General Catalogue

Chapter 1 Basic Information

1.1 General Information

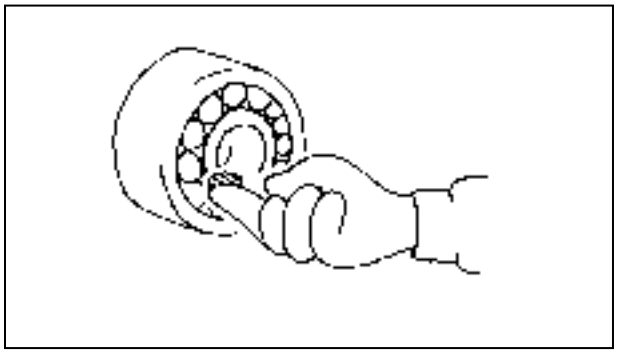
1.1.1 Diagnosis Form

Diagnosis form records the vehicle trouble; users shall properly fill in this Form, which is the original record for the Service Station to analyze the vehicle's failures before maintenance and write in Maintenance Record.

Checklist for Trouble (Sample)

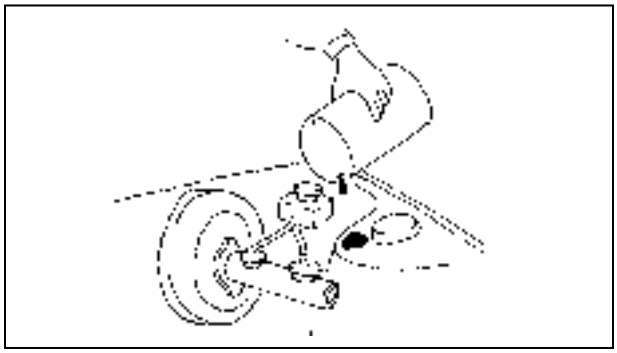
<table>
<tr><td colspan="2">User Name：</td><td colspan="2">Vehicle Model：</td><td colspan="2">VIN：</td></tr>
<tr><td colspan="2">Purchase Date：</td><td colspan="2"></td><td>Date in Trouble：</td><td>Mileage：</td></tr>
<tr><td colspan="6">Trouble</td></tr>
<tr><td colspan="6">□Abnormal noises of drive shaft □Abnormal noises of rear axle □Others</td></tr>
<tr><td colspan="6">□Steering loose □Front wheel vibrating □Tire uneven abrasion □Driving deflection
□Brake delay □Brake deflection □Brake pedal loose □Brake fluid leaking
□Others</td></tr>
<tr><td colspan="6">□Battery charging in failure □Abnormal light □Abnormal horn
□Radio and cassette player not working □Instruments working abnormally □Others</td></tr>
<tr><td colspan="6">□Power battery fault □poles of battery ablated □transmogrification of power battery
□Power battery charging in failure □Electromotor and Electromotor controller failure
□Record the information of the failure □Others</td></tr>
<tr><td colspan="6">□Door lock fault □Seats bad □Window regulator fault □Others</td></tr>
<tr><td colspan="6">The vehicle conditions/ environmental aspects when problems arise</td></tr>
<tr><td colspan="6">Vehicle/Environmental Conditions in Trouble</td></tr>
<tr><td colspan="6">Environmental Conditions</td></tr>
<tr><td>Weather
Temperature
Frequency
Road conditions</td><td colspan="5">□Sunny □Cloudy □Rainy □Snowy □Any weather □Others
□Hot □Warm □Cool □Cold （ °F/ °C）
□Any condition
□At any time □Sometimes (times/day, month) □Just 1 time □In special conditions
□City area □Out of city □Expressway □Mountain areas (□upslope □ Down slope)
□Bituminous macadam □Macadam □Others</td></tr>
<tr><td colspan="6">Vehicle conditions</td></tr>
<tr><td>Vehicle conditions</td><td colspan="5">□Running moment □Constant speed □When accelerating □Decelerating
□Turning right moment □Turning left moment □Parking moment
□Driving speed (km/h, miles/h) when trouble arises □Others</td></tr>
<tr><td>Troubleshooting code</td><td colspan="5">First check: □No code □Normal code □Fault code
Second check: □No code □Normal code □Fault code</td></tr>
</table>

Note: The above form is for reference only, which may be revised according to the special conditions in different areas if necessary。



◆Brake Fluid

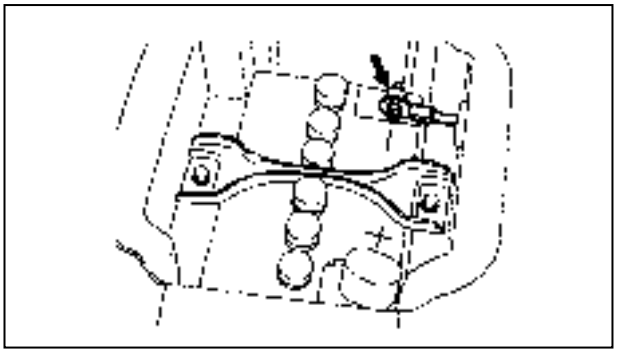
Never spill off the brake fluid, or it will damage the finish coating of your vehicle. If there is any spill, you should wash the stained part immediately by using clean water.



1.4.2 Notices to Electrical Service

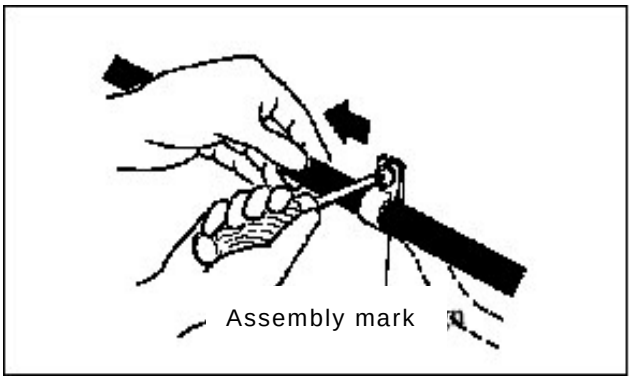
◆You should disconnect the negative terminal from the power battery before checking the circuit。

Attention: Be sure to disconnect the ignition switch and light switch before connecting or removing the negative cable (Or damages may be resulted in.).

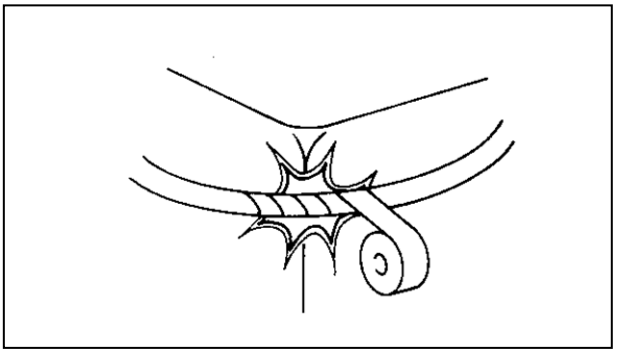


◆ Use a cable clamp to tighten the wiring harness to avoid any looseness. The wiring harness connected to vibrating parts such as the electromotor, etc. should be loose in a certain scale so that the free oscillations of the vibrating parts will not be restrained by the harness connection. When using cable clamps to fix them, you should confirm that its relaxation modulus is adequate.

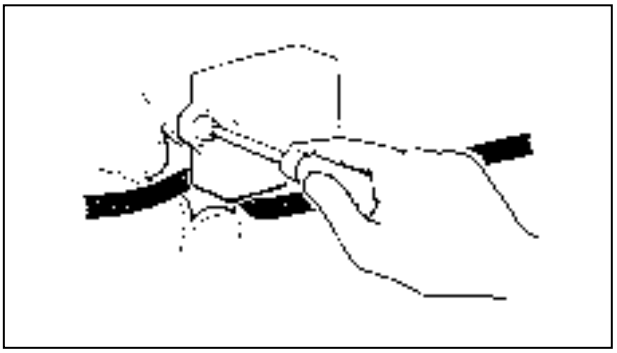
◆If there is a assembly mark indicated on the harness (color strip), on which you should fix the harness properly。



◆ If a harness has to contact with any sharp edge of the other parts, be sure to protect the harness by using ethylene tape, etc. to twine the parts that the hardness is easy to touch with the sharp edge, to avoid any possible damage to electrical wire.



◆Never allow any wiring or harness be pressed under any parts.



3.1 Check and Adjustment of Suspension System

3.1.1 Preparation before Check on Front Wheel Alignment

It is necessary to carry through all check-up and maintenance works below before starting to check and adjust the auto front wheel alignment, so as to ensure the correctness of alignment parameter when measuring and adjusting.

（1）Check all wheel tires, replace the one hose abrasion level is not equal on the right and the left, either that of seriously and partially abraded with new one.

（2）Check wheel air pressure: (Empty load)

	Front-wheel	Rear-wheel
Pressure	200KPa	200KPa

（3）Check tire's radial and lateral run-out quantity:
Requirements: Radial run-out<3mm
Lateral run-out<3mm

（4）Check all components of suspension ,replace the one that appears to be deformed and damaged.

（5）Check all fasteners among the components of suspension, tighten the loosing one as per relative specifications requirements.

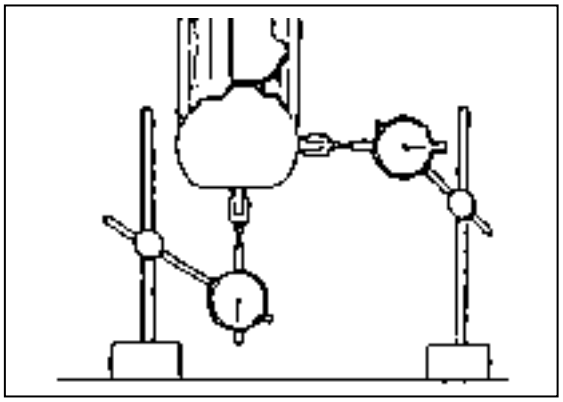
（6）Check the steering tie rod end, modify the loosing one before adjusting.

（7）Check and make sure the measurement apparatus is under a good condition, operate it according to the instructions provided by the factory.

3.1.2 Check and Adjustment of Front Wheel Alignment

1. Wheel Alignment Parameter

Items		Parameter
Toe In		0～3mm
Camber Angle		1°±30′
Caster Angle		2°42′±1°
Kingpin Inclination		14°20′±1°
Rotation Angle	Inner Wheel	37°10′±2°
	Outer Wheel	32°46′



3.3 Rear Suspension

3.3.1 Specifications

Suspension mode: Longitudinally mounted symmetry type semiellipse leaf spring with telescopic shock absorber

Number of leaves on leaf spring: 4 main spring and 1 auxiliary spring

Stiffness in installation status:

Main spring Stiffness: 42.67N/mm

Combined stiffness of main and auxiliary spring: 86.73N/mm

Flattening length of spring: 1000mm

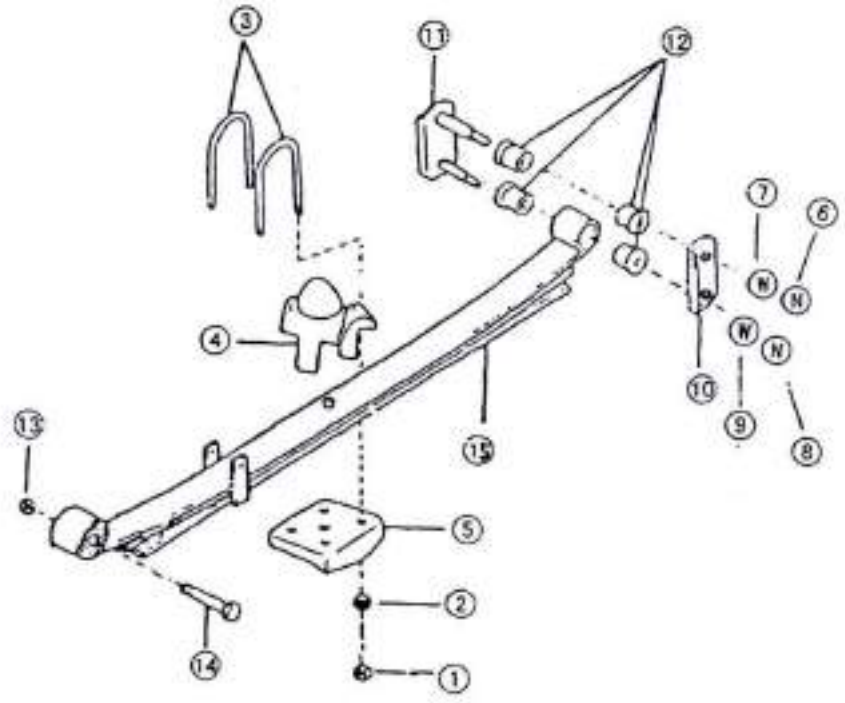
Spring lamination width: 60mm

Height of arc in installation status (idle load): 135mm

3.3.2 Rear Suspension Assembly Drawing

Disassembly

Disassemble according to the sequence shown in the following figure.



① Nut M10×1.25-10 ② Grower washer 10 ③ U bolt ④ Buffer rubber assembly

⑤ Shock absorber bottom bracket welded assembly ⑥ Nut M10×1.25-10

⑦ Grower washer 10 ⑧ Nut M10×1.25-10 ⑨ Grower washer 10 ⑩ Shackle plate II

⑪ Plate spring shackle assembly ⑫ Plate spring bushing (II) ⑬ Lock nut M12×1.25-8

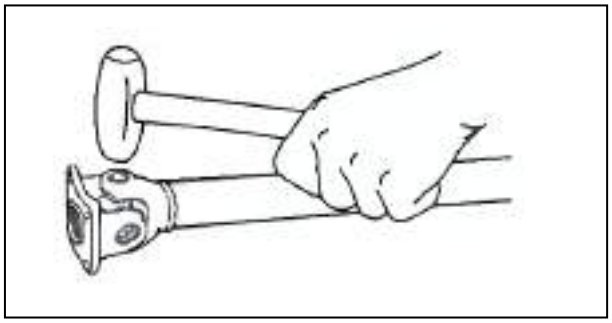
⑭ Front Holding pin of plate spring ⑮ Plate spring with bushing assembly

Attention

When reassembly, snap ring, cross axle and bearing must be used new ones, No reuse of the snap ring, cross axle and bearing once they have been disassembled.

(1) Insert the bearing pedestal rings to the inner of tube yoke of drive shaft, and knock it with a hammer until it flushes to the yoke surface. At the same time, insert the cross axle to the inside of bearing pedestal rings to avoid roller pins dropping out of the bearing pedestal rings.

(2) Insert the bearing pedestal ring on the other side to the inner of tube yoke, and knock it with a hammer until it flushes to the inner side face of Jump ring groove in tube yoke.



(3) Insert the bearing pedestal rings to the inner of flange yoke as per the methods in the process of (1) and (2).

Attention

Put a plate onto the bearing seat ring so as to avoid breaking the universal joint of axle yoke when insert the bearing seat ring.

(4) Fix a proper thick snap ring onto the yoke hole of the axle yoke and the flange yoke (clearance is 0-0.06 mm).

(5) Fit the sliding yoke on the axle yoke of drive shaft with the above-mentioned same method.

Assembly

Assemble the drive shaft as per a reverse order of disassembly.

Tightening torque value for connecting Flange yoke as following: Tightening Torque: 35-40 N·m

Attention

The connecting flange yoke should be aligned with the matching marks when it is fixed on the rear axle. Otherwise, it can result in vibration when running.

when installing.

·Gradually tighten the connecting bolt up to the specified torque as per an order of diagonal line.

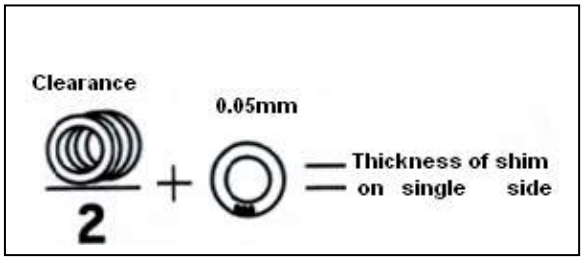
（Tightening Torque：65-70 N·m）

·Adjust gear pair side play of reducer as per following process:

① Tightly press the differential bearing inner race onto the differential mechanis(not include adjusting shim for the moment).

② Assemble the differential assembly into bearing support. Push it to one side (include bearing outer ring) to measure the clearance between the bearing support and the end face of differential bearing outer ring.

· Remove the bearing inner race from differential housing in order to install the adjusting shim of differential bearing. Thickness of the single side adjusting shim for differential bearing=a half of measured clearance value + 0.05 mm (this thickness is provided for the purpose of ensuring bearing pre-tightening).

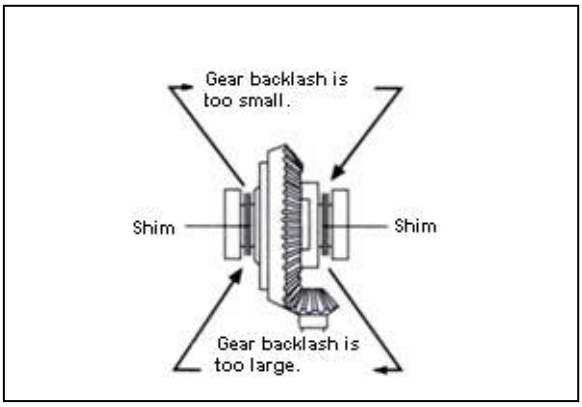


·Choose two adjusting shims according to the thickness of single side adjusting shim as showed above (least quantity), install them in the two sides of differential housing, and then press them into the bearing inner race.

·Assemble the bearing cover of two sides according to position marks. Fit on the connecting bolts with a specified torque.

（Tightening Torque：35～40 N·m）

·Check the reduction gear pair side play as per the methods above. If the side play does not meet requirements, adjust it as shown in the figure till it meets the requirements.



·Check the contact area of the teeth surface of reduction gear pair as per the methods above.

·Check the end face run-out of driven bevel gear as per the methods above. If the run-out range has exceeded limiting value, find out the reasons and remove the trouble.

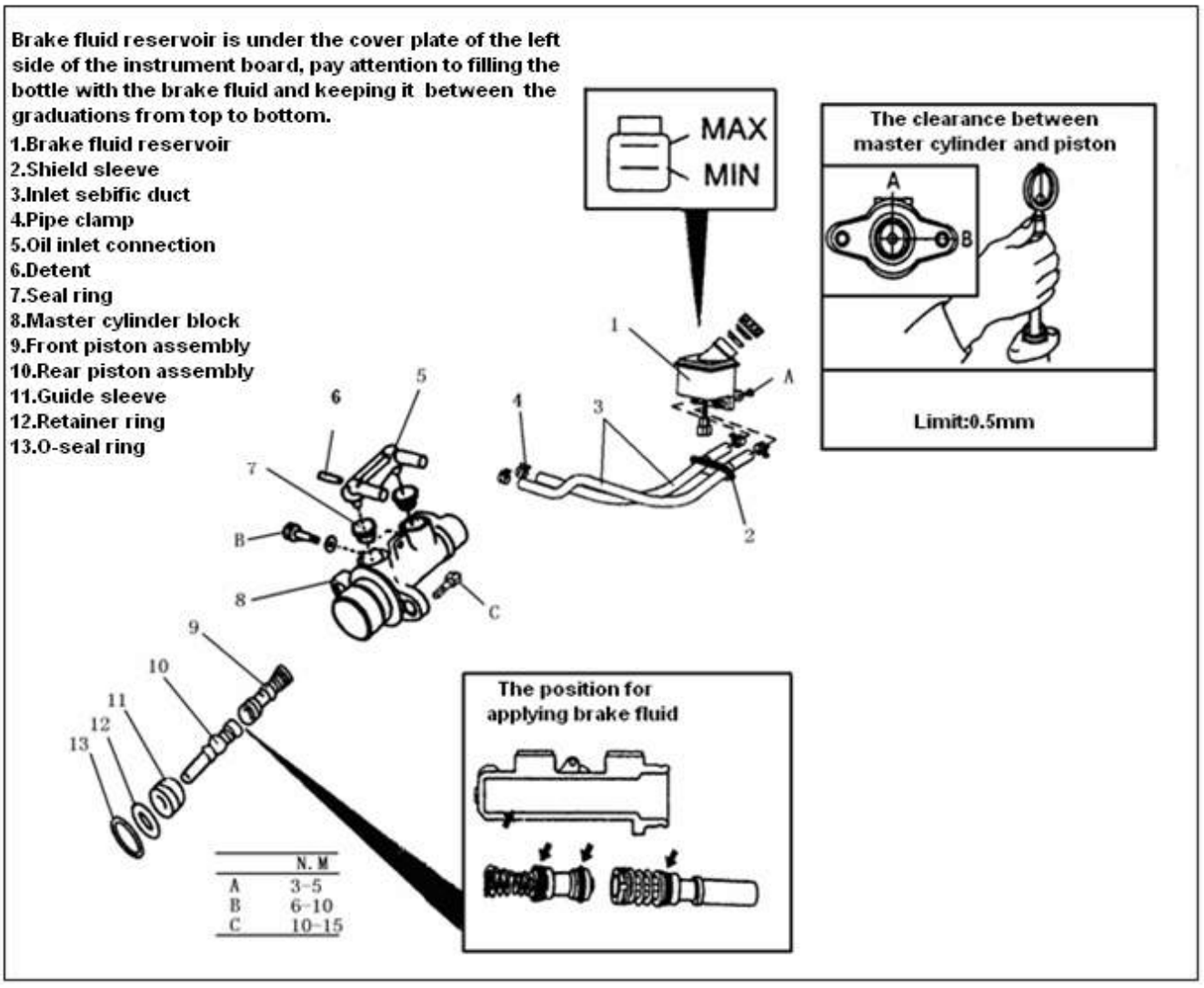
5.3 Brake Master Cylinder Assembly

5.3.1 Specifications

Type: Double series-wound chambers

Internal diameter: 20.64mm

5.3.2 Master Cylinder Assembly



(5)Remove the brake pads.

Attention:

- **Remove the brake caliper with a wooden cushion pad; prevent the brake hoses from bending, twisting and dragging too much.**
- **After removing the brake pads, the brake pedal is not allowed to step on.**

Checking Brake Pads

Check the attrition rate of lining on the brake pads, when they are worn excessively, new ones should be replaced.

Attention:

- **No sand papers are allowed to use to polish the brake pads, otherwise hard particles of the sand papers can seep into the linings, and it is possible to damage the brake disc. When the brake pads need to be replaced, brake pads in the left and right wheel should be replaced together.**

Thickness of brake pads (Lining + Steel backing of brake pads)

Standard value: 15mm

Ultimate value: 7mm

Attention:

- **When removing the brake pads, always observe the brake caliper to check if the brake fluid leaks. If leaking, always repair it.**

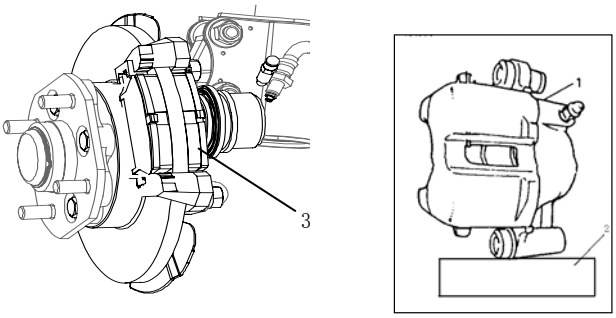
Guide Bar/Locating Rod

Check that locating rod moves flatly and smoothly as shown in the figure.

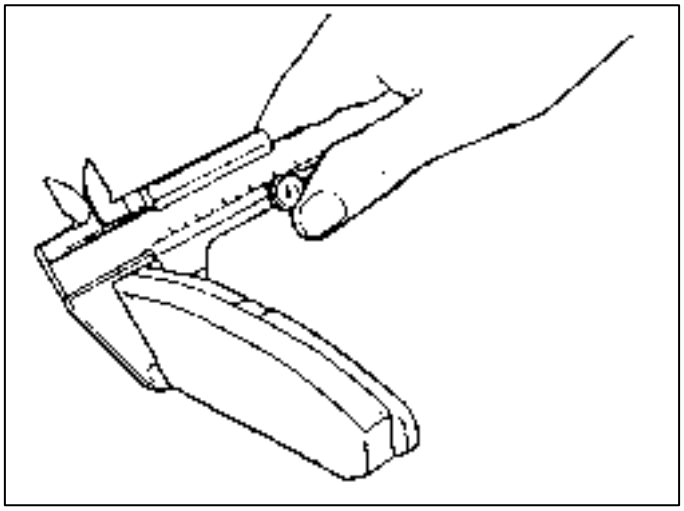
If finding any damage, repair and replacement should be carried out. Apply grease on the outer surface of guide bar and locating rod.

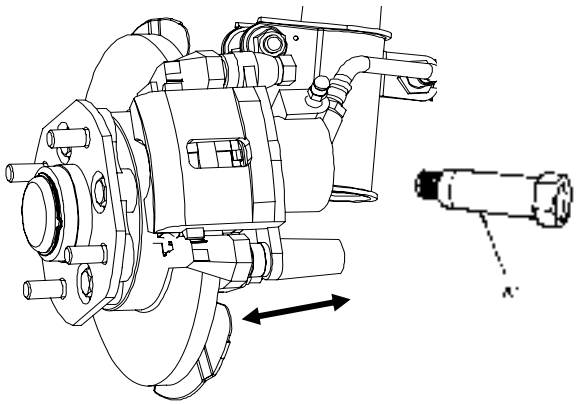
Dust Guard （Ⅰ）/（Ⅱ）

Check if there are quality problems such as crack, damage and so on. If any, repair them.



1- Brake caliper body 2-Wood brick 3-Brake pads





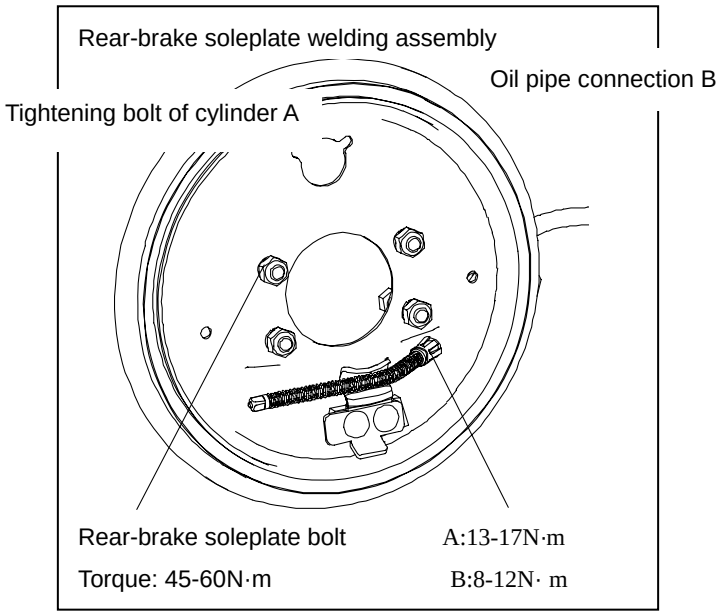
Apply grease on “A”.

Installation:

1) Before installation, carefully inspect all parts and ensure no any defects for use;

2) Install brake shoe, parking brake lever and clearance self-adjusting device in the order reverse to the disassembly steps of brake shoe, parking brake lever and clearance self-adjusting device.

3) Install brake drum (install it according to the above-mentioned installation steps of brake drum and adjust rear-brake clearance); (See the followings for method)



5.6.3.3 Rear-wheel Brake Cylinder Assembly

Disassembly

1) Disassemble brake drum (according to the above-mentioned steps);

2) Disassemble brake shoe, parking brake lever and clearance self-adjusting device (according to the above-mentioned steps);

3) Loosen the brake oil pipe joint, and plug up oil outlet;

4) Disassemble the bolt of brake cylinder, and take off wheel cylinder.

5) Disassemble the bleed screw;

6) Take off the dust guard;

7) Draw out piston from cylinder block;

8) Take off cup ring from piston;

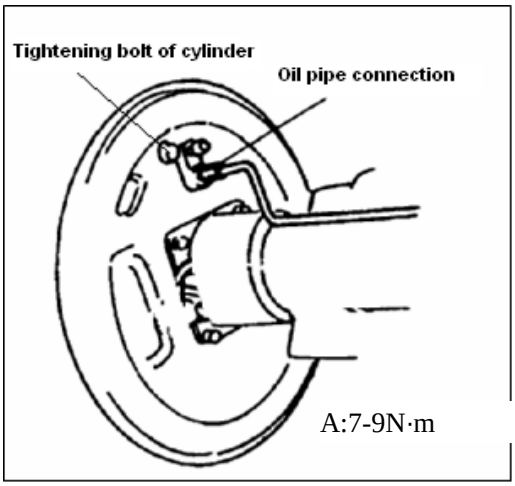
Checking

1) Measure the clearance between piston and cylinder block, when the clearance exceeds the limit value, which will result in bad seal of wheel cylinder and arouse leakage, so always replace it; (limit value ≤0.15mm)

2) Hairlike grinding crack is allowed on piston and cylinder block, but obvious nick will enlarge the abrasion of cup ring of brake cylinder or directly scratch the cup ring, which will result in leakage of wheel cylinder, so always replace it in time;

3) Inspect whether the dust guard is good or not, and replace it if any crackle;

4) Always replace the cup ring of brake cylinder once disassembled;



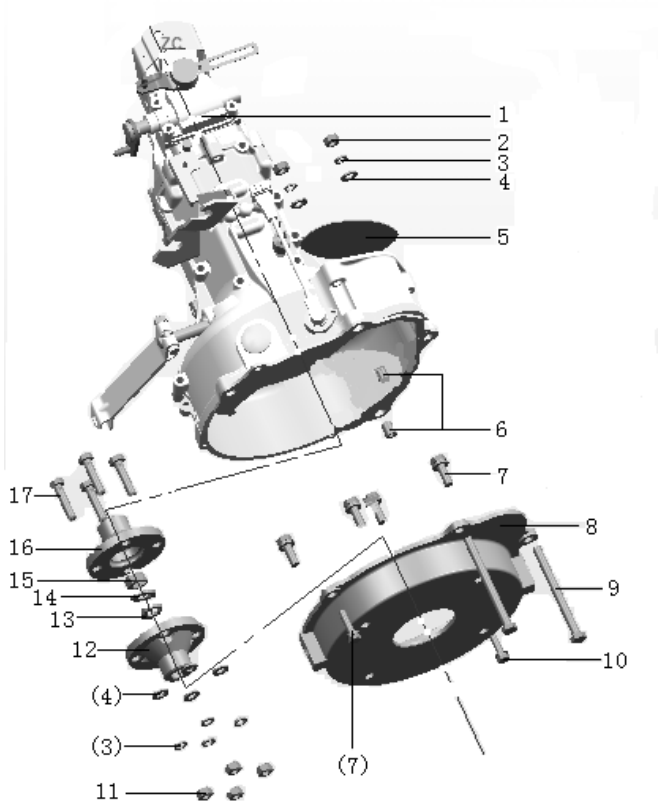
6.1 Connection Assembly of Electric Motor and Transmission

6.1.1 Specifications

Connection assembly of electric motor and transmission is composed mainly of the parts as below:

NO.	Figure No.	Name
1	EP1102-001	Transmission assembly
2	EP1102-10001	Coupling plate
3	EP1102-10002	Connecting plate
4	V1102-10001	Coupling plate Ⅱ

6.1.2 Tightening Torque Required for Connection Assembly of Electric Motor and Transmission



All parts and tightening torque in the figure:

No.	Name	(N·m) Tightening torque(N·m)
1	Transmission assembly	
2	Nut M10×1.25	45～65
3	Washer 10	
4	Washer 10	
5	Motor baffle plate	
6	Dowel pin of cylinder head	
7	Bolt assembly M10×1.25×30	45～65
8	Connecting plate	
9	Bolt M10×1.25×120	45～65
10	Bolt assembly M10X1.25×45	45～65
11	Locknut M10×1.25	45～65
12	Coupling plate Ⅱ	
13	Washer 16	
14	Washer 16	
15	Hex nut M16X1.5	120～140
16	Coupling plate	
17	Bolt for coupling plate	45～65

6.1.3 Maintenance Guide

During periodic maintenance service, always check the parts for connection assembly of electric motor and transmission according to the following methods:

Check that the bolts and the nuts on the joints become loose, were this to happen, tighten them according the specified torque.

Check that the spline in the coupling plate is badly worn, were this to happen, replace the coupling plate.

Carry out general maintenance for the connection assembly of electric motor and transmission according to the following steps:

·Loosen four bolts on the connecting plate; remove the electric motor together with the connecting plate.

·Loosen four bolts on the coupling plate, remove the coupling plate, if difficult to remove, do it after vibrating slightly with a wooden hammer.

·Loosen the hex nuts, remove the coupling plate Ⅱ.

·Loosen four bolt assemblies that connect the connecting plate and the electric motor so as to remove the connecting plate.

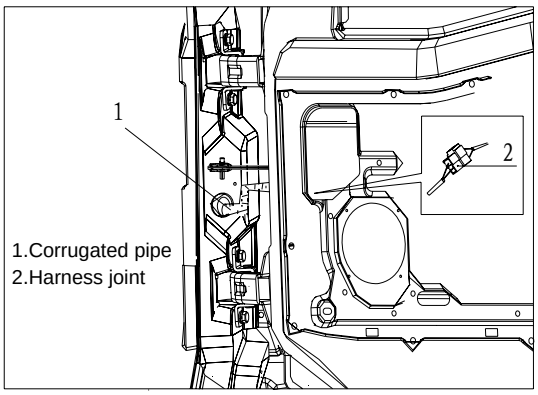
·Check that the splines and the flat keys in the coupling plate are worn and replace them if necessary.

· When reinstalling, tighten the bolts and the nuts according to the specified torque.

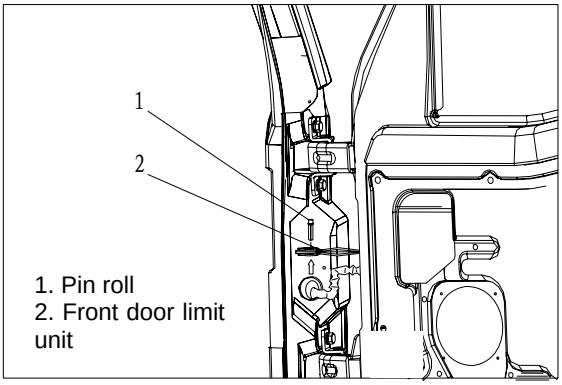
8.1.3 Disassembly, Assembly and Adjustment of Front Door

Disassembly

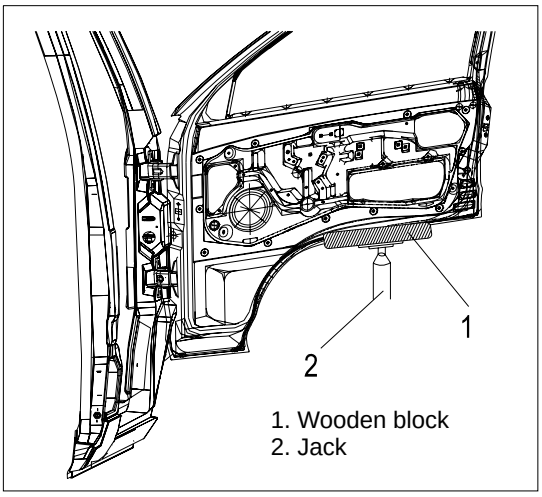
1）Remove the door harness joints at first and then take off corrugated pipe from front door.



2) Tap out the limit stop pin roll of front door



3）Sustain the front door by placing a wooden block between Jack and door inner panel.

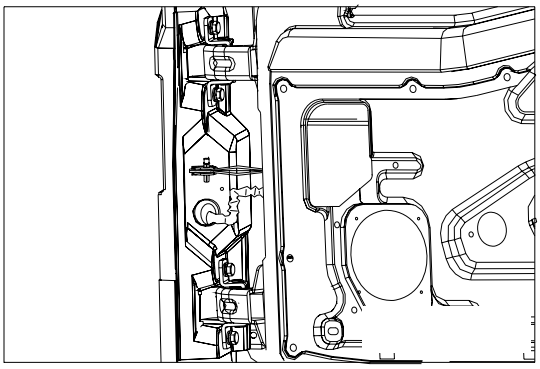


4）Unscrew the erection bolt of front door hinge and then disassemble the front door assembly.

Assembly

Install the front door in a reverse step of disassembly, such as 3）,4）,2）and 1）:

- Grease lubricant should be applied on the hinge rotating components.
- If the rubber seal is hardened, otherwise, a leakage of water may occur, were this to happen, replace it with a new one.
- Ensure door to be located appropriately by adjusting the door latch according to “Front Door Installation”.

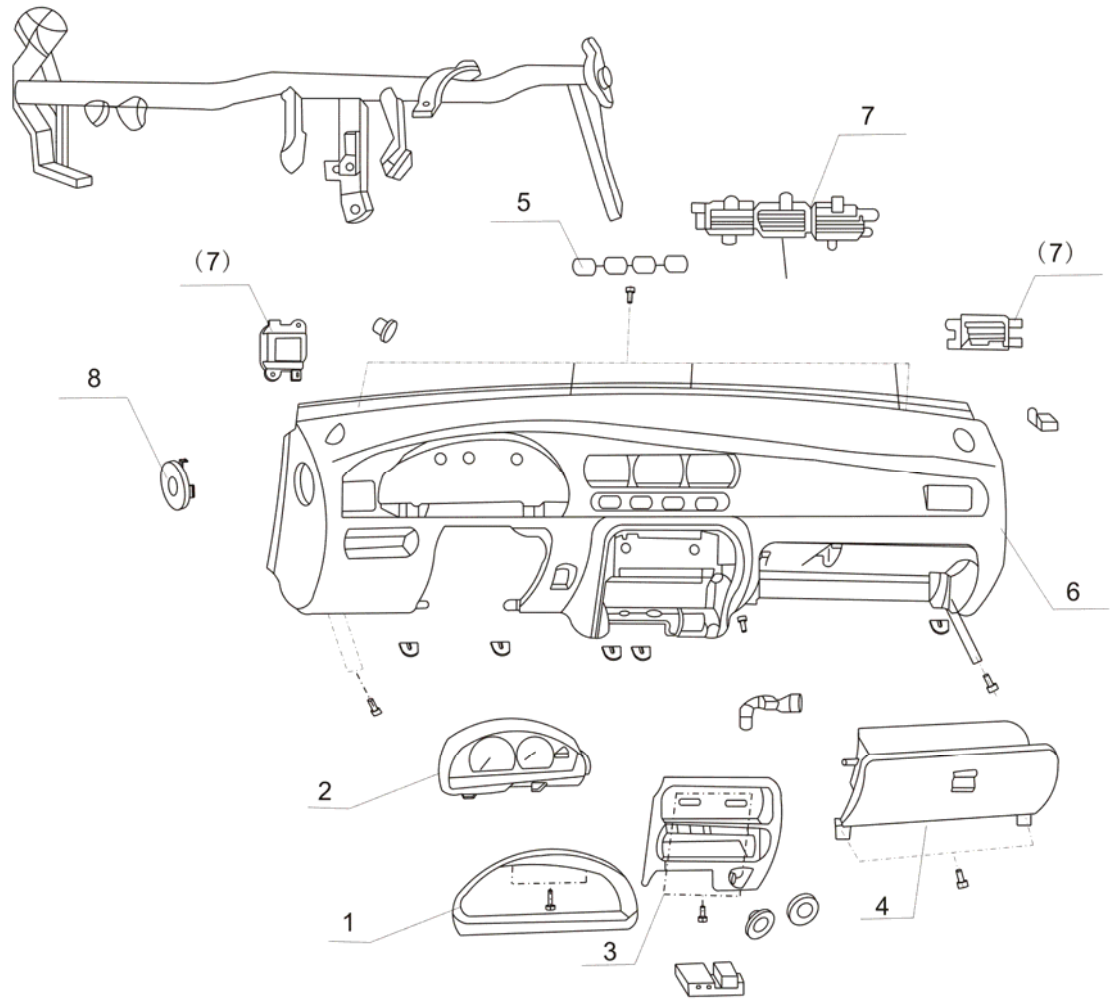


Adjustment

Unscrew the four hinge bolts on one body side and the ensure the clearance between door and the edge of door frame are even by pushing the door up and down, forward and backward.

8.6 Instrument Panel

Components of Instrument Panel



1. Meters Shield subassembly
2. Combined meters
3. Medium decorative sheet subassembly
4. Glove box
5. IP holes cover
6. Instrument panel
7. Tuyere subassembly of mid & side IP
8. Oil can cover

- Overtemperature of battery during charging

Possible Causes	Corrective & Preventive Measures
1. Failure of charger 2. Bad ventilation 3. Internal short circuit of battery 4. Vulcanization of battery plates	1. Inspect the charger's parameters (such as time, current, voltage, etc.). 2. Change the operation environment or use fan. 3. Inspect and replace short-circuit battery. . 4. Equalizing charge for long time, correct as much as possible.

- Too short working time of battery

Possible Causes	Corrective & Preventive Measures
1. Insufficient charge for battery. 2. Variable ambient environment - Mechanical failure - Failure of circuit - Too bad road 3. Internal short circuit of battery. 4. Battery service life end soon.	1. Inspect the charging time, prohibit over-discharge work of battery. 2. Confirm and change - Inspect brake and tire, lubricate. - Inspect motor and other power circuits. - Adjust the driving route or adjust load according to situations. 3. Inspect and correct 4. Make volume test.

10.1.2 Storage Battery

◆ **Specifications**

Type: 6QA36

Capacity (C_{20}): 36Ah

Voltage: 12V

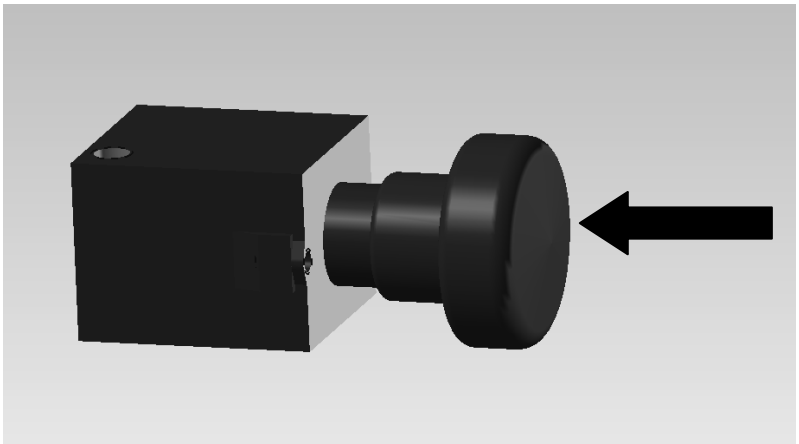
Electrolyte Density (standard value): 1.28 g/cm^3 at 20°C

◆ **Inspection and Repair**

· Clean the surface and wiring terminal of battery, and

Warning!

· Because the battery will produce combustible hydrogen, avoid treating the battery near the place where there is kindling, otherwise, there is the possibility of explosion. The battery liquid can not touch the eyes and skins. In case of touching skin, wash the skin with clean water for more than 5 min, and cure in time.



Emergency cut-off switch is the main power switch of power circuit, if emergency status happens, or there is need to cut off the main power, press the switch according to the direction of the above drawing (see the electric schematic diagram for details), cut off the power supply of power circuit.

10.8 Safety Device of Power for Vehicles

The safety device of power for vehicle includes large fork-bolt fuse and main contactor for electricity protection of high-voltage power circuit.

10.8.1 Large Fork-bolt Fuse

- **Specifications**

  Rated Current: 300A

- **Functional Description**

  For over current protection of high-voltage power circuit.

- **Inspection and Repair**

  After the vehicle is started, low-voltage circuit of vehicle is normal, but high-voltage power circuit has no reflection, please use multimeter to inspect whether large fork-bolt fuse is cut. Before changing large fork-bolt fuse, please inspect whether the power circuit connects the ground.

Warning!

- **Power circuit may have the high voltage which can harm people, you should cut off the connection of power battery when inspecting and changing large fork-bolt fuse for avoiding personal harm.**

10.8.2 Main Contactor

- **Specifications**

  Rated voltage of coil: 12VDC

  Rated current of main contact: 150A

- **Functional Description**

Warning!

- **Power circuit may have the high voltage which can harm people, you should cut off the connection of power battery when inspecting and changing main contactor for avoiding personal harm.**