An Oshkosh Corporation Company

Service and Maintenance Manual

Models
400S
460SJ

PVC 2001

31215016

April 13, 2020 - Rev B

ANSI

CE

AS/NZS

MidWestTech | JLG 400S, 460SJ Boom Lift Service Manual | Publication 31215016

Order the manual at mid-west-tech.com >

SECTION NO.	TITLE	PAGE NO.
SECTION A - INTRODUCTION - MAINTENANCE SAFETY PRECAUTIONS		
A	General	A-1
B	Hydraulic System Safety	A-1
C	Maintenance	A-1
SECTION 1 - SPECIFICATIONS		
1.1	Operating Specifications	1-1
	Machine Specifications - 400S	1-1
	Machine Specifications - 460SJ	1-1
1.2	Capacities	1-2
1.3	Engine Data	1-2
1.4	Tires	1-3
1.5	Hydraulic Oil	1-3
1.6	Critical Stability Weights	1-4
1.7	Maintenance and Lubrication	1-8
1.8	ThreadLocking Compound	1-14
1.9	Torque Charts	1-15
	SAE Fastener Torque Chart	1-15
	SAE Fastener Torque Chart (Continued)	1-16
	SAE Fastener Torque Chart (Continued)	1-17
	SAE Fastener Torque Chart (Continued)	1-18
	SAE Fastener Torque Chart (Continued)	1-19
	SAE Fastener Torque Chart (Continued)	1-20
	Metric Fastener Torque Chart	1-21
	Metric Fastener Torque Chart (Continued)	1-22
	Metric Fastener Torque Chart (Continued)	1-23
	Metric Fastener Torque Chart (Continued)	1-24
SECTION 2 - GENERAL		
2.1	Machine Preparation, Inspection, and Maintenance	2-1
	General	2-1
	Preparation, Inspection, and Maintenance	2-1
	Pre-Start Inspection	2-1
	Pre-Delivery Inspection and Frequent Inspection	2-1
	Annual Machine Inspection	2-1
	Preventive Maintenance	2-1
2.2	Service and Guidelines	2-2
	General	2-2
	Safety and Workmanship	2-2
	Cleanliness	2-2
	Components Removal and Installation	2-2
	Component Disassembly and Reassembly	2-3
	Pressure-Fit Parts	2-3
	Bearings	2-3
	Gaskets	2-3
	Bolt Usage and Torque Application	2-3
	Hydraulic Lines and Electrical Wiring	2-3
	Hydraulic System	2-3
	Lubrication	2-3
	Battery	2-3
	Lubrication and Servicing	2-3
2.3	Lubrication and Information	2-4
	Hydraulic System	2-4
	Hydraulic Oil	2-4
	Changing Hydraulic Oil	2-4
	Lubrication Specifications	2-4
2.4	Cylinder Drift Test	2-5

MidWestTech | JLG 400S, 460SJ Boom Lift Service Manual | Publication 31215016 Order the manual at mid-west-tech.com >

SECTION NO.	TITLE	PAGE NO.
	Theory	2-5
	Cylinder Leakage Test	2-5
	Cylinder Thermal Drift	2-5
2.5	Pins and Composite Bearing Repair Guidelines	2-6
2.6	Welding on JLG Equipment	2-6
	Do the Following When Welding on JLG Equipment	2-6
	Do NOT Do the Following When Welding on JLG Equipment	2-6
SECTION 3 - CHASSIS & TURNTABLE		
3.1	Tires and Wheels	3-1
	Tire Damage	3-1
	Tire Replacement	3-1
	Wheel Replacement	3-1
	Wheel Installation	3-1
3.2	Chassis Tilt Indicator System	3-2
3.3	Drive Orientation System	3-2
3.4	Lockout Cylinder Bleeding	3-2
3.5	Drive System (4WD & 2WD)	3-3
3.6	Oscillating Axle System	3-4
3.7	Oscillating Axle Lockout Test	3-4
3.8	Wheel Drive Assembly	3-8
	Removal	3-8
	Installation	3-8
3.9	Torque Hub	3-9
	Roll and Leak Testing	3-9
	Tightening and Torquing Bolts	3-9
	Main Disassembly for "B" Drives	3-10
	Hub-Spindle Disassembly	3-10
	Cover Disassembly	3-16
	Carrier Disassembly	3-16
	Assemble Carrier	3-16
	Cover Sub-Assembly	3-18
	Hub-Spindle Sub-Assembly	3-19
	Main Assembly	3-21
	Tool List	3-26
3.10	Re-Align Torque Hub Input Coupling	3-27
	Equipment Required	3-27
	Procedure	3-27
3.11	Drive Motor	3-27
	Description	3-27
	Shaft Seal Replacement	3-28
	Loop Flushing Valve	3-28
	Troubleshooting	3-29
	Disassembly	3-30
	Inspection	3-34
	Assembly	3-36
	Initial Start-Up Procedures	3-40
3.12	Swing Drive Hub	3-42
	Brake Test	3-42
	Spring Checking Procedure	3-43
	Brake Leak Repair Procedure	3-43
	Roll and Leak Test	3-43
	Tightening and Torquing Bolts	3-44
	Lubrication Information	3-45
	Motor Removal	3-45
	Input Brake Disassembly	3-47
	Main Disassembly	3-48
	Housing-Shaft Disassembly	3-49

MidWestTech | JLG 400S, 460SJ Boom Lift Service Manual | Publication 31215016 Order the manual at mid-west-tech.com >

SECTION NO.	TITLE	PAGE NO.
	Carrier Disassembly	3-50
	Carrier Assembly	3-51
	Housing - Shaft Assembly	3-52
	Main Assembly	3-53
	Motor and Brake Assembly	3-55
	Motor Control Valve Installation	3-58
3.13	Swing Motor	3-66
	Disassembly and inspection	3-66
	Assembly	3-73
	One Piece Stator Construction	3-80
3.14	Swing Bearing	3-81
	Swing Bearing Wear Tolerance	3-81
	Turntable Bearing Mounting Bolt Condition Check	3-82
	Swing Bearing Removal	3-86
	Swing Bearing Installation	3-86
	Procedure for Setting Swing Gear Backlash	3-87
	Swing Bearing Torque Values	3-88
3.15	Rotary Coupling	3-90
3.16	Generator	3-94
	Maintenance Schedule	3-94
	Overload Protection	3-94
	Inspecting Brushes, Replacing Brushes and Cleaning Slip Rings	3-94
	Generator Disassembly and Assembly	3-96
	Lead Connection List for Generator	3-104
3.17	Deutz Engine	3-105
3.18	Kubota Engine	3-113
3.19	Deutz Engine - D2.9L4	3-115
	Glow Plugs	3-115
	Check Oil Level	3-115
	Replacing Engine Oil	3-115
	Replacing the Oil Filter	3-116
	Replacing the Fuel Filters	3-116
3.20	HRC ENGINE EMISSION CHARACTERISTICS	3-117
	Terminology for Removing Soot	3-117
3.21	DIESEL PARTICULATE FILTER (IF EQUIPPED)	3-117
3.22	Deutz EMR5	3-118
3.23	Deutz Engine - D2011	3-145
	Glow Plugs	3-145
	Check Oil Level	3-145
	Replacing Engine Oil	3-146
	Replacing the Oil Filter	3-147
	Replacing the Fuel Filter	3-148
	Clean Fuel Strainer	3-148
3.24	Deutz EMR 2	3-149
3.25	Kubota Engine General Maintenance	3-218
	Checking Oil Level	3-218
	Replacing Engine Oil	3-218
	Replacing the Oil Filter	3-219
	Maintenance of the Drive Belt	3-219
	REPLACING OIL SEPARATOR	3-220
3.26	Counterweight	3-224
SECTION 4 - BOOM & PLATFORM		
4.1	Boom Systems	4-1
	Platform Control Enable System	4-1
	Platform Load Sensing System (LSS)	4-1
	Above Elevation (Above Horizontal) - Drive Speed Cutback System	4-1
	Transport Position Interlock System (CE only)	4-1

MidWestTech | JLG 400S, 460SJ Boom Lift Service Manual | Publication 31215016 Order the manual at mid-west-tech.com >

Table 3-15. Deutz Engine Fault Codes

SPN	FMI	Deutz Code	Blink Code	Description	Possible Cause	Action
						Check exhaust temperature sensor upstream of SCR-catalyst (SCR_tSensUCatUsT): plausible compared to Exh_t0xiCatUs & Exh_t0xiCatDs e.g. when engine has idled for 20 minutes? => Run stand-still to remove crystallination and to reset the DFC
29	2	978	1-2-6	Diagnostic fault check of synchronism of hand throttle and Low idle switch (LIS).	Plausibility error between sensor and idle switch	Threshold for error detection is an internal ECU threshold. The accelerator pedal must have detected full load and idle plausibility at least once.
29	3	932	1-2-6	Diagnostic fault check of short circuit to sup- ply voltage (signal range check high) of acceleration pedal signal.	The signal exceeds the applicable threshold; signal range violation	If the signal is below the applicable threshold APP_uRawSRCHiHTLIS_C, the signal range violation is reset after the healing debouncing. In case when the CCP is active (CCP_stActive = 1)and the reading from the EEPROM memory is successful, the signal is below the threshold APP_uHTLISCCPHi[1], a signal range violation is reset after debouncing.
29	4	937	1-2-6	Diagnostic fault check of short circuit to ground (signal range check low) of acceleration pedal signal	The signal is below the applicable threshold; signal range violation	If the signal exceeds the applicable threshold APP_uRawSRCLoHTLIS_C, the signal range violation is reset after the healing debouncing. In case when the CCP is active (CCP_stActive = 1)and the reading from the EEPROM memory is successful, the signal exceeds the threshold APP_uHTLISCCPLo[1], a signal range violation is reset after debouncing.
91	3	935	2-2-6	Analog accelerator pedal sensor 1 or double accelerator pedal sensor: the voltage measured by ECU is out of the target range or the calculated pedal position is implausible compared with the position of the second pedal	Sensor defect. Short cut to battery or open loop.	Check cabling, check accelerator pedal sensor and if necessary replace it, check connection cable and if necessary repair or replace it. If the signal is below the applicable threshold APP_uRaw1SRCHigh_C, the signal range violation is reset after the healing debouncing.

MidWestTech | JLG 400S, 460SJ Boom Lift Service Manual | Publication 31215016 Order the manual at mid-west-tech.com >

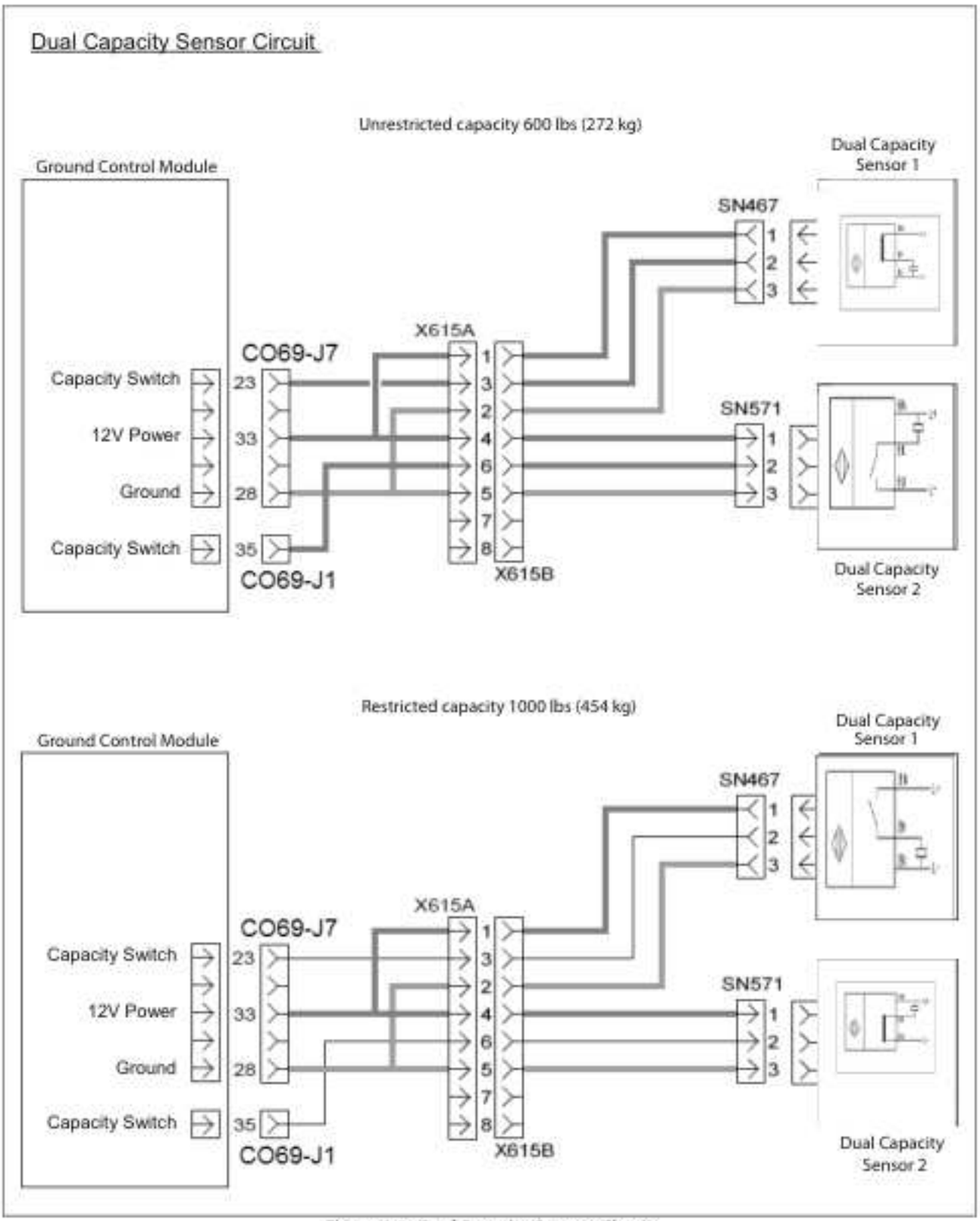


Figure 4-5. Dual Capacity Sensors Circuit

MidWestTech | JLG 400S, 460SJ Boom Lift Service Manual | Publication 31215016 Order the manual at mid-west-tech.com >

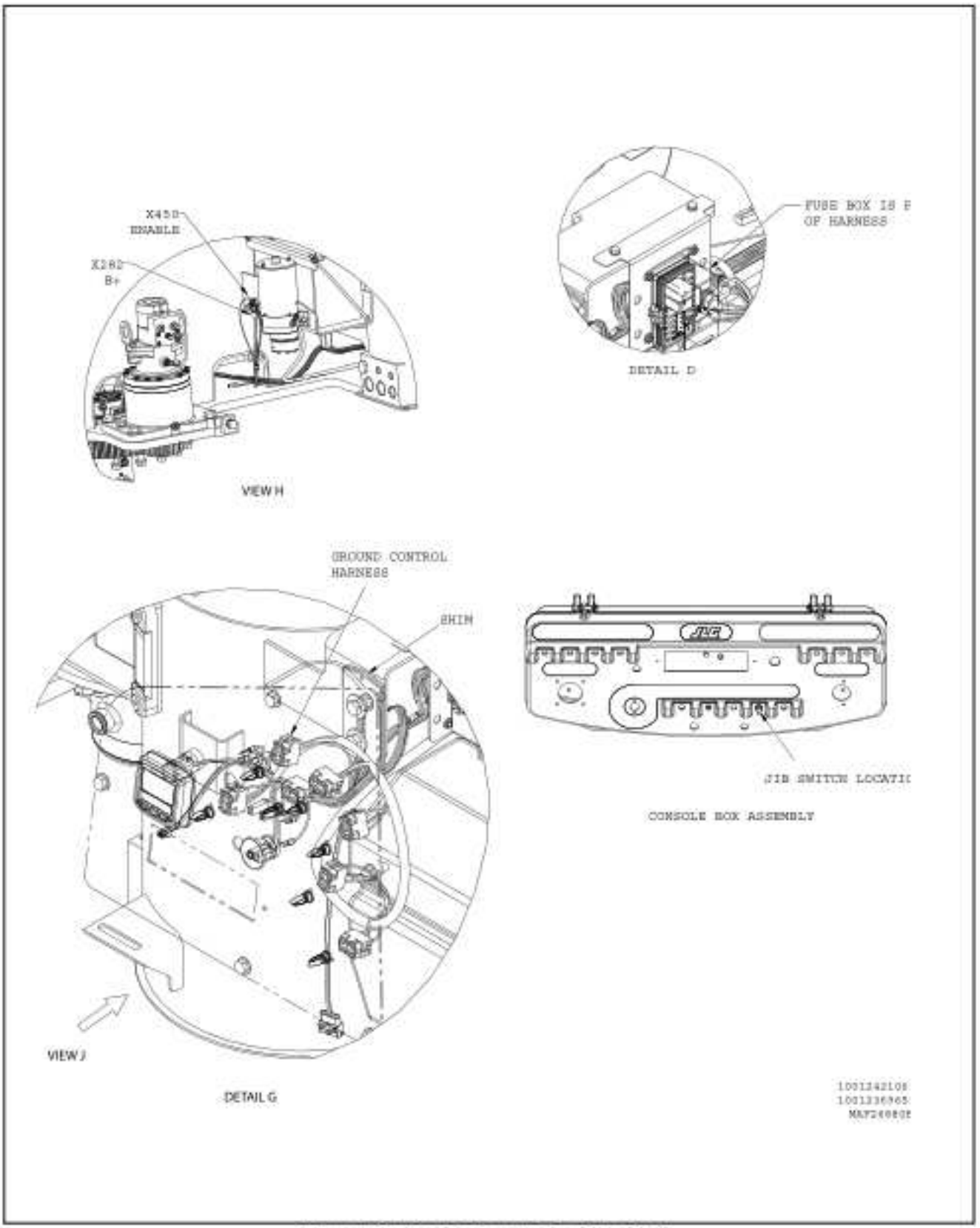
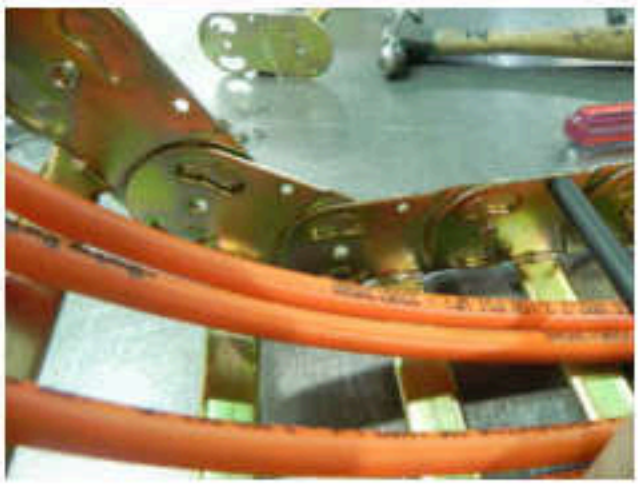


Figure 7-22. Electrical Installation - Sheet 2 of 5

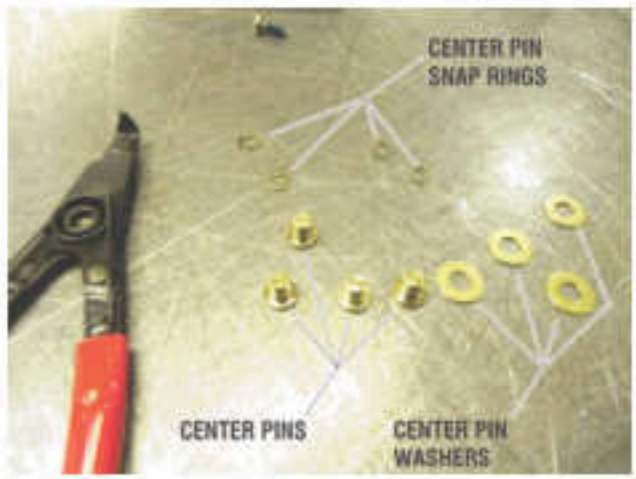
MidWestTech | JLG 400S, 460SJ Boom Lift Service Manual | Publication 31215016 Order the manual at mid-west-tech.com >

4. Pull moving end over track so new connection is positioned in curve of powertrack. Round half-shears will rotate into cut-outs.





5. Parts shown below connect new link to powertrack.



6. Push pin through center hole then slide washer on pin.





7. Install snap ring in groove on pin. Repeat pin installation steps for all center holes with rivets removed.



MidWestTech | JLG 400S, 460SJ Boom Lift Service Manual | Publication 31215016

Order the manual at mid-west-tech.com >

RL930					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	YEL	2-48-4	18 AWG	GXL	S946 (2)
2	BLK	148-26	0.75 mm²	FLRYW	ECM-J1 (26)

RL930-2					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	RED	1-148-135 ECM PWR	8 AWG	GXL	S944 (1)

RL930-1					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	WHT	48-96 FUEL PUMP	14 AWG	GXL	X941 (3)

RL931-85					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	BLK	248-35 GLOW RELAY CONTROL GND	0.75 mm²	FLRYW	ECM2 (35)

RL931-87					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	ORG	248-23-1 GLOW SENSE	18 AWG	GXL	M5932 (F)

RL931-87					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	RED	48-13 GLOW	8 AWG	GXL	EC18 (1)

RL931-87					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	RED	48-14 GLOW	8 AWG	GXL	EC1 (2)

RL931-86					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	YEL	2-48-3 IGNITION	18 AWG	GXL	S946 (2)

X960					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
A	YEL	CAN 2 HI DIAG CAN HIGH	18 AWG	J1939 CABLE	S964 (2)
B	GRN	CAN 2 LO DIAG CAN LOW	18 AWG	J1939 CABLE	S963 (2)
C					

X950					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
A	YEL	2-48-2 IGNITION	18 AWG	GXL	S946 (1)
B	BLK	000-48-2 ENG GND	18 AWG	GXL	T920 (1)
C					
D					
E					
F	GRN	CAN 1 LOCUSTOMER CAN LOW	18 AWG	J1939 CABLE	S952 (2)
G	GRN	CAN 2 LO DIAG CAN LOW	18 AWG	J1939 CABLE	S963 (2)
H	YEL	CAN 2 HI DIAG CAN HIGH	18 AWG	J1939 CABLE	S964 (2)
J					
K					
L					
M	YEL	CAN 1 HI CUSTOMER CAN HIGH	18 AWG	J1939 CABLE	S951 (2)

S946					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	YEL	2-48-1 IGNITION	16 AWG	GXL	M5932 (H)
1	YEL	2-48-2 IGNITION	18 AWG	GXL	X950 (A)
2	BLK	148-88 IGNITION	0.75 mm²	FLRYW	ECM-J1 (88)
2	YEL	2-48-3 IGNITION	18 AWG	GXL	RL931-86 (1)
2	YEL	2-48-4 IGNITION	18 AWG	GXL	RL930 (1)

MidWestTech | JLG 400S, 460SJ Boom Lift Service Manual | Publication 31215016 Order the manual at mid-west-tech.com >