Service & Maintenance Manual

Model 245-12

3121313

May 18, 2007

MidWestTech | JLG 245-12 Scissor Lift Service Manual | Publication 3121313

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

TABLE OF CONTENTS

SUBJECT - SECTION, PARAGRAPH — PAGE NO.

SECTION A - INTRODUCTION - MAINTENANCE SAFETY PRECAUTIONS

A.A General 1-a
A.B Hydraulic System Safety 1-a
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 1-1
1.5 Tires 1-2
1.6 Torque Requirements 1-2
1.7 Limit Switches & Sensors 1-2
- Platform Stowed/Jacks Retract Limit Switch 1-2
- High Drive Speed Cutout Limit Switch 1-2
- Pothole Protection Limit Switch 1-2
- Drive Cutout/Max Height Outdoors Limit Switch 1-2
- Max Height Indoors Limit Switch 1-2
- Tilt Sensor 1-2
- Pothole Sensors 1-2
- Outrigger Sensors 1-2
- Steering Limit Switches 1-2

1.8 Pressure Setting 1-4
1.9 Component Weights 1-4
1.11 Critical Stability Weights 1-4
1.12 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

MidWestTech | JLG 245-12 Scissor Lift Service Manual | Publication 3121313 Order the manual at mid-west-tech.com >

Lubrication Specifications 2-4
2.4 Operator maintenance 2-5
2.5 Cylinder Drift Test 2-9
Platform Drift 2-9
2.6 Preventive Maintenance and Inspection Schedule 2-9

SECTION 3 - CHASSIS & SCISSOR ARMS

3.1 Operating Characteristics 3-1
Leveling Jacks 3-1
3.2 Wheel Assembly 3-1
Drive Hub 3-1
Roll Test 3-1
The Leak Test 3-1
Lubricant 3-2
Tire Replacement 3-2
Wheel Replacement 3-2
Wheel Installation 3-4
3.3 Drive Motor 3-6
Motor Disassembly 3-7
Motor Assembly 3-7
3.4 Steering Assembly 3-8
3.5 Outrigger Cylinder Removal 3-9
3.6 Pothole Protection Assembly 3-11
3.7 Side Compartments 3-12
Hood Assembly 3-12
Deutz Engine 3-13
Engine Tray Slide 3-14
Hydraulic Pump Assembly 3-15
Hydraulic Pump 3-16
Exhaust Assembly 3-17
Engine Removal 3-18
Hydraulic Tank 3-19
Pressure Filter 3-20
Fuel Tank 3-21
3.8 Ground Control Panel 3-22
3.9 Battery Removal 3-23
3.10 Platform 3-24
Platform Control Box 3-24
Receptacles 3-25
Platform Extension End Rail 3-26
Platform Extension Side Rails 3-27
Main Platform Side Rails 3-28
Main Platform Gate 3-29
Platform Removal 3-30
3.11 Ladder Installation 3-32
3.12 Scissor Arms 3-33
Limit Switch 3-33
Arm Guards 3-34
Scissor Arm Assembly Removal 3-35
Lift Cylinder Removal 3-38
Scissor Arms Disassembly 3-39

SECTION 4 - HYDRAULICS

4.1 Cylinders - Theory of Operation 4-1
Lift Cylinder: 4-1
Outrigger Cylinders: 4-1
Steer Cylinder: 4-1
4.2 Valves - Theory of Operation 4-1

MidWestTech | JLG 245-12 Scissor Lift Service Manual | Publication 3121313 Order the manual at mid-west-tech.com >

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 4-17
Valve Compartment 4-17
Lowering Valve 4-18
Pump Engage/Disengage Valve 4-18
Main Valve Block 4-19
Drive Valve 4-20
Steer Valve 4-21
Hand Pump 4-21
Lift/Lower Valve Block 4-23
Pothole Cylinder Load Holding Valve 4-23
Outrigger Safety Valves 4-24

SECTION 5 - JLG CONTROL SYSTEM

5.1 Operation and Technical Data On Control Card Complex 5-1
General Description of Components and Functions 5-2
Joystick Controller and Drive Mode 5-3
Joystick Controller and Drive/Lift/Lower 5-3
Sensors 5-4
5.2 Automatic Self Leveling Device - (NIVOLUX) 5-5
Introduction 5-5
Operation 5-5
Operating Instructions and Technical Details 5-6
Nivolux Board LED's 5-6
Exchange and Adjustment of the NIVOLUX-Board 5-6
5.3 Engine Control System (Circuit Board Code MC 536) 5-7
Functional Description 5-7
5.4 Load Sensing System (LSS) 5-9
LSS Re-Calibration Procedure 5-9

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
Requirements: 6-4
Procedure 6-4
6.3 Applying Silicone Dielectric Compound To Amp Connectors 6-5
Assembly 6-6
Disassembly 6-7
Wedge Lock 6-8
Service - Voltage Reading 6-9
6.4 Working With Deutsch Connectors 6-10
DT/DTP Series Assembly 6-10
DT/DTP Series Disassembly 6-10
HD30/HDP20 Series Assembly 6-10

MidWestTech | JLG 245-12 Scissor Lift Service Manual | Publication 3121313 Order the manual at mid-west-tech.com >

1.8 PRESSURE SETTING

Cold temperatures have a significant impact on pressure readings. JLG Industries Inc. recommends setting the pressures with the operating temperature between 15°-20°C (59° - 68°F). JLG Industries Inc. also recommends the use of a calibrated gauge. The pressures may be set with a tolerence of ± 3 bar (43.5 psi).

Table 1-8. Pressure Settings

Main Relief	Pump Charge Press
185 bar (2683 psi)	14 bar (203 psi)

1.9 COMPONENT WEIGHTS

Table 1-9. Component Weights

Component	Unit of Measure	
	kg	lbs
Fixed Platform	700	1543.2
Chassis	5600	12,345.9
Arm Assembly	7100	15,652.8
Lift Cylinder	720	1587

1.11 CRITICAL STABILITY WEIGHTS

⚠ WARNING

DO NOT REPLACE ITEMS CRITICAL TO STABILITY, SUCH AS BATTERIES OR SOLID TIRES, WITH ITEMS OF DIFFERENT-WEIGHT OR SPECIFICATION. DO NOT MODIFY UNIT IN ANY WAY TO AFFECT STABILITY.

Table 1-10. Critical Stability Weights

Component	Unit of Measure	
	kg	lbs
Wheel and Tire Assembly (each)	110	242.5
Wheel/Tire and Drive Assembly (each)	156	344
Batteries - Standard (each)	24.6	54.2

1.12 LUBRICATION

Hydraulic Oil

Table 1-11. Hydraulic Oil

HYDRAULIC SYSTEM OPERATING TEMPERATURE RANGE	SAE VISCOSITY GRADE
-18° to -5°C (0° to +23°F)	10W
-18° to +100°C (0° to +210°F)	10W-20, 10W-30
+10° to +100°C (+50° to +210°F)	20W-20

NOTE: *Hydraulic oils must have anti-wear qualities at least to API Service Classification GL-3, and sufficient chemical stability for mobile hydraulic system service. JLG Industries recommends Mobilfluid 424 hydraulic oil, which has an SAE viscosity index of 152.*

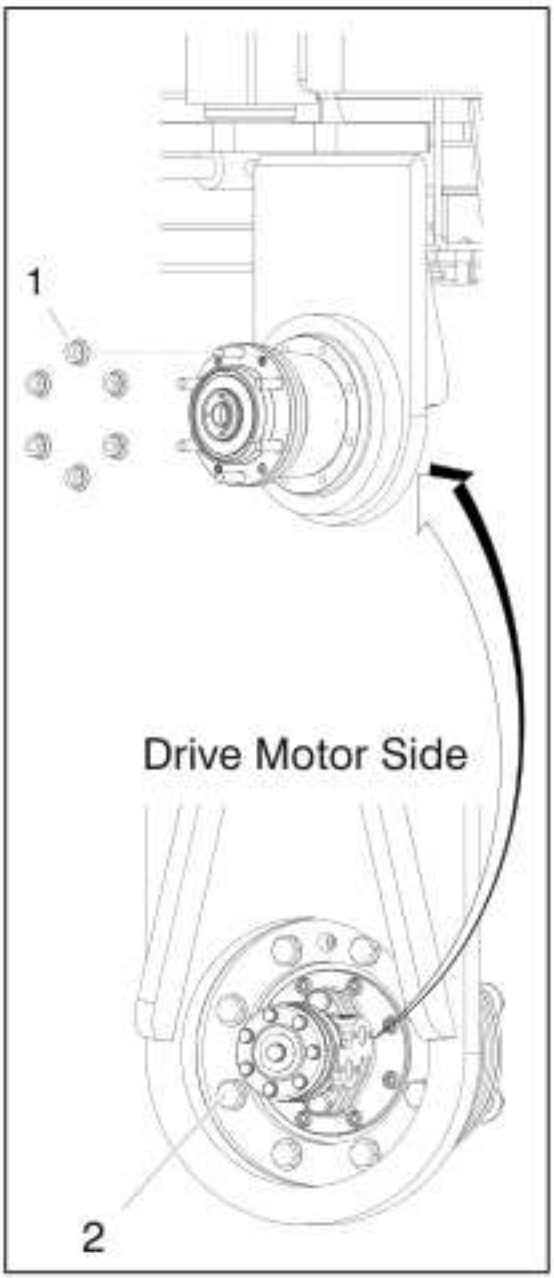
When temperatures remain below -7° C (20°F), JLG Industries recommends the use of Mobil DTE 13M.

NOTE: *Aside from JLG recommendations, it is not advisable to mix oils of different brands or types, as they may not contain the same required additives or be of comparable viscosities. If use of hydraulic oil other than Mobilfluid 424 or DTE 13M is desired, contact JLG Industries for proper recommendations.*

Table 1-12. Mobil DTE 11M Specs

	Mobil 424	Mobil DTE 13M
ISO Viscosity Grade	10W-30	#32
Specific Gravity	29.0	0.877
Pour Point, Max	-43°C (-45°F)	-40°C (-40°F)
Flash Point, Min	228°C (442°F)	166°C (330°F)
Viscosity		
at 40°C (104°F) at 100°C (212°F) Viscosity Index	55 cSt 9.3 cSt 152	33 cSt 6.5 cSt 140

MidWestTech | JLG 245-12 Scissor Lift Service Manual | Publication 3121313 Order the manual at mid-west-tech.com >



1. Torque to 480 Nm Dry (354 lb ft)
2. Torque to 313 Nm Dry (230.9 lb ft)

Figure 3-3. Hub Torque Values

Wheel Installation

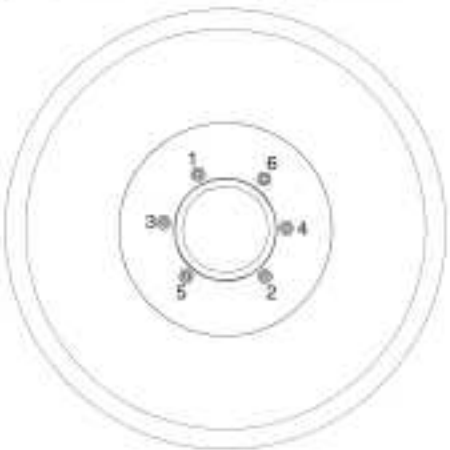
It is extremely important to apply and maintain proper wheel mounting torque.

⚠ WARNING

WHEEL NUTS MUST BE INSTALLED AND MAINTAINED AT THE PROPER TORQUE TO PREVENT LOOSE WHEELS, BROKEN STUDS, AND POSSIBLE SEPARATION OF WHEEL FROM THE AXLE. BE SURE TO USE ONLY THE NUTS MATCHED TO THE CONE ANGLE OF THE WHEEL.

Tighten the lug nuts to the proper torque to prevent wheels from coming loose. Use a torque wrench to tighten the fasteners. If you do not have a torque wrench, tighten the fasteners with a lug wrench, then immediately have a service garage or dealer tighten the lug nuts to the proper torque. Over-tightening will result in breaking the studs or permanently deforming the mounting stud holes in the wheels. The proper procedure for attaching wheels is as follows:

1. Start all nuts by hand to prevent cross threading. DO NOT use a lubricant on threads or nuts.
2. Tighten nuts in the following sequence:.



3. The tightening of the nuts should be done in stages. Following the recommended sequence, tighten nuts per wheel torque.

Table 3-2. Wheel Torque Chart

TORQUE SEQUENCE		
1st Stage	2nd Stage	3rd Stage
210 - 270 Nm (150-190 lb ft)	320-380 Nm (230 - 270 lb ft)	440 - 480 Nm (305 - 343 lb ft)

4. Wheel nuts should be torqued after the first 50 hours of operation and after each wheel removal. Check torque every 3 months or 150 hours of operation.

MidWestTech | JLG 245-12 Scissor Lift Service Manual | Publication 3121313 Order the manual at mid-west-tech.com >

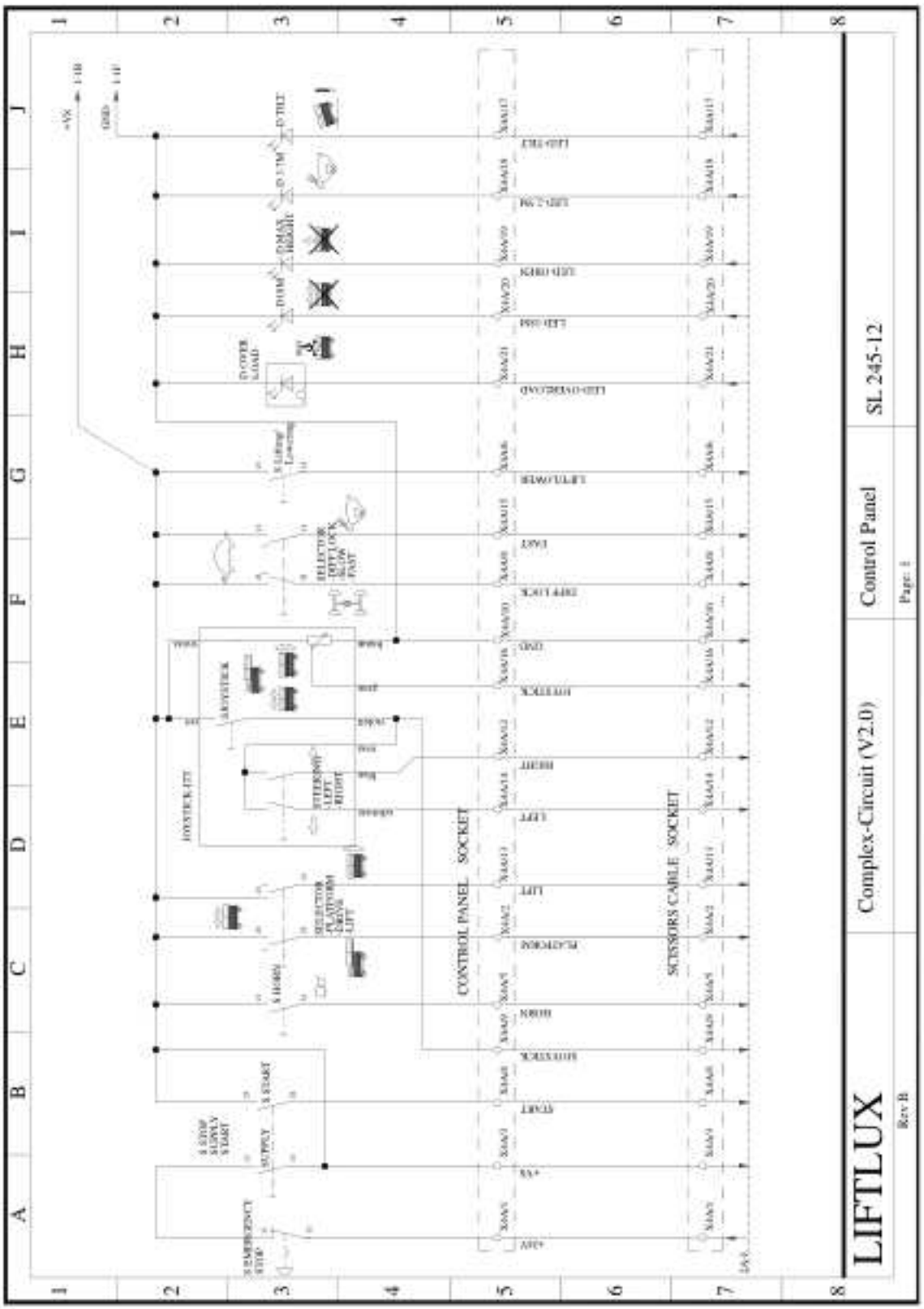


Figure 6-18. Electrical Schematic - Sheet 1 of 18

MidWestTech | JLG 245-12 Scissor Lift Service Manual | Publication 3121313 Order the manual at mid-west-tech.com >