fault of wiper combination switch assembly 2 Fault of wiper motor 3 Wiring fault	When the wiper combination switch assembly is at OFF, the wiper blade will go down and then up and stop.	The crank on the wiper motor is not at the RESET.

Check of Components of Wiper and Washer System

I Check of Wiper Combination Switch Assembly

(1) Check the conductivity of the wiper switch terminals



① Check the conductivity among the terminals of the wiper-gear connectors at the combination switch assembly. When, on the wiper combination switch assembly, the wiper gear is at MIST, terminal 2 and terminal 11 shall be conducted; at OFF, terminal 2 and terminal 10 shall be conducted; at INT, terminal 2 and terminal 10 shall be conducted and so shall terminal 2 and terminal 11; at LO, terminal 2 and terminal 11 shall be conducted; at HI, terminal 11 and terminal 1 shall be conducted.

② Check the conductivity among the terminals of the washer-gear connectors at the wiper combination switch assembly. When, on the wiper combination switch assembly, the washer gear is at OFF, the terminals shall not be conducted; at ON, terminal 3 and terminal 11 shall be conducted.

(2) Check the wiper gear of the wiper combination switch assembly

Place the wiper combination switch assembly at OFF, connect the positive pole of the battery with terminal 11 of the wiper switch connecter and the negative pole with terminal 8. Connect the positive probe of the voltmeter with terminal 3 of the right combination switch connector and the negative probe with terminal 8. Place the washer gear of the right combination switch successively at OFF, ON and OFF and check the voltage between terminal 3 and terminal 8 of the wiper switch connector, which shall be less than 1V, 10-14V and less than 1V.

II Check of Wiper Motor

(1) Operation at low speed: If the positive pole of the battery is connected with terminal 1 of the wiper motor connector and the negative pole with terminal 5, the motor shall operate at low speed.

(2) Operation at high speed: If the positive pole of the battery is connected with terminal 4 of the wiper motor connector and the negative pole with terminal 5, the motor shall operate at high speed.

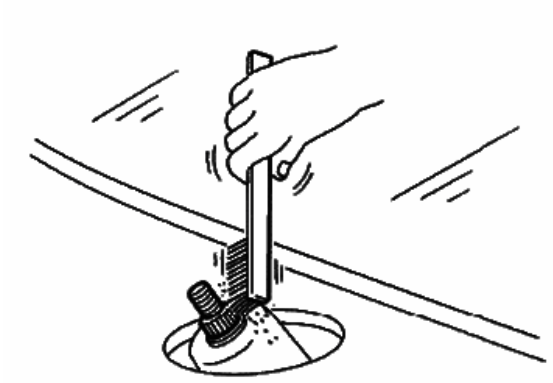
(3) Automatic stop: Connect the positive pole of the battery with terminal 1 of the wiper motor connector and the negative pole with terminal 5. Then the motor operates at low speed. Disconnect the connection of terminal 1 to make the wiper motor stop at any position except the automatic stop position. Make terminal 1 and terminal 3 of the wiper motor connector short-circuited and the positive pole of the battery connected with terminal 2 of the wiper motor connector. Restart the motor to make it operate at low speed. Then the motor shall stop at the automatic stop position.

(4) Check the sprayer motor

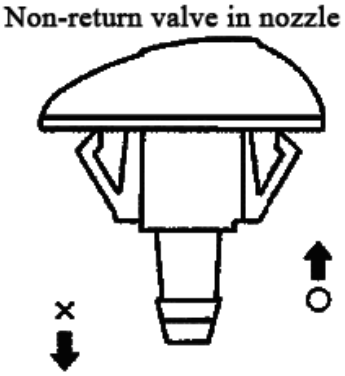
Install the sprayer motor and the water pump to the water storage tank of the sprayer and then fill the tank with water. Connect the positive pole of the battery with terminal 1 of the sprayer motor and the negative pole with terminal 2. The water shall be sprayed from the tank.

III Note

Clean the pivot before installing the wiper arm to avoid the looseness of the wiper arm (see the following figure).



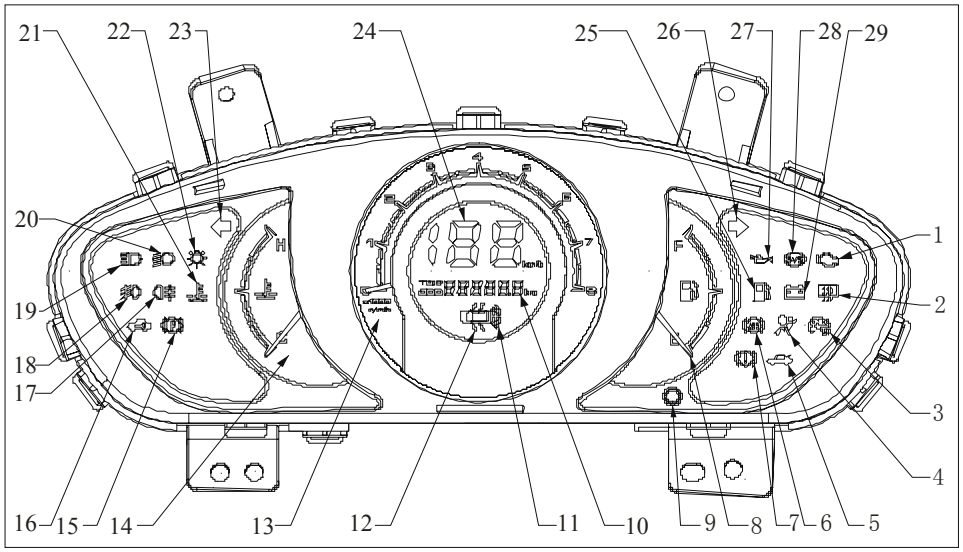
IV Check of Washer Nozzle



Blow air along the spraying direction of the washer fluid and confirm the air can flows in one way and the airflow direction can not be reversed, as shown in the figure below.

Instrument Cluster

I Introduction



1-Engine emission & monitor indicator 2-Rear windshield defrosting indicator 3-120km/h overspeed warning indicator 4-Air bag fault warning indicator 5-Luggage boot ajar warning indicator 6-Antiskid system fault indicator 7-Brake system fault indicator 8-Fuel gauge 9-Subtotal mileage/total mileage switch, reset lever 10-Subtotal/total odometer 11-Reverse radar indicator 12-Door ajar warning indicator 13-Engine tachometer 14-Water thermometer 15-Parking brake indicator 16-Burglar alarm indicator 17-Rear fog light indicator 18-Front fog light indicator 19-Headlight high-beam indicator 20-Headlight low-beam indicator 21-Water temperature too high warning indicator 22-Mater lighting switch indicator 23-Left steering light indicator 24-Speedometer 25-Fuel warning indicator 26-Right steering light indicator 27-Engine oil pressure too low warning indicator 28-Warning indicator for faults outside engine OBD 29-Battery charging indicator

As shown in the above figure, this instrument cluster is an electromechanical instrument cluster at the upper part of the steering column, right ahead of the driver. It includes installation parts and electric connections. All the circuits of the instrument cluster are connected at the back of the instrument cluster housing with connectors to constitute a single harness. All the instruments and the indicators of the instrument cluster are protected behind a transparent plastic mirror, which can be seen clearly from the front of the instrument cover. Behind the transparent plastic mirror are the cover and the panel of the instrument cluster. The cover adopts a visor which protects the surface of an instrument from being affected by illumination and reflection to reduce glare. This instrument cluster is also provided with

audio alarm. The visible dark surface of the panel and the surface of the instrument dial are surface layers or covering layers of multilayer structure. The surface layer is subtransparent and dark to avoid unorderly situation of the unlit indicators packaged in the instrument cluster. Translucence makes the lit indicators and icons visible. Under the covering layer is a non-transparent layer, behind which, the indicators send light to the panel and the instrument dial surface through the reserved opening. Then the panel and the dial become visible. Subtransparent figures, scales and numbers on the instruments can be lit from the back while white instrument pointers can be lit from the inside. There is a plastic button switch of the odometer/milometer, which is located at the center under the mirror of the instrument cluster and passes through the specially-made hole of projected mirror surface. The instrument cluster of this vehicle model uses integrated circuit to control the information from part of the instruments and the indicators via the PCI data bus. It is also equipped with many connection inputs which can realizes some functions of its own.

				
Fuel level low warning indicator	Water temperature too high warning indicator	Battery charging warning indicator	Engine oil pressure too low warning indicator	Brake system fault indicator
				
Parking brake indicator	Engine OBD indicator	Antiskid system fault indicator	Safety belt unbuckled warning indicator	Air bag fault warning indicator
				
Rear defrosting indicator	Left steering light indicator	Right steering light indicator	Hazard warning indicator	Headlight high-beam indicator
				
Headlight low-beam indicator	Position lamp indicator	Front fog light indicator	Rear fog light indicator	Warning indicator for faults outside engine OBD
				.....
120km/h overspeed warning indicator	Luggage boot ajar warning indicator	Door ajar warning indicator	Reverse radar distance display	... ...

The illumination of the instrument cluster is realized by the adjustable LED at its back, which can make the instruments visible. Each indicator of the instrument cluster is also lit by a special LED while each LED is welded integrally on the circuit board behind the instrument cluster housing. The instrument cluster is connected to the electric system of the complete vehicle by connecting circuits which are integrated in the harness of the vehicle in different routings, fixed in different ways.

II Layout of Instrument Cluster

Layout of instrument cluster

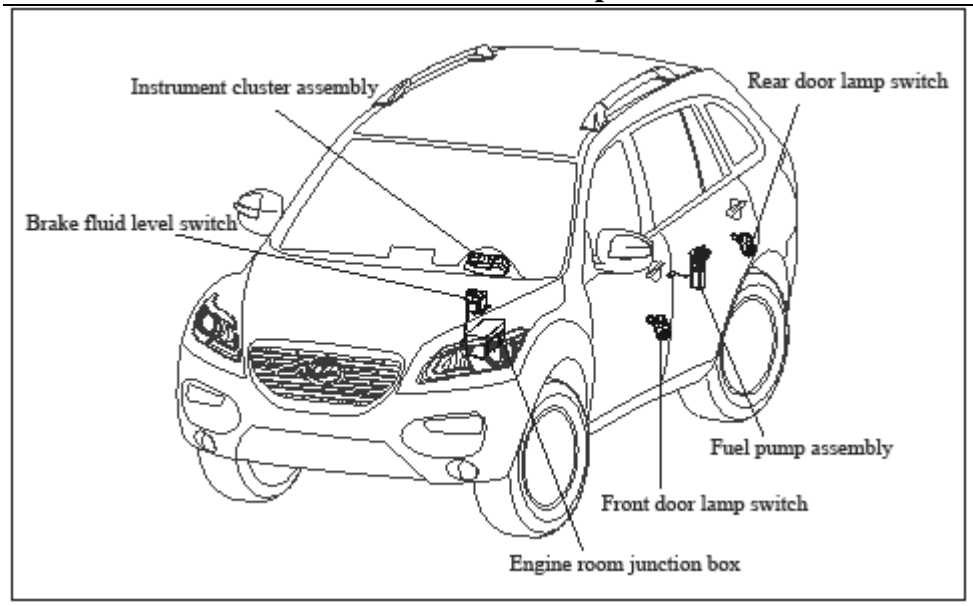
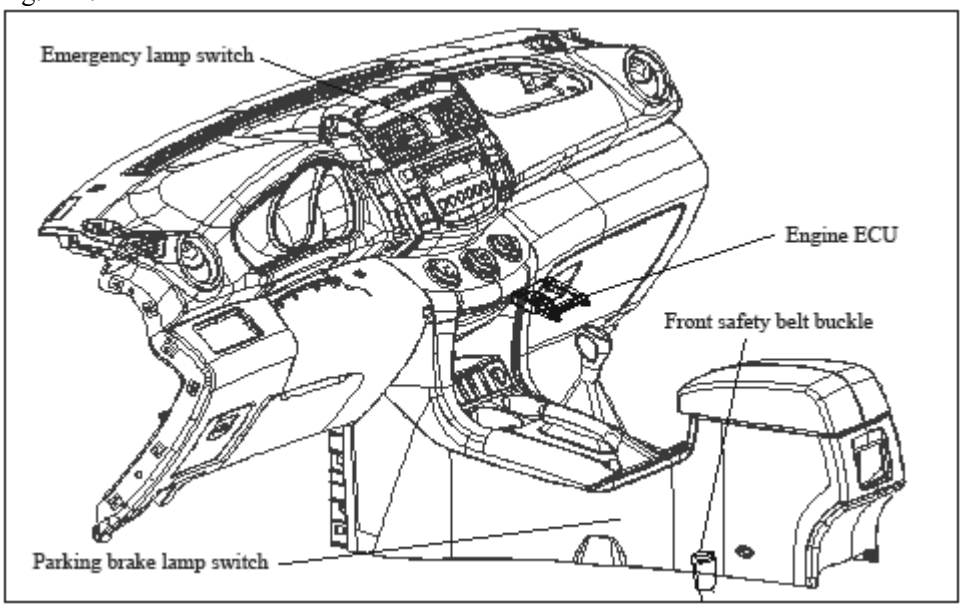
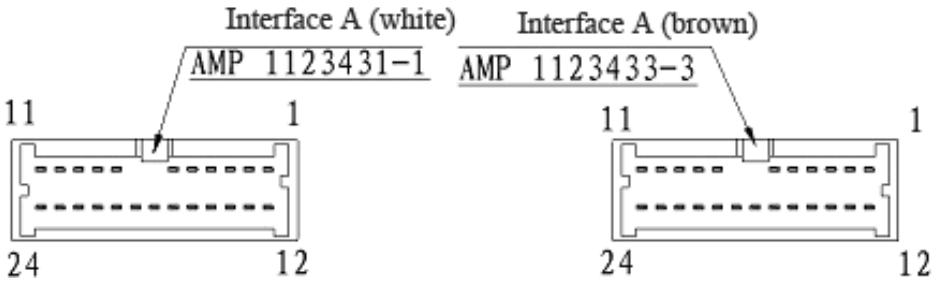


Fig. 4-17



III Instrument Cluster Terminal Voltage

1. See the following figure



2. Terminal description

Testing terminal	Wiring color	Terminal description	Testing conditions	Nominal value

A1—Body	Y/W	SRS air bag fault signal	Ignition switch ON, indicator lit → unlit	Less than 1V →1 0～14V
A3—Body	Y/B	Parking brake signal	Brake indicator unlit → lit	10 ～ 14V → less than 1V
A4—Body	W/G	ABS brake signal	Ignition switch ON, indicator lit → unlit	Less than 1V → 10～14V
A6—Body	Y/U	Status signal of driver seat safety belt	Ignition switch ON, driver seat safety belt unbuckled → buckled	10 ～ 14 V → less than 1V
A7—Body	R/Y	BCM fault warning signal	BCM fault indicator unlit → lit	Less than 1V → 10～14V
A9—Body	B	Instrument cluster grounded	Kept	Less than 1Ω
A10—Body	W/B	LIA BA9 signal input	Reverse radar working	LIA signal
A12—Body	V/W	Brake fault signal	Brake indicator unlit → lit	Less than 1V → 10～14V
A13—Body	S	Front left door OPEN/CLOSED indication	Lit (door open) → unlit (door closed)	Less than 1V → 10～14V
A14—Body	S/B	Front right door OPEN/CLOSED indication	Lit (door open) →unlit (door closed)	Less than 1V → 10～14V
A15—Body	S/G	Rear left door OPEN/CLOSED indication	Lit (door open) → unlit (door closed)	Less than 1V → 10～14V
A16—Body	S/Y	Rear right door OPEN/CLOSED indication	Lit (door open) → unlit (door closed)	Less than 1V → 10～14V
A17—Body	R	Lamplet power signal	Lamplet switch OFF → ON	Less than 1V → 10～14V
A18—Body	G/Y	Battery power B+	Kept	Less than 1Ω
A19—Body	V/B	Engine power IG1	Kept	Less than 1Ω
A20—Body	V/B	Engine power IG1	Kept	Less than 1Ω
A21—Body	O/G	Vehicle speed signal (input)	Ignition switch ON, driving wheel slowly revolving	Pulse signal produced
A22—Body	W/B	Engine rotation speed signal	Engine operating	Pulse signal produced
A23—Body	W/U	Fuel signal	Kept	Less than 1Ω
A24—Body	N	Engine coolant temperature signal	Engine operating, coolant temperature rising	Pulse signal produced
B3—Body	R/B	Low-beam signal	Ignition switch ACC, low-beam unlit → lit	Less than 1V → 10～14V
B4—Body	P/G	High-beam signal	Ignition switch ACC, high-beam unlit → lit	Less than 1V → 10～14V
B5—Body	Y/W	Front fog light signal	Ignition switch ON, front fog light unlit → lit	Less than 1V → 10～14V
B6—Body	G/R	Lamplet power signal	Lamplet switch OFF→ON	Less than 1V → 10～14V
B8—Body	V/G	Engine charging indicator signal	Engine operating, charging indicator unlit → lit	Less than 1V → 10～14V
B9—Body	B/W	Engine oil pressure signal	Engine oil pressure warning indicator lit → unlit	Less than 1V → 10～14V
B10—Body	G/B	Engine fault signal	Ignition switch ON, indicator lit → unlit	Less than 1V → 10～14V

B11—Body	Lg/W	Rear fog light power signal	Ignition switch ON, rear fog light unlit → lit	Less than 1V → 10～14V
B12—Body	S/V	Luggage boot ajar warning signal	Luggage boot open → closed	Less than 1V → 10～14V
B13—Body	N/W	Rear defrosting signal	Rear defrosting indicator unlit → lit	Less than 1V → 10～14V
B14—Body	G	Warning for fault outside SVS engine OBD	SVS indicator lit → unlit	Less than 1V → 10～14V
B19—Body	R/Y	Left steering signal	Ignition switch ON, left steering indicator OFF→ON	Less than 1V → 10～14V
B20—Body	N/Y	Right steering signal	Ignition switch ON, right steering indicator OFF→ON	Less than 1V → 10～14V
B21—Body	G	Automatic locking output signal	Unlocked → locked	Less than 1V → 10～14V

Table 4-2

IV Faults of Instrument Cluster

Faults	Causes	Faults	Causes
1 The instrument cluster does not work	1 Fuse fault 2 Wiring and connector fault 3 Fault of instrument cluster	2 Something happens to the speedometer	1 Fault of vehicle speed sensor 2 Wiring and connector fault 3 Fault of instrument cluster
3 There is something wrong with the tachometer	1 Engine/ECM fault 2 Wiring and connector fault 3 Fault of instrument cluster	4 The fuel gauge has fault	1 Fault of fuel level sensor 2 Wiring and connector fault 3 Fault of instrument cluster
5 The water thermometer has some fault	1 Fault of coolant temperature sensor 2 Wiring and connector fault 3 Fault of instrument cluster	6 The reverse radar alarm buzzer works abnormally	1 Fault of instrument cluster 2 Fault of ECM controller 3 Fault of reverse radar probe 4 Fault of reverse switch 4 Fault of key unlocked warning switch 5 Wiring and connector fault
7 The safety belt unbuckled buzzer works abnormally	1 Fault of four-door lamp switches 2 Fault of air bag ECU 2 Wiring and connector fault 3 Fault of instrument cluster	8 The door ajar buzzer works abnormally	1 Fault of four-door lamp switches 2 Fault of air bag ECU 2 Wiring and connector fault 3 Fault of instrument cluster

V Check of Instrument Cluster Circuits

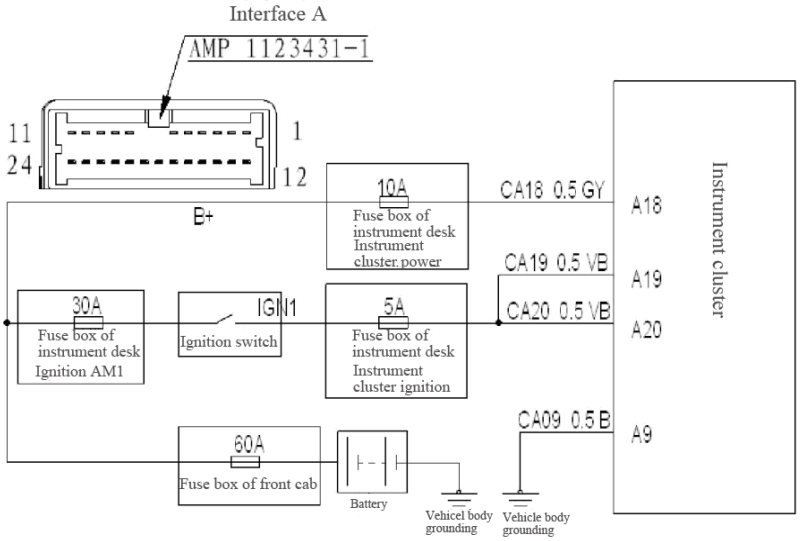
1. The instrument cluster does not work. (1) Check steps

1) Check the cab power (60A) fuse (located on the distribution box inside the engine room). If it is normal, the next step can be carried out; if it is abnormal, the instrument fuse shall be replaced.

2) Check the instrument cluster power (10A) fuse (located in the fuse box of the instrument desk). If it is normal, the next step can be carried out; if it is abnormal, the instrument fuse shall be replaced.

3) Check the instrument cluster ignition (5A) fuse (located on the fuse box of the instrument desk). If it is normal, the next step can be carried out; if it is abnormal, the instrument fuse shall be replaced.

(2) Check the circuits as shown in the below figure.



2. Fault of the speedometer

(1) Check steps

1) Check the input end of the vehicle speed sensor power.

Place the ignition switch at ON and detect the voltage between 1-T2 and the vehicle body, which shall be 10-14V. If it is normal, the next step shall be carried out; if it is abnormal, the fuse/wiring/connector shall be repaired or replaced.

2) Check the grounding end of the vehicle speed sensor, as shown in Fig. 4-20.

Detect the resistance between 2-T2 and the vehicle body, which shall be less than 1Ω. If it is normal, the next step shall be carried out; if it is abnormal, the wiring and connector shall be repaired or replaced.

3) Check the instrument cluster.

Place the shift lever at N, use a lift to hold up a front wheel and place the ignition switch at ON. Rotate the wheel slowly and detect the voltage between terminal A21 and terminal A9 of the instrument cluster harness, which shall be the pulse voltage with the wave crest of 5-14V.

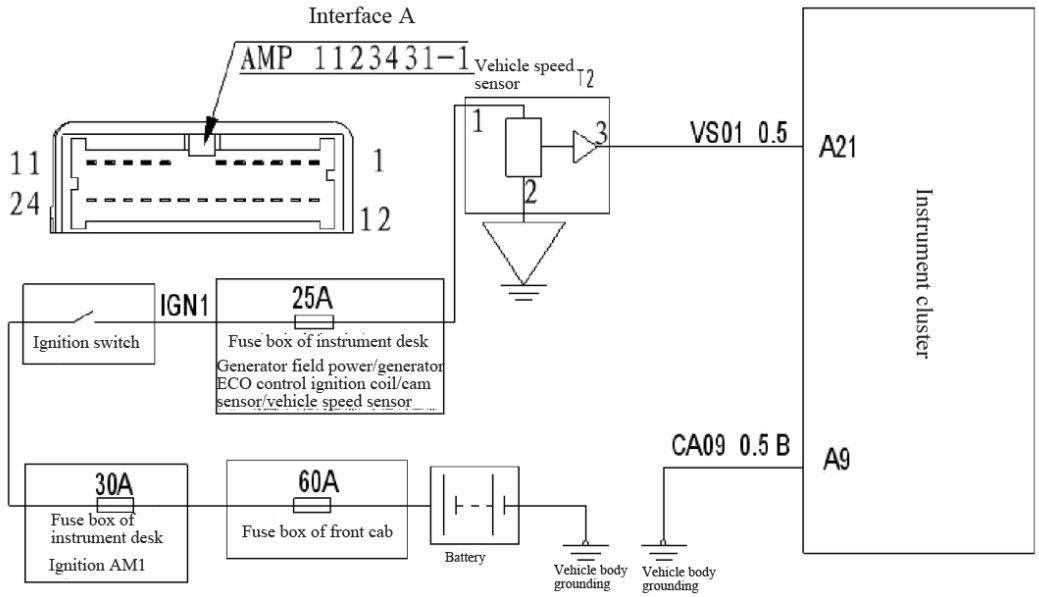
If it is normal, the instrument cluster shall be replaced; if it is abnormal, the wiring/connector and the vehicle speed sensor shall be repaired or replaced.

(2) Check the circuits as shown in the below figure.

4) Check the instrument cluster.

① Remove the instrument cluster and place the ignition switch at “ON”. Detect the voltage between terminal A18/terminal A19/terminal A20 of the instrument cluster connector and the vehicle body, which shall be 10-14V.

② Detect the resistance between terminal A9 of the instrument cluster connector and the vehicle body, which shall be less than 1Ω. If it is normal, the instrument cluster shall be replaced; if it is abnormal, the wiring and the connector shall be repaired or replaced.



3. Fault of the tachometer

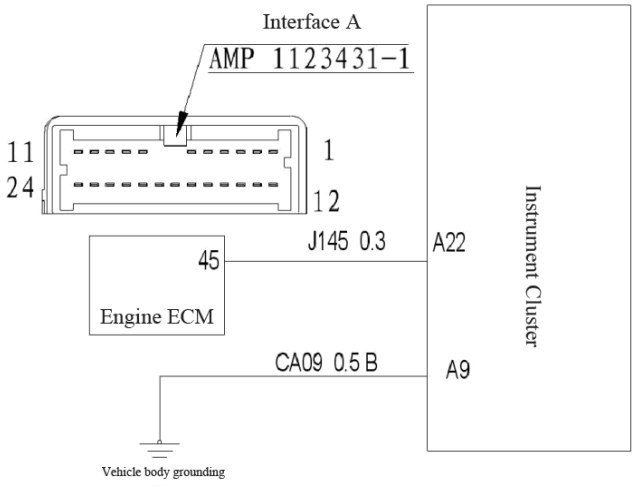
(1) Check steps

1) Check the rotation speed signal output of the engine ECM.

During the operation of the engine, check the voltage between terminal A22 and terminal A9, which shall be the pulse voltage with the wave crest of about 5V.

If it is normal, the instrument cluster shall be replaced; if it is abnormal, the wiring/connector/electronic injection system shall be repaired or replaced.

2) Check the circuits as shown in the below figure.



4. Fault of fuel gauge

(1) Check steps

1) Check the resistance of the fuel level sensor.

Disconnect the fuel pump harness connector F11. Detect the resistance between terminal 2-F11 and terminal 3-F11 of the fuel level sensor connector when the fuel level sensor float is at E and F. When it is at F, the resistance shall be 1-5Ω; when it is at E, the resistance shall be 112-116Ω.

If it is normal, the next step shall be carried out; if it is abnormal, the fuel level sensor shall be replaced and installed to the fuel pump.

2) Check the wiring and the connector between the instrument cluster and the fuel pump.

① Disconnect the instrument cluster harness connector and terminal F11 of the fuel pump harness connector.

② Measure the resistance between terminal A23 and terminal 3-F11, which shall be less than 1Ω.

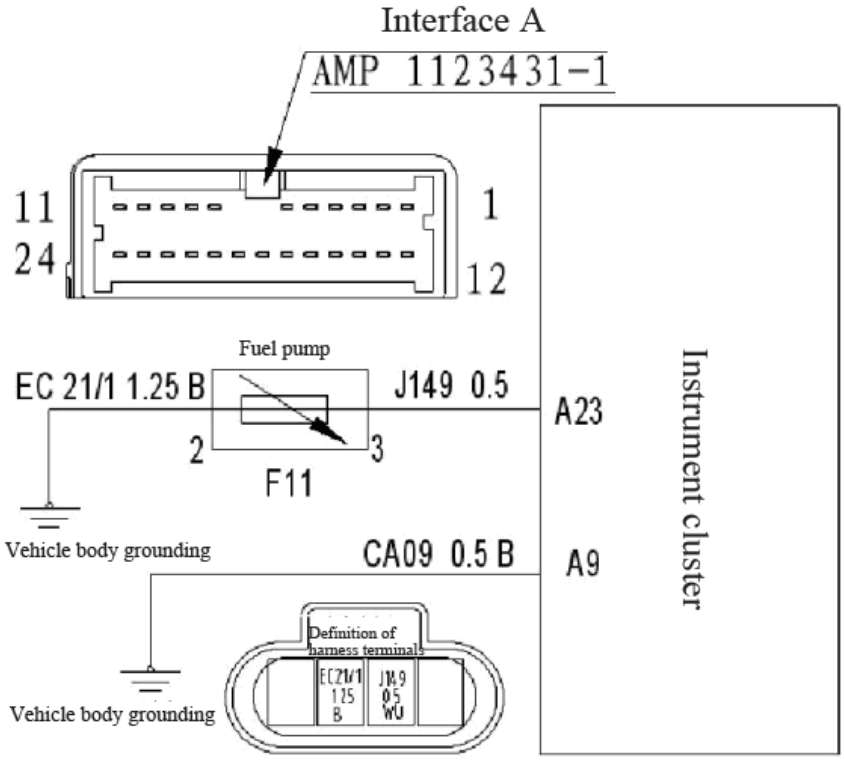
③ Measure terminal A9 of the harness and the vehicle body grounding, which shall be less than 1Ω.

④ Measure terminal A23 of the instrument cluster and the vehicle body, which shall be more than 100KΩ.

⑤ Measure terminal A9 of the instrument cluster and the vehicle body, which shall be more than 100KΩ.

If it is normal, the instrument cluster shall be replaced; if it is abnormal, the wiring and the connector shall be repaired or replaced.

(2) Check the circuits as shown in the below figure.



5. Fault of the water thermometer

(1) Check steps

1) Check the coolant temperature sensor

Disconnect the engine coolant temperature sensor harness connector. When the coolant temperature is 90℃, the resistance between the signal wire terminal of the coolant sensor and the vehicle body shall be 75-98Ω.

If it is normal, the next step shall be carried out; if it is abnormal, the coolant temperature sensor shall be replaced.

2) Check the wiring and the connector between the instrument cluster and the coolant temperature sensor.

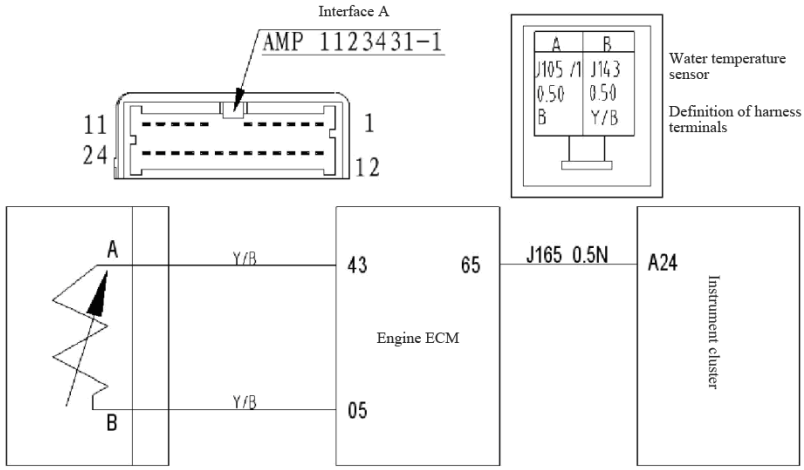
① Disconnect the instrument cluster harness connector and the engine coolant temperature sensor harness connector.

② Detect the resistance between the harness terminal of foot A24 of the instrument cluster and foot 65 of the engine ECM harness, which shall be less than 1Ω.

③ Measure the resistance between foot A24 of the instrument cluster and the vehicle body, which shall be more than 100KΩ.

If it is normal, the instrument cluster shall be replaced; if it is abnormal, the wiring and the connector shall be repaired or replaced.

(2) Check the circuits



6. The door lamp alarm buzzer works abnormally.

(1) Check steps

1) Check the left front door lamp switch.

Open and then close the left front door and confirm the status between A13 of the instrument cluster and the vehicle body shall be connected (the resistance shall be less than 1Ω) and then disconnected (the resistance shall be more than 100KΩ).

If it is normal, the next step shall be carried out; if it is abnormal, the left front door lamp switch shall be replaced.

2) Check the right front door lamp switch

Open and then close the right front door and confirm the status between A14 of the instrument cluster and the vehicle body shall be connected (the resistance shall be less than 1Ω) and then disconnected (the resistance shall be more than 100KΩ).

If it is normal, the next step shall be carried out; if it is abnormal, the right front door lamp switch shall be replaced.

3) Check the left rear door lamp switch.

Open and then close the left rear door and confirm the status between A15 of the instrument cluster and the vehicle body shall be connected (the resistance shall be less than 1Ω) and then disconnected (the resistance shall be more than 100KΩ).

If it is normal, the next step shall be carried out; if it is abnormal, the left rear door lamp switch shall be replaced.

4) Check the right rear door lamp switch.

Open and then close the right rear door and confirm the status between A16 of the instrument cluster and the vehicle body shall be connected (the resistance shall be less than 1Ω) and then disconnected (the resistance shall be more than 100KΩ).

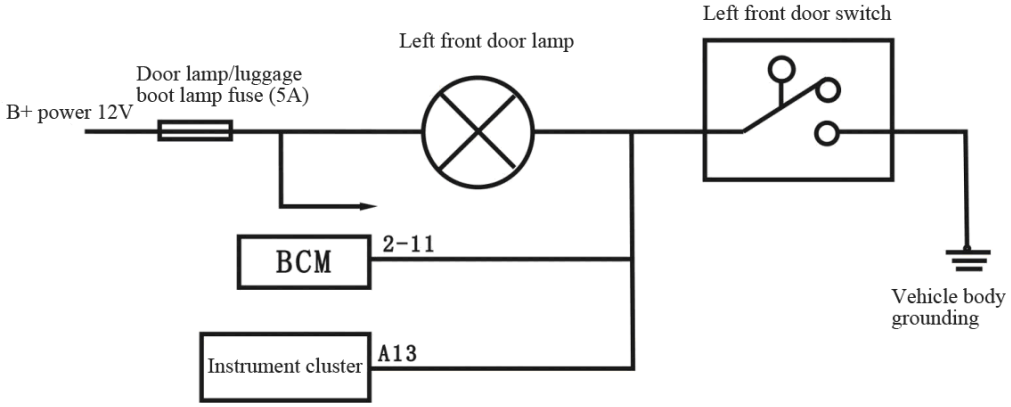
If it is normal, the next step shall be carried out; if it is abnormal, the right rear door lamp switch shall be replaced.

5) Check the rear luggage boot lamp switch.

Open and then close the rear luggage boot cover and confirm the status between B12 of the instrument cluster and the vehicle body shall be connected (the resistance shall be less than 1Ω) and then disconnected (the resistance shall be more than 100KΩ).

If it is normal, the next step shall be carried out; if it is abnormal, the rear luggage boot lamp switch shall be replaced.

(2) Check the circuits as shown in the below figure.

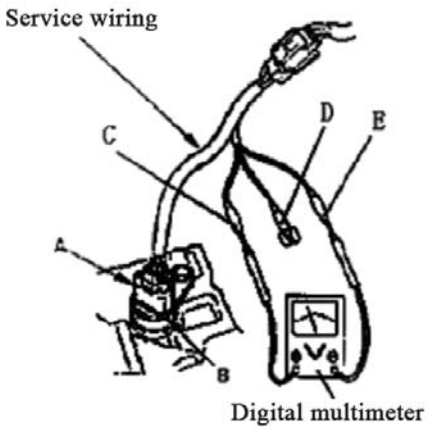


7. Driver safety belt unbuckled alarm buzzer works abnormally. See the following table.

Faults	Causes
The driver safety belt unbuckled alarm buzzer works abnormally.	1 Fault of instrument cluster 2 Fault of air bag ECU 3 Fault of wiring and connector 4 Fault of safety belt buckle switch

VI Check of Components of Instrument Cluster System

1. Check the speedometer of the instrument cluster (see the following figure).



A: Vehicle speed sensor service wiring socket

B: Vehicle speed sensor

C: Serial interface of vehicle speed sensor signal

D: Serial interface of vehicle speed sensor power

E: Serial interface of vehicle speed sensor grounding

(1) Prepare the service wiring and the digital multimeter well

(2) Lift the front part of the vehicle and make sure it is supported reliably.

(3) Place the ignition switch at ON and make the vehicle at neutral position.

(4) Rotate the wheel and use the multimeter to measure if the voltage changes from 0V to 5V or higher. If there is no signal, the vehicle speed sensor shall be replaced; if it is normal, the next step shall be carried out.

(5) Observe the speedometer of the instrument cluster. If the pointer is abnormal, the instrument cluster shall be replaced.

2. Check the speed signal output of the instrument cluster

(1) Prepare the service wiring and the digital multimeter well;

(2) Lift the front part of the vehicle and confirm it is supported reliably;

(3) Place the ignition switch at ON and make the vehicle at the neutral position;

(4) Drive the vehicle at the speed of 10km/h and detect the voltage between terminal 10-C7 and terminal 1-C7 of the instrument cluster connector, which shall fluctuate between 5V and 14V, with the fluctuation frequency of 14 times/second. If it is abnormal, the instrument cluster or the vehicle speed sensor shall be replaced.

Note: The ignition switch shall be placed at ON and the signal shall be checked on the condition that the harness

connector is connected well.

3. Check the tachometer of the instrument

Under the DC voltage of 13.5V±0.5V and the ambient temperature of 25℃±5℃, start the engine and use a diagnostic scanner to measure the rotation speed. The rotation speed values measured and the rotation speed values reflected by the instrument cluster shall meet the following requirements.

Allowable scope of the tachometer (see table 4-5)

Table 4-5

Measured value (rpm)	Value reflected by instrument cluster (rpm)
1000	900～1100
3000	2800～3200
5000	4800～5200

4. Check the fuel gauge of the instrument cluster

(1) Disconnect the fuel level sensor harness connector, place the ignition switch at ON and check the fuel gauge pointer which shall be at E.

(2) Connect terminal 2-F11 and terminal 3-F11 of the connector at the fuel level sensor wiring side, place the ignition switch at ON and check the fuel gauge pointer which shall be at F.

5. Check the fuel level warning indicator, disconnect the fuel level sensor harness connector and place the ignition switch at ON. The fuel gauge pointer shall be at E and the fuel level warning indicator shall be lit.

6. Check the water thermometer of the instrument cluster.

(1) Disconnect the coolant temperature sensor harness connector, place the ignition switch at ON and check the water thermometer pointer which shall be at C.

(2) 将冷却液温度传感器配线侧连接器端子与车身相连，检查水温表指针位置，指针应指在 H 位置；
(2) Connect the connector terminal of the coolant temperature sensor wiring with the vehicle body and check the water thermometer pointer which shall be at H.

7、检查组合仪表安全带警告灯
7. Check the safety belt warning indicator of the instrument cluster

(1) 将点火开关转至 ON，不扣上驾驶员侧座椅安全带，检查安全带警告灯，应亮；
(1) Place the ignition switch at ON, unbuckle the driver safety belt and check the safety belt warning indicator which shall be lit;

(2) 将点火开关转至 ON，扣上驾驶员侧座椅安全带，检查安全带警告灯，应灭；
(2) Place the ignition switch at ON, buckle the driver safety belt and check the safety belt warning indicator which shall be unlit;

(3) Disconnect the buckle switch connector and connect the connector terminal of the buckle switch wiring with the vehicle body. Place the ignition switch at ON, buckle the driver safety belt and check the safety belt warning indicator which shall be lit.

8. Check the engine oil pressure warning indicator of the instrument cluster

Disconnect the harness connector of the switch of the engine oil pressure warning indicator, place the ignition switch at ON and connect the connector terminal at the switch wiring side of the engine oil pressure warning indicator. The engine oil pressure warning indicator shall be lit.

9. Check the engine oil pressure warning indicator switch

Disconnect the harness connector of the engine oil pressure sensor switch and check the conductivity between the terminal of the engine oil pressure warning indicator switch and the vehicle body. When the engine stops, the terminal and the vehicle body shall be conducted; when the engine operates, the terminal and the vehicle body shall not be conducted.

10. Check the door lamp alarm buzzer

(1) Place the ignition switch at ON (IG1). The door ajar alarm buzzer will sound even if only one of the four doors is not closed. The sound will stop as long as all doors are closed.

12. Check the brake warning indicator of the instrument cluster

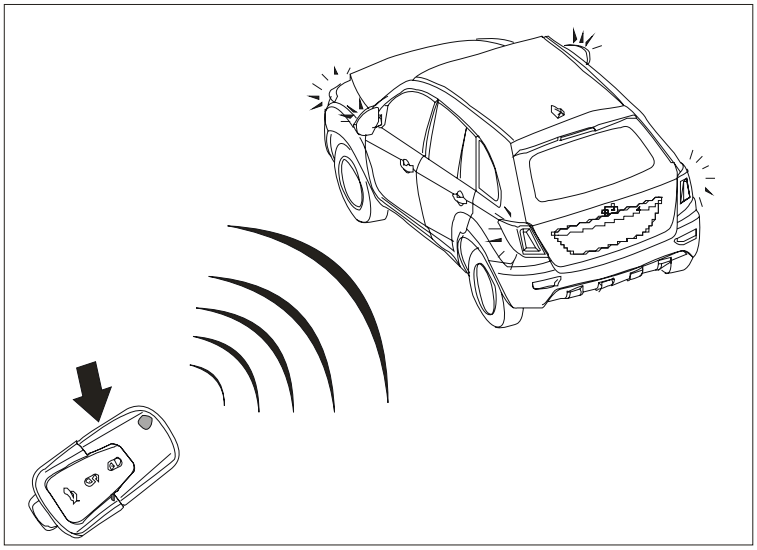
(1) Check the parking brake warning indicator: disconnect the parking brake switch harness connector and connect the connector terminal of the parking brake switch wiring and the vehicle body. Place the ignition switch at ON and check the parking brake warning indicator which shall be lit;

(12) Check the brake fluid level warning indicator: disconnect the brake fluid level warning indicator connector and make the connector terminal of the parking brake switch wiring short-circuited. Place the ignition switch at ON and check the brake fluid level warning indicator which shall be lit.

13. Check the brake fluid level warning indicator: remove the reservoir cover and the filter, disconnect the harness

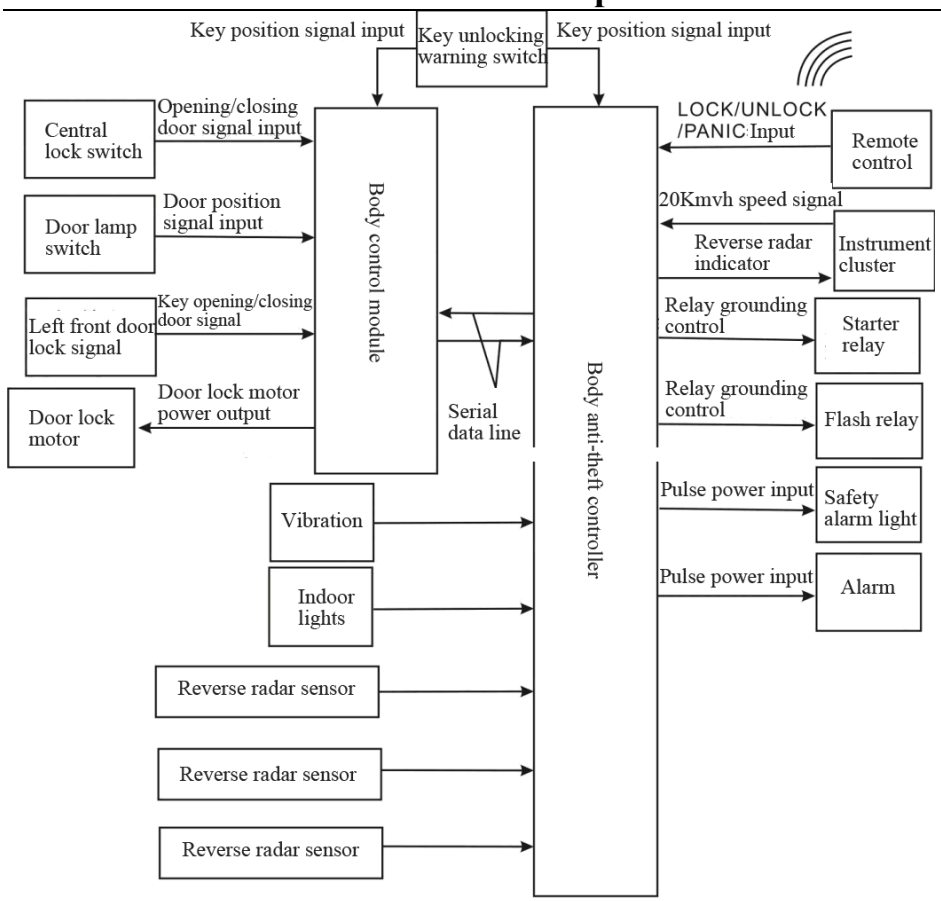
connector of the brake fluid warning indicator switch and check the conductivity between the terminals of the brake fluid level switch. When the float rises, the terminals shall not be conducted. Use a suction tube to draw out the brake fluid in the reservoir and check the conductivity between the terminals of the brake fluid level warning indicator switch. When the float drops, the terminals shall be conducted.

BCM Central Lock and Burglar Alarm System



Introduction

The central lock system is a part of the Body Control Module (BCM), connected with the burglar alarm system. It is mainly responsible for controlling four-door lock motors, remote locking & unlocking, controlling indoor lights, preventing the vehicle from being started during the security status, and vehicle search. See details in the user's manual. The control principle is as shown in the following figure.



The logic of the central door lock control shall meet the requirements of Q/LFQ J07.009-2008 *Technical Regulations for Operation Logic of LF7162 Sedan Central Door Lock Control/Burglar Alarm System*.

Alarm conditions: The ignition switch is disconnected, the ignition key is drawn out and the four doors and the rear luggage boot are closed in place.

Remote operation conditions: The remote operation is of no effect when the ignition key is inserted into the ignition lock.

1 Locking operations

Unlocked doors can be locked with many methods. Different methods are provided with different results.

(1) Automatic locking of driving vehicle

When the vehicle drives at the speed of 20km/h during the start, the four doors will be locked automatically. In a driving circle (the vehicle is not stopped but the ignition switch is turned off), when the vehicle speed decreases to less than 20km/h and then increases to 20km/h again, the system will not repeat the locking no matter whether the doors are unlocked or not.

(2) Locking switch on dash board

The four doors can be locked simultaneously via operating the locking switch on the dash board.

(3) Remote locking key

When the remote locking key is pressed (short-time operation), the four doors can be locked simultaneously, the steering light will flash once to send a vision signal and the alarm will sound once to send an acoustic signal.

(4) Key insertion into door lock

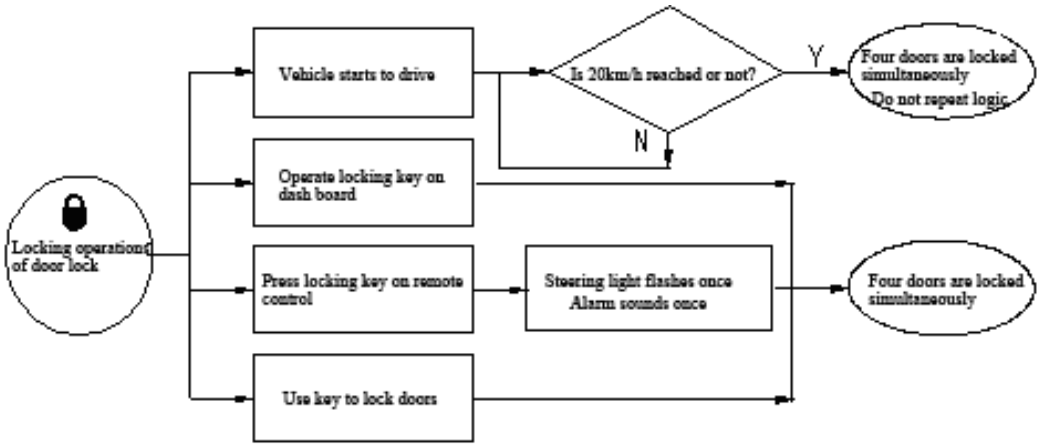
The four doors can be locked simultaneously when the key is inserted into the door keyhole and rotated anticlockwise.

(5) Door lock button

The door lock button can display the status of the vehicle door lock. The outward red mark means unlocking while the inward means locking. When the door lock button is moved from inside vehicle, only the corresponding door will be operated and others will not.

(6) Door locking operation procedure

See the following figure for the door locking operation procedure.



2 Unlocking operations

Locked doors can be unlocked with many methods. Different methods are provided with different results.

（1） 仪表板解锁开关操作
(1) Unlocking switch on dash board

The unlocking switch on the dash board can only be used to unlock the vehicle doors. The first operation of the switch is to unlock the driver door while the second operation is to unlock the other 3 doors.

(2) Door key

The four doors can be unlocked simultaneously when the key is inserted into the door keyhole and rotated clockwise.

(3) Key ignition switch

After the driving vehicle stops and the key leaves from ON to ACC, the four doors shall be unlocked simultaneously.

(4) Air bag

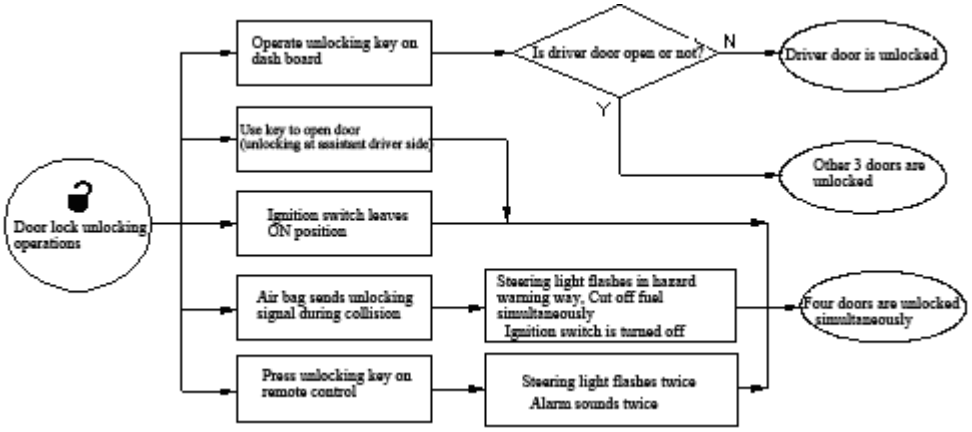
When the vehicle is hit and the air bag is exploded, the air bag SDM will send an unlocking signal. Then the four doors will be unlocked independently at the same time and the steering light will send a vision signal in hazard warning way (the ignition switch is turned off).

(5) Unlocking key on remote control

When the unlocking switch on the remote control is pressed, the four doors can be independently unlocked at the same time, the steering light will flash twice to send a vision signal and the alarm will sound twice to send an acoustic signal.

(6) Procedure of door unlocking operations

See the following figure for the procedure of the door unlocking operations.



3 Set alarm conditions

Alarm conditions: The ignition switch is turned off, the key is drawn out and the four doors and the rear luggage boot are closed.

(1) Alarm operations of the locking key on the remote control

Under the set alarm conditions, when the locking key on the remote control is pressed (short-time operation), the four doors can be locked simultaneously, the steering light will flash once to send a vision signal and the alarm will sound once to send an acoustic signal. Then the anti-theft indicator will flicker and the system will cut off the fuel control stop to enter the alarm status.

2) If the alarm conditions for the closed four doors and the rear luggage boot are not satisfied, the steering light will flash for 10s to point out the doors shall be closed; if the anti-theft indicator flickers after 10s, the system will cut off the fuel control stop to enter the alarm status.

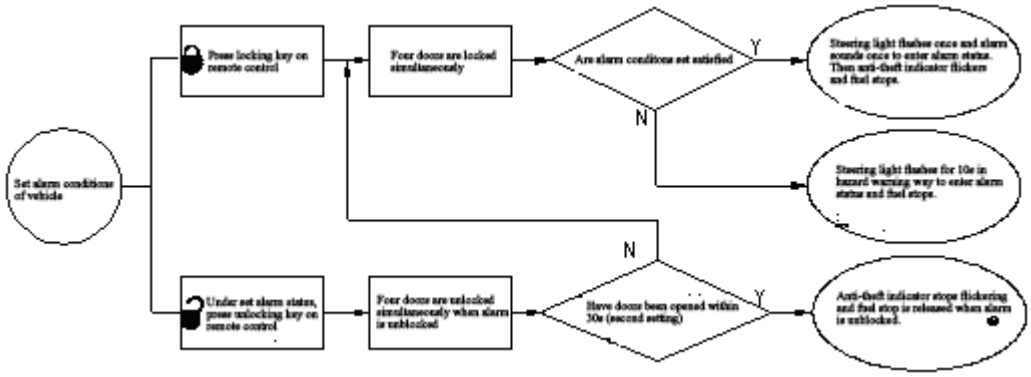
(2) A second setting for the alarm operations of the locking key on the remote control

① Under the set alarm conditions, when the unlocking key on the remote control is pressed, the four doors can be unlocked simultaneously, the steering light will flash twice to send a vision signal and the alarm will sound twice to send an acoustic signal. Then the anti-theft indicator will go off and the fuel supply control will be recovered.

② If no door has been opened within 30s, the four doors are locked and the anti-theft indicator flickers, the system will cut off the fuel stop to enter the alarm status for a second time.

(3) The procedure of the alarm setting operations

See the following figure for the procedure of the alarm setting operations.



4 Unblock the alarm

Under the set alarm conditions, unlawful entry or theft will be alarmed and the vehicle can be locked. Only the authorized person can unblock the alarm in a correct way and then the vehicle can be used normally.

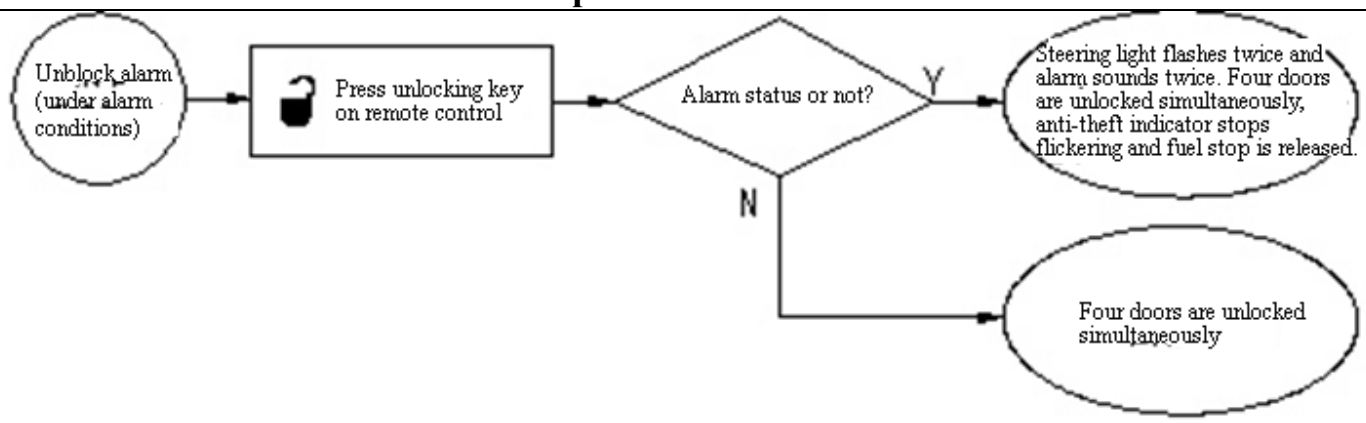
(1) Press the unlocking key on the remote control to unblock the alarm.

When the unlocking key on the remote control is pressed, the four doors can be unlocked simultaneously. If the system enters the alarm status, the steering light will flash twice to send a vision signal and the alarm will sound twice to send an acoustic signal. Then the anti-theft indicator will stop flickering, the alarm will be unblocked and the fuel supply control will be recovered.

If the alarm is unblocked, the four doors will be unlocked simultaneously.

(2) The procedure of alarm unblocking operations

See the following figure for the procedure of the alarm unblocking operations.



5 Suggestion for locking vehicle

If the doors are not locked and the alarm conditions are set, the system will judge the situation and give a suggestion.

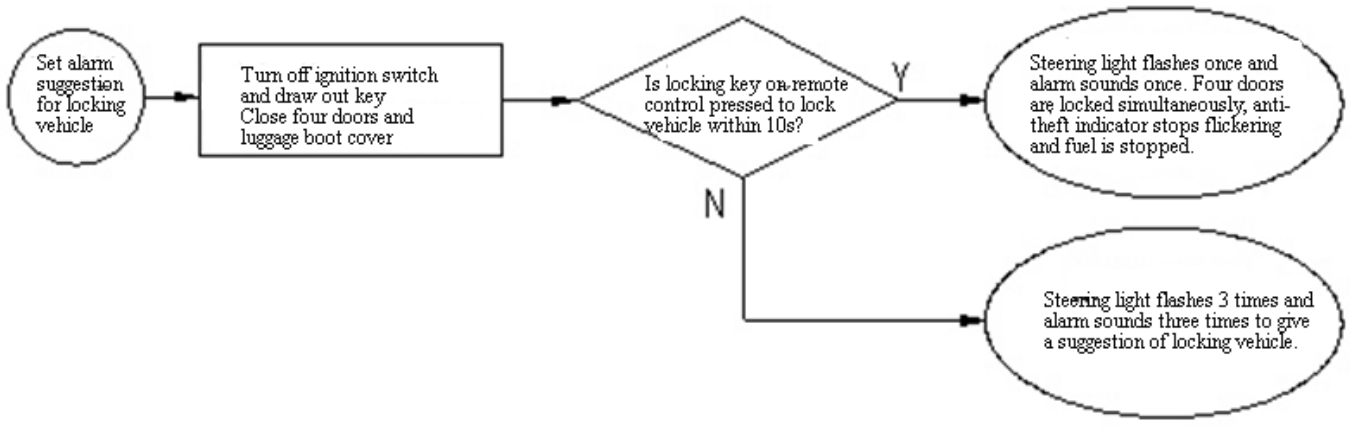
(1) Set the alarm suggestion for locking the vehicle

1) The ignition switch is disconnected, the key is drawn out and the four doors and the rear luggage boot are closed. If the locking key on the remote control is pressed within 10s to set the alarm conditions, the vehicle will enter the alarm status.

2) If the locking key on the remote control is not pressed within 10s, the steering light will flashes 3 times to send a vision signal and the alarm will sound three times to send an acoustic signal to give a suggestion of locking vehicle and setting alarm.

(2) The procedure of vehicle locking and alarm setting operations

See the following figure for the procedure of vehicle locking and alarm setting operations.



6 Vehicle search

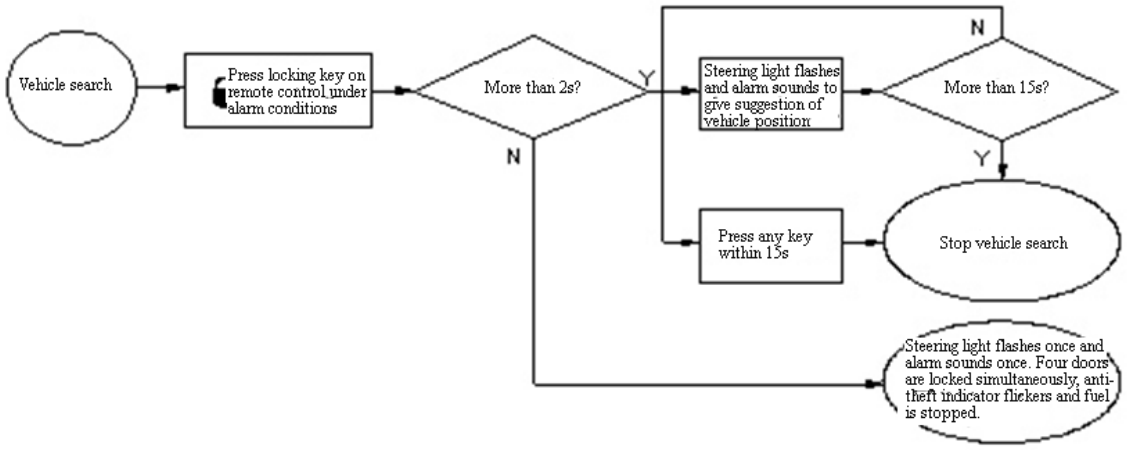
One can use vehicle search function to find his among many vehicles.

(1) Vehicle search operations

When the vehicle is in alarm status and the unlocking key on the remote control is pressed for no less than 2s, the vehicle search will begin. Then the steering light will send a vision signal and the alarm an acoustic signal. The vehicle search will end after 15s.

If any key on the remote control is pressed within 15s, the vehicle search will end. If the unlocking key on the remote control is pressed for less than 2s, the vehicle will be still in alarm status.

(2) The procedure of the vehicle search operations
See the following figure for the procedure of the vehicle search operations.



7. Electrically open the rear luggage boot (EX)

(1) Press the remote control to open the luggage boot under the non-alarm status.

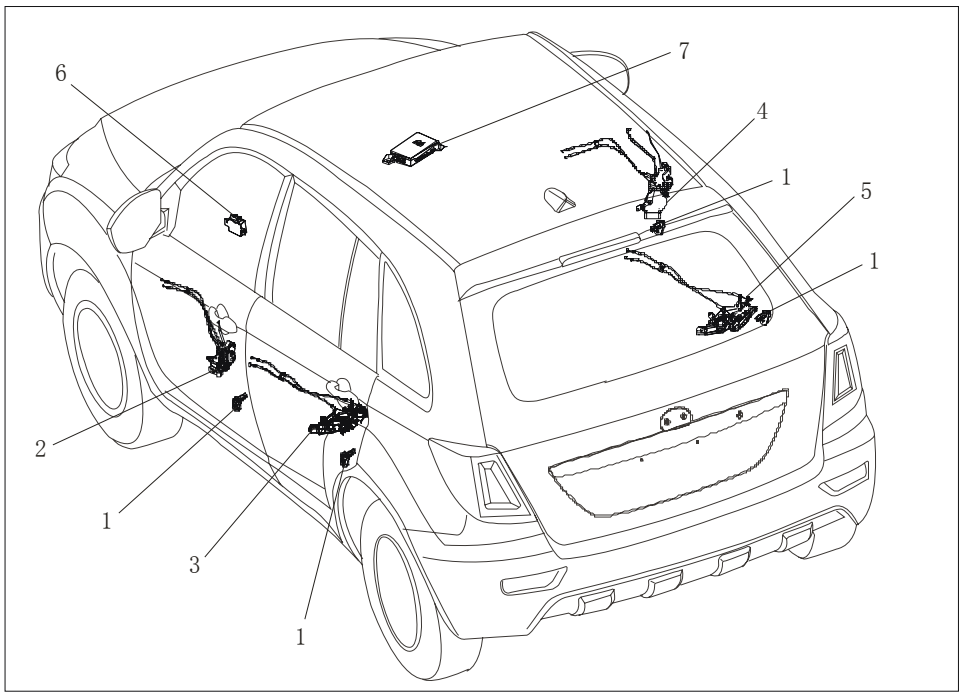
Under the non-alarm status, operate the opening key on the center console. The rear luggage boot cover will open and the signal light (31 in the figure) on the instrument cluster will be lit. Then the rear luggage boot cover can be lifted by hand. For closing, the luggage boot cover shall be pressed down. Then the signal light (31 in the figure) on the instrument cluster will go off and the cover shall be confirmed to be closed. If the cover is not closed within 60s, the steering light will flash to give a suggestion that the cover is not closed.

1) The rear luggage boot can not be opened by the remote control when the ignition key is inserted into the ignition lock. The remote operation will be of effect only when the ignition key is drawn out.

2) Under the alarm status, the alarm shall be unblocked first and the remote control shall be pressed to open the rear luggage boot. The rear luggage boot cover will open and the signal light on the instrument cluster will be lit. Then the rear luggage boot cover can be lifted by hand. The luggage boot cover shall be pressed down and be closed. Then the signal light on the instrument cluster will go off and the cover shall be confirmed to be locked. If the cover is not closed within 60s, the steering light will flash to give a suggestion that the cover is not closed.

(2) Open the rear luggage boot under the alarm status

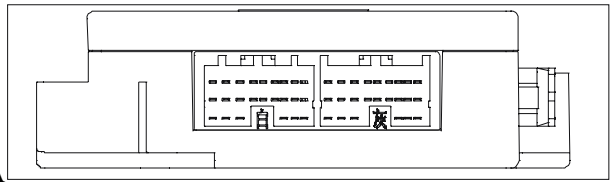
I Layout of Central Lock



1-Door lamp switch 2-Central lock actuator of left front door 3-Central lock actuator of left rear door 4-Central lock actuator of right front door 5-Central lock actuator of right rear door 6-Anti-theft ECU 7-Body control module (BCM)

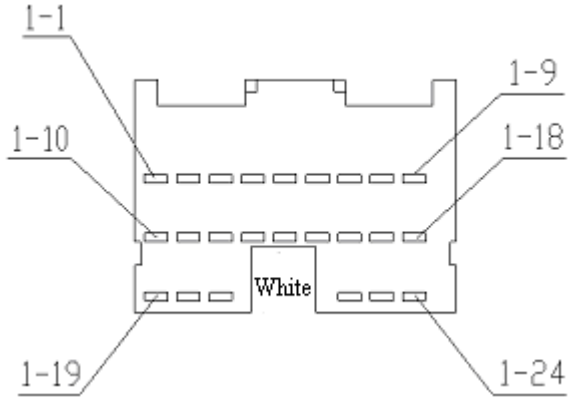
II Terminals of Central Lock

1 Pins of the central lock of the body control module (BCM):

A 

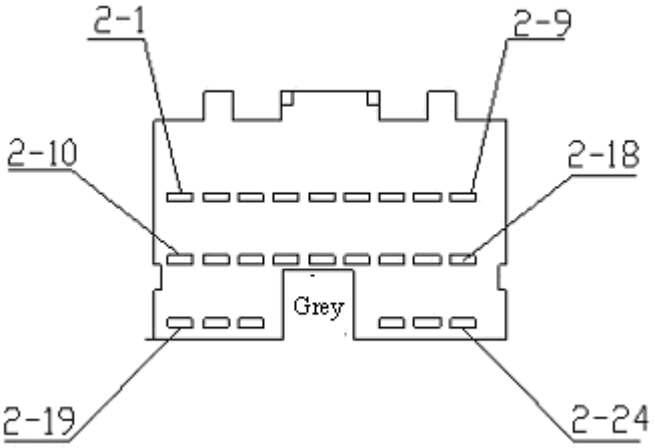
Testing terminal	Wiring color	Terminal description	Testing conditions	Nominal value
（3-1）— Body	S/B	Central lock power	Kept	Less than 1Ω
（3-2）— Body	Y/B	Left front door lock is locked	Kept	Less than 1Ω
（3-3）— Body	W/B	Left front door lock is unlocked	Kept	Less than 1Ω
（3-4）— Body	B	Grounding	Kept	Less than 1Ω
（3-9）— Body	B	Grounding	Kept	Less than 1Ω
（3-10）— Body	B	Grounding	Kept	Less than 1Ω
（3-13）— Body	G/W	Alarm drive power output	It is intermittent during the locking and unlocking by the remote control (see details in operation handbook)	10～14V
（3-19）— Body	N/G	Other three door locks are locked	Kept	Less than 1Ω
（3-20）— Body	N/W	Other three door locks are unlocked	Kept	Less than 1Ω
（3-27）— Body	B	Grounding	Kept	Less than 1Ω

B



Testing terminal	Wiring color	Terminal description	Testing conditions	Nominal value
（1-1）－Body	B/R	Time-delay illumination control output for indoor lights	When the roof light switch is at DOOR, the remote unlocking is operated or any door is opened, the roof light will be lit. If no door is opened by the remote unlocking within 30s, the roof light will go off. See details in operation handbook.	Less than 1 V
（1-2）－Body	Y/G	Keyhole illumination control output	If the ignition key is drawn out and the left front door is opened, the key ring indicator will be lit for 30s. If the left front door is closed within 30s, the key ring indicator will go off after 15s; when the key is inserted into the ignition lock, the indicator will go off immediately; when the key is drawn out, the indicator will be on and go off after 15s. See details in operation handbook.	Less than 1 V
（1-4）－Body	V/G	Fuel relay control line +	The engine is not started → the engine is started	Less than 1V→10～14V
（1-20）－Body	B/Y	Key locking	Active-low	Less than 1Ω
（1-22）－Body	W/Y	Key unlocking	Active-low	Less than 1Ω

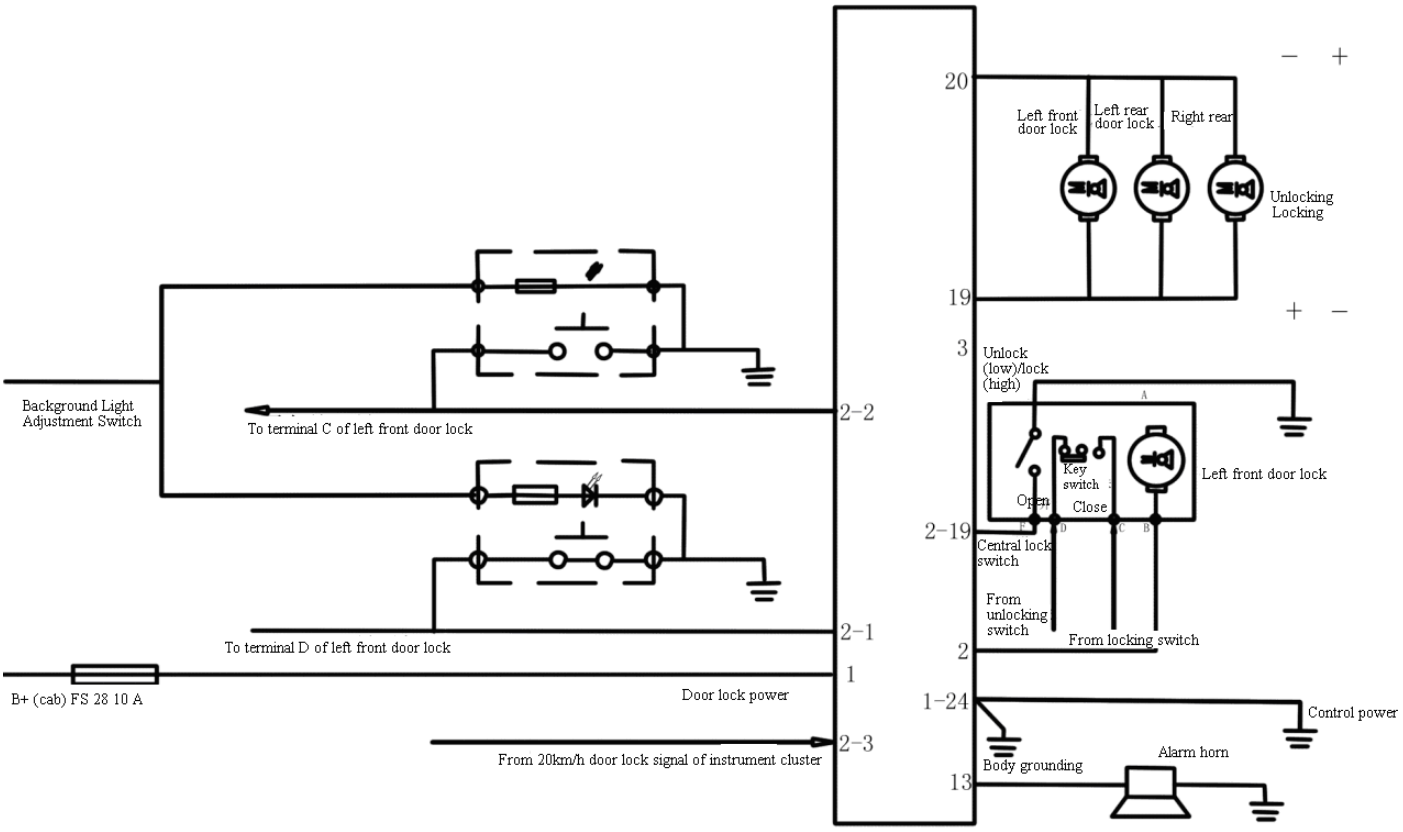
C



Testing terminal	Wiring color	Terminal description	Testing conditions	Nominal value
（2-1）－Body	U/W	Unlocking by the central lock switch	Active-low	Less than 1Ω
（2-2）－Body	G/U	Locking by the central lock switch	Active-low	Less than 1Ω

（2-17）－Body	W	Remote receiving antenna of BCM	Kept	Less than 1Ω

III Check of Circuits



IV Background Light Adjustment Switch

V. Vehicle Anti-theft Warning

While under anti-theft condition, if the key is at the ignition lock, the ignition switch is shorted, and all the doors are open, then, the oil line output will not be available, the alarm will send out continuous warning and the steering lamp will flash. The alarm will stop yet keep flash after 20 seconds. Ten seconds later, the flash will stop. The warning can be released only by pressing the unlocking key and then the oil line can be recontroled by the ignition key.

Vehicle Body Control Module Central Locking Fault Symptom Table

Fault Symptom	Fault Reason	Fault Symptom	Fault Reason
Door lock control system inoperative	1 Power supply system fuse fault 2 Vehicle body control module fault 3 Wiring fault	Door lock locking/unlocking fault (using central control switch and key)	1 A/C panel fault 2 Vehicle body control module fault 3 Wiring fault 4 Door key locking and unlocking switch fault
Only one door lock inoperative	1 Door lock motor fault 2 Wiring fault	Four door locks inoperative	1 Vehicle body control module fault 2 Switch control equipment fault 3 Door lock motor fault 4 Wiring fault
Remote control system failure	1 Door light switch fault 2 Door key locking & unlocking switch fault 3 Vehicle body control module fault (receiving function) 4 Remote controller battery low level or fault (transmitting function) 5 Wiring fault	Key mis-locking (the key is at ignition switch and the door can be locked automatically after stopping the vehicle)	1 Locking device fault 2 Vehicle body control module fault 3 Wiring fault

VI. Central Locking Parts Check

1 Central locking basic check

(1) All the doors will be locked if the driver side door is locked. All the doors will be opened if the driver side door is opened.

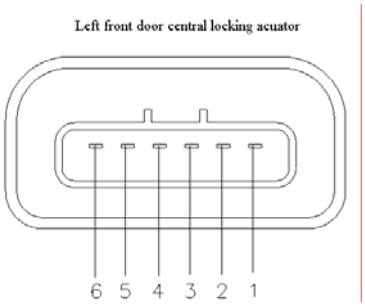
(2) Safety function check

① Only unlocking is performed by pressing the unlocking key on the remote controller if the anti-theft system is closed.

② The steering signal light will flash for two times, the alarm will sound for two times and the anti-theft light will go off by pressing the unlocking key on the remote controller if the anti-theft system has already been started.

If the anti-theft system has already been started and the door fails to be opened within 30 seconds after pressing the unlocking key on the remote controller, the door will be locked automatically under anti-theft condition, the steering lamp will not flash and the alarm will keep silent.

2 Left front door central locking acutator check



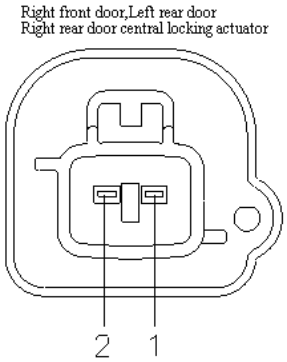
Check the left front door central locking actuator key locking and unlocking switch for continuity.

While the left front door central locking actuator locking and unlocking switch is at the locking position, the actuator terminals 2 and 4 should be connected; while at middle position, the actuator terminals 2 and 4 as well as 2 and 3 should not be connected; while at unlocking position, the actuator terminals 2 and 3 should be connected. If the continuity fails to meet the requirements, the left front door central locking actuator locking and unlocking switch should be replaced.

(2) Check left front door central locking actuator motor for locking and unlocking operation

Connect the positive pole of the battery with the left front door central locking actuator connector terminal 5 and the negative pole with terminal 6, and then the left front door central locking actuator control lever will move to locking

position. On the contrary, the actuator control lever will move to unlocking position. If not, the left front door central locking actuator motor should be replaced.



3 Check right front door central locking actuator, left rear door central locking actuator and right rear door central locking actuator

Connect the positive pole of the battery with the central locking actuator terminal 1 and the negative pole with terminal 2, and then the central locking actuator control lever will remove to locking position. On the contrary, the central locking actuator control lever will move to unlocking position. If not, the central locking actuator should be replaced.

4 Check the remote control locking system for normal operation

Steps

(1) Check control function

1) Check basic function

① Press the button on the remote controller for about 1s within 1m from the vehicle to check if all the door locks are unlocked or locked, and at this moment, the ignition key is not at the ignition lock cylinder and all the doors are locked.

② Press the button on the remote controller for 3 times, and check if the light-emitting diode on the remote controller illuminates for 3 times. And the diode will keep illuminating if keep pressing the button. Note: If the diode still can not illuminate after pressing the button for 3 times, the battery may have run down.

2) Check automatic locking function

① While the vehicle is under anti-theft condition, if press the unlocking button on the remote controller and no door is opened within 3Os, then, all the doors will be locked automatically and enter anti-theft condition again, at this moment, the steering lamp will not flash and the alarm will keep silent.

② Under the condition mentioned above, if any door is opened within about 3Os, then, all the doors will not be locked automatically.

3) Check safety protection function

① With the key at the lock cylinder, all the doors will not lock or open while pressing the locking or unlocking button on the remote controller,

② The doors should not lock or open while using a unregistered remote controller. However, the doors should lock or open if using a registered remote controller.

4) While the key is not at the ignition lock cylinder and the door is open or half-open, if press the button on the remote controller, the door will be locked with warning.

5) Check the flashing function of the steering signal light

① Press the remote control locking button. The system will enter anti-theft condition (anti-theft indicator flashes and fuel is cut off) and the doors will be locked. If proper, the steering lamp will flash for 1 time and the alarm will sound for 1 time. If not proper, the steering lamp will flash for 10 seconds and the alarm will keep silent, indicating the door should be opened. The flash will stop if proper.

② Press remote-control unlocking button. The anti-theft condition will be released and the 4 doors will be unlocked. And the steering lamp will flash for 2 times and the alarm will sound for 2 times. However, only unlocking will be performed while not under anti-theft condition.

③ While under anti-theft condition, if the door is not opened within 30 seconds after pressing the unlocking button on the remote controller, then, the door will be locked automatically and enter anti-theft condition. At this moment, the steering lamp will not flash and the alarm will keep silent.

④ Locking indication. If the doors fail to be locked within 10 seconds after taking out the iginition key and closing all the doors, then, the steering lamp will flash for 3 times and the alarm will sound for 3 times, indicating the door should be locked.

⑤ Vehicle locating function. Press the locking button on the remote controller for over 2 seconds to perform vehicle locating function. Then, the steering lamp will flash for 15 seconds, and the alarm will sound for 0.2 seconds at an interval of 0.6 seconds and stop after 15 seconds. The vehicle locating function can be stopped by pressing any key within the 15 seconds and corresponding function can be performed.

⑥ Vehicle anti-theft warning. While under anti-theft condition, if the key is at the ignition lock, the ignition switch is shorted, and all the doors are open, then, the oil

line output will not be available, the alarm will send out continuous warning and the steering lamp will flash. The alarm will stop yet keep flash after 20 seconds. Ten seconds later, the flash will stop. The warning can be released only by pressing the unlocking key and then the oil line can be recontroled by the ignition key.

⑦ Bulb damage reminding. The flashing frequency of the steering lamp will be doubled if the main bulb is damaged.

⑧ Open luggage boot with remote controller (EX). While under anti-theft condition, release the anti-theft condition at first and then open the luggage boot. If the luggage boot is not opened or closed within 60 seconds, the steering lamp will flash. And the flash will not stop until the luggage boot is opened or closed.

If normal, the system is normal. If not normal, go on with the next checking step.

(2) Check the battery of the remote controller

The light-emitting diode on the remote controller will flash for 3 times while pressing the remote controller switch for 3 times. If normal, go on with next checking step. If not normal, the battery is at low level and replace with specified battery.

(3) Check rear interior lamp

Move the rear interior lamp to position ON and check if the lamp can be illuminated.

Move the rear interior lamp to position DOOR and check if the lamp can be illuminated.

If normal, go on with next checking step. If not normal, repair or replace the rear interior lamp.

(4) Check the area can be controlled by the remote controller

Press the switch button on a new or a same normal remote controller 1m away from the driver side door to check the system for normal operation.

Note: Move the rear interior lamp to position DOOR and the rear interior lamp will keep flashing while pressing the switch button on the remote controller.

If normal, replace remote controller. If not normal, go on with step 5.

(5) Check the warning switch for unlocking of ignition switch

Insert the key into the ignition switch and take it out, then, the switch terminal 2 and 1 will be connected and disconnected.

If normal, go on with next checking step. If not normal, replace the warning switch for unlocking of ignition switch.

(6) Check vehicle body controller

Turn on the ignition switch and take out the fuel relay, then, check the continuity from vehicle body controller fuel control line to fuel relay and check if the voltage between the vehicle body controller fuel control line terminal BCM (1-4) pin and the vehicle body is 10~14V.

If normal, go on with next checking step. If not normal, replace vehicle body controller.

(7) Check if the vehicle windows can be automatically closed by the remote control key

Disconnect the vehicle body controller interface BCM3 and check if the voltage between the vehicle body controller terminal central locking power BCM (3-1) pin, steering lamp power (3-35) pin, window regulator power BCM (3-23) & BCM (3-32) and the vehicle body is 10~12V. Meanwhile, check if the resistance between the vehicle body controller terminal BCM(3-4), BCM (3-9), BCM (3-10), BCM (3-27) and the vehicle body is less than 1Ω. Finally, check the continuity between the vehicle body controller terminal BCM (3-33), BCM (3-34) and the left front window regulator motor. In the same way, check the continuity between the right front, left rear, right rear window regulator motor and the BCM. If normal, go on with next checking step. If not normal, repair or replace rear window regulator motor.

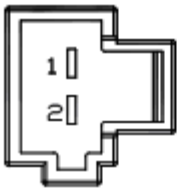
VII. Anti-theft Indicator

Check the anti-theft indicator for any fault:

Ground the pin 2 in the following figure and connect the pin 1 with power (10~14V), then the anti-theft indicator should be illuminated.

If normal, check and repair other faults. If not normal, replace anti-theft indicator.

Definition of anti-theft indicator interface



1. Anti-theft indicator power
2. Ground

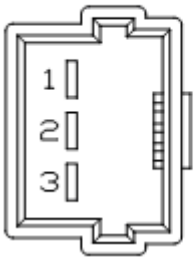
Background Lighting Adjustment Switch

Check the background lighting adjustment switch for any fault:

Ground the pin 3 in the following figure and connect the pin 2 with power (10~14V), connect the pin 1 with any switch with background lighting, and adjust the background lighting adjustment switch by hand, then, the intensity of the switch backlighting should be changed.

If normal, check and repair other faults. If not normal, replace the background lighting adjustment switch.

Definition of background light adjustment interface



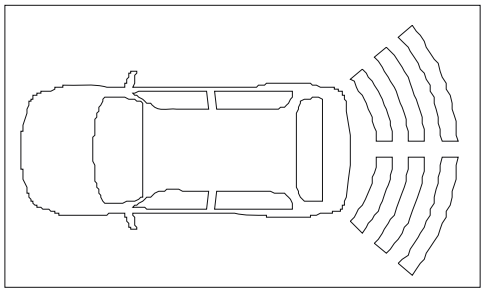
1. Light adjustment output
2. Power
3. Ground

Reverse Radar System

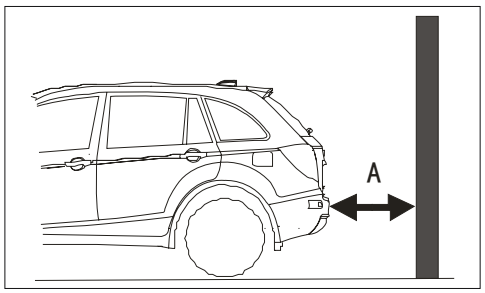
I. General

The reverse radar system is a vehicle monitoring system which is developed as per the detection principle of bat. Several ultrasonic radar probes are installed at the rear to send and receive signal and feed the signal back to the controller. Then, the controller will calculate the distance of the barrier through the signal time and send out different sounds for different distances, then the driver can get the distance between the barrier and the vehicle and the reverse can be more convenient and safer.

1. The alarm signal of the reverse radar system can be shown on the LCD screen of the instrument cluster.



2. Radar-detected distance



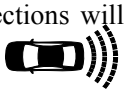
The distance from the reverse radar system will be displayed on the LCD screen section by section, which is controlled by the instrument cluster. The specific distance and display are as follows:

a. While the detected distance A is longer than 1.5m, all the 3 sections will not be illuminated (without chime).



b. While the detected distance A is longer than 1m and equal to 1.5m, the outside section will be illuminated (chime at an interval of 1s).

c. While the detected distance A is longer than 0.5m and equal to 1m, the outside two sections will be illuminated (chime at an interval of 0.5s).



d. While the detected distance A is shorter than 0.5m, all the 3 sections will be illuminated (continuous chimes).

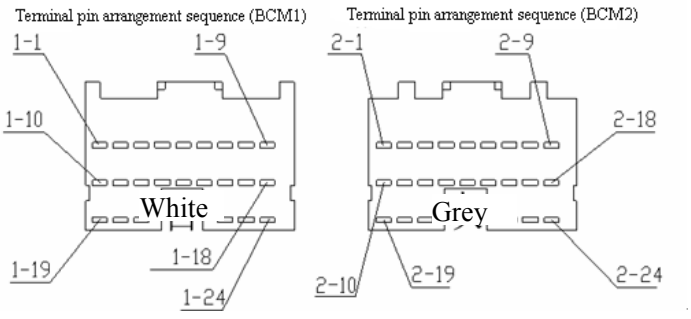
3. The system consists of:

(1) Reverse radar

(2) Reverse probe

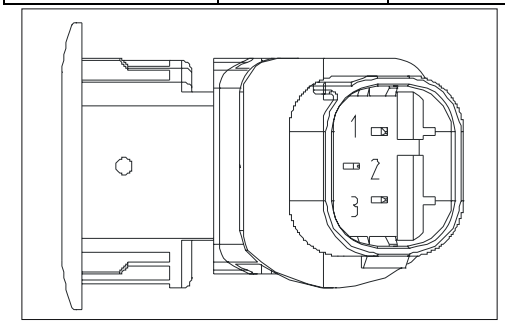
(3) Reverse indicator (on automatic panel)

II. Some Terminals of the Reverse Radar System (as shown in the following figure)



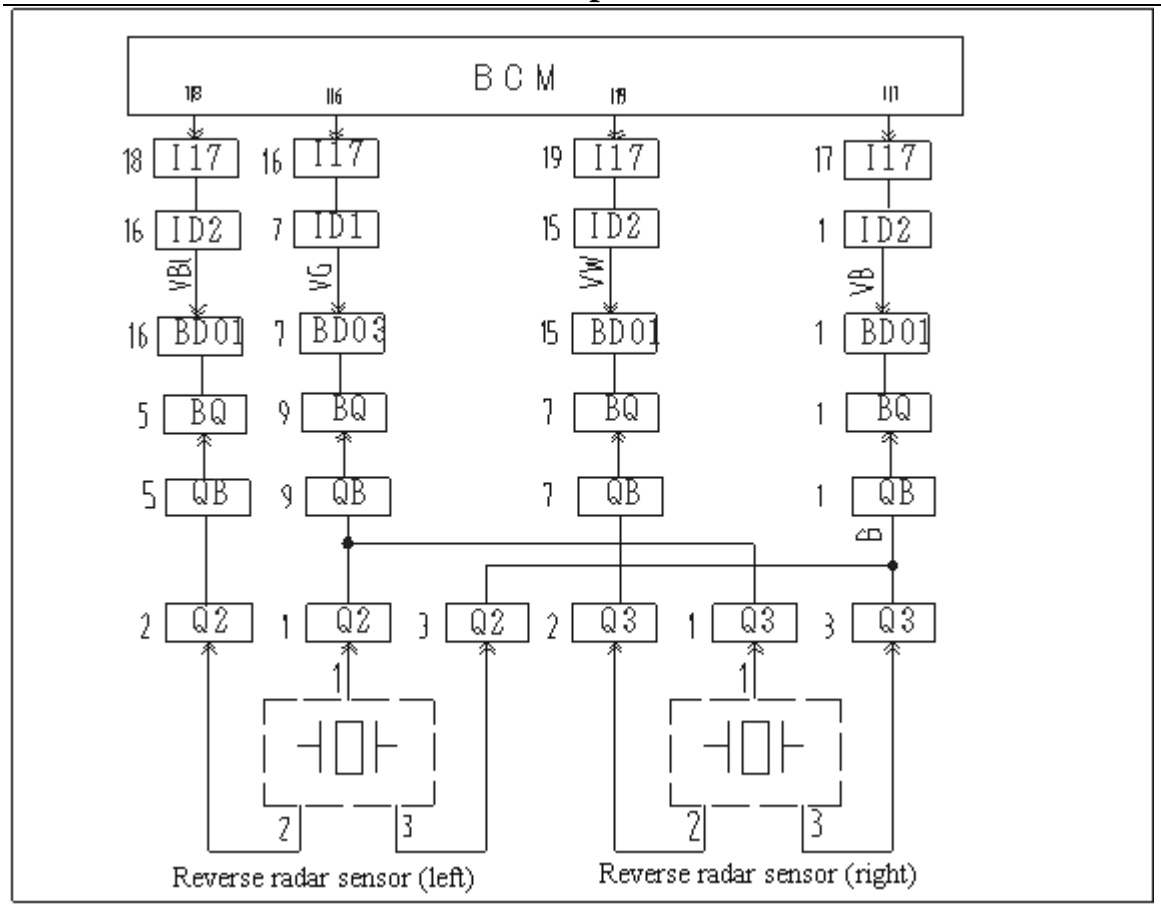
Test Terminal	Wiring Color	Terminal Description	Test Condition	Standard Value

BCM（1-8）- Vehicle body	G/N	Reverse signal input	Move the ignition switch to position ON, and apply reverse (all the time)	10～14V
BCM（1-19）- Vehicle body	W/B	Reverse LIN signal input to instrument	Data transmission	Produce pulse signal
BCM（2-18）- Vehicle body	R/Y	BCM fault warning output to instrument cluster indicator	While fault is reported by the reverse radar	10～14V
BCM（2-20）- Vehicle body	B	Ultrasonic probe power negative pole	All the time	小于 1Ω Less than 1Ω
BCM（2-21）- Vehicle body	G	Ultrasonic probe power positive pole	All the time	10～14V
BCM（2-22）- Vehicle body	Y	Ultrasonic probe 1 signal line	After the probe starting signal has been sent out by the BCM and while the probe is under operation	Produce pulse signal
BCM（2-23）- Vehicle body	R/W	Ultrasonic probe 2 signal line	After the probe starting signal has been sent out by the BCM and while the probe is under operation	Produce pulse signal
BCM（2-24）- Vehicle body	Y/R	Ultrasonic probe 3 signal line	After the probe starting signal has been sent out by the BCM and while the probe is under operation	Produce pulse signal



1-Power positive, 2-Data line, 3-Ground

2. The wiring diagram for checking and repairing is as follows:



III. Notes for Reverse Radar System

The reverse radar system is a supplementary tool for the driver and it is necessary to use the rear view mirror. Lifan Company shall not be responsible for any accident due to overspeed reversing and the carelessness of the driver.

The sensor can not check normally in the following situations.

(1) There is soil or snow on the sensor (the function of the sensor can be recoverd by washing off the soil or snow on the sensor)

(2) If the sensor is shielded by hand

(3) If the sensor freezes and goes wrong in low temperature

2. The checking range of the sensor will change in the following situations:

(1) There is soil or snow on the sensor (the function of the sensor can be recoverd by washing off the soil or snow on the sensor)

(2) If the vehicle is exposed to extreme sunshine and low temperature

3. The sensor may mis-check in the following situations:

(1) While the vehicle is on bumpy road, sand road or grassland

(2) If the sensor is disturbed by the horn of other vehicles, the engine noise of motorcycle, the brake noise of oversize vehicle, or the sound wave from other vehicles with probe

(3) While the vehicle is in heavy rain or splashed with water

(4) While the inclination of the vehicle is serious

(5) There is soil or snow on the sensor

(6) With towing eye on the vehicle

(7) While another vehicle with probe is approaching

(8) While the vehicle is driving toward high curb

4. The sensor can not detect the following barriers:

(1) String-shaped objects, such as wiring or rope

(2) The objects easy to absorb sound wave, such as cotton or snow

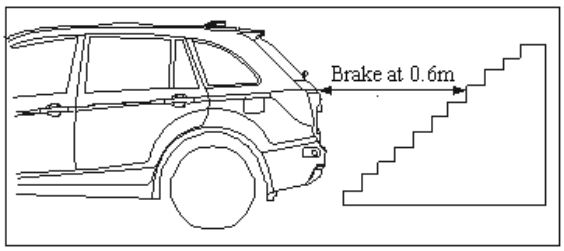
(3) The objects with sharp edge

(4) The objects are too low

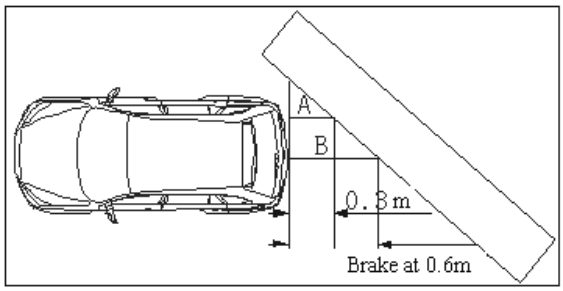
(5) The objects are too high or with a projecting upper part

(6) The sensor is knocked by strong force

(7) The vehicle is too close to the steps and the system can not correctly measure the distance between the vehicle and the bottom step, so the mudguard is damaged (as shown in the following figure)



(8) As shown in Figure 4-103, the vehicle is too close to the wall and the distance is mis-checked by the sensor



IV. Self-diagnosis and Fault Removal of Reverse Radar System

1. Pre-check

(1) Move ignition switch to position ON, move shift lever to reverse, apply parking brake to ensure the security of the vehicle, and check reverse radar system

(2) Connect reverse indicator switch

(3) Check the detecting range of the sensor with a column of 60mm diameter moving round the sensor

(4) Check the sound of the indicator and buzzer while a barrier is detected

A. The three sections will not be illuminated while the detected distance S is longer than 1.5 meter

B. While the detected distance S is longer than 1m and equal to 1.5m, the outside section will be illuminated (chime at an interval of 1s).

C. While the detected distance S is longer than 0.5m as well as shorter and equal to 1m, both the middle section and the outside section will be illuminated (chime at an interval of 0.5s)

D. While the detected distance S is shorter than 0.5m, all the 3 sections will be illuminated (continuous chime)

Test height: 528 + -10MM

2. Self-check function

(1) Test the self-check function of the LCD indicator and buzzer. Check the operation of the indicator and buzzer about 0.4s after moving ignition switch to position ON and keeping the shift lever at reverse location. The operation should last for 0.8±0.2 and the system is under normal checking and operation condition.

(2) If the LCD indicator is not illuminated or the buzzer fails to giver a sound as per requirement, the wiring may be disconnected.

3. See the following fault diagnosis table

Fault Symptom	Fault Reason	Fault Symptom	Fault Reason
Totally out of service (no self-check)	1. Power circuit fault 2 Reverse radar fault	Buzzer can not work (self-check available)	1. Buzzer driving circuit fault 2. Reverse radar fault
LCD indicator off sometimes (self-check available)	1. Indicator driving circuit fault 2. Reverse radar fault	Open circuit or freezing displayed during self-check	1. Sensor fault or influenced by outside environment 2. Sensor circuit fault
The system can not work while at reverse position (self-check available)	1. Reverse switch circuit fault 2. Reverse radar fault	Sound of buzzer too low	1. Buzzer driving circuit fault 2. Reverse radar fault

V. Reverse Radar System Troubleshooting

1. Totally out of service

(1) Check circuit (as shown in Figure 4-100)

(2) Check steps

(1) Disconnect reverse radar probe wiring connector, check the impedance of pin 3 and vehicle body as shown in above figure, which should be less than 1Ω.

(2) Move the ignition switch to position ON, move the shift lever to reverse position, and check the voltage between pin 1 and vehicle body as shown in above figure, which should be 10-14V. If normal, replace reverse radar. If not normal, go on with next step.

2. Check the buzzer for normal operation and damage

(1) Check circuit

(2) Checking steps

1) Check if there is reverse output signal

① Disconnect instrument cluster connector.

② Move the shift lever to reverse position after starting the engine, and square wave signal output should be seen while detecting pin BCM (1-19) with oscilloscope.

If normal, go on with next step. If not normal, check BCM controller and probe for damage.

2) Check wiring harness or connector

① Disconnect BCM vehicle body controller connector

② Disconnect instrument cluster connector

③ Check the impedance of BCM vehicle body controller sleeve BCM (1-19) and instrument cluster A10, which should be less than 1Ω.

If normal, go on with next step. If not normal, repair or replace wiring and connector.

3) Check instrument cluster buzzer for normal operation

① Move ignition key to position ON, open any door and the buzzer should sound.

② If the vehicle speed signal can be sent to instrument and the wiring & connector are normal, then, replace instrument cluster.

If normal, go on with other checks. If not normal, replace instrument cluster.

3. System can not work in reverse position

(1) Check circuit

(2) Checking steps

1) Checking reverse radar

① Move ignition switch to position ON and move shift lever to reverse position.

② Measure the voltage between BCM (1-8) and vehicle body, which should be less than 1.5V.

If normal, check reverse radar probe and BCM controller. If not normal, go on with next check.

2) Check reverse switch

① Disconnect reverse switch wiring harness connector.

② Move shift lever to reverse position, the impedance between 1-N1 and 2-N1 should be less than 1Ω.

If normal, go on with next step. If not normal, replace reverse switch.

3) Check wiring harness or connector

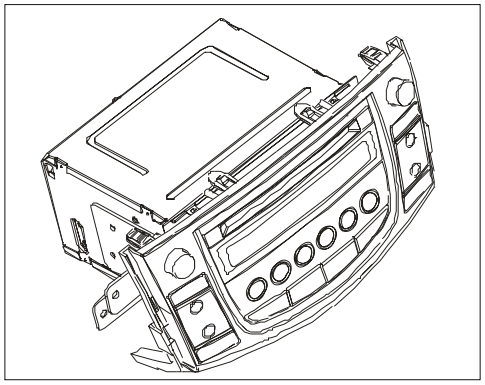
Check the wire between reverse switch interface and BCM for continuity.

If normal, go on with other checks. If not normal, repair or replace wiring and connector.

Audio System

I. General

The audio system is an integral digital product, and your car with this system will become a mini music theater. All the CD music, USB interface and AM/FM broadcast are excellent. The audio system consists of the following parts: (1) Antenna amplifier, (2) AM/FM printed antenna, (3) CD player assembly, (4) 2-high 4-low amplifier, (5) USB interface.



Working principle: the audio system can provide information and entertainment by receiving, modulating and amplifying the AM/FM signal from local radio station. The electromagnetic wave signal from radio station will be transformed to weak current modulation signal through printed antenna and then sent to the radio through antenna amplifier and cable. Then, the weak signal received by the radio will be modulated and amplified as strong current signal and sent to amplifier. After that, the strong current signal will be transformed to air vibration by the amplifier and so the radio signal from the radio station can be transformed to sound. The user can select the audio system of other model, which can play cassette & videotape, CD or VCD. Any type you choose can best regulate the sound in your vehicle and meet individual requirements.

The internal circuits of the audio system can suppress the interference from radio frequency and electromagnetic wave and the outside strategies are as follows:

(1) Antenna amplifier shell grounding

(2) Radio shell grounding

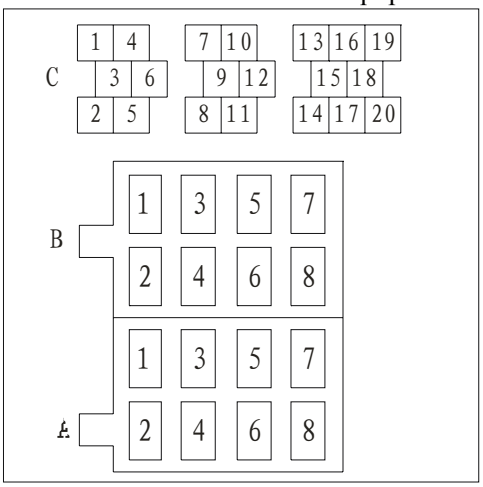
(3) Engine and vehicle body grounding

Definition / Pin	Wire C Interface
1-13	NC

(4) Adopt resistance type spark plug

(5) Adopt radio noise-surppressing secondary ignition coil

II. Definition of Audio Equipment Interface



Definition / Pin	Wire A Interface	Wire B Interface
1	Steering wheel switch（-）	Right rear amplifier（+）
2	Steering wheel switch（+）	Right rear amplifier（-）
3	NC	Right front amplifier（+）
4	Power ACC（+）	Right front amplifier（-）
5	Backlighting regulation switch（+）	Left front amplifier（+）
6	Reverse switch（+）	Left front amplifier（-）
7	Battery（B+）	Left rear amplifier（+）
8	Grounding（GND-）	Left rear amplifier（-）

14	Sound enabling signal
15	NC
16	NC
17	Sound control signal
18	NC
19	NC
20	Sound selection signal

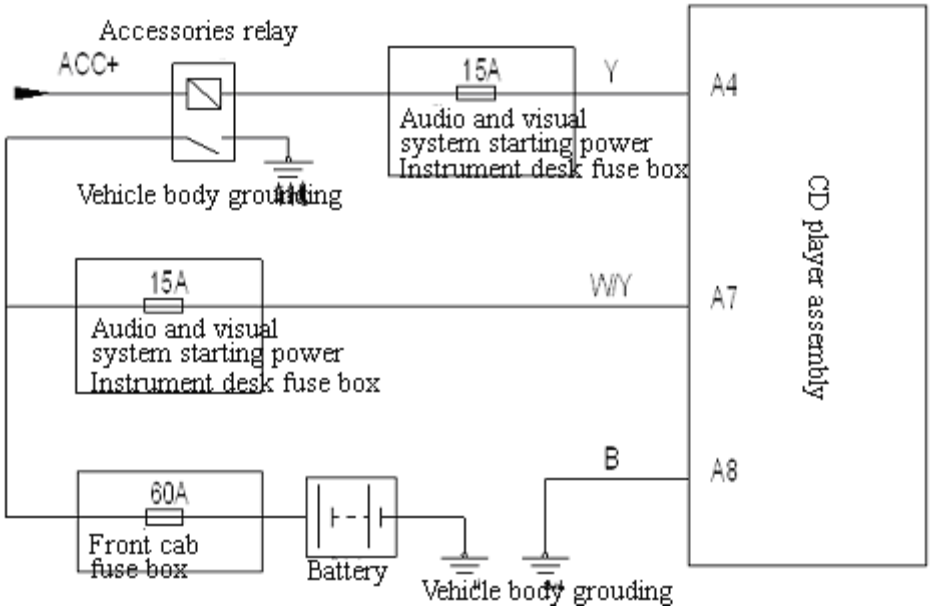
III. Audio System Fault Diagnosis Table

Fault Symptom	Fault Reason	Fault Symptom	Fault Reason
Press down the power switch and the radio system can not be started	1. Audio system power circuit fault 2. CD player assembly fault	The night illumination device of the audio system can not work	1. Audio system illumination circuit fault 2. CD player assembly fault
The amplifier keeps silent under all modes	1. Amplifier circuit fault 2. Radio system power circuit fault 3. CD player assembly fault	The sound is bad under all modes (sound volume too low)	1. Amplifier circuit fault 2. Radio system power circuit fault 3. CD player assembly fault
Can not receive radio broadcast (poor performance)	1. Antenna circuit fault 2. CD player assembly fault	CD can not be inserted or pop out immediately	1. CD disc fault 2. Audio system power circuit fault 3. CD player assembly fault
CD can not be played even with power	1. CD disc fault 2. Audio system power circuit fault 3. CD disc fault	Can not take out CD/VCD	1. CD disc fault 2. Audio system power circuit fault 3. CD player assembly fault
Poor sound of CD player	1. CD disc fault 2. CD player assembly fault	Jumping sound	1. CD disc fault 2. CD player assembly installation incorrect
Touch panel switch can not work	1. Audio system power circuit fault 2. CD player assembly fault 3. Wiring harness connection fault		

IV. Audio System Parts Check

1. Press down power switch and the audio system can not be started:

As per the following wiring diagram, ① Check the cab and find if there is electrical short circuit and keep good ventilation for the cab. ② Check the voltage between audio system assembly connector terminal A7 and vehicle body, which should be 10~14V. ③ Check the resistance between audio system assembly connector terminal A8 and vehicle body, which should be less than 1Ω. ④ Turn the ignition switch to ACC and check the voltage between audio system assembly connector terminal A4 and vehicle body, which should be 10~14V. If normal, check and replace audio system assembly. If not normal, repair or replace wiring and connector.



2. The night illumination device of the audio system can not work:

Turn the lighting control lever of the lighting combination switch assembly to little lamp position or fog light position, and check the voltage between audio system assembly connector terminal A5 and vehicle body as shown in the above wiring diagram, which should be 10～14V. If not normal, repair or replace wiring and connector. If normal, check and replace CD player assembly.

3. The amplifier keeps silent under all modes:

Check as per the 4-96 wiring diagram and the specific steps are as follows:

(1) Check display device

Turn ignition switch to ACC and move the audio system to position OPEN, and the display device is illuminated. If normal, go on with next step. If not normal, perform step 5.

(2) Adjust sound volume controller and the balance of the sound

Adjust the sound for balance with the volume knob and find out which amplifier is out of service. If certain amplifier is out of service, go on with next step. If all the amplifiers are out of service, check and replace the audio system.

(3) Check amplifier

Disconnect amplifier connector and check the resistance between the amplifier terminals, which should be 2～9Ω. If normal, go on with next step. If not normal, replace amplifier.

(4) Check the connector between audio system and amplifier

If normal, go on with next step. If not normal, repair or replace wiring and connector.

(5) Check CD player assembly

① Check the voltage between audio system assembly connector terminal A7 and vehicle body, which should be 10～14V.

② Check the resistance between audio system assembly connector terminal A8 and vehicle body, which should be less than 1Ω.

③ Turn the ignition switch to ACC and check the voltage between audio system assembly connector terminal A4 and vehicle body, which should be 10～14V.

If not normal, repair or replace wiring and connector. If normal, check and replace CD player assembly.

4. CD can not be inserted or pop out immediately, and the CD can not be used.

Check as per 4-96 wiring diagram and the specific steps are as follows:

(1) Make sure that the CD disc is normal, without deformation, crack, flaw, burr and other defects.

If normal, go on with next step. If not normal, the CD disc has already been damaged.

(2) Check if the CD disc is placed wrongly. If normal, go on with next step. If not normal, correctly place the CD disc.

(3) Replace the fault CD disc with normal CD disc and check if the same fault occurs again.

If normal, the CD disc is wrong. If not normal, go on with next check.

(4) Check the automatic search of the radio for normal operation.

If normal, repair or replace CD player assembly. If not normal, go on with step 6.

(5) Check if the temperature and humidity in the cab charges sharply.

If so, condensation is caused by the change of temperature and humidity (keep still for a while before use). If not, check and replace CD player assembly.

(6) Check CD player assembly

① Check the voltage between audio system assembly connector terminal A7 and vehicle body, which should be 10~14V.

② Check the resistance between audio system assembly connector terminal A8 and vehicle body, which should be less than 1Ω.

③ Turn the ignition switch to ACC and check the voltage between audio system assembly connector terminal A4 and vehicle body, which should be 10～14V.

If not normal, repair or replace wiring and connector. If normal, repair or replace CD player assembly.

5. Can not take out CD disc:

Check as per the above wiring diagram and the specific steps are as follows:

(1) Check the automatic search of the radio for normal operation.

If normal, repair or replace CD player assembly. If not normal, go on with step 5).

(2) Press down the open/close switch of the CD player for 2s or longer time and check if the CD disc can pop out.

If normal, go on with next step. If not normal, repair or replace CD player assembly.

(3) Check if the sound is stable while driving on a bad road.

If normal, go on with next step. If not normal, the CD disc is wrong.

(4) Check the installation of the CD player assembly

If normal, the CD disc is wrong. If not normal, go on with next step.

(5) Check CD player assembly

① Check the voltage between audio system assembly connector terminal A7 and vehicle body, which should be 10～14V.

② Check the resistance between audio system assembly connector terminal A8 and vehicle body, which should be less than 1Ω.

③ Turn the ignition switch to ACC, and check the voltage between audio system assembly connector terminal A4 and vehicle body, which should be 10～14V.

If not normal, repair or replace wiring and connector. If normal, repair or replace CD player assembly.

6. Poor sound of CD player (sound volume too low):

Check the CD player for installation, if normal, the CD disc is wrong. If not normal, check and replace the CD player assembly.

7. Can not receive radio broadcast (poor performance)

Check as per the above wiring diagram, and the specific steps are as follows:

(1) Check the automatic search of the radio for normal operation.

If normal, repair or replace CD player assembly. If not normal, go on with next step.

(2) Check if the equipment is disturbed by wiper, A/C blower, window regulator or others.

If so, move away such interference. If not, go on with next check.

(3) Carry out noise check for the printed antenna

Turn the ignition switch to ACC, turn on the radio and select AM mode, and check if the noise of the amplifier is caused by placing a screwdriver on the antenna. If normal, repair or replace CD player assembly. If not normal, go on with next step.

(4) Check audio system antenna assembly

Remove the antenna plug from the audio system assembly and turn the ignition switch to ACC while the radio connector is connected, then turn on the radio and select AM mode. Check if the noise of the amplifier is caused by placing such metal objects as screwdriver or wire on the antennal seat. If normal, go on with next step. If not normal, repair or replace CD player assembly.

8. Touch panel switch can not work

Check as per the abover wiring diagram and the specific steps are as follows:

(1) Check if there is dirt on the touch screen. If so, remove the surface dirt. If not, go on with next step.

(2) Check if the touch switch can respond correctly. If normal, go on with next step. If not normal, repair or replace CD player assembly.

(3) Check multimedia player assembly

① Check the voltage between audio system assembly connector terminal A7 and vehicle body, which should be 10～14V.

② Check the resistance between audio system assembly connector terminal A8 and vehicle body, which should be less than 1Ω.

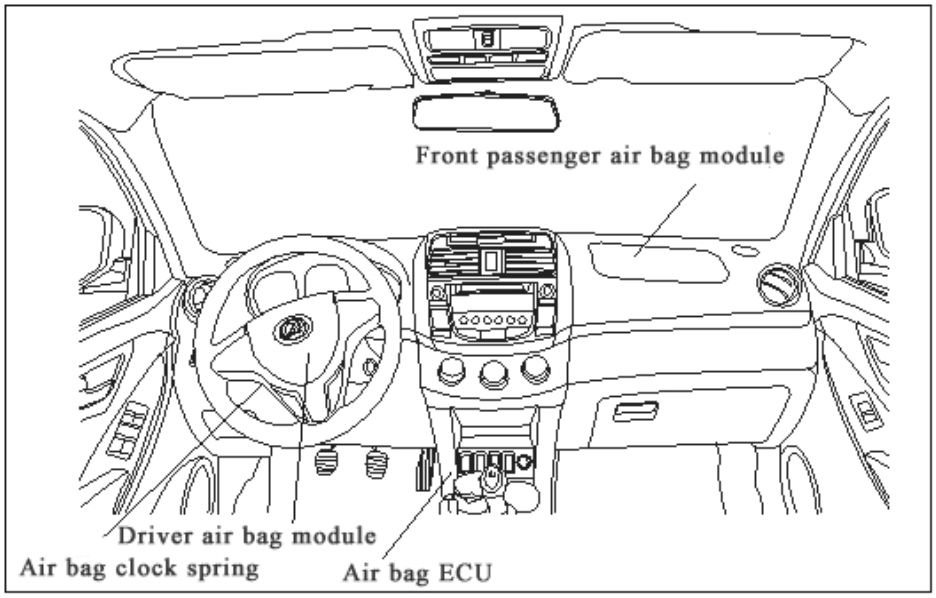
③ Turn the ignition switch to ACC, and check the voltage between audio system assembly connector terminal A4 and vehicle body, which should be 10～14V. If not normal, repair or replace wiring and connector. If not normal, go on with next step.

Air Bag

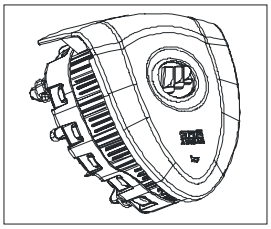
Composition, Principle and Maintenance Safety Rules

I. Composition and Layout of Air Bag System

LF6430 adopts an electronic double-air-bag system. One air bag is installed in the central ornamental cap of the steering wheel and the other in the dash board in front of the front passenger seat. The whole air bag system is composed of driver air bag module (DAB), front passenger air bag module (PAB), air bag clock spring (SRS CS), air bag electronic control unit (SRS ECU), safety belt pre-tensioners for driver and front passenger (luxury), and air bag harness and warning labels. Refer to the figure below for layout of air bag system.



The driver air bag module is installed in the central ornamental cap of the steering wheel, so it can not be disassembled. As shown in the figure, it consists of gas generator, air bag, ornamental cap and a series of auxiliary components.



Main function of the driver air bag module: Under normal use, in case of collision at certain strength, the driver air bag module will receive the signal for ignition from SRS ECU (electronic control unit of the air bag), and then trigger the gas generator to rapidly produce lots of gas so as to deploy the air bag and protect the driver.

1. Air bag ECU

The air bag ECU is installed at the central axis, and below the central control panel. See the following figure.

If the voltage of battery is too low or the power is off due to collision, the ECU will still work for over 100ms.

2. Driver air bag module

3. Air bag clock spring

The driver air bag module is installed on the steering wheel. It runs with the steering wheel, and communicates with ECU by the clock spring. The clock spring is installed on the combination switch as shown in Fig. IV-53. The clock spring is composed of spiral cable, swivel wheel, housing, harness and auxiliary components.

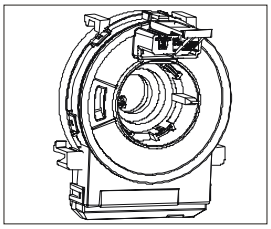
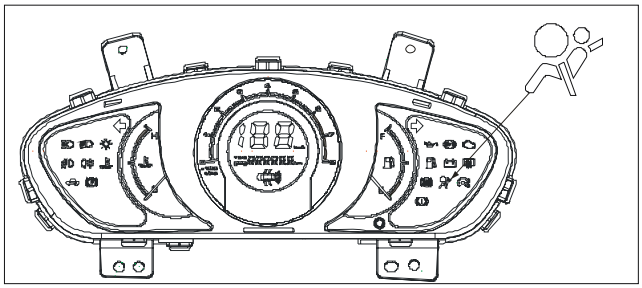


Fig. IV-53

Working principle of air bag clock spring: the installation housing of clock spring is fixed on the steering column, with the upper part of swivel wheel inserted into the steering wheel and spiral cable into the space between the swivel wheel and the housing. When the steering wheel turns left and right, the swivel wheel will turn with the steering wheel and make the output end of the cable turn together, so as to make the spiral cable stretch or be flapped, which can prevent the harness from winding the steering column and ensure the continuity of the harness and the connection of electric signal at any time. Therefore, the clock spring works as a harness bridge used to supply power for related components of the steering wheel.

4. Front passenger air bag module



6. SRS warning lamp

SRS warning lamp is installed on the instrument cluster.

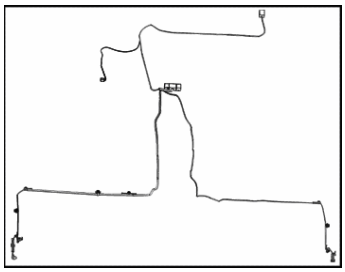


Fig. IV-55

In case of a fault in the self-diagnostic circuit of the air bag ECU assembly, the SRS warning lamp will illuminate to inform the driver of fault in the air bag system. Under normal circumstance, when the ignition switch turns to ON, the warning lamp will illuminate normally for 5s and then go out automatically. However, in some special cases, if the circuit is bad contacted and the fault exists sometimes, the air bag ECU warning lamp will record 8 faults data. If more than 8 faults data exist, the warning lamp will illuminate normally. Usually, in case of abnormity in the SRS warning lamp, the driver should go to a service station for check in time.

In case of a fault in the self-diagnostic circuit of the air bag ECU assembly, the SRS warning lamp will illuminate and inform the driver of the fault in the air bag system. Under normal circumstance, when the ignition switch turns to ON, the warning lamp will illuminate normally for 5s, and then go out.

The front passenger air bag module is installed above the sundries box. It consists of gas generator, air bag and a series of auxiliary components.

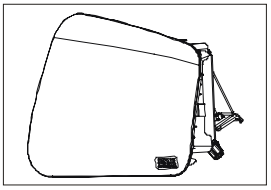


Fig. IV-54

Main function of the front passenger air bag module: Under normal use, in case of collision at certain strength, the front passenger air bag module will receive the signal for ignition from SRS ECU (electronic control unit of the air bag), and then trigger the gas generator to rapidly produce lots of gas so as to deploy the air bag and protect the front passenger.

5. Air bag harness

The air bag harness is used to connect the air bag ECU, clock spring and dash board harness.

II Working Principle

In case of a frontal collision, the collision sensor will produce a collision signal; then the air bag ECU will detect such a signal and make an analysis and judge if the requirements for ignition have been met. If yes, it will send out ignition pulse to ignite ignition tubes in air bag modules which will then ignite the gas production drug to produce mass of gas and swell the air bag in a short time to burst out the ornamental cap and form a full air bag, so as to buffer the impact from collision on the driver and the front passenger.

III Safety Rules for Air Bag Maintenance

Failure to implement correct operation procedure during maintenance may cause accidental deployment of the air bag and result in a serious accident. Moreover, for incorrect maintenance, the air bag may not deploy as expected. Therefore, before maintenance, please carefully read the following instructions and abide by the correct operation procedure.

1. Detection, installation and maintenance must be carried out by professionals.

2. For detection, a detecting lamp, general voltmeter and ohm meter should not be used; for measurement of voltage and resistance, a special voltmeter and ohm meter should be used (min 10kΩ/V).

3. Please do read the flash DTC before dismantling the earthing wire of battery for eliminating the fault in the air bag system.

4. Before specific maintenance, please do disconnect the earthing wire of the battery negative pole, wait for over 3 min, and then carry out maintenance; otherwise, the air bag may deploy unexpectedly. Furthermore, wrap the dismantled negative pole by insulating tape.

Note: After interruption of power supply, continue with the operation for 3 min at least later; otherwise the air bag may deploy unexpectedly and cause a serious accident.

5. The air bag has not deployed after a slight collision, but the driver air bag module and air bag ECU assembly must be checked.

6. If the sensor will be impacted by vibration due to maintenance, please dismantle the air bag ECU assembly before maintenance.

7. Do not use air bag components dismantled from other vehicles. For replacement of components, use a new one.

8. Do not dismantle and repair the driver and front passenger air bag modules and air bag ECU assembly for reuse or other reasons.

9. Replacement is required if the driver air bag module, the front passenger air bag module and air bag ECU assembly fall onto the floor, are impacted by vibration and knock, or there is crack, indentation or other damage on the housing, bracket or interface.

10. Do not place the driver air bag module, the front passenger air bag model and air bag ECU assembly in hot air or into flame.

11. If affected due to over heat (over 93℃) during painting, please remove the air bag ECU, air bag module and the clock spring and keep them properly.

12. A protecting mechanism to prevent the air bag from accidental deployment is installed in the air bag ECU assembly interface, the interface between the air bag ECU assembly and the clock spring, the interface between the clock spring and the driver air bag module, and the interface between the front passenger air bag module and the air bag ECU assembly. During maintenance of the air bag system, please do carry out operation as required to avoid accidental deployment of air bag and damage to its components.

13. There are warning labels on the components of the air bag system and in the relevant locations within the vehicle. During operation, please follow instruction on the labels.

14. During maintenance of the air bag system, the air bag module must be installed immediately after it is taken out from a transport container. If interruption is needed, put the air bag module back into the container, and do not keep it unwatched. For the storage of the module, place it with the deployed surface upward.

15. After the maintenance is finished, do not connect the air bag module to power supply right now. Do electrical inspection first, and connect it to the power supply if no fault is found.

16. There should be no any person in the vehicle when connecting the air bag system to the power supply. Power should not be connected if the air bag ECU has not been fixed properly.

17. After maintenance, check if the SRS warning lamp is normal.

18. The service life of the air bag is limited (refer to

the instruction). For expiration of service life, the air bag module and label must be replaced.

Diagnosis and Fault Elimination

LF6430 air bag system is furnished with self-diagnostic function. The basic diagnosis procedures are described as below.

I SRS Warning Lamp Circuit Self-diagnosis

1. Turn the ignition switch to ACC or ON, and check if the SRS warning lamp illuminates.

2. The system is normal if the warning lamp illuminates normally for about 5s and then goes out for over 5s.

3. If the warning lamp keeps illuminating but not goes out, the air bag ECU has detected one or more faults. As per Section 2, read the fault and eliminate it.

4. If the SRS warning lamp illuminates sometimes after the ignition switch is on for 5s, and even illuminates again after the ignition switch is located before LOCK, there may be short circuit in the SRS warning lamp circuit. Do inspection as per Section 2.5.

II Fault Reading

Read the fault by a special hand-held scanner tool.

(1) Connect the scanner tool to the fault diagnostic interface on vehicle.

(2) Read fault according to the prompt on the scanner tool. See DTC Table IV2.

DTC Table IV2

DTC	Fault cause	Fault condition
0x9012	ECU internal fault	ECU fault
0x9013	ECU used	ECU has activated the deployment of air bag for several times
0x9014	There is collision record in the register.	The collision record has been latched after the ECU activates the deployment of the air bag.
0x9017	Short circuit between a detonator and another one	Short circuit between a detonator and another one
0x9018	No VIN code	No VIN code has been storaged in the nonvolatile storage of ECU
0x9021	The driver front impact air bag resistance is too high	The driver air bag resistance is too high
0x9022	The driver front impact air bag resistance is too low	The driver air bag resistance is too low
0x9023	The driver front impact air bag is shorted to ground	The driver front impact air bag is shorted to ground
0x9024	The driver front impact air bag is shorted to power supply	The driver front impact air bag is shorted to power supply
0x9029	The resistance of driver safety belt pre-tensioner is too high	The resistance of driver safety belt pre-tensioner is too high
0x902A	The resistance of driver safety belt pre-tensioner is too low	The resistance of driver safety belt pre-tensioner is too low
0x902B	The driver safety belt pre-tensioner is shorted to ground	The driver safety belt pre-tensioner is shorted to ground
0x902C	The driver safety belt	The driver safety belt pre-tensioner

	pre-tensioner is shorted to power supply	is shorted to power supply
0x9031	The passenger front impact air bag resistance is too high	The passenger front impact air bag resistance is too high
0x9032	The passenger front impact air bag resistance is too low	The passenger front impact air bag resistance is too low
0x9033	The passenger front impact air bag is shorted to ground	The passenger front impact air bag is shorted to ground
0x9034	The passenger front impact air bag is shorted to power supply	The passenger front impact air bag is shorted to power supply
0x9039	The resistance of front passenger safety belt pre-tensioner is too high	The resistance of front passenger safety belt pre-tensioner is too high
0x903A	The resistance of front passenger safety belt pre-tensioner is too low	The resistance of front passenger safety belt pre-tensioner is too low
0x903B	The resistance of front passenger safety belt pre-tensioner is shorted to ground	The resistance of front passenger safety belt pre-tensioner is shorted to ground
0x903C	The resistance of front passenger safety belt pre-tensioner is shorted to power supply	The resistance of front passenger safety belt pre-tensioner is shorted to power supply
0x9051	The driver side front impact sensor is shorted to ground	The driver side front impact sensor is shorted to ground
0x9053	Internal fault in the driver side front impact sensor	Fault exists during the initialization of the driver side front impact sensor
0x9054	No communication for the driver side front impact sensor	ECU can not receive data from the sensor
0x9055	Incorrect communication for the driver side front impact sensor	Incorrect data stream from the sensor
0x9056	Internal fault 2 in the driver side front impact sensor	Incorrect sensor offset
0x9057	Internal fault 3 in the driver side front impact sensor	Incorrect sensor deflect
0x9061	The passenger side front impact sensor is shorted to ground	The passenger side front impact sensor is shorted to ground
0x9063	Internal fault in the passenger side front impact sensor	Fault exists during the initialization of the passenger side front impact sensor
0x9064	No communication for the passenger side front impact sensor	ECU can not receive data from the sensor
0x9065	Incorrect communication for the passenger side front impact sensor	Incorrect data stream from the sensor
0x9066	Internal fault 2 in the passenger side front impact sensor	Incorrect sensor offset
0x9067	Internal fault 3 in the passenger side front impact sensor	Incorrect sensor deflect

0x9091	Fault warning lamp is shorted to power supply	Fault warning lamp is shorted to power supply
0x9092	Fault warning lamp is shorted to ground	Fault warning lamp is shorted to ground
0x9095	Collision output is shorted to ground	Collision output is shorted to ground
0x9096	Collision output is shorted to power supply	Collision output is shorted to power supply
0x9097	Power voltage is too high	Power voltage is too high
0x9098	Power voltage is too low	Power voltage is too low

III Fault Inspection (Table IV-3)

Table IV-3

S/N	Possible fault	Fault location	Fault elimination
1	Poor earthing wire	Earthing harness	1. Preparation before inspection 2. Check the earthing wire; if normal, turn to step 3; if loose or disconnecting, and connect the earthing harness well. 3. Check the harness; if normal, the component that was faulty before is considered normal now; if abnormal, repair or replace it.
2	Voltage over the high limit	Battery	1. Preparation before inspection 2. Check the battery voltage; if normal, the component that was faulty before is considered normal now; if the voltage is too low, charge the battery or replace it.
3	NO DAB	Driver air bag module Clock spring Harness Air bag ECU	1. Preparation before inspection 2. Check the driver air bag circuit; if normal, turn to step 3; if abnormal, turn to step 5. 3. Check the air bag ECU; if normal, turn to step 4; if abnormal, replace the air bag ECU. 4. Check the driver air bag ECU; if normal, the component that was faulty before is considered normal now; if abnormal, replace the driver air bag module. 5. Check the clock spring; if normal, turn to step 6; if abnormal, replace the clock spring. 6. Check the harness between air bag ECU and clock spring; if normal, the component that was faulty before is considered normal now; if abnormal, repair or replace the harness.
4	No PAB	Front passenger air bag module Harness Air bag ECU	1. Preparation before inspection 2. Check the front passenger air bag circuit; if normal, turn to step 3; if abnormal, and repair or replace the harness or interface between air bag ECU and the front passenger air bag module. 3. Check the air bag ECU; if normal, turn to step 4; if abnormal, replace the air bag ECU. 4. Check the front passenger air bag module; if normal, the component that was faulty before is considered normal now; if abnormal, replace the front passenger air bag module.
5	No LPSB	1. Driver safety belt pre-tensioner 2. Harness 3. Air bag ECU	1. Preparation before inspection 2. Check the driver safety belt pre-tensioner circuit; if normal, turn to step 3; if abnormal, and repaire or replace the harness or interface between air bag ECU and the driver safety belt pre-tensioner module. 3. Check the air bag ECU; if normal, turn to step 4; if

			abnormal, replace the air bag ECU. 4. Check the driver safety belt pre-tensioner; if normal, the component that was faulty before is considered normal now; if abnormal, replace the driver safety belt pre-tensioner.
6	No RPSB	1. Front passenger safety belt pre-tensioner 2. Harness 3. Air bag ECU	1. Preparation before inspection 2. Check the front passenger safety belt pre-tensioner circuit; if normal, turn to step 3; if abnormal, and repaire or replace the harness or interface between air bag ECU and the front passenger safety belt pre-tensioner module. 3. Check the air bag ECU; if normal, turn to step 4; if abnormal, replace the air bag ECU. 4. Check the front passenger safety belt pre-tensioner; if normal, the component that was faulty before is considered normal now; if abnormal, replace the front passenger safety belt pre-tensioner.
7	More than 2 faults displayed at the same time	Related components	Diagnose and eliminate faults one by one according to the flash DTCs.

Air Bag Circuit

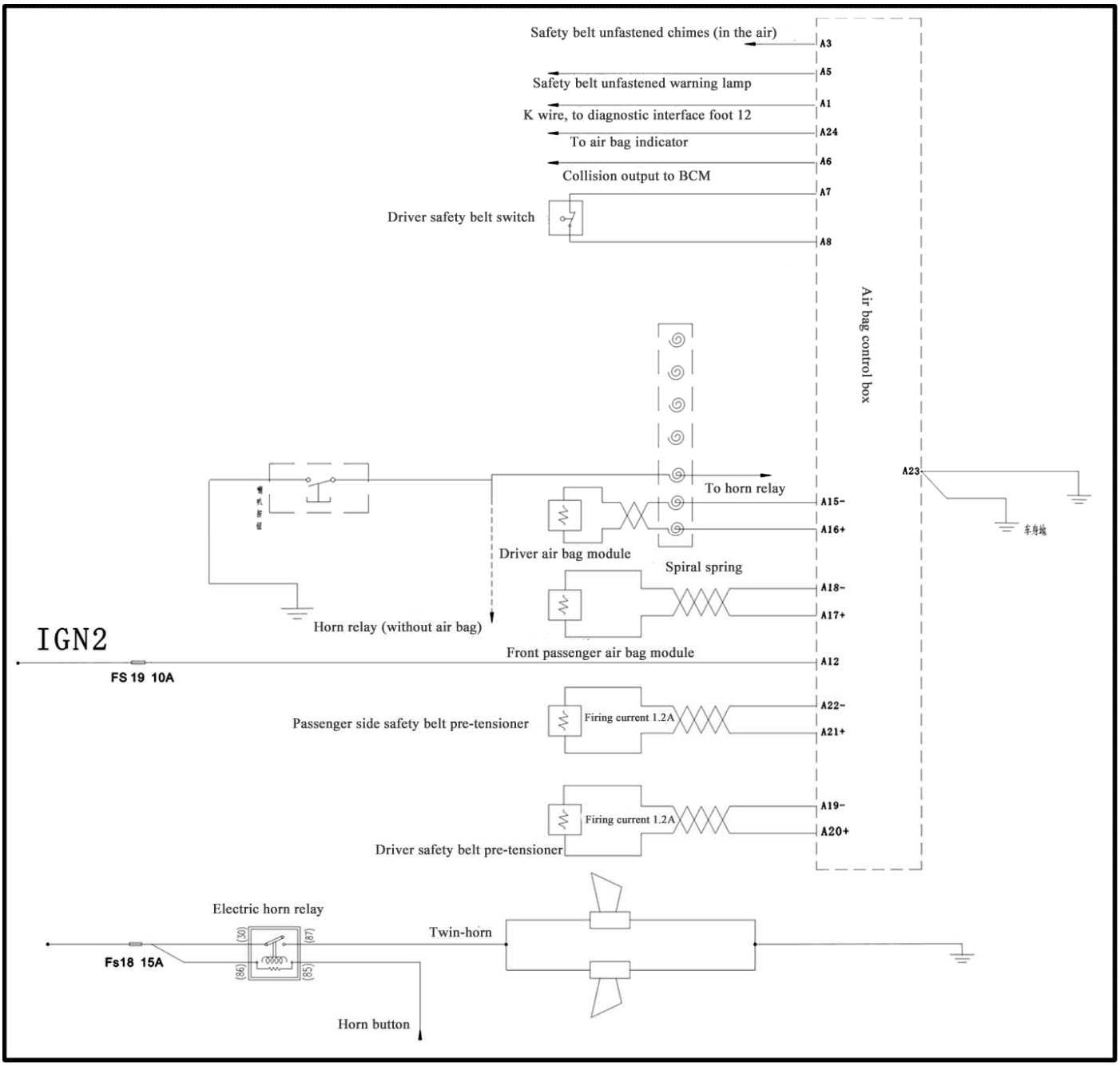


Fig. IV-56

Table 5-3 Feet and terminals of air bag ECU plugs

Terminal No.	Terminal name
A1	K wire, to diagnostic interface foot 12
A3	Safety belt unfastened chimes output
A5	Collision output to BCM
A7	Driver safety belt switch
A8	
A12	Power line
A14	Driver safety belt unfastened warning lamp

A15-	Driver air bag module
A16+	
A17+	Front passenger air bag module
A18-	
A19-	Driver safety belt pre-tensioner
A20+	
A21+	Passenger side safety belt pre-tensioner
A22-	
A23	Grounding
A24	To air bag indicator

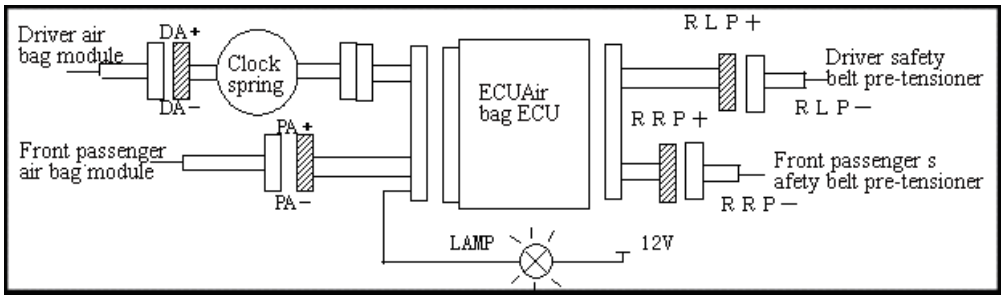
2. Preparation before inspection

Before operation, please carefully read the safety rules for maintenance of air bag in Section 1.3. Meanwhile, do the following preparation.

(1) Disconnect the negative pole earthing wire from the battery, and wait for at least 3 min.

(2) Remove the driver and front passenger air bag modules; keep the front facing upward (see Section IV for removal)

(3) Disconnect the interfaces for the driver and front passenger air bag modules, and interface for air bag ECU. Refer to the following figure.



3. Check if the battery voltage is too low or high

(1) Connect the battery negative pole earthing wire, turn on the ignition switch and it then turns to ON.

(2) Measure the PW voltage at the end of air bag harness.

(3) Normal voltage: 10-14V.

4. Check the harness and interface

(1) Check if the air bag harness is broken over and harness resistance is below 1Ω.

(2) Check if other harness is well connected to the corresponding terminal of interface.

(3) Check if there is crack in all leads of harness or crack in the insulating layer.

(4) Check there is crack in the harness interface.

5. Check the air bag ECU

(1) Connect the air bag ECU by air bag harness. See the above figure.

(2) Connect the negative pole earthing wire to the battery, and wait for at least 3 min.

(3) Turn the ignition switch to ACC or ON, and wait for at least 20s.

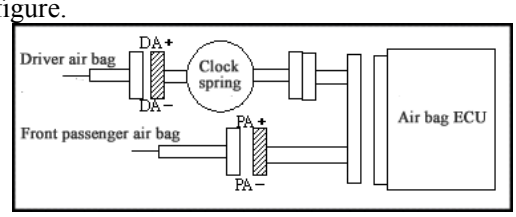
(4) Eliminate and read the flash DTC by a scanner tool.

6. Check the driver air bag module

(1) Turn the ignition switch to LOCK.

(2) Disconnect negative pole earthing wire from the battery, and wait for at least 3 min.

(3) Connect the driver air bag module. See the below figure.



(4) Connect the negative pole earthing wire, and wait for at least 3 min.

(5) Turn the ignition switch to ACC or ON, and wait for at least 20s.

(6) Eliminate the flash DTC and read the fault by a scanner tool.

7. Check the driver air bag circuit

(1) Measure the resistance of the interface between the clock spring and the driver air bag module, and that between DA＋ and DA－ at side of the clock spring. It should be over 1 megohm.

(2) Measure the resistance of the interface between the clock spring and the driver air bag module, and that between DA＋ beside the clock spring and DA＋ beside the air bag ECU interface harness. It should be within 1 ohm.

(3) Measure the resistance of the interface between the clock spring and the driver air bag module, and that between DA－ beside the clock spring and DA－ beside the air bag ECU interface harness. It should be within 1 ohm.

8. Check the front passenger air bag module

(1) Turn the ignition switch to LOCK.

(2) Disconnect the negative pole earthing wire from the battery, and wait for at least 3 min.

(3) Connect the front passenger air bag module interface.

(4) Connect battery negative pole earthing wire, and wait for at least 3 min.

(5) Turn the ignition switch to ACC or ON, and wait for at least 20s.

(6) Eliminate the flash DTC and read the fault by a scanner tool.

9. Check the front passenger air bag circuit

(1) Measure the resistance of the interface between the air bag ECU harness and the front passenger air bag module harness, and that between PA＋ and PA－ beside the air bag ECU harness. It should be over 1 megohm.

(2) Measure the resistance of the interface between the air bag ECU harness and the front passenger air bag module harness, and that between PA＋ beside the air bag ECU harness and PA＋ beside the front passenger air bag module harness. It should be within 1 ohm.

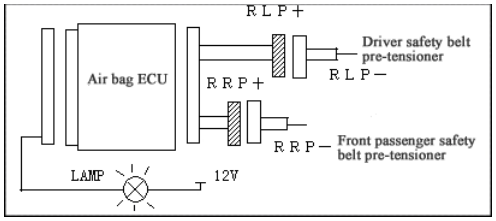
(3) Measure the resistance of the interface between the air bag ECU harness and the front passenger air bag module harness, and that between PA－ beside the air bag ECU harness and PA－ beside the front passenger air bag module harness. It should be within 1 ohm.

10. Check the driver safety belt pre-tensioner

(1) Turn the ignition switch to LOCK.

(2) Disconnect the negative pole earthing wire from the battery, and wait for at least 3 min.

(3) Connect the interface of the driver safety belt pre-tensioner. See Fig. 5-10.



(4) Connect the negative pole earthing wire, and wait for at least 3 min.

(5) Turn the ignition switch to ACC or ON, and wait for at least 20s.

(6) Eliminate the flash DTC and read the fault by a scanner tool.

11. Check the driver safety belt pre-tensioner circuit

(1) Measure the resistance of the interface between the air bag ECU harness and the driver safety belt pre-tensioner harness, and that between RLP＋ and RLP－ beside the air bag ECU harness. It should be over 1 megohm.

(2) Measure the resistance of the interface between

the air bag ECU harness and the driver safety belt pre-tensioner harness, and that between RLP＋ beside the air bag ECU harness and RLP＋ beside driver safety belt pre-tensioner harness. It should be within 1 ohm.

⑶ Measure the resistance of the interface between the air bag ECU harness and the driver safety belt pre-tensioner harness, and that between RLP－ beside the air bag ECU harness and RLP－ beside driver safety belt pre-tensioner harness. It should be within 1 ohm.

12. Check the front passenger safety belt pre-tensioner

⑴ Turn the ignition switch to LOCK.

⑵ Disconnect the negative pole earthing wire from the battery, and wait for at least 3 min.

⑶ Connect the interface of the front passenger safety belt pre-tensioner. See the above figure.

⑷ Connect the negative pole earthing wire, and wait for at least 3 min.

⑸ Turn the ignition switch to ACC or ON, and wait for at least 20s.

⑹ Eliminate the flash DTC and read the fault by a scanner tool.

13. Check the front passenger safety belt pre-tensioner circuit

⑴ Measure the resistance of the interface between the air bag ECU harness and the front passenger safety belt pre-tensioner harness, and that between RRP＋ and RRP－ beside the air bag ECU harness. It should be over 1 megohm.

⑵ Measure the resistance of the interface between the air bag ECU harness and the front passenger safety belt pre-tensioner harness, and that between RRP＋ beside the air bag ECU harness and RRP＋ beside front passenger safety belt pre-tensioner harness. It should be within 1 ohm.

⑶ Measure the resistance of the interface between the air bag ECU harness and the front passenger safety belt pre-tensioner harness, and that between RRP－ beside the air bag ECU harness and RRP－ beside front passenger safety belt pre-tensioner harness. It should be within 1 ohm.

14. Check the clock spring

⑴ Pull out the interface between the air bag ECU and the clock spring. See the above figure.

⑵ Measure the resistance of the interface between the clock spring and the air bag ECU harness, and of two ends of the air bag ECU harness. It should be over 1 ohm.

⑶ Measure the resistance of the interface between the clock spring and the air bag ECU harness, and that between A＋ beside the clock spring and A＋ beside the air bag ECU harness. It should be within 1 ohm.

⑷ Measure the resistance of the interface between the clock spring and the air bag ECU harness, and that between A－ beside the clock spring and A－ beside the air bag ECU harness. It should be within 1 ohm.

IV Check of fault in SRS warning lamp circuit

Under normal circumstance, when the ignition switch turns to ACC or ON from LOCK, the SRS warning lamp should illuminate for 5s and then go out automatically. In case of fault in the air bag system, it will always illuminate but not go out. The flash DTC can be read according to normal procedures.

If, when the ignition switch is at LOCK, the SRS warning lamp always illuminates or, when at ACC or ON, does not illuminate, the circuit of SRS warning lamp can be considered as faulty. Inspection should be carried out according to the following procedure. For inspection, refer to the circuit diagram for the air bag system.

1. Check when SRS warning lamp always illuminates if the ignition switch is at LOCK

⑴ Turn the ignition switch to LOCK.

⑵ Disconnect the negative pole earthing wire from the battery, and wait for at least 3 min.

⑶ Pull out the air bag ECU interface.

⑷ Connect the earthing wire to the negative pole of battery, and wait for at least 3 min.

⑸ Observe if the SRS warning lamp goes out. If it does, replace the air bag ECU; if not, check the SRS warning lamp circuit.

2. Check the SRS warning lamp circuit

Before checking the SRS warning lamp circuit, firstly check the fuse of ECU. If it is burnout, replace it with a new one; if normal, proceed with the next step.

⑴ Preparation before check.

⑵ Connect the negative pole earthing wire to the battery, and wait for at least 3 min.

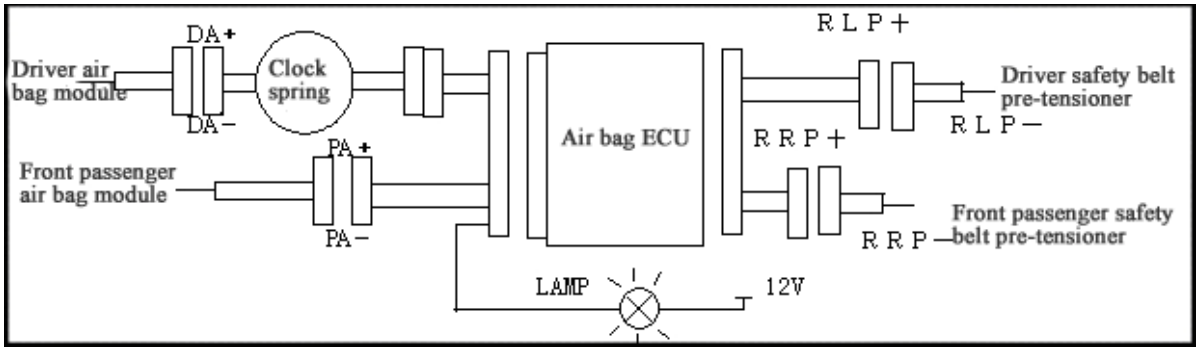
⑶ Turn the ignition switch to ACC or ON.

⑷ Measure the voltage between the foot LA of air bag ECU and the vehicle body.

⑸ Normal voltage: 0～4V. If the voltage is not normal, check the bulb or repair the circuit; if normal, proceed with the next step.

⑹ Disconnect the negative pole earthing wire from the battery, and wait for at least 3 min.

⑺ Connect the air bag ECU interface. Refer to the following figure.



⑻ Connect the negative pole earthing wire to the battery, and wait for at least 3 min.

⑼ Turn the ignition switch to ACC or ON.

⑽ Observe if the SRS warning lamp illuminates. If yes, the component that was faulty before is considered normal now; if not, check the terminal LA of air bag ECU. If the terminal LA is normal, replace the air bag ECU.

Diagnosis of Vehicle After Collision

No matter whether the air bag has deployed, inspection and maintenance should be carried out on the vehicle after collision. See Section IV for removal and installation.

I Diagnosis when the air bag has deployed

1. If the air bag has deployed after collision, do the fault diagnosis according to methods in Section II. The following components should be renewed.

⑴ Air bag ECU
⑵ Driver air bag module
⑶ Front passenger air bag module
⑷ Driver safety belt pre-tensioner module
⑸ Front passenger safety belt pre-tensioner module

Note: All replaced components should be recovered, such as air bag ECU, driver air bag module, front passenger air bag module, driver safety belt pre-tensioner module, and front passenger safety belt pre-tensioner module.

2. Check the following components. If abnormal, renew them.

⑴ Clock spring. Check if the interface and harness of clock spring are damaged; and check the on-off of the circuit of clock spring as per 2.3.10. In case of damage and abnormity, replace them with new ones.

⑵ Steering wheel, steering column, and steering lower shaft assembly. Check if steering wheel, steering column, and steering lower shaft assembly are distorted or abnormal. If yes, repair or replace them.

⑶ Harness. Check if the air bag harness is fixed, harness and interface damaged, or terminal distorted. If abnormal, replace the harness.

II Diagnosis when the air bag has not deployed

If the air bag has not deployed for collision at a lower speed or of other kinds, do the diagnosis according to methods in Section II and check the following components.

1. Air bag ECU. Check if there is dent, crack and

distortion in the air bag ECU body and bracket; check if the interface is damaged, terminal distorted and installation normal. In case of problems concerned, replace them with new ones.

2. Driver air bag module. Check if there is dent, crack and distortion on the ornamental cap; check if harness and interface are damaged, and terminal distorted; check if there is dent, crack and distortion on the gas generator housing; check if the horn button contact of steering wheel is distorted and if installation abnormal. In case of problems concerned, replace them with new ones.

3. Front passenger air bag module. Check if there is dent, crack and distortion on the ornamental cap; check if harness and interface are damaged, and terminal distorted; check if there is dent, crack and distortion on the gas generator housing; check if the horn button contact of steering wheel is distorted and if installation abnormal. In case of problems concerned, replace them with new ones.

4. Driver safety belt pre-tentioner. Check if there is dent, crack and distortion on the driver safety belt pre-tentioner; check if harness and interface are damaged, and terminal distorted; check if installation is abnormal. In case of problems concerned, replace them with new ones.

5. Front passenger safety belt pre-tentioner. Check if there is dent, crack and distortion on the front passenger safety belt pre-tentioner; check if harness and interface are damaged, and terminal distorted; check if installation is abnormal. In case of problems concerned, replace them with new ones.

6. Clock spring. Check if the interface and harness of clock spring are damaged; and check the on-off of the circuit of clock spring as per 2.3.14. In case of damage and abnormity, replace them with new ones.

7. Harness. Check if the air bag harness is fixed, harness and interface damaged, or terminal distorted. If abnormal, replace the harness.

Note: If water entering the vehicle makes the air bag system soggy, replace the entire air bag components.

8. Press down the SST execution switch to make the air bag deploy. When the LED lamp of the execution switch illuminates, the air bag will deploy at the same time.

Removal and Installation

Removal and installation of driver air bag module, front passenger air bag module, air bag clock spring, air bag electronic control unit, and air bag harness may be needed in the maintenance of LF6430 air bag system. Notes are demonstrated as below.

Make preparation before removal and installation:

1. Turn the ignition switch to ON; encrypt the SRS ECU by a scanner tool.

2. Turn the ignition switch to LOCK.

3. Disconnect the negative pole earthing wire from the battery, and wait for at least 3 min.

I Removal and installation of air bag ECU assembly

Note: Unless badly needed, the housing of air bag ECU assembly must not be opened. If it contacts the terminal of the integrated circuit, the integrated circuit will be damaged.

1. Notes for removal of air bag ECU assembly

⑴ Pull out the interface. Note: the interface should be pulled out during the installation of ECU assembly.

⑵ Remove screws by a wrench, and take out the air bag ECU assembly.

2. Notes for installation of air bag ECU assembly

⑴ Install the air bag ECU assembly by a wrench in the correct direction.

Note: Tighten the screws at torque of 8N·m.

⑵ Connect interface.

3. Inspection after installation

Sway the air bag ECU assembly and check if it is loose.

II Notes for removal, maintenance and repair of driver air bag module (DAB)

1. Removal procedure and notes

⑴ Turn the ignition switch to LOCK.

⑵ Disconnect the negative pole of battery for over 3 min.

⑶ Remove the two hexagon flange bolts at left and right sides of the steering wheel hub.

⑷ Pull up the driver air bag module from the steering wheel, and disconnect the interface of clock spring and the terminal of gas generator.

Note: Stir up the black shrapnel by a small flat-tip screwdriver.

⑸ Disconnect the interface of horn wire, and take out the air bag module, and complete the removal.

Note: During removal of the driver air bag module, do not pull the air bag harness. During storage, make the ornamental cap facing upward; and do not dismantle the air bag module. Do not knock the air bag module; if it has been knocked, replace it. Do not expose it in environment with temperature of 90℃. Prevent the module from lubricant, grease and water. The replaced air bag module should be put into a sealable bag and returned to Lifan.

2. Installation procedures and notes

⑴ A new driver air bag module is used for installation; well insert the interface between the clock spring and the gas generator.

Note: Clip the buckle of the black interface into the gas generator, and then insert the interface of horn wire.

⑵ Put the whole module into the steering wheel, adjust the position of the module. Note: the gap at four corners should be even. Screw down 2 hexagon bolts into corresponding position and tighten them by a hexagonal socket wrench at torque of 8 N·m.

⑶ Check the middle position of the steering wheel. After installation, turn the steering wheel to left and right, to check if there is abnormity or noise.

3. Notes for maintenance and repair

All components of LF6430 driver air bag module, except the horn mechanism, have no need for maintenance and repair. In case of faults, replace them with new ones.

Note: For component replacement, turn to professionals at designated service stations for help.

III Notes for removal, maintenance and repair of front passenger air bag module (DAB)

1. Removal procedure and notes

1) Turn the ignition switch to LOCK.

2) Disconnect the negative pole of battery for over 3 min.

3) Remove the trim board of sundries box door on the dash board to make a wrench capable of screw off the bolts connecting the front passenger air bag module and tubular beam.

Note: Extra attention should be paid for operation of the air bag interface. No damage is allowed to the air bag harness.

4) Remove the sundries box on the dash board. Slightly put up the dash board, and stir up the interface inserted on the terminal of gas generator of the front passenger air bag module by a small flat-tip screwdriver, and then pull it out.

5) Remove the front passenger air bag module. Remove the nuts fixing the front passenger air bag module and dash board by a wrench; take out the slope tied on the front passenger air bag module from the gap, and then take out the module from the dash board. The module should be packed in a sealable bag and returned to Lifan.

Note: The front passenger air bag module should not be dismantled.

2. Installation procedures and notes

1) A new front passenger air bag module should be used for installation. Align and insert the corresponding bolts on the mounting base of the front passenger air bag module and the dash board, then tighten the nuts by a wrench at torque of 8N·m.

2) Screw off bolts on the pulling rope ring first, and then put the pulling rope on the dash board into the pulling rope ring on the air bag module, and screw down the bolts at torque of 8N·m.

3) When the dash board is installed to corresponding positions, insert the interface of air bag harness into the terminal of gas generator of the front passenger air bag module.

4) Fix the dash board on the vehicle.

5) Now the installation holes at the lower part of air bag module should align with those on the tubular beam. Fix them by bolts.

6) Install sundries box.

7) After installation is completed, visually check if the surface of the dash board is smooth and the clearance normal. If not, readjustment is required.

Note: The installation and adjustment of the module must be carried out by professionals. Any others are not allowed for such operation to avoid danger.

3. Notes for maintenance and repair

All components of LF6430 front passenger air bag module, except the horn mechanism, have no need for maintenance and repair. In case of faults, replace them with new ones.

Note: For component replacement, turn to professionals at designated service stations for help.

IV Notes for removal, maintenance and repair of clock spring

1 Removal procedures and notes

1) Make the wheels at the position of straight running.

2) Turn the ignition switch to LOCK.

3) Disconnect the negative pole of battery, and wait for over 3 min.

4) Remove the driver air bag module. Then remove the installation nut M12 on the steering wheel by Φ19 sleeve, and take out the steering wheel.

5) Remove the screws on the combination switch cover by a cross-tip screwdriver, and then gently dismantle the combination switch cover.

6) Pull out the interface connected to the input socket of the clock spring.

7) Remove the clock spring from the steering column. Pay attention to the two buckles fixed on the steering column. The clock spring replaced should be packed in a sealable bag and returned to Lifan.

2 Installation procedures and notes

A new clock spring should be used for installation. Do not pull out the lock piece before installing the steering wheel.

1) Put the clock spring onto the steering column shaft.

2) Press down the clock spring by proper pressure to make the two plastic buckles and a metal one on the clock spring clipped into the mounting base of the steering column.

Note: Even force should be applied to the buckling of two barbs. In case that the buckle is broken, replace the clock spring with a new one.

3) Check if the buckle of the clock spring is buckled into the corresponding position.

4) Install the front and back covers of the steering column combination switch, and tighten the two screws.

5) Check if the front wheel is at straight running position (refer to the installation manual of clock spring), and install the steering wheel. Align the marks on the steering wheel and steering main shaft, and screw down the steering installation nuts. For a new steering wheel, adjust the direction and then pull out the lock piece of the clock spring.

Note: The lock piece of the clock spring should be recovered.

6) Connect the negative pole cable of battery and turn the ignition switch to ON.

3. Notes for maintenance and repair

The clock spring of LF6430 has no need for maintenance, repair and alignment.

Other Electric Systems

I Overview

This section covers rear defrosting system, electric horn system, and electric clock.

II Rear defrosting system

The rear defrosting system includes rear window heating net, rear window defroster relay, and rear window defroster switch. It is integrated with the emergency light and the internal integration is equipped on the A/C panel (equipped for an electric air-conditioning).

1. Fault symptom table

Symptom	Cause
The rear defrosting system does not work	The rear defroster relay is faulty. The rear defrosting fuse is faulty. The rear defrosting switch is faulty. The wiring is faulty.

2. Check the rear defrosting switch (equipped for an electric air-conditioning)

A/C HVAC assembly end connector

8	7	6	5		4	3	2	1
15	14	13		12	11		10	9

When the defroster switch is at ON, terminal 15 and 12 should be connected; when at OFF, they should not be connected. If out of requirements, replace the defroster switch.

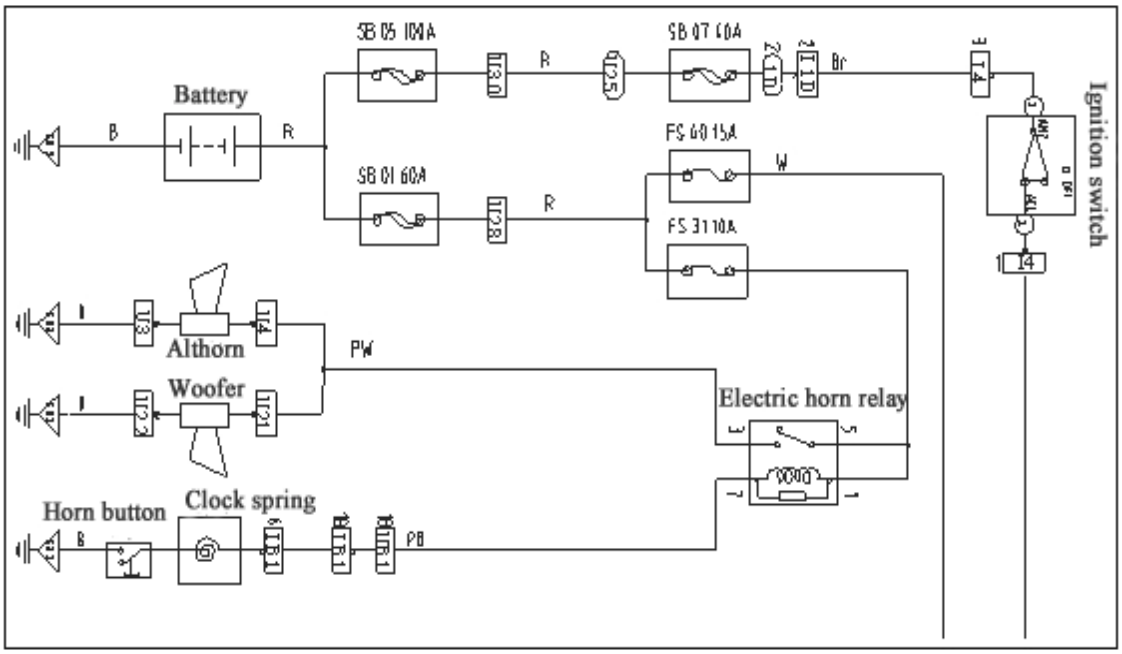
Check the rear defrosting switch luminous light (equipped for an electric air-conditioning). Connect the positive pole of battery with terminal 3 of A/C HVAC assembly end connector, and negative pole with terminal 9. The rear defrosting switch luminous light should illuminate. If out of requirements, replace the defroster switch.

IV Electric horn system

The system contains the following components.

The horn system is started by the switch under the ornamental cap of the air bag module hidden on the center of the steering wheel. Press down the horn switch of the ornamental cap of the air bag module to start the horn relay. The horn relay then leads current to the horn.

1. Carry out check and repair as per circuit diagram 4-106



2. Fault diagnosis table

Symptom	Cause
The two horns do not work	1. Fuse is blowout 2. Horn relay is ineffective 3. Horn switch is ineffective 4. Horn is ineffective 5. Clock spring is faulty 6. Wiring is faulty
One horn does not work	1. Horn is ineffective 2. Wiring is faulty
The horn keeps tweeting	1. Horn relay is ineffective 2. Horn switch is ineffective 3. Clock spring is faulty 4. Wiring is faulty

Vehicle Body and Accessories

Vehicle Body

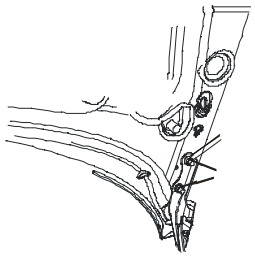
Door and Door Lock

I Engine room cover

i. 1. Removal of the engine room cover

⑴ Release the four bolts that fix the hinges, and lift up the engine room cover.
⑵ Take out the engine room cover.
(3) To install, reverse the removal procedure.

Torque: The hinge is connected with the engine room cover at torque of 23±2 N.M (two).



ii. 2. Removal of hinge

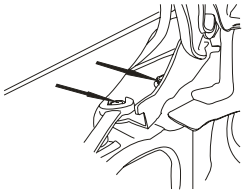
⑴ Remove the fender. The fender is fixed by 7 bolts at torque of 10N．M. See the following figure for installation position:

⑵ Release the two fixing bolts, and take out the hinge.

⑶ During check and repair, adjust the rubber pad at the two sides of the engine room cover to ensure the clearance between the engine room cover and the vehicle body.

⑷ To install, reverse the removal procedure.

Torque: The hinge is connected with the vehicle body at torque of 23±210 N.M (two).



II Dismantling of vehicle door

i. 1. Right front door

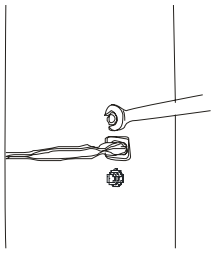
⑴ Remove the fixing bolt of the front door hinge.

⑵ Remove the fixing bolt of the door limiter.

⑶ Detach the front door.

For removal of other doors, refer to that of the right front door.

⑷ To install, reverse the removal procedure.



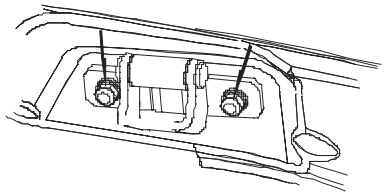
Torque: The left/right front door hinge is connected with the vehicle body at torque of 36±4 11 N．m

The left/right front door hinge is connected with the vehicle door at torque of 36±4 11 N．m

The left/right front door limiter is connected with the vehicle body at torque of 11 N．m (two)

ii. 2. Removal of back door

⑴ Remove the two nuts on the back door that are connected with the hinge.



⑵ Pull out the interface connecting the rear door harness and vehicle body harness.

⑶ Remove the back door pneumatic supporting rod.

⑷ Detach the rear door harness and the back door together.

⑸ To install, reverse the removal procedure.

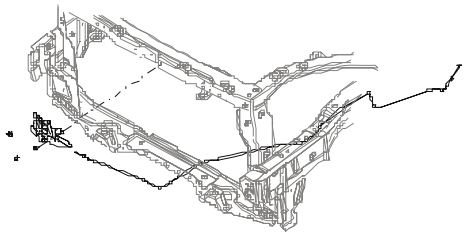
Torque: Hinge is connected with the vehicle body at torque of 36±4 N．m
Hinge is connected with the vehicle door at torque of 50±5N．m
Rear door limiter bracket is connected with the vehicle body at torque of 27 N．m (two)

III Removal of door lock

i. 1. Engine room cover lock

⑴ Dismantle the engine room cover lock body.

⑵ Removal of engine room lock cable.

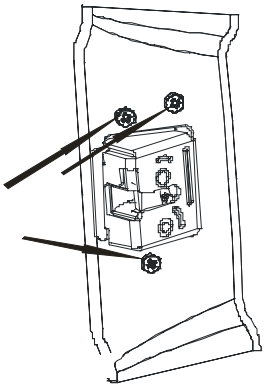


⑶ To install, reverse the removal procedure.

Torque:
The engine room upper lock body is connected with the vehicle body at torque of 11 N．m (3).

ii. 2. Back door lock

（1） Remove the back door upper shield
（2） Remove the back door left/right shields
（3） Remove the back door lower shield assembly
（4） Remove the opening-out rod from the outside handle
（5） Remove the lock cylinder rod from the lock cylinder
（6） Remove the back door lock



（7） Pull out the harness interface
（8） To install, reverse the removal procedure.

Torque:
The back door lock body is connected with the vehicle body at torque of 15Nm (3).
The back door lock catch is connected with the vehicle body at torque of 12±2Nm (2).

iii. 3. Four door locks

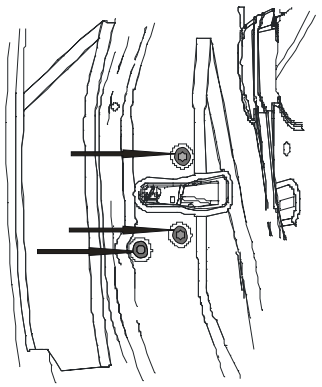
(1) Dismantle the inner shield of left front door.

(2)
a. Detach the triangle shield of the left front door;
b. Remove the snap button;
c. Release the self-tapping screw of inside handle Q2744816 (1);
d. Release the self-tapping screw of door handle cover (1);
e. Insert the flat-tip screwdriver into the gap at the door bottom, and prize up a corner of the door panel and remove the inside door shield.

Note: For other 3 doors, this process is applicable, too.

Take down the inside-opening cable and lock cable.

(3) Remove the lock body and door panel installation bolts.



(4) Take down the plug.

(5) Remove lock catch by a screwdriver.

(6) To install, reverse the removal procedure.

Torque:
The lock body assembly is connected with door at torque of 9±1Nm (4).
The lock catch is connected with vehicle body at torque of 12±2Nm (2).

Note: For other three doors, this procedure is applicable, too.

IV Adjustment of door

i. 1. Left/right rear door

Adjust the door clearance by iron (the clearance between the rear door and the triangle window is 8 ±1.5mm, and the side wall 6±1mm, door sill 6± 1mm, and the planeness is 0-0.5mm; marked by arrow) and make it flat by a magnet. Then put nuts (Q32008, 2 up and down respectively) into the sleeve of the pneumatic wrench and tighten them at torque of 35±3N.m.

Check:

(1) If there is bump during assembly; if bolts and nuts are properly assembled and if there is screw loose.

(2) If the planeness of clearance between the rear door and the side wall is within the requirements and the checker line of the rear door is higher than the side wall for 0-0.5mm.

ii. 2. Left/right front door

Adjust the door clearance by iron (the clearance between the front door and the rear door upper section is 5.5±0.7mm, and door outside panel 5.5± 0.7mm, front door and pillar A 6.5±1mm, and front and rear doors and door sill 6±1mm. The planeness is 0-0.5mm; marked by arrow) and make it flat by a magnet.

Then put nuts (11—6 1 O 11 03, 2 up and down respectively) into the 2-3 screw teeth and attached to the vehicle body, and tighten them by a pneumatic wrench at torque of 35±3N.m.

Check:

(1) If there is bump during assembly; if bolts and nuts are properly assembled and if there is screw loose.

(2) If the planeness of clearance between the front door and the rear door is within the requirements and the checker line is 0-0.5mm high.

iii. 3. Back door

Assemble the back door, and adjust the planeness of and clearance between the back door and the side wall. The average planeness is 0-0.5mm. The clearance is required to be 5.8±1mm between the back door and side wall, 6.4±1mm between the back door and the side wall center, and 6.2±1mm between that and the tail lamp (marked by arrow). Adjust the planeness of and clearance between the back door and the top cover; clearance is required to be 9.3±1.5mm. Check the clearance between the back door and the side wall and the top cover; the same requirement is applicable. Then tighten the bolts (T 11—630 1 O 11, each 2 up and down respectively) by a pneumatic wrench (at torque of 50±3N.m for top cover, hinge and vehicle body).

Check:
Check the torque
Use a torque wrench to check if the process torque of the back door is 50±3N.m.

iv. 4. Engine room cover

Assemble the engine hood: adjust the hood and fender.

Clearance and planeness of plate: clearance is 5±0.5mm; and planeness is 0-0.5mm. Attach the engine hood to the hinge through bolts (Q 1 4008 20, 2 up and down respectively) by an angle wrench (at torque of 30±4Nm).

Check

(1) Check the matching between the engine hood and fender, and check if the engine hood aligns with the fender front section in length (0-0.5mm).

(2) Check if the matching of four doors, front fender, and back door meets the requirements; if there are loose nuts and bolts; and also check the inner trims.

Accessories

I Removal of CD assembly

⑴ Prize up an end of the ornamental cap of the control panel by a flat-tip screwdriver, and take down the ornamental cap.

⑵ Remove the fixing bolts on CD by a cross-tip screwdriver.

⑶ Unplug the harness interface.

⑷ To install, reverse the removal procedure.

II Removal of A/C control panel

1. Prize up an end of the ornamental cap of the control panel by a flat-tip screwdriver, and take down the A/C control panel.

2. To install, reverse the removal procedure.

III Removal of steering wheel

1. Take down the horn cover, and unplug the horn button interface.

2. Remove the fixing nut on the steering wheel.

3. Take down the steering wheel.

4. To install, reverse the removal procedure.

Torque: Fix the steering wheel at torque of 30±3N.m.

IV Removal of instrument desk

1. Dismantle the auxiliary fascia console (refer to the removal of auxiliary fascia console).

2. Remove the steering wheel (refer to the removal of steering wheel).

3. Remove the A/C control panel (refer to the removal of control panel).

4. Remove the CD (refer to the removal of CD).

5. Remove the instrument cluster.

a. Remove the dustproof leather assembly of the instrument cluster cover.
b. Dismantle the upper and lower shields of steering column.
c. Remove the fixing screws of the instrument cluster.
d. Remove the instrument cluster.

6. Release the installation bolt (1) at the front section of the tubular beam.

7. Dismantle the sundries box.

8. Release the bolts (2) at left and right lower ends of the dash board.

9. Release the bolts (2) at left and right upper ends of the dash board.

10. Prize up the left and right end cover board of the dash board.

11. Release the fixing bolts under the shield (2 each at left and right; 4 in total).

12. Take down shield 13 of pillar A, and also the instrument desk.

Note: To install, reverse the removal procedure.

Torque: Fixing bolt at torque of 7±1N.m.

V Removal of auxiliary fascia console

1. Take down the A/C panel (refer to the removal of A/C panel).

2. Remove the decoration plate assembly of auxiliary fascia console

3. Remove the A/C left/right shield assembly.

a. Prize up the clamps (1 each at left and right; 2 in total) at the front end of the A/C left/right shield assembly.
b. Remove the A/C left/right shield assembly.

4. Release the fixing bolts of the auxiliary fascia console and the tubular beam (1 each at left and right; 2 in total).

5. Release the two self-tapping screws at the back of the auxiliary fascia console.

6. Release the two installation bolts in the sundries box of the auxiliary fascia console.

VI Removal of left front door window regulator

1. Detach the left front door shield (refer to the removal of lock cylinders of the four doors).

a. Prize up the door handle cover
b. Release the fixing screws
c. Unplug the harness interface
d. Take down the inner board of door

2. Release the door inner handle cable, and put off the protective film.

3. Remove the door glass. Release the bolts fixing the glass by a sleeve wrench.

4. Release the fixing bolts of the regulator.

5. Take out the regulator.

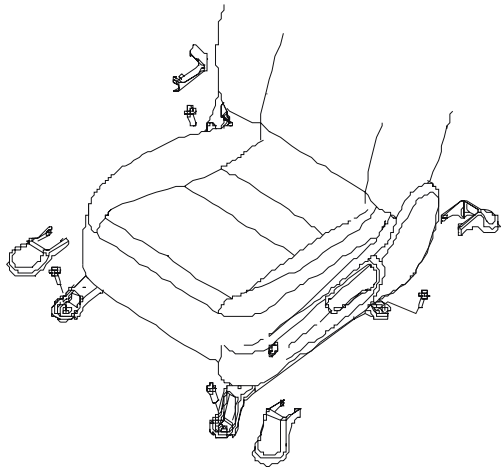
6. To install, reverse the removal procedure.

Torque:
To fix the door glass at torque of 11 N.m (2).
To fix the door regulator at torque of 11 N.m (6).

Note: For other 3 doors, this process is applicable, too.

VII Dismantling of seat

1. Dismantle the left front seat



1) Move the seat to the forefront, and take down the guide rail protective cover.

2) Release the fixing bolt at the rear end of the guide rail.

3) Move the seat to the tail end, and take down the guide rail protective cover.

4) Release the fixing bolt at the front end of the guide rail.

5) Unplug the seat heating interface, and take down the left front seat.

6) To install, reverse the removal procedure.

Torque:
Fix the seat guide rail at torque of 60N.m (4).

Note: For dismantling of the right front seat, refer to that for the left front door.

2. Remove the right rear seat

1) Open the rear side door.

2) Open the cushion and turn it forward. Release the two fixing bolts.

3) Release the two fixing bolts.

Torque: 60 Nm (2)

4) Now the cushion can be pushed down.

5) Pull the unlocking switch of the rear seat back, enlarge the back angle backward. Release the four fixing bolts.

Torque: 60 Nm (2)

6) To install, reverse the removal procedure.

Note: For the removal of the left rear seat, refer to that of the right rear seat.

VIII Removal of safety belt

1. Take down the fixing bolt protective cover of safety belt.

2. Release the upper fixing bolts.

3. Take down the safety belt lower fixing bolt protective cover.

4. Remove the pillar C lower shield.

5. Release the bolts that are used to fix the retractor of the safety belt.

6. To install, reverse the removal procedure.

Torque:
Fix the head end piece and the lower part of the retractor of the safety belt at torque of 50±5 N.m (1).
Attach the adjusting mechanism to the sliding rail at torque of 50±5 N.m (1).

IX Removal of roof

1. Remove the passenger armrest.

2. Take down the interior front roof light (refer to the removal of lamps).

3. Take down the interior middle roof light (refer to the removal of lamps).

4. Take down the interior rear roof light (refer to the removal of lamps).

5. Take down the roof safety belt cover.

6. Remove shields on pillar A, B and C.

7. Prize up the fixing buckle by a flat-tip screwdriver.

8. Take down the roof.

9. To install, reverse the removal procedure.

Outerior trims

I Dismantling of the front door outer handle

1. Remove the shield inside the left front door (refer to the removal of shield inside door), and put off the protective film.

2. Prize up the cover stem of the screw of the outer door handle.

3. Remove the fixing bolts by an internal spline wrench.

4. Disconnect the lock cylinder from the lock cylinder rod, and take down the protective cover of the left front door lock cylinder and the lock cylinder.

5. Take down the outer handle.

6. To install, reverse the removal procedure.

Toque:
Fix the lock cylinder at torque of 11N.m.

Note: For removal of the right front door outer handle, refer to that of the left front door.

II Dismantling of the rear door outer handle

1. Remove the shield inside the left rear door (refer to the removal of shield inside door).

2. Put off the protective film, and remove the fixing bolts at the tailstock of outer door handle by an internal spline wrench from the shield inside the door.

3. Take down the tailstock of door handle.

4. Take down the door outer handle.

5. To install, reverse the removal procedure.

Torque:
Fix the tailstock of outer handle at torque of 11N.m. (1).

Note: For removal of the right rear door outer handle, refer to that of the left rear door.

III Dismantling of the back door outer handle

1. Open the back door.

2. Remove the shield inside the back door, and put off the protective film.

3. Release the bolts that are used to fix the back door outer handle from the door shield.

4. Dismantle the door handle rod from the lock cylinder, and take off the back door outer handle.

Note: Fix the lock cylinder and handle by two bolts at the rear left side, take off the handle to disconnect the lock cylinder rod, and remove the lock cylinder.

5. To install, reverse the removal procedure.

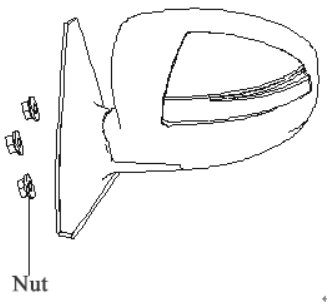
Torque:
Fix the back door outer handle at torque of 11N.m (3).

IV Dismantling of exterior rearview mirror

1. Take down the triangular block of the door.

2. Unplug the interface of the power exterior rearview mirror.

3. Release the screws that are used to fix the exterior rearview mirror.



4. Take down the exterior rearview mirror.
5. To install, reverse the removal procedure.

Torque:
Fix the exterior rearview mirror at torque of 11N.m (3).

V Dismantling of front wiper

1. Take down the wiper arm.

2. Release the nuts that fix the wiper arm.

3. Take out the wiper arm assembly.

4. Remove the lower decorative plate of the front windshield. Remove the buckle to take down the lower decorative plate.

5. Release the bolts fixing the linkage mechanism.

6. Unplug the motor interface, and take down the linkage mechanism assembly.

7. To install, reverse the removal procedure.

Torque:
Fix the wiper arm at torque of 55±3 N.m (1).
Fix the linkage mechanism at torque of 10±1 N.m (3).

VI Dismantling of rear wiper

1. Prize up the decorative cap of nuts fixing the rear wiper arm.

2. Release the fixing nut, and take down the wiper arm and rubber ring.

3. Open the back door.

4. Take down the shield inside the back door.

5. Unplug the interface of wiper harness, and release the three fixing bolts.

6. To install, reverse the removal procedure.

Torque:
Fix the wiper arm at torque of 20±3N.m (1)
Fix the wiper motor at torque of 10±1 N.m (3)

VII Dismantling of radiator grille

1. Open the engine room cover.

2. Release the bolts fixing radiator grille.

3. Take down the radiator grille.

4. To install, reverse the removal procedure.

Torque:
Fix the radiator grille at torque of 6±1N.m (5).

Replacement of Windshield

Replacement of Windshield

I Removal procedure

i. Remove the slug of the windshield according to the figure: cut the slug by a knife.
Note: Do not damage the vehicle body by a knife.

ii Remove the windshield

1. Put the steel piano wire out through the space between the vehicle body and glass.

2. Bind the two ends of the piano wire by wood block or similar object
Note: Stick the adhesive tape on the outside surface to protect the surface from scratch.



Note: For glass separation, do not damage the paint and inner and outer trims. To prevent scratch on the dash board, a plastic piece can be put between the steel piano wire and the dash board.

3. Pull the steel piano wire around the glass, cut open the adhesive, and then remove the glass.

Note: For cutting open the glass adhesive area, as much as adhesive should be left on the vehicle body.

II Installation procedure

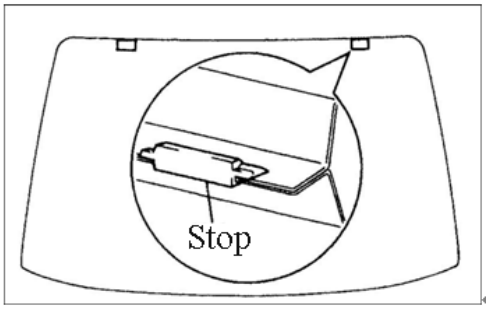
i. Preparation for installation

1. Do not touch the glass surface after cleaning.

2. Cut out the rough section on the vehicle body.
Note: Leave as much as adhesive on the vehicle body.

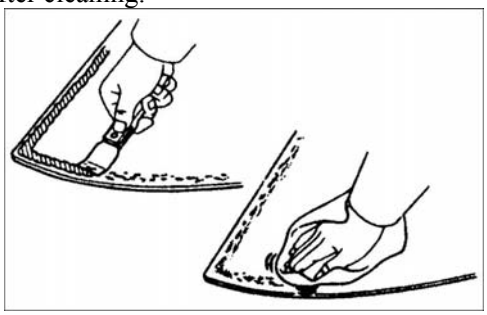
3. Clean the cut surface of adhesive by cleaning cloth with cleanser.
Note: Even all adhesive has been cleared away, the vehicle body surface should be cleaned.

4. Remove the stop. Cut out the stop by knife.



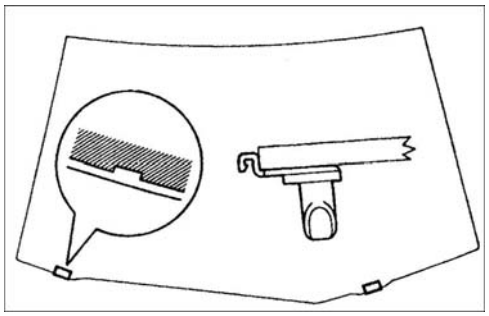
5. Clean the detached windshield.
1) Clear away the adhesive on the glass by a scrapper.

2) Clean the glass by cleanser. Note: Do not touch glass after cleaning.



3) Replace the clip as necessary.

a. Remove the stop by knife
b. (2) Remove the old clip
c. (3) Install the new clip

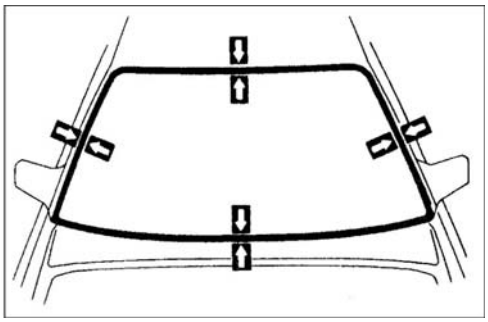


6. Positioning of glass

1) Locate the glass at correct position

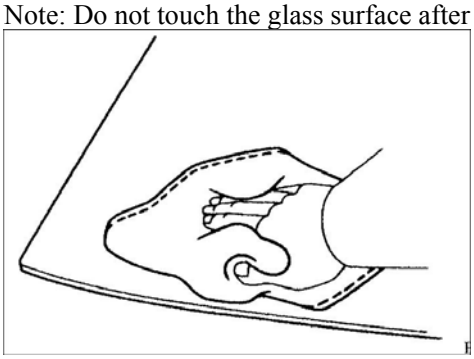
2) Make reference marks on glass and the vehicle body

3) Take down the glass

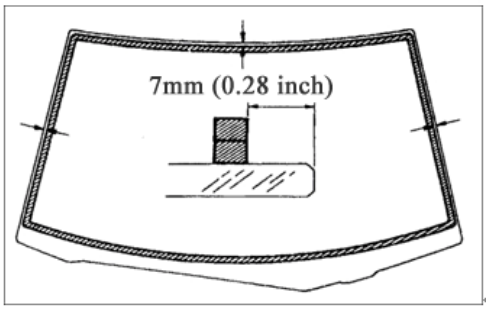


7. Clean the glass contact surface. Clear away the black dirt around glass contact surface.

Note: Do not touch the glass surface after cleaning.

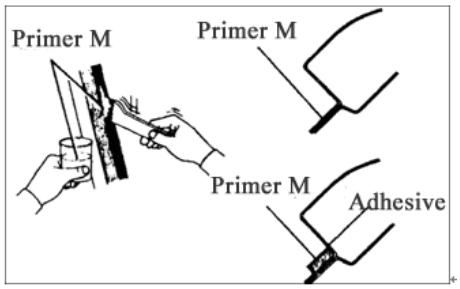


8. Install the baffle. Install the baffle by double sticky tape. Note: Do not touch the glass surface after cleaning.



9. Smear primer M on the vehicle body contact surface. Smear primer M on the vehicle body contact surface by a brush. Note:

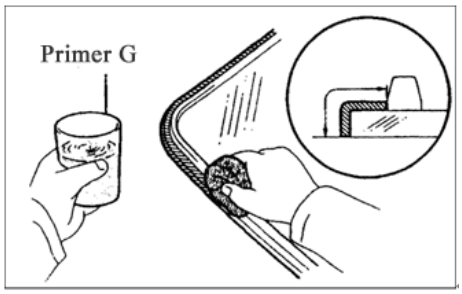
* The primer coating should be kept for at least 3 min.
* Do not smear it on the adhesive
* The primer M that has been opened for use can not be storaged for reuse.



10. Smear primer G on the glass contact surface.

1) Smear primer G on the edge of glass and the contact surface by brush or sponge.

2) Before the drying of primer, wipe it away by clean cloth. Note: (The primer coating should be kept for at least 3 min) Do not smear it on the adhesive. The primer G that has been opened for use can not be storaged for reuse.



11. Mixed adhesive

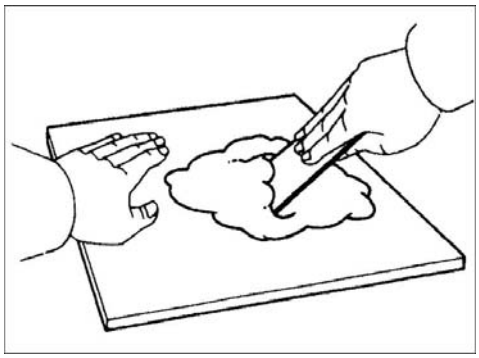
(1) Thoroughly clean the glass plate and putty knife by dissolvent.

(2) Mix the 500g base resin and 75g hardener by a scrapper on the glass plate or similar objects.

Note:

* Make sure that the slug has been installed during the period when the adhesive is applied.

* The adhesive should be mixed within 5 min.

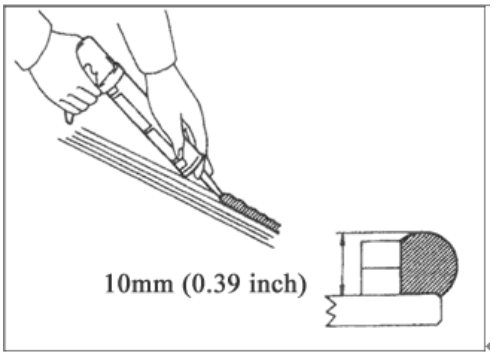


12. Smear the adhesive

(1) Cut off the mouth point of the pipe pot, and put the adhesive into the pipe pot.

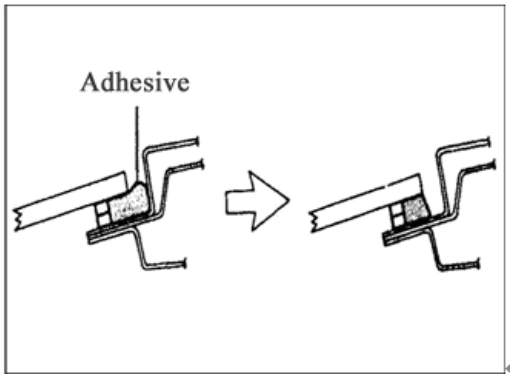
(2) Put the pipe pot into sealing rubber gun.

(3) Smear adhesive on glass as shown in the figure.

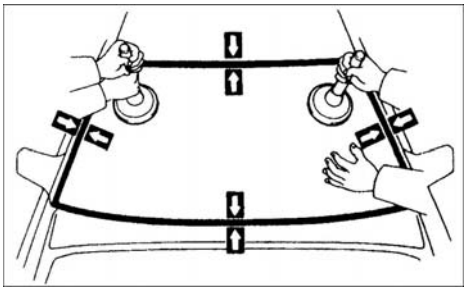


ii. Installation of glass

Note: As shown in the figure, make sure that the baffle has been sticked to the vehicle body panel.

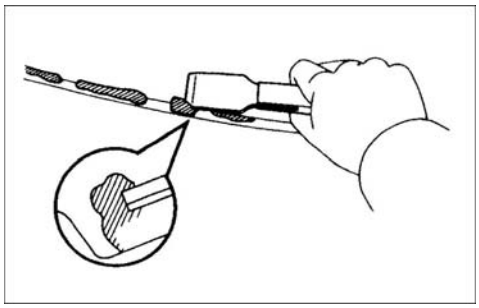


(1) Install glass. Align the reference marks on glass with those on the vehicle body, and then press the glass gently from the edge.



(2) Smear the adhesive on the edge of glass by a scrapper

(3) Remove the excessive or overflown adhesive by a scrapper.



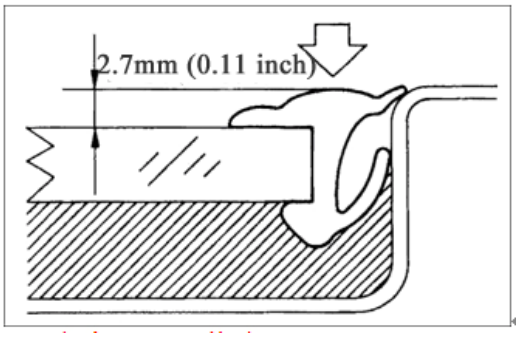
(4) Clamp the glass till the adhesive is hardened.

5. Check

Check if there is water leakage, and repair.

(1) After hardening, do the water leakage test.

(2) Stop the leaking area by adhesive.



14. Install the windshield upper slug. Install the upper slug on the vehicle body and beat it gently by hand.

15. Install the outside slug. Install screw and outside slug.

Replacement of Rear Windshield

I Removal procedure

1. Detach the lower slug. Cut off the double face tape at the two ends of slug by a scrapper.

Note: Wrap the scrapper point by tape before use, and prize up the slug in 6 directions.

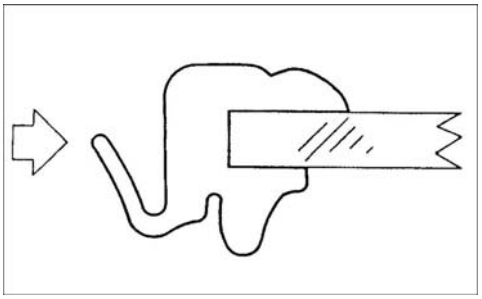
2. Remove the rear windshield

Pull out the steel piano wire from the vehicle inside through the space between vehicle body and glass; bind the two ends of the piano wire by wood block or similar objects. Note: Do not make the piano wire damaged by the two stops. Take out the glass.

3. Remove the rear windshield slug.

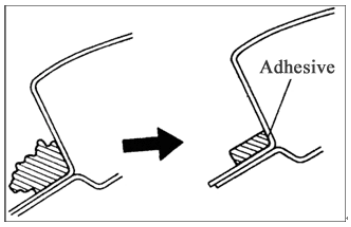
II Installation procedure

1. Install rear windshield slug. Put the slug around the glass and install it by hand.
Note: For installation, remove the rear windshield first.

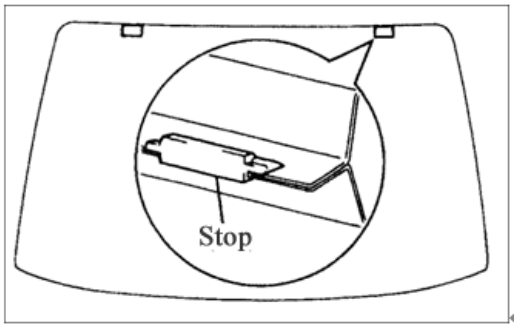


2. Clean and trim the vehicle body contact surface

Cut out the rough section on the vehicle body. Note: Leave as much as adhesive on the vehicle body. Clean the cut surface of adhesive by cleaning cloth with cleanser.
Note: Even all adhesive has been cleared away, the vehicle body surface should be cleaned.



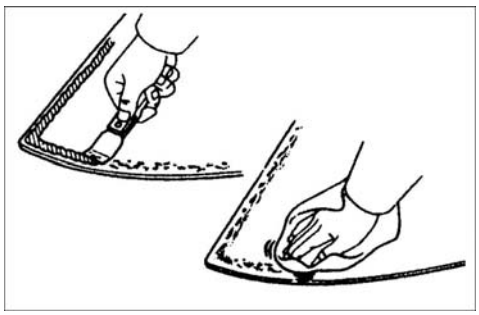
3. Remove the stop. Cut out the stop by knife.



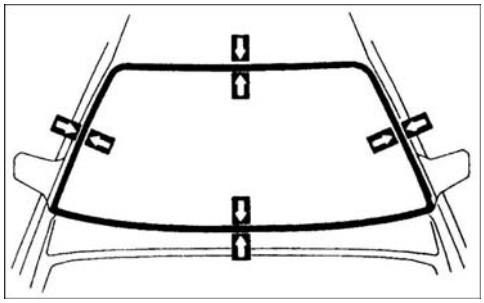
4. Clean the detached glass

Clear away the adhesive on the glass by a scrapper. Detach the stop by knife and clean the glass by cleanser.

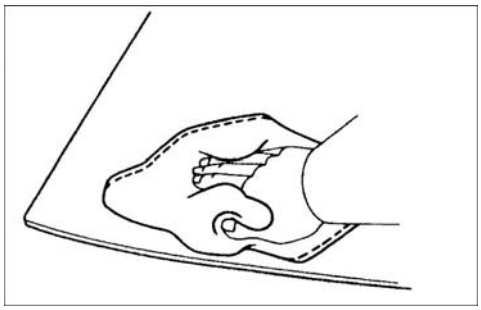
Note: Do not touch glass after cleaning.



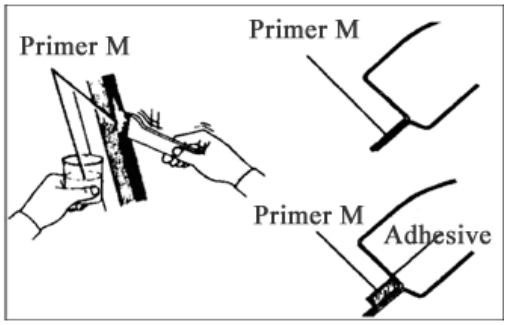
5. Positioning of glass. Locate the glass at correct position. Make reference marks on glass and the vehicle body. Take down the glass.



6. Clean the glass contact surface. Clear away the black dirt around glass contact surface. Note: Do not touch the glass surface after cleaning.

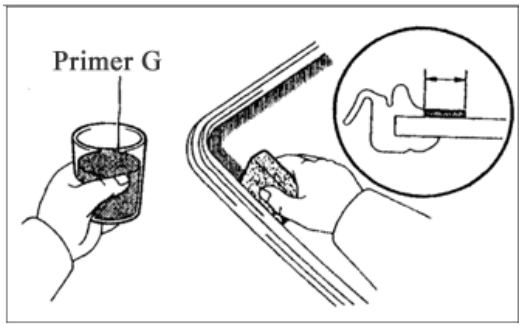


7. Smear primer M on the vehicle body contact surface. Smear primer M on the vehicle body contact surface by a brush. Note: The primer coating should be kept for at least 3 min. Do not smear it on the adhesive. The primer M that has been opened for use can not be storaged for reuse.

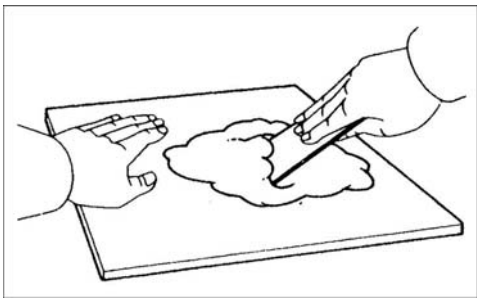


8. Smear primer G on the vehicle body contact surface.

Smear primer G on the vehicle body contact surface by a brush. Note: The primer coating should be kept for at least 3 min. Do not smear it on the adhesive. The primer G that has been opened for use can not be storaged for reuse.

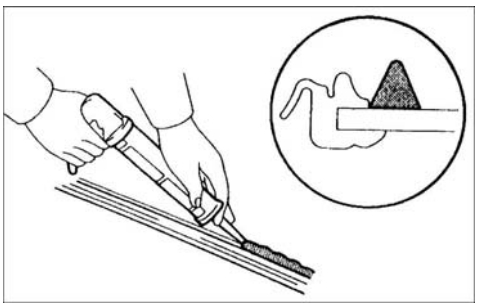


9. Mixed adhesive. Make sure that the slug has been installed during the period when the adhesive is applied. The adhesive should be mixed within the regulated time. Thoroughly clean the glass plate and putty knife by dissolvent. Mix the 500g base resin and 75g hardener by a scrapper on the glass plate or similar objects.



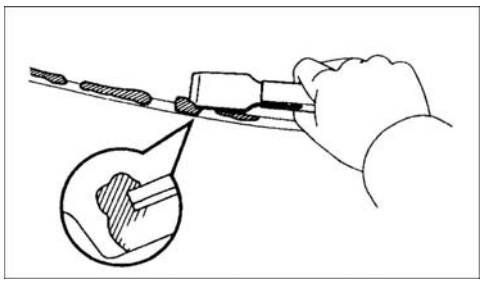
10. Smear the adhesive

Cut off the mouth point of the pipe pot, and put the adhesive into the pipe pot. Put the pipe pot into sealing rubber gun. Smear adhesive on glass.



11. Installation of glass

Install glass. Align the reference marks on glass with those on the vehicle body, and then press the glass gently from the edge. Smear the adhesive on the edge of glass by a scrapper. Remove the excessive or overflown adhesive by a scrapper. Clamp the glass till the adhesive is hardened.



12. Check if there is water leakage, and repair. After hardening, do the water leakage test. Stop the leaking area by adhesive.

13. Install the windshield lower slug. Install the upper slug on the vehicle body and beat it gently by hand.

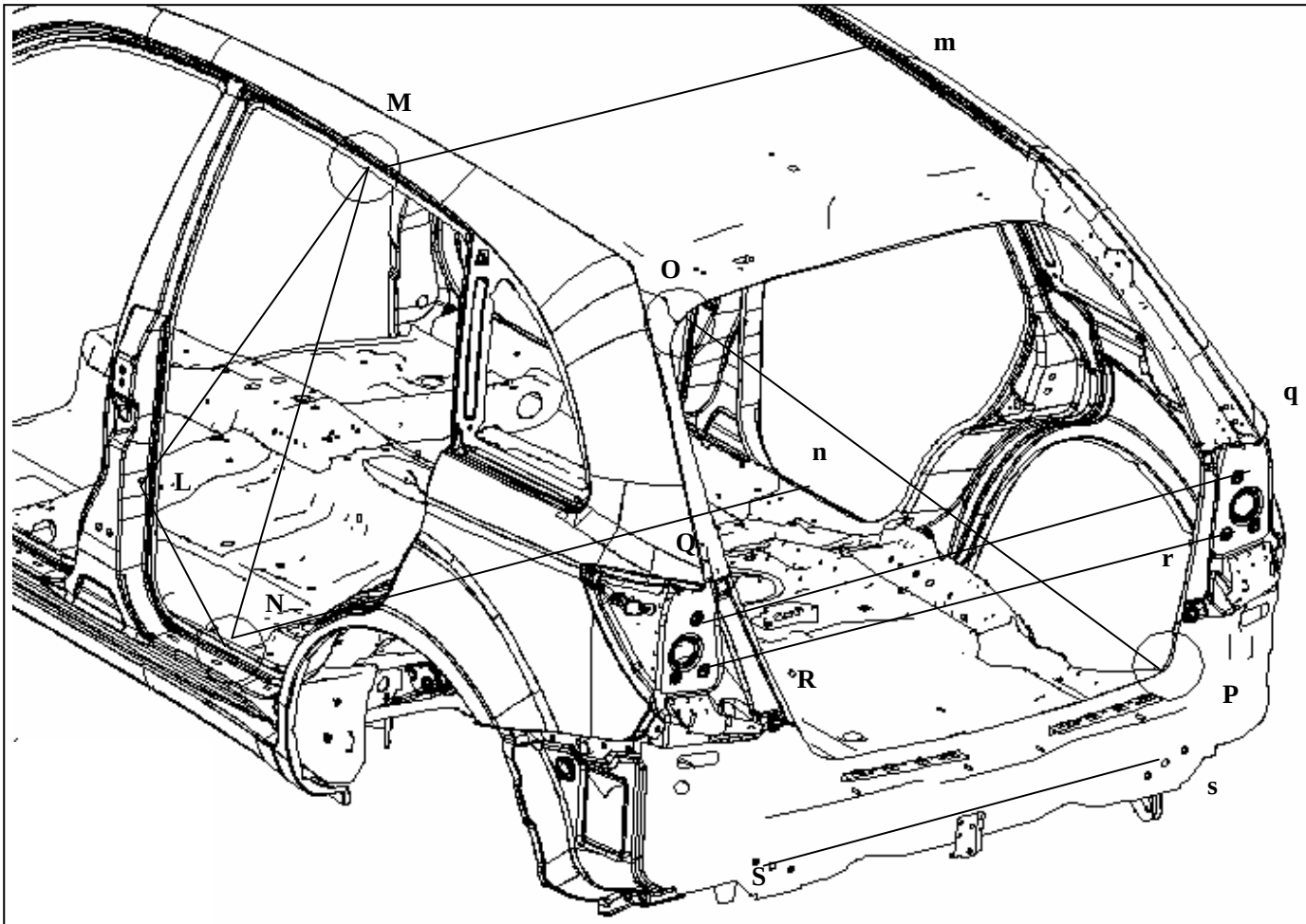
14. Connect the demister lead connector.

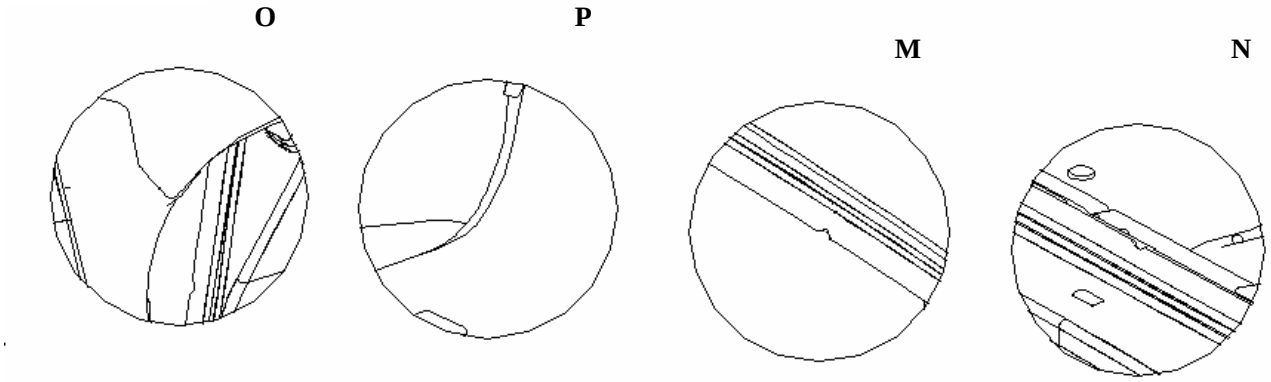
Vehicle Dimensions

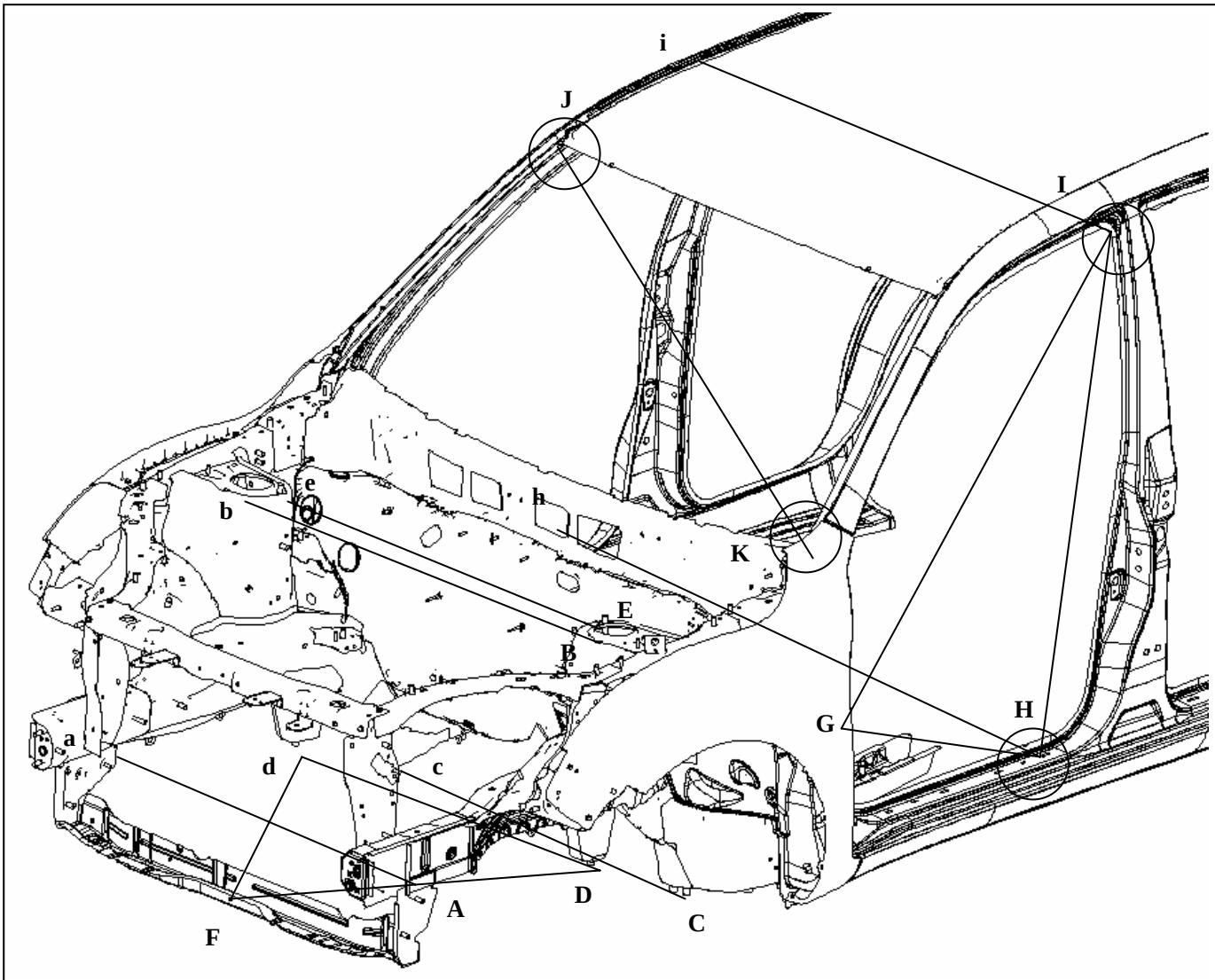
S/N	Measuring location	Dimension parameter (mm)	S/N	Measuring location	Dimension parameter (mm)
1	A-a	984	14	L-M	956
2	B-b	913	15	L-N	390
3	C-c	890	16	M-N	1114
4	D-d	1157	17	M-m	1142
5	E-e	1008	18	N-n	1438
6	F-D	756	19	O-P	1266
7	F-d	814	20	Q-q	1330
8	G-H	696	21	R-r	1286
9	G-L	1285	22	S-s	1012
10	H-h	1434	23		
11	H-L	1148	24		
12	I-i	1140	25		
13	J-K	1446	26		

Use of hole location

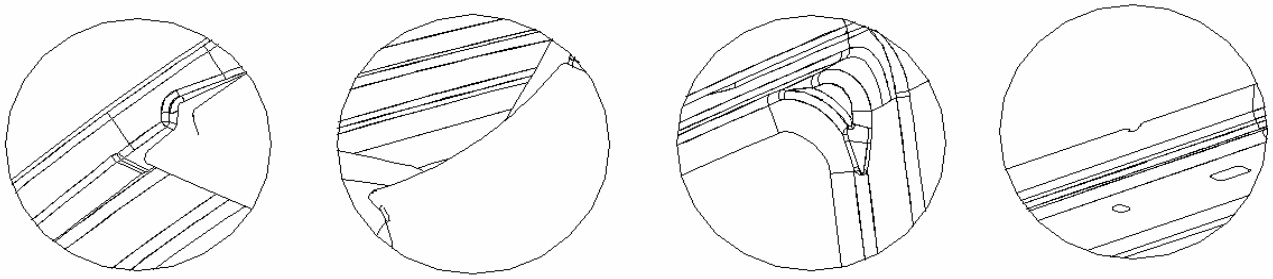
A，a	Main positioning hole of vehicle body	Q,q	Mounting hole of tail lamp
B，b	Mounting hold of suspension assembly	R,r	Mounting hole of tail lamp
C，c	Front sub-frame front mounting hole	S,s	Positioning hole for welding of backpanel
D，d	Front sub-frame front mounting hole	U，u	Positioning hole for welding of water tank lower beam
E，e	Mounting hold of suspension assembly	V,vW,w	Positioning hole for welding of front floor
F	Mounting hole of the lower shield of right engine room	X,x	Mounting hole of rubber cover stem
G	Mounting hole of front door limiter	Y，y	Mounting hole of rear shock absorber assembly
L	Mounting hole of rear door limiter	Z, z	Mounting hole of rear tow hook

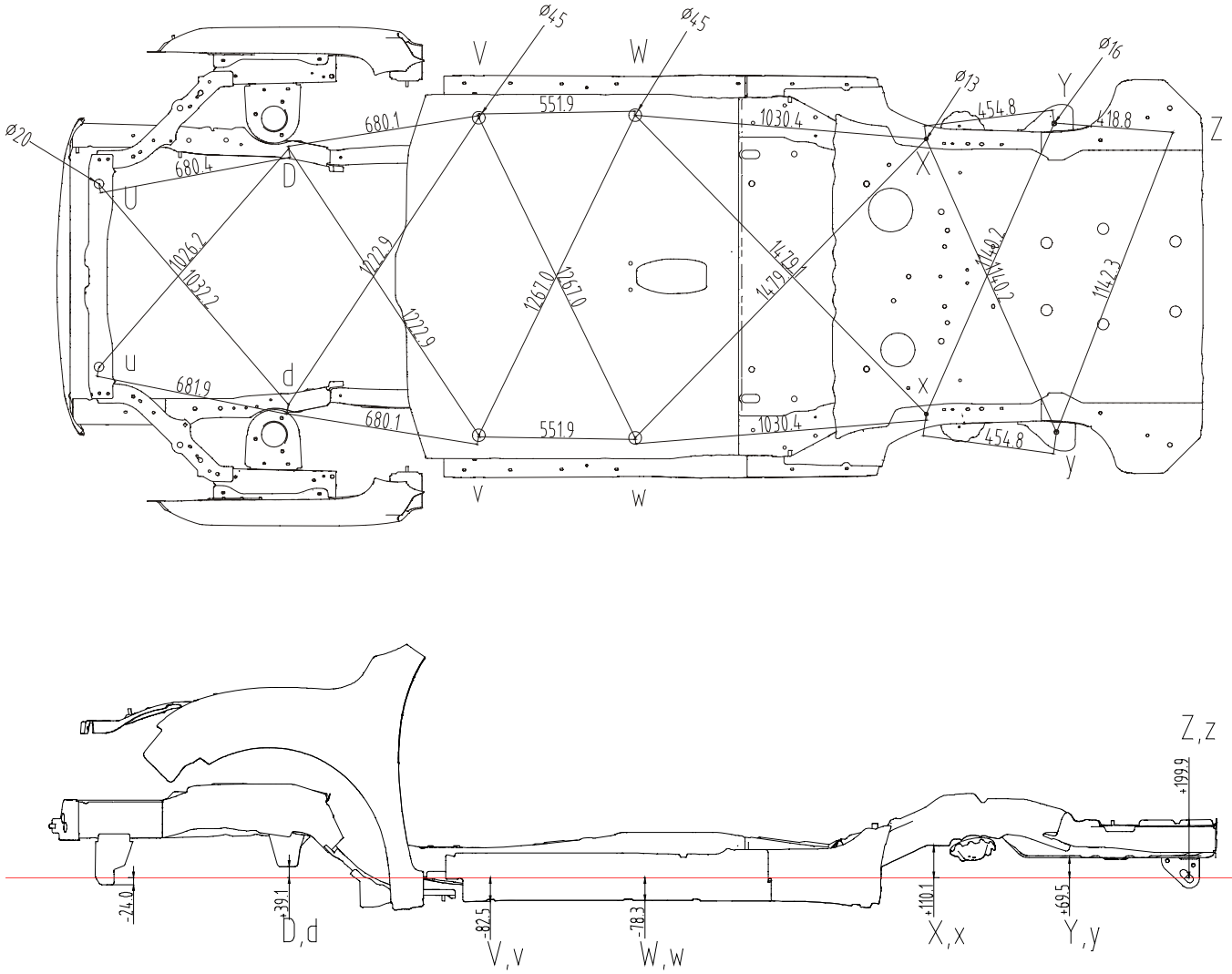

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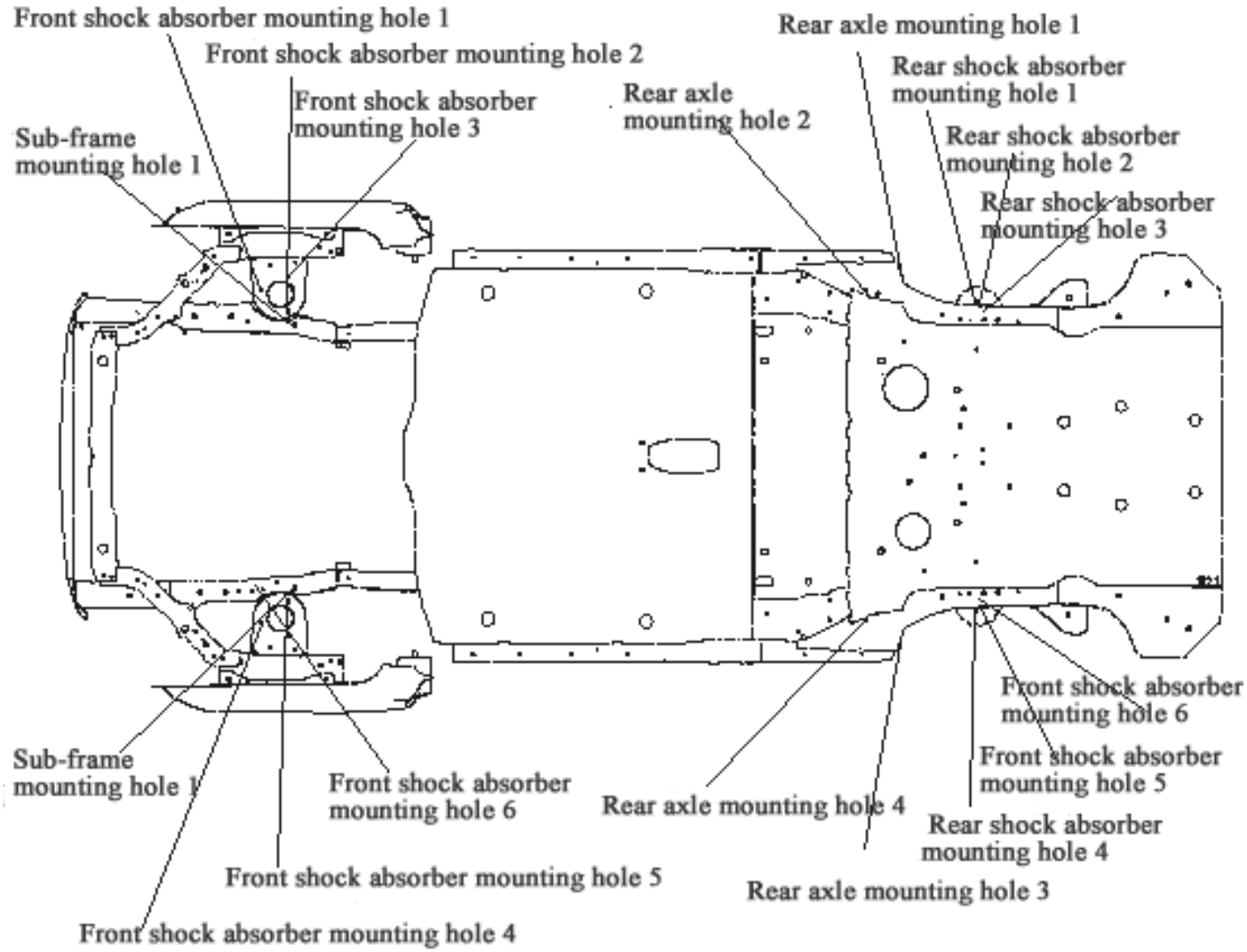

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1030.4
454.8
x
y
V
W
Z,z
+199.9
-24.0
39.1
D,d
-82.5
V,v
-78.3
W,w
±110.1
X,x
±69.5
Y,y



Coordinates of the front and rear shock absorbers mounting holes and the front and rear sub-frame mounting holes

Hole location	X(mm)	Y(mm)	Z(mm)
Sub-frame mounting hole 1	76	456.5	39.6
Sub-frame mounting hole 2	76	-456.5	39.6
Front shock absorber mounting hole 1	-39.9	578.7	619.1
Front shock absorber mounting hole 2	52.1	504.2	610.8
Front shock absorber mounting hole 3	54.4	622.7	617.4
Front shock absorber mounting hole 4	-39.9	-578.7	619.1
Front shock absorber mounting hole 5	52.1	-504.2	610.8
Front shock absorber mounting hole 6	54.4	-622.7	617.4
Rear axle mounting hole 1	2066.3	592.6	1.9

Rear axle mounting hole 2	2102.6	550	1.9
Rear axle mounting hole 3	2066.3	-592.6	1.9
Rear axle mounting hole 4	2102.6	-550	1.9
Rear shock absorber mounting hole 1	2442.1	536.2	74.3
Rear shock absorber mounting hole 2	2459	521.6	70.9
Rear shock absorber mounting hole 3	2453.3	498.8	62.3
Rear shock absorber mounting hole 4	2442.1	-536.2	74.3
Rear shock absorber mounting hole 5	2459	-521.6	70.9
Rear shock absorber mounting hole 6	2453.3	-498.8	62.3

Origin of vehicle body coordinate: X0 at the center of the front wheel shaft; Y0 at the left and right symmetrical center; Z0 at the upper surface of the middle floor.


力帆汽车
LIFAN MOTORS
力帆实业(集团)股份有限公司

MAINTENANCE WORK HOUR STANDARD OF LIFANX60

02.10.2012

Maintenance Work Hour Standard of LFX60

Work hour code	Maintenance operation	Maintenance work hour	auxiliary station number	
10001900	Assemble and disassemble engine assembly	7.00		Include: Filled antifreeze fluid and boosting steering fluid
10011900	Assemble and disassemble right suspension module	1.20		
10021900	Assemble and disassemble right suspension bushing module	0.90		
10031900	Assemble and disassemble connnecting bracket moudle of right suspension	0.30		
10041900	Assemble and disassemble connnecting bracket moudle I of rear suspension	0.60		
10051900	Assemble and disassemble rear suspension moudle	0.60		
10061900	Assemble and disassemble left suspension moudle	0.90		
10071900	Assemble and disassemble connnecting bracket moudle I of left suspension	1.20		
10081900	Assemble and disassemble connecting support module I of front suspension	0.70		
10091900	Assemble and disassemble front suspension module	0.60		
1009900	New vehicle hostling	0.40		Repair station for reporting maintenance file
1009901	First time maintenance	1.80		Repair station for reporting maintenance file
1009902	Show slicitude for maintenance	0.80		Repair station for reporting maintenance file

1159900	Regular servicing (Plus material relevant cost	1.70		
13011900	Assemble and disassemble cylinder shield assembly	0.40		
13025500	Replace filler cap	0.05		Filler cap of engine Oil
13035500	Replace sealing ring of filler cap	0.05		
13045500	Replace sealing ring of PCV valve	0.20		
13051900	Assemble and disassemble PCV valve	0.20		
13065500	Replace PCV valve air hose-steam hose	0.20		
13075500	Replace oil baffle plate of cylinder shield	0.45		
13085500	Replace sealing gasket assembly of cylinder shield	0.00	13011900	
13091900	Assemble and disassemble air cylinder assembly	3.00		
13093700	Disassembly air cylinder assembly	1.00	13011900	
13101900	Assemble and disassemble heater water pipe (on the cylinder cover)	0.50		
13111900	Assemble and disassemble radiator water pipe (on the cylinder cover)	0.50		
13125500	Replace sealing washer of air cylinder covery	0.05	13011900	
13135500	Replace connecting bolt of cylinder shield	1.20		
14015500	Replace tappet	0.00	13093700	
14025500	Replace valve lock plate	0.00	13093700	
14035500	Replace valve spring seat	0.00	13093700	
14045500	Replace valve spring	0.00	13093700	
14055500	Replace oil seal of intake valve	0.00	13093700	

14065500	Replace valve spring base	0.00	13093700	
14075500	Replace valve guide pipe	0.00	13093700	
14081900	Assemble and disassemble intake camshaft assembly	0.30	13011900	
14091900	Assemble and disassemble exhaust camshaft assembly	0.30	13011900	
14105500	Replace exhaust valve	0.00	13093700	
14115500	Replace intake valve	0.00	13093700	
14125500	Replace guide pipe of exhaust valve	0.00	13093700	
14135500	Replace oil seal of exhaust valve	0.00	13093700	
15011900	Assemble and disassemble exhaust timing sprocket	0.30	13011900	
15021900	Assemble and disassemble intake timing sprocket assembly (VVT)	0.30	13011900	
15031900	Assemble and disassemble timing sprocket link chain	0.00	15071900	
15041900	Assemble and disassemble timing link chain tractor assembly	0.05	15071900	
15051900	Assemble and disassemble timing sprocket	0.05	15071900	
15061900	Assemble and disassemble retainer ring of crankshaft timing sprocket	0.00	15071900	
15085500	Replace crankshaft front oil seal	0.00	18031900	
15095500	Replace tensioner assembly of timing link chain	0.30		
15105500	Replace oil control valve of camshaft (OCV)	0.30		
15111900	Assemble and disassemble moving rail assembly of link chain	0.05	15071900	
15125500	Replace water pump/ generator belt	0.30		
16011900	Assemble and disassemble crankshaft	1.00	16141900	

16025500	Replace crankshaft upper thrust plate	1.40		
16035500	Replace main shaft bushing of crankshaft	0.00	16011900	
16045500	Replace crankshaft rear oil seal	0.10	30011900	
16055500	Replace piston ring I	0.00	16095500	
16065500	Replace piston ringII	0.00	16095500	
16075500	Replace combination oil ring	0.00	16095500	
16085500	Replace piston pin	0.00	16095500	
16095500	Replace a piston	0.40	16101900	
16101900	Assemble and disassemble a connecting rod	0.40	13091900;16115500	
16115500	Replace connecting rod shaft bushing	0.20	17061900	
16131900	Assemble and disassemble crankcase upper body assembly	2.00	16011900	
16141900	Assemble and disassemble crankcase lower body assembly	2.00	10001900	
16155500	Replace oil pressure sensor	0.20		
17011900	Assemble and disassemble oil pump assembly	0.30	15051900	
17025500	Replace oil cleaner	0.20		
17035500	Replace connecting pipe of oil cleaner	0.10	17025500	
17041900	Assemble and disassemble guide pipe of oil level gauge	0.20		
17055500	Replace oil level gauge assembly	0.00		
17061900	Assemble and disassemble oil pan assembly(oil sump)	0.70		
17075500	Replace drain plug	0.10		

17081900	Assemble and disassemble oil strainer assembly	0.10	17061900	
18011900	Assemble and disassemble tension pulley	0.70		
18021900	Assemble and disassemble right mounting support of generator	0.20	27071900	
18031900	Assemble and disassemble crankshaft belt pulley	0.20	18045500	
18045500	Replace drive belt	0.15		
19011900	Assemble and disassemble radiator assembly	1.10		
19021900	Assemble and disassemble fan assembly	0.80		
19035500	Replace outlet water pipe of radiator	0.30		
19045500	Replace inlet water pipe of radiator	0.30		
19055500	Replace radiator lower installing bushing	1.00		
19065500	Replace expansion tank assembly	0.30		
19075500	Replace vent pipe	0.20		
19085500	Replace radiator upper installing bushing	0.30		
19095500	Replace radiator cover	0.05		
19105500	Replace vacuum connecting hose	0.10		
19111900	Assemble and disassemble welding moudle of bypass hose (with vacuum branch pipe)	0.40		
19125500	Replace sealing washer of bypass hose	0.00	19111900	
19135500	Replace thermostat assembly	0.00	19151900	
19145500	Replace sealing ring of thermostat	0.30		
19151900	Assemble and disassemble inlet water pipe assembly	0.30		

19165500	Replace O-sealing ring of water pump	0.00	19171900	
19171900	Assemble and disassemble water pump assembly	0.65	18045500	
21015500	Fuel inlet pipe moduleI of engineI	0.20		
21025500	Replace oil pipe module of engineII	0.20		
21035500	Replace oil outlet pipe moudule of cleaner	0.30		
21045500	Replace oil outlet pipe module of oil tank	0.30		
21051900	Assemble and disassemble filling pipe assembly	0.60	21095500	
21065500	Replace oil filler cap module	0.05		
21071900	Assemble and disassembl oil filler shield	0.40		
21081900	Assemble and disassemble oil filling pipe upper stage module	0.70		
21095500	Replace filling pipe shield	0.20		
21105500	Replace filling pipe lower stage	0.10		
21115500	Replace oil filling muffler I	0.10		
21125500	Replace fuel pump cover	0.20		
21131900	Assemble and disassemble fuel pump assembly	0.80	21125500	
21145500	Replace fuel level sensor	0.00	21131900	
21155500	Replace sealing washer of fuel pump cover	0.00	21131900	
21161900	Right bracket of fuel tank	0.15		
21171900	Assemble and disassemble middle bracket of fuel tank	0.15		
21181900	Assemble and disassemble left bracket of fuel tank	0.15		

21191900	Assemble and disassemble main body of fuel tank	0.90	21161900;21181900	
21205500	Replace fuel evaporation connecting pipe module I	0.20		
21211900	Assemble and disassemble fuel tank assembly	0.70	21161900;21181900	
21225500	Replace fuel cleaner assembly	0.20		
21235500	Replace cleaner support module	0.20		
21245500	Replace fuel evaporation connecting pipe module II	0.20		
21255500	Replace fuel evaporation connecting pipe module III	0.20		
21265500	Replace connecting pipe of control valve III	0.10		
21271900	Assemble and disassemble canister assembly	0.20		
21281900	Assemble and disassemble canister mounting support	0.10	21271900	
21295500	Replace connecting pipe of control valve IV	0.10		
21305500	Replacefuel evaporation connecting pipeIII	0.10		
21315500	Replace caniser vent pipe I	0.10		
21321900	Assemble and disassemble acceleration pedal module	0.40		
21331900	Assemble and disassembleacceleration pedal spport module	0.10	21321900	
22015500	Replace sealing ring of intake manifold	0.00	22021900	
22021900	Assemble and disassemble intake manifold assembly	1.00		
22035500	Replace sealing ring of throttle body	0.00	22041900	
22041900	Assemble and disassemble throttle body assembly	0.50		
22051900	Assemble and disassemble reinforcing plate of throttle body	0.50		

22061900	Assemble and disassemble connecting plate of instake manifold	0.10		
22075500	Replace vent pipe of crankcase	0.05		
22085500	Replace intake pipe of engine	0.10		
22095500	Replace intake pipe module of engine	0.10		
22101900	Assemble and disassemble air filter upper cover module	0.10		
22115500	Replace air cleaner module	0.10		
22121900	Assemble and disassemble air filter lower cover module	0.20	22101900	
22131900	Assemble and disassemble mounting support of air cleaner	0.10	22141900	
22141900	Assemble and disassemble air cleaner assembly	0.30		
22151900	Assemble and disassemble intake pipe module of air filter	0.20		
23011900	Assemble and disassemble engine ECU	0.40		
23025500	Replace fuel injector （injection nozzle）	0.40		
23031900	Assemble and disassemble fuel distribution pipe assembly	0.50		
23045500	Replace intake temprature pressure sensor	0.50		
23055500	Replace camshaft position sensor	0.30		
23065500	Replace KS knock sensor	0.40		
23075500	Replace crankshaft position sensor	0.20		
23085500	Replace water temperature sensor assembly	0.30		
23095500	Replace front oxygen sensor	0.20		
23095501	Replace rear oxygen sensor	0.30		

26015500	Replace heat insulation pad of exhaust manifold	0.00	26021900	
26021900	Assemble and disassemble exhaust manifold assembly	0.70		
26035500	Replace exhaust manifold upper heat inslulation shield	0.40		
26045500	Replace exhaust manifold lower heat inslulation shield	0.60		
26055500	Replace reinforcement plate of exhaust manifold	0.70		
26061900	Assemble and disassemblecatakyst converter assembly II	0.50		
26075500	Replace sealing gasket moduleII	0.30		
26085500	Replace small sealing gasket	1.50		
26095500	Replace rubber suspension block of rear muffler	0.10		
26101900	Assemble and disassemble connecting pipe module I	0.20		
26111900	Assemble and disassemble rear muffler upper hear inslulation shield	0.20		
26121900	Assemble and disassemble rear muffler assembly	0.20		
26135500	Replace triming shield of exhaust pipe	0.05		
26145500	Replace muffler supension blockII	0.10		
27015500	Replace battery pressing rod	0.10		
27025500	Replace battary pastic pressing block	0.10		
27031900	Assemble and disassemble battery assembly	0.30		
27045500	Replace battery pallet	0.10	27031900	
27051900	Assemble and disassemble battery support	0.10	27045500	
27065500	Replace battery pull rod	0.10		

27071900	Assemble and disassemble generator assembly	0.70		
27081900	Assemble and disassemble starter motor assembly	0.60		
28015500	Replace ignition coil	0.05		
28025500	Replace spark plug	0.40		Replace one sets spark plug
28025501	Replacment spark plug	0.10		Replace a spark plug
30011900	Assemble and disassemble flywheel gear ring assembly	0.20	30021900	
30021900	Assemble and disassemble cultch pressure plate assembly	0.00	30031900	
30031900	Assemble and disassemble clutch driven disc assembly	0.30	34011900	
30041900	Assemble and disassemble clutch pedal assembly	1.00		
30051900	Assemble and disassemble clutch master pump assembly	0.90		
30065500	Replace clutch operating oil pipe I	0.30		
30075500	Replace oil intake pipe I of clutch master pump	0.20		
30085500	Replace oil pipe module	0.30		
30091900	Assemble and disassemble cultch slave pump	0.60		
30105500	Replace support metal pin of release fork	0.10	34011900	
30111900	Assemble and disassemble release fork	0.20	34011900	
30125500	Replace release bearing	0.10	34011900	
34003700	Transmission dissemble and assemble	1.00	34001900	
34011900	Assemble and disassemble transmission assembly	4.00		
34021900	Assemble and disassemble flexble shaft assembly of gear selecting	0.40	68481900	

34035500	Replace gearshift handle bulb	0.10		
34045500	Replace gearshift handle leather sheath	0.05	34035500	
34051900	Assemble and disassemble gearshift support seat	0.40	68481900	
34061900	Assemble and disassemble transmission housing	0.00	34003700	
34075500	Replace right angle trimorph supprot	0.30		
34085500	Replace differential oil seal(one side)	0.20	40011900	
34095500	Replace oil baffle plate	0.00	34003700	
34105500	Replace magnetic drain plug	0.10		
34115500	Replace reverse lamp switch	0.20		
34125500	Replace adjusting gasket of differential bearing	0.00	34131900	
34131900	Assemble and disassemble outer ring of differential bearing	0.20	34003700	
34141900	Assemble and disassemble outer ring of output shaft rear bearing	0.20	34003700	
34155500	Replace output shaft rear bearing gasket	0.00	34141900	
34165500	Replace input shaft rear bearing gasket	0.00	34003700	
34171900	Assemble and disassemble outer ring of output shaft front bearing	0.20	34003700	
34185500	Replace guide oil pan	0.00	34003700	
34195500	Replace input shaft front oil seal	0.00	34003700	
34201900	Assemble and disassemble clutch housing	0.00	34003700	
34215500	Replace dust cover	0.10		
34221900	Assemble and disassemble cable supprot	0.20		

34231900	Assemble and disassemble gearshift shaft assembly	0.30	34291900	
34245500	Replace return spring B	0.00	34291900	
34251900	Assemble and disassemble gear selecting shaft module	0.30	34291900	
34261900	Assemble and disassemble gear selecting housing	0.30	34291900	
34271900	Assemble and disassemble gear shift swing rod	0.10	34291900	
34281900	Assemble and disassemble fifth reverse gear interlock cam	0.10	34291900	
34291900	Assemble and disassemble gear selecting mechanism assembly	0.60		
34305500	Replace speedmeter sensor	0.30		
35011900	Assemble and disassemble input shaft assembly	0.00	34003700	
35025500	Replace input shaft bearing	0.40	34003700	
35035500	Replace third and fourth speed needle bearing	0.60	34003700	
35041900	Assemble and disassemble third speed drive gear assembly	0.60	34003700	
35051900	Assemble and disassemble third speed synchronizer ring	0.00	35061900	
35061900	Assemble and disassemble third and fourth speed synchronizer assembly	0.60	34003700	
35071900	Assemble and disassemble fourth speed synchronizer ring	0.00	35061900	
35085500	Replace hub gear retainer ring of synchronizer	0.60	34003700	
35105500	Replace needle bearing space ring	0.60	34003700	
35111900	Assemble and disassemble fourth gear drive gear assembly	0.60	34003700	
35125500	Replace retainer ring of half retaing collar	0.00	35145500	
35135500	Replace locating pin of half retainer ring	0.40	34003700	

35145500	Replace half retainer ring	0.40	34003700	
35155500	Replace second speed needle bearing	0.60	34003700	
35315500	Replace gear hud retainer ring of synchronizer	0.60	34003700	
35325500	Replace spacer bushing of needle bearing	0.60	34003700	
35331900	Assemble and disassemble second speed driven gear assembly	0.60	34003700	
35345500	Replace second speed needle bearing	0.60	34003700	
35351900	Assemble and disassemble third speed driven gear	0.60	34003700	
35365500	Replace spacer bushing between third and forth speed	0.60	34003700	
35371900	Assemble and disassemble fourth speed driven gear	0.40	34003700	
35381900	Assemble and disassemble fifth speed driven gear	0.40	34003700	
35395500	Replace output fifth speed retainer ring	0.40	34003700	
35405500	Replace output shaft rear bearing	0.40	34003700	
35411900	Assemble and disassemble shift gear shifting fork of third/fourth speed	0.30	34003700	
35421900	Assemble and disassemble shift gear guide block of first/second speed	0.30	34003700	
35431900	Assemble and disassemble shift gear shifting fork shaft of third /forth speed	0.30	34003700	
35441900	Assemble and disassemble shift gear shift fork of fifth speed	0.30	34003700	
35455500	Replace return spring of shift fork	0.00	35441900	
35461900	Assemble and disassemble decultch shift shaft of fifth and reverse speed	0.30	34003700	
35471900	Assemble and disassemble shiftgear guide block of fifth and reverse speed	0.30	34003700	
35481900	Assemble and disassemble shift gear guide block of reverse speed	0.30	34003700	

35491900	Assemble and disassemble shift gear guide block of first and second speed	0.30	34003700	
35501900	Assemble and disassemble shiftgear forkshaft of first and second speed	0.30	34003700	
35511900	Assemble and disassemble idling shaft	0.00	34003700	
35521900	Assemble and disassemble reverse speed fork assembly	0.20	34003700	
35531900	Assemble and disassemble bow gasket	0.05	35521900	
35541900	Assemble and disassemble intermediate gear assembly of reverse speed	0.00	34003700	
39011900	Assemble and disassemble differential assembly	0.00	34013700	
39021900	Assemble and disassemble planet gear shaft	0.30	34013700	
39031900	Assemble and disassemble half shaft gear	0.30	34013700	
39045500	Replace half shaft gear shim	0.00	39031900	
39051900	Assemble and disassemble planet gear	0.30	34013700	
39065500	Replace planet gear shim	0.00	39051900	
39071900	Disassemble main reduce driven gear	0.30	34013700	
39081900	Assemble and disassemble differential housing	0.60		
39091900	Assemble and disassemble differential induction gear ring	0.30	34013700	
39105500	Replace differential bearing	0.30	34013700	
40011900	Assemble and disassemble one side drive shaft assembly	0.80	44011900	
40012000	Assemble and disassemble two side drive assembly	1.50	44012000	
40031900	Assemble and disassemble differential side universal joint kit(left)	0.30	44011900	
40041900	Assemble and disassemble differential side protective cover kit	0.20	44011900	

40051900	Assemble and disassemble wheel side universal joint kit	0.30	44011900	
40061900	Assemble and disassemble wheel side protective cover kit	0.20	44011900	
40081900	Assemble and disassemble drive shaft support plate	0.30		
41015500	Replace front post upper anti-dust cover	0.00		
41021900	Assemble and disassemble front performance rod module	0.50	41045600	
41031900	Assemble and disassemble side front performance rod	0.10		
41032000	Assemble and disassemble fixed block of two side front performance rod	0.15		
41045500	Replace buffler jacket of one side performance rod	0.00	41031900	
41045600	Replace buffler jacket of two sides front performance rod	0.00	41032000	
41051900	Assemble and disassemble connecting rod module of one side front performance rod	0.20		
41052000	Assemble and disassemble connecting rod module of two sides frontperformance rod	0.30		
41061900	Assemble and disassemble front bracket module	3.00		
41071900	Assemble and disassemble trimming beam module of front bracket	0.80		
41081900	Assemble and disassemble protecting plate of engine left lower steel plate	0.30		
41091900	Assemble and disassemble protecting plate of engine right lower steel plate	0.30		
41101900	Assemble and disassemble one side front swing arm	0.40	44011900	
41102000	Assemble and disassemble two sides front swing arm	0.70	44012000	
41115500	Replace one side ballpin module	0.30	44011900	
41115600	Replace two sides ballpin module	0.50	44012000	
41121900	Assemble and disassemble one side front post assembly	0.40	44011900	

41122000	Assemble and disassemble two sides front post assembly	0.70	44012000	
41131900	Assemble and disassemble one side front vibration damper	0.60	44011900	
41132000	Assemble and disassemble two sides front vibration damper	1.10	44012000	
41145500	Replace one side front spring lower cushion	0.00	41131900	
41145600	Replace two sides front spring lower cushion	0.00	41132000	
41155500	Replace one side front limit buffer block	0.00	41131900	
41155600	Replace two side front limit buffer block	0.00	41132000	
41165500	Replace one side anti-dust cover of vibration damper	0.00	41131900	
41165600	Replace two sides anti-dust cover of vibration damper	0.00	41132000	
41171900	Assemble and disassemble one side front spring	0.00	41131900	
41172000	Assemble and disassemble two sides front spring	0.00	41132000	
41185500	Replace one side front spring uppper support seat module	0.00	41131900	
41185600	Replace two sides front spring uppper support seat module	0.00	41132000	
41195500	Replace one side front post upper mounting support seat module	0.00	41131900	
42011900	Assemble and disassemble one side rear vibration damper assembly	0.50		
42012000	Assemble and disassemble two sides vibration damper assembly	0.90		
42021900	Assemble and disassemble rear bracket module	1.30		
42031900	Assemble and disassemble rear performance rod module	0.35	42055600	
42041900	Assemble and disassemble one side rear lateral stability fixed block	0.10		
42042000	Assemble and disassemble two side rear lateral stability fixed block	0.15		

42055500	Replace one side rear performance rod buffer jacket	0.00	42041900	
42055600	Replace two sides rear performance rod buffer jacket	0.00	42042000	
42061900	Assemble and disassemble one side rear suspension lower tie rod assembly	0.40		
42062000	Assemble and disassemble two sides rear suspension lower tie rod assembly	0.40		
42071900	Assemble and disassemble one side rear suspension upper tie rod assembly	0.40		
42072000	Assemble and disassemble two sides rear suspension upper tie rod assembly	0.40		
42081900	Assemble and disassemble one side rear vibration damper lower mounting support module	0.40		
42082000	Assemble and disassemble two sides vibration damper lower mounting support module	0.40		
42091900	Assemble and disassemble one side rear swing arm assembly	1.40		
42092000	Assemble and disassemble two sides rear swing arm assembly	2.70		
42105500	Replace one side rear spring upper gasket	0.00	42131900	
42105600	Replace two sides rear spring upper gasket	0.00	42132000	
42115500	Replace support seat of one side rear limit buffer block	0.20	42125500	
42115600	Replace support seat of two sides rear limit buffer block	0.40	42125600	
42125500	Replace one rear limit buffer block	0.05		
42125600	Replace two side limit buffer block	0.05		
42131900	Assemble and disassemble one side rear spring module	0.80		
42132000	Assemble and disassemble two sides rear spring module	1.70		
44000500	Check and adjust fifth wheel location parameter	3.00		Notes: This operation must be approved by technical room of lifan after-sale department and then carry out

44011900	Assemble and disassemble one wheel assembly	0.20		Include: wheel ： wheel dynamic balancer ,check seeling and so on
44012000	Assemble and disassemble two wheels assembly	0.40		
44016700	One wheel assembly balancing (include cleaning wheel)	0.20	44011900	
44016800	One wheel assembly balancing (include cleaning wheel)	0.40	44012000	
44021900	Assemble and disassemble one tires	0.70		Include: wheel ： wheel dynamic balancer ,check seeling and so on
44022000	Assemble and disassemble two wheels	1.30		Include: wheel ： wheel dynamic balancer ,check seeling and so on
44031900	Assemble and disassemble one side steel wheel module	0.70		Include: wheel ： wheel dynamic balancer ,check seeling and so on
44045500	Replace triming cover(wheel triming shield)	0.10		
44055500	Replace wheel nut module(one)	0.05		
44065500	Replace triming cover (wheel cover)	0.05		
44071900	Assemble and disassemble one side aluminium alloy wheel	0.70		
45001500	Brake system exhuat	0.50		
45011900	Assemble and disassemble righ front brake pipe I	0.40	45001500	
45021900	Assemble and disassemble left rear brake pipe I	0.60	45001500	
45031900	Assemble and disassemble main oil oulet pipe of brake master pump	0.40	45001500	
45041900	Assemble and disassemble right rear brake pipeI	0.40	45001500	

45051900	Assemble and disassemble secondary oil oulet pipe of brake master pump	0.40	45001500	
45061900	Assemble and disassemble left front brake pipeI	0.40	45001500	
45071900	Assemble and disassembleABS control assembly	0.60	45001500	
45085500	ReplaceABS support module	0.70		
45091900	Assemble and disassemble front brake pipeII	0.30	45001500	
45101900	Assemble and disassemble right rear brake pipeII	0.40	45001500	
45111900	Assemble and disassemble right rear brake pipeIII	0.30	45001500	
45121900	Assemble and disassemble right rear brake pipeIV	0.30	45001500	
45135500	Replace right support of rear brake hose	0.20	45001500	
45141900	Assemble and disassemble right rear brake pipe V	0.30	45001500	
45151900	Assemble and disassemble two-way valve support	0.20		
45161900	Assemble and disassemble two-way valve	0.25	45001500	
45171900	Assemble and disassemble right rear brake pipe II	0.50	45001500	
45181900	Assemble and disassemble left rear brake pipe II rear stages	0.30	45001500	
45191900	Assemble and disassemble left right brake pipe III	0.30	45001500	
45201900	Assemble and disassemble left rear brake pipe IV	0.30	45001500	
45215500	Replace left support of rear brake hose	0.20	45001500	
45221900	Assemble and disassemble left rear brake pipe V	0.30	45001500	
45231900	Assemble and disassemble parking twitch operating rod assembly	0.10	68481900	
45245500	Replace parking brake switch	0.05	68481900	

45251900	Assemble and disassemble front end assembly of spinning wheel brake cable	0.20	68481900	
45261900	Assemble and disassemble left parking brake cable assembly	0.20	46131900	
45271900	Assemble and disassemble left parking brake cable assembly	0.20	46141900	
46011900	Assemble and disassemble left front steering knuckle with wheel hub module	0.50	46061900	
46021900	Assemble and disassemble right front steering knuckle with wheel hub module	0.50	46071900	
46031900	Assemble and disassemble one side front brake calliper	0.20	44011900;45001500	
46032000	Assemble and disassemble two sides front brake calliper	0.40	44012000;45001500	
46051900	Assemble and disassemble front brake lining kit	0.10	44012000	
46061900	Assemble and disassemble left front brake base plate	0.10	46081900	
46071900	Assemble and disassemble right front brake base plate	0.10	46081900	
46081900	Assemble and disassemble one side front brake disc	0.00	46031900	
46082000	Assemble and disassemble two sides front brake disc	0.00	46032000	
46091900	Assemble and disassemble one side rear brake disc	0.00	46171900	
46101900	Assemble and disassemble rear wheel hub	0.20	46091900	
46115500	Replace fixed spring of brake shoe adjusting pull rod	0.10	46091900	
46121900	Assemble and disassemble brake shoe adjuster module	0.10	46091900	
46131900	Assemble and disassemble left brake shoe	0.30	46091900	
46141900	Assemble and disassemble right brake shoe	0.30	46091900	
46151900	Assemble and disassemble return spring of brake shoe	0.10	46091900	
46161900	Assemble and disassemble support plate of brake shoe	0.10	46091900	

46171900	Assemble and disassemble one side rear brake caliper	0.20	44011900	
46172000	Assemble and disassemble two sides rear brake caliper	0.40	44012000	
46191900	Assemble and disassemble rear brake lining kit	0.40	44012000	
46201900	Assemble and disassemble mounting left rear brake base plate module	0.10	46131900	
46211900	Assemble and disassemble right rear brake base plate module	0.10	46141900	
46221900	Assemble and disassemble one side connecting seat assembly	0.10		
47011900	Assemble and disassemble brake master pump with booster and oiler assembly	0.80	45001500	
47025500	Replace boosting vacuum	0.30		
47035500	Replace brake lamp switch	0.20		
47041900	Assemble and disassemble brake pedal assembly	0.80		
47051900	Assemble and disassemble vacuum boosting	0.90		
47061900	Assemble and disassemble brake master pump	0.30	45001500	
47075500	Replace brake oiler assembly	0.20		
47085500	Replace brake oiler cover	0.05		
48000500	Check adjusting front harness	0.60		
48011900	Assemble and disassemble steering oil return pipe moudle II	0.80		
48025500	Replace power steering oiler assembly	0.15		
48035500	Replace steering oiler cover module	0.05		
48045500	Replace support module of power steering oiler	0.10	48025500	
48051900	Assemble and disassembleoil intake module of steering oil pump	0.20		

48061900	Assemble and disassemble steering oil return module	0.30		
48071900	Assemble and disassemble dust shield of steering column I	0.10	48131900	
48081900	Assemble and disassemble mounting support of dust bushing	0.00	48071900	
48091900	Assemble and disassemble dust shield of steering column II	0.00	48105500	
48105500	Replace steering column dust bushing III	0.60		
48111900	Assemble and disassemble steering wheel	0.45		
48121900	Assemble and disassemble upper steering shaft assembly	1.00		
48131900	Assemble and disassemble lower steering shaft assembly	0.80		
48141900	Assemble and disassemble steering gear assembly	3.00		
48151900	Assemble and disassemble one side steering tie rod	0.30	48000500	
48152000	Assemble and disassemble two side steering tie rod	0.50	48000500	
48161900	Assemble and disassemble steering gear oil intake pipe assembly	0.60		
48171900	Assemble and disassemble power steering oil pump assembly	1.50		
49011900	Assemble and disassemble white body welding assembly	38.00		
49016100	Full vehicle spray-paint	40.00		
49025500	Replace front flooer assembly (include: disassemble and assembly attachment)	25.00		
49035500	Replace floor rear part assembly (include: disassemble and assembly attachment)	30.00		
49041900	Assemble and disassemble middle support module of water tank crossbeam	0.50		
49046100	Middle support module of water tank crossbeam	0.40		
49051900	Assemble and disassemble water tank upper crossbeam assembly	0.70		

49056100	Spray-paint of water tank upper crossbeam upper crossbeam	0.80		
49061900	Connecting plate of one side water tank upper crossbeam	0.30		
49066100	Spray-paint of connecting plate module for water tank upper crossbeam	0.40		
49071900	Assemble and disassemble water tank lower crossbeam assembly	1.00		
49076100	Spray-paint of water tank lower crossbeam assembly	0.80		
49081900	Assemble and disassemble longitudinal beam assembly of right front wheel housing (Include:Assemble and disassemble	15.00		
49091900	Assemble and disassemble longitudinal beam assembly of front wheel housing (Include:Assemble and disassemble	15.00		
49101900	Assemble and disassemble upper crossbeam assembly of dash board	1.50		
49106100	Spray-paint of upper crossbeam assembly of dash board	1.00		
49111900	Assemble and disassemble dash board assembly (Include:assemble and disassemble attachment)	20.00		
49121900	Assemble and disassemble left side wall assembly (Include:Assemble and disassemble attachment)	10.00		
49126100	Full-spray of left side wall assembly (be equal or greater than100cm2)	7.00		
49126102	Partial-spray of left side wall assembly (less than or equal to100cm2)	1.50		
49131900	Assemble and disassemble right side wall assembly	10.00		
49136100	Partial-spray right side wall (be equal or greater than100cm2)	7.00		
49136102	Partial-spray right side wall (less than or equal to100cm2)	1.50		
49145500	Replace filler cover module	0.20		
49146100	Spray-paint of filler cover module	0.70		
49151900	Assemble and disassemble front crash beam assembly	2.00		
49161900	Assemble and disassemble rear crash beam assembly	2.00		

49171900	Assemble and disassemble one side rear mounting support of crash beam	2.10		
49181900	Assemble and disassemble header assembly (Include:: Assemble and disassemble attachment)	11.00		
49186100	Full-spraying paint of header assembly(be equal or greater than100cm2)	7.00		
49186102	Partial -sprayng of header assembly (less than or equal to100cm2)	1.50		
49191900	Assemble and disassemble right front door assembly (Include:assemble and disassemble attachment)	1.80		
49196100	Full-spray paint of right front door (be equal or greater than100cm2)	4.00		
49196102	Partial spray paint of right front door (less than or equal to100cm2)	1.50		
49201900	Assemble and disassemble right front door upper hinge	0.30		
49211900	Assemble and disassemble right front door lower hinge	0.30		
49221900	Assemble and disassemble left front door assembly (Include:Assemble and disassemble attachment)	2.00		
49226100	Full-spray paint of left front door assembly (be equal or greater than100cm2)	4.00		
49226102	Partial spray paint of left front door assembly (less than or equal to100cm2)	1.50		
49231900	Assemble and disassemble left front door upper hinge	0.30		
49241900	Assemble and disassemble left front door lower hinge	0.30		
49251900	Assemble and disassemble right rear door assembly (Include:: Assemble and disassemble attachment)	2.00		
49256100	Full-spray paint of right rear door (be equal or greater than100cm2)	4.00		
49256102	Partial spray paint of right rear door (less than or equal to100cm2)	1.50		
49261900	Assemble and disassemble right rear door upper hinge	0.30		
49271900	Assemble and disassemble right rear door lower hinge	0.30		
49281900	Assemble and disassemble left rear door assembly (Include:Assemble and disassemble attachment)	2.00		

49286100	Full-spray paint of left rear door (be equal or greater than100cm2)	4.00		
49286102	Partial spray paint of left rear door (less than or equal to100cm2)	1.50		
49291900	Assemble and disassemble left rear door upper hinge	0.30		
49301900	Assemble and disassemble left rear door lower hinge	0.30		
49311900	Assemble and disassemble rear back door assembly (Include:Assemble and disassemble attachment)	2.00		
49316100	Full-spray paint of rear back door (be equal or greater than100cm2)	4.00		
49316102	Partial spray paint of rear back door (less than or equal to100cm2)	1.50		
49321900	Assemble and disassemble rear back door hinge	0.40		
49331900	Assemble and disassemble wiper installing cabin assembly	0.80		
49341900	Assemble and disassemble bracket assembly of wiper installing cabin	1.00		
49351900	Assemble and disassemble engine hood assembly	0.60		
49356100	Full-spray paint of engine hood assembly (be equal or greater than100cm2)	7.50		
49356102	Partial spray paint of engine hood (less than or equal to100cm2)	1.50		
49361900	Assemble and disassemble left hinge of engine hood	0.30		
49371900	Assemble and disassemble right hinge of engine hood	0.30		
49381900	Assemble and disassemble right fender module	0.60		
49386100	Full-spray paint of right fender module (be equal or greater than100cm2)	2.50		
49386102	Partial spray paint of right fender module (less than or equal to100cm2)	1.50		
49391900	Assemble and disassemble left fender module	0.60		
49396100	Full-spray paint of left fender module (be equal or greater than100cm2)	2.50		

49396102	Partial spray paint of left fender module (less than or equal to100cm2)	1.50		
50015500	Replace right sealing cover plate of front windshield	0.05		
50025500	Replace right part weather strip of ventilation cover plate	0.05		
50035500	Left part weather strip of ventilation cover plate	0.05		
50045500	Replace sealing cover plate of right front windshield	0.05		
50051900	Assemble and disassemble left ventilation cover plate module	0.35		
50061900	Assemble and disassemble right ventilation cover plate module	0.15		
50075500	Replace right cover plate of ventilation cover plate	0.05		
50085500	Replace right part of ventilation cover plate	0.15		
50095500	Replace rear triming plate (rear mark)	0.20		
50101900	Assemble and disassemble triming plate module of rear licence plate	0.20		
50115500	Replace rear exhaust outlet module	0.10		
50125500	Replace fender of one side rear wheel	0.10		
50135500	Replace fender of one side front wheel	0.20		
50145500	Replace fender of one side front wheel	0.10		
50151900	Assemble and disassemble front grille	0.40		
50165500	Replace front triming lable	0.20		
50175500	Replace exhaust water outlet module of front compartment	0.10		
50181900	Assemble and disassemble spoiler assembly	0.70		
50186100	Spoiler spray paint	1.50		

50191900	Assemble and disassemble left rear view mirror assembly	0.60		
50196100	Spray paint of left rear view mirror assembly	1.00		
50201900	Assemble and disassemble right rear view mirror assembly	0.60		
50206100	Spray paint of right rear view mirror assembly	1.00		
50211900	Assemble and disassemble rear view mirror assembly in the vehicle	0.30		
51015500	Replace fixed hook of one side sun visor	0.05		
51025500	Replace big fixed seat module of right sun visor	0.10		
51035500	Replace right front support flame of ceiling	0.40		
51045500	Replace a safety handle	0.10		
51055500	Replace right middle support flame of ceiling	0.40		
51065500	Replace right rear support flame of ceiling	0.40		
51071900	Assemble and disassemble ceiling	1.60		
51085500	Replace ceiling safety belt shield	0.10		
51095500	Replace ceiling left rear support flame	0.40		
51105500	Replace ceiling left middle support flame	0.40		
51115500	Replace ceiling left front support flame	0.40		
51125500	Replace big fixed seat module of left sun visor	0.10		
51135500	Replace left sun visor assembly	0.15		
51145500	Replace right sun visor assembly	0.15		
51151900	Assemble and disassemble C post left lower guard board module	0.50		

51161900	Assemble and disassemble C post right lower guard board module	0.50		
51171900	Assemble and disassemble C post left upper guard board module	0.40		
51181900	Assemble and disassemble C post right upper Guard board module	0.40		
51195500	Replace B post left upper guard board module	0.10		
51205500	Replace B post right upper guard board module	0.10		
51215500	Replace A post left upperGuard board module	0.05		
51225500	Replace A post right upper guard board module	0.05		
51235500	Replace A post left lower guard board module	0.10		
51245500	Replace A post right lower guard board module	0.10		
51255500	Replace left step plate assembly of front door	0.05		
51265500	Replace right step plate assembly of front door	0.05		
51275500	Replace left front door doorsill guard board	0.10		
51285500	Replace right front door doorsill guard board	0.10		
51295500	Replace B post left lower guard board	0.15		
51305500	Replace B post right lower guard board	0.15		
51315500	Replace left vibration damper cover plate	0.05		
51325500	Replace right vibration damper cover plate	0.05		
51335500	Replace left glove box cover	0.05		
51345500	Replace right glove box cover	0.05		
51351900	Assemble and disassemble doorsill guard board of left rear door	0.10		

51361900	Assemble and disassemble doorsill guard board of right rear door	0.10		
52011900	Assemble and disassemble front carpet assembly	2.00		
52025500	Replace front left floor insulation layer	0.70		
52035500	Replace front right floor insulation layer	0.70		
52045500	Replace rear right floor insulation layer	1.20		
52055500	Replace rear left floor insulation layer	1.20		
52065500	Replace filler cover opener	0.30		
52071900	Assemble and disassemble filler cap module	1.20		
52085500	Replace plastic buckle (filler cap splinter)	0.10		
53015500	Replace pneumatic jackstay support of one side front compartment cover	0.10		
53025500	Replace engine hood rear weather strip module	0.10		
53035500	Replace engine hood heat insulating plate	0.20		
53041900	Assemble and disassemble front compartment cover cable	0.40		
53051900	Assemble and disassemble front compartment cover lock assembly	0.30		
53065500	Replace front wall heating insluting cushion	4.00		
53075500	Replace heating insluting cushion of engine room	3.50		
53085500	Replace engine hood manual jackstay module	0.05		
53091900	Assemble and disassemble left lower guard board of engine room	0.15		
53101900	Assemble and disassemble right lower guard board of engine room	0.15		
53115500	Replace front weather strip module of engine hood	0.10		

53125500	Replace buffer block of engine cover	0.05		
53135500	Replace pneumatic jackstay of front compartment cover	0.10		
53145500	Replace rack curtain assembly	0.05		
53155500	Replace baggage armour cover plate assembly	0.05		
53165500	Replace guard board of rear skirtboard	0.20		
53175500	Replace left supprot plate of baggage armour	0.05		
53185500	Replace front supporting shoe of baggage armour	0.05		
53195500	Replace right supporting shoe of baggage armour	0.05		
53205500	Replace intermediate supporting shoe of baggage armour	0.05		
53215500	Replace left guard board of rear back door	0.15		
53225500	Replace upper guard board of rear back door	0.10		
53235500	Replace right guard board of rear back door	0.15		
53241900	Assemble and disassemble lower guard board of rear back door	0.30		
53255500	Replace sound insluting cushion of rear back door	0.05	53241900	
53261900	Assemble and disassemble inner hand buckle of rear back door	0.05		
53271900	Assemble and disassemble shackle module of rear back door	0.20		
53281900	Assemble and disassemble lock body of rear back door	0.20	53241900	
53291900	Assemble and disassemble lock cylinder pull rod of rear back door	0.20	53241900	
53305500	Replace rear back door weather strip	0.20		
53315500	Replace buffer block of rear back door	0.05		

53325500	Replace guide block of one side rear back door	0.10		
53335500	Replace back pneumatic jackstay	0.10		
53341900	Assemble and disassemble outer hand buckle assembly of rear back door	0.20	53241900	
54015500	Replace right weather strip of front windshield glass	0.30		
54025500	Replace left weather strip of front winde shield glass	0.30		
54031900	Assemble and disassemble rear back door glass assembly (include corresponding auxiliary material cost)	3.00		
54041900	Assemble and disassemble front windshied module (include corresponding auxiliary material cost)	3.50		
54055500	Replace glass weather strip of left front door	0.30		
54065500	Replace glass weather strip of right front door	0.30		
54071900	Assemble and disassemble left front door glass assembly	0.20	57111900	
54081900	Assemble and disassemble right front door glass assembly	0.20	57121900	
54095500	Replace glass weather strip of left rear door	0.30		
54105500	Replace glass weather strip of right rear door	0.30		
54111900	Assemble and disassemble left rear door glass assembly	0.20	58111900	
54121900	Assemble and disassemble right rear door glass assembly	0.20	58121900	
54135500	Replace windowweather strip of left rear door triangular	0.50		
54145500	Replace windowweather strip of right rear door triangula	0.50		
54151900	Assemble and disassemble lefe rear door triangular window glass	0.50		
54161900	Assemble and disassemble right rear door triangular window glass	0.50		
54175500	Replace triangular windowweather strip of left side wall	1.00		

54185500	Replace triangular windowweather strip of right side wall	1.00		
54191900	Assemble and disassemble triangular window glass of left side wall	1.00		
54201900	Assemble and disassemble triangular window glass of left side wall	1.00		
54215500	Replace clearing brushing assembly of wiper swing arm for rear backdoor	0.20		
54221900	Assemble and disassemble wiper motor of rear backdoor	0.20	53241900	
54235500	Replace left wiper module	0.20		
54245500	Replace left swing arm module of wiper	0.20		
54255500	Replace left clearing brush module of wiper	0.10		
54265500	Replace right wiper module	0.20		
54275500	Replace right swing arm module of wiper	0.20		
54285500	Replace right clearing brush module of wiper	0.10		
54291900	Assemble and disassemble wiper connecting connecting rod machanism and motor assembly	0.60		
54305500	Replace front windshield spray nozzler assembly	0.20		
54315500	Replace front windshield hose assembly	0.30		
54325500	Replace front windshield hose of windshield Washer	0.30		
54335500	Replace rear windshield hose of windshield Washer	0.30		
54341900	Assemble and disassemble windshield Washer assembly	0.60		
54355500	Replace rear windshield hose assembly	1.00		
57015500	Replace triangle guard board of left front door	0.05		
57025500	Replace triangle guard board of right front door	0.05		

57031900	Assemble and disassemble left front door handle assembly	0.10		
57041900	Assemble and disassemble right front door handle assembly	0.10		
57051900	Assemble and disassemble inner hand buckle assembly of left front door	0.20	57111900	
57061900	Assemble and disassemble inner hand buckle assembly of right front door	0.20	57121900	
57075500	Replace triming cover of inner hand buckle for left front door	0.05		
57085500	Replace triming cover of inner hand buckle for right front door	0.05		
57095500	Replace horn shield of left front door	0.05	57111900	
57105500	Replace horn shield of right front door	0.05	57121900	
57111900	Assemble and disassemble inner guard board assemblyof left front door	0.40		
57121900	Assemble and disassemble inner guard board assemblyof right front door	0.40		
57135500	Replace handle support of left front door	0.10	57111900	
57145500	Replace handle support of right front door	0.10	57121900	
57155500	Replace waterproof membrane module of left front door	0.05	57111900	
57165500	Replace waterproof membrane module of right front door	0.05	57121900	
57171900	Assemble and disassemble outer handle assembly of left front door	0.20	57111900	
57181900	Assemble and disassemble outer handle assembly of right front door	0.20	57121900	
57195500	Replace door shackle module	0.20		
57205500	Replace outer cutting water strip of left front door	0.05		
57215500	Replace outer cutting water strip of right front door	0.05		
57225500	Replace inner cutting water strip of left front door	0.30		

57235500	Replace inner cutting water strip of right front door	0.30		
57245500	Replace weather strip of left front door	0.30		
57255500	Replace weather strip of right front door	0.30		
57265500	Replace weather strip of left front door frame	0.30		
57275500	Replace weather strip of right front door frame	0.30		
57281900	Assemble and disassemble window glass lifter assembly of left front door	0.20	57111900	
57291900	Assemble and disassemble window glass lifter assembly of right front door	0.20	57121900	
57301900	Assemble and disassemble lock body assembly of left front door	0.20	57111900	
57311900	Assemble and disassemble lock body assembly of right front door	0.20	57121900	
57321900	Assemble and disassemble rear guide slot assembly of left front side door glass	0.20	57111900	
57331900	Assemble and disassemble rear guide slot assembly of right front side door glass	0.20	57121900	
57341900	Assemble and disassemble front guide slot lower stage of left front side door glass	0.20	57111900	
57351900	Assemble and disassemble front guide slot upper stage of right front side door glass	0.20	57121900	
57361900	Assemble and disassemble limiter of front door	0.20		
57375500	Replace limited block of front door	0.10		
57385500	Replace handrail board of left front door	0.15		
57395500	Replace handrail board of right front door	0.15		
58011900	Assemble and disassemble handle assembly of left rear door	0.10		
58021900	Assemble and disassemble handle assembly of right rear door	0.10		
58035500	Replace handle support of left rear door	0.10	58111900	

58045500	Replace handle support of right rear door	0.10	58121900	
58051900	Assemble and disassemble inner hand buckle assembly of left rear door	0.20	58111900	
58061900	Assemble and disassemble inner hand buckle assembly of right rear door	0.20	58121900	
58075500	Replace triming cover of inner hand buckle for left rear door	0.05		
58085500	Replace triming cover of inner hand buckle for right rear door	0.05		
58095500	Replace horn shield of left rear door	0.05	58111900	
58105500	Replace horn shield of right rear door	0.05	58121900	
58111900	Assemble and disassemble inner guard board assembly of left rear door	0.40		
58121900	Assemble and disassemble inner guard board assembly of right rear door	0.40		
58135500	Replace waterproof membrane module of left rear door	0.05	58111900	
58145500	Replace waterproof membrane module of right rear door	0.05	58121900	
58151900	Assemble and disassemble outer handle assembly of left rear door	0.20	58111900	
58161900	Assemble and disassemble outer handle assembly of right rear door	0.20	58121900	
58175500	Replace door shackle module	0.20		
58185500	Replace inner cutting water strip of left rear door	0.30		
58195500	Replace inner cutting water strip of right rear door	0.30		
58205500	Replace weather strip of left rear door	0.20		
58215500	Replace weather strip of right rear door	0.20		
58225500	Replace weather strip of frame for left rear door	0.20		
58235500	Replace weather strip of frame for right rear door	0.20		

58241900	Assemble and disassemble rear guide slot assembly of left rear side door glass	0.20	58111900	
58251900	Assemble and disassemble rear guide slot assembly of right rear side door glass	0.20	58121900	
58261900	Assemble and disassemble lock body assemblyof left rear door	0.20	58111900	
58271900	Assemble and disassemble lock body assemblyof right rear door	0.20	58121900	
58285500	Replace outer cutting water strip of left rear door	0.05		
58295500	Replace outer cutting water of right striprear door	0.05		
58305500	Replace limiter of rear door	0.20		
58311900	Assemble and disassemble window glass lifter assembly of left rear door	0.20	58111900	
58321900	Assemble and disassemble window glass lifter assembly of right rear door	0.20	58121900	
58335500	Replace handrail plate of left rear door	0.15		
58345500	Replace handrail plate of right rear door	0.15		
63015500	Replace left mounting support of rear bumper	0.30		
63021900	Assemble and disassemble rear bumper assembly	0.70		
63026100	Full spray-paint of rear bumper (be equal or greater than100cm2)	6.00		
63026101	Partial spray-paint of rear bumper (less than or equal to100cm2)	1.50		
63035500	Replace right mounting support of rear bumper	0.30		
63045500	Replace left buffer block of rear bumper	0.10	63021900	
63055500	Replace right buffer block of rear bumper	0.10	63021900	
63065500	Replace left side mounting support of front bumper	0.30		
63075500	Replace buffer block of front bumper	0.10	63081900	

63081900	Assemble and disassemble front bumper assembly	0.70		
63086100	Fullspray-paint of front bumper (be equal or greater than100cm2)	6.00		
63086101	Partial spray-paint of front bumper (less than or equal to100cm2)	1.50		
63095500	Replace right side mounting support of front bumper	0.30		
63105500	Replace front front steering lamp cover plate	0.20		
63115500	Replace intake air filer screen of air front bumper	0.20		
63125500	Replace mounting plate module of front license plate	0.20		
63126100	front spray-paint of mounting plate module for license plate	0.60		
63135500	Replace right front steering lamp cover plate	0.20		
68015500	Replace rear tab of center defrost duct	0.00	68061900	
68025500	Replace front tab of center defrost duct	0.00	68061900	
68035500	Replace right defrost duct	0.00	68061900	
68045500	Replace right blowing face dust	0.00	68061900	
68055500	Replace secondary-safety airbage cover plate	0.15		
68061900	Assemble and disassemble instrument panel body	3.00		
68075500	Replace blowing face air inlet assembly of instrument	0.20		
68085500	Replace upper guard board assembly of glove box	0.25		
68095500	Replace note box assembly	0.10		
68105500	Replace mounting support of module instrument	0.10	93011900	
68115500	Replace limited block of instument panel	3.00		

68125500	Replace left blowing face dust	0.00	68061900	
68135500	Replace left defrost duct	0.00	68061900	
68145500	Replace center blowing face dust	0.00	68061900	
68151900	Assemble and disassemble right side fixed plate module of instrument panel pipe beam	0.10	68321900	
68161900	Assemble and disassemble intermediate mad air outlet assembly	0.20		
68175500	Replace right high sound horn shield	0.05		
68185500	Replace right end cap of instrument panel	0.05		
68195500	Replace right triming strip of instrument panel	0.05		
68205500	Replace left triming strip of instrument panel	0.05		
68215500	Replace fender module of combination instrument shield	0.20		
68225500	Replace combination instrument body	0.10	68215500	
68231900	Assemble and disassemble upper protective guard of steering pipe	0.30		
68241900	Assemble and disassemble lower protective guard of steering pipe	0.20		
68255500	Replace left high sound horn shield	0.05		
68265500	Replace instrument panel service cover plate	0.05		
68275500	Replace handle assembly of engine cover	0.20		
68285500	Replace left end cap of instrument panel	0.05		
68295500	Replace right bottom end connecting support of instrument panel	3.00		
68305500	Replace bottom end connecting support of instrument panel	3.00		
68311900	Assemble and disassemble pipebeam left side fixed plate module of instrument panel	0.10	68321900	

68321900	Assemble and disassemble pipebeam welding module of instrument panel	0.00	68061900	
68335500	Replace front ashtray assemly	0.10		
68345500	Replace shiftgear protective shield	0.20		
68355500	Replace right guard board of A C	0.10		
68365500	Replace small glove box of secondary instrument panel	0.05		
68375500	Replace hand brake leathersheath	0.05		
68385500	Replace secondary glove box assembly of instrument panel	0.05		
68395500	Replace secondary hand buckle assembly of glove box for instrument panel	0.15		
68405500	Replace rear cover plate of secondary instrument panel	0.05		
68415500	Replace rear ashtray assembly	0.05		
68425500	Replace welding support assembly of grove box	0.20		
68431900	Assemble and disassemble secondary instrument panel bode	0.50		
68445500	Replace left guard board of AC	0.05		
68451900	Assemble and disassemble triming plate assemblyof secondary instrument panel	0.20		
68465500	Replace secondary instrument panel triming plate body	0.20		
68475500	Replace cup bracket assembly	0.05		
68481900	Assemble and disassemble secondary instrument panel assembly	0.35		
68491900	Assemble and disassemble glove box assembly of instrument panel	0.15		
68505500	Replace glove box lock assembly	0.20		
68515500	Replace glove box body assembly body	0.20		

72011900	Assemble and disassemble right rear safety belt assembly	0.70		
72025500	Replace hanging ring cover plate of rear safety belt	0.05		
72031900	Assemble and disassemble right seat back of rear seat	0.60		
72041900	Assemble and disassemble intermediate assembly	0.30		
72055500	Replace intermediate safety belt with pastic support assmlby	0.15		
72061900	Assemble and disassemble left seatback of rear seat	0.60		
72075500	Replace rear row intermediate sash and shackle assembly	0.20		
72081900	Assemble and disassemble left rear safety belt assembly	0.70		
72095500	Replace left rear row shackle assembly	0.20		
72101900	Assemble and disassemble left seat cushion of rear seat	0.40		
72111900	Assemble and disassemble right seat cushion of right rear seat	0.40		
72125500	Replace right rear row shackle assembly	0.20		
72135500	Replace hanging ring cover plate of front safety belt	0.05		
72141900	Assemble and disassemble height adjuster assembly of safety belt	0.20		
7215190	Assemble and disassemble front front safety belt assembly	0.70		
72161900	Assemble and disassemble driver seat assembly	0.50		
72171900	Assemble and disassemble co-driver seat assembly	0.50		
72185500	Replace rear foot cap of one side seat	0.05		
72195500	Replace foot foot cap of one side seat	0.05		
72205500	Replace left front safety belt shackle assembly	0.20		

72215500	Replace right front safety belt shackle assembly	0.20		
72221900	Assemble and disassemble right front safety belt assembly	0.70		
72231900	Assemble and disassemble airbag harness	0.00	68061900	
72241900	Assemble and disassemble airbag ECU	0.10	68481900	
72251900	Assemble and disassemble secondary airbag module	0.30		
72261900	Assemble and disassemble driver airbag module	0.40		
72271900	Assemble and disassemble airbag clock spring	0.05	48111900	
72285500	Replace front seat back headrest	0.05		
72295500	Replace rear seat back headrest	0.05		
77777777	Outing emergency has not workhour	0.00		
87001701	AC system leak detection and evacuating filling coolent(2 bottles)	1.00		Notes Include:: material cost of refrigerant(disasemble and assemblycompressor)
87015500	Replace pressure switch	0.20	87001701	
87021900	Assemble and disassemble high pressure pipe assemly of evaporator	0.30	87001701	
87035500	Replace pipeline connecting support assembly	0.20		
87041900	Assemble and disassemble low pressure pipe assemly of evaporator	0.30	87001701	
87051900	AC heating water inlet pipe	0.20		
87061900	AC heating water outlet pipe	0.20		
87071900	Assemble and disassemble compressor assembly	1.00	87001701	
87081900	Assemble and disassemble compressor electromagnetic clutch	0.60		

87095500	Replace compressor relief valve	0.30	87001701	
87101900	Assemble and disassemble compressor exhaust pipe assembly	0.30	87001701	
87111900	Assemble and disassemble condenser assembly	1.00	87001701	
87121900	Assemble and disassemble air suction pipe assembly of compressor	0.30	87001701	
87131900	Assemble and disassemble outlet pipe assembly of condenser	0.30	87001701	
87145500	Replace pressure switch socket support	0.20		
87151900	Assemble and disassemble intermediate duct of rear blowing foot	0.60	68481900	
87165500	Replace right tuyere assembly of rear blowing foot	0.90	68481900	
87175500	Replace left tuyere assembly of rear blowing foot	0.90	68481900	
87185500	Replace new wind duct assembly	0.10	68061900	
87195500	Replace center transitional duct assembly	0.10	68061900	
87205500	Replace one module of inner and outer circuit throttle	0.10	68061900	
87215500	Replace two module of inner and outer circuit throttle	0.10	68061900	
87221900	Inlet plenum upper housing	0.30	68061900	
87235500	Replace AC filter screen assembly	0.20		
87245500	Replace two rocker arm of inner and outer circuit throttle	0.05	68061900	
87251900	Assemble and disassemble axtuator of inner and outer circuit throttle	0.20	68061900	
87265500	Replace rocker arm of inner and outer circuit throttle	0.05	68061900	
87275500	Replace connecting rod of inner and outer circuit throttle	0.10	68061900	
87285500	Replace one rocker arm of inner and outer circuit throttle	0.10	68061900	

87295500	Replace upper volute housing of air blower	0.10	87331900;87001701	
87305500	Replace lower volute housing of air blower	0.10	87331900;87001701	
87315500	Replace motor speed control module of AC blower	0.40		
87325500	Replace motor of AC blower	0.50		
87331900	Assemble and disassemble inlet plenum assembly	0.40	68061900;87001701	
87341900	Assemble and disassemble outlet plenum assembly	0.50	68061900;87001701	
87355500	Replace spacing ring of high /low presure pipe	2.00		
87365500	Replace spacing ring of heating water inlet/outlet pipe	2.00		
87371900	Assemble and disassemble AC harness	0.20	68061900	
87385500	Replace temperature sensor of evaporator	0.50		
87391900	Assemble and disassemble front right blowing foot dust assambly	0.10	68061900	
87405500	Replace blowing face throttle	0.10	68061900	
87415500	Replace front blowing foot throttle module	0.10	68061900	
87425500	Replace defrost throttle module	0.10	68061900	
87435500	Replace cooling and hearing throttle module	0.10	68061900	
87445500	Replace rear blowing foot transitional duct	0.10	68061900	
87451900	Assemble and disassemble warm wind water tank assembly	0.30	68061900	
87465500	Replace rocker arm of blowing face throttle	0.30	68061900	
87475500	Replace rocker arm of front blowing foot throttle	0.30	68061900	
87485500	Replace mode throttle connecting rod	0.30	68061900	

87495500	Replace mode throttle rocker arm	0.30	68061900	
87505500	Replace cooling and heating throttle rocker arm	0.30	68061900	
87515500	Replace cooling and heating throttle connecting rod	0.30	68061900	
87525500	Replace left mounting support	0.30	68061900	
87535500	Replace defrost throttle rocker arm	0.30	68061900	
87545500	Replace transitional rocker arm of defrost throttle	0.30	68061900	
87555500	Replace mode,cooling and heating motor support	0.30	68061900	
87561900	Assemble and disassemble mode servo motor assembly	0.35	68061900	
87571900	Assemble and disassemble cooling and heating servo motor assembly	0.35	68061900	
87585500	Replace front left blowing foolt duct assembly	0.10	68061900	
87595500	Replace core protective shield of evaporator	0.00	87605500	
87605500	Replace core assembly of evaporator	0.20	68061900;87001701	
87615500	Replace left housing of outlet wind box	0.30	68061900	
87625500	Replace right housing of outlet wind box	0.30	68061900	
87635500	Replace AC dripping pipe	0.30		
87645500	Replace upper housing of evaporator	0.20	68061900	
87651900	Expansion valve of assemble and disassemble	0.50	68061900;87001701	
87661900	Assemble and disassemble HVAC assembly	0.50	68061900;87001701	
87671900	Assemble and disassemble AC control panel	0.20		
87685500	Replace O-seal ring of AC pipeline	0.00	87001701	

90011900	Assemble and disassemble engine harness	1.20		
90021900	Assemble and disassemble instrument harness	0.00	68061900	
90031900	Assemble and disassemble body harness	2.00		
90045500	Replace left front door harness	0.65		
90055500	Replace right front door harness	0.65		
90065500	Replace left rear door harness	0.65		
90075500	Replace right rear door harness	0.65		
90081900	Assemble and disassemble front part harness	1.60		
90095500	Replace rear bumper harness	0.10	63021900	
90105500	Replace rear defrost grounding wire	0.30		
90111900	Assemble and disassemble ceiling harness	0.10	51071900	
90125500	Replace starting power cable	0.40		
90135500	Replace combination instrument assembly	0.10	68225500	
91015500	Replace door lamp	0.50		
91025500	Replace one side high beam	0.10		
91035500	Replace one side low beam	0.10		
91041900	Assemble and disassemble left front combination lamp	0.60		
91051900	Assemble and disassemble right front combination lamp	0.60		
91065500	Replace steering lamp bulb	0.20		
91071900	Assemble and disassemble left front steering lamp	0.25		

91081900	Assemble and disassemble right front steering lamp	0.25		
91091900	Assemble and disassemble one side front fog lamp assembly	0.30		
91105500	Replace front fog lamp bulb	0.20		
91115500	Replace ceiling lamp bulb	0.05		
91121900	Assemble and disassemble middle /rear ceiling lam	0.15		
91135500	Replace front ceiling lamp bulb	0.05		
91141900	Assemble and disassemble front ceiling lamp	0.20		
91151900	Assemble and disassemble high order brake lamp	0.60		
91165500	Replace license plate lamp	0.50		
91171900	Assemble and disassemble left rear fog lamp assembly	0.30		
91181900	Assemble and disassemble right rear fog lamp assembly	0.30		
91195500	Replace rear fog lamp bulb	0.20		
91201900	Assemble and disassemble left rear combination lamp	0.50		
91211900	Assemble and disassemble right rear combination lamp	0.50		
91225500	Replace rear combination lamp bulb	0.10		
92011900	Assemble and disassemble vehicle mounting multifunctional display	0.30		
92021900	Assemble and disassemble high soundhead module	0.30		
92031900	Assemble and disassemble front overhang loudspeaker	0.50		
92041900	Assemble and disassemble radio and CD player assembly	0.20		
92051900	Assemble and disassemble noise filter and support	0.40		

92061900	Assemble and disassemble radio antenna system (inside vehicle)	2.00		
92071900	Assemble and disassemble radio antenna assembly(outside vehicle)	0.60		
93011900	Assemble and disassemble mpdule instrument	0.30		
93025500	Replace danger warning light switch	0.30		
93035500	Replace switch module	0.20		
93045500	Replace fuse	0.10		
93051900	Assemble and disassemble electric center control box of engine room	0.30		
93065500	Replace relay	0.10		
93071900	Assemble and disassemble left switch module of steering wheel	0.20		
93081900	Assemble and disassemble right switch module of steering wheel	0.20		
93095500	Replace heater switch assembly of driver seat	0.20		
93105500	Replace rear backdoor lock switch	0.20		
93115500	Replace spare switch cap	0.20		
93125500	Replace combination switch assembly of windscreen wiper	0.05	48111900	
93135500	Replace lamplight combination switch assembly	0.05	48111900	
93145500	Replace cigar lighter	0.05		
93155500	Replace vehicle -mounted power interface module	0.05		
93165500	Replace glass direction switch module	0.15		
93175500	Replace contact switch of door lamp	0.10		
93185500	Replace glass direction switch module of left front door	0.15		

94011900	Assemble and disassemble right rear speed sensor	0.50		
94021900	Assemble and disassemble reverse radar device(probe)	0.05	63021900	
94031900	Assemble and disassemble left rear speed sensor	0.50		
94045500	Replace ambient Light/sunny sensor	0.10		
94051900	Assemble and disassemble service kit of remote control unit	0.50		
94061900	Assemble and disassemble BCM support	0.50		
94071900	Assemble and disassemble left right front speed sensor	0.40		
94081900	Assemble and disassemble right front speed sensor	0.40		
94091900	Assemble and disassemble anti-thief alarm	0.30		
94105500	Replace fixed support module of anti-thief alarm	0.30		
94115500	Replace ambient temperature sensor	0.20		
94125500	Replace read-write dentification coil of anti-thief system	0.50		
94135500	Replace antipthief GPS	0.50		
94145500	Replace anti-thief ECU	0.50		
94151900	Assemble and disassemble electrical control box assembly of engine roor	0.30		
94165500	Replace high sound electric horn	0.20		
94175500	Replace low sound electric horn	0.20		
94185500	Replace ignition switch aperture	0.50		
94205500	Replace front washer pump motor	0.40		
94215500	Replace spraying water motor of headlamp	0.40		

95191900	Assemble and disassemble key lock service kit	2.00		
99911701	Added and supplement four season engine oil (1barrel)	0.00		Include:disassembly oil sump,coarse strainer,cylinder body, crankshaft, shaft shell, piston,piston ring ,piston pin ,engine oil pump and maintaince (improve conditions)
99931701	Added and supplement steering fiuld (0.2 barrel)	0.00		Include: disassembly and assembly or replace power steering oiler assembly
99931702	Added and supplement steering fiuld(0.5 barrel)	0.00		Include: disassembly oil intake pipe module of steering oil pump
99931703	Added and supplement boosting steering fiuld (1 barrel)	0.00		Include:disassembly and assembly or replace oil intake pipe assembly o f steering gear, oil return pipe module Ⅱof steering gear、oil pump of power steering , oil return pipe module Ⅰ of steering gear
99931704	Added and supplement boosting steering fiuld (1.5 barrel)	0.00		Include:disassembly and assembly or replace steering gear assembly

FAUTLT CODE CONTENT OF LIFAN320

02.10.2012

DTC / 故障代码 (Hex)	Description / 描述	Fault Trigger Conditions / 故障促发条件
0x9012	Internal ECU Fault / ECU内部故障	ECU is faulted. / ECU有故障
0x9013	ECU reuse exceeded / ECU已被使用	ECU has deployed airbags more than X times during its lifetime. / ECU在工作期间已多次起爆气囊
0x9014	Crash Stored in Memory / 寄存器中存有碰撞信息	Crash memory is locked after ECU deployed airbags. / 在ECU起爆气囊后碰撞记录已被锁存
0x9017	One Squib Shorted To Another / 一路起爆器与另一路之间短路	Squib is shorted to another squib / 起爆器与其他起爆器之间短路
0x9018	No VIN Number / 无VIN码	No VIN number stored in ECU's NVM. / 没有VIN码存储在ECU的非易失性存储器内
0x9021	Front Airbag Driver - resistance too high / 驾驶员前碰气囊电阻过高	Front Airbag driver resistance too HIGH. / 驾驶员前碰气囊电阻过高
0x9022	Front Airbag Driver - resistance too low / 驾驶员前碰气囊电阻过低	Front Airbag driver resistance too LOW. / 驾驶员前碰气囊电阻过低
0x9023	Front Airbag Driver - short to GND / 驾驶员前碰气囊对地短路	Front Airbag Driver short to ground. / 驾驶员前碰气囊对地短路
0x9024	Front Airbag Driver - short to Vbatt / 驾驶员前碰气囊对电源短路	Front Airbag Driver short to VBATT. / 驾驶员前碰气囊对电源短路
0x9029	Pretensioner Driver - resistance too high / 驾驶员安全带预紧器电阻过高	Pretensioner Driver resistance too HIGH. / 驾驶员安全带预紧器电阻过高
0x902A	Pretensioner Driver - resistance too low / 驾驶员安全带预紧器电阻过低	Pretensioner Driver resistance too LOW. / 驾驶员安全带预紧器电阻过低
0x902B	Pretensioner Driver - short to GND / 驾驶员安全带预紧器对地短路	Pretensioner Driver short to ground. / 驾驶员安全带预紧器对地短路
0x902C	Pretensioner Driver - short to Vbatt / 驾驶员安全带预紧器对电源短路	Pretensioner Driver short to VBATT. / 驾驶员安全带预紧器对电源短路
0x9031	Front Airbag Passenger - resistance too high / 乘员前碰气囊电阻过高	Front Airbag Passenger resistance too HIGH. / 乘员前碰气囊电阻过高
0x9032	Front Airbag Passenger - resistance too low / 乘员前碰气囊电阻过低	Front Airbag Passenger resistance too LOW. / 乘员前碰气囊电阻过低
0x9033	Front Airbag Passenger - short to GND / 乘员前碰气囊对地短路	Front Airbag passenger short to ground. / 乘员前碰气囊对地短路
0x9034	Front Airbag Passenger - short to Vbatt / 乘员前碰气囊对电源短路	Front Airbag passenger short to VBATT. / 乘员前碰气囊对电源短路
0x9039	Pretensioner Passenger - resistance too high / 乘员安全带预紧器电阻过高	Pretensioner passenger resistance is too HIGH. / 乘员安全带预紧器电阻过高
0x903A	Pretensioner Passenger - resistance too low / 乘员安全带预紧器电阻过低	Pretensioner passenger resistance is too LOW. / 乘员安全带预紧器电阻过低
0x903B	Pretensioner Passenger - short to GND / 乘员安全带预紧器对地短路	Pretensioner Passenger is short to ground. / 乘员安全带预紧器对地短路
0x903C	Pretensioner Passenger - short to Vbatt / 乘员安全带预紧器对电源短路	Pretensioner passenger is short to VBATT. / 乘员安全带预紧器对电源短路
0x9051	Front Satellite Driver - short to GND / 驾驶员侧前碰传感器对地短路	Front Satellite Driver short to ground. / 驾驶员侧前碰传感器对地短路
0x9053	Front Satellite Driver - internal fault / 驾驶员侧前碰传感器内部故障	Fault in initial set up of front satellite passenger. / 在初始化驾驶员侧前碰传感器时产生故障
0x9054	Front Satellite Driver - no communication / 驾驶员侧前碰传感器无通信	ECU receiving no data from this satellite. / ECU从传感器接收不到数据
0x9055	Front Satellite Driver - header / 驾驶员侧前碰传感器通信错误	Data stream from satellite is not correct. / 来自传感器的数据流错误
0x9056	Front Satellite Driver - offset / 驾驶员侧前碰传感器内部故障2	Satellite offset is not correct. / 传感器offset不正确
0x9057	Front Satellite Driver - deflect / 驾驶员侧前碰传感器内部故障3	Satellite deflect is not correct. / 传感器deflect不正确

0x9061	Front Satellite Passenger - short to GND / 乘员侧前碰传感器对地短路	Front Satellite passenger- short ground. / 乘员侧前碰传感器对地短路
0x9063	Front Satellite Passenger - internal fault / 乘员侧前碰传感器内部故障	Fault in initial set up of front satellite passenger. / 在初始化乘员侧前碰传感器时产生故障
0x9064	Front Satellite Passenger - no communication / 乘员侧前碰传感器无通信	ECU receiving no data from this satellite. / ECU从传感器接收不到数据
0x9065	Front Satellite Passenger - header / 乘员侧前碰传感器通信错误	Data stream from satellite is not correct. / 来自传感器的数据流错误
0x9066	Front Satellite Passenger - offset / 乘员侧前碰传感器内部故障2	Satellite offset is not correct. / 传感器offset不正确
0x9067	Front Satellite Passenger - deflect / 乘员侧前碰传感器内部故障3	Satellite deflect is not correct. / 传感器deflect不正确
0x9091	Fault lamp short to Vbatt / 故障警告灯对电源短路	Fault lamp short to Vbatt / 故障警告灯对电源短路
0x9092	Fault lamp short to ground / 故障警告灯对地短路	Fault lamp short to ground / 故障警告灯对地短路
0x9095	ENS short to ground / 碰撞输出对地短路	ENS short to ground / 碰撞输出对地短路
0x9096	ENS short to Vbatt / 碰撞输出对电源短路	ENS short to Vbatt / 碰撞输出对电源短路
0x9097	Vbatt too high / 电源电压过高	Vbatt too high / 电源电压过高
0x9098	Vbatt too low / 电源电压过低	Vbatt too low / 电源电压过低

Delphi Corporation
Technical Center Brighton
12501 E. Grand River Avenue
Brighton, MI 48116 USA

Delphi Brake Control 7.8
Pressure-Modulation Electro-Hydraulic Control Unit

Diagnostic and Service Manual

Customer Technical Document

Specification # 18105384

For use on applications with passive wheel speed sensors, K-line, and optional CAN

Controlled Brakes Engineering

Rev 1.0
Revision Date: 24 September 2009

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1 Introduction

1.1 Scope of Document

This document describes general, technical details for service and diagnostics for DBC 7.8 ABS applications. This document was written to provide the vehicle manufacturer with enough information (generic diagrams and diagnostic trouble charts) to write their own service manual. The vehicle manufacturer must add a great deal of information such as component pinouts, electrical diagrams, wire colors, circuit numbers, fuse information and hydraulic diagrams to tailor their final service manual to their own vehicle application. In addition, the vehicle manufacturer must keep the following points in mind when developing their service manual:

- The hydraulic control unit (HCU) and electronic control unit (ECU) are designed to allow separate service and replacement. However, not all automotive manufacturers utilize this feature. If separate HCU and ECU service parts are not available, then entire EHCU assembly will need to be replaced when required.

- Some diagnostics use a pinout box. The pinout box typically has two connector ends on a “TEE” type harness that will allow a service technician to gain access to circuits in the ABS system. Some diagnostic tests make use of the pinout box. Similar special tools or special harnesses can substitute for the Pinout box. The use of a pinout box can also avoid possible damage to terminals and pins in the ABS system during the diagnosing ABS related issues.

- The bleed procedure in the repair section is generic, and can be used with any vehicle. If the vehicle manufacturer wants to include a different procedure due to their specific vehicle design, then the vehicle manufacturer needs to write the additions required for the manual.

- The bleed procedure in the repair section also uses a scan tool for the automated bleeding process. The vehicle manufacturer needs to provide such a tool to accommodate the automated bleeding procedure in the field. If the vehicle manufacturer decides not to use a scan tool, then the vehicle manufacturer needs to write the applicable procedures.

- This document assumes that the ECU is connected to an IPC (Instrument Panel Cluster), which provides the default ON mechanism for the ABS and Brake Warning lamps. This connection maybe accomplished through serial data or hardwired outputs from the ABS ECU to the IPC. The vehicle manufacturer must review this mechanization for correctness because there are many alternate configurations possible.

- Some of diagnostic procedures require a scan tool to read data and diagnostic trouble codes (DTC’s) from the controller or activate some ABS/DRP functions. If the vehicle manufacturer does not have access to a capable scan tool, diagnostic procedures must be modified to use other methods of reading DTC’s. This document also assumes that the vehicle uses an SAE J1962 Data Link Connector (DLC) for accessing diagnostics via the scan tool.

This document is to be used in conjunction with the following customer technical documents for the Delphi Brake Control 7.8 - Pressure-Modulation Electro-Hydraulic Control Unit:

Use and Application Customer Technical Document

ECU Diagnostic Communication for K-Line / Keyword 2000

ECU Diagnostic Communication for ISO 14229

ECU Diagnostic Communication for ISO 14230 (KW over CAN)

Customer Diagnostic Code Cross-Reference Table (vehicle manufacturer specific)

ABS Electrical Mechanization Drawing (vehicle manufacturer specific)

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1.2 Applicable Documents

See section 11 of "Delphi Brake Control 7.8 - Pressure-Modulation Electro-Hydraulic Control Unit, Use and Application Customer Technical Document", Specification number, 18083939.

1.3 References

See section 12 of "Delphi Brake Control 7.8 - Pressure-Modulation Electro-Hydraulic Control Unit, Use and Application Customer Technical Document", Specification number, 18083939.

1.4 Vehicle Configurations and Content

This document includes services and diagnostics descriptions for the following possible vehicle content:

Passive Wheel Speed Sensors

Hardware ABS Lamp Outputs

Hardware Red Brake Lamp Outputs

Hardware Brake Switch Inputs

CAN – High Speed Vehicle Serial Communications

Keyword over K-line Diagnostic Communications

ISO 14229 Diagnostic Communications (via CAN)

ISO 14230 Diagnostic Communications (via CAN)

Hardware AWD Switch Input

Longitudinal Accelerometer Sensor Input (used for some AWD applications)

Hardware Rough Road PWM Output

Service manual information produced by vehicle manufacturers should only utilize the diagnostic and service information that is applicable to their specific vehicle application.

2 Service Considerations

Service Precautions

Observe the following general precautions during any ABS service. Failure to adhere to these precautions may result in ABS system damage.

Disconnect the ECU harness from the ECU before performing electric welding procedures.

Carefully note the routing, position, mounting and location of all ABS components, wiring, connectors, clips, and brackets. Improper routing may result in abnormal operation due to EMI.

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Do not use a quick charger for engine starting or for battery charging with the battery still connected. Battery failure or ABS component damage may result.

Disconnect the battery with the ignition OFF.

Disconnect the ECU harness from the ECU with the ignition off.

Do not attempt to modify any of the ABS components. All ABS components are serviceable by component replacement only.

Do not hang suspension components from the wheel speed sensor wires. The cable will almost certainly be damaged.

Do not subject the ECU to temperatures of more than 105 degrees C.

Do not use petroleum-based fluids in the master cylinder. Do not use any containers previously used for petroleum-based fluids. Petroleum causes swelling and distortion of the rubber components in the hydraulic brake system.

2.1 Abbreviations and Definitions

The following abbreviations are used within this document

ABS : Antilock Brake System

AWD : All Wheel Drive

B+ : Battery Voltage

BCM : Body Control Module

DIC : Driver Information Center

DRP : Dynamic Rear Proportioning

DLC : Data Link Connector

DMM : Digital Multi Meter

DTC : Diagnostic Trouble Code

ECU : Electronic Control Unit

ECM : Engine Control Module

EMI : Electromagnetic Interference

HCU : Hydraulic Control Unit

IPC : Instrument Panel Cluster

LDM : Lamp Driver Module

LF : Left Front

LR : Left Rear

PCM : Powertrain Control Module

PWM : Pulse Width Modulated

RF : Right Front

RR : Right Rear

WSS : Wheel Speed Sensor

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2.2 Basic Knowledge Required

Before using this section, it is important that the service technician user has a basic knowledge of the following items. Without this basic knowledge, it will be difficult to use the diagnostic procedures contained in this section.

2.3 Basic Electrical Circuits

The service technician should understand the basic theory of electricity and know the meaning of potential (voltage), current (amperes) and resistance (ohms).

The service technician should understand what happens in a circuit with open or shorted wires.

The service technician should be able to read and understand a wiring diagram.

2.4 Use of Circuit Test Tools

The service technician should be familiar with a Digital Multimeter (DMM), and with the meter controls on how to use them correctly.

3 Diagnostic Information and Procedures

3.1 Self-Diagnostics

The ECU performs system self-diagnostics. The ECU can detect and often isolate system malfunctions. When a malfunction is detected, the ECU sets a DTC. The DTC represents the malfunction, turns on the ABS Warning Lamp, and may disable ABS or other systems as necessary for the duration of the ignition cycle.

3.2 Displaying Diagnostic Trouble Codes

The ECU displays the DTC's through the use of a scan tool. The tool should utilize the appropriate diagnostic communication protocol and services for the application vehicle.

3.3 Clearing Diagnostic Trouble Codes

DTC's that are stored within the ECU can be cleared by either of the following conditions:

1. Automatic Clearing - If the conditions that caused a fault code to be set during a drive cycle are no longer present at the beginning of the next drive cycle, then the active fault code will be cleared. Any functions that were disabled due to the original fault code will be re-enabled. The DTC associated with the fault code will remain in the ECU fault history. If the DTC has not re-occurred over a period of 100 consecutive drive cycles, then the DTC history will be cleared.
2. Service Tool Clear DTC Request - If the conditions that caused the original DTC to be set are no longer present, then the DTC maybe cleared using a service scan tool and the appropriate diagnostic message for the vehicle. This action will also clear any DTC history that resides in the ECU memory. If this method is used, the service technician must verify proper system operation and absence of DTC's when the clearing procedure is completed.

DTC's that are stored in history cannot be cleared by unplugging the ECU, disconnecting the battery cables, or by turning the ignition OFF.

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3.4 Intermittent and Poor Connections

The following conditions can cause most intermittent problems:

Faulty electrical wiring.

Faulty electrical connections.

A faulty relay or solenoid.

Refer to Troubleshooting Procedures in Electrical Diagnosis in the Complete Service Manual for a detailed explanation of how to locate and repair intermittent conditions.

3.5 Initialization Sequence

The ECU performs a initialization test at the beginning of each drive cycle. This test takes less than 0.5 secs. The initialization sequence briefly cycles the solenoids and pump motor to check component operation. If any error is detected, the ECU will set the applicable DTC. The Initialization sequence may be heard and felt while it is taking place, and is considered a part of NORMAL SYSTEM OPERATION.

The initialization sequence is performed in a manner to minimize any disturbance to the driver. It is typically done at very low speeds or as the engine is just starting. In all cases initialization is done while the driver's foot if off the brake. If the driver happens to put their foot on the brake during the initialization process, the driver may feel some brake pedal feedback. This is normal and should not result in any repair or investigation activity.

4 General System and Diagnostic Circuit Check

4.1 System Description

The Diagnostic Circuit Check is an organized method of identifying any problems caused by a malfunction in the DBC78 ABS system.

A service technician should begin diagnosis of any ABS/DRP complaint with the Diagnostic Circuit Check. The Diagnostic Circuit Check directs a service technician to the next logical step when diagnosing a complaint.

4.2 Diagnostic Process

Use the following ordered procedure when servicing the DBC78 ABS system.

Inspect the vehicle for any mechanical conditions related to the brake system.

Inspect brake fluid reservoir for correct level

Inspect brake fluid reservoir for fluid contamination

Inspect brake master cylinder, HCU and brake components at wheels for leaks

Verify no brake drag exists (brake switch adjustment)

Verify even brake apply (no pull or lead)

Inspect for worn or damaged brake pads

Inspect for worn or damaged wheel bearings

Inspect wheel speed sensors/wiring

Inspect CV joints and exciter rings for damage

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Inspect tires for tread depth/wear

Road test the vehicle to verify the complaint

Perform the Diagnostic Circuit Check and proceed to the applicable Diagnostic Trouble Chart as necessary.

Clear the DTC's after all of the system malfunctions have been corrected.

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Diagnostic Circuit Check Procedure				
Step	Diagnostic Action	Expected Value	Yes	No
1	1. Connect or install all previously disconnected or removed components if applicable. 2. Key on, engine off 3. Install the applicable Scan Tool into the DLC and attempt to communicate with the ECU Does the Scan Tool communicate with the ECU?		Go to Step 2	Go to Step 4
2	Were any DTC's stored current or history?		Go to Step 3	Go to Step 7
3	1. Document Current DTC's 2. Document History DTC's 3. Document Enhanced History Data such as • number of times each DTC set • number of times since each DTC first set • number of times since each DTC last set • speed when each DTC set • other Enhanced Data which may assist with diagnosis 4. DO NOT CLEAR DTC's PRIOR TO FULLY DOCUMENTING THE INFORMATION FROM THE SCAN TOOL. 5. Refer to the applicable Diagnostic Trouble Code(s)			
4	Does the Scan Tool communicate with other Modules on the same data line?		Go to Step 5	Go to Step 6
5	Go to the NO COMMUNICATION WITH ECU with ECU trouble chart.			
6	Refer to general vehicle communications diagnostics.			
7	1. Key off 2. Wait 10 seconds 3. Key on, engine off. 4. Observe the amber ABS lamp when the key is turned on. Did the ABS Warning Lamp and Brake Warning Lamp turn on for 3 seconds and then turn off? (Bulb test)		Go to Step 8	Go to Step 9
8	System functioning as designed			
9	Did any lamp stay on?		Go to Step 10	Go to Step 11
10	Go to appropriate lamp "ON" trouble chart			
11	Go to appropriate lamp "INOPERATIVE" trouble chart			

5 General Symptom Problems – No Associated Diagnostic Trouble Codes

5.1 No Diagnostic Communication with ECU

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5.1.1 Circuit Description

Scan tool serial data is provided through either the K-line or CAN data interfaces to the ECU. Reference the vehicle electrical mechanization for specific pinout information.

5.1.2 Diagnostic Aids

Possible causes:

Poor terminal contact at the ECU

Loss of ECU ground.

Loss of battery voltage.

Loss of ignition voltage.

Open/grounded data line

Data line with high resistance

ECU internal malfunction.

Scan Tool Malfunction

Scan Tool Communication Protocol Compatibility

No Communication with ECU				
Step	**Diagnostic Action**	**Expected Value**	**Yes**	**No**
1	Was the Diagnostic Circuit Check Performed?		Go to Step 2	Perform Diagnostic Circuit Check
2	1. Key off 2. Disconnect the ECU harness 3. Check the voltage from the ECU harness battery terminal to the body ground. Was the voltage within the specified range?	Battery Voltage	Go to Step 3	Go to Step 8
3	1. Key on 2. Check the voltage from the ECU harness ignition-wakeup terminal to the body ground. Was the voltage within the specified range?	Battery Voltage	Go to Step 4	Go to Step 9
4	1. Key off 2. Check the resistance from the ECU harness ground terminal to the body ground. Was the resistance within the specified range?	Less than 2 ohms	Go to Step 5	Go to Step 10
5	1. Key off 2. ECU harness still disconnected from the ECU 3. Check the resistance from the ECU harness K-line and/or CAN data terminals to the corresponding terminals on the vehicle Data Link Connector (DLC). Was the resistance within the specified range?	Less than 2 ohms	Go to Step 6	Go to Step 11
6	1. Key off 2. ECU harness still disconnected. Disconnect Scan tool from DLC	OL (open circuit)	Go to Step 7	Go to Step 12

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No Communication with ECU				
Step	**Diagnostic Action**	**Expected Value**	**Yes**	**No**
	3. Check the resistance from the ECU harness K-Line terminal and/or CAN data terminals to the body ground. Was the resistance within the specified range?			
7	Replace the ECU Did you complete the repair?		Go to Step 13	
8	Repair the source of low voltage to ECU harness battery terminal. Inspect for an open fuse, poor terminal contact, or a grounded wire. Did you complete the repair?		Go to Step 13	
9	Repair the source of low voltage to the ECU harness ignition terminal. Inspect for an open fuse, poor terminal contact, a grounded wire, or an ignition switch condition. Did you complete the repair?		Go to Step 13	
10	Repair the source of high resistance between the ECU harness ground terminal and body ground. Find and check the ground location where the circuit is secured to body ground. Did you complete the repair?		Go to Step 13	
11	Repair the source of high resistance between the ECU harness K-line and/or CAN data terminals and the DLC. Did you complete the repair?		Go to Step 13	
12	Find and repair the short to ground on the data line. Did you complete the repair?		Go to Step 13	
13	Use the scan tool to clear DTC's Are you able to communicate with the ECU?		System OK	Go to Step 2

5.2 ABS Warning Lamp Inoperative with No DTC Set

5.2.1 Circuit Description

The Electronic Control Unit (ECU) controls the operation of the amber ABS Warning Lamp by means of a lamp driver module contained within the Instrument Panel Cluster (IPC).

Battery voltage is supplied to the Instrument Panel Cluster (IPC), and Electronic Control Unit (ECU) when the ignition switch is turned on.

The default state is for the Lamp Driver Module to turn ON the amber ABS Warning Lamp, by supplying a ground path through the Lamp Driver Module.

When the ECU commands the ABS lamp off, the ECU will ground the ABS Warning Lamp control circuit. This causes the Lamp Driver Module to open the path to ground for the bulb.

When the ignition switch is turned to the ON position, the ECU turns ON the ABS Warning Lamp for 3 seconds and then off for a bulb check. Whenever a malfunction is detected within the ABS system, the ECU turns ON the ABS Warning Lamp, notifying the driver that ABS needs to be serviced.

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5.2.2 Diagnostic Aids

Possible causes:

Faulty ABS bulb/ loose socket

IPC fuse open

Faulty IPC/Lamp Driver Module

Faulty ECU

Grounded circuit between the ECU and the IPC.

ABS Warning Lamp Inoperative/No DTC Set				
Step	**Diagnostic Action**	**Expected Value**	**Yes**	**No**
1	Was the Diagnostic Circuit Check performed?		Go to Step 2	Perform Diagnostic Circuit Check
2	1. Disconnect the ECU harness from the ECU. 2. Key on. Did the amber ABS lamp turn on?		Go to Step 8	Go to Step 3
3	Check the IPC fuse. Is the fuse and terminal contact ok?		Go to Step 4	Go to Step 9
4	1. Key off. 2. ECU harness still disconnected. 3. Remove the IPC Assembly. 4. Disconnect the IPC harness connector from the IPC Assembly. 5. Key on. 6. Check the voltage from the ignition terminal of the IPC harness to the body ground. Was the voltage within the specified range?	Battery Voltage	Go to Step 5	Go to Step 10
5	1. Key off. 2. With IPC harness and ECU harness still disconnected. 3. Check the resistance between the IPC harness ABS lamp input terminal and ECU harness ABS lamp output terminal. Was the resistance within the specified range?	OL open circuit	Go to Step 6	Go to Step 11
6	Remove the amber ABS bulb from the IPC and inspect for an open bulb filament or poor socket contact? Was the socket and bulb ok?		Go to Step 7	Go to Step 12
7	Replace the IPC Assembly. Did you complete the repair?		Go to Step 13	
8	Replace the ECU Did you complete the repair?		Go to Step 13	
9	Replace the open fuse and/or repair the loose terminals. Find the short, which caused the fuse to open, if applicable. Did you complete the repair?		Go to Step 13	
10	Find and repair the source of low voltage on the IPC voltage supply terminal.		Go to Step 13	

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ABS Warning Lamp Inoperative/No DTC Set				
Step	**Diagnostic Action**	**Expected Value**	**Yes**	**No**
	Did you complete the repair?			
11	Find the repair the short to ground between the IPC harness and the ECU harness. Did you complete the repair?		Go to Step 13	
12	Replace the Bulb/Socket as needed. Did you complete the repair?		Go to Step 13	
13	Use the scan tool to clear DTC's Does the indicator function properly?		System OK	Got to Step 2

5.3 ABS Warning Lamp On with No DTC Set

5.3.1 Circuit Description

The Electronic Control Unit (ECU) controls the operation of the amber ABS Warning Lamp by means of a lamp driver module contained within the IPC.

Battery voltage is supplied to the Instrument Panel Cluster (IPC), and Electronic Control Unit (ECU) when the ignition switch is turned on.

The default state is for the Lamp Driver Module to turn ON the amber ABS lamp, by supplying a ground path through the Lamp Driver Module.

When the ECU commands the ABS lamp off, the ECU will ground the ABS Warning Lamp control circuit. This causes the Lamp Driver Module to open the path to ground for the bulb.

When the ignition switch is turned to the ON position, the ECU turns ON the ABS Warning Lamp for 3 seconds and then off for a bulb check. Whenever a malfunction is detected within the ABS system, the ECU turns ON the ABS Warning Lamp, notifying the driver that ABS needs to be serviced.

5.3.2 Diagnostic Aids

Possible causes:

Open circuit between the IPC and the ECU.

Loss of ground connection to the ECU.

Circuit between the IPC and the ECU shorted to battery.

Faulty IPC/Lamp Driver Module.

Faulty ECU

ABS Warning Lamp On with No DTC Set				
Step	**Diagnostic Action**	**Expected Value**	**Yes**	**No**
1	Was the Diagnostic Circuit Check performed?		Go to Step 2	Perform Diagnostic Circuit Check
2	1. Key off. 2. Disconnect the ECU harness from the ECU. 3. Key on. 4. Connect a fused jumper wire from the ECU		Go to Step 6	Go to Step 3

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ABS Warning Lamp On with No DTC Set				
Step	**Diagnostic Action**	**Expected Value**	**Yes**	**No**
	harness ABS lamp output terminal to the body ground. Did the amber ABS lamp turn off?			
3	1. Key off. 2. ECU harness still disconnected. 3. Remove the IPC Assembly. 4. Disconnect the IPC harness from the IPC Assembly. 5. Check the resistance from the IPC harness ABS lamp input terminal to the ECU harness ABS lamp output terminal. Was the resistance within the specific range?	Less than 2 ohms	Go to Step 4	Go to Step 7
4	1. Key off. 2. ECU harness and IPC harness still disconnected. 3. Check the voltage from the IPC harness ABS lamp input terminal to ground. Was Battery voltage detected?		Go to Step 8	Go to Step 5
5	Replace the IPC Assembly. Did you complete the repair?		Go to Step 9	
6	Replace the ECU. Did you complete the repair?		Go to Step 9	
7	Repair the open or high resistance between the ECU and the IPC. Did you complete the repair?		Go to Step 9	
8	Repair short to battery on harness. Did you complete the repair?		Go to Step 9	
9	Use the scan tool to clear DTC's. Does the indicator function properly?		System OK	Go to Step 2

5.4 Brake Warning Lamp On

5.4.1 Circuit Description

The Electronic Control Unit (ECU) controls the operation of the Brake Warning Lamp by means of a lamp driver module contained within the IPC.

Battery voltage is supplied to the Instrument Panel Cluster (IPC), and Electronic Control Unit (ECU) when the ignition switch is turned on.

The default state is for the Lamp Driver Module to turn ON the Brake Warning Lamp, by supplying a ground path through the Lamp Driver Module.

When the ECU commands the Brake Warning Lamp off, the ECU will ground the ABS Warning Lamp control circuit. This causes the Lamp Driver Module to open the path to ground for the bulb.

When the ignition switch is turned to the ON position, the ECU turns ON the Brake Warning Lamp for 3 seconds and then off for a bulb check. Whenever a malfunction is detected within the general brake system or ABS system, the ECU may turn ON the Brake Warning Lamp, notifying the driver that either the Brake System or ABS needs to be serviced.

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5.4.2 Diagnostic Aids

Possible causes:

Faulty Emergency brake switches.

Low brakes fluid level or faulty brake fluid switch.

DTC fault conditions exist that would cause DRP to be disabled. DRP is disabled due to the following fault conditions in ABS system.

Two Wheel Speed Sensors inoperative on same axle

Battery Open or short to ground

Motor ground open or short to battery

ECU ground open or short to battery

Ignition open or short to ground

Open circuit between the IPC and the ECU.

Circuit between the vehicle lamp interface and ECU shorted to battery.

Faulty IPC/Lamp Driver Module.

Faulty ECU

. Brake Warning Lamp On				
Step	**Diagnostic Action**	**Expected Value**	**Yes**	**No**
1	Was the Diagnostic Circuit Check performed?		Go to Step 2	Perform Diagnostic Circuit Check
2	Observe ABS Warning Lamp. Is ABS Warning Lamp ON also?		Go to Step 3	Go to Step 7
3	Connect Scan Tool and retrieve DTC's. Does a DTC exist?		Go to Step 8	Go to Step 4
4	1. Key off. 2. Disconnect the ECU harness from the ECU. 3. Key on. 4. Connect a fused jumper wire from the ECU harness Brake lamp output terminal to the body ground. Did the Brake Warning Lamp turn off?		Go to Step 10	Go to Step 5
5	1. Key off. 2. ECU harness still disconnected. 3. Remove the IPC Assembly. 4. Disconnect the IPC harness from the IPC assembly. 5. Check the resistance from the IPC harness Brake lamp input terminal to the ECU harness Brake lamp output terminal. Was the resistance within specific range?	Less than 2 ohms	Go to Step 6	Go to Step 11
6	1. Key off. 2. ECU harness and IPC harness still		Go to Step 12	Go to Step 9

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. Brake Warning Lamp On				
Step	**Diagnostic Action**	**Expected Value**	**Yes**	**No**
	disconnected. 3. Check the voltage from the IPC harness Brake lamp input terminal to the body ground. Was Battery voltage detected?			
7	Possibility of general brake system failure. Refer to "Brake Diagnostic Section".			
8	Go to appropriate DTC diagnostic section.			
9	Replace the IPC Assembly. Did you complete the repair?		Go to Step 13	
10	Replace ECU Did you complete the repair?		Go to Step 13	
11	Repair the open or high resistance between the ECU and the IPC. Did you complete the repair?		Go to Step 13	
12	Repair short to battery on harness. Did you complete the repair?		Go to Step 13	
13	Use the scan tool to clear DTC's Does the indicator function properly?		System OK	Go to Step 2

5.5 Brake Warning Lamp Inoperative / No DTC Set

5.5.1 Circuit Description

The Electronic Control Unit (ECU) controls the operation of the red Brake Warning Lamp by means of a lamp driver module contained within the IPC.

Battery voltage is supplied to the Instrument Panel Cluster (IPC), and Electronic Control Unit (ECU) when the ignition switch is turned on.

The default state is for the Lamp Driver Module to turn ON the Brake Warning Lamp, by supplying a ground path through the Lamp Driver Module.

When the ECU commands the Brake Warning lamp off, the ECU will ground the Brake Warning Lamp control circuit. This causes the Lamp Driver Module to open the path to ground for the bulb.

When the ignition switch is turned to the ON position, the ECU turns ON the Brake Warning Lamp for 3 seconds and then off for a bulb check. Whenever a malfunction is detected within the general brake system or DRP, the ECU turns ON the Brake Warning Lamp, notifying the driver that the Brake System or ABS needs to be serviced.

5.5.2 Diagnostic Aids

Possible causes:

Faulty bulb/ loose socket

IPC fuse open

Faulty IPC/Lamp Driver Module

Faulty ECU

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Grounded circuit between the ECU and the IPC.

Brake Warning Lamp Inoperative / No DTC Set				
Step	**Diagnostic Action**	**Expected Value**	**Yes**	**No**
1	Was the Diagnostic Circuit Check performed?		Go to Step 2	Perform Diagnostic Circuit Check
2	1. Disconnect the ECU harness from the ECU. 2. Key on. Did the Brake Warning Lamp turn on?		Go to Step 8	Go to Step 3
3	Check the IPC fuse. Is the fuse and terminal contact ok?		Go to Step 4	Go to Step 9
4	1. Key off. 2. ECU harness still disconnected. 3. Remove the IPC Assembly. 4. Disconnect the IPC harness connector from the IPC Assembly. 5. Key on. 6. Check the voltage from the IPC harness Brake lamp input terminal to the body ground. Was the voltage within the specified range?	Battery Voltage	Go to Step 5	Go to Step 10
5	1. Key off. 2. IPC harness and ECU harness still disconnected. 3. Check the resistance from the IPC harness Brake lamp input terminal to the ECU harness Brake lamp output terminal. Was the resistance within the specified range?	OL open circuit	Go to Step 6	Go to Step 11
6	Remove the Brake Warning Lamp bulb from the IPC and inspect for an open bulb filament or poor socket contact? Was the socket and bulb ok?		Go to Step 7	Go to Step 12
7	Replace the IPC Assembly. Did you complete the repair?		Go to Step 13	
8	Replace the ECU Did you complete the repair?		Go to Step 13	
9	Replace the open fuse and/or repair the loose terminals. Find the short that caused the fuse to open, if applicable. Did you complete the repair?		Go to Step 13	
10	Find and repair the source of low voltage on the IPC voltage supply terminal. Did you complete the repair?		Go to Step 13	
11	Find the repair the short to ground between the IPC harness and the ECU harness. Did you complete the repair?		Go to Step 13	
12	Replace the Bulb/Socket as needed. Did you complete the repair?		Go to Step 13	

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Brake Warning Lamp Inoperative / No DTC Set				
Step	**Diagnostic Action**	**Expected Value**	**Yes**	**No**
13	Use the scan tool to clear DTC's Does the indicator function properly?		System OK	Go to Step 2

6 Diagnostic Trouble Code Description and Service Procedure

The following section addresses Diagnostic Trouble Codes that are supported by the ECU. Diagnostic information related to these codes is accessible through the communication protocols described in the following Customer Technical Documents:

ECU Diagnostics and Keyword 2000 Services

ECU Diagnostics and ISO14229 Services

ECU Diagnostics and ISO14230 Services (CAN applications)

All diagnostic trouble codes referenced in this document utilize Delphi standard C0XXX numbering format. Refer to the Diagnostic Code Cross-Reference Document for the specific diagnostic code numbers that are used for the vehicle manufacturer's diagnostic communications.

6.1 Diagnostic Code 11 ABS Warning Lamp Fault

6.1.1 Circuit Description

The ECU provides a low side drive capable output to either a lamp driver module or a lamp in the IPC. In either case, the output is pulled high in the inactive state and driven low in the active state.

6.1.2 Conditions for Running Test

Test Monitoring Cycle: Continuous Monitoring

ECU Operating Mode: Normal

6.1.3 Conditions for Setting Fault Code

DTC 11 will set after the ignition switch is ON, and:

1. A short to battery on the ECU ABS lamp output circuit is detected while the lamp driver output is commanded on (that is, driven low).

OR

2. An open ECU ABS lamp output circuit or a short to ground on the output circuit causes the voltage on the output to be pulled to ground. The resulting condition will be detected as an open or short to ground fault when the lamp driver output is commanded off (that is, expected to be pulled high)

This fault is set when the ABS warning lamp output is 'faulted' continuously for a period of 30 msec.

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6.1.4 Fault Actions

No systems are disabled. DTC 11 will be stored in the ECU.

6.1.5 Fault Recovery Conditions

The DTC status and history can be cleared as described in "Clearing Diagnostic Trouble Codes" , Section 3.3.

6.1.6 Possible Fault Causes

Possible causes:

1. Open circuit between ECU Brake lamp output and the IPC Brake lamp input.
2. Short to ground between ECU Brake lamp output and the IPC Brake lamp input.
3. Short to battery between ECU Brake lamp output and the IPC Brake lamp input.
4. Faulty IPC.
5. Faulty ECU.

6.1.7 Investigation and Repair Process

CODE 11 – ABS Warning Lamp Fault				
Step	**Diagnostic Action**	**Expected Value**	**Yes**	**No**
1	Was the Diagnostic Circuit Check performed?		Go to Step 2	Perform Diagnostic Circuit Check
2	1. Key off. 2. Disconnect the ECU harness from the ECU. 3. Key on. 4. Connect a fused jumper wire from the ECU harness ABS lamp output terminal to the body ground. Did the amber ABS lamp turn off?		Go to Step 6	Go to Step 3
3	1. Key off. 2. ECU harness still disconnected. 3. Remove the IPC Assembly. 4. Disconnect the IPC harness from the IPC Assembly. 5. Check the resistance from the IPC harness ABS lamp input terminal to the ECU harness ABS lamp output terminal. Was the resistance within the specific range?	Less than 2 ohms	Go to Step 4	Go to Step 7
4	1. Key off. 2. ECU harness and IPC harness still disconnected. 3. Check the voltage from the IPC harness ABS lamp input terminal to the body ground. . Was Battery voltage detected?		Go to Step 8	Go to Step 5
5	Replace the IPC Assembly. Did you complete the repair?		Go to Step 9	

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CODE 11 – ABS Warning Lamp Fault				
Step	**Diagnostic Action**	**Expected Value**	**Yes**	**No**
6	Replace the ECU. Did you complete the repair?		Go to Step 9	
7	Repair the open or high resistance between the ECU and the IPC. Did you complete the repair?		Go to Step 9	
8	Repair short to battery on harness. Did you complete the repair?		Go to Step 9	
9	Use the scan tool to clear DTC's. Does the indicator function properly?		System OK	Go to Step 2

6.2 Diagnostic Code 12 Brake Warning Lamp Fault

6.2.1 Circuit Description

The ECU provides a low side drive capable output to either a lamp driver module or a lamp in the IPC. In either case, the output is pulled high in the inactive state and driven low in the active state.

6.2.2 Conditions for Running Test

Test Monitoring Cycle: Continuous Monitoring

ECU Operating Mode: Normal

6.2.3 Conditions for Setting Fault Code

DTC 12 will set after the ignition switch is ON, and:

1. A short to battery on the ECU Brake lamp output circuit is detected while the lamp driver output is commanded on (that is, driven low).

OR

2. An open ECU Brake lamp output circuit or a short to ground on the output circuit causes the voltage on the output to be pulled to ground. The resulting condition will be detected as an open or short to ground fault when the lamp driver output is commanded off (that is, expected to be pulled high)

This fault is set when the Brake warning lamp output is 'faulted' continuously for a period of 30 msec.

6.2.4 Fault Actions

DTC 12 will be stored in the ECU. No systems are disabled.

6.2.5 Fault Recovery Conditions

The DTC status and history can be cleared as described in "Clearing Diagnostic Trouble Codes" , Section 3.3.

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6.2.6 Possible Fault Causes

Possible causes:

1. Open circuit between ECU Brake lamp output and the IPC Brake lamp input.
2. Short to ground between ECU Brake lamp output and the IPC Brake lamp input.
3. Short to battery between ECU Brake lamp output and the IPC Brake lamp input.
4. Faulty IPC.
5. Faulty ECU.

6.2.7 Investigation and Repair Process

CODE 12 – Brake Warning Lamp Fault				
Step	**Diagnostic Action**	**Expected Value**	**Yes**	**No**
1	Was the Diagnostic Circuit Check performed?		Go to Step 2	Perform Diagnostic Circuit Check
2	1. Key off. 2. Disconnect the ECU harness from the ECU. 3. Key on. 4. Connect a fused jumper wire from the ECU harness Brake lamp output terminal to the body ground. Did the red Bake lamp turn off?		Go to Step 6	Go to Step 3
3	1. Key off. 2. ECU harness still disconnected. 3. Remove the IPC Assembly. 4. Disconnect the IPC harness from the IPC Assembly. 5. Check the resistance from the IPC harness Brake lamp input terminal to the ECU harness Brake lamp output terminal. Was the resistance within the specific range?	Less than 2 ohms	Go to Step 4	Go to Step 7
4	1. Key off. 2. ECU harness and IPC harness still disconnected. 3. Check the voltage from the IPC harness Brake lamp input terminal to the body ground. . Was Battery voltage detected?		Go to Step 8	Go to Step 5
5	Replace the IPC Assembly. Did you complete the repair?		Go to Step 9	
6	Replace the ECU. Did you complete the repair?		Go to Step 9	
7	Repair the open or high resistance between the ECU and the IPC. Did you complete the repair?		Go to Step 9	
8	Repair short to battery on harness.		Go to Step 9	

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CODE 12 – Brake Warning Lamp Fault				
Step	**Diagnostic Action**	**Expected Value**	**Yes**	**No**
	Did you complete the repair?			
9	Use the scan tool to clear DTC's. Does the indicator function properly?		System OK	Go to Step 2

6.3 Diagnostic Code 14 System Relay Circuit Open or Short to Ground Fault

6.3.1 Circuit Description

The ABS system monitors power in and out of the system relay. The system relay is internal to the ECU. Battery voltage is supplied to system relay switch at all times. When the wake-up signal / ignition switch is turned ON, battery voltage is supplied to the relay enable circuit. The ECU will then activate the enable circuit to switch the relay on. This supplies the solenoids and motor with battery voltage. The relay will remain in the on position as long as the wake-up / ignition switch remains on, or a DTC set which turns off the relay.

6.3.2 Conditions for Running Test

Test Monitoring Cycle: Continuous Monitoring

ECU Operating Mode: Normal

6.3.3 Conditions for Setting Fault Code

DTC 14 will set after the wake-up /ignition switch is ON, and the ECU commands the relay on, if the battery voltage is greater than 9.5 volts and the switched relay voltage drops less than the expected value ~7.5 volts for 50 milliseconds. (These values can change based on vehicle manufacturer application specific calibration settings.)

6.3.4 Fault Actions

DTC 14 is stored in the ECU.

The solenoid relay is commanded off, removing battery voltage from the solenoids and the pump motor.

ABS and DRP are disabled.

Applicable warning lamps are commanded on.

6.3.5 Fault Recovery Conditions

The DTC status and history can be cleared as described in "Clearing Diagnostic Trouble Codes", Section 3.3.

6.3.6 Possible Fault Causes

Possible causes:

1. Weak or discharged battery.

2. Loose or corroded battery terminals.

3. Engine block ground from battery poor.

4. Poor or loose ABS fuse contacts.

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5. Poor ECU ignition, battery and ground terminals.
6. Low voltage to ECU battery terminal.
7. Internal ECU failure.

6.3.7 Investigation and Repair Process

CODE 14 – System Relay Circuit Open				
Step	**Diagnostic Action**	**Expected Value**	**Yes**	**No**
1	Was the Diagnostic Circuit Check Completed?		Go to Step 2	Perform Diagnostic Circuit Check
2	1. Load test the battery. Refer to battery load test in the service manual. 2. Inspect the charging system. Refer to starter and charging system in the service manual. 3. Perform a parasitic load test. Did the battery, charging system, and parasitic load test pass?		Go to Step 3	Go to Step 6
3	1. Key off. 2. Disconnect the battery positive and negative terminals. 3. Disconnect the harness from the ECU. 4. Inspect the following for a poor connection. • battery terminal cables • negative cable to block and/or chassis • positive cable to starter solenoid and/or junction block • ECU ignition, battery and ground harness terminals • ECU ground wire to chassis ground Were all the above connections satisfactory?		Go to Step 4	Go to Step 7
4	1. ECU still disconnected. 2. Battery cables still disconnected. 3. Check resistance from ECU harness ground terminal and the negative battery cable. Was the resistance within the specified range?	Less than 2 Ohms	Go to Step 5	Go to Step 8
5	1. Reconnect the battery cables. 2. ECU still disconnected. 3. Key on. 4. Check voltage from the ECU harness ignition and battery terminals to the body ground. Was the voltage on both terminals within the specified range?	Battery Voltage	Go to Step 10	Go to Step 9
6	Repair the charging system and/or Recharge/Replace the battery and/or Find and repair the source of the excessive parasitic draw. Did you complete the repair?		Go to Step 11	
7	Repair the terminal and/or connections as needed.		Go to Step 11	

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CODE 14 – System Relay Circuit Open				
Step	**Diagnostic Action**	**Expected Value**	**Yes**	**No**
	Did you complete the repair?			
8	Find and repair the source of high resistance between the negative battery cable and the ECU harness connector. Did you complete the repair?		Go to Step 11	
9	Find and repair the source of low voltage to the ECU terminals. Did you complete the repair?		Go to Step 11	
10	Replace the ECU Did you complete the repair?		Go to Step 11	
11	Use the scan tool to clear DTC's Does the DTC reset?		Go to Step 2	System OK

6.4 Diagnostic Code 17 ECU Pump Motor Battery Input Open Fault

6.4.1 Circuit Description

The pump motor voltage is supplied to the motor battery terminal of the ECU. The pump motor ground is supplied through the ECU at the motor return terminal.

6.4.2 Conditions for Running Test

Test Monitoring Cycle: Continuous Monitoring

ECU Operating Mode: Normal,Device_Control,DVT

6.4.3 Conditions for Setting Fault Code

The pump motor is commanded on or off and the ABS ECU has detected low voltage to the pump motor battery circuit.

6.4.4 Fault Actions

DTC 17 is stored in the ECU.

The ECU removes power from the pump motor circuit.

ABS is disabled.

Applicable warning lamps are commanded on.

6.4.5 Fault Recovery Conditions

The DTC status and history can be cleared as described in "Clearing Diagnostic Trouble Codes" , Section 3.3.

6.4.6 Possible Fault Causes

Possible causes:

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1. Open / blown fuse
2. Faulty wiring or poor electrical connection in the ABS wiring system
3. Vehicle battery or charging system malfunction.
4. Faulty ECU.

6.4.7 Investigation and Repair Process

CODE 17 – ECU Pump Motor Battery Input Open Fault				
Step	Diagnostic Action	Expected Value	Yes	No
1	Was the Diagnostic Circuit Check Completed?	-----	Go to Step 2	Perform Diagnostic Circuit Check
2	Use a scan tool to check DTC's. Are other pump motor related codes present?		Diagnose these first	Go to Step 3
3	Inspect battery terminals. Load test battery, and test charging system per vehicle service manual	Passed all battery and charging system test	Go to Step 4	Service battery or charging system
4	1. Key off. 2. Disconnect the ECU harness from the ECU inspect connector for any loose terminals damaged pins, or corrosion. Install Pinout box. 3. Key on. 4. Check the voltage from the ECU harness connector battery terminal to the body ground. Is voltage at the specified range?	Battery Voltage	Go to Step5	Go to Step 6
5	With break out box connected, Scan tool connected command the ABS pump motor on while monitoring voltage at the motor battery circuit	Battery Voltage +- 2 volts	Go to Step 7	Go to step 6
6	Find and repair the source of high resistance/open between the positive battery cable and the ECU harness battery terminal. Retest the system			
7	Replace the ECU. Retest the system			
8	Use the scan tool to clear DTC's Does the DTC reset?		Go to Step 2	System OK

6.5 Diagnostic Code 18 Pump Motor Ground High Resistance Fault

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6.5.1 Circuit Description

The pump motor is contained within the Hydraulic Control Unit (HCU) and can not be serviced separately from the HCU. The pump motor voltage is supplied through the battery terminal of the ECU and is controlled by a high-side solid-state driver. The pump motor ground is supplied through the ECU motor ground terminal.

6.5.2 Conditions for Running Test

Test Monitoring Cycle: Continuous Monitoring

ECU Operating Mode: Normal,Device_Control,DVT

6.5.3 Conditions for Setting Fault Code

DTC 18 can only be set with the key in the ON position and the ECU detected a short to power or high resistance in the pump ground circuit.

6.5.4 Fault Actions

DTC CODE 18 is stored in the ECU.

ABS is disabled. DRP has partial functionality.

Applicable warning lamps are commanded on.

6.5.5 Fault Recovery Conditions

The DTC status and history can be cleared as described in "Clearing Diagnostic Trouble Codes" , Section 3.3.

6.5.6 Possible Fault Causes

Possible causes:

1. Poor terminal contact at ECU motor ground terminal.
2. ECU motor ground circuit is shorted to voltage.
3. ECU motor ground circuit is open.
4. ECU motor ground circuit has high resistance to ground.
5. Faulty ECU.
6. Faulty Motor.

6.5.7 Investigation and Repair Process

CODE 18 – Pump Motor Short to Battery or Motor Ground Open/High				
Step	**Diagnostic Action**	**Expected Value**	**Yes**	**No**
1	Was the Diagnostic Circuit Check Completed?	-----	Go to Step 2	Perform Diagnostic Circuit Check
2	1. Key off. 2. Disconnect the ECU harness from the ECU. 3. Key on. 4. Check the voltage from the ECU harness motor	Less than 1 volt	Go to Step 3	Go to Step 8

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CODE 18 – Pump Motor Short to Battery or Motor Ground Open/High				
Step	**Diagnostic Action**	**Expected Value**	**Yes**	**No**
	ground terminal to the body ground. Was the voltage within the specified range?			
3	1. Key off. 2. Disconnect the negative battery cable. 3. ECU harness still disconnected from the ECU. 4. Check the resistance from the negative battery cable to the ECU harness motor ground terminal. Was the resistance reading within the specified range?	Less than 5 ohms	Go to Step 4	Go to Step 9
4	1. Follow the negative battery cable to the engine block and/or chassis ground connection and inspect for a good clean and tight connection. 2. For the ECU harness motor ground terminal, follow the circuit and find the location where the circuit grounds to the chassis. Inspect for a good clean and tight connection. Were both connections clean and tight?		Go to Step 5	Go to Step 10
5	1. ECU harness still disconnected from the ECU. 2. Remove the ECU from the HCU. 3. Inspect the ECU to HCU connector for conditions such as damage, corrosion, poor terminal contact, or the presence of brake fluid. Were the terminals and connector OK, and the cavity free of brake fluid, damage and corrosion?		Go to Step 6	Go to Step 11
6	Check the resistance across the pump motor terminals to the on the HCU. Was the pump motor resistance reading within the specified range?	Less than 2 Ohms	Go to Step 7	Go to Step 12
7	Replace ECU. Did you complete the repair?		Go to Step 13	
8	Find and repair the source of the short to voltage on the ECU harness motor ground circuit. Did you complete the repair?		Go to Step 13	
9	Find and repair the source of high resistance between the ECU harness motor ground terminal and the body ground. Did you complete the repair?		Go to Step 13	
10	Repair the poor ground connection as necessary. Did you complete the repair?		Go to Step 13	
11	1. If damage and/or corrosion are present, replace the ECU and/or the HCU as necessary. 2. If the brake fluid is present, replace both the ECU and the HCU. Did you complete the repair?		Go to Step 13	

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CODE 18 – Pump Motor Short to Battery or Motor Ground Open/High				
Step	**Diagnostic Action**	**Expected Value**	**Yes**	**No**
12	Replace the Hydraulic Control Unit. Did you complete the repair?		Go to Step 13	
13	Use the scan tool to clear DTC's Does the DTC reset?		Go to Step 2	System OK

6.6 Diagnostic Code 21 Left Front Wheel Speed = 0 kph (Passive Sensor)

6.6.1 Circuit Description

As the wheel is rotated, the passive wheel speed sensor produces an AC voltage that increases with wheel speed. The ECU uses the frequency of the AC signal to calculate wheel speed. The speed sensor is connected to the ECU by two wires: WSS HI, and WSS Low. The two wires are typically taped very close ("side by side" , or in a "twisted pair") to reduce electrical noise susceptibility that may cause a DTC to set.

6.6.2 Conditions for Running Test

Test Monitoring Cycle: Continuous Monitoring

ECU Operating Mode: Normal,DVT

6.6.3 Conditions for Setting Fault Code

All of the following must be true for the DTC to set:

1. DTC 32 or DTC 33 or DTC 34 or DTC 35 are not currently set.

2. ABS is not active.

3. Brake switch is off.

4. The suspect wheel speed equals 0, and all of the remaining Wheel Speed Sensors are greater than 8 km/hr (5 mph) for at least 2.5 seconds.

6.6.4 Fault Actions

DTC 21 is stored in the ECU.

ABS is disabled.

If a DTC is set for the other wheel speed sensor on the same axle, the ECU disables DRP for the duration of the ignition cycle.

Applicable warning lamps are commanded on.

6.6.5 Fault Recovery Conditions

The DTC status and history can be cleared as described in "Clearing Diagnostic Trouble Codes" , Section 3.3.

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6.6.6 Possible Fault Causes

Thoroughly inspect the wiring and connectors when diagnosing intermittent DTC's. This will include the following.

- Removal of the protective conduit and inspection of wiring for damage, shorts and contamination.

- Inspection for improperly formed and/or damaged terminals.

- Checking terminal contact (retention force) by using a spare male/female terminal.

- Removal of the terminals from the connectors to check for proper terminal to wire crimp.

If the driver's comments reflect that the ABS warning lamp is on only during moist environmental changes (rain, snow, vehicle wash), all wheel speed sensor circuitry should be thoroughly inspected for signs of water intrusion. If the DTC is not current, simulate the effects of water intrusion. Use the following procedure. Spray the suspected area with a 5 percent salt-water solution. Then test-drive the vehicle over various road surfaces such as (bumps, turns, etc) above 24 kph (15 mph). If the DTC sets then replace the suspected harness and/or sensor.

When measuring wheel speed sensor resistance ensure the vehicle is at room temperature, since resistance will increase with temperature.

Failure to perform the previous steps carefully and fully can result in misdiagnosis, unnecessary component replacement and reoccurrence of the DTC.

Possible causes:

1. Wheel speed high and low inputs shorted together.

2. Internal sensor fault.

3. Excessive Air Gap between tone ring and speed sensor

4. Faulty ECU

6.6.7 Investigation and Repair Process

CODE 21, CODE 22, CODE 23, CODE 24 – Wheel Speed Sensor Input Signal =0 (Passive WSS)				
Step	**Diagnostic Action**	**Expected Value**	**Yes**	**No**
1	Was the Diagnostic Circuit Check Completed?		Go to Step 2	Perform Diagnostic Circuit Check
2	1. Key off. 2. Inspect the Wheel Speed Sensor (WSS), connectors, harness, and tooth ring for physical damage, or excessive gap between the tone ring and sensor. Is any physical damage or other issues noted?		Go to Step 11	Go to Step 3
3	Was DTC CODE 32, 33, 34 or 35 set as a current or history code?		Go to Step 12	Go to Step 4
4	1. Connect a Scan Tool and select data list. 2. Monitor the wheel speed sensors. 3. Test drive vehicle above 24 kph (15 mph) and slowly decelerate to zero, do this several times. Did the DTC CODE reset or did the suspect wheel speed suddenly drop to zero prior to the vehicle coming to a complete stop?		Go to Step 5	Go to Step 13
5	1. Key off.	At least	Go to Step 14	Go to Step 6

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CODE 21, CODE 22, CODE 23, CODE 24 – Wheel Speed Sensor Input Signal =0 (Passive WSS)				
Step	**Diagnostic Action**	**Expected Value**	**Yes**	**No**
	2. Raise and suitably support the vehicle. 3. Disconnect the ECU harness from the ECU. 4. Connect a voltmeter between the suspect ECU harness WSS HI and WSS LO terminals. 5. Select the AC millivolt scale. 6. Spin the wheel while observing the voltmeter. (voltage should increase as wheel speed increases) Is the AC voltage within the specified range?	100 mV		
6	1. Disconnect the suspect WSS harness from the WSS. 2. Check the resistance across both terminals of the WSS. Is the resistance within the specified range?	800-1600 Ohms (Resistance will vary with temperature and by manufacturer)	Go to Step 7	Go to Step 15
7	1. WSS harness still disconnected from the WSS. 2. Connect a voltmeter between both WSS terminals. 3. Select the AC millivolt scale. 4. Spin the wheel while observing the voltmeter. (voltage should increase as wheel speed increases) Is the AC voltage within the specified range?	At least 100 mV	Go to Step 8	Go to Step 15
8	1. WSS harness still disconnected from the WSS. 2. ECU harness still disconnected from the ECU. 3. Check the resistance between the suspect ECU harness WSS HI and the ECU harness WSS LO terminals. Is the Resistance within the specified range?	OL (open circuit)	Go to Step 9	Go to Step 16
9	1. ECU harness still disconnected from the ECU. 2. WSS harness still disconnected from the WSS. 3. Check the resistance from the suspect ECU harness WSS HI terminal to the WSS harness WSS HI terminal. Is the resistance within the specified range?	Less than 2 Ohms	Go to Step 10	Go to Step 17
10	1. ECU harness still disconnected from the ECU. 2. WSS harness still disconnected from the WSS. 3. Check the resistance from the suspect ECU harness WSS LO terminal to the WSS harness WSS LO terminal. Is the resistance within the specified range?	Less than 2 ohms	Go to Step 14	Go to Step 18
11	Repair the damage to the WSS, harness and/or toothed ring / air gap. Did you complete the repair?		Go to Step 19	
12	Perform diagnostics for DTC prior to performing this table.			
13	The DTC is intermittent. Refer to the “Possible Fault Causes” section .			
14	Replace the ECU.		Go to Step 19	

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CODE 21, CODE 22, CODE 23, CODE 24 – Wheel Speed Sensor Input Signal =0 (Passive WSS)				
Step	**Diagnostic Action**	**Expected Value**	**Yes**	**No**
	Did you complete the repair?			
15	Replace the Wheel Speed Sensor. Did you complete the repair?		Go to Step 19	
16	Find and repair the short between the 2 circuits. Did you complete the repair?		Go to Step 19	
17	Repair the open or high resistance in the WSS HI circuit Did you complete the repair?		Go to Step 19	
18	Repair the open or high resistance in the WSS LO circuit. Did you complete the repair?		Go to Step 19	
19	Use the scan tool to clear DTC's. Does the DTC reset when condition for setting DTC are met?		Go to Step 2	System OK

6.7 Diagnostic Code 22 Right Front Wheel Speed = 0 kph (Passive Sensor)

6.7.1 Circuit Description

As the wheel is rotated, the passive wheel speed sensor produces an AC voltage that increases with wheel speed. The ECU uses the frequency of the AC signal to calculate wheel speed. The speed sensor is connected to the ECU by two wires: WSS HI, and WSS Low. The two wires are typically taped very close ("side by side" , or in a "twisted pair") to reduce electrical noise susceptibility that may cause a DTC to set.

6.7.2 Conditions for Running Test

Test Monitoring Cycle: Continuous Monitoring

ECU Operating Mode: Normal,DVT

6.7.3 Conditions for Setting Fault Code

All of the following must be true for the DTC to set:

1. DTC 32 or DTC 33 or DTC 34 or DTC 35 are not currently set.

2. ABS is not active.

3. Brake switch is off.

4. The suspect wheel speed equals 0, and all of the remaining Wheel Speed Sensors are greater than 8 km/hr (5 mph) for at least 2.5 seconds.

6.7.4 Fault Actions

DTC 22 is stored in the ECU.

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ABS is disabled.

If a DTC is set for the other wheel speed sensor on the same axle, the ECU disables DRP for the duration of the ignition cycle.

Applicable warning lamps are commanded on.

6.7.5 Fault Recovery Conditions

The DTC status and history can be cleared as described in "Clearing Diagnostic Trouble Codes" , Section 3.3.

6.7.6 Possible Fault Causes

Thoroughly inspect the wiring and connectors when diagnosing intermittent DTC's. This will include the following.

- Removal of the protective conduit and inspection of wiring for damage, shorts and contamination.

- Inspection for improperly formed and/or damaged terminals.

- Checking terminal contact (retention force) by using a spare male/female terminal.

- Removal of the terminals from the connectors to check for proper terminal to wire crimp.

If the driver's comments reflect that the ABS warning lamp is on only during moist environmental changes (rain, snow, vehicle wash), all wheel speed sensor circuitry should be thoroughly inspected for signs of water intrusion. If the DTC is not current, simulate the effects of water intrusion. Use the following procedure. Spray the suspected area with a 5 percent salt-water solution. Then test-drive the vehicle over various road surfaces such as (bumps, turns, etc) above 24 kph (15 mph). If the DTC sets then replace the suspected harness and/or sensor.

When measuring wheel speed sensor resistance ensure the vehicle is at room temperature, since resistance will increase with temperature.

Failure to perform the previous steps carefully and fully can result in misdiagnosis, unnecessary component replacement and reoccurrence of the DTC.

Possible causes:

1. Wheel speed high and low inputs shorted together.

2. Internal sensor fault.

3. Excessive Air Gap between tone ring and speed sensor

4. Faulty ECU

6.7.7 Investigation and Repair Process

SEE INVESTIGATION ACTION FOR CODE 21

6.8 Diagnostic Code 23 Left Rear Wheel Speed = 0 kph (Passive Sensor)

6.8.1 Circuit Description

As the wheel is rotated, the passive wheel speed sensor produces an AC voltage that increases with wheel speed. The ECU uses the frequency of the AC signal to calculate wheel speed. The speed sensor is connected to the ECU by two wires: WSS HI, and WSS Low. The two wires are typically taped very close ("side by side" , or in a "twisted pair") to reduce electrical noise susceptibility that may cause a DTC to set.

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6.8.2 Conditions for Running Test

Test Monitoring Cycle: Continuous Monitoring

ECU Operating Mode: Normal,DVT

6.8.3 Conditions for Setting Fault Code

All of the following must be true for the DTC to set:

1. DTC 32 or DTC 33 or DTC 34 or DTC 35 are not currently set.

2. ABS is not active.

3. Brake switch is off.

4. The suspect wheel speed equals 0, and all of the remaining Wheel Speed Sensors are greater than 8 km/hr (5 mph) for at least 2.5 seconds.

6.8.4 Fault Actions

DTC 23 is stored in the ECU.

ABS is disabled

If a DTC is set for the other wheel speed sensor on the same axle, the ECU disables DRP for the duration of the ignition cycle.

Applicable warning lamps are commanded on.

6.8.5 Fault Recovery Conditions

The DTC status and history can be cleared as described in "Clearing Diagnostic Trouble Codes" , Section 3.3.

6.8.6 Possible Fault Causes

Thoroughly inspect the wiring and connectors when diagnosing intermittent DTC's. This will include the following.

- Removal of the protective conduit and inspection of wiring for damage, shorts and contamination.

- Inspection for improperly formed and/or damaged terminals.

- Checking terminal contact (retention force) by using a spare male/female terminal.

- Removal of the terminals from the connectors to check for proper terminal to wire crimp.

If the driver's comments reflect that the ABS warning lamp is on only during moist environmental changes (rain, snow, vehicle wash), all wheel speed sensor circuitry should be thoroughly inspected for signs of water intrusion. If the DTC is not current, simulate the effects of water intrusion. Use the following procedure. Spray the suspected area with a 5 percent salt-water solution. Then test-drive the vehicle over various road surfaces such as (bumps, turns, etc) above 24 kph (15 mph). If the DTC sets then replace the suspected harness and/or sensor.

When measuring wheel speed sensor resistance ensure the vehicle is at room temperature, since resistance will increase with temperature.

Failure to perform the previous steps carefully and fully can result in misdiagnosis, unnecessary component replacement and reoccurrence of the DTC.

Possible causes:

1. Wheel speed high and low inputs shorted together.

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2. Internal sensor fault.

3. Excessive Air Gap between tone ring and speed sensor

4. Faulty ECU

6.8.7 Investigation and Repair Process

SEE INVESTIGATION ACTION FOR CODE 21

6.9 Diagnostic Code 24 Right Rear Wheel Speed = 0 kph (Passive Sensor)

6.9.1 Circuit Description

As the wheel is rotated, the passive wheel speed sensor produces an AC voltage that increases with wheel speed. The ECU uses the frequency of the AC signal to calculate wheel speed. The speed sensor is connected to the ECU by two wires: WSS HI, and WSS Low. The two wires are typically taped very close (“side by side” , or in a “twisted pair”) to reduce electrical noise susceptibility that may cause a DTC to set.

6.9.2 Conditions for Running Test

Test Monitoring Cycle: Continuous Monitoring

ECU Operating Mode: Normal,DVT

6.9.3 Conditions for Setting Fault Code

All of the following must be true for the DTC to set:

1. DTC 32 or DTC 33 or DTC 34 or DTC 35 are not currently set.

2. ABS is not active.

3. Brake switch is off.

4. The suspect wheel speed equals 0, and all of the remaining Wheel Speed Sensors are greater than 8 km/hr (5 mph) for at least 2.5 seconds.

6.9.4 Fault Actions

DTC 24 is stored in the ECU.

ABS is disabled.

If a DTC is set for the other wheel speed sensor on the same axle, the ECU disables DRP for the duration of the ignition cycle.

Applicable warning lamps are commanded on.

6.9.5 Fault Recovery Conditions

The DTC status and history can be cleared as described in "Clearing Diagnostic Trouble Codes" , Section 3.3.

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6.9.6 Possible Fault Causes

Thoroughly inspect the wiring and connectors when diagnosing intermittent DTC's. This will include the following.

- Removal of the protective conduit and inspection of wiring for damage, shorts and contamination.

- Inspection for improperly formed and/or damaged terminals.

- Checking terminal contact (retention force) by using a spare male/female terminal.

- Removal of the terminals from the connectors to check for proper terminal to wire crimp.

If the driver's comments reflect that the ABS warning lamp is on only during moist environmental changes (rain, snow, vehicle wash), all wheel speed sensor circuitry should be thoroughly inspected for signs of water intrusion. If the DTC is not current, simulate the effects of water intrusion. Use the following procedure. Spray the suspected area with a 5 percent salt-water solution. Then test-drive the vehicle over various road surfaces such as (bumps, turns, etc) above 24 kph (15 mph). If the DTC sets then replace the suspected harness and/or sensor.

When measuring wheel speed sensor resistance ensure the vehicle is at room temperature, since resistance will increase with temperature.

Failure to perform the previous steps carefully and fully can result in misdiagnosis, unnecessary component replacement and reoccurrence of the DTC.

Possible causes:

1. Wheel speed high and low inputs shorted together.

2. Internal sensor fault.

3. Excessive Air Gap between tone ring and speed sensor

4. Faulty ECU

6.9.7 Investigation and Repair Process

SEE INVESTIGATION ACTION FOR CODE 21

6.10 Diagnostic Code 25 Left Front Wheel Speed Intermittent Fault (Passive Sensor)

6.10.1 Circuit Description

As the wheel is rotated, the passive wheel speed sensor produces an AC voltage that increases with wheel speed. The ECU uses the frequency of the AC signal to calculate wheel speed. The speed sensor is connected to the ECU by two wires: WSS HI, and WSS Low. The two wires are typically taped very close ("side by side" , or in a "twisted pair") to reduce electrical noise susceptibility that may cause a DTC to set.

6.10.2 Conditions for Running Test

Test Monitoring Cycle: Continuous Monitoring

ECU Operating Mode: Normal,DVT

6.10.3 Conditions for Setting Fault Code

All of the following must be true for the DTC to set.

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DTC 32 or DTC 33 or DTC 34 or DTC 35 are not currently set

Brake switch is off.

The wheel speed is accelerating or decelerating beyond reasonable limits.

6.10.4 Fault Actions

DTC 25 is stored in the ECU.

ABS is disabled.

If a DTC is set for the other wheel speed sensor on the same axle, the ECU disables DRP for the duration of the ignition cycle.

Applicable warning lamps are commanded on.

6.10.5 Fault Recovery Conditions

The DTC status and history can be cleared as described in "Clearing Diagnostic Trouble Codes" , Section 3.3.

6.10.6 Possible Fault Causes

Thoroughly inspect the wiring and connectors when diagnosing intermittent DTC's. This will include the following.

- Removal of the protective conduit and inspection for wiring for damage, shorts and contamination.
- Inspection for improperly formed and/or damaged terminals.
- Checking terminal contact (retention force) by using a spare male/female terminal.
- Removal of the terminals from the connectors to check for proper terminal to wire crimp.

If the driver's comments reflect that the ABS Warning Lamp is on only during moist environmental changes (rain, snow, vehicle wash), all wheel speed sensor circuitry should be thoroughly inspected for signs of water intrusion. If the DTC is not current, simulate the effects of water intrusion. Use the following procedure. Spray the suspected area with a 5 percent salt-water solution. Then test-drive the vehicle over various road surfaces such as (bumps, turns, etc) above 24 kph (15 mph). If the DTC sets then replace the suspected harness and/or sensor.

A careful visual inspection of the toothed ring for damaged such as cracks and tooth damage should be performed. If the DTC sets at the same speed every drive cycle, the toothed ring is most likely damaged.

Failure to perform the previous steps carefully and fully can result in misdiagnosis, unnecessary component replacement and reoccurrence of the DTC.

Possible causes:

1. External or internal wheel speed circuit intermittent open.
2. Electrical noise coupled onto wheel speed wires.
3. Bent/ damaged tone ring
4. Excessive or inconsistent air gap between tone ring and sensor
5. Faulty ECU

6.10.7 Investigation and Repair Process

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CODE 25, CODE 26, CODE 27, CODE 28 – Wheel Speed Sensor Excessive Variation (Passive WSS)				
STEP	**DIAGNOSTIC ACTION**	**EXPECTED VALUE**	**YES**	**NO**
1	Was the Diagnostic Circuit Check Completed?		Go to Step 2	Perform Diagnostic Circuit Check
2	Was DTC CODE 32, 33, 34 or 35 set as a current or history code?		Go to Step 11	Go to Step 3
3	Inspect the Wheel Speed Sensor (WSS), connectors, harness, and tooth ring for physical damage, or excessive air gap. Is any physical damage noted? Is the air gap excessive ?		Go to Step 12	Step Go to 4
4	1. Vehicle in park. 2. Connect a Scan Tool and select data list. 3. Monitor the wheel speed sensors. 4. Start the vehicle, and monitor wheel speed sensors with engine running but vehicle not moving. 5. Lightly depress the accelerator pedal to increase engine idle speed. Did the DTC reset or did the suspect wheel speed read above 0 mph when the vehicle was in park with the engine running.		Go to Step 13	Go to Step 5
5	1. Scan tool still connected. 2. Monitor the wheel speed sensors. 3. Test drive the vehicle up to the maximum-posted speed limit, and slowly decelerate to zero. Do this several times. Did the DTC reset or did the suspect wheel speed vary more than 5 kph (3 mph) when compared to any one of the other wheels during the drive?		Go to Step 6	Go to Step 14
6	1. Vehicle in park, key off. 2. Raise and suitably support the vehicle. 3. Disconnect the suspect WSS harness from the WSS. 4. Check the resistance across both terminals of the WSS. Is the resistance within the specified range?	800-1600 Ohms (Resistance will vary with temperature and by manufacturer)	Go to Step 7	Go to Step 15
7	1. WSS harness still disconnected from the WSS. 2. Connect a voltmeter between the suspect ECU harness WSS HI and WSS LO terminals. 3. Select the AC millivolt scale. 4. Spin the wheel while observing the voltage on the meter. Is the AC voltage within the specified range?	At least 100 mV	Go to Step 8	Go to Step 15
8	1. Disconnect ECU harness from the ECU. 2. WSS harness still disconnected from the WSS. 3. Check the resistance from the suspect ECU harness WSS HI terminal to the WSS harness WSS HI terminal near the sensor. Is the resistance within the specified range?	Less the 2 ohms	Go to Step 9	Go to Step 16
9	1. ECU harness still disconnected from the ECU.	Less than 2 ohms	Go to step 10	Go to Step 17

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CODE 25, CODE 26, CODE 27, CODE 28 – Wheel Speed Sensor Excessive Variation (Passive WSS)				
STEP	**DIAGNOSTIC ACTION**	**EXPECTED VALUE**	**YES**	**NO**
	2. WSS harness still disconnected from the WSS. 3. Check the resistance from the suspect ECU harness WSS LO terminal to the WSS harness WSS LO terminal near the sensor. Is the resistance within the specified range?			
10	1. ECU harness still disconnected from the ECU. 2. WSS harness still disconnected from the WSS. 3. Check the resistance between the suspect ECU harness WSS HI and the ECU harness WSS LO terminals. Is the resistance within the specified range?	OL (open circuit)	Go to Step 19	Go to Step 18
11	Perform diagnostics for DTC prior to performing this table.			
12	Repair any damage to the WSS, harness and/or the toothed ring, or correct the excessive air gap. Did you complete the repair?		Go to Step 20	
13	The cause of the DTC is ignition noise coupled onto the WSS circuits. Inspect the routing of the WSS harness for potential ignition noise sources such as spark plug wires. Reroute wiring as needed. Did you complete the repair?		Go to Step 20	
14	The DTC is intermittent. Refer to the ”Possible Fault Causes” section.			
15	Replace the Wheel Speed Sensor. Did you complete the repair?		Go to Step 20	
16	Repair the open or high resistance in the WSS HI circuit Did you complete the repair?		Go to Step 20	
17	Repair the open or high resistance in the WSS LO circuit. Did you complete the repair?		Go to Step 20	
18	Repair the short between the 2 wires. Did you complete the repair?		Go to Step 20	
19	Replace the ECU. Did you complete the repair?		Go to Step 20	
20	Use the scan tool to clear DTC’s. Does the DTC reset when condition for setting DTC are met?		Go to Step 2	System OK

6.11 Diagnostic Code 26 Right Front Wheel Speed Intermittent Fault (Passive Sensor)

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6.11.1 Circuit Description

As the wheel is rotated, the passive wheel speed sensor produces an AC voltage that increases with wheel speed. The ECU uses the frequency of the AC signal to calculate wheel speed. The speed sensor is connected to the ECU by two wires: WSS HI, and WSS Low. The two wires are typically taped very close (“side by side” , or in a “twisted pair”) to reduce electrical noise susceptibility that may cause a DTC to set.

6.11.2 Conditions for Running Test

Test Monitoring Cycle: Continuous Monitoring

ECU Operating Mode: Normal,DVT

6.11.3 Conditions for Setting Fault Code

All of the following must be true for the DTC to set.

DTC 32 or DTC 33 or DTC 34 or DTC 35 are not currently set

Brake switch is off.

The wheel speed is accelerating or decelerating beyond reasonable limits.

6.11.4 Fault Actions

DTC 26 is stored in the ECU.

ABS is disabled.

If a DTC is set for the other wheel speed sensor on the same axle, the ECU disables DRP for the duration of the ignition cycle.

Applicable warning lamps are commanded on.

6.11.5 Fault Recovery Conditions

The DTC status and history can be cleared as described in "Clearing Diagnostic Trouble Codes" , Section 3.3.

6.11.6 Possible Fault Causes

Thoroughly inspect the wiring and connectors when diagnosing intermittent DTC’s. This will include the following.

- Removal of the protective conduit and inspection for wiring for damage, shorts and contamination.
- Inspection for improperly formed and/or damaged terminals.
- Checking terminal contact (retention force) by using a spare male/female terminal.
- Removal of the terminals from the connectors to check for proper terminal to wire crimp.

If the driver’s comments reflect that the ABS Warning Lamp is on only during moist environmental changes (rain, snow, vehicle wash), all wheel speed sensor circuitry should be thoroughly inspected for signs of water intrusion. If the DTC is not current, simulate the effects of water intrusion. Use the following procedure. Spray the suspected area with a 5 percent salt-water solution. Then test-drive the vehicle over various road surfaces such as (bumps, turns, etc) above 24 kph (15 mph). If the DTC sets then replace the suspected harness and/or sensor.

A careful visual inspection of the toothed ring for damaged such as cracks and tooth damage should be performed. If the DTC sets at the same speed every drive cycle, the toothed ring is most likely damaged.

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Failure to perform the previous steps carefully and fully can result in misdiagnosis, unnecessary component replacement and reoccurrence of the DTC.

Possible causes:

1. External or internal wheel speed circuit intermittent open.
2. Electrical noise coupled onto wheel speed wires.
3. Bent/ damaged tone ring
4. Excessive or inconsistent air gap between tone ring and sensor
5. Faulty ECU

6.11.7 Investigation and Repair Process

SEE INVESTIGATION ACTION FOR CODE 25

6.12 Diagnostic Code 27 Left Rear Wheel Speed Intermittent Fault (Passive Sensor)

6.12.1 Circuit Description

As the wheel is rotated, the passive wheel speed sensor produces an AC voltage that increases with wheel speed. The ECU uses the frequency of the AC signal to calculate wheel speed. The speed sensor is connected to the ECU by two wires: WSS HI, and WSS Low. The two wires are typically taped very close (“side by side” , or in a “twisted pair”) to reduce electrical noise susceptibility that may cause a DTC to set.

6.12.2 Conditions for Running Test

Test Monitoring Cycle: Continuous Monitoring

ECU Operating Mode: Normal,DVT

6.12.3 Conditions for Setting Fault Code

All of the following must be true for the DTC to set.

DTC 32 or DTC 33 or DTC 34 or DTC 35 are not currently set

Brake switch is off.

The wheel speed is accelerating or decelerating beyond reasonable limits.

6.12.4 Fault Actions

DTC 27 is stored in the ECU.

ABS is disabled.

If a DTC is set for the other wheel speed sensor on the same axle, the ECU disables DRP for the duration of the ignition cycle.

Applicable warning lamps are commanded on.

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6.12.5 Fault Recovery Conditions

The DTC status and history can be cleared as described in "Clearing Diagnostic Trouble Codes" , Section 3.3.

6.12.6 Possible Fault Causes

Thoroughly inspect the wiring and connectors when diagnosing intermittent DTC's. This will include the following.

- Removal of the protective conduit and inspection for wiring for damage, shorts and contamination.
- Inspection for improperly formed and/or damaged terminals.
- Checking terminal contact (retention force) by using a spare male/female terminal.
- Removal of the terminals from the connectors to check for proper terminal to wire crimp.

If the driver's comments reflect that the ABS Warning Lamp is on only during moist environmental changes (rain, snow, vehicle wash), all wheel speed sensor circuitry should be thoroughly inspected for signs of water intrusion. If the DTC is not current, simulate the effects of water intrusion. Use the following procedure. Spray the suspected area with a 5 percent salt-water solution. Then test-drive the vehicle over various road surfaces such as (bumps, turns, etc) above 24 kph (15 mph). If the DTC sets then replace the suspected harness and/or sensor.

A careful visual inspection of the toothed ring for damaged such as cracks and tooth damage should be performed. If the DTC sets at the same speed every drive cycle, the toothed ring is most likely damaged.

Failure to perform the previous steps carefully and fully can result in misdiagnosis, unnecessary component replacement and reoccurrence of the DTC.

Possible causes:

1. External or internal wheel speed circuit intermittent open.
2. Electrical noise coupled onto wheel speed wires.
3. Bent/ damaged tone ring
4. Excessive or inconsistent air gap between tone ring and sensor
5. Faulty ECU

6.12.7 Investigation and Repair Process

SEE INVESTIGATION ACTION FOR CODE 25

6.13 Diagnostic Code 28 Right Rear Wheel Speed Intermittent Fault (Passive Sensor)

6.13.1 Circuit Description

As the wheel is rotated, the passive wheel speed sensor produces an AC voltage that increases with wheel speed. The ECU uses the frequency of the AC signal to calculate wheel speed. The speed sensor is connected to the ECU by two wires: WSS HI, and WSS Low. The two wires are typically taped very close ("side by side" , or in a "twisted pair") to reduce electrical noise susceptibility that may cause a DTC to set.

6.13.2 Conditions for Running Test

Test Monitoring Cycle: Continuous Monitoring

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ECU Operating Mode: Normal,DVT

6.13.3 Conditions for Setting Fault Code

All of the following must be true for the DTC to set.

DTC 32 or DTC 33 or DTC 34 or DTC 35 are not currently set

Brake switch is off.

The wheel speed is accelerating or decelerating beyond reasonable limits.

6.13.4 Fault Actions

DTC 28 is stored in the ECU.

ABS is disabled.

If a DTC is set for the other wheel speed sensor on the same axle, the ECU disables DRP for the duration of the ignition cycle.

Applicable warning lamps are commanded on.

6.13.5 Fault Recovery Conditions

The DTC status and history can be cleared as described in "Clearing Diagnostic Trouble Codes" , Section 3.3.

6.13.6 Possible Fault Causes

Thoroughly inspect the wiring and connectors when diagnosing intermittent DTC's. This will include the following.

- Removal of the protective conduit and inspection for wiring for damage, shorts and contamination.
- Inspection for improperly formed and/or damaged terminals.
- Checking terminal contact (retention force) by using a spare male/female terminal.
- Removal of the terminals from the connectors to check for proper terminal to wire crimp.

If the driver's comments reflect that the ABS Warning Lamp is on only during moist environmental changes (rain, snow, vehicle wash), all wheel speed sensor circuitry should be thoroughly inspected for signs of water intrusion. If the DTC is not current, simulate the effects of water intrusion. Use the following procedure. Spray the suspected area with a 5 percent salt-water solution. Then test-drive the vehicle over various road surfaces such as (bumps, turns, etc) above 24 kph (15 mph). If the DTC sets then replace the suspected harness and/or sensor.

A careful visual inspection of the toothed ring for damaged such as cracks and tooth damage should be performed. If the DTC sets at the same speed every drive cycle, the toothed ring is most likely damaged.

Failure to perform the previous steps carefully and fully can result in misdiagnosis, unnecessary component replacement and reoccurrence of the DTC.

Possible causes:

1. External or internal wheel speed circuit intermittent open.
2. Electrical noise coupled onto wheel speed wires.
3. Bent/ damaged tone ring
4. Excessive or inconsistent air gap between tone ring and sensor
5. Faulty ECU

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6.13.7 Investigation and Repair Process

SEE INVESTIGATION ACTION FOR CODE 25

6.14 Diagnostic Code 32 Left Front Wheel Speed Hardware Fault (Passive Sensor)

6.14.1 Circuit Description

As the wheel is rotated, the passive wheel speed sensor produces an AC voltage that increases with wheel speed. The ECU uses the frequency of the AC signal to calculate wheel speed. The speed sensor is connected to the ECU by two wires: WSS HI, and WSS Low. The two wires are typically taped very close (“side by side” , or in a “twisted pair”) to reduce electrical noise susceptibility that may cause a DTC to set.

6.14.2 Conditions for Running Test

Test Monitoring Cycle: Continuous Monitoring

ECU Operating Mode: Normal,DVT

6.14.3 Conditions for Setting Fault Code

The DTC 32 can be set anytime the key is on and the ECU has detected an open, short to ground or a short to battery on the wheel speed circuit.

6.14.4 Fault Actions

DTC 32 is stored in the ECU.

ABS is disabled.

If a DTC is set for the other wheel speed sensor on the same axle, the ECU disables DRP for the duration of the ignition cycle.

Applicable warning lamps are commanded on.

6.14.5 Fault Recovery Conditions

The DTC status and history can be cleared as described in "Clearing Diagnostic Trouble Codes" , Section 3.3.

6.14.6 Possible Fault Causes

Thoroughly inspect the wiring and connectors when diagnosing intermittent DTC’s. This will include the following.

- Removal of the protective conduit and inspection to wiring for damage, shorts and contamination.

- Inspection for improperly formed and/or damaged terminals.

- Checking terminal contact (retention force) by using a spare male/female terminal.

- Removal of the terminals from the connectors to check for proper terminal to wire crimp.

If the driver’s comments reflect that the ABS Warning Lamp is on only during moist environmental changes (rain, snow, vehicle wash), all wheel speed sensor circuitry should be thoroughly inspected for signs of water intrusion. If the DTC is

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not current, simulate the effects of water intrusion. Use the following procedure. Spray the suspected area with a 5 percent salt-water solution. Then test-drive the vehicle over various road surfaces such as (bumps, turns, etc) above 24 kph (15 mph). If the DTC sets then replace the suspected harness and or sensor.

When measuring wheel speed sensor resistance insure the vehicle is at room temperature, since resistance will increase with temperature

Failure to perform the previous steps carefully and fully can result in misdiagnosis, unnecessary component replacement and reoccurrence of the DTC.

Possible causes:

1. External or internal wheel speed circuit open.
2. External or internal wheel speed circuit shorted to ground.
3. External or internal wheel speed circuit shorted to power.
4. Defective wheel speed sensor.
5. Faulty ECU.

6.14.7 Investigation and Repair Process

CODE 32, CODE 33, CODE 34, CODE 35 – Wheel Speed Sensor Open or Shorted (Passive WSS)				
STEP	**DIAGNOSTIC ACTION**	**EXPECTED VALUE**	**YES**	**NO**
1	Was the diagnostic circuit check performed?		Go to Step 2	Perform Diagnostic Circuit Check
2	1. Key off. 2. Inspect the Wheel Speed Sensor (WSS), harness and the toothed ring for physical damage. Is any physical damage noted?		Go to Step 13	Go to Step 3
3	Test drive vehicle at various speeds and over various road surfaces. Did the DTC reset?		Go to Step 4	Go to Step 14
4	1. Key off, vehicle in park. 2. Raise and suitably support the vehicle. 3. Disconnect the suspect WSS harness from the WSS. 4. Check the resistance across both terminals of the WSS. Is the resistance with in specified range?	800-1600 Ohms (Resistance will vary with temperature and by manufacturer)	Go to Step 5	Go to Step 15
5	1. WSS harness still disconnected from the WSS. 2. Key / System off . Check the resistance from the suspect WSS HI and Low terminals to the body ground on the wheel speed sensor connector (Sensor Side) . Is the resistance within the specified range?	OL (open circuit)	Go to Step 6	Go to Step 15
6	1. Disconnect the ECU harness from the ECU. 2. WSS harness still disconnected from the WSS.	Less the 2 ohms	Go to Step 7	Go to Step 16

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CODE 32, CODE 33, CODE 34, CODE 35 – Wheel Speed Sensor Open or Shorted (Passive WSS)				
STEP	**DIAGNOSTIC ACTION**	**EXPECTED VALUE**	**YES**	**NO**
	3. Key/ System off. Check the resistance from the suspect ECU connector harness WSS HI terminal to the WSS harness WSS HI terminal nearest to the wheel speed sensor. Is the resistance within the specified range?			
7	1. ECU harness still disconnected from the ECU. 2. WSS harness still disconnected from the WSS. 3. Key / System off. Check the resistance from the suspect ECU harness WSS LO terminal at the ECU connector to the WSS harness WSS LO terminal nearest to the wheel speed sensor. Is the resistance within the specified range?	Less than 2 ohms	Go to Step 8	Go to Step 17
8	1. ECU harness still disconnected from the ECU. 2. WSS harness still disconnected from the WSS. 3. Key / System on. Check the voltage from the suspect ECU harness connector WSS HI terminal to the body ground. Is the voltage within the specified range?	Less than 1 volt	Go to Step 9	Go to Step 18
9	1. ECU harness still disconnected from the ECU. 2. WSS harness still disconnected from the WSS. 3. Key system “On”. Check the voltage from the suspect ECU harness WSS LO terminal to the body ground. Is the voltage within the specified range?	Less than 1 volt	Go to Step 10	Go to Step 19
10	1. ECU harness still disconnected from the ECU. 2. WSS harness still disconnected from the WSS. 3. Key system “Off”. Check the resistance from the suspect ECU harness WSS HI terminal to the body ground. Is the resistance within the specified range?	OL (open circuit)	Go to Step 11	Go to Step 20
11	1. ECU harness still disconnected from the ECU. 2. WSS harness still disconnected from the WSS. 3. Key system “Off”. Check the resistance from the suspect ECU harness WSS LO terminal to the body ground. Is the resistance within the specified range?	OL (open circuit)	Go to Step 12	Go to Step 21
12	1. ECU harness still disconnected from the ECU. 2. WSS harness still disconnected from the WSS. 3. Key system “Off”. Check the resistance between the suspect ECU harness WSS HI terminal and the ECU harness WSS LO terminal.	OL (open circuit)	Go to Step 23	Go to Step 22

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CODE 32, CODE 33, CODE 34, CODE 35 – Wheel Speed Sensor Open or Shorted (Passive WSS)				
STEP	**DIAGNOSTIC ACTION**	**EXPECTED VALUE**	**YES**	**NO**
	Is the resistance within the specified range?			
13	Repair the damage to the WSS, harness and/or toothed ring. Did you complete the repair?		Go to Step 24	
14	The DTC is intermittent. Refer to the "Possible Fault Causes" section.			
15	Replace the Wheel Speed Sensor. Did you complete the repair?		Go to Step 24	
16	Repair the open or high resistance in the WSS HI circuit Did you complete the repair?		Go to Step 24	
17	Repair the open or high resistance in the WSS LO circuit. Did you complete the repair?		Go to Step 24	
18	Repair the short to voltage in the WSS HI circuit Did you complete the repair?		Go to Step 24	
19	Repair the short to voltage in the WSS LO circuit. Did you complete the repair?		Go to Step 24	
20	Repair the short to ground in the WSS HI circuit Did you complete the repair?		Go to Step 24	
21	Repair the short to ground in the WSS LO circuit. Did you complete the repair?		Go to Step 24	
22	Repair the short between the 2 circuits. Did you complete the repair?		Go to Step 24	
23	Replace the ECU. Did you complete the repair?		Go to Step 24	
24	Use the scan tool to clear DTC's Does the DTC reset when condition for setting DTC are met?		Go to step 2	System OK

6.15 Diagnostic Code 33 Right Front Wheel Speed Hardware Fault (Passive Sensor)

6.15.1 Circuit Description

As the wheel is rotated, the passive wheel speed sensor produces an AC voltage that increases with wheel speed. The ECU uses the frequency of the AC signal to calculate wheel speed. The speed sensor is connected to the ECU by two wires: WSS HI, and WSS Low. The two wires are typically taped very close ("side by side" , or in a "twisted pair") to reduce electrical noise susceptibility that may cause a DTC to set.

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6.15.2 Conditions for Running Test

Test Monitoring Cycle: Continuous Monitoring

ECU Operating Mode: Normal,DVT

6.15.3 Conditions for Setting Fault Code

The DTC 33 can be set anytime the key is on and the ECU has detected an open, short to ground or a short to battery on the wheel speed circuit.

6.15.4 Fault Actions

DTC 33 is stored in the ECU.

ABS is disabled.

If a DTC is set for the other wheel speed sensor on the same axle, the ECU disables DRP for the duration of the ignition cycle.

Applicable warning lamps are commanded on.

6.15.5 Fault Recovery Conditions

The DTC status and history can be cleared as described in "Clearing Diagnostic Trouble Codes" , Section 3.3.

6.15.6 Possible Fault Causes

Thoroughly inspect the wiring and connectors when diagnosing intermittent DTC's. This will include the following.

- Removal of the protective conduit and inspection to wiring for damage, shorts and contamination.

- Inspection for improperly formed and/or damaged terminals.

- Checking terminal contact (retention force) by using a spare male/female terminal.

- Removal of the terminals from the connectors to check for proper terminal to wire crimp.

If the driver's comments reflect that the ABS Warning Lamp is on only during moist environmental changes (rain, snow, vehicle wash), all wheel speed sensor circuitry should be thoroughly inspected for signs of water intrusion. If the DTC is not current, simulate the effects of water intrusion. Use the following procedure. Spray the suspected area with a 5 percent salt-water solution. Then test-drive the vehicle over various road surfaces such as (bumps, turns, etc) above 24 kph (15 mph). If the DTC sets then replace the suspected harness and or sensor.

When measuring wheel speed sensor resistance insure the vehicle is at room temperature, since resistance will increase with temperature

Failure to perform the previous steps carefully and fully can result in misdiagnosis, unnecessary component replacement and reoccurrence of the DTC.

Possible causes:

1. External or internal wheel speed circuit open.

2. External or internal wheel speed circuit shorted to ground.

3. External or internal wheel speed circuit shorted to power.

4. Defective wheel speed sensor.

5. Faulty ECU.

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6.16 Diagnostic Code 34 Left Rear Wheel Speed Hardware Fault (Passive Sensor)

6.16.1 Circuit Description

As the wheel is rotated, the passive wheel speed sensor produces an AC voltage that increases with wheel speed. The ECU uses the frequency of the AC signal to calculate wheel speed. The speed sensor is connected to the ECU by two wires: WSS HI, and WSS Low. The two wires are typically taped very close (“side by side” , or in a “twisted pair”) to reduce electrical noise susceptibility that may cause a DTC to set.

6.16.2 Conditions for Running Test

Test Monitoring Cycle: Continuous Monitoring

ECU Operating Mode: Normal,DVT

6.16.3 Conditions for Setting Fault Code

The DTC 34 can be set anytime the key is on and the ECU has detected an open, short to ground or a short to battery on the wheel speed circuit.

6.16.4 Fault Actions

DTC 34 is stored in the ECU.

ABS is disabled.

If a DTC is set for the other wheel speed sensor on the same axle, the ECU disables DRP for the duration of the ignition cycle.

Applicable warning lamps are commanded on.

6.16.5 Fault Recovery Conditions

The DTC status and history can be cleared as described in "Clearing Diagnostic Trouble Codes" , Section 3.3.

6.16.6 Possible Fault Causes

Thoroughly inspect the wiring and connectors when diagnosing intermittent DTC’s. This will include the following.

- Removal of the protective conduit and inspection to wiring for damage, shorts and contamination.

- Inspection for improperly formed and/or damaged terminals.

- Checking terminal contact (retention force) by using a spare male/female terminal.

- Removal of the terminals from the connectors to check for proper terminal to wire crimp.

If the driver’s comments reflect that the ABS Warning Lamp is on only during moist environmental changes (rain, snow, vehicle wash), all wheel speed sensor circuitry should be thoroughly inspected for signs of water intrusion. If the DTC is not current, simulate the effects of water intrusion. Use the following procedure. Spray the suspected area with a 5 percent salt-water solution. Then test-drive the vehicle over various road surfaces such as (bumps, turns, etc) above 24 kph (15 mph). If the DTC sets then replace the suspected harness and or sensor.

When measuring wheel speed sensor resistance insure the vehicle is at room temperature, since resistance will increase with temperature

Failure to perform the previous steps carefully and fully can result in misdiagnosis, unnecessary component replacement and reoccurrence of the DTC.

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Possible causes:

1. External or internal wheel speed circuit open.
2. External or internal wheel speed circuit shorted to ground.
3. External or internal wheel speed circuit shorted to power.
4. Defective wheel speed sensor.
5. Faulty ECU.

6.16.7 Investigation and Repair Process

SEE INVESTIGATION ACTION FOR CODE 32

6.17 Diagnostic Code 35 Right Rear Wheel Speed Hardware Fault (Passive Sensor)

6.17.1 Circuit Description

As the wheel is rotated, the passive wheel speed sensor produces an AC voltage that increases with wheel speed. The ECU uses the frequency of the AC signal to calculate wheel speed. The speed sensor is connected to the ECU by two wires: WSS HI, and WSS Low. The two wires are typically taped very close (“side by side” , or in a “twisted pair”) to reduce electrical noise susceptibility that may cause a DTC to set.

6.17.2 Conditions for Running Test

Test Monitoring Cycle: Continuous Monitoring

ECU Operating Mode: Normal,DVT

6.17.3 Conditions for Setting Fault Code

The DTC 35 can be set anytime the key is on and the ECU has detected an open, short to ground or a short to battery on the wheel speed circuit.

6.17.4 Fault Actions

DTC 35 is stored in the ECU.

ABS is disabled.

If a DTC is set for the other wheel speed sensor on the same axle, the ECU disables DRP for the duration of the ignition cycle.

Applicable warning lamps are commanded on.

6.17.5 Fault Recovery Conditions

The DTC status and history can be cleared as described in "Clearing Diagnostic Trouble Codes" , Section 3.3.

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6.17.6 Possible Fault Causes

Thoroughly inspect the wiring and connectors when diagnosing intermittent DTC's. This will include the following.

- Removal of the protective conduit and inspection to wiring for damage, shorts and contamination.

- Inspection for improperly formed and/or damaged terminals.

- Checking terminal contact (retention force) by using a spare male/female terminal.

- Removal of the terminals from the connectors to check for proper terminal to wire crimp.

If the driver's comments reflect that the ABS Warning Lamp is on only during moist environmental changes (rain, snow, vehicle wash), all wheel speed sensor circuitry should be thoroughly inspected for signs of water intrusion. If the DTC is not current, simulate the effects of water intrusion. Use the following procedure. Spray the suspected area with a 5 percent salt-water solution. Then test-drive the vehicle over various road surfaces such as (bumps, turns, etc) above 24 kph (15 mph). If the DTC sets then replace the suspected harness and or sensor.

When measuring wheel speed sensor resistance insure the vehicle is at room temperature, since resistance will increase with temperature

Failure to perform the previous steps carefully and fully can result in misdiagnosis, unnecessary component replacement and reoccurrence of the DTC.

Possible causes:

1. External or internal wheel speed circuit open.

2. External or internal wheel speed circuit shorted to ground.

3. External or internal wheel speed circuit shorted to power.

4. Defective wheel speed sensor.

5. Faulty ECU.

6.17.7 Investigation and Repair Process

SEE INVESTIGATION ACTION FOR CODE 32

6.18 Diagnostic Code 36 Low Voltage Condition

6.18.1 Circuit Description

This circuit is used to monitor the voltage level available to the ECU. If the voltage drops below a certain level, full performance of the system cannot be guaranteed. During ABS operation, there are several current requirements that will cause battery voltage to drop. Because of this, voltage is monitored prior to ABS operation to indicate good charging system condition and also during ABS operation when voltage may drop significantly.

6.18.2 Conditions for Running Test

Test Monitoring Cycle: Continuous Monitoring

ECU Operating Mode: Normal,DVT

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6.18.3 Conditions for Setting Fault Code

DTC 36 will be set when the ECU detects a low voltage condition that could affect ABS system operation, and vehicle speed is above a speed threshold (typically 8 kph). Typical voltage limits to set this fault are 10.5 volts with no ABS activation, or

8.7 volts during ABS activation. Above conditions are present for approximately 1 second. The actual voltage threshold level may vary between vehicle manufacturers.

6.18.4 Fault Actions

DTC 36 is stored in the ECU.

ABS is disabled.

Applicable warning lamps are commanded on.

6.18.5 Fault Recovery Conditions

DTC 36 will be recovered once the voltage returns to an acceptable operating range.

Otherwise, the DTC status and history can be cleared as described in "Clearing Diagnostic Trouble Codes" , Section 3.3.

6.18.6 Possible Fault Causes

Possible causes:

1. Weak or discharged battery.
2. Poor battery terminal contact.
3. Excessive battery draws from factory or after-market equipment (parasitic load).
4. Poor battery ground at block or chassis.
5. Poor terminal contact at ECU.
6. Poor ECU ground connection.
7. Charging system malfunction.
8. ECU malfunction

Thoroughly inspect the wiring and the connectors. Failure to inspect the wiring and the connectors carefully and fully can cause inappropriate replacement of parts.

6.18.7 Investigation and Repair Process

CODE 36 – Low System Voltage				
Step	**Diagnostic Action**	**Expected Value**	**Yes**	**No**
1	Was the Diagnostic Circuit Check Completed?		Go to Step 2	Perform Diagnostic Circuit Check
2	1. Load test the battery. Refer to battery in the service manual. 2. Inspect the charging system. Refer to starter and charging system in the service manual. 3. Perform a parasitic load test.		Go to Step 3	Go to Step 6

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CODE 36 – Low System Voltage				
Step	**Diagnostic Action**	**Expected Value**	**Yes**	**No**
	Did the battery, charging system, and parasitic load test pass?			
3	1. Key off. 2. Disconnect the battery positive and negative terminals. 3. Disconnect the harness from the ECU. 4. Inspect the following for a poor connection. • battery terminal cables • negative cable to block and/or chassis • positive cable to starter solenoid and/or junction block • ECU ignition, battery and ground harness terminals • ECU ground wire to body ground Were all the above connections satisfactory?		Go to Step 4	Go to Step 7
4	1. ECU still disconnected. 2. Battery cables still disconnected. 3. Check resistance from the ECU harness ground terminal to the negative battery cable. Was the resistance within the specified range?	Less than 2 Ohms	Go to Step 5	Go to Step 8
5	1. Reconnect the battery cables. 2. ECU still disconnected. 3. Key on. 4. Check voltage from the ECU harness ignition and battery terminals to the body ground. Was the voltage on both terminals above the specified range?	Battery Voltage	Go to Step 10	Go to Step 9
6	Repair the charging system and/or Recharge/Replace the battery and/or Find and repair the source of the excessive parasitic draw. Did you complete the repair?		Go to Step 11	
7	Repair the terminal and/or connections as needed. Did you complete the repair?		Go to Step 11	
8	Find and repair the source of high resistance between the negative battery cable and the ECU harness connector. Did you complete the repair?		Go to Step 11	
9	Find and repair the source of low voltage to the ECU terminals. Did you complete the repair?		Go to Step 11	
10	Replace the ECU. Did you complete the repair?		Go to Step 11	
11	Use the scan tool to clear DTC's		Go to Step 2	System OK

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CODE 36 – Low System Voltage				
Step	**Diagnostic Action**	**Expected Value**	**Yes**	**No**
	Does the DTC reset when condition for setting DTC are met?			

6.19 Diagnostic Code 37 High Voltage Shutdown Fault

6.19.1 Circuit Description

This circuit is used to monitor the voltage level available to the ECU. If the voltage rises above a certain level, damage to the system may occur.

6.19.2 Conditions for Running Test

Test Monitoring Cycle: Continuous Monitoring

ECU Operating Mode: Normal,DVT

6.19.3 Conditions for Setting Fault Code

DTC 37 can be set if the voltage at the ECU harness battery terminal is greater than 17 volts for 1 second. Note that the voltage threshold may vary slightly between vehicle manufacturers.

6.19.4 Fault Actions

DTC 37 is stored in the ECU.

ABS and DRP are disabled and power is reomoved from the solenoids and pump.

Applicable warning lamps are commanded on.

6.19.5 Fault Recovery Conditions

DTC 37 will be recovered once the voltage returns to an acceptable operating range.

Otherwise, the DTC status and history can be cleared as described in "Clearing Diagnostic Trouble Codes" , Section 3.3.

6.19.6 Possible Fault Causes

Possible causes:

1. Charging system malfunction.
2. Poor connection.
3. ECU malfunction.
4. Improper jump starting of vehicle

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6.19.7 Investigation and Repair Process

CODE 37 – High System Voltage				
Step	**Diagnostic Action**	**Expected Value**	**Yes**	**No**
1	Was the Diagnostic Circuit Check Completed?		Go to Step 2	Perform Diagnostic Circuit Check
2	1. Turn off all accessories. 2. Start the engine. 3. Monitor the voltage across the battery positive and negative terminals with the engine running at 2000 rpm for several seconds. Is the voltage within the specified range?	Less than 17.0 volts	Go to Step 3	Go to Step 4
3	1. Connect a scan tool and select ABS data list. 2. Monitor battery voltage on the ABS data list while running the engine at 2000 rpm for several seconds. Is the voltage within the specified range?	Less than 17.0 volts	Go to Step 5	Go to Step 6
5	Refer to Starter and Charging system diagnosis.			
6	Condition is intermittent, Refer to diagnostic aids and Starter and Charging system diagnosis.			
7	Replace ECU. Did you complete the repair?		Got to Step 7	
8	Use the scan tool to clear DTC's Does the DTC reset when condition for setting DTC are met?		Go to Step 2	System OK

6.20 Diagnostic Code 42 Pump Motor Open Fault

6.20.1 Circuit Description

The pump motor is contained within the Hydraulic Control Unit (HCU) and can not be serviced separately from the HCU. The pump motor voltage is supplied through the battery terminal of the ECU and is controlled by a high-side solid-state driver. The pump motor ground is supplied through the motor ground terminal of the ECU.

6.20.2 Conditions for Running Test

Test Monitoring Cycle: Continuous Monitoring

ECU Operating Mode: Normal,DVT

6.20.3 Conditions for Setting Fault Code

DTC 42 can only be set with the key in the ON position, pump motor is off, and the ECU detected high resistance or an open circuit across the motor.

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6.20.4 Fault Actions

DTC 42 is stored in the ECU.

ABS is disabled.

Applicable warning lamps are commanded on.

6.20.5 Fault Recovery Conditions

The DTC status and history can be cleared as described in "Clearing Diagnostic Trouble Codes" , Section 3.3.

6.20.6 Possible Fault Causes

Possible causes:

1. High resistance/open pump motor to ECU connection.
2. Pump motor windings are open
3. ECU malfunction.

6.20.7 Investigation and Repair Process

CODE 42 – Pump Motor Circuit Open				
Step	**Diagnostic Action**	**Expected Value**	**Yes**	**No**
1	Was the Diagnostic Circuit Check Completed?	-----	Go to Step 2	Perform Diagnostic Circuit Check
2	1. Key off. 2. Disconnect the ECU. 3. Remove the ECU from the HCU. 4. Inspect the ECU to HCU connector for conditions such as damage, corrosion, poor terminal contact, or the presence of brake fluid. Were the terminals and connector OK, and the cavity free of brake fluid, damage and corrosion?	---	Go to Step 3	Go to Step 4
3	Check resistance across the motor terminals of the HCU. Was the pump motor resistance reading within the specified range?	Less than 2 Ohms	Go to Step 5	Go to Step 6
4	1. If damage and/or corrosion are present, replace the ECU and/or the HCU as necessary. 2. If the brake fluid is present, replace both the ECU and the HCU. Did you complete the repair?		Go to Step 7	
5	Replace the ECU. Did you complete the repair?		Go to Step 7	
6	Replace the HCU. Did you complete the repair?		Go to Step 7	
7	Use the scan tool to clear DTC's.		Go to Step 1	System OK

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	Does the DTC reset when condition for setting DTC are met?			

6.21 Diagnostic Code 43 Pump Motor Stalled Fault

6.21.1 Circuit Description

The pump motor is contained within the Hydraulic Control Unit (HCU) and can not be serviced separately from the HCU. The pump motor voltage is supplied through the battery terminal of the ECU and is controlled by a high-side solid-state driver. The pump motor ground is supplied through the motor ground terminal of the ECU.

6.21.2 Conditions for Running Test

Test Monitoring Cycle: Pump On to Off Transition

ECU Operating Mode: Normal,DVT

6.21.3 Conditions for Setting Fault Code

The pump motor continues to rotate briefly after activation creating a feedback voltage. The ECU sets DTC 43 if the measured feedback voltage indicates a binding or stalled pump motor.

6.21.4 Fault Actions

DTC 43 is stored in the ECU.

ABS is disabled.

Applicable warning lamps are commanded on.

6.21.5 Fault Recovery Conditions

The DTC status and history can be cleared as described in "Clearing Diagnostic Trouble Codes" , Section 3.3.

6.21.6 Possible Fault Causes

Possible causes:

1. Pump motor windings have high resistance.
2. Pump motor is seized.
3. Pump motor turns too slowly (may be due to corroded motor or contaminated pump circuit).
4. ECU malfunction.

6.21.7 Investigation and Repair Process

CODE 43 – Pump Motor Stalled Fault				
Step	**Diagnostic Action**	**Expected Value**	**Yes**	**No**
1	Was the Diagnostic Circuit Check Completed?	-----	Go to Step 2	Perform

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CODE 43 – Pump Motor Stalled Fault				
Step	**Diagnostic Action**	**Expected Value**	**Yes**	**No**
				Diagnostic Circuit Check.
2	1. Use the scan tool in order to clear the DTC's. 2. Cycle the ignition to the OFF position. 3. Start the engine. 4. In park or neutral, release the brake. 5. Turn OFF the engine. Does the DTC reset?		Go to Step 3	Go to Testing for Intermittent Conditions and Poor Connections
3	1. Remove the ECU from the HCU. 2. Inspect the ECU to HCU connector for conditions that could cause an intermittent, such as damage, corrosion, poor terminal contact, or presence of brake fluid. Is the connector OK and the cavity free of brake fluid?		Go to Step 5	Go to Step 4
4	1. If connector corrosion or damage is evident, replace HCU and/or ECU as necessary. 2. If brake fluid is present, replace both HCU and ECU. Did you complete the repair?		Go to Step 8	
5	1. Connect the ECU harness to the ECU with the HCU still separated. 2. Connect a test lamp between the pump motor terminals on the ECU. 3. Cycle the ignition to the OFF position. 4. Start the engine. 5. In park or neutral, release the brake. Does the test lamp illuminate?		Go to Step 7	Go to Step 6
6	Replace the ECU. Did you complete the repair?		Go to Step 8	
7	Replace the HCU. Did you complete the repair?		Go to Step 8	
8	Use the scan tool to clear the DTC's. Does the DTC reset when conditions for setting DTC are met?		Go to Step 2	System OK

6.22 Diagnostic Code 48 DRP Failed

6.22.1 Circuit Description

The dynamic rear proportioning (DRP) system is a control system that replaces the hydraulic proportioning function of the mechanical proportioning valve in the base brake system. The DRP control system is part of the operating software in the ECU. DRP uses active control with the existing ABS in order to regulate the vehicle's rear brake pressure.

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6.22.2 Conditions for Running Test

Test Monitoring Cycle: Continuous Monitoring

ECU Operating Mode: Normal,DVT

6.22.3 Conditions for Setting Fault Code

DTC 48 will set if one of the following conditions exists:

1. A DTC that fails DRP is set.
2. Two wheel speed sensor DTC's on the same axle are set.

6.22.4 Fault Actions

The red brake warning lamp is commanded on.

6.22.5 Fault Recovery Conditions

The DTC status and history can be cleared as described in "Clearing Diagnostic Trouble Codes" , Section 3.3.

6.22.6 Possible Fault Causes

This DTC is for information only. As an aid to the technician, this DTC indicates that another DTC exists that caused DRP to fail.

6.22.7 Investigation and Repair Process

CODE 48 – DRP Failed				
Step	**Diagnostic Action**	**Expected Value**	**Yes**	**No**
1	Was the Diagnostic Circuit Check Completed?	-----	Go to Step 2	Perform the Diagnostic Circuit Check.
2	1. Install a scan tool. 2. Turn ON the ignition, with the engine OFF. 3. Select the display DTC's function on the scan tool for the ECU. Does the scan tool display any ABS/TCS/VSES DTC's?		Go to Diagnostic Trouble Code (DTC) List - Vehicle	Go to Step 3
3	1. Use the scan tool to clear the DTC's. 2. Operate the vehicle within the Conditions for Running the DTC as specified in the supporting text. Does the DTC reset?		Go to Step 2	Go to Testing for Intermittent Conditions and Poor Connections

6.23 Diagnostic Code 55 ECU Internal Fault

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6.23.1 Circuit Description

This DTC identifies a possible malfunction within the ECU. This DTC has a subset of ECU fault codes that indicate additional details regarding the ECU malfunction.

6.23.2 Conditions for Running Test

Test Monitoring Cycle: Continuous Monitoring

ECU Operating Mode: Normal,DVT

6.23.3 Conditions for Setting Fault Code

DTC 55 will set when a possible internal component/microprocessor problem exists.

6.23.4 Fault Actions

DTC 55 is stored.

The solenoid relay opens, removing power from the pump motor and the solenoids.

ABS and DRP are disabled.

Applicable warning lamps are commaned on.

6.23.5 Fault Recovery Conditions

The DTC status and history can be cleared as described in "Clearing Diagnostic Trouble Codes" , Section 3.3.

6.23.6 Possible Fault Causes

1. Power or Ground connections

2. Faulty ECU

When CODE 55 is displayed on the scan tool, it may be followed by additional characters , which should be documented along with any other DTC's that may be displayed.

Repair low voltage, drivability, or other electrical complaints first, prior to performing CODE 55 Investigation and Repair Process trouble table.

Make sure the integrity of the connection between the ECU and the HCU is secure, tight and free of corrosion, leaks and/or damage.

6.23.7 Investigation and Repair Process

CODE 55 – ECU Internal Fault				
Step	**Diagnostic Action**	**Expected Value**	**Yes**	**No**
1	Was the Diagnostic Circuit Check Completed?		Go to Step 2	Perform Diagnostic Circuit Check
2	1. Install scan tool. 2. Turn ignition ON, with engine OFF. 3. Using scan tool, observe DTC information. Are any DTC's set in current or history data other		Go to Step 5	Go to Step 3

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	than DTC CODE 55?			
3	1. Key off 2. Disconnect the ECU harness from the ECU. 3. Check the connectors for damage, corrosion, and terminal contact. Were any problems found?		Go to Step 6	Go to Step 4
4	Replace the ECU. Did you complete the repair?		Go to Step 7	
5	Perform the applicable DTC diagnostic for the other DTC's.			
6	Repair as needed. Did you complete the repair?		Go to Step 7	
7	Use the scan tool to clear DTC's. Does the DTC reset when condition for setting DTC are met?		Go to Step 2	System OK

6.24 Diagnostic Code 56 System Enable Relay Shorted On

6.24.1 Circuit Description

This DTC identifies a possible malfunction within the ECU. When the ECU relay is activated (turned on), voltage is supplied to the valve solenoids and pump motor.

6.24.2 Conditions for Running Test

Test Monitoring Cycle: Continuous Monitoring,ECU Power On Initialization

ECU Operating Mode: Normal,DVT

6.24.3 Conditions for Setting Fault Code

DTC 56 will set when the ECU detects a relay malfunction that prevents power from being switched off to the ABS system when the system is commanded off. A minimum battery voltage must be present (typically greater than 9.25 Volts).

6.24.4 Fault Actions

DTC 56 is stored in the ECU.

No other action is taken.

6.24.5 Fault Recovery Conditions

The DTC status and history can be cleared as described in "Clearing Diagnostic Trouble Codes" , Section 3.3.

6.24.6 Possible Fault Causes

Repair low voltage, drivability, or other electrical complaints first, prior to performing CODE 56 trouble tree.

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Make sure the integrity of the connection between the ECU and the HCU is secure, tight and free of corrosion, leaks and/or damage.

Possible causes:

1. Vehicle battery or charging system malfunction.
2. High resistance in ECU power and ground circuits.
3. ECU internal malfunction.

6.24.7 Investigation and Repair Process

CODE 56 – System Relay Shorted On				
Step	**Diagnostic Action**	**Expected Value**	**Yes**	**No**
1	Was the Diagnostic Circuit Check Completed?		Go to Step 2	Perform Diagnostic Circuit Check
2	1. Install scan tool. 2. Turn ignition ON, with engine OFF. 3. Using scan tool, observe DTC information. Are any DTC's set in current or history data other than CODE 56?		Go to Step 5	Go to Step 3
3	1. Key off. 2. Disconnect the ECU harness from the ECU. 3. Check the connectors for damage, corrosion, and terminal contact. Inspect ABS system grounds Were any problems found?		Go to Step 6	Go to Step 4
4	Replace the ECU. Did you complete the repair?		Go to Step 7	
5	Perform the applicable diagnostic for the other DTC's.			
6	Repair as needed. Did you complete the repair?		Go to Step 7	
7	Use the scan tool to clear DTC's. Does the DTC reset when condition for setting DTC are met?		Go to Step 2	System OK

6.25 Diagnostic Code 91 Brake Pedal Not Applied with Decel Fault

6.25.1 Circuit Description

The ECU monitors the brake apply sensor or brake switch input state for proper system operation. The brake apply sensor or brake switch signal is supplied by the vehicle. The ECU recognizes three states for the brake apply sensor or brake switch input: low, high, and open.

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6.25.2 Conditions for Running Test

Test Monitoring Cycle: Continuous Monitoring

ECU Operating Mode: Normal,DVT

6.25.3 Conditions for Setting Fault Code

DTC 91 will be set when the following conditions are met:

1. Ignition is present
2. Brake pedal is in a not applied state
3. There is no active brake control underway
4. Vehicle speed exceeds 24 kph
5. The vehicle deceleration rate exceeds 11.5 kph/sec for 2 consecutive 1-second samples.
6. The above 5 conditions are met 2 times.

6.25.4 Fault Actions

DTC 91 is stored in the ECU.

ABS remains functional.

6.25.5 Fault Recovery Conditions

This DTC 91 will recover if the brake pedal state indicates applied during a decel event.

Otherwise, the DTC status and history can be cleared as described in "Clearing Diagnostic Trouble Codes" , Section 3.3.

6.25.6 Possible Fault Causes

Possible causes:

1. Output of brake apply sensor or brake switch shorted below brake on voltage.
2. Internal brake apply sensor or switch malfunction.

6.25.7 Investigation and Repair Process

CODE 91 – Brake Pedal Not Applied with Decel CODE 93 – Brake Pedal Not Applied with Decel on Previous Ignition Cycle				
Step	**Diagnostic Action**	**Expected Value**	**Yes**	**No**
1	Was the Diagnostic Circuit Check completed?		Go to Step 2	Perform Diagnostic Circuit Check
2	Depress the brake pedal. Are any brake light bulbs inoperative, including the CHMSL (Center High Mounted Stop Lamp) or 3rd Brake Light?		Go to Step 5	Go to Step 3
3	1. Key off.	Less than	Go to Step 4	Go to Step 6

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	2. Disconnect the ECU harness from the ECU. 3. Install the universal pin out box inline between the ECU and the ECU harness using the applicable adapter cable. 4. Check voltage from the brake input terminal of the universal pin out box to either the ground terminal of the universal pin out box or to body ground. Is the voltage within the specified range?	2 volts		
4	Replace the ECU. Did you complete the repair?		Go to Step 7	
5	Remove and inspect bulbs/sockets that do not illuminate when brake pedal is depressed. Replace bulbs/sockets/and repair grounds as necessary. Did you complete the repair?		Go to Step 7	
6	Inspect all rear brake light grounds/bulbs/socks for poor connections/high resistance, which would not allow the 5-volt reference signal from the ECU to be pulled low (under 2 volts). Did you complete the repair?		Go to Step 7	
7	Use the scan tool to clear DTC's. Does the DTC reset when condition for setting DTC are met?		Go to Step 2	System OK

6.26 Diagnostic Code 93 Brake Pedal Not Applied with Decel on Previous Ignition Cycle

6.26.1 Circuit Description

The ECU monitors the brake apply sensor or brake switch input state for proper system operation. The brake apply sensor or brake switch signal is supplied by the vehicle. The ECU recognizes three states for the brake apply sensor or brake switch input: low, high, and open.

6.26.2 Conditions for Running Test

Test Monitoring Cycle: Continuous Monitoring

ECU Operating Mode: Normal,DVT

6.26.3 Conditions for Setting Fault Code

DTC 93 will set when DTC 91 was current at the end of the previous ignition cycle.

6.26.4 Fault Actions

DTC 93 is stored in the ECU.

ABS remains functional.

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6.26.5 Fault Recovery Conditions

This DTC 93 will recover if the brake pedal state indicates applied during a decel event.

Otherwise, the DTC status and history can be cleared as described in "Clearing Diagnostic Trouble Codes" , Section 3.3.

6.26.6 Possible Fault Causes

Possible causes:

1. Output of brake apply sensor or brake switch shorted below brake on voltage.

2. Internal brake apply sensor or switch malfunction.

6.26.7 Investigation and Repair Process

SEE INVESTIGATION ACTION FOR CODE 91

6.27 Diagnostic Code 94 Brake Pedal Always Applied without Decel Fault

6.27.1 Circuit Description

The ECU monitors the brake apply sensor or brake switch input state for proper system operation. The brake apply sensor or brake switch signal is supplied by the vehicle. The ECU recognizes three states for the brake apply sensor or brake switch input, low, high and open.

6.27.2 Conditions for Running Test

Test Monitoring Cycle: Continuous Monitoring

ECU Operating Mode: Normal,DVT

6.27.3 Conditions for Setting Fault Code

DTC 94 will set when the following conditions are met:

1. The brake pedal is sensed as applied

2. Vehicle speed exceeds 40 kph

3. Vehicle acceleration rate exceeds 8 kph/sec

4. The 3 above conditions are present for 2 or more seconds.

6.27.4 Fault Actions

DTC 94 is stored in the ECU.

ABS remains functional

6.27.5 Fault Recovery Conditions

DTC 94 can be recovered if the brake switch is determined to be in the 'not applied' position.

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Otherwise, the DTC status and history can be cleared as described in "Clearing Diagnostic Trouble Codes" , Section 3.3.

6.27.6 Possible Fault Causes

Possible causes:

1. Output of brake apply sensor or brake switch shorted above brake on voltage
2. The driver is a “two-footed” driver
3. Internal brake apply sensor or brake switch malfunction
4. ECU internal malfunction.

6.27.7 Investigation and Repair Process

CODE 94 – Brake Pedal Always Applied without Decel Fault CODE 127 - Brake Pedal Always Applied without Decel on Previous Ignition Cycle				
Step	**Diagnostic Action**	**Expected Value**	**Yes**	**No**
1	Was the Diagnostic Circuit Check completed?		Go to Step 2	Perform Diagnostic Circuit Check
2	Depress the brake pedal. Are any brake light bulbs inoperative, including the CHMSL (Center High Mounted Stop Lamp) or 3rd Brake Light?		Go to Step 5	Go to Step 3
3	1. Key off. 2. Disconnect the ECU harness from the ECU. 3. Install the universal pin out box inline between the ECU and the ECU harness using the applicable adapter cable. 4. Check voltage from the brake input terminal of the universal pin out box to either the ground terminal of the universal pin out box or to body ground. Is the voltage within the specified range?	Less than 2 volts	Go to Step 4	Go to Step 6
4	Replace the ECU. Did you complete the repair?		Go to Step 7	
5	Remove and inspect bulbs/sockets that do not illuminate when brake pedal is depressed. Replace bulbs/sockets/and repair grounds as necessary. Did you complete the repair?		Go to Step 7	
6	Inspect all rear brake light grounds/bulbs/socks for poor connections/high resistance, which would not allow the 5-volt reference signal from the ECU to be pulled low (under 2 volts). Did you complete the repair?		Go to Step 7	
7	Use the scan tool to clear DTC’s. Does the DTC reset when condition for setting DTC		Got to Step 2	System OK

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	are met?			

6.28 Diagnostic Code 95 Brake Switch / Lamp Circuit Open Fault

6.28.1 Circuit Description

This DTC is used to identify open stop lamp switch circuitry that prevents the stop lamp switch input to the ECU from changing states when the brake is applied. The ECU sends a low current 5 volt sense voltage on brake switch input line to the rear brake light bulbs. If the rear brake light circuit is intact, this voltage will be pulled low (under 1 volt) to ground through the rear brake light bulbs. When the brake light switch is depressed, battery voltage will be supplied to the rear brake lights and to the ECU, indicating brake lights are on. If the voltage on the brake switch input line voltage is between 2 to 5 volts for 2 seconds, the DTC will set.

6.28.2 Conditions for Running Test

Test Monitoring Cycle: Continuous Monitoring

ECU Operating Mode: Normal,DVT

6.28.3 Conditions for Setting Fault Code

DTC 95 can be set after initialization. If the voltage on the brake switch input line voltage is between 2 to 5 volts for 2 seconds, the DTC will set.

6.28.4 Fault Actions

DTC 95 is stored in the ECU.

ABS remains functional.

6.28.5 Fault Recovery Conditions

The DTC status and history can be cleared as described in "Clearing Diagnostic Trouble Codes" , Section 3.3.

6.28.6 Possible Fault Causes

Possible causes:

1. One or more stop lamp bulb filaments open.
2. One or more stop lamp bulb and/or socket connections loose.
3. One or more stop lamp grounds loose or open.
4. Brake switch input terminal connection poor or open.
5. Brake switch input circuit open.

6.28.7 Investigation and Repair Process

CODE 95 – Brake Switch Circuit Open (Stop Lamp Circuit Fault)

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Step	Diagnostic Action	Expected Value	Yes	No
1	Was the Diagnostic Circuit Check completed?		Go to Step 2	Perform Diagnostic Circuit Check
2	Depress the brake pedal. Are any brake light bulbs inoperative, including the CHMSL (Center High Mounted Stop Lamp) or 3rd Brake Light?		Go to Step 5	Go to Step 3
3	1. Key off. 2. Disconnect the ECU harness from the ECU. 3. Install the universal pin out box inline between the ECU and the ECU harness using the applicable adapter cable. 4. Check voltage from the brake input terminal of the universal pin out box to either the ground terminal of the universal pin out box or to body ground. Is the voltage within the specified range?	Less than 2 volts	Go to Step 4	Go to Step 6
4	Replace the ECU. Did you complete the repair?		Go to Step 7	
6	Remove and inspect bulbs/sockets that do not illuminate when brake pedal is depressed. Replace bulbs/sockets/and repair grounds as necessary. Did you complete the repair?		Go to Step 7	
7	Inspect all rear brake light grounds/bulbs/socks for poor connections/high resistance, which would not allow the 5-volt reference signal from the ECU to be pulled low (under 2 volts). Did you complete the repair?		Go to Step 7	
8	Use the scan tool to clear DTC's. Does the DTC reset when condition for setting DTC are met?		Got to Step 2	System OK

6.29 Diagnostic Code 121 LF or RF or LR or RR ECU Apply Solenoid Control Fault

6.29.1 Circuit Description

Apply and release coils are an integral part of the ECU. The coils are supplied with battery power when the ignition is in the ON position and the solenoid relay is closed. The ECU controls the solenoids by grounding the respective coil circuit when necessary.

6.29.2 Conditions for Running Test

Test Monitoring Cycle: Modulator Initialization

ECU Operating Mode: Normal,DVT

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6.29.3 Conditions for Setting Fault Code

DTC 121 will set when a front or rear apply solenoid action commanded by the software does not match the corresponding feedback signal from the ECU hardware. This test will not run if other solenoid diagnostic codes are present.

6.29.4 Fault Actions

DTC 121 is stored in the ECU.

The solenoid relay opens removing power from the solenoids.

ABS and DRP are disabled

Applicable warning lamps are commanded on.

6.29.5 Fault Recovery Conditions

The DTC status and history can be cleared as described in "Clearing Diagnostic Trouble Codes" , Section 3.3.

6.29.6 Possible Fault Causes

Possible causes:

1. Internal ECU fault.

6.29.7 Investigation and Repair Process

CODE 121 and CODE 122 ECU Solenoid Control Faults				
Step	**Diagnostic Action**	**Expected Value**	**Yes**	**No**
1	Was the Diagnostic Circuit Check Completed?		Go to Step 2	Perform Diagnostic Circuit Check
2	1. Key off. 2. Inspect the ECU and HCU for physical damage. Is any physical damage noted?		Go to Step 5	Go to Step 3
3	1. Disconnect the ECU harness from the ECU. 2. Remove the ECU from the HCU. 3. Inspect the ECU and the HCU cavity for fluid leaks, corrosion and/or damage. Was any fluid, damage or corrosion found?		Go to Step 6	Go to Step 4
4	1. Install Scan Tool. 2. Turn ignition to ON position, with engine OFF. 3. Clear DTC using scan tool. 4. Operate vehicle within conditions for running the DTC. Does the DTC reset as current DTC?		Go to Step 7	Intermittent problem Go to Step 1
5	Replace the damaged components. Did you complete the repair?		Go to Step 8	
6	Replace both the ECU and the HCU.		Go to Step 8	

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	Did you complete the repair?			
7	Replace the ECU. Did you complete the repair?		Got to Step 8	
8	Use the scan tool to clear DTC's Does the DTC reset when condition for setting DTC are met?		Go to Step 2	System OK

6.30 Diagnostic Code 122 LF or RF or LR or RR ECU Release Solenoid Control Fault

6.30.1 Circuit Description

Apply and release coils are an integral part of the ECU. The coils are supplied with battery power when the ignition is in the ON position and the solenoid relay is closed. The ECU controls the solenoids by grounding the respective coil circuit when necessary.

6.30.2 Conditions for Running Test

Test Monitoring Cycle: Modulator Initialization

ECU Operating Mode: Normal,DVT

6.30.3 Conditions for Setting Fault Code

DTC 122 will set when a front or rear release solenoid action commanded by the software does not match the corresponding feedback signal from the ECU hardware. This test will not run if other solenoid diagnostic codes are present.

6.30.4 Fault Actions

DTC 122 is stored in the ECU.

The solenoid relay opens removing power from the solenoids.

ABS and DRP are disabled

Applicable warning lamps are commanded on.

6.30.5 Fault Recovery Conditions

The DTC status and history can be cleared as described in "Clearing Diagnostic Trouble Codes" , Section 3.3.

6.30.6 Possible Fault Causes

Possible causes:

1. Internal ECU fault.

6.30.7 Investigation and Repair Process

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SEE INVESTIGATION ACTION FOR CODE 121

6.31 Diagnostic Code 127 Brake Pedal Always Applied Without Decel on Previous Ignition Cycle

6.31.1 Circuit Description

The ECU monitors the brake apply sensor or brake switch input state for proper system operation. The brake apply sensor or brake switch signal is supplied by the vehicle. The ECU recognizes three states for the brake apply sensor or brake switch input: low, high, and open.

The purpose of this code is to latch the fail action of the "Brake Pedal Always Applied Without Decel" (DTC 94) fault. This test exists because the "Brake Pedal Always Applied Without Decel" test can not be passed until the vehicle has been driven in a particular manner.

6.31.2 Conditions for Running Test

Test Monitoring Cycle: Continuous Monitoring

ECU Operating Mode: Normal,DVT

6.31.3 Conditions for Setting Fault Code

DTC 127 sets when the "Brake Pedal Always Applied Without Decel" fault (DTC 94) was set failed at the end of the previous ignition cycle.

6.31.4 Fault Actions

DTC 127 is stored in the ECU.

ABS remains functional

6.31.5 Fault Recovery Conditions

DTC 127 will recover when DTC 94 has recovered.

Otherwise, the DTC status and history can be cleared as described in "Clearing Diagnostic Trouble Codes" , Section 3.3.

6.31.6 Possible Fault Causes

Possible causes:

1. Output of brake apply sensor or brake switch shorted above brake on voltage

2. The driver is a “two-footed” driver

3. Internal brake apply sensor or brake switch malfunction 4.ECU internal malfunction.

6.31.7 Investigation and Repair Process

SEE INVESTIGATION ACTION FOR CODE 94

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6.32 Diagnostic Code 134 ECU Ground High Resistance Fault

6.32.1 Circuit Description

The ABS ECU ground is external to the ABS ECU. The ground is monitored by the ECU by comparing motor ground and ECU ground.

6.32.2 Conditions for Setting Fault Code

ECU has detected voltage greater than 1 volt between ECU ground and motor ground. Note: Voltage threshold may vary between vehicle manufacturers.

6.32.3 Fault Actions

DTC 134 is stored in the ECU.

ABS is disabled.

Applicable warning lamps are commanded on.

6.32.4 Fault Recovery Conditions

The DTC status and history can be cleared as described in "Clearing Diagnostic Trouble Codes" , Section 3.3.

6.32.5 Possible Fault Causes

1. Poor connection at the ABS ECU electrical connector.
2. Poor chassis ground.
3. Open / high resistance in ABS wiring
4. Open/ high resistance in vehicle chassis wiring, or battery connections
5. Aftermarket accessories

6.32.6 Investigation and Repair Process

CODE 134 ECU Ground High Resistance Fault				
Step	**Diagnostic Action**	**Expected Value**	**Yes**	**No**
1	Was the Diagnostic Circuit Check Completed?		Go to step 2	Perform Diagnostic Circuit Check
2	Install Scan Tool, an verify code is current		Go to step 3	Go to step 3 if all ok attempt to duplicate code setting e
3	Locate and inspect the ABS ECU ground location, vehicle battery connections, ABS wiring, for corroded or damaged wire terminals, aftermarket or large electrical load devices on same ground location.	Electrical connections and ECU ground location is clean and tight	Go to step 4	Go to step 7
4	Install break out box ABS ECU connected. Turn power on. Monitor voltage on ABS ECU ground /power return pin.	<1 volt ?	Go to step 5	Go to step 7

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	Is voltage less than one volt?			
5	Disconnect ABS ECU and disconnect battery. Use DVOM to Ohm test ECU ground terminal to vehicle negative battery cable.	Less than 2 ohms	Go to step 6	Go to Step 7
6	Replace ABS ECU and retest			
7	Inspect and repair ECU or vehicle chassis ground circuit			

6.33 Diagnostic Code 147 CAN Bus Malfunction

6.33.1 Circuit Description

Modules connected to the CAN serial data circuit monitor serial data communications on the CAN network during normal vehicle operation. Operating information and commands are exchanged among the modules. Each module on CAN network maintains a transmit error counter (TEC) and a receive error counter (REC). The counter values increase with detected errors and will decrease with error-free messages. If the TEC value exceeds 255 the controller removes itself from the network and a DTC CODE 147 will be set.

6.33.2 Conditions for Running Test

Test Monitoring Cycle: Continuous Monitoring

ECU Operating Mode: Normal,DVT

6.33.3 Conditions for Setting Fault Code

DTC 147 will be set when the handler informs the application that the CAN hardware has entered the bus off state (i.e. TEC > 255)

6.33.4 Fault Actions

DTC 147 is stored in the ECU.

ABS remains functional

Applicable warning lamps are commanded on.

6.33.5 Fault Recovery Conditions

The DTC status and history can be cleared as described in "Clearing Diagnostic Trouble Codes" , Section 3.3.

6.33.6 Possible Fault Causes

Possible causes:

1. CAN bus is open
2. CAN bus is shorted to ground
3. CAN bus is shorted to battery
4. CAN bus high and low wires shorted together

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5. ECU internal malfunction

6.34 Diagnostic Code 151 Left Front Wheel Release Too Long

6.34.1 Circuit Description

Apply and release coils are an integral part of the ECU. The coils are supplied with battery power when the ignition is in the ON position and the solenoid relay is closed. The ECU controls the solenoids by grounding the respective coil circuit when necessary.

The ECU monitors the On/Off state of each solenoid and recognizes when the ABS is in pressure decrease too long. This fault indicates that the ECU was unable to decrease brake pressure enough to a wheel to prevent excessive wheel slip.

6.34.2 Conditions for Running Test

Test Monitoring Cycle: ABS Events

ECU Operating Mode: Normal

6.34.3 Conditions for Setting Fault Code

This test is executed whenever ABS is active.

DTC 151 sets when the following criteria are met:

1. ABS is commanding a pressure release from the Left Front wheel.
2. The Left Front wheel speed is below 5 kph for 1.00 seconds.
3. The parking brake is not applied (used only if parking brake signal is available).

6.34.4 Fault Actions

DTC 151 is stored in the ECU.

ABS is disabled.

Applicable warning lamps are commanded on.

6.34.5 Fault Recovery Conditions

The DTC status and history can be cleared as described in "Clearing Diagnostic Trouble Codes" , Section 3.3.

6.34.6 Possible Fault Causes

Possible causes:

1. A contaminated hydraulic unit.
2. An intermittent wheel speed sensor.
3. A sticking solenoid.
4. Excessive brake drag or high resistance in base brake system.
5. Suspension system irregularities.
6. Severe driving surface irregularity allowing one or more wheels to lift off of the ground.

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6.34.7 Investigation and Repair Process

CODE 151, CODE 152, CODE 153, CODE 154 – Wheel Release Too Long Fault				
Step	**Diagnostic Action**	**Expected Value**	**Yes**	**No**
1	Was the Diagnostic Circuit Check Completed?		Go to Step 2	Perform Diagnostic Circuit Check
2	1. Install a scan tool. 2. Turn ON the ignition, with the engine OFF. 3. With a scan tool, observe the DTC Information parameter in the ABS Diagnostic Trouble Codes (DTC's). Does the scan tool display any other ABS DTC's related to wheel speed sensor or solenoid valve operation?		Go to appropriate DTC flow chart	Go to Step 3
3	With a scan tool, monitor all of the wheel speed sensors in the ABS Data Display while decelerating the vehicle from 56 to 0 km/h (35 to 0 mph). Do any of the wheel speeds indicate erratic or intermittent operation?		Go to Diagnostic Trouble Code (DTC) List for Excessive Wheel Speed Variation for the affected wheel	Go to Step 4
4	Inspect the base brake system for the following conditions: • Brake fluid contamination. • Excessive brake drag. • Suspension system irregularities. • Brake lines routing for any pinched or kinked lines • Brake lines to ABS unit reversed or not installed into proper ports. Did you find and correct the condition?		Go to Step 7	Go to Step 5
5	1. Use the scan tool in order to clear the DTC's 2. Apply force to the brake pedal with your foot. 3. With the scan tool, activate the appropriate release valve. Does the brake pedal drop?		Intermittent condition – Refer to Diagnostic Aids.	Go to Step 6.
6	Replace the HCU. Did you complete the procedure?		Go to Step 7	
7	1. Use the scan tool to clear the DTC's. 2. Test drive vehicle, perform an ABS braking event. Does the DTC reset?		Go to Step 2	System OK

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6.35 Diagnostic Code 152 Right Front Wheel Release Too Long

6.35.1 Circuit Description

Apply and release coils are an integral part of the ECU. The coils are supplied with battery power when the ignition is in the ON position and the solenoid relay is closed. The ECU controls the solenoids by grounding the respective coil circuit when necessary.

6.35.2 Conditions for Running Test

Test Monitoring Cycle: ABS Events

ECU Operating Mode: Normal

6.35.3 Conditions for Setting Fault Code

This test is executed whenever ABS is active.

DTC 152 sets when the following criteria are met:

1. ABS is commanding a pressure release from the Right Front wheel.
2. The Right Front wheel speed is below 5 kph for 1.00 seconds.
3. The parking brake is not applied (used only if parking brake signal is available).

6.35.4 Fault Actions

DTC 152 is stored in the ECU.

ABS is disabled.

Applicable warning lamps are commanded on.

6.35.5 Fault Recovery Conditions

The DTC status and history can be cleared as described in "Clearing Diagnostic Trouble Codes" , Section 3.3.

6.35.6 Possible Fault Causes

Possible causes:

1. A contaminated hydraulic unit.
2. An intermittent wheel speed sensor.
3. A sticking solenoid.
4. Excessive brake drag or high resistance in base brake system.
5. Suspension system irregularities.
6. Severe driving surface irregularity allowing one or more wheels to lift off of the ground.

6.35.7 Investigation and Repair Process

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SEE INVESTIGATION ACTION FOR CODE 151

6.36 Diagnostic Code 153 Left Rear Wheel Release Too Long

6.36.1 Circuit Description

Apply and release coils are an integral part of the ECU. The coils are supplied with battery power when the ignition is in the ON position and the solenoid relay is closed. The ECU controls the solenoids by grounding the respective coil circuit when necessary.

6.36.2 Conditions for Running Test

Test Monitoring Cycle: ABS Events

ECU Operating Mode: Normal

6.36.3 Conditions for Setting Fault Code

This test is executed whenever ABS is active.

DTC 153 sets when the following criteria are met:

1. ABS is commanding a pressure release from the Left rear wheel.
2. The Left rear wheel speed is below 5 kph for 1.00 seconds.
3. The parking brake is not applied (used only if parking brake signal is available).

6.36.4 Fault Actions

DTC 153 is stored in the ECU.

ABS is disabled.

Applicable warning lamps are commanded on .

6.36.5 Fault Recovery Conditions

The DTC status and history can be cleared as described in "Clearing Diagnostic Trouble Codes" , Section 3.3.

6.36.6 Possible Fault Causes

Possible causes:

1. A contaminated hydraulic unit.
2. An intermittent wheel speed sensor.
3. A sticking solenoid.
4. Excessive brake drag or high resistance in base brake system.
5. Suspension system irregularities.
6. Severe driving surface irregularity allowing one or more wheels to lift off of the ground.

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6.36.7 Investigation and Repair Process

SEE INVESTIGATION ACTION FOR CODE 151

6.37 Diagnostic Code 154 Right Rear Wheel Release Too Long

6.37.1 Circuit Description

Apply and release coils are an integral part of the ECU. The coils are supplied with battery power when the ignition is in the ON position and the solenoid relay is closed. The ECU controls the solenoids by grounding the respective coil circuit when necessary.

6.37.2 Conditions for Running Test

Test Monitoring Cycle: ABS Events

ECU Operating Mode: Normal

6.37.3 Conditions for Setting Fault Code

This test is executed whenever ABS is active.

DTC 154 sets when the following criteria are met:

1. ABS is commanding a pressure release from the Right rear wheel.
2. The Right rear wheel speed is below 5 kph for 1.00 seconds.
3. The parking brake is not applied (used only if parking brake signal is available).

6.37.4 Fault Actions

DTC 154 is stored in the ECU.

ABS is disabled.

Applicable warning lamps are commanded on.

6.37.5 Fault Recovery Conditions

The DTC status and history can be cleared as described in "Clearing Diagnostic Trouble Codes" , Section 3.3.

6.37.6 Possible Fault Causes

Possible causes:

1. A contaminated hydraulic unit.
2. An intermittent wheel speed sensor.
3. A sticking solenoid.
4. Excessive brake drag or high resistance in base brake system.
5. Suspension system irregularities.

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6. Severe driving surface irregularity allowing one or more wheels to lift off of the ground.

6.37.7 Investigation and Repair Process

SEE INVESTIGATION ACTION FOR CODE 151

6.38 Diagnostic Code 166 Longitudinal Accelerometer Sensor Out of Range

6.38.1 Circuit Description

The test is only applicable to All Wheel Drive vehicles that are equipped with a longitudinal accelerometer. The longitudinal accelerometer is a discrete sensor that receives power through the vehicle ignition circuitry.

6.38.2 Conditions for Running Test

Test Monitoring Cycle: Continuous Monitoring

ECU Operating Mode: Normal,DVT

6.38.3 Conditions for Setting Fault Code

DTC 166 will set if one of the following conditions exists:

The longitudinal sensor input voltage is less than 0.18 volts for 30 milliseconds.

or

The longitudinal sensor input voltage is greater than 4.84 volts for 30 milliseconds.

6.38.4 Fault Actions

DTC 166 is stored in the ECU.

ABS remains functional.

6.38.5 Fault Recovery Conditions

DTC 166 may recover if the voltage value returns to an acceptable range .

Otherwise, the DTC status and history can be cleared as described in "Clearing Diagnostic Trouble Codes" , Section 3.3.

6.38.6 Possible Fault Causes

Possible causes:

1. Open, short to ground, or short to voltage on signal or voltage supply circuit.
2. Sensor internal failure.
3. ECU internal malfunction.

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6.38.7 Investigation and Repair Process

CODE 166, CODE 167 Longitudinal Accelerometer Fault				
STEP	**DIAGNOSTIC ACTION**	**EXPECTED VALUE**	**YES**	**NO**
1	Was the diagnostic circuit check performed?		Go to Step 2	Perform Diagnostic Circuit Check
2	1. Install a scan tool. 2. Turn ON the ignition, with the engine OFF. 3. With a scan tool, observe the longitudinal accelerometer input parameter in the data list. Does the scan tool display within the specified range?	0.18 – 4.84 V	Go to Step 6	Go to Step 3
3	1. Turn OFF the ignition. 2. Disconnect the longitudinal accelerometer connector. 3. Turn ON the ignition, with the engine OFF. 4. With the scan tool, observe the longitudinal accelerometer Input parameter. Does the scan tool display a voltage less than the specified value?	0.18 V	Go to Step 4	Go to Step 10
4	1. Turn OFF the ignition. 2. Connect a 3-amp fused jumper wire between the voltage supply circuit of the longitudinal accelerometer and the signal circuit of the longitudinal accelerometer. 3. Turn ON the ignition, with the engine OFF. 4. With the scan tool, observe the longitudinal accelerometer input parameter. Does the scan tool display a voltage greater than the specified value?	4.84 V	Go to Step 5	Go to Step 8
5	1. Disconnect the fused jumper wire. 2. Use a DMM to measure the voltage between the voltage supply circuit of the longitudinal accelerometer and the low reference circuit of the longitudinal accelerometer. Does the voltage measure less the specified value?	Battery Voltage (stand alone) 5.1 V (combo)	Go to Step 12	Go to Step 7
6	Does the scan tool display that the longitudinal accelerometer input parameter is within the specified range?	2.3-2.7 V	Got to Diagnostic Aids	Go to Step 11
7	Test the voltage supply circuit of the longitudinal accelerometer for a short to voltage. Did you find and correct the condition?		Go to Step 16	Go to Step 13
8	Test the voltage supply circuit of the longitudinal accelerometer for the following conditions: • An open • A short to ground • A high resistance		Go to Step 16	Go to Step 9

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CODE 166, CODE 167 Longitudinal Accelerometer Fault				
STEP	**DIAGNOSTIC ACTION**	**EXPECTED VALUE**	**YES**	**NO**
	Did you find and correct the condition?			
9	Test the signal circuit of the longitudinal accelerometer for the following conditions: • An open • A short to ground • A high resistance Did you find and correct the condition?		Go to Step 16	Go to Step 13
10	Test the signal circuit of the longitudinal accelerometer for a short to voltage. Did you find and correct the condition?		Go to Step 16	Go to Step 13
11	Test the low reference circuit of the longitudinal accelerometer for the following conditions: • An open • A high resistance .Did you find and correct the condition?		Go to Step 16	Go to Step 12
12	Inspect for poor connections at the harness connector of the longitudinal accelerometer . Did you find and correct the condition?		Go to Step 16	Go to Step 14
13	Inspect for poor connections at the harness connector of the ECU. Did you find and correct the condition?		Go to Step 16	Go to Step 15
14	Replace the longitudinal accelerometer. Did you complete the repair?		Go to step 16	
15	Replace the ECU. Did you complete the repair?		Go to Step 16	
16	1. Clear the DTC's using the scan tool. 2. Operate the vehicle within the Conditions for Running the DTC as specified in the supporting text. Does the DTC reset?		Go to Step 2	System OK

6.39 Diagnostic Code 167 Longitudinal Accelerometer Bias Fault

6.39.1 Circuit Description

The test is only applicable to All Wheel Drive vehicles that are equipped with a longitudinal accelerometer. The longitudinal accelerometer is a discrete sensor that receives power through the vehicle ignition circuitry.

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6.39.2 Conditions for Running Test

Test Monitoring Cycle: Continuous Monitoring

ECU Operating Mode: Normal,DVT

6.39.3 Conditions for Setting Fault Code

DTC 167 will set if the following condition exists:

The compensated bias value of the longitudinal accelerometer sensor is greater than 0.5 g.

6.39.4 Fault Actions

DTC 167 is stored in the ECU.

ABS remains functional.

6.39.5 Fault Recovery Conditions

DTC 167 may recover if the bias value returns to an acceptable range (< 0.5 g)

Otherwise, the DTC status and history can be cleared as described in "Clearing Diagnostic Trouble Codes" , Section 3.3.

6.39.6 Possible Fault Causes

Possible causes:

1. Open, short to ground, or short to voltage on signal or voltage supply circuit.

2. Sensor internal failure.

3. Vehicle operation on dynamic rollers, dynamometer, or in a stuck condition (all 4 wheels spinning but vehicle not moving)

4. ECU internal malfunction.

6.39.7 Investigation and Repair Process

SEE INVESTIGATION ACTION FOR CODE 166

6.40 Diagnostic Code 191 No Pump Motor Starting Current

6.40.1 Circuit Description

The ECU has the capability to sense whether current through the pump motor circuit is above/below a fixed threshold when the pump motor is commanded on.

6.40.2 Conditions for Running Test

Test Monitoring Cycle: Pump Off to On Transition

ECU Operating Mode: Normal,DVT

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6.40.3 Conditions for Setting Fault Code

DTC 191 sets when the motor current measured by the ECU fails to exceed a current threshold within 100 ms of switching the pump motor on.

6.40.4 Fault Actions

DTC 191 is stored in the ECU.

ABS is disabled. DRP has partial functionality.

Applicable warning lamps are commanded on.

6.40.5 Fault Recovery Conditions

The DTC status and history can be cleared as described in "Clearing Diagnostic Trouble Codes" , Section 3.3.

6.40.6 Possible Fault Causes

Possible causes:

1. Pump motor windings have high resistance.
2. Pump motor ground has high resistance.

6.40.7 Investigation and Repair Process

CODE 191 - No Pump Motor Starting Current				
Step	**Diagnostic Action**	**Expected Value**	**Yes**	**No**
1	Was the Diagnostic Circuit Check Completed?		Go to Step 2	Perform Diagnostic Circuit Check
2	1. Key off. 2. Disconnect the negative battery cable. 3. Disconnect ECU harness from the ECU. 4. Check resistance between the negative battery cable terminal and the ECU harness motor ground terminal. Was the resistance reading within the specified range?	Less than 2 ohms	Go to Step 3	Go to Step 6
3	1. Follow the negative battery cable to the engine block and/or chassis ground connection and inspect for a good clean and tight connection. 2. From the ECU harness motor ground terminal, follow the wire and find the location where the circuit grounds to the chassis. Inspect for a good clean and tight connection. Were both connections clean and tight?		Go to Step 4	Go to Step 7
4	1. ECU harness still disconnected. 2. Remove the ECU from the HCU. 3. Inspect the ECU to HCU connector for conditions such as damage, corrosion, poor terminal contact, or the presence of brake fluid.		Go to Step 5	Go to Step 8

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	Were the terminals and connector OK, and the cavity free of brake fluid, damage and corrosion?			
5	Check resistance between the pump motor terminals of the HCU. Was the pump motor resistance reading within the specified range?	Less than 2 Ohms	Go to Step 9	Go to Step 10
6	Find and repair the source of high resistance between the ECU ground circuit and chassis ground. Did you complete the repair?		Go to Step 11	
7	Repair the poor ground connection. Did you complete the repair?		Go to Step 11	
8	1. If damage and/or corrosion are present, replace the ECU and/or the HCU as necessary. 2. If the brake fluid is present, replace both the ECU and the HCU. Did you complete the repair?		Go to Step 11	
9	Replace the ECU. Did you complete the repair?		Go to Step 11	
10	Replace the HCU. Did you complete the repair?		Go to Step 11	
11	Use the scan tool to Clear DTC's. Does the DTC reset?		Go to Step 2	System OK

6.41 Diagnostic Code 192 Pump Motor Excess Operating Current

6.41.1 Circuit Description

The ECU has the capability to sense whether current through the pump motor circuit is above/below a fixed threshold while the pump motor is commanded on.

6.41.2 Conditions for Running Test

Test Monitoring Cycle: Pump Commanded On

ECU Operating Mode: Normal,DVT

6.41.3 Conditions for Setting Fault Code

DTC 192 will set when the following criteria are met:

1. The pump motor is commanded on.

2. 100 msec after turning the motor on, the motor current measured by the ECU exceeds a current threshold level.

3. The current remains above the threshold for 10 msec.

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6.41.4 Fault Actions

DTC 192 is stored in the ECU.

ABS is disabled. DRP has partial functionality.

Applicable warning lamps are commanded on.

6.41.5 Fault Recovery Conditions

The DTC status and history can be cleared as described in "Clearing Diagnostic Trouble Codes" , Section 3.3.

6.41.6 Possible Fault Causes

Possible causes:

1. Pump motor windings have low resistance.

2. The motor or pump are not seized, but require excessive torque to spin.

6.41.7 Investigation and Repair Process

CODE 192 - Pump Motor Excess Operation Current				
Step	**Diagnostic Action**	**Expected Value**	**Yes**	**No**
1	Was the Diagnostic Circuit Check Completed?	-----	Go to Step 2	Perform Diagnostic Circuit Check
2	Connect Scan tool 1. Use the scan tool to command the pump motor on Were any abnormal noises audible during the motor run test?		Go to Step 7	Go to Step 3
3	1. Key off. 2. Disconnect the negative battery cable. 3. Disconnect ECU harness from the ECU. 4. Separate the ECU from the HCU. 5. Check resistance between the pump motor terminals of the HCU. Was the resistance within the specified range?	100 – 200 milliohms	Go to Step 4	Go to Step 7
4	Check resistance from both pump motor terminals on the HCU to the HCU motor cover. In either case, was the resistance reading within the specified range?	Greater than 100 kohms	Go to Step 5	Go to Step 7
5	Replace the ECU Did you complete the repair?		Go to Step 6	
6	Use the scan tool to Clear DTC's Does the DTC reset?		Go to Step 7	System OK
7	Replace the HCU. Did you complete the repair?		Go to Step 8	
8	Use the scan tool to Clear DTC's.		Go to Step 2	System OK

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	Does the DTC reset?			

6.42 Diagnostic Code 194 Pump Motor Short Circuit Current

6.42.1 Circuit Description

The ECU has the capability to sense whether current through the pump motor circuit is above/below a fixed threshold.

6.42.2 Conditions for Running Test

Test Monitoring Cycle: Pump Off to On Transition

ECU Operating Mode: Normal,DVT

6.42.3 Conditions for Setting Fault Code

DTC 194 will set when the following criteria are met:

1. The pump motor is commanded on.
2. The motor current measured by the ECU exceeds a threshold within 0.15 ms of switching the pump motor on.

6.42.4 Fault Actions

DTC 194 is stored in the ECU.

ABS is disabled. DRP has partial functionality.

Applicable warning lamps are commanded on.

6.42.5 Fault Recovery Conditions

The DTC status and history can be cleared as described in "Clearing Diagnostic Trouble Codes" , Section 3.3.

6.42.6 Possible Fault Causes

Possible causes:

1. The pump motor windings have extremely low resistance.
2. The high side of the pump motor is shorted to ground.

6.42.7 Investigation and Repair Process

CODE 194 - Pump Motor Short Circuit Current				
Step	**Diagnostic Action**	**Expected Value**	**Yes**	**No**
1	Was the Diagnostic Circuit Check Completed?		Go to Step 2	Perform Diagnostic Circuit Check
2	Connect Scan tool 1. Use the scan tool to command the pump motor		Go to Step 7	Go to Step 3

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	on Were any abnormal noises audible during the motor run test?			
3	6. Key off. 7. Disconnect the negative battery cable. 8. Disconnect ECU harness from the ECU. 9. Separate the ECU from the HCU. 10. Check resistance between the pump motor terminals of the HCU. Was the resistance within the specified range?	100 – 200 milliohms	Go to Step 4	Go to Step 7
4	Check resistance from both pump motor terminals on the HCU to the HCU motor cover. In either case, was the resistance reading within the specified range?	Open	Go to Step 5	Go to Step 7
5	Replace the ECU Did you complete the repair?		Go to Step 6	
6	Use the scan tool to Clear DTC's Does the DTC reset?		Go to Step 7	System OK
7	Replace the HCU. Did you complete the repair?		Go to Step 8	
8	Use the scan tool to Clear DTC's. Does the DTC reset?		Go to Step 2	System OK

6.43 Diagnostic Code 198 Misfire Rough Road PWM Output Fault

6.43.1 Circuit Description

The PCM (Powertrain Control Module) / ECM (Engine Control Module) identifies engine misfire by detecting variations in crankshaft speed. Crankshaft speed variations can also occur when a vehicle is operated over a rough surface. The ABS can detect if the vehicle is on a rough surface based on wheel acceleration / deceleration data supplied by each wheel speed sensor. This information is sent to the PCM by the ABS ECU through the dedicated PWM line. The PCM then uses this information to determine if the crankshaft variations are being caused by an actual engine misfire or from being driven on a rough surface. If the ABS is found to be malfunctioning, the PCM will still continue to detect for misfire. However, if a misfire DTC is set, this additional DTC may also be set, indicating that rough surface data was not usable during the misfire detection due to the ABS system, or circuit malfunction.

6.43.2 Conditions for Running Test

Test Monitoring Cycle: Continuous Monitoring

ECU Operating Mode: Normal

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6.43.3 Conditions for Setting Fault Code

ABS ECU diagnosed a problem with the PWM circuit. The PCM or ECM will typically set a DTC and the ABS ECU will set DTC 198. The ABS has detected a short to battery, short to ground, or an open circuit on the PWM output line between the ABS and PCM / ECM

6.43.4 Fault Actions

DTC 198 is stored in the ABS ECU.

No systems are disabled.

PCM or ECM may set misfire codes when vehicle is on rough roads.

The ABS warning lamp will not be illuminated

6.43.5 Fault Recovery Conditions

The DTC status and history can be cleared as described in "Clearing Diagnostic Trouble Codes" , Section 3.3.

6.43.6 Possible Fault Causes

Possible Causes

1. The misfire rough road PWM output circuit is open
2. The misfire rough road PWM output circuit is shorted to ground
3. The misfire rough road PWM output circuit is shorted to battery
4. Defective Powertrain ECU.
5. Defective ABS ECU.

6.44 Diagnostic Code 205 Critical Low Battery Voltage Fault

6.44.1 Circuit Description

This circuit is used to monitor the voltage level available to the ECU. If the voltage drops below a certain level, full performance of the system cannot be guaranteed. During ABS operation, there are several current requirements that will cause battery voltage to drop. Because of this, voltage is monitored prior to ABS operation to indicate good charging system condition and also during ABS operation when voltage may drop significantly.

6.44.2 Conditions for Running Test

Test Monitoring Cycle: Continuous Monitoring

ECU Operating Mode: Normal,DVT

6.44.3 Conditions for Setting Fault Code

DTC 205 can be set if one of the following conditions exists:

The battery voltage is less than 8 volts for 20 msec when the vehicle speed is exceeding 8 kph during the ignition cycle.

The battery voltage is less than 8 volts for 200 msec when the vehicle speed is less than less than 8 kph during the ignition cycle.

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6.44.4 Fault Actions

DTC 205 is stored in the ECU.

ABS and DRP are disabled.

Applicable warning lamps are commanded on.

6.44.5 Fault Recovery Conditions

DTC 205 will recover once the voltage returns to an acceptable operating range.

Otherwise, the DTC status and history can be cleared as described in "Clearing Diagnostic Trouble Codes" , Section 3.3.

6.44.6 Possible Fault Causes

Possible causes:

1. Weak or discharged battery.
2. Poor battery terminal contact.
3. Excessive battery draws from factory or after-market equipment (parasitic load).
4. Poor battery ground at block or chassis.
5. Poor terminal contact at ECU.
6. Poor ECU ground connection.
7. Charging system malfunction (generator).
8. ECU malfunction

Thoroughly inspect the wiring and the connectors. Failure to inspect the wiring and the connectors fully can cause inappropriate replacement of parts.

6.44.7 Investigation and Repair Process

SEE INVESTIGATION ACTION FOR CODE 36

6.45 Diagnostic Code 206 Left Front Wheel Speed Frequency Out Of Range (Passive Sensor)

6.45.1 Circuit Description

As the wheel is rotated, the passive wheel speed sensor produces an AC voltage that increases with wheel speed. The ECU uses the frequency of the AC signal to calculate wheel speed. The speed sensor is connected to the ECU by two wires: WSS HI, and WSS Low. The two wires are typically taped very close (“side by side” , or in a “twisted pair”) to reduce electrical noise susceptibility that may cause a DTC to set.

6.45.2 Conditions for Running Test

Test Monitoring Cycle: Continuous Monitoring

ECU Operating Mode: Normal,DVT

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6.45.3 Conditions for Setting Fault Code

DTC 206 will be set when the following conditions are met:

1. Battery voltage is sufficient to operate the wheel speed sensors (typically greater than 9.0 v)

and

2. During a 0.30 second period, the ABS ECU detects that consecutive rising edges of the wheel speed sensor signal have occurred at a unreasonable frequency.

6.45.4 Fault Actions

DTC 206 is stored in the ECU.

ABS is disabled. If a DTC is set for the other wheel speed sensor on the same axle, the ECU disables DRP for the duration of the ignition cycle.

Applicable warning lamps are commanded on.

6.45.5 Fault Recovery Conditions

DTC 206 will recover if the wheel speed signal is within expected performance for approximately 0.20 sec

Otherwise, the DTC status and history can be cleared as described in "Clearing Diagnostic Trouble Codes" , Section 3.3.

6.45.6 Possible Fault Causes

Possible causes:

1. Electrical noise on the wheel speed input

2. Faulty wheel speed sensor

3. Faulty ECU

Check wheel speed wiring harness with a DMM set to measure frequency for possible locations where high frequency transient noise may couple into wheel speed signal line.

Note: Correct any other vehicle or system related issues befor investigating this diagnostic code.

6.45.7 Investigation and Repair Process

Code 206, 207, 208, 211 (Passive WSS) Wheel Speed Frequency Out Of Range Fault				
STEP	**DIAGNOSTIC ACTION**	**EXPECTED VALUE**	**YES**	**NO**
1	Was the Diagnostic Circuit Check Completed?		Go to Step 2	Perform Diagnostic Circuit Check
2	Were any codes set in the ABS system or other vehicle systems as a current or history code?		Go to Step 11	Go to Step 3
3	Inspect the Wheel Speed Sensor (WSS), connectors, harness, and tooth ring for physical damage, routing near high energy systems (secondary ignition) or excessive air gap.		Go to Step 12	Step Go to 4

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	Is any issues noted?			
4	1. Vehicle in park. 2. Connect a Scan Tool and select data list. 3. Monitor the wheel speed sensors. 4. Start the vehicle, and monitor wheel speed sensors with engine running but vehicle not moving. 5. Lightly depress the accelerator pedal to increase engine idle speed. 6. Activate any factory or aftermarket electrical devices (transmitters, Blower motor, wipers, power windows ECT.. Did the DTC reset or did the suspect wheel speed read above 0 mph when the vehicle was in park with the engine running.		Go to Step 13	Go to Step 5
5	1. Scan tool still connected. 2. Monitor the wheel speed sensors. 3. Test drive the vehicle up to the maximum-posted speed limit, and slowly decelerate to zero. Do this several times. Did the DTC reset or did the suspect wheel speed vary more than 5 kph (3 mph) when compared to any one of the other wheels during the drive?		Go to Step 6	Go to Step 14
6	1. Vehicle in park, key off. 2. Raise and suitably support the vehicle. 3. Disconnect the suspect WSS harness from the WSS. 4. Check the resistance across both terminals of the WSS. Is the resistance within the specified range?	800-1600 Ohms (Resistance will vary with temperature and by manufacturer)	Go to Step 7	Replace wheel speed sensor and Retest system
7	Disconnect ABS ECU Disconnect ABS wheel speed sensor Set volt meter to AC monitor for voltage on wheel speed circuits while engine running, and cycling all electrical loads on the vehicle. Is voltage below 500 mV?	Less than 500 mV	Go to Step 8	Go to Step 15
8	1. Disconnect ECU harness from the ECU. 2. WSS harness still disconnected from the WSS. 3. Check the resistance from the suspect ECU harness WSS HI terminal to the WSS harness WSS HI terminal near the sensor. Is the resistance within the specified range?	Less the 2 ohms	Go to Step 9	Go to Step 16
9	1. ECU harness still disconnected from the ECU. 2. WSS harness still disconnected from the WSS. 3. Check the resistance from the suspect ECU harness WSS LO terminal to the WSS harness WSS LO terminal near the sensor. Is the resistance within the specified range?	Less than 2 ohms	Go to step 10	Go to Step 17
10	1. ECU harness still disconnected from the ECU. 2. WSS harness still disconnected from the WSS. 3. Check the resistance between the suspect ECU harness WSS HI and the ECU harness WSS LO terminals. Is the resistance within the specified range?	OL (open circuit)	Go to Step 19	Go to Step 18

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11	Perform diagnostics for DTC prior to performing this table.			
12	Repair any damage to the WSS, harness and/or the toothed ring, or correct the excessive air gap. Did you complete the repair?		Go to Step 20	
13	The cause of the DTC is noise coupled onto the WSS circuits. Inspect the routing of the WSS harness for potential noise sources such as spark plug wires. Reroute wiring as needed. Did you complete the repair?		Go to Step 20	
14	The DTC is intermittent. Refer to the "Possible Fault Causes" section.			
15	Investigate and repair source of voltage/ on wheel speed circuit Did you complete the repair?		Go to Step 20	
16	Repair the open or high resistance in the WSS HI circuit Did you complete the repair?		Go to Step 20	
17	Repair the open or high resistance in the WSS LO circuit. Did you complete the repair?		Go to Step 20	
18	Repair the short between the 2 wires. Did you complete the repair?		Go to Step 20	
19	Replace the ECU. Did you complete the repair?		Go to Step 20	
20	Use the scan tool to clear DTC's. Does the DTC reset when condition for setting DTC are met?		Go to Step 2	System OK

6.46 Diagnostic Code 207 Right Front Wheel Speed Frequency Out Of Range (Passive Sensor)

6.46.1 Circuit Description

As the wheel is rotated, the passive wheel speed sensor produces an AC voltage that increases with wheel speed. The ECU uses the frequency of the AC signal to calculate wheel speed. The speed sensor is connected to the ECU by two wires: WSS HI, and WSS Low. The two wires are typically taped very close ("side by side" , or in a "twisted pair") to reduce electrical noise susceptibility that may cause a DTC to set.

6.46.2 Conditions for Running Test

Test Monitoring Cycle: Continuous Monitoring

ECU Operating Mode: Normal,DVT

6.46.3 Conditions for Setting Fault Code

DTC 207 will be set when the following conditions are met:

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1. Battery voltage is sufficient to operate the wheel speed sensors (typically greater than 9.0 v)

and

2. During a 0.30 second period, the ABS ECU detects that consecutive rising edges of the wheel speed sensor signal have occurred at a unreasonable frequency.

6.46.4 Fault Actions

DTC 207 is stored in the ECU.

ABS is disabled. If a DTC is set for the other wheel speed sensor on the same axle, the ECU disables DRP for the duration of the ignition cycle.

Applicable warning lamps are commanded on.

6.46.5 Fault Recovery Conditions

DTC 207 will recover if the wheel speed signal is within expected performance for approximately 0.20 sec

Otherwise, the DTC status and history can be cleared as described in "Clearing Diagnostic Trouble Codes" , Section 3.3.

6.46.6 Possible Fault Causes

Possible causes:

1. Electrical noise on the wheel speed input

2. Faulty wheel speed sensor

3. Faulty ECU

Check wheel speed wiring harness with a DMM set to measure frequency for possible locations where high frequency transient noise may couple into wheel speed signal line.

Note: Correct any other vehicle or system related issues befor investigating this diagnostic code.

6.46.7 Investigation and Repair Process

SEE INVESTIGATION ACTION FOR CODE 206

6.47 Diagnostic Code 208 Left Rear Wheel Speed Frequency Out Of Range (Passive Sensor)

6.47.1 Circuit Description

As the wheel is rotated, the passive wheel speed sensor produces an AC voltage that increases with wheel speed. The ECU uses the frequency of the AC signal to calculate wheel speed. The speed sensor is connected to the ECU by two wires: WSS HI, and WSS Low. The two wires are typically taped very close (“side by side” , or in a “twisted pair”) to reduce electrical noise susceptibility that may cause a DTC to set.

6.47.2 Conditions for Running Test

Test Monitoring Cycle: Continuous Monitoring

ECU Operating Mode: Normal,DVT

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6.47.3 Conditions for Setting Fault Code

DTC 208 will be set when the following conditions are met:

1. Battery voltage is sufficient to operate the wheel speed sensors (typically greater than 9.0 v)

and

2. During a 0.30 second period, the ABS ECU detects that consecutive rising edges of the wheel speed sensor signal have occurred at a unreasonable frequency.

6.47.4 Fault Actions

DTC 208 is stored in the ECU.

ABS is disabled. If a DTC is set for the other wheel speed sensor on the same axle, the ECU disables DRP for the duration of the ignition cycle.

Applicable warning lamps are commanded on.

6.47.5 Fault Recovery Conditions

DTC 208 will recover if the wheel speed signal is within expected performance for approximately 0.20 sec

Otherwise, the DTC status and history can be cleared as described in "Clearing Diagnostic Trouble Codes" , Section 3.3.

6.47.6 Possible Fault Causes

Possible causes:

1. Electrical noise on the wheel speed input

2. Faulty wheel speed sensor

3. Faulty ECU

Check wheel speed wiring harness with a DMM set to measure frequency for possible locations where high frequency transient noise may couple into wheel speed signal line.

Note: Correct any other vehicle or system related issues befor investigating this diagnostic code.

6.47.7 Investigation and Repair Process

SEE INVESTIGATION ACTION FOR CODE 206

6.48 Diagnostic Code 211 Right Rear Wheel Speed Frequency Out Of Range (Passive Sensor)

6.48.1 Circuit Description

As the wheel is rotated, the passive wheel speed sensor produces an AC voltage that increases with wheel speed. The ECU uses the frequency of the AC signal to calculate wheel speed. The speed sensor is connected to the ECU by two wires: WSS HI, and WSS Low. The two wires are typically taped very close (“side by side” , or in a “twisted pair”) to reduce electrical noise susceptibility that may cause a DTC to set.

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6.48.2 Conditions for Running Test

Test Monitoring Cycle: Continuous Monitoring

ECU Operating Mode: Normal,DVT

6.48.3 Conditions for Setting Fault Code

DTC 211 will be set when the following conditions are met:

1. Battery voltage is sufficient to operate the wheel speed sensors (typically greater than 9.0 v)

and

2. During a 0.30 second period, the ABS ECU detects that consecutive rising edges of the wheel speed sensor signal have occurred at a unreasonable frequency.

6.48.4 Fault Actions

DTC 211 is stored in the ECU.

ABS is disabled. If a DTC is set for the other wheel speed sensor on the same axle, the ECU disables DRP for the duration of the ignition cycle.

Applicable warning lamps are commanded on.

6.48.5 Fault Recovery Conditions

DTC 211 will recover if the wheel speed signal is within expected performance for approximately 0.20 sec

Otherwise, the DTC status and history can be cleared as described in "Clearing Diagnostic Trouble Codes" , Section 3.3.

6.48.6 Possible Fault Causes

Possible causes:

1. Electrical noise on the wheel speed input

2. Faulty wheel speed sensor

3. Faulty ECU

Check wheel speed wiring harness with a DMM set to measure frequency for possible locations where high frequency transient noise may couple into wheel speed signal line.

Note: Correct any other vehicle or system related issues befor investigating this diagnostic code.

6.48.7 Investigation and Repair Process

SEE INVESTIGATION ACTION FOR CODE 206

6.49 Diagnostic Code 217 Motor Drive Temperature Out Of Range

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6.49.1 Circuit Description

Controlled braking events require motor speed control which can cause the motor drive circuitry to heat up to a point where the controller must disable the motor speed control feature. The ECU has the capability to sense whether current through the pump motor circuit is above/below a fixed threshold while the pump motor is commanded on.

6.49.2 Conditions for Running Test

Test Monitoring Cycle: Continuous Monitoring

ECU Operating Mode: Normal,Device_Control,DVT

6.49.3 Conditions for Setting Fault Code

DTC 217 will set if the motor drive temperature becomes > 160 Celsius or < -40 Celsius for >= 30 msec.

6.49.4 Fault Actions

DTC 217 is stored in the ECU.

No systems are disabled.

Motor speed control will be disabled during controlled brake events. ABS and DRP perform normally, however, the EHCU operating noise maybe slightly louder.

6.49.5 Fault Recovery Conditions

DTC 217 will recover if the temperature returns to a reasonable operating range.

Otherwise, the DTC status and history can be cleared as described in "Clearing Diagnostic Trouble Codes" , Section 3.3.

6.49.6 Possible Fault Causes

Possible causes:

1. The ECU has been subjected to a temperature > 160 Celsius.
2. The ECU has been subjected to a temperature < -40 Celsius.
3. Vehicle subjected to multiple and extended ABS events.
4. Vehicle abuse.
5. Internal ECU fault.

NOTE: This DTC is for information only as an aid to the technician. This DTC does not necessarily indicate a problem in the ABS system.

6.50 Diagnostic Code 218 Motor Drive Temperature Threshold Exceeded

6.50.1 Circuit Description

Controlled braking events require motor speed control which can cause the motor drive circuitry to heat up to a point where the controller must disable the motor speed control feature. The ECU has the capability to sense whether current through the pump motor circuit is above/below a fixed threshold while the pump motor is commanded on.

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6.50.2 Conditions for Running Test

Test Monitoring Cycle: Continuous Monitoring

ECU Operating Mode: Normal,Device_Control,DVT

6.50.3 Conditions for Setting Fault Code

DTC 218 will set if the motor drive temperature is >= 129 C for at least 200 msec.

6.50.4 Fault Actions

DTC 218 is stored in the ECU.

No systems are disabled.

Motor speed control will be disabled during controlled brake events. ABS and DRP perform normally, however, the EHCU operating noise maybe slightly louder.

6.50.5 Fault Recovery Conditions

DTC 218 will recover as soon as the motor drive temperature falls below the high temperature threshold.

Otherwise, the DTC status and history can be cleared as described in "Clearing Diagnostic Trouble Codes" , Section 3.3.

6.50.6 Possible Fault Causes

Possible causes:

1. Extended controlled braking events

2. The ECU has been subjected to a very high temperature

NOTE: This DTC is for information only as an aid to the technician. This DTC does not necessarily indicate a problem in the ABS system.

6.51 Diagnostic Code 221 Motor Drive Temperature Reasonableness Fault

6.51.1 Circuit Description

Controlled braking events require motor speed control which can cause the motor drive circuitry to heat up to a point where the controller must disable the motor speed control feature. The ECU has the capability to sense whether current through the pump motor circuit is above/below a fixed threshold while the pump motor is commanded on.

6.51.2 Conditions for Running Test

Test Monitoring Cycle: Continuous Monitoring

ECU Operating Mode: Normal,Device_Control,DVT

6.51.3 Conditions for Setting Fault Code

DTC 221 will set if one of the following conditions exists:

1. The motor drive temperature feedback changes >= 5 deg C within 10ms. This indicates a rate of change error.

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2. Upon detecting that the pump motor has been on recently for a cumulatively extended period of time, the range of motor drive temperatures recorded during the ignition cycle are < 4 deg C. This indicates an unresponsive feedback error

6.51.4 Fault Actions

DTC 221 is stored in the ECU.

No systems are disabled.

Motor speed control will be disabled during controlled brake events. ABS and DRP perform normally, however, the EHCU operating noise maybe slightly louder.

6.51.5 Fault Recovery Conditions

DTC 221 will recover when the reasonableness criteria has been met.

Otherwise, the DTC status and history can be cleared as described in "Clearing Diagnostic Trouble Codes" , Section 3.3.

6.51.6 Possible Fault Causes

Possible causes:

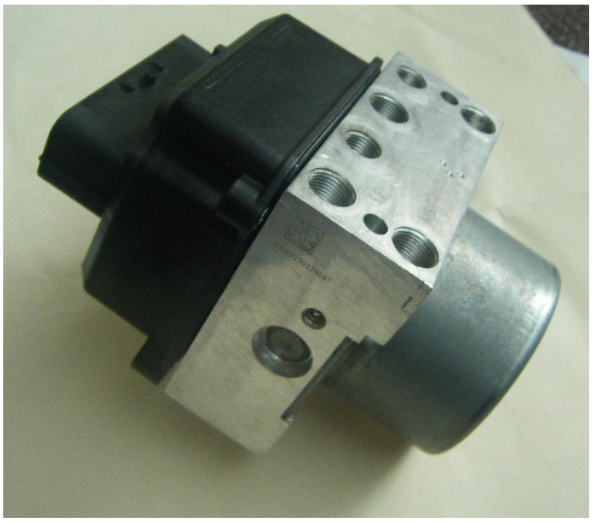
1. Thermistor open

2. Intermittent open/short.

NOTE: This DTC is for information only as an aid to the technician. This DTC does not necessarily indicate a problem in the ABS system.

7 Repair Instructions

7.1 Electronic Hydraulic Control Unit (EHCU) Replacement



DBC78 EHCU Assembly

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Removal Procedure

1. Key off.
2. Remove any components that may interfere with the EHCU removal.
3. Disconnect the vehicle wiring harness from the EHCU.
4. Inspect and tighten the master cylinder reservoir cap by hand, this will help retain the brake fluid in the master cylinder when the brake lines are removed from the HCU.
5. Note the position of the brake lines and disconnect them by loosening the tube nut fittings at the HCU.
6. Remove the old EHCU and adapter plate assembly from the vehicle by loosening the bolts that secure the adapter plate to the vehicle body.

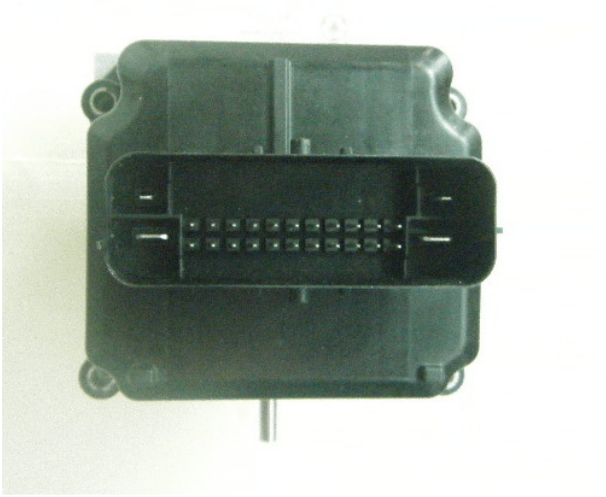
Installation Procedure

1. Position the new EHCU and adapter plate assembly on the vehicle by aligning the adapter plate grommets onto the vehicle mounting holes.
2. Install the adapter plate mounting bolts and tighten to the recommended torque.
3. The new ECHU will have shipping plugs on each line opening. Remove these plugs one at a time during step 4 to minimize fluid loss and air ingestion.
4. Install the brake lines onto the HCU in the correct locations by tightening to 16 to 22 NM (12-16 ft-lbs).
5. Bleed the system; refer to ABS bleed procedure in this section of the service manual. Connect the ECU harness to the ECU.
6. Install any components removed to gain access to the ECU.
7. Turn the ignition switch to run, engine off.
8. Perform the Diagnostic Circuit Check.

7.2 ECU Replacement

Note: This service procedure is only applicable for vehicle manufacturers that support the ECU only service replacement operation and provide ECU service part assemblies. If this service procedure is not supported, then the entire EHCU assembly must be replaced.

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DBC78 ECU Assembly

Removal Procedure

Note: Do not pry the ECU. Be careful not to damage the ECU seal. If the ECU seal is damaged during removal, repair the damaged area by using silicone sealer. If the seal is damaged beyond repair, replace the ECU.

1. Key off.
2. Remove any component that may interfere with the ECU removal.
3. Disconnect the ECU harness from the ECU.
4. Remove the 4 corner bolts that hold the ECU to the HCU.
5. Remove the ECU by pulling the ECU away from the HCU until the internal pump motor connector and all solenoid coils have disengaged from the HCU. Do not twist the ECU during the removal procedure as it may damage the internal components.

Installation Procedure

1. Clean the ECU seal and HCU gasket surface with alcohol.
2. Align the solenoid coils and the pump motor terminals on both units.
3. Push the ECU onto the HCU until the ECU gasket surface contacts the HCU sealing surface.
4. Install the 4 corner ECU to HCU retaining bolts and tighten to 4-5.1 NM (35-45 in-lbs).
5. Connect the ECU harness to the ECU.
6. Install any components removed to gain access to the ECU.
7. Turn the ignition switch to run, engine off.
8. Perform the Diagnostic Circuit Check.

7.3 HCU Replacement

Note: This service procedure is only applicable for vehicle manufacturers that support the HCU only service replacement operation and provide HCU service part assemblies. If this service procedure is not supported, then the entire EHCU assembly must be replaced.

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DBC78 HCU Assembly

Removal Procedure

Note: For safety reasons, never attempt to repair the HCU. The unit can only be replaced as an entire assembly, with the exception of the ECU.

1. Remove the ECU from the HCU; refer to ECU removal in this section of the manual.
2. Key still off.
3. Remove any component that may interfere with the HCU removal.
4. Inspect and tighten the master cylinder reservoir cap by hand, this will help retain the brake fluid in the master cylinder when the brake lines are removed from the HCU.
5. Note the position of the brake lines and disconnect them by loosening the tube nut fittings at the HCU.
6. Remove the HCU and adapter plate assembly from the vehicle by loosening the bolts that secure the adapter plate to the vehicle body.

Installation Procedure

1. Position the HCU and adapter plate assembly on the vehicle by aligning the adapter plate grommets onto the vehicle mounting holes.
2. Install the adapter plate mounting bolts and tighten to the recommended torque.
3. If a new HCU is to be installed, the new unit will have shipping plugs on each line opening. Remove these plugs one at a time during step 4 to minimize fluid loss and air ingestion.
4. Install the brake lines onto the HCU in the correct locations by tightening to 16 to 22 NM (12-16 ft-lbs).
5. Install the ECU onto the HCU; refer to ECU installation procedure in this section of the manual.
6. Bleed the system; refer to ABS bleed procedure in this section of the service manual.

7.4 ABS Bleed Procedure

It is recommended that all vehicle manufactures implement an automated brake bleed process within their service scan tool software. The following automated ABS bleed procedure is required when the one of the following occurs.

1. Traditional bleeding at the wheel cylinders does not achieve the desired pedal height or feel.

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2. EHCU (Electronic Hydraulic Control Unit) replacement.

3. Extreme fluid loss occurred.

4. Air ingestion is suspected.

5. Brake fluid has been contaminated.

This procedure uses a scan tool to cycle the system valves and runs the pump in order to purge any air or contaminates from the secondary circuits. These secondary circuits are normally closed off, and are only opened during system initialization at vehicle start up and during ABS operation. The automated bleed procedure opens these secondary circuits and allows any air trapped inside the HCU to flow out toward the wheel cylinders where it can be purged out of the system.

Items required

1. Scan tool with the proper software

2. Brake fluid

3. Hoist

4. Bleeder bottle equipped with a hose to recover fluid at the wheels. When bleeding a wheel, insure that a hose is attached to the bleeder screw and empties into a reservoir with brake fluid. The reservoir should be at least 300 mm above the bleeder screw with the hose filled with brake fluid. This will prevent air from re-entering the brake circuit when the brake pedal is released.

5. Proper safety equipment, including safety glasses

6. Two technicians are required - one person to pump the brake pedal and control the scan tool, another person to maintain the fluid level in the master cylinder reservoir and to open and close the bleeder screws as directed by the Scan Tool procedure

Preliminary Inspection

1. Inspect the battery for state of charge, repair the battery and charging system as needed.

2. Connect a scan tool and select current and history DTC's. Repair any DTC's prior to performing the ABS bleed procedure.

3. Inspect for visual damage and leaks. Repair as needed.

Preliminary Setup

1. Key on

2. Connect the proper scan tool and establish communications with the ABS system

3. Raise and suitably support vehicle

4. Remove all four tires

Vehicle Brake System Bleed Process

Step	Time (sec)	Service Technician Actions	LF A	LF R	RF A	RF R	LR A	LR R	RR A	RR R	PUMP	Bleed Screw	Comments

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1		Perform a base brake bleed											Follow base brake bleed procedure in vehicle service manual
2	5	Apply brake pedal		ON		ON		ON		ON		All closed	Force fluid in HCU accumulators
3	10	Remove foot from brake pedal									ON	All closed	Force fluid out of HCU accumulators into base brake system
4	5	Apply brake pedal		ON		ON		ON		ON		All closed	Force fluid in HCU accumulators
5	10	Remove foot from brake pedal									ON	All closed	Force fluid out of HCU accumulators into base brake system
6		Perform a base brake bleed											Follow base brake bleed procedure in vehicle service manual
7		Evaluate brake pedal travel											Pedal travel should meet requirements in vehicle service manual. Repeat bleed process as necessary

8 Special Tools and Equipment

1. ABS Pinout Box - Interface box used to diagnose ECU based systems by using a “T” connector that interfaces with vehicle wiring harness. One end of the connector attaches to the ECU, one end to the vehicle harness, and one end to a box with test terminals that can be used to check and test wiring circuits without probing wires and ECU terminals. Some vehicle manufacturers may utilize a universal pinout case that can be used for all vehicle electrical systems. In this case, an adapter cable required to connect the ABS ECU to the pin out box.

2. Scan Tool – Required for interfacing with the ABS ECU diagnostic messaging and device control protocols.

3. Digital Multimeter – Required for taking measurements of ABS and vehicle system electrical characteristics

9 Fastener Tightening Specifications

Application	Newton Meters	Foot Pounds	Inch Pounds
Brake pipe fittings at the HCU	16 - 22	12 - 16	144 - 192
HCU to adapter (accumulator) plate	4.5 – 6.8	3.3 - 5	40 - 60
Adapter plate to frame/cradle	Determined by Vehicle Manufacturer	Determined by Vehicle Manufacturer	Determined by Vehicle Manufacturer

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10 Revision History

Revision	Date	Description of Change
1.0	9/24/2009	Initial Release

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DTC / 故障代码 (Hex)	Description / 描述	Fault Trigger Conditions / 故障促发条件
0x9012	Internal ECU Fault / ECU内部故障	ECU is faulted. / ECU有故障
0x9013	ECU reuse exceeded / ECU已被使用	ECU has deployed airbags more than X times during its lifetime. / ECU在工作期间已多次起爆气囊
0x9014	Crash Stored in Memory / 寄存器中存有碰撞信息	Crash memory is locked after ECU deployed airbags. / 在ECU起爆气囊后碰撞记录已被锁存
0x9017	One Squib Shorted To Another / 一路起爆器与另一路之间短路	Squib is shorted to another squib / 起爆器与其他起爆器之间短路
0x9018	No VIN Number / 无VIN码	No VIN number stored in ECU's NVM. / 没有VIN码存储在ECU的非易失性存储器内
0x9021	Front Airbag Driver - resistance too high / 驾驶员前碰气囊电阻过高	Front Airbag driver resistance too HIGH. / 驾驶员前碰气囊电阻过高
0x9022	Front Airbag Driver - resistance too low / 驾驶员前碰气囊电阻过低	Front Airbag driver resistance too LOW. / 驾驶员前碰气囊电阻过低
0x9023	Front Airbag Driver - short to GND / 驾驶员前碰气囊对地短路	Front Airbag Driver short to ground. / 驾驶员前碰气囊对地短路
0x9024	Front Airbag Driver - short to Vbatt / 驾驶员前碰气囊对电源短路	Front Airbag Driver short to VBATT. / 驾驶员前碰气囊对电源短路
0x9029	Pretensioner Driver - resistance too high / 驾驶员安全带预紧器电阻过高	Pretensioner Driver resistance too HIGH. / 驾驶员安全带预紧器电阻过高
0x902A	Pretensioner Driver - resistance too low / 驾驶员安全带预紧器电阻过低	Pretensioner Driver resistance too LOW. / 驾驶员安全带预紧器电阻过低
0x902B	Pretensioner Driver - short to GND / 驾驶员安全带预紧器对地短路	Pretensioner Driver short to ground. / 驾驶员安全带预紧器对地短路
0x902C	Pretensioner Driver - short to Vbatt / 驾驶员安全带预紧器对电源短路	Pretensioner Driver short to VBATT. / 驾驶员安全带预紧器对电源短路
0x9031	Front Airbag Passenger - resistance too high / 乘员前碰气囊电阻过高	Front Airbag Passenger resistance too HIGH. / 乘员前碰气囊电阻过高
0x9032	Front Airbag Passenger - resistance too low / 乘员前碰气囊电阻过低	Front Airbag Passenger resistance too LOW. / 乘员前碰气囊电阻过低
0x9033	Front Airbag Passenger - short to GND / 乘员前碰气囊对地短路	Front Airbag passenger short to ground. / 乘员前碰气囊对地短路
0x9034	Front Airbag Passenger - short to Vbatt / 乘员前碰气囊对电源短路	Front Airbag passenger short to VBATT. / 乘员前碰气囊对电源短路
0x9039	Pretensioner Passenger - resistance too high / 乘员安全带预紧器电阻过高	Pretensioner passenger resistance is too HIGH. / 乘员安全带预紧器电阻过高
0x903A	Pretensioner Passenger - resistance too low / 乘员安全带预紧器电阻过低	Pretensioner passenger resistance is too LOW. / 乘员安全带预紧器电阻过低
0x903B	Pretensioner Passenger - short to GND / 乘员安全带预紧器对地短路	Pretensioner Passenger is short to ground. / 乘员安全带预紧器对地短路
0x903C	Pretensioner Passenger - short to Vbatt / 乘员安全带预紧器对电源短路	Pretensioner passenger is short to VBATT. / 乘员安全带预紧器对电源短路
0x9051	Front Satellite Driver - short to GND / 驾驶员侧前碰传感器对地短路	Front Satellite Driver short to ground. / 驾驶员侧前碰传感器对地短路
0x9053	Front Satellite Driver - internal fault / 驾驶员侧前碰传感器内部故障	Fault in initial set up of front satellite passenger. / 在初始化驾驶员侧前碰传感器时产生故障
0x9054	Front Satellite Driver - no communication / 驾驶员侧前碰传感器无通信	ECU receiving no data from this satellite. / ECU从传感器接收不到数据
0x9055	Front Satellite Driver - header / 驾驶员侧前碰传感器通信错误	Data stream from satellite is not correct. / 来自传感器的数据流错误
0x9056	Front Satellite Driver - offset / 驾驶员侧前碰传感器内部故障2	Satellite offset is not correct. / 传感器offset不正确
0x9057	Front Satellite Driver - deflect / 驾驶员侧前碰传感器内部故障3	Satellite deflect is not correct. / 传感器deflect不正确

0x9061	Front Satellite Passenger - short to GND / 乘员侧前碰传感器对地短路	Front Satellite passenger- short ground. / 乘员侧前碰传感器对地短路
0x9063	Front Satellite Passenger - internal fault / 乘员侧前碰传感器内部故障	Fault in initial set up of front satellite passenger. / 在初始化乘员侧前碰传感器时产生故障
0x9064	Front Satellite Passenger - no communication / 乘员侧前碰传感器无通信	ECU receiving no data from this satellite. / ECU从传感器接收不到数据
0x9065	Front Satellite Passenger - header / 乘员侧前碰传感器通信错误	Data stream from satellite is not correct. / 来自传感器的数据流错误
0x9066	Front Satellite Passenger - offset / 乘员侧前碰传感器内部故障2	Satellite offset is not correct. / 传感器offset不正确
0x9067	Front Satellite Passenger - deflect / 乘员侧前碰传感器内部故障3	Satellite deflect is not correct. / 传感器deflect不正确
0x9091	Fault lamp short to Vbatt / 故障警告灯对电源短路	Fault lamp short to Vbatt / 故障警告灯对电源短路
0x9092	Fault lamp short to ground / 故障警告灯对地短路	Fault lamp short to ground / 故障警告灯对地短路
0x9095	ENS short to ground / 碰撞输出对地短路	ENS short to ground / 碰撞输出对地短路
0x9096	ENS short to Vbatt / 碰撞输出对电源短路	ENS short to Vbatt / 碰撞输出对电源短路
0x9097	Vbatt too high / 电源电压过高	Vbatt too high / 电源电压过高
0x9098	Vbatt too low / 电源电压过低	Vbatt too low / 电源电压过低

THE FIRST ACCESSORIES RECOMMENDED LIST OF LIFANX60

02.10.2012

The first accessories recommended list			
	Accessories code	Accessories name	Single machine number
Maintenance parts	LF479Q1-1017100A	Oil Filter	1
	F1117100	Fuel filter	1
	S1109100	Air filter assy.	1
	S1109160	Air filter element	1
Routine replacement parts	Q40112T4F	Oil plug washer	1
	LFB479Q-3707800A	Spark plug	4
	S5205120	Window wiper brush, left	1
	S6102710	Water proof, front left door	1
	S6102810	Water proof, front right door	1
	S6202710	Outer handle washer, rear right door	1
	S6202810	Rear right door water proof	1
	S3501110	Front brake disc	2
	S3502110	Rear brake disc	2
	SS35003	Brake shoe kit	4
	SS35002	Rear brake pad kit	4
	SS35001	Front brake pad kit	4
	S5205220	Window wiper brush, right	1
	LFB479Q-1025015A	Water pump and generator belt	1
	S8113110	Air strainer	1
	S3106100	Tyre	5
The daily use components	S3106800	Tyre valve	5
	LFB479Q-1003300A	Cylinder head cover seal	1
	LFB479Q-1014011A	PCV hose	1

The daily use components	LFB479Q-1014100A	PCV assy.	1
	LFB479Q-1021020A	Timing chain	1
	LFB479Q-1003300A	Gasket,cylinder head	1
	S8103200	A/C compressor	1
	S3407100	Steering pump	1
	LFB479Q-1307100A	Water pump	1
	LFB479Q-1025100A	Tenioner	1
	LBA3612400	Knock sensor	1
	LF479Q1-3818100A	Oil pressure warner	1
	LFB479Q-1004210A	Piston ring kit	4
	LFB479Q-1004201A	Piston ring 1	4
	LFB479Q-1004202A	Piston ring 2	4
	LFB479Q-1004011A	Rod Bearing	8
	LFB479Q-1005015A	Crankshaft bearing, upper	5
	LFB479Q-1005014A	Crankshaft lower thrust washer	2
	Q5500416	Woodruff key	1
	LFB479Q-1005024A	Crankshaft bearing, lower	5
	LFB479Q-1005020A	Crankshaft rear seal	1
	LFB479Q-1008014A	Intake manifold seal	1
	S3614300	Temperature And Pressure Sensor	1
	LFB479Q-1008013A	Exhaust Manifold gasket	1
	S3612300	Oxygen Sensor	1
	S1601200	Clutch Driven Plate	1
	S1601100	Clutch press plate	1
	LFB479Q-3708100A	Starter assy	1
	LFB479Q-3701100A	Generator assy.	1
	S1700000	Transmission assy.	1
	S1701100	Clutch shell assy.	1
	S1701011A	Clutch shell	1

The daily use components	S2303324	Differential seal	1
	LF481Q1-1701334A	Throwout bearing	1
	LF481Q1-1701332A	Throwout circlip	1
	S1701330	Throwout fork	1
	LF479Q1-1701333	Throwout fork stopper	1
	LF481Q1-1701336A	Square magnet	1
	LF481Q1-1701331A	Boot	1
	LF481Q1-1702160A	Clutch slave cylinder	1
	S1702170	Oil pipe	1
	LF481Q1-1701030A	Input shaft front seal	1
	LF481Q1-1701021D	Transmission shell	1
	LF481Q1-1701027A	Reverse light switch	1
	LF481Q1-1701029A	Washer	1
	LF481Q1-1701029B	Copper washer	2
	LF481Q1-1701026A	Oil bolt plug	2
	LF481Q1-1701033A	Shift position device	1
	LF481Q1-1701034A	Oil baffle	1
	LF481Q1-2303323A	Differential seal	1
	S1701300	Input shaft assy.	1
	S1701041A	Input shaft	1
	LF481Q1-1701078A	Input shaft bearing	2
	S1701060	Third forth synchronize assy.	1
	S1701070	Fifth synchronize assy.	1
	LF481Q1-1701127A	Second gear needle bearing	1
	LF481Q1-1701069A	Fifth synchronize rim	1
	LF481Q1-1701065A	Forth synchronize rim	1
	LF481Q1-1701059A	Third synchronize rim	1
	LF481Q1-1701076A	Third forth needle bearing	2
	S1701500	Output shaft assy.	1
	LF481Q1-1701141A	Output shaft front bearing	1
	S1701114B	Synchronize ring, 1st&2nd	2

The daily use components	S1701115B	Middle ring, 1st&2nd	2
	LF481Q1-1701127A	Second gear needle bearing	1
	LF481Q1-1701150A	Output shaft rear bearing	1
	S1701120B	First second synchronize assy.	1
	LF481Q1-1701103A	First needle bearing	1
	LF481Q1-1701106A	Output shaft	1
	LF481Q1-1701101A	Output fifth circlip	1
	S1701047	Bearing spacing sleeve	1
	LF481Q1-1701137A	Spacing sleeve, 3rd&4th	1
	S1701116B	Synchronize ouer ring, 1st&2nd	2
	S2303300	Differential assy.	1
	S6101001	Front left door assy.	1
	S6101002	Front right door assy.	1
	S6201001	Rear left door assy.	1
	S6201002	Rear right door assy.	1
	S6301000	Tail door assy.	1
	S8402000	Engine hood	1
	S8402410	Engine hood hinge, left	1
	S8402420	Engine hood hinge, right	1
	Q1840820	Hex flange bolt	8
	S8403100	Front left fender	1
	S8403200	Front right fender	1
	S3661220	Ambient light sensor	1
	S3820000	Instrument cluster	1
	S8112100	Air conditioner control panel	1
	S3722100	Central control case	1
	S3787820	Tail door lock switch	1
	S3710400	warning light switch	1
	B3774100D1	Lamp switch	1
	S3774300B1	Wiper switch	1

The daily use components	S3746100	Inner handrail with switches,front left door	1
	S3746200	Inner handrail with switches,front right door	1
	S3746300	Inner handrail with switches,rear left door	1
	S3746400	Inner handrail with switches,rear right door	1
	B3746120A2	Glass lifter,front left door	1
	B3746220A2	Glass lifter switch	1
	B3758110	Contacter switch,front door	4
	S3774100	Front wiper motor	1
	S3722200	Central control case, engine room	1
	S3747120	Front washer motor	1
	S3721200	Bass horn	1
	S3721100	Alt horn	1
	S3703100	Battery assy.	1
	S3741400	Rear wiper motor	1
	S4131100	Door lock warning light	4
	S4116100	Front fog light	2
	S4111100	Srteering light,left	1
	S4111200	Srteering light,right	1
	S4121100	Front left head lamp	1
	S4121200	Front right head lamp	1
	S4123100	Front ceiling light	1
	S4123200	Middle ceiling light	2
	S4134300	High-mount brake lamp	1
	S4133300	Left tail lamp	1
	S4133400	Right tail lamp	1
	S4116300	Rear fog light,left	1
	S4116400	Rear fog light,right	1
	LBU4108100	Lisence plate light	2
	S7909200	Alt speaker	2

The daily use components	S7901500	CD player	1
	S7909100	Front speaker	4
	SS37001	Key and lock cylinders	1
	SS36001	BCM remote kit	1
	S4001500	Engine cable	1
	S4001350	Battery negative cable	1
	S4003100	Dashboard cable	1
	S4003600	SRS cable(Airbag cable)	1
	S4006100	Front left door harness	1
	S4006200	Front right door harness	1
	S4006300	Rear left door harness	1
	S4006400	Rear right door harness	1
	S4006600	Tail door cable	1
	S4002100	Body cable	1
	S4005100	Roof cable	1
	S2803110	Front bumper assy.	1
	S2803121	Front bumper damper	1
	S2803131	Front bumper bracket, left	1
	S2803132	Front bumper bracket, right	1
	S2803411	Steering lamp cover, left	1
	S2803412	Steering lamp cover, right	1
	S2804111	Rear bumper	1
	S2804121	Rear bumper damper, left	1
	S2804122	Rear bumper damper, right	1
	S2804130	Rear bumper bracket, left	1
	S2804140	Rear bumper bracket, right	1
	S2804132	Rear bumper bracket washer	2
	S2803510	License plate fixing plate	1
	Q31206	“B” spring nut	2
	S2803510B1	License plate fixing plate	1
	400-0072	Plastic clip	12

The daily use components	400-2233	Clip	1
	400-2232	Clip	1
	400-2237	Clip	3
	S5304110	Left ventilation cover assy.	1
	S5304210	Right ventilation cover assy.	1
	S5304121	Ventilation cover seal	1
	S5509100	Front grille	1
	S5512111	Front left mudguard 1	1
	S5512121	Front right mudguard 1	1
	S5512112	Front left mudguard	1
	S5512122	Front right mudguard	1
	S5512152	Rear left mudguard 2	1
	S5512162	Rear right mudguard 2	1
	400-0415	Plastic clip	12
	400-0084	Clip	4
	S5206100	Front wind-shield glass	1
	S5206260	Front wind-shield glass seal	1
	S5206210	Front wind-shield glass mount, left	1
	S5206220	Front wind-shield glass mount, right	1
	S5206240	Front wind-shield seal, left	1
	S5206250	Front wind-shield seal, right	1
	S5206230	Front wind-shield seal, upper	1
	S6303110	Tail door glass	1
	S6307112	Tail door glass seal, left	1
	S6307212	Tail door glass seal, right	1
	S6307114	Tail door glass seal, lower	1
	S6103100	Front left door glass	1
	S6103200	Front right door glass	1
	S6107111	Glass seal, front left door	1
	S6107211	Glass seal, front right door	1

The daily use components	S6203100	Rear left door glass	1
	S6203200	Rear right door glass	1
	S6207111	Glass seal, rear left door	1
	S6207211	Glass seal, rear right door	1
	S6203311	Left triangular window, door side	1
	S6203411	Right triangular window, door side	1
	S6207131	Left triangular window seal, door side	1
	S6207231	Right triangular window seal, door side	1
	S5406110	Left triangular window, body side	1
	S5406210	Right triangular window, body side	1
	S5406113	Clip	6
	S5207100	Washer can assy.	1
	S5205100	Window wiper, left	1
	S5205200	Window wiper, right	1
	S6310100	Tail windshield wiper	1
	S5305230	Shift lever sleeve assy.	1
	S5306300	Dashboard centre A/C nozzle assy.	2
	S5306711B31	Steering pillar cover, upper	1
	S5306712B31	Steering pillar cover, lower	1
	S5306600B32	Glove box assy.	1
	S5406420	Fuel filler cap switch	1
	S5406410	Fuel filler cap cable assy.	1
	S5402110B32	Left upper fender,A-pillar	1
	S5402210B32	Right upper fender,A-pillar	1
	S5402120B31	Left lower fender,A-pillar	1
	S5402220B31	Right lower fender,A-pillar	1
	S5402130B32	Left upper fender, B pillar	1
	S5402230B32	Right upper fender, B pillar	1
	S5402140B31	Left lower fender, B pillar	1
	S5402240B31	Right lower fender, B pillar	1

The daily use components	S5402181B31	Threshold fender, rear left door	1
	S5402281B32	Threshold fender, rear right door	1
	S5402150B32	Left upper fender,C-pillar	1
	S5402250B32	Right upper fender,C-pillar	1
	S5402160B31	Left lower fender assy,C-pillar	1
	S5402260B31	Right lower fender assy,C-pillar	1
	400-540	Plastic clip	46
	400-0317B31	Plastic clip	2
	400-255	Plastic clip	2
	S5608400B31	Trunk curtain	1
	S5614110	Rear spoiler assy.	1
	S5824100	Driver ‘s airbag	1
	S3658300	Airbag clock spring	1
	S5824200	Passengers airbag	1
	S6102110B34	Front left door interior assy.	1
	S6102210B34	Front right door interior assy.	1
	S6102181B31	Triangular fender, front left door	1
	S6102281B31	Triangular fender, front right door	1
	S6202110B34	Rear left door interior assy.	1
	S6202210B34	Rear right door interior assy.	1
	S6102130	Inner handle, left door	1
	S6102230	Inner handle, right door	1
	S6202150B32	Outer handle assy, rear left door	1
	S6202250B32	Outer handle assy, rear right door	1
	S6202151	Outer handle, rear left door	1
	S6202251	Outer handle, rear right door	1
	S6202152	Outer handle cap, rear left door	1
	S6202185B33	Outer handle washer, rear left door	1

	S6202285B33	Outer handle bracket, rear right door	1
The daily use components	400-540	Plastic clip	16
	S6302110B31	Tail door interior assy, lower	1
	S6105300A2	Out handle,front left door	1
	S6105400A2	Out handle,front right door	1
	S6105310A2	Out handle lever,left door	1
	S6105410A2	Out handle lever,right door	1
	S6105331A2	Out handle cap,front left door	1
	S6105431A2	Out handle cap,front right door	1
	S6105320	Out handle seat,front left door	1
	S6105420	Out handle seat,front right door	1
	S6105332	Out handle washer 1,front left door	1
	S6105432	Out handle washer 1,front right door	1
	S6105333	Out handle washer 2,front left door	1
	S6105433	Out handle washer 2,front right door	1
	S5532311	Front door stoping block	2
	S6107120	Front left door seal, door side	1
	S6107220	Front right door seal, door side	1
	S6107113	Front left door seal, body side	1
	S6107213	Front right door seal, body side	1
	S6109110	Front door stopper	2
	S6104100	Glass lifter, front left door	1
	S6104200	Glass lifter, front right door	1
	S6105110	Front left door lock	1
	S6105210	Front right door lock	1

	S6101030	Glass rail front part ,front left door	1
The daily use components	S6101040	Glass rail front part,front right door	1
	S6101050	Glass rail rear part ,front left door	1
	S6101060	Glass rail rear part,front right door	1
	S6207112	Out weather Strip, rear left door	1
	S6207212	Out weather Strip, rear right door	1
	S6205300A2	Out handle,rear left door	1
	S6205400A2	Out handle,rear right door	1
	S6105310A2	Out handle lever,left door	1
	S6105410A2	Out handle lever,right door	1
	S6205331A2	Out handle cap,rear left door	1
	S6205431A2	Out handle cap,rear right door	1
	S6205320	Out handle seat,rear left door	1
	S6205420	Out handle seat,rear right door	1
	S6105332	Out handle washer 1,rear left door	1
	S6105432	Out handle washer 1,rear right door	1
	S6105333	Out handle washer 2,rear left door	1
	S6105433	Out handle washer 2,rear right door	1
	S6207114	Inner weather Strip, rear left door	1
	S6207214	Inner weather Strip, rear right door	1
	S6207120	Rear left door seal, door side	1
	S6207220	Rear right door seal, door side	1
	S6207113	Rear left door seal, body side	1
	S6207213	Rear right door seal, body side	1

	S6205110	Rear left door lock	1
	S6205210	Rear right door lock	1
The daily use components	S6204100	Glass lifter, rear left door	1
	S6204200	Glass lifter, rear right door	1
	S6209110	Rear door stopper	2
	S5532312	Rear door stoping block	2
	S6201030	Glass rail,rear left door	1
	S6201040	Glass rail,rear right door	1
	S6307111	Tail door seal	1
	S6305110	Tail door lock assy.	1
	S6309110	Trunk door pneumatic spring	2
	S6305180	Tail door out handle	1
	S8202100	Left wing mirror	1
	S8202200	Right wing mirror	1
	S8402500	Engine hood lock	1
	S8402610	Engine hood switch cable assy.	1
	S8402710	Engine hood prop	1
	S8402721	Engine hood prop sleeve	1
	S8402722	Engine hood prop clamp	1
	S3630300	Wheel speed sensor, front left	1
	S3630400	Wheel speed sensor, front right	1
	S3630500	Wheel speed sensor, rear left	1
	S3630600	Wheel speed sensor, rear right	1
	S3540000	Brake pump with booster and liquid can	1
	SS35400	Brake pump with reservior	1
	S3540400	Brake booster	1
	S3540931	Booster pipe	1
	B3781120	Brake lamp switch	1

	S3612100	ECU	1
The domestic market easy failure parts	S3705100	Ignition coil	1
	S1121100	Fuel distributor	1
	S3612300	Oxygen Sensor	1
	LBA3612600	Crankshaft Position Sensor	1
	LBA1130310	Canister Control Valve	1
	S3612200	Camshaft position sensor	1
	LBA3612400	Knock Sensor	1
	S1132100	Throttle assy	1
	LBA3612500	Acceleration sensor	1
	S3614300	Temperature And Pressure Sensor	1
	LBA3616100	Water Temperature Sensor	1
	B3676230	Temperature sensor, out of vehicle	1
	SS36001	BCM remote kit	1
	S3658300	Airbag clock spring	1
	B3603820B1	Reverse radar sensor	2
	B3605410	Immobilizer warner	1
	S3722100	Central control case	1
	LFB479Q-3610200A	Camshaft oil distributor	1
	S1132100	Throttle assy	1
	S1601200	Clutch Driven Plate	1
	S1601100	Clutch press plate	1
	S1205300	TWC	1
	S2905100	Front left shock absorber assy.	1
	S2905600	Front right shock absorber assy.	1
	S2905200	Front left shock absorber assy.	1
	S2905700	Front right shock absorber assy.	1
	S4001500	Engine cable	1

According to various market demand choice parts state	S3721200	Bass horn	1
	S3721100	Alt horn	1
	S3721220	Horn	1
	S3721120	Horn	1
	S2915200	Rear shock absorber	2
	S6102130	Inner handle, left door	1
	S3658300	Airbag clock spring	1
	S3658300B1	Airbag clock spring (EX, for steering wheel with multi-switch)	1
	S3661220	Ambient light sensor	1
	S3661220B1	Sun light sensor(for AT A/C)	1
	S6102150B32	Outer handle assy, front left door(leatherette)	1
	S6102150A2	Outer handle assy, front left door(fabric)	1
	S6102250B32	Outer handle assy, front right door(leatherette)	1
	S6102250A2	Outer handle assy, front right door(fabric)	1
	S6102151	Outer handle, front left door(leatherette)	1
	S6102151A2	Outer handle, front left door(fabric)	1
	S6102251	Outer handle, front right door(leatherette)	1
	S6102251A2	Outer handle, front right door(fabric)	1
	S6105300	Out handle,front left door	1
	S6105300A2	Out handle,front left door(chromium)	1
	S6105400	Out handle,front right door	1
	S6105400A2	Out handle,front right door(chromium)	1
	S6105310	Out handle lever,left door	1
	S6105310A2	Out handle lever,left door(chromium)	1

	S6105410	Out handle lever,right door	1
	S6105410A2	Out handle lever,right door(chromium)	1
	S6105331	Out handle cap,front left door	1
	S6105331A2	Out handle cap,front left door(chromium)	1
	S6105431	Out handle cap,front right door	1
According to various market demand choice parts state	S6105431A2	Out handle cap,front right door(chromium)	1
	S6205300A2	Out handle,rear left door(chromium)	1
	S6205400	Out handle,rear right door	1
	S6205400A2	Out handle,rear right door(chromium)	1
	S6105310	Out handle lever,left door	1
	S6105310A2	Out handle lever,left door(chromium)	1
	S6105410	Out handle lever,right door	1
	S6105410A2	Out handle lever,right door(chromium)	1
	S6205331	Out handle cap,rear left door	1
	S6205331A2	Out handle cap,rear left door(chromium)	1
	S6205431	Out handle cap,rear right door	1
	S6205431A2	Out handle cap,rear right door(chromium)	1
	S8202100	Left wing mirror	1
	S8202100C1	Left wing mirror(Defrost)	1
	S8202200	Right wing mirror	1
	S8202200C1	Right wing mirror(Defrost)	1
	S8112100	Air conditioner control panel(MT A/C)	1
	S8112100B1	Air conditioner control panel(AT A/C)	1

CIRCUIT DIAGRAM OF LIFANX60

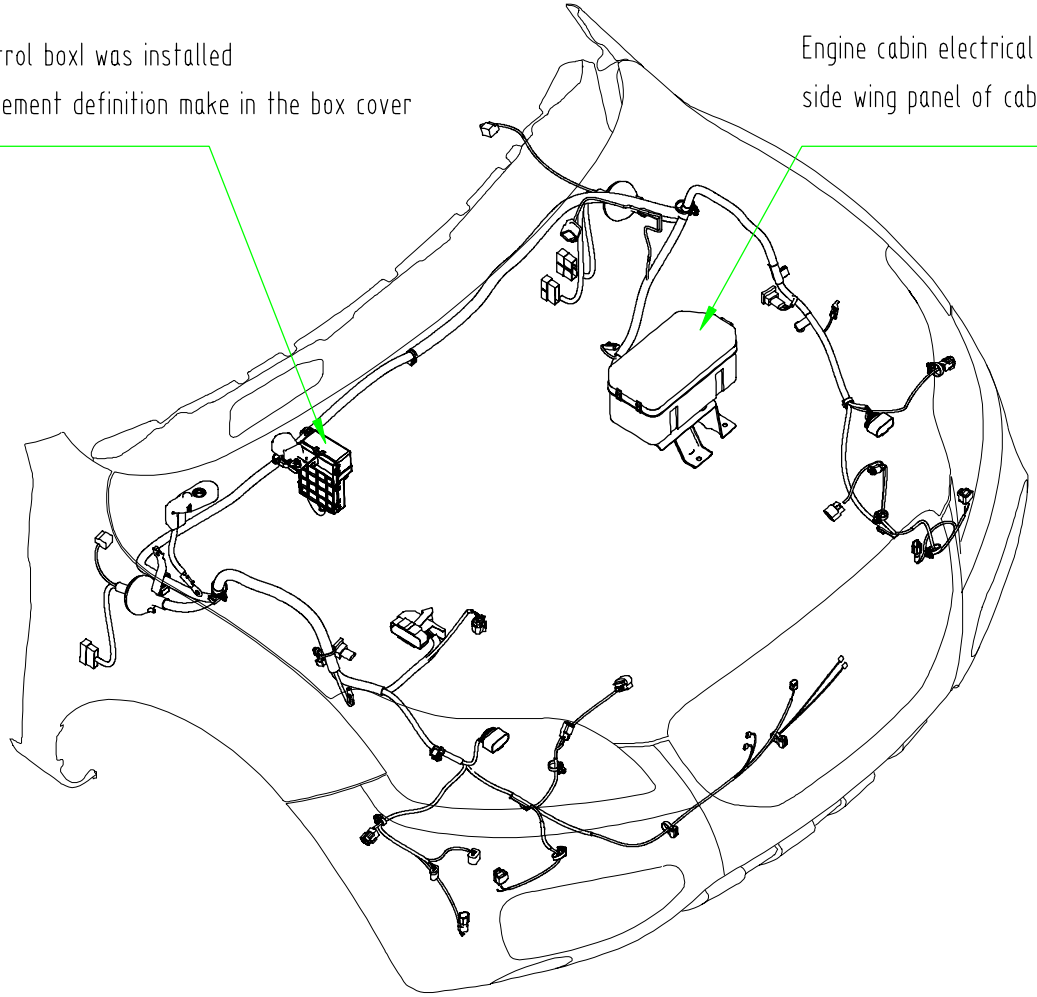
02.10.2012

Engine cabin electrical equipment center control box interface PIN feet block definition

1 2 3 4

Engine cabin electrical equipment center control boxI was installed positive terminal of right battery of cabin,element definition make in the box cover

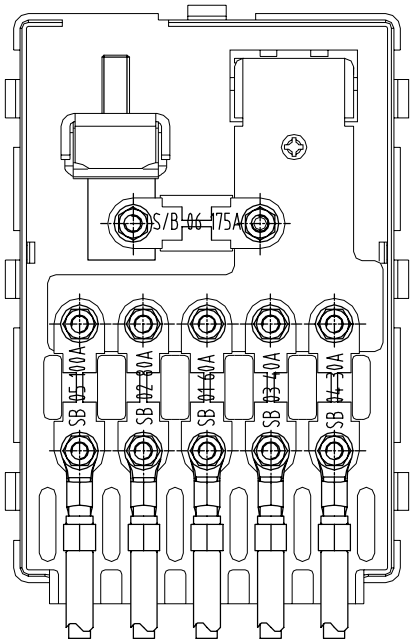
Engine cabin electrical equipment center control box Ⅱ was installed the left side wing panel of cabin, element definition make in the box cover



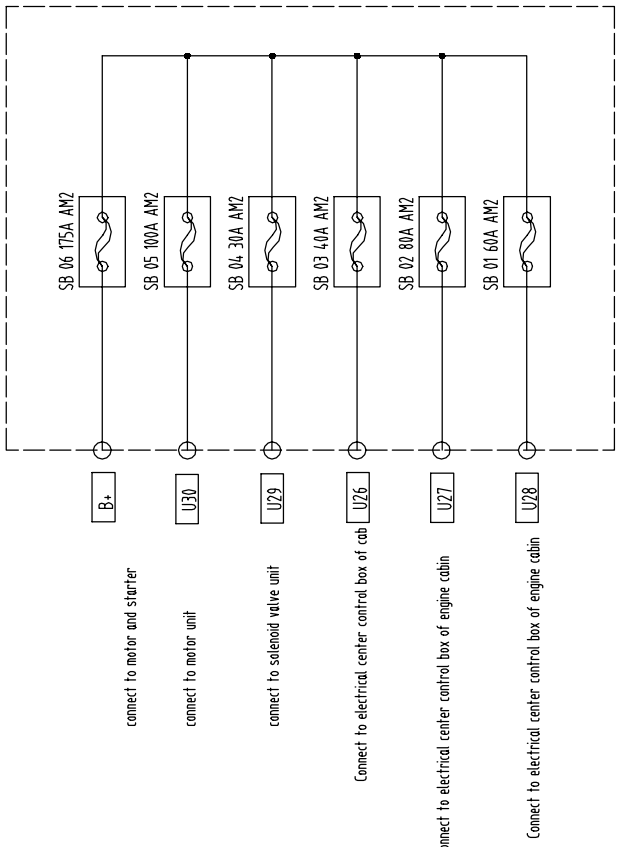
1 2 3 4

Engine cabin electrical equipment center control box interface PIN feet block definition

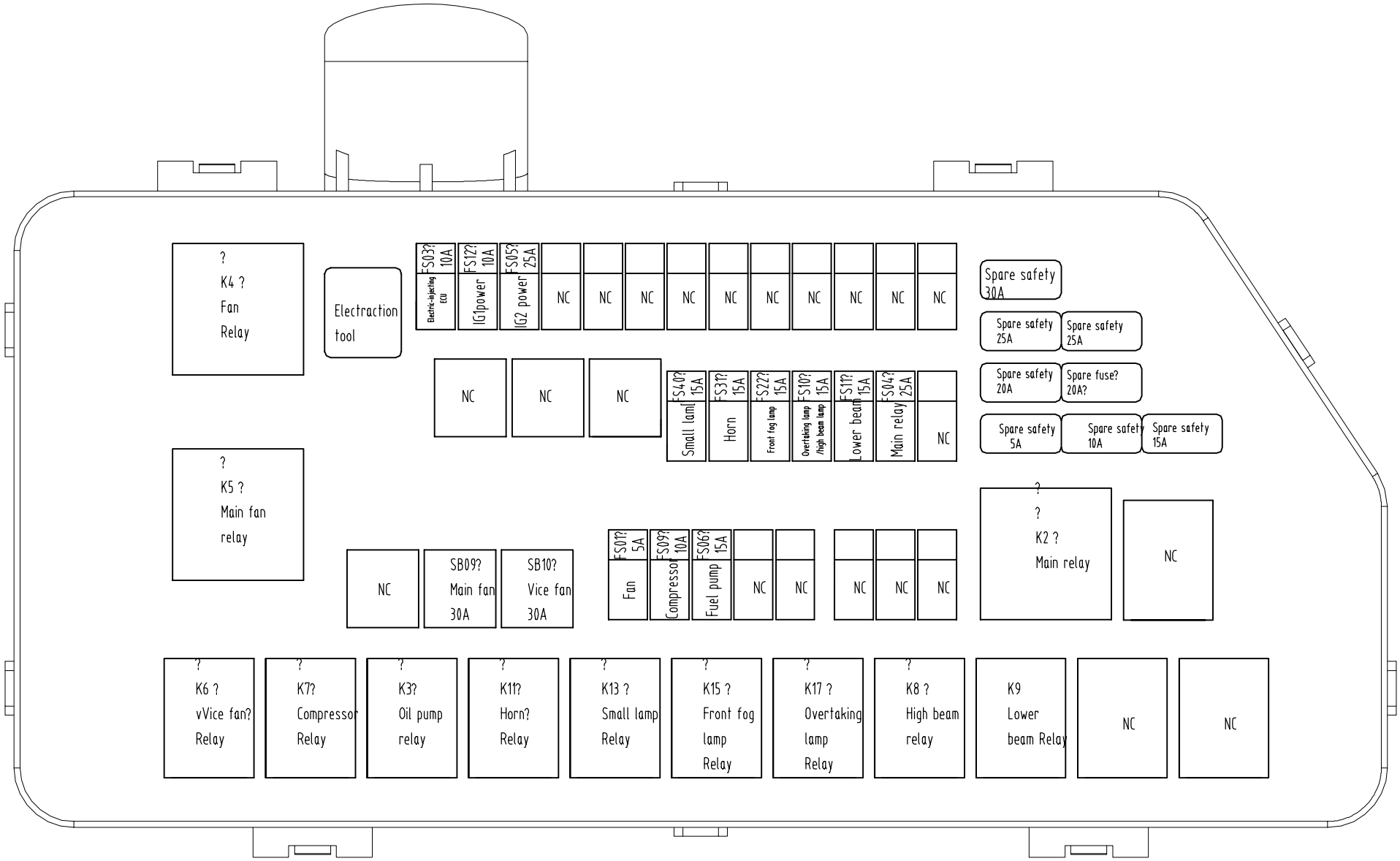
Element layout



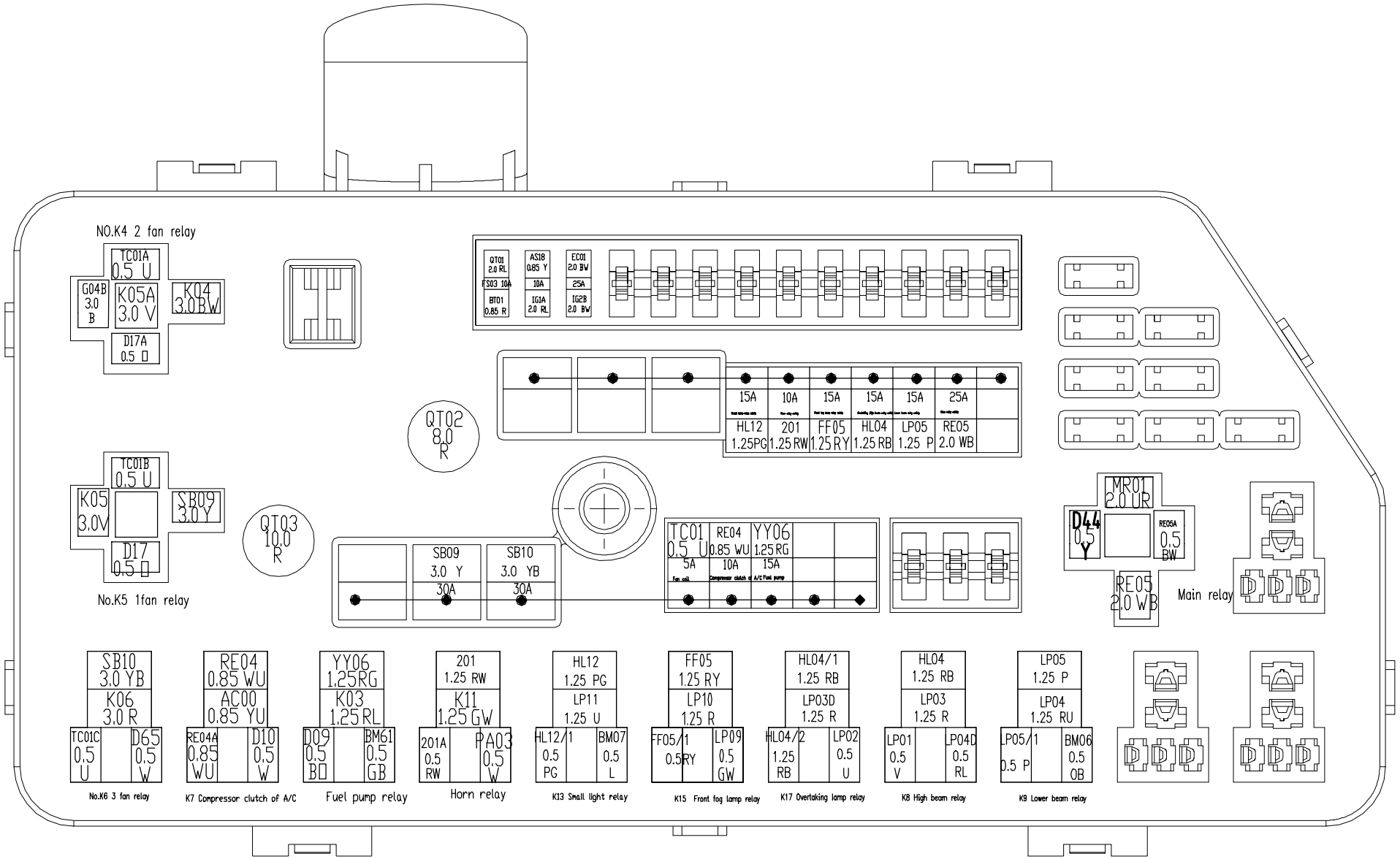
Electric circuit schematic diagram

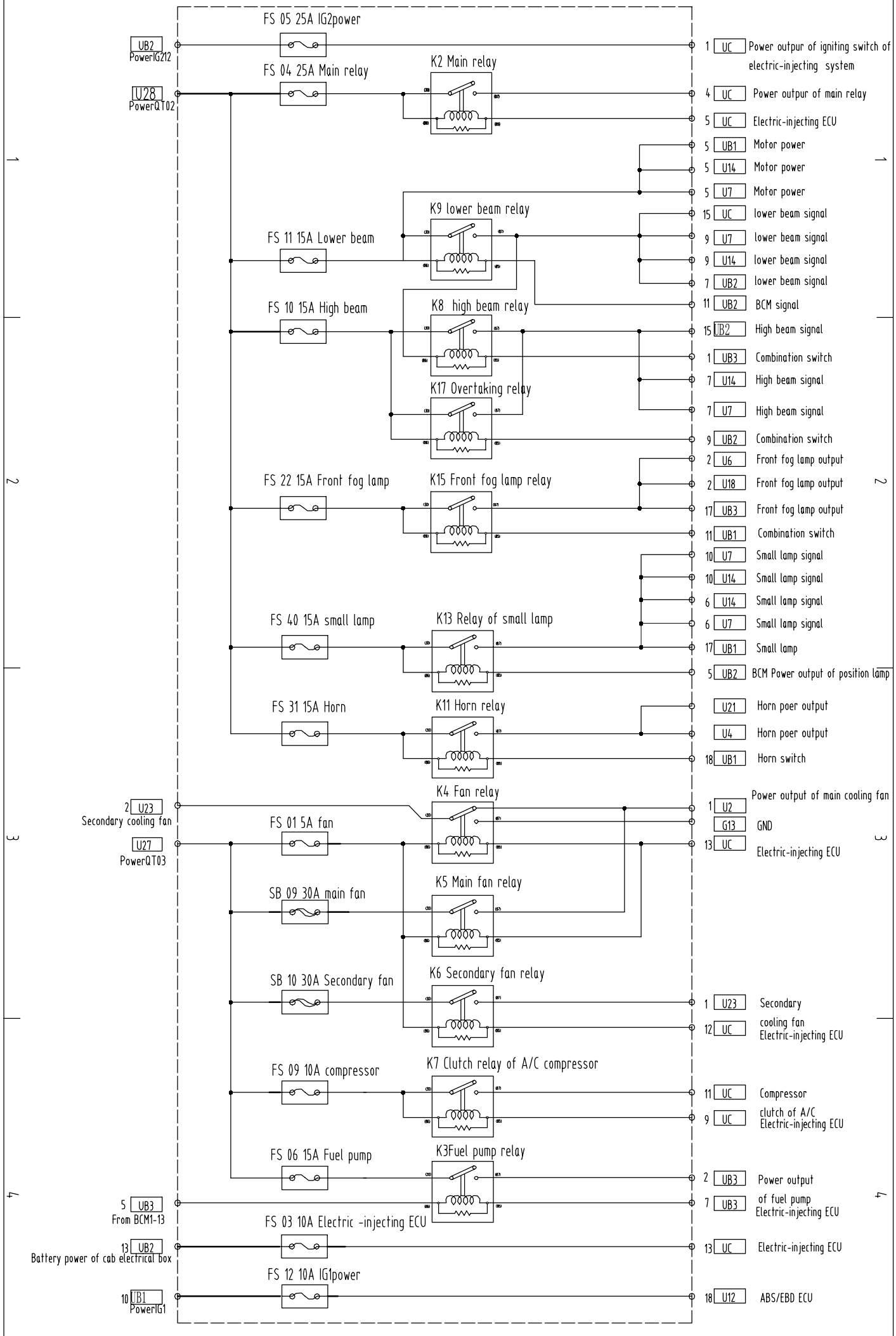


Electric layout of center control box of cab



Cab electrical center control box interface PIN feet definition figure

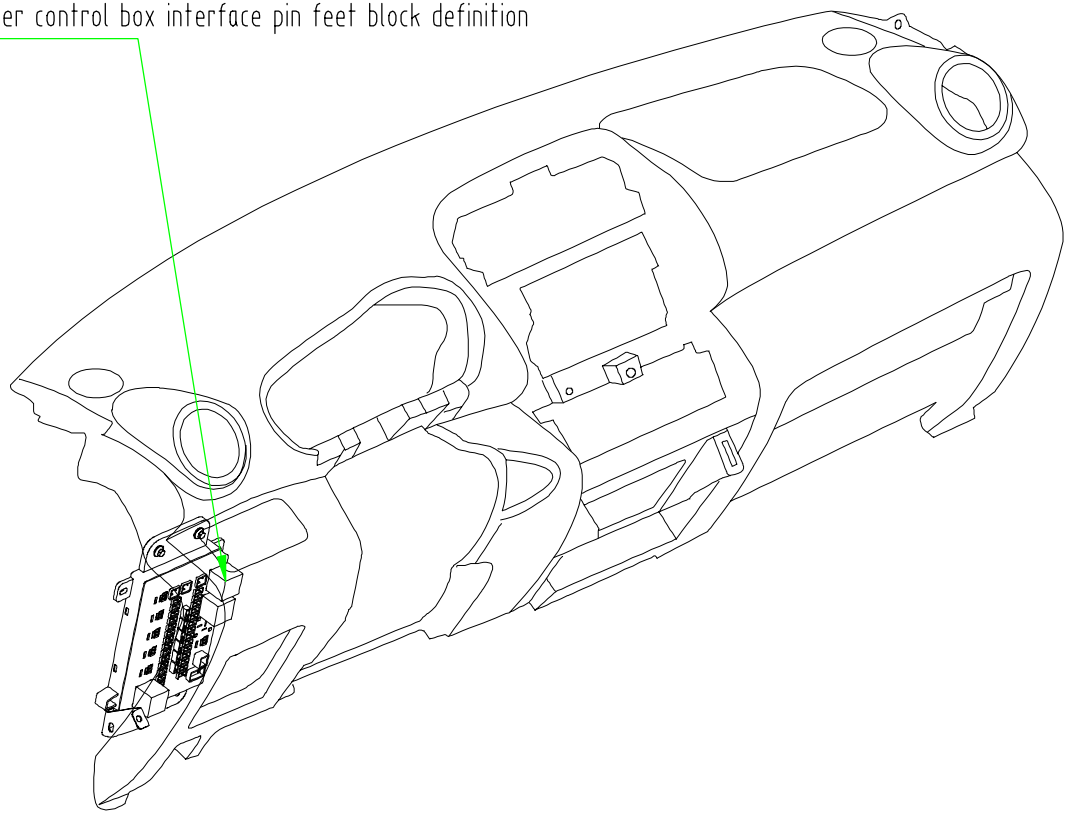



FS 05 25A IG2power
UB2
PowerIG212
FS 04 25A Main relay
U28
PowerQT02
K2 Main relay
1 UC Power outpur of igniting switch of electric-injecting system
4 UC Power outpur of main relay
5 UC Electric-injecting ECU
5 UB1 Motor power
5 U14 Motor power
5 U7 Motor power
K9 lower beam relay
FS 11 15A Lower beam
15 UC lower beam signal
9 U7 lower beam signal
9 U14 lower beam signal
7 UB2 lower beam signal
11 UB2 BCM signal
FS 10 15A High beam
K8 high beam relay
15 UB2 High beam signal
1 UB3 Combination switch
7 U14 High beam signal
K17 Overtaking relay
7 U7 High beam signal
9 UB2 Combination switch
2 U6 Front fog lamp output
FS 22 15A Front fog lamp
K15 Front fog lamp relay
2 U18 Front fog lamp output
17 UB3 Front fog lamp output
11 UB1 Combination switch
10 U7 Small lamp signal
10 U14 Small lamp signal
6 U14 Small lamp signal
6 U7 Small lamp signal
FS 40 15A small lamp
K13 Relay of small lamp
17 UB1 Small lamp
5 UB2 BCM Power output of position lamp
FS 31 15A Horn
K11 Horn relay
U21 Horn poer output
U4 Horn poer output
18 UB1 Horn switch
K4 Fan relay
2 U23
Secondary cooling fan
FS 01 5A fan
U27
PowerQT03
1 U2 Power output of main cooling fan
G13 GND
13 UC Electric-injecting ECU
SB 09 30A main fan
K5 Main fan relay
SB 10 30A Secondary fan
K6 Secondary fan relay
1 U23 Secondary
12 UC cooling fan Electric-injecting ECU
FS 09 10A compressor
K7 Clutch relay of A/C compressor
11 UC Compressor
9 UC clutch of A/C Electric-injecting ECU
FS 06 15A Fuel pump
K3Fuel pump relay
2 UB3 Power output
7 UB3 of fuel pump Electric-injecting ECU
5 UB3
From BCM1-13
FS 03 10A Electric -injecting ECU
13 UB2
Battery power of cab electrical box
13 UC Electric-injecting ECU
FS 12 10A IG1power
10 UB1
PowerIG1
18 U12 ABS/EBD ECU
1
2
3
4
Electric circuit schematic diagram of center control box of engine cabin

Installing position draw of cab electrical equipment center control box

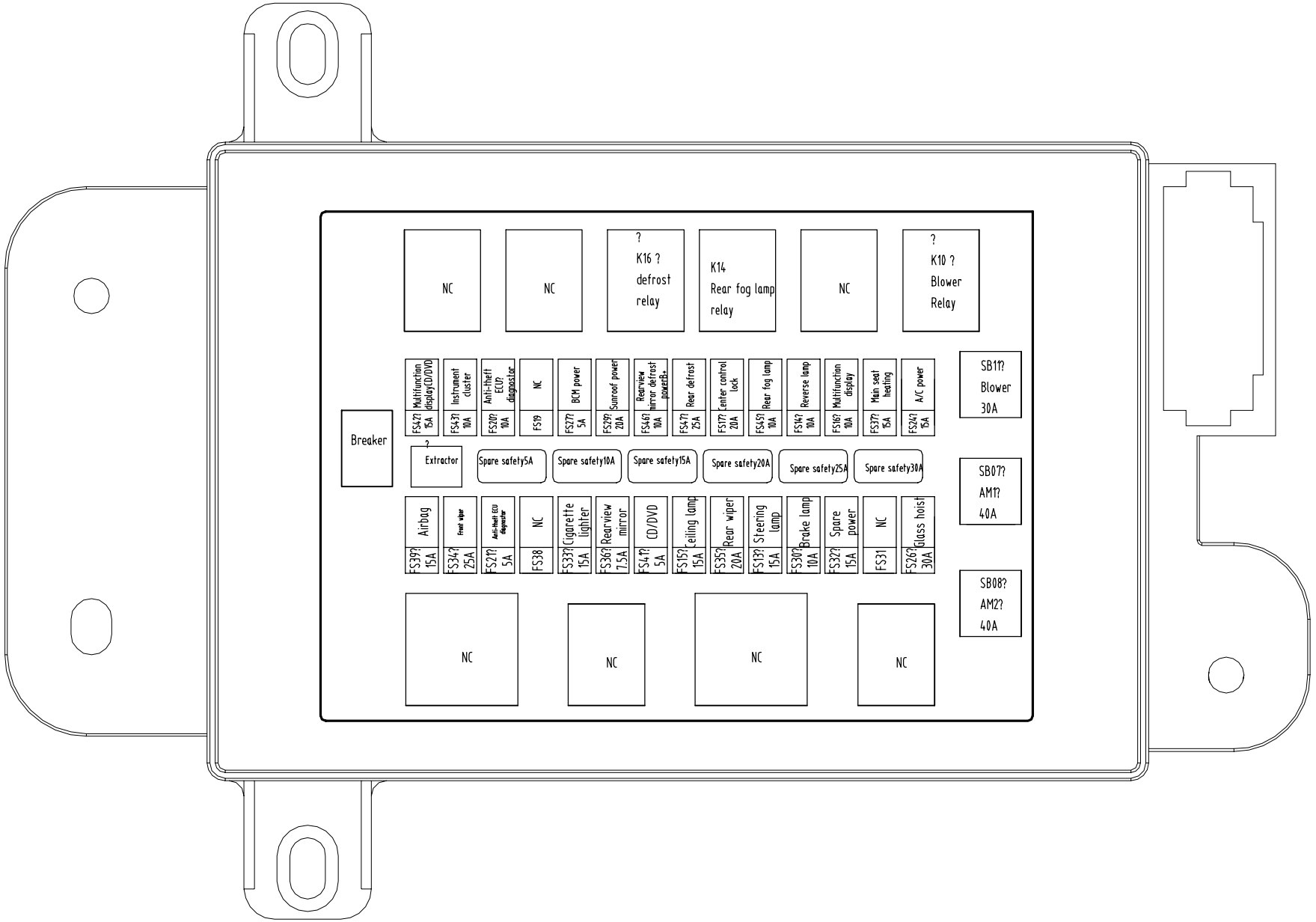
1	2	3	4

Engine cabin electrical equipment center control box interface pin feet block definition

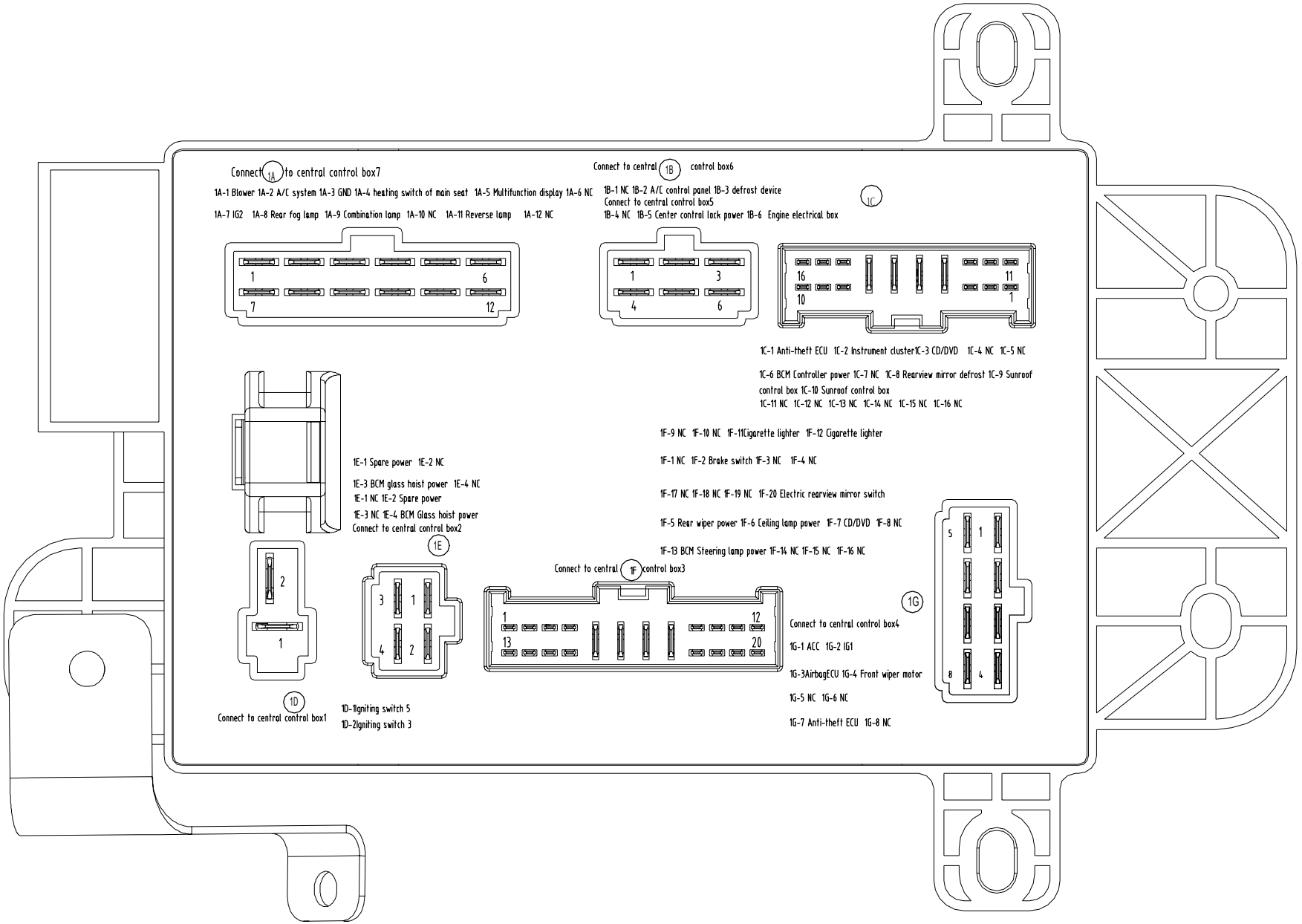


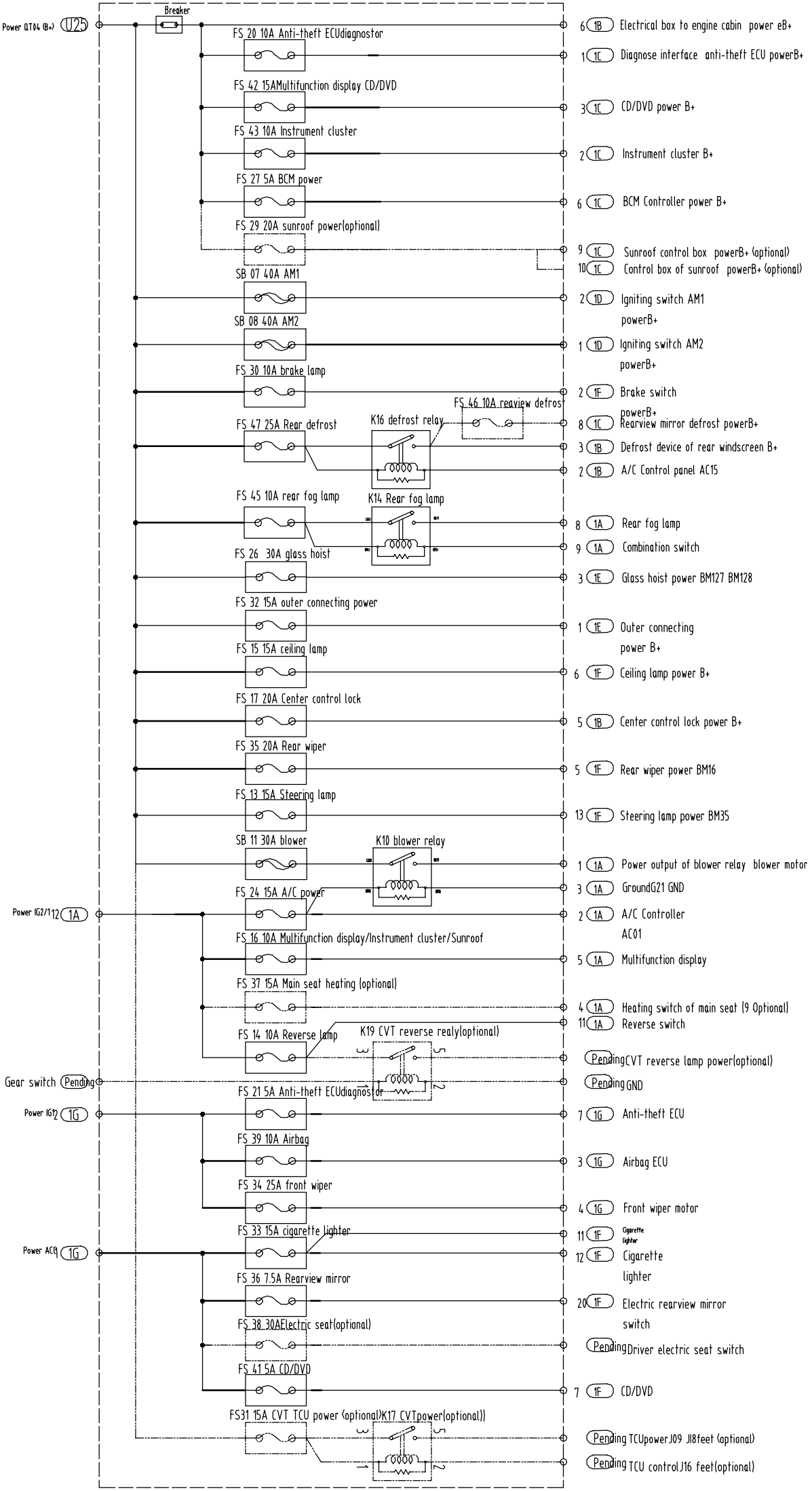
1	2	3	4

Electric layout of center control box of cab



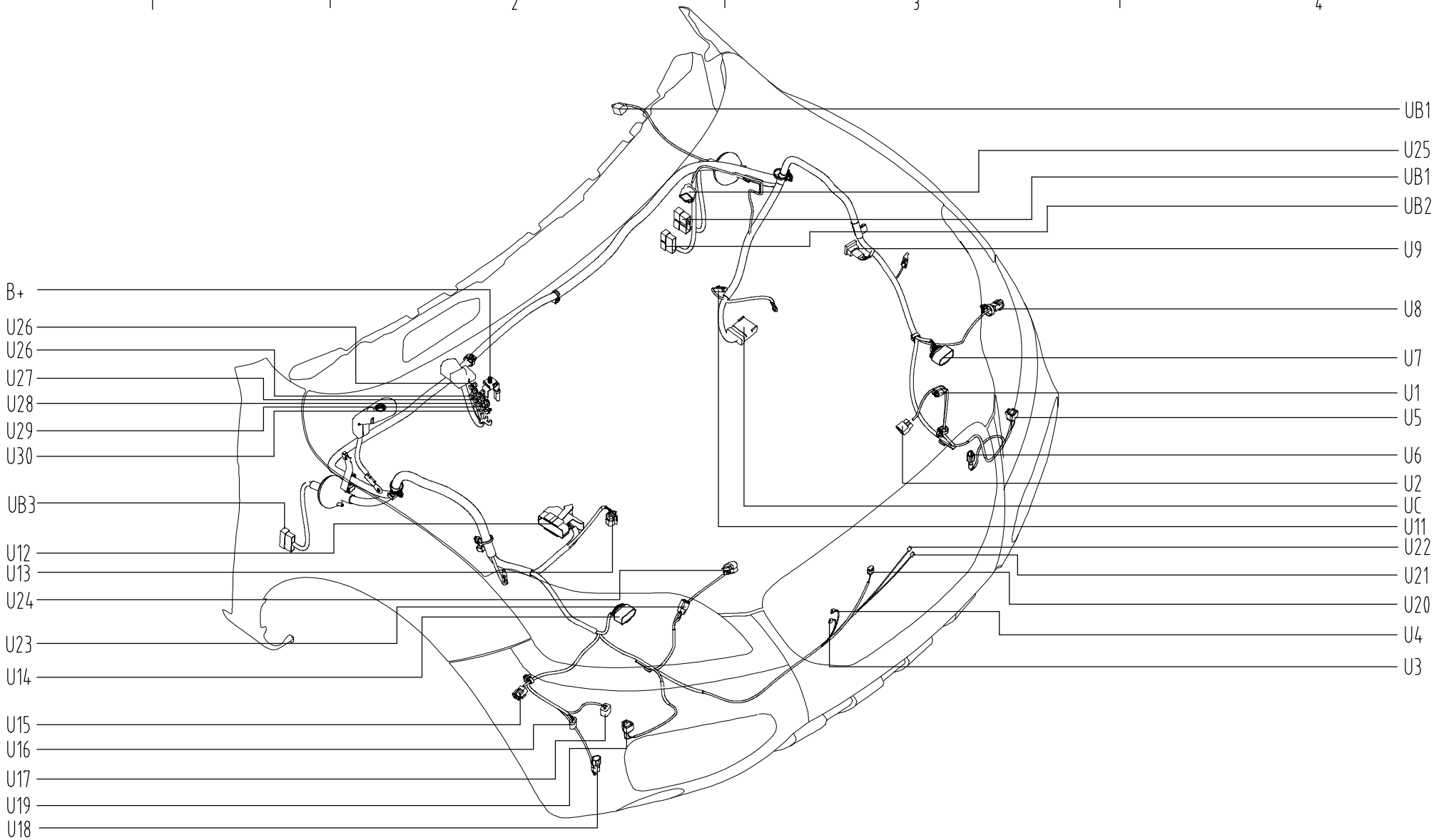
Cab electrical center control box interface PIN feet definition figure





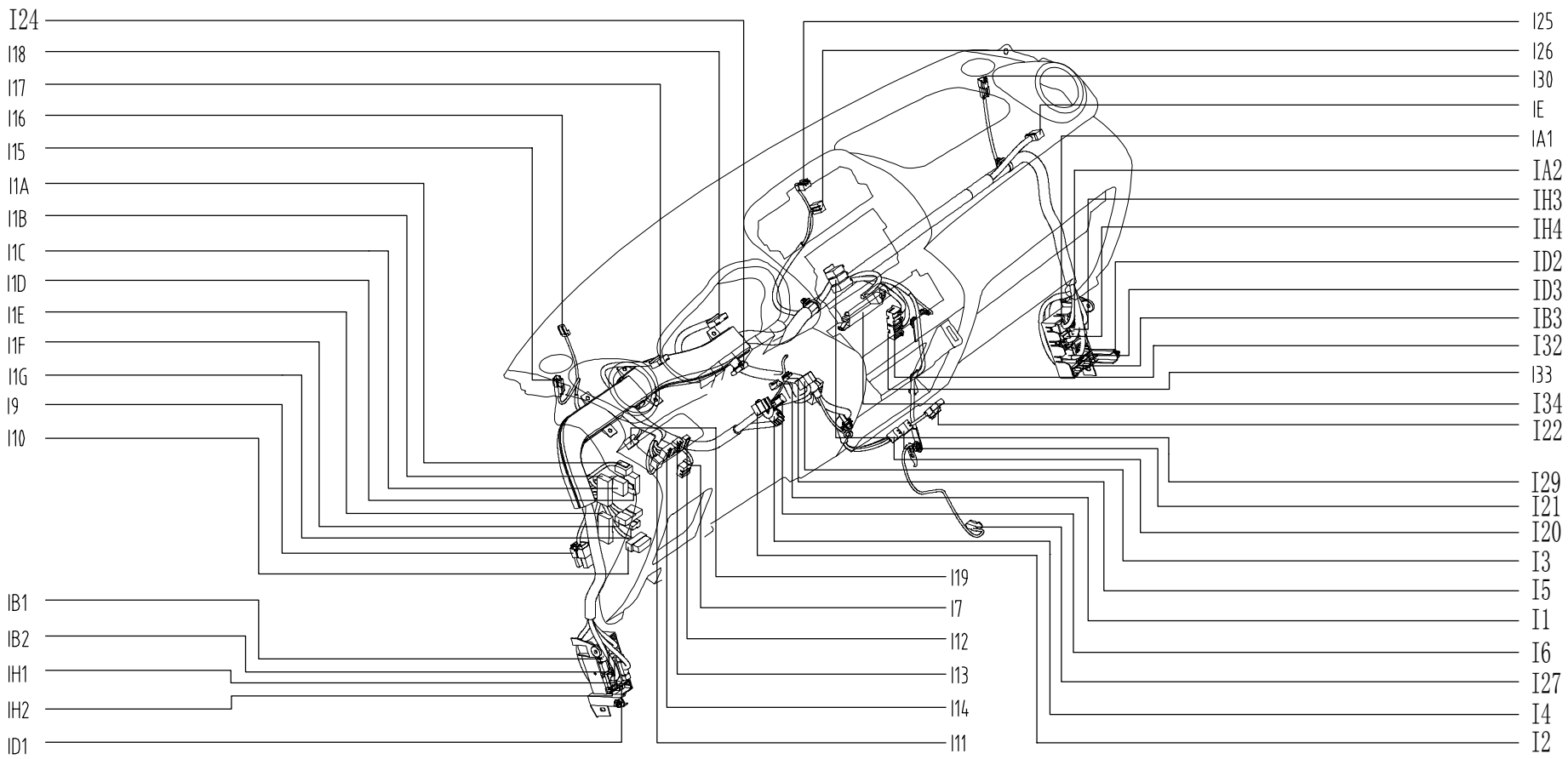
Electric circuit schematic diagram of center control box of engine cabin

Front conbin harness and components layout



U1- Connect to left front airbag sensor; U2- Connect to cooling fan; U3, U4-Connect to double chime electric horn; U5- Connect to left steering lamp; U6-Connecting left front fog lamp; U7- Connect to left front combination lamp; U8- Connect to left front speed sensor; U9-Connect to wearacceleration sensor; U10-Connect to wiper motor; U11-Connect to brake fluid level sensor; U12-Connect to ABS ECU;U13-Connect A/C pressure switch; U14-Connect to front combination lamp; U15- Connect to right front speed sensor; U16- Connect to headlamp washing motor; U17- Connect to front/rear washing motor; U18-Connect to right front frog lamp; U19-Connect to steering lamp; U20-Connect to outdoor temperature sensor; U21, U22-connect to double chime electric horn; U23-Connect to cooling fan; U24- Connect to right front airbag sensor; U25-Connect to cab electric control box 3; UC- Connect to engine harness; UB1, UB2, UB3-Connect to instrument panel harness

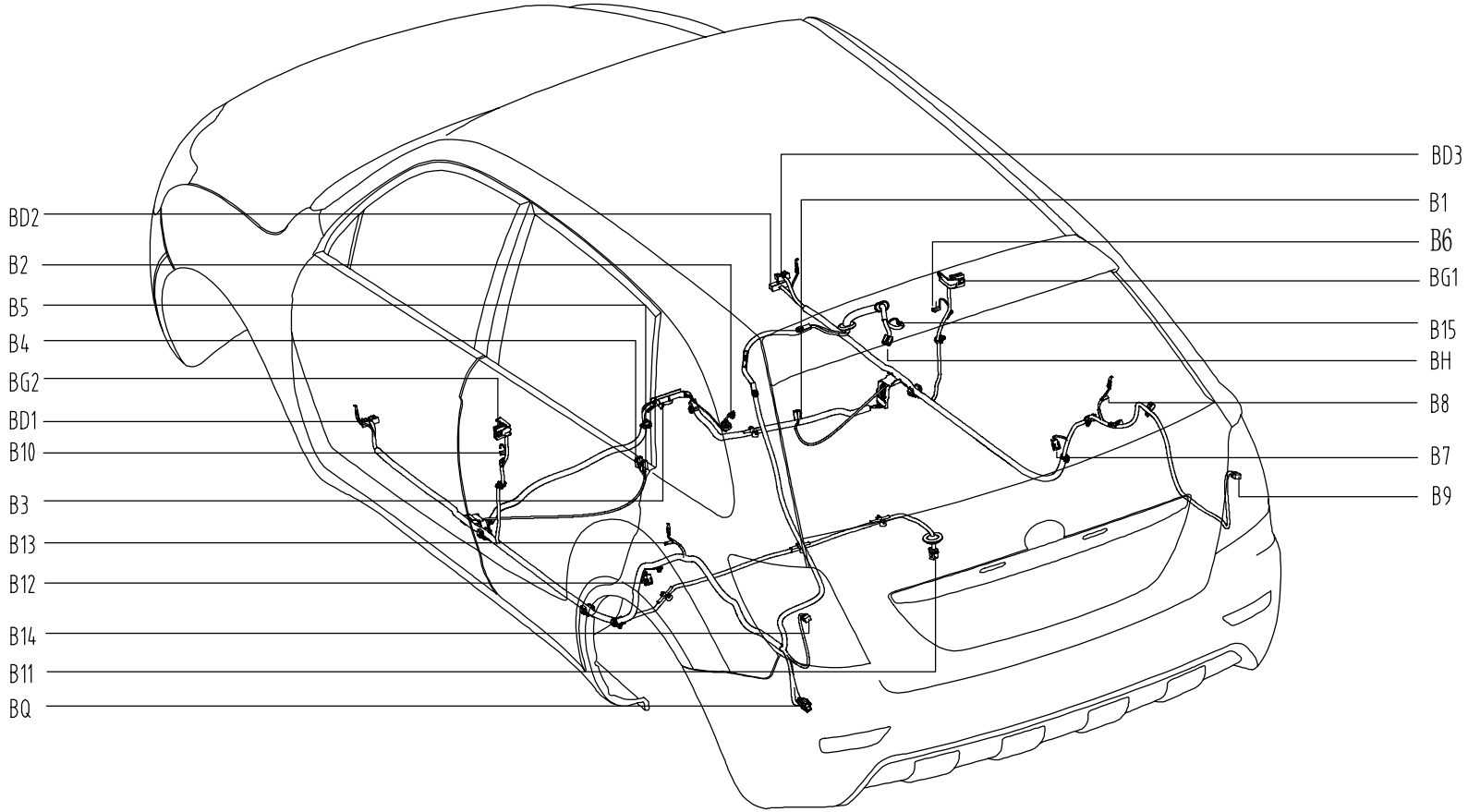
Instrument panel and part layout



I1 Connect to clock spring I2 Connect to lighting combination switch I3 Wiper combination switch I4Connect to igniting switch I5 Connect to key aperture I6 Connect to key insertion switch I7 connect-anti-theft controller I8Connect orBrake switch I9 Connect to airbag harness I10 Connect to diagnose interface
I11 Connect to center control lock switch I12 Connect to lower beam adjustabe switch I13 connect to instrument back light adjustable switch, I14 connect to electric rearview mirror switch, I15 Connect to left front high volume loudspeaker,I16 connect to ambient light sensor I17 Connect to Instrument clusterAI18 Connect to Instrument clusterB 119 connect to indoor temperature sensor; I20 connect to heating switch; I21 connect to back switch I22 connect to cigar lighter I24 connect to anti-theft alarm I25 connect to multi-function display: I26 connect to warning lamp switch I27 Connect to rear oxygen sensor: I29 Connect to CDI30 Connect to right front hight volume loudspeak 133 Connect to IBM, I34 Connect to BCM: I1A Connect to center control box: I1B Connect to center control boxB: I1C Connect to center control boxC: I1D Connect to center control boxD: I1E Connect to center control boxE I1F Connect to center control boxF I1G Connect to center control boxG IB1 Connect to front cabin harness 1 IB2 Connect to front cabin harness 2 IB3 Connect to front cabin harness 3 ID1 connect to body harness A ID2 connect to body harness A A ID3 connect to body harness3 IA1 connect to engine harness 1 IA2 connect to engine harness 2 IE Connect to ceilling harness IH1 connect to left front door harness 1 IH2 connect to left front door harness 2 IH3 connect to right front door harness 1 IH4 connect to right front door harness 2

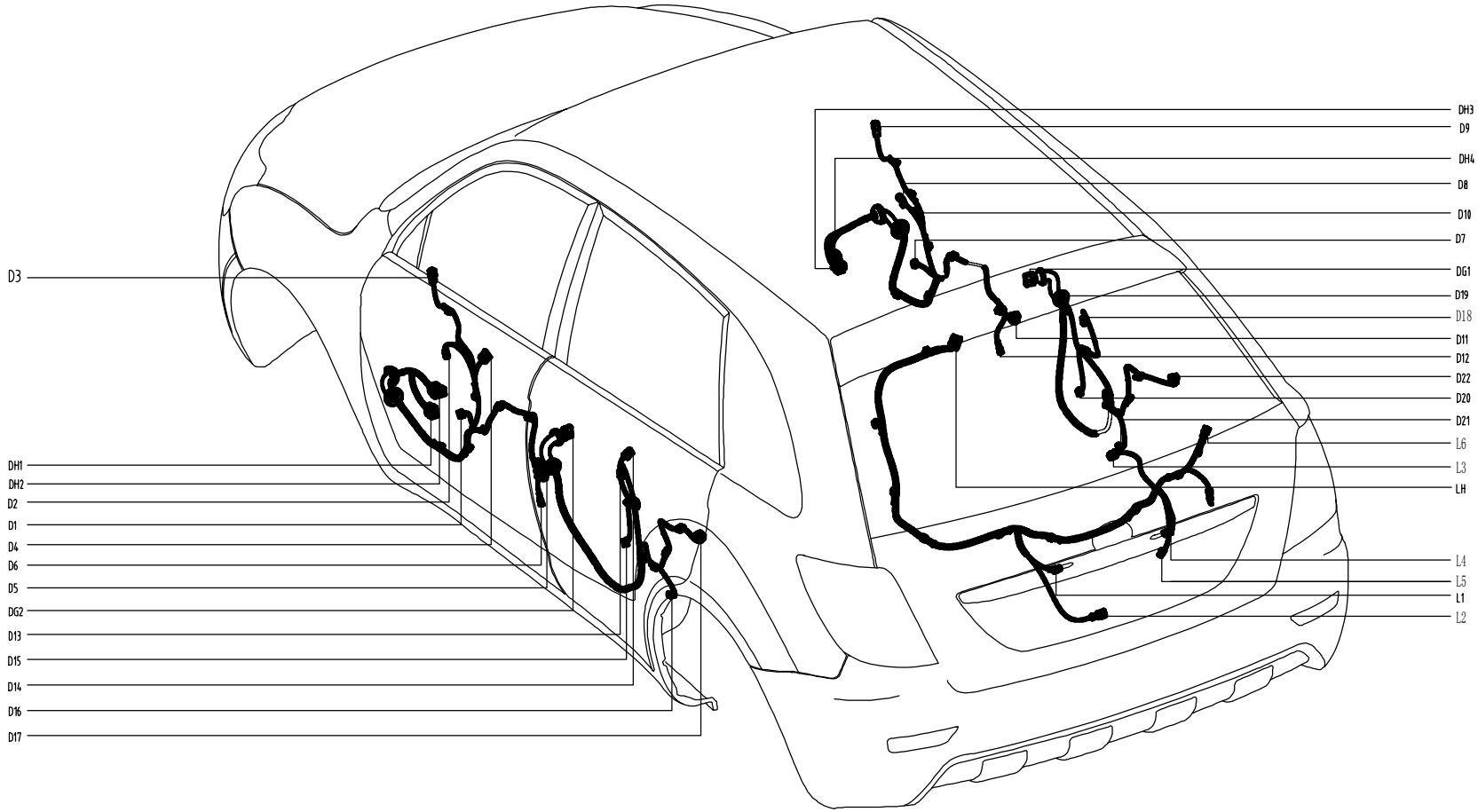
I14. Connect to electric rearview mirror switch

Body harness, right floor harness and component layout



B1-Connect to safety belt switch; B2-Connect to spare power; B3-Connect manual stop switch; B4-Connect to seat heating; B5-Connect to safety belt switch; B6-Connect right front door control switch; B7-Connect to right rear speed sensor; B8-Connect to right rear door control switch; B9-Connect to right rear combination lamp
B10-Connect to left front door control switch; B11-Connect to fuel tank; B12- Connect to left rear speed sensor; B13-Left rear door control switch; B14-Connect to left/right combination lamp; B15-Connect to hight position brake lamp; BH-Connecting rear cargo harness;
BQ-Connect to rear bumper harness; BD1、BD2、BD3-Connect to instrument desk harness

Door harness and component layout

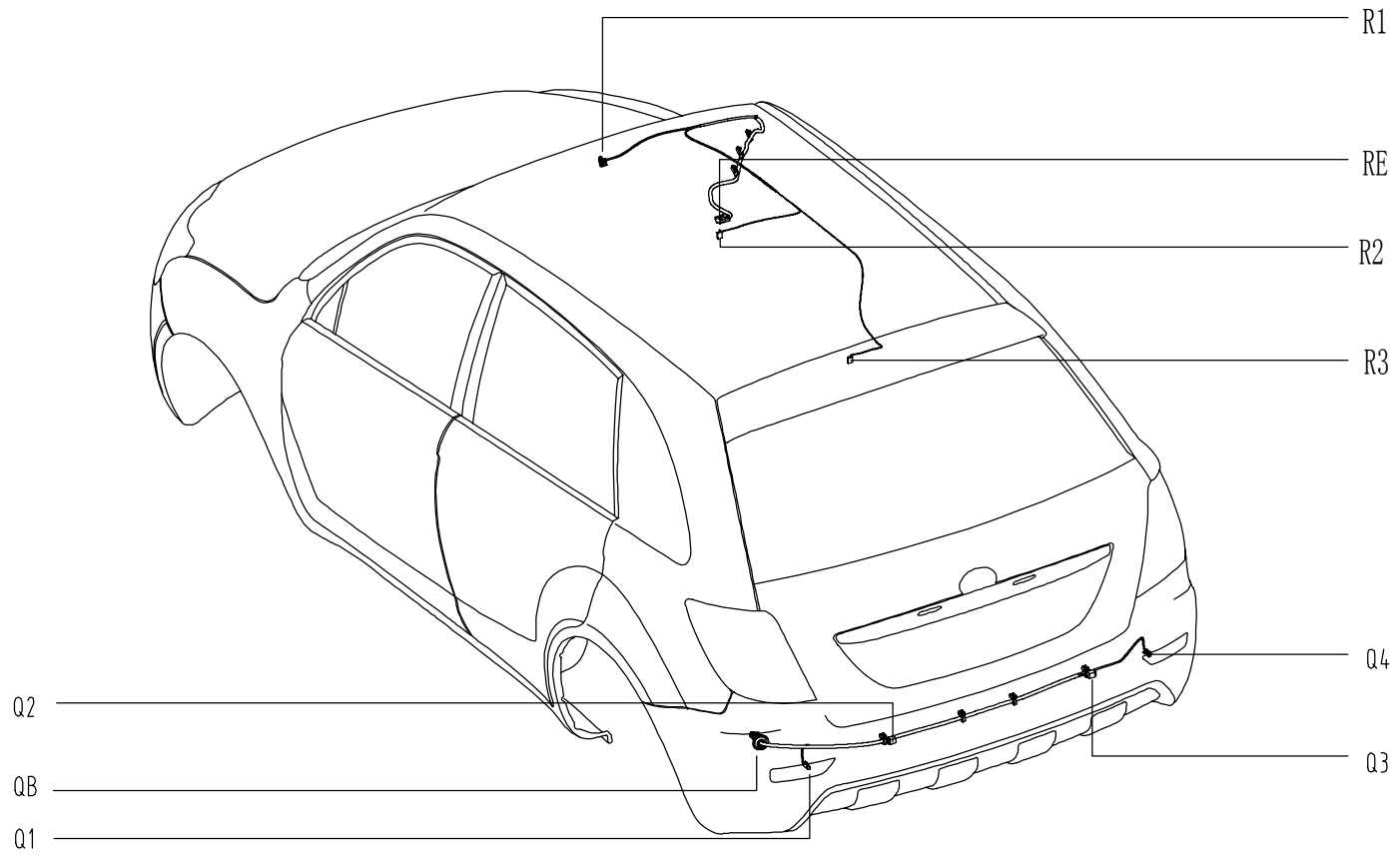


D3-Left front rearview mirror D2-Left front glass hoisting motor DH1、DH2-Connect to instrument harness D1-connect to loudspeaker of left front door

D4-Connect to left front glass hoist switch; D6-Connect to front door lamp; D5-Connect to fastener of left front door; DG2-connect to body harness; D13-connecting left rear glass hoisting motor; L2-Connect to rear back door lock; L5:Rear noise filter; D15-connect to loudspeaker of left rear door; D14-connect to left rear electric window switch; LH、DG1-connect to body harness; D9-Connect to right front electric rearview mirror; DH3、DG4-connect to instrument panel harness; D8-Connect to right front glass hoisting motor; D16-Connect left rear door lamp; D17-Connect to left rear door lock motor; D18-connect to right rear glass hoisting motor; D11- connect to right front door glass hoisting motor D10-Connect to right front glass hoisting switch; D7-connect to right front glass hoisting motor; D19-Connect to right rear electric window switch;

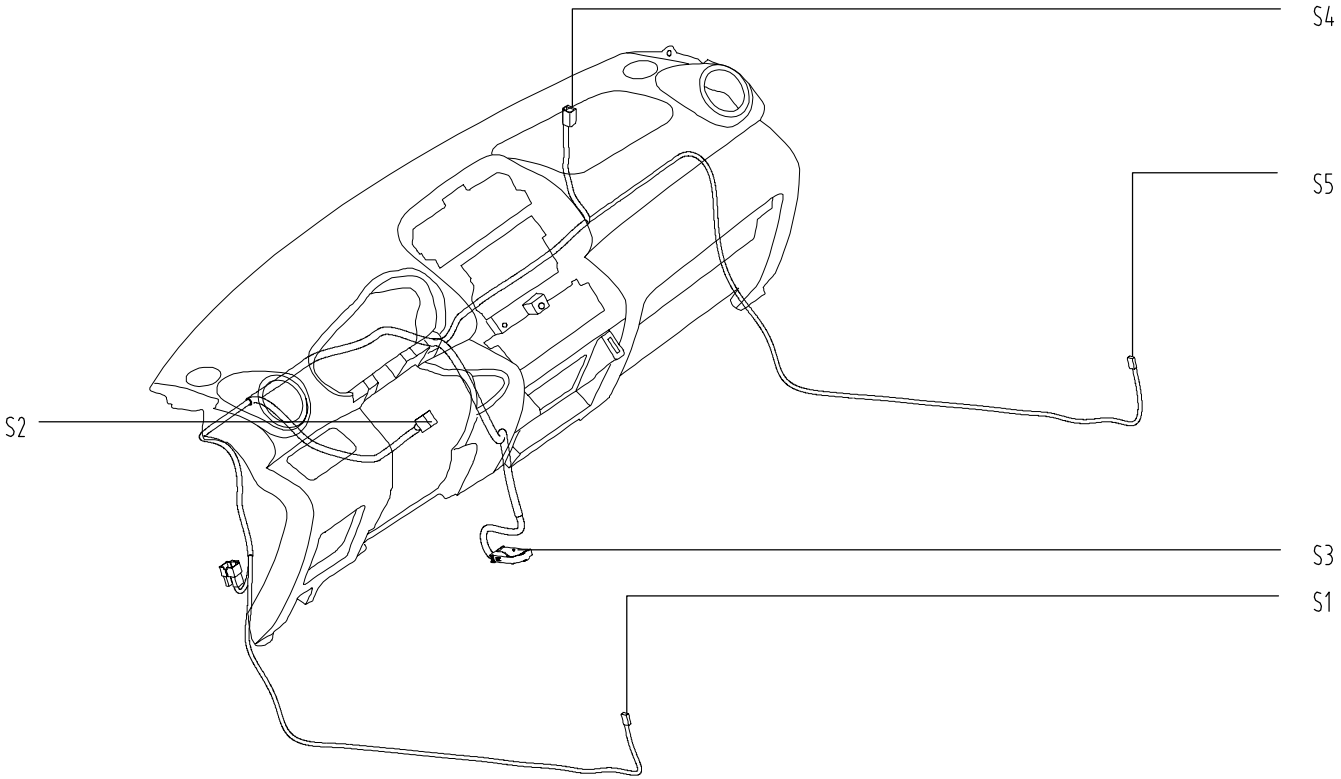
D12- Connect to right front door lamp; D20-Connect to right rear door loudspeaker; D22-Connectto right rear door lock motor; D21-Connect to right rear door lamp; L6-Connect to rear cargo defrost; L3- Connect to rear wiper motor; L1-Connect to left license lamp; L4-Connect right license lamp

Ceiling harness, rear body harness and component layout



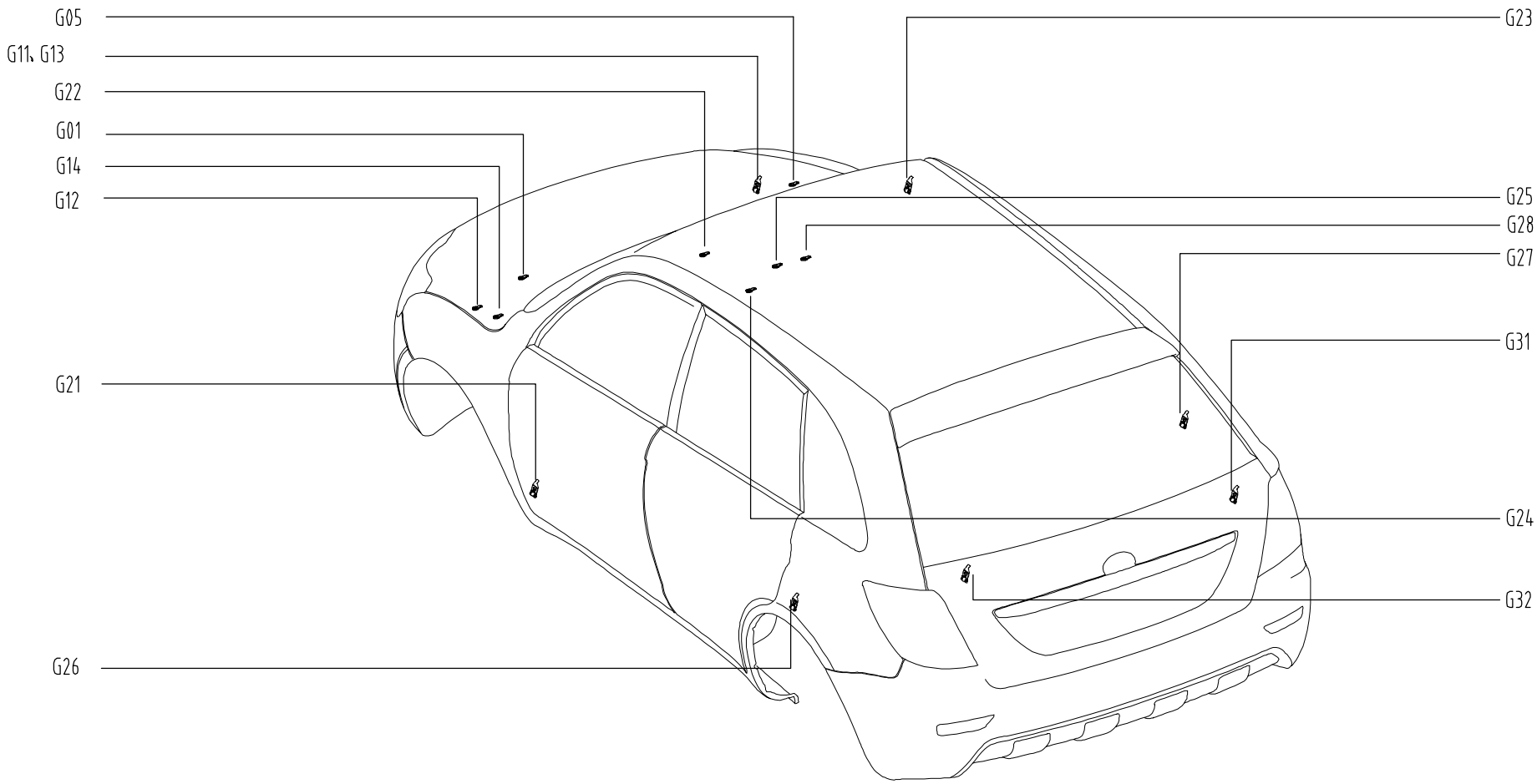
Q1- Connect to left rear fog lamp; Q2-Connect to left rear probe; Q3- Connect to right rear probe; Q4: Connect to right rear fog lamp; QB:Connect to body harness; RE-Connecting instrument deck harness; R1-Connect front ceiling lamp; R2-Connect middle ceiling lamp; R3-Connect to rear ceiling lamp

Airbag harness and part layout



S1— Connect left front safety Belt pretensioner; S2 — Connect to clock spring ; S3 Connect to Airbag ECU ; S4 — Connect to Co-airbag ECU; S5 — Connect to right front safety belt pretensioner

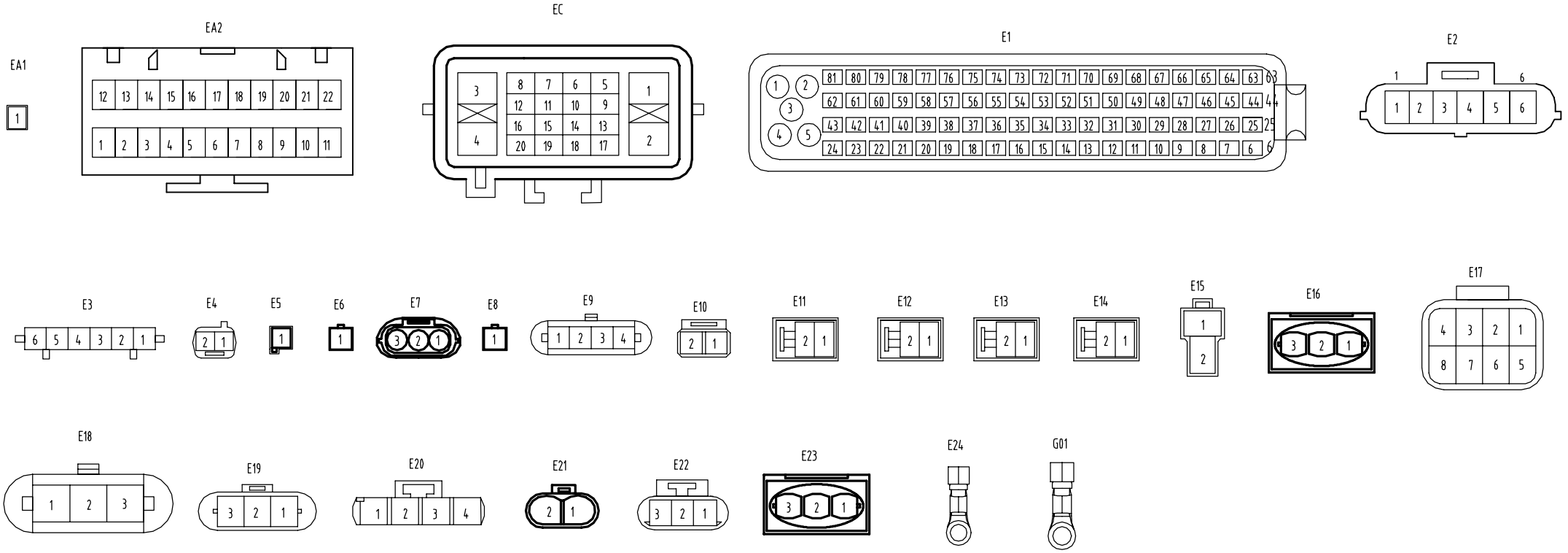
Complete vehicle ground point drawing



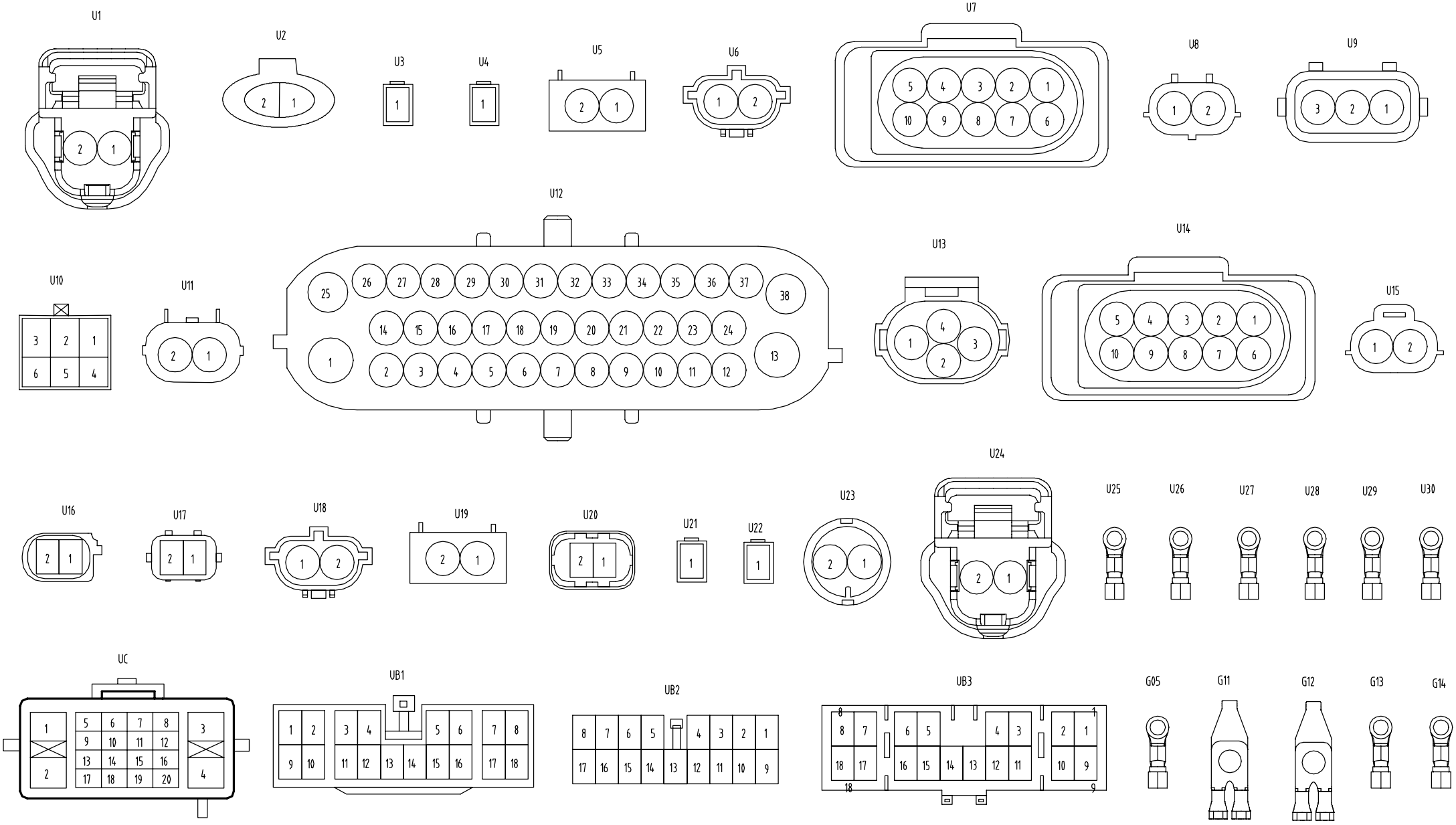
G01 —Connect to ground point of engine harness; G12、G14-Connect to left side ground of engine cabin; G11、G13-Connect to right side ground of engine cabin;G05-negative ground point of battery; G23、G27-Right body harness ground point G28-safety airbag grounding point

G21、G26- Ground point of left body harness; G31-Rear cargo harness ground point; G22,G24, G25-Instrument desk harness ground point;G31-Rear cargo ground point; G32-Rear defrost ground point

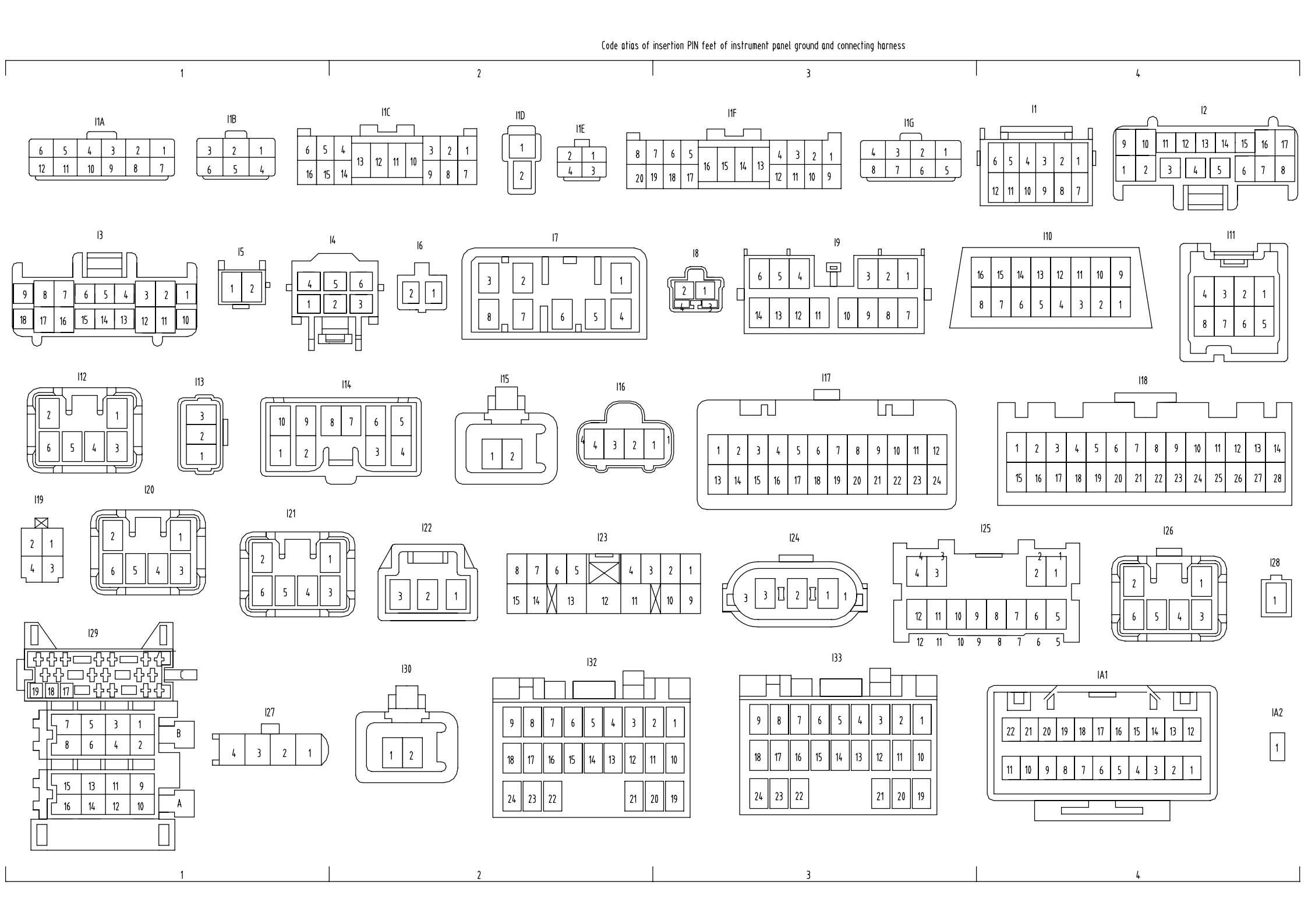
Socket pin feet code map of engine ground and connecting harness



Code atlas of insertion PIN feet of front cabin ground and connecting harness

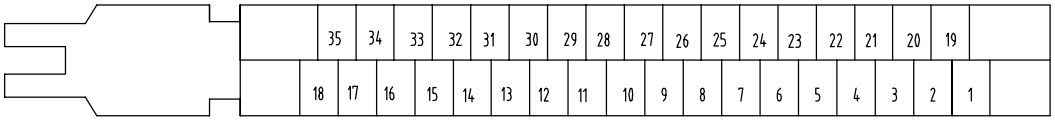


Code atlas of insertion PIN feet of instrument panel ground and connecting harness

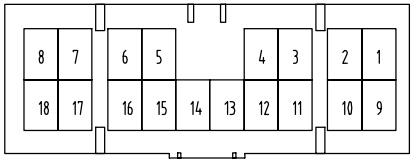


Code atias of insertion PIN feet of instrument panel ground and connecting harness

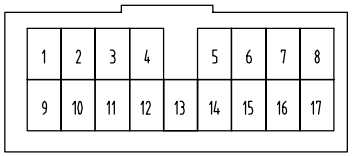
I34



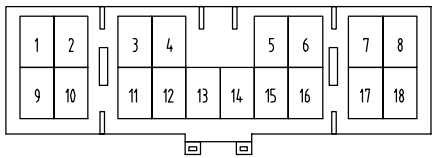
IB1



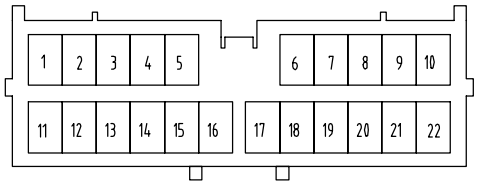
IB2



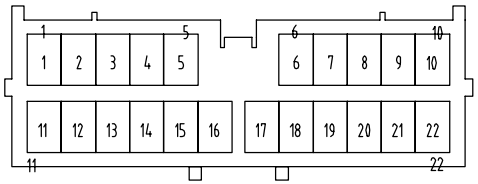
IB3



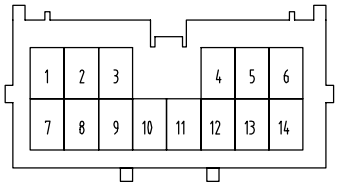
ID1



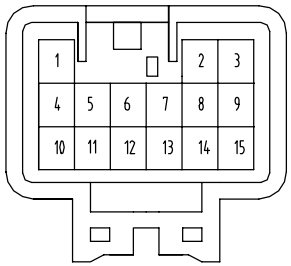
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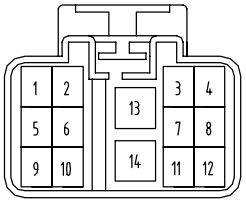
ID3



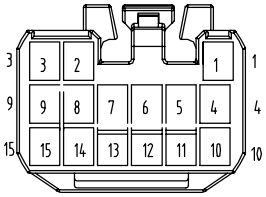
IH1



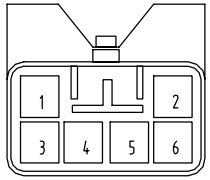
IH2



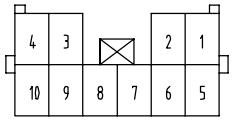
IH3



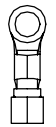
IH4



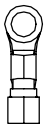
IE



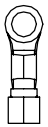
G28



G29



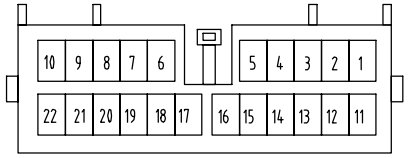
G30



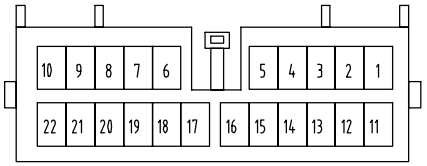
Code atlas of insertion PIN feet of body ground and connecting harness

1	2	3	4

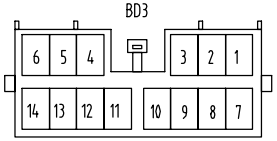
BD1



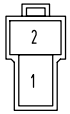
BD2



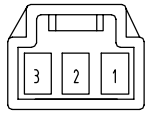
BD3



B1



B2



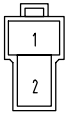
B3



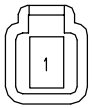
B4



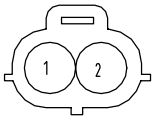
B5



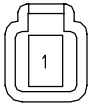
B6



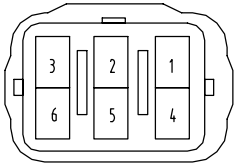
B7



B8



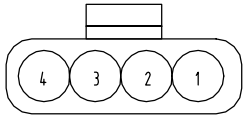
B9



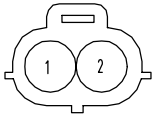
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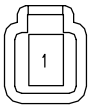
B11



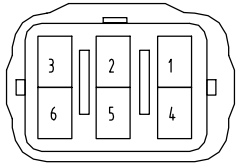
B12



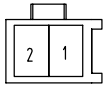
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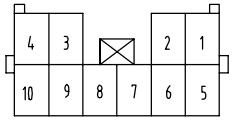
B14



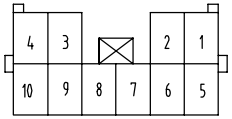
B15



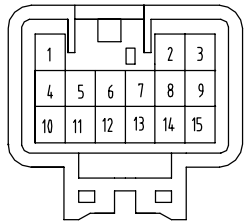
BH



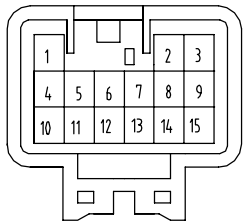
BQ



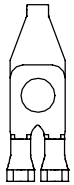
BG1



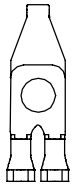
BG2



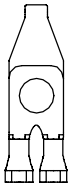
G21



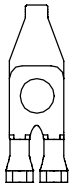
G23



G26



G27

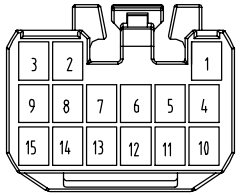


1	2	3	4

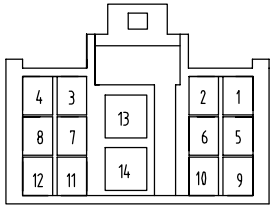
Code atlas of insertion PIN feet of door ground and connecting harness

1	2	3	4

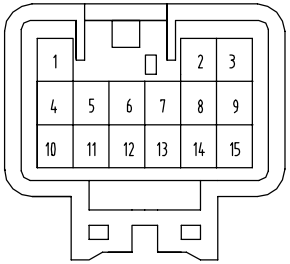
DH1



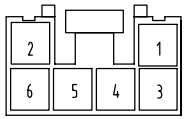
DH2



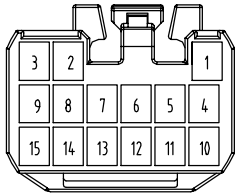
DH3



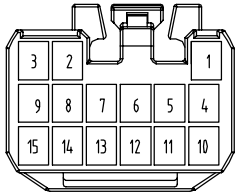
DH4



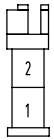
DG1



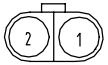
DG2



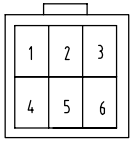
D1



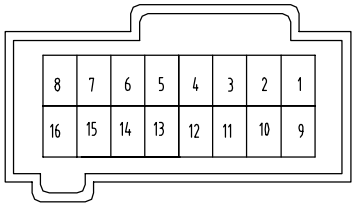
D2



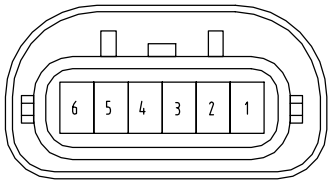
D3



D4



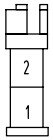
D5



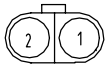
D6



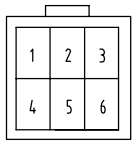
D7



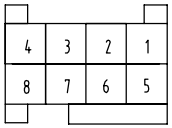
D8



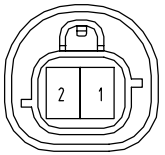
D9



D10



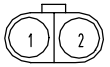
D11



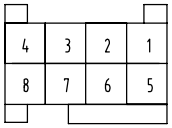
D12



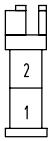
D13



D14



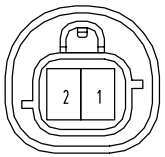
D15



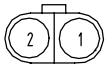
D16



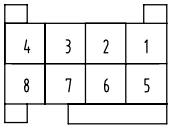
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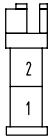
D18



D19



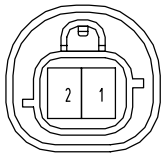
D20



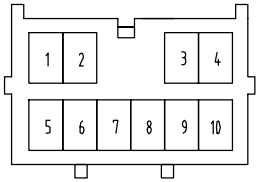
D21



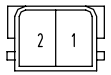
D22



BIH



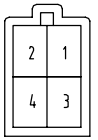
BI1



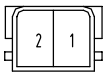
BI2



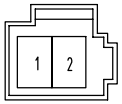
BI3



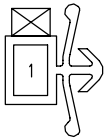
BI4



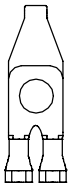
BI5



BI6



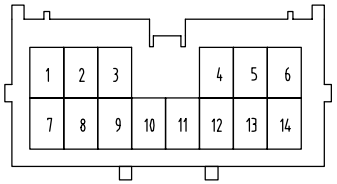
G31



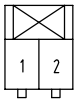
1	2	3	4

Code atlas of insertion PIN feet of airbage sensor,ceiling, rear bumper, rear defrost ground and connecting harness

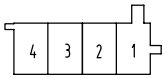
SF



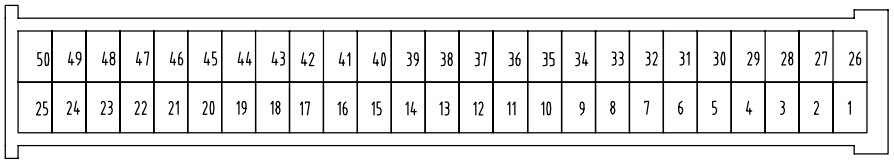
S1



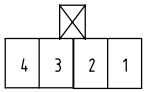
S2



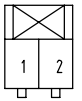
S3



S4



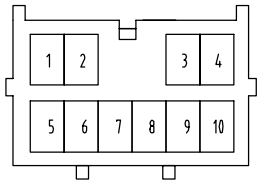
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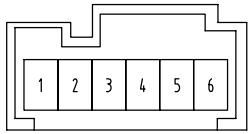
G26



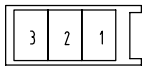
RE



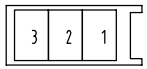
R1



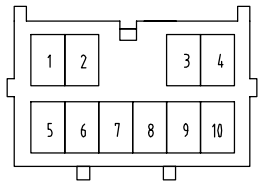
R2



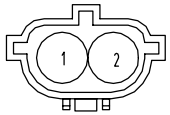
R3



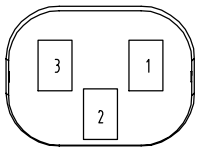
QB



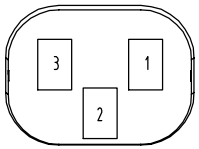
Q1



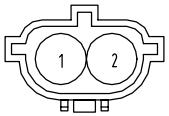
Q2



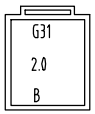
Q3



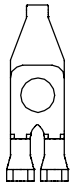
Q4



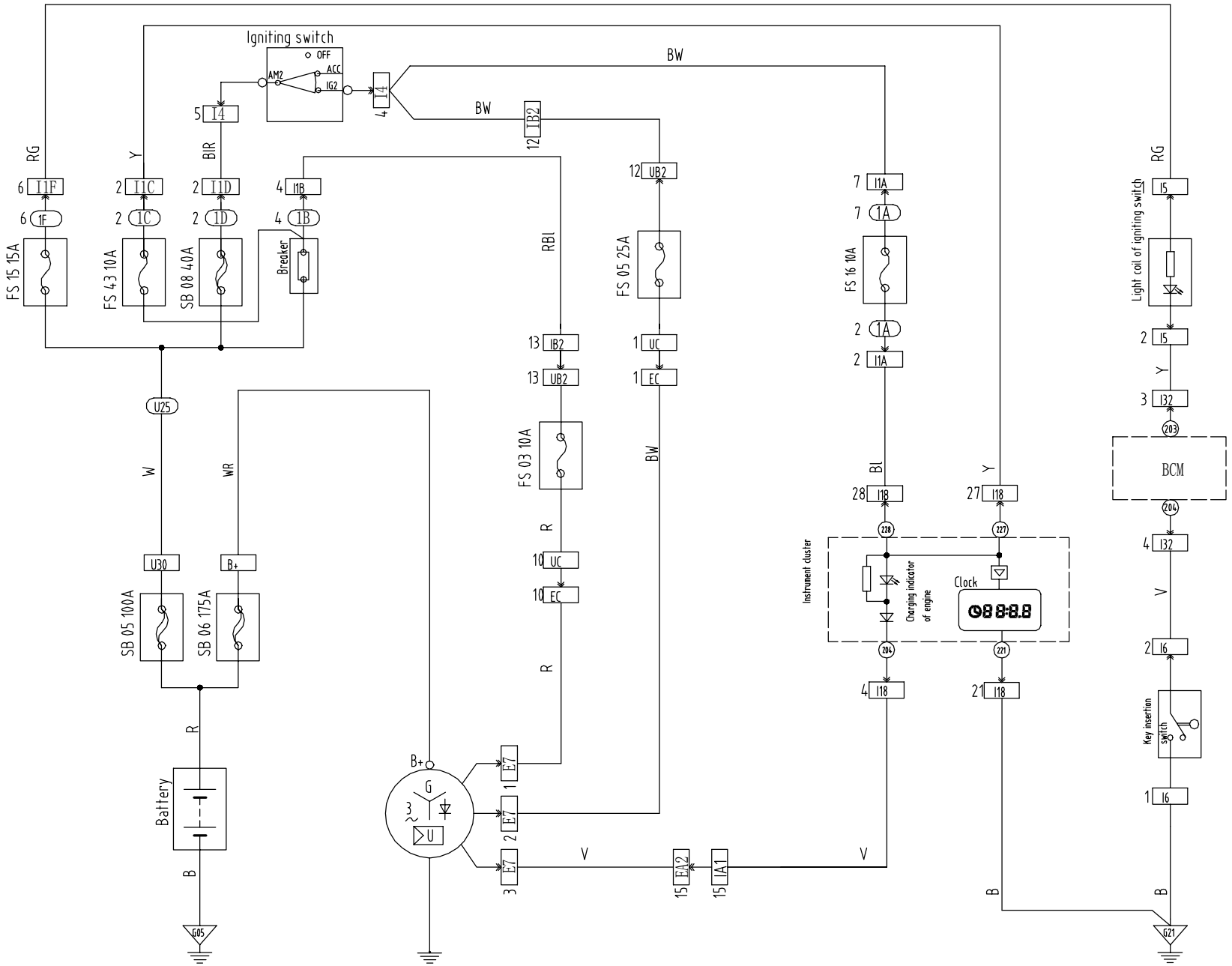
BIH



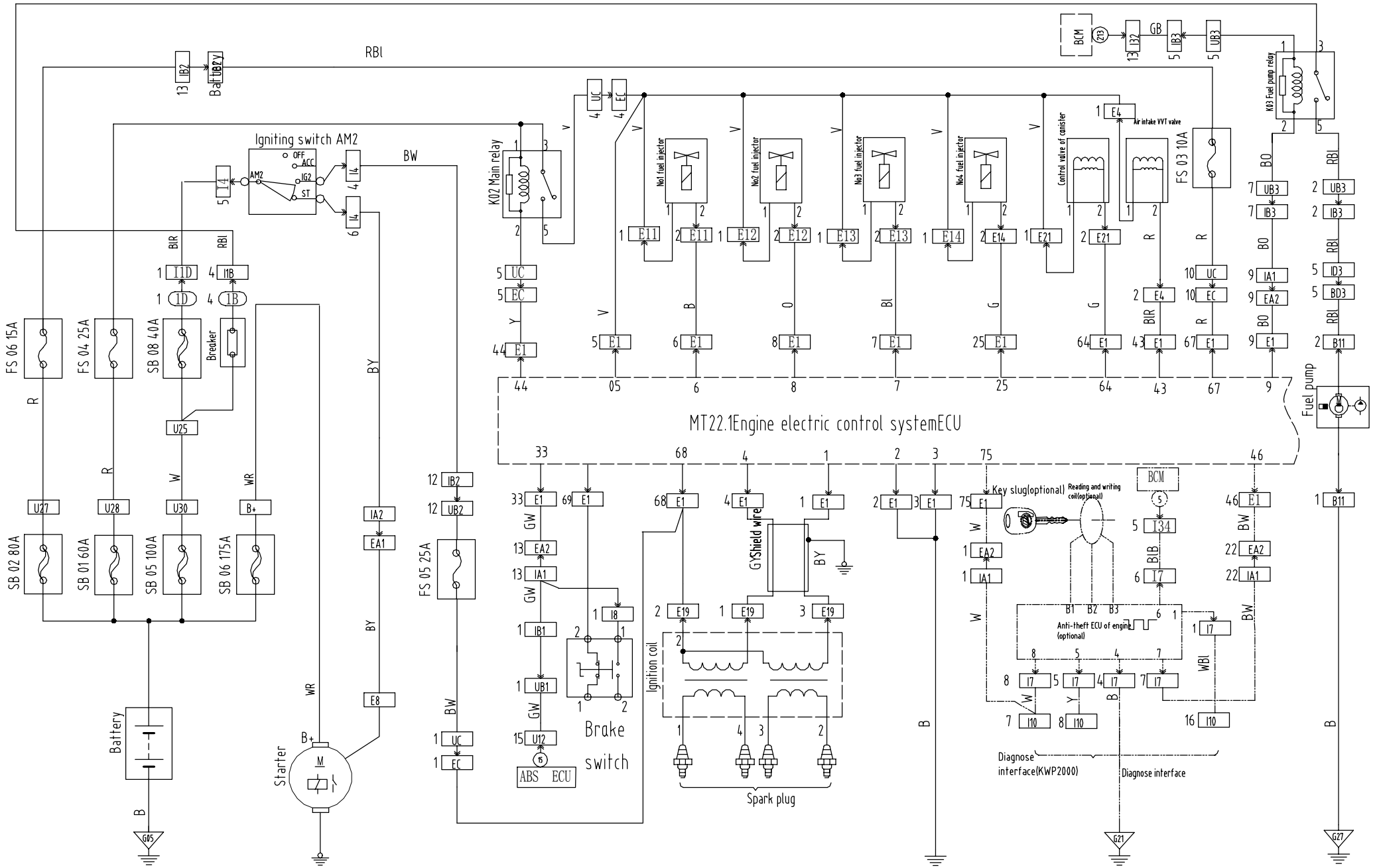
G32



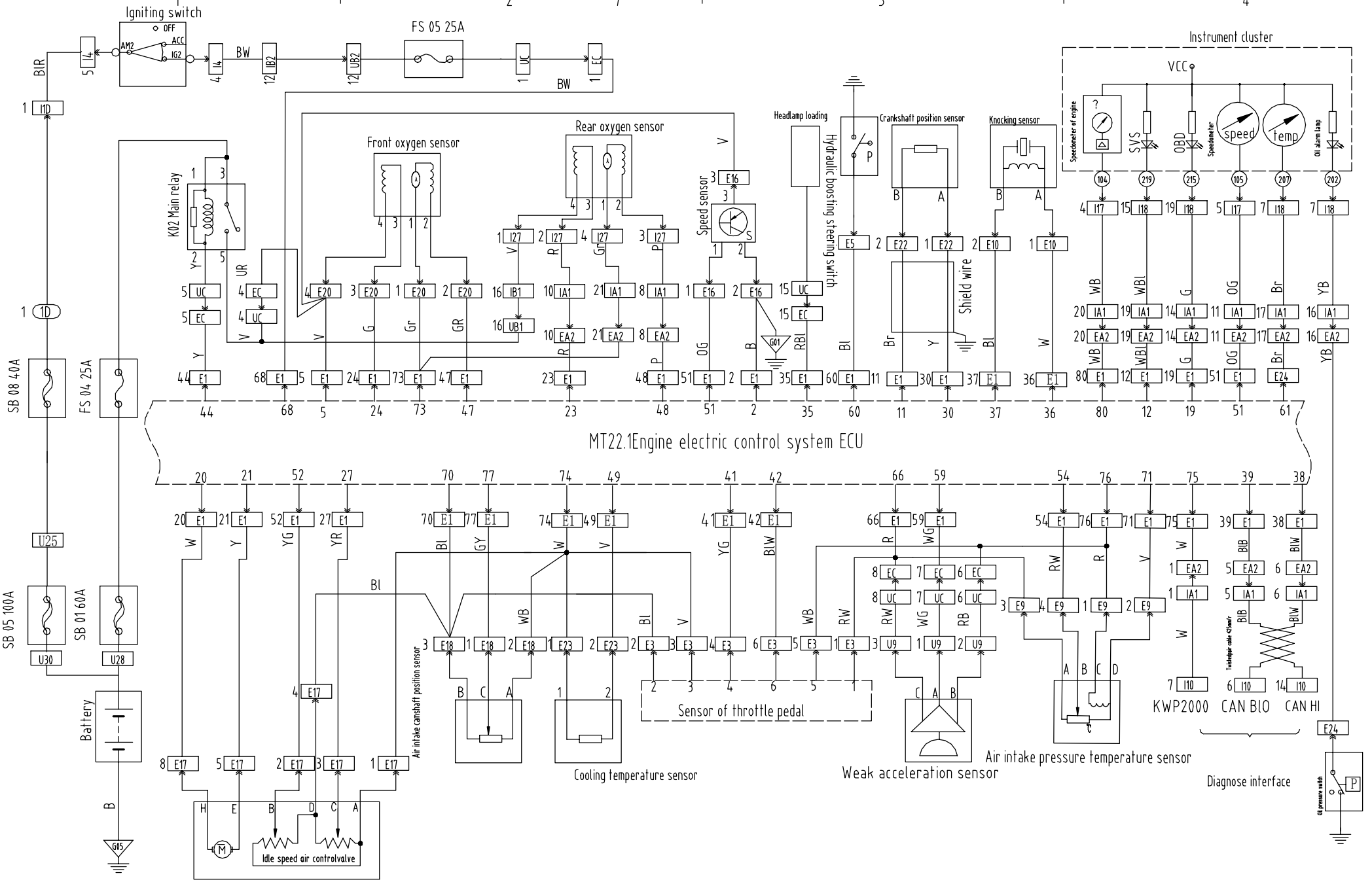
Display system of power, charging, clock



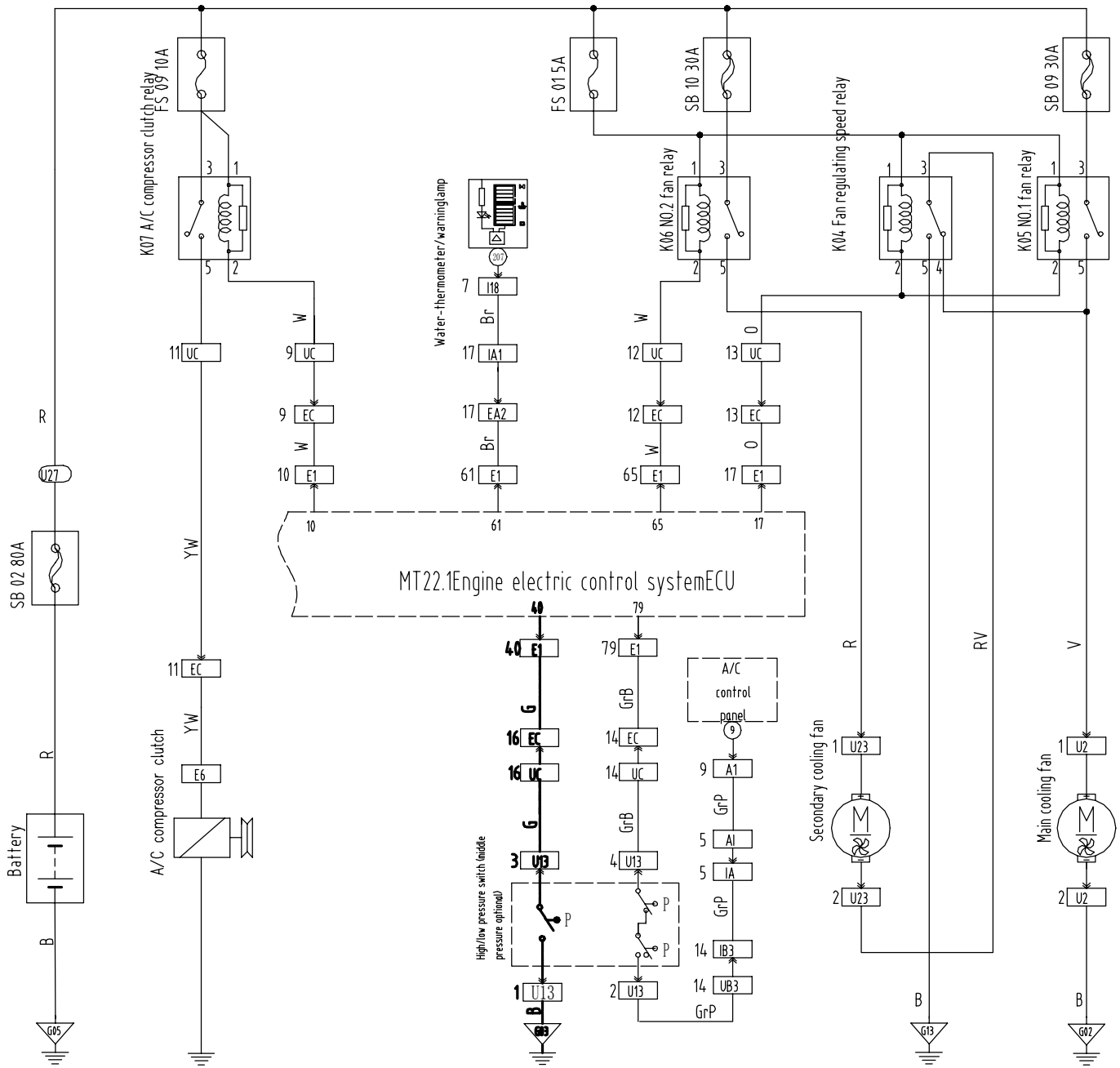
Starting igniting and oil supply system of engine



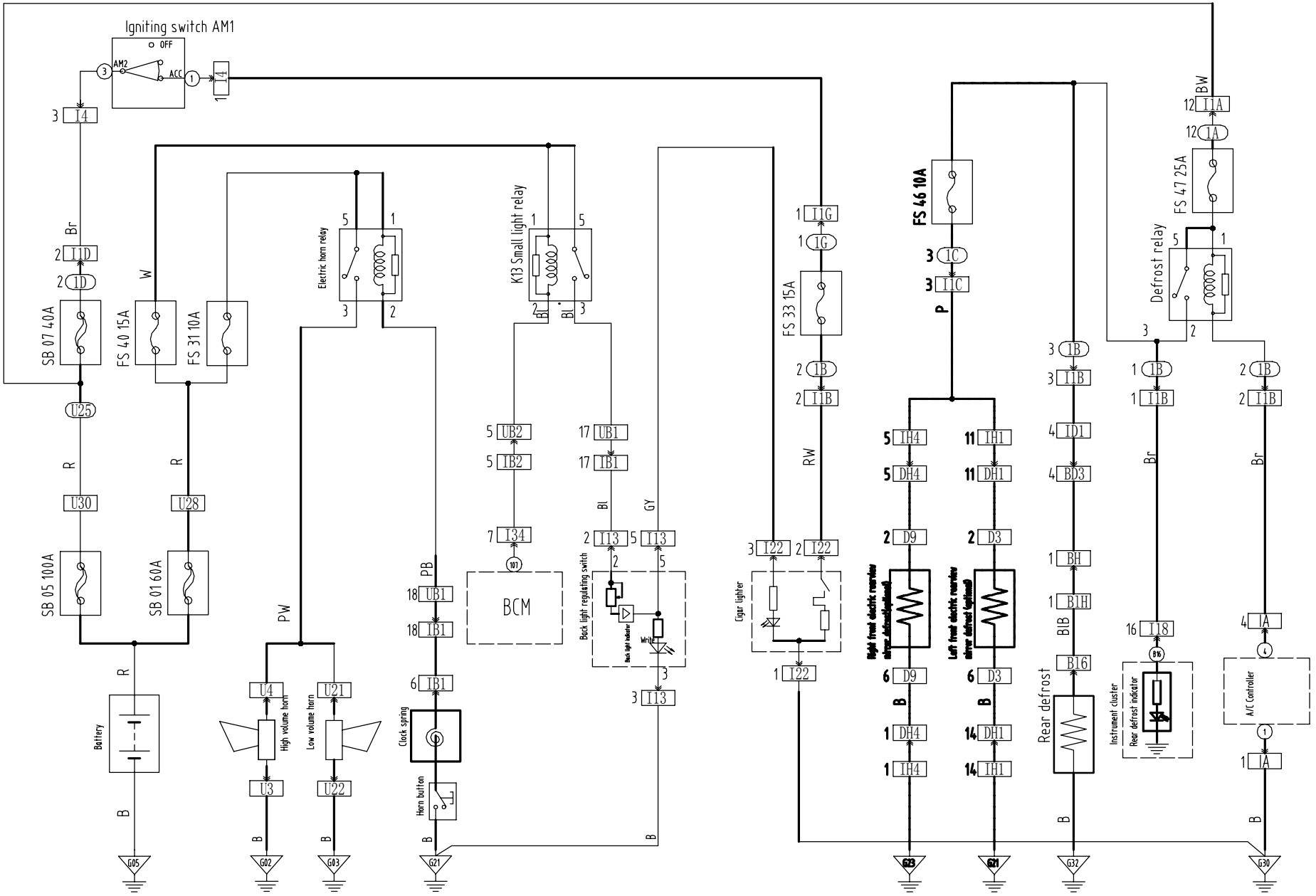
Control system of engine(Sunshine Tektronix,



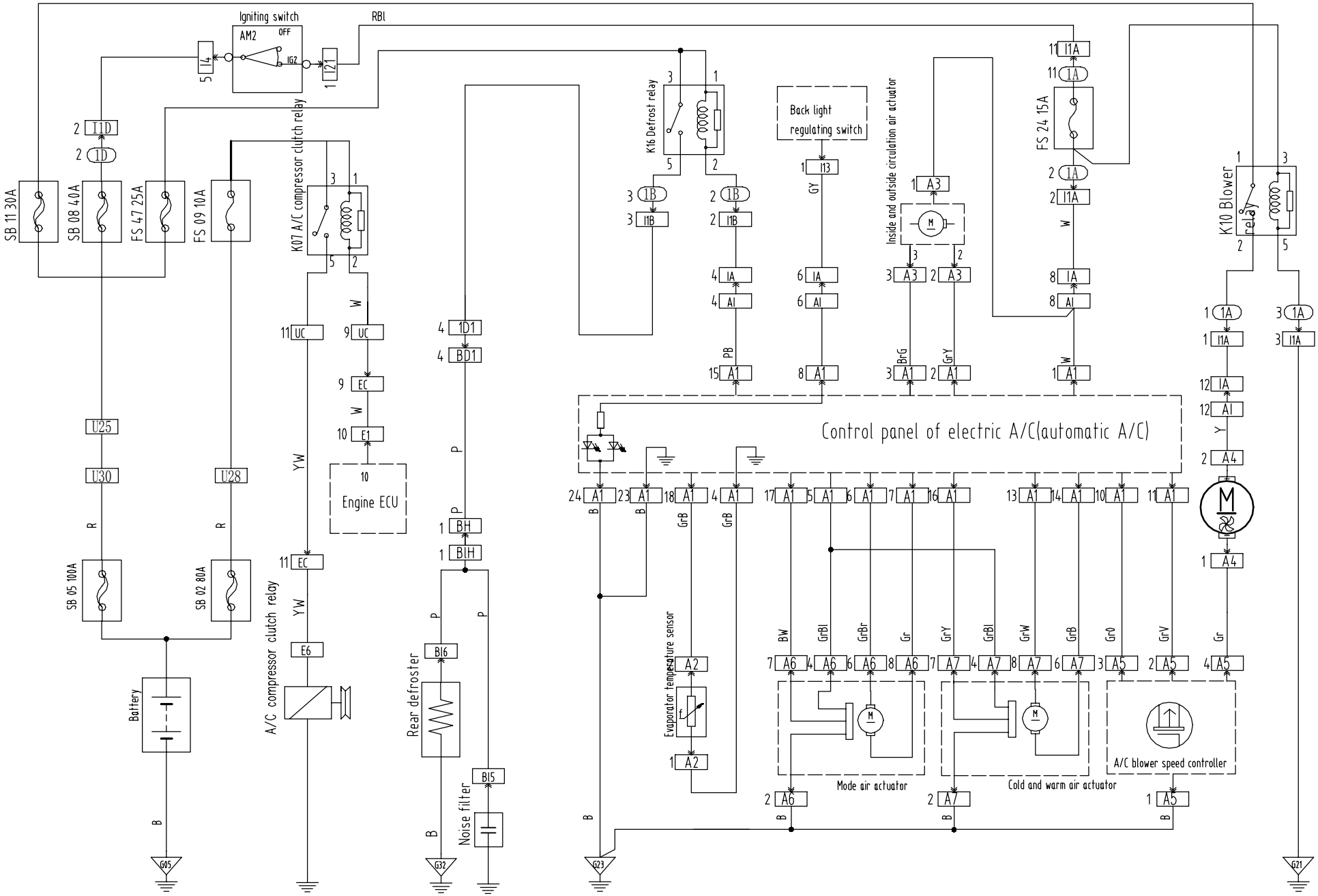
Radiator system of engine and A/C



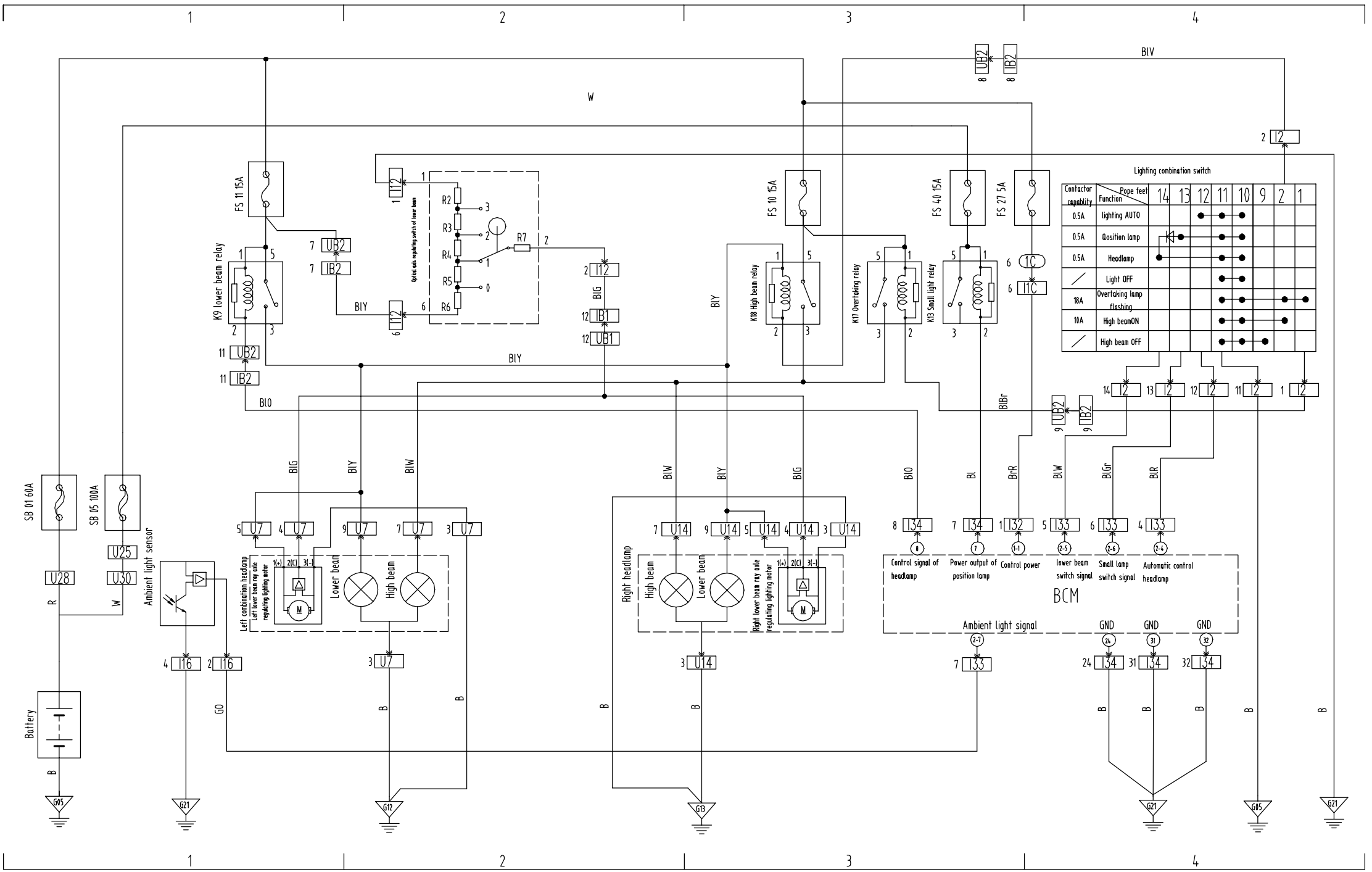
Defrost electric horn cagar lighter



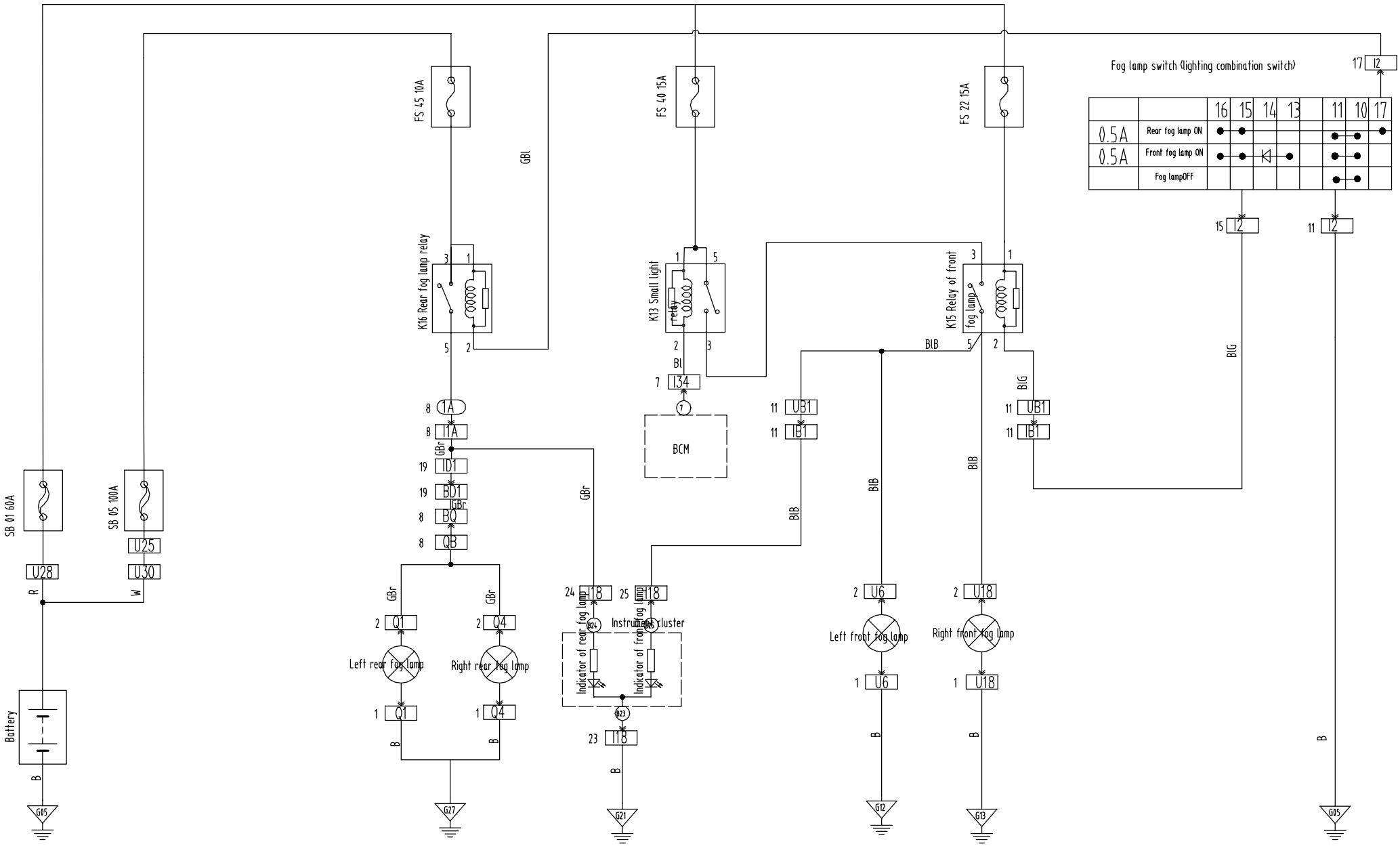
Electric A/C system



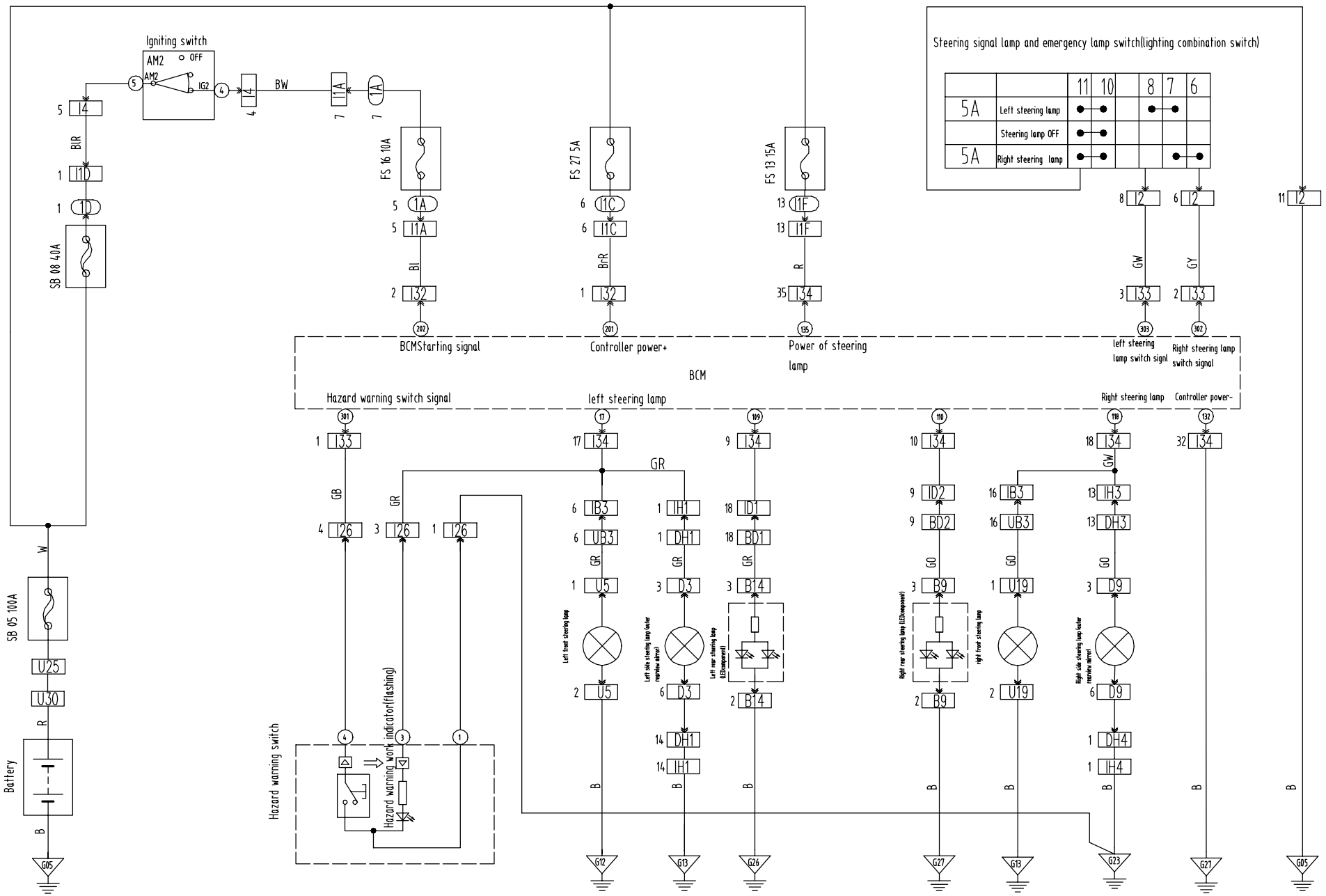
Automatic control system of headlamp



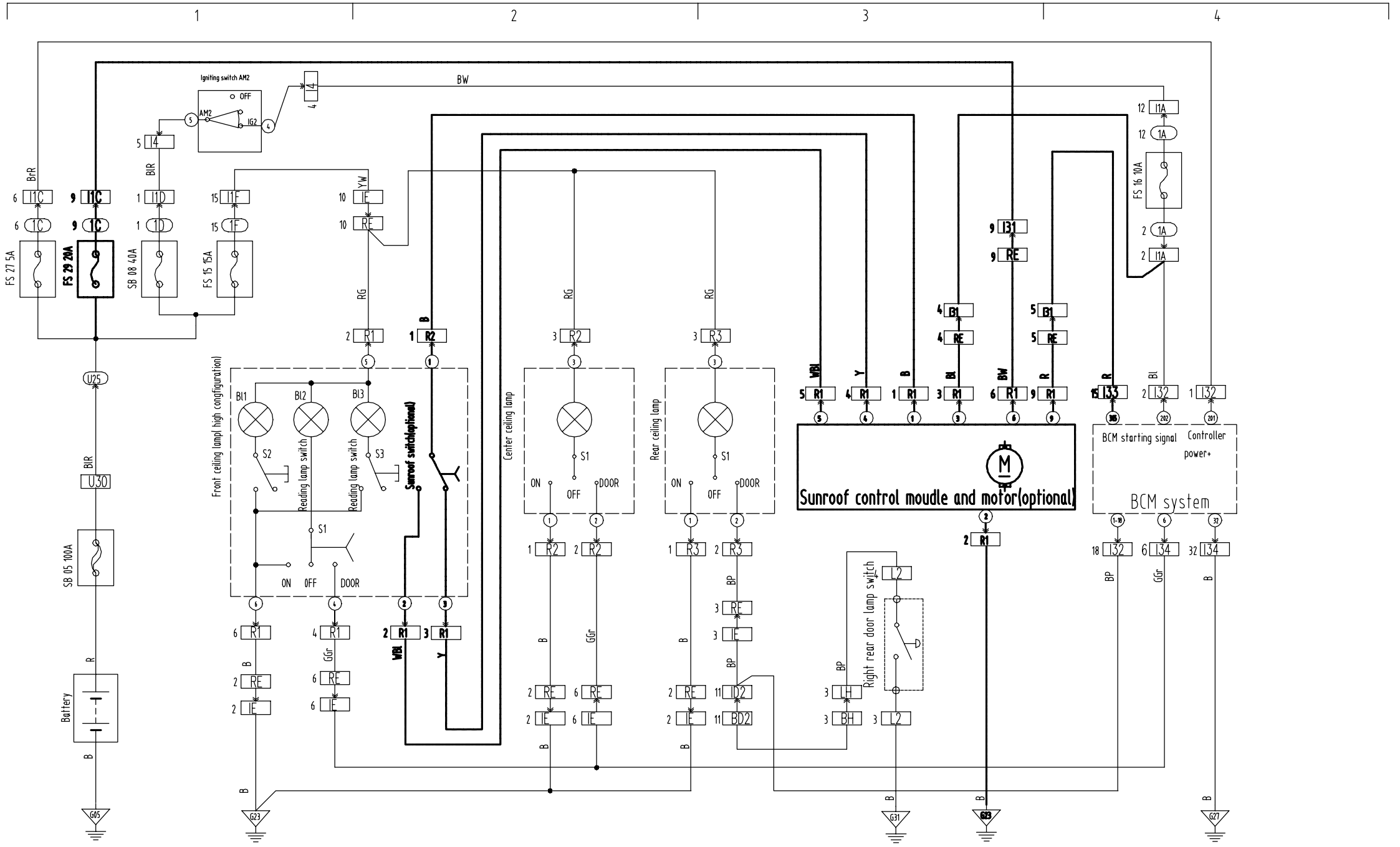
Front/rear fog lamp system



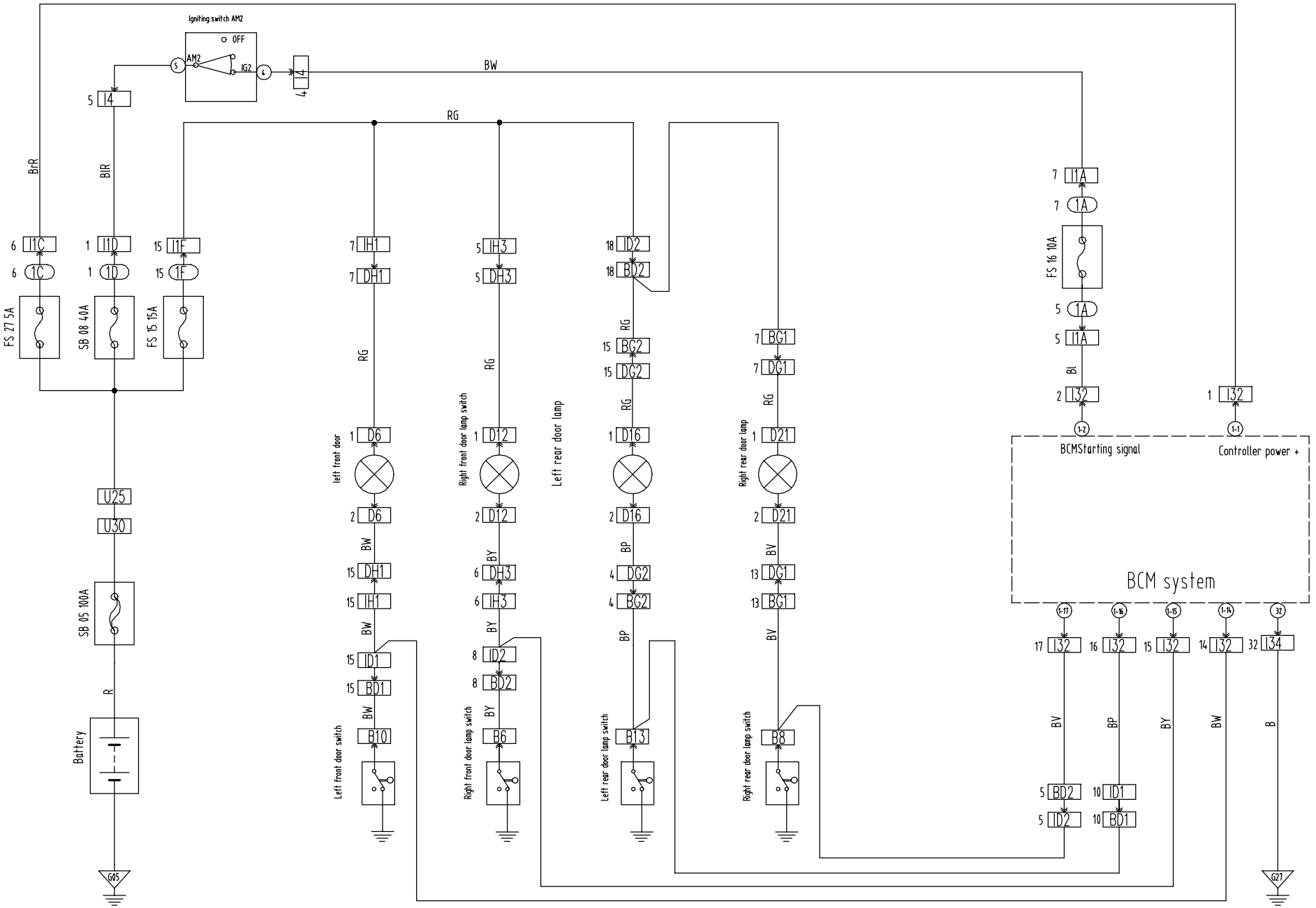
Steering signal and hazard warning lamp system



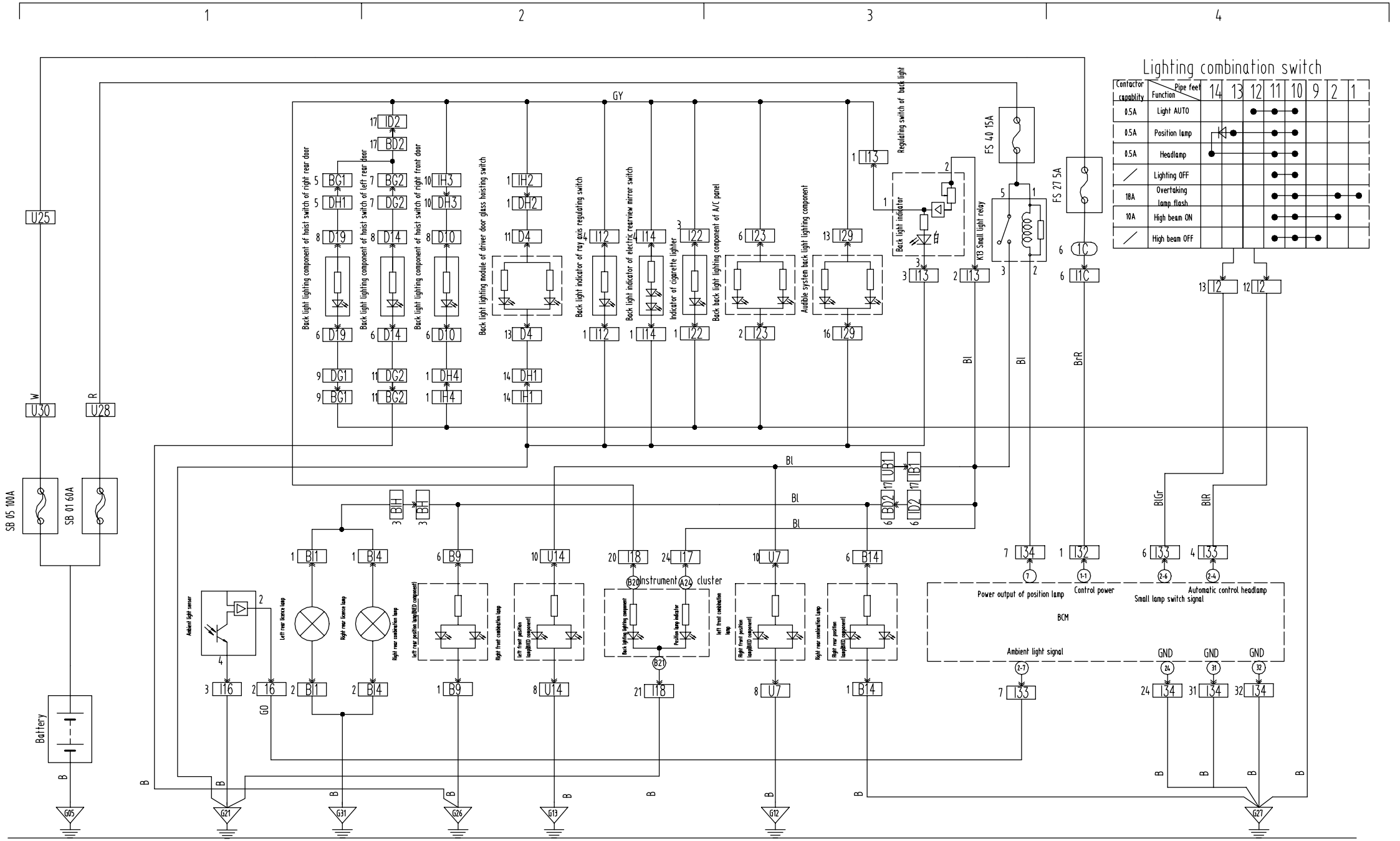
Inner ceiling lamp, sunroof(optional)



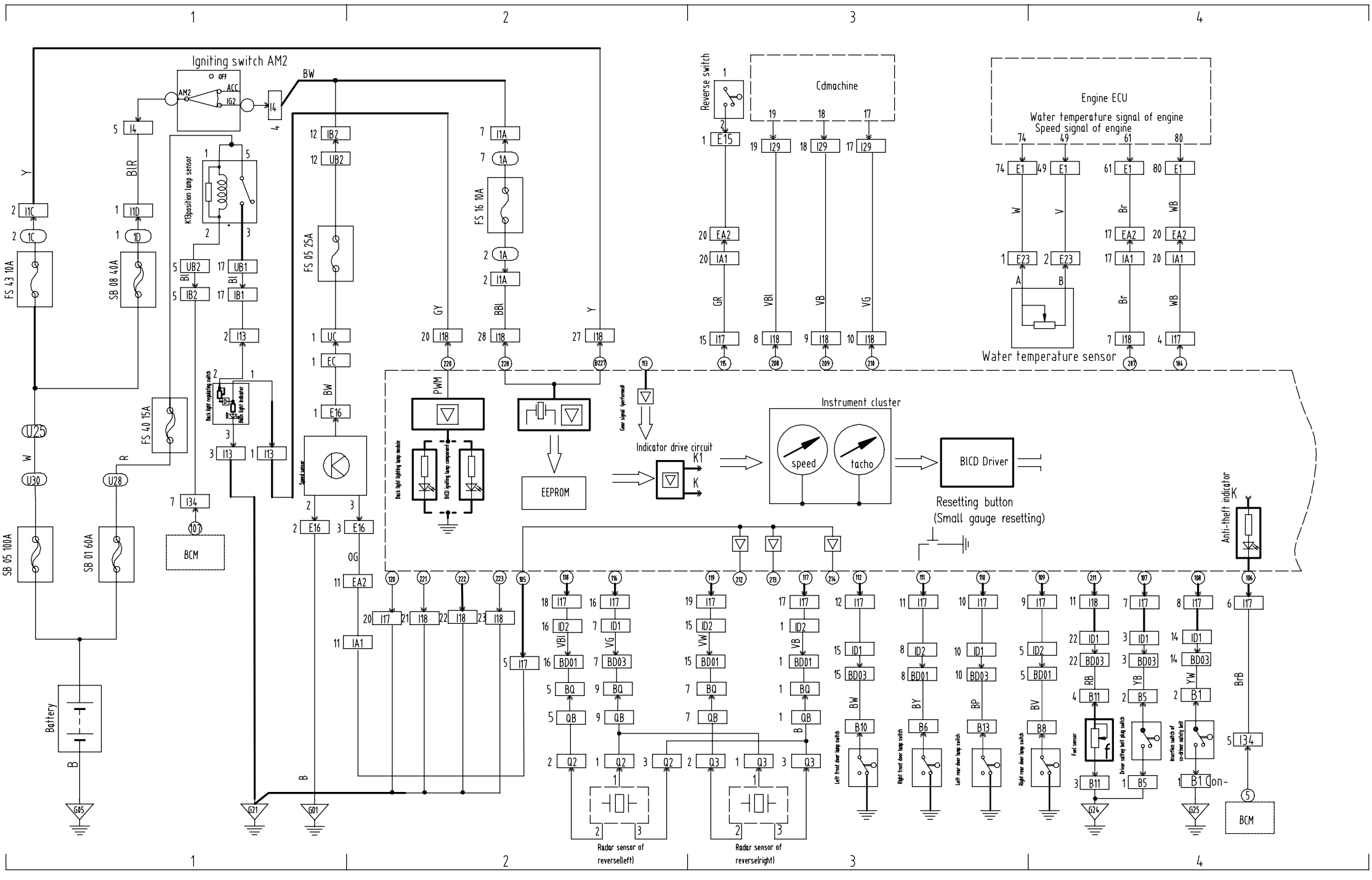
Door lamp


Igniting switch AM2
OFF
AM2
IG2
BW
RG
BrR
BlR
FS 27 5A
SB 08 40A
FS 15 15A
SB 05 100A
Battery
G05
Left front door
Left front door switch
Right front door lamp switch
Left rear door lamp
Left rear door lamp switch
Right rear door lamp
Right rear door lamp switch
FS 16 10A
BCMStarting signal
Controller power +
BCM system
G27

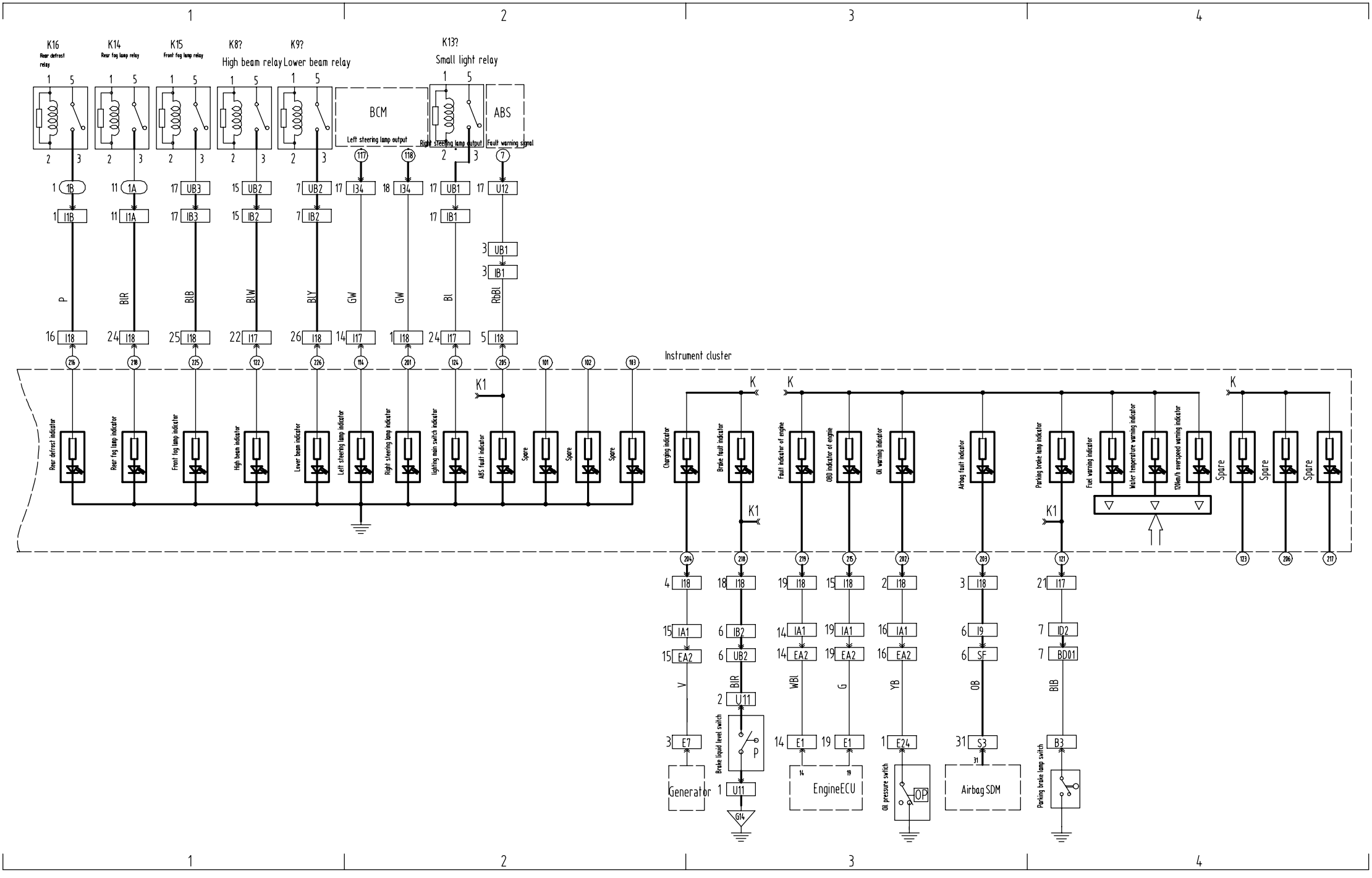
Position lamp, back light lighting system



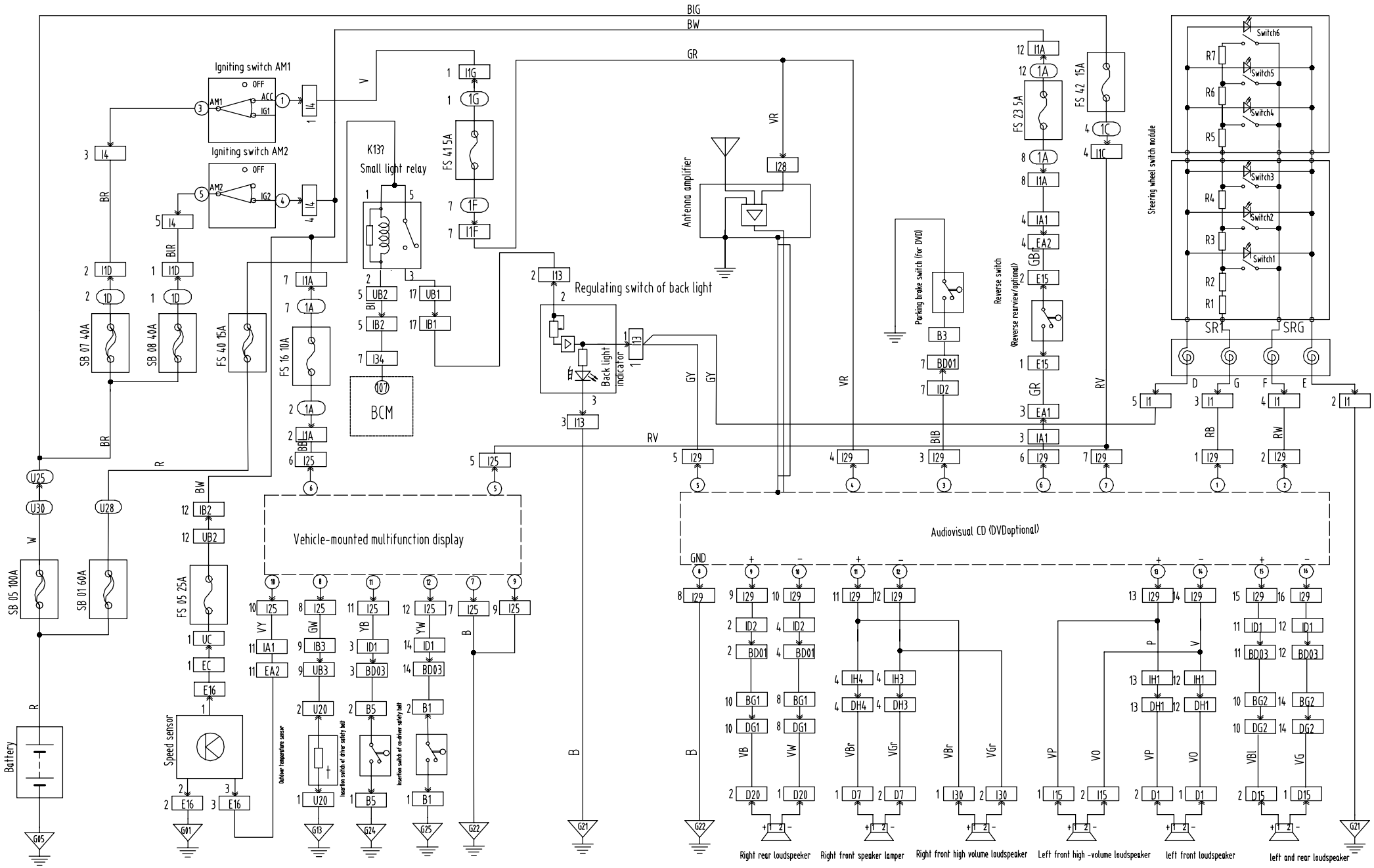
Instrument cluster(part I) and reverse radar system



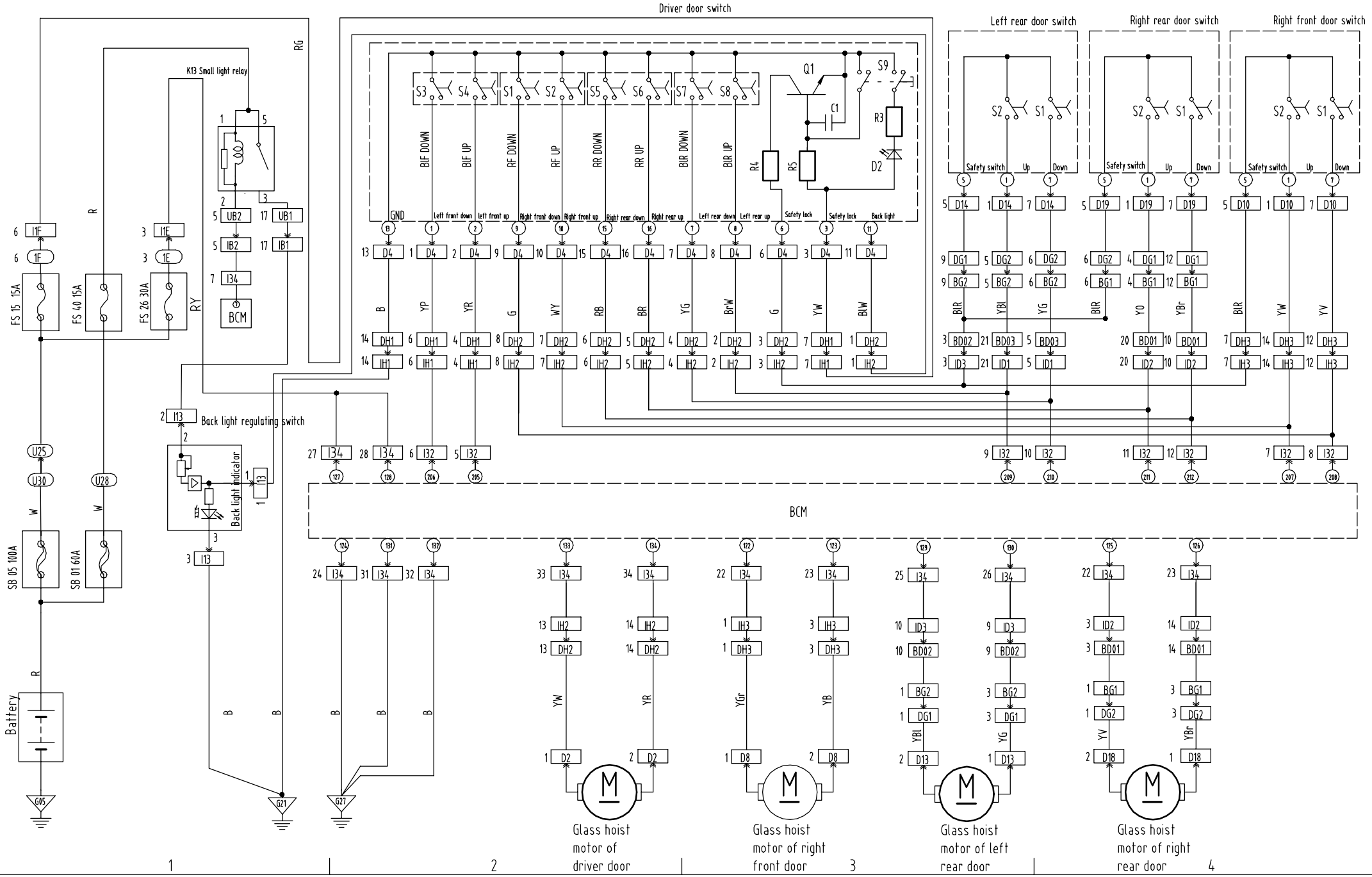
Instrument cluster(PartII)



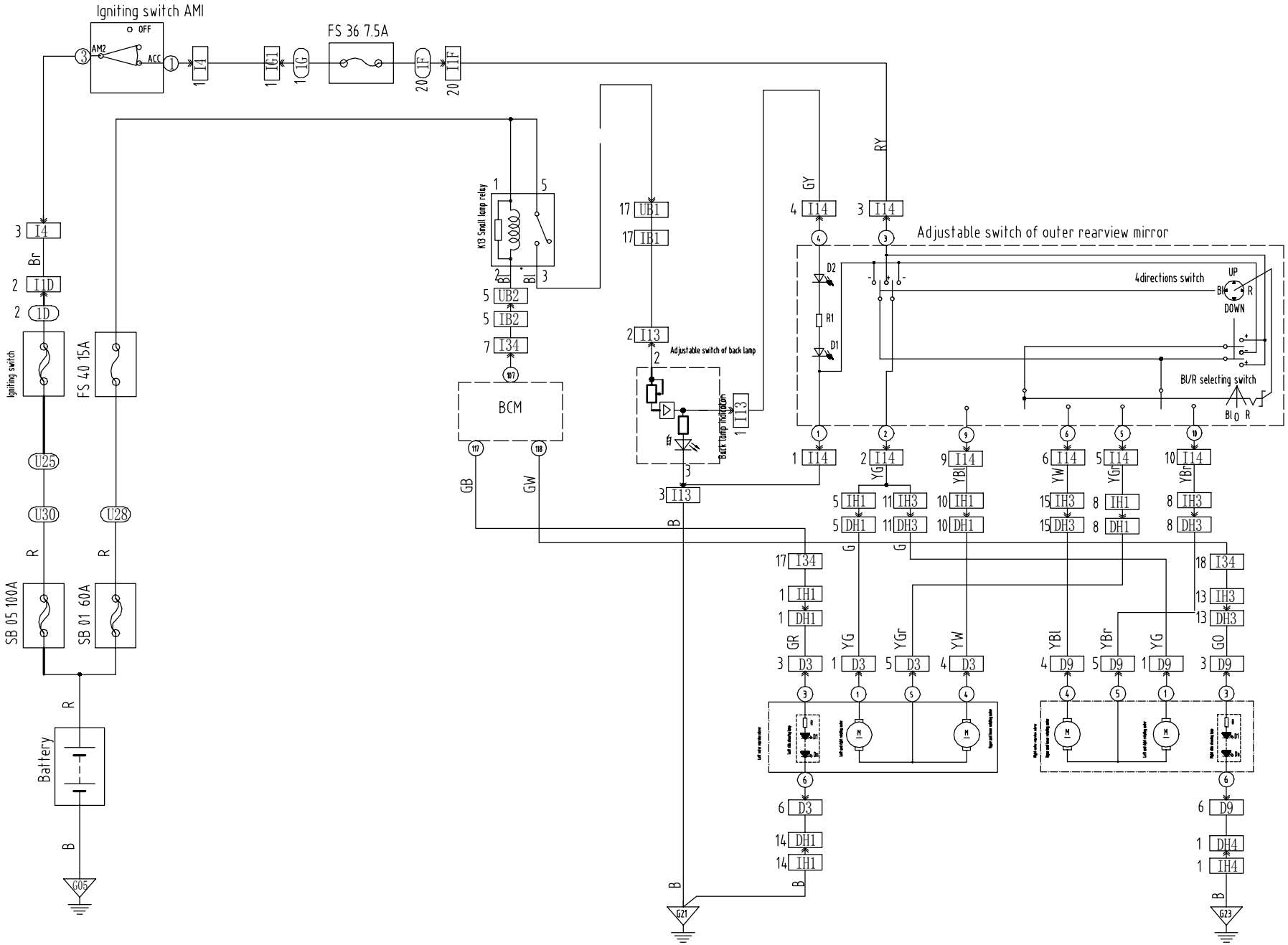
Audiovisual system and vehical-mounted multifunction screen system



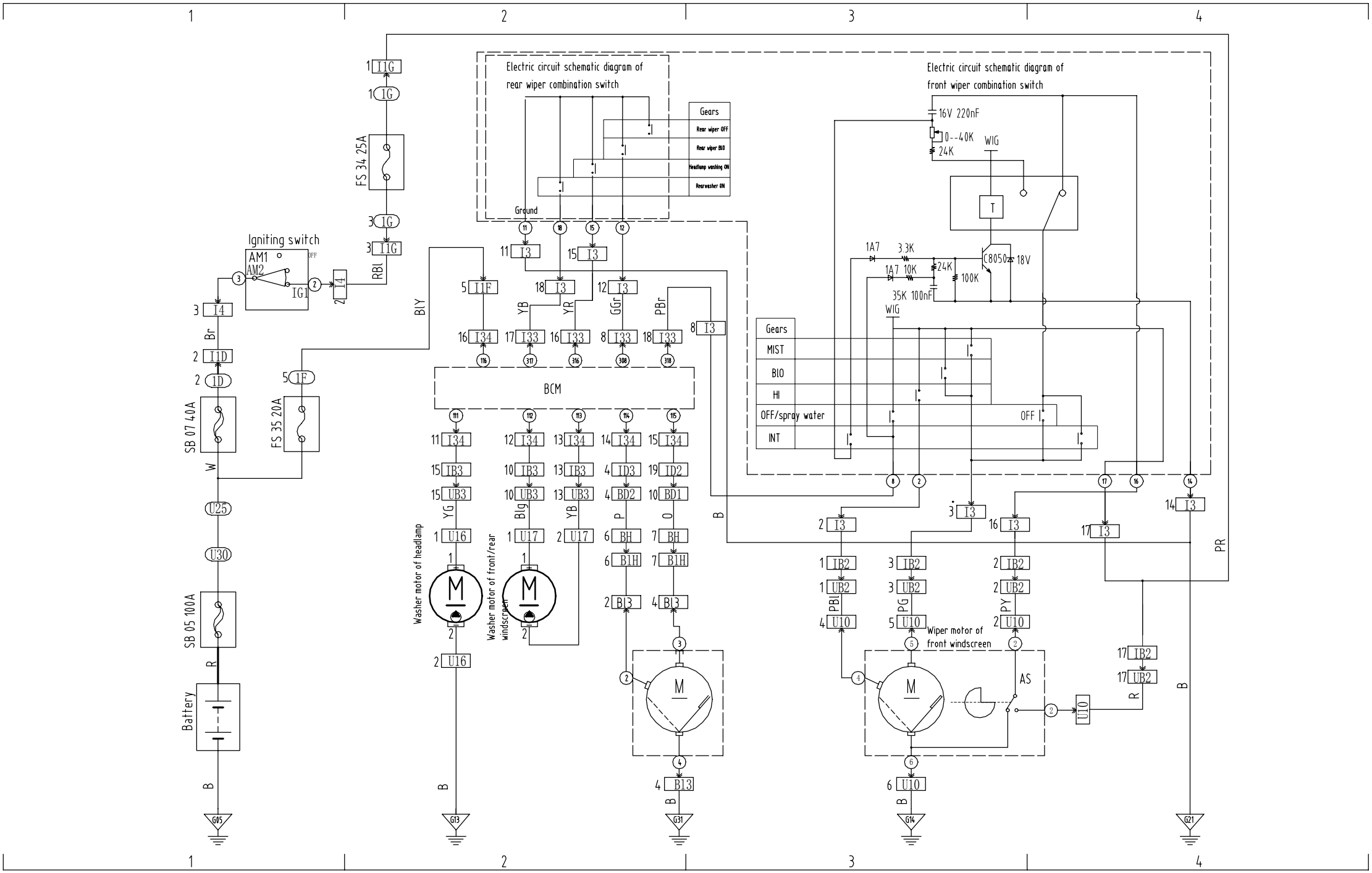
Glass hoisting system of electric door



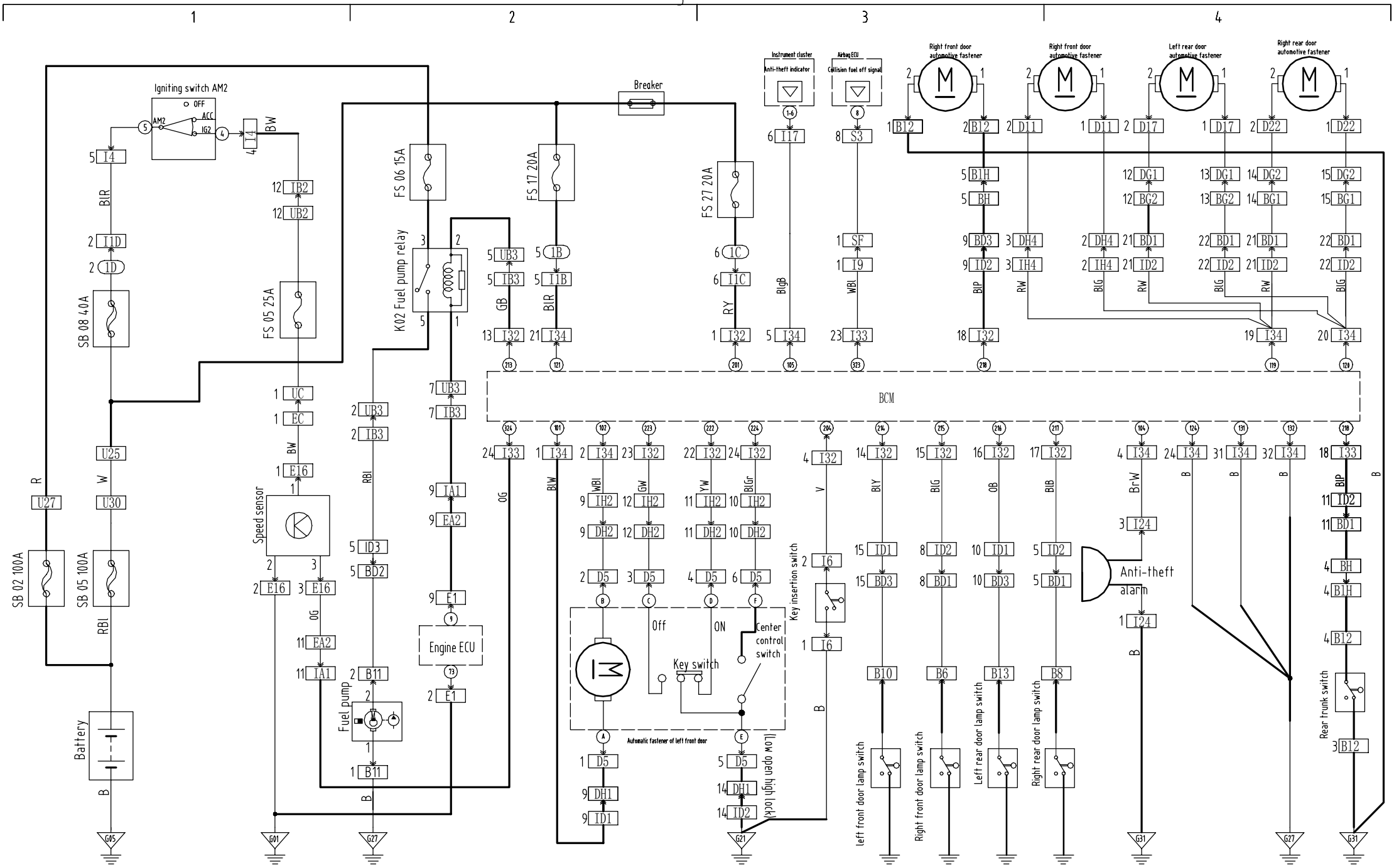
Electronic control outer rearview mirror system



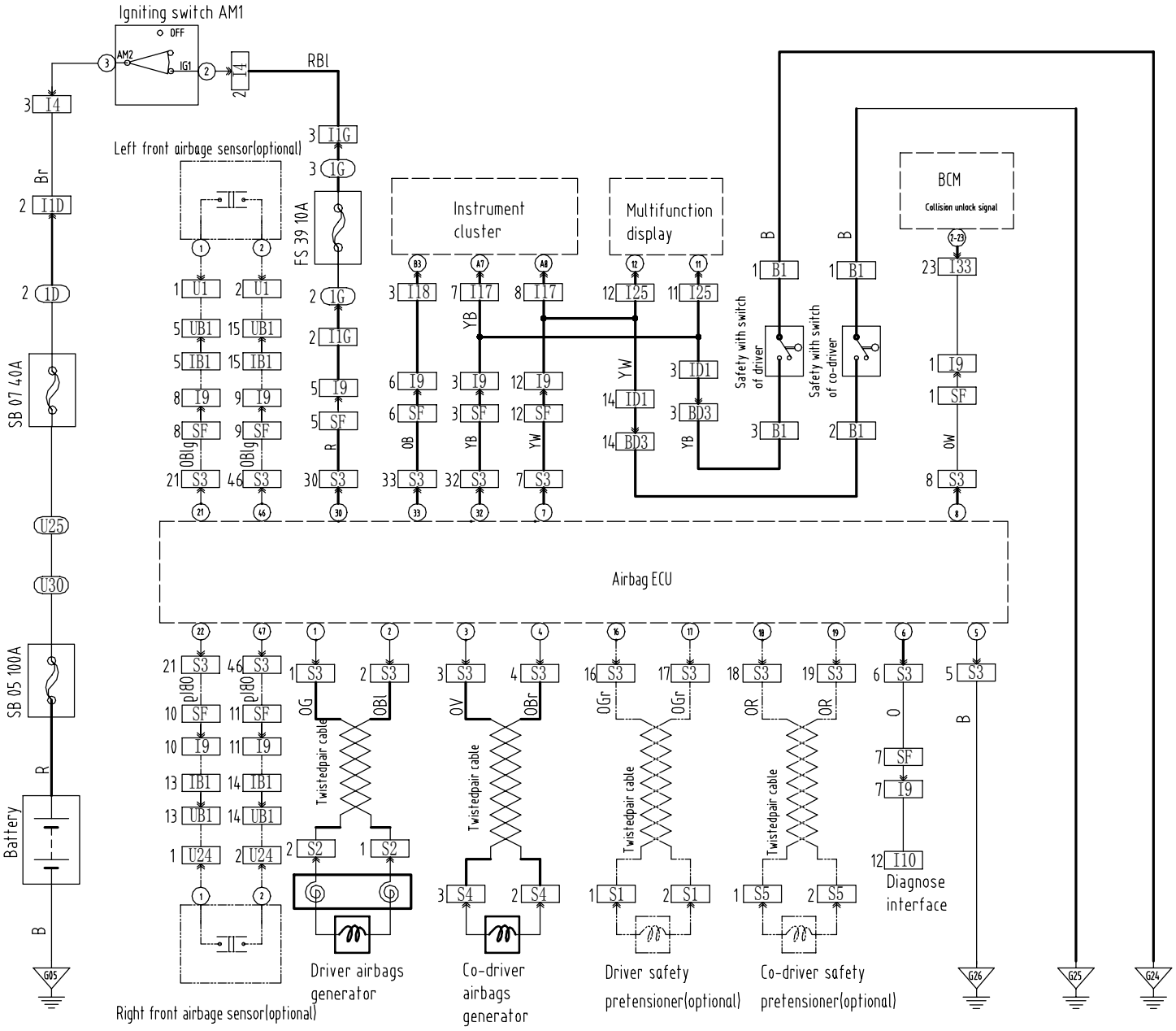
Wiper of front windscreen and washer system



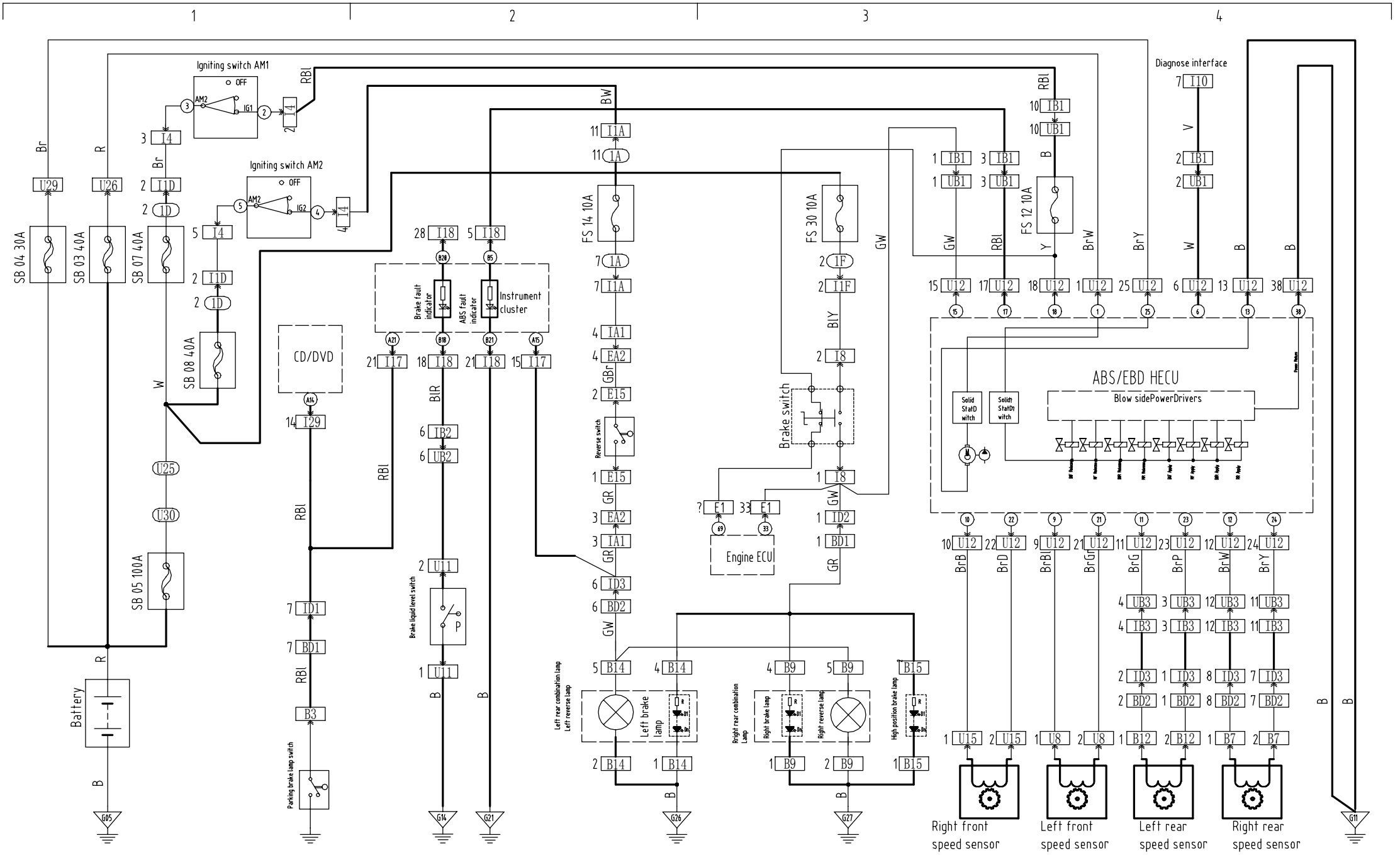
Burglar alarm and center control door lock



Igniting switch of passenger limited control system



Brake lamp, ABS, reverse lamp and parking brake



LF320《备件图册》

2012.02.10

LIFAN

LIFAN SUV Spare Parts catalogue

X60



Lifan industry(group)imp.&exp.co.ltd Ver 201108

LIFAN

LIFAN SUV Spare Parts catalogue

X60



Lifan industry(group)imp.&exp.co.ltd Ver 201108

Introduction

1. The catalogue of the spare parts can only show its structure combination for directing the customer for maintenance; it can't completely show the practical status of the spare parts, thus, the catalogue of the spare parts can only be taken as a reference for ordering after-sales service spare parts.

2. Since the relevant parts for one model of car are in sorts of status, and the pictures of the parts in the catalogue can only show the newest status of the parts upon the editing this catalogue, thus, it can't reflect the details of parts which are presented in the price list.

3. The parts price list is the main foundation for customers to order after-service parts not including packaging charges for requirements.and the monetary unit is RMB.

4. The parts price list includes parts code, name, model, design, status description, price and reference picture. Principally one component code only refers to one parts with entity status; thus parts code is as the only efficient foundation to get parts entity status.

5.When ordering spare parts with price list, one should get the model and design for required parts, get the name of the parts, and get the description behind the parts name which should conform with the status, finally determine the parts code.

6.In terms of comprehensive technology and procurement possibility, for which not on the price list partly can separate parts superficially and not solely provide principally. It will make side effect to the complete vehicle safety and operation if solely provided.

7.Due to the potential mistakes of written, please contact our personnel in charge of parts to assure the accuracy of real shipment if finding the difference between the real status and the status on the spare price list.

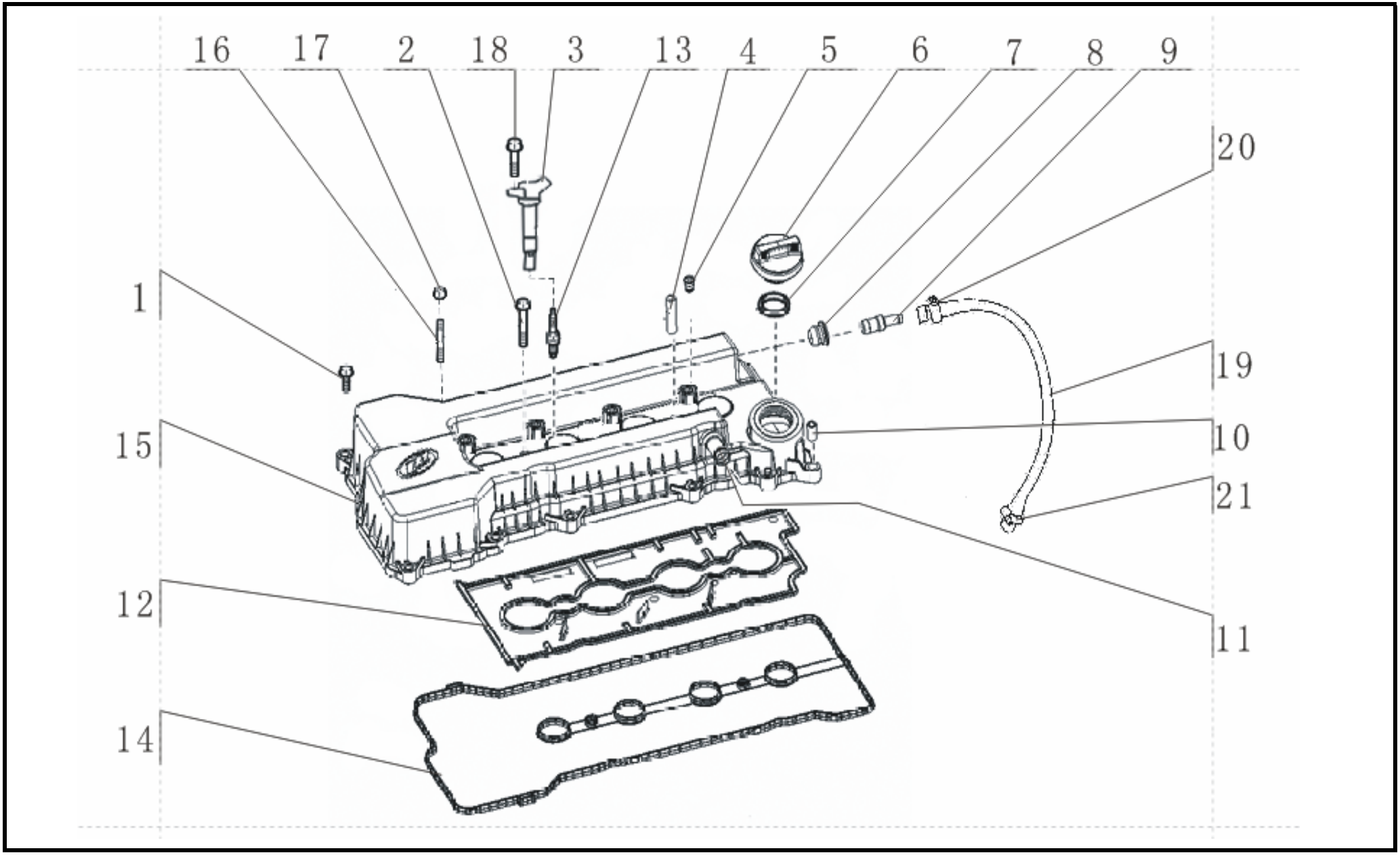
Any query please contact the LIFAN automoible service net!!!

LF6430(X60) spare parts catalogue

(Version:201108)

1.Engine

1.1、气缸盖罩 Cylinder head cover



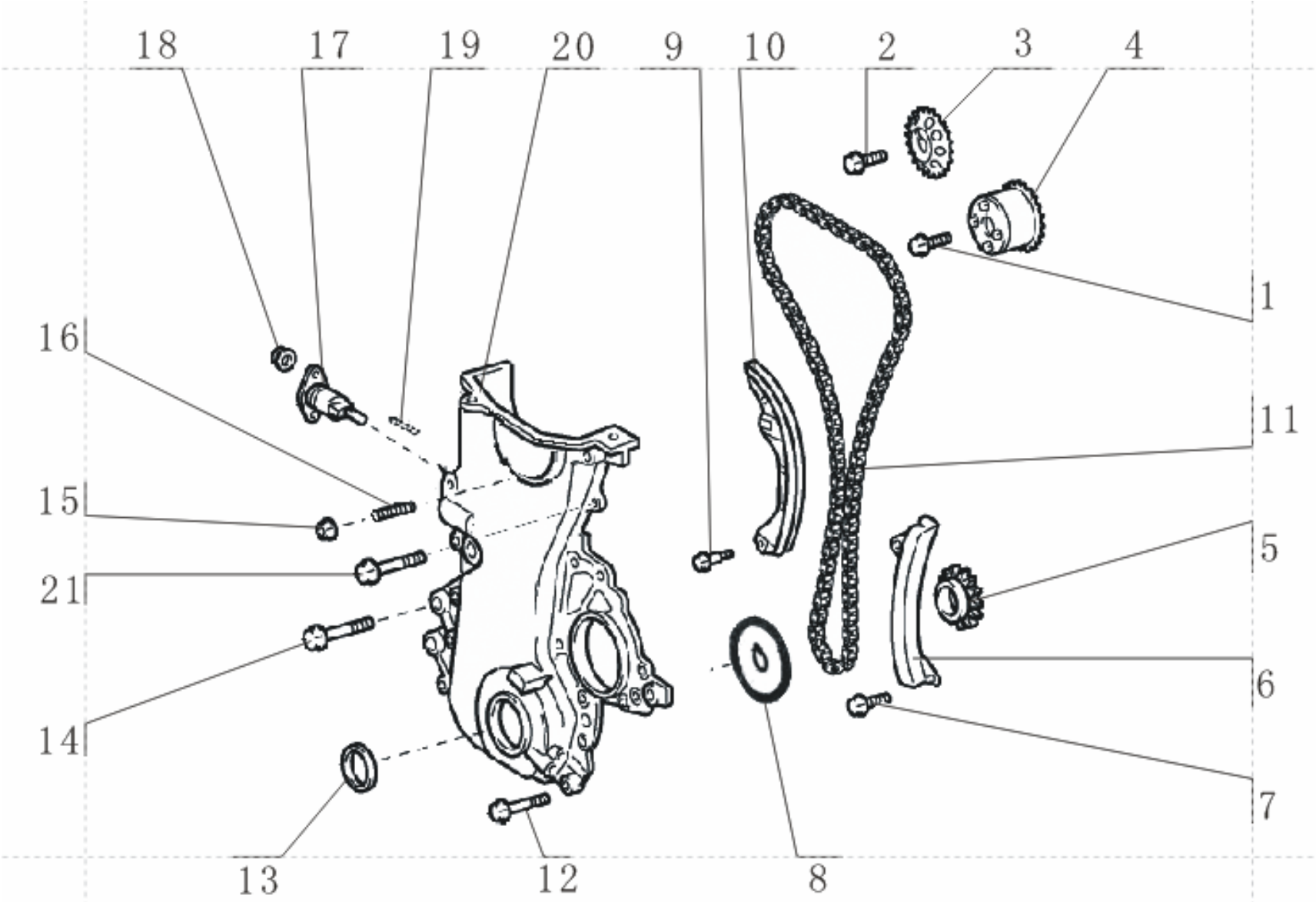
1.1、气缸盖罩 Cylinder head cover

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1	Q1860625	缸盖罩螺栓	Bolt，cylinder head cover	11		√
2	Q1840655	缸盖罩螺栓	Bolt，cylinder head cover	2		
3	S3705100	点火线圈	Ignition Coil	4		√
4	LFB479Q-1003222A	缸盖罩螺栓衬套2	Bolt sleeve 2，cylinder head cover	2		
5	LFB479Q-1003223A	点火线圈螺栓衬套	Bolt sleeve，Ignition Coil	4		
6	LFB479Q-1003231A	加油口盖	Oil Filler Cap	1		
7	LFB479Q-1003232A	加油口盖密封圈	Oil Filler Cap seal	1		
8	LFB479Q-1014014A	PCV阀密封圈	PCV seal	1		
9	LFB479Q-1014100A	PCV阀总成	PCV assy.	1		√
10	LFB479Q-1003221A	缸盖罩螺栓衬套1	Bolt sleeve 1，cylinder head cover	13		
11	LFB479Q-1003215A	缸盖罩通气嘴	Vent nozzle，cylinder head cover	1		
12	LFB479Q-1003212A	气缸盖罩挡油板	Oil baffle，cylinder head cover	1		
13	LFB479Q-3707800A	火花塞	Spark plug	4		√
14	LFB479Q-1003300A	气缸盖罩密封垫总成	Cylinder head cover seal	1		√
15	LFB479Q-1003200A	气缸盖罩总成	Cylinder head cover assy.	1		√
16	Q1200625	双头螺柱	Blot	2		√
17	Q32006	缸盖罩螺母	Nut	2		√
18	Q1460625	点火线圈螺栓	Ignition Coil bolt	4		√
19	LFB479Q-1014011A	PCV阀通气软管	PCV hose	1		√
20	Q676B16	卡箍	Hoop	1		√

1.1、气缸盖罩 Cylinder head cover

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
21	Q676B20	卡箍	Hoop	1		

1.2、正时部分 **Timing system**



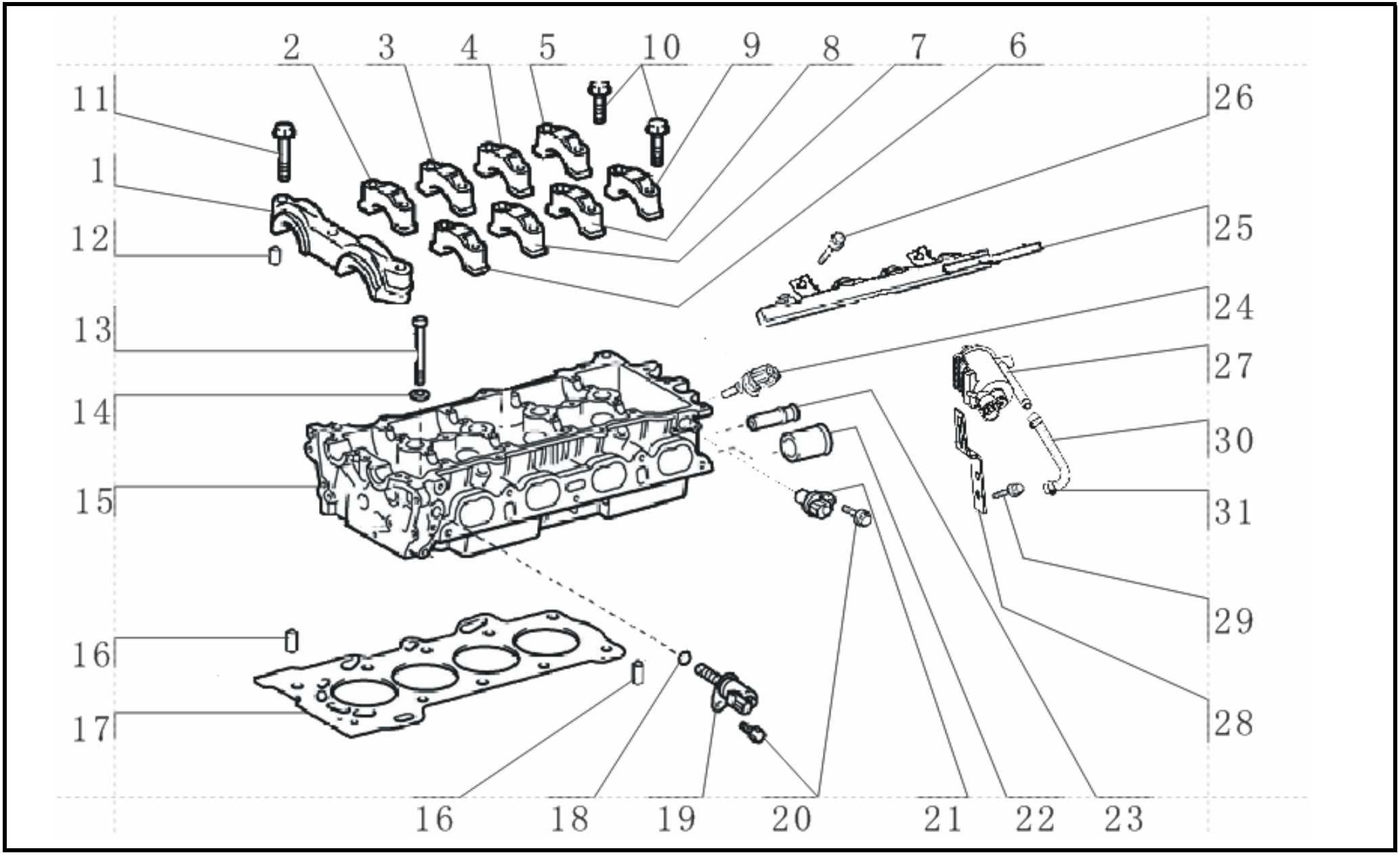
1.2、正时部分 Timing system

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1	LFB479Q-1021005A	VVT安装螺栓	Bolt，VVT	1		
2	LFB479Q-1021002A	排气正时链轮螺栓	Bolt，exhaust timing chain wheel	1		√
3	LFB479Q-1021001A	排气正时链轮	Timing chain wheel,exhaust	1		√
4	LFB479Q-1021100A	进气正时链轮总成（VVT）	Timing chain wheel,intake	1		√
5	LFB479Q-1021015A	曲轴正时链轮	Crankshaft timing chain wheel	1		√
6	LFB479Q-1021300A	正时链条定轨总成	Timing chain guide，fixed side	1		√
7	Q1400612	定轨总成螺栓	Guide bolt	14		√
8	LFB479Q-1021016A	曲轴正时链轮档片	Stopper，crankshaft timing chain wheel	1		√
9	LFB479Q-1021011A	动轨定位螺栓	Guide bolt	1		√
10	LFB479Q-1021200A	正时链条动轨总成	Timing chain guide，moving side	1		√
11	LFB479Q-1021020A	正时链条	Timing chain	1		√
12	Q1860625	前罩壳螺栓1	Front cover bolt 1	6		√
13	LFB479Q-1005030A	曲轴前油封	Crankshaft front seal	1		√
14	Q1840840	前罩壳螺栓2	Front cover bolt 2	3		√
15	Q32006	前罩壳螺母	Front cover nut	1		√
16	Q1200641	前罩壳双头螺柱	Front cover stud bolt	1		
17	LFB479Q-1021400A	正时链条张紧器总成	Timing chain tensioner	1		√
18	Q32006	张紧器总成螺母	Tensioner bolt	2		√
19	Q1200615	张紧器双头螺柱	Tensioner stud bolt	1		
20	LFB479Q-1025020A	前罩壳总成	Front cover	1		

1.2、正时部分 Timing system

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
21	Q1840845	前罩壳螺栓3	Front cover bolt 3	2		√

1.3、气缸盖 Cylinder head



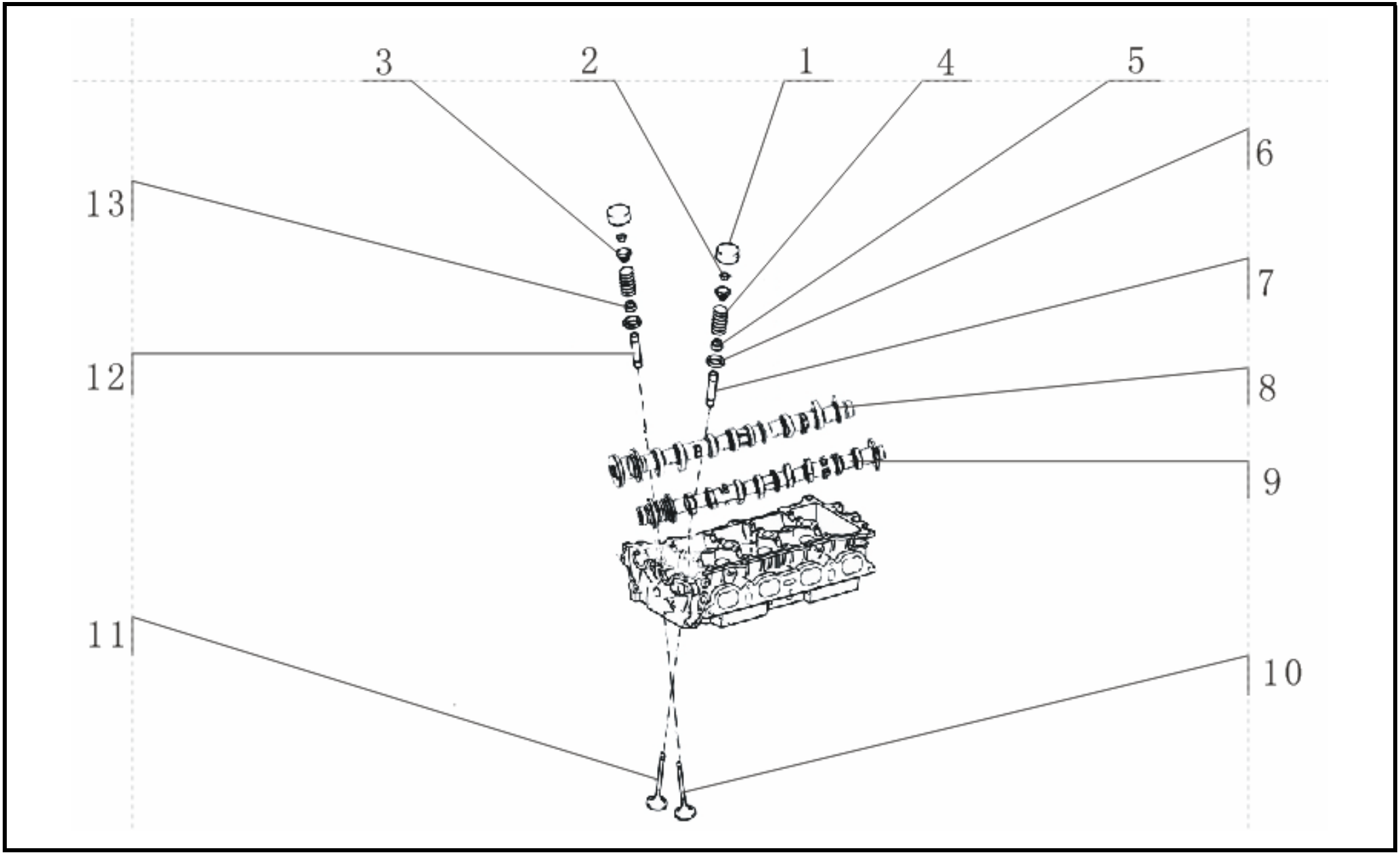
1.3、气缸盖 Cylinder head

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1	LFB479Q-003104A	凸轮轴轴承盖I	Main bearing cap，camshaft	1		
2	LFB479Q-1003105A	进气凸轮轴承盖Ⅱ	Bearing cap II，intake	1		
3	LFB479Q-1003106A	进气凸轮轴承盖Ⅲ	Bearing cap III，intake	1		
4	LFB479Q-1003107A	进气凸轮轴承盖Ⅳ	Bearing cap IV，intake	1		
5	LFB479Q-1003108A	进气凸轮轴承盖Ⅴ	Bearing cap V，intake	1		
6	LFB479Q-1003110A	排气凸轮轴承盖Ⅱ	Bearing cap II，exhaust	1		
7	LFB479Q-1003111A	排气凸轮轴承盖Ⅲ	Bearing cap III，exhaust	1		
8	LFB479Q-1003112A	排气凸轮轴承盖Ⅳ	Bearing cap IV，exhaust	1		
9	LFB479Q-1003113A	排气凸轮轴承盖Ⅴ	Bearing cap V，exhaust	1		
10	LFB479Q-1003114A	凸轮轴主轴承盖紧固螺栓	Bolt，main bearing cap	16		
11	LFB479Q-1003115A	I号凸轮轴主轴承盖紧固螺栓	Bolt，main bearing cap	3		
12	LFB479Q-1003116A	I号凸轮轴轴承盖定位销	Pin，main bearing cap	2		
13	LFB479Q-1003012A	缸盖连接螺栓	Bolt，cylinder head	10		√
14	LFB479Q-1003014A	缸盖连接螺栓垫圈	Bolt washer，cylinder head	10		√
15	LFB479Q-1003100A	气缸盖总成	Cylinder head assy.	1		√
16	LFB479Q-1003011A	气缸盖定位销	Pin，cylinder head	2		
17	LFB479Q-1003300A	气缸盖密封垫总成	Gasket,cylinder head	1		√
18	19×1.8-G-N-GB/T3452.1-2005	凸轮轴机油控制阀O型密封圈	O seal	1		
19	LFB479Q-3610200A	凸轮轴机油控制阀（OCV）	Camshaft oil distributor	1		√
20	Q1840612	螺栓	Bolt	2		√

1.3、气缸盖 Cylinder head

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
21	S3612200	凸轮轴位置传感器	Camshaft position sensor	1		√
22	LFB479Q-1003142A	散热器水管	Radiator water pipe	1		
23	LFB479Q-1003143A	加热器水管	A/C water pipe	1		
24	LBA3616100	水温传感器	Water Temperature Sensor	1		√
25	S1121100	燃油导轨总成	Fuel distributor	1		√
26	Q1860625	六角法兰面螺栓	Hex flange bolt	2		√
27	LBA1130310	碳罐电磁阀	Canister control valve	1		√
28	LFB479Q-1104014A	碳罐电磁阀支架	Canister control valve bracket	1		√
29	Q1860612	碳罐安装螺栓	Can canister bolt	2		√
30	LFB479Q-1104301A	碳罐电磁阀软管	Canister control valve hose	1		√
31	Q676B16	卡箍	Hoop	2		√

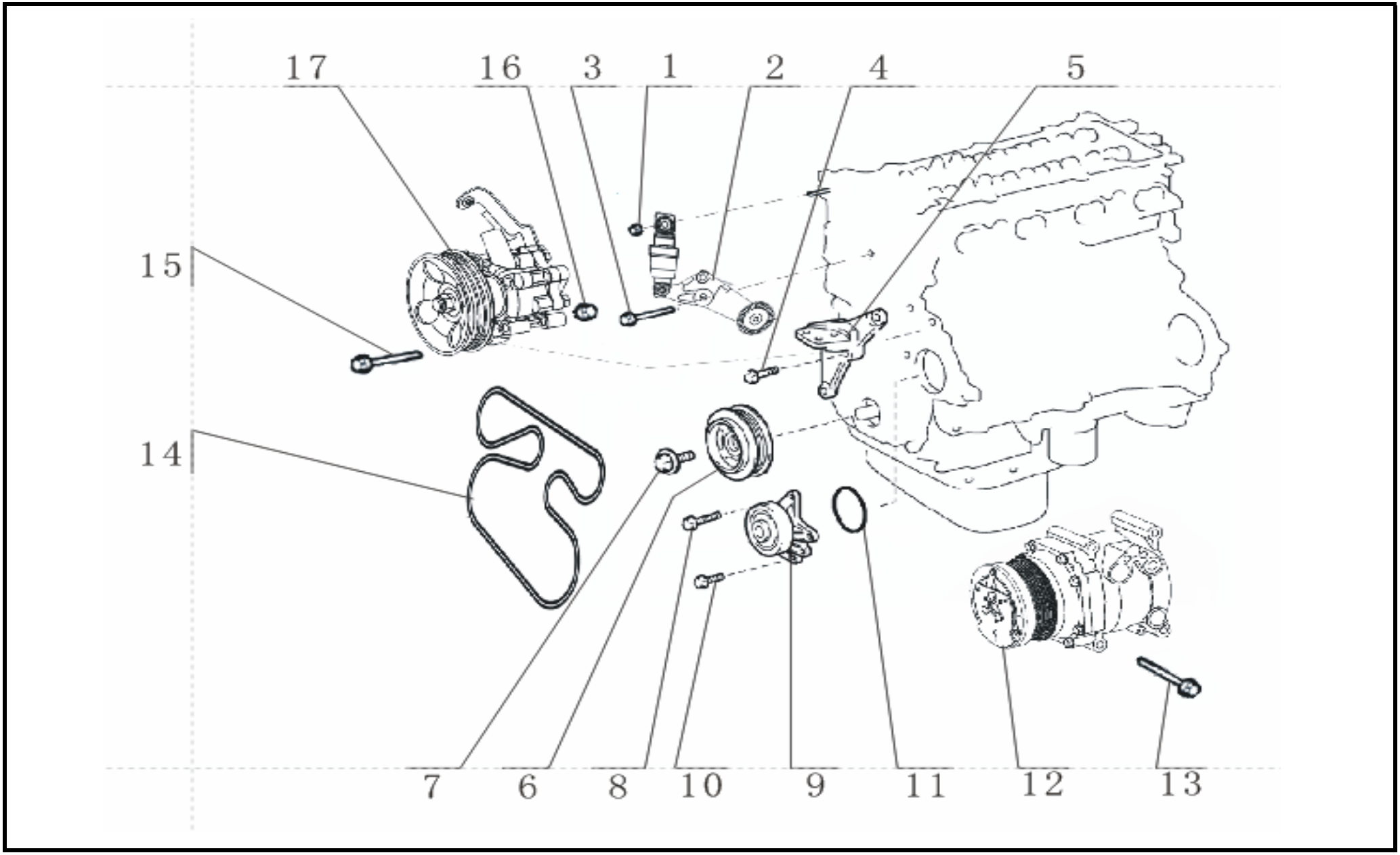
1.4、配气机构 Valve timing mechanism



1.4、配气机构 Valve timing mechanism

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1	LF479Q3-1007020A	挺柱	Tappet	16		√
2	LFB479Q-1007016A	气门锁片	Valve Lock	32		√
3	LFB479Q-1007015A	气门弹簧座	Valve Spring Retainer	16		√
4	LFB479Q-1007013A	气门弹簧	Valve Spring	16		√
5	LFB479Q-1007018A	进气门油封	Intake valve seal	8		√
6	LFB479Q-1007014A	气门弹簧底座	Valve Spring Seat	16		√
7	LFB479Q-1003132A	进气门导管	Valve guide，intake	8		
8	LFB479Q-1006200A	排气凸轮轴总成	Intake camshaft	1		
9	LFB479Q-1006100A	进气凸轮轴总成	Exhaust camshaft	1		
10	LFB479Q-1007011A	排气门	Exhaust Valve	8		√
11	LFB479Q-1007012A	进气门	Intake Valve	8		√
12	LFB479Q-1003133A	排气门导管	Valve guide，exhaust	8		
13	LFB479Q-1007017A	排气门油封	Exhaust Valve Seal	8		√

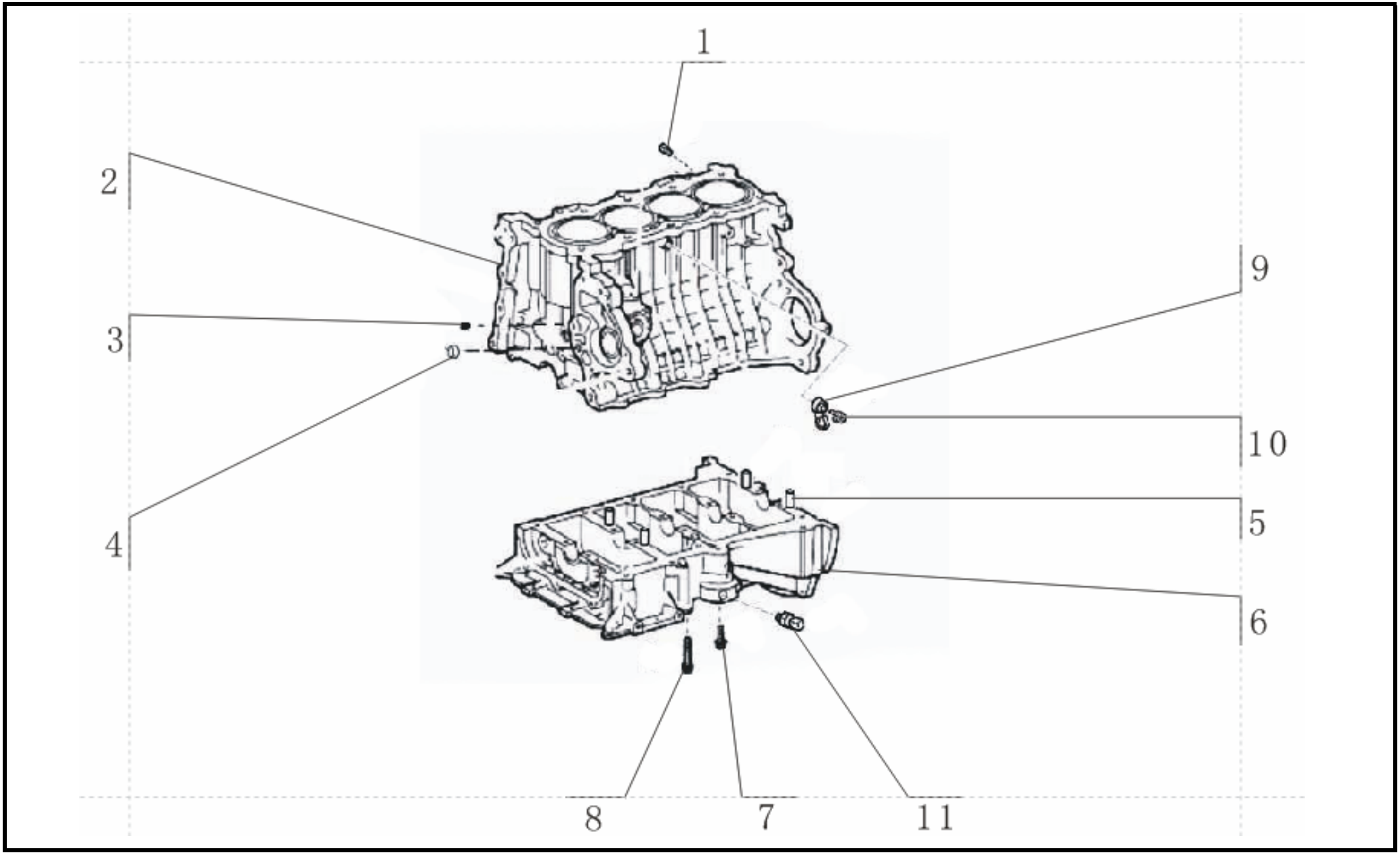
1.5、前罩壳 Front cover



1.5、前罩壳 Front cover

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1	Q1840867	张紧轮螺母	Tenioner nut	1		
2	LFB479Q-1025100A	张紧轮总成	Tenioner	1		√
3	LFB479Q-1025035A	张紧轮螺栓	Tenioner bolt	1		√
4	LFB479Q-1001405A	右安装支架螺栓	Bolt，right bracket	3		√
5	LFB479Q-1001400A	发动机右安装支架	Engine right bracket	1		√
6	LFB479Q-1025013A	曲轴皮带轮	Crankshaft pulley	1		√
7	LFB479Q-1025024A	曲轴皮带轮螺栓	Crankshaft pulley bolt	1		√
8	Q1860635	水泵长螺栓	Water pump bolt，longer	3		√
9	LFB479Q-1307100A	水泵总成	Water pump	1		√
10	Q1860630	水泵短螺栓	Water pump bolt，shorter	2		√
11	LFB479Q-1307012A	水泵O型密封圈	Ring seal	1		√
12	S8103200	空调压缩机总成	A/C compressor	1		√
13	LFB479Q-8103008A	空调压缩机螺栓	A/C compressor bolt	3		√
14	LFB479Q-1025015A	水泵、发电机皮带	Water pump and generator belt	1		√
15	Q18410125TF2	六角法兰面螺栓	Hex flange bolt	2		√
16	Q32010	六角法兰面螺母	Hex flange nut	2		√
17	S3407100	动力转向泵总成	Steering pump	1		√

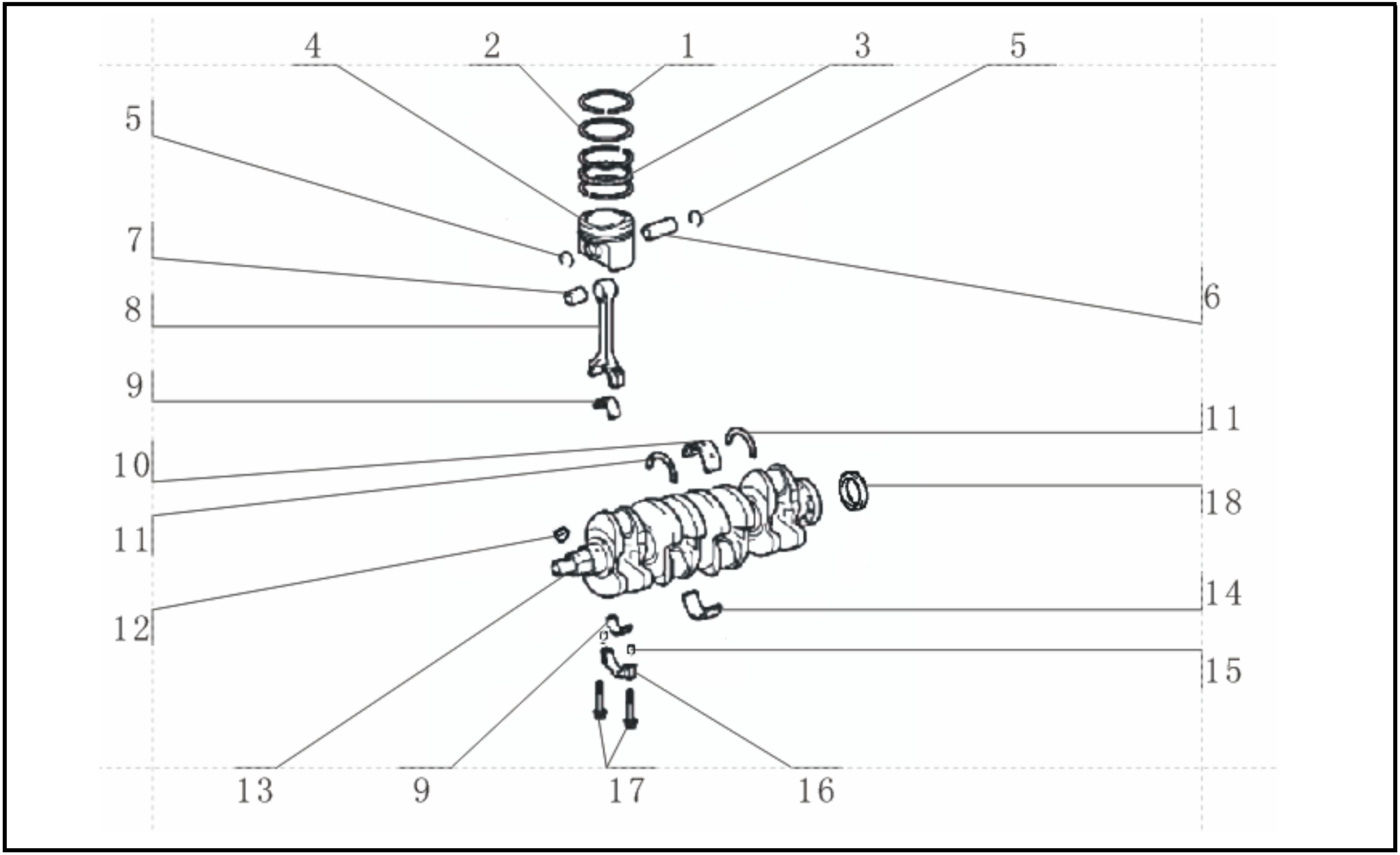
1.6、曲轴箱 Cylinder block



1.6、曲轴箱 Cylinder block

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1	LFB479Q-1002111A	放水螺塞	Drain way bolt	1		√
2	LFB479Q-1002120A	曲轴箱上体总成	Crankcase，upper	1		
3	6.0 G100 b GB/T308-2002	油道堵珠	Oil plug ball	1		
4	LFB479Q-1002123A	曲轴箱油道堵塞	Oil plug	4		
5	LFB479Q-1002112A	曲轴箱上下体定位销	Crankcase pin	4		
6	LFB479Q-1002130A	曲轴箱下体总成	Crankcase lower	1		
7	Q1840840	曲轴箱上下体连接螺栓	Crankcase bolt	10		√
8	LFB479Q-1002107A	曲轴箱主轴承盖紧固螺栓	Bolt，crankcase bearing cap	10		
9	LBA3612400	爆震传感器	Knock sensor	1		√
10	Q1840830	爆震传感器螺栓	Knock sensor sensor	1		√
11	LF479Q1-3818100A	机油压力报警器	Oil pressure warner	1		√

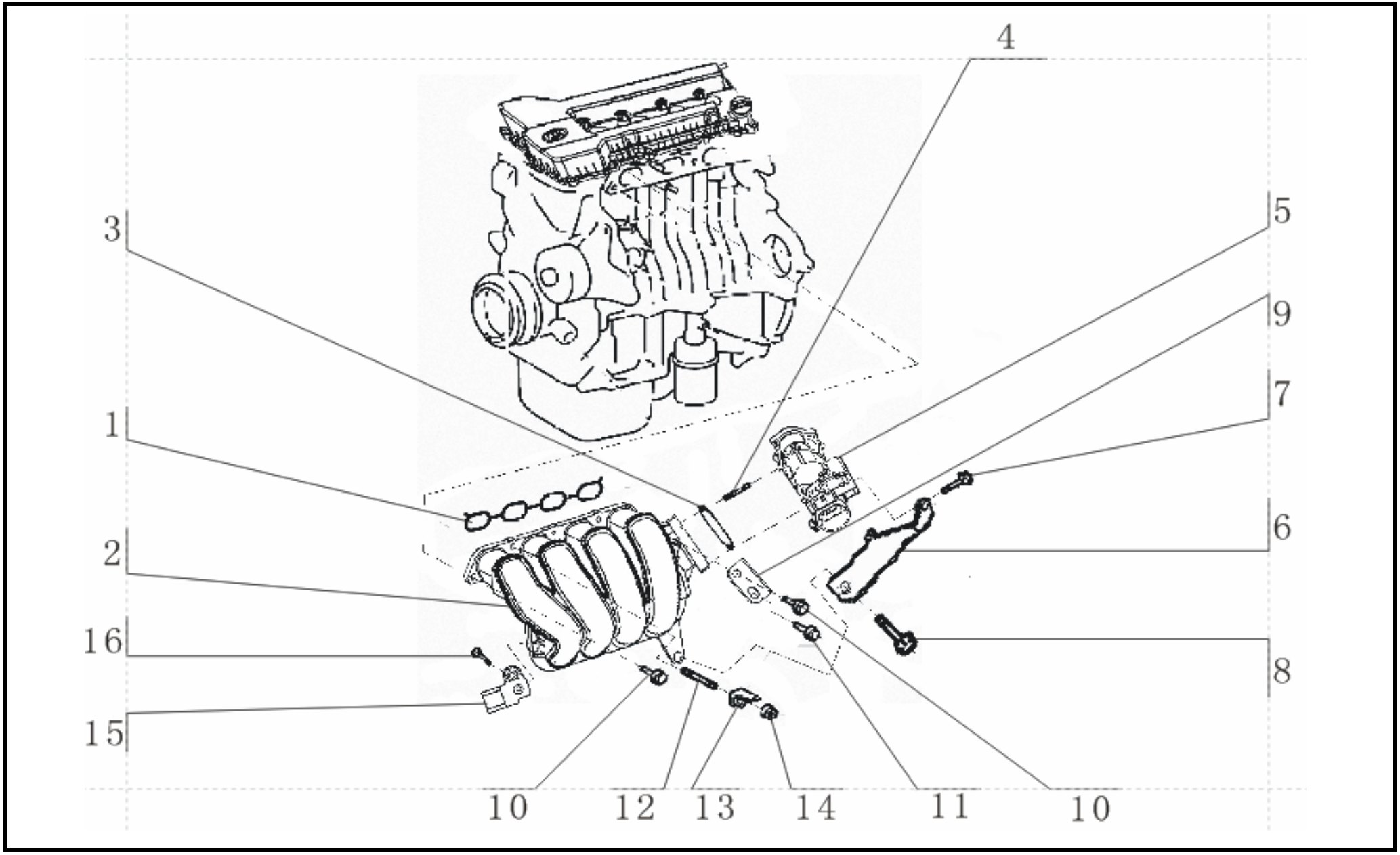
1.7、活塞连杆曲轴 Crankshaft and piston rod



1.7、活塞连杆曲轴 Crankshaft and piston rod

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1	LFB479Q-1004201A	活塞环Ⅰ	Piston ring 1	4		√
2	LFB479Q-1004202A	活塞环Ⅱ	Piston ring 2	4		√
3	LFB479Q-1004210A	组合油环	Piston ring kit	4		
4	LFB479Q-1004012A	活塞	Piston	4		√
5	LFB479Q-1004014A	活塞销卡环	Circlip，piston pin	8		√
6	LFB479Q-1004013A	活塞销	Piston Pin	4		√
7	LFB479Q-1004107A	连杆小头衬套	Rod sleeve	4		
8	LFB479Q-1004102A	连杆体	Rod	4		
9	LFB479Q-1004011A	连杆轴瓦	Rod Bearing	8		√
10	LFB479Q-1005015A	曲轴上主轴瓦	Crankshaft bearing，upper	5		√
11	LFB479Q-1005014A	曲轴下止推片	Crankshaft lower thrust washer	2		√
12	Q5500416	半圆键	Woodruff key	1		√
13	LFB479Q-1005011A	曲轴	Crankshaft	1		√
14	LFB479Q-1005024A	曲轴下主轴瓦	Crankshaft bearing，lower	5		√
15	LFB479Q-1004106A	连杆盖定位销	Rod cap pin	8		
16	LFB479Q-1004103A	连杆盖	Rod cap	4		
17	LFB479Q-1004104A	连杆螺栓	Rod bolt	8		
18	LFB479Q-1005020A	曲轴后油封	Crankshaft rear seal	1		√

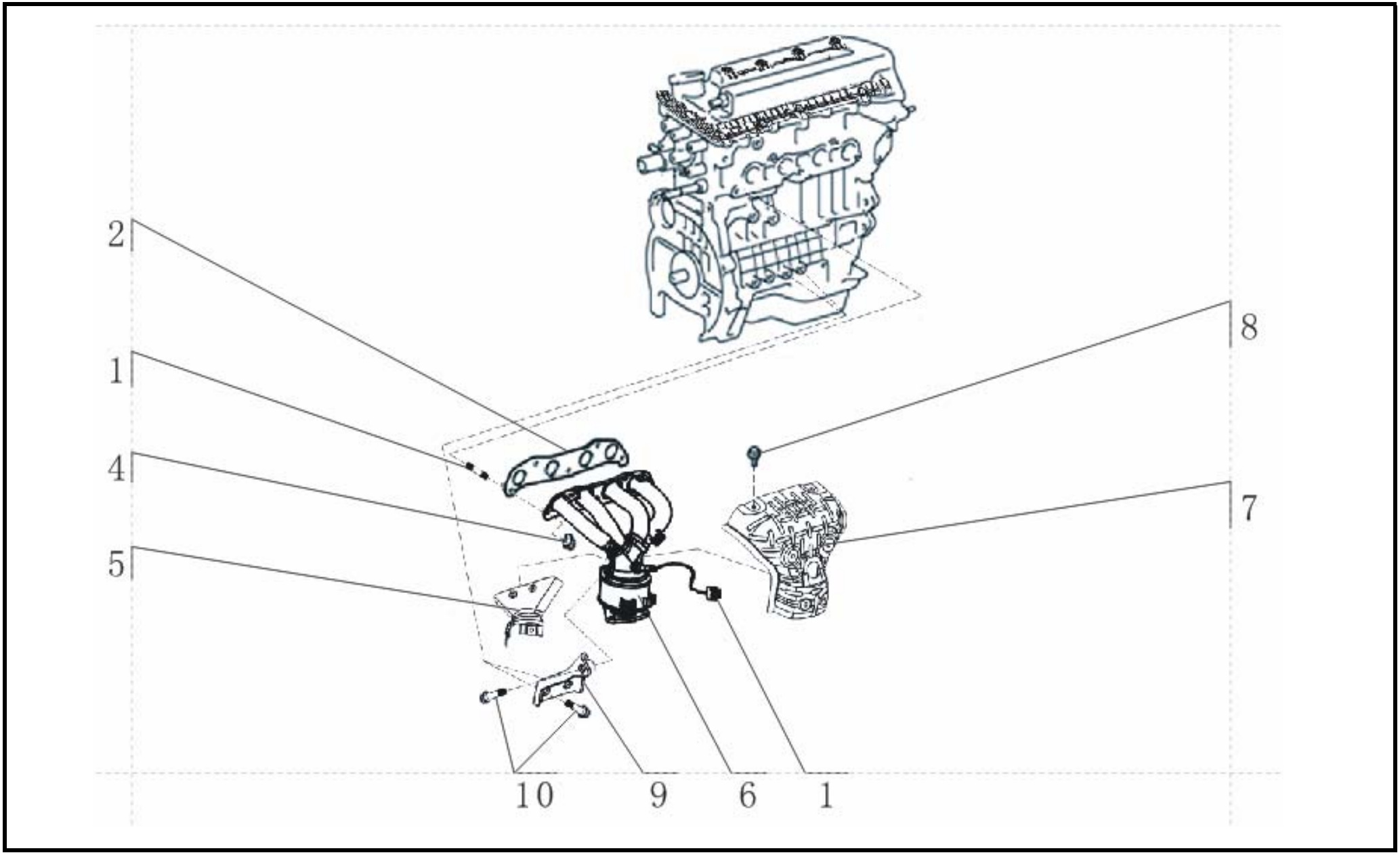
1.8、进气歧管 In-manifold



1.8、进气歧管 In-manifold

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1	LFB479Q-1008014A	进气歧管密封圈	Intake manifold seal	1		
2	LFB479Q-1008200A	进气歧管总成	Intake manifold assy.	1		√
3	LFB479Q-1008021A	节气门体密封圈	Throttle seal	1		
4	Q1200622	双头螺柱	Blot	2		
5	S1132100	节气门体总成	Throttle assy	1		√
6	LFB479Q-3765012A	节气门体加强板	Throttle bracket	1		√
7	Q1860635	节气门安装螺栓	Throttle bolt	2		√
8	Q1400830	节气门加强板螺栓	Throttle bracket bolt	1		√
9	LFB479Q-1008015A	进气歧管连接板	Intake manifold connecting plate	1		√
10	Q1400835	进气歧管螺栓	Bolt,Intake manifold	3		√
11	Q1400820	进气歧管连接板螺栓	Bolt,Intake manifold connecting plate	1		√
12	Q1200832	双头螺柱	Blot	2		√
13	LFB479Q-4001014A	线束支架II	Harness bracket	2		√
14	Q32008	进气歧管螺母	Intake manifold nut	2		√
15	S3614300	进气压力温度传感器	Temperature And Pressure Sensor	1		√
16	Q1840612	进气压力温度传感器螺栓	Bolt,Temperature And Pressure Sensor	1		√

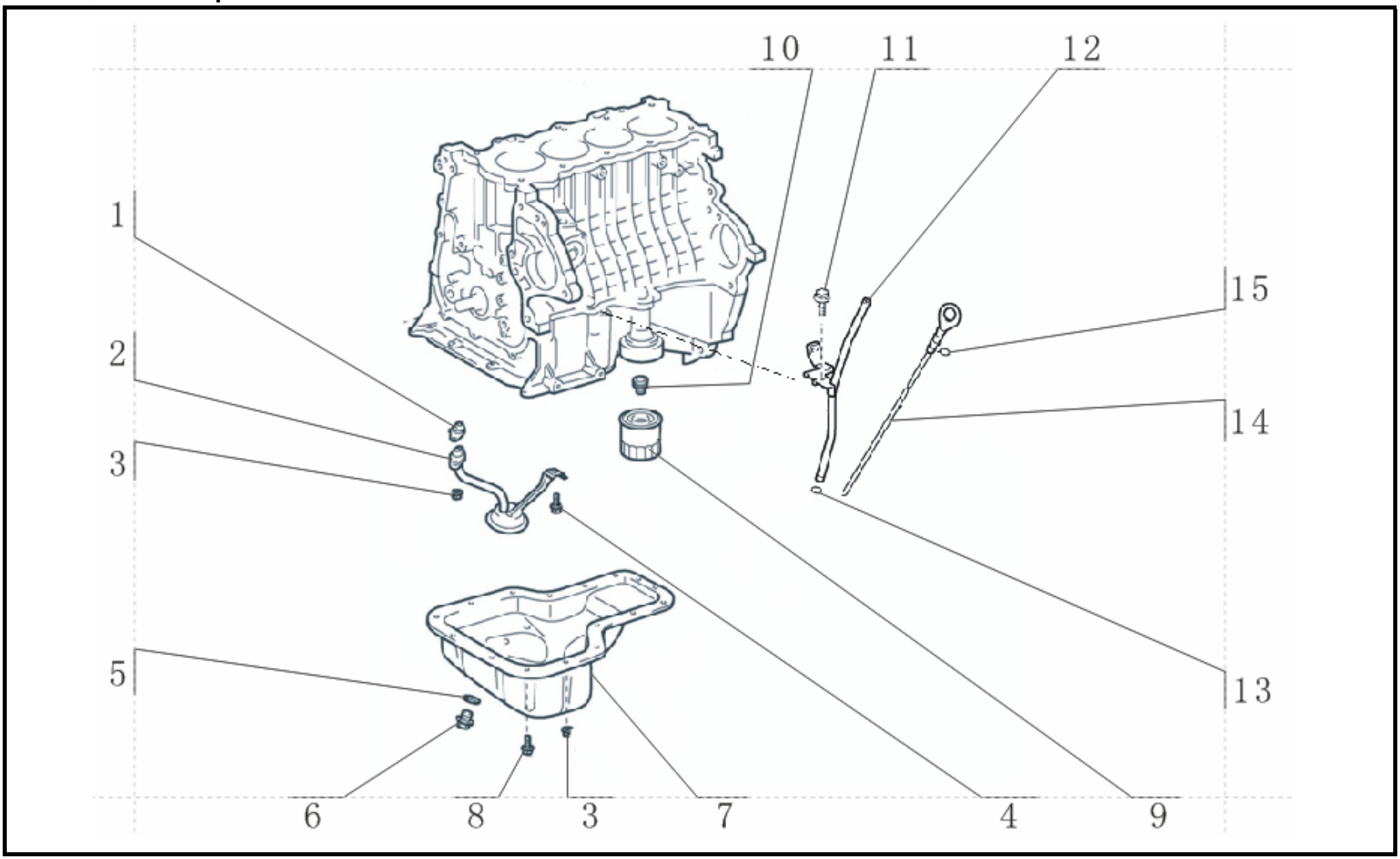
1.9、排气歧管 Ex-manifold



1.9、排气歧管 Ex-manifold

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1	Q1200825	双头螺柱	Blot	5		
2	LFB479Q-1008013A	排气歧管隔热垫	Exhaust Manifold gasket	1		√
3	LFB479Q-1008100A	排气歧管总成	Exhaust Manifold	1		√
4	LFB479Q-1008022A	排气歧管螺母	Exhaust Manifold nut	5		√
5	LFB479Q-1008012A	排气歧管下隔热罩	Heat insulator lower	1		√
6	LBA3612300	前氧传感器	Oxygen Sensor	1		√
7	LFB479Q-1008011A	排气歧管上隔热罩	Heat Insulator upper	1		√
8	Q1400820	螺栓	Hex bolt	10		√
9	LFB479Q-1008016A	排气歧管加强板	Exhaust Manifold bracket	1		√
10	Q1401030	螺栓	Hex bolt	3		√

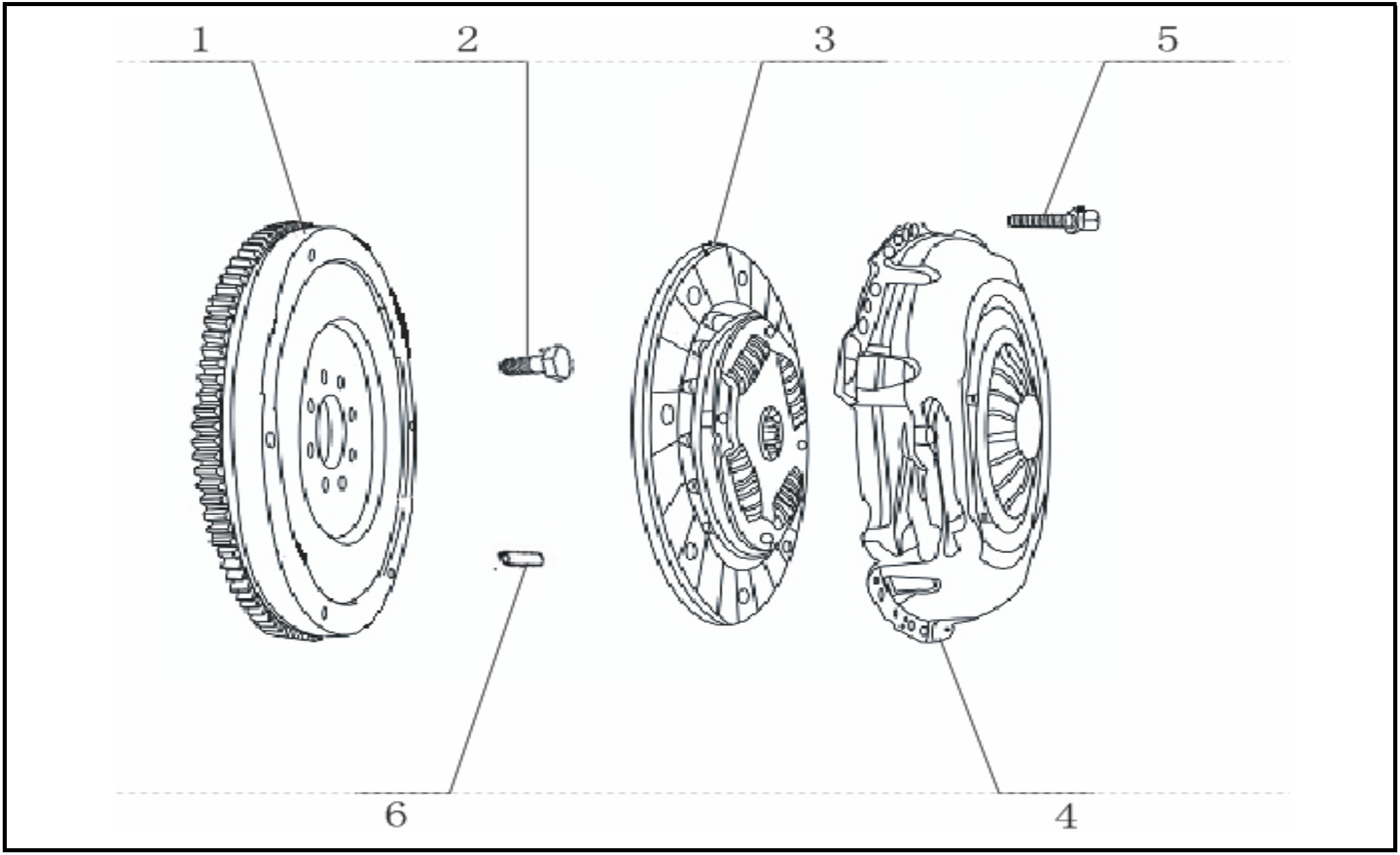
1.10、机油盘 Oil pan



1.10、机油盘 Oil pan

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1	LFB479Q-1010011A	机油集滤器密封垫	Gasket，oil strainer	1		√
2	LFB479Q-1010100A	机油集滤器总成	Oil strainer sub-assy	1		√
3	Q32006	螺母	Nut	4		√
4	Q1860612	螺栓	Hex bolt	1		√
5	Q40112T4F	放油螺塞垫片	Oil plug washer	1		√
6	LF479Q1-1009013A	放油螺塞	Oil plug	1		√
7	LFB479Q-1009100A	机油盘总成	Oil Pan	1		√
8	Q1400612	螺栓	Hex bolt	14		√
9	LF479Q1-1017100A	机油滤清器	Oil Filter	1		√
10	LFB479Q-1017011A	机油滤清器连接管	Oil Filter connecting pipe	1		√
11	Q1860612	螺栓	Hex bolt	2		√
12	LFB479Q-1009015A	油位计导管	Oil level gauge guide	1		√
13	9.0×1.8-G-N-GB/T3452.1-2005	油位计导管O型密封圈	O seal	1		
14	LFB479Q-1009300A	油位计总成	Oil level gauge assy	1		√
15	6.9×1.8-G-N-GB/T3452.1-2005	油位计O型密封圈	O seal	2		

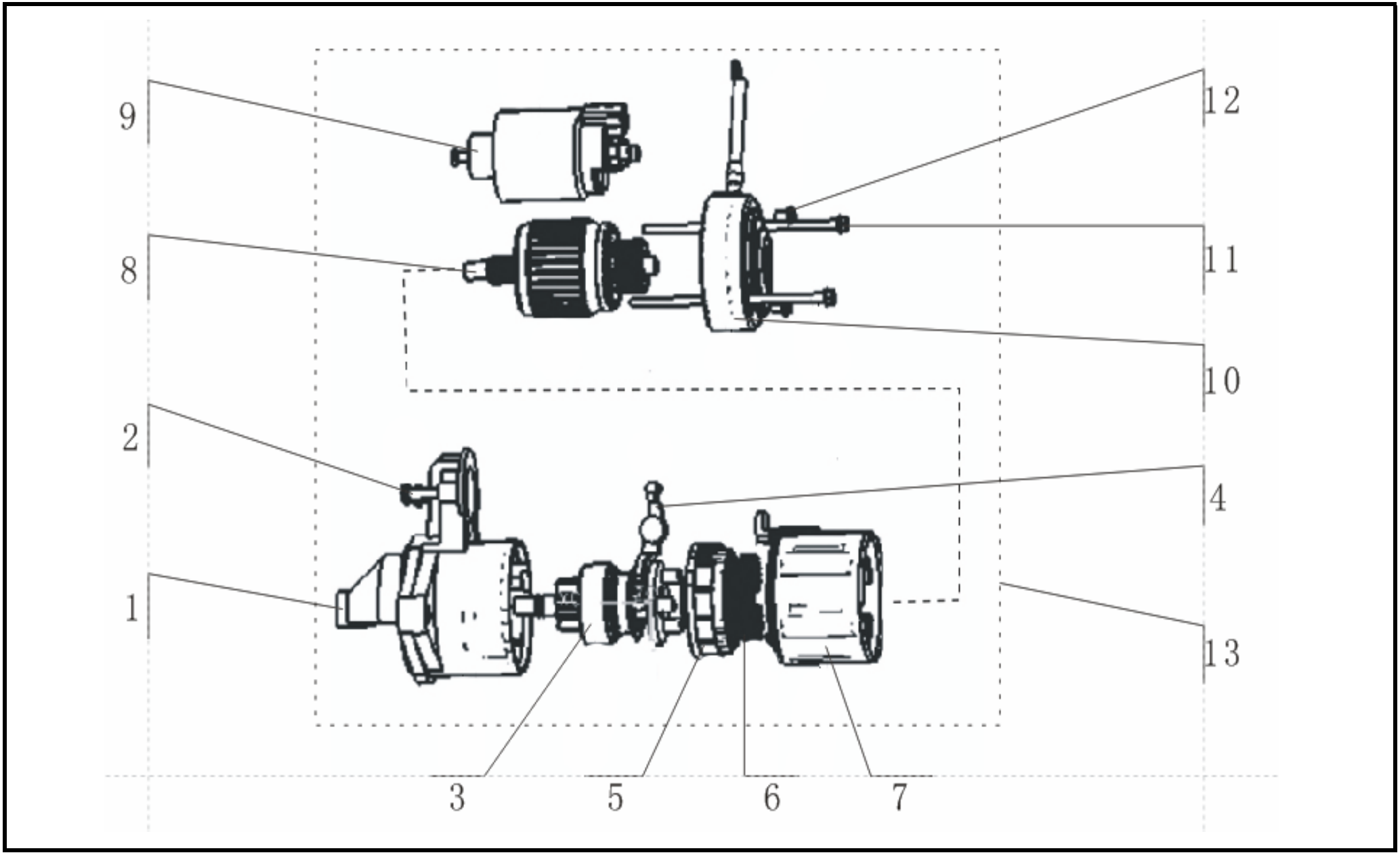
1.11、离合器 Clutch



1.11、离合器 Clutch

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1	LFB479Q-1005100A	飞轮齿圈总成	Flywheel rim	1		√
2	LFB479Q-1005023A	飞轮螺栓	Flywheel bolt	8		√
3	S1601200	离合器从动盘总成	Clutch Driven Plate	1		
4	S1601100	离合器压盘总成	Clutch press plate	1		
5	LFB479Q-1601012A	离合器压盘螺栓	Clutch bolt	6		

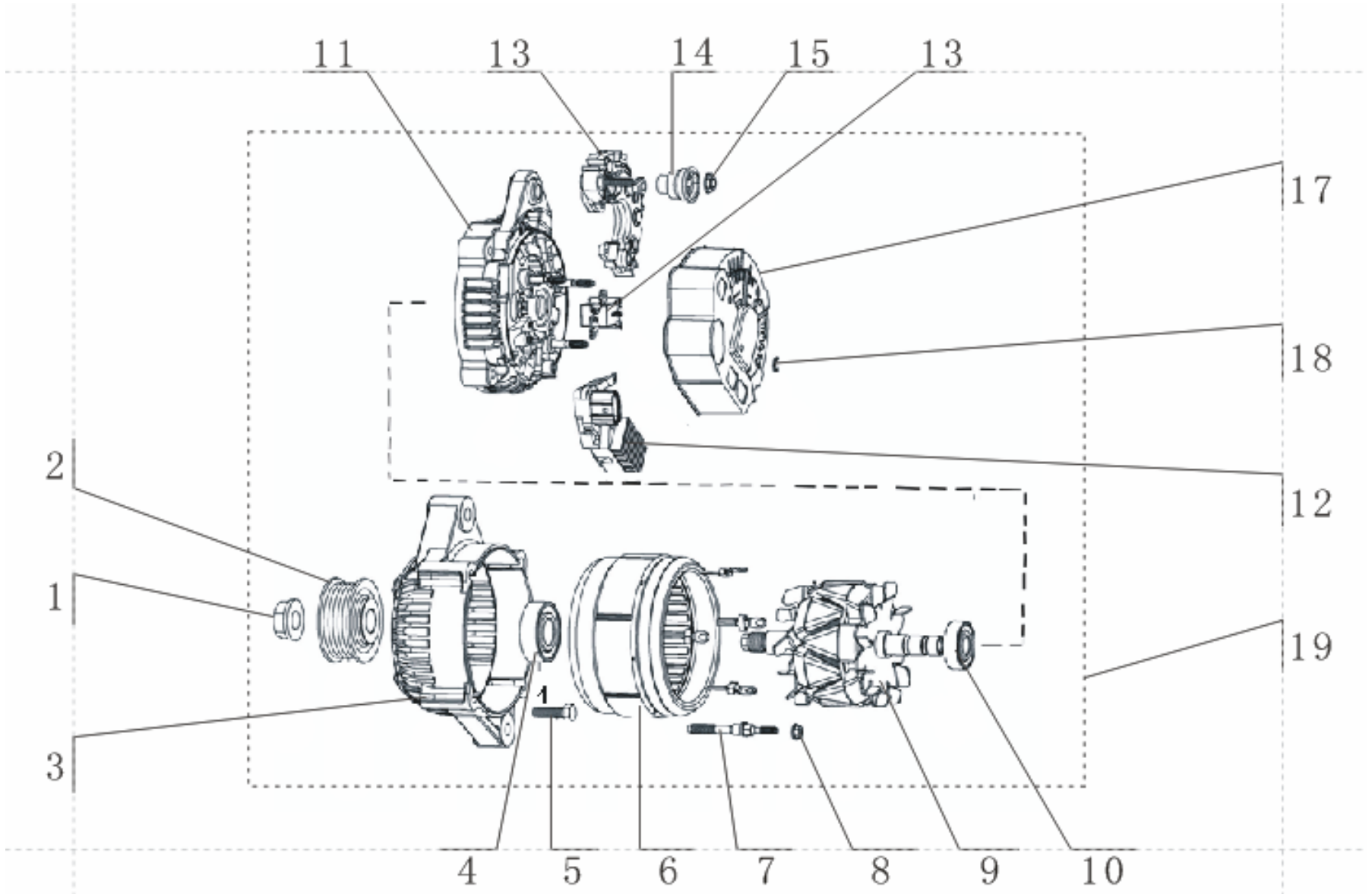
1.12、启动电机 Starter



1.12、启动电机 Starter

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1	LFB479Q-3708110A	前盖总成	Front cap assy.	1		
2	Q24100625	螺钉	Screw	2		
3	LFB479Q-3708120A	单向器	unidirectional	1		
4	LFB479Q-3708130A	拨叉	Fork	1		
5	LFB479Q-3708140A	减速齿轮总成	Reducing gear	1		
6	LFB479Q-3708150A	行星齿轮	Planet gear	3		
7	LFB479Q-3708160A	定子	Stater	1		
8	LFB479Q-3708170A	转子	Rotor	1		
9	LFB479Q-3708180A	电磁开关总成	Solenoid Switch	1		
10	LFB479Q-3708190A	电刷组件总成	Brush	1		
11	Q150B08120	螺栓	Hex bolt	2		
12	Q2140510	螺钉	Screw	2		√
13	LFB479Q-3708100A	起动电机总成	Starter assy	1		√

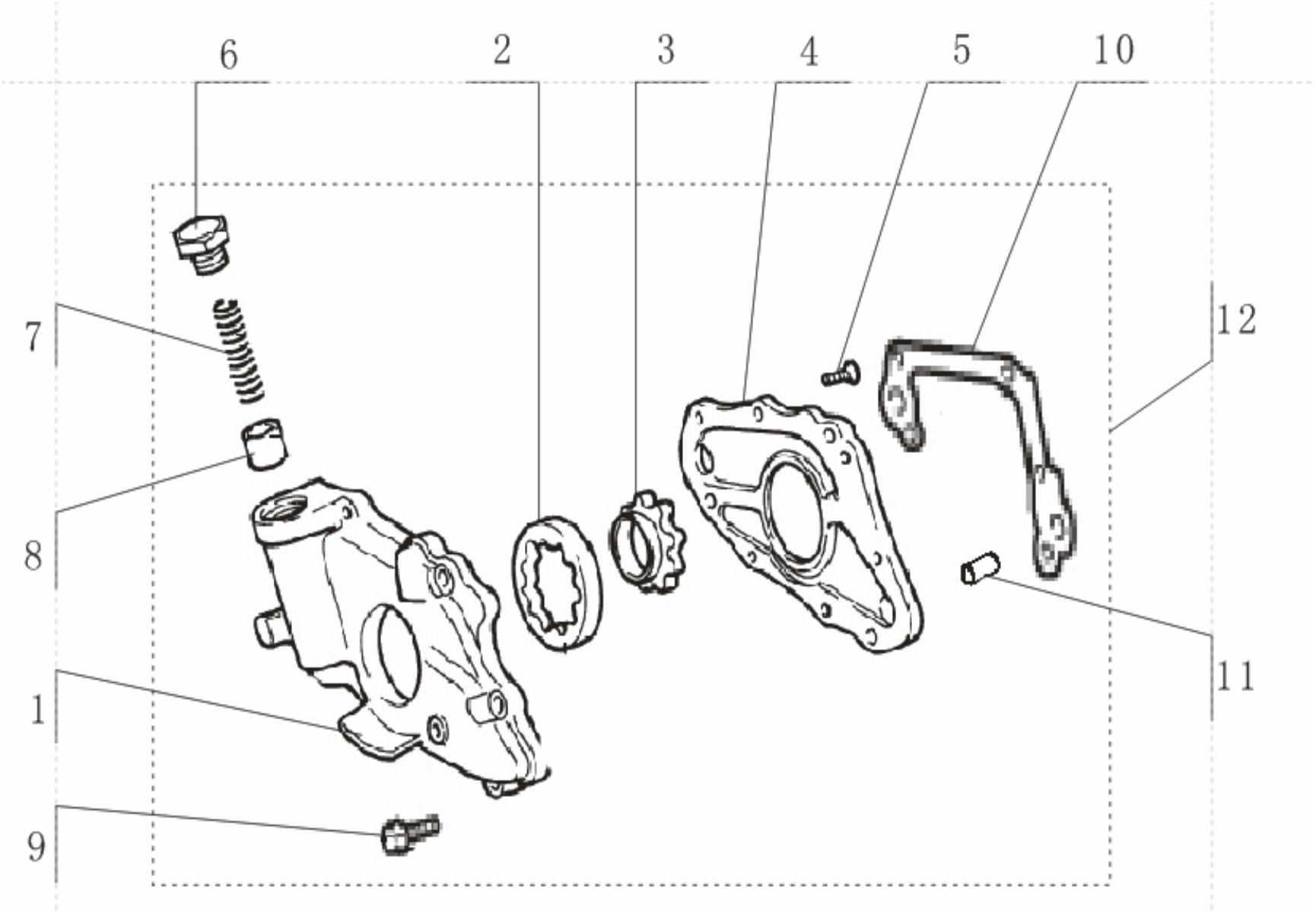
1.13、发电机 Generator



1.13、发电机 Generator

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1	Q32014	螺母	Nut	1		
2	LFB479Q-3701110A	皮带轮	Pulley	1		
3	LFB479Q-3701120A	前端盖	Front cover	1		
4	LFB479Q-3701130A	前滚动轴承	Front bearing	1		
5	Q174B0517	螺栓	Hex bolt	4		
6	LFB479Q-3701140A	定子	Stator	1		
7	Q1200550	双头螺栓	Bolt	4		
8	Q32005	螺母	Nut	7		√
9	LFB479Q-3701150A	转子	Rotor	1		
10	LFB479Q-3701160A	后滚动轴承	Rear bearing	1		
11	LFB479Q-3701170A	后盖组件	Rear cover	1		
12	LFB479Q-3701180A	电压调节器	Voltage regulator	1		
13	LFB479Q-3701190A	电刷总成	Brush	1		
14	LFB479Q-3701111A	整流器	Rectifier	1		
15	LFB479Q-3701112A	绝缘套	Insulant	1		
16	Q32006	螺母	Nut	1		√
17	LFB479Q-3701113A	罩盖	Cover	1		
18	Q32005	螺母	Nut	1		√
19	LFB479Q-3701100A	发电机总成	Generator assy.	1		√

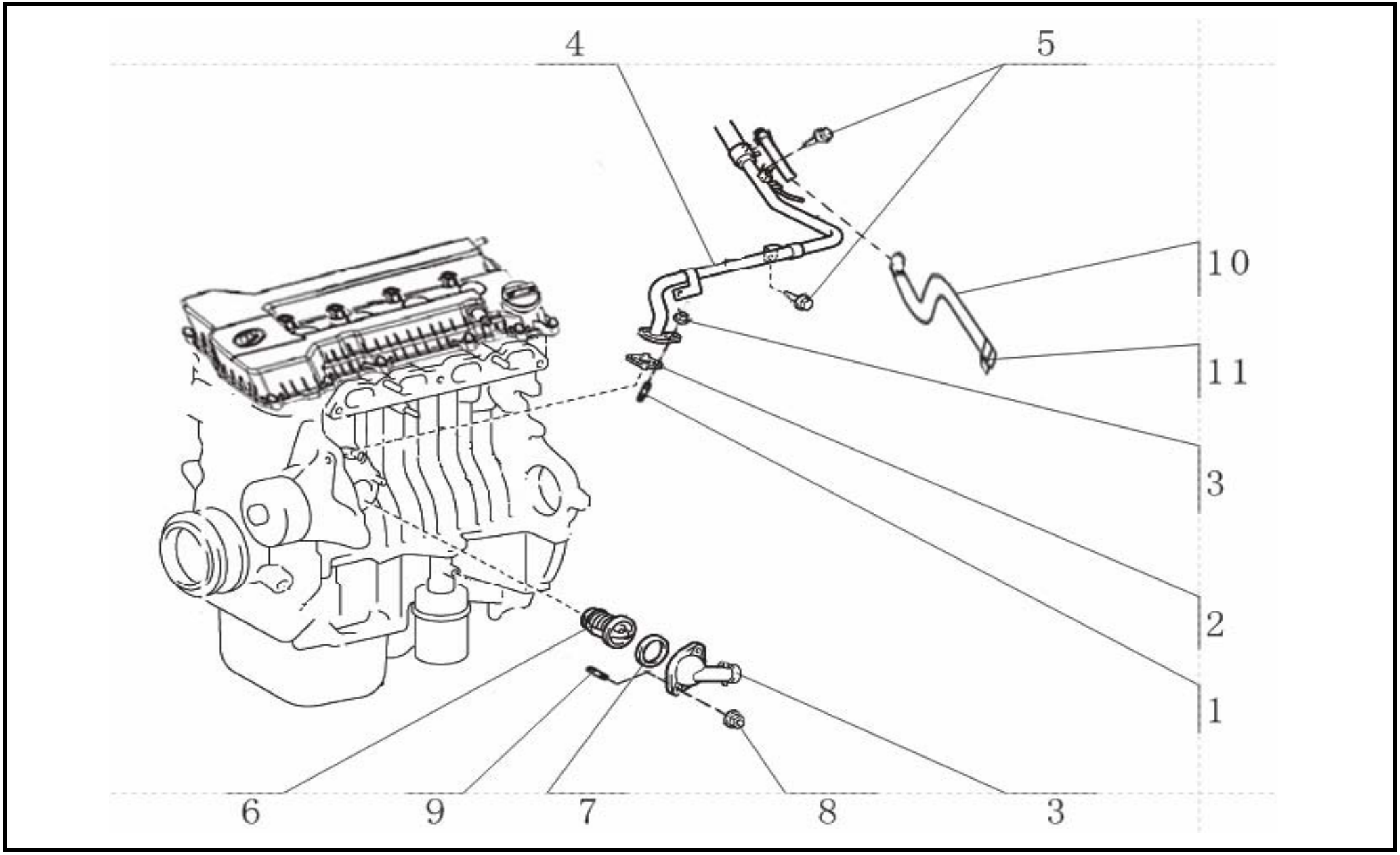
1.13、机油泵 Oil pump



1.13、机油泵 Oil pump

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1	LFB479Q-1011101A	泵体	Oil Pump body	1		
2	LFB479Q-1011104A	外转子	Rotor，outer	1		
3	LFB479Q-1011103A	内转子	Rotor，inner	1		
4	LFB479Q-1011102A	泵盖	Oil Pump cap	1		
5	Q2540616	十字沉头螺钉	Screw	3		
6	LFB479Q-1011107A	螺塞	Plug	1		
7	LFB479Q-1011106A	限压阀弹簧	limiting valve spring	1		
8	LFB479Q-1011105A	限压阀柱塞	limiting valve plug	1		
9	Q1860635	机油泵螺栓	limiting valve bolt	5		√
10	LFB479Q-1011011A	机油泵密封垫	Gasket，oil pump	1		√
11	LFB479Q-1011012A	机油泵定位销	Oil pump pin	2		√
12	LFB479Q-1011100A	机油泵总成	Oil Pump Assy	1		√

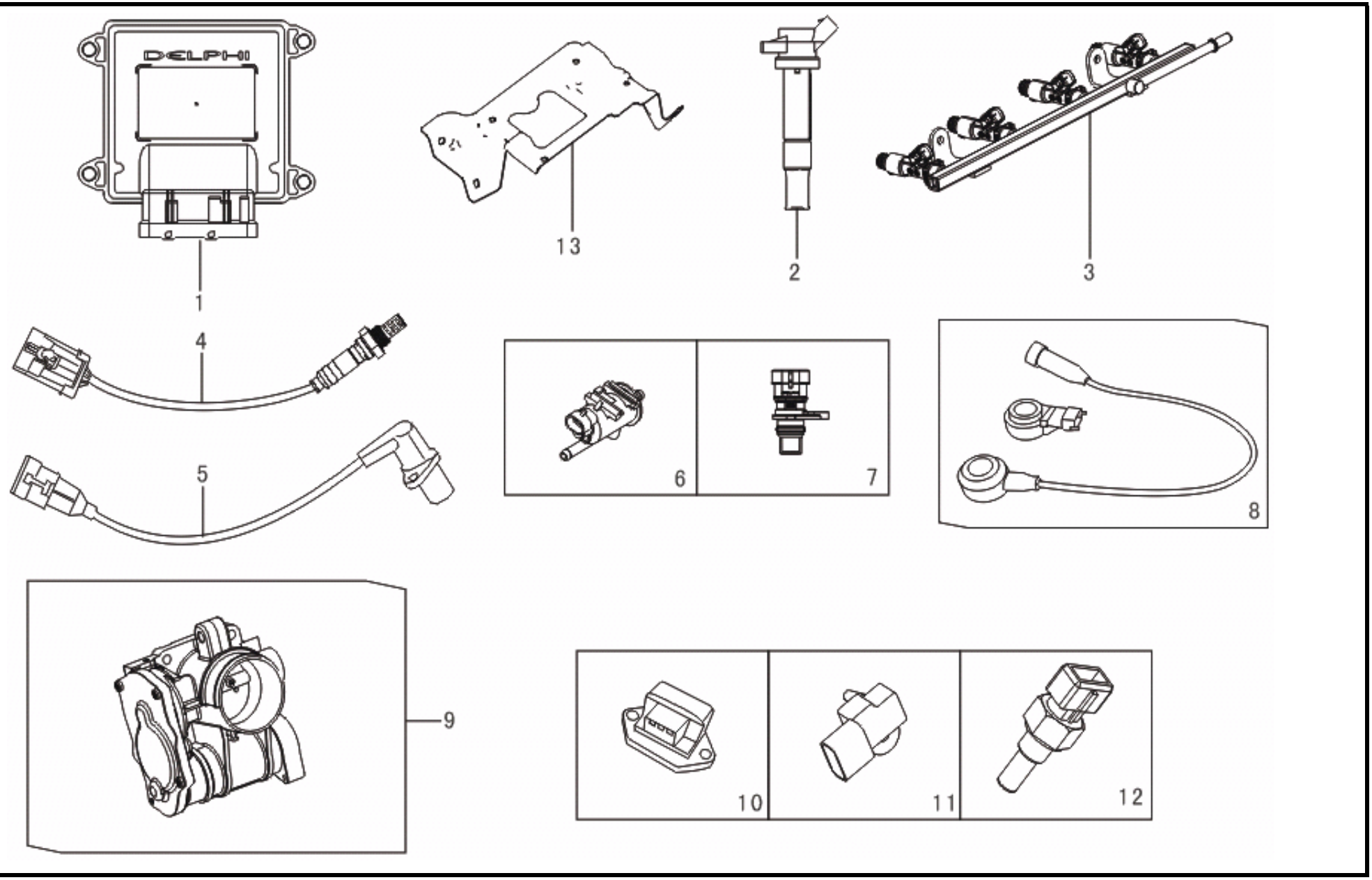
1.14、节温器及水管组件 **Thermostat**



1.14、节温器及水管组件 Thermostat

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1	Q1200616	双头螺柱	Bolt	2		√
2	LFB479Q-1300031A	旁通水管密封垫	Pipe seal	1		√
3	Q32006	螺母	Nut	4		√
4	LFB479Q-1300030A	旁通水管焊接组件（带真空支管）	Water pipe	1		√
5	Q1860612	螺栓	Hex bolt	2		√
6	LFB479Q-1306100A	节温器总成	Thermostat assy	1		√
7	LFB479Q-1306202A	节温器密封圈	Thermostat seal	1		
8	LFB479Q-1300020A	进水管总成	Water intake pipe	1		√
9	Q1200622	双头螺柱	Blot	2		
10	LFB479Q-1000038A	真空连接软管	Hose	1		
11	Q676B20	卡箍	Hoop	2		

1.15 电喷系统 EFI

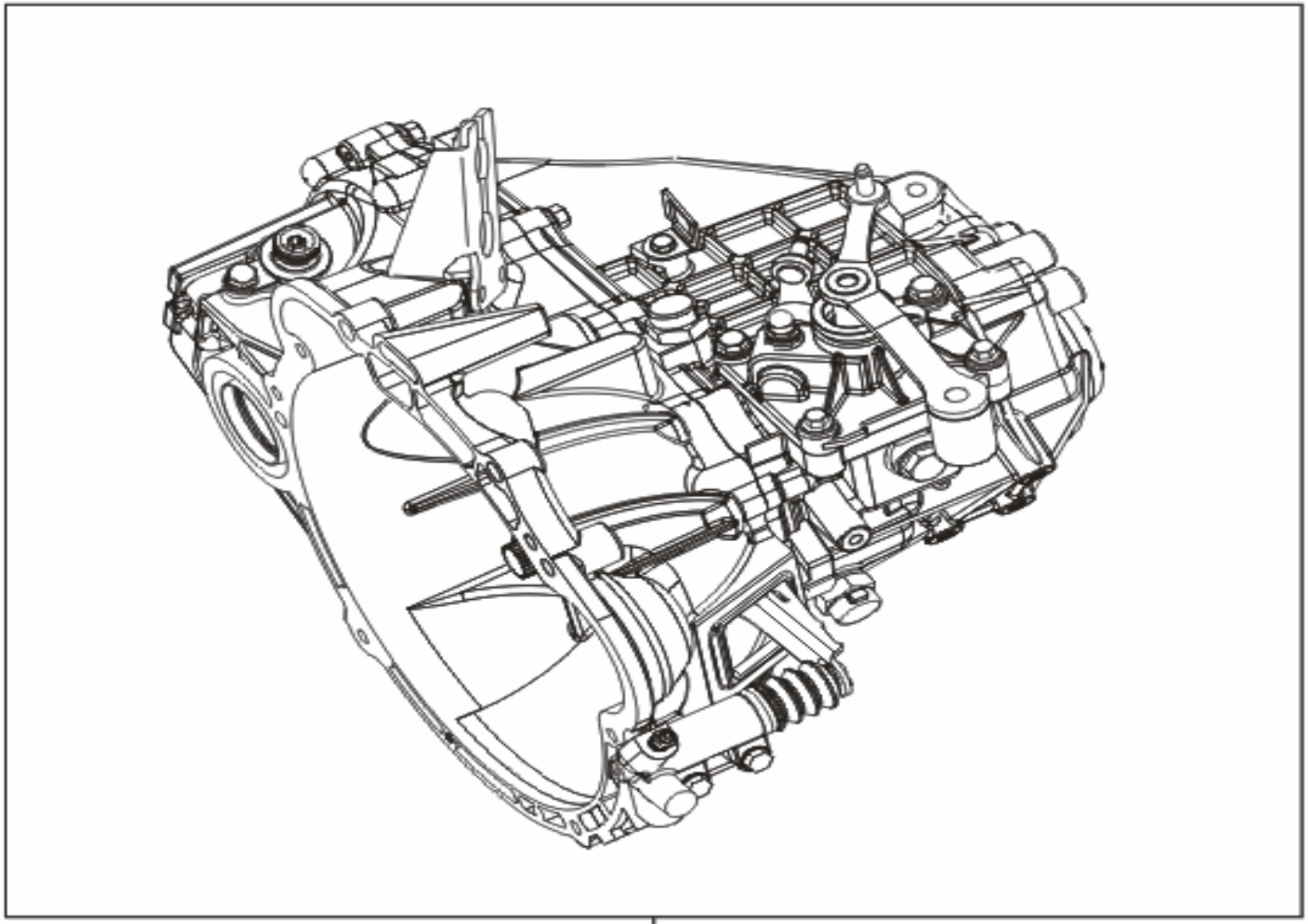


1.15 电喷系统 EFI

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1	S3612100	发动机ECU	ECU	1		√
2	S3705100	点火线圈	Ignition coil	1		√
3	S1121100	燃油导轨总成	Fuel distributor	1		√
4	LBA3612300	氧传感器	Oxygen Sensor	1		√
5	LBA3612600	曲轴位置传感器	Crankshaft Position Sensor	1		√
6	LBA1130310	碳罐控制阀	Canister Control Valve	1		√
7	S3612200	凸轮轴位置传感器	Camshaft position sensor	1		√
8	LBA3612400	爆震传感器	Knock Sensor	1		√
9	S1132100	节气门体总成	Throttle assy	1		√
10	LBA3612500	弱加速传感器	Acceleration sensor	1	OBD	√
11	S3614300	进气压力温度传感器	Temperature And Pressure Sensor	1		√
12	LBA3616100	水温传感器	Water Temperature Sensor	1		√
13	S3612210	电喷ECU支架	ECU bracket	1		√

2.Transmission

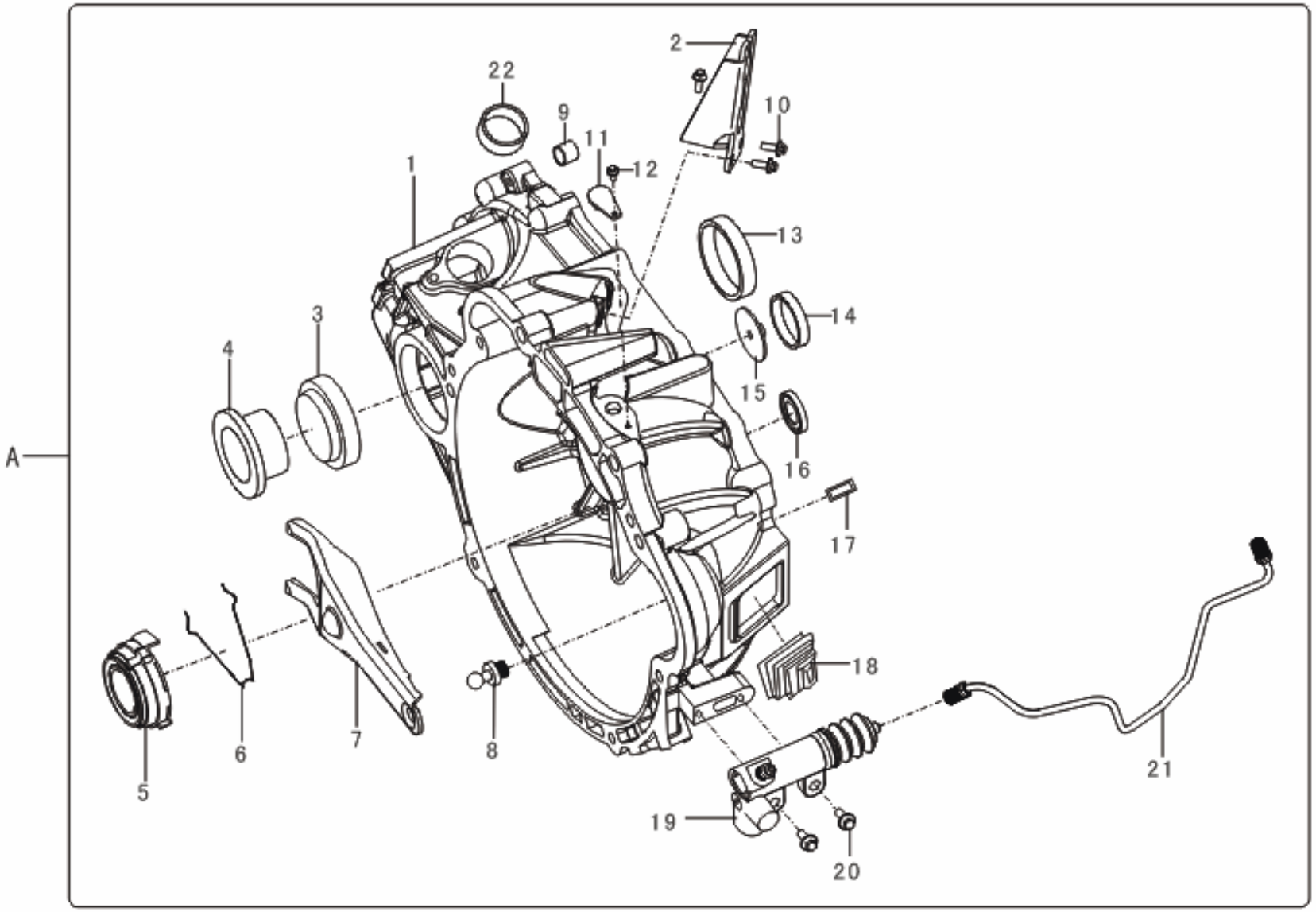
2.01、变速器 Transmission assy.



2.01、变速器 Transmission assy.

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1	S1700000	变速器总成	Transmission assy.	1		√

2.02、离合器壳体 Clucth shell



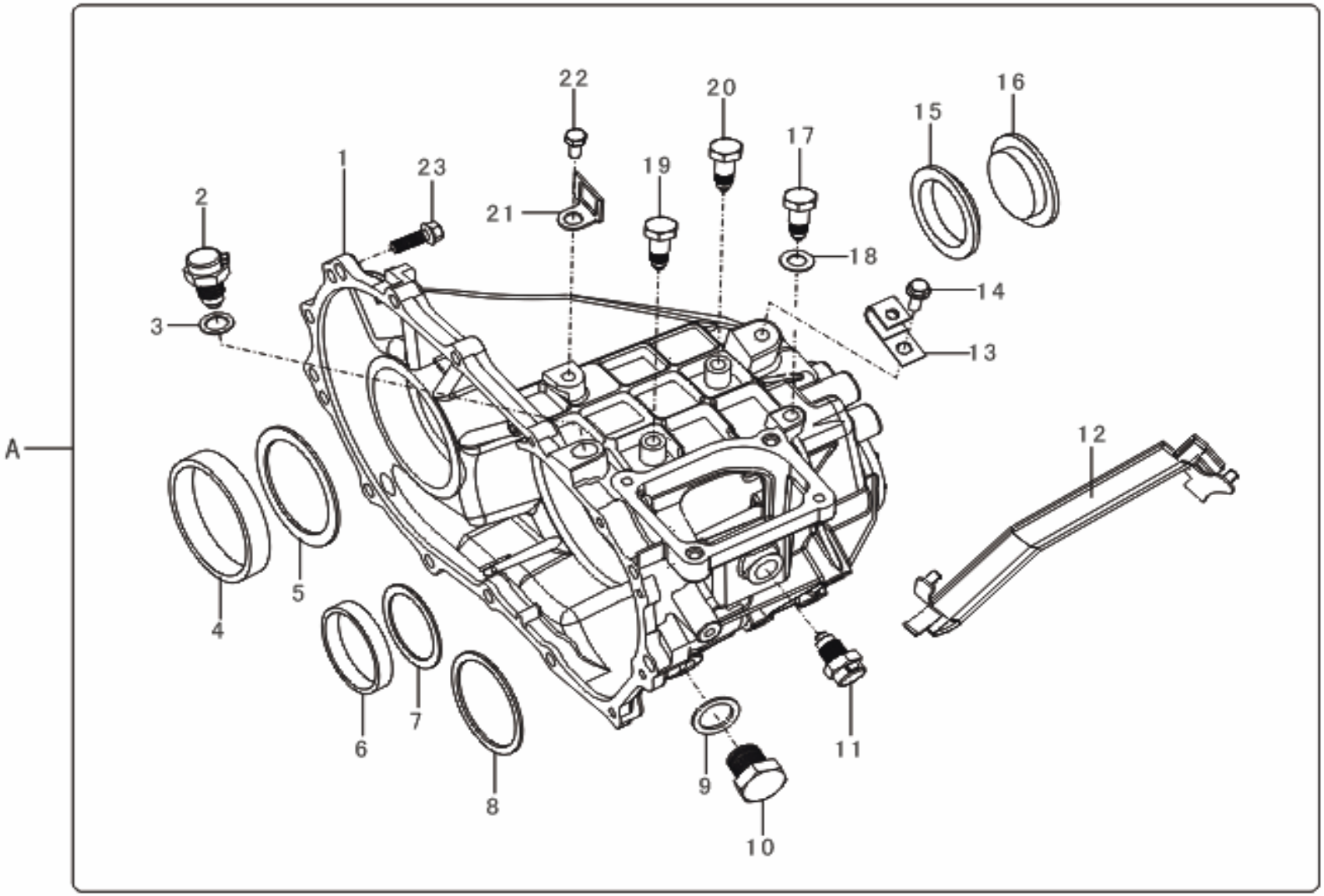
2.02、离合器壳体 Clucth shell

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
A	S1701100	离合器壳体总成	Clutch shell assy.	1		
1	S1701011A	离合器壳体	Clutch shell	1		
2	S1702039C	拉索支架	Cable bracket	1		
3	S2303324	差速器油封	Differential seal	1		
4	LF481Q1-1701337	差速器油封堵	Differential plug	1		
5	LF481Q1-1701334	分离轴承	Throwout bearing	1		
6	LF481Q1-1701332	分离卡簧	Throwout circlip	1		
7	S1701330	分离拨叉	Throwout fork	1		
8	LF479Q1-1701333	分离拔叉支撑钉	Throwout fork stopper	1		
9	LF481Q1-1701028	定位销	Pin	2		
10	LF481Q1-1701095A	拉索支架紧固螺栓	Cable bracket bolt	3		√
11	S1701029	传感器堵盖	Sensor plug	1		
12	LF481Q1-1701155	螺栓	Hex bolt	1		
13	LF481Q1-2303325	差速器轴承外圈	Differential bearing ring	1		
14	LF481Q1-1701141	输出轴前轴承外圈	Input shaft front bearing ring	1		
15	LF481Q1-1701190	导油盘	Oil guide	1		
16	LF481Q1-1701030	输入轴前油封	Input shaft front seal	1		
17	LF481Q1-1701336	方形磁体	Square magnet	1		
18	LF481Q1-1701331	防尘罩	Boot	1		
19	LF481Q1-1702160A	离合器分泵	Clutch slave cylinder	1		√

2.02、离合器壳体 Clucth shell

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
20	LF481Q1-1701095	螺栓	Hex bolt	2		
21	S1702170	油管组件	Oil pipe	1		
22	LF481Q1-2303318	里程表堵盖	Speedometer plug	1		

2.03、变速器壳体 Transmission shell



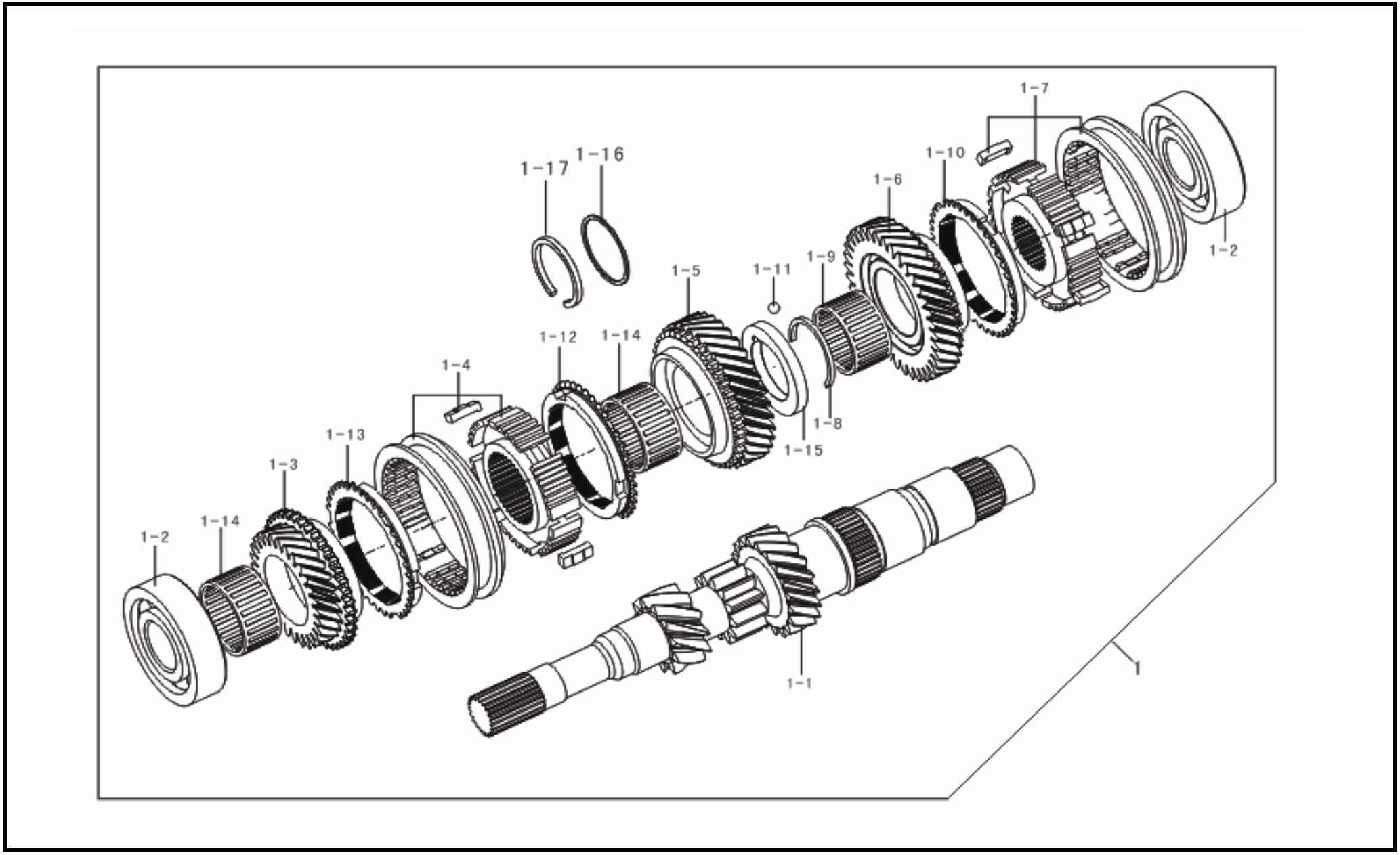
2.03、变速器壳体 Transmission shell

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
A	S1701200	变速箱壳体总成	Transmission shell assy.	1		
1	LF481Q1-1701021D	变速箱壳体	Transmission shell	1		
2	LF481Q1-1701027	倒车灯开关	Reverse light switch	1		
3	LF481Q1-1701029	铝垫圈	Washer	1		
4	LF481Q1-2303325	差速器轴承外圈	Differential bearing ring	1		
5	LF481Q1-2303326	差速器轴承调整垫片	Differential adjusting washer	1	optional	
5	LF481Q1-2303326A	差速器轴承调整垫片	Differential adjusting washer	1	optional	
5	LF481Q1-2303326B	差速器轴承调整垫片	Differential adjusting washer	1	optional	
5	LF481Q1-2303326C	差速器轴承调整垫片	Differential adjusting washer	1	optional	
5	LF481Q1-2303326D	差速器轴承调整垫片	Differential adjusting washer	1	optional	
6	LF481Q1-1701150	输出轴后轴承外圈	output shaft rear bearing ring	1		
7	LF481Q1-1701151	输出轴后轴承垫片	output shaft rear bearing washer	1	optional	
7	LF481Q1-1701151B	输出轴后轴承垫片	output shaft rear bearing washer	1	optional	
7	LF481Q1-1701151C	输出轴后轴承垫片	output shaft rear bearing washer	1	optional	
7	LF481Q1-1700182A	输出轴后轴承垫片	output shaft rear bearing washer	1	optional	
7	LF481Q1-1700182B	输出轴后轴承垫片	output shaft rear bearing washer	1	optional	
8	LF481Q1-1701074	输入轴后轴承垫片	Input shaft rear bearing washer	1	optional	
8	LF481Q1-1701074A	输入轴后轴承垫片	Input shaft rear bearing washer	1	optional	√
8	LF481Q1-1701074B	输入轴后轴承垫片	Input shaft rear bearing washer	1	optional	
8	LF481Q1-1701074C	输入轴后轴承垫片	Input shaft rear bearing washer	1	optional	

2.03、变速器壳体 Transmission shell

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
9	LF481Q1-1701029A	铜垫圈	Copper washer	2		√
10	LF479Q1-1701026	磁性油塞	Oil bolt plug	2		
11	LF481Q1-1701033A	换档定位座	Shift position device	1		√
12	LF481Q1-1701034	挡油板	Oil baffle	1		
13	LF481Q1-1701335	线卡	Wire clip	1		
14	LF481Q1-1701025	带垫螺栓	Bolt with washer	1		
15	LF481Q1-2303324	差速器油封	Differential seal	1		
16	LF481Q1-1701337	差速器堵盖	Differential plug	1		
17	S1701130	三四档叉轴定位座	Fork shaft positioner， 3rd&4th	1		
18	LF479Q1-1701029	铜垫	Washer	1		
19	S1702210	一二档叉轴定位座	Fork shaft positioner， 1st&2nd	1		
20	S1701140	五倒档叉轴定位座	Fork shaft positioner， 5th&R	1		
21	LF481Q1-1701024	直角形支架	Bracket	1		
22	LF481Q1-1702047	拉索支架螺栓	Cable bracket bolt	1		
23	LF481Q1-1701023A	连接螺栓	Connecting bolt	demand		√

2.04、输入轴 Input shaft



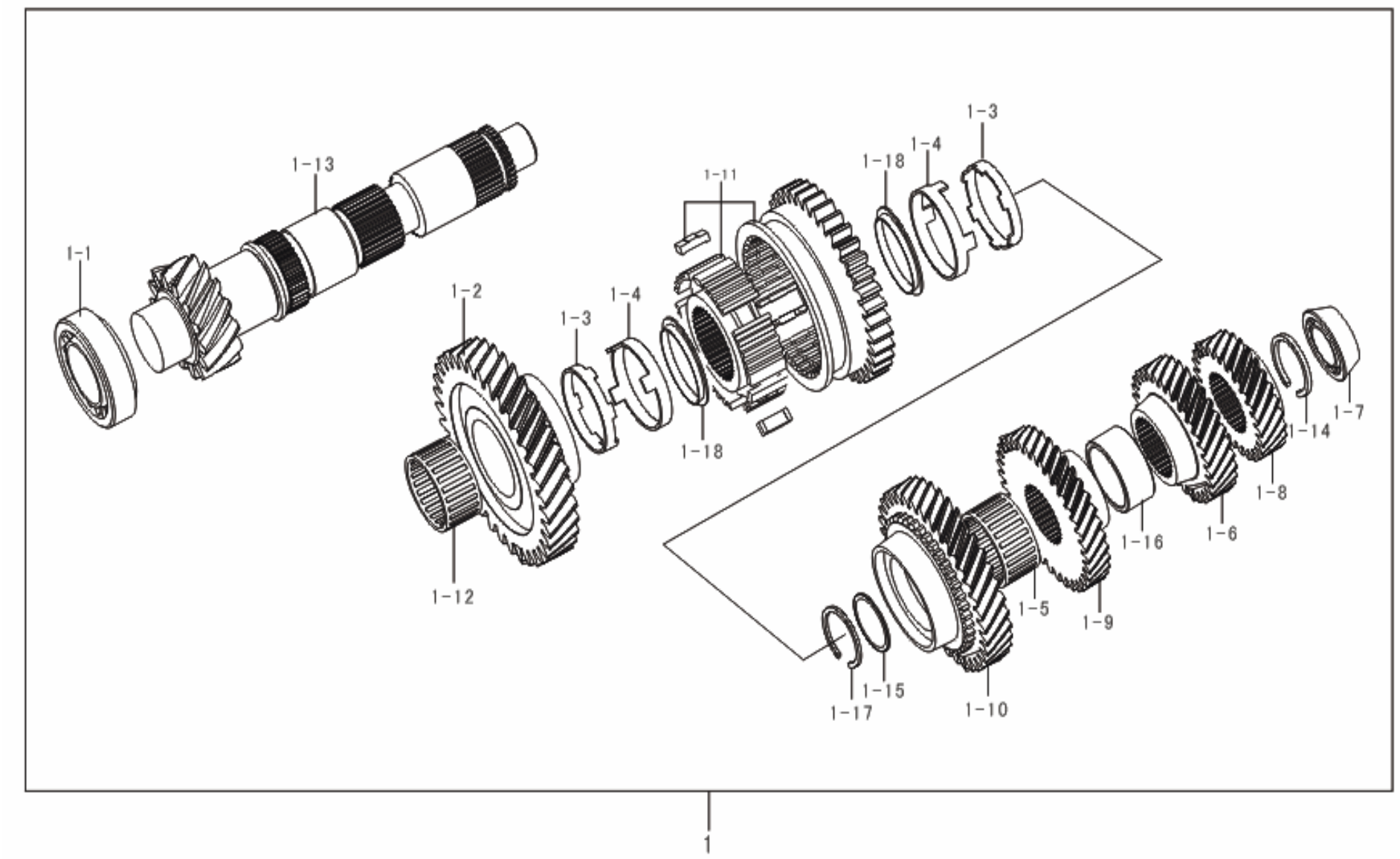
2.04、输入轴 Input shaft

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1	S1701300	输入轴总成	Input shaft assy.	1		
1-1	S1701041A	输入轴	Input shaft	1		
1-2	LF481Q1-1701078	输入轴轴承	Input shaft bearing	2		
1-3	LF481Q1-1701050E	三档主动齿轮总成	Third drive gear	1		
1-4	S1701060	三四档同步器总成	Third forth synchronize assy.	1		
1-5	S1701053C	四档主动齿轮总成	Forth drive gear	1		
1-6	S1701057C	五档主动齿轮总成	Fifth drive gear	1		
1-7	S1701070	五档同步器总成	Fifth synchronize assy.	1		
1-8	S1701044A	半挡环	Semi-circlip	2		
1-9	LF481Q1-1701127	二档滚针轴承	Second gear needle bearing	1		
1-10	LF481Q1-1701069	五档同步环	Fifth synchronize rim	1		
1-11	S1701045	半挡环定位销	Semi-circlip pin	1		
1-12	LF481Q1-1701065	四档同步环	Forth synchronize rim	1		
1-13	LF481Q1-1701059	三档同步环	Third synchronize rim	1		
1-14	LF481Q1-1701076	三、四档滚针轴承	Third forth needle bearing	2		
1-15	S1701046	半挡环挡圈	Circlip	1		
1-16	LF481Q1-1701043	滚针轴承隔环	Bearing spacing ring	1		
1-17	LF481Q1-1701042	同步器齿毂挡圈	Synchronize gear circlip	1		
1-17	LF481Q1-1701042A	同步器齿毂挡圈	Synchronize gear circlip	1	optional	√
1-17	LF481Q1-1701042B	同步器齿毂挡圈	Synchronize gear circlip	1	optional	

2.04、输入轴 Input shaft

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1-17	LF481Q1-1701042C	同步器齿毂挡圈	Synchronize gear circlip	1	optional	

2.05、输出轴总成 Output shaft



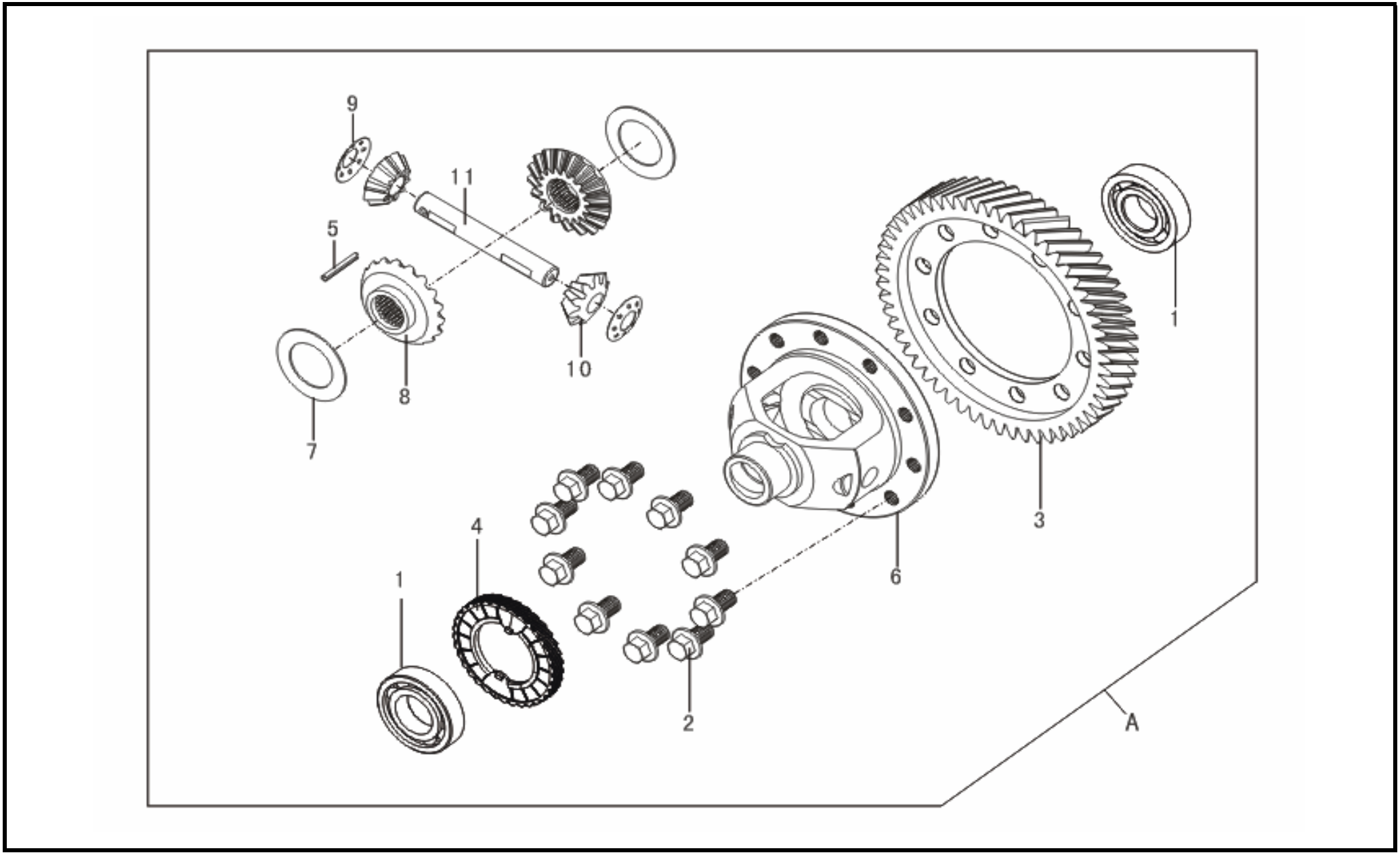
2.05、输出轴总成 Output shaft

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1	S1701500	输出轴总成	Output shaft assy.	1		
1-1	LF481Q1-1701141	输出轴前轴承	Output shaft front bearing	1		
1-2	S1701110B	一档从动齿轮总成	First driven gear	1		
1-3	S1701114B	一二档同步环	Synchronize ring，1st&2nd	2		
1-4	S1701115B	一二档中间环	Middle ring，1st&2nd	2		
1-5	LF481Q1-1701127	二档滚针轴承	Second gear needle bearing	1		
1-6	LF481Q1-1701138C	四档从动齿轮	Forth driven gear	1		
1-7	LF481Q1-1701150	输出轴后轴承	Output shaft rear bearing	1		
1-8	S1701140C	五档从动齿轮	Fifth driven gear	1		
1-9	LF481Q1-1701136E	三档从动齿轮	Third driven gear	1		
1-10	S1701130B	二档从动齿轮总成	Second gear second driven gear	1		
1-11	S1701120B	一二档同步器总成	First second synchronize assy.	1		
1-12	LF481Q1-1701103	一档滚针轴承	First needle bearing	1		
1-13	LF481Q1-1701106A	输出轴	Output shaft	1		√
1-14	LF481Q1-1701101A	输出五档挡圈	Output fifth circlip	1		√
1-15	S1701047	滚针轴承隔套	Bearing spacing sleeve	1		
1-16	LF481Q1-1701137	三四档间隔套	Spacing sleeve，3rd&4th	1		
1-17	LF481Q1-1701042	同步器齿毂档圈	Synchronize gear circlip	1		
1-17	LF481Q1-1701042A	同步器齿毂档圈	Synchronize gear circlip	1	optional	√
1-17	LF481Q1-1701042B	同步器齿毂档圈	Synchronize gear circlip	1	optional	

2.05、输出轴总成 Output shaft

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1-17	LF481Q1-1701042C	同步器齿毂档圈	Synchronize gear circlip	1	optional	
1-18	S1701116B	一二档外同步环	Synchronize ouer ring，1st&2nd	2		

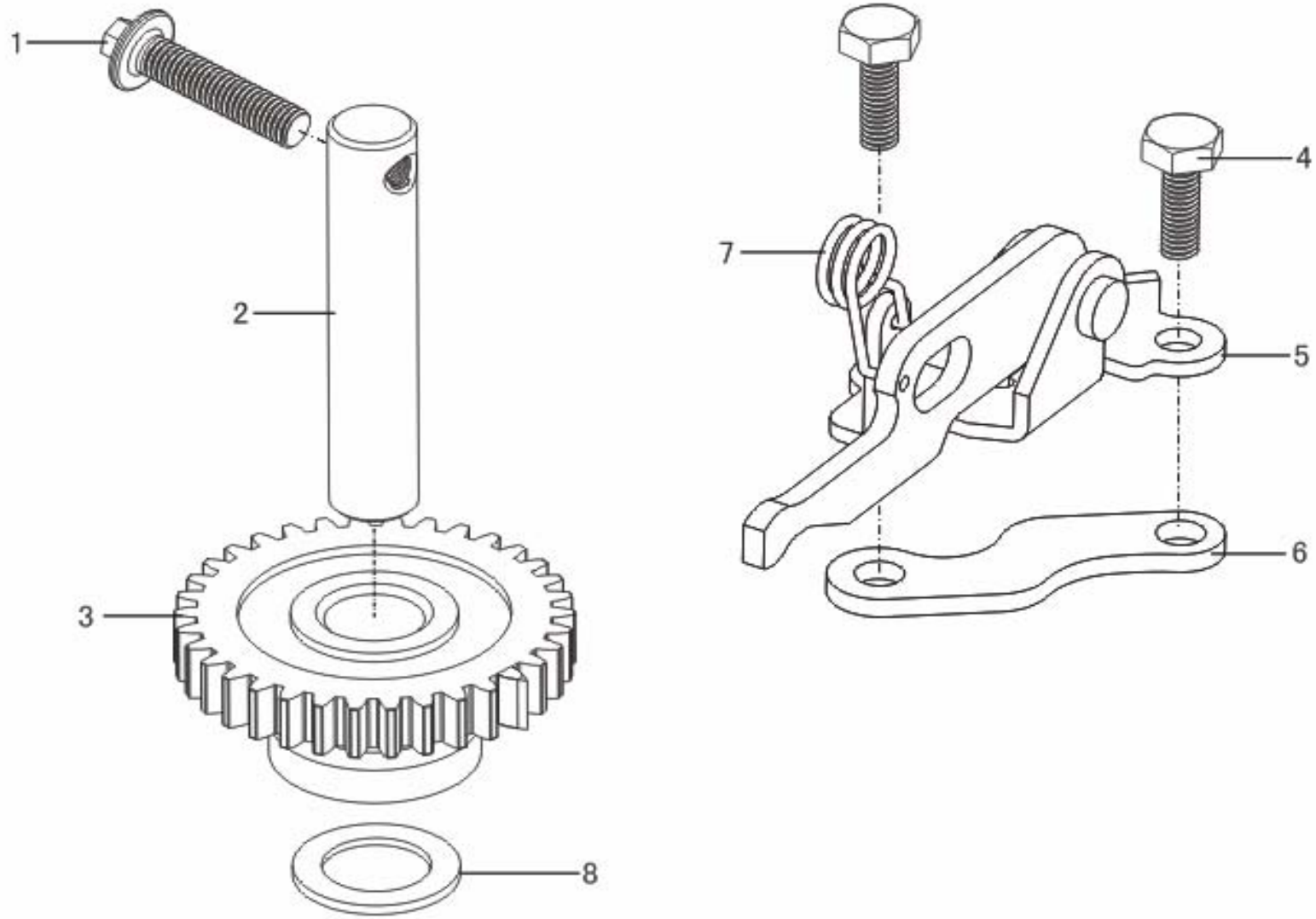
2.06、差速器总成 Differential



2.06、差速器总成 Differential

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
A	S2303300	差速器总成	Differential assy.	1		
1	S2303325	差速器轴承	Differential bearing	2		
2	LF481Q1-2303311	差速器齿圈紧固螺栓	Bolt，differential gear	10		
3	S2303308	主减从动齿轮	Deceleration driven gear	1		
4	S2303309	里程表感应齿圈	Speedometer induction gear	1		
5	LF481Q1-2303307	弹性圆柱销	Spring pin	1		
6	S2303301	差速器壳体	Differential shell	1		
7	LF481Q1-2303304	半轴齿轮垫片	Differential axle gear washer	2		
8	LF481Q1-2303302	半轴齿轮	Differential axle gear	2		
9	LF481Q1-2303305	行星齿轮垫片	Planet gear washer	2		
10	LF481Q1-2303303	行星齿轮	Planet gear	2		
11	LF481Q1-2303306	行星齿轮轴	Planet gear shaft	1		

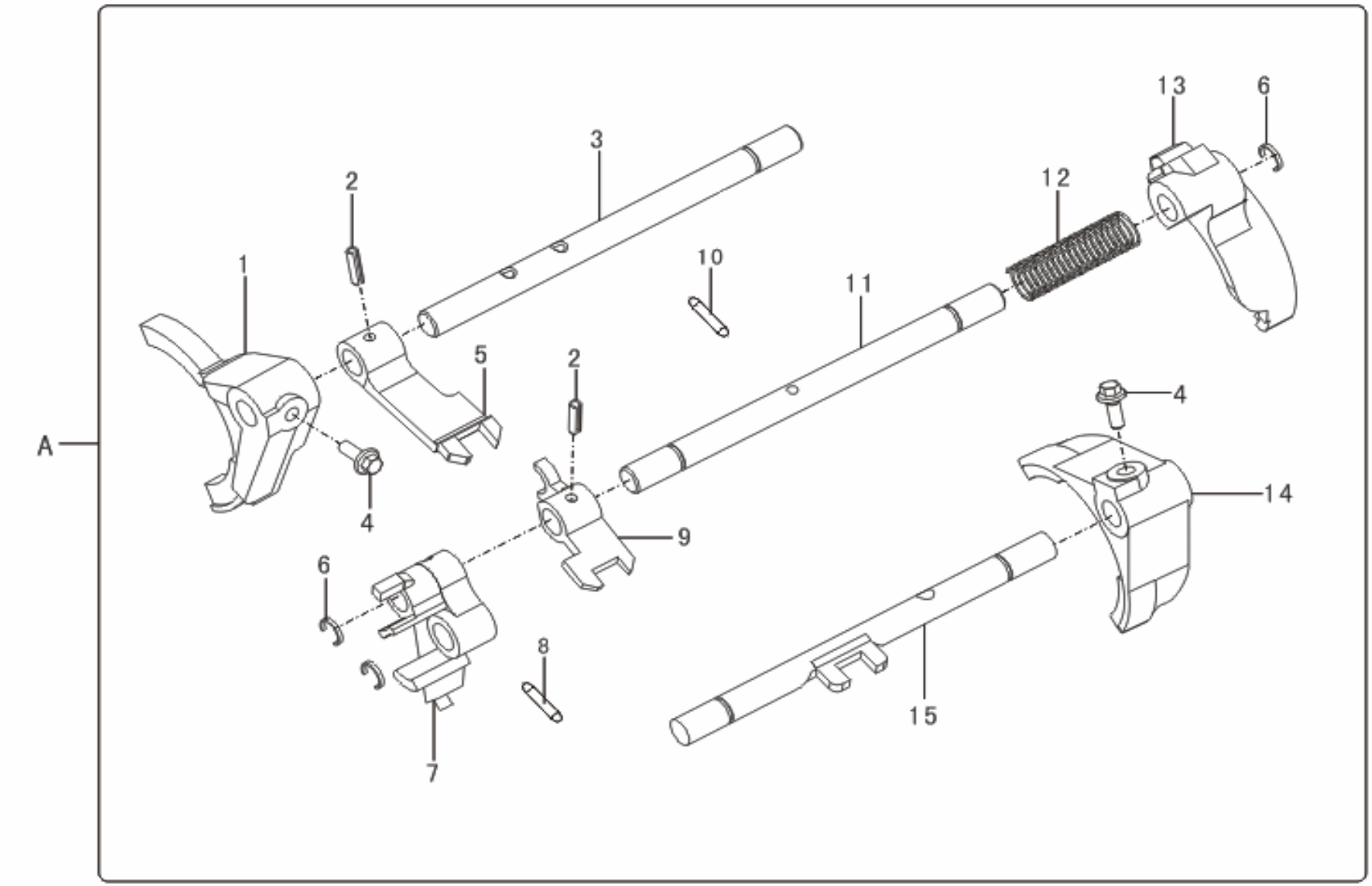
2.07、倒档机构 Reverse mechanism



2.07、倒档机构 Reverse mechanism

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1	LF481Q1-1701083	倒档中间齿轮螺栓	Bolt	1		
2	LF481Q1-1701081	惰轮轴	Idle gear shaft	1		
3	S1701080	倒档中间齿轮总成	Reverse middle gear assy.	1		
4	LF481Q1-1701095	倒档拔叉紧固螺栓	Reverse fork bolt	4		
5	LF481Q1-1701090	倒档拔叉总成	Reverse fork	1		
6	LF481Q1-1701085	弓形垫片	Washer	1		
7	LF481Q1-1701093	复位扭簧	Spring	1		
8	LF481Q1-1702154	尼龙垫	Washer	1		

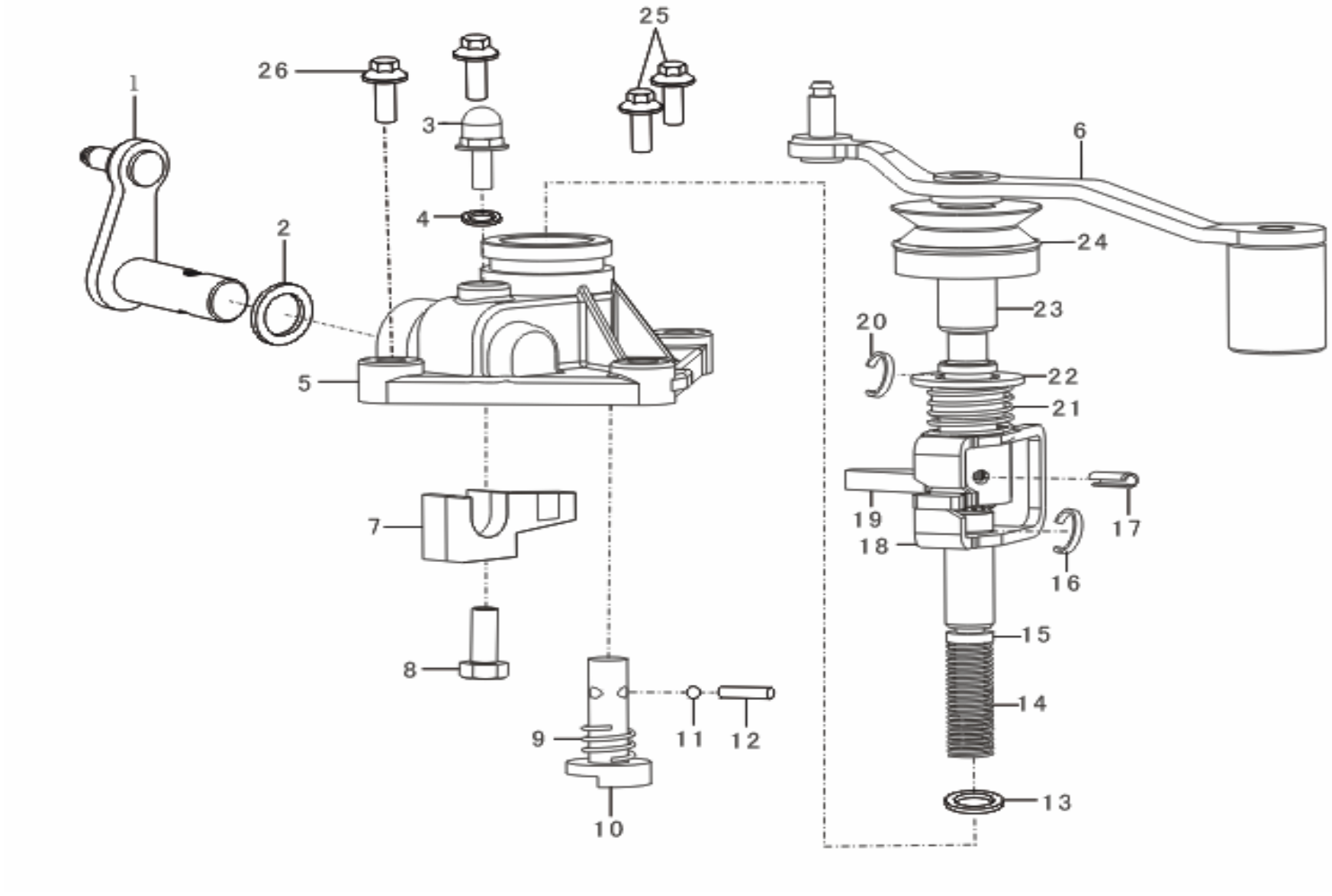
2.08、拨叉组件 **Forks**



2.08、拨叉组件 Forks

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
A	S1702400	拔叉组件	Forks assy.	1		
1	LF481Q1-1702062	三、四档换档拨叉	Third forth fork	1		
2	LF481Q1-1702056	弹性圆柱销	Spring pin	2		
3	LF479Q1-1702061	三、四档换挡拨叉轴	Third forth fork shaft	1		
4	LF481Q1-1702054	拔叉紧固螺栓	Forks bolt	2		
5	LF481Q1-1702052	一、二档换档导块	First second shift block	1		
6	LF481Q1-1702057	叉轴挡圈	Fork shaft circlip	3		
7	S1702075	倒档换挡导块	Reverse shift block	1		
8	LF481Q1-1702081	互锁销A	Interlock pin	1		
9	LF481Q1-1702072	五、倒档换档导块	Fifth reverse shift block	1		
10	LF481Q1-1702082	互锁销B	Interlock pin	1		
11	LF4791Q1-1702071C	五档、倒档拨叉轴	Fifth reverse fork shaft	1		
12	LF479Q1-1702074	拨叉回位弹簧	Fork spring	1		
13	LF481Q1-1702073A	五档换档拨叉	Fifth fork	1		√
14	LF481Q1-1702053A	一、二档换挡拨叉	First second fork	1		√
15	LF479Q1-1702051C	一、二档换挡拨叉轴	First second fork shaft	1		

2.09 换选档机构 Shift mechanism



2.09 换选档机构 Shift mechanism

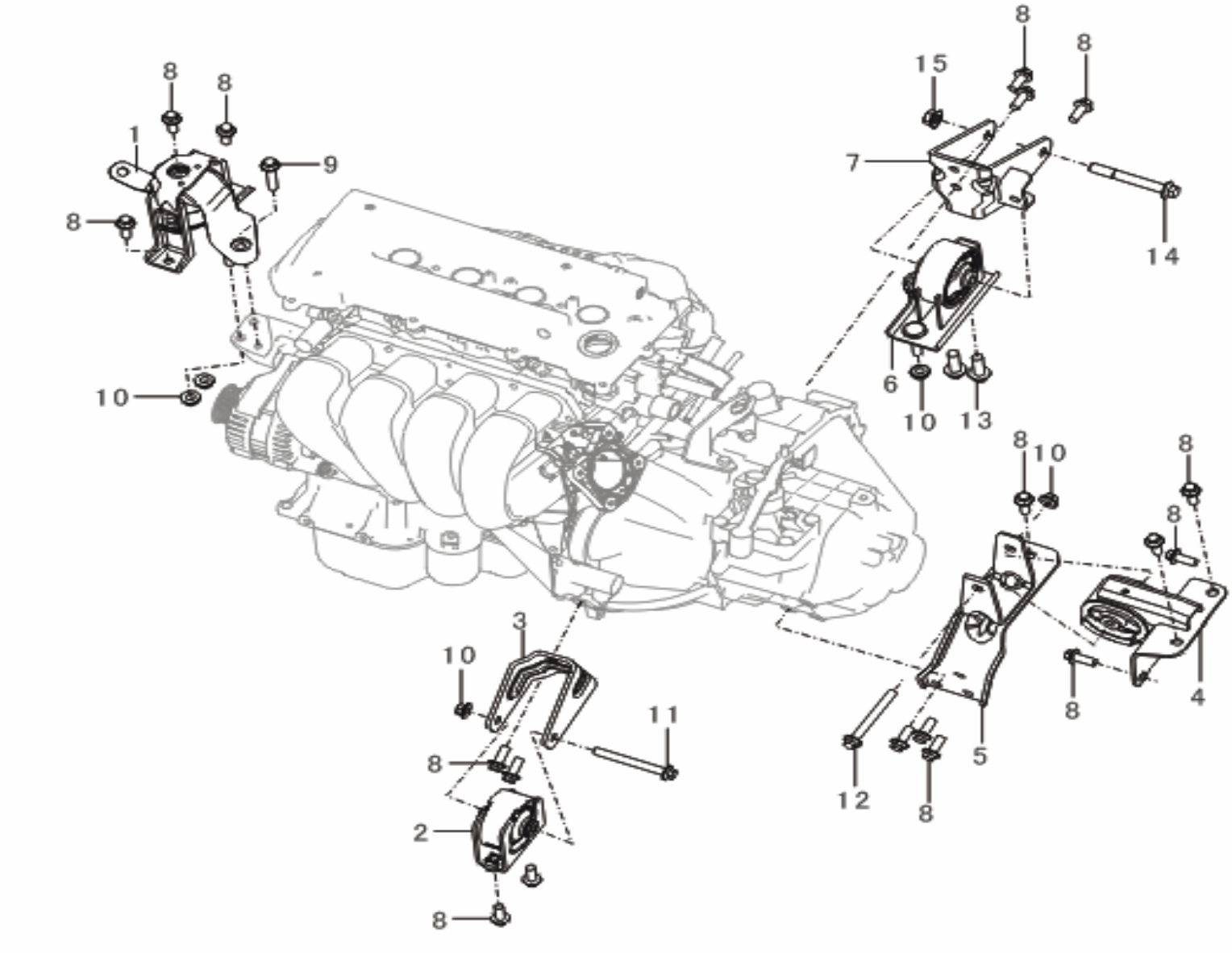
P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1	LF481Q1-1702030A	选档轴组件	Transposition swing arm	1		√
2	LF481Q1-1702035	选档轴油封	Transposition swing arm seal	1		
3	LF481Q1-1702130	通气阀组件	Venting valve	1		
4	LF481Q1-1702141	通气阀垫圈	Venting valve washer	1		
5	LF481Q1-1702151	选换档壳体	Shift cap	1		
6	LF479Q1-1702110A1	换档轴组件	Shift shaft component	1		
7	LF481Q1-1702114	换档摆杆	Shift swinglever	1		
8	LF481Q1-1702115	换位摆杆定位螺栓	Shift swinglever bolt	1		
9	LF481Q1-1702122	五、倒档互锁凸轮回位弹簧	Fifth reverse cam spring	1		
10	LF481Q1-1702120	五互锁凸轮	Fifth reverse cam	1		
11	LF481Q1-1702121	钢球	Steel ball	1		
12	LF481Q1-1702123	五、倒档互锁凸轮销	Fifth reverse cam pin	1		
13	LF481Q1-1702036	换档导轴定位环A	Shift shaft seal	1		
14	LF481Q1-1702155B	回位弹簧B	Return spring	1		
15	LF481Q1-1702154	尼龙垫圈	Shift shaft washer	1		
16	LF481Q1-1702137	换档导轴挡圈B	Shift shaft circlip	1		
17	LF481Q1-1702116	弹性圆柱销	Spring pin	1		
18	LF481Q1-1702108A	互锁板	Shift swinglever interlock bracket	1		√
19	LF481Q1-1702142	换档指	Shift swinglever	1		
20	LF481Q1-1702138	换档导轴挡圈A	Shift shaft circlip	1		

2.09 换选档机构 Shift mechanism

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
21	LF481Q1-1702156B	回位弹簧	Return spring	1		
22	LF481Q1-1702128	弹簧座	Return spring seat	1		
23	LF481Q1-1702152	换档轴油封	Shift cap bush	1		
24	LF481Q1-1702105A	防尘罩	Boot	1		√
25	LF481Q1-1702157A	换档盖紧固螺栓	Bolt	2	M8×30	√
26	LF481Q1-1702158A	换档盖定位螺栓	Bolt	2	M8×35	√

3.Chassis

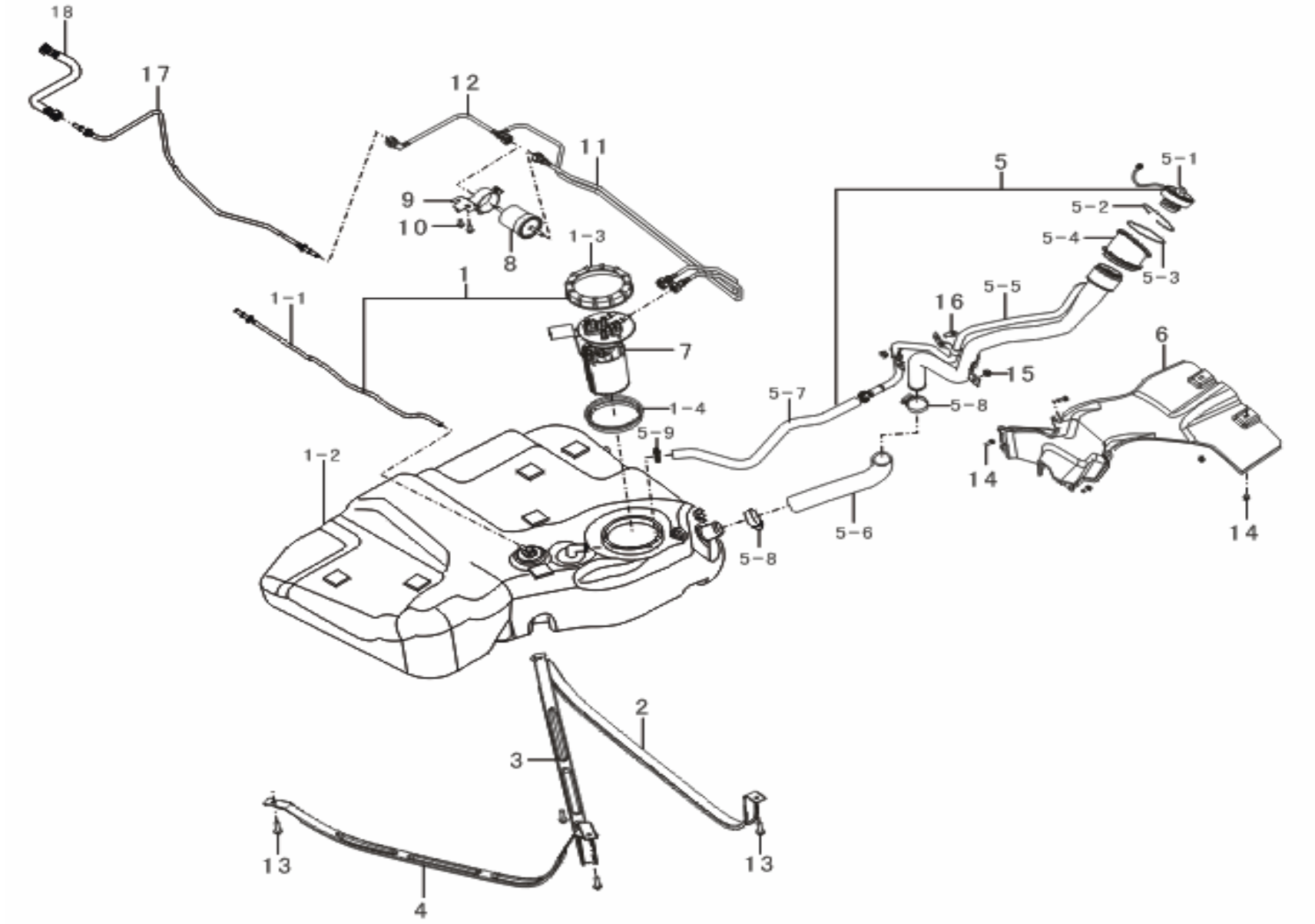
3.01 发动机悬置 Engine suspension



3.01 发动机悬置 Engine suspension

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1	S1001410	右悬置组件	Right suspension component	1		√
2	S1001110	前悬置组件	Front suspension component	1		√
3	S1001140	前悬置连接支架组件Ⅰ	Front suspension bracket	1		√
4	S1001310	左悬置组件	Left suspension component	1		√
5	S1001340	左悬置连接支架组件Ⅰ	Left suspension bracket	1		√
6	S1001210	后悬置组件	Rear suspension component	1		√
7	S1001240	后悬置连接支架组件Ⅰ	Rear suspension bracket	1		√
8	231-1025TF3	六角法兰面螺栓	Hex flange bolt	18		√
9	231-1050TF3	六角法兰面螺栓	Hex flange bolt	1		√
10	101B-1010T13F3	六角法兰面螺母	Hex flange nut	5		√
11	231-1090TF3	六角法兰面螺栓	Hex flange bolt	1		√
12	231B-1095TF3	六角法兰面螺栓	Hex flange bolt	1		√
13	231B-1235TF3	六角法兰面螺栓	Hex flange bolt	2		√
14	231B-1295TF3	六角法兰面螺栓	Hex flange bolt	1		√
15	101B-1212T13F3	六角法兰面螺母	Hex flange nut	1		√

3.02 燃油供给装置 Fuel supply system



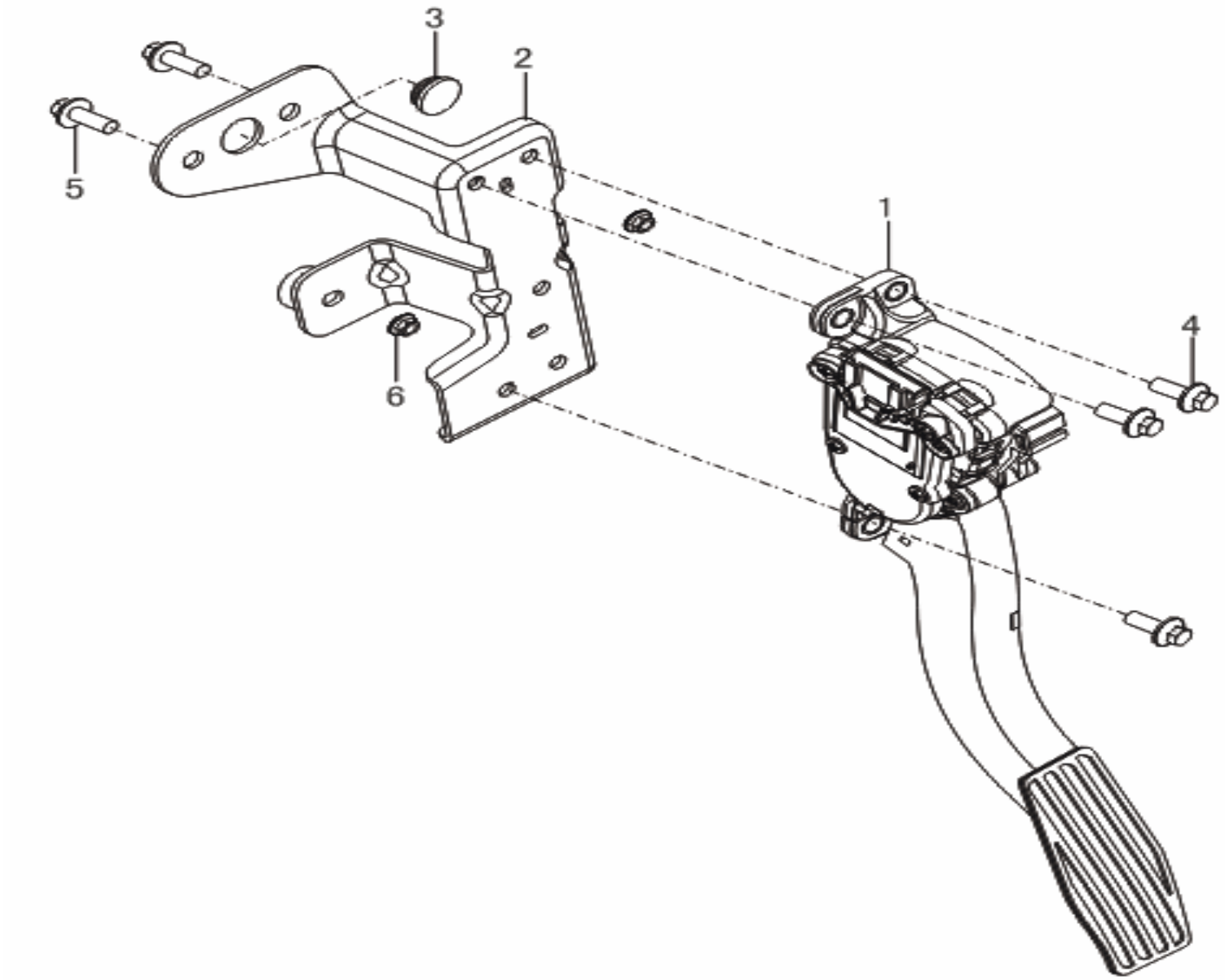
3.02 燃油供给装置 Fuel supply system

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1	S1101100	燃油箱总成	Fuel tank assy.	1		√
1-1	S1130110	燃油蒸发连接管组件Ⅰ	Fuel evaporation tube I	1		
1-2	S1101110	燃油箱主体组件	Fuel tank	1		
1-3	S1101211	燃油泵盖	Fuel pump cap	1		
1-4	S1101221	燃油泵盖密封垫	Fuel pump cap seal	1		
2	S1101321	燃油箱右托架	Fuel tank bracket，right	1		√
3	S1101331	燃油箱中托架	Fuel tank bracket，middle	1		√
4	S1101311	燃油箱左托架	Fuel tank bracket，left	1		√
5	S1101400	加注管总成	Fuel filler tube assy.	1		√
5-1	S1101440	加油口盖组件	Fuel filler cap	1		√
5-2	S1101412	加油口护罩上卡簧	Fuel filler cover lower circlip	1		
5-3	S1101413	加油口护罩下卡簧	Fuel filler cover upper circlip	1		
5-4	S1101411	加油口护罩	Fuel filler cover	1		
5-5	S1101510	加油管上段组件	Fuel filling pipe，upper	1		
5-6	S1101551	加注管下段	Fuel filling pipe，lower	1		
5-7	S1101611	加油回气管Ⅰ	Venting pipe，fuel filling pipe	1		
5-8	Q67545	A型涡杆传动式软管环箍	Hoop	2		
5-9	Q67525	A型蜗杆传动式软管环箍	Hoop	2		√
6	S1101471	加注管护罩	Fuel filling pipe cover	1		√
7	S1123100	燃油泵总成	Fuel pump	1		

3.02 燃油供给装置 Fuel supply system

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
8	F1117100	燃油滤清器总成	Fuel filter	1		√
9	S1117410	滤清器支架组件	Fuel filter bracket	1		√
10	Q1840616	六角法兰面螺栓	Hex flange bolt	2		√
11	S1104110	油箱出油管组件	Fuel tank outlet pipe	1		√
12	S1104210	滤清器出油管组件	Fuel filter outlet pipe	1		√
13	Q1840830	六角法兰面螺栓	Hex flange bolt	4		√
14	Q1410616L	六角头螺栓和锥形弹性垫圈组合件	Hex bolt and taper springiness washer	5		√
15	Q32008	六角法兰面螺母	Hex flange nut	2		√
16	Q1840816	六角法兰面螺栓	Hex flange bolt	1		√
17	S1104310	发动机进油管组件Ⅰ	Fuel pipe 1，into engine	1		√
18	S1104320	发动机进油管组件Ⅱ	Fuel pipe 2，into engine	1		√

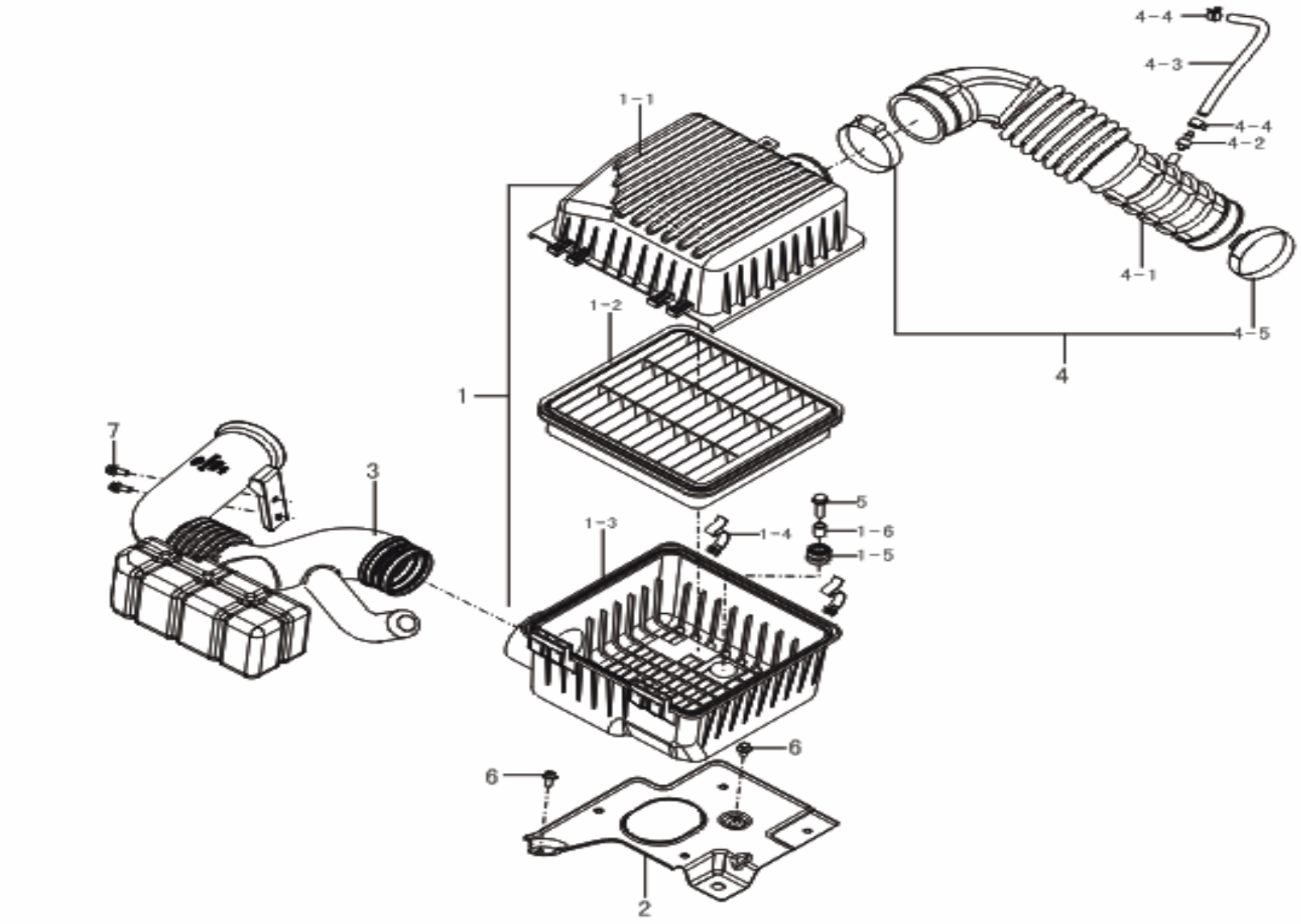
3.03 加速操纵机构(电子式) Accelerator system



3.03 加速操纵机构(电子式) Accelerator system

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1	S1108110	油门踏板组件	Accelerator pedal assy.	1		√
2	S1108210	油门踏板支架组件	Accelerator pedal bracket	1		√
3	S1108215	油门踏板支架堵盖	Accelerator pedal bracket plug	1		
4	Q1840620	六角法兰面螺栓	Hex flange bolt	3		√
5	Q18406166	六角法兰面螺栓	Hex flange bolt	2		
6	Q32006	六角法兰面螺母	Hex flange nut	2		√

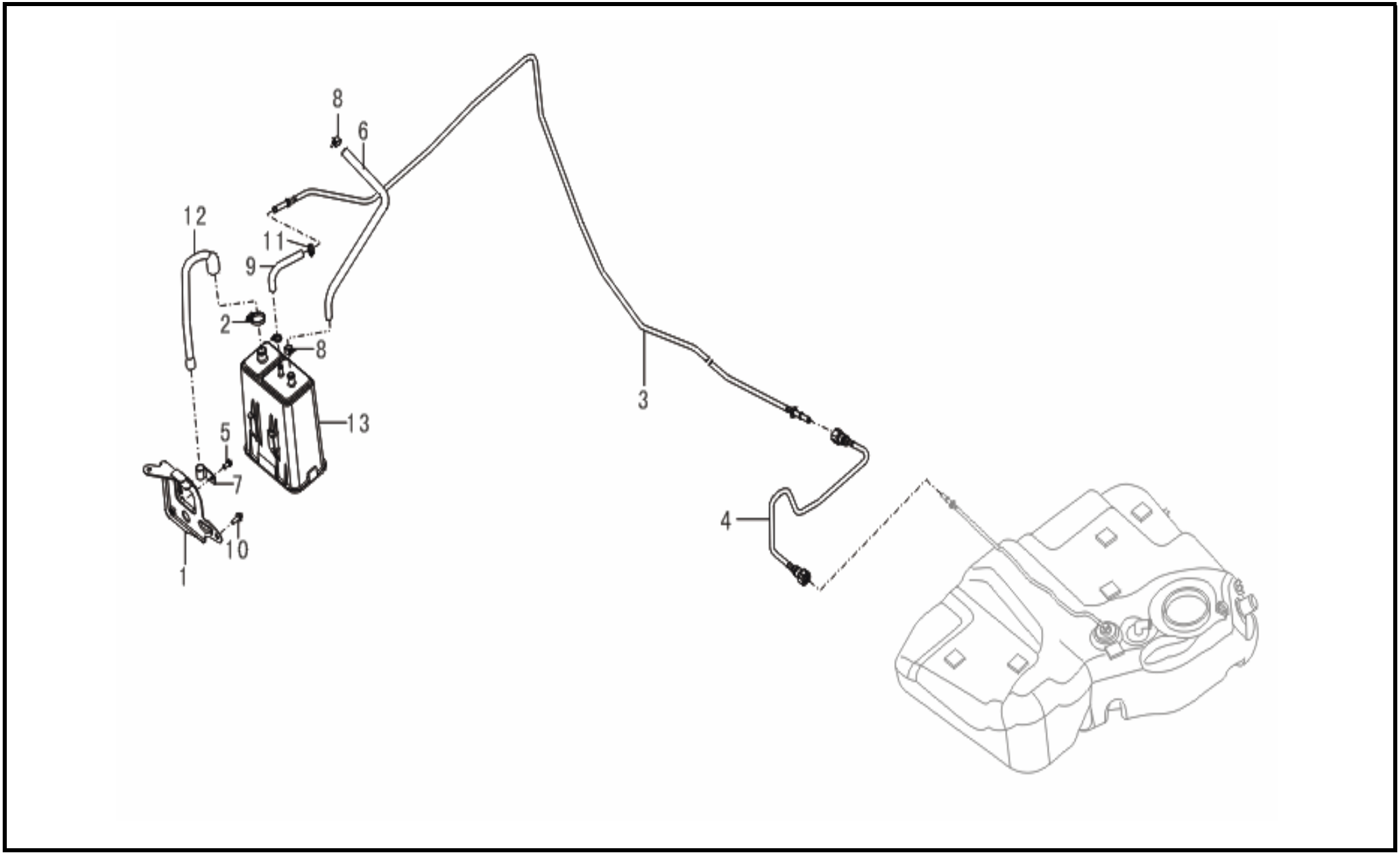
3.04 空滤器 Air filter



3.04 空滤器 Air filter

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1	S1109100	空气滤清器总成	Air filter assy.	1		√
1-1	S1109111	空滤器上盖	Air filter shell，upper	1		
1-2	S1109160	空滤器滤清组件	Air filter element	1		
1-3	S1109121	空滤器下盖	Air filter shell，lower	1		
1-4	S1109241	弹簧卡夹	Clip	2		
1-5	S1109221	减震垫	Damper	3		
1-6	S1109231	衬管	Sleeve	3		
2	S1109810	空气滤清器安装支架	Air filter bracket	1		√
3	S1109310	空滤器进气管组件	Air filter inlet pipe	1		√
4	S1109610	发动机进气管组件	Air pipe assy，into engine	1		√
4-1	S1109611	发动机进气管	Air pipe，into engine	1		
4-2	S1109651	连接管接头	Air pipe connector	1		
4-3	S1109671	曲轴箱通风管	Crank case tube	1		
4-4	Q673B185	钢带型弹性环箍	Hoop	2		
4-5	Q67670	C型蜗杆传动式软管环箍	Hoop	2		√
5	Q1410625L	六角头螺栓和锥形弹性垫圈组合件	Hex bolt and taper springiness washer	3		√
6	Q1840612	六角法兰面螺栓	Hex flange bolt	2		√
7	Q1840616	六角法兰面螺栓	Hex flange bolt	2		√

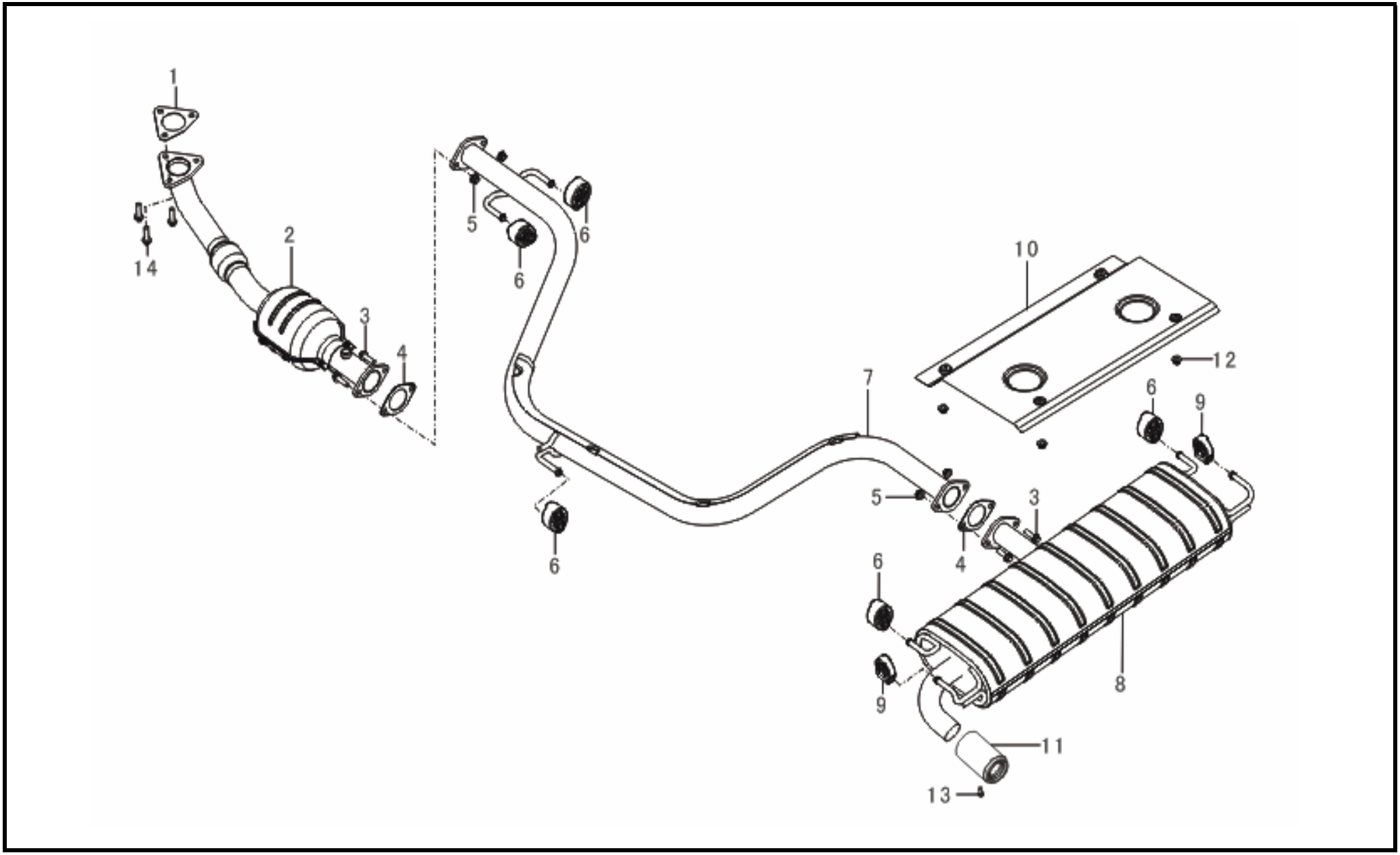
3.05 燃油蒸发物排放控制系统 Can canister



3.05 燃油蒸发物排放控制系统 Can canister

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1	S1130280	炭罐安装支架组件	Can Canister bracket	1		√
2	Q67525	A型蜗杆传动式软管环箍	Hoop	1		√
3	S1130120	燃油蒸发连接管组件Ⅱ	Fuel evaporation tube II	1		√
4	S1130130	燃油蒸发连接管组件Ⅲ	Fuel evaporation tube III	1		√
5	Q1410612	六角头螺栓和锥行弹簧垫圈组合件	Bolt	1		
6	S1130431	控制阀连接管III	Canister vavle hose III	1		√
7	S1130371	炭罐通气管固定支架	Canister hose bracket	1		√
8	Q673B13	钢带型弹性环箍	Hoop	2		√
9	S1130411	控制阀连接管Ⅰ	Canister vavle hose I	1		√
10	Q1840616	六角法兰面螺栓	Hex flange bolt	1		√
11	Q67512	A型蜗杆传动式软管环箍	Hoop	2		√
12	S1130311	碳罐通气管I	Canister hose I	1		√
13	S1130200	炭罐总成	Can canister	1		√

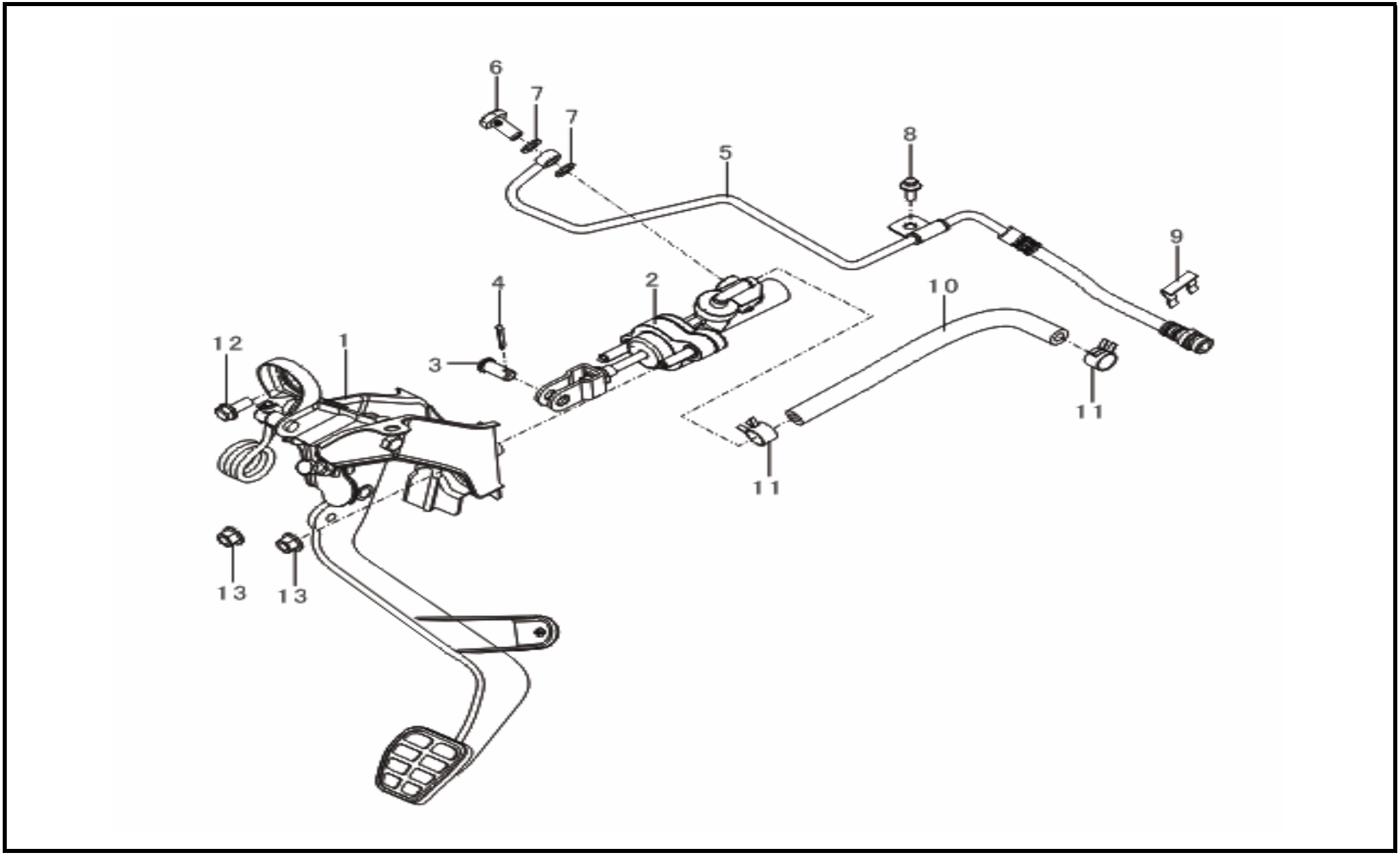
3.06 排气系装置 Exhaust system



3.06 排气系装置 Exhaust system

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1	S1200210	密封垫组件Ⅱ	Seal II	1		
2	S1205300	催化转换器总成Ⅱ	TWC	1		
3	231-1035TF3	六角法兰面螺栓	Hex flange bolt	4		√
4	L1200017	小密封垫	Gasket	2		√
5	101-1010T2F3	六角法兰面螺母	Hex flange nut	4		√
6	B1211522	后消声器橡胶悬置块	Rear muffler rubber block	5		√
7	S1203110	连接管组件Ⅰ	Muffler connecting pipe	1		
8	S1201600	后消声器总成	Rear muffler	1		
9	S1200021	消声器悬置块Ⅱ	Muffler mount II	2		
10	S1208111	后消声器上隔热罩	Rear muffler insulater	1		
11	S1209110	排气尾管装饰罩	Exhaust pipe decoration	1		
12	Q32006	六角法兰面螺母	Hex flange nut	4		√
13	Q1410612	六角头螺栓和锥形弹性垫圈组合件	Hex bolt and taper springiness washer	1		
14	231-1030TF30	六角法兰面螺栓	Hex flange bolt	3		√

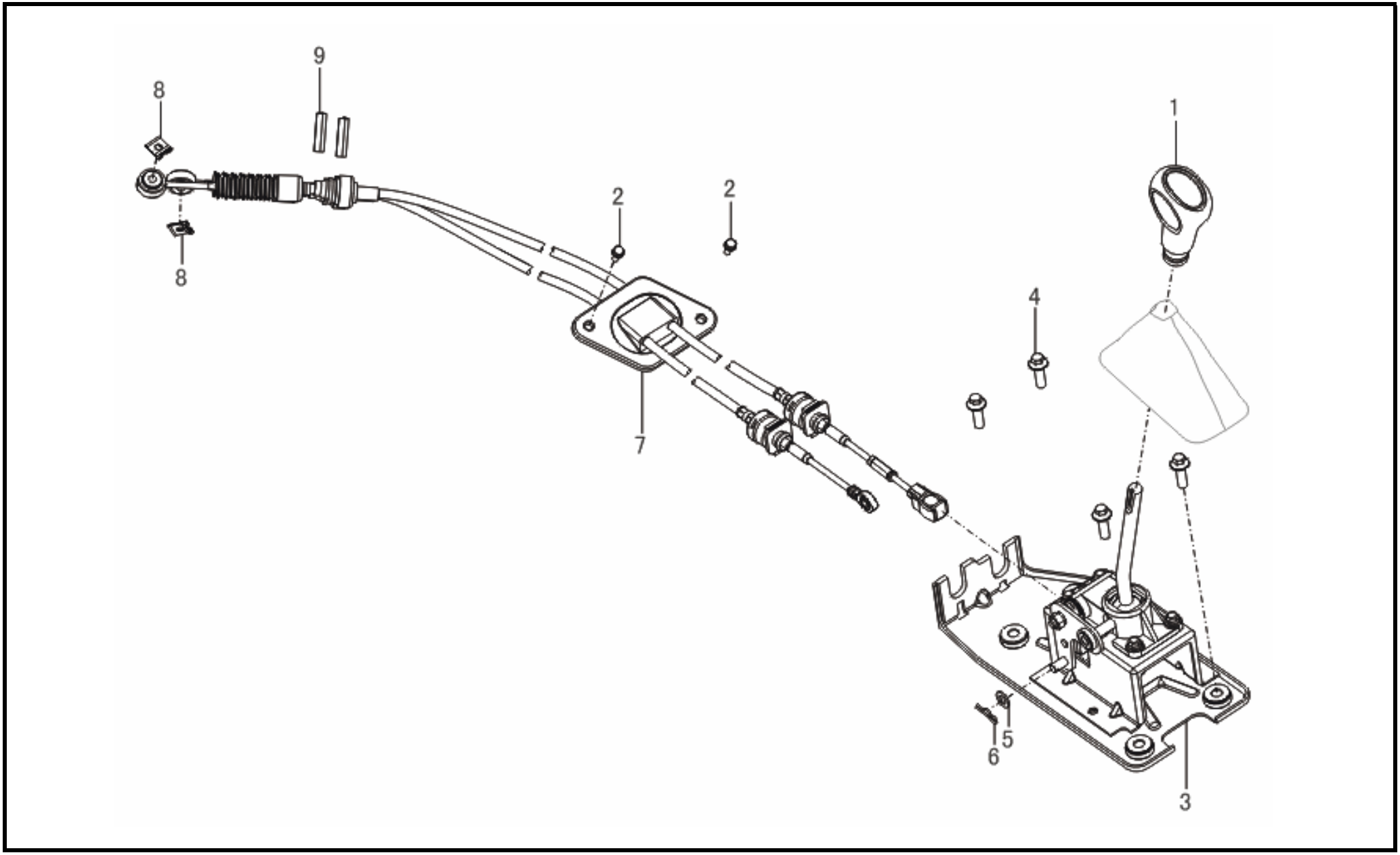
3.07 离合器操纵机构 Clutch control mechanism



3.07 离合器操纵机构 Clutch control mechanism

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1	S1602100	离合踏板总成	Clutch paddle assy.	1		√
2	S1608000	离合器总泵总成	Clutch master pump	1		√
3	Q5101022	销轴	Axis pin	1		√
4	Q5003220	开口销	Cotter pin	1		√
5	S1607310	离合操纵油管Ⅰ	Clutch pump controlling tube	1		√
6	221-1018	离合空心螺栓	Bolt	1		√
7	L1600014	垫密圈	washer	2		√
8	Q1840616	六角法兰面螺栓	Hex flange bolt	1		√
9	L1600013	卡片	Clip	1		√
10	S1607110	离合总泵进油管Ⅰ	Clutch pump intake tube	1		√
11	Q673B16	钢带型弹性环箍	Hoop	2		√
12	Q1410820	六角头螺栓和锥形弹性垫圈组合件	Hex bolt and taper springiness washer	1		√
13	Q33008	六角法兰面螺母	Hex flange nut	2		√

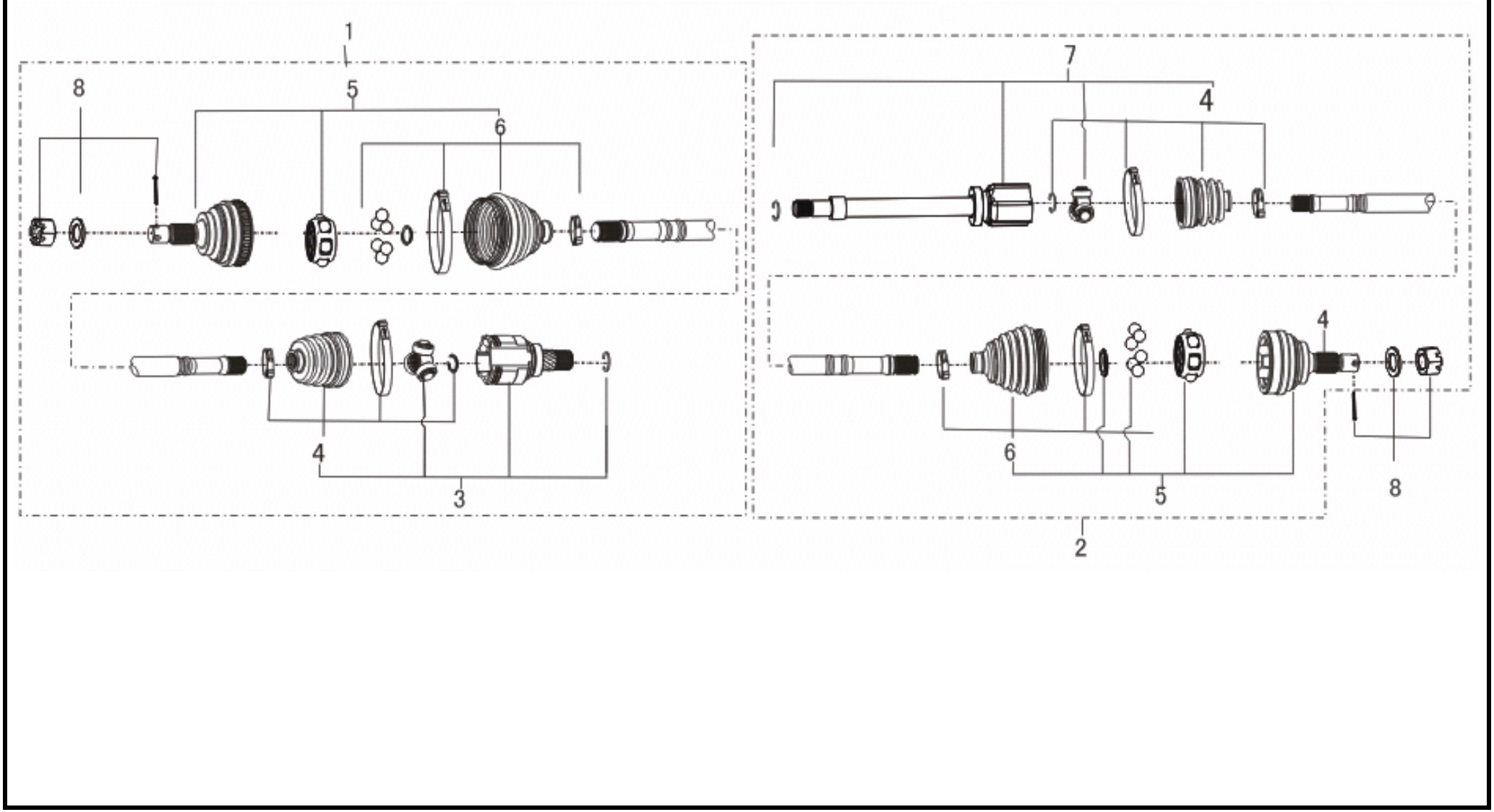
3.08 换挡操纵机构 Clutch control mechanism



3.08 换挡操纵机构 Clutch control mechanism

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1	S1703160	换挡手柄球头组件	Gear shift handle	1		√
2	Q1410616	六角头螺栓和锥形弹性垫圈组合件	Hex bolt and taper springiness washer	2		√
3	S1703100	换挡支座总成	Gearshift mount assy.	1		√
4	Q1840825	六角法兰面螺栓	Hex flange bolt	4		√
5	Q40108	平垫圈	Flat washer	1		√
6	Q50108	锁销	Lock pin	1		√
7	S1703200	换选档软轴总成	Gear shift cable	1		√
8	L1703016	变速拉索接头固定卡	Shift cable joint clip	2		√
9	L1703017	E型卡	E clip	2		√

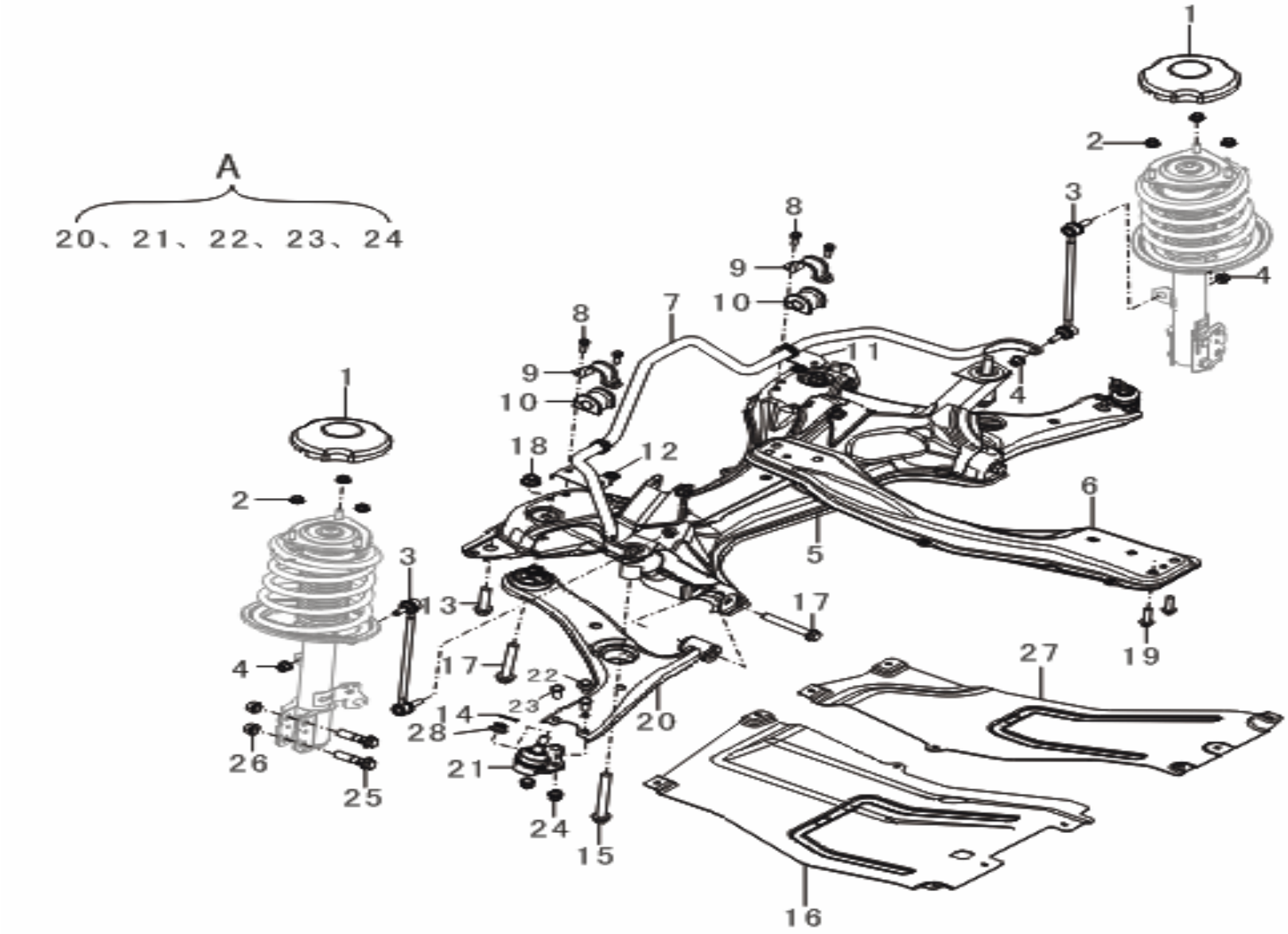
3.09 传动轴 Transmission shaft



3.09 传动轴 Transmission shaft

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1	S2203100	左传动轴总成	Left axle shaft assy.	1		√
2	S2203200	右传动轴总成	Right axle shaft assy.	1		√
3	SS22001	差速器侧万向节维修包（左）	Joint kit，differential，left	1		
4	SS22002	差速器侧防护罩维修包	Seal kit，differential	2		
5	SS22003	车轮侧万向节维修包	Joint kit，wheel	2		
6	SS22004	车轮侧防护罩维修包	Seal kit，wheel	2		
7	SS22005	差速器侧万向节维修包（右）	Joint，differential，right	1		
8	SS22006	螺母组件	Nuts kit	1		

3.10 前悬架 Front suspension



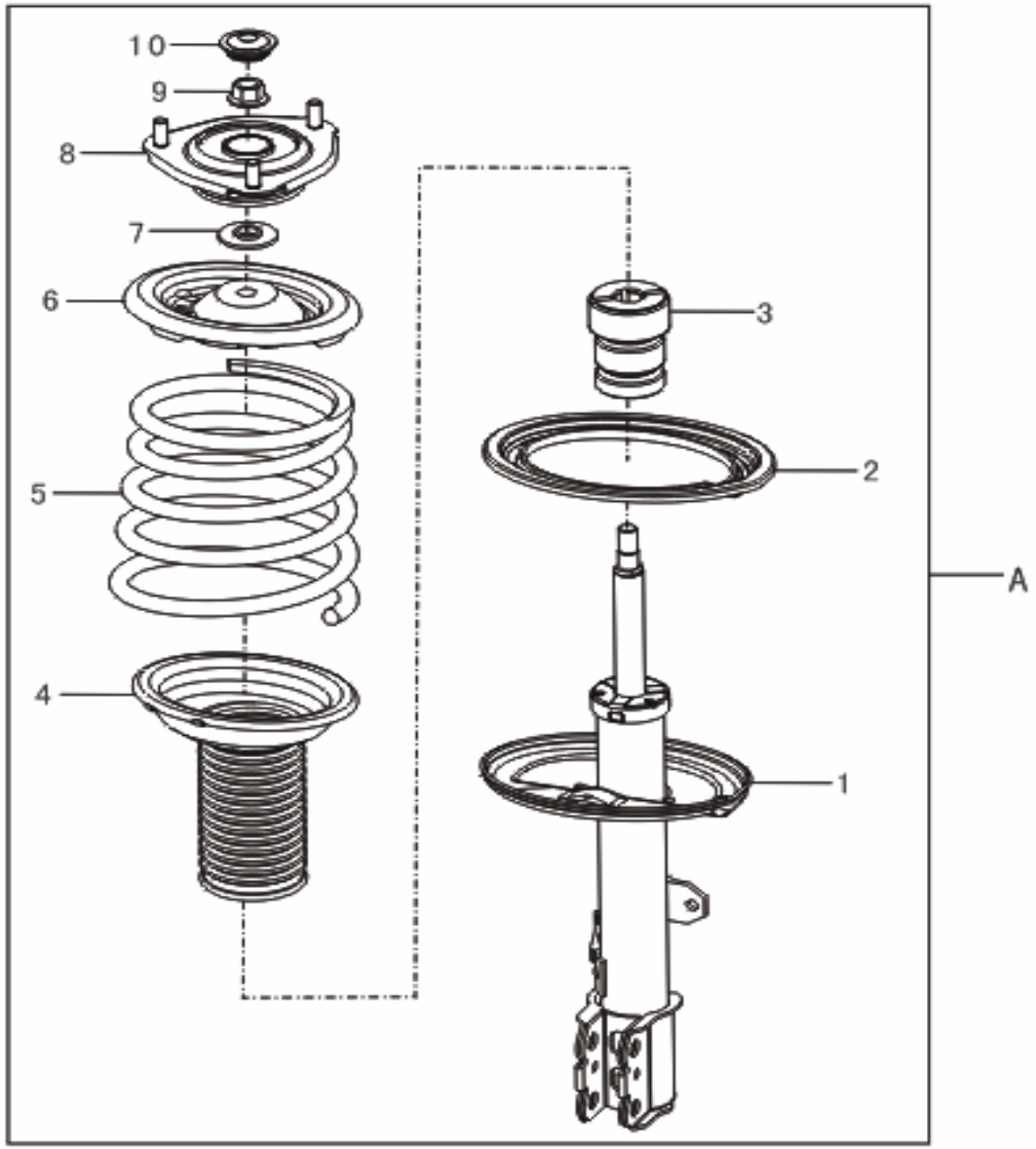
3.10 前悬架 Front suspension

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1	S2905491	前支柱上防尘盖	Front shock absorber dust proof	4		√
2	Q33014S	全金属六角法兰面锁紧螺母	Hex flange nut	6		√
3	S2906210	前横向稳定杆连接杆组件	Front stabilizer bar connecting bar	2		√
4	101B-1010T13F3	六角法兰面螺母	Hex flange nut	4		√
5	S2901110	前托架组件	Front bracket assy.	1		√
6	S2901410	前托架托梁组件	Front bracket corbel	1		√
7	S2906110	前横向稳定杆组件	Front stabilizer bar	1		√
8	Q1410825	六角头螺栓和弹簧垫圈组合件	Bolt	4		√
9	S2906311	前横向稳定杆固定块	Front stabilizer bar mount	2		√
10	S2906341	前横向稳定杆缓冲套	Front stabilizer bar sleeve	2		√
11	S2906351	左固定块垫片	Mount washer，left	1		√
12	S2906352	右固定块垫片	Mount washer，right	1		√
13	231-1450TF3	六角法兰面螺栓	Hex flange bolt	2		√
14	Q5003225	开口销	Cotter pin	2		√
15	231C-14120TF3	六角法兰面螺栓	Hex flange bolt	2		√
16	S2802312	发动机右下钢板护板	Engine lower protect panel，right	1		√
17	231-1490TF3	六角法兰面螺栓	Hex flange bolt	4		√
18	101-1414T13F3	六角法兰面螺栓	Hex flange bolt	2		√
19	231-1025TF3	六角法兰面螺栓	Hex flange bolt	2		√
A	S2904100	左前摆臂总成	Front swingarm assy，left	1		√

3.10 前悬架 Front suspension

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
A	S2904200	右前摆臂总成	Front swingarm assy，right	1		√
20	S2904110	左前摆臂组件	Front swingarm，left	1		
20	S2904210	右前摆臂组件	Front swingarm，right	1		
21	S2904810	球销组件	Ball joint	2		
22	S2904101	六角法兰面螺栓	Hex flange bolt	2		
23	S2904102	球销安装螺栓	Bolt	4		
24	S2904103	螺母	Nut	4		
25	231-1560TF3	六角法兰面螺栓	Hex flange bolt	4		√
26	101-1514T13T3	六角法兰面螺母	Hex flange nut	4		
27	S2802311	发动机左下钢板护板	Engine lower protect panel，left	1		√
28	124-1417T13F3	六角法兰面开槽螺母	Hex flange nut	2		√

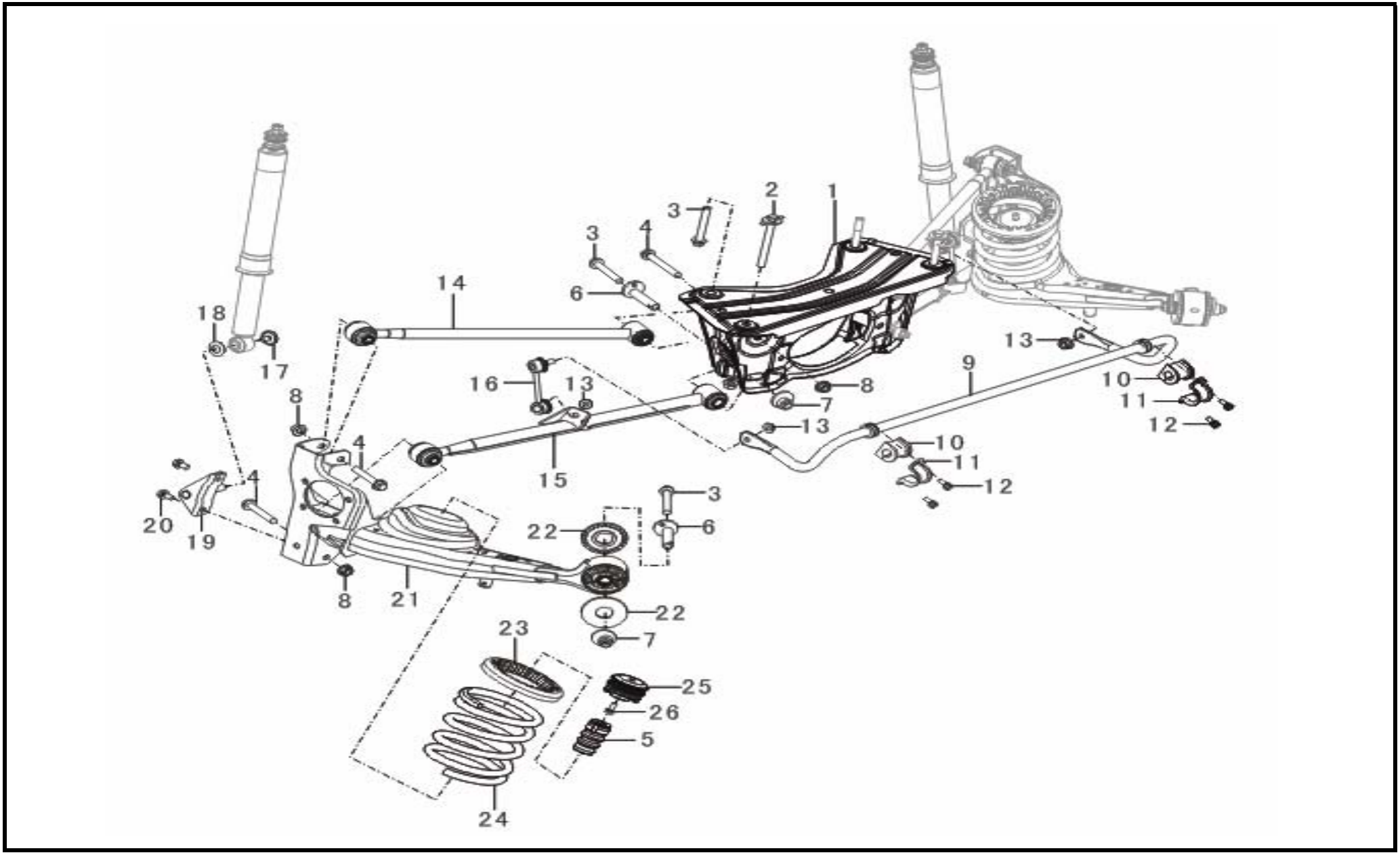
3.11 前支柱总成 Front shock absorber



3.11 前支柱总成 Front shock absorber

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
A	S2905100	左前支柱总成	Front left shock absorber assy.	1		√
A	S2905600	右前支柱总成	Front right shock absorber assy.	1		√
1	S2905200	左前减振器总成	Front left shock absorber assy.	1		
1	S2905700	右前减震器总成	Front right shock absorber assy.	1		
2	S2905562	前弹簧下垫	Shock absorber spring washer	2		√
3	S2905521	前限位缓冲块	Stopping damper	2		√
4	S2905541	减震器防尘罩	Shock absorber dust proof	2		√
5	S2905511	前弹簧	Front shock absorber spring	2		√
6	S2905450	前弹簧上支承座组件	Front shock absorber spring seat	2		√
7	S2905431	轴承油封	Bearing seal	2		√
8	S2905410	前支柱上安装支座组件	Front shock absorber mount	2		√
9	Q33014S	全金属六角法兰面锁紧螺母	Hex flange nut	2		√
10	S2905481	前减震器上支承座堵盖	Front shock absorber plug	2		√

3.12 后悬架 Rear suspension



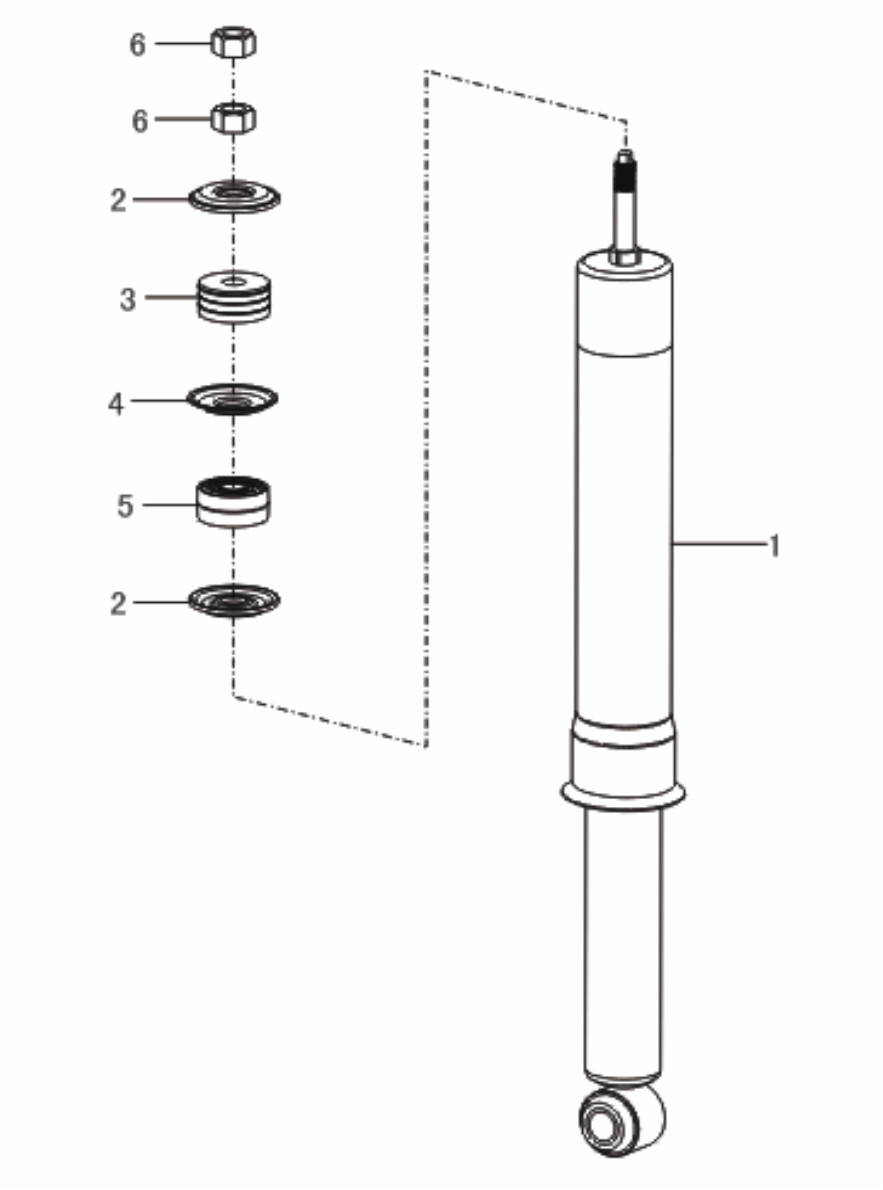
3.12 后悬架 Rear suspension

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1	S2911110	后托架组件	Rear bracket assy.	1		√
2	S2911010	后托架前安装螺栓组件	Bolt，rear bracket assy.	2		
3	231B-12100TF3	六角法兰面螺栓	Hex flange bolt	6		√
4	231B-1280TF3	六角法兰面螺栓	Hex flange bolt	4		√
5	S2920611	后限位缓冲块	Limiting damper	2		√
6	S2914720	后轮前束调整偏心轮组件	Adjusting eccentric wheel	4		
7	S2914711	后轮前束调整锁紧螺母	Adjusting nut	4		
8	101B-1212T13F3	六角法兰面螺母	Hex flange nut	6		√
9	S2916110	后横向稳定杆组件	Rear stabilizer bar	1		√
10	S2916341	后横向稳定杆缓冲套	Rear stabilizer bar sleeve	2		√
11	S2916331	后横向稳定杆固定块	Rear stabilizer bar mount	2		√
12	Q1420820	六角头螺栓和弹簧垫圈组合件	Bolt	4		√
13	101B-1010T13F3	六角法兰面螺母	Hex flange nut	2		√
14	S2914100	后悬上横拉杆总成	Upper drag link，rear suspension	2		√
15	S2914300	后悬左下横拉杆总成	lower left drag link，rear suspension	1		√
15	S2914400	后悬右下横拉杆总成	lower right drag link，rear suspension	1		√
16	S2916210	后横向稳定杆左连接杆组件	Rear stabilizer bar connecting bar，left	1		√
16	S2916260	后横向稳定杆右连接杆组件	Rear stabilizer bar connecting bar，right	1		√
17	S2915040	后减震器下安装螺栓	Rear shock absorber bolt	2		√
18	S2915312	后减震器下安装垫片Ⅱ	Rear shock absorber washer II	2		

3.12 后悬架 Rear suspension

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
19	S2915010	后减震器左下安装支架组件	Rear shock absorber bracket，left	1		√
19	S2915020	后减震器右下安装支架组件	Rear shock absorber bracket，right	1		√
20	Q1401020	六角头螺栓和平垫圈组合件	Hex bolt，taper springiness washer and flat washer	4		
21	S2914500	左后纵臂总成	Left trailing arm	1		√
21	S2914600	右后纵臂总成	Right trailing arm	1		√
22	S2914751	后纵臂安装胶套	Trailing arm washer	4		√
23	S2915531	后弹簧上衬垫	Rear shock absorber spring washer	2		√
24	S2915510	后弹簧组件	Rear shock absorber spring	2		√
25	S2920620	后限位缓冲块支座	Limiting damper mount	2		√
26	Q1840820	六角法兰面螺栓	Hex flange bolt	2		√
27	S2920611	后限位缓冲块	Limiting damper	2		√

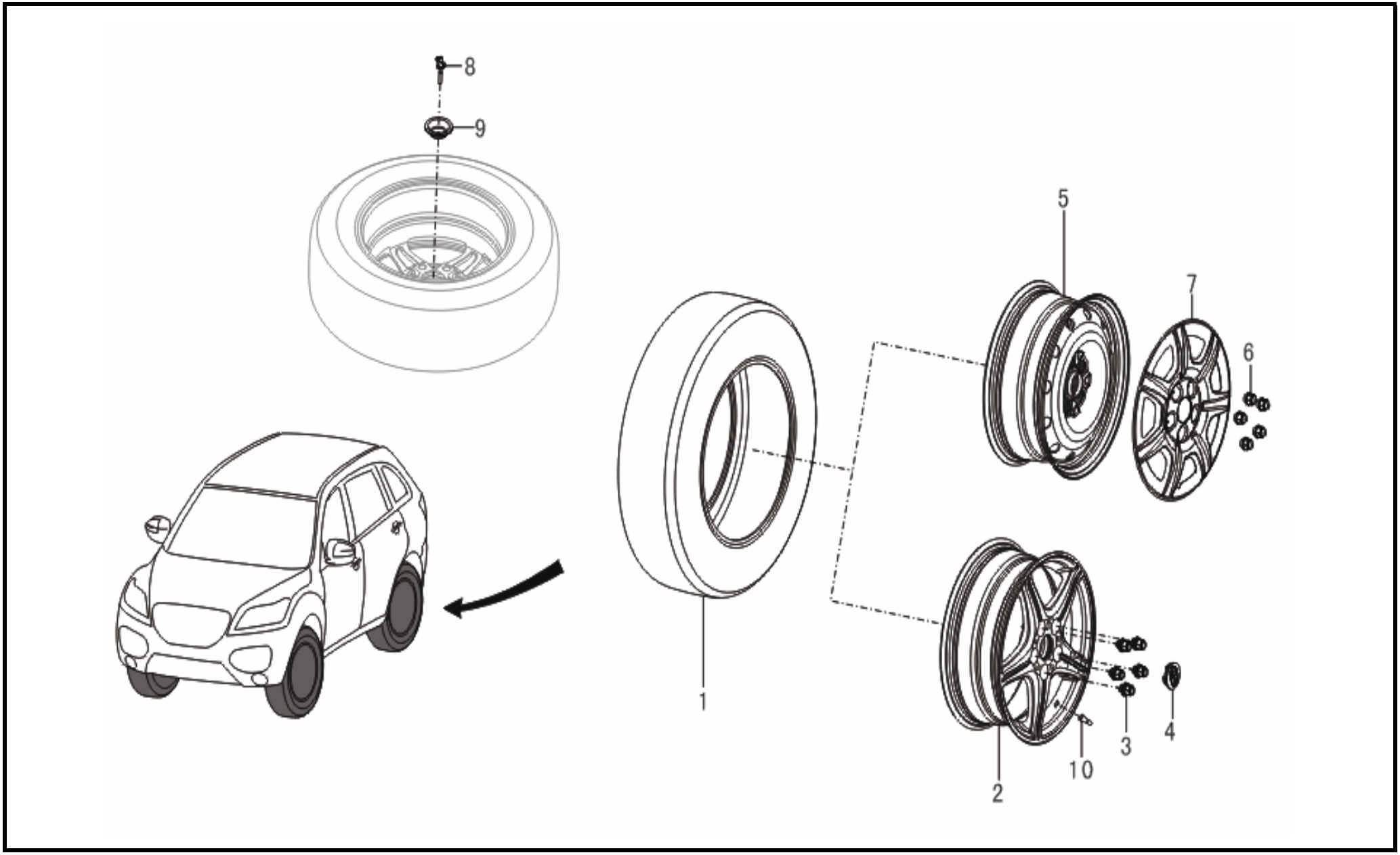
3.13 后支柱总成 Rear shock absorber



3.13 后支柱总成 Rear shock absorber

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1	S2915200	后减震器总成	Rear shock absorber	2		√
2	S2915441	后减震器上垫片Ⅰ	Rear shock absorber washer I	4		√
3	S2915432	后减震器上胶垫Ⅱ	Rear shock absorber rubber washer II	2		
4	S2915442	后减震器上垫片Ⅱ	Rear shock absorber washer II	2		√
5	S2915431	后减震器上胶垫Ⅰ	Rear shock absorber rubber washer I	2		
6	101B-1010T13F3	六角法兰面螺母	Hex flange nut	4		√

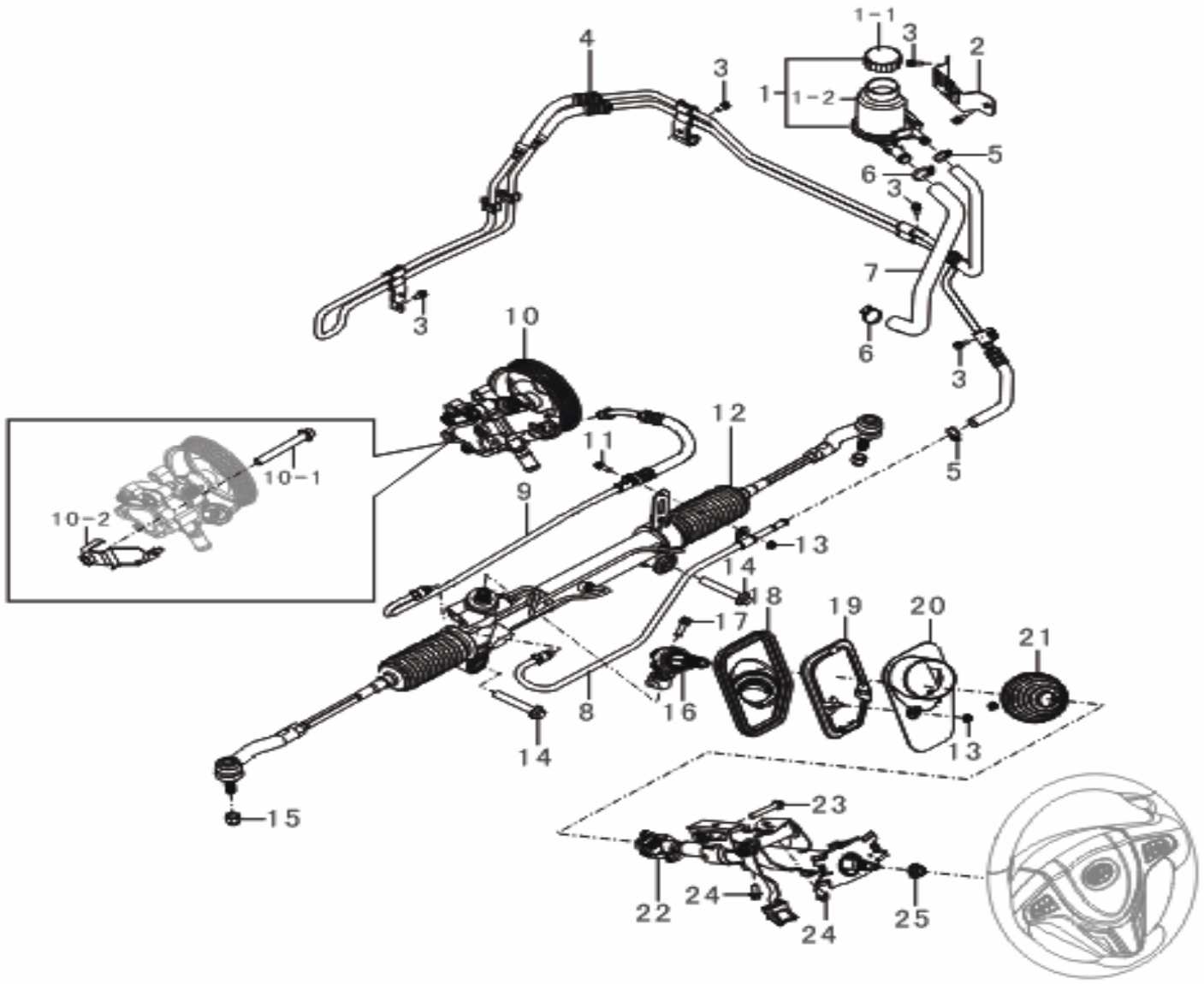
3.14 车轮 Wheels



3.14 车轮 Wheels

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1	S3106100	轮胎总成	Tyre	5		√
2	S3101211	铝合金车轮	Aluminum rim	5		
3	189-1237T13F6	车轮螺母组件	Wheel bolt	20		√
4	S3102110	装饰盖	Aluminum wheel cover	4		
5	S3101110	钢制车轮组件	Steel rim	5		√
6	183C-1228T13F6	车轮锥面螺母	Nut	20		
7	S3102110B1	装饰盖	Steel wheel cover	4		√
8	S3105610	固定螺杆组件	Wheel bolt	1		√
9	S3105660	固定压盘组件	Wheel press plate	1		√
10	S3106800	气门嘴总成	Tyre valve	5		√

3.15 转向系统装置 Steering system



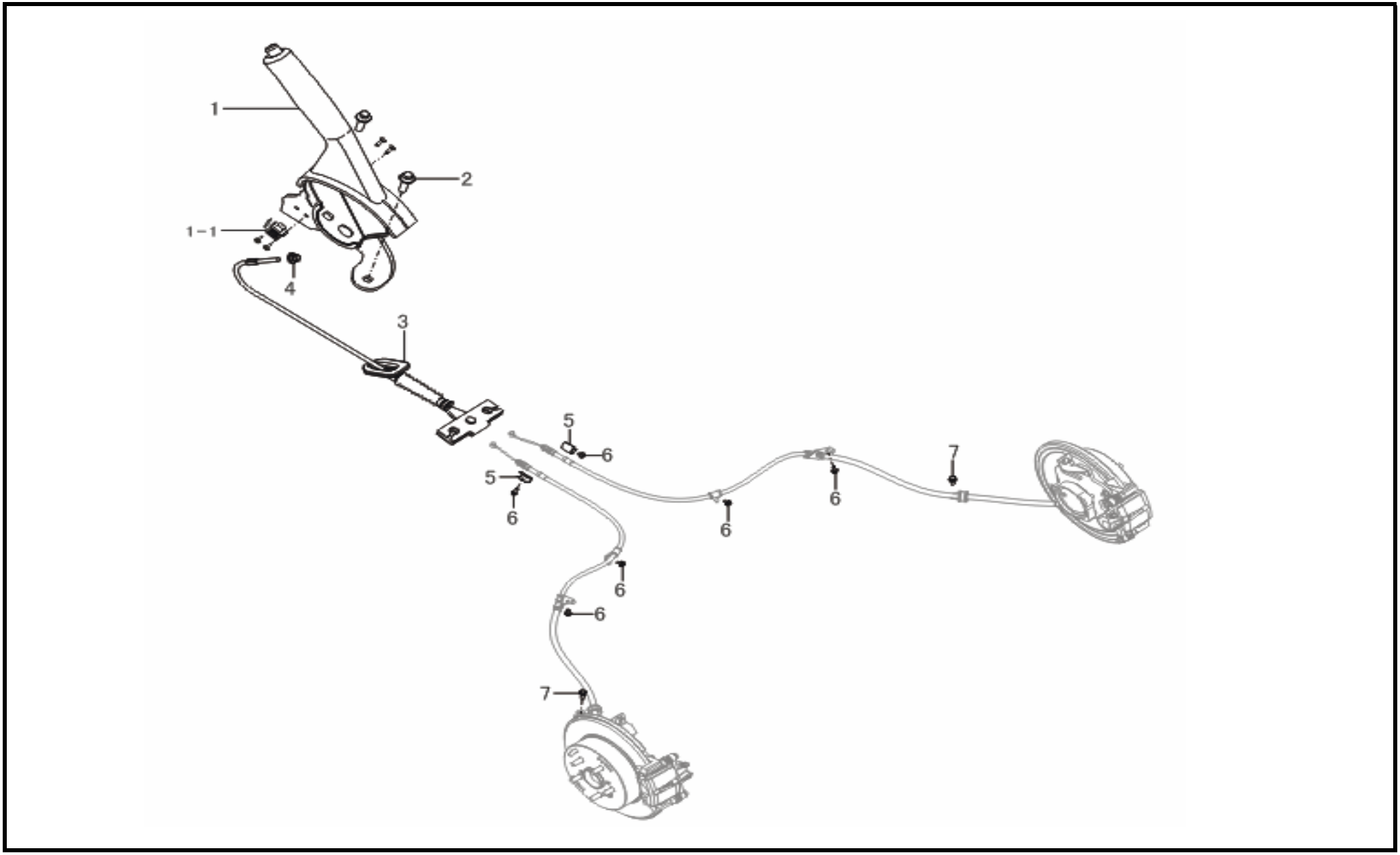
3.15 转向系统装置 Steering system

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1	F3408100	动力转向油壶总成	Power steering reservior assy.	1		√
1-1	F3408170	转向油壶盖组件	Steering liquid reservior cap	1		
1-2	F3408110	转向油壶体组件	Steering liquid reservior body	1		
2	S3408210	动力转向油壶支架组件	Power steering reservior bracket assy.	1		√
3	Q1460616	六角头螺栓、弹簧垫圈和平垫圈组合件	Bolt	6		√
4	S3406320	转向器回油管组件Ⅱ	Steering gear outlet pipe II	1		√
5	Q67516	A型蜗杆传动式软管环箍	Hoop	2		√
6	Q67525	A型蜗杆传动式软管环箍	Hoop	2		√
7	S3406110	转向油泵进油管组件	Steering pump intake pipe	1		√
8	S3406310	转向器回油管组件Ⅰ	Steering reflux pipe I	1		√
9	S3406200	转向器进油管总成	Steering intake pipe assy.	1		√
10	S3407100	动力转向油泵总成	Steering pump assy.	1		√
10-1	GB/T16674-2000	六角法兰面螺栓	Hex flange bolt	1	M10×1.25×78	
10-2	S3407110	转向油泵连接支架	Steering pump bracket	1		
11	Q1460620	六角头螺栓、弹簧垫圈和平垫圈组合件	Bolt	1		√
12	S3401100	转向器总成	Steering gear	1		
13	Q32006	六角法兰面螺母	Hex flange nut	3		√
14	231B-1275TF3	六角法兰面螺栓	Hex flange bolt	2		√
15	101-1212T13F3	六角法兰面螺母	Hex flange nut	2		√
16	S3404400	下转向轴总成	Lower steering shaft assy.	1		

3.15 转向系统装置 Steering system

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
17	Q1840830	六角法兰面螺栓	Hex flange bolt	1		√
18	S3404711	转向管柱防尘罩Ⅰ	Steering gear dust proof I	1		√
19	S3404741	防尘套安装支架	Dust proof bracket，steering gear	1		√
20	S3404731	转向管柱防尘罩Ⅱ	Steering gear dust proof II	1		√
21	S3404751	转向管柱防尘套Ⅲ	Steering gear dust proof III	1		√
22	S3404100	上转向轴总成	Upper steering shaft assy.	1		√
23	Q1840855	六角法兰面螺栓	Hex flange bolt	1		√
24	101B-1212T13F3	六角法兰面螺栓	Hex flange bolt	2		√
25	Q32012T13F2	六角法兰面螺母	Hex flange nut	1		

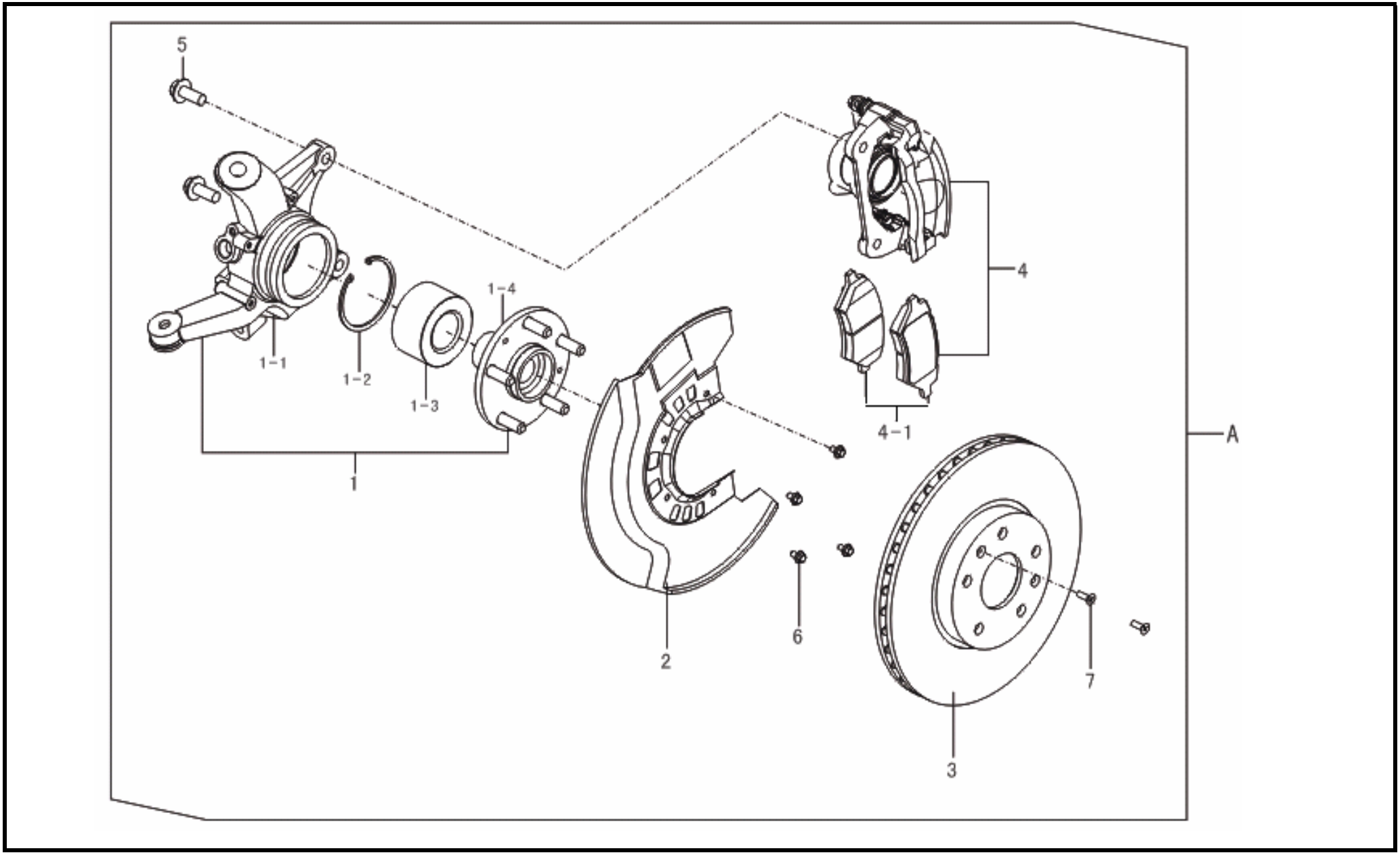
3.16 驻车制动操纵装置 Parking brake system



3.16 驻车制动操纵装置 Parking brake system

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1	S3508300	驻车制动操纵杆总成	Parking brake lever	1		√
1-1	B3781110	驻车制动开关	Parking brake switch	1		
2	Q1840825	六角法兰面螺栓	Hex flange bolt	2		√
3	S3508400	驻车制动拉索前段总成	Parking brake cable，front part	1		√
4	Q32005	六角法兰面螺母	Hex flange nut	1		√
5	S3508811	驻车制动拉索固定扣	Parking brake cable clamp	2		√
6	Q1840612	六角法兰面螺栓	Hex flange bolt	6		√
7	Q1410820	六角头螺栓和锥形弹性垫圈组合件	Hex bolt and taper springiness washer	2		√

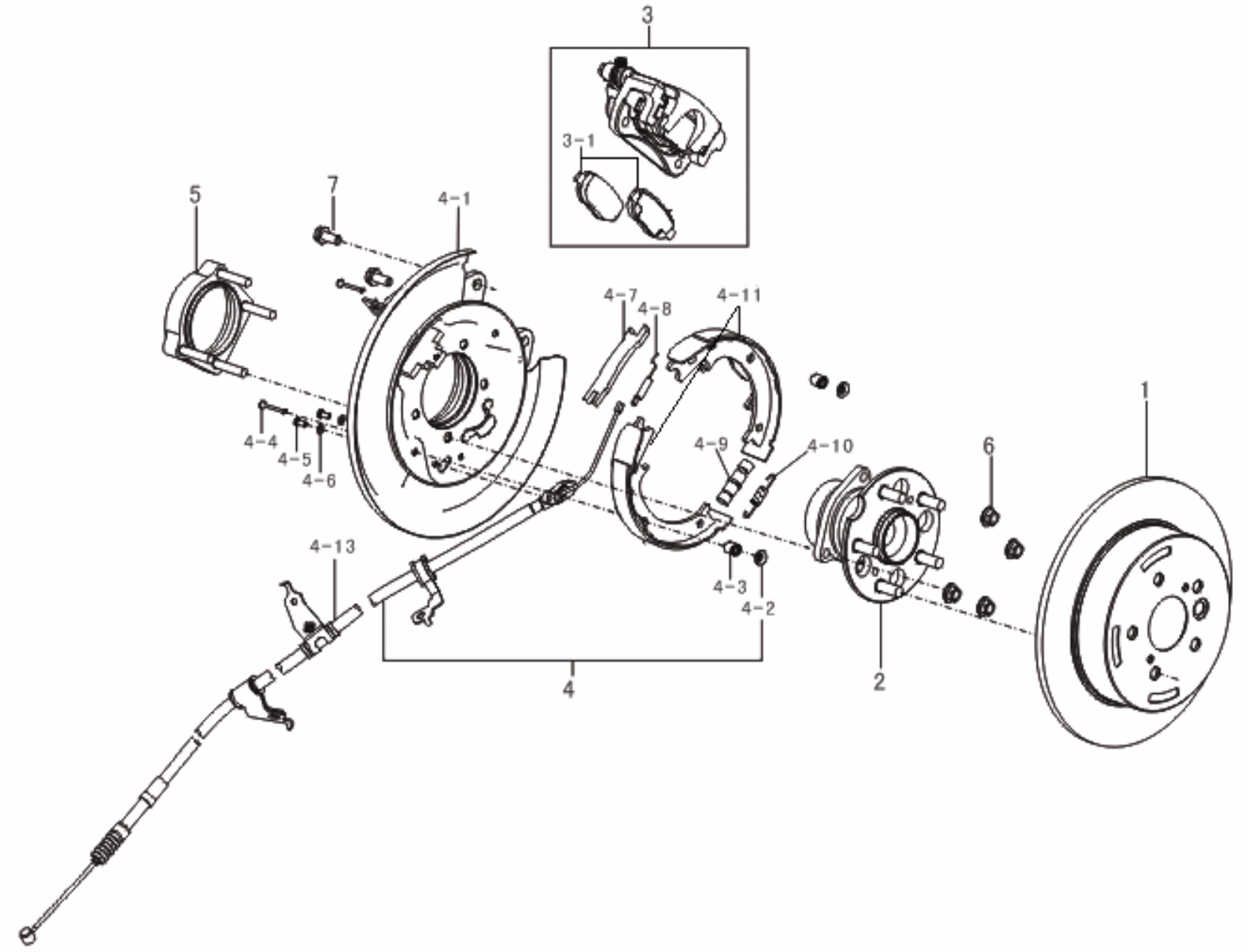
3.17 前制动器 Front brake



3.17 前制动器 Front brake

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
A	S3501100	左前制动器总成	Left front brake assy.	1		√
A	S3501600	右前制动器总成	Right front brake assy.	1		
1	S3103100	左前转向节带轮毂组件	Left front steer knuckle with hub	1		√
1	S3103600	右前转向节带轮毂组件	Right front steer knuckle with hub	1		√
1-1	S3103300	左前转向节	Left front steer knuckle	1		√
1-1	S3103700	右前转向节	Right front steer knuckle	1		√
1-2	S3103101	轴承挡圈	Bearing circlip	2		√
1-3	S3103400	前轮毂轴承	Front wheel hub bearing	2		√
1-4	S3103200	前轮毂单元组件	Front wheel hub	2		√
2	S3501431	左前制动底板	Left backing plate	1		√
2	S3501931	右前制动底板	Right backing plate	1		√
3	S3501110	前制动盘	Front brake disc	2		√
4	S3501200	左前制动卡钳组件	Front left brake caliper	1		√
4	S3501700	右前制动卡钳组件	Front right brake caliper	1		√
4-1	SS35001	前制动片维修包	Front brake pad kit	1	4 pcs	√
5	Q1861230TF2	六角法兰面螺栓	Hex flange bolt	4		
6	Q1840610TF2	六角法兰面螺栓	Hex flange bolt	8		
7	Q2540616	十字槽沉头螺钉	Philips screw	4		

3.18 后制动器 Rear brake



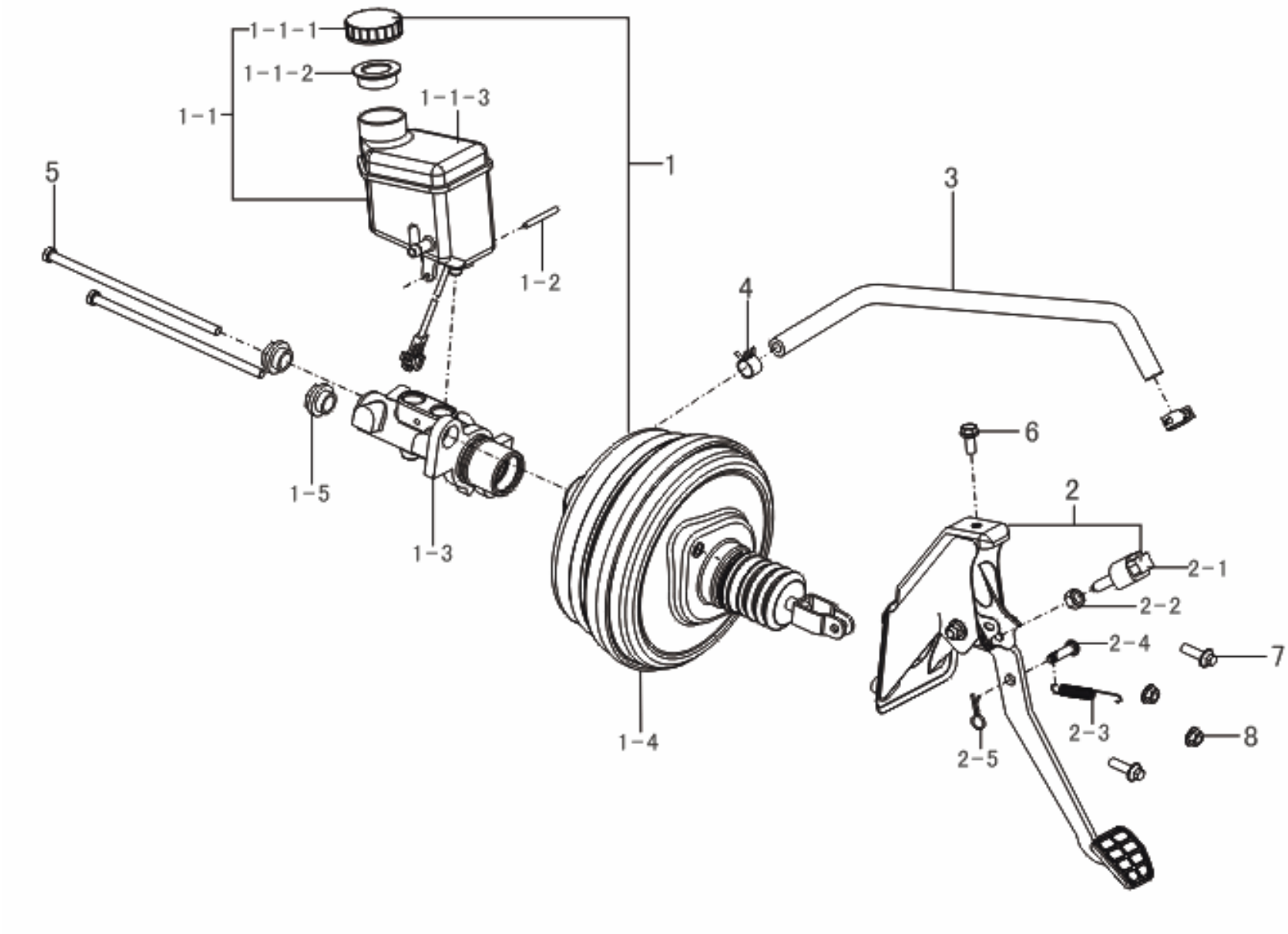
3.18 后制动器 Rear brake

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1	S3502110	后制动盘	Rear brake disc	2		√
2	S3104100	后轮毂	Rear wheel hub	2		√
3	S3502200	左后制动钳总成	Rear brake caliper，left	1		√
3	S3502700	右后制动钳总成	Rear brake caliper，right	1		√
3-1	SS35002	后制动片维修包	Rear brake pad kit	1	4 pcs	√
4	S3502400	左后制动底板带拉索总成	Rear left brake backing plate with cable	1		√
4	S3502900	右后制动底板带拉索总成	Rear right brake backing plate with cable	1		√
4-1	S3502420	左后制动底板组件	Left rear brake bottom	1		√
4-1	S3502920	右后制动底板组件	Right rear brake bottom	1		√
4-2	S3502405	底板固定支座	Brake bottom damper	4		√
4-3	S3502406	底板固定支座弹簧	Brake bottom spring	4		√
4-4	S3502407	底板固定杆	Brake bottom fixing rod	4		√
4-5	Q150B0612	六角头螺栓	Hex bolt	4		√
4-6	Q40106	平垫圈	Flat washer	4		√
4-7	S3502402	制动蹄支撑板	Support plate	2		√
4-8	S3502401	制动蹄回位弹簧	Return spring	2		√
4-9	S3502403	制动蹄调节器组件	Brake shoe adjustor	2		√
4-10	S3502404	制动蹄调节拉杆固定弹簧	Fixing spring	2		√
4-11	S35003	制动蹄组件	Brake shoe kit	1	4 pcs	

3.18 后制动器 Rear brake

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
4-13	S3508100	左驻车制动拉索总成	parking brake left cable	1		√
4-13	S3508200	右驻车制动拉索总成	Parking brake right cable	1		√
5	S3502500	连接座总成	Connecting mount	2		√
6	101B-10F2	六角法兰面螺母	Hex flange nut	8		
7	204-1025	六角头螺栓和锥形弹性垫圈组合件	Hex bolt and taper springiness washer	4		√

3.19 制动操纵装置 Brake control mechanism



3.19 制动操纵装置 Brake control mechanism

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1	S3540000	制动总泵带助力器带油壶总成	Brake pump with booster and liquid can	1		√
1-1	S3540700	制动油壶总成	Fluid pot	1		√
1-1-1	S3540710	制动油壶盖组件	Fluid pot cap	1		√
1-1-2	S3540720	滤网	Fluid pot filter	1		√
1-1-3	S3540730	制动油壶组件	Fluid pot body	1		
1-2	S3540011	制动油壶连接销	Fluid pot pin	1		√
1-3	S3540100	制动总泵	Brake pump	1		√
1-4	S3540400	真空助力器	Brake booster	1		√
1-5	S3540012	制动总泵连接螺母	Brake pump bolt	2		√
2	S3504100	制动踏板总成	Brake pedal	1		√
2-1	B3781120	制动灯开关	Brake lamp switch	1		√
2-2	Q351C10	六角薄螺母	Hex nut	1		
2-3	S3504101	回位弹簧	Return spring	1		√
2-4	S3504102	销轴	Axis pin	1		√
2-5	Q50110	插销	Pin	1		
3	S3540931	助力真空管	Booster pipe	1		√
4	Q673B16	钢带型弹性环箍	Hoop	2		√
5	244-08190F2	真空助力器固定螺栓	Brake booster bolt	2		√
6	Q1410820	六角头螺栓和锥形弹性垫圈组合件	Hex bolt and taper springiness washer	1		√
7	Q1840825	六角法兰面螺栓	Hex flange bolt	2		√

3.19 制动操纵装置 Brake control mechanism

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
8	Q32008	六角法兰面螺母	Hex flange nut	2		√

3.20 制动管路装置 Brake line



3.20 制动管路装置 Brake line

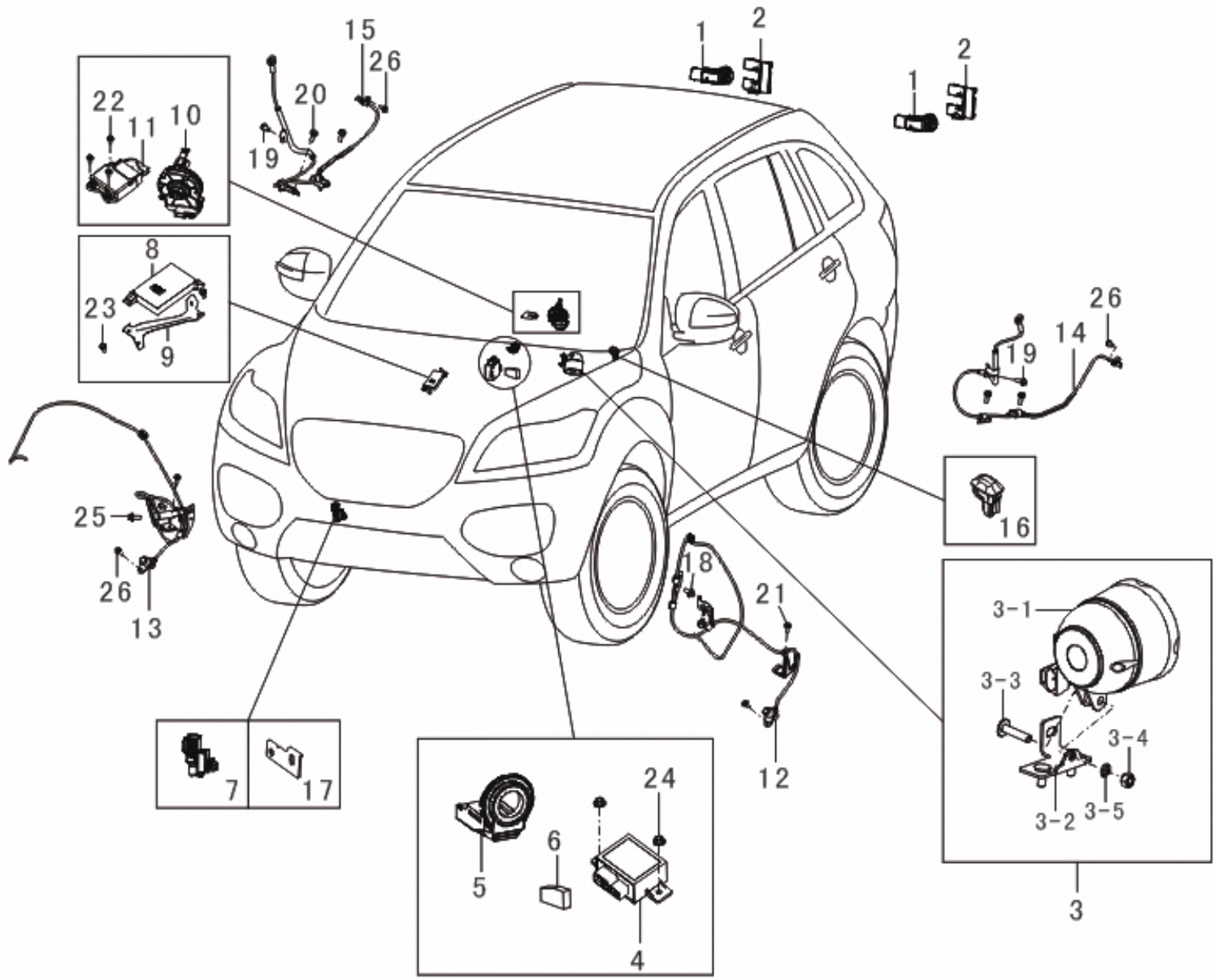
P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1	S3506110	制动总泵主出油管	Brake pump primary outlet pipe	1		√
2	S3506210	左前制动管Ⅰ	Front left brake tube I	1		√
3	S3506310	右前制动管Ⅰ	Front right brake tube I	1		√
4	S3506410	左后制动管Ⅰ	Rear left brake tube I	1		√
5	S3506610	右后制动管Ⅰ	Rear right brake tube I	1		√
6	S3506160	制动总泵次出油管	Brake pump secondary outlet pipe	1		√
7	S3550100	ABS控制器总成	ABS ECU	1		√
8	S3550710	ABS支架组件	ABS bracket	1		√
9	271-0627T1F3	ABS机构安装螺栓	Bolt	2		√
10	B3550212	ABS机构安装衬套	ABS sleeve	3		√
11	Q1840820	六角法兰面螺栓	Hex flange bolt	2		√
12	231-1020TF3	六角法兰面螺栓	Hex flange bolt	1		√
13	S3506921	六孔管夹	Clamp for 6 tubes	1		√
14	S3506920	六孔管夹组件	Clamp for 6 tubes assy.	1		√
15	Q1400612	六角头螺栓和平垫圈组合件	Hex bolt，taper springiness washer and flat washer	8		√
16	S3506840	制动管固定卡组件Ⅰ	Brake tube clamp I	2		√
17	Q32006	六角法兰面螺母	Hex flange nut	15		√
18	S3506240	左前制动管Ⅱ	Front left brake tube II	1		√
19	L3506106	E型卡片	E shape clip	10		√
20	S3506890	制动管固定卡组件Ⅵ	Brake tube clamp VI	1		√

3.20 制动管路装置 Brake line

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
21	B3506361	前轮制动管路过孔胶套	Front brake tube sleeve	2		√
22	S3506911	制动管固定卡组件Ⅷ管夹	Brake tube clamp VIII	5		√
23	S3506912	制动管固定卡组件Ⅷ支架	Brake tube clamp bracket	4		√
24	S3506640	右后制动管Ⅱ	Rear right brake tube II	1		√
25	S3506440	左后制动管Ⅱ	Rear left brake tube II	1		√
26	S3506870	制动管固定卡组件Ⅳ	Brake tube clamp IV	3		√
27	S3506850	制动管固定卡组件Ⅱ	Brake tube clamp II	9		√
28	S3506460	左后制动管Ⅱ后段	Rear left brake tube II，rear part	1		√
29	S3506670	右后制动管Ⅲ	Rear right brake tube III	1		√
30	S3506470	左后制动管Ⅲ	Rear left brake tube III	2		√
31	S3506471	后制动软管左支架	Rear brake hose bracket，left	1		√
32	S3506472	后制动软管右支架	Rear brake hose bracket，right	1		√
33	Q1410820	六角头螺栓和锥形弹性垫圈组合件	Hex bolt and taper springiness washer	2		√
34	S3506510	左后制动管Ⅳ	Rear left brake tube IV	1		√
35	S3506740	右后制动管Ⅳ	Rear right brake tube IV	1		√
36	S3506860	制动管固定卡组件Ⅲ	Brake tube clamp III	2		√
37	S3506540	左后制动管Ⅴ	Rear left brake tube V	1		√
38	S3506770	右后制动管Ⅴ	Rear right brake tube V	1		
39	S3506981	空心螺栓	Eye bolt	2		√
40	S3506982	紫铜垫片	Washer	2		√

4.Electrical Equipment

4.01 整车电子系统装置 Electrical Equipment



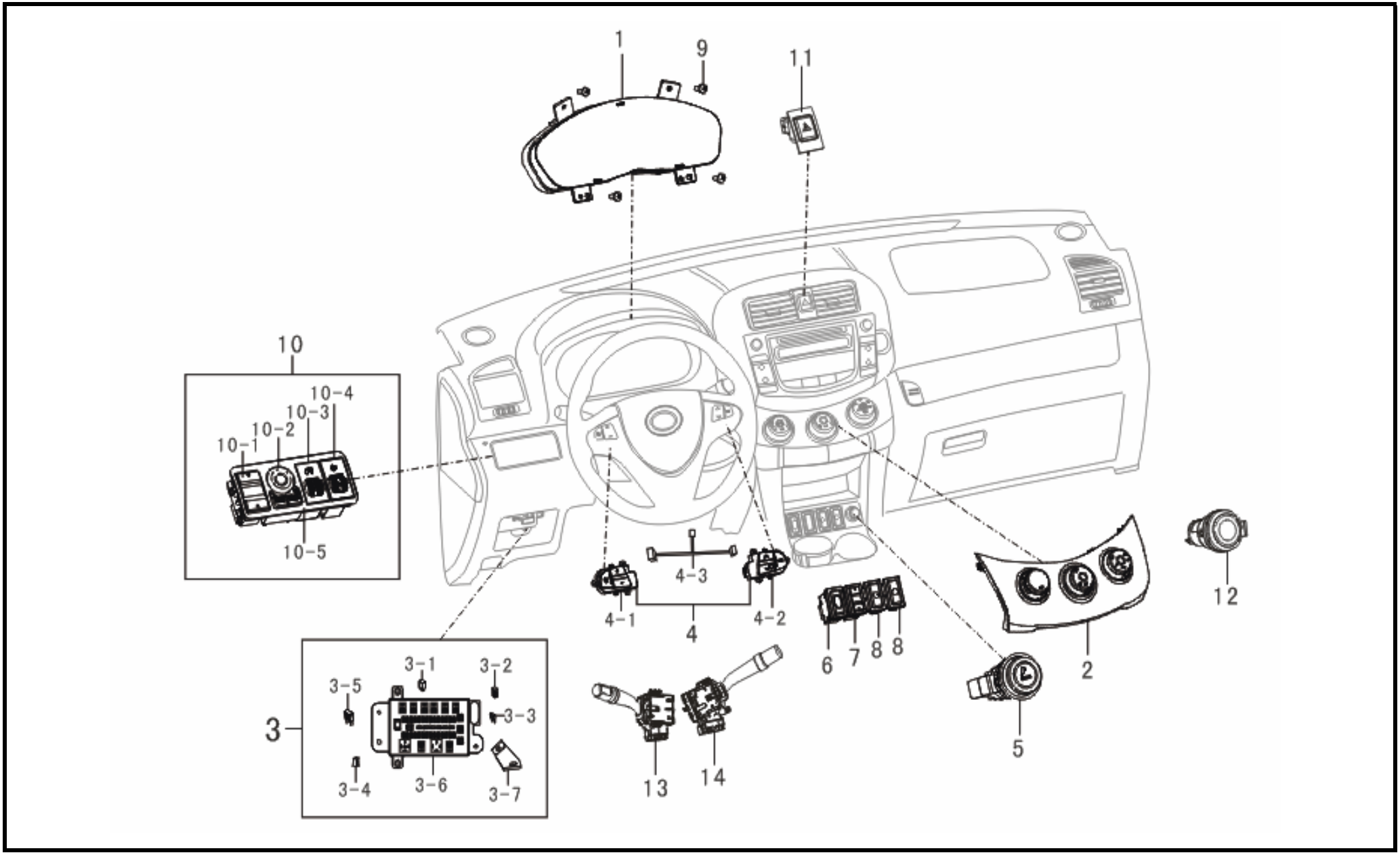
4.01 整车电子系统装置 Electrical Equipment

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1	B3603820B1	倒车雷达传感器	Reverse radar sensor	2		√
2	B3603841	安装支架	Bracket	2		√
3	B3605400	防盗报警器总成	Immobilizer warner assy.	1		√
3-1	B3605410	防盗报警器	Immobilizer warner	1		
3-2	B3605460	防盗报警器固定支架组件	Immobilizer warner bracket	1		
3-3	Q1920625	大半圆夹方颈螺栓	Bolt	1		
3-4	Q340B06	1型六角螺母	Nut	1		√
3-5	Q40306	弹簧垫圈	springiness washer	1		√
4	LBX3605100	防盗ECU	Immobilizer ECU	1		√
5	B3605200	防盗系统读写识别线圈	Immobilizer recognition	1		√
6	LAX3605011	防盗芯片	Immobilizer chip	1		√
7	B3676230	环境温度传感器	Temperature sensor，out of vehicle	1		√
8	S3674100	BCM	BCM	1		√
9	S3674200B1	BCM支架	BCM bracket	1		
10	S3658300	安全气囊时钟弹簧	Airbag clock spring	1		√
10	S3658300B1	安全气囊时钟弹簧	Airbag clock spring	1	EX	√
11	S3658100	安全气囊ECU	Airbag ECU	1		√
11	S3658100B1	安全气囊ECU	Airbag ECU	1	EX	√
12	S3630300	左前轮速传感器总成	Wheel speed sensor，front left	1		√
13	S3630400	右前轮速传感器总成	Wheel speed sensor，front right	1		√

4.01 整车电子系统装置 Electrical Equipment

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
14	S3630500	左后轮速传感器总成	Wheel speed sensor，rear left	1		√
15	S3630600	右后轮速传感器总成	Wheel speed sensor，rear right	1		√
16	S3661220	环境光传感器	Ambient light sensor	1		√
16	S3661220B1	环境光阳光传感器	Sun light sensor	1	for AT A/C	√
17	S3676220	环境温度传感器支架	Ambient temperature sensor	1		
18	Q1840612	六角法兰面螺栓	Hex flange bolt	4		√
19	Q1840610TF2	六角法兰面螺栓	Hex flange bolt	2		
20	Q1400820	六角头螺栓和平垫圈组合件	Hex bolt，taper springiness washer and flat washer	2		√
21	Q1840612	六角头螺栓	Hex bolt	2		√
22	Q1840616	六角法兰面螺栓	Hex flange bolt	3		√
23	Q1840645	六角法兰面螺栓	Hex flange bolt	2		√
24	Q32006	六角法兰面螺母	Hex flange nut	2		√
25	Q1840616	六角法兰面螺栓	Hex flange bolt	2		√
26	Q1400612	六角头螺栓和平垫圈组合件	Hex bolt，taper springiness washer and flat washer	4		√

4.02 仪表板电器 Electric equipment in dashboard



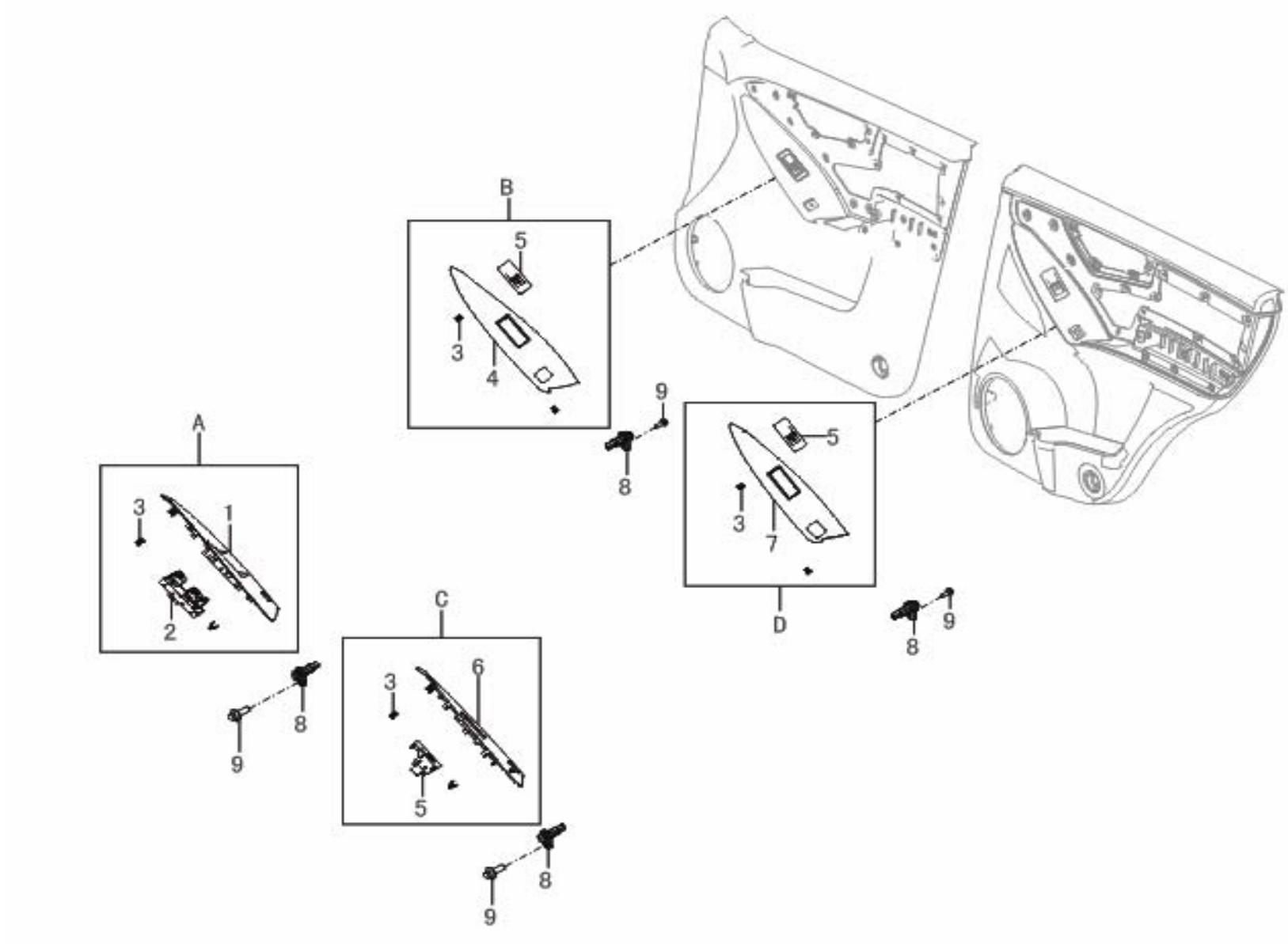
4.02 仪表板电器 Electric equipment in dashboard

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1	S3820000	组合仪表	Instrument cluster	1		√
2	S8112100	空调控制面板总成	Air conditioner control panel	1	MT	√
2	S8112100B1	空调控制面板总成	Air conditioner control panel	1	AT	
3	S3722100	驾驶舱电器中央控制盒	Central control case	1		√
3-1	DJ1927-30A/QCT73	继电器	Relay	3		
3-2	BX2011A1-30A/QCT73	保险丝	Fuse	1		
3-2	BX2011A1-40A/QCT73	保险丝	Fuse	2		
3-3	BX2011F-5/QCT73	保险丝	Fuse	4		
3-3	BX2011F-10A/QCT73	保险丝	Fuse	8		
3-3	BX2011F-15A/QCT73	保险丝	Fuse	10		
3-3	BX2011F-20A/QCT73	保险丝	Fuse	4		
3-3	BX2011F-25A/QCT73	保险丝	Fuse	3		
3-3	BX2011F-30A/QCT73	保险丝	Fuse	2		
3-4	S3722111	拨片器	Puller	1		
3-5	S3722112	断电器	Breaker	1		
3-6	S3722110	驾驶舱电器中央控制盒体	Central control case body	1		
3-7	S3722120	驾驶舱电器中央控制盒支架	Central control case bracket	1		
4	S3750300	方向盘多功能开关总成	Steering wheel switch assy.	1		
4-1	S3750310	方向盘左开关组件	Steering wheel switch，left	1		
4-2	S3750320	方向盘右开关组件	Steering wheel switch，right	1		

4.02 仪表板电器 Electric equipment in dashboard

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
4-3	S3750330	方向盘开关线束总成	Steering wheel switch cable	1		
5	B3725100	点烟器总成	Cigarette lighter	1		√
6	S3759300	驾驶员座椅加热开关总成	Seat heater switch	1		√
7	S3787820	后背门锁开关	Tail door lock switch	1		√
8	S3750511	备用开关堵盖	Spare switch plug	2		√
9	Q2714816	十字槽盘头自攻螺钉-C型	Screw	4		√
10	S3782000	开关组件	Switch combination	1		√
10-1	S3787810	中控锁开关	Central lock switch	1		
10-2	B3750560A2	电动后视镜控制开关	Wing mirror switch	1		√
10-3	B3750520A2	背景光调整开关	Background light switch	1		√
10-4	S3750530	近光灯光轴调整开关	Low beam adjust switch	1		
10-5	S3782110	开关组件支架	Switch bracket	1		
11	S3710400	危险警示灯开关	warning light switch	1		
12	S3784100	车载电源接口组件	Power resource connector	1		√
13	B3774100D1	灯光组合开关总成	Lamp switch	1		√
14	S3774300	风窗刮水器组合开关总成	Wiper switch	1		
14	S3774300B1	风窗刮水器组合开关总成	Wiper switch	1		√

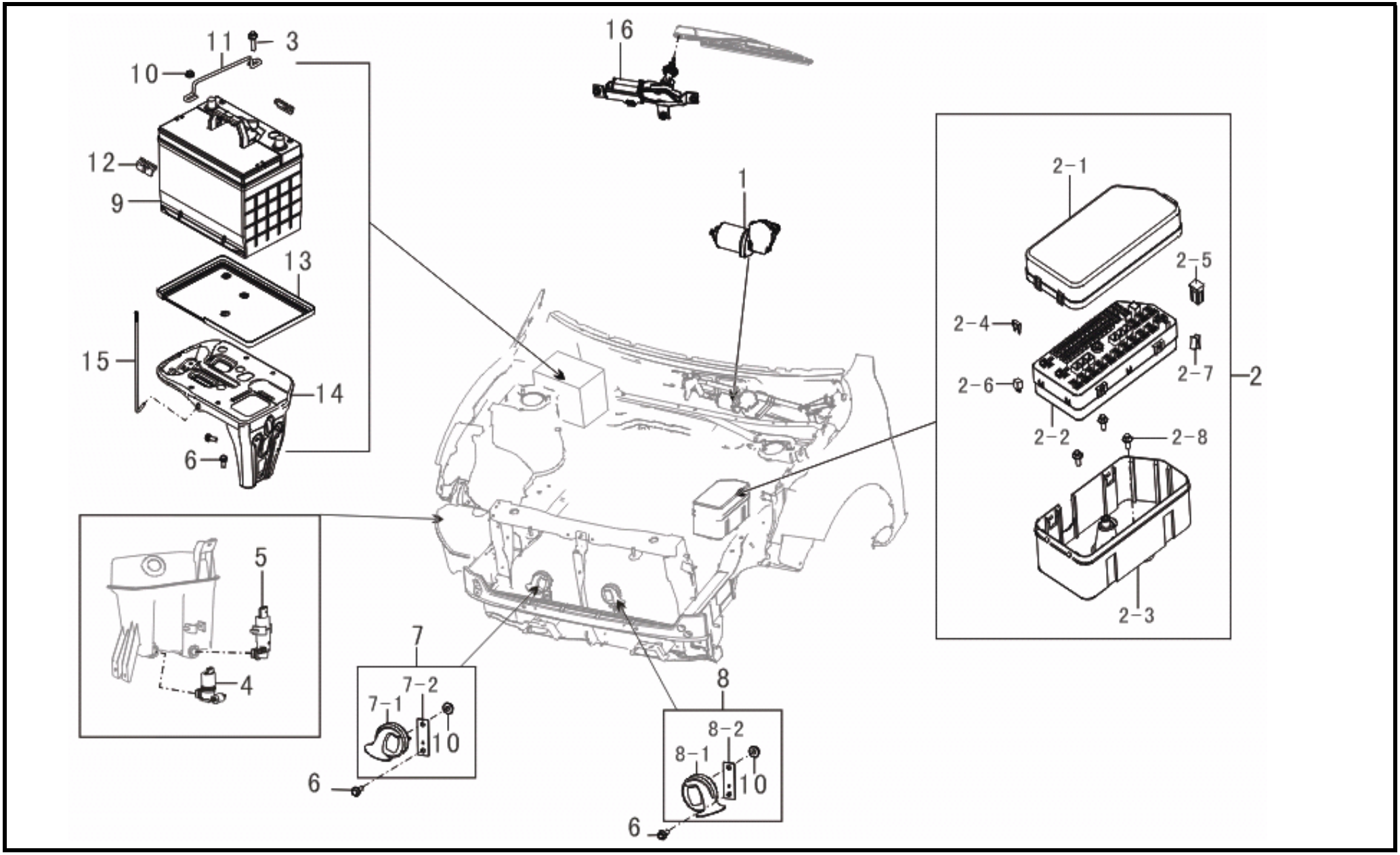
4.03 乘员舱电器 Inner handrail switch



4.03 乘员舱电器 Inner handrail switch

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
A	S3746100	左前门扶手及开关总成	Inner handrail with switches,front left door	1		√
B	S3746200	右前门扶手及开关总成	Inner handrail with switches,front right door	1		√
C	S3746300	左后门扶手及开关总成	Inner handrail with switches,rear left door	1		√
D	S3746400	右后门扶手及开关总成	Inner handrail with switches,rear right door	1		√
1	S3746110	左前门扶手板	Inner handrail,front left door	1		
2	B3746120A2	左前门玻璃升降开关	Glass lifter,front left door	1		√
3	S3745131	弹簧卡子	Clip	8		
4	S3746210	右前门扶手板	Inner handrail,front right door	1		
5	S3746220	玻璃升降开关组件	Glass lifter switch	1		
6	S3746310	左后门扶手板	Inner handrail,raer left door	1		
7	S3746410	右后门扶手板	Inner handrail,rear right door	1		
8	B3758110	前门接触开关	Contacter switch,front door	4		√
9	Q1840616T1F30	六角法兰面螺栓	Hex flange bolt	4		√

4.04 机舱电器 Electric equipment in engine room



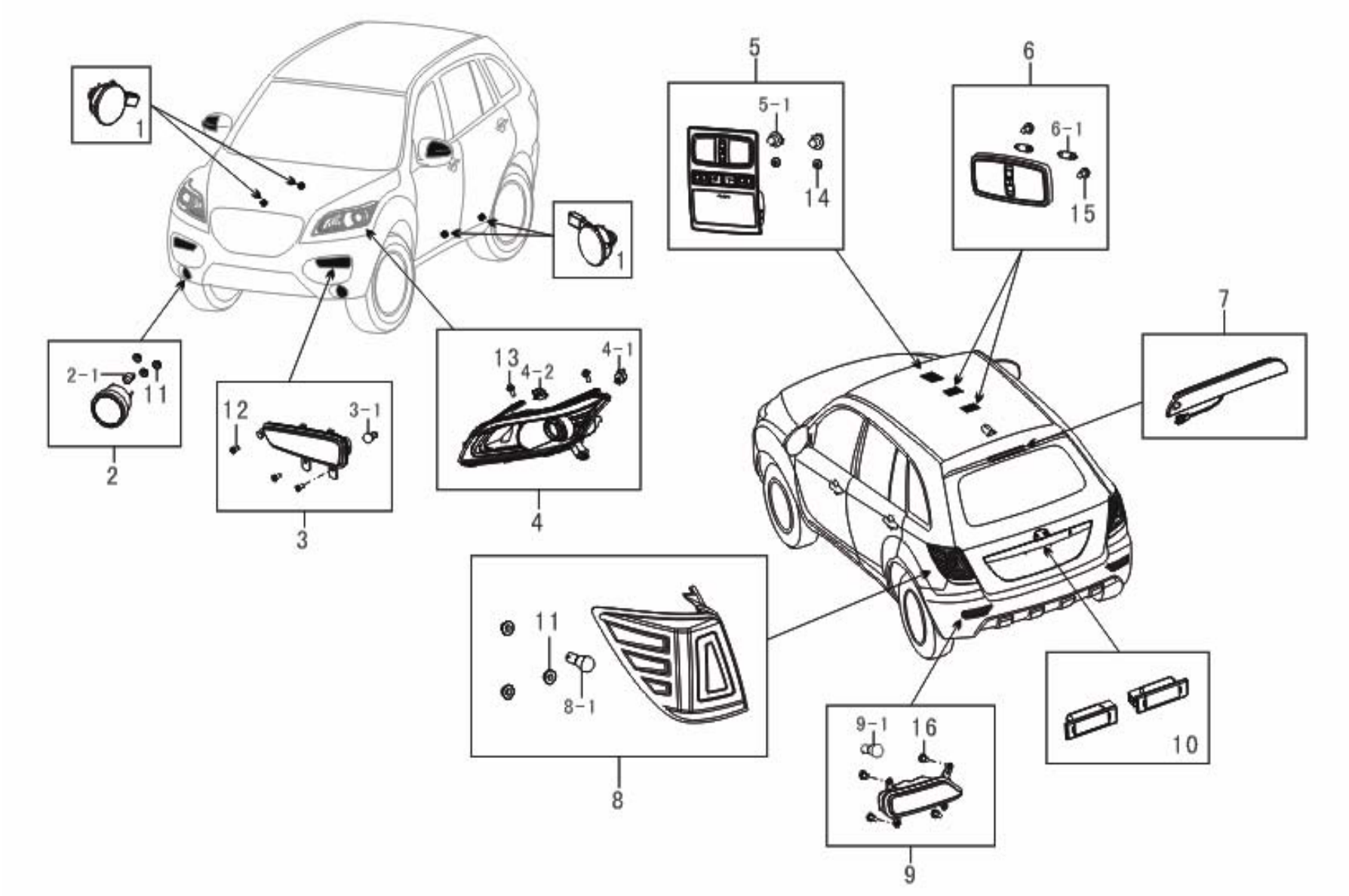
4.04 机舱电器 Electric equipment in engine room

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1	S3774100	前刮水器电动机	Front wiper motor	1		
2	S3722200	发动机舱电器控制盒总成	Central control case，engine room	1		√
2-1	S3722211	发动机舱电器控制盒上	Case shell，upper	1		
2-2	S3722213	发动机舱电器控制盒体中	Case shell，midlle	1		
2-3	S3722212	发动机舱电器控制盒体下	Case shell，lower	1		
2-4	BX2011F-5A/QCT73	保险丝	Fuse	2		
2-4	BX2011F-10A/QCT73	保险丝	Fuse	4		
2-4	BX2011F-15A/QCT73	保险丝	Fuse	7		
2-4	BX2011F-20A/QCT73	保险丝	Fuse	2		
2-4	BX2011F-25A/QCT73	保险丝	Fuse	4		
2-4	BX2011F-30A/QCT73	保险丝	Fuse	1		
2-5	BX2011A1-30A/QCT73	保险丝	Fuse	2		
2-6	JD109-30A/QC T73	继电器	Relay	1		
2-6	JD1912-40A/QC T73	继电器	Relay	2		√
2-6	JD1927-30A/QC T73	继电器	Relay	9		√
2-7	S3722201	拔片器	Fuse puller	1		
2-8	Q1840620	六角法兰面螺栓	Hex flange bolt	3		√
3	Q1840630	六角法兰面螺栓	Hex flange bolt	1		√
4	S3747120	前洗涤泵电机	Front washer motor	1		
5	S3747130	前大灯喷水电机	Head light water blower	1		

4.04 机舱电器 Electric equipment in engine room

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
6	Q1460616	六角头螺栓、弹簧垫圈和平垫圈组合件	Bolt	4		√
7	S3721200	低音电喇叭	Bass horn	1		√
7-1	S3721220	电子喇叭	Horn	1		
7-2	S3721211	避震片	damper	1		
8	SS3721100	高音电喇叭	Alt horn	1		
8-1	S3721120	电子喇叭	Horn	1		
8-2	S3721111	避震片	damper	1		
9	S3703100	蓄电池总成	Battery assy.	1		
10	Q32006	六角法兰面螺母	Hex flange nut	3		√
11	S3703211	蓄电池压杆	Battery press bar	1		√
12	BAC3703212	蓄电池塑料压块	Battery plastic press plate	2		√
13	S3703213	蓄电池托盘	Battery holder	1		√
14	S3703220	蓄电池支架	Battery bracket	1		√
15	S3703212	蓄电池拉杆	Battery draglink	1		√
16	S3741400	后雨刮电机总成	Rear wiper motor	1		

4.05 全车灯系 Vehicle lights



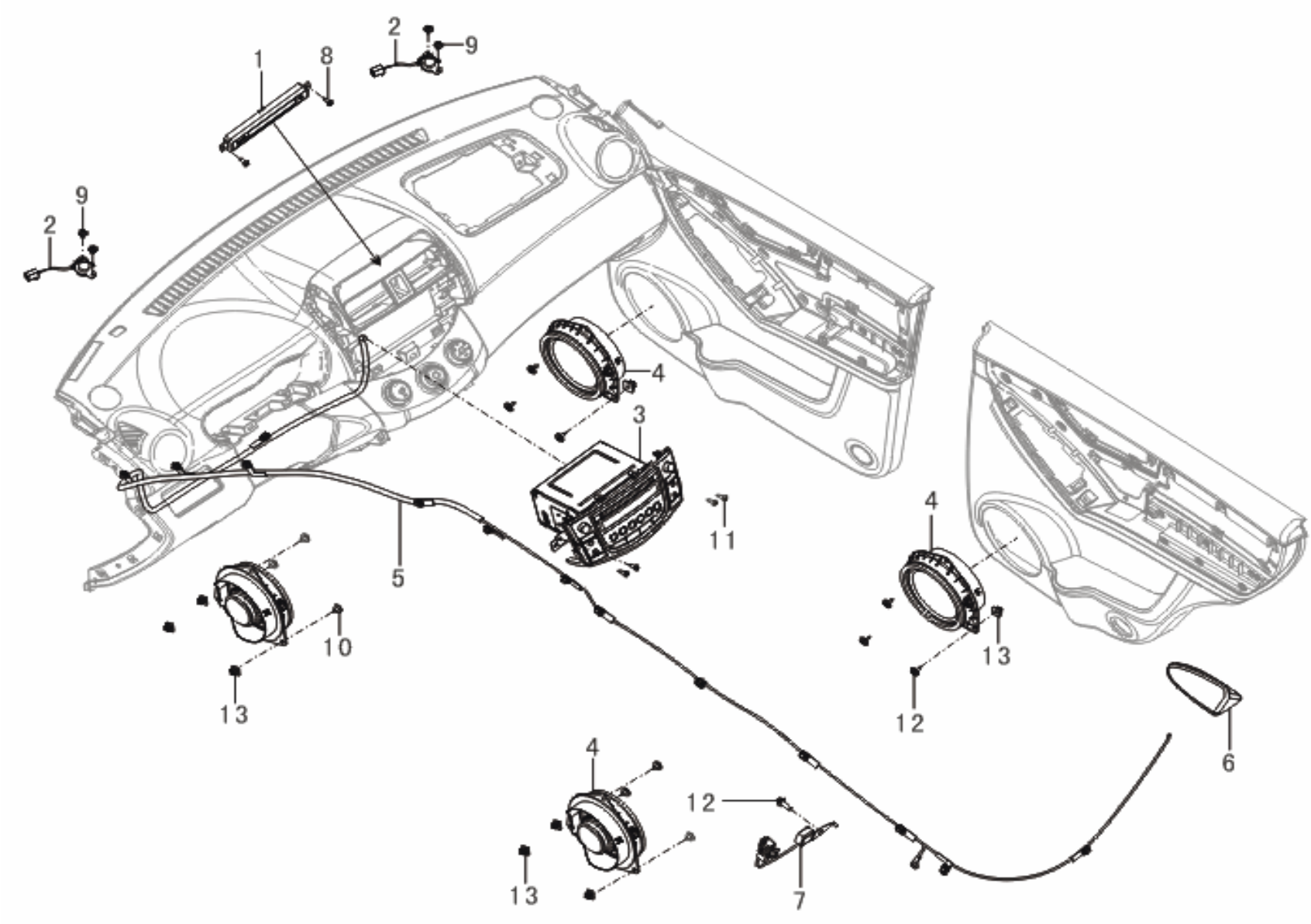
4.05 全车灯系 Vehicle lights

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1	S4131100	门灯	Door lock warning light	4		√
2	S4116100	前雾灯总成	Front fog light	2		√
2-1	H3 12V 55W GB15766.1-2008	灯泡 H3 12V 55W	Bulb	2	Front fog light	
3	S4111100	左前转向灯	Srteering light,left	1		√
3	S4111200	右前转向灯	Srteering light,right	1		√
3-1	PY21W 12V GB15766.1-2008	灯泡PY21W 12V	Bulb	2	steering light	
4	S4121100	左前组合灯	Front left head lamp	1		√
4	S4121200	右前组合灯	Front right head lamp	1		√
4-1	H7 12V GB15766.1-2008	灯泡H7 12V	Bulb	2	low beam	
4-2	H1 12V GB15766.1-2008	灯泡H1 12V	Bulb	2	high beam	
5	S4123100	前顶灯	Front ceiling light	1		√
5-1	W5W 12V GB15766.1-2008	灯泡 W5W 12V	Bulb	2	front ceiling light	
6	S4123200	中顶灯	Middle roof light	2		√
6-1	C5W 12V GB15766.1-2008	灯泡 C5W 12V	Bulb	4	Rear ceiling light	
7	S4134300	高位制动灯	High-mount brake lamp	1		√
8	S4133300	左后组合灯	Left tail lamp	1		√
8	S4133400	右后组合灯	Right tail lamp	1		√
8-1	P21W 12V 21W GB15766.1-2008	灯泡 P21W 12V 21W	Bulb	2	Tail light	
9	S4116300	左后雾灯总成	Rear fog light,left	1		√
9	S4116400	右后雾灯总成	Rear fog light,right	1		√

4.05 全车灯系 Vehicle lights

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
9-1	P21W 12V 21W GB15766.1-2008	灯泡 P21W 12V 21W	Bulb	2	rear fog light	
10	LBU4108100	牌照灯	Lisence plate light	2		√
11	Q32006	六角法兰面螺母	Hex flange nut	12		√
12	Q2714813	十字槽盘头自攻螺钉	Philips self-tapping screw	6		√
13	Q1840616	六角法兰面螺栓	Hex flange bolt	6		√
14	Q2214825	十字槽盘头自攻螺钉和大垫圈组合件	Philips screw with washer	4		√
15	Q2714819	十字槽盘头自攻螺钉-C型	Screw	2		√
16	Q2714816	十字槽盘头自攻螺钉-C型	Screw	6		√

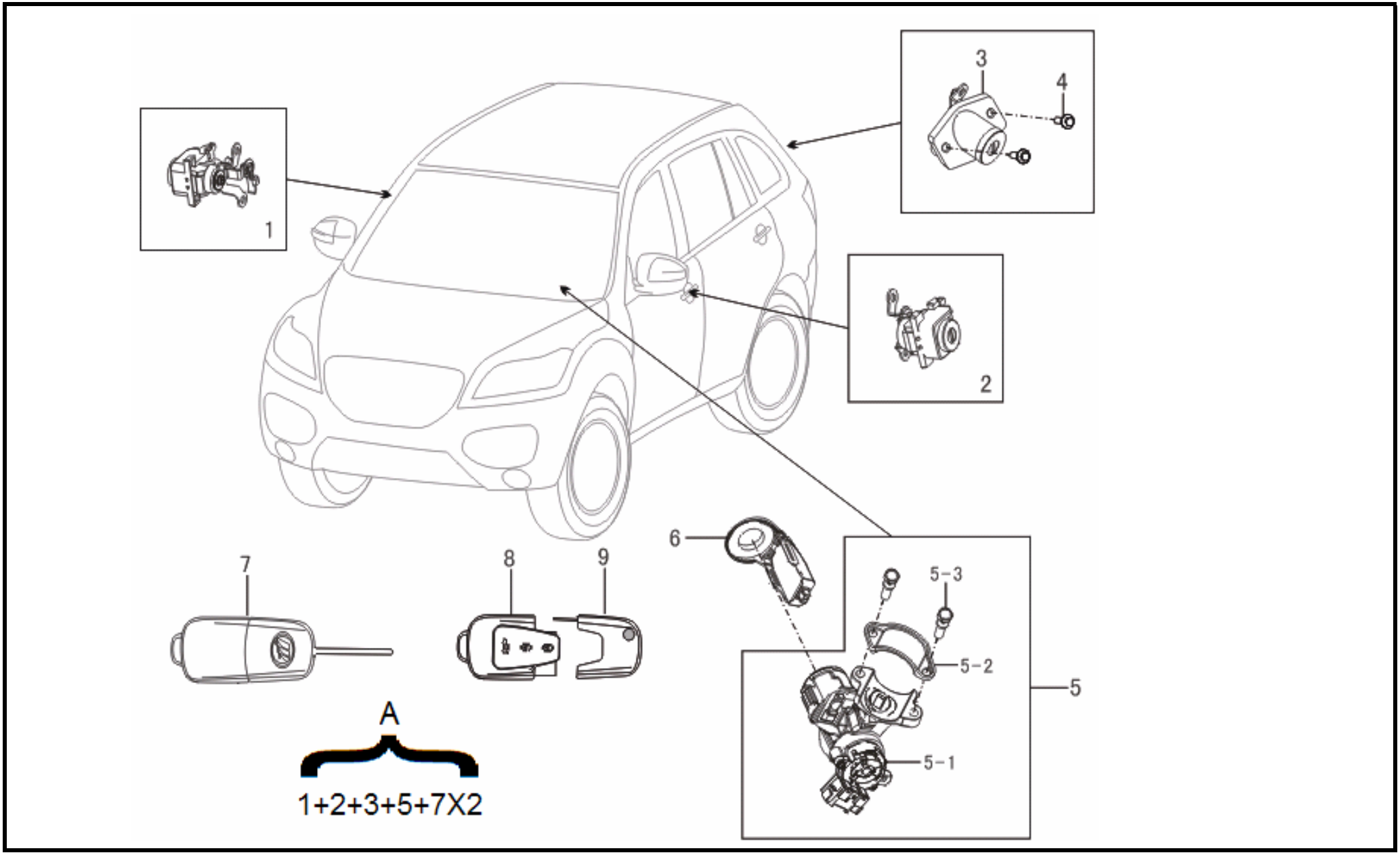
4.06 车用信息通讯与声像装置 Communication system & A/V system



4.06 车用信息通讯与声像装置 Communication system & A/V system

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1	S7935100	车载多功能显示屏	Moniter	1		√
2	S7909200	高音头组件	Alt speaker	2		√
3	S7901500	收音机/CD播放器总成	CD player	1		√
4	S7909100	前置扬声器	Front speaker	4		√
5	S7903140	收音机天线馈线总成	Antenna cable	1		√
6	S7903110	收音机天线体总成	Antenna	1		√
7	B7904310	静噪滤波器及支架	Noise filter	1		√
8	334-0414	十字槽大盘头自攻螺钉	Screw	2		
9	Q2214216	十字槽盘头自攻螺钉和大垫圈组合件	Philips screw with washer	4		√
10	Q2214816	十字槽盘头自攻螺钉和大垫圈组合件	Philips screw with washer	12		√
11	Q2714816	十字槽盘头自攻螺钉	Philips self-tapping screw	4		√
12	Q1800612	六角法兰面承面带齿螺栓	Hex flange bolt	1		√
13	400-0072	方螺母卡扣	Clip	12		√

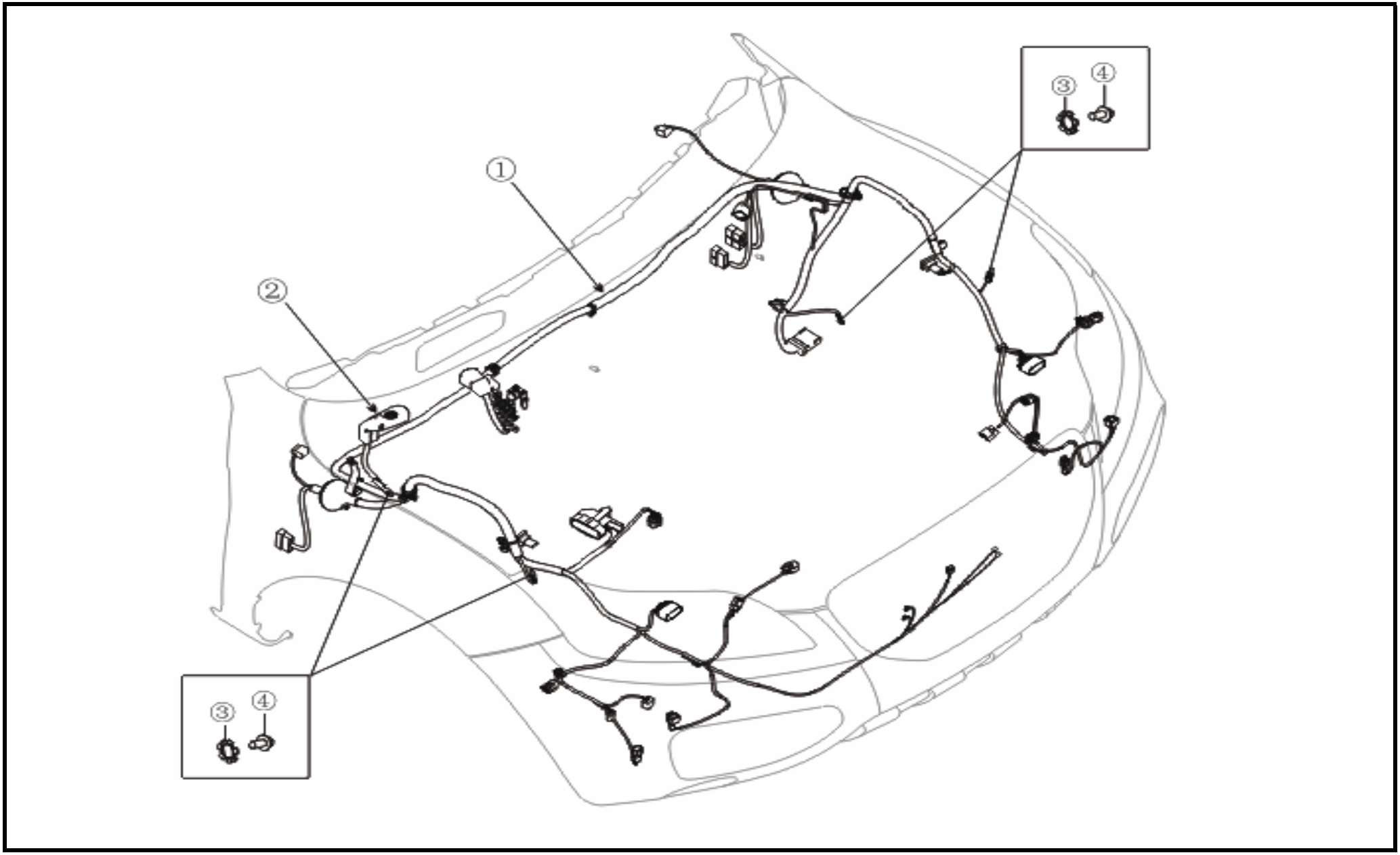
4.07 锁芯 Key and locks



4.07 锁芯 Key and locks

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1	S3704520	右前门锁芯	Lock cylinder，front right door	1		
2	S3704510	左前门锁芯	Lock cylinder，front left door	1		
3	S3704550	后背门锁芯	Lock cylinder，tail door	1		
3	S3704550B1	后背门锁芯	Lock cylinder，tail door	1		
4	Q1840612	六角法兰面螺栓	Hex flange bolt	2		√
5	S3704100	点火开关组件	Ignition switch assy.	1		
5-1	S3704110	点火开关	Ignition switch	1		
5-2	S3704161	轴盖	Ignition switch cap	1		
5-3	S3704162	防盗螺栓	Ignition switch bolt	2		
6	B3704300	点火开关光圈	Ignition decoration	1		√
7	S3704200	钥匙组件	Key	1		
8	S3674300	遥控手柄	remote controller	2		
9	S3704230	折叠钥匙	Foldable key	2		√
A	SS37001	钥匙锁芯维修包	Key and lock cylinders	1		√

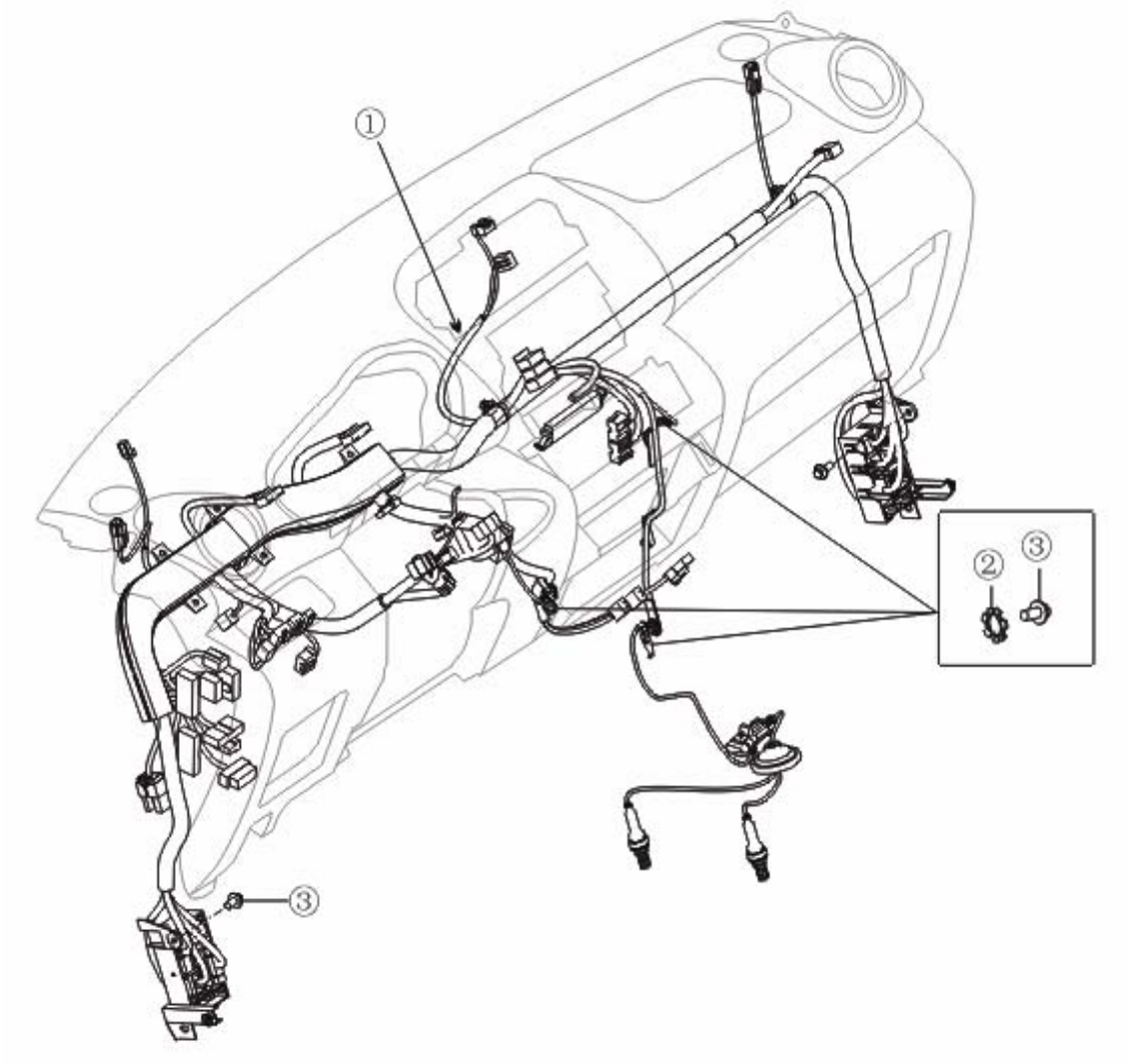
4.08 发动机舱线束 Cable in engine room



4.08 发动机舱线束 Cable in engine room

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1	S4001500	发动机舱线束	Engine cable	1		
2	S4001350	蓄电池负极线	Battery negative cable	1		
3	Q41206	外锯齿锁紧垫圈	External teeth serrated lock washer	4		√
4	Q1840616	六角法兰面螺栓	Hex flange bolt	4		√

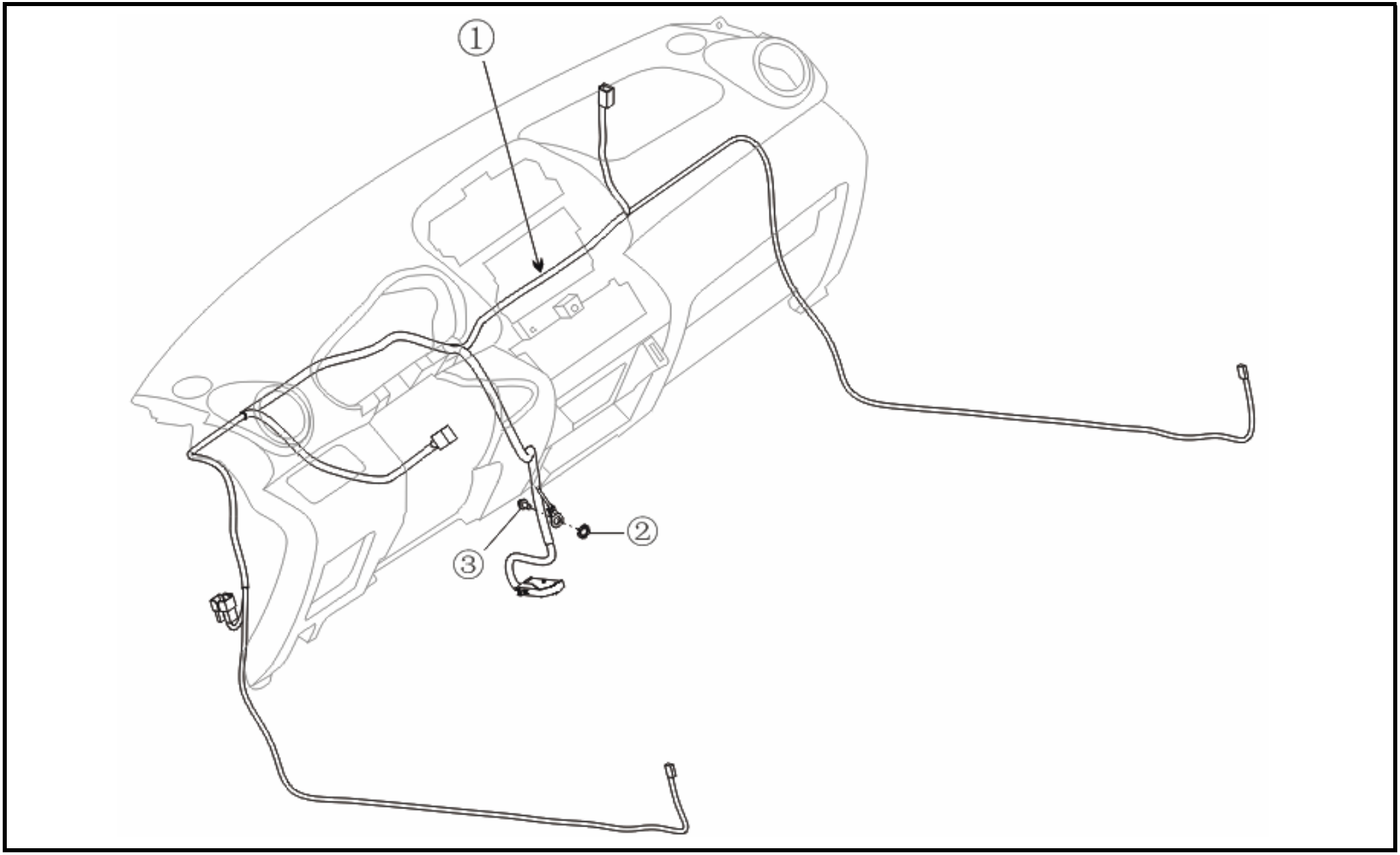
4.09 仪表板线束 Dashborad cable



4.09 仪表板线束 Dashborad cable

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1	S4003100	仪表板线束	Dashboard cable	1		
2	Q41206	外锯齿锁紧垫圈	External teeth serrated lock washer	3		√
3	Q1840616	六角法兰面螺栓	Hex flange bolt	5		√

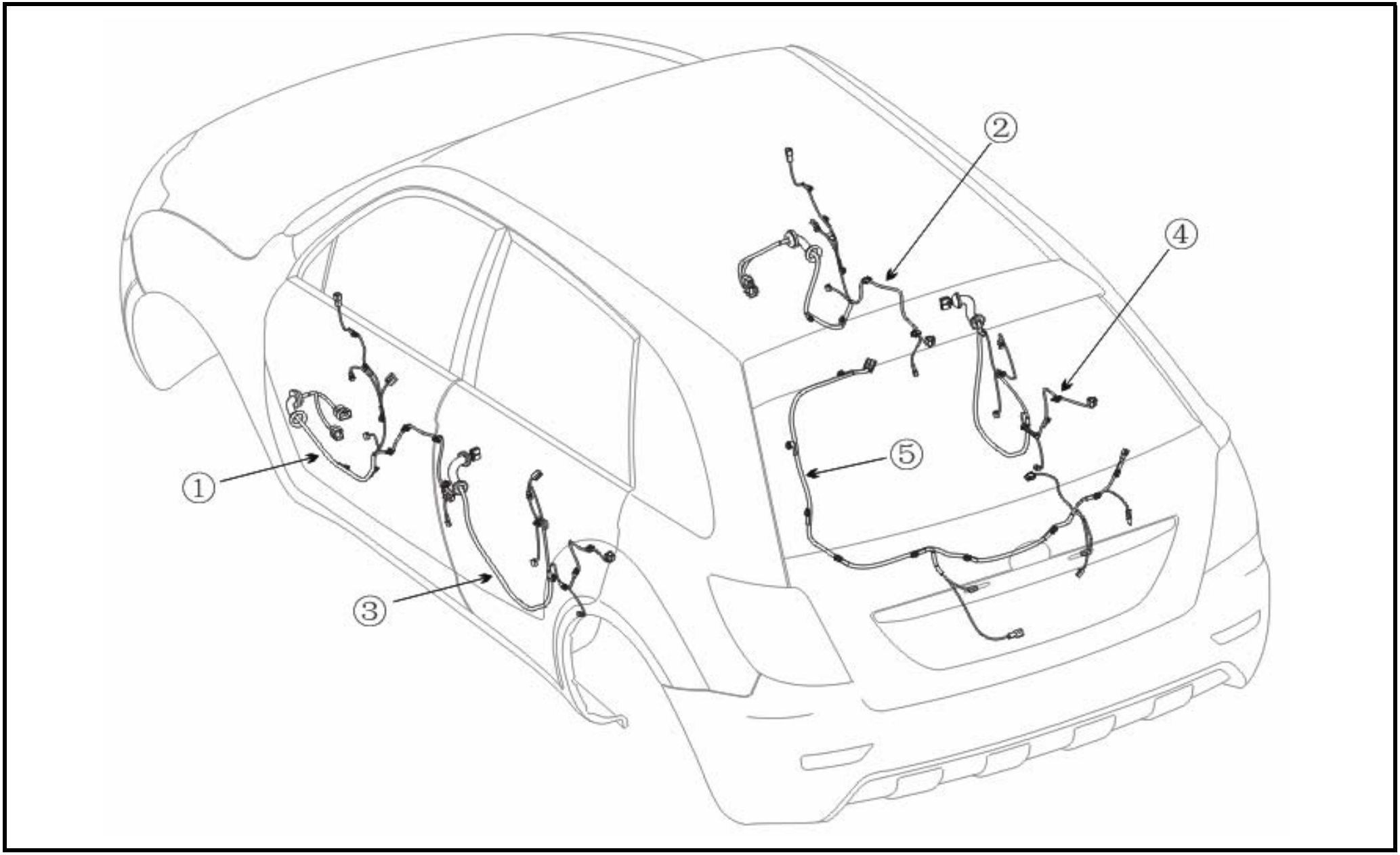
4.10 安全气囊线束 SRS cable



4.10 安全气囊线束 SRS cable

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1	S4003600	仪表板SRS线束	SRS cable(Airbag cable)	1		
2	Q41206	外锯齿锁紧垫圈	External teeth serrated lock washer	1		√
3	Q1840616	六角法兰面螺栓	Hex flange bolt	1		√

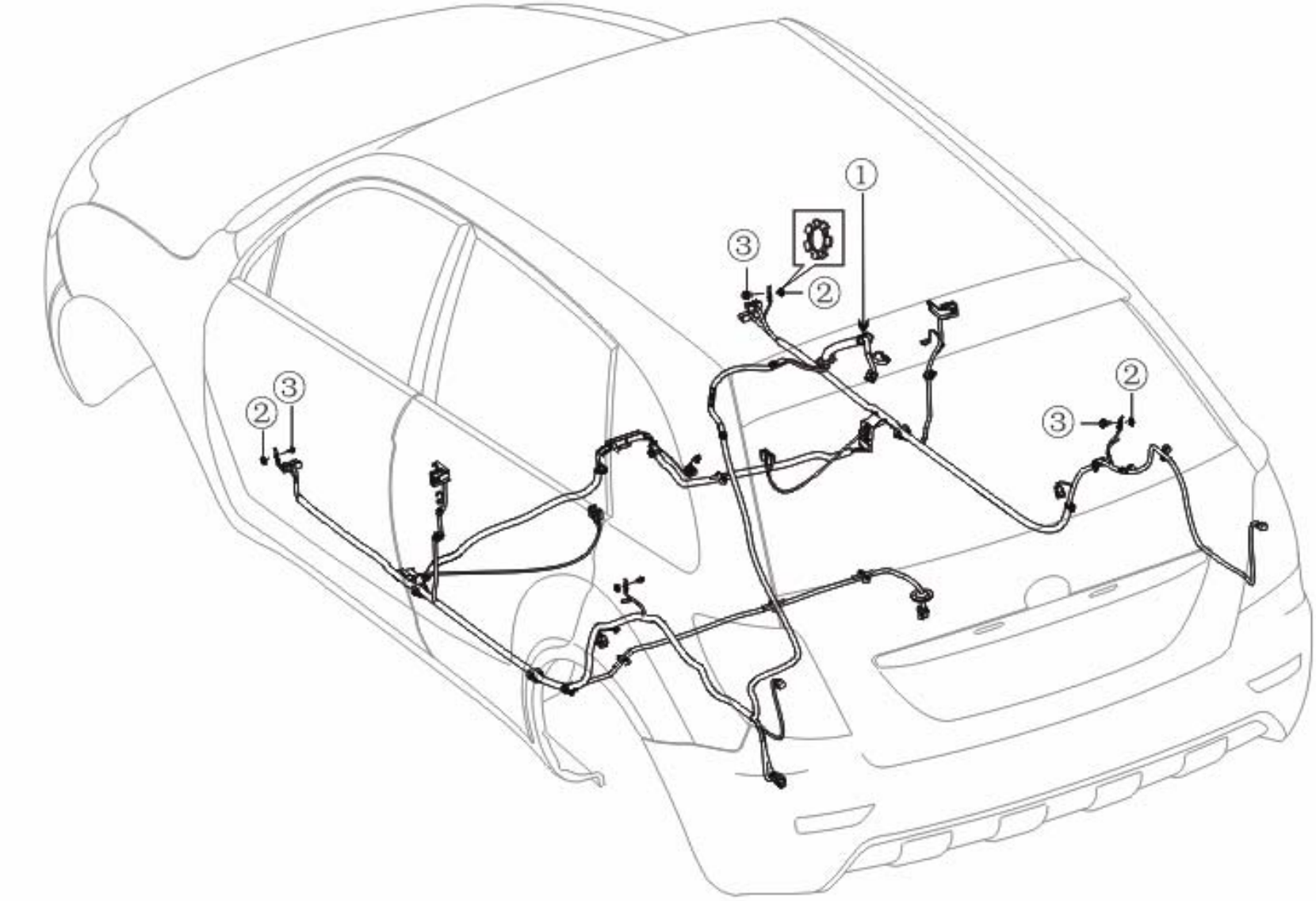
4.11 车门线束 Vehicle door cable



4.11 车门线束 Vehicle door cable

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1	S4006100	左前门线束	Front left door harness	1		
2	S4006200	右前门线束	Front right door harness	1		
3	S4006300	左后门线束	Rear left door harness	1		
4	S4006400	右后门线束	Rear right door harness	1		
5	S4006600	后厢门线束	Tail door cable	1		

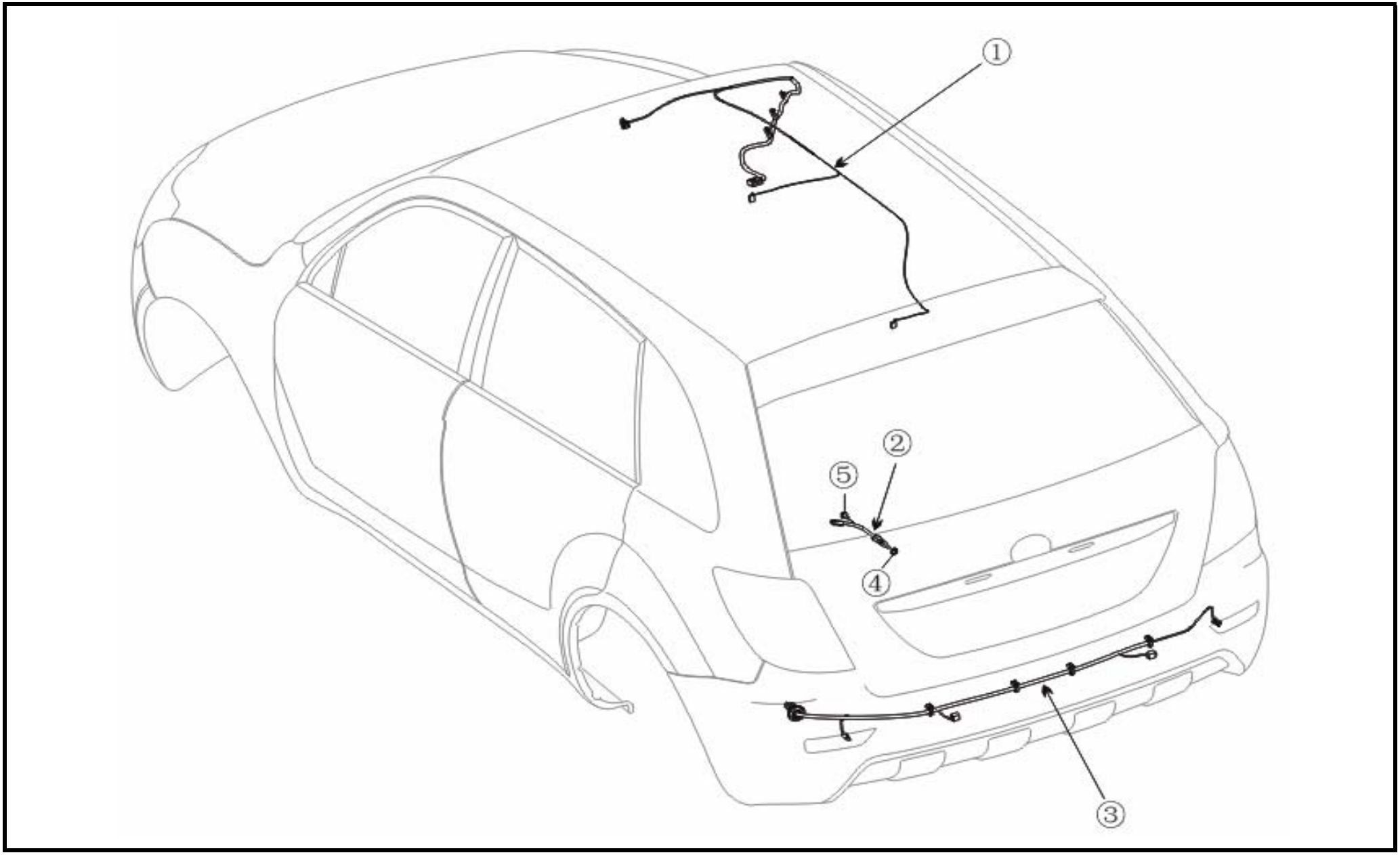
4.12 车身线束 Body cable



4.12 车身线束 Body cable

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1	S4002100	车身线束	Body cable	1		
2	Q41206	外锯齿锁紧垫圈	External teeth serrated lock washer	4		√
3	Q1840616	六角法兰面螺栓	Hex flange bolt	4		√

4.13 后保险杠、除霜、顶棚线束 Other cables

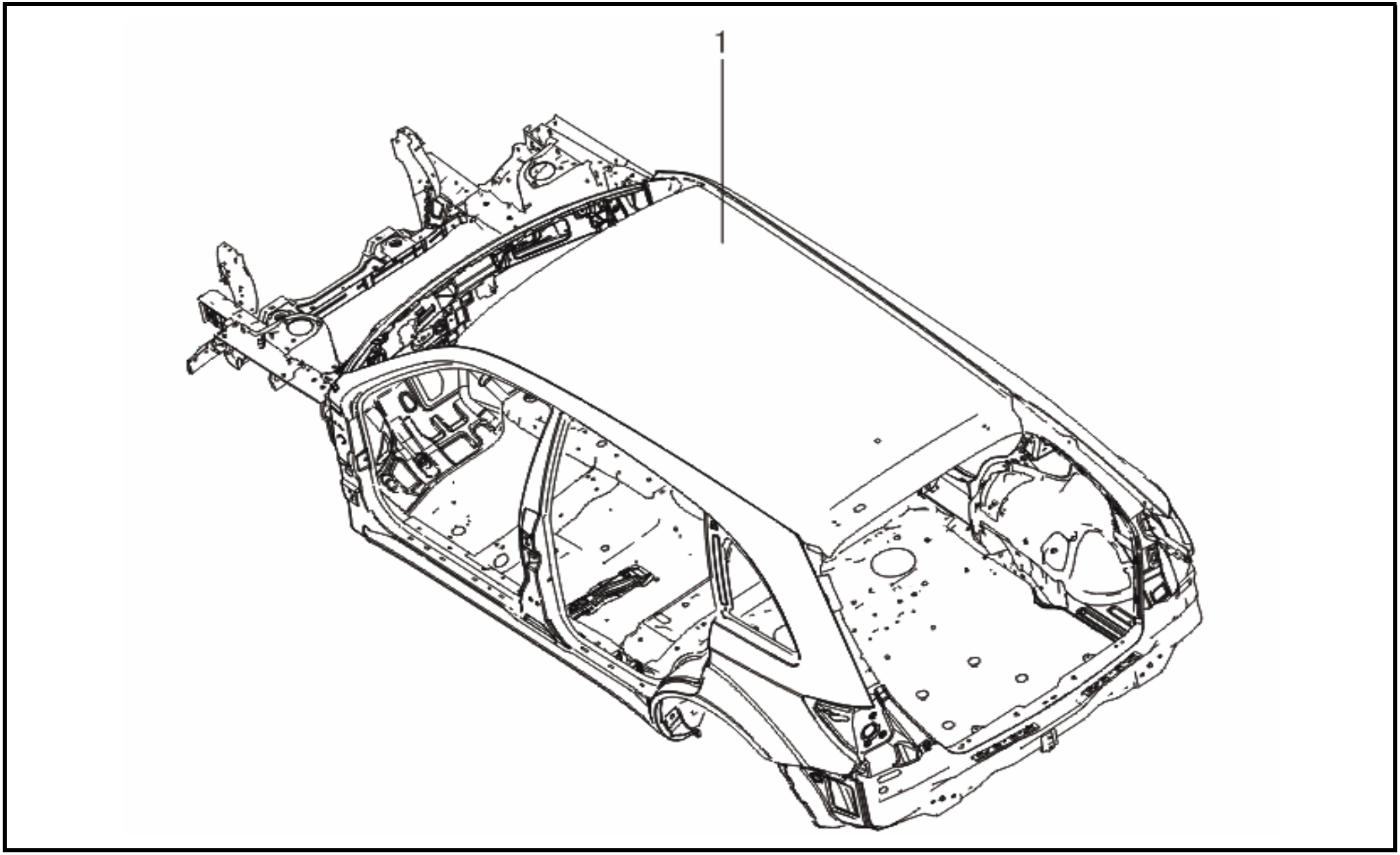


4.13 后保险杠、除霜、顶棚线束 Other cables

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1	S4005100	顶棚线束	Roof cable	1		
2	S4002020	后除霜接地线	Defroster cable	1		
3	S4002800	后保险杠线束	Rear bumper cable	1		
4	Q41206	外锯齿锁紧垫片	Washer	1		√
5	Q1840616	六角法兰面螺母	Hex flange nut	1		√

5.Vehicle body

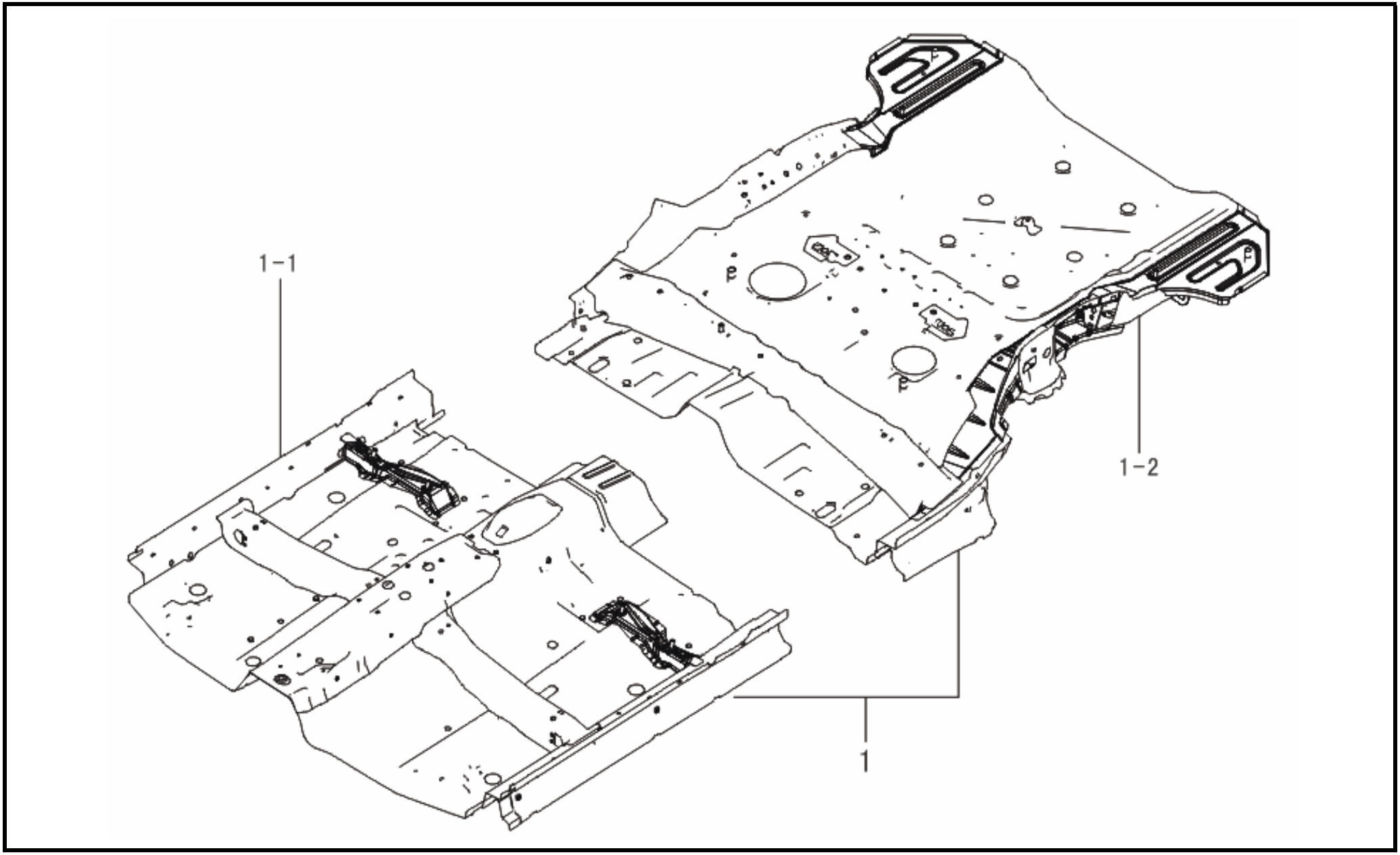
5.01 白车身焊接总成 Vehicle body



5.01 白车身焊接总成 Vehicle body

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1	S5009	白车身焊接总成	Vehicle body assy.	1		
1	S5009B1	白车身焊接总成	Vehicle body assy.		for sunroof edition	

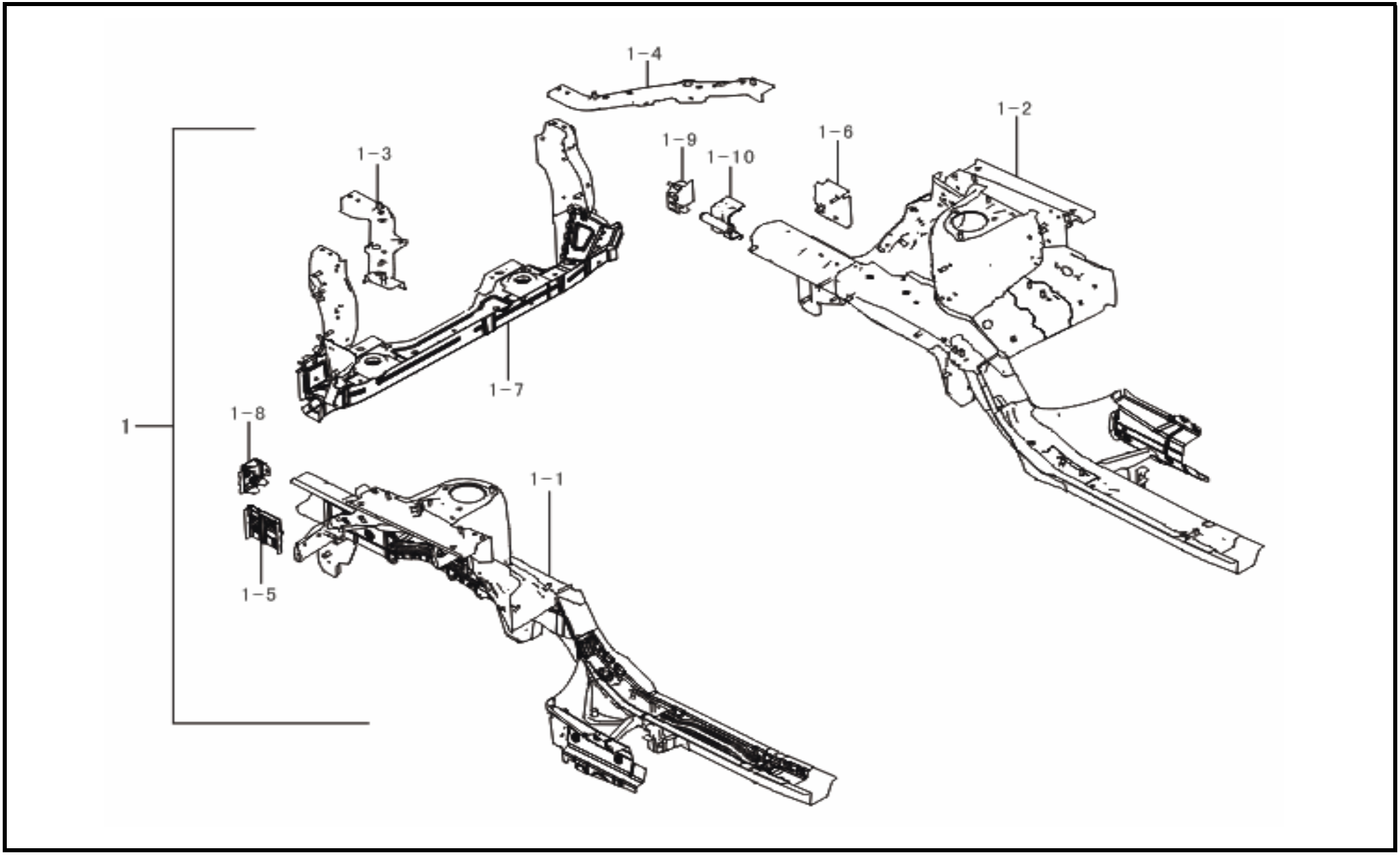
5.02 地板总成 Floor



5.02 地板总成 Floor

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1	S5100000	车身地板总成	vehicle floor assy.	1		
1-1	S5120000	前地板总成	Front floor	1		
1-2	S5130000	地板后部总成	Rear floor	1		

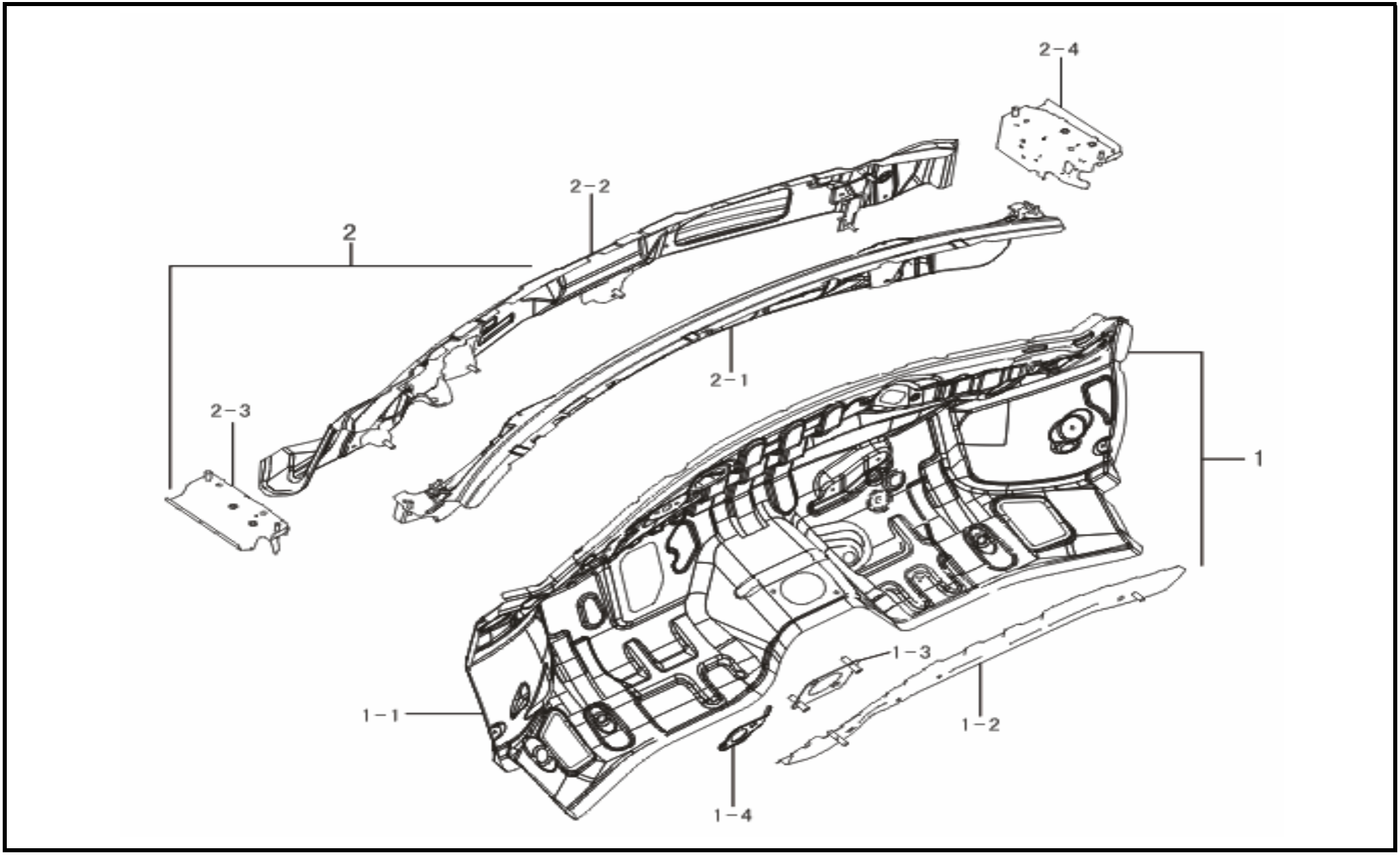
5.03 车前钣金总成 Front damper



5.03 车前钣金总成 Front damper

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1	S8400000	车前钣金总成	Front body assy.	1		
1-1	S8400010	左前轮罩纵梁总成	Left front longeron and wheel cap assy.	1		
1-2	S8400020	右前轮罩纵梁总成	Right front longeron and wheel cap assy.	1		
1-3	S8400030	水箱上横梁左连接板组件	Radiator upper beam connecting plate，left	1		
1-4	S8400040	水箱上横梁右连接板组件	Radiator upper beam connecting plate，right	1		
1-5	S8400051	左前纵梁外板前段	Left front longeron fore part	1		
1-6	S8400061	右前纵梁外板前段	Right front longeron fore part	1		
1-7	S8401200	水箱下横梁总成	Radiator lower beam	1		
1-8	S8412500	左前纵梁前封板组件	Left front longeron end part	1		
1-9	S8422510	右前纵梁前封板组件	Right front longeron end part	1		
1-10	S8422500	拖车勾总成	Trailer hook	1		

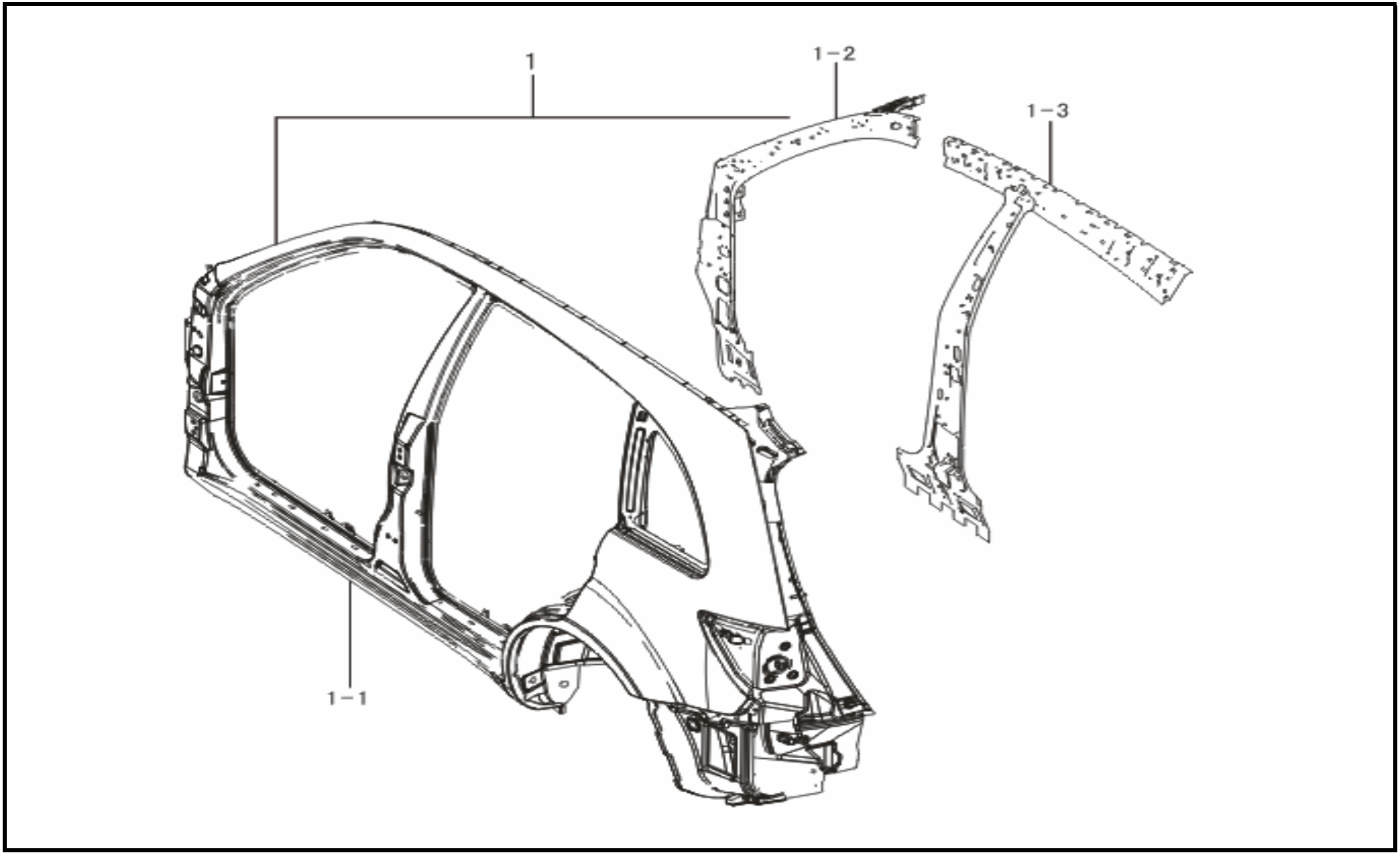
5.04 前围 Front cowl



5.04 前围 Front cowl

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1	S5302000	前围板总成	Front cowl assy.	1		
1-1	S5302100	前围板组件	Front cowl	1		
1-2	S5302010	前围板加强板组件	Front cowl stiffening plate	1		
1-3	S5302012	制动踏板支架加强板	Brake pedal bracket	1		
1-4	S5302013	离合踏板加强板	Clutch pedal bracket	1		
2	S5301000	前围板上横梁总成	Front cowl upper beam assy.	1		
2-1	S5301100	前围板上横梁内板总成	Front cowl upper beam，inner	1		
2-2	S5301200	前围板上横梁外板总成	Front cowl upper beam，outer	1		
2-3	S5301300	发动机罩左铰链安装板总成	Engine hood hinge plate，left	1		
2-4	S5301400	发动机罩右铰链安装板总成	Engine hood hinge plate，right	1		

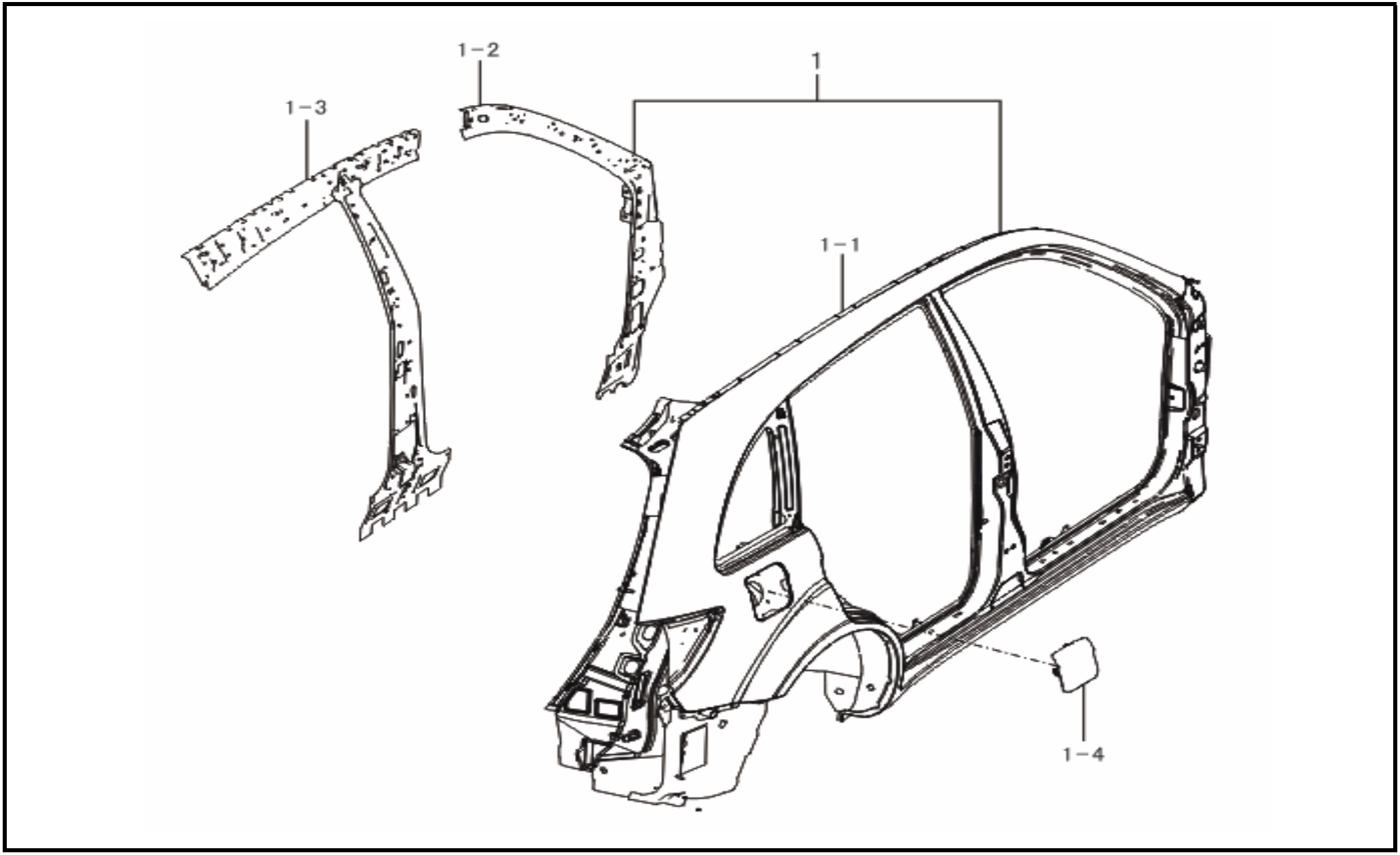
5.05 左侧围 Left cowl



5.05 左侧围 Left cowl

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1	S5401010	左侧围总成	Left cowl assy.	1		
1-1	S5401100	左侧围外板总成	Left cowl outer plate	1		
1-2	S5401500	左A柱内板总成	A pillar inner plate，left	1		
1-3	S5401700	左B柱内板总成	B pillar inner plate，left	1		

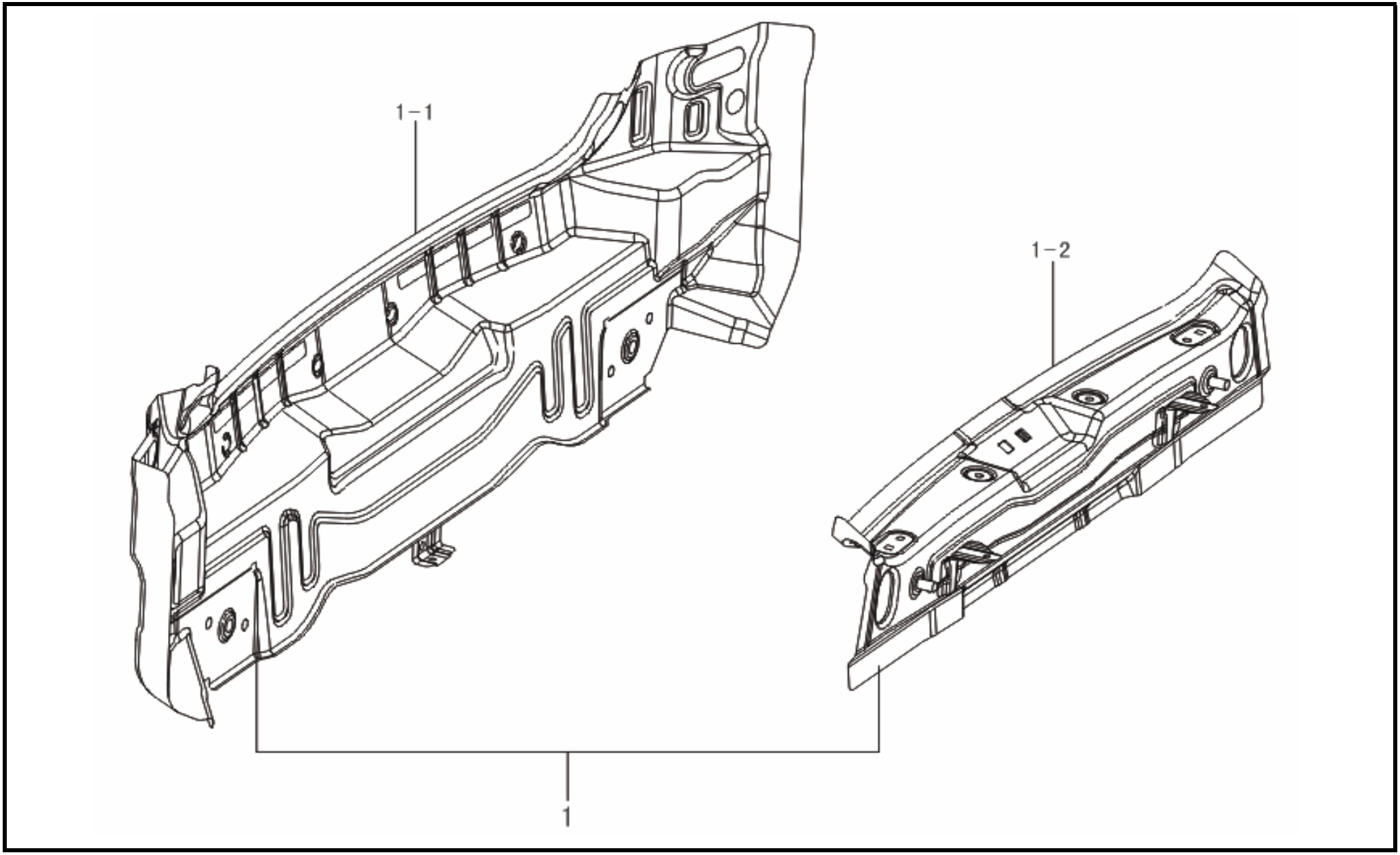
5.06 右侧围 Right cowl



5.06 右侧围 Right cowl

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1	S5401020	右侧围总成	Right cowl assy.	1		
1-1	S5401200	右侧围外板总成	Right cowl outer plate	1		
1-2	S5401600	右A柱内板总成	A pillar inner plate，right	1		
1-3	S5401800	右B柱内板总成	B pillar inner plate，right	1		
1-4	S5401900	加油口盖总成	Fuel filler cap	1		

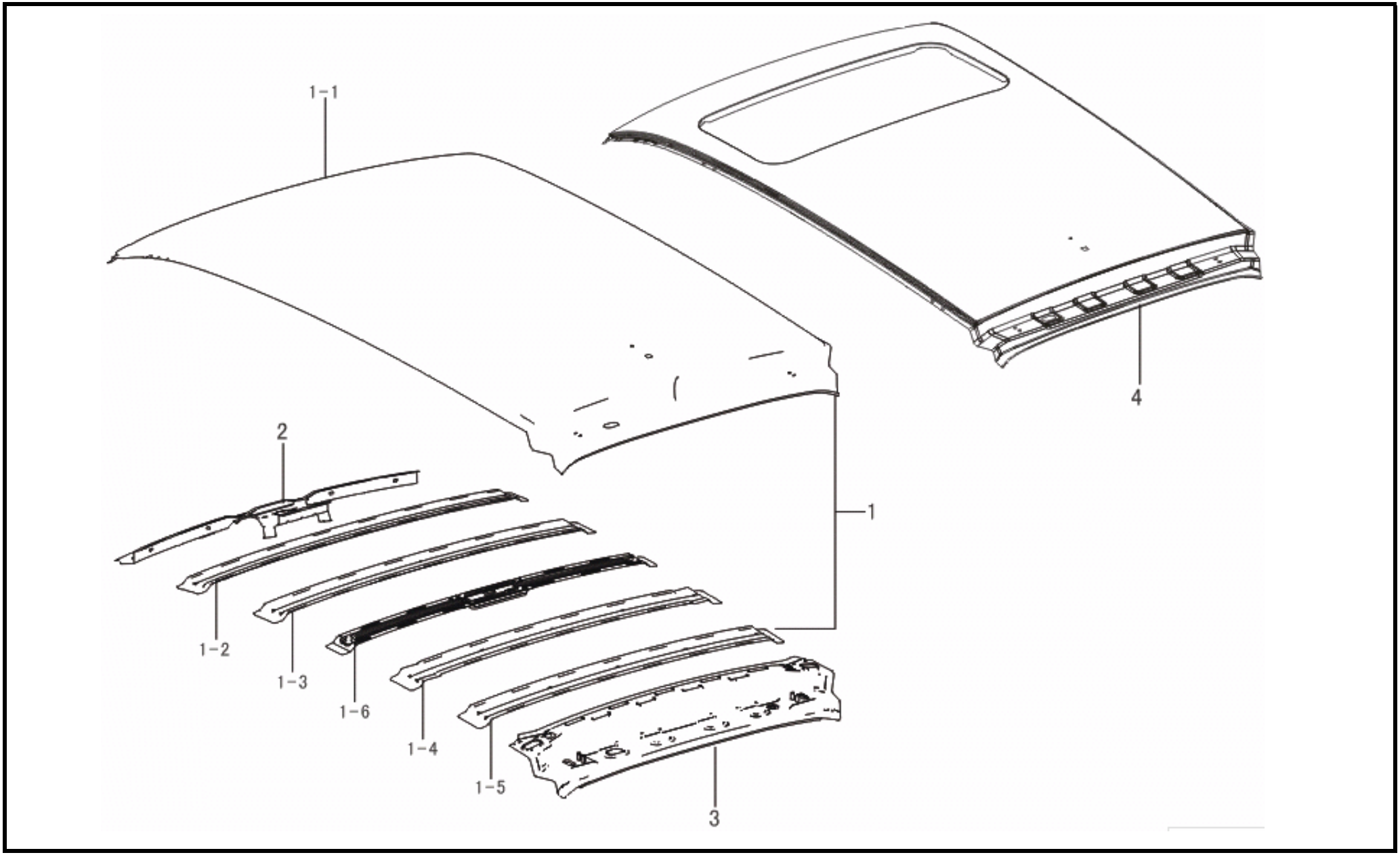
5.07 后围 Rear cowl



5.07 后围 Rear cowl

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1	S5601100	后围板总成	Rear cowl assy.	1		
1-1	S5601200	后围外板总成	Rear cowl outer plate	1		
1-2	S5601300	后围内板总成	Rear cowl inner plate	1		

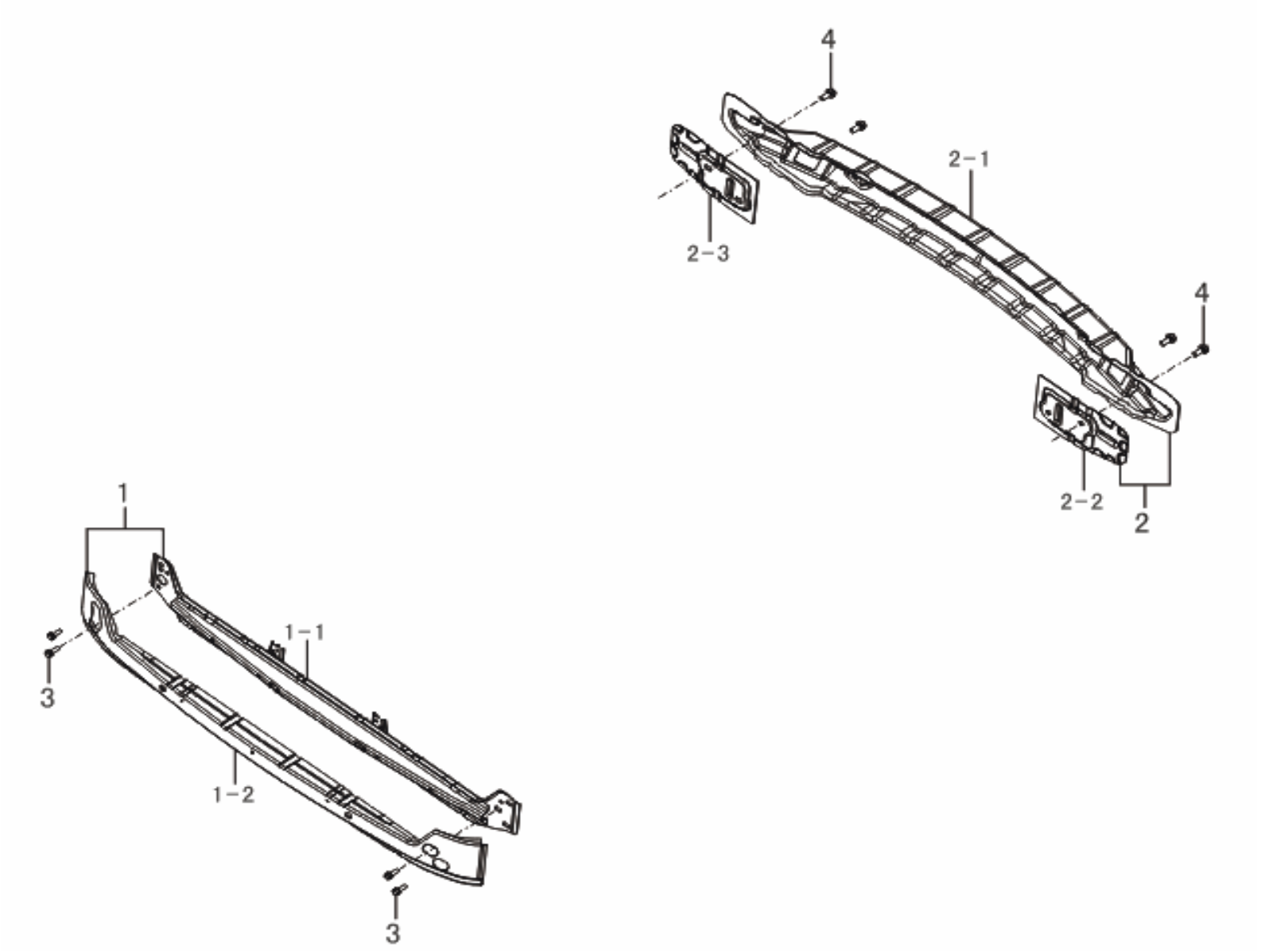
5.08 顶盖 Roof



5.08 顶盖 Roof

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1	S5701100	顶盖外板总成	Roof panel assy.	1		
1-1	S5701101	顶盖外板	Roof panel	1		
1-2	S5701102	顶盖横梁Ⅰ	Roof beam 1	1		
1-3	S5701103	顶盖横梁Ⅱ	Roof beam 2	1		
1-4	S5701104	顶盖横梁Ⅲ	Roof beam 3	1		
1-5	S5701105	顶盖横梁Ⅳ	Roof beam 4	1		
1-6	S5701110	顶盖中间横梁总成	Roof middle beam	1		
2	S5701200	顶盖前横梁总成	Roof front beam	1		
3	S5701300	顶盖后横梁总成	Roof rear beam	1		
4	S5701100B1	顶盖外板总成	Roof panel assy.	1	for sunroof edition	

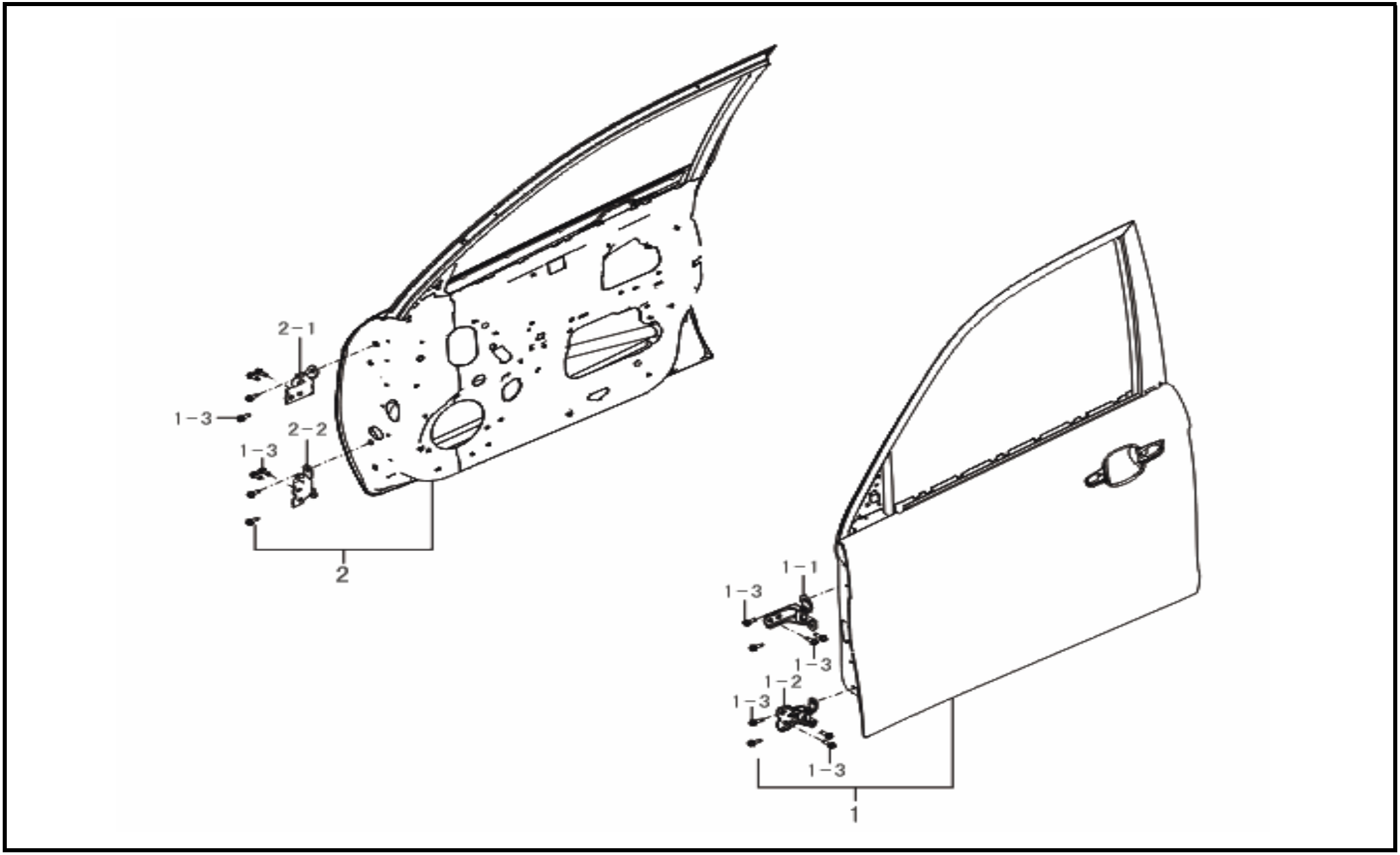
5.09 前后防撞横梁 Anti-collision beam



5.09 前后防撞横梁 Anti-collision beam

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1	S2803200	前防撞梁总成	Front anti-collision beam assy.	1		
1-1	S2803210	前防撞横梁内板总成	Inner plate,front anti-collision beam	1		
1-2	S2803230	前防撞横梁外板组件	Outer plate,front anti-collision beam	1		
2	S2804200	后防撞梁总成	Rear anti-collision beam assy.	1		
2-1	S2804211	后防撞梁外板	Outer plate,rear anti-collision beam	1		
2-2	S2804213	后防撞梁左安装支架	Rear anti-collision beam bracket,left	1		
2-3	S2804214	后防撞梁右安装支架	Rear anti-collision beam bracket,right	1		
3	Q1400825	六角头螺栓和平垫圈组合件	Hex bolt，taper springiness washer and flat washer	4		√
4	Q1401025	六角头螺栓和平垫圈组合件	Hex bolt，taper springiness washer and flat washer	4		

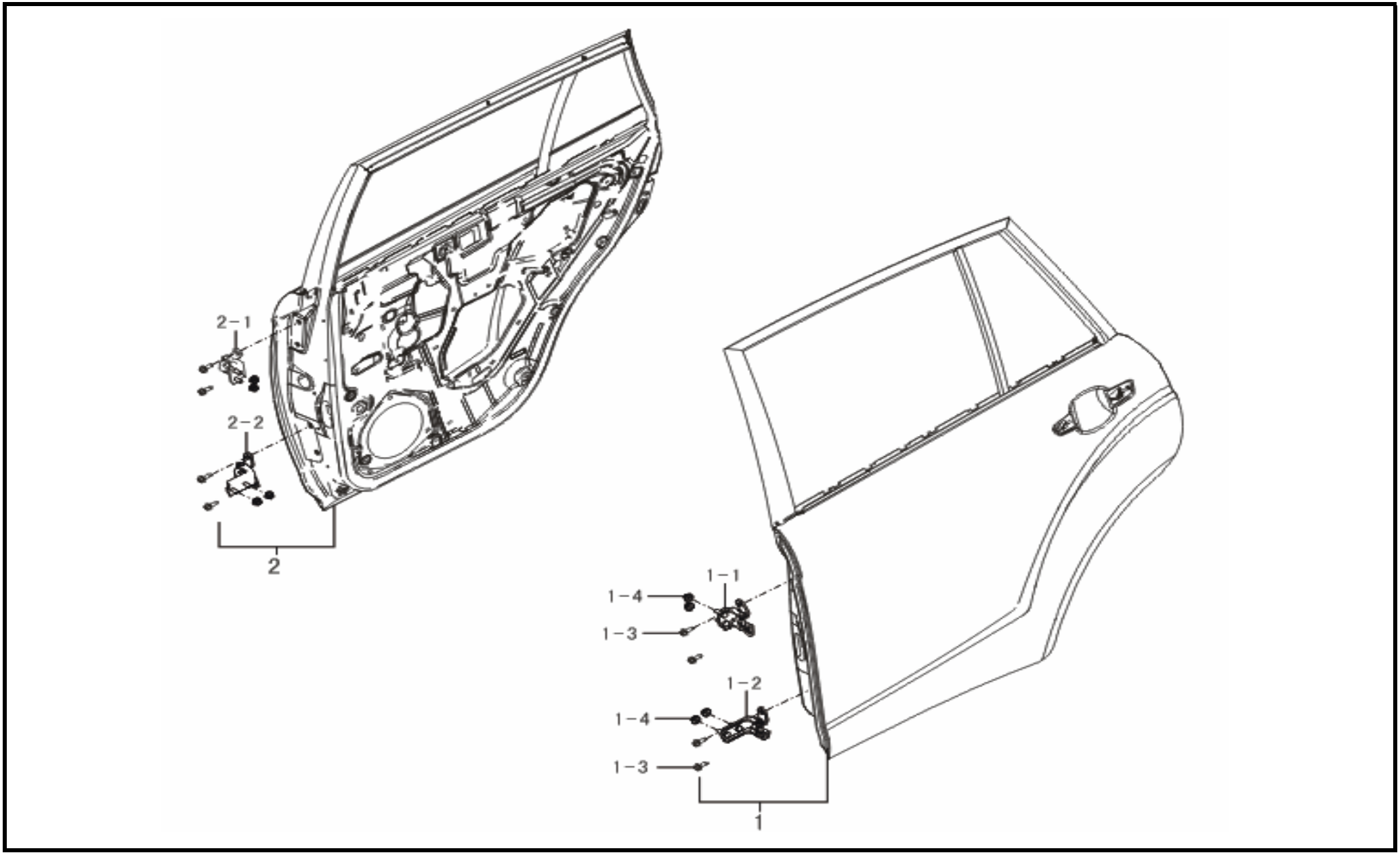
5.10 前车门 Front door



5.10 前车门 Front door

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1	S6101001	左前侧车门总成	Front left door assy.	1		
1-1	S6106110	左前车门上铰链	Front left door hinge，upper	1		√
1-2	S6106120	左前车门下铰链	Front left door hinge，lower	1		√
1-3	Q1840825TF2	六角法兰面螺栓	Hex flange bolt	16		
2	S6101002	右前侧车门总成	Front right door assy.	1		
2-1	S6106210	右前车门上铰链	Front right door hinge，upper	1		√
2-2	S6106220	右前车门下铰链	Front right door hinge，lower	1		√

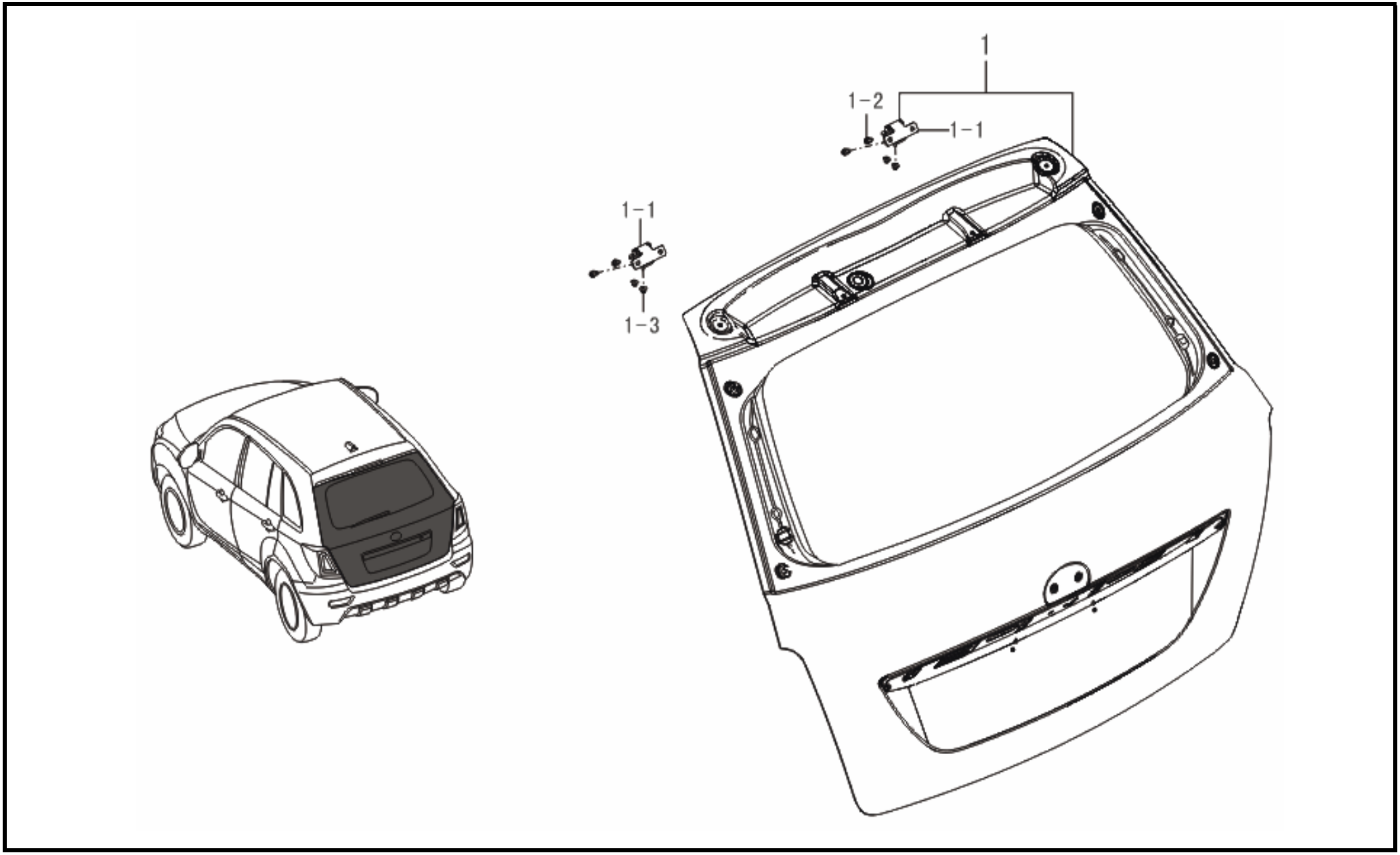
5.11 后侧车门 Rear door



5.11 后侧车门 Rear door

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1	S6201001	左后侧车门总成	Rear left door assy.	1		
1-1	S6206110	左后车门上铰链	Rear left door hinge，upper	1		√
1-2	S6206120	左后车门下铰链	Rear left door hinge，lower	1		√
1-3	Q1840825TF2	六角法兰面螺栓	Hex flange bolt	8		
1-4	Q32008	六角法兰面螺母	Hex flange nut	8		√
2	S6201002	右后侧车门总成	Rear right door assy.	1		
2-1	S6206210	右后车门上铰链	Rear right door hinge，upper	1		√
2-2	S6206220	右后车门下铰链	Rear right door hinge，lower	1		√

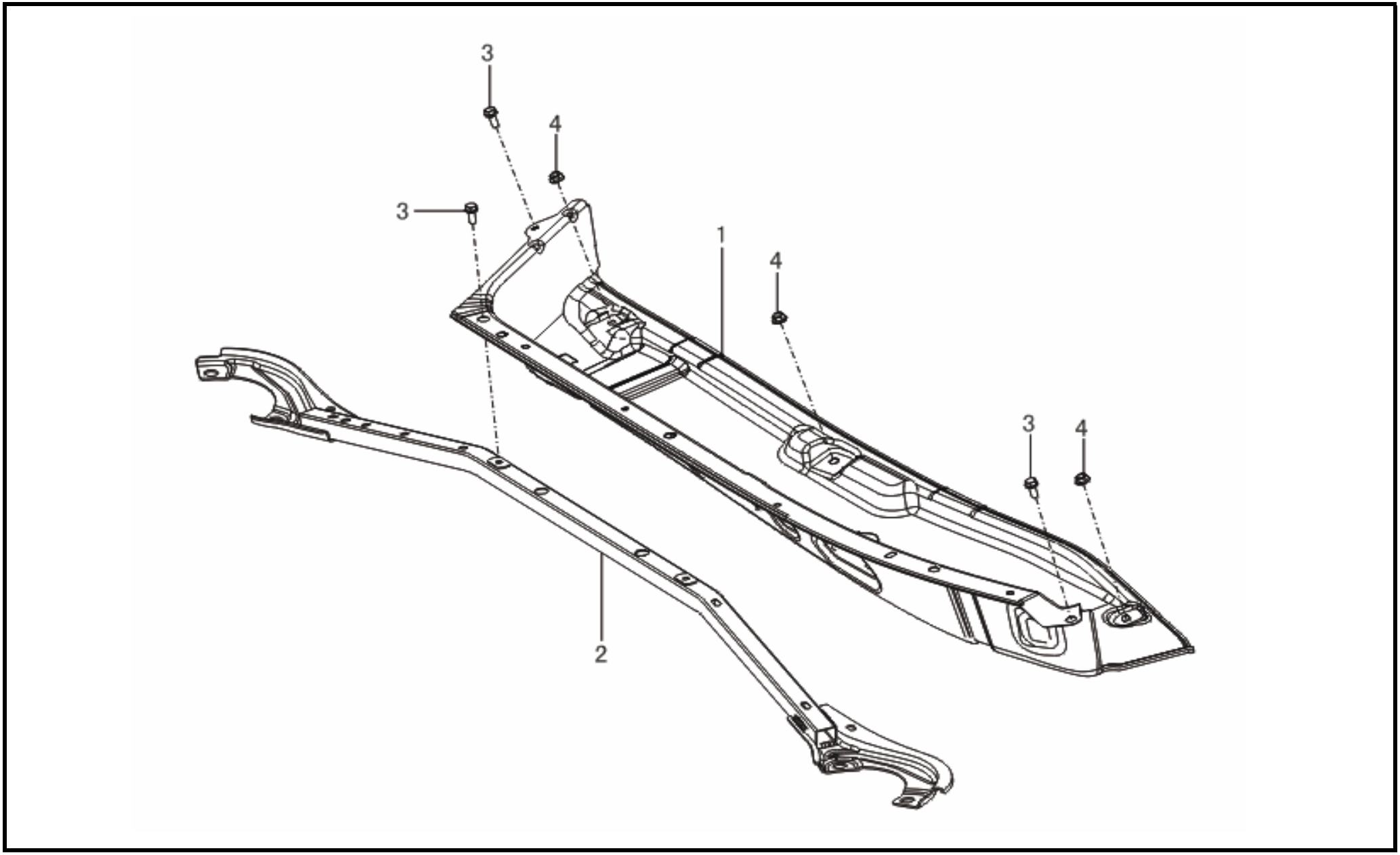
5.12 后背门 Tail door



5.12 后背门 Tail door

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1	S6301000	后背门总成	Tail door assy.	1		
1-1	S6306110	后背门铰链	Tail door hinge	1		√
1-2	S6306101	六角头螺栓弹簧垫圈和平垫圈组合件	Bolt	4		
1-3	Q32206L	六角法兰面螺母	Hex flange nut	4		

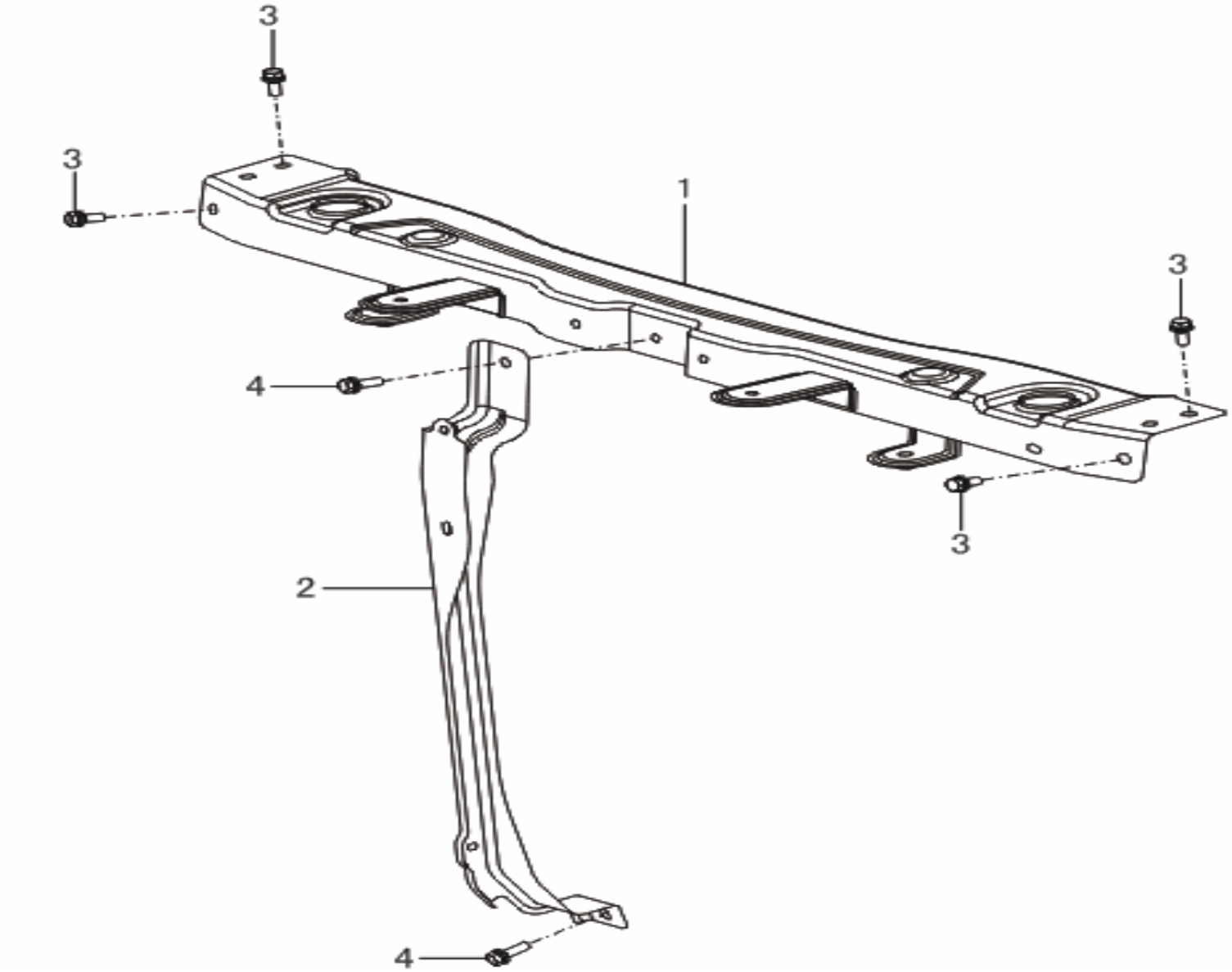
5.13 刮水器安装舱 Wiper fixing panel



5.13 刮水器安装舱 Wiper fixing panel

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1	S8400700	刮水器安装舱总成	Wiper fixing panel	1		
2	S8400800	刮水器安装舱托架总成	Wiper fixing panel bracket	1		
3	Q1400616	六角头螺栓和平垫圈组合件	Hex bolt，taper springiness washer and flat washer	3		√
4	Q32006	六角法兰面螺母	Hex flange nut	3		√

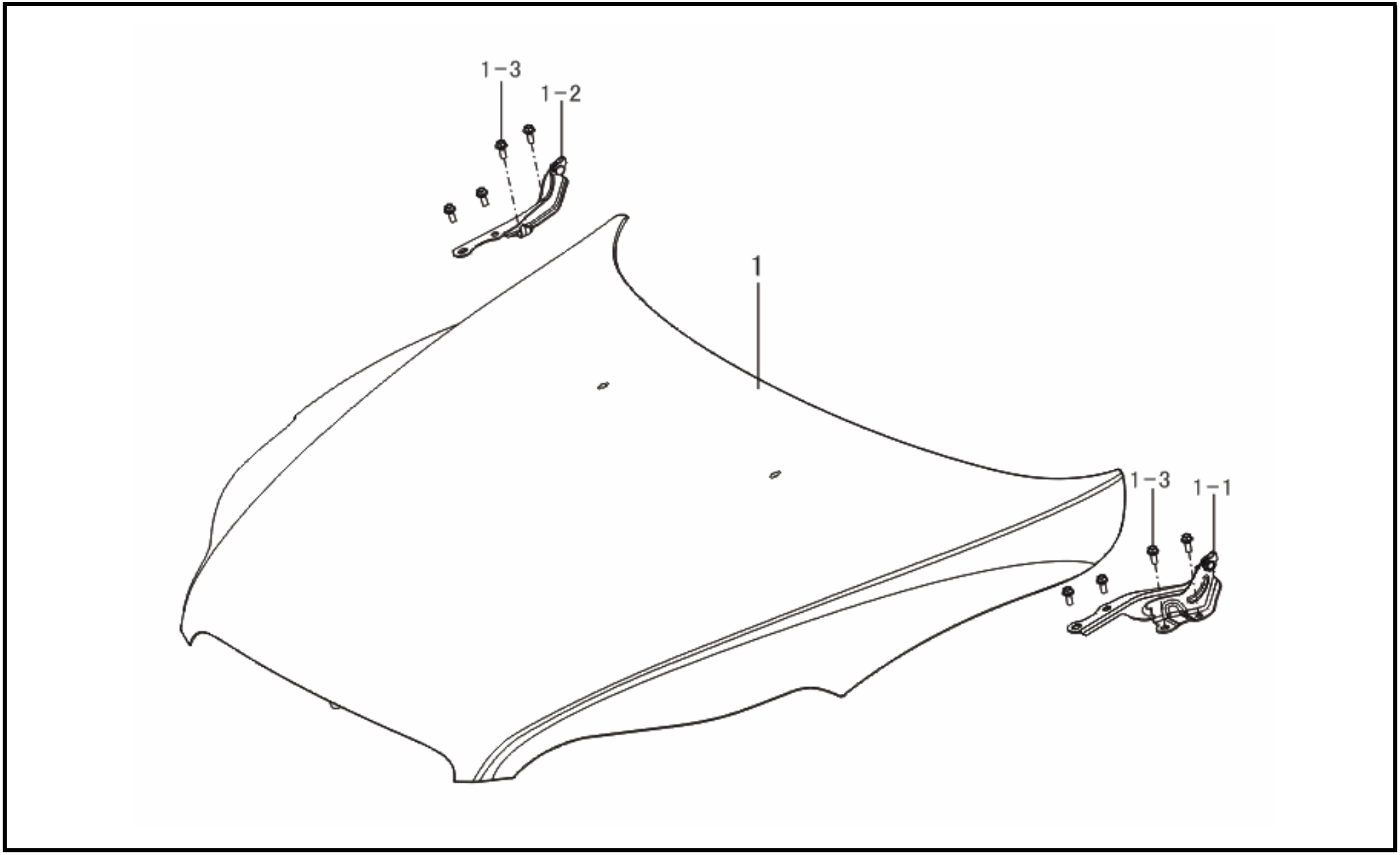
5.14 水箱上横梁 Radiator upper beam



5.14 水箱上横梁 Radiator upper beam

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1	S8401100	水箱上横梁总成	Radiator upper beam	1		
2	S8401030	水箱上横梁中支架组件	Radiator upper beam bracket	1		
3	Q1460616	六角头螺栓、弹簧垫圈和平垫圈组合件	Bolt	4		√
4	Q1460620	六角头螺栓平垫圈组合件	Bolt	2		√

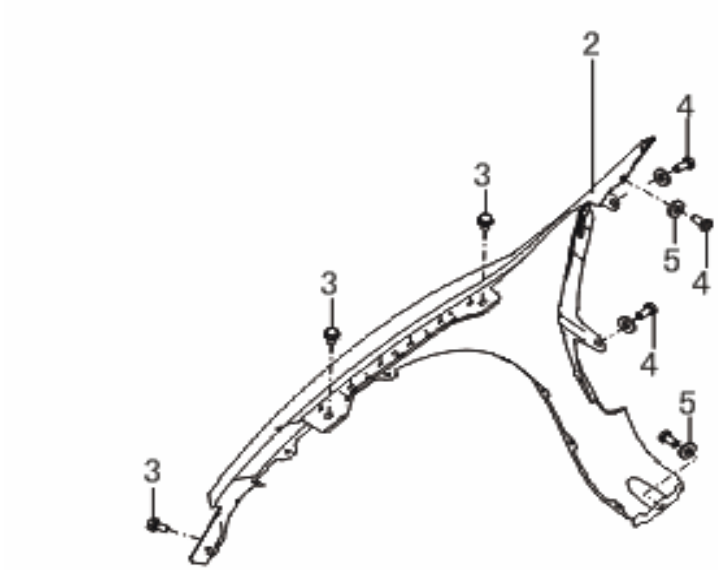
5.15 发动机罩 Engine hood

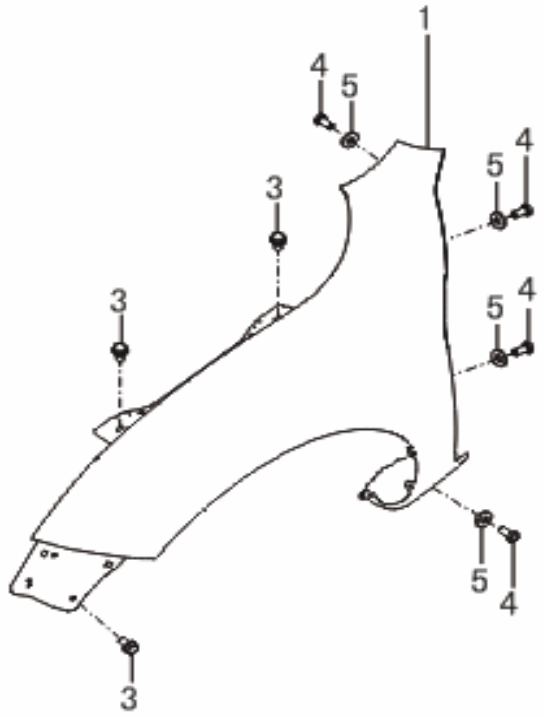


5.15 发动机罩 Engine hood

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1	S8402000	发动机罩总成	Engine hood	1		
1-1	S8402410	发动机罩左铰链总成	Engine hood hinge，left	1		
1-2	S8402420	发动机罩右铰链总成	Engine hood hinge，right	1		
1-3	Q1840820	六角法兰面螺栓	Hex flange bolt	8		√

5.16 翼子板　Front side fender



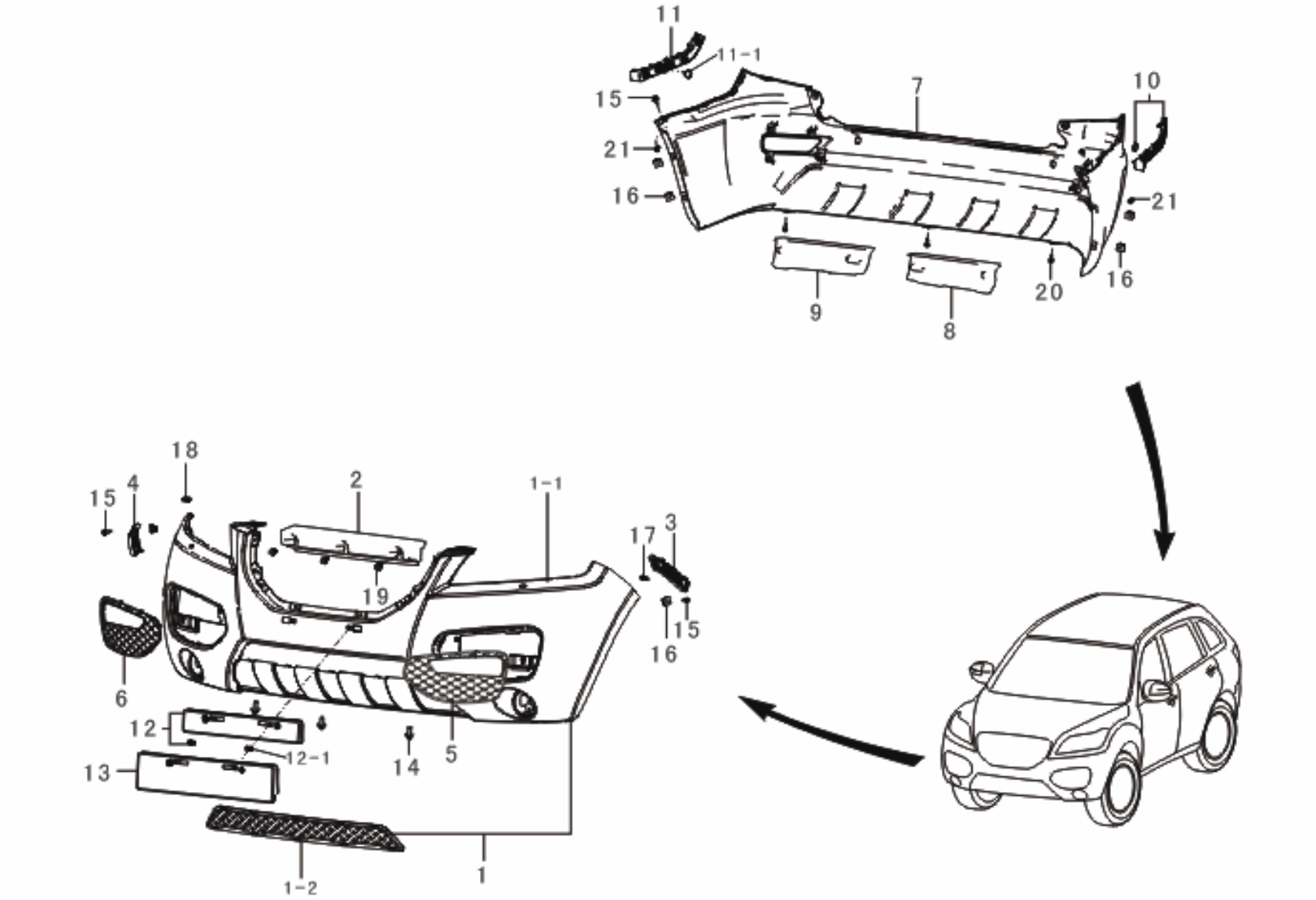


5.16 翼子板 Front side fender

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1	S8403100	左翼子板组件	Front left fender	1		
2	S8403200	右翼子板组件	Front right fender	1		
3	Q1400612	六角头螺栓和平垫圈组合件	Hex bolt，taper springiness washer and flat washer	3		√
4	Q150B0612	六角头螺栓	Hex bolt	4		√
5	Q40206	大垫圈	Big washer	4		√

6.Body attachment

6.01 保险杠 Bumpers



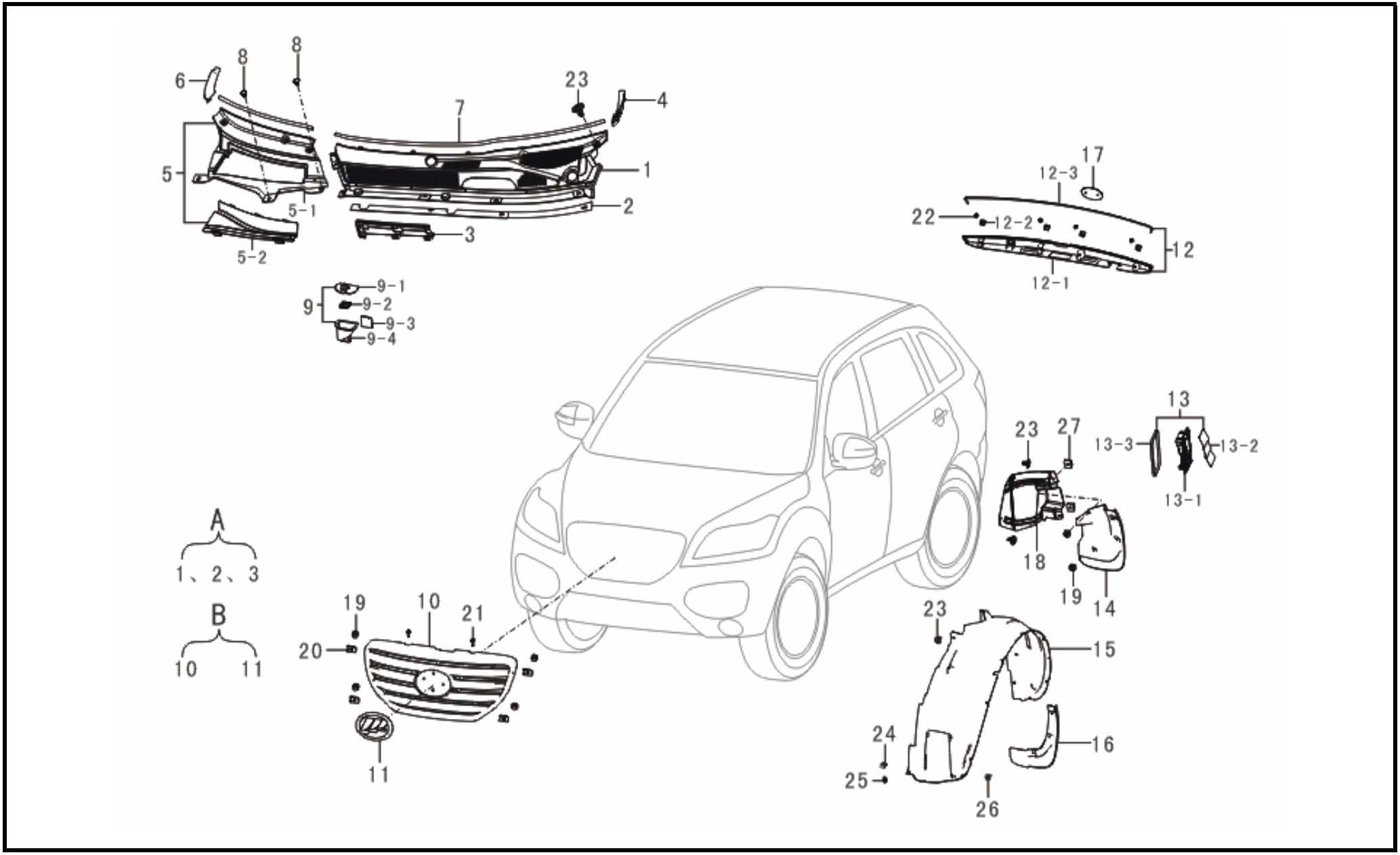
6.01 保险杠 Bumpers

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1	S2803110	前保险杠总成	Front bumper assy.	1		√
1-1	S2803111	前保险杠本体	Front bumper	1		
1-2	S2803112	前保险杠进风口过滤网	Front bumper strainer	1		
2	S2803121	前保险杠缓冲块	Front bumper damper	1		√
3	S2803131	前保险杠左侧安装支架	Front bumper bracket，left	1		√
4	S2803132	前保险杠右侧安装支架	Front bumper bracket，right	1		√
5	S2803411	左前转向灯盖板	Steering lamp cover，left	1		√
6	S2803412	右前转向灯盖板	Steering lamp cover，right	1		√
7	S2804111	后保险杠本体	Rear bumper	1		√
8	S2804121	后保险杠左缓冲块	Rear bumper damper，left	1		√
9	S2804122	后保险杠右缓冲块	Rear bumper damper，right	1		
10	S2804130	后保险杠左安装支架组件	Rear bumper bracket，left	1		√
11	S2804140	后保险杠右安装支架组件	Rear bumper bracket，right	1		√
11-1	S2804132	后保险杠安装支架垫圈	Rear bumper bracket washer	2		
12	S2803510	前牌照板安装板组件	License plate fixing plate	1		√
12-1	Q31206	B型板簧螺母	“B”spring nut	2		√
13	S2803510B1	前牌照板安装板组件	License plate fixing plate	1	export only	√
14	Q1840616	六角法兰面螺栓	Hex flange bolt	7		√
15	Q2706316	六角法兰面自攻螺钉	Hex flange tapping screw	16		√
16	400-0072	塑料卡扣	Plastic clip	12		√

6.01 保险杠 Bumpers

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
17	400-2233	卡扣	Clip	1		√
18	400-2232	卡扣	Clip	1		√
19	400-2237	卡扣	Clip	3		√
20	Q1410616	六角头螺栓和锥形弹性垫圈组合件	Hex bolt and taper springiness washer	7		√
21	400-2236	卡扣	Clip	2		√

6.02 车身外饰装置 External attachment



6.02 车身外饰装置 External attachment

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
A	S5304110	左通风盖板组件	Left ventilation cover assy.	1		√
1	S5304111	通风盖板左件	Left ventilation cover	1		
2	S5304112	通风盖板左件海绵条	Left ventilation cover sponge strip	8		
3	S5304113	通风盖板左件下扰流板	Left ventilation cover spoiler	1		
4	S5304131	左前风挡密封盖板	Front wind-shield seal cover，left	1		√
5	S5304210	右通风盖板组件	Right ventilation cover assy.	1		√
5-1	S5304211	通风盖板右件	Right ventilation cover	1		
5-2	S5304212	通风盖板右件盖板	Right ventilation cover component	1		
6	S5304231	右前风挡密封盖板	Front wind-shield seal cover，right	1		√
7	S5304121	通风盖板密封条	Ventilation cover seal	1		√
8	S5512152	左后轮挡泥板内板	Rear left mudguard 2			√
9	S5304300	前舱排水口组件	Front drain component	1		√
9-1	S5304312	前舱排水口盖子	Front drain cap	1		
9-2	S5304313	前舱排水口海绵	Front drain sponge	1		
9-3	S5304314	前舱排水口盖片	Front drain cover	1		
9-4	S5304311	前舱排水口本体	Front drain body	1		
B	S5509100	前格栅总成	Front grille	1		√
10	S5509111	前格栅	Front grille	1		
11	S3921111	前部装饰标牌	Front LOGO“LLL”	1		√
12	S5506110	后牌照装饰板组件	License plate trim assy.	1		√

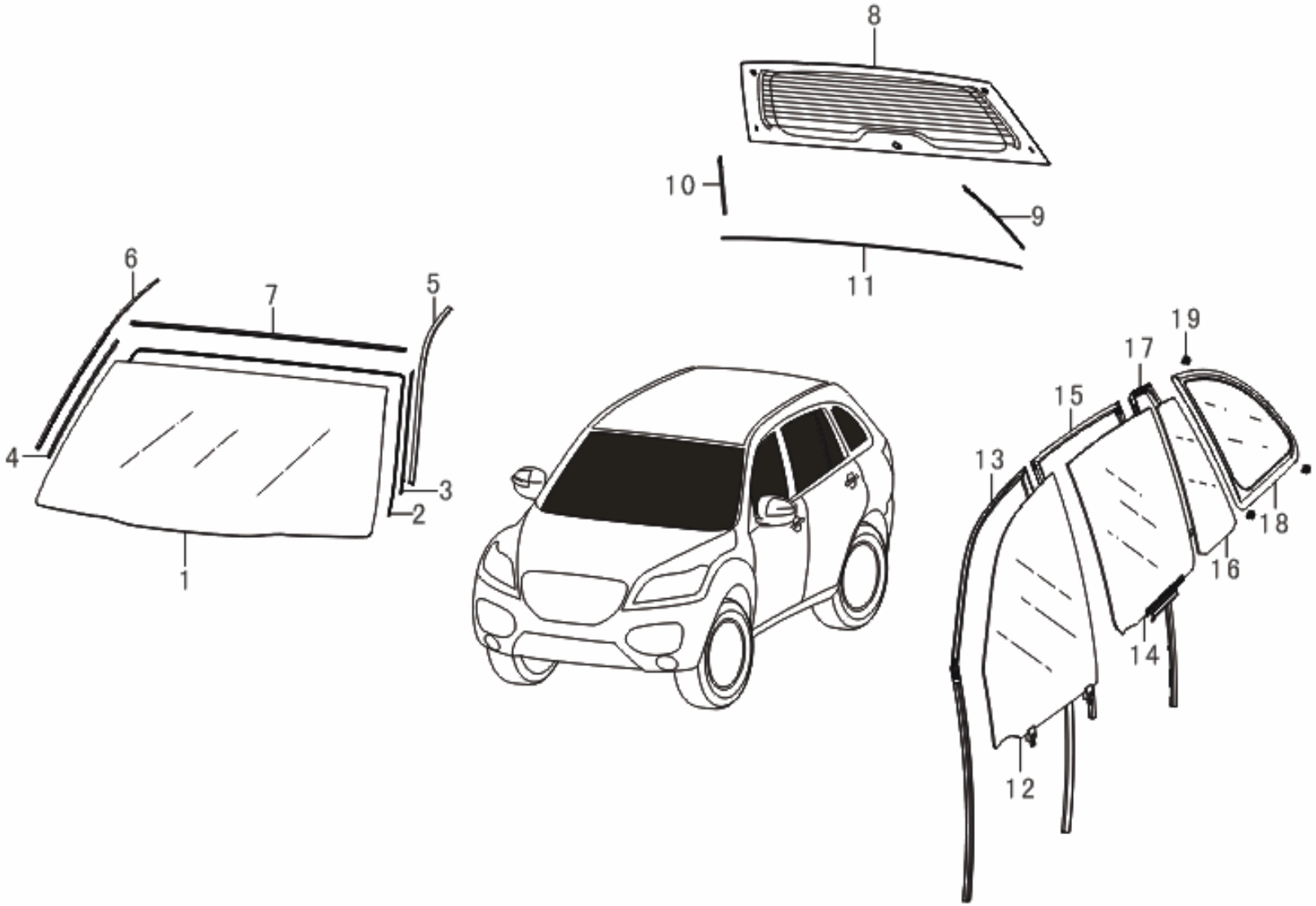
6.02 车身外饰装置

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
12-1	S5506111	后牌照装饰板	License plate trim	1		
12-2	S5506112	方头特种螺栓	Bolt	4		
12-3	S5506113	密封条	Top window seal	1		
13	S5513110	左后排风口组件	Rear air distribution assy，left	1		√
13	S5513120	右后排风口组件	Rear air distribution assy，right	1		√
13-1	S5513111	左后排风口	Rear air distribution，left	1		
13-1	S5513121	右后排风口	Rear air distribution，right	1		
13-2	S5513112	海绵条	Sponge strip	2		
13-3	S5513113	排风挡片	Air distribution baffle	6		
14	S5512151	左后轮挡泥板	Rear left mudguard	1		√
14	S5512161	右后轮挡泥板	Rear right mudguard	1		√
15	S5512111	左前轮挡泥皮	Front left mudguard 1	1		√
15	S5512121	右前轮挡泥皮	Front right mudguard 1	1		√
16	S5512112	左前轮挡泥板	Front left mudguard	1		√
16	S5512122	右前轮挡泥板	Front right mudguard	1		√
17	S3921211	后部装饰标牌	Rear trim plate	1		√
18	S5512152	左后轮挡泥板内板	Rear left mudguard 2	1		√
18	S5512162	右后轮挡泥板内板	Rear right mudguard 2	1		√
19	Q2214816	盘头自攻螺钉C	Screw	6		√
20	Q39748202	A型簧片螺母	Spring nut	4		√

6.02 车身外饰装置 External attachment

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
21	Q1410616	六角头螺栓和锥形弹性垫圈组合件	Hex bolt and taper springiness washer	2		√
22	Q32005T2F30	六角法兰面螺母	Hex flange nut	4		√
23	400-0415	塑料卡扣	Plastic clip	12		
24	400-0084	卡扣	Clip	4		√
25	Q2706316	六角法兰面自攻螺钉	Hex flange tapping screw	4		√
26	Q2215519F31	十字槽盘头螺钉和大垫圈组合件	Screw	24		√
27	400-0072	方螺母卡扣	Clip	4		√

6.03 全车玻璃 Vehicle glasses



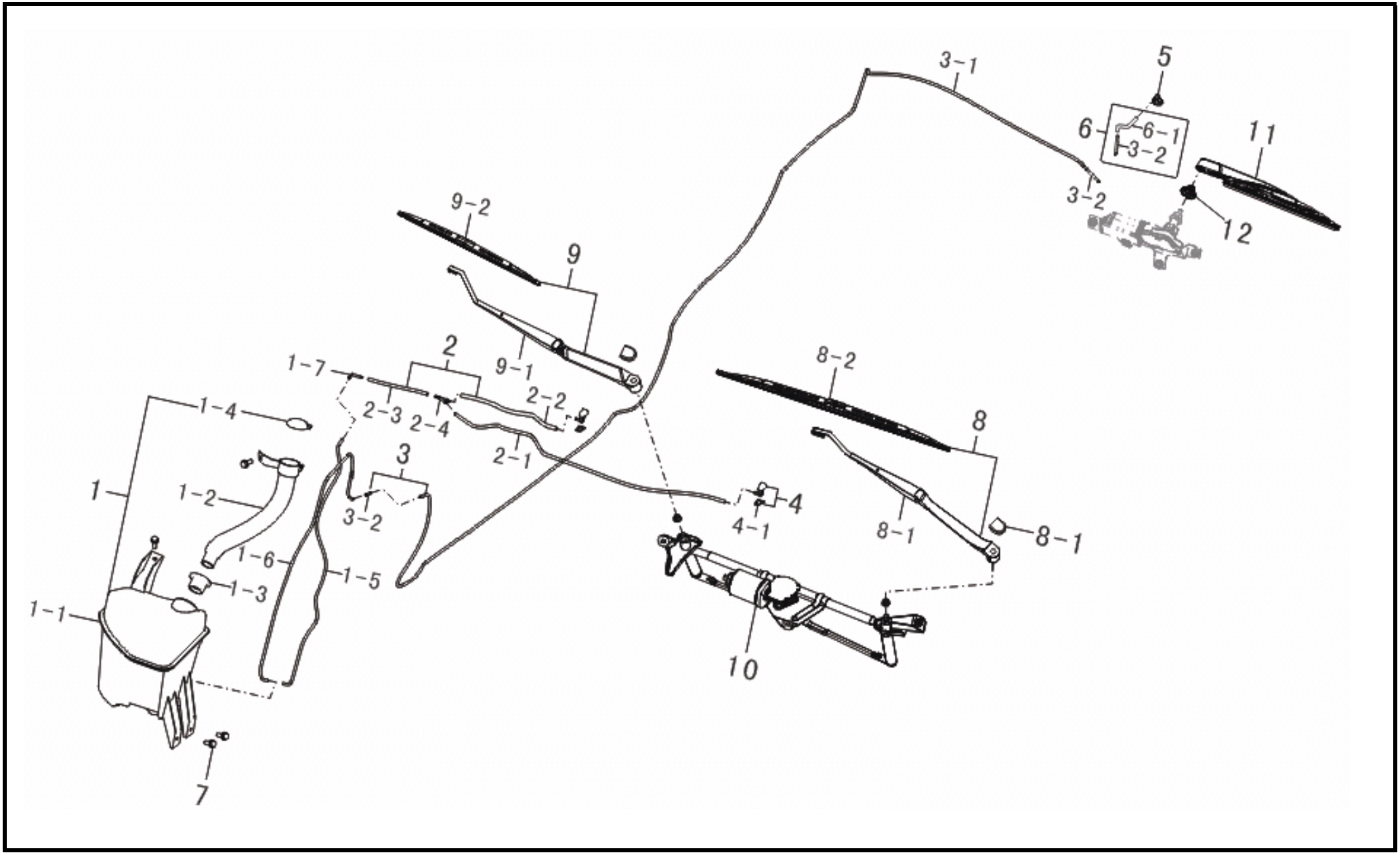
6.03 全车玻璃 Vehicle glasses

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1	S5206100	前风挡玻璃组件	Front wind-shield glass	1		√
2	S5206235	挡胶条	Front wind-shield glass seal	1		√
3	S5206210	前风挡玻璃左固定条组件	Front wind-shield glass mount，left	1		√
4	S5206220	前风挡玻璃右固定条组件	Front wind-shield glass mount，right	1		√
5	S5206240	前风挡玻璃左密封条组件	Front wind-shield seal，left	1		√
6	S5206250	前风挡玻璃右密封条组件	Front wind-shield seal，right	1		√
7	S5206230	前风挡玻璃上密封条	Front wind-shield seal，upper	1		√
8	S6303110	后背门玻璃总成	Tail door glass	1		√
9	S6307112	后背门玻璃左密封条	Tail door glass seal，left	1		√
10	S6307212	后背门玻璃右密封条	Tail door glass seal，right	1		√
11	S6307114	后背门玻璃下密封条	Tail door glass seal，lower	1		√
12	S6103100	左前车门玻璃总成	Front left door glass	1		√
12	S6103200	右前车门玻璃总成	Front right door glass	1		√
13	S6107111	左前车门玻璃密封条	Glass seal，front left door	1		√
13	S6107211	右前车门玻璃密封条	Glass seal，front right door	1		√
14	S6203100	左后车门玻璃总成	Rear left door glass	1		√
14	S6203200	右后车门玻璃总成	Rear right door glass	1		√
15	S6207111	左后车门玻璃密封条	Glass seal，rear left door	1		√
15	S6207211	右后车门玻璃密封条	Glass seal，rear right door	1		√
16	S6203311	左后车门三角窗玻璃	Left triangular window，door side	1		√

6.03 全车玻璃 Vehicle glasses

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
16	S6203411	右后车门三角窗玻璃	Right triangular window，door side	1		√
17	S6207131	左后车门三角窗密封条	Left triangular window seal，door side	1		√
17	S6207231	右后车门三角窗密封条	Right triangular window seal，door side	1		√
18	S5406110	左侧围三角窗总成	Left triangular window，body side	1		√
18	S5406210	右侧围三角窗总成	Right triangular window，body side	1		√
19	S5406113	卡扣	Clip	6		

6.04 风窗雨刮装置 Wiper



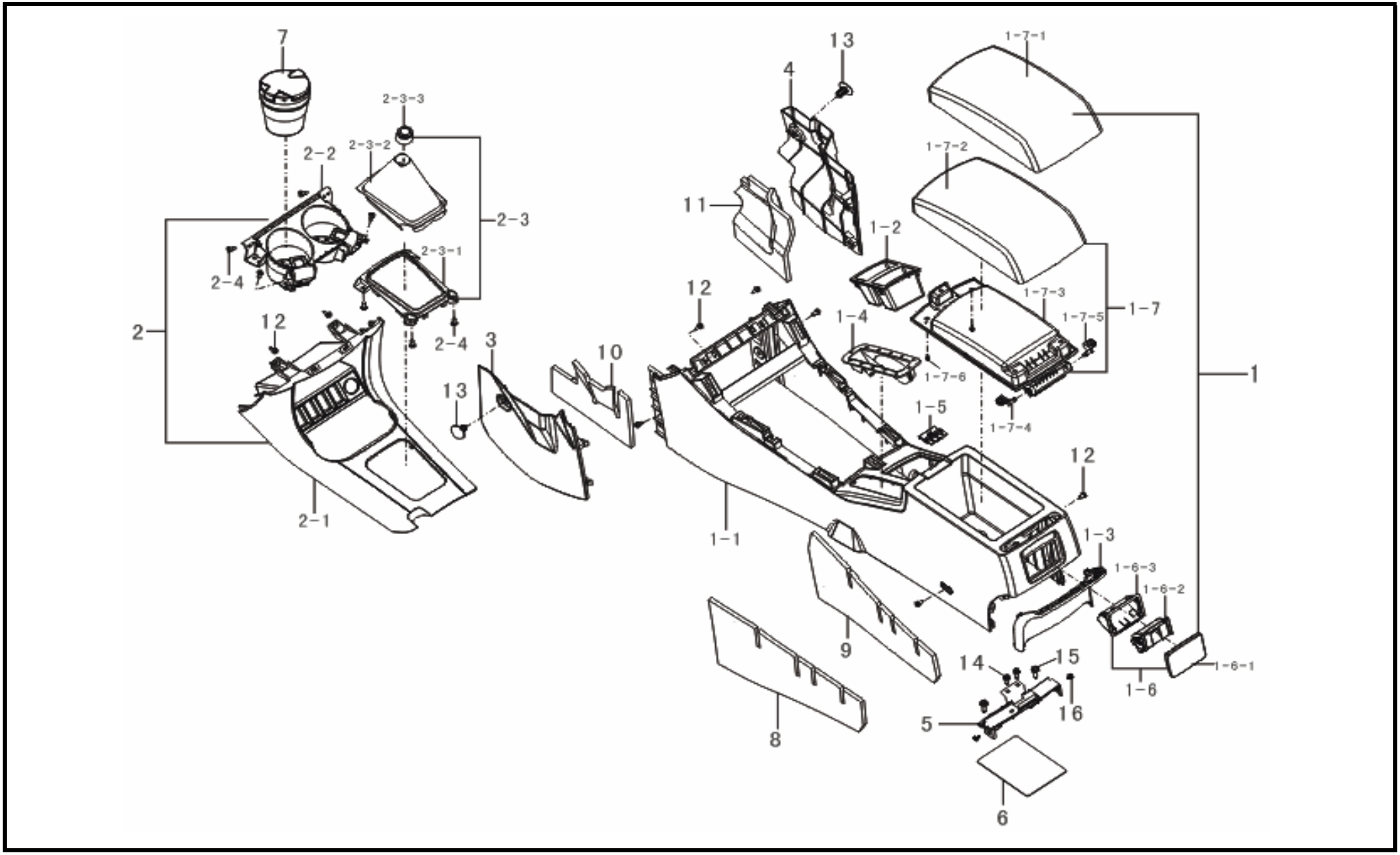
6.04 风窗雨刮装置 Wiper

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1	S5207100	洗涤壶总成	Washer can assy.	1		√
1-1	S5207111	洗涤壶本体	Washer can	1		
1-2	S5207112	洗涤液加注管	Water filling hose	1		
1-3	S5207114	洗涤液加注管密封圈	Water filling hose seal	1		
1-4	S5207113	加注口盖	Water filling hose cap	1		
1-5	S5207115	洗涤壶前风窗软管	Washer hose，for front windshield	1		
1-6	S5207116	洗涤壶后风窗软管	Washer hose，for rear windshield	1		
1-7	S5207217	L型固定连接二通头	Two way connector	1		
2	S5207210	前风窗软管总成	Front wind-shield washer hose assy.	1		√
2-1	S5207211	前风窗软管A	Front wind-shield washer hose A	1		
2-2	S5207212	前风窗软管B	Front wind-shield washer hose B	1		
2-3	S5207213	前风窗软管C	Front wind-shield washer hose C	1		
2-4	S5207214	连接三通头	Three way connector	1		
3	S5207230	后风窗软管前段总成	Rear wind-shield washer hose assy.	1		√
3-1	S5207231	后风窗软管前段	Rear wind-shield washer hose	1		
3-2	S5207232	连接二通头	Two way connector	3		
4	S5207310	前风挡喷头总成	Front wind-shield washer nozzle	2		√
4-1	S5207313	前风挡喷头胶垫	Nozzle washer	2		
5	S5207410	后风挡喷头总成	Rear wind-shield washer nozzle	1		√
6	S5207240	后风窗软管后段总成	Rear wind-shield washer hose assy，rear part	1		√

6.04 风窗雨刮装置 Wiper

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
6-1	S5207241	后风窗软管后段	Rear wind-shield washer hose，rear part	1		
7	Q1410616L	六角头螺栓和锥形弹性垫圈组合件	Hex bolt and taper springiness washer	4		√
8	S5205100	左刮水器组件	Window wiper，left	1		√
8-1	S5205110	刮水器左摆臂组件	Window wiper arm，left	1		
8-2	S5205120	刮水器左刮刷组件	Window wiper brush，left	1		
8-3	S5205131	雨刮塑料盖帽	Wiper arm cap	2		
9	S5205200	右刮水器组件	Window wiper，right	1		√
9-1	S5205210	刮水器右摆臂组件	Window wiper arm，right	1		
9-2	S5205220	刮水器右刮刷组件	Window wiper brush，right	1		
10	S5205300	刮水器连杆机构及电机总成	Window wipers connecting rod with motor	1		
11	S6310100	后背门雨刮器摆臂刮刷总成	Tail windshield wiper	1		√
12	S6310211	后雨刮电机转轴护套	Rear wiper motor sleeve	1		

6.05 副仪表板 Console



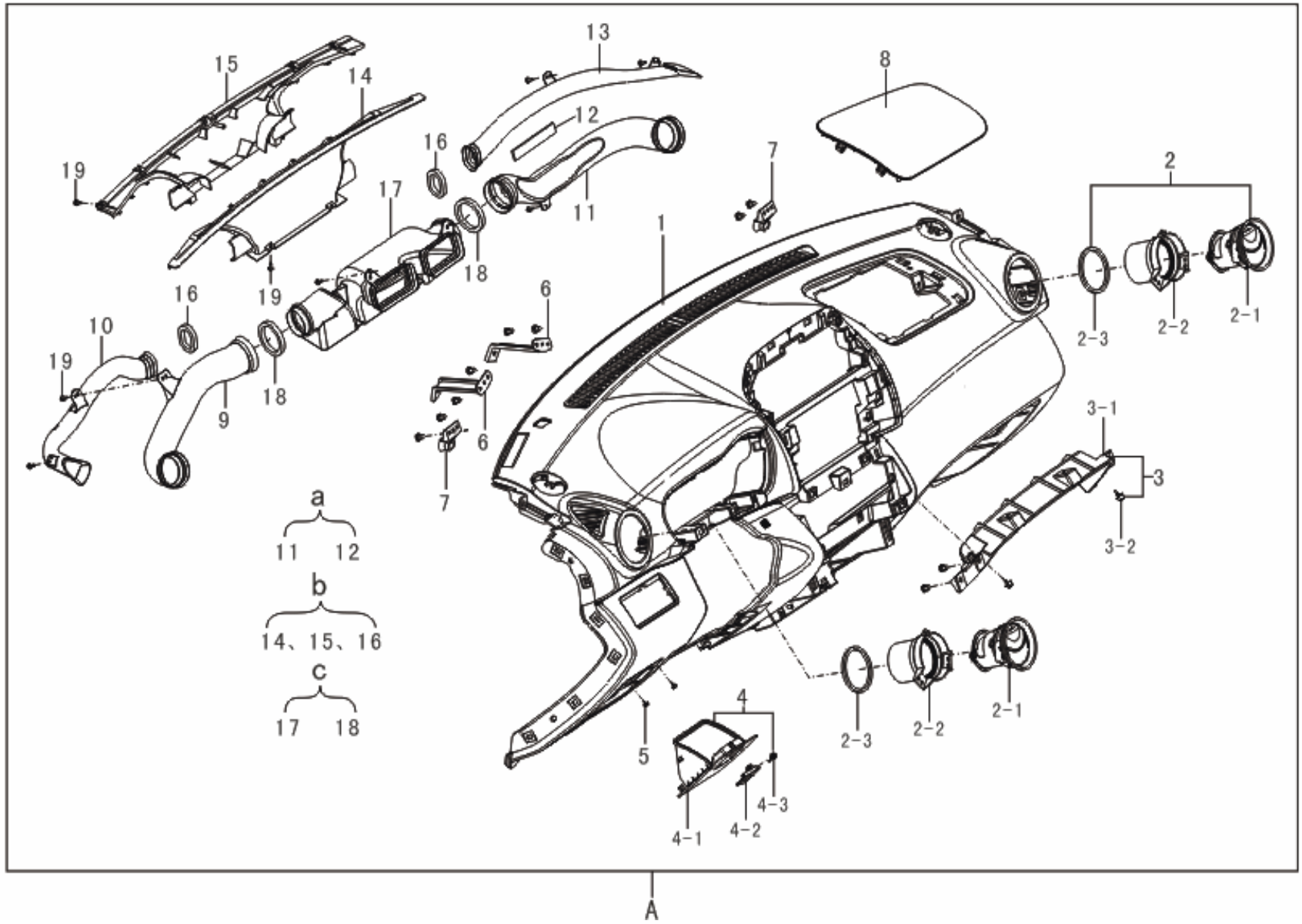
6.05 副仪表板 Console

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1	S5305100B35	副仪表板本体总成	Console assy.	1		√
1-1	S5305111	副仪表板本体	Console body	1		
1-2	S5305112	副仪表板小杂物盒	Console box	1		
1-3	S5305113	副仪表板后盖板	Console rear cover	1		
1-4	S5305114	手刹皮套	Parking brake lever sleeve	1		
1-5	S5305140	副仪表板杂物盒扣手锁总成	Glove box buckle，Console	1		
1-6	S5305430	后烟灰缸总成	Rear ashtray assy.	1		
1-6-1	S5305431	后烟灰缸外盖	Rear ashtray cap	1		
1-6-2	S5305432	后烟灰缸本体	Rear ashtray panel 2	1		
1-6-3	S5305433	后烟灰缸缸体	Rear ashtray body	1		
1-7	S5305130	副仪表板杂物盒总成	Glove box，Console	1		
1-7-1	S5305131	副仪表板杂物盒上盖外板	Glove box cap outer panel	1		
1-7-2	S5305132	副仪表板杂物盒上盖外板表皮	Glove box cap outer panel cover	1		
1-7-3	S5305133	副仪表板杂物盒上盖内板	Glove box cap inner panel	1		
1-7-4	S5305135	副仪表板杂物盒盖左铰链	Glove box hinge，left	1		
1-7-5	S5305136	副仪表板杂物盒盖右铰链	Glove box hinge，right	1		
1-7-6	S5305137	副仪表板杂物盒盖缓冲块	Glove box cap damper	2		
2	S5305200B36	副仪表板装饰板总成	Console trim panel assy.	1		√
2-1	S5305211	副仪表板装饰板本体	Console trim panel	1		
2-2	S5305220	杯托总成	Cup holder	1		

6.05 副仪表板 Console

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
2-3	S5305230	换挡护罩总成	Shift lever sleeve assy.	1		
2-3-1	S5305231	换挡皮护套基座	Gear shift sleeve circlip	1		
2-3-2	S5305232	换挡皮护套	Shift lever sleeve	1		
2-3-3	S5305233	换挡皮护套固定块	Shift lever sleeve fixing plate	1		
2-4	Q2714210	十字槽盘头自攻螺钉	Philips self-tapping screw	8		
3	S5305311B31	空调左护板	A/C trim fender，left	1		√
4	S5305322B31	空调右护板	A/C trim fender，right	1		√
5	S5305330	杂物盒焊接支架总成	Dashboard glovebox bracket	1		√
6	S5305341B33	副仪表板杂物盒底部垫	Glove box bottom damper	1		√
7	S8203110	前烟灰缸总成	Front ashtray assy.	1		√
8	S5531717	副仪表板左后隔音垫	Console insulator，rear left	1		√
9	S5531718	副仪表板右后隔音垫	Console insulator，rear right	1		√
10	S5531715	副仪表板左前隔音垫	Console insulator，front left	1		√
11	S5531716	副仪表板右前隔音垫	Console insulator，front right	1		√
12	Q2734816	十字槽大半圆头自攻螺钉	Hex flange screw	8		√
13	400-0466	塑料卡扣	Plastic clip	2		
14	Q1840616	六角法兰面螺栓	Hex flange bolt	2		√
15	Q1840816	六角法兰面螺栓	Hex flange bolt	2		√
16	400-8888	塑料卡扣	Plastic clip	2		

6.06 仪表板总成 Dashboard



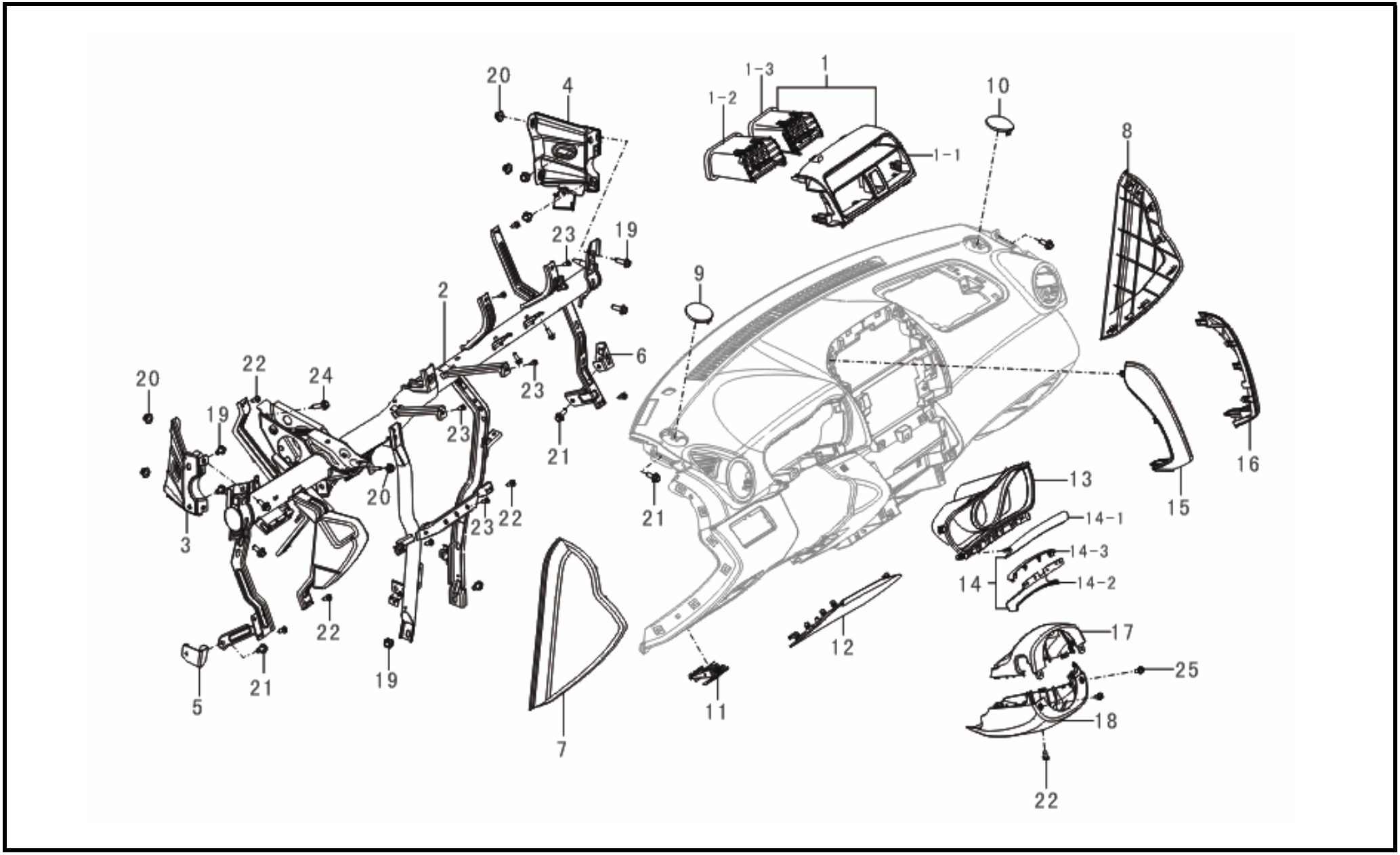
6.06 仪表板总成 Dashboard

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
A	S5306100B34	仪表板总成	Dashboard assy.	1		√
A	S5306100B1	仪表板总成	Dashboard assy.	1	without passenger airbag	
1	S5306111	仪表板本体	Dashboard	1		
2	S5306300	仪表板吹面风口总成	Dashboard centre A/C nozzle assy.	2		
2-1	S5306320	吹面风口本体组件	Dashboard centre A/C nozzle	2		
2-2	S5306311	吹面风口外壳	Dashboard A/C nozzle shell	2		
2-3	S5306319	吹面风口密封海绵	Dashboard A/C nozzle sponge	2		
3	S5306140	杂物箱上护板总成	Glovebox trim panel assy.	1		
3-1	S5306141	杂物箱上护板	Glovebox trim panel	1		
3-2	S5306142	缓冲垫	Glovebox trim damper	2		
4	S5306130	票据盒总成	Notes box assy.	1		
4-1	S5306131	票据盒本体	Notes box	1		
4-2	S5306132	票据盒卡扣	Notes box clip	1		
4-3	S5306133	弹簧	Notes box spring	1		
5	S5306117	票据盒缓冲垫	Notes box damper	2		
6	S5306113	组合仪表安装支架	Instrument cluster bracket	2		
7	S5306112	仪表板前限位块	Dashboard stopper	2		
8	S5306114	副安全气囊盖板	Passengers airbag panel	1	without passenger airbag	
9	S8117181	左吹面风道	Left A/C ventilation	1		
10	S8117171	左除霜风道	Left defroster ventilation	1		

6.06 仪表板总成 Dashboard

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
a	S8117190	右吹面风道总成	Right A/C ventilation assy.	1		
11	S8117191	右吹面风道	Right A/C ventilation	1		
12	S8117192	右吹面风道密封垫	Right A/C ventilation seal	1		
13	S8117211	右除霜风道	Right defroster ventilation	1		
b	S8117120	中央除霜风道总成	Centre defroster ventilation	1		
14	S8117121	中央除霜风道前片	Centre defroster ventilation，front part	1		
15	S8117122	中央除霜风道后片	Centre defroster ventilation，rear part	1		
16	S8117123	中央除霜风道密封海绵	Centre defroster ventilation seal	2		
c	S8117220	中央吹面风道总成	Centre A/C ventilation assy.	1		
17	S8117221	中央吹面风道	Centre A/C ventilation	1		
18	S8117222	中央吹面风道密封海绵	Centre A/C ventilation seal	2		
19	Q2714216	十字槽盘头自攻螺钉	Philips self-tapping screw	16		√

6.07 仪表台装置 Dashborad attachment



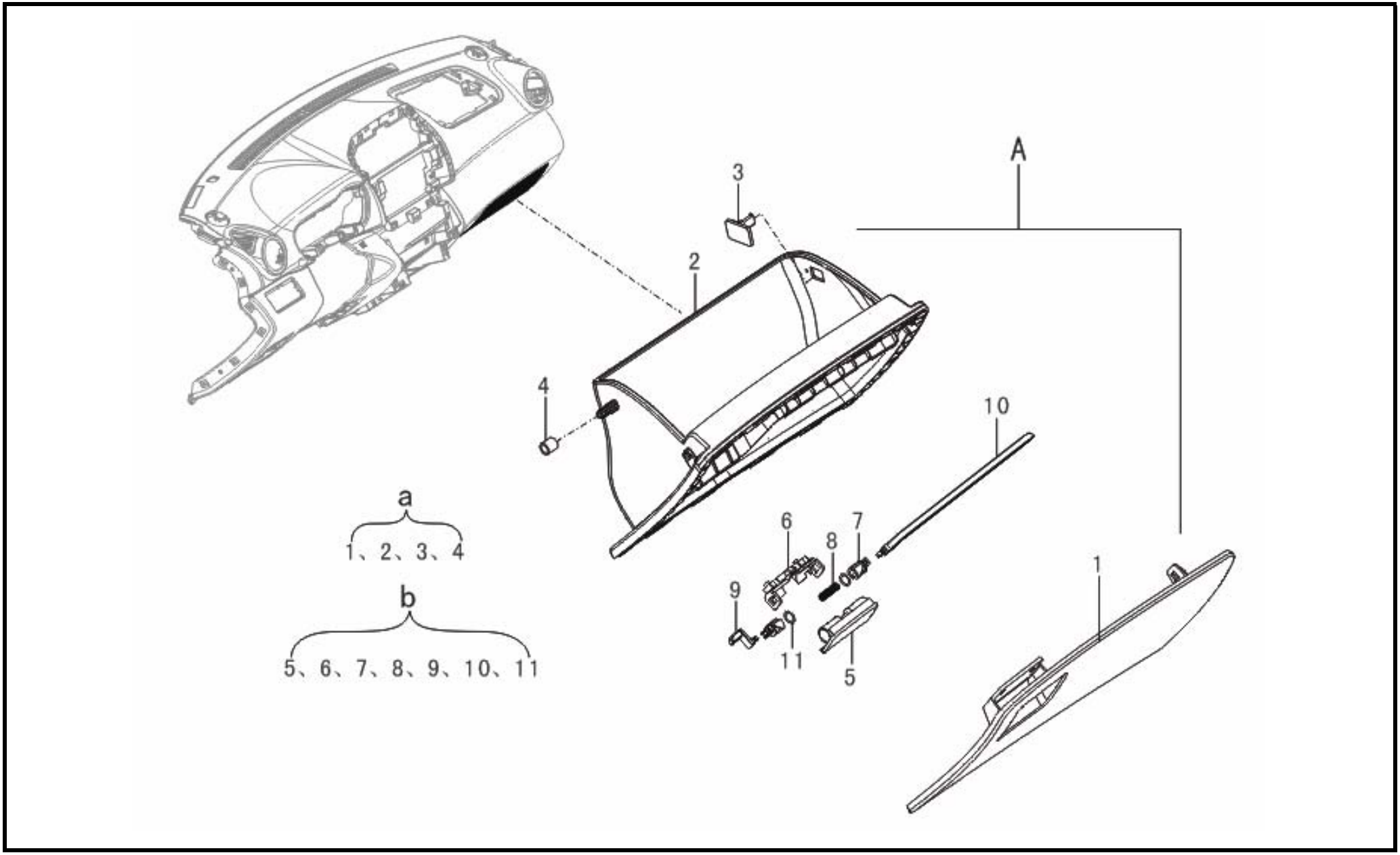
6.07 仪表台装置 Dashborad attachment

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1	S5306500B33	中间出风口总成	Air distribution，center	1		√
1-1	S5306511	中间出风口面板	Air distribution，center panel	1		
1-2	S5306530	中间左出风口总成	Air distribution，left	1		
1-3	S5306560	中间右出风口总成	Air distribution，right	1		
2	S5306230	仪表板管梁焊接组件	Dashboard bar	1		√
2	S5306230B1	仪表板管梁焊接组件	Dashboard bar	1	without passenger airbag	
3	S5306210	仪表板管梁左侧固定板组件	Dashboard bar mount，left	1		√
4	S5306220	仪表板管梁右侧固定板组件	Dashboard bar mount，right	1		√
5	S5306861	仪表板左部底端连接支架	Dashboard lower bracket，left	1		√
6	S5306862	仪表板右部底端连接支架	Dashboard lower bracket，right	1		√
7	S5306821B32	仪表板左端盖	Dashboard end cover，left	1		√
8	S5306822B32	仪表板右端盖	Dashboard end cover，right	1		√
9	S5306871B31	左高音喇叭罩	Left horn cover	1		√
10	S5306872B31	右高音喇叭罩	Right horn cover	1		√
11	S5306810B32	引擎盖拉手总成	Engine hood handle	1		√
12	S5306851B32	仪表板维修盖板	Dashboard lower cover	1		√
13	S5306010	组合仪表罩本体组件	Instrument cluster cover	1		√
14	S5306020B33	组合仪表罩防尘皮组件	Instrument cluster dust proof	1		√
14-1	S5306021	组合仪表罩下护板	Instrument cluster lower fender	1		
14-2	S5306022	组合仪表罩防尘皮	Instrument cluster dust proof	1		

6.07 仪表台装置 Dashborad attachment

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
14-3	S5306023	组合仪表罩防尘皮安装板	Instrument cluster dust proof panel	1		
15	S5306830	仪表板左装饰条组件	Dashboard trim assy,left	1		√
16	S5306840	仪表板右装饰条组件	Dashboard trim assy,right	1		√
17	S5306711B31	转向管罩上护罩	Steering pillar cover，upper	1		√
18	S5306712B31	转向管罩下护罩	Steering pillar cover，lower	1		√
19	Q1840816	六角法兰面螺栓	Hex flange bolt	10		√
20	Q32006	六角法兰面螺母	Hex flange nut	5		√
21	Q1840616	六角法兰面螺栓	Hex flange bolt	6		√
22	Q2714816	十字槽盘头自攻螺钉	Philips self-tapping screw	10		√
23	Q2140616	十字槽盘头螺钉	Screw	6		√
24	Q1840825	六角法兰面螺栓	Hex flange bolt	1		√
25	Q2300410	十字槽盘头自攻螺钉和平垫圈组合件	Screw	2		

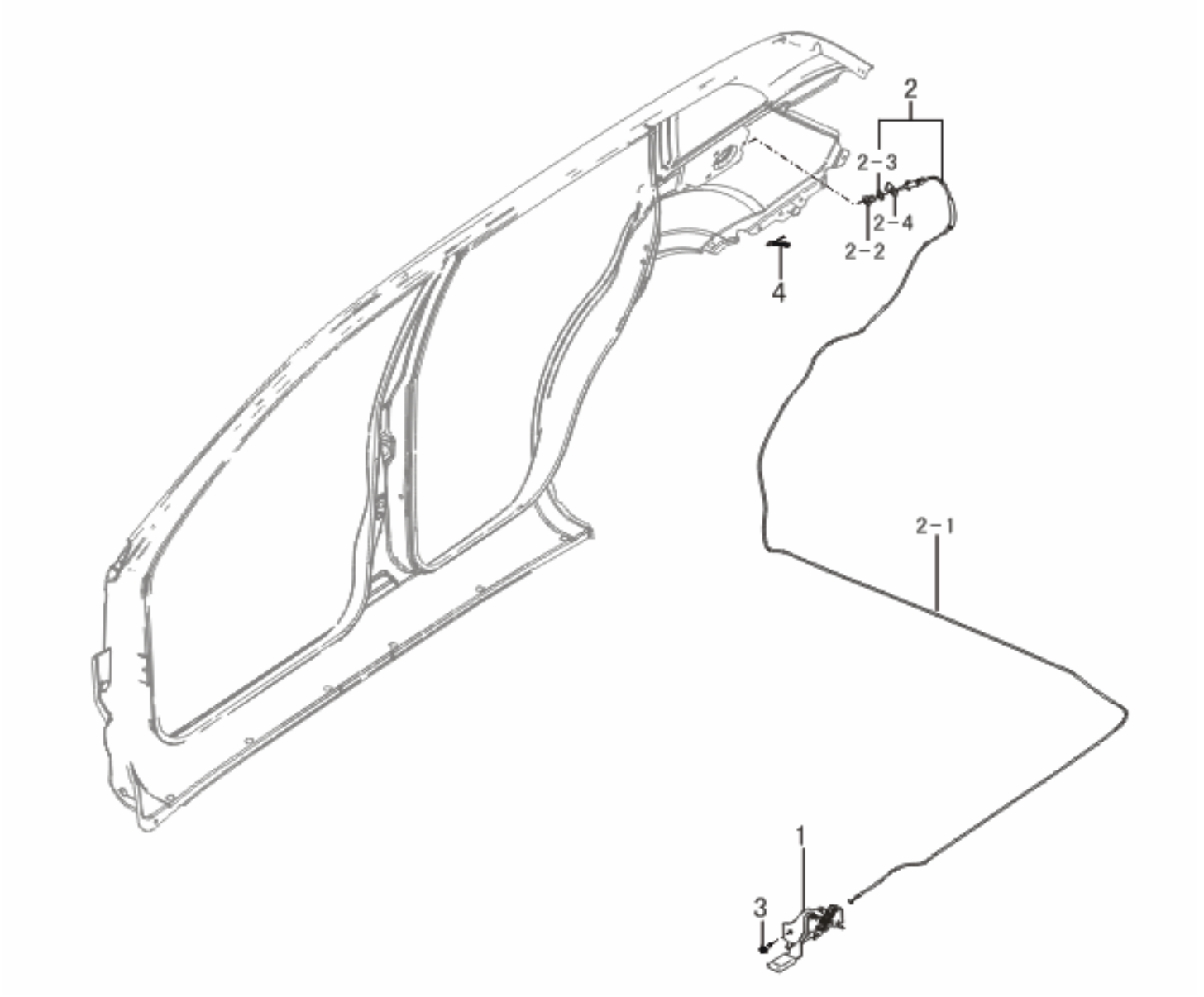
6.08 仪表板杂物箱 Dashboard glovebox



6.08 仪表板杂物箱 Dashboard glovebox

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
A	S5306600B32	仪表板杂物箱总成	Glove box assy.	1		√
a	S5306610	杂物箱本体总成	Glove box	1		
1	S5306611	仪表板杂物箱外板	Glove box outter panel	1		
2	S5306612	仪表板杂物箱内板	Glove box inner panel	1		
3	S5306630	仪表板杂物箱限位块	Glove box stopper	1		√
4	S5306614	仪表板杂物箱限位柱毛毡	Glove box stopping felt	1		
b	S5306620	杂物箱锁总成	Glove box lock	1		
5	S5306621	杂物箱锁扣	Glovebox buckle	1		
6	S5306622	杂物箱锁内壳	Glove box lock shell	1		
7	S5306623	杂物箱锁锁芯	Glove box lock cylinder	2		
8	S5306624	弹簧	Spring	2		
9	S5306625	杂物箱锁锁舌Ⅰ	Glove box locking dog 1	1		
10	S5306626	杂物箱锁锁舌Ⅱ	Glove box locking dog 2	1		
11	S5306627	0型密封圈	O seal	2		

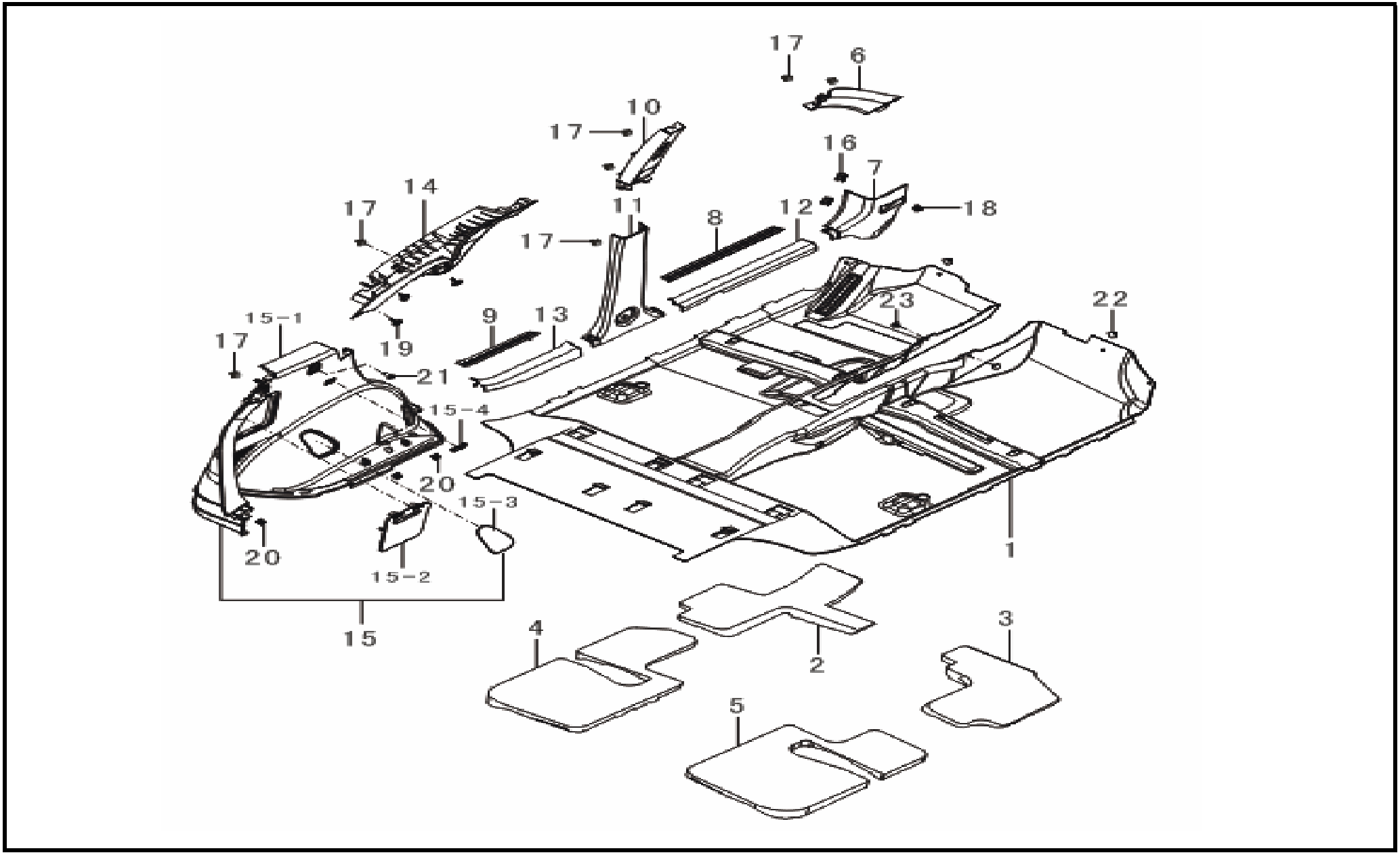
6.09 加油口拉索 Fuel filler cable



6.09 加油口拉索 Fuel filler cable

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1	S5406420	加油口盖开启器	Fuel filler cap switch	1		
2	S5406410	加油口盖拉索组件	Fuel filler cap cable assy.	1		√
2-1	S5406411	加油口盖拉索	Fuel filler cap cable	1		
2-2	S5406412	锁圈	Lock washer	1		
2-3	S5406413	垫圈	Washer	1		
2-4	S5406419	塑料卡扣	Plastic clip	1		
3	Q1840610	六角法兰面螺栓	Hex flange bolt	1		√
4	400-1934B	塑料卡扣	Plastic clip	1		√

6.10 地板,侧围装饰装置 Floor&side cowl attachment



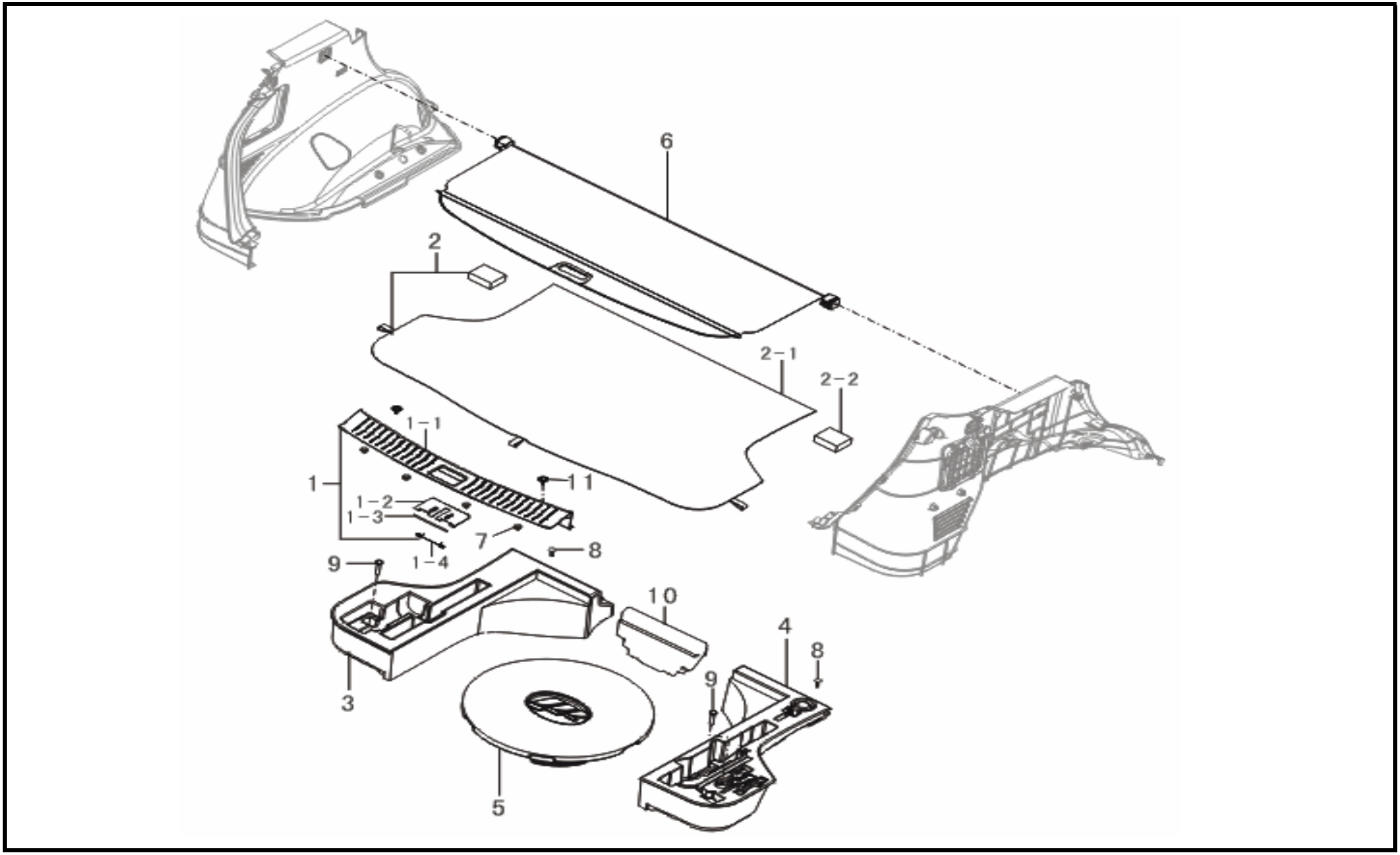
6.10 地板,侧围装饰装置 Floor&side cowl attachment

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1	S5109100B31	前地板总成	Front floor assy.	1		√
2	S5110111	前左地板隔热层	Floor insulator,front left	1		√
3	S5110112	前右地板隔热层	Floor insulator,front right	1		√
4	S5110113	后左地板隔热层	Rear insulator,front left	1		√
5	S5110114	后右地板隔热层	Rear insulator,front right	1		√
6	S5402110B32	A柱左上护板组件	Left upper fender,A-pillar	1		√
6	S5402210B32	A柱右上护板组件	Right upper fender,A-pillar	1		√
7	S5402120B31	A柱左下护板组件	Left lower fender,A-pillar	1		√
7	S5402220B31	A柱右下护板组件	Right lower fender,A-pillar	1		√
8	S5146110B31	前门左踏步板总成	Threshold,front left door	1		√
8	S5146210B31	前门右踏步板总成	Threshold,front right door	1		√
9	S5160110B31	后门左踏步板总成	Threshold,rear left door	1		√
9	S5160210B31	后门右踏步板总成	Threshold,rear right door	1		√
10	S5402130B32	B柱左上护板组件	Left upper fender，B pillar	1		√
10	S5402230B32	B柱右上护板组件	Right upper fender，B pillar	1		√
11	S5402140B31	B柱左下护板组件	Left lower fender，B pillar	1		√
11	S5402240B31	B柱右下护板组件	Right lower fender，B pillar	1		√
12	S5402171B31	左前门门槛护板	Threshold fender，front left door	1		√
12	S5402271B32	右前门门槛护板	Threshold fender，front right door	1		
13	S5402181B31	左后门门槛护板	Threshold fender，rear left door	1		√

6.10 地板,侧围装饰装置 Floor&side cowl attachment

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
13	S5402281B32	右后门门槛护板	Threshold fender，rear right door	1		
14	S5402150B32	C柱左上护板组件	Left upper fender,C-pillar	1		√
14	S5402250B32	C柱右上护板组件	Right upper fender,C-pillar	1		√
15	S5402160B31	C柱左下护板组件	Left lower fender assy,C-pillar	1		√
15	S5402260B31	C柱右下护板组件	Right lower fender assy,C-pillar	1		√
15-1	S5402161	C柱左下护板	Left lower fender,C-pillar	1		
15-1	S5402261	C柱右下护板	Right lower fender,C-pillar	1		
15-2	S5402162	左杂物箱盖	C-pillar glovebox cover，left	1		
15-2	S5402262	右杂物箱盖	C-pillar glovebox cover，right	1		
15-3	S5402163	左减振器盖板	Shock absorber cap，left	1		
15-3	S5402263	右减振器盖板	Shock absorber cap，right	1		
15-4	S5402164	织带固定塑料卡子	Clip	2		
16	S5402191	卡簧	Circlip	4		√
17	400-540	塑料卡扣	Plastic clip	46		√
18	Q32006	六角法兰面螺母	Hex flange nut	2		√
19	400-1494	子母扣	Inlay button	6		√
20	400-0072	方螺母卡扣	Clip	6		√
21	Q2204816	十字槽盘头自攻螺钉带平垫圈组合	Screw	12		√
22	400-0317	塑料卡扣	Plastic clip	2		
23	400-255	塑料卡扣	Plastic clip	2		√

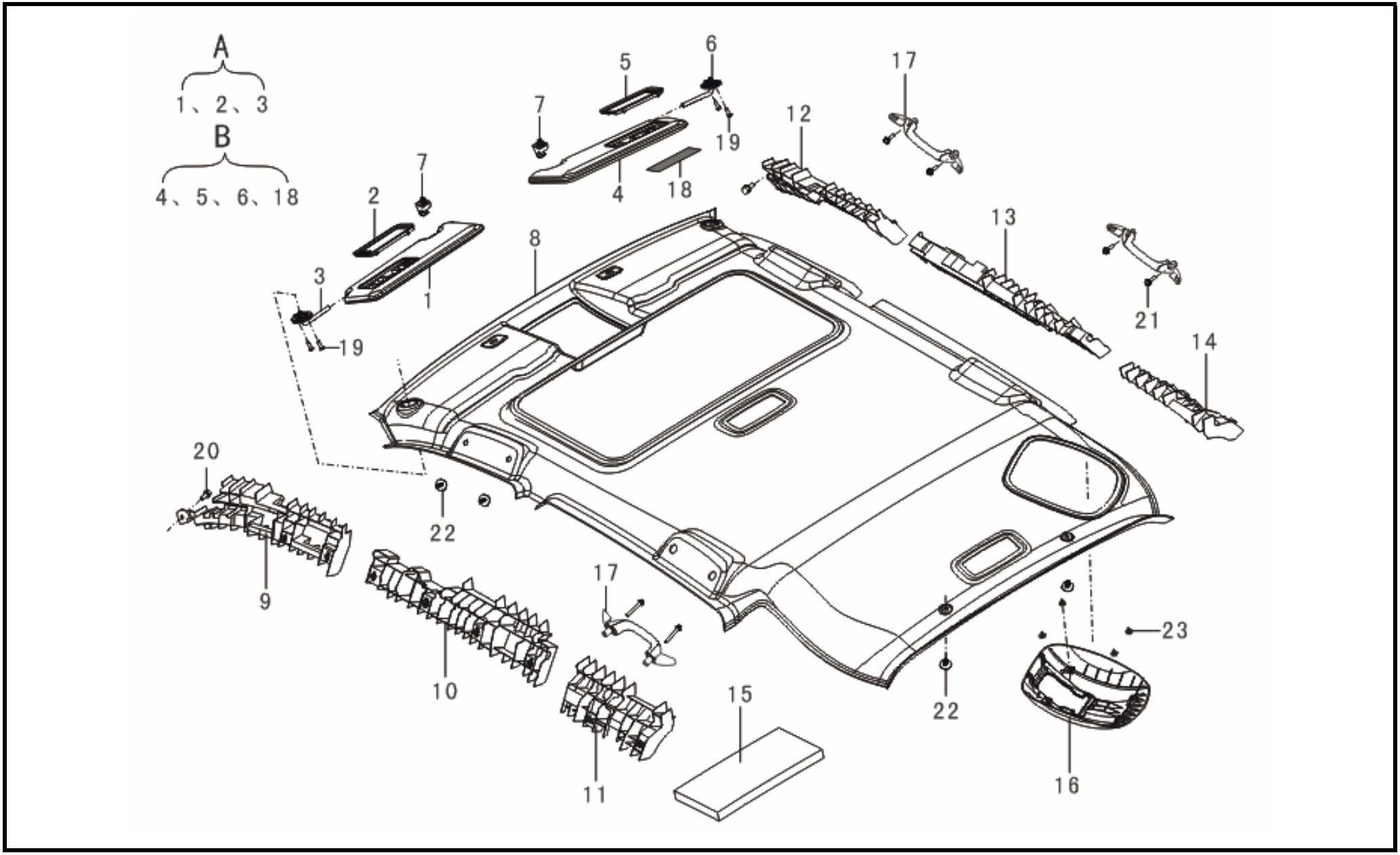
6.11 行李箱装饰装置 Trunk interior



6.11 行李箱装饰装置 Trunk interior

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1	S5602110	后裙板总成	Back lower panel	1		√
1-1	S5602111	后裙板护板	Rear skirt fender	1		
1-2	S5602112	锁体挡板	Lock fender	1		
1-3	S5602113	金属轴	Axis	1		
1-4	S5602114	弹簧	spring	1		
2	S5608110	行李箱护面盖板总成	Trunk cover panel assy.	1		√
2-1	S5608111	行李箱护面盖板本体	Trunk cover panel	1		
2-2	S5608112	行李箱护面盖板定位块	Trunk cover panel locator	2		
3	S5608211	行李箱护面左支撑块	Trunk cover panel support，left	1		√
4	S5608212	行李箱护面右支撑块	Trunk cover panel support，right	1		√
5	S5608213	行李箱护面中间支撑块	Trunk cover panel support，center	1		√
6	S5608400B31	搁物帘总成	Trunk curtain	1		√
7	400-540	塑料卡扣	Plastic clip	4		√
8	400-2237	卡扣	Clip	2		√
9	Q1410840TF3	六角头螺栓和锥形弹性垫圈组合件	Hex bolt and taper springiness washer	2		√
10	S5608214	行李箱护面前支撑块	Trunk cover panel support，front	1		√
11	400-1494	子母扣	Inlay button	2		√

6.12 顶棚装饰装置 Roof interior



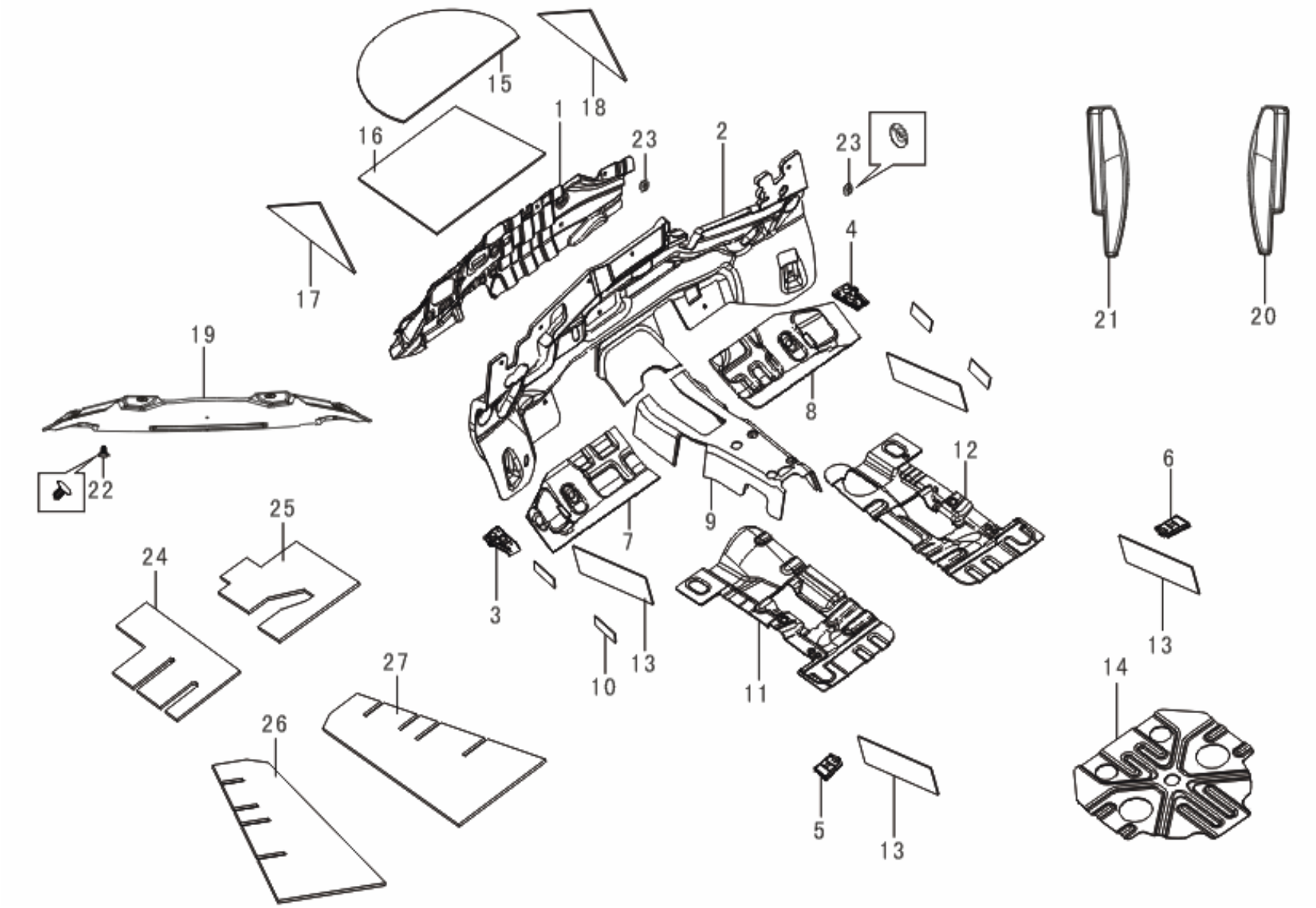
6.12 顶棚装饰装置 Roof interior

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
A	S8204100B32	左遮阳板总成	Left sunvisor assy.	1		√
1	S8204110	左遮阳板本体	Left sunvisor	1		
2	S8204120	左化妆镜组件	Left sunvisor mirror	1		
3	S8204130	左遮阳板大固定座组件	Left sunvisor fixing seat	1		
B	S8204200B32	右遮阳板总成	Right sunvisor assy.	1	with airbag warning tag	√
B	S8204200B1	右遮阳板总成	Right sunvisor assy.	1	without airbag warning tag	
B	S8204200C1	右遮阳板总成	Right sunvisor assy.	1	with 2 airbag warning tag	
4	S8204210	右遮阳板本体	Right sunvisor	1		
5	S8204220	右化妆镜组件	Right sunvisor mirror	1		
6	S8204230	右遮阳板大固定座组件	Right sunvisor fixing seat	1		
7	S8204311B32	遮阳板固定挂钩	Sunvisor fixing hook	2		√
8	S5702110	顶棚本体	Roof	1	without center safety belt hole	√
8	S5702111B1	顶棚本体	Roof	1	with center safety belt hole	
8	S5702111C1	顶棚本体	Roof	1	Sunroof，without center safety belt hole	
8	S5702111D1	顶棚本体	Roof	1	Sunroof，with center safety belt hole	
9	S5702311	顶棚左前支撑架	Roof support，front left	1		√
10	S5702312	顶棚左中支撑架	Roof support，middle left	1		√
11	S5702313	顶棚左后支撑架	Roof support，rear left	1		√
12	S5702321	顶棚右前支撑架	Roof support，front right	1		√
13	S5702322	顶棚右中支撑架	Roof support，middle right	1		√

6.12 顶棚装饰装置 Roof interior

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
14	S5702323	顶棚右后支撑架	Roof support，rear right	1		√
15	S5702211	顶盖毛毡	Roof felt	8		
16	S5702113	顶棚安全带罩	Safety belt cover	1	for rear 3 point safety belt	√
17	B8215100B32	安全拉手	Safety handle	3		√
18	B8204231	安全气囊警示标签	Airbag warning tag	1		√
19	Q2560620F13	十字槽半沉头螺钉	Philips screw	4		√
20	Q1410616	六角头螺栓和锥形弹性垫圈组合件	Hex bolt and taper springiness washer	2		√
21	Q1840645	六角法兰面螺栓	Hex flange bolt	6		√
22	400-0466	塑料卡扣	Plastic clip	4		
23	400-540	塑料卡扣	Plastic clip	4		√

6.13 隔热，隔音装饰件 NVH parts



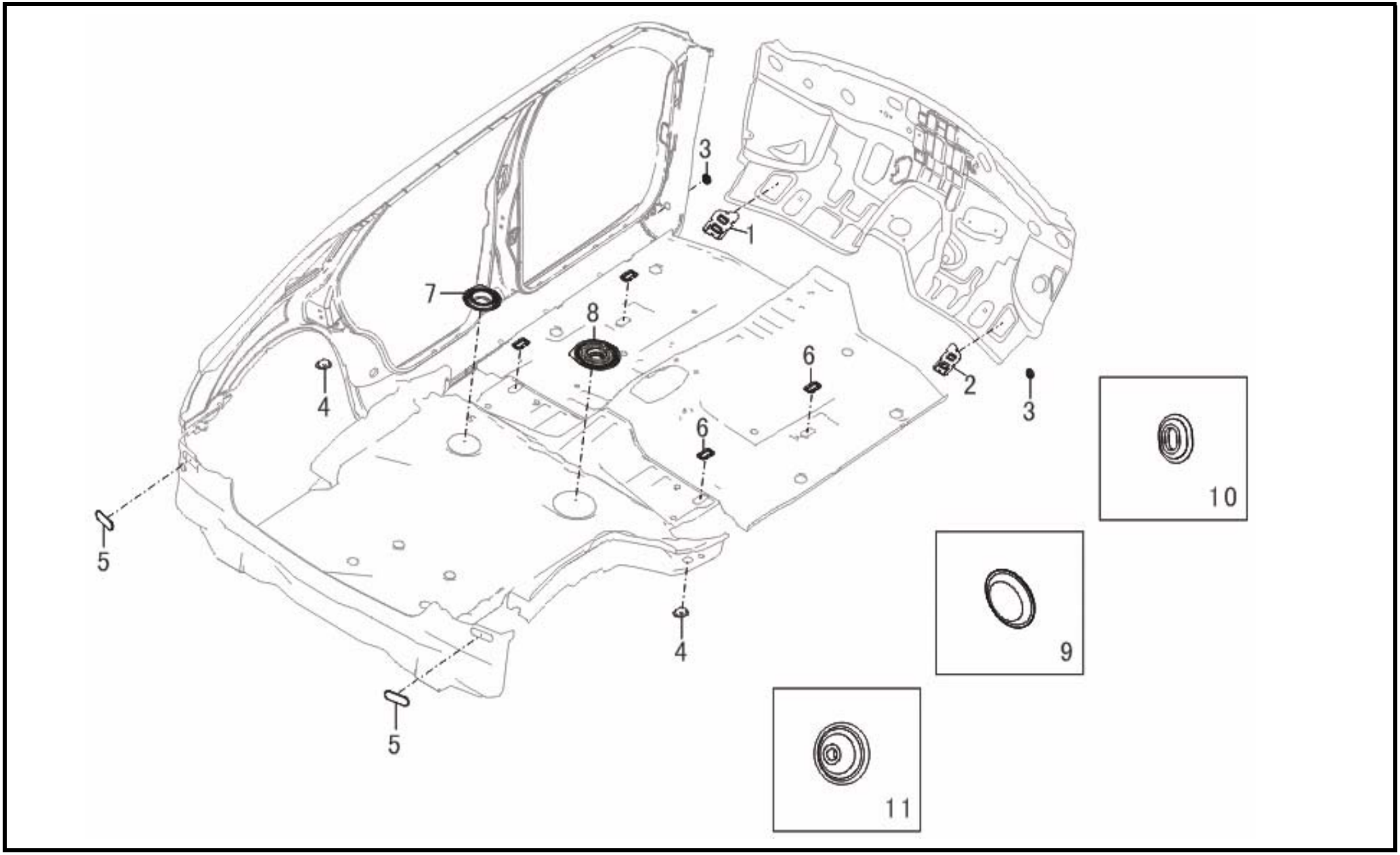
6.13 隔热，隔音装饰件 NVH parts

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1	S5531220	发动机舱隔热垫	Engine room insulator	1		√
2	S5531210	前围隔热垫	Front body insulator	1		√
3	S5531611	左前密封挡板	Front left seal plate	1		√
4	S5531612	右前密封挡板	Front right seal plate	1		√
5	S5531613	左后密封挡板	Rear left seal plate	1		√
6	S5531614	右后密封挡板	Rear right seal plate	1		√
7	S5531511	左前地板阻尼垫	Front left floor damper	1		
8	S5531512	右前地板阻尼垫	Front right floor damper	1		
9	S5531410	副仪表板隔音垫	Console insulator	1		√
10	S5531517	防撞梁阻尼垫片	Anti-collision beam damper	4		
11	S5531513	左中地板阻尼垫	Middle left floor damper	1		
12	S5531514	右中地板阻尼垫	Middle right floor damper	1		
13	S5531516	车门外板阻尼垫片	Door plate damper	4		
14	S5531515	后地板备胎阻尼垫	Rear floor damper，for spare tyre	1		
15	S5531711	仪表板上吸音棉	Dashboard insulator sponge，upper	1		√
16	S5531712	仪表板下吸音棉	Dashboard insulator sponge，lower	1		√
17	S5531713	仪表板左吸音棉	Dashboard insulator sponge，left	1		√
18	S5531714	仪表板右吸音棉	Dashboard insulator sponge，right	1		√
19	S5531110	发动机罩隔热板	Engine hood insulator	1		√
20	S5531311	左翼子板隔音垫	Left fender insulator	1		√

6.13 隔热，隔音装饰件 NVH parts

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
21	S5531312	右翼子板隔音垫	Right fender insulator	1		√
22	400-0466B32	塑料卡扣	Plastic clip	8		√
23	400-0245B	塑料卡扣	Plastic clip	9		
24	S5531715	副仪表板左前隔音垫	Console noise insulator,front left	1		√
25	S5531716	副仪表板右前隔音垫	Console noise insulator,front right	1		√
26	S5531717	副仪表板左后隔音垫	Console noise insulator,rear left	1		√
27	S5531718	副仪表板右后隔音垫	Console noise insulator,rear right	1		√

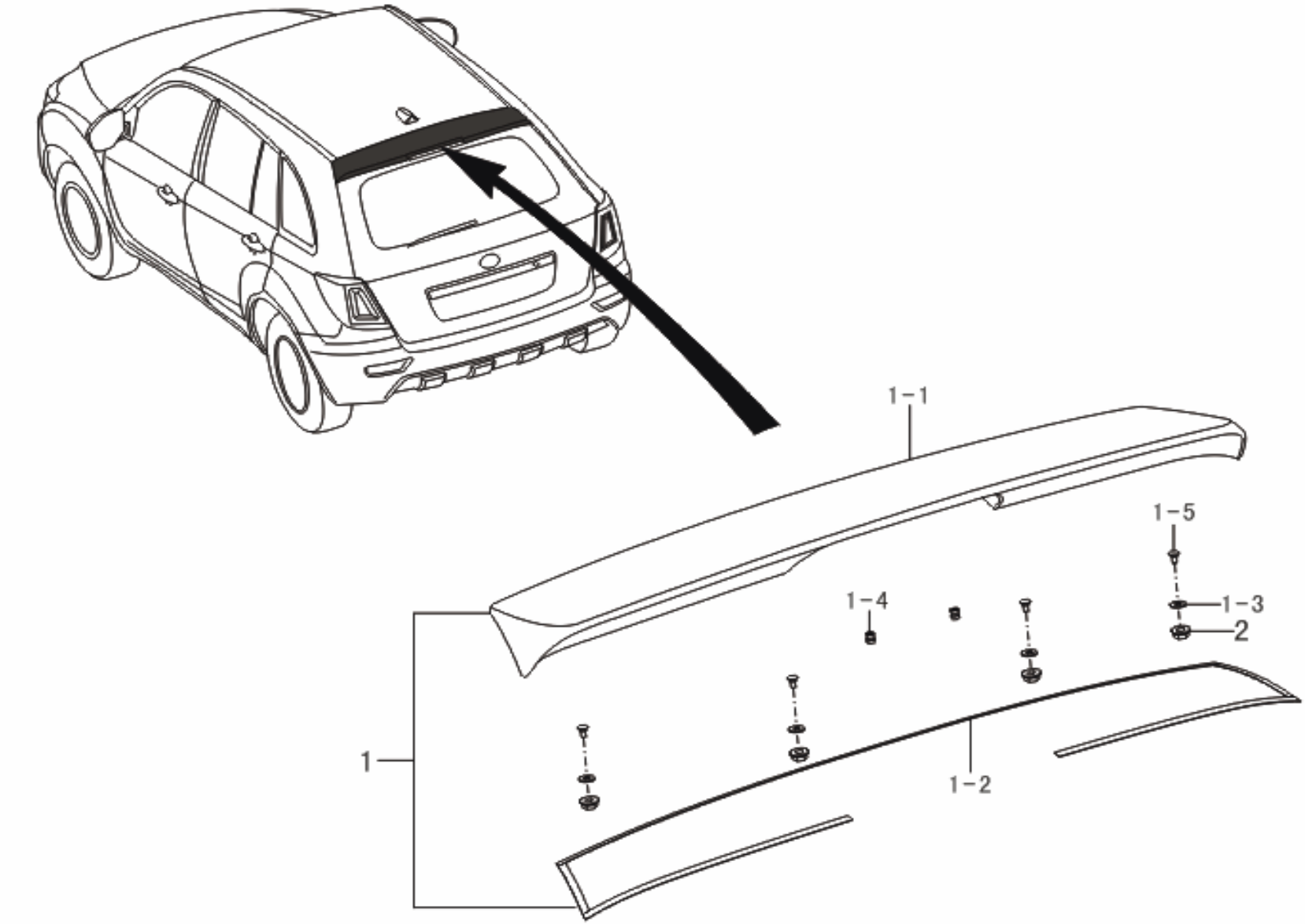
6.14 防尘防雨密封件装置 Waterproof & dustproof



6.14 防尘防雨密封件装置 Waterproof & dustproof

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1	S5532111	前围板堵盖左	Front body plug，left	1		√
2	S5532112	前围板堵盖右	Front body plug，right	1		√
3	S5532711	天窗水管堵盖	Roof pipe plug	2		√
4	S5532616	橡胶堵盖	Rubber plug（28*45）	2	28×45	√
5	S5532211	橡胶堵盖	Rubber plug	2	ф30×90	√
6	S5532613	金属堵盖	Metal plug（ф30×65）	4	ф30×65	√
7	S5532611	左油泵盖	Fuel pump cap，left	1		√
8	S5532612	右油泵盖	Fuel pump cap，right	1		√
9	Q72712	橡胶堵盖	Rubber plug	6		√
9	Q72716	橡胶堵盖	Rubber plug	11		√
9	Q72720	橡胶堵盖	Rubber plug	30		√
9	Q72725	橡胶堵盖	Rubber plug	4		√
9	Q72740	橡胶堵盖	Rubber plug	6		√
9	Q72745	橡胶堵盖	Rubber plug	4		√
10	S5532113	左副车架后固定支架外板堵盖	Sub frame bracket plug	1		√
11	S5532213	氧传感器胶套	Oxygen Sensor sleeve	1		

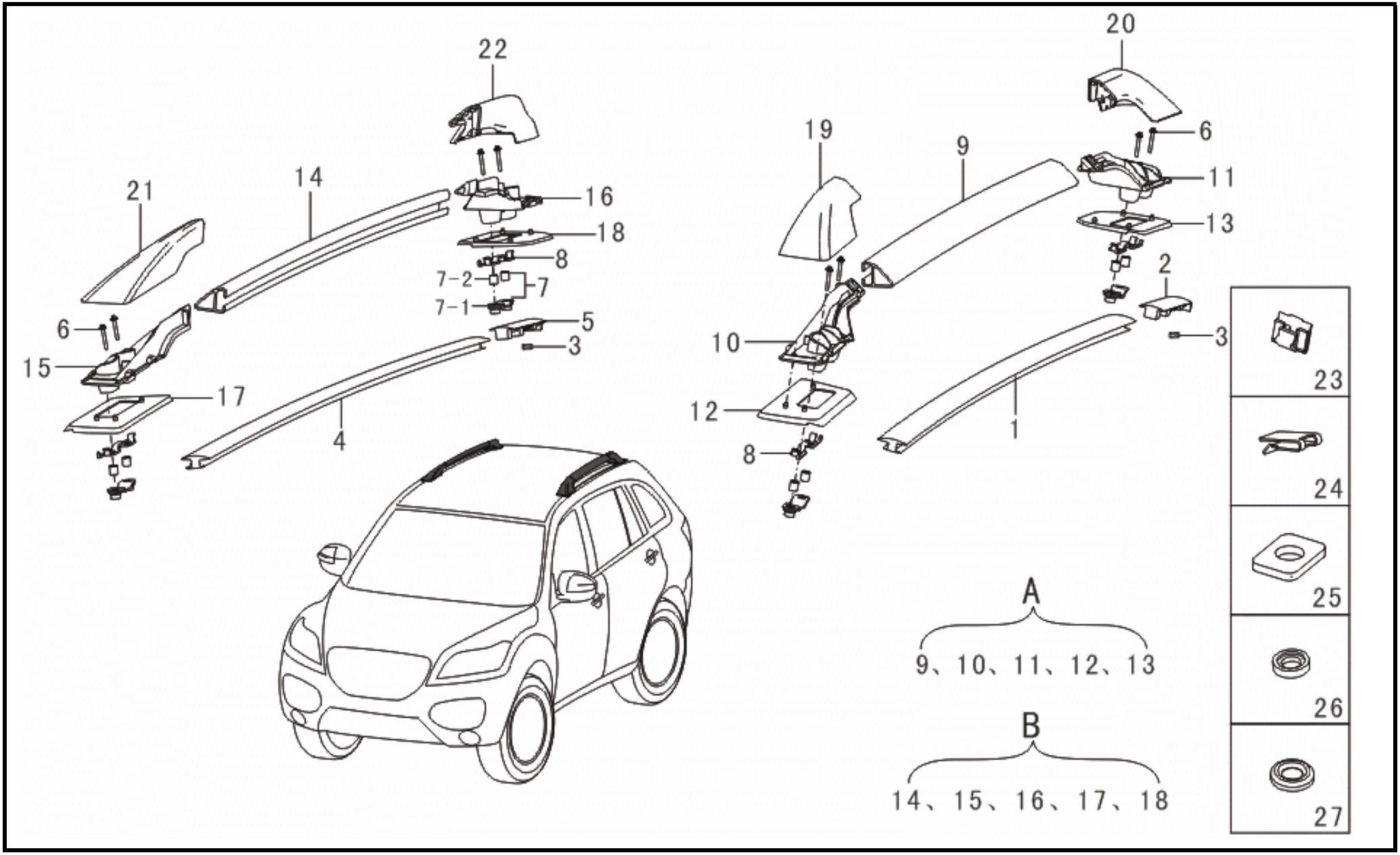
6.15 扰流板 Rear spoiler



6.15 扰流板 Rear spoiler

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1	S5614110	扰流板组件	Rear spoiler assy.	1		√
1-1	S5614111	扰流板本体	Rear spoiler	1		
1-2	S5614112	密封条	Top window seal	1		
1-3	S5614113	密封圈	Washer	4		
1-4	S5614114	扰流板镶嵌螺母	Nut	2		
1-5	S5614115	扰流板镶嵌螺柱	Bolt	4		
2	Q33006	全金属六角法兰面锁紧螺母	Hex flange nut	4		√

6.16 顶盖附件装置 Roof attachment



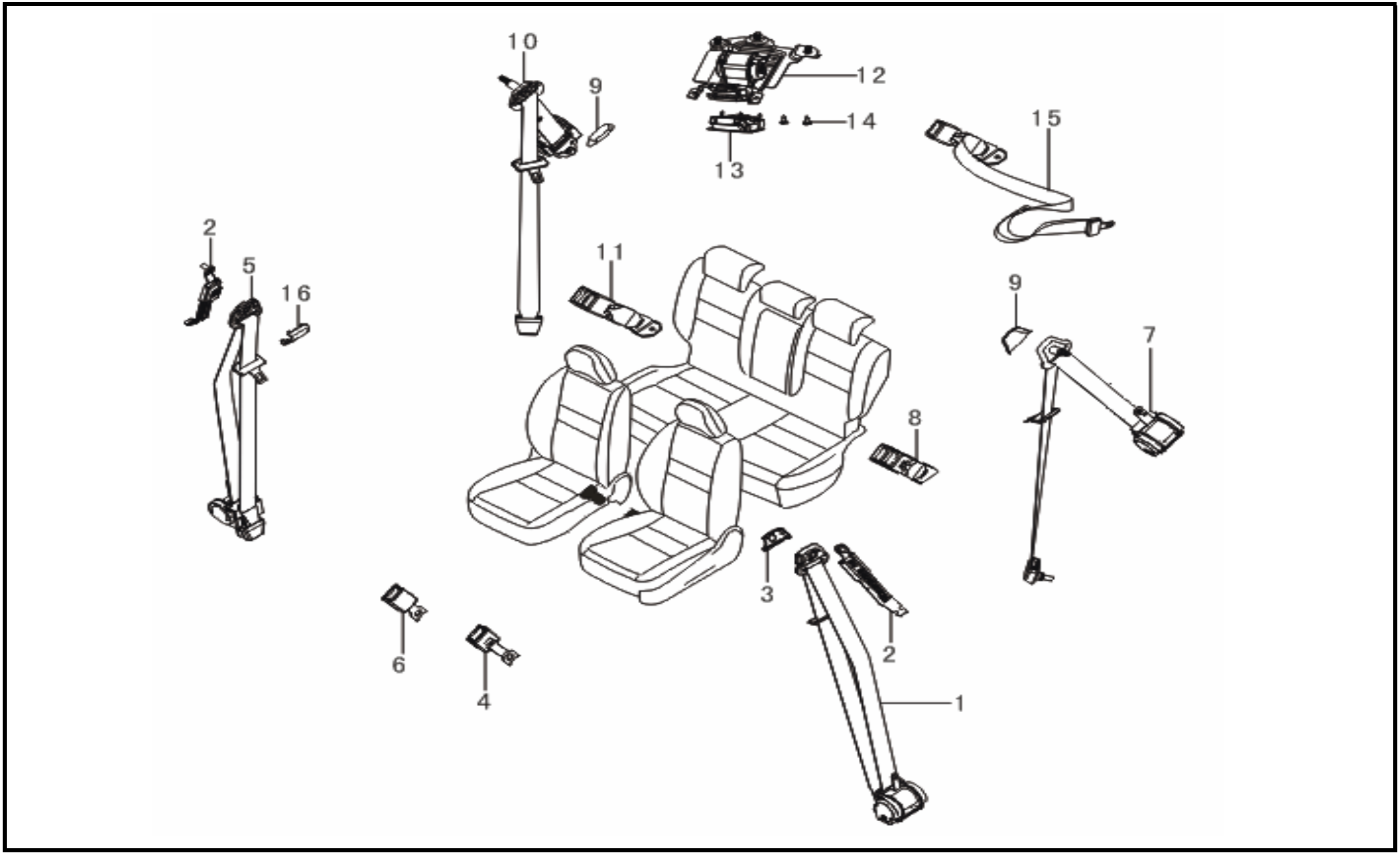
6.16 顶盖附件装置 Roof attachment

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1	S5704110	左顶盖饰条组件	Roof trim stripe，left	1		√
2	S5704511	左顶盖饰条盖板	Roof trim stripe cover，left	1		√
3	400-2235	卡扣	Clip	2		√
4	S5704210	右顶盖饰条组件	Roof trim stripe，right	1		√
5	S5704611	右顶盖饰条盖板	Roof trim stripe cover，right	1		√
6	Q1840845	六角法兰面螺栓	Hex flange bolt	8		√
7	S5704310	支架固定板组件	Bracket mount assy	4		√
7-1	S5704311	支架固定板	Bracket mount	4		
7-2	S5704312	支架固定板塑料套	Bracket mount sleeve	8		
8	S5704321	装饰条盖板固定支架	Roof trim stripe cover bracket	4		√
A	S5709110	顶棚左行李架组件	Roof rack，Left	1		√
9	S5709111	顶棚行李架左纵梁	Roof rack longeron，Left	1		
10	S5709113	顶棚行李架左前固定支架	Roof rack front bracket，Left	1		
11	S5709114	顶棚行李架左后固定支架	Roof rack rear bracket，Left	1		
12	S5709115	顶棚行李架左前橡胶垫	Roof rack front damper，Left	1		
13	S5709116	顶棚行李架左后橡胶垫	Roof rack rear damper，Left	1		
B	S5709210	顶棚右行李架组件	Roof rack，right	1		√
14	S5709211	顶棚行李架右纵梁	Roof rack longeron，right	1		
15	S5709213	顶棚行李架右前固定支架	Roof rack front bracket，right	1		
16	S5709214	顶棚行李架右后固定支架	Roof rack rear bracket，right	1		

6.16 顶盖附件装置 Roof attachment

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
17	S5709215	顶棚行李架右前橡胶垫	Roof rack front damper，right	1		
18	S5709216	顶棚行李架右后橡胶垫	Roof rack rear damper，right	1		
19	S5709131	顶棚行李架左前装饰盖	Front roof rack trim，Left	1		√
20	S5709132	顶棚行李架左后装饰盖	Rear roof rack trim，Left	1		√
21	S5709231	顶棚行李架右前装饰盖	Front roof rack trim，right	1		√
22	S5709232	顶棚行李架右后装饰盖	Rear roof rack trim，right	1		√
23	S5704411	顶棚盖板弹簧卡片	Roof springness clamp	4		√
24	S5704412	支架固定板弹簧卡片	Bracket mount springness clamp	4		√
25	S5704413	支架密封垫	Bracket seal	4		√
26	S5704414	密封圈	Seal	8		√
27	S5704415	密封盖	Seal cover	8		√
28	Q1840845	六角法兰面螺栓	Hex flange bolt	8		√
29	400-2235	卡扣	Clip	2		√

6.17 乘员安全约束装置 Safety belts



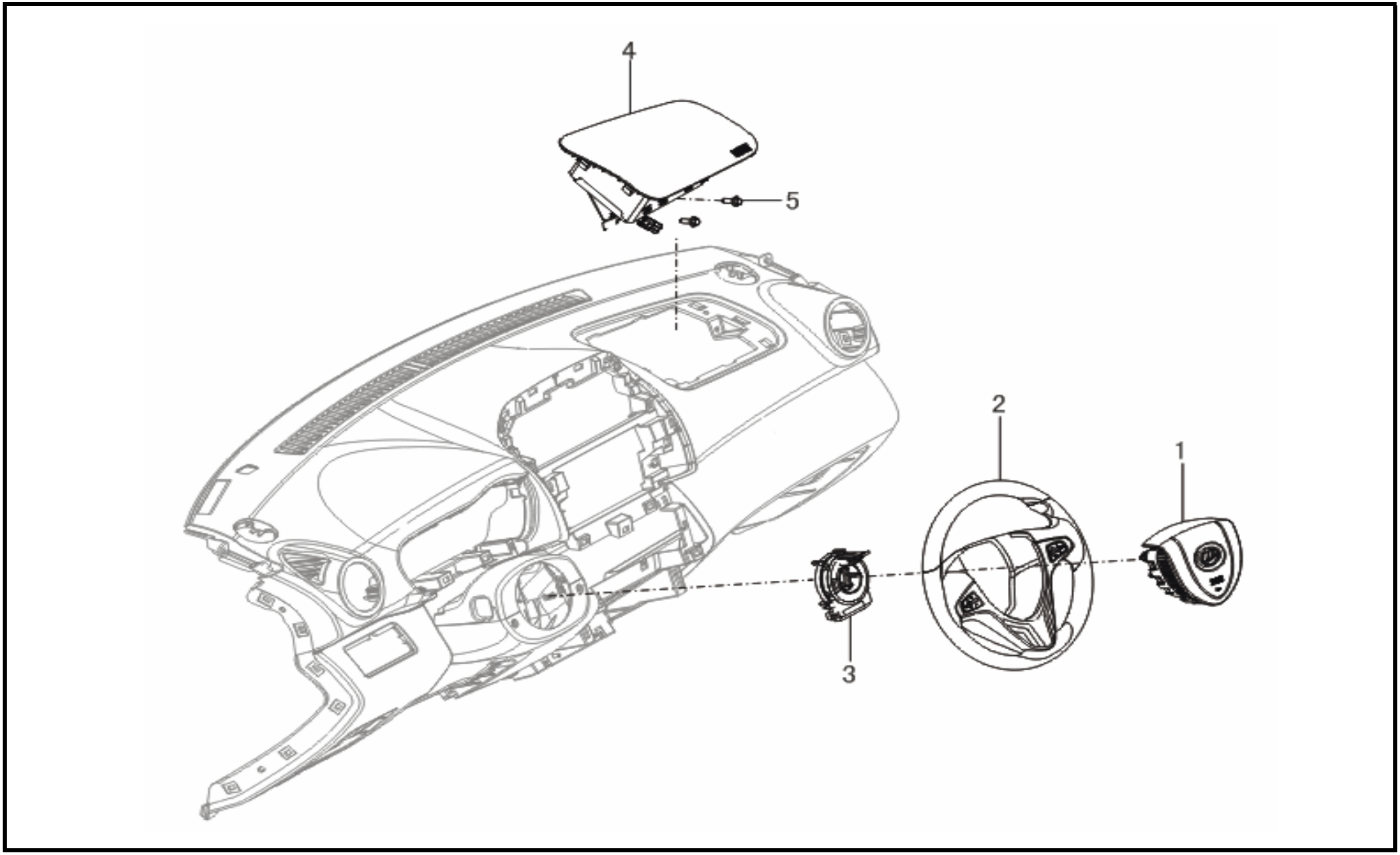
6.17 乘员安全约束装置 Safety belts

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1	S5811100	左前安全带总成	Front left safety belt	1		√
1	S5811100A2	左前安全带总成	Front left safety belt	1	E-Mark	
1	S5811100B2	左前安全带总成	Front left safety belt	1	Pre-load	
2	S5811210	安全带高度调节器总成	Safety belt height adjuster	2		√
2	S5811210A2	安全带高度调节器总成	Safety belt height adjuster	2	E-Mark	
3	S5811251	左前安全带吊环盖板	Front safety belt end cap	1		√
3	S5811251A2	左前安全带吊环盖板	Front safety belt end cap	1	E-Mark	
4	S5811230	左前安全带锁扣总成	Front left safety belt buckle	1		√
4	S5811230B1	左前安全带锁扣总成	Front left safety belt buckle	1	E-Mark	
5	S5811400	右前安全带总成	Front right safety belt	1		√
5	S5811400A2	右前安全带总成	Front right safety belt	1	E-Mark	
5	S5811400B2	右前安全带总成	Front right safety belt	1	Pre-load	
6	S5811430	右前安全带锁扣总成	Front right safety belt buckle	1		√
6	S5811430B1	右前安全带锁扣总成	Front right safety belt buckle	1	E-Mark	
7	S5812100	左后安全带总成	Rear left safety belt	1		√
7	S5812100A2	左后安全带总成	Rear left safety belt	1	E-Mark	
8	S5812200	左后排锁扣总成	Rear left safety belt buckle	1		√
8	S5812200A2	左后排锁扣总成	Rear left safety belt buckle	1	E-Mark	
9	S5812251	后安全带吊环盖板	Rear safety belt end cap	2		√
9	S5812251A2	后安全带吊环盖板	Rear safety belt end cap	2	E-Mark	

6.17 乘员安全约束装置 Safety belts

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
10	S5812400	右后安全带总成	Rear right safety belt	1		√
10	S5812400A2	右后安全带总成	Rear right safety belt	1	E-Mark	
11	S5812500	右后排锁扣总成	Rear right safety belt buckle	1		√
11	S5812500A2	右后排锁扣总成	Rear right safety belt buckle	1	E-Mark	
12	S5813100	中间安全带总成	Middle safety belt	1		√
12	S5813100A2	中间安全带总成	Middle safety belt	1	E-Mark	
13	S5813210	中间安全带塑料支架总成	Middle safety belt bracket	1		
14	Q2734212F30	十字槽大半圆头自攻螺钉	Hex flange screw	2		√
15	S5813300	后排中间腰带及锁扣总成	Rear middle safety belt	1		√
15	S5813300A2	后排中间腰带及锁扣总成	Rear middle safety belt	1	E-Mark	
16	S5811451	右前安全带吊环盖板	Front right safety belt end cap	1		
16	S5811451A2	右前安全带吊环盖板	Front right safety belt end cap	1	E-Mark	

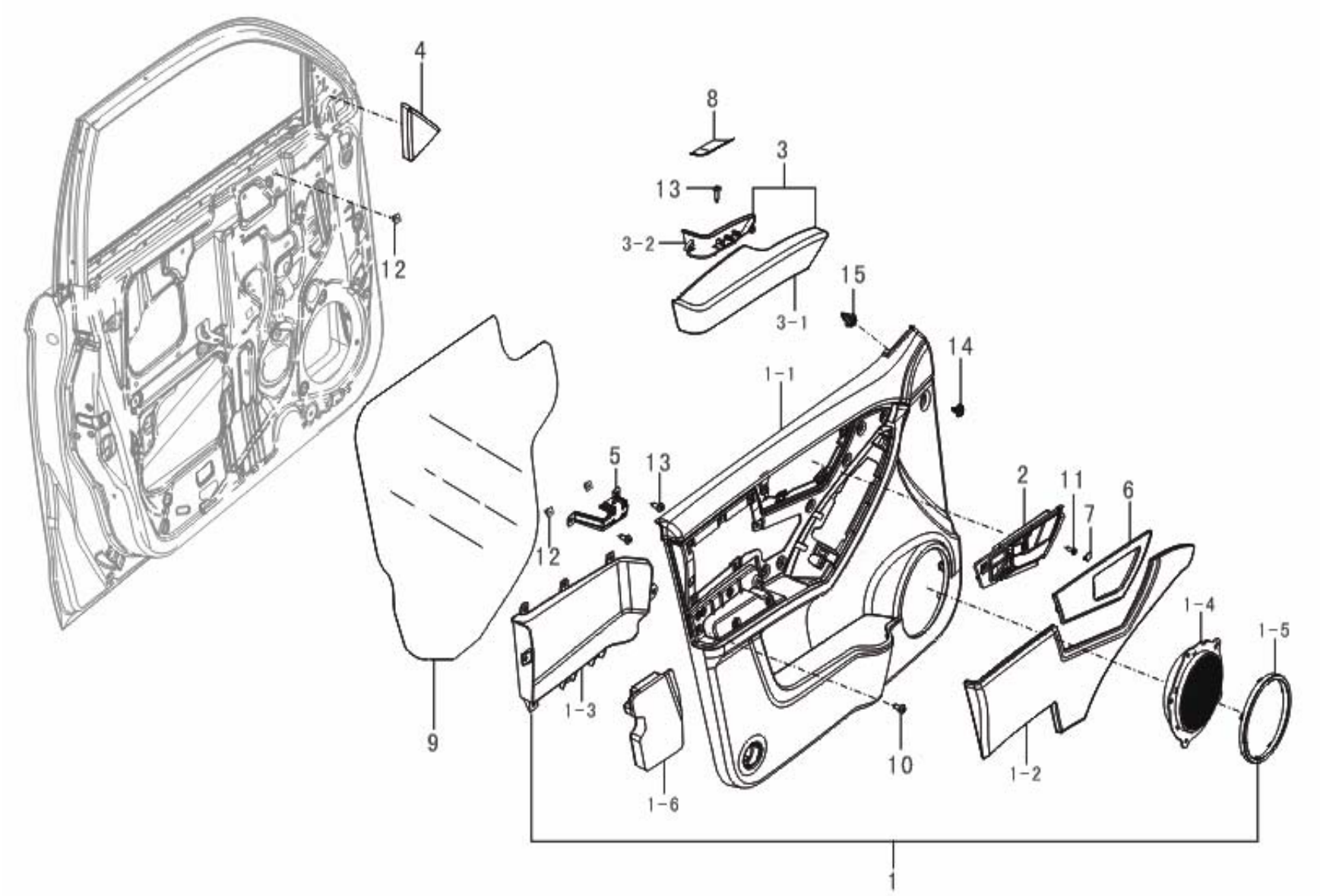
6.18 转向盘及安全气囊 Steering wheel & Airbag



6.18 转向盘及安全气囊 Steering wheel & Airbag

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1	S5824100	驾驶员气囊模块	Driver‘s airbag	1		√
2	S3402100	方向盘总成	Steering wheel	1		√
2	S3402100B1	方向盘总成	Steering wheel	1	EX,with switches	√
3	S3658300	安全气囊时钟弹簧	Airbag clock spring	1		√
3	S3658300B1	安全气囊时钟弹簧	Airbag clock spring	1		√
4	S5824200	副驾驶员气囊模块	Passengers airbag	1		√
5	Q1840620	六角法兰面螺栓	Hex flange bolt	2		√

6.19 前门护面 Front door interior



6.19 前门护面 Front door interior

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1	S6102110B34	左前门内护板总成	Front left door interior assy.	1	leatherette	
1	S6102110A2	左前门内护板总成	Front left door interior assy.	1	fabric	√
1	S6102210	右前门内护板总成	Front right door interior assy.	1	leatherette	√
1	S6102210A2	右前门内护板总成	Front right door interior assy.	1	fabric	√
1-1	S6102111	左前门护板本体	Front left door interior	1		√
1-1	S6102211	右前门护板本体	Front right door interior	1		√
1-2	S6102112	左前门中饰板	Front left door middle trim	1	leatherette	
1-2	S6102112A2	左前门中饰板	Front left door middle trim	1	fabric	
1-2	S6102212	右前门中饰板	Front right door middle trim	1	leatherette	
1-2	S6102212A2	右前门中饰板	Front right door middle trim	1	fabric	
1-3	S6102113	左前门地图袋	Front left door map bag	1		
1-3	S6102213	右前门地图袋	Front right door map bag	1		
1-4	S6102114	左门喇叭罩	Speaker cap,left door	1		
1-4	S6102214	右门喇叭罩	Speaker cap,right door	1		
1-5	S6102115	左门喇叭罩装饰圈	Speaker cap trim,left door	1		
1-5	S6102215	右门喇叭罩装饰圈	Speaker cap trim,right door	1		
1-6	S6102116	左前门缓冲块	Front left door damper	1		
1-6	S6102216	右前门缓冲块	Front right door damper	1		
2	S6102130	左门内扣手总成	Inner handle，left door	1		√
2	S6102230	右门内扣手总成	Inner handle，right door	1		√

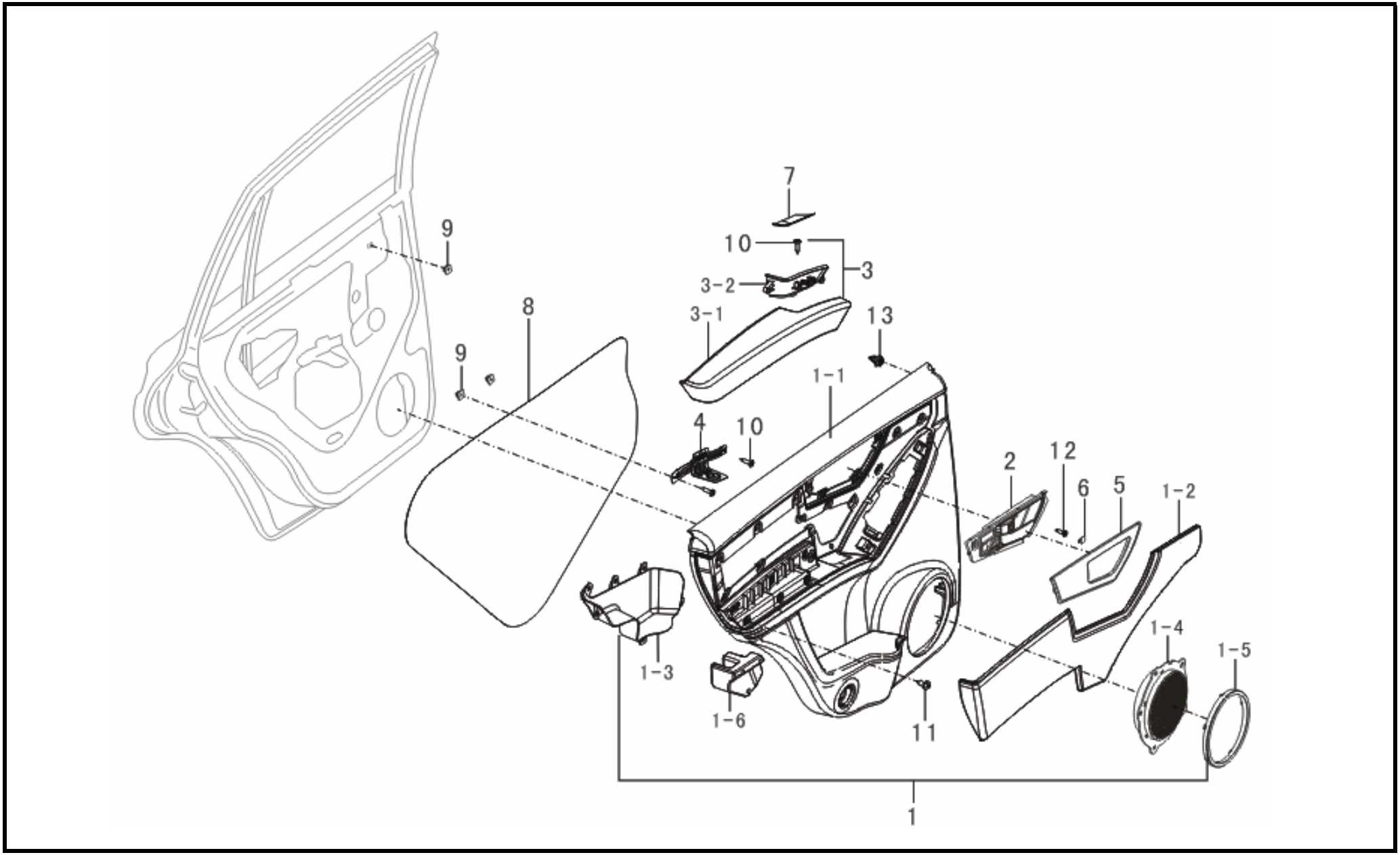
6.19 前门护面 Front door interior

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
3	S6102150B32	左前门把手总成	Outer handle assy，front left door	1	leatherette	
3	S6102150A2	左前门把手总成	Outer handle assy，front left door	1	fabric	√
3	S6102250B32	右前门把手总成	Outer handle assy，front right door	1	leatherette	√
3	S6102250A2	右前门把手总成	Outer handle assy，front right door	1	fabric	√
3-1	S6102151	左前门把手	Outer handle，front left door	1	leatherette	√
3-1	S6102151A2	左前门把手	Outer handle，front left door	1	fabric	√
3-1	S6102251	右前门把手	Outer handle，front right door	1	leatherette	√
3-1	S6102251A2	右前门把手	Outer handle，front right door	1	fabric	√
3-2	S6102152	左前门把手盖	Outer handle cap，front left door	1		√
3-2	S6102252	右前门把手盖	Outer handle cap，front left door	1		√
4	S6102181B31	左前门三角护板	Triangular fender，front left door	1		
4	S6102281B31	右前门三角护板	Triangular fender，front right door	1		√
5	S6102182	左前门把手支架	Inner handle bracket，front left door	1		√
5	S6102282	右前门把手支架	Inner handle bracket，front right door	1		√
6	S6102183	左门内扣手装饰盖	Inner handle trim，left door	1		√
6	S6102283	右门内扣手装饰盖	Inner handle trim，right door	1		√
7	S6102184B31	螺钉堵盖	Screw plug	2		
8	S6102185B33	左前门把手垫	Inner handle washer，front left door	1		
8	S6102285B33	右前门把手垫	Inner handle washer，front right door	1		√
9	S6102710	左前门防水膜组件	Water proof，front left door	1		√

6.19 前门护面 Front door interior

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
9	S6102810	右前门防水膜组件	Water proof，front right door	1		√
10	Q2714816	十字槽盘头自攻螺钉	Philips self-tapping screw	14		√
11	Q2744819	十字槽沉头自攻螺钉	Philips self-tapping screw	2		√
12	400-0072	方螺母卡扣	Clip	3		√
13	Q2204816	十字槽盘头自攻螺钉带平垫圈组合	Screw	6		√
14	400-0415	塑料卡扣	Plastic clip	2		
15	400-540	塑料卡扣	Plastic clip	18		√

6.20 后门护面 Rear door interior



6.20 后门护面 Rear door interior

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1	S6202110B34	左后门内护板总成	Rear left door interior assy.	1		√
1	S6202110A2	左后门内护板总成	Rear left door interior assy.	1		√
1	S6202210B34	右后门内护板总成	Rear right door interior assy.	1		√
1	S6202210A2	右后门内护板总成	Rear right door interior assy.	1		√
1-1	S6202111	左后门护板本体	Rear left door interior	1		√
1-1	S6202211	右后门护板本体	Rear right door interior	1		√
1-2	S6202112	左后门中饰板	Rear left door middle trim	1	leatherette	
1-2	S6202112A2	左后门中饰板	Rear left door middle trim	1	fabric	
1-2	S6202212	右后门中饰板	Rear right door middle trim	1	leatherette	
1-2	S6202212A2	右后门中饰板	Rear right door middle trim	1	fabric	
1-3	S6202113	左后门地图袋	Rear left door map bag	1		
1-3	S6202213	右后门地图袋	Rear right door map bag	1		
1-4	S6202114	左门喇叭罩	Speaker cap,left door	1		
1-4	S6102214	右门喇叭罩	Speaker cap,right door	1		
1-5	S6202115	左门喇叭罩装饰圈	Speaker cap trim,left door	1		
1-5	S6102215	右门喇叭罩装饰圈	Speaker cap trim,right door	1		
1-6	S6202116	左后门缓冲块	Rear left door damper	1		
1-6	S6202216	右后门缓冲块	Rear right door damper	1		
2	S6102130	左门内扣手总成	Inner handle，left door	1		√
2	S6102230	右门内扣手总成	Inner handle，right door	1		√

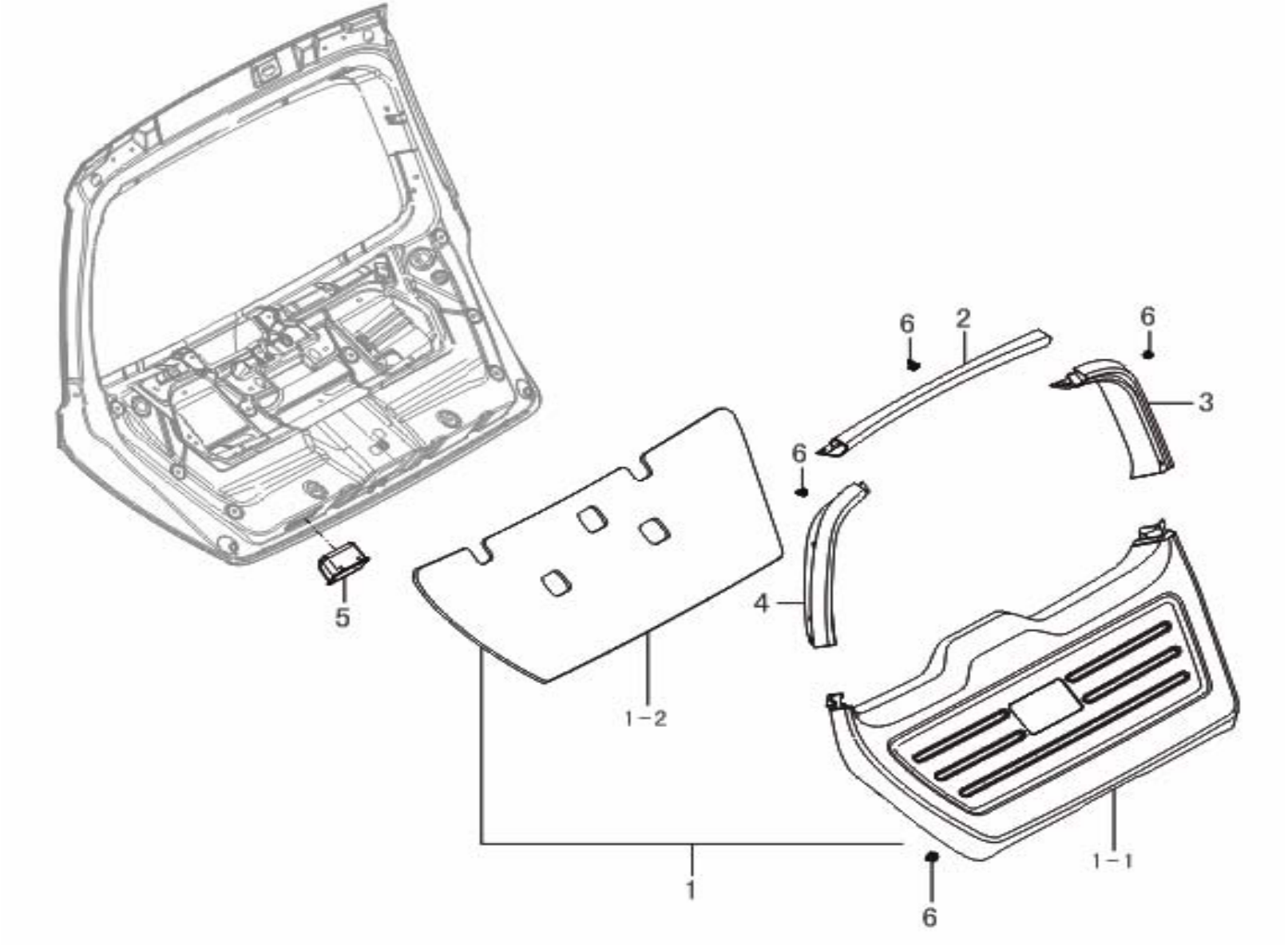
6.20 后门护面 Rear door interior

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
3	S6202150B32	左后门把手总成	Outer handle assy，rear left door	1	leatherette	√
3	S6202150A2	左后门把手总成	Outer handle assy，rear left door	1	fabric	√
3	S6202250B32	右后门把手总成	Outer handle assy，rear right door	1	leatherette	√
3	S6202250A2	右后门把手总成	Outer handle assy，rear right door	1	fabric	√
3-1	S6202151	左后门把手	Outer handle，rear left door	1	leatherette	√
3-1	S6202151A2	左后门把手	Outer handle，rear left door	1	fabric	√
3-1	S6202251	右后门把手	Outer handle，rear right door	1	leatherette	√
3-1	S6202251A2	右后门把手	Outer handle，rear right door	1	fabric	√
3-2	S6202152	左后门把手盖	Outer handle cap，rear left door	1	leatherette	√
3-2	S6202252	右后门把手盖	Outer handle cap，rear right door	1	fabric	√
3-3	Q2140616	十字槽盘头螺钉	Screw	2		√
4	S6202182	左后门把手支架	Outer handle bracket，rear left door	1		√
4	S6202282	右后门把手支架	Outer handle assy，rear right door	1		√
5	S6102183	左门内扣手装饰盖	Inner handle trim，left door	1		√
5	S6102283	右门内扣手装饰盖	Inner handle trim，right door	1		√
6	S6102184B31	螺钉堵盖	Screw plug	2		
7	S6202185B33	左后门把手垫	Outer handle washer，rear left door	1		√
7	S6202285B33	右后门把手垫	Outer handle bracket，rear right door	1		√
8	S6202710	左后门防水膜组件	Outer handle washer，rear right door	1		√
8	S6202810	右后门防水膜组件	Rear right door water proof	1		√

6.20 后门护面 Rear door interior

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
9	400-0072	方螺母卡扣	Clip	6		√
10	Q2204816	十字槽盘头自攻螺钉带平垫圈组合	Screw	6		√
11	Q2714816	十字槽盘头自攻螺钉	Philips self-tapping screw	16		√
12	Q2744819	十字槽沉头自攻螺钉	Philips self-tapping screw	2		√
13	400-540	塑料卡扣	Plastic clip	16		√

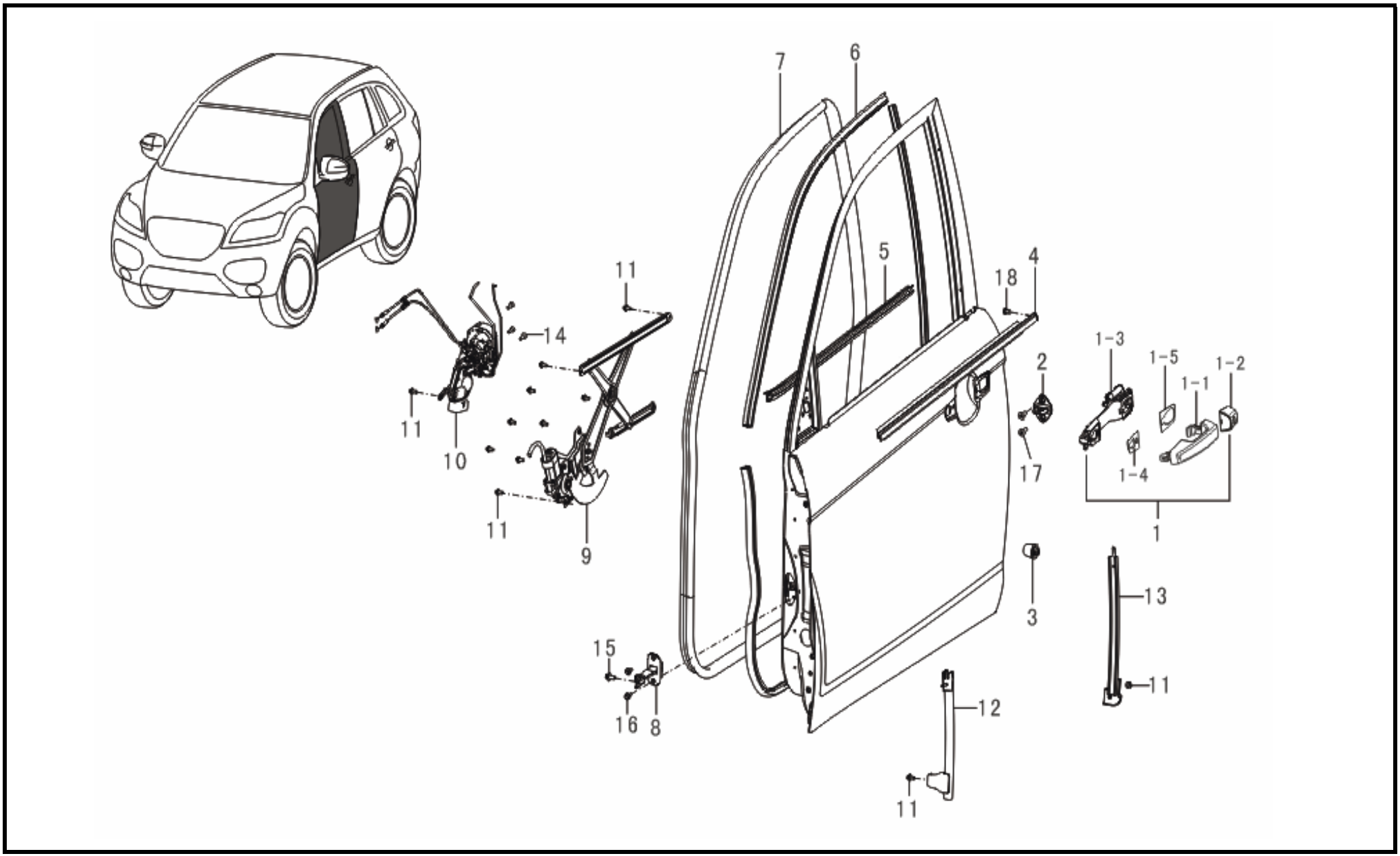
6.21 后背门护面 Tail door interior



6.21 后背门护面 Tail door interior

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1	S6302110B31	后背门下护板组件	Tail door interior assy，lower	1		√
1-1	S6302111	后内门下护板	Tail door interior，lower	1		
1-2	S6302119	后背门隔音垫	Tail door insulater	1		
2	S6302121B32	后背门上护板	Tail door interior，upper	1		√
3	S6302131B32	后背门左护板	Tail door interior，left	1		√
4	S6302141B32	后背门右护板	Tail door interior，right	1		√
5	S6302151B31	后背门内扣手	Tail door inner handle	1		√
6	400-540	塑料卡扣	Plastic clip	23		√

6.22 前门附件 Front door attachment



6.22 前门附件 Front door attachment

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1	S6105300	左前车门外拉手总成	Out handle,front left door	1		√
1	S6105300A2	左前车门外拉手总成	Out handle,front left door	1	chromium	√
1	S6105400	右前车门外拉手总成	Out handle,front right door	1		√
1	S6105400A2	右前车门外拉手总成	Out handle,front right door	1	chromium	√
1-1	S6105310	左车门外拉手手柄总成	Out handle lever,left door	1		
1-1	S6105310A2	左车门外拉手手柄总成	Out handle lever,left door	1	chromium	
1-1	S6105410	右车门外拉手手柄总成	Out handle lever,right door	1		
1-1	S6105410A2	右车门外拉手手柄总成	Out handle lever,right door	1	chromium	
1-2	S6105331	左前车门外拉手手柄帽	Out handle cap,front left door	1		
1-2	S6105331A2	左前车门外拉手手柄帽	Out handle cap,front left door	1	chromium	
1-2	S6105431	右前车门外拉手手柄帽	Out handle cap,front right door	1		
1-2	S6105431A2	右前车门外拉手手柄帽	Out handle cap,front right door	1	chromium	
1-3	S6105320	左前车门外拉手手柄座总成	Out handle seat,front left door	1		
1-3	S6105420	右前车门外拉手手柄座总成	Out handle seat,front right door	1		
1-4	S6105332	左车门外拉手手柄塑料垫片	Out handle washer 1,front left door	1		
1-4	S6105432	右车门外拉手手柄塑料垫片	Out handle washer 1,front right door	1		
1-5	S6105333	左车门外拉手手柄帽塑料垫片	Out handle washer 2,front left door	1		
1-5	S6105433	右车门外拉手手柄帽塑料垫片	Out handle washer 2,front right door	1		
2	S6105170	车门锁扣组件	Door buckle component	2		√
3	S5532311	前车门限位块	Front door stoping block	2		√

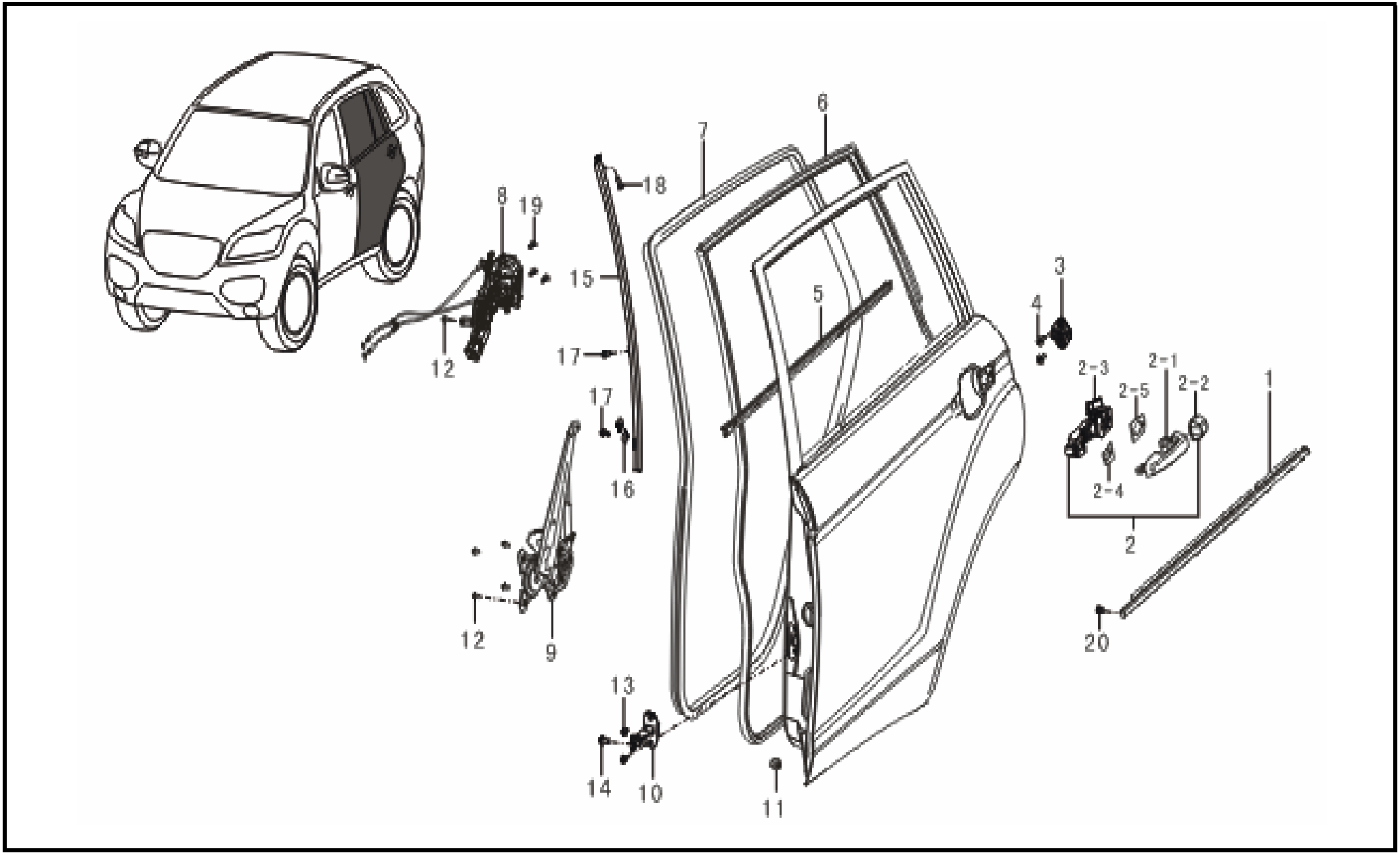
6.22 前门附件 Front door attachment

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
4	S6107112	左前车门外切水	Out weather Strip，front left door	1		√
4	S6107212	右前车门外切水	Out weather Strip，front right door	1		√
5	S6107114	左前车门内切水	Inner weather Strip，front left door	1		√
5	S6107214	右前车门内切水	Inner weather Strip，front right door	1		√
6	S6107120	左前车门密封条组件	Front left door seal，door side	1		√
6	S6107220	右前车门密封条组件	Front right door seal，door side	1		√
7	S6107113	左前车门门框密封条	Front left door seal，body side	1		√
7	S6107213	右前车门门框密封条	Front right door seal，body side	1		√
8	S6109110	前车门限位器	Front door stopper	2		√
9	S6104100	左前车门电动玻璃升降器总成	Glass lifter，front left door	1		√
9	S6104200	右前车门电动玻璃升降器总成	Glass lifter，front right door	1		√
10	S6105110	左前车门锁体总成	Front left door lock	1		√
10	S6105210	右前车门锁体总成	Front right door lock	1		√
11	Q1840612	六角法兰面螺栓	Hex flange bolt	22		√
12	S6101030	左前侧车门玻璃前导槽下段总成	Glass rail front part ,front left door	1		
12	S6101040	右前侧车门玻璃前导槽下段总成	Glass rail front part,front right door	1		
13	S6101050	左前侧车门玻璃后导槽总成	Glass rail rear part ,front left door	1		
13	S6101060	右前侧车门玻璃后导槽总成	Glass rail rear part,front right door	1		
14	Q2560620F13	十字槽半沉头螺钉	Philips screw	6		√
15	Q1840816	六角法兰面螺栓	Hex flange bolt	2		√

6.22 前门附件 Front door attachment

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
16	Q1840616	六角法兰面螺栓	Hex flange bolt	4		√
17	Q2400820F13	十字槽沉头螺钉和锥形锁紧垫圈组合	Philips screw and washer	4		√

6.23 后门附件



6.23 后门附件 Rear door attachment

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1	S6207112	左后车门外切水	Out weather Strip，rear left door	1		√
1	S6207212	右后车门外切水	Out weather Strip，rear right door	1		√
2	S6205300	左后车门外拉手总成	Out handle,rear left door	1		√
2	S6205300A2	左后车门外拉手总成	Out handle,rear left door	1	chromium	√
2	S6205400	右后车门外拉手总成	Out handle,rear right door	1		√
2	S6205400A2	右后车门外拉手总成	Out handle,rear right door	1	chromium	√
2-1	S6105310	左车门外拉手手柄总成	Out handle lever,left door	1		
2-1	S6105310A2	左车门外拉手手柄总成	Out handle lever,left door	1	chromium	
2-1	S6105410	右车门外拉手手柄总成	Out handle lever,right door	1		
2-1	S6105410A2	右车门外拉手手柄总成	Out handle lever,right door	1	chromium	
2-2	S6205331	左后车门外拉手手柄帽	Out handle cap,rear left door	1		
2-2	S6205331A2	左后车门外拉手手柄帽	Out handle cap,rear left door	1	chromium	
2-2	S6205431	右后车门外拉手手柄帽	Out handle cap,rear right door	1		
2-2	S6205431A2	右后车门外拉手手柄帽	Out handle cap,rear right door	1	chromium	
2-3	S6205320	左后车门外拉手手柄座总成	Out handle seat,rear left door	1		
2-3	S6205420	右后车门外拉手手柄座总成	Out handle seat,rear right door	1		
2-4	S6105332	左车门外拉手手柄塑料垫片	Out handle washer 1,rear left door	1		
2-4	S6105432	右车门外拉手手柄塑料垫片	Out handle washer 1,rear right door	1		
2-5	S6105333	左车门外拉手手柄帽塑料垫片	Out handle washer 2,rear left door	1		
2-5	S6105433	右车门外拉手手柄帽塑料垫片	Out handle washer 2,rear right door			

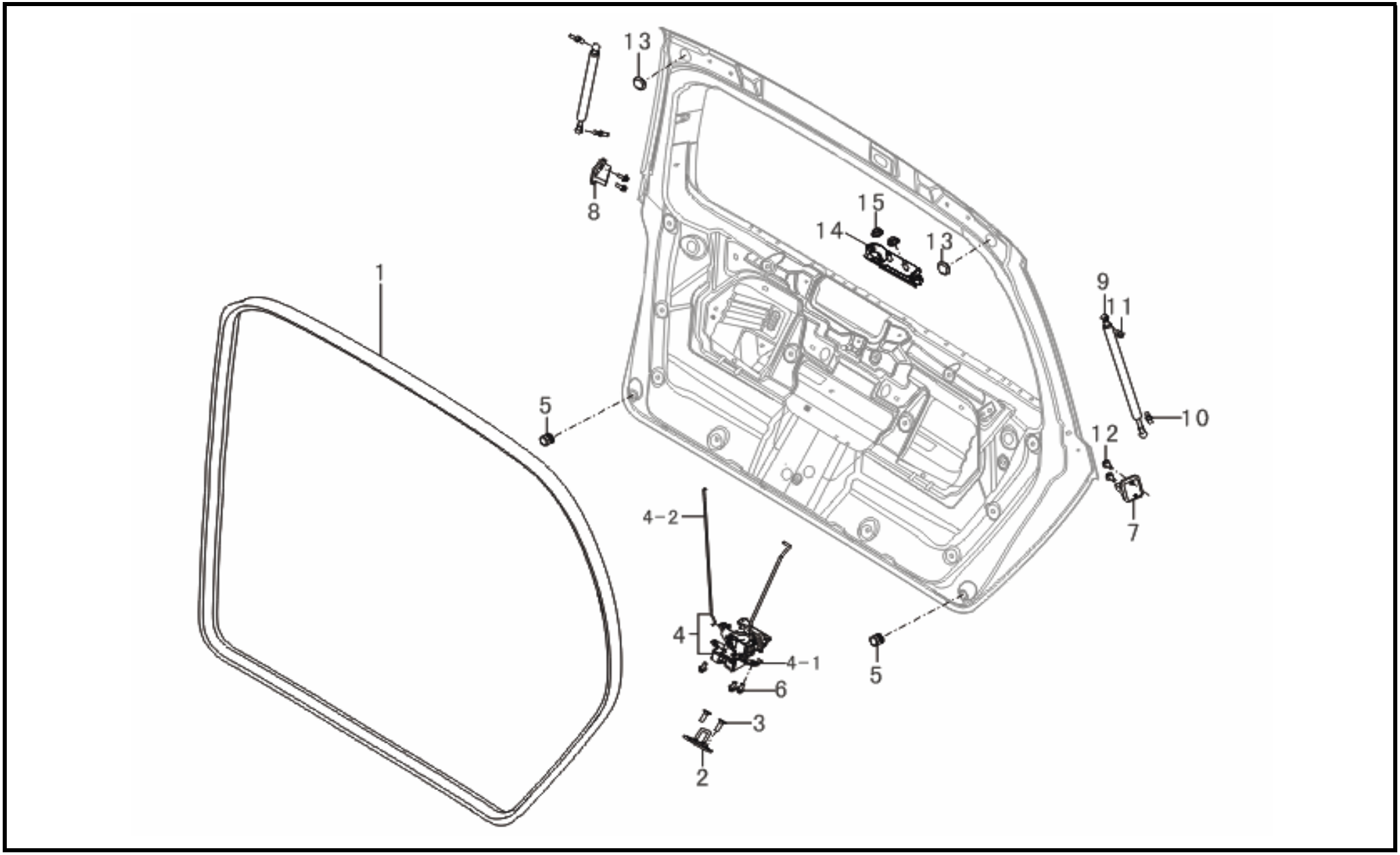
6.23 后门附件 Rear door attachment

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
3	S6105170	车门锁扣组件	Door buckle component	2		√
4	Q2400820F13	十字槽沉头螺钉和锥形锁紧垫圈组合	Philips screw and washer	2		√
5	S6207114	左后车门内切水	Inner weather Strip，rear left door	1		√
5	S6207214	右后车门内切水	Inner weather Strip，rear right door	1		√
6	S6207120	左后车门密封条组件	Rear left door seal，door side	1		√
6	S6207220	右后车门密封条组件	Rear right door seal，door side	1		√
7	S6207113	左后车门门框密封条	Rear left door seal，body side	1		√
7	S6207213	右后车门门框密封条	Rear right door seal，body side	1		√
8	S6205110	左后车门锁体总成	Rear left door lock	1		√
8	S6205210	右后车门锁体总成	Rear right door lock	1		√
9	S6204100	左后车门电动玻璃升降器总成	Glass lifter，rear left door	1		√
9	S6204200	右后车门电动玻璃升降器总成	Glass lifter，rear right door	1		√
10	S6209110	后车门限位器	Rear door stopper	2		√
11	S5532312	后车门限位块	Rear door stoping block	2		√
12	Q1840612	六角法兰面螺栓	Hex flange bolt	10		√
13	Q1840616	六角法兰面螺栓	Hex flange bolt	4		√
14	Q1840816	六角法兰面螺栓	Hex flange bolt	2		√
15	S6201030	左后侧车门玻璃后导槽总成	Glass rail,rear left door	1		
15	S6201040	右后侧车门玻璃后导槽总成	Glass rail,rear right door	1		
16	S6201050	后侧车门玻璃后导槽下支架组件	Glass rail bracket，rear door	2		

6.23 后门附件 Rear door attachment

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
17	Q1840612	六角头螺栓和平垫圈组合件	Hex bolt，taper springiness washer and flat washer	4		√
18	Q2540508	十字槽沉头螺钉	Philips screw	2		√
19	Q2560620F13	十字槽半沉头螺钉	Philips screw	6		√
20	Q2714265	十字槽盘头自攻螺钉	Philips self-tapping screw	2		

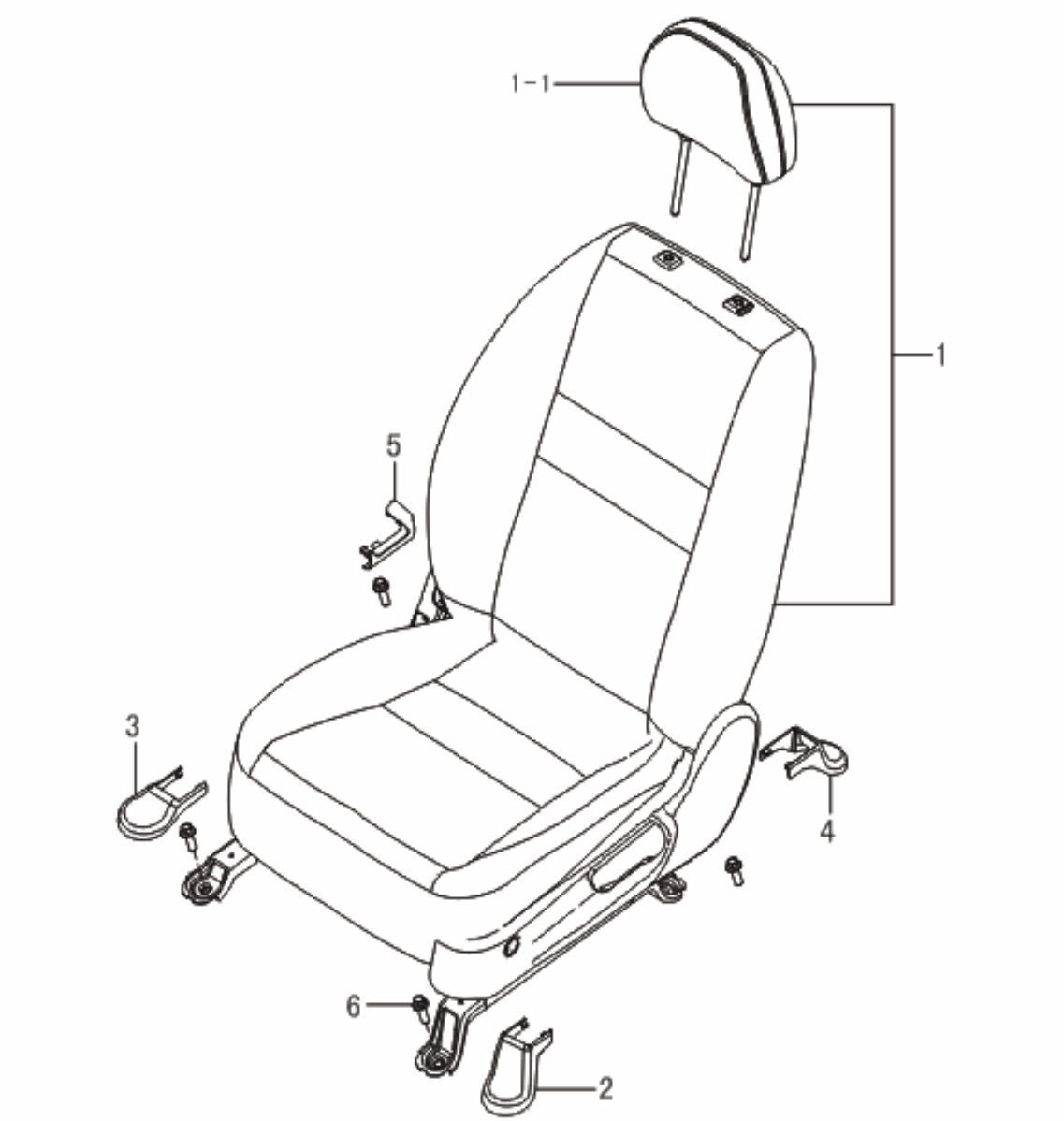
6.24 后背门附件



6.24 后背门附件 Tail door attachment

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1	S6307111	后背门密封条	Tail door seal	1		√
2	S6305170	后背门锁扣组件	Tail door lock buckle	1		√
3	Q2400820F13	十字槽沉头螺钉和锥形锁紧垫圈组合	Philips screw and washer	3		√
4	S6305110	后背门锁体总成	Tail door lock assy.	1		√
4-1	S6305111	后背门锁体	Tail door lock	1		
4-2	S6305112	后背门锁芯拉杆	Tail door lock rod	1		
5	L8402021	缓冲块	Damper block	2		√
6	Q1840612	六角法兰面螺栓	Hex flange bolt	3		√
7	S5532212	后背门左导向块	Tail door guard block,left	1		√
8	S5532214	后背门右导向块	Tail door guard block,right	1		
9	S6309110	后背门气动撑杆本体	Trunk door pneumatic spring	2		√
10	S6309121	气动撑杆球头1(M8)	Pneumatic spring tie-rod 1	2		
11	S6309122	气动撑杆球头2(M6)	Pneumatic spring tie-rod 2	2		
12	Q1840616	六角法兰面螺栓	Hex flange bolt	4		√
13	L5101021	橡胶堵塞φ30	Rubber Plug	2	φ30	
14	S6305180	后背门外扣手总成	Tail door out handle	1		
15	Q33006	全金属六角法兰面锁紧螺母	Hex flange nut	2		√

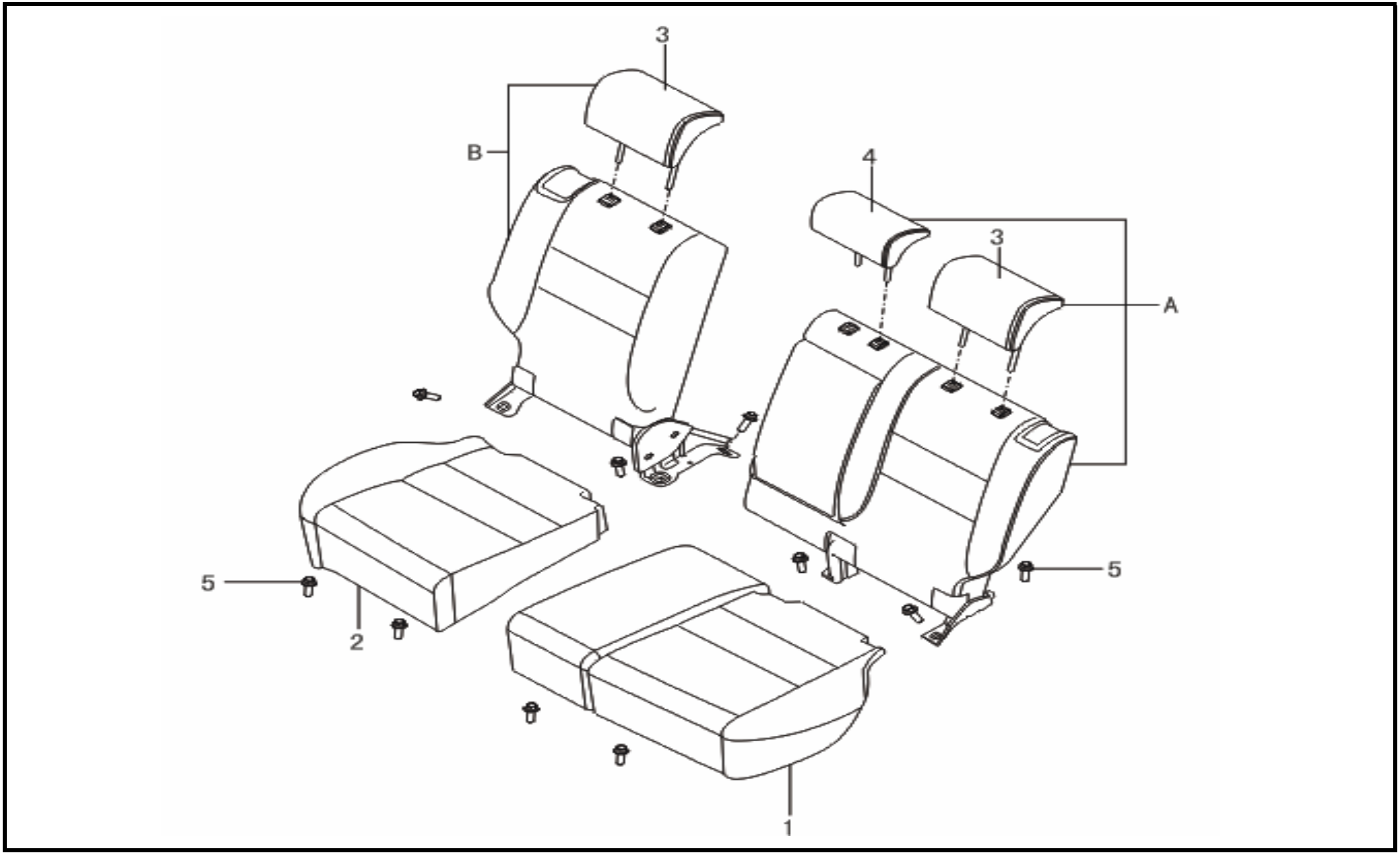
6.25 前座椅 Front seat



6.25 前座椅 Front seat

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1	S6800100B32	驾驶员座	Driver seat	1	leatherette	√
1	S6800100A2	驾驶员座	Driver seat	1	Fabric	
1	S6800100A3	驾驶员座	Driver seat	1	leather	
1	S6900100B32	副驾驶座	Front passenger seat	1	leatherette	√
1	S6900100A2	副驾驶座	Front passenger seat	1	Fabric	
1	S6900100A3	副驾驶座	Front passenger seat	1	leather	
1-1	S6808100	前座椅头枕	Front seat pillow	2		√
2	S6802113B32	驾驶员座左前脚盖	Driver seat stand,front left	1		√
2	S6900113B32	副驾驶员座左前脚盖	Front passenger seat stand,front left	1		√
3	S6802114B32	驾驶员座右前脚盖	Driver seat stand,front right	1		√
3	S6900114B32	副驾驶员座右前脚盖	Front passenger seat stand,front right	1		√
4	S6802115B32	驾驶员座左后脚盖	Driver seat stand,rear left	1		√
4	S6900115B32	副驾驶员座左后脚盖	Front passenger seat stand,rear left	1		√
5	S6802116B32	驾驶员座右后脚盖	Driver seat stand,rear right	1		√
5	S6900116B32	副驾驶员座右后脚盖	Front passenger seat stand,rear right	1		√
6	231-1030TF30	六角法兰螺栓	Bolt	8		√

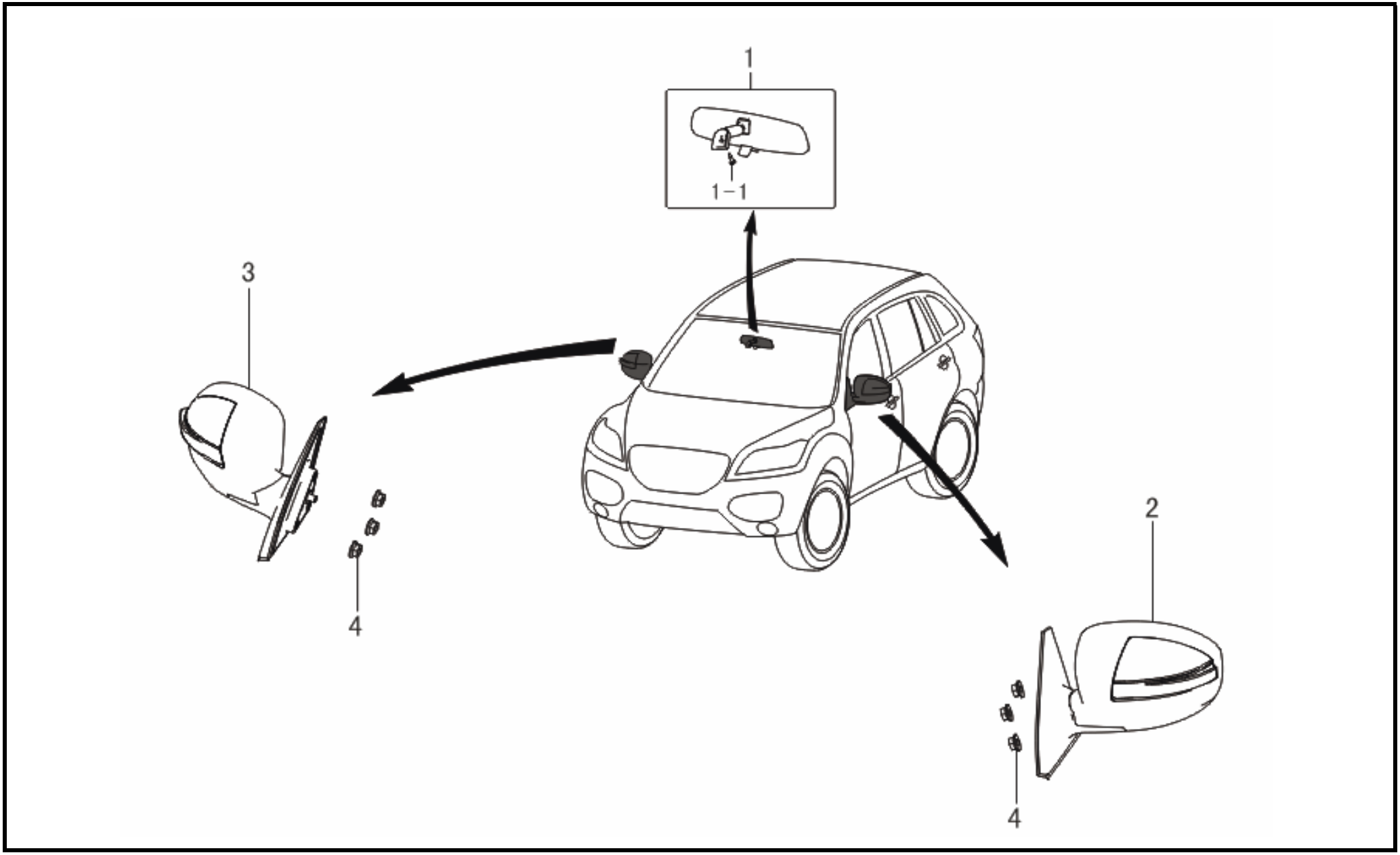
6.26 后座椅 Rear seat



6.26 后座椅 Rear seat

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1	S7003100B32	后座左座垫	Rear seat cushion，left	1	leatherette	
1	S7003100A2	后座左座垫	Rear seat cushion，left	1	Fabric	
1	S7003100A3	后座左座垫	Rear seat cushion，left	1	leather	
2	S7003400B32	后座右座垫	Rear seat cushion，right	1	leatherette	
2	S7003400A2	后座右座垫	Rear seat cushion，right	1	Fabric	
2	S7003400A3	后座右座垫	Rear seat cushion，right	1	leather	
A	S7005100B32	后座左靠背	Rear seat backrest，left	1	leatherette	
A	S7005100A2	后座左靠背	Rear seat backrest，left	1	Fabric	
A	S7005100A3	后座左靠背	Rear seat backrest，left	1	leather	
B	S7005400B32	后座右靠背	Rear seat backrest，right	1	leatherette	
B	S7005400A2	后座右靠背	Rear seat backrest，right	1	Fabric	
B	S7005400A3	后座右靠背	Rear seat backrest，right	1	leather	
3	S7008100B32	后座侧头枕	Rear seat side pillow	2	leatherette	
3	S7008100A2	后座侧头枕	Rear seat side pillow	2	Fabric	
3	S7008100A3	后座侧头枕	Rear seat side pillow	2	leather	
4	S7008200B32	后座中头枕	Rear seat middle pillow	1	leatherette	
4	S7008200A2	后座中头枕	Rear seat middle pillow	1	Fabric	
4	S7008200A3	后座中头枕	Rear seat middle pillow	1	leather	
5	231-1030TF30	六角法兰螺栓	Bolt	12		√

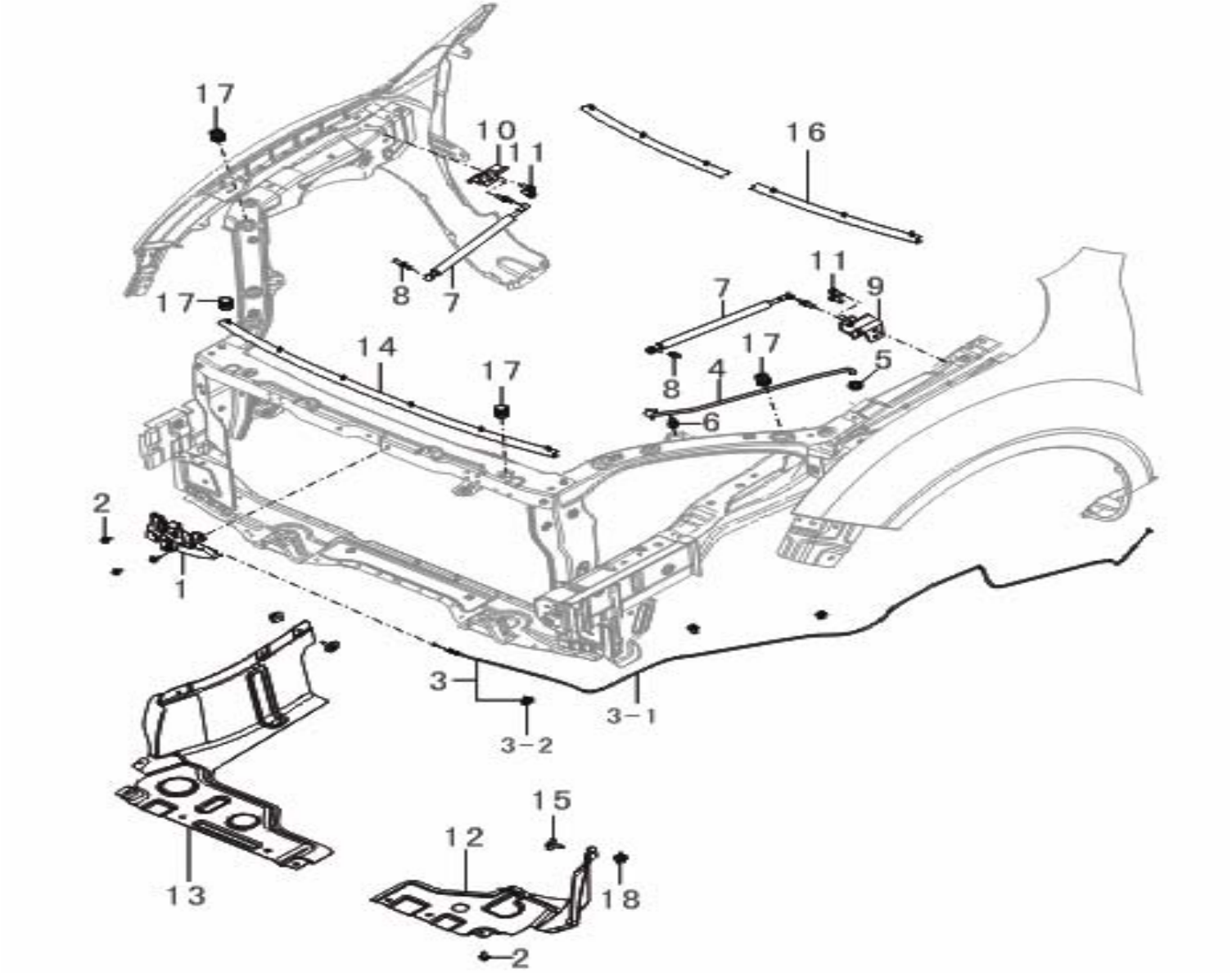
6.27 内外后视镜 Reverse mirror



6.27 内外后视镜 Reverse mirror

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1	S8201100	内后视镜组件	Inside mirror component	1		
1-1	Q2140512F30	十字槽螺钉	Screw	1		
2	S8202100	左外后视镜总成	Left wing mirror	1		√
2	S8202100C1	左外后视镜总成	Left wing mirror	1	Defrost	√
3	S8202200	右外后视镜总成	Right wing mirror	1		√
3	S8202200C1	右外后视镜总成	Right wing mirror	1	Defrost	√
4	Q32006	六角法兰面螺母	Hex flange nut	6		√

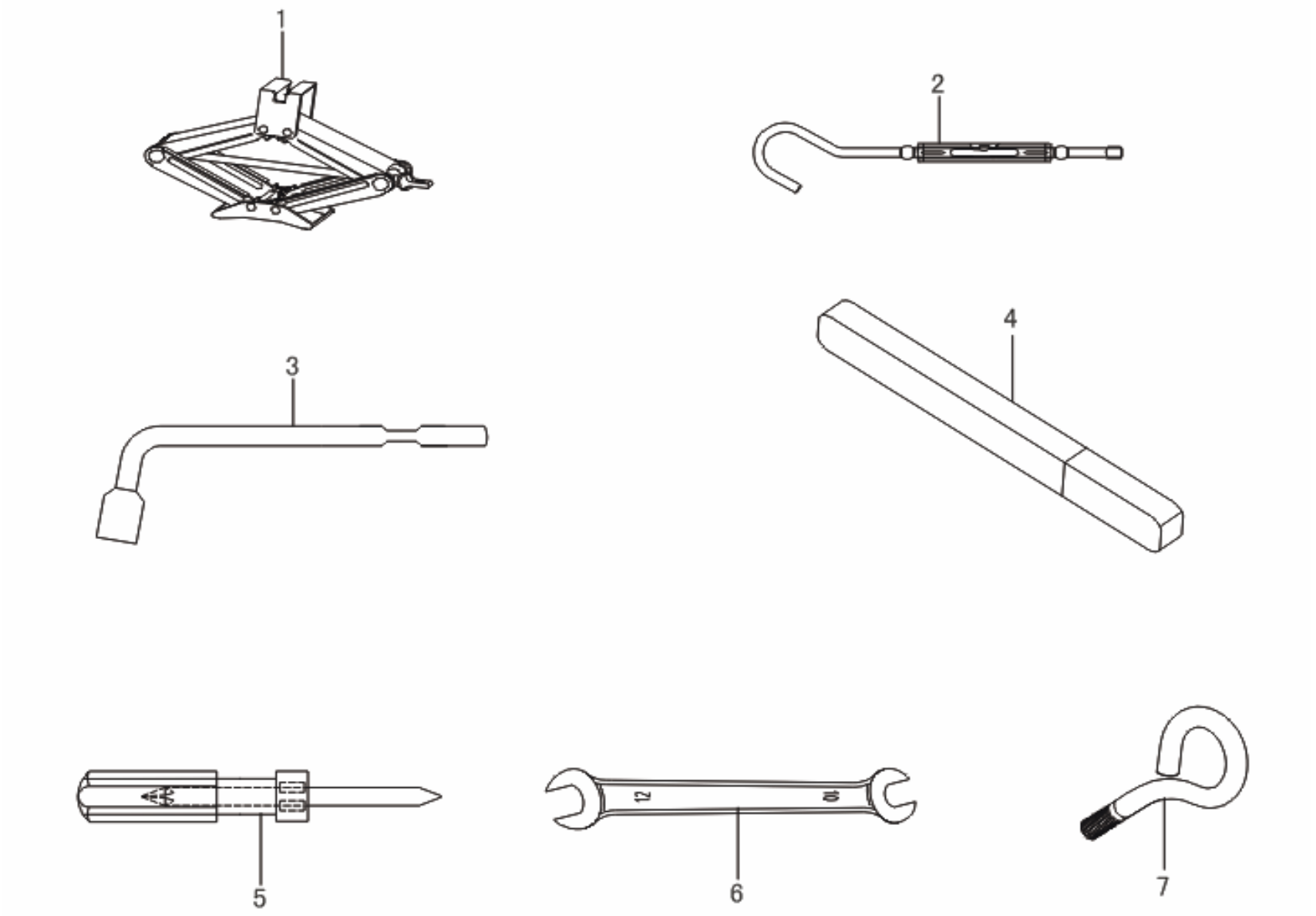
6.28 发动机舱附件 Engine room attachment



6.28 发动机舱附件 Engine room attachment

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1	S8402500	前舱盖锁总成	Engine hood lock	1		√
2	Q1840612	六角法兰面螺栓	Hex flange bolt	7		√
3	S8402610	前舱盖拉索组件	Engine hood switch cable assy.	1		√
3-1	S8402611	前舱盖拉索	Engine hood switch cable	1		
3-2	S8402621	前舱盖拉索卡扣	Engine hood switch cable clamp	3		
4	S8402710	发动机罩手动撑杆组件	Engine hood prop	1		√
5	S8402721	发动机罩撑杆套环	Engine hood prop sleeve	1		√
6	S8402722	发动机罩撑杆卡扣	Engine hood prop clamp	1		√
7	S8402730	前舱盖气动撑杆本体	Engine hood holder	2		√
8	S6309121	气动撑杆球头1（M8）	Pneumatic spring tie-rod 1	4		
9	S8402750	前舱盖左气动撑杆支架	Engine hood holder bracket,left	1		
10	S8402760	前舱盖右气动撑杆支架	Engine hood holder bracket,right	1		
11	Q1420820	六角头螺栓和弹簧垫圈组合件	Bolt	4		√
12	S8402811	发动机舱左下护板	Engine protect plate，left	1		√
13	S8402812	发动机舱右下护板	Engine protect plate，right	1		√
14	S8402910	发动机罩前密封条组件	Engine hood seal，front	1		√
15	Q2214819	十字槽盘头自攻螺钉和大垫圈组合件	Philips screw with washer	4		√
16	S8402920	发动机罩后密封条组件	Engine hood seal，rear	1		√
17	L8402021	缓冲块	Damper block	4		√
18	400-0072	方螺母卡扣	Clip	4		√

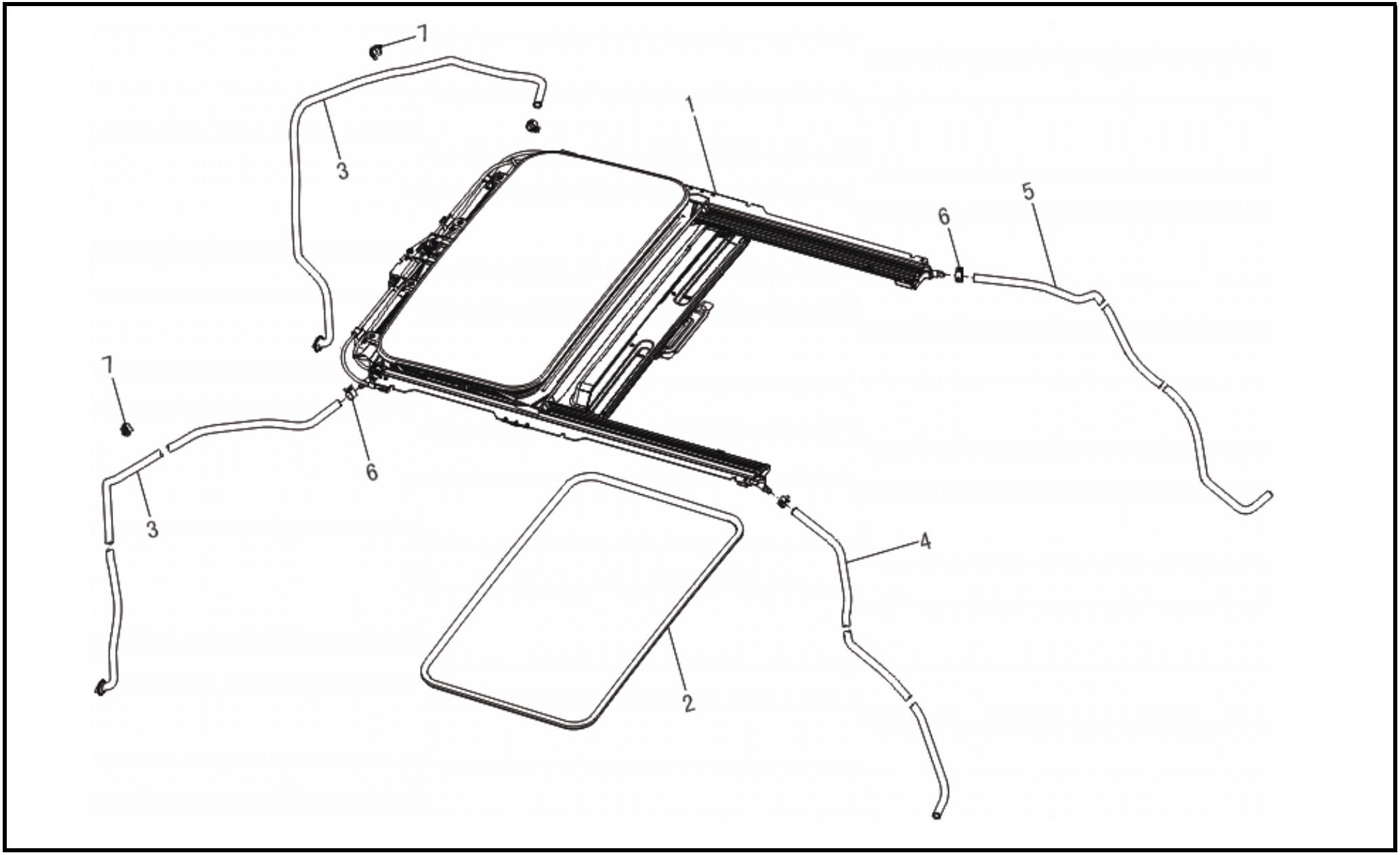
6.29 随车工具 Tools



6.29 随车工具 Tools

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1	S3901120	千斤顶组件	Jack	1		√
2	S3901140	千斤顶摇把	Jack crank	1		√
3	S3901114	轮胎螺母扳手	Wrench for wheel nut	1	M21	√
4	F3926100	三角警示牌	Warning triangle	1		√
5	L3901117	胶柄两用螺丝刀	Screwdriver	1		√
6	L3901111	双呆扳手	Wrench 10*12	1	10*12	√
6	L3901112	双呆扳手	Wrench 13*15	1	13*15	√
7	S3901191	前拖钩	Front hook	1		√

6.30 天窗 Top window

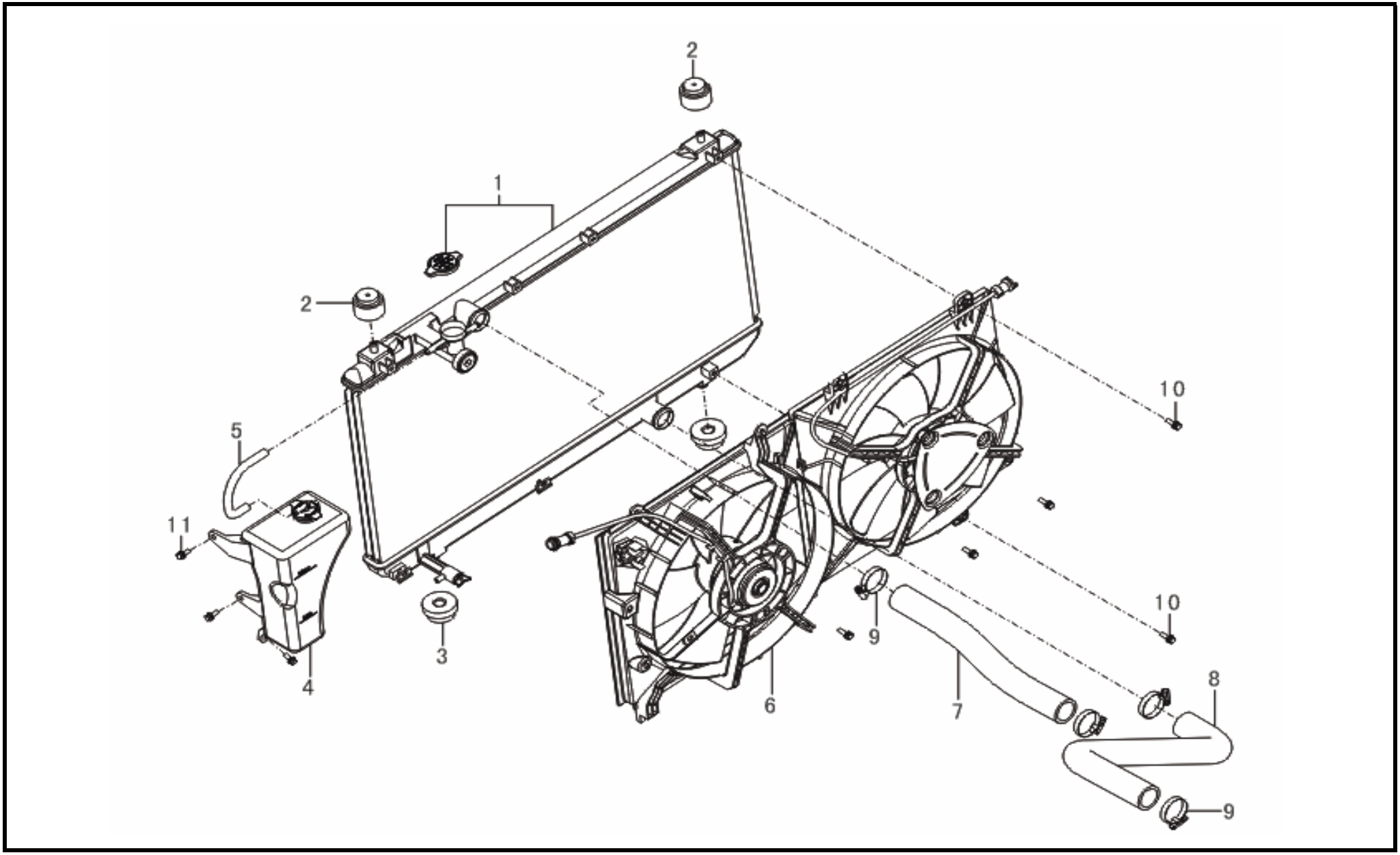


6.30 天窗 Top window

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1	S5703010	天窗本体总成	Top window assy.	1		√
2	S5703711	内饰胶条	Top window seal	1		
3	S5703811	天窗前水管	Top window front pipe	2		√
4	S5703813	天窗左后水管	Top window rear pipe,left	1		√
5	S5703814	天窗右后水管	Top window rear pipe,right	1		√
6	Q673B17	钢带弹性环箍	Hoop	4		√
7	400-0547	卡子	Clip	18		√

7.Air conditioner

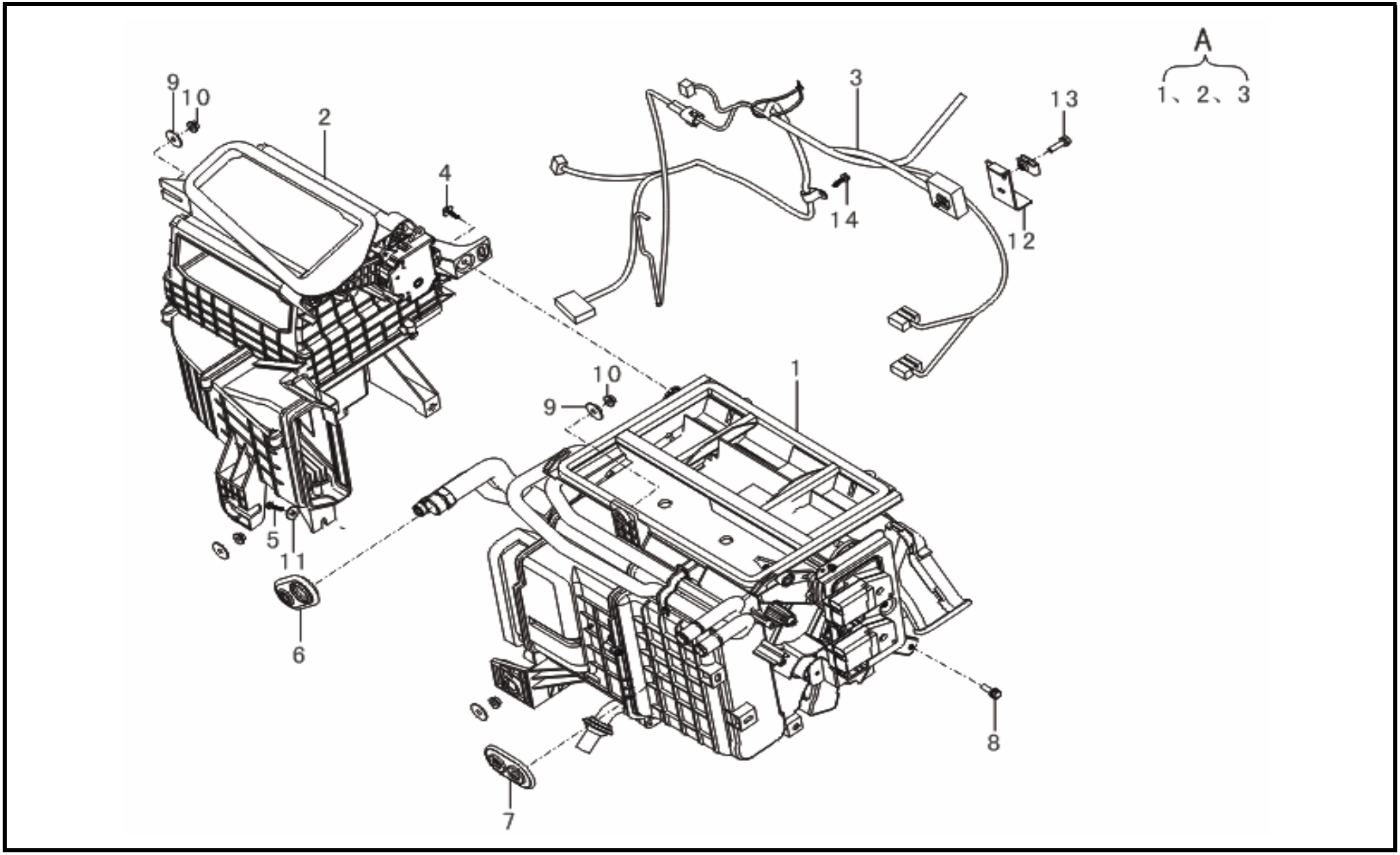
7.01 散热器 Radiator



7.01 散热器 Radiator

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1	S1301000	散热器总成	Radiator assy.	1		√
2	S1302171	散热器上安装衬套	Radiator upper fixing sleeve	2		√
3	S1302271	散热器下安装衬套	Radiator lower fixing sleeve	2		√
4	S1311100	膨胀水箱总成	Expansion tank	1		√
5	S1311181	通气管	Ventilation hose	1		√
6	S1308000	风扇总成	Radiator fan	1		√
7	S1303110	散热器进水管	Radiator intake pipe	1		√
8	S1303210	散热器出水管	Radiator drain pipe	1		√
9	Q67542	A型蜗杆传动式软管环箍	Hoop	4		√
10	Q1460620	六角头螺栓，弹簧垫圈和平垫圈组合件	Bolt	5		√
11	Q1460616	六角头螺栓，弹簧垫圈和平垫圈组合件	Bolt	3		√

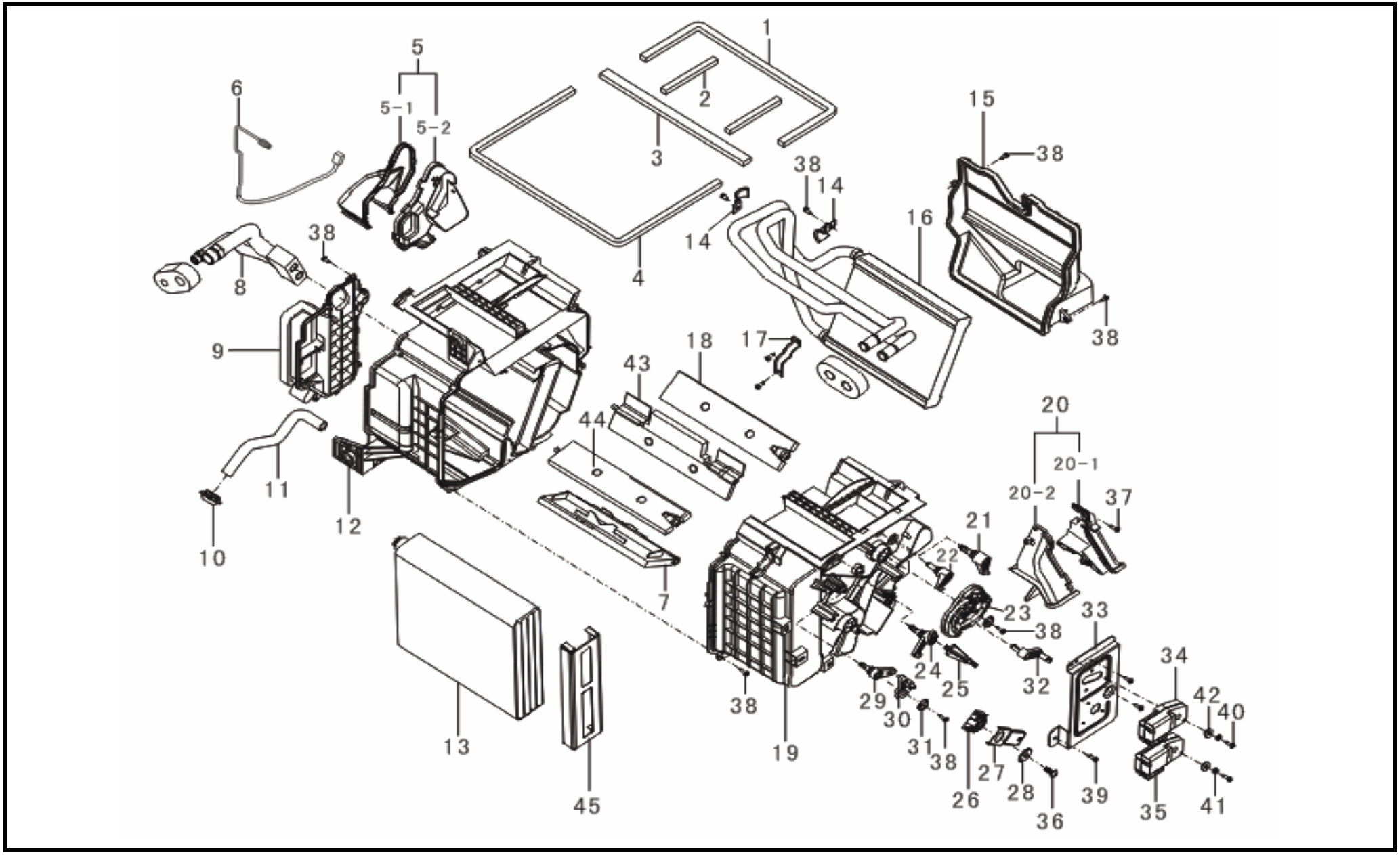
7.02 HVAC总成 HVAC



7.02 HVAC总成 HVAC

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
A	S8100010	HVAC总成	HVAC	1		√
1	S8101010	出风箱总成	Evaporator	1		
2	S8104010	进风箱总成	Blower assy.	1		
3	S8114110	空调器线束	A/C cable	1		
4	Q2215516	十字槽盘头自攻螺钉和大垫圈组合件	Philips screw with washer	1		√
5	Q2716316	十字槽盘头自攻螺钉	Philips self-tapping screw	1		
6	B8111014	高/低压管隔离圈	Separate plate,H/L pressure pipes	1		√
7	B8111012	暖气进/出管隔离圈	Separate plate,I/O pipes	1		√
8	Q1460620	六角头螺栓、弹簧垫圈和平垫圈组合件	Bolt	1		√
9	Q40206	大垫圈	Big washer	4		√
10	Q32006	六角法兰面螺母	Hex flange nut	4		√
11	Q40110	平垫圈	Flat washer	1		√
12	S8114120	空调器线束支架	A/C cable bracket	1		
13	Q1410620	六角头螺栓带锥形垫圈组合件	Hex bolt and taper springiness washer	1		√
14	Q2714216	十字槽盘头自攻螺钉	Philips self-tapping screw	1		√

7.03 出风箱 Evaporator



7.03 出风箱 Evaporator

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1	S8101139	吹面风口密封条	A/C nozzle seal	1		
2	S8101137	短密封条	Seal,shorter	2		
3	S8101136	长密封条	Seal,longer	1		
4	S8101138	除霜风口密封条	Defrost nozzle seal	1		
5	S8101140	前右吹足风道总成	A/C lower air distributor assy，right	1		
5-1	S8101141	前右吹足风道上片	A/C lower air distributor 1，right	1		
5-2	S8101142	前右吹足风道下片	A/C lower air distributor 2，right	1		
6	S8114200	蒸发器温度传感器	Evaporator Temperature senser	1		
7	A8101190	冷暖风门组件	Air blower shield	1		
8	S8106100	膨胀阀总成	Expansion Valve	1		
9	S8101113	蒸发器上壳体	Evaporator shell，upper	1		
10	S8101134	滴水管护套	Dripping pipe sleeve	1		
11	S8101135	滴水管	Dripping pipe	1		
12	S8101112	出风箱右壳体	Blower shell，right	1		
13	S8107100	蒸发器芯体总成	Evaporator core	1		
14	S8101220	水箱支架总成	Heater radiator bracket	2		
15	S8101114	后吹足过渡风道	A/C lower air distributor	1		
16	S8101300	暖风水箱总成	Heater radiator	1		
17	S8101230	水箱双管支架总成	Heater radiator pipe bracket	1		
18	S8101180	前吹足风门组件	Air blower shield，lower	1		

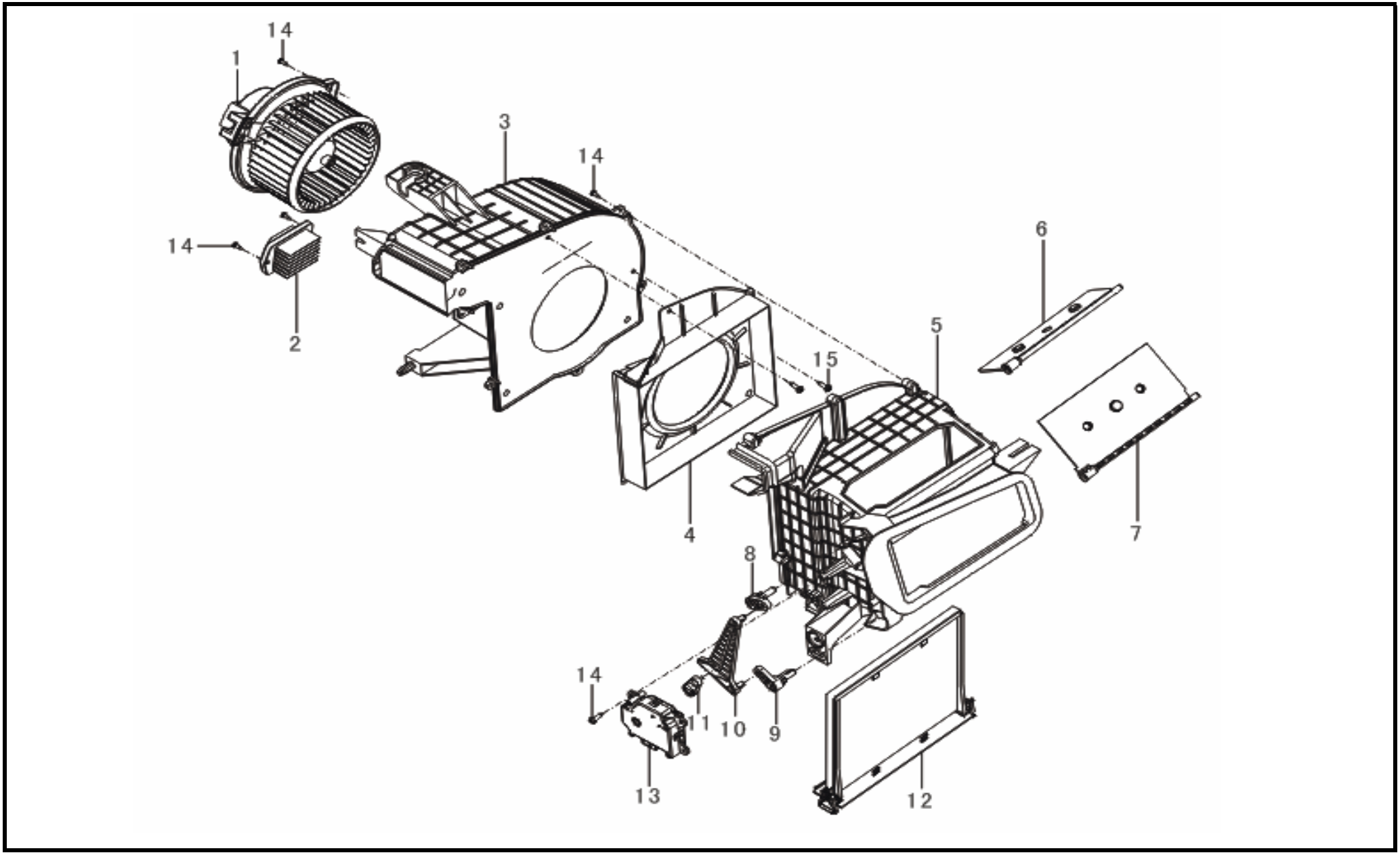
7.03 出风箱 Evaporator

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
19	S8101111	出风箱左壳体	Blower shell，left	1		
20	S8101150	前左吹足风道总成	A/C lower air distributor assy，left	1		
20-1	S8101151	前左吹足风道上片	A/C lower air distributor 1，left	1		
20-2	S8101152	前左吹足风道下片	A/C lower air distributor 2，left	1		
21	S8101128	吹面风门摇臂	Upper shield swingarm	1		
22	S8101127	前吹脚风门摇臂	Lower shield swingarm	1		
23	S8101124	模式风门连杆	Mode switch rod	1		
24	S8101132	冷暖风门摇臂	Temperature switch swingarm	1		
25	S8101133	冷暖风门连杆	Temperature switch rod	1		
26	S8101119	左安装支架固定垫	Left bracket fixing damper	1		
27	S8101118	左安装支架	Left bracket	1		
28	S8101121	左安装支架垫片	Left bracket washer	1		
29	S8101131	除霜风门摇臂	Defrost swingarm 1	1		
30	S8101129	除霜风门过渡摇臂	Defrost swingarm 2	1		
31	S8101125	螺钉塑料垫片	Washer	2		
32	S8101126	模式风门摇臂	Mode switch swingarm	1		
33	S8101123	模式、冷暖电机支架	Bracket	1		
34	S3745300	模式伺服电机总成	Mode switch motor	1		
35	S3745400	冷暖伺服电机总成	Temperature switch motor	1		
36	Q2724816	十字槽盘头自攻螺钉	Philips self-tapping screw	1		

7.03 出风箱 Evaporator

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
37	Q2734216	十字槽大半圆头自攻螺钉	Hex flange screw	3		√
38	Q2714216	十字槽盘头自攻螺钉	Philips self-tapping screw	视需		√
39	Q2714213	十字槽盘头自攻螺钉	Philips self-tapping screw	3		√
40	Q2140425	十字槽盘头自攻螺钉	Philips self-tapping screw	6		
41	Q40304	弹簧垫圈	springiness washer	6		
42	Q40204	大垫圈	Big washer	6		
43	S8101160	吹面风门组件	A/C air door	1		
44	S8101170	除霜风门组件	Defrost air door	1		
45	8101115	蒸发器芯体保护罩	Evaporator core cover	1		

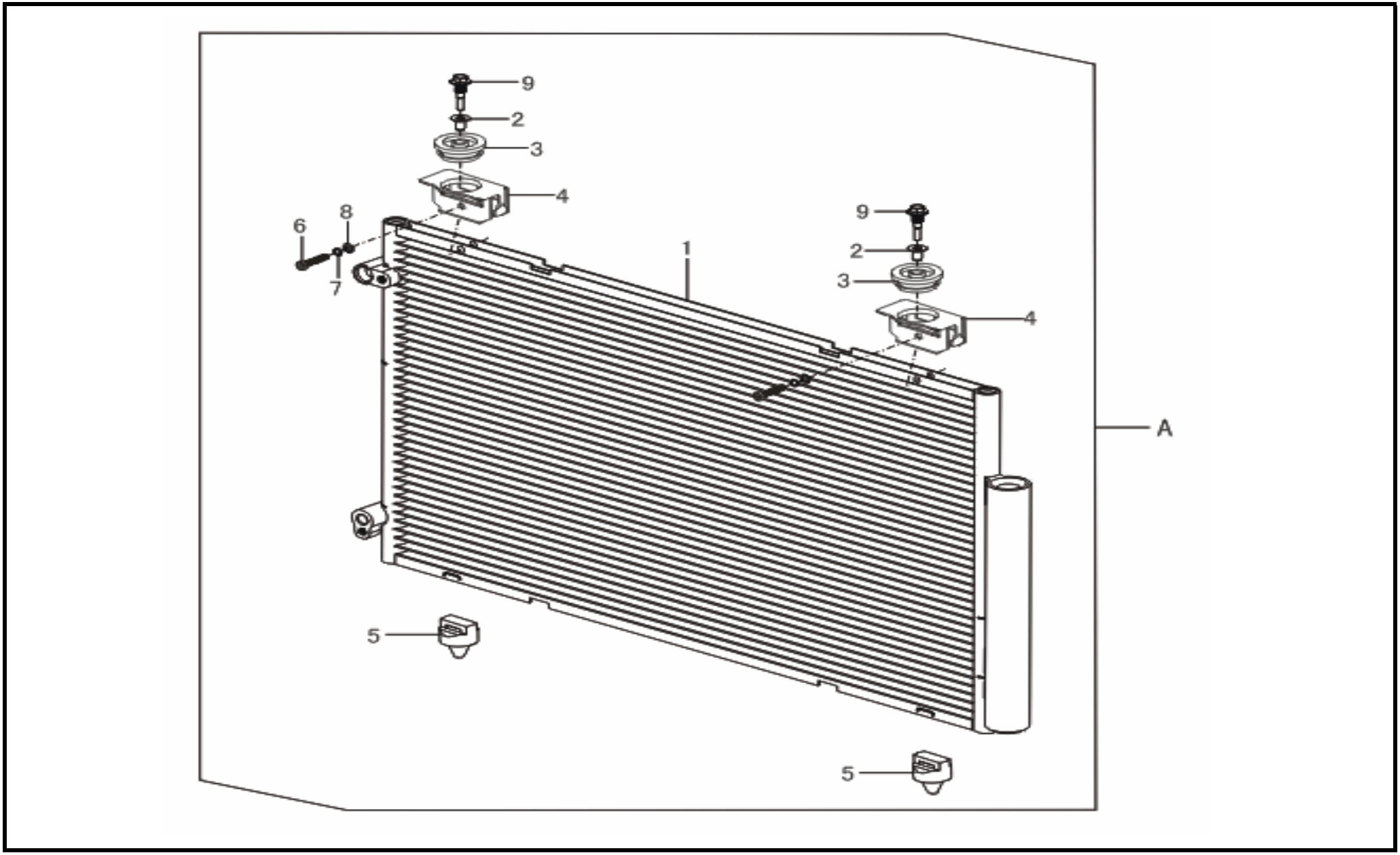
7.04 进风箱 Blower



7.04 进风箱 Blower

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1	B3745100	空调鼓风机电机	Blower motor	1		√
2	B3745180C1	空调鼓风机电机调速模块	Governor,blower	1		√
3	S8104112	鼓风机下涡壳	Blower shell，lower	1		
4	S8104111	鼓风机上涡壳	Blower shell，middle	1		
5	S8104113	进风箱上壳体	Bellow shell,upper	1		
6	S8104150	内外循环风门一组件	self-circle air door component 1	1		
7	S8104160	内外循环风门二组件	self-circle air door component 2	1		
8	S8104114	内外循环风门一摇臂	self-circle air door swingarm 1	1		
9	S8104115	内外循环风门二摇臂	self-circle air door swingarm 2	1		
10	S8104117	内外循环风门连杆	self-circle air door rod	1		
11	S8104116	内外循环风门摇臂	self-circle air door swingarm	1		
12	S8113110	过滤网总成	Air strainer	1		
13	S3745200	内外循环风门执行器	self-circle air door actuator	1		
14	Q2714216	十字槽盘头自攻螺钉	Philips self-tapping screw	16		√
15	Q2714210	十字槽盘头自攻螺钉	Philips self-tapping screw	2		

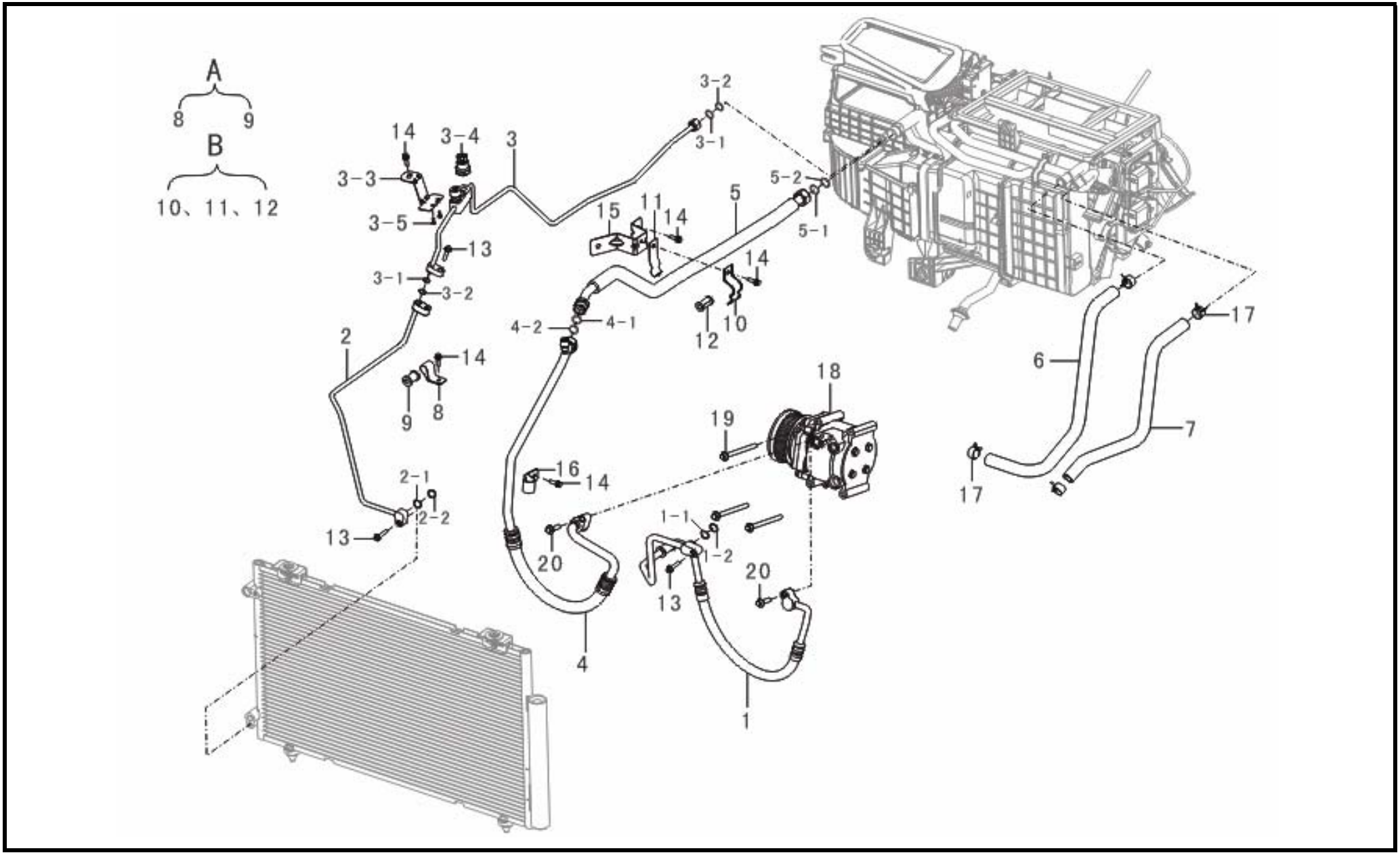
7.05 冷凝器 Condensor



7.05 冷凝器 Condensor

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
A	B8105100	冷凝器总成	Condensor	1		√
1	B8105130	冷凝器芯子组件	Condensor core	1		
2	B8105114	上支架螺栓套	Upper bracket bolt sleeve	2		
3	B8105115	上支架缓冲垫	Upper bracket damper	2		
4	B8105150	上支架组件	Upper bracket	2		
5	B8105113	下缓冲垫	Lower damper	2		
6	Q150B0530	六角头螺栓	Hex bolt	2		
7	Q40405	轻型弹垫	elastic washer	2		
8	Q40105	平垫圈	Flat washer	2		√
9	Q184A0612	六角法兰面螺栓	Hex flange bolt	2		√

7.06 空调管路 Air conditioner pipeline



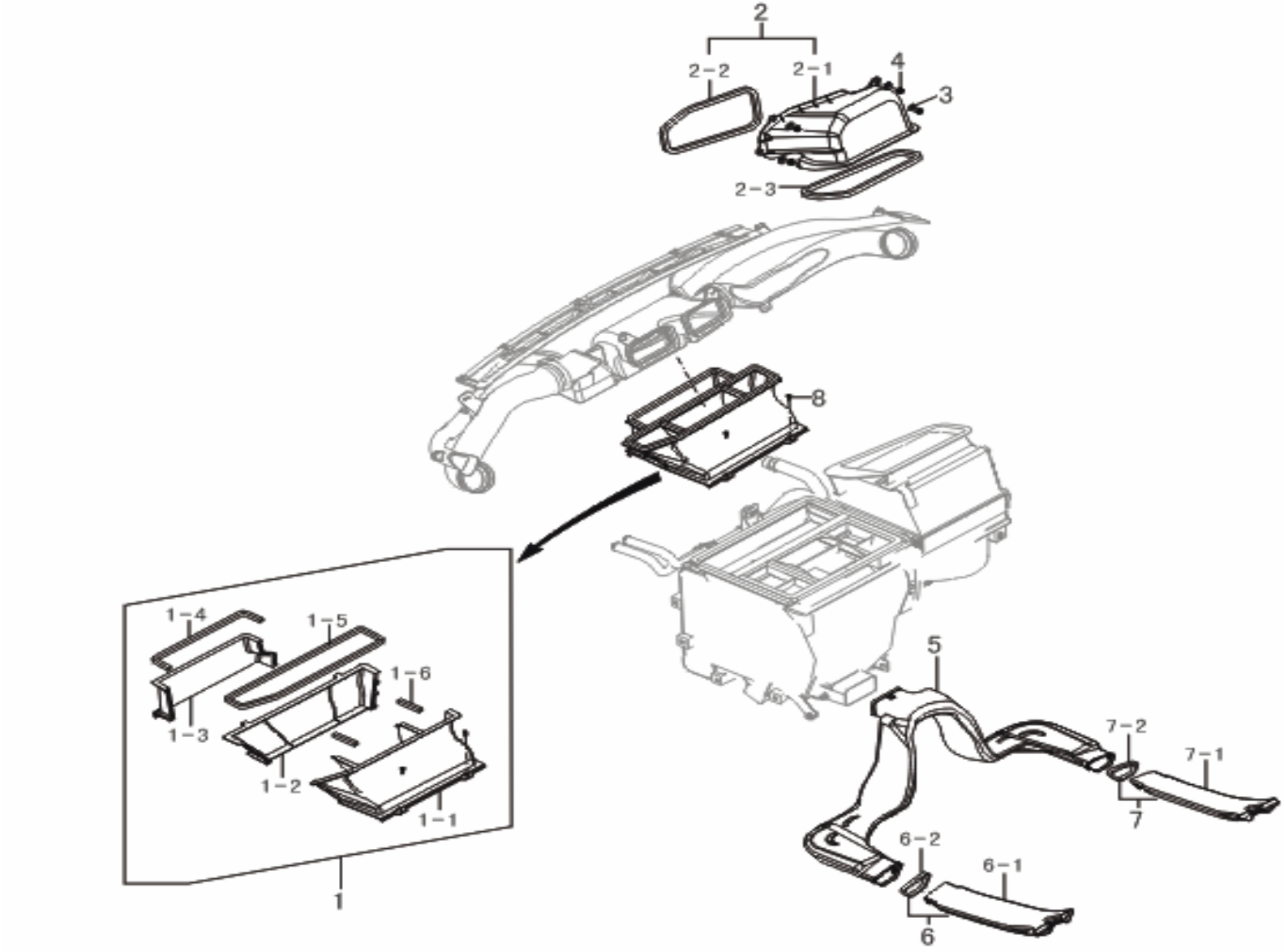
7.06 空调管路 Air conditioner pipeline

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1	S8108100	压缩机排气管总成	Compressor exhaust pipe	1		√
1-1	10.8×2.4-G-S-GB/T3452.1-2005	O形圈	O seal	1		
1-2	13.5×1.7-G-S-GB/T3452.1-2005	O形圈	O seal	1		
2	S8108200	冷凝器出液管总成	Condensor outlet pipe	1		√
2-1	8×1.6-G-S-GB/T3452.1-2005	O形圈	O seal	1		
2-2	6.7×1.8-G-S-GB/T3452.1-2005	O形圈	O seal	1		
3	S8108300	蒸发器高压管总成	Evaporator pipe，H	1		√
3-1	8×1.6-G-S-GB/T3452.1-2005	O形圈	O seal	2		
3-2	6.7×1.8-G-S-GB/T3452.1-2005	O形圈	O seal	2		
3-3	S8108341	压力开关座支架	Pressure switch bracket	1		
3-4	S8108320	压力开关	Pressure switch	1		
3-5	Q2140512	十字槽盘头螺钉	Screw	2		√
4	S8108400	压缩机吸气管总成	Compressor intake pipe	1		√
4-1	15.6×1.7-G-S-GB/T3452.1-2005	O形圈	O seal	1		
4-2	13.4×2.4-G-S-GB/T3452.1-2005	O形圈	O seal	1		
5	S8108500	蒸发器低压管总成	Evaporator pipe，L	1		√
5-1	15.6×1.7-G-S-GB/T3452.1-2005	O形圈	O seal	1		
5-2	13.4×2.4-G-S-GB/T3452.1-2005	O形圈	O seal	1		
6	S8108611	空调加热器进水管	HVAC water intake pipe	1		√
7	S8108612	空调加热器出水管	HVAC water outlet pipe	1		√

7.06 空调管路 Air conditioner pipeline

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
A	S8108710	冷凝器出液管支架总成	Condensor pipe bracket assy.	1		√
8	S8108711	冷凝器出液管支架	Condensor pipe bracket	1		
9	S8108712	冷凝器出液管支架胶垫	Condensor pipe bracket washer	1		
B	S8108720	双管夹总成	Clamp，for 2 pipes	1		√
10	S8108721	双管夹支架上片	Clamp part 1	1		
11	S8108723	双管夹支架下片	Clamp part 2	1		
12	S8108722	胶套	Sleeve	1		
13	Q1840630	六角法兰面螺栓	Hex flange bolt	3		√
14	Q1460620	六角头螺栓、弹簧垫圈和平垫圈组合件	Bolt	5		√
15	S8108730	管路连接支架总成	Pipe connecting bracket	1		√
16	S8108741	压缩机吸气管支架	Compressor pipe bracket	1		√
17	Q673B21F32	钢带型弹性环箍	Hoop	4		√
18	S8103200	压缩机总成	Compressor	1		√
19	Q18408105	六角法兰面螺栓	Hex flange bolt	3		√
20	Q1840830	六角法兰面螺栓	Hex flange bolt	2		√

7.07 风道 Air ventilation



7.07 风道 Air ventilation

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
1	S8117110	中央过渡风道总成	Air center ventilation pipe	1		√
1-1	S8117111	中央过渡风道前片	Air center ventilation pipe，part 1	1		
1-2	S8117112	中央过渡风道中片	Air center ventilation pipe，part 2	1		
1-3	S8117113	中央过渡风道后片	Air center ventilation pipe，part 3	1		
1-4	S8117114	密封条一	Seal 1	1		
1-5	S8117115	密封条二	Seal 2	1		
1-6	S8117116	密封条三	Seal 3	2		
2	S8117130	新风风道总成	Air changer pipe assy.	1		√
2-1	S8117131	新风风道	Air changer pipe	1		
2-2	S8117132	新风风道进风口密封条	Air changer pipe seal 1	1		
2-3	S8117133	新风风道出风口密封条	Air changer pipe seal 2	1		
3	Q40206	大垫圈	Big washer	4		√
4	Q32006	六角法兰面螺母	Hex flange nut	4		√
5	S8117161	后吹足中间风道	Rear air nozzle，middle	1		√
6	S8117140	后吹足左风嘴总成	Rear air nozzle assy，left	1		√
6-1	S8117141	后吹足左风嘴	Rear air nozzle，left	1		
6-2	S8117142	后吹足左风嘴密封条	Rear air nozzle seal，left	1		
7	S8117150	后吹足右风嘴总成	Rear air nozzle assy，right	1		√
7-1	S8117151	后吹足右风嘴	Rear air nozzle，right	1		
7-2	S8117152	后吹足右风嘴密封条	Rear air nozzle seal，right	1		

7.07 风道 Air ventilation

P/N	PARTS CODE	PARTS NAME	PARTS NAME	QTY	DESCRIPTION	Supply
8	Q2714216	十字槽盘头自攻螺钉	Philips self-tapping screw	2		√

PARTS CODE	PARTS NAME	PARTS NAME	DESCRIPTION	UNIT	Price（￥）
Q1860625	缸盖罩螺栓	Bolt，cylinder head cover		PCS	0.56
S3705100	点火线圈	Ignition Coil		PCS	108.108
LFB479Q-1014100A	PCV阀总成	PCV assy.		PCS	11.2
LFB479Q-3707800A	火花塞	Spark plug		PCS	6.48
LFB479Q-1003300A	气缸盖罩密封垫总成	Cylinder head cover seal		PCS	77
LFB479Q-1003200A	气缸盖罩总成	Cylinder head cover assy.		PCS	221.2
Q1200625	双头螺柱	Blot		PCS	0.88
Q32006	缸盖罩螺母	Nut		PCS	0.8
Q1460625	点火线圈螺栓	Ignition Coil bolt		PCS	1.04
LFB479Q-1014011A	PCV阀通气软管	PCV hose		PCS	8.456
Q676B16	卡箍	Hoop		PCS	3.4
LFB479Q-1021002A	排气正时链轮螺栓	Bolt，exhaust timing chain wheel		PCS	1.96
LFB479Q-1021001A	排气正时链轮	Timing chain wheel,exhaust		PCS	12.6
LFB479Q-1021100A	进气正时链轮总成（VVT）	Timing chain wheel,intake		PCS	371
LFB479Q-1021015A	曲轴正时链轮	Crankshaft timing chain wheel		PCS	6.3
LFB479Q-1021300A	正时链条定轨总成	Timing chain guide，fixed side		PCS	22.4
Q1400612	定轨总成螺栓	Guide bolt		PCS	0.72
LFB479Q-1021016A	曲轴正时链轮档片	Stopper，crankshaft timing chain wheel		PCS	3.92
LFB479Q-1021011A	动轨定位螺栓	Guide bolt		PCS	2.576
LFB479Q-1021200A	正时链条动轨总成	Timing chain guide，moving side		PCS	19.6

LFB479Q-1021020A	正时链条	Timing chain		PCS	54.6
Q1860625	前罩壳螺栓1	Front cover bolt 1		PCS	0.56
LFB479Q-1005030A	曲轴前油封	Crankshaft front seal		PCS	9.66
Q1840840	前罩壳螺栓2	Front cover bolt 2		PCS	1.52
Q32006	前罩壳螺母	Front cover nut		PCS	0.8
LFB479Q-1021400A	正时链条张紧器总成	Timing chain tensioner		PCS	64.4
Q32006	张紧器总成螺母	Tensioner bolt		PCS	0.8
Q1840845	前罩壳螺栓3	Front cover bolt 3		PCS	1.8
LFB479Q-1003012A	缸盖连接螺栓	Bolt，cylinder head		PCS	3.472
LFB479Q-1003014A	缸盖连接螺栓垫圈	Bolt washer，cylinder head		PCS	0.84
LFB479Q-1003100A	气缸盖总成	Cylinder head assy.		PCS	1188
LFB479Q-1003300A	气缸盖密封垫总成	Gasket,cylinder head		PCS	77
LFB479Q-3610200A	凸轮轴机油控制阀（OCV）	Camshaft oil distributor		PCS	189
Q1840612	螺栓	Bolt		PCS	0.6
S3612200	凸轮轴位置传感器	Camshaft position sensor		PCS	98.28
LBA3616100	水温传感器	Water Temperature Sensor		PCS	28.899
S1121100	燃油导轨总成	Fuel distributor		PCS	501.228
Q1860625	六角法兰面螺栓	Hex flange bolt		PCS	0.56
LBA1130310	碳罐电磁阀	Canister control valve		PCS	39.546
LFB479Q-1104014A	碳罐电磁阀支架	Canister control valve bracket		PCS	3.5
Q1860612	碳罐安装螺栓	Can canister bolt		PCS	0.72

LFB479Q-1104301A	碳罐电磁阀软管	Canister control valve hose		PCS	7.49
Q676B16	卡箍	Hoop		PCS	3.4
LF479Q3-1007020A	挺柱	Tappet		PCS	6.305
LFB479Q-1007016A	气门锁片	Valve Lock		PCS	0.56
LFB479Q-1007015A	气门弹簧座	Valve Spring Retainer		PCS	1.75
LFB479Q-1007013A	气门弹簧	Valve Spring		PCS	2.94
LFB479Q-1007018A	进气门油封	Intake valve seal		PCS	3.64
LFB479Q-1007014A	气门弹簧底座	Valve Spring Seat		PCS	0.28
LFB479Q-10070111A	排气门	Exhaust Valve		PCS	13.118
LFB479Q-10070122A	进气门	Intake Valve		PCS	10.682
LFB479Q-1007017A	排气门油封	Exhaust Valve Seal		PCS	3.64
LFB479Q-1025100A	张紧轮总成	Tenioner		PCS	182
LFB479Q-1025035A	张紧轮螺栓	Tenioner bolt		PCS	2.716
LFB479Q-1001405A	右安装支架螺栓	Bolt，right bracket		PCS	3.2
LFB479Q-1001400A	发动机右安装支架	Engine right bracket		PCS	40.6
LFB479Q-1025013A	曲轴皮带轮	Crankshaft pulley		PCS	70
LFB479Q-1025024A	曲轴皮带轮螺栓	Crankshaft pulley bolt		PCS	2.8
Q1860635	水泵长螺栓	Water pump bolt，longer		PCS	0.76
LFB479Q-1307100A	水泵总成	Water pump		PCS	133.7
Q1860630	水泵短螺栓	Water pump bolt，shorter		PCS	0.64
LFB479Q-1307012A	水泵O型密封圈	Ring seal		PCS	0.7

S8103200	空调压缩机总成	A/C compressor		PCS	692.55
LFB479Q-8103008A	空调压缩机螺栓	A/C compressor bolt		PCS	3.2
LFB479Q-1025015A	水泵、发电机皮带	Water pump and generator belt		PCS	35.84
Q18410125TF2	六角法兰面螺栓	Hex flange bolt		PCS	7.04
Q32010	六角法兰面螺母	Hex flange nut		PCS	1.44
S3407100	动力转向泵总成	Steering pump		PCS	425.6
LFB479Q-1002111A	放水螺塞	Drain way bolt		PCS	1.61
Q1840840	曲轴箱上下体连接螺栓	Crankcase bolt		PCS	1.52
LBA3612400	爆震传感器	Knock sensor		PCS	53.235
Q1840830	爆震传感器螺栓	Knock sensor sensor		PCS	1.28
LF479Q1-3818100A	机油压力报警器	Oil pressure warner		PCS	9.62
LFB479Q-1004201A	活塞环Ⅰ	Piston ring 1		PCS	7.42
LFB479Q-1004202A	活塞环Ⅱ	Piston ring 2		PCS	3.99
LFB479Q-1004012A	活塞	Piston		PCS	27.72
LFB479Q-1004014A	活塞销卡环	Circlip，piston pin		PCS	0.6
LFB479Q-1004013A	活塞销	Piston Pin		PCS	5.32
LFB479Q-1004011A	连杆轴瓦	Rod Bearing		PCS	3.5
LFB479Q-1005015A	曲轴上主轴瓦	Crankshaft bearing，upper		PCS	2.8
LFB479Q-1005014A	曲轴下止推片	Crankshaft lower thrust washer		PCS	1.372
Q5500416	半圆键	Woodruff key		PCS	2
LFB479Q-1005011A	曲轴	Crankshaft		PCS	985.5

LFB479Q-1005024A	曲轴下主轴瓦	Crankshaft bearing，lower		PCS	2.8
LFB479Q-1005020A	曲轴后油封	Crankshaft rear seal		PCS	18.2
LFB479Q-1008200A	进气歧管总成	Intake manifold assy.		PCS	329
S1132100	节气门体总成	Throttle assy		PCS	389.844
LFB479Q-3765012A	节气门体加强板	Throttle bracket		PCS	9.24
Q1860635	节气门安装螺栓	Throttle bolt		PCS	0.76
Q1400830	节气门加强板螺栓	Throttle bracket bolt		PCS	1.36
LFB479Q-1008015A	进气歧管连接板	Intake manifold connecting plate		PCS	4.76
Q140083 5	进气歧管螺栓	Bolt,Intake manifold		PCS	1.44
Q140082 0	进气歧管连接板螺栓	Bolt,Intake manifold connecting plate		PCS	1.2
Q1200832	双头螺柱	Blot		PCS	2.12
LFB479Q-4001014A	线束支架II	Harness bracket		PCS	1.68
Q32008	进气歧管螺母	Intake manifold nut		PCS	0.92
S3614300	进气压力温度传感器	Temperature And Pressure Sensor		PCS	131.04
Q1840612	进气压力温度传感器螺栓	Bolt,Temperature And Pressure Sensor		PCS	0.6
LFB479Q-1008013A	排气歧管隔热垫	Exhaust Manifold gasket		PCS	7
LFB479Q-1008100A	排气歧管总成	Exhaust Manifold		PCS	282.8
LFB479Q-1008022A	排气歧管螺母	Exhaust Manifold nut		PCS	2.24
LFB479Q-1008012A	排气歧管下隔热罩	Heat insulator lower		PCS	45.5
LBA3612300	前氧传感器	Oxygen Sensor		PCS	167.31
LFB479Q-1008011A	排气歧管上隔热罩	Heat Insulator upper		PCS	121.8

Q1400820	螺栓	Hex bolt		PCS	1.2
LFB479Q-1008016A	排气歧管加强板	Exhaust Manifold bracket		PCS	9.52
Q1401030	螺栓	Hex bolt		PCS	2.2
LFB479Q-1010011A	机油集滤器密封垫	Gasket，oil strainer		PCS	0.7
LFB479Q-1010100A	机油集滤器总成	Oil strainer sub-assy		PCS	22.61
Q32006	螺母	Nut		PCS	0.8
Q1860612	螺栓	Hex bolt		PCS	0.72
Q40112T4F	放油螺塞垫片	Oil plug washer		PCS	4.6
LF479Q1-1009013A	放油螺塞	Oil plug		PCS	2.72
LFB479Q-1009100A	机油盘总成	Oil Pan		PCS	89.6
Q1400612	螺栓	Hex bolt		PCS	0.72
LF479Q1-1017100A	机油滤清器	Oil Filter		PCS	8.556
LFB479Q-1017011A	机油滤清器连接管	Oil Filter connecting pipe		PCS	7.448
Q1860612	螺栓	Hex bolt		PCS	0.72
LFB479Q-1009015A	油位计导管	Oil level gauge guide		PCS	7.7
LFB479Q-1009300A	油位计总成	Oil level gauge assy		PCS	4.2
LFB479Q-1005100A	飞轮齿圈总成	Flywheel rim		PCS	182
LFB479Q-1005023A	飞轮螺栓	Flywheel bolt		PCS	3.4
Q2140510	螺钉	Screw		PCS	0.24
LFB479Q-3708100A	起动电机总成	Starter assy		PCS	393.4
Q32005	螺母	Nut		PCS	0.6

Q32006	螺母	Nut		PCS	0.8
Q32005	螺母	Nut		PCS	0.6
LFB479Q-3701100A	发电机总成	Generator assy.		PCS	434
Q1860635	机油泵螺栓	limiting valve bolt		PCS	0.76
LFB479Q-1011011A	机油泵密封垫	Gasket，oil pump		PCS	4.62
LFB479Q-1011012A	机油泵定位销	Oil pump pin		PCS	0.448
LFB479Q-1011100A	机油泵总成	Oil Pump Assy		PCS	112
Q1200616	双头螺柱	Bolt		PCS	0.8
LFB479Q-1300031A	旁通水管密封垫	Pipe seal		PCS	1.4
Q32006	螺母	Nut		PCS	0.8
LFB479Q-1300030A	旁通水管焊接组件（带真空支管）	Water pipe		PCS	32.2
Q1860612	螺栓	Hex bolt		PCS	0.72
LFB479Q-1306100A	节温器总成	Thermostat assy		PCS	18.9
LFB479Q-1300020A	进水管总成	Water intake pipe		PCS	9.8
S3612100	发动机ECU	ECU		PCS	835.38
S3705100	点火线圈	Ignition coil		PCS	108.108
S1121100	燃油导轨总成	Fuel distributor		PCS	501.228
LBA3612300	氧传感器	Oxygen Sensor		PCS	167.31
LBA3612600	曲轴位置传感器	Crankshaft Position Sensor		PCS	53.235
LBA1130310	碳罐控制阀	Canister Control Valve		PCS	39.546
S3612200	凸轮轴位置传感器	Camshaft position sensor		PCS	98.28

LBA3612400	爆震传感器	Knock Sensor		PCS	53.235
S1132100	节气门体总成	Throttle assy		PCS	389.844
LBA3612500	弱加速传感器	Acceleration sensor	OBD	PCS	107.9
S3614300	进气压力温度传感器	Temperature And Pressure Sensor		PCS	131.04
LBA3616100	水温传感器	Water Temperature Sensor		PCS	28.899
S3612210	电喷ECU支架	ECU bracket		PCS	26.6
S1700000	变速器总成	Transmission assy.		PCS	3640
LF481Q1-1701095A	拉索支架紧固螺栓	Cable bracket bolt		PCS	1.52
LF481Q1-1702160A	离合器分泵	Clutch slave cylinder		PCS	56.121
LF481Q1-1701074A	输入轴后轴承垫片	Input shaft rear bearing washer	optional	PCS	3.25
LF481Q1-1701029A	铜垫圈	Copper washer		PCS	0.76
LF481Q1-1701033A	换档定位座	Shift position device		PCS	35.88
LF481Q1-1701023A	连接螺栓	Connecting bolt		PCS	2.2
LF481Q1-1701042A	同步器齿毂挡圈	Synchronize gear circlip	optional	PCS	0.715
LF481Q1-1701106A	输出轴	Output shaft		PCS	232.05
LF481Q1-1701101A	输出五档挡圈	Output fifth circlip		PCS	1.88
LF481Q1-1701042A	同步器齿毂档圈	Synchronize gear circlip	optional	PCS	0.715
LF481Q1-1702073A	五档换档拨叉	Fifth fork		PCS	19.63
LF481Q1-1702053A	一、二档换挡拨叉	First second fork		PCS	20.54
LF481Q1-1702030A	选档轴组件	Transposition swing arm		PCS	8.45
LF481Q1-1702108A	互锁板	Shift swinglever interlock bracket		PCS	15.405

LF481Q1-1702105A	防尘罩	Boot		PCS	2.795
LF481Q1-1702157A	换档盖紧固螺栓	Bolt	M8×30	PCS	1.92
LF481Q1-1702158A	换档盖定位螺栓	Bolt	M8×35	PCS	1.8
S1001410	右悬置组件	Right suspension component		PCS	33.936
S1001110	前悬置组件	Front suspension component		PCS	71.862
S1001140	前悬置连接支架组件Ⅰ	Front suspension bracket		PCS	7.7
S1001310	左悬置组件	Left suspension component		PCS	58.66
S1001340	左悬置连接支架组件Ⅰ	Left suspension bracket		PCS	22.4
S1001210	后悬置组件	Rear suspension component		PCS	63.322
S1001240	后悬置连接支架组件Ⅰ	Rear suspension bracket		PCS	22.4
231-1025TF3	六角法兰面螺栓	Hex flange bolt		PCS	2.8
231-1050TF3	六角法兰面螺栓	Hex flange bolt		PCS	2.72
101B-1010T13F3	六角法兰面螺母	Hex flange nut		PCS	2.32
231-1090TF3	六角法兰面螺栓	Hex flange bolt		PCS	6.8
231B-1095TF3	六角法兰面螺栓	Hex flange bolt		PCS	4
231B-1235TF3	六角法兰面螺栓	Hex flange bolt		PCS	2.4
231B-1295TF3	六角法兰面螺栓	Hex flange bolt		PCS	5.6
101B-1212T13F3	六角法兰面螺母	Hex flange nut		PCS	6
S1101100	燃油箱总成	Fuel tank assy.		PCS	497.7
S1101321	燃油箱右托架	Fuel tank bracket，right		PCS	23.52
S1101331	燃油箱中托架	Fuel tank bracket，middle		PCS	24.92

S1101311	燃油箱左托架	Fuel tank bracket，left		PCS	23.52
S1101400	加注管总成	Fuel filler tube assy.		PCS	121.52
S1101440	加油口盖组件	Fuel filler cap		PCS	49.896
Q67525	A型蜗杆传动式软管环箍	Hoop		PCS	3.692
S1101471	加注管护罩	Fuel filling pipe cover		PCS	47.6
F1117100	燃油滤清器总成	Fuel filter		PCS	7.544
S1117410	滤清器支架组件	Fuel filter bracket		PCS	6.3
Q1840616	六角法兰面螺栓	Hex flange bolt		PCS	0.72
S1104110	油箱出油管组件	Fuel tank outlet pipe		PCS	18.424
S1104210	滤清器出油管组件	Fuel filter outlet pipe		PCS	28.154
Q1840830	六角法兰面螺栓	Hex flange bolt		PCS	1.28
Q1410616L	六角头螺栓和锥形弹性垫圈组合件	Hex bolt and taper springiness washer		PCS	0.664
Q32008	六角法兰面螺母	Hex flange nut		PCS	0.92
Q1840816	六角法兰面螺栓	Hex flange bolt		PCS	1.08
S1104310	发动机进油管组件Ⅰ	Fuel pipe 1，into engine		PCS	18.116
S1104320	发动机进油管组件Ⅱ	Fuel pipe 2，into engine		PCS	16.128
S1108110	油门踏板组件	Accelerator pedal assy.		PCS	37.8
S1108210	油门踏板支架组件	Accelerator pedal bracket		PCS	14.7
Q1840620	六角法兰面螺栓	Hex flange bolt		PCS	0.64
Q32006	六角法兰面螺母	Hex flange nut		PCS	0.8
S1109100	空气滤清器总成	Air filter assy.		PCS	65.8

S1109810	空气滤清器安装支架	Air filter bracket		PCS	11.9
S1109310	空滤器进气管组件	Air filter inlet pipe		PCS	39.2
S1109610	发动机进气管组件	Air pipe assy，into engine		PCS	33.6
Q67670	C型蜗杆传动式软管环箍	Hoop		PCS	7.2
Q1410625L	六角头螺栓和锥形弹性垫圈组合件	Hex bolt and taper springiness washer		PCS	0.84
Q1840612	六角法兰面螺栓	Hex flange bolt		PCS	0.6
Q1840616	六角法兰面螺栓	Hex flange bolt		PCS	0.72
S1130280	炭罐安装支架组件	Can Canister bracket		PCS	3.08
Q67525	A型蜗杆传动式软管环箍	Hoop		PCS	3.692
S1130120	燃油蒸发连接管组件Ⅱ	Fuel evaporation tube II		PCS	19.012
S1130130	燃油蒸发连接管组件Ⅲ	Fuel evaporation tube III		PCS	3.276
S1130431	控制阀连接管III	Canister vavle hose III		PCS	17.388
S1130371	炭罐通气管固定支架	Canister hose bracket		PCS	1.4
Q673B13	钢带型弹性环箍	Hoop		PCS	1.14
S1130411	控制阀连接管Ⅰ	Canister vavle hose I		PCS	6.174
Q1840616	六角法兰面螺栓	Hex flange bolt		PCS	0.72
Q67512	A型蜗杆传动式软管环箍	Hoop		PCS	2.924
S1130311	碳罐通气管I	Canister hose I		PCS	5.572
S1130200	炭罐总成	Can canister		PCS	54.6
231-1035TF3	六角法兰面螺栓	Hex flange bolt		PCS	3.88
L1200017	小密封垫	Gasket		PCS	8.671

101-1010T2F3	六角法兰面螺母	Hex flange nut		PCS	1.72
B1211522	后消声器橡胶悬置块	Rear muffler rubber block		PCS	7.56
Q32006	六角法兰面螺母	Hex flange nut		PCS	0.8
231-1030TF30	六角法兰面螺栓	Hex flange bolt		PCS	2.16
S1602100	离合踏板总成	Clutch paddle assy.		PCS	91.7
S1608000	离合器总泵总成	Clutch master pump		PCS	58.8
Q5101022	销轴	Axis pin		PCS	1.8
Q5003220	开口销	Cotter pin		PCS	0.108
S1607310	离合操纵油管Ⅰ	Clutch pump controlling tube		PCS	26.138
221-1018	离合空心螺栓	Bolt		PCS	1.844
L1600014	垫密圈	washer		PCS	0.26
Q1840616	六角法兰面螺栓	Hex flange bolt		PCS	0.72
L1600013	卡片	Clip		PCS	0.312
S1607110	离合总泵进油管Ⅰ	Clutch pump intake tube		PCS	4.494
Q673B16	钢带型弹性环箍	Hoop		PCS	1.8
Q1410820	六角头螺栓和锥形弹性垫圈组合件	Hex bolt and taper springiness washer		PCS	1.16
Q33008	六角法兰面螺母	Hex flange nut		PCS	1.12
S1703160	换挡手柄球头组件	Gear shift handle		PCS	25.06
Q1410616	六角头螺栓和锥形弹性垫圈组合件	Hex bolt and taper springiness washer		PCS	0.68
S1703100	换挡支座总成	Gearshift mount assy.		PCS	102.2
Q1840825	六角法兰面螺栓	Hex flange bolt		PCS	1.24

Q40108	平垫圈	Flat washer		PCS	0.2
Q50108	锁销	Lock pin		PCS	1.2
S1703200	换选档软轴总成	Gear shift cable		PCS	93.8
L1703016	变速拉索接头固定卡	Shift cable joint clip		PCS	1.04
L1703017	E型卡	E clip		PCS	1.04
S2203100	左传动轴总成	Left axle shaft assy.		PCS	340.9
S2203200	右传动轴总成	Right axle shaft assy.		PCS	394.1
S2905491	前支柱上防尘盖	Front shock absorber dust proof		PCS	10.22
Q33014S	全金属六角法兰面锁紧螺母	Hex flange nut		PCS	4.8
S2906210	前横向稳定杆连接杆组件	Front stabilizer bar connecting bar		PCS	24.5
101B-1010T13F3	六角法兰面螺母	Hex flange nut		PCS	2.32
S2901110	前托架组件	Front bracket assy.		PCS	972
S2901410	前托架托梁组件	Front bracket corbel		PCS	161
S2906110	前横向稳定杆组件	Front stabilizer bar		PCS	91
Q1410825	六角头螺栓和弹簧垫圈组合件	Bolt		PCS	1.424
S2906311	前横向稳定杆固定块	Front stabilizer bar mount		PCS	4.2
S2906341	前横向稳定杆缓冲套	Front stabilizer bar sleeve		PCS	4.2
S2906351	左固定块垫片	Mount washer，left		PCS	2.8
S2906352	右固定块垫片	Mount washer，right		PCS	2.8
231-1450TF3	六角法兰面螺栓	Hex flange bolt		PCS	6.2
Q5003225	开口销	Cotter pin		PCS	0.28

231C-14120TF3	六角法兰面螺栓	Hex flange bolt		PCS	9.6
S2802312	发动机右下钢板护板	Engine lower protect panel，right		PCS	98
231-1490TF3	六角法兰面螺栓	Hex flange bolt		PCS	13.6
101-1414T13F3	六角法兰面螺栓	Hex flange bolt		PCS	4.08
231-1025TF3	六角法兰面螺栓	Hex flange bolt		PCS	2.8
S2904100	左前摆臂总成	Front swingarm assy，left		PCS	179.2
S2904200	右前摆臂总成	Front swingarm assy，right		PCS	179.2
231-1560TF3	六角法兰面螺栓	Hex flange bolt		PCS	12.8
S2802311	发动机左下钢板护板	Engine lower protect panel，left		PCS	95.2
124-1417T13F3	六角法兰面开槽螺母	Hex flange nut		PCS	4.84
S2905100	左前支柱总成	Front left shock absorber assy.		PCS	457.8
S2905600	右前支柱总成	Front right shock absorber assy.		PCS	457.8
S2905562	前弹簧下垫	Shock absorber spring washer		PCS	8.12
S2905521	前限位缓冲块	Stopping damper		PCS	23.38
S2905541	减震器防尘罩	Shock absorber dust proof		PCS	18.34
S2905511	前弹簧	Front shock absorber spring		PCS	68.6
S2905450	前弹簧上支承座组件	Front shock absorber spring seat		PCS	30.8
S2905431	轴承油封	Bearing seal		PCS	20.3
S2905410	前支柱上安装支座组件	Front shock absorber mount		PCS	53.2
Q33014S	全金属六角法兰面锁紧螺母	Hex flange nut		PCS	4.8
S2905481	前减震器上支承座堵盖	Front shock absorber plug		PCS	2.31

S2911110	后托架组件	Rear bracket assy.		PCS	254.8
231B-12100TF3	六角法兰面螺栓	Hex flange bolt		PCS	7.04
231B-1280TF3	六角法兰面螺栓	Hex flange bolt		PCS	4.8
S2920611	后限位缓冲块	Limiting damper		PCS	10.22
101B-1212T13F3	六角法兰面螺母	Hex flange nut		PCS	6
S2916110	后横向稳定杆组件	Rear stabilizer bar		PCS	71.4
S2916341	后横向稳定杆缓冲套	Rear stabilizer bar sleeve		PCS	3.5
S2916331	后横向稳定杆固定块	Rear stabilizer bar mount		PCS	3.5
Q1420820	六角头螺栓和弹簧垫圈组合件	Bolt		PCS	1.2
101B-1010T13F3	六角法兰面螺母	Hex flange nut		PCS	2.32
S2914100	后悬上横拉杆总成	Upper drag link，rear suspension		PCS	69.552
S2914300	后悬左下横拉杆总成	lower left drag link，rear suspension		PCS	69.552
S2914400	后悬右下横拉杆总成	lower right drag link，rear suspension		PCS	69.552
S2916210	后横向稳定杆左连接杆组件	Rear stabilizer bar connecting bar，left		PCS	23.1
S2916260	后横向稳定杆右连接杆组件	Rear stabilizer bar connecting bar，right		PCS	23.1
S2915040	后减震器下安装螺栓	Rear shock absorber bolt		PCS	4
S2915010	后减震器左下安装支架组件	Rear shock absorber bracket，left		PCS	15.4
S2915020	后减震器右下安装支架组件	Rear shock absorber bracket，right		PCS	15.4
S2914500	左后纵臂总成	Left trailing arm		PCS	352.8
S2914600	右后纵臂总成	Right trailing arm		PCS	352.8
S2914751	后纵臂安装胶套	Trailing arm washer		PCS	1.26

S2915531	后弹簧上衬垫	Rear shock absorber spring washer		PCS	8.12
S2915510	后弹簧组件	Rear shock absorber spring		PCS	56.84
S2920620	后限位缓冲块支座	Limiting damper mount		PCS	11.494
Q1840820	六角法兰面螺栓	Hex flange bolt		PCS	1.16
S2920611	后限位缓冲块	Limiting damper		PCS	10.22
S2915200	后减震器总成	Rear shock absorber		PCS	130.2
S2915441	后减震器上垫片Ⅰ	Rear shock absorber washer I		PCS	2.1
S2915442	后减震器上垫片Ⅱ	Rear shock absorber washer II		PCS	1.792
101B-1010T13F3	六角法兰面螺母	Hex flange nut		PCS	2.32
S3106100	轮胎总成	Tyre		PCS	464.8
189-1237T13F6	车轮螺母组件	Wheel bolt		PCS	14
S3101110	钢制车轮组件	Steel rim		PCS	154
S3102110B1	装饰盖	Steel wheel cover		PCS	28
S3105610	固定螺杆组件	Wheel bolt		PCS	4.578
S3105660	固定压盘组件	Wheel press plate		PCS	8.26
S3106800	气门嘴总成	Tyre valve		PCS	1.26
F3408100	动力转向油壶总成	Power steering reservior assy.		PCS	19.5
S3408210	动力转向油壶支架组件	Power steering reservior bracket assy.		PCS	5.88
Q1460616	六角头螺栓、弹簧垫圈和平垫圈组合件	Bolt		PCS	1
S3406320	转向器回油管组件Ⅱ	Steering gear outlet pipe II		PCS	112.812
Q67516	A型蜗杆传动式软管环箍	Hoop		PCS	3.26

Q67525	A型蜗杆传动式软管环箍	Hoop		PCS	3.692
S3406110	转向油泵进油管组件	Steering pump intake pipe		PCS	13.09
S3406310	转向器回油管组件Ⅰ	Steering reflux pipe Ⅰ		PCS	24.248
S3406200	转向器进油管总成	Steering intake pipe assy.		PCS	38.78
S3407100	动力转向油泵总成	Steering pump assy.		PCS	425.6
Q1460620	六角头螺栓、弹簧垫圈和平垫圈组合件	Bolt		PCS	1
Q32006	六角法兰面螺母	Hex flange nut		PCS	0.8
231B-1275TF3	六角法兰面螺栓	Hex flange bolt		PCS	18
101-1212T13F3	六角法兰面螺母	Hex flange nut		PCS	2.16
Q1840830	六角法兰面螺栓	Hex flange bolt		PCS	1.28
S3404711	转向管柱防尘罩Ⅰ	Steering gear dust proof Ⅰ		PCS	16.8
S3404741	防尘套安装支架	Dust proof bracket，steering gear		PCS	5.6
S3404731	转向管柱防尘罩Ⅱ	Steering gear dust proof Ⅱ		PCS	11.9
S3404751	转向管柱防尘套Ⅲ	Steering gear dust proof Ⅲ		PCS	9.8
S3404100	上转向轴总成	Upper steering shaft assy.		PCS	170.8
Q1840855	六角法兰面螺栓	Hex flange bolt		PCS	2.04
101B-1212T13F3	六角法兰面螺栓	Hex flange bolt		PCS	6
S3508300	驻车制动操纵杆总成	Parking brake lever		PCS	53.9
Q1840825	六角法兰面螺栓	Hex flange bolt		PCS	1.24
S3508400	驻车制动拉索前段总成	Parking brake cable，front part		PCS	30.1
Q32005	六角法兰面螺母	Hex flange nut		PCS	0.6

S3508811	驻车制动拉索固定扣	Parking brake cable clamp		PCS	1.708
Q1840612	六角法兰面螺栓	Hex flange bolt		PCS	0.6
Q1410820	六角头螺栓和锥形弹性垫圈组合件	Hex bolt and taper springiness washer		PCS	1.16
S3501100	左前制动器总成	Left front brake assy.		PCS	643.3
S3103100	左前转向节带轮毂组件	Left front steer knuckle with hub		PCS	257.712
S3103600	右前转向节带轮毂组件	Right front steer knuckle with hub		PCS	257.712
S3103300	左前转向节	Left front steer knuckle		PCS	152.894
S3103700	右前转向节	Right front steer knuckle		PCS	152.894
S3103101	轴承挡圈	Bearing circlip		PCS	2.814
S3103400	前轮毂轴承	Front wheel hub bearing		PCS	65.324
S3103200	前轮毂单元组件	Front wheel hub		PCS	77.84
S3501431	左前制动底板	Left backing plate		PCS	21.28
S3501931	右前制动底板	Right backing plate		PCS	21.28
S3501110	前制动盘	Front brake disc		PCS	150.08
S3501200	左前制动卡钳组件	Front left brake caliper		PCS	368.2
S3501700	右前制动卡钳组件	Front right brake caliper		PCS	368.2
SS35001	前制动片维修包	Front brake pad kit	4 pcs	KIT	97.02
S3502110	后制动盘	Rear brake disc		PCS	85.4
S3104100	后轮毂	Rear wheel hub		PCS	242.2
S3502200	左后制动钳总成	Rear brake caliper，left		PCS	165.2
S3502700	右后制动钳总成	Rear brake caliper，right		PCS	165.2

SS35002	后制动片维修包	Rear brake pad kit	4 pcs	KIT	109.2
S3502400	左后制动底板带拉索总成	Rear left brake backing plate with cable		PCS	221.2
S3502900	右后制动底板带拉索总成	Rear right brake backing plate with cable		PCS	221.2
S3502420	左后制动底板组件	Left rear brake bottom		PCS	91.28
S3502920	右后制动底板组件	Right rear brake bottom		PCS	91.28
S3502405	底板固定支座	Brake bottom damper		PCS	0.7
S3502406	底板固定支座弹簧	Brake bottom spring		PCS	1.12
S3502407	底板固定杆	Brake bottom fixing rod		PCS	1.12
Q150B0612	六角头螺栓	Hex bolt		PCS	2
Q40106	平垫圈	Flat washer		PCS	2.72
S3502402	制动蹄支撑板	Support plate		PCS	9.1
S3502401	制动蹄回位弹簧	Return spring		PCS	2.03
S3502403	制动蹄调节器组件	Brake shoe adjustor		PCS	6.02
S3502404	制动蹄调节拉杆固定弹簧	Fixing spring		PCS	1.26
S3508100	左驻车制动拉索总成	parking brake left cable		PCS	35.84
S3508200	右驻车制动拉索总成	Parking brake right cable		PCS	12.6
S3502500	连接座总成	Connecting mount		PCS	22.4
204-1025	六角头螺栓和锥形弹性垫圈组合件	Hex bolt and taper springiness washer		PCS	2.036
S3540000	制动总泵带助力器带油壶总成	Brake pump with booster and liquid can		PCS	483
S3540700	制动油壶总成	Fluid pot		PCS	37.8
S3540710	制动油壶盖组件	Fluid pot cap		PCS	2.8

S3540720	滤网	Fluid pot filter		PCS	1.4
S3540011	制动油壶连接销	Fluid pot pin		PCS	1.12
S3540100	制动总泵	Brake pump		PCS	87.08
S3540400	真空助力器	Brake booster		PCS	343
S3540012	制动总泵连接螺母	Brake pump bolt		PCS	7
S3504100	制动踏板总成	Brake pedal		PCS	94.5
B3781120	制动灯开关	Brake lamp switch		PCS	10.26
S3504101	回位弹簧	Return spring		PCS	4.9
S3504102	销轴	Axis pin		PCS	3.5
S3540931	助力真空管	Booster pipe		PCS	21.56
Q673B16	钢带型弹性环箍	Hoop		PCS	1.8
244-08190F2	真空助力器固定螺栓	Brake booster bolt		PCS	7.6
Q1410820	六角头螺栓和锥形弹性垫圈组合件	Hex bolt and taper springiness washer		PCS	1.16
Q1840825	六角法兰面螺栓	Hex flange bolt		PCS	1.24
Q32008	六角法兰面螺母	Hex flange nut		PCS	0.92
S3506110	制动总泵主出油管	Brake pump primary outlet pipe		PCS	16.828
S3506210	左前制动管Ⅰ	Front left brake tube I		PCS	18.2
S3506310	右前制动管Ⅰ	Front right brake tube I		PCS	11.032
S3506410	左后制动管Ⅰ	Rear left brake tube I		PCS	11.158
S3506610	右后制动管Ⅰ	Rear right brake tube I		PCS	10.934
S3506160	制动总泵次出油管	Brake pump secondary outlet pipe		PCS	16.828

S3550100	ABS控制器总成	ABS ECU		PCS	947.7
S3550710	ABS支架组件	ABS bracket		PCS	14
271-0627T1F3	ABS机构安装螺栓	Bolt		PCS	2
B3550212	ABS机构安装衬套	ABS sleeve		PCS	0.8
Q1840820	六角法兰面螺栓	Hex flange bolt		PCS	1.16
231-1020TF3	六角法兰面螺栓	Hex flange bolt		PCS	2.2
S3506921	六孔管夹	Clamp for 6 tubes		PCS	1.12
S3506920	六孔管夹组件	Clamp for 6 tubes assy.		PCS	2.254
Q1400612	六角头螺栓和平垫圈组合件	Hex bolt，taper springiness washer and flat washer		PCS	0.72
S3506840	制动管固定卡组件Ⅰ	Brake tube clamp I		PCS	2.1
Q32006	六角法兰面螺母	Hex flange nut		PCS	0.8
S3506240	左前制动管Ⅱ	Front left brake tube II		PCS	21.196
L3506106	E型卡片	E shape clip		PCS	3.12
S3506890	制动管固定卡组件Ⅵ	Brake tube clamp VI		PCS	4.816
B3506361	前轮制动管路过孔胶套	Front brake tube sleeve		PCS	0.6075
S3506911	制动管固定卡组件Ⅷ管夹	Brake tube clamp VIII		PCS	2.1
S3506912	制动管固定卡组件Ⅷ支架	Brake tube clamp bracket		PCS	2.716
S3506640	右后制动管Ⅱ	Rear right brake tube II		PCS	15.232
S3506440	左后制动管Ⅱ	Rear left brake tube II		PCS	17.962
S3506870	制动管固定卡组件Ⅳ	Brake tube clamp IV		PCS	2.786
S3506850	制动管固定卡组件Ⅱ	Brake tube clamp II		PCS	1.47

S3506460	左后制动管Ⅱ后段	Rear left brake tube II，rear part		PCS	15.204
S3506670	右后制动管Ⅲ	Rear right brake tube III		PCS	12.936
S3506470	左后制动管Ⅲ	Rear left brake tube III		PCS	10.416
S3506471	后制动软管左支架	Rear brake hose bracket，left		PCS	4.2
S3506472	后制动软管右支架	Rear brake hose bracket，right		PCS	4.2
Q1410820	六角头螺栓和锥形弹性垫圈组合件	Hex bolt and taper springiness washer		PCS	1.16
S3506510	左后制动管Ⅳ	Rear left brake tube IV		PCS	8.946
S3506740	右后制动管Ⅳ	Rear right brake tube IV		PCS	8.946
S3506860	制动管固定卡组件Ⅲ	Brake tube clamp III		PCS	1.316
S3506540	左后制动管Ⅴ	Rear left brake tube V		PCS	9.268
S3506981	空心螺栓	Eye bolt		PCS	2.856
S3506982	紫铜垫片	Washer		PCS	2.282
B3603820B1	倒车雷达传感器	Reverse radar sensor		PCS	46.3185
B3603841	安装支架	Bracket		PCS	1.35
B3605400	防盗报警器总成	Immobilizer warner assy.		PCS	21.6
Q340B06	1型六角螺母	Nut		PCS	4
Q40306	弹簧垫圈	springiness washer		PCS	0.192
LBX3605100	防盗ECU	Immobilizer ECU		PCS	97.5
B3605200	防盗系统读写识别线圈	Immobilizer recognition		PCS	36.45
LAX3605011	防盗芯片	Immobilizer chip		PCS	27.95
B3676230	环境温度传感器	Temperature sensor，out of vehicle		PCS	7.42

S3674100	BCM	BCM		PCS	390.53
S3658300	安全气囊时钟弹簧	Airbag clock spring		PCS	119.574
S3658300B1	安全气囊时钟弹簧	Airbag clock spring	EX	PCS	150.696
S3658100	安全气囊ECU	Airbag ECU		PCS	343.98
S3658100B1	安全气囊ECU	Airbag ECU	EX	PCS	343.98
S3630300	左前轮速传感器总成	Wheel speed sensor，front left		PCS	49
S3630400	右前轮速传感器总成	Wheel speed sensor，front right		PCS	49
S3630500	左后轮速传感器总成	Wheel speed sensor，rear left		PCS	53.2
S3630600	右后轮速传感器总成	Wheel speed sensor，rear right		PCS	53.2
S3661220	环境光传感器	Ambient light sensor		PCS	24.5
S3661220B1	环境光阳光传感器	Sun light sensor	for AT A/C	PCS	32.2
Q1840612	六角法兰面螺栓	Hex flange bolt		PCS	0.6
Q1400820	六角头螺栓和平垫圈组合件	Hex bolt，taper springiness washer and flat washer		PCS	1.2
Q1840612	六角头螺栓	Hex bolt		PCS	0.6
Q1840616	六角法兰面螺栓	Hex flange bolt		PCS	0.72
Q1840645	六角法兰面螺栓	Hex flange bolt		PCS	1.2
Q32006	六角法兰面螺母	Hex flange nut		PCS	0.8
Q1840616	六角法兰面螺栓	Hex flange bolt		PCS	0.72
Q1400612	六角头螺栓和平垫圈组合件	Hex bolt，taper springiness washer and flat washer		PCS	0.72
S3820000	组合仪表	Instrument cluster		PCS	540.4
S8112100	空调控制面板总成	Air conditioner control panel	MT	PCS	210

S3722100	驾驶舱电器中央控制盒	Central control case		PCS	350
B3725100	点烟器总成	Cigarette lighter		PCS	22.68
S3759300	驾驶员座椅加热开关总成	Seat heater switch		PCS	21
S3787820	后背门锁开关	Tail door lock switch		PCS	19.6
S3750511	备用开关堵盖	Spare switch plug		PCS	0.84
Q2714816	十字槽盘头自攻螺钉-C型	Screw		PCS	0.28
S3782000	开关组件	Switch combination		PCS	21
B3750560A2	电动后视镜控制开关	Wing mirror switch		PCS	24.3
B3750520A2	背景光调整开关	Background light switch		PCS	20.25
S3784100	车载电源接口组件	Power resource connector		PCS	12.04
B3774100D1	灯光组合开关总成	Lamp switch		PCS	57.375
S3774300B1	风窗刮水器组合开关总成	Wiper switch		PCS	59.5
S3746100	左前门扶手及开关总成	Inner handrail with switches,front left door		PCS	186.62
S3746200	右前门扶手及开关总成	Inner handrail with switches,front right door		PCS	89.46
S3746300	左后门扶手及开关总成	Inner handrail with switches,rear left door		PCS	82.46
S3746400	右后门扶手及开关总成	Inner handrail with switches,rear right door		PCS	82.46
B3746120A2	左前门玻璃升降开关	Glass lifter,front left door		PCS	123.228
B3758110	前门接触开关	Contacter switch,front door		PCS	4.59
Q1840616T1F30	六角法兰面螺栓	Hex flange bolt		PCS	0.56
S3722200	发动机舱电器控制盒总成	Central control case，engine room		PCS	280
JD1912-40A/QC T73	继电器	Relay		PCS	8.125

JD1927-30A/QC T73	继电器	Relay		PCS	8.125
Q1840620	六角法兰面螺栓	Hex flange bolt		PCS	0.64
Q1840630	六角法兰面螺栓	Hex flange bolt		PCS	1.2
Q1460616	六角头螺栓、弹簧垫圈和平垫圈组合件	Bolt		PCS	1
S3721200	低音电喇叭	Bass horn		PCS	33.6
Q32006	六角法兰面螺母	Hex flange nut		PCS	0.8
S3703211	蓄电池压杆	Battery press bar		PCS	2.8
BAC3703212	蓄电池塑料压块	Battery plastic press plate		PCS	0.9045
S3703213	蓄电池托盘	Battery holder		PCS	10.01
S3703220	蓄电池支架	Battery bracket		PCS	47.6
S3703212	蓄电池拉杆	Battery draglink		PCS	3.5
S4131100	门灯	Door lock warning light		PCS	7.7
S4116100	前雾灯总成	Front fog light		PCS	63
S4111100	左前转向灯	Srteering light,left		PCS	35.868
S4111200	右前转向灯	Srteering light,right		PCS	35.868
S4121100	左前组合灯	Front left head lamp		PCS	512
S4121200	右前组合灯	Front right head lamp		PCS	512
S4123100	前顶灯	Front ceiling light		PCS	58.8
S4123200	中顶灯	Middle roof light		PCS	19.6
S4134300	高位制动灯	High-mount brake lamp		PCS	49
S4133300	左后组合灯	Left tail lamp		PCS	400

S4133400	右后组合灯	Right tail lamp		PCS	400
S4116300	左后雾灯总成	Rear fog light,left		PCS	35
S4116400	右后雾灯总成	Rear fog light,right		PCS	35
LBU4108100	牌照灯	Lisence plate light		PCS	7.8
Q32006	六角法兰面螺母	Hex flange nut		PCS	0.8
Q2714813	十字槽盘头自攻螺钉	Philips self-tapping screw		PCS	0.4
Q1840616	六角法兰面螺栓	Hex flange bolt		PCS	0.72
Q2214825	十字槽盘头自攻螺钉和大垫圈组合件	Philips screw with washer		PCS	0.58
Q2714819	十字槽盘头自攻螺钉-C型	Screw		PCS	0.32
Q2714816	十字槽盘头自攻螺钉-C型	Screw		PCS	0.28
S7935100	车载多功能显示屏	Moniter		PCS	105
S7909200	高音头组件	Alt speaker		PCS	13.3
S7901500	收音机/CD播放器总成	CD player		PCS	803.25
S7909100	前置扬声器	Front speaker		PCS	22.4
S7903140	收音机天线馈线总成	Antenna cable		PCS	12.446
S7903110	收音机天线体总成	Antenna		PCS	102.354
B7904310	静噪滤波器及支架	Noise filter		PCS	13.77
Q2214216	十字槽盘头自攻螺钉和大垫圈组合件	Philips screw with washer		PCS	0.44
Q2214816	十字槽盘头自攻螺钉和大垫圈组合件	Philips screw with washer		PCS	0.608
Q2714816	十字槽盘头自攻螺钉	Philips self-tapping screw		PCS	0.28
Q1800612	六角法兰面承面带齿螺栓	Hex flange bolt		PCS	1.04

400-0072	方螺母卡扣	Clip		PCS	1.12
Q1840612	六角法兰面螺栓	Hex flange bolt		PCS	0.6
SS37001	钥匙锁芯维修包	Key and lock cylinders		KIT	154
B3704300	点火开关光圈	Ignition decoration		PCS	8.775
S3704230	折叠钥匙	Foldable key		PCS	10.64
Q41206	外锯齿锁紧垫圈	External teeth serrated lock washer		PCS	1.2
Q1840616	六角法兰面螺栓	Hex flange bolt		PCS	0.72
Q41206	外锯齿锁紧垫圈	External teeth serrated lock washer		PCS	1.2
Q1840616	六角法兰面螺栓	Hex flange bolt		PCS	0.72
Q41206	外锯齿锁紧垫圈	External teeth serrated lock washer		PCS	1.2
Q1840616	六角法兰面螺栓	Hex flange bolt		PCS	0.72
Q41206	外锯齿锁紧垫圈	External teeth serrated lock washer		PCS	1.2
Q1840616	六角法兰面螺栓	Hex flange bolt		PCS	0.72
Q41206	外锯齿锁紧垫片	Washer		PCS	1.2
Q1840616	六角法兰面螺母	Hex flange nut		PCS	0.72
Q1400825	六角头螺栓和平垫圈组合件	Hex bolt，taper springiness washer and flat washer		PCS	1.28
S6106110	左前车门上铰链	Front left door hinge，upper		PCS	15.4
S6106120	左前车门下铰链	Front left door hinge，lower		PCS	14.35
S6106210	右前车门上铰链	Front right door hinge，upper		PCS	15.4
S6106220	右前车门下铰链	Front right door hinge，lower		PCS	14.35
S6206110	左后车门上铰链	Rear left door hinge，upper		PCS	15.4

S6206120	左后车门下铰链	Rear left door hinge，lower		PCS	14.35
Q32008	六角法兰面螺母	Hex flange nut		PCS	0.92
S6206210	右后车门上铰链	Rear right door hinge，upper		PCS	15.4
S6206220	右后车门下铰链	Rear right door hinge，lower		PCS	14.35
S6306110	后背门铰链	Hatch door hinge		PCS	11.2
Q1400616	六角头螺栓和平垫圈组合件	Hex bolt，taper springiness washer and flat washer		PCS	0.68
Q32006	六角法兰面螺母	Hex flange nut		PCS	0.8
Q1460616	六角头螺栓、弹簧垫圈和平垫圈组合件	Bolt		PCS	1
Q1460620	六角头螺栓平垫圈组合件	Bolt		PCS	1
Q1840820	六角法兰面螺栓	Hex flange bolt		PCS	1.16
Q1400612	六角头螺栓和平垫圈组合件	Hex bolt，taper springiness washer and flat washer		PCS	0.72
Q150B0612	六角头螺栓	Hex bolt		PCS	2
Q40206	大垫圈	Big washer		PCS	0.48
S2803110	前保险杠总成	Front bumper assy.		PCS	374.4
S2803121	前保险杠缓冲块	Front bumper damper		PCS	23.8
S2803131	前保险杠左侧安装支架	Front bumper bracket，left		PCS	10.08
S2803132	前保险杠右侧安装支架	Front bumper bracket，right		PCS	10.08
S2803411	左前转向灯盖板	Steering lamp cover，left		PCS	14.84
S2803412	右前转向灯盖板	Steering lamp cover，right		PCS	14.84
S2804111	后保险杠本体	Rear bumper		PCS	368
S2804121	后保险杠左缓冲块	Rear bumper damper，left		PCS	14

S2804130	后保险杠左安装支架组件	Rear bumper bracket，left		PCS	14.84
S2804140	后保险杠右安装支架组件	Rear bumper bracket，right		PCS	14.84
S2803510	前牌照板安装板组件	License plate fixing plate		PCS	12.04
Q31206	B型板簧螺母	“B”spring nut		PCS	0.784
S2803510B1	前牌照板安装板组件	License plate fixing plate	export only	PCS	13.16
Q1840616	六角法兰面螺栓	Hex flange bolt		PCS	0.72
Q2706316	六角法兰面自攻螺钉	Hex flange tapping screw		PCS	0.56
400-0072	塑料卡扣	Plastic clip		PCS	1.12
400-2233	卡扣	Clip		PCS	4
400-2232	卡扣	Clip		PCS	4
400-2237	卡扣	Clip		PCS	2.12
Q1410616	六角头螺栓和锥形弹性垫圈组合件	Hex bolt and taper springiness washer		PCS	0.68
400-2236	卡扣	Clip		PCS	4
S5304110	左通风盖板组件	Left ventilation cover assy.		PCS	43.4
S5304131	左前风挡密封盖板	Front wind-shield seal cover，left		PCS	6.72
S5304210	右通风盖板组件	Right ventilation cover assy.		PCS	26.6
S5304231	右前风挡密封盖板	Front wind-shield seal cover，right		PCS	6.72
S5304121	通风盖板密封条	Ventilation cover seal		PCS	6.86
S5512152	左后轮挡泥板内板	Rear left mudguard 2		PCS	10.5
S5304300	前舱排水口组件	Front drain component		PCS	8.12
S5509100	前格栅总成	Front grille		PCS	221.2

S3921111	前部装饰标牌	Front LOGO“LLL”		PCS	16.8
S5506110	后牌照装饰板组件	License plate trim assy.		PCS	57.4
S5513110	左后排风口组件	Rear air distribution assy，left		PCS	11.62
S5513120	右后排风口组件	Rear air distribution assy，right		PCS	11.62
S5512151	左后轮挡泥板	Rear left mudguard		PCS	13.3
S5512161	右后轮挡泥板	Rear right mudguard		PCS	13.3
S5512111	左前轮挡泥皮	Front left mudguard 1		PCS	56
S5512121	右前轮挡泥皮	Front right mudguard 1		PCS	56
S5512112	左前轮挡泥板	Front left mudguard		PCS	11.2
S5512122	右前轮挡泥板	Front right mudguard		PCS	11.2
S3921211	后部装饰标牌	Rear trim plate		PCS	12.6
S5512152	左后轮挡泥板内板	Rear left mudguard 2		PCS	10.5
S5512162	右后轮挡泥板内板	Rear right mudguard 2		PCS	10.5
Q2214816	盘头自攻螺钉C	Screw		PCS	0.608
Q39748202	A型簧片螺母	Spring nut		PCS	0.448
Q1410616	六角头螺栓和锥形弹性垫圈组合件	Hex bolt and taper springiness washer		PCS	0.68
Q32005T2F30	六角法兰面螺母	Hex flange nut		PCS	0.44
400-0084	卡扣	Clip		PCS	1.4
Q2706316	六角法兰面自攻螺钉	Hex flange tapping screw		PCS	0.56
Q2215519F31	十字槽盘头螺钉和大垫圈组合件	Screw		PCS	0.76
400-0072	方螺母卡扣	Clip		PCS	1.12

S5206100	前风挡玻璃组件	Front wind-shield glass		PCS	419.184
S5206235	挡胶条	Front wind-shield glass seal		PCS	13.3
S5206210	前风挡玻璃左固定条组件	Front wind-shield glass mount，left		PCS	7.98
S5206220	前风挡玻璃右固定条组件	Front wind-shield glass mount，right		PCS	7.98
S5206240	前风挡玻璃左密封条组件	Front wind-shield seal，left		PCS	9.8
S5206250	前风挡玻璃右密封条组件	Front wind-shield seal，right		PCS	9.8
S5206230	前风挡玻璃上密封条	Front wind-shield seal，upper		PCS	6.58
S6303110	后背门玻璃总成	Tail door glass		PCS	268.464
S6307112	后背门玻璃左密封条	Tail door glass seal，left		PCS	1.75
S6307212	后背门玻璃右密封条	Tail door glass seal，right		PCS	1.75
S6307114	后背门玻璃下密封条	Tail door glass seal，lower		PCS	7.84
S6103100	左前车门玻璃总成	Front left door glass		PCS	82.736
S6103200	右前车门玻璃总成	Front right door glass		PCS	82.736
S6107111	左前车门玻璃密封条	Glass seal，front left door		PCS	29.54
S6107211	右前车门玻璃密封条	Glass seal，front right door		PCS	29.54
S6203100	左后车门玻璃总成	Rear left door glass		PCS	66.096
S6203200	右后车门玻璃总成	Rear right door glass		PCS	66.096
S6207111	左后车门玻璃密封条	Glass seal，rear left door		PCS	24.64
S6207211	右后车门玻璃密封条	Glass seal，rear right door		PCS	24.64
S6203311	左后车门三角窗玻璃	Left triangular window，door side		PCS	29.708
S6203411	右后车门三角窗玻璃	Right triangular window，door side		PCS	29.708

S6207131	左后车门三角窗密封条	Left triangular window seal，door side		PCS	12.32
S6207231	右后车门三角窗密封条	Right triangular window seal，door side		PCS	12.32
S5406110	左侧围三角窗总成	Left triangular window，body side		PCS	173.068
S5406210	右侧围三角窗总成	Right triangular window，body side		PCS	173.068
S5207100	洗涤壶总成	Washer can assy.		PCS	45.192
S5207210	前风窗软管总成	Front wind-shield washer hose assy.		PCS	9.1
S5207230	后风窗软管前段总成	Rear wind-shield washer hose assy.		PCS	28
S5207310	前风挡喷头总成	Front wind-shield washer nozzle		PCS	2.45
S5207410	后风挡喷头总成	Rear wind-shield washer nozzle		PCS	1.638
S5207240	后风窗软管后段总成	Rear wind-shield washer hose assy，rear part		PCS	1.092
Q1410616L	六角头螺栓和锥形弹性垫圈组合件	Hex bolt and taper springiness washer		PCS	0.664
S5205100	左刮水器组件	Window wiper，left		PCS	207.2
S5205200	右刮水器组件	Window wiper，right		PCS	207.2
S6310100	后背门雨刮器摆臂刮刷总成	Tail windshield wiper		PCS	142.8
S5305100B35	副仪表板本体总成	Console assy.		PCS	217
S5305200B36	副仪表板装饰板总成	Console trim panel assy.		PCS	98
S5305311B31	空调左护板	A/C trim fender，left		PCS	19.6
S5305322B31	空调右护板	A/C trim fender，right		PCS	21
S5305330	杂物盒焊接支架总成	Dashboard glovebox bracket		PCS	9.8
S5305341B33	副仪表板杂物盒底部垫	Glove box bottom damper		PCS	4.2
S8203110	前烟灰缸总成	Front ashtray assy.		PCS	21

S5531717	副仪表板左后隔音垫	Console insulator，rear left		PCS	3.122
S5531718	副仪表板右后隔音垫	Console insulator，rear right		PCS	3.122
S5531715	副仪表板左前隔音垫	Console insulator，front left		PCS	1.344
S5531716	副仪表板右前隔音垫	Console insulator，front right		PCS	1.498
Q2734816	十字槽大半圆头自攻螺钉	Hex flange screw		PCS	0.292
Q1840616	六角法兰面螺栓	Hex flange bolt		PCS	0.72
Q1840816	六角法兰面螺栓	Hex flange bolt		PCS	1.08
S5306100B34	仪表板总成	Dashboard assy.		PCS	470.4
Q2714216	十字槽盘头自攻螺钉	Philips self-tapping screw		PCS	0.2
S5306500B33	中间出风口总成	Air distribution，center		PCS	70
S5306230	仪表板管梁焊接组件	Dashboard bar		PCS	161
S5306210	仪表板管梁左侧固定板组件	Dashboard bar mount，left		PCS	14
S5306220	仪表板管梁右侧固定板组件	Dashboard bar mount，right		PCS	14
S5306861	仪表板左部底端连接支架	Dashboard lower bracket，left		PCS	3.5
S5306862	仪表板右部底端连接支架	Dashboard lower bracket，right		PCS	2.8
S5306821B32	仪表板左端盖	Dashboard end cover，left		PCS	9.8
S5306822B32	仪表板右端盖	Dashboard end cover，right		PCS	9.8
S5306871B31	左高音喇叭罩	Left horn cover		PCS	2.8
S5306872B31	右高音喇叭罩	Right horn cover		PCS	2.8
S5306810B32	引擎盖拉手总成	Engine hood handle		PCS	5.6
S5306851B32	仪表板维修盖板	Dashboard lower cover		PCS	11.2

S5306010	组合仪表罩本体组件	Instrument cluster cover		PCS	39.2
S5306020B33	组合仪表罩防尘皮组件	Instrument cluster dust proof		PCS	8.4
S5306830	仪表板左装饰条组件	Dashboard trim assy,left		PCS	18.2
S5306840	仪表板右装饰条组件	Dashboard trim assy,right		PCS	18.2
S5306711B31	转向管罩上护罩	Steering pillar cover，upper		PCS	16.1
S5306712B31	转向管罩下护罩	Steering pillar cover，lower		PCS	18.2
Q1840816	六角法兰面螺栓	Hex flange bolt		PCS	1.08
Q32006	六角法兰面螺母	Hex flange nut		PCS	0.8
Q1840616	六角法兰面螺栓	Hex flange bolt		PCS	0.72
Q2714816	十字槽盘头自攻螺钉	Philips self-tapping screw		PCS	0.28
Q2140616	十字槽盘头螺钉	Screw		PCS	0.344
Q1840825	六角法兰面螺栓	Hex flange bolt		PCS	1.24
S5306600B32	仪表板杂物箱总成	Glove box assy.		PCS	95.9
S5306630	仪表板杂物箱限位块	Glove box stopper		PCS	5.6
S5406410	加油口盖拉索组件	Fuel filler cap cable assy.		PCS	18.2
Q1840610	六角法兰面螺栓	Hex flange bolt		PCS	0.6
400-1934B	塑料卡扣	Plastic clip		PCS	5.08
S5109100B31	前地板总成	Front floor assy.		PCS	210
S5110111	前左地板隔热层	Floor insulator,front left		PCS	21
S5110112	前右地板隔热层	Floor insulator,front right		PCS	21
S5110113	后左地板隔热层	Rear insulator,front left		PCS	21

S5110114	后右地板隔热层	Rear insulator,front right		PCS	21
S5402110B32	A柱左上护板组件	Left upper fender,A-pillar		PCS	26.46
S5402210B32	A柱右上护板组件	Right upper fender,A-pillar		PCS	26.46
S5402120B31	A柱左下护板组件	Left lower fender,A-pillar		PCS	18.578
S5402220B31	A柱右下护板组件	Right lower fender,A-pillar		PCS	18.578
S5146110B31	前门左踏步板总成	Threshold,front left door		PCS	18.2
S5146210B31	前门右踏步板总成	Threshold,front right door		PCS	18.2
S5160110B31	后门左踏步板总成	Threshold,rear left door		PCS	17.5
S5160210B31	后门右踏步板总成	Threshold,rear right door		PCS	17.5
S5402130B32	B柱左上护板组件	Left upper fender，B pillar		PCS	26.53
S5402230B32	B柱右上护板组件	Right upper fender，B pillar		PCS	26.53
S5402140B31	B柱左下护板组件	Left lower fender，B pillar		PCS	41.23
S5402240B31	B柱右下护板组件	Right lower fender，B pillar		PCS	41.23
S5402171B31	左前门门槛护板	Threshold fender，front left door		PCS	17.5
S5402181B31	左后门门槛护板	Threshold fender，rear left door		PCS	16.1
S5402150B32	C柱左上护板组件	Left upper fender,C-pillar		PCS	86.352
S5402250B32	C柱右上护板组件	Right upper fender,C-pillar		PCS	86.352
S5402160B31	C柱左下护板组件	Left lower fender assy,C-pillar		PCS	162.05
S5402260B31	C柱右下护板组件	Right lower fender assy,C-pillar		PCS	164.85
S5402191	卡簧	Circlip		PCS	0.7
400-540	塑料卡扣	Plastic clip		PCS	1.28

Q32006	六角法兰面螺母	Hex flange nut		PCS	0.8
400-1494	子母扣	Inlay button		PCS	1.4
400-0072	方螺母卡扣	Clip		PCS	1.12
Q2204816	十字槽盘头自攻螺钉带平垫圈组合	Screw		PCS	0.6
400-255	塑料卡扣	Plastic clip		PCS	1.04
S5602110	后裙板总成	Back lower panel		PCS	39.2
S5608110	行李箱护面盖板总成	Trunk cover panel assy.		PCS	40.152
S5608211	行李箱护面左支撑块	Trunk cover panel support，left		PCS	49
S5608212	行李箱护面右支撑块	Trunk cover panel support，right		PCS	49
S5608213	行李箱护面中间支撑块	Trunk cover panel support，center		PCS	49
S5608400B31	搁物帘总成	Trunk curtain		PCS	259
400-540	塑料卡扣	Plastic clip		PCS	1.28
400-2237	卡扣	Clip		PCS	2.12
Q1410840TF3	六角头螺栓和锥形弹性垫圈组合件	Hex bolt and taper springiness washer		PCS	1.52
S5608214	行李箱护面前支撑块	Trunk cover panel support，front		PCS	49
400-1494	子母扣	Inlay button		PCS	1.4
S8204100B32	左遮阳板总成	Left sunvisor assy.		PCS	40.6
S8204200B32	右遮阳板总成	Right sunvisor assy.	with airbag warning tag	PCS	40.6
S8204311B32	遮阳板固定挂钩	Sunvisor fixing hook		PCS	1.4
S5702110	顶棚本体	Roof	without center safety belt hole	PCS	224
S5702311	顶棚左前支撑架	Roof support，front left		PCS	10.5

S5702312	顶棚左中支撑架	Roof support，middle left		PCS	10.5
S5702313	顶棚左后支撑架	Roof support，rear left		PCS	13.3
S5702321	顶棚右前支撑架	Roof support，front right		PCS	13.3
S5702322	顶棚右中支撑架	Roof support，middle right		PCS	11.9
S5702323	顶棚右后支撑架	Roof support，rear right		PCS	11.9
S5702113	顶棚安全带罩	Safety belt cover	for rear 3 point safety belt	PCS	10.22
B8215100B32	安全拉手	Safety handle		PCS	7.994
B8204231	安全气囊警示标签	Airbag warning tag		PCS	1.215
Q2560620F13	十字槽半沉头螺钉	Philips screw		PCS	0.48
Q1410616	六角头螺栓和锥形弹性垫圈组合件	Hex bolt and taper springiness washer		PCS	0.68
Q1840645	六角法兰面螺栓	Hex flange bolt		PCS	1.2
400-540	塑料卡扣	Plastic clip		PCS	1.28
S5531220	发动机舱隔热垫	Engine room insulator		PCS	35
S5531210	前围隔热垫	Front body insulator		PCS	189
S5531611	左前密封挡板	Front left seal plate		PCS	3.22
S5531612	右前密封挡板	Front right seal plate		PCS	3.22
S5531613	左后密封挡板	Rear left seal plate		PCS	2.24
S5531614	右后密封挡板	Rear right seal plate		PCS	2.24
S5531410	副仪表板隔音垫	Console insulator		PCS	29.4
S5531711	仪表板上吸音棉	Dashboard insulator sponge，upper		PCS	5.18
S5531712	仪表板下吸音棉	Dashboard insulator sponge，lower		PCS	4.62

S5531713	仪表板左吸音棉	Dashboard insulator sponge，left		PCS	3.08
S5531714	仪表板右吸音棉	Dashboard insulator sponge，right		PCS	3.08
S5531110	发动机罩隔热板	Engine hood insulator		PCS	37.8
S5531311	左翼子板隔音垫	Left fender insulator		PCS	15.148
S5531312	右翼子板隔音垫	Right fender insulator		PCS	15.148
400-0466B32	塑料卡扣	Plastic clip		PCS	1.2
S5531715	副仪表板左前隔音垫	Console noise insulator,front left		PCS	1.344
S5531716	副仪表板右前隔音垫	Console noise insulator,front right		PCS	1.498
S5531717	副仪表板左后隔音垫	Console noise insulator,rear left		PCS	3.122
S5531718	副仪表板右后隔音垫	Console noise insulator,rear right		PCS	3.122
S5532111	前围板堵盖左	Front body plug，left		PCS	5.81
S5532112	前围板堵盖右	Front body plug，right		PCS	5.81
S5532711	天窗水管堵盖	Roof pipe plug		PCS	1.2
S5532616	橡胶堵盖	Rubber plug（28*45）	28×45	PCS	1.92
S5532211	橡胶堵盖	Rubber plug	ф30×90	PCS	1.72
S5532613	金属堵盖	Metal plug（ф30×65）	ф30×65	PCS	3.57
S5532611	左油泵盖	Fuel pump cap，left		PCS	10.136
S5532612	右油泵盖	Fuel pump cap，right		PCS	12.88
Q72712	橡胶堵盖	Rubber plug		PCS	0.72
Q72716	橡胶堵盖	Rubber plug		PCS	1.6
Q72720	橡胶堵盖	Rubber plug		PCS	1.44

Q72725	橡胶堵盖	Rubber plug		PCS	2.6
Q72740	橡胶堵盖	Rubber plug		PCS	2.4
Q72745	橡胶堵盖	Rubber plug		PCS	2.92
S5532113	左副车架后固定支架外板堵盖	Sub frame bracket plug		PCS	1.12
S5614110	扰流板组件	Rear spoiler assy.		PCS	173.32
Q33006	全金属六角法兰面锁紧螺母	Hex flange nut		PCS	1.2
S5704110	左顶盖饰条组件	Roof trim stripe，left		PCS	11.06
S5704511	左顶盖饰条盖板	Roof trim stripe cover，left		PCS	11.06
400-2235	卡扣	Clip		PCS	2.2
S5704210	右顶盖饰条组件	Roof trim stripe，right		PCS	11.06
S5704611	右顶盖饰条盖板	Roof trim stripe cover，right		PCS	11.06
Q1840845	六角法兰面螺栓	Hex flange bolt		PCS	1.8
S5704310	支架固定板组件	Bracket mount assy		PCS	11.9
S5704321	装饰条盖板固定支架	Roof trim stripe cover bracket		PCS	6.3
S5709110	顶棚左行李架组件	Roof rack，Left		PCS	102.48
S5709210	顶棚右行李架组件	Roof rack，right		PCS	102.48
S5709131	顶棚行李架左前装饰盖	Front roof rack trim，Left		PCS	8.89
S5709132	顶棚行李架左后装饰盖	Rear roof rack trim，Left		PCS	7.14
S5709231	顶棚行李架右前装饰盖	Front roof rack trim，right		PCS	8.89
S5709232	顶棚行李架右后装饰盖	Rear roof rack trim，right		PCS	7.14
S5704411	顶棚盖板弹簧卡片	Roof springness clamp		PCS	1.358

S5704412	支架固定板弹簧卡片	Bracket mount springness clamp		PCS	1.358
S5704413	支架密封垫	Bracket seal		PCS	0.6
S5704414	密封圈	Seal		PCS	1.04
S5704415	密封盖	Seal cover		PCS	1.162
Q1840845	六角法兰面螺栓	Hex flange bolt		PCS	1.8
400-2235	卡扣	Clip		PCS	2.2
S5811100	左前安全带总成	Front left safety belt		PCS	61.6
S5811210	安全带高度调节器总成	Safety belt height adjuster		PCS	25.2
S5811251	左前安全带吊环盖板	Front safety belt end cap		PCS	0.7
S5811230	左前安全带锁扣总成	Front left safety belt buckle		PCS	19.6
S5811400	右前安全带总成	Front right safety belt		PCS	61.6
S5811430	右前安全带锁扣总成	Front right safety belt buckle		PCS	18.2
S5812100	左后安全带总成	Rear left safety belt		PCS	58.8
S5812200	左后排锁扣总成	Rear left safety belt buckle		PCS	39.2
S5812251	后安全带吊环盖板	Rear safety belt end cap		PCS	0.7
S5812400	右后安全带总成	Rear right safety belt		PCS	58.8
S5812500	右后排锁扣总成	Rear right safety belt buckle		PCS	35
S5813100	中间安全带总成	Middle safety belt		PCS	39.2
Q2734212F30	十字槽大半圆头自攻螺钉	Hex flange screw		PCS	0.204
S5813300	后排中间腰带及锁扣总成	Rear middle safety belt		PCS	35
S5824100	驾驶员气囊模块	Driver‘s airbag		PCS	376.74

S3402100	方向盘总成	Steering wheel		PCS	281.736
S3402100B1	方向盘总成	Steering wheel	EX,with switches	PCS	681.408
S3658300	安全气囊时钟弹簧	Airbag clock spring		PCS	119.574
S3658300B1	安全气囊时钟弹簧	Airbag clock spring		PCS	150.696
S5824200	副驾驶员气囊模块	Passengers airbag		PCS	556.92
Q1840620	六角法兰面螺栓	Hex flange bolt		PCS	0.64
S6102110A2	左前门内护板总成	Front left door interior assy.	fabric	PCS	207.76
S6102210	右前门内护板总成	Front right door interior assy.	leatherette	PCS	207.76
S6102210A2	右前门内护板总成	Front right door interior assy.	fabric	PCS	207.76
S6102111	左前门护板本体	Front left door interior		PCS	187.46
S6102211	右前门护板本体	Front right door interior		PCS	187.46
S6102130	左门内扣手总成	Inner handle，left door		PCS	15.4
S6102230	右门内扣手总成	Inner handle，right door		PCS	15.4
S6102150A2	左前门把手总成	Outer handle assy，front left door	fabric	PCS	24.5
S6102250B32	右前门把手总成	Outer handle assy，front right door	leatherette	PCS	24.5
S6102250A2	右前门把手总成	Outer handle assy，front right door	fabric	PCS	24.5
S6102151	左前门把手	Outer handle，front left door	leatherette	PCS	22.4
S6102151A2	左前门把手	Outer handle，front left door	fabric	PCS	22.4
S6102251	右前门把手	Outer handle，front right door	leatherette	PCS	22.4
S6102251A2	右前门把手	Outer handle，front right door	fabric	PCS	22.4
S6102152	左前门把手盖	Outer handle cap，front left door		PCS	2.1

S6102252	右前门把手盖	Outer handle cap，front left door		PCS	2.1
S6102281B31	右前门三角护板	Triangular fender，front right door		PCS	2.52
S6102182	左前门把手支架	Inner handle bracket，front left door		PCS	9.52
S6102282	右前门把手支架	Inner handle bracket，front right door		PCS	9.52
S6102183	左门内扣手装饰盖	Inner handle trim，left door		PCS	4.9
S6102283	右门内扣手装饰盖	Inner handle trim，right door		PCS	4.9
S6102285B33	右前门把手垫	Inner handle washer，front right door		PCS	1.4
S6102710	左前门防水膜组件	Water proof，front left door		PCS	22.4
S6102810	右前门防水膜组件	Water proof，front right door		PCS	22.4
Q2714816	十字槽盘头自攻螺钉	Philips self-tapping screw		PCS	0.28
Q2744819	十字槽沉头自攻螺钉	Philips self-tapping screw		PCS	0.32
400-0072	方螺母卡扣	Clip		PCS	1.12
Q2204816	十字槽盘头自攻螺钉带平垫圈组合	Screw		PCS	0.6
400-540	塑料卡扣	Plastic clip		PCS	1.28
S6202110B34	左后门内护板总成	Rear left door interior assy.		PCS	189.84
S6202110A2	左后门内护板总成	Rear left door interior assy.		PCS	189.84
S6202210B34	右后门内护板总成	Rear right door interior assy.		PCS	189.84
S6202210A2	右后门内护板总成	Rear right door interior assy.		PCS	189.84
S6202111	左后门护板本体	Rear left door interior		PCS	169.54
S6202211	右后门护板本体	Rear right door interior		PCS	169.54
S6102130	左门内扣手总成	Inner handle，left door		PCS	15.4

S6102230	右门内扣手总成	Inner handle，right door		PCS	15.4
S6202150B32	左后门把手总成	Outer handle assy，rear left door	leatherette	PCS	28.7
S6202150A2	左后门把手总成	Outer handle assy，rear left door	fabric	PCS	28.7
S6202250B32	右后门把手总成	Outer handle assy，rear right door	leatherette	PCS	28.7
S6202250A2	右后门把手总成	Outer handle assy，rear right door	fabric	PCS	28.7
S6202151	左后门把手	Outer handle，rear left door	leatherette	PCS	25.9
S6202151A2	左后门把手	Outer handle，rear left door	fabric	PCS	25.9
S6202251	右后门把手	Outer handle，rear right door	leatherette	PCS	25.9
S6202251A2	右后门把手	Outer handle，rear right door	fabric	PCS	25.9
S6202152	左后门把手盖	Outer handle cap，rear left door	leatherette	PCS	2.8
S6202252	右后门把手盖	Outer handle cap，rear right door	fabric	PCS	2.8
Q2140616	十字槽盘头螺钉	Screw		PCS	0.344
S6202182	左后门把手支架	Outer handle bracket，rear left door		PCS	8.96
S6202282	右后门把手支架	Outer handle assy，rear right door		PCS	8.96
S6102183	左门内扣手装饰盖	Inner handle trim，left door		PCS	4.9
S6102283	右门内扣手装饰盖	Inner handle trim，right door		PCS	4.9
S6202185B33	左后门把手垫	Outer handle washer，rear left door		PCS	1.4
S6202285B33	右后门把手垫	Outer handle bracket，rear right door		PCS	1.4
S6202710	左后门防水膜组件	Outer handle washer，rear right door		PCS	21
S6202810	右后门防水膜组件	Rear right door water proof		PCS	21
400-0072	方螺母卡扣	Clip		PCS	1.12

Q2204816	十字槽盘头自攻螺钉带平垫圈组合	Screw		PCS	0.6
Q2714816	十字槽盘头自攻螺钉	Philips self-tapping screw		PCS	0.28
Q2744819	十字槽沉头自攻螺钉	Philips self-tapping screw		PCS	0.32
400-540	塑料卡扣	Plastic clip		PCS	1.28
S6302110B31	后背门下护板组件	Tail door interior assy，lower		PCS	96.88
S6302121B32	后背门上护板	Tail door interior，upper		PCS	15.4
S6302131B32	后背门左护板	Tail door interior，left		PCS	11.9
S6302141B32	后背门右护板	Tail door interior，right		PCS	11.9
S6302151B31	后背门内扣手	Tail door inner handle		PCS	1.12
400-540	塑料卡扣	Plastic clip		PCS	1.28
S6105300	左前车门外拉手总成	Out handle,front left door		PCS	26.6
S6105300A2	左前车门外拉手总成	Out handle,front left door	chromium	PCS	47.6
S6105400	右前车门外拉手总成	Out handle,front right door		PCS	26.6
S6105400A2	右前车门外拉手总成	Out handle,front right door	chromium	PCS	47.6
S6105170	车门锁扣组件	Door buckle component		PCS	4.48
S5532311	前车门限位块	Front door stoping block		PCS	1.2
S6107112	左前车门外切水	Out weather Strip，front left door		PCS	15.54
S6107212	右前车门外切水	Out weather Strip，front right door		PCS	15.54
S6107114	左前车门内切水	Inner weather Strip，front left door		PCS	13.58
S6107214	右前车门内切水	Inner weather Strip，front right door		PCS	13.58
S6107120	左前车门密封条组件	Front left door seal，door side		PCS	31.22

S6107220	右前车门密封条组件	Front right door seal，door side		PCS	31.22
S6107113	左前车门门框密封条	Front left door seal，body side		PCS	42.952
S6107213	右前车门门框密封条	Front right door seal，body side		PCS	42.952
S6109110	前车门限位器	Front door stopper		PCS	13.72
S6104100	左前车门电动玻璃升降器总成	Glass lifter，front left door		PCS	120.4
S6104200	右前车门电动玻璃升降器总成	Glass lifter，front right door		PCS	120.4
S6105110	左前车门锁体总成	Front left door lock		PCS	123.34
S6105210	右前车门锁体总成	Front right door lock		PCS	116.2
Q1840612	六角法兰面螺栓	Hex flange bolt		PCS	0.6
Q2560620F13	十字槽半沉头螺钉	Philips screw		PCS	0.48
Q1840816	六角法兰面螺栓	Hex flange bolt		PCS	1.08
Q1840616	六角法兰面螺栓	Hex flange bolt		PCS	0.72
Q2400820F13	十字槽沉头螺钉和锥形锁紧垫圈组合	Philips screw and washer		PCS	0.96
S6207112	左后车门外切水	Out weather Strip，rear left door		PCS	16.38
S6207212	右后车门外切水	Out weather Strip，rear right door		PCS	16.38
S6205300	左后车门外拉手总成	Out handle,rear left door		PCS	26.6
S6205300A2	左后车门外拉手总成	Out handle,rear left door	chromium	PCS	47.6
S6205400	右后车门外拉手总成	Out handle,rear right door		PCS	26.6
S6205400A2	右后车门外拉手总成	Out handle,rear right door	chromium	PCS	47.6
S6105170	车门锁扣组件	Door buckle component		PCS	4.48
Q2400820F13	十字槽沉头螺钉和锥形锁紧垫圈组合	Philips screw and washer		PCS	0.96

S6207114	左后车门内切水	Inner weather Strip，rear left door		PCS	14
S6207214	右后车门内切水	Inner weather Strip，rear right door		PCS	14
S6207120	左后车门密封条组件	Rear left door seal，door side		PCS	35.98
S6207220	右后车门密封条组件	Rear right door seal，door side		PCS	35.98
S6207113	左后车门门框密封条	Rear left door seal，body side		PCS	42.56
S6207213	右后车门门框密封条	Rear right door seal，body side		PCS	42.56
S6205110	左后车门锁体总成	Rear left door lock		PCS	113.4
S6205210	右后车门锁体总成	Rear right door lock		PCS	113.4
S6204100	左后车门电动玻璃升降器总成	Glass lifter，rear left door		PCS	99.4
S6204200	右后车门电动玻璃升降器总成	Glass lifter，rear right door		PCS	99.4
S6209110	后车门限位器	Rear door stopper		PCS	13.72
S5532312	后车门限位块	Rear door stoping block		PCS	0.8
Q1840612	六角法兰面螺栓	Hex flange bolt		PCS	0.6
Q1840616	六角法兰面螺栓	Hex flange bolt		PCS	0.72
Q1840816	六角法兰面螺栓	Hex flange bolt		PCS	1.08
Q1840612	六角头螺栓和平垫圈组合件	Hex bolt，taper springiness washer and flat washer		PCS	0.6
Q2540508	十字槽沉头螺钉	Philips screw		PCS	0.22
Q2560620F13	十字槽半沉头螺钉	Philips screw		PCS	0.48
S6307111	后背门密封条	Tail door seal		PCS	44.24
S6305170	后背门锁扣组件	Tail door lock buckle		PCS	5.32
Q2400820F13	十字槽沉头螺钉和锥形锁紧垫圈组合	Philips screw and washer		PCS	0.96

S6305110	后背门锁体总成	Tail door lock assy.		PCS	100.52
L8402021	缓冲块	Damper block		PCS	3.68
Q1840612	六角法兰面螺栓	Hex flange bolt		PCS	0.6
S5532212	后背门左导向块	Tail door guard block,left		PCS	3.64
S6309110	后背门气动撑杆本体	Trunk door pneumatic spring		PCS	32.2
Q1840616	六角法兰面螺栓	Hex flange bolt		PCS	0.72
Q33006	全金属六角法兰面锁紧螺母	Hex flange nut		PCS	1.2
S6800100B32	驾驶员座	Driver seat	leatherette	PCS	939.357
S6900100B32	副驾驶座	Front passenger seat	leatherette	PCS	939.357
S6808100	前座椅头枕	Front seat pillow		PCS	49
S6802113B32	驾驶员座左前脚盖	Driver seat stand,front left		PCS	3.976
S6900113B32	副驾驶员座左前脚盖	Front passenger seat stand,front left		PCS	3.976
S6802114B32	驾驶员座右前脚盖	Driver seat stand,front right		PCS	3.976
S6900114B32	副驾驶员座右前脚盖	Front passenger seat stand,front right		PCS	3.976
S6802115B32	驾驶员座左后脚盖	Driver seat stand,rear left		PCS	4.48
S6900115B32	副驾驶员座左后脚盖	Front passenger seat stand,rear left		PCS	4.48
S6802116B32	驾驶员座右后脚盖	Driver seat stand,rear right		PCS	4.48
S6900116B32	副驾驶员座右后脚盖	Front passenger seat stand,rear right		PCS	4.48
231-1030TF30	六角法兰螺栓	Bolt		PCS	2.16
231-1030TF30	六角法兰螺栓	Bolt		PCS	2.16
S8202100	左外后视镜总成	Left wing mirror		PCS	259

S8202100C1	左外后视镜总成	Left wing mirror	Defrost	PCS	266
S8202200	右外后视镜总成	Right wing mirror		PCS	259
S8202200C1	右外后视镜总成	Right wing mirror	Defrost	PCS	266
Q32006	六角法兰面螺母	Hex flange nut		PCS	0.8
S8402500	前舱盖锁总成	Engine hood lock		PCS	25.9
Q1840612	六角法兰面螺栓	Hex flange bolt		PCS	0.6
S8402610	前舱盖拉索组件	Engine hood switch cable assy.		PCS	18.2
S8402710	发动机罩手动撑杆组件	Engine hood prop		PCS	13.3
S8402721	发动机罩撑杆套环	Engine hood prop sleeve		PCS	0.84
S8402722	发动机罩撑杆卡扣	Engine hood prop clamp		PCS	0.84
S8402730	前舱盖气动撑杆本体	Engine hood holder		PCS	26.6
Q1420820	六角头螺栓和弹簧垫圈组合件	Bolt		PCS	1.2
S8402811	发动机舱左下护板	Engine protect plate，left		PCS	84
S8402812	发动机舱右下护板	Engine protect plate，right		PCS	33.6
S8402910	发动机罩前密封条组件	Engine hood seal，front		PCS	4.27
Q2214819	十字槽盘头自攻螺钉和大垫圈组合件	Philips screw with washer		PCS	0.52
S8402920	发动机罩后密封条组件	Engine hood seal，rear		PCS	4.27
L8402021	缓冲块	Damper block		PCS	3.68
400-0072	方螺母卡扣	Clip		PCS	1.12
S3901120	千斤顶组件	Jack		PCS	45.668
S3901140	千斤顶摇把	Jack crank		PCS	2.576

S3901114	轮胎螺母扳手	Wrench for wheel nut	M21	PCS	7.574
F3926100	三角警示牌	Warning triangle		PCS	19.5
L3901117	胶柄两用螺丝刀	Screwdriver		PCS	1.04
L3901111	双呆扳手	Wrench 10*12	10*12	PCS	1.69
L3901112	双呆扳手	Wrench 13*15	13*15	PCS	1.82
S3901191	前拖钩	Front hook		PCS	6.3
S5703010	天窗本体总成	Top window assy.		PCS	1687.5
S5703811	天窗前水管	Top window front pipe		PCS	10.864
S5703813	天窗左后水管	Top window rear pipe,left		PCS	11.522
S5703814	天窗右后水管	Top window rear pipe,right		PCS	11.522
Q673B17	钢带弹性环箍	Hoop		PCS	1.8
400-0547	卡子	Clip		PCS	1.4
S1301000	散热器总成	Radiator assy.		PCS	319.2
S1302171	散热器上安装衬套	Radiator upper fixing sleeve		PCS	2.52
S1302271	散热器下安装衬套	Radiator lower fixing sleeve		PCS	2.38
S1311100	膨胀水箱总成	Expansion tank		PCS	18.984
S1311181	通气管	Ventilation hose		PCS	2.534
S1308000	风扇总成	Radiator fan		PCS	218.4
S1303110	散热器进水管	Radiator intake pipe		PCS	18.382
S1303210	散热器出水管	Radiator drain pipe		PCS	30.212
Q67542	A型蜗杆传动式软管环箍	Hoop		PCS	6

Q1460620	六角头螺栓，弹簧垫圈和平垫圈组合件	Bolt		PCS	1
Q1460616	六角头螺栓，弹簧垫圈和平垫圈组合件	Bolt		PCS	1
S8100010	HVAC总成	HVAC		PCS	1136.7
Q2215516	十字槽盘头自攻螺钉和大垫圈组合件	Philips screw with washer		PCS	0.504
B8111014	高/低压管隔离圈	Separate plate,H/L pressure pipes		PCS	4.05
B8111012	暖气进/出管隔离圈	Separate plate,I/O pipes		PCS	4.725
Q1460620	六角头螺栓、弹簧垫圈和平垫圈组合件	Bolt		PCS	1
Q40206	大垫圈	Big washer		PCS	0.48
Q32006	六角法兰面螺母	Hex flange nut		PCS	0.8
Q40110	平垫圈	Flat washer		PCS	0.36
Q1410620	六角头螺栓带锥形垫圈组合件	Hex bolt and taper springiness washer		PCS	0.8
Q2714216	十字槽盘头自攻螺钉	Philips self-tapping screw		PCS	0.2
Q2734216	十字槽大半圆头自攻螺钉	Hex flange screw		PCS	0.204
Q2714216	十字槽盘头自攻螺钉	Philips self-tapping screw		PCS	0.2
Q2714213	十字槽盘头自攻螺钉	Philips self-tapping screw		PCS	0.24
B3745100	空调鼓风机电机	Blower motor		PCS	168.75
B3745180C1	空调鼓风机电机调速模块	Governor,blower		PCS	60.75
Q2714216	十字槽盘头自攻螺钉	Philips self-tapping screw		PCS	0.2
B8105100	冷凝器总成	Condensor		PCS	283.5
Q40105	平垫圈	Flat washer		PCS	2
Q184A0612	六角法兰面螺栓	Hex flange bolt		PCS	6

S8108100	压缩机排气管总成	Compressor exhaust pipe		PCS	49
S8108200	冷凝器出液管总成	Condensor outlet pipe		PCS	27.3
S8108300	蒸发器高压管总成	Evaporator pipe，H		PCS	57.4
Q2140512	十字槽盘头螺钉	Screw		PCS	0.16
S8108400	压缩机吸气管总成	Compressor intake pipe		PCS	74.9
S8108500	蒸发器低压管总成	Evaporator pipe，L		PCS	36.4
S8108611	空调加热器进水管	HVAC water intake pipe		PCS	16.8
S8108612	空调加热器出水管	HVAC water outlet pipe		PCS	16.8
S8108710	冷凝器出液管支架总成	Condensor pipe bracket assy.		PCS	2.1
S8108720	双管夹总成	Clamp，for 2 pipes		PCS	2.8
Q1840630	六角法兰面螺栓	Hex flange bolt		PCS	1.2
Q1460620	六角头螺栓、弹簧垫圈和平垫圈组合件	Bolt		PCS	1
S8108730	管路连接支架总成	Pipe connecting bracket		PCS	2.8
S8108741	压缩机吸气管支架	Compressor pipe bracket		PCS	2.1
Q673B21F32	钢带型弹性环箍	Hoop		PCS	5.92
S8103200	压缩机总成	Compressor		PCS	692.55
Q18408105	六角法兰面螺栓	Hex flange bolt		PCS	3.004
Q1840830	六角法兰面螺栓	Hex flange bolt		PCS	1.28
S8117110	中央过渡风道总成	Air center ventilation pipe		PCS	35
S8117130	新风风道总成	Air changer pipe assy.		PCS	22.4
Q40206	大垫圈	Big washer		PCS	0.48

Q32006	六角法兰面螺母	Hex flange nut		PCS	0.8
S8117161	后吹足中间风道	Rear air nozzle，middle		PCS	32.2
S8117140	后吹足左风嘴总成	Rear air nozzle assy，left		PCS	7
S8117150	后吹足右风嘴总成	Rear air nozzle assy，right		PCS	7
Q2714216	十字槽盘头自攻螺钉	Philips self-tapping screw		PCS	0.2

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