521D Tier 2
Wheel Loader

Service Manual

6-40745NA

CASE

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Bur 6-42725

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Issued August, 2001 Revised July, 2005

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Bur 6-42725 Revised 7-05 Printed in U.S.A.

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NOTE: Case Corporation reserves the right to make improvements in design or changes in specifications at any time without incurring any obligation to install them on units previously sold.

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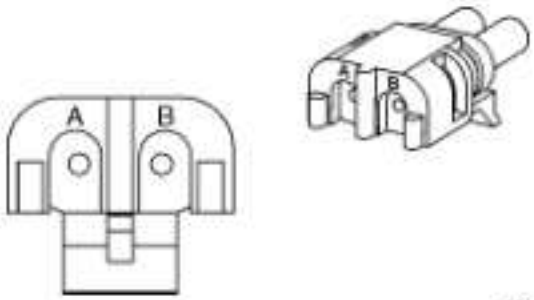
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Issued August, 2001 Revised July, 2005

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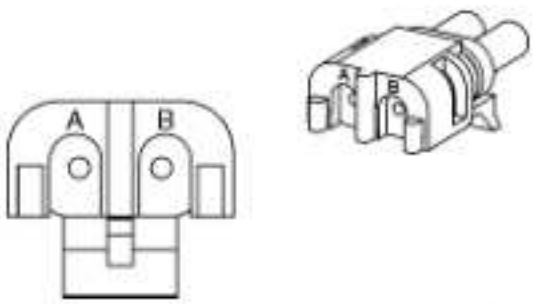
CONNECTOR 168 - LICENSE PLATE LAMP TO HOOD HARNESS



245482C1

CAV	WIRE IDENT	CIRCUIT
A	18G_E Or-1.0	License Plate Lamp
B	0_JC Bk-1.0	License Plate Lamp Ground

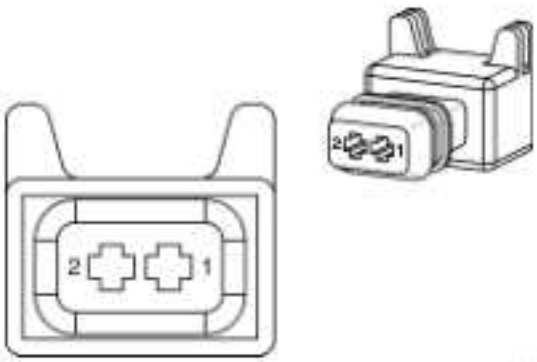
CONNECTOR 178M - FLOAT PRESSURE SWITCH TO FRONT CHASSIS HARNESS



245482C1

CAV	WIRE IDENT	CIRCUIT
A	53P_D W-1.0	Float Solenoid Power
B	53S_A W-1.0	Float Solenoid Signal

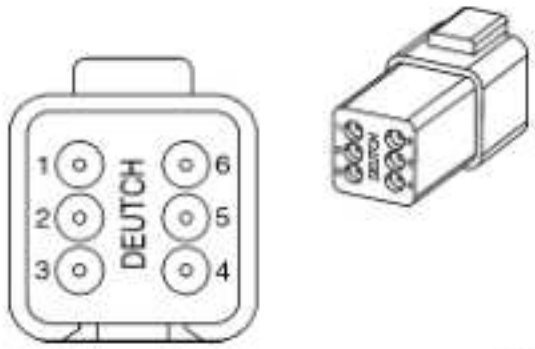
CONNECTOR 179F - FLOAT SOLENOID TO FRONT CHASSIS HARNESS



251718A1

CAV	WIRE IDENT	CIRCUIT
1	53S_B W-1.0	Float Solenoid Signal
2	0_AP Bk-1.0	Float Solenoid Ground

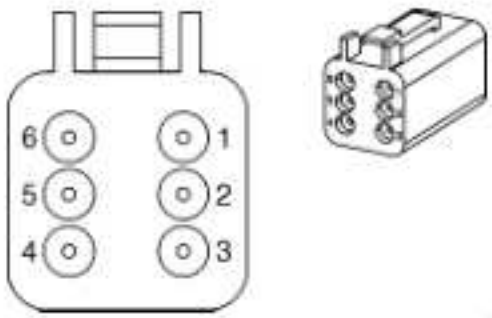
CONNECTOR 180F - FRONT CHASSIS HARNESS TO SECONDARY STEERING MODULE HARNESS



225350C1

CAV	WIRE IDENT	CIRCUIT
1	19M_B Or-1.0	Secondary Steering Accessory
2	19R_B Or-1.0	Secondary Steering Ignition
3	35X_C Y-1.0	Sec Steer Low Pressure Signal
4	51P_B W-1.0	Sec Steer High Pressure
5	0_AN Bk-1.0	Sec Steer Signal Ground
6		None

CONNECTOR 180M - SECONDARY STEERING MODULE HARNESS TO FRONT CHASSIS HARNESS



225351C1

CAV	WIRE IDENT	CIRCUIT
1	19M_C Or-1.0	Secondary Steering Accessory
2	19R_C Or-1.0	Secondary Steering Ignition
3	35X_D Y-1.0	Sec Steer Low Pressure Signal
4	51P_A W-1.0	Sec Steer High Pressure
5	0_CC Bk-1.0	Sec Steer Signal Ground
6		None

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96 – Radio Power Converter (24 volts to 12 volts) (Option)

Check Points	Reading	Possible Cause of Bad Reading
Terminal for wire 0_PD to ground	Continuity	Bad ground circuit.
NOTE: *Put master disconnect switch and ignition switch in ON position. Turn radio on.*		
Terminal for wire 65C to ground	12 volts	Check fuse L and circuit 19L. Bad radio power converter (96).

97 – Left Speaker (Option)

Check Points	Reading	Possible Cause of Bad Reading
NOTE: *Disconnect connector from left speaker (97). Put master disconnect switch and ignition switch in ON position. Turn radio (94) on. Put balance control for RH and LH speakers to center position.*		
Pin A in wiring harness connector 112M to ground	Voltage	Bad circuit between the left speaker (97) and the radio or a bad radio (94).
Pin B in wiring harness connector 112M to ground	Continuity	Bad circuit between the left speaker (97) and the radio (94).
NOTE: *If the readings are good, replace the left speaker (97).*		

98 – Right Speaker (Option)

Check Points	Reading	Possible Cause of Bad Reading
NOTE: *Disconnect connector from right speaker (98). Put master disconnect switch and ignition switch in ON position. Turn radio (94) on. Put balance control for RH and LH speakers to center position.*		
Pin A in wiring harness connector 111M to ground	Voltage	Bad circuit between the right speaker (98) and the radio or a bad radio (94).
Pin B in wiring harness connector 111M to ground	Continuity	Bad circuit between the right speaker (98) and the radio (94).
NOTE: *If the readings are good, replace the right speaker (98).*		

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DIFFERENTIAL CARRIER ASSEMBLY

NOTE: *The ring gear and the drive pinion are a matched gear set and cannot be serviced separately.*

Determine Shim Thickness for Correct Tooth Contact Pattern

NOTE: *Make the following measurements at maximum accuracy. Inaccurate measurements will result in a faulty tooth contact pattern causing disassembly of the drive pinion and differential.*

STEP 129

Install the CAS(*TBS) pinion depth gauge set on the differential carrier.

STEP 130



BD01F070

Determine dimension B (gap between the measuring shaft and the measuring pin) using a thickness gauge.

Dimension B (Example) . . . . . 1.00 mm (0.039 inch)

Example A:

Dimension A (tool constant)	171.75 mm (6.762 inch)
Dimension B (gap)	+1.00 mm (0.039 inch)
Results in Dimension X	**172.75 mm (6.801 inch)**

*TBS: To Be Supplied

STEP 131



BD02D122

Determine dimension C (bearing width).

Dimension C (Example) . . . . 33.65 mm (1.325 inch)

STEP 132



BD02D123

1. 138.00 MM (+/-0 MM)

Read dimension D (dimension for pinion).

Dimension D (Example) . . . 138.00 mm (5.433 inch)

Example B:

Dimension C	33.65 mm (1.325 inch)
Dimension D	+138.00 mm (5.433 inch)
Results in Dimension Y	**171.65 mm (6.758 inch)**

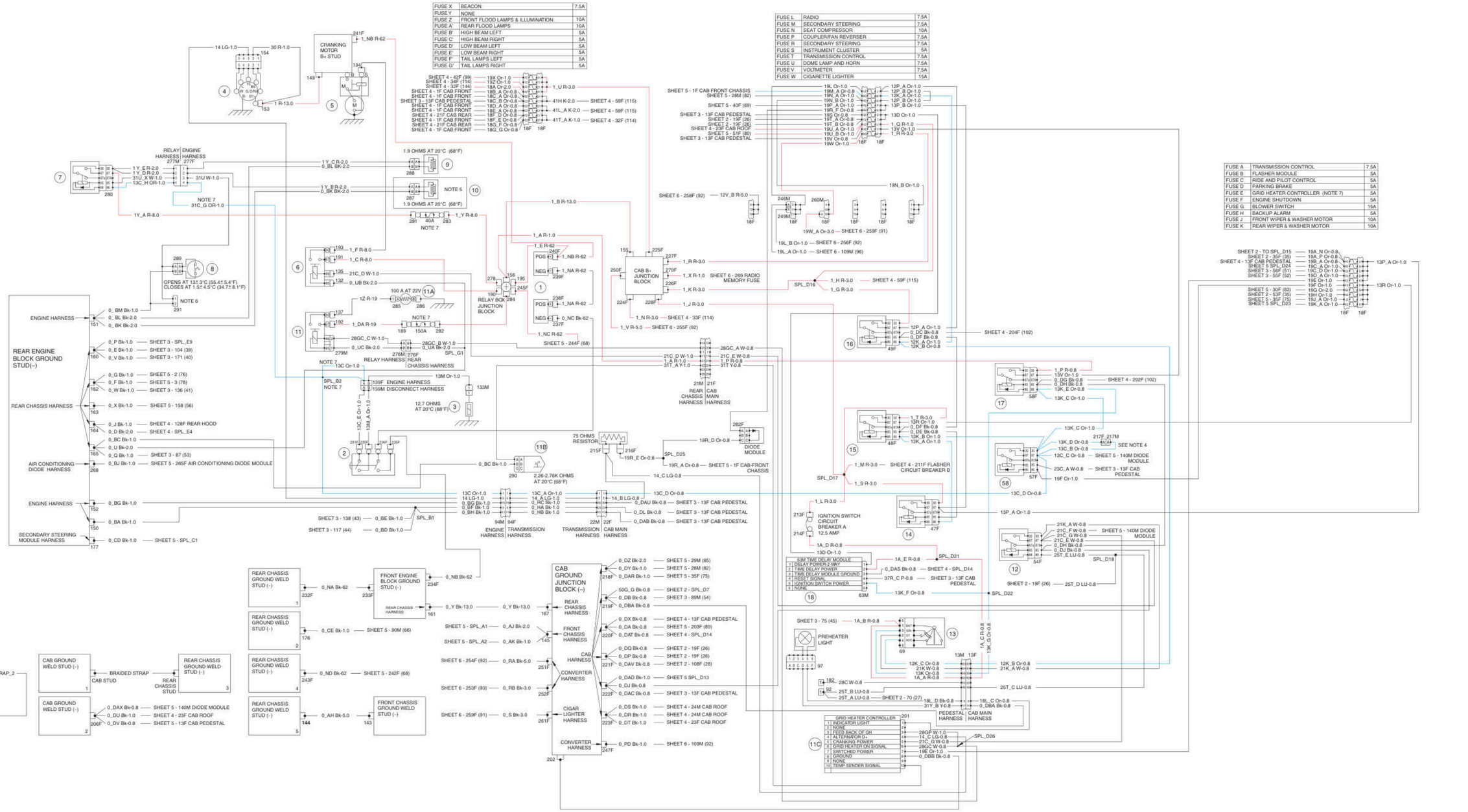
STEP 133

Subtract dimension Y from dimension X. The difference is the required shim thickness.

Example C:

Dimension X	172.75 mm (6.801 inch)
Dimension Y	– 171.65 mm (6.758 inch)
Difference = Shim	**1.10 mm (0.043 in)**

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COMPONENTS

1. Batteries
2. Master Disconnect Switch
3. Engine Fuel Solenoid
4. Alternator
5. Starter Motor
6. Starting Relay
7. Fuel Filter Heater Relay - Number 16
8. Fuel Filter Heater Switch
9. First Fuel Filter Heater
10. Second Fuel Filter Heater
11. Grid Heater Relay - Number 15 (Option)

11A. Grid Heater (Option)
11B. Grid Heater Temperature Sensor (Option)
11C. Grid Heater Controller (Option)
12. Neutral Start Relay - Number 8
13. Ignition Switch
14. Ignition Relay - Number 1
15. Ignition Relay - Number 2
16. Accessory Relay - Number 3
17. Voltmeter Relay - Number 12
18. Time Delay Module
19. Output Speed Sensor
20. Engine Speed Sensor
21. Intermediate Speed Sensor
22. Turbine Speed Sensor
23. Filter Maintenance Switch
24. Torque Converter Output Temperature Sender
25. Transmission Solenoid Valve and Temperature Sensors
26. Transmission Electronic Control Module
27. Transmission Shifter
28. Diagnostic Connector
29. Transmission Kick-down Switch
30. Transmission Auto Switch
31. Declutch Switch
32. Brake Declutch Pressure Switch
33. Transmission Enable Switch
34. FNR Switch
35. Backup Alarm Relay - Number 7
36. Backup Alarm Disable Switch (TUV road approved machines only)
37. Backup Alarm
38. Brake Warning Pressure Switch
39. Coolant Level Sender
40. Fuel Level Sender
41. Hydraulic Oil Temperature Sender
42. Hydraulic Filter Restriction Switch
43. Engine Coolant Temperature Sender
44. Air Filter Restriction Switch
45. Program Reset Switch
46. Parking Brake Switch
47. Instrument Cluster
48. Pilot Control Switch
49. Up/Down Count Switch
50. Engine Oil Pressure Switch
51. Pilot Control Relay - Number 10
52. Parking Brake Relay - Number 9
53. Parking Brake Solenoid
54. Pilot Pressure Solenoid
55. Fan Reversing Switch (Option)
56. Fan Reversing Solenoid (Option)
57. Redundant Brake Pressure Switches
58. Relay Socket - Number 11
59. Detent Switch
60. Bucket Control Valve Electromagnetic Detents
61. Return-To-Travel/Float Switch
62. Return-To-Dig Proximity Switch
63. Height Control/Return-To-Travel Proximity Switch
64. Float Pressure Switch
64A. Rollback Pressure Switch (Option)
65. Float Solenoid
66. Secondary Steering Module (Option)
67. Secondary Steering Pressure Switch (Option)
68. Secondary Steering Motor (Option)
68A. Secondary Steering Solenoid (Option)
69. Pin Engage Switch (Option)
70. Pin Engage Solenoid (Option)
71. Ride Control Switch
72. Ride Control Relay - Number 4
73. Ride Control Solenoid
74. Front Wiper Motor
75. Front Wiper and Washer Switch
76. Front Washer Pump Motor
77. Rear Wiper and Washer Switch
78. Rear Washer Pump Motor
79. Rear Wiper Motor
80. Horn Relay - Number 5
81. Horn
82. Seat Compressor and Switch (Option)
83. Blower Switch
84. Blower Motor Speed Resistors with Thermal Fuse
85. Blower Motor
86. Air Conditioning Low Pressure Switch
87. Air Conditioning High Pressure Switch
88. Thermostat Switch
89. Compressor Clutch Lockout Relay - Number 14
90. Compressor Clutch
91. Cigar Lighter (Option)
92. Power Converter - 24 volts to 12 volts (Option)
93. Power Outlet (Option)
94. Remote Radio or 24 Volt Radio (Option)
95. 12 Volt Radio (Option)
96. Radio Power Converter - 24 volts to 12 volts (Option)
97. Left Speaker (Option)
98. Right Speaker (Option)
99. Beacon Switch
100. Rotating Beacon
101. Brake Lamp Pressure Switch
102. Brake Lamps Relay - Number 6
103. Hazard Switch
104. Turn Signal, Hi/Low Beam, and Horn Switch
105. Flasher Module
106. Left-Hand Rear Combination Lamp
107. Right-Hand Rear Combination Lamp
108. Left-Hand Front Combination Lamp
109. Right-Hand Front Combination Lamp
110. Left-Hand Rear Work Lamp
111. Right-Hand Rear Work Lamp
112. Left-Hand Front Work Lamp
113. Right-Hand Front Work Lamp
114. Five Position Rotary Lamp Switch
115. High/Low Beam Relay - Number 13
116. License Plate Lamp
117. Dome Lamp
118. Courtesy Lamp

WIRE IDENTIFICATION

1. WIRE NUMBER
2. WIRE COLOR SYMBOL
3. WIRE SIZE

Example: 23F_A W-2.0 (1 2 3)

Bk = BLACK	LU = LIGHT BLUE	S = GRAY	
DU = DARK BLUE	N = BROWN	T = TAN	
G = GREEN	Or = ORANGE	U = BLUE	
K = PINK	P = PURPLE (VIOLET)	W = WHITE	
LG = LIGHT GREEN	R = RED	Y = YELLOW	

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
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. LEVER RELEASED
2. LEVER ACTUATED
3. LIQUID LEVEL FLOAT
4. PRESSURE
5. HAND OPERATED
6. TEMPERATURE
7. COIL
8. VARIABLE RESISTOR
9. RESISTOR
10. DIODE
11. LIGHT EMITTING DIODE
12A. MOMENTARY CONTACT
12B. 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

1. 209M and 209F disconnected when backup alarm disable switch is installed (TUV road approved machines only).
2. Resistors part of ground wire assembly.
3. 64M and 64F connected for North American machines, opposite side steady ON. 64M and 64F disconnected for European machines, opposite side OFF.
4. 217F and 217M disconnected when engine shutdown relay special feature is installed.
5. Used only on 621D.
6. On 521D connector 289 connected to fuel filter heater switch; on 621D connector 291 connected.
7. Used only when grid heater option installed.

ELECTRICAL SCHEMATIC P.I.N. JEE0135501AND ABOVE
521D Z-BAR, 521D XR, and 521D XT WHEEL LOADERS

Additional copies of this Hydraulic and Electrical Schematic can be ordered throughTechnical Publications Distribution System. The Part Number is 6-49280

6C02N033

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