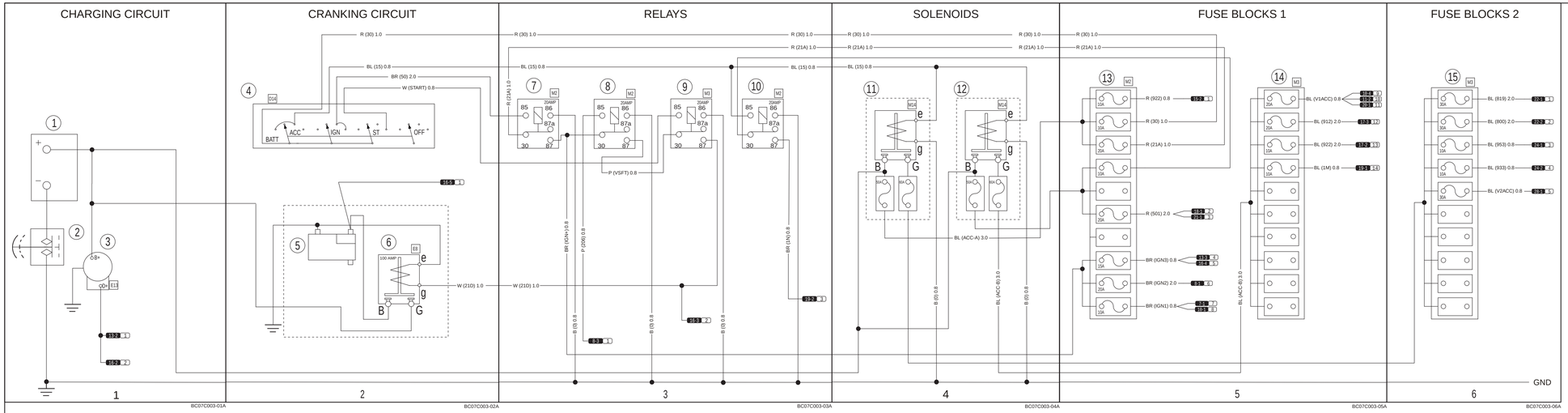
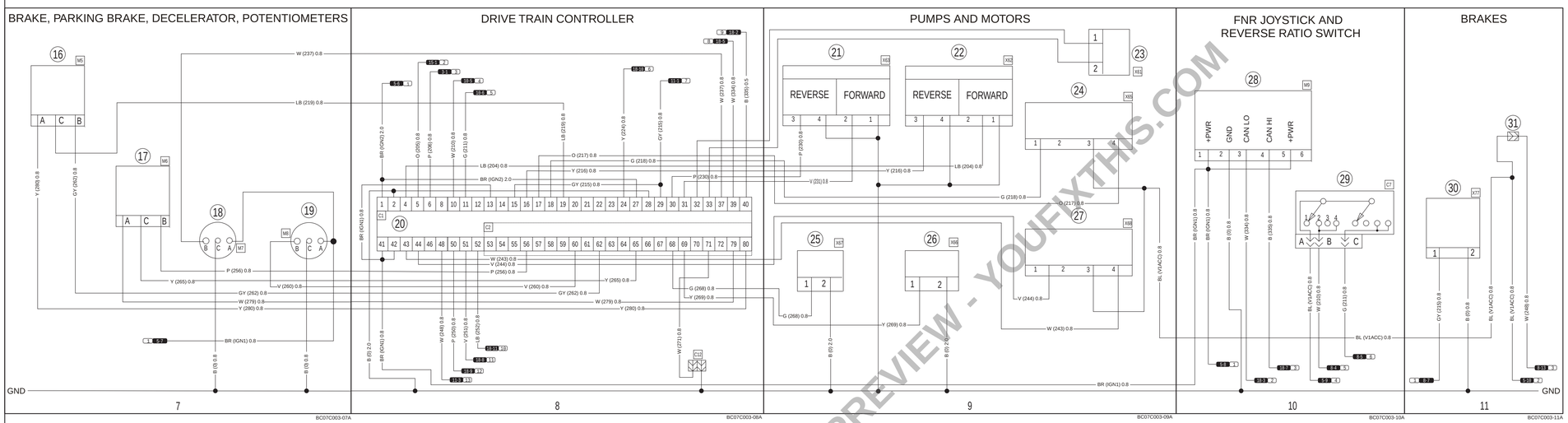
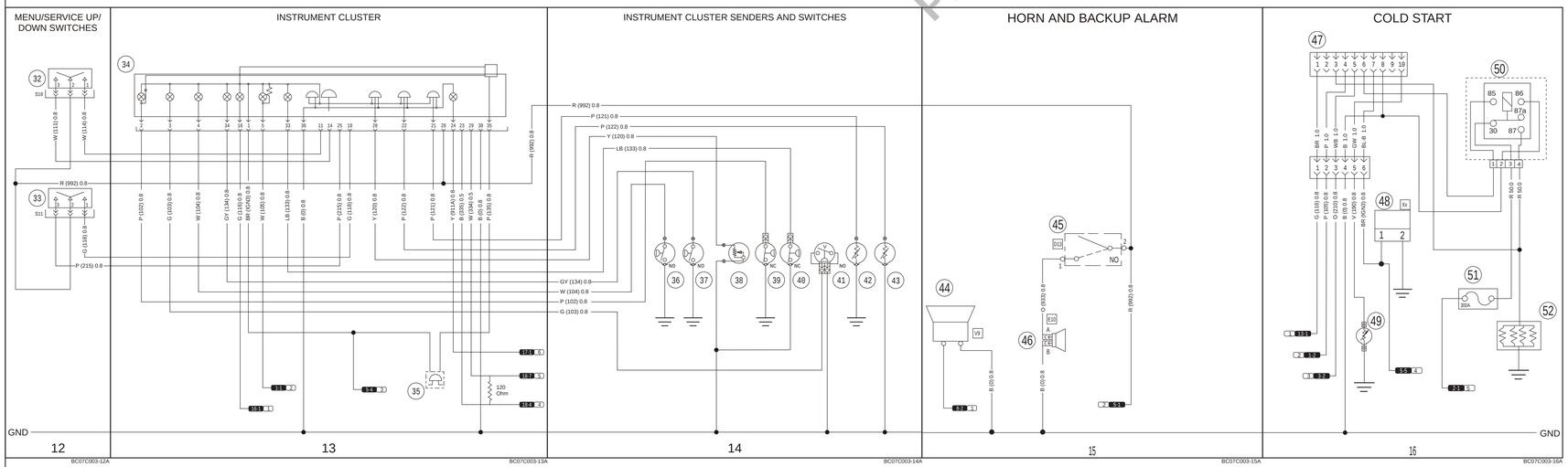






COMPONENTS

1. BATTERY
2. MASTER DISCONNECT SWITCH
3. ALTERNATOR
4. IGNITION SWITCH
5. STARTER
6. STARTER SOLENOID
7. IGNITION RELAY
8. VEHICLE SAFETY RELAY
9. STARTER RELAY
10. FLEET RELAY
11. ACCESSORY RELAY A
12. ACCESSORY RELAY B
13. FUSE AND RELAY BLOCK
14. FUSE BLOCK ACCESSORY B
15. FUSE BLOCK ACCESSORY A
16. DECLERATOR POSITION SENSOR
17. BRAKE POSITION SENSOR
18. LH PARK BRAKE PROX. SWITCH
19. RH PARK BRAKE PROX. SWITCH
20. DRIVE TRAIN CONTROLLER
21. LH HYDROSTATIC PUMP
22. RH HYDROSTATIC PUMP
23. ENGINE SPEED SENSOR
24. RH MOTOR SPEED SENSOR
25. LH MOTOR SOLENOID
26. RH MOTOR SOLENOID
27. LH MOTOR SPEED SENSOR
28. FNR JOYSTICK
29. REVERSE RATIO SWITCH
30. BRAKE SOLENOID
31. BRAKE PRESSURE SWITCH BYPASS
32. ENTER/ESCAPE SWITCH
33. UP/DOWN SWITCH
34. INSTRUMENT CLUSTER
35. WARNING BUZZER
36. EQUIPMENT FILTER RESTRICTION SWITCH
37. HYDROSTATIC FILTER RESTRICTION SWITCH
38. FUEL SENDING UNIT
39. ENGINE OIL PRESSURE
40. TRANSMISSION CHARGE PRESSURE SWITCH
41. AIR FILTER RESTRICTION SWITCH
42. TRANSMISSION TEMPERATURE
43. ENGINE TEMPERATURE
44. BACKUP ALARM
45. HORN SWITCH
46. HORN
47. GRID HEATER CONTROLLER
48. ENGINE SHUT OFF SOLENOID
49. TEMPERATURE SENSOR
50. GRID HEATER RELAY
51. GRID HEATER FUSE
52. GRID HEATER

CIRCUIT DIAGRAM LEGEND

SHOWS CIRCUIT CROSSING NOT CONNECTED

SHOWS CIRCUIT SPLICE CONNECTION

CIRCUIT CONTINUATION

COMPONENT NUMBER

MALE TERMINAL

FEMALE TERMINAL

INDICATES EXTERNAL GROUND

INDICATES INTERNALLY GROUNDED COMPONENT

WIRE IDENTIFICATION

B . . . BLACK
BL . . BLUE
G. . . GREEN
P . . . PINK
BR. . TAN/BROWN
LB . . LIGHT BLUE
W . . WHITE
Y. . . YELLOW
O. . . ORANGE
V. . . VIOLET/PURPLE
R. . . RED
GY . GREY

BL | XXX | 1.0
WIRE COLOR | WIRE NUMBER | WIRE SIZE

NOTES

1. 650K Serial Number CAL 012200 and above.
2. 750K Serial Number CAL 003400 and above.
3. 850K Serial Number CAL 005700 and above.

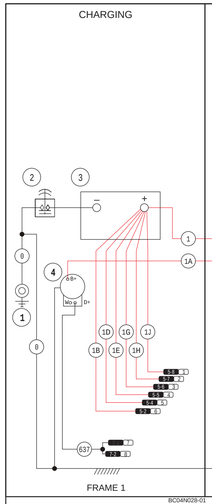
ELECTRICAL SCHEMATIC
650K, 750K, 850K DOZER SERIES 3 DOZER

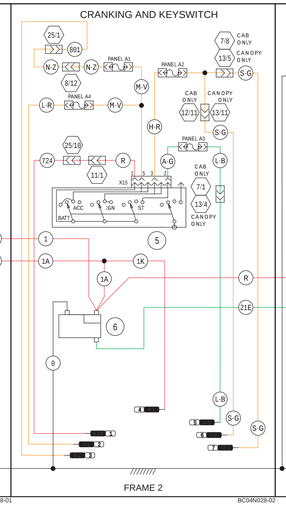
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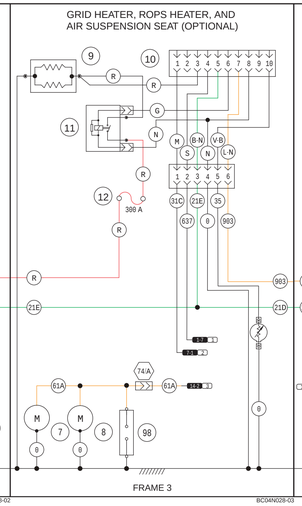
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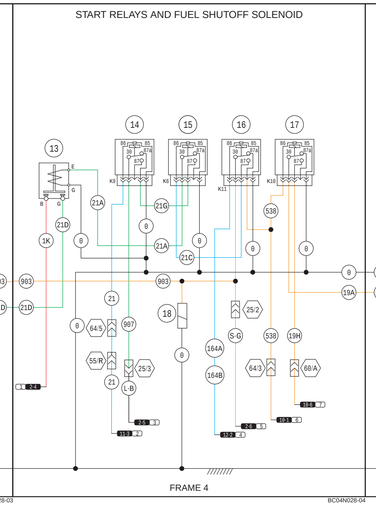
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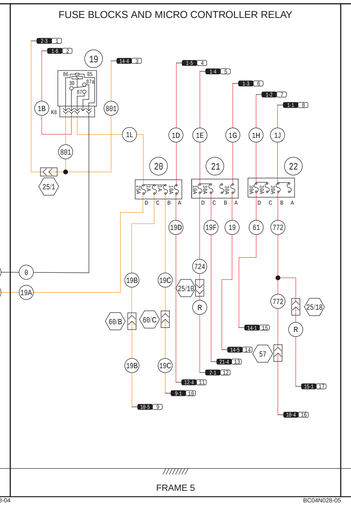
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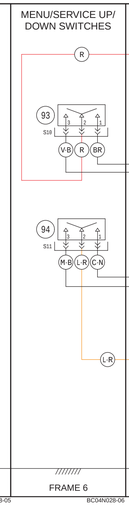


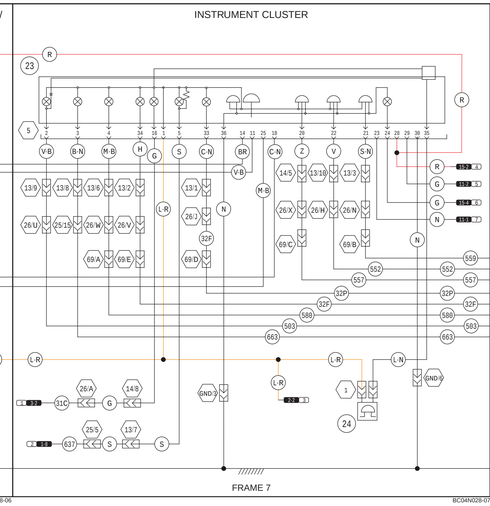


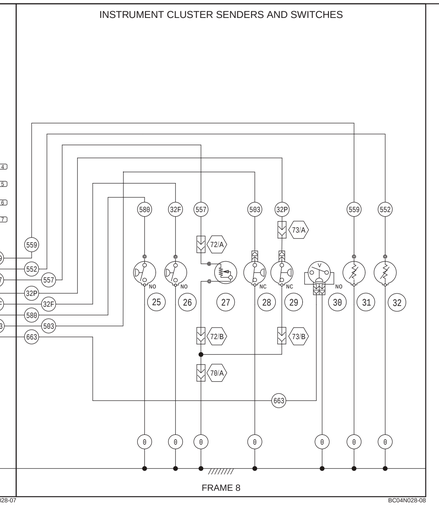


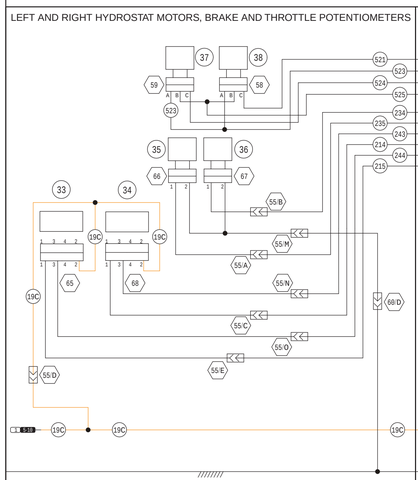


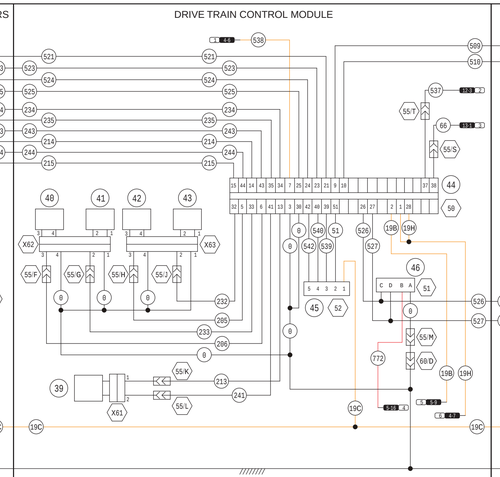


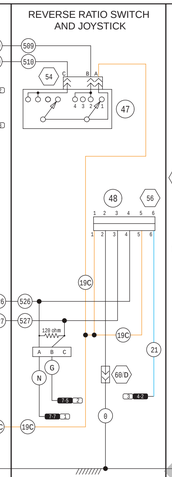


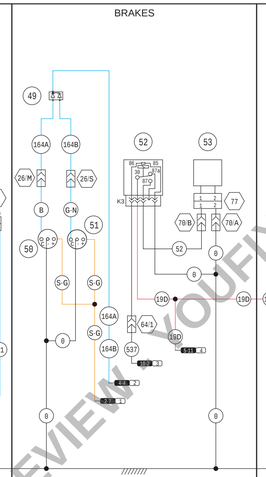


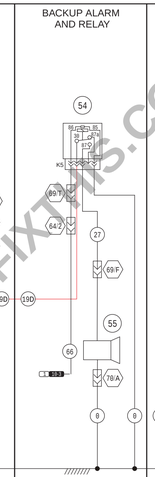


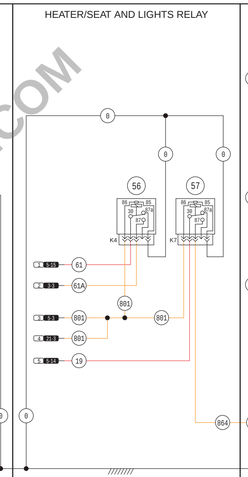


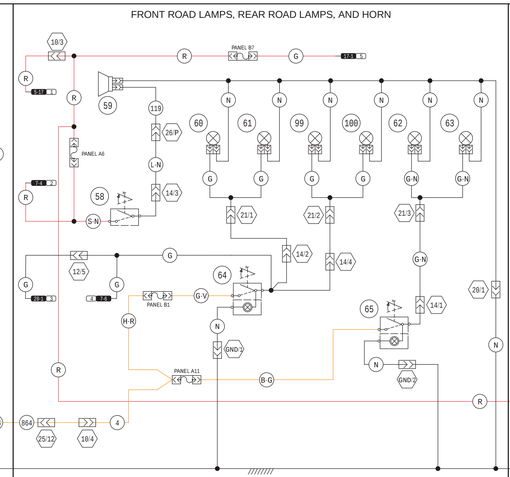


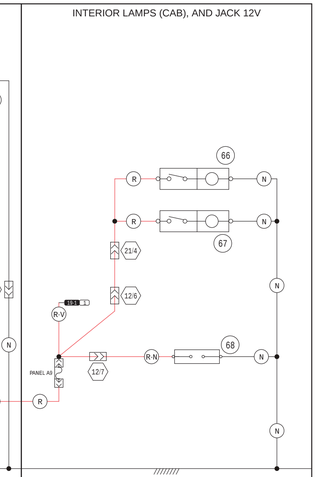


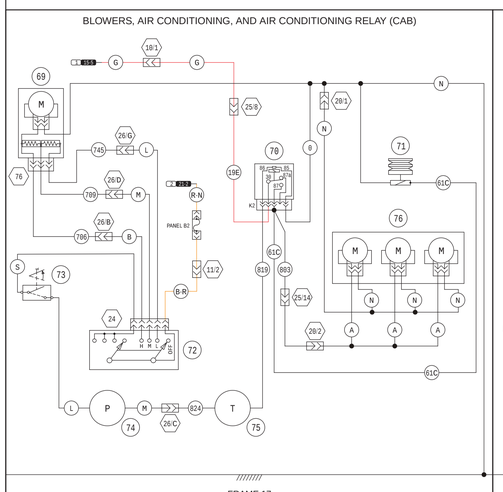


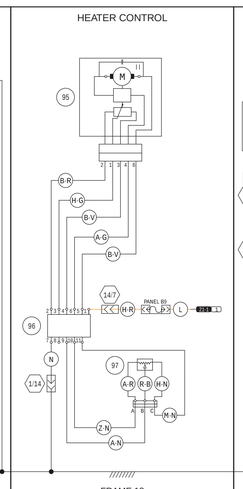


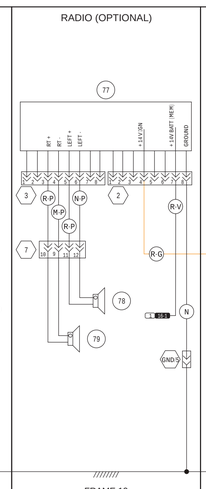


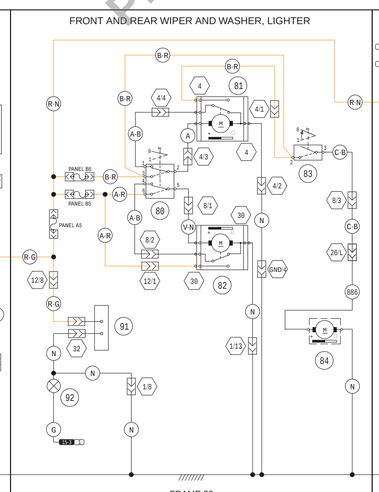


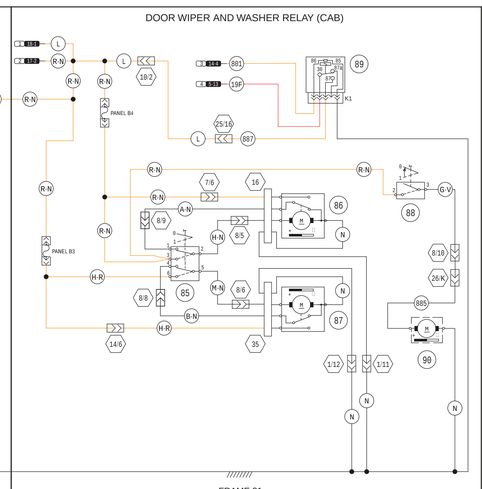












1. GROUND
2. MASTER DISCONNECT SWITCH
3. BATTERY
4. ALTERNATOR
5. IGNITION SWITCH
6. STARTER
7. ROPS HEATER
8. AIR SUSPENSION SEAT
9. GRID HEATER
10. GRID HEATER CONTROLLER
11. GRID HEATER RELAY
12. GRID HEATER FUSE 300 AMP
13. STARTER RELAY 100 AMP
14. START IGNITION RELAY
15. HANDLE NEUTRAL OK RELAY
16. NEUTRAL OK RELAY
17. SAFETY RELAY
18. FUEL SHUTOFF SOLENOID
19. MICROCONTROLLER RELAY
20. MICROCONTROLLER FUSE BLOCK
21. MAIN FUSE BLOCK
22. ACCESSORY FUSE BLOCK
23. INSTRUMENT CLUSTER
24. ENGINE OIL AND COOLANT TEMP ALARM
25. HYDRAULIC FILTER RESTRICTION SWITCH
26. HYDROSTAT FILTER RESTRICTION SWITCH
27. FUEL LEVEL SENDER
28. OIL PRESSURE SWITCH
29. TRANSMISSION CHARGE PRESSURE
30. AIR FILTER RESTRICTION SWITCH
31. TRANSMISSION TEMP SENDER
32. ENGINE COOLANT TEMP SENDER
33. SPEED SENSOR RIGHT MOTOR
34. SPEED SENSOR LEFT MOTOR
35. RIGHT MOTOR SOLENOID
36. LEFT MOTOR SOLENOID
37. THROTTLE POTENTIOMETER
38. BRAKE POTENTIOMETER
39. ENGINE SPEED PICKUP
40. LEFT SOLENOID REAR PUMP
41. RIGHT SOLENOID REAR PUMP
42. LEFT SOLENOID FRONT PUMP
43. RIGHT SOLENOID FRONT PUMP
44. DRIVE TRAIN CONTROL MODULE
45. SERIAL COMMUNICATION PORT
46. DIGITAL
47. REVERSE RATIO SWITCH
48. JOY STICK
49. DIODES
50. PROXIMITY SWITCH
51. PROXIMITY SWITCH
52. BRAKE RELAY
53. BRAKE SOLENOID
54. BACKUP ALARM RELAY
55. BACKUP ALARM
56. HEATER/SEAT RELAY
57. LIGHTS RELAY
58. HORN PUSH BUTTON SWITCH
59. HORN
60. FRONT FLOODLIGHT
61. FRONT FLOODLIGHT
62. REAR FLOODLIGHT
63. REAR FLOODLIGHT
64. FRONT FLOODLIGHT AND MONITOR LIGHT SWITCH
65. REAR FLOODLIGHT SWITCH
66. CAB INTERIOR LAMP
67. CAB INTERIOR LAMP
68. 12 VOLT JACK
69. THREE SPEED FAN
70. AIR CONDITIONER RELAY
71. AIR CONDITIONER CLUTCH ON ENGINE
72. BLOWER SWITCH
73. AIR CONDITIONER SWITCH
74. PRESSURE SWITCH
75. THERMOSTAT SWITCH
76. CONDENSER FANS
77. RADIO
78. LEFT SPEAKER
79. RIGHT SPEAKER
80. FRONT AND REAR WIPER SWITCH
81. FRONT WINDSHIELD WIPER MOTOR
82. REAR WINDSHIELD WIPER MOTOR
83. FRONT AND REAR WINDSHIELD WASHER SWITCH
84. FRONT AND REAR WINDSHIELD WASHER PUMP
85. DOOR WIPER SWITCH
86. LEFT HAND DOOR WIPER MOTOR
87. RIGHT HAND DOOR WIPER MOTOR
88. DOOR WINDSHIELD WASHER PUMP SWITCH
89. CAB RELAY
90. DOOR WINDSHIELD WASHER PUMP
91. LIGHTER
92. LAMP
93. DISPLAY/SERVICE SWITCH
94. UP/DOWN SWITCH
95. HEATER CONTROL VALVE
96. HEATER CONTROL MODULE
97. TEMPERATURE CONTROL
98. ROPS POWER PLUG
99. OPT FRONT LIGHTS
100. OPT FRONT LIGHTS

CIRCUIT DIAGRAM LEGEND

SHOWS CIRCUIT CROSSING NOT CONNECTED

SHOWS CIRCUIT CONNECTED

54 COMPONENT NUMBER

38 WIRE TAG NUMBER

8 CONNECTOR NUMBER

NUMBERS REFER TO THE FRAME NUMBER AT THE BOTTOM CENTER OF EACH FRAME.

MALE TERMINAL — FEMALE TERMINAL

INDICATES EXTERNAL GROUND

GROUND

INDICATES INTERNALLY GROUNDED COMPONENT

WIRE IDENTIFICATION COLORS

A . . LIGHT BLUE	G . . YELLOW	M . . BROWN	S . . PINK
B . . WHITE	H . . GREY	N . . BLACK	V . . GREEN
C . . ORANGE	L . . . BLUE	R . . RED	Z . . . PURPLE

COMPONENT IDENTIFICATION

F . . FUSES	M . . MOTOR	X . . HARNESS CONNECTOR/ CAVITY IDENTIFICATION	
K . . RELAY	S . . SWITCH		

NOTES

1. NUMBERS REFER TO THE FRAME NUMBER AT THE BOTTOM CENTER OF EACH BLOCK.
2. FUSES DRAWN AS INLINE ARE LOCATED IN FUSE PANEL A OR FUSE PANEL B. THESE PANELS ARE LOCATED ON THE LEFT SIDE OF THE DASH.
3. (XY) IDENTIFIES THE CONNECTOR (X) AND PIN (Y).
4. 650K Serial Number CAL 012143 and below.
5. 750K Serial Number CAL 003348 and below.
6. 850K Serial Number CAL 005666 and below.

LEGEND

INDICATES CONSTANT POWER WITH MASTER SWITCH ON

INDICATES POWER WHEN KEY SWITCH IS IN ON POSITION

INDICATES MOMENTARY POWER WHEN KEY SWITCH IS IN START POSITION

FNR JOYSTICK IN NEUTRAL, PARKING BRAKES APPLIED

ELECTRICAL SCHEMATIC
650K, 750K, AND 850K SERIES 2 DOZER

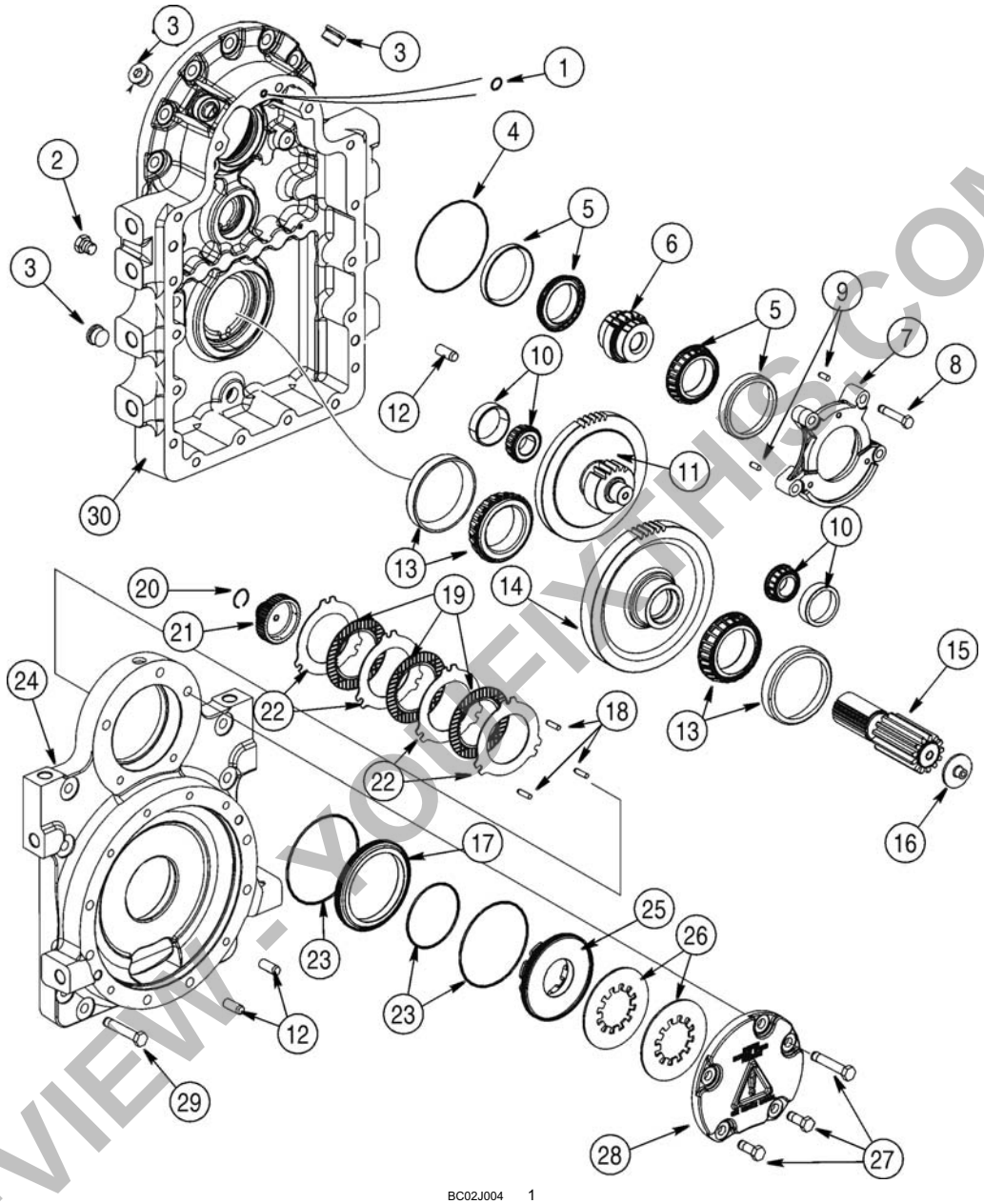
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BC07C001

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Final drive - Exploded view



BC02J004 1

1. O-ring brake feed	11. Counter shaft gear	21. Park brake shaft
2. Fill/check plug with o-ring	12. Dowel pins (6)	22. Separator plates (4)
3. Plugs with o-rings (3)	13. Lower gear bearings	23. Brake o-rings (3)
4. Drive motor o-ring	14. Lower gear	24. Sandwich housing
5. Input gear bearings	15. Sun Gear	25. Brake piston
6. Input gear	16. Wear plate	26. Spring washers (2)
7. Input bearing housing	17. Piston plate	27. Brake cover bolts (5)
8. Input bearing housing bolts (4)	18. Dowel pins (3)	28. Park brake cover
9. Dowel pins (2)	19. Friction plates (3)	29. Sandwich housing bolts (8)
10. Counter shaft bearings	20. Brake shaft snap ring	30. Drop box

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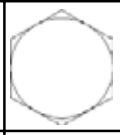
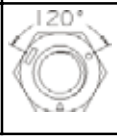
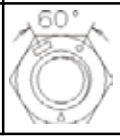
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General specification

BOLT TORQUE INFORMATION

DECIMAL HARDWARE

1. Fasteners should be replaced with the same or higher grade. If higher grade fasteners are used, these should only be tightened to the strength of the original.
2. Make sure the fasteners threads are clean and that thread engagement is started. This will prevent them from failing when being tightened.
3. Tighten plastic insert or crimped steel-type lock nuts to approximately **50 %** of the dry torque, applied to the nut, not to the bolt head. Tighten toothed or serrated-type lock nuts to the full torque value.
4. The L9 (Alloy) fasteners torque values are for a bolt, nut, and two washers.
   When using L9 (Alloy) fasteners, do not use the values in this table for tapped holes.

GRADE							
	1 or 2	5	5.1	5.2	8	8.2	L9 (Alloy)
SAE Markings for Bolts and Cap Screws							
	2	5			8		L9 (Alloy)
SAE Markings for Hex Nuts							

	GRADE 2 *				GRADE 5, 5.1 or 5.2				GRADE 8 or 8.2				GRADE L9 (Alloy)			
	Dry **		Lubricated **		Dry**		Lubricated **		Dry**		Lubricated **		Head		Nut	
SIZE	Nm	lb/ft	Nm	lb/ft	Nm	lb/ft	Nm	lb/ft	Nm	lb/ft	Nm	lb/ft	Nm	lb/ft	Nm	lb/ft
1/4 UNF	7.5	5.5	5.7	4.2	10.8	8	8.5	6.3	16.3	12	12.2	9	13.6	10	14.9	11
1/4 UNC	8.5	6.3	6.4	4.7	13.6	10	9.8	7.2	19	14	13.6	10	16.3	12	17.6	13
5/16 UNF	15	11	11	8	23	17	18	13	33	24	24	18	26	19	28	21
5/16 UNC	16	12	12	9	26	19	19	14	37	27	27	20	27	20	31	23
3/8 UNF	27	20	20	15	41	30	31	23	61	45	47	35	41	30	45	33
3/8 UNC	31	23	23	17	47	35	34	25	68	50	47	35	47	35	52	38
7/16 UNF	43	32	33	24	68	50	47	35	95	70	68	50	75	55	81	60
7/16 UNC	49	36	37	27	75	55	54	40	108	80	81	60	81	60	88	65
1/2 UNF	68	50	47	35	102	75	75	55	149	110	108	80	115	85	129	95
1/2 UNC	75	55	54	40	115	85	88	65	163	120	122	90	129	95	142	105
9/16 UNF	95	70	75	55	149	110	108	80	203	150	149	110	163	120	190	140
9/16 UNC	108	80	81	60	163	120	122	90	231	170	176	130	183	135	203	150
5/8 UNF	136	100	102	75	203	150	149	110	285	210	217	160	231	170	251	185

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Contents

DISTRIBUTION SYSTEMS - A

FAULT CODES - 50.A

DIAGNOSTIC
ELECTRONIC SYSTEM
4121-Left forward pump solenoid circuit open or over current 5
650K TIER II [CAL012200 -], 750K TIER II [CAL003400 -], 850K TIER II [CAL005700 -]
4121-Left forward pump solenoid circuit open or over current 10
650K TIER II [CAL000000 - CAL012143], 750K TIER II [CAL000000 - CAL003348], 850K TIER II [CAL000000 - CAL005666]
4121-Left forward pump solenoid circuit open or over current 13
650K TIER II [CAL000000 - CAL012143], 750K TIER II [CAL000000 - CAL003348], 850K TIER II [CAL000000 - CAL005666]
4131-Right forward pump solenoid circuit open or over current 16
650K TIER II [CAL012200 -], 750K TIER II [CAL003400 -], 850K TIER II [CAL005700 -]
4131-Right forward pump solenoid circuit open or over current 21
650K TIER II [CAL000000 - CAL012143], 750K TIER II [CAL000000 - CAL003348], 850K TIER II [CAL000000 - CAL005666]
4131-Right forward pump solenoid circuit open or over current 24
650K TIER II [CAL000000 - CAL012143], 750K TIER II [CAL000000 - CAL003348], 850K TIER II [CAL000000 - CAL005666]
4141-Left reverse pump solenoid circuit open or over current 27
650K TIER II [CAL012200 -], 750K TIER II [CAL003400 -], 850K TIER II [CAL005700 -]
4141-Left reverse pump solenoid circuit open or over current 32
650K TIER II [CAL000000 - CAL012143], 750K TIER II [CAL000000 - CAL003348], 850K TIER II [CAL000000 - CAL005666]
4141-Left reverse pump solenoid circuit open or over current 35
650K TIER II [CAL000000 - CAL012143], 750K TIER II [CAL000000 - CAL003348], 850K TIER II [CAL000000 - CAL005666]
4151-Right reverse pump solenoid circuit open or over current 38
650K TIER II [CAL012200 -], 750K TIER II [CAL003400 -], 850K TIER II [CAL005700 -]
4151-Right reverse pump solenoid circuit open or over current 43
650K TIER II [CAL000000 - CAL012143], 750K TIER II [CAL000000 - CAL003348], 850K TIER II [CAL000000 - CAL005666]
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650K TIER II [CAL000000 - CAL012143], 750K TIER II [CAL000000 - CAL003348], 850K TIER II [CAL000000 - CAL005666]

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PRIMARY HYDRAULIC POWER SYSTEM - Decontaminating

CAS10162A CAS10508 CAS10192

1. Prepare the portable filter **CAS10162A** by doing the following steps:
   (A) Remove all the hydraulic oil from the inlet and outlet hoses for the portable filter.
   (B) Remove the filter element from the portable filter.
   (C) Remove all hydraulic oil from the portable filter.
   (D) Clean the inside of the housing for the filter element.
2. You must know whether the contamination is microscopic or visible. Refer to **PRIMARY HYDRAULIC POWER SYSTEM - Cleaning (A.10.A)**.
3. If the contamination is microscopic:
   (A) Check the maintenance schedule for the machine to learn if the hydraulic oil must be changed. If needed, change the hydraulic oil. Change the hydraulic filter.
   (B) Do steps 6 through 35.
4. If the contamination is visible:
   (A) Change the hydraulic oil and hydraulic filter.
   (B) Do steps 5 through 35.
5. Check the amount of contamination in the hydraulic system by doing the following steps:
   (A) Disassemble one cylinder in two different circuits. Check for damage to seals, scoring of the cylinder wall, etc. Repair the cylinders as necessary.
   (B) If, in your judgment, the damage to the cylinders was caused by sever contamination and is not the result of normal wear, it is necessary to remove, clean and repair valves, pump, lines, cylinders, hydraulic reservoir, etc. in the hydraulic system.
6. Remove the breather from the reservoir and connect the vacuum pump to the opening. Start the vacuum pump.
7. Loosen and remove the drain plug from the reservoir.
8. Using the fitting kit **CAS10508**, install the valve in the hole for the drain plug. Make sure that the valve is closed.
9. Stop the vacuum pump.
10. Connect the inlet hose for the portable filter to the valve that is installed in the hole for the drain plug.
11. Disconnect the vacuum pump from the hydraulic reservoir air breather hose. Remove the filler cap.
12. Install the outlet hose for the portable filter in the hydraulic reservoir filler neck.
13. Open the valve that is installed in the hole for the drain plug.
14. Move the switch for the portable filter to the ON position. Start and run the engine at 1500 rpm (r/min).
15. Run the portable filter for 10 minutes.

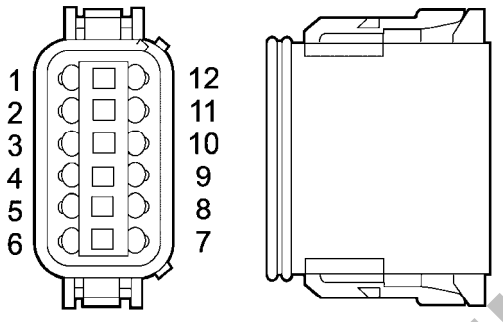
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Connector - Component diagram 02

650K TIER II [CAL000000 - CAL012143], 750K TIER II [CAL000000 - CAL003348], 850K TIER II [CAL000000 - CAL005666]

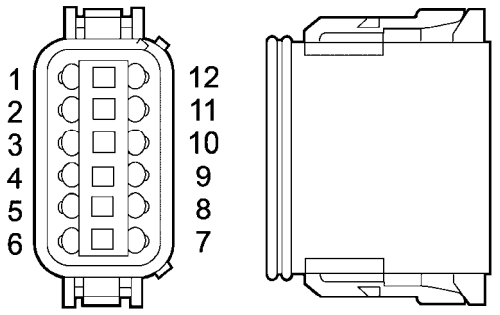
Connector X7 (Red)



DEU_DT06-12S 1

Cavity	Circuit ID	Description
1	L-B	(Cab Only) From ignition switch to start ignition relay
2	open	
3	open	
4	open	
5	open	
6	R-N	Switched B+ to left door wiper motor
7	open	
8	S-G	(Cab Only) From ignition switch run terminal to park brake proximity switches
9	M-p	- from right speaker
10	R-p	+ to right speaker
11	R-p	+ to left speaker
12	N-p	- from left speaker

Connector X8 (Green)



DEU_DT06-12S 2

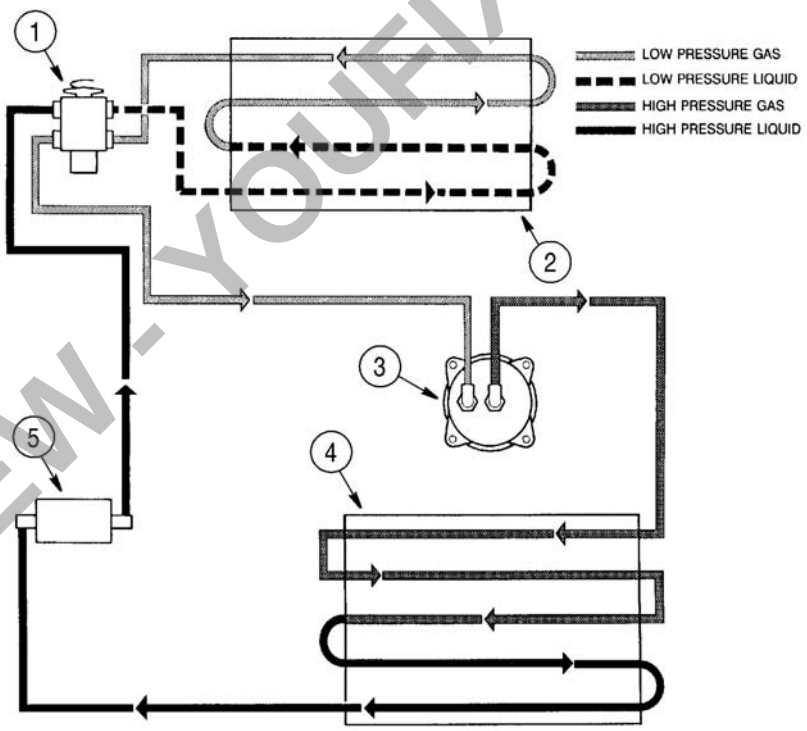
Cavity	Circuit ID	Description
1	V/N	Windshield wiper switch to rear windshield wiper motor
2	A/B	Rear windshield wiper motor park
3	C-B	From windshield washer switch to connector X26 pin L
4	open	
5	H-N	From door wiper switch to left door wiper
6	M-N	From door wiper switch to right door wiper
7	open	
8	B/N	Right door wiper park

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ENVIRONMENT CONTROL Air-conditioning system - Dynamic description

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 HFC134a 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.
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, three (3) mini relays, two (2) 10 amp circuit breakers, two (2) fan motors, a blower motor, blower resistor, compressor clutch, low pressure switch, high pressure switch, and warning light.



208L95 1

(1) Expansion valve
(2) Evaporator
(3) Compressor
(4) Condenser
(5) Receiver drier

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4121-Left forward pump solenoid circuit open or over current

650K TIER II [CAL012200 -], 750K TIER II [CAL003400 -], 850K TIER II [CAL005700 -]

Cause:

1. Connectors not mated fully, pins not pushed into connector fully, bent pin or broken wire at rear of connector.
2. Wiring or solenoid circuits open.
3. Wiring or solenoid circuits shorted.
4. Failed Drivetrain Control Module.

Possible failure modes:

1. Crawler will not move forward.

Solution:

1. Find out if the fault code is still active, refer to **Command Display/service switch - Dynamic description (C.20.F)**.
   Prior to clearing fault codes write down all fault codes, number of occurrences, and engine hours at last occurrence.

   A. Turn ignition switch to RUN position to power drivetrain controller.

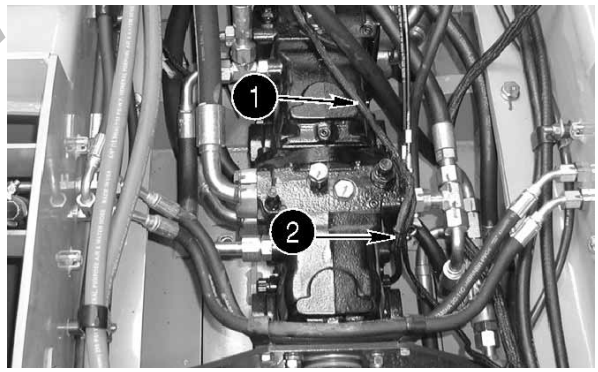
   B. Clear all fault codes from the controller.

   C. To check for fault code: Move directional control to neutral, ignition switch to run (engine does not need to be running), move both parking levers to down position, move hand throttle to high idle position, and push directional control to forward position.

   D. NOT OK – Fault code 4121 is recorded again. Go to step **2**.

   E. OK for return to service.

2. Clean and inspect the Left Forward Pump Solenoid Connection.
   1. Connector X 63
   2. Connector X 62



BD02H004-2 1

   A. Turn ignition switch and master disconnect off.

   B. Tilt ROPS cab/canopy, refer to **USER PLATFORM - Tilt (E.34.A)**.

   C. Disconnect the Left Forward Pump Solenoid, Connector **X63**.

   D. Inspect pins 1 through 4. Clean connections.

   E. Clean female pins by installing and removing.

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Sensing system Filter restriction sensor - Testing

NOTE: *For wiring diagram refer to* ***Wiring harness - Electrical schematic frame 07 (A.30.A)*** *and* ***Wiring harness - Electrical schematic frame 08 (A.30.A)****.*

N°	Test Point	Expected Result	Other Result (Possible Cause)
1	**Check** Check between the hydraulic filter restriction switch housing and the filter housing.	**Result** Continuity	**Action** Bad ground circuit.
2	**Condition** Disconnect wire 580 from the hydraulic filter restriction switch terminal. **Check** Hydraulic filter restriction switch terminal to ground.	**Result** Open	**Action** Bad hydraulic filter restriction switch.
3	**Condition** Put the master disconnect switch in the ON position. Put the ignition switch in the RUN position. **Check** Wire 580 to ground.	**Result** 12 volts	**Action** Bad wire 580 between hydraulic filter restriction switch and connector **X69** cavity A, from 6 way connector to connector **X26** pin W. Bad wire M-B between connector X26/W and cavity 4 of connector **X5**, instrument cluster connector. Bad connectors. Check instrument cluster hydraulic filter bulb; check instrument cluster.
4	**Condition** Turn the ignition switch OFF, disconnect the X26 connector and the instrument cluster connector. **Check** Connector **X26** cab harness from pin W to cavity 4 of connector **X5** instrument cluster connector.	**Result** Continuity	**Action** Bad wire M-B, bad connector.
5	**Check** Connector **X26** main harness from pin W for wire 580 to connector **X69** 6 way rear harness connector cavity A.	**Result** Continuity	**Action** Bad wire 580, bad connector.
6	**Check** Wire 580 at connector **X69** cavity A to hydraulic filter restriction switch.	**Result** Continuity	**Action** Bad wire 580, bad connector.

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Battery - Visual inspection

⚠ WARNING ⚠

Never try to charge the battery if the electrolyte in the battery is frozen. 47-83A

⚠ WARNING ⚠

Never cause sparks to occur or smoke near batteries that are charging or have been recently charged. 13-8A

⚠ WARNING ⚠

Disconnect the ground cable first when the battery cables are disconnected from the battery. Connect the ground cable last when the battery cables are connected to the battery. 47-55A

⚠ WARNING ⚠

Some batteries have a ventilation tube. If there is battery acid in the ventilation tube, this battery acid can be released when the battery is turned upside down. If you turn the battery upside down, make sure that the end of the ventilation tube is away from you and away from any other people in the area. Battery acid can cause severe burns. 48-57B

⚠ WARNING ⚠

BATTERY ACID CAUSES SEVERE BURNS. Batteries contain sulfuric acid. Avoid contact with skin, eyes or clothing. Antidote: EXTERNAL - flush with water. INTERNAL - Drink large quantities of water or milk. DO NOT induce vomiting. Seek medical attention immediately. EYES - Flush with water for 15 minutes and seek medical attention immediately. BATTERIES PRODUCE EXPLOSIVE GASES. Keep sparks, flame, cigars and cigarettes away. Ventilate when charging or using in enclosed area. Always wear eye protection when working near batteries. Wash hands after handling. KEEP OUT OF REACH OF CHILDREN. M144B

1. If the battery is a maintenance free battery, check the level of the electrolyte every 1000 hours of operation or six months, whichever occurs first. For all other batteries, check the level of the electrolyte every 250 hours of operation.

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 for access to the battery caps, it is possible that the words Maintenance Free have been removed from the decal.*

2. Check the level of the electrolyte more often during hot weather. The use of a large amount of water by the battery can be caused by high battery temperature or a voltage regulator setting that is too high. Keep the electrolyte level above the top of the plates in the battery at all times to prevent damage to the battery.

NOTE: *On maintenance free batteries it is necessary to remove the center part of the decal for access to the battery caps. Do not discard the center part of the decal. Install the center part of the decal after the battery caps have been installed.*

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REPAIR MANUAL



650K TIER II
750K TIER II
850K TIER II

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21. Make sure that the top edge of the spool boot is seated in the groove in the spool.



BP99J123 20

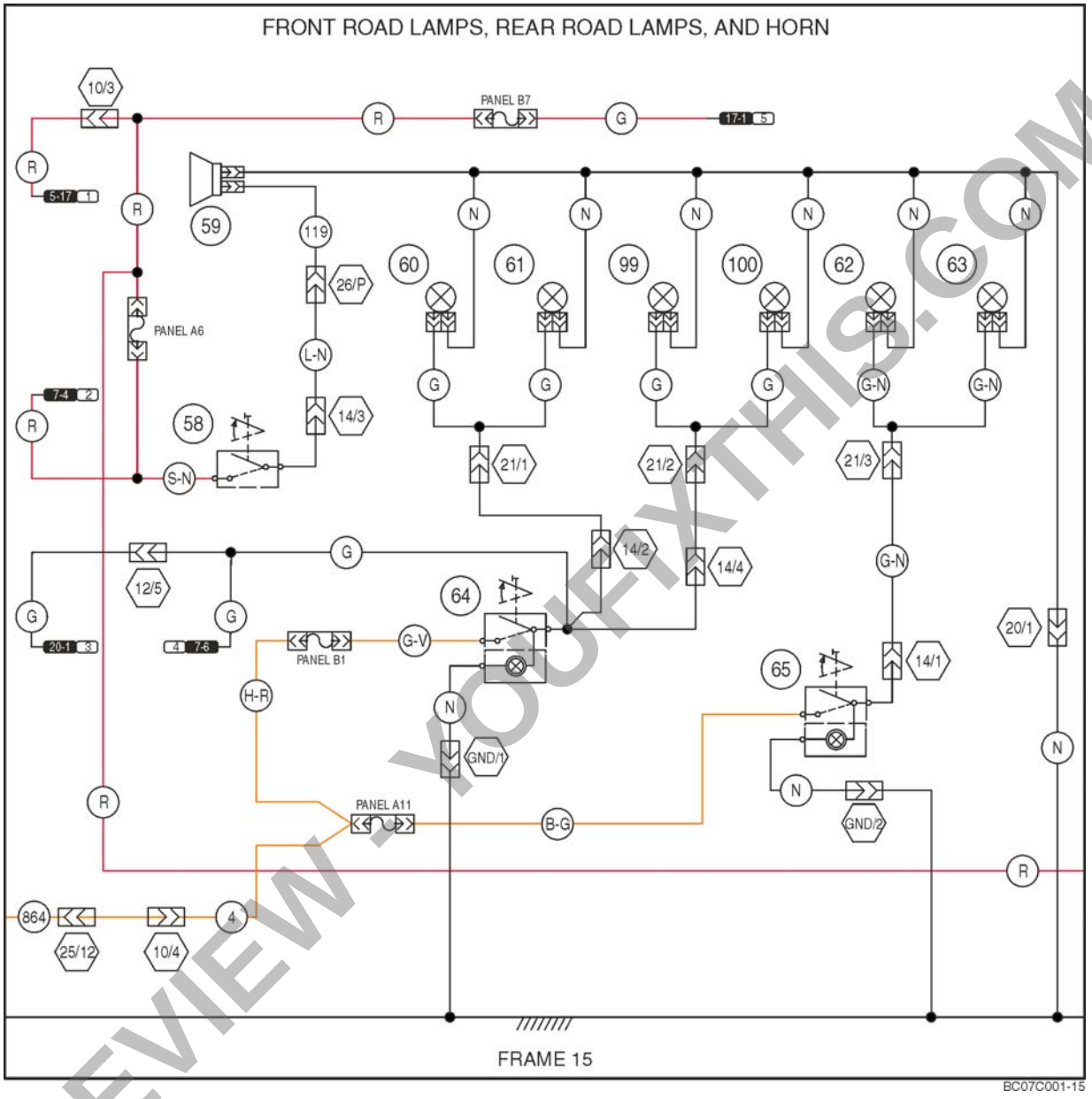
Next operation:
Stack valve - Assemble (A.10.A)

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Wiring harness - Electrical schematic frame 15

650K TIER II [CAL000000 - CAL012143], 750K TIER II [CAL000000 - CAL003348], 850K TIER II [CAL000000 - CAL005666]



BC07C001-15-B 1

(58) Horn push button switch	**(63)** Rear floodlight
(59) Horn	**(64)** Front floodlight and monitor light switch
(60) Front floodlight	**(65)** Rear floodlight switch
(61) Front floodlight	**(99)** Opt front lights
(62) Rear floodlight	**(100)** Opt front lights

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4131-Right forward pump solenoid circuit open or over current

650K TIER II [CAL000000 - CAL012143], 750K TIER II [CAL000000 - CAL003348], 850K TIER II [CAL000000 - CAL005666]

Cause:

1. Connectors not mated fully, pins not pushed into connector fully, bent pin or broken wire at rear of connector.
2. Wiring or solenoid circuits open.
3. Wiring or solenoid circuits shorted.
4. Failed Drivetrain Control Module.

Possible failure modes:

1. Crawler will not move forward.

Solution:

1. Find out if the fault code is still active, refer to **Command Display/service switch - Dynamic description (C.20.F)**.
   Prior to clearing fault codes write down all fault codes, number of occurrences, and engine hours at last occurrence.

   A. Turn ignition switch to RUN position to power drivetrain controller.

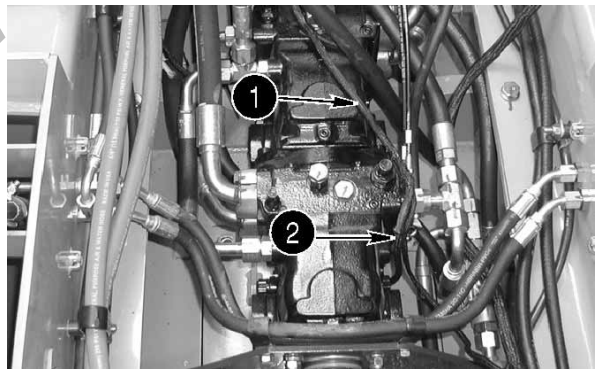
   B. Clear all fault codes from the controller.

   C. To check for fault code: Move directional control to neutral, ignition switch to run (engine does not need to be running), move both parking levers to down position, move hand throttle to high idle position, and push directional control to forward position.

   D. NOT OK – Fault code 4131 is recorded again. Go to Step **2**.

   E. OK – Fault is not recorded again. OK for return to service.

2. Clean and inspect the Left Forward Pump Solenoid Connection.
   1. Connector X 63
   2. Connector X 62



BD02H004-2 1

   A. Turn ignition switch and master disconnect off.

   B. Tilt ROPS cab/canopy, refer to **USER PLATFORM - Tilt (E.34.A)**.

   C. Disconnect the Left Forward Pump Solenoid, Connector **X62**.

   D. Inspect pins 1 through 4. Clean connections.

   E. Clean female pins by installing and removing.

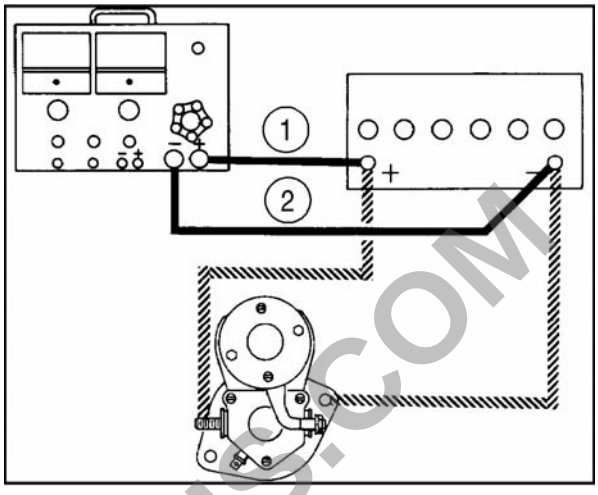
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(28)FNR joystick
(29) Reverse ratio switch

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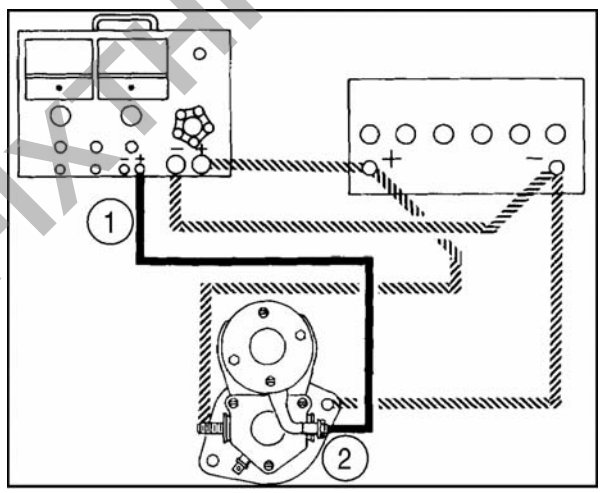
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4. Connect the positive load cable to the positive post of the battery. Connect the negative load cable to the negative post.
   (1) Positive battery cable
   (2) Negative load cable



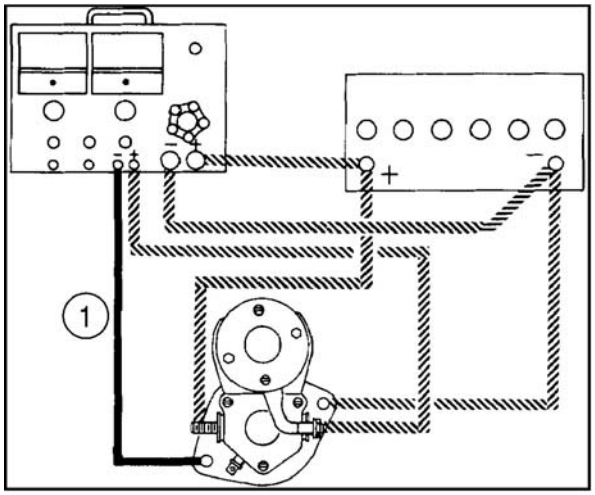
B831431 3

5. Connect the red voltmeter lead to the motor terminal on the starter solenoid.
   (1) Red voltmeter lead
   (2) Motor terminal



B831432 4

6. Connect the black voltmeter lead to the mounting flange on the starter.
   (1) Black voltmeter lead



B831433 5

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SERVICE BRAKE Hydraulic - Preliminary test

⚠ WARNING ⚠

Always know the location of all workers in your area. Warn them before you start working the machine. Always keep all other persons away from your area. Serious injury or death can result if you do not follow these instructions. SA015

1. Remove the drain plug from the final drive, start the engine and set the instrument cluster to read engine r/min (rpm).
2. Release the parking brake levers and place the directional control in the F or R position. Increase engine r/min (rpm) to 950 for 1 minute.
3. Place the directional control in neutral, apply the parking brakes and turn off the engine.
4. Check for fluid coming out of the final drive drain, if no fluid is present install the drain plug and torque to **43 - 46 Nm** (**32 - 34 lb ft**).

NOTE: *If fluid is leaking out of the final drive drain, plug the brake piston **(25)** and piston plate **(17)** should be inspected for damage and the brake O-rings **(23)** must be replaced.*

5. Fill the final drive with the authorized lubricant. Reinstall the fill/check plug and torque to **43 - 46 Nm** (**32 - 34 lb ft**).
6. Open the left side ROPS access panel and disconnect the brake solenoid.



BD02M045_2 1

7. Start the engine and set the instrument cluster to read engine r/min (rpm), use the bump up button on the directional control and place the range selector at 100%.
8. Release the parking brake levers and place the directional control in the F or R position. Increase engine r/min (rpm) to 1250, there should be no movement of the machine.

ATTENTION: *DO NOT press the foot brake unless the machine moves, if machine moves quickly press the foot brake and place the directional control in neutral.*

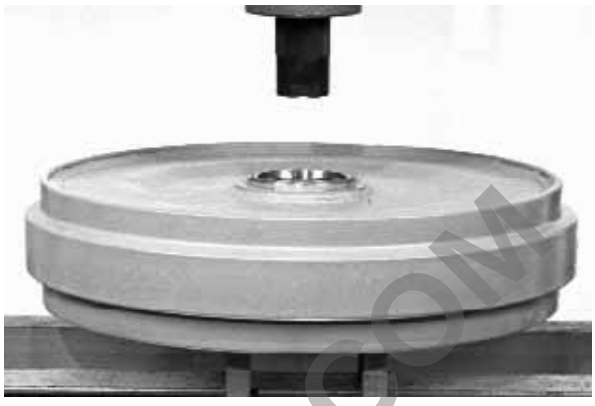
IMPORTANT: *DO NOT exceed 1250 r/min (rpm).*

NOTE: *If the machine moves the brakes are misassembled.*

9. Place the directional control in neutral, apply the parking brakes and turn off the engine.

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13. Put the idler wheel in the press for removal of the other bushing.



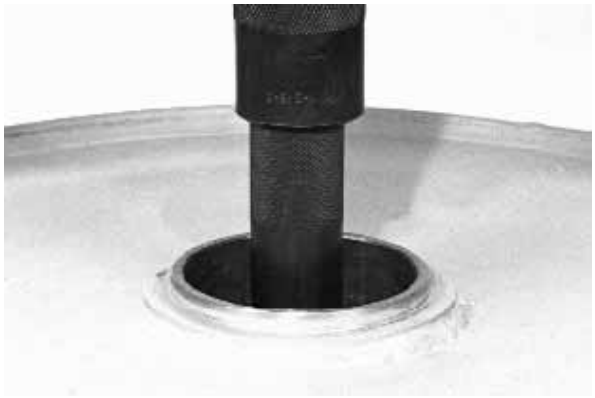
B150637M 8

14. Install an acceptable driver on top of the bushing.



B150528M 9

15. Press the bushing out of the idler wheel.



B150530M 10

16. Remove the metal ring and the rubber ring from the bracket and shaft assembly.



B509844M 11

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16. Slip the rubber boot over the upper plate.



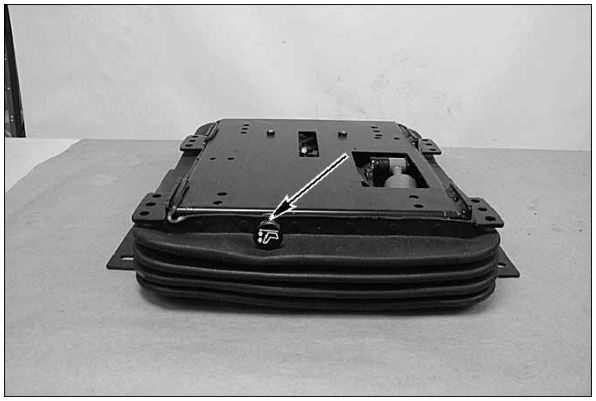
BS02N016 16

17. Slide the rubber boot into position on the upper and lower housing. Install the plastic pins into the mounting holes in the rubber boot.



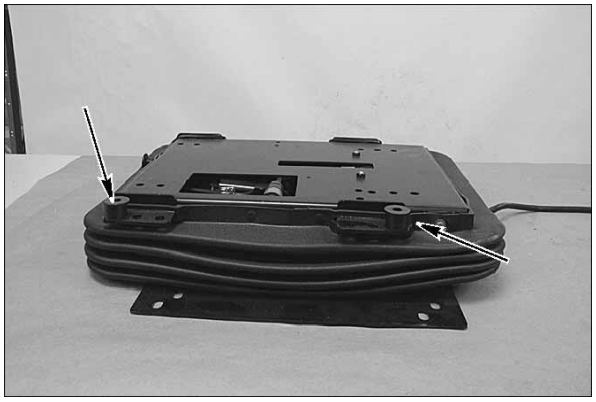
BS02N015 17

18. Install the control knob onto the switch, tighten the Allen set screw.



BS02N014 18

19. Place the 4 bushings and washers onto the upper plate.



BS02N013 19

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BODY AND STRUCTURE - E

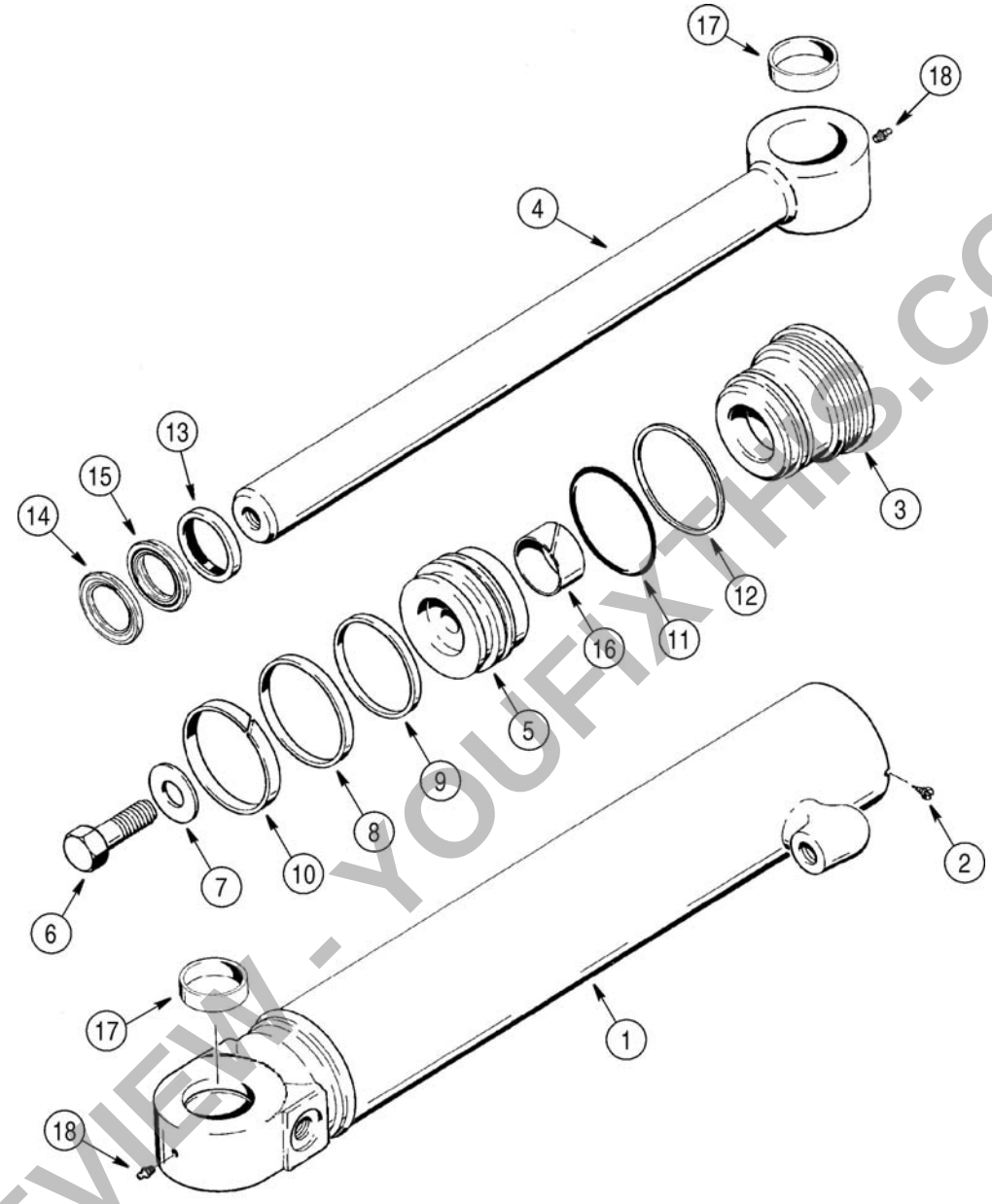
ENVIRONMENT CONTROL Heating, ventilation and air-conditioning - 40.D

650K TIER II [CAL000000 - CAL012143] , 650K TIER II [CAL012200 -] , 750K TIER II [CAL000000 - CAL003348] , 750K TIER II [CAL003400 -] , 850K TIER II [CAL000000 - CAL005666] , 850K TIER II [CAL005700 -]

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Cylinder - Disassemble



BS00E118 1

(1) Tube	**(7)**Washer	**(13)** Wiper
(2) Lock screw	**(8)** Seal	**(14)** Buffer seal
(3) Bland	**(9)** Ring	**(15)** Rod seal
(4) Piston rod	**(10)** Wear ring	**(16)** Bushing
(5) Piston	**(11)** O-ring	**(17)** Bushing
(6) Bolt	**(12)** Backup ring	**(18)** Grease fitting

1. Clean the outside of the cylinder. If hoses were removed with the cylinder, remove the hoses from the cylinder.
2. Fasten the tube (1) in a vise or other holding equipment. Do not damage the tube (1).
3. Loosen and remove the lock screw (2) from the gland (3) and the tube (1).

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