SKYJACK

SERVICE MANUAL

SJ46 AJ+, SJ46 AJ, SJ51 AJ

ARTICULATING BOOMS



229042AGA
September 2025
ANSI/CSA, CE, AS

MidWestTech | Skyjack SJ46 AJ+, SJ46 AJ, SJ51 AJ Articulating Boom Lift Service Manual... Order the manual at mid-west-tech.com >

Table of Contents

Section 1 – Scheduled Maintenance 13

1.1 Read and Heed 13

1.1-1 MEWP and Mobile Elevating Work Platform Definition 13

1.1-2 Purpose of Equipment 13

1.1-3 Use of Equipment 13

1.1-4 Manual 13

1.1-5 Service Policy and Warranty 13

1.1-6 Operator Safety Reminders, Warnings and Precautions 13

1.2 Maintenance and Service 14

1.2-1 Maintenance and Inspection Schedule 14

1.2-2 Owner's Annual Inspection Record 14

1.2-3 Replacement Parts 14

1.2-4 Maintenance and Service Safety Tips. 14

1.2-5 Hydraulic System & Component Maintenance and Repair 15

1.2-6 Hydraulic Maintenance Hints 15

1.2-7 Railing Maintenance and Repair. 16

1.3 Scheduled Maintenance 17

1.3-1 Service Bulletins 17

1.3-2 Maintenance and Inspection 17

1.3-3 Maintenance Instructions 17

1.4 Owner's Annual Inspection Record 18

1.5 Pre-Delivery/Maintenance Inspection Checklist 19

1.6 Scheduled Maintenance Inspections 20

1.6-1 Electrical 20

1.6-2 Hydraulic 20

1.6-3 Labels 20

1.6-4 Limit switches 20

1.6-5 Engine Compartment 21

1.6-6 Control Compartment 24

1.6-7 Base 26

1.6-8 Platform 28

1.6-9 Boom Assembly 29

1.6-10 Optional equipment 30

1.7 Function Tests 31

Section 2 – Maintenance Tables and Diagrams 33

2.1 Standard Hose Numbering System 33

2.2 Torque Specifications for Fasteners (US Imperial) 35

MidWestTech | Skyjack SJ46 AJ+, SJ46 AJ, SJ51 AJ Articulating Boom Lift Service Manual... Order the manual at mid-west-tech.com >

2.3 Torque Specifications for Fasteners (Metric) 36
2.4 Torque Specifications for Hydraulic Couplings & Hoses 37
2.5 MEWP Torque Specifications 38
2.6 Axle Torque Specifications 39
2.7 Axle Maintenance Intervals 40
2.8 Maximum Platform Capacity 41
2.9 Tire Specifications 41
2.10 Floor Loading Pressure 42
2.11 Hydraulic Specifications 43
2.12 Hydraulic & Gear Oils 44
2.13 Specifications & Features - Dimensions & Speeds 45
2.14 Engine Specifications 47
2.15 Reach & Dimension Diagrams - SJ46 AJ+ ANSI/CSA 48
2.16 Reach & Dimension Diagrams - SJ46 AJ CE & AS 49
2.17 Reach & Dimension Diagrams - SJ51 AJ CE & AS 50
2.18 Axle Oscillation Diagram 51

Section 3 – System Component Identification and Schematics 53

3.1 Electrical Symbol Chart 54
3.2 Hydraulic Symbol Chart 55
3.3 Wire Number and Colour Chart 56
3.4 Hydraulic Parts List 57
3.5 Electrical Parts List 60
3.6 Brake Manifold Components and Ports 63
3.7 Rotary Manifold Ports 64
3.8 Drive and System Pump Ports 65
3.9 Drive and System Pump Ports 66
3.10 Drive Motor Ports 67
3.11 Jib Valve Ports 68
3.12 Pressure Reducing Valve Ports 69
3.13 Main Manifold Ports 71
3.14 Generator Control Valve and Manifold 74
3.15 Major Components 75
3.16 Main Harness and Fuel Level Switch Harness 76
3.17 Interface Harness - Deutz D2.9L 77
3.18 Interface Harness - Deutz D2011 78
3.19 Engine Interface Harness - Deutz D2.2 79
3.20 Interface Harness - Kubota 80
3.21 ECU Engine Wiring Diagram - Deutz D2011 81
3.22 Glow Plug Harnesses - Deutz D2.9L 82
3.23 Glow Plug Harnesses - Deutz D2011 83
3.24 Platform Harnesses 84
3.25 Platform Control Cables - CE & AS 85

MidWestTech | Skyjack SJ46 AJ+, SJ46 AJ, SJ51 AJ Articulating Boom Lift Service Manual... Order the manual at mid-west-tech.com >

3.26 Limit Switch Connections - ANSI/CSA 86
3.27 Limit Switch Connections - CE & AS 87
3.28 Load Sensing Cable Connections - CE & AS 88
3.29 All Motion Alarm Connections - CE & AS 89
3.30 Flashing Amber Light Connections 90
3.31 SGE Wiring Diagram 91
3.32 SGE Connections - ANSI/CSA 92
3.33 Moba Load Cell Connections - ANSI/CSA 93
3.34 Footswitch Connections - ANSI/CSA 94
3.35 CANbus Cable Connections - ANSI/CSA 95
3.36 Power Cable Connections - ANSI/CSA 96
3.37 Oil Cooler and 3.5 kW Generator Base Control Box Wiring 97
3.38 Generator (3.5 kW) Platform Control Box Wiring 98
3.39 Oil Cooler and 12 kW Generator Base Control Box Wiring 99
3.40 Generator (12 kW) Platform Control Box Wiring 100
3.41 12kW Generator Electrical Connections 101
3.42 Load Circuit Wiring - SJ46 AJ+ 102
3.43 Hydraulic Schematic - ANSI/CSA 103
3.44 Hydraulic Schematic - CE & AS 104
3.45 Platform Control Box Wiring - ANSI/CSA 105
3.46 Platform Control Box Wiring - CE 106
3.47 Platform Control Box Wiring - AS 107
3.48 Base Control Box Wiring - ANSI/CSA 108
3.49 Base Control Box Wiring - ANSI/CSA with Positive Air Shut-Off Option 109
3.50 Base Control Box Wiring - CE Deutz D2.2 110
3.51 Base Control Box Wiring - CE Deutz D2011 111
3.52 Base Control Box Wiring - AS 112
3.53 Electrical Schematic - ANSI/CSA 113
3.54 Electrical Schematic - CE with Deutz D2.2 114
3.55 Electrical Schematic - CE with D2011 115
3.56 Electrical Schematic - AS 116
3.57 Interface & Engine Electrical Schematic - Deutz D2.9L 117
3.58 Interface & Engine Electrical Schematic - Deutz D2011 118
3.59 Engine Electrical Schematic - Deutz D2.2 119
3.60 Interface & Engine Electrical Schematic - Kubota WG2503 120

Section 4 – Troubleshooting Information 121

4.1 Introduction 121
4.2 Electrical System - ANSI/CSA 122
4.2-1 All Controls are Inoperative from the Base or Platform Console 122
4.2-2 All Controls are Inoperative from the Base Console 124
4.2-3 The Engine will not Crank from the Base or Platform 124
4.2-4 The Engine will not Crank from the Base 125

MidWestTech | Skyjack SJ46 AJ+, SJ46 AJ, SJ51 AJ Articulating Boom Lift Service Manual... Order the manual at mid-west-tech.com >

Table 2.13 Specifications & Features - Dimensions & Speeds

	SJ46 AJ+ ANSI/CSA		SJ46 AJ CE & AS	SJ51 AJ CE & AS
Height & Reach				
Working Height	15.93 m	52' 3-1/4"	16.10 m	17.55 m
Platform Elevated Height	14.10 m	46' 3-1/4"	14.10 m	15.55 m
Drive Height	Driveable at all heights			
Horizontal Reach - Maximum	7.54 m	24' 8-3/4"	7.54 m	9.03 m
Horizontal Reach at Max Height	2.47 m	8' 1"	2.47 m	2.86 m
Tailswing	0	0	0	0
Up and Over Clearance - Platform	7.53 m	24' 8-3/4"	7.53 m	7.53 m
Up and Over Clearance - Main Boom	7.45 m	24' 5-1/4"	7.45 m	7.45 m
Platform				
Platform Size	0.76 x 1.52 m 0.76 x 1.83 m	30" x 60" 30" x 72"	0.76 m x 1.52 m 0.76 m x 1.83 m	0.76 m x 1.52 m 0.76 m x 1.83 m
Platform Rotation	178°	178°	178°	178°
Platform Height - Stowed	0.28 m	11"	0.25 m	0.25 m
Platform Height - Overall	1.35 m	53"	1.33 m	1.33 m
Railing Height - Platform	1.11 m	44"	1.10 m	1.10 m
Dimensional Data				
Height - Stowed	2.06 m	6' 9"	2.06 m	2.06 m
Length - Stowed	6.35 m	20' 10"	6.35 m	7.10 m
Width	2.29 m	7' 6"	2.29 m	2.29 m
Wheelbase	2.03 m	6' 8"	2.03 m	2.03 m
Ground Clearance - Chassis	0.39 m	15-1/4"	0.39 m	0.39 m
Ground Clearance - Axle	0.33 m (front)	13" (front)	0.27 m (rear)	0.27 m (rear)
Axle Oscillation	0.09 m	3"-5/8	0.09 m	0.09 m
Turning Radius - Inside	1.50 m	4' 11-1/4"	1.50 m	1.50 m
Turning Radius - Outside	4.34 m	14' 3"	4.34 m	4.34 m
Turret Rotation	355°	355°	355°	355°
Lift Capacity				
Max Lift Capacity without attachment	300 kg	660 lb	227 kg	227 kg
Max Persons without Attachment	2	2	2	2
Max Lift Capacity with attachment	272 kg	600 lb	227 kg	227 kg
Max Persons with Attachment	1	1	2	2
Jib				
Jib Length - Stowed	1.42 m	55-3/4"	1.42 m	1.42 m

2041AD

MidWestTech | Skyjack SJ46 AJ+, SJ46 AJ, SJ51 AJ Articulating Boom Lift Service Manual... Order the manual at mid-west-tech.com >

Section 4 – Troubleshooting Information

4.1 Introduction

The following pages contain a table of Troubleshooting for locating and correcting most service trouble which can develop. Careful and accurate analysis of the systems listed in the table of Troubleshooting will localize the trouble more quickly than any other method. This manual cannot cover all possible troubles and deficiencies that may occur. If a specific trouble is not listed, isolate the major component in which the trouble occurs, isolate whether the problem is electrical or hydraulic, and then isolate and correct the specific problem.

The content of this section is separated into "probable cause" and "remedy." The information in the left-hand column, preceded by a number, represents the "probable cause." The information in the right-hand column, in bold text, represents the "remedy" to the "probable cause" directly beside it. See the example below for clarification.

1. Probable cause	**Remedy**

MidWestTech | Skyjack SJ46 AJ+, SJ46 AJ, SJ51 AJ Articulating Boom Lift Service Manual... Order the manual at mid-west-tech.com >

Kubota WG2503 Diagnostic Trouble Codes

DTC	(J1939) SPN	(J1939) FMI	Detected Item/Hardware
2116	29	0	• Wiring harness open/short/damage • FPP malfunction • IVS malfunction
2122	91	3	• Wiring harness open/short/damage • FPP malfunction
2123	91	3	• Wiring harness open/short/damage • FPP malfunction
2127	29	4	• Wiring harness open/short/damage • FPP malfunction
2128	29	3	• Wiring harness open/short/damage • FPP malfunction
2135	51	31	• TPS malfunction
2139	91	1	• Wiring harness open/short/damage • FPP malfunction • IVS malfunction
2140	29	1	• Wiring harness open/short/damage • FPP malfunction • IVS malfunction
2300	1268	5	• a short to ground or open circuit in the harness • an open internal to the primary coil
2301	1268	6	• a short to power in the harness • a short internal to the primary coil
2303	1269	5	• a short to ground or open circuit in the harness • an open internal to the primary coil
2304	1269	6	• a short to power in the harness • a short internal to the primary coil
2306	1270	5	• a short to ground or open circuit in the harness • an open internal to the primary coil
2307	1270	6	• a short to power in the harness • a short internal to the primary coil
2309	1271	5	• a short to ground or open circuit in the harness • an open internal to the primary coil
2310	1271	6	• a short to power in the harness • a short internal to the primary coil

MidWestTech | Skyjack SJ46 AJ+, SJ46 AJ, SJ51 AJ Articulating Boom Lift Service Manual... Order the manual at mid-west-tech.com >

5.4-2 Verify Proper Operation of the Load Sensing System

Overload Status Chart

Weight	Indicator Light	Load Cell LED Display	Audible Alarm	MEWP Functions
kg (Zero)	OFF	Error - OFF Alarm - OFF Zero/Tare - ON (orange) Power - FLASHING (green)	OFF	ENABLED
kg (Work Mode @ 244+)	FLASHING	Error - OFF Alarm - FLASHING (red) Zero/Tare - OFF Power - FLASHING (green)	PULSING	DISABLED
kg (Travel Mode @ 244+)	FLASHING	Error - OFF Alarm - FLASHING (red) Zero/Tare - OFF Power - FLASHING (green)	PULSING	ENABLED

1. Ensure MEWP is on firm level ground.
2. Fully "" retract and "" lower boom.
3. Turn engine "" off.
4. Ensure both "" emergency stops are pulled out and platform engine enable switch is in " " on position.
   Result: Overload indicator light and audible alarm will pulse two times.
5. Ensure platform is unloaded and is free from any surface contact.
   Result: Green power LED is flashing, orange LED is ON, red alarm LED is OFF and red error LED is OFF.
6. Place a 244 kg load on platform.
   Result: Platform indicator light is flashing, load cell red alarm LED is ON, and audible alarm is pulsing.
7. On base control console, start engine and extend boom by > 30 cm.
   Result: All drive and boom function are disabled.
8. Remove load from platform.
   Result: All drive and boom function are enabled and all warning indicators are OFF.

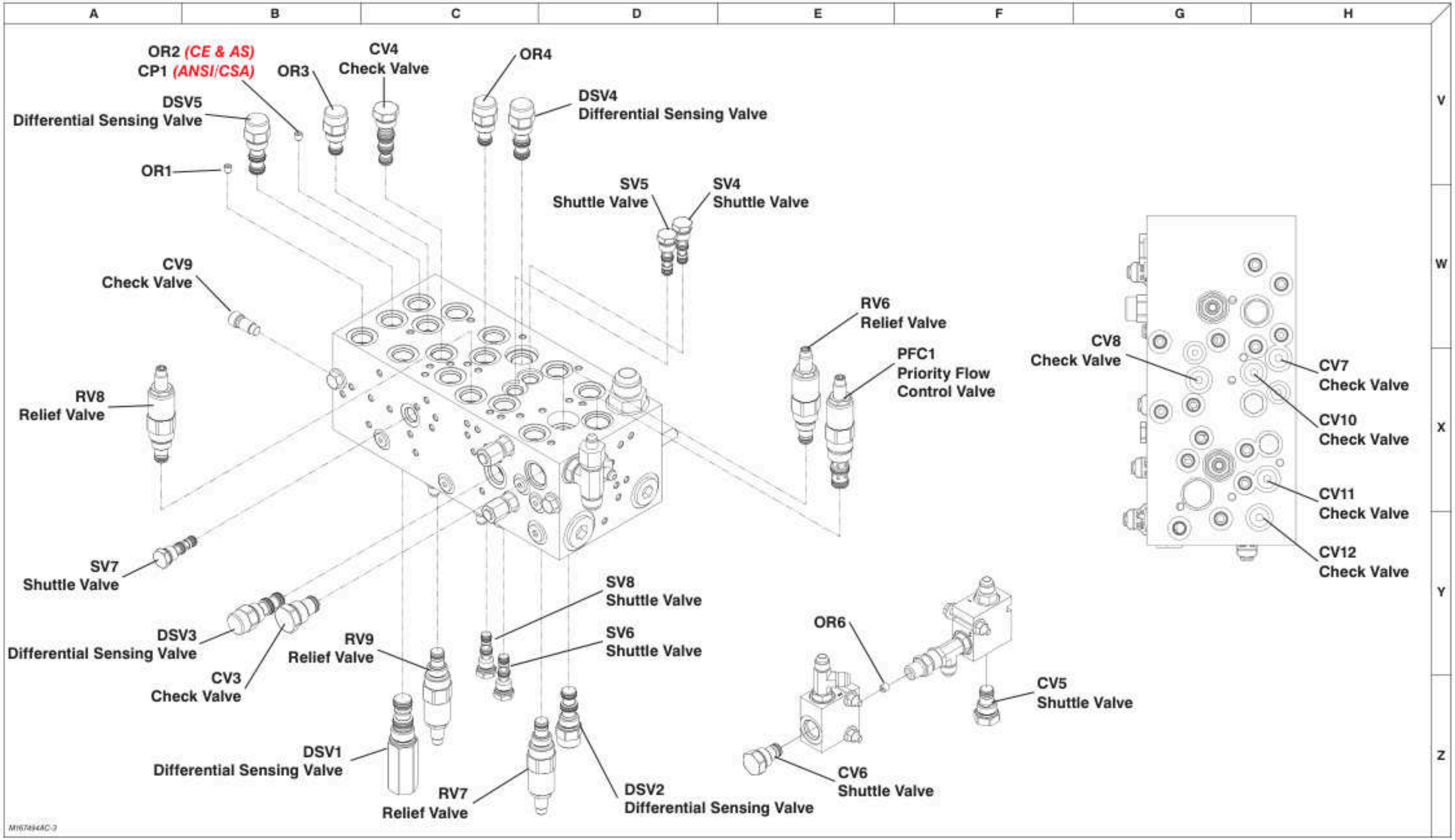
NOTE
Refer to Section 4 for load sensing system troubleshooting.

MidWestTech | Skyjack SJ46 AJ+, SJ46 AJ, SJ51 AJ Articulating Boom Lift Service Manual... Order the manual at mid-west-tech.com >

5.2-8 OCM Pin Voltage Reference - CE & AS 204
5.2-9 SCM Pin Reference - ANSI/CSA 207
5.2-10 Check I/O Error - ANSI/CSA 213
5.2-11 How to Unlock and Modify the SCM - ANSI/CSA 214
5.2-12 SCM Select Model - ANSI/CSA 216
5.2-13 SCM Weight Calibration - ANSI/CSA 218
5.2-14 SCM Weight Calibration Flowchart - ANSI/CSA 219
5.2-15 CAN Bus Communication Check - ANSI/CSA 221
5.3 Platform 222
5.3-1 Fly Boom Switch Voltage References 222
5.3-2 Platform Controller Voltage References 223
5.3-3 Load cell 10% error troubleshooting 225
5.3-4 Replace the load cell 227
5.4 Load Sensing System - CE & AS 231
5.4-1 Load Sensing System 231
5.4-2 Verify Proper Operation of the Load Sensing System 232
5.4-3 Calibration of Load Sensing System (with "Teach In" Handset) 233
5.5 Boom 234
5.5-1 Check Wear Pads 234
5.5-2 Shim Wear Pads 234
5.5-3 Cable Carrier Repair 234
5.5-4 Rotary Actuator Bolt Torque Procedure 234
5.5-5 Master Cylinder Replacement 235
5.5-6 Limit Switch Locations - SJ46 AJ+ ANSI/CSA 236
5.5-7 Limit Switch Locations - SJ46 AJ & SJ51 AJ CE & AS 237
5.6 Turret 238
5.6-1 Check and Replace the High Pressure Filter 238
5.6-2 Ring Gear Bolt Torque Sequence 238
5.6-3 Check the Ring Gear for Axial Wear 239
5.6-4 Electronic Tilt Switch Setup Procedure 241
5.6-5 Battery Replacement 243
5.7 Deutz Diesel Engines 244
5.7-1 Replace Engine Oil and Filter 244
5.7-2 Replace the Fuel Filter 245
5.7-3 Replace the Air Filter 245
5.7-4 Check the Engine Belt 245
5.7-5 Check the Oil Cooler (Deutz D2011 only) 245
5.7-6 Retrieve Engine Fault Codes - Deutz D2.9L 246
5.7-7 Deutz D2.9L Fault Codes 247
5.8 Hydraulic Tank 267
5.8-1 Hydraulic Oil Replacement 267
5.8-2 Hydraulic Filter Replacement 267
5.9 Kubota WG2503 Dual Fuel Engine 268

MidWestTech | Skyjack SJ46 AJ+, SJ46 AJ, SJ51 AJ Articulating Boom Lift Service Manual... Order the manual at mid-west-tech.com >

3.13 Main Manifold Hydraulic Components



MidWestTech | Skyjack SJ46 AJ+, SJ46 AJ, SJ51 AJ Articulating Boom Lift Service Manual | Publication 229042AGA
Order the manual at mid-west-tech.com >