An Oshkosh Corporation Company

Service and Maintenance Manual

Model

450AJ

SN 0300199221 to Present,
SN 1300007279 to Present,
SN E300000001 to Present, &
SN B300003516 to Present

3121659

September 13, 2019 - Rev F

ANSI

CE

AS/NZS

MidWestTech | JLG 450A, 450AJ Boom Lift Service Manual | Publication 3121659

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
1.2	Dimensional Data	1-1
1.3	Capacities	1-1
1.4	Tires	1-1
1.5	Engine Data	1-2
1.6	Hydraulic Oil	1-4
1.7	Maintenance and Lubrication	1-10
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 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
	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

MidWestTech | JLG 450A, 450AJ Boom Lift Service Manual | Publication 3121659 Order the manual at mid-west-tech.com >

SECTION NO. **TITLE** **PAGE NO.**

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 Oscillating Axle System 3-2
3.3 Lockout Cylinder Bleeding 3-2
3.4 Chassis Tilt Indicator System 3-2
3.5 Oscillating Axle Lockout Test 3-6
3.6 Drive Orientation System 3-6
3.7 Drive System 3-7
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 Drive Brake 3-41
Disassembly 3-41
Inspection 3-41
Assembly 3-41
3.13 Swing Bearing 3-44
Removal 3-44
Installation 3-44
Turntable Bearing Mounting Bolt Condition Check 3-46
Wear Tolerance 3-46
3.14 Swing Motor 3-50
Removal 3-52
Preparation Before Disassembly 3-54
Disassembly and Inspection 3-54
Assembly 3-61
One Piece Stator Construction 3-67
Two Piece Stator Construction 3-68
Final Checks 3-69
Installation 3-69

MidWestTech | JLG 450A, 450AJ Boom Lift Service Manual | Publication 3121659 Order the manual at mid-west-tech.com >

SECTION NO.	TITLE	PAGE NO.
3.15	Generator	3-69
	Maintenance Schedule	3-69
	Overload Protection	3-70
	Inspecting Brushes, Replacing Brushes and Cleaning Slip Rings	3-70
	Generator Disassembly and Assembly	3-72
	Lead Connection List for Generator	3-80
3.16	Deutz Engine	3-81
3.17	GM Engine	3-85
3.18	Kubota Engine	3-87
3.19	Deutz Engine - D2.9L4	3-89
	Check Oil Level	3-89
	Replacing Engine Oil	3-89
	Replacing the Oil Filter	3-89
	Replacing the Fuel Filters	3-90
3.20	Deutz Engine - D2011	3-91
	Check Oil Level	3-91
	Replacing Engine Oil	3-92
	Replacing the Oil Filter	3-92
	Replacing the Fuel Filter	3-93
3.21	Deutz EMR 2	3-94
3.22	GM Engine General Maintenance	3-131
	Maintenance of the Drive Belt	3-131
	Engine Electrical System Maintenance	3-131
	Checking/Filling Engine Oil Level	3-131
	Changing the Engine Oil	3-132
	Coolant Fill Procedure - Dual Fuel Engine	3-132
3.23	GM Engine Dual Fuel System	3-133
	Fuel Filter	3-133
	Electric Lock Off	3-134
	EPR Assembly	3-134
	Low Pressure Regulator (LPR)	3-134
	Air Fuel Mixer	3-135
	Electronic Throttle Control (ETC)	3-135
	Engine Control Module	3-136
	Heated Exhaust Gas Oxygen Sensor	3-136
	Gasoline Multi Point Fuel Injection System (MPFI)	3-136
	Gasoline Fuel Pump	3-137
	Gasoline Pressure And Temperature Sensor Manifold	3-137
	Fuel Filter	3-137
	Fuel Injector Rail	3-137
	Fuel Injector	3-137
3.24	GM Engine Fuel System Repair	3-138
	Propane Fuel System Pressure Relief	3-138
	Propane Fuel System Leak Test	3-138
	Propane Fuel Filter Replacement	3-139
	Electronic Pressure Regulator (EPR) Assembly Replacement	3-140
	Electronic Throttle Control Replacement	3-141
	Mixer Replacement	3-143
	Coolant Hose Replacement	3-143
	Vapor Hose Replacement	3-143
	Engine Control Module Replacement	3-144
	Heated Exhaust Gas Oxygen Sensor Replacement	3-144
3.25	GM Engine LPG Fuel System Diagnosis	3-145
	Fuel System Description	3-145
	Diagnostic Aids	3-145

MidWestTech | JLG 450A, 450AJ Boom Lift Service Manual | Publication 3121659 Order the manual at mid-west-tech.com >

Table 3-9. Swing Motor Troubleshooting

Trouble	Cause	Remedy
Oil Leakage	1. Hose fittings loose, worn or damaged.	Check & replace damaged fittings or "O" Rings. Torque to manufacturers specifications.
	2. Oil seal rings (4) deteriorated by excess heat.	Replace oil seal rings by disassembling unit.
	3. Special bolt (1, 1A, 1B or 1C) loose or its sealing area deteriorated by corrosion.	(a) Loosen then tighten single bolt to torque specification. (b) Replace bolt.
	4. Internal shaft seal (16) worn or damaged.	Replace seal. Disassembly of motor unit necessary.
	5. Worn coupling shaft (12) and internal seal (16).	Replace coupling shaft and seal by disassembling unit.
Significant loss of speed under load	1. Lack of sufficient oil supply	(a) Check for faulty relief valve and adjust or replace as required. (b) Check for and repair worn pump. (c) Check for and use correct oil for temperature of operation.
	2. High internal motor leakage	Replace worn rotor set by disassembling unit.
	3. Severely worn or damaged internal splines.	Replace rotor set, drive link and coupling shaft by disassembling unit.
	4. Excessive heat.	Locate excessive heat source (usually a restriction) in the system and correct the condition.
Low mechanical efficiency or undue high pressure required to operate unit	1. Line blockage	Locate blockage source and repair or replace.
	2. Internal interference	Disassemble unit, identify and remedy cause and repair, replacing parts as necessary.
	3. Lack of pumping pressure	Check for and repair worn pump.
	4. Excessive binding or loading in system external to motor unit.	Locate source and eliminate cause.

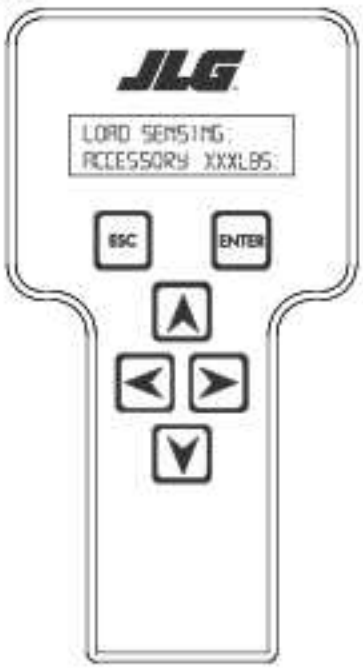
MidWestTech | JLG 450A, 450AJ Boom Lift Service Manual | Publication 3121659 Order the manual at mid-west-tech.com >

Pressing the ESC key [ESC] after starting calibration and before calibration is complete will display the CAL FAILED message. This will not disturb the prior calibration information.

7. Press ENTER [ENTER]. The analyzer screen will read:



8. If the platform is empty, press ENTER [ENTER]. The screen will read:



NOTE: *Accessory weight will reset to 0 lbs. each time the machine is re-calibrated and will need to be re-entered.*

NOTE: *The Accessory weight will be temporarily stored in the Control System until calibration has been completed successfully.*

Refer to Table 6-6, Accessory Weights. Use the up and down analyzer keys to enter the accessory weight(s) (in lbs). When all the accessory weights are entered, press ENTER [ENTER]. The screen will read:



Table 6-6. Accessory Weights

Accessory	Weight
SkyWelder (stick welder)	70 lb (32 kg)
SkyWelder Prep	Prep only = 15 lb (7 kg) Full install = 70 lb (32 kg)
SkyCutter (plasma cutter)	70 lb (32 kg)
SkiCutter / SkyWelder Combo	140 lb (64 kg)
Fire Extinguisher	45 lb (20 kg)
Overhead Soft Touch	80 lb (36 kg)
Work Surface	20 lb (9 kg)

NOTE: *Not all Accessories are available on every JLG model. Some Accessory combinations are prohibited due to excessive weight and/or load restriction. If any installed JLG Accessories are labeled with weight decals but are not listed in the table above, include their weight when entering the ACC WEIGHT value.*

MidWestTech | JLG 450A, 450AJ Boom Lift Service Manual | Publication 3121659 Order the manual at mid-west-tech.com >

7.9 ELECTRICAL SCHEMATICS

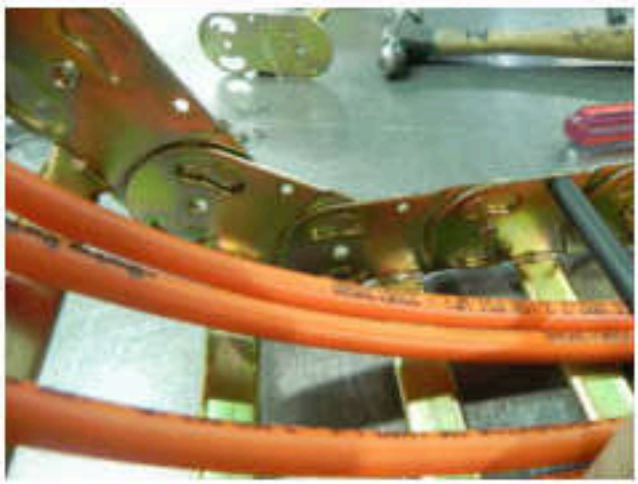
SHEET 2: PLATFORM
CONSOLE BOX HARNESS
SHEET 3: PLATFORM AND BOOM COMPONENTS
PLATFORM VALVE HARNESS
LOW TEMP CUTOUT, LSS, 4 CELL LSS
BOOM LOWER - STANDARD, ARCTIC
BOOM UPPER - STANDARD, ARCTIC
SHEET 4: CHASSIS, TURNTABLE
TURNTABLE HARNESS
CHASSIS SOLENOID HARNESS
SHEET 5: GROUND USER INTERFACE
MAIN VALVE
UPPER UPRIGHT
GROUND CONTROL PANEL
CRIBBING OPTION HARNESS
SHEET 6: ENGINE SCHEMATICS DEUTZ T4I
DEUTZ ENGINE T4I
T4I ENG POS, T4I END NEG
POS BATTERY, NEG BATTERY, AUX TO AUX
SHEET 7: ENGINE SCHEMATIC DEUTZ T4F
DEUTZ ENGINE T4F, DEUTZ FUEL
T4F ENG POS, T4F ENG NEG
POS BATTERY, NEG BATTERY, AUX TO AUX
SHEET 8: ENGINE SCHEMATIC GM
ENGINE GM
GM ENG POS, GM ENG NEG
POS BATTERY, NEG BATTERY, AUX TO AUX
SHEET 9: SKYGUARD
SHEET 10: PLATFORM LIGHTS, CHASSIS HEAD AND TAIL LIGHTS, CLEARSKY
SHEET 11: KUBOTA ENGINE
KUBOTA ENGINE HARNESS
ALTERNATOR
POS BATTERY
NEG BATTERY
KUBOTA D/F PWR

Figure 7-116. Electrical Schematic - Sheet 1 of 20

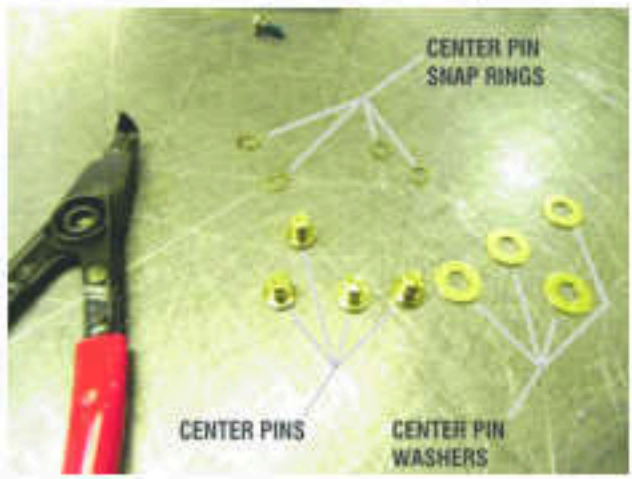
MidWestTech | JLG 450A, 450AJ Boom Lift Service Manual | Publication 3121659 Order the manual at mid-west-tech.com >

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 450A, 450AJ Boom Lift Service Manual | Publication 3121659

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

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 Rotary Angle Sensors are examples of components with the M12 connector system.



Figure 7-7. Brad-Harrison M12



Figure 7-8. Phoenix Contact M12

ENGINE CONTROL UNIT CONNECTORS

These connectors use back-seals for moisture integrity. However, the low-force contacts cannot displace dielectric grease and create electrical contact. It is possible to use solvents (i.e. contact cleaner or mineral spirits) for the removal of improperly applied dielectric grease. The EMR4 engine control module from Deutz employs this connector system (for example).



SEALED ENCLOSURES

Application of dielectric grease is not required in properly sealed enclosures. To meet criteria, the enclosure must be rated to at least IP66 (dust tight; protected from powerful jets of water). The enclosure must be fitted with a high quality, continuous gasket and all wiring must pass through cable entrances.



MidWestTech | JLG 450A, 450AJ Boom Lift Service Manual | Publication 3121659 Order the manual at mid-west-tech.com >