621D Loader
Service Manual
6-42965

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Reprinted

CNH America LLC.
700 State Street
Racine, WI 53404 U.S.A.

Bur 6-44625

Issued August, 2001 Revised July, 2005

TORQUE SPECIFICATIONS - STEEL HYDRAULIC FITTINGS

Tube OD Hose ID	Thread Size	Pound-Inches	Newton metres
37 Degree Flare Fitting			
1/4 inch 6.4 mm	7/16-20	72 to 144	8 to 16
5/16 inch 7.9 mm	1/2-20	96 to 192	11 to 22
3/8 inch 9.5 mm	9/16-18	120 to 300	14 to 34
1/2 inch 12.7 mm	3/4-16	180 to 504	20 to 57
5/8 inch 15.9 mm	7/8-14	300 to 696	34 to 79
Tube OD Hose ID	Thread Size	Pound-Feet	Newton metres
3/4 inch 19.0 mm	1-1/16-12	40 to 80	54 to 108
7/8 inch 22.2 mm	1-3/16-12	60 to 100	81 to 135
1.0 inch 25.4 mm	1-5/16-12	75 to 117	102 to 158
1-1/4 inch 31.8 mm	1-5/8-12	125 to 165	169 to 223
1-1/2 inch 38.1 mm	1-7/8-12	210 to 250	285 to 338

Tube OD Hose ID	Thread Size	Pound-Inches	Newton metres
Straight Threads with O-ring			
1/4 inch 6.4 mm	7/16-20	144 to 228	16 to 26
5/16 inch 7.9 mm	1/2-20	192 to 300	22 to 34
3/8 inch 9.5 mm	9/16-18	300 to 480	34 to 54
1/2 inch 12.7 mm	3/4-16	540 to 804	57 to 91
Tube OD Hose ID	Thread Size	Pound-Feet	Newton metres
5/8 inch 15.9 mm	7/8-14	58 to 92	79 to 124
3/4 inch 19.0 mm	1-1/16-12	80 to 128	108 to 174
7/8 inch 22.2 mm	1-3/16-12	100 to 160	136 to 216
1.0 inch 25.4 mm	1-5/16-12	117 to 187	159 to 253
1-1/4 inch 31.8 mm	1-5/8-12	165 to 264	224 to 357
1-1/2 inch 38.1 mm	1-7/8-12	250 to 400	339 to 542

Split Flange Mounting Bolts		
Size	Pound-Inches	Newton metres
5/16-18	180 to 240	20 to 27
3/8-16	240 to 300	27 to 34
7/16-14	420 to 540	47 to 61
Size	Pound-Feet	Newton metres
1/2-13	55 to 65	74 to 88
5/8-11	140 to 150	190 to 203

Section

1003

METRIC CONVERSION CHART

CNH AMERICA LLC
700 State Street
Racine, WI 53404 U.S.A.

Bur 7-52950

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June, 1997

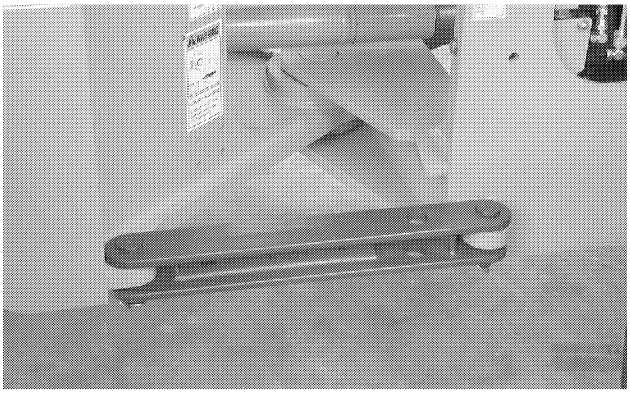
ENGINE

Removal

STEP 1

Park machine on a level surface and lower bucket to ground. Stop engine. Actuate brake pedal several times to discharge brake accumulators. Put key switch in ON position and move loader control lever back and forth at least 30 times to release any pressure from hydraulic circuit. Put key switch in OFF position.

STEP 2



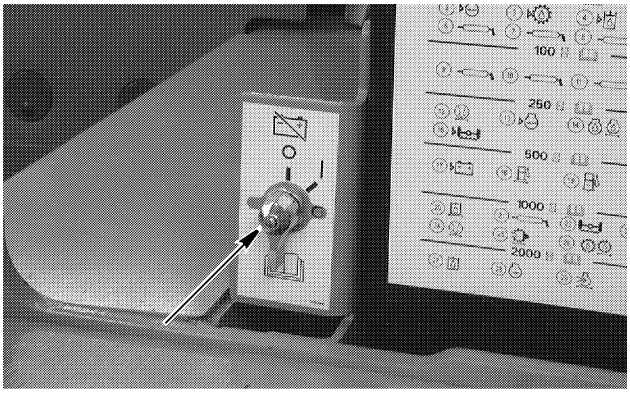
BD01F143

Put articulation lock in LOCKED position.

STEP 3

Slowly loosen the filler cap for hydraulic reservoir to release air pressure in hydraulic reservoir.

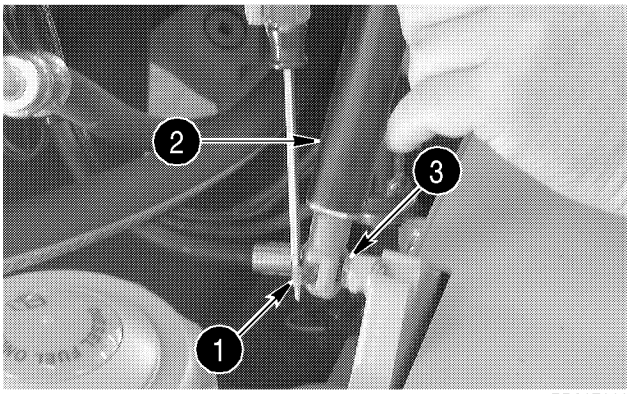
STEP 4



BD01F258

Open and raise hood. Put master disconnect switch in OFF position.

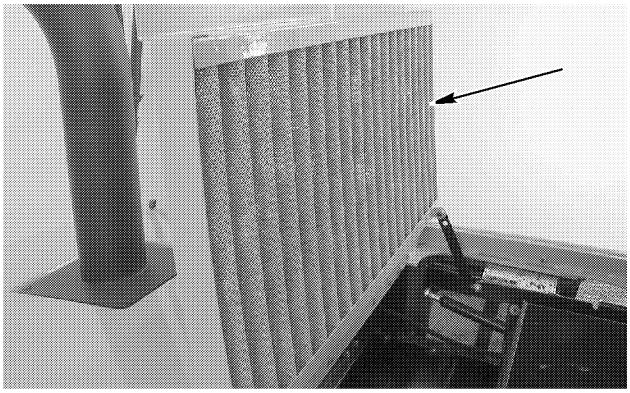
STEP 5



BD01F144

Using a flat blade screwdriver or other suitable tool, disengage bottom clip (1) from hood prop (2) and pull bottom of prop from stud (3). Repeat to remove top of prop from hood; remove prop then close hood.

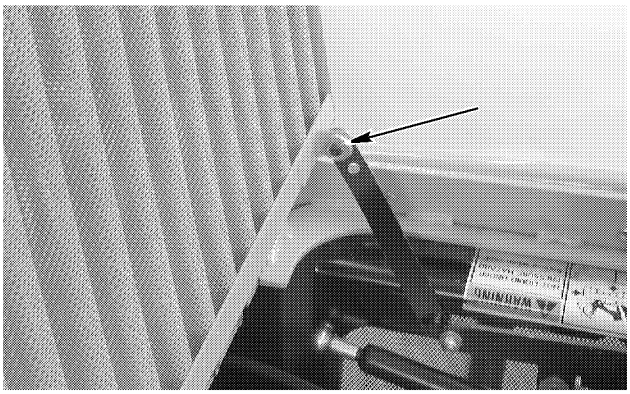
STEP 6



BD01F145

Open screen.

STEP 7



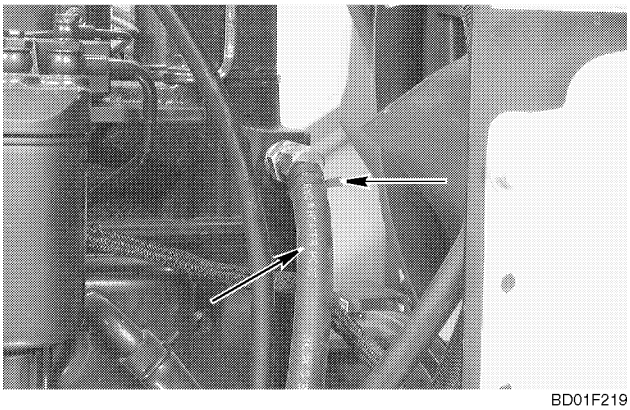
BD01F146

Remove cotter pin and three washers.

STEP 59

If equipped, disconnect ether start tube from intake manifold.

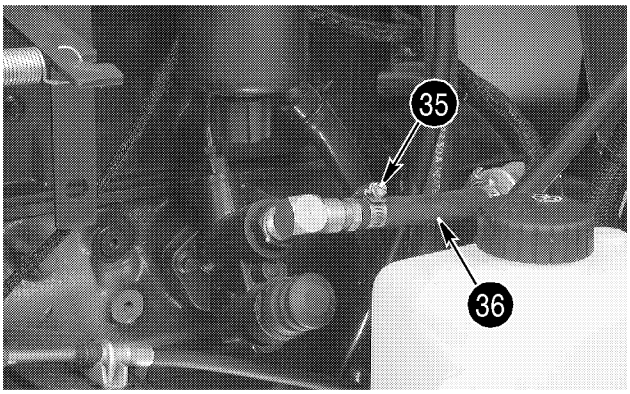
STEP 60



BD01F219

Expand clamp and disconnect heater hose from fitting. Plug heater hose and cap fitting.

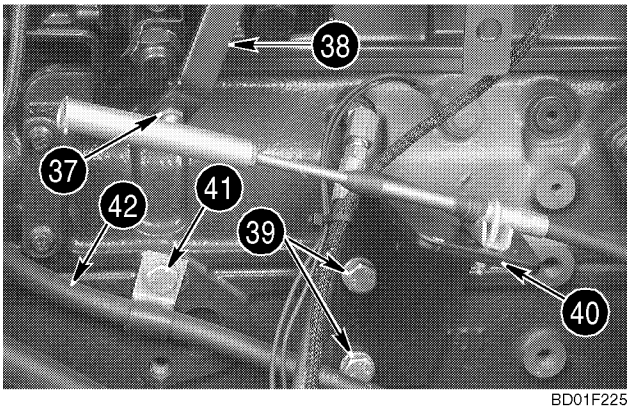
STEP 61



BD01F217

Loosen clamp (35). Tag and disconnect fuel supply hose (36) from primer pump. Plug hose and cap fitting to prevent intrusion of foreign matter into fuel system.

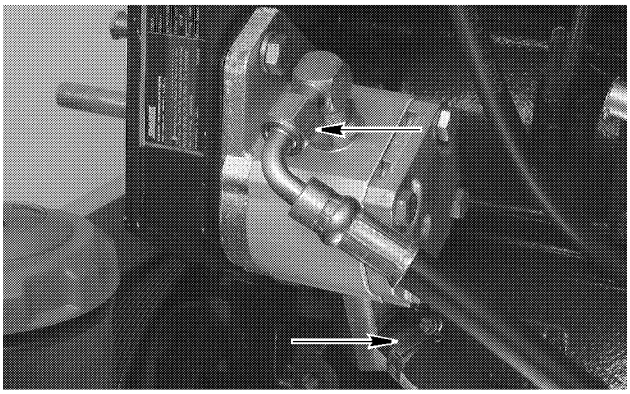
STEP 62



BD01F225

Remove nut and washer securing ball joint (37) to throttle lever (38). Remove two bolts (39) and washers securing throttle bracket (40) to engine. Move throttle bracket with throttle cable and ball joint attached away from engine. Remove bolt (41) and clamp securing fuel return hose (42).

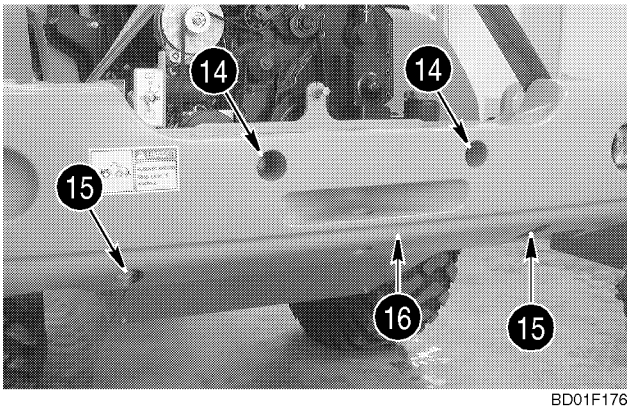
STEP 63



BD01F221

Connect a vacuum pump to hydraulic reservoir. If a vacuum pump is not available, drain the hydraulic oil (hydraulic reservoir holds 68.5 liters (18 gallons) of oil). Turn on vacuum pump (if available). Tag, disconnect, and plug hoses connected to brake pump. Plug hoses securely and cap fittings. Turn off vacuum pump.

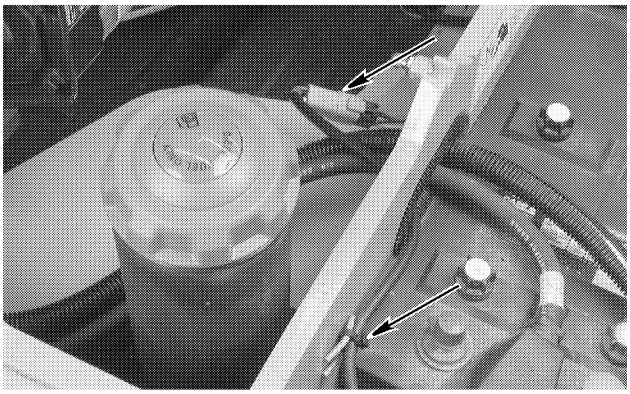
STEP 108



BD01F176

Install two nuts (14) and washers and two bolts (15), washers, and nuts. Tighten nuts to a torque of 693 to 780 Nm (510 to 575 lb-ft). Tighten bolts to a torque of 955 to 1075 Nm (704 to 793 lb-ft). Disconnect lifting equipment from counterweight (16).

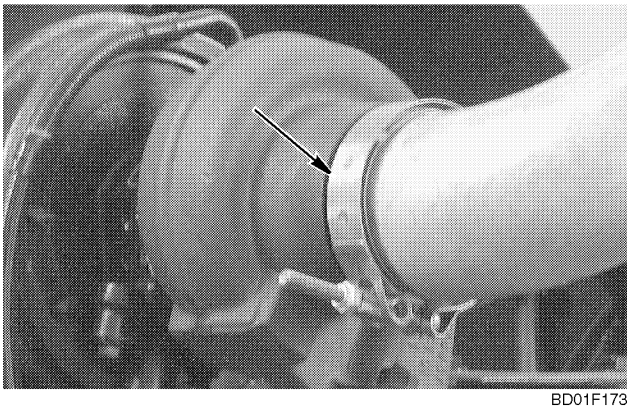
STEP 109



BD01F174

Connect rear chassis wiring harness connector to combination lamp connector following tag installed during removal. Install new tie strap to secure RH rear combination lamp wire. Remove and discard tags. Repeat this step for LH rear combination lamp.

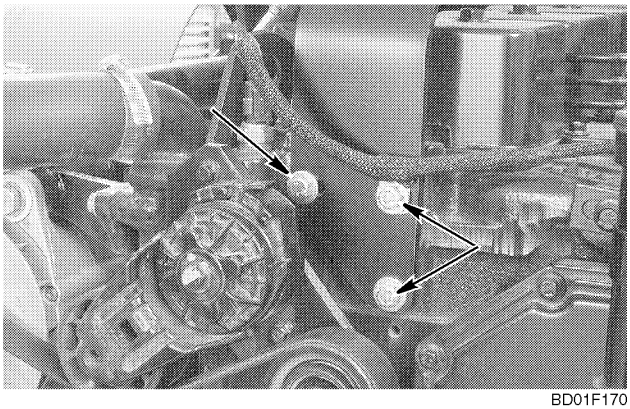
STEP 110



BD01F173

Position tube on turbocharger. Do not tighten clamp at this time.

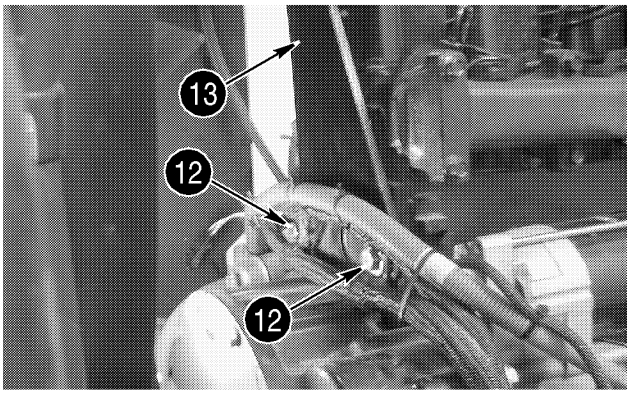
STEP 111



BD01F170

Install and support muffler and brackets on engine while connecting muffler to tube installed in Step 110. Install three washers and bolts at rear of engine finger tight.

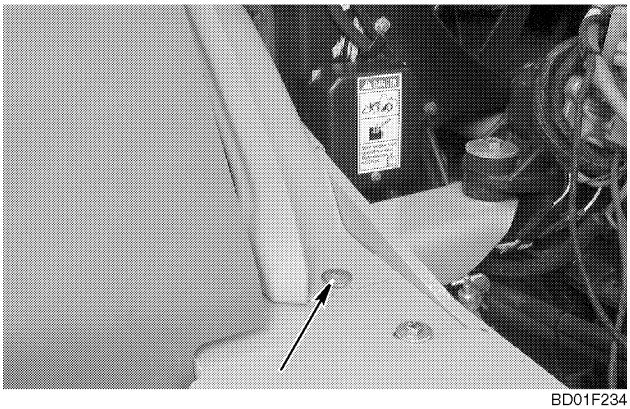
STEP 112



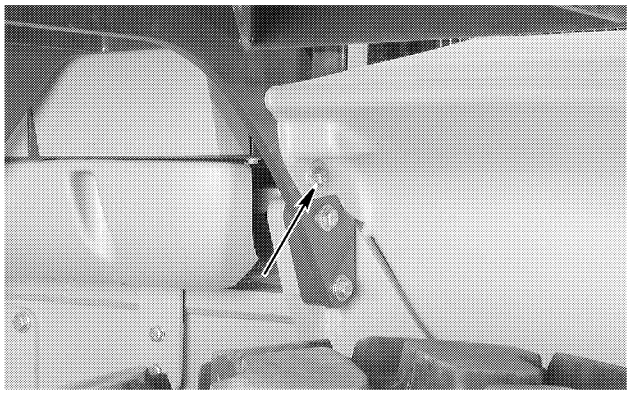
BD01F232

At front of engine, position wiring harness clamps on muffler mounting bracket (13). Secure clamps and muffler mounting bracket using two washers and bolts (12). Tighten bolts to a torque of 118 to 133 Nm (87 to 98 lb-ft). Tighten the three rear bolts installed in Step 111 to a torque of 34 to 39 Nm (25 to 28 lb-ft).

STEP 167



BD01F234



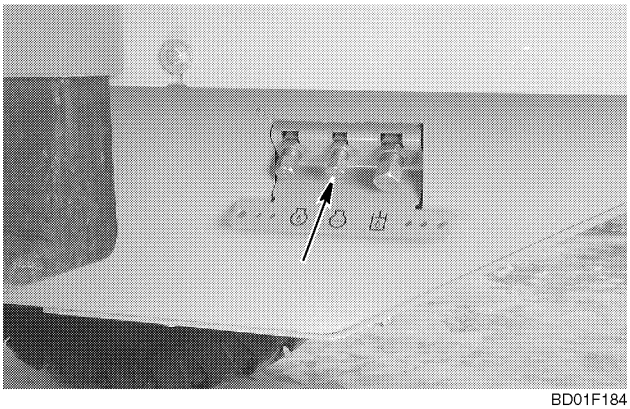
BD01F235

Install LH fender and secure using two washers and bolts.

STEP 168

Install the hood (Steps 122 through 134).

STEP 169



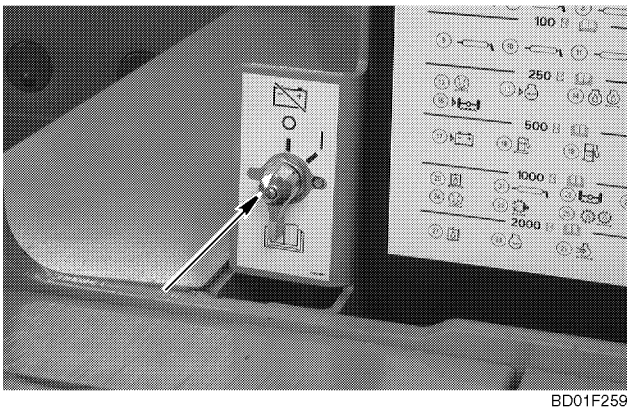
BD01F184

Check that coolant drain cap is tight.

STEP 170

Fill engine coolant system with a solution of 50% Ethylene Glycol and 50% water. Cooling system capacity is 36 liters (38 quarts). Install the radiator cap. Fill the coolant reservoir up to the FULL mark on the reservoir.

STEP 171



BD01F259

Put master disconnect switch in ON position.

STEP 172

Start engine and run the engine at low idle. Run the engine at operating temperature for approximately five minutes to completely mix the Ethylene Glycol and water. When the coolant is at operating temperature, stop the engine. When engine has cooled, check the coolant level at the reservoir.

WARNING: *Hot coolant can spray out if radiator cap is removed. To remove radiator cap: Let system cool, turn to first notch, then wait until all pressure is released. Scalding can result from fast removal of radiator cap.*

STEP 173

Lower and close hood.

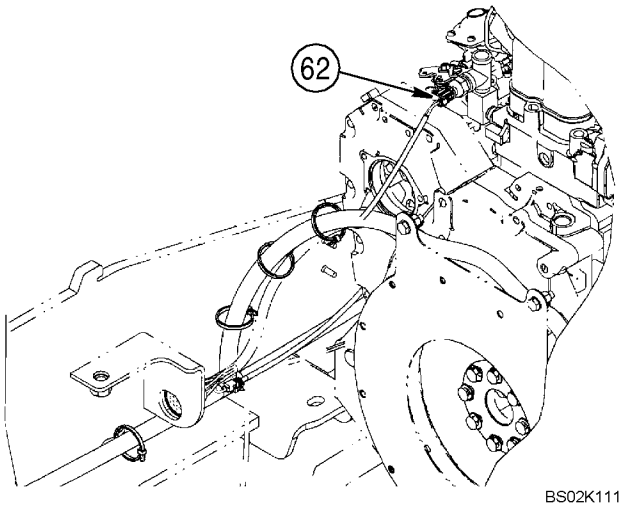
STEP 174

Put articulation lock in OPERATING position.

STEP 38

Remove nut (60) and washer securing five ground wires of rear chassis harness and three ground wires of engine harness to stud (61). Identify, tag, and disconnect ground wires from stud.

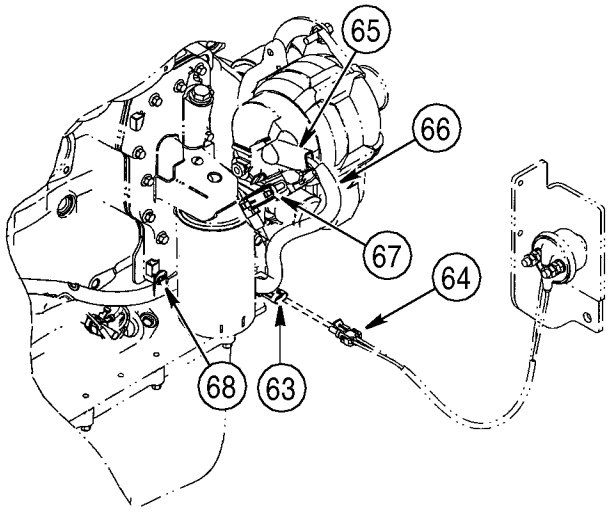
STEP 39



62. CONNECTOR

Identify, tag, and disconnect rear chassis harness connector (62) from grid heater temperature switch.

STEP 40



63. CONNECTOR	66. WIRE
64. CONNECTOR	67. CONNECTOR
65. BOOT	68. BOLT

Identify, tag, and disconnect engine harness connector (63) from disconnect harness connector (64).

STEP 41

Pull boot (65) away from alternator stud. Identify, tag, and disconnect engine harness wire (66) from stud.

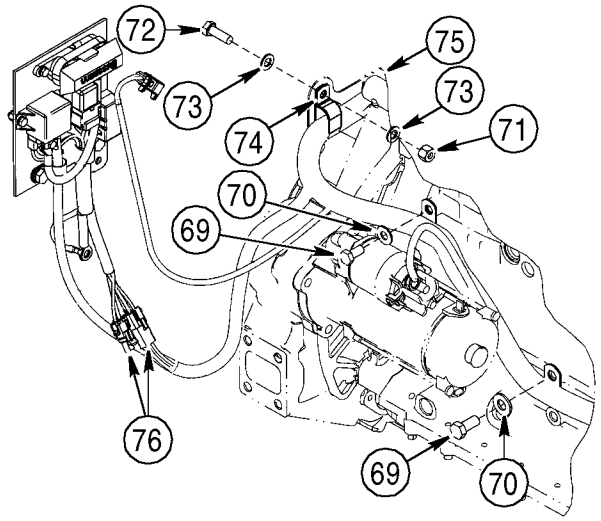
STEP 42

Identify, tag, and disconnect two connectors (67).

STEP 43

Remove bolt (68) and washer securing engine harness clamp to engine.

STEP 44



69. BOLT	73. WASHER
70. WASHER	74. CLAMP
71. NUT	75. FLYWHEEL HOUSING COVER
72. BOLT	76. CONNECTOR

Remove two bolts (69) and washers (70) securing clamps of engine harness and rear chassis harness to engine block. Top harness is rear chassis harness; bottom harness is engine harness.

STEP 45

Remove two nuts (71) and bolts (72) and four washers (73) securing two clamps (74) to flywheel housing cover (75).

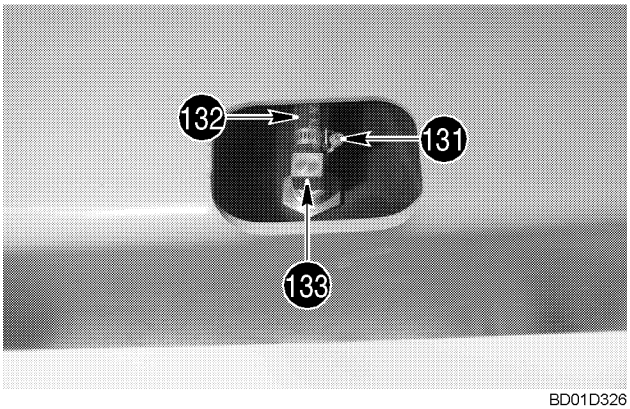
STEP 46

Route engine harness and rear chassis harness to front of engine and away from flywheel housing cover. Remove any hardware securing harness clamps to engine as necessary.

STEP 47

If necessary, identify, tag, and disconnect four connectors (76).

STEP 95

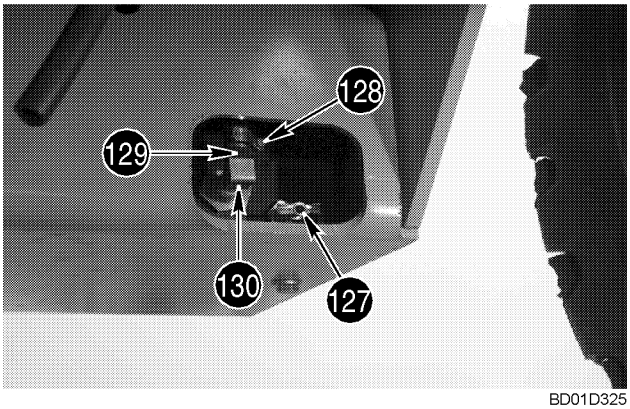


BD01D326

131.CLAMP
132.FUEL SUPPLY HOSE
133.FITTING

Route fuel supply hose (132) down from engine to fuel tank. Remove plug from fuel supply hose and cap from fuel tank fitting (133). Put clamp (131) on hose (132). Connect fuel supply hose and tighten clamp to a torque of 3.4 Nm (30 lb-inch).

STEP 96

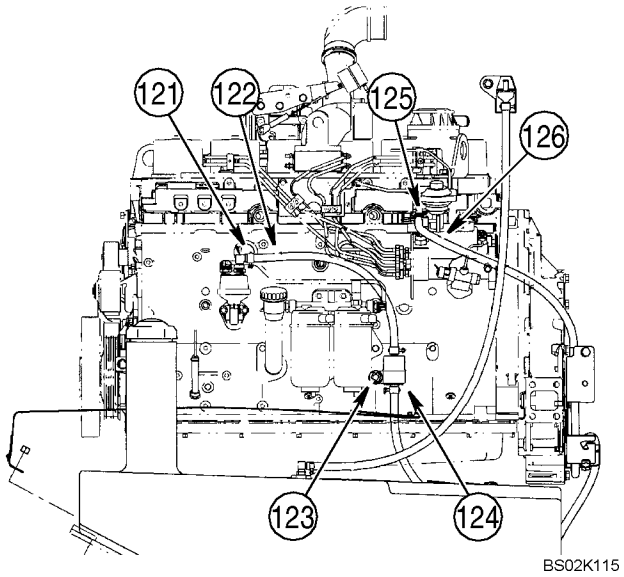


BD01D325

127.DRAIN VALVE
128.CLAMP
129.FUEL RETURN HOSE
130.FITTING

Have an assistant route fuel return hose over to fitting (130). Remove plug from hose and cap from fitting. Put clamp (128) on fuel return hose. Connect hose to fitting (130) and tighten clamp to a torque of 3.4 Nm (30 lb-inch). Check that drain valve (128) is closed.

STEP 97

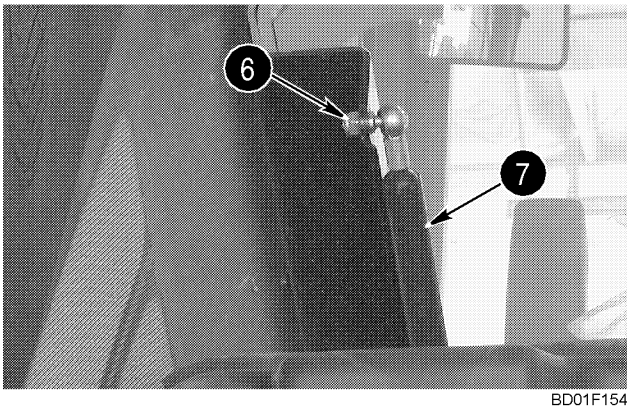


BS02K115

121.CLAMP
122.FUEL SUPPLY HOSE
123.BOLT
124.CLAMP
125.CLAMP
126.FUEL RETURN HOSE

Put clamp (125) on fuel return hose (126). Remove plug from fuel return hose (126) and cap from fuel injection pump fitting. Connect fuel return hose to fuel injection pump and tighten clamp (125) to a torque of 3.4 Nm (30 lb-inch). Position clamp (124) holding in-line fuel filter and secure to engine block using washer and bolt (123). Put clamp (121) on fuel supply hose (122). Remove plug from fuel supply hose (122) and cap from priming pump fitting. Connect fuel supply hose to priming pump and tighten clamp (121) to a torque of 3.4 Nm (30 lb-inch).

STEP 150

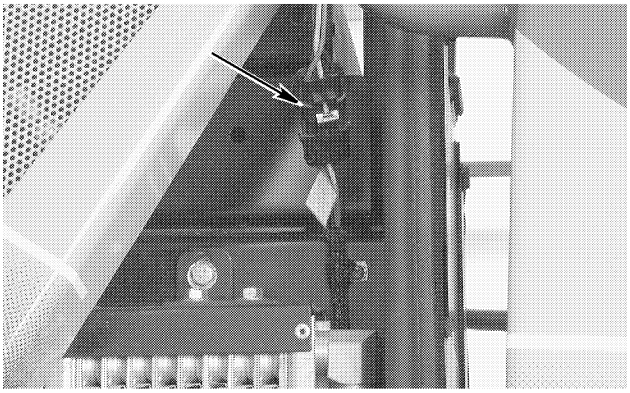


BD01F154

6. LOCK NUT 7. SPRING

Connect springs (7) to hood; it may be necessary to raise hood to connect springs. Install lock nuts (6) to secure LH and RH springs to hood.

STEP 151



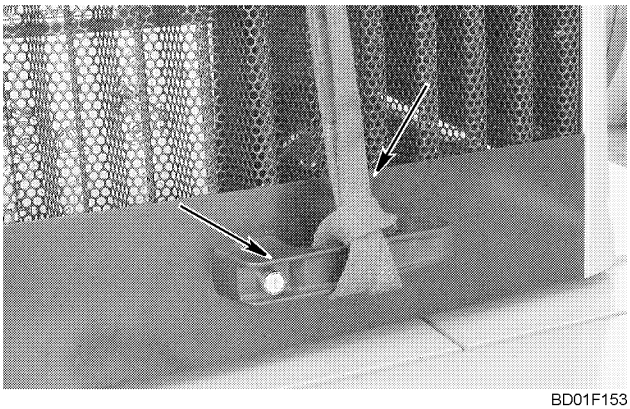
BD01F155

At front RH side of hood, connect hood wiring harness connector to rear chassis wiring harness connector following tag installed during removal. Remove and discard tag.

STEP 152

Lower hood.

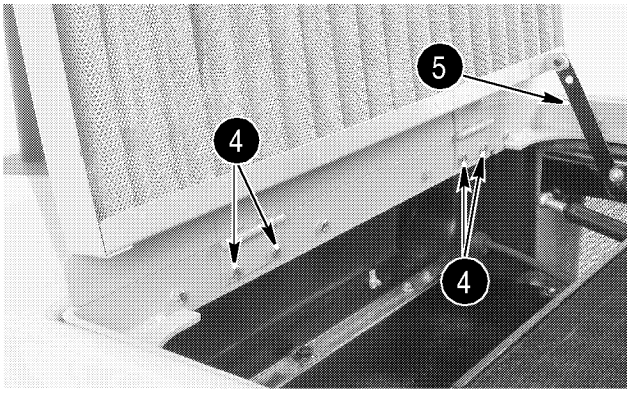
STEP 153



BD01F153

Disconnect lifting strap from hood handle.

STEP 154

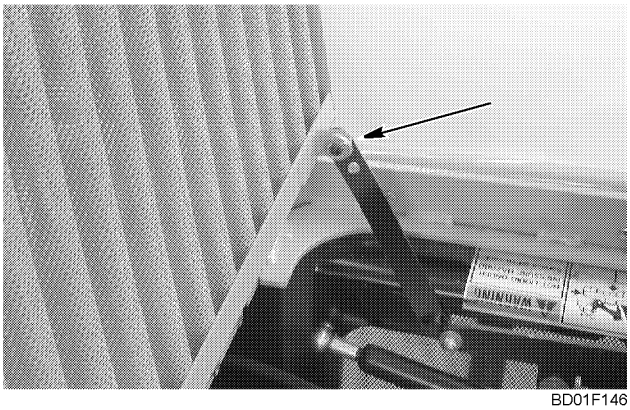


BD01F148

4. BOLT 5. PROP BAR

Position screen on hood. Install four bolts (4) to secure hinges of screen to hood. Tighten bolts to a torque of 27 to 33 Nm (19.8 to 24.4 lb-ft). Connect prop bar (5) to screen.

STEP 155



BD01F146

Install three washers and cotter pin.

SPECIFICATIONS

Low idle .....980 to 1020 rpm
Full throttle (no load).....2220 to 2280 rpm
Temperature of the torque converter oil.....82° to 104° C (180° to 220° F)
Temperature of the hydraulic oil.....51° to 79°C (125° to 175°F)

Stall Speeds

Torque converter.....1940 to 2180 rpm
Hydraulic system .....1715 to 2215 rpm
Torque converter and hydraulic system together.....1380 to 1800 rpm

STALL TESTS

During these tests the engine runs at full throttle and works against the torque converter, the hydraulic system, or both the torque converter and the hydraulic system. The results of these tests will show if the cause of poor performance is one or more of the following: (1) engine, (2) torque converter or transmission, and (3) hydraulic system.

Procedure to Heat the Oil

Torque Converter

1. Sit in the seat.
2. Start the engine and run the engine at low idle.
3. To measure the oil temperature with the instrument cluster:
   A. Press the program switch.
   B. Press the up count switch to function 007.
   C. Return the program switch to the OFF (center) position.
4. Place the declutch switch in the OFF position.
5. Place the automatic switch in the manual mode position.
6. Release the parking brake.
7. Move the transmission control lever to Forward and turn the transmission control lever to 3rd gear.
8. Increase the engine speed to full throttle and run the engine at this speed until the instrument cluster shows a temperature of 115°C (239°F).
9. Decrease the engine speed to low idle and move the transmission control lever to the Neutral position.
10. Wait and allow the converter temperature to cool to 90°C (194°F).
11. Repeat steps 4 through 9 (approximately three times) until the temperature of the torque converter oil is 82° to 104°C (180° to 220°F).

Hydraulic System

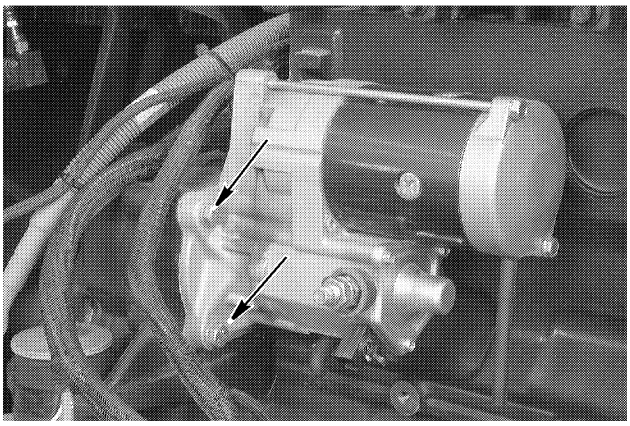
1. Apply the parking brake.
2. Start the engine and run at full throttle.
3. Hold the bucket control lever in the ROLLBACK position and hold the lift control lever in the FLOAT position.
4. View the oil temperature by pressing the program switch, then press the up count switch to function 008. Return the program switch to the center (OFF) position.
5. Continue holding until the temperature of the hydraulic oil is 51° to 79°C (125° to 175°F).

Test No. 1 - Torque Converter and Hydraulic Stall Together

1. Sit in the seat.
2. Start the engine and run the engine at low idle.
3. Press the brake pedal, and shift into Forward.
4. Make sure the parking brake is released (OFF).
5. Run engine at low idle. Push the clutch cutout switch to OFF. Put the transmission in manual mode. Push down and hold the brake pedal for the remainder of this procedure.
6. Make sure that the transmission is in Forward and turn the transmission control lever to third gear.
7. Increase the engine speed to full throttle.
8. Hold the bucket control lever in the ROLLBACK position and raise the lift arms. The stall speed must be read while the lift arms are in motion.

Installation

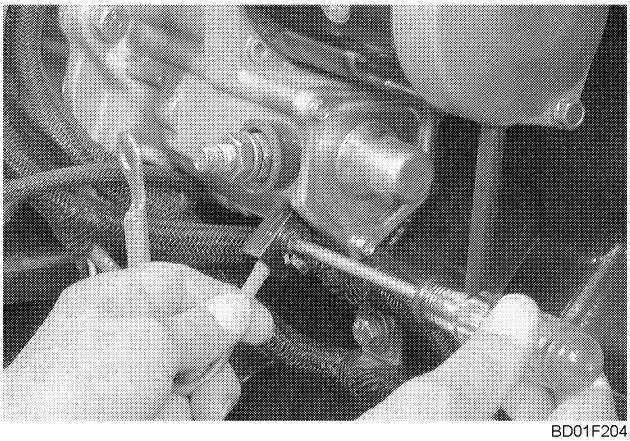
STEP 9



BD01F208

Position and support starter on engine and install three bolts to secure starter to engine flywheel housing. Tighten three bolts to a torque of 41 to 74 Nm (30 to 54 lb-ft).

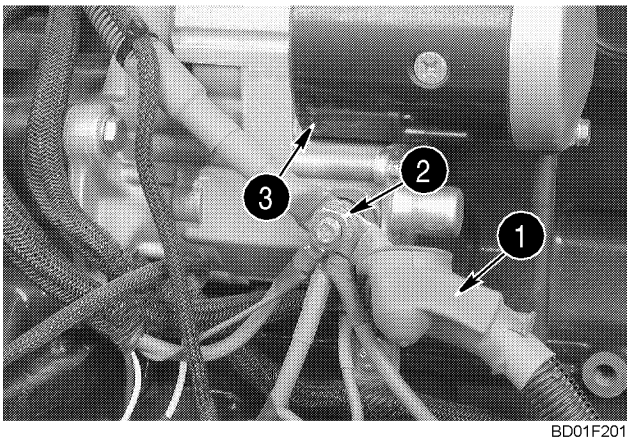
STEP 10



BD01F204

Install solenoid wire and screw on starter. Tighten screw to a torque of 2.6 to 4.6 Nm (2 to 3.4 lb-ft).

STEP 11



BD01F201

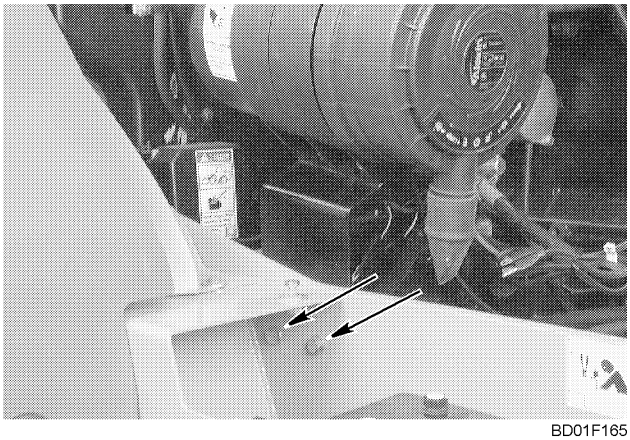
1. COVER 2. NUT 3. STARTER

A. Install positive cables and nut (2) on starter (3).

B. Tighten nut (2) to a torque of 22.5 to 29.4 Nm (17 to 22 lb-ft).

C. Place boot (1) in position over nut (2).

STEP 12



BD01F165

Put air cleaner in position and install bolts.

4002

Section 4002

ELECTRICAL SPECIFICATIONS AND TROUBLESHOOTING

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

CASE CANADA CORPORATION
3350 South Service Road
Burlington, ON L7N 3M6 CANADA

Bur 6-40782

Printed in U.S.A.
March, 2001 (Revised June, 2002)

Wire Identification Codes

21C Bk - 1.0

- 21C — Wire Name
- Bk — Wire Color
- 1.0 — Wire Size (mm^2)

Wire Size (mm^2)	0.8 mm	1.0 mm	2.0 mm	5.0 mm

Wire Color				
Bk = Black	DU = Dark Blue	S = Gray	LG = Light Green	K = Pink
T = Tan	W = White	N = Brown	G = Green	U = Blue
LU = Light Blue	Or = Orange	R = Red	P = Purple	Y = Yellow

Wire Identification			From Connector		To Connector	
Wire	**Circuit**	**Color, Size, and Material**	**Connector**	**Cavity**	**Connector**	**Cavity**
0_DAU	Analog Ground	Bk-0.8-SXL	22F Cab Transmission	30	13F Cab-Pedestal	8
0_DAV	Diag TECM Grnd	Bk-0.8-SXL	108F Diagnostic Connector	3	221F Ground Cab	1
0_DAW	Ground	Bk-1.0-SXL	42F Beacon Sw	7	118F Back-up Alarm Dis Sw	7
0_DAX	Beacon Wiper Diode Grnd	Bk-0.8-SXL	206F Cab Floor Weld Stud	1	140M Diode Module	C
0_DAY	Switch Grnd	Bk-1.0-SXL	210F Fan Reverser Sw	7	SPL_D13 Ground	1
0_DB	Can Pilot Sol Grnd	Bk-0.8-SXL	89M Pilot Pres Sol	B	219F Ground Cab	1
0_DC	Relay Grnd	Bk-0.8-SXL	52F Ether Start Relay	85	49F Accessory Relay	85
0_DD	Ride Cntrl Relay Sink	Bk-0.8-SXL	19F TECM	57	50F Ride Control Relay	85
0_DE	Relay Grnd	Bk-0.8-SXL	48F Ignition Relay #2	85	47F Ignition Relay #1	85
0_DF	Relay Grnd	Bk-0.8-SXL	49F Accessory Relay	85	48F Ignition Relay #2	85
0_DG	Relay Grnd	Bk-0.8-SXL	52F Ether Start Relay	85	58F Volt Meter Relay	85
0_DH	Relay Grnd	Bk-0.8-SXL	58F Volt Meter Relay	85	54F Neutral Start Relay	85
0_DJ	Relay Grnd	Bk-0.8-SXL	54F Neutral Start Relay	85	222F Ground Cab	1
0_DK	AC Brk Lt Time Del Horn Grnd	Bk-0.8-SXL	203F Relay AC	85	204F Relay Brake Lights	85
0_DL	Signal Ground	Bk-0.8-SXL	22F Cab-Transmission	23	13F Cab-Pedestal	39
0_DM	Speed Sensor Grounds	Bk-0.8-SXL	19F TECM	3	22F Cab Transmission	11
0_DN	Out Speed Sensor Grnd	Bk-0.8-SXL	19F TECM	4	22F Cab Transmission	28
0_DP	Diag TECM Grnd	Bk-0.8-SXL	19F TECM	1	221F Ground Cab	1
0_DQ	Diag TECM Grnd	Bk-0.8-SXL	19F TECM	2	221F Ground Cab	1
0_DR	Dome Court Work Lt Grnd	Bk-1.0-SXL	24M Cab Roof	E	223F Ground Cab	1
0_DS	Dome Court Work Lt Grnd	Bk-1.0-SXL	24M Cab Roof	G	223F Ground Cab	1
0_DT	Dome Court Work Lt Grnd	Bk-1.0-SXL	23F Cab Roof	B	223F Ground Cab	1
0_DU	Beacon Wiper Diode Grnd	Bk-1.0-SXL	23F Cab Roof	C	206F Cab Floor Weld Stud	1
0_DV	Beacon Wiper Diode Grnd	Bk-0.8-SXL	206F Cab Floor Weld Stud	1	13F Cab-Pedestal	61
0_DW	Ground	Bk-0.8-SXL	45F Rear Wiper Sw	7	118F Back-up Alarm Dis Sw	7
0_DX	Horn Ground	Bk-0.8-SXL	13F Cab-Pedestal	41	220F Ground Cab	1
0_DY	Blwr Wiper Seat Grnd	Bk-1.0-SXL	28M Seat Comp Motor	B	218F Ground Cab	1
0_DZ	Blwr Wiper Seat Grnd	Bk-2.0-SXL	29M Blower Motor	4	218F Ground Cab	1
0_E	Fuel Redundant Br Cool Grnd	Bk-1.0-SXL	160 Engine Grounds	1	171 Fuel Sender Grnd	1
0_F	Frt Rear Wash Hot Grnd	Bk-1.0-SXL	162 Engine Ground	1	3 Rear Washer	2

Wire Identification Codes

21C Bk - 1.0

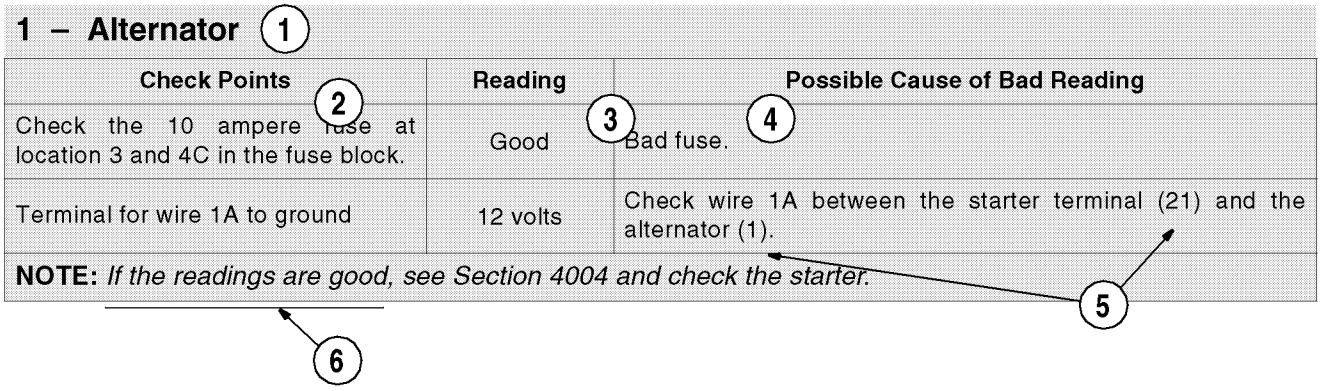
- 21C — Wire Name
- Bk — Wire Color
- 1.0 — Wire Size (mm^2)

Wire Size (mm^2)	0.8 mm	1.0 mm	2.0 mm	5.0 mm

Wire Color				
Bk = Black	DU = Dark Blue	S = Gray	LG = Light Green	K = Pink
T = Tan	W = White	N = Brown	G = Green	U = Blue
LU = Light Blue	Or = Orange	R = Red	P = Purple	Y = Yellow

Wire Identification			From Connector		To Connector	
Wire	**Circuit**	**Color, Size, and Material**	**Connector**	**Cavity**	**Connector**	**Cavity**
25S	Output Sw Power VPS1	LU-0.8-TXL	22M Cab-Transmission	22	102 Trans Control	7
25S_A	Output Sw Power VPS1	LU-0.8-SXL	22F Cab-Transmission	22	SPL_D12 Common Power	1
25S_B	Output Sw Power VPS1	LU-0.8-SXL	19F TECM	12	SPL_D12 Common Power	1
25S_C	Output Sw Power VPS1	LU-0.8-SXL	19F TECM	13	SPL_D12 Common Power	1
25T_A	Neutral Signal	LU-0.8-SXL	92 Ether Switch	1	70 Transmission Shifter	D
25T_B	Neutral Signal	LU-0.8-SXL	13M Pedestal-Cab	46	92 Ether Switch	1
25T_C	Neutral Signal	LU-0.8-SXL	13F Cab-Pedestal	46	SPL_D18 Neutral Signal	1
25T_D	Neutral Signal	LU-0.8-SXL	19F TECM	67	SPL_D18 Neutral Signal	1
25T_E	Neutral Signal	LU-0.8-SXL	54F Neutral Start Relay	86	SPL_D18 Neutral Signal	1
25W	3rd And 4th Gear Signal	LU-0.8-SXL	13M Pedestal-Cab	48	183 Transmission Shifter	B
25W_A	3rd And 4th Gear Signal	LU-0.8-SXL	19F TECM	65	13F Cab-Pedestal	48
25Y	Trans Kickdown Signal	LU-0.8-SXL	13M Pedestal-Cab	50	183 Transmission Shifter	D
25Y_A	Trans Kickdown Signal	LU-0.8-SXL	13F Cab-Pedestal	50	SPL_D11 Trans Kick Down Signal	1
25Y_B	Trans Kickdown Sig	LU-0.8-SXL	19F TECM	22	SPL_D11 Trans Kick Down Signal	1
25Y_C	Trans Kickdown Signal	LU-0.8-SXL	20M Trans Kick-Down	2	SPL_D11 Trans Kick Down Signal	1
25Z	1st And 4th Gear Signal	LU-0.8-SXL	13M Pedestal-Cab	49	183 Transmission Shifter	C
25Z_A	1st And 4th Gear Signal	LU-0.8-SXL	19F TECM	63	13F Cab-Pedestal	49
26E	Trans Enable Signal	LU-0.8-SXL	19F TECM	31	199F Trans Enable Sw	3
26F_A	FNR Forward Signal	LU-0.8-SXL	198 FNR Switch	6	197M FNR-Main Cab	2
26F_B	FNR Forward Signal	LU-0.8-SXL	19F TECM	20	197F Main Cab FNR	2
26J	FNR Switch Jumper	LU-0.8-SXL	198 FNR Switch	2	198 FNR Switch	4
26N_A	FNR Neutral Signal	LU-0.8-SXL	198 FNR Switch	3	197M FNR-Main Cab	3
26N_B	FNR Neutral Signal	LU-0.8-SXL	19F TECM	44	197F Main Cab FNR	3
26R_A	FNR Reverse Signal	LU-0.8-SXL	198 FNR Switch	1	197M FNR-Main Cab	4
26R_B	FNR Reverse Signal	LU-0.8-SXL	19F TECM	30	197F Main Cab FNR	4
28C	Ether Start Control	W-0.8-SXL	13M Pedestal-Cab	52	182 Ether Switch	1
28C_A	Ether Start Control	W-0.8-SXL	52F Ether Start Relay	86	13F Cab-Pedestal	52
28P	Ether Sol	W-1.0-SXL	103 Ether Sol Opt	A	21M Rear-Cab	1
28P_A	Ether Sol	W-0.8-SXL	52F Ether Start Relay	87	21F Cab-Rear	1
28T	Ether Start Temp Sw	W-1.0-SXL	97 Ether Temp Sw	A	65M Eng-Rear (Ether Start)	1

UNDERSTANDING THE TROUBLESHOOTING TABLES



1 – Alternator (1)

Check Points (2)	Reading (3)	Possible Cause of Bad Reading (4)
Check the 10 ampere fuse at location 3 and 4C in the fuse block.	Good	Bad fuse.
Terminal for wire 1A to ground	12 volts	Check wire 1A between the starter terminal (21) and the alternator (1). (5)
NOTE: *If the readings are good, see Section 4004 and check the starter.* (6)		

1. *This title is the number and component name on the Electrical Schematic.*
2. *This column shows the location of the check point.*
3. *This column shows the indication of the check.*
4. *This column shows the possible cause of a bad test indication.*
5. *The numbers in the parentheses show the number of the component on the Electrical Schematic.*
6. *This statement assumes that all other problems are solved at this point in the test.*

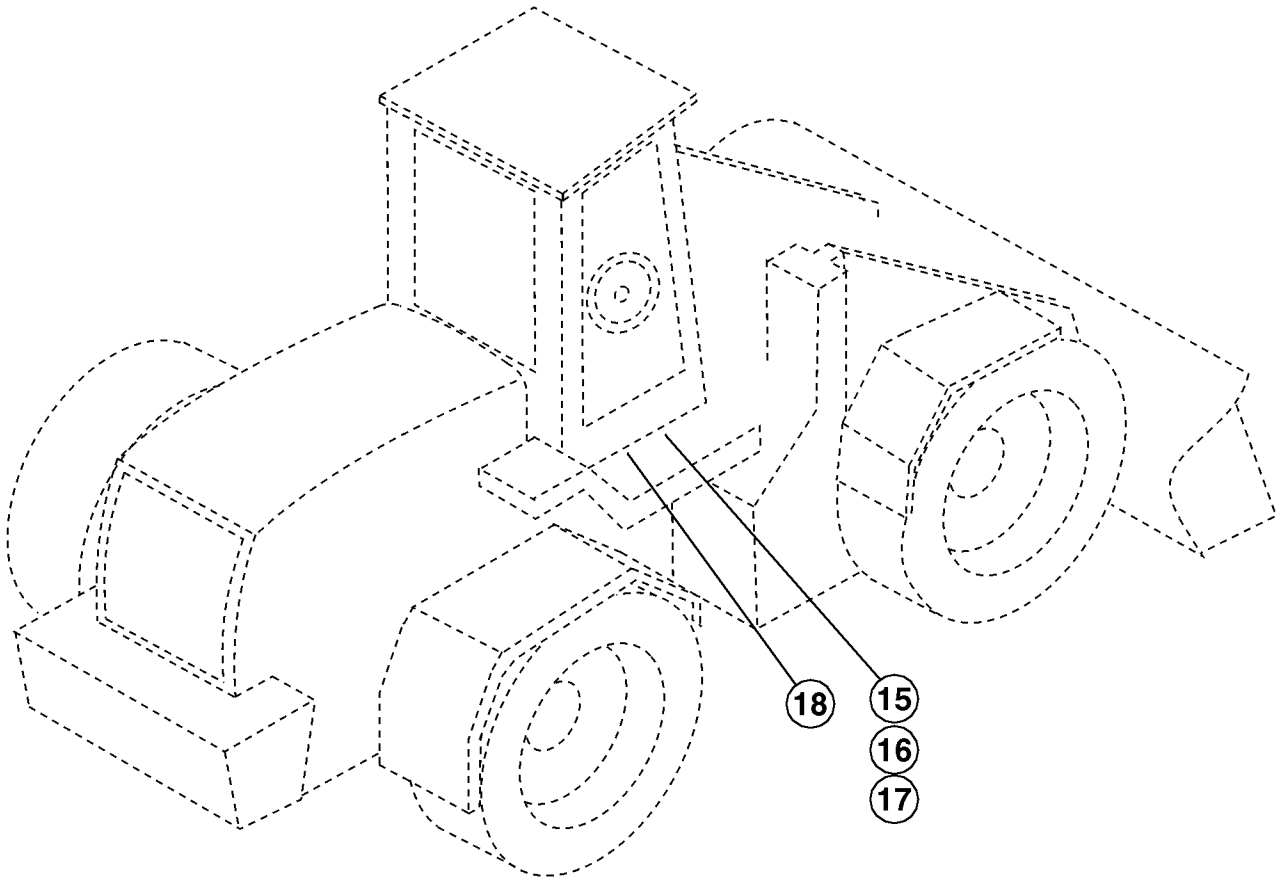
LOCATING COMPONENTS ON THE SCHEMATIC POSTERS

NOTE: *For the System Electrical Schematic refer to the Schematic Posters located at the rear of this manual.*

Components can be located on the Electrical Schematic posters (rear pocket) by item number using the key at the bottom of the posters. Use the following index to find the sheet a component is located on.

COMPONENT	COMPONENT NUMBER	SCHEMATIC SHEET
12 Volt Radio (Option)	95	6
Accessory Relay No. 3	16	1
Air Conditioning High Pressure Switch	87	5
Air Conditioning Low Pressure Switch	86	5
Air Filter Restriction Switch	44	3
Alternator	4	1
Back-up Alarm	37	2
Back-up Alarm Disable Switch	36	2
Back-up Alarm Relay No. 7	35	2
Batteries	1	1
Beacon Switch	99	4
Blower Motor	85	5
Blower Motor Speed Resistors with Thermal Fuse	84	5

TROUBLESHOOTING IGNITION RELAY, ACCESSORY RELAY, VOLTMETER RELAY, AND TIME DELAY MODULE



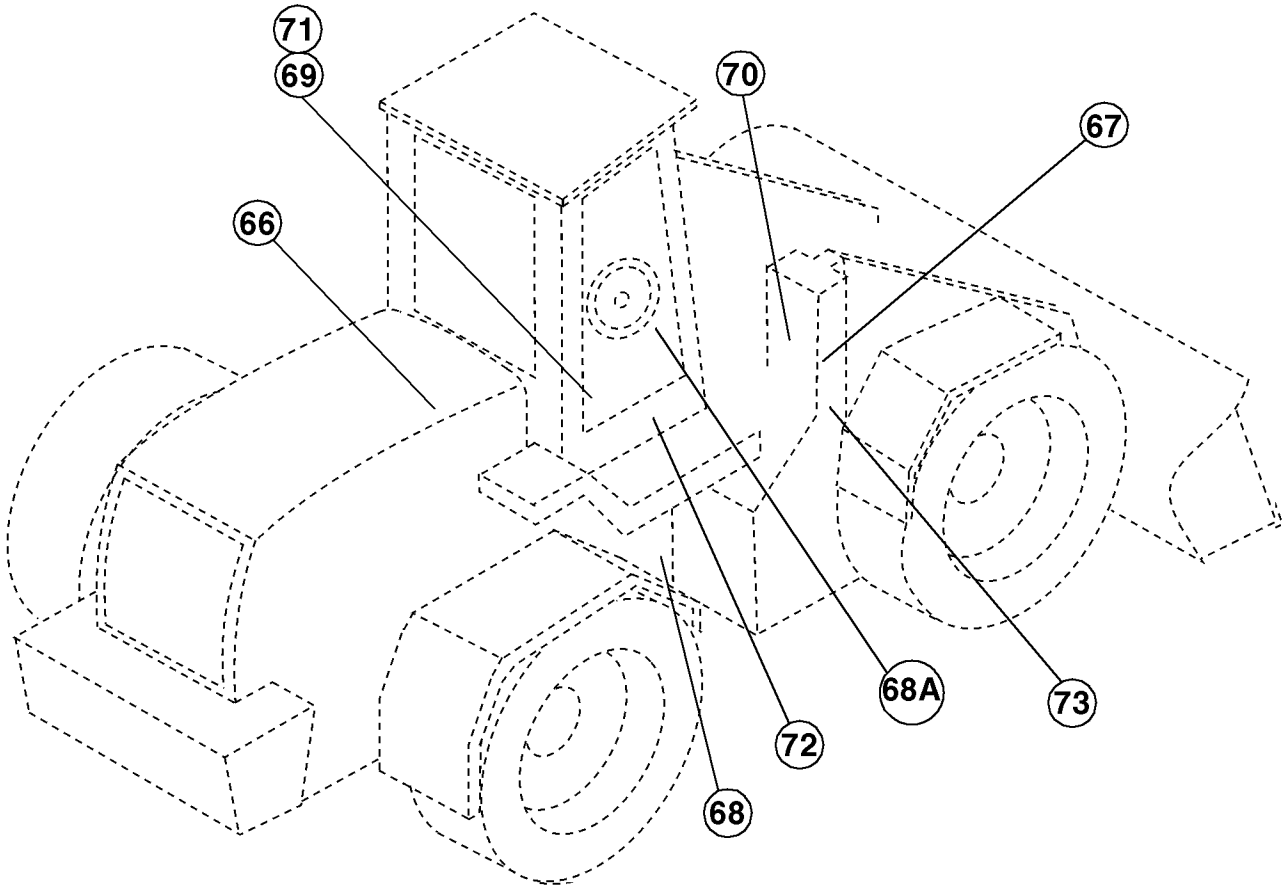
BC00N140

15. IGNITION RELAY NO. 2
16. ACCESSORY RELAY NO. 3
17. VOLTMETER RELAY NO. 12
18. TIME DELAY MODULE

15 – Ignition Relay No. 2		
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. Turn the ignition switch to the ON position.*		
Terminal for wire 1_T to ground	24 volts	Check circuit 1 to B+ stud.
Terminal for wire 13K to ground	24 volts	Check circuit 13K and ignition switch.
Terminal for wire 13R to ground	24 volts	Bad ignition relay No. 2 (15).

47 – Instrument Cluster (Continued)		
NOTE: *Put the blower switch in any position other than OFF and thermostat switch fully clockwise.*		
Connector terminal 10 to ground	24 volts	Check fuse G, blower switch, thermostat switch, and A/C low pressure switch. Also check circuits 61R, 61A, and 61T.
NOTE: *Put the five position rotary lamp switch in position four or five.*		
Connector terminal 12 to ground	24 volts	Check lamp switch and fuse A'. Also check circuits18A and 42R.
NOTE: *Put the rotating beacon switch in the ON position.*		
Connector terminal 13 to ground	24 volts	Check rotating beacon switch and fuse X. Also check circuit 46.
NOTE: *Put the five position rotary lamp switch in position four or five. Put the high/low beam switch in HIGH BEAM position.*		
Connector terminal 15 to ground	24 volts	Check high/low beam switch, high/low beam relay, five position rotary lamp switch, and fuse C'. Also check circuits 18C and 64D and wires 41H and 41J_A.
NOTE: *Put the turn signal switch in the LEFT TURN position.*		
Connector terminal 16 to ground	24 volts on and off every 1-2 seconds	Check fuse B, turn signal switch, and flasher module. Also check wire 19B, circuit 45A to flasher module, and circuit 45L from flasher module to instrument cluster.
NOTE: *Put the turn signal switch in the RIGHT TURN position.*		
Connector terminal 17 to ground	24 volts on and off every 1-2 seconds	Check fuse B, turn signal switch, and flasher module. Also check wire 19B, circuit 45B to flasher module, and circuit 45R from flasher module to instrument cluster.
NOTE: *Put the program/reset switch in the PROGRAM position.*		
Connector terminal 24 to ground	24 volts	Bad program/reset switch. Also check wire 37P and wire 1A_B to ignition switch.
NOTE: *Press and hold the program/reset switch in the RESET position.*		
Connector terminal 25 to ground	24 volts	Bad program/reset switch. Also check wire 37R_B and wire 1A_B to ignition switch.
NOTE: *Press and hold up/down count switch in UP position.*		
Connector terminal 26 to ground	24 volts	Fuse S, or up/down count switch, or time delay module bad. Also check wires 37U and wire 13D from time delay module to fuse S, and circuit 19S.
NOTE: *Press and hold up/down count switch in DOWN position.*		
Connector terminal 27 to ground	24 volts	Fuse S, or up/down count switch, or time delay module bad. Also check wire 37D and wire 13D from time delay module to fuse S, and circuit 19S.

TROUBLESHOOTING SECONDARY STEERING COMPONENTS AND RIDE CONTROL



BC00N140

66. SECONDARY STEERING MODULE (OPTION)
67. SECONDARY STEERING PRESSURE SWITCH (OPTION)
68. SECONDARY STEERING MOTOR (OPTION)
68A. SECONDARY STEERING SOLENOID (OPTION)
69. PIN ENGAGE SWITCH (OPTION)
70. PIN ENGAGE SOLENOID (OPTION)
71. RIDE CONTROL SWITCH
72. RIDE CONTROL RELAY NO. 4
73. RIDE CONTROL SOLENOID

81 – Horn

Check Points	Reading	Possible Cause of Bad Reading
Terminal for wire 0_AD to ground	Continuity	Bad ground circuit.
NOTE: *Disconnect the wire 64 from the horn (81). Have an assistant push and hold the horn switch.*		
Terminal for wire 64 to ground.	24 volts	Check the horn relay (80). Also check wires 64 and 64_A.
NOTE: *If the readings are good replace the horn (81).*		

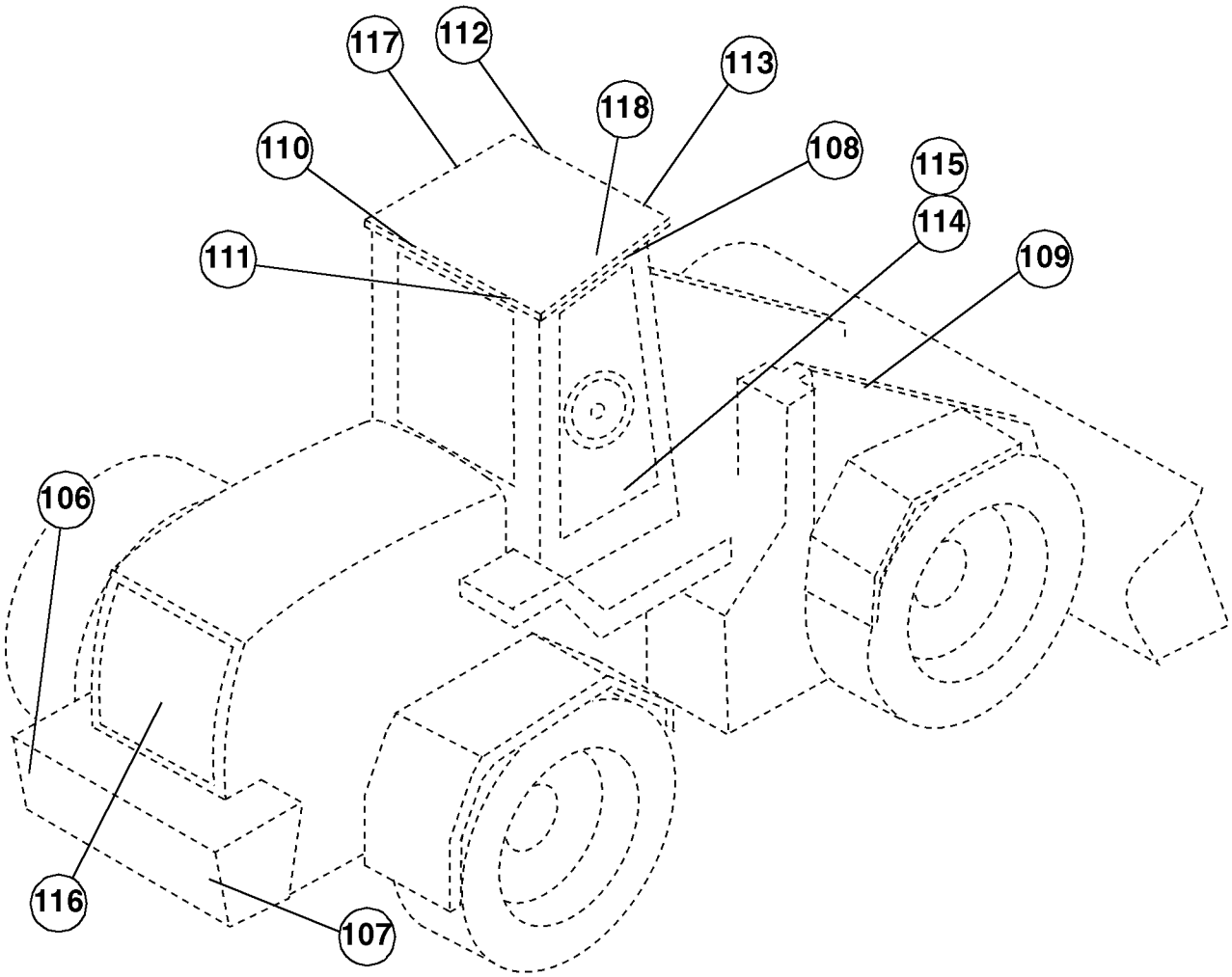
82 – Seat Compressor and Switch (Option)

Check Points	Reading	Possible Cause of Bad Reading
Terminal for wire 0_DY to ground	Continuity	Bad ground circuit.
NOTE: *Put the master disconnect switch and the ignition switch in the ON position.*		
Terminal for wire 19N_A at seat switch	24 volts	Check fuse N and accessory relay (16). Also check wire 19N_A and circuit 12P.
NOTE: *Put the seat compressor (82) switch in the ON position.*		
Terminal for wire from seat switch at compressor	24 volts	Bad seat switch, also check circuit from seat switch to compressor.
NOTE: *If the readings are good replace the seat compressor.*		

83 – Blower Switch

Check Points	Reading	Possible Cause of Bad Reading
NOTE: *Put the master disconnect switch and the ignition switch in the ON position.*		
Terminal for wire 19G to ground	24 volts	Check fuse G and ignition relay No. 2 (15). Also check circuits 19G and 13R.
NOTE: *Turn the blower switch to LOW.*		
Terminal for wire 62L to ground	24 volts	Bad blower switch (83).
Terminal for wire 61T to ground	24 volts	Bad blower switch (83).
NOTE: *Turn the blower switch to MEDIUM.*		
Terminal for wire 62M to ground	24 volts	Bad blower switch (83).
Terminal for wire 61T to ground	24 volts	Bad blower switch (83).
NOTE: *Turn the blower switch to HIGH.*		
Terminal for wire 62H to ground	24 volts	Bad blower switch (83).
Terminal for wire 61T to ground	24 volts	Bad blower switch (83).

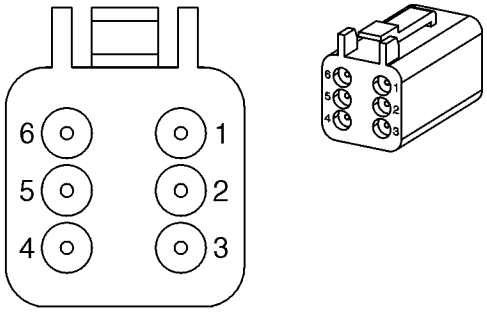
TROUBLESHOOTING EXTERNAL LIGHTS AND SIGNALS, ROTARY LAMP SWITCH, AND CAB LIGHTS



BC00N140

106. LH REAR COMBINATION LAMP
107. RH REAR COMBINATION LAMP
108. LH FRONT COMBINATION LAMP
109. RH FRONT COMBINATION LAMP
110. LH REAR WORK LAMP
111. RH REAR WORK LAMP
112. LH FRONT WORK LAMP
113. RH FRONT WORK LAMP
114. FIVE POSITION ROTARY LAMP SWITCH
115. HIGH/LOW BEAM RELAY NO. 13
116. LICENSE PLATE LAMP
117. DOME LAMP
118. COURTESY LAMP

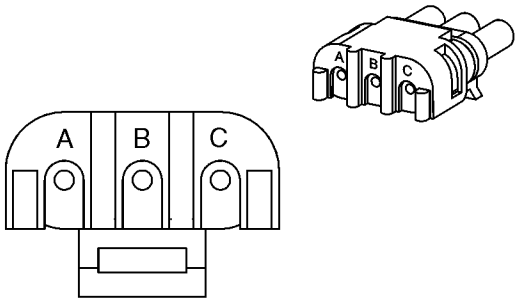
CONNECTOR 8 - RH FRONT COMBINATION LAMP TO FRONT CHASSIS HARNESS



225351C1

CAV	WIRE IDENT	CIRCUIT
1	0_AG Bk-1.0	Lights Ground RH
2	18E Or-1.0	Low Beam RH
3	18C Or-1.0	High Beam RH
4	18G Or-1.0	Position RH
5	45R N-1.0	Right Turn Signal
6		None

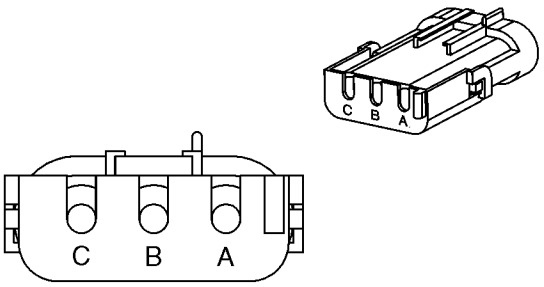
CONNECTOR 10 - HEIGHT CONTROL/RTT PROXIMITY SWITCH TO FRONT CHASSIS HARNESS



245484C1

CAV	WIRE IDENT	CIRCUIT
A	54B W-1.0	Height/RTT Signal
B	0_AA Bk-1.0	Height/RTT Ground
C	56_A W-1.0	Height/RTT Power

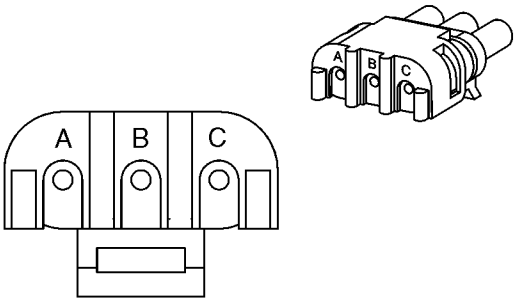
CONNECTOR 12F - RTD HARNESS FOR XT CHASSIS TO FRONT CHASSIS HARNESS



245485C1

CAV	WIRE IDENT	CIRCUIT
A	53B W-1.0	RTD Signal
B	0_AF Bk-1.0	RTD Ground
C	56_B W-1.0	RTD Power

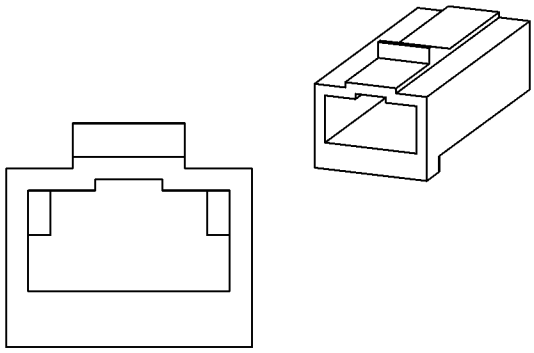
CONNECTOR 12M - RTD HARNESS FOR XT CHASSIS TO FRONT CHASSIS HARNESS



245484C1

CAV	WIRE IDENT	CIRCUIT
A	53B_A W-1.0	RTD Signal
B	0_AM Bk-1.0	RTD Ground
C	56_D W-1.0	RTD Power

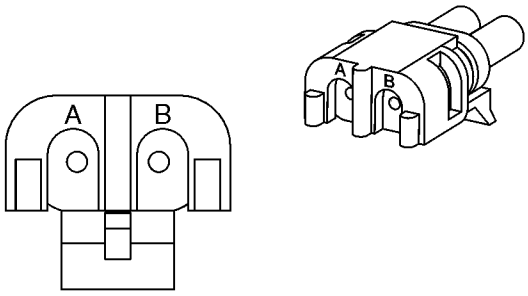
CONNECTOR 25F - FIVE POSITION ROTARY LAMP SWITCH TO CAB MAIN HARNESS



631801C1

CAV	WIRE IDENT	CIRCUIT
A	41J_B K-2.0	Driving Light Signal

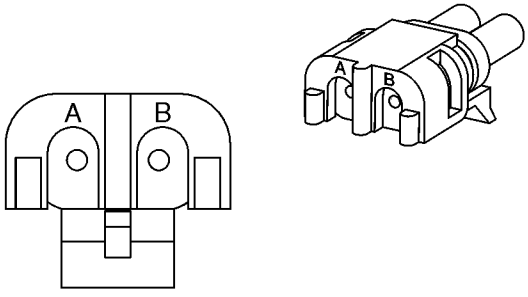
CONNECTOR 27M - AC LOW PRESSURE SWITCH TO CAB MAIN HARNESS



245482C1

CAV	WIRE IDENT	CIRCUIT
A	61R_E Or-0.8	AC Low Pressure Switch
B	61A_E Or-0.8	AC Low Pressure Switch

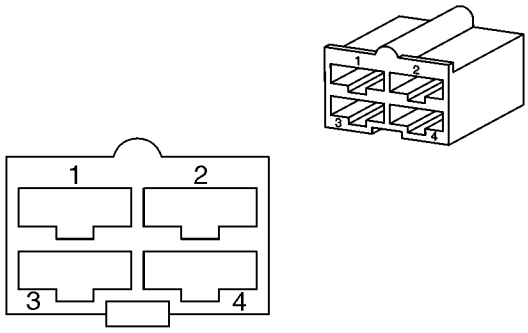
CONNECTOR 28M - SEAT COMPRESSOR MOTOR TO CAB MAIN HARNESS



245482C1

CAV	WIRE IDENT	CIRCUIT
A	19N_A Or-1.0	Access Seat Fused Pwr (3 Way)
B	0_DY Bk-1.0	Blower Wpr Seat Ground

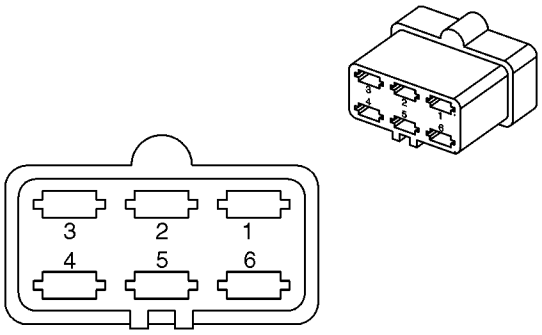
CONNECTOR 29M - BLOWER MOTOR TO CAB MAIN HARNESS



255058C1

CAV	WIRE IDENT	CIRCUIT
1	62L Or-1.0	Blower Low Speed
2	62M Or-2.0	Blower Medium Speed
3	62H Or-2.0	Blower High Speed
4	0_DZ Bk-2.0	Blwr Wpr Seat Ground

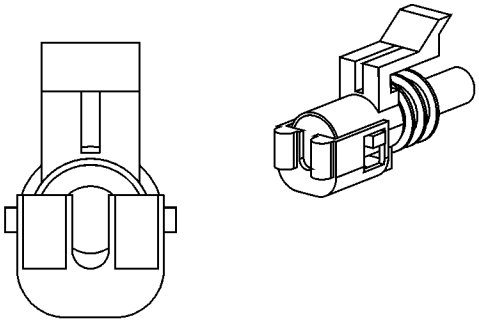
CONNECTOR 30F - BLOWER SWITCH TO CAB MAIN HARNESS



449797C1

CAV	WIRE IDENT	CIRCUIT
1		None
2	19G Or-2.0	Blower Switch Fused Power
3	62H Or-2.0	Blower High Speed
4	62M Or-2.0	Blower Medium Speed
5	62L Or-1.0	Blower Low Speed
6	61T Or-1.0	AC Thermostat Power

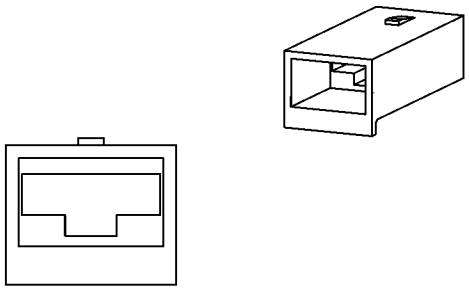
CONNECTOR 65M - ETHER START TEMPERATURE SWITCH TO ETHER START SOLENOID



245480C1

CAV	WIRE IDENT	CIRCUIT
1	28T W-1.0	Ether Start Temp Switch

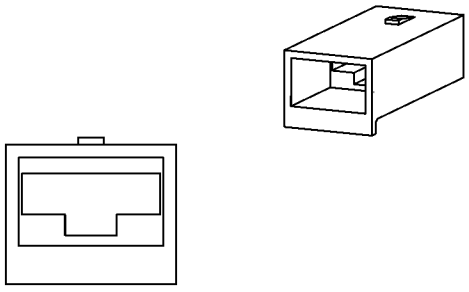
CONNECTOR 66 - TURN SIGNAL SWITCH TO PEDESTAL HARNESS



1964527C1

CAV	WIRE IDENT	CIRCUIT
1	45A N-0.8	Left Turn Switch Power

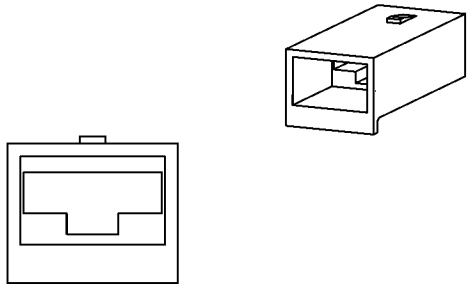
CONNECTOR 67 - TURN SIGNAL SWITCH TO PEDESTAL HARNESS



1964527C1

CAV	WIRE IDENT	CIRCUIT
1	19B Or-0.8	Turn Signal Power

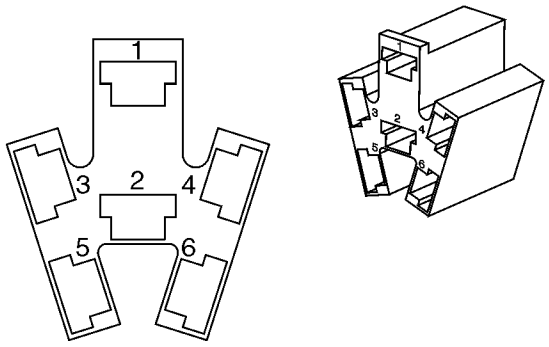
CONNECTOR 68 - TURN SIGNAL SWITCH TO PEDESTAL HARNESS



1964527C1

CAV	WIRE IDENT	CIRCUIT
1	45B N-0.8	Right Turn Switch Power

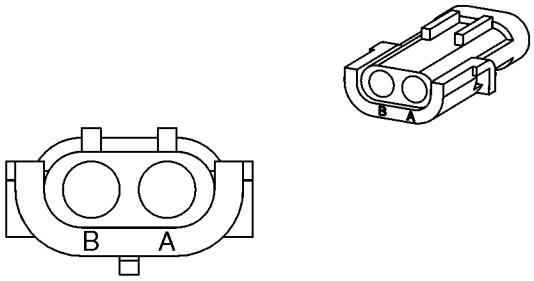
CONNECTOR 69 - IGNITION SWITCH TO PEDESTAL HARNESS



225253C1

CAV	WIRE IDENT	CIRCUIT
1	1A_A R-0.8 1A_B R-0.8	Ign Prog Reset Sw Power
2	21K W-0.8	Ign Switch Start Signal
3	13K Or-0.8	Ignition Switch Power
4	12K_C Or-0.8	Ign Switch Acc Power
5		None
6		None

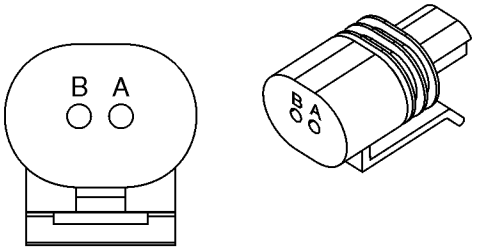
CONNECTOR 103 - ETHER START SOLENOID TO REAR CHASSIS HARNESS



245483C1

CAV	WIRE IDENT	CIRCUIT
A	28P W-1.0	Ether Solenoid
B	28T_A W-1.0	Ether Start Temp Switch

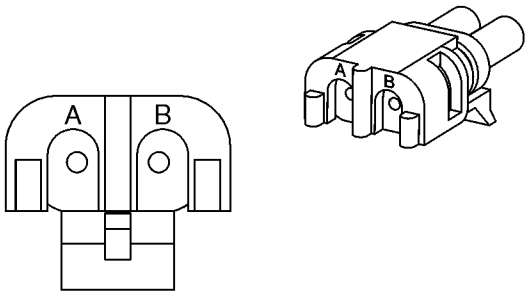
CONNECTOR 104 - COOLANT LEVEL SENDER TO REAR CHASSIS HARNESS



194788A1

CAV	WIRE IDENT	CIRCUIT
A	31D Y-1.0	Coolant Level Signal
B	0_V Bk-1.0	Fuel Rdndnt Brake Cool Ground

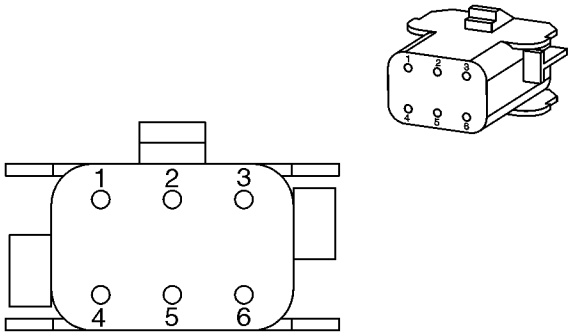
CONNECTOR 107M - PIN ENGAGE SOLENOID TO FRONT CHASSIS HARNESS



245482C1

CAV	WIRE IDENT	CIRCUIT
A	57 W-1.0	Pin Engage Solenoid Power
B	0_AB Bk-1.0	Pin Engage Ground

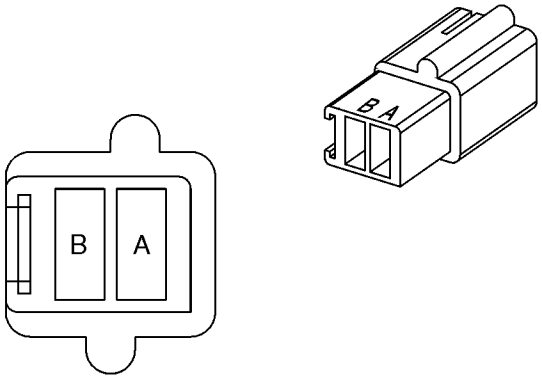
CONNECTOR 108F - DIAGNOSTIC CONNECTOR TO CAB MAIN HARNESS



291663A1

CAV	WIRE IDENT	CIRCUIT
1	19A_L Or-0.8	Cab Switched Power
2	37D_A P-0.8	Diagnostic Signal
3	0_DAV Bk-0.8	Diagnostic TECM Ground
4	37E P-0.8	Diagnostic Signal
5		None
6		None

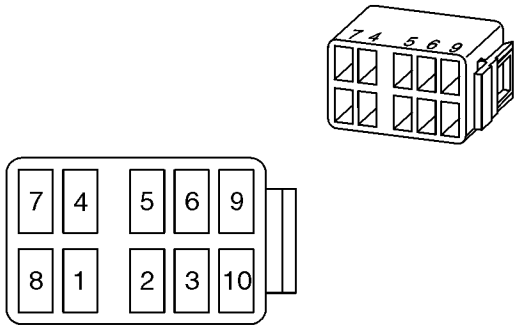
CONNECTOR 109M - RADIO POWER CONVERTER TO RADIO HARNESS



291730A1

CAV	WIRE IDENT	CIRCUIT
A	19L_A Or-1.0	Radio Power
B	0_PD Bk-1.0	Radio Ground

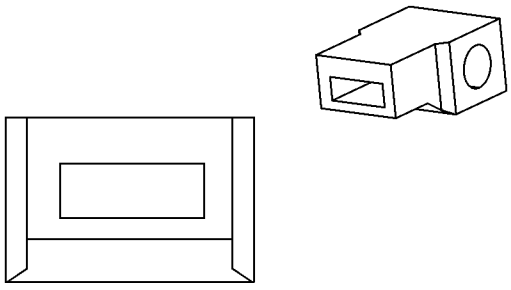
CONNECTOR 210F - FAN REVERSER SWITCH TO CAB MAIN HARNESS



382391A1

CAV	WIRE IDENT	CIRCUIT
1		None
2	19P_B Or-1.0	Fan Rev Pin Engage Fused Pwr
3	52_A W-0.8	Fan Reverse Solenoid
4		None
5		None
6		None
7	0_DAF Bk-1.0 0_DAY Bk-1.0	Switch Ground
8	49_H S-0.8 49_U S-0.8	Pilot Light
9		None
10		None

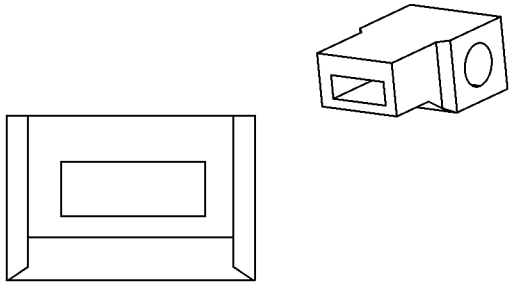
CONNECTOR 215F - ALTERNATOR RESISTOR TO CAB MAIN HARNESS



199436A1

CAV	WIRE IDENT	CIRCUIT
1	14_B LG-0.8	Alternator D+

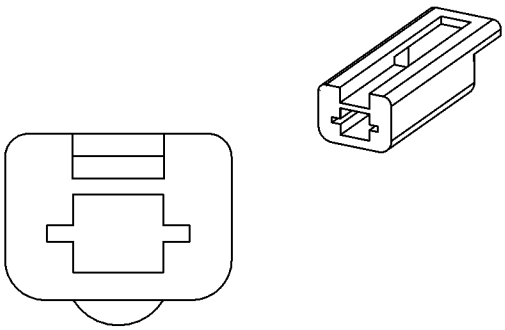
CONNECTOR 216F - ALTERNATOR RESISTOR TO CAB MAIN HARNESS



199436A1

CAV	WIRE IDENT	CIRCUIT
1	19R_E Or-0.8	Cab Switched Power

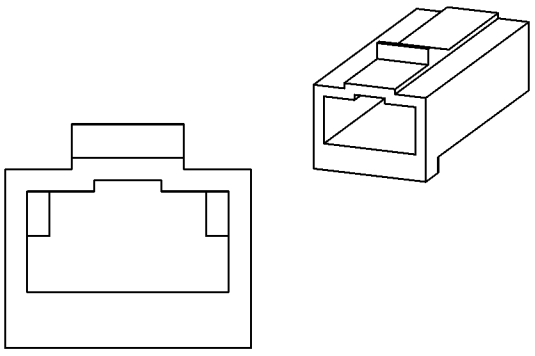
CONNECTOR 217F - ENGINE SHUTDOWN JUMPER



739070C1

CAV	WIRE IDENT	CIRCUIT
A	13K_D Or-0.8	Ignition Switch Power

CONNECTOR 217M - ENGINE SHUTDOWN JUMPER



631801C1

CAV	WIRE IDENT	CIRCUIT
A	13C_B Or-0.8	Fuel Solenoid Power

4002

Section
4002

ELECTRICAL SPECIFICATIONS AND TROUBLESHOOTING

P.I.N. JEE0135501 AND ABOVE

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

CASE CANADA CORPORATION
3350 South Service Road
Burlington, ON L7N 3M6 CANADA

Bur 6-48930

Printed in U.S.A.
February, 2003

Wire Identification Codes

21C Bk - 1.0

- 21C — Wire Name
- Bk — Wire Color
- 1.0 — Wire Size (mm^2)

Wire Size (mm^2)	0.8 mm	1.0 mm	2.0 mm	5.0 mm

Wire Color				
Bk = Black	DU = Dark Blue	S = Gray	LG = Light Green	K = Pink
T = Tan	W = White	N = Brown	G = Green	U = Blue
LU = Light Blue	Or = Orange	R = Red	P = Purple	Y = Yellow

Wire Identification			From Connector		To Connector	
Wire	**Circuit**	**Color, Size, and Material**	**Connector**	**Cavity**	**Connector**	**Cavity**
0_DAT	Brk Lt Time Del Horn Grnd	Bk-0.8-SXL	220F Ground Cab	1	SPL_D14 Module Grnds	1
0_DAU	Analog Ground	Bk-0.8-SXL	22F Cab Transmission	30	13F Cab-Pedestal	8
0_DAV	Diag TECM Grnd	Bk-0.8-SXL	108F Diagnostic Connector	3	221F Ground Cab	1
0_DAW	Ground	Bk-1.0-SXL	42F Beacon Sw	7	118F Back-up Alarm Dis Sw	7
0_DAX	Beacon Wiper Diode Grnd	Bk-0.8-SXL	206F Cab Floor Weld Stud	1	140M Diode Module	C
0_DAY	Switch Grnd	Bk-1.0-SXL	210F Fan Reverser Sw	7	SPL_D13 Ground	1
0_DB	Can Pilot Sol Grnd	Bk-0.8-SXL	89M Pilot Pres Sol	B	219F Ground Cab	1
0-DBA	Grid Heater Lamp Grnd	Bk-0.8-SXL	13F Cab Pedestal	11	219F Ground Cab	1
0-DBB	Ground	Bk-0.8-SXL	201 Grid Htr Controller	8	202 Radio Ground	1
0_DC	Ac Brk Lt Time Delay Horn Grnd	Bk-0.8-SXL	204F Relay Brake Lamps	85	49F Accessory Relay	85
0_DD	Ride Cntrl Relay Sink	Bk-0.8-SXL	19F TECM	57	50F Ride Control Relay	85
0_DE	Relay Grnd	Bk-0.8-SXL	48F Ignition Relay #2	85	47F Ignition Relay #1	85
0_DF	Relay Grnd	Bk-0.8-SXL	49F Accessory Relay	85	48F Ignition Relay #2	85
0_DG	Ac Brk Lt Time Delay Horn Grnd	Bk-0.8-SXL	204F Relay Brake Lamps	85	58F Volt Meter Relay	85
0_DH	Relay Grnd	Bk-0.8-SXL	58F Volt Meter Relay	85	54F Neutral Start Relay	85
0_DJ	Relay Grnd	Bk-0.8-SXL	54F Neutral Start Relay	85	222F Ground Cab	1
0_DL	Signal Ground	Bk-0.8-SXL	22F Cab-Transmission	23	13F Cab-Pedestal	39
0_DM	Speed Sensor Grounds	Bk-0.8-SXL	19F TECM	3	22F Cab Transmission	11
0_DN	Out Speed Sensor Grnd	Bk-0.8-SXL	19F TECM	4	22F Cab Transmission	28
0_DP	Diag TECM Grnd	Bk-0.8-SXL	19F TECM	1	221F Ground Cab	1
0_DQ	Diag TECM Grnd	Bk-0.8-SXL	19F TECM	2	221F Ground Cab	1
0_DR	Dome Court Work Lt Grnd	Bk-1.0-SXL	24M Cab Roof	E	223F Ground Cab	1
0_DS	Dome Court Work Lt Grnd	Bk-1.0-SXL	24M Cab Roof	G	223F Ground Cab	1
0_DT	Dome Court Work Lt Grnd	Bk-1.0-SXL	23F Cab Roof	B	223F Ground Cab	1
0_DU	Beacon Wiper Diode Grnd	Bk-1.0-SXL	23F Cab Roof	C	206F Cab Floor Weld Stud	1
0_DV	Beacon Wiper Diode Grnd	Bk-0.8-SXL	206F Cab Floor Weld Stud	1	13F Cab-Pedestal	61
0_DW	Ground	Bk-0.8-SXL	45F Rear Wiper Sw	7	118F Back-up Alarm Dis Sw	7
0_DX	Horn Ground	Bk-0.8-SXL	13F Cab-Pedestal	41	220F Ground Cab	1
0_DY	Blwr Wiper Seat Grnd	Bk-1.0-SXL	28M Seat Comp Motor	B	218F Ground Cab	1
0_DZ	Blwr Wiper Seat Grnd	Bk-2.0-SXL	29M Blower Motor	4	218F Ground Cab	1
0_E	Fuel Redundant Br Cool Grnd	Bk-1.0-SXL	160 Engine Grounds	1	171 Fuel Sender Grnd	1

Wire Identification Codes

21C Bk - 1.0

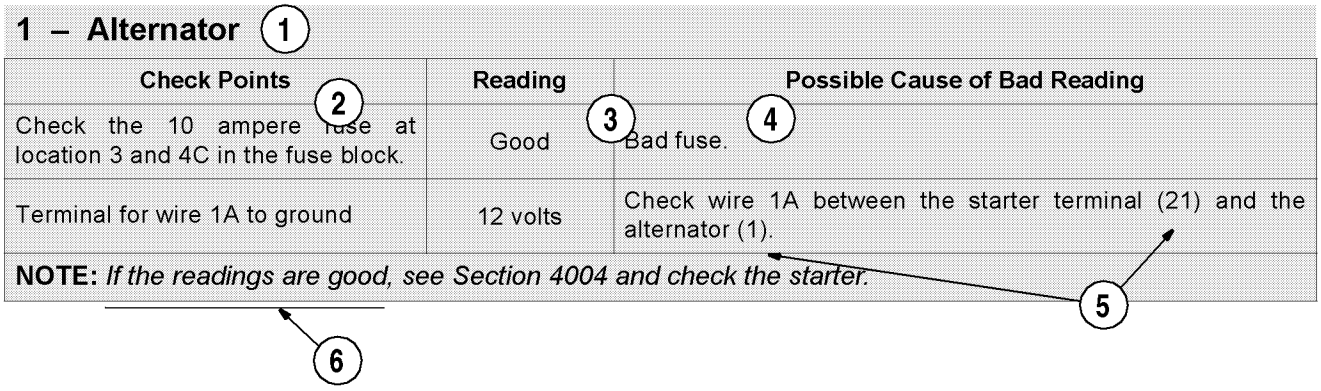
- 21C — Wire Name
- Bk — Wire Color
- 1.0 — Wire Size (mm^2)

Wire Size (mm^2)	0.8 mm	1.0 mm	2.0 mm	5.0 mm

Wire Color				
Bk = Black	DU = Dark Blue	S = Gray	LG = Light Green	K = Pink
T = Tan	W = White	N = Brown	G = Green	U = Blue
LU = Light Blue	Or = Orange	R = Red	P = Purple	Y = Yellow

Wire Identification			From Connector		To Connector	
Wire	**Circuit**	**Color, Size, and Material**	**Connector**	**Cavity**	**Connector**	**Cavity**
25R	Reverse Signal	LU-0.8-SXL	13M Pedestal-Cab	45	70 Transmission Shifter	C
25R_A	Reverse Signal	LU-0.8-SXL	19F TECM	64	13F Cab-Pedestal	45
25S	Output Sw Power VPS1	LU-0.8-TXL	22M Cab-Transmission	22	102 Trans Control	7
25S_A	Output Sw Power VPS1	LU-0.8-SXL	22F Cab-Transmission	22	SPL_D12 Common Power	1
25S_B	Output Sw Power VPS1	LU-0.8-SXL	19F TECM	12	SPL_D12 Common Power	1
25S_C	Output Sw Power VPS1	LU-0.8-SXL	19F TECM	13	SPL_D12 Common Power	1
25T_A	Neutral Signal	LU-0.8-SXL	92 Ether Switch	1	70 Transmission Shifter	D
25T_B	Neutral Signal	LU-0.8-SXL	13M Pedestal-Cab	46	92 Ether Switch	1
25T_C	Neutral Signal	LU-0.8-SXL	13F Cab-Pedestal	46	SPL_D18 Neutral Signal	1
25T_D	Neutral Signal	LU-0.8-SXL	19F TECM	67	SPL_D18 Neutral Signal	1
25T_E	Neutral Signal	LU-0.8-SXL	54F Neutral Start Relay	86	SPL_D18 Neutral Signal	1
25W	3rd And 4th Gear Signal	LU-0.8-SXL	13M Pedestal-Cab	48	183 Transmission Shifter	B
25W_A	3rd And 4th Gear Signal	LU-0.8-SXL	19F TECM	65	13F Cab-Pedestal	48
25Y	Trans Kickdown Signal	LU-0.8-SXL	13M Pedestal-Cab	50	183 Transmission Shifter	D
25Y_A	Trans Kickdown Signal	LU-0.8-SXL	13F Cab-Pedestal	50	SPL_D11 Trans Kick Down Signal	1
25Y_B	Trans Kickdown Sig	LU-0.8-SXL	19F TECM	22	SPL_D11 Trans Kick Down Signal	1
25Y_C	Trans Kickdown Signal	LU-0.8-SXL	20M Trans Kick-Down	2	SPL_D11 Trans Kick Down Signal	1
25Z	1st And 4th Gear Signal	LU-0.8-SXL	13M Pedestal-Cab	49	183 Transmission Shifter	C
25Z_A	1st And 4th Gear Signal	LU-0.8-SXL	19F TECM	63	13F Cab-Pedestal	49
26E	Trans Enable Signal	LU-0.8-SXL	19F TECM	31	199F Trans Enable Sw	3
26F_A	FNR Forward Signal	LU-0.8-SXL	198 FNR Switch	6	197M FNR-Main Cab	2
26F_B	FNR Forward Signal	LU-0.8-SXL	19F TECM	20	197F Main Cab FNR	2
26J	FNR Switch Jumper	LU-0.8-SXL	198 FNR Switch	2	198 FNR Switch	4
26N_A	FNR Neutral Signal	LU-0.8-SXL	198 FNR Switch	3	197M FNR-Main Cab	3
26N_B	FNR Neutral Signal	LU-0.8-SXL	19F TECM	44	197F Main Cab FNR	3
26R_A	FNR Reverse Signal	LU-0.8-SXL	198 FNR Switch	1	197M FNR-Main Cab	4
26R_B	FNR Reverse Signal	LU-0.8-SXL	19F TECM	30	197F Main Cab FNR	4
28C	Ether Start Control	W-0.8-SXL	13M Pedestal Cab	52	182 Ether Switch	1
28GC	Grid Heater Signal	W-0.8-SXL	SPL_D26 B+ Power	1	201 Grid Heater Controller	6
28GC_A	Grid Heater Signal	W-0.8-SXL	SPL_D26 B+ Power	1	21F Cab Rear	20
28GC_B	Grid Heater Signal	W-1.0-SXL	276F Relay Rear	A	21M Rear Cab	20

UNDERSTANDING THE TROUBLESHOOTING TABLES



1 – Alternator (1)

Check Points (2)	Reading (3)	Possible Cause of Bad Reading (4)
Check the 10 ampere fuse at location 3 and 4C in the fuse block.	Good	Bad fuse.
Terminal for wire 1A to ground	12 volts	Check wire 1A between the starter terminal (21) and the alternator (1). (5)
NOTE: *If the readings are good, see Section 4004 and check the starter.* (6)		

1. *This title is the number and component name on the Electrical Schematic.*
2. *This column shows the location of the check point.*
3. *This column shows the indication of the check.*
4. *This column shows the possible cause of a bad test indication.*
5. *The numbers in the parentheses show the number of the component on the Electrical Schematic.*
6. *This statement assumes that all other problems are solved at this point in the test.*

LOCATING COMPONENTS ON THE SCHEMATIC POSTERS

NOTE: *For the System Electrical Schematic refer to the Schematic Posters located at the rear of this manual.*

Components can be located on the Electrical Schematic posters (rear pocket) by item number using the key at the bottom of the posters. Use the following index to find the sheet a component is located on.

COMPONENT	COMPONENT NUMBER	SCHEMATIC SHEET
12 Volt Radio (Option)	95	6
Accessory Relay No. 3	16	1
Air Conditioning High Pressure Switch	87	5
Air Conditioning Low Pressure Switch	86	5
Air Filter Restriction Switch	44	3
Alternator	4	1
Back-up Alarm	37	2
Back-up Alarm Disable Switch	36	2
Back-up Alarm Relay No. 7	35	2
Batteries	1	1
Beacon Switch	99	4
Blower Motor	85	5
Blower Motor Speed Resistors with Thermal Fuse	84	5

12 – Neutral Start Relay No. 8		
Check Points	**Reading**	**Possible Cause of Bad Reading**
Terminal for wire 0_DJ to ground	Continuity	Bad ground circuit.
NOTE: *Put master disconnect switch and ignition switch in ON position. Make sure transmission is in NEUTRAL.*		
Terminal for wire 25T_E to ground	24 volts	Check circuit 25T.
NOTE: *Have another person hold the ignition switch in the START position.*		
Terminal for wire 21K_A to ground	24 volts	Check circuit 21K_A and ignition switch.
Terminal for wire 21C_E to ground	24 volts	Bad neutral start relay (12).

13 – Ignition Switch		
Check Points	**Reading**	**Possible Cause of Bad Reading**
NOTE: *Put the master disconnect switch in the ON position.*		
Terminal for wire 1A to ground	24 volts	Check circuit 1A to 12.5 ampere circuit breaker A.
NOTE: *Disconnect the connector from the ignition switch (13). Turn the switch to ON.*		
Between Bat and Ign	Continuity	Bad ignition switch (13).
Between Bat and Acc	Continuity	Bad ignition switch (13).
NOTE: *Hold the ignition switch (13) in the START position.*		
Between Bat and Starter	Continuity	Bad ignition switch (13).
Between Bat and Ign	Continuity	Bad ignition switch (13).
NOTE: *Put the switch in the Acc position.*		
Between Bat and Acc	Continuity	Bad ignition switch (13).

14 – Ignition Relay No. 1		
Check Points	**Reading**	**Possible Cause of Bad Reading**
Terminal for wire 0_DE to ground	Continuity	Bad ground circuit.
NOTE: *Put the master disconnect switch in the ON position. Turn the ignition switch to the ON position.*		
Terminal for wire 1_S to ground	24 volts	Check circuit 1 to B+ stud.
Terminal for wire 13K_A to ground	24 volts	Check circuit 13K and ignition switch.
Terminal for wire 13P to ground	24 volts	Bad ignition relay No. 1 (14)

47 – Instrument Cluster		
Check Points	**Reading**	**Possible Cause of Bad Reading**
NOTE: *Disconnect the connector from the instrument cluster.*		
Connector terminal 3 to ground	Continuity	Bad brake warning pressure switch (38). Also check circuit 33P and ground circuit at brake warning pressure switch.
Connector terminal 4 to ground	Continuity	Bad coolant level sender (39). Also check circuit 31D and ground circuit at coolant level sender.
Connector terminal 5 to ground	Continuity	Bad secondary steering pressure switch (67). Also check circuit 35X and ground circuit at pressure switch.
Connector terminal 6 to ground	Open Circuit	Bad air filter restriction switch (44). Also check circuit 31F.
Connector terminal 7 to ground	Open Circuit	Bad hydraulic filter restriction switch. Also check circuit 31H.
Connector terminal 8 to ground	Continuity	Bad ground circuit. Check wires 0_KP, 0_DAV, 0_HC, and 0_BG.
Connector terminal 18 to ground	130 to 9500 ohms	Bad engine coolant temperature sender (43). Also check circuit circuit 36C and ground circuit at sender.
Connector terminal 19 to ground	33 to 240 ohms	Bad fuel level sender (40). Also check circuit 36F and ground circuit at sender.
Connector terminal 20 to ground	130 to 9500 ohms	Bad hydraulic oil temperature sender (41). Also check circuit 36H and ground circuit at sender.
Connector terminal 21 to connector terminal 33	Continuity	Bad wire 50T.
Connector terminal 22 to ground	237 to 243 ohms	Bad engine oil pressure switch (50). Also check circuit 36P and ground circuit.
Connector terminal 28 to ground	Open Circuit	Bad redundant brake switche(s) (57). Also check circuit 33R.
Connector terminal 31 to terminals 26 and 27 on the transmission electronic control module (26)	Continuity	Bad circuit 50L.
Connector terminal 32 to terminal 25 on the transmission electronic control module (26)	Continuity	Bad circuit 50H.
Connector terminal 35 to ground	Continuity	Check LH and RH stop lamps and circuit 44. Also check ground circuit at lamps.
Connector terminal 37 to ground	Continuity	Bad ground circuit.
Connector terminal 38 to ground	Continuity	Bad ground circuit.
Connector terminal 39 to ground	Continuity	Bad ground circuit.
NOTE: *Put the master disconnect switch and the ignition switch in the ON position.*		
Connector terminal 1 to ground	24 volts	Bad fuse V. Also check circuit 19V.
Connector terminal 2 to ground	24 volts	Bad fuse S. Also check circuit 19S.
NOTE: *Put the parking brake switch in the ON position.*		
Connector terminal 9 to ground	24 volts	Bad parking brake switch. Also check fuse A and circuit 19A.

63 – Height Control/Return-To-Travel Proximity Switch

Check Points	Reading	Possible Cause of Bad Reading
NOTE: *Disconnect the connector from the height control/return-to-travel proximity switch (63). Put the master disconnect switch and the ignition switch in the ON position. Put the pilot control switch (48) in the OFF position and the detent switch (59) in the ON position.*		
Terminal B for wire 0_AA to ground	Continuity	Bad ground circuit.
Terminal A for wire 54B to ground	24 volts	Bad bucket control valve detent electromagnets (60) or detent switch (59). Also check circuit 54B.
Terminal C for wire 56_A to ground	24 volts	Bad detent switch (59). Also check circuit 56.
NOTE: *If the readings are good, replace the height control/return-to-travel proximity switch (63).*		

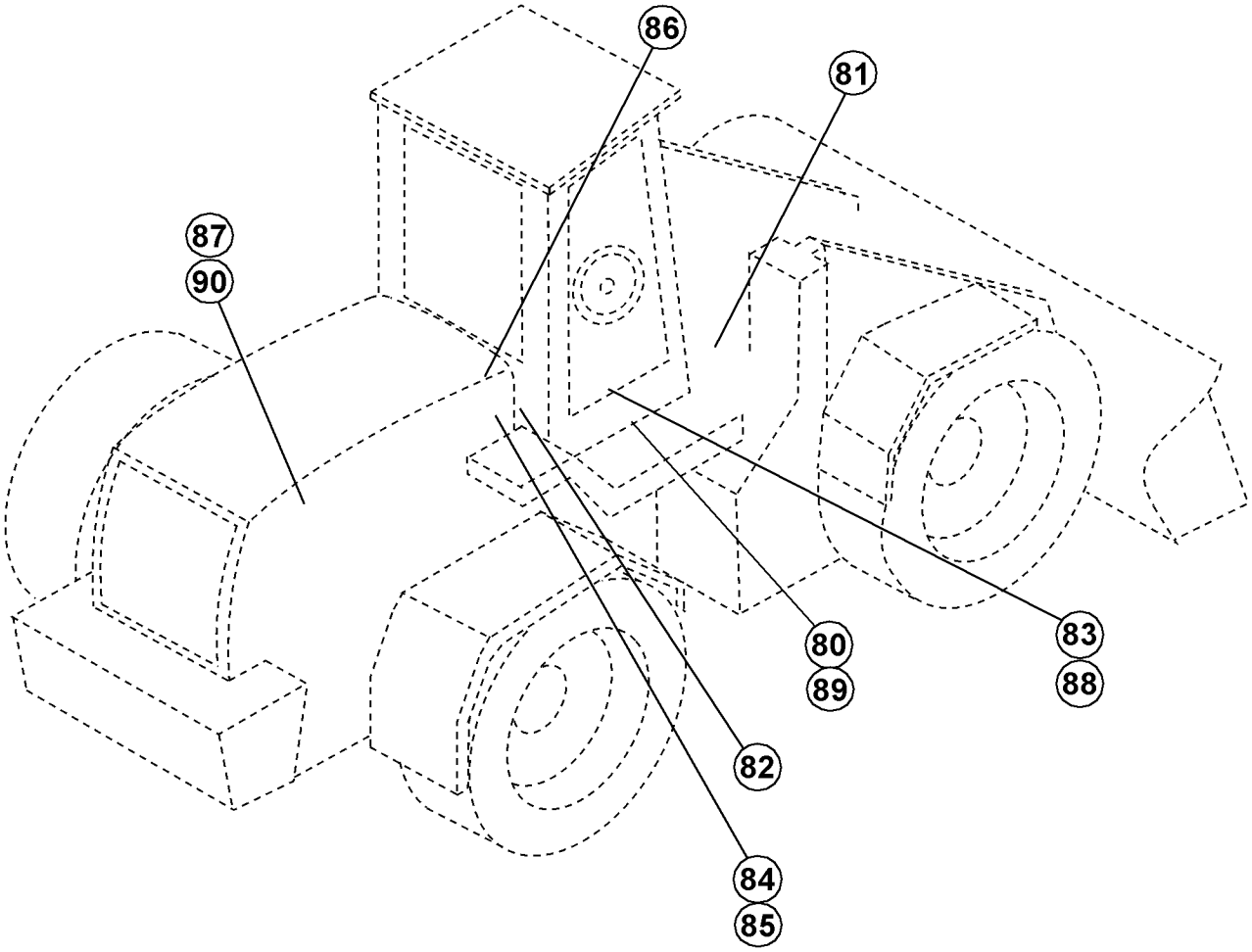
64 – Float Pressure Switch

Check Points	Reading	Possible Cause of Bad Reading
NOTE: *Disconnect the wiring harness connector 178M from the float pressure switch.*		
Between terminals of float pressure switch	Open Circuit	Bad float pressure switch.
NOTE: *Start and run engine at idle speed. Put return-to-travel/float switch in FLOAT position. Put loader control lever in FLOAT position.*		
Between terminals of float pressure switch	Continuity	Bad float pressure switch.
NOTE: *Shut down engine. Put ignition switch in ON position. Put pilot control switch in OFF position (switch LED OFF).*		
Wiring harness connector 178M, pin A and ground	24 volts	Bad pilot control relay. Also check wires 53P_C and 53P_D.

65 – Float Solenoid

Check Points	Reading	Possible Cause of Bad Reading
NOTE: *Disconnect the wiring harness connector 179F from the float solenoid.*		
Between terminals of float solenoid	37 to 43 ohms	Bad float solenoid.
Wiring harness connector 179F pin 2 to ground	Continuity	Bad ground circuit.
NOTE: *Start and run engine at idle speed. Put return-to-travel/float switch in FLOAT position. Put loader control lever in FLOAT position.*		
Wiring harness connector 179F pin 1 to ground	24 volts	Bad float pressure switch. Also check wires 53S_A and 53S_B.

TROUBLESHOOTING HORN, BLOWER, AND AIR CONDITIONING



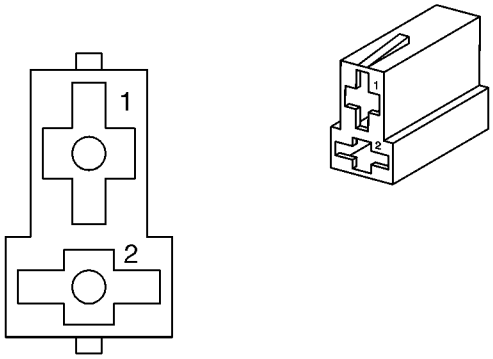
BC00N140

80. HORN RELAY NO. 5
81. HORN
82. SEAT COMPRESSOR
83. BLOWER SWITCH
84. SPEED RESISTOR
85. BLOWER MOTOR
86. A/C LOW PRESSURE SWITCH (IN CAB)
87. A/C HIGH PRESSURE SWITCH (IN REAR CHASSIS)
88. THERMOSTAT SWITCH
89. COMPRESSOR CLUTCH LOCKOUT RELAY NO. 14
90. COMPRESSOR CLUTCH

80 – Horn Relay No. 5		
Check Points	**Reading**	**Possible Cause of Bad Reading**
Terminal for wire 19U_B to ground	24 volts	Check fuse U, also check wire 19U_B.
Terminal for wire 19U_C to ground	24 volts	Check wire 19U_C.
Terminal for wire 64C_A to ground	24 volts	Bad horn relay (80).
NOTE: *Have another person push and hold the horn switch.*		
Terminal for wire 64C_A to ground	0 volt	Bad horn switch.
Terminal for wire 64_A to ground	24 volts	Bad horn relay (80).

105 – Flasher Module		
Check Points	**Reading**	**Possible Cause of Bad Reading**
NOTE: *Wiring harness connectors 64F and 64M must be connected for North American Machines for opposite side steady on operation and disconnected for European machines for opposite side off operation.*		
Terminal for wire 0_DAN to ground	Continuity	Bad ground circuit.
Terminal for wire 0_DAQ to ground	Continuity	Bad ground circuit.
Terminal for wire 45N_A to terminal for wire 45N_B (North American machines only)	Continuity	Bad 45N circuit.
NOTE: *Put master disconnect switch in ON position.*		
Terminal for wire 1B_B to ground	24 volts	Check flasher circuit breaker B. Also check wires 1B_B and 1B_F.
NOTE: *Put ignition switch in the ON position. Put the hazard switch (103) ON.*		
Terminal for wire 45H_A to ground	24 volts	Bad hazard switch (103). Also check wires 45H_A and 45H.
Terminal for wire 45L_D to ground	Intermittent 24 volts	Bad flasher module (105).
Terminal for wire 45R_E to ground	Intermittent 24 volts	Bad flasher module (105).
NOTE: *Put hazard switch (103) in OFF position. Put turn signal switch (104) in RIGHT turn position.*		
Terminal for wire 45B_A to ground	24 volts	Bad turn signal switch (104) or fuse B. Also check wires 45B_A and 45B.
Terminal for wire 45R_E to ground	Intermittent 24 volts	Bad flasher module (105).
NOTE: *Put turn signal switch (104) in LEFT turn position.*		
Terminal for wire 45A_A to ground	24 volts	Bad turn signal switch (104) or fuse B. Also check wires 45A_A and 45A.
Terminal for wire 45L_D to ground	Intermittent 24 volts	Bad flasher module (105).

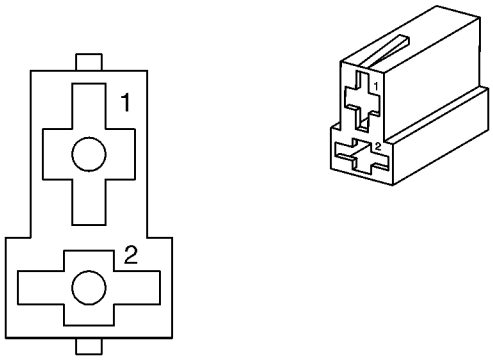
CONNECTOR 2 - FRONT WASHER PUMP MOTOR TO REAR CHASSIS HARNESS



3227856R1

CAV	WIRE IDENT	CIRCUIT
1	63W Or-1.0	Front Washer Pump
2	0_G Bk-1.0	Front Rear Washer Hot Ground

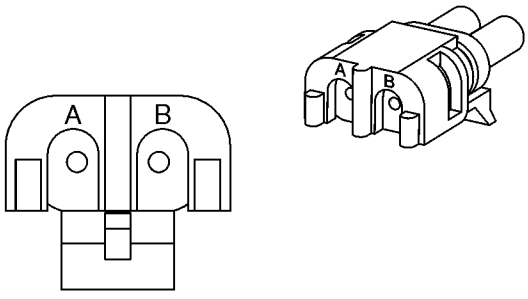
CONNECTOR 3 - REAR WASHER PUMP MOTOR TO REAR CHASSIS HARNESS



3227856R1

CAV	WIRE IDENT	CIRCUIT
1	68W Or-1.0	Rear Washer Pump
2	0_F Bk-1.0	Front Rear Washer Hot Ground

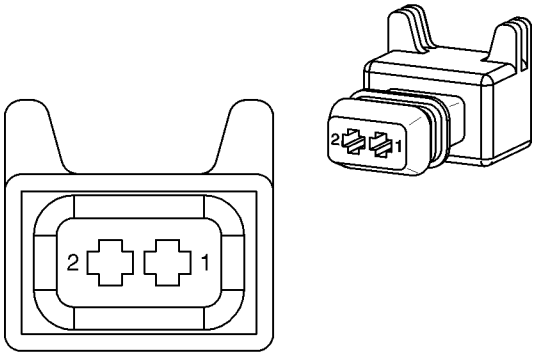
CONNECTOR 4 - BRAKE DECLUTCH PRESSURE SWITCH TO REAR CHASSIS HARNESS



245482C1

CAV	WIRE IDENT	CIRCUIT
A	19A_A Or-1.0	Declutch Switch
B	25G LU-1.0	Declutch Switch

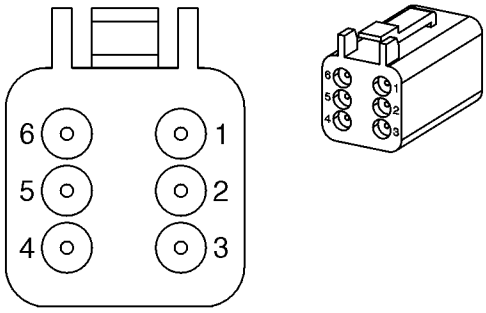
CONNECTOR 5F - RIDE CONTROL SOLENOID TO FRONT CHASSIS HARNESS



291718A1

CAV	WIRE IDENT	CIRCUIT
1	58_C W-1.0	Ride Control Solenoid Power
2	0_AC Bk-1.0	Ride Control Ground

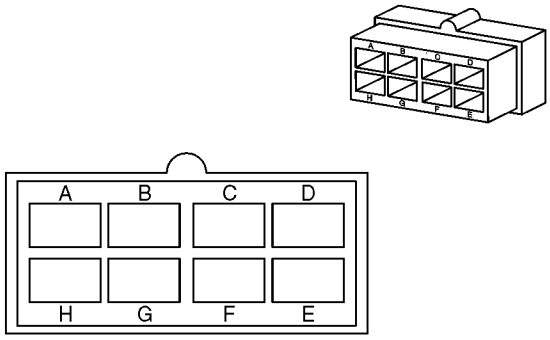
CONNECTOR 6 - LH FRONT COMBINATION LAMP TO FRONT CHASSIS HARNESS



225351C1

CAV	WIRE IDENT	CIRCUIT
1	0_AL Bk-1.0	Lights Ground LH
2	18D Or-1.0	Low Beam LH
3	18B Or-1.0	High Beam LH
4	18F Or-1.0	Position LH
5	45L N-1.0	Left Turn Signal
6		None

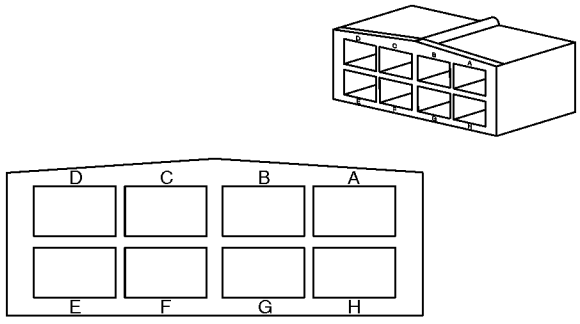
CONNECTOR 23F - CAB MAIN HARNESS TO CAB ROOF HARNESS



3195530R1

CAV	WIRE IDENT	CIRCUIT
A	68C_A Or-1.0	Rear Wiper Park
B	0_DT Bk-1.0	Dome Court Work Light Ground
C	0_DU Bk-1.0	Beacon Wiper Diode Ground
D	19U_A Or-1.0	Dome Light Horn Fused Power
E	46_A K-0.8 46_C K-1.0	Beacon Switched Power
F	19K_B Or-1.0	Rear Wiper Wash Fused Power
G	68L_A Or-1.0	Rear Wiper Low Speed
H	42R_B DU-0.8	Rear Work Light Power

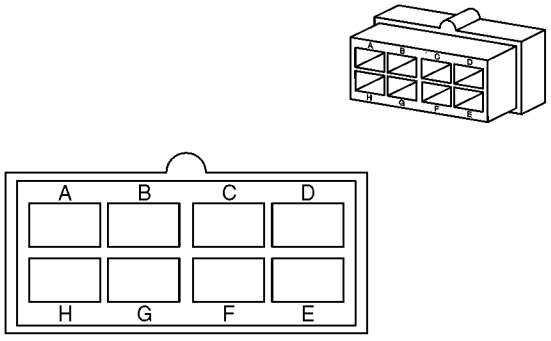
CONNECTOR 23M - CAB ROOF HARNESS TO CAB MAIN HARNESS



245430C1

CAV	WIRE IDENT	CIRCUIT
A	68C_B Or-1.0	Rear Wiper Park
B	0_MG Bk-1.0	Rear Work Light Ground
C	0_MD Bk-1.0	Beacon Rear Wiper Ground
D	19U_D Or-1.0	Dome Light Fused Power
E	46_D K-1.0	Beacon Switched Power
F	19K_E Or-1.0	Rear Wiper Wash Fused Power
G	68L_C Or-1.0	Rear Wiper Low Speed
H	42R_F DU-1.0	Rear Work Light Power

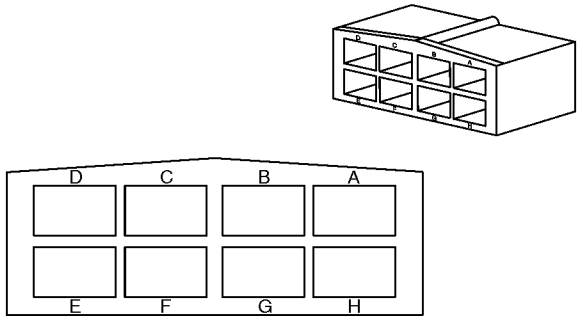
CONNECTOR 24F - CAB ROOF HARNESS TO CAB MAIN HARNESS



3195530R1

CAV	WIRE IDENT	CIRCUIT
A		None
B		None
C		None
D		None
E	0_MN Bk-0.8	Dome Courtesy Light Ground
F	49_V S-0.8	Courtesy Pilot Light
G	0_MK Bk-1.0	Front Work Light Ground
H	42C_D DU-1.0	Front Work Lights Power

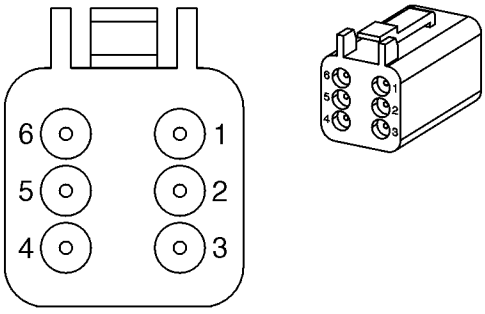
CONNECTOR 24M - CAB MAIN HARNESS TO CAB ROOF HARNESS



245430C1

CAV	WIRE IDENT	CIRCUIT
A		None
B		None
C		None
D		None
E	0_DR Bk-1.0	Dome Court Work Light Ground
F	49_S S-1.0	Courtesy Pilot Light
G	0_DS Bk-1.0	Dome Court Work Light Ground
H	42C_A DU-1.0	Front Flood Lights

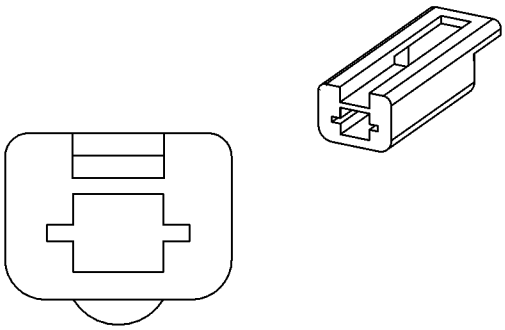
CONNECTOR 63M - TIME DELAY MODULE TO CAB MAIN HARNESS



225351C1

CAV	WIRE IDENT	CIRCUIT
1	13D Or-1.0	Delay Power (2 Way)
2	1A_E R-0.8	Time Delay Power
3	0_DAS Bk 0.8	Time Delay Module Ground
4	37R_C P-0.8	Reset Signal
5	13K_F Or-0.8	Ignition Switch Power
6		None

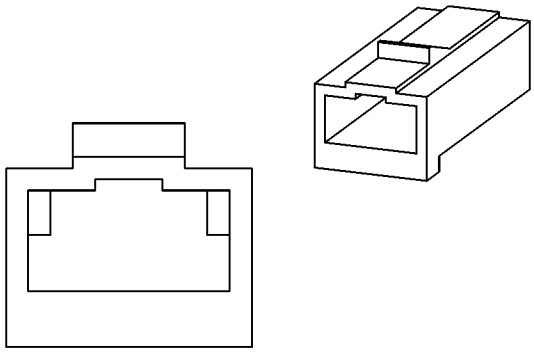
CONNECTOR 64F - FLASHER MODULE TO CAB MAIN HARNESS



739070C1

CAV	WIRE IDENT	CIRCUIT
1	45N_A N-0.8	Flasher Opp Side Control

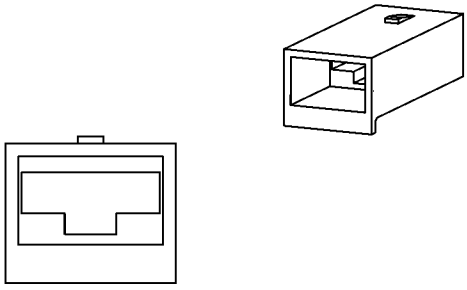
CONNECTOR 64M - FLASHER MODULE TO CAB MAIN HARNESS



631801C1

CAV	WIRE IDENT	CIRCUIT
1	45N_B N-0.8	Flasher Opp Side Control

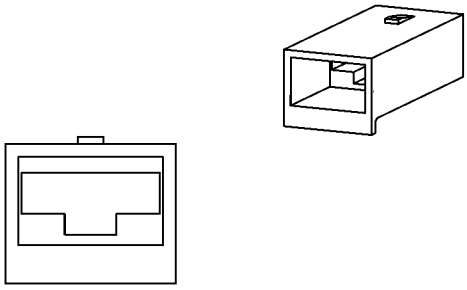
CONNECTOR 66 - TURN SIGNAL SWITCH TO PEDESTAL HARNESS



1964527C1

CAV	WIRE IDENT	CIRCUIT
1	45A N-0.8	Left Turn Switch Power

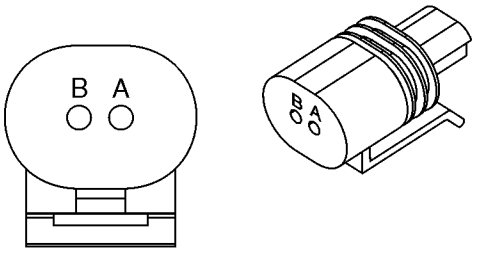
CONNECTOR 67 - TURN SIGNAL SWITCH TO PEDESTAL HARNESS



1964527C1

CAV	WIRE IDENT	CIRCUIT
1	19B Or-0.8	Turn Signal Power

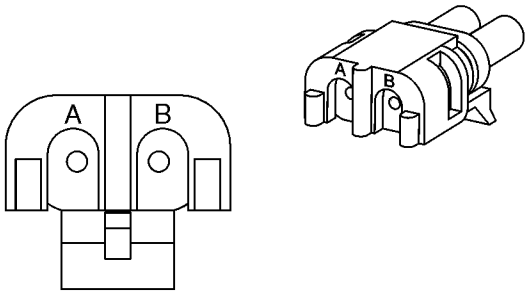
CONNECTOR 104 - COOLANT LEVEL SENDER TO REAR CHASSIS HARNESS



194788A1

CAV	WIRE IDENT	CIRCUIT
A	31D Y-1.0	Coolant Level Signal
B	0_V Bk-1.0	Fuel Rdndnt Brake Cool Ground

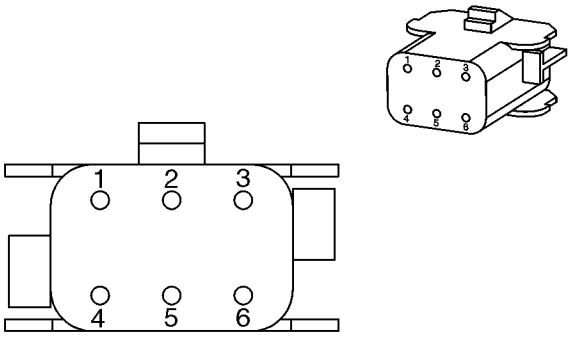
CONNECTOR 107M - PIN ENGAGE SOLENOID TO FRONT CHASSIS HARNESS



245482C1

CAV	WIRE IDENT	CIRCUIT
A	57 W-1.0	Pin Engage Solenoid Power
B	0_AB Bk-1.0	Pin Engage Ground

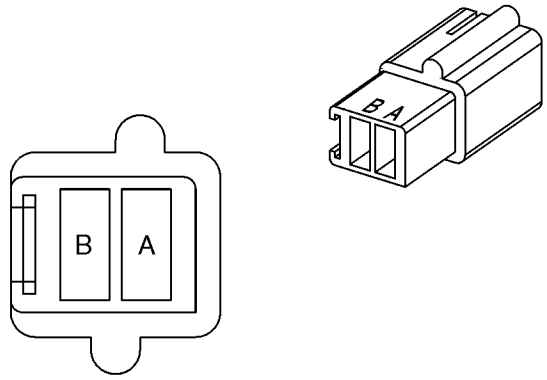
CONNECTOR 108F - DIAGNOSTIC CONNECTOR TO CAB MAIN HARNESS



291663A1

CAV	WIRE IDENT	CIRCUIT
1	19A_L Or-0.8	Cab Switched Power
2	37D_A P-0.8	Diagnostic Signal
3	0_DAV Bk-0.8	Diagnostic TECM Ground
4	37E P-0.8	Diagnostic Signal
5		None
6		None

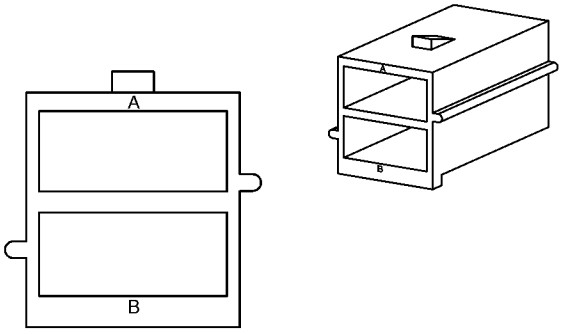
CONNECTOR 109M - RADIO POWER CONVERTER TO RADIO HARNESS



291730A1

CAV	WIRE IDENT	CIRCUIT
A	19L_A Or-1.0	Radio Power
B	0_PD Bk-1.0	Radio Ground

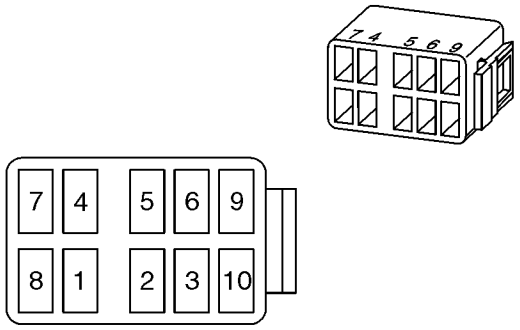
CONNECTOR 110F - RADIO POWER CONVERTER TO RADIO HARNESS



245426C1

CAV	WIRE IDENT	CIRCUIT
A	65C Or-0.8	Radio Power
B	0_PC Bk-0.8	Radio Ground

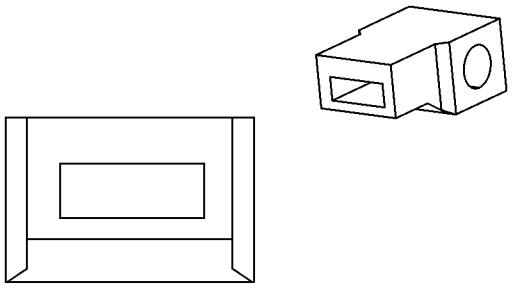
CONNECTOR 210F - FAN REVERSER SWITCH TO CAB MAIN HARNESS



382391A1

CAV	WIRE IDENT	CIRCUIT
1		None
2	19P_B Or-1.0	Fan Rev Pin Engage Fused Pwr
3	52_A W-0.8	Fan Reverse Solenoid
4		None
5		None
6		None
7	0_DAF Bk-1.0 0_DAY Bk-1.0	Switch Ground
8	49_H S-0.8 49_U S-0.8	Pilot Light
9		None
10		None

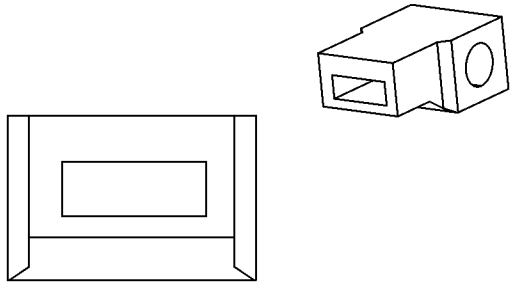
CONNECTOR 215F - ALTERNATOR RESISTOR TO CAB MAIN HARNESS



199436A1

CAV	WIRE IDENT	CIRCUIT
1	14_B LG-0.8 14_C LG-0.8	Alternator D+

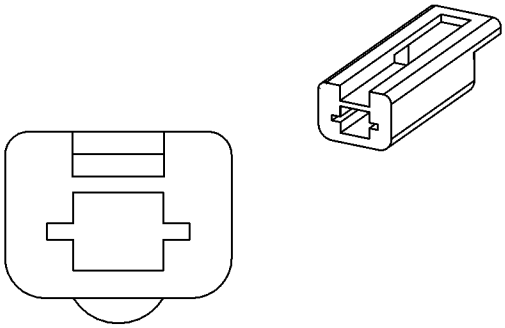
CONNECTOR 216F - ALTERNATOR RESISTOR TO CAB MAIN HARNESS



199436A1

CAV	WIRE IDENT	CIRCUIT
1	19R_E Or-0.8	Cab Switched Power

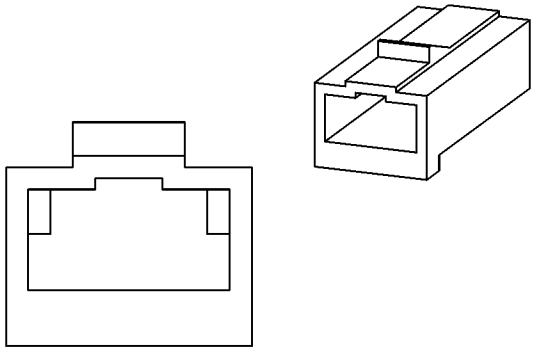
CONNECTOR 217F - ENGINE SHUTDOWN JUMPER



739070C1

CAV	WIRE IDENT	CIRCUIT
A	13K_D Or-0.8	Ignition Switch Power

CONNECTOR 217M - ENGINE SHUTDOWN JUMPER



631801C1

CAV	WIRE IDENT	CIRCUIT
A	13C_B Or-0.8	Fuel Solenoid Power

Section
4005

INFORMATION AND DIAGNOSTIC CENTER

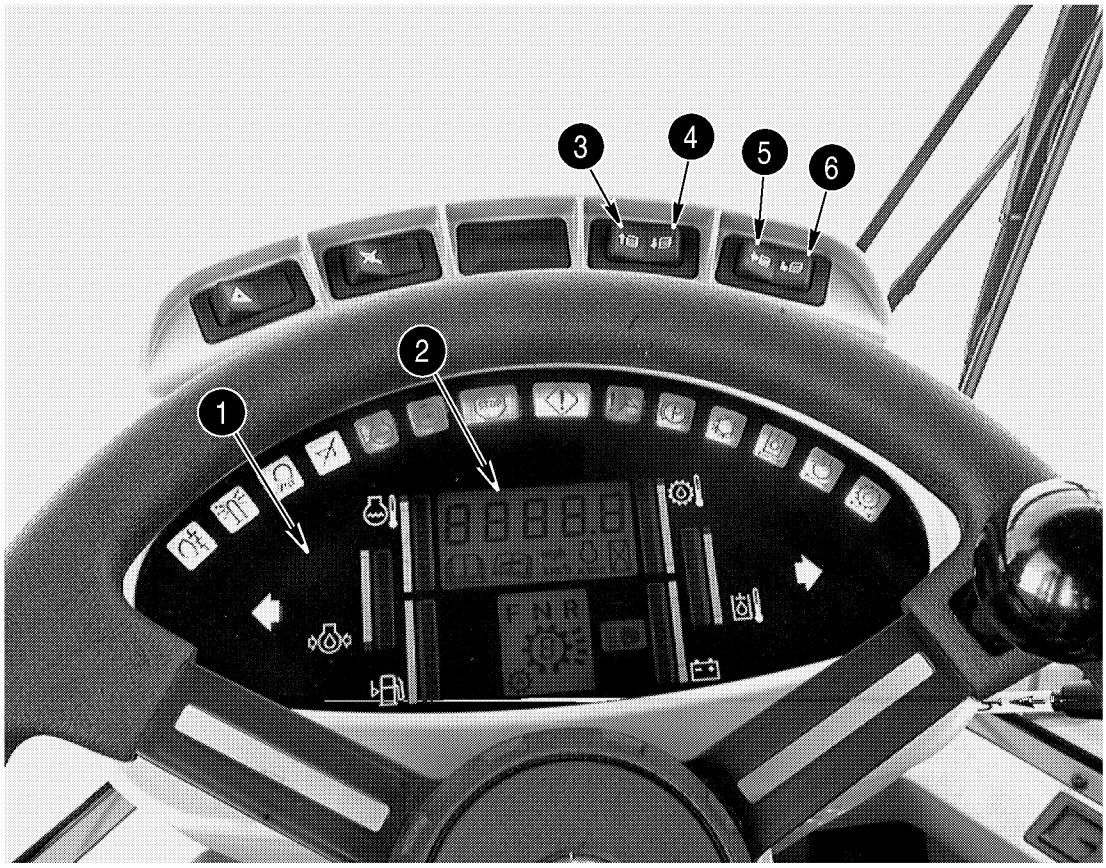
4005

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

Bur 6-42352

Issued August, 2001 Revised July, 2005

SETTINGS, DIAGNOSTICS, AND FAULT CODES



RD98K316

1. INFORMATION CENTER
2. DISPLAY CENTER
3. UP COUNT
4. DOWN COUNT
5. PROGRAM
6. RESET

FIGURE 3. INFORMATION CENTER

Programming the Information Center

NOTE: *The machine must be OFF prior to programming the information center.*

Two switches are used during the programming of the information center: the up/down count switch and the program/reset switch. These switches are located on the right hand side of the information center, refer to Figure 3.

For an up count press the left side of the up/down count switch. For a down count press the right side of the up/down count switch. The center position is OFF or NEUTRAL.

For programming press the left side of the program/reset switch. For resetting press the right side of the program/reset switch. The center position is OFF or NEUTRAL.

To program the information center do the following steps:

1. Turn the machine OFF.
2. Turn the key to the RUN position.
3. Press the program/reset switch to program.
4. Press the up/down count switch to up count program location 010.
5. Center the program/reset switch to OFF.
6. Note the gauge display setting that is displayed, 01, 02, 03, 04, or 05. If the desired setting has already been selected go to step 7.
7. Press the up/down count switch to up count to choose one of the following gauge display settings:

Display Location Numbers (048 and 049) Reserved for Future Use

Minimum Gear Selection

Do the following procedures to program the transmission for the lowest gear possible in the automatic mode.

NOTE: *The 1st or 2nd gear can be selected. The gear that is selected will be the gear that the transmission is in when the machine begins to move. The factory minimum gear setting is 1.*

1. Press the program/reset switch to program.
2. Press the up/down count switch to up count until the display reads 050.
3. Place the program/reset switch in the OFF (center) position.
4. Read the number (1 or 2) shown on the Information Center. If this is the desired gear selection, press the program/reset switch to either program or reset.
5. If you want the other minimum gear selection, press the up/down count switch to up count.
6. Press the program/reset switch momentarily (0.25 seconds) to reset.

Maximum Gear Selection

Do the following procedures to program the transmission for the highest gear possible in the automatic mode.

NOTE: *The 2nd, 3rd, or 4th gear can be selected. The gear that is selected will be the highest attainable gear that the transmission will be able to reach. The factory maximum gear setting is 4.*

1. Press the program/reset switch to program.
2. Press the up/down count switch to up count until the display reads 051.
3. Place the program/reset switch in the OFF (center) position.
4. Read the number (2, 3, or 4) shown on the Information Center. If this is the desired gear selection, press the program/reset switch to either program or reset.
5. If you want a different maximum gear selection, press the up/down count switch to up count until the desired number is displayed.
6. Press the program/reset switch momentarily (0.25 seconds) to reset.

Gear Range Read Only

Do the following procedures to read the gear range.

1. Press the program/reset switch to program.
2. Press the up/down count switch to up count until the display reads 052. The operational indicator will flash intermittently.
3. Place the program/reset switch in the OFF (center) position.
4. The Information Center will read 1 or 2 (gears).
5. Press the program/reset switch to program.
6. Press the up/down count switch to up count until the display reads 053. The operational indicator will flash intermittently.
7. Place the program/reset switch in the OFF (center) position.
8. The Information Center will read 2,3, or 4 (gears).

Display Location Number 054 Reserved for Future Use

Reset Diagnostic Stack for Locations 071 through 090

Do the following procedure to remove all diagnostic codes from field number locations 071 through 090.

1. Press the program/reset switch to program.
2. Press the up/down count switch to up count until the display reads 055. The service indicator will flash intermittently.
3. Place the program/reset switch in the OFF (center) position.
4. Press the up/down count switch to up count until the display reads 21.
5. Press the program/reset switch to reset. If there are diagnostic codes in field number locations 071 through 090 they will be removed, unless the condition still exists.

FAULT CODES

CODE	DEFINITION	POSSIBLE STEPS FOR REPAIR
12110	Engine coolant temperature is 110° C (230° F) or greater	Troubleshoot electrical circuits.
12900	Engine coolant short circuit measuring less than 50 ohms to the engine coolant temperature sensor.	
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.
21070	Engine oil pressure is measured below 70 kPa (10 psi)	
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.

INDEX

14. Check the rotor shaft for damage. Make sure that the coils are not loose on the shaft. Check the slip rings for too much wear or deep grooves. The slip rings can be cleaned by using fine 400 grit sand paper.

15. Connect one of the test leads from an ohmmeter to the rotor shaft (ground). Connect the other test lead to one of the slip rings. There must not be any electrical connection between the slip ring and the rotor shaft. The ohmmeter reading must not be low or zero ohms. If the ohmmeter reading is low or zero ohms, replace the rotor assembly. Repeat this test on the other slip ring.

16. Connect an ohmmeter between the two slip rings. The reading on the ohmmeter must be 8 to 9 ohms. If the reading on the ohmmeter is high, there is a break in the rotor coil and the rotor assembly will have to be replaced.

17. Remove the rear bearing (25) from the rotor (24) using a bearing puller.

18. Remove the front bearing (27) and spacer (23) by using a bearing puller and hydraulic press.

19. Remove the bearing retaining plate (28).

20. Check the capacitor (18) for continuity between the mounting tab and the lead. If there is continuity, the capacitor (18) is bad. Check the capacitor (18) by connecting an ohmmeter between the mounting tab and lead. The ohmmeter will initially show movement and then return to indicating no continuity as the capacitor (18) is charged. Discharge the capacitor (18) by grounding the lead to the tab before installation.

21. Check for continuity between each brush (14) and the brush terminal. If there is no continuity, replace the brushes (14).

22. Measure the length of the brush (14) projecting from the brush holder and voltage regulator (12). Replace the brushes if the length is 7 mm (0.27 inch) or less.

23. Use a soldering iron to disconnect the brush lead. Remove the brush (14) and the spring (13) from the brush holder and voltage regulator (12).

NOTE: *When soldering leads to the terminals, the solder must not flow into copper leads.*

24. Install a new brush (14) and spring (13) in the brush holder and voltage regulator (12). Solder lead to terminal using rosin-cored solder. Clamp rubber tube in terminal next to the solder point. Test for easy movement of brushes after installation. Brushes will project 14 mm (0.55 inch) from holder.

25. Remove the nuts (29), washers (30), nuts (31), washers (32) and fiber washers (33) from the rectifier bridge terminals.

26. Remove the insulator (35) from the B+ terminal (40).

27. Remove the rectifier screws (36) that hold the rectifier bridge (37) to the rear housing (21). Remove the rectifier bridge (37) from the rear housing (21).

28. Remove the insulator (35) from the B+ terminal (40).

29. Remove the insulator (38) from the D+ terminal (39).

30. Unsolder the stator coil (44) at the connections to the rectifier bridge (37). Remove the stator coil (44).

NOTE: *Bend phase lead-out wires as little as possible.*

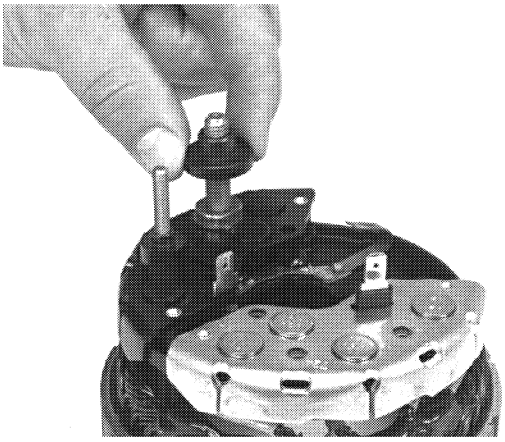
31. Test the positive diodes in the rectifier bridge (37). Connect the negative lead of the ohmmeter to the output B+ terminal (40). Connect the positive lead of the ohmmeter to one of the leads for the positive diodes. The positive diodes are the seven diodes closest to the B+ terminal (40).

32. Reverse the ohmmeter leads. Read the ohmmeter. There must be a high reading and a low reading. If the readings are the same, replace the rectifier bridge (37). Repeat this step for the other six diodes.

NOTE: *D+ terminal (39) must be installed on a new rectifier bridge (37).*

33. Check the negative diodes in the rectifier bridge (37). Connect the negative lead of the ohmmeter to the surface of the diode plate that is not painted. Connect the positive lead of the ohmmeter to one of the leads for the negative diodes. The negative diodes are the seven diodes on the side of the rectifier bridge (37) opposite the B+ terminal (40).

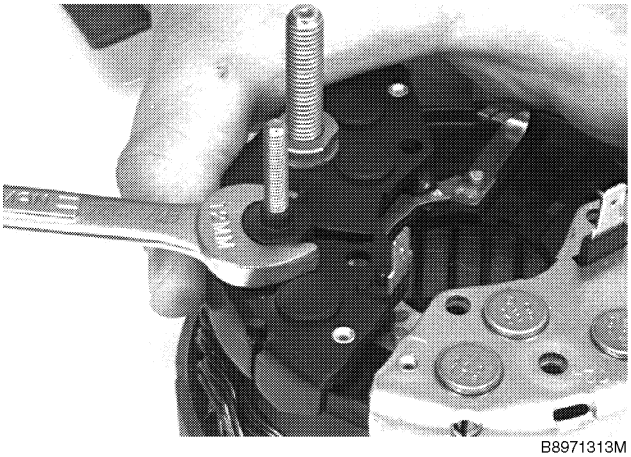
STEP 18



B8971310M

Remove the insulator from the B+ terminal.

STEP 19



B8971313M

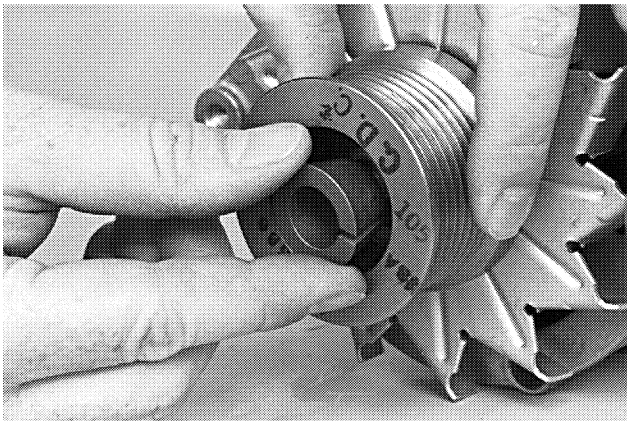
Remove the insulator from the D+ terminal.

STEP 20

B8971319M

Remove the shield from the housing.

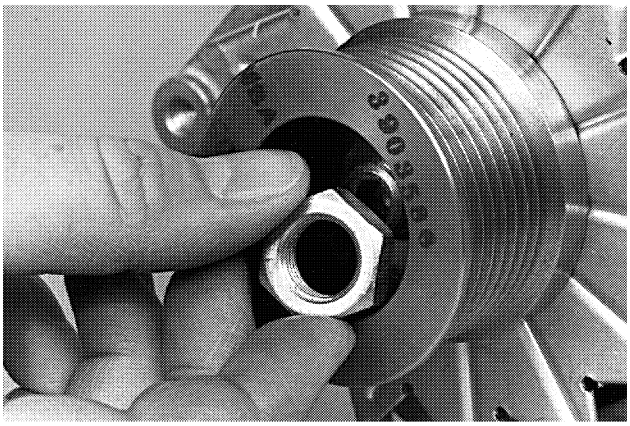
STEP 57



B523418M

Install the pulley and the retainer.

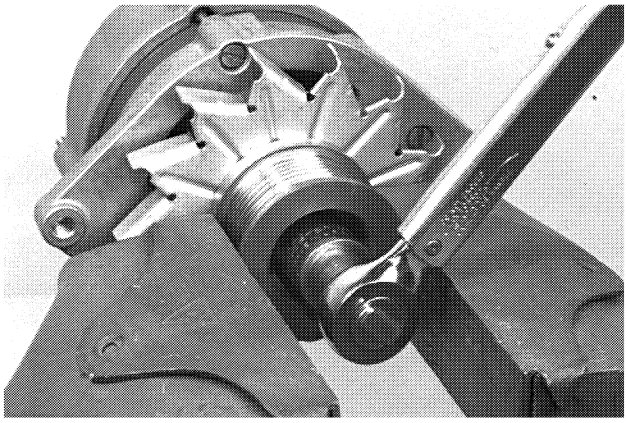
STEP 58



B523407M

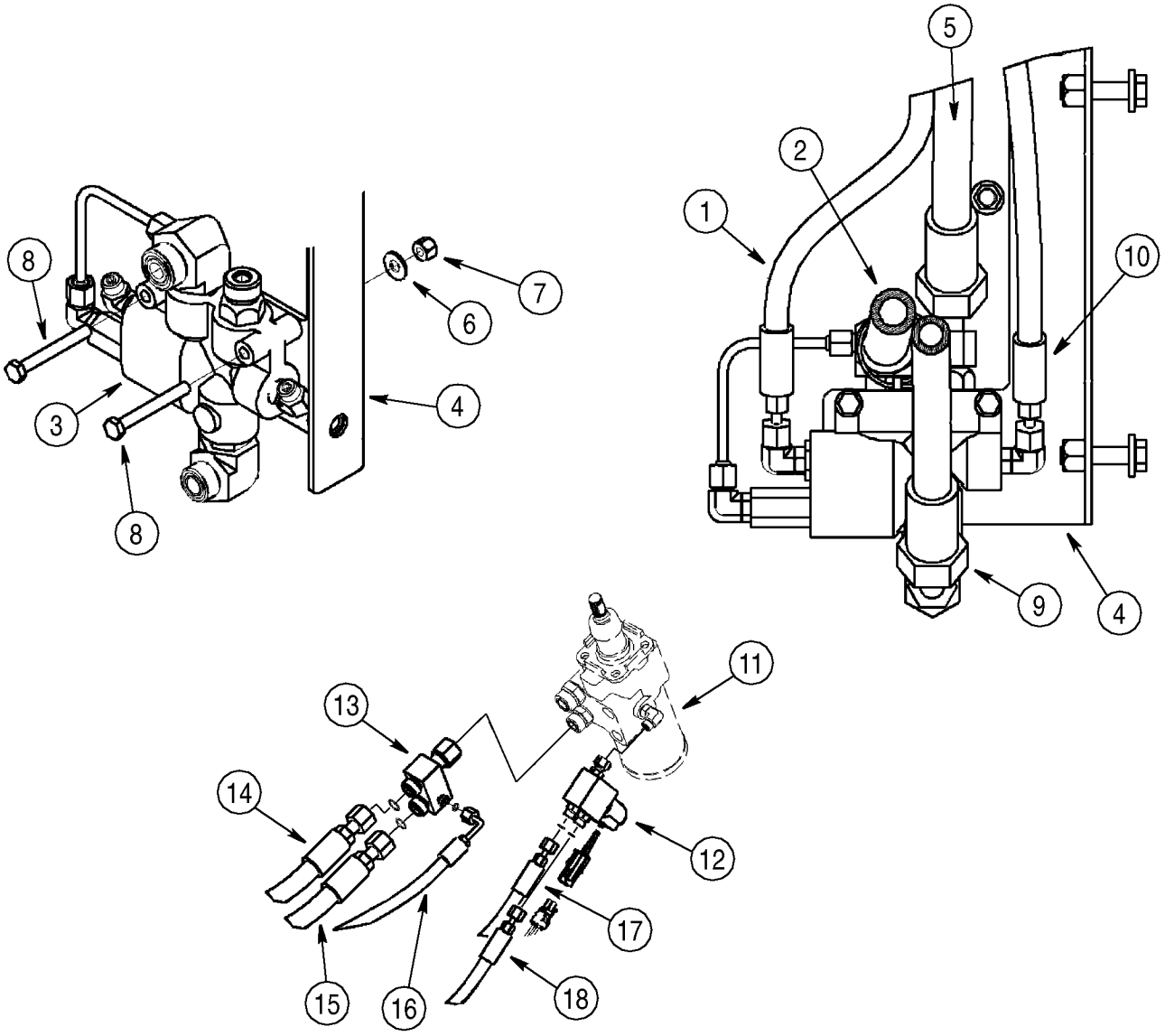
Install the washer and start the nut onto the shaft.

STEP 59



B518009M

Fasten the pulley in a vise with soft jaws. Tighten the nut to a torque of 60 to 73 Nm (45 to 54 pound-feet).



BS01C105

1. HOSE
2. HOSE
3. PRIORITY VALVE
4. BRACKET
5. HOSE
6. WASHER
7. LOCKNUT
8. BOLT
9. HOSE
10. HOSE
11. STEERING CONTROL VALVE
12. SOLENOID VALVE
13. AUXILIARY STEERING PRESSURE FITTING
14. HOSE TO LOADER CONTROL VALVE
15. HOSE TO PRIORITY VALVE
16. HOSE TO PRIORITY VALVE
17. HOSE TO PRIORITY VALVE
18. HOSE TO LOADER CONTROL VALVE

PRIORITY VALVE ILLUSTRATION

AUXILIARY STEERING SYSTEM MOTOR TEST

Test Equipment

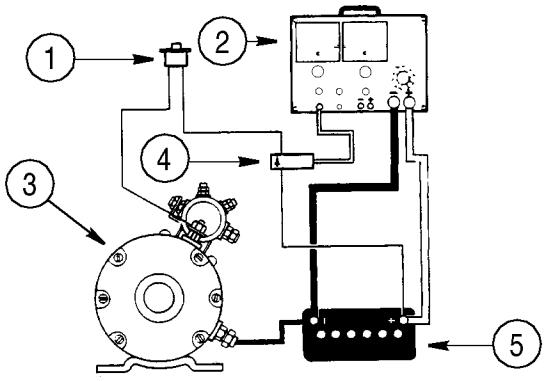
1. A 24 volt battery that is fully charged.

NOTE: *A 24 volt battery system (two 12 volt batteries in a series) is used for this test. A 12 volt battery system will cause damage to the auxiliary steering motor.*

2. A remote starter switch.
3. A tachometer to check the armature speed.
4. A Sun Electric VAT-33 Starting and Charging System Tester.

Test Procedure

1. Remove the connector that is between the terminals on the magnetic switch and the auxiliary steering motor.
2. Remove the auxiliary steering motor from the auxiliary steering pump.
3. Remove the drive coupling from the auxiliary steering motor (3).
4. Connect the auxiliary steering motor (3), remote starter switch (1) and tester (2) to the 24 volt battery system (5) as illustrated in Figure 3.
5. Push the button on the remote starter switch (1) and look at the voltmeter in the tester.
6. Turn the load control (8) until the voltmeter (7) indicates 24 volts. Refer to figure 4. Look at the ammeter (6) in the tester. Make a record of the ammeter indication.
7. Hold the tachometer against the armature shaft. Look at the tachometer. Make a record of the indication.
8. Release the button on the remote starter switch (1).

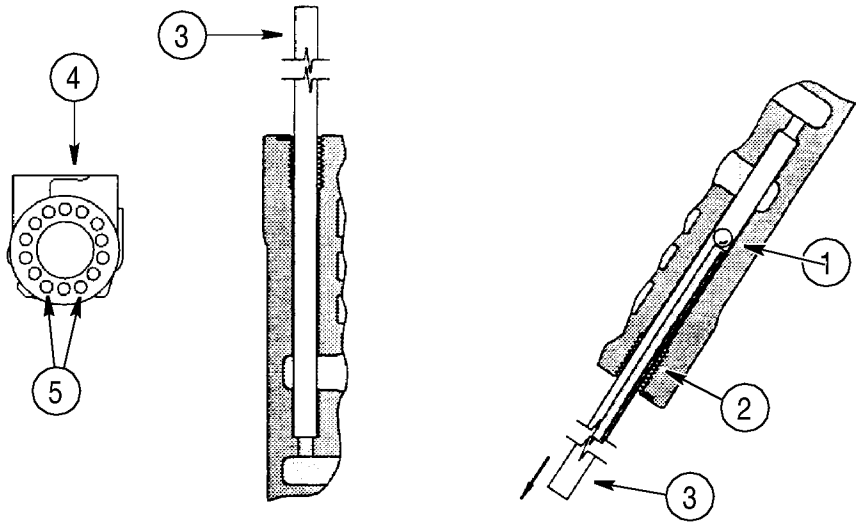


B790852

1. REMOTE STARTER SWITCH
2. TESTER
3. AUXILIARY STEERING MOTOR
4. AMMETER CLAMP
5. 24 VOLT BATTERY SYSTEM

B795328

6. AMMETER
7. VOLTMETER
8. LOAD CONTROL



GS98K530

1. BALL CHECK
2. ROLL PIN
3. SODA STRAW
4. PORT FACE
5. ANTI-CAVITATION VALVES

FIGURE 3. ANTI-CAVITATION VALVE - DISASSEMBLY

Inspection

1. Clean all parts in cleaning solvent and air dry on paper towels. Do not use cloths to wipe parts dry, as it may leave lint on the parts.
2. Check all machined surfaces for wear or damage. If there are rough places on the ends of the gerotor star or gerotor (4), steering control valve housing (7), end cap (2), or spacer plate (5), use 600 grit emery cloth to smooth the surfaces, refer to Figure 2. Place the emery cloth on a flat surface. If the emery cloth is new, rub a piece of steel across the emery cloth six times to remove the sharp pieces of grit. Make sure that the part is held flat on the emery cloth. Rub each part across the cloth six times. Check to see if the rough places are removed. Use this method until all rough places are removed. Clean the parts in cleaning solvent to remove any grit.
3. If the spool (9) and sleeve (8) or the bore in the housing of the steering control valve (7) is damaged or worn, use a new steering control valve.
4. Inspect the cap screws (1), pin (11), ball check (10), backup washer (15), seal ring (16), O-ring (17), needle thrust bearing (13) and bearing race (14). Use new parts as required.
5. If your steering control valve has anti-cavitation valves, inspect the ball checks (20) and roll pins (21) for damage or wear. Use new parts as required.

SPECIFICATIONS

Torque for piston cap screw.....585 to 720 Nm (431 to 531 pound-feet)
Torque for gland.....339 to 475 Nm (250 to 350 pound-feet)

STEERING CYLINDER

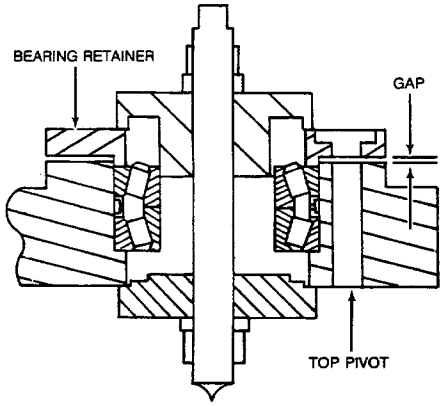
Disassembly

1. Fasten the tube (1) in a vise. Be careful not to damage the tube (1). Refer to the illustration on page 4.
2. Loosen and remove the gland (3) from the tube (1).
3. Pull the piston (11) straight out of the tube (1).
4. Fasten the yoke on the piston rod (10) in the vise and put a support below the piston rod (10) near the piston (11). Use a shop cloth between the support and the piston rod (10) to prevent damage to the piston rod (10).
5. Loosen and remove the bolt (15) and hardened washer (16) that hold the piston (11).
6. Remove the piston (11) from the piston rod (10).
7. Remove the seal (12), backup ring (13), and wear ring (14) from the piston (11).
8. Remove the gland (3) from the piston rod (10).
9. Remove the O-ring (6), backup ring (7), seal (4), seal (5), wiper (9), and guide (8) from the gland (3).

Inspection

1. Discard the O-ring (6), backup ring (7), seal (4), seal (5), wiper (9), and guide (8) from the gland (3). Refer to the illustration on page 4.
2. Discard the seal (12), backup ring (13), and wear ring (14) that were removed from the piston (11).
3. Clean all parts in cleaning solvent.
4. Check to be sure that the piston rod (10) is straight. If the piston rod (10) is bent, install a new piston rod (10).
5. Inspect the inside of the tube (1) for deep grooves and other damage. If there is any damage to the tube (1), a new tube (1) must be used.
6. Remove small scratches on the piston rod (10) or inside the tube (1) with emery cloth of medium grit. Use the emery cloth with a rotary motion.
7. Inspect the bushings (2) and replace as required.

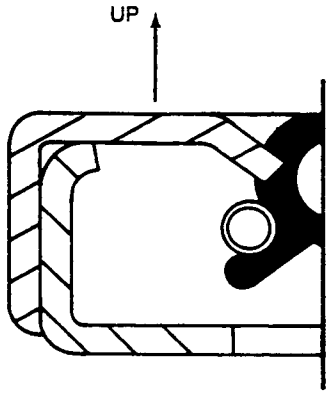
9. Put the bearing retainer (7) in place on the upper pivot bearing (9), refer to Figure 1.
10. Install the bearing driver and plate, refer to Figure 4.
11. Tighten a nut on the screw until the bearing retainer (7) is tight against the upper pivot bearing (9).



B1425A88J

FIGURE 4.

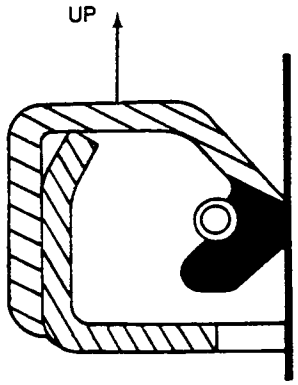
12. Measure the gap between the bearing retainer (7) and the top pivot. Make a record of the measurement. Subtract 0.0762 to 0.1016 mm (0.003 to 0.004 inch) from the measurement, refer to Figure 4. Select shims (8) equal to that value.
13. Remove the bearing driver, plate, and bearing retainer (7) from the top pivot.
14. Install the shims (8) and the bearing retainer (7).
15. Install the washers (2) and bolts (1). Tighten the bolts (1) to 124 Nm (92 pound-feet).
16. Install the seal (6) in the bearing retainer (7). The top of the seal (6) must be even with the top of the bearing retainer (7), refer to Figure 5.



B1426A88J

FIGURE 5.

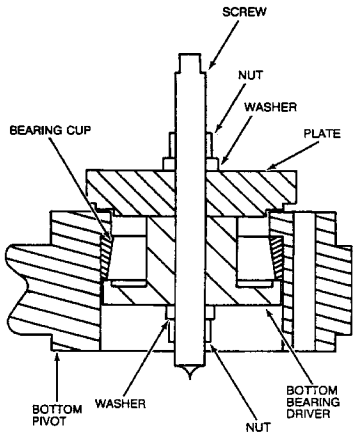
17. Fill the other seal (6) for the top pivot with grease. See Specifications in this section for the correct grease.
18. Use an acceptable driver to install the seal (6) in the bottom of the top pivot, refer to Figure 6.
19. The bottom of the seal (6) must be even with the bottom of the top pivot.



B1430A88J

FIGURE 6.

20. Apply grease to the upper pivot pin (4).
21. Install the upper pivot pin (4) in the top pivot.
22. Lubricate the top pivot until grease is forced out of the seal (6). See Specifications in this section.
23. Rotate the upper pivot pin (4) to check the bearing assembly. The upper pivot pin (4) must rotate smoothly, but not easily. Leave the upper pivot pin (4) in place to keep dirt out of the upper pivot bearing (9).
24. Lubricate the bore for the bottom pivot with grease. Install a bearing cup in the bottom pivot.
25. Install the bearing driver and plate, refer to Figure 7.



B1427A88J

FIGURE 7.

SECTION INDEX

POWER TRAIN

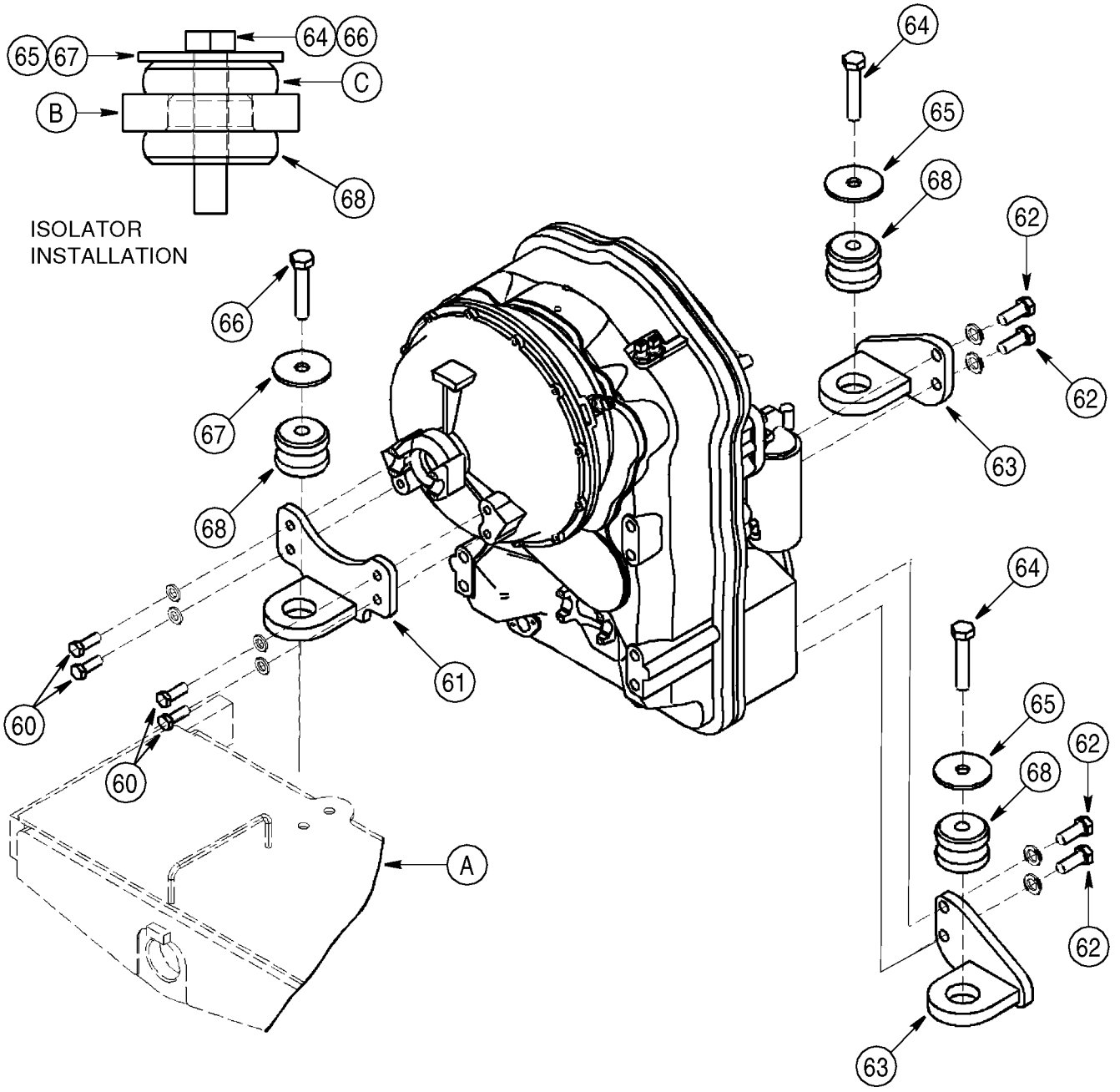
CASE CORPORATION
700 State Street
Racine, WI 53404 U.S.A.

CASE CANADA CORPORATION
3350 South Service Road
Hamilton, ON L7N 3M6 CANADA

Bur 6-44682

Issued October, 2001 Revised July, 2005

Transmission Mounting



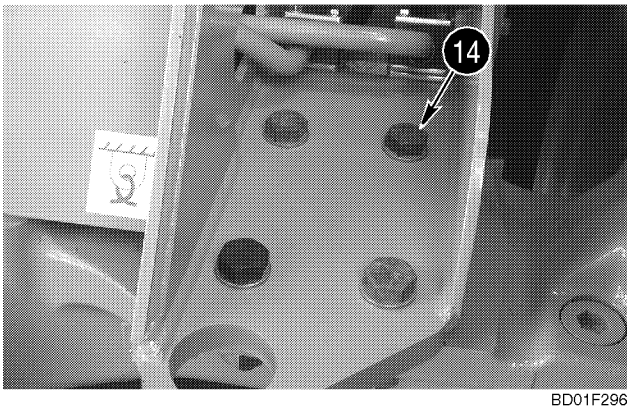
60. BOLT
61. TOP MOUNTING BRACKET
62. BOLT
63. MOUNTING BRACKET
64. BOLT
65. WASHER
66. BOLT
67. WASHER
68. ISOLATOR
A. REAR CHASSIS TRUNNION
B. BRACKET (61 OR 63)
C. SMALLER PIECE ON TOP

Installation

STEP 74

Carefully move front axle under machine and raise against mounting pads on machine.

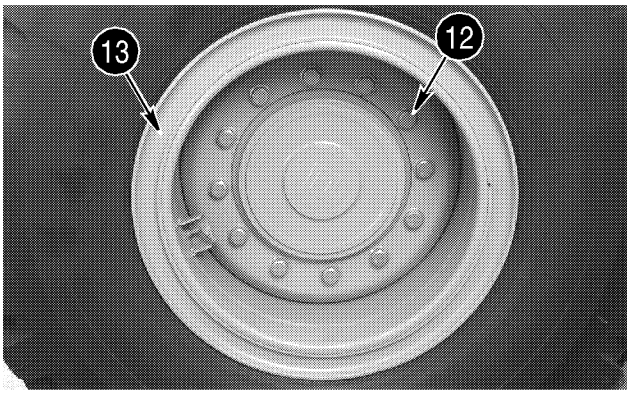
STEP 75



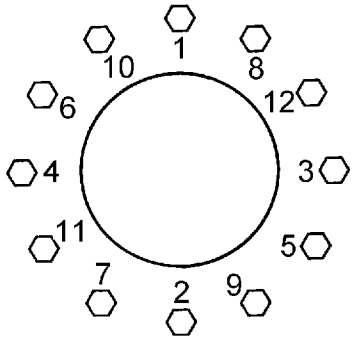
BD01F296

Install eight washers (15), bolts (14), washers (16), and nuts (17) to secure front axle to machine. Tighten bolts to a torque of 845 to 950 Nm (625 to 700 lb-ft).

STEP 76



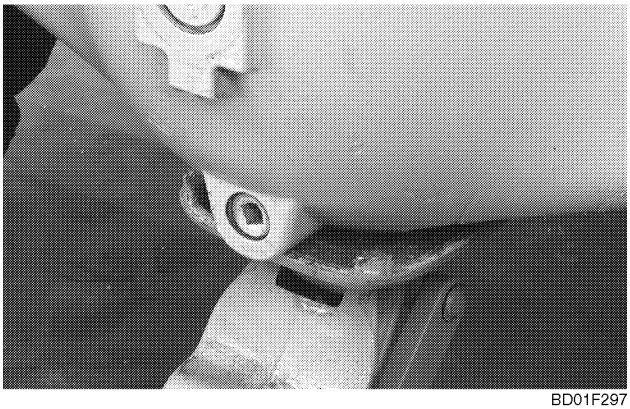
BD01F295



B0987A88

Install both wheels (13) on front axle and secure using 10 washers and bolts (12). Tighten bolts to a preliminary torque of 203 Nm (150 lb-ft) in sequence indicated; then tighten to a torque of 640 to 720 Nm (475 to 530 lb-ft) in same sequence.

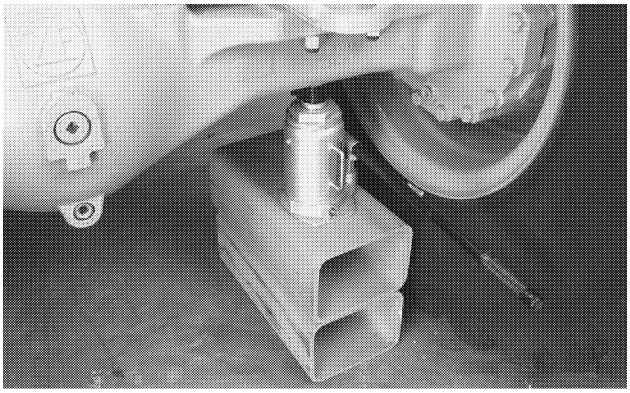
STEP 77



BD01F297

Remove jack from front axle.

STEP 78



BD01F298

BD01D392

Using an acceptable hydraulic jack, raise axle and remove jack stand from under machine.

STEP 79

Repeat Step 78 to remove other jack stand from under machine.

SPECIAL TOOLS

CAS-1953A Transmission supplemental fitting kit. Includes: CAS-2324 special 90 degree adapter and CAS-2325 plug and cap set.

CAS-1804 Master pressure test kit

CAS-1808 Flowmeter kit

CAS-2702 Flowmeter adapter

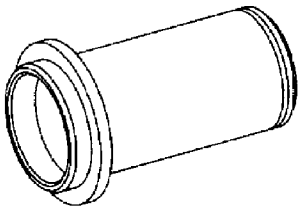
CAS-2278 Flow test kit

SPECIFICATIONS

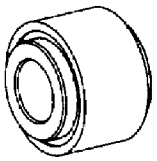
Main pressure and clutch pressure .....16 to 18 bar (232 to 261 psi)
Converter in pressure .....8 to 10 bar (116 to 145 psi)
Pressure reduction for solenoids .....7 to 9 bar (102 to 131 psi)
Converter out pressure .....2.5 bar (36 psi) minimum
Lubrication pressure .....0.2 to 1.2 bar (3 to 18 psi)
Minimum pump output (at 2000 rpm)
621D .....52 L/min (14 U.S. gpm)
Transmission oil operating temperature .....80 to 120 °C (176 to 248 °F)
Clutch KV .....16 to 18 bar (232 to 261 psi)
Clutch KR .....16 to 18 bar (232 to 261 psi)
Clutch K1 .....16 to 18 bar (232 to 261 psi)
Clutch K2 .....16 to 18 bar (232 to 261 psi)
Clutch K3 .....16 to 18 bar (232 to 261 psi)
Clutch K4 .....16 to 18 bar (232 to 261 psi)

NOTES

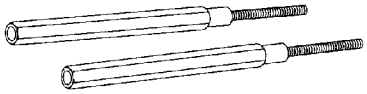
SPECIAL TOOLS



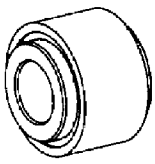
CAS2803 TRANSMISSION TORQUE CONVERTER SEAL INSTALLATION TOOL



CAS2807 TRANSMISSION INPUT/OUTPUT SHAFT SEAL INSTALLATION TOOL



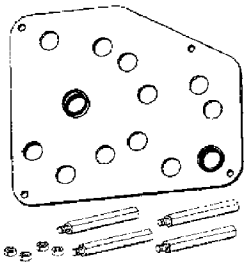
CAS2885 TRANSMISSION VALVE ADJUSTMENT TOOL SET



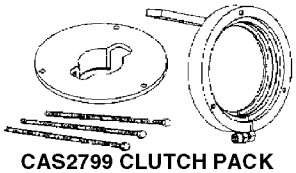
CAS2869 TRANSMISSION OUTPUT SHAFT SEAL INSTALLATION TOOL (521D AND 621 MODELS ONLY)

BS02C093 THRU 096

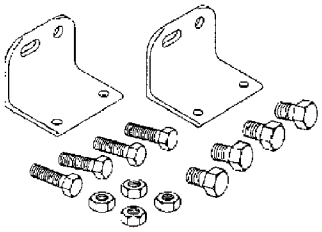
CAS40075 TRANSMISSION TOOL KIT



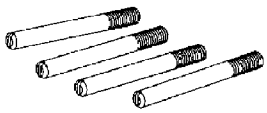
CAS2796 NESTING PLATE



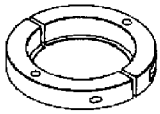
CAS2799 CLUTCH PACK H0LDER AND SPRING COMPRESSOR TOOLS



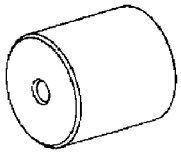
CAS2801 TRANSMISSION MOUNTING BRACKETS



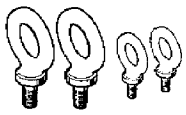
CAS2802 ALIGNMENT DOWEL SET



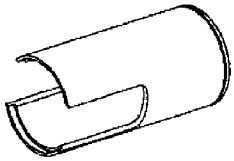
CAS2798 GEAR PULLER COLLET SET



CAS2800 CLUTCH ASSEMBLY HOLDING KNOB SET



CAS2797 LIFTING EYEBOLT SET



CAS2868 CLUTCH SPRING COMPRESSOR (521D AND 621 MODELS ONLY)

BS02C097 THRU 104

CAS40079 TRANSMISSION OVERHAUL KIT

SPECIAL TORQUES

Oil pipes
- Studs ..... 9 Nm (80 lb-in)
- Socket head screw ..... 23 Nm (204 lb-in)
- Screw plug ..... 51 Nm (38 lb-ft)

Clutch K1, K2, K3, K4 Stud ..... 17 Nm (150 lb-in)

Plugs ..... 25 Nm (221 lb-in)

Output shaft
- Output shaft screws (apply Loctite 243 to threads) ..... 23 Nm (204 lb-in)
- Housing cover screws (apply Loctite 574 to threads) ..... 46 Nm (407 lb-in)
- Output flange screws ..... 34 Nm (301 lb-in)

Oil feed housing and transmission pump
- Transmission pump screws ..... 46 Nm (407 lb-in)
- Oil feed housing screws ..... 25 Nm (221 lb-in)

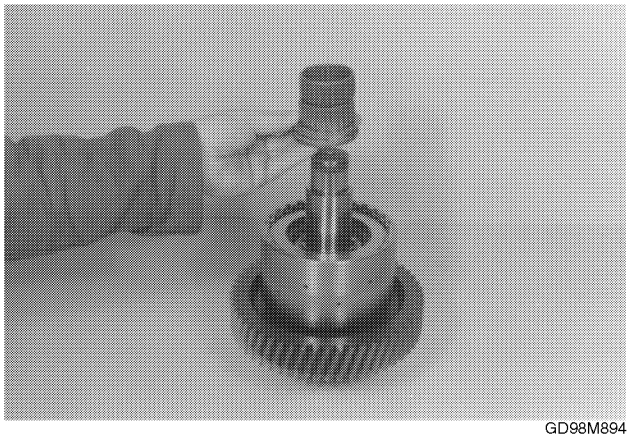
Engine connection and converter
- Input shaft screws ..... 115 Nm (85 lb-ft)
- Converter housing screws ..... 68 Nm (50 lb-ft)
- Cover ..... 23 Nm (204 lb-in)
- Converter cover ..... 46 Nm (407 lb-in)
- Input flange ..... 34 Nm (301 lb-in)

STEP 51

GD98M893

Remove the idler gear.

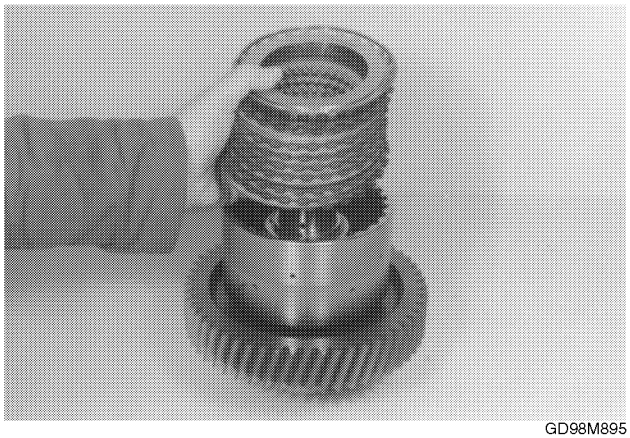
STEP 52



GD98M894

Remove the needle bearings and thrust bearing.

STEP 53



GD98M895

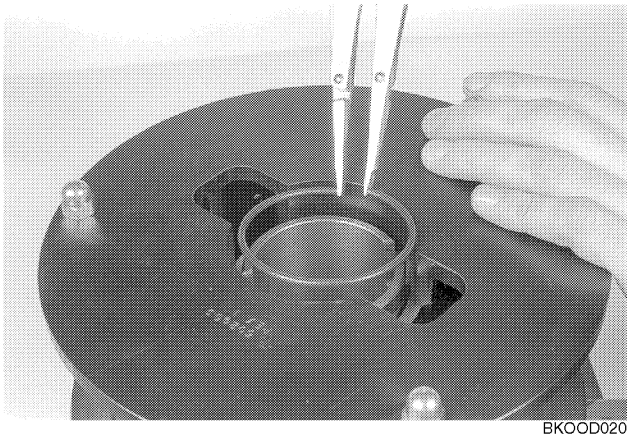
Remove the snap ring and remove the clutch disc pack.

STEP 54

BK00D018

Preload compression spring using CAS2799 clutch pack holder and spring compressor tool.

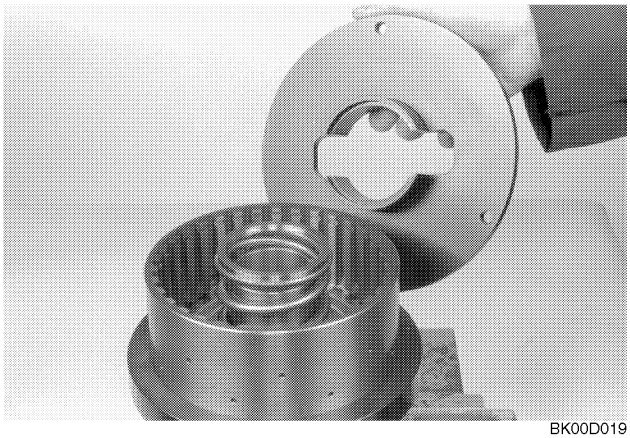
STEP 55



BKOOD020

Remove the snap ring.

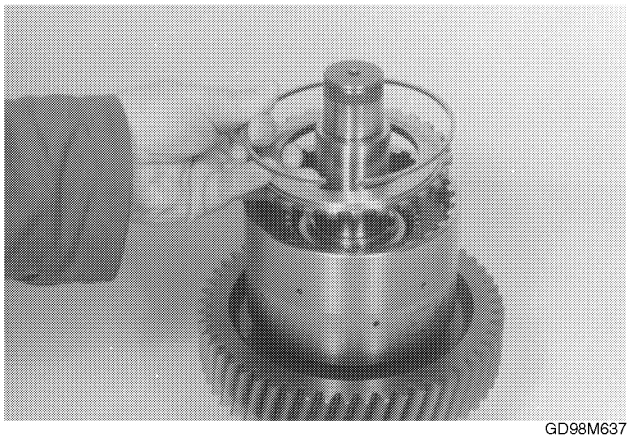
STEP 56



BK00D019

Remove the compression spring.

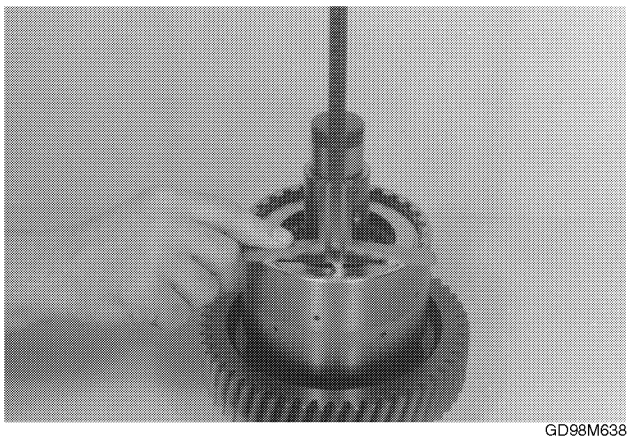
STEP 103



GD98M637

Install the end shim and snap ring.

STEP 104

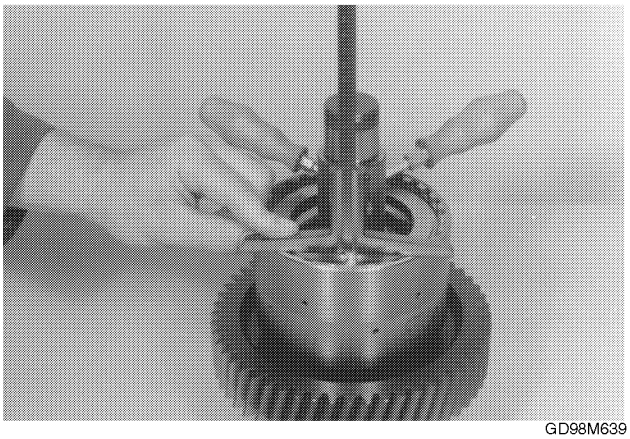


GD98M638

Adjust running clearance for K1, K2, and K3 to 2.1 to 2.3 mm (0.083 to 0.090 in). Press down on the end shim with approximately 10 kg (20 lb). Measure and record dimension (A) from carrier face to end shim using depth gauge as shown.

Example
Dimension A . . . . . 8.2 mm (0.32 in)

STEP 105



GD98M639

Use tools to lift the end shim against snap ring (upward) until contact is obtained. Measure and record dimension (B) from carrier face to end shim using depth gauge as shown. Subtract this measurement from the measurement of Step 104. The difference is the running clearance.

Example
Dimension A . . . . . .8.2 mm (0.32 in)
Dimension B . . . . . .6.1 mm (0.24 in)

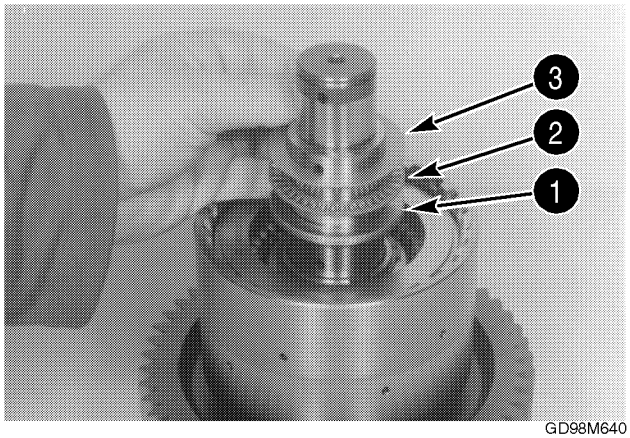
Difference = Running . . . . . .2.1 mm (0.08 in)
Clearance

Required running clearance is 2.1 to 2.3 mm (0.083 to 0.090 in). Use snap ring(s) of different thickness as necessary to obtain correct running clearance.

STEP 106

Remove clutch disc pack, apply oil to discs, and install clutch disc pack, end shim, and snap ring as determined in Step 105.

STEP 107

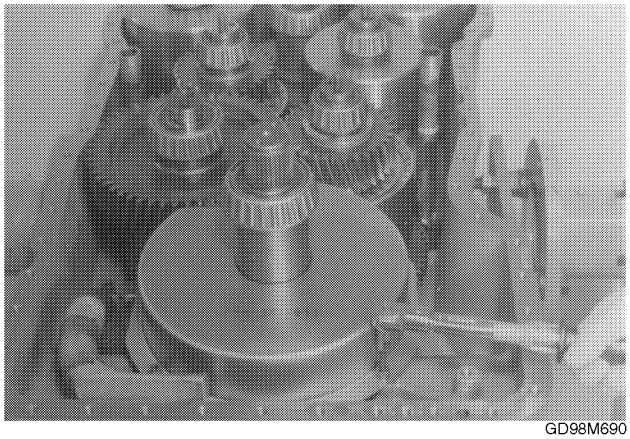


GD98M640

Install the thrust washer (1), thrust bearing (2), and thrust washer (3).

NOTE: *Install the thrust washer (1) with the chamfer facing the thrust bearing.*

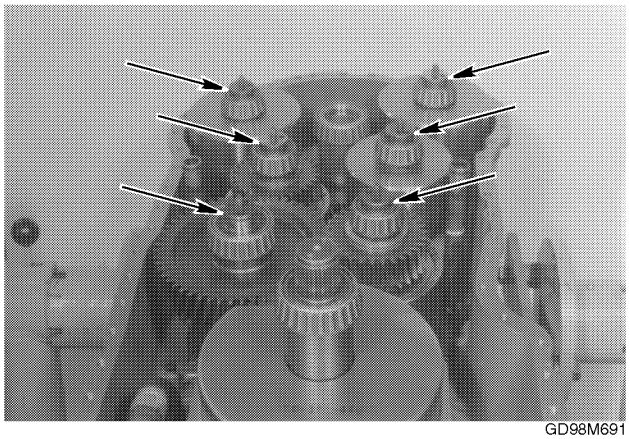
STEP 159



GD98M690

Apply Loctite 243 to the socket head screws and install the screws. Tighten the screws to a torque of 23 Nm (204 lb-in).

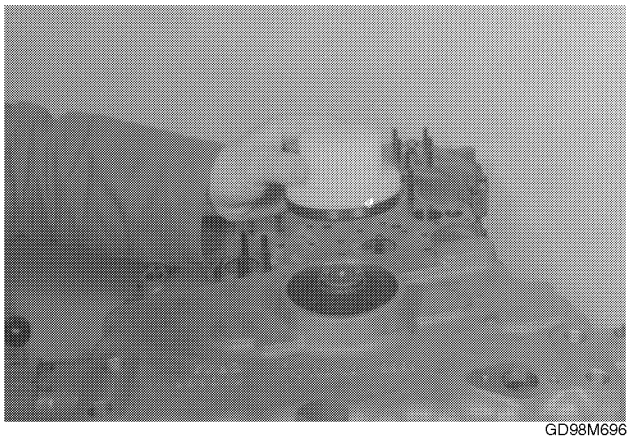
STEP 160



GD98M691

Install rectangular rings in grooves of clutch shafts. Apply grease to rings and align rings.

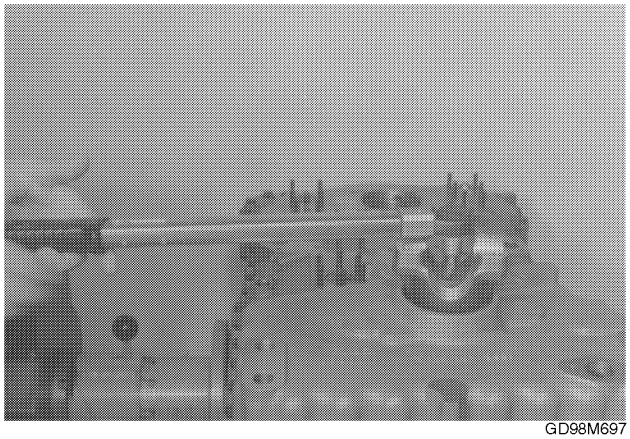
STEP 161



GD98M696

Position shaft seal with sealing lip facing oil chamber. Apply grease to sealing lip. Use CAS2869 transmission output shaft seal installation tool to install seal.

STEP 162



GD98M697

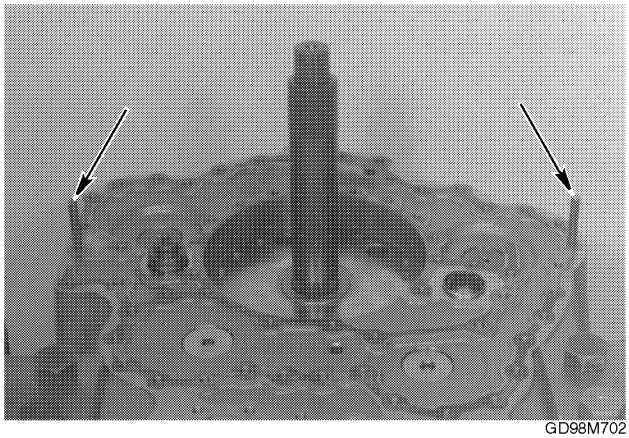
Heat the output flange to about 90° C (194° F). Apply Loctite 574 to the contact area and assemble the flange with the washers and hex head screws. Tighten the screws to a torque of 34 Nm (301 lb-in). Bend corner of lock plate over hex head screws.

STEP 163

Repeat Steps 161 and 162 to install shaft seal and output flange on converter side.

NOTE: *The following steps are for the assembly of the oil feed housing and transmission pump.*

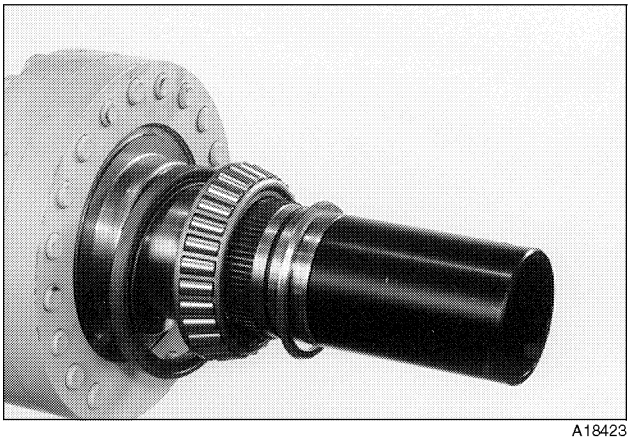
STEP 164



GD98M702

Install two alignment studs and install the gasket.

STEP 12

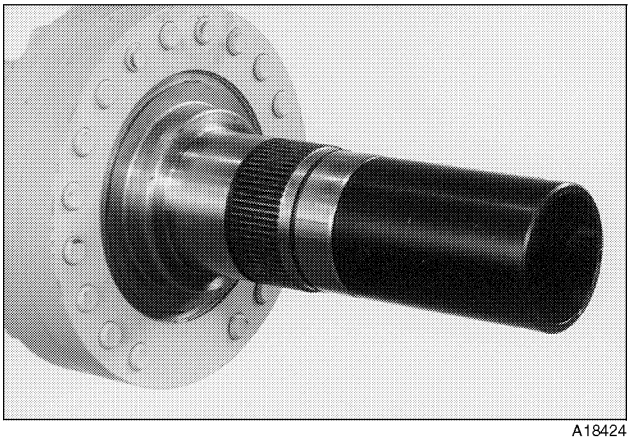


A18423

The seal, bearing, and spacer may stay on the axle housing when the hub is removed. If so, remove the items now. Discard O-ring.

NOTE: *Do not remove the dust cover from the spindle on the 411 axle.*

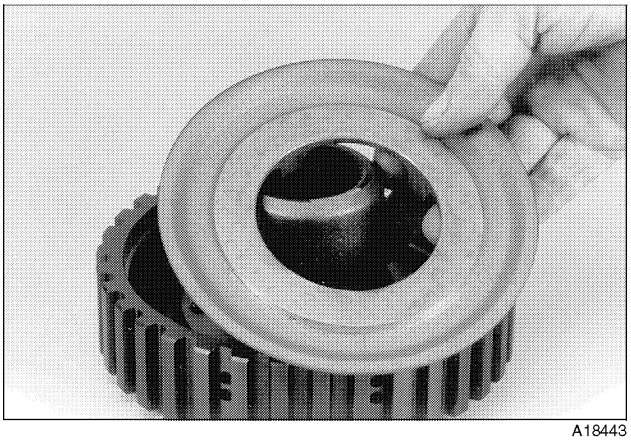
STEP 13



A18424

If necessary, remove the axle spindle.

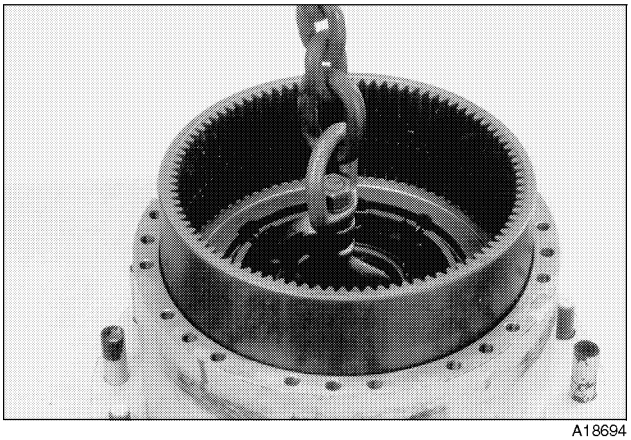
STEP 14



A18443

Remove the wear ring from the disc carrier.

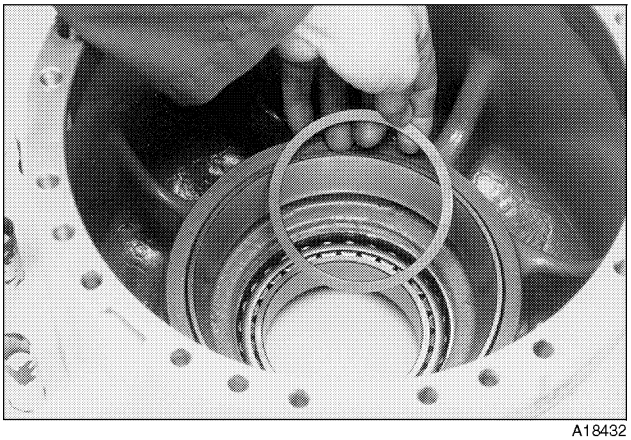
STEP 15



A18694

Remove the carrier using carrier lifting plate CAS-2290-3 and eyebolt CAS-2290-5.

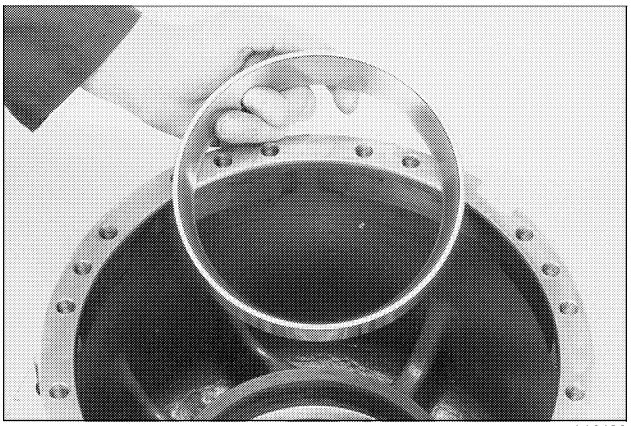
STEP 16



A18432

Remove the bearing spacer.

STEP 17

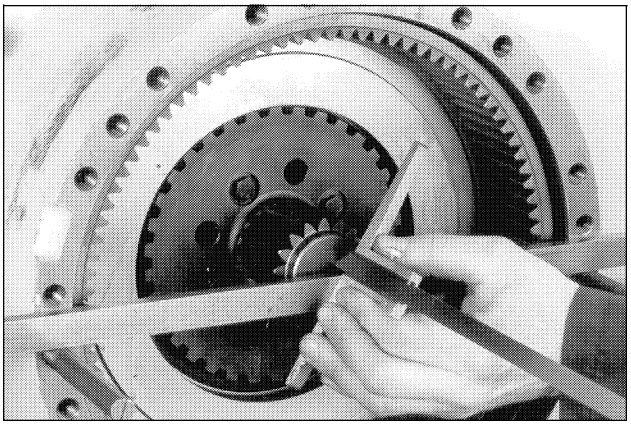


A18430

Remove the inner bearing cup.

Disc Carrier End Play Procedure

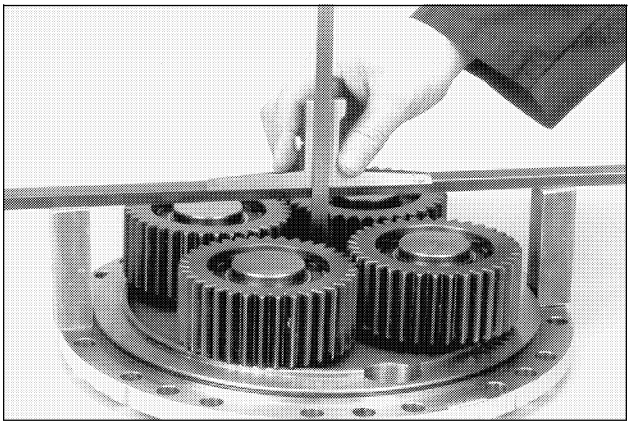
STEP 53



A18693

Install the stub shaft. Measure from hub end to stub shaft. Dimension X.

STEP 54



A18677

Measure from the cover mounting surface to the installed thrust washer. Dimension XX.

STEP 55

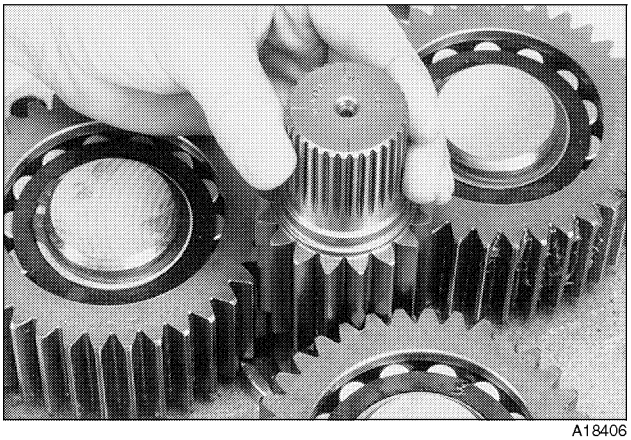
Subtract dimension XX from dimension X.

Example:
5.7 mm---Dimension X
5.2 mm---Dimension XX
0.5 mm---Required end play.

End play must be 0.3 to 0.6 mm.

Install correct size thrust washer and lock in place with Loctite 270.

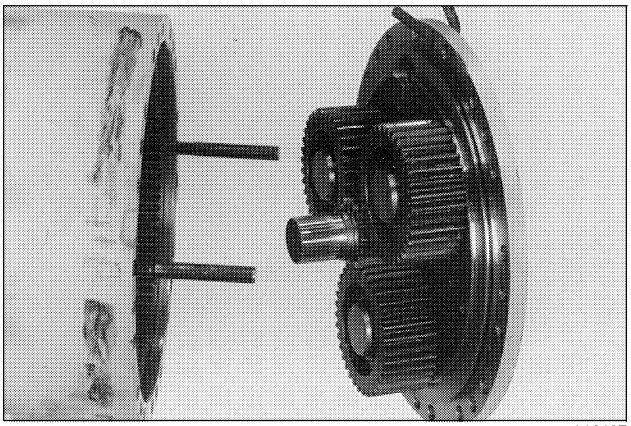
STEP 56



A18406

Install the stub shaft between the planet gears.

STEP 57



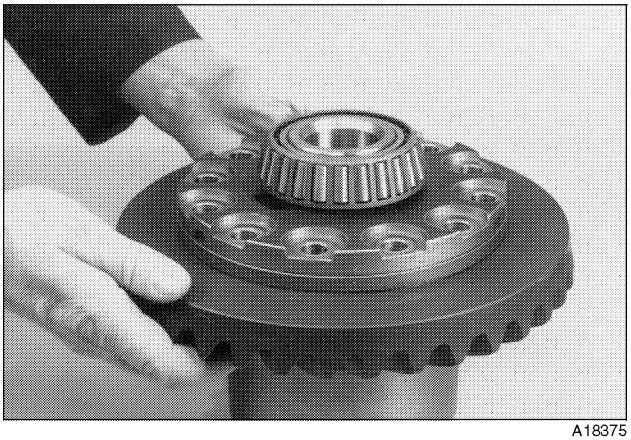
A18407

Install the guide studs in the hub. Use CAS-2286 for 407 and 409 axles. Use CAS-2285 for 411 axles. Install the cover and gears. Turning the hub will help align the gears also.

STEP 58

Install the planetary drain plug and fill the axle with 135H EP gear lubricant. See the operators manual for the procedure.

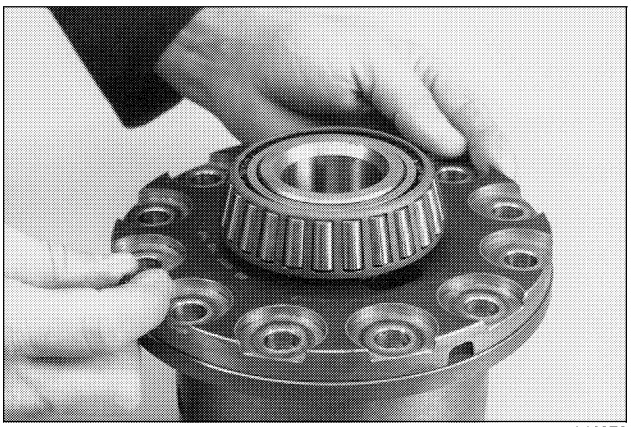
STEP 94



A18375

Mark the ring gear to the housing. Remove the ring gear.

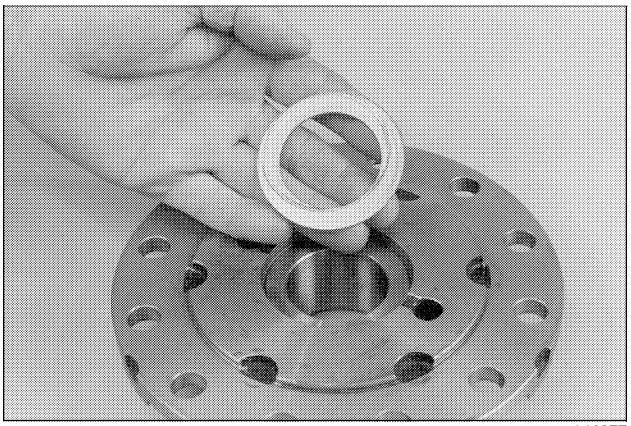
STEP 95



A18376

Remove the differential cover. Mark the cover to the housing for assembly.

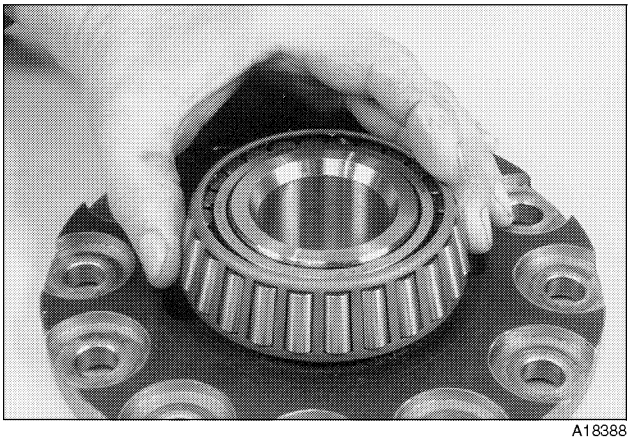
STEP 96



A18377

Remove the thrust washer.

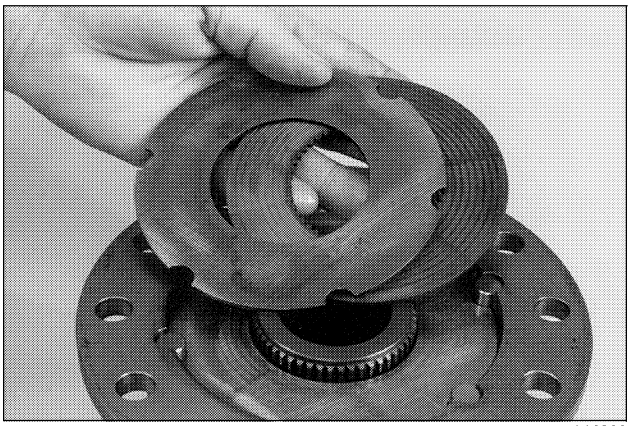
STEP 97



A18388

Remove the bearing cone from the cover.

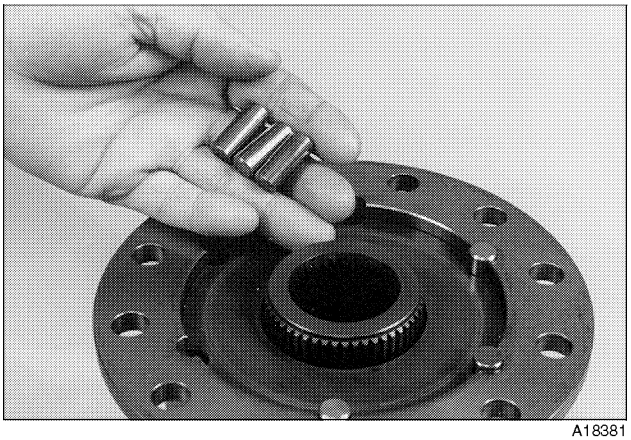
STEP 98



A18380

Remove the clutch discs.

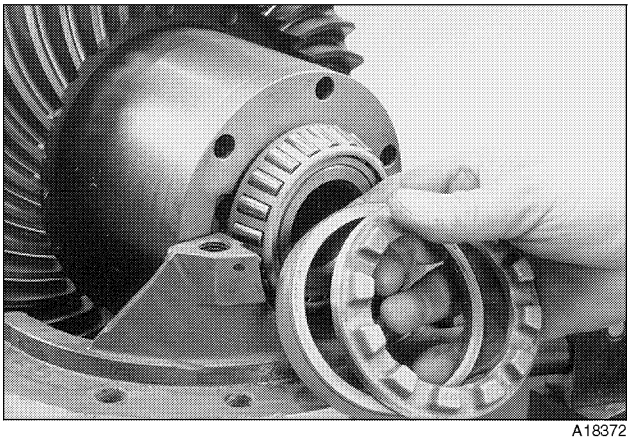
STEP 99



A18381

Remove the pressure ring pins.

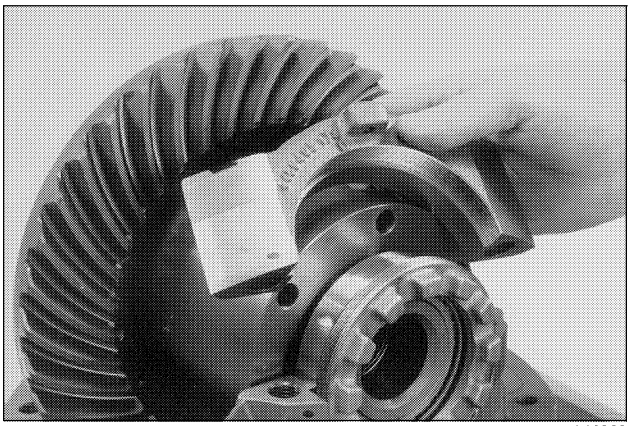
STEP 140---407 Only



A18372

Install the bearing cups and adjusting nuts.

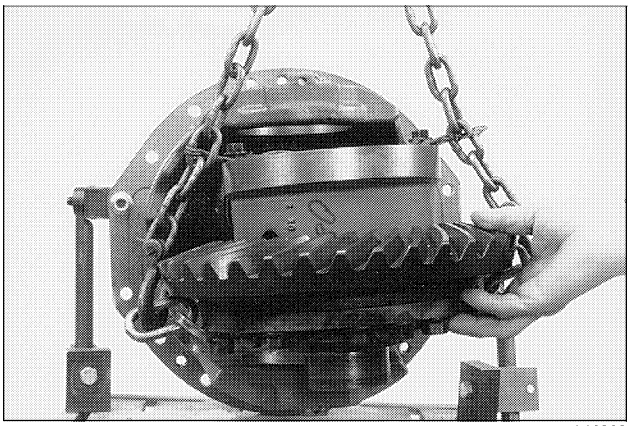
STEP 141---407 Only



A18369

Install the bearing caps. Align marks on caps and carrier which were made during disassembly.

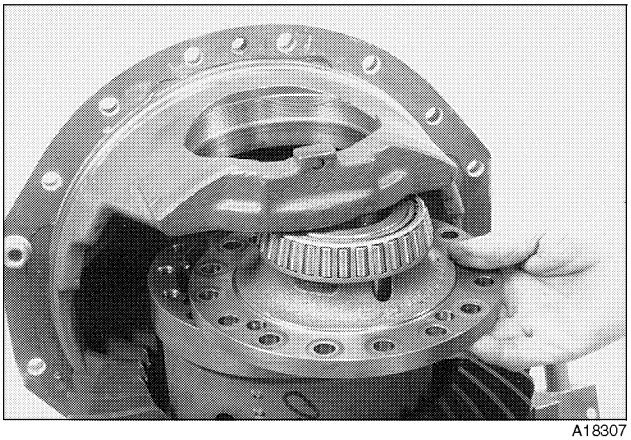
STEP 142---409 and 411 Only



A18309

Install the differential.

STEP 143---411 Only

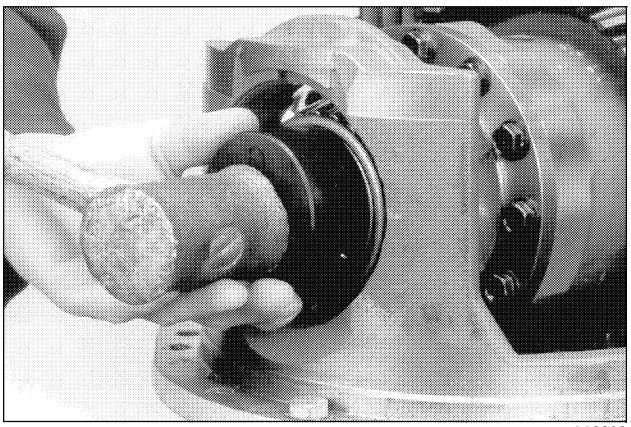


A18307

Install the differential cover. Align marks on cover and housing which were made during disassembly.

NOTE: *The drive pins must be blocked by the cover to prevent falling out. Turn cover until all pins are blocked.*

STEP 144---409 and 411 Only



A18683

Install the bearing cone or cones on the differential housing. Use forcing cup CAS-1732 to install the one cone on the 411 axle and forcing cup CAS-2304 to install both bearings on the 409 axle.

STEP 145---409 and 411 Only

A18305

Install the bearing cups on the bearings.

Section 6004

FRONT AXLE

6004

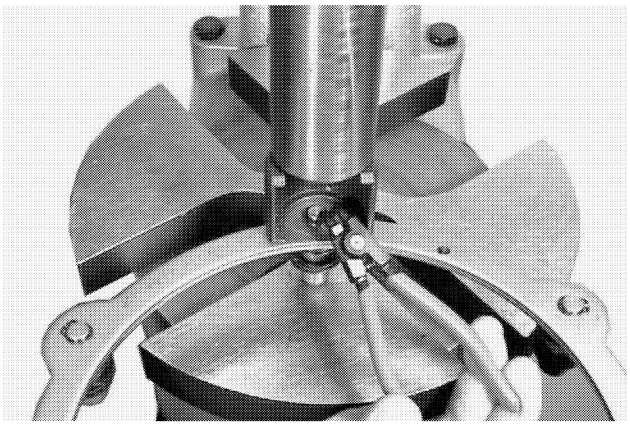
CASE CORPORATION
700 State Street
Racine, WI 53404 U.S.A.

CASE CANADA CORPORATION
3350 South Service Road
Burlington, ON L7N 3M6 CANADA

Bur 6-45240

Printed in U.S.A.
June, 2002

STEP 24



BD00M259

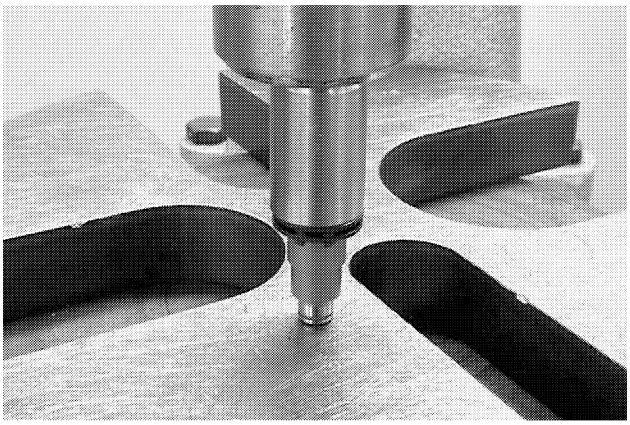
Put support shim in a press and compress Belleville washers. Remove retaining ring and pull pin with Belleville washers and rings installed from support shim. Repeat this step to remove the remaining five retaining rings and pins from support shim.

STEP 25

BD00M260

Remove seven Belleville washers from each pin.

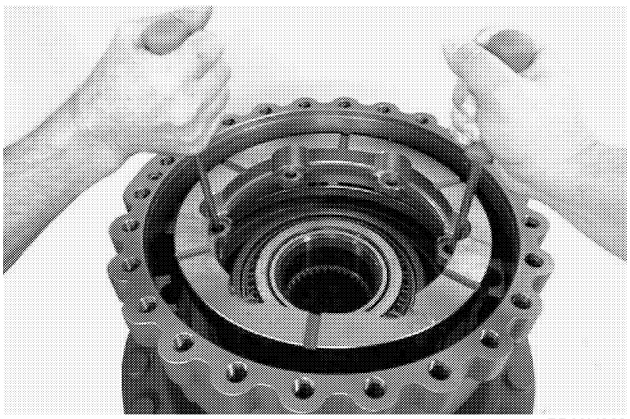
STEP 26



BD00M261

Using a press, remove four gripping rings from each pin.

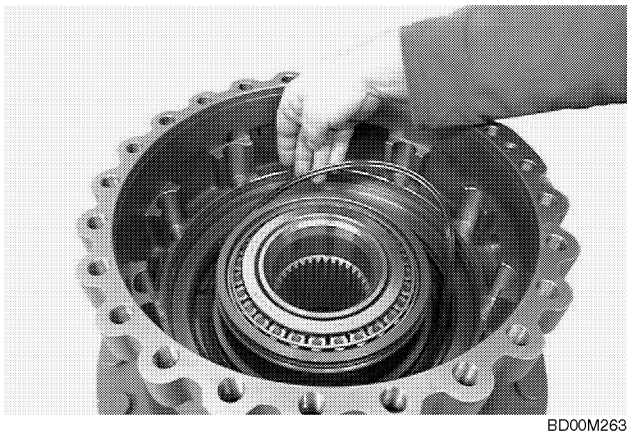
STEP 27



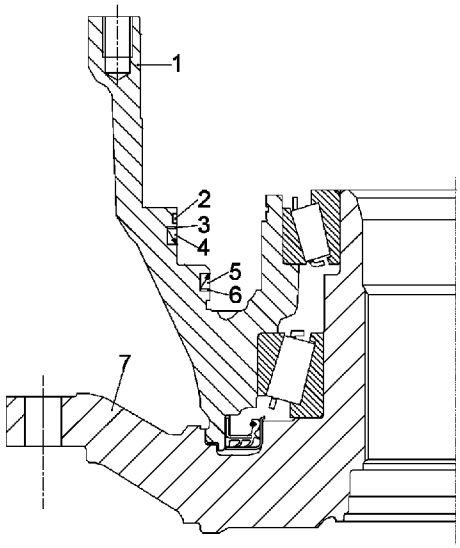
BD00M262

Lift and remove the piston from the brake housing.

STEP 28



BD00M263

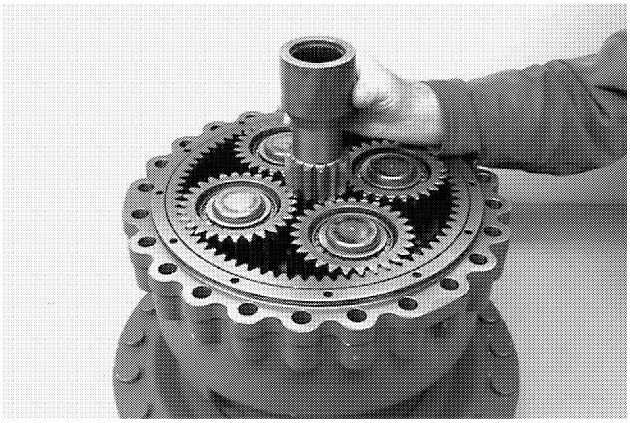


BS00M072

1. BRAKE HOUSING
2. GUIDE RING
3. SUPPORT RING
4. U-RING
5. U-RING
6. SUPPORT RING
7. WHEEL END SHAFT

Remove the guide ring (2), support rings (3 and 6), and U-rings (4 and 5) from the grooves of the brake housing.

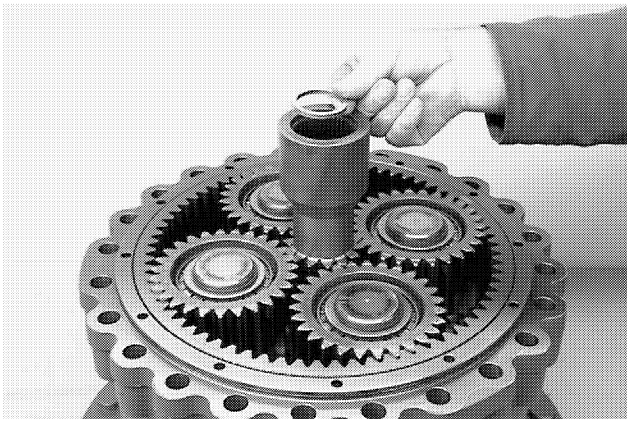
STEP 72



BD00M245

Install the sun gear shaft in the planet carrier.

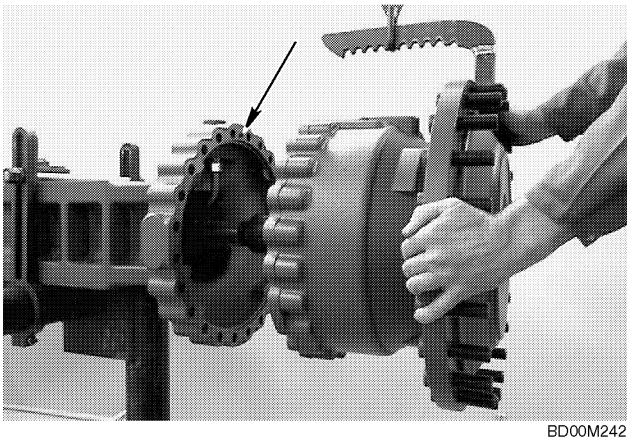
STEP 73



BD00M244

Install the shim set (size as determined in Step 71 above) into the sun gear shaft with grease.

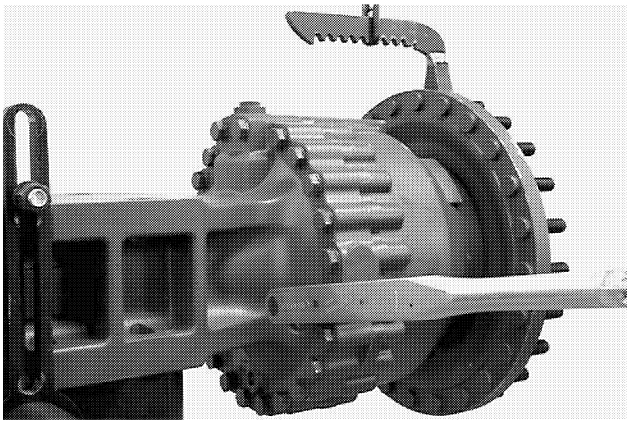
STEP 74



BD00M242

Apply grease to a new O-ring and install O-ring in brake port. Use acceptable lifting equipment and install the assembled wheel end onto the axle housing.

STEP 75



BD00M300

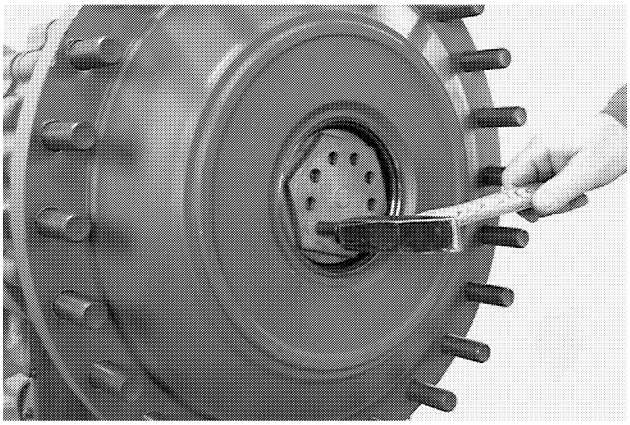
Install the washers and bolts to secure the wheel end to the axle housing. Tighten the bolts to a torque of 390 Nm (288 lb-ft).

STEP 76

BD00M301

Install the lock nut by hand and tighten using CAS2883 support bracket and CAS2876 locknut socket and nuts. Tighten the lock nut to a torque of 700 to 1000 Nm (516 to 737 lb-ft).

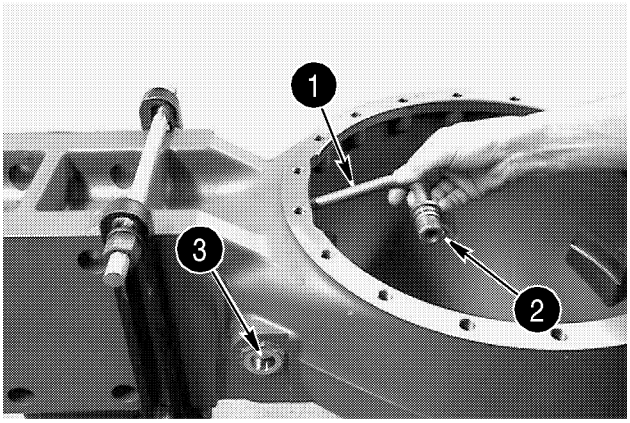
STEP 77



BD00M302

Install the slotted pin into the wheel end lock nut.

STEP 121

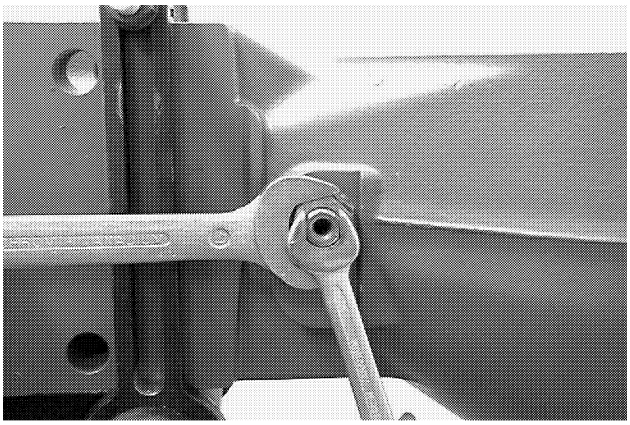


BD00M344

1. BRAKE TUBE
2. FITTING
3. CONNECTOR

Install the brake tube (1) in the axle housing, inserting the fitting (2) through the connector (3).

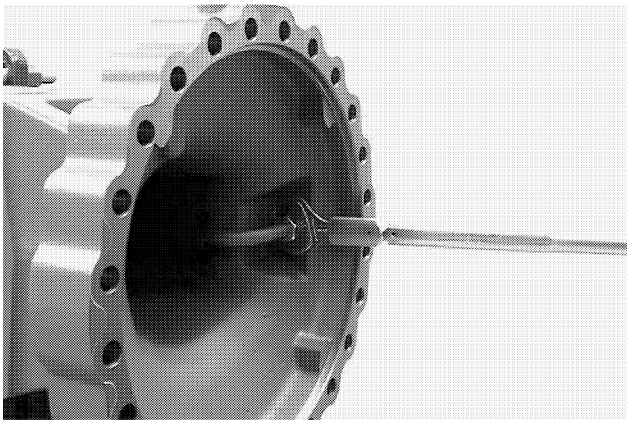
STEP 122



BD00M345

Install the nut to secure the brake tube fitting. Tighten the nut to a torque of 70 Nm (52 lb-ft).

STEP 123

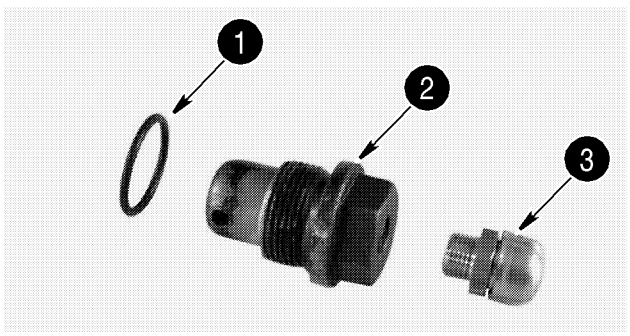


BD00M346

Connect fitting on opposite end of brake tube to fitting installed in wheel end. Tightening brake tube fitting to a torque of 80 Nm (60 lb-ft).

NOTE: *Do Steps 117 to 123 on other wheel end.*

STEP 124

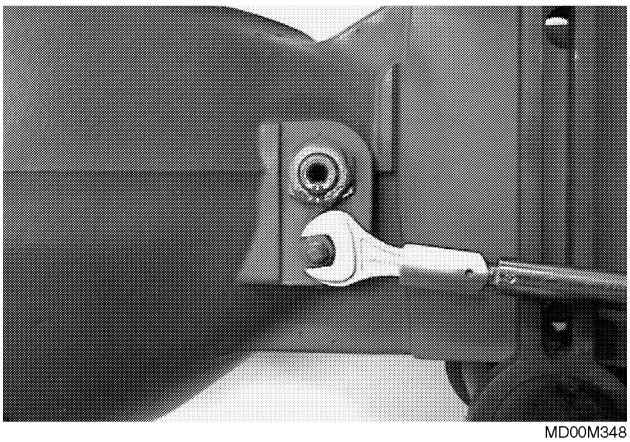


BD00M347

1. O-RING
2. PLUG
3. BREATHER

Remove and discard O-ring (1) from plug (2) and install a new O-ring. Install breather (3) in plug.

STEP 125

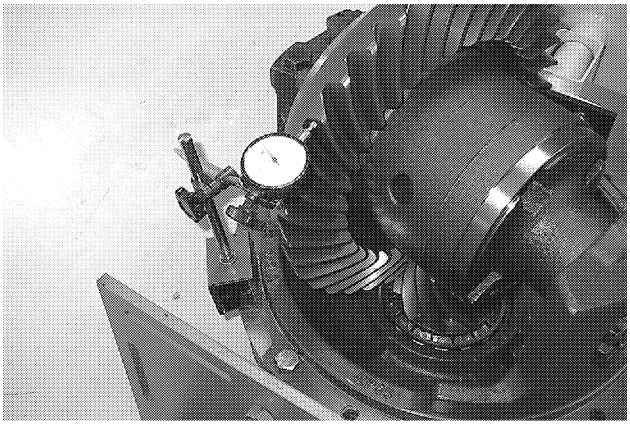


MD00M348

Install the plug in axle housing. Tighten plug to a torque of 70 Nm (52 lb-ft)

Adjust Backlash and Bearing Preload

STEP 170



BD01F061

Place CAS10066A dial indicator right-angled at the outer diameter of the tooth flank (ring gear). Adjust the pinion to ring gear backlash to the low side of specifications (see numbers etched on the outer diameter of the ring gear) by alternately turning each of the adjusting nuts to move the ring gear closer to or further away from the pinion.

STEP 171

Go to the adjusting nut opposite the ring gear and loosen the nut approximately one turn to release pressure on the bearing. It should be very noticeable that pressure is released on the bearing, as the adjusting nut will turn much easier.

STEP 172

Tighten the bearing adjusting nut slowly until firm contact is made with the bearing.

NOTE: *As the adjusting nut makes firm contact with the bearing, the adjusting nut will immediately begin to turn with more effort.*

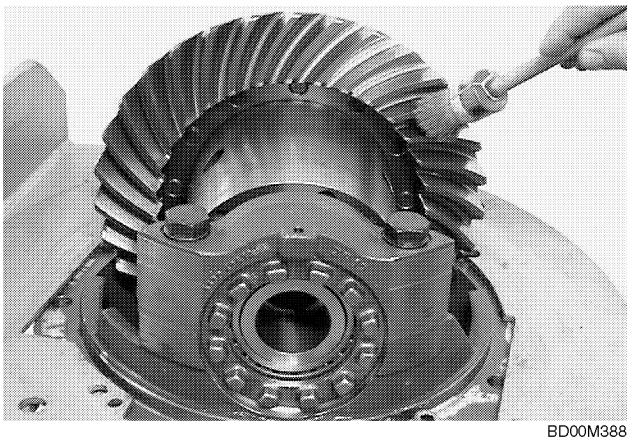
STEP 173

To adjust the differential bearing preload, note the position of the adjusting nut. Now tighten the nut two additional notches.

STEP 174

When the bearing preload is adjusted the backlash may increase slightly. Check pinion backlash to confirm that it is within specifications. If within specifications, install the adjusting nut locking roll pins. If backlash is outside of specified range, repeat Step 170 through 174 again.

STEP 175



BD00M388

Apply marking ink on several teeth of the ring gear and rotate it in both directions. Compare the obtained tooth contact pattern with the examples on pages 4 and 5.

NOTE: *If the tooth contact pattern differs, the wrong shim size was selected in Step 130. Remove differential and repeat Steps 126 though 130.*

STEP 176

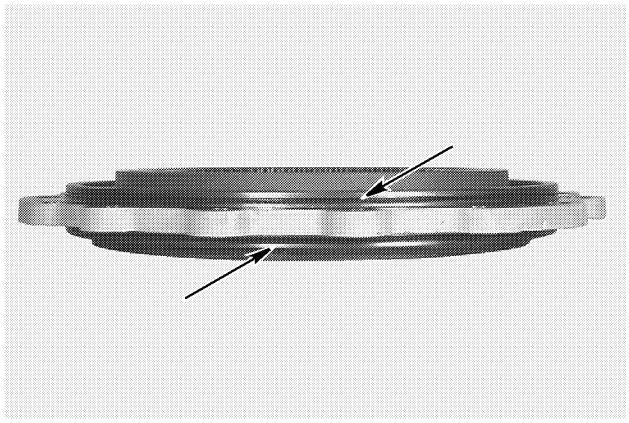
BD00M389

Install pins to secure both adjusting nuts.

STEP 177

Apply sealing compound (Three Bond Type 1215) to differential mounting surface on axle housing. Install two CAS2861 alignment studs in axle housing to aid installation of differential carrier. Using suitable lifting equipment, install the differential carrier in the axle housing then remove alignment studs.

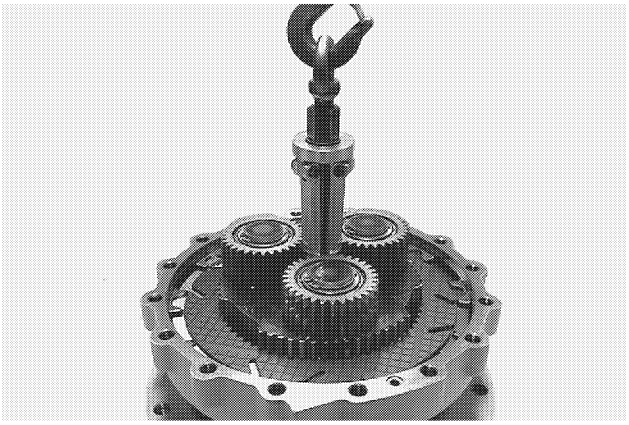
STEP 12



BD02D014

Remove and discard O-rings from ring gear.

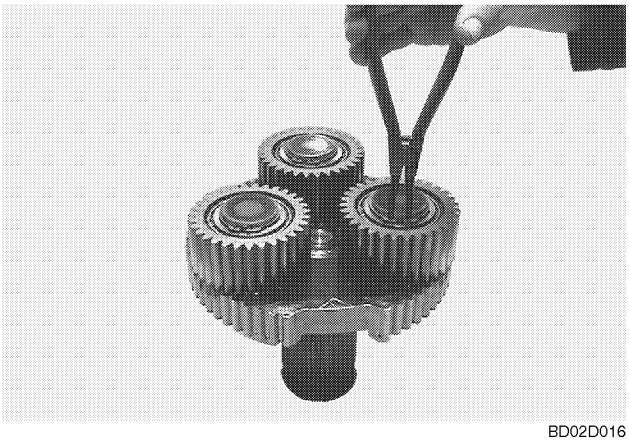
STEP 13



BD02D015

Using OEM4054 pulling attachment, remove the planetary carrier.

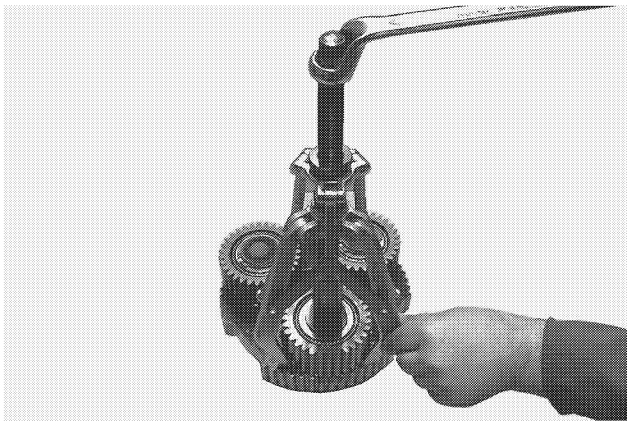
STEP 14



BD02D016

Remove retaining ring.

STEP 15



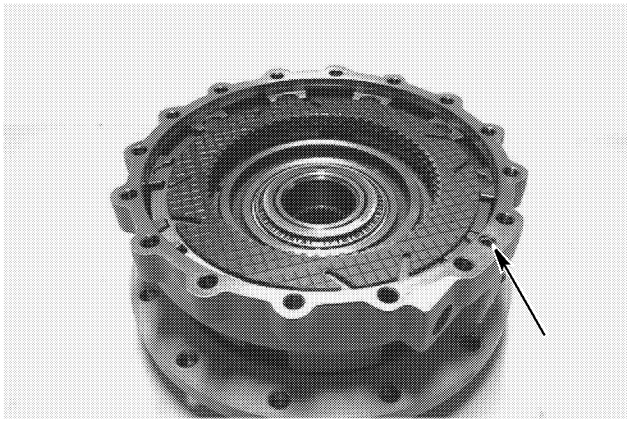
BD02D017

Using CAS2848 planetary gear puller and step plate 8061, remove planetary gear and outer bearing from planetary carrier shaft. Using a suitable puller, remove the inner bearing from carrier shaft.

STEP 16

Repeat Steps 14 and 15 to remove the remaining two retaining rings, planetary gears, and four bearings.

STEP 17



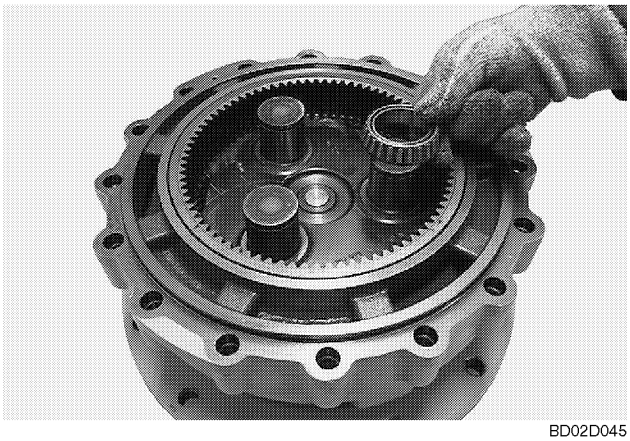
BD02D018

Remove and discard O-ring from brake housing port.

STEP 63

> **WARNING:** *Always wear heat protective gloves to prevent burning your hand when handling heated parts.*

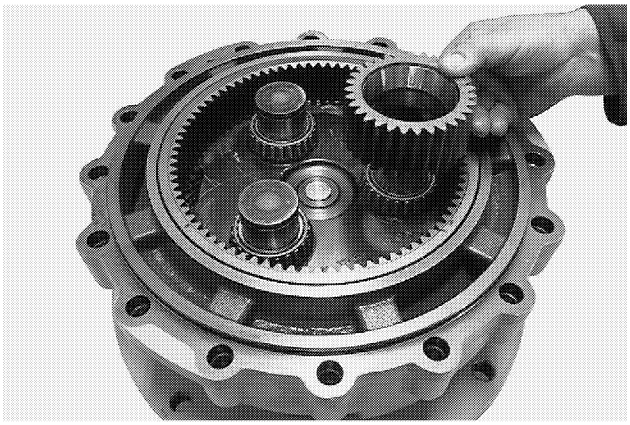
SM121A



BD02D045

Heat the planetary gears inner bearings to 100° C (212° F) in a bearing oven. Wearing heat resistant gloves or mittens, install the bearings on the shafts until the bearing is against the bottom of the shaft.

STEP 64



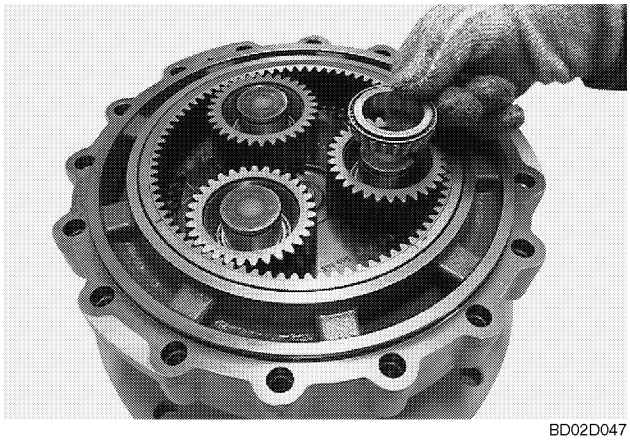
BD02D046

Install the planetary gears on the bearings.

STEP 65

> **WARNING:** *Always wear heat protective gloves to prevent burning your hand when handling heated parts.*

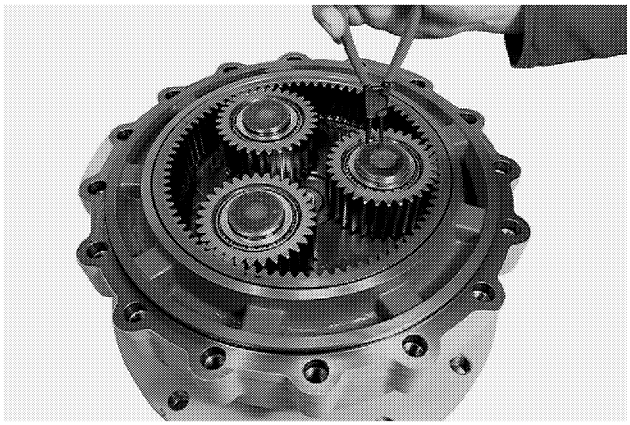
SM121A



BD02D047

Heat the planetary gears outer bearings to 100° C (212° F) in a bearing oven. Wearing heat resistant gloves or mittens, install the bearings on the shafts until the bearing is against the gear.

STEP 66

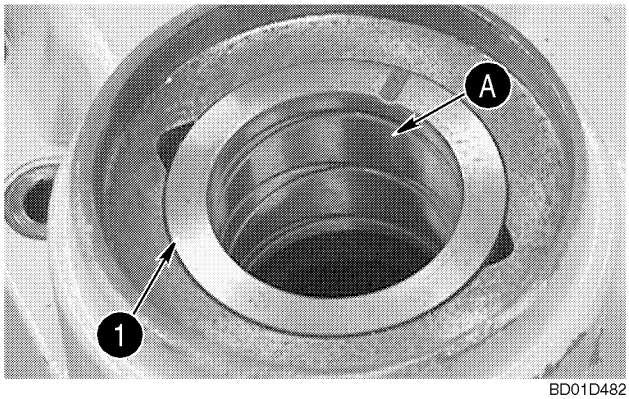


BD02D048

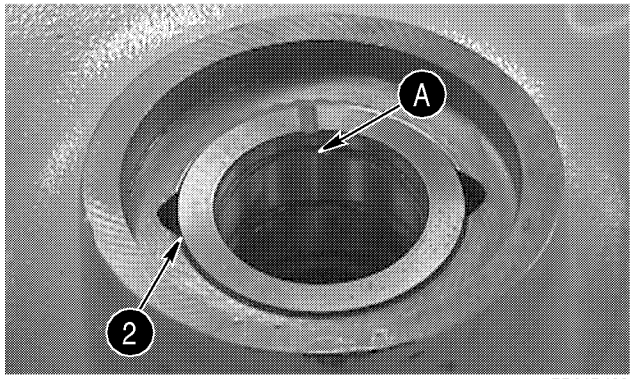
Install the retaining rings on the planetary gear shafts.

PIVOT PIN BUSHINGS

STEP 110



BD01D482

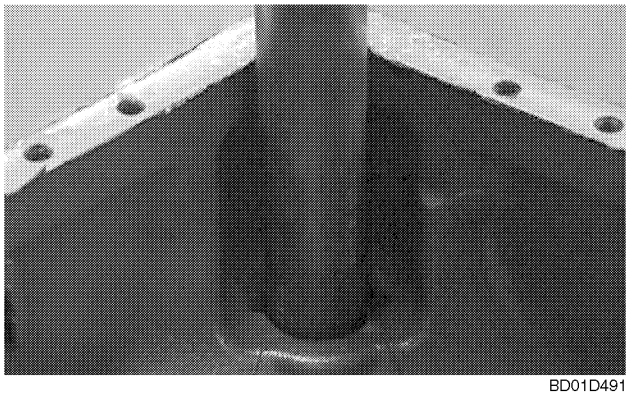


BD01D499

1. DIFFERENTIAL CARRIER PIVOT PIN BUSHING
2. AXLE HOUSING PIVOT PIN BUSHING
A. THRUST SURFACE

Inspect pivot pin bushings in differential carrier and axle housing for cracks, breaks, deformation, or other damage. Check oil splash grooves for scoring or chipping. Check for scoring on thrust surface (A). If bushing (1 or 2) requires replacement, do Steps 111 and 112.

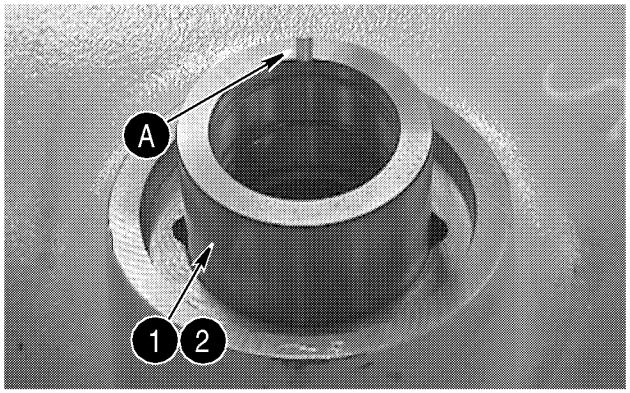
STEP 111



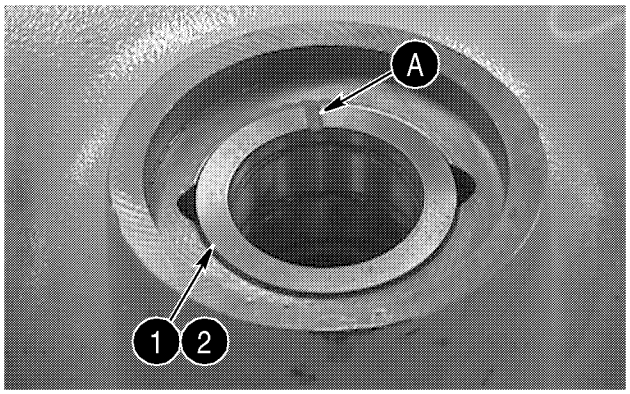
BD01D491

Put axle housing or differential carrier in hydraulic press. Make sure housing or carrier is properly supported. Using a 66.6 mm (2.625 inches) diameter by suitable length rod, press bushing out of housing or carrier.

STEP 112



BD01D495

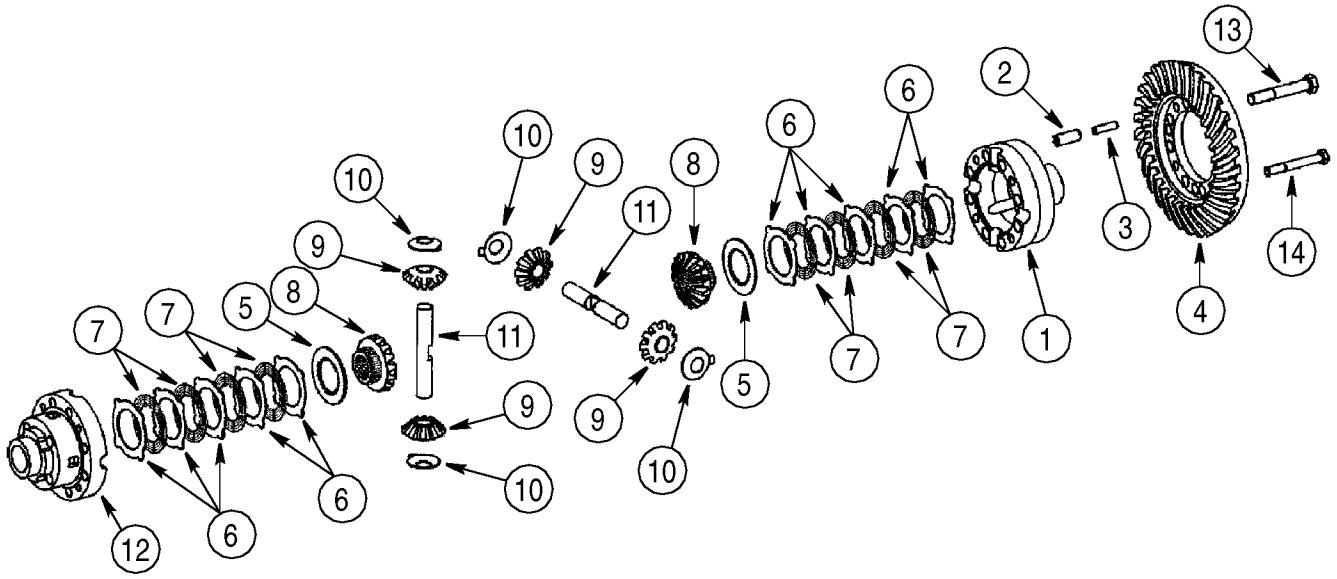


BD01D499

1. DIFFERENTIAL CARRIER PIVOT PIN BUSHING
2. AXLE HOUSING PIVOT PIN BUSHING
A. GROOVE

WARNING: *Always wear insulated gloves or mittens when handling frozen parts.*

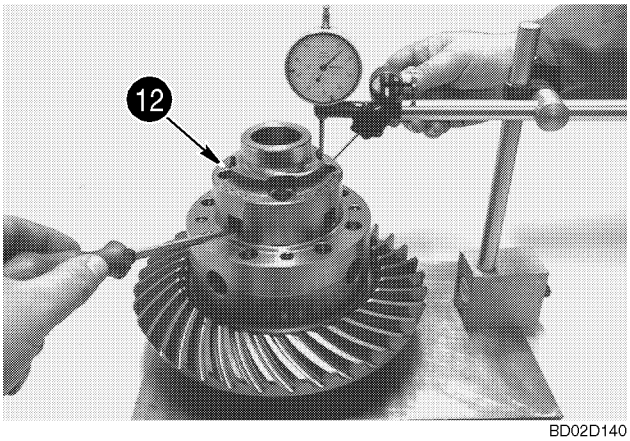
Freeze new bushing in dry ice for several hours. Install bushing in axle housing or differential carrier with groove (A) on circumference of bushing facing center of housing or carrier. Install bushing against shoulder in housing or carrier.



BS01D141

1. DIFFERENTIAL CAGE HALF
2. SLOTTED PIN
3. SLOTTED PIN
4. RING GEAR
5. THRUST WASHER
6. SEPARATOR PLATE
7. FRICTION PLATE
8. BEVEL GEAR
9. BEVEL GEAR
10. THRUST WASHER
11. SHAFT
12. DIFFERENTIAL CAGE HALF
13. BOLT
14. BOLT

STEP 160



BD02D140

Check the end play (zero to 0.15 mm (0.006 inch)) of the bevel gear (8). Do this by mounting a dial indicator as shown set to indicate from the top separator plate through one of the top holes in differential cage half (12). Zero the dial indicator. Using screwdrivers or other suitable tools inserted in holes in side of cage half, move the bevel gear up. Record the dial indicator reading. Dial indicator should indicate zero to 0.15 mm (0.006 inch) (required end play).

If required end play of zero to 0.15 mm (0.006 inch) is not obtained, install new outer clutch discs of thickness necessary to obtain required end play.

STEP 161

After obtaining the required end play, disassemble the differential. Install the adjusted clutch pack that was in the differential cage half (12) in the other differential cage half (1). Repeat Step 160 to check the end play. After both clutch packs have been adjusted, go to Step 162.

STEP 162

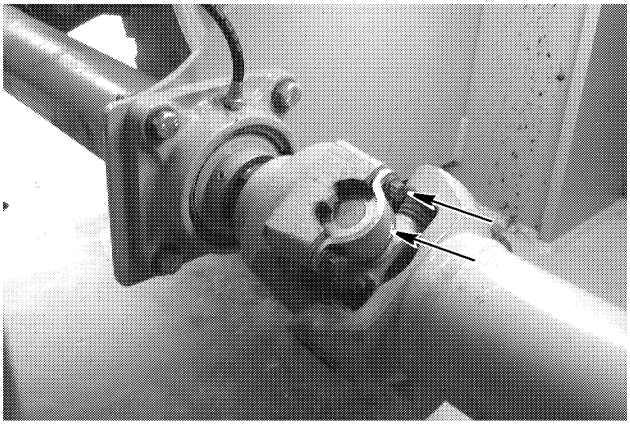
BD02D141

After adjustment is completed, separate the cage halves, and remove the parts. Keep clutch packs together and identify which side they are installed. Apply oil to all parts. Do Steps 154 to 158 to assemble the differential, then go to Step 163.

CENTER DRIVE SHAFT

Removal

STEP 35



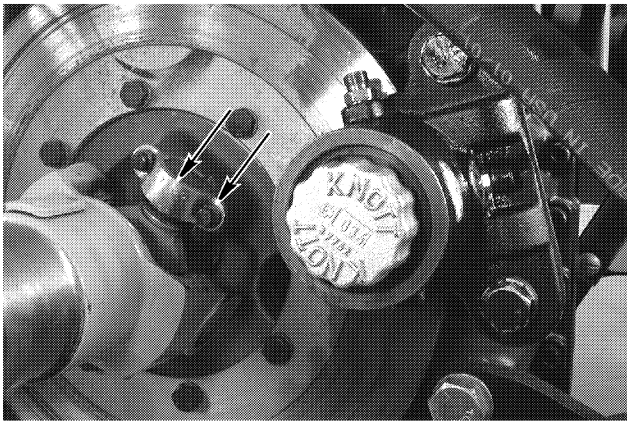
BD01F291

Loosen and remove the bolts and straps that fasten the center drive shaft to the yoke of the front drive shaft.

STEP 36

Use a prybar to disengage the center drive shaft from the yoke of the front drive shaft.

STEP 37



BD01F289

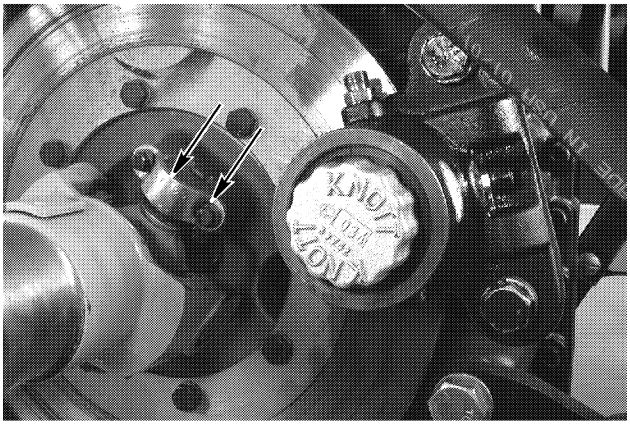
Loosen and remove the bolts and straps that fasten the center drive shaft to the transmission.

STEP 38

Hold the center drive shaft and remove from the machine.

Installation

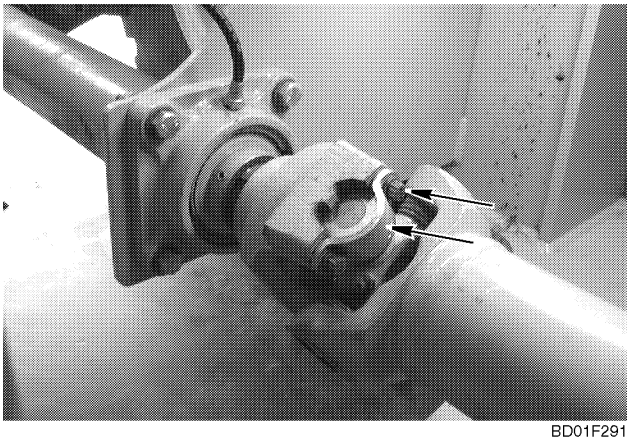
STEP 39



BD01F289

Hold the center drive shaft in position and install the bolts and straps that fasten the center drive shaft to the transmission. Tighten the bolts to a torque of 61 to 81 Nm (45 to 60 lb ft).

STEP 40



BD01F291

Install the bolts and straps that fasten the center drive shaft to the yoke of the front drive shaft. Tighten the bolts to a torque of 61 to 81 Nm (45 to 60 lb ft).

DISASSEMBLY

STEP 1

To aid in assembly, put alignment marks on transmission control valve (7, figure 1), distribution plate (2), and valve plate (4).

STEP 2

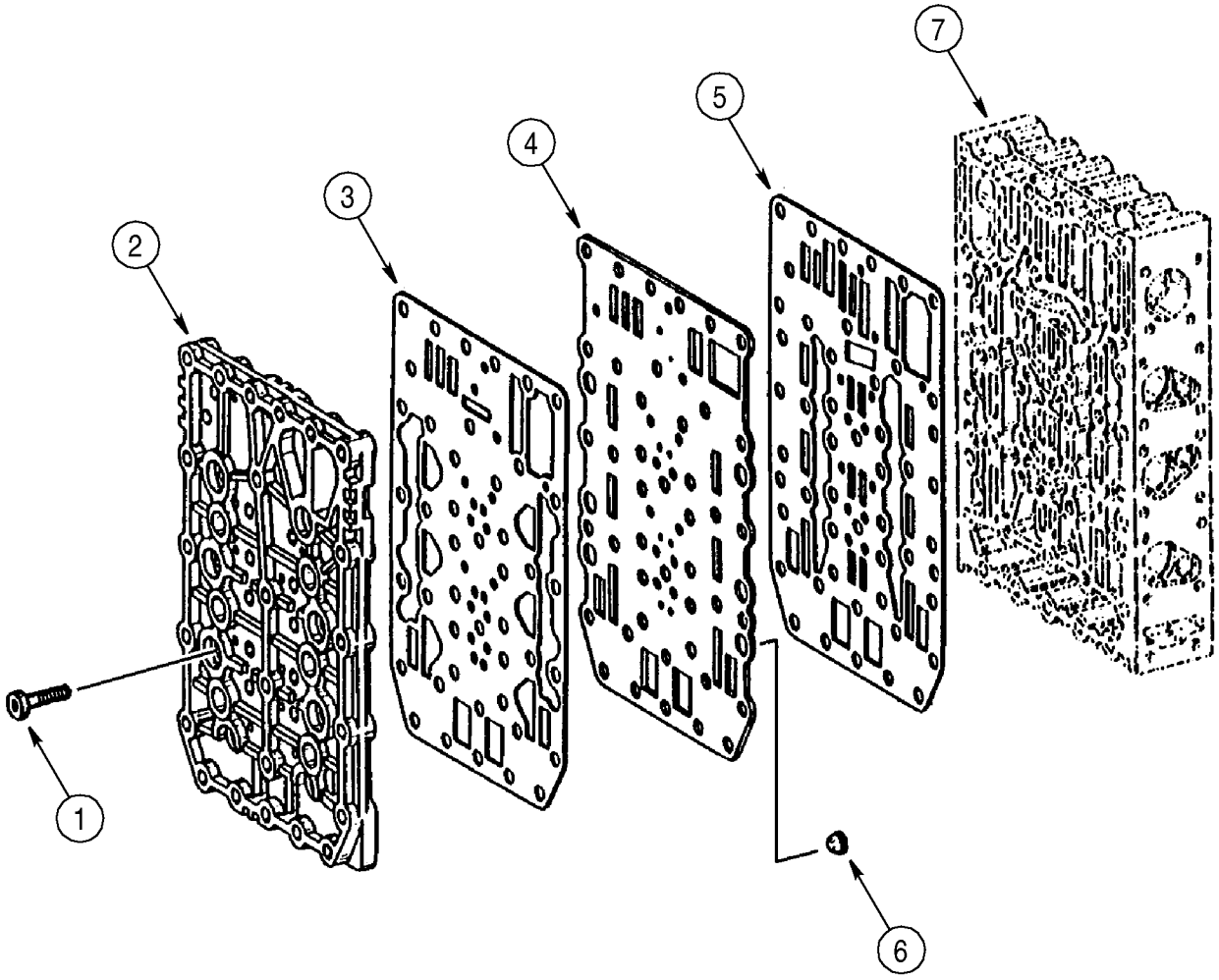
Remove 18 screws (1) securing distribution plate (2) to transmission control valve (7).

STEP 3

Remove distribution plate (2), housing gasket (3), valve plate (4), and housing gasket (5). Discard housing gaskets (3 and 5).

STEP 4

Remove six filter screens (6) from valve plate (4).



BS98J157

1. SCREW
2. DISTRIBUTION PLATE
3. HOUSING GASKET
4. VALVE PLATE
5. HOUSING GASKET
6. FILTER SCREEN
7. TRANSMISSION CONTROL VALVE

FIGURE 1. TRANSMISSION CONTROL VALVE PLATES AND GASKETS

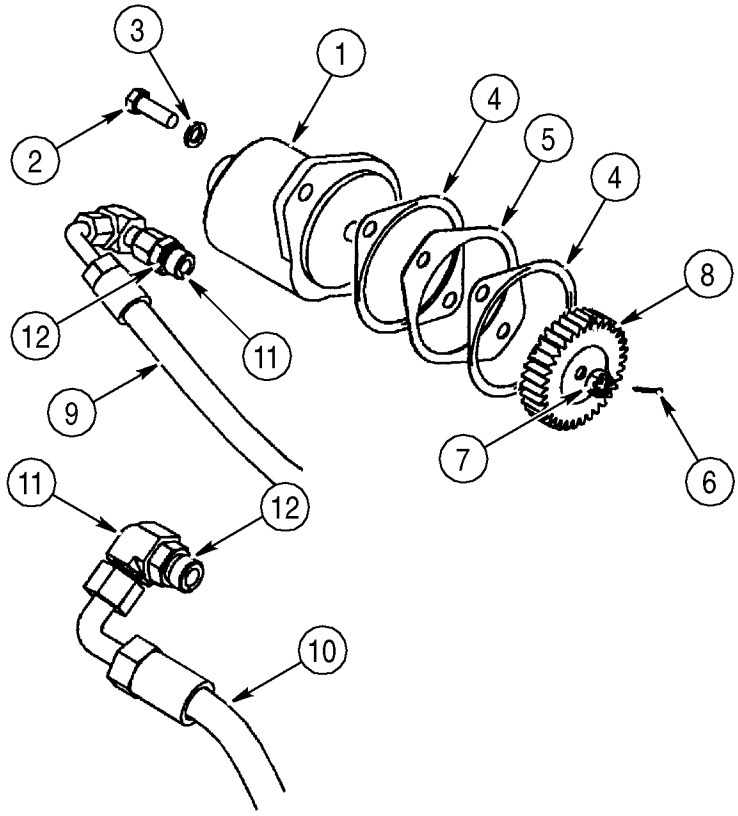
SECTION INDEX

BRAKES

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

CASE CANADA CORPORATION
3350 South Service Road
Hamilton, ON L7N 3M6 CANADA

Bur 6-42510



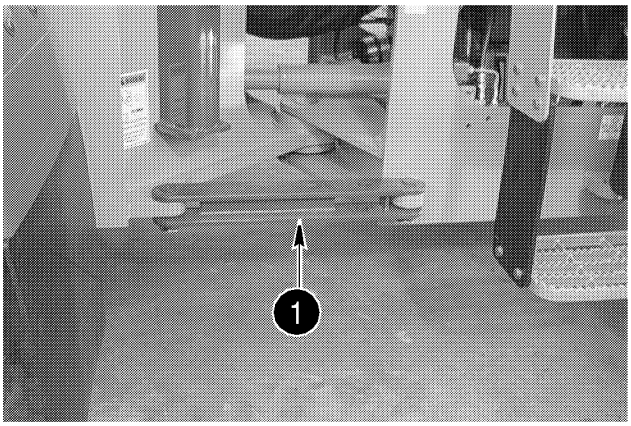
BS02K143

1. BRAKE PUMP
2. BOLT
3. WASHER
4. GASKET
5. SPACER
6. COTTER PIN
7. NUT
8. GEAR
9. PRESSURE HOSE
10. SUCTION HOSE
11. ELBOW
12. O-RING

BRAKE PUMP ILLUSTRATION - P.I.N. JEE0135501 AND ABOVE

CHECKING THE BRAKE SYSTEM

1. Check the level of the hydraulic fluid in the reservoir, add as needed.



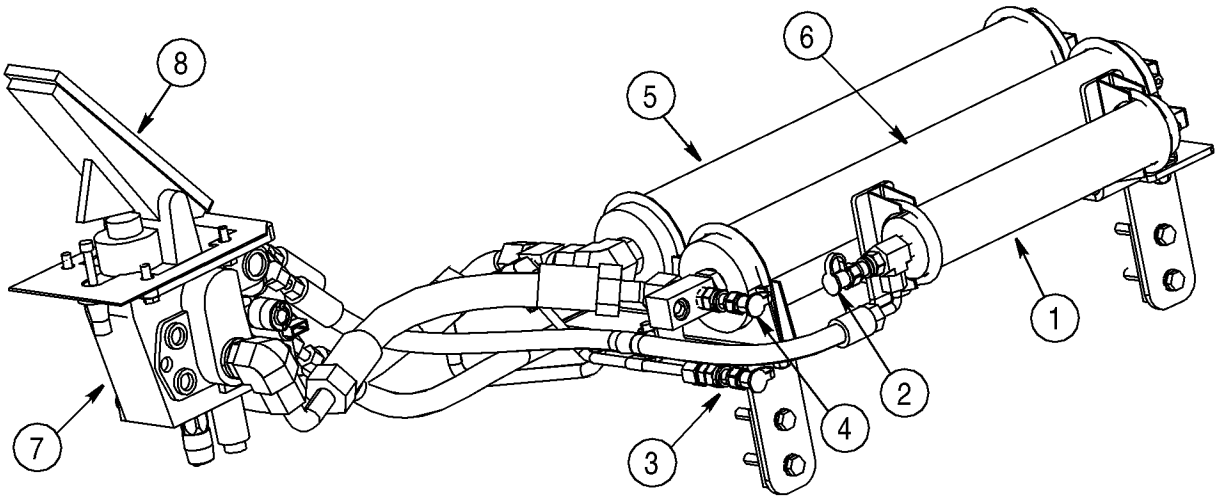
BD00M030

1. ARTICULATION LOCK

2. Install the articulation lock (1) before doing this test.
3. Remove the left side cab skirt to gain access to the brake accumulators (5 and 6). Refer to the illustration below.
4. Pump the brake pedal (8) until there is no hydraulic pressure in the brake system (approximately 20 pumps).
5. Connect two 207 bar (3000 psi) pressure gauges to the test ports (3 and 4).
6. Start the engine and let idle until both the front and rear accumulators (5 and 6) are fully charged. The accumulators are fully charged at 190 to 196 bar (2755 to 2842 psi).
7. Stop the engine.
8. Push the brake pedal (8) down slowly, allowing for full piston actuation.

NOTE: *Depress the brake pedal at the rate of three strokes per minute.*

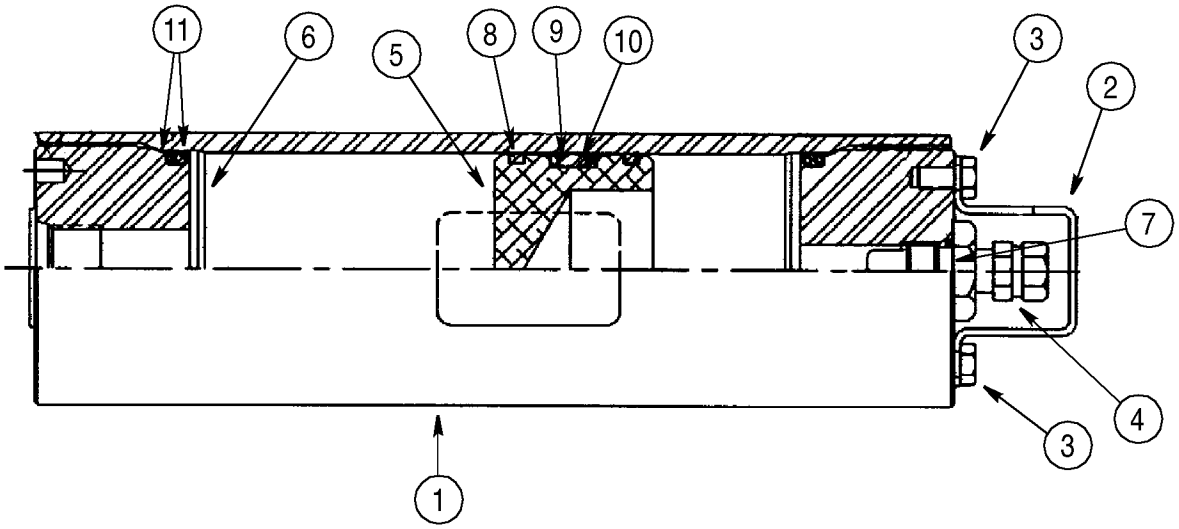
9. Continue pressing the brake pedal (8) down. The low brake pressure light should activate when the pressure reaches 110 to 124 bar (1600 to 1800 psi). After the low brake pressure light activates, press the brake pedal eight more times.
10. Record the readings on the pressure gauges. The pressure gauges should read at or above 52 to 58 bar (750 to 850 psi).
11. If the pressures are at or above 52 to 58 bar (750 to 850 psi), the test is complete.
12. If the pressures are not within the required specifications, then the brake system must be bled.
13. After bleeding the brake system, perform the brake system check again.



BC01E040

1. PARKING BRAKE ACCUMULATOR
2. PARKING BRAKE ACCUMULATOR TEST PORT
3. FRONT BRAKE ACCUMULATOR TEST PORT
4. REAR BRAKE ACCUMULATOR TEST PORT
5. FRONT BRAKE ACCUMULATOR
6. REAR BRAKE ACCUMULATOR
7. BRAKE AND ACCUMULATOR CHARGING VALVE
8. BRAKE PEDAL

BRAKE SYSTEM COMPONENTS - P.I.N. JEE0135500 AND BELOW



BS01B224

1. BODY	4. PRESSURE VALVE	7. O-RING	10. O-RING
2. GUARD	5. PISTON	8. WEAR RING	11. SEALS (2)
3. SCREW	6. GLAND	9. BACKUP RING	

PARKING BRAKE ACCUMULATOR - P.I.N. JEE0135500 AND BELOW

SECTION INDEX

HYDRAULICS

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

CASE CANADA CORPORATION
3350 South Service Road
Hamilton, ON L7N 3M6 CANADA

Bur 6-42551

Issued August, 2001 Revised July, 2005

REMOTE CONTROL VALVE

Removal

STEP 27

Park the machine on a level surface and lower the bucket to the floor. Stop the engine and apply the parking brake.

IMPORTANT: *Pump the brake repeatedly to be sure the brake accumulators have no hydraulic pressure, then move the loader control lever back and forth several times to release any hydraulic pressure in the pilot control circuit.*

STEP 28

BD01D138

Place the master disconnect switch in the OFF position.

STEP 29

Loosen and remove the bolts and washers that fasten the right skirt panel under the right side of the ROPS cab or ROPS canopy. Remove the right skirt panel.

STEP 30

Loosen the filler cap on the reservoir to release any air in the reservoir.

STEP 31

Drain the hydraulic reservoir.

STEP 32

Unlatch and open the right hand side access door.

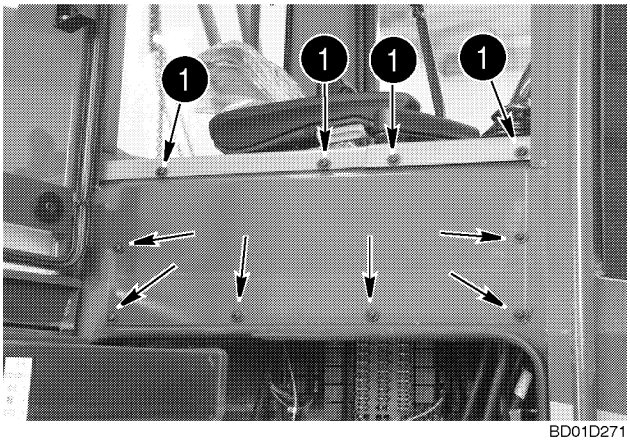
STEP 33

Lift the access door up and remove the access door from the pins.

STEP 34

Unlatch and open the window on the right hand side.

STEP 35



BD01D271

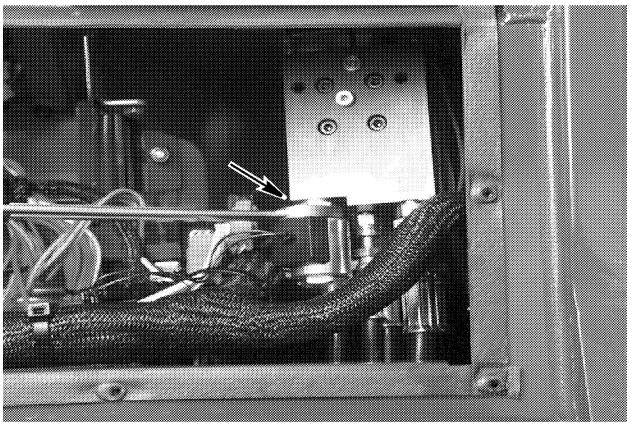
A. Loosen the top four screws (1).

B. Loosen and remove the remaining six screws holding the access panel to the ROPS cab or canopy.

STEP 36

Remove the access panel.

STEP 37



BD01D390

Disconnect the wire from the solenoid and loosen and remove the lock-out solenoid to gain access to the hydraulic hoses.

STEP 38

Put identification tags on each hose and disconnect one at a time from the remote control valve. Install plugs in the hoses and caps on the fittings.

STEP 39

Tag and disconnect the electrical connectors for the remote control valve.

LIFT CYLINDERS

Removal

STEP 80

Park the machine on a level surface and lower the bucket to the floor. Stop the engine and apply the parking brake.

STEP 81

Pump the brake repeatedly to be sure the brake accumulators have no hydraulic pressure, then move the loader control lever back and forth several times to release any hydraulic pressure in the pilot control circuit.

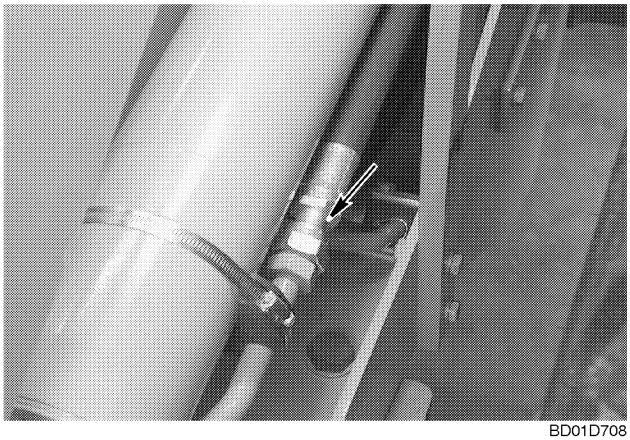
STEP 82

Relieve the pressure in the ride control accumulator with the manual bleeder valve located at the rear of the front chassis.

STEP 83

Loosen the filler cap on the hydraulic reservoir to release any pressure.

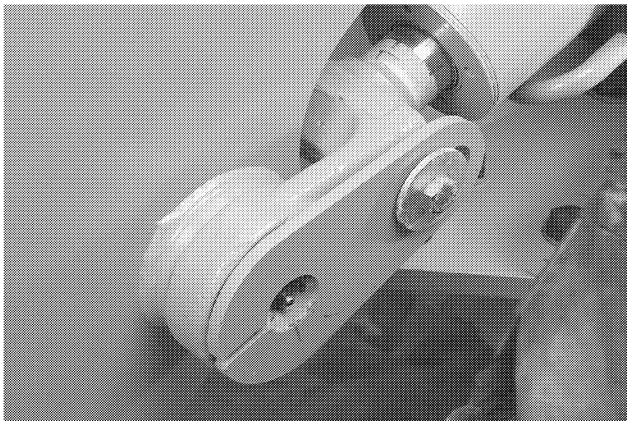
STEP 84



BD01D708

Tag and disconnect the hoses on each side of the lift cylinder. Install plugs in the hoses and caps on the fittings.

STEP 85



BD01D709

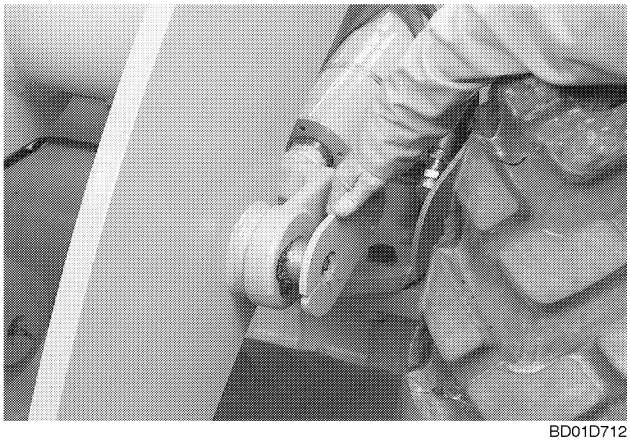
Loosen and remove the bolt, washer and spacer that hold the pivot pin for the yoke.

STEP 86

BD01D711

Use a proper lifting device and secure a strap around the lift cylinder.

STEP 87



BD01D712

Remove the pivot pin from the yoke end of the lift cylinder.

OIL COOLER

Removal

STEP 152

Park the machine on a level surface and lower the bucket to the ground. Stop the engine and apply the parking brake.

STEP 153

BD01D138

Place the master disconnect switch in the OFF position.

STEP 154

Raise the engine hood and remove the shield on the right side of the machine between the tire and the oil cooler.

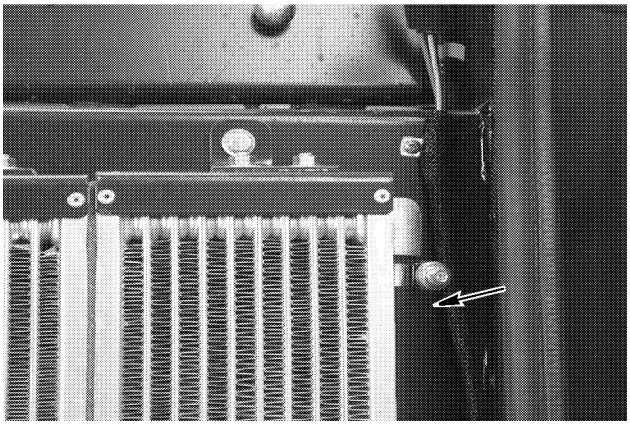
STEP 155

Loosen the filler cap on the hydraulic reservoir to release the air pressure in the reservoir.

STEP 156

Drain the hydraulic reservoir.

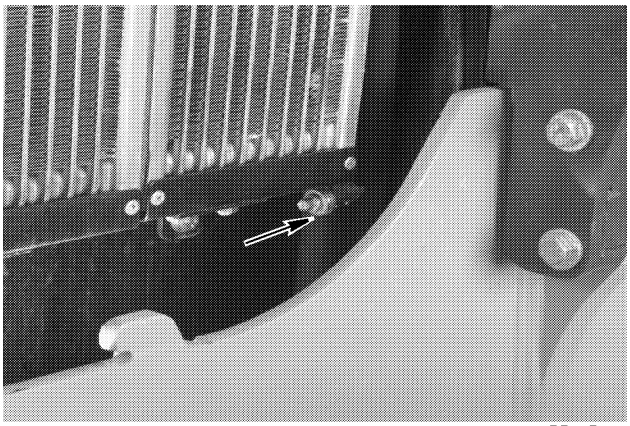
STEP 157



BD01D234

Disconnect the top hose and install a plug in the hose and a cap on the fitting.

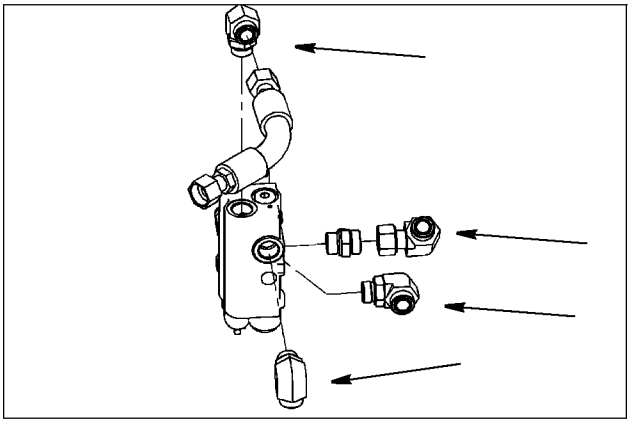
STEP 158



BD01D231

Disconnect the hose from the bottom of the oil cooler. Install a plug in the hose and a cap on the fitting.

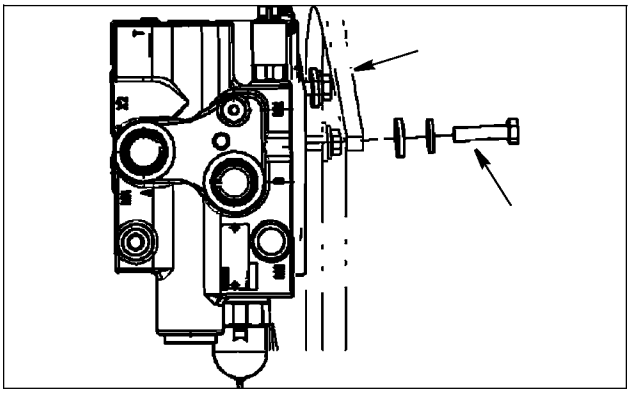
STEP 222



BC05B017

Tag and disconnect the hoses from the ride control valve. Install a plug in the hoses and caps on fittings.

STEP 223



BC05B016

Loosen and remove the two bolts and washers that fasten the ride control valve to the frame.

STEP 224

Remove the ride control valve from the machine.

STEP 225

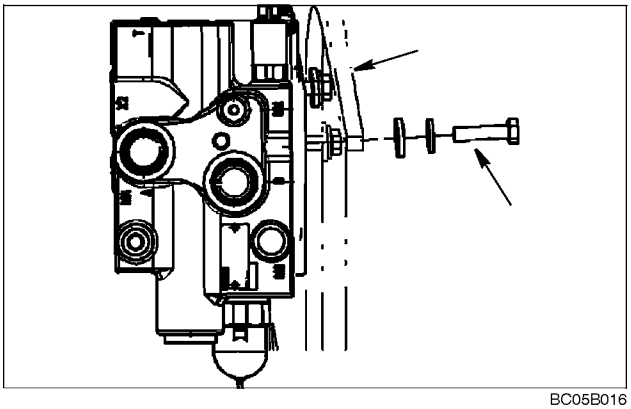
Remove and discard all O-rings.

Installation

STEP 226

Install the ride control valve in position on the front frame.

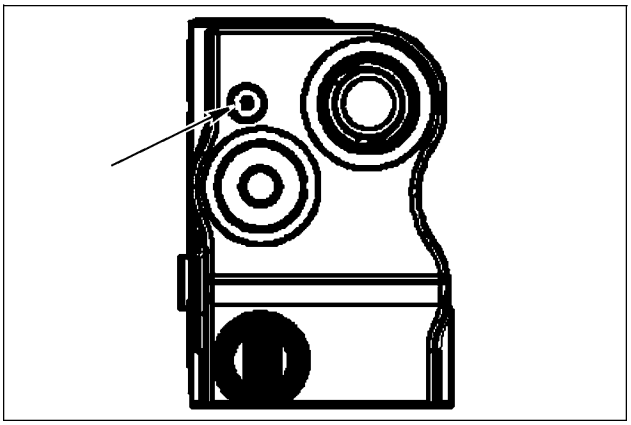
STEP 227



BC05B016

Install the washers and bolts through the frame and into the ride control valve. Tighten the bolts.

STEP 228



BC05B018

Tighten the accumulator manual bleeder valve located on the top of the ride control valve to a torque of 3.5 Nm (31 lb-in). Install the plug and torque to 7 Nm (62 lb-in).

STEP 229

Lubricate and install new O-rings.

TESTING AND ADJUSTING THE PUMP DIFFERENTIAL PRESSURE

NOTE: *The Pump Differential Pressure must be set before attempting any other tests.*

Pressure Check

STEP 1

Make sure that the temperature of the hydraulic oil is at least 52°C to 60°C (125°F to 140°F). The following is the procedure for heating the hydraulic oil.

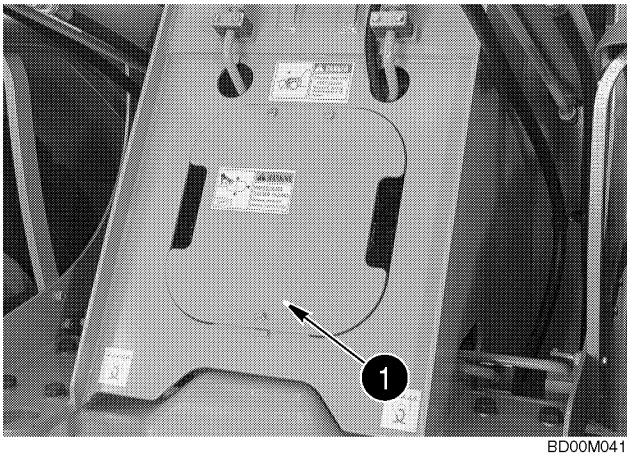
A. Start the engine and run at full throttle.

B. Lower the loader bucket to the ground and hold the lift control lever in the FLOAT position.

C. Roll the bucket back against the stops and hold.

D. View the oil temperature by pressing the program switch, then press the up count switch to function 008. Return the program switch to the center (OFF) position.

STEP 2

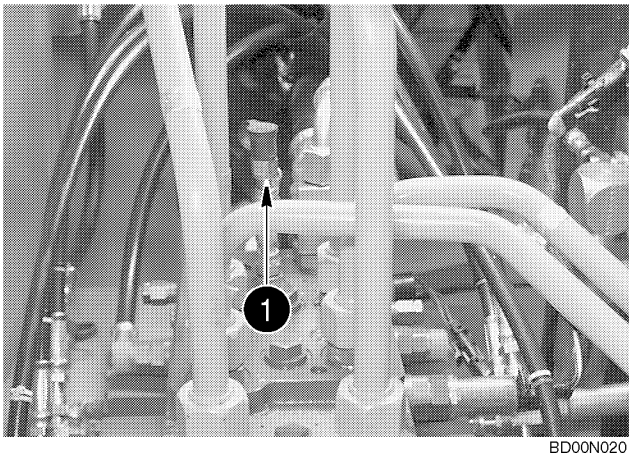


BD00M041

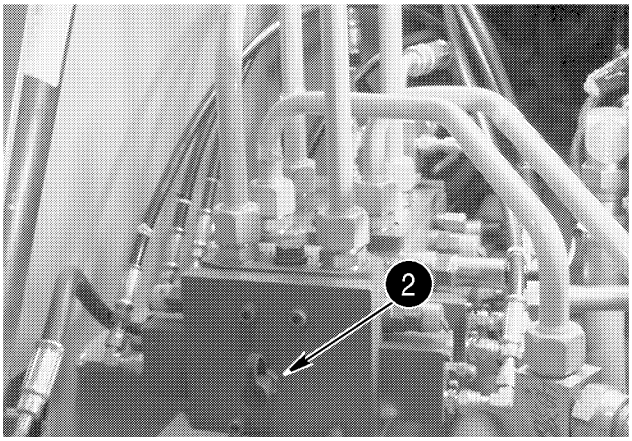
1. COVER PLATE

Remove the cover plate to gain access to the loader control valve.

STEP 3



BD00N020



BD00N017

1. TEST PORT (LOAD SENSE)
2. TEST PORT (PUMP PRESSURE)

Connect two 69 bar (1000 psi) test gauges to the test ports (1) and (2) located on the loader control valve.

STEP 4

Start the engine and run at low idle.

STEP 5

Make sure all of the controls are in the neutral position and record the readings on the test gauges (1) and (2).

STEP 6

The pressure on test port (1) should read approximately 29 bar (420 psi). The pressure on test port (2) should read approximately 51 bar (740 psi).

NOTE: *These readings may vary from one machine to another. The important value is the difference between the two readings.*

Section

8003

8003

CLEANING THE HYDRAULIC SYSTEM

CASE CORPORATION
700 STATE STREET
RACINE, WI 53404 U.S.A.

CASE CANADA CORPORATION
3350 SOUTH SERVICE ROAD
BURLINGTON, ON L7N 3M6 CANADA

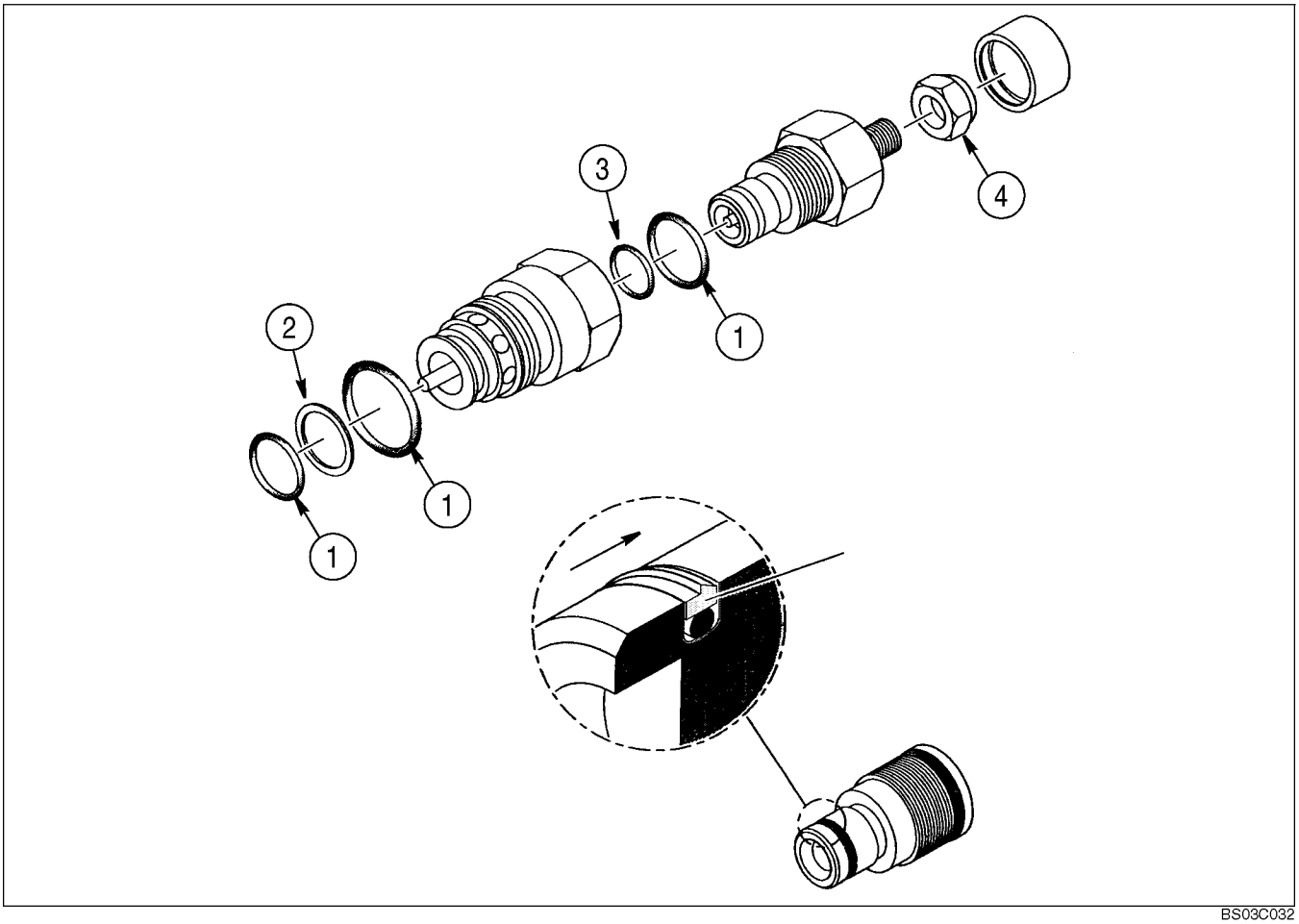
Bur 7-49640

Printed in U.S.A.
Issued May 1995

SPECIFICATIONS

Manufacturer	Rexroth
Special Torques	
End plate mounting bolts	70 Nm (51.5 lb-ft)
Pressure relief, flow limit, and pilot pressure reducing valves	20 to 25 Nm (177 to 221 lb-in)
Allen head plugs	240 Nm (177 lb-ft)
Allen head locking screw	100 Nm (73.7 lb-ft)
Allen head cover screws (short)	10.4 Nm (92 lb-in)
Allen head cover screws (long)	6 Nm (53 lb-in)
Anticavitation valves	100 Nm (73.7 lb-ft)
Combination anticavitation and circuit relief	200 Nm (147.5 lb-ft)
Main relief valve pressure settings	
Z-Bar and XT	248 to 252 bar (3596 to 3654 psi)
Circuit relief valve pressure setting	
Auxiliary A and B port (XT and Z-Bar)	290 bar (4206 psi)
Bucket A and B port (Z-Bar)	290 bar (4206 psi)
Bucket A port (XT)	183 bar (2654 psi)
Bucket B port (XT)	290 bar (4206 psi)

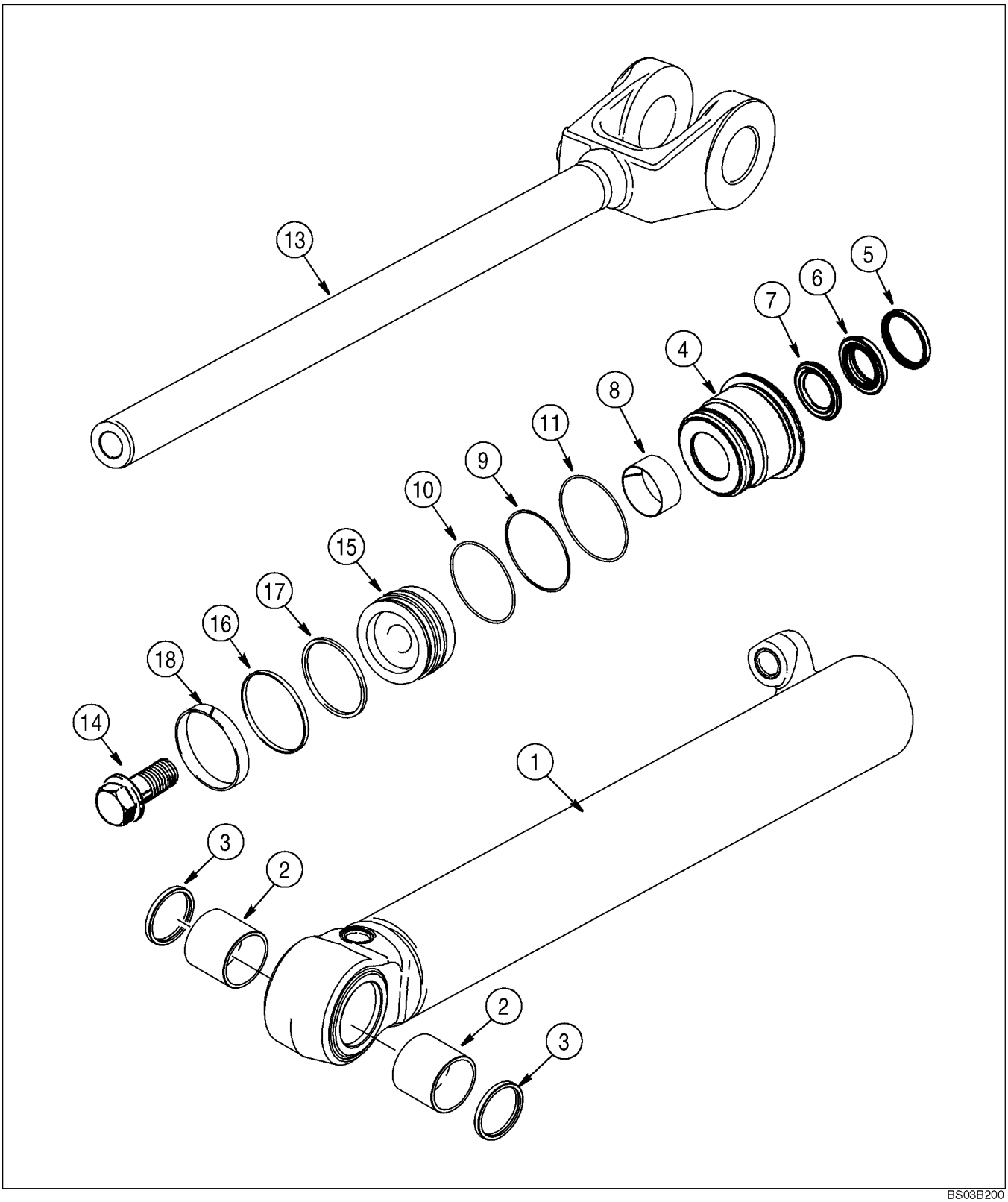
STEP 23



BS03C032

1. O-RINGS 2. THRUST RING 3. SPOOL SEAL 4. LOCK NUT

Remove and discard O-rings and thrust rings from anticavitation and circuit relief valves (21 and 35).



1. TUBE
2. BUSHING
3. WIPER
4. GLAND
5. WIPER
6. ROD SEAL
7. BUFFER SEAL
8. BUSHING
9. BACKUP RING
10. O-RING
11. O-RING
12. SCREW (NOT SHOWN)
13. ROD
14. BOLT
15. PISTON
16. SEAL
17. RING
18. WEAR RING

FIGURE 1. LIFT CYLINDER

Section
8007

COUPLER SOLENOID LOCKING VALVE

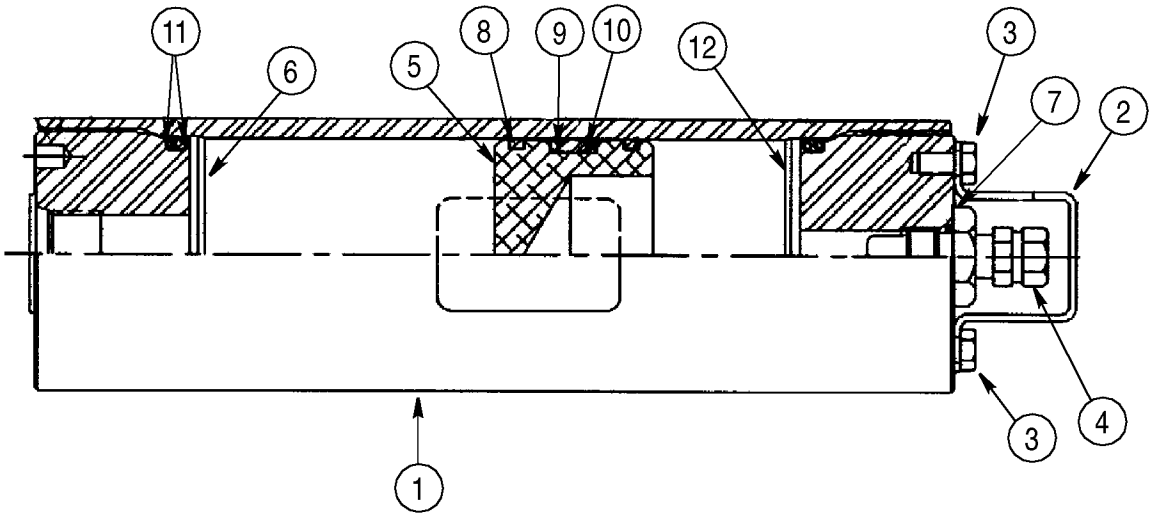
8007

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

CASE CANADA CORPORATION
3350 South Service Road
Burlington, ON L7N 3M6 CANADA

Bur 6-42600

Printed in U.S.A.
August, 2001



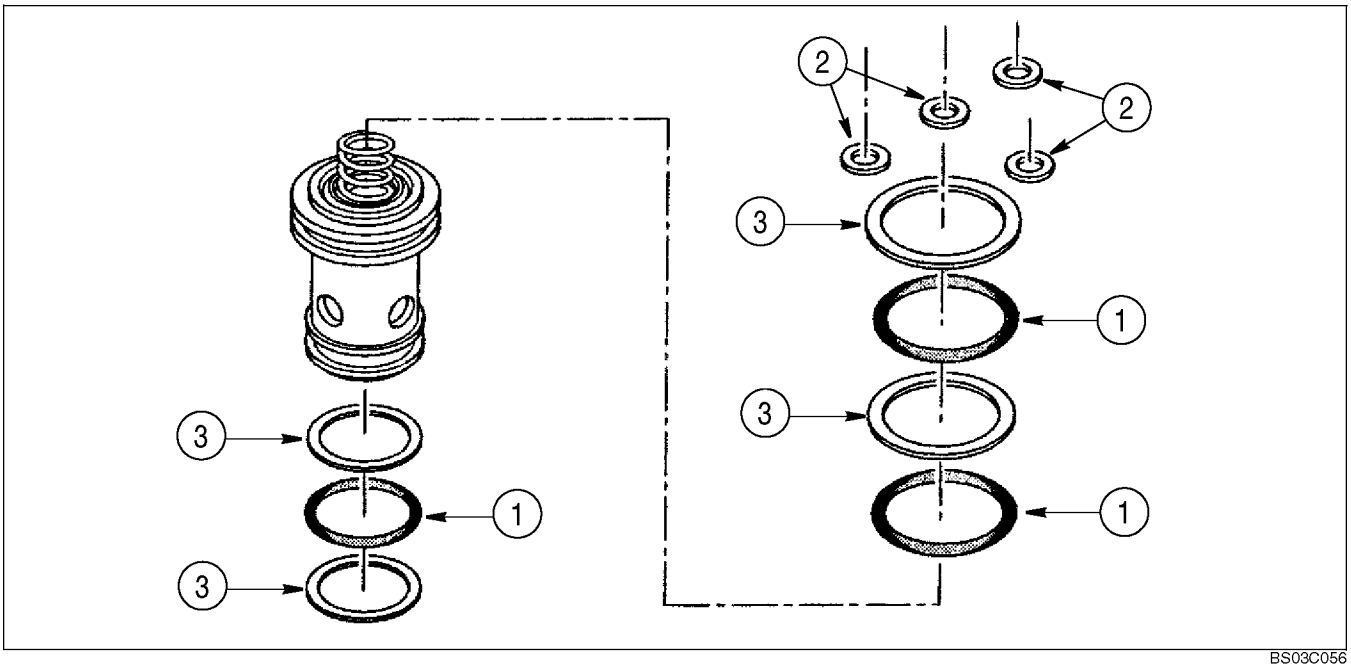
BS01B224

1. BODY
2. GUARD
3. SCREW
4. PRESSURE VALVE
5. PISTON
6. GLAND
7. O-RING
8. WEAR RING
9. BACKUP RING
10. O-RING
11. SEALS (2)
12. CAP

RIDE CONTROL ACCUMULATOR ILLUSTRATION

ASSEMBLY

STEP 6



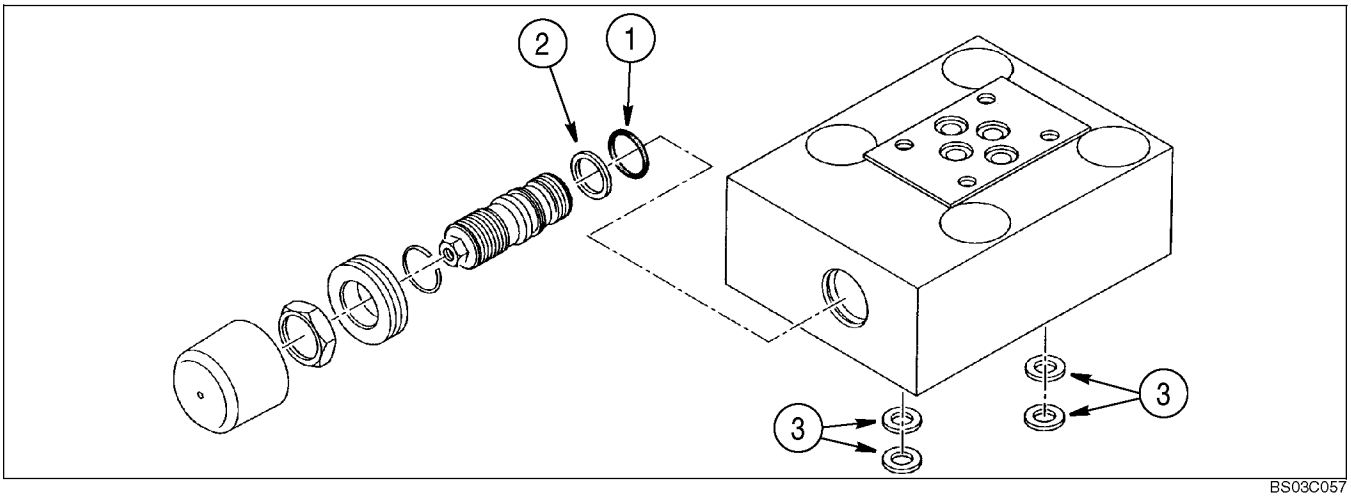
BS03C056

1. O-RINGS 2. R-RINGS 3. THRUST RINGS

INSERT VALVE

Replace O-rings (1) and thrust rings (3) on the insert valve (2).

STEP 7



BS03C057

1. O-RING 2. BACKUP RING 3. R-RINGS

LOGIC COVER

Replace O-rings (1), thrust rings (2), and R-rings on the logic cover.

SPECIFICATIONS

Engine speeds

Low idle - 621D Z-Bar and XT	920 to 980 r/min (rpm)
High idle - 621D Z-Bar and XT	2160 to 2260 r/min (rpm)
Brake light pressure switch	4.1 bar (60 psi)
Brake warning pressure switch	141 bar (2045 psi) rising 117 bar (1697 psi) falling
Parking brake adjustment	
Adjusting screw - M16	0.5 mm to 1.5 mm
Adjusting screw - M20	1.0 mm to 3.0 mm

OPERATION

The refrigerant circuit of the air conditioning system contains five major components: compressor, condenser, receiver-drier, expansion valve and evaporator. These components are connected by tubes and hoses and operate as a closed system. The air conditioner system is charged with HFC-134a refrigerant.

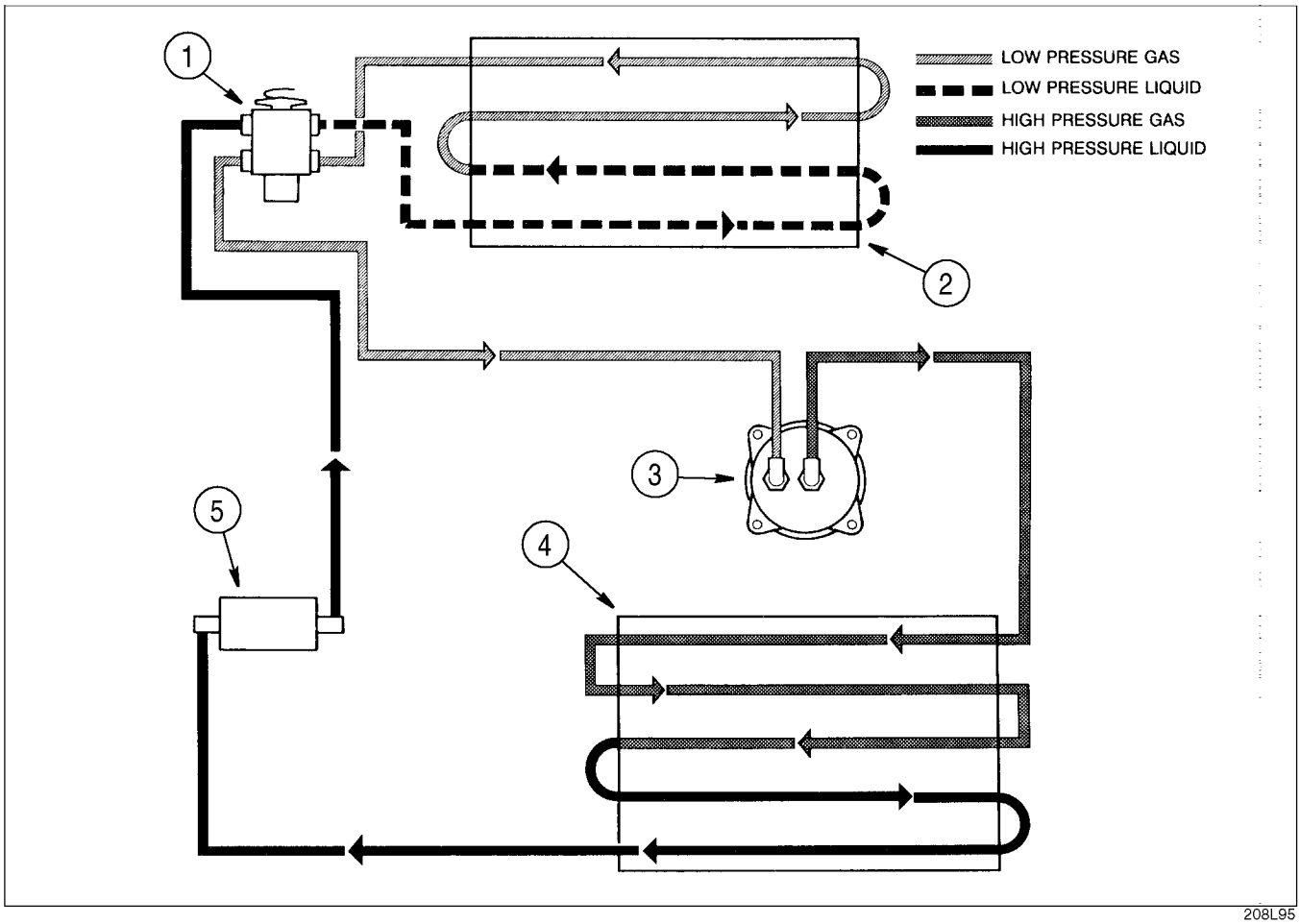
The compressor receives the refrigerant as a low pressure gas. The compressor then compresses the refrigerant and sends it in the form of a high pressure gas to the condenser. The air flow through the condenser then removes the heat from the refrigerant. As the heat is removed the refrigerant changes to a high pressure liquid.

The high pressure refrigerant liquid then flows from the condenser to the receiver-drier. The receiver-drier is a container filled with moisture removing material, which removes any moisture that may have entered the air conditioner system in order to prevent corrosion of the internal components of the air conditioner system.

The refrigerant, still in a high pressure liquid form, then flows from the receiver-drier to the expansion valve. The expansion valve then causes a restriction in flow of refrigerant to the evaporator core. The evaporator meters refrigerant flow based on evaporator heat load.

As the refrigerant flows through the evaporator core, the refrigerant is heated by the air around and flowing through the evaporator fins. The combination of increased heat and decreased pressure causes the air flow through the evaporator fins to become very cool and the liquid refrigerant to become a low pressure gas. The cooled air then passes from the evaporator to the cab for the operator's comfort.

The electrical circuit of the air conditioning system consists of a fan speed control, temperature control, one (1) relay, a blower motor, blower resistor, A.C. compressor clutch, A.C. low pressure switch, A.C. high pressure switch, and A.C. warning light.

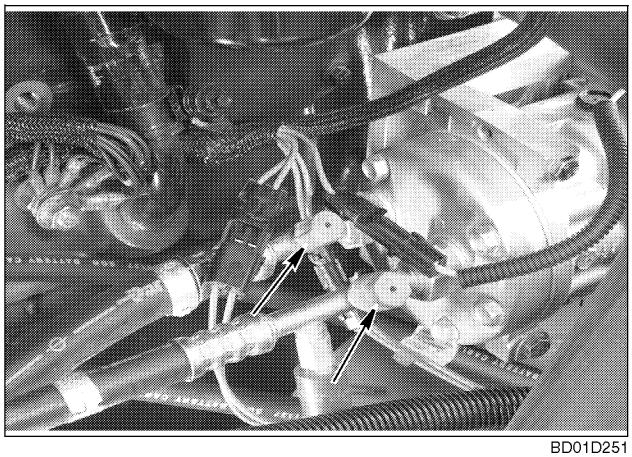


208L95

1. EXPANSION VALVE
2. EVAPORATOR
3. COMPRESSOR
4. CONDENSER
5. RECEIVER-DRIER

A/C RECOVERY AND CHARGING STATION CONNECTIONS

STEP 1

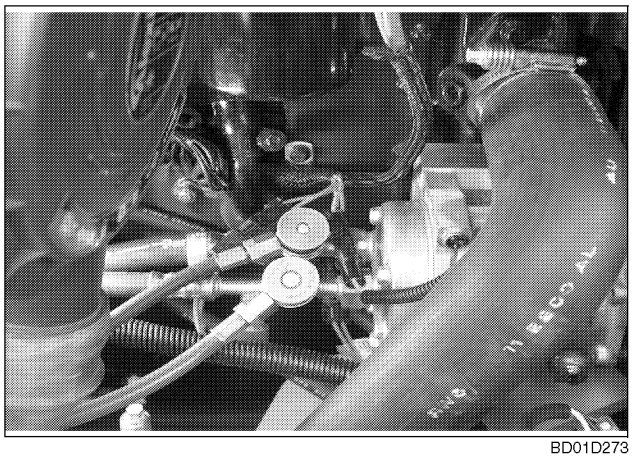


BD01D251

Clean the external surfaces of the compressor and hoses. Remove the caps from the service ports on the suction and pressure hoses.

WARNING: *Do not steam clean any air conditioning system parts while the system is charged. The heat will cause the refrigerant to rise to a pressure that could cause the system to explode.* SM104A

STEP 2



BD01D273

Connect the hoses from the test gauges to the service ports by turning the knurled knobs on the depressors.

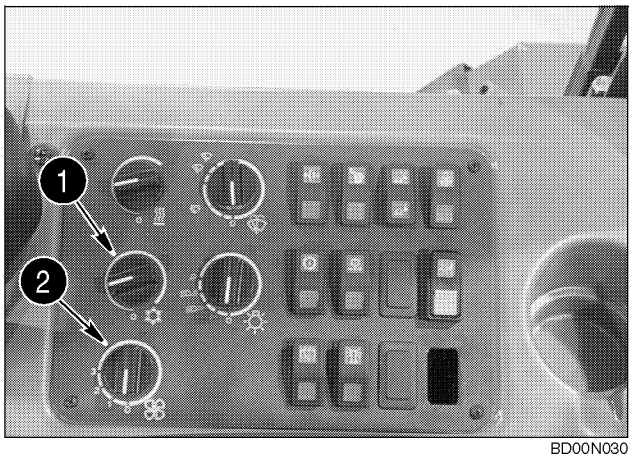
Connect the hose from the low pressure gauge to the port on the suction hose.

Connect the hose from the high pressure gauge to the port on the discharge hose.

WARNING: *Always wear safety goggles when working with liquid refrigerant. Liquid refrigerant in your eyes could cause blindness.* SM105A

Make sure the charging station manifold gauge valves are in the closed position.

STEP 3

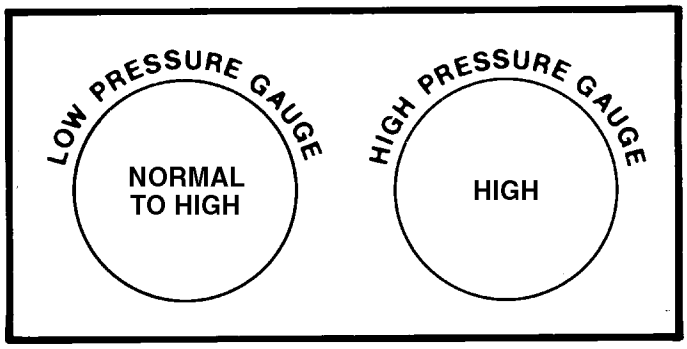


BD00N030

6. A/C TEMPERATURE CONTROL
7. BLOWER FAN SWITCH

Start the engine and run at 1500 RPM maximum speed. Operate the air conditioner system at maximum cooling setting and blower speed for 15 minutes with the cab door open. Observe the test gauges and check the chart on page 13 against the gauge readings.

PROBLEM: NOISE IN SYSTEM



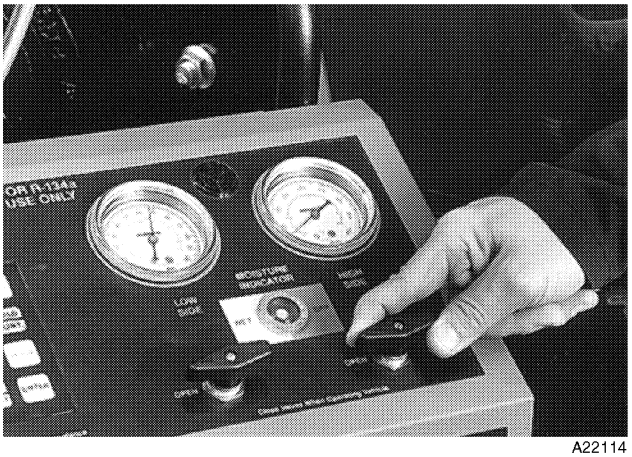
476L7

SEE PRESSURE - TEMPERATURE CHART ON PAGE 14

Too Much Refrigerant in System - Indications:

A. Cool discharge air from heater/evaporator. B. Compressor makes noise.	→	1. Remove refrigerant from system until gauge readings are below normal. See Section 9003. 2. Add new refrigerant until gauge readings are normal. See Section 9003.

STEP 18



A22114

Completely close the high and low pressure manifold valves.

ATTENTION: *Check the OEM equipment manual before performing Step 19 to avoid damaging the recovery unit. The pressure reading should be obtainable with valves closed. Damage may occur if the machine is started with the valves accidently open or if either or both valves are opened while the A/C system is operating.*

STEP 19

Start the engine and run at 1500 RPM. Operate the air conditioner system at maximum cooling setting and blower speed with the doors and windows open.

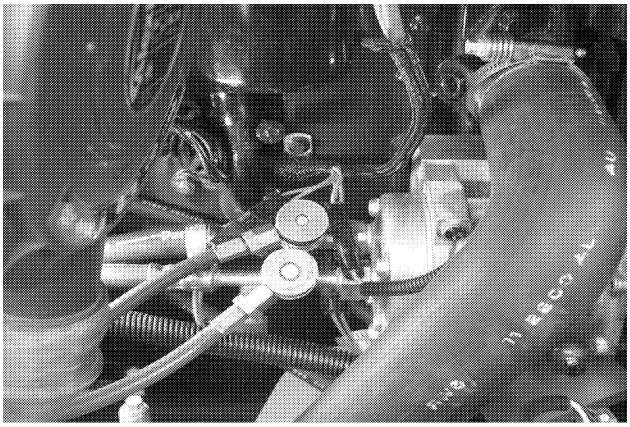
NOTE: *The compressor will not operate if the system pressure is too low or too high. The pressure indicator lamp will illuminate when the relay is actuated by a low or high pressure and the compressor clutch will disengage. To restart the compressor, the air conditioner control or blower switch must be turned to the OFF position and then to the ON position.*

STEP 20

A22117

Observe the pressure gauge readings to determine that the correct amount of refrigerant has entered the system. See chart on Page 9002-9 for temperature and pressure variations.

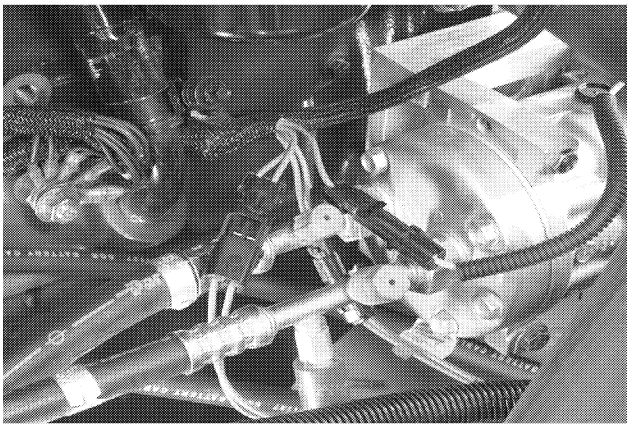
STEP 21



BD01D273

Stop the engine, close any open valves and carefully remove the manifold gauge hoses.

STEP 22



BD01D251

Install the caps on the service ports on the suction and discharge hoses.