521D
Loader

Service Manual

6-40742

CASE CONSTRUCTION

MidWestTech | Case 521D Loader Service Manual | Publication 6-42722

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521D Loader
Service Manual
6-40742
Table of Contents

Description	Section No.	Form No.
General	**Tab 1**	
Section Index - General		6-42730
Standard Torque Specifications	1001	8-71602
Fluids and Lubricants	1002	6-40762
Metric Conversion Chart	1003	7-52950
Loctite Product Chart		8-98902
Engines	**Tab 2**	
Section Index - Engines		6-42281
Engine and Radiator Removal and Installation	2000	6-42290
Engine and Radiator Removal and Installation P.I.N. JEE0135501 and Above	2000	6-48920
Stall Tests	2002	6-40770
For Engine Repair, See the Engine Service Manual		
Fuel System	**Tab 3**	
Section Index - Fuel System		6-42300
For Fuel System Repair, See the Engine Service Manual		
Electrical	**Tab 4**	
Section Index - Electrical		6-42311
Removal and Installation of Starter and Alternator	4001	6-42321
Electrical Specifications and Troubleshooting	4002	6-40782
Electrical Specifications and Troubleshooting P.I.N. JEE0135501 and Above	4002	6-48930
Batteries	4003	6-42330
Information and Diagnostic Center	4005	6-42351
Alternator - 65 Ampere	4007	7-12260
Alternator - 45 Ampere	4008	6-42360
Steering	**Tab 5**	
Section Index - Steering		6-42370
Removal and Installation of Steering Components	5001	6-42380
Steering Specifications, Pressure Checks, and Troubleshooting	5002	6-40790
Steering Control Valve	5003	6-42390
Steering Priority Valve	5004	6-42400
Steering Cylinders	5005	6-42410
Center Pivot	5006	6-42420
Auxiliary Steering Motor and Pump	5008	6-42430

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521D Loader
Service Manual
6-40742
Table of Contents

Description	Section No.	Form No.
Power Train	**Tab 6**	
Section Index - Power Train		6-42442
Removal and Installation of Power Train Components	6001	6-42451
Transmission Specifications, Pressure Checks, and Troubleshooting	6002	6-40800
Transmission	6003	6-42460
Front and Rear Axle	6004	6-42470
Front and Rear Axle P.I.N. JEE0135501 and Above	6004	6-48970
Drive Shafts, Center Bearing, and Universal Joints	6005	6-42480
Wheels and Tires	6006	6-42490
Transmission Control Valve	6007	6-42500
Brakes	**Tab 7**	
Section Index - Brakes		6-42510
Removal and Installation of Brake Components	7001	6-42521
Hydraulic Brake Troubleshooting	7002	6-40811
Brake Accumulators	7004	6-42531
Parking Brake	7008	6-42540
NOTE: *For parking brake and brake pedal adjustments, see Section 9001.*		
Hydraulics	**Tab 8**	
Section Index - Hydraulics		6-42550
Removal and Installation of Hydraulic Components	8001	6-42560
Hydraulic Specifications, Troubleshooting, and Pressure Checks	8002	6-40820
Cleaning the Hydraulic System	8003	7-49640
Cylinders	8006	6-42590
Coupler Solenoid Locking Valve	8007	6-42600
Pilot Pressure Accumulator and Ride Control Accumulator	8013	6-42621
Mounted Equipment	**Tab 9**	
Section Index - Mounted Equipment		6-42640
Pedals and Levers	9001	6-40830
Air Conditioning Troubleshooting and System Checks For Systems with HFC-134a Refrigerant	9002	6-42650
Air Conditioner System Service	9003	6-42660
Removal and Installation of Air Conditioning Components For Systems with HFC-134a Refrigerant	9004	6-42671
Loader	9006	6-42690
ROPS Cab and ROPS Canopy	9007	6-42700
Cab Glass Installation	9010	6-42710

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521D Loader
Service Manual
6-40742
Table of Contents

Description	Section No.	Form No.
Electrical Schematic Foldouts and Hydraulic Schematic Foldout	**In Rear Pocket**	**6-40841**
Electrical Schematic Foldouts and Hydraulic Schematic Foldout P.I.N JEE0135501 and Above	**In Rear Pocket**	**6-49280**

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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71 – Ride Control Switch

Check Points	Reading	Possible Cause of Bad Reading
NOTE: *Disconnect connector 44F from ride control switch (71).*		
Connector 44F pin 7 to ground	Continuity	Bad ground circuit.
Ride control switch terminal 6 (positive) to terminal 7 (negative)	Continuity	Bad ride control switch.
NOTE: *Connect connector 44F to ride control switch (71). Put master disconnect switch and ignition switch in ON position. Put ride control switch in OFF position.*		
Terminal for wire 19C_B to ground	24 volts	Check fuse C and ignition relay No. 1. Also check circuits 19C and 13P_A.
Terminal for wire 58S to ground	0 volt	Bad ride control switch.
NOTE: *Put the ride control switch (71) in the ON position.*		
Terminal for wire 58S to ground	24 volts	Bad ride control switch.
NOTE: *Put the five position rotary light switch (114) in position 3 or higher.*		
Terminal for wire 49_P to ground	24 volts	Check five position rotary lamp switch (114). Also check circuit 49. If LED in ride control switch is not ON with 24 volts at check point, replace ride control switch.

72 – Ride Control Relay No. 4

Check Points	Reading	Possible Cause of Bad Reading
Terminal 85 for wire 0_DD to connector 19F pin 57	Continuity	Check wire 44F.
Terminal 86 for wire 58H_B to connector 19F pin 8	Continuity	Check wire 58H_B.
Terminal 87 for wire 58_B to ride control switch (71) pin 6	Continuity	Check wire 58_B
NOTE: *Put master disconnect switch and ignition switch in ON position. Put ride control switch in ON position.*		
Terminal for wire 58S to ground	24 volts	Bad ride control switch. Also check wire 58S.
NOTE: *If readings are normal, replace ride control relay (72).*		

73 – Ride Control Solenoid

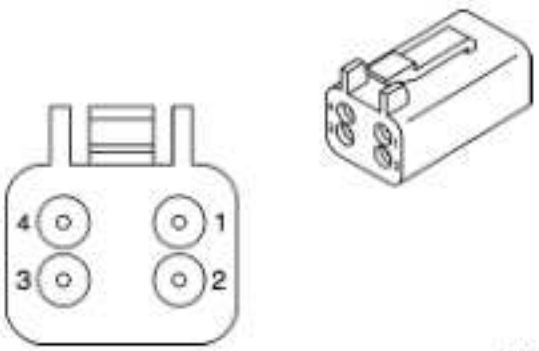
Check Points	Reading	Possible Cause of Bad Reading
NOTE: *Disconnect connector 5F from ride control solenoid.*		
Connector 5F pin 2 to ground	Continuity	Bad ground circuit.
Between terminals 1 and 2 of ride control solenoid	20 to 26 ohms	Bad ride control solenoid.

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CONNECTOR 277F - ENGINE HARNESS TO RELAY HARNESS

CAV	WIRE IDENT	CIRCUIT
1	1Y_C R-2.0	Fuel Filter Heater Power
2	1Y_B R-2.0	Fuel Filter Heater Power
3	31U W-1.0	Fuel Filter Heater Signal
4	13C_G Or-1.0	Fuel Filter Heater Signal Power

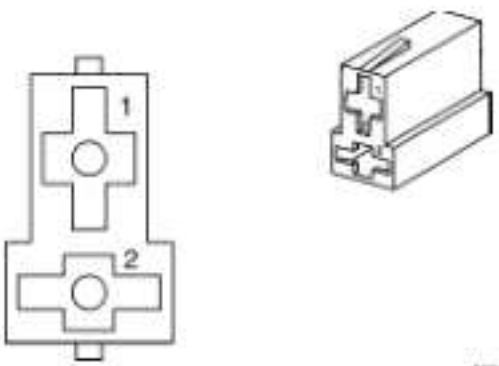
CONNECTOR 277M - RELAY HARNESS TO ENGINE HARNESS



239451A1

CAV	WIRE IDENT	CIRCUIT
1	1Y_E R-2.0	Fuel Filter Heater Power
2	1Y_D R-2.0	Fuel Filter Heater Power
3	31U_X W-1.0	Fuel Filter Heater Signal
4	13C_H Or-1.0	Fuel Filter Heater Signal Power

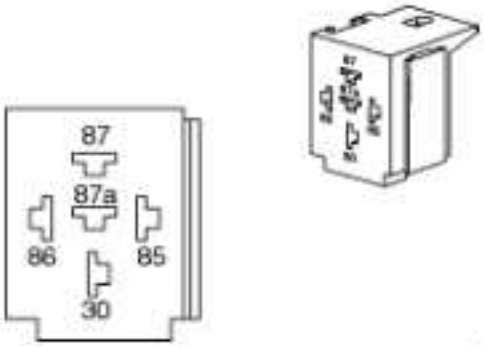
CONNECTOR 279M - GRID HEATER RELAY TO RELAY HARNESS



3227856R1

CAV	WIRE IDENT	CIRCUIT
1	0_UC Bk-2.0	Grid Heater Ground
2	28GC_C W-1.0	Grid Heater Ground

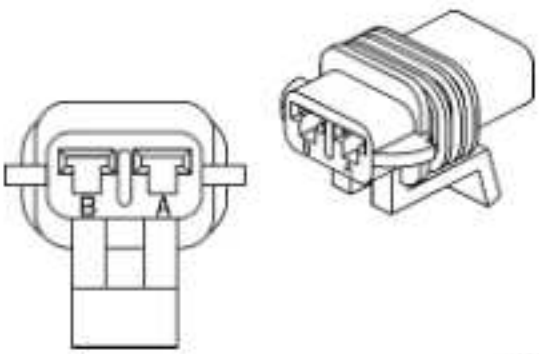
CONNECTOR 280 - FUEL FILTER HEATER RELAY TO RELAY HARNESS



245731C1

CAV	WIRE IDENT	CIRCUIT
30	1Y_E R-2.0 1Y_D R-2.0	Fuel Filter Heater Power
85	31U_X W-1.0	Fuel Filter Heater Signal
86	13C_H Or-1.0	Fuel Filter Heater Signal Power
87	1Y_A R-8.0	Fuel Filter Relay Power
87A		None

CONNECTOR 287 - SECOND FUEL FILTER HEATER TO ENGINE HARNESS



182069A1

CAV	WIRE IDENT	CIRCUIT
A	1Y_B R-2.0	Fuel Filter Heater Power
B	0_BK Bk-2.0	Fuel Filter Heater Ground

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CONVERTER OUT PRESSURE CHECK

Test Equipment Required

0 to 28 bar (400 psi) gauge with hose long enough to take readings in the cab and CAS-2324 Special Adapter.

Test Procedure

1. Block the machine tires.
2. Apply the parking brakes.
3. Install the pressure gauge.
4. Heat the oil to an operating temperature of 80 to 100° C (176 to 212° F).
5. While in the cab, put the transmission in NEUTRAL. Run the engine at full throttle. Record the reading in the chart on page 6002.16. Pressure must be a minimum of 2.5 bar (36 psi).

LUBRICATION PRESSURE CHECK

Test Equipment Required

0 to 7 bar (100 psi) gauge.

Test Procedure

1. Block the machine tires.
2. Apply the parking brakes.
3. Install the pressure gauge in the cooler return line at the transmission.
4. Heat the oil to an operating temperature of 80 to 100° C (176 to 212 ° F).
5. While in the cab, run the engine at full throttle. Put the transmission in each gear and record the reading in the chart on page 6002.16. Pressure must be 0.2 to 1.2 bar (3 to 18 psi).

FLOWMETER TEST

Test Equipment Required

CAS-1808 Flowmeter Kit; CAS-2702 Flowmeter Adapter.

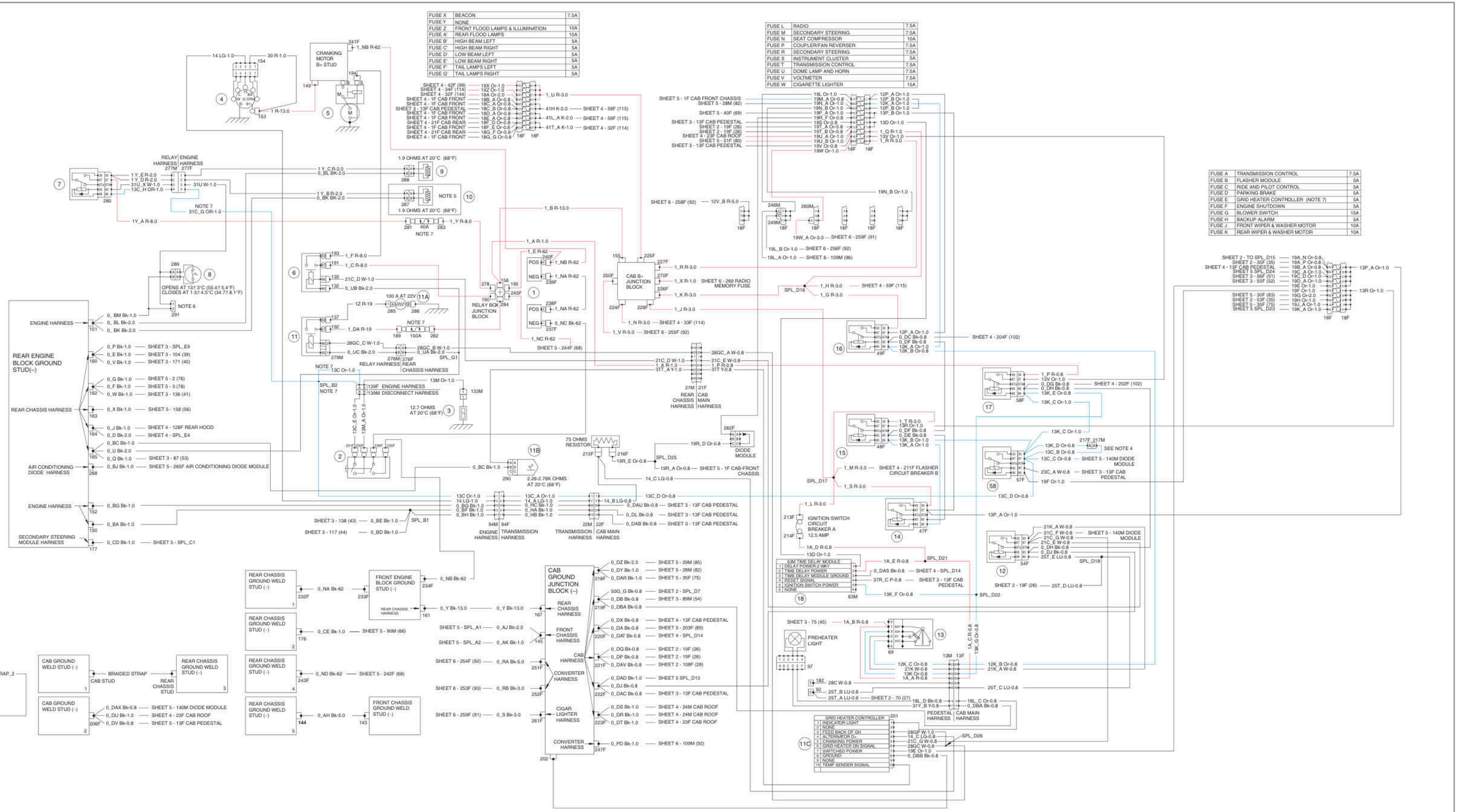
Flowmeter Test Procedure

1. Block the machine tires.
2. Apply the parking brakes.
3. Heat the oil to an operating temperature of 80 to 100° C (176 to 212° F).
4. Remove the filter and install the CAS-2702 adapter.
5. Install the flowmeter between the adapter and the filter.
6. While in the cab, run the engine at full throttle. Put the transmission in NEUTRAL and record the flow measurement. The correct flow for 521D machines is 52 L/min (14 U.S. gpm) at 2000 rpm.

CONSUMPTION TEST PROCEEDURE

1. Block the machine tires.
2. Apply the parking brakes.
3. Heat the oil to an operating temperature of 80 to 100° C (176 to 212 ° F).
4. Install the flowmeter to converter outlet line (line to cooler) in series.
5. While in the cab, run the engine at full throttle. Put the transmission in NEUTRAL and record the flow measurement. The flow must be 9.1 L/min (2 U.S. gpm).
6. Repeat the procedure with the transmission in FORWARD in third gear. The flow must be 9.1 L/min (2 U.S. gpm).
7. Repeat the procedure with the transmission in REVERSE in third gear. The flow must be 9.1 L/min (2 U.S. gpm).

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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

A. LEVER RELEASED
B. 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

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