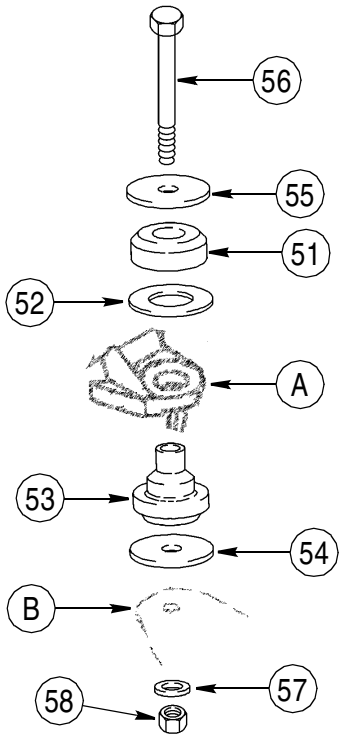
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Installation

STEP 67

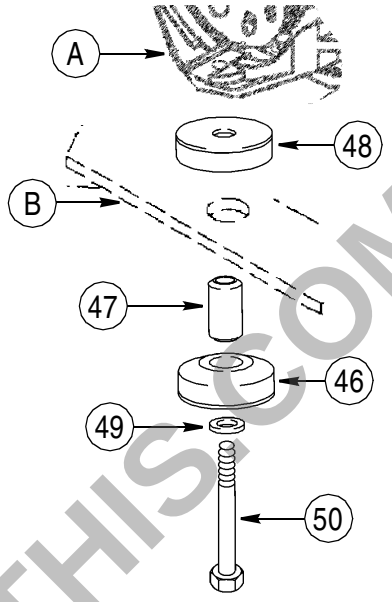


BC01D128

51. RUBBER ISOLATOR
52. WASHER
53. RUBBER ISOLATOR
54. WASHER
55. WASHER
56. BOLT
57. WASHER
58. NUT
A. ENGINE
B. REAR CHASSIS

If engine front rubber isolators require replacement, remove and discard isolators (51 and 53). Install new rubber isolator (53), washer (52), then rubber isolator (51).

STEP 68



BC01D129

46. RUBBER ISOLATOR
47. SPACER
48. RUBBER ISOLATOR
49. WASHER
50. BOLT
A. ENGINE
B. REAR CHASSIS

If engine rear rubber isolators require replacement, remove and discard isolators (46 and 48) and spacer (47). Install new rubber isolators (46 and 48) and spacer (47) in rear chassis.

STEP 69

Slowly raise engine and move into position over rear chassis. Be sure all harness connections and hoses are out of the way then lower engine. Put washer (54) between front rubber isolator (53) and rear chassis. Install washer (55), bolt (56), washer (57), and nut (58) in engine front isolators. Lower engine into position. Install washer (49) and bolt (50) in rear isolator.

STEP 70

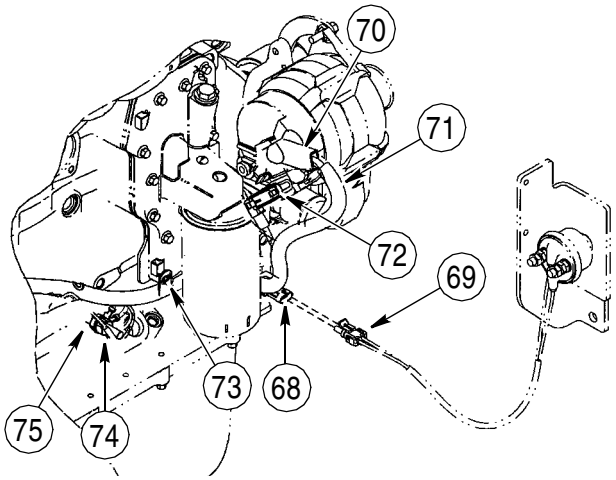


BD01D206

At front of engine, tighten two bolts (56) to a torque of 244 to 298 Nm (180 to 220 lb-ft).

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STEP 114



BS02J059

68. CONNECTOR
69. CONNECTOR
70. BOOT
71. WIRE
72. CONNECTOR
73. BOLT
74. NUT
75. STUD

Connect five ground wires of rear chassis harness and three ground wires of engine harness to stud (75) following tags installed during removal. Install nut (74) and washer to secure ground wires. Remove and discard tags.

STEP 115

Position engine harness clamp on engine block. Secure using bolt (73) and washer.

STEP 116

Connect two connectors (72) following tags installed during removal. Remove and discard tags.

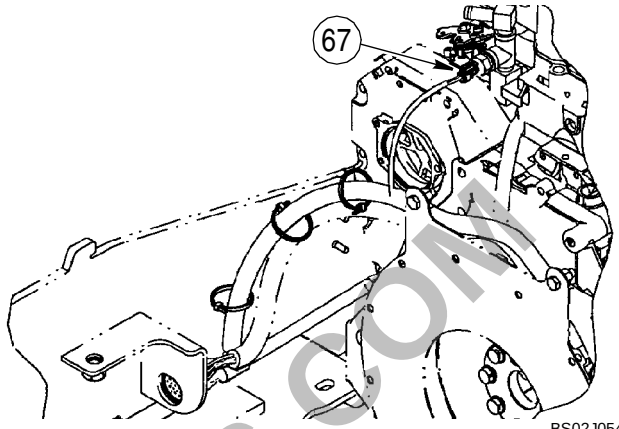
STEP 117

Connect engine harness wire (71) to alternator stud following tag installed during removal. Remove and discard tag. Push boot (70) on alternator stud.

STEP 118

Connect engine harness connector (68) to disconnect harness connector (69) following tags installed during removal. Remove and discard tags.

STEP 119

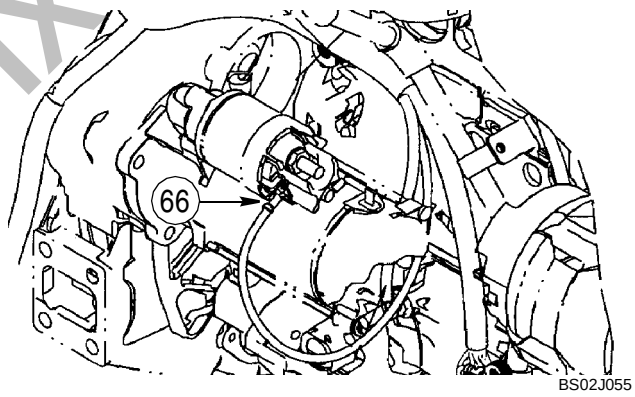


BS02J054

67. CONNECTOR

Connect rear chassis harness connector (67) to grid heater temperature switch following tag installed during removal. Remove and discard tag.

STEP 120



BS02J055

66. STARTER SOLENOID WIRE

Connect rear chassis harness wire (66) to starter solenoid terminal following tag installed during removal. Remove and discard tag.

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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

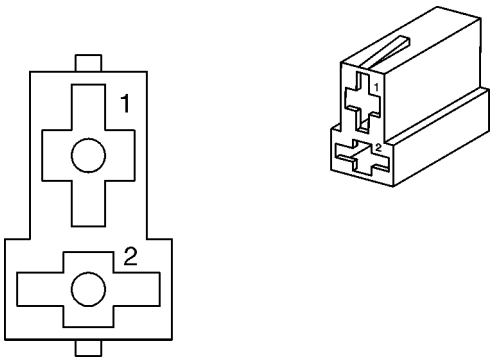
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47 – Instrument Cluster		
Check Points	**Reading**	**Possible Cause of Bad Reading**
NOTE: *Disconnect the connector from the instrument cluster.*		
Connector terminal 3 to ground	Continuity	Bad brake warning pressure switch (38). Also check circuit 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.

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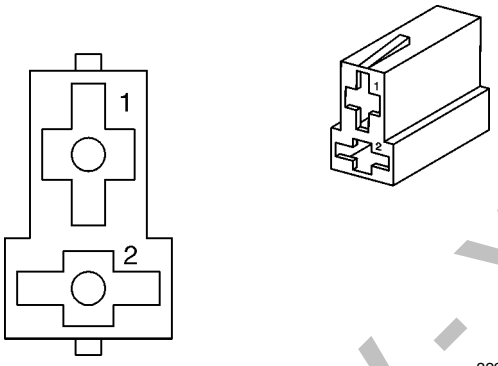
CONNECTOR 2 - FRONT WASHER PUMP MOTOR TO REAR CHASSIS HARNESS



3227856R1

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

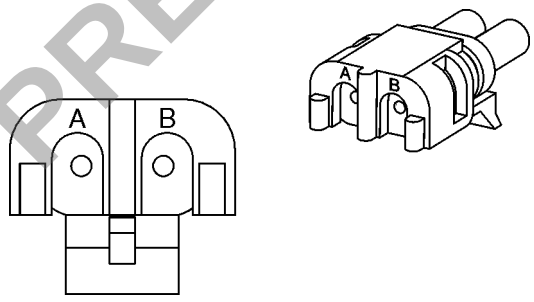
CONNECTOR 3 - REAR WASHER PUMP MOTOR TO REAR CHASSIS HARNESS



3227856R1

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

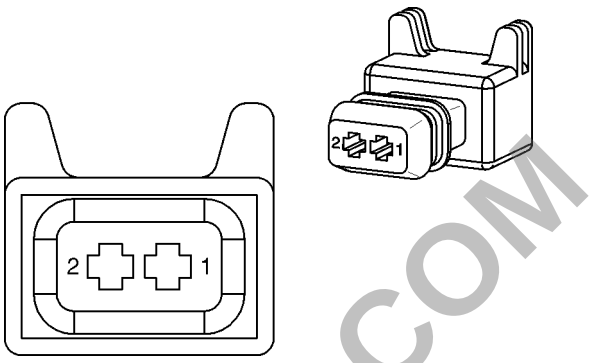
CONNECTOR 4 - BRAKE DECLUTCH PRESSURE SWITCH TO REAR CHASSIS HARNESS



245482C1

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

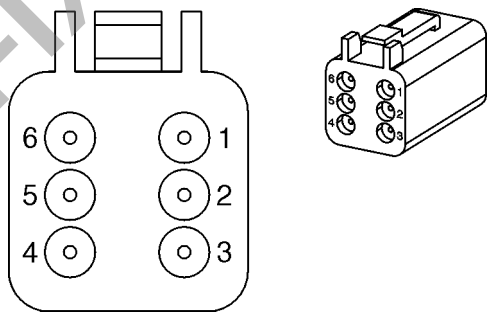
CONNECTOR 5F - RIDE CONTROL SOLENOID TO FRONT CHASSIS HARNESS



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



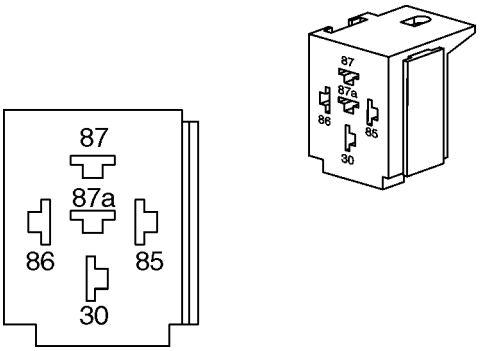
225351C1

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

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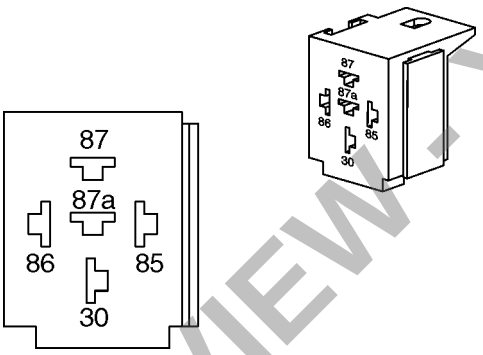
CONNECTOR 203F - COMPRESSOR CLUTCH LOCKOUT RELAY TO CAB MAIN HARNESS



245731C1

CAV	WIRE IDENT	CIRCUIT
30	61A_B Or-0.8 61A_C Or-0.8	Relay Power
85	0_DK Bk-0.8	AC BRK LT Time Del Horn Gnd
86	61R_C Or-0.8	AC Relay Signal
87	61R_B Or-0.8 61R_C Or-0.8 61R_D Or-0.8	AC Relay Signal
87A	61C_B Or-0.8	AC Comp Clutch

CONNECTOR 204F - BRAKE LAMPS RELAY TO CAB MAIN HARNESS



245731C1

CAV	WIRE IDENT	CIRCUIT
30	1B_E R-0.8	Brake Lamp Relay Power
85	0_DA Bk-0.8 0_DK Bk-0.8	AC BRK LT Time Del Horn Gnd
86	44A_B T-0.8	Brake LT Input Signal
87	44_E T-0.8	Brake LT Relay Signal
87A		None

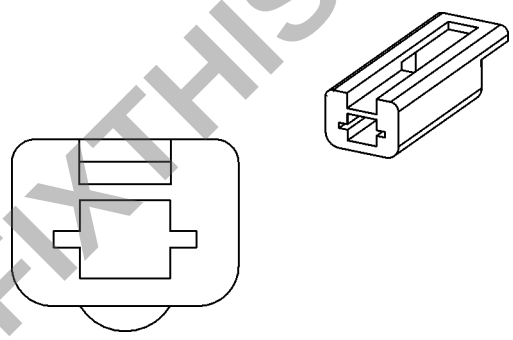
CONNECTOR 207F - THERMOSTAT SWITCH TO CAB MAIN HARNESS

CAV	WIRE IDENT	CIRCUIT
A	61T Or-1.0	Beacon Wiper Diode Ground

CONNECTOR 208F - THERMOSTAT SWITCH TO CAB MAIN HARNESS

CAV	WIRE IDENT	CIRCUIT
A	61A_D Or-0.8	AC Thermostat

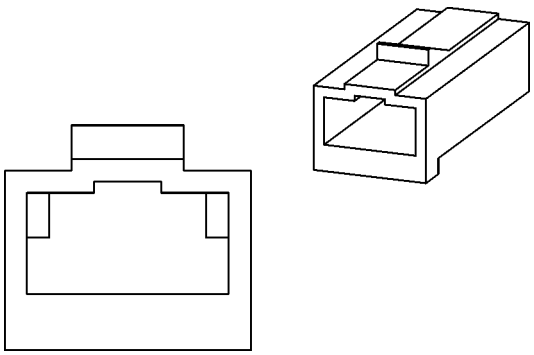
CONNECTOR 209F - BACKUP ALARM DISABLE JUMPER



739070C1

CAV	WIRE IDENT	CIRCUIT
A	35R_D Y-0.8	Backup Alarm Switch

CONNECTOR 209M - BACKUP ALARM DISABLE JUMPER



631801C1

CAV	WIRE IDENT	CIRCUIT
A	35A_F Y-0.8	Backup Alarm Relay Out

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Wire Identification Codes

21C Bk - 1.0

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

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**
64C	Horn Control	Or-0.8-SXL	13M Pedestal-Cab	42	184 Horn Switch	1
64C_A	Horn Control	Or-0.8-SXL	51F Horn Relay	85	13F Cab-Pedestal	42
64D	High/Low Beam Signal	Or-0.8-SXL	13M Pedestal-Cab	55	186 High Low Beam	1
64D_A	Low Beam Signal (2 Way)	Or-0.8-SXL	59F High/Low Beam	6	13F Cab-Pedestal	55
64A	Horn	Or-0.8-SXL	51F Horn Relay	87	1F Cab-Frnt Chas	N
65C	Radio Power	Or-0.8-SXL	114F Radio Radio Adapter	6	110F 24/12V Converter	A
65C_B	Radio Power	Or-0.8-SXL	114M Radio Adapter Radio	6	113 Radio	14
65L	Left Spkr Signal	Or-0.8-SXL	114F Radio Radio Adapter	1	112M Left Speaker	A
65L_A	Left Spkr Signal	Or-0.8-SXL	114M Radio Adapter Radio	1	113 Radio	11
65R	Right Spkr Signal	Or-0.8-SXL	114F Radio Radio Adapter	5	111M Right Speaker	A
65R_A	Right Spkr Signal	Or-0.8-SXL	114M Radio Adapter Radio	5	113 Radio	9
68C_A	Rear Wiper Park	Or-1.0-SXL	23F Cab-Roof	A	45F Rear Wiper Sw	1
68C_B	Rear Wiper Park	Or-1.0-SXL	23M Roof-Cab	A	81M Rear Wiper Mtr	D
68L_A	Rear Wiper Low Speed	Or-1.0-SXL	23F Cab-Roof	G	45F Rear Wiper Sw	2
68L_B	Rear Wiper Low Speed	Or-0.8-SXL	45F Rear Wiper Sw	2	140M Diode Module	F
68L_C	Rear Wiper Low Speed	Or-1.0-SXL	23M Roof-Cab	G	81M Rear Wiper Mtr	B
68W	Rear Washer Pump	Or-1.0-SXL	3 Rear Washer	1	21M Rear-Cab	24
68W_A	Rear Washer Pump	Or-1.0-SXL	45F Rear Wiper Sw	6	21F Cab-Rear	24

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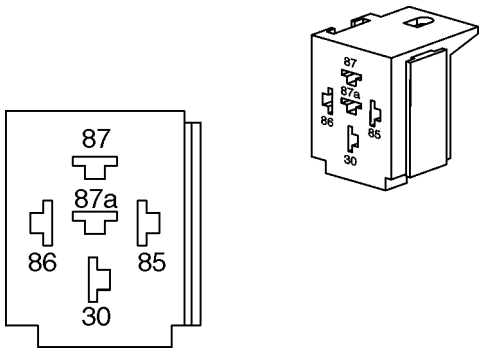
75 – Front Wiper and Washer Switch		
Check Points	**Reading**	**Possible Cause of Bad Reading**
Terminal for wire 0_DAR to ground	Continuity	Bad ground circuit.
NOTE: *Put the master disconnect switch and the ignition switch in the ON position. Make sure the front wiper and washer switch (75) is in the OFF position.*		
Terminal for wire 19J_A to ground	24 volts	Check fuse J, also check circuit 19J.
NOTE: *Put the front wiper and washer switch (75) in the LOW position.*		
Terminal for wire 63L to ground	24 volts	Check fuse J, also check circuit 19J. Bad front wiper and washer switch (75).
Terminal for wire 63C to ground	0 volt	Bad front rotary wiper and washer switch (75)
NOTE: *Put the front wiper and washer switch (75) in the HIGH position.*		
Terminal for wire 63H to ground	24 volts	Check fuse J, also check circuit 19J. Bad front rotary wiper and washer switch (75).
Terminal for wire 63C to ground	0 volt	Bad front rotary wiper and washer switch (75).
NOTE: *Put the front wiper and washer switch in the intermittent position.*		
Terminal for wire 63L_A to ground	24 volts pulse	Bad front wiper and washer switch (75).
Terminal for wire 63C_A to ground	24 volts pulse	Bad front wiper and washer switch (75).

76 – Front Washer Pump Motor		
Check Points	**Reading**	**Possible Cause of Bad Reading**
Terminal for wire 0_G to ground	Continuity	Bad ground circuit.
NOTE: *Put the master disconnect switch and the ignition switch in the ON position. Connect volt meter to check point then push down on front wiper and washer switch (75).*		
Terminal for wire 63W to ground	24 volts	Bad front wiper and washer switch (75), also check wires 63W and 63W_A.
NOTE: *If the readings are good, replace the front washer pump motor (76).*		

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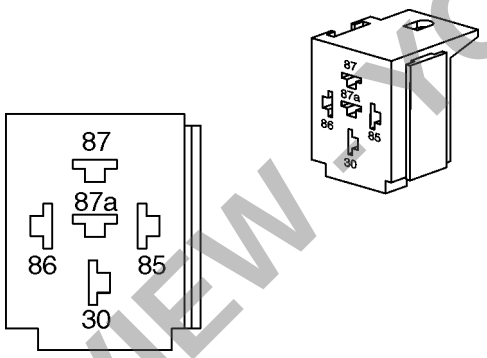
CONNECTOR 55F - PARKING BRAKE RELAY TO CAB MAIN HARNESS



245731C1

CAV	WIRE IDENT	CIRCUIT
30	19D_A Or-1.0 19D_B Or-1.0	Park Brake Relay Fused Power
85	52C_A W-0.8	Parking Brake Signal
86	19D_B Or-1.0	Park Brake Relay Fused Power
87	52P_B W-0.8 52P_A W-0.8	Park Brake Relay Out
87A		None

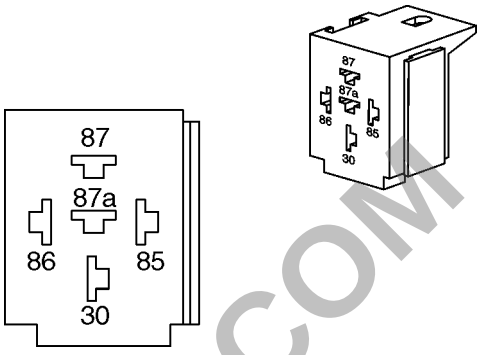
CONNECTOR 56F - PILOT CONTROL RELAY TO CAB MAIN HARNESS



245731C1

CAV	WIRE IDENT	CIRCUIT
30	19C_D Or-1.0 19C_E Or-1.0	Pilot Ride Control Fused Power
85	53C_A W-0.8	Pilot Control Signal
86	19C_E Or-1.0	Pilot Ride Control Fused Power
87	53P_A W-0.8 53P_B W-0.8 53P_C W-0.8	Pilot Control Signal
87A		None

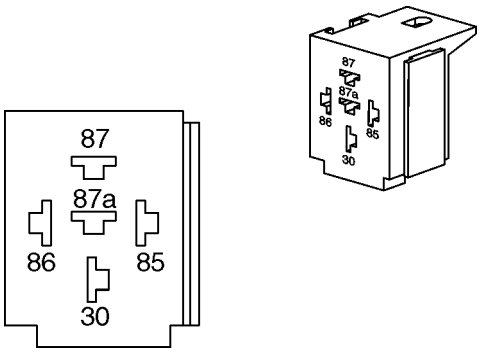
CONNECTOR 57F - RELAY SOCKET N0. 11 TO CAB MAIN HARNESS



245731C1

CAV	WIRE IDENT	CIRCUIT
30	13K_B Or-1.0 13K_C Or-1.0 13K_D Or-0.8	Ignition Switch Power
85	23C_A W-0.8	Engine Shutdown Signal
86	19F Or-1.0	Engine Shtdwn Rly Fused Pwr
87	13C_B Or-0.8 13C_C Or-0.8 13C_D Or-0.8	Fuel Solenoid Power
87A		None

CONNECTOR 58F - VOLTMETER RELAY TO CAB MAIN HARNESS



245731C1

CAV	WIRE IDENT	CIRCUIT
30	1_P R-0.8	Voltmeter Relay Power
85	0_DG Bk-0.8 0_DH Bk-0.8	Relay Ground
86	13K_C Or-1.0 13K_E Or-0.8	Ignition Switch Power
87	13V Or-1.0	Voltmeter Relay Out
87A		None

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CHARGING A BATTERY

Before you charge the battery, check the level of the electrolyte.

It is difficult to give an exact charging rate because of the following variable conditions: (1) temperature of the electrolyte, (2) level of charge, and (3) condition of the battery. Use the charging guide for the correct charging rate and time.

See Specifications in Section 4002 for the reserve capacity of the battery in this machine.

The charging rate must be decreased if:

1. Too much gas causes the electrolyte to flow from the cells.
2. The temperature of the electrolyte rises above 52°C (125° F).

NOTE: *For the best charge, use the slow charging rates.*

The battery is fully charged when, over a three hour period at a low charging rate, no cell is giving too much gas, and the specific gravity does not change.

CHARGING GUIDE FOR MAINTENANCE FREE BATTERIES

Recommended Rate* and Time for Fully Discharged Battery

Battery Capacity - See Reserve Capacity under Specifications	Slow Charge	Fast Charge
80 Minutes or Less	10 Hours at 5 Amperes 5 Hours at 10 Amperes	2.5 Hours at 20 Amperes 1.5 Hours at 30 Amperes
Above 80 to 125 Minutes	15 Hours at 5 Amperes 7.5 Hours at 10 Amperes	3.75 Hours at 20 Amperes 1.5 Hours at 50 Amperes
Above 125 to 170 Minutes	20 Hours at 5 Amperes 10 Hours at 10 Amperes	5 Hours at 20 Amperes 2 Hours at 50 Amperes
Above 170 to 250 Minutes	30 Hours at 5 Amperes 15 Hours at 10 Amperes	7.5 Hours at 20 Amperes 3 Hours at 50 Amperes
*Initial rate for standard taper charger		

NOTE: *A maintenance free battery will have the words Maintenance Free on the decal on the top of the battery. If the center part of the decal has been removed to get access to the battery caps, it is possible the words Maintenance Free will have been removed from the decal.*

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CODE	DEFINITION	POSSIBLE STEPS FOR REPAIR
46211	Low voltage at battery	1. Check batteries. 2. Check B+ wires from batteries to TCU. 3. Check voltage at TCU connector pin 45.
46212	High voltage at battery	
46213	Error at switch 1 for solenoid power supply	1. Check fuse A2. 2. Check cable from control valve to TCU. 3. Check connectors from control valve to TCU. 4. Replace TCU.
46214	Error at switch 2 for solenoid power supply	
46227	Short circuit to battery voltage at display output	1. Check the cable from TCU to the display. 2. Check the connectors at the display. 3. Change display.
46228	Short circuit to ground at display output	
46229	Error at communication on CAN	1. Check the cluster controller. 2. Check the wire of the CAN-Bus. 3. Check cable to cluster controller.
46230	Undefined VIN request via CAN.	
46241	General EEPROM fault	Replace the TCU.
46242	Current ID not set or corrupt	Reprogram the correct configuration for the vehicle.
46243	Application error (ZF internal)	Replace the TCU.
46245	Clutch calibration fault	Check the clutch.
46246	Clutch adjustment data lost	Do the transmission clutch calibration procedure.
47000	CAN interface failure where no signals are received over one second of time	1. Clear the codes. 2. Restart the machine. 3. Monitor machine operation and diagnostics.
47001	Engine speed is missing	1. Verify corresponding function is displayed on the information center and is working properly: A. Engine rpm - run engine LO to HI and verify display shows rpm. B. Output shaft speed - drive unit with mph/kph displayed and verify that it is working properly. C. Transmission oil temperature - display temperature values on information center and run machine to verify that the temperature changes with machine operation. 4. If operation is satisfactory, clear fault codes and continue to monitor. 5. If there are problems during operation, troubleshoot the appropriate electrical circuits.
47002	Output shaft speed is missing	
47011	Transmission oil temperature is missing	

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Removal 10
Installation 10

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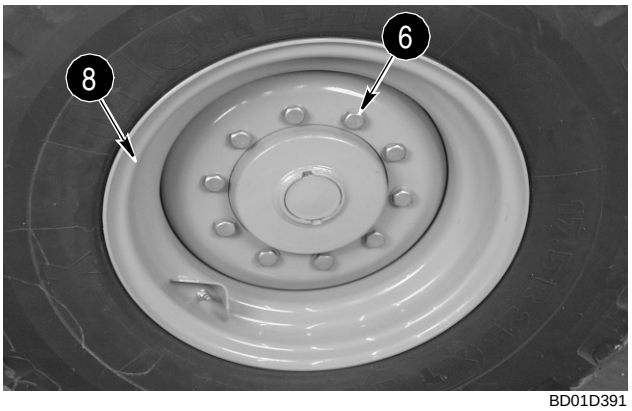
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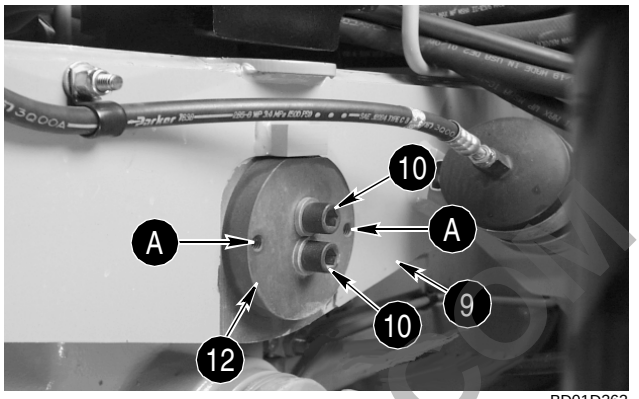
STEP 105



BD01D391

Remove 10 bolts (6) and washers (7) from rear wheels (8). Remove both wheels from rear axle.

STEP 106



BD01D363

At front of trunnion (9), remove two Allen head bolts (10) and washers (11). Remove front cap (12): if necessary use two M12 by 32 mm (1.25 inches) bolts in puller holes (A); tighten bolts evenly to pull cap from axle and trunnion. Remove and discard O-ring (15) from cap. Repeat this step at rear of trunnion except remove and retain shim(s) (14) after removal of rear cap (13). Remove pivot shaft (16) using acceptable sleeve or rod if necessary.

STEP 107

Carefully lower rear axle and remove through side of machine.

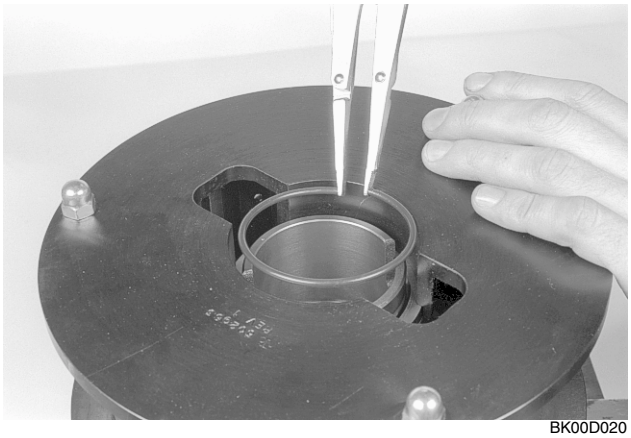
STEP 108

Remove and discard two seals (17) from rear axle pivot point.

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STEP 62



BK00D020

Remove the snap ring.

STEP 63



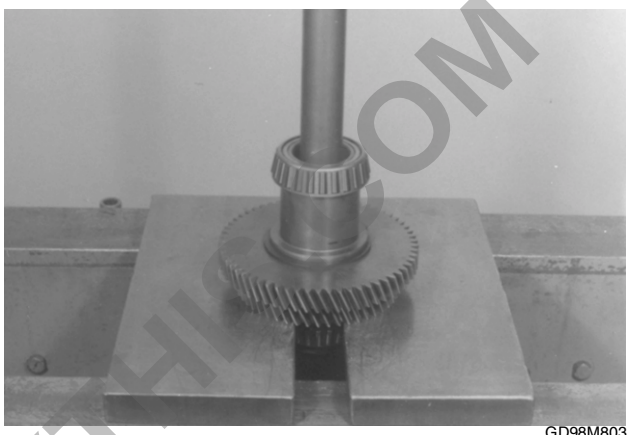
BK00D019

Remove the compression spring.

NOTE: *The following two steps are for disassembly of the input shaft.*

NOTE: *A snap ring is used to lock turbine shaft in input shaft. Snap ring will be destroyed when turbine shaft is pressed from input shaft.*

STEP 64



GD98M803

If turbine shaft is to be removed from input shaft, use proper size diameter sleeve or rod and press turbine shaft out of input shaft.

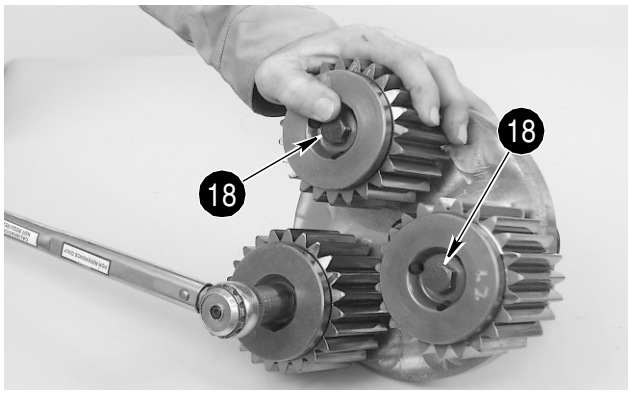
STEP 65

Remove bearings from input shaft using a bearing puller.

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STEP 72



BD01D630

18. BOLT

Tighten three bolts (18) to a torque of 114 Nm (84 lb-ft).

STEP 73

Install planetary carrier (32) in hub (2).

STEP 74

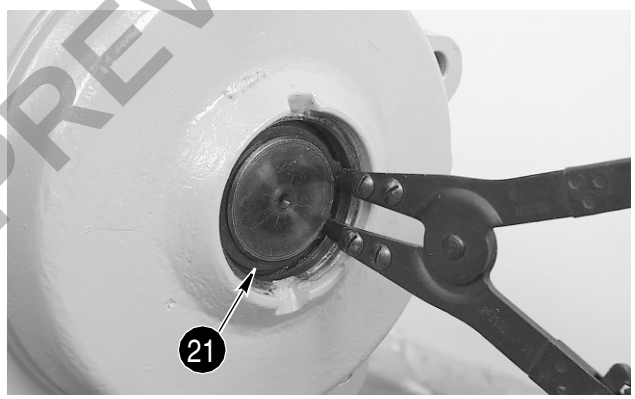


BD01D504

22. WASHER

Tip wheel end down. Install washer (22).

STEP 75



BD01D503

21. RETAINING RING

Install retaining ring (21).

STEP 76

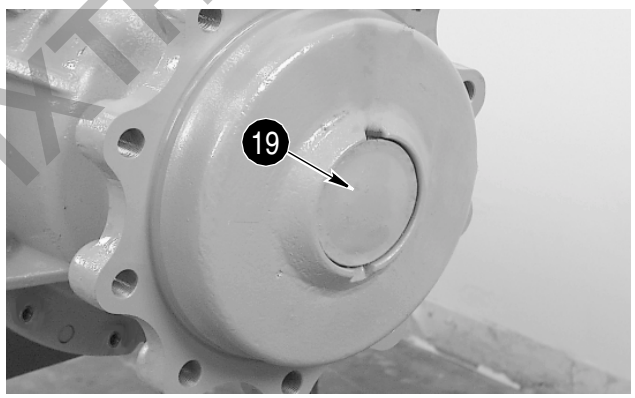


BD01D505

20. O-RING

Install new O-ring (20).

STEP 77

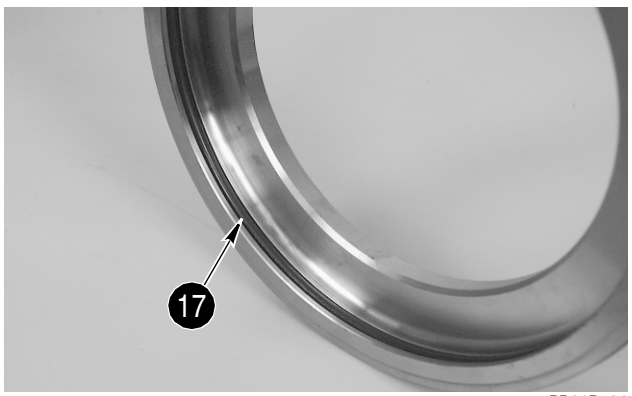


BD01M019

19. CAP

Install cap (19).

STEP 78



BD01D524

17. O-RING

Install a new O-ring (17) in brake piston (13).

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SPECIFICATIONS

Lubricant Capacity	22.1 Liters (23.5 U.S. Quarts)
Distance Between Gripping Rings and Shoulder of Pin	10.5 to 10.8 mm (0.41 to 0.43 inch)
Top of Pins to Top of Support Shim	4.5 to 5.0 mm (0.18 to 0.20 inch)
Sun Gear Shaft End Play	0.5 to 2.0 mm (0.020 to 0.079 inch)
Drive Pinion Rolling Torque	1.1 to 4.5 Nm (9.7 to 40 lb-inch)
Differential Carrier Bevel Gear End Play	Zero to 0.15 mm (zero to 0.006 inch)

SPECIAL TORQUES

Bolts Securing Wheel End to Axle Housing	390 Nm (288 lb-ft)
Locknut Securing Planetary Carrier	700 to 1000 Nm (516 to 737 lb-ft)
Vent Valve Fitting	140 Nm (103 lb-ft)
Vent Valve	80 Nm (59 lb-ft)
Axle Housing Connector for Brake Tube	140 Nm (103 lb-ft)
Nut Securing Brake Tube to Connector	140 Nm (103 lb-ft)
Brake Tube Fitting to Wheel End Fitting	80 Nm (60 lb-ft)
Breather Plug	140 Nm (103 lb-ft)
Nut Securing Input Flange (Apply Loctite 262 to Threads)	600 Nm (442 lb-ft)
Bolts Securing Differential Ring Gear	
M12 Bolts	120 Nm (88 lb-ft)
M16 Bolts	300 Nm (221 lb-ft)
Bolts Securing Differential Bearing Caps (Apply Loctite 262 to Threads)	185 Nm (136 lb-ft)
Differential Carrier Mounting Bolts (Apply Loctite 262 to Threads)	390 Nm (288 lb-ft)

SPECIAL TOOLS

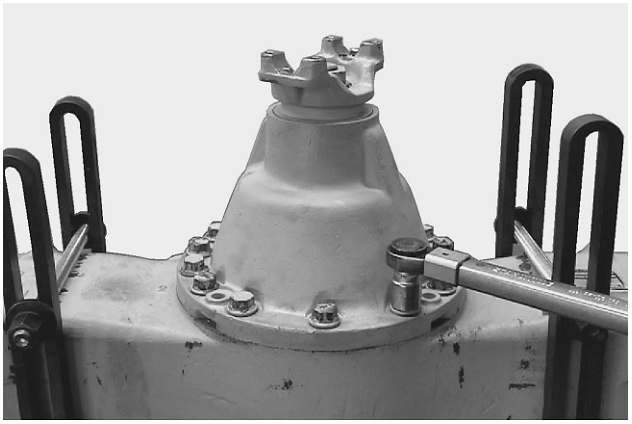
Brake housing seal installer	CAS2880
Differential bearing cone puller collet set	CAS2871
Brake housing inner bearing cup installer	CAS2877
Brake housing outer bearing cup installer	CAS2878
Wear ring installer adapter	CAS2875
Pinion depth gauge set	CAS(*TBS)
Support bracket	CAS2883
Slide hammer puller adapter	CAS10846-3
Slide hammer	OEM4252
Replacer	CAS2297
Dial indicator with magnetic base	CAS10066A
Heat gun	CAS10810
Engine stand	OEM4135
Snap ring pliers	OEM6484
Snap ring pliers	OEM6177
Snap ring pliers	OEM6492
Alignment Studs	CAS2861
Step plate set (includes 8061, 8067, and 8073)	OEM4288
Step plate	8061
Step plate	8067
Step plate	8073
Socket	CAS2876
Planetary Gear Puller	CAS2848
Brake Housing Puller Bridge	CAS2850
Pressure Ring Installer	CAS2860
Holding Bracket	CAS2847
Puller	CAS2848
Pulling Attachment	OEM4175
Puller Legs	1103
Step Plate	8065
Holding Wrench	CAS1579A
Pinion Inner Bearing Cup Installer	CAS2293-1
Pinion Outer Bearing Cup Installer	CAS(*TBS)
Pinion Seal Installer	CAS(*TBS)
Pinion Seal Installer	CAS(*TBS)
Pulling Attachment	OEM4054

*TBS: To Be Supplied

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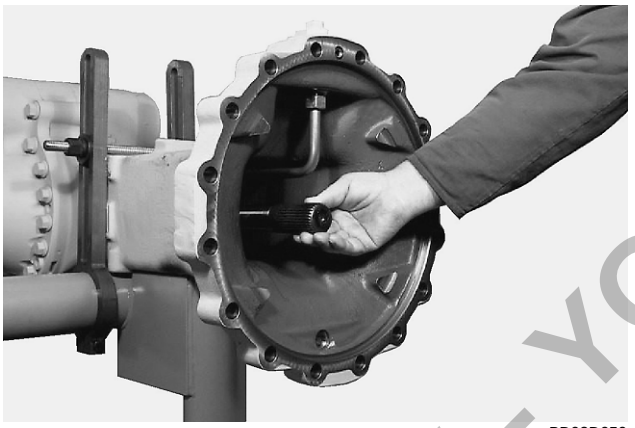
STEP 177



BD02D151

Using new bolts, secure the differential carrier to the axle housing. Tighten bolts to a torque of 390 Nm (288 lb-ft).

STEP 178



BD02D050

Install the stub shaft into the spline of the differential bevel gear.

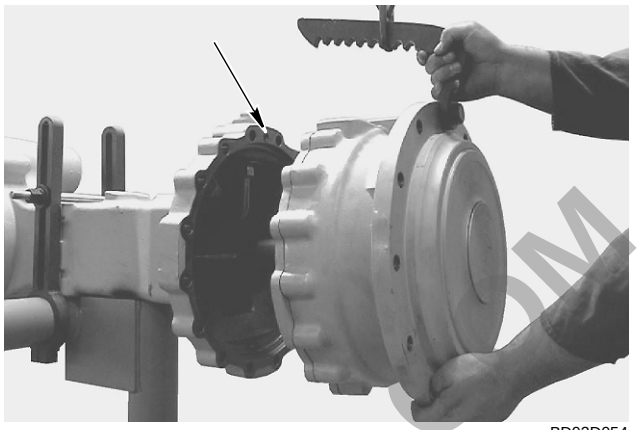
STEP 179



BD02D011

Install the thrust washer removed at disassembly. Use grease to keep it in the sun gear.

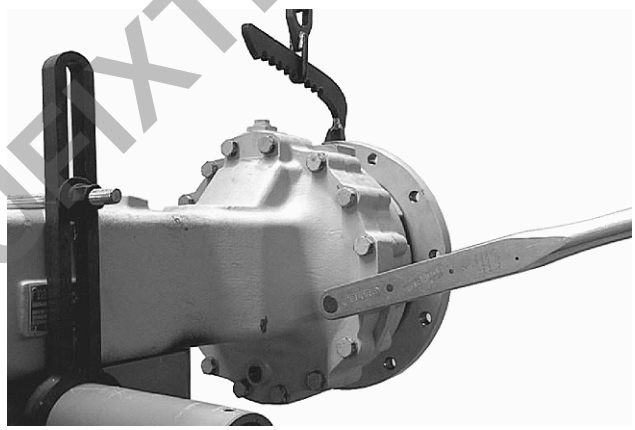
STEP 180



BD02D054

Apply grease to a new O-ring and install O-ring in brake port. Position the wheel end on the axle housing.

STEP 181



BD02D154

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

NOTE: *Repeat Steps 178 through 181 for the other wheel end.*

NOTE: *Refer to Section 1002 of this service manual for proper lubricant.*

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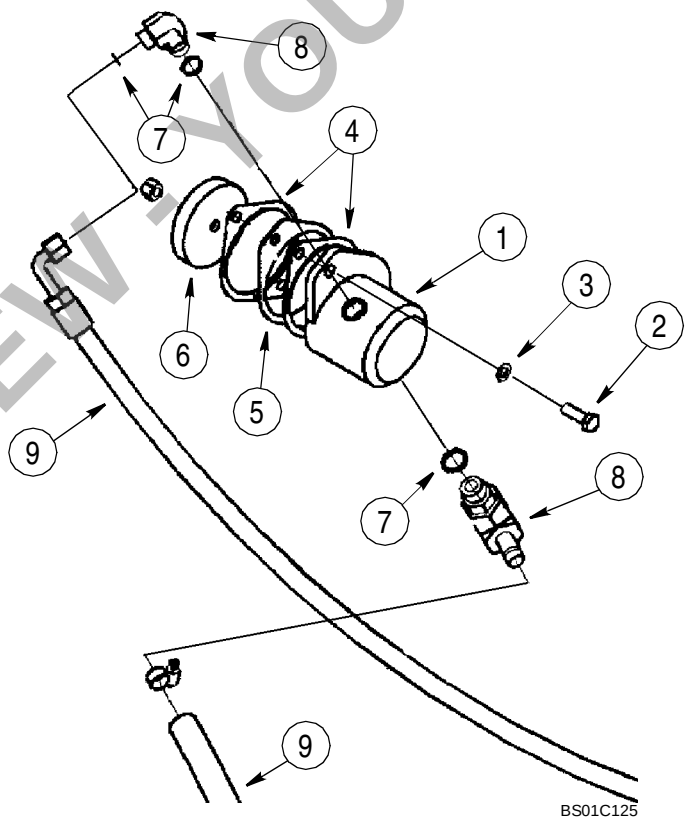
BRAKE PUMP

Removal

1. Park the machine on a level surface and lower the loader bucket to the floor. Stop the engine.
2. Put blocks on both sides of each tire to prevent machine movement.
3. Raise the engine hood and turn the master disconnect switch to the OFF position.
4. Clean the brake pump (1) and lines, refer to the illustration below.
5. Put identification tags on all lines that are connected to the brake pump (1).
6. Connect a vacuum pump to the hydraulic reservoir. Start the vacuum pump.
7. Disconnect the lines from the brake pump (1) and put plugs or caps on each line.
8. Stop the vacuum pump and remove.
9. Remove the mounting bolts (2) and lock washers (3) from the brake pump (1) and remove the brake pump (1).

Installation

1. Install the brake pump (1), mounting bolts (2) and lock washers (3). Refer to the illustration below for units P.I.N. JEE0135500 and below or illustration on page 9 for units P.I.N. JEE0135501 and above.
2. Tighten the mounting bolts (2).
3. Connect a vacuum pump to the hydraulic reservoir. Start the vacuum pump.
4. Remove the plugs or caps and connect the lines to the brake pump (1).
5. Turn the master disconnect switch to the ON position.
6. Bleed the brake system. See Section 7002.
7. Check the hydraulic reservoir oil level and add oil as required. See Section 1002 for the correct oil.



1. BRAKE PUMP
2. MOUNTING BOLT
3. LOCK WASHER
4. GASKET
5. SPACER
6. GEAR
7. O-RING
8. ELBOW
9. HOSE

BRAKE PUMP ILLUSTRATION - P.I.N. JEE0135500 AND BELOW

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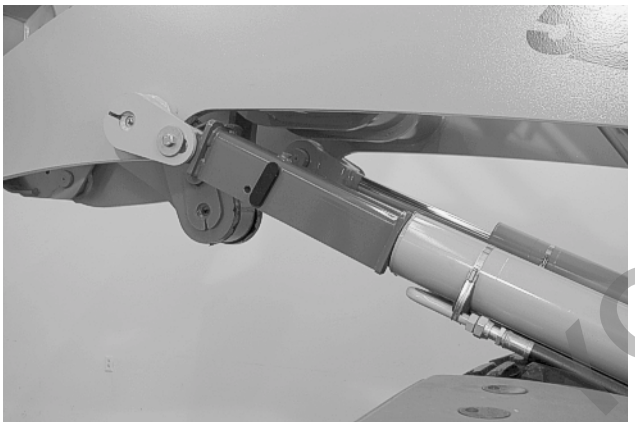
STEP 20



BD01D138

Place the master disconnect switch in the ON position.

STEP 21



BD00M048

Raise the loader arms and remove the safety link.

STEP 22

Start the engine and run at half throttle.

STEP 23

Slowly and completely extend and retract all cylinders at least 10 times to remove any air from the circuits.

STEP 24

Stop the engine and check for leaks.

STEP 25

Install the access cover on the front of the machine.

STEP 26

Check the level of the hydraulic oil and add hydraulic oil as required.

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STEP 7

Subtract the reading of the test port (1) from the reading of the test port (2).

STEP 8

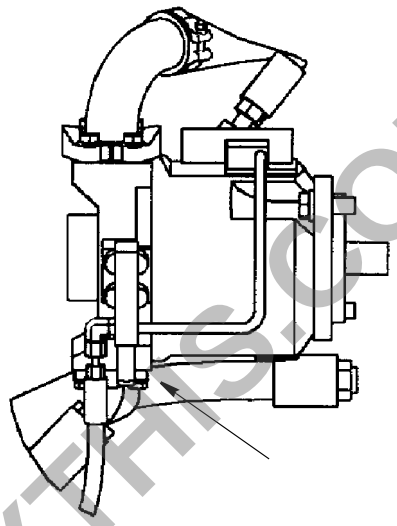
The difference between the two readings should be 22 + 1/-0 bar (320 + 15/-0 psi).

STEP 9

If this reading is more or less than that specified, it will be necessary to adjust the pump.

Adjusting the Main Hydraulic Pump

STEP 10



BS01B022

Turn the pump adjusting screw closest to the pump as illustrated. Turn the screw clockwise to increase the differential pressure. Turning the screw counterclockwise will decrease the differential pressure.

NOTE: *One turn of the adjustment screw will change the pressure approximately 16 bar (230 psi).*

TESTING THE HYDRAULIC PUMP PERFORMANCE AND TORQUE LIMITER

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 high idle.

B. Lower the loader bucket to the ground.

C. Hold the lift control lever in the “FLOAT” position.

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

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

Connect the flowmeter (5) by installing a tee fitting (1) between the pump and the loader control valve (2). Refer to illustration on page 9.

STEP 3

Make sure that the flowmeter valve is in the closed position. Raise the lift arms to the stops and secure the lift control lever in the “RAISE” position.

STEP 4

Operate the engine at 2000 rpm and open the flowmeter valve until the pump pressure is 500 psi. The flow at this point should be 36.5 to 37.5 gpm.

STEP 5

Close the flowmeter valve slowly and read the flow at 2000 psi @ 2000 rpm. The flow should read 35.5 to 36.5 gpm.

STEP 6

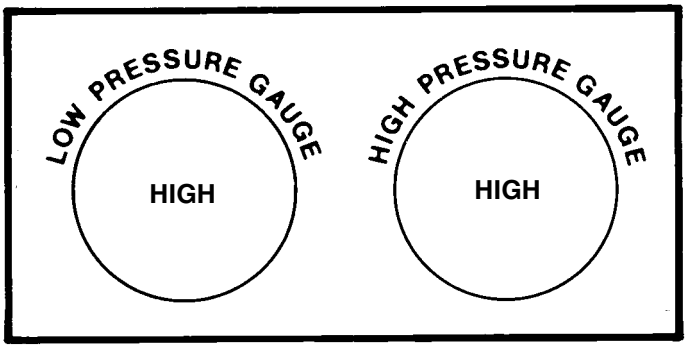
Continue slowly closing the flowmeter valve, monitoring the flow with the engine speed at 2000 rpm. At a point between 2200 and 2400 psi, the flow should noticeably start decreasing. This is the torque limit setting of the pump. Record this pressure.

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NOTES

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476L7

SEE PRESSURE - TEMPERATURE CHART ON PAGE 14

Condenser Not Operating - Indications:

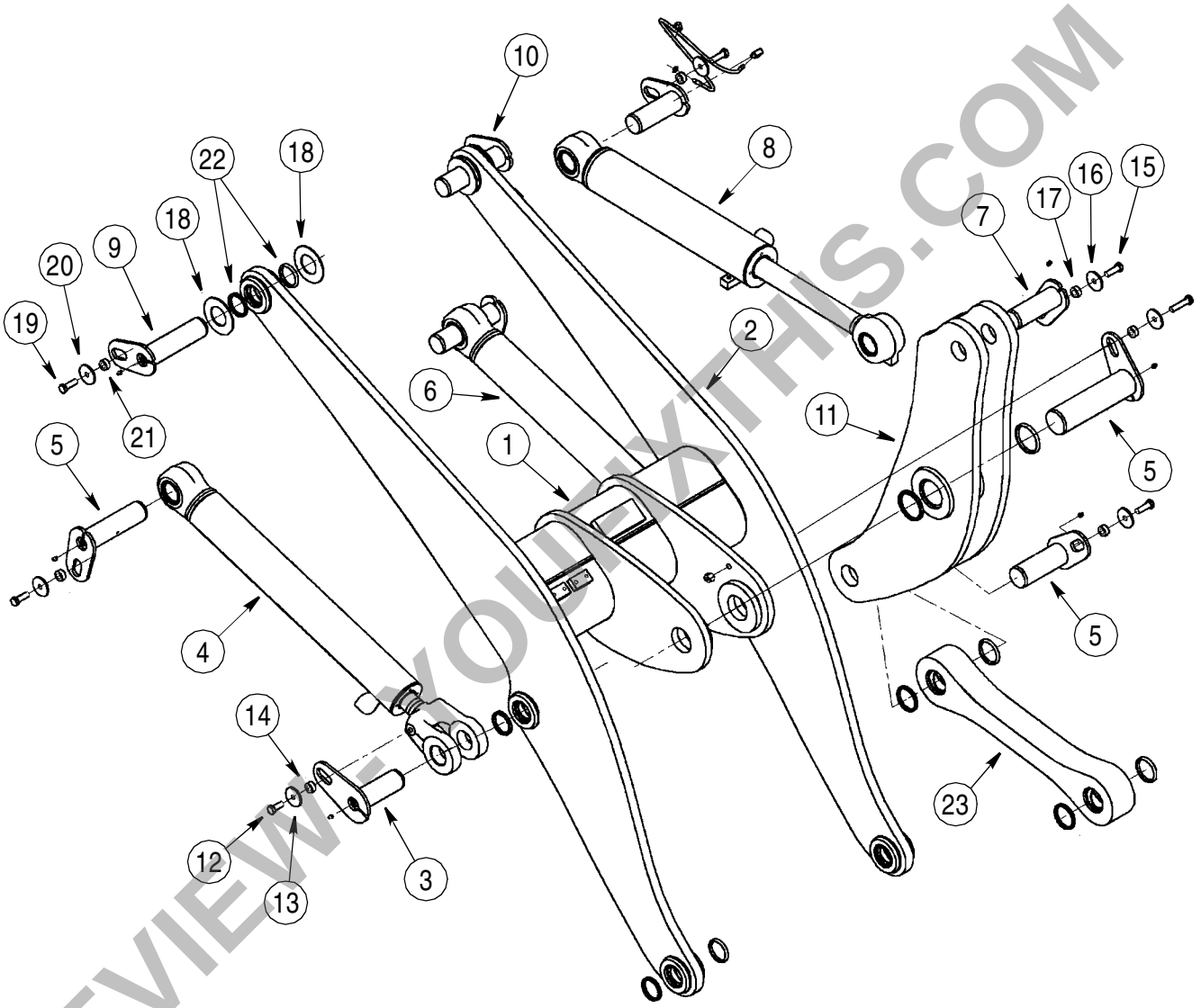
A. Liquid line very hot. B. Discharge air from evaporator warm. →	1. Check for loose or worn compressor belt and proper condenser fan operation. 2. Check to see that condenser is clean and that the fins are straight. 3. Check system for too much refrigerant. A. Remove refrigerant from system until gauge pressure is below normal. See Section 9003. B. Add refrigerant until gauge pressures are normal. See Section 9003. C. If there is still a problem, do step 4. 4. Remove and inspect condenser for restrictions caused by oil or reduced heat transfer. A. Discharge refrigerant from system. See Section 9003. B. Use compressed air to remove oil from condenser. C. Replace receiver-drier. See Section 9004.

Air in the System - Indications:

Warm discharge air from evaporator. →	1. Discharge refrigerant from system. See Section 9003. 2. Replace receiver-drier. 3. Remove air and moisture from the system. See Section 9003. 4. Charge system with new refrigerant. See Section 9003.

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BS01C087

1. CROSSMEMBER
2. LOADER FRAME
3. PIVOT PIN
4. LIFT CYLINDER
5. PIVOT PIN
6. LIFT CYLINDER
7. PIVOT PIN
8. BUCKET CYLINDER
9. PIVOT PIN
10. PIVOT PIN
11. BELLCRANK
12. BOLT
13. WASHER
14. SPACER
15. BOLT
16. WASHER
17. SPACER
18. WASHER
19. BOLT
20. WASHER
21. SPACER
22. WIPER
23. DUMP LINK

LOADER FRAME - Z-BAR MODEL ILLUSTRATION

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