An Oshkosh Corporation Company

Service and Maintenance Manual

Models

400S
460SJ

P/N - 3120895

December 6, 2012

CE

An Oshkosh Corporation Company

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	Capacities	1-1
1.2	Engine Specifications	1-1
1.3	Tires	1-2
1.4	Specifications and Performance Data	1-2
1.5	Torque Requirements	1-3
1.6	Critical Stability Weights	1-3
1.7	Major Component Weights	1-4
1.8	Function Speeds	1-4
1.9	Pressure Settings - PSI (Bar)	1-4
1.10	Cylinder Specifications	1-5
1.11	Lubrication	1-5
	Hydraulic Oil	1-5
1.12	Welder, Hydraulic (option)	1-6
1.13	Serial Number Location	1-6
1.14	Operator Maintenance and Lubrication	1-7
	Draining Oil Build Up From The Propane Regulator	1-10
	Propane Fuel Filter Replacement	1-11
	Propane Fuel System Pressure Relief	1-11
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
	Preventative 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

MidWestTech | JLG 400S, 460SJ Boom Lift Service Manual | Publication 3120895 Order the manual at mid-west-tech.com >

SECTION NO.	TITLE	PAGE NO.
2.3	Lubrication and Information	2-3
	Hydraulic System	2-3
	Hydraulic Oil	2-4
	Changing Hydraulic Oil	2-4
	Lubrication Specifications	2-4
2.4	Cylinder Drift Test	2-4
	Platform Drift	2-4
	Cylinder Drift	2-4
2.5	Pins and Composite Bearing Repair Guidelines	2-5
2.6	Welding on JLG Equipment	2-5
	Do the Following When Welding on JLG Equipment	2-5
	Do NOT Do the Following When Welding on JLG Equipment	2-5
SECTION 3 - CHASSIS & TURNTABLE		
3.1	Tires & Wheels	3-1
	Tire Inflation	3-1
	Tire Damage	3-1
	Tire Replacement	3-1
	Wheel Replacement	3-1
	Wheel Installation	3-1
3.2	Drive Hub Part No. 2780243 (2wd Rear) Part No. 2780244 (4wd Rear)	3-2
	Disassembly	3-2
	Disassembly of Cover Unit (8)	3-3
	Disassembly of First Stage Planetary Assembly	3-3
	Disassembly of the Second Stage Planet Gears (1)	3-3
	Assembly of First Stage Planetary Assembly (7)	3-3
	Assembly Of End Cover Unit (8)	3-3
	Final Assembly	3-3
3.3	Drive Hub Part No. 2780246 (4wd steer axle Prior to S/N 0300076633)	3-5
	Disassembly	3-5
	Disassembly of Cover Unit (8)	3-5
	Disassembly of First Stage Planetary Assembly	3-5
	Disassembly of the Second Stage Planet Gears (1)	3-5
	Assembly of First Stage Planetary Assembly (7)	3-6
	Assembly of End Cover Unit (8)	3-6
	Final Assembly	3-6
3.4	Torque Hub - 4WD (Machines built after S/N 0300076633)	3-8
	Roll and Leak Testing	3-8
	Tightening and Torquing Bolts	3-8
	Oil Information	3-8
	Main Disassembly for "B" Drives	3-8
	Hub-Spindle Disassembly	3-9
	Cover Disassembly	3-9
	Carrier Disassembly	3-9
	Assembly of the Carrier	3-10
	Cover Sub-Assembly	3-12
	Hub-Spindle Sub-Assembly	3-13
	Main Assembly	3-15
	Tool List	3-20
3.5	Re-Aligning Torque Hub Input Coupling	3-21
	Equipment Required	3-21
	Procedure	3-21

MidWestTech | JLG 400S, 460SJ Boom Lift Service Manual | Publication 3120895 Order the manual at mid-west-tech.com >

SECTION NO.	TITLE	PAGE NO.
3.6	Drive Brake	3-22
	Pre-Installation Checks	3-22
	Installation	3-23
	Maintenance	3-23
	Disassembly	3-23
	Examination	3-23
	Assembly	3-23
3.7	Drive Motor	3-25
	Description	3-25
	Shaft Seal Replacement	3-25
	Loop Flushing Valve	3-26
	Troubleshooting	3-27
	Disassembly	3-28
	Inspection	3-32
	Assembly	3-34
	Initial Start-up Procedures	3-39
3.8	Adjustment Procedure For Lockout Valve	3-40
3.9	Toe-In Adjustment	3-40
3.10	2WD Hub	3-41
	Removal & Disassembly	3-41
	Cleaning & Inspection	3-41
	Assembly & Installation	3-42
3.11	Oscillating Axle Bleeding Procedure	3-43
3.12	Oscillating Axle Lockout Test	3-43
3.13	Swing Bearing	3-44
	Turntable Bearing Mounting Bolt Condition Check	3-44
	Wear Tolerance	3-45
	Replacement of Swing Bearing	3-46
	Swing Bearing Torque Value	3-47
	Swing Drive Installation	3-47
3.14	Swing Brake (Prior to S/N 64802)	3-50
	Installation	3-50
	Brake Disassembly	3-50
	Assembly Information	3-50
3.15	Swing Brake S/N 64802 to Present	3-52
	Disassembly	3-52
	Assembly	3-52
3.16	Swing Drive Torque Hub	3-54
	Disassembly Procedure	3-54
	Hub Shaft Sub-Assembly Procedure	3-58
	Carrier Sub-Assembly Procedure	3-60
3.17	Semi-Track	3-61
	Testing the Track	3-61
	Removing the Track	3-62
	Assuming Normal Wear	3-62
	Adjustment	3-62
3.18	Generator	3-66
	Every 250 hours	3-66
	Every 500 hours	3-66
	Overload Protection	3-66
	Inspecting Brushes, Replacing Brushes, and Cleaning Slip Rings	3-66

MidWestTech | JLG 400S, 460SJ Boom Lift Service Manual | Publication 3120895 Order the manual at mid-west-tech.com >

SECTION 1. SPECIFICATIONS

1.1 CAPACITIES

Table 1-1. Capacities

Fuel Tank	26 gallons (98.4 liters)
Hydraulic Tank	40.0 gallons (152 liters)
Hydraulic System (Including Tank)	52 gallons (196.8 liters)
Drive Hub	17 ounces (0.5 liters)
Engine Oil Capacity	
Ford	4.5 Quarts (4.25 L) w/Filter
Deutz	6.3 qts. (6 L) w/Filter
Caterpillar	3.8 quarts (3.6 L) crankcase only
GM	4.5 qts. (4.25 L) w/Filter

1.2 ENGINE SPECIFICATIONS

NOTE: *RPM Tolerances are ± 100.*

Table 1-2. Ford LRG-425 (Gas or Dual Fuel)

Type	4 cylinder, 4 stroke, spark ignition
Fuel	Gasoline or Gasoline/LP Gas
Bore	3 in. (96 mm)
Stroke	3.4 in. (86.4 mm)
Displacement	153 cu. in. (2.5 L)
Firing Order	1-3-4-2
BHP at Max. RPM	82
Oil Capacity	4.5 quarts (4.26 L)
Low RPM	1000
Mid RPM	1800
High RPM	3000
Fuel Consumption: Gasoline	
Intermittent	6 gal./hr.
Continuous	5 gal./hr.
Fuel Consumption: LPG	
Intermittent	26 lbs./hr.
Continuous	23 lbs./hr.
Spark Plug	AWSF-52-C
Spark Plug Gap	0.044 in. (1.117 mm)

Table 1-3. Deutz F3M1011F/F3M2011F

Fuel	Diesel
No. of Cylinders	3
Bore	3.6 in. (91 mm)
Stroke	4.4 in. (112 mm)
Displacement	133 cu. in. (2184 cm³)
BHP at Max. RPM	48
Oil Capacity	
crankcase	6.3 quarts (6 L)
cooler	4.75 quarts (4.5 L)
total capacity	11 quarts (10.5 L)
Low RPM	1200
Mid RPM	1800
High RPM	2800

Table 1-4. Isuzu 4LE1

Fuel	Diesel
No. of Cylinders	4
BHP at Max. RPM	45
Low RPM	1000
Mid RPM	1500
High RPM	2800

Table 1-5. Caterpillar 3024/C2.2

Fuel	Diesel
No. of Cylinders	4
BHP	46.5 hp (34 kW)
Bore	3.307 in. (84 mm)
Stroke	3.9370 in. (112 mm)
Displacement	134.3 cu. in. (2.2L)
Oil Capacity	3.8 quarts (3.6 L) crankcase only
Compression Ratio	19:1
Firing Order	1-3-4-2
Max. RPM	2800

MidWestTech | JLG 400S, 460SJ Boom Lift Service Manual | Publication 3120895 Order the manual at mid-west-tech.com >

3.31 DGC DIAGNOSTIC SUPPORT AND TROUBLE CODE DEFINITIONS

This section defines the diagnostics and recommended troubleshooting procedures associated with an EControls Diesel Governor Control (DGC) engine control module (ECM) for use on industrial engines.

Section Layout

This section is organized in the following manner:

DTC XXXX- Diagnostic Condition

Block Diagram of Circuit

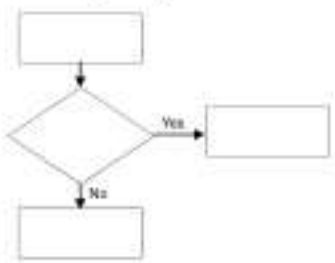
- *External Hardware Input/Output*- This identifies the hardware that either sends an input to the ECM or is driven by and ECM output.
- *Check Condition*- This defines what condition to troubleshoot the fault condition.
- *Fault Condition(s)*- This identifies the condition(s) that set the fault.
- *Corrective Action(s)*- This identifies the *RECOMMENED* corrective action(s) that the ECM is generally programmed to perform. In some instances, the calibration engineer(s) may choose to perform a different action.
- Emissions or Non-emissions related fault

Text to identify the circuit of interest and its use for control.

Text to describe the conditions that cause the fault to set.

DTC XXXX- Diagnostic Condition

Note: Helpful tips used to aid troubleshooting



Troubleshooting flow chart

Diagnostic Aids
- Tip #1
- Tip #2 ...

MidWestTech | JLG 400S, 460SJ Boom Lift Service Manual | Publication 3120895 Order the manual at mid-west-tech.com >

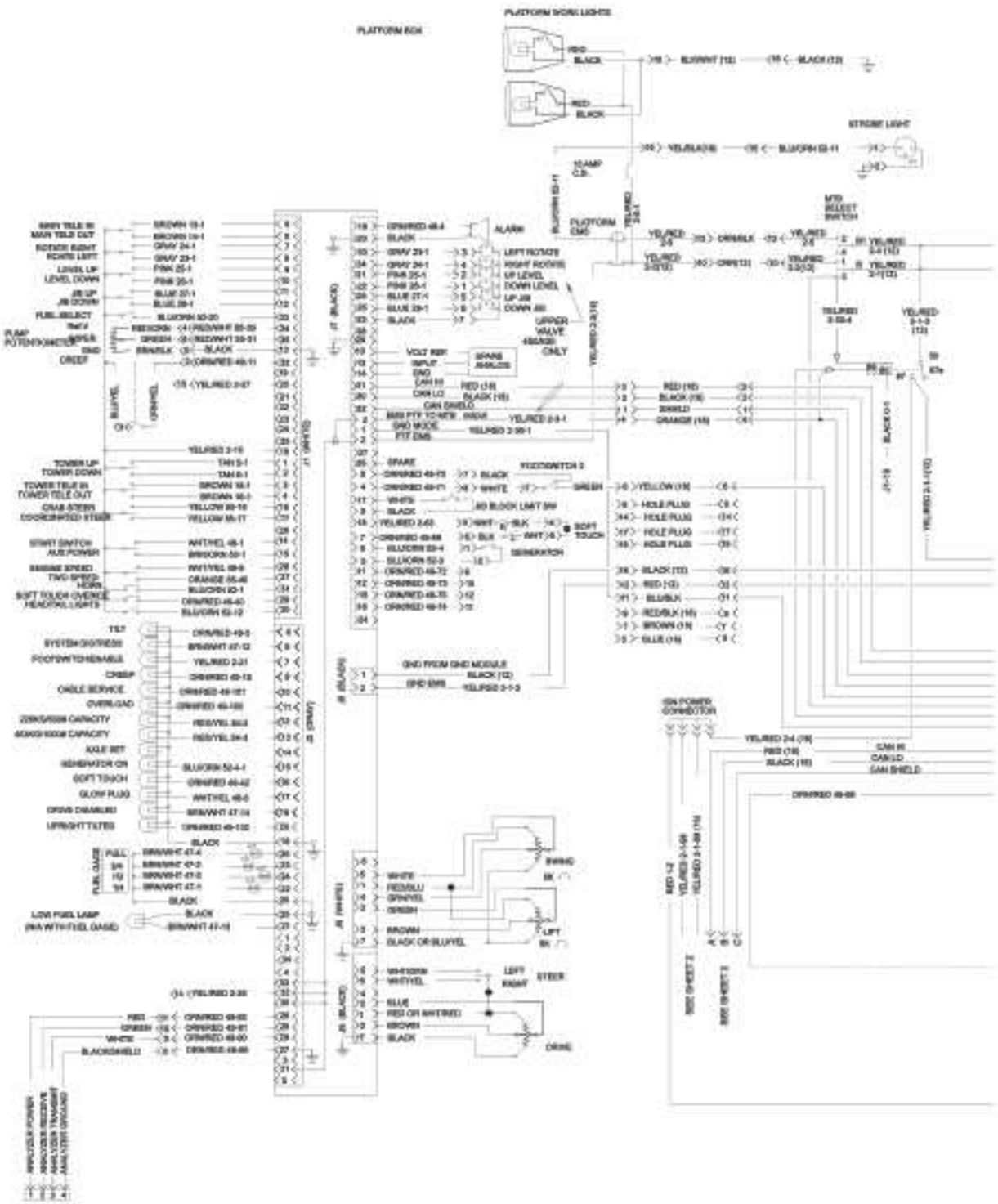


Figure 7-50. Electrical Schematic - Deutz, GM, & CAT Engine - Sheet 1 of 6

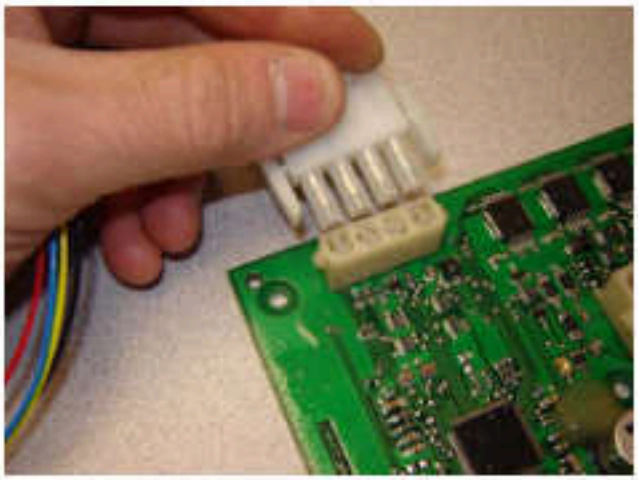
MidWestTech | JLG 400S, 460SJ Boom Lift Service Manual | Publication 3120895 Order the manual at mid-west-tech.com >



Figure 7-6. Use of Seal Plugs

AMP Mate-N-Lok

Follow the installation instructions.



DIN Connectors

This connector is typically used on hydraulic valves. Follow the installation instructions.



Exclusions

A limited number of connectors do not benefit from dielectric grease, or may be permanently damaged by application. Dielectric grease may not be required in properly sealed enclosures.

BRAD HARRISON / PHOENIX CONTACT M12

The connector uses gold contact material to resist corrosion and an o-ring seal for moisture integrity. If dielectric grease is mistakenly applied to this connector system, the low-force contacts cannot displace the grease to achieve electrical contact. Once contaminated, there is no practical way to remove the dielectric grease (replacement of female contacts required). The JLG Load Sensing System and 1250AJP Rotary Angle Sensors are examples of components with the M12 connector system.

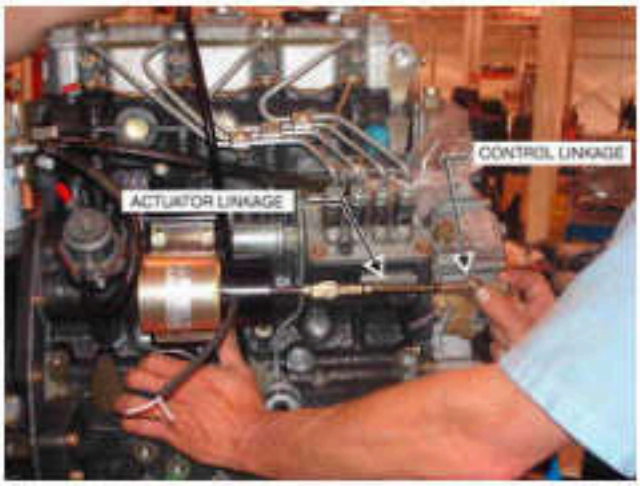




MidWestTech | JLG 400S, 460SJ Boom Lift Service Manual | Publication 3120895 Order the manual at mid-west-tech.com >

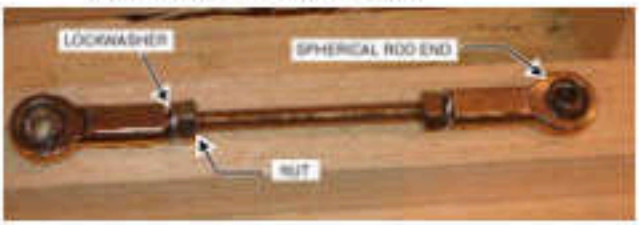
Setting the Actuator

1. Remove the bolt from the control linkage



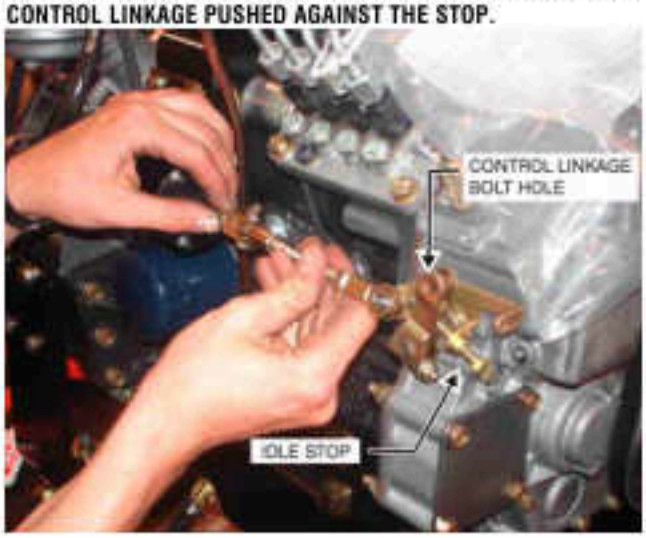


2. With the control linkage pushed against the idle stop, begin to make adjustments to the actuator linkage in order to align the bearing of the spherical rod end with the control linkage bolt hole. When making linkage adjustments, thread the spherical rod end and threaded rod evenly (for every turn of spherical rod end, turn the threaded rod.)

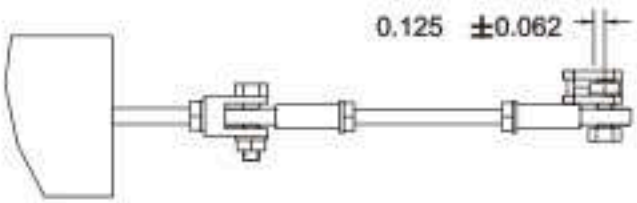


NOTICE

DURING THIS PROCEDURE IT'S VERY IMPORTANT TO KEEP THE CONTROL LINKAGE PUSHED AGAINST THE STOP.



3. Once the adjustments have been made to align the spherical rod end bearing with the control linkage bolt hole, lengthen the actuator linkage by continuing to turn the spherical rod end and threaded rod 2-2 ½ turns (1-1 ¼ turns of spherical rod end and 1-1 ¼ turns of threaded rod.) This will provide 1/8" (3 mm) preload.



Use a measuring device to ensure the preload is approximately 1/8" (3 mm), then secure the actuator linkage to the control linkage with original bolt and nut. Make sure the spherical ball is seated in the control linkage bolt hole.

Tighten the 2 nuts on the threaded rod of the actua-

MidWestTech | JLG 400S, 460SJ Boom Lift Service Manual | Publication 3120895 Order the manual at mid-west-tech.com >