CASE

REPAIR MANUAL

435 - 445
Skid Steer Loader
445CT
Compact Track Loader

Bur 6-75491

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Pump - General specification (C.20.F.20 - D.40.A.10)

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Hydrostatic Pump	
Manufacturer	Sauer-Danfoss
Type	Tandem Axial Piston
Model	M46
Displacement	46 cc (2.80 in^3)
Pump Control Style	Servo
System Relief Pressure (Forward and Reverse) 435 Models	29,772 kPa (4350 psi)
System Relief Pressure (Forward and Reverse) 445 - 445CT Machines	34,500 kPa (5003 psi)
Charge Oil Source 435 - 445 - 445CT Machines	Integral Pump
Charge Pump Displacement 435 - 445 - 445CT Machines	22.9 cc (1.40 in^3)
Charge Pressure All Models	2482 kPa (24.8 bar) (360 psi)
Charge Flow (Approximate at Rated Engine RPM) 435 - 445 - 445CT Machines	52.6 litre/min (13.9 gpm)
Rated Pump Speed	2300 RPM
Pump Flow at Rated Engine RPM minus 50 RPM 435 - 445 - 445CT Machines	106 litre/min (27.9 gpm)
Pump RPM/Engine RPM Ratio 435 - 445 - 445CT Machines	1:1

Pump - Torque (C.20.F.20 - D.20.A.10)

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Bolts that hold pumps together	**91 - 111 Nm** (**67 - 82 lb ft**)
Orifice	**0.9 - 1.3 Nm** (**8 - 12 lb in**)
Bypass valve	**9 - 13 Nm** (**84 - 120 lb in**)
Bolts for servo piston covers	**11 - 15 Nm** (**96 - 132 lb in**)
3/8 inch Special bolts for cover	**53 - 64 Nm** (**39 - 47 lb ft**)
7/16 inch Special bolts for cover	**81 - 100 Nm** (**60 - 74 lb ft**)
Tandem Pump Mounting Bolts	Tighten the 4 pump flange to engine adapter bolts to a torque of **122 Nm** (**90 lb ft**). Tighten the 2 lower pump support bracket to engine adapter bolts to a torque of **4 Nm** (**35 lb in**). Use a soft faced hammer and tap the pump support bracket until it contacts the pump mounting surface. Tighten the 2 upper pump support bracket to engine adapter bolts to a torque of **122 Nm** (**90 lb ft**). Tighten the 2 lower pump support bracket to the engine adapter bolts to a torque of **95 Nm** (**70 lb ft**). Tighten the pump support to tandem pump bolts to a torque of **122 Nm** (**90 lb ft**).

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TRANSMISSION Hydrostatic - Troubleshooting (C.20.F - G.40.A.10)

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Problem	Possible Cause	Correction
One transmission works (Left or Right) works correctly and the other does not.	1. Check to see that the direction control levers are adjusted correctly. Refer to for adjustment procedure.	A. Is there still a problem? No: Troubleshooting complete. Yes: Go to Next Step 2.
	2. Check for charge pressure at the servo bypass valve fitting while in neutral.	A. Charge pressure OK? Stroke the control lever. A 20 psi or greater drop indicates a leaky servo. B. Is there still a problem? No: Troubleshooting complete. Yes: Go to Step 3.
	3. Check the pressure setting of the circuit relief valve for the transmission with the problem.	A. Preform Checking the Circuit Relief Valve Test Refer to **Relief valve - Pressure test (C.20.F.16 - F.40.A.30)** B. Is there still a problem? No: Troubleshooting complete. Yes: Go to Step 4.
	4. There is too much leakage in the hydrostatic system.	Disassemble and inspect the piston pump and drive. Repair as required.
Machine Does Not Have Enough Power	1. Full throttle and rated engine speeds are incorrect.	A. Is there still a problem? No: Troubleshooting complete. Yes: Go to Step 2.
	2. Full throttle engine speed is good, rated engine speed is low.	A. Problem in engine or fuel system. Repair as required. B. Is there still a problem? No: Troubleshooting complete. Yes: Go to Step 3.
	3. Insufficient Charge Pressure	Perform Checking Charge Pressure Test **Charge pump - Pressure test (A.10.A.21 - F.40.A.30)** Also check for damaged parts. Adjust pressure setting. A. Is there still a problem? No: Troubleshooting complete. Yes: Go to Step 4.
	4. Faulty hydrostatic pump or hydrostatic drive motors.	Disassemble and inspect the hydrostatic pump and hydrostatic drive motors. Repair as required.

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Audible alert Switch - Testing (E.50.B.84.80 - G.40.A.20)

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NOTE: *For wiring diagram refer to* ***Wiring harness - Electrical schematic frame 26 (A.30.A.88 - C.20.E.26)*** ***Wiring harness - Electrical schematic frame 08 (A.30.A.88 - C.20.E.08)***

N°	Test Point	Expected Result	Other Result (Possible Cause)
1	Horn switch terminal for wire 178AD (B) to ground.	Continuity	Bad ground connection.
2	Disconnect the horn switch connector. Measure the resistance across the terminals of the switch.	Open	Bad horn switch.
3	Have another person hold the horn button down. Measure the resistance across the terminals of the switch.	Continuity	Bad horn switch.
4	Reconnect the horn switch connector. Turn the key switch to the ON position. Have another person push and hold the horn button. Terminal for wire 892B (O) at the horn.	Approximately 12 volts	Check the circuit between the terminal for wire 892B (O) and the horn button. Check the circuit between the horn button and the 10 amp fuse in the primary fuse block. Also check the horn button. Also check the 10 amp fuse.

Audible alert Horn - Testing (E.50.B.84.50 - G.40.A.20)

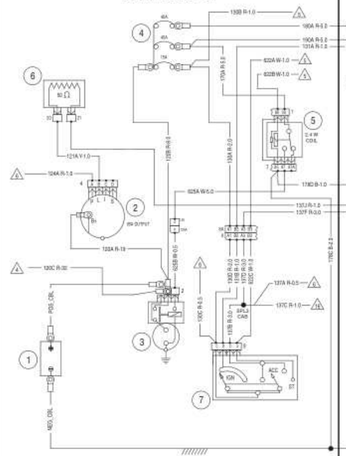
435, 445, 445CT

NOTE: *For wiring diagram refer to* ***Wiring harness - Electrical schematic frame 08 (A.30.A.88 - C.20.E.08)***

N°	Test Point	Expected Result	Other Result (Possible Cause)
1	Terminal for wire 178AD (B) to ground.	Continuity	Bad ground circuit.
2	Turn the key switch to the ON position. Have another person hold down the horn button. Terminal for wire 892B (O) to ground.	12 volts	Check the circuit between the horn and the horn button. Also check the horn button. If the readings are correct and the horn does not work, replace the horn.

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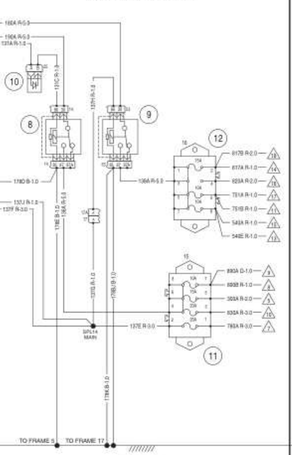
STARTING SYSTEM



FRAME 1

BC04E027-01

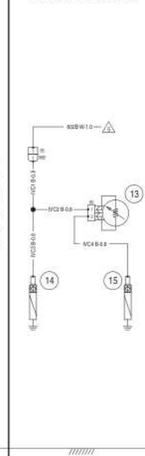
POWER DISTRIBUTION



FRAME 2

BC04E027-02

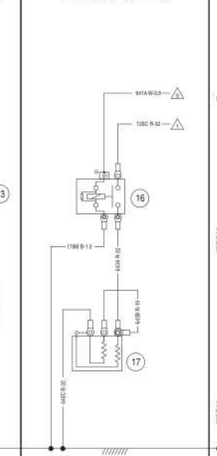
FUEL SUPPLY SYSTEM



FRAME 3

BC04E027-03

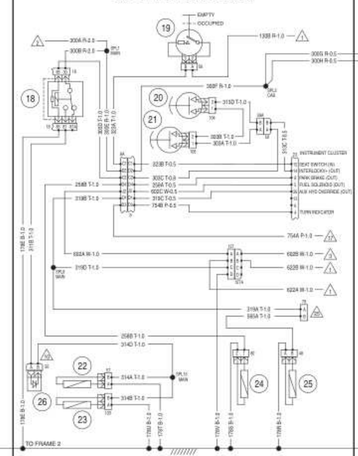
GRID HEATER SYSTEM



FRAME 4

BC04E027-04

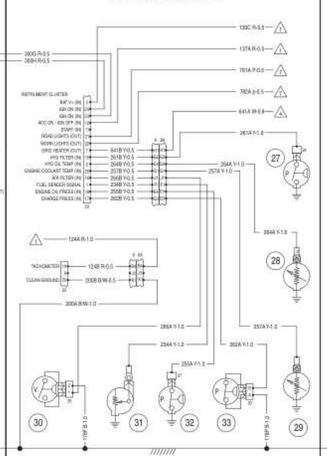
SAFETY INTERLOCK SYSTEM



FRAME 5

BC04E027-05

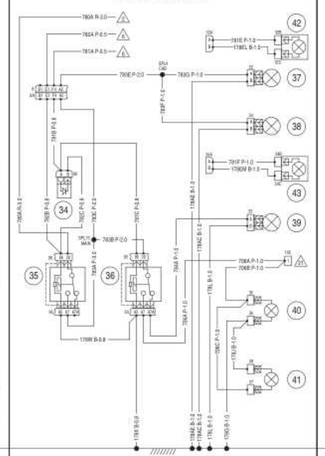
INSTRUMENT CLUSTER



FRAME 6

BC04E027-06

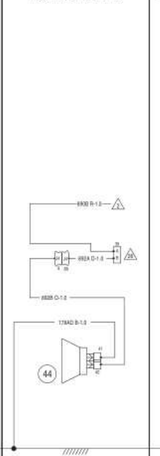
STANDARD LAMPS



FRAME 7

BC04E027-07

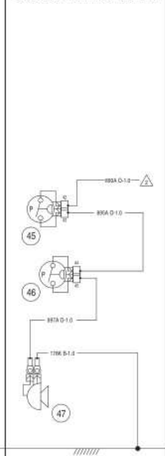
HORN (OPTIONAL)



FRAME 8

BC04E027-08

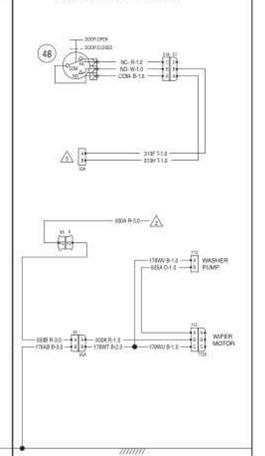
BACK-UP ALARM (OPTIONAL)



FRAME 9

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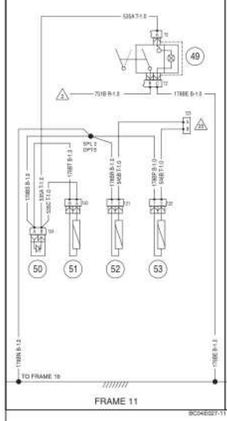
FRONT DOOR (OPTIONAL)



FRAME 10

BC04E027-10

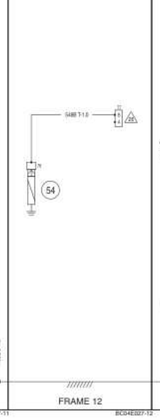
HIGH FLOW ELECTRO-HYDRAULIC ATTACHMENT FLOW (OPTIONAL)



FRAME 11

BC04E027-11

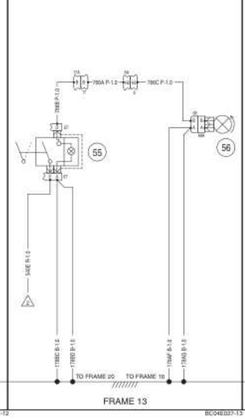
RIDE CONTROL (OPTIONAL)



FRAME 12

BC04E027-12

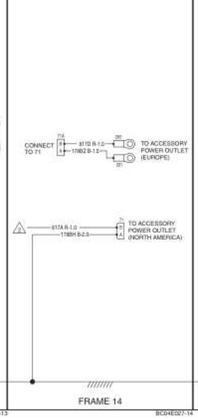
ROTATING BEACON (OPTIONAL)



FRAME 13

BC04E027-13

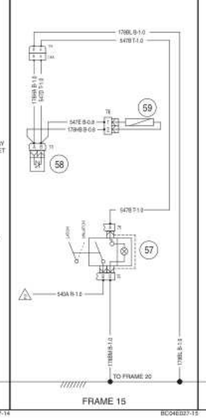
ELECTRICAL ACCESSORY OUTLET (OPTIONAL)



FRAME 14

BC04E027-14

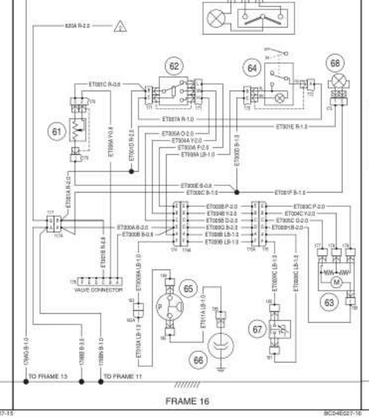
HYDRAULIC COUPLER (OPTIONAL)



FRAME 15

BC04E027-15

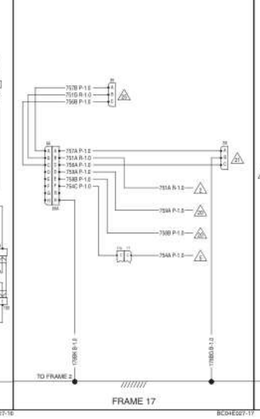
DOME LIGHT/HEATER/HVAC (OPTIONAL)



FRAME 16

BC04E027-16

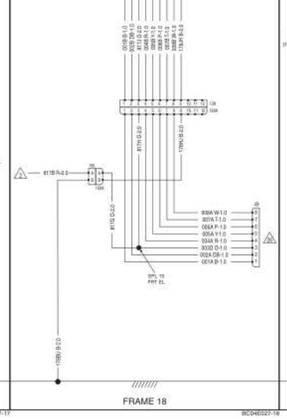
TURN SIGNALS (OPTIONAL)



FRAME 17

BC04E027-17

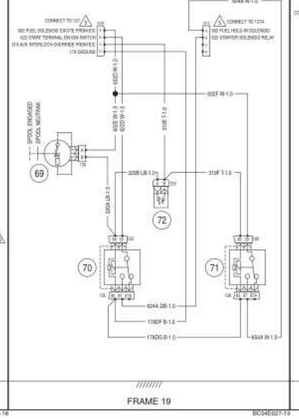
LOADER ARM AUXILIARY ELECTRIC (OPTIONAL)



FRAME 18

BC04E027-18

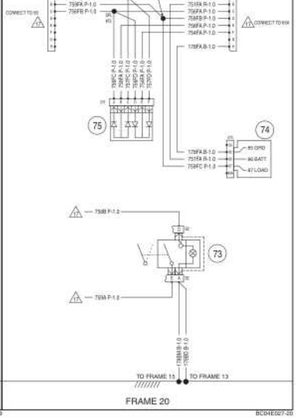
AUXILIARY OVERIDE SYSTEM



FRAME 19

BC04E027-19

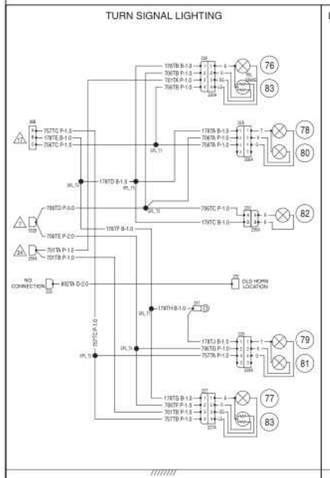
HAZARD SWITCH AND FLASHER HARNESS (OPTIONAL)



FRAME 20

BC04E027-20

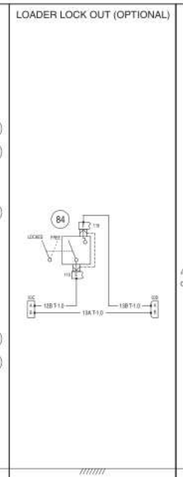
TURN SIGNAL LIGHTING



FRAME 21

BC04E027-21

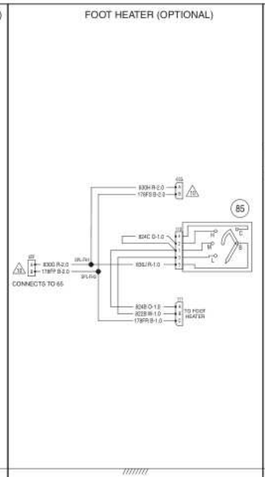
LOADER LOCK OUT (OPTIONAL)



FRAME 22

BC04E027-22

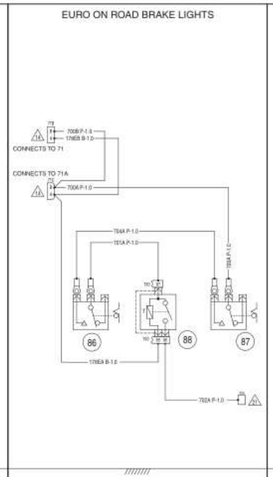
FOOT HEATER (OPTIONAL)



FRAME 23

BC04E027-23

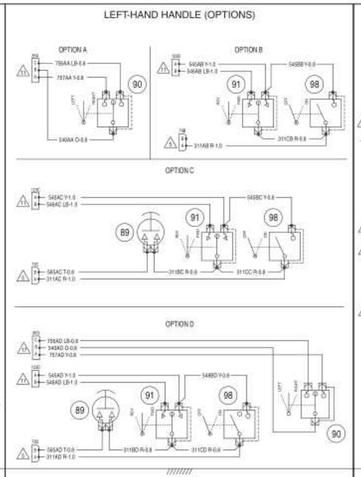
EURO ON ROAD BRAKE LIGHTS



FRAME 24

BC04E027-24

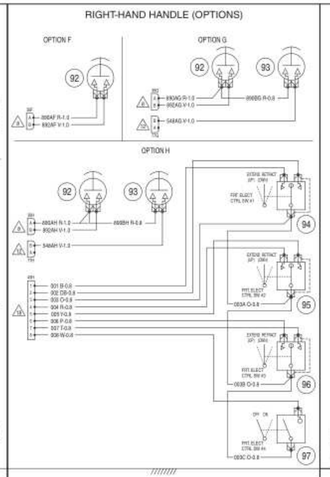
LEFT-HAND HANDLE (OPTIONS)



FRAME 25

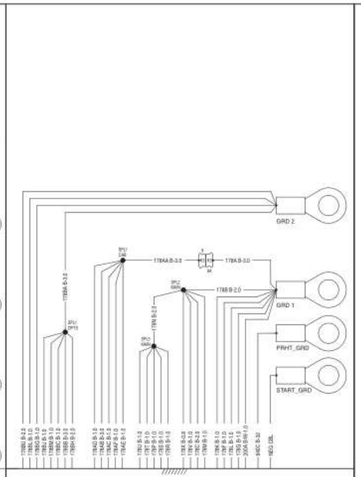
BC04E027-25

RIGHT-HAND HANDLE (OPTIONS)



FRAME 26

BC04E027-26

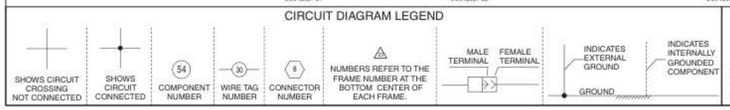


FRAME 27

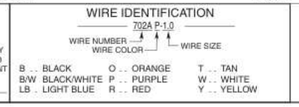
BC04E027-27

1. BATTERY
2. ALTERNATOR
3. STARTER AND SOLENOID
4. CIRCUIT BREAKER
5. STARTER RELAY
6. RESISTOR (50 OHMS)
7. IGNITION SWITCH
8. MAIN POWER RELAY
9. OPTIONS POWER RELAY
10. DIODE (REVERSE POLARITY)
11. PRIMARY FUSE BLOCK
12. OPTIONS FUSE BLOCK
13. COLD START ADVANCE TEMPERATURE SENDER
14. FUEL HOLD-IN SOLENOID
15. COLD START ADVANCE SOLENOID
16. GRID HEATER RELAY
17. GRID HEATER
18. INTERLOCK RELAY
19. SEAT SWITCH
20. SEAT BAR SWITCH
21. CAB LOCK DOWN SWITCH
22. LOADER VALVE SOLENOID
23. LOADER VALVE SOLENOID
24. BRAKE RELEASE/TANDEM PUMP NEUTRAL OVERRIDE SOLENOID
25. TWO (2) SPEED SOLENOID
26. DIODE
27. HYDRAULIC PRESSURE SWITCH
28. HYDRAULIC OIL TEMPERATURE SENDER
29. ENGINE COOLANT TEMPERATURE SENDER
30. AIR FILTER RESTRICTION SWITCH
31. FUEL SENDER
32. ENGINE OIL PRESSURE SWITCH
33. CHARGE PRESSURE SWITCH
34. DIODE
35. LIGHT RELAY No. 1
36. LIGHT RELAY No. 2
37. LEFT FRONT WORKLIGHT
38. RIGHT FRONT WORKLIGHT
39. REAR WORKLIGHT
40. LEFT REAR INDICATOR LIGHT
41. RIGHT REAR INDICATOR LIGHT
42. LEFT FRONT EURO ROAD LIGHT
43. RIGHT FRONT EURO ROAD LIGHT
44. HORN
45. BACKUP ALARM SWITCH (LEFT)
46. BACKUP ALARM SWITCH (RIGHT)
47. BACKUP ALARM
48. CAB DOOR SWITCH
49. ELECTRO HYDRAULIC HIGH FLOW SWITCH
50. DIODE
51. COMBINATION SOLENOID
52. FORWARD SOLENOID
53. REVERSE SOLENOID
54. RIDE CONTROL SOLENOID
55. ROTATING BEACON SWITCH
56. ROTATING BEACON
57. HYDRAULIC COUPLER SWITCH
58. DIODE
59. HYDRAULIC COUPLER RELEASE SOLENOID
60. DOME LIGHT AND SWITCH
61. HEAT CONTROL SWITCH
62. FAN SPEED SWITCH
63. BLOWER MOTOR
64. AIR CONDITIONER SWITCH
65. AIR CONDITIONER PRESSURE SWITCH
66. AIR CONDITIONER COMPRESSOR CLUTCH
67. THERMOSTAT
68. AIR CONDITIONER INDICATOR LAMP
69. AUXILIARY HYDRAULIC NEUTRAL SPOOL SWITCH
70. STARTING INTERLOCK RELAY
71. FUEL SOLENOID RELAY
72. DIODE
73. HAZARD SWITCH
74. FLASHER MODULE
75. DIODE PACK
76. LEFT REAR TURN LIGHT
77. RIGHT REAR TURN LIGHT
78. LEFT FRONT TURN LIGHT
79. RIGHT FRONT TURN LIGHT
80. LEFT FRONT POSITION LIGHT
81. RIGHT FRONT POSITION LIGHT
82. LICENSE PLATE LIGHT
83. RESISTOR
84. LOADER LOCKOUT SWITCH (OPTIONAL)
85. FAN SPEED SWITCH (OPTIONAL FOOT HEATER)
86. LEFT BRAKE LIGHT SWITCH (EURO)
87. RIGHT BRAKE LIGHT SWITCH (EURO)
88. BRAKE LIGHT TIMER RELAY (EURO)
89. TWO (2) SPEED SWITCH
90. TURN SIGNAL SWITCH
91. ATTACHMENT HYDRAULIC SWITCH
92. HORN SWITCH
93. RIDE CONTROL SWITCH
94. FRONT ELECTRIC CONTROL SWITCH No. 1
95. FRONT ELECTRIC CONTROL SWITCH No. 2
96. FRONT ELECTRIC CONTROL SWITCH No. 3
97. FRONT ELECTRIC CONTROL SWITCH No. 4
98. ATTACHMENT HYDRAULIC FORWARD FLOW "ON" SWITCH

CIRCUIT DIAGRAM LEGEND



WIRE IDENTIFICATION



B	BLACK	O	ORANGE	T	TAN
B/W	BLACK/WHITE	P	PURPLE	W	WHITE
LB	LIGHT BLUE	R	RED	Y	YELLOW

NOTES

ELECTRICAL SCHEMATIC
435, 445, AND 445CT SKID STEER

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