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The following wire pairs must be twisted at least 1 turn per 25mm:

- 892 & 893
- E793 & E794
- F418 & F419
- F711 & F712
- L854 & L855

WIRE GROUP COLOR DESCRIPTIONS

Orange	Orange Circuit
Blue	Blue Circuit
Green	Green Circuit
Red	Red Circuit
Black	Black Circuit
White	White Circuit
Yellow	Yellow Circuit
Purple	Purple Circuit
Grey	Grey Circuit
Light Blue	Light Blue Circuit
Light Green	Light Green Circuit
Light Orange	Light Orange Circuit
Light Red	Light Red Circuit
Light Black	Light Black Circuit
Light White	Light White Circuit
Light Yellow	Light Yellow Circuit
Light Purple	Light Purple Circuit
Light Grey	Light Grey Circuit
Light Light Blue	Light Light Blue Circuit
Light Light Green	Light Light Green Circuit
Light Light Orange	Light Light Orange Circuit
Light Light Red	Light Light Red Circuit
Light Light Black	Light Light Black Circuit
Light Light White	Light Light White Circuit
Light Light Yellow	Light Light Yellow Circuit
Light Light Purple	Light Light Purple Circuit
Light Light Grey	Light Light Grey Circuit
Light Light Light Blue	Light Light Light Blue Circuit
Light Light Light Green	Light Light Light Green Circuit
Light Light Light Orange	Light Light Light Orange Circuit
Light Light Light Red	Light Light Light Red Circuit
Light Light Light Black	Light Light Light Black Circuit
Light Light Light White	Light Light Light White Circuit
Light Light Light Yellow	Light Light Light Yellow Circuit
Light Light Light Purple	Light Light Light Purple Circuit
Light Light Light Grey	Light Light Light Grey Circuit

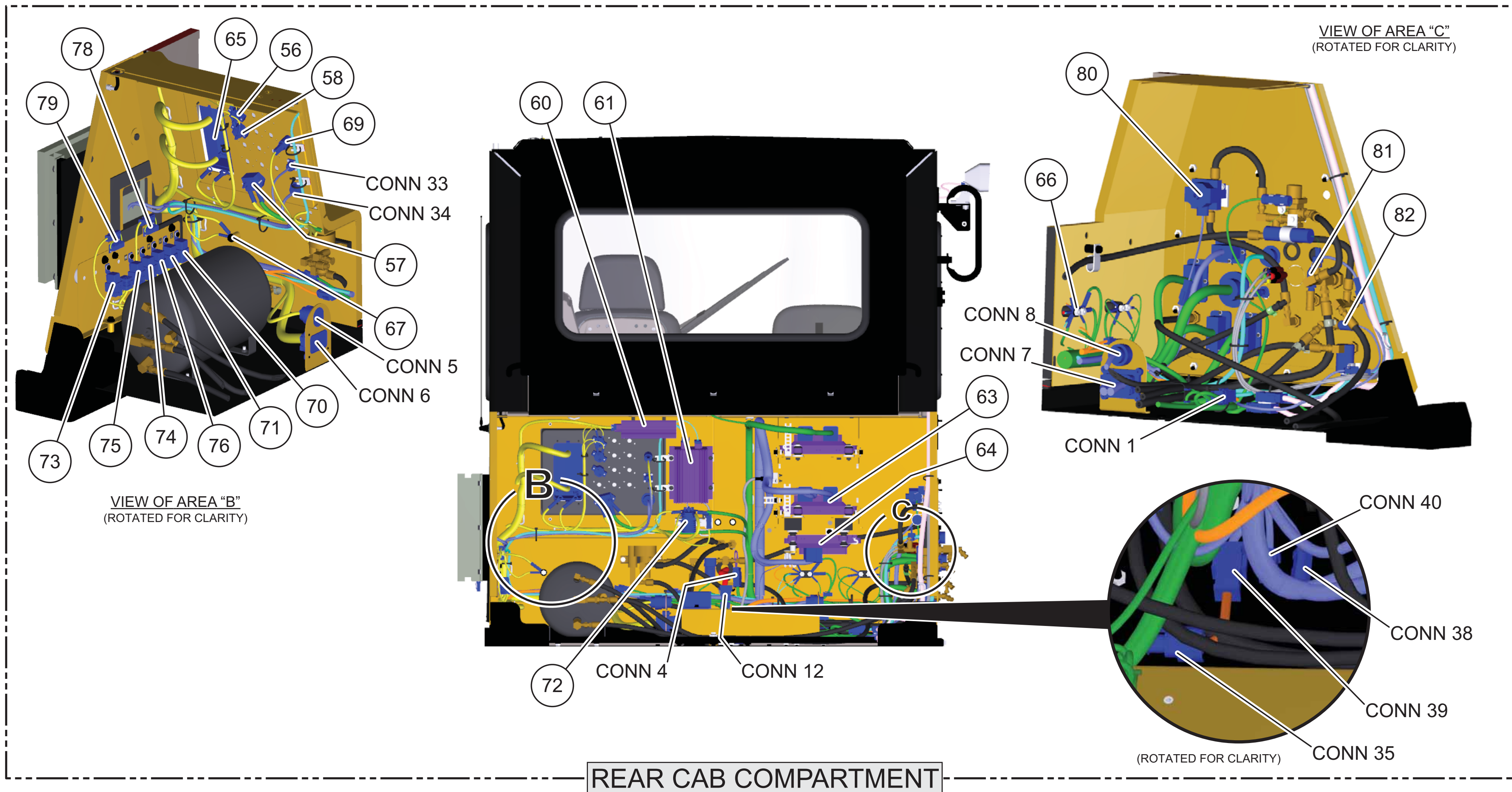
OTHER COLOR DESCRIPTIONS

SYMBOL	DESCRIPTION	ABBREVIATION	COLOR
+	Ground	GN	GREEN
-	Ground	WH	WHITE
+	Ground	OR	ORANGE
-	Ground	BL	BLACK
+	Ground	PK	PAK
-	Ground	BLK	BLACK
+	Ground	GY	GRAY
-	Ground	PL	PURPLE
+	Ground	BR	BROWN
-	Ground	GN	GREEN
+	Ground	BL	BLUE

CALLOUTS

Callout Number	138-1234
Component Location	138-1234

THIS SCHEMATIC IS FOR THE 785D OFF-HIGHWAY TRUCK ELECTRICAL SYSTEM
 VOLUME 1 of 5: CAB (INTERIOR AND BRAKE CONTROL)
 MEDIA NUMBER: UENR2450
 SCHEMATIC PART NUMBER: 321-6340 CHANGE: 02, VERSION -
 Components are shown installed on a fully operable machine with the key and engine off, transmission shift in neutral and with parking brake set.
 Refer to the appropriate Service Manual for Troubleshooting, Specifications and Systems Operations.



REAR CAB COMPARTMENT

Schematic

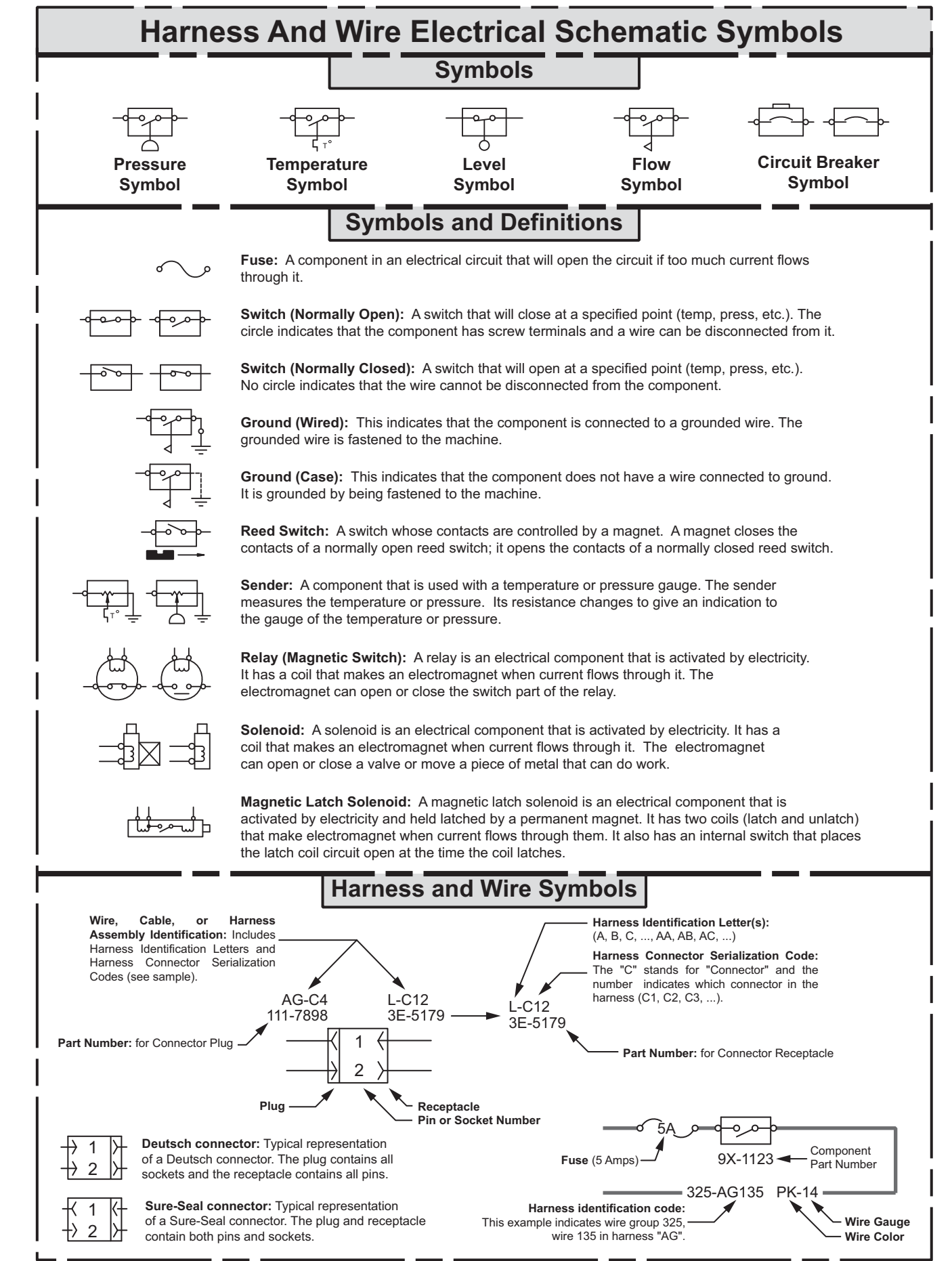
785D Off-Highway Truck Electrical System

MSY408-UP

Volume 2 of 5: Cab Transmission/Chassis Control and Relay/Breaker Panel

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Component Identifiers (CID)¹

Module Identifier (MID)²

VIMS ECM
(MID No. 049)

0041	Sensor Power Supply (+8 Volt)
0075	Steering Oil Temperature Sensor
0096	Fuel Level Sensor
0171	Ambient Air Temperature Sensor
0248	Oil Data Link
0267	Remote Shutdown Input
0271	Adviser Alarm
0279	Front Aftercooler Coolant Temperature Sensor
0286	Transmission Electronic Control Module
0324	Lamp (Action)
0379	Auto Lube Pressure Sensor
0431	Steering Oil Level Sensor
0533	Auto Retarder Electronic Control Module
0540	Engine Electronic Control Module
0554	Trailer Right Brake Oil Temperature Sensor
0656	Trailer Left Brake Oil Temperature Sensor
0658	Trailer Brake Cooler Inlet Temperature Sensor
0657	Trailer Brake Cooler Outlet Temperature Sensor
0658	Trailer Right Strut Pressure Sensor
0659	Trailer Left Strut Pressure Sensor
0703	Trailer Door Position Sensor
0809	Speedometer/Tachometer Module (No. 1)
0810	Speedometer/Tachometer Module (No. 2)
0811	Gauge Cluster (No. 1)
0812	Gauge Cluster (No. 2)
0813	Gauge Cluster (No. 3)
0814	Gauge Cluster (No. 4)
0815	Message Center (No. 1)
0816	Message Center (No. 2)
0817	ECM Backup Battery
0819	Display Data Link
0820	Keypad Data Link
0821	Display Power Supply (12 Volts)
0823	Lamp (Service Indicator)
0824	Lamp (Truck Payload) (Green)
0825	Lamp (Truck Payload) (Red)
0833	Rear Brake Oil Temperature Sensor
0838	Left Front Suspension Cylinder Pressure Sensor
0839	Right Front Suspension Cylinder Pressure Sensor
0840	Left Rear Suspension Cylinder Pressure Sensor
0841	Right Rear Suspension Cylinder Pressure Sensor
0852	Right Front Brake Oil Temperature Sensor
0853	Left Front Brake Oil Temperature Sensor
0854	Right Rear Brake Oil Temperature Sensor
0855	Left Rear Brake Oil Temperature Sensor
0890	Telemetry Data Link
1421	Rear Engine Electronic Control Module
1422	Front Engine Electronic Control Module

Transmission/Chassis ECM
(MID No. 030)

CID	Component
0168	Electrical System
0177	Temperature Sensor (Transmission Oil)
0190	Speed Sensor (Engine)
0248	CAT Data Link
0269	Sensor Power Supply
0378	Solenoid Valve (Automatic Lubrication)
0444	Start Relay
0585	Speed Sensor (Transmission Output 1)
0590	Electronic Control Module (Engine)
0627	Brake Switch (Parking)
0672	Speed Sensor (Torque Converter Output)
0673	Speed Sensor (Transmission Output 2)
0681	Solenoid Valve (Parking Brake)
0700	Sensor (Transmission Gear)
0701	Speed Sensor (Transmission Output)
0702	Position Sensor (Shift Lever)
0704	Pressure Switch (Service Brake)
0707	Solenoid Valve (Upshift)
0708	Solenoid Valve (Downshift)
0709	Solenoid Valve (Lockup Clutch)
0718	Transmission System
0724	Solenoid Valve (Body Raise)
0725	Solenoid Valve (Body Lower)
0773	Rotary Position Sensor (Host Lever)
0800	Vital Information Management System (VIMS)
0805	Temperature Sensor (Torque Converter Oil)
0967	Machine Application
1175	Body Position Sensor
1236	Lamp (Body Up Indicator)
1326	Location Code
1427	Lamp (Machine Lockout)

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.

COMPONENT (59) NOT SHOWN



CIODS CONTROL

Failure Mode Identifiers (FMI)¹

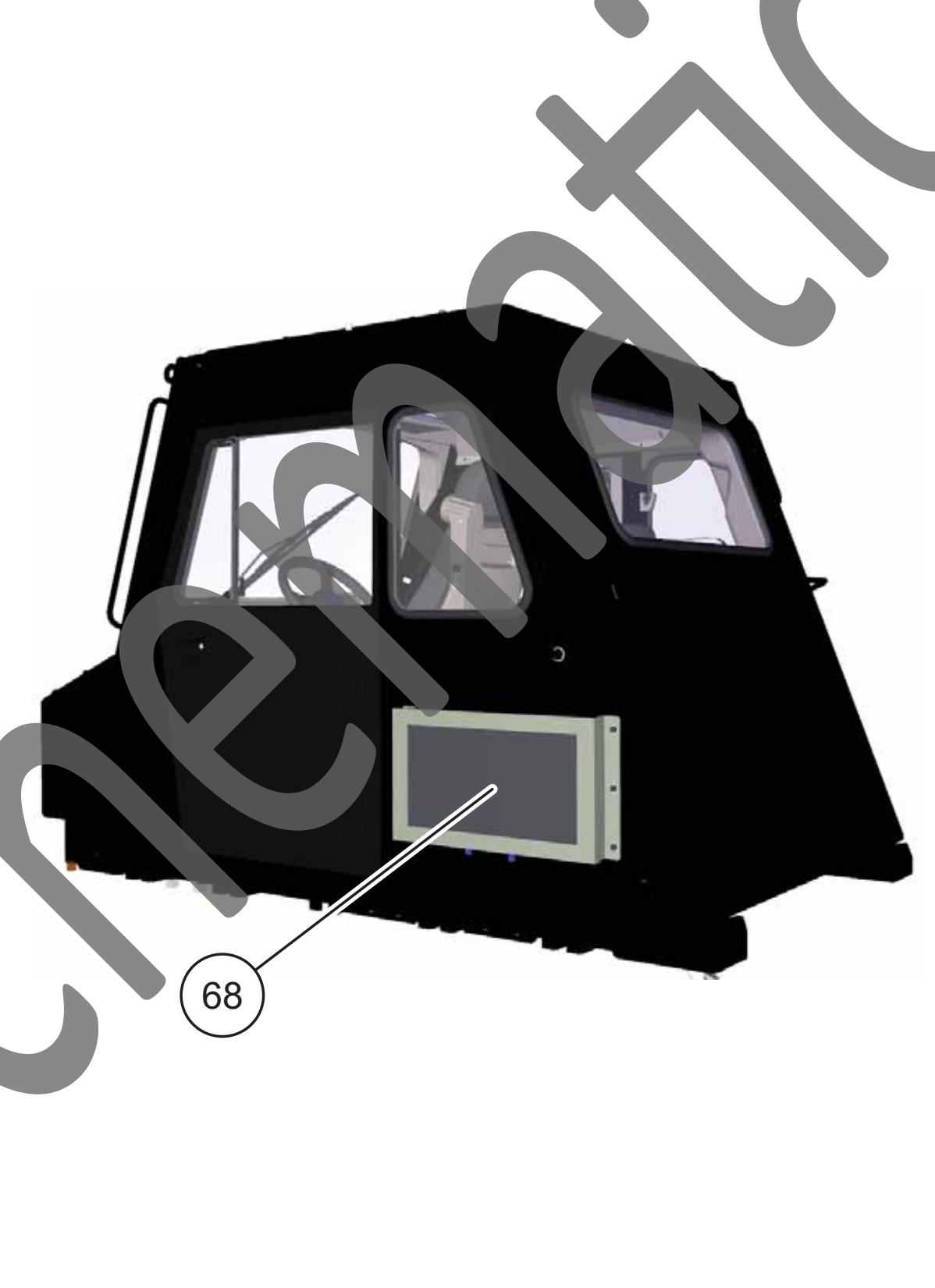
FMI No.	Failure Description
0	Data valid but above normal operational range.
1	Data valid but below normal operational range.
2	Data erratic, intermittent, or incorrect.
3	Voltage above normal or shorted high.
4	Voltage below normal or shorted low.
5	Current below normal or open circuit.
6	Current above 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.

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

Related Electrical Service Manuals

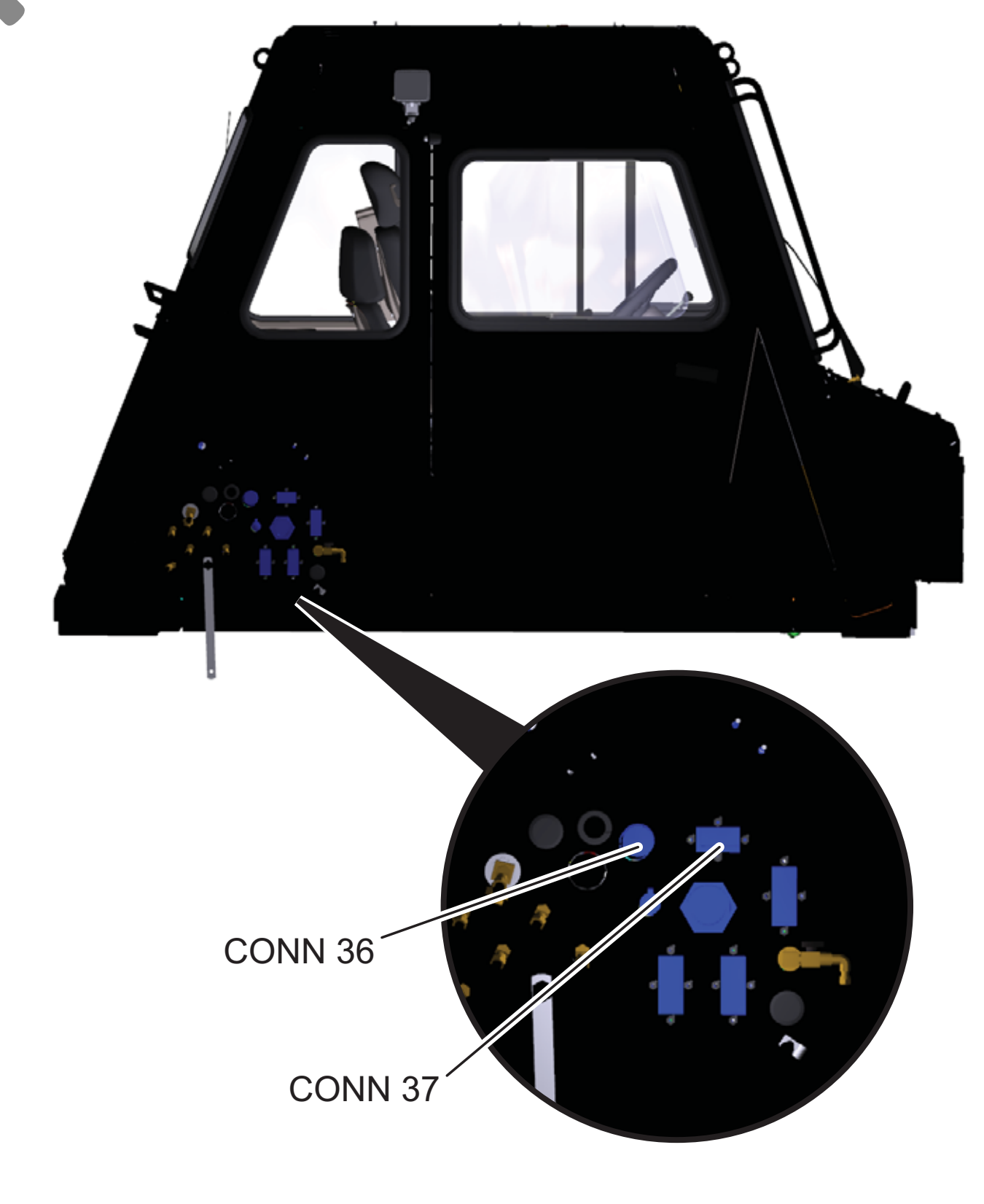
Title	Form Number
Cross Reference for Electrical Connectors:	REHS0970
VIMS Control:	REN2831
Transmission/Chassis Control:	SEN1932

LH DIGITAL PAYLOAD MONITOR



LH DIGITAL PAYLOAD MONITOR

CAB TO CHASSIS CONNECTIONS



CAB TO CHASSIS CONNECTIONS

Off-Machine Switch Specification

Part No.	Function	Machine Location	Machine Location	Component	Schematic Location	Machine Location
111-9563	Service Brake Pressure	80 kPa MAX (11.80 psi)	55 kPa ± 20 kPa (7.98 psi ± 2.90 psi)	Relay - Brake Retract	E-8	70
242-8903	Parking Brake Pressure	517 kPa ± 35 kPa (74.98 psi)	448 kPa ± 35 kPa (64.98 psi ± 5.08 psi)	Relay - High Beam	E-8	71
				Relay - Main Power	E-8	72
				Relay - Seal Ball	E-8	73
				Relay - Window 1	F-8	74
				Relay - Window 2	F-8	75
				Relay - Wiper	E-8	76
				Resistor - CIDDS CAN 2	D-4	77
				Resistor - Starting Aid 1	D-8	78
				Resistor - Starting Aid 2	D-8	79
				Switch - Parking Brake Pressure	C-2	81
				Switch - Service Brake Pressure	C-2	82

Component Location

Component	Schematic Location	Machine Location	Component	Schematic Location	Machine Location
Breaker - A/C	B-8	56	Relay - Brake Retract	E-8	70
Breaker - Alternator	B-8	57	Relay - High Beam	E-8	71
Breaker - Brake Retract	B-8	58	Relay - Main Power	E-8	72
Control - CIDDS	D-4	59	Relay - Seal Ball	E-8	73
Converter - 20A 1	F-8	60	Relay - Window 1	F-8	74
Converter - 20A 2	D-5	61	Relay - Window 2	F-8	75
ECM - RAC (ATCH) - NOT SHOWN	A-3	62	Relay - Wiper	E-8	76
ECM - Transmission/Chassis	C-2	63	Resistor - CIDDS CAN 2	D-4	77
ECM - VMS	F-3	64	Resistor - Starting Aid 1	D-8	78
Fuse and Relay Block AS	D-8	65	Resistor - Starting Aid 2	D-8	79
Ground - Cab	D-5	66	Solenoid - Adjuster	A-4	80
Ground Box - Fuse Block	D-6	67	Switch - Parking Brake Pressure	C-2	81
Monitor - LH Digital Payload (ATCH)	F-3	68	Switch - Service Brake Pressure	C-2	82
Outlet - +12V Power	B-8	69			

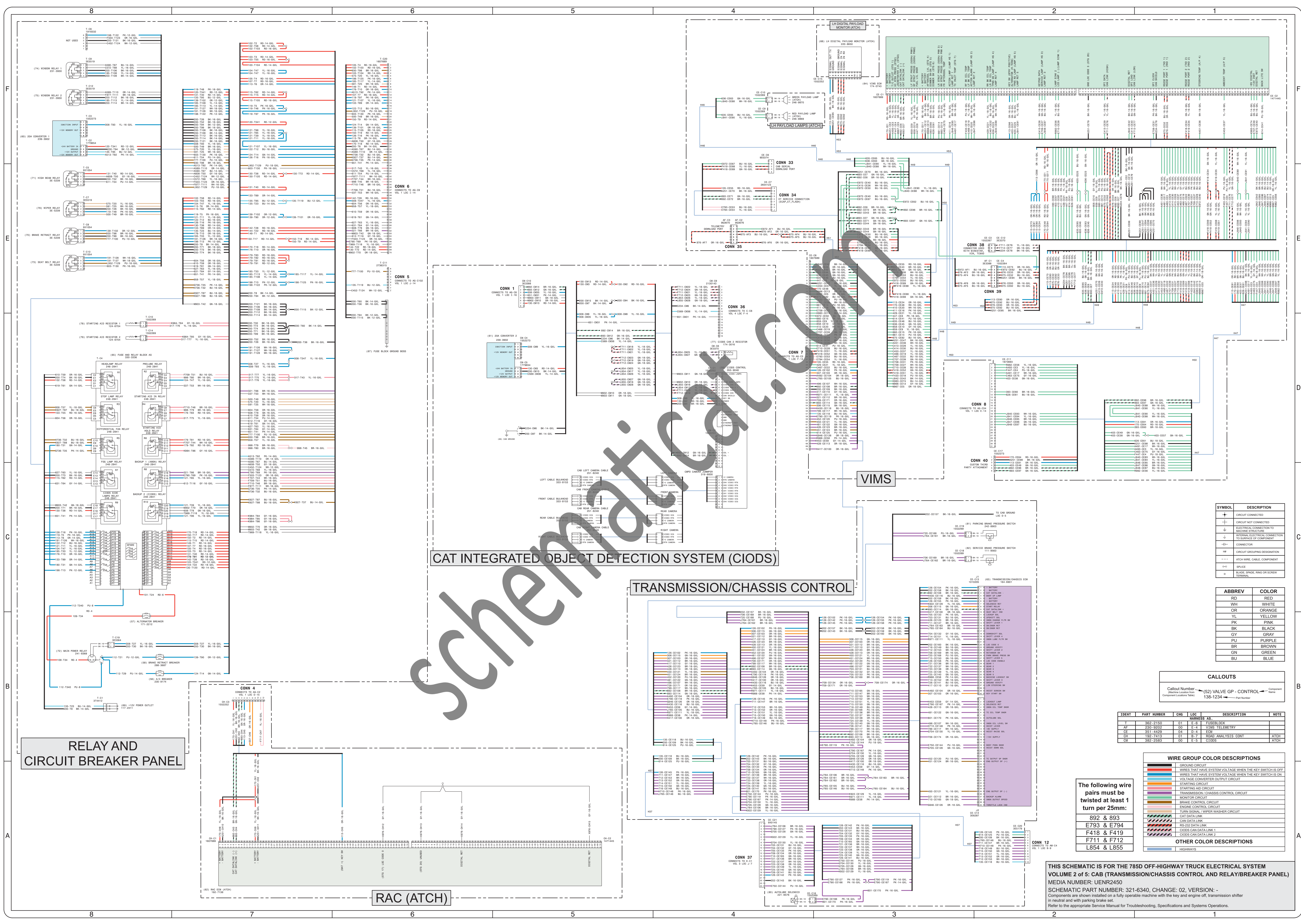
Connector Location

Connector Number	Schematic Location
CONN 1	E-5
CONN 4	E-7
CONN 5	E-6
CONN 6	E-6
CONN 7	D-4
CONN 8	A-2
CONN 12	A-2
CONN 33 - Cab Serial Download Port	E-4
CONN 34 - E-T Service Connection	E-4
CONN 35	E-4
CONN 36	E-4
CONN 37	A-4
CONN 38 - Ministar XSM TC900	E-2
CONN 39	E-2
CONN 40 - Custom Third Party Aitch	C-2

Resistor Specifications

Part No.	Component Description	Resistance (Ohms) ¹
174-3016	Resistor - CIDDS CAN 2	126 (Ohms) ± 10 %

¹ At room temperature unless otherwise noted.



RELAY AND CIRCUIT BREAKER PANEL

RAC (ATCH)

CAT INTEGRATED OBJECT DETECTION SYSTEM (CIODS)

TRANSMISSION/CHASSIS CONTROL

VIMS

The following wire pairs must be twisted at least 1 turn per 25mm:
892 & 893
E793 & E794
F418 & F419
F711 & F712
L854 & L855

WIRE GROUP COLOR DESCRIPTIONS

- Ground Circuit
- Wires that have system voltage when the key switch is off
- Wires that have system voltage when the key switch is on
- Voltage converter output circuit
- Starting circuit
- Starting aid circuit
- Transmission/Chassis Control Circuit
- Monitor circuit
- Brake control circuit
- Engine control circuit
- Turn signal/wiper/washer circuit
- Can Data Link
- Can Data Link
- PS-252 Data Link
- COOSE CAN DATA LINK 1
- COOSE CAN DATA LINK 2

OTHER COLOR DESCRIPTIONS

- Highways

CALLOUTS

Callout Number: Machine Location (e.g., 138-1234) Component Name (e.g., Valve GP - Control) Part Number (e.g., 138-1234)

IDENT	PART NUMBER	CHS	LOC	DESCRIPTION	NOTE
T	382-2150	01	E-1	TURBIDLOCK	
AF	230-9202	00	E-4	VIMS TELEMETRY	
CE	331-4840	00	D-4	ECB	
CR	192-7413	01	B-2	ROAD ANALYSIS CONT	ATCH
CM	382-2583	00	E-5	CIODS	ATCH

SYMBOL DESCRIPTION

- ⊕: Circuit Connected
- ⊖: Circuit Not Connected
- ⊕⊖: Electrical Connection to Machine Structure
- ⊕⊖⊕: Internal Electrical Connection to Housing of Component
- ⊕⊖⊕⊕: Connector
- ⊕⊖⊕⊕⊕: Circuit Grouping Designation
- ⊕⊖⊕⊕⊕⊕: Atchwire Cable Component
- ⊕⊖⊕⊕⊕⊕⊕: Splice
- ⊕⊖⊕⊕⊕⊕⊕⊕: Blade, Spring, Ring or Screw Terminal

ABBREV COLOR

RD	RED
WH	WHITE
OR	ORANGE
YL	YELLOW
PK	PINK
BK	BLACK
GY	GRAY
PJ	PURPLE
BR	BROWN
GN	GREEN
BL	BLUE

THIS SCHEMATIC IS FOR THE 785D OFF-HIGHWAY TRUCK ELECTRICAL SYSTEM VOLUME 2 of 5: CAB (TRANSMISSION/CHASSIS CONTROL AND RELAY/BREAKER PANEL)
MEDIA NUMBER: UENR2450
SCHEMATIC PART NUMBER: 321-6340, CHANGE: 02, VERSION: -
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 Operation.

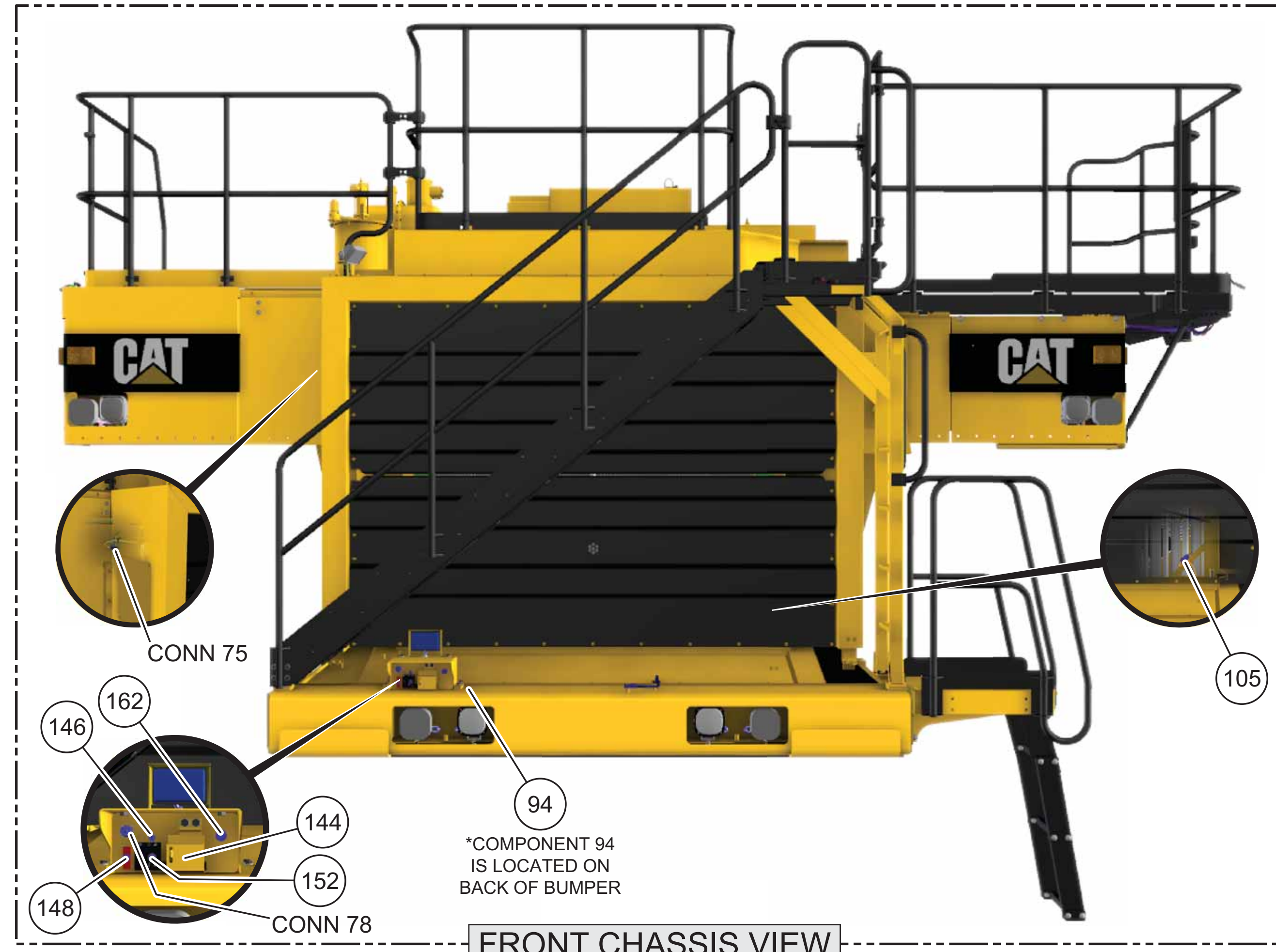
Schematic

785D Off-Highway Truck Electrical System

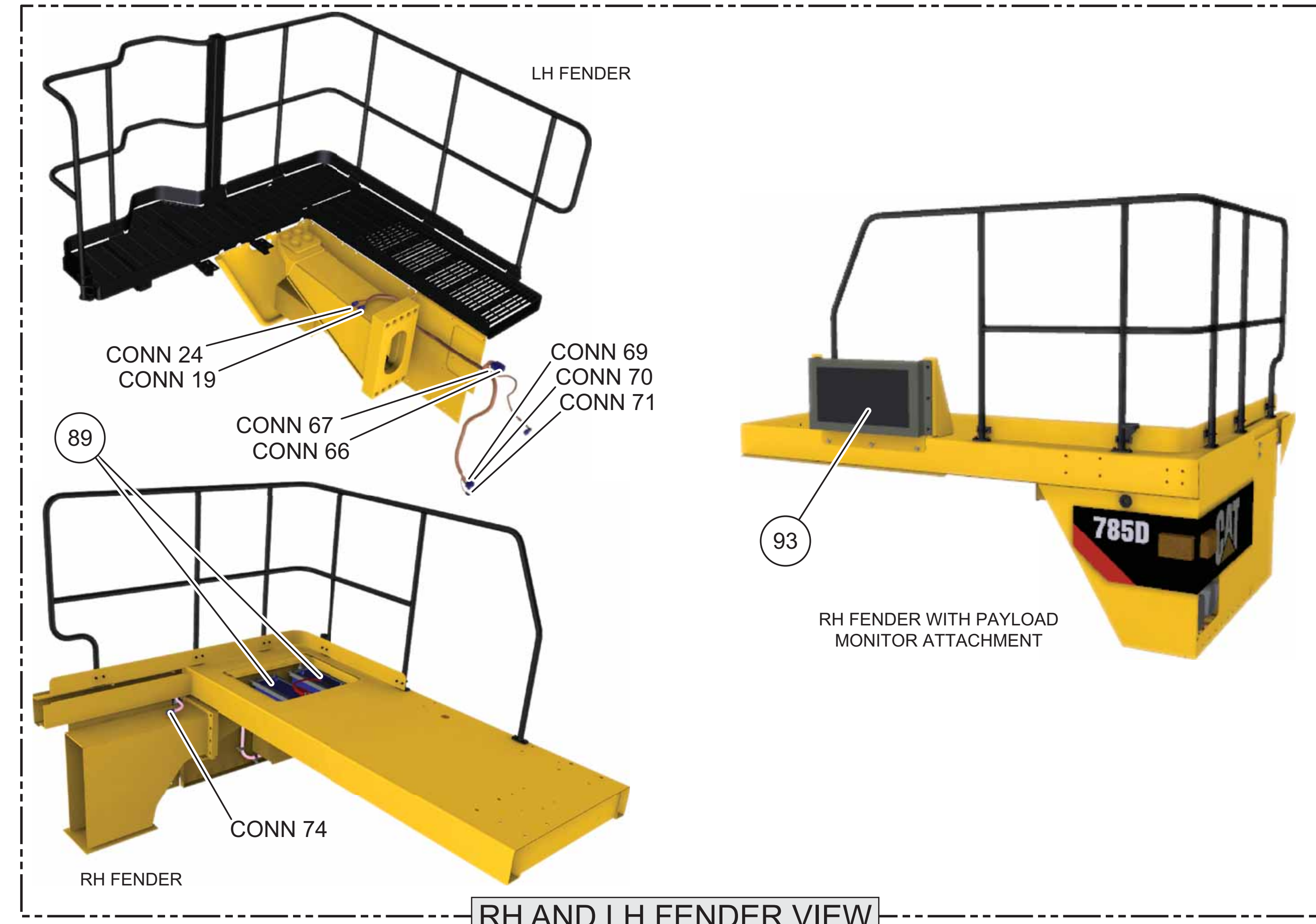
MSY408-UP

Volume 3 of 5: Chassis

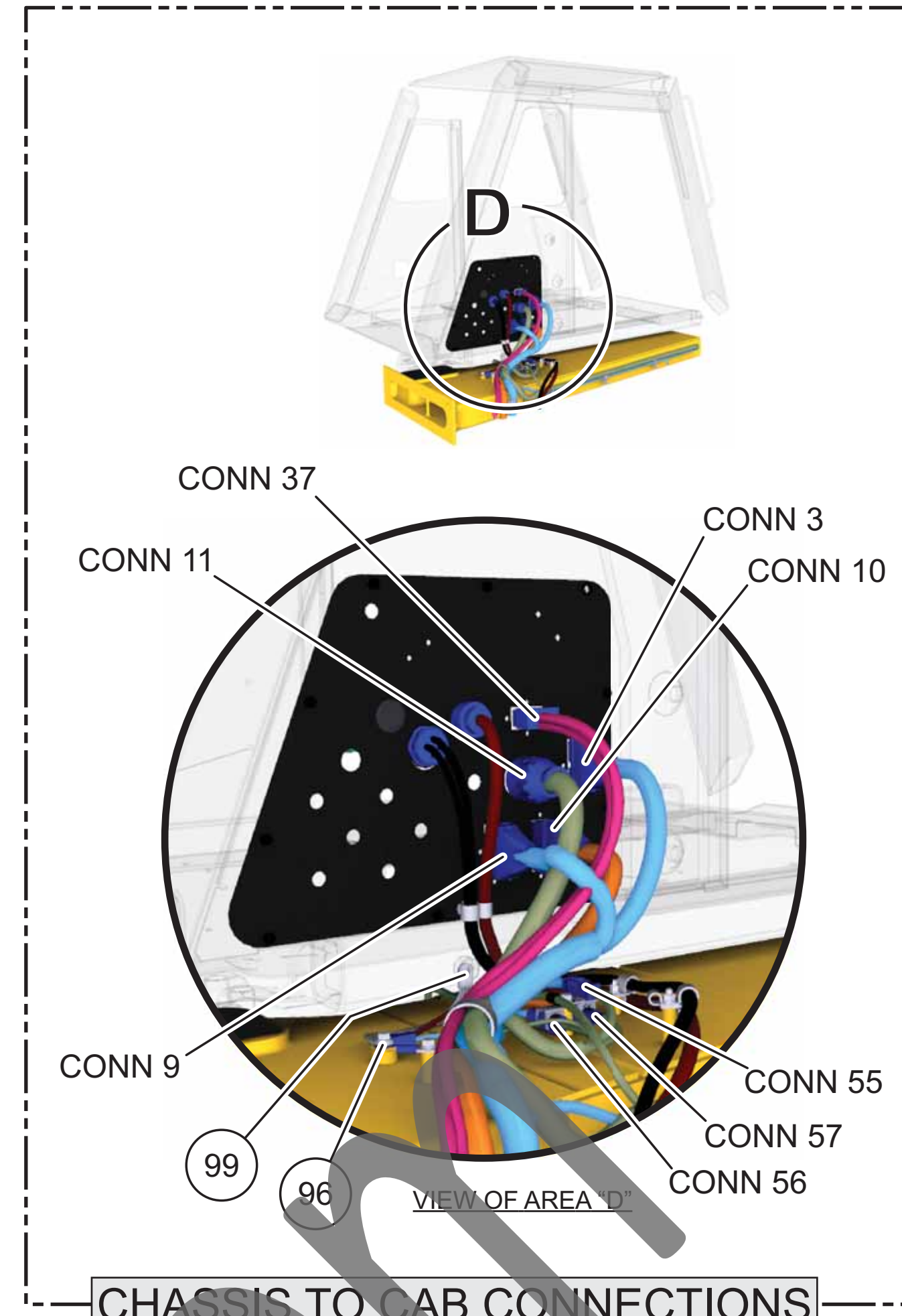
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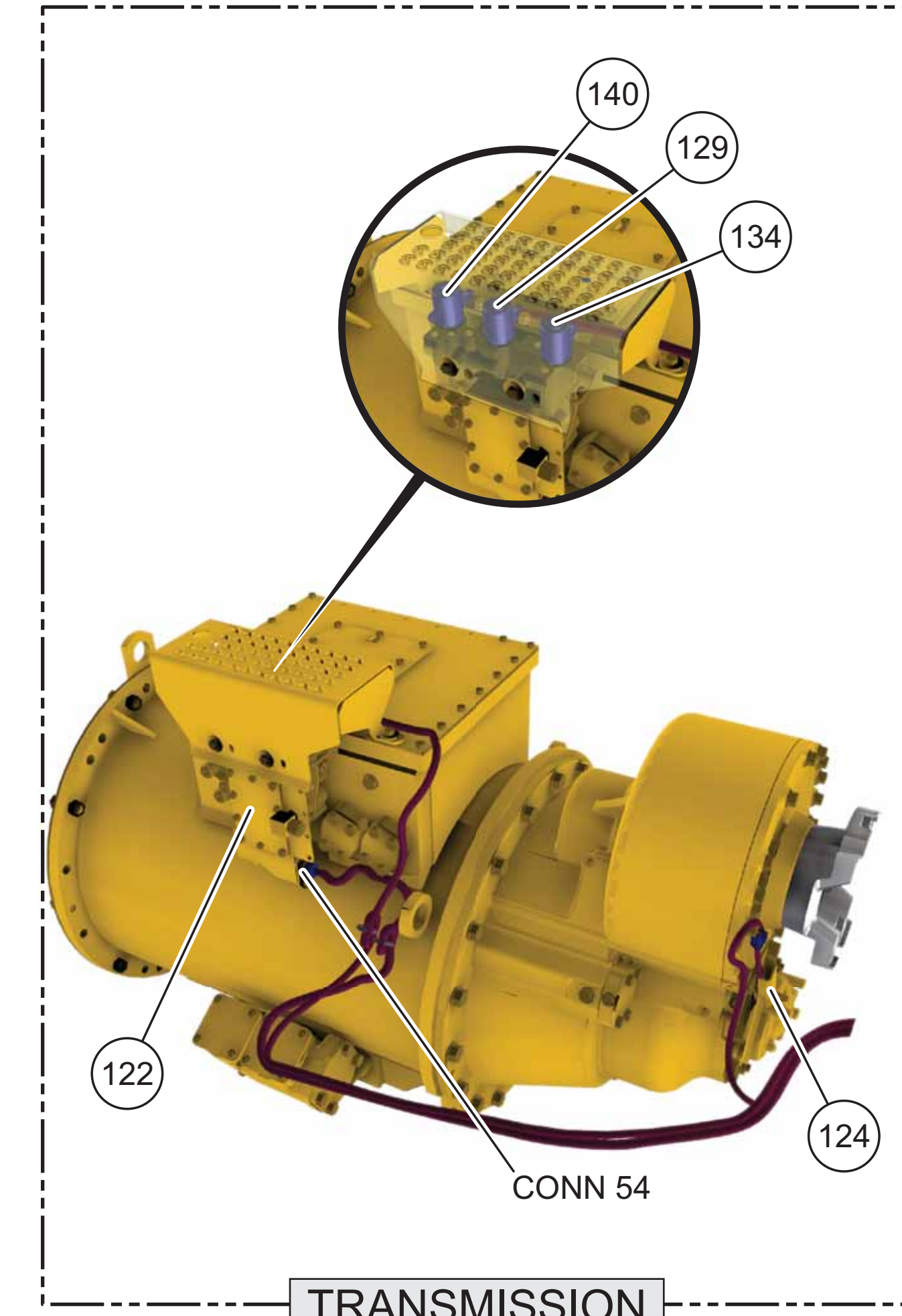
FRONT CHASSIS VIEW



RH AND LH FENDER VIEW

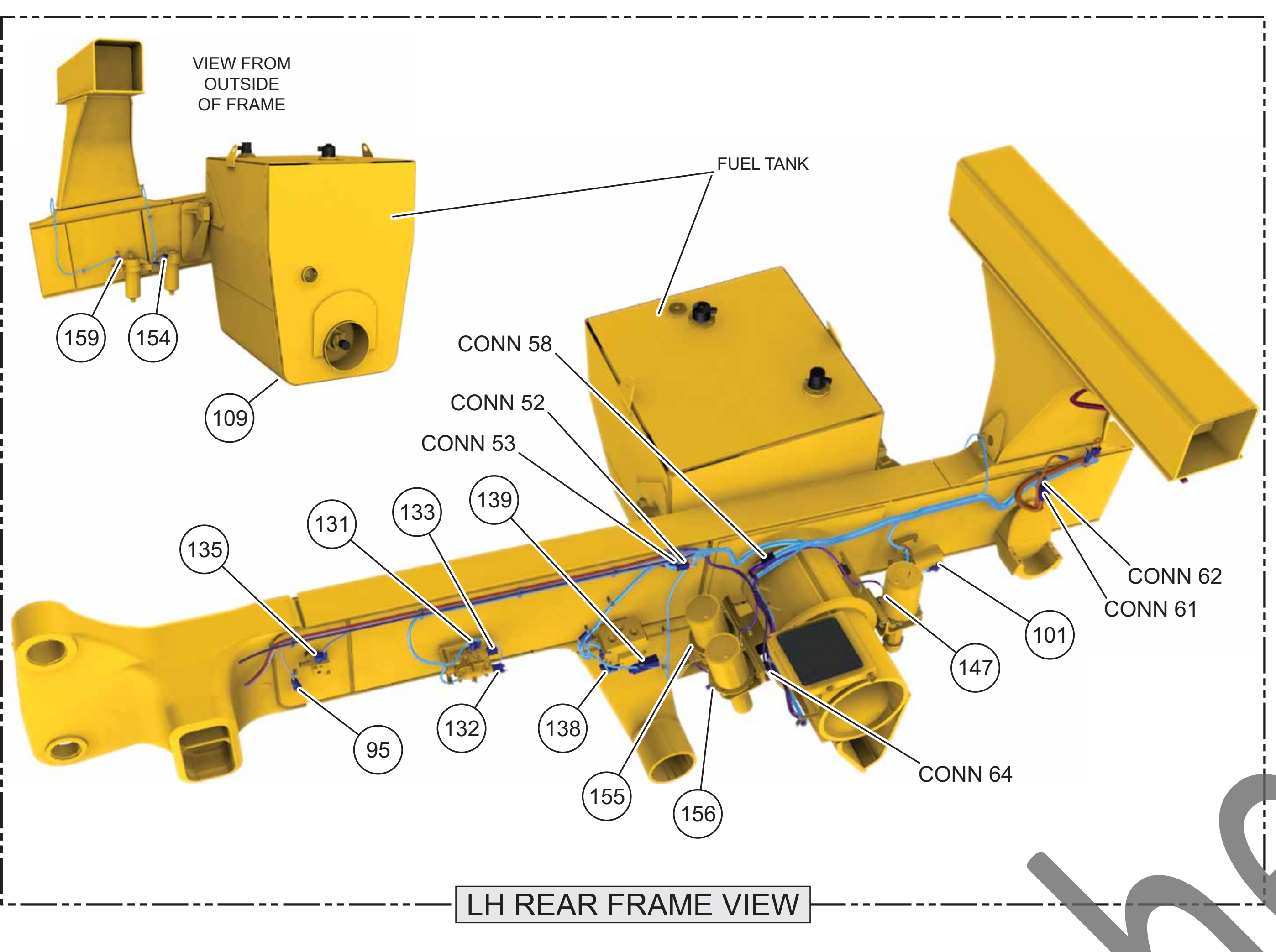


CHASSIS TO CAB CONNECTIONS

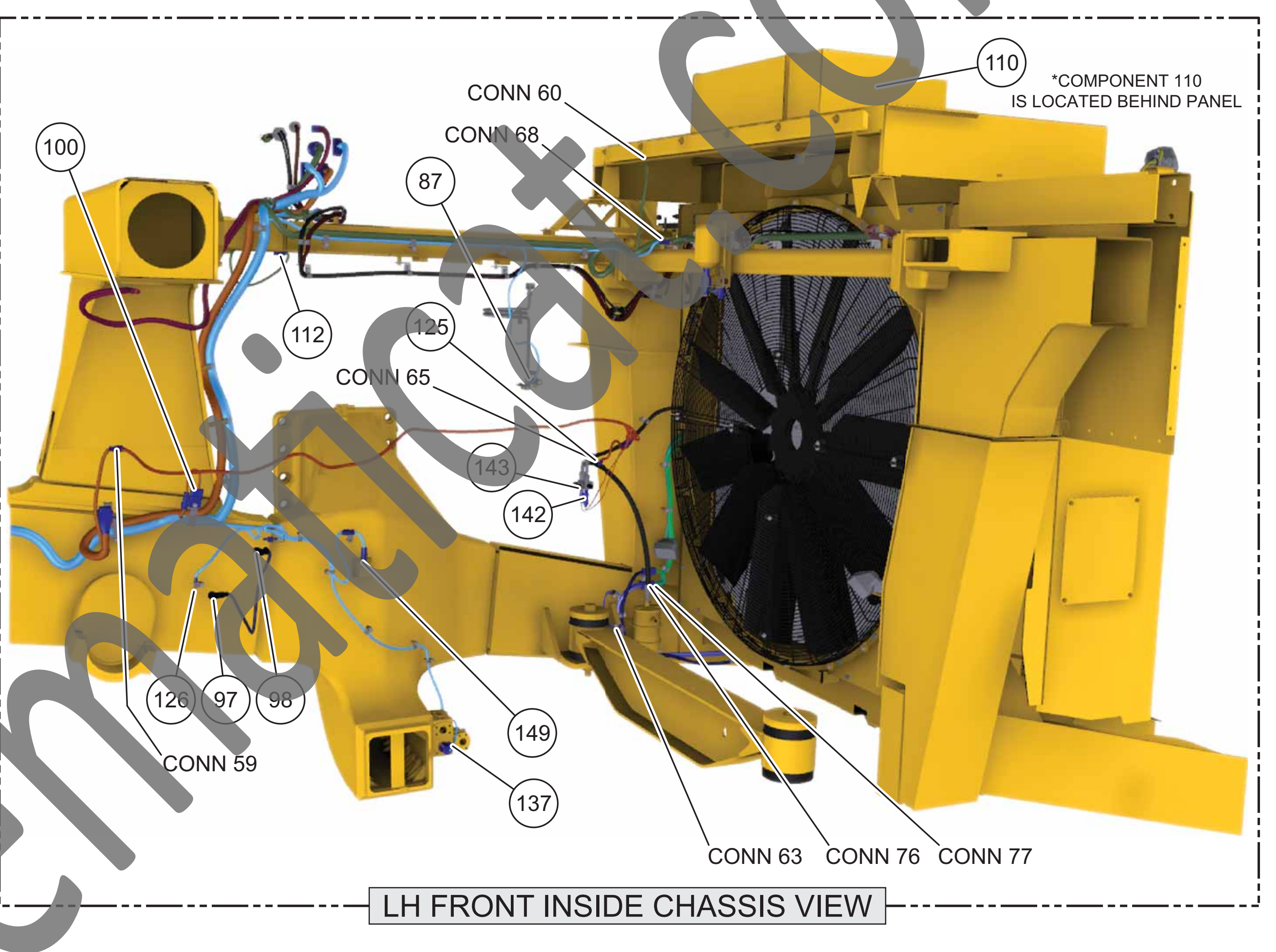


TRANSMISSION

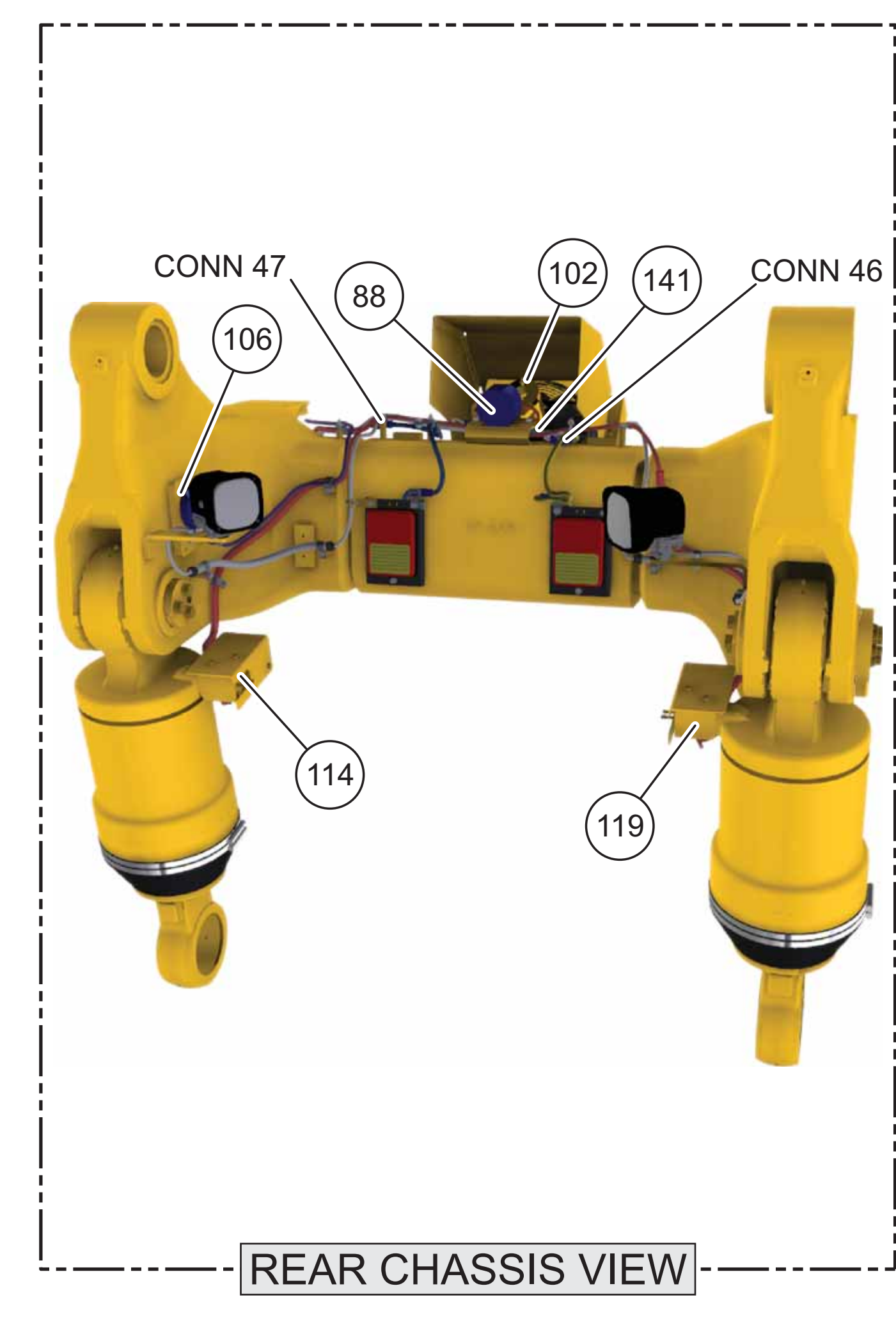
Component Location			Connector Location		
Component	Maximum Location	Minimum Location	Connector Number	Maximum Location	Minimum Location
Air Dryer Act.	0-10	87	CONN 3	0-10	87
Alarm Buzzer	0-10	88	CONN 10	0-10	88
Relay	0-10	89	CONN 10	0-10	89
Block Junction 1	0-10	90	CONN 11	0-10	90
Block Junction 2	0-10	91	CONN 10	0-10	91
Block Junction 3	0-10	92	CONN 11	0-10	92
Display - RH Digital Fuel/Alt (A/C)	0-10	93	CONN 27	0-10	93
Display - Battery Charge/Level	0-10	94	CONN 27	0-10	94
Control - Chassis 1	0-10	95	CONN 47	0-10	95
Control - Chassis 2	0-10	96	CONN 48	0-10	96
Control - Chassis 3	0-10	97	CONN 49	0-10	97
Control - Engine	0-10	98	CONN 50	0-10	98
Control - Brake	0-10	99	CONN 51	0-10	99
Module - A/C Protection	0-10	100	CONN 52	0-10	100
Module - A/C Pressure	0-10	101	CONN 53	0-10	101
Motor - Differential Cooling Fan (A/C)	0-10	102	CONN 54	0-10	102
Motor - PTO (A/C)	0-10	103	CONN 55	0-10	103
Relay - PTO (A/C)	0-10	104	CONN 56	0-10	104
Sensor - Differential Oil Temperature	0-10	105	CONN 57	0-10	105
Sensor - Body Pressure	0-10	106	CONN 58	0-10	106
Sensor - Differential Oil Temperature	0-10	107	CONN 59	0-10	107
Sensor - Differential Pump Outlet Pressure	0-10	108	CONN 60	0-10	108
Sensor - Fuel Level	0-10	109	CONN 61	0-10	109
Sensor - Brake Oil Pressure	0-10	110	CONN 62	0-10	110
Sensor - LH Front Brake Oil Pressure	0-10	111	CONN 63	0-10	111
Sensor - LH Rear Brake Oil Pressure	0-10	112	CONN 64	0-10	112
Sensor - RH Front Brake Oil Pressure	0-10	113	CONN 65	0-10	113
Sensor - RH Rear Brake Oil Pressure	0-10	114	CONN 66	0-10	114
Sensor - LH Wheel Speed	0-10	115	CONN 67	0-10	115
Sensor - RH Wheel Speed	0-10	116	CONN 68	0-10	116
Sensor - RH Front Shock Pressure	0-10	117	CONN 69	0-10	117
Sensor - RH Rear Shock Pressure	0-10	118	CONN 70	0-10	118
Sensor - LH Wheel Speed	0-10	119	CONN 71	0-10	119
Sensor - LH Rear Shock Pressure	0-10	120	CONN 72	0-10	120
Sensor - Transmission Oil Temperature	0-10	121	CONN 73	0-10	121
Sensor - Transmission Oil Temperature	0-10	122	CONN 74	0-10	122
Sensor - Transmission Oil Temperature	0-10	123	CONN 75	0-10	123
Sensor - Transmission Oil Temperature	0-10	124	CONN 76	0-10	124
Sensor - Transmission Speed	0-10	125	CONN 77	0-10	125
Sensor - A/C Compressor Clutch	0-10	126	CONN 78	0-10	126
Solenoid - Air Start	0-10	127	CONN 79	0-10	127
Solenoid - Body Control	0-10	128	CONN 80	0-10	128
Solenoid - Body Control	0-10	129	CONN 81	0-10	129
Solenoid - Fuel Shut Valve	0-10	130	CONN 82	0-10	130
Solenoid - Hydraulic Air Shut	0-10	131	CONN 83	0-10	131
Solenoid - Hydraulic Air Control	0-10	132	CONN 84	0-10	132
Solenoid - Hydraulic Air Control	0-10	133	CONN 85	0-10	133
Solenoid - Hydraulic Air Control	0-10	134	CONN 86	0-10	134
Solenoid - Rear Air Pump Oil Churner	0-10	135	CONN 87	0-10	135
Solenoid - Steering Aid	0-10	136	CONN 88	0-10	136
Solenoid - Steering Assist	0-10	137	CONN 89	0-10	137
Solenoid - Traction Control	0-10	138	CONN 90	0-10	138
Solenoid - Traction Control	0-10	139	CONN 91	0-10	139
Solenoid - Traction Control	0-10	140	CONN 92	0-10	140
Suppressor - Differential Cooling Fan Act.	0-10	141	CONN 93	0-10	141
Switch - A/C Low Pressure	0-10	142	CONN 94	0-10	142
Switch - A/C Low Pressure	0-10	143	CONN 95	0-10	143
Switch - Battery Disconnect	0-10	144	CONN 96	0-10	144
Switch - Differential Filter Bypass Switch	0-10	145	CONN 97	0-10	145
Switch - Engine Fuel Valve	0-10	146	CONN 98	0-10	146
Switch - Fuel Brake Controller	0-10	147	CONN 99	0-10	147
Switch - Ground Level Fuel Filter	0-10	148	CONN 100	0-10	148
Switch - High Speed Protection	0-10	149	CONN 101	0-10	149
Switch - Head Lamp Switch	0-10	150	CONN 102	0-10	150
Switch - Head Lamp Switch	0-10	151	CONN 103	0-10	151
Switch - LH Wheel Speed	0-10	152	CONN 104	0-10	152
Switch - LH Wheel Speed	0-10	153	CONN 105	0-10	153
Switch - Parking Brake Filter	0-10	154	CONN 106	0-10	154
Switch - Rear Brake Brake Controller	0-10	155	CONN 107	0-10	155
Switch - Rear Brake Brake Controller	0-10	156	CONN 108	0-10	156
Switch - RH Differential Oil Level	0-10	157	CONN 109	0-10	157
Switch - Traction Control Air Filter Pressure	0-10	158	CONN 110	0-10	158
Switch - Traction Control Sensor	0-10	159	CONN 111	0-10	159
Switch - Transmission Charge Filter	0-10	160	CONN 112	0-10	160
Switch - Transmission Lube Filter	0-10	161	CONN 113	0-10	161
Switch - VSDS Service Key	0-10	162	CONN 114	0-10	162



LH REAR FRAME VIEW



LH FRONT INSIDE CHASSIS VIEW



REAR CHASSIS VIEW

Harness and Wire Electrical Schematic Symbols

Symbols

Pressure Symbol **Temperature Symbol** **Level Symbol** **Flow Symbol** **Circuit Breaker Symbol**

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.). This switch indicates that the component has some 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 cross indicates that the wire cannot be disconnected from the component.

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

Relay (Normally Open): A relay is an electrical component that is actuated by electricity. It has a coil that makes an electromagnet when current flows through it. The electromagnet can open or close a valve or drive a switch just the relay.

Solenoid: A solenoid is an electrical component that is actuated by electricity. It has a coil that makes an electromagnet when current flows through it. The electromagnet can open or close a valve or drive a switch just the solenoid.

Magnetic Latch Solenoid: A magnetic latch solenoid is an electrical component that is actuated by electricity and held latched by a permanent magnet. It has two coils (latch and unlatch) that make an electromagnet when current flows through them. A latch coil or unlatch coil that opens the latch coil circuit opens or closes the switch just the latch.

Harness and Wire Symbols

Wire, Cable, or Harness Assembly Identification includes: Harness Identification Letter and Number, Connector Letter and Number, Color and Number, and Wire Gauge.

Part Number for Connector Plug: 111-7858, 111-7859, 111-7860, 111-7861, 111-7862, 111-7863, 111-7864, 111-7865, 111-7866, 111-7867, 111-7868, 111-7869, 111-7870, 111-7871, 111-7872, 111-7873, 111-7874, 111-7875, 111-7876, 111-7877, 111-7878, 111-7879, 111-7880, 111-7881, 111-7882, 111-7883, 111-7884, 111-7885, 111-7886, 111-7887, 111-7888, 111-7889, 111-7890, 111-7891, 111-7892, 111-7893, 111-7894, 111-7895, 111-7896, 111-7897, 111-7898, 111-7899, 111-7900, 111-7901, 111-7902, 111-7903, 111-7904, 111-7905, 111-7906, 111-7907, 111-7908, 111-7909, 111-7910, 111-7911, 111-7912, 111-7913, 111-7914, 111-7915, 111-7916, 111-7917, 111-7918, 111-7919, 111-7920, 111-7921, 111-7922, 111-7923, 111-7924, 111-7925, 111-7926, 111-7927, 111-7928, 111-7929, 111-7930, 111-7931, 111-7932, 111-7933, 111-7934, 111-7935, 111-7936, 111-7937, 111-7938, 111-7939, 111-7940, 111-7941, 111-7942, 111-7943, 111-7944, 111-7945, 111-7946, 111-7947, 111-7948, 111-7949, 111-7950, 111-7951, 111-7952, 111-7953, 111-7954, 111-7955, 111-7956, 111-7957, 111-7958, 111-7959, 111-7960, 111-7961, 111-7962, 111-7963, 111-7964, 111-7965, 111-7966, 111-7967, 111-7968, 111-7969, 111-7970, 111-7971, 111-7972, 111-7973, 111-7974, 111-7975, 111-7976, 111-7977, 111-7978, 111-7979, 111-7980, 111-7981, 111-7982, 111-7983, 111-7984, 111-7985, 111-7986, 111-7987, 111-7988, 111-7989, 111-7990, 111-7991, 111-7992, 111-7993, 111-7994, 111-7995, 111-7996, 111-7997, 111-7998, 111-7999, 111-8000.

Failure Mode Identifiers (FMI)

FMI No.	Failure Description
0	Data valid but above normal operational range.
1	Data valid but below normal operational range.
2	Data invalid, open/closed, or unknown.
3	Voltage above normal or shorted high.
4	Voltage below normal or shorted low.
5	Current above normal or open circuit.
6	Current below normal or grounded circuit.
7	Mechanical system not responding correctly.
8	Abnormal frequency, pulse width, or period.
9	Abnormal amplitude.
10	Abnormal rate of change.
11	Explain mode not in operation.
12	Explain mode not in operation.
13	Explain mode not in operation.
14	Explain mode not in operation.
15	Explain mode not in operation.
16	Explain mode not in operation.
17	Explain mode not in operation.
18	Explain mode not in operation.
19	Explain mode not in operation.
20	Explain mode not in operation.
21	Explain mode not in operation.
22	Explain mode not in operation.

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

Related Electrical Service Manuals

Title	Form Number
Cross Reference for Electrical Connections	REN00001

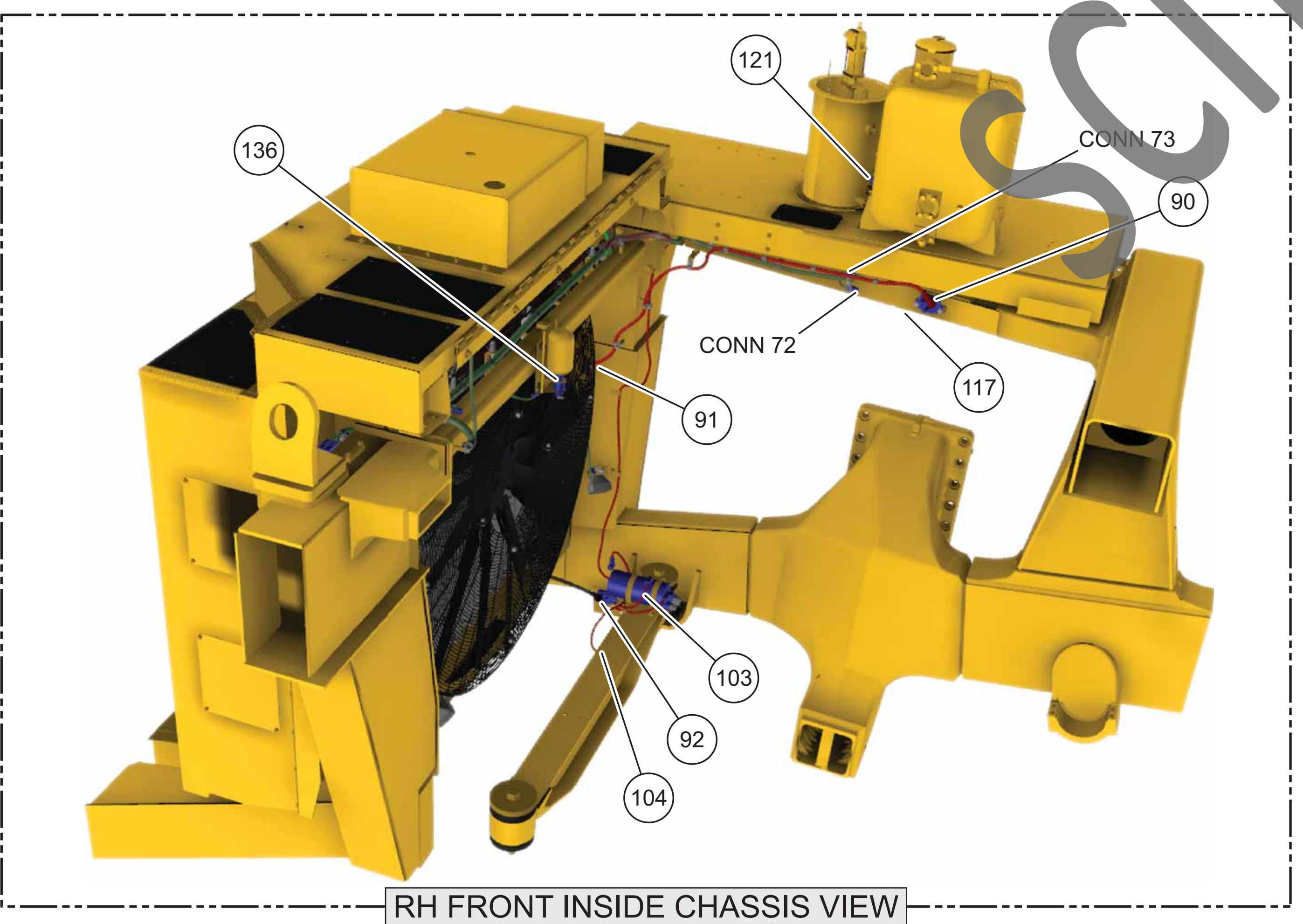
Solenoid Specifications

Part No.	Component Description	Resistance (Ohm)
81-0402	Solenoid - TCS Proportional	16
80-0168	Solenoid - TCS Proportional	16
184-0387	Solenoid - Hydraulic A/C Supply	25.0 ± 1.0
184-0387	Solenoid - Hydraulic A/C Supply	25.0 ± 1.0
184-0387	Solenoid - A/C Compressor Clutch	12.9
303-3909	Solenoid - Locking Clutch	32.0 ± 1.0

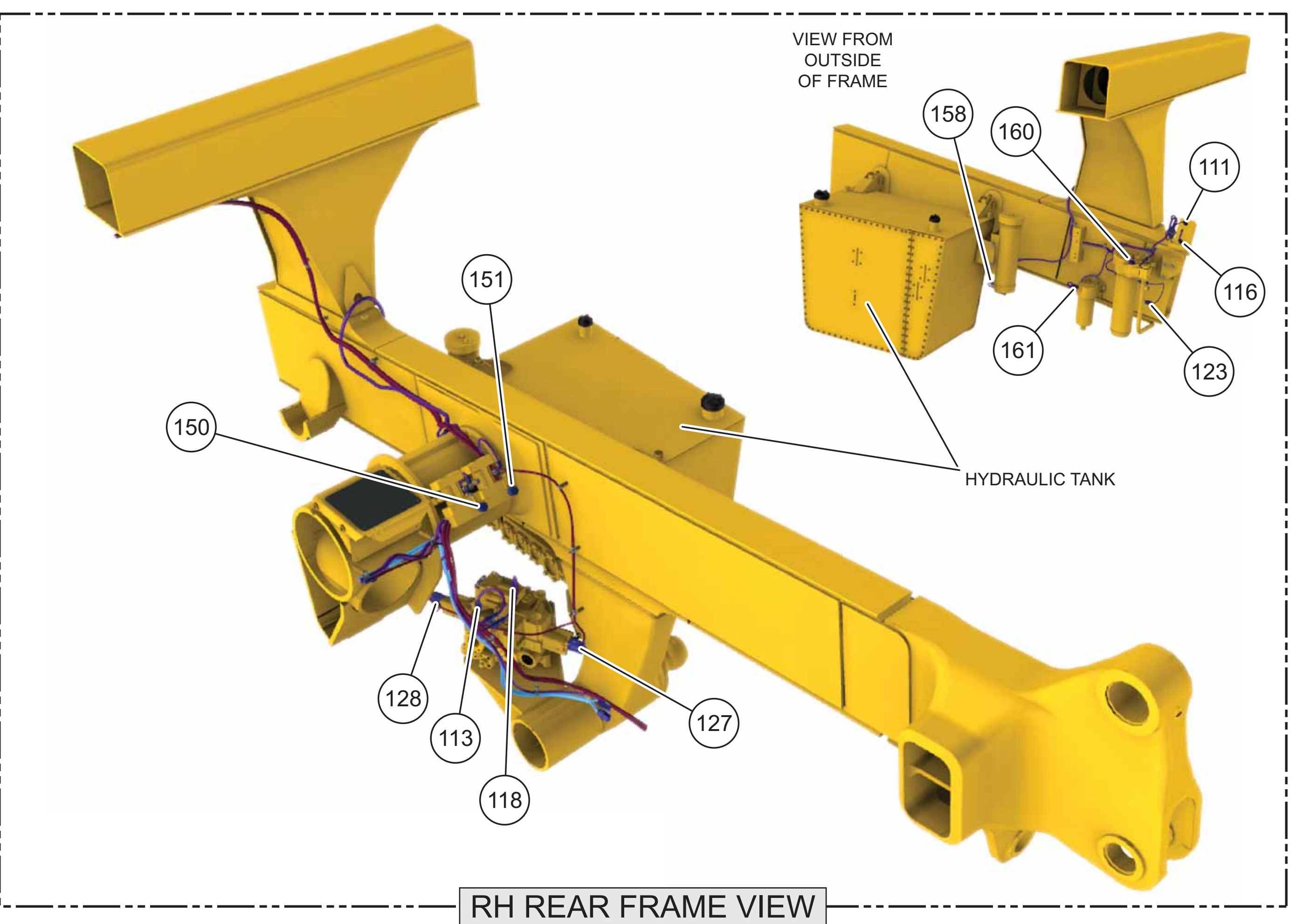
*At room temperature unless otherwise noted.

Off-Machine Switch Specification

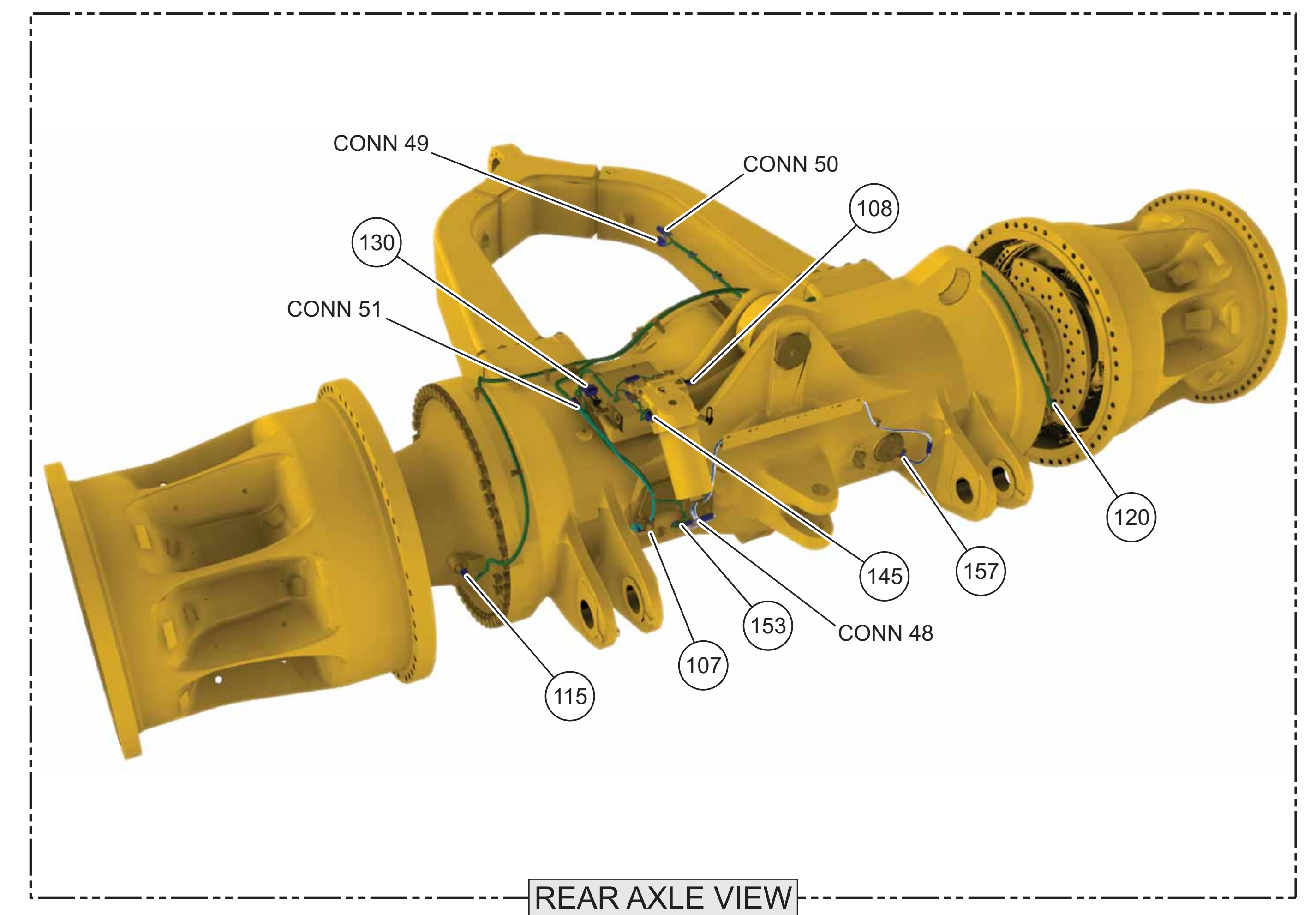
Part No.	Function	Actuate	Contact	Contact Position
114-8330	A/C High-Low Pressure	278.0 to 293.0 psi	NO	Normally Open
149-0371	A/C Low Pressure	115.0 to 120.0 psi	NC	Normally Open / Normally Closed / SPDT
307-0719	High Speed	11800 psi	NO	Normally Open / Normally Closed / SPDT



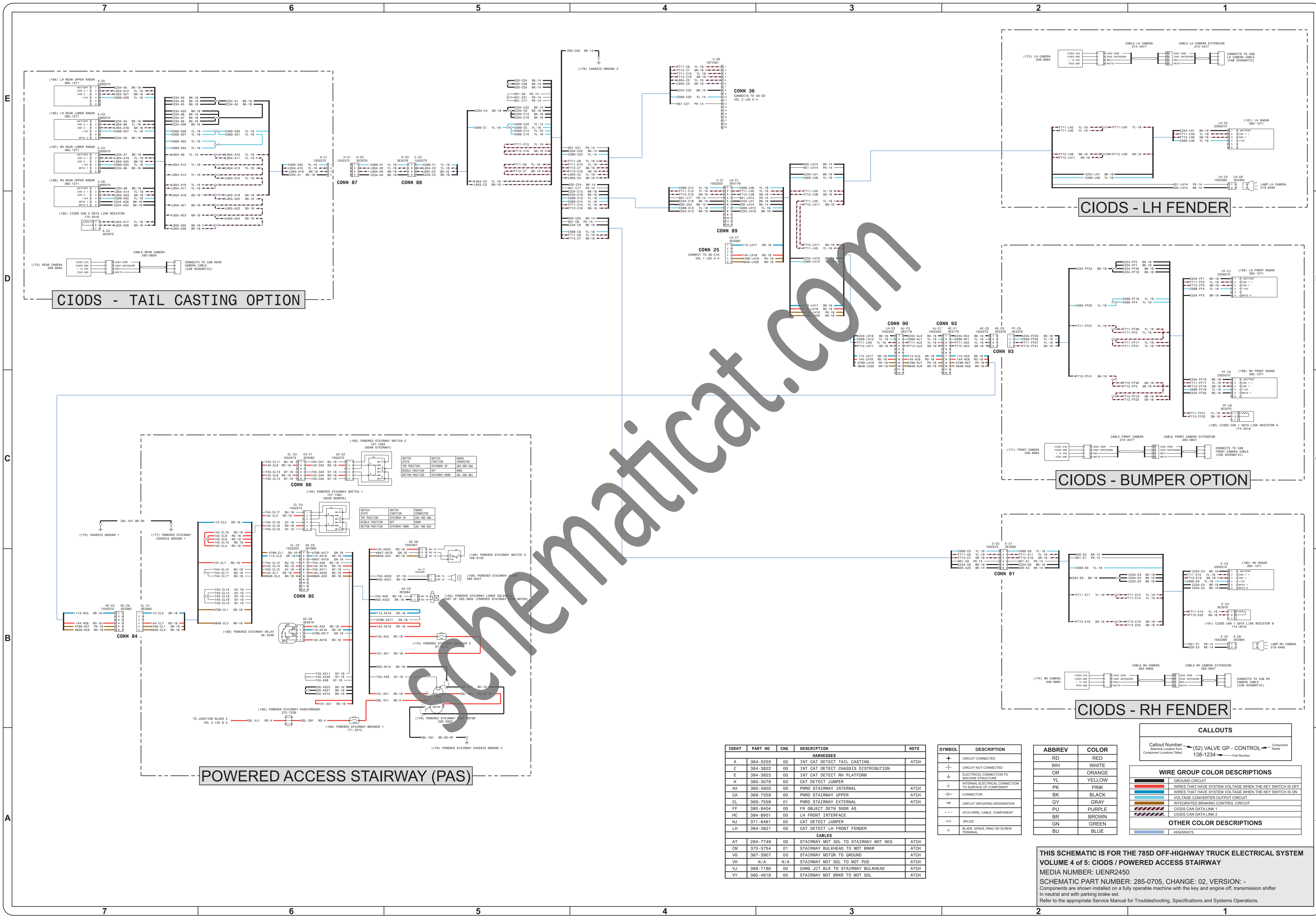
RH FRONT INSIDE CHASSIS VIEW



RH REAR FRAME VIEW



REAR AXLE VIEW



CIODS - TAIL CASTING OPTION

CIODS - LH FENDER

CIODS - BUMPER OPTION

CIODS - RH FENDER

POWERED ACCESS STAIRWAY (PAS)

IDENT	PART NO	CHG	DESCRIPTION	NOTE
HARNESSES				
A	384-5203	00	INT CAT DETECT TAIL CASTING	ATCH
C	384-3822	00	INT CAT DETECT CHASSIS DISTRIBUTION	
E	384-3823	00	INT CAT DETECT RH PLATFORM	
H	360-3079	00	CAT DETECT JUMPER	
CA	360-4920	00	PWRD STAIRWAY INTERNAL	ATCH
AX	369-7559	00	PWRD STAIRWAY UPPER	ATCH
CL	369-7558	01	PWRD STAIRWAY EXTERNAL	ATCH
FF	380-8404	00	FR OBJECT DETN SNR AS	
HC	384-5901	00	LH FRONT INTERFACE	
HJ	371-6461	00	CAT DETECT JUMPER	
LH	384-3821	00	CAT DETECT LH FRONT FENDER	
CABLES				
AT	294-7749	00	STAIRWAY MOT SOL TO STAIRWAY MOT NEG	ATCH
CM	370-5754	01	STAIRWAY BULKHEAD TO MOT BRKR	ATCH
VM	367-3907	00	STAIRWAY MOTOR TO GROUND	ATCH
VH	N/A	N/A	STAIRWAY MOT SOL TO MOT POS	
VJ	369-7180	00	CHRG JCT BLK TO STAIRWAY BULKHEAD	ATCH
VY	360-4918	00	STAIRWAY MOT BRKR TO MOT SOL	ATCH

SYMBOL	DESCRIPTION
+	CIRCUIT CONNECTED
-	CIRCUIT NOT CONNECTED
+	ELECTRICAL CONNECTION TO MACHINE STRUCTURE
+	EXTERNAL ELECTRICAL CONNECTION TO SURFACE OF COMPONENT
-	CONNECTOR
HC	CIRCUIT GROUPING DESIGNATION
- - -	ATCH WIRE, CABLE, COMPONENT
o-o	SPLICE
o	BLADE, SPRING, RING OR SCREW TERMINAL

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

CALLOUTS

Callout Number (Identify Location from Component Locations Table) (52) VALVE GP - CONTROL Component Name
 138-1234 Part Number

WIRE GROUP COLOR DESCRIPTIONS

- GROUND CIRCUIT
- WIRES THAT HAVE SYSTEM VOLTAGE WHEN THE KEY SWITCH IS OFF
- WIRES THAT HAVE SYSTEM VOLTAGE WHEN THE KEY SWITCH IS ON
- VOLTAGE CONVERTER OUTPUT CIRCUIT
- INTEGRATED BRAKING CONTROL CIRCUIT
- CIODS CAN DATA LINK 1
- CIODS CAN DATA LINK 2

OTHER COLOR DESCRIPTIONS

- HIGHWAYS

THIS SCHEMATIC IS FOR THE 785D OFF-HIGHWAY TRUCK ELECTRICAL SYSTEM
VOLUME 4 of 5: CIODS / POWERED ACCESS STAIRWAY
 MEDIA NUMBER: UENR2450
 SCHEMATIC PART NUMBER: 285-0705, CHANGE: 02, VERSION: -
 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.

Schematic

785D Off-Highway Truck Electrical System

MSY408-UP

Volume 5 of 5: Engine

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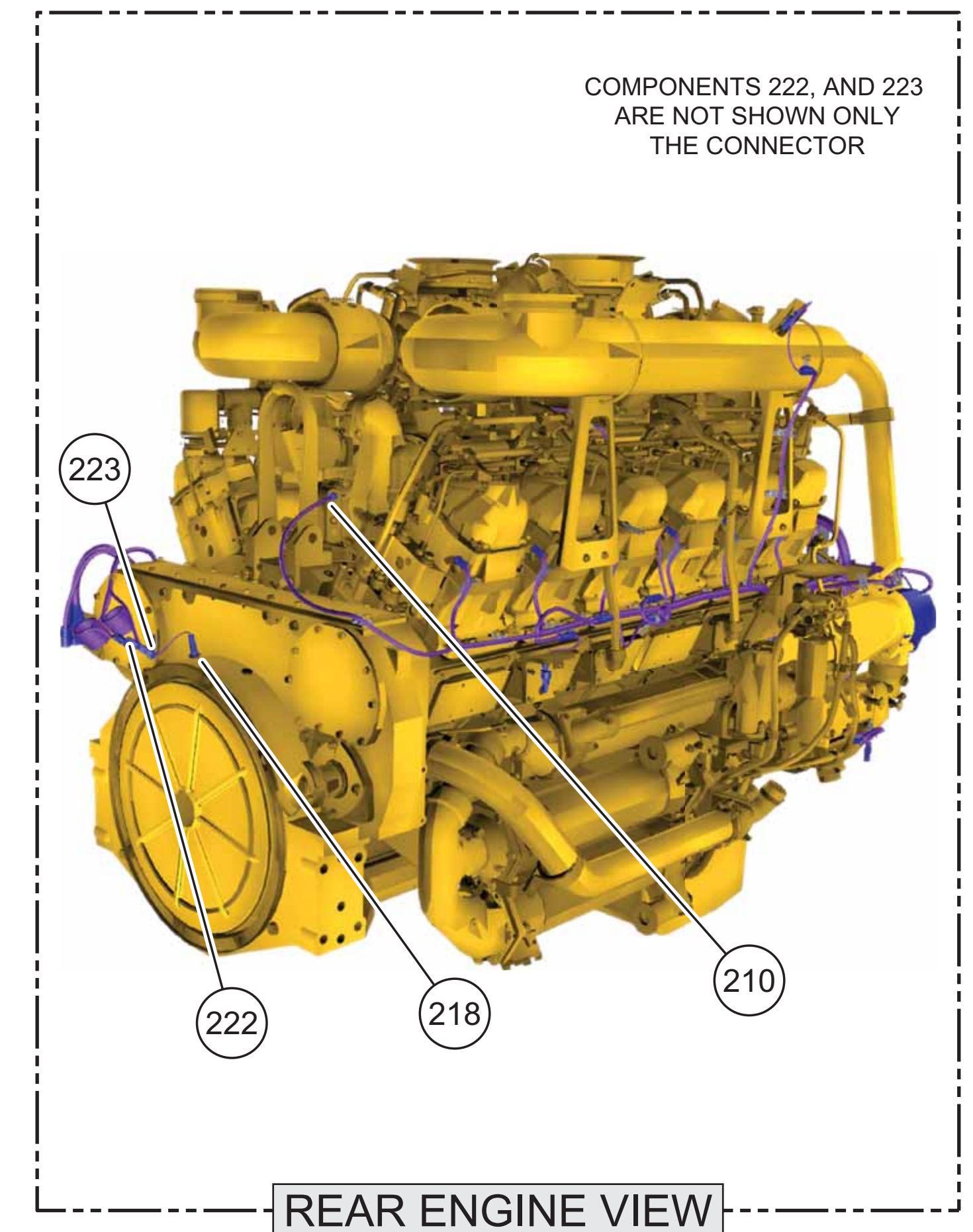
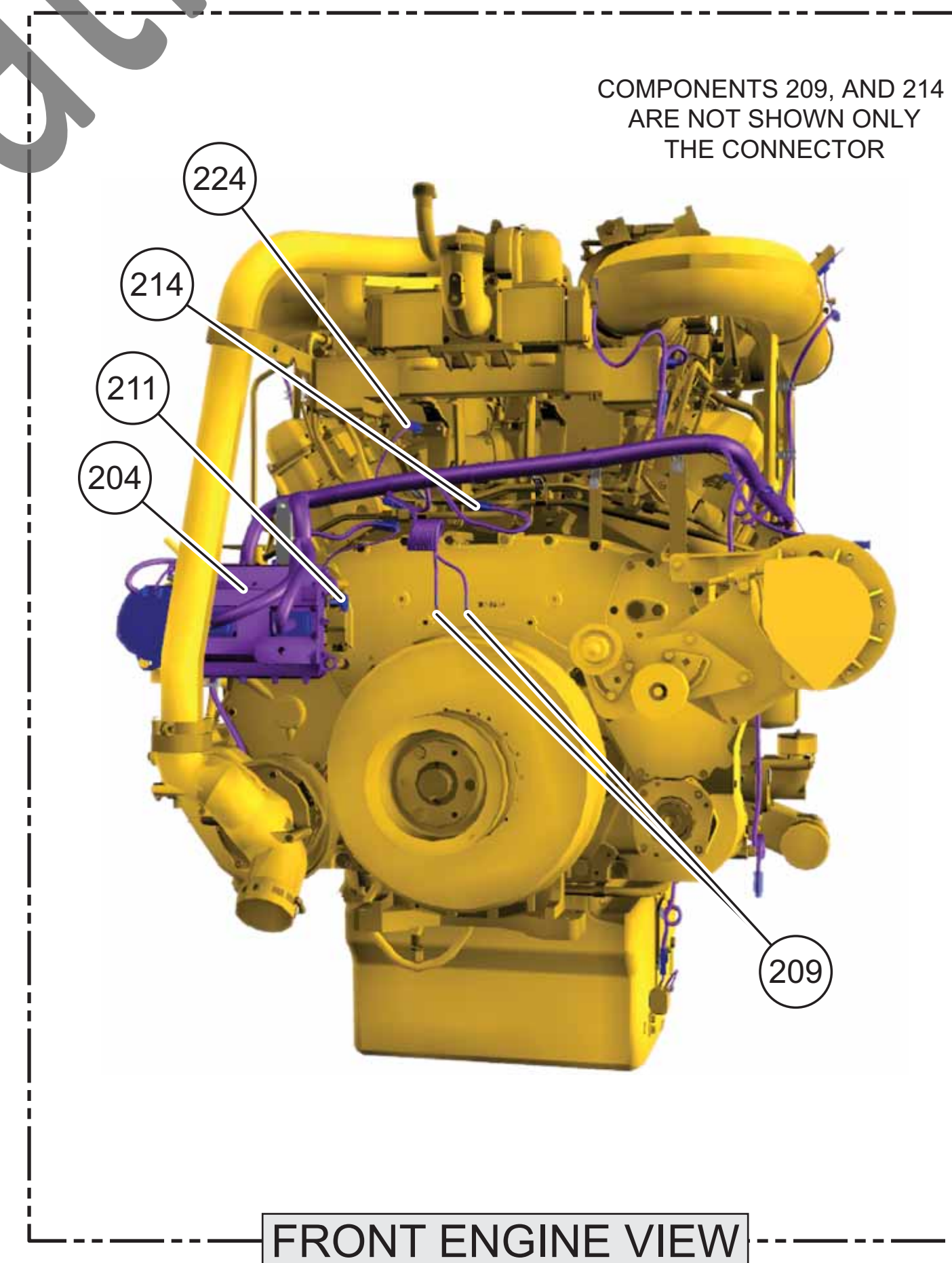
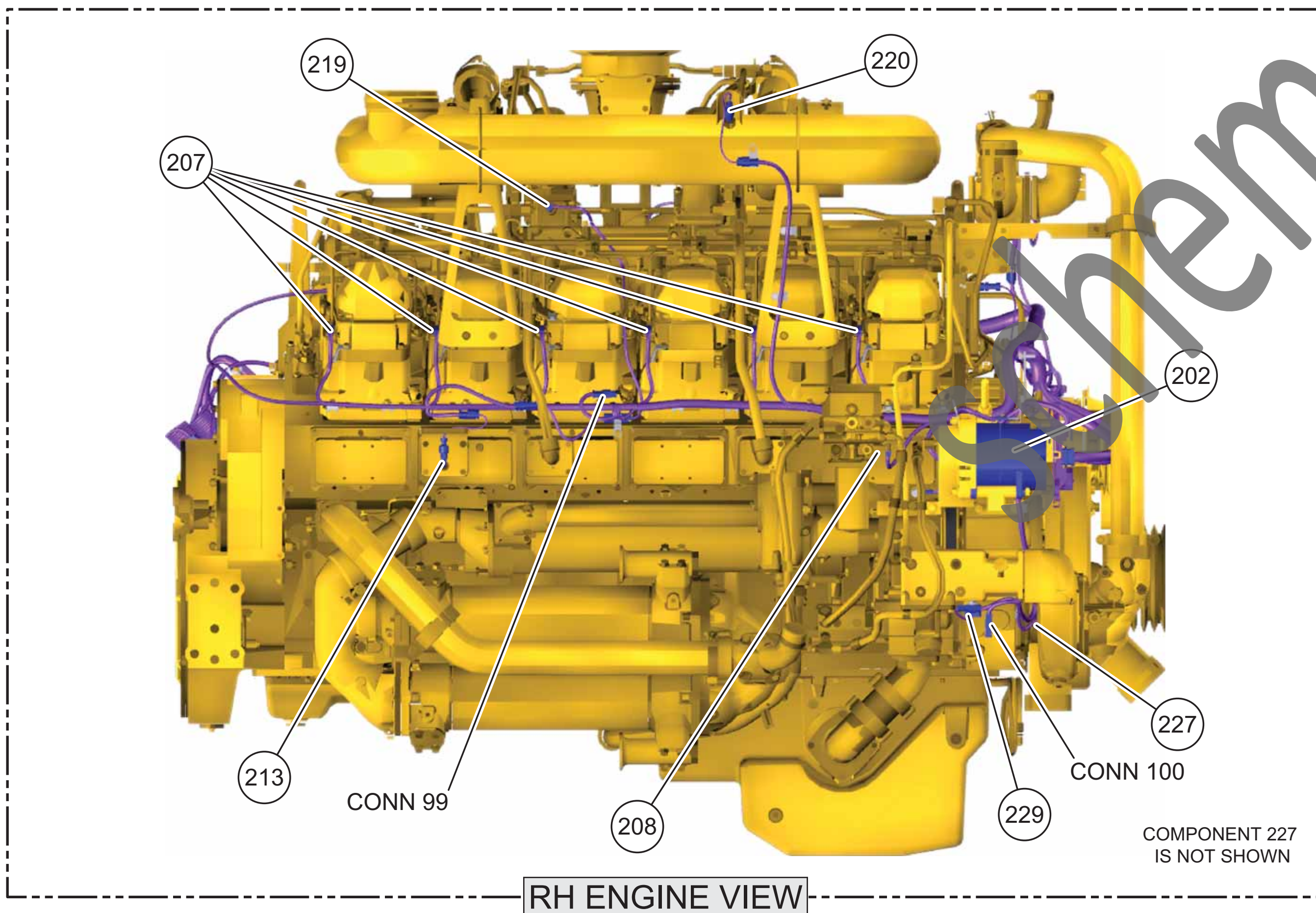
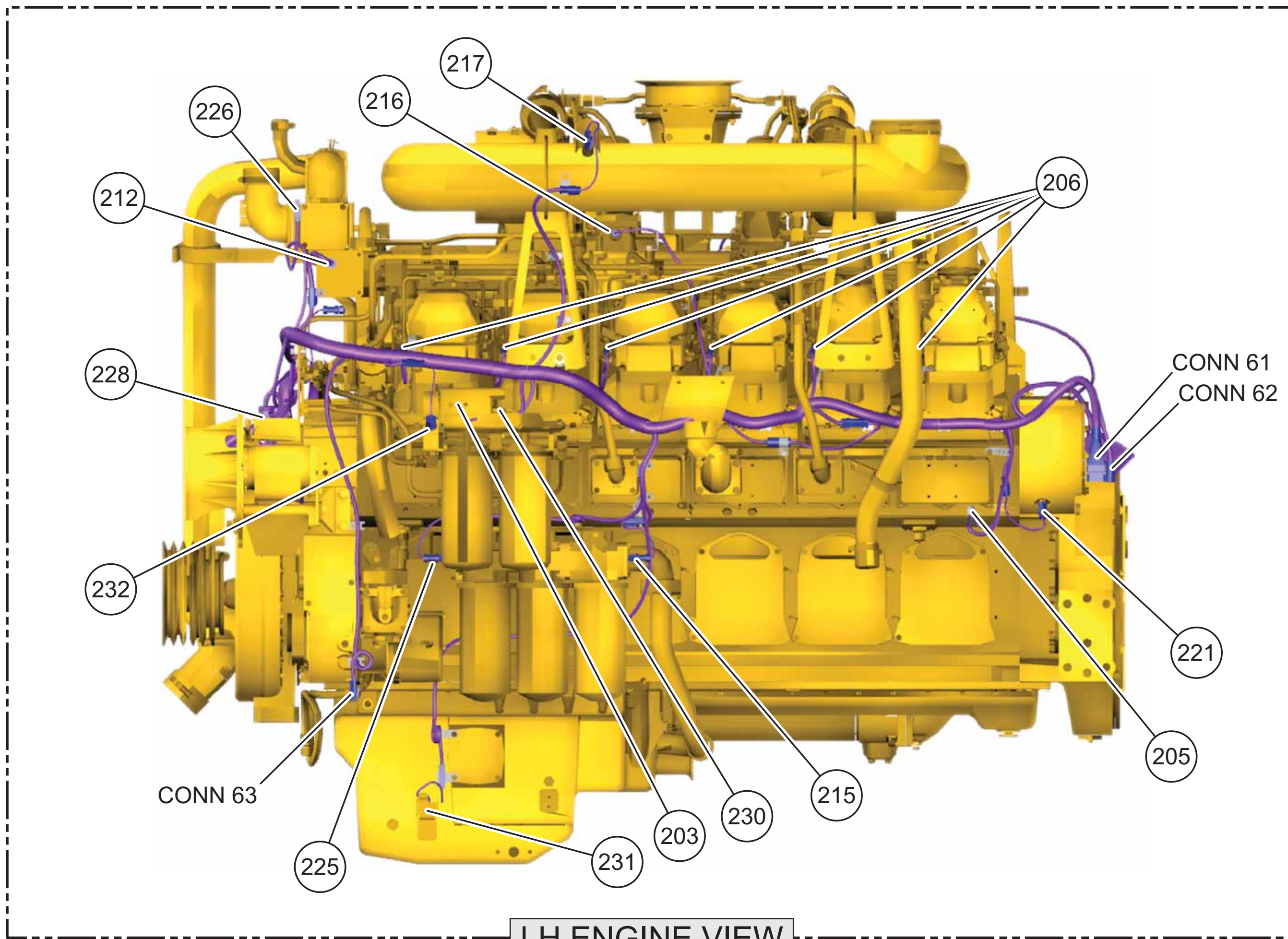
Off-Machine Switch Specification				
Part No.	Function	Actuate	Deactuate	Contact Position
255-2282	Fuel Filter Differential	148.9 ± 21.6 kPa 21.6 psi ± 3.13 psi	69 kPa min. 10 psi min.	Normally Closed Below Deactuation Pressure

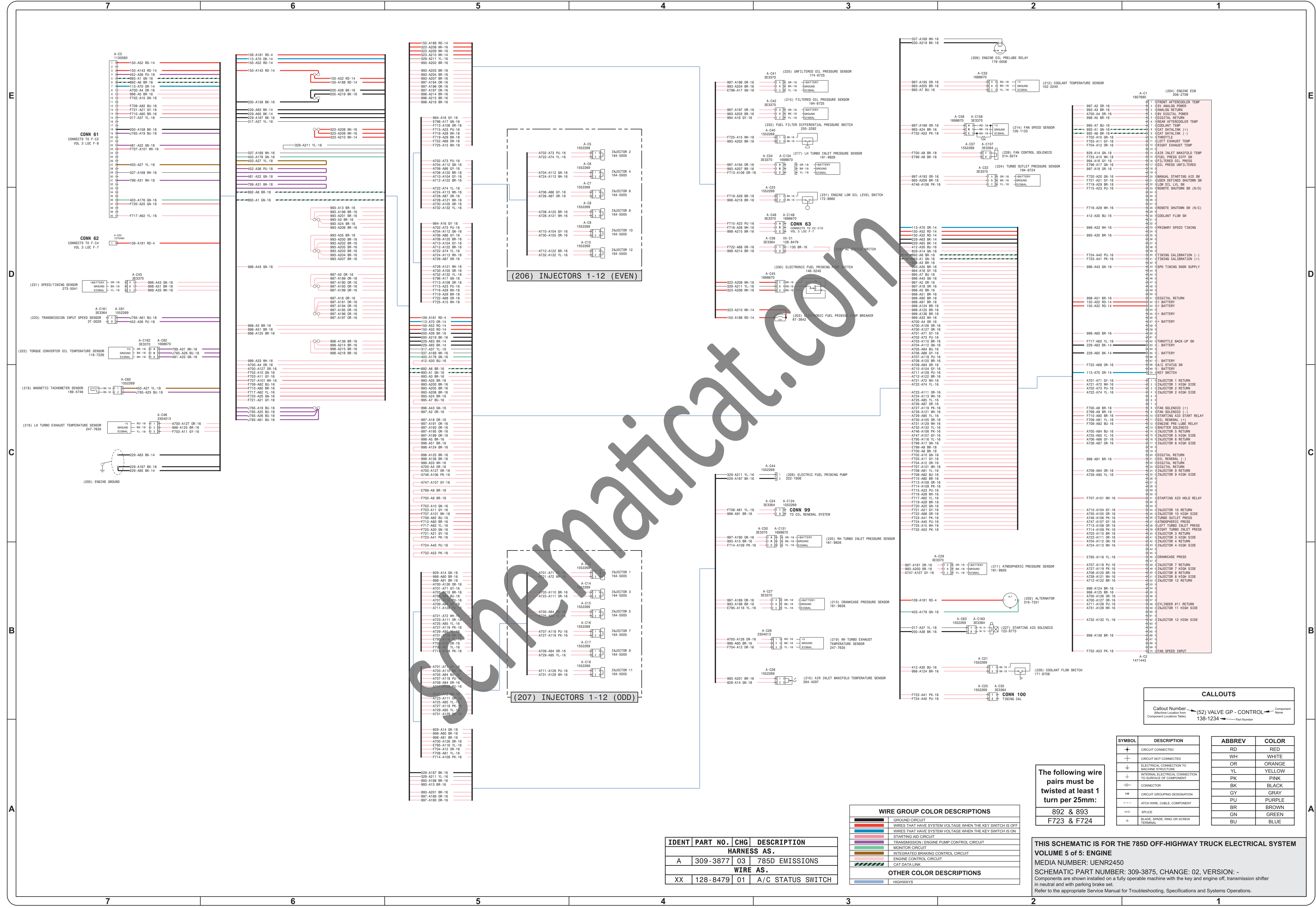
Component Location					
Component	Schematic Location	Machine Location	Component	Schematic Location	Machine Location
Alternator	B-2	202	Sensor - Magnetic Tachometer	C-7	218
Breaker - Electronic Fuel Priming Pump	D-3	203	Sensor - RH Turbo Exhaust Temperature	B-3	219
ECM - Engine	E-1	204	Sensor - RH Turbo Inlet Pressure	B-3	220
Ground - Engine	C-7	205	Sensor - Speed/Timing	D-7	221
Injectors - 1-12 (Even)	D-4	206	Sensor - Torque Converter Oil Temperature	D-7	222
Injectors - 1-12 (Odd)	B-4	207	Sensor - Transmission Input Speed	D-7	223
Pump - Electronic Fuel Priming	C-3	208	Sensor - Turbo Outlet Pressure	E-2	224
Relay - Engine Oil Prohibit	E-2	209	Sensor - Unfiltered Oil Pressure	E-3	225
Sensor - Air Inlet Manifold Temperature	B-3	210	Solenoid - Fan Control	E-2	226
Sensor - Atmospheric Pressure	B-2	211	Solenoid - Starting Aid	B-2	227
Sensor - Coolant Temperature	E-2	212	Switch - A/C Status	D-3	228
Sensor - Crankcase Pressure	B-3	213	Switch - Coolant Flow	B-2	229
Sensor - Fan Speed	E-2	214	Switch - Electronic Fuel Priming Pump	D-3	230
Sensor - Filtered Oil Pressure	E-3	215	Switch - Engine Low Oil Level	D-3	231
Sensor - LH Turbo Exhaust Temperature	C-7	216	Switch - Fuel Filter Differential Pressure	E-3	232
Sensor - LH Turbo Inlet Pressure	E-3	217			

Connector Location	
Connector Number	Schematic Location
CONN 61	E-7
CONN 62	D-7
CONN 63	D-3
CONN 99 - To Oil Renewal System	C-3
CONN 100 - Timing Cal	B-2

Related Electrical Service Manuals	
Title	Form Number
Cross Reference for Electrical Connectors:	REHS0970
Engine Control:	KENR6856

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.





(206) INJECTORS 1-12 (EVEN)

(207) INJECTORS 1-12 (ODD)

Callout Number	Component Name
(52) VALVE GP. CONTROL	
138-1234	Part Number

SYMBOL	DESCRIPTION	ABBREV	COLOR
+	CIRCUIT CONNECTED	RD	RED
-	CIRCUIT NOT CONNECTED	WH	WHITE
+	ELECTRICAL CONNECTION TO MACHINE STRUCTURE	OR	ORANGE
+	EXTERNAL ELECTRICAL CONNECTION TO SURFACE OF COMPONENT	YL	YELLOW
+	CONNECTOR	PK	PINK
+	CIRCUIT GROUPING DESIGNATION	BK	BLACK
+	ATCH WIRE, CABLE, COMPONENT	GY	GRAY
+	SLICE	PU	PURPLE
+	BLADE, SPARE, RING OR SCREW TERMINAL	BR	BROWN
+		GN	GREEN
+		BU	BLUE

WIRE GROUP COLOR DESCRIPTIONS	
(Symbol)	GROUND CIRCUIT
(Symbol)	WIRES THAT HAVE SYSTEM VOLTAGE WHEN THE KEY SWITCH IS OFF
(Symbol)	WIRES THAT HAVE SYSTEM VOLTAGE WHEN THE KEY SWITCH IS ON
(Symbol)	STARTING AID CIRCUIT
(Symbol)	TRANSMISSION / ENGINE PUMP CONTROL CIRCUIT
(Symbol)	MONITOR CIRCUIT
(Symbol)	INTEGRATED BRAKING CONTROL CIRCUIT
(Symbol)	ENGINE CONTROL CIRCUIT
(Symbol)	CAT DATA LINK
OTHER COLOR DESCRIPTIONS	
(Symbol)	HIGHWAYS

IDENT	PART NO.	CHG	DESCRIPTION
HARNESS AS.			
A	309-3877	03	785D EMISSIONS
WIRE AS.			
XX	128-8479	01	A/C STATUS SWITCH

The following wire pairs must be twisted at least 1 turn per 25mm:
892 & 893
F723 & F724

THIS SCHEMATIC IS FOR THE 785D OFF-HIGHWAY TRUCK ELECTRICAL SYSTEM VOLUME 5 of 5: ENGINE
MEDIA NUMBER: UENR2450
SCHEMATIC PART NUMBER: 309-3875, CHANGE: 02, VERSION: -
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.