

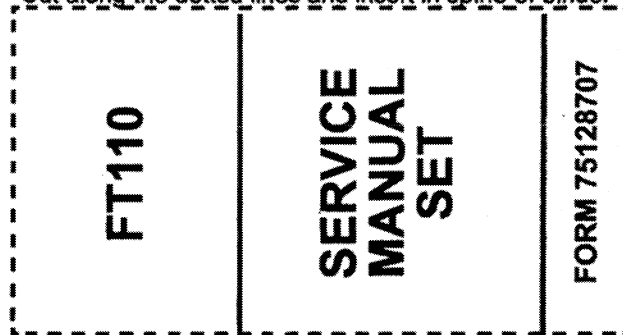
INDEX FT110 SERVICE MANUAL SET FORM NO. 75128707

Service manual set is arranged in the following order	Individual manuals are also available in translation in form numbers listed below
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Service Manuals	English Form No.	Español (Spanish)	Français (French)	Italiano (Italian)	Deutsch (German)
Engine.....	75128709				
Transmission.....	75128708				
Brakes.....	75128709				
Axles.....	75128709				
Hydraulics.....	75128709				
Electrical.....	75128709				
Binder.....	73155403				

The following additional Service Manuals, in English, are not included in the Manual Set, but may be ordered from a Fiatallis representative:

Cut along the dotted lines and insert in spine of binder



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INDEX CARD 95128707

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Cleaning, inspection and legend symbols

2.2.2 Oil Seals, Gaskets, Etc.

Replacement of spring load oil seals, "O"-rings, metal sealing rings, gaskets, and snap rings is more economical when unit is disassembled than premature overhaul to replace these parts at a future time. Further loss of lubricant through a worn seal may result in failure of other more expensive parts of the assembly. Sealing members should be handled carefully, particularly when being installed. Cutting, scratching, or curling under of lip of seal seriously impairs its efficiency. When assembling new metal type sealing rings, these should be lubricated with coat of chassis grease to stabilize rings in their grooves for ease of assembly of mating members. Lubricate all "O"-rings and seals with recommended type Automatic Transmission Fluid before assembly.

2.2.3 Gears and Shafts

If magna-flux process is available, use process to check parts. Examine teeth on all gears carefully for wear, pitting, chipping, nicks, cracks, or scores. If gear teeth show spots where case hardening is worn through or cracked, replace with new gear. Small nicks may be removed with suitable hone. Inspect shafts and quills to make certain they are not sprung, bent, or splines twisted, and that shafts are true.

2.2.4 Housing, Covers, etc.

Inspect housings, covers and bearing caps to ensure that they are thoroughly clean and that mating surfaces, bearing bores, etc..., are free from nicks or burrs. Check all parts carefully for evidence of cracks or conditions which would cause subsequent oil leaks or failures.

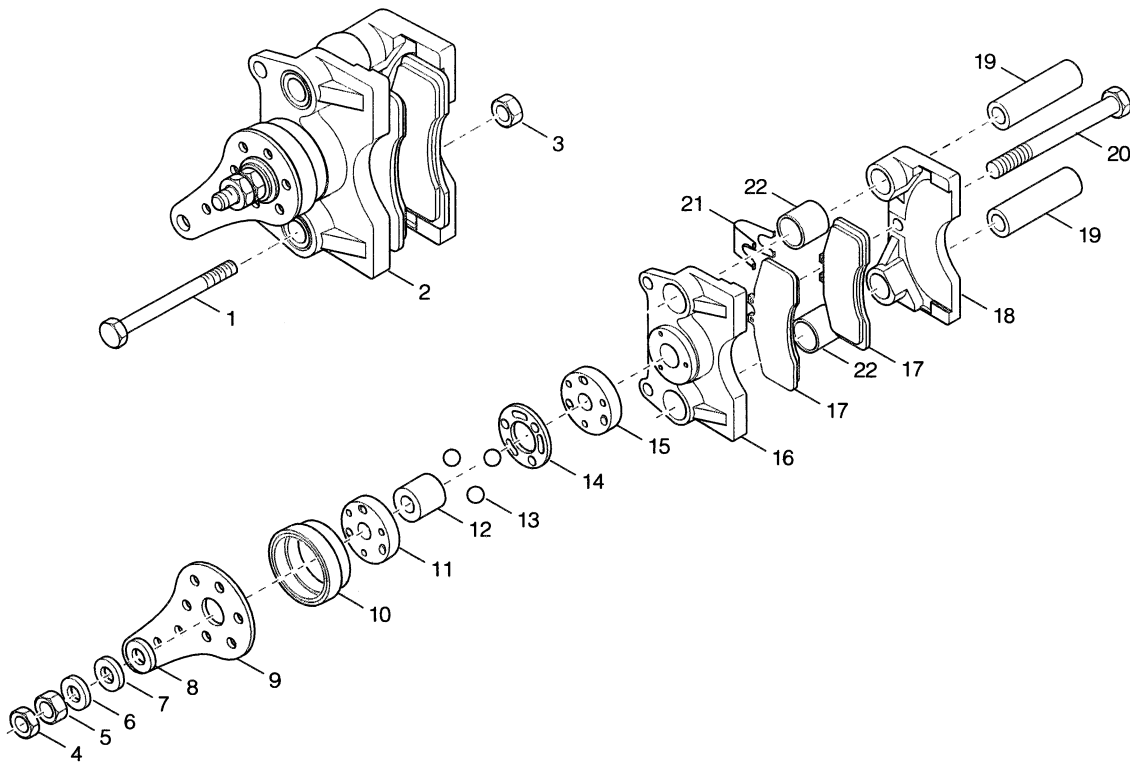
2.3 LEGEND SYMBOLS

	Smontaggio di sottogruppi Disassembly of assembly groups
	Montaggio di sottogruppi Reassemble to from assembly group
	Smontaggio di particolari ingombranti Remove obstruction parts
	Montaggio di particolari ingombranti Reinstall - remount parts which had obstructed disassembly
	Attenzione, indicazione importante Attention! important notice
	Controllare regolare p.e. coppie, misure, pressione etc. Check - adjust e.g. torque, dimensions, pressures etc.
	T = Attrezzature speciali P = Pagina T = Special tool P = Page
	Rispettare direzione di montaggio Note direction of installation
	Controllare esaminare controllo visuale Visual inspection
	Eventualmente riutilizzabile (sostituire se necessario) Possibly still serviceable, renew if necessary

	Sostituire con ogni montaggio Renew at each reassembly
	Togliere - mettere la sicura Unlock - lock e.g. split pin, locking plate, etc.
	Mettere la sicura, incollare (mastice liquido) Lock - adhere (liquid sealant)
	Evitare danni ai materiali, danni ai pezzi Guard against material damage, damage to parts
	Marchiare prima dello smontaggio (per il montaggio) Mark before disassembly, observe marks when reassembl.
	Carricare riempire (olio - lubrificante) Filling - topping up - refilling e.g. oil, cooling water, etc.
	Scarricare olio, lubrificante Drain off oil, lubricant
	Tendere Tighten - clamp ; tightening a clamping device
	Inserire pressione nel circuito idraulico Apply pressure into hydraulic circuit
	Pulire To clean

4.4 INSTRUCTIONS FOR LINING REPLACEMENT AND ADJUSTMENT OF PARKING BRAKE ASSEMBLY

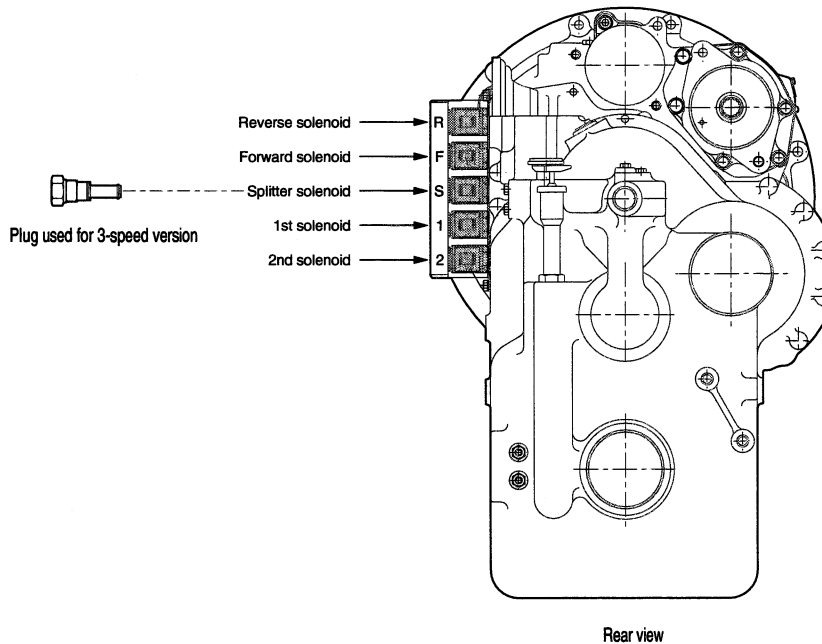
1. Loosen two adjustment locking nuts (4 & 5) enough to slide each torque plate (16 & 18) away from disc far enough to provide clearance to remove old carrier and lining assemblies and install new ones. (It may be necessary to remove one or both nuts).
2. Collapse lining retraction spring (21) and remove from brake head assembly.
3. Slide torque plates (16 & 18) away from disc, move carrier and lining assemblies (17) out of pockets, and remove from the brake head assembly from the side.
4. Install new carrier and lining assemblies (17) in each torque plate (16 & 18).
5. Install lining retention spring (21) into brake head assembly.
Be sure spring's "feet" are positioned properly in holes in both lining carrier assemblies (17).
6. Tighten inner adjusting nut (5) until firm contact is made with the disc by the linings.
Torque to (100 lbs.-inch) 11 N.m make certain lever is in proper operating position for application.
7. Back off inner adjusting nut 4 (5) to 5 flats and check that disc is free to move (total clearance 0.8 - 1.1 mm (0.031" - 0.043")).
8. Tighten outer locking nut (4) against inner adjusting nut to lock adjustment bolt in place.
Torque to (45 to 55 lb.-ft.) 61 - 75 N.m.



Operation of the transmission

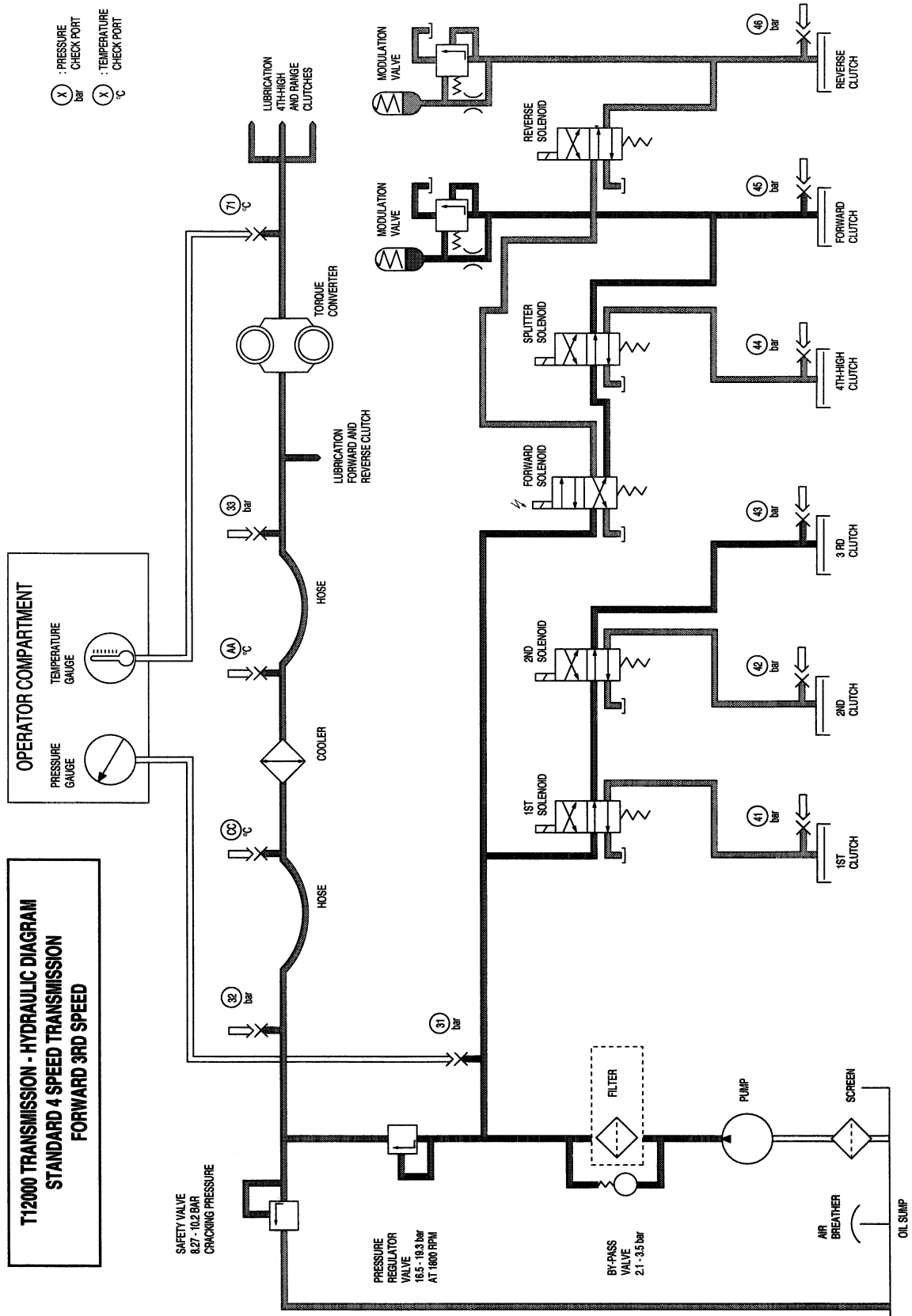
6.1.5 The transmission controls (refer to hydraulic diagram)

The transmission is controlled by the direction and range solenoids. The solenoids are mounted on the left side of the transmission case. When the selected direction and range solenoids are energised, oil under pressure will flow through tubes and passages to the selected clutch shafts. Oil sealing rings are located on the clutch shafts. These rings direct oil under pressure through a drilled passage way in the shaft to the desired clutch.

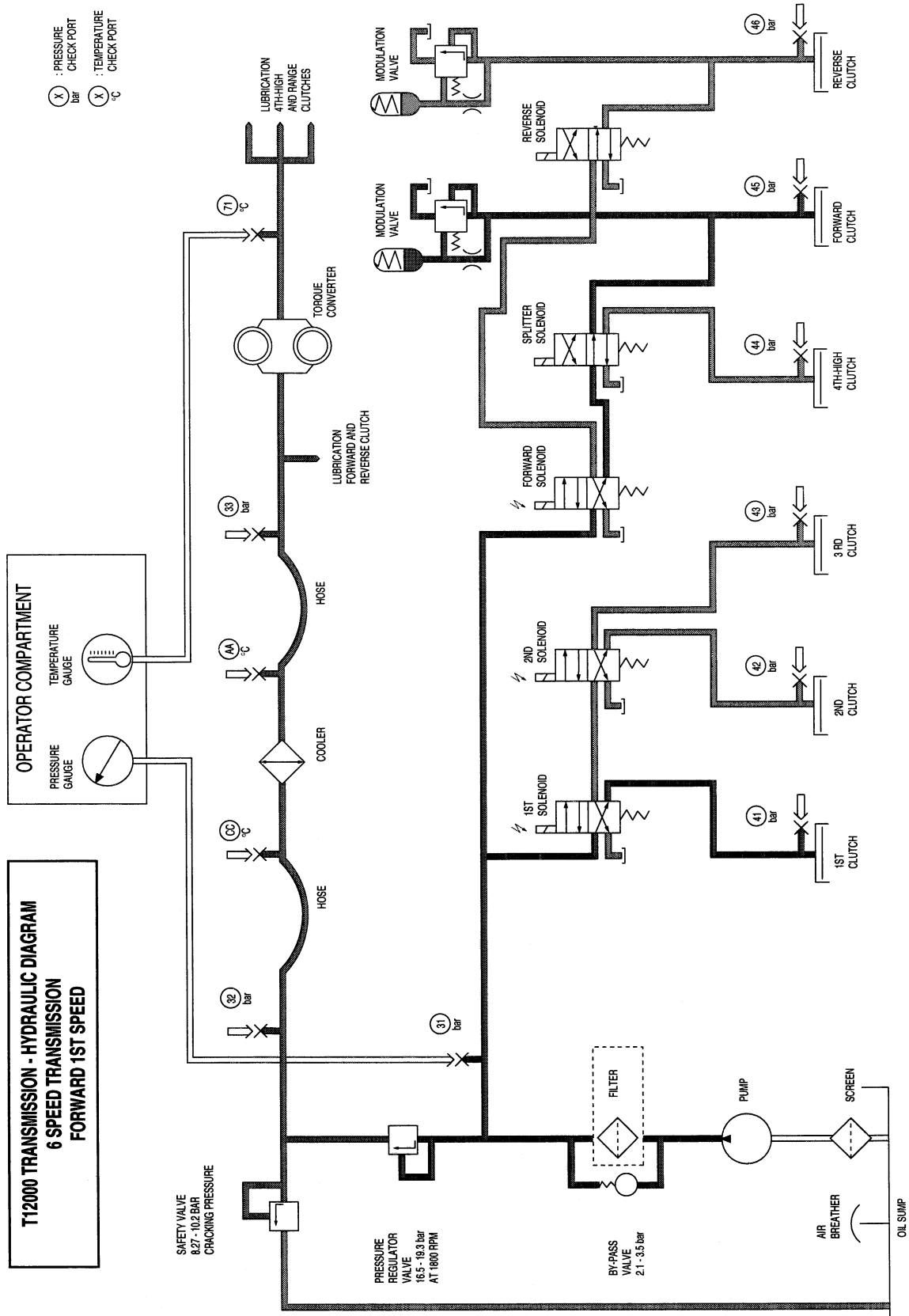


 THE TRANSMISSION CONTROLS

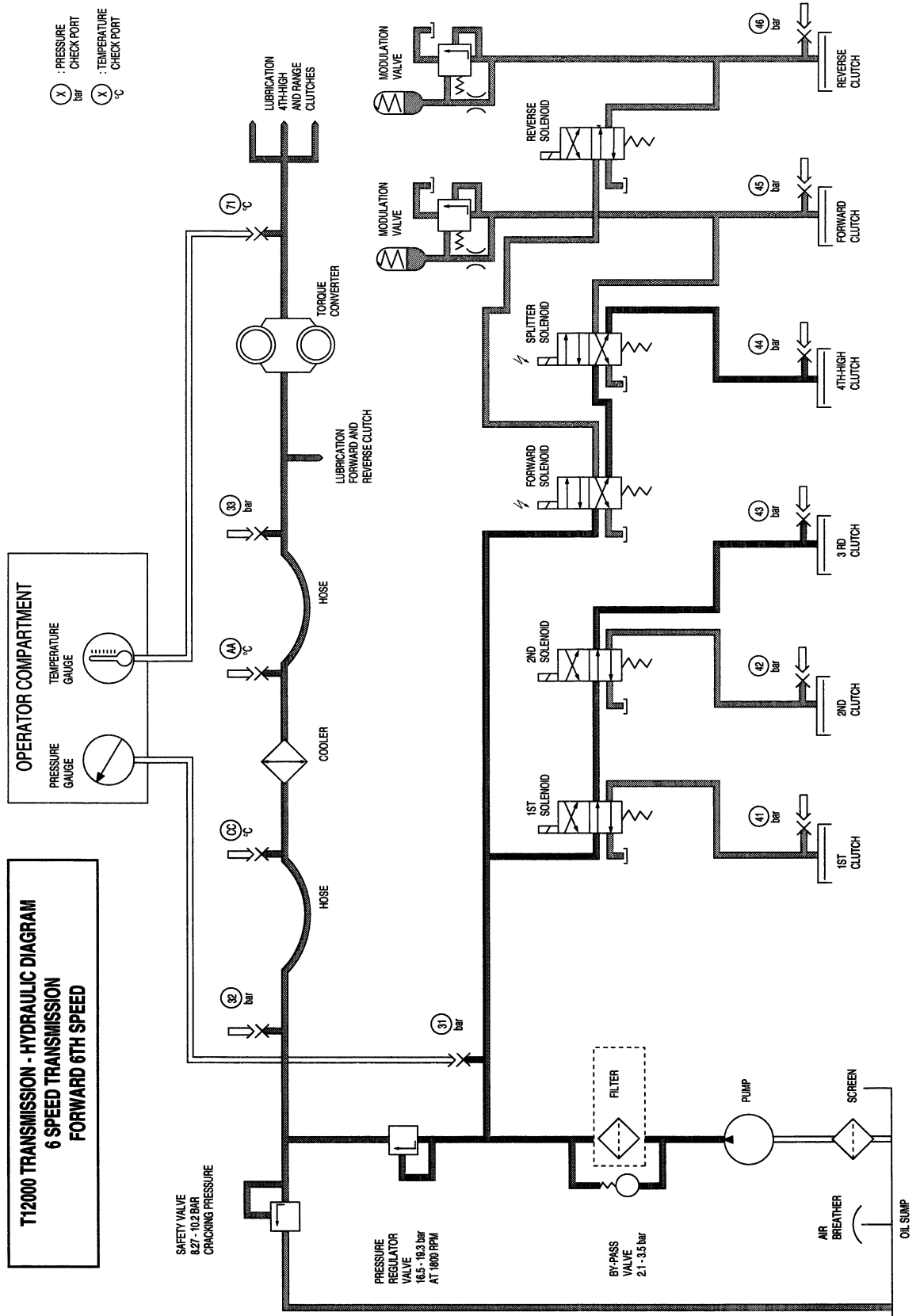
6.3.2.1.4 Forward 3rd speed (continued)



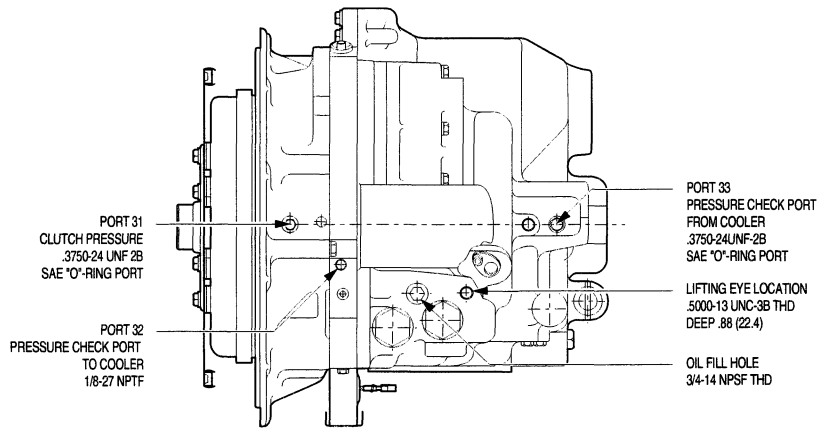
6.3.3.2 Forward 1st speed (continued)



6.3.3.7 Forward 6th speed (continued)



7.4 CHECK POINTS (CONTINUED)



TOP VIEW

GROUP - TRANSMISSION CASE AND PLATE

Item	Description	Quantity
1	Case - Transmission	1
2	Breather - Air	1
3	Plug - Oil level	1
4	"O"-ring	1
5	Plug - Magnetic drain	1
6	Pin - Plate to transmission case dowel	2
7	Gasket - Plate to transmission case	1
8	Ring - Oil supply tube seal	1
9	Clip - Oil supply tube retainer	1
10	Spacer - Plate	1
11	Seat - Safety valve	1
12	Snap ring - Seat	1
13	Poppet - Converter safety valve	1
14	Spring - Converter safety valve	1
15	Washer - Poppet retaining	1
16	Plug	1
17	Plug	3
18	"O"-ring	3
19	Screw - Plate to transmission case	7
20	Screw - Plate to transmission case	2
21	Lockwasher - Plate to transmission case screw	9
22	Assembly - Tube & screen	1
23	Plug - Filler	1
24	Plug	1
25	Plug	1
26	Plug - Drain back port	1
27	Tube - Dipstick	1
28	Assembly - Dipstick	1
29	Plug - Speed sensor port	2
30	"O"-ring - Speed sensor	2
31	Screw - Speed sensor	2
32	Screw - Baffle hole	1
33	Washer - Baffle seal	1
34	Screw	1
35	Washer - Seal	1
36	Washer	1
37	Nut	1
38	Plug - Dipstick hole	1

GROUP - FORWARD AND REVERSE SHAFT

Item	Description	Quantity
1	Assembly - Turbine shaft, drum & plug	1
2	Sleeve - Oil distributor	1
3	Screw - Retainer	1
4	Ring - Piston	3
5	Piston - Clutch	2
6	Seal - Clutch piston (Outer)	2
7	Seal - Clutch piston (Inner)	2
8	Plate - End	2
9	Snap ring - End plate	2
10	Plate - Clutch piston wear	2
11	Assembly - Disc spring	2
12	Retainer - Snap ring	2
13	Snap ring - retainer	2
14	Disc - Outer (6 forward - 6 reverse)	12
15	Disc - Inner (6 forward - 6 reverse)	12
16	Bearing - Clutch gear thrust	4
17	Washer - Clutch gear thrust	8
18	Bearing - Turbine shaft rear	1
19	Bearing	4
20	Spacer	2
21	Gear - Reverse clutch	1
22	Gear - Forward clutch	1

GROUP - OUTPUT SHAFT (FRONT ONLY)

Item	Description	Quantity
1	Shaft - Output	1
2	Bearing - Output shaft	1
3	Sleeve - Oil seal	1
4	"O"ring - Oil seal sleeve	1
5	Seal - Output shaft bearing	1
6	Snap ring - Output shaft bearing	3
7	Snap ring - Gear & bearing retaining	1
8	Plug - End	1
9	Snap ring - Bearing retainer	1
10	Bearing - Output shaft	1
11	Gear - Output shaft	1

GROUP - DRIVE PLATE

Item	Description	Quantity
1	Assembly - Drive plate and (when used) weld nut	1
2	Plate - Drive	2
3	Ring - Drive plate backing	1
4	Screw - Drive plate mounting	6
5	Lockwasher - Drive plate mounting screw	6

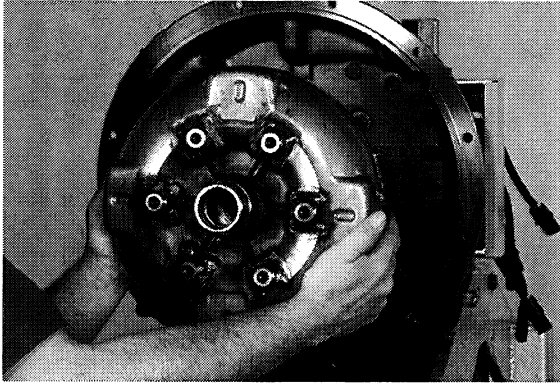


Figure 7
Remove torque converter assembly.

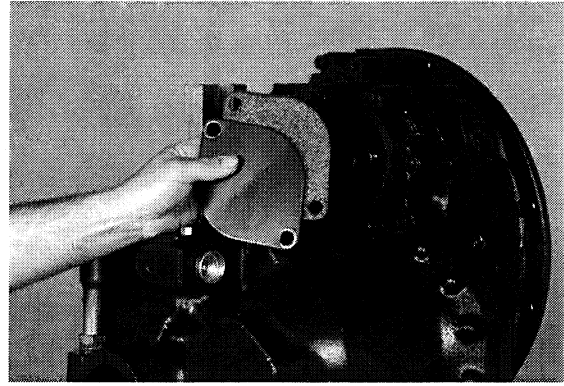


Figure 10
Remove charging pump permanent pump hole cover (not used when auxiliary pump is used).

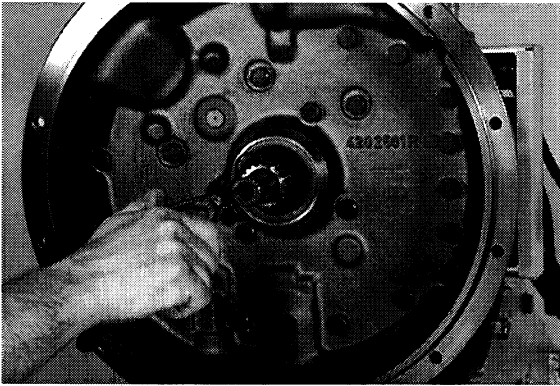


Figure 8
Remove torque converter to shaft locating ring.

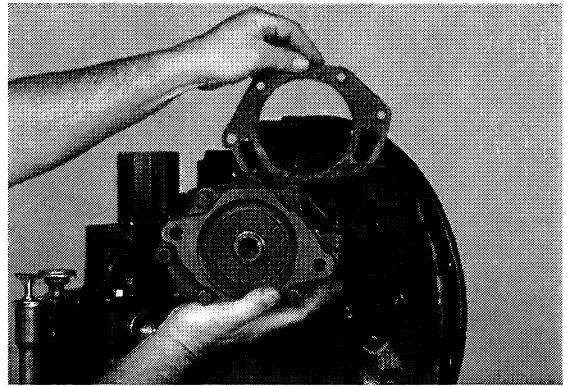


Figure 11
Remove pump mounting bolts and washers.
Remove pump and gasket.

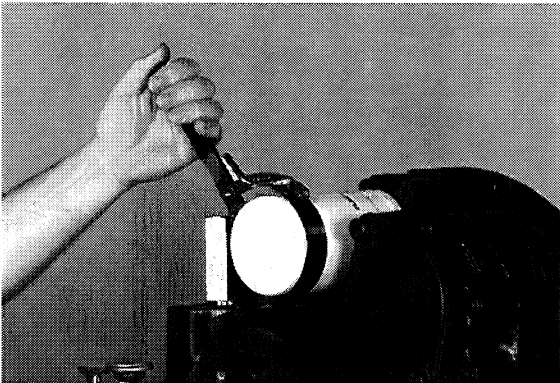


Figure 9
Remove filter assembly.

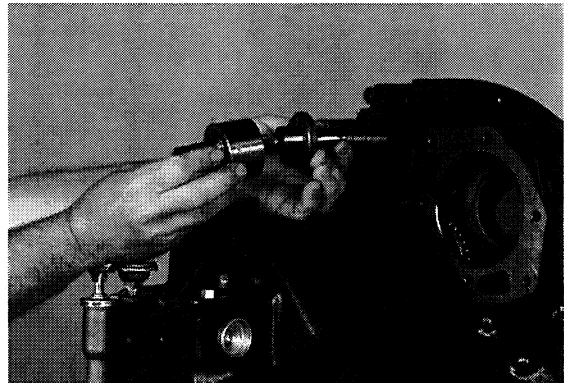


Figure 12
Remove pressure regulator and regulator sleeve.
NOTE: special tool can be fabricated.
See Figure 427.



Disassembly low (1st) clutch

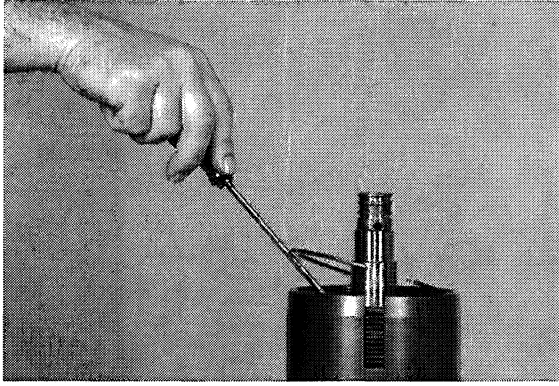


Figure 65
Remove clutch disc end plate retainer ring.

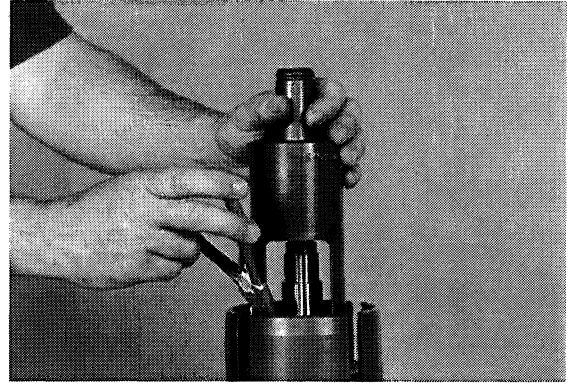


Figure 68
Compress disc springs and remove retainer ring.

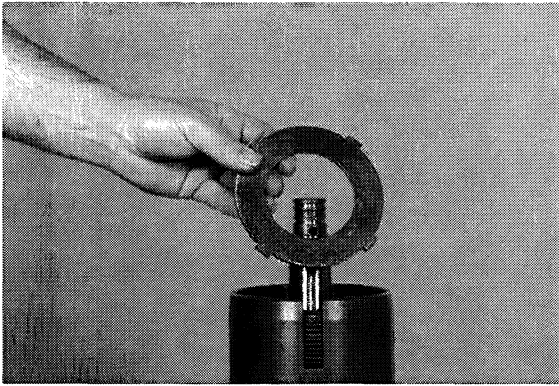


Figure 66
Remove clutch disc end plate.

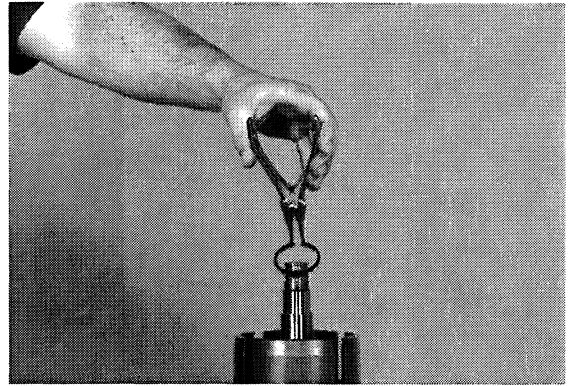


Figure 69
Remove retainer ring.

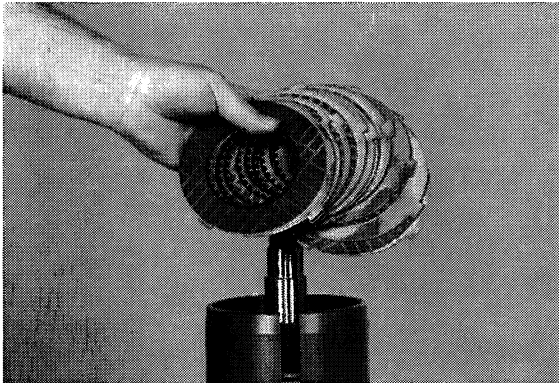


Figure 67
Remove inner and outer clutch discs.

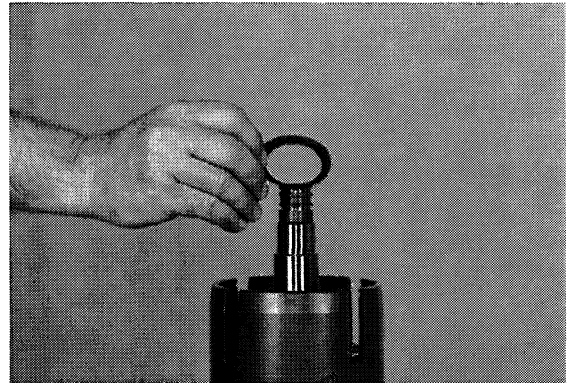


Figure 70
Remove retainer ring retainer.

Reassembly 2nd clutch

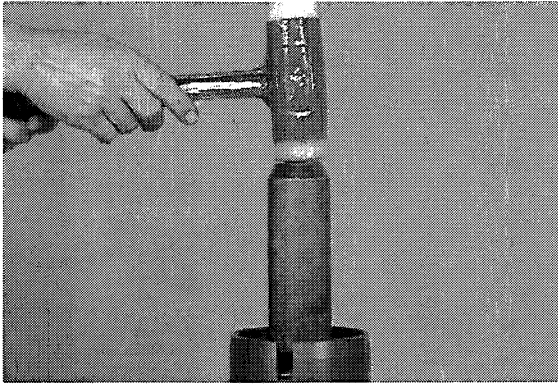


Figure 121

Use a sleeve with the proper inner diameter to fit over shaft and against retainer ring. A sharp blow with a shaft hammer will compress springs and seat retainer ring. Be sure ring is in full position in groove.

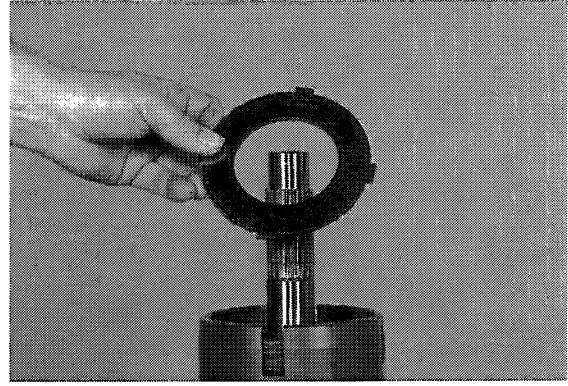


Figure 124

Install clutch disc end plate.

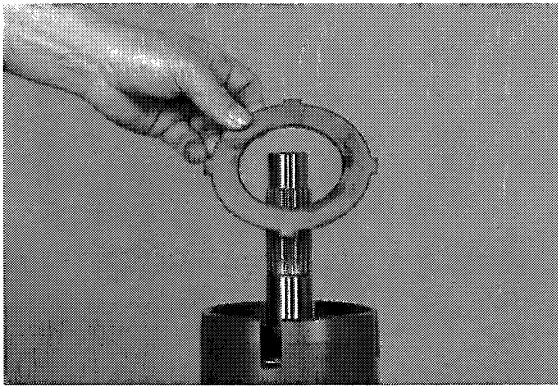


Figure 122

Install first steel (outer) clutch disc.

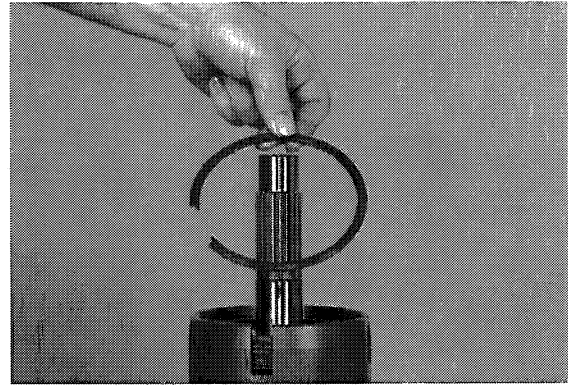


Figure 125

Install end plate retainer ring.

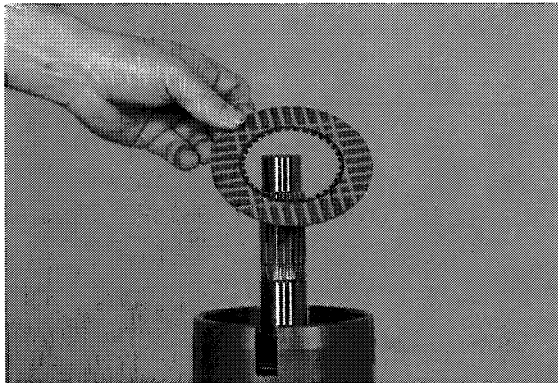


Figure 123

Install first friction (inner) clutch disc. Alternate steel and friction until five (5) steel and five (5) friction discs are in position.

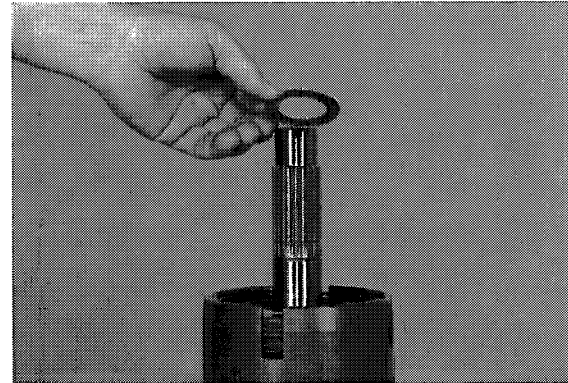


Figure 126

Position thrust bearing inner washer on clutch shaft.

Reassembly 4th clutch

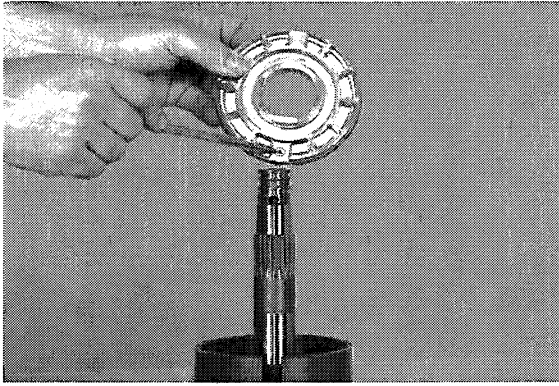


Figure 169

Clutch piston bleed ball must be clean and free of any foreign material. Refer to the cleaning and inspection page. For the 3-speed version, proceed to figure 189

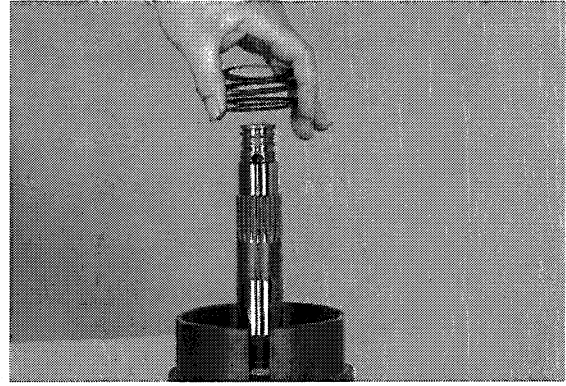


Figure 172

Install piston return disc springs. First spring with large diameter of bevel towards wear plate. Alternate five (5) springs. **NOTE:** see page 10-85.

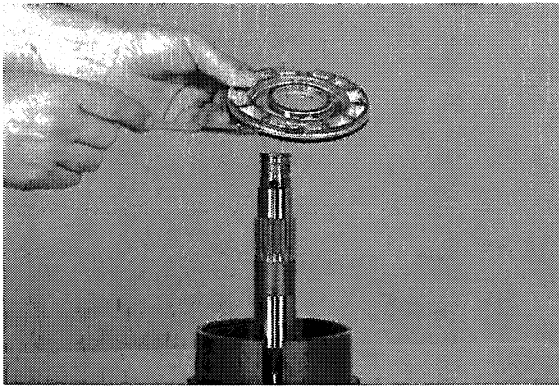


Figure 170

Install inner and outer clutch piston seal rings. Size inner ring as explained in figure 93. Install clutch piston in clutch drum. Use caution as not to damage sealing rings.

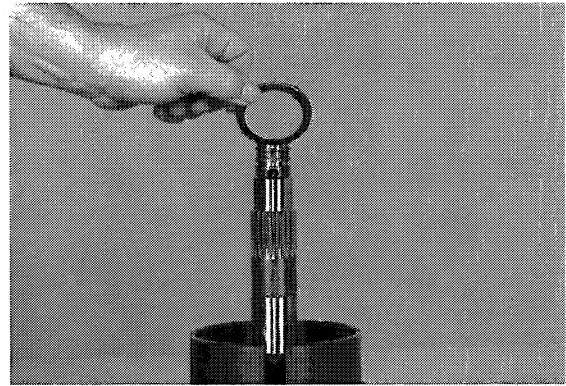


Figure 173

Position return spring ring retainer on clutch shaft.

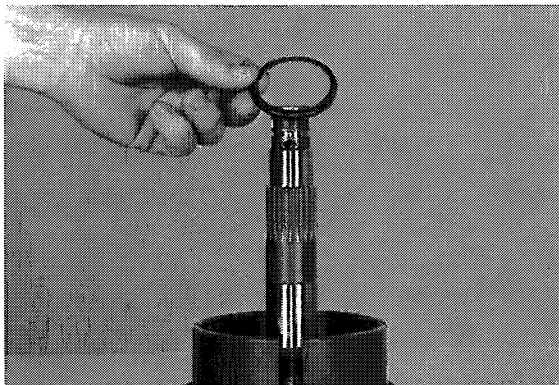


Figure 171

Install clutch piston wear plate.

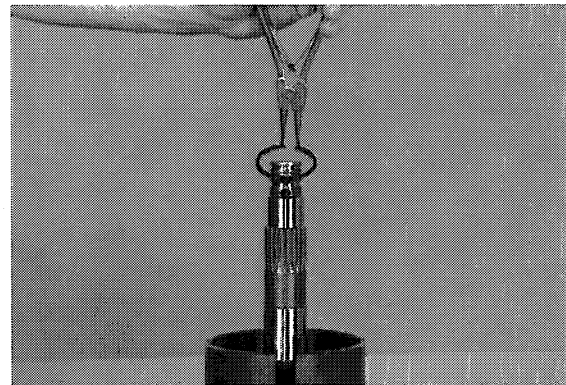


Figure 174

Start ring on shaft with snap ring pliers.

Disassembly forward clutch

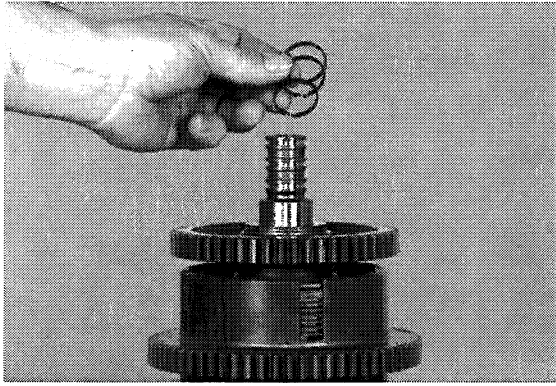


Figure 226
Remove clutch shaft oil sealing rings.

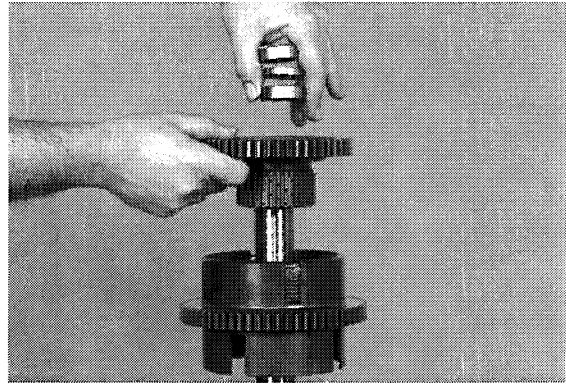


Figure 229
Remove bearings and spacer from clutch gear.

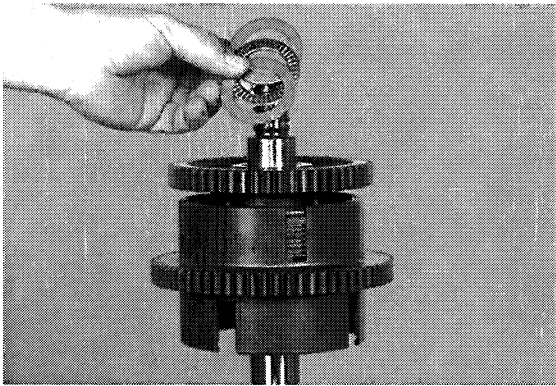


Figure 227
Remove outer thrust washer, thrust bearing and inner thrust washer.

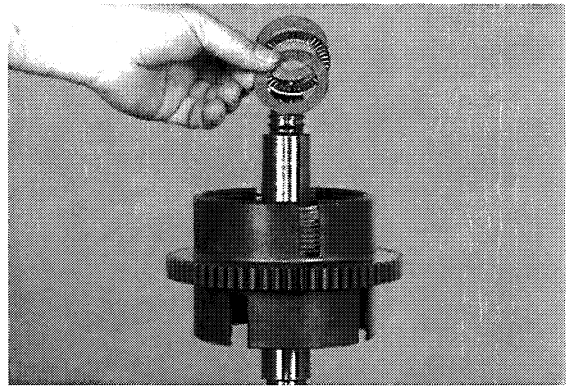


Figure 230
Remove outer thrust washer, thrust bearing and inner thrust washer.

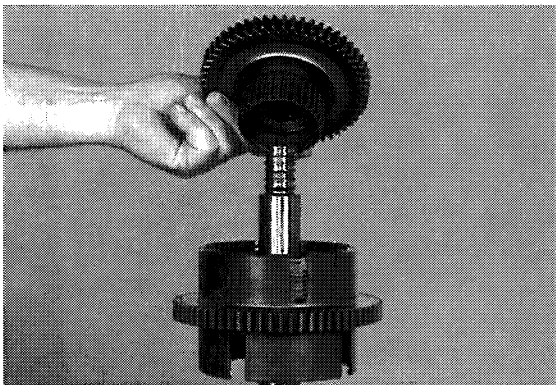


Figure 228
Remove clutch gear and disc hub.

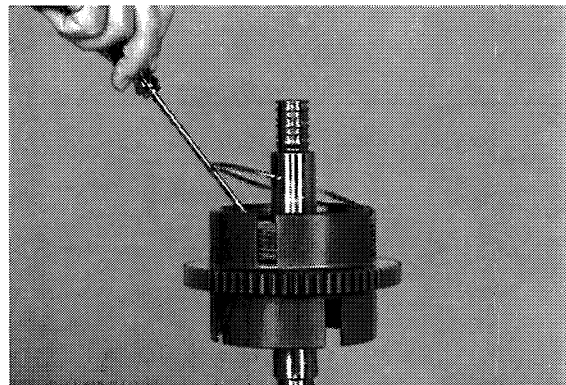


Figure 231
Remove end plate retainer ring.

Reassembly reverse clutch

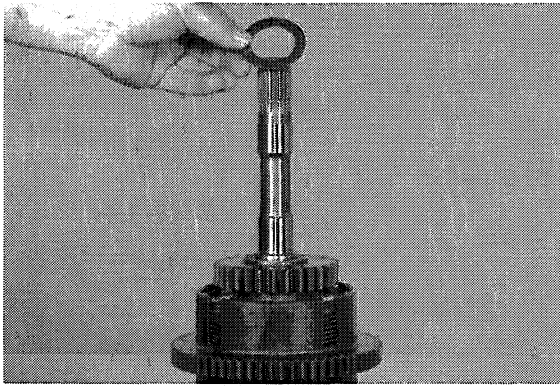
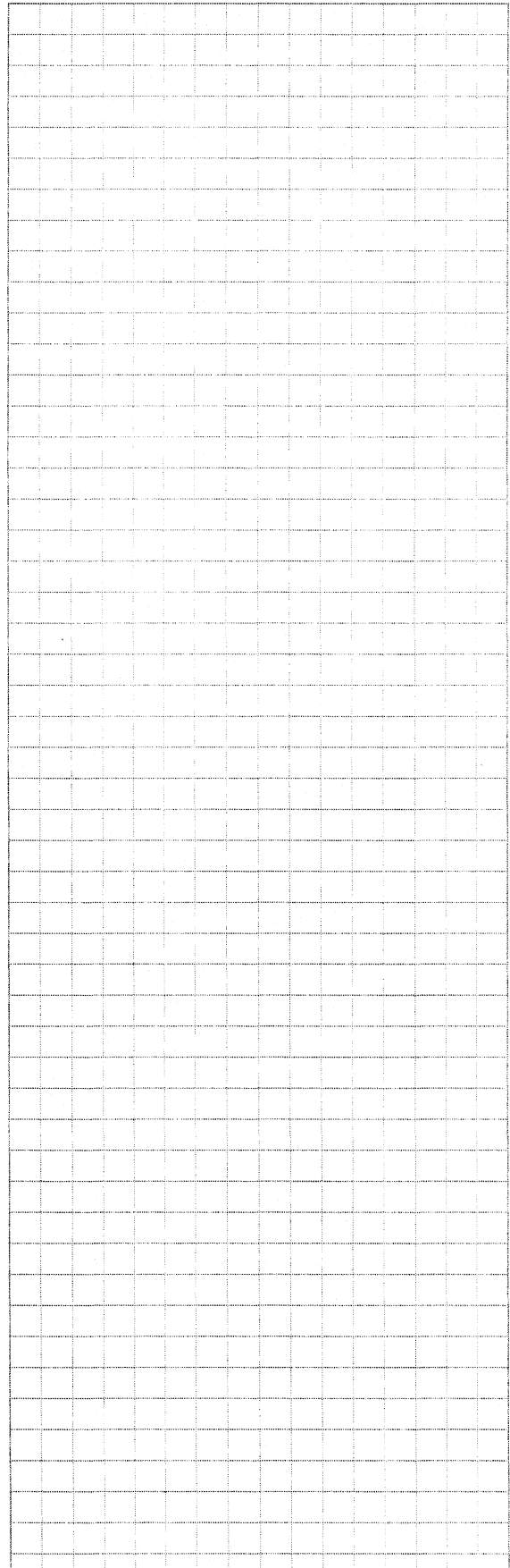
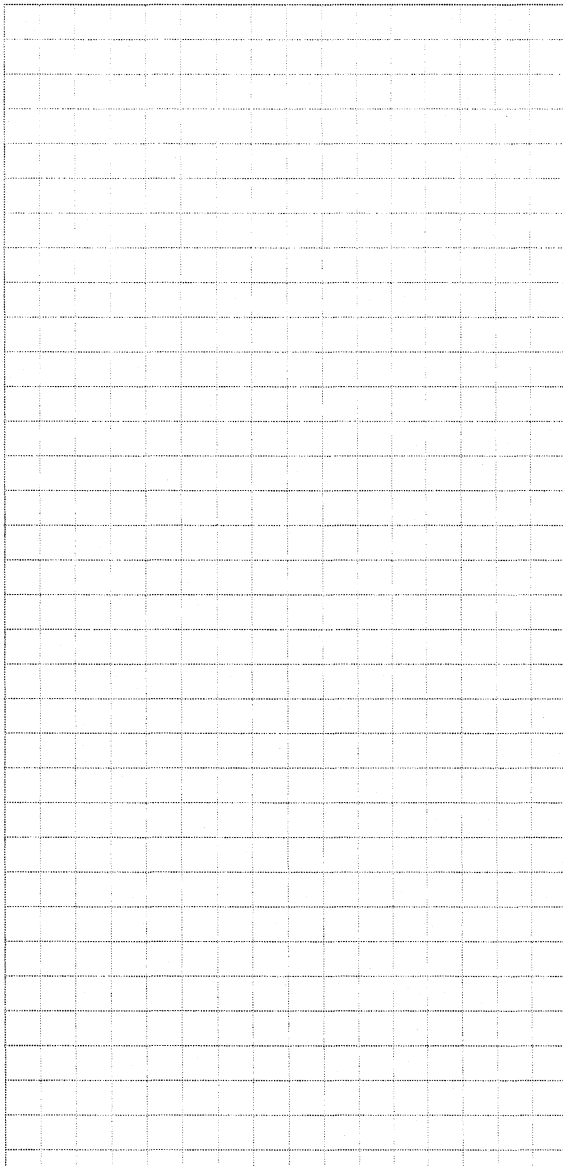


Figure 277
Position outer thrust washer on shaft.



Reassembly spacer plate

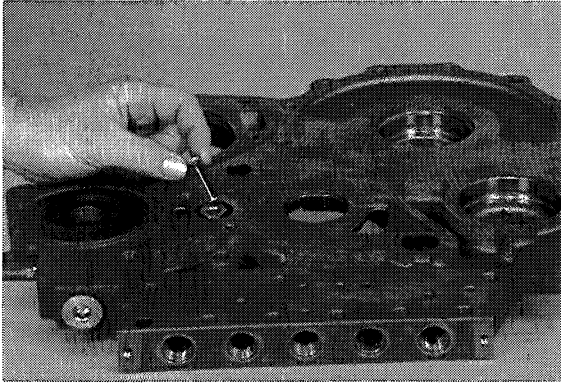


Figure 320

From transmission side of spacer plate, position converter safety valve poppet in bore in spacer. Refer to the cleaning and inspection pages.

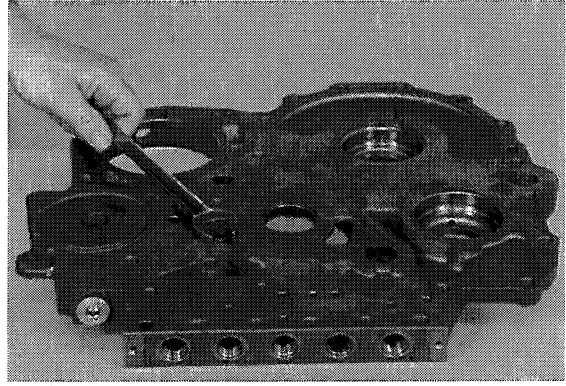


Figure 323

Install plug and seal washer.

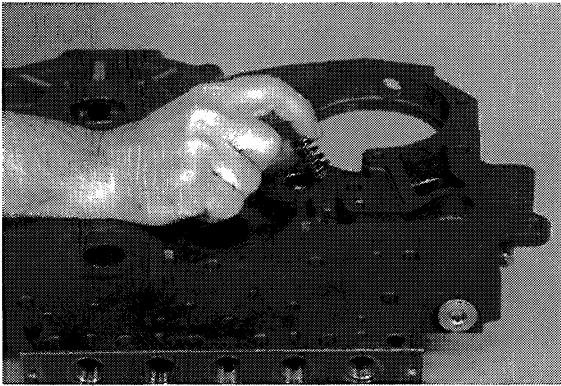


Figure 321

Turn spacer over and position safety valve spring on poppet.

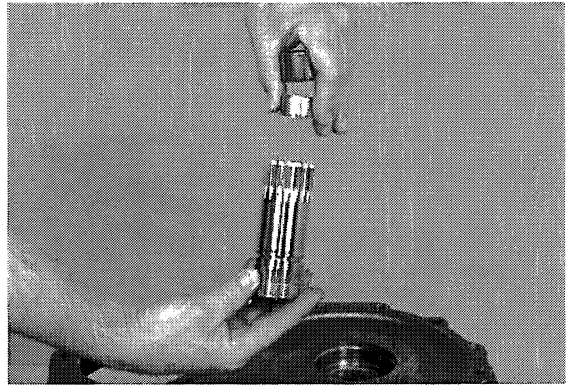


Figure 324

If stator support bushing was removed, install bushing in support. Install needle bearing in stator support.

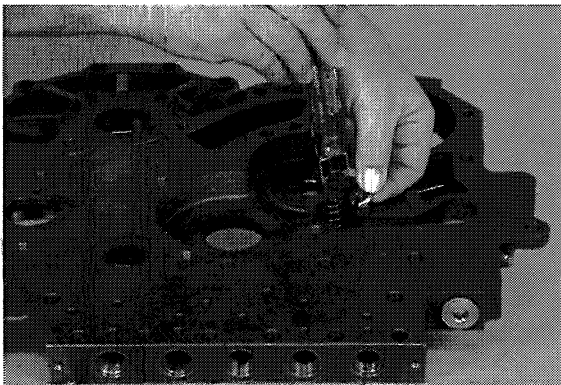


Figure 322

Compress spring and install poppet retaining washer. **NOTE:** end of spring must go in recessed side of washer.

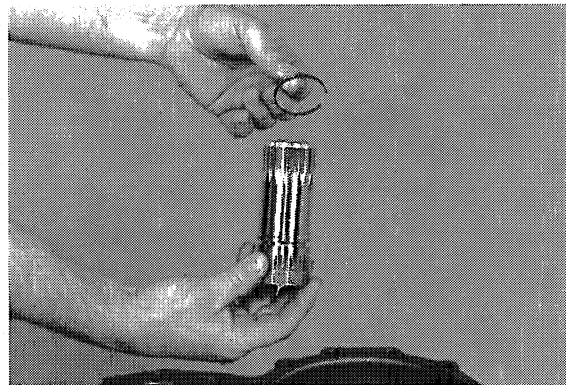


Figure 325

Install stator support oil sealing ring expander ring.

Reassembly transmission

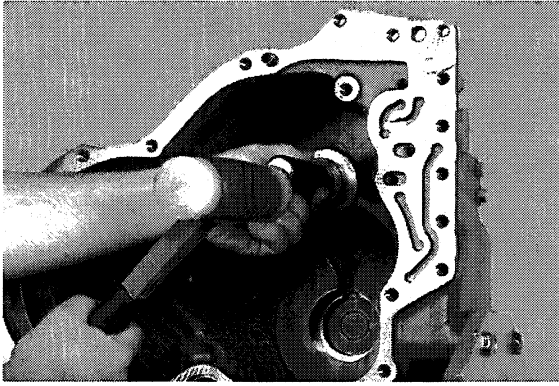


Figure 373

Install forward - reverse oil distributor sleeve in transmission case with inside diameter chamfer out (towards front of transmission) and the notch in the distributor aligned up with the retaining set screw hole in the transmission case. Refer to the cleaning and inspection pages.

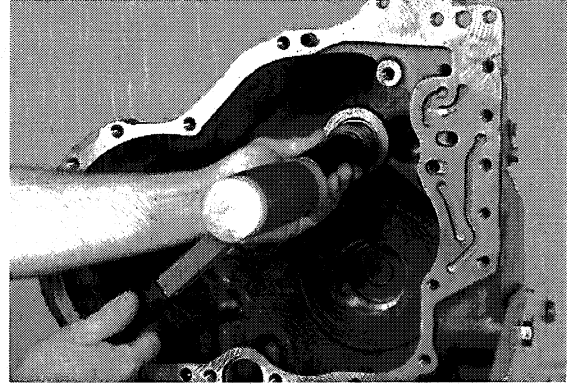


Figure 376

Install reverse and forward clutch shaft rear bearing in transmission case.

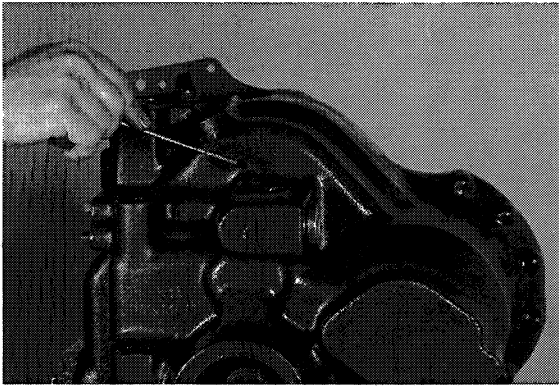


Figure 374

Apply Loctite #243 and install set screw in transmission case and in oil distributor sleeve.

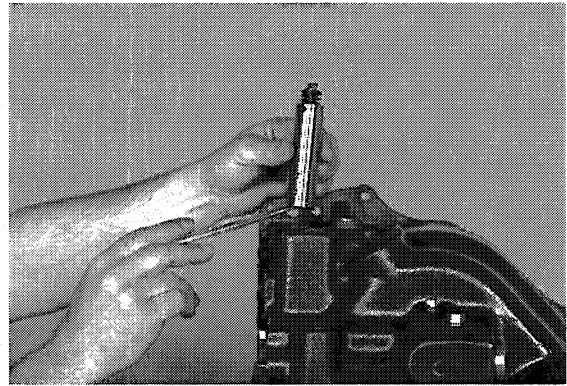


Figure 377

Position a new "O"-ring on lower end of the modulation valve sleeve and spring assembly. Install "O"-ring on other valve sleeve. **NOTE:** for single modulation and hydraulic inching see section 11.1.

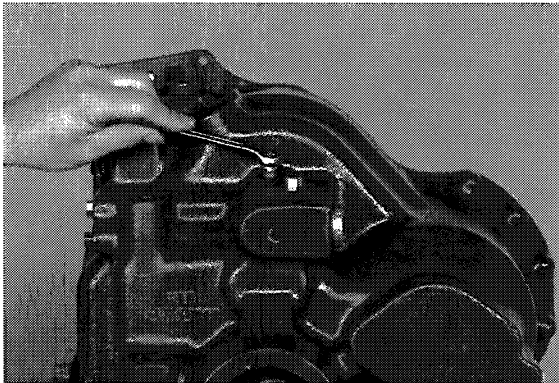


Figure 375

Install set screw plug.

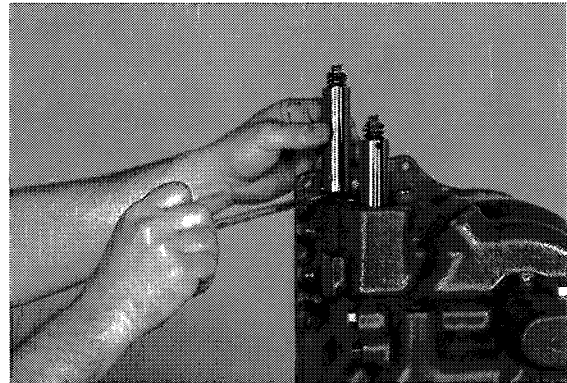


Figure 378

Install valve or valves in transmission case.

Reassembly transmission

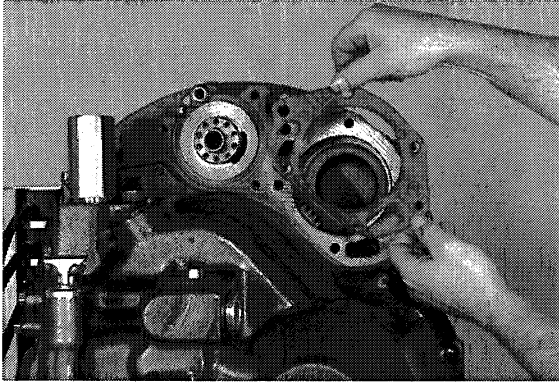


Figure 428

Position new charging pump to converter housing gasket.

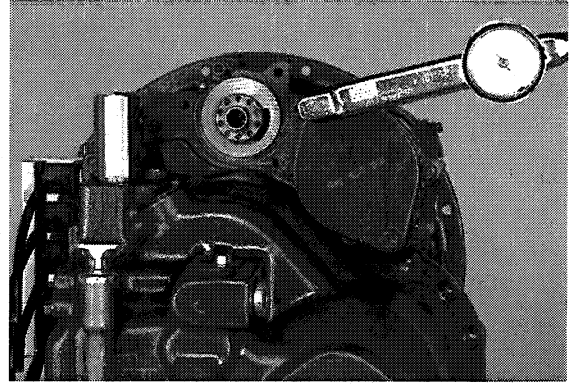


Figure 431

If auxiliary pump is used, it is not necessary to install the permanent pump hole cover. With new gasket in place, install pump hole cover on charging pump. Install bolts and washers and tighten to specified torque. See torque chart.

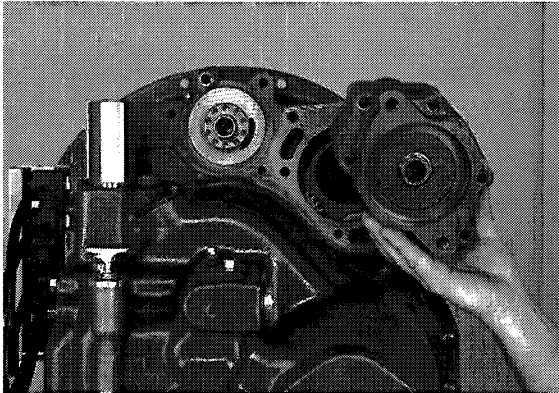


Figure 429

Install charging pump in converter housing.

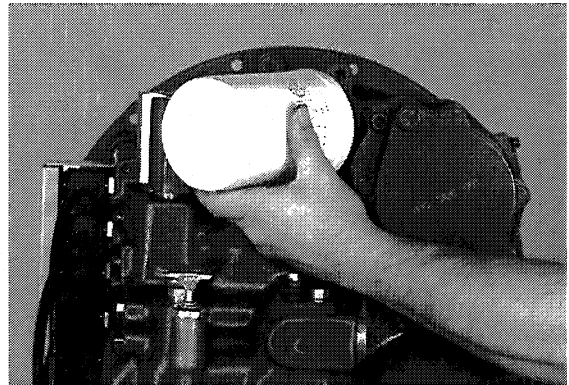


Figure 432

Install oil filter on regulating valve. Tighten filter to 20-25 lbf. ft [27-34 N.m]. If parking brake is not used proceed to figure 436.

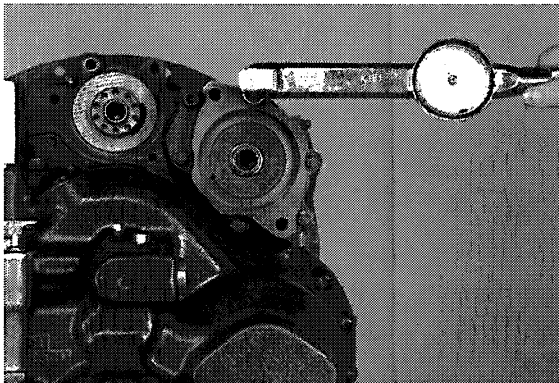


Figure 430

Install charging pump to converter housing bolts and washers and tighten to specified torque. See torque chart.

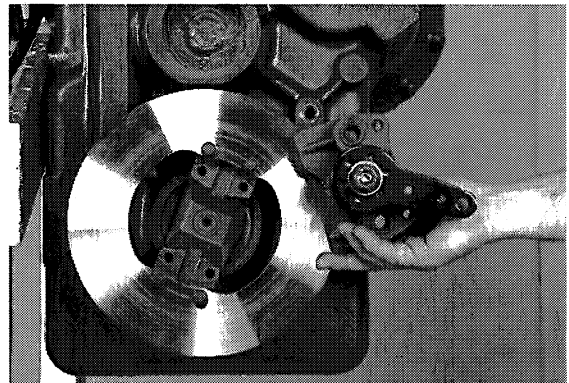


Figure 433

Position calliper brake assembly on brake disc.

Disassembly single modulator valve assembly

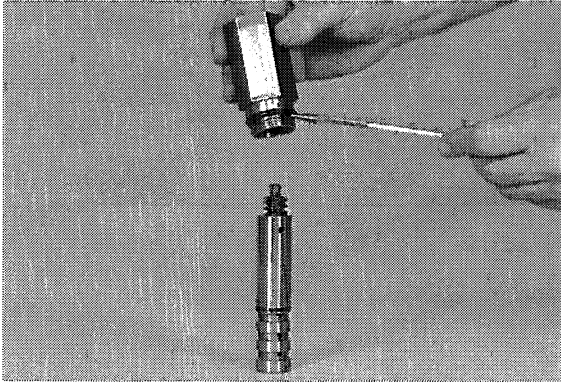


Figure 10
Remove modulator valve body "O"-ring.

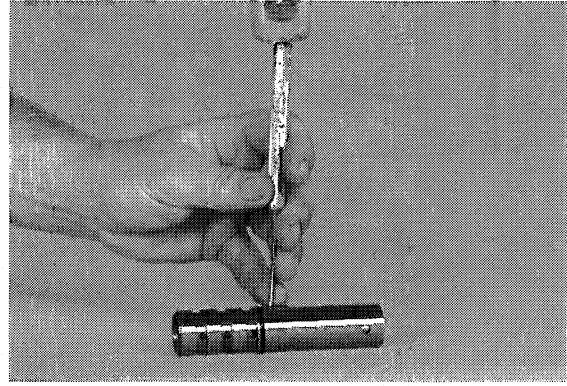


Figure 13
Remove modulator sleeve pin.

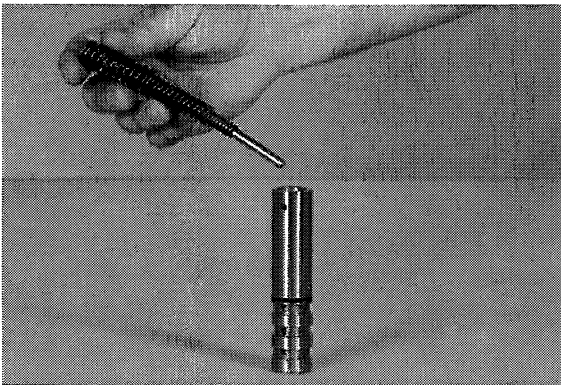


Figure 11
Remove modulator valve outer, middle and inner springs and spring stop ref. figure 7.

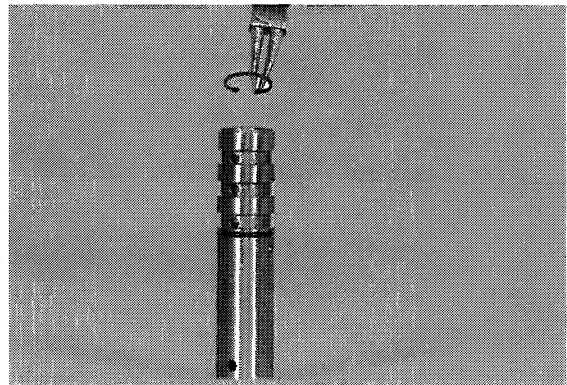


Figure 14
Remove regulator spool assembly retainer ring.

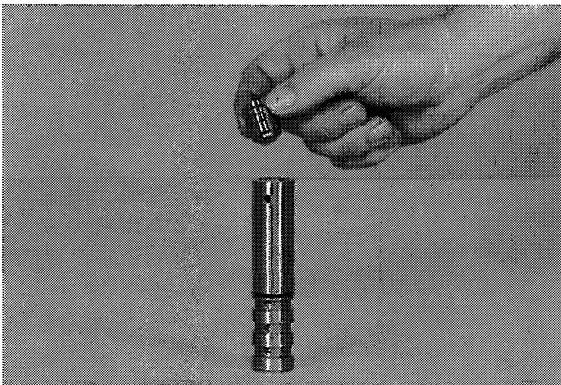


Figure 12
Remove accumulator spool. Ref. figure 8.

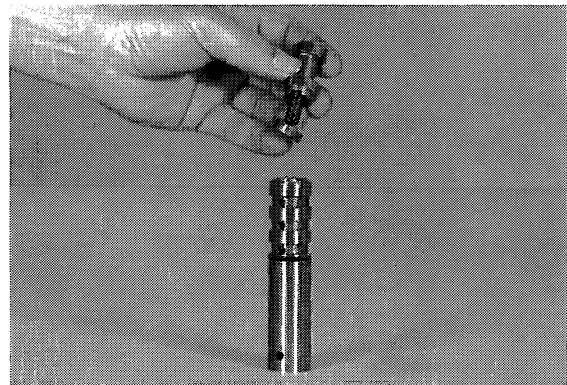


Figure 15
Remove regulator spool stop, spring and spring and sleeve assembly .

Options

11.2 MT SECTION

The information contained herein must be used in conjunction with a T12000 ID section. The MT model is the midship mounted T12000 series transmission with an integral converter unit.

11.2.1 Sectional views and parts identification

11.2.2 Assembly instructions

FIATALLIS BACKHOE LOADER

פּוֹרְטָלִי

MACHINE SHOWN WITH
OPTIONAL EQUIPMENT



- NET FLYWHEEL POWER 73.8kW/99HP
- DIG DEPTH STANDARD: 535cm/17'6"
HED: 655 cm/21'6"
- OPERATING WEIGHT 9,149 kg/20,170 lb.
to 10,249 Kg/22,595 lb.



SPECIFICATIONS

BACKHOE SPECIFICATIONS

Transport Dimensions

Height	13' 1" (3988 mm)
Stabilizer spread	6' 7" (2007 mm)
Ground clearance	14.75" (375 mm)
Length	24' (7315 mm)

Backhoe Cycle Times

Lift Ext./Ret.	5/4.8 sec.
Swing 90° to center	2 sec.
Dipper Ext./Ret.	2.4/2.1 sec.
Bucket Ext./Ret.	2.6/2.1 sec.
HED Ext./Ret.	2.8/2.1 sec.

Backhoe Lift Capacity - SAE J31

Standard Backhoe

Boom lift capacity at 12'	3130 lbs. (1423 kg)
Ground to full height	2320 lbs. (1055 kg)
Dipper lift capacity at 12'	4810 lbs. (2186 kg)
Ground to 12'	4810 lbs. (2186 kg)

HED Backhoe - Retracted

Boom lift capacity at 12'	2870 lbs. (1305 kg)
Ground to full height	2060 lbs. (936 kg)
Dipper lift capacity at 12'	4550 lbs. (2068 kg)
Ground to full height	4550 lbs. (2068 kg)

HED Backhoe - Extended

Boom lift capacity at 12'	1900 lbs. (864 kg)
Ground to full height	1570 lbs. (714 kg)
Dipper lift capacity at 12'	2330 lbs. (1059 kg)
Ground to full height	2330 lbs. (1059 kg)

Backhoe Digging Force - Standard

Bucket cylinder	17,600 lbs. (8000 kg)
Crowd cylinder	8800 lbs. (4000 kg)

Backhoe Digging Force - HED

Bucket cylinder	17,600 lbs. (8000 kg)
Crowd Cylinder - HED Ret.	8200 lbs. (3727 kg)
Crowd cylinder - HED Ext.	6300 lbs. (2864 kg)

OPERATOR'S AREA

The loader and backhoe controls are located in the driver's seat armrests. They are hydraulically power-assisted, single-lever joysticks operating through an independent gear pump feeding the hydraulic circuit.

4-positions of loader arms: raise, hold, lower, float. Provided with automatic limit stop.

3-positions of bucket tilting: rollback, hold, and dump. Adjustable automatic bucket positioner.

Pump capacity for pilot-assisted control

8.7 GPM (33 L/min)

Relief pressure	580 PSI (40 bar)
-----------------------	------------------

Operator Area	ROPS-FOPS type
---------------------	----------------

Seat	Swivel type
------------	-------------

Full set of instruments.

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


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Maintenance plan

Work description For service and maintenance work on the diesel engine/implement, we also refer to the operation and maintenance manual of the engine/implement manufacturer.	Maintenance plan/service hours					
	Maintenance daily	"A" every 50 h weekly	1st inspection ¹ after 100 h	"B" every 300 h	"C" every 600 h ²	"D" every 1200 h yearly
Oil change and filter replacement ():						
Carry out the following oil changes and filter replacements (check oil levels after test run):						
• Engine oil			X		X	X
• Engine oil filter			X		X	X
• Screen filter of the fuel supply pump			X		X	X
• Primary fuel filter			X		X	X
• Air filter insert ³					X	X
• Gearbox oil in the front and rear axle differential/gearbox			X			X
• Gearbox oil in the front and rear final drives, left and right			X			X
• Brake fluid						X
• Hydraulic oil						X
• Hydraulic oil filter insert ³			X			X
• Ventilation filter (hydraulic oil tank)						X
Inspection work ():						
Check the following material. Refill if necessary:						
• Engine oil	X	X		X		
• Hydraulic oil	X	X	X	X	X	
• Brake fluid	X	X	X	X	X	
• Gearbox oil in the front and rear axle differential/gearbox				X	X	
• Gearbox oil in the front and rear final drives, left and right				X	X	
Cardan shaft ⁴						X
Check radiator for engine cooling and hydraulic oil cooler for fouling. Clean if necessary ⁴		X	X	X	X	X
Clean dust valve on air filter housing	X	X	X	X	X	X
V-belt: check condition and pretension. Retighten or replace if necessary	X	X	X	X	X	X
Check toothed belt of the engine. Replace if necessary ⁵						X
Check valve tip clearance. Adjust if necessary			X			X
Battery: check electrolyte level and charge condition		X	X	X	X	X
Service and parking brake: check thickness of brake pads. Replace if necessary					X	X
Check toe-in. Correct if necessary					X	X
Tyre check (damage, air pressure, tread depth)	X	X	X	X	X	X
Check screws and nuts or screw connections for tightness on the following assemblies/components. Retighten if necessary:						
• Engine and engine bearing		X	X	X	X	X
• Steering system		X	X	X	X	X
• Hydraulic system		X	X	X	X	X
• Axle mounting, axle suspension		X	X	X	X	X
• Fastening screws of the propshafts			X	X	X	X
• Wheel nuts			X	X	X	X
Lubrication service ():						
Lubricate the following assemblies/components:						
• Rear axle oscillating bearing		X	X	X	X	X
• Front and rear axle final drive bearing, left and right		X	X	X	X	X
• Loader unit:						
- Lift frame bearing		X	X	X	X	X
- Lift ram bearing		X	X	X	X	X
- Tilt ram bearing		X	X	X	X	X
- Tilt lever bearing	X	X	X	X	X	X
- Tilt rod bearing	X	X	X	X	X	X
- Quickhitch frame (lock pins, lift frame bearing)	X	X	X	X	X	X
Functional check (?):						
Check the function of the following assemblies/components. Rectify if necessary:						
• Service and parking brake	X	X	X	X	X	X
• Steering system	X	X	X	X	X	X
• Hydraulic system	X	X	X	X	X	X
• Hydrostatic drive/gearshift	X	X	X	X	X	X
• Light system	X	X	X	X	X	X
• Electrical system (heater blower, horn, windscreen wiper, washer system, etc.)	X	X	X	X	X	X
Leakage check ():						
Check pipe and flexible lines, as well as screw connections of the following assemblies/components for tightness, leakage and chafings. Rectify if necessary:						
• Air intake line (air filter - engine)		X	X	X	X	X
• Engine lubrication (engine - filter)		X	X	X	X	X
• Fuel feed lines		X	X	X	X	X
• Cooling system (engine and hydraulic oil cooler)		X	X	X	X	X
• Brake system		X	X	X	X	X
• Steering system		X	X	X	X	X
• Hydraulic system		X	X	X	X	X
Leakage check of the following hydraulic rams. Rectify if necessary:						
• Front and rear axle steering rams		X	X	X	X	X
• Loader unit:						
- Lift ram		X	X	X	X	X
- Tilt ram		X	X	X	X	X
- Control ram on quickhitch frame		X	X	X	X	X

- 1: Work to be carried out once only after the first 100 service hours. This maintenance and inspection work must be carried out by a dealer or authorized workshop for warranty claims to be accepted.
- 2: Maintenance and inspection work after the first 600 service hours (2nd inspection) must be carried out by a dealer or authorized workshop for warranty claims to be acknowledged.
- 3: Clean/replace filter insert as indicated by the telltale in the instrument panel, however at least every 12 months or 1200 service hours.
- 4: Depending on operation and dust conditions, it may be necessary to clean the radiator more frequently.
- 5: Replace toothed belt every 4500 service hours.

ADDITIONAL SAFETY ITEMS

Transport Latches and Safety Retainers

This machine is equipped with certain transport latches and safety retainers. To help prevent accidents and reduce the risk of injury to yourself and others their use is recommended whenever:

The machine is left unattended.

The machine is being driven on the road.

If the machine must be kept with the backhoe or loader raised or in any position other than that which will enable the recommended latches and retainers to be used, the operator must provide suitable alternative supports, offering equal protection and safety.

Backhoe

When transporting the machine by driving on the road or when performing loader work, secure the backhoe as follows:

Completely close the bucket.

Completely close the dipper stick.

Raise the boom and install the retainers, 1.

For transportation, deactivate the servo controls (the green indicator light on the button must be off).

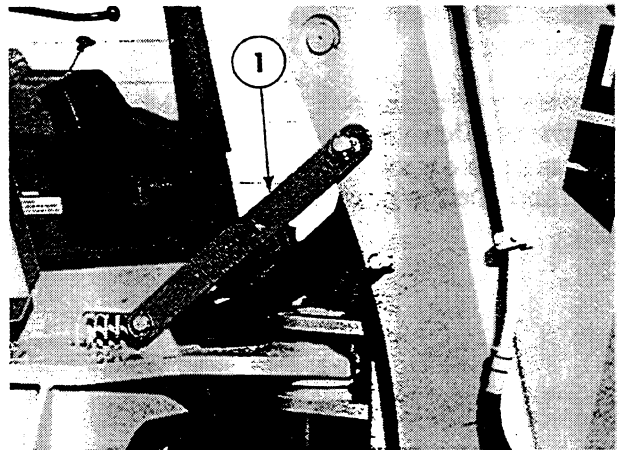


Figure 0-1

When the backhoe is in use, store the retainer on the pins, 1, provided, securing them with the 'inchpins.

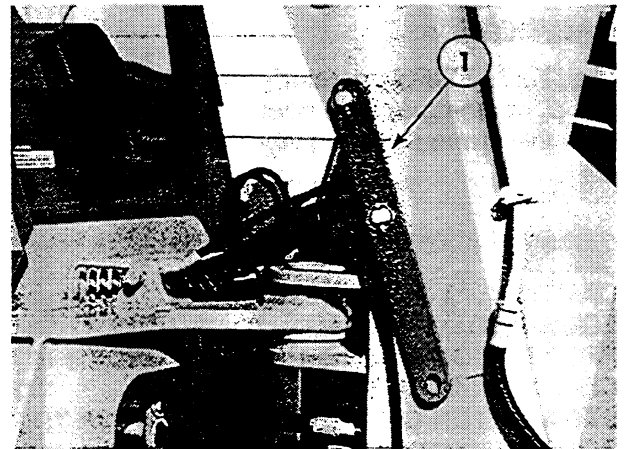


Figure 0-2

ENGINE

DESCRIPTION AND OPERATION

Industrial engines are 4-cylinder and available in naturally aspirated and turbocharged forms.

All engines feature cross flow cylinder heads, with the inlet and exhaust manifolds on opposite sides of the cylinder head. The fuel and air combustion process takes place in the specially designed bowl in the crown of the pistons.

Cylinder Head Assembly

The cylinder head incorporates valves and springs, with the valve rocker arm shaft assembly bolted to the cylinder block through the cylinder head. Cylinder head retaining bolts are evenly spaced with a six point pattern around each cylinder, this ensures an even clamping load across the cylinder head area.

The intake and exhaust manifolds are bolted to the head, the intake manifold is mounted on the right-hand side of the engine, with the diesel injectors mounted outside the rocker cover. The exhaust manifold is mounted on the left-hand side of the engine. Water outlet connections and thermostat are attached to the front of the cylinder block directly behind the radiator.

Valve guides are integral in the cylinder head, and valves with oversize stems are available in service. Special replaceable cast alloy valve seats are pressed into each valve port during manufacture, with oversize valve seats also available in service.

The exhaust valves are fitted with positive valve rotators with all valves using umbrella type oil seals. Valve lash is maintained by adjustment of the self locking adjusting screw, mounted in each of the rocker arms.

Camshaft Assembly

The camshaft runs in three replaceable bearings. The camshaft drive gear is in mesh with and driven by the camshaft idler gear and crankshaft timing gear.

Camshaft end thrust is controlled by a thrust plate bolted to the block, and located between the camshaft gear and the front camshaft journal.

A helical gear is mounted on the rear of the camshaft, and drives the engine oil lubrication pump mounted forward of the flywheel.

Crankshaft Assembly

The crankshaft is supported in the cylinder block by five main bearings. The crankshaft is manufactured from nodular cast iron with machined finished crank webs. End thrust is controlled by a thrust bearing incorporated in the center main bearing of the crankshaft.

Front and rear crankshaft oil sealing is effected by one-piece seals that are designed for long and durable service life.

Connecting Rods

Connecting rods, wedge shaped at the small end, have been designed to reduce the reciprocating weight at the piston end. The connecting rods are of a heavy beam construction and are assembled as a matched set to each engine, attached to the crankshaft, by means of insert-type bearings.

They are retained in position by the connecting rod big end cap and secured by two bolts per rod. The small end of the connecting rod is fitted with a replaceable bronze bushing, through which the free floating piston pin is fitted. The steel pin is held in place within the piston by two snap rings.

Pistons

Pistons are constructed of an aluminum silicon alloy with an iron insert for the top ring. The combustion chamber is recessed into the piston crowns. Each piston has two compression rings and one oil control ring, to reduce friction and increase positive sealing. All rings are located above the piston pin.

Manifolds

The cross flow design aluminum intake and cast iron exhaust manifolds are on opposite sides of the cylinder head. This is designed to maintain balanced heat distribution within the cylinder head. The configuration of the manifolds also ensures minimum heat transfer to the intake manifold.

The intake manifold is connected through tubing to the air cleaner and in the rear end of the manifold a tapped hole is provided for installation of a thermostat or an ether cold starting aid.

NOTE: On tractors where cold start equipment is not installed ensure the plug in the intake manifold is kept tight at all times. Considerable damage to the cylinder bores may be incurred by entry of dust or other foreign material if the plug is left loose or missing. Also, dirt and grit may be drawn through the air cleaner connections if they are not properly secured.

Cylinder Block Assembly

The cylinder block is an alloy cast iron with deep cylinder skirts, and water jackets for cooling the cylinders. The cylinder bores are machined integral with the cylinder block during the manufacturing process.

Cylinders are in line and vertical and numbered from 1 to 4 from the front to the rear of the engine. They can be bored oversize for installation of sleeves, which are available in service.

Valve Inserts

Insert Oversize	Counterbore in Cylinder Head	
	Exhaust Valve Insert	Intake Valve Insert
0.010" (0.25 mm)	1.739–1.740" (44.17–44.20 mm)	1.969–1.970" (50.01–50.04 mm)
0.020" (0.58 mm)	1.749–1.750" (44.42–44.45 mm)	1.979–1.980" (50.27–50.29 mm)
0.030" (0.76 mm)	1.759–1.760" (44.68–44.70 mm)	1.989–1.990" (50.52–50.55 mm)

NOTE: Refacing the valve seat should always be coordinated with refacing of the valve to ensure a compression tight fit.

1. Examine the valve seat inserts and reface if pitted. Replace if loose or damaged.
2. To install a new valve insert, the cylinder head must be counterbored, as described in the above chart. The new insert must be chilled in dry ice prior to installation.

Valve Seat Specifications

Valve seat angle, 1,

Intake = 30.0–30.30°

Exhaust = 45.0–45.30°

Valve seat width, 2,

Intake = 0.078–0.098" (1.9–2.4 mm)

Exhaust = 0.072–0.092" (1.8–2.3 mm)

Valve head face to cylinder head face depth, 3,

Intake = 0.034–0.052" (0.86–1.32 mm)

Exhaust = 0.047–0.065" (1.2–1.6 mm)

NOTE: Valve inserts of 0.010" (0.25 mm) and 0.020" (0.5 mm) oversize on diameter are sometimes installed during manufacture. Cylinder heads with oversize inserts are stamped SO10OS, SO20OS, on the exhaust manifold side in line with the valve seat concerned.

3. Check the width of the valve seat inserts and, as required, reface by grinding to correct dimensions.
4. Measure the concentricity of valve seats, using a dial indicator and measure concentricity of seat to the valve guide bore. Total Indicator Reading should not exceed 0.002" (0.051 mm).

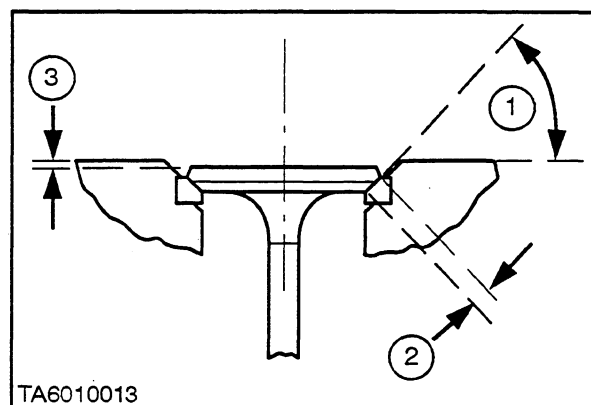


Figure 1-24

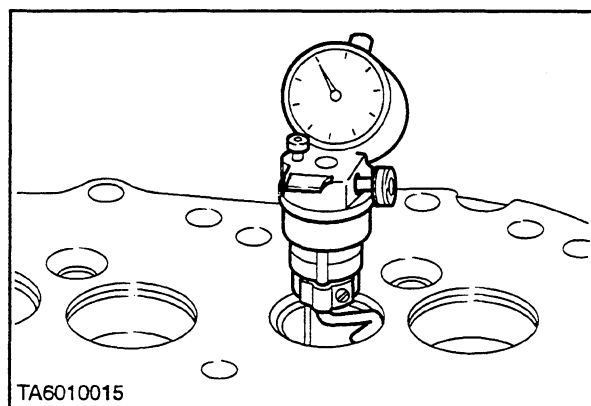


Figure 1-25

5. Where special tooling is not available for the removal or installation of the connecting rod bushing, a standard bushing can be installed in the following manner.
6. Place the connecting rod securely in a bench press. Manufacture from suitable bar stock a press tool with the end face ground at an angle to suit the connecting rod bushing side face. Position the tool on the bushing and gently drive the bushing from its position. It is recommended a guide be manufactured to assist alignment of the bar stock during this operation.
7. A new bushing can then be installed in a similar manner by using a suitable piece of bar stock, with an end face machined flat to suit the standard parallel bushing. Use a guide as described and gently drive the new bushing into the connecting rod.

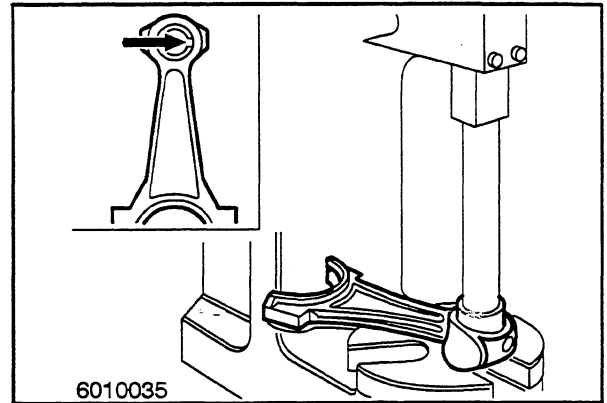


Figure 1-49

NOTE: The seam of the new bushing must be placed at 90° to the center line of the connecting rod.

8. After installation grind the side faces of the new bushing to match the side faces of the connecting rod. Ensure all sharp edges are removed, and loose chippings are cleaned from the connecting rod before reassembly into the engine.
9. With a new bushing installed, drill a hole through the top of the connecting rod using a 0.187" (4.6 mm) bit. Drill through the existing oil hole.
10. Use an expanding reamer to obtain correct bushing to piston pin clearance. Refer to the Specification Section. Remove burrs and metal chips before installing.

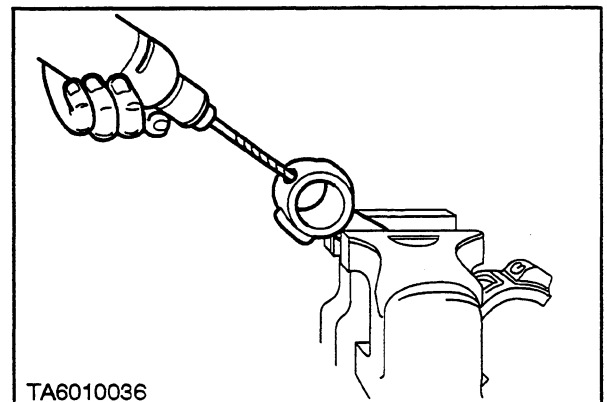


Figure 1-50

Rear Cover Plate Removal

To gain access to the engine oil pump, camshaft gear or end of crankshaft remove the oil pan, as previously described, along with the rear cover, 1, in the following manner:

1. With rear of engine exposed, loosen and remove the 12 attaching bolts and gently pry off the cover plate.
2. Clean off all sealer, remove crankshaft oil seal, and check for damage or distortion around the sealing faces.

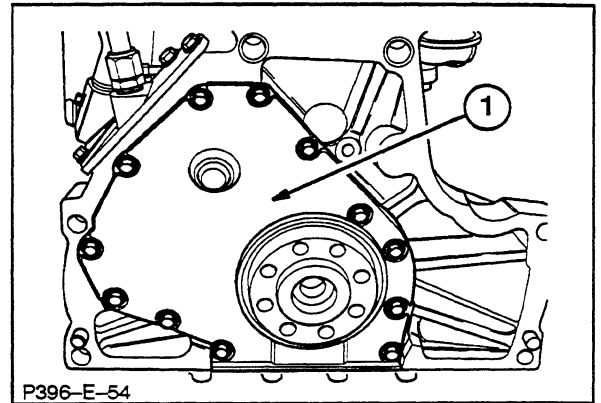


Figure 1-77

Installation

1. Apply a liberal coating of new engine oil on a new oil seal and position the rear seal over the end of the crankshaft.

Tighten evenly and squarely until the seal is fully seated.

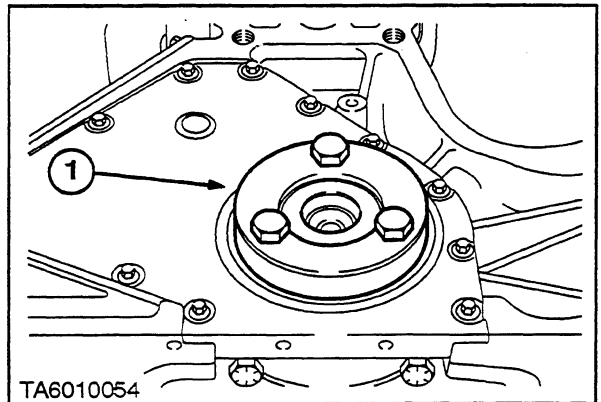


Figure 1-78

2. Ensure rear of block face is clean and free of old sealer. Install a new gasket and apply sealer to faces, 1. With the plate in the recess install and tighten the twelve bolts, in sequence to 12–17 ft. lbs. (16–23 N·m).
3. Ensure edges of the retainer and seal assembly, 2, are even with edges of block, within 0.003" (0.08 mm). If not to specification, loosen and realign retainer in the recess and repeat the installation procedure.

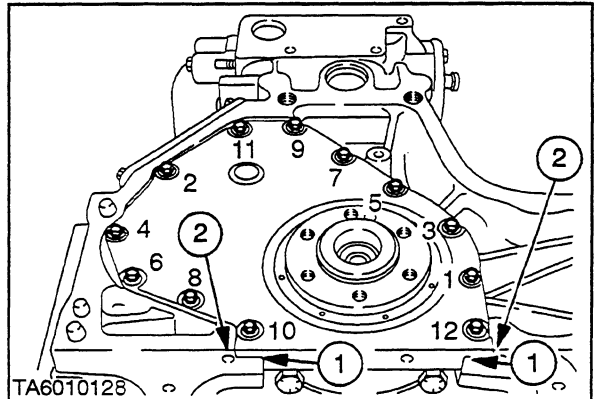


Figure 1-79

4. With new crankshaft seal installed, place a dial indicator on the end of the crankshaft and ensure seal runout is within 0.020" (0.51 mm) Total Indicator Reading.

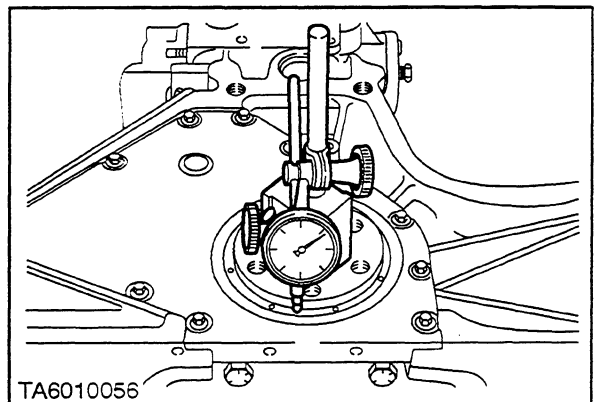


Figure 1-80

SECTION 1 – ENGINE

PROBLEM	POSSIBLE CAUSES	REMEDY
Engine knocks	1. Diluted or thin oil	1. Check crankshaft bearings for damage, change as required. Drain and refill with specified oil and replace filter. Determine cause of dilution
	2. Insufficient oil supply	2. Check oil level and top up as necessary. Overhaul or replace pump as necessary. Check oil filter is not clogged
	3. Low oil pressure	3. Overhaul pump or relief valve as necessary
	4. Excessive crankshaft end play	4. Install new thrust bearing liner
	5. Flywheel or ring gear runout excessive	5. Skim flywheel or install new ring gear
	6. Excessive connecting rod or main bearing clearance	6. Install new bearing inserts and/or regrind crankshaft
	7. Bent or twisted connecting rods	7. Replace connecting rods
	8. Crankshaft journals out-of-round	8. Regrind crankshaft and install undersize bearing inserts
	9. Excessive piston-to-cylinder bore clearance	9. Rebore/resleeve block and install new pistons
	10. Excessive piston ring clearance	10. Install new pistons and rings
	11. Broken rings	11. Install new rings, check bore and pistons for damage
	12. Excessive piston pin clearance	12. Install new piston or pin
	13. Piston pin retainer loose or missing	13. Install new retainer, and check bore/pistons for damage
	14. Excessive camshaft play	14. Install new thrust plate
	15. Imperfections on timing gear teeth	15. Replace timing gear
	16. Excessive timing gear backlash	16. Replace timing gear

Oil Specification

Temperature	Oil Viscosity & Type	API Classification	Engine Oil & Filter Change Period (Hours)
Below 10°F Below -12°C	Low Ash SAE 5W or Low Ash SAE 5W/20 or SAE 5W-30	SF/CD/CF-4	150 150 150
0°F to 40°F -18°C to 4°C	Low Ash SAE 10W Series 3 or SAE 10W-30	SF/CD/CF-4	150 300
0°F to 90°F -18°C to 32°C	Low Ash SAE 10W Series 3 or SAE 10W-40	SF/CD/CF-4	300 300
Above 10°F Above -12°C	Low Ash SAE 30W Series 3 or SAE 15W-40 (Preferred)	SF/CD/CF-4	300

NOTE: When using diesel fuel with a sulphur content below 1.0%, Series 3 diesel engine oil with an API classification of CD may be used instead of CF-4 oil, but the oil and filter interval must be reduced to 150 hours.

When using diesel fuel with a sulphur content between 1% and 1.3% use only oils listed above but reduce the oil and filter change period to every 50 hours.

The use of fuel with a sulphur content above 1.3% is not recommended.

Engine Oil Capacities (Less Oil Filter)

Model	U.S. Qts	Imp. Qts	Liters
4-Cylinder	16.9	14.0	16.0

Engine Oil Capacities (With Oil Filter)

Model	U.S. Qts	Imp. Qts	Liters
4-Cylinder	17.6	14.8	17.0

Thermostat

Opening Temperature	174–181°F (79–83°C)
Fully Open	199–205°F (93–96°C)

Expansion Tank Cap

Opening Pressure	13 psi (0.9 bar)
------------------	------------------

Water Pump

Type	Centrifugal
Drive	V-Belt

Installation

1. Lubricate the pressure relief valve and spring and insert into housing, ensuring free movement. Install a new O-ring to the plug and torque to 42 ft. lbs. (55 N·m).

NOTE: On some models including the turbocharged version the pressure relief valve “end plug” is replaced by an oil return tube from the engine block. Where this pipe is installed a plug is used to blank the oil return port to the engine block.

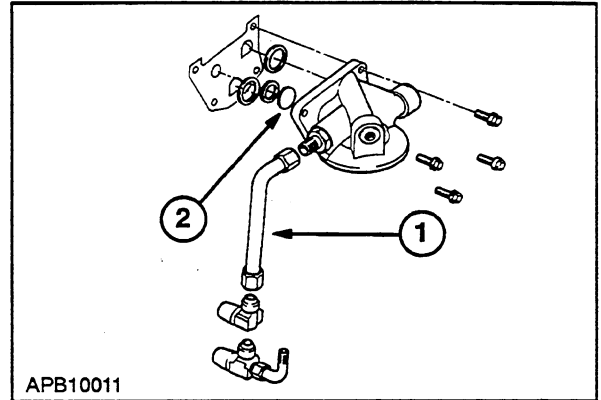
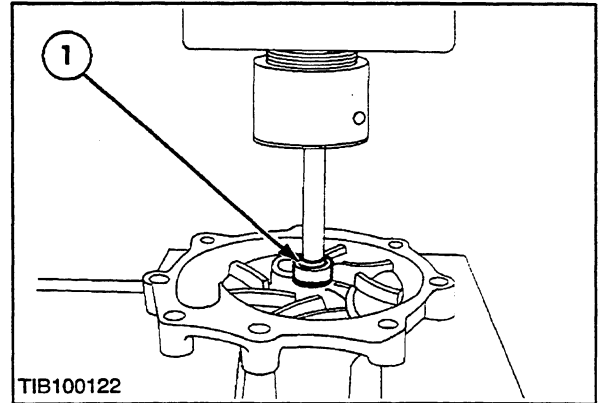


Figure 1-109

2. Fit tube, 1, to the connector and torque to 20 ft. lbs. (27 N·m).
3. Install the oil filter head to the engine block with new O-rings, 2, and plug where required as above and torque the bolts to 26–35 ft. lbs. (34–47 N·m).

3. Remove the retaining bolts, then separate the pump covers and discard the gasket.
4. Using a press and an adapter, 1, with a diameter slightly smaller than the bearing shaft, press the bearing assembly out of the pump housing and discard the bearing.
5. Use a suitable sleeve and press the seal assembly out of the impeller side of the pump housing. Discard the seal assembly.

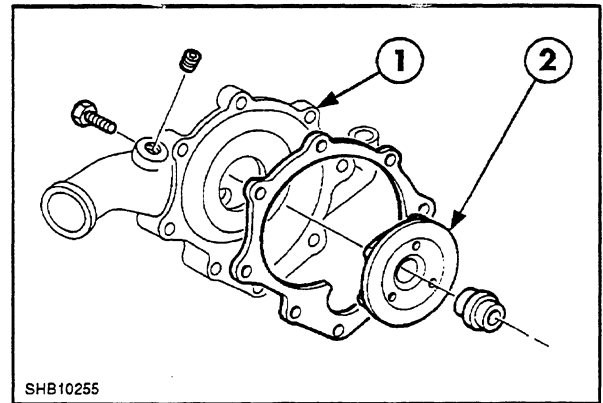


TIB100122

Figure 1-122

Inspection and Wear

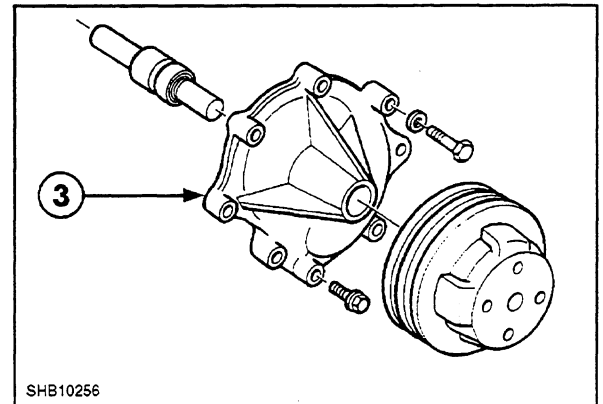
1. Check the impeller, 2, for worn or damaged vanes. Install a new impeller if the vanes are damaged.



SHB10255

Figure 1-123

2. Check both parts of the pump housing, 1, and 3, for cracks or signs of leakage. Replace any defective parts, Figures 1-123 and 1-124.



SHB10256

Figure 1-124

TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSES	REMEDY
Air cleaner warning light illuminates	1. Clogged air cleaner	1. Clean or replace outer element
Air cleaner warning light illuminates, after filter service	1. Vacuum switch faulty	1. Replace switch with a new one
Air cleaner warning light illuminates, before service intervals	1. Debris in filter body	1. Clean filter body. Clean element and reinstall

SPECIFICATIONS**AIR CLEANER**

Type Dry, Dual Element

Change Interval 600 Hours (or More Frequently When Operating in Adverse Conditions)

TORQUE SPECIFICATIONS

DESCRIPTION	ft. lbs.	N·m
Air Cleaner Retaining Bolts	40	55
Air Cleaner Hose Clamps	1.8	2.5
Air Cleaner Restriction Indicator Switch	9	12

3. Set the dial indicator to zero.
4. Manually apply equal and simultaneous pressure to the wheels to move the shaft as far as it will go toward the plunger. Make a note of the shaft movement shown on the indicator dial.

NOTE: To make sure the reading indicated is the maximum possible, roll the wheels slightly in both directions while applying pressure.

5. Manually apply equal and simultaneous pressure to the compressor and turbine wheels, to move the shaft away from the plunger again. Note that the indicator pointer returns exactly to zero.
6. Repeat steps 2 to 5 several times to ensure that maximum radial clearance as indicated by maximum shaft movement has been measured.
7. If the maximum clearance is less than 0.0022" (0.056 mm), or greater than 0.0050" (0.127 mm), replace the CHRA.

Troubleshoot the engine to find the cause of the bearing failure, and correct the problem before resuming operations.

Axial Clearance Check

Check the thrust bearing axial clearance as follows:

1. Place a dial indicator with the probe on the compressor end of the turbocharger shaft assembly, 1.
2. Manually move the compressor/turbine wheel assembly as far as it will go away from the plunger.
3. Set the dial indicator at zero.
4. Manually move the compressor/turbine wheel assembly as far as it will go toward the dial indicator plunger. Make a note of the shaft movement shown on the indicator dial.
5. Manually move the compressor/turbine wheel assembly as far as it will go away from the plunger. Note that the indicator plunger returns to zero.

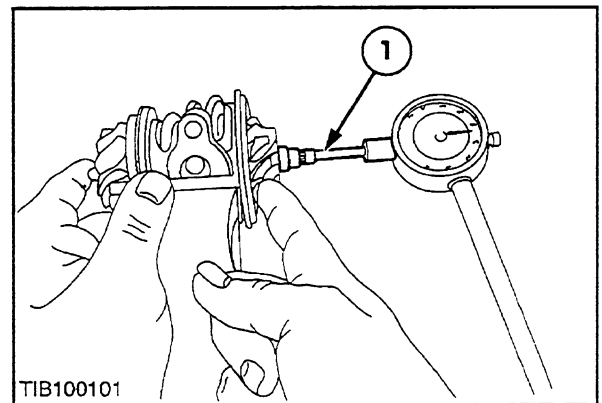


Figure 1-151

GROUP

03

**TRANSMISSION
AND TROUBLE SHOOTING**

4.2.2 Neutral start protection

Each EGS has an output signal which is activated whenever the shift lever is in the neutral position.

This signal can be used to control a relay preventing engine startup whenever the shift lever is NOT in the neutral detented position.

4.2.3 Shift repeat

While pushing the shift lever for a short time (more than 0.1 sec) results in an upshift or a downshift, holding the lever in either UP or DOWN position will produce subsequent upshifts or downshifts with 1.5 second intervals.

4.3 External inputs

Apart from the shift lever, external signals can influence the behaviour of the EGS.

As already mentioned before (3.3 KICKDOWN option) external access to the kickdown switch is provided.

Additionally an extra programmable external input is available.

Both inputs can be used for various functions (application dependent) such as transmission declutch, force neutral, throttle sensing, kickdown, mode select, etc...

Note that KICKDOWN is accessible externally only if no internal kickdown switch is mounted.

4.4 Display function

The EGS has an internal indicator panel for displaying selected gear and driving direction. Below description is applicable for many EGS implementations.

Application specific details are described in a separate document shipped along with each EGS unit. These overrule below description wherever applicable.

4.4.1 Displayed information

Typically four types of information about the EGS and the transmission can be of interest to the driver :

- selected shift lever position
- selected transmission position
- application specific information
- diagnostic information

4.4.1.1 Selected position

The difference between shift lever position and transmission position might not be immediately clear, but when one remembers that the EGS can protect the transmission e.g. by not allowing a downshift, it becomes clear that the REQUESTED position (i.e. the shift lever position) can be different from the ACTUAL ENGAGED position (i.e. the position of the transmission).

7 SELFTEST FUNCTIONS

The EGS has special circuitry to help verifying its operation.

Three selftest modes are built into the EGS control programs :

INPUT TEST
SPEED SENSOR TEST + LAMPTEST
OUTPUT TEST

The EGS furthermore has the ability to check for possible problems while driving (ON LINE diagnostics).

As described in 4.4.2, the 'T' LED is used for identifying different Trouble(Shoot) modes. This is done in combination with the status of the 'N' LED.

7.1 Operation of the 'N' and 'T' LEDs

7.1.1 Overview

In normal situations (driving, no problems)	'T' LED is always OFF
When error is detected	'T' LED is ON or BLINKING
In selftest mode	'T' LED is always ON

7.1.2 Detailed operation

Situation	'N' LED	'T' LED
Normal Operation	On when transmission neutr	OFF
INPUT FAULT	ON	blinking SLOWLY
INPUT TEST	blinking SLOWLY	ON
OUTPUT TEST	blinking FAST	ON
SPEED SENSOR TEST	OFF	ON

7.2 Selftest Operation

Selftest modes can only be started WHILE POWERING UP the EGS.

Invocation of a certain mode is done by moving the shift lever to a specific position while switching on the power of the EGS.

Leaving the selftest mode is done by switching OFF the power of the EGS.

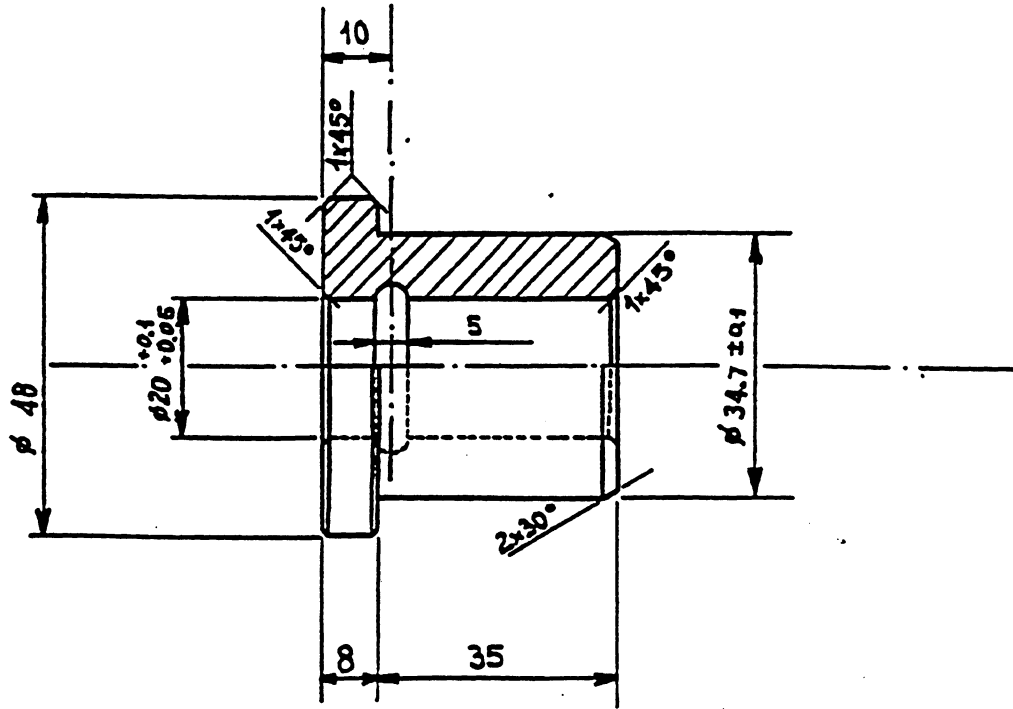
REPAIR MANUAL

710 CARRARO AXLE

INDEX OF SECTIONS

SECTION	DESCRIPTION
A	SPECIFICATION AND FEATURES
B	SECTION VIEW
C	TORQUE SETTINGS
D	LUBRICATION
E	SPECIAL TOOLS
F	DISASSEMBLING, REASSEMBLING AND SETTING OPERATION

5.8	> 4+30	> 10+110	> 120+115	> 115+1000
2.41	2.43	2.43	2.43	2
2.43	2.43	2	2.43	2.4
2.1°	2.30°	2.20°	2.10°	2.10°
2.2°	2.2°	2.1°-30°	2.1°-30°	2.1°



TO BE USED WITH car 119033 INTERCHANGEABLE HANDLE



OFF. MECC. CARRARO S.p.A.
CAMPODARSEGO - (Padova)

Mecchina

Sottogruppo

Denominazione DRIVER FOR car 109972 BUSH

Classifica mater.		Sost. II	Sost. dal
Scala FULL	Mat. SAE 1040 (C40)	Peso grezzo	Posizione Archivio SERVICE DEPT.
Data 11-10-86	Tratt. termico	Peso Finito	N. DISEGNO
Firma J. Torelli	Tratt. superf.	Quantità 1	119043

ediliche

EPICYCLIC REDUCTION GEARS

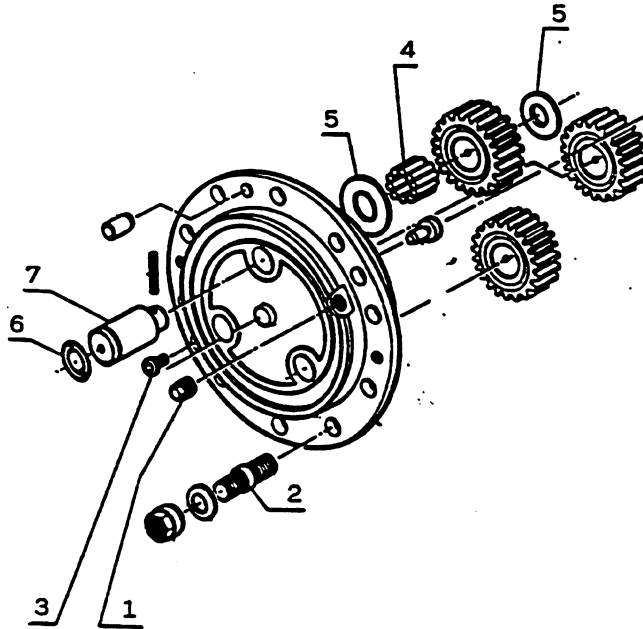


Fig. 1

- Turn the hub so that the filler/plug (1) is at the lowest position and drain the hub oil.
- Unscrew the two centering studs (2) and the two screws (3) and remove the planetary carrier assembly from the hub assembly.
- Inspect the needle bearings (4) and the thrust washers (5) for wear and replace if necessary.
- Inspect the oil seals (6) of the pinion shaft (7) and replace if worn or damaged.
- Reassembling: if necessary hold the needle bearing in position with grease.
- Refill the hub with correct oil, see specification. The drain/level plug bore position, must be at the top.
- Check the oil level with the plug at the horizontal line.

SETTING OF THE PRE - LOAD FOR THE DIFFERENTIAL BEARINGS

Adjust the pre-load of the differential side bearing using the following method :

With the crown wheel in mesh with the pinion and the backlash correctly set, rotate the pinion using a string and pull scale and record the effort required to rotate the pinion and the crown wheel/differential unit.

Tighten each differential side bearing adjuster ring by equal amounts, to preserve the backlash adjustment.

Install the adjuster ring lock tabs.

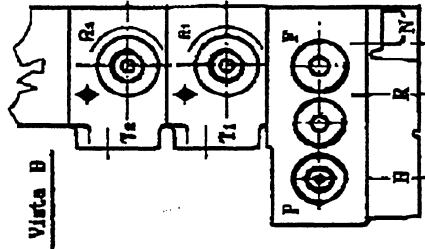
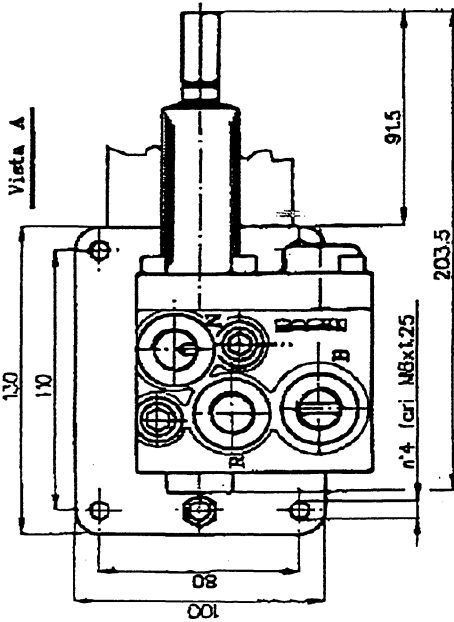
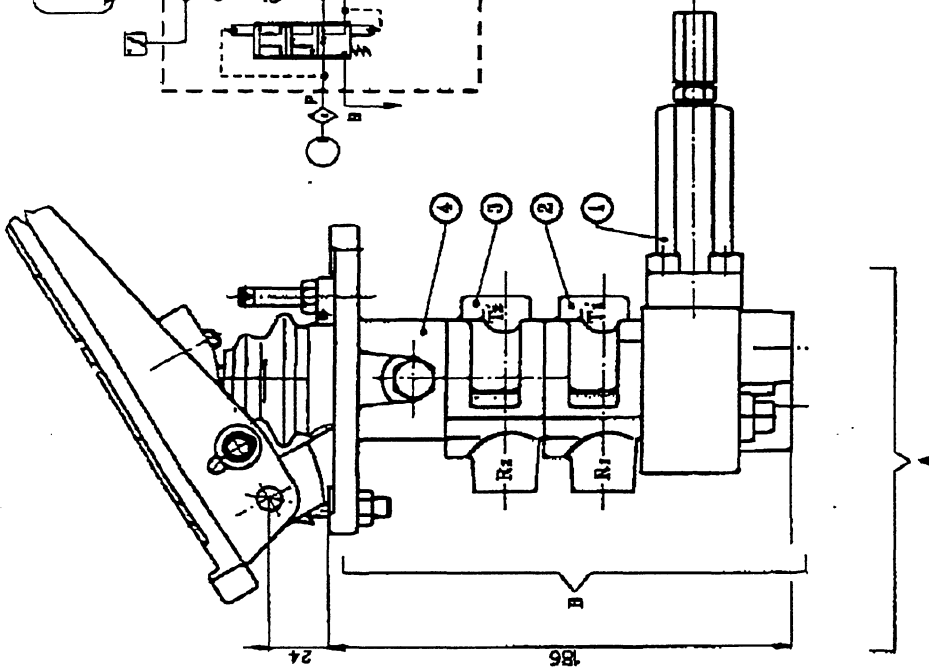
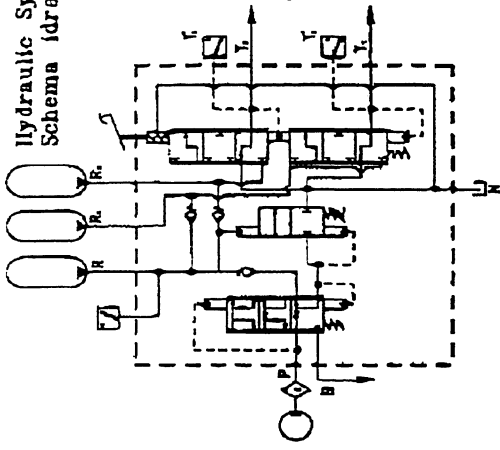
Fully thigten the cap nuts to the torque specified.

Recheck to make sure that the backlash is correct.

The total amount of the pre - load to find (differential + pinion bearings) on the diameter of the pinion queue must be:

$$T = (P + 2,2) \text{ to } (P + 3,3) \text{ where } P \text{ is the final value found for the pinion.}$$

Hydraulic System
Schema Idrraulico



Pos	Descrizione	Rif.
-	Serie guarnizioni Seal Kit	10847
4	Supporto valvola Brake vertical support	10.1166/A
3	Modulo di frenatura n°2 Brake modul n°2	10.1228
2	Modulo di frenatura n°1 Brake modul n°1	10.1226
1	Valvola carica accumulatore Accumulator charging valve	10.1160/A

Pos	Descrizione	Rif.
R1	Accumulator - Accumulatore	M14x1.5
F	Pressure switch - Pressostato	M10x1
P	Inlet oil - Alimentazione	1/2 gas
R	Accumulator - Accumulatore	M18x1.5
Tu	Brake - Collegamento freni	M14x1.5
T1	Brake pressure switch - Pressostato controllo freni	M10x1
N	Tank - Collegamento scarico	M18x1.5
B	Other service or tank - Altri utilizzi o scarico	1/2 gas

Codice Cliente
Code Customer

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	
V	4	2	F	S	I	N																M

A termini di legge di questo disegno con divieto di riproduzione o di renderlo comunque noto a terzi o a ditte concorrenti senza la nostra autorizzazione.

Materie
Sost. N° 10.1701
Arc: Compless/s6
File: 101701A3

Dis. Dal. Rev. Cont. N. Mod. Peso G. Peso F. Denom. Sistema frenante S8 10.1238 con valvola carica acc. girata di 90°

Treatments

Copia N.

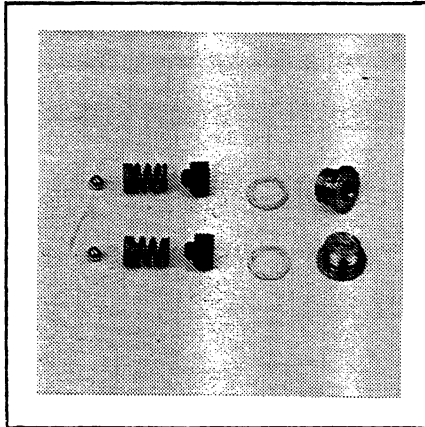
GROUP

06

HYDRAULIC

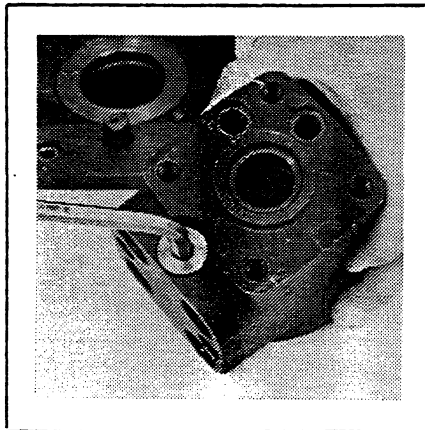


18 Shake out the two springs and two valve balls into your hand. The valve seats are bonded into the housing and cannot be removed.



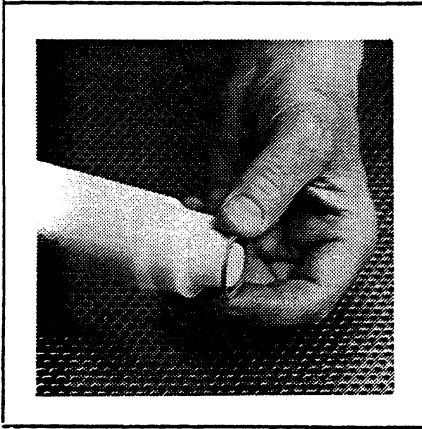
19 The dual shock valves are now dismantled.

Dismantling the pressure relief valve (cartridge) for OSPC

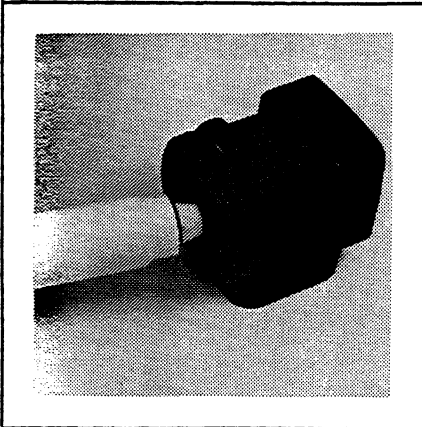
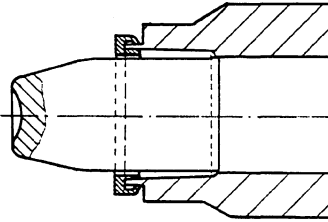


20 Screw out the plug using an 8 mm hexagon socket spanner. Remove seal washers.

Installation instructions for lip seal



44 Lubricate the lip seal with hydraulic oil and place it on the assembly tool.



45 Guide the assembly tool right to the bottom.



46 Press and turn the lip seal into place in the housing.

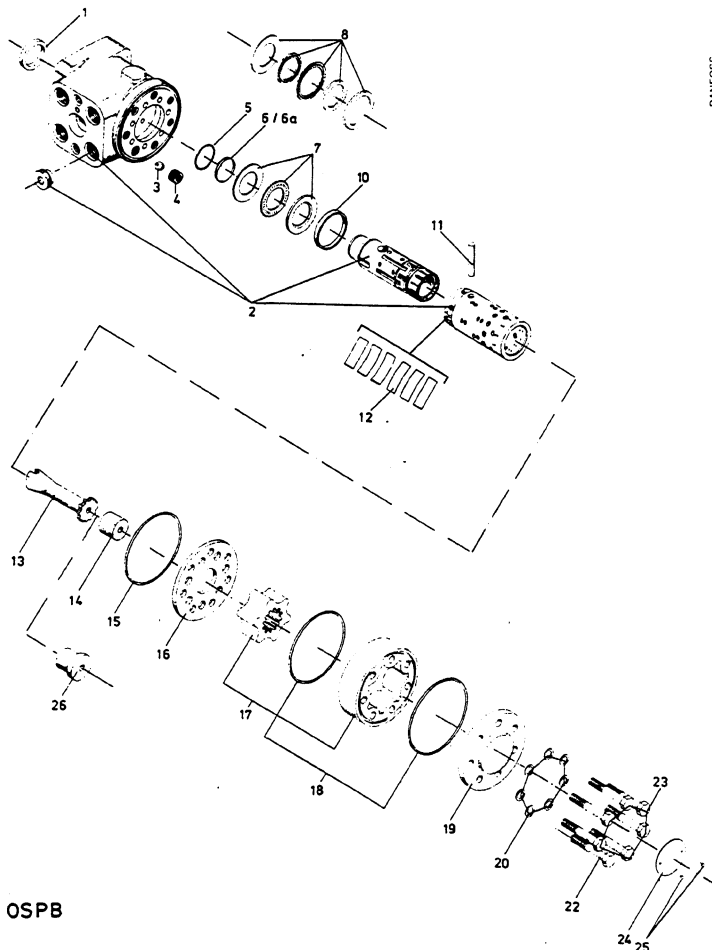
Authorized service shops:

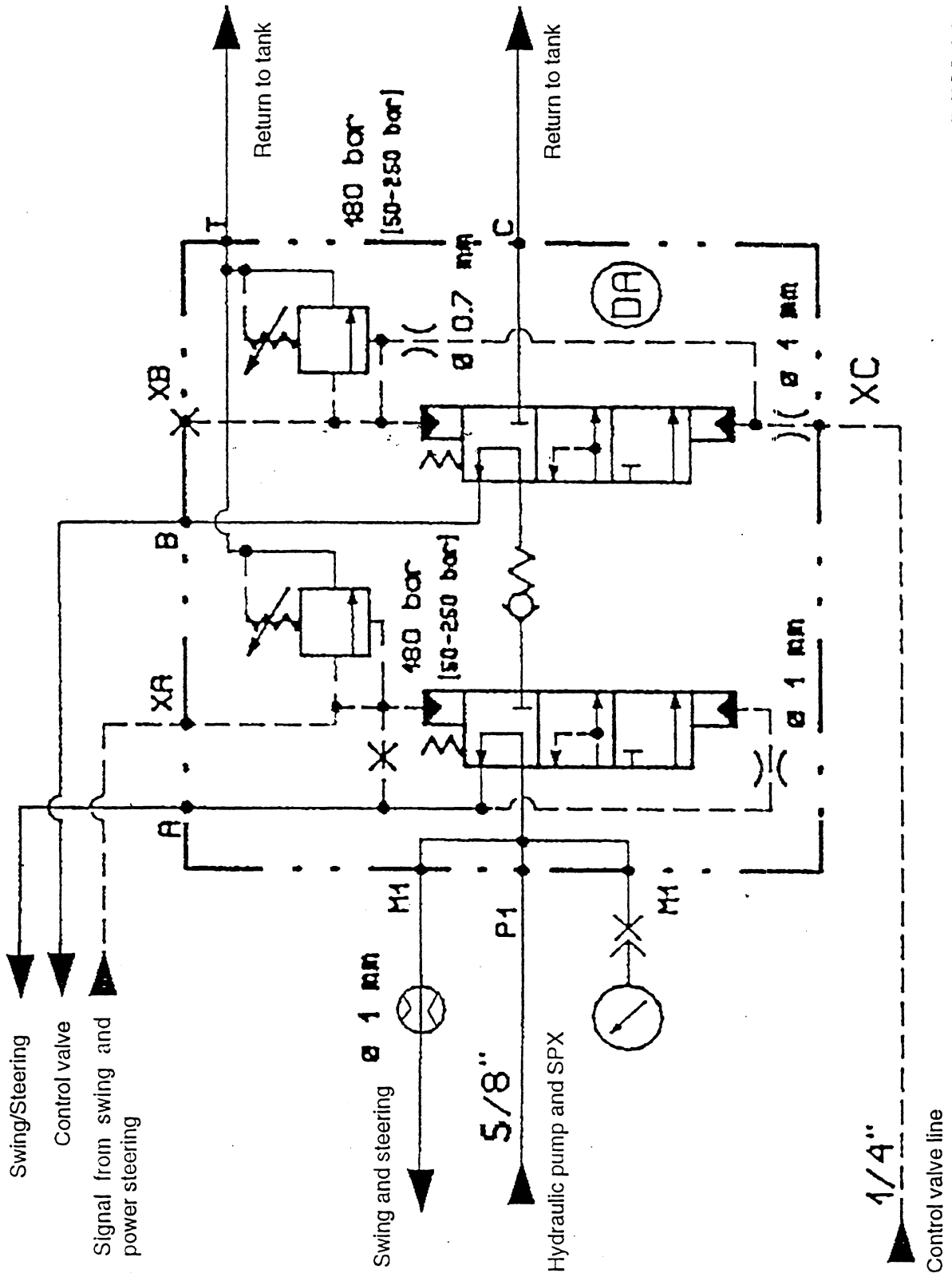
- Asean : Danfoss Industries Pte. Ltd., Singapore
- Australia : Danfoss (Australia) Pty. Ltd., Melbourne
- Austria : Hainzl Industriesysteme, Gesellschaft m.b.H, Linz
- Belgium : N.V. Danfoss S.A., Bruxelles
- Canada : Danfoss Mfg. Co. Ltd., Mississauga
- Denmark : H. Søndergaard A/S, Måløv
- Finland : OY Danfoss AB, Espoo
- France : Danfoss S.a.r.l., Trappes (Paris)
- FRG (W. Germany): Danfoss GmbH, Offenbach/Main
- Great Britain : Danfoss Limited, Greenford
- Iceland : Velsmidjan Hedinn, Reykjavik
- Italy : Sordella & C. Oleodinamica s.r.l., Torino
- Japan : Danfoss (Japan) Manufacturing Co., Ltd., Gotemba
- Netherlands : ITHO B.V., Schiedam
- New Zealand : Danfoss (New Zealand) Limited, Auckland
- Norway : Danfoss Norge A/S, Skui
- Spain : Danfoss S.A., Madrid
- Sweden : Transventor Hydraulik AB, Mölndal, Göteborg
- Switzerland : Werner Kuster AG, Frenkendorf
- U.S.A. : Danfoss Inc., Rockford, Illinois

Service shops:

- Greece : A. Skoura & Co. E.E., Athens
- Norway : Servi Produksjon A.S., Trondheim

Item	Spare Parts
1	Dust seal ring
2	Housing + spool + sleeve
3	Ball ø 8,5 mm
4	Thread bushing
5	O-ring 25, 12x1,78 mm, is used with kin-ring (item 6)
6	Kin-ring
6a	Lip seal
7	Bearing assembly
8	Bearing assembly
10	Ring I/D 39,6x0,7x4,5 mm
11	Cross pin ø6x41 mm
12	Neutral position spring
13	Cardan shaft
14	Spacer
15	O-ring ø80,5x1,5 mm
16	Distributor plate
17	Gearwheel
18	O-ring ø75,92x1,78 mm
19	End cover
20	Washer ø8,2x11,9x1,0 mm
22	Special screw
23	Screw
24	Rating plate
25	Drive screw
26	Spacer





DPV 60

SETTING OF PRIORITY VALVE UNIT WITH DISCHARGE L.S.-DPV 60

- With hot oil, 50°:70° C, connect the pressure gauge, range 250 bar, at the third intake (from the left to the right); (see Fig. 1/3)

- engine at 1/2 accelerator about 1200-1300 RPM

- set backhoe steering or swing to the end-of-stroke and check on the pressure gauge that pressure is at 180 Bar.

- in case it is necessary to set pressure operate valve Pos. 3 Table A

- unscrew valve protection nut with a 24 mm wrench (see Fig. 2/3)

- Loose setting lockout nut with a 24 mm wrench (see Fig. 3/3)

- with a 8 mm screw wrench tighten or untighten valve setting (by tightening pressure increases, by untightening it decreases) see Fig. 4/3, until the right pressure is reached.

- tighten setting lockout nut (Fig. 3/3)

- fit protection nut again (Fig. 2/3)

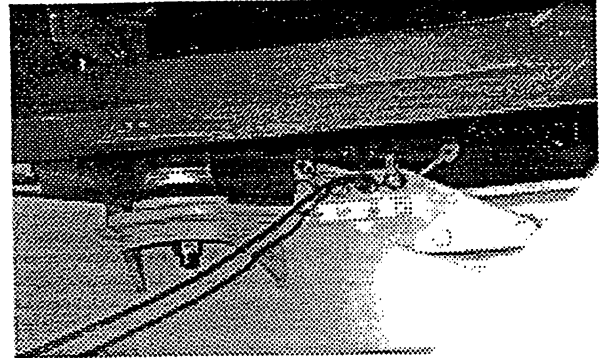


Fig. 1/3

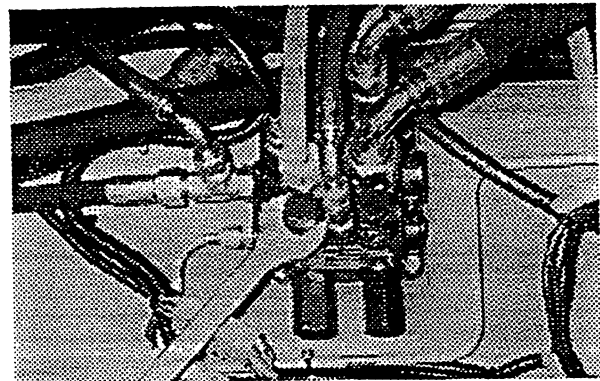


Fig. 2/3

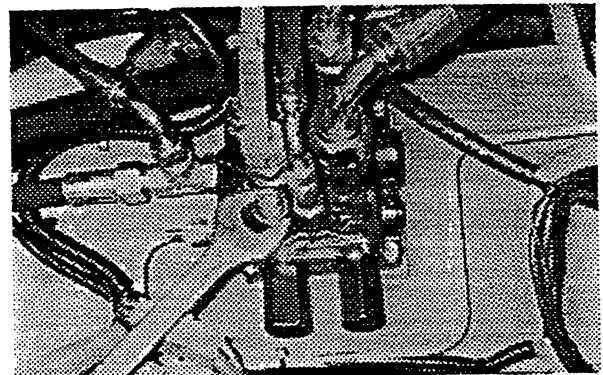


Fig. 3/3

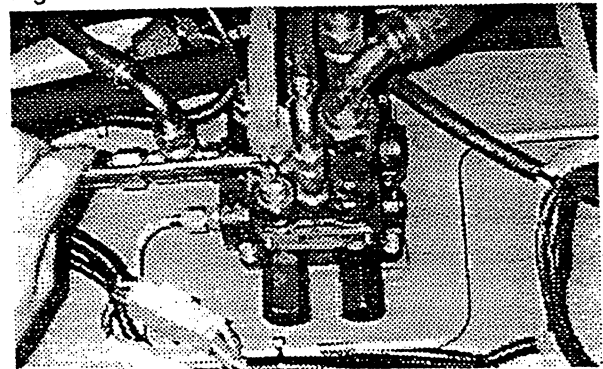
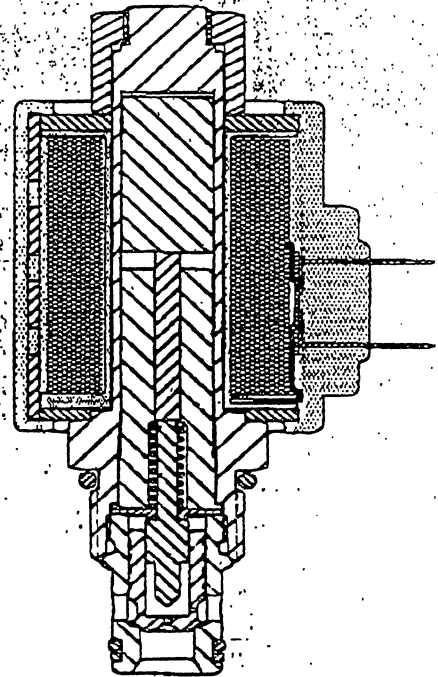
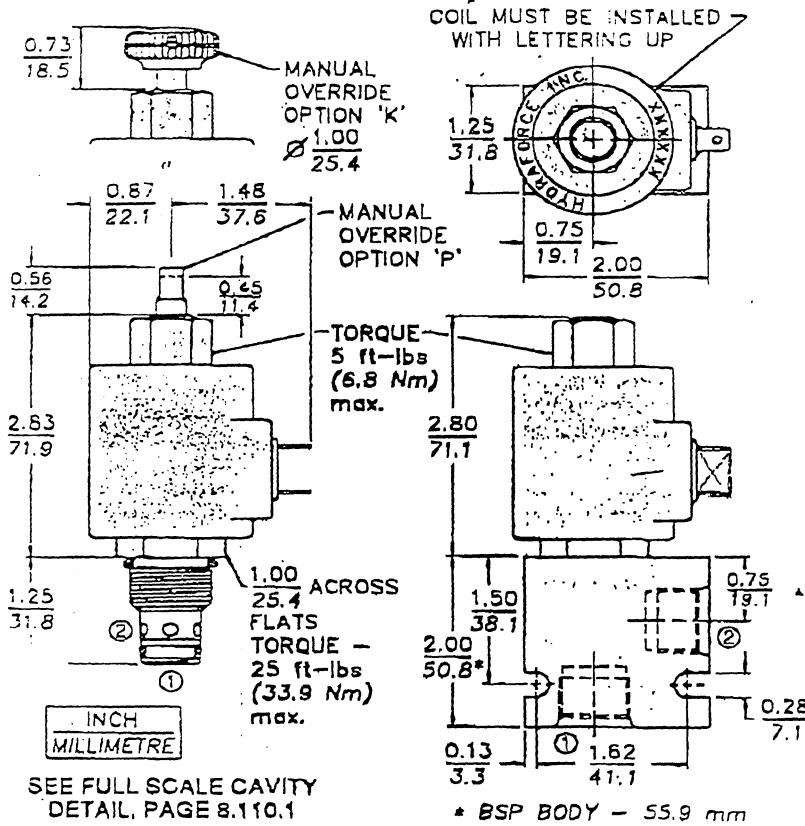


Fig. 4/3

DIMENSIONS



MATERIALS

Cartridge: Weight: 0.16 kg. (0.35 lbs.); Steel with hardened work surfaces. Zinc-plated exposed surfaces. Buna N O-rings and polyester elastomer back-ups standard.

Standard Ported Body: Weight: 0.16 kg. (0.35 lbs.); Anodized high-strength 6061 T6 aluminum alloy, rated to 240 bar (3500 psi); See page 8.042.1. Steel bodies available; consult factory.

Coil: Weight: 0.27 kg. (0.60 lbs.); Unitized thermoplastic encapsulated, Class H high temperature magnet-wire; See page 8.200.1.

TO ORDER

SV10-21

Option	
None (Blank)	
Screen	S
Manual Override without Knob	P
Manual Override with Knob	K
Waterproofing	W
Porting	
Cartridge Only	0
1/4 in. NPTF	2P
3/8 in. NPTF	3P
1/2 in. NPTF	4P
SAE 6	6T
SAE 8	8T
1/4 in. BSP*	2B
3/8 in. BSP*	3B
1/2 in. BSP*	4B
*BSP Body, U.K. Mfr. Only	

Voltage	
0 Less Coil	
10 10 VDC*	
12 12 VDC	
24 24 VDC	
36 36 VDC	
48 48 VDC	
110 110 VDC	
24 24 VAC	
115 115 VAC	
230 230 VAC	
*Available only with DS, DW or DL terminations	

Terminations (VDC)
DS Dual Spades
DG DIN 43650
DL Leadwires (2)
DW Leads w/Weatherpak® Connectors
DD Single 8-32 Stud, Internal Ground w/Diode
DE Dual 8-32 Stud
DB Single 8-32 Stud, Internal Ground
Terminations (VAC)
AG DIN 43650
AP 1/2 in. Conduit

Seals
N Buna N (Std.)
V Viton A

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