580LE-SLE-LSP-LPS 590SLE-LSP LOADER BACKHOES
TABLE OF CONTENTS

*Refer to the Engine Service Manual

Reprinted

CAPACITIES AND LUBRICANTS

Engine Oil
- Capacity with filter replacement ..... 11 litres
- Type of oil ..... refer to “Engine oil recommendations”

Engine cooling system
- Capacity without heating system ..... 15.8 litres
- Capacity with heating system ..... 16.5 litres
- Type of collant solution ..... refer to “Fluids and lubricants”

Fuel tank
- Capacity ..... 128 litres
- Type of fuel ..... refer to “Fluids and lubricants"

Hydraulic system
- Total hydraulic system capacity Model 580SLE ..... 125 litres
- Total hydraulic system capacity Model 580LE ..... 106 litres
- Total hydraulic system capacity Model 590SLE ..... 136 litres
- Hydraulic reservoir filling capacity with filter replacement ..... 54.5 litres
- Hydraulic reservoir filling capacity without filter replacement ..... 52.6 litres
- Type of fluid ..... CASE MS1210 or CASE Hydraulic Fluid

Transmission

580LE, 580SLE and 580LSP gearbox
- 2 Wheel Drive
  - Total system ..... 18.5 litres
  - Filling with or without filter replacement ..... 16 litres
  - Type of oil ..... CASE Hy-Tran Plus MS1207
- 4 Wheel Drive
  - Total system ..... 21 litres
  - Filling with or without filter replacement ..... 18.5 litres
  - Type of oil ..... CASE Hy-Tran Plus MS1207

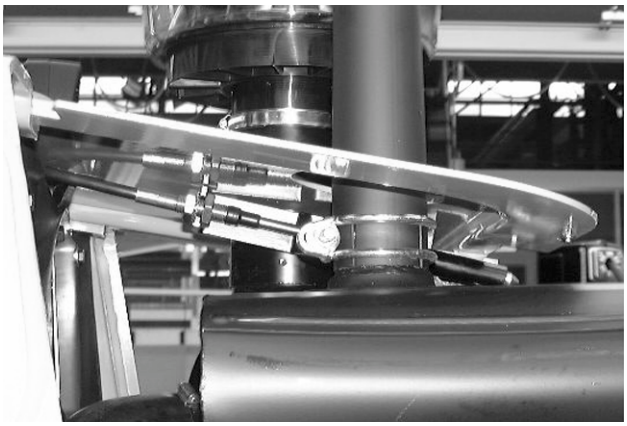
580LPS and 590SLE Powershift gearbox
- Total system ..... 21 litres
- Filling with filter ..... 18.5 litres
- Type of oil ..... Elfmatic G3

4 wheel drive front axle - 580LE, 580SLE and 580LSP
- Differential capacity ..... 6.5 litres
- Planetary capacity (each) ..... 1 litre
- Type of oil ..... CASE Wet Brake Lubricant MS1317 or SAE 85W140

Rear axle - 580LE, 580SLE and 580LSP
- Differential capacity ..... 14.2 litres
- Planetary capacity (each) ..... 2 litres
- Type of oil - Axle serial numbers before 586 ..... CASE Wet Brake Lubricant MS1317 or SAE 85W140
- Type of oil - Axle serial number 586 and on ..... CASE Hy-Tran Plus MS1207

Brake fluid reservoir ..... (automatically supplied with fluid from the hydraulic system)

STEP 30



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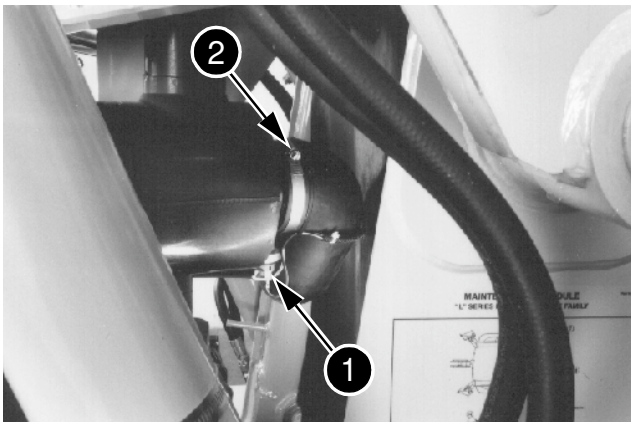
Loosen the clamp for the exhaust pipe at the muffler. Remove the exhaust pipe from the muffler.

NOTE: *When installing, tighten the clamp to a torque of between 53 and 61 Nm.*

STEP 31



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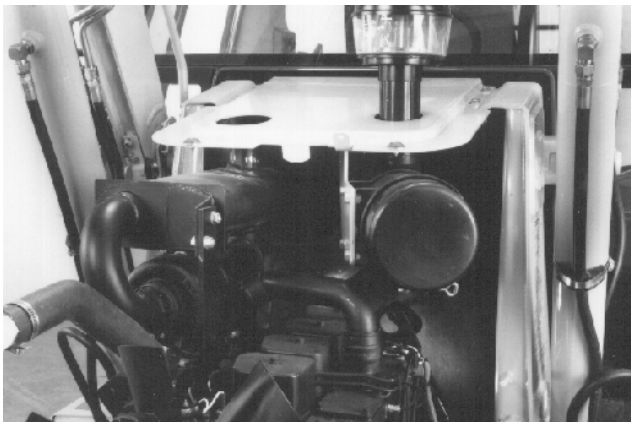
Remove the electrical connectors (1) from the air filter restriction warning lamp. Loosen the air filter hose clamp (2). Disconnect the air filter hose.

STEP 32



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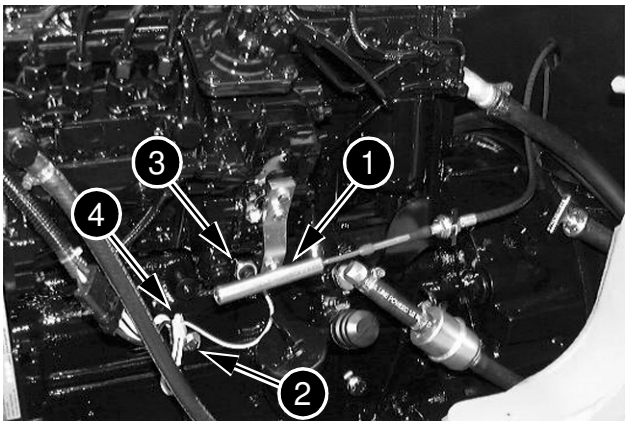
Remove the cap screws and flat washers that fasten the cover to uprights. Remove the cover and air cleaner as an assembly.

STEP 33



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Remove the tie straps (1). Disconnect the wiring harness clamp (2). Disconnect the cable from the oil pressure sender (3). Disconnect the fuel stop cable (4).

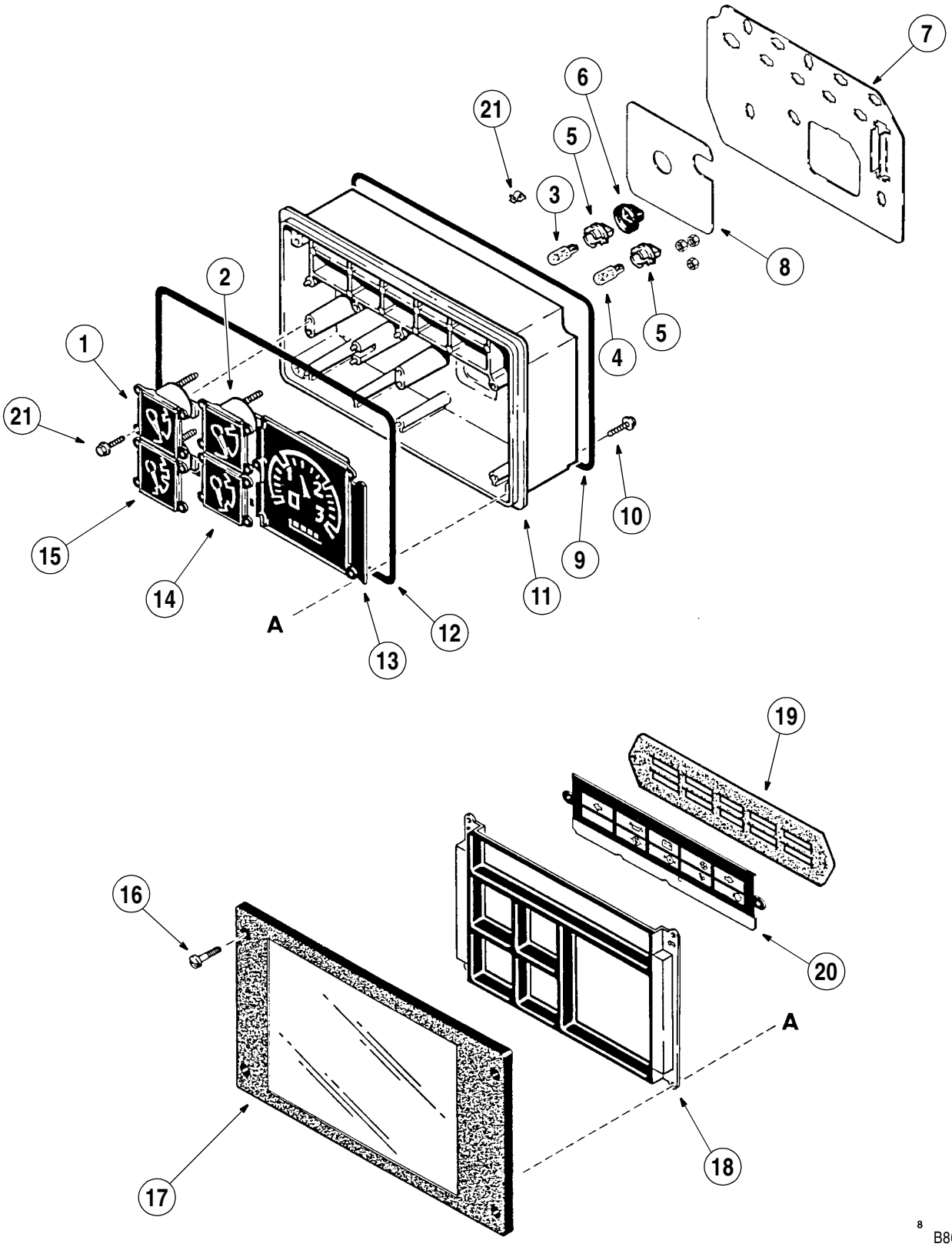
580SLE INSPECTION PROCEDURE (91 hp)

1. Prepare the machine for the stall tests as per the instructions in this section.
2. Warm up the hydraulic oil as per the instructions in this section.
3. Apply the parking brake and start the engine.
4. With the engine running at full speed, keep the loader control lever in the RAISE position and read the tachometer. Note the reading on the first line of the inspection sheet.
5. Reduce the engine speed to idle.
6. Move the transmission control lever to second speed and the direction of travel control lever to the FORWARD position.
7. Gradually increase engine speed up to full speed and read the tachometer. Note the reading on the second line of the inspection sheet.
8. With the transmission lever in second speed, the direction of travel control lever in the FORWARD travel position (the audible warning device sounds), and with the engine running at full speed, keep the loader control lever in the RAISE position and read the tachometer. Note the reading on the third line of the inspection sheet.
9. Reduce the engine speed to idle (over a period of 2 min with turbo-charger) and shut down the engine.
10. Refer to the inspection sheet to interpret the results of the stall tests.

580SLE INSPECTION SHEET (91 hp)

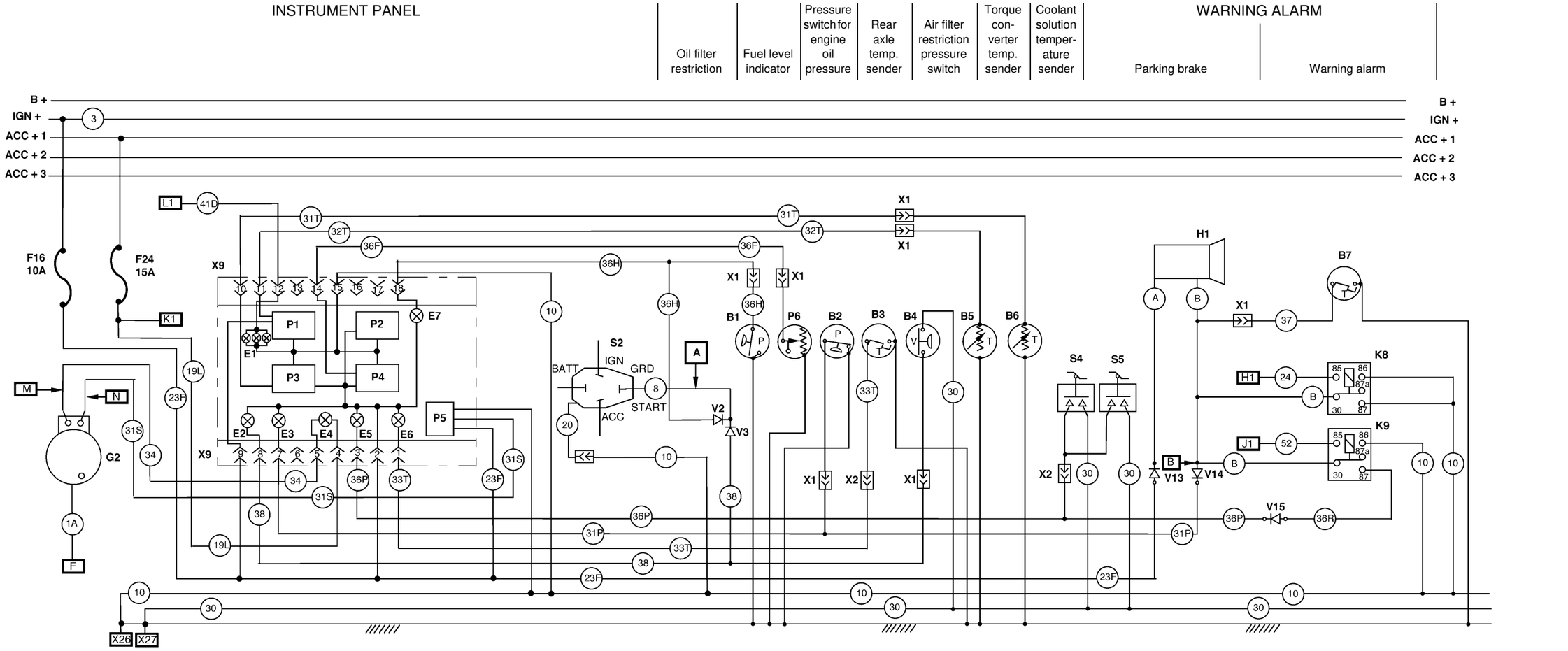
1. _____ rpm = hydraulic stall speed (specifications between 2225 and 2320 rpm)
2. _____ rpm = torque converter stall speed (specifications between 2150 and 2280 rpm)
3. _____ rpm = torque converter stall speed and hydraulic stall (specifications between 1485 and 1790 rpm)

rpm	
1. 2225 to 2320 2. 2150 to 2280 3. 1485 to 1790	Torque converter, transmission, hydraulic system and engine assumed to be in good condition.
1. Over 2320 2. Over 2280 3. Over 1790	Problem with the engine. Check the engine speeds. Refer to specifications in Section 9001. Check the fuel injection pump setting as per instructions in Section 3410.
1. Under 2225 2. Under 2150 3. Under 1485	Problem with engine. Check the engine speeds as per instructions in Section 9001. Check the fuel injection pump setting as per instructions in Section 3410. Change the fuel filter and the air filter.
1. Under 2225 2. 2150 to 2280 3. Under 1485	Problem(s) with the hydraulic system. Refer to Section 8002. Check the relief valve setting. Do the pump test.
1. Over 2320 2. 2150 to 2280 3. Over 1790	Problem(s) with the hydraulic system. Refer to Section 8002. Check the relief valve setting. Do the pump test. Check for leaks at the loader control valve.
1. 2225 to 2320 2. Over 2280 3. Over 1790	Problems with the transmission or torque converter. Refer to Section 6002 and check the transmission and the torque converter.
1. 2225 to 2320 2. Under 2150 3. Under 1485	Problems with the transmission or torque converter. Refer to Section 6002 and check the transmission and the torque converter.



8 B861764R

1. *Water temperature gauge*
2. *Oil temperature gauge*
3. *Bulb No. 194*
4. *Bulb No. 168*
5. *Socket*
6. *Rubber boot*
7. *Circuit board*
8. *Gasket*
9. *Gasket*
10. *screw*
11. *Body*
12. *Gasket*
13. *Tachometer*
14. *Voltmeter*
15. *Fuel gauge*
16. *Screw*
17. *Cover*
18. *Retainer*
19. *Gasket*
20. *Identification strip*
21. *Screw*



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M1

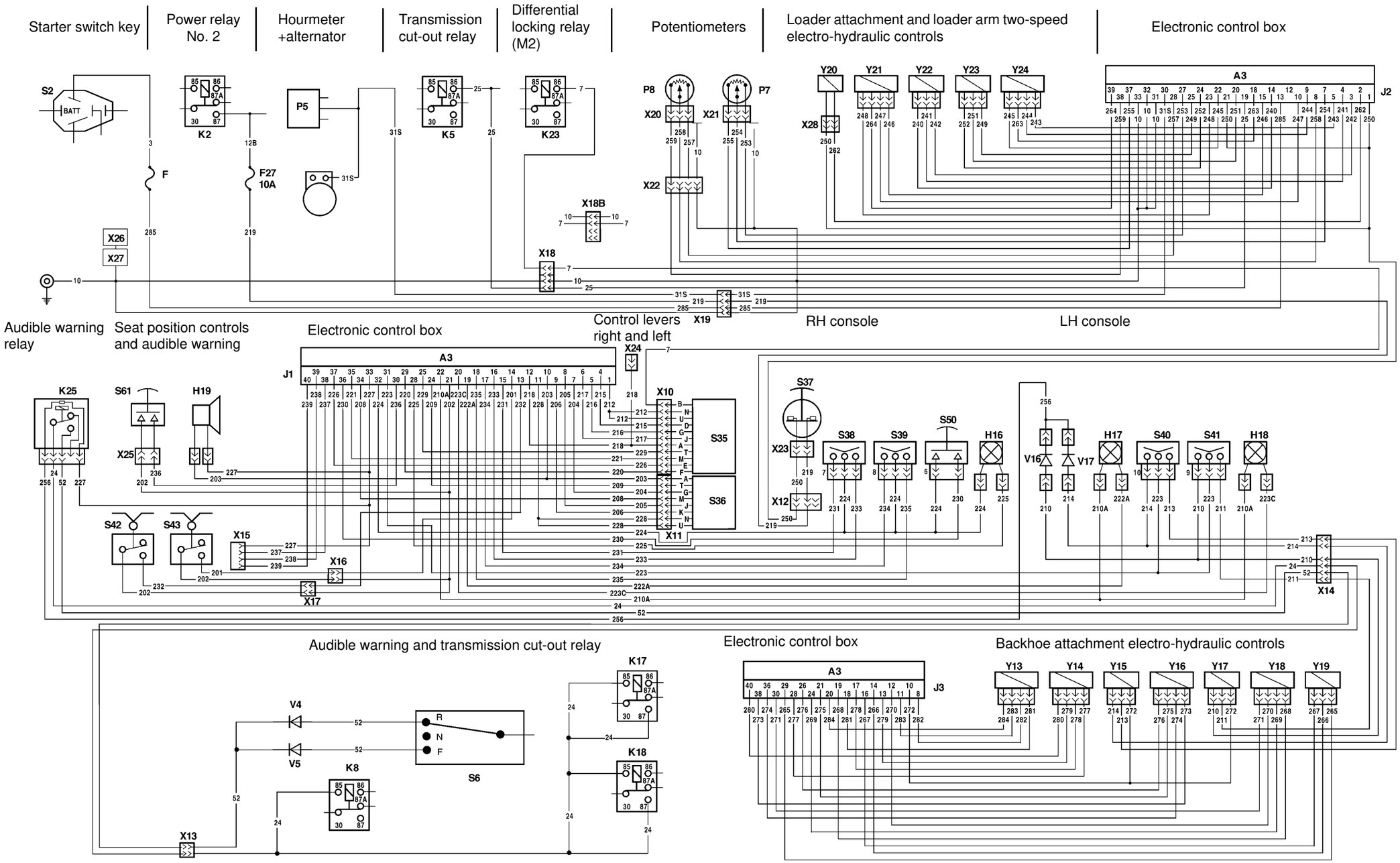
Wire number	Wire section mm²	Wire colour	Wire number	Wire section mm²	Wire colour
1A	8.5	Red	33T	1.5	Yellow/pink
8	1.5	Yellow/white	34	1.5	Yellow/black blue
10	1.5	Black/orange	36F	1.5	Yellow/brown
19L	1.5	Red/grey	36H	1.5	Yellow/purple
20	1.5	Black	36P	1.5	Yellow/brown
23F	1.5	White/orange	36R	1.5	Yellow/orange
24	1.5	White/brown	37	1.5	Yellow/white
30	1.5	Noir/yellow	38	1.5	Yellow/blue
31P	1.5	Yellow/red	39A	1.5	Purple/yellow
31S	1.5	Yellow/red	39B	1.5	Purple/white
31T	1.5	Yellow	41D	1.5	Grey/white
32T	1.5	Yellow/grey	52	1.5	Blue/red

Wire no.	M1	M2
A	39A	39
B	39B	37

M2

Wire number	Wire section mm²	Wire colour	Wire number	Wire section mm²	Wire colour
1A	8.5	Red	33T	1.32	Yellow
8	1.32	Yellow	34	1.32	Light green
10	1.32	Black	36F	1.32	Yellow
19L	1.32	Red	36H	1.32	Yellow
20	1.32	Black	36P	1.32	Yellow
23F	1.32	Red	36R	1.32	Grey
24	1.32	Grey	37	1.32	Yellow
30	1.32	Black	38	1.32	Yellow
31P	1.32	Yellow	39	1.32	Grey
31S	1.32	Yellow	41D	1.32	Red
31T	1.32	Yellow	52	1.32	Grey
32T	1.32	Yellow			

Connectors X1 - X2					
Wire no.	M1	M2	Wire no.	M1	M2
31P	X1 (C1)	X1 (B3)	36P	X2 (M)	X1 (M2)
31T	X1 (B3)	X1 (E5)	37	X1 (D1)	X1 (B4)
32T	X1 (G1)	X1 (C2)	38	X1 (D2)	X1 (D3)
33T	X2 (N)	X1 (M3)			
36F	X1 (F1)	X1 (B6)			
36H	X1 (F2)	X1 (D5)			



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Connectors X1 - X2		
Wire no.	**M1**	**M2**
3	F20/10A	F18/10A

CHASSIS WIRING (M2)

1 Parking brake connector
2 Rear axle oil temperature connector
3 Hydraulic filter
4 Hydraulic filter restriction switch
6 **X1** connector, chassis harness/side console harness, see side console wiring
7 Fuel level indicator harness
8 **X6** connector, chassis harness/cab harness, road lights, side lights and flasher lamp, see front and rear lighting wiring
9 Transmission temperature sender
10 Transmission cut-out connector
11 Cold start cable
12 Air filter harness
13 Windshield washer pump connector
14 Windshield washer pump connector
15 **X4** connector, chassis harness/front console harness, see front console wiring
16 Starter motor earth strap
17 Starter motor
18 Coolant solution temperature thermal switch
19 Coolant solution temperature sender
20 Horn
21 Alternator
22 Cable, starter motor solenoid
23 Starter motor/alternator positive cable
24 Battery positive cable
25 Bucket automatic return harness
26 4 wheel drive connector
27 Transmission forward, reverse connector
28 **X5** connector, chassis harness/cab harness, road lights, sidelights and flasher lamp, see front and rear lighting wiring
29 Diodes
30 4th gear reverse lock-out (option)
31 Negative battery cable
32 Battery master switch
33 Bucket automatic return connector
34 Chassis main harness
35 Parking brake connector
36 **X7** connector, chassis harness/brake lights harness, fog light, flasher lamps, rear sidelights and registration plate light, see front and rear lighting wiring
37 Reversing light connector
38 Reverse audible warning device connector
39 Reverse audible warning device
40 **X13** connector, stabilizer raising safety
41 Sideshift carriage locking/unlocking connector
42 Sideshift carriage locking/unlocking solenoid valve
43 Stabilizer raising safety switch
44 Engine oil pressure cable
45 Injection pump solenoid valve cable
46 Diode (**V8**), forward travel transmission solenoid valve
47 Diode (**V9**), reverse travel transmission solenoid valve
48 Starter motor/fuse block positive cable
49 Air conditioning high pressure switch connector
50 Air conditioning compressor connector
51 Diode (V50), differential locking solenoid valve
52 Differential locking solenoid valve connector
53 Supply wire to fuse F13
54 Fuel injection pump solenoid valve connector (low emissions engine)

Wire number	Wire section mm^2	Wire colour	Coming from	Going to
1G	3.32	Red	Battery	Relay, T30 fuel injection pump solenoid valve (low emissions engine)
1L	3.32	Red	Battery+ (battery master switch)	Fuse box
2	3.32	White	Relay, T87 fuel injection pump solenoid valve	Fuel injection pump solenoid valve (low emissions engine)
3	3.32	White	Starter switch (cont.)	Sol. Solenoid for fuel shut-off, cold start switch Fuse block 2C, 4C, 6C & 12C
3C	1.32	Black	RH cab loud-speaker	Radio earth
19B	3.32	Red	Fuse block 5A	Hazard warning light switch, horn relay T85, T30
19F	1.32	Red	Fuse block 7D	Solenoid for loader return to dig, sideshift, locking switch
19L	1.32	Red	Fuse block 5D	Hazard warning light switch, brake light switch, instrument panel T4

Wire number	Wire section mm^2	Wire colour	Coming from	Going to
21	1.32	Red	Clutch relay T87a	FWD - N -REV lever (+), 3 & 4 slow speed relay T30, slow speed control switch and PTO
21B	3.32	White	Starter motor relay T87	Starter motor solenoid
21C	1.32	White	FWD - N - REV lever (neu.)	Neutral relay T85
24	1.32	Grey	Stab. lever switch	Neutral 1 locking relay, T85. T87. neutral 2 locking relay, T85, T87, audible warning locking relay T85
25	1.32	Red	Clutch relay T86	4th gear clutch locking switches REV (4th) clutch locking relay T30
25A	1.32	Light blue	FWD - N - REV (FWD) lever	front relay T85, diode To cables 25G & 25J
25B	1.32	Light blue	FWD - N - REV (REV) lever	REV relay T85, diode, opt., 4th gear REV micro-switch
25C	1.32	Red	4WD cont. switch	4WD solenoid
25S	1.32	Grey		
26	1.32	Light blue	Neutral 1 locking relay, T87	front solenoid and diode
27	1.32	Light blue	Neutral 2 locking relay, T87	Wire 51A, forward travel solenoid & diode
27A	1.32	Grey	REV 4th gear micro-switch	Relay, T85. Reverse travel 4th gear clutch locking
28	2.07	Light blue	Cold start switch	Cold start pre-heat plug
30	3.32/1.32	Black	Accessories	Earth
31P	1.32	Yellow	Instrument panel T7	Oil pressure switch & diode
31S	1.32	Yellow	Tach. Alt. output	Servo, tach. Instrument cluster harness
31T	1.32	Yellow	Instrument cluster T10	Oil cooler temp. sender
32T	1.32	Yellow	Instrument cluster T11	Transmission temp. sender
33T	1.32	Yellow	Instrument cluster T1	Rear axle temp. switch
34	1.32	Light green	Alternator	Instrument cluster T5
36F	1.1.32	Yellow	Instrument cluster T14	Fuel level sender
36H	1.32	Yellow	Instrument cluster T18	Hydraulic filter restriction & diode connector
36P	1.32	Yellow	Instrument cluster T3	Parking brake switch & diode
37	1.32	Yellow	Audible warning device (-) Wire 39B	Oil cooler temp. switch
38	1.32	Yellow	Instrument cluster T8	Air filter restriction switch & diode
41A	1.32	Red	Fuse block 10A	Front road lighting
41D	1.32	Red	Fuse block 7C	Instrument cluster T12, frt LH & rear RH side lights
41E	1.32	Red	Fuse block 9C	Fog light switch, front RH and rear brake lights G
43	1.32	Tan	Flasher unit relay T49A	Direction indicator & hazard warning light switches
44	2.07	Tan	Brake switch	Brake lights
45L	1.32	Tan	Direction indicator switch	Diodes, direction ind. lamps, frt & rear direction indicator, LH side light
45R	1.32	Tan	Direction indicator switch	Diodes, flasher ind. lamp, frt. & rear flashers, RH side mounted light
46	1.32	Tan	Hazard warning lights switch	Flasher unit relay T49
47	1.32	Grey	Fog light switch	Fog light
52	1.32	Grey	Diodes	Audible warning relay T85, stabilizer lever cont. switch
53	1.32	Red	Loader return to dig solenoid valve	Return to dig limit switch (NC)
60	1.32	Red	Aircon. thermostat	Air conditioning relay T30 and air conditioning control
60A	1.32	Red		
60B	1.32	Grey	Air conditioning relay T86, T87	High and low pressure air conditioning pressure switches
61B	1.32	Red	Cab interior light	Cab interior light switch
62	1.32	Grey	Washer switch (frt.)	Frt. windshield washer pump
64A	1.32	Red	Horn relay T86	Frt & rear horn switches
64B	1.32	Grey	Horn relay T87	Horn
65	1.32	Grey	Windshield washer switch (rear)	Rear windshield washer pump
72	1.32	Grey	Sideshift locking switch	Sideshift locking solenoid valve

FRONT AND REAR LIGHTING WIRING (M1 + M2)

1 Registration plate lighting
2 Connector, registration plate and fog light
3 Connector, registration plate and fog light
4 Fog light
5 Brake light, side light and left-hand rear direction indicator
6 Brake light, side light and left-hand rear direction indicator connector
7 Connector **X7**, rear lighting harness, see chassis wiring
8 Reversing light
9 Brake light, side light and right-hand rear direction indicator
10 Brake light, side light and left-hand rear direction indicator connector
11 Reversing light connector
12 Reversing light connector
13 Headlight, direction indicator and front right-hand side light
14 Connector **X5**, headlights, direction indicator flasher and RH front sidelight/chassis hear, see chassis wiring
15 Connector **X6**, headlights, direction indicator flasher and RH front sidelight/chassis hear, see chassis wiring
16 Headlight, direction indicator and front left-hand side light
17 Rear lighting harness
18 Reversing light connector

M1

Wire number	Wire section mm^2	Wire colour	Coming from	Going to
30	1.5	Black/yellow	Accessories	Earth
41A	1.5	Pink/blue	Fuse block 10A	Front road lights
41D	1.5	Green/white	Fuse block 7C	Instrument cluster T12, frt LH & rear RH side lights
41E	1.5	Green/yellow	Fuse block 9C	Fog light switch, frt RH and rear brake lights G
44	2	Tan	Brake switch	Brake lights
45L	1.5	Dark brown/yellow	Direction indicator switch	Diodes, direction ind. lamps, frt & rear direction indicator, LH side light
45R	1.5	Dark brown/green	Direction indicator switch	Diodes, flasher ind. lamp, frt. & rear flashers, RH side mounted light
47	1.5	Brown/white	Fog light switch	Fog light
51A	1.5	Red/yellow	Cable 27 and diode	REV: audible warning (+) & light or cable 54

M2

Wire number	Wire section mm^2	Wire colour	Coming from	Going to
27	1.32	Light blue	Relay 2, for changing to neutral	Reversing light & reversing audible warning device
30	1.32	Black	Accessories	Earth
41A	1.32	Red	Fuse box	Front road lights
41D	1.32	Red	Fuse box	Instrument panel T12, front LH sidelight and rear RH sidelight
41E	1.32	Red	Fuse box	Fog light switch, front RH sidelight and rear LH sidelight, registration plate lighting
44	2.07	Tan	Brake contact switch	Brake lights
45L	1.32	Tan	Direction indicator switch	Diodes, flashing indicator lamp, LH front, rear and side direction indicator flashing lights
45R	1.32	Tan	Direction indicator switch	Diodes, flashing indicator lamp, RH front, rear and side direction indicator flashing lights
47	1.32	Grey	Fog-light switch	Fog light

FOREWORD

This section is divided into five parts:

1 Electronic system presentation.

2 Electronic system troubleshooting using self-inspection device built into the electronic control box.

3 Troubleshooting guide.

4 Electronic system troubleshooting using the tools: CAS-2110A, CAS-2524 and CAS-1559.

5 Adjustments.

When carrying out a servicing operation on the machine, you are recommended to carry out the following steps in the order shown:

1 Check if the incident which you have detected is of electrical or hydraulic origin Refer to la page 4S14 (Service Manual yellow page).

2 Make sure when switching on the electronic system that the electronic box self-inspection device does not detect any error code. Warning lamps H17 and H18 should not be flashing. If they are flashing, refer to section "Electronic system troubleshooting" on page 8.

3 Use the troubleshooting guide to make an accurate diagnosis of the cause of the problem, refer to page 13.

4 If you have still not detected the cause of the problem by using the troubleshooting guide, carry out the diagnosis of the electronic system using tools CAS-2110A, CAS-2524 and CAS-1559. Refer to page 34.

Problems connected with the loader: automatic functions (continued)

It is impossible to record a new return-to-work position.

a) Make sure, first of all, that the recorded position is about 40 cm above the ground. The default position will be recorded if the edge of the bucket is less than 40 cm from the ground when the memorisation key (S50) is pressed.

b) Carry out the calibration (see page 32).

NOTE: *Calibration can fail if the recording button (S50) is defective. To check the correct operation of this button, carry out the component inspection procedure (C1). See page 24.*

The loader movements for return-to-level and return-to-position seem correct but the speed of movement seems slower and does not seem to change with the speed of the engine.

a) Check the operation of the tachometer and of the hourmeter on the instrument panel. If these components do not operate correctly or if error codes 25 or 26 are displayed on the indicator lamps (H17) and (H18), carry out the procedures shown on page 4S15 (yellow page of the service manual).

b) If the tachometer and the hourmeter operate correctly or if error codes 25 or 26 are displayed, check the tachometer connection between wire (31S) on the connector (X18) and pin (30) on the control box (J2) connector. See the electrical schematic.

The loader arms fall to the "Floating" position when return-to-level is operated, after button (S45) has been pressed, when the bucket stops 60 cm above the ground, with the loader in mode 1.

OR

The loader does not lower completely to the ground when return-to-level is selected, with the loader in mode 2.

OR

The loader arms do not move at all, after the return-to-level button (S45) has been pressed and the RH control lever (S35) pushed forward, with the loader in mode 3.

a) Lower the bucket flat on the ground.

NOTE: *The following checks (a) to (g) can be carried out with the engine shut down but with the circuit live (starter switch = "ON").*

b) Select mode 3 on the loader mode selector (S39). The yellow indicator lamp (H16) should start to flash.

c) Press the return-to-level button (S45) and move the RH control lever (S35) forward.

d) Release the RH control lever (S35). The yellow indicator lamp should stop flashing and stay on.

e) Check the voltage (0V) at pin (4) on the connector (J2) for the electronic control box.

f) If the voltage at (e) is not correct, this shows that the electronic control box (A3) is defective and that it must be replaced. Change the electronic control box, not forgetting to carry out a new calibration (see page 32), after the change has been completed. If the voltage at (e) is correct, make sure that the voltage is the same at pin (T2) on the connector for the floating position control valve (Y22).

g) If the voltage at pin (T2) on the connector for the floating position control valve (Y22) in (f) is correct, this shows that the floating position control valve is defective and that it must be replaced. If the voltage is incorrect, make sure that there is continuity between pin (4) on the connector for the electronic control box (J2) and pin (T2) on the connector for the floating position control valve (Y22).

h) If the voltage at pin (T2) of the "floating" position control valve (Y22) in (F) is correct, check that there is approximately 12V at pin (T2) on the floating position control valve (Y22).

i) If the voltage at pin (T1) on the "floating" position control valve (Y22) at (h) is correct, this shows that the "floating" position control valve is defective and that it must be replaced.

j) If the voltage at pin (T1) on the "floating" position control valve (Y22) at (h) is not correct, check for continuity between pin (3) on the connector (J2) for the control box and pin (T1) on the "floating" position control valve (Y22).

d) The voltages measured at (c) should be about 50% of the voltages at pins <1> and <11> on electronic control box connector (J1) when the control lever is centred. When the control lever is operated within its limits, these voltages should also vary approximately between 25% and 75% of the voltages at pins <1> and <11> on the connector (J1).

e) Now check the signals <<with the control lever centred>> at the following pins:

FUNCTION	CONNECTOR PIN No. (J1)
RH control lever CENTRE	25
LH control lever CENTRE	24

f) The voltage signal "CENTRE" should show about 0 V when the control lever is centred and about 12 V when the control lever is operated.

g) Now check buttons on the control levers as follows:

Connector pin No. (J1)	Button	Function	ON	OFF
			(approx)	
-	S60	Differential lock	-	-
37	S44	Return to position (Right)	12 V	0.7 V
29	S45	Return to level (Right)	12 V	0.7 V
12	S48	Transmission cut-out (Right)	12 V	0.2 V
9	S46	Bucket shaking (Left)	12 V	0.7 V
10	S47	Working mode change (Left)	12 V	0 V

h) If some voltages from (c) to (g) are not correct, disconnect the connectors (X10) and (X11) from the control levers. Then apply 12 V (for example from a 12 V battery) directly on the pin <U> or <N> and apply the earth to the pin <M>. Cary out the (c) to (g) operations again.

i) If the voltages on repeating (c) to (g) with the connectors disconnected from the control levers are still not correct, the control lever(s) is/are defective and must be changed. Otherwise, recheck the connections between (X10) and (X11) and the electronic control box connector (J1), the continuities and transverse connections as at (b).

General comments

Check that all the indicator lamps are working by entering the "emergency" mode. The three lamps (H16), (H17), (H18) should flash at intervals of 0.5 seconds. If one lamp does not flash, check the lamp and the harness, change if defective.

NOTE: *In the "Emergency" mode, there can be a slight jerkiness in <<pulsation>> the loader functions which follows the flashing frequency of the indicator lamps. This is normal.*

SAFETY RULES

Never try to charge the battery if the electrolyte in the battery is frozen.

47-83A

Never cause sparks to occur or smoke near batteries that are charging or have been recently charged.

13-8A

Disconnect the ground cable first when the battery cables are disconnected from the battery.

Connect the ground cable last when the battery cables are connected to the battery.

47-55A

Some batteries have a ventilation tube. If there is battery acid in the ventilation tube, this battery acid can be released when the battery is turned upside down. If you turn the battery upside down, make sure that the end of the ventilation tube is away from you and away from any other people in the area. Battery acid can cause severe burns.

48-57B

If the battery(s) in this machine must have nonspill caps, do not operate the machine if the nonspill caps do not work correctly, or if the nonspill caps are not in place.

48-99A

Battery acid causes severe burns. Batteries contain sulfuric acid. Avoid contact with skin, eyes, or clothing. Antidote: EXTERNAL-Flush with water. INTERNAL-Drink large quantities of water or milk. Follow with milk of magnesia, beaten egg, or vegetable oil. Call physician immediately. Eyes: Flush with water for 15 minutes and get prompt medical attention.

Batteries produce explosive gases. Keep sparks, flame, and cigarettes away. Ventilate when charging or using in enclosed area. Always shield eyes when working near batteries.

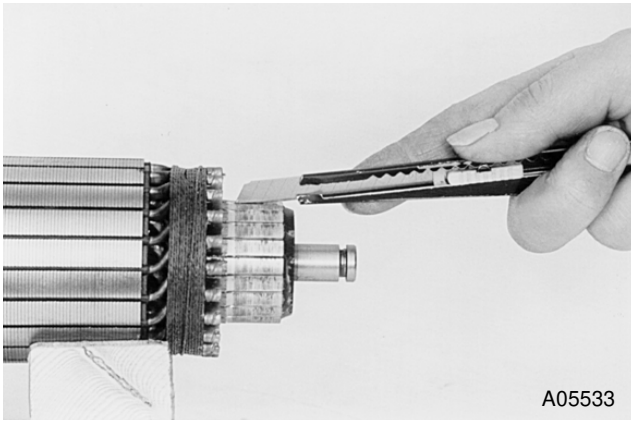
Keep out of reach of children.

D-47-53A

SPECIAL TOOLS

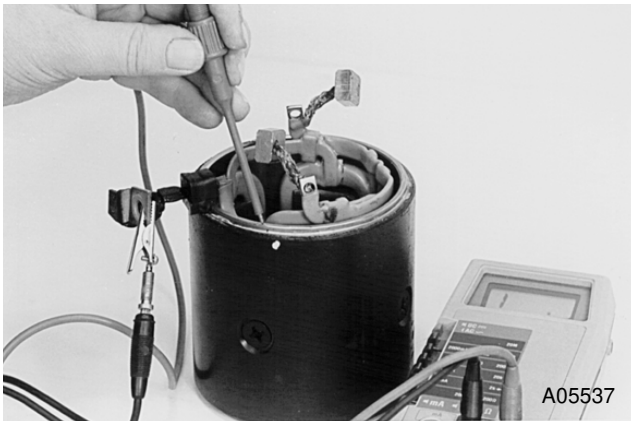
The CAS-10147 tester is used to do the Capacity (Load) Test. This tool is first used on page 4003-7.

STEP 24



If the depth of the groove between the commutator bar is less than 0.2 mm, cut the insulation between the commutator bar to a depth of 0.5 mm. Use sandpaper to remove the rough edges from the commutator bar. DO NOT use emery cloth.

STEP 25



Touch one probe of the multimeter to the field coil terminal and the other probe to an unpainted area on the surface of the frame. If there is continuity the field winding is grounded and must be replaced.

STEP 26

Touch one probe of the multimeter to the field coil terminal and the other probe to the brush connection. If there is no continuity the field winding has an open circuit and must be replaced.

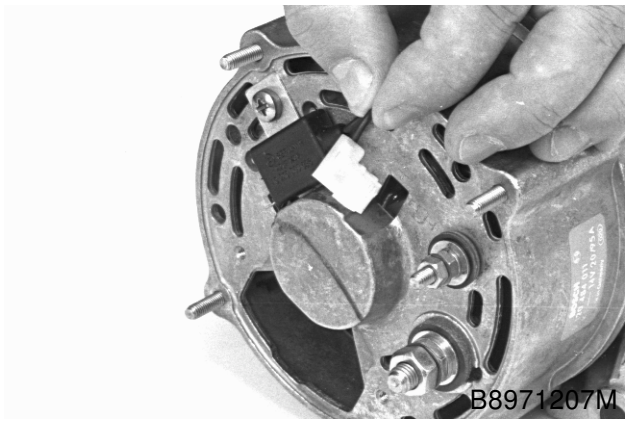
STEP 27

Check the splines and teeth of the overrunning clutch for wear and damage. Make sure the drive clutch moves freely on the armature shaft.

STEP 28

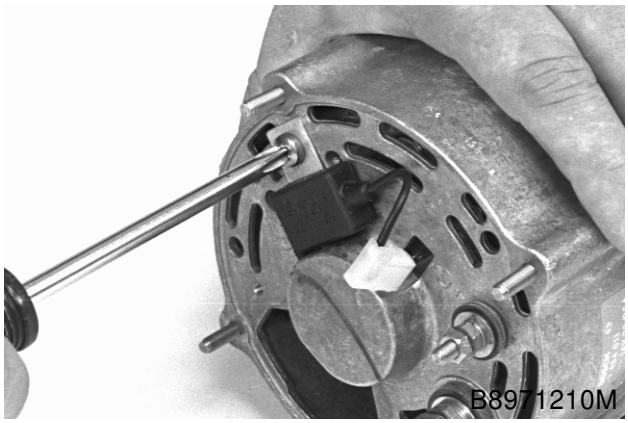
Check the bushings in the drive clutch, drive housing and end cover, replace if worn or damaged.

STEP 7



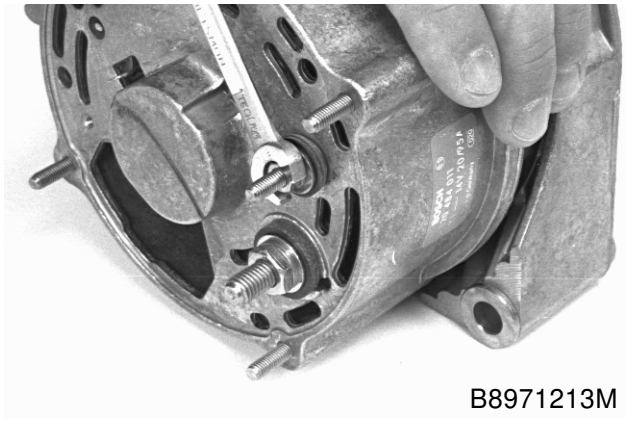
Disconnect the lead for the capacitor.

STEP 8



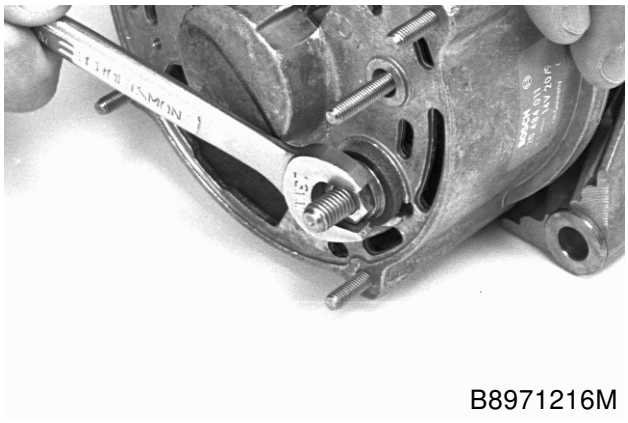
Loosen and remove the screw and remove the capacitor.

STEP 9



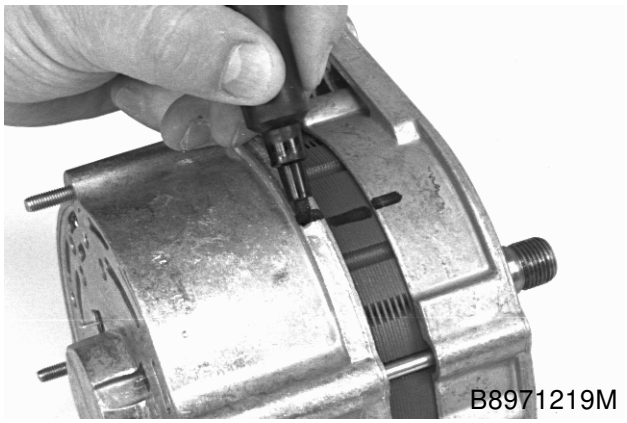
Loosen and remove the nut, flat washer, and fiber washers from the D+ terminal.

STEP 10



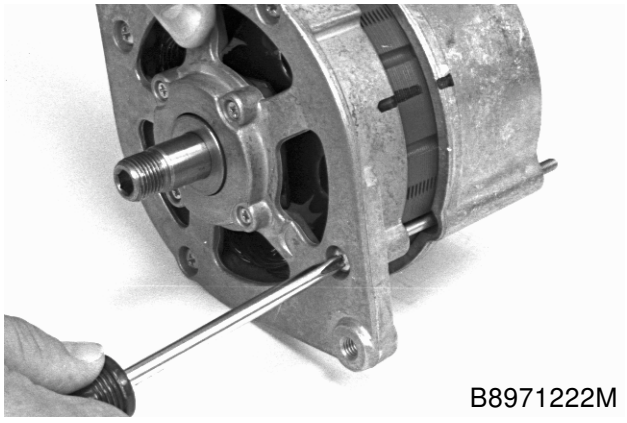
Loosen and remove the nut, flat washer, and fiber washers from the B+ terminal.

STEP 11



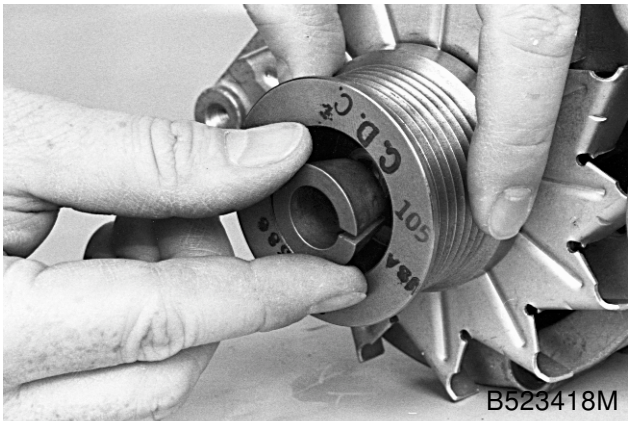
Make an alignment mark on the cover, the stator, and the housing.

STEP 12



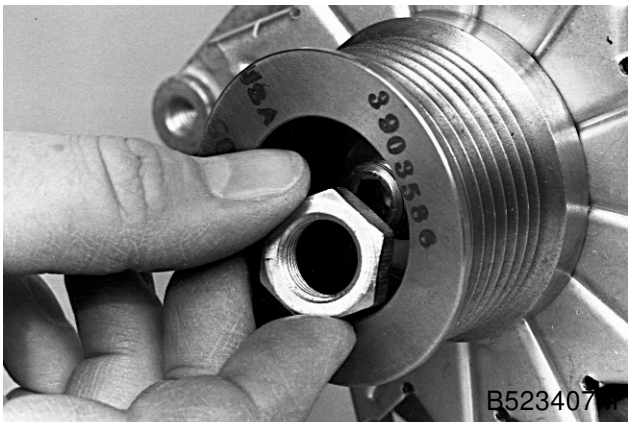
Loosen and remove the screws that fasten the cover, stator, and housing together.

STEP 56



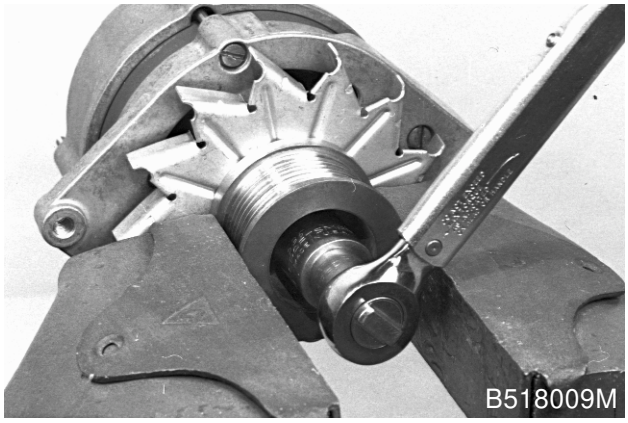
Install the pulley and the tapered bushing.

STEP 57



Install the lock washer and start the nut onto the shaft.

STEP 58



Fasten the pulley in a vise with soft jaws. Tighten the nut to 60 to 70 Nm.

FRONT AXLE - TWO WHEEL DRIVE MACHINES

Removal

1. Raise the front wheels above the floor and use suitable stands to hold the machine in place.
2. Loosen and remove the wheel bolts and remove the wheels.
3. Fasten an identification tag to one of the hoses for the steering cylinder.
4. Disconnect the hoses from the fittings in the steering cylinder. Install a plug in each hose and a cap on each fitting.
5. Remove the snap ring (1) from the rear of the pivot pin (2).
6. Remove the spacers (6).
7. Loosen and remove the grease fitting (4) from the end of the pivot pin (2).
8. Put a floor jack under the axle (5) to hold the axle (5) in position.
9. Drive the pivot pin (2) out of the frame.
10. Spacers (3 and 6) are used at the front and rear of the axle (5), between the axle (5) and the frame. Lower the axle (5) and remove the spacers (3).
11. Remove the axle (5) from under the machine.

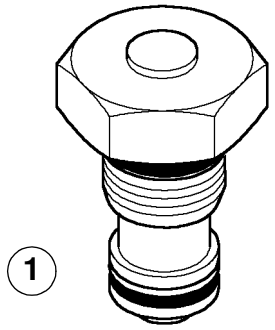
Installation

1. Raise the axle (5) into alignment with the machine.
2. Loosen and remove the grease fitting (4) from the other end of the pivot pin (2). Install the pivot pin (2) with the tapered end of the pivot pin (2) toward the rear of the machine.
3. Install a spacer (3) between the front of the axle (5) and the frame. Use spacer(s) (3) to remove any end play.
4. Start the pivot pin (2) into the frame, spacer(s) (3) and axle (5).
5. Drive the pivot pin (2) into the rear pivot of the axle (5) but not through the rear pivot.
6. Install the spacer (6) between the rear of the axle (5) and the frame.

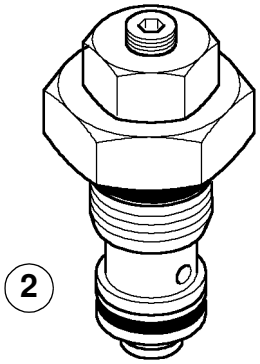
NOTE: *Remove or install spacer(s) (3) as required between the front of the axle and the frame to remove any end play.*

7. Drive the pivot pin (2) through the rear pivot and the frame.
8. Install the snap ring (1) on the tapered end of the pivot pin (2).
9. Hit the pivot pin (2) to move the pivot pin (2) toward the front of the machine as far as possible.
10. Check the end play between the frame and the snap ring (1) on the pivot pin (2) at the front of the machine. Use spacers (3) as required to remove any end play.
11. Install a grease fitting (4) in each end of the pivot pin (2). Tighten the grease fittings (4).
12. Loosen and remove the plugs from the hoses and the caps from the fittings for the steering cylinder.
13. Connect the hoses to the steering cylinder.
14. Install the wheels and wheel bolts. DO NOT use an impact wrench to tighten the wheel bolts.
15. Tighten the screws to a torque of between 156 and 203 Nm.
16. Remove the stands and lower the wheels to the floor.
17. Lubricate the pivot pin (2) for the axle (5).

WARNING: *When carrying out an operation on the loader control valve, never try to operate the machine if the control valve was equipped with a safety valve which has been removed.*
Never equip the machine with an "Option circuit" or "Swing priority" without first installing a safety valve.
Never install a control valve which is not fitted with a safety valve on a machine from No. 1 series or before.



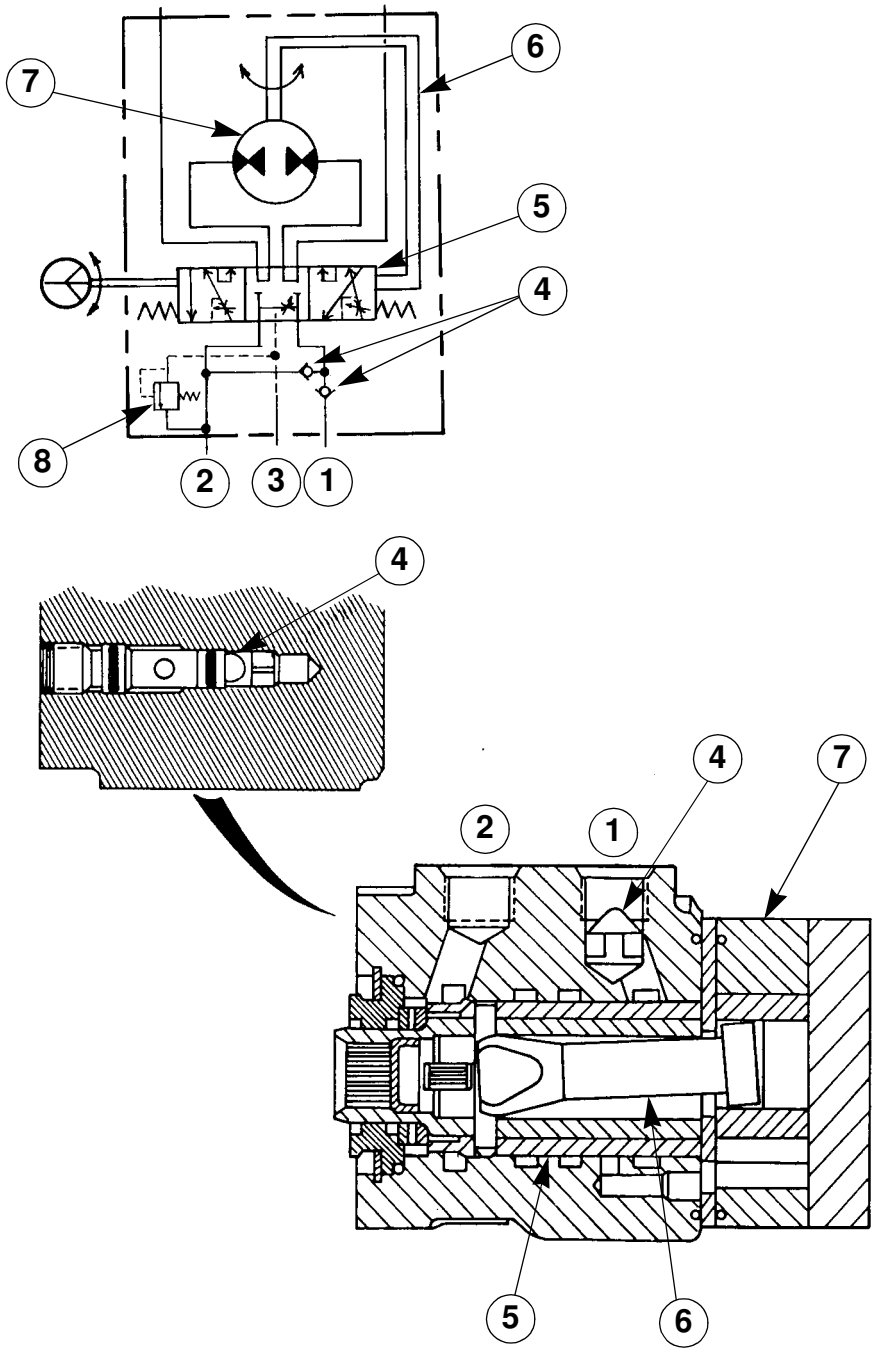
CI00C511



CI00C512

1 CIRCUIT RELIEF VALVE
2 PLUG

4 STEERING CONTROL VALVE

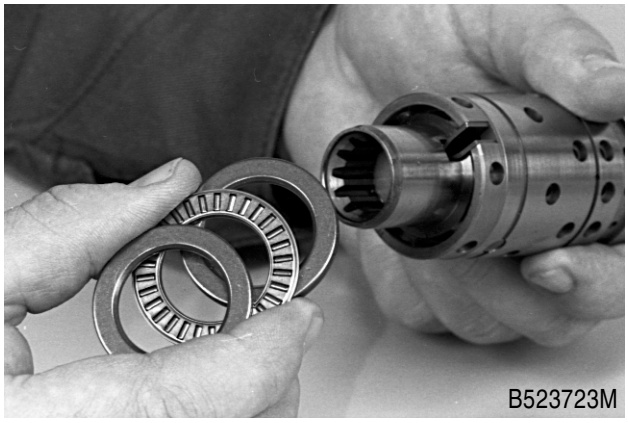


B9409046

1 INLET PORT
2 OUTLET PORT
3 PILOT
4 NON-RETURN CHECK VALVE
5 SPOOL AND SLEEVE ASSEMBLY
6 DRIVE LINK
7 ROTOR AND STATOR GROUP
8 STEERING RELIEF VALVE

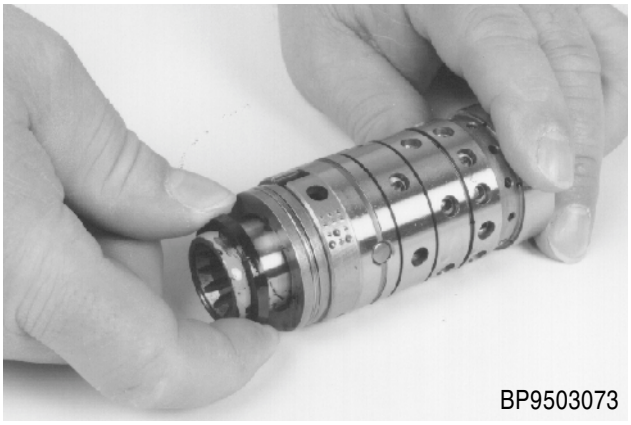
The steering control valve controls oil flow to the steering cylinder.

STEP 52



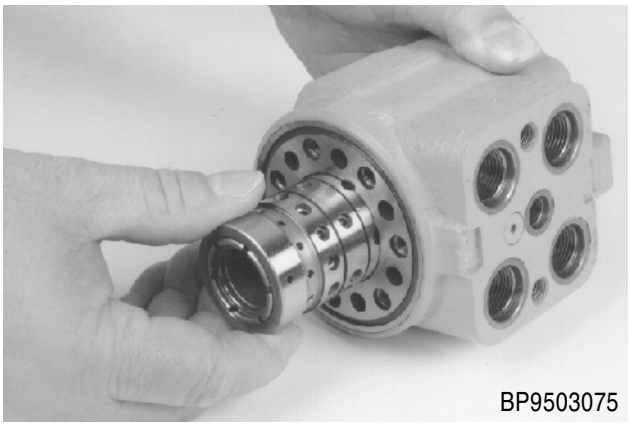
Install the thrust washer, the thrust bearing, and the other thrust washer on the spool.

STEP 53



Install a new seal on the spool.

STEP 54

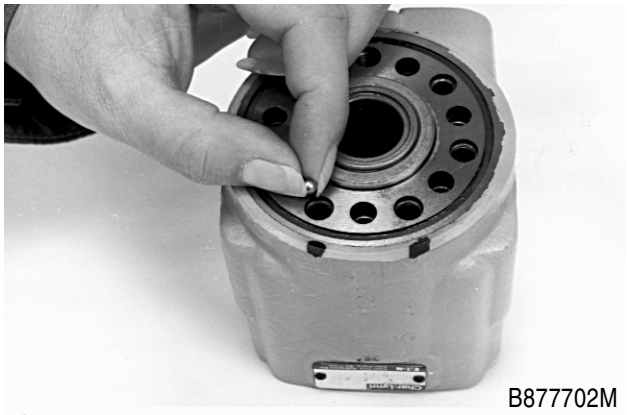


Use clean hydraulic oil to lubricate the outside of the sleeve. Use clean hydraulic oil to lubricate the bore in the body. Install the sleeve and the spool straight into the body.

STEP 55

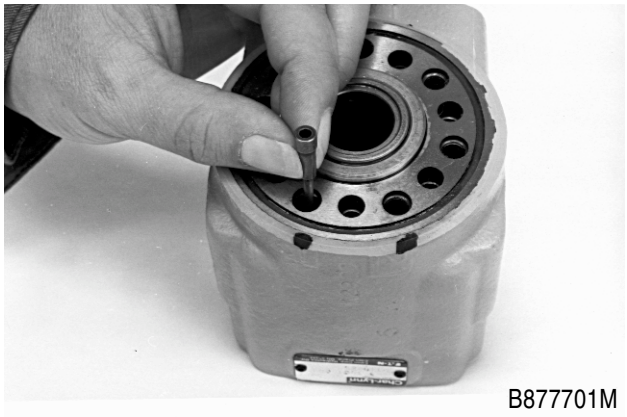
The pin can move out of the sleeve and the spool. If the pin moves out of the sleeve and the spool, the pin can keep the sleeve and the spool from being pushed into the body. Hold the sleeve and the spool in position in the body. Put the end of the sleeve and the spool on the bench. Lower the body onto the sleeve and the spool as shown.

STEP 56



Find the ports with identification marks. Install the balls in the ports.

STEP 57



Install the pins in the ports.

Section

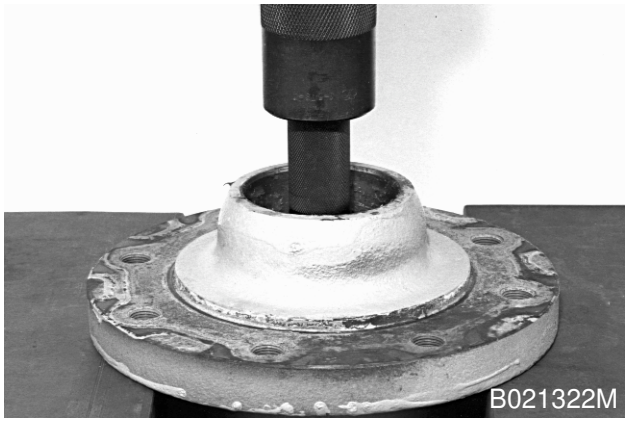
5003

5003

STEERING CYLINDERS

Cre 7-79590GB

STEP 13



Press the hub seal and the wheel bearing out of the hub.

STEP 14

Use a hammer and a punch to remove the outer bearing cup from the hub only if inspection indicates the need for a new bearing cup or wheel bearing.

STEP 15

Use a hammer and a punch to remove the inner bearing cup from the hub only if inspection indicates the need for a new bearing cup or wheel bearing.

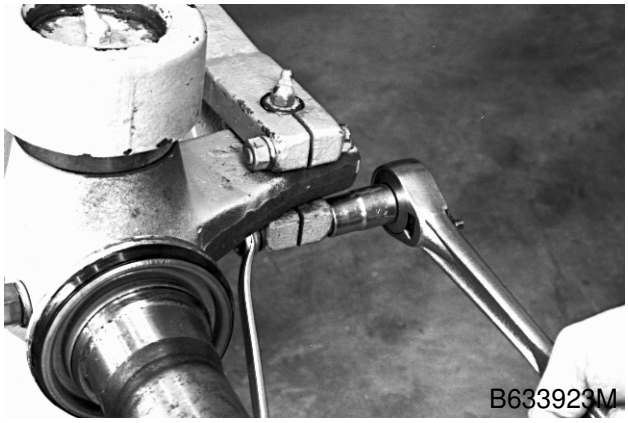
Inspection

1. Clean the wheel bearings in cleaning solvent to remove all grease from the wheel bearings.

2. Check the bearing cups for scoring, flat areas, and pitting.

3. Inspect the rollers in the wheel bearings for flat areas, scoring, and other damage. Also check the inner race for wear and damage.

STEP 80



Tighten the nuts on the bolts that hold the pivot pin.

STEP 81

Drive the spindle seal all the way onto the spindle. Be careful not to damage the spindle seal.

STEP 82

Fill the groove in the hub seal with the wheel bearing grease specified on page 2.

STEP 83

Install the hub onto the spindle.

STEP 84

Install the outer wheel bearing.

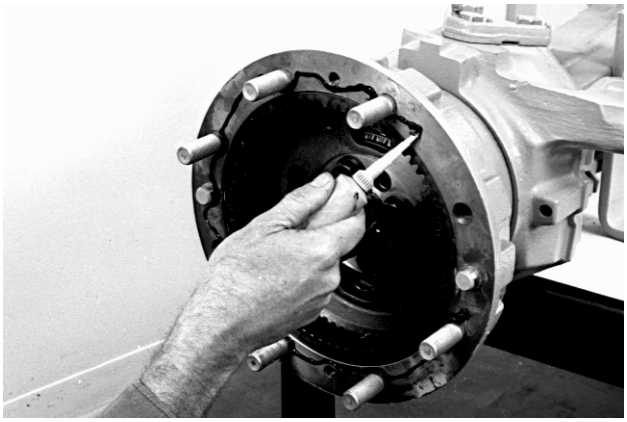
STEP 85

Install the flat washer and the nut.

SPECIFICATIONS

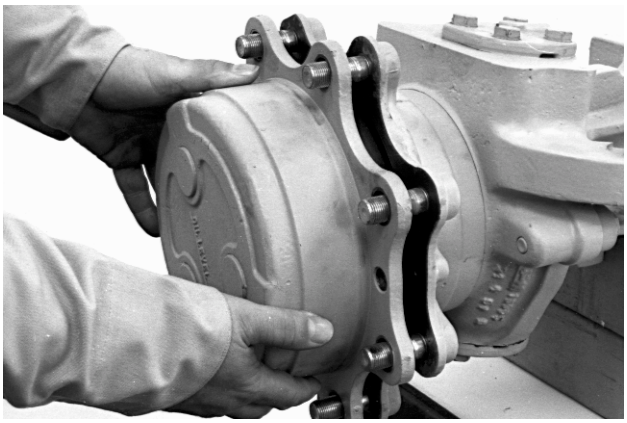
Type (standard)	2616UP
CASE Part No.	279170A1
Type (Powershift)	26-18
CASE Part No.	225065A1
Backlash for ring gear	0.20 to 0.25 mm
Rotating torque for pinion shaft without seal	1.1 to 2.3 Nm
Lubricant for gears	MS1317
Capacities	
Central housing (standard)	7.6 litres
Central housing (Powershift)	6.5 litres
Planetary (each) (standard)	0.7 litre
Planetary (each) (Powershift)	1.0 litre
Special torque	
Wheel studs	70 Nm
Wheel nuts	270 to 352 Nm
Satellite carrier Allen head screws (standard)	25 Nm
Satellite carrier Allen head screws (Powershift)	80 Nm
Ball-joint nut (standard)	165 Nm
Ball-joint nut (Powershift)	220 Nm
Planetary ring gear hub screws (Powershift)	230 Nm
Steering swivel pin screws (standard)	120 Nm
Steering swivel pin screws (Powershift)	190 Nm
Adjusting ring locking screws	13 Nm
Bearing cap screws	266 Nm
Steering cylinder screws	120 Nm
Planetary ring gear hub screws (standard)	95 Nm
Planetary ring gear hub screws (Powershift)	230 Nm
Differential carrier screws	169 Nm
Differential ring gear screws	78 Nm
Steering cylinder connecting rod	300 Nm

NOTE: *There is no O-ring on the Powershift axle. Apply a coating of sealing compound to the entire surface of the bearing surface of the planetary (see illustration below).*



B9076425M

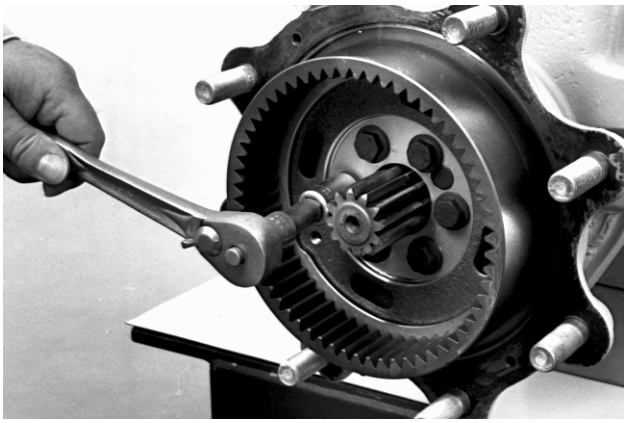
STEP 47



B9111104M

Install the housing.

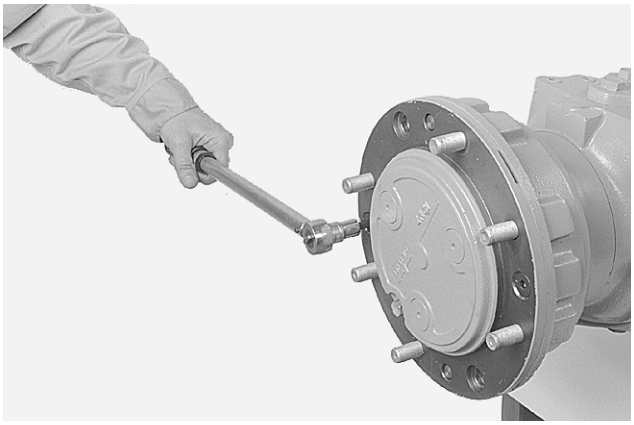
STEP 48



B9110714M

Install and tighten the Allen screws to a torque of 25 Nm.

NOTE: *For the Powershift axle, tighten the Allen screws to a torque of 80 Nm (see illustration below).*



BK98E071

NOTE: *On a Powershift axle, apply Loctite 271 to the threads of the shoulder studs. Use special tool CAS-1842 and tighten the studs to a torque of 70 Nm (see illustration below).*

BK98E069

STEP 49

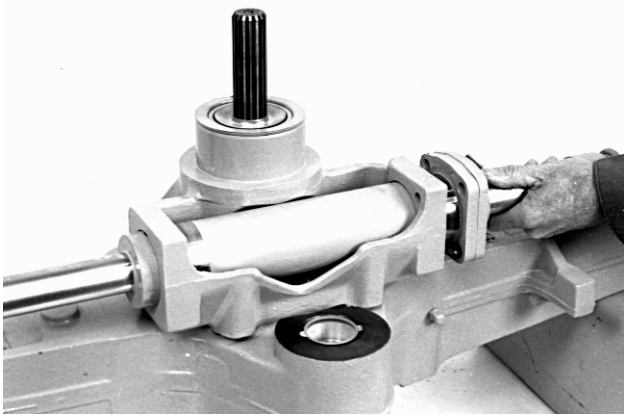
Turn the planetary until the oil level line on the carrier is horizontal and the fill hole is in the position shown. See "Specifications" for the correct oil. Fill each planetary with 0.7 litre until the oil level is level with the bottom of the filler orifice. Install the plug and tighten it to a torque of 80 Nm.

NOTE: *For Powershift axle planetaries, the quantity of oil is 1.0 litre each.*

STEP 50

Install the wheel(s), hardened washers and nuts. Tighten the nuts to a torque of 270 to 352 Nm.

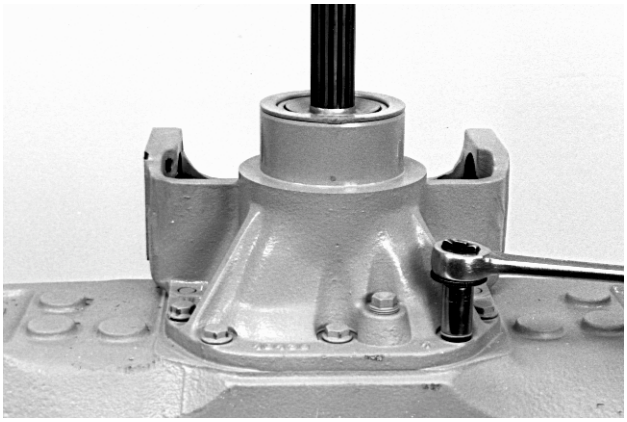
STEP 119



B9076605M

Remove the steering cylinder from the axle.

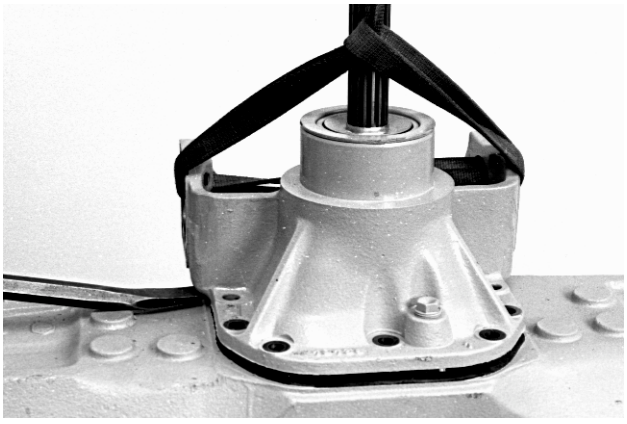
STEP 120



B9076610M

Remove the differential carrier screws.

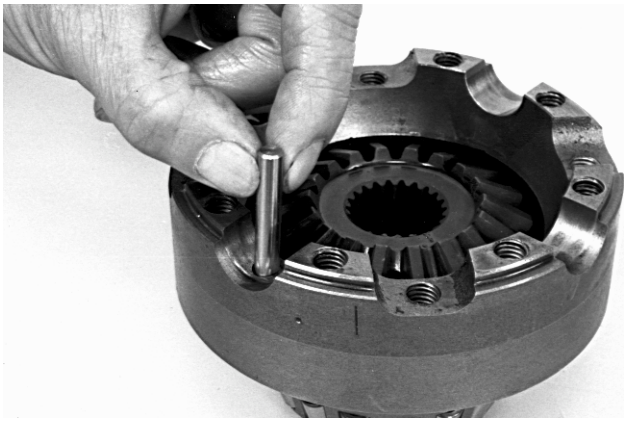
STEP 121



B9076614M

Using a suitable lifting device, remove the differential carrier.

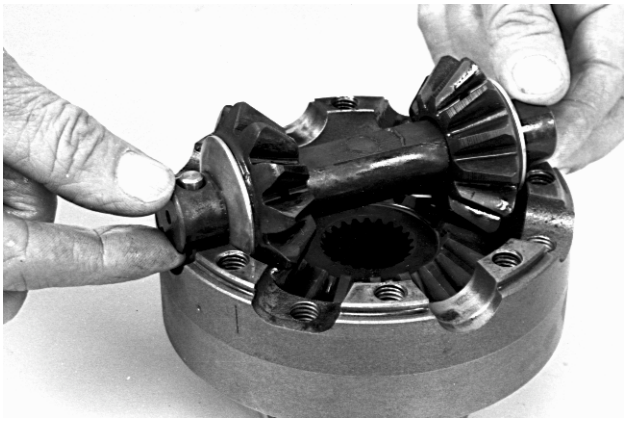
STEP 177



B9076829M

Install the pin

STEP 178



B9076825M

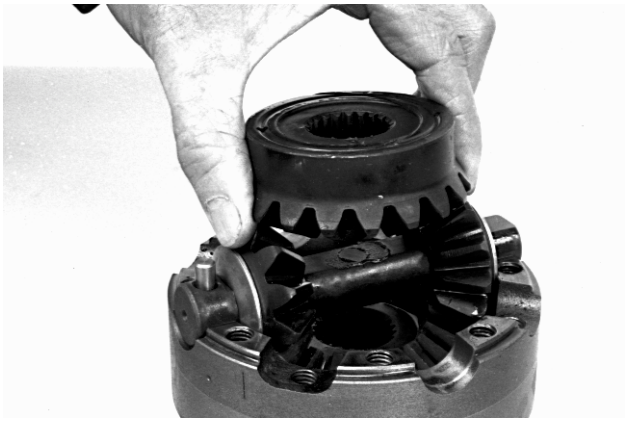
Install the satellite pinion shaft assembly.

STEP 179

B9076918M

Coat the threads of the half-carrier with the threaded orifices with Loctite 271.

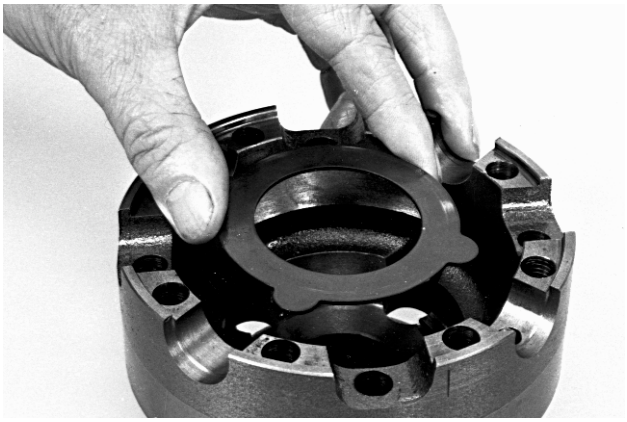
STEP 180



B9076823M

Install the other planetary pinion.

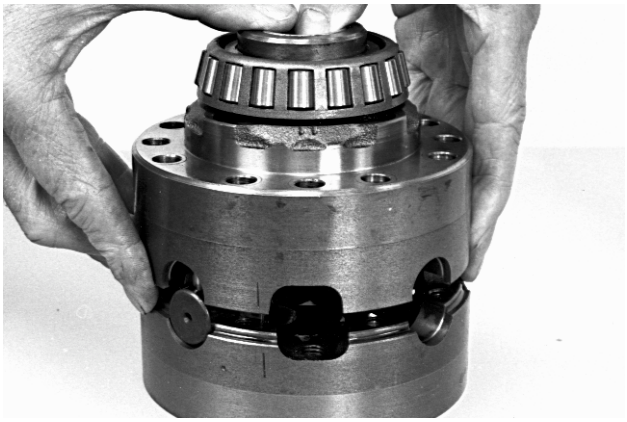
STEP 181



B9076920M

Install the other thrust washer in the other half-housing.

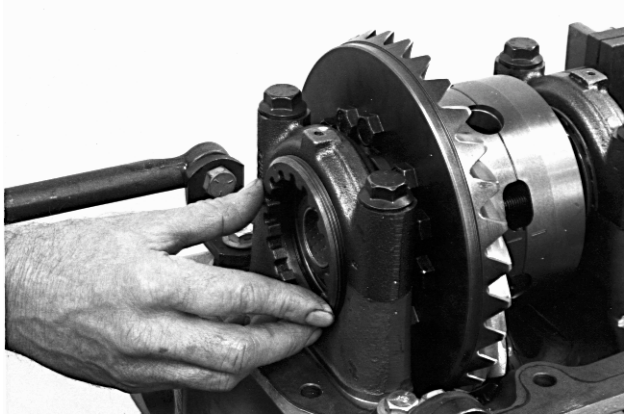
STEP 182



B9076814M

Assemble both halves of the housing.

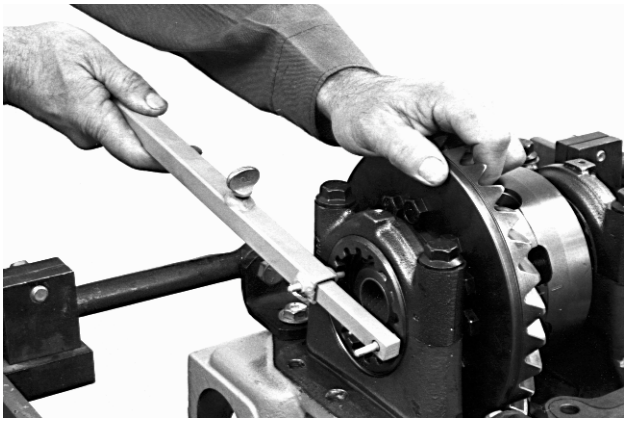
STEP 253



B9077220M

Install the adjusting rings.

STEP 254



B9077224M

Using tool CAS-1840B, tighten the adjusting rings, making sure that a slight clearance (backlash) is maintained between the ring gear and the pinion.

STEP 255

B9077301M

Check the axial clearance, using a dial gauge.

STEP 256

If there is any axial clearance, tighten the adjusting ring on the toothed side of the ring gear until the axial clearance is completely eliminated.

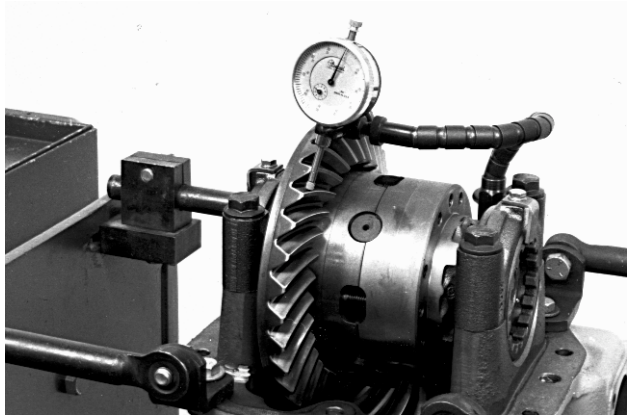
STEP 257

If there is no axial clearance, loosen the adjusting ring on the rear side of the ring gear to make sure that there is a certain clearance between the ring gear and the piston. Then tighten the adjusting ring on the other side of the ring gear until the axial play is completely eliminated.

STEP 258

When all axial clearance is eliminated, retighten each of the adjusting rings by one additional notch.

STEP 259



B9076722M

Using a dial gauge, measure the ring gear backlash at intervals of 90 degrees. If the readings are not identical, set the backlash at the position with the lowest reading.

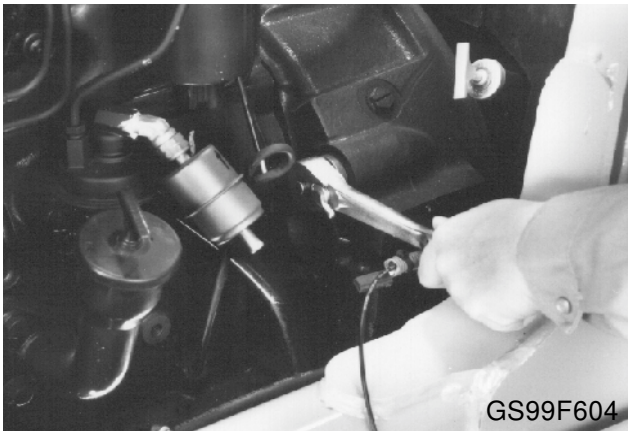
STEP 260

If the ring gear and the original pinion are re-used, the backlash should correspond to the measurement taken during disassembly.

STEP 261

If a new ring gear and pinion assembly has to be used, the backlash should be between 0.20 and 0.25 mm.

STEP 32

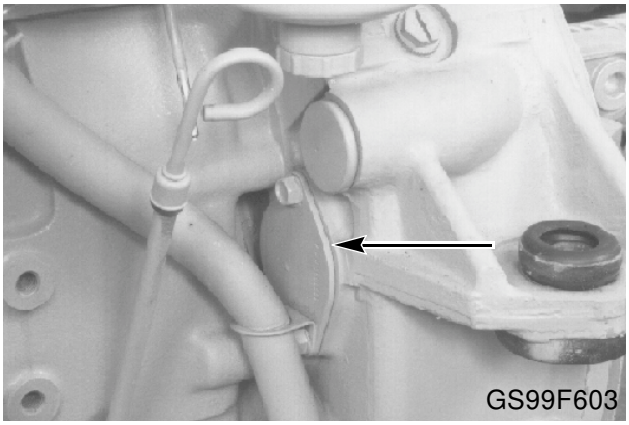


Using the CAS-1690 tool, turn the flywheel to align the torque converter to flywheel bolt holes.

STEP 33

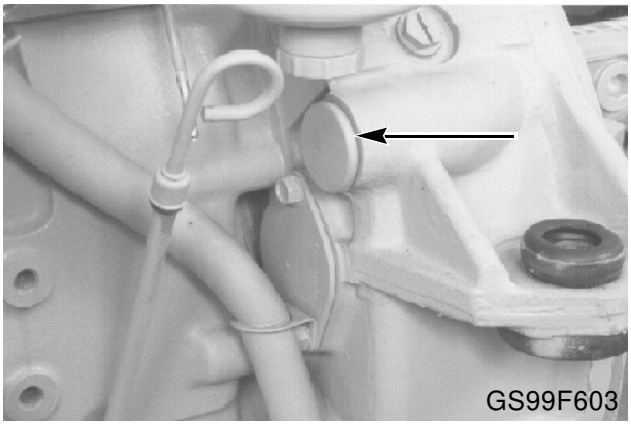
Install all six cap screws and lock washers. Tighten the cap screws to a torque of 52 to 57 Nm.

STEP 34



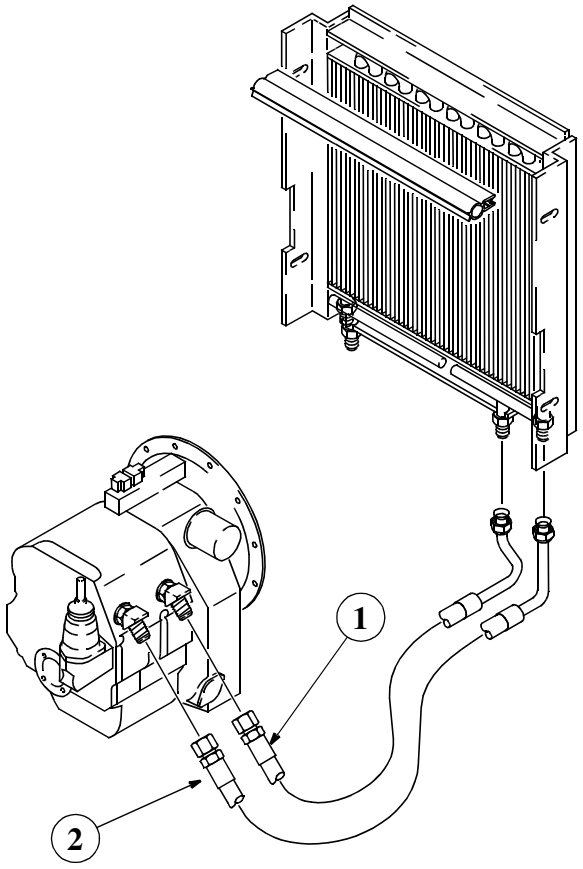
Install the flywheel cover and the breather hose for the engine block. Tighten the cover cap screws to a torque of 55 Nm.

STEP 35



Install the plastic plug in the flywheel housing.

STEP 36



1. INLET HOSE 2. OUTLET HOSE

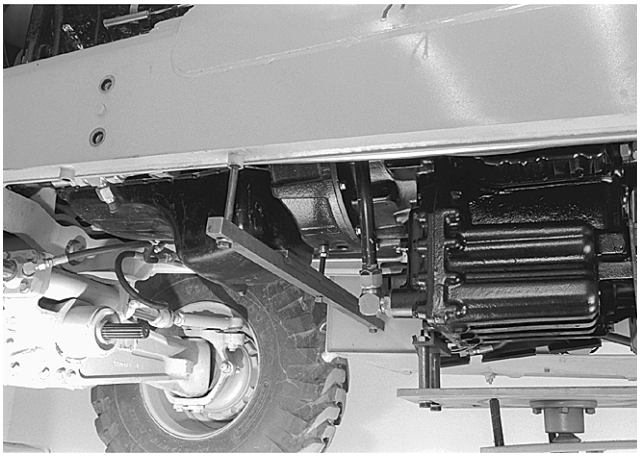
Connect the transmission cooler inlet (1) and outlet (2) hoses to the appropriate fittings on the transmission.

NOTE: *The fittings for the inlet hose (1) and outlet hose (2) may look different but the procedures are the same.*

STEP 23

Using special tool CAS-2588 attach the transmission jack to the transmission.

STEP 24



BK98D163

Install a transmission jack under the transmission and apply light pressure.

STEP 25

Remove both the left and right transmission mounting bolts and the mounting brackets from the transmission.

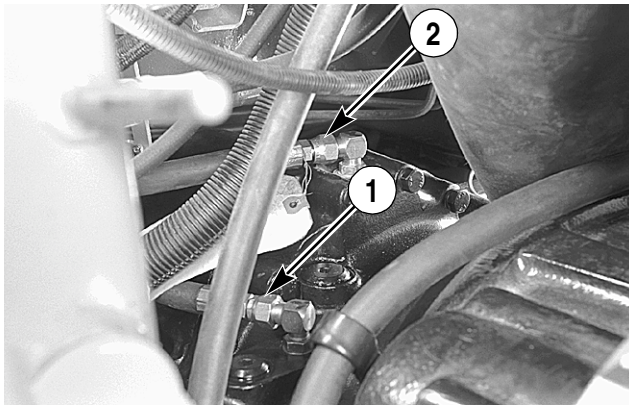
STEP 26

Remove the bellhousing bolts.

STEP 27

Remove wire harness from valve body.

STEP 28

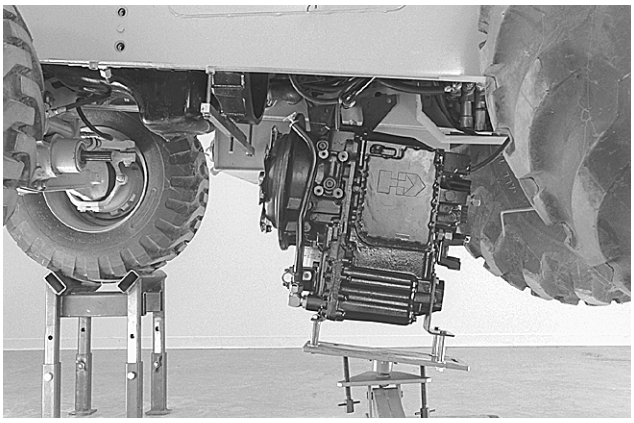


BK98D177

1. DIFFERENTIAL LOCK SUPPLY LINE
2. DIFFERENTIAL LOCK RETURN LINE

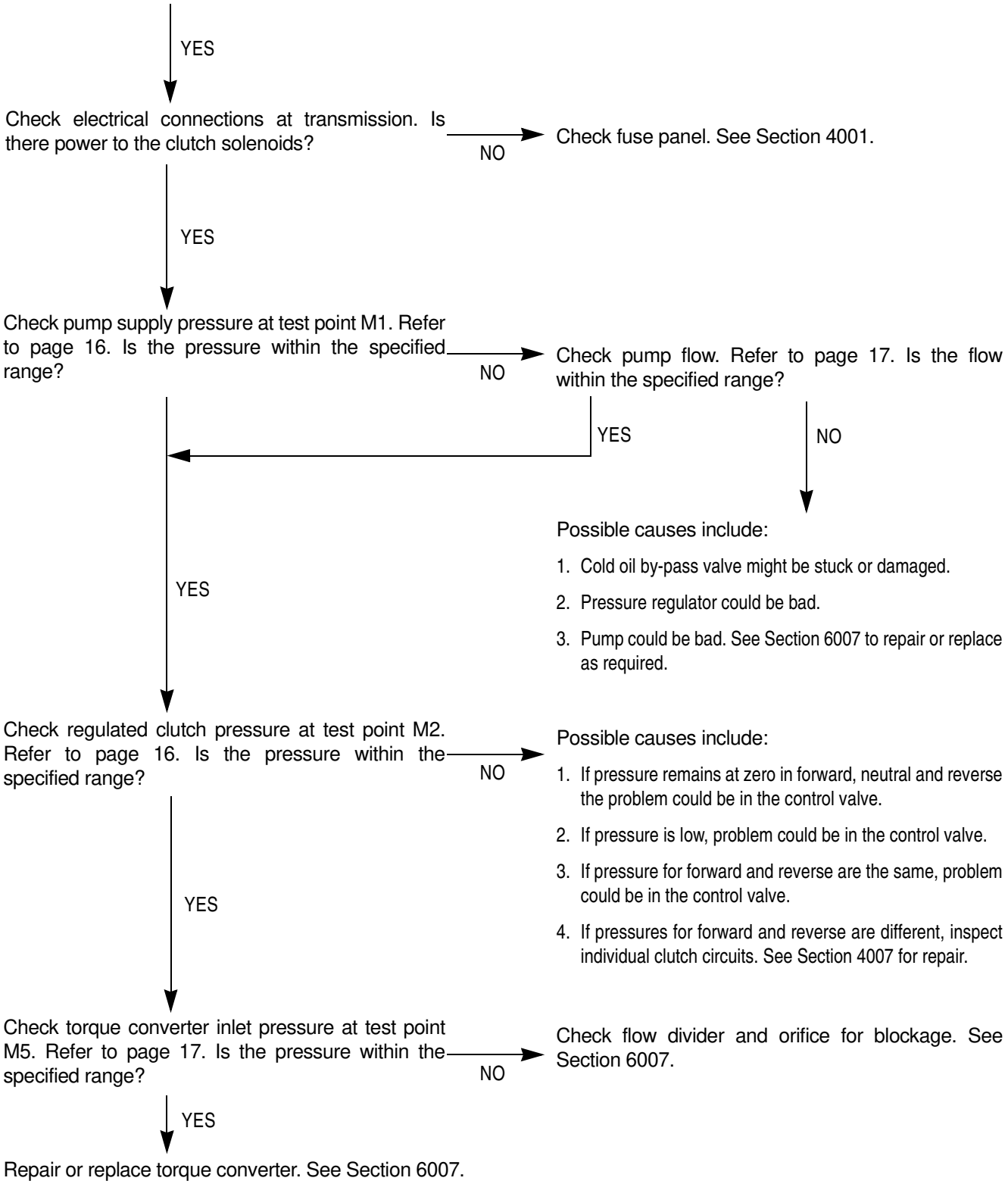
Remove the differential lock solenoid supply line (1) and the differential lock return line (2).

STEP 29



BK98D162

Lower the transmission and remove the remaining bellhousing bolts. Carefully slide the transmission away from the engine taking the torque converter with the transmission. Lower to the floor and remove from under the machine. Support the engine with special tool CAS-2591.


YES
Check electrical connections at transmission. Is there power to the clutch solenoids?
NO
Check fuse panel. See Section 4001.
YES
Check pump supply pressure at test point M1. Refer to page 16. Is the pressure within the specified range?
NO
Check pump flow. Refer to page 17. Is the flow within the specified range?
YES
NO
Possible causes include:
1. Cold oil by-pass valve might be stuck or damaged.
2. Pressure regulator could be bad.
3. Pump could be bad. See Section 6007 to repair or replace as required.
YES
Check regulated clutch pressure at test point M2. Refer to page 16. Is the pressure within the specified range?
NO
Possible causes include:
1. If pressure remains at zero in forward, neutral and reverse the problem could be in the control valve.
2. If pressure is low, problem could be in the control valve.
3. If pressure for forward and reverse are the same, problem could be in the control valve.
4. If pressures for forward and reverse are different, inspect individual clutch circuits. See Section 4007 for repair.
YES
Check torque converter inlet pressure at test point M5. Refer to page 17. Is the pressure within the specified range?
NO
Check flow divider and orifice for blockage. See Section 6007.
YES
Repair or replace torque converter. See Section 6007.

SPECIFICATIONS

Stall tests

Operating temperature ..... 70° to 120°C

Maximum authorised transmission temperature..... 120°C

NOTE: *Measure all flows and pressures with the oil temperature between 82°C and 93°C.*

For the engine speed s of the various machines (idle, full speed (without load), hydraulic stall speed (loader only), torque converter stall speed and mixed stall), see section 2002.

Transmission regulator pressure, neutral point in second gear
- At idle ..... 16.5 bar
- At 2200 rpm..... 19.6 to 23.1 bar

Clutch pressures at 2200 rpm
- First gear control clutch
- Second gear control clutch
- Forward travel high range clutch
- Forward travel low range clutch
- Reverse travel control clutch
- 2WD/4WD clutch
- Clutch activated..... 18.1 to 21.5 bar
- Clutch released ..... 0 to 0.2 bar

Filter bypass valve pressure measured between M1 and M5 ..... 4.1 to 5 bar

Lubrication pressure at 1800 rpm..... 0.3 to 0.5 bar

Safety valve pressure, opening pressure ..... 9.5 to 10.5 bar

Oil cooler pressure, leaving and entering torque converter
- At 2000 rpm..... 2 bar minimum
- At regulated speed; without load ..... 5 bar maximum

Pressure at torque converter bypass valve between M3 and M4..... 5 to 7 bar

Pump flow
- At 2200 rpm, in neutral and second gear ..... 64.9 l/min, minimum
- At 2200 rpm, in first and second gear, forward and reverse travel..... 62 l/min
- At 2200 rpm, in third and fourth gear, forward travel..... 60 l/min

Internal leaks for each clutch

Maximum total leak-off flow 6.8 l/min without disengaging the clutch: range and gear clutch leaks, including torque converter leaks and leaks at control valve.

Section

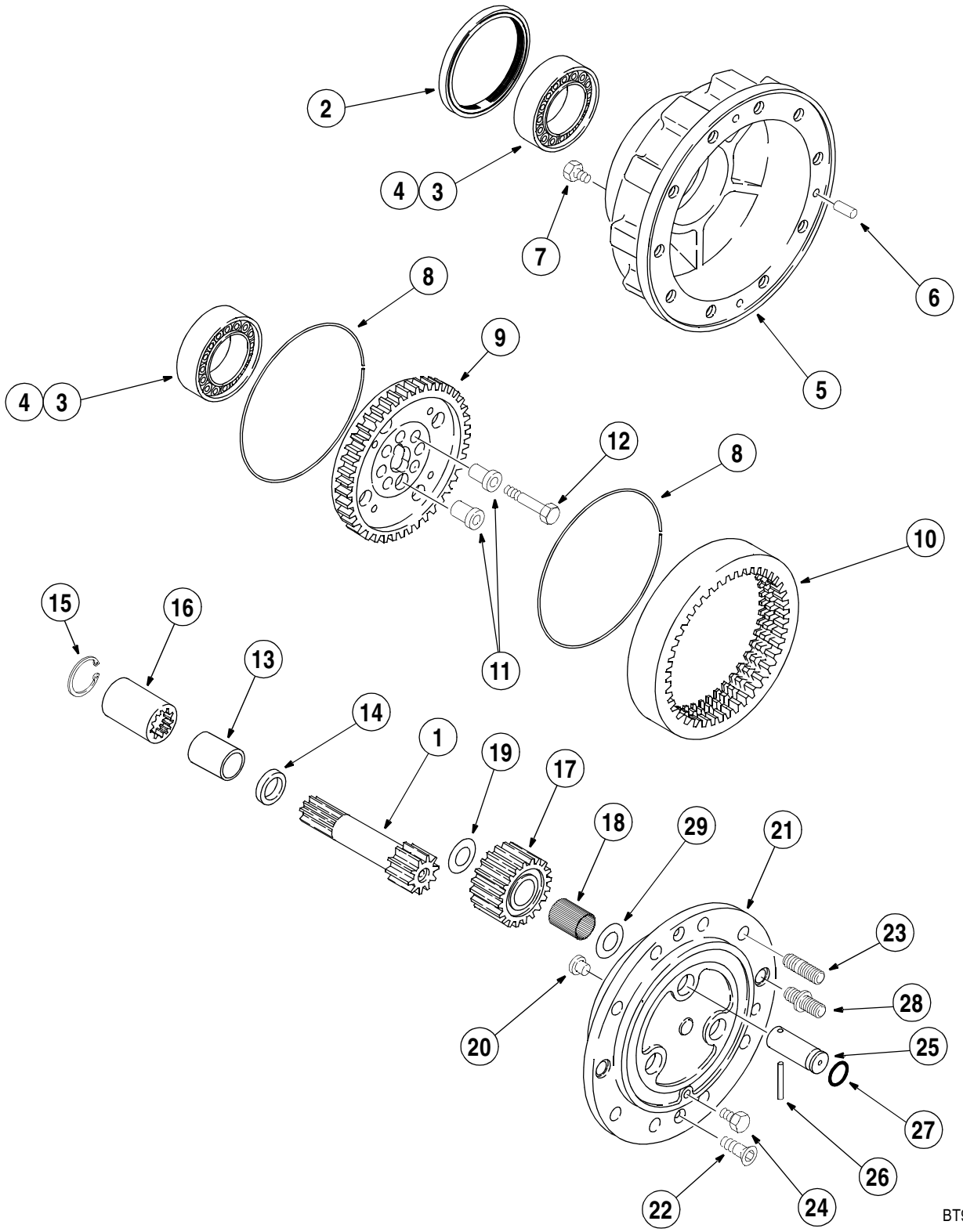
6003

WHEELS AND TIRES

Case

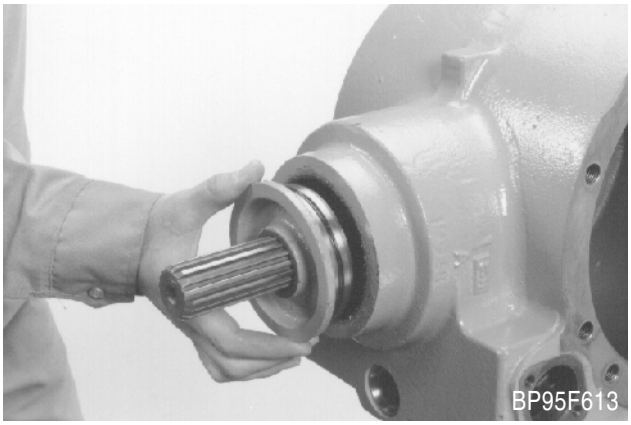
Cre 7-79640GB

Issued March 1996



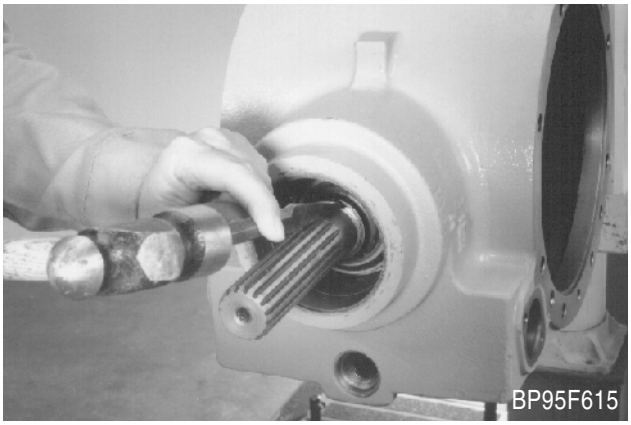
1. *Drive shaft*
2. *Seal*
3. *Bearing*
4. *Bearing cup*
5. *Wheel hub*
6. *Dowel pin*
7. *Cap screw*
8. *Lock ring*
9. *Ring gear hub*
10. *Ring gear*
11. *Bushing*
12. *Cap screw (8)*
13. *Bushing*
14. *Seal*
15. *Snap ring*
16. *Coupling*
17. *Pinion gear*
18. *Needle bearing*
19. *Inner thrust washer*
20. *Thrust pin*
21. *Carrier*
22. *Allen head screw*
23. *Stud*
24. *Plug*
25. *Pinion shaft*
26. *Roll pin*
27. *O-Ring*
28. *Shoulder stud (2)*
29. *Outer thrust washer*

STEP 114



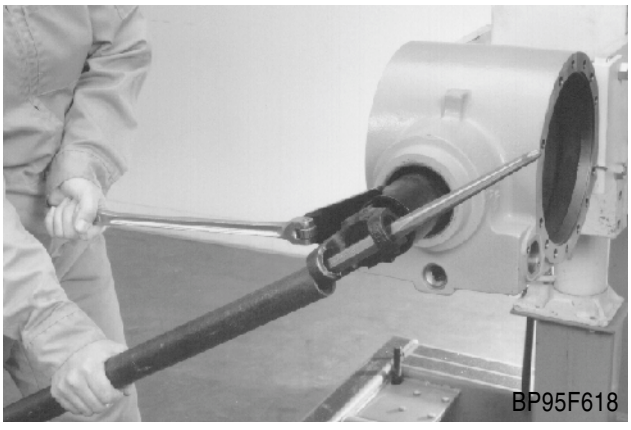
Remove the cover.

STEP 115



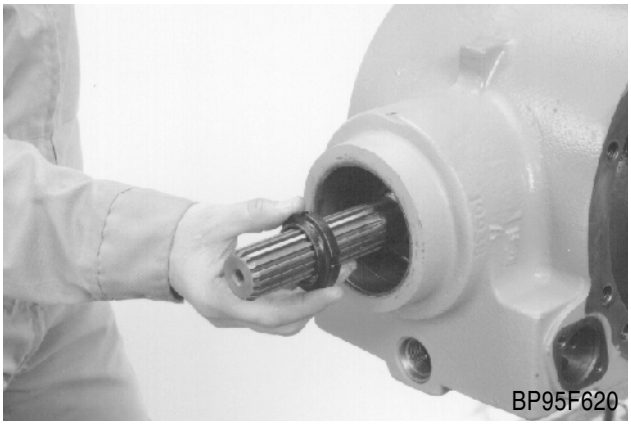
Use a chisel to push the peened area of the pinion nut out of contact with the groove in the shaft for the pinion gear.

STEP 116



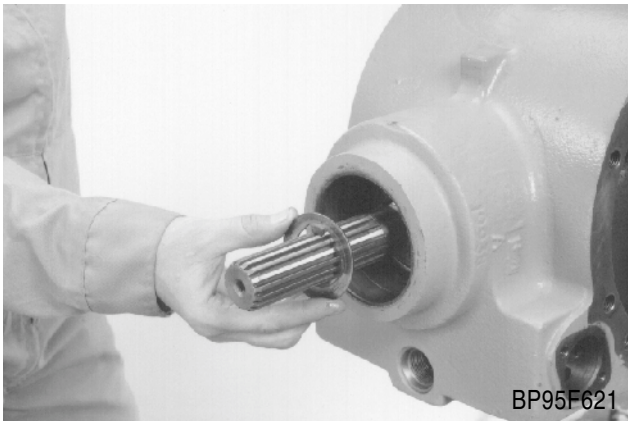
Use the N13365 Yoke and the CAS1965 Spanner Wrench to loosen the pinion nut.

STEP 117



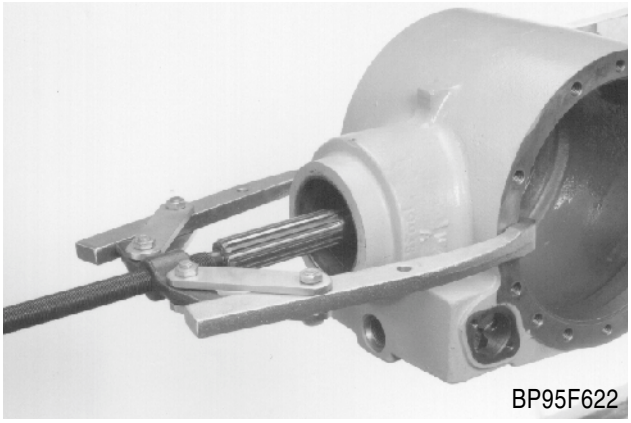
Remove the pinion nut.

STEP 118



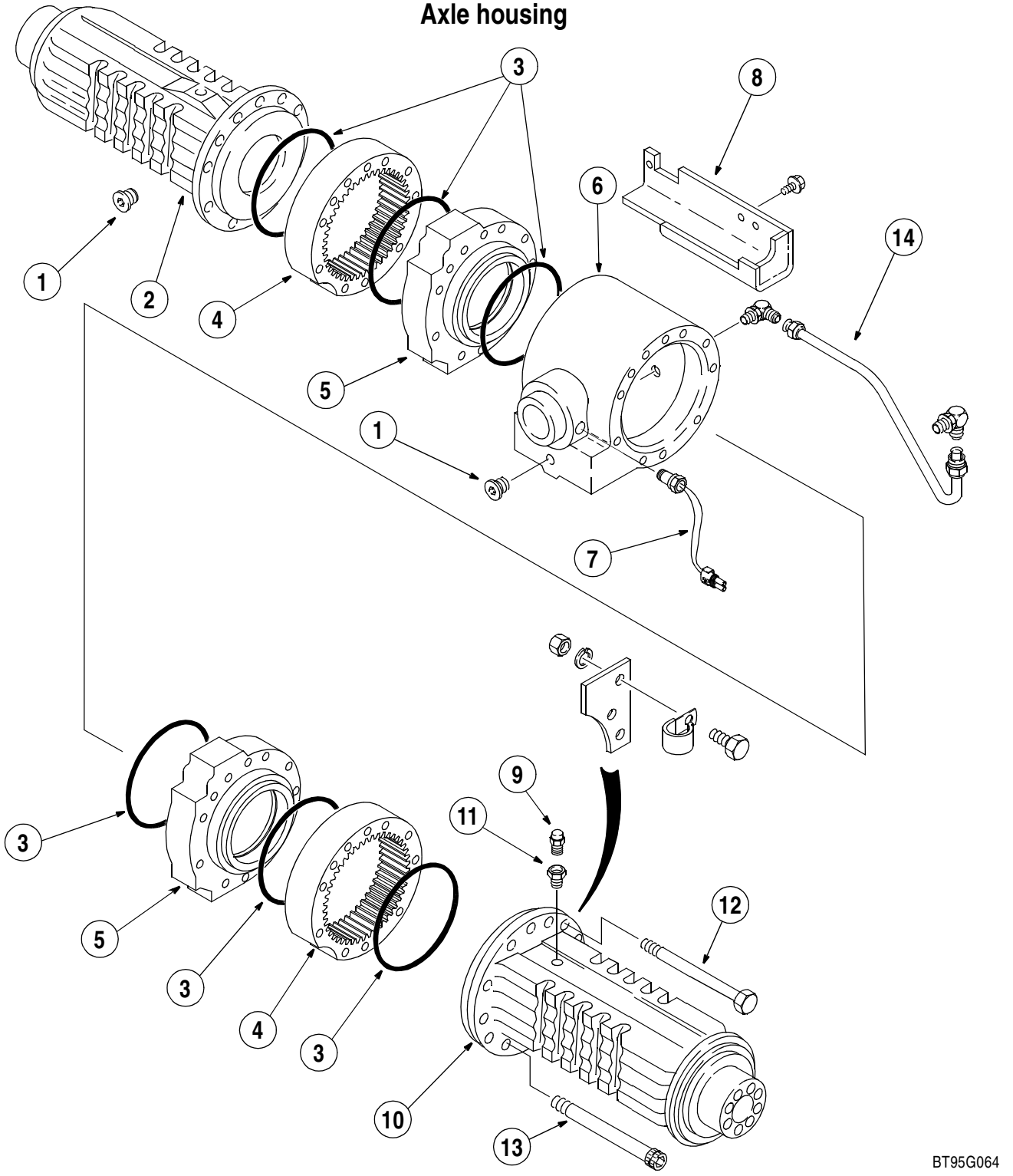
Remove the special washer.

STEP 119



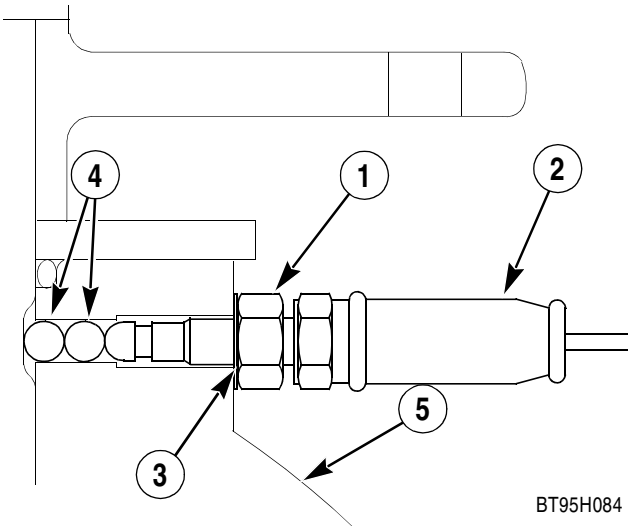
Install a puller on the shaft for pinion gear and center housing as shown. Tighten the screw on the puller to loosen the pinion gear assembly in the center section.

Axle housing



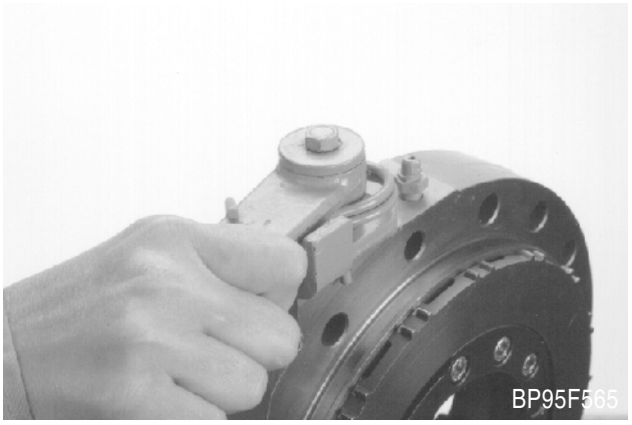
1. Plug
2. Axle housing, right-hand side
3. O-Ring
4. Carrier housing
5. Brake section
6. Center section
7. Temperature switch
8. Guard for lubrication tube
9. Breather
10. Axle housing, left-hand side
11. Stand pipe
12. Cap screw
13. Allen head screw
14. Lubrication tube

STEP 245



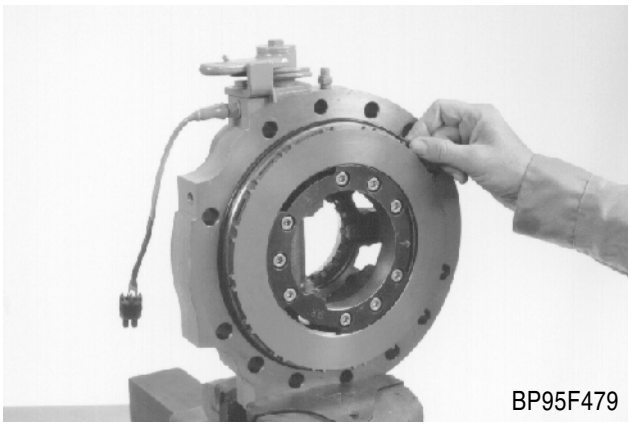
Apply a light coating of Silicomet to the threads of the brake switch (2). Install the brake switch (2), jam nut (1), 0.5 mm shim (3), and two steel balls (4) in the brake housing (5).

STEP 246



Connect an ohmmeter to the leads on the switch. Move the lever approximately 1/16 inch (1.6 mm) away from the stop. Hold the lever in this position and turn the brake switch into the brake housing until the ohmmeter indicates the brake switch is working. Tighten the jam nut on the brake switch. Release the lever. The ohmmeter must no longer show that the brake switch is working. Adjust the depth of the brake switch as required.

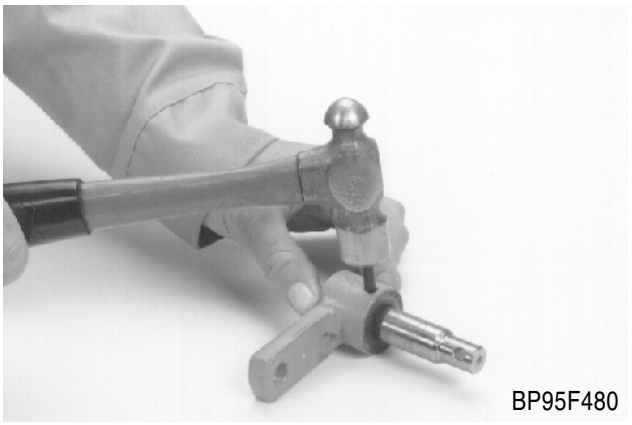
STEP 247



Install a new O- ring on both sides of the brake housing.

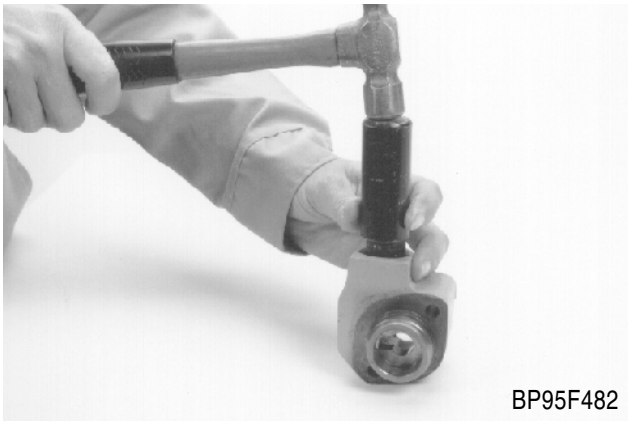
Differential lock housing

STEP 248



Install the shaft in the differential lock lever as shown. Install the roll pin.

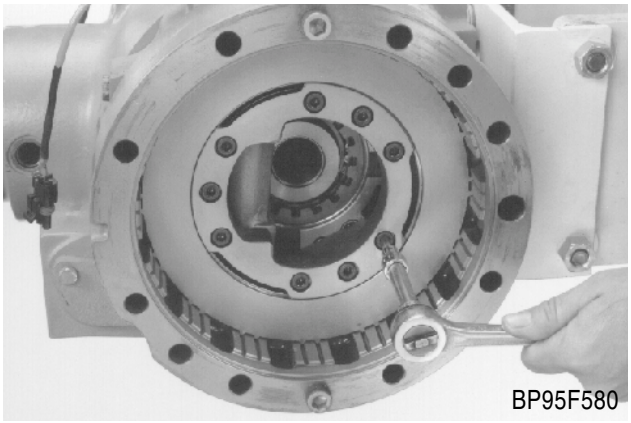
STEP 249



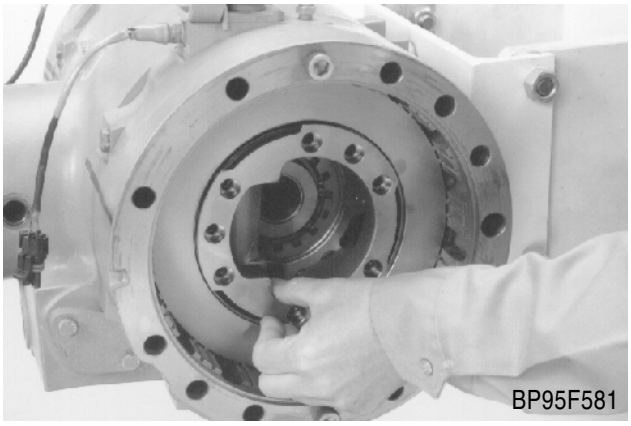
Install a new seal in the bore for the shaft. The lips of the seal must be toward the inside of the bore for the shaft.

STEP 318
Repeat steps 312 to 317 to assemble the other side of the center section.

Pinion gear backlash adjustment

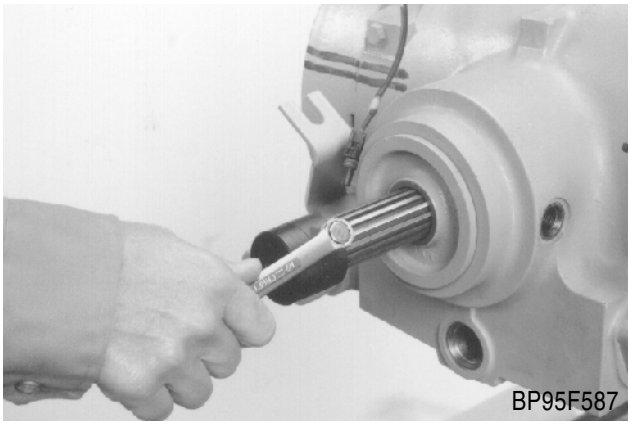
STEP 319


Loosen and remove the Allen head screws from the retainer.

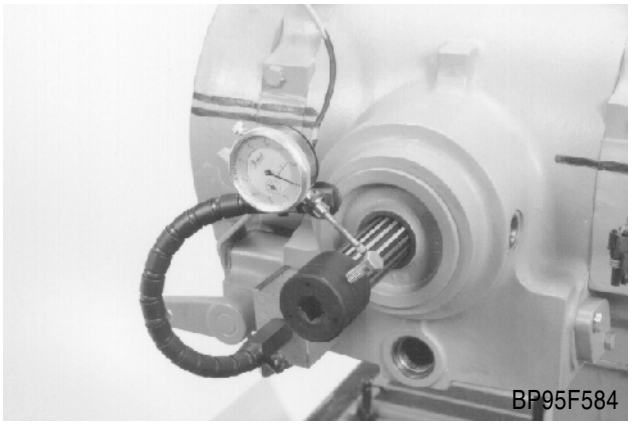
STEP 320


Remove the retainer.

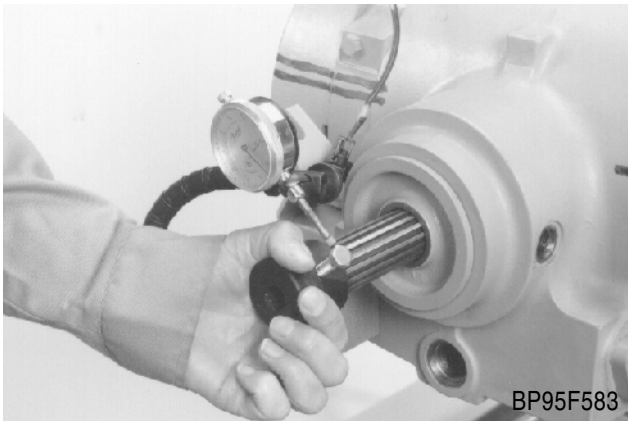
IMPORTANT : *The following photos show the cover for the pinion gear shaft installed. Do not install the cover at this time.*

STEP 321


Put the CAS-2375 on the pinion shaft. Tighten the cap screw that fastens the CAS-2375 to the pinion shaft.

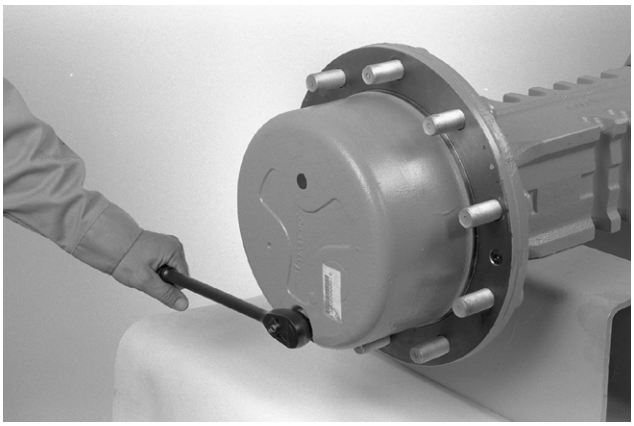
STEP 322


Put the dial indicator in position on the CAS-2375 tool as shown.

STEP 323


Use your hand and move the shaft back and forth to check for backlash.

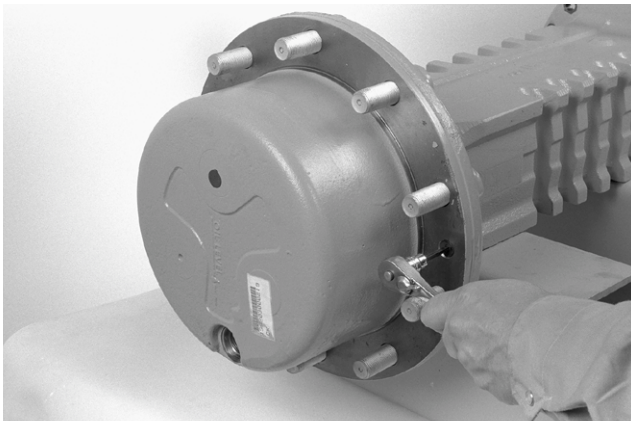
STEP 3



BK98J259

Turn the planetary until the plug is at the bottom. Remove the plug from the planetary and drain the oil from the planetary.

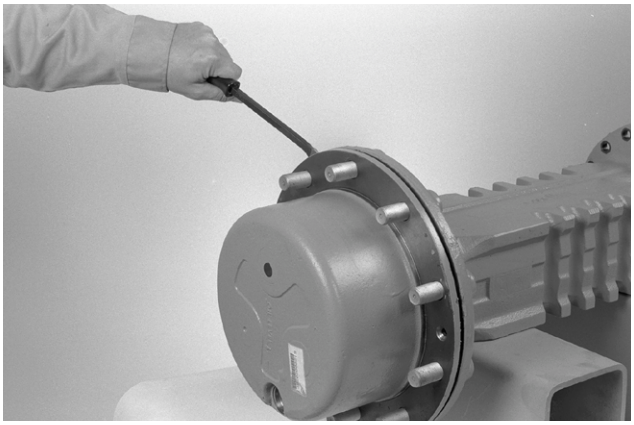
STEP 4



BK98J260

Remove the two Allen head screws.

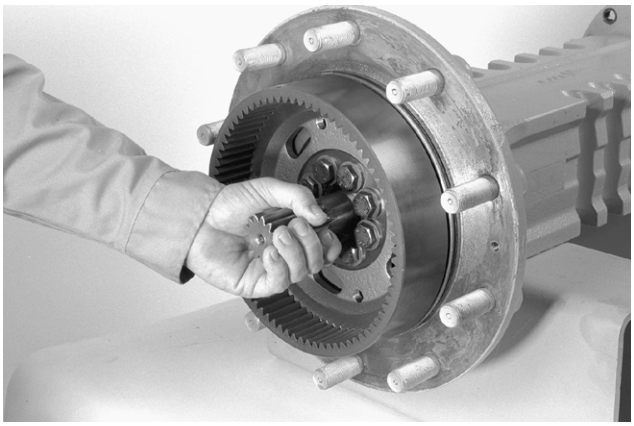
STEP 5



BK98J261

Remove the housing.

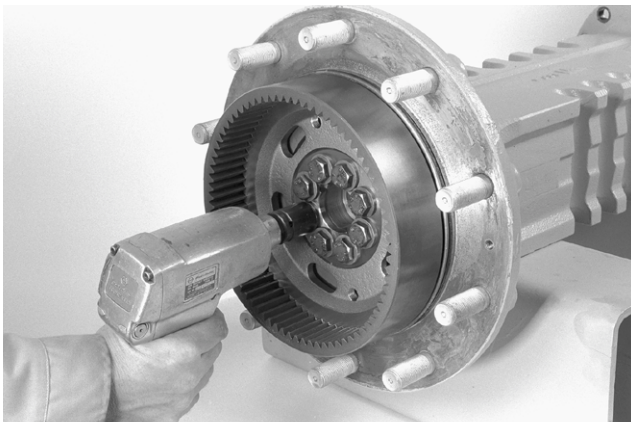
STEP 6



BK98J262

Remove the drive shaft.

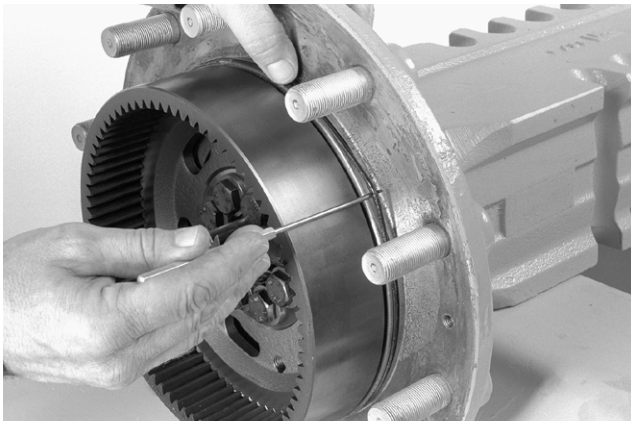
STEP 7



BK98J263

Remove the eight cap screws.

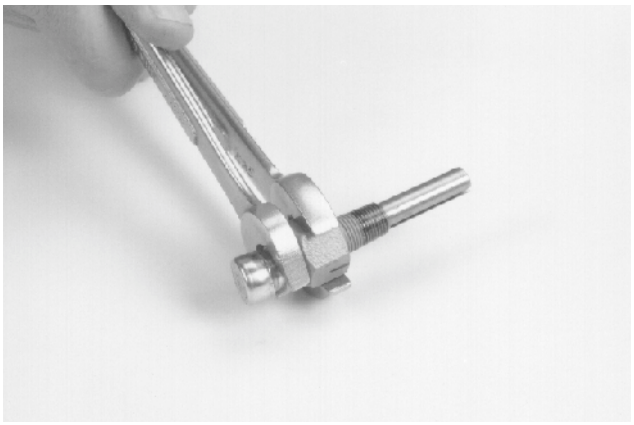
STEP 8



BK98J264

Remove the wheel hub O-ring.

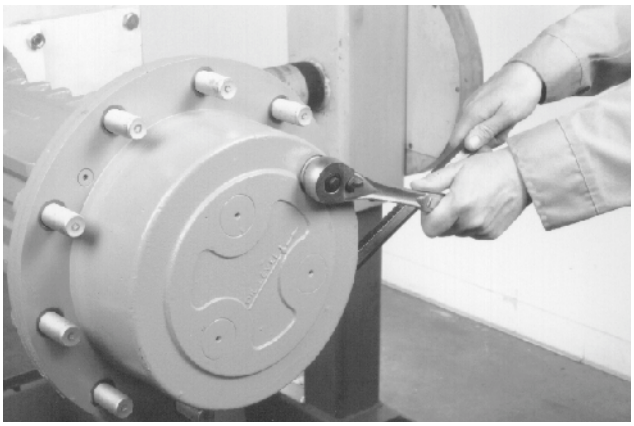
STEP 70



BP95F598

If required, remove the breather from the standpipe.

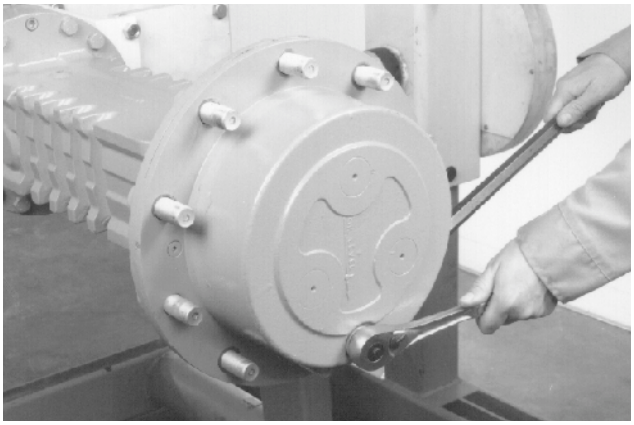
STEP 71



BP95F403

Put the planetary drain plug in the position shown. Loosen the planetary drain plug to remove any pressure.

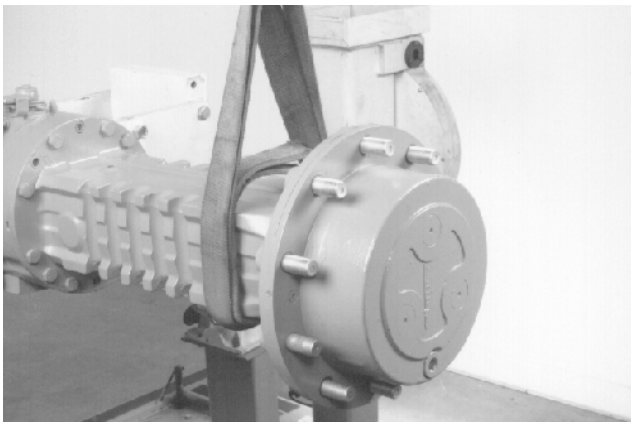
STEP 72



BP95F404

Put a container, with a capacity of at least 2.08 litres, under the planetary. Turn the planetary until the drain plug is in the position shown. Remove the drain plug and drain the oil from the planetary.

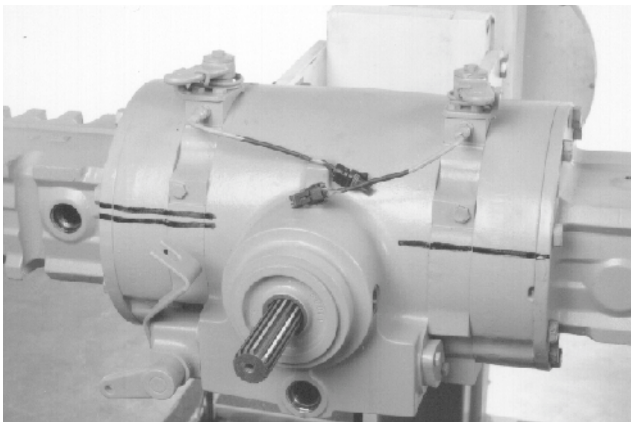
STEP 73



BP95F405

Connect acceptable lifting equipment to the planetary as shown.

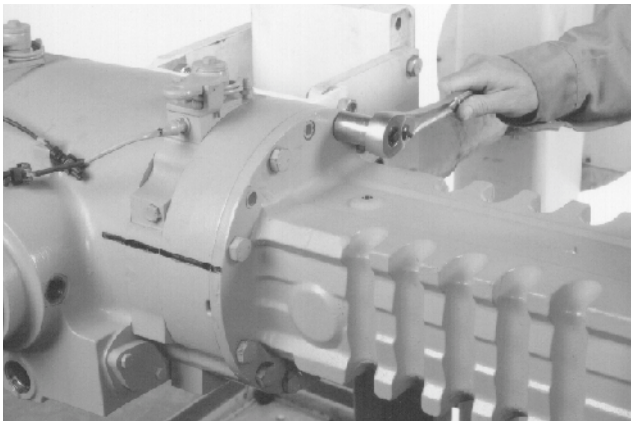
STEP 74



BP95F408

Put identification marks on the axle for use during assembly.

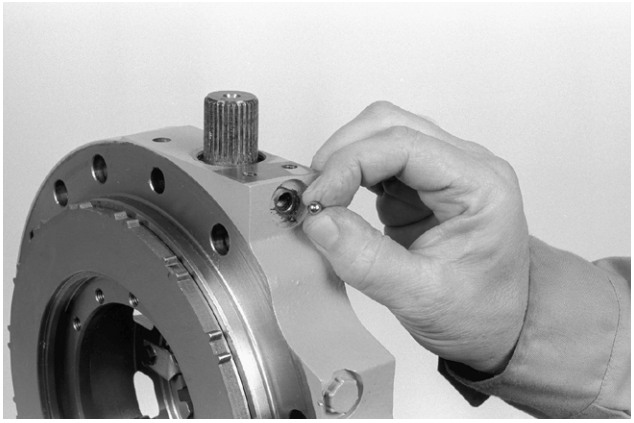
STEP 75



BP95F409

Loosen and remove all but one top screw. Slowly loosen the last top screw. Adjust the lifting equipment as required to balance the axle housing. Remove the screw.

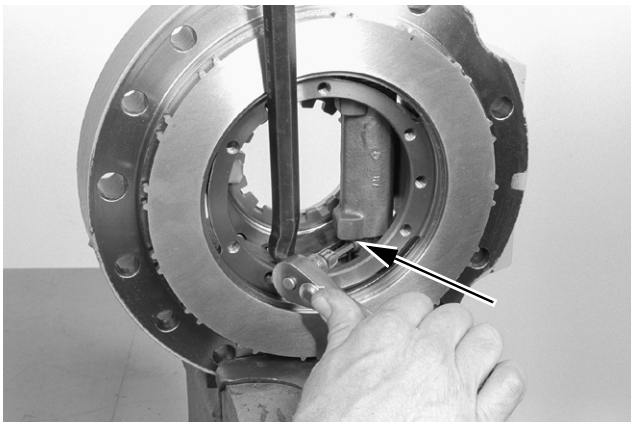
STEP 150



BK98J311

Remove the steel ball.

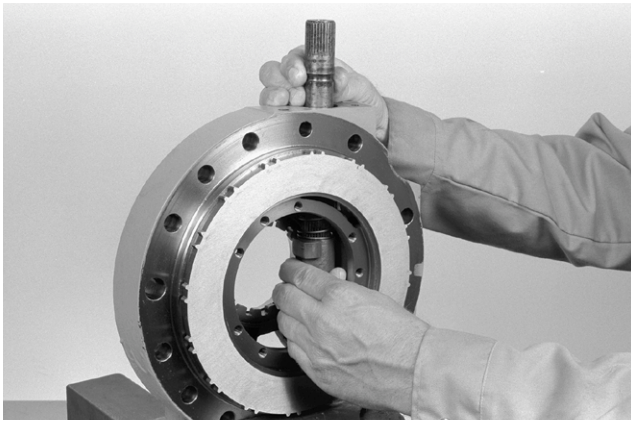
STEP 151



BK98J310

Use a pry-bar to raise the shaft for access to the Allen screw at the bottom of the shaft. Make an alignment mark on the cam even with the top of the Allen screw, for use during assembly. Loosen and remove the Allen screw.

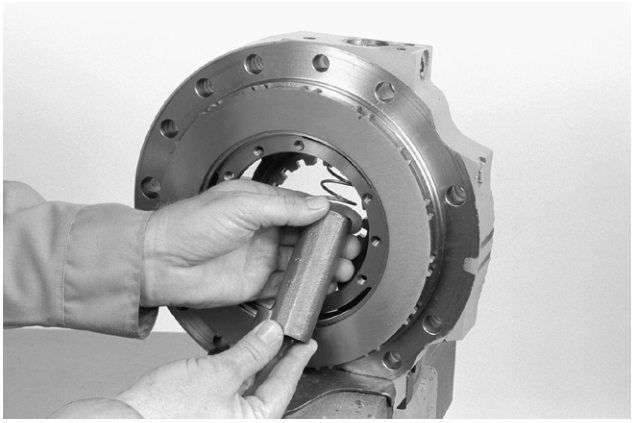
STEP 152



BK98J309

Remove the shaft.

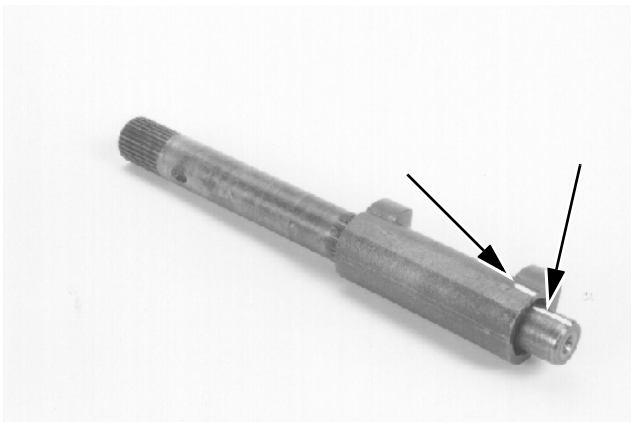
STEP 153



BK98J308

Remove the cam.

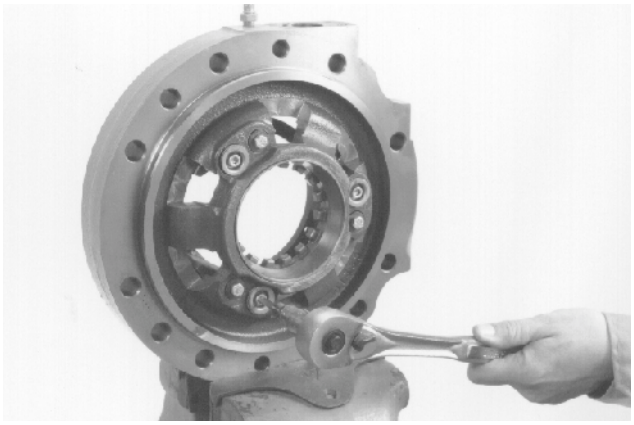
STEP 154



BP95F527

Make an alignment mark on the shaft in line with the mark on the cam and the hole for the Allen screw.

STEP 155



BP95F508

Loosen the Allen screws for the return springs.

Differential lock fork

STEP 195

BP95F470

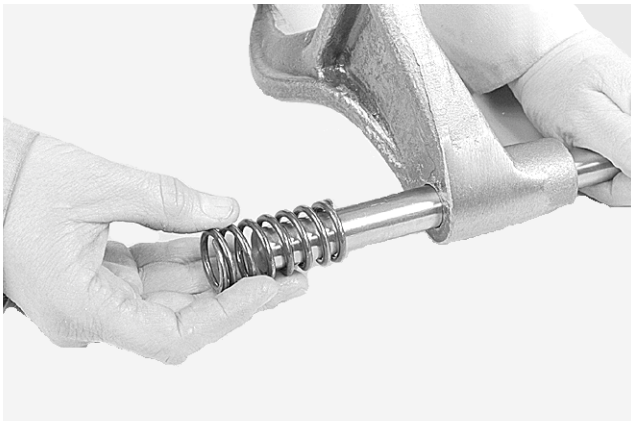
Install the snap ring on the shaft.

STEP 196

BK98C107

Lubricate the shaft with clean oil and install the fork on the shaft.

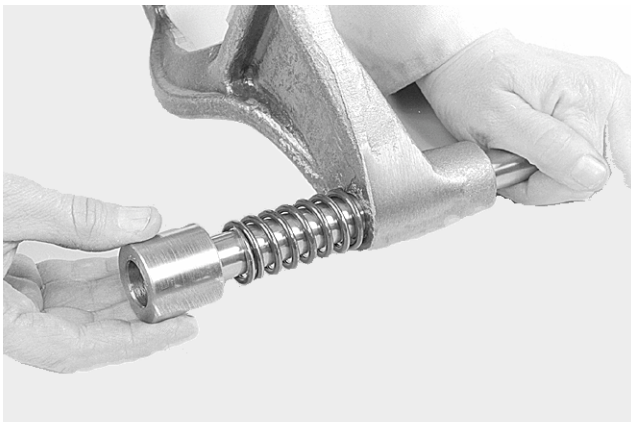
STEP 197



BK98C105

Install the spring on the shaft.

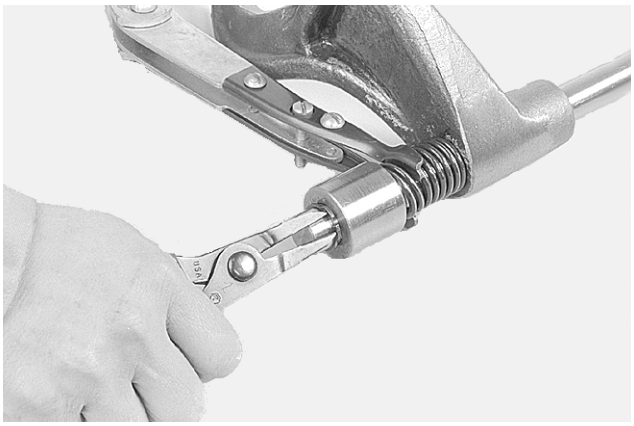
STEP 198



BK98C104

Install the spacer.

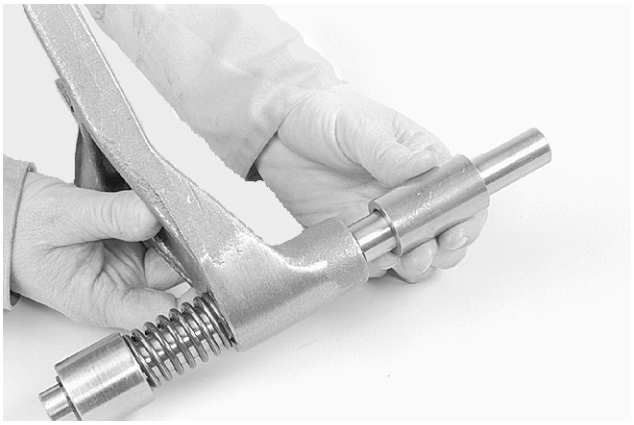
STEP 199



BK98C103

Use a spring compression tool to compress the spring and install the snap ring.

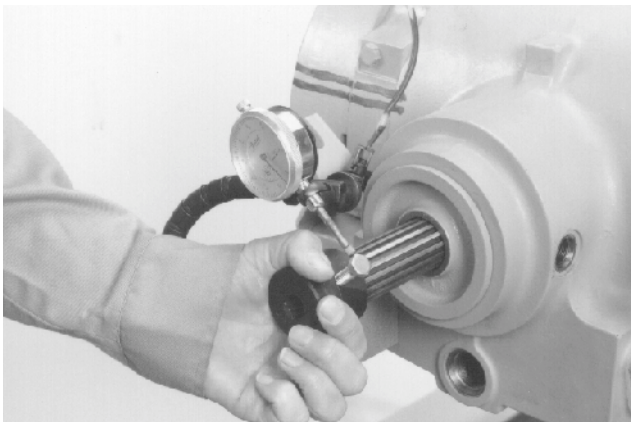
STEP 200



BK98C108

Remove the spring compression tool and install the ring.

STEP 262



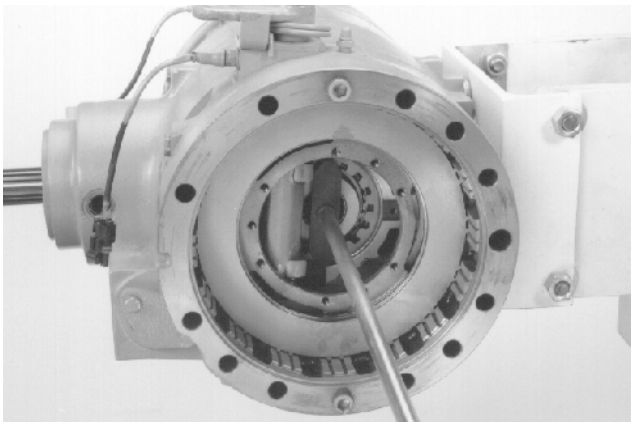
BP95F583

Use your hand and move the shaft back and forth to check for backlash.

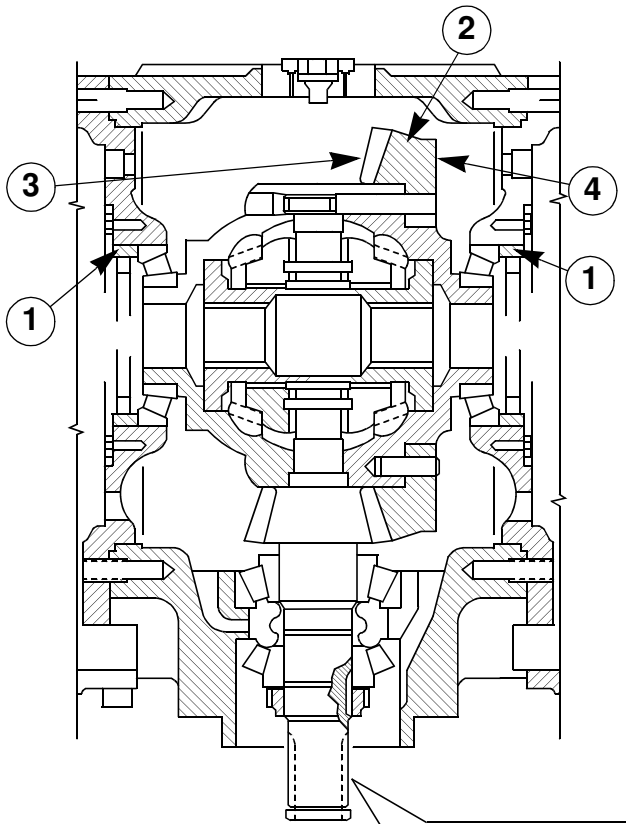
STEP 263

The pinion shaft backlash should be between 0.20 and 0.28 mm. If the backlash is not correct, carry out the procedure shown in Step 264.

STEP 264



BP95F579



BT95G151

1 ADJUSTING RING
2 RING GEAR
3 TOOTHED SIDE OF RING GEAR
4 REAR SIDE OF RING GEAR (WITHOUT TEETH)

If the backlash is insufficient, loosen the adjusting ring one notch on the side shown in the photo, by turning it anti-clockwise using tool CAS-2376. Then retighten the adjusting ring located on the other side of the central section, also by one notch, turning it clockwise Continue with this step until the backlash is 0.20 to 0.28 mm.

If the backlash is excessive, loosen the adjusting ring by one notch on the opposite side to the side shown, turning it anti-clockwise by means of tool CAS-2376. Then retighten the adjusting ring on the side shown, also by one notch, turning it clockwise. Continue with this step until the backlash is 0.20 to 0.28 mm.

STEP 265

Remove the dial gauge from the central housing.

BP95F676

24835 Forcing Screw (Part of CAS-1934 CE Tool Set). Used to install the pinion inner bearing cup.

BP95F677

CAS-1940 Driver Plate (Part of CAS-40002 CE Tool Set). Used to install the pinion inner bearing cup.

BP95F678

24836 Special Nut (Part of CAS-1934 CE Tool Set). Used to install the pinion inner bearing cup.

BP95F670

Universal tool for installing bearing cups OEM-4185. Used for installing hub bearing cups.

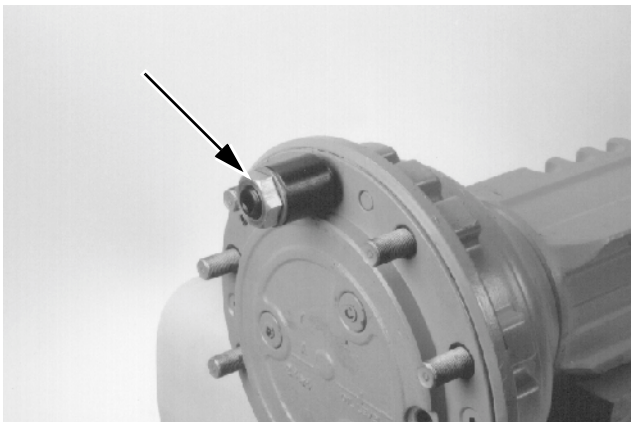
BP95F673

22301 3/4-16 UNF Grade 8 Hex Nut. Used to install the pinion inner bearing cup.

BP95F671

CAS-1716-3 Handle (Part of CAS-1716 AG Tool Set). Used with hub seal installing tool CAS-2374.

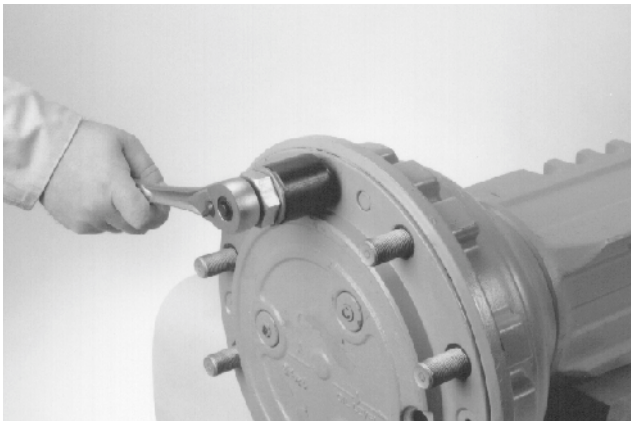
STEP 69



BP95F790

Apply a thin coating of Loctite 272 to the last 2 or 3 threads on the shoulder stud. Start a shoulder stud into one of the two tapped holes in the wheel hub. Install the CAS-1968 Stud Remover/Install on the shoulder stud. Tighten the nut.

STEP 70



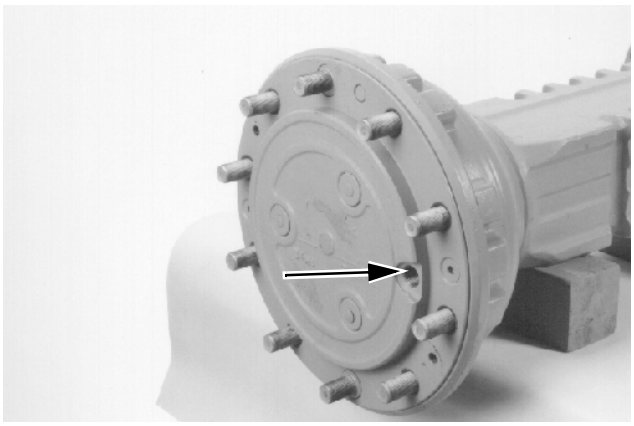
BP95F789

Using a torque wrench with half-inch drive, tighten the shoulder stud to a torque of 70 Nm.

STEP 71

Repeat steps 69 and 70 to install the other shoulder stud.

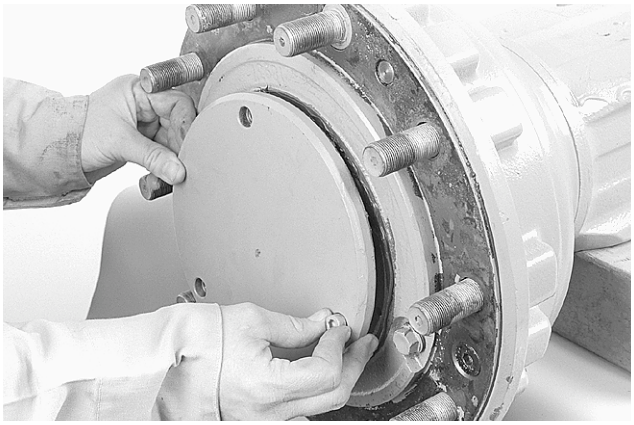
STEP 72



BP95F746

Turn the planetary until the oil level line on the carrier is horizontal and the fill hole is in the position shown. See "Specifications" for the correct oil. Fill the planetary until the oil is level with the bottom of the fill hole. Install the plug.

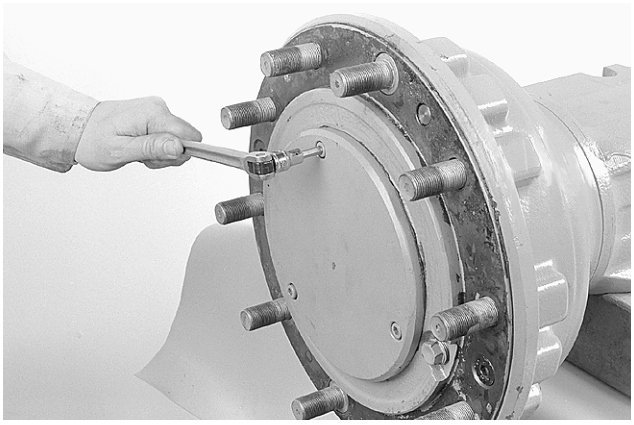
STEP 73



BK98C064

Install the cover using the three Allen screws.

STEP 74



BK98C065

Tighten the screws to 35 Nm.

Differential lock housing

STEP 148

BK98C112

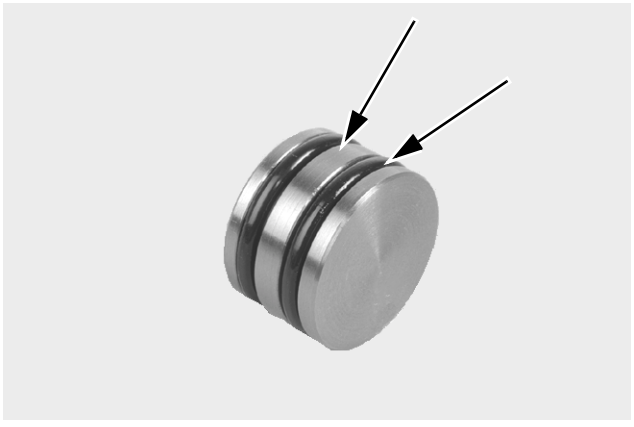
Remove the O-ring from the differential lock cover.

STEP 149

BK98C114

Use compressed air to push the differential lock cover piston out.

STEP 150



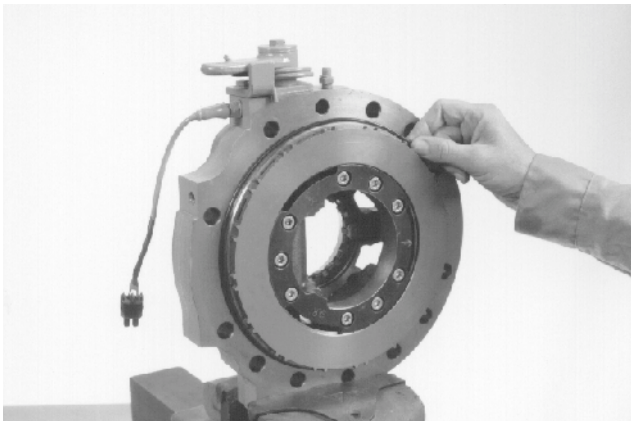
BK98C113

Remove and scrap the piston O-rings.

Brake housing

NOTE: *The photos below do not correspond with the brake housing on the machine, but the procedure is the same.*

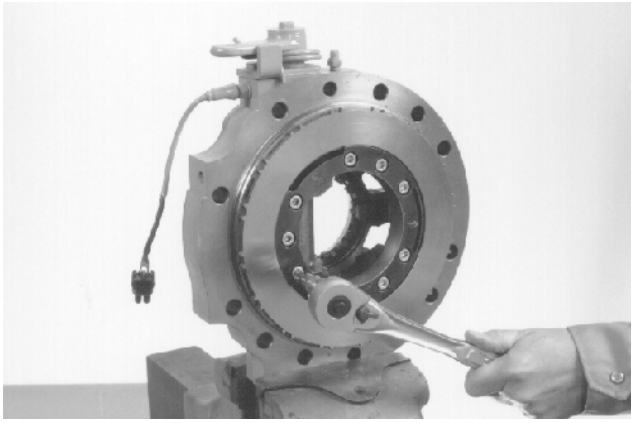
STEP 151



BP95F479

Fasten the brake housing in a vice with soft jaws. Remove the O-ring from both sides of the brake housing.

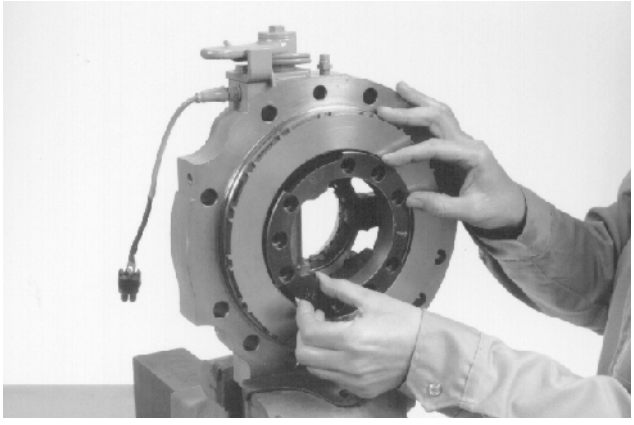
STEP 152



BP95F483

Loosen and remove the Allen head screws.

STEP 153



BP95F485

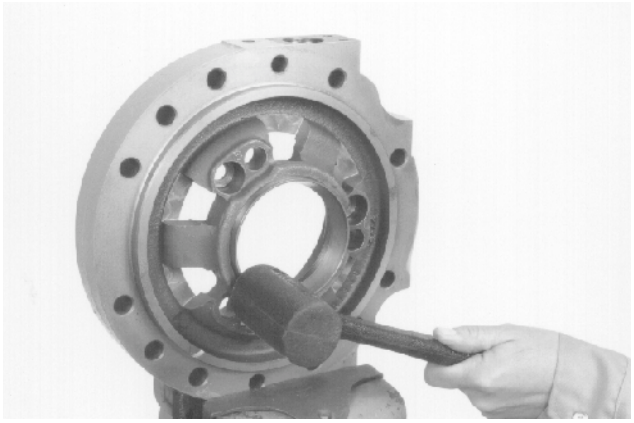
Remove the retainer bracket.

ASSEMBLING THE REAR AXLE

Brake housing

NOTE: *The photos below do not correspond to the brake housing on the machine, but the procedure is the same.*

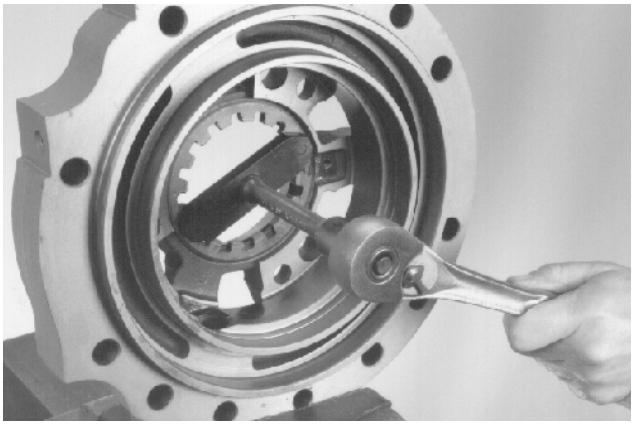
STEP 193



BP95F520

Insert the bearing cup into the bore. The bearing cup should be slightly inside the bore.

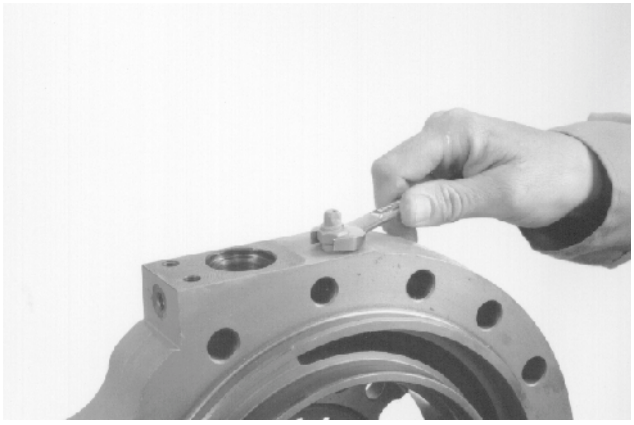
STEP 194



BP95F518

Use the CAS-2376 special tool and install the adjusting ring. Do not tighten the adjusting ring at this time.

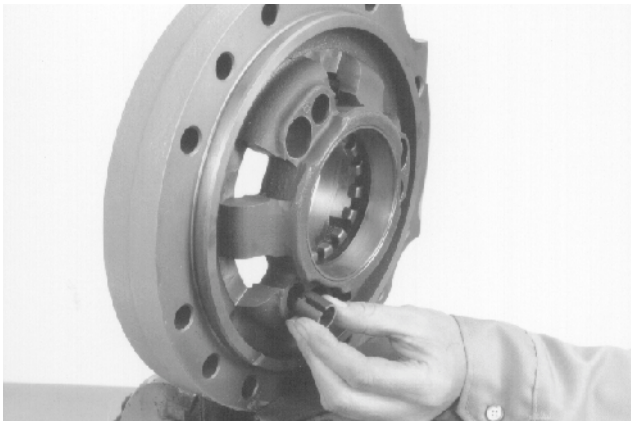
STEP 195



BP95F513

Install the brake bleed valve.

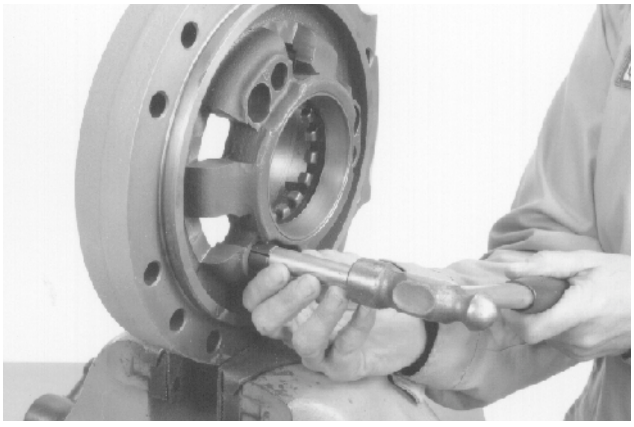
STEP 196



BP95F521

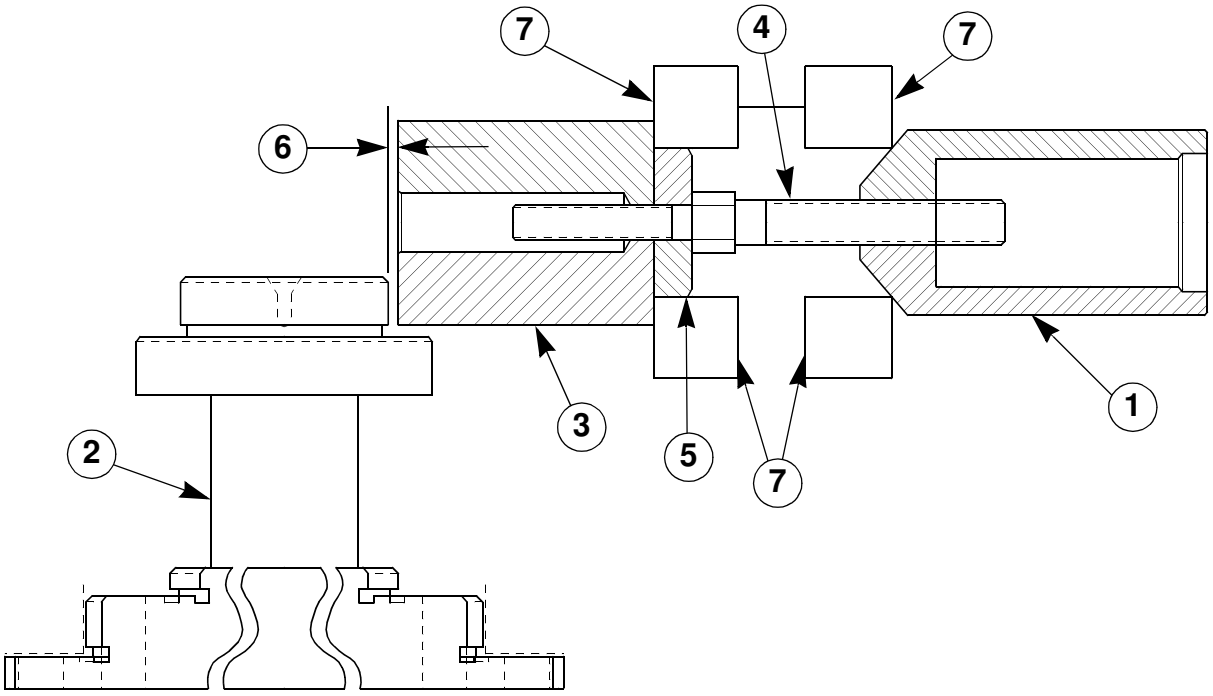
Start the tapered end of a new clearance adjusting ring into the brake housing.

STEP 197



BP95F522

Insert the bushing until the end of the bushing is even with the edge of the bore.



BT95G152

1 CAS 1596A-4
2 CAS 2372
3 CAS 1596B-5
4 CAS 1596A-7
5 CAS 1596A-6
6 GAP MEASUREMENT
7 BEARING STACK

Example

a.	*134.600 mm*	*a. At tool constant dimension*
b.	*+ 0.600 mm*	*b. Gap measurement*
c.	*135.200 mm*	*c. Total dimension*
d.	*- 132.250 mm*	*d. Figure stamped on pinion*
e.	*2.950 mm*	*e. Required shim thickness*

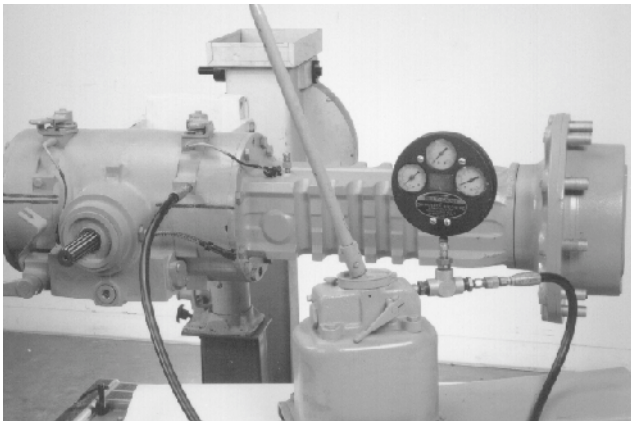
Use 2.950 mm thick shim

Work Sheet

a.	*134.600 mm*	*a. At tool constant dimension*
b.	*+ mm*	*b. Gap measurement*
c.	*mm*	*c. Total dimension*
d.	*- mm*	*d. Figure stamped on pinion*
e.	*mm*	*e. Required shim thickness*

Adjusting the parking brake levers

STEP 334



BP95F595

Loosen the air bleed screw. Connect a hand pump and pressure gauge to the brake section as shown. Pump the hand pump until oil with no air bubbles flows from the air bleed screw. Then retighten the bleed screw to a torque of 12 Nm. Subject the piston to a pressure of 10 342 kPa, to adjust the clearance adjusting rings.

STEP 335

Repeat Step 334 for the other brake assembly.

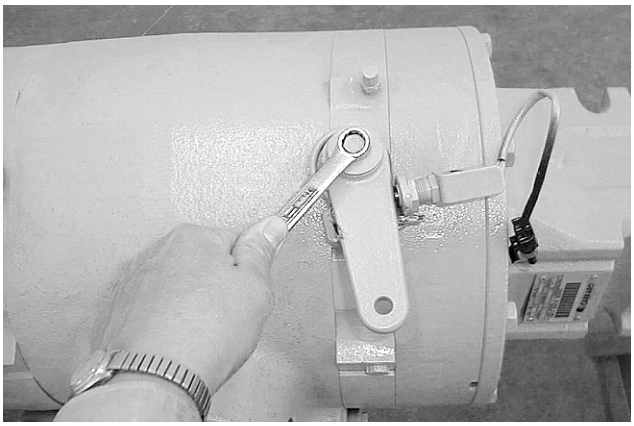
STEP 336

Remove the hand pump and pressure gauge from the brake section.

STEP 337

If you have installed a brake housing using the original parts, go to Step 338. If you have installed a brake housing using new parts, go to Step 347.

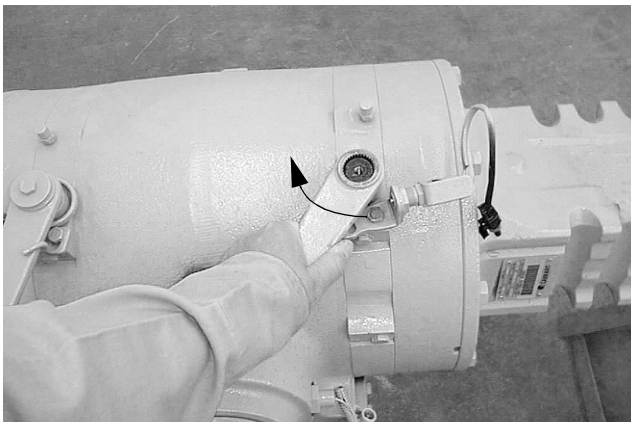
STEP 338



BK98F050

Loosen and remove the screw and washer from the parking brake lever.

STEP 339



BK98F045

Use the parking brake lever to turn the shaft in the direction shown above until the shaft cam is in contact with the brake housing inner disc.

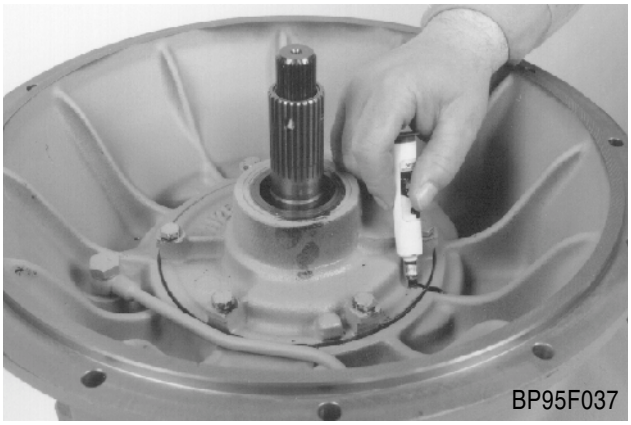
STEP 340

Repeat Steps 338 and 339 for the other parking brake lever.

STEP 34

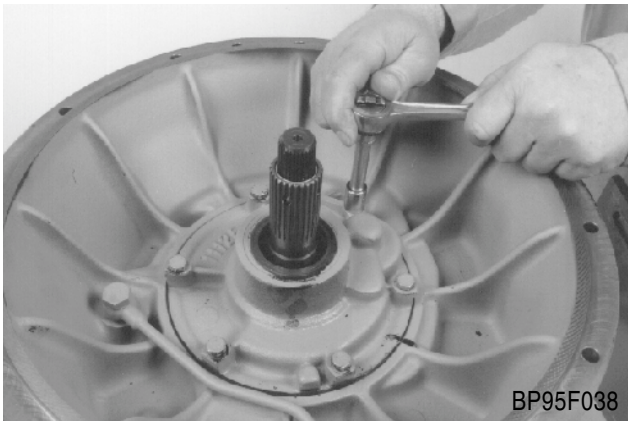
Remove the seal from the cover.

STEP 35



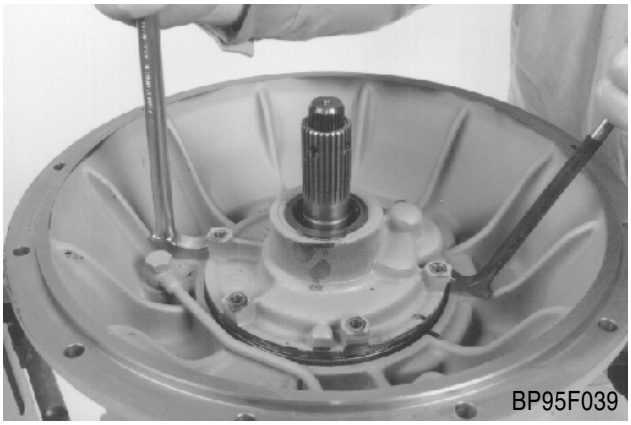
Make a mark across the joint between the oil pump and the torque converter housing so that the oil pump can be aligned the same way during installation.

STEP 36



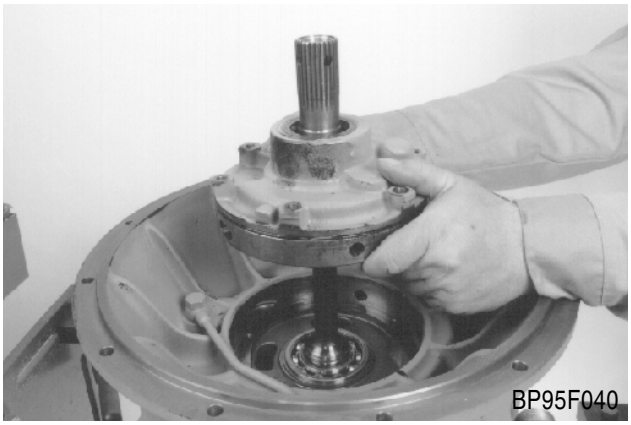
Remove the six cap screws which fasten the oil pump in position.

STEP 37



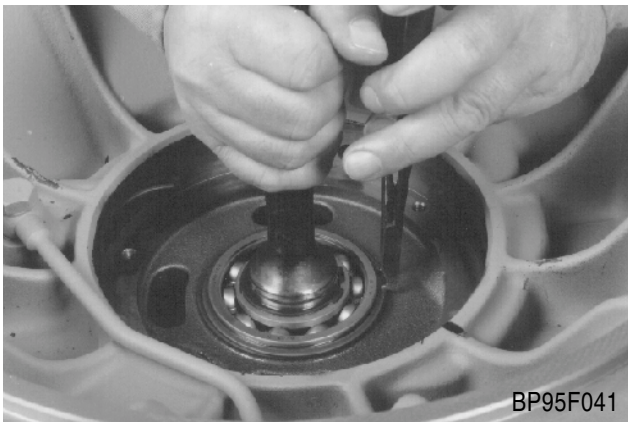
Use two prybars to lift the oil pump evenly until the oil pump can be removed.

STEP 38



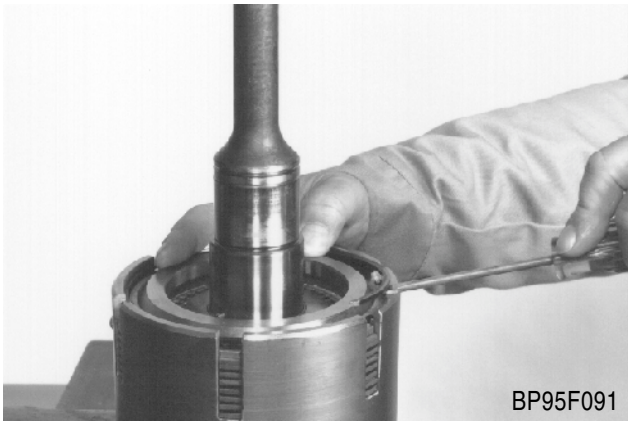
Remove the oil pump.

STEP 39



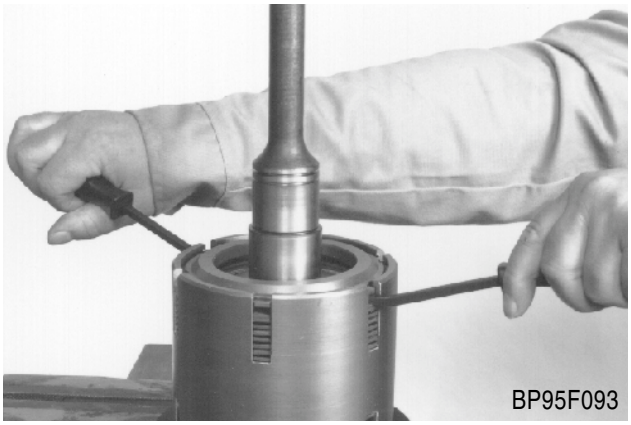
Pull up the input shaft to get clearance as you release the snap ring.

STEP 97



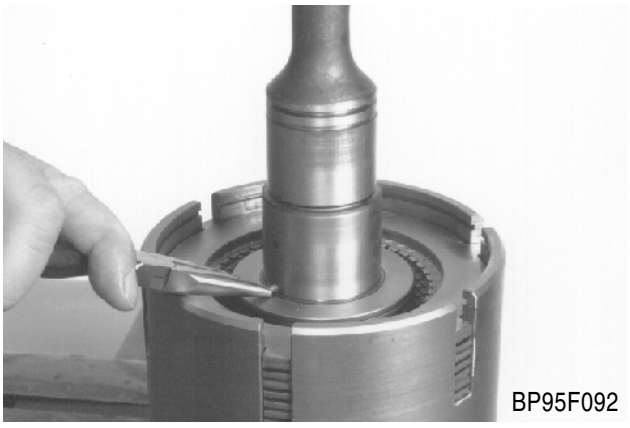
Remove the snap ring.

STEP 98



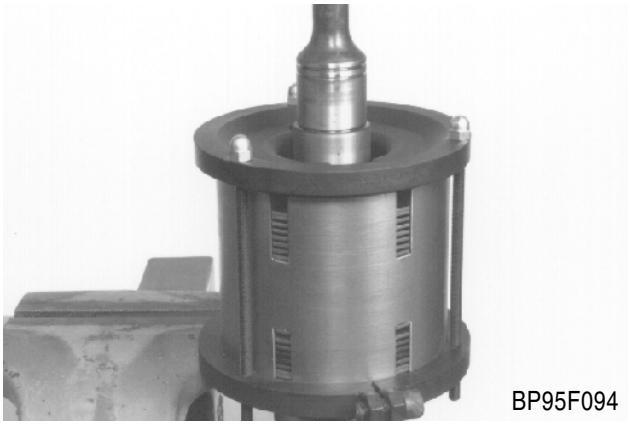
Use prybars to lift the end plate evenly. Remove the end plate.

STEP 99



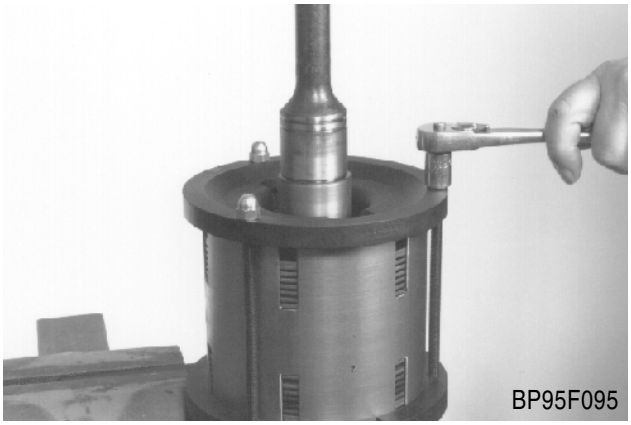
Remove the roll pin.

STEP 100



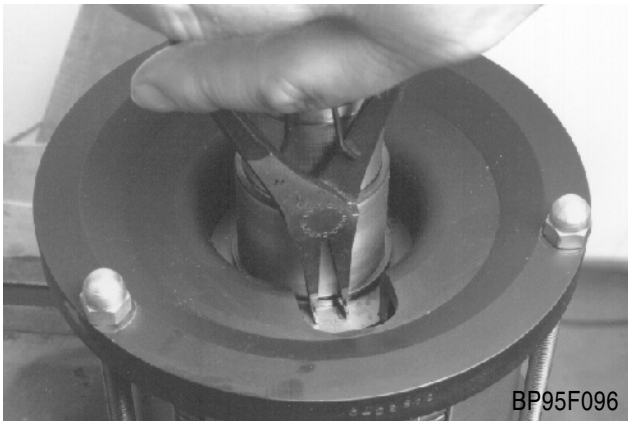
Install the top piece of the CAS-2379 special tool as shown. Use the three threaded rods and nuts to fasten the two pieces together.

STEP 101



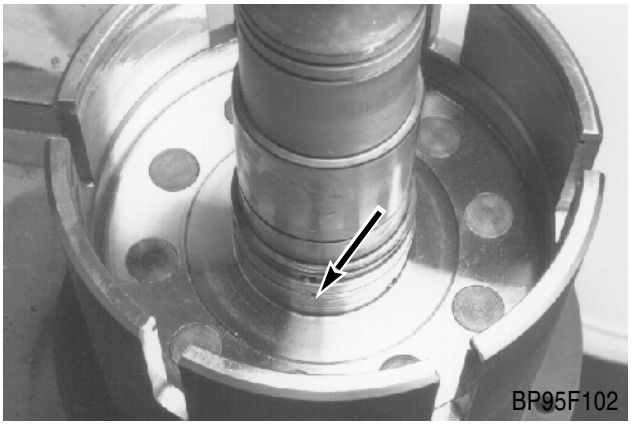
Tighten the nuts evenly to compress the spring. Compress the spring just enough to get access to the snap ring.

STEP 102



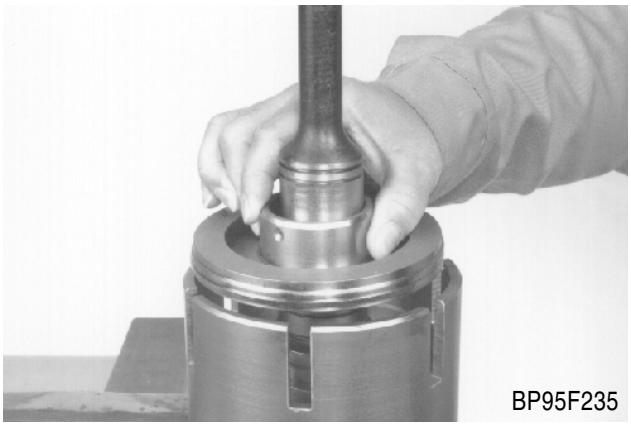
Remove the snap ring.

STEP 167



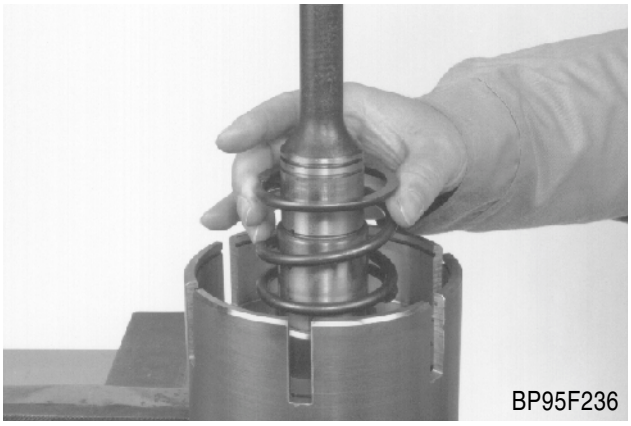
Put the input shaft in the bottom piece of the CAS-2379 special tool so that the reverse clutch housing is up. Install the sealing ring on the input shaft in the reverse clutch housing.

STEP 168



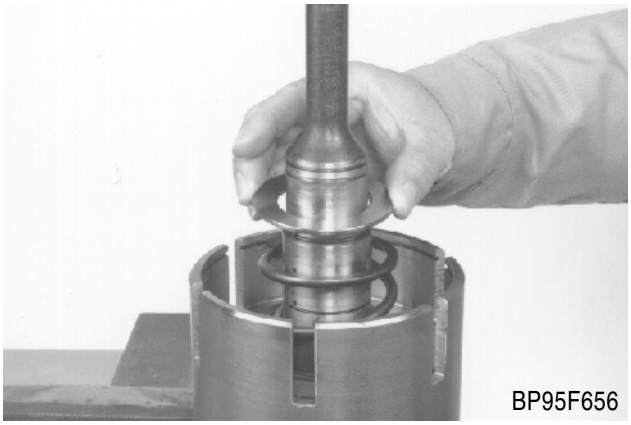
Use clean transmission oil to lubricate the edge and the bore of the piston. Install the piston.

STEP 169



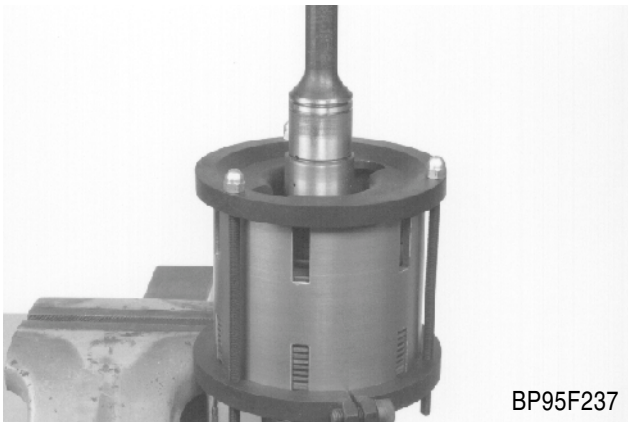
Install the spring.

STEP 170



Install the retainer plate. The side which has a raised area around the bore goes down. The side which has the groove around the bore goes up. The outer edge of the snap ring must fit in this groove after the parts are assembled.

STEP 171



Install the top piece of the CAS-2379 special tool. Use the three threaded rods and nuts to fasten the two pieces together. Tighten the nuts evenly to compress the spring just enough to get access to the snap ring groove in the input shaft. Install the snap ring. Loosen the nuts to relieve the spring tension and remove the CAS-2379 special tool. Make sure that the outer edge of the snap ring is seated in the groove in the retainer plate.

INSPECTION OF THE SECONDARY SHAFT

STEP 231

Check the teeth on the gears for wear and damage. If a tooth is badly damaged, be sure to inspect the gear or spline that is in mesh with the damaged gear.

STEP 232

Check the splines on the secondary shaft for wear and damage. Check the passages in the secondary shaft to be sure that the passages are open and free of foreign material.

STEP 233

Check the bearings for flat areas, pitting, and other damage. Replace as necessary.

STEP 234

Check the teeth in the synchronizer assemblies for wear and damage. Replace as necessary.

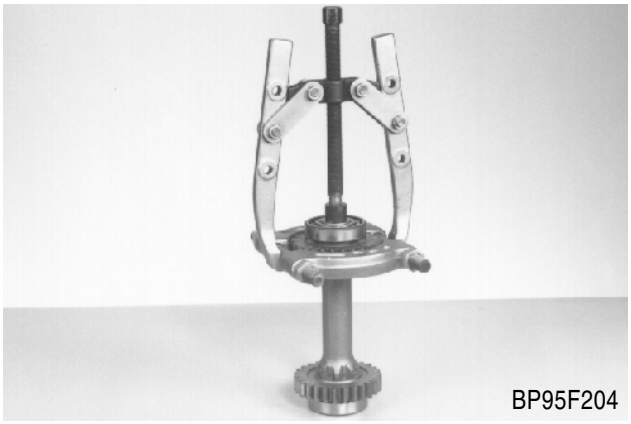
STEP 235

Check the springs in the synchronizer assemblies for wear, cracks, heat distortion, and other damage. Replace as necessary.

DDISASSEMBLY, INSPECTION, AND ASSEMBLY OF THE REVERSE SHAFT

Disassembly

STEP 292



Install a bearing separator under the gear as shown. DO NOT install the bearing separator between the gear and the bearing. Install an acceptable puller on the bearing separator. Use a shaft protector between the puller and the end of the reverse shaft. Use molydisulfide grease to lubricate the shaft protector and the end of the puller. Pull the bearing from the reverse shaft.

STEP 293

Remove the spacer and the gear from the reverse shaft.

STEP 294

Repeat steps 292 and 293 to disassemble the other end of the reverse shaft.

Inspection

STEP 295

Check the teeth on the gears for wear and damage. If a tooth is badly damaged, be sure to inspect the gear or spline that is in mesh with the damaged gear.

STEP 296

Check the splines on the reverse shaft for wear and damage.

STEP 297

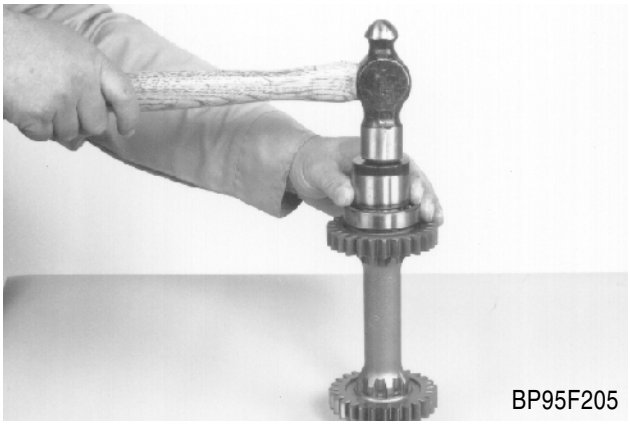
Check the bearings for flat areas, pitting, and other damage. Replace as necessary.

Assembly

STEP 298

Install a gear and a spacer on one end of the reverse shaft.

STEP 299

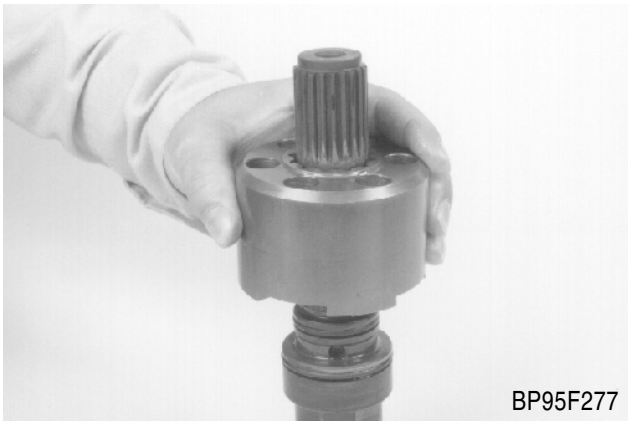


Use an acceptable driver to drive the bearing onto the reverse shaft until the bearing makes contact with the spacer.

STEP 300

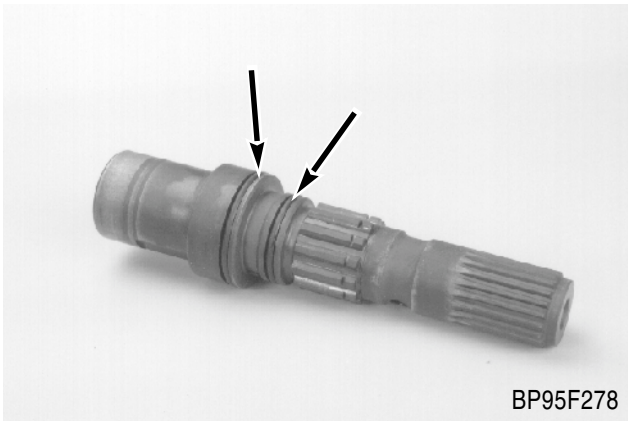
Repeat steps 298 and 299 to assemble the other end of the reverse shaft.

STEP 347



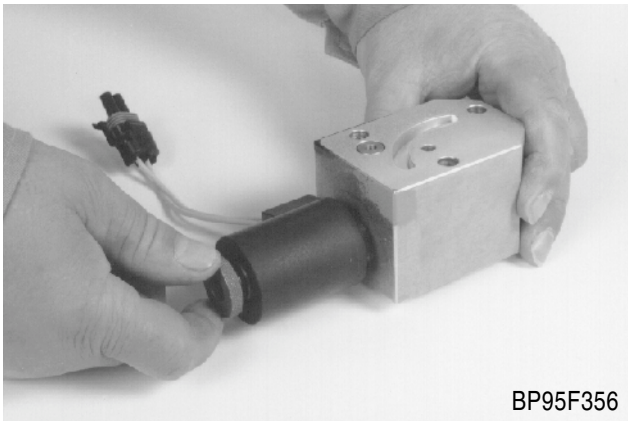
Remove the sleeve.

STEP 348



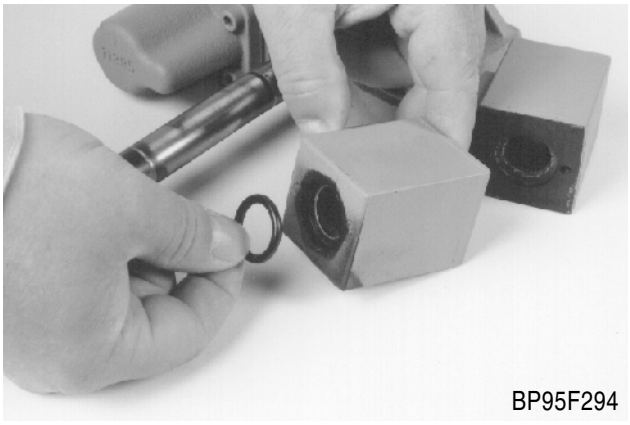
Remove the two O-rings from the shaft.

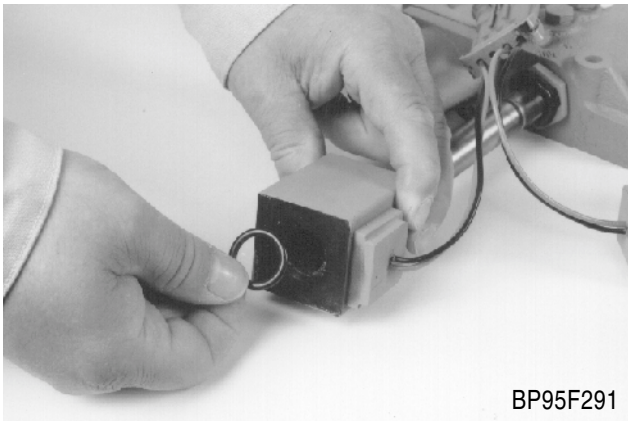
STEP 388



Install the nut. Tighten the nut to a torque of 8 Nm.

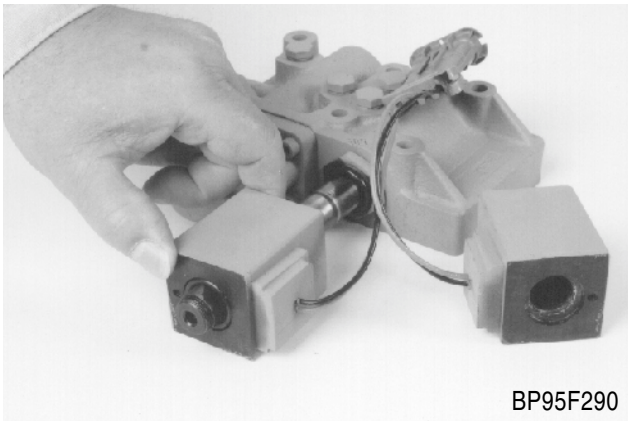
STEP 457





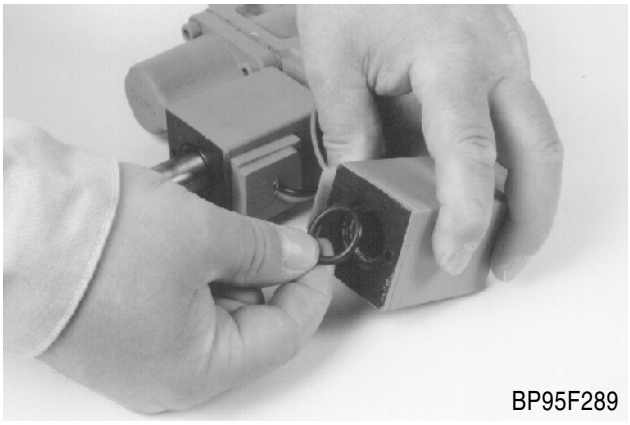
Install new O-rings at each end of the solenoid coil which goes next to the control valve body. Use clean transmission oil to lubricate the O-rings.

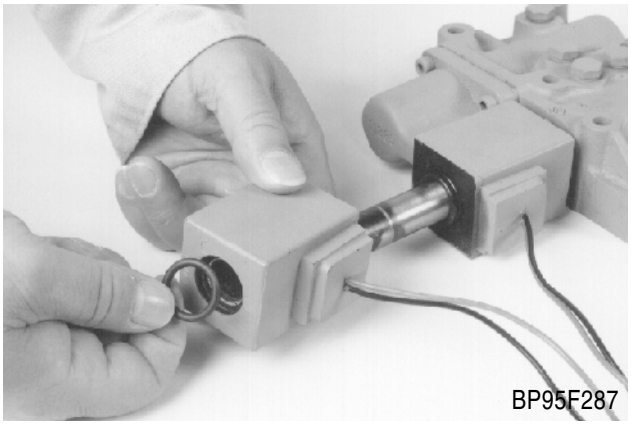
STEP 458



Install the solenoid coil on the solenoid plunger.

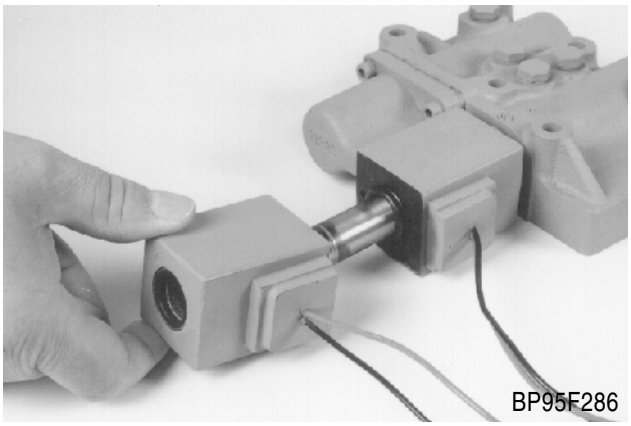
STEP 459





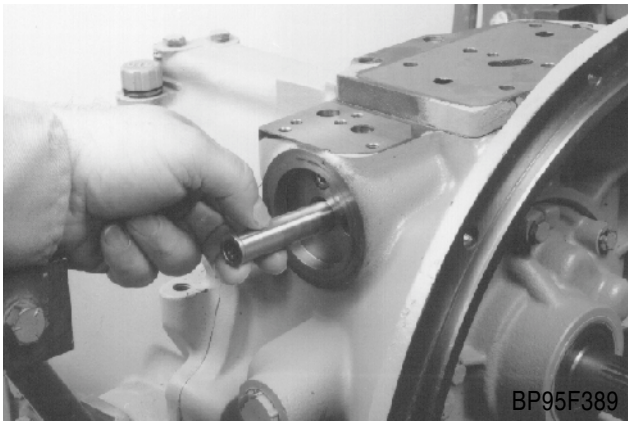
Install new O-rings at each end of the remaining solenoid coil. Use clean transmission oil to lubricate the O-rings.

STEP 460



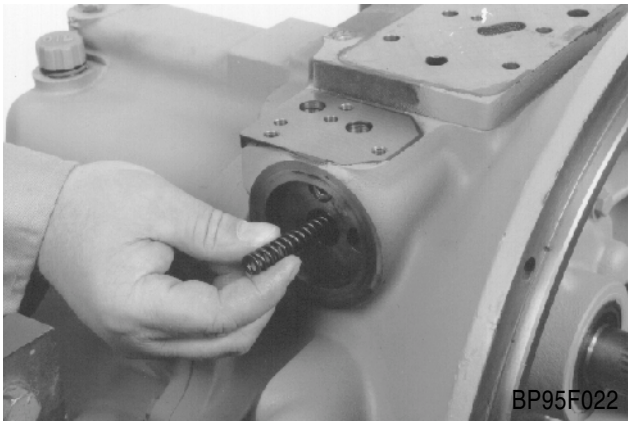
Install the remaining solenoid coil on the solenoid plunger.

STEP 525



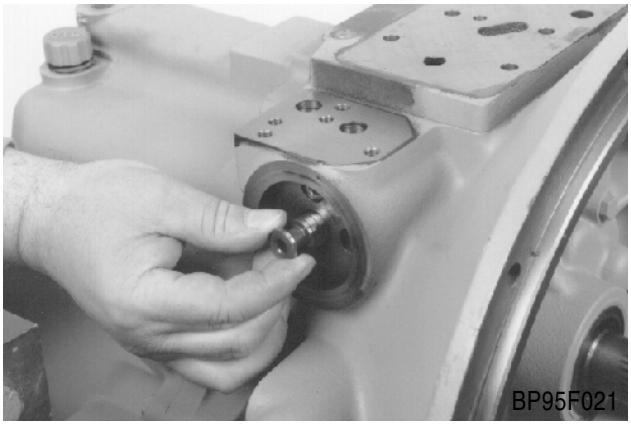
Install the four-wheel drive priority valve in the oil filter bore.

STEP 526



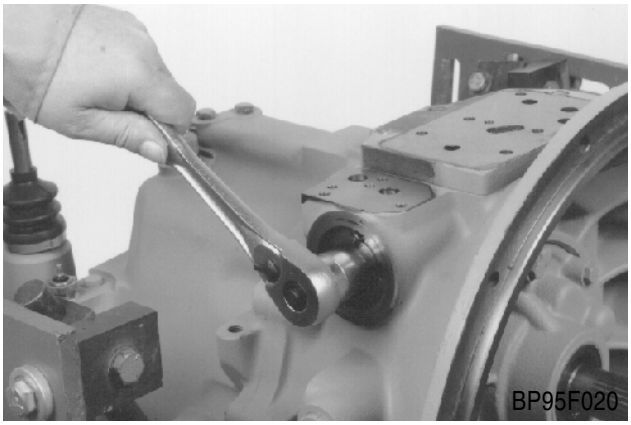
Install the spring.

STEP 527



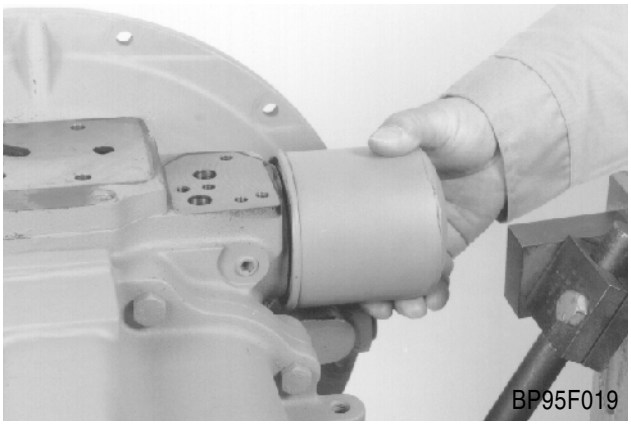
Install the spool.

STEP 528



Install the fitting for the oil filter. Tighten the fitting to a torque of 50 Nm.

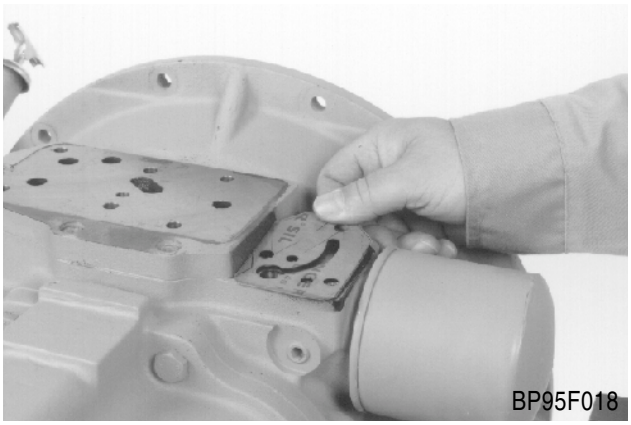
STEP 529



Use clean transmission oil to lubricate the gasket on the oil filter. Install the oil filter.

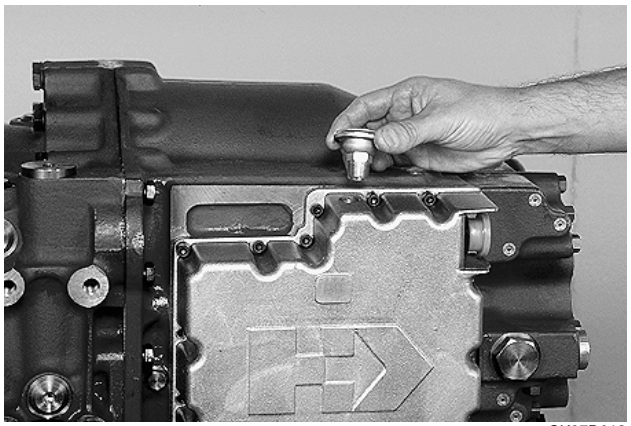
NOTE : *Steps 530 through 534 are for four-wheel drive gear boxes only. If you are working on a two-wheel drive gear box, go to step 535.*

STEP 530



Install the gasket for the four-wheel drive valve.

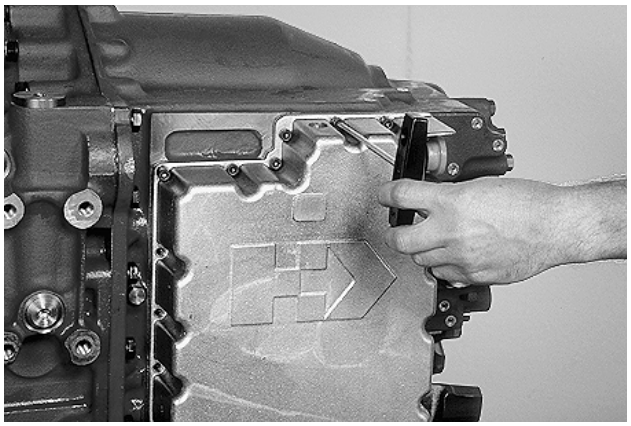
STEP 13



CK97D013

Remove the air breather.

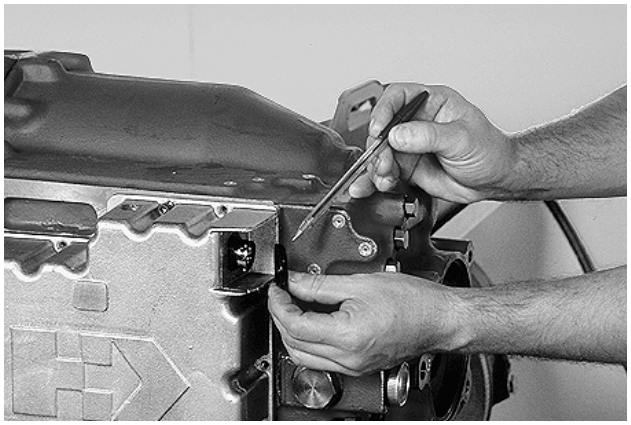
STEP 14



CK97D014

Remove the control valve protection cover mounting screws.

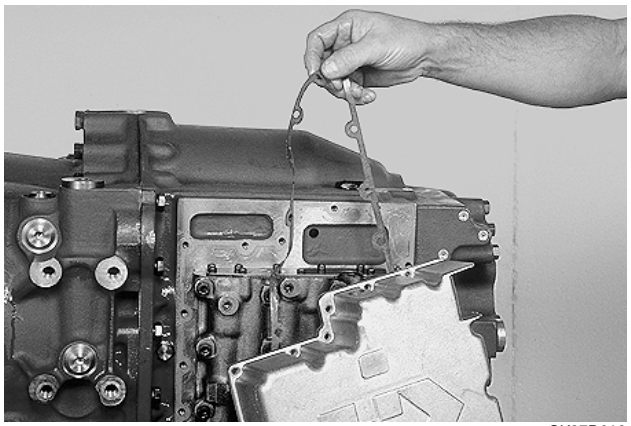
STEP 15



CK97D015

Remove the wiring connector mounting nut.

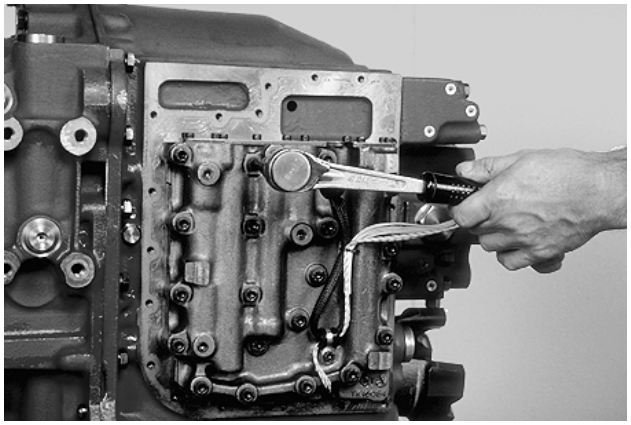
STEP 16



CK97D016

Remove the control valve protection cover and gasket.

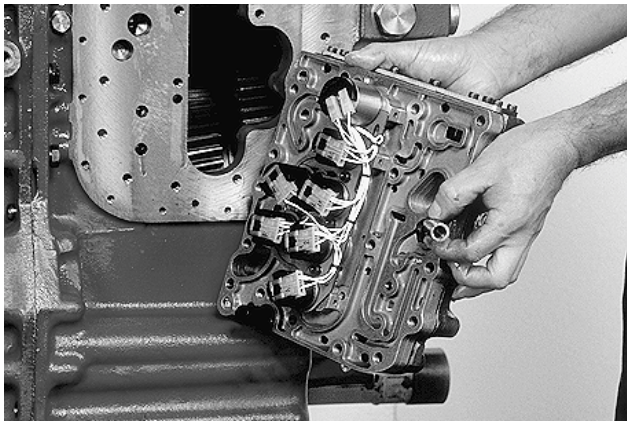
STEP 17



CK97D017

Remove the control valve mounting screws.

STEP 18



CK97D018

Remove the control valve as an assembly. Remove the bypass valve spool and spring.

Disassembly Forward High Clutch

STEP 67

CK97D059

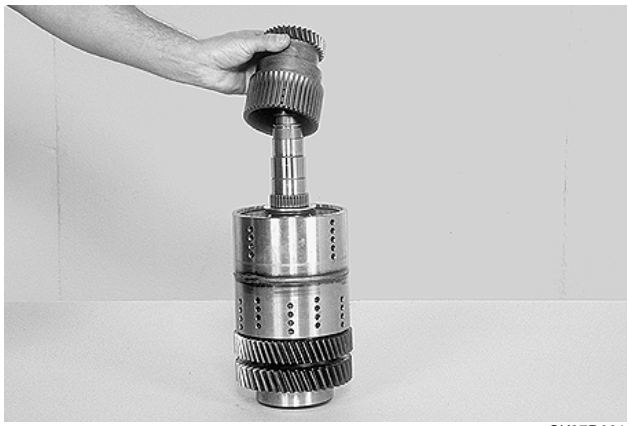
Remove the thrust washer and thrust bearing.

STEP 68

CK97D060

Remove the clutch gear outer needle bearing.

STEP 69



CK97D061

Remove the clutch gear.

STEP 70

CK97D062

Remove the clutch gear inner needle bearing.

STEP 132

CK97D126

Install the piston return spring retainer.

STEP 133

CK97D127

Install the spring retainer spacer.

STEP 134

CK97D128

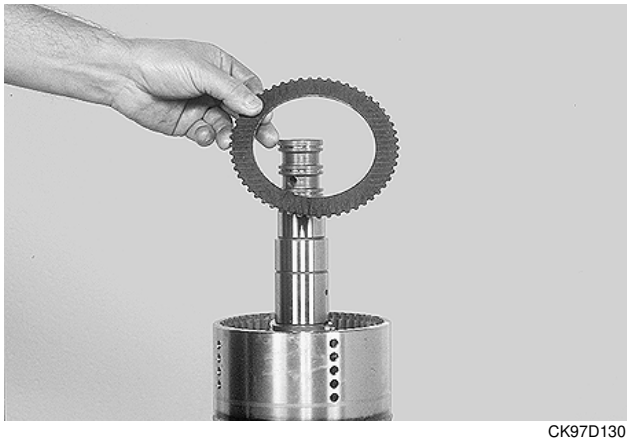
Install the clutch spring retainer snap ring.

STEP 135

BK98J127

Use the CAS2586 clutch spring compressor tool. Compress the spring and install the spring retainer snap ring. Be sure ring is in full position in groove.

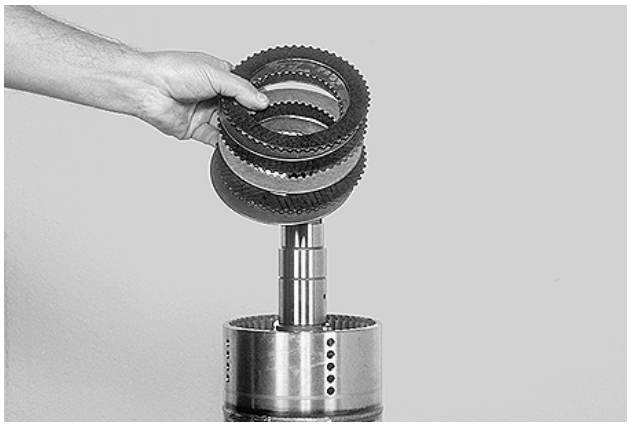
STEP 136



CK97D130

Install one outer half disc with the friction material away from the piston.

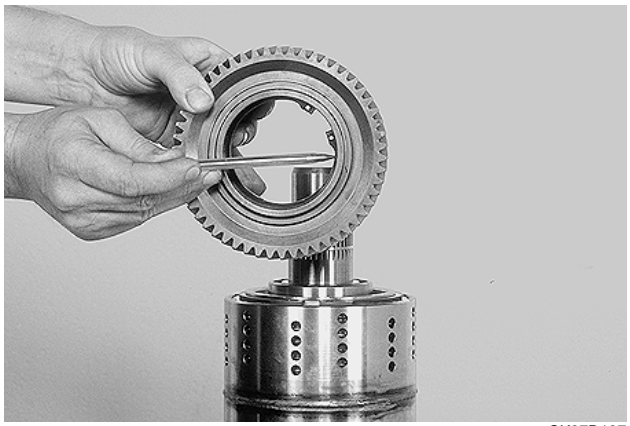
STEP 137



CK97D131

Install one steel disc. Alternate friction and steel discs until the proper amount of discs are installed. The first and last discs are steel.

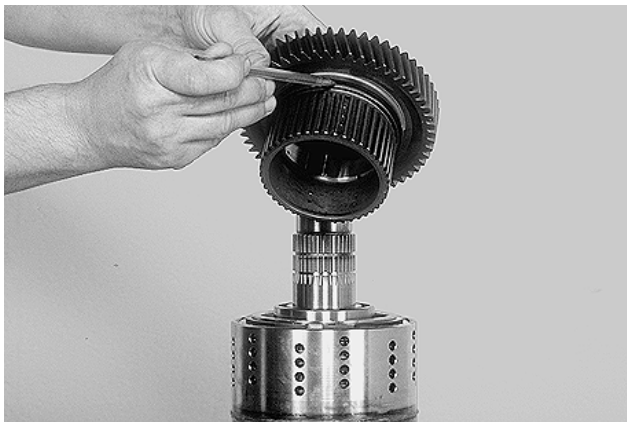
STEP 201



CK97D197

Install the clutch gear bearing locating rings.

STEP 202



CK97D198

Install clutch gear sealing ring. Install clutch gear in clutch drum. Align splines on clutch gear with internal teeth of steel discs. Do not force this operation. Gear splines must be in full position with internal teeth of all inner discs.

STEP 203

CK97D199

Install the clutch gear outer bearing.

> ⚠ *Caution : Be sure that bearing shield is on the outside.*

STEP 204

CK97D200

Use acceptable tools and drive the outer bearing into place.

STEP 205

CK97D201

Install the outer bearing snap ring.

STEP 272

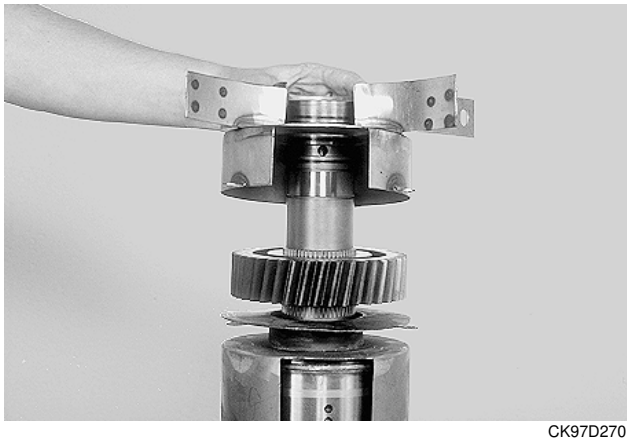
CK97D268

Install the upper output gear on the shaft.

Disassembly Output Shaft

NOTE: *The following photo is for reference only. The oil baffle is one piece and should be removed as one piece.*

STEP 273



CK97D270

Remove the oil baffle.

STEP 274

CK97D271

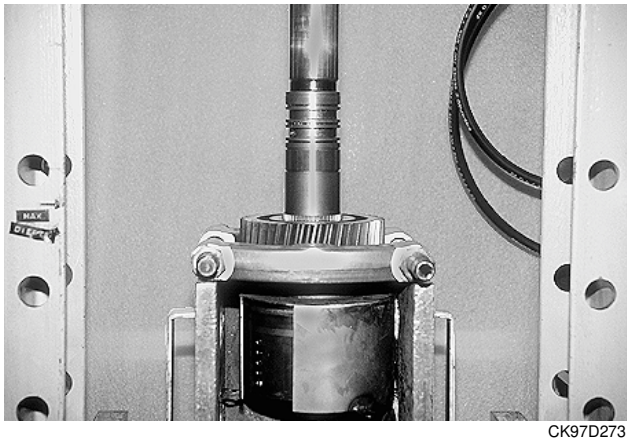
Remove the output shaft sealing rings.

STEP 275

CK97D272

Remove the output shaft gear retaining ring.

STEP 276



CK97D273

Use acceptable tools and press output gear from the shaft.

Reassembly Input Shaft

STEP 328

CK97D336

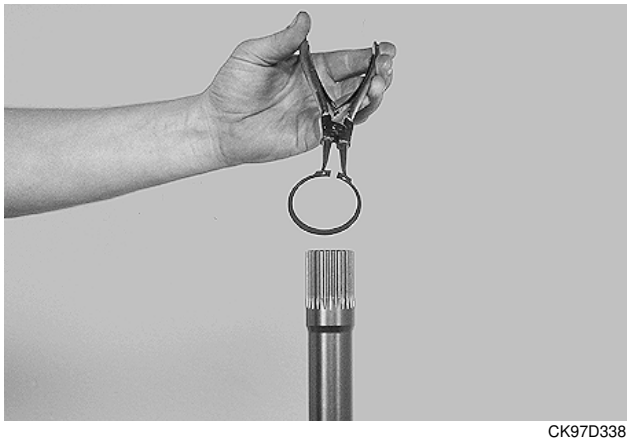
Install the forward low gear retaining ring.

STEP 329

CK97D337

Install the forward low gearon the shaft.

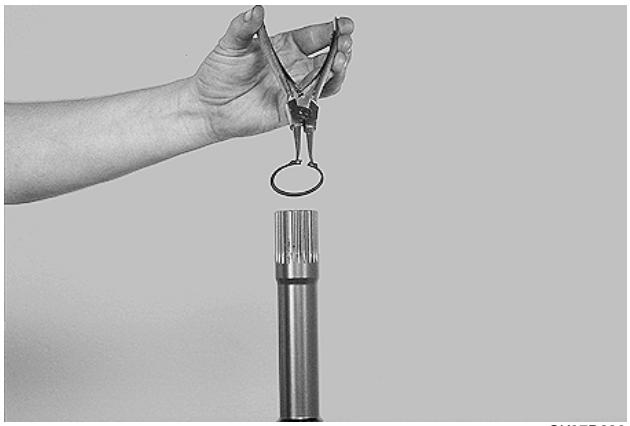
STEP 330



CK97D338

Install the forward low gear retaining ring.

STEP 331



CK97D339

Install the input shaft front bearing retaining ring.

STEP 332

CK97D340

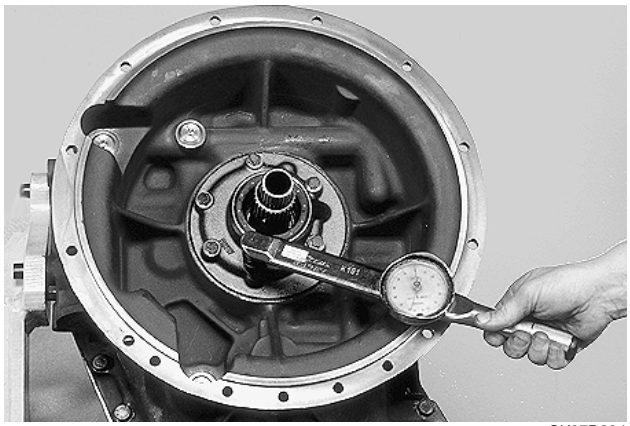
Install the input shaft front sealing ring.

STEP 333

CK97D341

Warm the input shaft front bearing to 120°C (248°F), install the bearing.

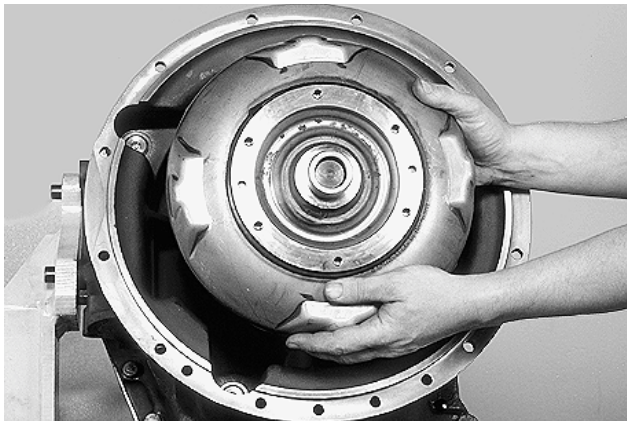
STEP 395



CK97D384

Install the pump mounting screws and lockwashers. Tighten the screws to a torque of 20 to 25 Nm.

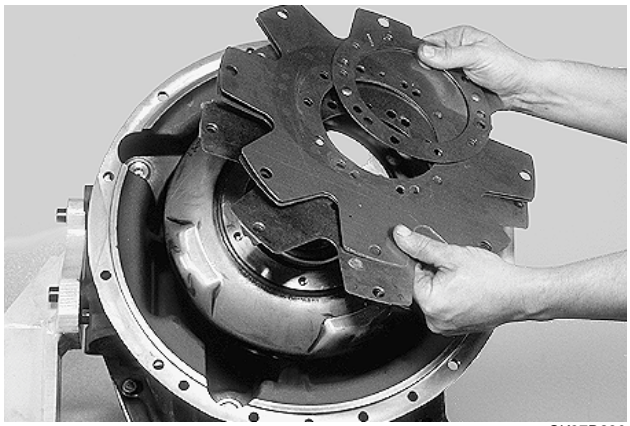
STEP 396



CK97D385

Install the converter assembly on the input shaft. Rotate the converter while pushing the converter towards the transmission until the tangs on the converter shaft are aligned with the grooves of the pump shaft. After the tangs are aligned with the grooves, the converter will slide into place.

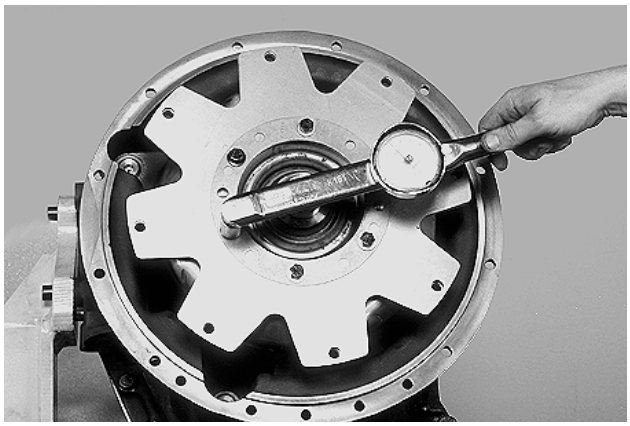
STEP 397



CK97D386

Install the drive plates on the converter.

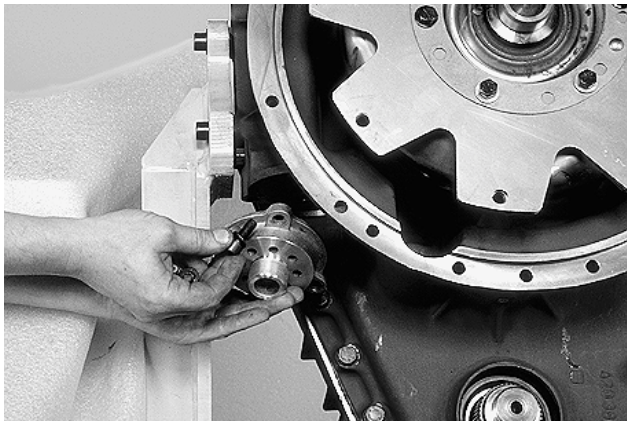
STEP 398



CK97D387

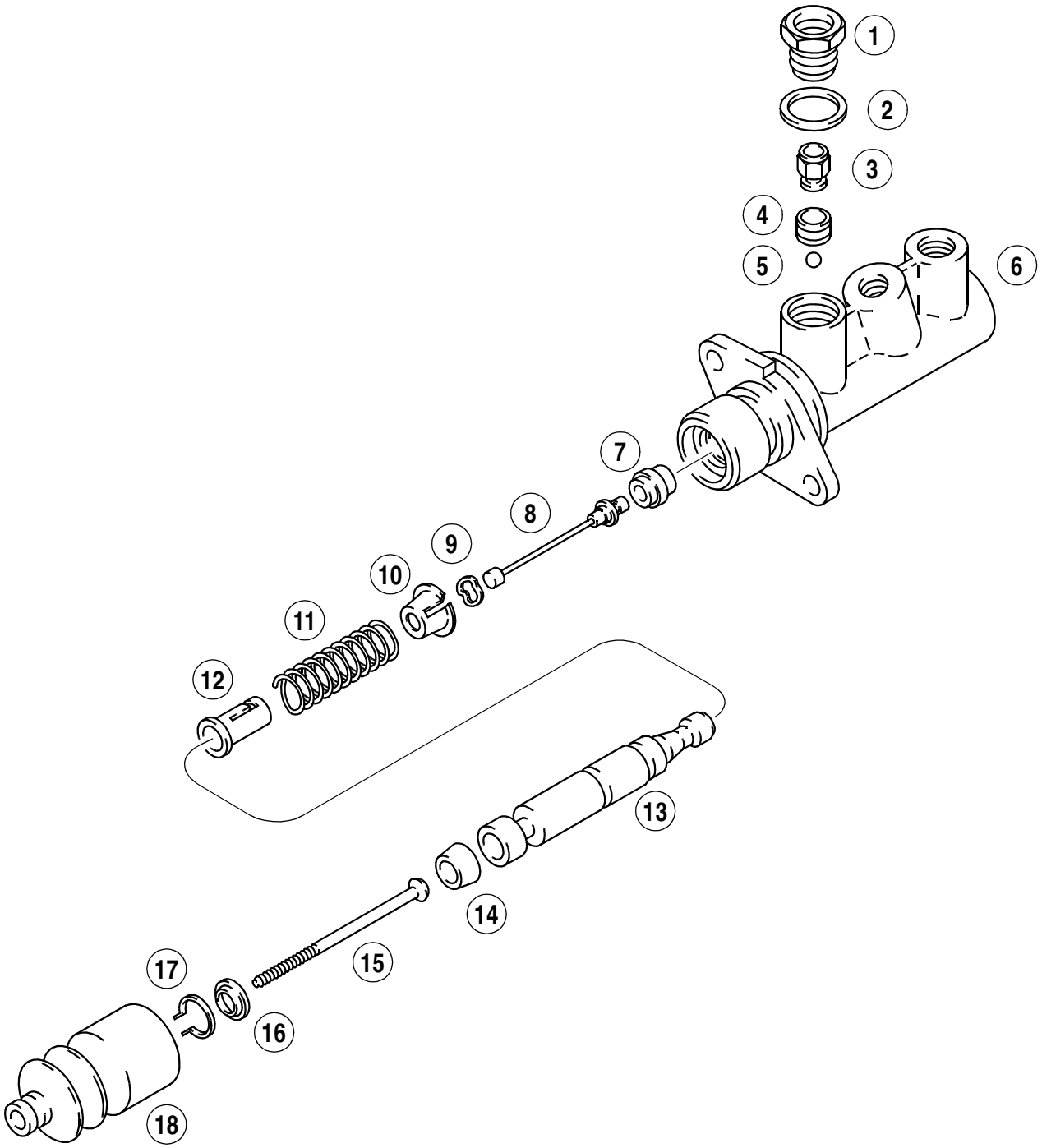
Install the drive plates screws and lockwashers. Tighten the screws to a torque of 18 to 32 Nm.

STEP 399



CK97D388

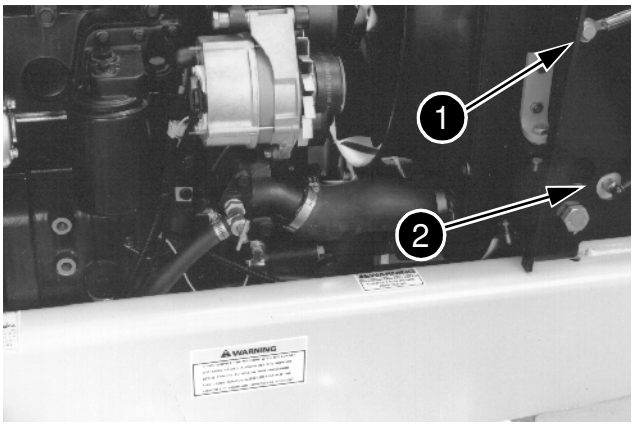
Install the filter adapter, O-ring, lockwashers and mounting screws.



B9502283T

1. Flow valve adapter
2. Gasket
3. Flow valve
4. Flow valve seal
5. Ball
6. Body
7. Check valve seal
8. Check valve piston
9. Wave spring
10. Check valve seat
11. Spring
12. Spring seat
13. Piston
14. Seal
15. Push rod
16. Washer
17. Snap ring
18. Boot

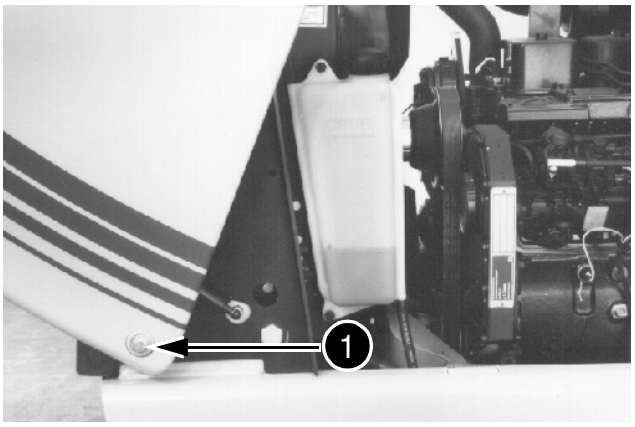
Master cylinder



BP9410015

C. Have an assistant hold the hood while the hood cable (1) is connected to the radiator shroud.
D. Connect the hood gas strut (2) to the studs.

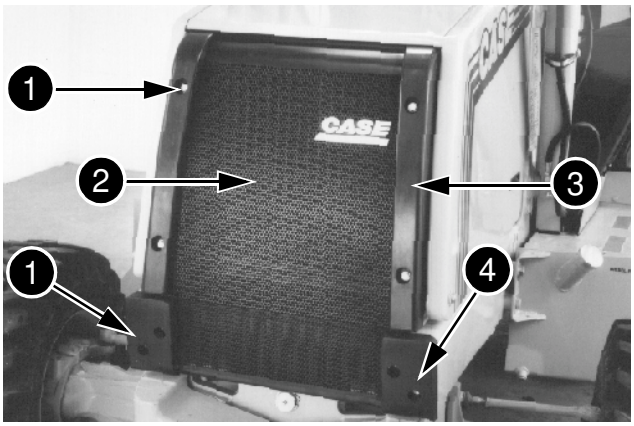
STEP 16



BP9502286

Install the screws, washers and nuts for the hood orientation point (1).

STEP 17



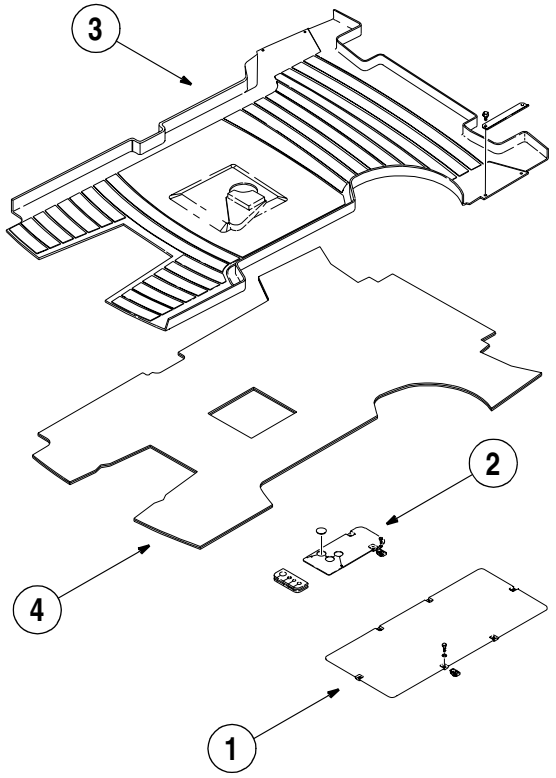
BP9502315

Install the screws (1) which attach the grille (2), the upper bumpers (3) and the lower bumpers (4) to the machine.

STEP 18

Start the engine and operate the loader and backhoe attachments for 3 to 4 minutes.
Position the loader bucket flat on the ground in the road transport position.
Stop the engine.
Check the hydraulic oil level, top up if necessary.

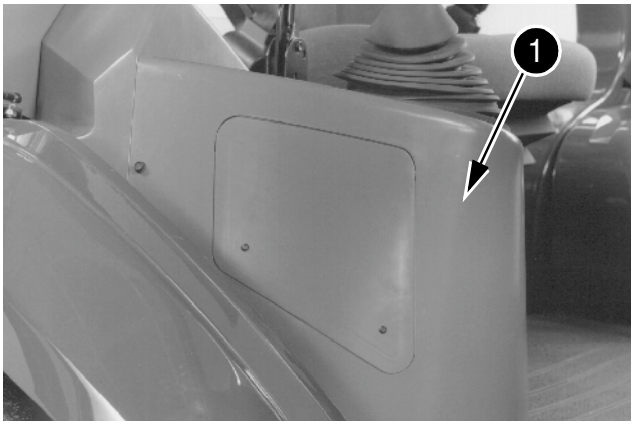
8. Install the front floor plate (1) in the cab, also the loader control lever separation plate (2) on the cab floor. Make sure you position the control rod boot correctly in the openings in the loader control lever separation plate.



BT95K122

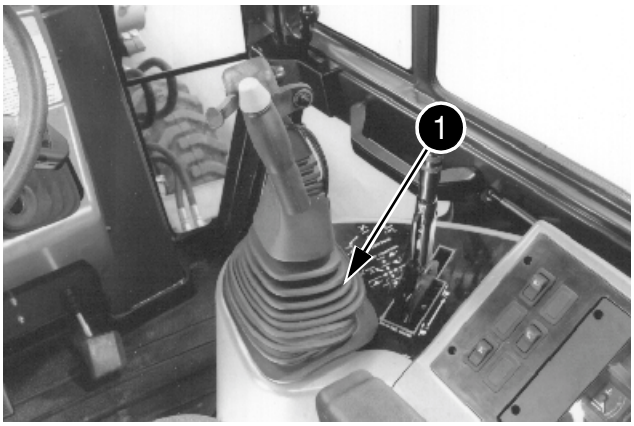
9. Install the cab floor mats (3) and (4), if fitted.

10. Install the cover (1) and fasten it in position using the three cap screws.



BP9410110

11. Install the boot (1) over the cover. Fasten the boot in position using the corresponding retaining screws.



BP9410020

12. Start and rung the engine at low idle. Operate the lift function and the bucket function. Operate, if equipped, the "clam" function. Hold the levers in each position for 15 to 20 seconds.

13. Lower the loader bucket to the ground and stop the engine.

14. Check for oil leaks at the loader control valve.

15. Check the hydraulic oil level in the hydraulic reservoir. Add oil as required. Refer to Section 1002 for the oil specifications.

REMOVING AND INSTALLING THE RIDE CONTROL SYSTEM

STEP 1

Park the machine on a hard, level surface. Lower the loader bucket to the ground. Stop the engine.

> **WARNING:** *It is essential that the operations in Step 2 are carried out to release pressure in the hydraulic system and in the ride-control accumulator before any operation is performed on the ride control system.*

STEP 2

CD98E008

Turn the starter switch key to the "ON" position.
Move the control for the ride control (1) to the "ON" position.
Proceed as follows to release pressure in the hydraulic system:

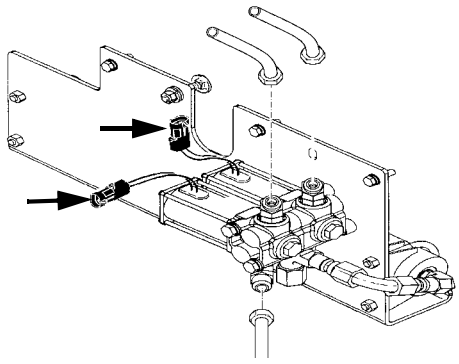
- Remove the hydraulic reservoir filler cap.
- Operate the loader control levers in all directions.
- Install the hydraulic reservoir filler cap.
- Turn the starter switch key to the "OFF" position.
- Move the control for the ride control (1) to the "OFF" position.

STEP 3

Disconnect the battery cables.

NOTE: *Always disconnect the negative cable (-) last. To reconnect the battery cables, always connect the positive cable (+) first.*

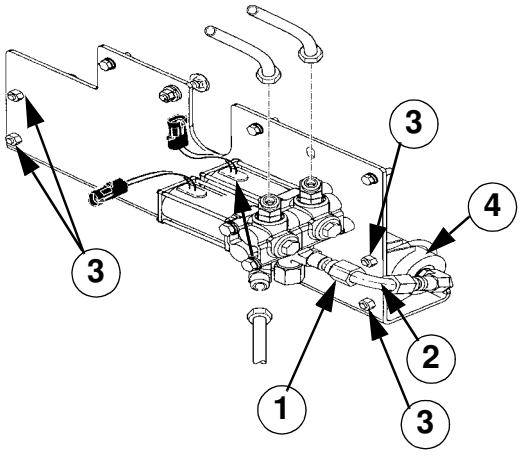
STEP 4



CI98D111

Disconnect the ride control system solenoid valve harnesses.

STEP 5



CI98D111

Place a receptacle under the ride control system solenoid valves.
Unscrew the union (1) and allow the fluid to flow out.
Remove and plug the pipe (2), unscrew the accumulator (4) retaining screws (3) and remove the accumulator from the machine.

8002

Section

8002

HYDRAULIC SYSTEM SPECIFICATIONS, TROUBLESHOOTING AND PRESSURE CHECKS

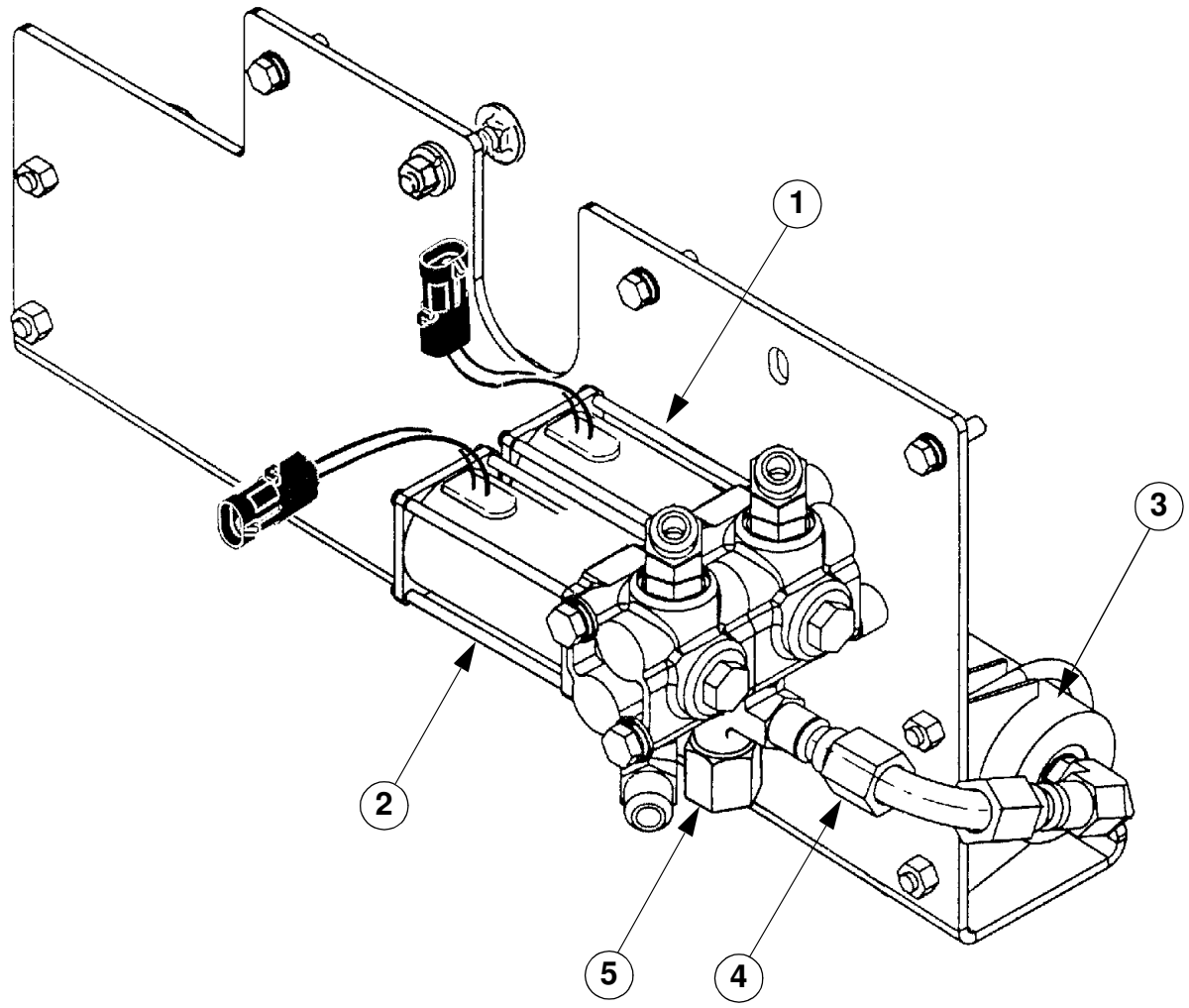
580LE

April 2000

Case

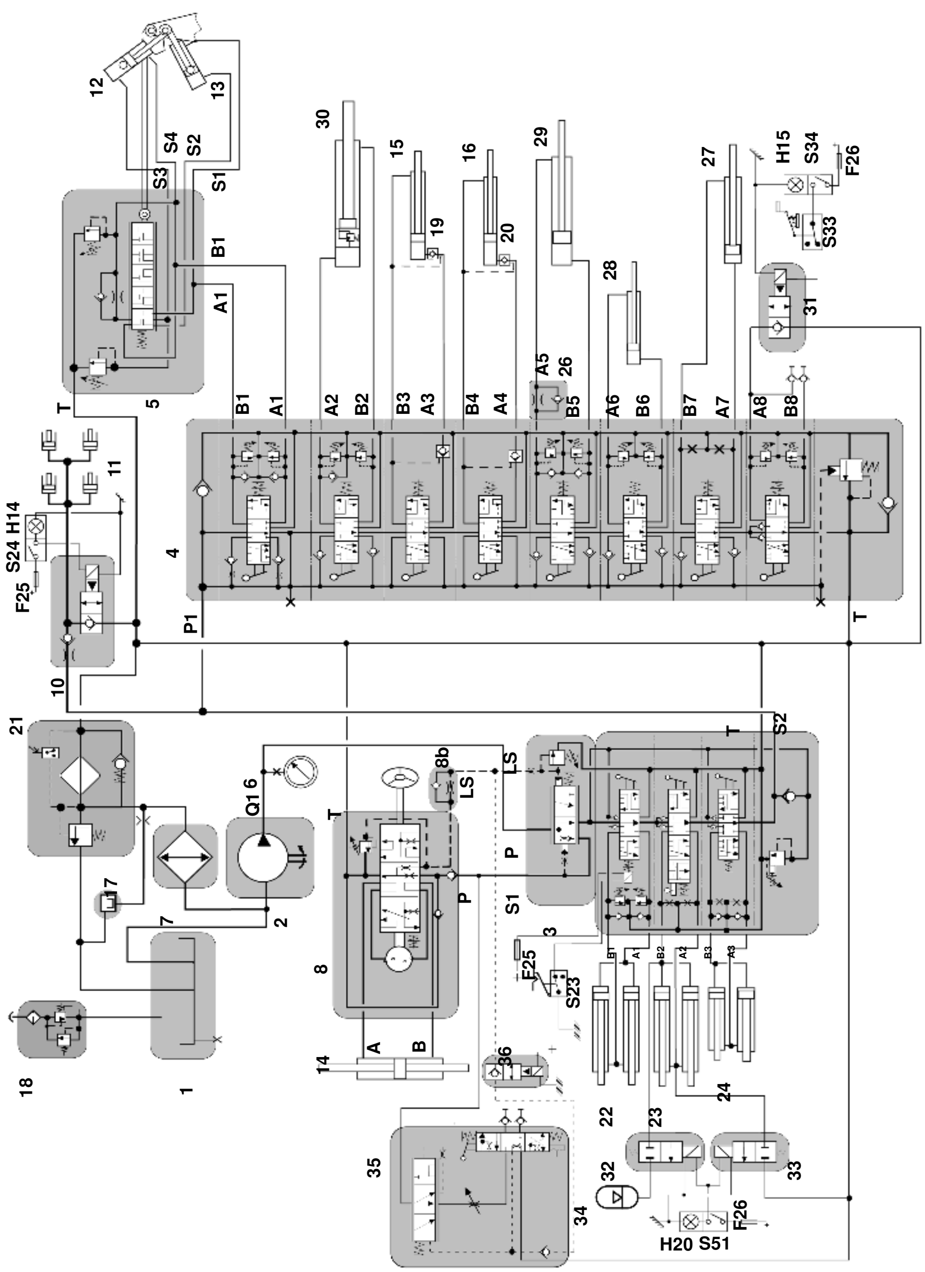
Cre 7-79701GB

5. Move the loader control to the lowering position until the loader bucket touches the ground. Continue lowering the loader bucket until the machine no longer touches the ground. The loader should be able to lift and hold the machine off the ground. If the loader cannot lift and hold the machine above the ground, refer to Section 4001 (Electrical system troubleshooting) or to Section 8009 to repair or replace the ride control system LH solenoid valve.
6. Lower the machine to the ground, if necessary.



BS96H097

1 RIDE CONTROL SYSTEM RH SOLENOID VALVE (ACCUMULATOR)
2 RIDE CONTROL SYSTEM LH SOLENOID VALVE (RESERVOIR)
3 ACCUMULATOR
4 PIPE BETWEEN RH SOLENOID VALVE AND ACCUMULATOR
5 ADJUSTABLE T-UNION (PART NO. 218-5286). CONNECT THE HOSE AND PRESSURE GAUGE HERE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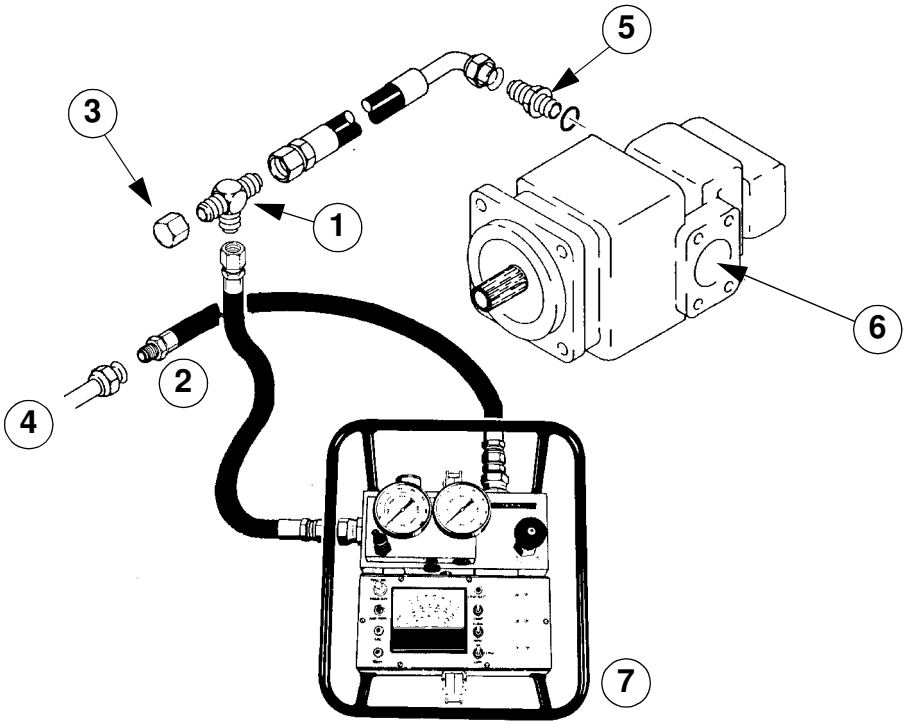
A3
B3
A4
B4
A5
B5
A6
B6
A7
B7
A8
B8
A
B
S24 H14
F25
S23
H15
S34
F26
S33
H20 S51

CHECKING THE EFFICIENCY OF THE PUMP (front and rear bodies)

Checking the output of the rear section

NOTE: *To carry out this procedure, use parts from the flowmeter connections kit.*

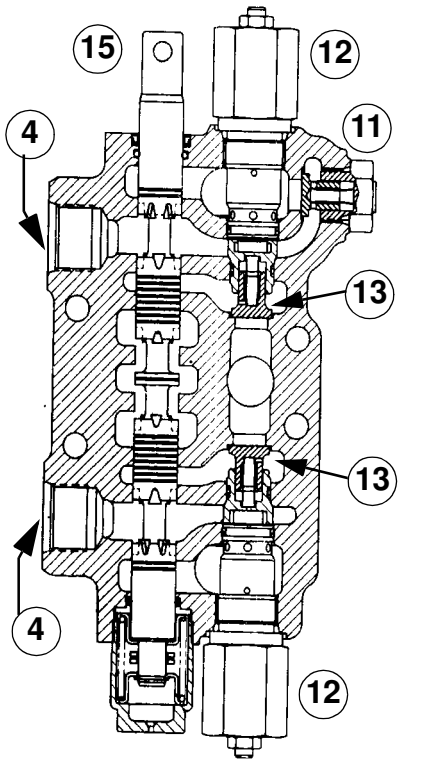
1. Park the machine on a level surface. Put the backhoe in the transport position and lower the loader bucket to the ground. Stop the engine.
2. Refer to the illustration below. Connect the flowmeter into the circuit as shown.
3. The oil must be at operating temperature. If the oil is not at operating temperature, close the load valve on the flowmeter until the pressure gauge indicates 69 bar. Run the engine at full throttle until the temperature is 52°C.
4. Run the engine at 2000 rpm. Completely open the load valve on the flowmeter. Read the flow gauge. Record the flow reading.
5. Continue to run the engine at 2000 rpm. Slowly close the load valve until the pressure is 138 bar. Read the flow gauge and record the reading.
6. Decrease the engine speed to low idle and stop the engine.
7. Divide the 138 bar flow reading by the flow reading obtained instep 4. The result, multiplied by 100 gives the efficiency, in percentage terms, of the pump. If the efficiency of the pump is less than 70 percent, repair or replace the pump. If the efficiency of the pump is more than 70%, the pump is good.



B9409041

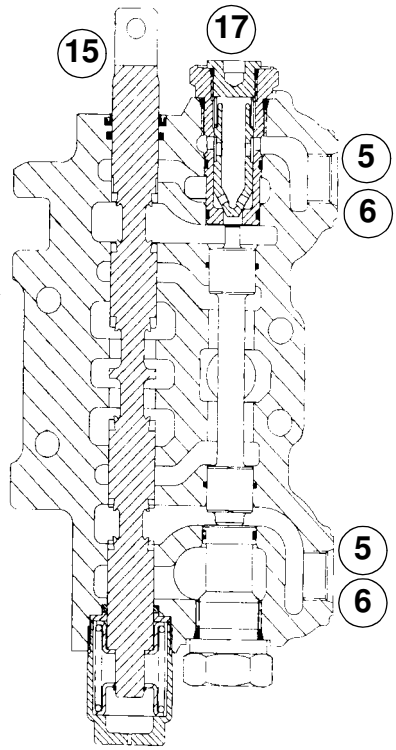
1 TEST PORT 2 (LOCATED INSIDE THE LH FRAME RAIL TO THE LEFT OF THE ENGINE). REMOVE QUICK DISCONNECT FITTING. THE HOSE FROM THE FLOWMETER INLET PORT TO THE T-UNION HAS A FLARE END 1-1/16-12 THREAD
2 DISCONNECT THE PIPE FROM THE T-UNION. CONNECT THE HOSE FROM THE FLOWMETER OUTLET PORT TO THE PIPE. IT HAS A 1-5/16-12 FLARE END THREAD
3 INSTALL THE CAP. THE THREAD IS 1-5/16-12 FLARE THREAD
4 TO INLET PLATE OF LOADER CONTROL VALVE
5 CONNECTED TO OUTLET PORT OF HYDRAULIC PUMP
6 FROM HYDRAULIC RESERVOIR
7 CAS-10280 FLOWMETER

BOOM SECTION



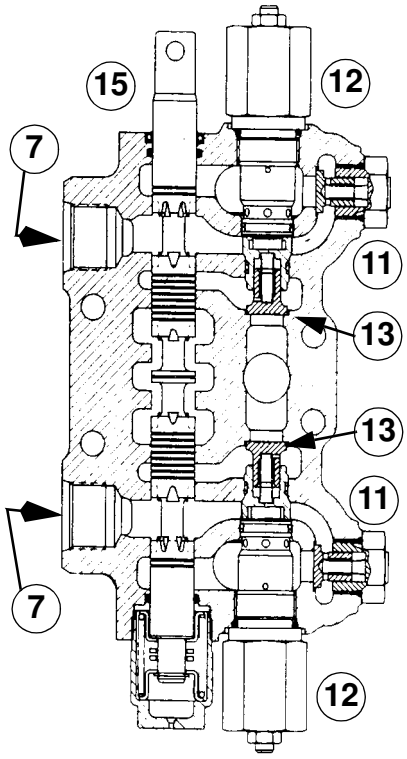
B9409099

STABILIZER SECTIONS



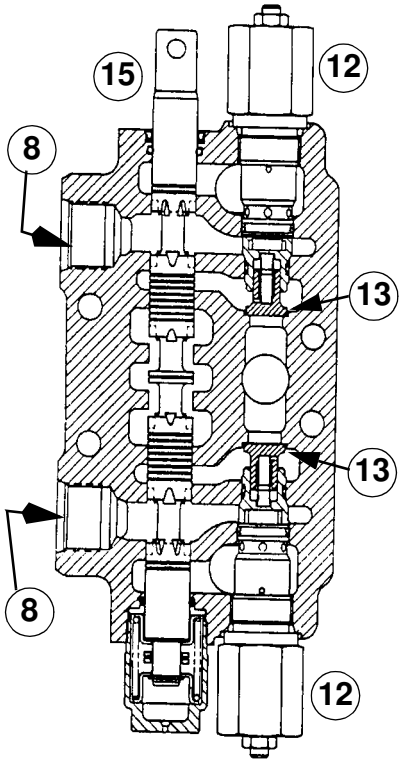
B9409099

DIPPER SECTION



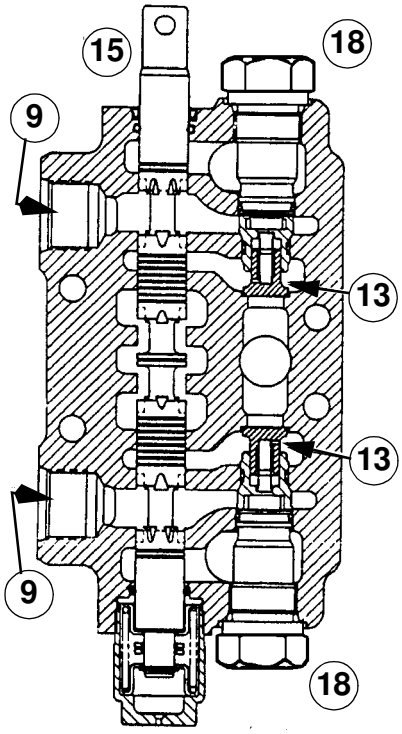
B9409099

BUCKET SECTION



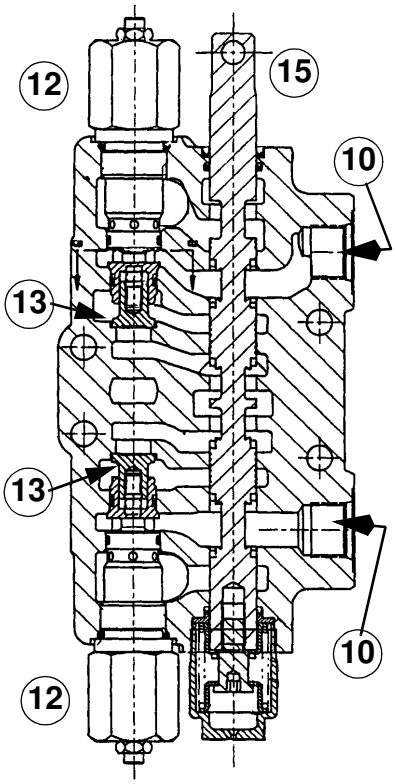
B9409099

TELESCOPIC DIPPER SECTION



CS98D174

OPTION SECTION



CS98B066

FLUSHING WATER FROM THE HYDRAULIC SYSTEM

1. Start and run the engine at 1500 rpm (r/min).

2. Completely retract the cylinders of all attachments on the machine.

> **WARNING:** *If retracting the cylinder rods causes the attachment to be raised, block the attachment in place before proceeding to the next step!*

NOTE: *Any attachment or part of an attachment that is raised must be supported with acceptable equipment to prevent the attachment from falling.*

3. Loosen and remove the filler cap from the reservoir.

4. Drain the hydraulic oil from the reservoir.

    a. The reservoir holds approximately 60 litres of hydraulic oil.

    b. Have available acceptable equipment to drain the hydraulic oil.

    c. Remove the drain plug from the bottom of the reservoir.

5. Remove the hydraulic oil filter from the machine.

6. Install a new hydraulic oil filter on the machine.

7. Install the drain plug in the bottom of the reservoir.

8. Fill the hydraulic reservoir with 54.5 litres of Case Fluid. See Section 1002 for specifications.

9. Move each control lever in both directions to release pressure in the hydraulic circuits.

10. Disconnect the line from the rod end and closed end of each cylinder.

11. Be sure all control levers are in the NEUTRAL position.

12. Start the engine and run the engine at low idle.

IMPORTANT: *Check the oil level in the hydraulic reservoir frequently while doing step 13. Have another person hold a container under the hydraulic lines while you do step 13.*

13. Slowly move each control lever in both directions until oil begins to flow from the open line. Hold the control lever in place until clean oil flows from the open line.

14. Stop the engine.

NOTE: *Any attachment or part of an attachment that is raised must be supported with acceptable equipment to prevent the attachment from falling.*

15. Connect the line to the CLOSED end of each cylinder.

16. Start the engine and run the engine at low idle.

17. Slowly and completely extend all cylinders. As the piston rod comes out of the cylinder, oil will be pushed out of the rod end of the cylinder.

18. Support the loader frame so that the loader frame will stay in the RAISED position.

19. Stop the engine.

20. Connect the lines to the rod end of the cylinders.

21. Check the oil level in the hydraulic reservoir. Add oil as required. See Section 1002 for specifications.

22. Install the filler cap for the reservoir.

Section

8004

HYDRAULIC PUMP
580SLE

8004

Case

Cre 7-79741GB

Printed in France
March 2000

Section

8005

LOADER CONTROL VALVE

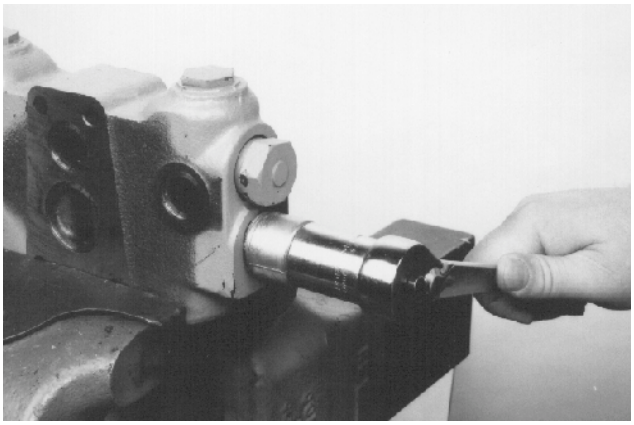
8005

Printed in France
March 2000

4-IN-1 BUCKET SECTION

Disassembly

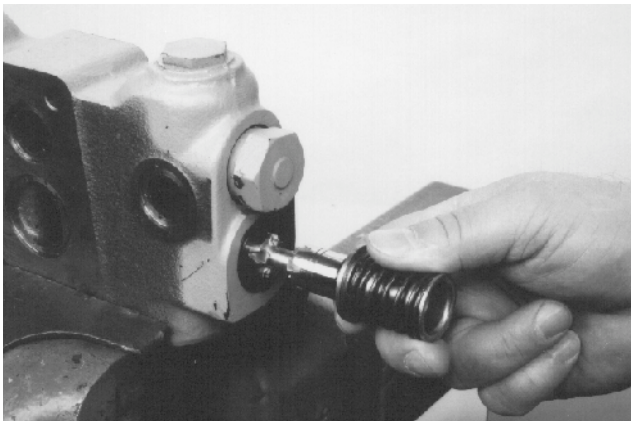
STEP 37



BP9502195

Fasten the 4-in-1 bucket section in a soft-jawed vice. Remove the spool cap.

STEP 38



BP9502196

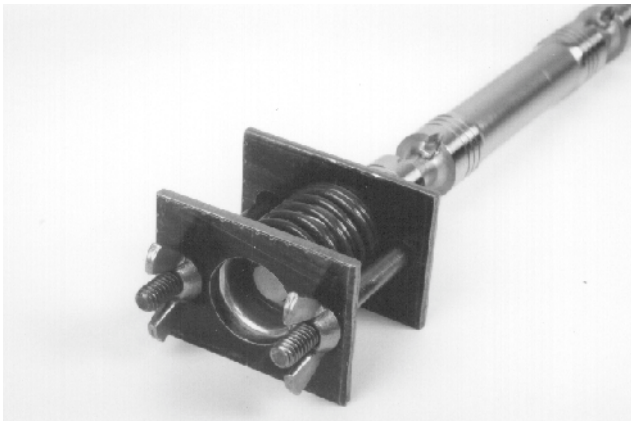
Pull the spool, the retainer, and the O-ring from the body.

STEP 39

B628532M

Remove the O-ring and the retainer from the spool.

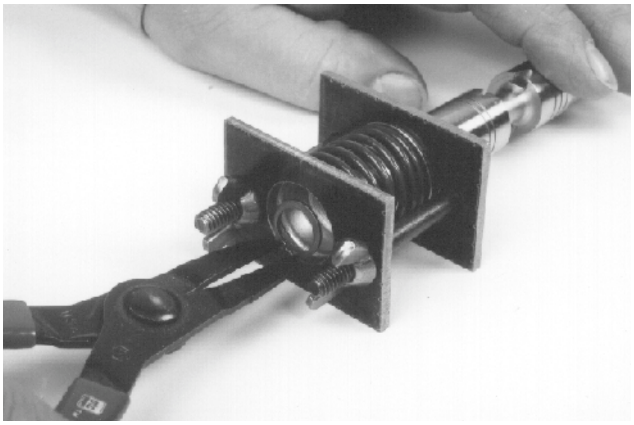
STEP 40



BP9502110

Use the spring compressing plates shown on page 4 to compress the spring.

STEP 41



BP9502111

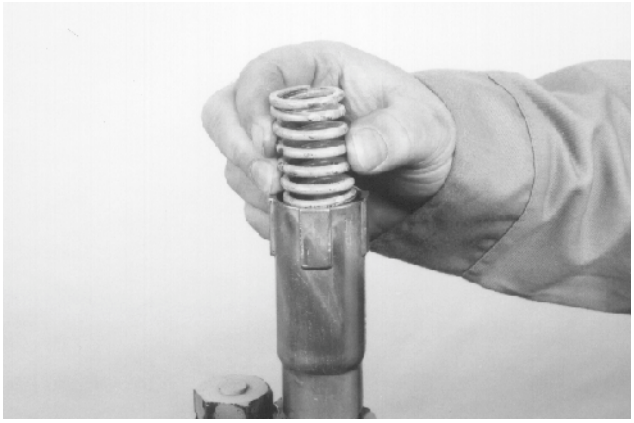
Remove the snap ring from the spool. Release the spring tension and remove the spring compressing plates.

STEP 42

BP9502112

Remove the spring seat.

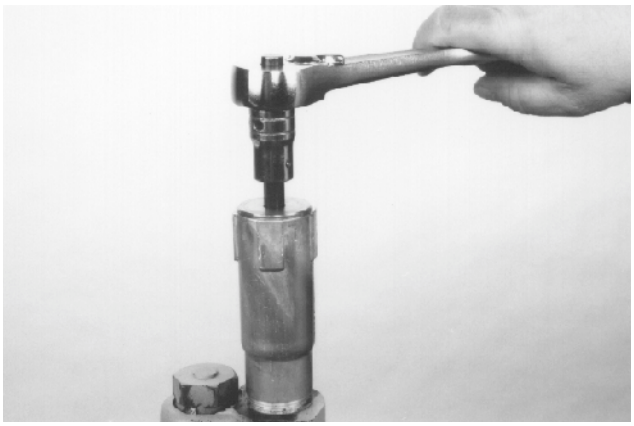
STEP 115



BP9502240

Install the detent spring.

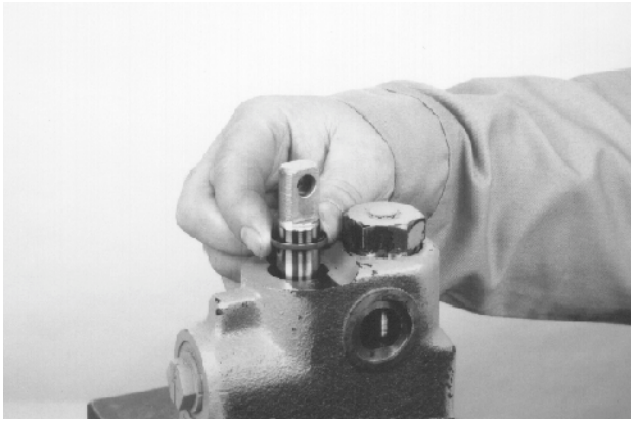
STEP 116



BP9502241

If the rubber plug was removed from the hole in the detent plug, install the rubber plug. Use a new rubber plug if necessary. Install the detent plug.

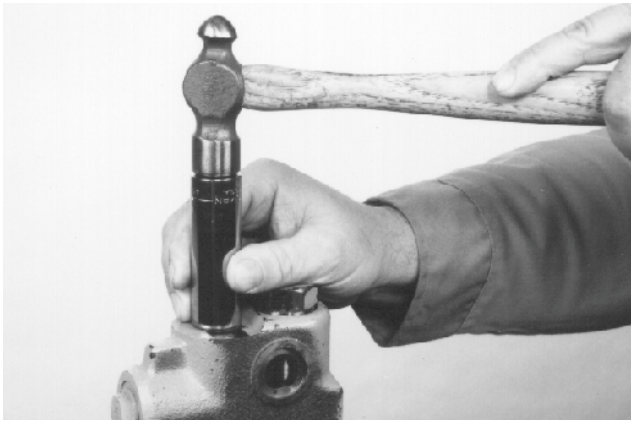
STEP 117



BP9502242

Move the section in the vice so that the spool eye is up. Use clean hydraulic oil to lubricate the wiper. Install the wiper so that the lip is up.

STEP 118



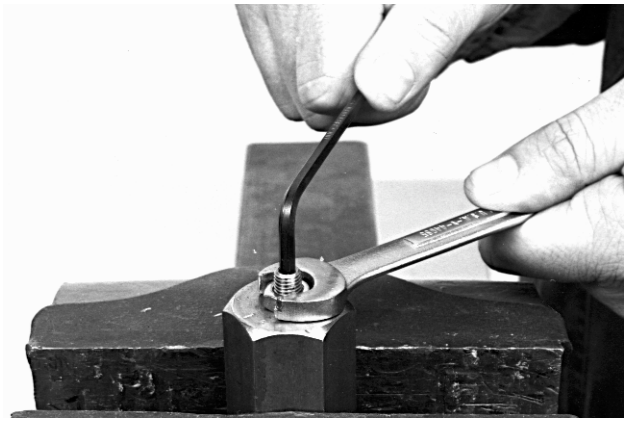
BP9502243

Use a hollow sleeve and a hammer to push the wiper into the spool bore. Push only on the outside edge of the wiper seal. Push the wiper seal in until the outside edge is level with the edge of the spool bore.

SECONDARY RELIEF VALVE

Disassembly

STEP 181

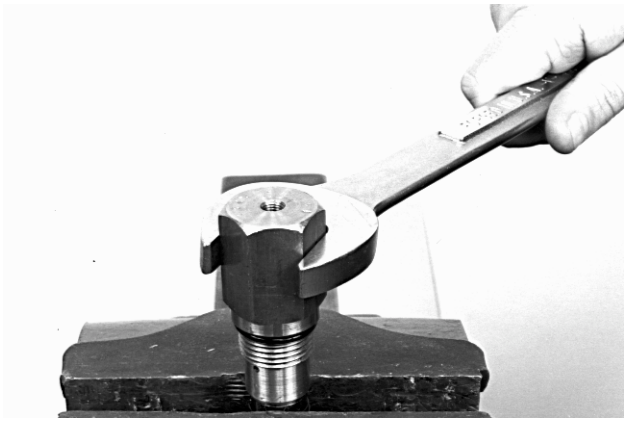


B628644M

Fasten the relief valve in a soft-jawed vice. Loosen the lock nut. Remove the adjusting screw and the lock nut.

NOTE: *If you disassemble more than one secondary relief valve, keep the parts for each relief valve together. This procedure will prevent mixing the parts during assembly.*

STEP 182



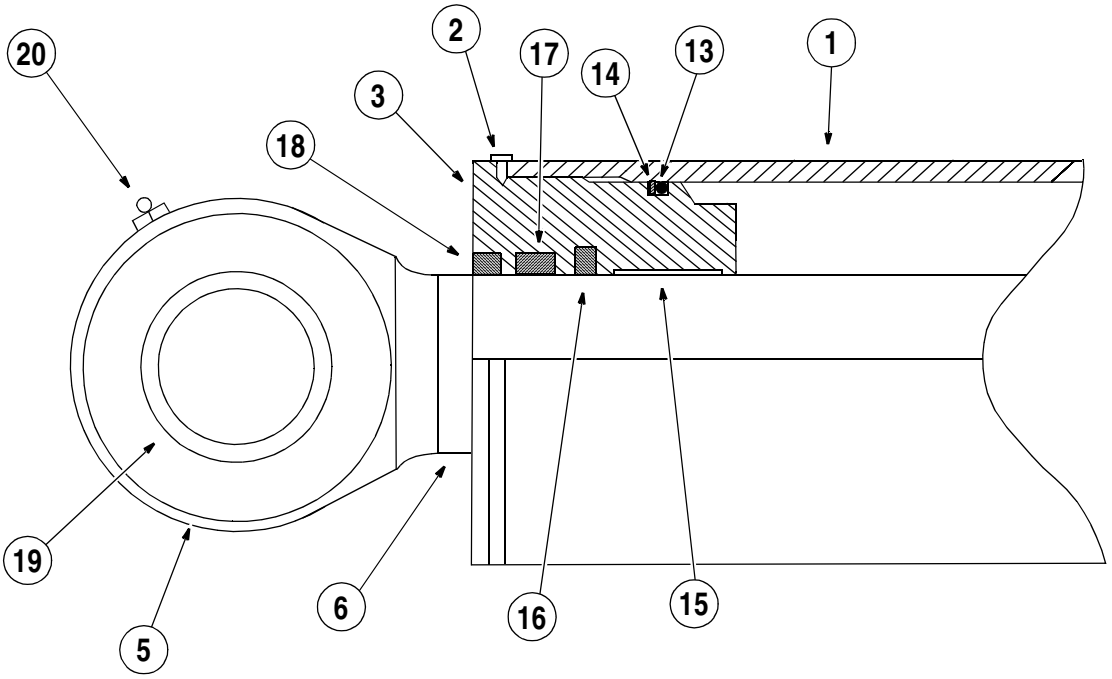
B628604M

Move the secondary relief valve in the vice so the jaws are clamping the valve seat. Loosen the valve cap from the check valve seat.

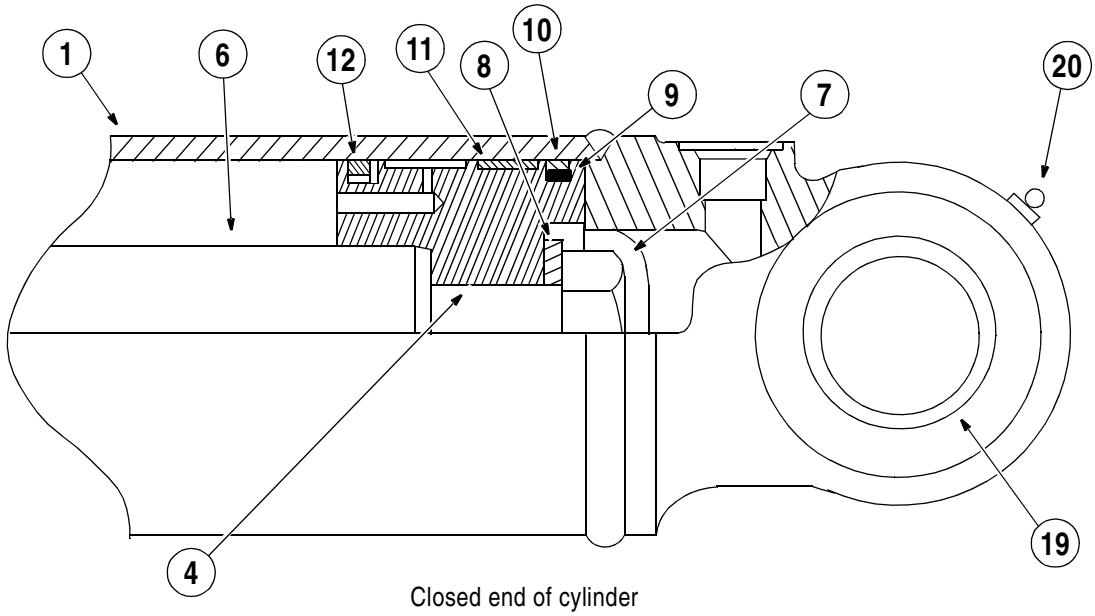
STEP 183

B628606M

Remove the secondary relief valve from the vice. Separate the parts of the secondary relief valve.



Rod end of cylinder



Closed end of cylinder

B9501087T

1. Tube
2. Lock screw
3. Gland
4. Piston
5. Piston rod eye
6. Piston rod
7. Cap screw
8. Hardened washer
9. Seal
10. Backup ring
11. Wear ring
12. Piston ring
13. O-Ring
14. Backup ring
15. Bushing
16. Buffer seal
17. Wide seal
18. Wiper
19. Bushing
20. Grease fitting

580LE - Boom cylinder

Section

8007

BACKHOE ATTACHMENT CONTROL VALVE BLOCK

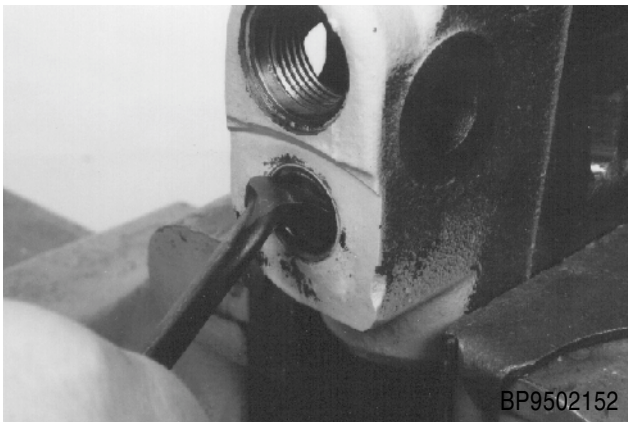
580LE

Case

Cre 7-79771GB

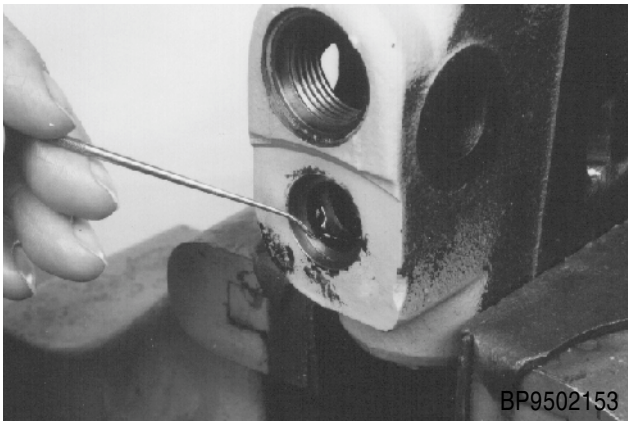
Printed in France
March 2000

STEP 49



Using a suitable lever, remove the wiper seal located on the A port end of the spool bore.

STEP 50



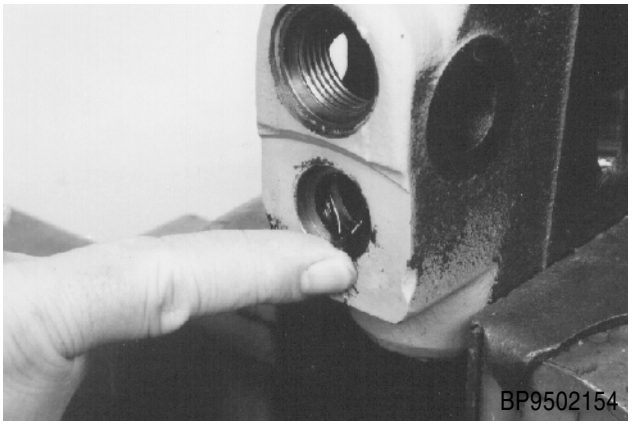
Remove the O-ring from the spool bore.

STEP 51

Inspect the parts of the telescopic dipper section according to the instructions under Inspection on page 60.

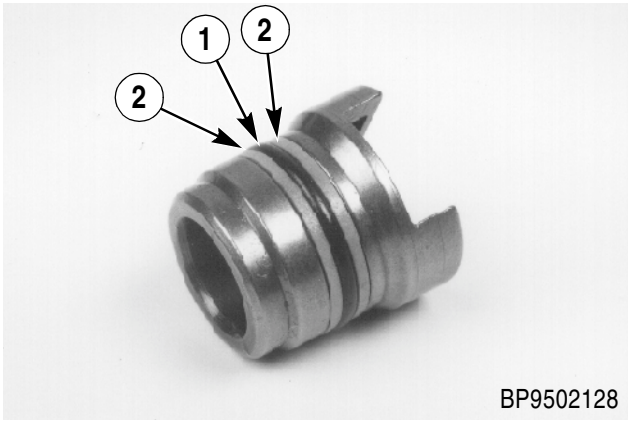
Assembly

STEP 52



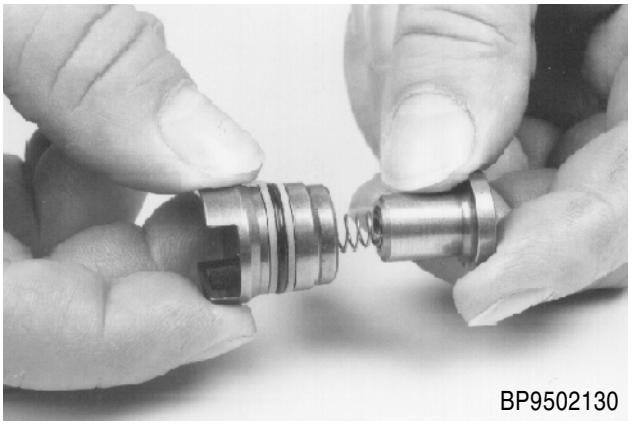
Install a new O-ring in the A port end of the spool bore.

STEP 53



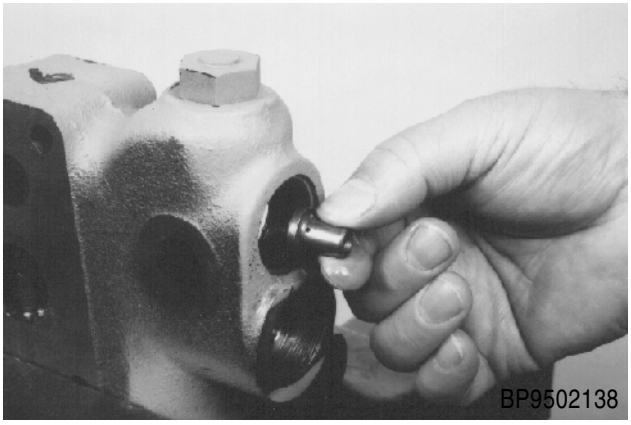
Install a new O-ring (1) and new back-up rings (2) on the load check valve guide.

STEP 54



Install the spring and the check valve in the load check valve guide.

STEP 116

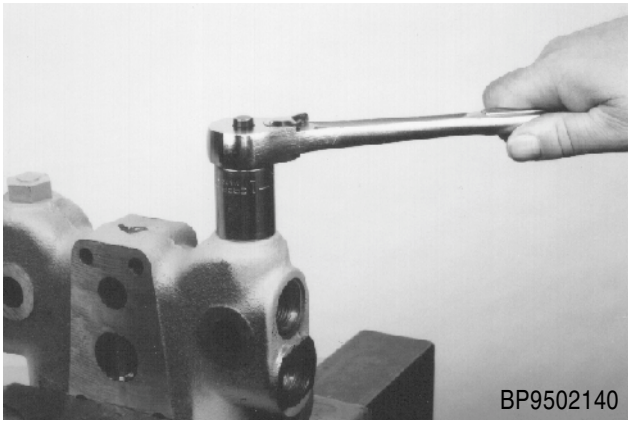


Remove the check valve for the load check valve.

STEP 117

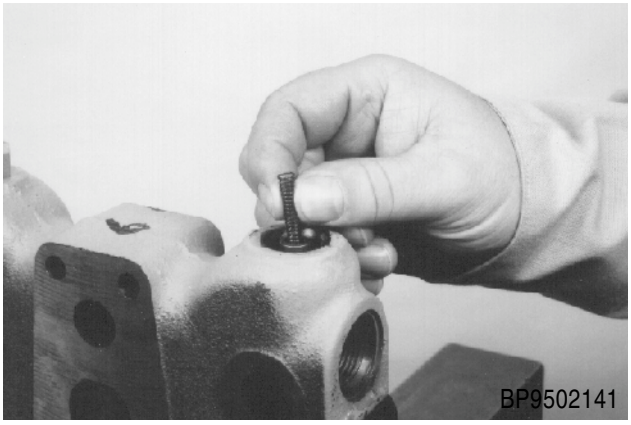
Repeat Steps 114 through 116 to remove the load check valve guide, spring, and check valve from the other end of the section.

STEP 118



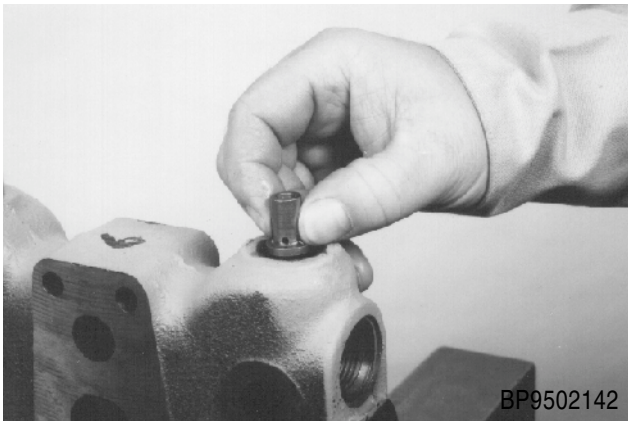
Remove the anti-cavitation valve plug.

STEP 119



Remove the spring.

STEP 120



Remove the check valve.

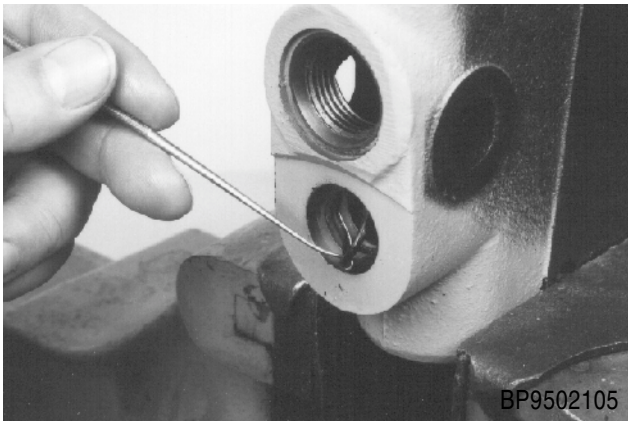
STEP 121

Repeat Steps 118 through 120 to install the other check valve, spring, and plug.

STEP 122

Using a suitable lever, remove the wiper seal from the A port end of the spool bore.

STEP 123

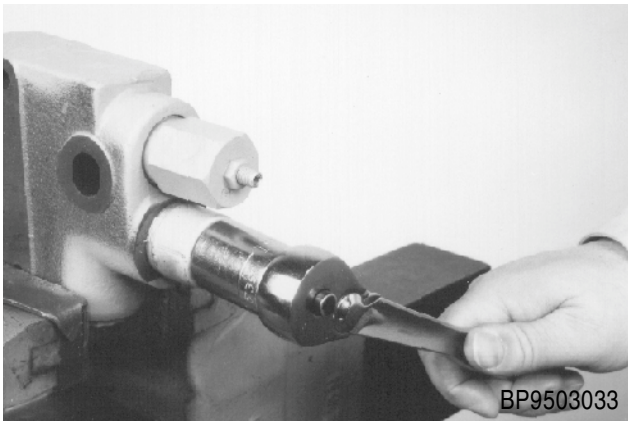


Remove the O-ring from the spool bore.

BOOM SECTION

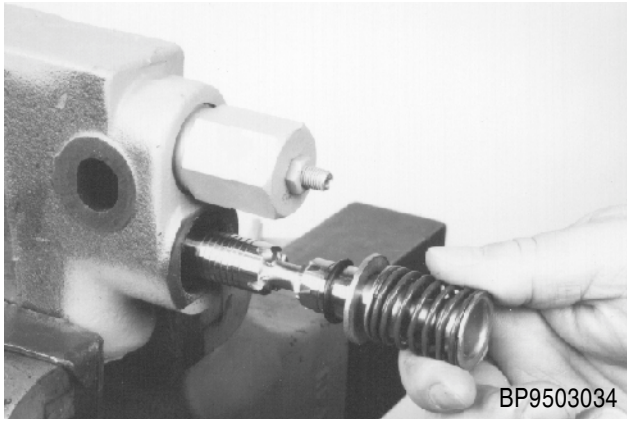
Disassembly

STEP 184



Fasten the boom section in a soft-jawed vice. Remove the spool cap.

STEP 185

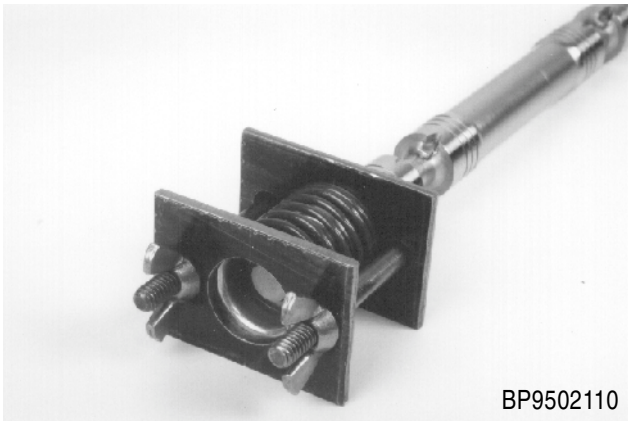


Pull the spool, the retainer, and the O-ring from the body.

STEP 186

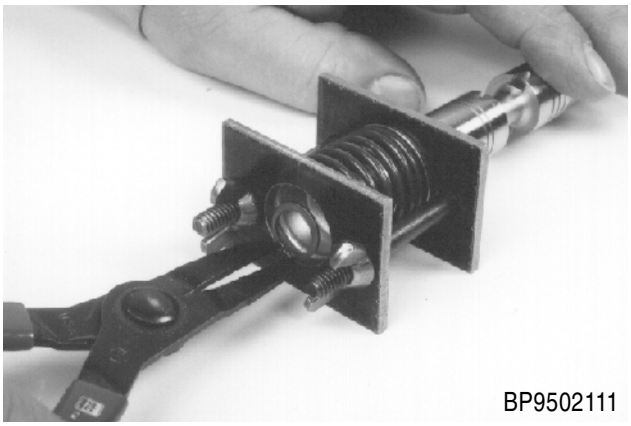
Remove the O-ring and the retainer from the spool.

STEP 187



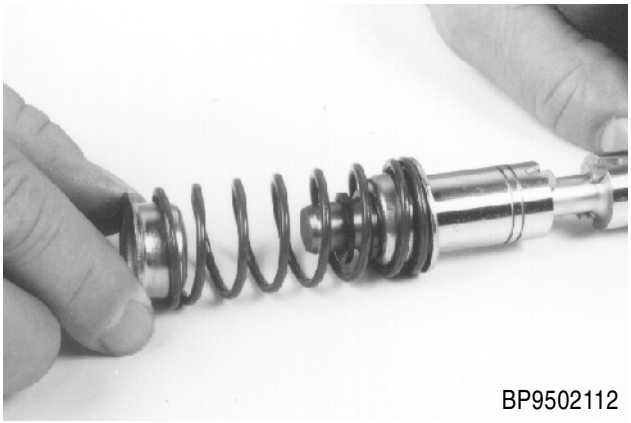
Use the spring compressing plates shown on page 3 to compress the spring.

STEP 188



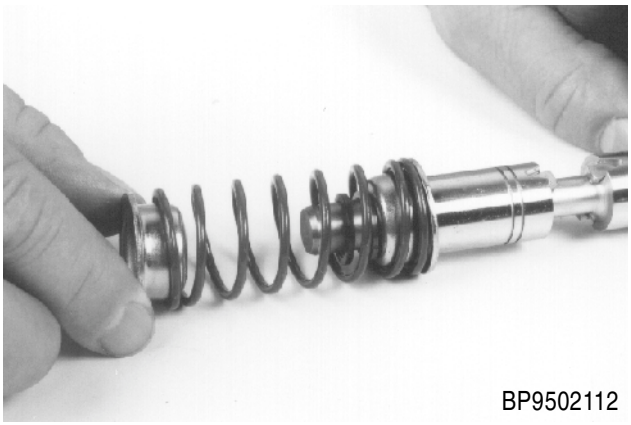
Remove the snap ring from the spool. Release the spring tension and remove the spring compressing plates.

STEP 189



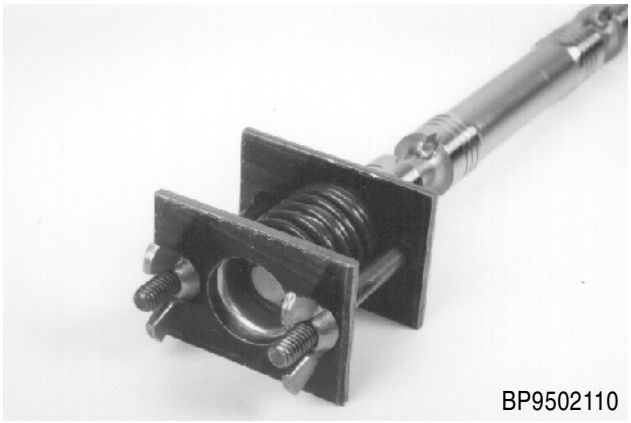
Remove the spring seat.

STEP 260



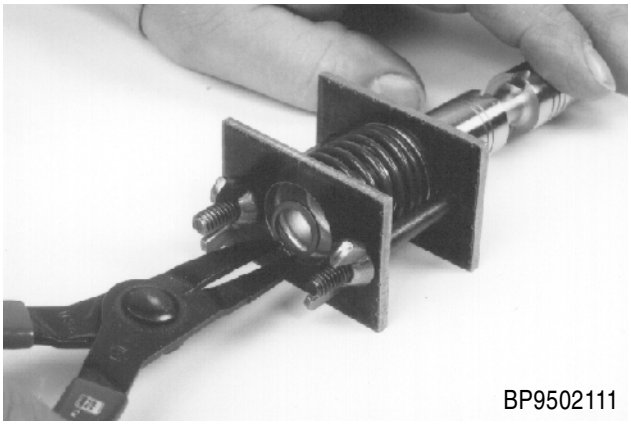
Put the other spring seat into position in the spring.

STEP 261



Use the spring compressing plates shown on page 3 to compress the spring. Make sure that the two spacers do not fall from the spool.

STEP 262

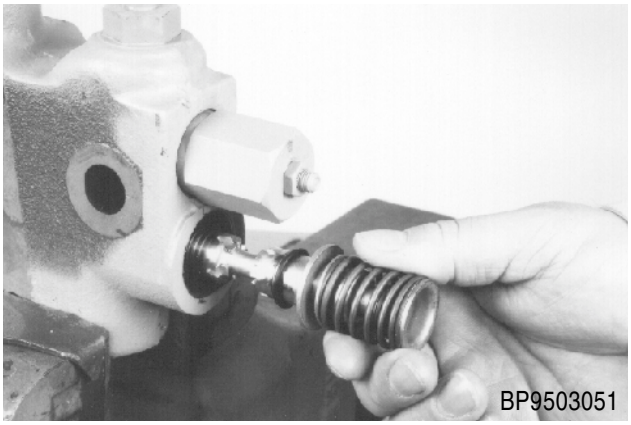


Install the snap ring. Release the spring tension and remove the spring compressing plates.

STEP 263

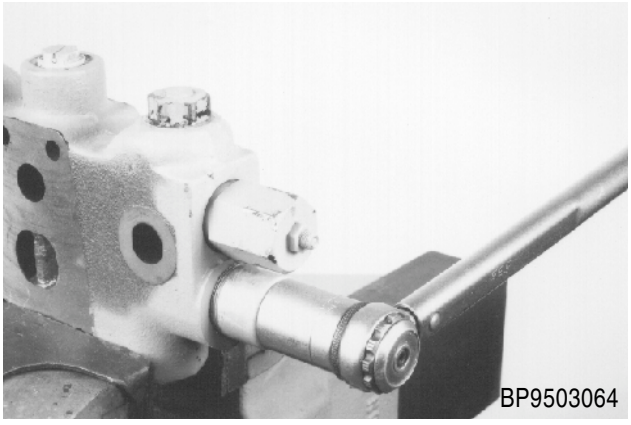
Use clean hydraulic oil to lubricate a new O-ring. Install the retainer and the O-ring. Be careful so that you do not cut the O-ring on the spool.

STEP 264



Use clean hydraulic oil to lubricate the spool and the spool bore. Install the spool.

STEP 265

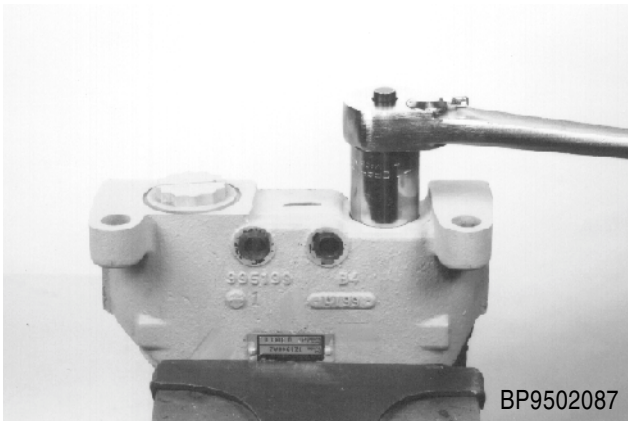


Install the cap. Tighten the cap to a torque of between 27 and 41 Nm.

INLET SECTION

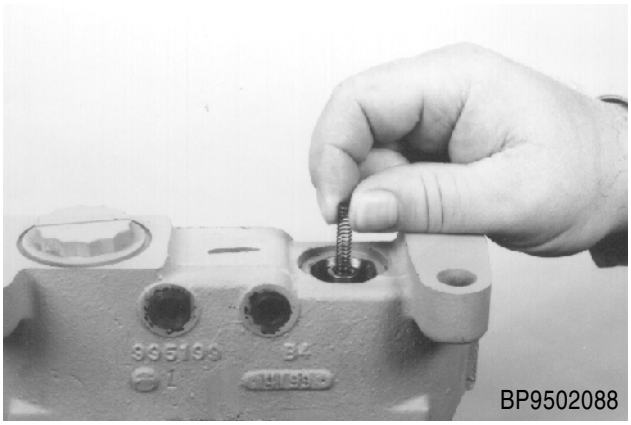
Disassembly

STEP 12



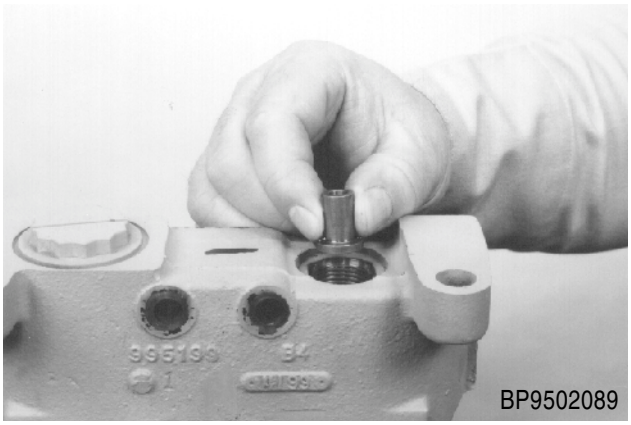
Fasten the inlet section in a soft-jawed vice. Loosen the anti-cavitation valve plug.

STEP 13



Remove the spring.

STEP 14

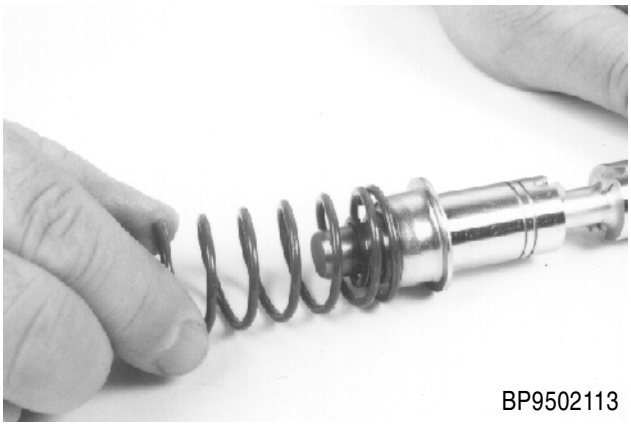


Remove the check valve.

STEP 15

Inspect the parts of the inlet section according to the instructions under Inspection on page 58.

STEP 80

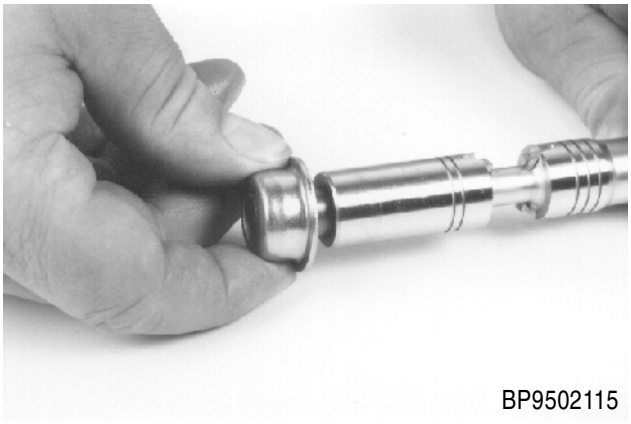


Remove the spring.

STEP 81

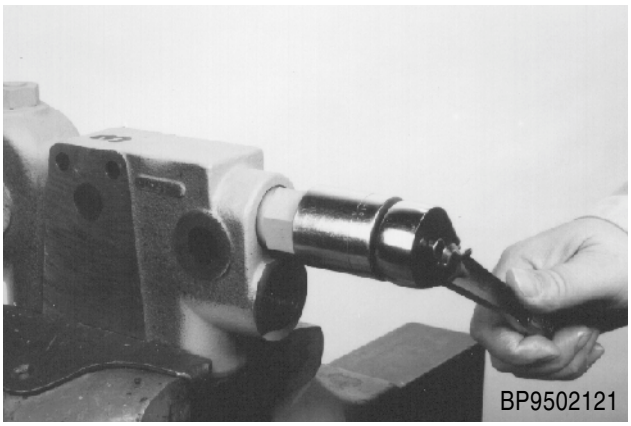
Remove the two spacers.

STEP 82



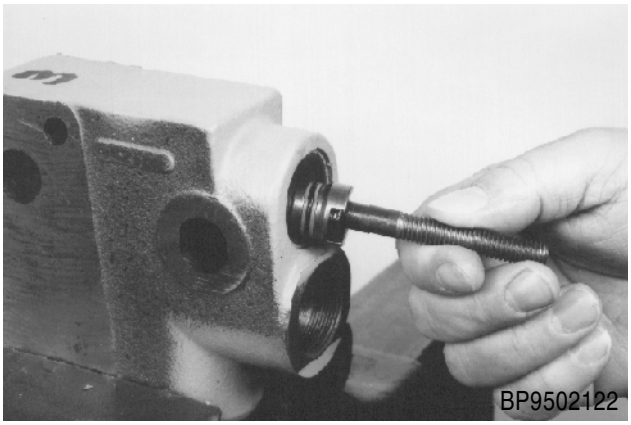
Remove the other spring seat.

STEP 83



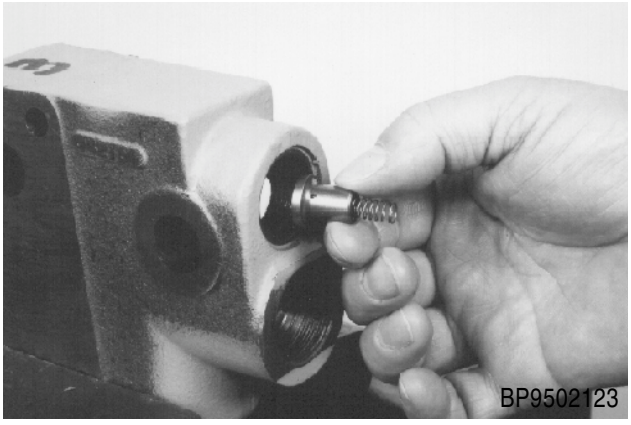
Remove the secondary relief valves from the ends of the section.

STEP 84



Use the tool shown on page 3 to remove the load check valve guide.

STEP 85

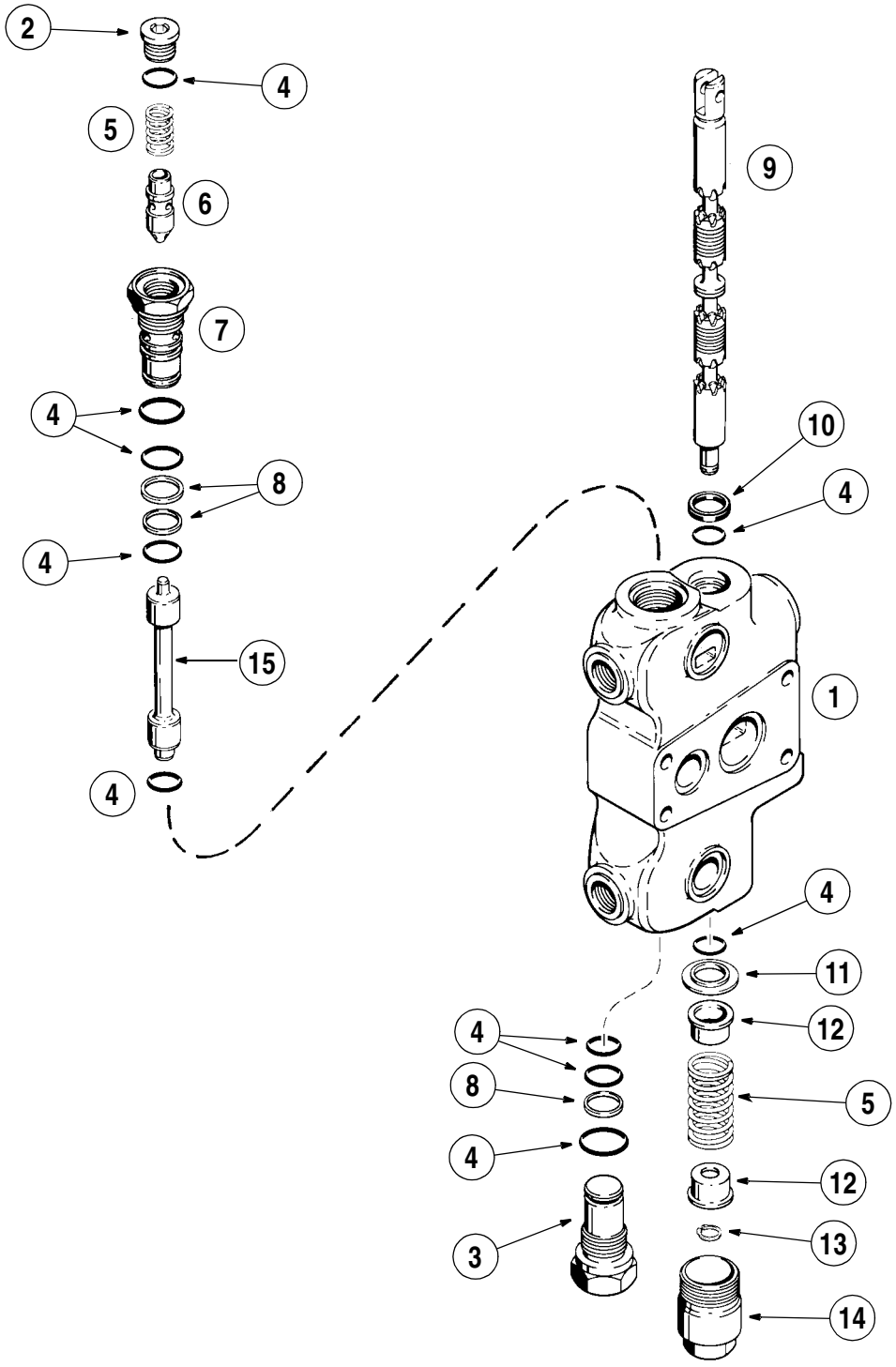


Remove the spring and the check valve for the load check valve.

STEP 86

Repeat steps 84 and 85 to remove the load check valve guide, spring, and check valve from the other end of the section.

Stabilizer section



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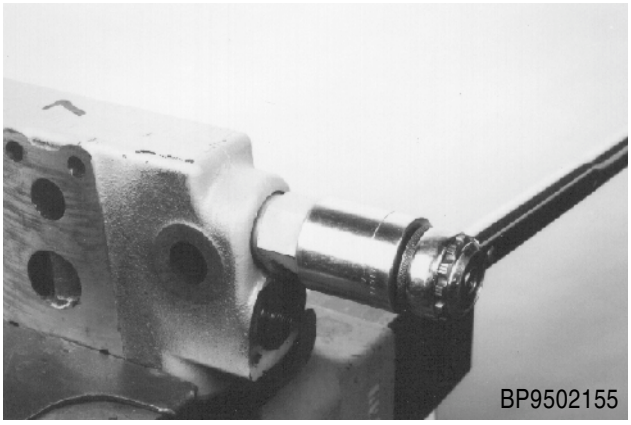
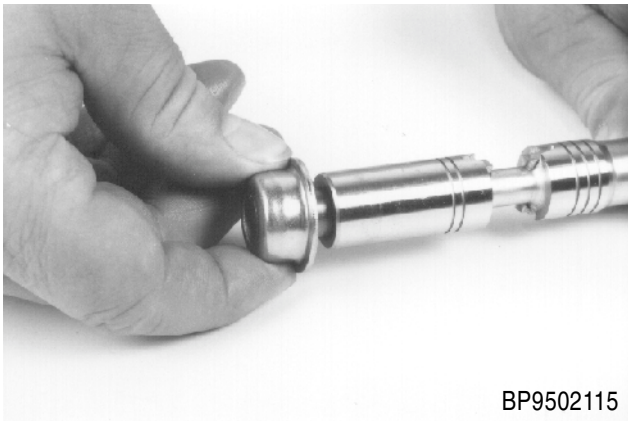
1. *Stabilizer section*
2. *Plug*
3. *Dummy cartridge*
4. *O-Ring*
5. *Spring*
6. *Piloted check valve*
7. *Piloted check valve body*
8. *Back-up ring*
9. *Spool*
10. *Wiper seal*
11. *Spring guide*
12. *Spring seat*
13. *Snap ring*
14. *Spool cap*
15. *Pilot*

STEP 217



Use clean hydraulic oil to lubricate the backup ring and the O-rings on each secondary relief valve. Install the secondary relief valves in the ends of the section. Tighten each secondary relief valve to a torque of between 88 and 108 Nm.

STEP 218

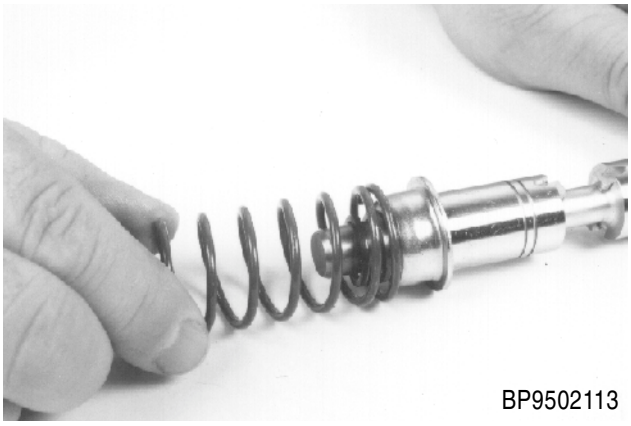


Install the spring seat on the spool.

STEP 219

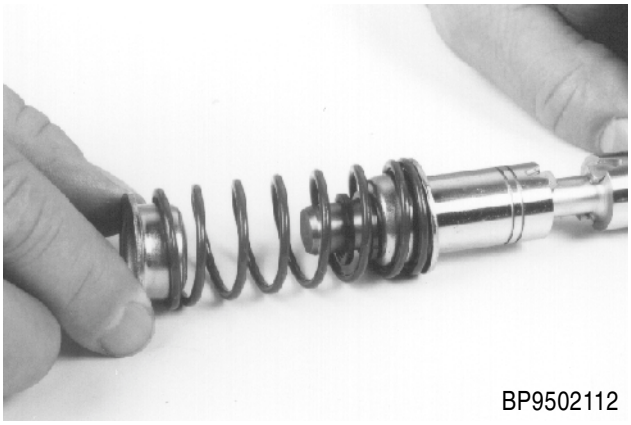
Install the two spacers.

STEP 220



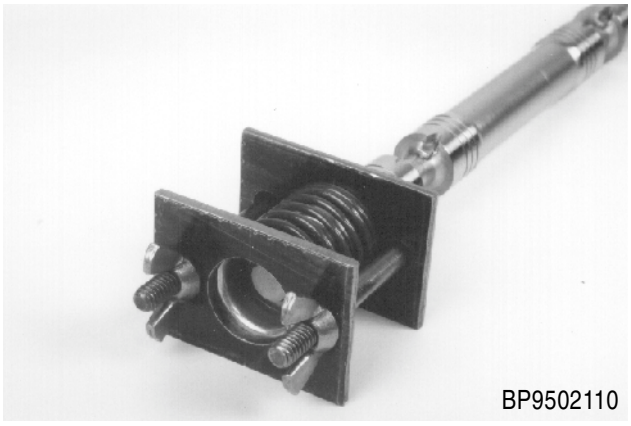
Put the spring into position on the spring seat.

STEP 221



Put the other spring seat into position in the spring.

STEP 222



Use the spring compressing plates shown on page 3 to compress the spring. Make sure that the two spacers do not fall from the spool.

Section

8008

AUXILIARY CONTROL VALVE

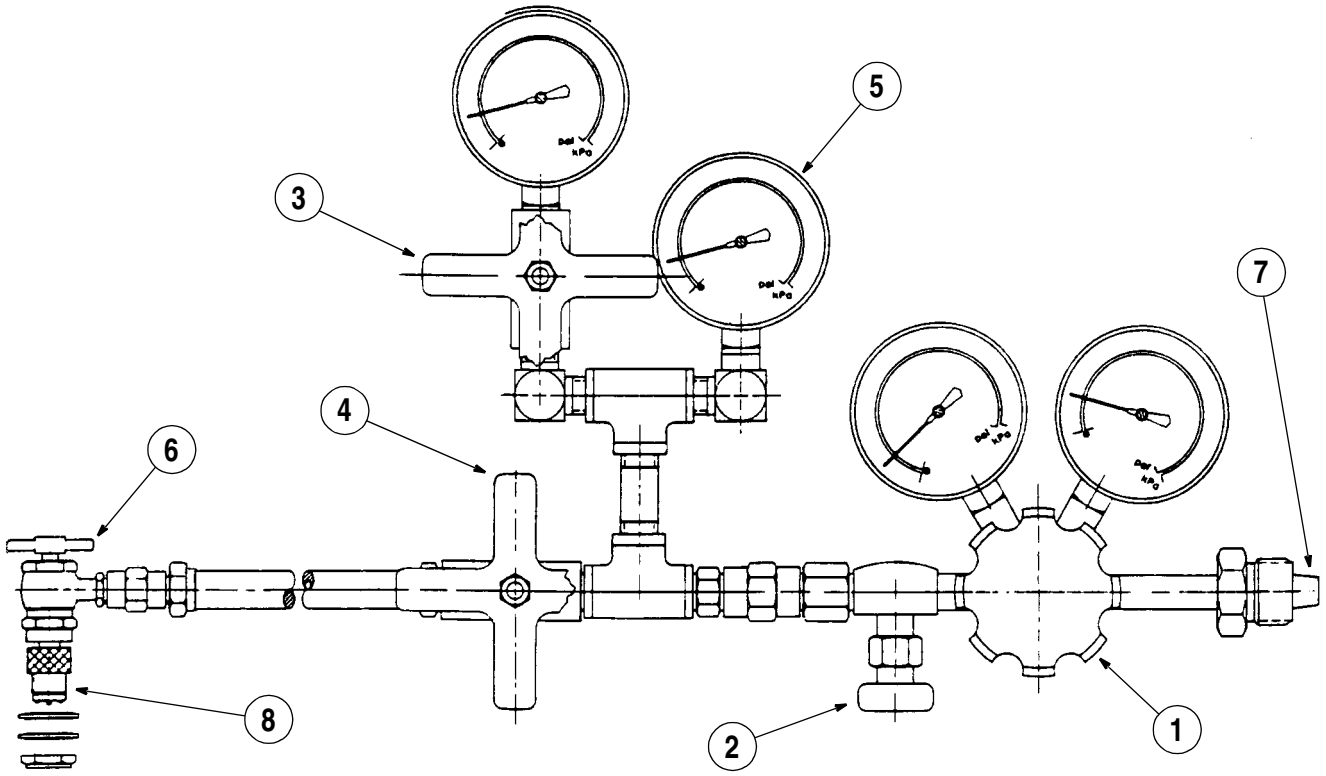
March 2000

DISCHARGING AN ACCUMULATOR

WARNING: *NEVER TRY to disassemble and accumulator before correctly discharging all its charge of nitrogen*

IMPORTANT: *To prevent damage to the equipment, it is ESSENTIAL for the low pressure gauge (valve C) to be CLOSED for high pressure applications (10 bars or more).*

1. Use the accumulator charging kit CAS-10899 to discharge the accumulator. The tool should be disconnected from the nitrogen bottle.
2. Close the valves B, C and D.
3. Adjust the regulator A to the minimum pressure by turning the knob anti-clockwise.
4. Turn the T-handle on valve F completely outwards.
5. Remove the protection and the cap from the accumulator charge.
6. Connect valve F to the accumulator valve.
7. Turn the T-handle on valve F inwards to engage the pin in the discharge valve.
8. Open the valve D and check the charge pressure on the pressure gauge E.
9. To discharge the accumulator partially, open valve B. The charge will be discharged via the regulator.
10. When the accumulator is completely discharged, disconnect the valve F from the accumulator valve.
11. The accumulator can now be disassembled.



94L95

1. Valve A
2. Valve B
3. Valve C
4. Valve D
5. Pressure gauge E
6. Valve F
7. To the nitrogen bottle
8. To the accumulator

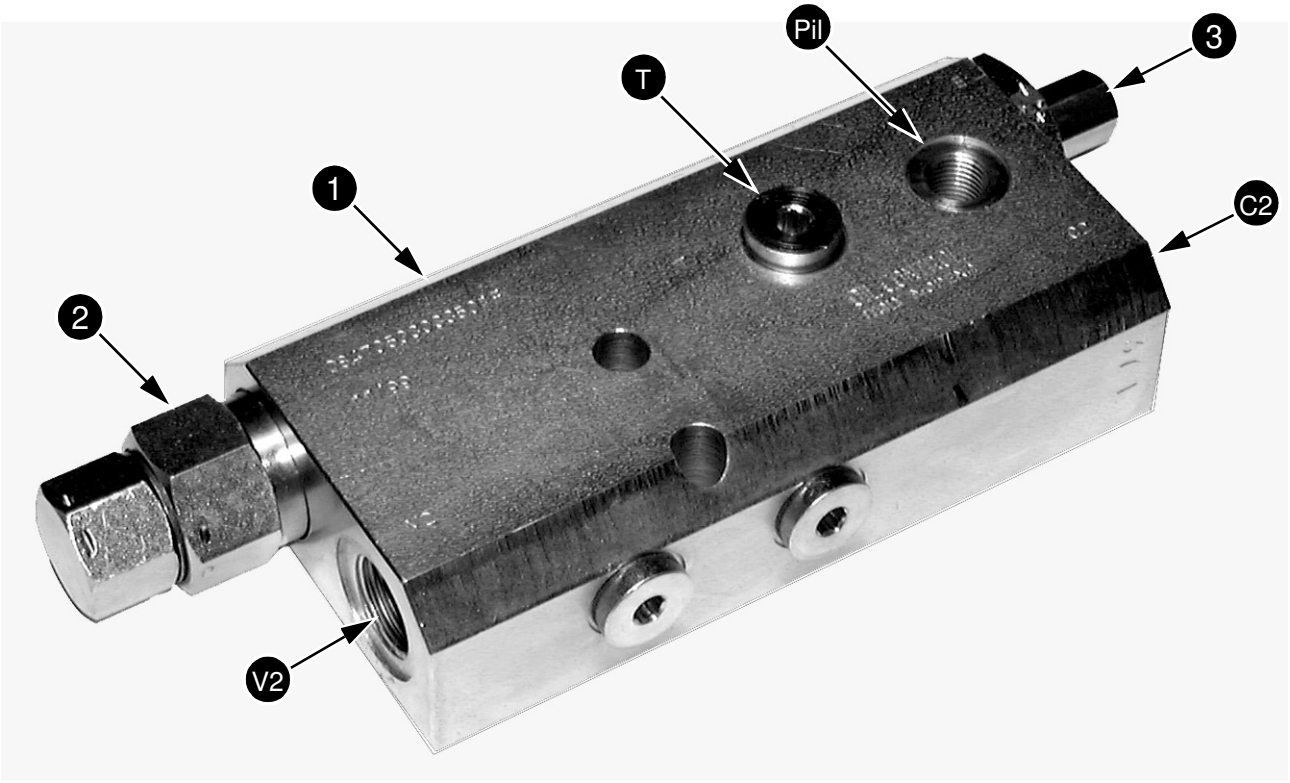
Section

8011

SIDESHIFT CARRIAGE LOCKING CYLINDER

March 2000

DIPPER SAFETY VALVE



CK00B004

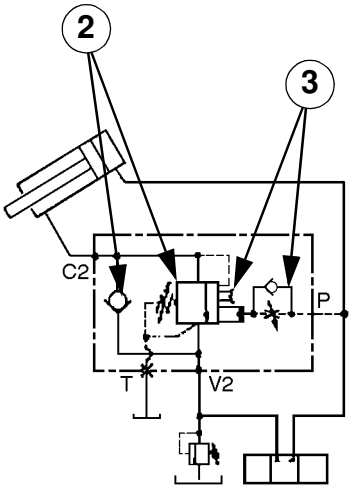
Description

1 SAFETY VALVE
2 SECONDARY RELIEF VALVE
3 PILOT CHECK VALVE

Port identification

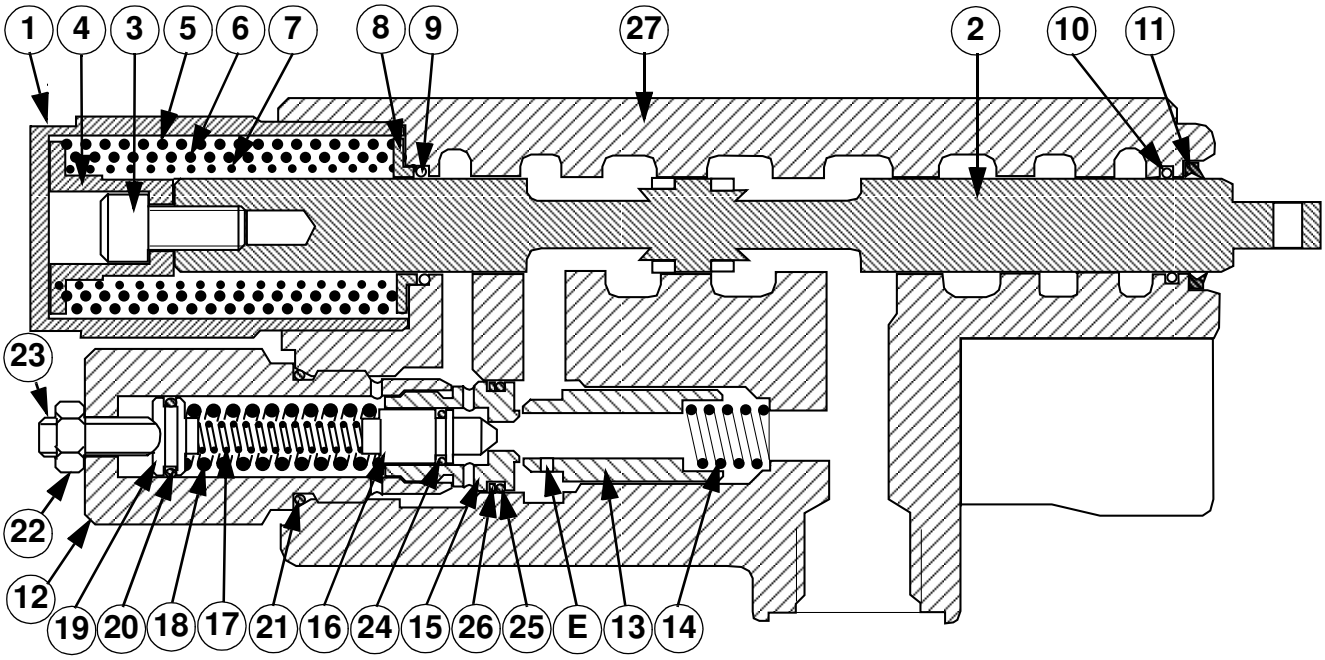
V2 Safety valve supply
C2 Dipper cylinder small chamber supply
Pil Safety valve piloting
T Return (drain)

Basic schematic



CS00C513

Cross-sectional view



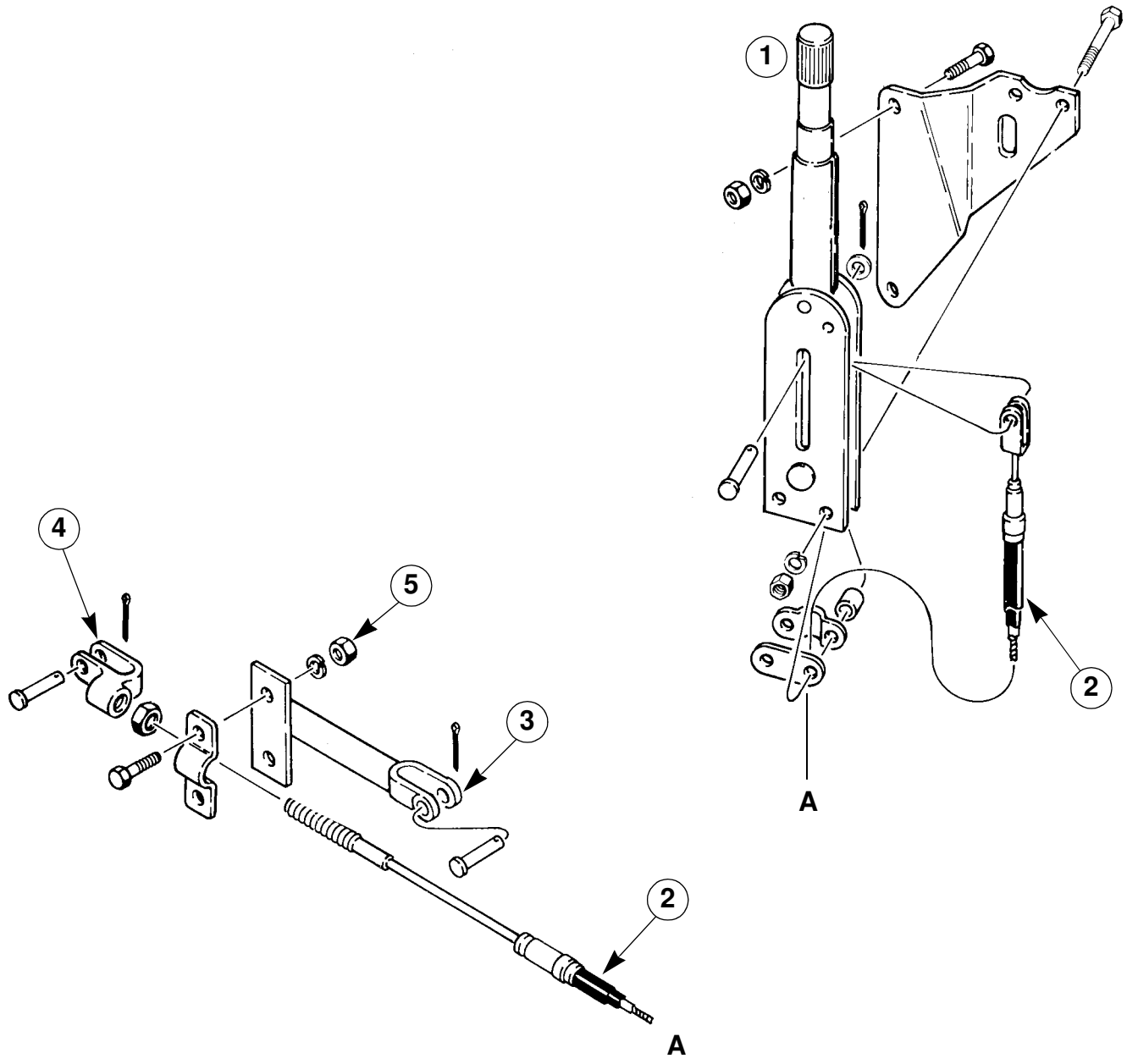
CM98A038

1 SPOOL CAP
2 SPOOL
3 SPOOL ASSEMBLY SCREW
4 STOP CUP
5 SPRING
6 SPRING
7 SPRING
8 LOCK WASHER
9 O-RING
10 O-RING
11 SEAL
13 NON-RETURN CHECK VALVE WITH RESTRICTION
14 SPRING
27 SWING VALVE BODY

High pressure secondary relief valve (28)

12 VALVE CAP
15 SEAT
16 CHECK VALVE
17 SPRING
18 SPRING
19 GUIDE
20 O-RING
21 O-RING
22 NUT
23 ADJUSTING SCREW
24 O-RING
25 O-RING
26 BACK-UP RING

E = Restriction



1 PARKING BRAKE CONTROL LEVER
2 PARKING BRAKE CONTROL CABLE
3 RH BRAKE YOKE
4 LH BRAKE YOKE
5 LOCK NUT

TROUBLESHOOTING

1 Perform a visual inspection of the machine. Check the following and correct as necessary :

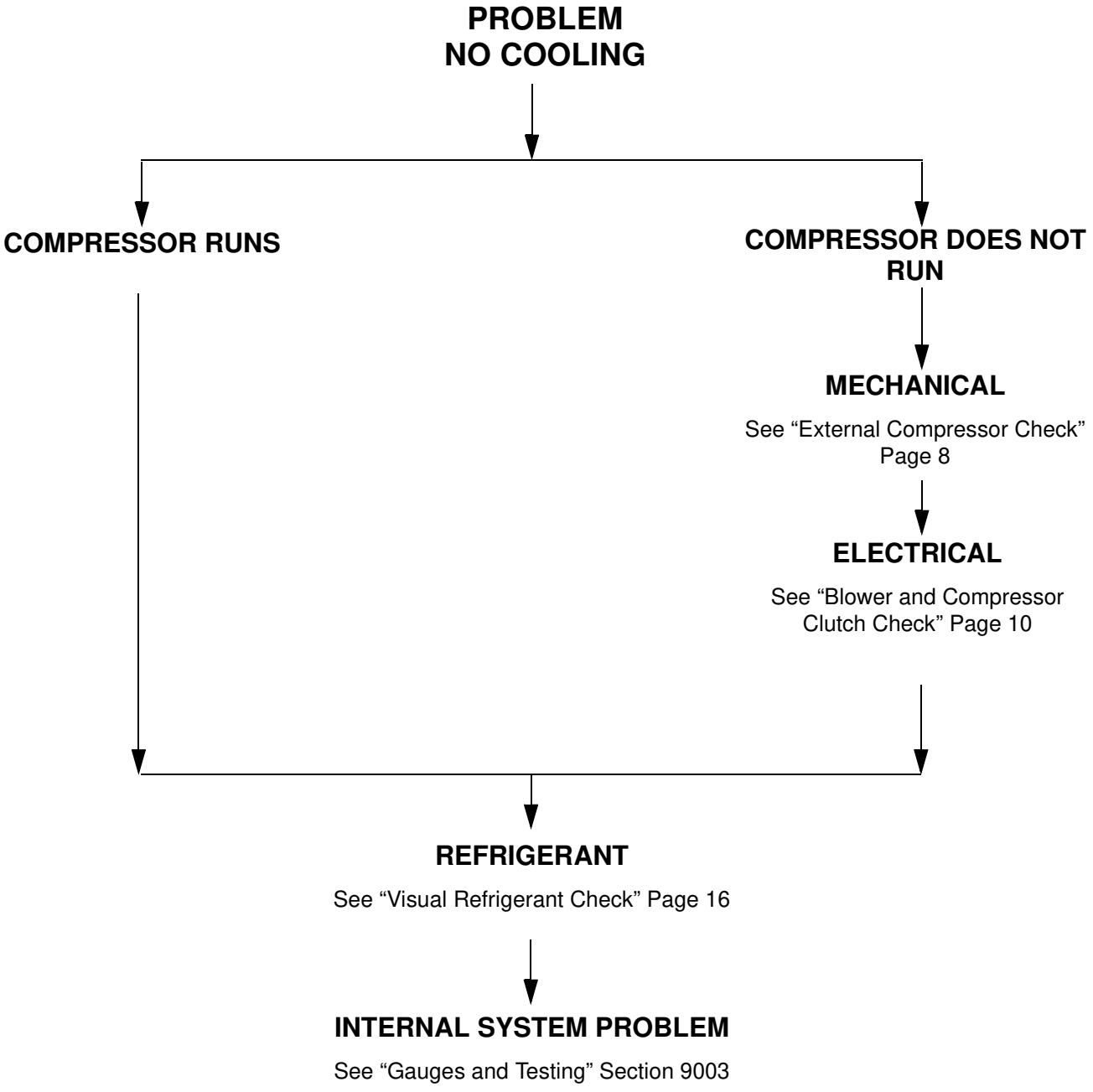
A Are the compressor and fan drive belts in place and at the correct tension?

B Are grille screens, radiator, and condenser unobstructed?

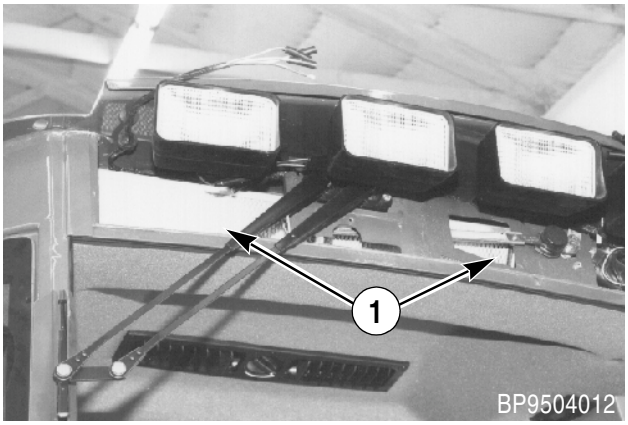
C Are there any sharp bends or kinks in the hoses?

D Are compressor clutch and pressure switch leads plugged into the harness?

E Are there heavy accumulations of oil or oily dust around the fittings, indicating refrigerant leakage?



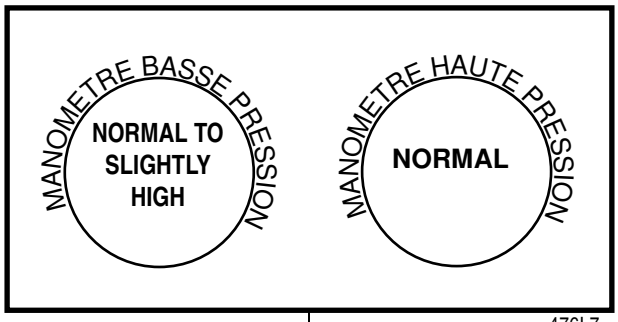
(Evaporator and plenum check continued)



1. Filters

Filters → Keep the air filter elements clean to provide maximum air flow into the operator cab.

PROBLEM : INSUFFICIENT COOLING



Refer to the Pressure/ Temperature Table on page 4

The heater control valve does not function - Symptoms:

A. Air leaving the evaporator is slightly tepid.

B. The heater hoses outside the cab are hotter that the ambient temperature.

1. If the hoses are hot, we can deduce that the heater control valve has stayed open.
2. Cut off the supply of refrigerant going to the evaporator body.
3. Check the air passage to detect any change in temperature.
4. Inspect and repair the heater control valve. Refer to Section 9002 of this manual.
5. Continue checking to detect any other problems.

Air or humidity in the system - Symptoms:

A. The inlet line is hot to the touch.

B. Air leaving the evaporator is slightly tepid.

1. Check the system for leaks, in case a leak has allowed air to enter the system. Refer to Section 9002 of this manual.
2. Reclaim the refrigerant from the system. Refer to Section 9004 of this manual.
3. Repair system leaks as necessary.

(Continued on next page)

(Continued on next page)

SAFETY PROCEDURES

THIS WARNING SYMBOL SHOWS IMPORTANT SAFETY MESSAGES IN THIS MANUAL. WHEN YOU SEE THIS SYMBOL, CAREFULLY READ THE MESSAGE WHICH FOLLOWS AND TAKE CARE, SINCE THERE IS A RISK OF PHYSICAL OR FATAL INJURY.

R-134a refrigerant is the most stable, and easiest to work with of the refrigerants now used in air conditioner systems. R-134a refrigerant does not contain any chlorofluorocarbons (CFC's) which are harmful to the earth's ozone layer.

To avoid any risk of injury when working with refrigerant R-134a, follow the safety procedures scrupulously.

1. Always wear safety goggles when doing any service work near an air conditioner system. Liquid refrigerant getting into the eyes can cause serious injury. Do the following if you get refrigerant in or near your eyes :

   A. Flush your eyes with water for 15 minutes.

   B. Consult a doctor immediately.

2. A drop of refrigerant liquid on the skin can cause frostbite. Before carrying out any servicing work on the air conditioning system, open the unions slowly and carefully. In case of contact between refrigerant and your skin, consult a doctor or treat the skin in the same way as for frostbite.

3. Keep refrigerant containers in the correct upright position. Always keep refrigerant containers away from heat and sunlight. The pressure in a container will increase with heat.

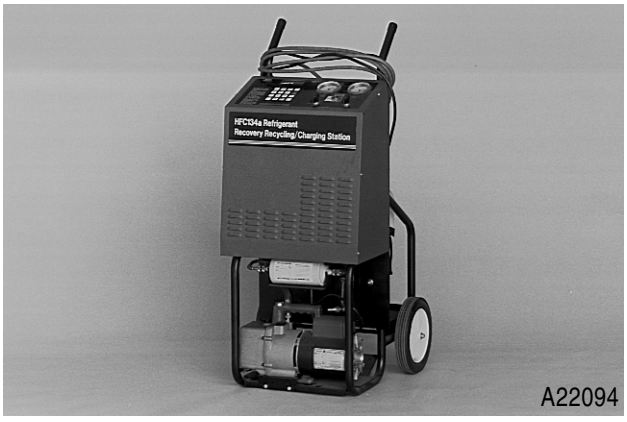
4. Always reclaim the refrigerant from the system if you are going to weld or steam clean near the air conditioner system.

5. Always check the temperature and pressure of the air conditioner system before reclaiming refrigerant and when you test the system.

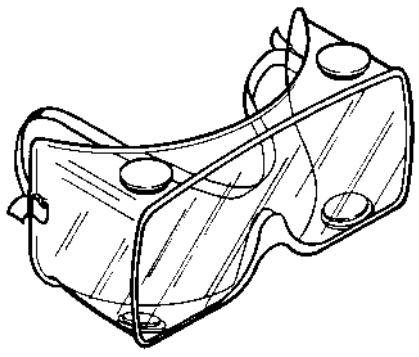
6. Dangerous gas can form when refrigerant comes in contact with an open flame. Never permit fumes to be inhaled.

7. Never leak test with compressed air or flame testers. Tests have indicated that, at pressures above atmospheric, and with air concentrations greater than 60% by volume, R-134a can form a combustible gas.

SPECIAL TOOLS



REFRIGERANT RECLAIMING, RECYCLING AND CHARGING STATION OEM-1418



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PROTECTIVE GOGGLES CAS-10073-3