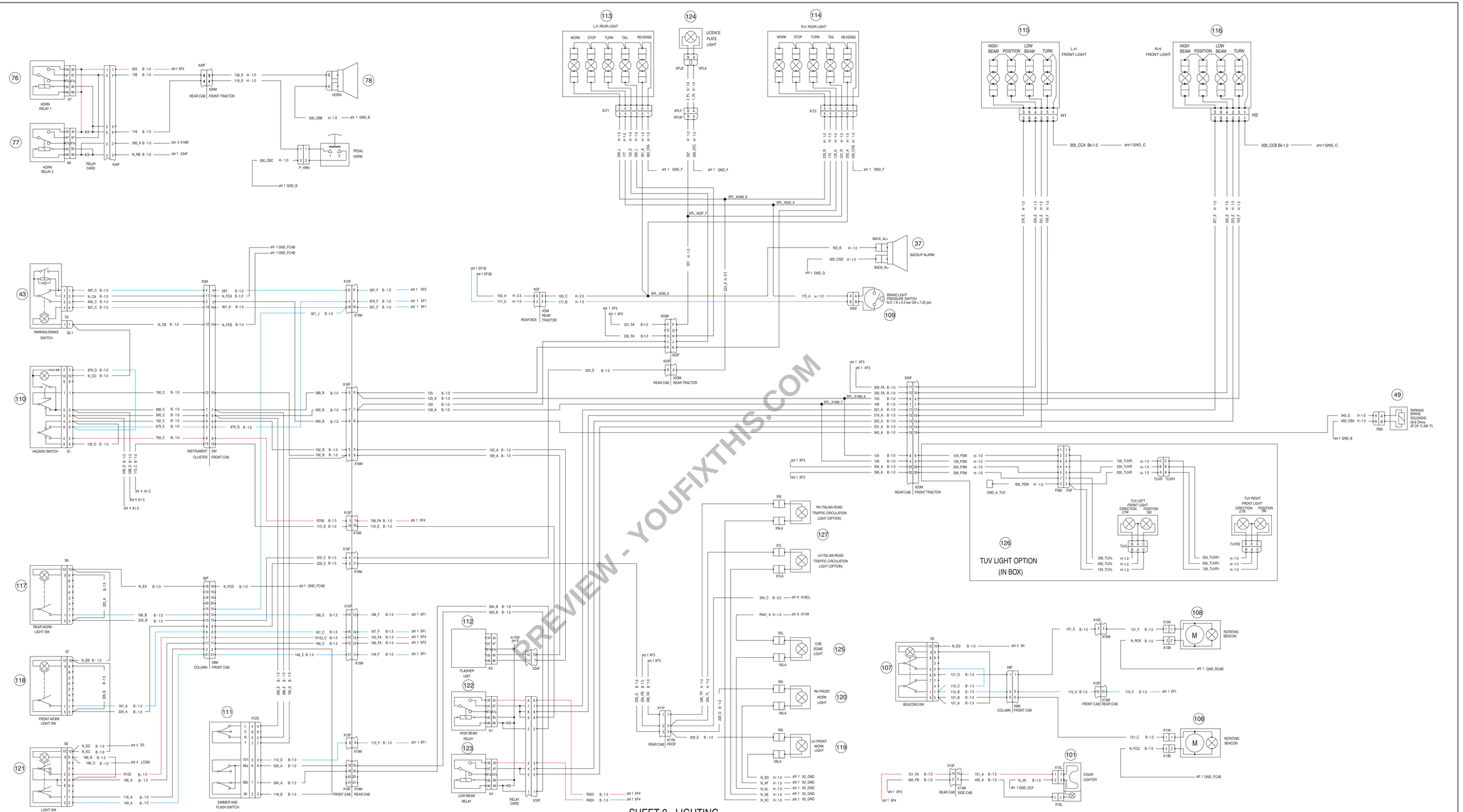


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SHEET 2 - LIGHTING

COMPONENTS

1. Batteries
2. Master Disconnect Switch
3. Engine Stop
4. Alternator
5. Starter Motor
6. Starting Relay
7. Filter Heater Relay
8. Water In Fuel Sensor
9. Electronic Diesel Control
10. Fuel Filter Heater
11. Cold Start Relay
12. Grid Heater
13. Low Oil Pressure Relay
14. Accelerator Potentiometer
15. Neutral Start Relay
16. Ignition Switch
17. Ignition Relay
18. Engine Diagnostic Lamp and Switch
19. Service Tool Connector
20. Output Speed Sensor
21. Engine Speed Sensor
22. Intermediate Speed Sensor
23. Turbine Speed Sensor
24. Filter Maintenance Switch
25. Torque Converter Output Temperature Sender
26. Transmission Solenoid Valve and Temperature Sensors
27. Transmission Electronic Control Module
28. Transmission Shifter
29. Diagnostic Connector
30. Transmission Kick-down Switch
31. Transmission Automatic Switch
32. Declutch Switch
33. Declutch Pressure Switch
34. Transmission Enable Switch
35. FNR Switch
36. Backup Alarm Relay
37. Backup Alarm
38. Brake Warning Pressure Switch
39. Brown Box
40. Fuel Level Sender
41. Not Used
42. Air Filter Restriction Switch
43. Parking Brake Switch
44. Instrument Cluster
45. Digital Display Panel
46. Not Used
47. Parking Brake Pressure Switch
48. Parking Brake Relay
49. Parking Brake Solenoid
50. Fan Reversing Switch (Option)
51. Fan Reversing Solenoid (Option)
52. Detent Switch
53. Bucket Control Valve Electromagnetic Detents
54. Boom Control
55. Bucket Control
56. Float Solenoid
57. Secondary Steering Pressure Switch (Option)
58. Secondary Steering Motor (Option)
59. Secondary Steering Solenoid (Option)
60. Secondary Steering Relay (Option)
61. Pin Engage Switch (Option)
62. Pin Engage Solenoid (Option)
63. LTS Control Switch
64. LTS Control Relay Number 1
65. LTS Control Relay Number 2
66. LTS Control Solenoid
67. Front Wiper Motor
68. Front Wiper and Washer Switch
69. Front Wiper Timer
70. Front Washer Motor
71. Rear Wiper Switch
72. Rear Washer Switch
73. Rear Washer Pump Motor
74. Rear Wiper Motor
75. Rear Wiper Timer
76. Horn Relay - Number 1
77. Horn Relay - Number 2
78. Horn
79. Central Grease Lubrication Switch (Option)
80. Seat Compressor and Switch (Option)
81. Seat Heater Switch (Option)
82. Blower Switch
83. Blower Motor Speed Resistors
84. Blower Motor
85. Air Conditioning Pressure Switch
86. Thermostat Switch
87. Compressor Clutch Relay
88. Compressor Clutch
89. Conditioner Switch
90. Heater Control Unit
91. Circuit Control Switch
92. Circuit Control Motor
93. Warm Cold Stop Cock Knob
94. Warm Cold Stop Cock Motor
95. Climate Control Unit (Option)
96. Temperature Senors (Option)
97. Climate Control Relays (Option)
98. Recycling Motor (Option)
99. Power Converter, Recycling Motor (Option)
100. Water Valve Motor (Option)
101. Cigar Lighter
102. Power Converter - 24 volts to 12 volts (Option)
103. Power Outlet (Option)
104. 12 Volt Radio (Option)
105. Left Speaker (Option)
106. Right Speaker (Option)
107. Beacon Switch (Option)
108. Rotating Beacon (Option)
109. Brake Lamp Pressure Switch
110. Hazard Switch
111. Turn Signal, Hi/Low Beam Switch
112. Flasher Module
113. Left-Hand Rear Combination Lamp
114. Right-Hand Rear Combination Lamp
115. Left-Hand Front Combination Lamp
116. Right-Hand Front Combination Lamp
117. Rear Work Light Switch
118. Front Work Light Switch
119. Left-Hand Front Work Lamp
120. Right-Hand Front Work Lamp
121. Lamp Switch
122. High Beam Relay
123. Low Beam Relay
124. License Plate Lamp
125. Dome Lamp
126. TUV Lamps (Option)
127. Italian Road Circulation Lamps (Option)

WIRE IDENTIFICATION

1. WIRE NUMBER
2. WIRE COLOR SYMBOL
3. WIRE SIZE (mm²) TYPICAL

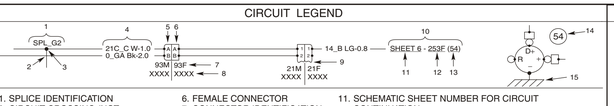
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N = BLACK	RT = RED	H = GREY
L = BLUE	M = BROWN	BL = BLUE
GN = GREEN	SW = BLACK	B = WHITE
GE = YELLOW	V = GREEN	G = YELLOW
RN = RED/BLACK DOTTED	R = RED	

SHOWS POWER - MASTER DISCONNECT SWITCH IN ON POSITION

SHOWS POWER - KEY SWITCH IN ON POSITION

CIRCUIT LEGEND



1. SPLICE IDENTIFICATION
2. CIRCUIT CROSSING (NOT CONNECTED)
3. CIRCUIT CONNECTED
4. WIRE IDENTIFICATION
5. MALE CONNECTOR
6. FEMALE CONNECTOR
7. CONNECTOR IDENTIFICATION
8. HARNESS IDENTIFICATION
9. INDICATES PARTIAL CONNECTOR
10. CIRCUIT IDENTIFICATION
11. SCHEMATIC SHEET NUMBER FOR CIRCUIT CONTINUATION
12. CONNECTION POINT ON SCHEMATIC
13. COMPONENT NUMBER (IF ASSIGNED)
14. COMPONENT NUMBER
15. INDICATES INTERNALLY GROUNDED COMPONENT

ACTUATOR SYMBOLS

1. PRESSURE
2. HAND OPERATED
3. TEMPERATURE
4. COIL
5. VARIABLE RESISTOR
6. RESISTOR
7. DIODE
8. LIGHT EMITTING DIODE
9A. MOMENTARY CONTACT
9B. MAINTAINED CONTACT

HOUSINGS

1. VACUUM SWITCH
2. PRESSURE SWITCH
3. TEMPERATURE SWITCH
4. MOTOR
5. LAMP

CONTACT SYMBOLS

1. SINGLE POLE, SINGLE THROW
2. SINGLE POLE, DOUBLE THROW
3. DOUBLE POLE, SINGLE THROW
4. DOUBLE POLE, DOUBLE THROW

FUSE AND CIRCUIT BREAKER

1. FUSE
2. CIRCUIT BREAKER, AUTOMATIC RESET
3. CIRCUIT BREAKER, MANUAL RESET

NOTES

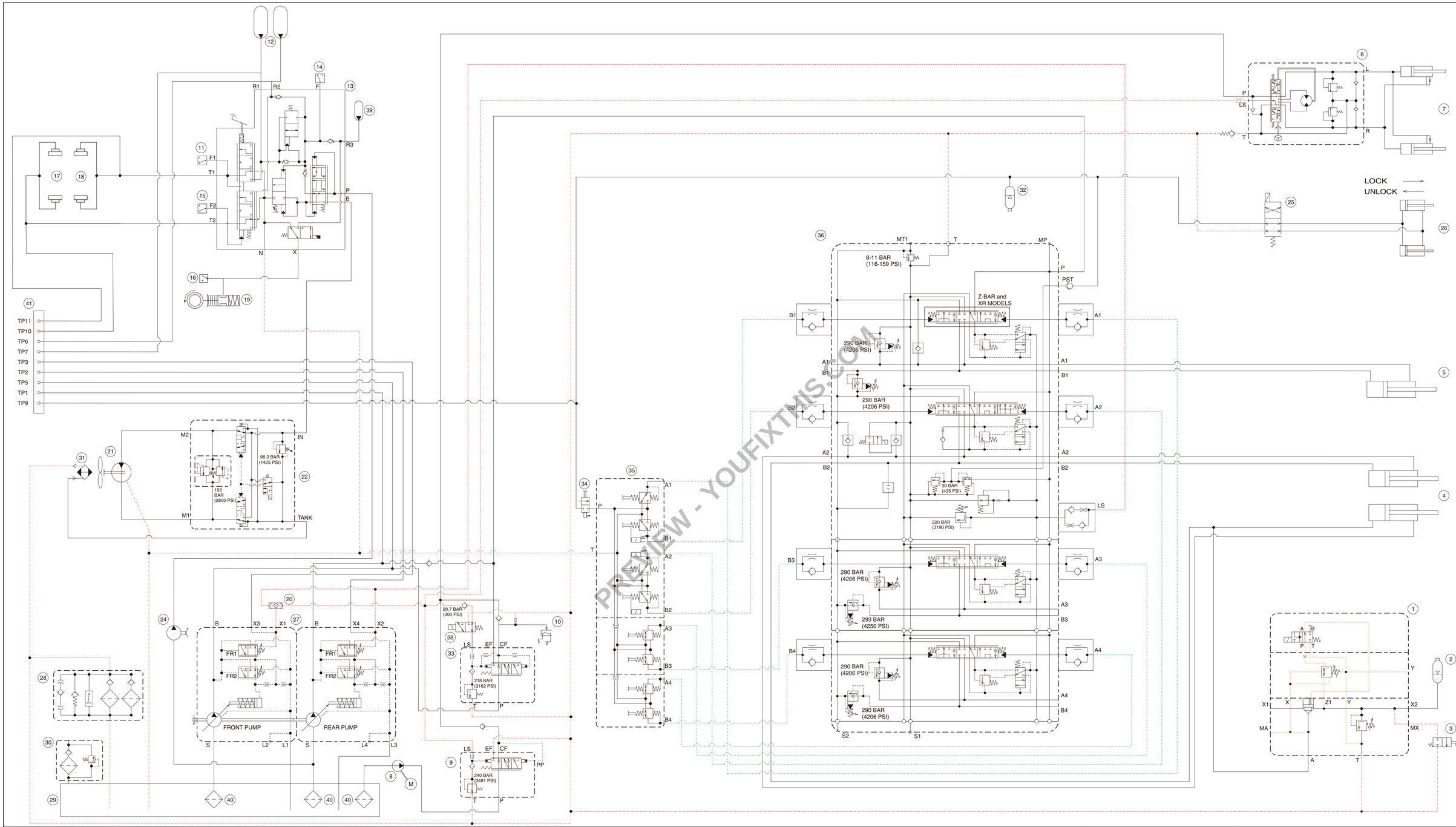
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ELECTRICAL SCHEMATIC LW 170.B Wheel Loader

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The Part Number is 6-49770

BC03N231

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COMPONENTS

1. RIDE CONTROL VALVE (OPTION)
2. RIDE CONTROL ACCUMULATOR (OPTION)
   PRECHARGE: 14.5 BAR (250 PSI)
   CAPACITY: 3.8 LITRES (231.8 CU IN.)
3. RIDE CONTROL ACCUMULATOR BLEEDER VALVE
4. LIFT CYLINDERS
   BORE: 120.5 MM (4.75 IN)
   ROD: 76.2 MM (3.0 IN)
   STROKE: 828.1 MM (32.6 IN)
5. BUCKET CYLINDER
   BORE: 146 MM (5.75 IN)
   ROD: 76.20 MM (3.00 IN)
   STROKE: 629.40 MM (24.8 IN)
6. STEERING CONTROL VALVE
   DISPLACEMENT: 985 CC/REV (60 CU IN./REV)
7. STEERING CYLINDERS (2)
   BORE: 76.2 MM (3.00 IN)
   ROD: 44.5 MM (1.75 IN)
   STROKE: 484.9 MM (19.10 IN)
8. AUXILIARY STEERING MOTOR AND PUMP
   DISPLACEMENT: 11 CC/REV (0.671 CU IN./REV)
9. AUXILIARY STEERING VLC PRIORITY VALVE
   RELIEF PRESSURE: 240.3 BAR (3481 PSI)
10. AUXILIARY STEERING PRESSURE SWITCH
    2.6 BAR (37.7 PSI) CLOSING SETPOINT
11. BRAKE DECLUTCH PRESSURE SWITCH
    OPENS AT 15 BAR (217.5 PSI)
12. BRAKE ACCUMULATORS (2)
    PRECHARGE: 55 +2 –1 BAR (800 +30 –15 PSI)
    CAPACITY: 3.2 LITRE (195 CU IN.)
13. BRAKE VALVE AND ACCUMULATOR CHARGING VALVE
    CUT-IN: 157 +10 BAR (2277 +145 PSI)
    CUT-OUT: 190 ±3 BAR (2756 ± 43 PSI)
14. BRAKE WARNING PRESSURE SWITCH
    110 BAR (1595 PSI) RISING
    105 BAR (1523 PSI) FALLING
15. BRAKE LIGHT PRESSURE SWITCH
    1.8 BAR (26 PSI)
16. PARKING BRAKE SWITCH: 80 - 84 BAR (1160 - 1218 PSI)
17. REAR BRAKE CYLINDERS
    MODULATION PRESSURE: 88 + 7 BAR (1276 + 101.5 PSI)
18. FRONT BRAKE CYLINDERS
    MODULATION PRESSURE: 90 + 7 BAR (1305 + 101.5 PSI)
19. PARKING BRAKE CYLINDER
20. LOAD SENSE SHUTTLE VALVE
21. FAN DRIVE MOTOR - DISPLACEMENT: 23 CC/REV (1.40 CU IN./REV)
22. FAN REVERSING VALVE RELIEF SETTING: 162 BAR (2350 PSI)
23. NOT USED
24. BRAKE HYDRAULIC PUMP
    DISPLACEMENT: 23 CC/REV (1.4 CU IN./REV)
25. COUPLER LOCKING VALVE (OPTION)
26. COUPLER LOCKING CYLINDERS (2) (OPTION)
27. HYDRAULIC PUMP - CONSISTS OF STEERING PUMP AND LOADER PUMP
    STEERING PUMP (FRONT) (CLOSEST TO TRANSMISSION)
    DISPLACEMENT: 63 CC/REV (3.84 CU IN./REV)
    CUTOFF: 280 BAR (4061 PSI)
    DELTA: 30 BAR (435 PSI)
    LOADER PUMP (REAR)
    DISPLACEMENT: 45 CC/REV (2.75 CU IN./REV)
    CUTOFF: 200 BAR (2900 PSI)
    DELTA: 22 BAR (319 PSI)
28. HYDRAULIC FILTER ASSEMBLY
    BYPASS VALVE: 3.4 BAR (50 PSI)
    WARNING SWITCH: 2.7 BAR (40 PSI)
29. HYDRAULIC RESERVOIR
    TOTAL VOLUME: 154.5 LITRES (40.8 U.S. GALLONS)
    OIL CAPACITY: 105.5 LITRES (27.9 U.S. GALLONS)
30. HYDRAULIC RESERVOIR BREATHER
    20 MICRON BREATHER
31. HYDRAULIC COOLER (OPTION)
32. PILOT PRESSURE ACCUMULATOR
    PRECHARGE: 13.8 BAR (200 PSI)
    CAPACITY: 0.75 LITRE (45.8 CU IN.)
33. STEERING VLE PRIORITY VALVE
    RELIEF PRESSURE: 218 BAR (3162 PSI)
34. PILOT CONTROL ACTUATOR VALVE
35. CONTROLLER WITH TWO SPOOL LOADER VALVE
    TWO LEVER OR JOYSTICK CONTROLLER
35. CONTROLLER WITH THREE SPOOL LOADER VALVE
    OPTIONAL AUXILIARY
35. CONTROLLER WITH FOUR SPOOL LOADER VALVE
    OPTIONAL AUXILIARY
36. LOADER CONTROL VALVE
    TWO SPOOL (STANDARD)
    THREE SPOOL (OPTION)
    FOUR SPOOL (OPTION)
37. NOT USED
38. AUXILIARY STEERING LOAD SENSE SOLENOID VALVE
    20.7 BAR (300 PSI)
39. PARKING BRAKE ACCUMULATOR
    PRECHARGE: 97 BAR (1407 PSI)
    CAPACITY: 0.5 LITRE (30.5 CU IN.)
40. 100 MESH STRAINER (3)
41. DIAGNOSTIC PANEL CONSISTS OF:
    TP1 UNLOADING PUMP PRESSURE
    TP2 LOADER PUMP LOAD SENSE PRESSURE
    TP3 STEERING PUMP LOAD SENSE PRESSURE
    TP4 NOT USED
    TP5 STEERING PUMP PRESSURE
    TP6 FRONT BRAKES ACCUMULATOR PRESSURE
    TP7 REAR BRAKES ACCUMULATOR PRESSURE
    TP8 NOT USED
    TP9 PILOT PRESSURE
    Tp10 REAR AXLE BRAKE PRESSURE
    Tp11 FRONT AXLE BRAKE PRESSURE

NOTES

HYDRAULIC SYMBOLS

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

HYDRAULIC SCHEMATIC
LW 170.B WHEEL LOADER

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TORQUE SPECIFICATIONS - DECIMAL HARDWARE

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

Grade 5 Bolts, Nuts, and Studs



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

Grade 8 Bolts, Nuts, and Studs



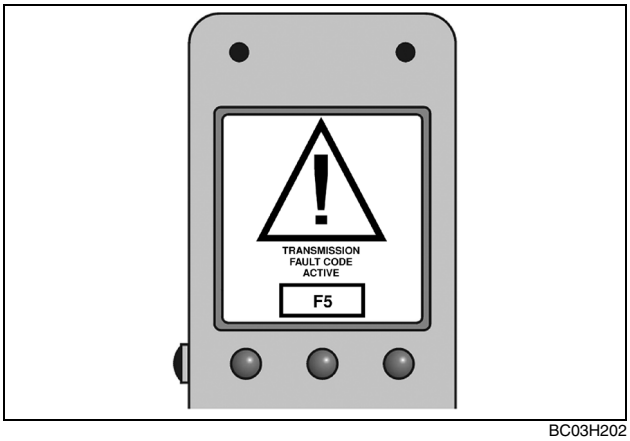
Size	Pound-Inches	Newton metres
1/4 inch	144 to 180	16 to 20
5/16 inch	288 to 348	33 to 39
3/8 inch	540 to 648	61 to 73
Size	Pound-Feet	Newton metres
7/16 inch	70 to 84	95 to 114
1/2 inch	110 to 132	149 to 179
9/16 inch	160 to 192	217 to 260
5/8 inch	220 to 264	298 to 358
3/4 inch	380 to 456	515 to 618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

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

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TRANSMISSION FAULT CODES



BC03H202

NOTE: *If the machine is not equipped with the digital display see section 6002 for use of AEB Starter, tool number 75301796 and Display, tool number 75301847.*

During operation if the Transmission Control Unit (TCU) should monitor a malfunction, the fault messages are transferred from the ZF EST 37 controller to the Brown Box Controller. The fault is then displayed on the monitor with a numeric code.

There are 4 levels of operation, normal, substitution, limp home, and TCU shut down.

- Normal: System operates normally.
- Substitution: System has abnormal gear shifts not corresponding to load conditions.
- Limp Home: The machine stops moving and the gear shift must be shifted to neutral and back into forward or reverse. The gear selection is inhibited to 2nd gear only.
- TCU Shut Down: The machine stops moving and must be towed to be recovered.

CODE	DEFINITION	POSSIBLE STEPS FOR REPAIR
11	Logical error at gear range signal	1. Check the cables from TCU to shift lever. 2. Check signal combinations of shift lever positions 1, 2, 3, 4.
12	Logical error at direction select signal	1. Check the cables from TCU to shift lever. 2. Check signal combinations of shift lever positions F-N-R.
15	Logical fault at directional control lever	1. Check the cables from the TCU to directional control lever. 2. Check signal combinations of directional control lever positions F-N-R.
31	Short circuit to battery voltage or open circuit at engine speed sensor	1. Check the cables from TCU to the sensor. 2. Check the connectors. 3. Check the speed sensor.
32	Short circuit to ground at engine speed sensor	
33	Logical error at engine speed sensor input	1. Check the cables from TCU to the sensor. 2. Check the connectors. 3. Check the speed sensor. **NOTE:** *This fault code is reset after power up of the TCU. It is also reset if the signal is above zero speed threshold.*
34	Short circuit to battery voltage or open circuit at turbine speed sensor input	1. Check the cables from TCU to the sensor. 2. Check the connectors. 3. Check the speed sensor.
35	Short circuit to ground at turbine speed sensor input	

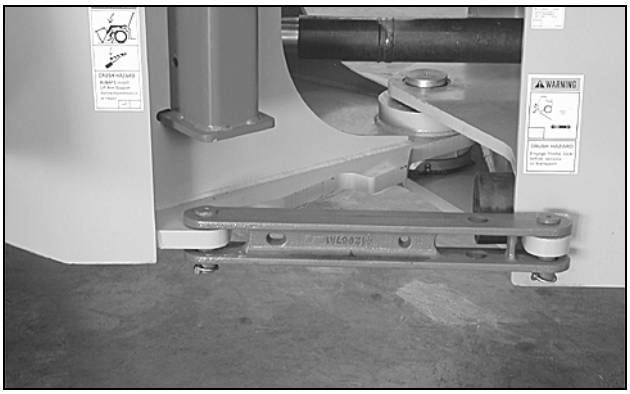
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ENGINE

Removal

STEP 1



BD03A040

Park machine on a level surface and lower bucket to ground. Put articulation lock in LOCKED position.

STEP 2

Stop engine. Actuate brake pedal several times to discharge brake accumulators. Put key switch in ON position and move loader control lever back and forth at least 30 times to release any pressure from hydraulic circuit. Put key switch in OFF position.

STEP 3

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

STEP 4

Put master disconnect switch in OFF position. Disconnect batteries from the machine.

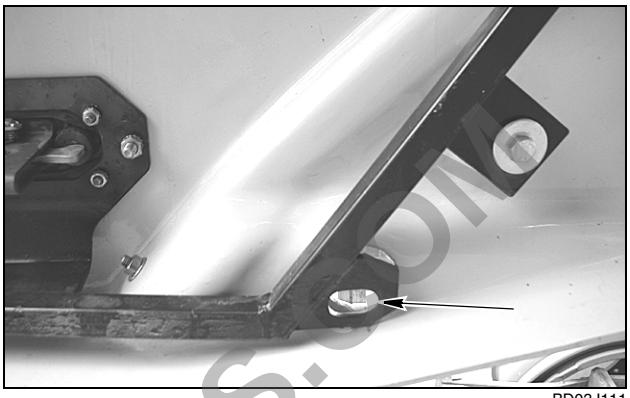
STEP 5



BD03N043

Loosen clamps and remove air filter intake from air filter.

STEP 6



BD03J111

Open the engine compartment side panel, attach a lifting eye to the hole in the lower portion of the panel.

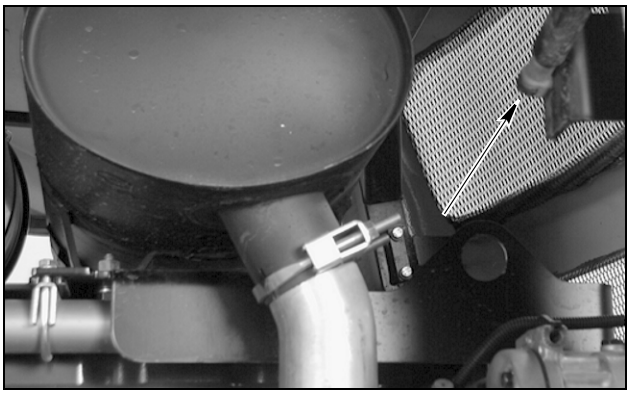
STEP 7



BD03N045

Attach lifting straps to the hinge side of the hood, attach suitable lifting equipment to the straps and take up slack in the straps.

STEP 8



BD03J112

Disconnect the gas cylinder from the side panel and hood.

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TROUBLESHOOTING

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.*

1 – Batteries

NOTE: *See Section 4003 and check the batteries.*

2 – Master Disconnect Switch

Check Points	Reading	Possible Cause of Bad Reading
NOTE: *Disconnect cables from both terminals of master disconnect switch (main contact). Put master disconnect switch in ON position.*		
Between terminals of master disconnect switch	Continuity	If there is no continuity, the master disconnect switch (2) is bad.
NOTE: *Put the master disconnect switch in the OFF position.*		
Between terminals of master disconnect switch	Open Circuit	If there is continuity, the master disconnect switch is bad.
NOTE: *Use the same method to check the master disconnect switch (auxiliary contact).*		

3 – Engine Fuel Solenoid

Check Points	Reading	Possible Cause of Bad Reading
NOTE: *Disconnect connector from fuel solenoid.*		
Between pin of fuel connector and ground	Continuity	Bad EDC7 ground circuit.

4 – Alternator

Check Points	Reading	Possible Cause of Bad Reading
Between housing of alternator and ground	Continuity	Bad ground connection.
NOTE: *Put the master disconnect switch in the ON position.*		
Between the B+ terminal of alternator and ground	24 volts	Check circuit to positive post of left battery. Bad master disconnect switch.
Between terminal for wire 707_A and ground	24 volts	Bad wire 707_A.
NOTE: *Put the ignition switch in the ON position.*		
Terminal for wire 875_a to ground	24 volts	Check circuit 875_A. Bad fuse EF5. Check ignition switch (16).
NOTE: *If the readings are good repair or replace the alternator.*		

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CAPACITIES AND LUBRICANTS

Engine Oil
- Capacity with Filter Change ..... 14.2 liters (15 U.S. quarts)
- Type of oil ..... New Holland AMBRA Mastergold HSP SAE 15W-40

Engine Cooling System
- Capacity ..... 25.5 liters (6.75 U.S. Gallons)
- Type of Coolant ..... 50% water and 50% Ethylene Glycol

Fuel Tank
- Capacity ..... 246 liters (65 U.S. Gallons)
- Type of Fuel ..... See Diesel fuel specifications

Hydraulic System
- Hydraulic Reservoir Refill Capacity with Filter Change ..... 123 liters (32.5 U.S. Gallons)
- Total System Capacity ..... 193 liters (51 U.S. Gallons)
- Type of Oil ..... New Holland AMBRA Master-Tran

Transmission
- Refill Capacity with Filter Change ..... 25.5 litres (27 U.S. Quarts)
- Total System Capacity ..... 39.7 litres (42 U.S. Quarts)
- Type of Oil ..... New Holland AMBRA Mastergold HSP SAE 15W-40

Axles
- Capacity
  - Front ..... 30.2 litres (32 U.S. Quarts)
  - Rear ..... 27.4 litres (29 U.S. Quarts)
- Type of Lubricant ..... New Holland AMBRA TRX Transaxle Fluid, 80w-140

Brake System
- Type of Fluid (Same as Hydraulic System) ..... New Holland AMBRA Master-Tran

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

ENGINE OIL RECOMMENDATIONS

New Holland AMBRA Engine oil is recommended for use in your New Holland engine. New Holland AMBRA Engine Oil will lubricate your engine correctly under all operating conditions.

If New Holland AMBRA Multi-Viscosity Oil is not available, use only oil meeting API engine oil service category CH-4 (preferred) or CG-4.



RH99K130

See the chart below for recommended viscosity at ambient air temperature ranges.

NOTE: *Do not put performance additives or other oil additive products in the engine crankcase. The oil change intervals given in this manual are according to tests with New Holland AMBRA lubricants.*

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MAINTENANCE SCHEDULE

Model LW 170.B

AS REQUIRED

SERVICE THE AIR CLEANER IF THE AIR CLEANER WARNING LAMP ILLUMINATES	SEE OPERATORS MANUAL
REPLACE THE TRANSMISSION FILTER IF THE TRANSMISSION FILTER RESTRICTION WARNING LAMP ILLUMINATES	USE NEW HOLLAND FILTER
CHECK THE RADIATOR COOLANT LEVEL IF THE WARNING LAMP ILLUMINATES	SEE OPERATORS MANUAL
REPLACE THE HYDRAULIC FILTER IF THE HYDRAULIC FILTER WARNING LAMP ILLUMINATES	USE NEW HOLLAND FILTER
CHECK ALTERNATOR AND AIR CONDITIONING DRIVE BELT	SEE OPERATORS MANUAL

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

CHECK THE ENGINE OIL LEVEL	SEE OPERATORS MANUAL

EVERY 50 HOURS OF OPERATION

CHECK THE TRANSMISSION OIL LEVEL (ENGINE RUNNING AND OIL WARM)	SEE OPERATORS MANUAL
CHECK THE HYDRAULIC RESERVOIR FLUID LEVEL	SEE OPERATORS MANUAL
CHECK THE ENGINE COOLANT SURGE BOTTLE	SEE OPERATORS MANUAL
LUBRICATE THE BUCKET AND BELLCRANK PIVOT POINTS (10 FITTINGS) TC	NEW HOLLAND AMBRA GR 75 MD GREASE
LUBRICATE THE BELLCRANK AND BUCKET PIVOTS (6 FITTINGS) Z-BAR	NEW HOLLAND AMBRA GR 75 MD GREASE
LUBRICATE THE FRONT DRIVE SHAFT SUPPORT BEARING	NEW HOLLAND AMBRA GR 75 MD GREASE

EVERY 100 HOURS OF OPERATION

LUBRICATE THE STEERING CYLINDER PIVOTS - ROD AND CLOSED END (4 FITTINGS)	NEW HOLLAND AMBRA GR 75 MD GREASE
LUBRICATE THE LOADER LIFT ARM AND CYLINDER PIVOTS (7 FITTINGS) Z-BAR	NEW HOLLAND AMBRA GR 75 MD GREASE

EVERY 250 HOURS OF OPERATION

CHECK THE ALTERNATOR, AC BELT	SEE OPERATORS MANUAL
CHECK THE TIRE CONDITION AND AIR PRESSURE	SEE OPERATORS MANUAL
CLEAN THE CAB AIR FILTERS (IF EQUIPPED)	SEE OPERATORS MANUAL

EVERY 500 HOURS OF OPERATION

CHANGE THE ENGINE OIL AND REPLACE THE ENGINE OIL FILTER	SEE OPERATORS MANUAL
REPLACE THE FUEL FILTER	SEE OPERATORS MANUAL
CHECK THE BATTERY FLUID LEVEL	SEE OPERATORS MANUAL
DRAIN WATER AND SEDIMENT FROM THE FUEL TANK	SEE OPERATORS MANUAL
CHECK THE AXLE OIL LEVEL FRONT AND REAR	SEE OPERATORS MANUAL
CHECK ROPS AND SEAT BELT MOUNTING BOLTS	SEE OPERATORS MANUAL

EVERY 1000 HOURS OF OPERATION

REPLACE THE HYDRAULIC FILTER	USE NEW HOLLAND FILTER
REPLACE WATER SEPARATOR	USE NEW HOLLAND FILTER
REPLACE THE TRANSMISSION OIL FILTER	USE NEW HOLLAND FILTER
CHANGE THE TRANSMISSION OIL	SEE OPERATORS MANUAL
CLEAN THE TRANSMISSION BREATHER	CLEAN WITH SOLVENT
LUBRICATE THE UPPER AND LOWER CHASSIS PIVOTS (2 FITTINGS)	NEW HOLLAND AMBRA GR 75 MD GREASE
CHANGE THE FRONT/REAR AXLE OIL	SEE OPERATORS MANUAL
LUBRICATE CENTER DRIVE SHAFT SLIP JOINT	NEW HOLLAND AMBRA GR 75 MD GREASE

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

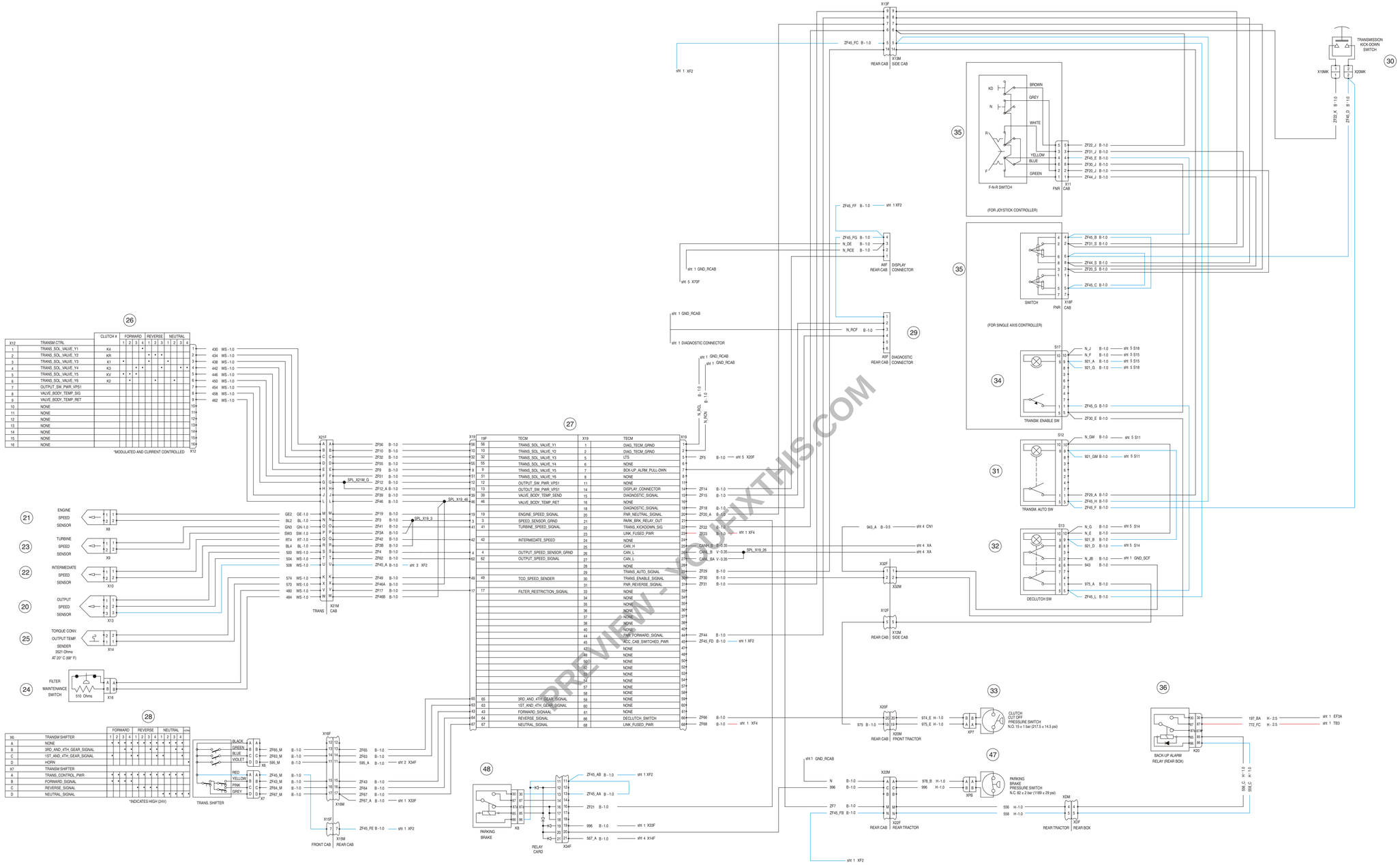
CHANGE THE HYDRAULIC OIL	SEE OPERATORS MANUAL
DRAIN, FLUSH AND REFILL THE ENGINE COOLING SYSTEM	ETHYLENE GLYCOL AND WATER
REPLACE THE AIR CLEANER ELEMENTS	USE NEW HOLLAND FILTERS
CHECK THE ENGINE VALVE CLEARANCES	SEE ENGINE SERVICE MANUAL
CHECK TURBOCHARGER MOUNTING BOLTS	SEE ENGINE SERVICE MANUAL

If you operate the machine in severe conditions, lubricate and service the machine more frequently. It is recommended that you see your dealer for information on the Systemgard Lubrication Analysis System.

See your Operators manual for maintenance of safety related items and for detailed information of the service items on this chart. Operators and service manuals are available for this machine from your dealer.

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SHEET 3 - TRANSMISSION CONTROLS

COMPONENTS

1. Batteries
2. Master Disconnect Switch
3. Engine Stop
4. Alternator
5. Starter Motor
6. Starting Relay
7. Filter Heater Relay
8. Water In Fuel Sensor
9. Electronic Diesel Control
10. Fuel Filter Heater
11. Cold Start Relay
12. Grid Heater
13. Low Oil Pressure Relay
14. Accelerator Potentiometer
15. Neutral Start Relay
16. Ignition Switch
17. Ignition Relay
18. Engine Diagnostic Lamp and Switch
19. Service Tool Connector
20. Output Speed Sensor
21. Engine Speed Sensor
22. Intermediate Speed Sensor
23. Turbine Speed Sensor
24. Filter Maintenance Switch
25. Torque Converter Output Temperature Sender
26. Transmission Solenoid Valve and Temperature Sensors
27. Transmission Electronic Control Module
28. Transmission Shifter
29. Diagnostic Connector
30. Transmission Kick-down Switch
31. Transmission Automatic Switch
32. Declutch Switch
33. Declutch Pressure Switch
34. Transmission Enable Switch
35. FNR Switch
36. Backup Alarm Relay
37. Backup Alarm
38. Brake Warning Pressure Switch
39. Brown Box
40. Fuel Level Sender
41. Not Used
42. Air Filter Restriction Switch
43. Parking Brake Switch
44. Instrument Cluster
45. Digital Display Panel
46. Not used
47. Parking Brake Pressure Switch
48. Parking Brake Relay
49. Parking Brake Solenoid
50. Fan Reversing Switch (Option)
51. Fan Reversing Solenoid (Option)
52. Detent Switch
53. Bucket Control Valve Electromagnetic Detents
54. Boom Control
55. Bucket Control
56. Float Solenoid
57. Secondary Steering Pressure Switch (Option)
58. Secondary Steering Motor (Option)
59. Secondary Steering Solenoid (Option)
60. Secondary Steering Relay (Option)
61. Pin Engage Switch (Option)
62. Pin Engage Solenoid (Option)
63. LTS Control Switch
64. LTS Control Relay Number 1
65. LTS Control Relay Number 2
66. LTS Control Solenoid
67. Front Wiper Motor
68. Front Wiper and Washer Switch
69. Front Wiper Timer
70. Front Washer Motor
71. Rear Wiper Switch
72. Rear Washer Switch
73. Rear Washer Pump Motor
74. Rear Wiper Motor
75. Rear Wiper Timer
76. Horn Relay - Number 1
77. Horn Relay - Number 2
78. Horn
79. Central Grease Lubrication Switch (Option)
80. Seat Compressor and Switch (Option)
81. Seat Heater Switch (Option)
82. Blower Switch
83. Blower Motor Speed Resistors
84. Blower Motor
85. Air Conditioning Pressure Switch
86. Thermostat Switch
87. Compressor Clutch Relay
88. Compressor Clutch
89. Conditioner Switch
90. Heater Control Unit
91. Circuit Control Switch
92. Circuit Control Motor
93. Warm Cold Stop Cock Knob
94. Warm Cold Stop Cock Motor
95. Climate Control Unit (Option)
96. Temperature Sensors (Option)
97. Climate Control Relays (Option)
98. Recycling Motor (Option)
99. Power Converter, Recycling Motor (Option)
100. Water Valve Motor (Option)
101. Cigar Lighter
102. Power Converter - 24 volts to 12 volts (Option)
103. Power Outlet (Option)
104. 12 Volt Radio (Option)
105. Left Speaker (Option)
106. Right Speaker (Option)
107. Beacon Switch (Option)
108. Rotating Beacon (Option)
109. Brake Lamp Pressure Switch
110. Hazard Switch
111. Turn Signal, Hi/Low Beam Switch
112. Flasher Module
113. Left-Hand Rear Combination Lamp
114. Right-Hand Rear Combination Lamp
115. Left-Hand Front Combination Lamp
116. Right-Hand Front Combination Lamp
117. Rear Work Light Switch
118. Front Work Light Switch
119. Left-Hand Front Work Lamp
120. Right-Hand Front Work Lamp
121. Lamp Switch
122. High Beam Relay
123. Low Beam Relay
124. License Plate Lamp
125. Dome Lamp
126. TUV Lamps (Option)
127. Italian Road Circulation Lamps (Option)

WIRE IDENTIFICATION

1. WIRE NUMBER
2. WIRE COLOR SYMBOL
3. WIRE SIZE (mm²) TYPICAL

23F_A W-2.0

N = BLACK
L = BLUE
GN = GREEN
GE = YELLOW
RN = RED/BLACK DOTTED
RT = RED
M = BROWN
SW = BLACK
V = GREEN
R = RED
H = GREY
BL = BLUE
B = WHITE
G = YELLOW

SHOWS POWER - MASTER DISCONNECT SWITCH IN ON POSITION
SHOWS POWER - KEY SWITCH IN ON POSITION

CIRCUIT LEGEND

SPL_G2
21C_C W-1.0
D_GA Bk-2.0
93M 93F 7
XXXX XXXX 8
14_B LG-0.8
21M 21F 9
XXXX XXXX
SHEET 6 - 253F (54)
54
R

1. SPLICE IDENTIFICATION
2. CIRCUIT CROSSING (NOT CONNECTED)
3. CIRCUIT CONNECTED
4. WIRE IDENTIFICATION
5. MALE CONNECTOR
6. FEMALE CONNECTOR
7. CONNECTOR IDENTIFICATION
8. HARNESS IDENTIFICATION
9. INDICATES PARTIAL CONNECTOR
10. CIRCUIT IDENTIFICATION
11. SCHEMATIC SHEET NUMBER FOR CIRCUIT CONTINUATION
12. CONNECTION POINT ON SCHEMATIC
13. COMPONENT NUMBER (IF ASSIGNED)
14. COMPONENT NUMBER
15. INDICATES INTERNALLY GROUNDED COMPONENT

ACTUATOR SYMBOLS

1. PRESSURE
2. HAND OPERATED
3. TEMPERATURE
4. COIL
5. VARIABLE RESISTOR
6. RESISTOR
7. DIODE
8. LIGHT EMITTING DIODE
9A. MOMENTARY CONTACT
9B. MAINTAINED CONTACT

HOUSINGS

1. VACUUM SWITCH
2. PRESSURE SWITCH
3. TEMPERATURE SWITCH
4. MOTOR
5. LAMP

CONTACT SYMBOLS

1. SINGLE POLE, SINGLE THROW
2. SINGLE POLE, DOUBLE THROW
3. DOUBLE POLE, SINGLE THROW
4. DOUBLE POLE, DOUBLE THROW

FUSE AND CIRCUIT BREAKER

1. FUSE
2. CIRCUIT BREAKER, AUTOMATIC RESET
3. CIRCUIT BREAKER, MANUAL RESET

NOTES

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ELECTRICAL SCHEMATIC LW 170.B Wheel Loader

Additional copies of this Hydraulic and Electrical Schematic can be ordered throughTechnical Publications Distribution System.
The Part Number is 6-49770

BC03N232

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TORQUE SPECIFICATIONS - METRIC HARDWARE

Use the following torques when specifications are not given.

These values apply to fasteners with coarse threads as received from supplier, plated or unplated, or when lubricated with engine oil. These values do not apply if graphite or Molydisulfide grease or oil is used.

Grade 8.8 Bolts, Nuts, and Studs



Size	Pound-Inches	Newton metres
M4	24 to 36	3 to 4
M5	60 to 72	7 to 8
M6	96 to 108	11 to 12
M8	228 to 276	26 to 31
M10	456 to 540	52 to 61
Size	Pound-Feet	Newton metres
M12	66 to 79	90 to 107
M14	106 to 127	144 to 172
M16	160 to 200	217 to 271
M20	320 to 380	434 to 515
M24	500 to 600	675 to 815
M30	920 to 1100	1250 to 1500
M36	1600 to 1950	2175 to 2600

Grade 10.9 Bolts, Nuts, and Studs



Size	Pound-Inches	Newton metres
M4	36 to 48	4 to 5
M5	84 to 96	9 to 11
M6	132 to 156	15 to 18
M8	324 to 384	37 to 43
Size	Pound-Feet	Newton metres
M10	54 to 64	73 to 87
M12	93 to 112	125 to 150
M14	149 to 179	200 to 245
M16	230 to 280	310 to 380
M20	450 to 540	610 to 730
M24	780 to 940	1050 to 1275
M30	1470 to 1770	2000 to 2400
M36	2580 to 3090	3500 to 4200

Grade 12.9 Bolts, Nuts, and Studs



Usually the torque values specified for grade 10.9 fasteners can be used satisfactorily on grade 12.9 fasteners.

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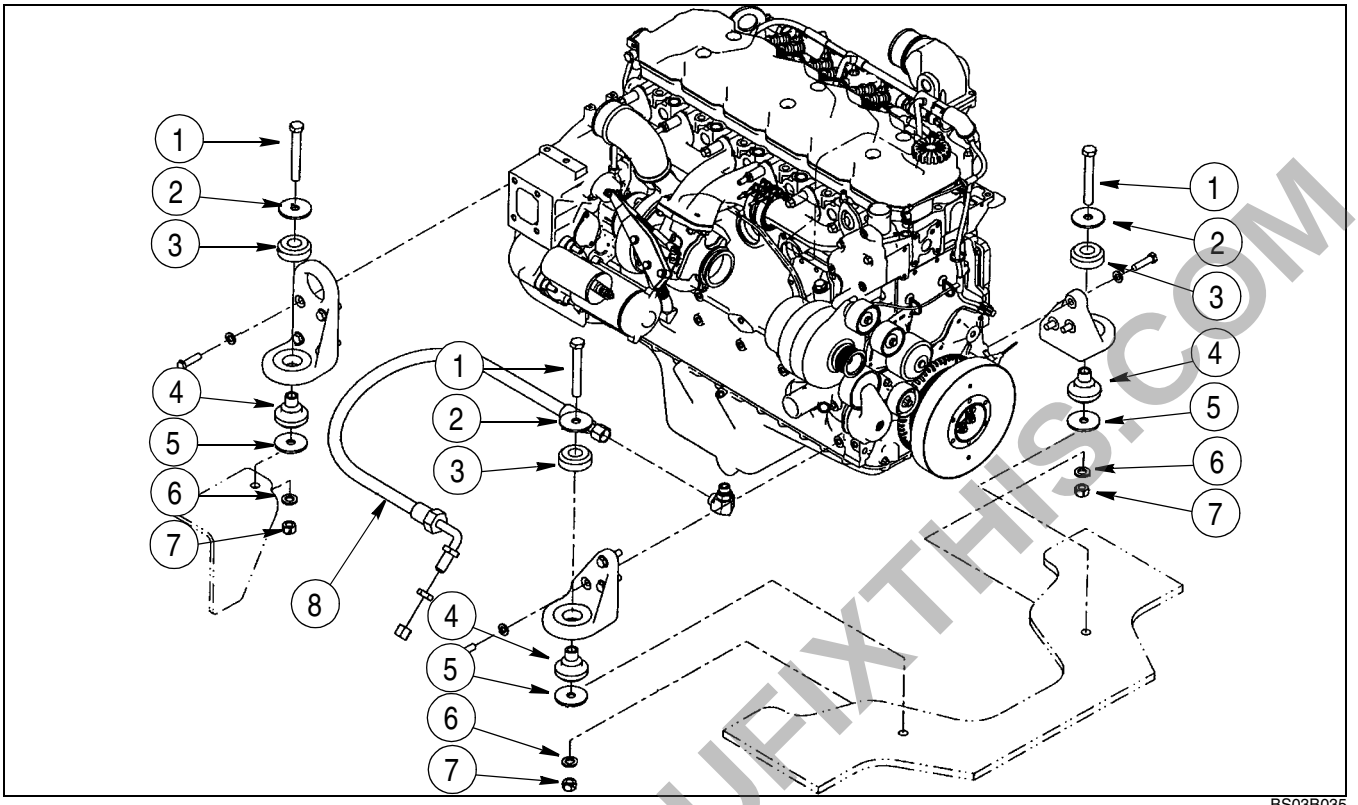
Blink Code	Failure Description	SPN Code	System Degradation
1.4	Accelerator Pedal Signal	3601	1
2.1	Coolant Temperature Signal	3718	1
2.2	Boost Temperature Signal	3672	1
2.3	Fuel Temperature Signal	3800	1
2.4	Boost Pressure Signal	3668	1
2.5	Atmospheric Pressure Signal	3667	1
2.6	Oil Pressure Signal	3801	1
2.7	Oil Temperature Signal	3802	1
2.8	Power Stage Fuel Filter Heater	3803	1
3.7	Battery Voltage Signal	168	1
3.8	Ls Power Stage Cold Start Lamp	9876	1
3.9	Cold Start Heater Monitoring	3804	1
5.1	Injector Solenoid Valve Cylinder 1	3811	1
5.2	Injector Solenoid Valve Cylinder 2	3815	1
5.3	Injector Solenoid Valve Cylinder 3	3813	1
5.4	Injector Solenoid Valve Cylinder 4	3816	1
5.5	Injector Solenoid Valve Cylinder 5	3812	1
5.6	Injector Solenoid Valve Cylinder 6	3814	1
5.7	Injector Booster Voltage C1	3817	1
5.8	Injector Booster Voltage C2	3818	1
6.1	Increment Speed Signal	3821	2
6.2	Segment Speed Signal	3822	2
6.3	Engine Speed Sensing	190	1
6.4	Engine Overspeed	9818	1
6.5	Hs Power Stage 8 For Starter Control	9870	1
8.1	Fuel Pressure Monitoring Cp3	3828	3
8.2	Fuel Pressure Signal	3829	3
8.3	CC HS Power Stage 1 Fuel Pressure Control	3830	3
8.4	Monitoring Of Rail Pressure Relief Valve	3831	3
8.5	Fuel Pressure Monitoring CP3 (High)	3828	4
9.4	Main Relay Defect	3014	1
9.6	ECU Self Test Shutoff Paths	9902	1
9.7	Power Supply For Sensors	3835	1

System Degradation:
1 = 0% Derate; 2 = Moderate Derate; 3 = Significant Derate; 4 = Engine Stop

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Installation



BS03B035

1. ENGINE MOUNT BOLT
2. WASHER
3. INSOLATOR UPPER
4. INSOLATOR LOWER
5. WASHER
6. WASHER
7. NUT
8. REMOTE OIL DRAIN HOSE

STEP 46

If engine rubber isolators require replacement, remove and discard isolators (3 and 4). Install new rubber isolator (4), then rubber isolator (3).

STEP 47

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 (5) between front rubber isolator (4) and chassis. Install washer (2), bolt (1), washer (6), and nut (7) in engine isolators. Lower engine into position.

STEP 48

Tighten engine mounting bolts to a torque of 244 to 298 Nm (180 to 220 lb-ft).

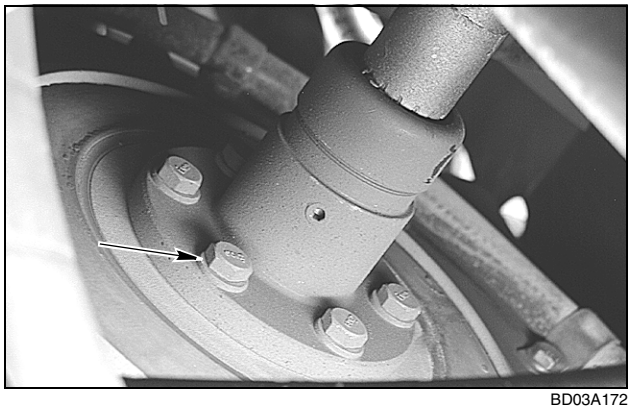
STEP 49

Disconnect lifting equipment from engine lifting brackets.

STEP 50

Connect engine oil drain hose to frame bracket.

STEP 51



BD03A172

At front of engine, position drive shaft on engine coupling. Install six bolts to secure drive shaft to engine coupling. Tighten the six bolts to a torque of 53 to 62 Nm (39 to 46 lb-ft).

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5 – Starter Motor		
Check Points	**Reading**	**Possible Cause of Bad Reading**
Between housing of starter and ground	Continuity	Bad ground connection.
NOTE: *Put the master disconnect switch in the ON position.*		
Starter B+ stud to ground	24 volts	Check circuit to batteries.
NOTE: *Put the transmission in NEUTRAL. Have another person hold the ignition switch in the START position.*		
Terminal S to ground	24 volts	Bad starting relay (6). Also check circuit 888_A between starter and starting relay (6).
NOTE: *If the readings are good, repair or replace the starter.*		

6 – Starting Relay		
Check Points	**Reading**	**Possible Cause of Bad Reading**
Terminal for wire 000 to ground	Continuity	Bad ground circuit.
NOTE: *Put the master disconnect switch in the ON position.*		
Terminal for wire 777 to ground	24 volts	Check circuit to batteries.
NOTE: *Put the transmission in NEUTRAL. Have another person hold the ignition switch in the START position.*		
Terminal for wire 888 to ground	24 volts	Check neutral start relay (15), also check EDC7 (9), and circuit 888 and 802.
Terminal for wire 888_A to ground	24 volts	Bad starting relay.

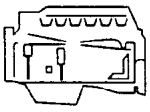
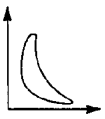
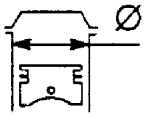
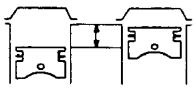
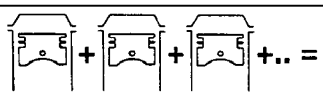
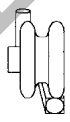
7 – Fuel Filter Heater Relay		
Check Points	**Reading**	**Possible Cause of Bad Reading**
NOTE: *Make sure engine temperature is below -3° C (27° F). Put the master disconnect switch in the ON position.*		
Terminal for wire EDC02 to ground	Continuity	Bad ground circuit or bad EDC7 (9).
Terminal for wire 775 to ground	24 volts	Check 20 ampere fuse, also check circuit 775 and circuit to batteries.
NOTE: *Put the ignition switch in the ON position.*		
Terminal for wire EDC36 to ground	24 volts	Check ignition switch (16), also check EDC7 (9).
Terminal for wires 923 to ground	24 volts	Bad fuel filter relay.

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ENGINE F4GE0684F - F4HE0684J OVERHAUL

MAIN ENGINE FEATURES

	Type		F4GE6484F *D601	F4HE6484J *D100
	Cycle		4-stroke diesel engine	
	Feeding		Boosted by intercooler	
	Injection		Direct	
	Number of cylinders		In-line, 6-cylinder	
	Bore	mm	11042	
	Stroke	mm	132	
	Total displacement	cm^3	6728 cm^3	
	Compression ratio			
	Max. rating	kW min $^{-1}$	110 2000	145 2000
	Max. torque	Nm (kgm) min $^{-1}$	675 1400	850 1400
	No-load idle rpm	min $^{-1}$	700	
	No-load peak rpm	min $^{-1}$	-	
	BOOSTING Type of turbocompressor:		With intercooler HOLSET HX35W	
	LUBRICATION Oil pressure with hot engine: at idle rpm at peak rpm	 bar bar	Forced by means of gear pump, pressure relief valve, oil filter 1.2 3.8	

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SAFETY RULES

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. Follow with milk of magnesia, beaten egg, or vegetable oil. Call physician immediately. Eyes: Flush with water for 15 minutes and get prompt medical attention.*

Batteries produce explosive gases. Keep sparks, flame, and cigarettes away. Ventilate when charging or using in enclosed area. Always shield eyes when working near batteries.

Keep out of reach of children.

D-47-53A

SPECIAL TOOLS



B795328

The CAS10147 tester is used to do the Capacity (Load) Test. This tool is first used on Page 6.

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TORQUE SPECIFICATIONS - STEEL HYDRAULIC FITTINGS

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

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

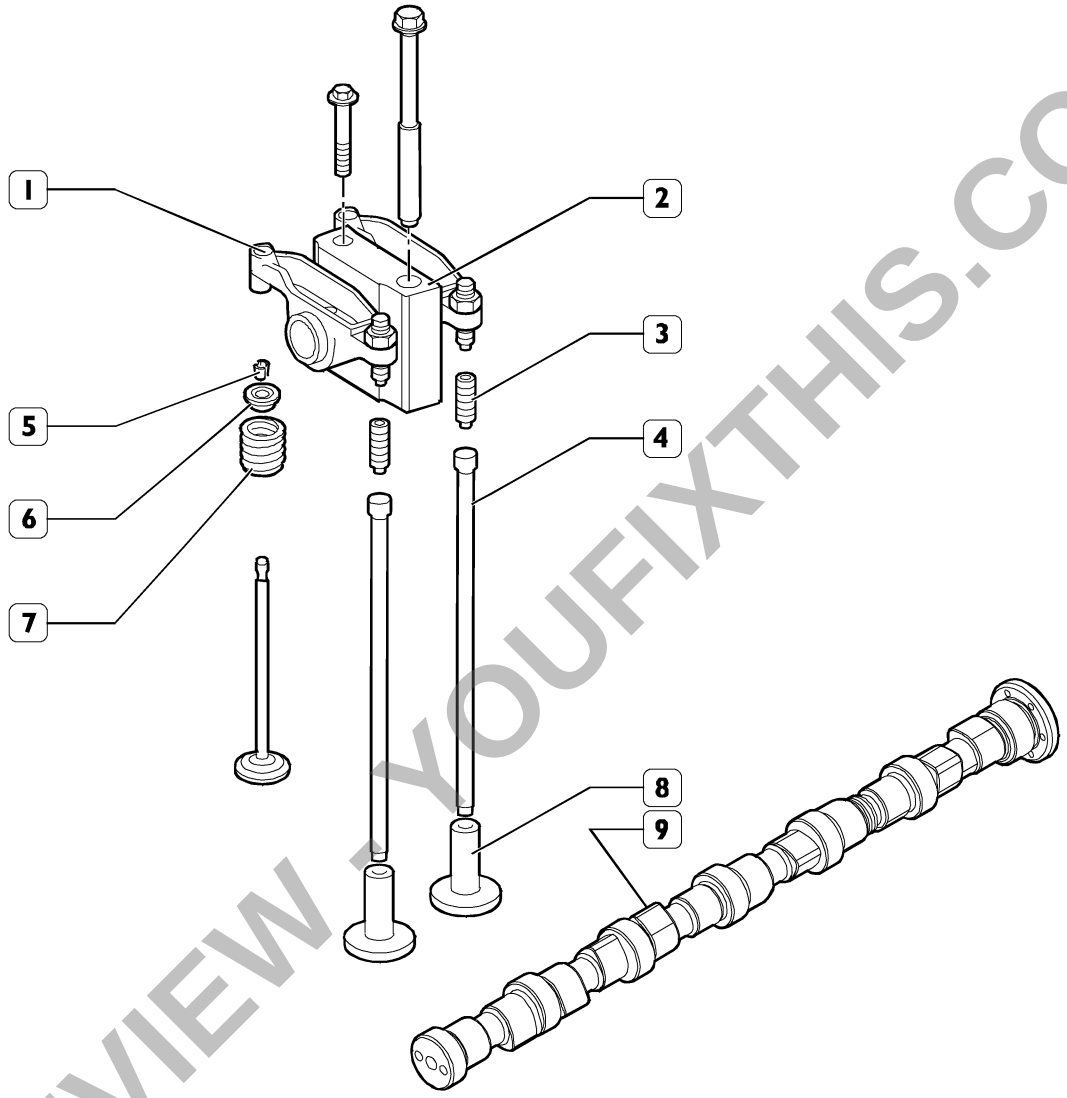
Split Flange Mounting Bolts		
Size	Pound-Inches	Newton metres
5/16-18	180 to 240	20 to 27
3/8-16	240 to 300	27 to 34
7/16-14	420 to 540	47 to 61
Size	Pound-Feet	Newton metres
1/2-13	55 to 65	74 to 88
5/8-11	140 to 150	190 to 203

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Engine F4GE0684F valve control

Figure 10



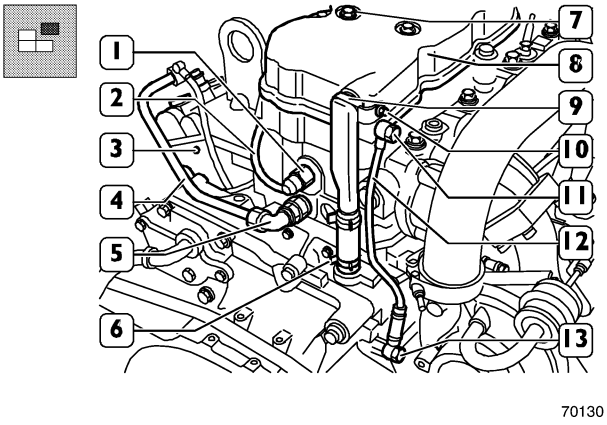
84042

1. Rocker arm – 2. Arbour support – 3. Adjusting screw – 4. Rod – 5. Lock cones – 6. Cup – 7. Spring – 8. Tappet – 9. Distributing shaft

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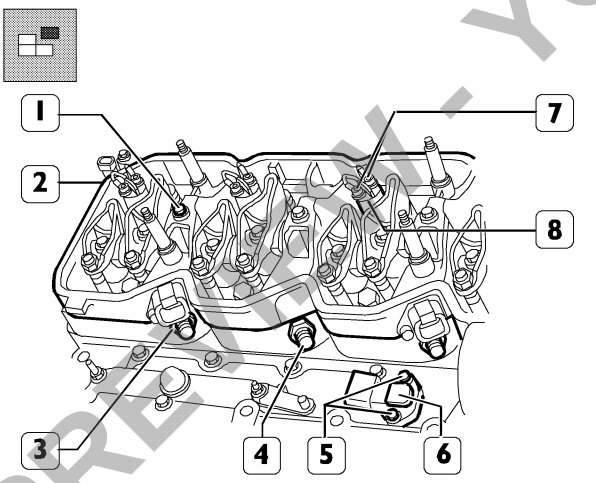
Figure 226



70130

Remove from the fuel return pressure limiting device (1), the pipe (2) as described in Figure 221. Remove the pipe (4) from the air supercharger (3) and from the union (5). Remove the nut (10) Loosen the elastic hose clamp (6) and remove the oil vapor pipe (9).Remove the unions (13-11) and remove the pipe (12). Remove the nuts (7) and remove the tappet (8) cover complete of gasket.

Figure 227

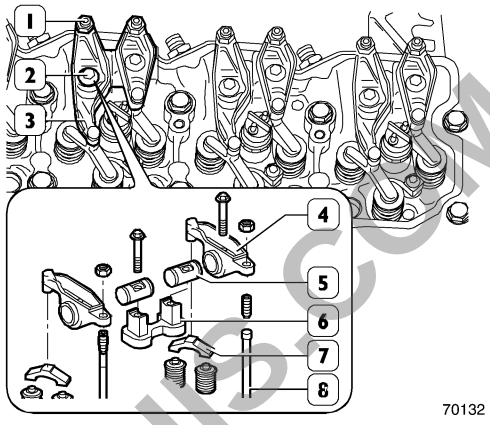


86501

Remove the nuts (7) and disconnect the electric wires from the injectors (8). Remove the screws (1) and remove the injector harness support (2) complete of gasket. Remove the screws (5) and remove the air pressure/temperature sensor (6). Remove the nuts (3) and withdraw the fuel manifolds (4).

IMPORTANT - *The removed fuel manifold (4) shall not be used again and they must be replaced by new ones.*

Figure 228

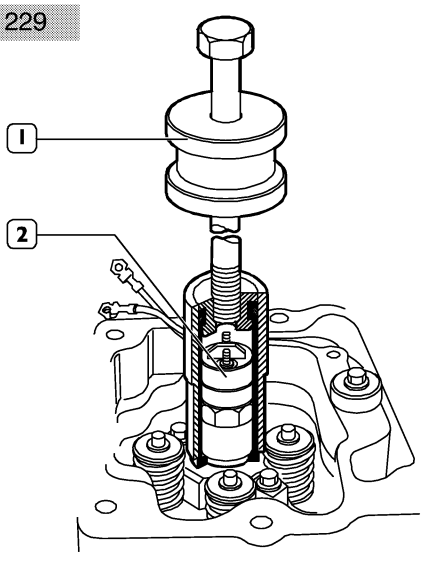


70132

Loosen the tappet adjuster fixing nuts (1) and unscrew the adjuster.

Remove the screws (2), remove the equalizer unit (3) composed by the support (6), equalizers (4), shafts (5) and remove the bonds (7) from the valves. Remove the rods (8)

Figure 229



70133

Remove the injector fixing screws and by means of tool 380001099 (1) withdraw the injectors (2) from the cylinder head.

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96 – Climatisation Air Temperature Sensors (Option)		
Check Points	**Reading**	**Possible Cause of Bad Reading**
NOTE: *Disconnect connector on sensor.*		
Between terminals of sensor.	Resistance	Bad temperature sensor.

97 – Climatisation Relays (Option)		
Check Points	**Reading**	**Possible Cause of Bad Reading**
NOTE: *If relay is suspect, remove and replace with known good relay. If circuit then works, replace relay. Also check fuse F3A.*		

98 – Climatisation Air Recycling Motor (Option)		
Check Points	**Reading**	**Possible Cause of Bad Reading**
NOTE: *Put master disconnect switch and ignition switch in ON position. Disconnect connector on motor.*		
Terminal for wire N_XA to ground	Continuity	Bad ground circuit.
Terminal for wire 190 to ground	12 volts	Bad climatisation transformer (99).
NOTE: *Temperature outside of cab above 26° C (79°F).*		
Terminal for wire 191 to ground	12 volts	Bad recycle relay (97), bad external air temperature sensor (96), bad climatisation control unit (95), bad climatisation transformer (99).

99 – Climatisation Transformer (Option)		
Check Points	**Reading**	**Possible Cause of Bad Reading**
NOTE: *Put master disconnect switch and ignition switch in ON position. Disconnect connector on motor.*		
Terminal for wire N_XM to ground	Continuity	Bad ground circuit.
Terminal for wire 190 to ground	12 volts	Bad climatisation transformer.
Terminal for wire 711_C to ground	24 volts	Bad fuse F3A

100 – Climatisation Water Valve Motor (Option)		
Check Points	**Reading**	**Possible Cause of Bad Reading**
NOTE: *Disconnect connector on motor.*		
Between terminals of motor.	Resistance	Bad motor.

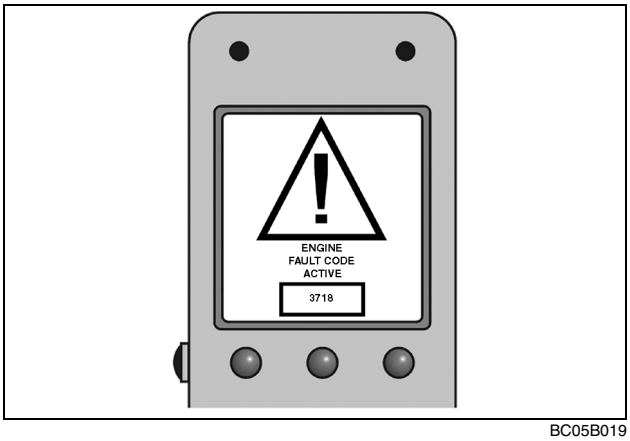
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ENGINE FAULT CODES

Accessing Fault Codes

NOTE: *To access engine fault codes, SPN codes, the digital display must be on the home page.*

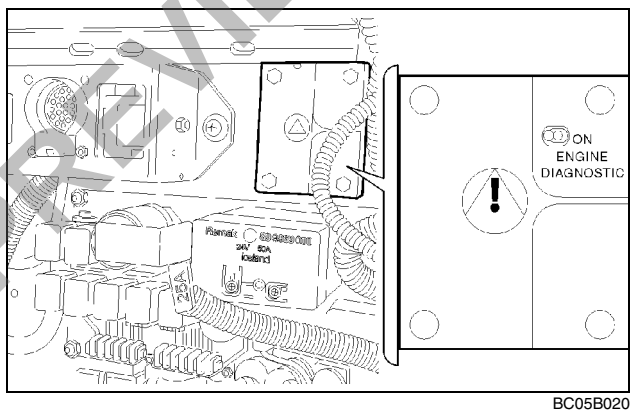


BC05B019

1. During operation if the Electronic Diesel Controller (EDC-7) should monitor a malfunction, the fault messages are transferred from the EDC-7 to the brown box controller. From the home page the fault will be displayed on the monitor with a numeric SPN code.
2. Hold the center display button for at least 2 seconds, the active faults will be cleared
3. Faults will reappear when the engine is turned off and restarted and the fault is still present.

NOTE: *No inactive codes will be displayed on the digital display.*

4. To access the inactive codes, the blink code sequence must be accessed.
5. Remove the panel in the rear of the cab behind the operators seat.



BC05B020

6. The switch may be toggled while the ignition switch is in the ON position, engine stopped.
7. The lamp will start a blinking sequence of engine fault codes active and inactive.
8. The code is composed of two digits divided by a dot (2.3) and is shown by slow flashes followed by fast flashes.
9. If no fault codes are stored or active the lamp comes on once only.
10. Two long flashes a pause and three short flashes represents a fault code of 2.3.
11. Toggle the fault code diagnostic switch.
12. If another fault code is stored the fault code lamp will flash the fault code.
13. Repeat this procedure until the first code is repeated to determine all codes.

Erasing Fault Codes

1. Press and hold fault code diagnostic switch, put ignition switch in the run position.
2. Continue to hold diagnostic switch for five seconds after the diagnostic lamp turns off.
3. Fault code indicator lamp should not illuminate, if lamp blinks wait until it stops blinking.
4. Turn the ignition switch off, wait 5 seconds and turn the ignition switch back on, do not start the engine.
5. The diagnostic lamp should turn on for 1 to 2 seconds and go off.
6. Press and release the diagnostic switch and watch the lamp.
7. If all systems are normal no blink codes should be present.
8. Start and run the engine.
9. If a fault is active, it will reappear.

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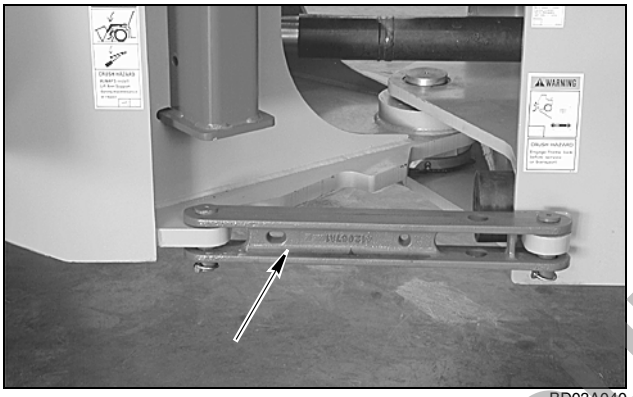
REAR AXLE

Removal

STEP 1

Park machine on a level surface; be sure to allow adequate space at side of machine for removal of rear axle. Stop engine. Actuate brake pedal several times to discharge brake accumulators. Put key switch in ON position and move loader control lever back and forth at least 30 times to release any pressure from hydraulic circuit.

STEP 2



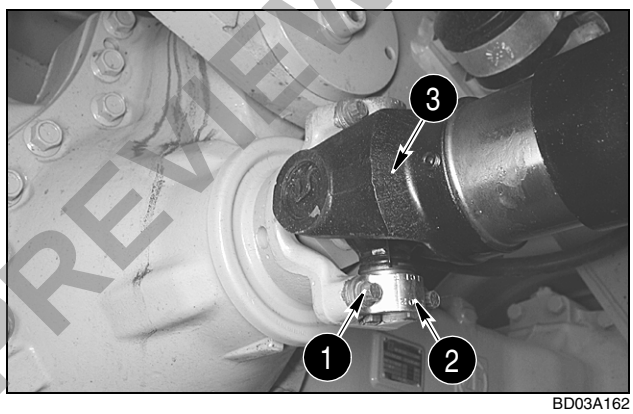
BD03A040

Put articulation lock in LOCKED position.

STEP 3

Install wood blocks between rear axle and chassis to prevent rear axle from pivoting.

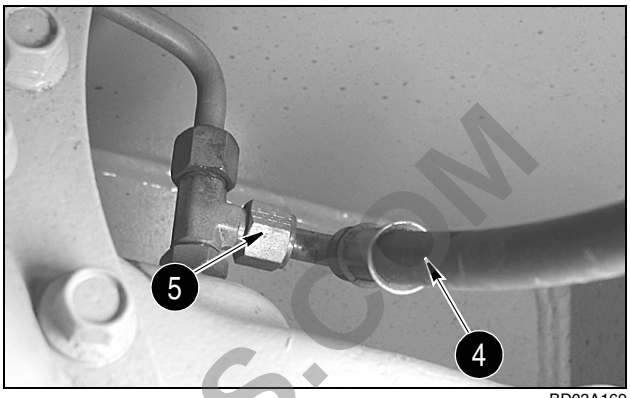
STEP 4



BD03A162

Remove four bolts (1) and two straps (2). Use a pry bar to disconnect rear drive shaft (3) from rear axle.

STEP 5



BD03A169

Disconnect brake hose (4) from elbow (5). Remove and discard O-ring face seal from elbow.

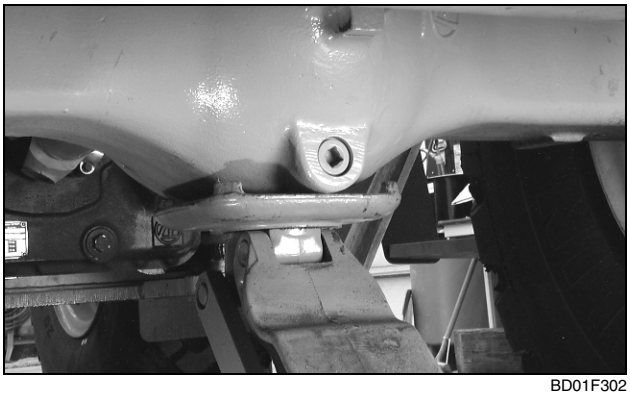
STEP 6



BD01F299

Using an acceptable hydraulic jack, raise one tire from ground and install an acceptable jack stand under machine. Repeat this step for other tire.

STEP 7



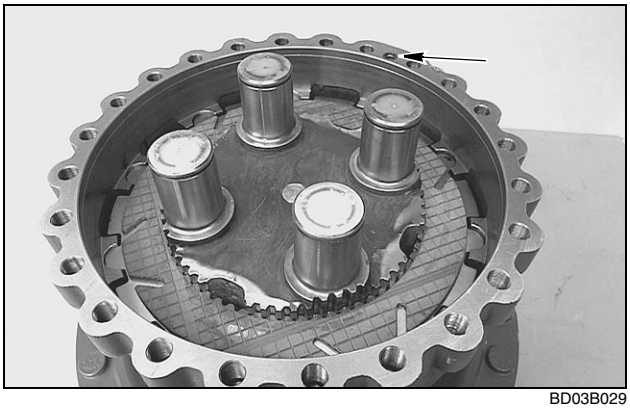
BD01F302

Use an acceptable jack to hold rear axle.

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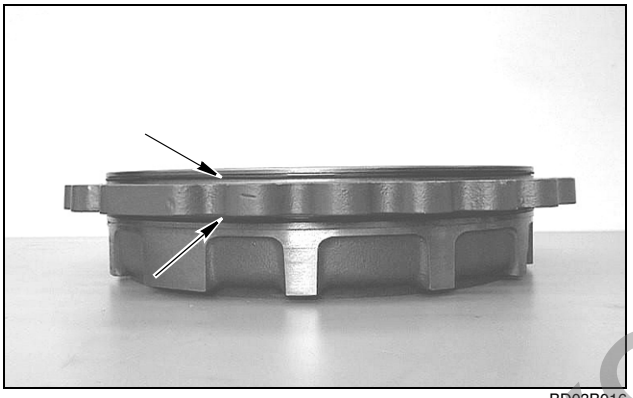
STEP 57



BD03B029

Insert O-ring into the recess of the brake housing.

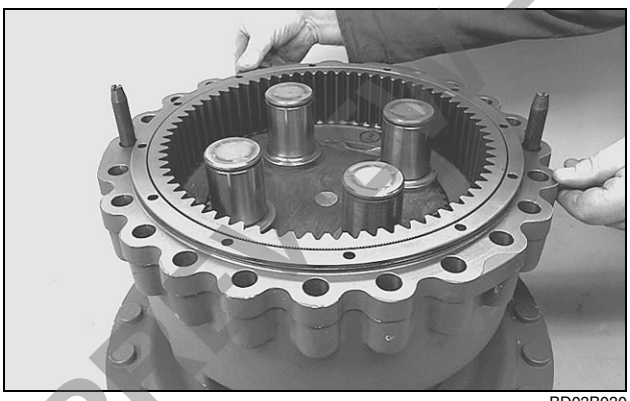
STEP 58



BD03B016

Grease both O-rings.

STEP 59



BD03B030

Install two aligning dowels in the brake housing, install ring gear onto the brake housing.

NOTE: *Make sure alignment is correct on ring gear.*

STEP 60



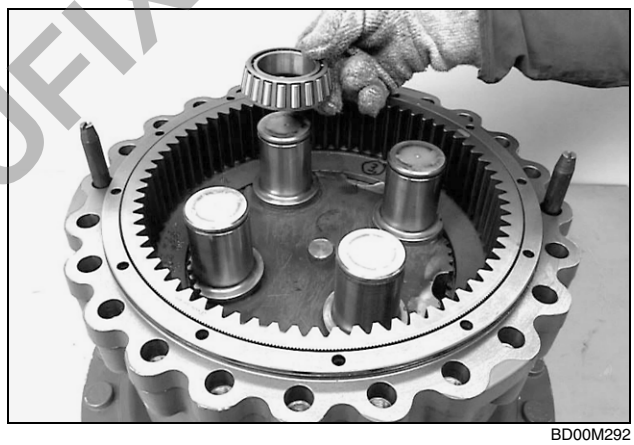
BD01C009

Heat the bearing inner rings with a hot air gun.

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

SM121A

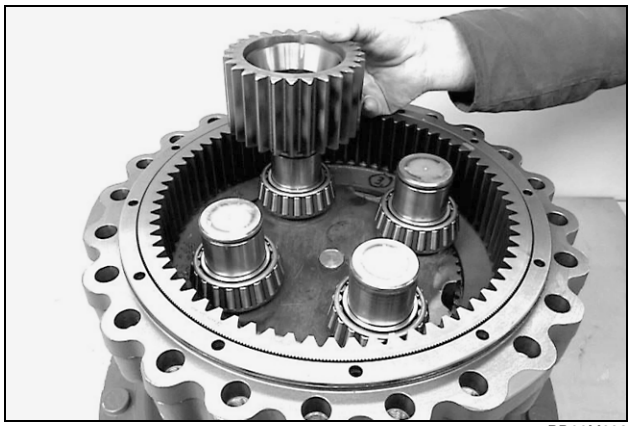
STEP 61



BD00M292

Install the bearings with the big radius showing to the planet carrier (downwards).

STEP 62



BD00M293

Put the planet gears onto the bearing inner rings.

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CHANGING TIRES

The split rim wheels used on this machine can be dangerous. When inflating a tire on the machine, use a self-locking nozzle and stand at the front or rear of the tire.

⚠ When inflating a tire off the machine, put the wheel in a tire inflation cage. The retaining ring and rim can come off with enough force to result in death to a person in front of the rim.

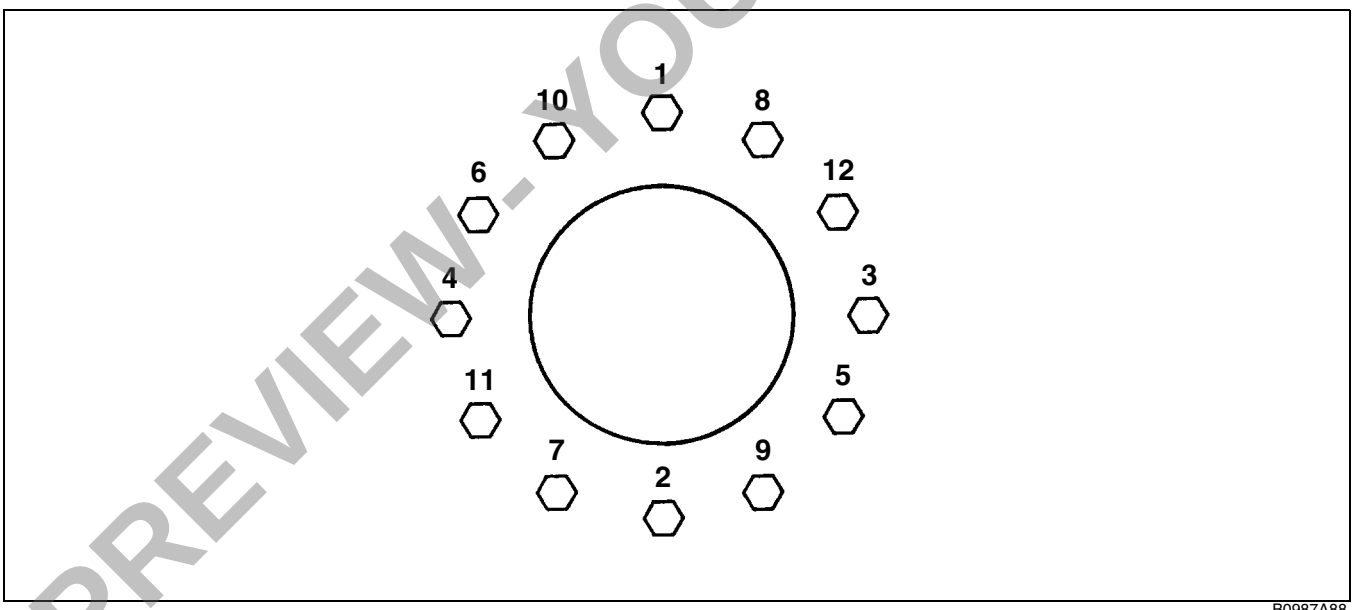
48-44

1. Have a qualified tire mechanic service the split rim wheels used on this machine.
2. The correct tire equipment, especially a tire inflation cage, is required. Using the wrong procedure for a split rim wheel can result in death.

IMPORTANT: *When installing a Michelin tire, lubricate the tire with a tire mounting lubricant and inflate the tire to 551 kPa, 5.5 bar (80 psi) to make sure that the tire is seated on the rim. Then decrease the pressure to the specified pressure.*

INSTALLING A WHEEL

1. Make sure the mounting surfaces of the rim and axle flange are clean and free of dirt and grease.
2. Install the wheel, hardened washers and wheel bolts.
3. Use a hand wrench (not an impact) to tighten the wheel bolts to pull the wheel against the planetary housing. DO NOT use an impact wrench to tighten the wheel bolts.
4. Tighten the wheel bolts to 298 Nm (220 pound-feet) in the sequence shown in Figure 1. Then tighten the wheel bolts in the same sequence to 640 to 720 Nm (475 to 530 pound-feet).



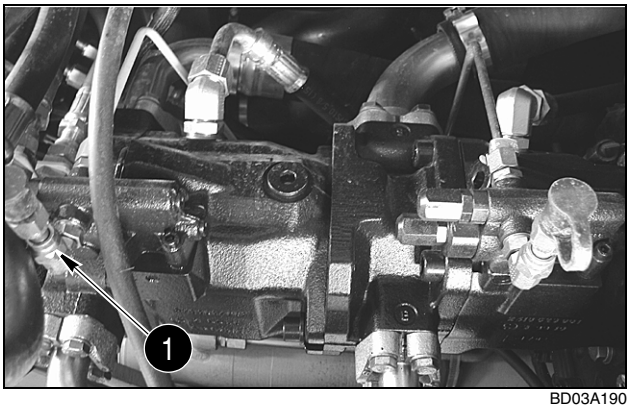
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FIGURE 1. WHEEL BOLT TORQUE SEQUENCE

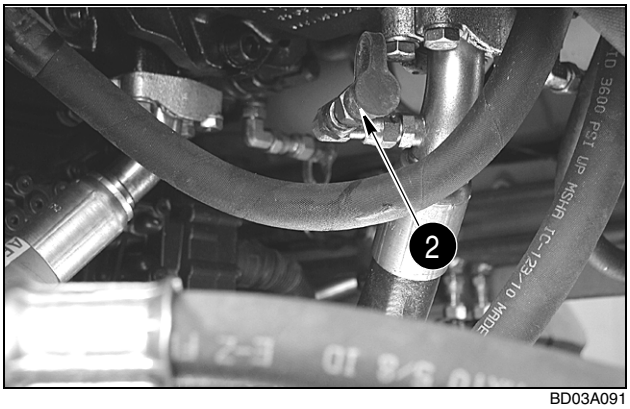
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STEP 3



BD03A190



BD03A091

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

Connect two 69 bar (1000 psi) test gauges, one to the test port (2) located on the large hydraulic tube on the bottom of the pump (port 1 optional diagnostic panel), and one on the pump load-sense pressure tap (1 furthest from the transmission) (port 2 optional diagnostic panel).

IMPORTANT: *Do not steer of operate loader controls while the gauges are connected, gauges could be damaged.*

STEP 4

Start the engine and run at low idle.

STEP 5

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

STEP 6

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

STEP 7

The difference between the two readings should be 22 to 25 bar (320 to 360 psi).

STEP 8

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

Adjusting the Loader/Unloading Pump Differential Pressure

STEP 9

The differential adjusting screw is directly above the load-sense pressure tap. Turn the screw clockwise to increase the load-sense 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).*

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TROUBLESHOOTING

Perform a visual inspection of the machine. Check the following and correct as necessary:

1. - Obtain service history if possible.
2. - Is compressor drive belt in place and tensioned?
3. - Are grille screens, fan blades, condenser, air filter, and evaporator unobstructed?
4. - Are there any sharp bends or kinks in the hoses?
5. - Are there heavy accumulations of oil, or oily dust around the fittings, indicating refrigerant leakage?
6. - Are air ducts undamaged, sealed properly and in position?
7. - Condensate drain hoses and check valves present and unobstructed?

Problem: No Cooling

Compressor Runs

No → Mechanical - See Mechanical Compressor Check Page 8
Electrical - See Blower and Compressor Clutch Check Page 9

Yes ↓

Internal System Problem
See Pressure Testing, Page 13

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