An Oshkosh Corporation Company

Service and Maintenance Manual

Model

E450A
E450AJ
M450A
M450AJ

P/N - 3121829

March 20, 2014

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	Operating specifications	1-1
1.2	Capacities	1-1
1.3	Tires	1-1
1.4	Battery Charger	1-1
1.5	Dimensional Data	1-1
1.6	Drive System	1-2
1.7	Hydraulic Pump/Electric Motor Assembly	1-2
1.8	Generator	1-2
1.9	Function Speeds	1-2
1.10	Pressure Settings	1-3
1.11	Torque Specifications	1-4
1.12	Lubrication Specifications	1-4
	Hydraulic Oil	1-4
1.13	Critical Stability Weights	1-4
1.14	Cylinder Specifications	1-5
1.15	Major Component Weights	1-5
1.16	Serial Number Locations	1-5
1.17	Operator Maintenance & Lubrication	1-7
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

MidWestTech | JLG E450A, E450AJ, M450A, M450AJ Boom Lift Service Manual | Publicati... 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	Spindle	3-2
	Setting Wheel Bearing End Play	3-2
	Specifications	3-2
	Checking	3-2
	Greasing Requirements	3-2
3.3	Drive Hub	
	Part No. 27802363-4	
	Disassembly	3-4
	Disassembly of Cover	3-5
	Disassembly of First Stage Planetary Assembly (7)	3-5
	Disassembly of Second Stage Planet Gears (1)	3-5
	Assembly of First Stage Planetary Assembly (7)	3-5
	Assembly of End Cover Unit (8)	3-5
	Final Assembly	3-6
	Initial Start-up and After Repairs	3-6
	Maintenance	3-6
	Oil Change Interval-Gear Drive	3-6
	Setting of Tapered Roller Bearings	3-6
	Securing of the Shaft Nut	3-6
3.4	Drive Brake - Mico	3-8
	Disassembly	3-8
	Assembly	3-8
	Bleeding	3-8
3.5	Speed Sensor Adjustment	3-11
	Adjustment Procedure	3-11
	Speed Sensor Installation Verification	3-16
	Verification w/ Analyzer Procedure	3-16
3.6	Positrac/Tilt module	3-19
3.7	Swing Motor - S/N 0300135649 to Present	3-21
	Preparation Before Disassembly	3-24
	Disassembly and Inspection	3-24
	Assembly	3-30
	One Piece Stator Construction	3-37
	Two Piece Stator Construction	3-38
	Final Checks	3-38

MidWestTech | JLG E450A, E450AJ, M450A, M450AJ Boom Lift Service Manual | Publicati... Order the manual at mid-west-tech.com >

SECTION NO.	TITLE	PAGE NO.
3.8	Swing Bearing	3-39
	Turntable Bearing Mounting Bolt Condition Check	3-39
	Wear Tolerance	3-40
	Replacement of Swing Bearing	3-41
	Swing Bearing Torque Value	3-43
	Checking Worm Gear End Play	3-43
	Adjusting End Play	3-43
3.9	Battery Maintenance and Charging	3-45
	Battery Maintenance, Quarterly	3-45
	Optional On Board Generator	3-45
	Battery Charging (On Board Charger)	3-47
3.10	Battery Charger (S/N 0300059350 to Present)	3-48
	Operating Instructions	3-48
	Maintenance Instructions	3-48
	Battery Charger Fault Codes	3-48
	Excessive Battery Watering Requirements or Strong Sulphur (Rotten Egg) Smell	3-51
	Checking/Changing the Battery Charger Algorithm	3-52
3.12	Generator (Prior to S/N 88539)	3-53
	Timing Sequences	3-55
	To Connect the JLG Control System Analyzer to the Generator	3-56
	Alarms and Fault Flash Codes	3-56
	Output Current and Voltage Settings	3-58
	Priming the Fuel Line	3-59
3.13	Generator (S/N 88539 to Present)	3-60
	Engine	3-60
	Alternator	3-60
	Dynamo and Dynamo Voltage Regulator	3-60
	Dynamo Output Fuse	3-60
	Control Fuse	3-60
	Start Battery	3-62
	Engine Starter	3-62
	Start Control Relay	3-62
	Fuel Control Relay	3-63
	Glow Plug Control Relay	3-63
	Glow Plug	3-63
	Fuel Pump	3-64
	Fuel Solenoid	3-64
	Engine Low Oil Pressure Switch	3-64
	Engine Oil Temperature Sensor	3-64
	Alternator Output Current Sensor	3-65
	Engine Speed Sensor	3-65
	RBS Engine/Generator Controller	3-65
	Warnings and Safety Precautions	3-66
	System Controls	3-66
	System Status and Performance Monitoring	3-66
	System Settings	3-66
	RBS Start	3-67
	RBS shutdown	3-67
	RBS Alarms and Flash Codes	3-68
	Resetting the RBS Controller	3-68
	Maintenance Schedule	3-68
	Troubleshooting	3-69
	APU Engine Start Battery Boosting	3-70

MidWestTech | JLG E450A, E450AJ, M450A, M450AJ Boom Lift Service Manual | Publicati... Order the manual at mid-west-tech.com >

1.14 CYLINDER SPECIFICATIONS

NOTE: All dimensions are given in inches (in.), with the metric equivalent, millimeters (mm), given in parentheses.

Table 1-17. Cylinder Specifications

Cylinder	Bore	Stroke	Rod Dia.
Upper Lift Cylinder	3.00 (76.2)	28.3125 (719.1)	1.50 (38.1)
Mid Lift Cylinder	3.00 (76.2)	21.25 (539.7)	1.50 (38.1)
Lower Lift Cylinder	4.00 (101.6)	23.25 (590.5)	2.25 (57.1)
Telescope Cylinder	2.00 (50.8)	92 (2337)	1.25 (31.8)
Master Cylinder (E/M450A)	2.00 (50.8)	9.375 (238.1)	1.00 (25.4)
Master Cylinder (E/M450AJ)	3.00 (75)	11.5 (292)	1.25 (32)
Slave Cylinder (E/M450A)	2.00 (50.8)	9.375 (238.1)	1.00 (25.4)
Slave Cylinder (E/M450AJ)	3.00 (75)	11.6 (295.5)	1.25 (32)
Rotator Cylinder	1.875 (47.6)	15.250 (387.3)	1.00 (25.4)
Steer Cylinder (Double Rod)	2.50 (63.5)	4.06 (103.1)	1.75 (44.5)

1.15 MAJOR COMPONENT WEIGHTS

Table 1-18. Major Component Weights

Component	LB.	KG.
Platform and Support	215	97.5
Upper Boom Complete	810	367
Mid Boom Complete	550	249
Lower Boom Complete	550	249
Upper Lift Cylinder	89	40
Mid Lift Cylinder	95	43
Lower Lift Cylinder	110	50
Telescope Cylinder	85	38.5
Upper Upright	225	102
Lower Upright	97	44
Turntable	948	430
Battery Box (incl. batteries)	600	272
Chassis (w/ pneu. tires)	4,295	1948
Chassis (w/ foam-filled tires)	4,695	2130
Counterweight	3850	1746
Machine Complete	11,800	5352

⚠ WARNING

SELECT LIFTING EQUIPMENT WITH CAPACITY CAPABLE OF SAFELY SUPPORTING WEIGHT.

1.16 SERIAL NUMBER LOCATIONS

For machine identification, a serial number plate is affixed to the left rear of frame, in front of left rear wheel. If the serial number plate is damaged or missing, the machine serial number is stamped on the top left side of the frame and the top left side of the turntable. In addition, the serial number is stamped on top of the end of the upper boom, mid boom, and lower boom at the left rear of the booms.

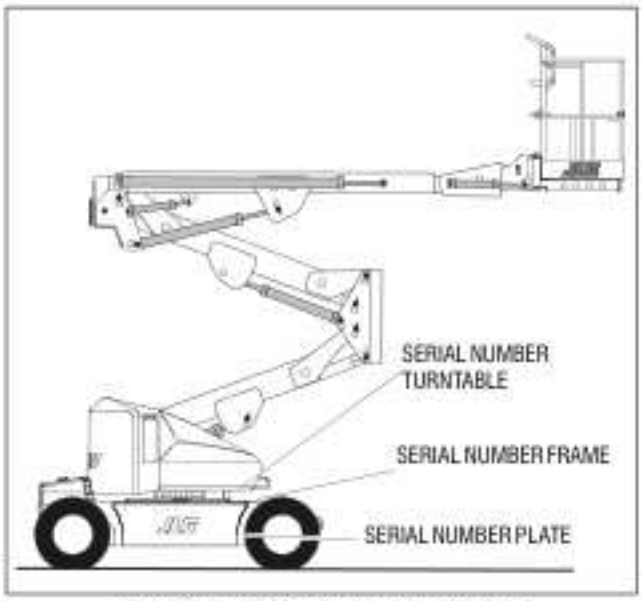


Figure 1-1. Serial Number Locations

MidWestTech | JLG E450A, E450AJ, M450A, M450AJ Boom Lift Service Manual | Publicati... Order the manual at mid-west-tech.com >

SECTION 7. BASIC TROUBLESHOOTING, ELECTRICAL INFORMATION, & SCHEMATICS

7.1 GENERAL

This section contains basic troubleshooting information and basic electrical information to be used for locating and correcting most of the operating problems which may develop. If a problem should develop which is not presented in this section or which is not corrected by listed corrective actions, technically qualified guidance should be obtained before proceeding with any maintenance.

7.2 TROUBLESHOOTING

The troubleshooting procedures applicable to the aerial platform are listed and defined in Table 7-1 through Table 7-6. As an aid to table use, the aerial platform is divided into four major groups, each covered separately within this section. These groups are as follows: elevation system, chassis assembly, hydraulic system and electrical system.

Each malfunction within an individual group or system is followed by a listing of probable causes which will enable determination of the applicable remedial action. The probable causes and the remedial action should, where possible, be checked in the order listed in the tables.

It should be noted that there is no substitute for a thorough knowledge of the equipment and related systems.

It should be recognized that the majority of the problems arising in the machine will be centered in the hydraulic and electrical systems. For this reason, every effort has been made to ensure that all likely problems in these areas are given the fullest possible treatment. In the remaining machine groups, only those problems which are symptomatic of greater problems which have more that one probable cause and remedy are included. This means that problems for which the probable cause and remedy may be immediately obvious are not listed in this section.

The first rule for troubleshooting any circuit that is hydraulically operated and electrically controlled is to determine if the circuit is lacking hydraulic oil and electrical control power. This can be ascertained by overriding the bypass valve so that oil is available to the function valve, then overriding the function valve mechanically. If the function performs satisfactorily, the problem exists with the control circuit.

The reference for improper function of a hydraulic system, where the cause is not immediately apparent, should be the Troubleshooting Chart. The best place to begin the problem analysis is at the power source (pump). Once it is determined that the pump is serviceable, then a systematic check of the circuit components, beginning with the control, would follow. For aid in troubleshooting, refer to the Illustrated Parts Manual for hydraulic diagrams of the various circuits

MidWestTech | JLG E450A, E450AJ, M450A, M450AJ Boom Lift Service Manual | Publicati... Order the manual at mid-west-tech.com >

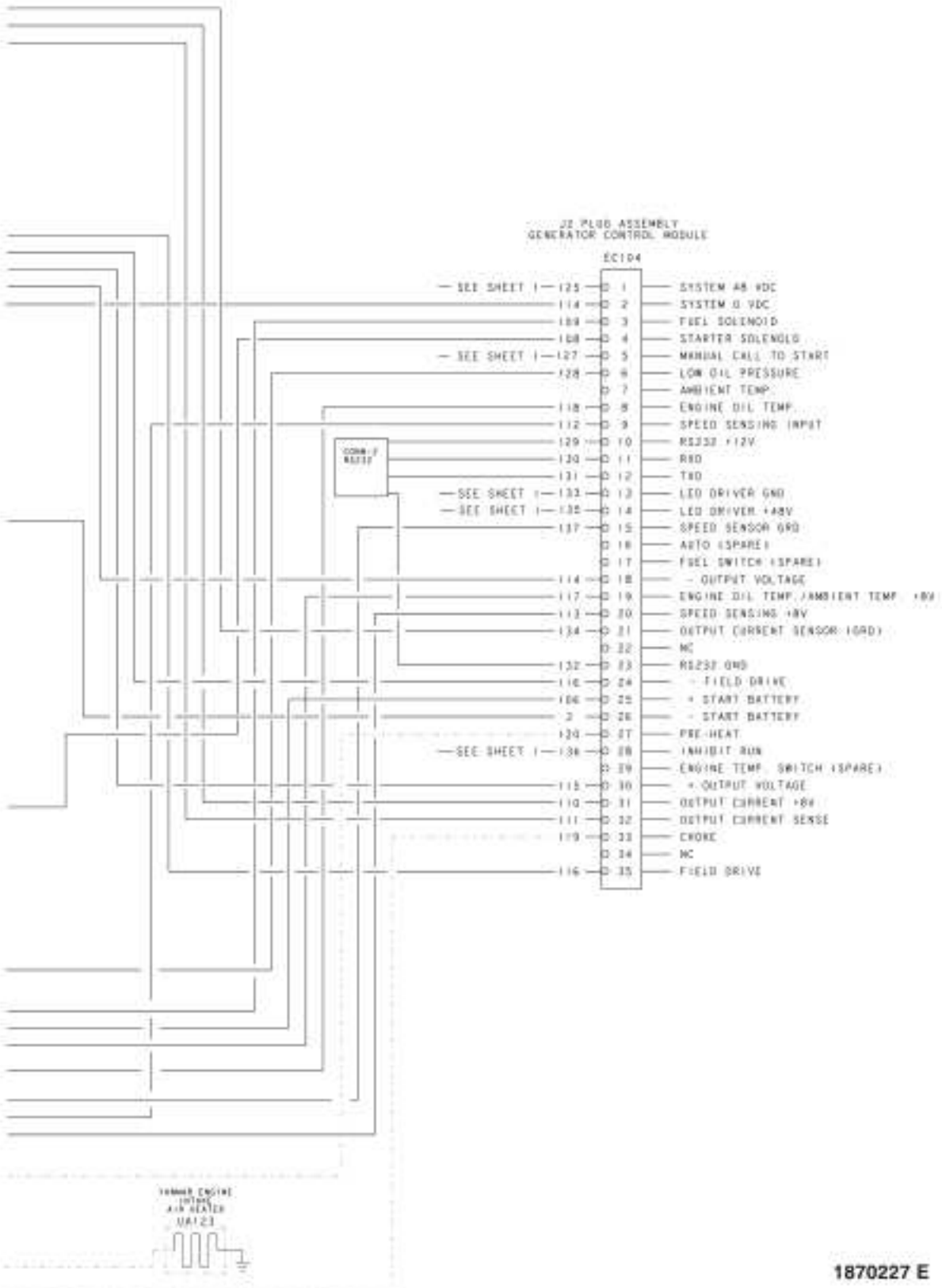
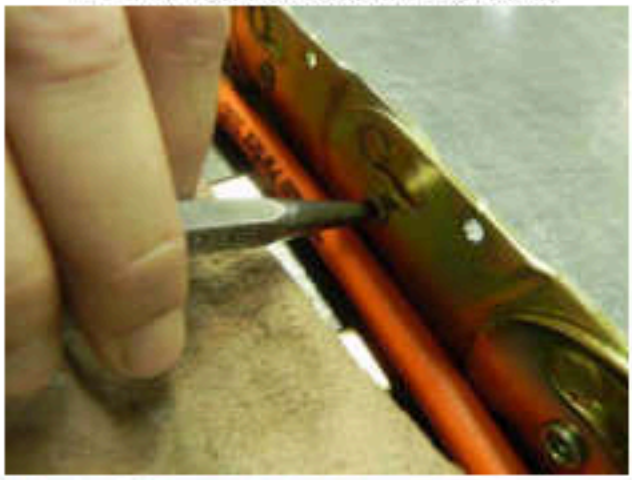
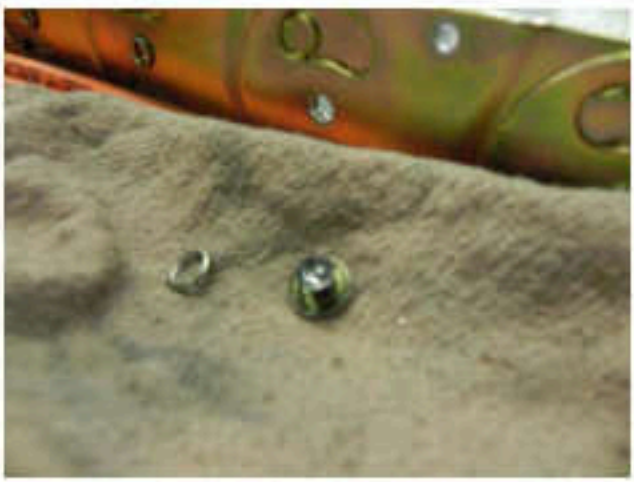


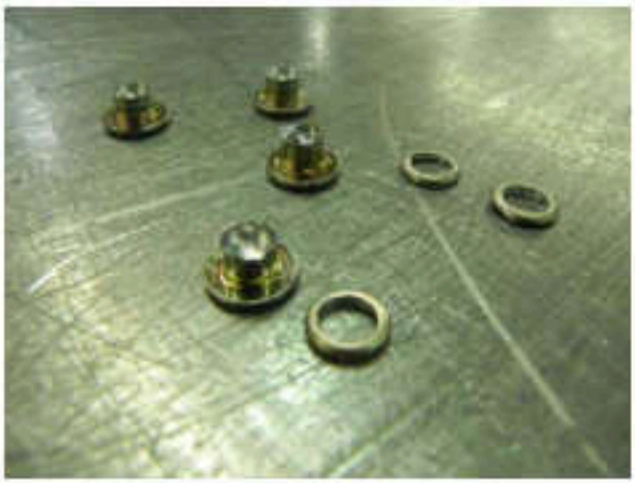
Figure 7-25. Electrical Schematic - Sheet 6 of 6

MidWestTech | JLG E450A, E450AJ, M450A, M450AJ Boom Lift Service Manual | Publicati... Order the manual at mid-west-tech.com >

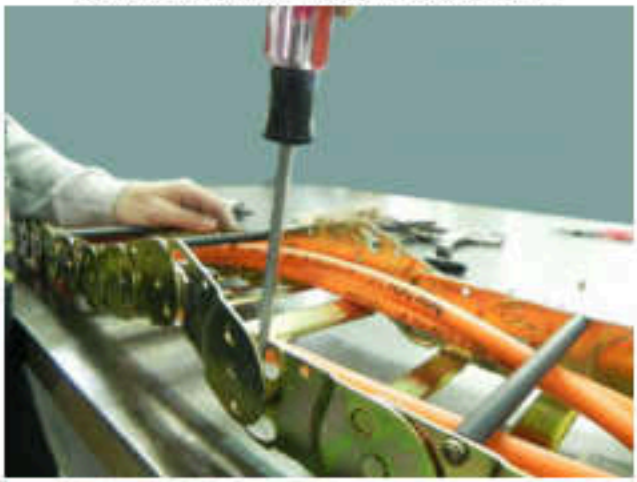
5. After grinding it may be neccesary to help the rivet out by using a center punch with a hammer.







6. Using a flat head screwdriver between the links, twist the screwdriver and pull the links apart.





NOTE: *It may be necessary to loosen the fixed end brackets from the machine in order to twist and pull the track section enough to disconnect the links.*

MidWestTech | JLG E450A, E450AJ, M450A, M450AJ Boom Lift Service Manual | Publicati... Order the manual at mid-west-tech.com >

Table 2-3. Inspection and Preventive Maintenance Schedule

AREA	INTERVAL					
	Pre-Start[1] Inspection	Weekly Preventive Maintenance	Monthly Preventive Maintenance	Pre-Delivery[2] or Frequent[3] Inspection	Annual[4] (Yearly) Inspection	Every 2 Years
Boom Assembly	9					
Boom Weldments				1,2,4	1,2,4	
Hose/Cable Carrier Installations				1,2,9,12	1,2,9,12	
Pivot Pins and Pin Retainers				1,2	1,2	
Sheaves, Sheave Pins				1,2	1,2	
Bearings				1,2	1,2	
Wear Pads				1,2	1,2	
Covers or Shields				1,2	1,2	
Extend/Retract Chain or Cable Systems				1,2,3	1,2,3	
Platform Assembly	9					
Platform	1,2				1,2	
Railing	1,2			1	1,2	
Gate			5	1	1,5	
Floor	1,2			1	1,2	
Rotator		9,5		15		
Lanyard Anchorage Point	2			1,2,10	1,2,10	
Turntable Assembly	9					
Swing Bearing or Worm Gear				1,2,14	1,2,3,13,14	
Oil Coupling		9				
Swing Drive System				11	11	
Turntable Lock				1,2,5	1,2,5	
Hood, Hood Props, Hood Latches				5	1,2,5	
Chassis Assembly	9					
Tires	1	16,17		16,17,18	16,17,18	
Wheel Nuts/Bolts	1	15		15	15	
Wheel Bearings						14,24
Oscillating Axle/Lockout Cylinder Systems					5,8	
Outrigger or Extendable Axle Systems				5,8	5,8	
Steer Components						
Drive Motors						
Drive Hubs				11	11	
Functions/Controls	9					
Platform Controls	5	5		6	6	

MidWestTech | JLG E450A, E450AJ, M450A, M450AJ Boom Lift Service Manual | Publicati... Order the manual at mid-west-tech.com >