821C Loader
Service Manual

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CASE CORPORATION
700 State Street
Racine, WI 53404 U.S.A.

Bur 7-13053

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TORQUE SPECIFICATIONS - DECIMAL HARDWARE

Use the torques in this chart when special torques are not given. These torques apply to fasteners with both UNC and UNF threads as received from suppliers dry, or when lubricated with engine oil. Not applicable if special graphities, Molydisulfide greases, or other extreme pressure lubricants are used.

Grade 5 Bolts, Nuts, and Studs



Size	Pound-Inches	Newton metres
1/4 inch	108 to 132	12 to 15
5/16 inch	204 to 252	23 to 28
3/8 inch	420 to 504	48 to 57
Size	**Pound-Feet**	**Newton metres**
7/16 inch	54 to 64	73 to 87
1/2 inch	80 to 96	109 to 130
9/16 inch	110 to 132	149 to 179
5/8 inch	150 to 180	203 to 244
3/4 inch	270 to 324	366 to 439
7/8 inch	400 to 480	542 to 651
1.0 inch	580 to 696	787 to 944
1-1/8 inch	800 to 880	1085 to 1193
1-1/4 inch	1120 to 1240	1519 to 1681
1-3/8 inch	1460 to 1680	1980 to 2278
1-1/2 inch	1940 to 2200	2631 to 2983

Grade 8 Bolts, Nuts, and Studs



Size	Pound-Inches	Newton metres
1/4 inch	144 to 180	16 to 20
5/16 inch	288 to 348	33 to 39
3/8 inch	540 to 648	61 to 73
Size	**Pound-Feet**	**Newton metres**
7/16 inch	70 to 84	95 to 114
1/2 inch	110 to 132	149 to 179
9/16 inch	160 to 192	217 to 260
5/8 inch	220 to 264	298 to 358
3/4 inch	380 to 456	515 to 618
7/8 inch	600 to 720	814 to 976
1.0 inch	900 to 1080	1220 to 1465
1-1/8 inch	1280 to 1440	1736 to 1953
1-1/4 inch	1820 to 2000	2468 to 2712
1-3/8 inch	2380 to 2720	3227 to 3688
1-1/2 inch	3160 to 3560	4285 to 4827

NOTE: *Use thick nuts with Grade 8 bolts.*

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Rac 8-71601 Issued 11-91 Printed in U.S.A

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CAPACITIES AND LUBRICANTS

Engine oil
- Capacity with filter change ..... 20.8 litres (22 U.S. quarts)
- Type of oil ..... Case No. 1 Engine Oil - see engine oil recommendations on page 3

Engine cooling system
- Capacity ..... 32.1 litres (34 U.S. quarts)
- Type of coolant ..... Ethylene glycol and water mixed for lowest ambient temperature (at least 50/50 mix)

Fuel tank
- Capacity ..... 268 litres (70.8 U.S. gallons)
- Type of fuel ..... See diesel fuel specifications on page 4

Hydraulic system
- Hydraulic reservoir refill capacity ..... 90 litres (95.2 U.S. quarts)
- Total system ..... 174 litres (184 U.S. quarts)

Type of oil ..... MS-1209 Hy-Tran Ultra®

Transmission
- Refill capacity with filter change ..... 12.3 litres (13 U.S. quarts)
- Total system capacity ..... 26.5 litres (28 U.S. quarts)

Type of oil ..... Case No. 1 Engine Oil (15W-40)

Axles
- Capacity of center bowl
  - Front ..... 18.9 litres (20 quarts) 135H EP Plus 1.9 litres (4 pints) B91246
  - Rear ..... 13.7 litres (14.5 quarts) 135H EP Plus 1.4 litres (3 pints) B91246
- Capacity of planetary (each)
  - Front ..... 6.0 litres (6.5 quarts) 135H EP
  - Rear ..... 5.5 litres (6 quarts) 135H EP
- Type of lubricant ..... Case (MS1316) 135H EP (SAE 85W-140)
- Limited slip additive ..... Case B91246

Brake system
- Type of fluid (same as hydraulic system) ..... MS-1209 Hy-Tran Ultra®

NOTE: *DO NOT use an alternate oil in the axles. The brake components in the axles could be damaged as a result of using an alternate oil.*

Conversion Formulas

Imperial quart = litres x 0.879877
Imperial gallons = litres x 0.219969

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MAINTENANCE SCHEDULE
Model 821C
Instructions

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IF THE TRANSMISSION FILTER RESTRICTION WARNING LAMP ILLUMINATES ..... USE CASE FILTER
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6 REPLACE THE HYDRAULIC FILTERS IF THE HYDRAULIC FILTER WARNING LAMP ILLUMINATES ..... USE CASE FILTERS
20 CHECK THE FAN BELT CONDITION ..... REPLACE AS REQUIRED
CHECK THE AIR CONDITIONING DRIVE TENSION (IF EQUIPPED) NOT SHOWN ..... ADJUST AS REQUIRED

EVERY 10 HOURS OF OPERATION OR EACH DAY- WHICHEVER OCCURS FIRST

16 CHECK THE ENGINE OIL LEVEL ..... SEE OPERATORS MANUAL

EVERY 50 HOURS OF OPERATION

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29 CHECK THE TRANSMISSION OIL LEVEL (ENGINE RUNNING AND OIL WARM) ..... SEE OPERATORS MANUAL
5 CHECK THE HYDRAULIC RESERVOIR FLUID LEVEL ..... SEE OPERATORS MANUAL
15 LUBRICATE THE REAR AXLE TRUNNION PIVOTS (2 FITTINGS) ..... CASE MOLYDISULFIDE GREASE
27 LUBRICATE THE CENTER DRIVE SHAFT SLIP JOINT (1 FITTING) ..... CASE MOLYDISULFIDE GREASE

EVERY 100 HOURS OF OPERATION

10 LUBRICATE THE BUCKET PIVOT POINTS (3 FITTINGS) ..... CASE MOLYDISULFIDE GREASE
7 LUBRICATE THE STEERING CYLINDER PIVOTS - ROD AND CLOSED END (4 FITTINGS) ..... CASE MOLYDISULFIDE GREASE
9 LUBRICATE THE LOADER PIVOT POINTS (10 FITTINGS) ..... CASE MOLYDISULFIDE GREASE
26 LUBRICATE THE FRONT DRIVE SHAFT SUPPPORT BEARING (1 FITTING) ..... CASE MOLYDISULFIDE GREASE
32 LUBRICATE THE REAR DRIVE SHAFT SLIP JOINT (1 FITTING) ..... CASE MOLYDISULFIDE GREASE
35 LUBRICATE THE REAR DRIVE SHAFT SLIP JOINT (1) FITTING) ..... CASE MOLYDISULFIDE GREASE

EVERY 250 HOURS OF OPERATION

19 CHECK THE RADIATOR COOLANT LEVEL ..... ETHYLENE GLYCOL AND WATER
2 CHANGE THE ENGINE OIL AND REPLACE THE ENGINE OIL FILTER ..... SEE OPERATORS MANUAL
34 CHECK THE BATTERY FLUID LEVEL ..... SEE OPERATORS MANUAL
36 CHECK THE TIRE CONDITION AND AIR PRESSURE ..... SEE OPERATORS MANUAL
12 CLEAN THE CAB AIR FILTERS (IF EQUIPPED) ..... SEE OPERATORS MANUAL
25 REPLACE ENGINE COOLING SYSTEM FILTER ..... USE CASE FILTER

EVERY 500 HOURS OF OPERATION

3 REPLACE THE FUEL FILTERS ..... USE CASE FILTERS
33 DRAIN WATER AND SEDIMENT FROM THE FUEL TANK ..... SEE OPERATORS MANUAL
14 REPLACE THE IN-LINE FUEL FILTER ..... USE CASE FILTERS

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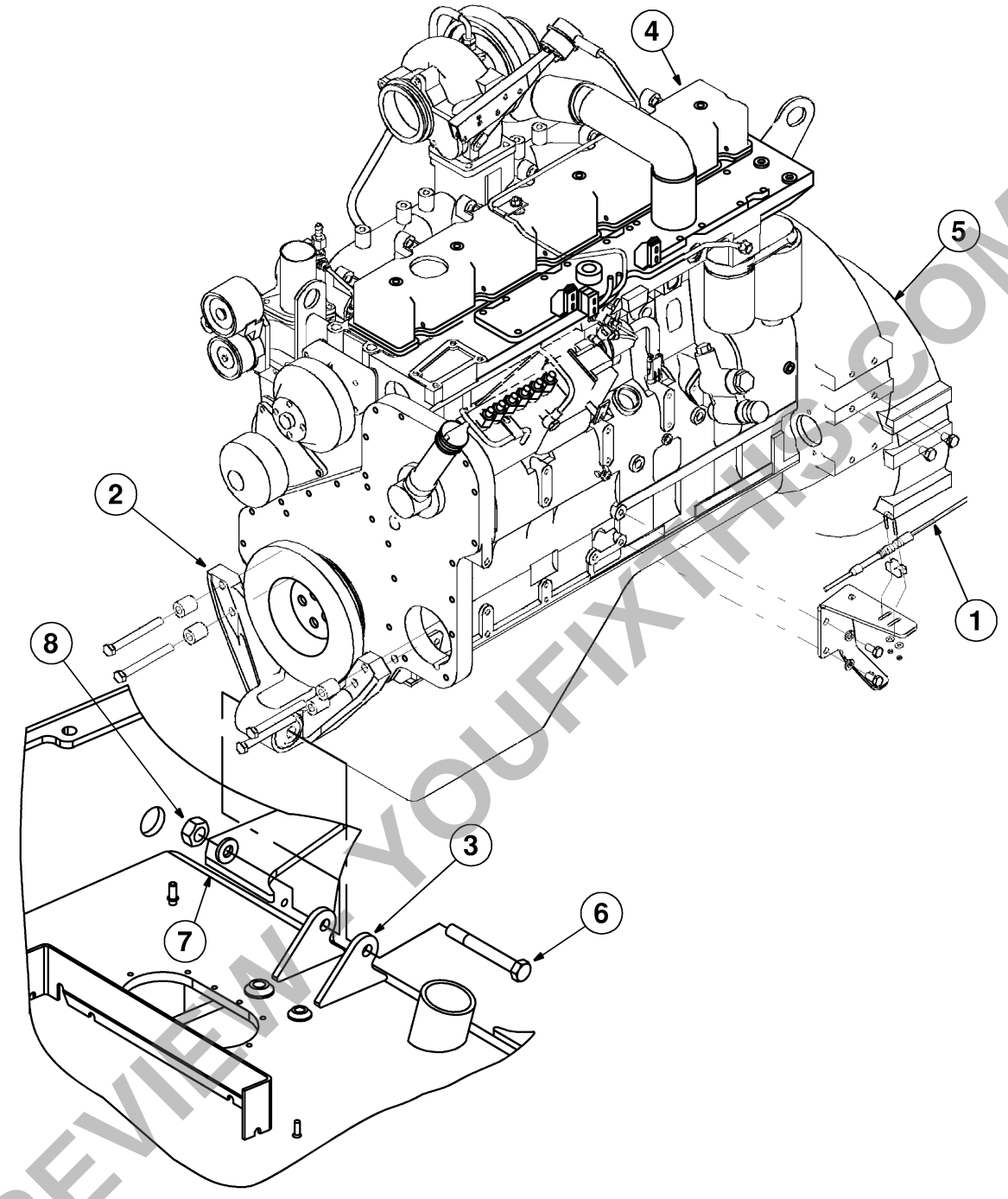
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EVERY 2000 HOURS OF OPERATION OR EACH YEAR - WHICHEVER OCCURS FIRST

4 CHANGE THE HYDRAULIC OIL AND CLEAN THE SCREEN ..... SEE OPERATORS MANUAL
18 DRAIN, FLUSH AND REFILL THE ENGINE COOLING SYSTEM ..... ETHYLENE GLYCOL AND WATER
22 REPLACE THE AIR CLEANER ELEMENTS ..... USE CASE FILTERS

NOTE: *When you drain, flush and refill the engine cooling system, add one container (0.5L) of Case cooling system treatment, and replace the cooling filter.*

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1. THROTTLE CABLE
2. FRONT ENGINE MOUNT
3. ENGINE WELDMENT MOUNT
4. ENGINE
5. FLYWHEEL HOUSING
6. BOLT
7. WASHER
8. NUT

Figure 1. ENGINE

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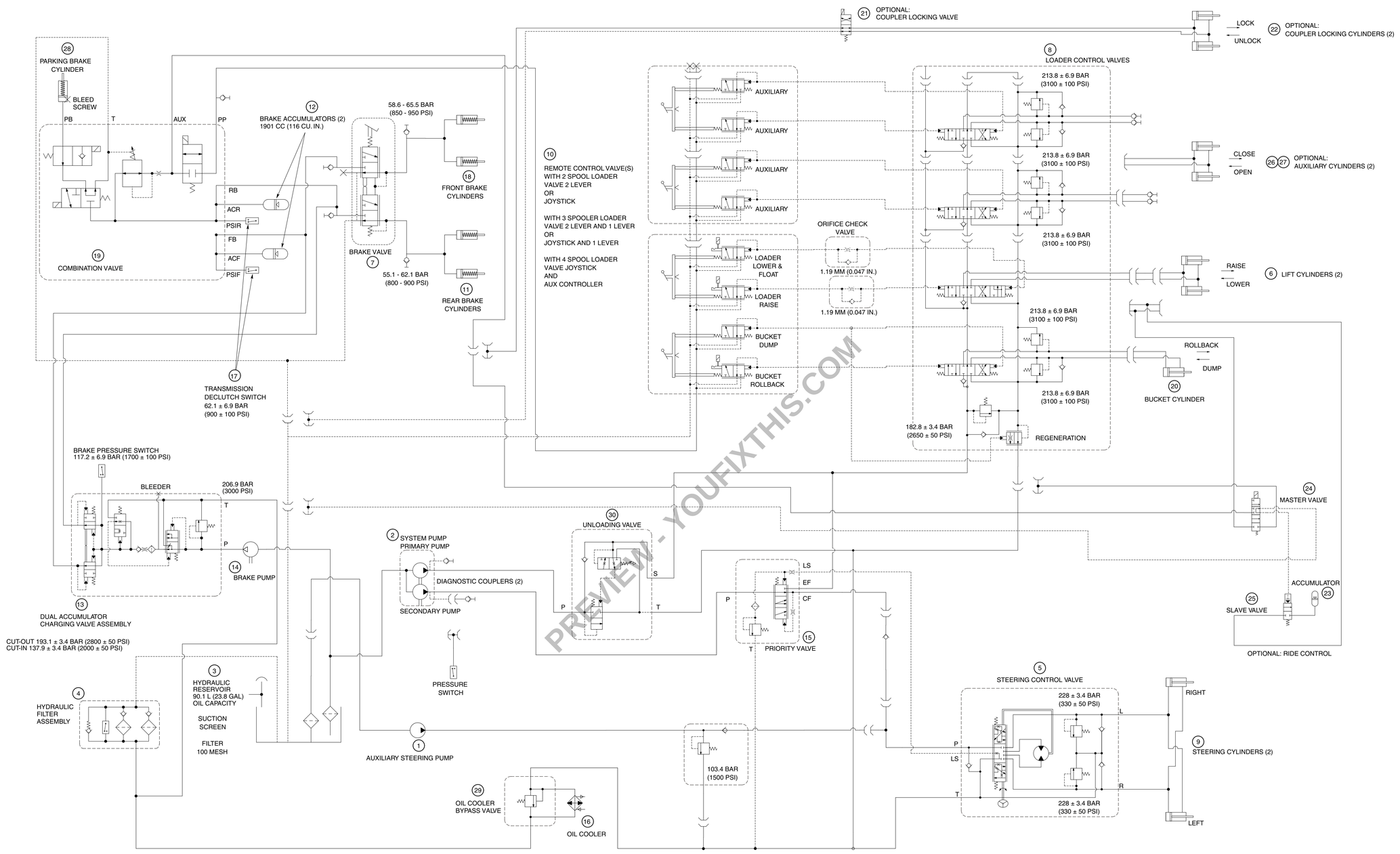
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COMPONENTS

1. AUXILIARY STEERING PUMP:
   24V DC AND 68.9 BAR (1000 PSI)
2. SYSTEM PUMP
   PRIMARY PUMP 88.5 CC (5.4 CU. IN.)/REV.
   SECONDARY PUMP 56.5 CC (3.45 CU. IN.)/REV.
3. HYDRAULIC RESERVOIR: 90.1 L (23.8 GAL)
4. HYDRAULIC FILTER ASSEMBLY
   BYPASS VALVE 3.4 BAR (50 PSI)
   INDICATOR SWITCH 2.8 BAR (40 PSI)
5. STEERING CONTROL VALVE, VARIABLE DISPLACEMENT:
   737.6 – 1180 CC (45 – 72 CU. IN.)/REV
6. LIFT CYLINDERS (2):
   BORE: 152.4 MM (6.0 IN.)
   ROD: 88.9 MM (3.5 IN.)
   STROKE: 806.5 MM (31.75 IN.)
7. BRAKE VALVE
8. LOADER CONTROL VALVES
9. STEERING CYLINDERS (2):
   BORE: 88.9 MM (3.5 IN.)
   ROD: 44.4 MM (1.75 IN.)
   STROKE: 435.4 MM (17.14 IN.)
10. REMOTE CONTROL VALVE(S)
11. REAR BRAKE CYLINDERS (2)
12. BRAKE ACCUMULATORS (2)
13. DUAL ACCUMULATOR CHARGING VALVE ASSY.:
    206.8 BAR (3000 PSI)
14. BRAKE PUMP:
    14.1 CC (0.86 CU. IN.)/REV.
15. PRIORITY VALVE:
    179.3 ± 3.4 BAR (2600 ± 50 PSI)
16. OIL COOLER
17. TRANSMISSION DECLUTCH SWITCH
18. FRONT BRAKE CYLINDERS (2)
19. COMBINATION VALVE:
    37.9 BAR (550 PSI)
20. BUCKET CYLINDER:
    BORE: 177.8 MM (7.0 IN.)
    ROD: 88.9 MM (3.5 IN.)
    STROKE: 578.6 MM (22.78 IN.)
21. COUPLER LOCKING VALVE (OPTIONAL)
22. COUPLER LOCKING CYLINDERS (OPTIONAL)
23. RIDE CONTROL ACCUMULATOR (OPTIONAL):
    31 BAR (450 PSI)
24. RIDE CONTROL MASTER VALVE (OPTIONAL)
25. RIDE CONTROL SLAVE VALVE (OPTIONAL)
26. AUXILIARY CYLINDERS (2)
27. AUXILIARY CYLINDERS (2)
28. PARKING BRAKE CYLINDER
29. OIL COOLER BYPASS VALVE:
    1.7 – 4.1 BAR (25 – 60 PSI)
30. UNLOADING VALVE:
    151.7 ± 6.9 BAR (2200 ± 100 PSI)

HYDRAULIC SYMBOLS

DIRECTION OF OIL FLOW
PILOT PRESSURE
CROSSOVER LINES
CHECK VALVE
CONNECTION LINES
FILTER OR SCREEN
OIL COOLER

821C WHEEL LOADER HYDRAULIC SCHEMATIC

Additional copies of this Hydraulic Schematic can be ordered through Technical Publications Distribution System. The Part Number is 7-13451

BC00D015

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FAULT CODES

CODE	DEFINITION	POSSIBLE STEPS FOR REPAIR
12900	Engine coolant short circuit measuring less than 50 ohms to the engine coolant temperature sensor.	Troubleshoot electrical circuits.
12901	Engine coolant open circuit measuring greater than 10,000 ohms to the engine coolant temperature sensor with hydraulic oil temperature at 40° C (104° F) or more.	
13000	Low engine coolant level - This code will not be generated if the engine coolant temperature is below 20° C (68° F).	1. A critical stop function warning has occurred. 2. Red stop indicator comes on and continuous buzzer sounds. 3. Stop machine and perform required service on the critical area.
21100	Engine oil pressure is measured below 100 kPa (14.5 PSI)	
21110	Engine coolant temperature is 110° C (230° F) or greater.	
21900	Engine oil pressure short circuit measuring less than 16 ohms to the engine oil pressure sensor.	Troubleshoot electrical circuits. **NOTE:** *Fault code 21900 is possible during cold engine start-up. After machine warm up, verify proper operation.*
21901	Engine oil pressure open circuit measuring more than 270 ohms to the engine oil pressure sensor.	
33900	Fuel level short circuit measuring less than 16 ohms to the fuel level sender.	Troubleshoot electrical circuits.
33901	Fuel level open circuit measuring more than 270 ohms to the fuel level sender.	
34000	Fuel solenoid output short circuit.	
35000	High air filter restriction.	1. A caution level warning has occurred. 2. Yellow caution indicator comes on and buzzer sounds for 3 seconds. 3. Perform required service on the cautioned area.
42125	Transmission temperature measured above 125° C (257° F)	1. A critical stop function warning has occurred. 2. Red stop indicator comes on and continuous buzzer sounds. 3. Stop machine and perform required service on the critical area.
45000	High transmission filter restriction when the transmission oil is above 20° C (68° F).	1. A caution level warning has occurred. 2. Yellow caution indicator comes on and buzzer sounds for 3 seconds. 3. Perform required service on the cautioned area.
46017	Gear range fault error	1. Check the cables from TCU to shift lever. 2. Check signal combinations of shift lever positions for gear range.
46018	Logical error at direction select signal	1. Check the cables from TCU to shift lever. 2. Check signal combinations of shift lever positions F-N-R.

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SPECIFICATIONS

Auxiliary steering motor
Maximum amperes ..... 30 amperes

Minimum armature speed ..... 6950 r/min (rpm)

Auxiliary steering pump
Minimum flow ..... 24 L/min at 138 bar at 525 amperes or less
(64 U.S. gpm at 2000 psi at 525 amperes or less)

Steering relief valve
Pressure setting ..... 184 to 193 bar (2665 to 2800 psi)

Location of steering relief valve ..... in the steering priority valve

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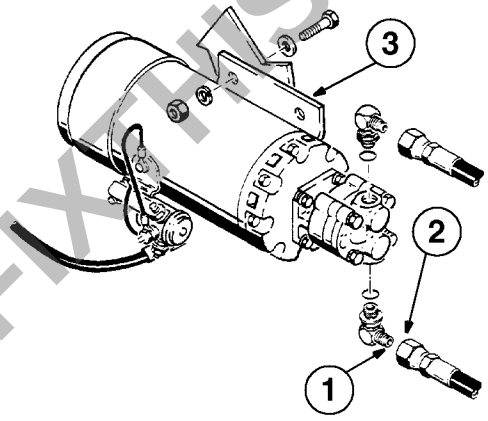
AUXILIARY STEERING SYSTEM PUMP TEST

Equipment Required

1. CAS-10280 Flowmeter
2. CAS-1808 Flowmeter fitting kit.
   a. 0019 plug
   b. 0020 cap
   c. 1002 tee

Test Procedure

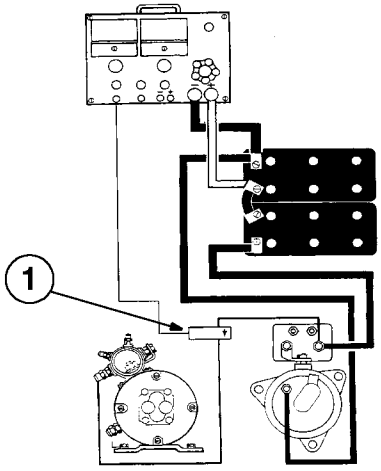
1. Assemble the tee and cap and install the tee (1) at the location shown, refer to Figure 1.
2. Install the plug (2) in the hose that was disconnected from the pump. Connect the inlet of the flowmeter to the tee (1).
3. Install the outlet hose of the flowmeter in the reservoir and hold in place with wire.
4. Connect the ammeter clamp (1) to the cable shown, refer to Figure 2.
5. Make sure the parking brake is applied and the bucket is on the floor.
6. Make sure the oil is at operating temperature.
7. Disconnect the wire from the injection pump solenoid.
8. Make sure the load valve for the flowmeter is open (zero pressure).
9. Turn the key switch to the START position while turning the steering wheel until the lamp for the secondary steering is not illuminated or no longer than 15 seconds.
10. Release the key switch to the RUN position.
11. Turn the load valve toward CLOSED until the pressure is 138 bar (2000 psi).
12. Read the flowmeter and ammeter gauges and record the readings.
13. The flowmeter reading must not be less than 24 L/min, (64 U.S. gpm). The ammeter reading must be 525 amperes or less.
14. Turn the key switch to the OFF position. If the flow was less than the specification, or if the amperage was more than 525 amperes, remove the auxiliary steering motor and pump. Test the auxiliary steering motor. If the motor is good, make repairs to the pump.



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1. TEE 2. PLUG 3. REAR CHASSIS

Figure 1.



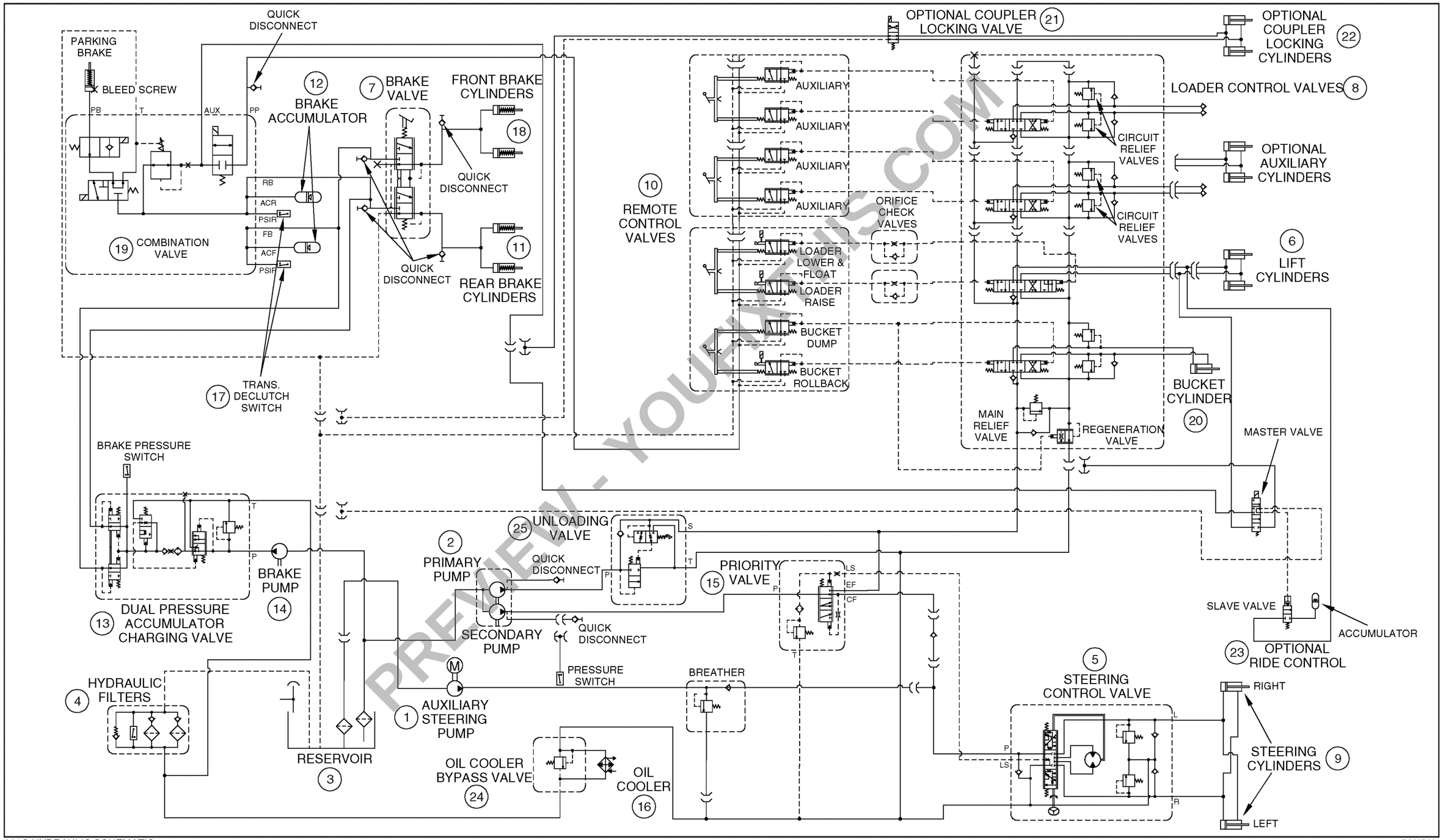
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1. AMMETER CLAMP

Figure 2.

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821C HYDRAULIC SCHEMATIC



821C HYDRAULIC SCHEMATIC

BC00D061

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SPECIFICATIONS

Electrical System ..... Two 12 volt batteries connected in series, negative ground
System Voltage ..... Approximately 24 volts

Batteries

The specifications are the same for the production battery and the replacement battery.

Production Battery case P/N ..... L51769 or BCM4DAW
Replacement Battery Case P/N ..... L13308 or BMC4DA
Group Size 4D
Reserve Capacity ..... 310 minutes
Cold Cranking Capacity:
At -17°C (0°F) ..... 800 amperes
At -29°C (-20°F) ..... 650 amperes
Load of Capacity (Load) Test ..... 400 amperes
Plates per Cell 23
Approximate weight with electrolyte ..... 49.8 kg (110 pounds)
Nonspill caps ..... Standard

Alternator ..... 24 volt, 65 amperes
Voltage Regulator ..... Solid State, Not Adjustable
Starter ..... 24 volt, Solenoid Actuated
Bucket Control Valves Detent Electromagnets ..... 84 ohms
Fuel Level Sender (E-F) ..... 240-33 ohms
Coolant and Hydraulic Temperature Sender 20°C (68°F) 3521ohms
Coolant and Hydraulic Temperature Sender (Yellow Line) 105°C (221°F) ..... 154 ohms
Coolant and Hydraulic Temperature Sender (Red Line) 110°C (230°F) ..... 133.9 ohms
Hydraulic Filter Restriction Switch closing setpoint ..... 310 kPa (45 psi)
Air Filter Restriction Switch closing setpoint ..... 6.4 kPa (0.928 psi)
Low Brake Pressure Warning Switch opening setpoint ..... 11 724 kPa (1700 psi)
A/C High Pressure Switch closing setpoint ..... 28 Bar (400 psi) (increasing pressure)
A/C Low Pressure Switch closing setpoint ..... 0.3 Bar (4 psi) (decreasing pressure)
Contacts 2 to 3 of thermostat switch close at initial turn of the rotary switch. Contacts 1 to 2 close with thermal setting.

Engine Oil Pressure Sender. Reference Resistance vs. Pressure

1 Bar ..... 178 ohms
3 Bar ..... 90 ohms
5.2 Bar ..... 38 ohms

Fuel Solenoid Resistance (pull in) ..... 0.82 ohms
Fuel Solenoid Resistance (hold in) ..... 11.3 ohms

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117 – Courtesy Light		
Check Points	**Reading**	**Possible Cause of Bad Reading**
Terminal for wire 0 to ground	Continuity	Bad ground circuit.
NOTE: *Put the master disconnect switch in the ON position. Put the 5 position rotary lamp switch (112) in position 2 or higher.*		
Bulb	Continuity	Bad bulb.
Terminal for wire 49 to ground	24 volts	Check the circuit 49, also check 5 position rotary lamp switch (112).

118 – Cab Dome Light		
Check Points	**Reading**	**Possible Cause of Bad Reading**
Terminal for wire 0 to ground	Continuity	Bad ground circuit.
NOTE: *Put the master disconnect switch in the ON position. Put the cab dome light switch (118) in either ON position.*		
Bulb	Continuity	Bad bulb.
Terminal for wire 19U to ground	24 volts	Check the fuse U, also check the circuit 19U.
NOTE: *If the readings are good, replace the cab dome light (118).*		

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Section
6002

6002

TRANSMISSION SPECIFICATIONS, PRESSURE CHECK, AND TROUBLESHOOTING

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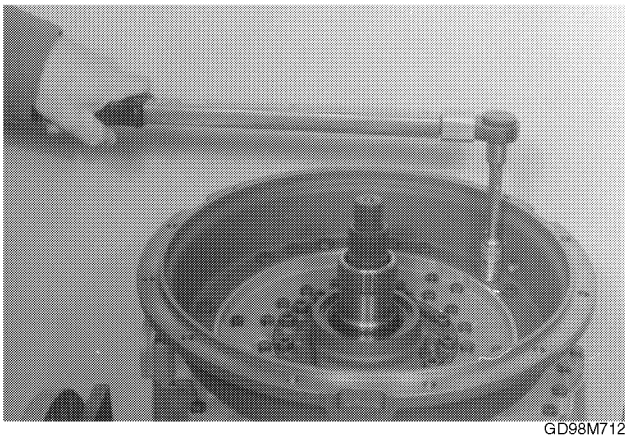
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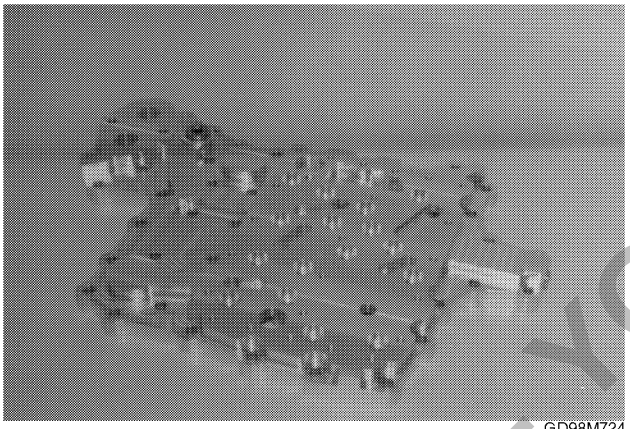
STEP 109



GD98M712

Fit the flat gasket and install the cover with the hex head screws. Tighten the screws to a torque of 23 Nm (17 lb-ft).

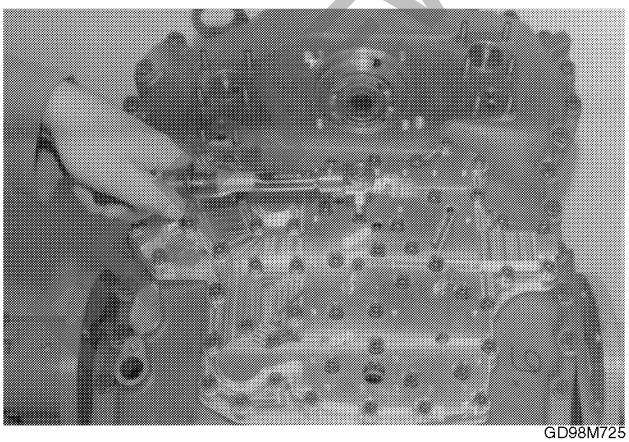
STEP 110



GD98M724

Install new sealing rings and both plugs.

STEP 111

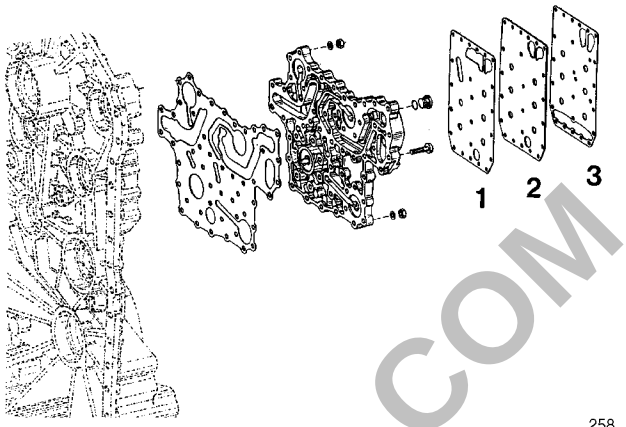


GD98M725

Install the gasket, place the duct plate against shoulder and install the socket head screws and hex nuts. Tighten the screws to a torque of 25 Nm (18 lb-ft).

NOTE: *The following steps are for the assembly of the transmission control valve.*

STEP 112



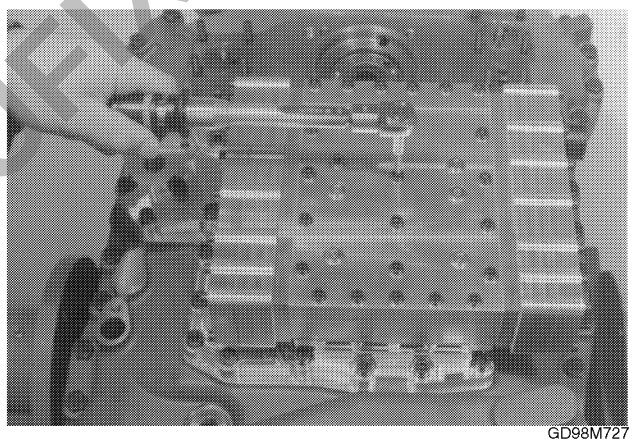
258

Mount the gasket (1), intermediate plate (2), and gasket (3).

STEP 113

Install the screw plug with new O-ring. Tighten the plug to a torque of 30 Nm (22 lb-ft).

STEP 114



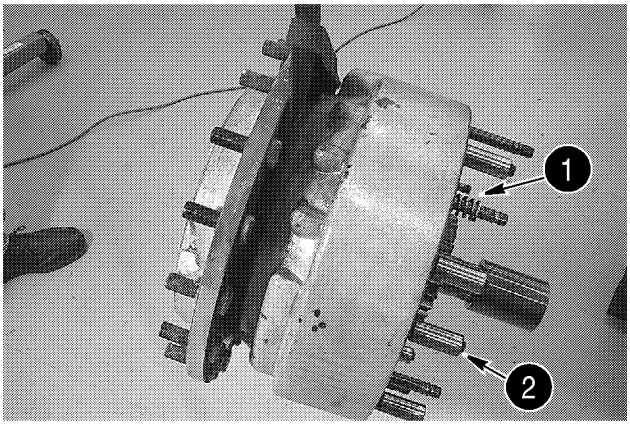
GD98M727

Install the control valve on the duct plate with the socket head screws. Tighten the screws to a torque of 9.5 Nm (7 lb-ft).

NOTE: *The following steps are for the assembly of the filter.*

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STEP 19



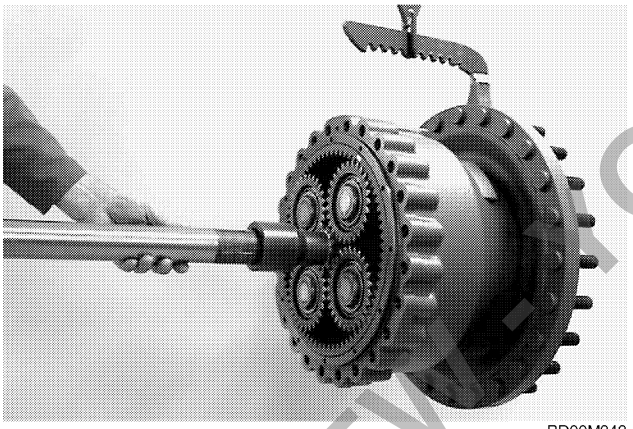
BD01F112

1. SPRING
2. BUSHING

Remove the wheel end from the axle casing.

IMPORTANT: ***Take note of the location of the springs and bushings when removing the wheel end.***

STEP 20

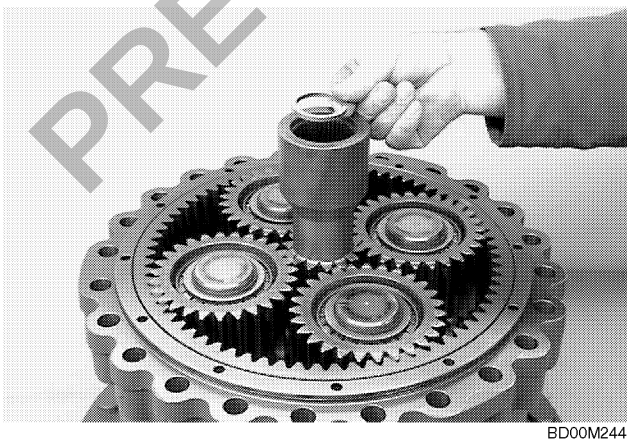


BD00M243

Pull the stub shaft out of the sun gear shaft.

NOTE: *Watch for released shim(s).*

STEP 21



BD00M244

Remove the shim(s) from the sun gear shaft.

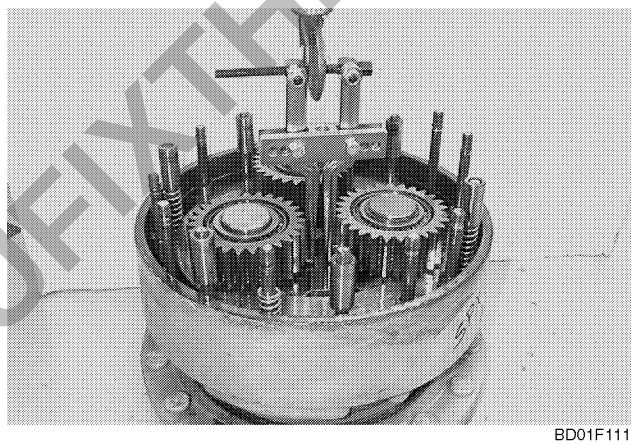
STEP 22



BD00M245

Pull the sun gear shaft out of the planet gears.

STEP 23

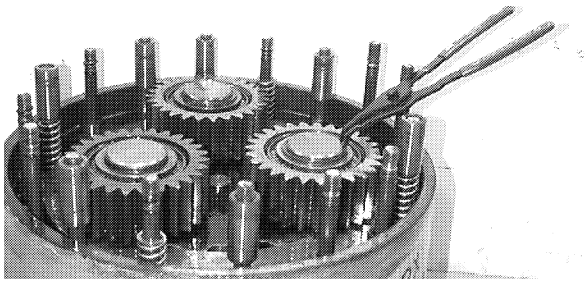


BD01F111

Lift the planet carrier out of the brake housing using OEM4054 pulling attachment.

NOTE: *Steps 24 through 26 show the planet carrier in the brake housing. It should be removed.*

STEP 24



BD01F114

Remove the snap ring from the planet gear shaft using OEM6492 snap ring pliers.

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13. Install the screws (15) which fasten the cover (23) to the housing (14). Tighten screws to 5.5 Nm (4 pound-feet).

14. Install cover (22), gasket (21), and screws (15). Tighten the screws (15) to 5.5 Nm (4 pound-feet).

15. Install the housing gasket (1) on the transmission control valve (7), refer to Figure 2.

16. Install the valve plate (2) with screens (3) facing upward (toward the distribution plate (5)).

17. Install the housing gasket (4).

18. Install the distribution plate (5).

19. Apply Loctite 243 only to the screws as shown on Figure 2.

20. Install and tighten the screws (6) to 12 Nm (8.8 pound-feet).

NOTE: *See Section 6001 for proper tightening procedure when mounting on transmission.*

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Installation

1. Install and align the loader control valve (10) with the mounting plate, refer to Figure 5.

2. Install the bolts, flat washers and self-locking nuts that fasten the loader control valve (10) to the front frame. The left front bolt fastens a support bracket for the hoses to the loader control valve (10). Make sure the flat washers are installed between the loader control valve (10) and the front frame. Tighten the self-locking nuts.

IMPORTANT: *Before installing the fittings or connecting the tubes to the fittings, install new O-rings on the fittings.*

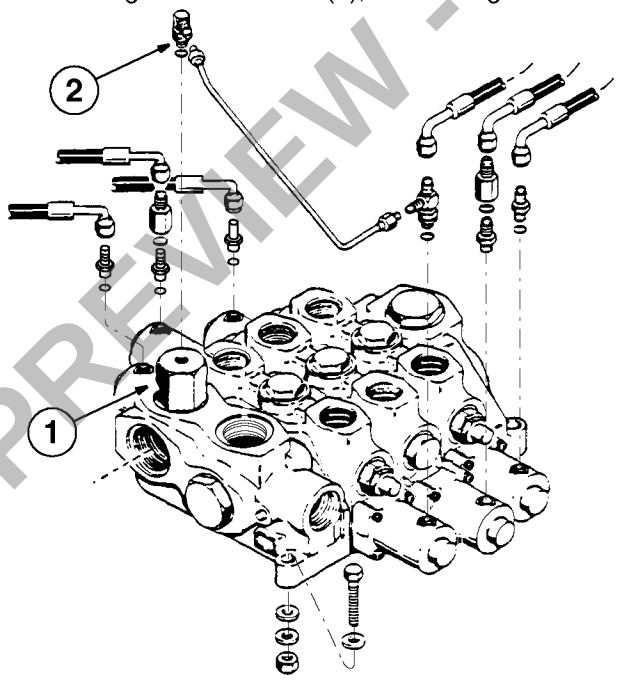
3. If equipped, connect the tubes to the fourth working section.

4. Connect the left tube (9) to the auxiliary section. Then install the right fitting (13) and connect the right tube (9) to the fitting (13).

5. Connect the left tube (11) to the lift section. Install the right fitting (12) and connect the right tube (11) to the fitting (12).

6. Connect the tubes (5) to the bucket section.

7. Install and tighten the elbow (2) to the regeneration valve (1) and connect the tube to the regeneration valve (1), refer to Figure 6.



GS98M890

Figure 6. LOADER CONTROL VALVE

8. Install the insulators (4), clamps (3), bolts (2) and self-locking nuts (1) that secure the tubes (5) in the bucket circuit and tighten the self-locking nuts (1), refer to Figure 5.

9. Install the U-bolts (8), lock washers (7) and nuts (6) that secure the tubes (9) in the auxiliary circuit and tighten the nut (6).

10. Start the vacuum pump.

11. Connect the inlet tube (2) to the loader control valve (9) and tighten the nuts (8) on the U-bolts (6) that secure the inlet tube (2), refer to Figure 4.

12. Connect the outlet tube (1) to the loader control valve (9) and tighten the nuts (3) on the U-bolts (5) that secure the outlet tube (1).

13. Stop the vacuum pump.

14. Connect the hoses from the remote control valve(s) to the loader control valve, refer to Figure 6.

15. Disconnect the vacuum pump from the reservoir.

16. Turn the battery disconnect switch to the ON position.

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

18. With the engine running at low idle, slowly and completely extend and retract all cylinders at least four times to remove any air from the circuits.

19. Lower the bucket to the floor and stop the engine

20. Check for oil leakage at the loader control valve.

21. Install the access covers (3), hardened washers (2) and cap screws (1) on the front frame (4) and tighten the cap screws (1), refer to Figure 2.

22. Check the level of the hydraulic oil in the reservoir and add hydraulic oil as required. See Section 1002 for the correct hydraulic oil.

23. Install and tighten the filler cap for the reservoir.

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HYDRAULIC PUMP

Disassembly

NOTE: *The hydraulic pump shown in Figure 1 is a general cross section view. Illustration may vary from actual component parts.*

1. Fasten the hydraulic pump in a vise with soft jaws with the shaft extended downward. Clamp the vise on the shaft end cover (2), not on the housing (8), refer to Figure 1.
2. Loosen and remove the bolts (10) and the port end cover (1). Take note of the pressure ports position to the suction port.
3. Remove and discard the seal (13) from the port end cover (1).
4. Firmly grasp the pump cartridge (3) and, while rotating it, pull outward and remove the pump cartridge (3) from the housing (8).
5. Remove and discard the seals (14 and 15) and backup ring (16) from the pump cartridge (3).
6. Remove the hydraulic pump from the vise to reposition it with the shaft extended upward. Clamp the vise on the housing (8), not the shaft end cover (2).
7. Loosen and remove the bolts (11) from the housing (8) and shaft end cover (2).
8. Slowly remove the shaft end cover (2) upward and away from the housing (8).

NOTE: *The shaft end cover (2) contains the pump cartridge (4) and shaft (5).*

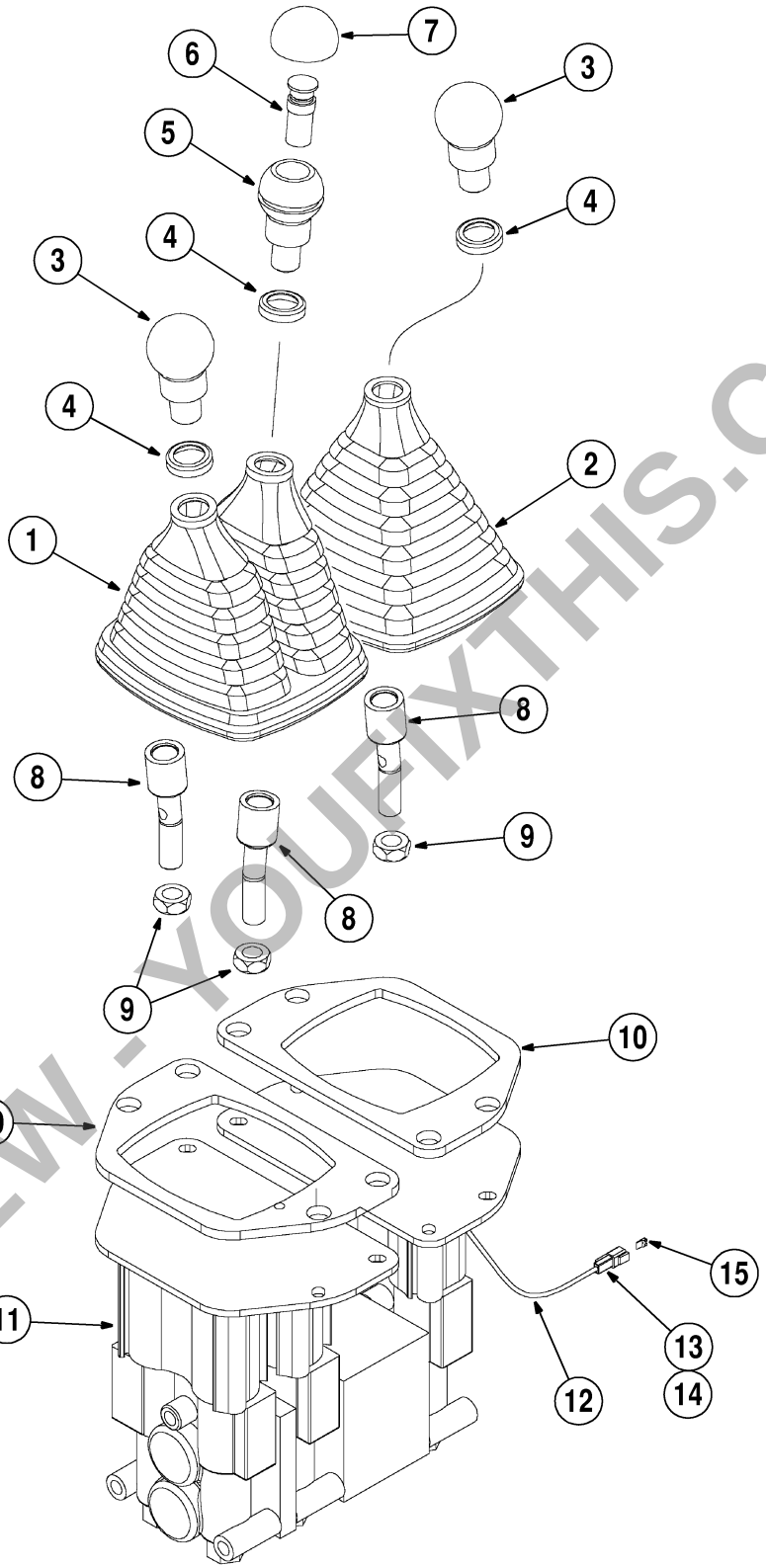
9. Remove and discard the seal (17) from the shaft end cover (2).
10. Remove the housing (8) from the vise.
11. Fasten the shaft end cover (2) in the vise with the coupling end of the shaft (5) downward.
12. Firmly grasp the pump cartridge (4) and, while rotating it, pull outward and remove the pump cartridge (4) from the shaft end cover (2).
13. Remove and discard the seals (19 and 20) and backup ring (18) from the pump cartridge (4).
14. Remove the shaft end cover (2) from the vise and remove the retaining ring (9) from the shaft end cover (2).
15. Remove the shaft (5) from the shaft end cover (2) by gently tapping the coupling end of the shaft (5) with a plastic tipped hammer.
16. Remove and discard the seal (6) from the shaft end cover (2).
17. Loosen and remove the screws (22) from the pump cartridge (3).
18. Remove the plate (23) from the pump cartridge (3).
19. Loosen and remove the screws (12) from the pump cartridge (4).
20. Remove the plate (7) from the pump cartridge (4).

Inspection

1. Clean all parts in cleaning solvent and allow all parts to air dry or use a lint free cloth for drying all parts thoroughly.
2. Inspect the port end cover (1), housing (8), shaft end cover (2) and the shaft (5) for wear marks, nicks and burrs. Replace the port end cover (1), housing (8), shaft end cover (2) or shaft (5) as required, refer to Figure 1.
3. Inspect the bearing on the shaft (5) for wear and cracks. If the bearing shows signs of wear or is cracked, a new shaft (5) is required.
4. Inspect the plates (7 and 23) for light scoring on the wear surface. Replace the plate (7 or 23) with a new plate (7 or 23) if light scoring is found on the wear surface.
5. Inspect the pump cartridges (3 and 4). The vanes must move freely in the rotor slots and not bind or have excessive play. If the vanes do not move freely in the rotor slots, or if they bind or have excessive play, a new pump cartridge (3 or 4) is required.
6. Make sure all ports in the pump cartridges (3 and 4) are open and clean.

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GM98K850

1. DUST COVER BOOT
2. DUST COVER BOOT
3. KNOB
4. WASHER
5. KNOB
6. KICK DOWN SWITCH
7. SWITCH BOOT
8. LEVER
9. NUT
10. SEAL
11. REMOTE CONTROL VALVE ASSEMBLY
12. HEAT SHRINK TUBE
13. CONNECTOR
14. PIN
15. WEDGE

Figure 1. UPPER LEVEL - REMOTE CONTROL VALVE THREE SPOOL - THREE LEVER - EXPLODED VIEW

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SOLENOID VALVE FOR RIDE CONTROL

Disassembly

NOTE: *The solenoid valve for the ride control is also known as the master valve for the ride control system.*

NOTE: *The seals (12 and 14), O-rings (13 and 15), snap ring (16) and solenoid assembly (10) are the only serviceable items. Complete disassembly is shown, refer to Figure 1.*

1. Remove the socket head screws (8), lock washers (9), and solenoid housing (11) from the valve body (1), refer to Figure 1.
2. Remove and discard the O-ring (13) from the valve body (1).
3. Remove and discard the solenoid assembly (10) from the solenoid housing (11).
4. Remove the socket head screws (4) and the end cap (6) from the other side of the valve body (1).
5. Remove the spacer (5), seal (12), spring (3) and washer (7) from the valve body (1). Discard the seal (12).
6. Remove and discard the snap ring (16) from the valve body (1).
7. Remove the spool (2), teflon seal (14), and O-ring (15) from the valve body (1). Discard the teflon seal (14) and the O-ring (15).

Inspection

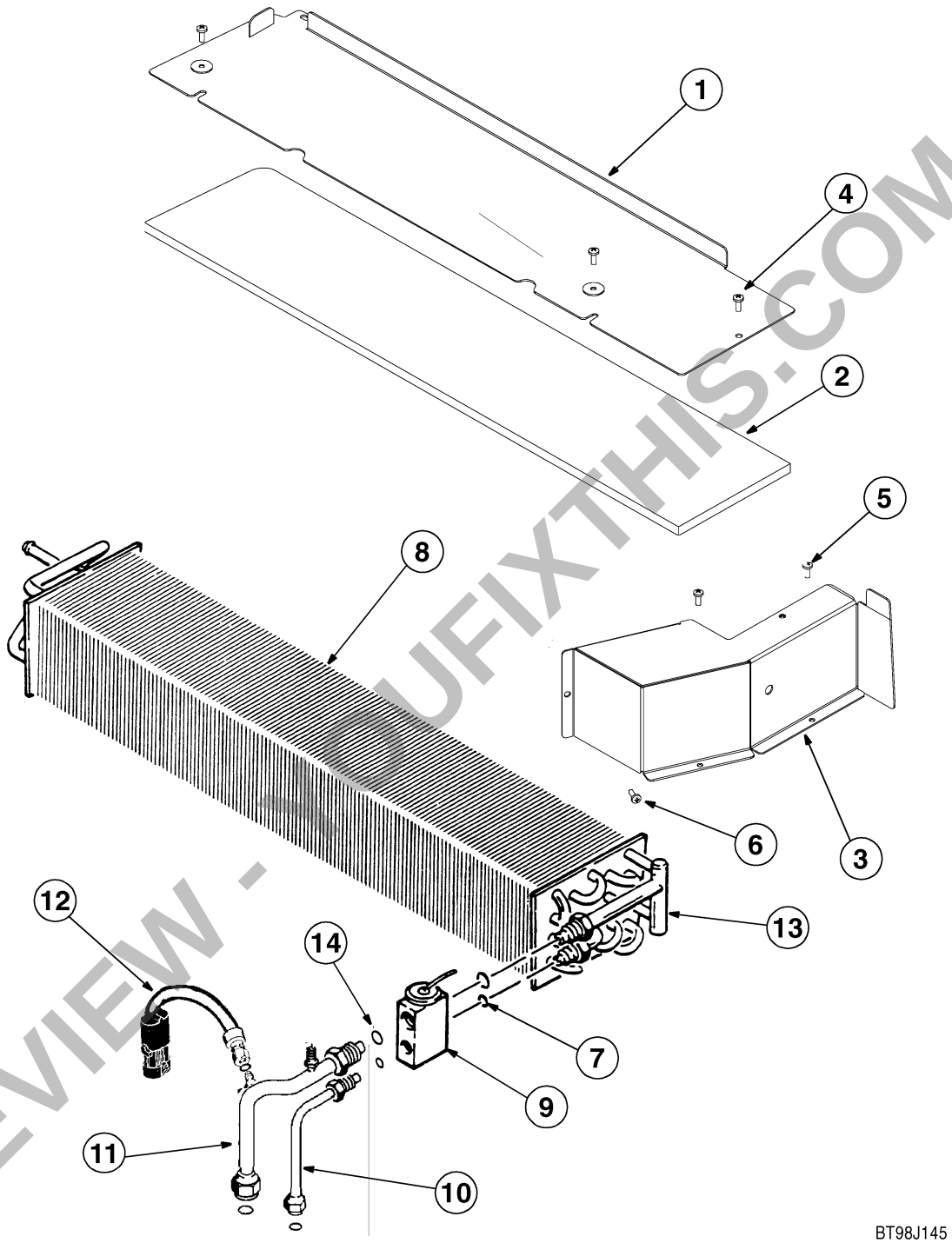
1. Clean all parts in cleaning solvent.
2. Inspect the valve body (1) for wear and damage. If the valve body is damaged, a new solenoid valve assembly must be used.
3. Inspect the solenoid housing (11) and end cap (6) for wear and damage. If the solenoid housing (11) or the end cap (6) is damaged, a new solenoid valve assembly must be used.

Assembly

1. Lubricate the new O-ring (15) with clean hydraulic oil, refer to Figure 1.
2. Install a new teflon seal (14), a new O-ring (15) and the spool (2) into the valve body (1).
3. Install a new seal (12) and new snap ring (16) into the valve body (1).
4. Install the washer (7), a new spring (3) and the spacer (5) into the valve body (1).
5. Install the end cap (6) and socket head screws (4) onto the valve body (1).
6. Install a new solenoid assembly (10) into the solenoid housing (11).
7. Lubricate a new O-ring (13) with clean hydraulic oil and install it into the solenoid housing (11).
8. Install the solenoid housing (11), socket head screws (8) and lock washers (9) onto the valve body (1).

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1. CORE COVER
2. SEAL
3. VALVE COVER
4. SCREW
5. SCREW
6. SCREW
7. O-RING
8. EVAPORATOR / HEATER CORE
9. EXPANSION VALVE
10. LIQUID TUBE
11. SUCTION TUBE
12. SWITCH
13. TUBES
14. O-RING

Figure 3. EXPANSION VALVE

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