An Oshkosh Corporation Company

Service & Maintenance Manual

Model
67SL

3121322

March 7, 2008

ANSI

ISO9001 REGISTERED COMPANY

UKAS QUALITY MANAGEMENT 015

An Oshkosh Corporation Company

MidWestTech | JLG 67SL Scissor Lift Service Manual | Publication 3121322

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

TABLE OF CONTENTS

SUBJECT - SECTION, PARAGRAPH — PAGE NO.

SECTION A - INTRODUCTION - MAINTENANCE SAFETY PRECAUTIONS

A General 1-a
B Hydraulic System Safety 1-a
C Maintenance 1-a

SECTION 1 - SPECIFICATIONS

1.1 Operating Specifications 1-1
1.2 Dimensional Data 1-1
1.3 Capacities 1-1
1.4 Engine 1-2
Battery 1-2
1.5 Tires 1-2
1.6 Torque Requirements 1-2
1.7 Limit Switches 1-2
Platform Stowed/Jacks Retract Limit Switch 1-2
High Drive Speed Cutout Limit Switch 1-2
Maximum Drive Height/Maximum Height without Outriggers Limit Switch 1-2
Maximum Height Limit Switch 1-2
Tilt Sensor 1-2
Outrigger Interlock Sensors 1-2
1.8 Pressure Setting 1-4
1.9 Major Component Weights 1-4
1.10 Critical Stability Weights 1-4
1.11 Lubrication 1-4

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
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 Operator Maintenance 2-5

MidWestTech | JLG 67SL Scissor Lift Service Manual | Publication 3121322 Order the manual at mid-west-tech.com >

2.5 Cylinder Drift Test 2-9
Lift Cylinder Drift 2-9
2.6 Preventive Maintenance and Inspection Schedule 2-10

SECTION 3 - CHASSIS, PLATFORM & SCISSOR ARMS

3.1 Operating Characteristics 3-1
Leveling Jacks 3-1
3.2 Wheel Assembly 3-1
Drive System 3-1
Drive Hub 3-2
Roll Test 3-2
Leak Test 3-2
Lubricant 3-2
Tire Replacement 3-3
Wheel Replacement 3-3
Drive Motor 3-7
Motor Disassembly 3-8
Motor Assembly 3-8
3.3 Steering Assembly 3-9
3.4 Rear Axle Assembly 3-10
3.5 Outrigger Cylinder Removal 3-11
3.6 Engine Compartment 3-13
Hood Assembly 3-13
Deutz Engine 3-14
Engine Tray Slide 3-15
Glow Plugs 3-16
Engine Solenoid 3-16
Gear Pump Assembly 3-17
Exhaust Pipe Assembly 3-19
Air Filter Assembly 3-20
Engine Removal 3-21
Hydraulic Tank 3-22
Pressure Filter 3-23
3.7 Fuel Tank 3-24
3.8 Ground Control Panel 3-25
3.9 Battery Removal 3-26
3.10 Platform 3-27
Platform Control Box 3-27
Joystick Controller 3-28
Receptacles 3-29
Extension End Rails 3-30
Extension Side Rails 3-31
Main Platform End Rails 3-32
Main Platform Side Rails 3-33
Platform Removal 3-34
3.11 Ladder Installation 3-36
3.12 Beacon Installation (Option) 3-37
3.13 Scissor Arms 3-38
Limit Switches 3-38
Scissor Arm Assembly Removal 3-39
Lift Cylinder Removal 3-42
Scissor Arms Disassembly 3-43

SECTION 4 - HYDRAULICS

4.1 Cylinders - Theory of Operation 4-1
Deck Extension Cylinder: 4-1
Lift Cylinder: 4-1
Outrigger Cylinders: 4-1

MidWestTech | JLG 67SL Scissor Lift Service Manual | Publication 3121322 Order the manual at mid-west-tech.com >

Steer Cylinder: 4-1
4.2 Valves - Theory of Operation 4-1
Solenoid Control Valves (Bang-Bang) 4-1
Relief Valves 4-1
Crossover Relief Valves 4-1
Proportional Valve 4-1
4.3 Cylinder Checking Procedure 4-2
4.4 Cylinder Repair 4-2
Disassembly 4-2
Cleaning and Inspection 4-5
Assembly 4-6
4.5 Valves 4-15
Valve Compartment 4-15
Pressure Switch, Drive Enable 4-15
Brake Valve 4-16
Main Valve Block 4-17
Steering Valve 4-18
Drive Valve 4-20
Hand Pump 4-21
Lift/Lower Valve Block 4-22
Platform Lower Flow Valve 4-23
Outrigger Safety Valves 4-23

SECTION 5 - JLG CONTROL SYSTEM

5.1 Main Terminal Box Circuit Boards 5-1
5.2 Control Card Complex 2 5-2
General Description of Components and Functions 5-2
5.3 Nivolux - Automatic Self-Leveling System 5-5
Introduction 5-5
The System 5-5
Operation 5-5
NIVOLUX Board LED's 5-6
Setting and Adjustment of the NIVOLUX Board 5-6
5.4 PNP5 Circuit Board 5-8
System 5-8
Operation 5-8
Adjustment 5-8
5.5 Trigger Control Circuit Card 5-8
Relay K1 5-8
Relay K2 5-8
Relay K3 5-9
5.6 Limit Switch & Sensor Operation 5-9
Height Limit Switches 5-9
Tilt Switch 5-10
Outrigger Limit Switches 5-10
Pressure Switch 5-10
5.7 Engine Control System 5-11
Functional Description 5-11

SECTION 6 - GENERAL ELECTRICAL INFORMATION & SCHEMATICS

6.1 General 6-1
6.2 Multimeter Basics 6-1
Grounding 6-1
Backprobing 6-1
Min/Max 6-1
Polarity 6-1
Scale 6-1
Continuity Measurement Over Long Distances 6-4

MidWestTech | JLG 67SL Scissor Lift Service Manual | Publication 3121322 Order the manual at mid-west-tech.com >

SECTION 1. SPECIFICATIONS

1.1 OPERATING SPECIFICATIONS

Table 1-1. Operating Specifications

Description	67SL
Maximum Working Height: with outriggers deployed with outriggers stowed	 73.2 ft (22.3 m) 56.8 ft (17.3 m)
Maximum Platform Height: with outriggers deployed with outriggers stowed	 66.7 ft (20.3 m) 50 ft (15.2 m)
Turning Radius: Inside Outside	 3.9 ft (1.2 m) 17.1 ft (5.2 m)
Maximum Work Load (Capacity) - Main Platform/Platform Extension	1650 lbs/1100 lbs (750 kg/500 kg)
Maximum Occupants	4
Tools and Equipment - Main Platform / Platform Extension	1300 lbs/397 lbs (430 kg/180 kg)
Maximum Horizontal Manual Side Force	200 Lb force (890N)
Tilt Sensor Setting	3°
Maximum Operating Wind Speed	28 mph (12.5 m/s)
Gross Machine Weight (Approximate)	25,133 lbs (11,400 kg)
Drive Speed (slow)	0.4 mph (0.6 ft/sec) (0.7 kmh)
Drive Speed (fast)	2.2 mph (3.2 ft/sec) (3.6 kmh)
Sideslope (Machine Stowed)	5°
Gradeability (Machine Stowed)	25%
Lift Speed (no load)	95 sec
Lowering Speed	60 sec
Maximum Operating Hydraulic Pressure	3046 psi (210 bar)
Power Supply	Diesel Engine
Maximum Ground Bearing Pressure: Outriggers Tires	 128 psi (9 kg/cm²) 71 psi (5 kg/cm²)
Maximum Tire Load	9700 lbs (4400 kg)
Maximum Outrigger Pad Load	9458 lbs (4290 kg)
Electrical System Voltage	24 V
Ground Clearance	0.9 ft (0.27 m)

1.2 DIMENSIONAL DATA

Table 1-2. Dimensional Data

Description	67SL
Machine Height (rails up)	3.8 m (12.5 ft)
Machine Height (rails down)	3 m (9.9 ft)
Machine Width	2.4 m (7.9 ft)
Machine Length	4.8 m (15.7 ft)
Platform Dimensions (extension retracted)	4.6 x 2.4 m (15 x 7.9 ft)
Platform Dimensions (extension extended)	7.4 x 2.4 m (24.3 x 7.9 ft)
Transport Dimensions (L x W x H)	4.8 x 2.4 x 3 m (15.7 x 7.9 x 9.9 ft)

1.3 CAPACITIES

Table 1-3. Capacities

Description	67SL
Fuel Tank	90 L (23.8 gal)
Hydraulic Tank	135 L (35.7 gal)
Engine Crankcase with Filter without Filter	 10.5 ltr (11 qt) 10 ltr (10.6 qt)

MidWestTech | JLG 67SL Scissor Lift Service Manual | Publication 3121322 Order the manual at mid-west-tech.com >

Service - Voltage Reading

⚠ CAUTION

DO NOT PIERCE WIRE INSULATION TO TAKE VOLTAGE READINGS.

It has been common practice in electrical troubleshooting to probe wires by piercing the insulation with a sharp point. This practice should be discouraged when dealing with the AMPSEAL plug assembly, or any other sealed connector system. The resulting pinholes in the insulation will allow moisture to invade the system by traveling along the wire strands. This nullifies the effectiveness of the connector seals and could result in system failure.

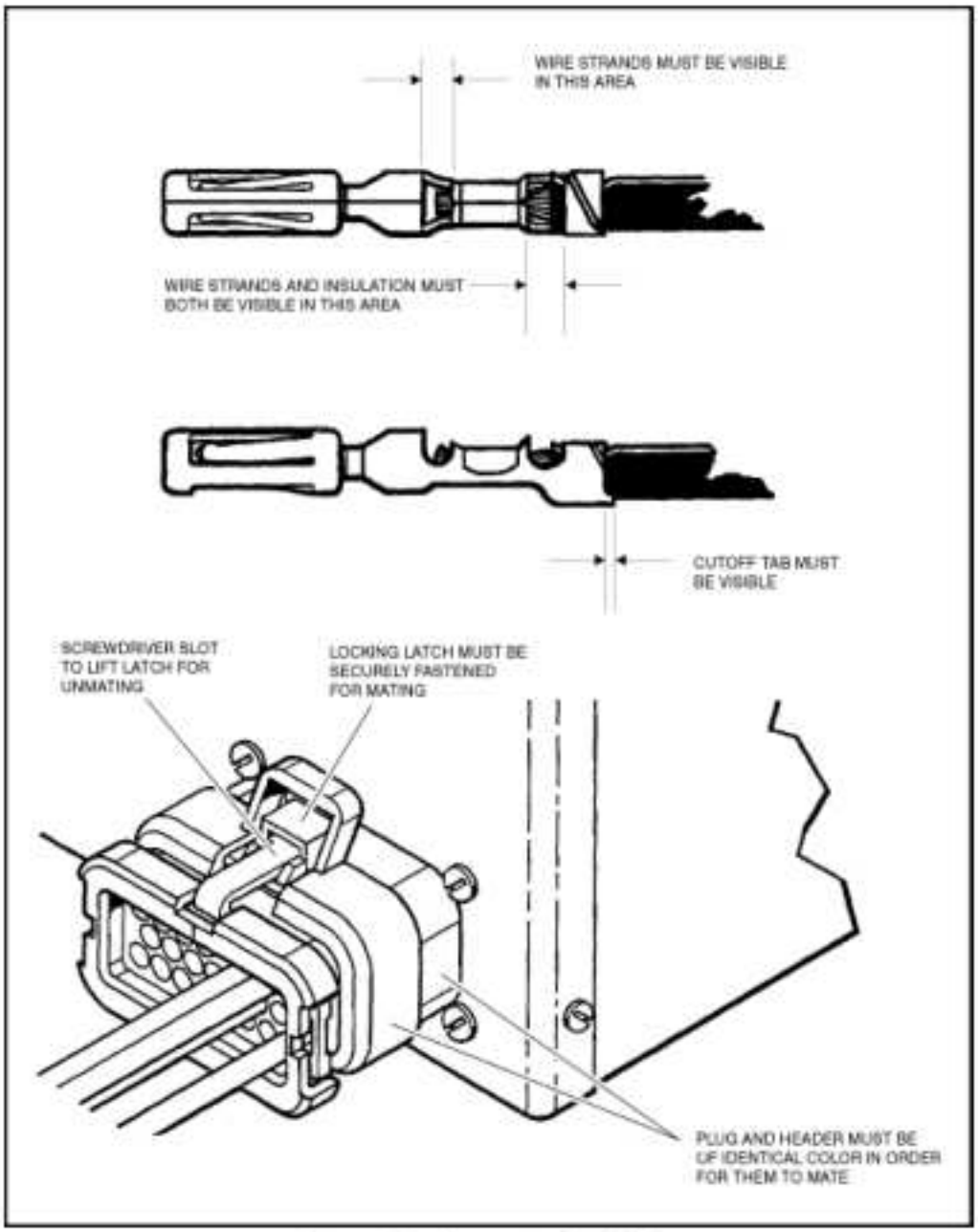


Figure 6-11. Connector Installation

MidWestTech | JLG 67SL Scissor Lift Service Manual | Publication 3121322 Order the manual at mid-west-tech.com >

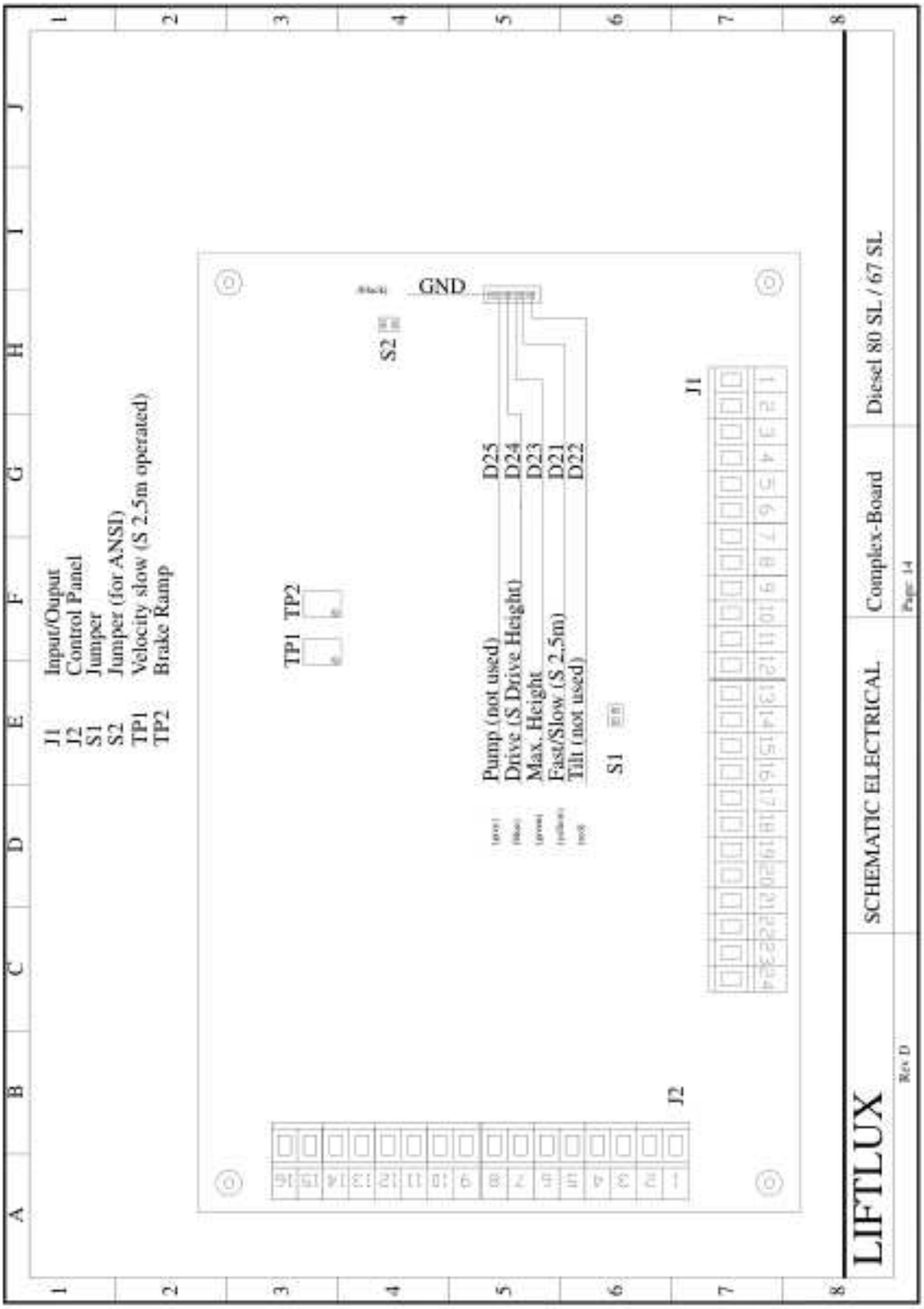
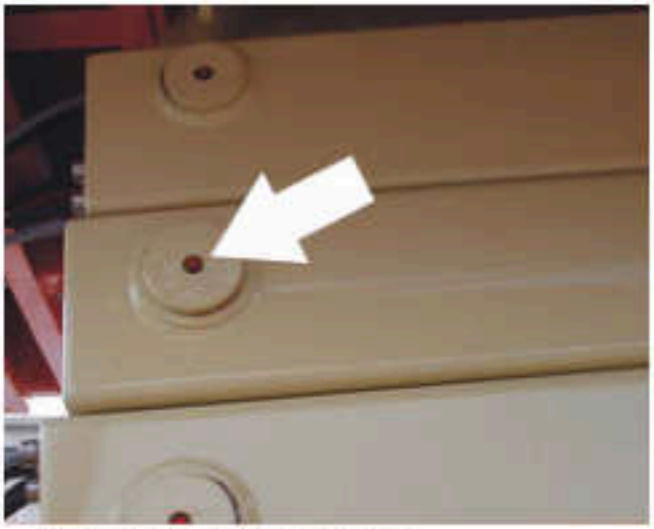


Figure 6-31. Electrical Schematic - Sheet 14 of 15

MidWestTech | JLG 67SL Scissor Lift Service Manual | Publication 3121322 Order the manual at mid-west-tech.com >

NOTE: *The following numbers correspond with those in Figure 2-1., Lubrication Diagram.*

1. Arm Pins



- Lube Points - 39 Grease Fittings
- Capacity - As Required
- Lube - MPG
- Interval - As Required

2. Outrigger Cylinders



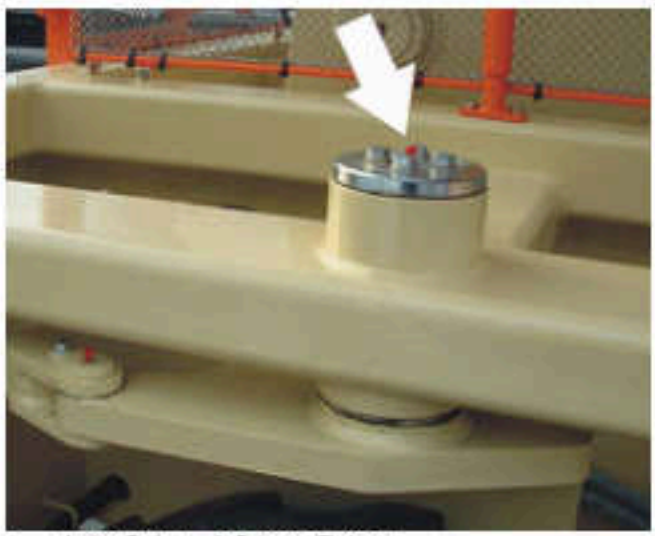
- Lube Points - 4 Grease Fittings
- Capacity - As Required
- Lube - MPG
- Interval - As Required

3. Tie Rod Ends



- Lube Points - 2 Grease Fittings
- Capacity - As Required
- Lube -MPG
- Interval - As Required

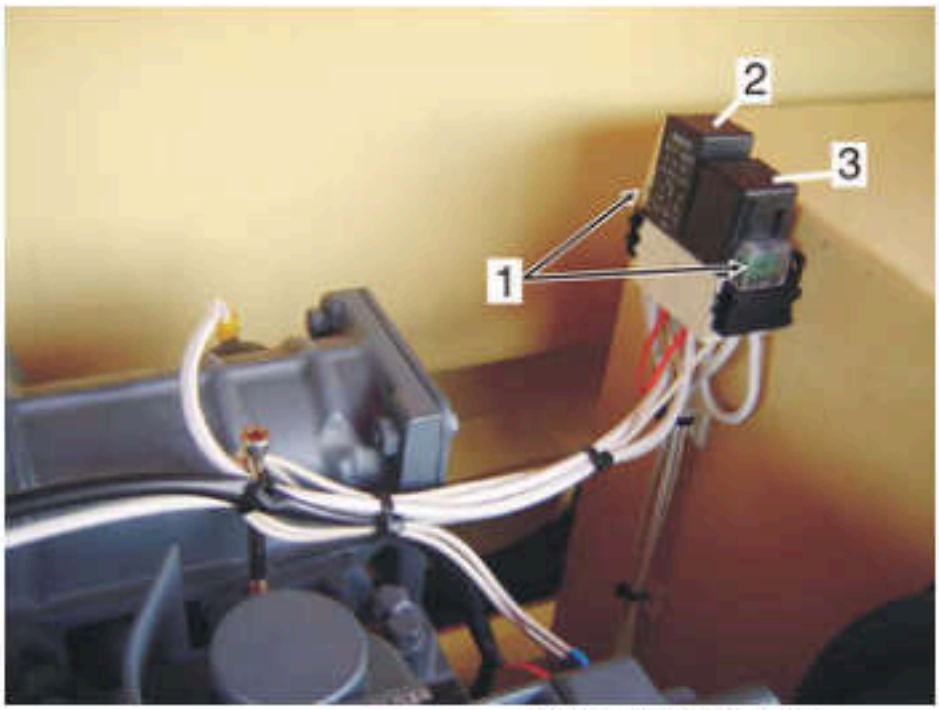
4. Spindles



- Lube Points - 2 Grease Fittings
- Capacity - As Required
- Lube - MPG
- Interval - As Required

MidWestTech | JLG 67SL Scissor Lift Service Manual | Publication 3121322 Order the manual at mid-west-tech.com >

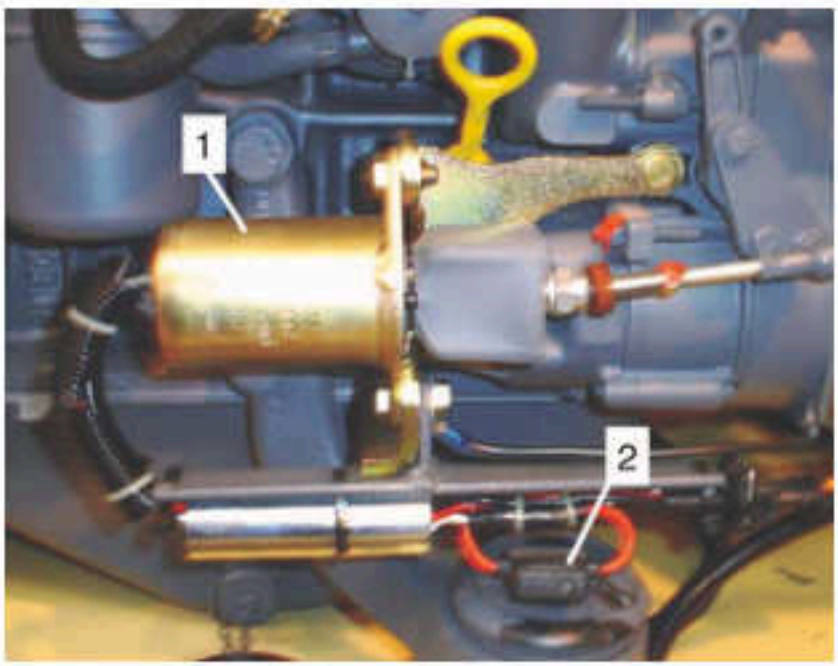
Glow Plugs



1. 30 amp Fuses
2. Timer Relay N6
3. Relay K3

Figure 3-13. Glow Plugs

Engine Solenoid



1. Solenoid
2. 30 amp Fuse

Figure 3-14. Engine Solenoid

MidWestTech | JLG 67SL Scissor Lift Service Manual | Publication 3121322 Order the manual at mid-west-tech.com >