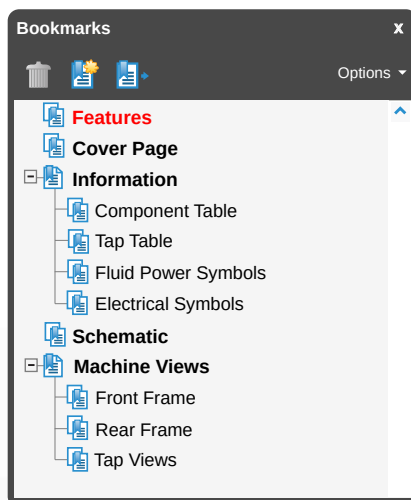


INTERACTIVE SCHEMATIC



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**.

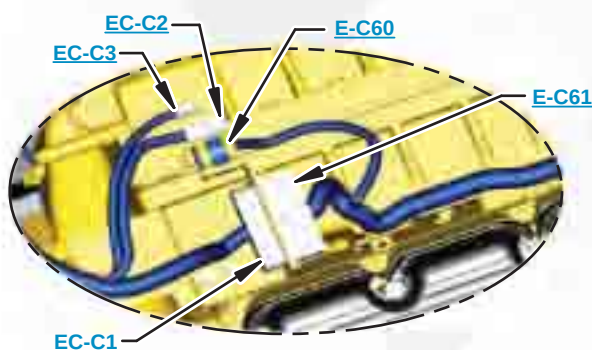
Select **PROPERTIES**.

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

D11R Track-Type Tractor D11R Carrydozer Track-Type Tractor Electrical System

D11R TTT:
7PZ1-880

D11R CD TTT:
AAF1-227

COMPONENT LOCATION

Page 1 of 2



Component	Schematic Location	Machine Location	Component	Schematic Location	Machine Location
Alarm - Action	G-15	A	Sensor - Ground Speed (Radar) ATCH	B-12	36
Alarm - Backup	J-13	1	Sensor - Lift Cylinder Position Left ATCH ²	K-2	15
Alternator	H-2	2	Sensor - Lift Cylinder Position Right ²	C-2, C-1	16
Arc Suppressor A ATCH	I-14	3	Sensor - Makeup Oil Level ATCH	E-10	37
Arc Suppressor B ATCH	I-14	3	Sensor - Pressure Atmospheric	E-1	38
Battery - 1	I-4	4	Sensor - Pressure Crankcase	D-1	20
Battery - 2	I-3	4	Sensor - Pressure Demand Fan Pump	C-4	39
Battery - 3 & 4	C-3	5	Sensor - Pressure Engine Oil	D-1	40
Block AS - Power	F-4	6	Sensor - Pressure Main Hydraulic Pump Oil	F-12, F-11, F-10	41
Breaker - Blower	H-8	E	Sensor - Engine Speed / Timing	D-1	45
Breaker - Engine Control	H-8	E	Sensor - Pressure Tilt Hydraulic Pump Oil	G-12, G-11, F-10	41
Breaker - Front Floods	H-8	E	Sensor - Pressure Turbo Inlet LH	F-1	42
Breaker - Implement Control	G-8	E	Sensor - Pressure Turbo Inlet RH	E-1	43
Breaker - Key Start Switch	H-8	E	Sensor - Pressure Turbo Outlet	E-1	44
Breaker - Main	G-9	E	Sensor - Ripper Raise / Lower ATCH	G-15	B
Breaker - Power Train Control	G-8	E	Sensor - Shank In / Out ATCH	G-15	B
Buss Bar A - D	G-9	E	Sensor - Speed Torque Converter Output	H-11	36
Control - Engine	E-3	7	Sensor - Steer Lever Position LH	I-6	C
Control - Handle Blade	I-15	B	Sensor - Steer Lever Position RH	I-6	C
Control - Handle Implement	H-15	B	Sensor - TDC Cal	E-1	46
Control - Handle Ripper ATCH	G-15	B	Sensor - Temperature Aftercooler	F-1	40
Control - Implement	D-14	B	Sensor - Temperature Air Inlet	F-1	47
Control - Monitor (VIDS)	G-13	B	Sensor - Temperature Engine Coolant	E-1	48
Control - Power Train	J-7	8	Sensor - Temperature Exhaust LH	E-1	49
Control - Shifter	J-6	C	Sensor - Temperature Exhaust RH	E-1	39
Control - Temperature ATCH	E-15, F-15	B	Sensor - Temperature Oil Hydraulic	B-15	50
Control - Water Valve	K-12	9	Sensor - Temperature Oil Power Train	D-1	51
Converter - 24V to 12V	E-15, F-15	10	Sensor - Temperature Oil Steering	I-10	35
Converter - 24V to 12V High Capacity ATCH	B-14	11	Sensor - Ultrasonic Fuel Level	B-15	52
Converter - 24V to 15V ATCH	J-3	12	Sensor A	H-15	B
Dimmer	E-6	A	Sensor B	H-15	B
Display - Gauge Cluster	E-9	A	Socket - Power Outlet	F-15	34
Display - Monitor (VIDS) Message Center	D-9	A	Solenoid - A/C Clutch ATCH	F-1	24
Display - Speedometer / Tachometer	E-9	A	Solenoid - Brake Steer LH	H-10	35
Fan - Defrost Front ATCH	F-8	13	Solenoid - Brake Steer RH	H-10	35
Fan - Defrost Rear ATCH	D-8	14	Solenoid - Clutch Steer LH	H-10	35
Filter AS Left ATCH	K-2	15	Solenoid - Clutch Steer RH	H-10	35
Filter AS Right ATCH	C-3	16	Solenoid - Diverter ATCH	B-12	36
Fuse Block	G-8	E	Solenoid - Fan Bypass ATCH	F-5	53
Ground Strap - Engine Control Ground	D-3	7	Solenoid - Start Aid	G-3	24
Ground Strap 1 (Beam to Frame)	H-3	17	Solenoid Valve - Blade Lower / Float	G-11	G
Ground Strap 2 (LH Fender to Beam)	H-3	6	Solenoid Valve - Blade Raise	H-12	G
Ground Strap 3 (LH Beam to Platform)	H-3	6	Solenoid Valve - Blade Tilt Left	G-11	G
Ground Strap 4 (RH Beam to RH Fender)	B-4	18	Solenoid Valve - Blade Tilt Right	H-12	G
Ground Strap 5 (Fuel Tank to LH Fender)	B-15	19	Solenoid Valve - Brake Parking	H-10	35
Heater - Jacket Water Left	F-4	20	Solenoid Valve - Brake Secondary	H-10	35
Heater - Jacket Water Right	F-4	2	Solenoid Valve - Demand Fan	C-4	53
Horn - Forward (High & Low)	C-1	21	Solenoid Valve - Dual Tilt	H-1	54
Indicator - Operating Function Statistics	C-12	22	Solenoid Valve - Implement Lockout	G-12	G
Indicator - Strip LED	E-9	E	Solenoid Valve - PCO	F-11	G
Injector 1	F-2	E	Solenoid Valve - Pitch Regenerate ATCH	H-1	54
Injector 2	E-2	E	Solenoid Valve - Ripper Pin ATCH	I-14	3
Injector 3	F-2	E	Solenoid Valve - Ripper Shank In	H-12	G
Injector 4	E-2	E	Solenoid Valve - Ripper Shank Lower	H-12	G
Injector 5	F-2	E	Solenoid Valve - Ripper Shank Out	G-11	G
Injector 6	E-2	E	Solenoid Valve - Ripper Shank Raise	G-11	G
Injector 7	E-2	E	Solenoid Valve 1 (Clutch Reverse)	I-12	D
Injector 8	E-2	E	Solenoid Valve 2 (Clutch Forward)	I-12	D

COMPONENT LOCATION

Page 2 of 2



Component	Schematic Location	Machine Location	Component	Schematic Location	Machine Location
Keypad - Monitor (VIDS)	D-12	22	Solenoid Valve 3 (Clutch Third Gear)	I-12	D
Lamp - Backlight Keypad	D-12	22	Solenoid Valve 4 (Clutch Second Gear)	H-12	D
Lamp - Backlight Panel	F-9	A	Solenoid Valve 5 (Clutch First Gear)	I-12	D
Lamp - Backlight Washer	B-9	23	Switch - A/C On	E-15	B
Lamp - Master Action	F-9	A	Switch - Accessory	D-8	A
Lamp - Master Action Rear	G-14	10	Switch - Bi-Directional Module	E-9	E
Module - A/C ATCH	G-1	24	Switch - Blower	E-15	B
Module - Intermittent Front	B-7	25	Switch - Brake	H-6	56
Module - Intermittent Left	C-7	25	Switch - Brake Parking	J-6	C
Module - Intermittent Rear	C-8	25	Switch - Bypass Electro/Hyd Filter	B-14	57
Module - Intermittent Right	B-7	25	Switch - Bypass Fan Return Filter	B-14	58
Motor - Blower	K-13, J-13	9	Switch - Console Raise / Lower	I-6	C
Motor - Console Raise/Lower	I-5	C	Switch - Defrost Fan Front ATCH	F-8	A
Motor - Defrost Fan Front ATCH	F-9	A	Switch - Defrost Fan Rear ATCH	D-8	A
Motor - Defrost Fan Rear ATCH	D-8	26	Switch - Disconnect	I-4	59
Motor - Pressurizer Group ATCH	J-11	27	Switch - Downshift	J-6	C
Motor - Starter 1 & 2	I-2	28	Switch - Engine Coolant Flow	D-1	38
Motor - Washer Front	J-13	8	Switch - Flood Front	E-8	A
Motor - Washer Left	J-14	8	Switch - Flood Rear	E-8	A
Motor - Washer Rear	J-14	8	Switch - Floods Side	E-8	A
Motor - Washer Right	J-14	8	Switch - Horn	G-14	B
Motor - Wiper Front	B-6	29	Switch - Implement Lockout	I-15	B
Motor - Wiper Left	C-6	30	Switch - Intermittent Wiper Front	C-9	23
Motor - Wiper Rear	D-8	31	Switch - Intermittent Wiper Left	C-9	23
Motor - Wiper Right	B-6	32	Switch - Intermittent Wiper Rear	C-9	23
Plug - Implement Code (D11CD)	D-15	B	Switch - Intermittent Wiper Right	B-9	23
Plug - Implement Code (D11R)	D-15	B	Switch - Key Start	E-8	A
Plug - Power Train Code	J-8	9	Switch - Load Select ATCH	C-12	44
Relay - Intermittent Front	B-7	33	Switch - Power Train Oil Filter 1	K-10	60
Relay - Intermittent Left	C-7	33	Switch - Power Train Oil Filter 2	J-10	60
Relay - Intermittent Right	B-7	33	Switch - Power Train Oil Temperature	D-1	51
Relay - Main	G-9	E	Switch - Pressure A/C High ATCH	F-1	24
Relay - Pressurizer Group ATCH	J-10	27	Switch - Pressure A/C Low ATCH	F-1	24
Relay - Start 1	G-9	E	Switch - Pressure Fuel Filter Differential	D-1	53
Relay - Start 2	F-9	E	Switch - Pressure Prelube Oil ATCH	G-3	53
Relay - Start Aid	G-3	24	Switch - Reverse	I-6	C
Relay - Start Aid Hold	H-3	24	Switch - Ripper Auto Stow ATCH	G-15	B
Relay - Wiper Rear	D-8	33	Switch - Ripper Pin Puller ATCH	G-14	B
Resistor - Motor Blower	K-13, J-13	9	Switch - Start Aid	D-8	A
Resistor - Motor Starter 1	I-2	28	Switch - Thermostat	K-12, J-11	9
Resistor - Motor Starter 2	H-2	28	Switch - Throttle	H-14	B
Resistor - Start Aid	H-3	24	Switch - Upshift	J-6	C
Resistor - Water Valve Signal	J-12	9	Termination - J1939 Data Link 1	E-13	10
Seat GP ATCH	G-15	34	Termination - J1939 Data Link 2	E-14	10
Sensor - Brake	H-6	35	Timer - Prelube ATCH	G-3	24
Sensor - Deceleration Pedal	F-7	E	Valve - Oil Renewal	F-1	55
Sensor - Direction	I-6	C	Valve - Water	K-12, J-12	9
Sensor - Dynamic Inclination ATCH	B-12	G			

Machine locations are repeated for components located close together.

A = Located in the dash.

B = Located in or on the right-hand console.

C = Located in the left-hand console.

D = Located in transmission case.

E = Located lower left of the dash.

F = Located at each cylinder of the engine.

G = Located on or around the Electro/Hydraulic Manifold.

¹Components from earlier machines (Shown in balloons on Schematic).

²Components used are serial number specific (See Schematic).

CONNECTOR LOCATION

Page 1 of 2



Connector Number	Schematic Location	Machine Location
CONN 1	E-15	B
CONN 2	E-15	B
CONN 3	E-15	B
CONN 4	D-15	B
CONN 5	B-15	41
CONN 6	B-14	10
CONN 7	E-14	10
CONN 8	I-14	3
CONN 9	J-14	61
CONN 10	J-14	26
CONN 11	J-14	26
CONN 12	J-13	27
CONN 13	H-13	62
CONN 14	E-13	10
CONN 15	E-13	10
CONN 16	C-12	62
CONN 17	C-12	22
CONN 18	C-12	22
CONN 19	D-12	22
CONN 20	K-12, J-12	9
CONN 21	K-11, J-11	63
CONN 22	K-11, J-11	27
CONN 23	I-11	E
CONN 24	F-11	50
CONN 25	D-11	58
CONN 26	C-11	58
CONN 27	B-11	58
CONN 28	I-10	E
CONN 29	I-9	33
CONN 30	I-9	33
CONN 31	H-9	E
CONN 32	G-9	E
CONN 33	C-9	31
CONN 34	B-8	62
CONN 35	C-8	62
CONN 36	D-8	A
CONN 37	J-8	9
CONN 38	H-7	63
CONN 39	H-7	A
CONN 40	E-7	A
CONN 41	D-7	A
CONN 42	D-7	A
CONN 43	D-7	A
CONN 44	C-7	64
CONN 45	H-6	56

Connector Number	Schematic Location	Machine Location
CONN 46	F-5	63
CONN 47	F-5	63
CONN 48	E-4, F-5	65
CONN 49	D-4	65
CONN 50	D-5	24
CONN 51	C-5	24
CONN 52	B-5	24
CONN 53	B-4	18
CONN 54	D-4	38
CONN 55	G-4, F-4	17
CONN 56	G-4	63
CONN 57	I-4	6
CONN 58	J-4	17
CONN 59	H-3	17
CONN 60	H-3	17
CONN 61	G-3	24
CONN 62	C-2	66
CONN 63	C-2	66
CONN 64	F-2	44
CONN 65	G-2	67
CONN 66	J-2	12
CONN 67	J-2	68
CONN 68	K-1	68

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.

¹Connectors locations from earlier machines (Shown in balloons on Schematic).

Component Identifiers (CID ¹) Module Identifier (MID ²)	
Engine Control (MID No. 036)	
CID	Component
0001	Cylinder 1 Injector Solenoid
0002	Cylinder 2 Injector Solenoid
0003	Cylinder 3 Injector Solenoid
0004	Cylinder 4 Injector Solenoid
0005	Cylinder 5 Injector Solenoid
0006	Cylinder 6 Injector Solenoid
0007	Cylinder 7 Injector Solenoid
0008	Cylinder 8 Injector Solenoid
0091	Throttle Switch
0100	Oil Pressure Sensor
0101	Crankcase Pressure Sensor
0110	Coolant Temperature Sensor
0168	Electrical Power Supply
0190	Engine Speed Signal
0248	Cat Data Link
0253	Personality Module
0254	Engine ECM
0261	Speed / Timing Sensor
0262	5 Volt Sensor DC Power Supply
0263	Digital Sensor Supply
0264	Decelerator Position Sensor
0266	Crank Without Inject Inputs
0268	Programmable Parameters
0273	Turbocharger Outlet Pressure Sensor
0274	Atmospheric Pressure Sensor
0275	Right Turbocharger Inlet Pressure Sensor
0276	Left Turbocharger Inlet Pressure Sensor
0277	Timing Calibration
0290	Engine Cooling Fan Pressure Sensor
0291	Engine Fan Control Solenoid
0545	Start Aid Relay
0546	Start Aid Hold Relay
0827	Left Exhaust Temperature Signal
0828	Right Exhaust Temperature Signal
0829	Rear Aftercooler Temperature Signal
0861	Service Engine Lamp
0865	High Exhaust Temperature Lamp
0867	Hydraulic Engine Retarder Valve
Monitor (VIDS) (MID No. 051)	
CID	Component
96	Fuel Level Sensor
271	Action Alarm
296	Power Train ECM
324	Master Action Lamp
590	Engine ECM
596	Implement ECM
600	Hydraulic Oil Temperature Sensor
809	Speedometer / Tachometer
811	Gauge (Quad) Cluster
815	Message Center
820	Keypad Data Link
1045	Power Train Oil Temperature Sensor
1426	Rear Master Action Lamp
Implement Control (MID No. 082)	
CID	Component
78	Blade Pitch Not Reset
84	Ground Speed Sensor
168	Electrical System Voltage
296	Power Train ECM
490	Implement Lockout Switch
497	Blade Tilt Right Solenoid Valve
498	Blade Tilt Left Solenoid Valve
590	Engine ECM
596	Implement ECM
597	Main Pump Pressure Sensor
650	Harness Code
672	Torque Converter Output Speed Sensor
869	Right Lift Cylinder Position Sensor (CDO)
870	Left Lift Cylinder Position Sensor (CDO)

871	Inclination Sensor
873	Tilt Pump Pressure Sensor
874	Mode Select Switch
875	Manual Select Switch
876	Pitch Forward Trigger Switch
877	Pitch Back Thumb Switch
878	Load Selector
879	Ripper Shank In / Out Sensor
880	Ripper Raise / Lower Sensor
881	Ripper Auto Stow Switch
882	Implement Lockout Solenoid Valve
883	Pitch Regenerate Solenoid Valve
884	Pitch Solenoid of Dual Tilt Solenoid Valve
885	Pressure Compensation Override Solenoid Valve
886	Ripper Shank In Solenoid Valve
887	Ripper Shank Out Solenoid Valve
888	Ripper Shank Lower Solenoid Valve
889	Ripper Shank Raise Solenoid Valve
1034	Pitch Forward Thumb Switch
1047	Single Tilt Solenoid of Dual Tilt Solenoid Valve
1078	Blade Control Lift Sensor
1079	Blade Control Tilt Sensor
1180	Auxiliary Solenoid #1
1197	Blade Lower Solenoid Valve
1198	Blade Raise Solenoid Valve
1199	Vital Information Display System (VIDS)
1298	Solenoid Calibration (Implement ECM Replaced)
1395	Engine Over Speed
1448	Torque Converter Output Speed (Power Train ECM)
1709	Diverter Solenoid
Power Train Control (MID No. 113)	
CID	Component
70	Parking Brake Switch - On / Off Pole
75	Steering System Oil Temperature Sensor
168	Electrical System
177	Transmission Oil Temperature Sensor
190	Engine Speed Sensor
248	Cat Data Link
254	Power Train Control
269	Sensor Power Supply
298	Service Brake Switch
299	Transmission Direction Lever position Sensor
368	Autoshift Switch
468	Service Brake Pedal Position Sensor
573	Inching Pedal Position Sensor
618	Parking Brake Switch - Brake Backup Pole
621	Downshift Switch
622	Upshift Switch
623	Direction Switch
650	Harness Code
668	Transmission Lever Position Sensor
671	Transmission Output Speed 1 Sensor
672	Torque Converter Output Speed Sensor
673	Transmission Output Speed 2 Sensor
674	Transmission Intermediate Speed 1 Sensor
675	Transmission Intermediate Speed 2 Sensor
676	Left Steering Lever Position Sensor
677	Right Steering Lever Position Sensor
681	Parking Brake Solenoid
689	Left Steering Brake Solenoid
690	Right Steering Brake Solenoid
691	Reverse Clutch Solenoid Valve 1
692	Forward Clutch Solenoid Valve 2
693	Speed 3 Clutch Solenoid Valve 3
694	Speed 2 Clutch Solenoid Valve 4
695	Speed 1 Clutch Solenoid Valve 5
697	Priority Solenoid Valve
698	Left Steering Clutch Solenoid Valve
699	Right Steering Clutch Solenoid Valve
722	Secondary Brake Solenoid Valve
1199	Vital Information Display System (VIDS)

¹ The CID is a diagnostic code that indicates which circuit is faulty.

² The MID is a diagnostic code that indicates which electronic control module diagnosed the fault.

Failure Mode Identifiers (FMI)¹	
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.
14	Parameter failures.
15	Parameter failures.
16	Parameter not available.
17	Module not responding.
18	Sensor supply fault.
19	Condition not met.
20	Parameter failures.

¹The FMI is a diagnostic code that indicates what type of failure has occurred.

SPECIFICATIONS AND RELATED MANUALS



Off Machine Switch Specification				
Part No.	Function	Actuate	Deactuate	Contact Position
3E-5464	Refrigerant Thermostat	-1.1 ± 0.8°C (30 ± 1.4°F)	2.2 ± 0.8°C (36 ± 1.4°F)	Normally Closed
3E-9350	Power Train Oil - Temperature	52.0 ± 3.0° C (125.6 ± 5.4° F)	43° C MIN (109.4° F MIN)	Normally Closed
105-9152	Prelube Oil Pressure	30 ± 7 kPa (4.4 ± 1)	30 ± 7 kPa (4.4 ± 1)	Normally Closed
114-5333	Refrigerant Pressure (A/C)	275 to 1750 kPa ¹ (40 to 255 psi)	--	Normally Open ²
144-5661	Fuel Filter	137.9 ± 13.8 kPa (20 ± 2 psi)	87.2 kPa MIN (12 psi MIN)	Normally Closed
149-6371	A/C Low Pressure	103.4 ± 13.8 kPa (15 ± 2 psi)	34.5 ± 7 kPa (5 ± 1 psi)	Normally Open
156-1382	Electro/Hyd Filter Bypass	276 ± 28 kPa (40 ± 4 psi)	179 kPa MIN (26 psi MIN)	Normally Closed
171-8708	Coolant Flow	362 ± 29 mN (1.3 ± .1 oz.)	303 mN MIN (1.1 oz. MIN)	Normally Open

¹ With increasing pressure the closed condition can be maintained up to 2800 kpa (405 psi), with decreasing pressure the closed condition can be maintained down to 170 kpa (25psi).

² Contact position at the contacts of the harness connector.

Resistor and Solenoid Specifications		
Part No.	Component Description	Resistance (Ohms) ¹
3E-7842	Resistor: Starter Diagnostic 1 Starter Diagnostic 2	150 ± 7.5
125-9740	Resistor: Blower Motor	A - C 2.0 ± 5% B - C 1.0 ± 5% C - D 0.36 ± 5%
127-4540	Resistor: Temperature Control	A - C 5000 ± 500 A - B Variable B - C Variable
134-2540	Resistor: J1939 Data Link Termination 1 J1939 Data Link Termination 2	120
239-9368	Resistor: Water Valve Signal	27.0 k ± 1%
3E-1906	Solenoid: A/C Compressor Clutch	17.6 ± 0.6
3E-8575	Solenoid: Ripper Pin	25
3E-9205	Solenoid: LH Steer Clutch Valve - Dual Tilt	25
121-4030	Solenoid: Blade Lower / Float Blade Raise Blade Tilt Left LH Steer Brake RH Steer Brake RH Steer Clutch	7.75 ± 1.0
124-3052	Solenoid: Blade Tilt Right Ripper Raise Ripper Shank In Ripper Shank Lower Ripper Shank Out	7.75 ± 1.0
133-2250	Solenoid: Park Brake Dump Service Brake Dump	33
136-9412	Solenoid: Demand Fan Valve Forward Clutch Reverse Clutch	3
147-5399	Solenoid: 1st Gear Clutch 2nd Gear Clutch 3rd Gear Clutch	8.15 ± 0.6
152-6761	Solenoid: Valve -Implement Lockout	32.6 ± 1.6
152-8340	Solenoid: PCO Valve	32.6 ± 1.6
152-8346	Solenoid: Valve -Pitch Regenerate	32.6 ± 1.6
155-4066	Solenoid: Injectors 1 thru 8	0.060 ± 5%
169-2610	Solenoid: Fan Bypass	32.6 ± 1.6
172-2392	Solenoid: Park Brake Dump Service Brake Dump	41.9 ± 2.1
174-4909	Solenoid: LH Steer Brake LH Steer Clutch RH Steer Brake RH Steer Clutch	8.7 ± 0.4
189-0189	Solenoid: Diverter	32.6 ± 1.6
189-8627	Solenoid: Demand Fan Valve	5.0 ± 0.3

¹ At room temperature unless otherwise noted.

Related Electrical Service Manuals	
Title	Form Number
30SI Series and 34SI Series Alternator: 165-5140	SENR7508
3508B Engines for Caterpillar Built Machines:	RENR1331
50-MT Series Starting Motors: 6V-0890, 123-8689	SENR3860
Contour Series Seat:	SENR6615
HDB Series and M1 Series Heavy Duty Brushless Alternators: 197-8820	SENR4130
Implement Control:	SENR9457
Monitor (VIDS)	SENR9413
Power Train Control:	RENR3695
Starting and Charging Systems:	SENR2947

WIRE DESCRIPTION

Page 1 of 3



Wire Number	Wire Color	Description	Wire Number	Wire Color	Description
Power Distribution Circuits			Control Circuits (Continued)		
101	RD	Battery (+)	830	OR	RH Steer Lever Position Signal
102	RD	Front Flood Lamps / 12V Converter / Defrost Fans / Radio	851	WH	Direction Sensor Signal
105	RD	Key Switch / Diagnostic Connector	892	BR	CAT Data Link -
108	BU	Wiper / Start Aid	893	GN	CAT Data Link +
109	RD	Alternator Output (+) Terminal / Main Breaker	900	PU	First Gear Clutch
112	PU	Main Relay to Fuse Block and Breakers (Switched Battery)	918	OR	Engine Overspeed Signal
113	OR	Key Switch On	919	GN	Engine Overspeed Parity Signal
114	RD	Warning Horn (Forward)	973	BR	Indicator Strip
116	BR	Rear Flood Lamps / Radio	975	WH	LH Steer Brake
122	BU	A/C Clutch	977	YL	Auto-Downshift Switch
124	GN	Water Valve Control / Blower Switch	993	BR	Analog Sensor Return
125	OR	Side Flood Lamps	994	GY	Engine Oil Pressure
130	GN	Pressurizer Group Relay	995	BU	Engine Coolant Temperature
131	RD	CAES / METS Power	996	GN	Engine Speed Timing Supply
133	OR	High Capacity 24V to 12V Converter	997	OR	Analog Sensor Supply (Engine Sensors)
134	YL	Spare	998	BR	Digital Sensor Return
135	RD	Monitor Control	999	WH	Engine Speed Timing Sensor Signal
139	OR	Spare	A700	OR	Digital Sensor Supply (LH/RH Exhaust Temp Snsr)
140	BU	Power Train Control	A701	GY	Injector 1
150	RD	Engine Control	A702	PU	Injector 2
158	BR	Spare	A703	BR	Injector 3
174	PK	Accessories	A704	GN	Injector 4
176	YL	Seat Raise, Lower, and Heat	A705	YL	Injector 5
177	RD	Main Breaker to Breakers (Unswitched Battery)	A706	GY	Injector 6
184	BU	Ripper Pin Puller Switch / 24V to 12V Converter	A707	PU	Injector 7
186	RD	Spare	A708	BR	Injector 8
197	GN	Implement Control	A746	PK	Turbo Outlet Pressure Signal
198	RD	Secondary Brake	A747	GY	Atmospheric Pressure Signal
Ground Circuits			A751	YL	Fuel Filter Differential Pressure Switch
200	BK	Main Chassis	C913	BU	Ground Speed Sensor
201	BK	Monitor (VIDS) Returns	C989	PU	Makeup Oil Level Signal
202	BK	Power Train Control Returns	E707	GN	Instrument Power (Monitor (VIDS))
203	BK	Disconnect Switch to Diagnostic Connector	E708	PK	Display Clock (Monitor (VIDS))
207	BK	Starter Motor to Diagnostic Connector	E710	BU	LCD Lamp Driver (Monitor (VIDS))
210	BK	Implement Control Returns	E735	PU	Operator Switch (Monitor (VIDS))
229	BK	Engine Control Ground	E793	BU	ATA Data Link -
270	BK	Monitor (VIDS) Identification Code 0	E794	YL	ATA Data Link +
271	BK	Monitor (VIDS) Identification Code 1	E795	YL	Crankcase Pressure
272	BK	Monitor (VIDS) Identification Code 2	E796	GN	Air Inlet Temperature Sensor Signal
273	BK	Monitor (VIDS) Identification Code 3	E797	WH	Retarder Solenoid Return (NOT USED)
274	BK	Monitor (VIDS) Identification Code 4	E798	PK	Retarder Solenoid (NOT USED)
275	BK	Monitor (VIDS) Identification Code 5	E799	BR	Solenoid Return (To Engine Control)
276	BK	Power Train Control Identification Code 0	E900	WH	Power Train Transmission Output Speed (+)
277	BK	Power Train Control Identification Code 1	E901	GN	Power Train Transmission Output Speed (-)
278	BK	Power Train Control Identification Code 2	E902	PU	Power Train Transmission Intermediate Speed (+)
279	BK	Power Train Control Identification Code 3	E903	YL	Power Train Transmission Intermediate Speed (-)
280	BK	Power Train Control Identification Code 4	E904	BR	Power Train Transmission Intermediate Speed Q (+)
290	BK	Monitor (VIDS) Service	E905	BU	Power Train Transmission Intermediate Speed Q (-)
291	BK	Monitor (VIDS) Clear	E906	OR	Power Train Transmission Output Speed Q (+)
A210	BK	Implement Control Harness Code 0	E907	GY	Power Train Transmission Output Speed Q (-)
A211	BK	Implement Control Harness Code 1	E908	BR	Torque Converter Output Speed Sensor (+)
A212	BK	Implement Control Harness Code 2	E909	WH	Torque Converter Output Speed Sensor (-)
A213	BK	Implement Control Harness Code 3	E917	WH	Implement Lockout Switch Locked

WIRE DESCRIPTION

Page 2 of 3



Wire Number	Wire Color	Description	Wire Number	Wire Color	Description
Basic Machine Circuits			E918	GN	Implement Lockout Solenoid Switch
301	BU	Starter No. 1 Solenoid	F701	BR	Oil Renewal Valve
302	OR	Starter No. 1 Resistor to Diagnostic Connector	F702	GN	Decelerator Pedal Signal
304	WH	Starter Relay No. 1 Output	F703	GY	LH Exhaust Temperature Signal
306	GN	Park Brake Switch to Starter Relay Coil 1 & 2	F704	OR	RH Exhaust Temperature Signal
307	OR	Key Switch to Prelube Timer	F707	WH	Start Aid Hold Relay (Current Level)
308	YL	Key Switch to Main Relay Coil / Diagnostic Connector	F710	BR	Start Aid Relay (On)
310	PU	Start Aid Relay to Start Aid Solenoid and Resistor	F711	GN	CAN Data Link High
312	PK	Starter No. 2 Solenoid to Resistor	F712	GY	CAN Data Link Low
313	GY	Starter No. 2 Resistor to Diagnostic Connector	F713	OR	LH Turbo Inlet Pressure Signal
314	PU	Starter Relay No. 2 Output to Starter No. 2	F714	PK	RH Turbo Inlet Pressure Signal
321	BR	Power Train Control to Backup Alarm	F715	PU	Throttle Switch Low Idle
322	GY	Forward Horn Switch to Forward Horn	F716	WH	Throttle Switch Low Idle (Parity)
334	BU	Power Train Control to Start Aid Solenoid No. 2	F717	YL	Throttle Switch High Idle
337	WH	Parking Brake Switch to Prelube Timer	F718	BU	Throttle Switch High Idle (Parity)
Monitoring Circuits			F719	BR	Crank Without Injection (NC)
403	GN	Alternator (R) Terminal to Monitor (VIDS)	F720	GN	Crank Without Injection (NO)
410	WH	Monitor (VIDS) to Action Alarm	F721	GY	Start Aid Switch
411	PK	Monitor (VIDS) to Rear Master Action Lamp (See 421-BU)	F723	PK	TDC Probe +
412	BU	Engine Coolant Flow Switch	F724	PU	TDC Probe -
419	YL	Parking Brake Switch to Power Train Control	F725	WH	Demand Fan Pump Pressure
421	BU	Monitor (VIDS) to Front Master Action Lamp (See 411-PK)	F726	YL	Injector 1 and 3 Common
426	BR	Power Train Oil Filter Temp. Switch and Bypass Switch 1	F727	YL	Injector 2 and 4 Common
427	GN	Power Train Bypass Switch 2 to Bypass Switch 1	F728	BR	Injector 5 and 7 Common
442	GY	Hydraulic Oil Temperature Sensor to Monitor (VIDS)	F729	GN	Injector 6 and 8 Common
443	YL	Power Train Oil Temperature Sensor to Monitor (VIDS)	F737	YL	Aftercooler Temperature Signal
447	PK	Fuel Level Sensor to Monitor (VIDS)	F780	PK	Parking Brake Switch (Normally Closed)
450	YL	Engine Speed Sensor (Not Used)	F781	BR	Downshift Switch (Normally Open)
499	GY	Fan Return Filter Bypass Switch to Monitor (VIDS)	F782	OR	Reverse Switch (Normally Open)
A447	PK	Prelube Oil Pressure Switch to Prelube Timer	F783	GN	Upshift Switch (Normally Closed)
C413	YL	Monitor (VIDS) Display Data to Gauges and Message Center	F784	YL	Downshift Switch (Normally Closed)
C414	BU	Monitor (VIDS) Display Load to Gauges and Message Center	F785	WH	Upshift Switch (Normally Open)
C415	WH	Monitor (VIDS) Display Key Data to Monitor (VIDS)	F786	GY	Reverse Switch (Normally Closed)
E455	BR	Electro / Hydraulic Filter Bypass Switch to Monitor (VIDS)	F788	PU	Left Steer Clutch Solenoid
Accessory Circuits			F789	YL	Right Steer Clutch Solenoid
500	BR	Wiper - Front (Park)	F790	BR	Service Brake Pedal Position
501	GN	Wiper - Front (Low)	F791	BU	Right Steer Brake Solenoid
502	OR	Wiper - Front (High)	F792	WH	Left Steer Brake Solenoid
503	BR	Wiper - Rear (Park)	F797	BU	8V Sensor Supply
504	YL	Wiper - Rear (Low)	F799	BU	Pitch Regenerate Solenoid Valve
505	BU	Wiper - Rear (High)	F842	BU	AIH Post Heat Switch
506	PU	Washer - Front	F843	YL	Inching Pedal Sensor
507	WH	Washer - Rear	F846	PU	Indicator Lamp
508	PU	Radio Speaker - Left (+)	F847	YL	Indicator Strip Lamp
509	WH	Radio Speaker - Left (-)	F848	OR	Bi-Directional (Normally Open)
511	BR	Radio Speaker - Right (+)	F849	WH	Bi-Directional (Normally Closed)
512	GN	Radio Speaker - Right (-)	F850	PK	Power Train Switch
513	GN	A/C Low Pressure Switch to A/C Module	G730	PK	Park Brake Solenoid (Power Train)
515	GY	Blower Motor (High)	G731	GY	Secondary Service Brake Solenoid (Power Train)
516	GN	Blower Motor (Medium)	G848	GN	Auto-Downshift Indicator
517	BU	Blower Motor (Low)	G865	BU	Makeup Oil Level Sensor Power
519	GN	A/C Low Pressure Switch to A/C High / Low Pressure Switch	G939	PK	Switch Return
521	YL	A/C On Switch to A/C Module	H710	PK	Lift Lever Position (Implement Control)
522	WH	A/C Thermostat Switch to A/C High / Low Pressure Switch	H711	GN	Tilt Lever Position (Implement Control)

WIRE DESCRIPTION

Page 3 of 3



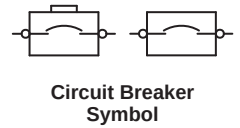
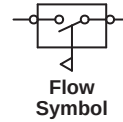
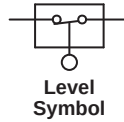
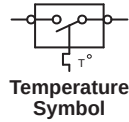
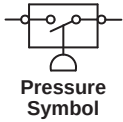
Wire Number	Wire Color	Description	Wire Number	Wire Color	Description
523	BR	Wiper - Left (Park)	H713	PK	Blade Raise Solenoid Valve (Implement Control)
524	BU	Wiper - Left (Low)	H714	OR	Lower Proportional Solenoid (Implement Control)
525	GY	Wiper - Left (High)	H721	OR	Load Mode Switch (Implement Control)
526	YL	Wiper - Right (Park)	H735	GY	Diverter Solenoid Valve (Cruise Control)
527	GN	Wiper - Right (Low)	H746	YL	Demand Fan Solenoid Valve
528	PK	Wiper - Right (High)	H801	PU	Proportional Driver Return
529	WH	Washer - Left	H802	GY	Proportional Driver Return
530	OR	Washer - Right	H803	BU	Proportional Driver Return
567	WH	A/C On Switch to Blower Motor Switch	H804	GN	Proportional Driver Return
592	BU	24V to 12V Converter Switched Output	H805	BR	Proportional Driver Return
A513	PK	24V to 12V Converter Memory Output	H806	OR	Proportional Driver Return
A523	PU	Temperature Potentiometer Position 1	J764	BR	Code Plug Return (Implement Control)
A524	BR	Temperature Potentiometer Position 2	J910	OR	Single Tilt Solenoid Valve
A525	GN	Temperature Potentiometer Position 3 or A/C Ground	J913	GN	Ripper Shank In Solenoid Valve
A599	YL	Pressurizer Relay to Pressurizer Motor	J914	PU	Ripper Shank Lower Solenoid Valve
C568	WH	Blower Motor (Maximum)	J921	PK	Ripper Shank Raise Solenoid Valve
C569	YL	24V to 12V Converter Switched Output	J922	GY	Ripper Shank Out Solenoid Valve
E508	PK	Front Wiper Switch to Front Intermittent Module	J929	YL	Ripper Auto-Lift Switch (Normally Closed)
E509	PU	Front Intermittent Wiper Module to Front Wiper Relay	J930	PK	Ripper Auto-Lift Switch (Normally Open)
E510	GN	Rear Wiper Switch to Rear Intermittent Module	J943	GN	Blade Control Mode Select Switch (Normally Open)
E511	WH	Rear Intermittent Wiper Module to Rear Wiper Relay	J944	BU	Blade Control Mode Select Switch (Normally Closed)
E512	OR	Right Wiper Switch to Right Intermittent Module	J945	WH	Blade Control Manual Select Switch (Normally Open)
E513	BR	Right Intermittent Wiper Module to Right Wiper Relay	J946	OR	Blade Control Manual Select Switch (Normally Closed)
E514	YL	Left Wiper Switch to Left Intermittent Module	J947	YL	Ripper In / Out Sensor
E515	PK	Left Intermittent Wiper Module to Left Wiper Relay	J948	PK	Ripper Raise / Lower Sensor
E516	YL	Front Intermittent Relay to Front Wiper Motor Park	J949	GY	Right Lift Cylinder Position Sensor
E517	PU	Rear Intermittent Relay to Rear Wiper Motor Park	J950	PU	Left Lift Cylinder Position Sensor
E518	BU	Right Intermittent Relay to Right Wiper Motor Park	J991	OR	Blade Control Handle Pitch Fwd Trigger Switch (N.O.)
E519	GN	Left Intermittent Relay to Left Wiper Motor Park	J996	BR	Blade Control Handle Pitch Fwd Trigger Switch (N.C.)
Lighting Circuits			J997	GN	Operator Function Stat Indicator Single Tilt LED 3
600	BR	Dash Lamps	J998	BU	Operator Function Stat Indicator Single Tilt LED 2
608	GN	Flood Lamps - Rear	J999	WH	Operator Function Stat Indicator Single Tilt LED 1
609	YL	Flood Lamps - Side	K977	PK	Steer Oil Temperature Sensor
610	OR	Flood Lamps - Front	K978	BU	ECPC Pump Solenoid
630	GY	Flood Lamps - Ripper	K984	GY	Hold Relay Resistor
633	BU	Accessory Switch to Accessory Connector	M916	OR	Ripper VT Valve
661	GN	Tachometer Lamp - Monitor (VIDS)	M919	BU	Main Hydraulic Pump Oil Pressure Sensor
662	YL	Speedometer Lamp - Monitor (VIDS)	M921	BR	Pressure Compensation Override Solenoid
663	GY	Gauge Lamps - Monitor (VIDS)	M927	GN	Lockout Switch (Not Locked)
Control Circuits			M928	BU	Blade Right Tilt Solenoid Valve
709	OR	Sensor Power Supply (Power Train Control)	M929	WH	Blade Left Tilt Solenoid Valve
751	GN	Transmission Shift Solenoid No. 1 (Reverse Clutch)	M930	PK	Pitch Solenoid Dual Tilt Pitch Solenoid
752	YL	Transmission Shift Solenoid No. 2 (Forward Clutch)	M931	YL	Sensor Supply Pressure
754	BU	Transmission Shift Solenoid No. 3 (Third Gear Clutch)	N932	PU	Operator Function Stat Indicator Single Tilt LED 4
755	OR	Transmission Shift Solenoid No. 4 (Second Gear Clutch)	N935	OR	Blade Control Handle Pitch Back Switch (N.O. LT Sw)
779	WH	Ripper Pin Puller Switch to Ripper Solenoid (Engage)	N936	YL	Blade Control Handle Pitch Back Switch (N.C. LT Sw)
780	PU	Ripper Pin Puller Switch to Ripper Solenoid (Disengage)	N937	PU	Blade Control Handle Pitch Back Switch (N.O. LT Sw)
828	WH	LH Steer Lever Position Signal	N938	BU	Blade Control Handle Pitch Back Switch (N.C. RT Sw)

HARNESS and WIRE

Electrical Schematic Symbols



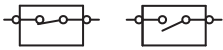
Symbols



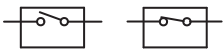
Symbols and Definitions



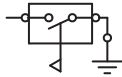
Fuse: A component in an electrical circuit that will open the circuit if too much current flows through it.



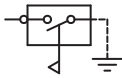
Switch (Normally Open): A switch that will close at a specified point (temp, press, etc.). The circle indicates that the component has screw terminals and a wire can be disconnected from it.



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.



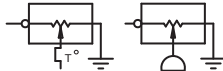
Ground (Wired): This indicates that the component is connected to a grounded wire. The grounded wire is fastened to the machine.



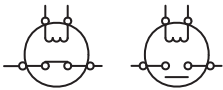
Ground (Case): This indicates that the component does not have a wire connected to ground. It is grounded by being fastened to the machine.



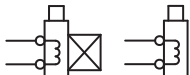
Reed Switch: A switch whose contacts are controlled by a magnet. A magnet closes the contacts of a normally open reed switch; it opens the contacts of a normally closed reed switch.



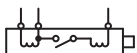
Sender: A component that is used with a temperature or pressure gauge. The sender measures the temperature or pressure. Its resistance changes to give an indication to the gauge of the temperature or pressure.



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.



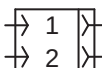
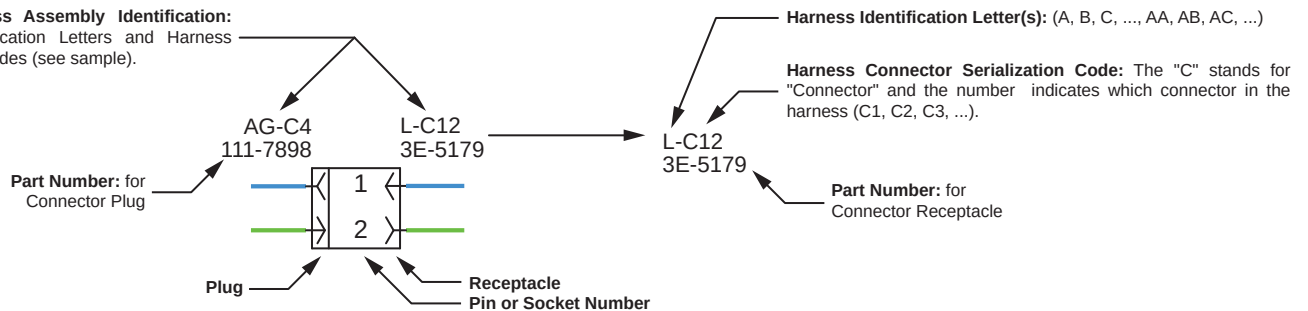
Solenoid: A solenoid is an electrical component that is activated by electricity. It has a coil that makes an electromagnet when current flows through it. The electromagnet can open or close a valve or move a piece of metal that can do work.



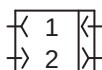
Magnetic Latch Solenoid: A magnetic latch solenoid is an electrical component that is activated by electricity and held latched by a permanent magnet. It has two coils (latch and unlatch) that make electromagnet when current flows through them. It also has an internal switch that places the latch coil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

Harness and Wire Symbols

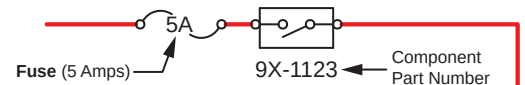
Wire, Cable, or Harness Assembly Identification:
Includes Harness Identification Letters and Harness Connector Serialization Codes (see sample).



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



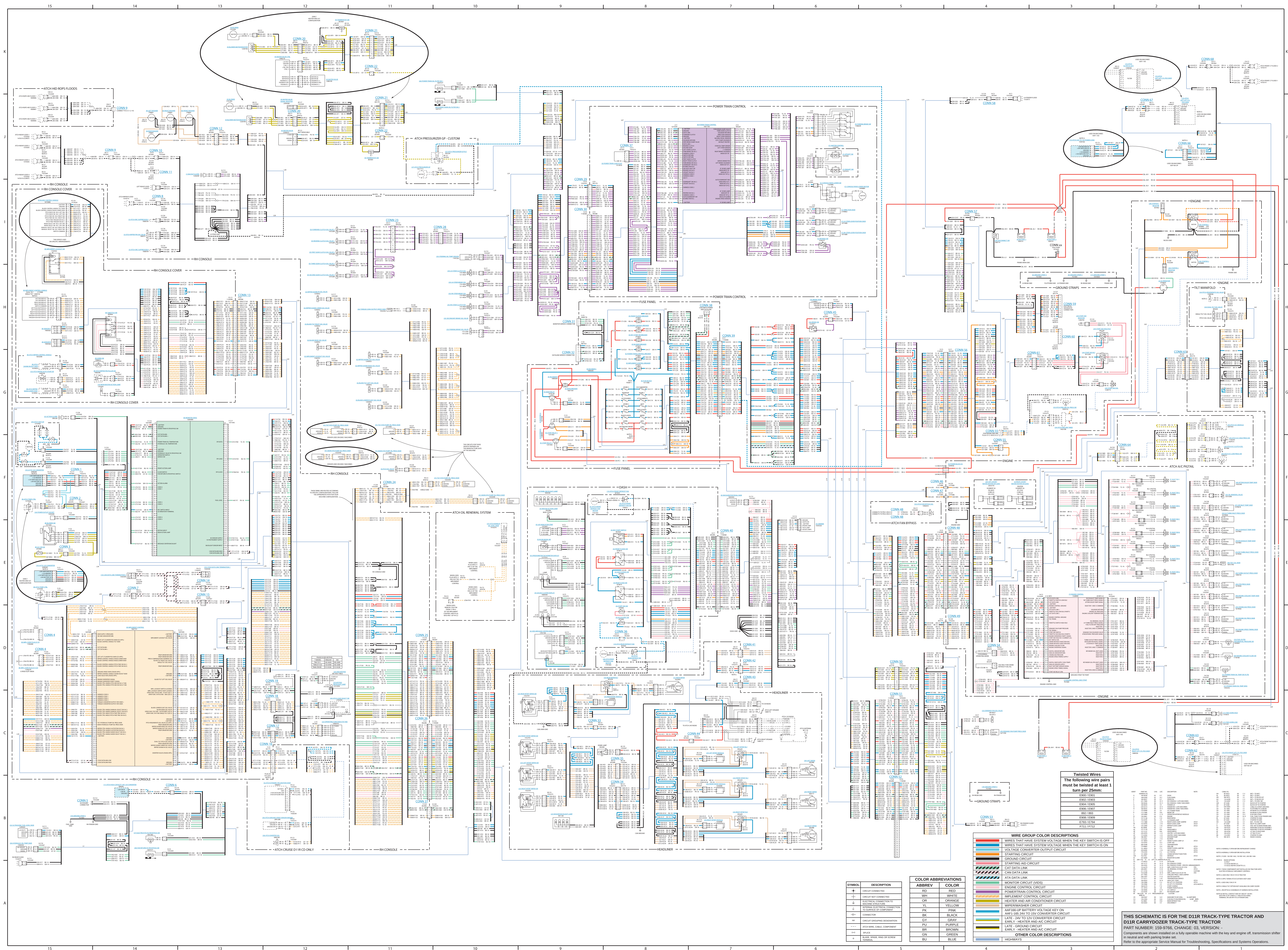
Sure-Seal connector: Typical representation of a Sure-Seal connector. The plug and receptacle contain both pins and sockets.



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

Wire Gauge

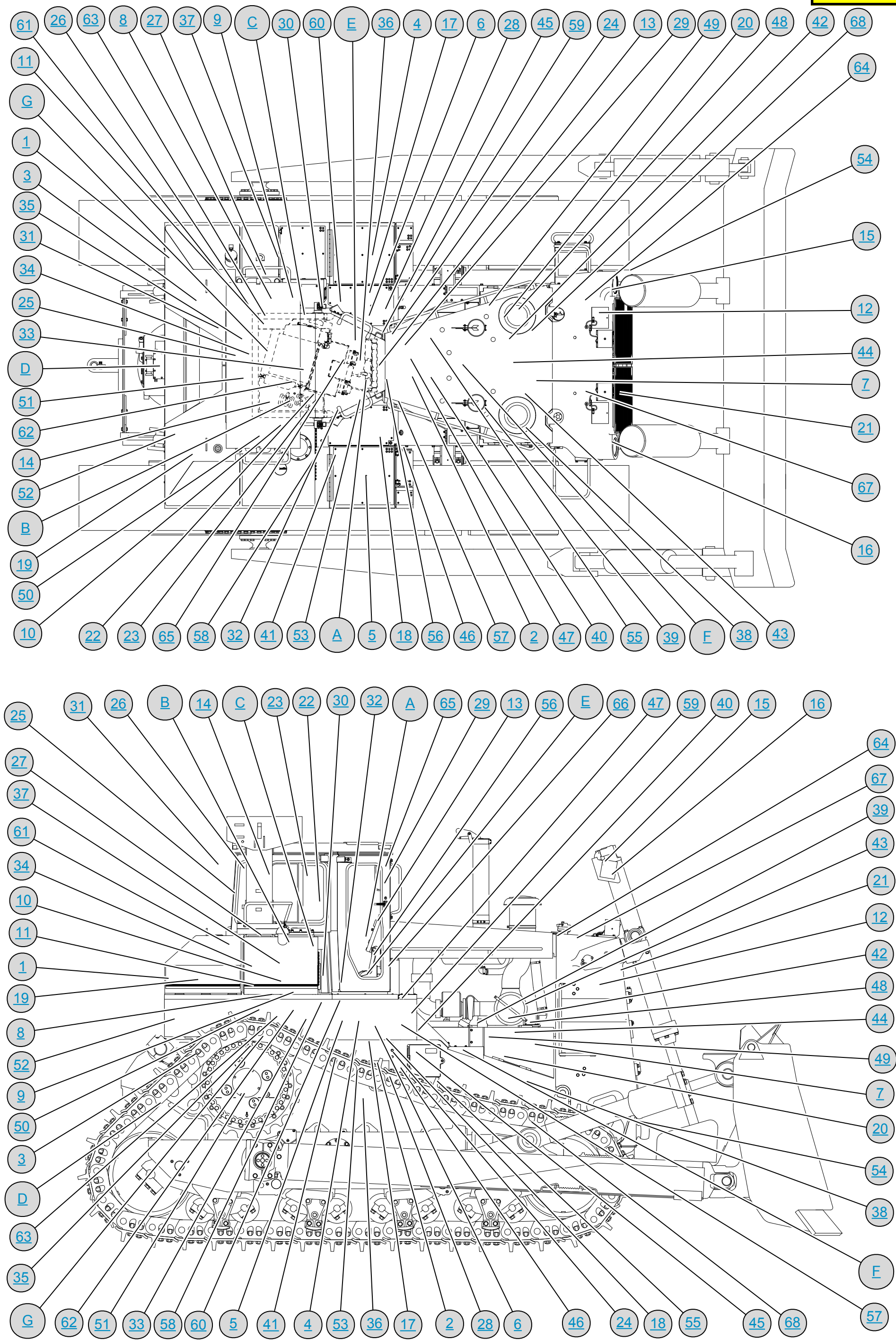
Wire Color



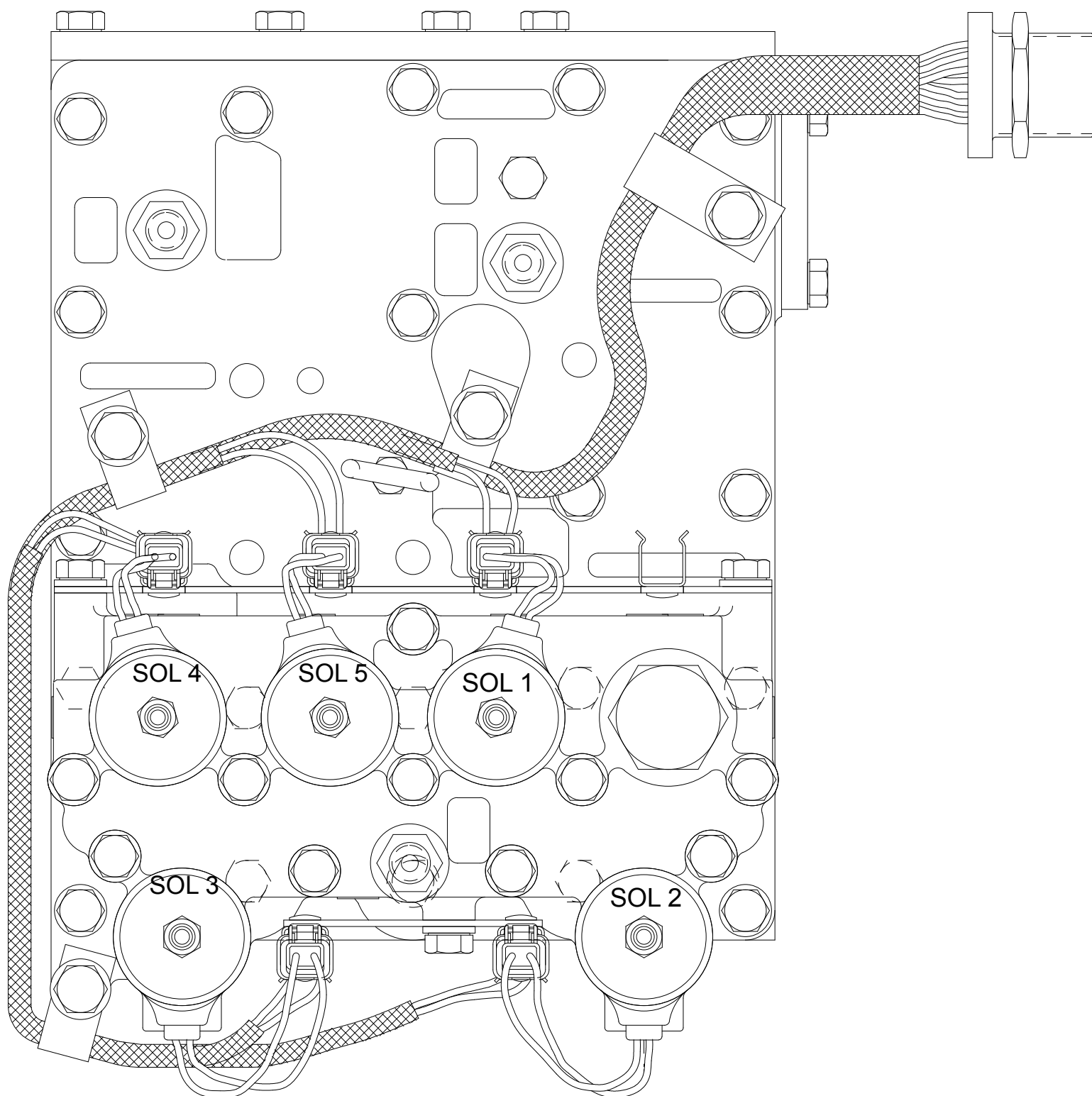
MACHINE HARNESS CONNECTOR AND COMPONENT LOCATIONS



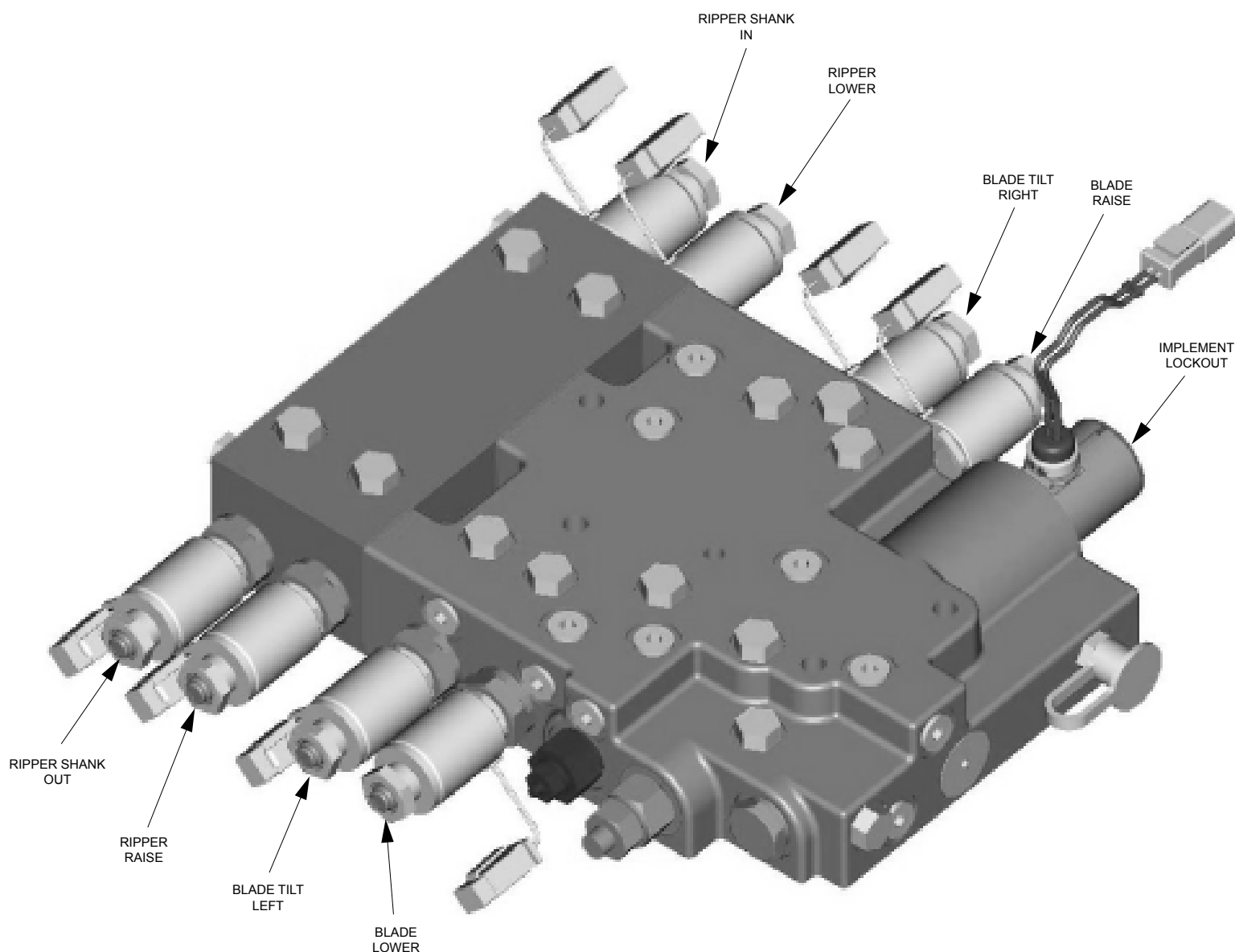
[VIEW ALL CALLOUTS](#)



AREA D - SOLENOID VALVES FOR THE TRANSMISSION



AREA G - RIPPER, BLADE, AND IMPLEMENT SOLENOID VALVES



SOLENOID VALVES FOR STEERING AND BRAKING

