An Oshkosh Corporation Company

Service and Maintenance Manual

Model

530LRT

SN E200000676 to Present,
Including 1200030223

3121781

July 17, 2019 - Rev C

ANSI

AS/NZS

MidWestTech | JLG 530LRT Boom Lift Service Manual | Publication 3121781

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

TABLE OF CONTENTS

SUBJECT - SECTION, PARAGRAPH **PAGE NO.**

SECTION A - INTRODUCTION - MAINTENANCE SAFETY PRECAUTIONS

General 1-a
Hydraulic System Safety 1-a
Maintenance 1-a

SECTION 1 - SPECIFICATIONS

1.1 Specifications 1-1
Operating Specifications 1-1
Generator Specifications (If Equipped) 1-1
Dimensional Data 1-2
Capacities 1-2
Drive Information 1-2
Steering Information 1-2
Tires 1-2
Critical Stability Weights 1-2
Major Component Weights 1-2
1.2 Serial Number Locations 1-3
1.3 Lubrication 1-3
Hydraulic Oil Specifications 1-3
1.4 Hydraulic Pressure Settings 1-4
1.5 Hydraulic Cylinder Specifications 1-4
1.6 Engine SPecifications 1-5
1.7 Platform Height/Tilt Limit Settings 1-6
1.8 Torque Charts 1-9

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 Preventive Maintenance and Inspection Schedule 2-2
Maintenance and Inspection Schedule Codes 2-2
Footnotes 2-4
2.3 Service and Guidelines 2-5
General 2-5
Safety and Workmanship 2-5
Cleanliness 2-5
Components Removal and Installation 2-5
Component Disassembly and Reassembly 2-5
Pressure-Fit Parts 2-5
Bearings 2-5
Gaskets 2-5
Bolt Usage and Torque Application 2-5
Hydraulic Lines and Electrical Wiring 2-6
Hydraulic System 2-6
Lubrication 2-6
Battery 2-6

MidWestTech | JLG 530LRT Boom Lift Service Manual | Publication 3121781 Order the manual at mid-west-tech.com >

Lubrication and Servicing 2-6
2.4 Lubrication and Information 2-6
Hydraulic System 2-6
Changing Hydraulic Oil 2-7
Lubrication Specifications 2-7
2.5 Service Maintenance components 2-7
Setting Scissor Arm Safety Prop 2-7
General Maintenance Tips 2-8
Fuel Tank 2-9
Drive Hub 2-9
Scissor Arms - Sliding Wear Pads 2-9
Hydraulic Oil Tank 2-9
Hydraulic Charge Filter 2-9
Oil Change with Filter 2-10
Fuel/Water Separator Filter (Diesel) - Kubota 2-10
Fuel Strainer (Diesel) - Kubota 2-10
Fuel Filter (Gas) - Kubota 2-11
Air Filter 2-11
Engine Coolant 2-11
2.6 Cylinder Drift Test 2-12
Platform Drift 2-12
Cylinder Drift 2-12
2.7 Pins and Composite Bearing Repair Guidelines 2-12

SECTION 3 - CHASSIS, PLATFORM & SCISSOR ARMS

3.1 Operating Characteristics 3-1
Leveling Jacks 3-1
Generator 3-1
Lift 3-1
Drive 3-1
3.2 Tires, Wheels & Drive Assembly 3-1
Tire Inflation 3-1
Tire Damage 3-1
Tire Replacement 3-1
Wheel Replacement 3-2
Wheel Installation 3-2
Drive Assembly 3-3
3.3 Drive Hub (Fairfield) 3-4
Roll and Leak Testing 3-4
Tightening and Torquing Bolts 3-4
Oil Information 3-4
Main Disassembly for Drive Hub 3-8
Hub-Spindle Disassembly 3-8
Cover Disassembly 3-9
Carrier Disassembly 3-9
Carrier Assembly 3-9
Cover Sub-Assembly 3-11
Hub-Spindle Sub-Assembly 3-12
Main Assembly 3-14
Tool List 3-19
Re-Aligning Torque Hub Input Coupling 3-19
3.4 Drive Motor (Sauer) 3-20
Description 3-20
Shaft Seal Replacement 3-20

MidWestTech | JLG 530LRT Boom Lift Service Manual | Publication 3121781 Order the manual at mid-west-tech.com >

Loop Flushing Valve 3-21
Troubleshooting 3-22
Disassembly 3-23
Inspection 3-27
Assembly 3-29
Initial Start-Up Procedures 3-34
3.5 Axle Installation 3-35
Front Axle Assembly (Fixed) 3-35
Front Axle Assembly (Oscillating) 3-36
Steering Assembly 3-37
Axle Lockout Cylinder 3-38
3.6 Leveling Jacks 3-39
Cylinder Removal 3-39
Assembly Removal 3-40
3.7 Platform 3-41
Platform Control Station 3-42
Joystick Controller 3-43
3.8 Scissor Arms 3-44
Lift Cylinder Removal 3-44
Scissor Arms Removal 3-44
Scissor Arm Assembly Removal 3-44
3.9 Side Compartment Covers 3-48
Cover Removal 3-50
Cover installation 3-50
3.10 Ground Control Station 3-50
Control Station Removal 3-50
Ground Control Station Components 3-51
Options Control Module 3-52
3.11 Battery 3-53
3.12 Fuel Tank 3-54
3.13 Hydraulic Tank 3-55
3.14 Kubota Engine 3-56
Engine Tray - Swing Out 3-56
Engine Removal 3-57
Dual Fuel/LPG System 3-59
Changing From Gasoline to LP Gas 3-59
Changing From LP Gas to Gasoline 3-59
Using Liquid Petroleum (LP) Gas 3-59
Propane Fuel System Pressure Relief 3-59
Propane Fuel System Leak Test 3-59
Generator (if equipped) 3-60
Exhaust System 3-61
DUAL FUEL - GAS/LPG 3-61
DIESEL 3-61
Air Cleaner System 3-62
Radiator 3-63
Engine Electrical Component Locations 3-64
Hydraulic Pump Installation 3-66
Pump Coupling Assembly 3-67
Engine Speed Sensor (Kubota Diesel Engine) 3-68
Throttle Actuator Adjustment 3-69
Air Gap Setting 3-69
Diagnosis of Actuator 3-70
Adjustment of the Actuator 3-71

MidWestTech | JLG 530LRT Boom Lift Service Manual | Publication 3121781 Order the manual at mid-west-tech.com >

SECTION 1. SPECIFICATIONS

1.1 SPECIFICATIONS

Operating Specifications

Table 1-1. Operating Specifications

Model	S30LRT
Maximum Occupants	6
Maximum Workload (Capacity): Main Platform: Max. on Extension (Each):	 1500 lb. (680 kg) 500 lb. (227 kg)
Maximum Stowed Travel Grade - Gradeability:	40% (22°)
Maximum Stowed Travel Grade - Sideslope:	5°
Maximum Platform Working Height	53 ft. (16.15 m)
Maximum Drive Height	32 ft. (9.8 m)
Maximum Drive Speed Platform Lowered: High Mid Low (> 14 Ft.) Platform Elevated:	 3.5 mph (5.6 kph) 1.5 mph (2.4 kph) 0.7 mph (1.1 kph) 0.5 mph (0.8 kph)
Lift Up Speed (No Load) (Stowed to Full Height)	65 seconds
Lift Down Speed (No Load) (Full Height to Stowed)	60 seconds
Maximum Wind Speed	28 mph (12.5 m/s)
Maximum Horizontal Manual Side Force: ANSI/ANSI EXPORT: CE:	 300 lb force (1335 N) 90 lb force (400 N)
Maximum Tire Load (Each)	5500 lb. (2500 kg)
Ground Bearing Pressure w/Standard tires	26.5 psi (1.86 kg/cm^2)
Leveling Jack Bearing Pressure	70 psi (4.92 kg/cm^2)
Hydraulic System Pressure Main Relief: Steer Relief:	 2700 psi (186 bar) 2500 psi (172 bar)
Electrical System Voltage	12 Volt
Inside Turning Radius	109.7 in (2.79 m)

Table 1-1. Operating Specifications

Model	S30LRT
Outside Turning Radius	19.76 ft. (6.023 m)
Gross Vehicle Weight Dual Fuel/Diesel - ANSI/ANSI Export/CSA/CE w/ One Extension: w/Two Extensions: w/Mega Deck: *Note: Certain options or country standards increase weight.*	 17,000 lb. (7711 kg) 17,300 lb. (7847 kg) 17,800 lb (8074 kg)

Generator Specifications (If Equipped)

Table 1-2. 7500W Generator Specifications

Type:	Brush Type, Synchronous, Revolving Field
Regulation: 3 Phase: 1 Phase: 1 Phase: Peak:	 240 Volt, 7.5 Kw, 18.3 Amps, 1.0 pf 240 Volt, 6 Kw, 26 Amps, 1.0 pf 120 Volt, 6 Kw, 50 Amps, 1.0 pf 3 Phase - 8.5 Kw, - 1 Phase - 6.0 Kw
Max Rated Temperature:	104 F (40C)

Table 1-3. 4000W Generator Specifications

Type:	Brush Type, Synchronous, Revolving Field
Regulation: 1 Phase: Peak:	 120/240 Volt, 4 Kw, 20 Amps, 1.0 pf 4.0 Kw
Max Rated Temperature:	104 F (40C)

MidWestTech | JLG 530LRT Boom Lift Service Manual | Publication 3121781 Order the manual at mid-west-tech.com >

Table 4-33. Main Valve Port Identification

See Figure 4-15. on page 4-54

Port	Functionality	To Port
L1	To Lift Cylinder	Lift Cylinder
L2	To Lift Cylinder	Lift Cylinder
T4	Main RT Valve (Left Side)	T - Outrigger Valve
P1	Main RT Valve (Left Side)	Outlet - Tandem Gear Pump
S1	Main RT Valve (Left Side)	Steer Cylinder
S2	Main RT Valve (Left Side)	Steer Cylinder
G	Main RT Valve (Left Side) (Tee at Port)	P - Axle Lockout Valve M3 - Axial Pump
2S2	Main RT Valve (Left Side)	Union Tee
T2	Main RT Valve (Left Side)	Return to Tank
P2	Main RT Valve (Right Side)	LP - Leveling Jack Valve
PS	Main RT Valve (Right Side)	Outlet - Tandum Gear Pump
MS	Main RT Valve (Right Side)	Diagnostic Port
MP1	Main RT Valve (Right Side)	Diagnostic Port

Table 4-34. Main Valve Torque Specs

See Figure 4-15. on page 4-54

Component	Functionality	Torque
1	Steer Valve	25 ft. lb.
2	Lift Up Valve	24 - 26 ft. lb.
3	Lift Pump Unloader Valve (Dump)	35 - 40 ft. lb.
4	Motors 2 Speed Control	40 ft. lb.
5	Hydraulic Brakes	40 ft. lb.
6	Steer Cylinder Relief Valve	19 - 21 ft. lb.
7	Flow Control	35 - 40 ft. lb.
8	Steer Cylinder Shuttle Valve	19 - 21 ft. lb.
18	Lift Cylinders Tank Port Check Valve	40 - 45 ft. lb.
20	Manifold Relief Valve	40 - 45 ft. lb.

Table 4-35. Main Valve Porting Specs

Port	Size
L2, P1 & T1	SAE 10
L1	SAE 08
G, T4 & T2	SAE 06
All Others	SAE 04

NOTE: *For internal hydraulic circuits see Figure 4-44. on page 4-85.*

MidWestTech | JLG 530LRT Boom Lift Service Manual | Publication 3121781 Order the manual at mid-west-tech.com >

5.2 DIAGNOSTIC TROUBLESHOOTING CODES (DTC'S) AND FLASH CODES DESCRIPTION

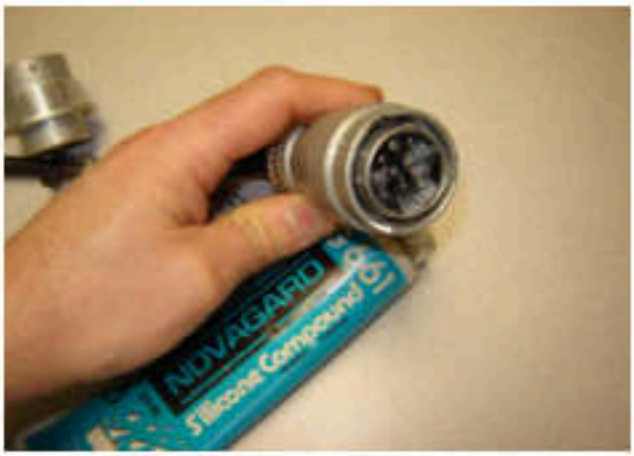
Table 5-1. DTC and Flash Code Descriptions

DTC Code	Flash Code		Description	Item Check List
001	0	0	"Everything Ok"	• No issues detected
004	0	0	"Driving At Cutback - Above Elevation"	• The platform is determined to be elevated (Reference platform height calculation section).
005	0	0	"Drive & Lift Up Prevented - Tilted & Elevated"	• Platform is elevated, and machine tilt exceeds the model and market specific limits.
009	0	0	"Drive Prevented - Elevated Above Drive Cutout Height"	• Attempting to drive with the platform elevated to over 32 feet. The control system prevents driving. • Lower the platform to under 32 feet.
0041	0	0	"Front Left Leveling Jack At End Of Stroke"	• Front Left Leveling Jack cylinder has reached end of stroke. • Check if the cylinder is at end of stroke (normal operation). • Check the wiring to the Front Left Leveling Jack end of stroke switch.
0042	0	0	"Front Right Leveling Jack At End Of Stroke"	• Front Right Leveling Jack cylinder has reached end of stroke. • Check if the cylinder is at end of stroke (normal operation). • Check the wiring to the Front Right Leveling Jack end of stroke switch.
0043	0	0	"Rear Left Leveling Jack At End Of Stroke"	• Rear Left Leveling Jack cylinder has reached end of stroke. • Check if the cylinder is at end of stroke (normal operation). • Check the wiring to the Rear Left Leveling Jack end of stroke switch.
0044	0	0	"Rear Right Leveling Jack At End Of Stroke"	• Rear Right Leveling Jack cylinder has reached end of stroke. • Check if the cylinder is at end of stroke (normal operation). • Check the wiring to the Rear Right Leveling Jack end of stroke switch.
0045	0	0	"Engine Shutdown Commanded - Check Engine Sensors"	• The engine coolant temperature is high or the oil pressure is low. The control system shuts down the engine. • DIESEL - Check the engine oil pressure and engine coolant temperature sensors for damage. • Check the engine oil pressure input J2-17 (should be low when not overheating). • Check the engine coolant input J2-25 (resistive).
211	2	1	"Power Cycle"	• Power was cycled ON
212	2	1	"Keyswitch Faulty - Platform & Ground Active Together"	• The Platform and Ground mode switches are both high. • Check the Ground Module inputs for Ground Mode (J4-4) and Platform Mode (J1-2).
221	2	2	"Function Problem - Horn Permanently Selected"	• Horn switch input is closed during power up.
223	2	2	"Function Problem - Drive & Lift Active Together"	• Drive and Lift Digital Inputs on the Platform Control Module are HIGH simultaneously for 1000ms.
224	2	2	"Function Problem - Steer Left Permanently Selected"	• Left steer select switch input is closed during power up.
225	2	2	"Function Problem - Steer Right Permanently Selected"	• Right steer select switch input is closed during power up.
228	2	2	"Function Locked Out - Accelerator Not Centered"	• Joystick is not centered during start-up of the machine. Joystick signal must remain at neutral voltage for 1000 ms after start-up or fault will activate.
229	2	2	"Function Problem - Trigger Permanently Closed"	• The Trigger Switch CAN message and LRT Ground Module Trigger DI are conflicting with each one another.

MidWestTech | JLG 530LRT Boom Lift Service Manual | Publication 3121781 Order the manual at mid-west-tech.com >

Deutsch HD, DT, DTM, DRC Series

The Deutsch connector system is commonly used for harsh environment interconnect. Follow the installation instructions.



AMP Seal

The AMP Seal connector system is used on the Control ADE Platform and Ground Modules.

Apply dielectric grease to the plug/male connector housing which typically contains socket contacts/female terminals. If trapped air prevents the connector from latching, pierce one of the unused wire seals. After assembly, install a seal plug (JLG #4460905) in that location to prevent moisture ingress.

Note that seal plugs may be installed by the wire harness manufacturer if an unused wire seal becomes compromised (wire inserted in the wrong cavity during assembly and then corrected).



Figure 7-5. Application to Plug/Male Contacts



Figure 7-6. Use of Seal Plugs

AMP Mate-N-Lok

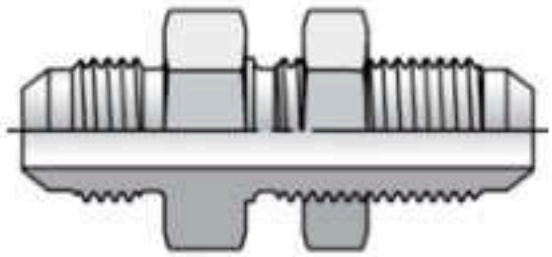
This connector system is widely used inside enclosures for general-purpose interconnect. Follow the general guidance for installation.



MA001571

MidWestTech | JLG 530LRT Boom Lift Service Manual | Publication 3121781 Order the manual at mid-west-tech.com >

Table 4-10. Bulkhead Fittings (BH) - INCH



TYPE/FITTING IDENTIFICATION				FASTENING JAM NUT for Bulkhead Connectors					
				Torque					
				[ft. lb.]			[N-m]		
MATERIAL	TYPE	Dash Size	Thread Size (UNF)	Min	Nom	Max	Min	Nom	Max
STEEL FITTINGS	O-RING FACE SEAL (ORFS) BULKHEAD FITTING	4	9/16-18	15	16	17	20	22	23
		6	11/16-16	25	27	28	34	37	38
		8	13/16-16	55	58	61	75	79	83
		10	1-14	85	90	94	115	122	127
		12	13/16-12	135	142	149	183	193	202
		14	15/16-12	170	179	187	230	243	254
		16	17/16-12	200	210	220	271	285	298
		20	1 11/16-12	245	258	270	332	350	366
		24	2-12	270	284	297	366	385	403
	TYPE	Dash Size	Thread Size (UNF)	Torque [ft. lb.] Min	Nom	Max	[N-m] Min	Nom	Max
	37° FLARE (JIC) BULKHEAD FITTING	3	3/8-24	8	9	9	11	12	12
		4	7/16-20	13	14	14	18	19	19
		5	1/2-20	20	21	22	27	28	30
		6	9/16-18	25	27	28	34	37	38
		8	3/4-16	50	53	55	68	72	75
		10	7/8-14	85	90	94	115	122	127
		12	1 1/16-12	135	142	149	183	193	202
		14	1 3/16-12	170	179	187	230	243	254
		16	1 5/16-12	200	210	220	271	285	298
		20	1 5/8-12	245	258	270	332	350	366
		24	1 7/8-12	270	284	297	366	385	403
		32	2 1/2-12	310	326	341	420	442	462

MidWestTech | JLG 530LRT Boom Lift Service Manual | Publication 3121781 Order the manual at mid-west-tech.com >