60 / 70XT SKID STEER
Service Manual
Bur 6-45720

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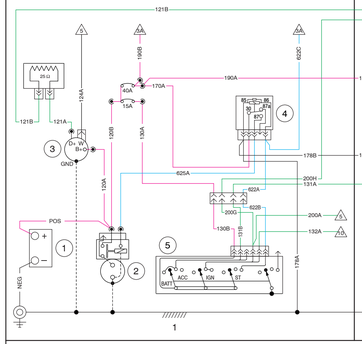
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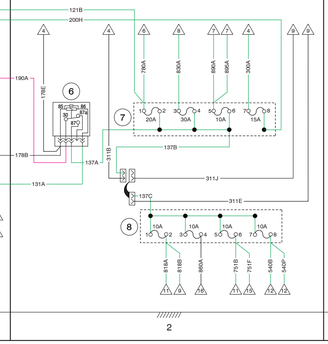
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STARTING SYSTEM



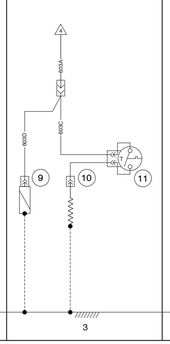
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POWER DISTRIBUTION



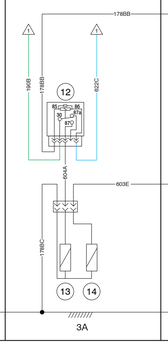
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FUEL SUPPLY SYSTEM
(Naturally Aspirated Engines)



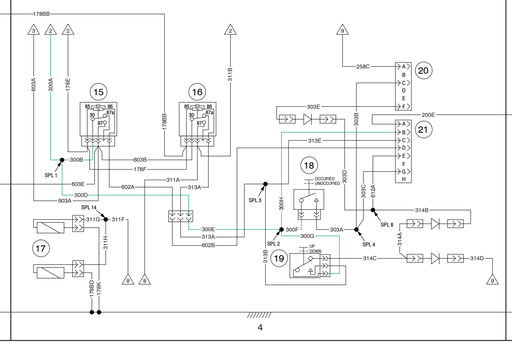
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FUEL SUPPLY SYSTEM
(Turbo Engines)



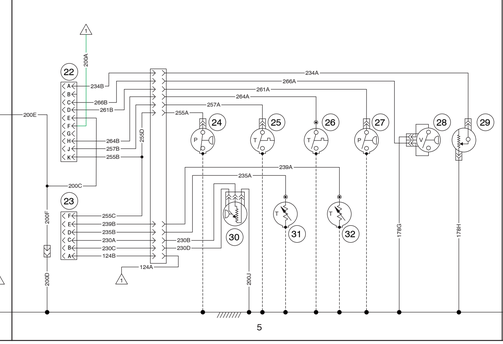
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SAFETY INTERLOCK SYSTEM



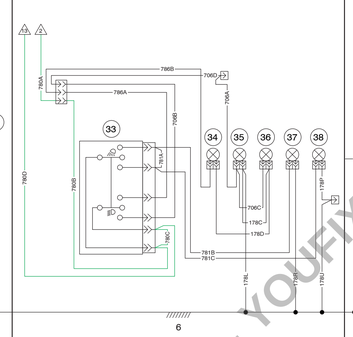
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INSTRUMENT CLUSTER



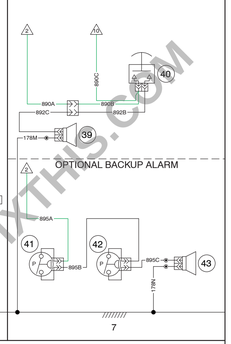
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STANDARD LAMPS



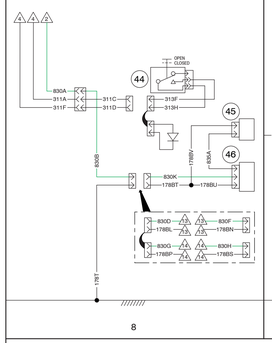
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OPTIONAL HORN



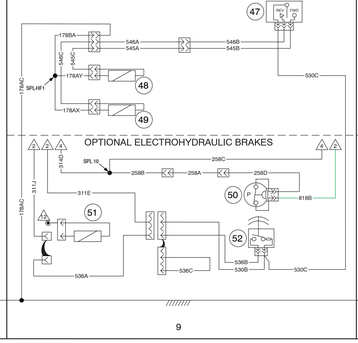
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OPTIONAL FRONT DOOR



8

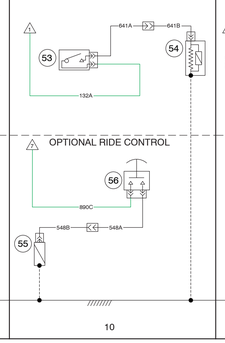
OPTIONAL HIGH FLOW



OPTIONAL ELECTROHYDRAULIC BRAKES

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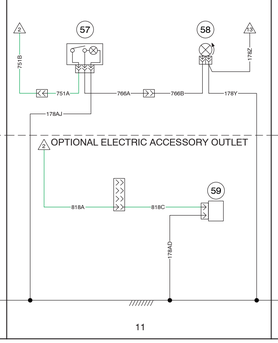
OPTIONAL COLD START



OPTIONAL RIDE CONTROL

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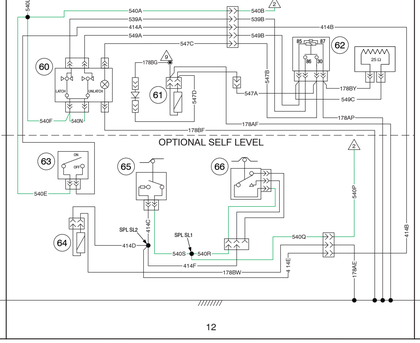
OPTIONAL ROTATING BEACON



OPTIONAL ELECTRIC ACCESSORY OUTLET

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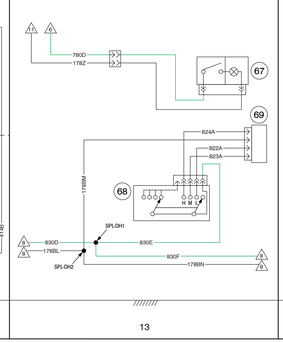
OPTIONAL HYDRAULIC COUPLER



OPTIONAL SELF LEVEL

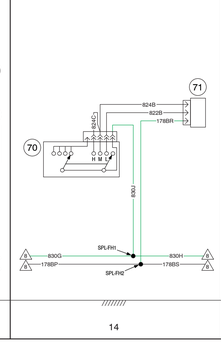
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OPTIONAL DELUXE HEATER



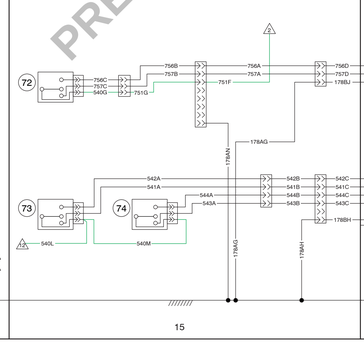
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OPTIONAL FOOT HEATER



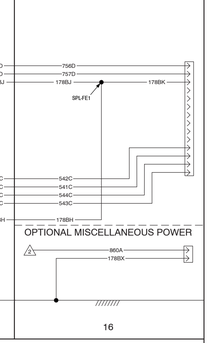
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OPTIONAL AUXILIARY ELECTRIC



15

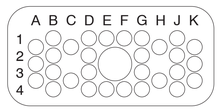
OPTIONAL LOADER ARM
AUXILIARY ELECTRICAL



OPTIONAL MISCELLANEOUS POWER

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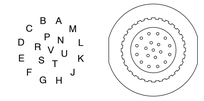
CHASSIS HARNESS TO CAB HARNESS



	A	B	C	D	E	F	G	H	J	K	
1	130A	200H	311F	X	706D	234A	257A	641B	266A	200D	1
2	780A	131A	--	300D	--	--	261A	--	602A	830A	2
3	--	622A	--	X	--	--	X	--	239A	--	3
4	786B	124A	313A	X	255A	235A	264A	311A	X	178S	4
	A	B	C	D	E	F	G	H	J	K	

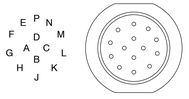
CHASSIS OPTIONS TO CAB OPTIONS

A	751B	L	759A
B	540B	M	544B
C	539B	N	754C
D	418B	P	547B
E	549B	R	818A
F	543B	S	X
G	542B	T	X
H	541B	U	X
J	258D	V	X
K	758B		

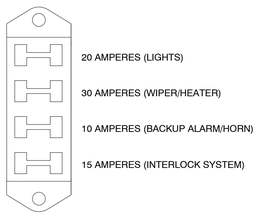


FRONT AUXILIARY ELECTRIC

A	X	H	544C
B	178BK	J	X
C	757D	K	X
D	756D	L	X
E	541C	M	X
F	542C	N	X
G	543C	P	X



FUSES



PRIMARY FUSE BLOCK

OPTIONS FUSE BLOCK

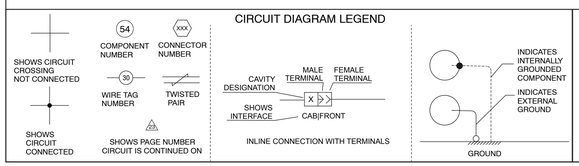
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COMPONENTS

1. BATTERY
2. STARTER MOTOR AND SOLENOID
3. ALTERNATOR
4. STARTING RELAY
5. IGNITION SWITCH
6. MAIN POWER RELAY
7. PRIMARY FUSE BLOCK
8. OPTIONS FUSE BLOCK
9. FUEL HOLD IN SOLENOID
10. FUEL TIMING HEATER
11. FUEL TIMING TEMPERATURE SWITCH
12. FUEL SOLENOID PULL IN RELAY
13. FUEL PULL IN SOLENOID
14. FUEL HOLD IN SOLENOID
15. ENGINE SHUT DOWN RELAY
16. LOADER VALVE SOLENOID RELAY
17. LOADER VALVE SOLENOIDS
18. SEAT SWITCH
19. SEAT BAR SWITCH
20. LH INSTRUMENT CLUSTER (6-PIN CONNECTOR)
21. RH INSTRUMENT CLUSTER (8-PIN CONNECTOR)
22. LH INSTRUMENT CLUSTER (10-PIN CONNECTOR)
23. RH INSTRUMENT CLUSTER (6-PIN CONNECTOR)
24. ENGINE OIL PRESSURE SWITCH
25. ENGINE COOLANT TEMPERATURE SWITCH
26. HYDRAULIC OIL TEMPERATURE SWITCH
27. HYDRAULIC FILTER PRESSURE SWITCH
28. AIR FILTER RESTRICTION SWITCH
29. FUEL SENDER
30. ENGINE OIL PRESSURE SENSOR (OPTIONAL)
31. ENGINE COOLANT TEMPERATURE SENDER (OPTIONAL)
32. HYDRAULIC OIL TEMPERATURE SENDER (OPTIONAL)
33. WORK/ROAD LIGHT SWITCH
34. REAR HALOGEN WORK LAMP
35. LH REAR POSITIONAL LAMP
36. RH REAR POSITIONAL LAMP
37. LEFT FRONT HALOGEN WORK LAMP
38. RIGHT FRONT HALOGEN WORK LAMP
39. HORN
40. HORN SWITCH
41. BACKUP ALARM SWITCH
42. BACKUP ALARM SWITCH
43. BACKUP ALARM
44. CAB DOOR SWITCH
45. WASHER PUMP
46. WIPER MOTOR
47. HIGH FLOW SWITCH
48. FORWARD HIGH FLOW SOLENOID
49. REVERSE HIGH FLOW SOLENOID
50. BRAKE PRESSURE SWITCH
51. BRAKE RELEASE SOLENOID
52. BRAKE SWITCH
53. COLD START SWITCH
54. THERMOSTART COIL
55. RIDE CONTROL SOLENOID
56. RIDE CONTROL SWITCH
57. ROTATING BEACON SWITCH
58. ROTATING BEACON
59. ACCESSORY OUTLET
60. HYDRAULIC COUPLER SWITCH
61. HYDRAULIC COUPLER RELEASE SOLENOID
62. HYDRAULIC COUPLER RELEASE TIMER
63. SELF LEVEL OVERRIDE SWITCH
64. SELF LEVEL OVERRIDE SOLENOID
65. LOADER VALVE FLOAT SPOOL SWITCH
66. LOADER VALVE TIP SPOOL SWITCH
67. DOME LIGHT WITH SWITCH
68. DELUXE HEATER BLOWER SWITCH
69. DELUXE HEATER
70. FOOT HEATER BLOWER SWITCH
71. FOOT HEATER
72. FRONT ELECTRIC CONTROL SWITCH
73. AUXILIARY ELECTRIC SWITCH #1
74. AUXILIARY ELECTRIC SWITCH #2

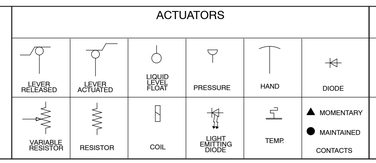
CIRCUIT DIAGRAM LEGEND



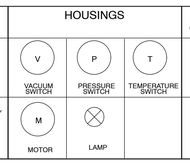
WIRE IDENTIFICATION

ABBREV	WIRE COLOR
B	BLACK
BR	BROWN
DB	DARK BLUE
DG	DARK GREEN
G	GRAY
LB	LIGHT BLUE
LG	LIGHT GREEN
O	ORANGE
P	PINK
R	RED
T	TAN
V	VIOLET (PURPLE)
W	WHITE
Y	YELLOW

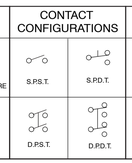
ACTUATORS



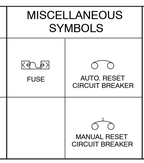
HOUSINGS



CONTACT CONFIGURATIONS



MISCELLANEOUS SYMBOLS



NOTES

1. DIAGRAM SHOWN WITH VEHICLE PARKED, POWER OFF AND CONTROLS IN OFF OR NEUTRAL POSITION.
2. SHEET NUMBERS REFER TO THE NUMBER AT THE BOTTOM CENTER OF EACH BLOCK.

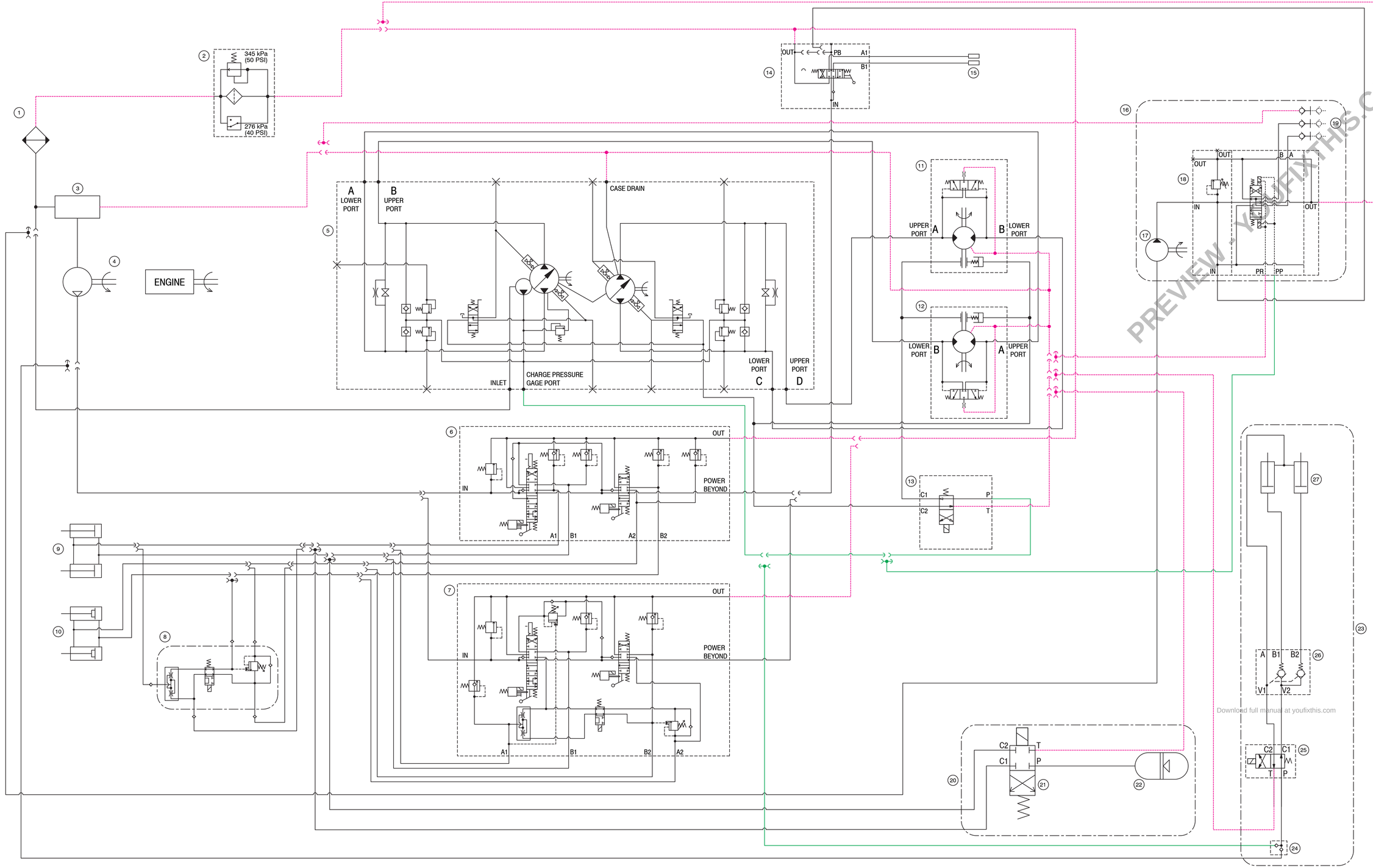
LEGEND

- INDICATES CONSTANT POWER
- INDICATES POWER WHEN KEY SWITCH IS IN ON POSITION
- INDICATES MOMENTARY POWER WHEN KEY SWITCH IS IN START POSITION

ELECTRICAL SCHEMATIC
60/70XT SKID STEER LOADERS

Additional copies of this Hydraulic and Electrical Schematic can be ordered through Technical Publications Distribution System. The part number is 6-44940.

H601H002



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COMPONENTS

1. OIL COOLER
2. RETURN FILTER
3. HYDRAULIC RESERVOIR
4. GEAR PUMP
5. TANDEM HYDROSTATIC PUMP
6. LOADER CONTROL VALVE
7. LOADER CONTROL VALVE (with Optional Dual Self Level)
8. SEPARATE DUAL SELF LEVEL VALVE (Optional on 70XT)
9. LIFT CYLINDERS (2)
10. BUCKET CYLINDERS (2)
11. LH DRIVE MOTOR
12. RH DRIVE MOTOR
13. BRAKE/SERVO OVERRIDE SOLENOID VALVE
14. AUXILIARY HYDRAULICS VALVE
15. AUXILIARY HYDRAULICS QUICK DISCONNECTS
16. HIGH FLOW OPTION
17. GEAR PUMP
18. HIGH FLOW VALVE
19. HIGH FLOW AUXILIARY HYDRAULICS QUICK DISCONNECTS
20. RIDE CONTROL OPTION
21. RIDE CONTROL VALVE
22. RIDE CONTROL ACCUMULATOR
23. HYDRAULIC COUPLER OPTION
24. CHECK VALVE
25. 4-WAY SOLENOID VALVE
26. LOCKOUT VALVE
27. HYDRAULIC COUPLER CYLINDERS (2)

NOTES

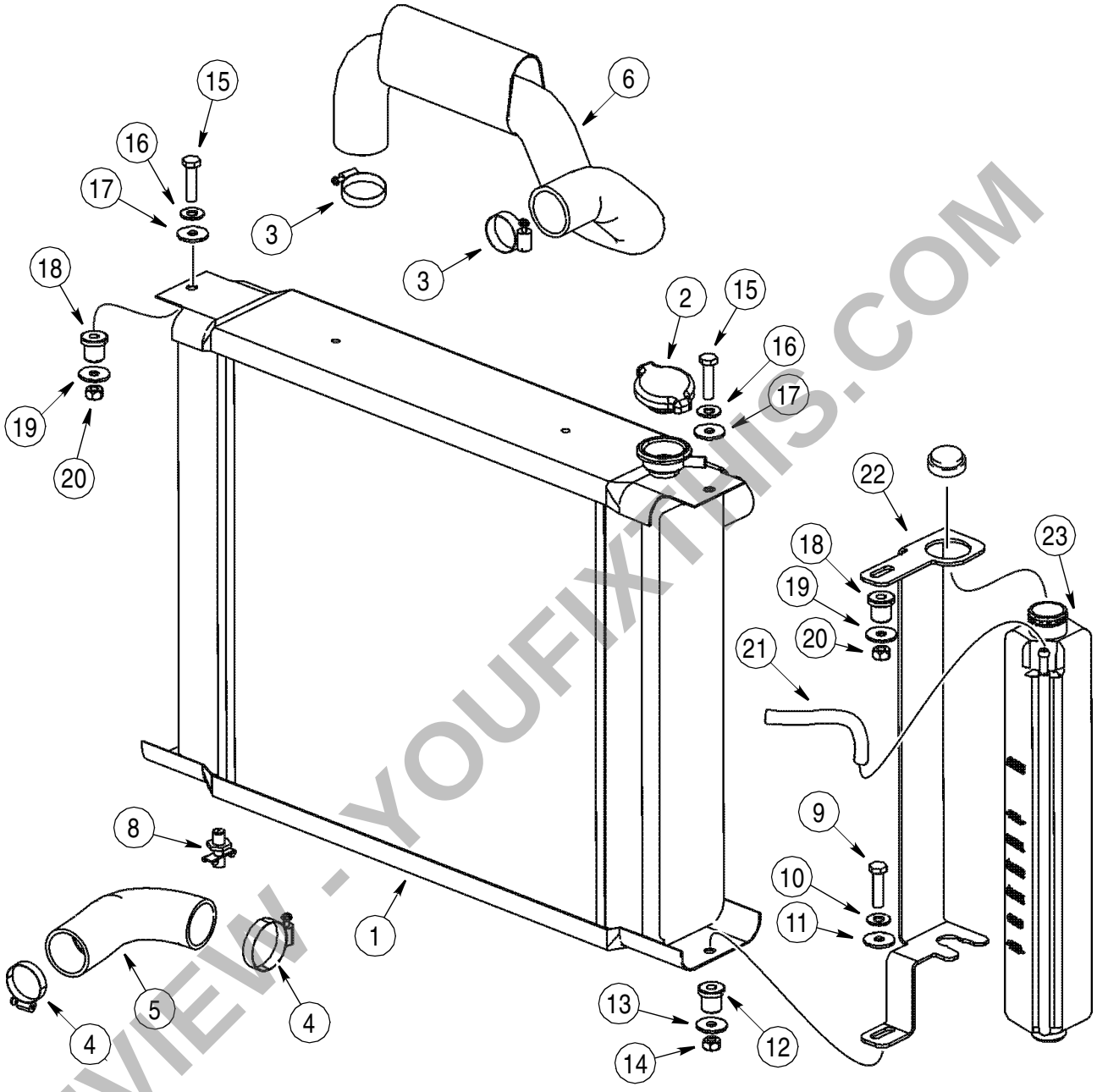
HYDRAULIC SYMBOLS

PRESSURE
COMPONENT
RETURN
LOAD SENSE
PILOT PRESSURE
CROSSING LINES
CHECK VALVE
FILTER OR SCREEN
LINE CONNECTION
RESTRICTOR
OIL COOLER

HYDRAULIC SCHEMATIC
60/70XT SKID STEER LOADERS

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H0019001



1. RADIATOR
2. RADIATOR CAP
3. HOSE CLAMP
4. HOSE CLAMP
5. LOWER RADIATOR HOSE
6. UPPER RADIATOR HOSE
7. HOSE HEAT GUARD
8. DRAIN VALVE
9. BOLT
10. WASHER
11. WASHER
12. MOUNT
13. WASHER
14. NUT
15. BOLT
16. WASHER
17. WASHER
18. MOUNT
19. WASHER
20. NUT
21. OVER FLOW HOSE
22. BRACKET
23. OVER FLOW BOTTLE

RADIATOR

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TORQUE SPECIFICATIONS - DECIMAL HARDWARE

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

Grade 5 Bolts, Nuts, and Studs



Size	Newton metres	Pound-Inches
1/4 inch	10 to 12	91 to 103
5/16 inch	21 to 24	188 to 212
3/8 inch	38 to 43	336 to 378
		Pound-Feet
7/16 inch	61 to 69	45 to 51
1/2 inch	94 to 104	68 to 76
9/16 inch	132 to 149	98 to 110
5/8 inch	183 to 210	138 to 155
3/4 inch	325 to 370	242 to 270
7/8 inch	530 to 595	390 to 435
1.0 inch	790 to 890	585 to 655
1-1/8 inch	980 to 1100	725 to 805
1-1/4 inch	1385 to 1555	1020 to 1145
1-3/8 inch	1810 to 2030	1335 to 1495
1-1/2 inch	2400 to 2700	1770 to 1990

Grade 8 Bolts, Nuts, and Studs



Size	Newton metres	Pound-Inches
1/4 inch	15 to 16	130 to 145
5/16 inch	30 to 34	268 to 301
3/8 inch	54 to 60	474 to 534
		Pound-Feet
7/16 inch	86 to 97	63 to 71
1/2 inch	132 to 149	96 to 110
9/16 inch	191 to 213	140 to 155
5/8 inch	260 to 293	190 to 215
3/4 inch	480 to 515	340 to 380
7/8 inch	745 to 835	550 to 615
1.0 inch	1120 to 1280	825 to 925
1-1/8 inch	1585 to 1785	1170 to 1315
1-1/4 inch	2215 to 2235	1650 to 1855
1-3/8 inch	2930 to 3295	2160 to 2430
1-1/2 inch	3895 to 4375	2870 to 3225

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

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TROUBLESHOOTING

1 Battery

NOTE: *The battery must be at full charge and all connections clean and tight before doing any testing of the electrical system. Use a multimeter for the following tests.*

2 Starter Motor and Solenoid

Check Points	Reading	Possible Cause of Bad Readings
❶ Battery terminal of starter to ground	12 volts	Check the battery cable to the positive post of the battery.

NOTE: *Have another person hold the ignition switch in the START position.*

❷ Terminal for wire 625A to ground	12 volts	Check the circuit between the starter and starting relay. Also check the starting relay (4).

NOTE: *If the readings are good, the starter motor and solenoid should be bench tested.*

3 Alternator

Check Points	Reading	Possible Cause of Bad Readings
❸ Terminal for wire 120A to ground	12 volts	Check wire 120A between the alternator and the starter battery terminal. Also check the starter (2).

NOTE: *Put the ignition switch in the RUN position.*

❹ Terminal for wire 121A to ground	Approximately 1.1 volts	Check the circuit from the alternator through the 25 ohm resistor to the fuse block (7). Also check the 25 ohm resistor and the fuse block (7).

NOTE: *Start the engine.*

❺ Terminal for wire 124A to ground	Voltage varies with engine RPM	Bad alternator.

4 Starting Relay

Check Points	Reading	Possible Cause of Bad Readings
❻ Terminal for wire 178A to ground	Continuity	Bad ground circuit.
❼ Terminal for wire 170A to ground	12 volts	Check the circuit between the starter relay and the 40 ampere circuit breaker. Also check the 40 ampere circuit breaker and the buss bar.

NOTE: *Make sure all electrical switches except the ignition switch are in the OFF position. Have another person hold the ignition switch in the START position.*

❽ Terminal for wire 622A to ground	12 volts	Check the circuit between the starter relay and the ignition switch (5). Also check the ignition switch (5).
❾ Terminal for wire 625A to ground	12 volts	Bad starter relay.

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CAPACITIES AND LUBRICANTS

FUEL TANK
- Capacity ..... 83.3 litres (22 U.S. gallons)
- Specifications ..... See diesel fuel specifications on page 5

COOLING SYSTEM
- Capacity .....16.6 litres (17.5 quarts)
- Recovery bottle capacity ..... 2 litres (2.1 quarts)
- Specifications ..... 50% water and 50% ethylene glycol

HYDRAULIC SYSTEM
- Capacity - System ..... 50.2 litres (13.3 gallons)
- Specifications ..... Case No. 1 Engine Oil SAE 10W30
  ..... add 1.4 litres (1.5 quarts) HTA Wear Additive

CHAIN COMPARTMENTS
- Capacity - Each Side ..... 5.7 litres (6.0 quarts)
- Specifications ..... Case No. 1 Engine Oil, SAE 10W30

BATTERY
- Quantity ..... As required
- Specifications ..... Distilled water

GREASE FITTINGS
- Quantity ..... As required
- Attachments (If equipped) ..... Quantity as required
- Specifications ..... Case molydisulfide grease

ENGINE CRANKCASE OIL
- Capacity - with filter change ..... 10.4 litres (11.0 quarts)
- Capacity - without filter change ..... 9.5 litres (10.0 quarts)
- Specifications ..... Case No. 1 Engine Oil SAE 15W-40 (API service CH-4)
  ..... (See Oil Viscosity/Temperature Ranges Chart on page 4)

ENVIRONMENT

Before you service this machine and dispose of oil, fluids and lubricants, always remember the environment. Do not put oil or fluids into the ground or into containers that can leak. Check with your local environmental, recycling center or your Case dealer for correct disposal information.

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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 of 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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RADIATOR

Removal

NOTE: *Put caps on all fittings and plugs in all disconnected hoses.*

STEP 1

Park the machine on a level surface. Remove the bucket or attachment from the loader arms. Raise the loader arms and lock the loader arms into the raised position.

STEP 2

Turn the ignition switch and the master disconnect switch (if equipped) to the OFF position.

STEP 3

Disconnect the negative battery cable from the battery.

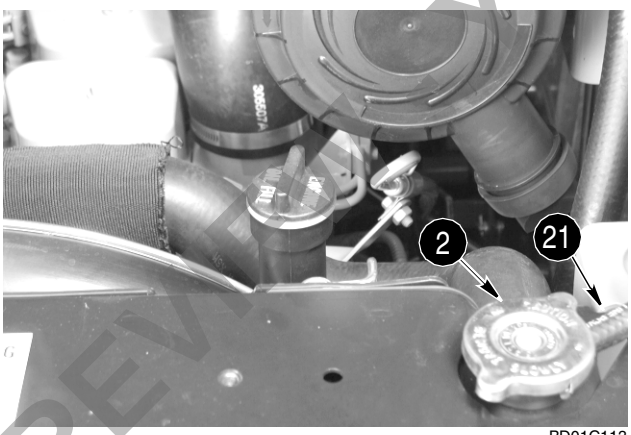
STEP 4

Tilt the cab forward.

STEP 5

Open the hood and rear access door on the machine.

STEP 6

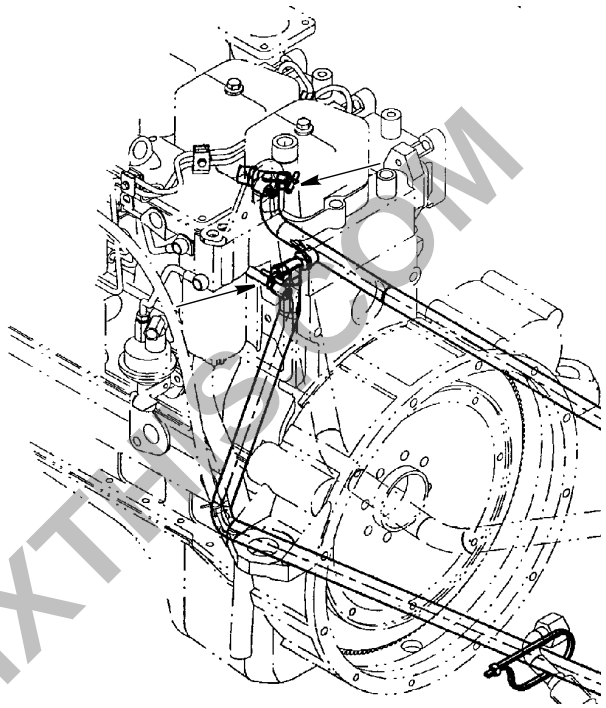


BD01C113

Let unite cool then slowly loosen the radiator cap (2). Disconnect the overflow hose (21) from the radiator neck.

NOTE: *Refer to illustration on page 5.*

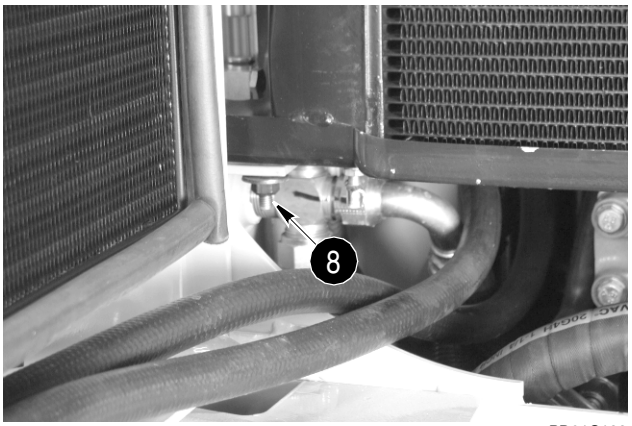
STEP 7



BS01F166

If equipped with a heater, open the heater coolant valves on the engine.

STEP 8



BD01C133

Install a hose on the drain valve (8) and drain the radiator (1) into a clean container that holds approximately 17 litres (4.5 gallons).

NOTE: *Refer to illustration on page 5.*

STEP 9

If equipped with a heater, close the heater coolant valves on the engine.

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GENERAL

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Fluid and Lubricants	1002
Metric Conversion Chart	1003
Loctite Product Chart	

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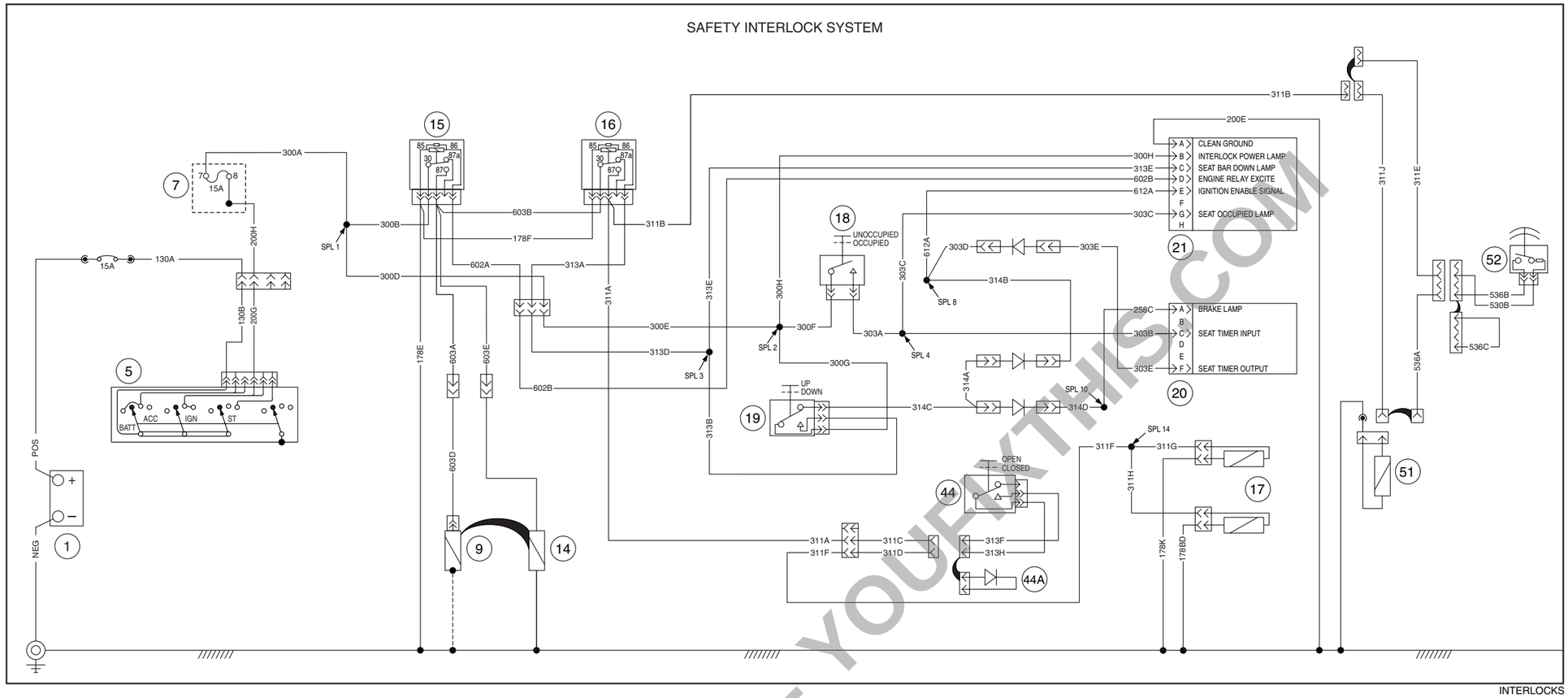
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Components

1. Battery
5. Ignition Switch
7. Primary Fuse Block
9. Fuel Hold In Solenoid (Normally Aspirated Engines)
14. Fuel Hold In Solenoid (Turbo Engines)
15. Engine Shut Down Relay
16. Loader Valve Solenoid Relay
17. Loader Valve Solenoids
18. Seat Switch
19. Seat Bar Switch
20. LH Instrument Cluster (6-Pin Connector)
21. RH Instrument Cluster (8-Pin Connector)
44. Cab Door Switch (Optional)

44A.Diode (w/o Cab Door)

51. Brake Release/Travel l Solenoid
52. Brake Switch (Optional)

Circuits

NO.	GA.	COLOR	FROM:	TO:
NEG	50	Black	Chassis Ground	Battery (-)
POS	50	Red	Battery (+)	Starter Solenoid (+)
130A	2.0	Red	15 Ampere Circuit Breaker	Cab Harness Connector (A1)
130B	2.0	Red	Cab Harness Connector (A1)	Ignition Switch (Batt)
178E	1.0	Black	Engine Shut Down Relay (85)	Ground
178F	1.0	Black	Engine Shut Down Relay(85)	Loader Valve Solenoid Relay (85)
178K	1.0	Black	Loader Valve Solenoid	Ground
178BC	3.0	Black	Fuel Solenoids	Ground
178BD	1.0	Black	Loader Valve Solenoid	Ground
200E	1.0	Black/White	RH Instrument Cluster (8-Pin, A)	Clean Ground
200G	2.0	Red	Ignition Switch (Ign)	Cab Harness Connector (B1)
200H	2.0	Red	Cab Harness Connector (B1)	Primary Fuse Block (15A)
258C	0.8	Yellow	Splice 10	LH Instrument Cluster (6-Pin, A)
300A	2.0	Red	Primary Fuse Block (15A)	Splice 1
300B	2.0	Red	Splice 1	Engine Shut Down Relay (30)
300D	1.0	Red	Splice 1	Cab Harness Connector (D2)
300E	1.0	Red	Cab Harness Connector (D2)	Splice 2
300F	0.8	Red	Splice 2	Seat Switch
300G	0.8	Red	Splice 2	Seat Bar Switch

Circuits

NO.	GA.	COLOR	FROM:	TO:
300H	0.8	Red	Splice 2	RH Instrument Cluster (8-Pin, B)
303A	0.8	Tan	Seat Switch	Splice 4
303B	0.8	Tan	Splice 4	LH Instrument Cluster (6-Pin, C)
303C	0.8	Tan	Splice 4	RH Instrument Cluster (8-Pin, G)
303D	0.8	Tan	Diode	Splice 8
303E	0.8	Tan	LH Instrument Cluster (6-Pin, F)	Diode
311A	1.0	Tan	Loader Valve Solenoid Relay (87)	Cab Harness Connector (H2)
311B	1.0	Pink	Loader Valve Solenoid Relay (87)	Chassis Options Harness
311C	1.0	Tan	Cab Harness Connector (H2)	Front Door Connector
311D	1.0	Tan	Front Door Connector	Cab Harness Connector (C1)
311E	1.0	Pink	Chassis Options Harness	Brake Switch Connector
311F	1.0	Tan	Cab Harness Connector (C1)	Splice 14
311G	1.0	Tan	Splice 14	Loader Valve Solenoid
311H	1.0	Tan	Splice 14	Loader Valve Solenoid
311J	1.0	Pink	Chassis Options Harness	Brake Release Solenoid
313A	1.0	Tan	Cab Harness Connector (C2)	Loader Valve Solenoid Relay (86)
313B	0.8	Tan	Seat Bar Switch	Splice 3
313D	0.8	Tan	Cab Harness Connector (H2)	Splice 3

Circuits

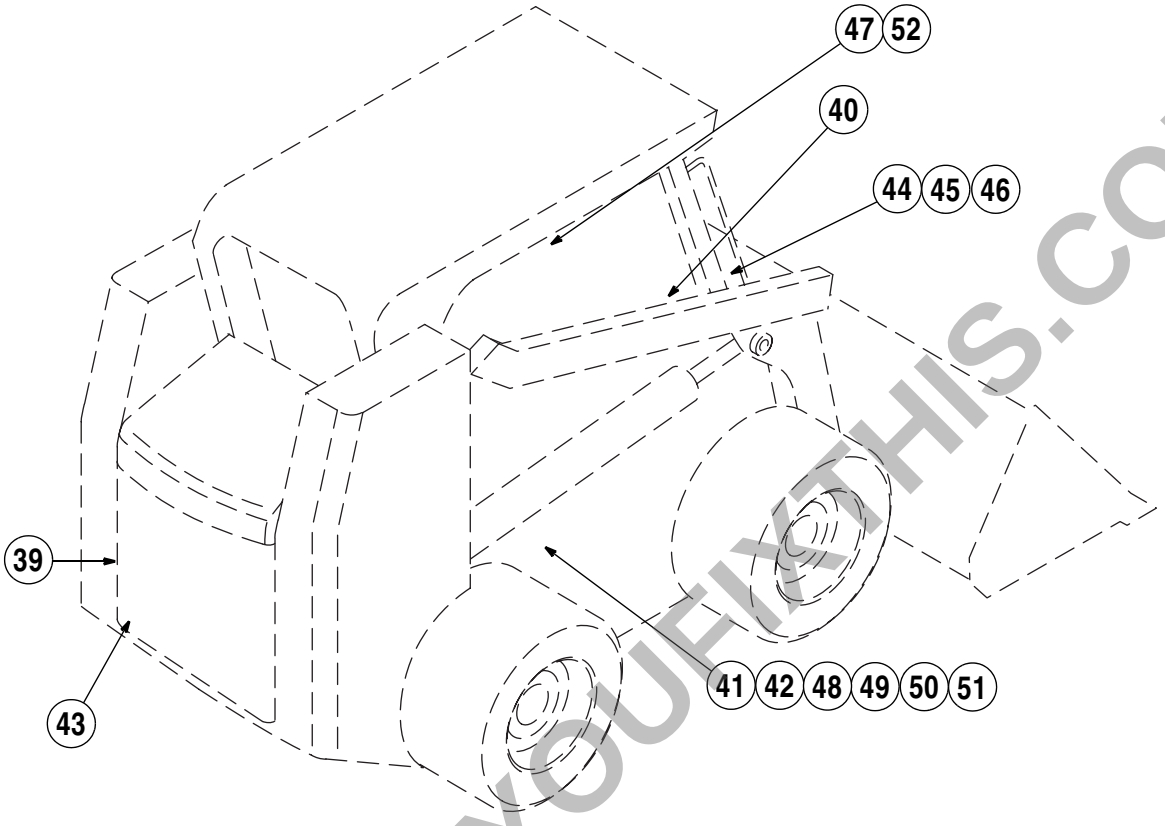
NO.	GA.	COLOR	FROM:	TO:
313E	0.8	Tan	Splice 3	RH Instrument Cluster (8-Pin, C)
313F	1.0	Tan	Front Door Connector	Cab Door Switch Connector
313H	1.0	Tan	Cab Door Switch Connector	Front Door Connector
314A	0.8	Tan	Diode	Diode
314B	0.8	Tan	Diode	Splice 8
314C	0.8	tan	Seat Bar Switch	Diode
314D	0.8	Tan	Diode	Splice 10 (Hydraulic Brakes)
530B	1.0	Red	Brake Switch Connector	Brake Switch
536A	1.0	Lt. Blue	Brake Switch Connector	Brake Release Solenoid
536B	1.0	Lt. Blue	Brake Switch	Brake Switch Connector
536C	1.0	Lt. Blue	Brake Switch	Brake Switch
602A	1.0	White	Cab Harness Connector (J2)	Engine Shut Down Relay (86)
602B	0.8	White	RH Instrument Cluster (8-Pin, D)	Cab Harness Connector (J2)
603A	1.0	White	Engine Shut Down Relay (87)	Fuel Supply System Connector
603B	1.0	White	Engine Shut Down Relay (87)	Engine Shut Down Relay (30)
603D	1.0	White	Fuel Supply System Connector	Fuel Hold In Solenoid
603E	1.0	White	Engine Shut Down Relay (87)	Fuel Hold Solenoid
612A	0.8	White	Splice 8	RH Instrument Cluster (8-Pin, E)

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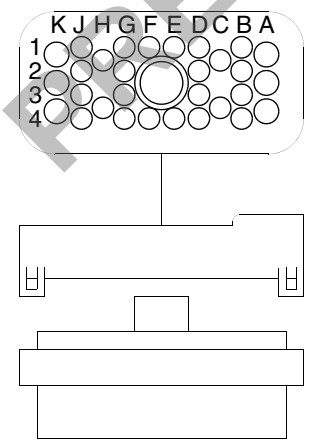
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HI01E015

CHASSIS HARNESS/CAB HARNESS CONNECTOR



PIN	CIRCUIT	PIN	CIRCUIT
A1	130A	K2	830A
B1	200H	B3	622A
C1	311F	D3	PLUGGED
D1	PLUGGED	G3	PLUGGED
E1	706D	J3	239A
F1	234A	A4	786B
G1	257A	B4	124A
H1	641B	C4	313A
J1	266A	D4	PLUGGED
K1	200D	E4	255A
A2	780A	F4	235A
B2	131A	G4	264A
D2	300D	H4	311A
G2	261A	J4	PLUGGED
J2	602A	K4	178S

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Section
4007

ALTERNATOR

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4007

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HYDROSTATIC START-UP PROCEDURE

Failure of a pump or motor shortly after installation or after replacement of a failed hose normally indicates an improper start-up procedure.

After the machine is in service, the most common cause of hydraulic system failure is contamination. If the smallest particle of foreign material, such as dirt or a metal chip, is allowed to reach the precision moving parts contained within the hydrostatic system, rapid wear will result causing excessive downtime and costly maintenance. Therefore, when disconnecting hydraulic lines or removing one of the hydraulic components. **ALWAYS** clean and plug all ports and connections. Use lint free rags for cleaning to prevent contaminants from entering the system.

WARNING: *Hydrostatic systems are highly pressurized. Escaping hydraulic oil, even an invisible pinhole leak, can penetrate body tissue causing serious injury. Use a piece of wood or cardboard when looking for leaks. Never use your hands or other parts of your body.*

Relieve hydraulic pressure before disconnecting circuits. When reassembling, make absolutely certain that all connections are tight.

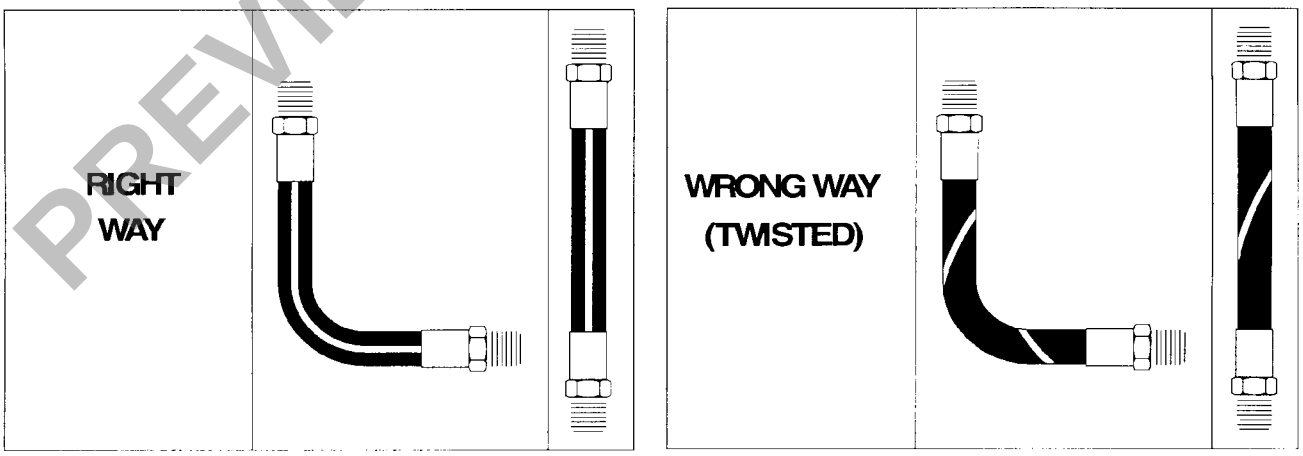
If injured by hydraulic oil escaping under pressure, see a doctor immediately. Serious complications may arise if medical attention is not given at once.

1. Prior to installation, inspect the pump, motor, hoses, adapters, and fittings for cleanliness. Check for proper pump rotation.
2. Install the pump and/or motor with attaching parts on the machine. Be sure to install hoses properly without twisting. See illustration below.
3. Fill reservoir with recommended clean hydraulic oil. See Operator's Manual.
4. Install a 40 bar (600 PSI) pressure gauge with a dampener valve in the charge pressure test port.
5. Disconnect the wire from the shutoff solenoid on the injection pump.
6. Center the control lever on the pump to insure the pump is in neutral.

IMPORTANT: *Raise the machine up on supports until the tires are up off of the floor. This will allow the ground drive to be operated to get the air out of the system. Clear the area of all unauthorized personnel and operate the starter from the operator's seat.*

NOTE: *Cranking the engine will get hydraulic oil into the circuit without harming the components.*

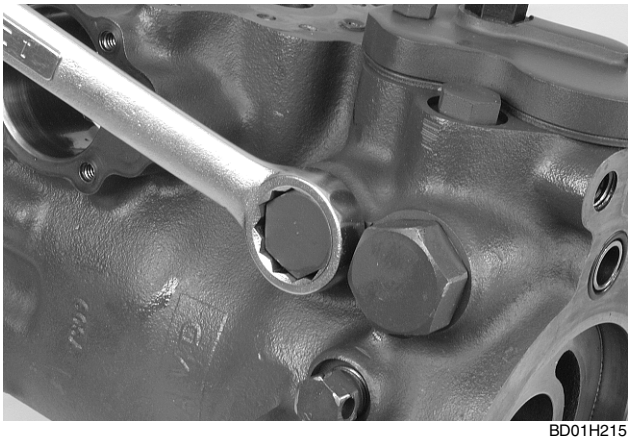
7. Crank the engine until pressure starts to build on the gauge.
8. Connect the wire for the fuel injection pump.
9. Start the engine and run at low idle until the 40 bar (600 PSI) pressure gauge rises and stabilizes above the minimum pressure specified in the charge pressure test.
10. After proper charge pressure has been reached, increase engine to full throttle and operate system to its fullest travel in all directions. If charge pressure remains stable, the system is satisfactory.
11. Stop the engine. Remove the pressure gauge and reinstall the plug. Check all fittings for leaks.
12. Check oil level in the reservoir. Add as necessary.



HS01D069

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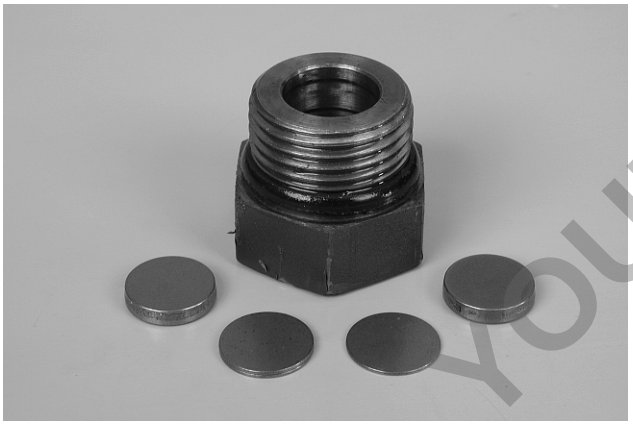
STEP 44



BD01H215

Remove the hex plug (22) and shims (20) for the charge pressure relief valve, refer to illustration on page 17.

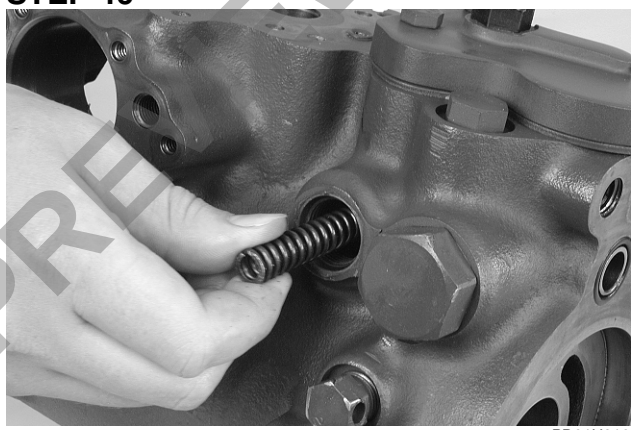
STEP 45



BD01H227

Remove the shims (20) from the hex plug (22). Do not lose the shims.

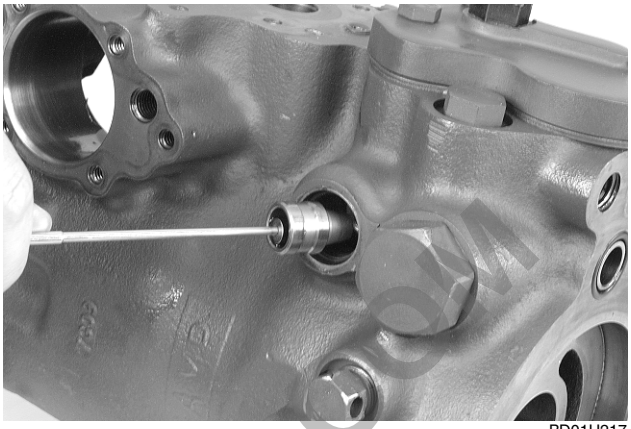
STEP 46



BD01H216

Remove the spring (19).

STEP 47



BD01H217

Remove the valve poppet (18).

STEP 48



BD01H218

Make a mark on one of the circuit relief-check valves (2).

STEP 49



BD01H219

Remove the hex plug (2) for the circuit relief-check valve.

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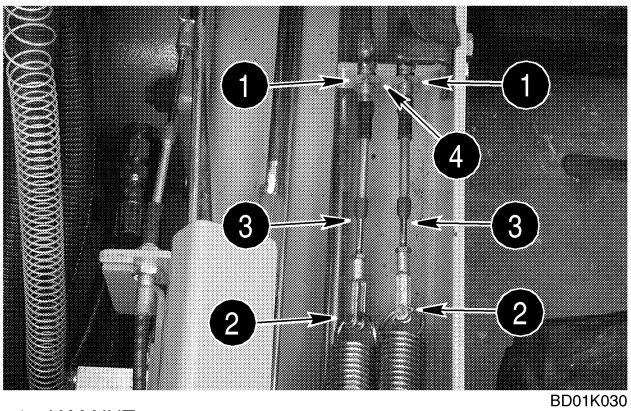
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Installation of Pin Lock Park Brakes

STEP 1

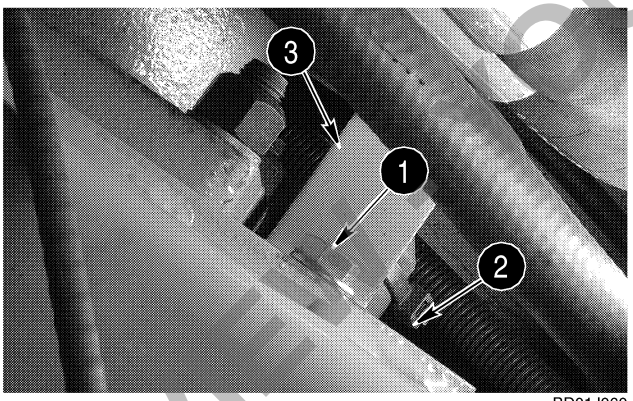


BD01K030

1. JAM NUT
2. CLEVIS PINS
3. CABLE
4. BRACKET

Install the cables into the bracket and tighten the cable jam nuts. Install the clevis for each cable into the correct spring. Install the clevis pin for each clevis.

STEP 2

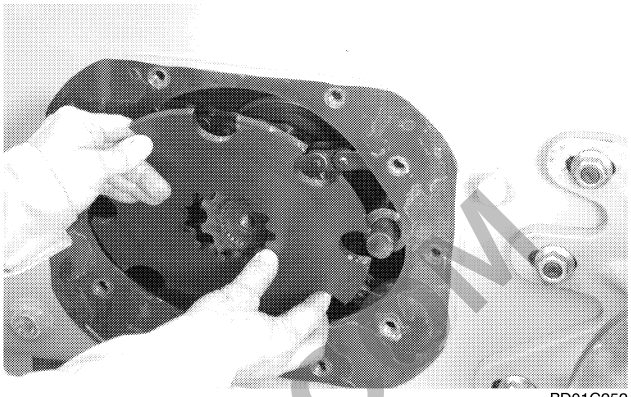


BD01J060

1. UPPER BOLT
2. LOWER BOLT (NOT SHOWN)
3. BRACKET

Apply RTV sealant between the bolts and chassis and between the tube and chassis. Install the upper bolt and washer through the bracket and the tube and into the chassis. Install the lower bolt and washer through the tube and into the chassis. Tighten the bolts to a torque of 59 to 106 Nm (43 to 78 pound-feet).

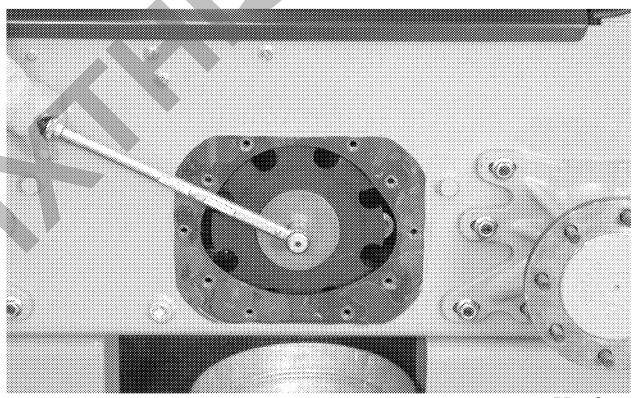
STEP 3



BD01C252

Install the brake disk.

STEP 4



BD01C259

Install the retaining plate and the center bolt onto the brake disk. Tighten the center bolt to a torque of 247 to 320 Nm (185 to 235 pound-feet).

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HYDRAULIC SYSTEM OVERVIEW

The reservoir is located in the left rear loader frame upright. The fill cap controls the pressure of the reservoir to 5 psi, and will allow make-up air to enter at .5 psi vacuum. There is also a drain plug at the bottom of the reservoir to be used in conjunction with the filter buggy to clean up the system. There is no suction screen inside the reservoir.

The gear type hydraulic pump is mounted at the rear of the machine, driven by the crankshaft pulley. (Service Note: To replace the fan belt on the engine, do not disconnect the hoses to the pump. Unbolt the pump and lay it over to the side.)

From the pump, the oil flows directly to a two spool open center loader control valve. The main relief valve for the complete hydraulic system is located at the inlet to the loader valve. The first spool in the valve controls the loader lift functions - raise, neutral, lower and float. The second spool in the valve controls the bucket cylinder functions - rollback, neutral, and dump. The valves have one load check valve for each spool to prevent the load from dropping as the spool is slowly engaged to the power position. An optional bi-directional hydraulic bucket self-leveling system is available. The bi-directional self-leveling system is incorporated into the loader control valve. A circuit relief/anti-cavitation check valve is incorporated at each work port of the bi-directional self-leveling loader control valve. On the standard loader control valve, a circuit relief/anti-cavitation check valve is incorporated at each work port except the A1 port.

The units are equipped with an auxiliary hydraulic system. The pump supply flows from the power beyond port in the outlet of the loader valve to the auxiliary hydraulic valve rather than going directly back to the oil cooler. The auxiliary valve will only be supplied with oil if the bucket spool is in neutral and the loader lift spool is either in neutral or the loader lift circuit is still able to flow oil (cylinder not at the end of travel). The single spool auxiliary control valve is located at the left rear of the machine and is cable operated by a pedal between the operator's feet. This valve controls the flow to the hydraulic quick disconnect couplers on the loader frame near the bucket. The oil is routed through plumbing on the left rear loader frame and through the loader pivot point. The auxiliary quick disconnect couplers are located at the left side of the loader frame crossbar. The main relief valve in the loader valve also limits the maximum pressure available to the auxiliary circuit. Return oil from the auxiliary valve, joins the return oil from the loader valve and returns to the oil cooler. The oil cooler is mounted on the back door of the unit for ease of cleaning.

There is one filter in the complete hydraulic system. The filter head has a 50 psi differential bypass relief valve to protect the filter element during cold weather operation. The filter head also has a 40 psi differential pressure switch to signal when the filter requires changing. To check the condition of the filter, operate the engine at full throttle with the oil at operating temperature and observe the filter indicator light. The filter light will also come on and the filter bypass will open when the hydraulic oil is cool. Because of this, it is recommended to limit the maximum engine speed while the oil is cold.

Oil returning from the hydrostatic pump and motor case drain connections returns directly to the reservoir and does not flow through the hydraulic filter. If a failure occurs in the hydrostatic system, the hydraulic reservoir must be thoroughly flushed.

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Section 8001

HYDRAULIC SYSTEM TROUBLESHOOTING

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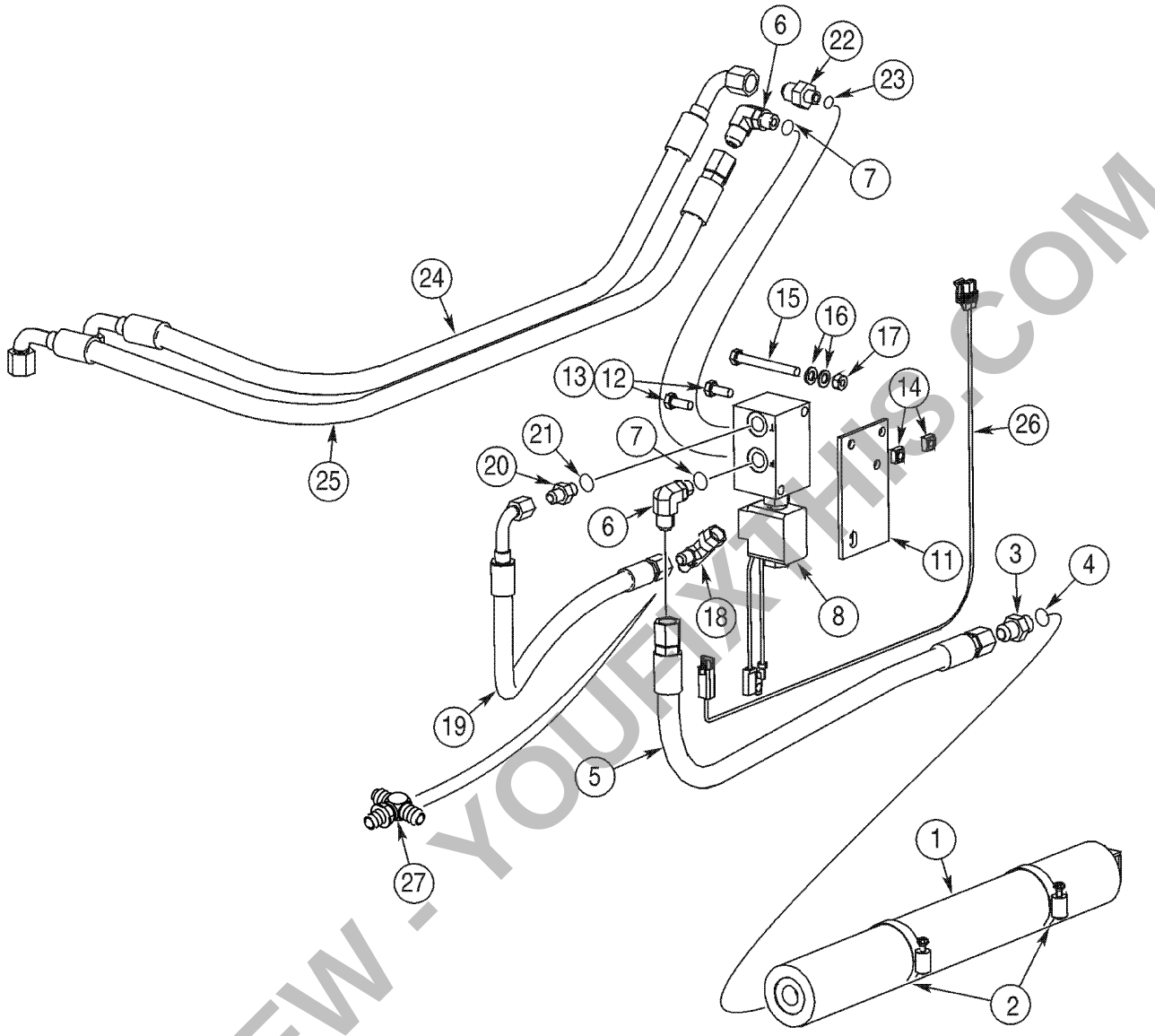
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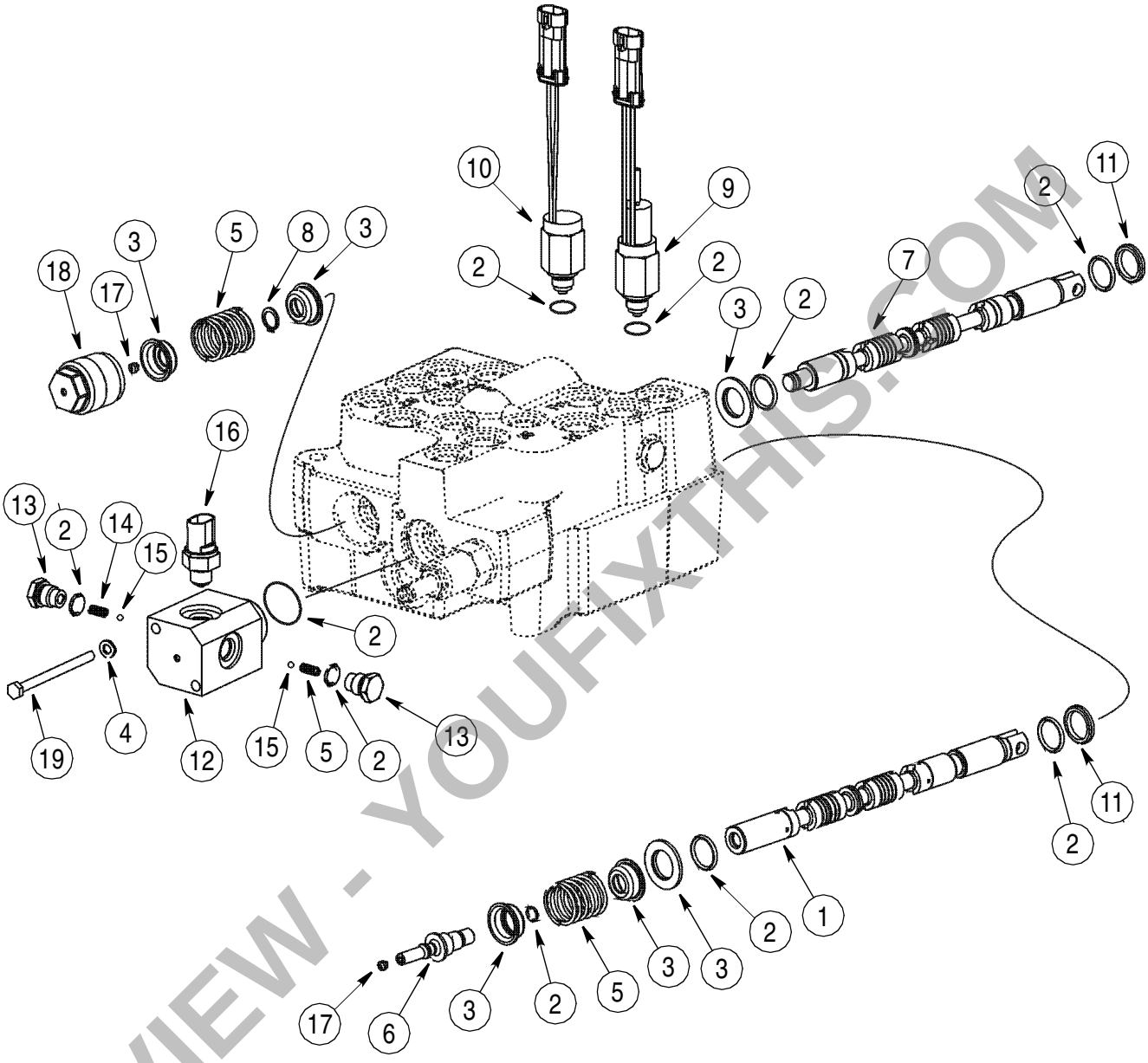
BC01C162

1. ACCUMULATOR	8. SOLENOID VALVE	15. BOLT	22. ADAPTER
2. CLAMP	9. NOT SHOWN	16. WASHER	23. O-RING
3. ADAPTER	10. NOT SHOWN	17. LOCK NUT	24. HOSE
4. O-RING	11. BRACKET	18. TEE	25. HOSE
5. HOSE	12. BOLT	19. HOSE	26. HARNESS
6. 90° ELBOW	13. BOLT	20. ADAPTER	27. TEE
7. O-RING	14. SPECIAL NUT	21. O-RING	

RIDE CONTROL HYDRAULIC INSTALLATION

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BC01J004

1. LOADER LIFT SPOOL
2. O-RING
3. RETAINER
4. WASHER
5. SPRING
6. STUD
7. SPOOL
8. RETAINING RING
9. SOLENOID ASSEMBLY
10. LOCK SPOOL ASSEMBLY
11. OIL SEAL
12. COVER
13. PLUG ASSEMBLY
14. DETENT SPRING
15. BALL
16. SWITCH
17. PLUG
18. CAP
19. BOLT

EXPLODED VIEW OF DUAL SELF-LEVELING CONTROL VALVE

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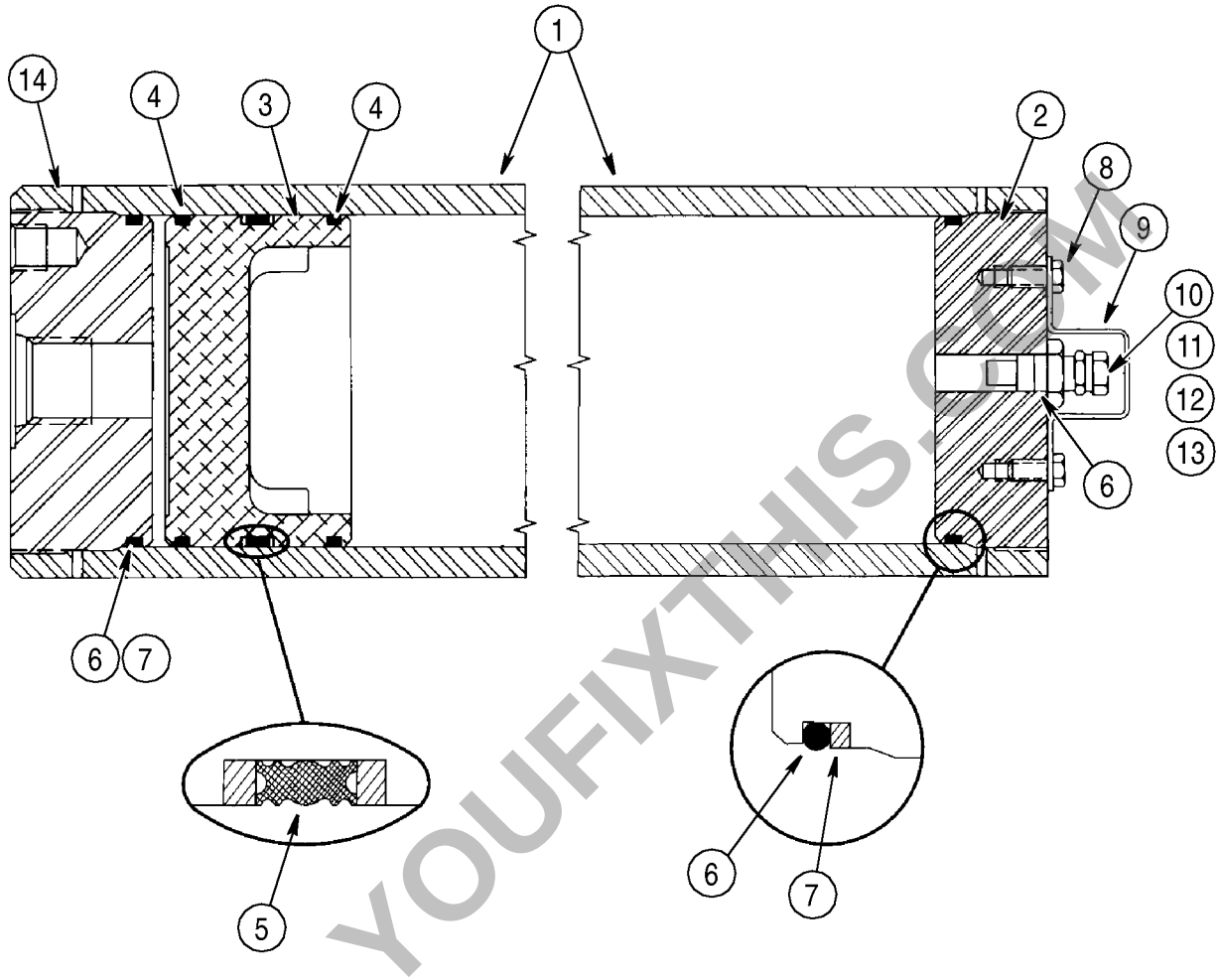
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Assembly 4

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BT96H068

1. TUBE
2. GLAND WITH GAS VALVE
3. PISTON
4. SEAL
5. QUAD RING
6. O-RING
7. BACKUP RING (IF USED)
8. CAP SCREW
9. GUARD
10. GAS VALVE ASSEMBLY
11. CAP
12. VALVE CORE
13. BODY
14. GLAND WITOUT GAS VALVE

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