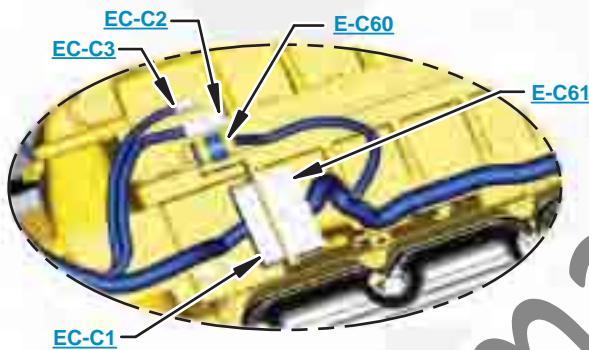




***This document is best viewed at a screen resolution of 1024 X 768.***

To set your screen resolution do the following:  
**RIGHT CLICK** on the **DESKTOP**.  
 Select **PROPERTIES**.  
**CLICK** the **SETTINGS TAB**.  
**MOVE THE SLIDER** under **SCREEN RESOLUTION** until it shows **1024 X 768**.  
**CLICK OK** to apply the resolution.

The Bookmarks panel will allow you to quickly navigate to points of interest.



Click on any text that is BLUE and underlined. These are hyperlinks that can be used to navigate the schematic and machine views.

**VIEW ALL CALLOUTS**

When only one callout is showing on a machine view this button will make all of the callouts visible. This button is located in the top right corner of every machine view page.

HOTKEYS (Keyboard Shortcuts)		
	FUNCTION	KEYS
	Zoom In	"CTRL" / "+"
	Zoom Out	"CTRL" / "-"
	Fit to Page	"CTRL" / "0" (zero)
	Hand Tool	"SPACEBAR" (hold down)
	Find	"CTRL" / "F"



# Schematic

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## **D9R Tractor Electrical System**

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7TL852-UP  
8BL1053-UP

SchematicCat.com

# COMPONENT LOCATION



Component	Schematic Location	Machine Location	Component	Schematic Location	Machine Location
Action Lamp - Rear Master	D-8	B	Resistor - Blower	E-7	13
Alarm - Action	C-8	2	Resistor - Starter	B-4	19
Alarm - Backup	E-8	1	Resistor - Starter (Prelube)	E-2	18
Alternator	E-2	3	Seat	D-8	2
Aux Start Receptacle	E-3	5	Sensor - Coolant Temp	C-3	21
Battery	E-3	6	Sensor - Engine Oil Pressure	C-3	22
Battery	A-3	6	Solenoid - AC Clutch	E-2	28
Breaker - Alternator	D-7	7	Solenoid - Dual Tilt	E-1	29
Breaker - Blower	C-6	7	Solenoid - Flexaire Fan Actuator	E-2	44
Breaker - ECB	C-6	7	Solenoid - Quick Drop Valve	D-1	32
Breaker - Engine	D-7	7	Solenoid - Ripper Pin	A-8	33
Breaker - Floods (Front)	D-7	7	Solenoid - Start Aid	C-4	17
Breaker - Implement	C-6	7	Solenoid - Winch	C-8	45
Breaker - Key	D-7	7	Starter - #1/Prelube	F-2	34
Breaker - Main	D-7	7	Starter 2	A-3	34
Breaker - Power Outlet	D-7	7	Suppressor - Arc #1	A-8	33
Breaker - Remote Condensor	D-6	7	Suppressor - Arc #2	A-8	33
Caterpillar Monitoring System	B-7	A	Suppressor - Arc (A/C) #3	E-1	4
Control - Flexaire Fan	E-5	42	Suppressor - Arc (A/C) #4	E-1	4
Control - Prelube Timer	E-3	9	Switch - AC Binary	E-2	28
Converter - 24V to 12V	D-8	B	Switch - Accessory	B-6	A
Decelerator Pedal	B-6	10	Switch - Blower	F-7	A
Dimmer	C-7	A	Switch - Clutch Brake Backup Alarm	E-6	C
Diode - AC Clutch	E-2	4	Switch - Clutch Brake Neutral Start	E-6	C
Display - Flexaire Fan	E-4	4	Switch - Coolant Flow	D-3	20
Fan - Defrost (Front)	C-5	13	Switch - Diff Steer Backup Alarm	E-6	C
Fan - Defrost (Rear)	A-8	13	Switch - Diff Steer Neutral Start	E-6	C
Fuses	D-6, D-7	A	Switch - Disconnect	F-3	35
Gauge Cluster	C-7	A	Switch - Fan Coolant Temp	D-2	46
Horn - Hi	D-1	12	Switch - Flood (Front)	C-6	A
Horn - Lo	D-1	12	Switch - Flood (Rear)	B-6	A
Key Switch	B-6	A	Switch - Flood (Side)	B-6	A
Lamp - Master Action	C-7	A	Switch - Horn	C-8	B
Motor - Blower	E-8	13	Switch - Hydraulic Filter Bypass	D-1	36
Motor - Condensor #1	B-8	14	Switch - Hydraulic Filter Temp	D-1	36
Motor - Condensor #2	B-8	14	Switch - Operator	A-6	A
Motor - Washer (Front)	E-8	15	Switch - Pitch Control	D-8	B
Motor - Washer (Left)	F-8	15	Switch - Prelube Oil Pressure	E-3	37
Motor - Washer (Rear)	F-8	15	Switch - PTO Filter	F-7	38
Motor - Washer (Right)	F-8	15	Switch - PTO Filter Temp	F-8	38
Motor - Wiper (Front)	A-4	C	Switch - Quick Drop	B-8	39
Motor - Wiper (Left)	A-4	C	Switch - Ripper Pin Puller	B-8	B
Motor - Wiper (Rear)	A-7	C	Switch - Single/Dual Tilt	D-8	B
Motor - Wiper (Right)	A-4	C	Switch - Start Aid	B-5	A
Power Outlet Socket	C-8	B	Switch - Wiper (Front)	A-6	A
Power Post	D-7	B	Switch - Wiper (Left)	A-7	A
Radio 12V	A-4	D	Switch - Wiper (Rear)	A-7	A
Radio 24V	A-5	D	Switch - Wiper (Right)	A-7	A
Relay - Condensor	B-8	14	Tachometer	C-7	A
Relay - Main	D-7	7	Ultrasonic Fuel Level	E-8	40
Relay - Start #1	D-7	7	Winch Joystick	C-8	B
Relay - Start #2	C-7	7			

Machine location are repeated for components located close together

A = Operator Compartment - Front Dash  
 B = Operator Compartment - Right Console  
 C = Operator Compartment - Left Console

D = Operator Compartment - Overhead Console  
 E = Operator Compartment

# CONNECTOR LOCATION



Connector Number	Schematic Location	Machine Location
CONN 1	<a href="#">B-7</a>	<a href="#">14</a>
CONN 2	<a href="#">B-7</a>	<a href="#">14</a>
CONN 3	<a href="#">B-8</a>	<a href="#">16</a>
CONN 4	<a href="#">C-8</a>	<a href="#">B</a>
CONN 5	<a href="#">D-8</a>	<a href="#">B</a>
CONN 6	<a href="#">E-8</a>	<a href="#">47</a>
CONN 7	<a href="#">E-8</a>	<a href="#">47</a>
CONN 8	<a href="#">E-8</a>	<a href="#">48</a>
CONN 9	<a href="#">F-8</a>	<a href="#">48</a>
CONN 10 Datalink Service Connector	<a href="#">D-7</a>	<a href="#">A</a>
CONN 11 Monitor Service Connector	<a href="#">D-7</a>	<a href="#">A</a>
CONN 12	<a href="#">E-7</a>	<a href="#">49</a>
CONN 13	<a href="#">F-6</a>	<a href="#">49</a>
CONN 14	<a href="#">A-6</a>	<a href="#">E</a>
CONN 15	<a href="#">A-6</a>	<a href="#">E</a>
CONN 16	<a href="#">A-6</a>	<a href="#">A</a>
CONN 17	<a href="#">B-6</a>	<a href="#">A</a>
CONN 18	<a href="#">B-6</a>	<a href="#">C</a>
CONN 19	<a href="#">A-5</a>	<a href="#">A</a>
CONN 20	<a href="#">A-5</a>	<a href="#">A</a>
CONN 21	<a href="#">B-5</a>	<a href="#">A</a>
CONN 22	<a href="#">D-5</a>	<a href="#">50</a>
CONN 23 CAES/METS Power and Datalink	<a href="#">E-6</a>	<a href="#">A</a>
CONN 24 Remote Cal	<a href="#">E-5</a>	<a href="#">42</a>
CONN 25	<a href="#">A-5</a>	<a href="#">E</a>
CONN 26	<a href="#">B-4</a>	<a href="#">51</a>
CONN 27	<a href="#">C-4</a>	<a href="#">50</a>
CONN 28	<a href="#">C-4</a>	<a href="#">50</a>
CONN 29	<a href="#">D-4</a>	<a href="#">50</a>
CONN 30	<a href="#">D-4</a>	<a href="#">50</a>
CONN 31	<a href="#">D-4</a>	<a href="#">50</a>
CONN 32	<a href="#">D-4</a>	<a href="#">50</a>
CONN 33	<a href="#">B-5</a>	<a href="#">50</a>
CONN 34	<a href="#">E-4</a>	<a href="#">50</a>
CONN 35	<a href="#">E-4</a>	<a href="#">9</a>
CONN 36	<a href="#">F-4</a>	<a href="#">50</a>
CONN 37 Diagnostic Connector	<a href="#">F-4</a>	<a href="#">50</a>
CONN 38	<a href="#">C-4</a>	<a href="#">18</a>
CONN 39	<a href="#">D-3</a>	<a href="#">53</a>
CONN 40	<a href="#">D-3</a>	<a href="#">9</a>
CONN 41	<a href="#">A-2</a>	<a href="#">55</a>
CONN 42	<a href="#">D-2</a>	<a href="#">54</a>
CONN 43	<a href="#">E-2</a>	<a href="#">28</a>

The connectors shown in this chart are for harness to harness connectors. Connectors that join a harness to a component are generally located at or near the component. See the Component Location Chart.

Failure Mode Identifiers (FMI) List	
FMI No.	Failure Description
0	Data valid but above normal operational range.
1	Data valid but below normal operational range.
2	Data erratic, intermittent, or incorrect.
3	Voltage above normal or shorted high.
4	Voltage below normal or shorted low.
5	Current below normal or open circuit.
6	Current above normal or grounded circuit.
7	Mechanical system not responding properly.
8	Abnormal frequency, pulse width, or period.
9	Abnormal update.
10	Abnormal rate of change.
11	Failure mode not identifiable.
12	Bad device or component.
13	Out of calibration.

Monitoring System Modes	
Mode Of Operation	Mode Number
Normal	0
Harness Code	1
Numeric Readout	2
Service	3
Tattletale (Log)	4
Units	5

Component Identifiers (CID) List	
CID No.	Component
Caterpillar Monitoring System MID 30	
0096	Fuel Level Sender
0110	Engine Coolant Temperature Sensor
0177	Torque Converter Oil Temperature Sensor
0248	Data Link
0263	Sensor Power Supply
0271	Action Alarm
0324	Action Lamp
0600	Hydraulic Oil Temperature Sensor
0601	Brake Air Pressure
0819	Display Data Link
0821	Display Power Supply
0830	Brake Oil Temperature Sensor

Off Machine Switch Specification				
Part No.	Function	Actuate	Deactuate	Contact Position
3E-6428	Coolant Flow (CMS)	362 ± 29mN(45.6mm ID point) (1.3 ± .1oz, 1.8inID point)	303mN MIN (1.1oz MIN)	Normally Open
3E-9350	PTO Filter Temperature	52 ± 3°C (125.6 ± 5.4°F)	43°C MIN (109.4°F MIN)	Normally Closed
9X-7781	Hydraulic Oil Filter Bypass	210 ± 70kPa (30 ± 10psi)	-	Normally Open
105-9152	Prelube Oil Pressure	30 ± 7kPa (4.3 ± 1.0psi)	30 ± 7kPa (4.3 ± 1.0psi)	Normally Closed
114-5333	AC Binary	275 to 1750 kPa <sup>1</sup> (40 to 255 psi)	-	Normally Open
124-8274	Hydraulic Oil Filter Temp	25 ± 3°C (77 ± 5.4°F)	15°C MIN (59°F MIN)	Normally Open

Resistor, Sender and Solenoid Specifications		
Part No.	Component Description	Resistance (Ohms) <sup>1</sup>
9G-1950	Resistor - Blower Motor Speed	Overall 2.0 ± .1; Tap 1.0 ± .05
3E-7842	Resistor - Starter/Diagnostic/Prelube	150 ± 7.5
3E-9205	Solenoid - Dual Tilt	24.90
109-3032	Solenoid - Quick Drop Valve	34.3 ± 1.7
3E-8575	Solenoid - Ripper Pin Puller	24.90
3E-6333	Solenoid - Start Aid	6.00

<sup>1</sup> At room temperature unless otherwise noted.

Related Electrical Service Manuals	
Title	Form Number
Alternator 9X-7803	SENR7508
Caterpillar Monitoring System	SENR6717
Starting And Charging Systems	SENR2947
Starting Motor 6V-0889 and 123-8689	SENR3860
Starting Motor 6V-0928	SENR3851

# WIRE DESCRIPTION



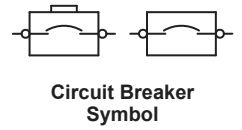
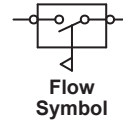
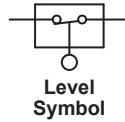
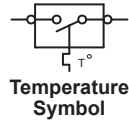
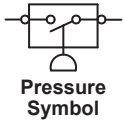
Wire Number	Wire Color	Description	Wire Number	Wire Color	Description
Power Circuits			Monitoring Circuits (Continued)		
101	RD	Battery (+)	499	GY	Hydraulic Oil Filter Differential Pressure
102	RD	Front Flood Power	447	PK	Engine Oil Prelube Pressure Switch
105	RD	Key Switch Power	413	YL	SPI Data
108	BU	Wiper Motor Power	414	BU	SPI Load
109	OR	Alt Output (+) Terminal	Accessory Circuits		
112	PU	Main Power Relay Output	500	BR	Wiper - Front (Park)
113	OR	Monitor Panel Power	501	GN	Wiper - Front (Low)
114	RD	Warning Horn Power	502	OR	Wiper - Front (HI)
116	BR	Rear Flood Power	503	BR	Wiper - Rear (Park)
124	ON	A/C and Blower Power	504	YL	Wiper - Rear (Low)
125	OR	Side Flood Power	505	BU	Wiper - Rear (HI)
130	GN	Auxiliary Power	506	PU	Washer - Front
131	RD	CAES/METS Power	507	WH	Washer - Rear
133	OR	Auxiliary Power	508	PU	Radio Speaker - Left
134	YL	Auxiliary Power	509	WH	Radio Speaker - Left (Common)
135	RD	Auxiliary Power	511	BR	Radio Speaker - Right
140	BU	Powertrain Control Power	512	GN	Radio Speaker - Right (Common)
150	RD	Engine Control Power	513	OR	A/C Compressor Refrigerant Pressure Switch
158	BR	Remote A/C Condenser Power	515	GY	Blower Motor (HI)
174	PK	Accessory Power	516	ON	Blower Motor (Medium)
176	OR	Seat Power	517	BU	Blower Motor (Low)
177	OR	Main Breaker Power	521	YL	A/C Switch to Refrigerant Switch
184	BU	Attachment Power	522	WH	A/C Clutch to Thermostat Switch
186	RD	Power Outlet Power	523	BR	Wiper - Left (Park)
197	GN	Implement Control Power	524	BU	Wiper - Left (Low)
198	RD	Secondary Brake Power	525	GY	Wiper - Left (HI)
Ground Circuits			526	YL	Wiper - Right (Park)
200	BK	Main Chassis Ground	527	GN	Wiper - Right (Low)
201	BK	Operator Monitor Return	528	PK	Wiper - Right (HI)
203	BK	Chassis Ground Diagnostic	529	WH	Washer Left
207	BK	Starter Ground Diagnostic	530	OR	Washer Right
270	BK	EMS-II Ident Code 0	553	YL	Pth Solenoid to Trigger Switch - Dual Tilt
271	BK	EMS-II Ident Code 1	564	PK	Momentary Switch to Single Tilt Solenoid - Dual Tilt
272	BK	EMS-II Ident Code 2	592	BU	DC/DC Converter Output
273	BK	EMS-II Ident Code 3	593	GN	Codensor Fan Relay to Motors
274	BK	EMS-II Ident Code 4	513	PK	DC/DC Converter Memory Output
275	BK	EMS-II Ident Code 5	Lighting Circuits		
290	BK	EMS-II Service	600	BR	Dash Lamp Basic
291	BK	EMS-II Clear	608	GN	Flood Lamp Rear
Basic Machine Circuits			609	YL	Flood Lamp - Side
301	BU	Starter No. 1 Solenoid	610	OR	Flood Lamp-Front
302	OR	Starter No. 1 Resistor to Diagnostic	630	GY	Flood Lamp - Rear Ripper
304	WH	Starter Relay No. 1 Output	633	BU	Accessory Power
306	GN	Starter Relay Coil to Neutral Start SW or Key SW	661	GN	Tachometer Lamp - EMS-II
307	OR	Key Switch to Neutral Start Switch	662	YL	Speedometer Lamp - EMS-II
308	YL	Main Power Relay Coil	663	GY	Gage Lamps - EMS-II Control Circuits
310	PU	Start Aid Switch to Start Aid Solenoid	Control Circuits		
311	WH	Start Aid Solenoid to Temp Switch	779	WH	Ripper Pin Engage Solenoid
312	PK	Starter No. 2 Solenoid to Resistor	780	PU	Ripper Pin Disengage Solenoid
313	GY	Starter No. 2 Resistor to Diagnostic	700	OR	Engine Control Digital Sensor Power (+8V)
314	PU	Starter Relay No. 2 Output	707	GN	Display +V
321	BR	Backup Alarm	708	PK	SPI C lock
322	GY	Warning Horn (Forward)	735	PU	EMS-II Operator Switch
337	WH	Prelube Pushbutton Switch to Prelube Timer	793	BU	ATA Datalink -
Monitoring Circuits			794	YL	ATA Datalink +
403	GN	Alternator (R) Term.	702	GN	Decelerator Pedal
405	GY	Engine Oil Pressure	710	BR	Start Aid Relay
410	WH	Fault Alarm	715	PU	Throttle Switch (Low Idle)
411	PK	Master Fault Lamp	716	WH	Throttle Switch (Low Idle Parity)
412	BU	Engine Coolant Flow	717	YL	Throttle Switch (High Idle)
420	OR	Fuel Filter Differential Pressure	718	BU	Throttle Switch (High Idle Parity)
426	BR	Powertrain Oil Filter Differential Pressure	721	GY	Start Aid Switch
441	OR	Engine Coolant Temperature	797	BU	EMS-II Sensor Power (+8V)
442	GY	Hydraulic Oil Temperature	703	GN	Quick Drop Valve
443	YL	Powertrain Oil Temperature	892	BR	CAT Data Link (-)
447	PK	Fuel Level	893	GN	CAT Data Link (+)
450	YL	Engine Speed	998	BR	Engine Digital Sensor Return

# HARNESS and WIRE

## Electrical Schematic Symbols



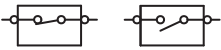
### Symbols



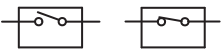
### Symbols and Definitions



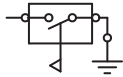
**Fuse:** A component in an electrical circuit that will open the circuit if too much current flows through it.



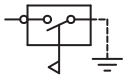
**Switch (Normally Open):** A switch that will close at a specified point (temp, press, etc.). The circle indicates that the component has screw terminals and a wire can be disconnected from it.



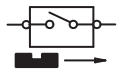
**Switch (Normally Closed):** A switch that will open at a specified point (temp, press, etc.). No circle indicates that the wire cannot be disconnected from the component.



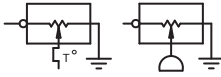
**Ground (Wired):** This indicates that the component is connected to a grounded wire. The grounded wire is fastened to the machine.



**Ground (Case):** This indicates that the component does not have a wire connected to ground. It is grounded by being fastened to the machine.



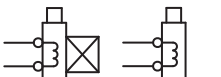
**Reed Switch:** A switch whose contacts are controlled by a magnet. A magnet closes the contacts of a normally open reed switch; it opens the contacts of a normally closed reed switch.



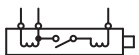
**Sender:** A component that is used with a temperature or pressure gauge. The sender measures the temperature or pressure. Its resistance changes to give an indication to the gauge of the temperature or pressure.



**Relay (Magnetic Switch):** A relay is an electrical component that is activated by electricity. It has a coil that makes an electromagnet when current flows through it. The electromagnet can open or close the switch part of the relay.



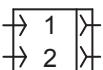
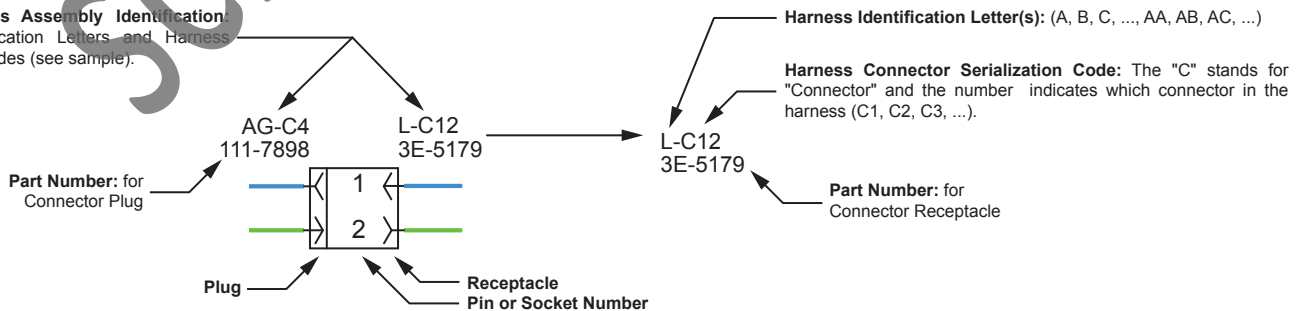
**Solenoid:** A solenoid is an electrical component that is activated by electricity. It has a coil that makes an electromagnet when current flows through it. The electromagnet can open or close a valve or move a piece of metal that can do work.



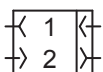
**Magnetic Latch Solenoid:** A magnetic latch solenoid is an electrical component that is activated by electricity and held latched by a permanent magnet. It has two coils (latch and unlatch) that make electromagnet when current flows through them. It also has an internal switch that places the latch coil circuit open at the time the coil latches.

### Harness and Wire Symbols

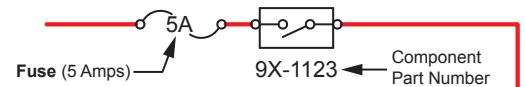
**Wire, Cable, or Harness Assembly Identification:** Includes Harness Identification Letters and Harness Connector Serialization Codes (see sample).



**Deutsch connector:** Typical representation of a Deutsch connector. The plug contains all sockets and the receptacle contains all pins.



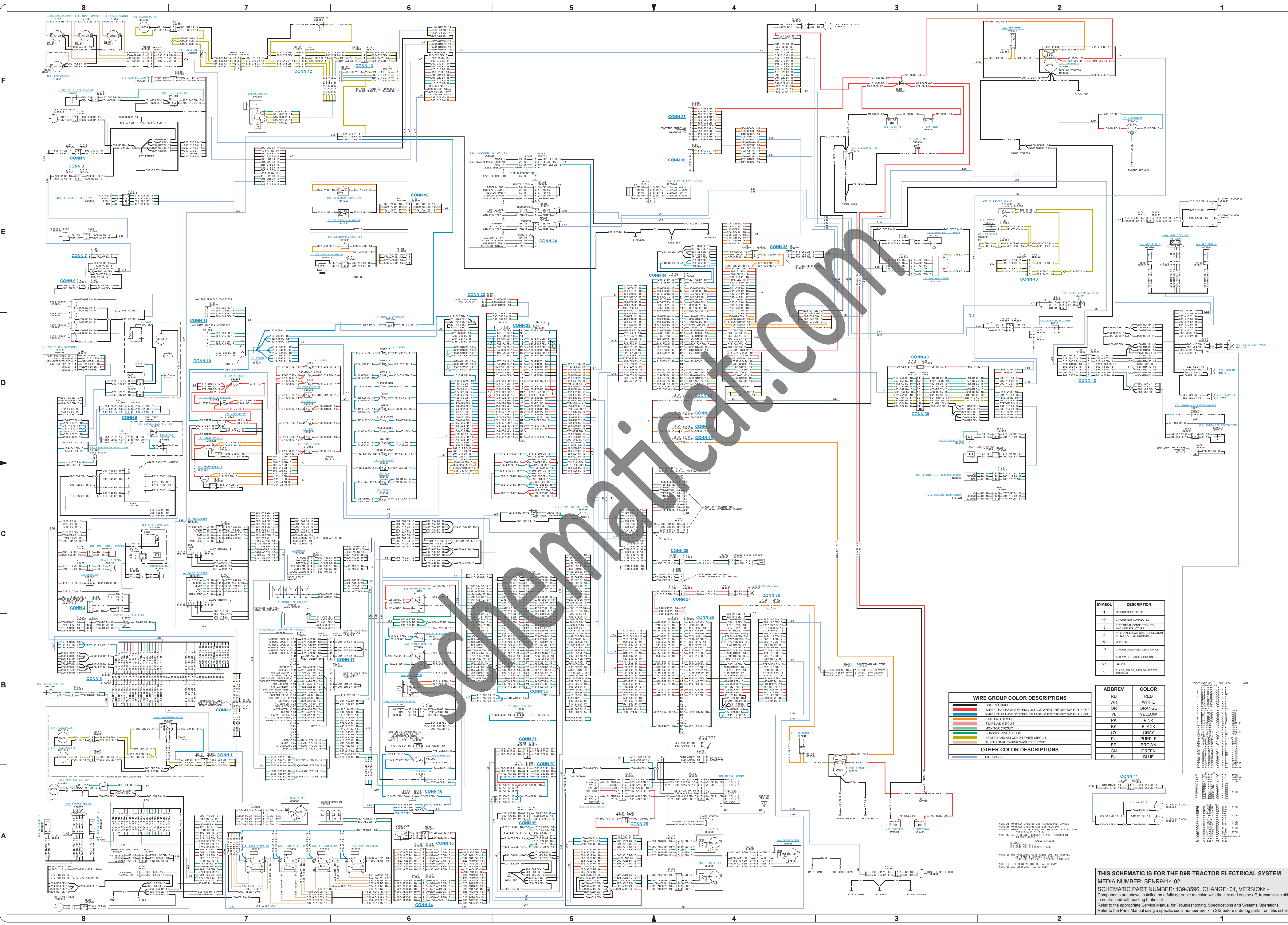
**Sure-Seal connector:** Typical representation of a Sure-Seal connector. The plug and receptacle contain both pins and sockets.



**Harness identification code:** This example indicates wire group 325, wire 135 in harness "AG".

**Wire Gauge** (325-AG135) and **Wire Color** (PK-14)





SYMBOL DESCRIPTION	
+	CIRCUIT CONNECTED
+	CIRCUIT NOT CONNECTED
+	ELECTRICAL CONNECTION TO MACHINE STRUCTURE
+	MACHINE ELECTRICAL CONNECTION TO SURFACE OF COMPONENT
+	DISCONNECT
+	CIRCUIT GROUNDING DESIGNATION
+	WIRE WITH CABLE COMPONENT
+	SPRINT
+	BLADE SHIELD RING OR SCREW TERMINAL

ABBREV COLOR	
RD	RED
WH	WHITE
OR	ORANGE
YL	YELLOW
PK	PINK
BLK	BLACK
GY	GRAY
PU	PURPLE
BR	BROWN
GN	GREEN
BU	BLUE

WIRE GROUP COLOR DESCRIPTIONS	
Black	GROUND CIRCUIT
Red	WIRES THAT HAVE SYSTEM VOLTAGE WHEN THE KEY SWITCH IS OFF
Orange	WIRES THAT HAVE SYSTEM VOLTAGE WHEN THE KEY SWITCH IS ON
Yellow	STARTING CIRCUIT
Pink	MONITOR CIRCUIT
Black	CHASSIS GROUND CIRCUIT
Purple	HEATER AND AIR CONDITIONER CIRCUIT
Brown	TURBO SUPERCHARGER WIPER CIRCUIT

OTHER COLOR DESCRIPTIONS	
Blue	HEADLAMP

**THIS SCHEMATIC IS FOR THE D9R TRACTOR ELECTRICAL SYSTEM**  
**MEDIA NUMBER: SENR0414-02**  
**SCHEMATIC PART NUMBER: 139-3596, CHANGE: 01, VERSION: 1**  
 Components are shown installed on a fully operable machine with the key and engine off, transmission shifter in neutral and with parking brake set.  
 Refer to the appropriate Service Manual for Troubleshooting, Specifications and Systems Operations.  
 Refer to the Parts Manual using a specific serial number prefix in SIS before ordering parts from this schematic.



# MACHINE HARNESS CONNECTOR AND COMPONENT LOCATIONS

