DAIHATSU

WORKSHOP MANUAL
S85
(HIJET)
NO. 7933

Daihatsu Motor Co., Ltd.

CHASSIS SERIAL NUMBER & MANUFACTURER'S PLATE

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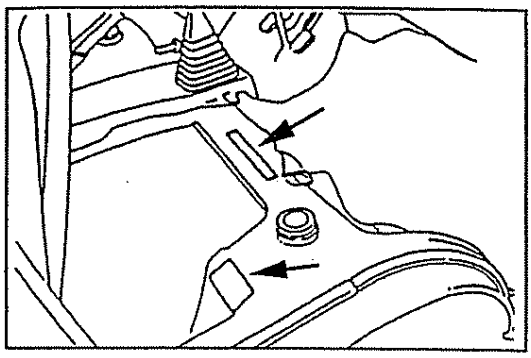
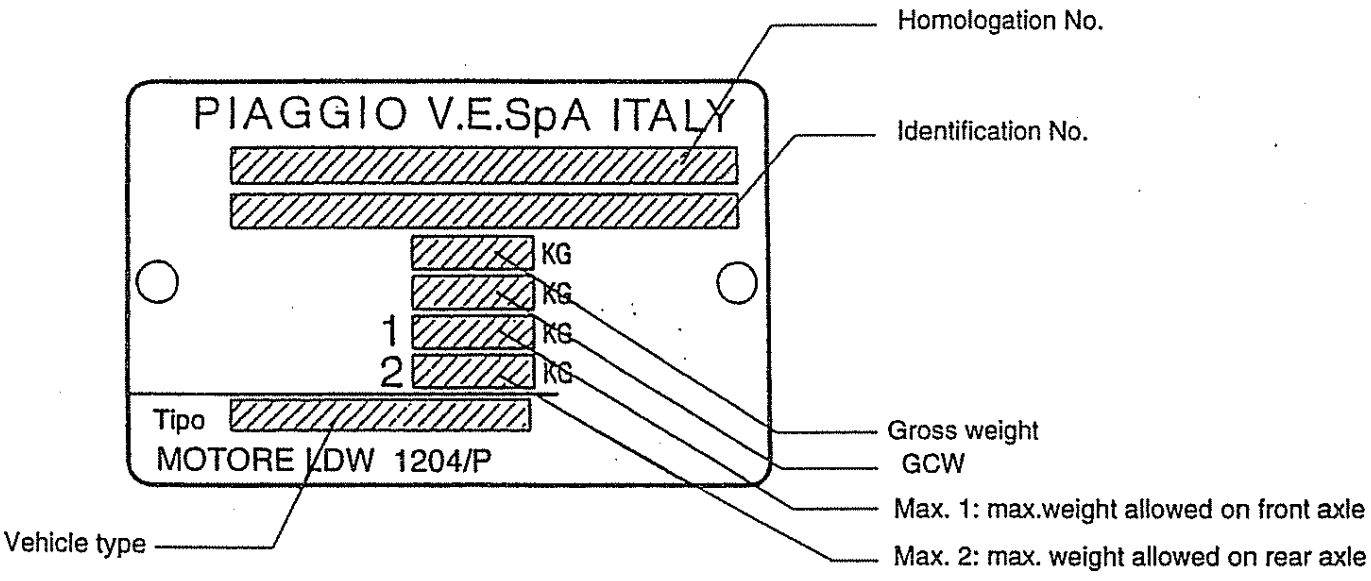


1. Location

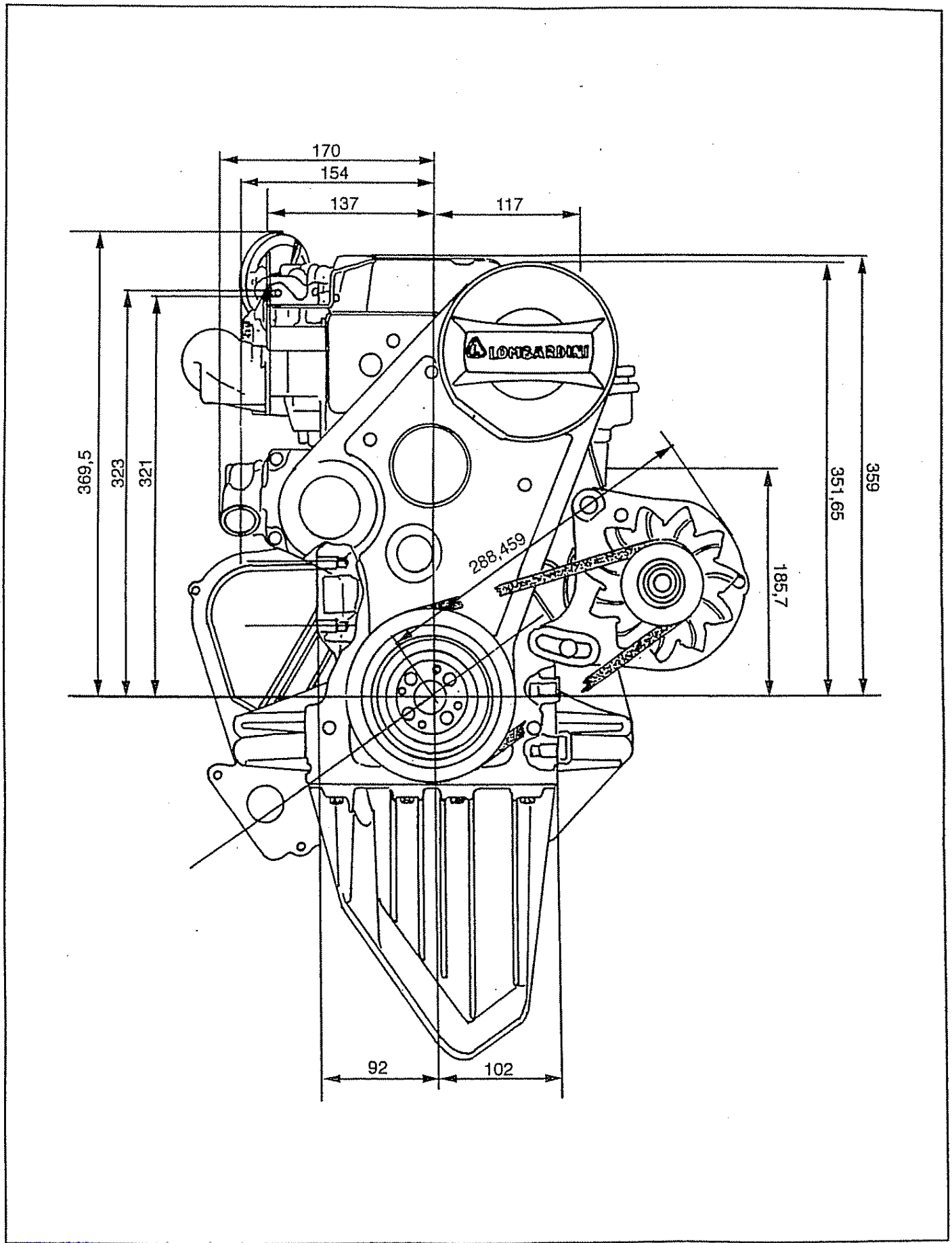
The chassis number is stamped on the front floor panel. The manufacturer's plate is attached on the cowl panel at the right side in the engine compartment.

2. Contents of manufacturer's plate

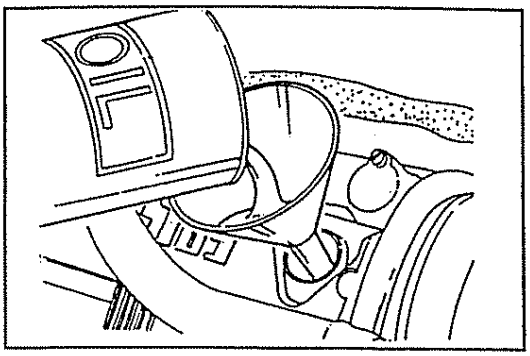


ENGINE

SECTIONAL VIEW



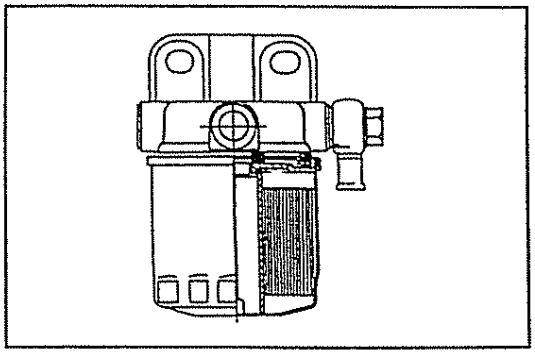
9) Pour engine oil to the engine until it comes to the upper level of the oil level gauge.
(Recommended grade API CD or higher).



10) Start the engine and check it for leakage.
11) Stop the engine.
12) Check the oil level again and replenish engine oil if necessary.

FUEL FILTER

1) Change the fuel filter.
2) After changing, inspect the fuel leakage from around the fuel filter.



FUEL LINE & CONNECTION

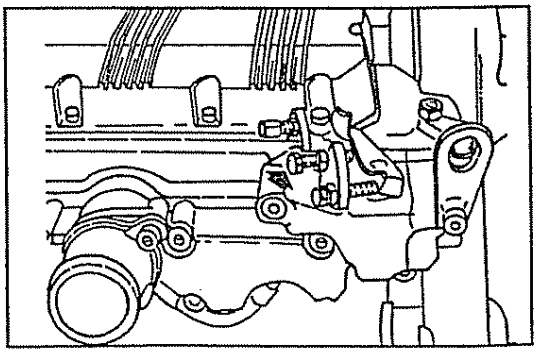
Check the fuel line and connections for cracks, leakage, loose connection or deformation.

REGULATOR

Adjustment of idle speed

NOTE:

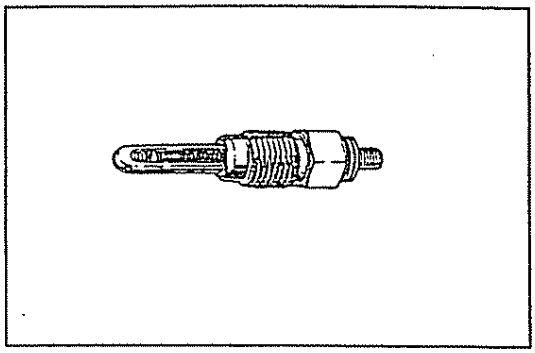
- Do not perform the idle speed adjustment while the fan motor is functioning.



1) Connect a tachometer warm up the engine thoroughly.
2) With the engine running, turn the idle speed adjust screw to adjust engine speed to the specified RPM.(900±50)
3) Raise the engine speed quickly to 2000 RPM two or three times to confirm engine RPM is correct.

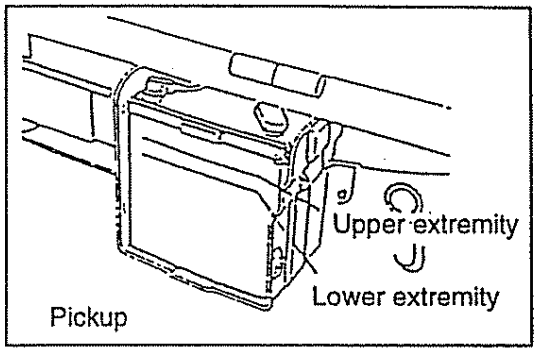
GLOW PLUGS

Ensure the efficiency of glow plugs, otherwise replace them.

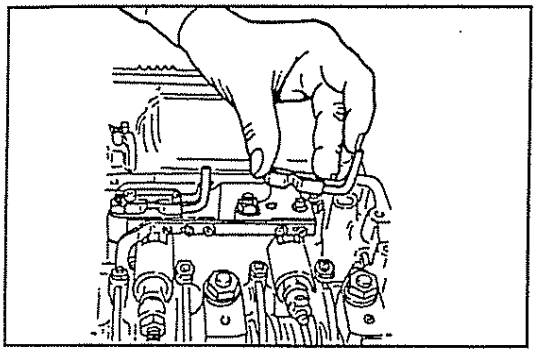


BATTERY

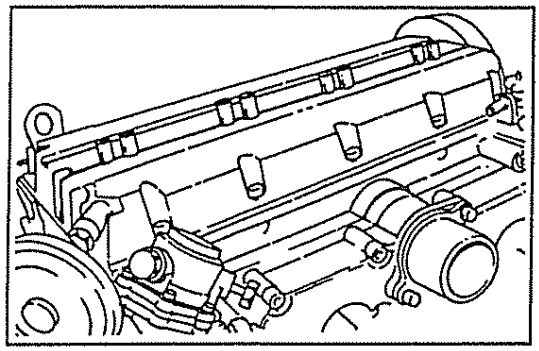
The battery doesn't need either checks or maintenance.



④ Fit the pump-injector with the heads that are part of specific tool 19.1.20314/2



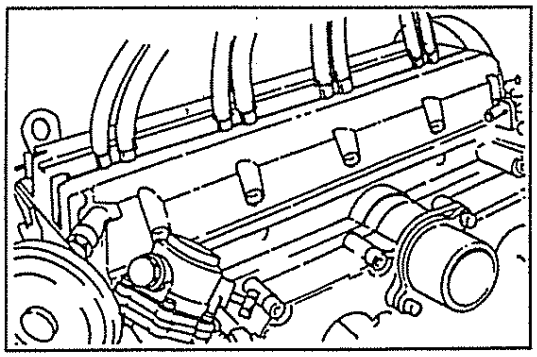
⑤ Position specific tool 19.1.20314/4, which substitutes for the head cover.



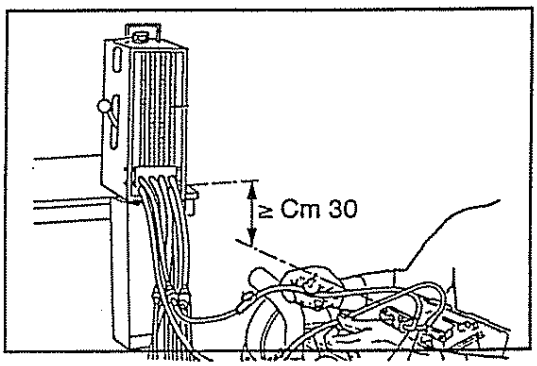
⑥ Connect the tubings of specific tool 19.1.20314/1 to the heads.

NOTE:

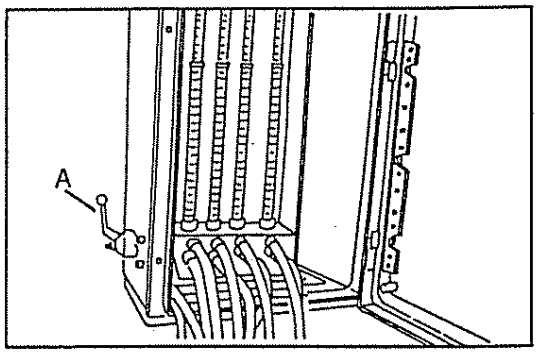
- The feed pipes have no filters and must be connected to the inlets of the pump-injectors. The return tubes have filters and must be connected to the outlets



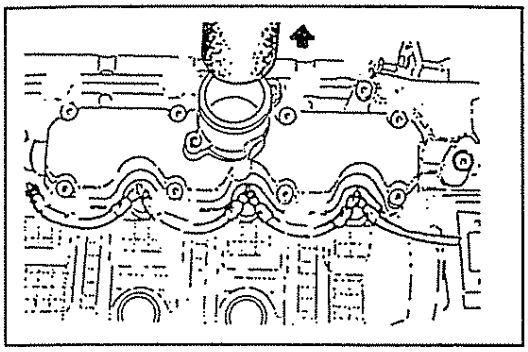
⑦ Supply the tool with filtered diesel fuel. Position the equipment at least 30 cm higher than the pumps, so as to ensure sufficient feeding pressure.



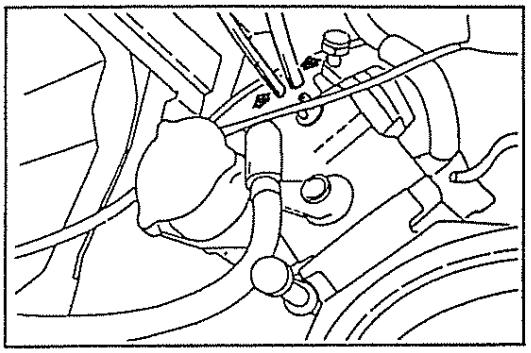
⑧ Open the cock by placing lever (A) in the "tank connected" position.



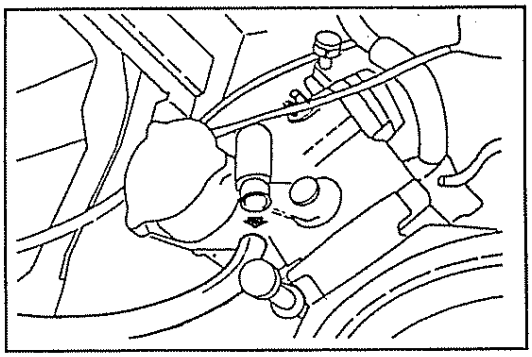
11) Disconnect the engine intake sleeve.



12) Disconnect the diesel fuel feed pipes (from the head and from the fuel feed pump).

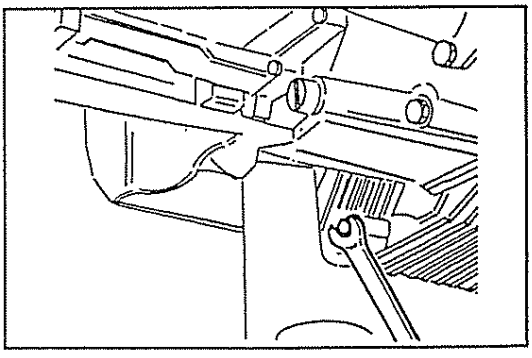


13) Disconnect the pneumatic pump tube.



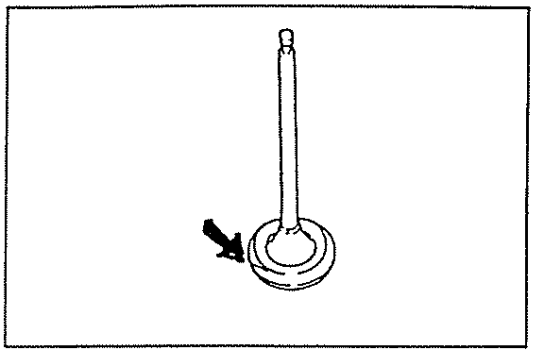
14) Disconnect the silencer from the exhaust pipe.

15) Drain the gearbox oil.



③ Remove the valve.
④ Check the tightness of the valve and the relevant seat by following these steps:

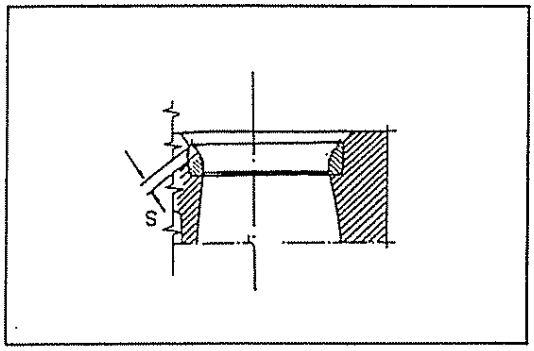
a. Make sure that the area of contact of the valve is continuous on all valve circumference. If it is not, replace the valve.



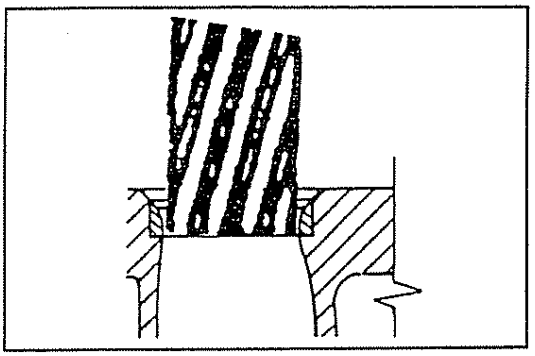
b. Make sure that the area of contact of the valve seat is continuous on all seat circumference. If it is not, replace the valve seat.
c. Measure the width of the area of contact of the valve seat.

Width of area of contact: 1.6 ÷ 1.7 mm
Wear limit: 2.0 mm

If the measurement is greater, replace the valve seat.

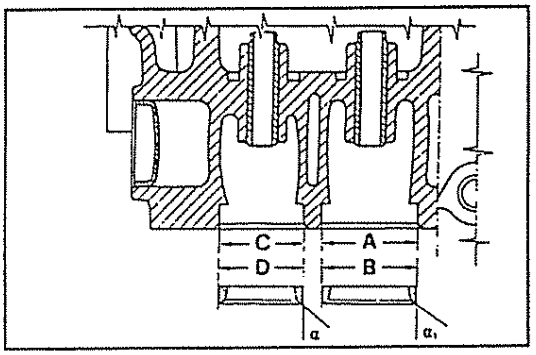


10) Replacing the valve seats.
① Using a miller of suitable diameter, remove material from the seat until it becomes thin enough to be easily removed.



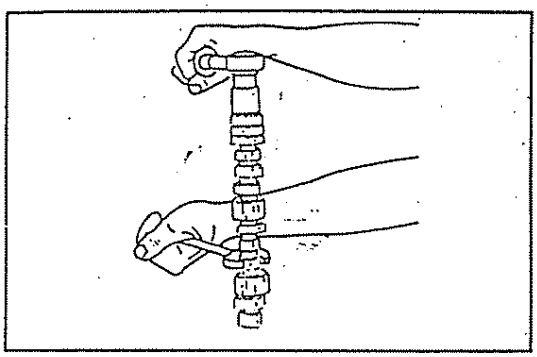
11) Check that the housings of the valve seats have the following dimensions:

Dimensions:	
A	34.020 ÷ 34.045
B	34.106 ÷ 34.115
C	30.020 ÷ 30.041
D	30.108 ÷ 30.116
α	44°53' ÷ 45°
α'	59°53' ÷ 60°



Fit the new seats on the head, heating the head to 120° or cooling the seats in liquid nitrogen.
NOTE:
- Seats are predefined. After being driven, they require no additional treatment.

11) Fitting the camshaft



① Clamp the camshaft in a vice, using aluminium linings. Position the feed pump control (ring and cam) on the camshaft and lock it with the special screw at 80 N.m. while counteracting with a fork spanner inserted in a cam.

② Insert the camshaft into the head on the flywheel side.

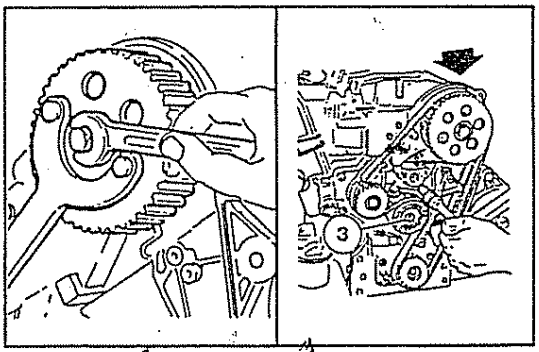
③ Assemble the bearing on the camshaft.
④ Assemble the support with weights and the pipe. Place the group into the camshaft.

NOTE
- Be sure to place the weights and their holder in the right place to let uncovered the lubrication hole.

⑤ Assemble the bearing with the retainer and the new oil retainer on the flange of the pulley side; fix the bearing with retainer plate and fasten the screws with Loctite 270 to the specified tightening torque.
Tightening torque 10 N·m.

⑥ Assemble the flange on the head with a new O-ring. Fix the three screws to the specified tightening torque.
Tightening torque 12 N·m.

⑦ Assemble the pulley of the camshaft and the timing belt (See EM-14).

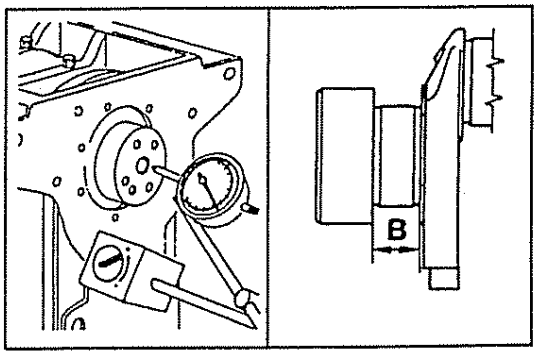


NOTE:
- 0.25÷0.50 mm reductions of inside diameter are available for both crankshaft bearings and connecting-rod big end bearings.

c. If the diameters of the crankshaft journals come within the prescribed limits, replace the bronze bearings with standard bearings. If not, grind the crankshaft. 0.25÷0.50 mm reductions of inside diameter are available for both crankshaft bearings and connecting-rod bearings.

Dim. bronze bearings	connecting rod pin Ø	crankshaft journal Ø
Standard size	39.984 ÷ 40.000	47.984 ÷ 48.000
0.25 reduction	39.734 ÷ 39.750	47.734 ÷ 47.750
0.50 reduction	39.484 ÷ 39.500	47.484 ÷ 47.500

⑤ Checking the axial play of the crankshaft.
Install the bronze bearings on the cylinder block. Position the crankshaft.
Fit the levellers on the cylinder block and on the flywheel-side U-bolt. Fit the flywheel-side and timing-side U-bolt and tighten them with the prescribed torque (60 N.m.).

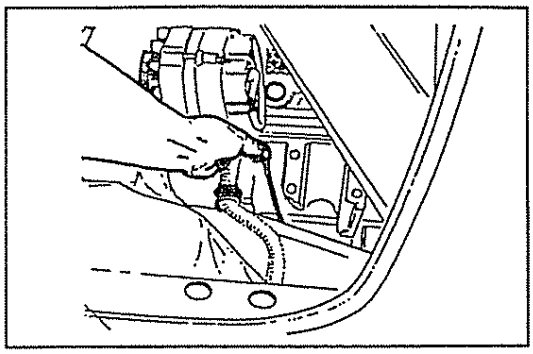


NOTE:
- There is no need to fit the U-bolts with gaskets, as the installation is provisional. Using a magnetic-base comparator, measure the axial play of the crankshaft.

NOTE:
- For the validity of the test, use a screwdriver as shown in the figure, acting in both directions. Measure the axial play.
Prescribed axial play: 0.130 ÷ 0.313 mm.
If the play does not fall within the prescribed range, use thicker levellers.
0.10 mm and 0.20 mm oversizes are available.

c. Install a new oil filter. Lubricate the gasket and lock it by hand.

d. Install the oil level gauge.



⑱ To complete the fitting operations, refer to the relevant sections.

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S85

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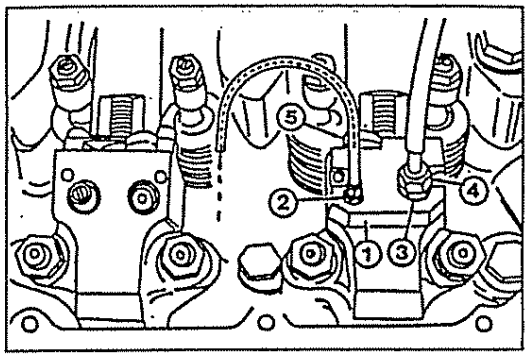
FUEL SYSTEM

NO. 7933-SE



③ Remove the fuel feed pipe.
④ Connect the SST No. 19. 1. 20301 to the injector No. 1. shown in figure.

NOTE:

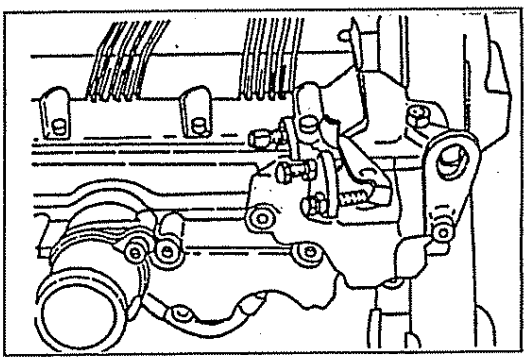
- The SST automatically positions the delivery control lever on maximum delivery.
- The tank of the SST equipment is placed at least 30 cm upper than the plane of the injector.

⑤ Slowly revolve the crankshaft to check the fuel stops following out from plastic tube as SST No. 2 shown in right figure.
⑥ Check the position to bring back the valve into contact with the piston and read the comparator.
Injection Timing: 11 ± 1° BTDC

REFERENCE:

Degrees	13°	12°	11°	10°	9°
Stroke	1.242	1.059	0.891	0.737	0.597

⑦ Repeat above operation ① - ⑥ for each cylinder.
⑧ Remove the SST.
⑨ Install the cylinder head cover.



8. Measure and adjust the idle speed.
   ① Warm up the engine until 2 interventions of the electric fan are obtained.
   ② Measure the idle speed while the electric fan is not operate.
   Idling Engine Speed: 900 ± 50 rpm

   If the measured value is not conform to the specification, adjust the engine speed by turning the screw shown in the figure.

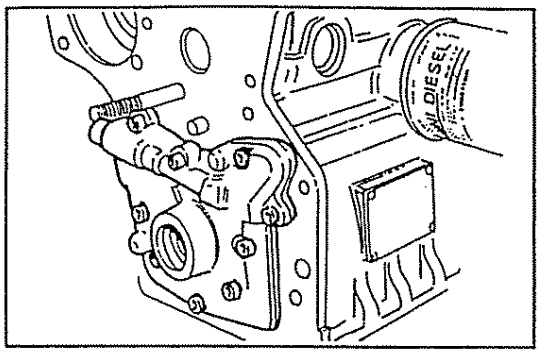
   NOTE:

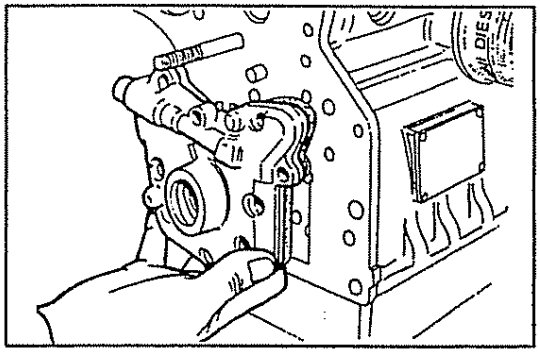
   - To measure the engine speed, it is possible to use an electric counter to be connected to alternator connection (tacho pulse pick up terminal).

   If the engine speed is not stabilized, check and adjust the injector delivery equalization.
   (Refer to EM section)

2. OIL PUMP REMOVAL

1) Disconnect the ground cable from the negative (-) terminal of the battery.
2) Remove the timing belt (see EM 13).
3) Loosen the fastening screws and remove the alternator support plate.
4) Remove the pinion.
5) Remove the pinion key.
6) Loosen the 9 oil pump screws and position pistons 1-4 at the TDC.
   Remove the pump assembly from the crankcase.





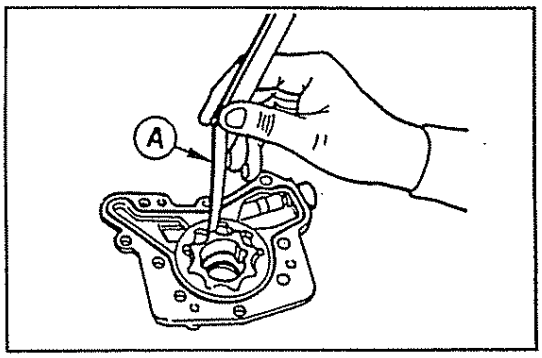
3. OIL PUMP CHECKS

1) Measuring the clearance between the impellers.

   ① Measure tooth clearance A as shown in the figure.

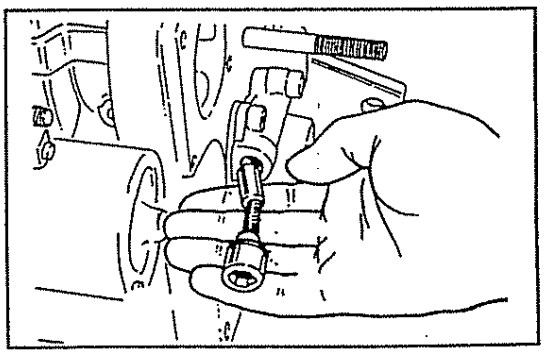
   Maximum assembly clearance: 0.174 mm
   Maximum allowed clearance: 0.250 mm

   If the clearance exceeds the above values, replace the impellers.



2) Visually inspect the contact surfaces between the impellers and the pump body. If they are excessively worn or scored, replace the pump assembly.

3) By-pass valve verification
   ① Check that the piston and its seat are not worn or scored. If necessary, replace the piston or the pump assembly.
   ② Check the spring free length = 27.50÷27.75 mm.



4. INSTALLING THE OIL PUMP

1) To install the oil pump, follow these steps:

   ① Position pistons 1-4 at the TDC.

   ② Use grease and fit a new gasket.

3. INSPECTION OF WATER PUMP

1) Check the water pump retainig ring

   The pump has got 2 drain holes Check the water pump pulley for damage or defor placed on the upper side, to shows only coolant leakages instead of transitory drips, considered normal setting.

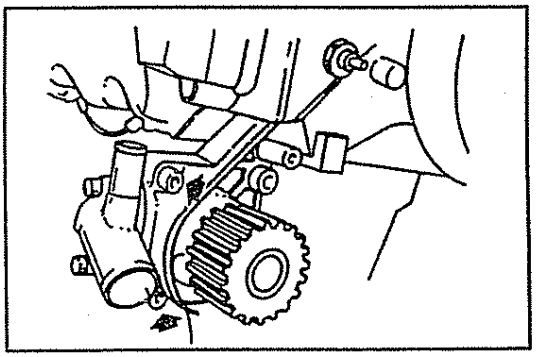
2) Check bearings

   Check the shaft runs rightly and without clearances

3) Check rotor
   The rotor must not exhibit damage or deformation.

If serious damages should occur to the water pump-related parts, replace the water pump.

4. INSTALLATION OF WATER PUMP



1) Remove the gasket material from the water pump installing surface of the cylinder block and of the water pump, using a gasket scraper.

2) Install a new gasket to the cylinder block.
3) Install the water pump to the cylinder block.
4) Tighten the attaching bolts evenly over two or three stages to the specified torque.
   Tightening torque: 30 N.m.

   NOTE:
   - After tightening bolts, ensure that the water pump rotates smoothly by hand.

5) Install the connection with a new gasket.

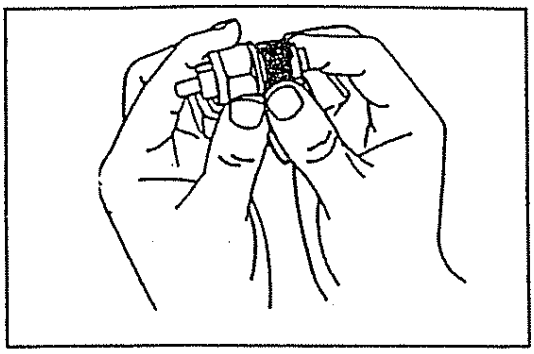
6) Install the intake pump pipe.

7) Install a new timing belt.

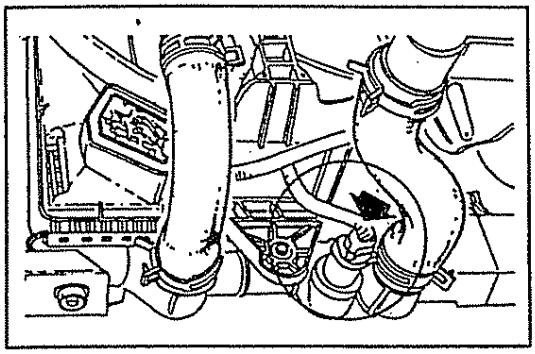
8) Fill coolant (See CO-4).

9) Start the engine. Ensure that no water leakage is present.

3) Installation of radiator thermo-control switch
   ① Clean the threaded portion of the radiator thermo-control switch.



   ② Install the thermo-control switch on the radiator
   Tightening torque: 30 N·m

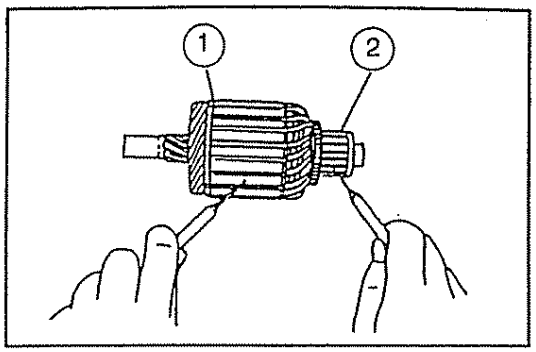


   ③ Fill coolant (CO-4).
   Start the engine and check for water leakage.

9. INSPECTION

1) Checking armature insulation.

Ensure that no continuity exists between the commutator and the armature coil, using an ohmmeter.

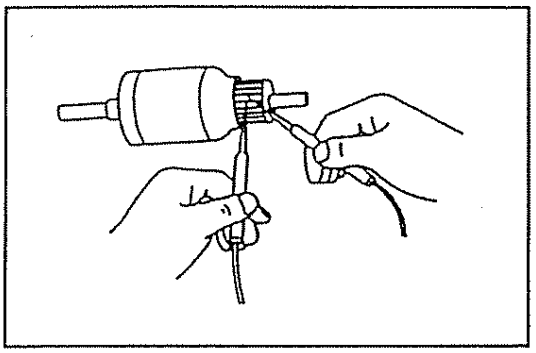


If continuity exists, replace the armature.

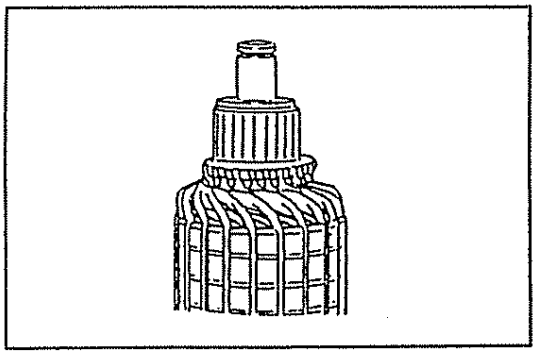
2) Checking commutator continuity.

Check continuity between adjacent segments of the commutator, using an ohmmeter.

If no continuity exists between any adjacent segments, replace the armature.

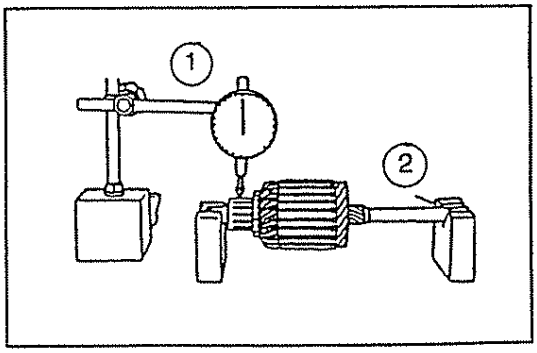


3) Check each contact surface of the commutator segments with the brushes for burning.
If the surfaces are dirty or burnt, correct the commutator surfaces, using abrasive paper (No. 400) or a lathe.



4) Checking the commutator for circle runout.

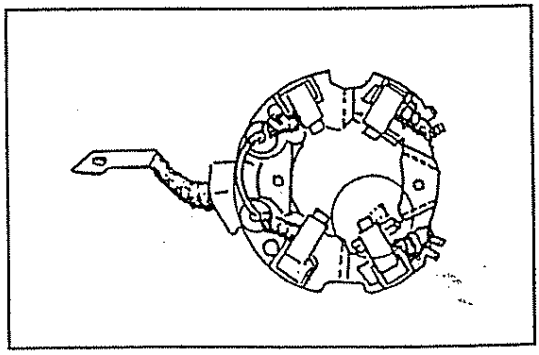
Support the armature at both ends on a Vee block.
Check the commutator for cicle runout, using a dial gauge.
Circle runout limit: 0.05 mm (0.002 inch).



If the circle runout exceeds the allowable limit, reface the commutator on a lathe.

5) Checking the projection of the brushes use a gauge to measure the projection of the brushes.

Standard projection: 10.6 mm
Minimum allowable projection: 5 mm



If the projection is shaller, replace the brush holder assembly.

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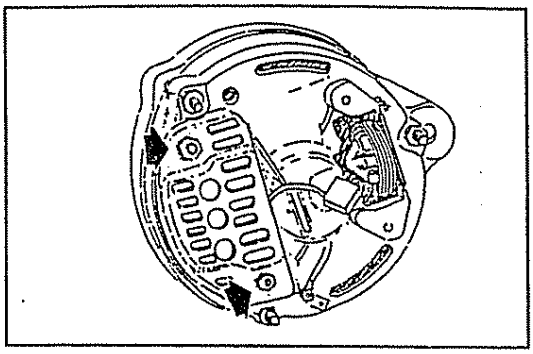
CH

CHARGING SYSTEM

NO. 7933-SE

7) Fit the brush holder regulator, taking care to properly insert the plastic protection. Connect the rectifier terminal to the regulator.



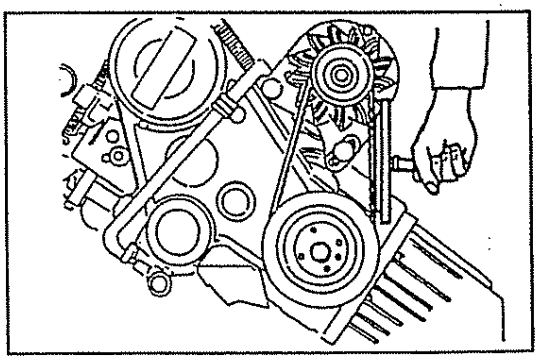
8) Fit the spacer, the fan and the pulley in succession. Tighten the nut with the prescribed torque.

   Tightening torque: 60 (+3/-21 N.m. N.m.)

9. INSTALLATION

1) Temporarily install the alternator on the motor by means of the two attachment bolts.
2) Properly fit the alternator belt.

3) Adjust the belt tension so that, when a 100 N pressure is applied on the middle point between the pulleys, the resulting sag is: 10÷15 mm.



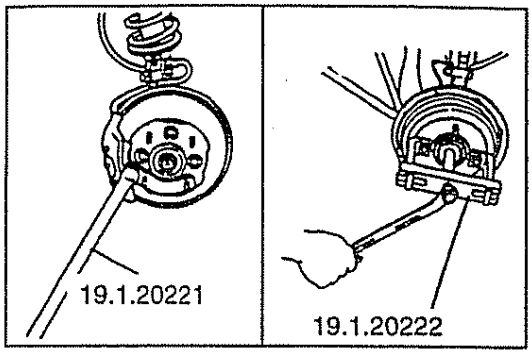
   NOTE:
   - A belt is considered to be new if it has been used on a running engine for less than five minutes.

4) Fasten cables B+ and D- to the alternator.
5) Reconnect the ground terminal to the negative (-) pole of the battery.

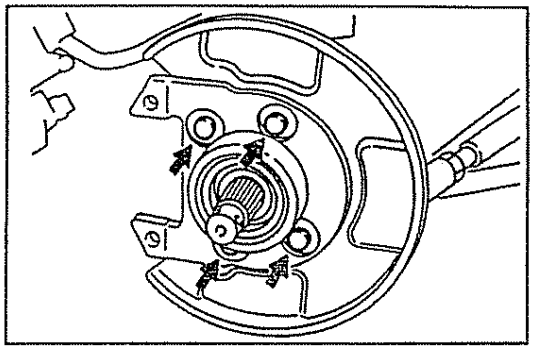
   NOTE:
   - If the alternator has been overhauled, let the engine idle for a few minutes.

5) Disc assembly removal
   ① Remove the cotter pin
   ② Remove the castle nut using the following SST.
   SST: 19.1.20221

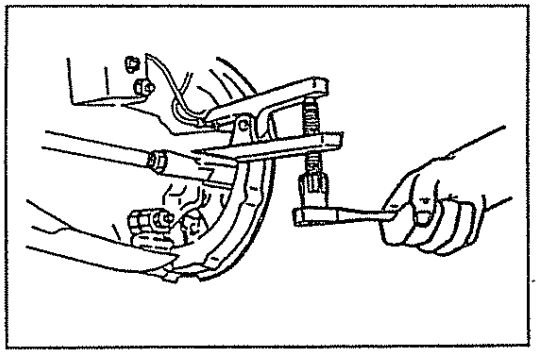
6) Remove the disc brake assembly using the following SST.
   SST: 19.1.20222



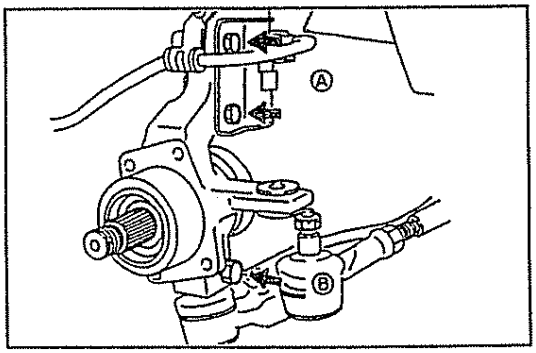
7) Remove the disc brake dust cover.



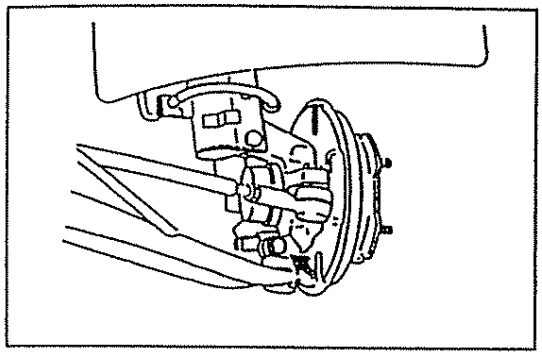
8) Remove the tie-rod end using the SST.
   SST: 19.1.20231



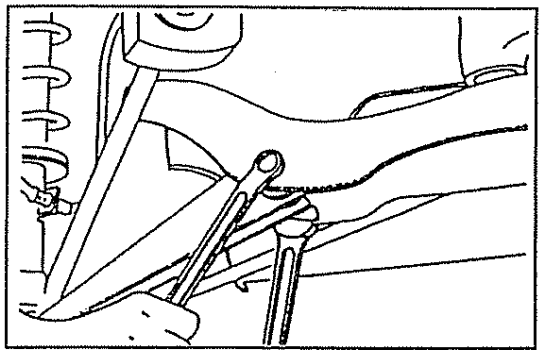
9) Remove the steering knuckle by removing the bolts Ⓐ and Ⓑ



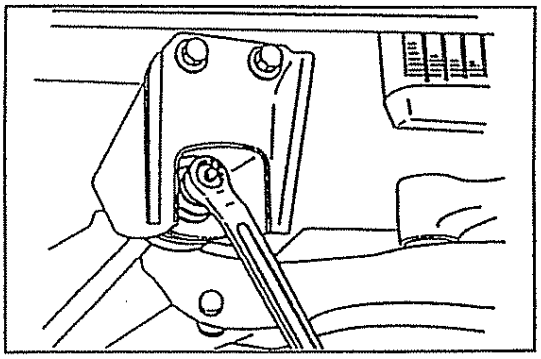
4) Suspension lower arm subassembly removal
   ① Remove the bolt and nut attaching to the steering knuckle.
   ② Detach the suspension lower arm subassembly from the steering knuckle.



   ③ Remove the suspension lower arm subassembly by removing the bolt and lock nut at the cross member.

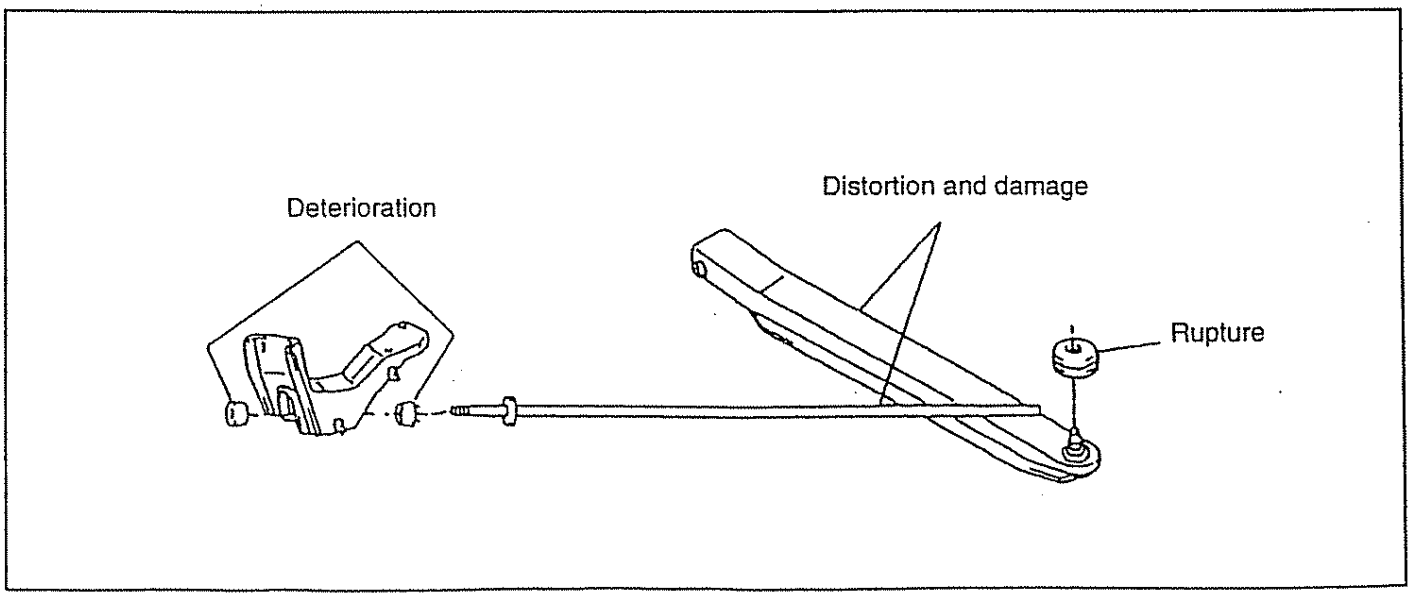


   ④ Remove the suspension lower arm subassembly by removing the lock nut at the strut bar bracket.
   ⑤ Remove the suspension lower arm subassembly from the vehicle



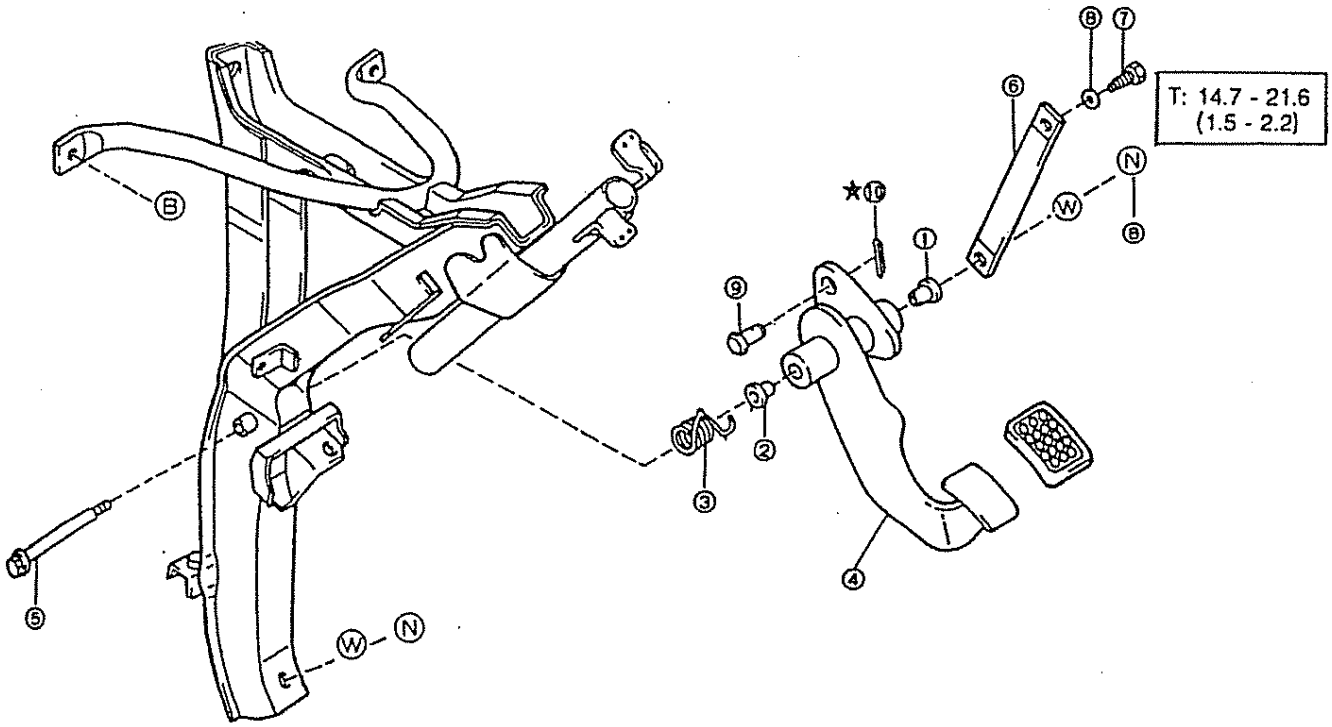
8) Remove the strut bar bracket subassembly by removing the four hexagon bolts.

3. INSPECTION



3. INSTALLATION

Install the parts in the numerical order shown in the figure below.



T : Tightening torque
Unit : N·m kgf-m, ft-lb)
*** : Non- reusable parts**

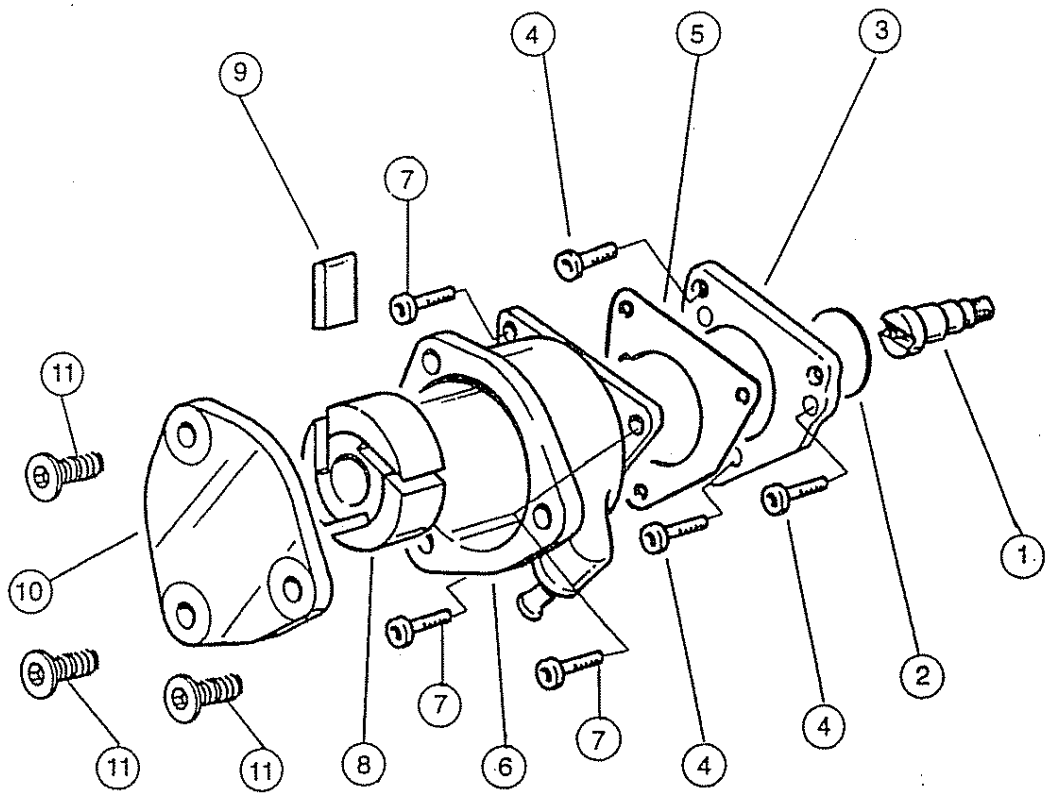
① Bush
② Bush
③ Spring
④ Brake pedal assembly
⑤ Pedal shaft
⑥ Pedal shaft lock plate
⑦ Bolt
⑧ Nut
⑨ Pin with ball
⑩ Cotter pin

Specified values

Item		Specified value
Pedal height	mm	132 ÷ 142
Pedal free travel	mm	2 ÷ 7
Pedal reserve travel		Not less than 85 mm [When pedal applying force is 30 kg]

3. ASSEMBLY

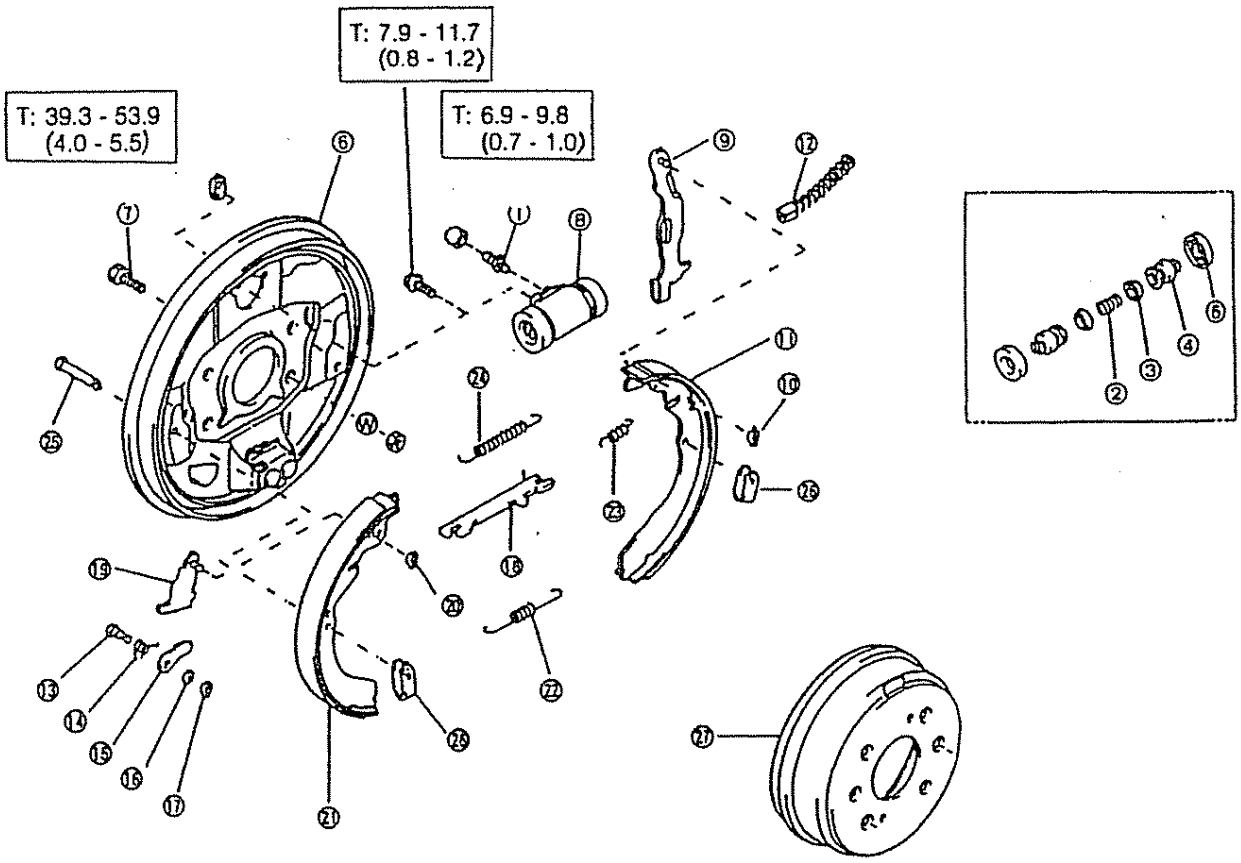
Assemble the parts as shown in the figure below.



① Drive
② O-ring
③ Flange
④ Screw
⑤ Joint
⑥ Vacuum pump
⑦ Screw
⑧ Rotor
⑨ Blade
⑩ Pump cover
⑪ Screw

3. INSTALLATION

Install the parts in the numerical order shown in the figure below.

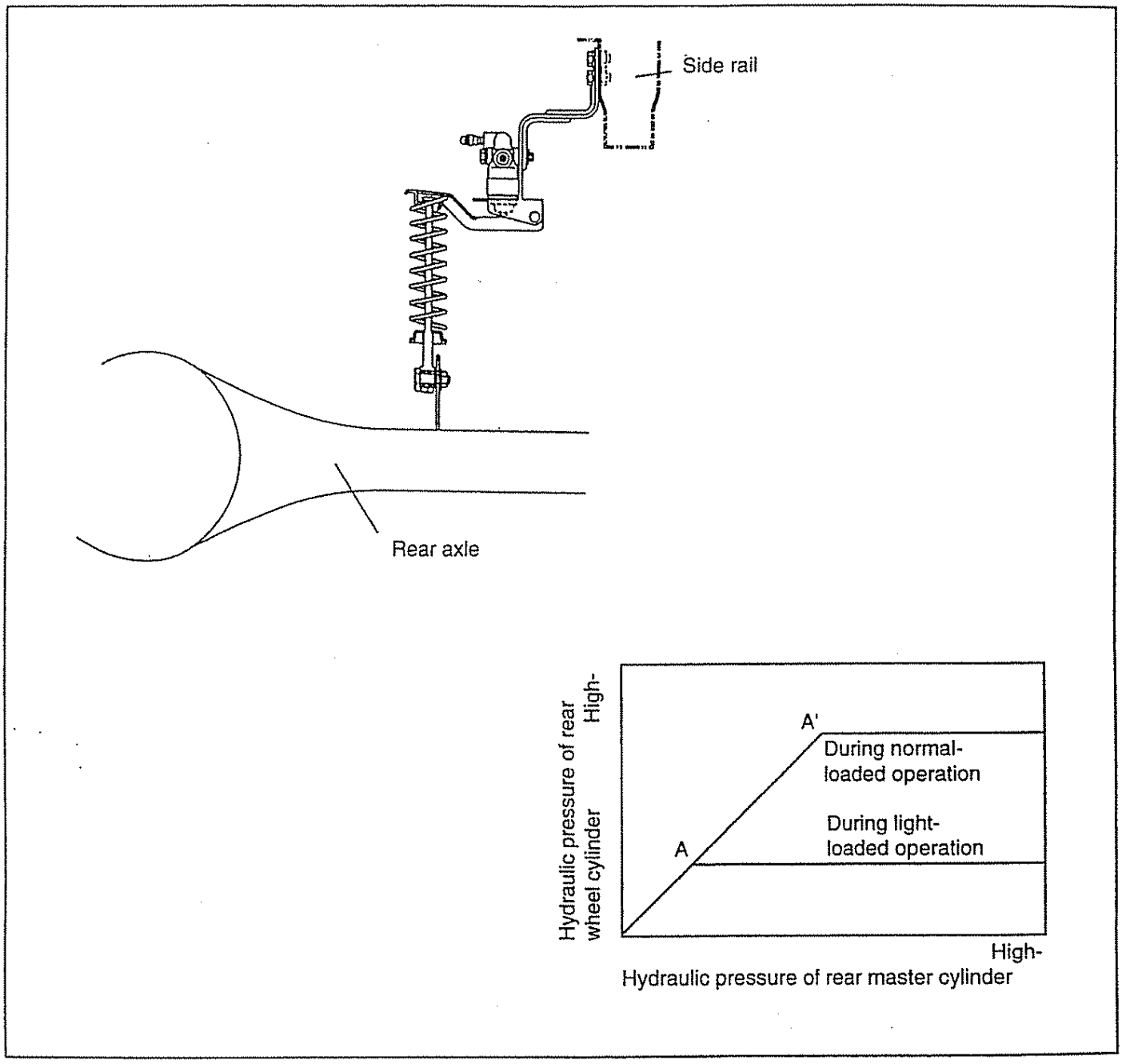


T : Tightening torque
Unit : N·m kgf-m, ft-lb)
*** : Non-reusable parts**

① Bleeder plug
② Compression spring
③ Cylinder cup
④ Wheel brake cylinder piston
⑤ Wheel cylinder boot
⑥ Brake backing rear plate subasssembly
⑦ Bolt
⑧ Rear wheel brake cylinder assembly
⑨ Parking brake shoe lever subassembly
⑩ C-ring
⑪ Rear brake shoe No. 2 assembly
⑫ Parking brake cable assembly
⑬ Automatic adjusting lever pin
⑭ Torsion spring
⑮ Automatic adjusting lever pin
⑯ Parking brake cable assembly
⑰ Rear brake shoe No. 2 assembly
⑱ C-ring
⑲ Parking brake shoe lever subassembly
⑳ Rear wheel brake cylinder assembly
㉑ Bolt
㉒ Brake backing rear plate subassembly
㉓ Wheel cylinder boot
㉔ Wheel brake cylinder piston
㉕ Cylinder cup
㉖ Compression spring
㉗ Bleeder plug

LOAD SENSING PROPORTIONING VALVE (LSPV)

The LSPV adjusts the turning point of hydraulic pressure of the proportioning valve in accordance with the weight being applied to the rear axle of the vehicle.



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HW

HARNESS AND WIRING DIAGRAM