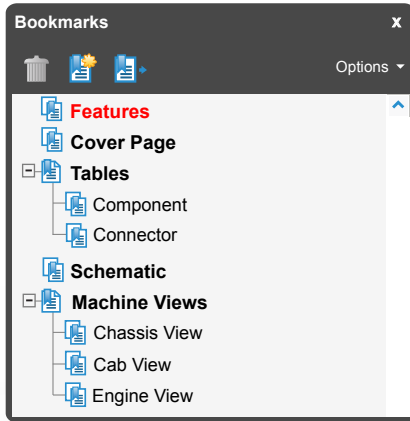


INTERACTIVE SCHEMATIC



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

****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**.

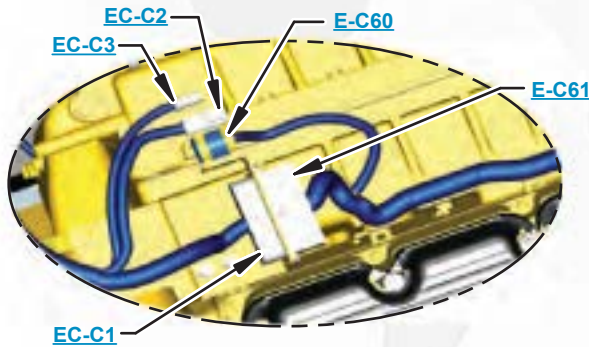
Select **PROPERTIES**.

CLICK the **SETTINGS TAB**.

MOVE THE SLIDER under **SCREEN RESOLUTION** until it shows **1024 X 768**.

CLICK OK to apply the resolution.

**Due to different monitor sizes and PDF reader preferences there may be some variance in linked schematic locations*



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



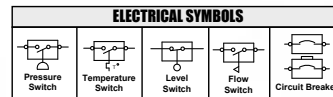
[Click here to save a copy of this interactive schematic to your desktop](#)

VIEW ALL CALLOUTS

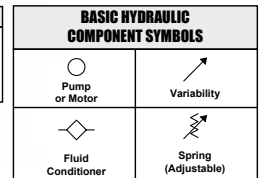
When only one callout is showing on a machine view, clicking on this button will make all of the callouts visible. This button is located in the top right corner of every machine view page.

HOTKEYS (Keyboard Shortcuts)

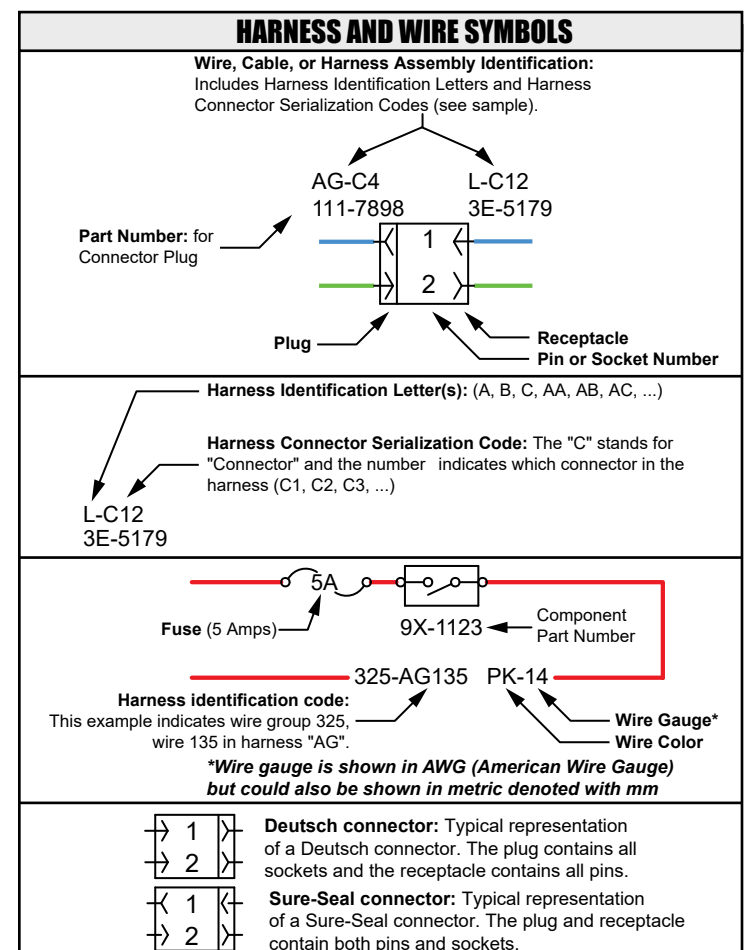
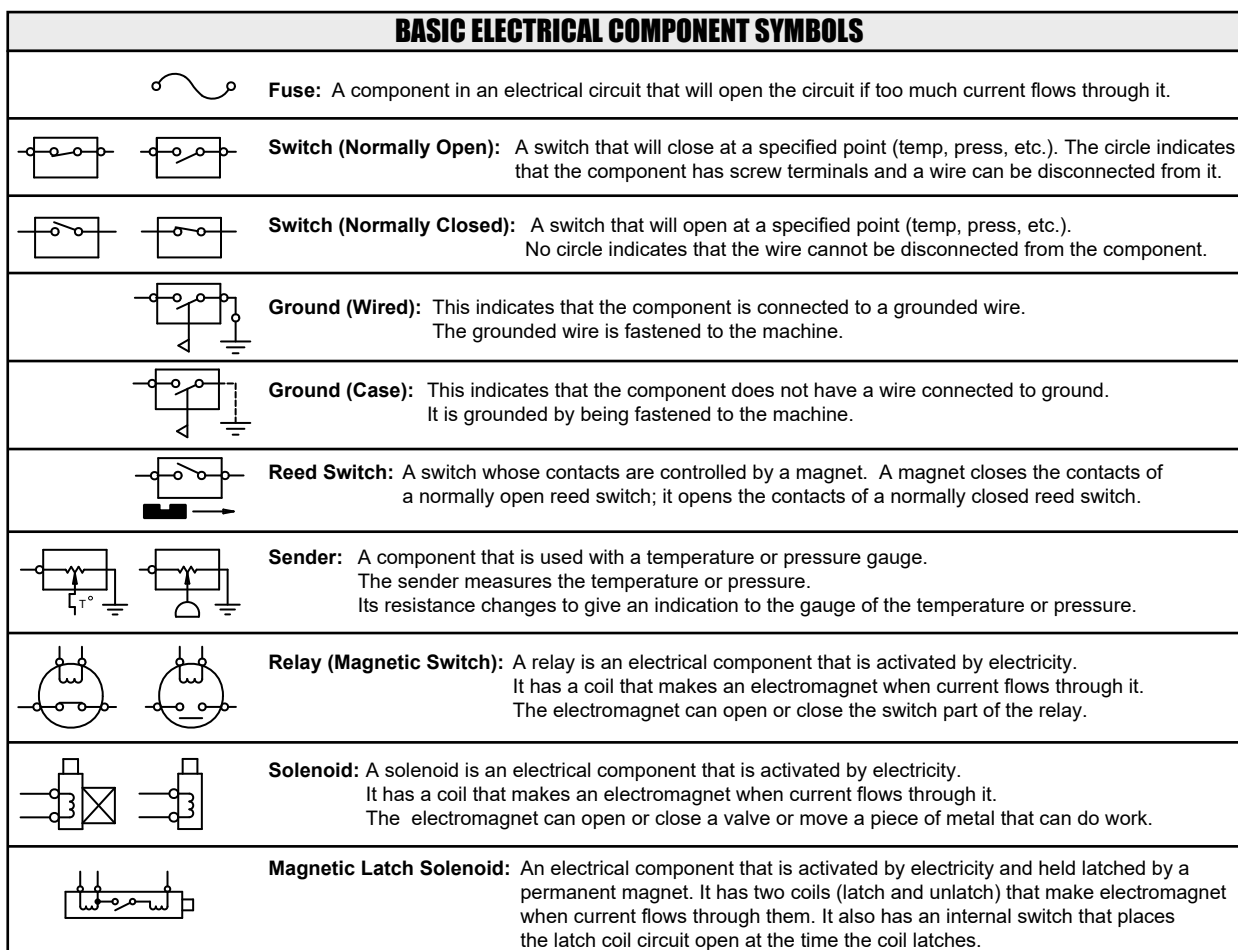
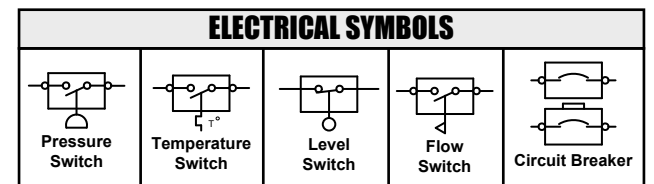
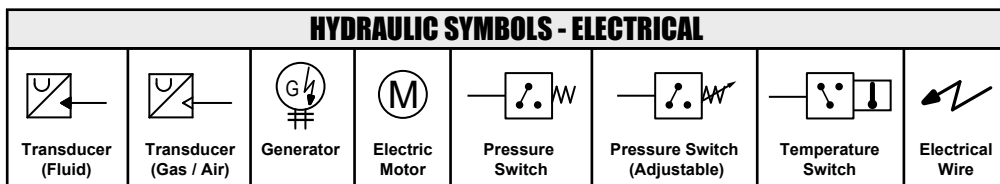
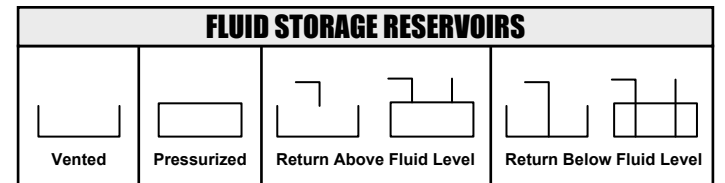
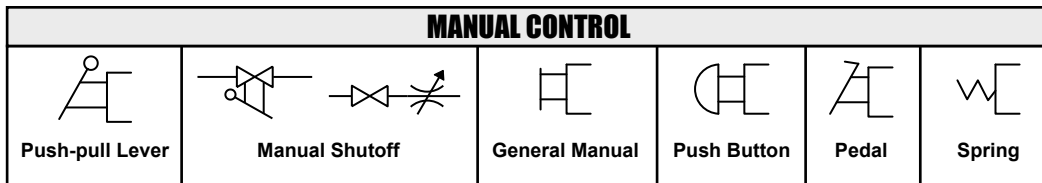
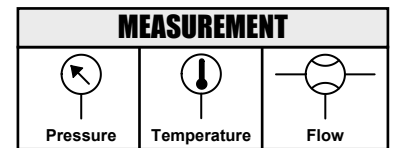
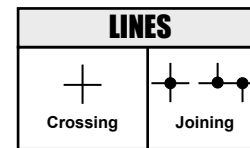
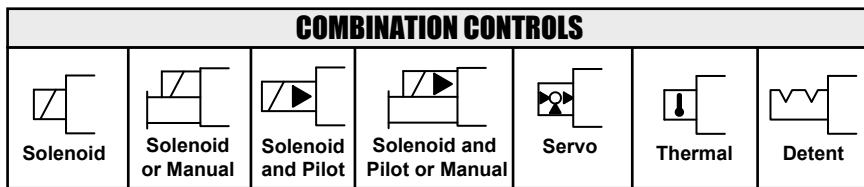
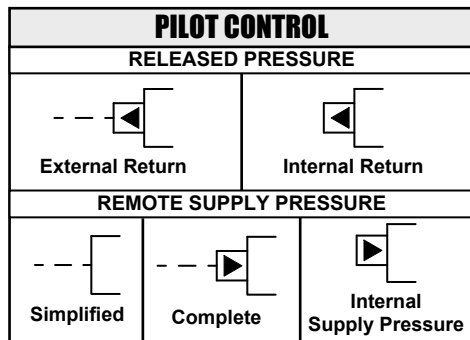
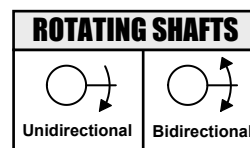
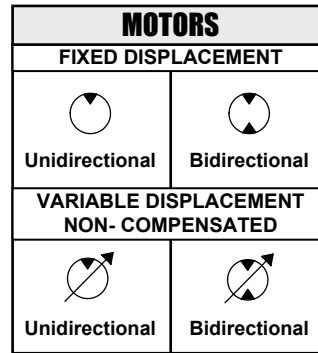
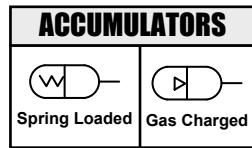
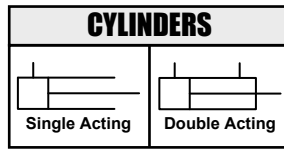
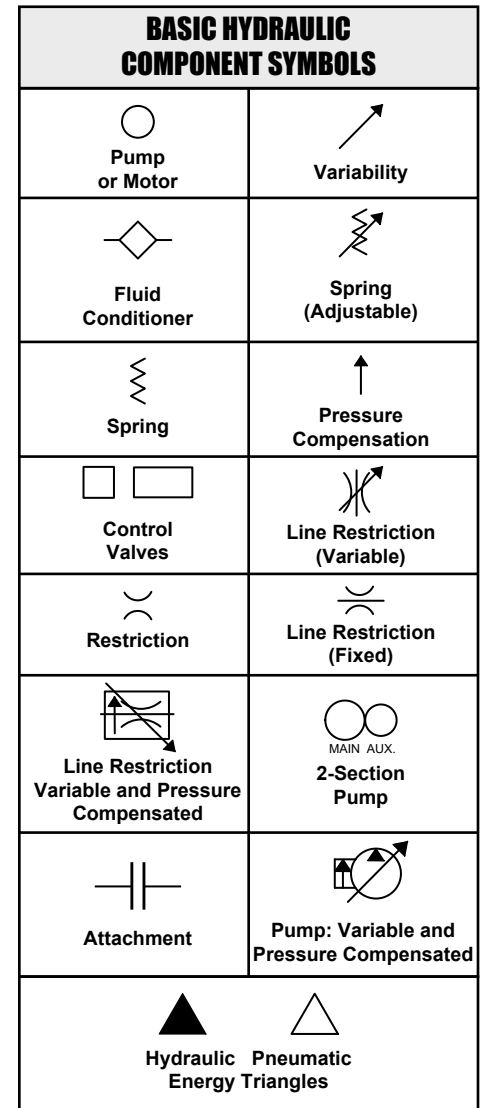
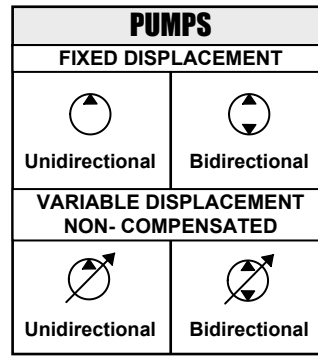
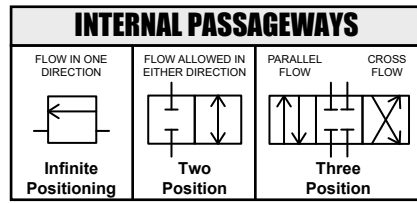
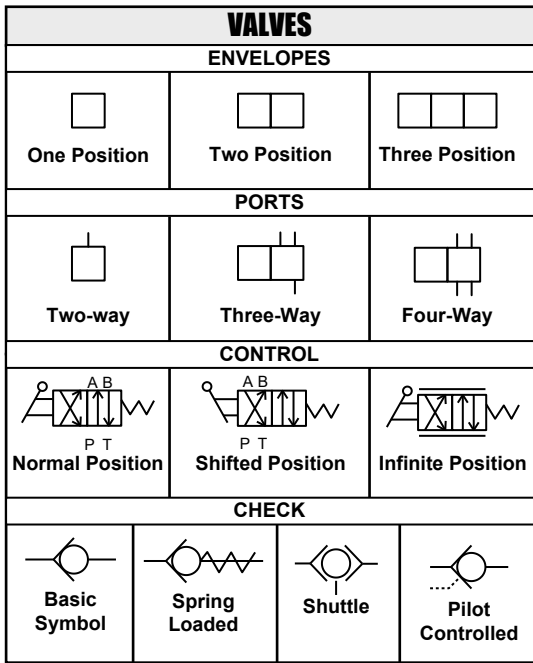
	FUNCTION	KEYS
	Zoom In	“CTRL” / “+”
	Zoom Out	“CTRL” / “-”
	Fit to Page	“CTRL” / “0” (zero)
	Hand Tool	“SPACEBAR” (hold down)
	Find	“CTRL” / “F”
	Search	“CTRL” / “SHIFT” / “F”



[Click here to view the Schematic Symbols and Definitions page](#)



SCHEMATIC SYMBOLS AND DEFINITIONS





Schematic

12K, 120K, 140K and 160K Motor Grader Electrical System

JJA1-3011
SZP1-359
SZN1-1485
JAP1-3119
JPA1-3139
SZL1-1868
SZM1-489
JBP1-3159

COMPONENT LOCATION

Page 1 of 2



Component	Schematic Location	Machine Location	Component	Schematic Location	Machine Location
Air Dryer	F-12	1	Sensor - Atmospheric Pressure	G-15	76
Alarm - Action	A-12	2	Sensor - Engine Oil Pressure	G-15	77
Alarm - Backup	J-16	3	Sensor - Engine Speed	F-15	78
Alternator	H-12	4	Sensor - Fuel Pressure	F-12	79
Arc Suppressor - Differential Lock	I-15	5	Sensor - Inching Pedal Position	E-7	80
Battery 1	G-12	6	Sensor - Injector Actuation Pressure	G-15	81
Battery 2	G-12	7	Sensor - Intake Manifold Air Pressure	G-15	82
Breaker - Alternator	G-12	8	Sensor - Secondary Engine Speed	F-15	83
Breaker - Main	G-12	9	Sensor - Throttle Position	I-8	84
Control - Engine	H-16	10	Sensor - Transmission Input Speed	B-16	85
Control - Transmission	E-12	11	Sensor - Transmission Output Speed 1	B-16	86
Converter - 12 to 24 Volt 1	J-10	12	Sensor - Transmission Output Speed 2	B-16	87
Converter - 12 to 24 Volt 2	I-8	13	Sensor - Transmission Temperature	D-15	88
Converter - 20A	C-2	14	Sensor - Turbo Inlet Pressure	F-12	89
Flasher	J-7	15	Shifter - Transmission	A-11	90
Gauge - LH Air Pressure	G-2	16	Solenoid - A/C Clutch	E-11	91
Gauge - RH Air Pressure	G-2	17	Solenoid - Blade Cushion 1	H-5	92
Gauge Cluster	F-2	18	Solenoid - Blade Cushion 2	H-5	93
Ground - Cab 1 (Lower Right Rear)	H-9	19	Solenoid - Centershift Pin	D-7	94
Ground - Cab 2 (Cab Front)	C-6	20	Solenoid - Differential Lock	I-15	95
Ground - Cab 3 (Upper Cab)	C-3	21	Solenoid - Park Brake	D-7	96
Ground - Frame 1 (RH Side)	H-12	22	Solenoid - Start Aid	I-11	97
Ground - Frame 2 (RH Side Rear)	H-12	23	Solenoid - Transmission 1 (Forward High)	C-16	98
Ground - Front Frame 1 (Articulation Joint)	H-9	24	Solenoid - Transmission 2 (Forward Low)	C-16	99
Ground - Front Frame 2 (LH Side)	H-8	25	Solenoid - Transmission 3 (Reverse)	C-16	100
Ground - Front Frame 3 (RH Side)	D-9	26	Solenoid - Transmission 4 (2nd)	C-16	101
Ground - Platform (Left Rear Cab)	H-10	27	Solenoid - Transmission 5 (3rd)	C-16	102
Ground - Rear Frame 1 (Articulation Joint)	H-10	28	Solenoid - Transmission 6 (1st)	C-16	103
Ground - Rear Frame 2 (RH Side)	H-11	29	Solenoid - Transmission 7 (Low Range)	C-16	104
Ground - Rear Frame 3 (LH Side)	I-14	30	Solenoid - Transmission 8 (High Range)	C-16	105
Ground - Rear Frame 4 (LH Side)	I-14	31	Speedometer	G-1	106
Ground Strap AS 1	I-10	32	Strap AS	G-12	107
Ground Strap AS 2	H-9	33	Switch - A/C High Pressure	E-11	108
Ground Strap - Engine Control	D-16	34	Switch - A/C Low Pressure	E-11	109
Ground Strap - Transmission Control	E-12	35	Switch - Autoshift	C-11	110
Horn - Forward Warning	E-4	36	Switch - Beacon	B-8	111
Horn GP	I-7	37	Switch - Blade Cushion	B-11	112
Injector - Cylinder #1	H-14	38	Switch - Blower	C-14	113
Injector - Cylinder #2	H-14	39	Switch - Brake Pedal Limit	E-6	114
Injector - Cylinder #3	H-14	40	Switch - Centershift Indicator	D-7	115
Injector - Cylinder #4	H-14	41	Switch - Centershift Pin	B-16	116
Injector - Cylinder #5	H-14	42	Switch - Differential Lock	I-5	117
Injector - Cylinder #6	H-14	43	Switch - Disconnect	H-12	118
Lighter - Cigar	A-13	44	Switch - Engine Coolant Temperature	G-15	119
Meter - Service Hour	J-6	45	Switch - Floodlamp	I-5	120
Module - A/C Protection	E-11	46	Switch - Front Defrost	A-7	121
Module - Gauge Interface	G-2	47	Switch - Front Lower Wiper 1	A-7	122
Motor - Blower	B-14	48	Switch - Front Lower Wiper 2	A-7	123

COMPONENT LOCATION

Page 2 of 2



Component	Schematic Location	Machine Location	Component	Schematic Location	Machine Location
Motor - Front Defrost Fan	B-2	49	Switch - Front Upper Wiper 1	B-7	124
Motor - Front Lower Washer	I-10	50	Switch - Front Upper Wiper 2	B-7	125
Motor - Front Lower Wiper	E-4	51	Switch - Fuel Pressure	F-12	126
Motor - Front Upper Washer	I-10	52	Switch - Ground Level Shutdown	C-15	127
Motor - Front Upper Wiper	D-3	53	Switch - Headlamp	J-4	128
Motor - Rear Defrost Fan	C-9	54	Switch - Headlamp Dimmer	J-4	129
Motor - Rear Washer	I-10	55	Switch - Heated Mirrors	B-6	130
Motor - Rear Wiper	C-9	56	Switch - Inching Pedal Limit	E-6	131
Motor - Starting	H-12	57	Switch - Intake Manifold Air Temperature	G-15	132
Port - 12V Power	B-3	58	Switch - Key	A-13	133
Pump - Fuel Priming	F-12	59	Switch - LH Brake System Pressure	E-7	134
Relay - Backup Alarm	J-16	60	Switch - Lightbar Lamp	J-4	135
Relay - Cranking	E-12	61	Switch - Open ROPS Beacon	C-13	136
Relay - Fuel Priming	F-12	62	Switch - Park Brake Pressure	E-9	137
Relay - Horn	J-7	63	Switch - Rear Defrost	A-8	138
Relay - Key Switch Enable	B-13	64	Switch - Rear Wiper	A-7	139
Relay - Main	G-12	65	Switch - RH Brake System Pressure	E-7	140
Relay - Start Aid	I-11	66	Switch - Snow Wing Lamp	A-6	141
Relays Tail Panel Lamps	J-7	67	Switch - Stop Lamp	E-7	142
Resistor - CAN 1	H-16	68	Switch - Tail Lamp	J-4	143
Resistor - CAN 2	G-2	69	Switch - Thermostat	C-14	144
Resistor - Front Defrost	B-2	70	Switch - Throttle Hold Mode	B-10	145
Resistor - HVAC 1	B-14	71	Switch - Throttle Speed Set	A-10	146
Resistor - HVAC 2	B-9	72	Switch - Transmission Filter Bypass	H-13	147
Sender - Articulation Angle	H-10	73	Switch - Turn Signal	J-7	148
Sender - Coolant Temperature	D-12	74	Tachometer	G-1	149
Sender - Fuel Level	D-12	75	Valve - Injector Actuation	F-15	150

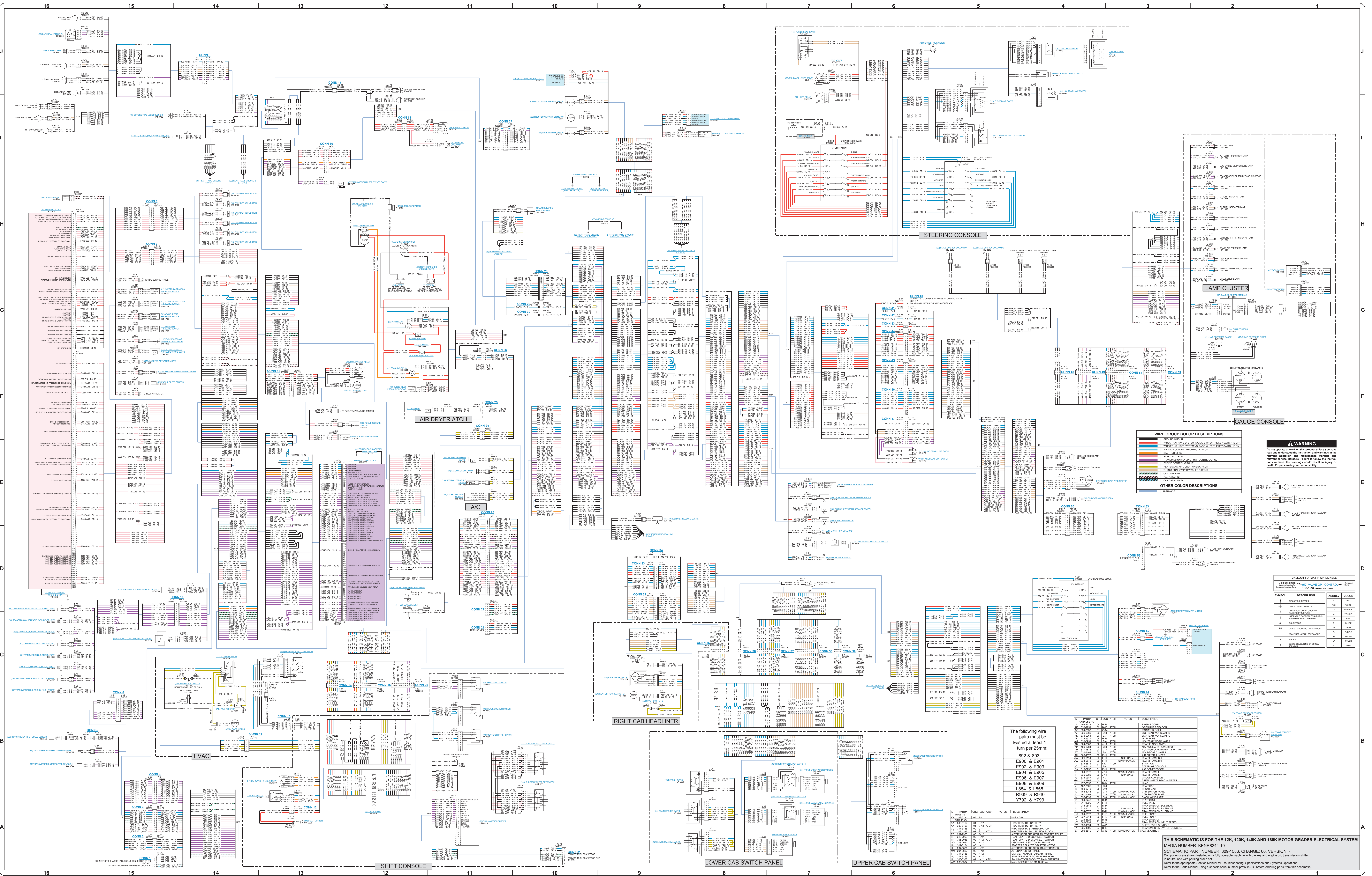
Always check component part numbers with Parts Manual for your specific machine.

CONNECTOR LOCATION



Connector Number	Schematic Location
CONN 1	A-15
CONN 2	A-15
CONN 3	A-15
CONN 4	B-15
CONN 5	B-15
CONN 6	B-15
CONN 7	H-15
CONN 8	H-15
CONN 9	J-14
CONN 10	D-14
CONN 11	B-14
CONN 12	A-13
CONN 13	B-13
CONN 14	C-13
CONN 15	F-13
CONN 16	I-13
CONN 17	J-13
CONN 18	I-12
CONN 19	C-12
CONN 20	C-12
CONN 21	C-11
CONN 22	D-11
CONN 23	E-11
CONN 24	F-11
CONN 25	F-11
CONN 26	G-11
CONN 27	I-11
CONN 28	G-10
CONN 29	G-10
CONN 30	G-10
CONN 31	A-10
CONN 32	D-9
CONN 33	D-9
CONN 34	D-9
CONN 35	C-8
CONN 36	C-8
CONN 37	C-7
CONN 38	C-7
CONN 39	C-7
CONN 40	G-6
CONN 41	G-6
CONN 42	G-6
CONN 43	G-6
CONN 44	G-6
CONN 45	F-6
CONN 46	F-6
CONN 47	F-6
CONN 48	F-4
CONN 49	F-4
CONN 50	E-4
CONN 51	C-3
CONN 52	C-3
CONN 53	D-3
CONN 54	F-3
CONN 55	F-3

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.



WIRE GROUP COLOR DESCRIPTIONS

- Orange: Ground Circuit
- Red: Positive Power System Voltage (When the Key Switch is Off)
- Yellow: Positive Power System Voltage (When the Key Switch is On)
- Blue: Starting Circuit
- Green: Diagnostic/Control Circuit
- Black: Diagnostic/Control Circuit
- White: Diagnostic/Control Circuit
- Grey: Diagnostic/Control Circuit
- Light Blue: Diagnostic/Control Circuit
- Light Green: Diagnostic/Control Circuit
- Light Yellow: Diagnostic/Control Circuit
- Light Orange: Diagnostic/Control Circuit
- Light Red: Diagnostic/Control Circuit
- Light Purple: Diagnostic/Control Circuit
- Light Blue-Black: Diagnostic/Control Circuit
- Light Green-Black: Diagnostic/Control Circuit
- Light Yellow-Black: Diagnostic/Control Circuit
- Light Orange-Black: Diagnostic/Control Circuit
- Light Red-Black: Diagnostic/Control Circuit
- Light Purple-Black: Diagnostic/Control Circuit
- Light Blue-Black: Diagnostic/Control Circuit
- Light Green-Black: Diagnostic/Control Circuit
- Light Yellow-Black: Diagnostic/Control Circuit
- Light Orange-Black: Diagnostic/Control Circuit
- Light Red-Black: Diagnostic/Control Circuit
- Light Purple-Black: Diagnostic/Control Circuit

OTHER COLOR DESCRIPTIONS

- Black: Ground
- White: Ground
- Grey: Ground
- Light Blue: Ground
- Light Green: Ground
- Light Yellow: Ground
- Light Orange: Ground
- Light Red: Ground
- Light Purple: Ground
- Light Blue-Black: Ground
- Light Green-Black: Ground
- Light Yellow-Black: Ground
- Light Orange-Black: Ground
- Light Red-Black: Ground
- Light Purple-Black: Ground
- Light Blue-Black: Ground
- Light Green-Black: Ground
- Light Yellow-Black: Ground
- Light Orange-Black: Ground
- Light Red-Black: Ground
- Light Purple-Black: Ground

WARNING
Do not operate or work on this product unless you have read and understood the instructions set forth in the relevant Operation and Maintenance Manuals and relevant service literature. Failure to follow the instructions of these manuals may result in injury or death. Proper care is your responsibility.

CALLOUT FORMAT IF APPLICABLE

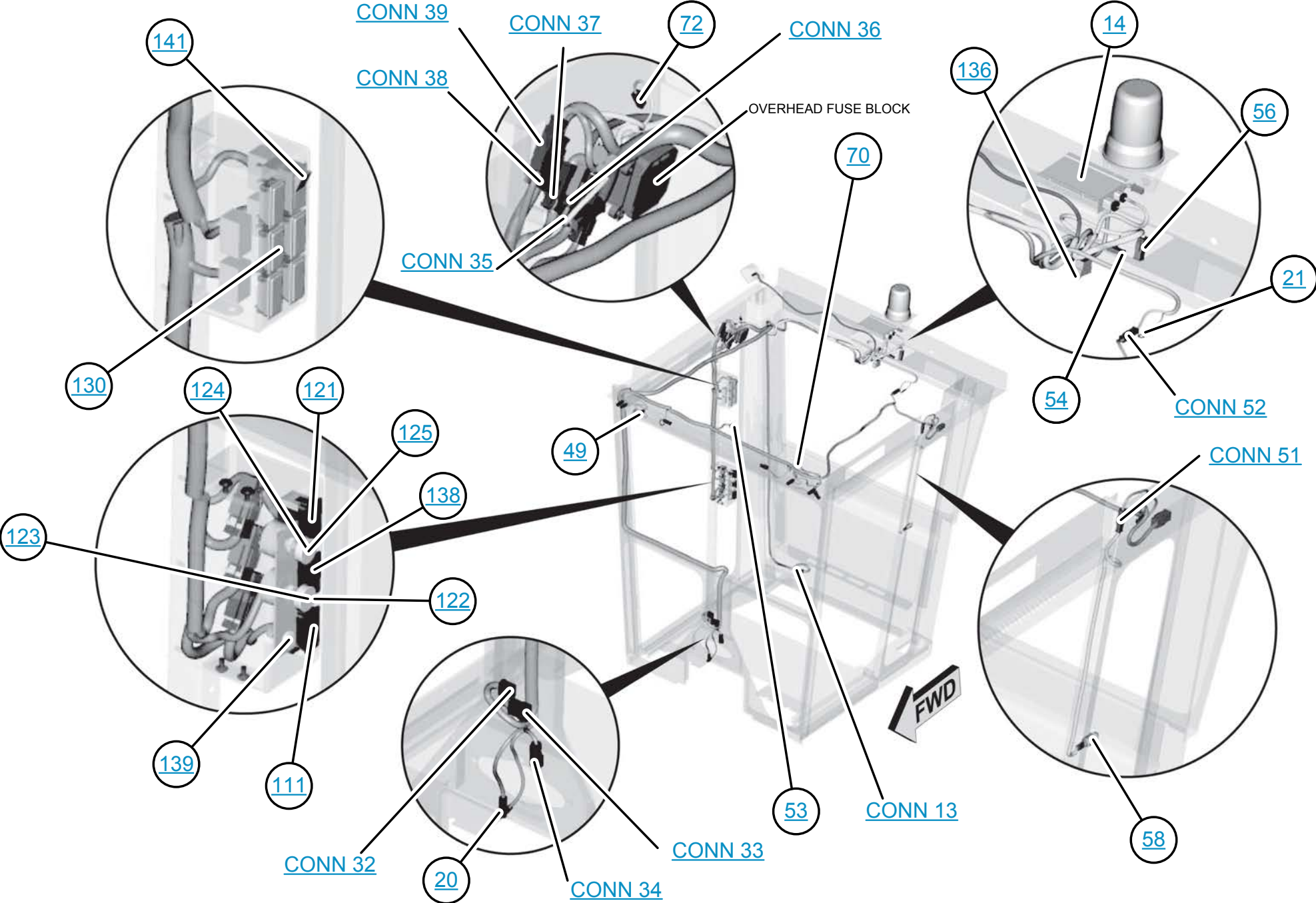
SYMBOL	DESCRIPTION	ABBREVIATION	COLOR
+	CREW CONNECTION	CC	RED
-	CREW CONNECTION	CC	BLACK
+	OPERATOR CONNECTION	OC	RED
-	OPERATOR CONNECTION	OC	BLACK
+	ATTORNEY CALL CONNECTION	AC	RED
-	ATTORNEY CALL CONNECTION	AC	BLACK
+	GROUND	GR	BLACK
-	GROUND	GR	BLACK

The following wire pairs must be twisted at least 1 turn per 25mm:
 892 & 893
 E900 & E901
 E902 & E903
 E904 & E905
 E906 & E907
 E908 & E909
 L854 & L855
 R930 & R931
 Y792 & Y793

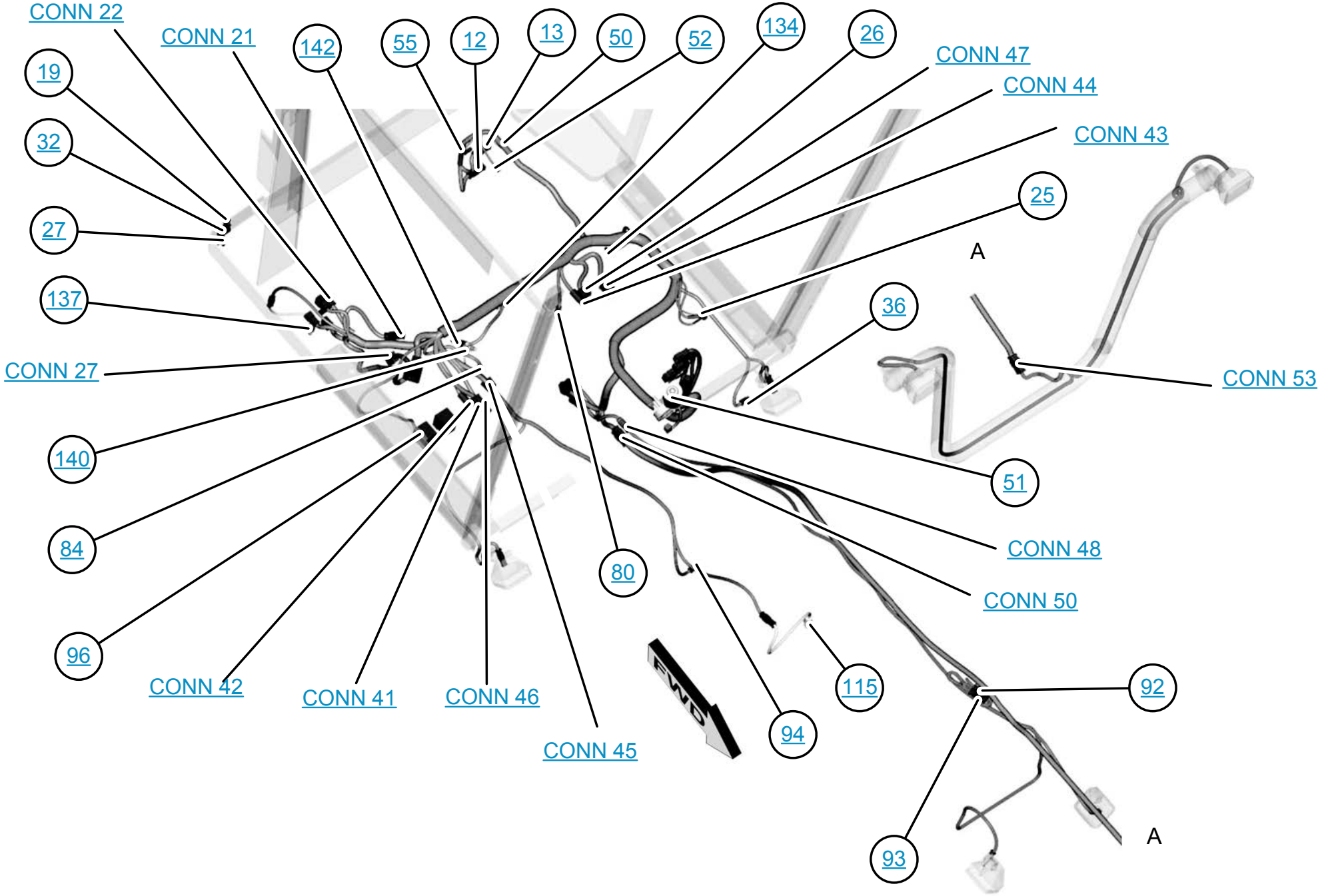
WIRE NO.	WIRE COLOR	WIRE LOCATION	NOTE	DESCRIPTION
892	Red	Engine Compartment		ENGINE COMP
893	Black	Engine Compartment		ENGINE COMP
E900	Red	Engine Compartment		ENGINE COMP
E901	Black	Engine Compartment		ENGINE COMP
E902	Red	Engine Compartment		ENGINE COMP
E903	Black	Engine Compartment		ENGINE COMP
E904	Red	Engine Compartment		ENGINE COMP
E905	Black	Engine Compartment		ENGINE COMP
E906	Red	Engine Compartment		ENGINE COMP
E907	Black	Engine Compartment		ENGINE COMP
E908	Red	Engine Compartment		ENGINE COMP
E909	Black	Engine Compartment		ENGINE COMP
L854	Red	Engine Compartment		ENGINE COMP
L855	Black	Engine Compartment		ENGINE COMP
R930	Red	Engine Compartment		ENGINE COMP
R931	Black	Engine Compartment		ENGINE COMP
Y792	Red	Engine Compartment		ENGINE COMP
Y793	Black	Engine Compartment		ENGINE COMP

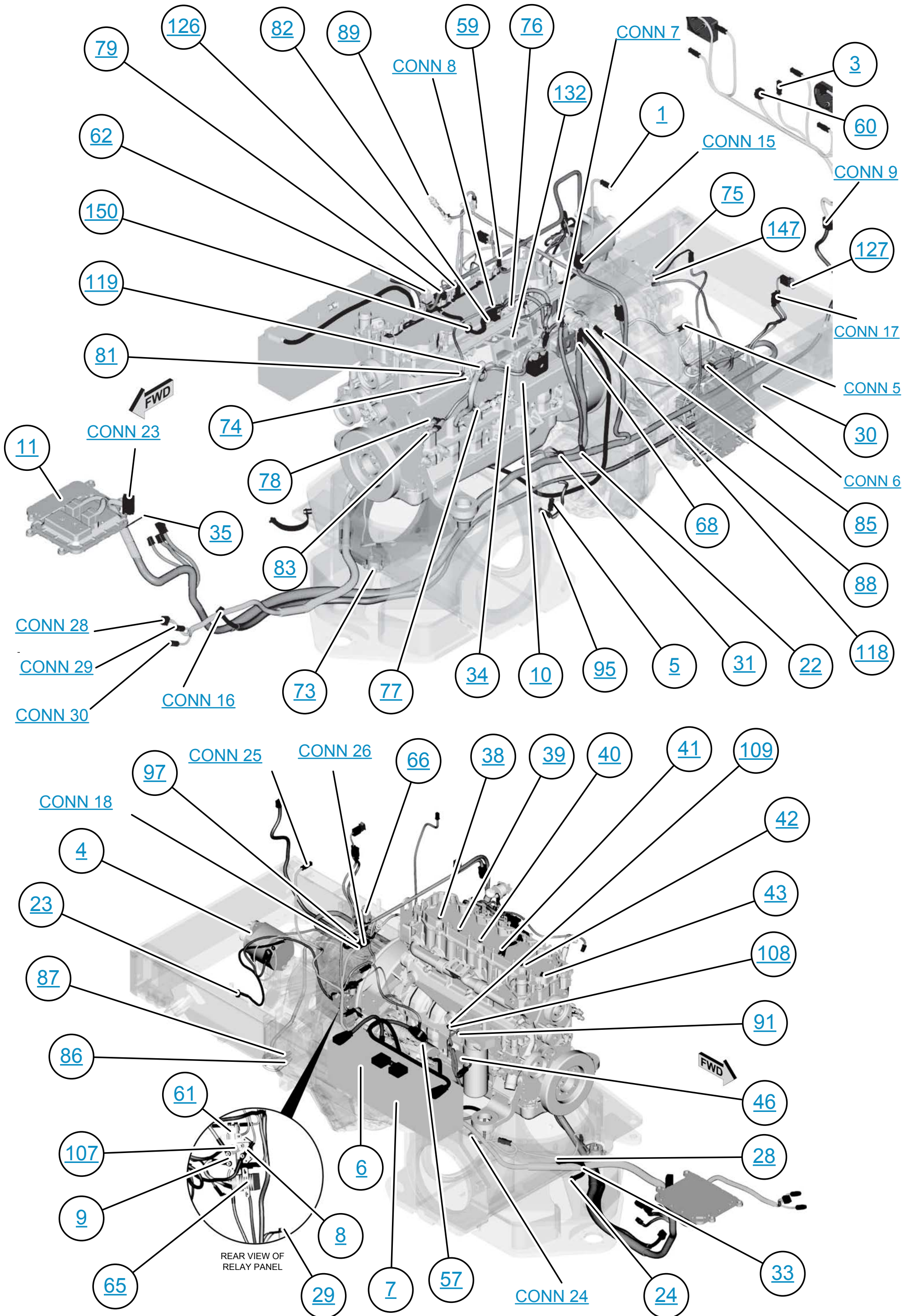
THIS SCHEMATIC IS FOR THE 12K, 120K, 140K AND 160K MOTOR GRADER ELECTRICAL SYSTEM
 MEDIA NUMBER: KENR244-10
 SCHEMATIC PART NUMBER: 309-1586, CHANGE: 00, VERSION: 0
 Components are shown installed on a fully operable machine with the key and engine off. Suspension is in neutral and with parking brake set.
 Refer to the appropriate Service Manual for Troubleshooting, Specifications and System Operations.
 Refer to the Parts Manual using a specific serial number prefix in SIS before ordering parts from this schematic.

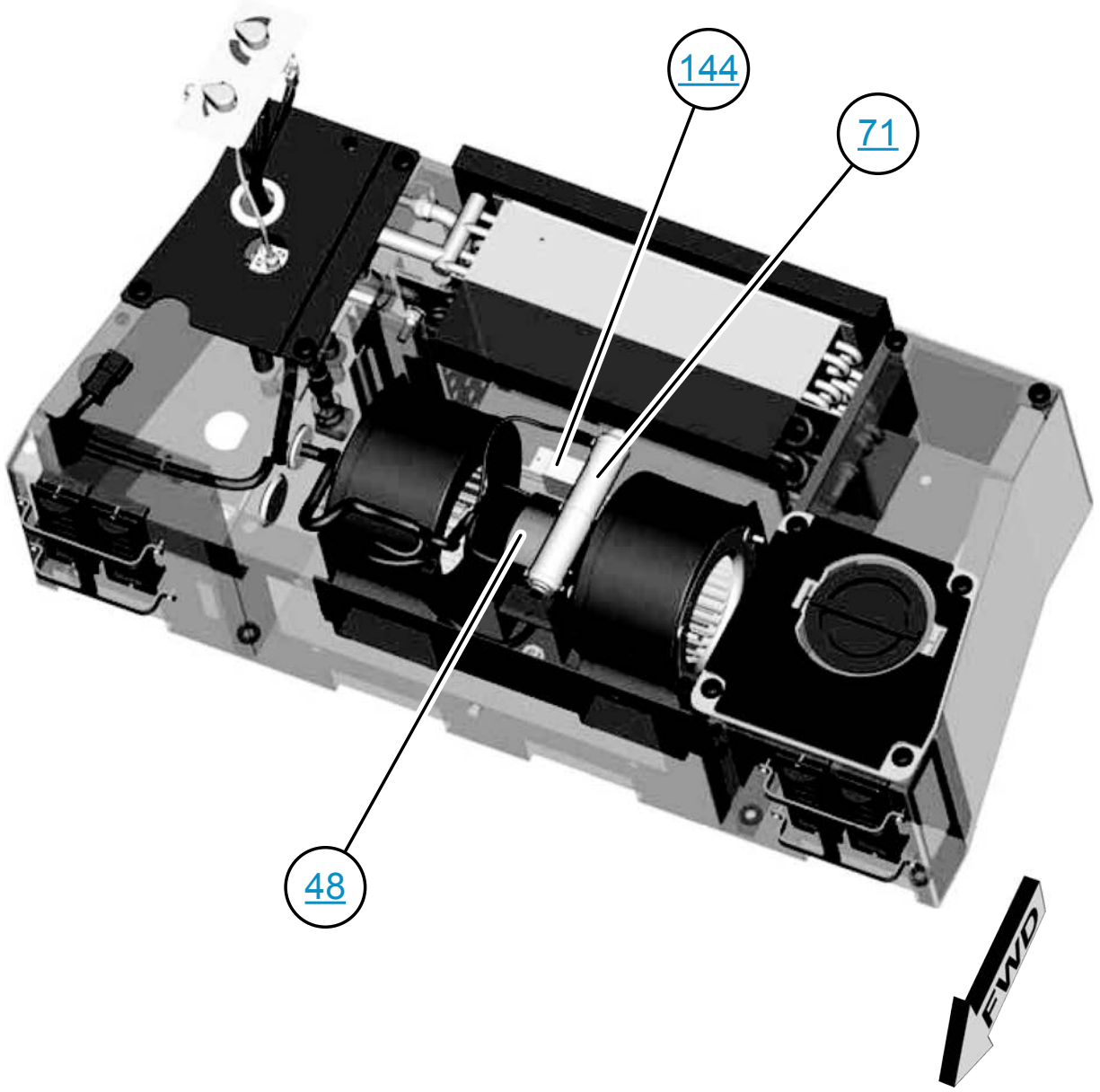
CAB HARNESSSES



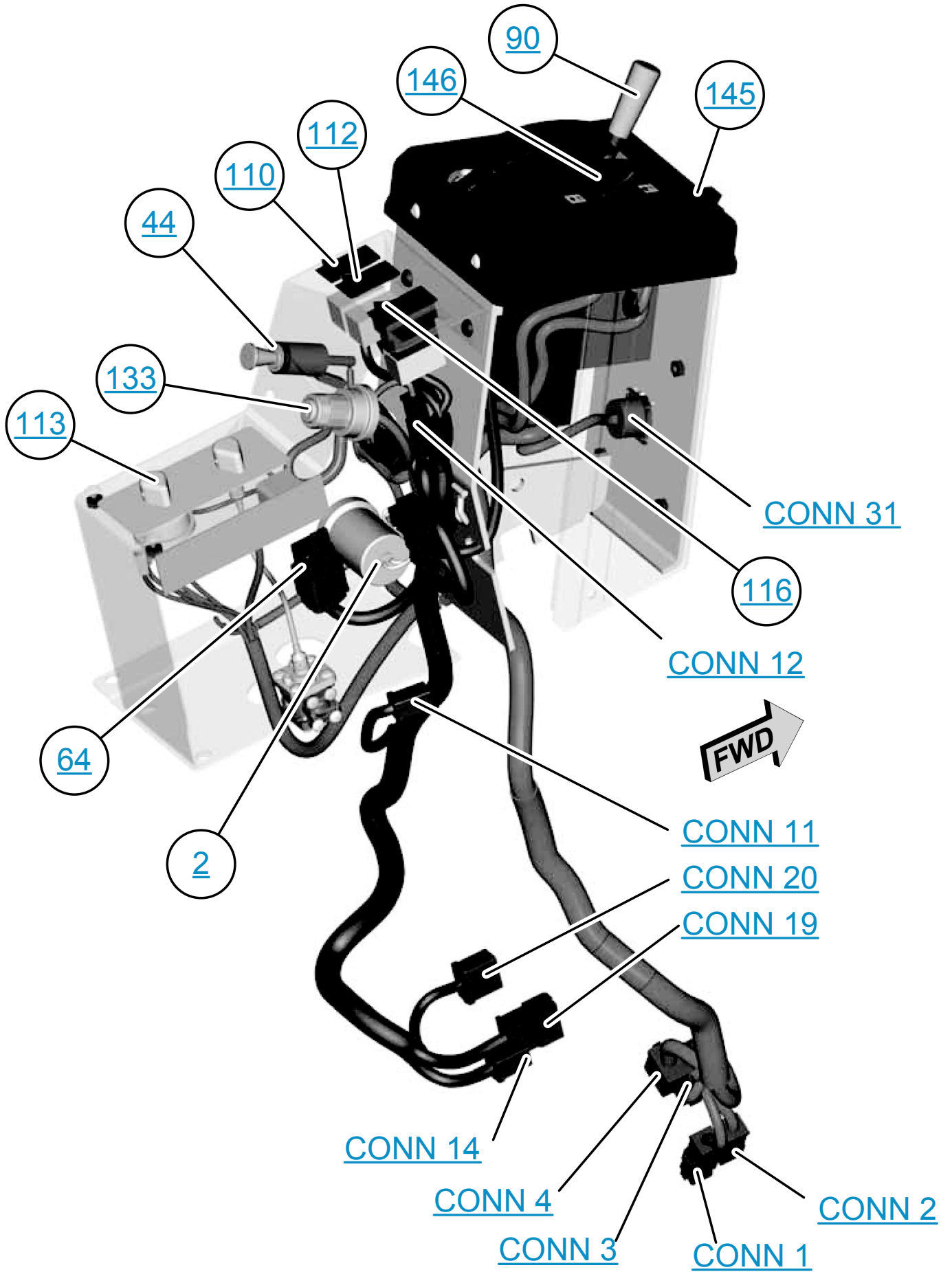
CAB PLATFORM HARNESS



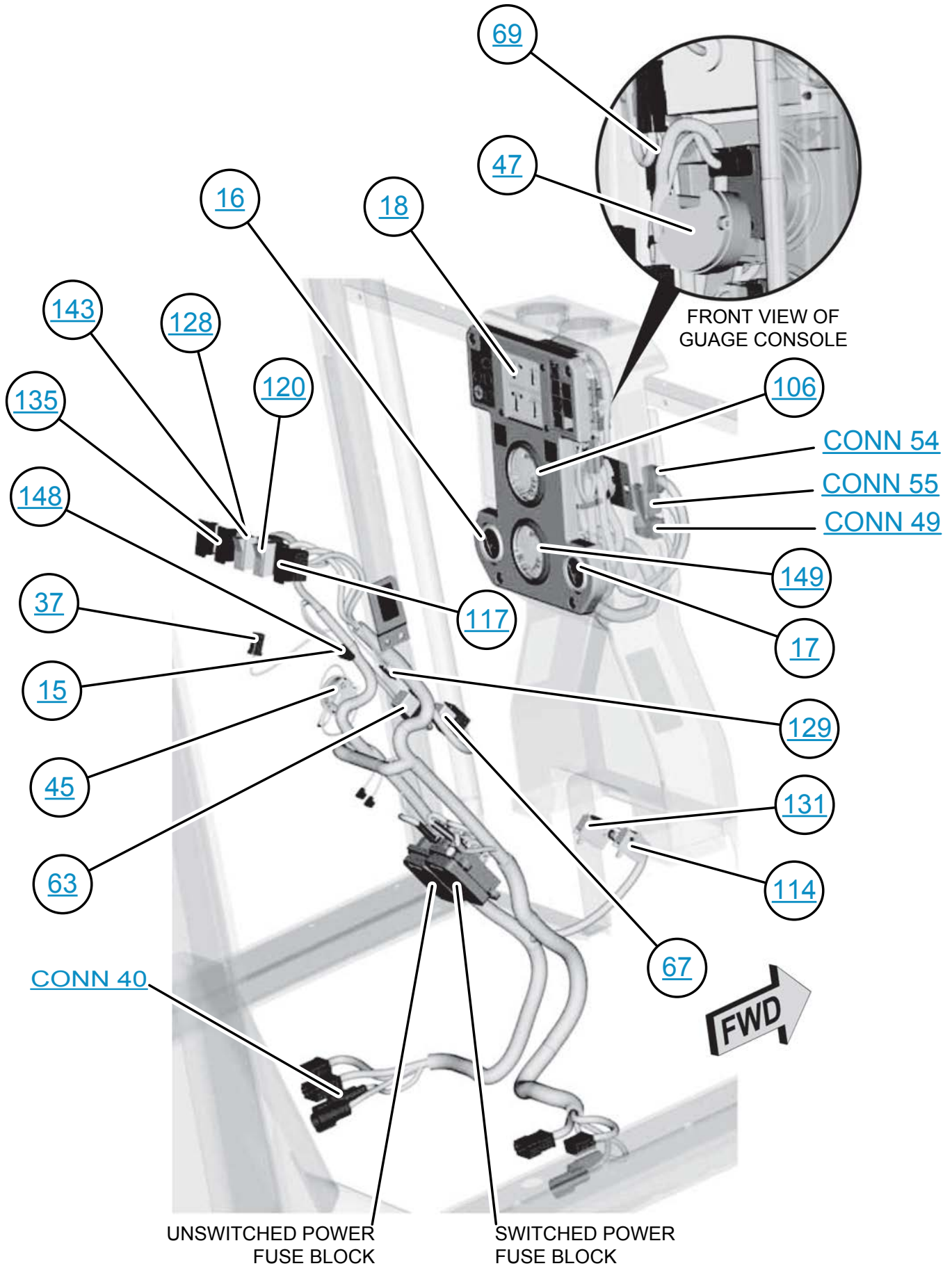




SHIFT CONSOLE



STEERING AND GUAGE CONSOLES



TRANSMISSION CONTROL VALVE

