621B/721B Loaders
Service Manual

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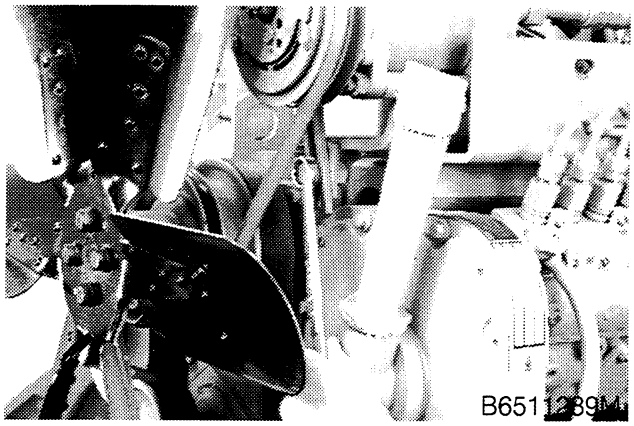
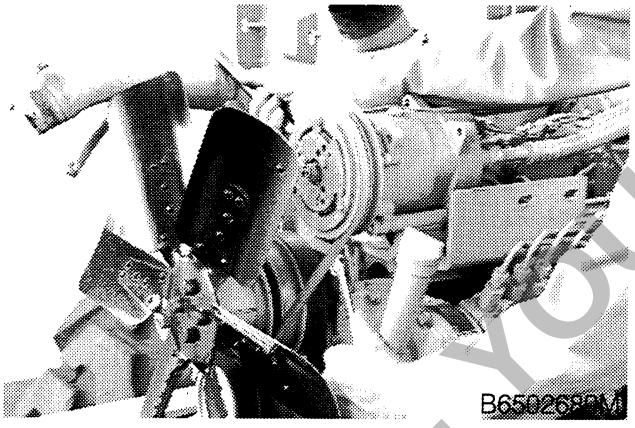
STEP 75



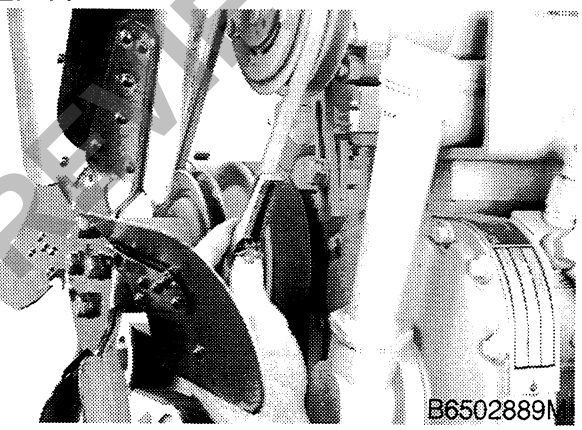
Install the cap screw, lock washer, and flat washer that fasten the adjusting strap for the compressor. Do not tighten the cap screw all the way at this time.

STEP 76



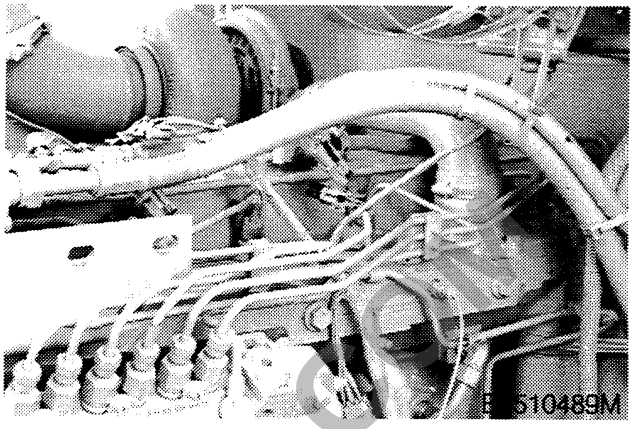
Use a prybar to move the compressor away from the engine. Tighten the cap screw.

STEP 77



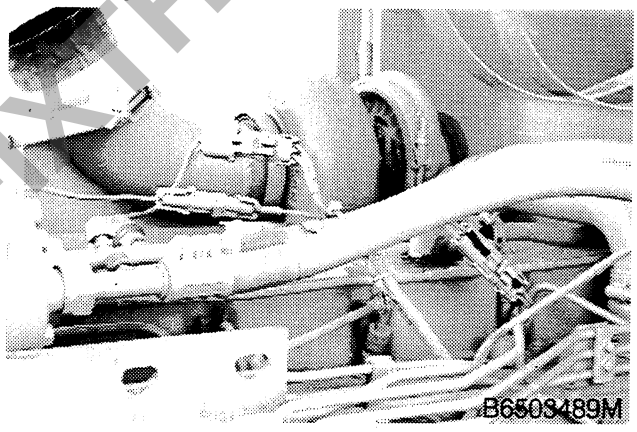
Check the tension on the belt with a tension gauge. The tension for a new belt is 100 pounds (45 kg). The tension for a used belt is 90 pounds (41 kg).

STEP 78



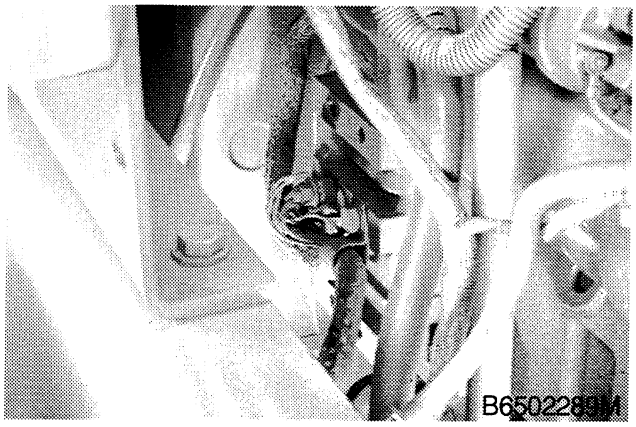
Install new tie straps to fasten the wire harness to the fuel line and the compressor hose.

STEP 79



Connect the connectors for the compressor.

STEP 80



Install the cap screw and lock washer that fasten the clamp for the wire harness to the left side of the flywheel housing. Tighten the cap screw. Install the wires on the stud. Install the brass flat washer and the brass nut on the stud and tighten the brass nut.

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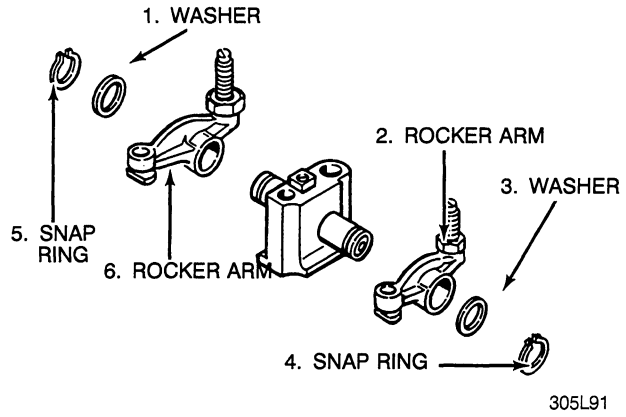
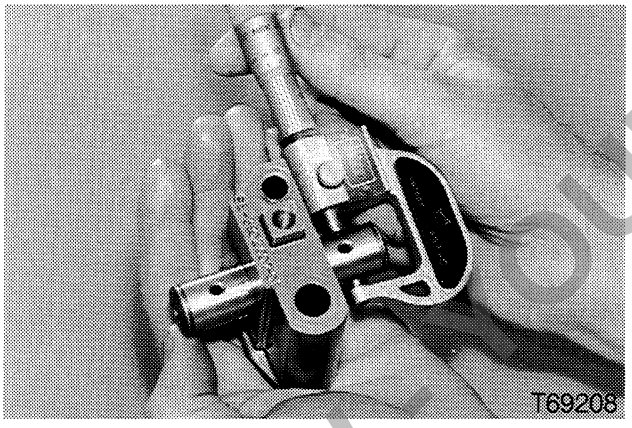
Rocker Arm Disassembly

STEP 67



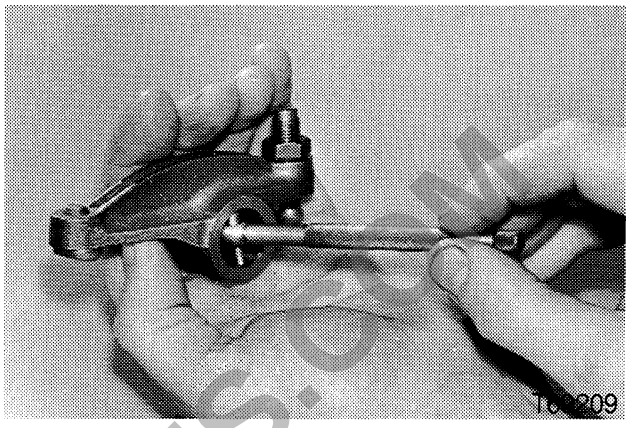
Remove the snap ring, washer and rocker arm from the shaft.

STEP 68



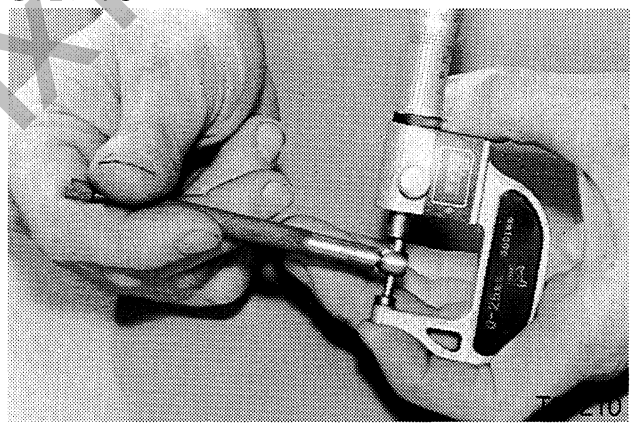
Use a micrometer and measure the rocker arm shaft for out of round. Measure three different locations around the shaft. If the rocker arm shaft is less than 18.938 mm in diameter, the rocker arm shaft assembly must be replaced.

STEP 69



Measure the rocker arm with a bore gauge in three different locations around the bore.

STEP 70



Use a micrometer to measure the bore gauge. If the diameter of the bore is more than 19.05 mm, the rocker arm must be replaced.

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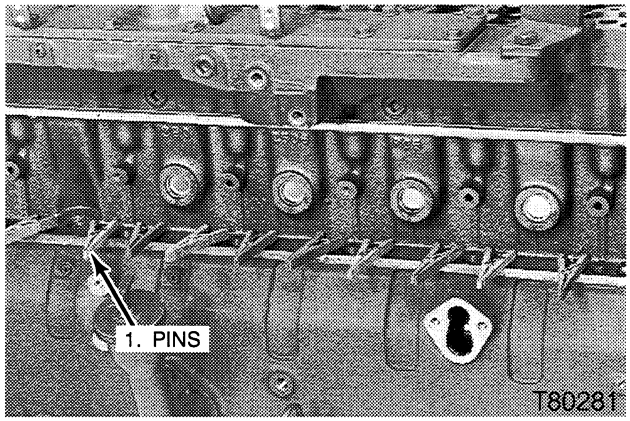
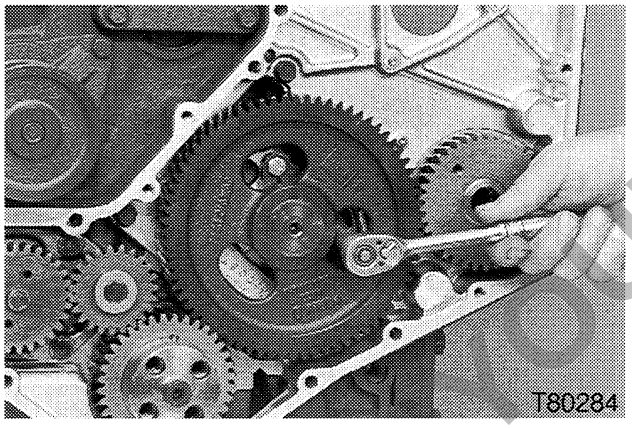
STEP 262



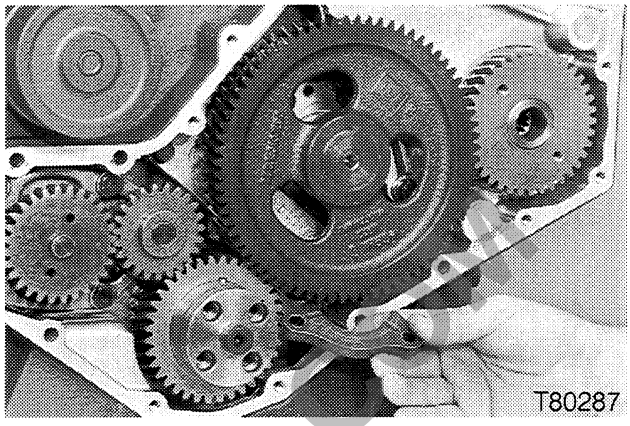
Raise the lifters and install retaining pins to hold the lifters in place, when the camshaft is removed.

STEP 263



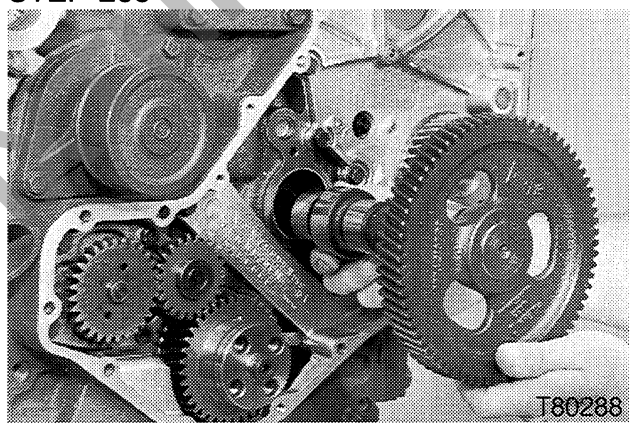
Remove the bolts from the camshaft thrust plate.

STEP 264



Remove the camshaft thrust plate.

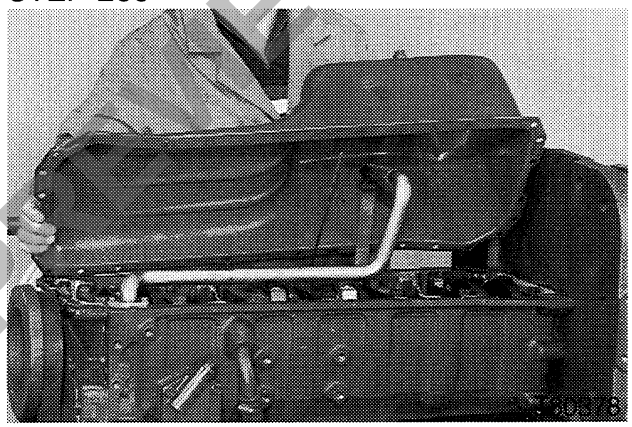
STEP 265



Remove the camshaft from the engine block.

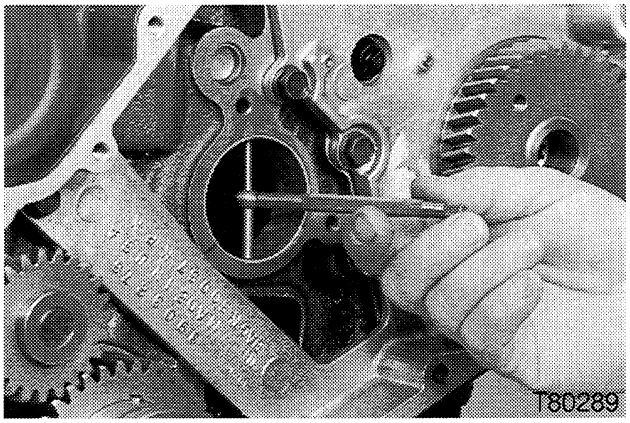
Camshaft Bushing Removal and Installation

STEP 266



Remove the engine oil pan. See Section 2445 in the service manual.

STEP 267



Measure the camshaft bores. Use a bore gauge. The bores must be measured in two positions. Take a second measurement 90 degrees from the first measurement.

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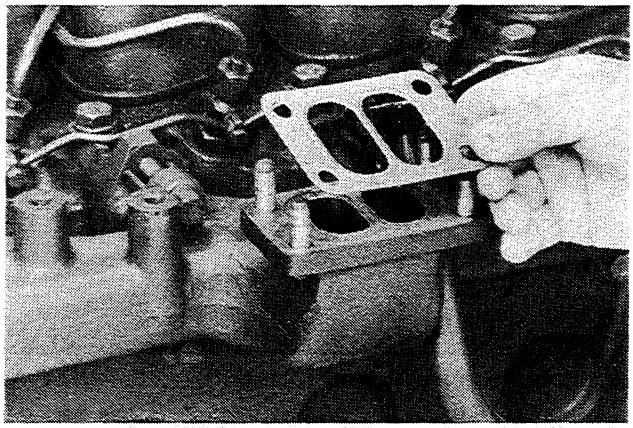
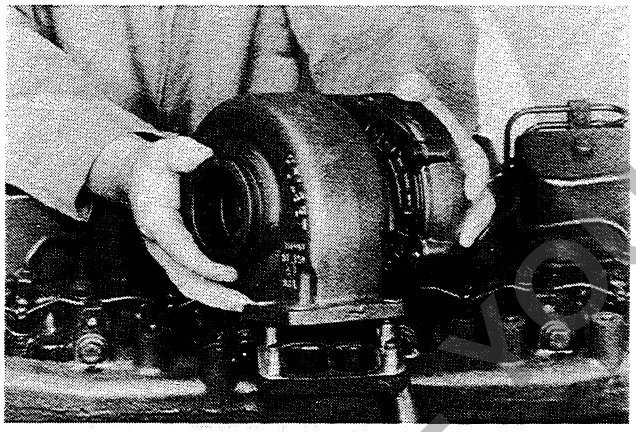
Installation

STEP 92



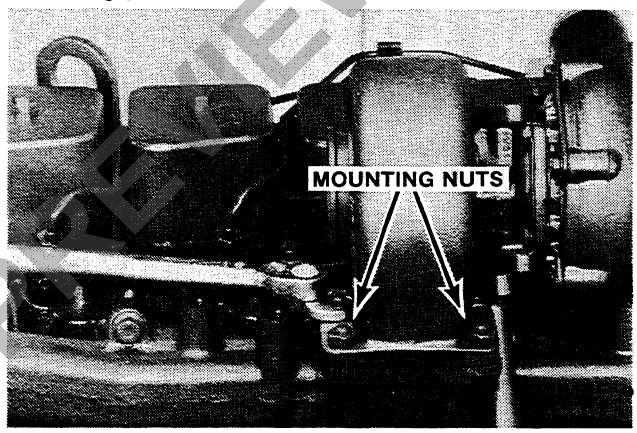
Install a new gasket on the exhaust manifold.

STEP 93



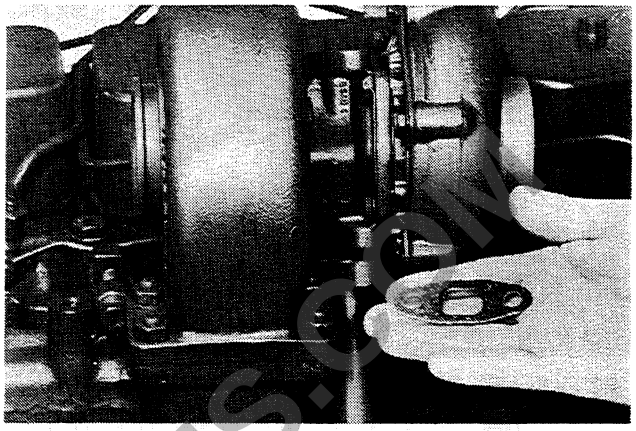
Install the turbocharger on the exhaust manifold.

STEP 94



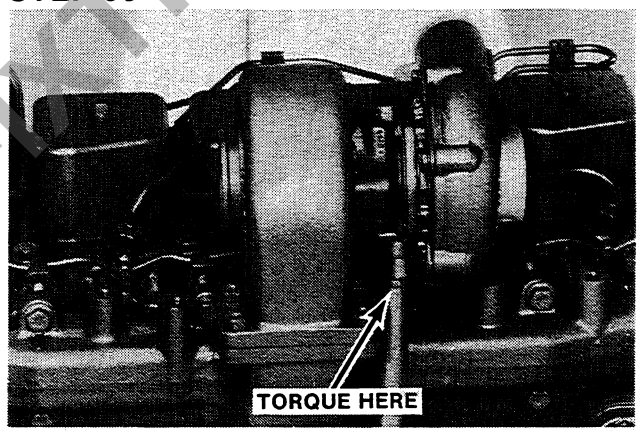
Install the turbocharger mounting nuts and tighten to a torque of 24 lb ft (32 Nm)(3.2 kgm).

STEP 95



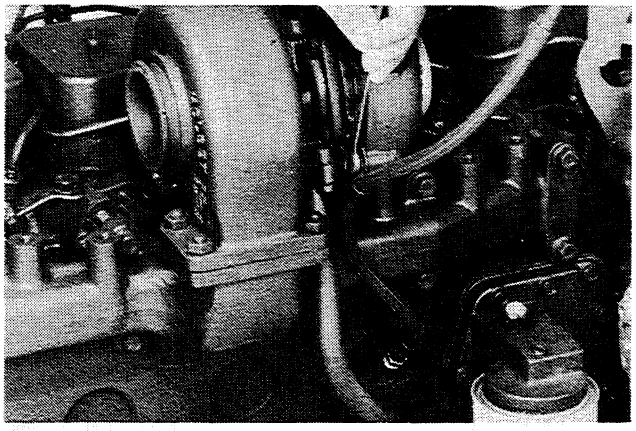
Install a new gasket on the oil drain tube.

STEP 96



Install the oil drain tube bolts and tighten the bolts to a torque of 18 lb ft (24 Nm)(2.4 kgm).

STEP 97



Install and tighten the bolt for the oil supply tube clamp.

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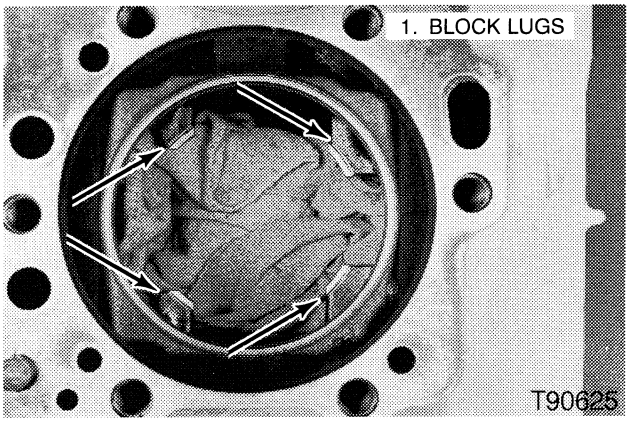
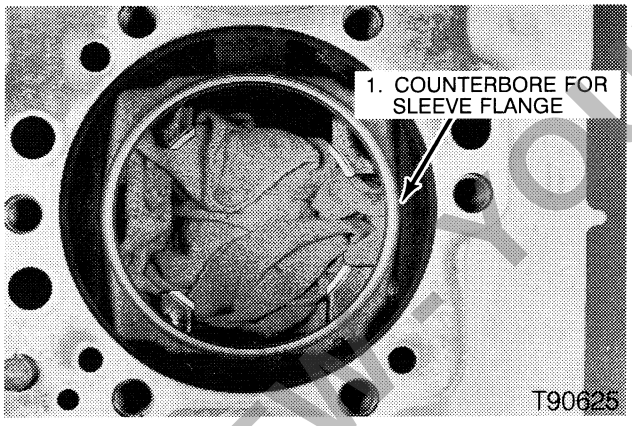
Cleaning and Inspecting the Cylinder Sleeve Counterbore

STEP 85



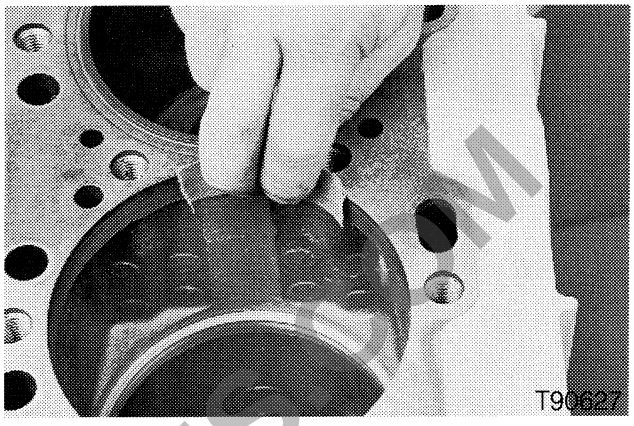
Clean and flush the lower sleeve area in the crankcase. Inspect the lower sleeve bore for erosion. Check the four block lugs in each cylinder for damage. If the upper and lower sleeve area or any of the lugs are damaged the cylinder block must be replaced.

STEP 86



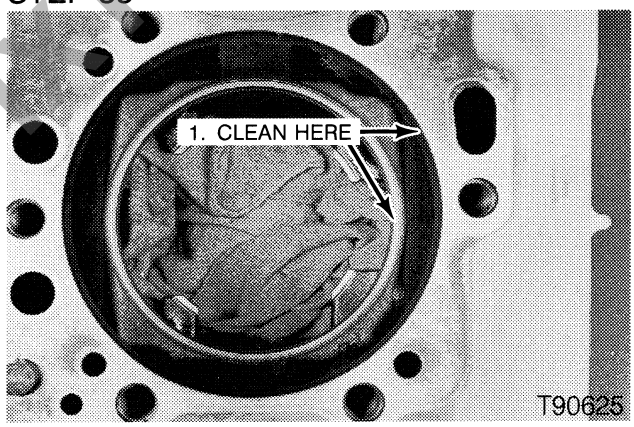
Inspect the crankcase counterbore for the cylinder sleeve flange contact area. This area is metal to metal seal. The sleeve flange and the counterbore must be in good condition for the correct sleeve protrusion.

STEP 87



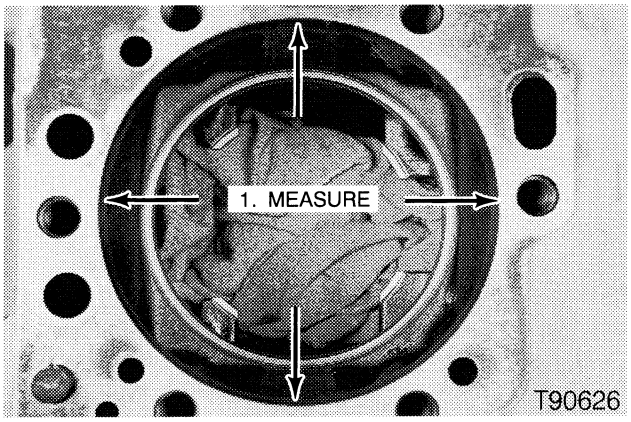
Clean the counterbore flange and the upper bore surface of all foreign material.

STEP 88



Use a clean cloth to clean the upper and lower sleeve contact area.

STEP 89



Measure the upper sleeve contact area before cylinder sleeve installation.

Prior to Engine Serial Number 44487830 ..... 132.900 to 132.950 mm

Engine Serial Number 44487830 and After ..... 130.900 to 130.950 mm

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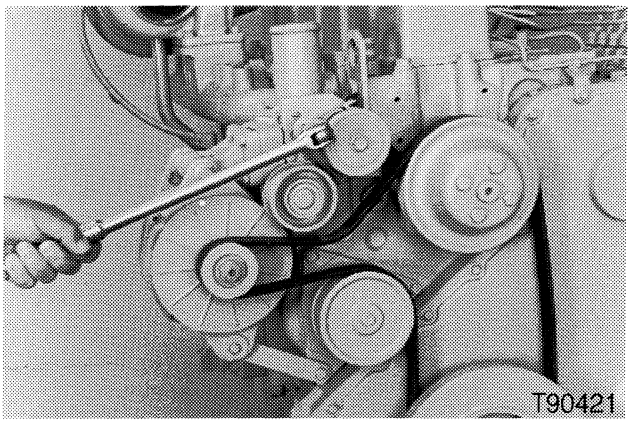
THERMOSTAT SERVICE
Removal

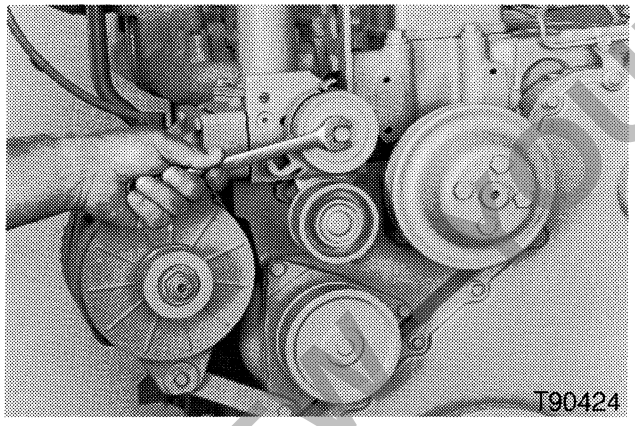
NOTE: *The engine shown is not equipped with a water filter. Your engine may be equipped with a water filter on the thermostat housing.*

STEP 7



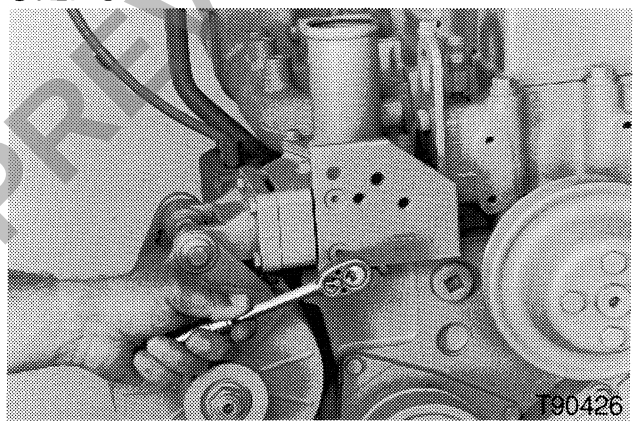
Lift the belt tensioner pulley and remove the fan belt.

STEP 8



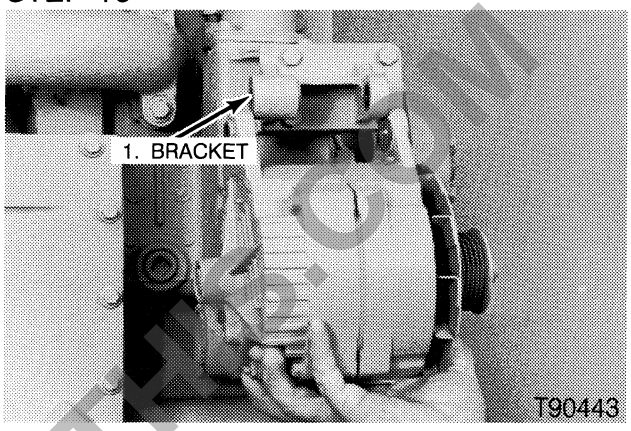
Remove the belt tensioner bolt and the belt tensioner.

STEP 9



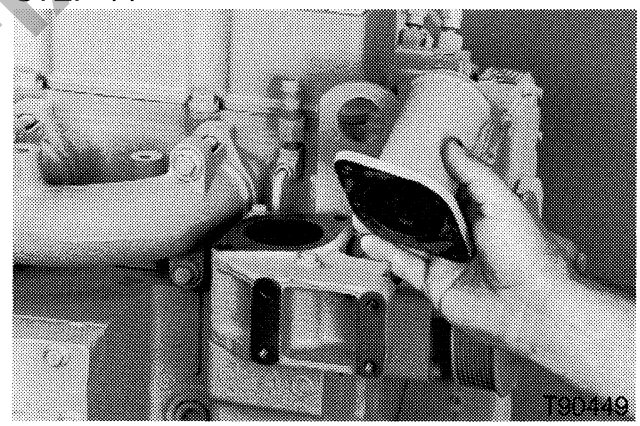
Remove the tensioner bracket bolts and the tensioner bracket.

STEP 10



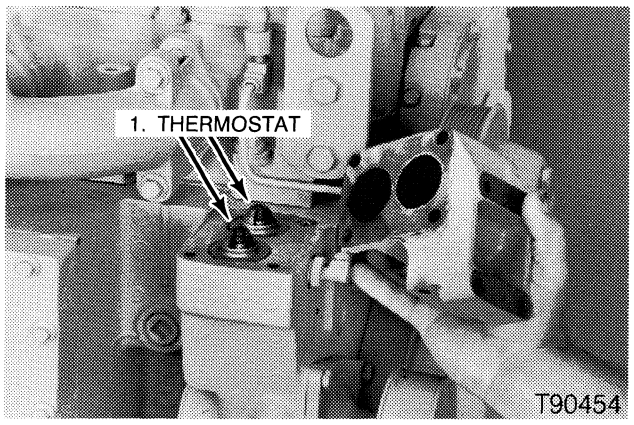
Remove the alternator and the alternator bracket.

STEP 11



Remove the coolant outlet pipe from the thermostat housing.

STEP 12



Remove the thermostat housing and the thermostats.

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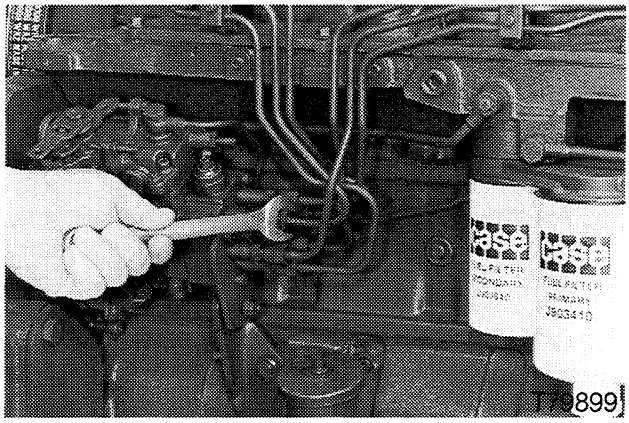
LOCATING BAD INJECTORS

If there is a loss of power during engine operation, the injectors can be bad. Do the following procedure to find the bad injectors.

Locating Bad Injectors at the Fuel Pump

STEP 1

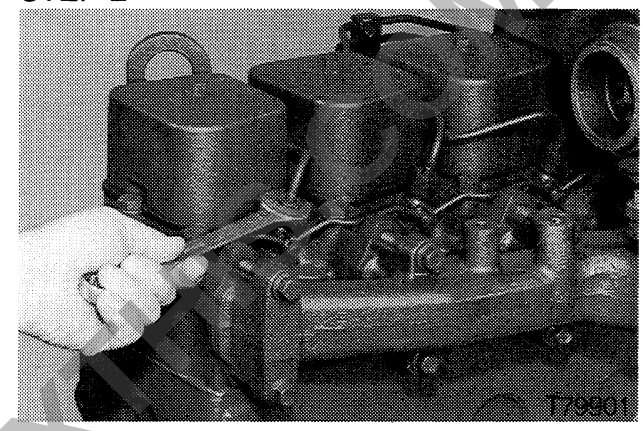


1. Loosen the tube nut on the fuel line. This will release the fuel and the injector will not work. If this injector is bad, there will not be any difference in the engine performance. Connect and tighten the tube nut on the fuel line.

2. Do this procedure again for the remainder of the injectors.

Locating Bad Injectors at the Cylinder Head

STEP 2

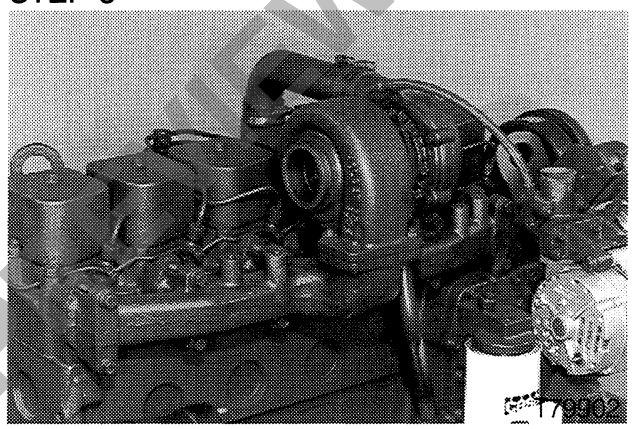


1. Loosen the tube nut on the fuel inlet line for the injector at the cylinder head. If the injector is bad, there will not be any difference in the engine performance. Connect and tighten the tube on the fuel inlet line.

2. Do this procedure again for the remainder of the injectors.

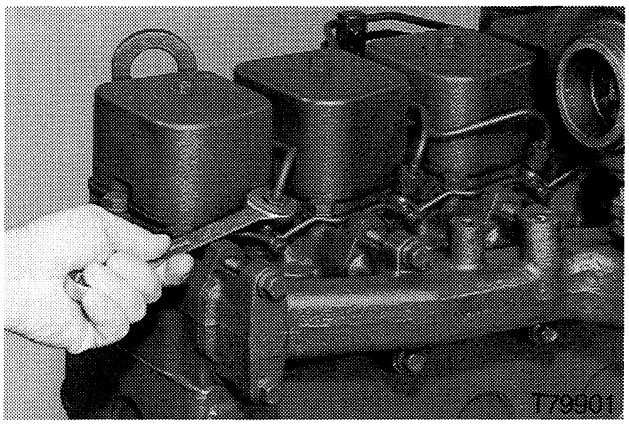
REMOVING INJECTORS

STEP 3



Clean the location around the fuel injectors.

STEP 4



Disconnect the fuel line from the injector and install a dust cover over the inlet of the injector.

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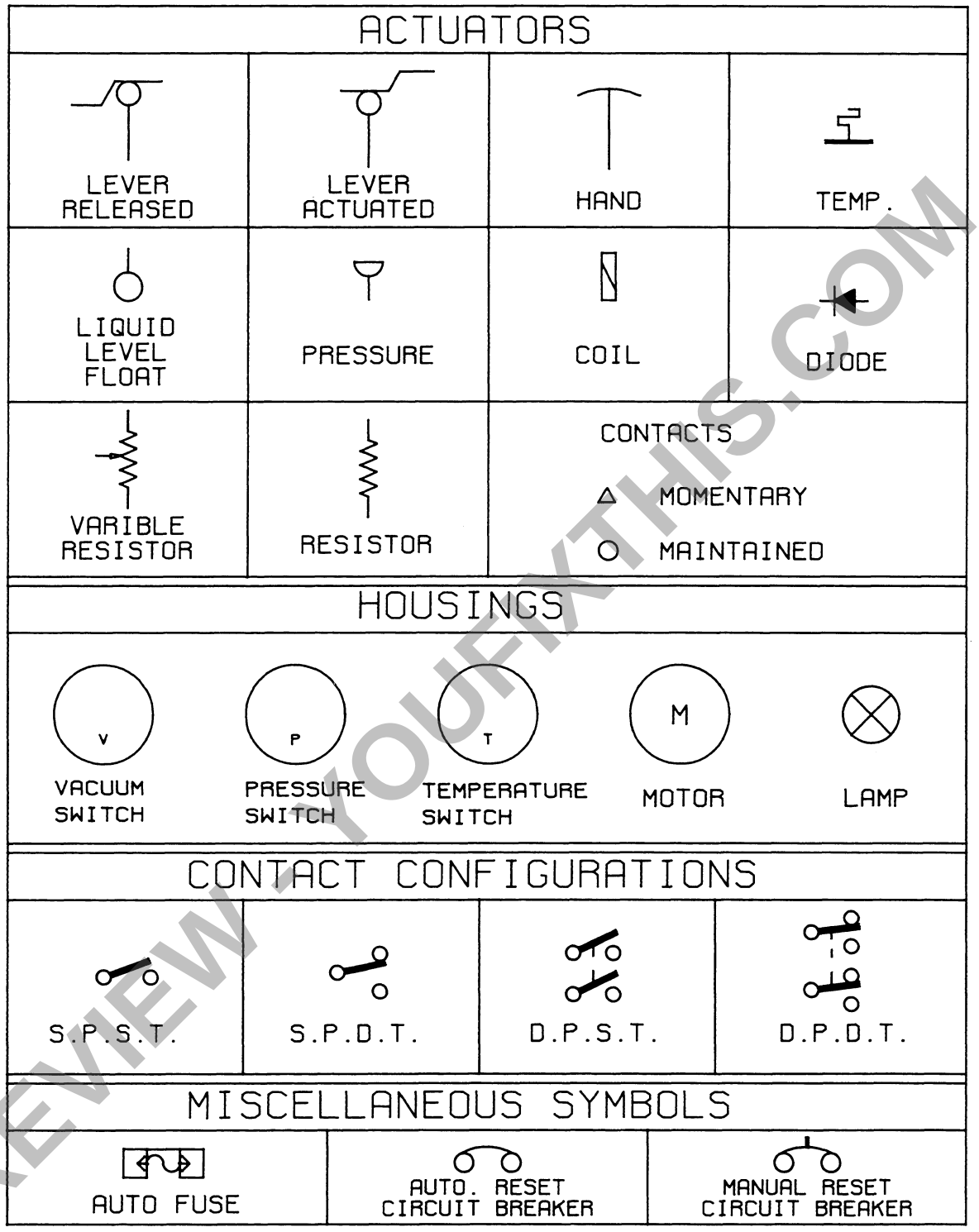

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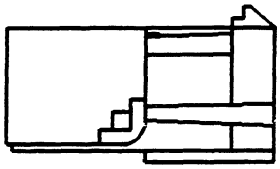
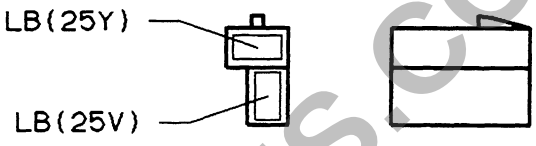


CAV.	WIRE COLOR
A	P(41D)
B	P(41T)
C	DB(42F)
D	BR/Y(45L)|BR/Y(45)

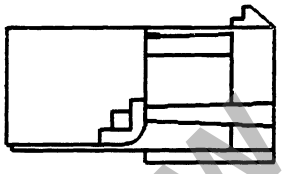
FRONT CHASSIS HARNESS
TO L.H. LIGHTS HARNESS
(ON MODEL 921 ONLY)

(84)



MAIN CAB CHASSIS HARNESS
TO TRANSMISSION KICK-DOWN

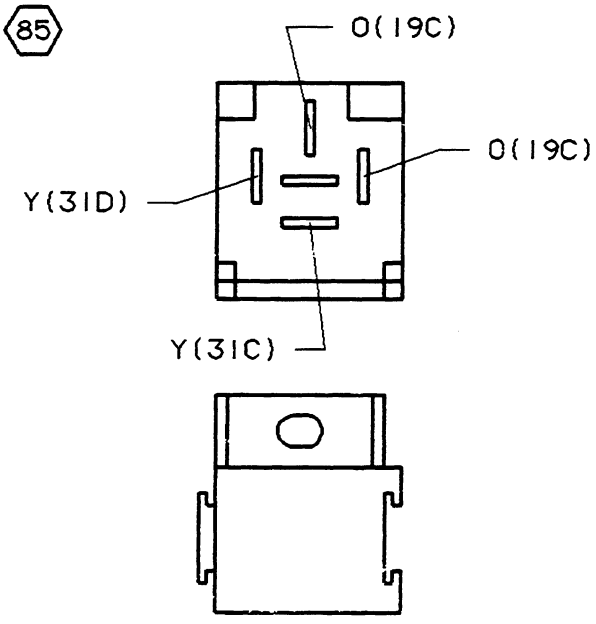
(83)



CAV.	WIRE COLOR
A	P(41D)
B	P(41T)
C	DB(42F)
D	BR/LG(45R)|BR/Y(45)

FRONT CHASSIS HARNESS
TO R.H. LIGHTS HARNESS
(ON MODEL 921 ONLY)

(85)



MAIN CAB CHASSIS HARNESS
TO LOW COOLANT RELAY

959L92

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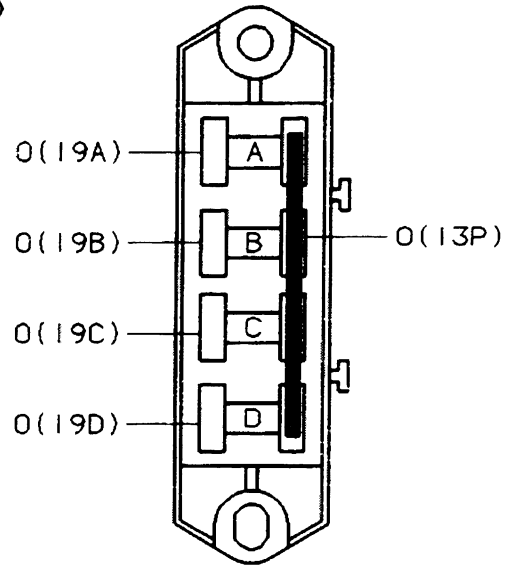
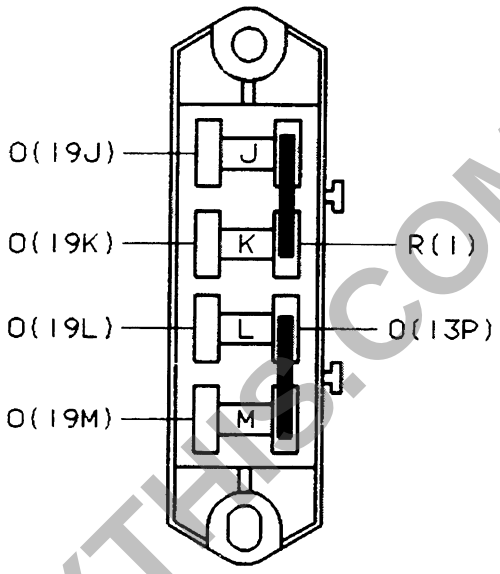


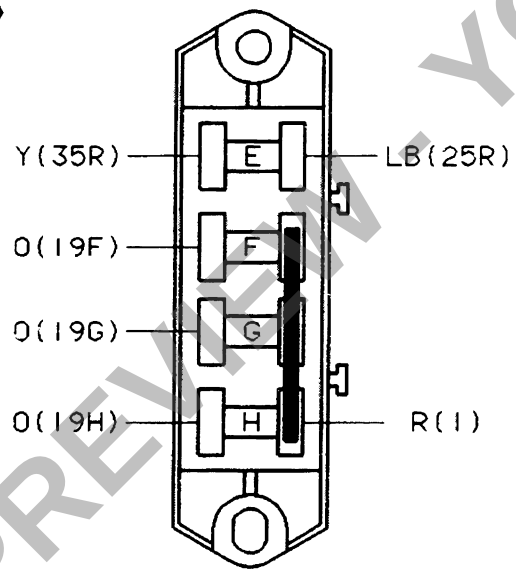
MAIN CAB HARNESS
TO FUSE BLOCK NO. 1

11



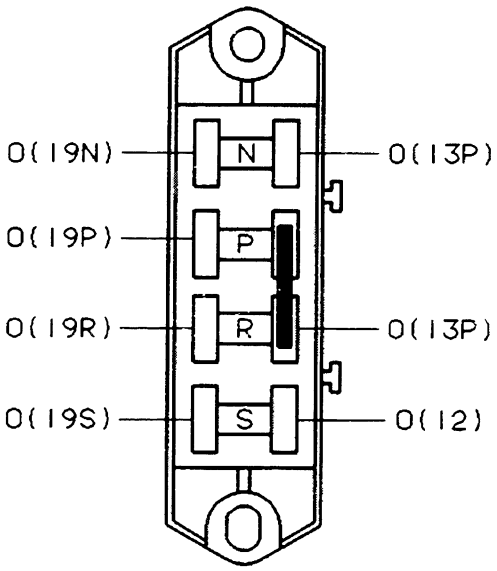
MAIN CAB HARNESS TO
FUSE BLOCK NO.3

10



MAIN CAB HARNESS TO
FUSE BLOCK NO.2

12



MAIN CAB HARNESS TO
FUSE BLOCK NO.4

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WARNING ALARM

The warning alarm is a part of the instrument cluster.

The warning alarm must sound for three seconds during the self-test. Turn the key switch from OFF to ON and wait three seconds for the instrument cluster to complete the self-test. If the warning alarm does not sound during the self-test, the instrument cluster is bad and must be replaced.

The warning alarm must sound when any of the following warning lamps are illuminated. The warning alarm must continue to sound until the warning lamp is no longer illuminated. If the warning alarm does not sound, the instrument cluster is bad and must be replaced.

1. Engine oil pressure
2. Brake pressure
3. Auxiliary steering

The warning alarm must sound for three seconds when any of the following warning lamps illuminate. If the warning alarm does not sound, the instrument cluster is bad and must be replaced.

1. Alternator
2. Transmission oil temperature
3. Hydraulic oil temperature
4. Hydraulic filter
5. Air filter
6. Parking brake, when transmission is in FORWARD or REVERSE.

The warning alarm must sound for three seconds when either of the following lamps in the engine coolant temperature gauge illuminate. If the warning alarm does not sound, the instrument cluster is bad and must be replaced.

1. Bar ten (third from the top).
2. Bar eleven (second from the top).

The warning alarm must sound for three seconds when bar two (second from bottom) of the fuel gauge stops illuminating. If the warning alarm does not sound, the instrument cluster is bad and must be replaced.

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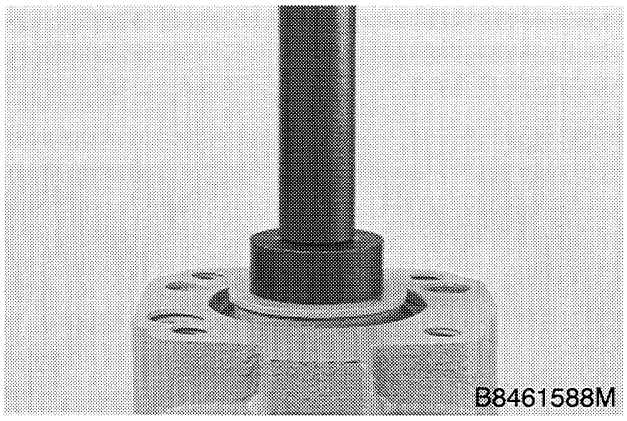
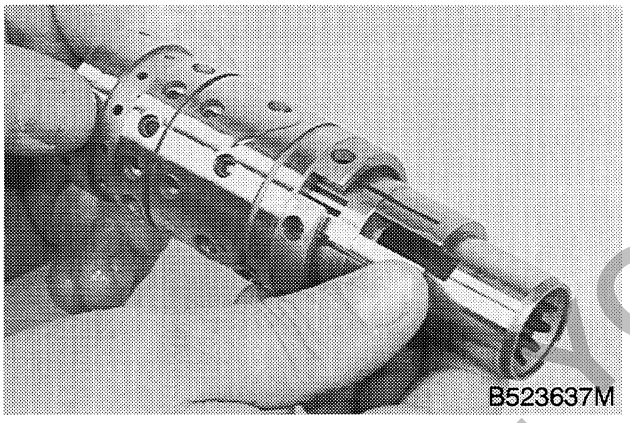
STEP 51



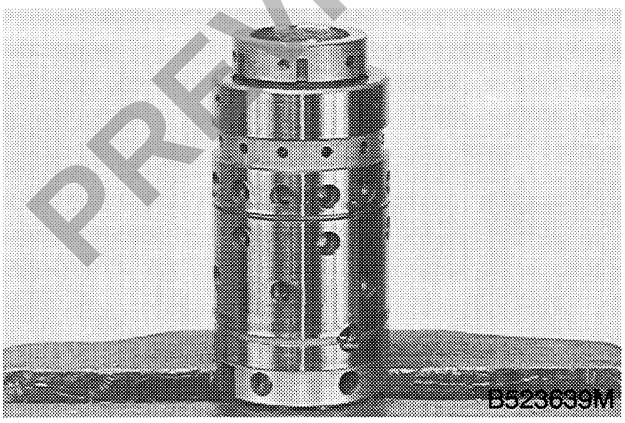
Install the seal in the gland with the lip for the seal toward the outside of the body. Drive the seal into the gland until the seal stops moving.

STEP 52



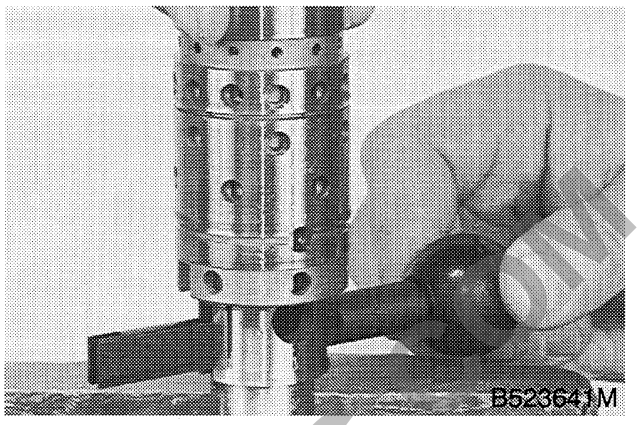
Put clean oil on the inside of the sleeve and on the outside of the spool. Install the spool in the sleeve. The spool must be installed straight into the sleeve. Turn the spool in both directions as the spool is pushed into the sleeve.

STEP 53



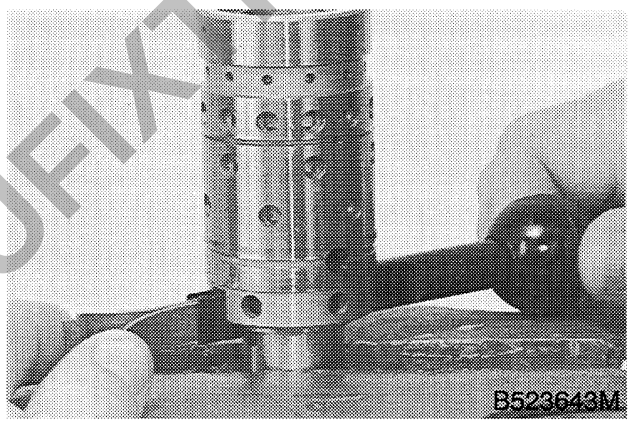
Put the spool and sleeve in a vise with soft jaws. Tighten the vise just enough to hold the spool and sleeve in position. Turn the sleeve and move the sleeve on the spool until the slots in the sleeve and spool for the centering springs are in alignment.

STEP 54



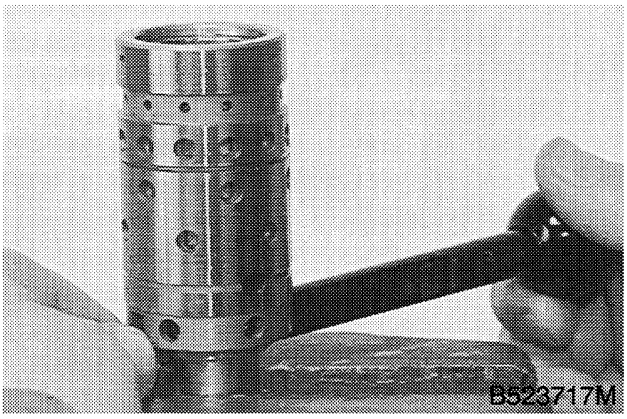
Install the tool shown on page 5003-2 through the slot for the centering springs.

STEP 55



Assemble the centering springs in sets of three. Put the two sets of centering springs in the end of the tool with the notched corners toward the sleeve. Use your thumb and finger to compress the centering springs.

STEP 56



Push the centering springs into the spool. Move the tool as necessary to put the centering springs in position.

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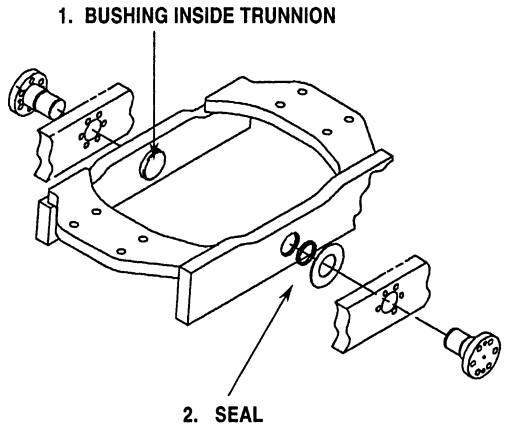
STEP 13 REAR AXLE ONLY



902L92

Replace the seals and bushings in the trunnion as required.

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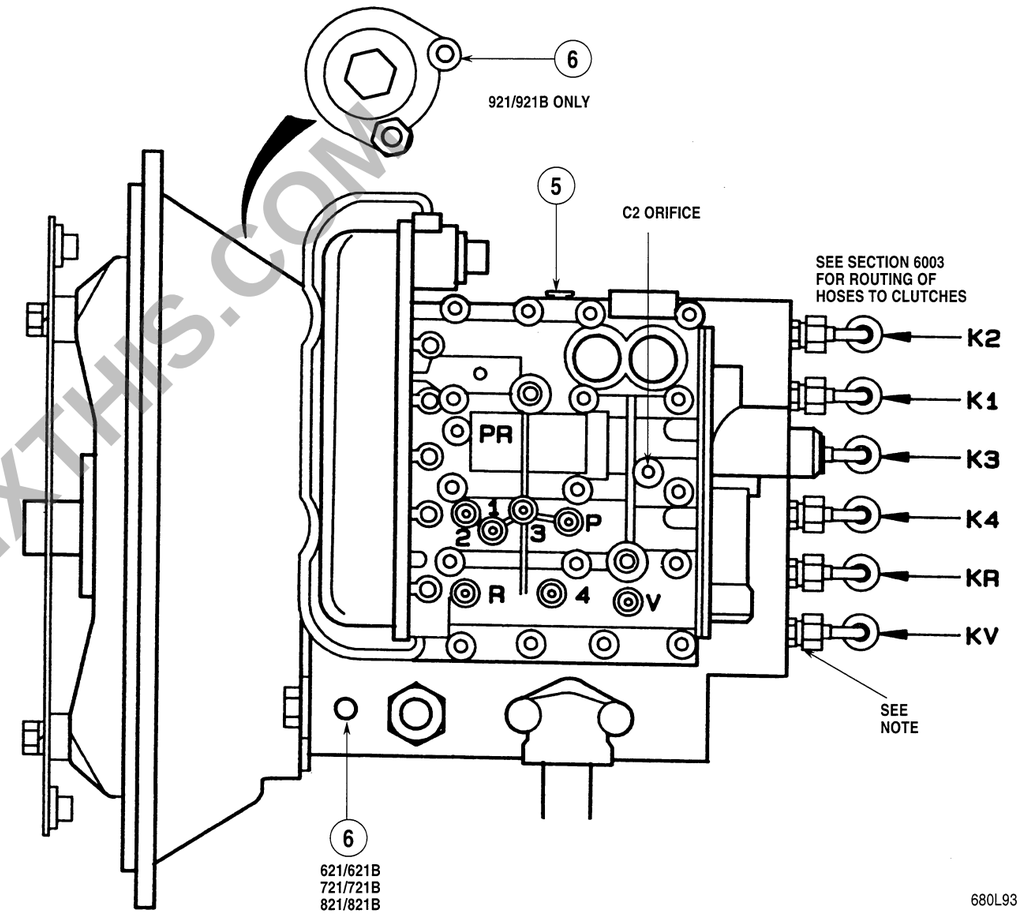
LOCATION OF TEST POINTS



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P. Test Point 65 Main Pressure

V. Test Point 53 Forward Gear

R. Test Point 55 Reverse Gear

1. Test Point 56 First Gear

2. Test Point 57 Second Gear

3. Test Point 58 Third Gear

4. Test Point 60 Fourth Gear

5. Test Point 51 Converter IN

6. Test Point 52 Converter OUT

PR. Test Point PR Pressure Reduction

C2 ORIFICE = Location identified, refer to Section 6007 for removal, installation and replacement of O-ring.

NOTE: *Disconnect hoses to the clutch shafts at this fitting to use CAS-2325 plug and cap set to isolate the source of a problem.*

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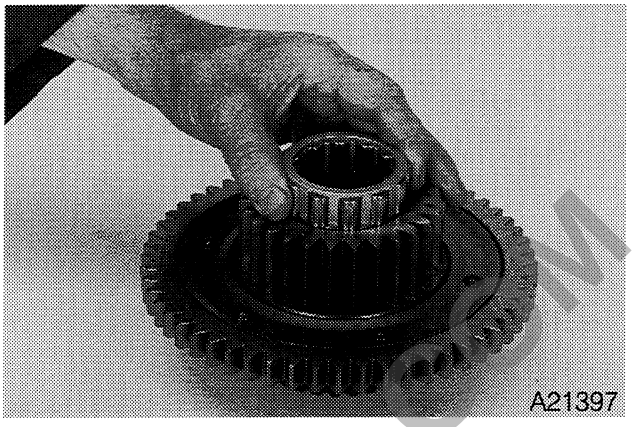
STEP 276



Remove the retaining rings from the second gear.

STEP 277



Remove the roller bearing from the second gear.

INSPECTION OF THE REVERSE AND SECOND CLUTCHES

STEP 278

Check the teeth on the gears for wear and damage. If a tooth is badly damaged, be sure to inspect the gear that is in mesh with the damaged gear. Inspect the splines in the gears for wear and damage. Be sure to inspect the shaft on which the gear is installed.

STEP 279

Check the ball, roller, and needle bearings for flat areas, pitting, and other damage. Check the cages, inner races, and outer races for damage.

STEP 280

Check each metal disc and friction disc with a straight edge to be sure each part is flat. If a metal disc or a friction disc is not flat, a new part must be installed. If the friction discs are smooth or almost smooth, use new parts. Inspect the metal discs for pitting, scoring, or other damage. If there is any damage, use new parts. Also, check the splines for wear. Inspect the bore and shaft in the clutch housing for damage that will cause leakage when the clutch is assembled. Use new parts as required.

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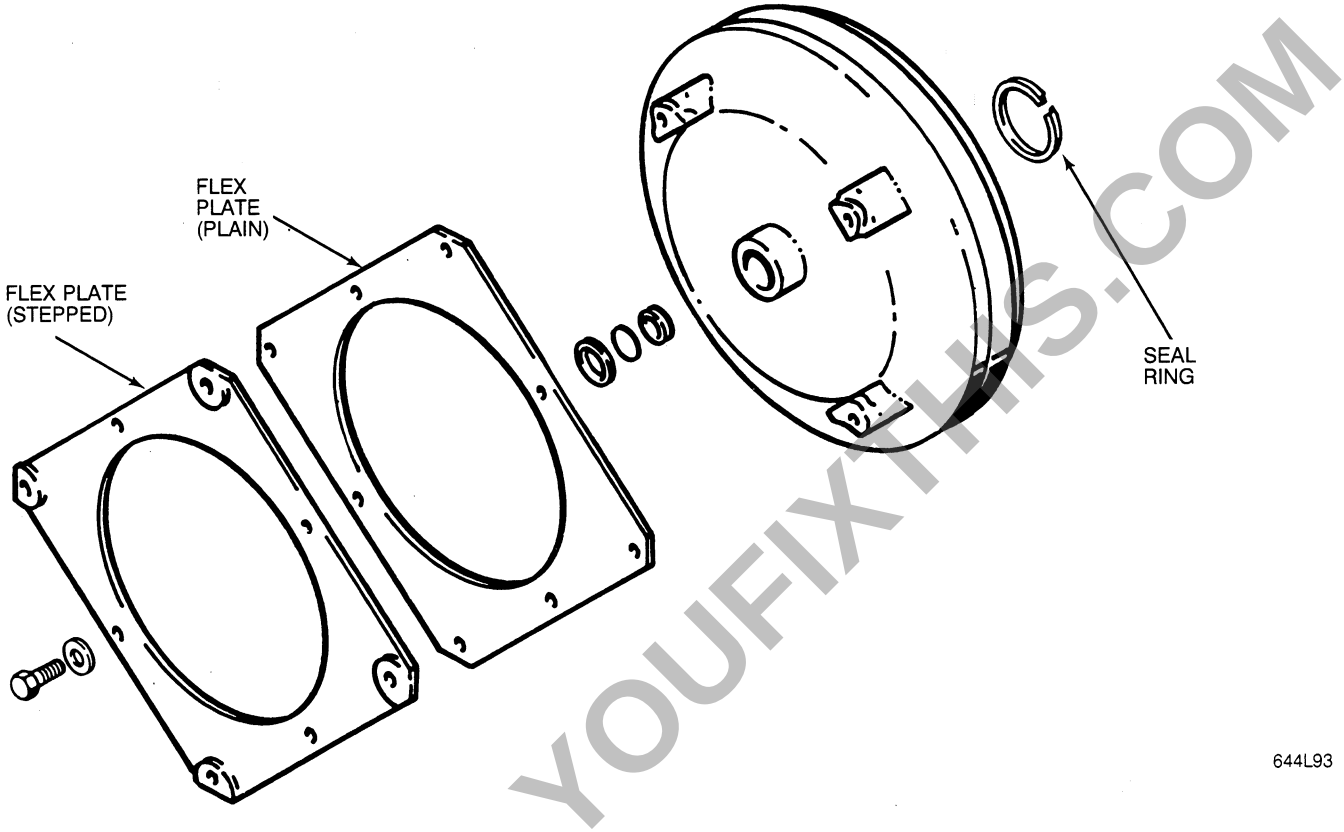
INSPECTION OF THE TORQUE CONVERTER

The torque converter is a sealed unit. Except for the flex plates, ring and O-ring on the plug, there is no inspection to be done of the torque converter. If the torque converter is not operating correctly, it must be replaced.



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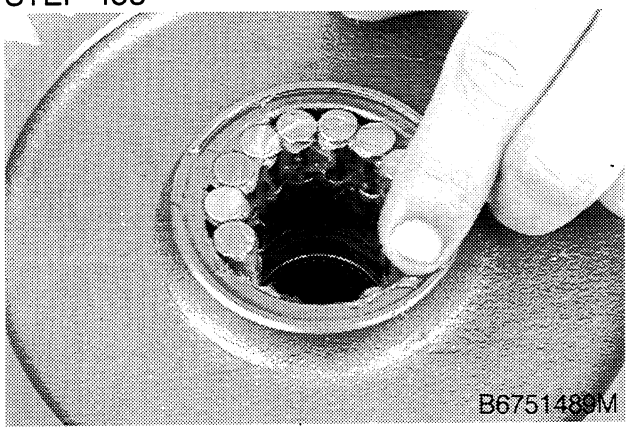
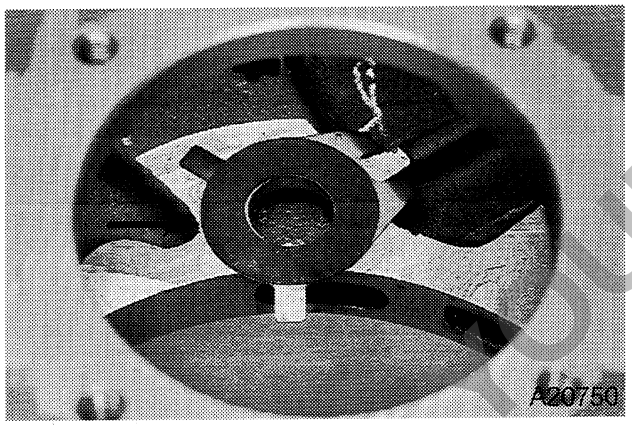
STEP 458



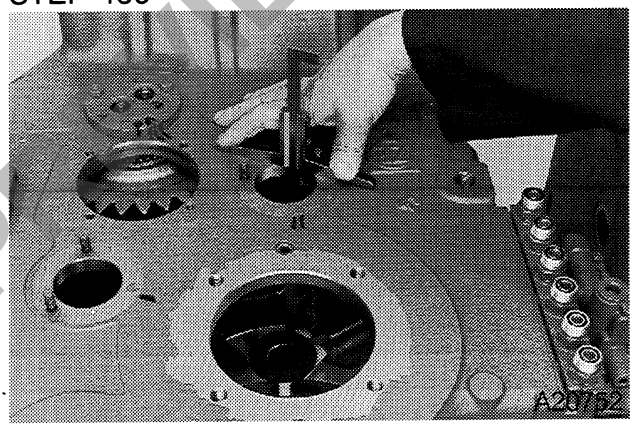
Apply grease to the long rollers. Install the long rollers in the reverse gear.

STEP 459



Install the slotted and plastic thrust washers for the reverse and second gear clutch assembly in the transmission housing. The slotted washer fits the tab in the transmission housing.

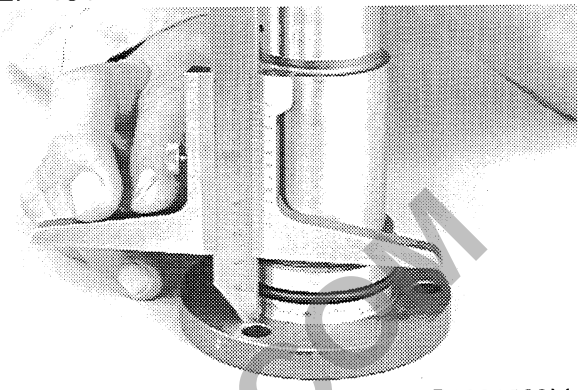
STEP 460



Use caliper CAS-1938 and measure the distance from the housing to the plastic thrust washer.

Example: Dimension A = 9.93 inches (252.2 mm).

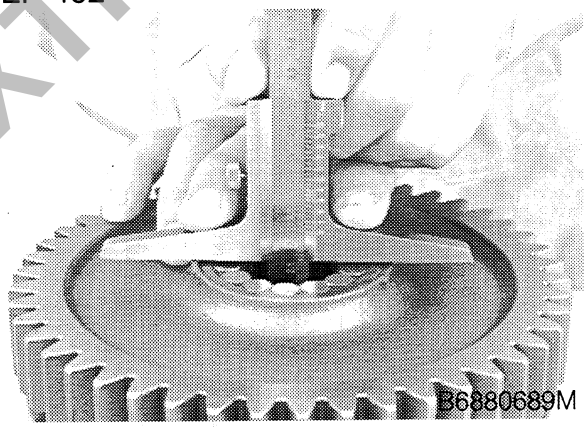
STEP 461



Use caliper CAS-1938 and measure the distance from the contact area of the bearing rollers to the flange face.

Example: Dimension B = 0.89 inch (22.6 mm).

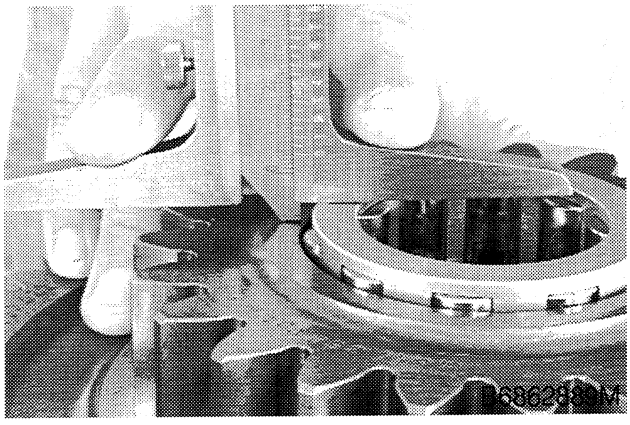
STEP 462



Use caliper CAS-1938 and measure the distance from the plane surface of the second gear to the contact area of the reverse gear.

Example: Dimension C = 8.99 inches (228.3 mm).

STEP 463



Use caliper CAS-1938 and measure the distance from the plane surface of the reverse gear to the face of the rollers.

Example: Dimension D = 0.01 inch (0.2 mm).

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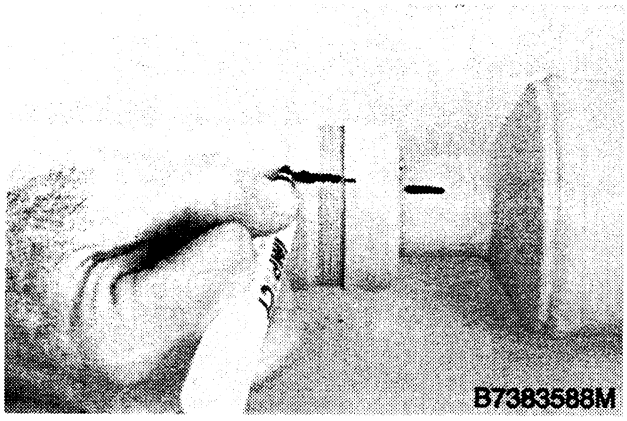
REMOVAL AND INSTALLATION OF SLIDING YOKE

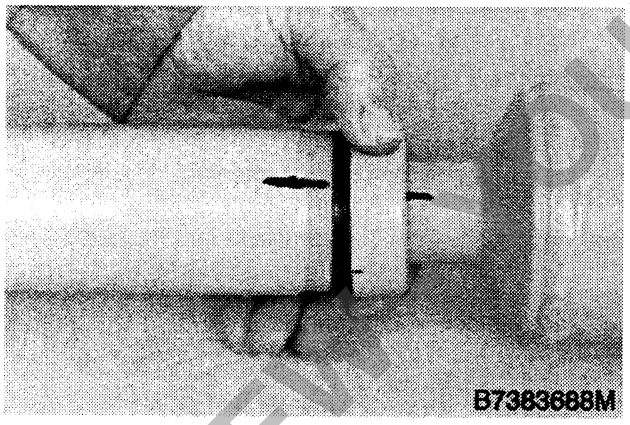
Remove the drive shaft according to instructions in this section.

STEP 57



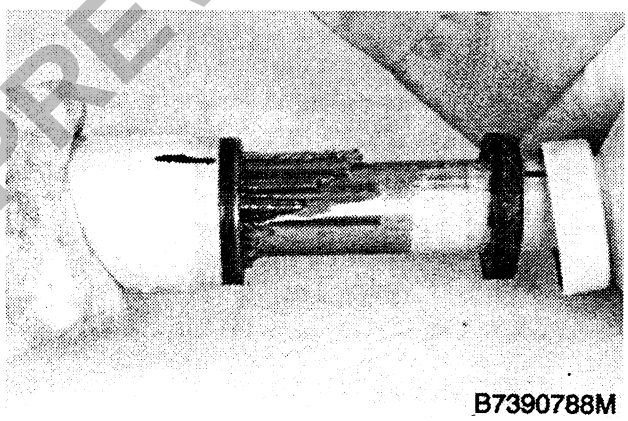
Make an alignment mark on the sliding yoke and shaft so that the parts are assembled correctly.

STEP 58



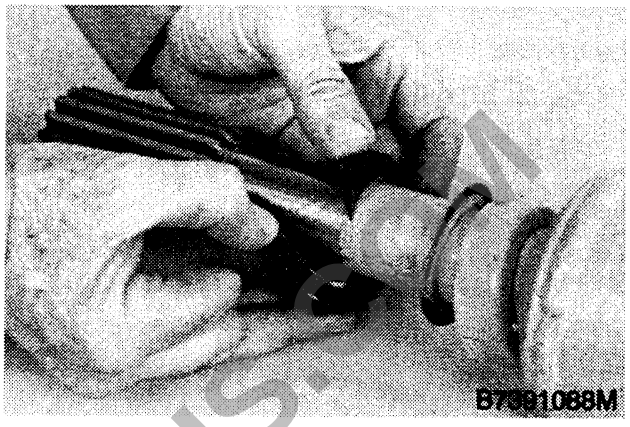
Loosen and remove the retainer from the sliding yoke.

STEP 59



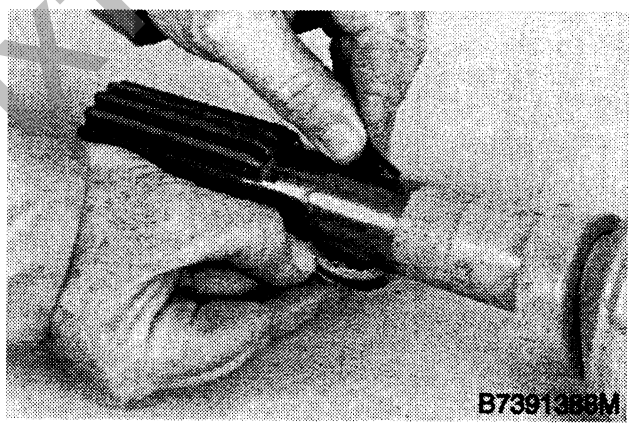
Remove the sliding yoke.

STEP 60



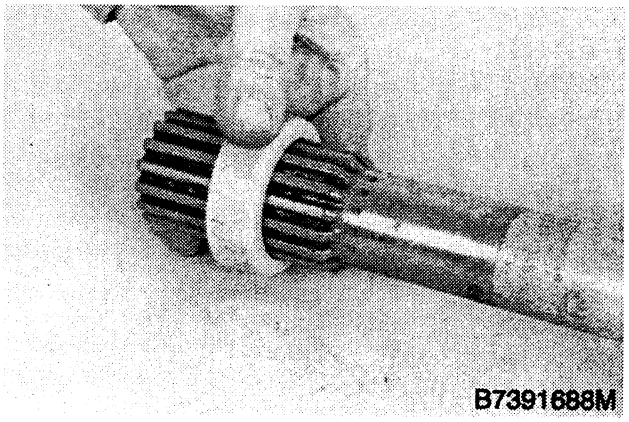
Remove the seal.

STEP 61



Remove the washer.

STEP 62



Remove the retainer.

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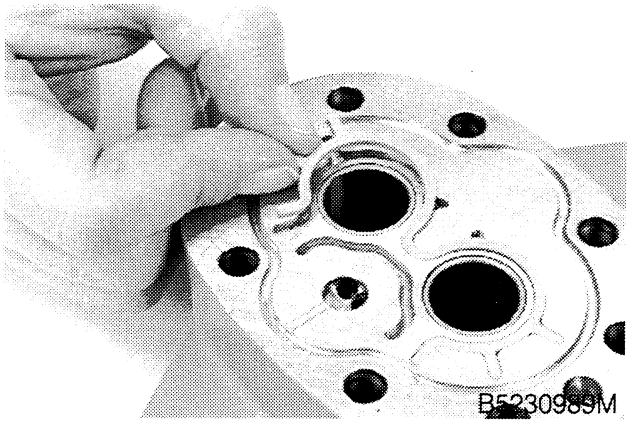
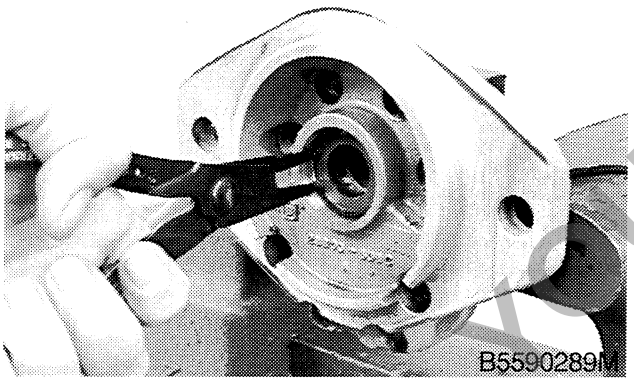
STEP 13



Remove the back-up seal, pressure seal and bearing seal from the front cover.

STEP 14



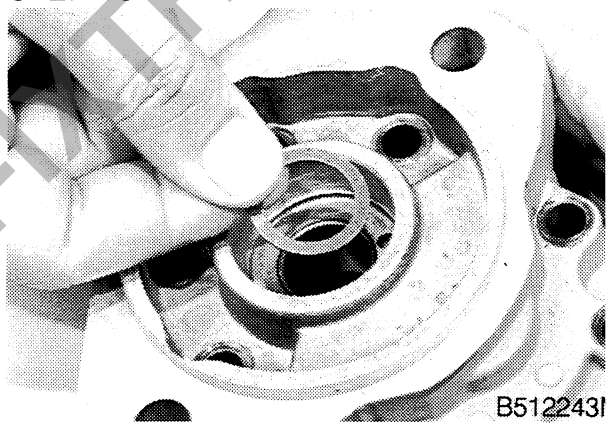
Remove the snap ring from the front cover.

STEP 15



Use a puller to remove the old shaft seal from the fr cover.

STEP 16



Remove the washer from the front cover.

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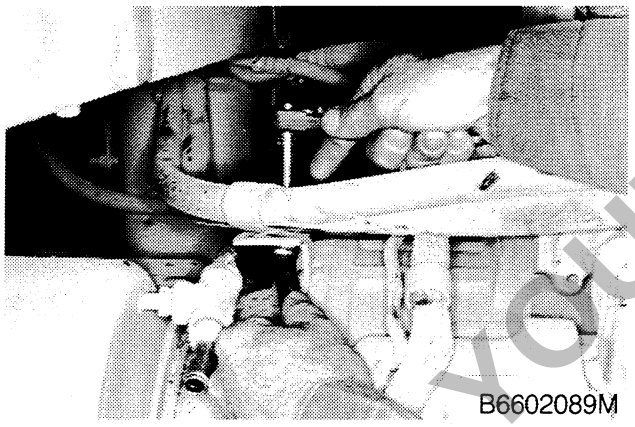
STEP 13



Loosen and remove the self-locking nut, bolt, and clamp that holds the hoses to the brake actuators.

STEP 14



If the machine is equipped with a heater, loosen and remove the nut, lock washer, and bolt that holds the clamp for the hoses and put the hoses out of the way.

STEP 15

If the machine is equipped with auxiliary steering, do Steps 16 and 17. If the machine is not equipped with auxiliary steering, go to Step 18.

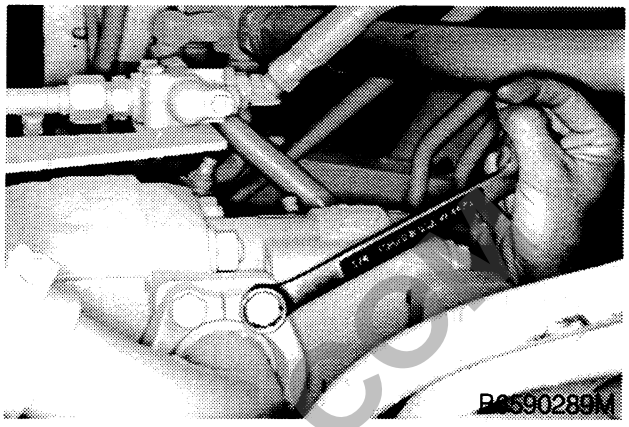
STEP 16

See the illustration on Page 25. Disconnect the tube from the fitting in the shuttle valve. Install a plug in the tube and a cap on the fitting. Thread size is 1-5/8-12.

STEP 17

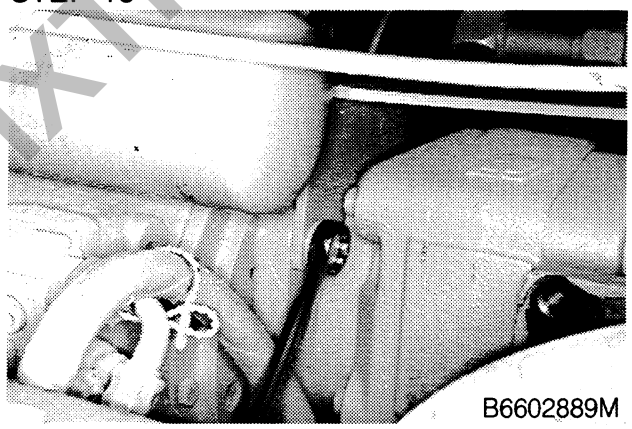
Disconnect the hose from the inlet tube. Install a plug in the hose and a cap on the inlet tube. The thread size is 1-5/16-12.

STEP 18



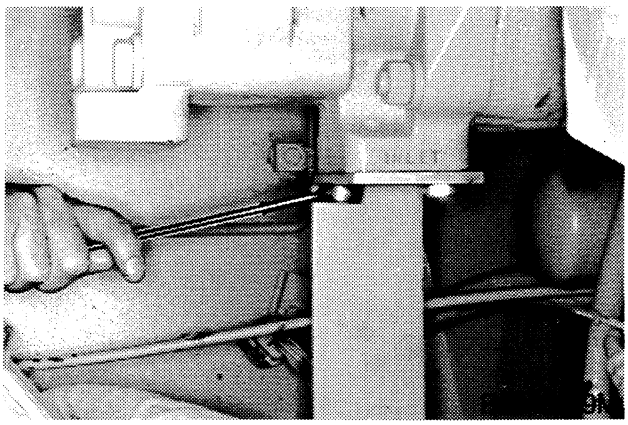
Loosen and remove the cap screws, lock washers, and clamps that hold the suction tube. Move the inlet tube out of the way.

STEP 19



Loosen and remove the cap screws and hardened washers that hold the pump.

STEP 20



Fasten the CAS-2020 lever to the inlet port of the pump.

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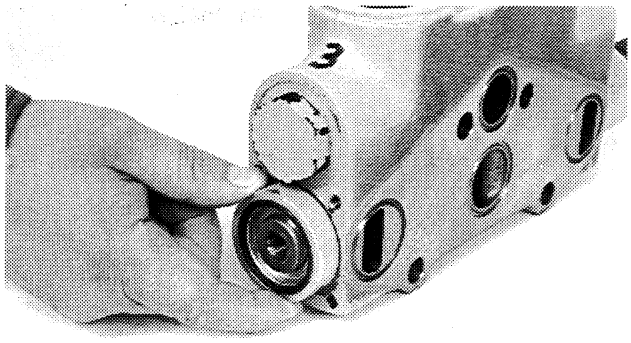
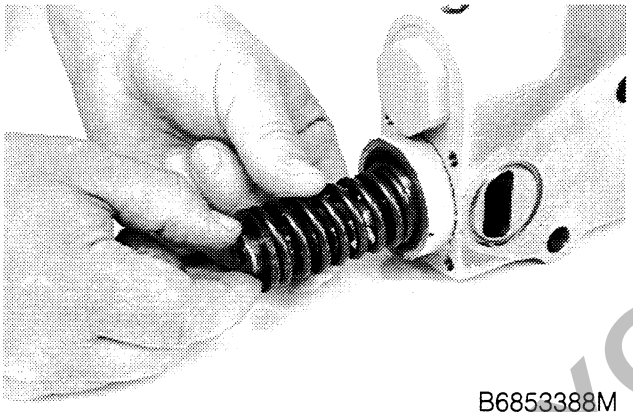
STEP 73



B6862888M

Install the spacer on the other end.

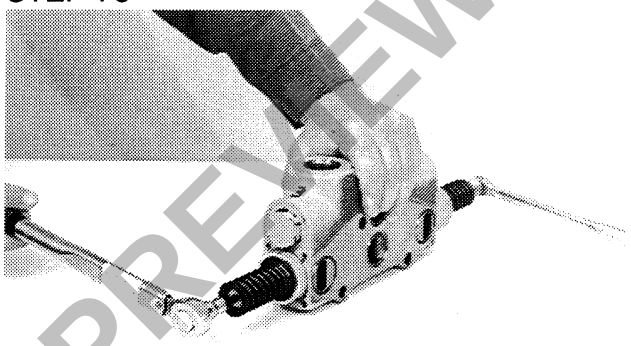
STEP 74



B6853388M

Install the inner spring seat, spring, and outer spring seat and cap screw.

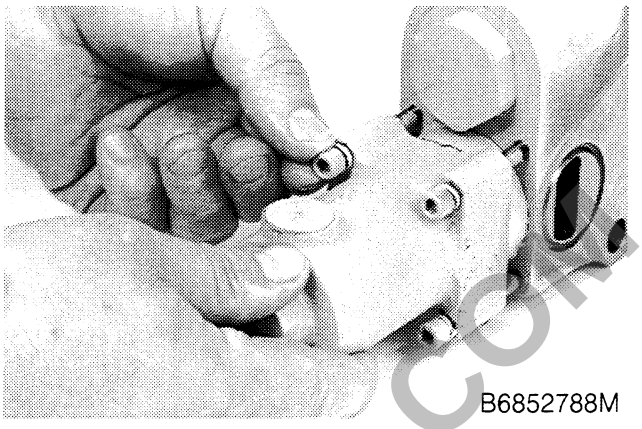
STEP 75



B6863488M

Tighten the special cap screw to 216 to 240 lb inch (24 to 27 Nm).

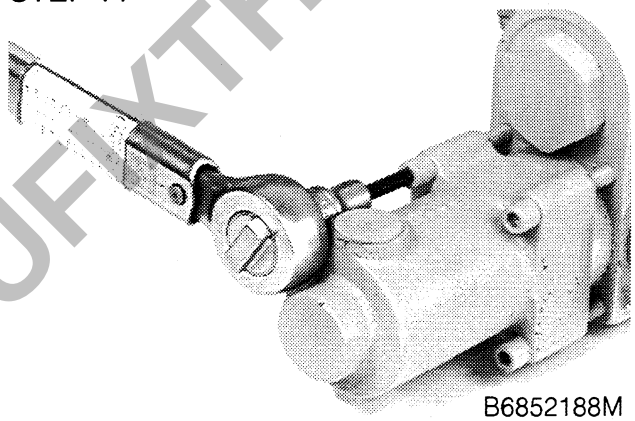
STEP 76



B6852788M

Install the spring cap and Allen head screws and lock washers.

STEP 77



B6852188M

Tighten the Allen head screws to 108 to 132 lb inch (12 to 15 Nm).

Repeat procedure on opposite end spring cap.

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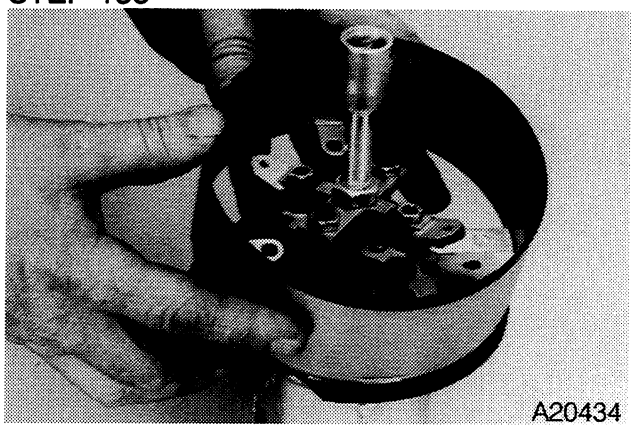
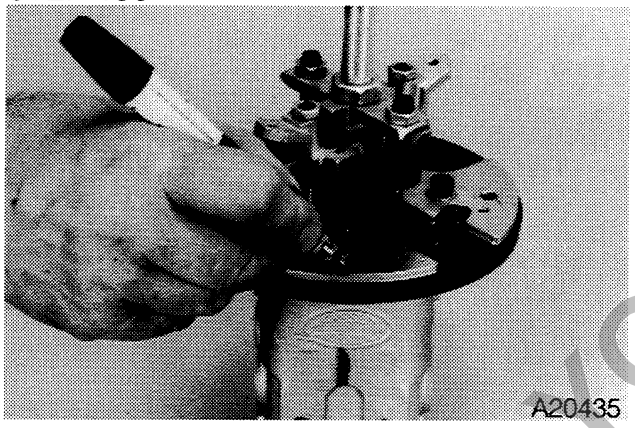
STEP 135



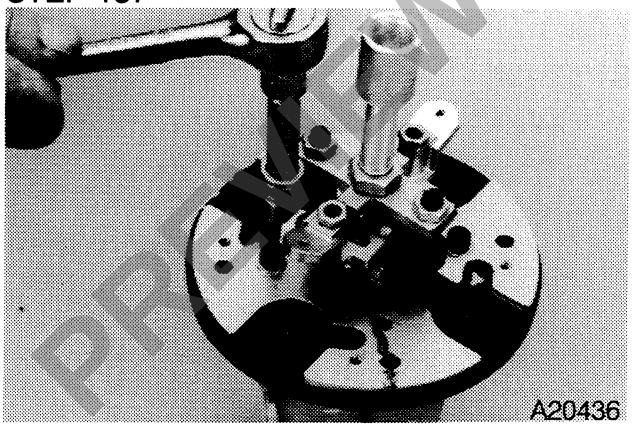
Remove the collar.

STEP 136



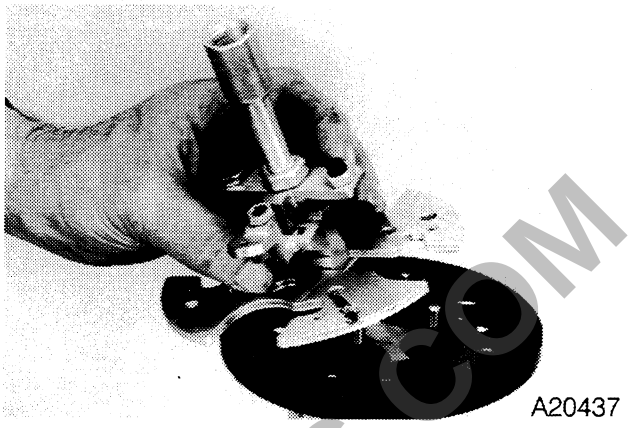
Make marks on the body and plate.

STEP 137



Loosen and remove the two Allen screws that fasten the plates to the body.

STEP 138



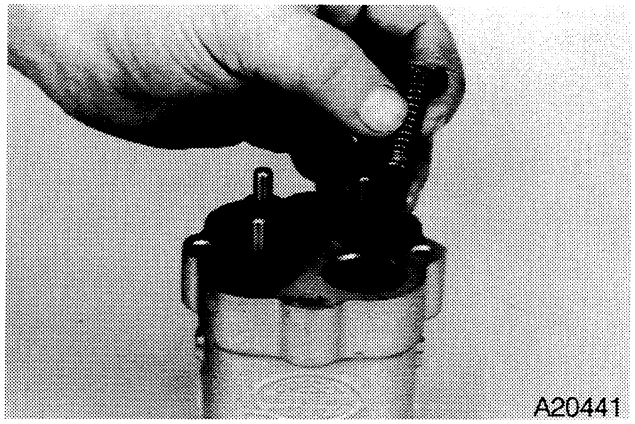
Remove the plates and lever assembly from the body.

STEP 139



One of the plunger assemblies is different than the other three. The guide for plunger assembly in Port YB has a longer stem. Remove all the plunger assemblies.

STEP 140



Remove all the spool assemblies.

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SAFETY PROCEDURES 3

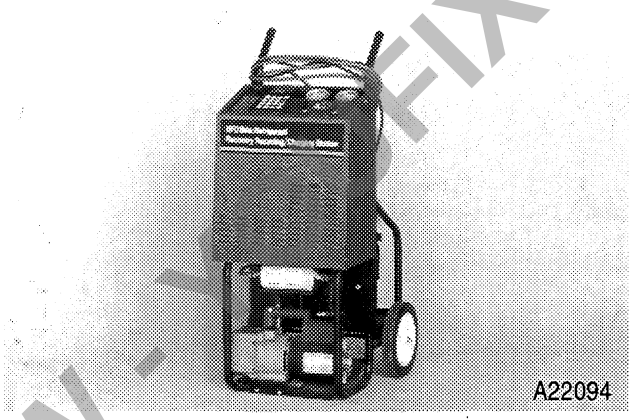
AIR CONDITIONER SYSTEM REFRIGERANT RECOVERY 4

AIR CONDITIONER SYSTEM EVACUATION AND RECHARGING 6
Pressure-Temperature Chart 9

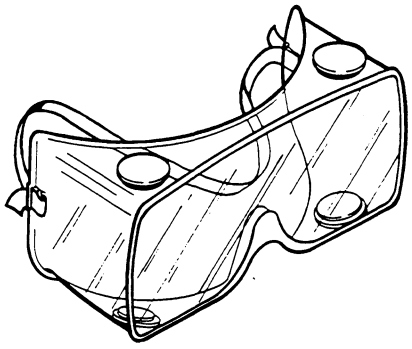
SPECIFICATIONS

Air Conditioning System Refrigerant Capacity ..... 3.5 lbs (1.6 kg)

SPECIAL TOOLS



Refrigerant Recovery, Recycling and Recharging Station OEM-1415



109L7

Safety Goggles CAS-10073-3

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SPECIFICATIONS

Special Torques
Bolts for the Bucket Teeth ..... 380 to 456 lb ft (515 to 618 Nm)

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