An Oshkosh Corporation Company

Service & Maintenance Manual

Liftlux

Models
210-25
245-25

S/N 20465 to Present
including S/N's: 16563, 18190,
19542, 19543, 19933, 20020,
20242 & 20317

3121331

July 23, 2010

CE

An Oshkosh Corporation Company

MidWestTech | JLG 210-25, 245-25 Scissor Lift Service Manual | Publication 3121331

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 Specifications 1-1
1.3 Capacities 1-2
1.4 Engine 1-2
1.5 Tires 1-2
1.6 Limit Switches 1-2
Platform Stowed/Jacks Retract Limit Switch 1-2
High Drive Speed Cutout Limit Switch 1-2
Maximum Drive Height Limit Switch 1-2
Maximum Height Limit Switch 1-2
Tilt Sensor 1-2
Outrigger Sensors 1-2
Oscillating Axle Limit Switch 1-2
1.7 Pressure Setting 1-4
1.8 Major Component Weights 1-4
1.10 Critical Stability Weights 1-4
1.11 Lubrication 1-4
1.12 Torque Charts 1-6

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 210-25, 245-25 Scissor Lift Service Manual | Publication 3121331 Order the manual at mid-west-tech.com >

2.5 Cylinder Drift Test 2-10
Platform Drift 2-10
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
Torque Hub 3-2
Roll Test 3-2
Leak Test 3-2
Lubricant 3-2
Hub 3-2
Tire Replacement 3-3
Wheel Replacement 3-3
Wheel Installation 3-3
3.3 Drive Motor 3-7
Motor Disassembly 3-8
Motor Assembly 3-8
3.4 Steering Assembly 3-9
3.5 Rear Axle 3-10
Rear Axle Limit Switches 3-11
3.6 Outrigger Cylinder Removal 3-12
3.7 Engine Compartment 3-14
Hood Assembly 3-14
Deutz Engine 3-15
Engine Tray Slide 3-16
Glow Plugs 3-17
Engine Solenoid Fuse 3-17
Hydraulic Pump Assembly 3-18
Hydraulic Pump 3-19
Exhaust Pipe Assembly 3-20
Air Filter Assembly 3-21
Engine Removal 3-22
Hydraulic Tank 3-23
Pressure Filter 3-24
3.8 Fuel Tank 3-25
3.9 Ground Control Panel 3-26
3.10 Battery Removal 3-27
3.11 Platform 3-28
Platform Control Box 3-28
Joystick Controller 3-29
Receptacles 3-30
Platform Extension End Rail (210-25) 3-31
Platform Extension Side Rails (210-25) 3-32
Main Platform End Rails (210-25) 3-33
Main Platform Side Rails (210-25) 3-34
Main Platform Side Rails (245-25) 3-35
Main Platform End Rails (245-25) 3-36
Platform Extension Side Rails (245-25) 3-37
Platform Extension End Rail 3-38
Platform Removal 3-39
3.12 Ladder Installation 3-41
3.13 Beacon Installation (Option) 3-42
3.14 Scissor Arms 3-43
Limit Switches 3-43
Arm Guards 3-44

MidWestTech | JLG 210-25, 245-25 Scissor Lift Service Manual | Publication 3121331 Order the manual at mid-west-tech.com >

Scissor Arm Assembly Removal 3-45
Lift Cylinder Removal 3-48
Scissor Arms Disassembly 3-49

SECTION 4 - HYDRAULICS

4.1 Cylinders - Theory of Operation 4-1
Pump Flow 4-1
Deck Extension Cylinder 4-1
Lift Cylinder 4-1
Outrigger Cylinders 4-1
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 4-2
4.3 Cylinder Checking Procedure 4-2
4.4 Cylinder Repair 4-2
Disassembly 4-2
Cleaning and Inspection 4-6
Assembly 4-7
4.5 Valves 4-18
Valve Compartment 4-18
Pressure Switch, Drive Enable 4-18
Brake Valve 4-19
Drive Valve 4-20
Main Valve Bank 4-21
Pump Engage/Disengage Valve 4-22
Hand Pump 4-23
Load Holding Valve 4-24
Lift/Lower Valve Block 4-25
Platform Lower Flow Valve 4-25
Outrigger Safety Valves 4-26

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
Oscillating Axle Limit Switches 5-10
Outrigger Limit Switches 5-10
Pressure Switch 5-10

MidWestTech | JLG 210-25, 245-25 Scissor Lift Service Manual | Publication 3121331 Order the manual at mid-west-tech.com >

SECTION 1. SPECIFICATIONS

1.1 OPERATING SPECIFICATIONS

Table 1-1. Operating Specifications

Description	210-25	245-25
Maximum Working Height	23 m (75 ft)	26.5 m (87 ft)
Maximum Platform Height	21 m (69 ft)	24.5 m (80 ft)
Maximum Drive Height	21 m (68.9 ft)	21 m (68.9 ft)
Turning Radius: Inside Outside	1.5 m (4.92 ft) 6.2 m (20.34 ft)	
Wheelbase	3.9 m (12.8 ft)	
Max Work Load (Capacity): Main Platform Platform Extension	 1000 kg (2205 lbs) 800 kg (1764 lbs)	 750 kg (1650 lbs) 750 kg (1650 lbs)
Maximum Platform Occupants	5	2
Tools and Equipment	600/400 kg (1323/882 lbs)	590 kg (1300 lbs)
Maximum Horizontal Manual Side Force	400 N (90 Lbf)	
Tilt Sensor Setting	3°	
Maximum Operating Wind Speed	12.5 m/s (28mph)	
Gross Machine Weight (Approximate)	15,000 kg (33,068.8 lbs)	16,800 kg (36,960 lbs)
Drive Speed (creep)	0.14 m/sec (0.46 ft/sec)	
Drive Speed (slow)	0.4 m/sec (1.4 ft/sec)	
Drive Speed (fast)	0.6 m/sec (2.1 ft/sec)	
Gradeability (Machine Stowed)	35%	25%
Sideslope (Machine Stowed)	5°	
Lift Speed (platform empty)	95 sec	105 sec

Table 1-1. Operating Specifications

Description	210-25	245-25
Lowering Speed	70 sec	80 sec
Maximum Operating Hydraulic Pressure	185 bar (2,683 psi)	230 bar (3,336 psi)
Power Supply	Diesel Engine	
Maximum Tire Ground Bearing Pressure	5 kg/cm^2 (71 psi)	6 kg/cm^2 (85 psi)
Maximum Outrigger Ground Bearing Pressure	7 kg/cm^2 (100 psi)	9 kg/cm^2 (128 psi)
Maximum Outrigger Pad Load	5915 kg (13,040 lbs)	7720 kg (17,020 lbs)
Maximum Tire Load Rating	5950 kg (13,118 lbs)	6620 kg (14,595 lbs)
Electrical System Voltage	24V	
Ground Clearance	0.27 m (0.9 ft)	0.27 m (0.9 ft)
Jack Pad Ground Clearance	0.24 m (0.78 ft)	

1.2 DIMENSIONAL SPECIFICATIONS

Table 1-2. Dimensional Specifications

Description	210-25	245-25
Machine Height: rails up rails down	 4.1 m (13.5 ft) 3.2 m (10.5 ft)	 4.24 m (13.9 ft) 3.24 m (10.6 ft)
Platform Dimensions : extension retracted (W x L) extension extended (W x L)	 2.5 x 5.35 m (8.2 x 17.6 ft) 2.5 x 7.6 m (8.2 x 25 ft)	 2.5 x 5.35 m (8.2 x 17.6 ft) 2.5 x 7.8 m (8.2 x 25.6 ft)
Transport Dimensions: rails up (L x W x H) rails down (L x W x H)	 5.35 x 2.5 x 4.1 m (17.6 x 8.2 x 13.5 ft) 5.35 x 2.5 x 3.2 m (17.6 x 8.2 x 10.5 ft)	 5.35 x 2.5 x 4.24 m (17.6 x 8.2 x 13.9 ft) 5.35 x 2.5 x 3.24 m (17.6 x 8.2 x 10.6 ft)

MidWestTech | JLG 210-25, 245-25 Scissor Lift Service Manual | Publication 3121331 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.

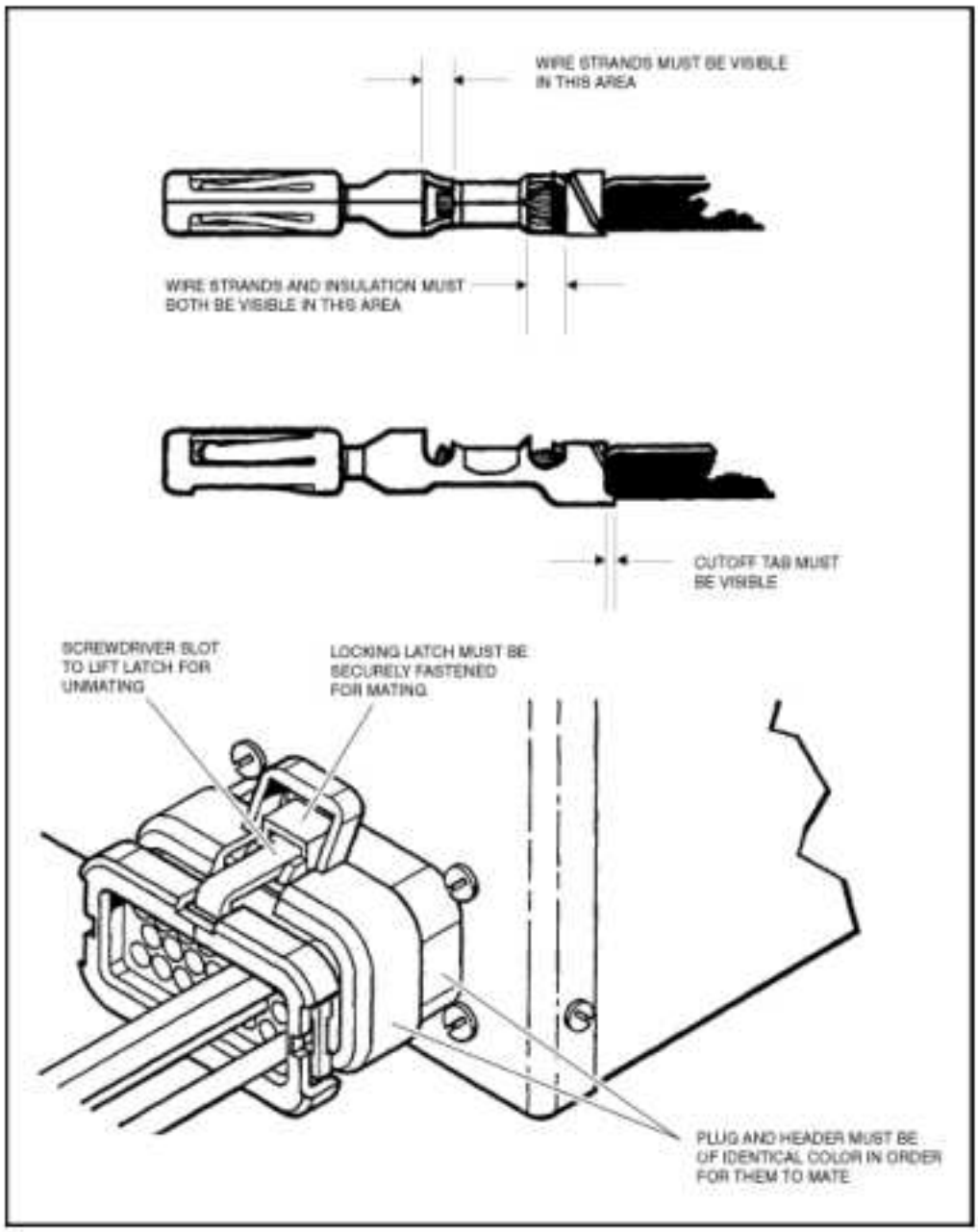


Figure 6-11. Connector Installation

MidWestTech | JLG 210-25, 245-25 Scissor Lift Service Manual | Publication 3121331 Order the manual at mid-west-tech.com >

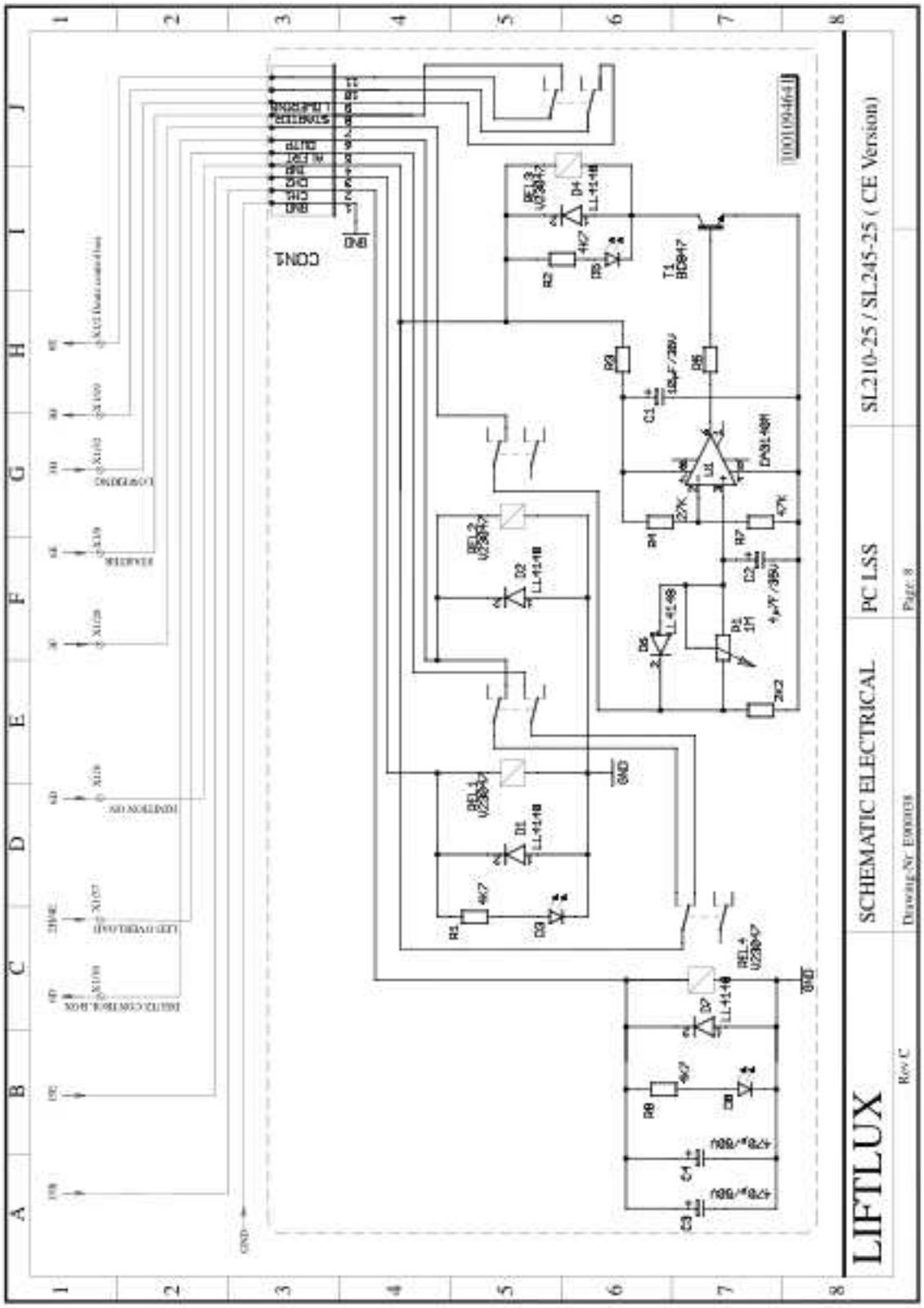


Figure 6-25. Electrical Schematic - Sheet 8 of 18

MidWestTech | JLG 210-25, 245-25 Scissor Lift Service Manual | Publication 3121331 Order the manual at mid-west-tech.com >