Service and Maintenance Manual

Models

100SX
110SX
110SXJ
120SXJ

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SECTION 1. SPECIFICATIONS

1.1 CAPACITIES

Engine Crankcase
Deutz F4L912 w/Filter - 13.2 quarts (12.5 liters)

Fuel Tank
26 gallons (98 liters)

Hydraulic Tank
50 gallons (189 liters)

1.2 COMPONENT DATA

NOTE: *Tolerance on all engine rpm settings is plus or minus 10%.*

Engine - Deutz F4L912

Fuel - Diesel

Oil Capacity (crankcase only) - 12.7 quarts (12 liters)

Low (Mid) RPM - 1800

High RPM - 2400

Alternator - 55 Amp

Battery - 1000 cold cranking Amps, 210 minutes reserve capacity, 12 VDC

Fuel Consumption

Low RPM - 2.4 gph (9.1 lph)

High RPM - 3.8 gph (14.2 lph)

Horsepower - 70 @ 2400 RPM, no load

Torque Hub

Input Torque - 116 ft. lbs.

Input Speed - 2734 rpm

Output Torque - 10236 ft. lbs.

Output Speed - 31 rpm

Static Brake Torque - 147.5 ft. lbs.

Release Pressure - 261 psi

Max. Release Pressure - 725 psi

Drive Motor

Max. Displacement - 2.75 in^3 (45 cc)

Min. Displacement - 0.93 in^3 (15.2 cc)

Output Speed at Max. Displacement - 3000 rpm

Output speed at Min. Displacement - 4000 rpm

1.3 PERFORMANCE DATA - 100SX, 110SX & 110SXJ

Platform Height

100SX - 100ft. (30.5 m)
110SX & 110SXJ - 110 ft. (33.5 m)

Horizontal Outreach

60 ft. (18.3 m)

Below Ground Reach (110SX only)

12 ft. (3.6 m)

Swing

360° Continuous

Platform Capacity - Restricted (100SX & 110SX only)

1000 lbs. (450 kg)

Platform Capacity - Unrestricted

500 lbs. (230 kg)

Platform Rotator

180° Hydraulic

Jib Range of Articulation - 110SXJ

10 ft. (3.05 m) 95 degrees (+15, -80)

Overall Width - Axles Retracted

8 ft. 2 in. (2.49 m)

Overall Width - Axles Extended

10 ft. 10 in. (3.3 m)

Tailswing (Axles Extended)

2 ft. 10 in. (86 cm)

Stowed Height

10 ft. (3.0 m)

Stowed Length

100SX - 37ft. 10 in. (11.55 m)
110SX - 38 ft. 7 in. (11.76 m)
110SXJ - 44 ft. 2 in. (13.46 m)

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3. Remove piston (7) from end cover (2).
4. Remove o-ring (5), back-up ring (6), o-ring (8) and back-up ring (9) from piston (7).
5. Remove separators (13) from housing (21).
6. Remove stack assembly, consisting of discs (11), return plate (14) and friction discs (12) from housing (21).

NOTE: *Not all models use the same number of springs or spring pattern. Record this information for assembly purposes. Spring retainer (17) was not used in earlier models.*

7. Remove dowel pins (20), springs (15 & 16) and spring retainer (17) from housing (21).
8. Remove retaining ring (18) from housing (21).
9. Remove shaft by pressing or using a soft mallet on male end of shaft (10).

NOTE: *Earlier models did not use retaining ring (22).*

10. Remove retaining ring (22) and bearing (19) from shaft (10).
11. Press Rotary oil seal (23) from housing (21).

Cleaning and Inspection

1. Clean all parts thoroughly.
2. Closely inspect all parts for excessive wear, cracks, and chips. Replace parts as necessary.
3. Discard seals and o-rings.
4. Closely inspect bearings and bearing contact surfaces. Replace as necessary.

NOTE: *Bearings may be reused if, after thorough inspection, they are found to be in good condition.*

Assembly

NOTE: *Lubricate all seals and o-rings with clean hydraulic oil prior to assembly.*

1. Clean all parts thoroughly before assembly.
2. Press new rotary oil seal (23) into housing (21). Note direction of the seal.

NOTE: *Earlier models did not use retaining ring (22).*

3. Install new bearing (19) and retaining ring (22) on shaft (10).
4. Insert shaft assembly and retaining ring (18) in housing (21).

NOTE: *Be sure to use the same number of springs and spring pattern as recorded during disassembly. Spring retainer (17) was not used in earlier models.*

5. Insert dowel pins (20), spring retainer (17) and springs (15 & 16) in housing (21).
6. Position new large diameter return plate (14) in housing with tabs guided by dowel pins (20) until disc rests on springs (15 & 16).

⚠ IMPORTANT

DISCS (11, 14) AND FRICTION DISCS (12) SHOULD REMAIN DRY DURING INSTALLATION. NO OIL RESIDUE SHOULD BE ALLOWED TO CONTAMINATE DISC SURFACES.

7. Place a new friction disc (12) on shaft (10) until it contacts return plate (14).
8. Add additional new discs (11) and new friction discs (12) as required to complete assembly.
9. Insert separators (13) in holes of return plate.
10. Install new o-ring (5), new backup ring (6), new o-ring (8) and new back-up ring (9) on piston (7). Note order of o-rings and back-up rings. Insert piston (7) into end cover (2) being careful not to shear o-rings or back-up rings.
11. Install new case seal (4) in housing (21) then install bleeder screw (3) in end cover (2).
12. Position end cover (2) on housing (21) aligning dowel pins (20) with holes in end cover.

NOTE: *If available, a hydraulic press will simplify installation of end cover on housing. Clamp cover in position while tightening capscrews.*

13. Press on inner ring of bearing (37) until it shoulders on shaft (45) to eliminate binding on bearings. Be certain to restrain opposite end of shaft to avoid excessive thrust loading on bearing (54).

⚠ IMPORTANT

IF HYDROSTATIC BENCH TESTING IS PERFORMED ON THE BRAKE ASSEMBLY, RELEASE PRESSURE SHOULD NOT EXCEED 138 BAR UNLESS TWO ADDITIONAL BOLTS ARE USED FOR SUPPLEMENTAL CLAMPING.

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SECTION 6. SCHEMATICS

6.1 GENERAL

This section contains schematics to be used for locating and correcting most of the operating problems which may develop. If a problem should develop which is not presented in this section or which is not corrected by listed corrective actions, technically qualified guidance should be obtained before proceeding with any maintenance.

6.2 TROUBLESHOOTING

It should be noted that there is no substitute for a thorough knowledge of the equipment and related systems.

It should be recognized that the majority of the problems arising in the machine will be centered in the hydraulic and electrical systems.

The first rule for troubleshooting any circuit that is hydraulically operated and electrically controlled is to determine if the circuit is lacking hydraulic oil and electrical control power. This can be ascertained by overriding the bypass valve (mechanically or electrically) so that oil is available to the function valve, then overriding the function valve mechanically. If the function performs satisfactorily, the problem exists with the control circuit.

6.3 HYDRAULIC CIRCUIT CHECKS

The best place to begin the problem analysis is at the power source (pump). Once it is determined that the pump is serviceable, then a systematic check of the circuit components, beginning with the control, would follow. For aid in troubleshooting, refer to the Illustrated Parts Manual for hydraulic diagrams of the various circuits.

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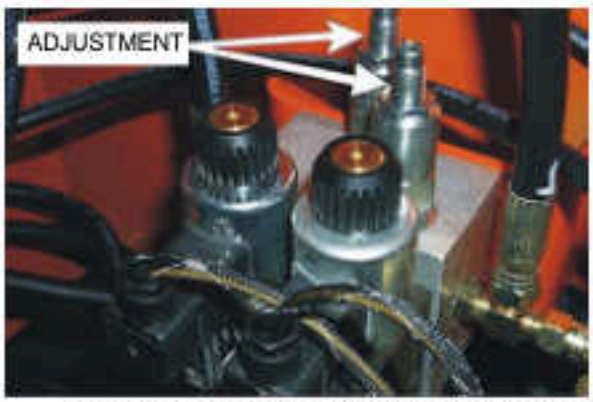
2. Lift Down Relief.
   a. Monitor pressure gauge at quick-connect (G port) on main valve.
   b. Bottom out Lift Down function.
   c. Loosen nut at lift down relief and adjust pressure to 1500 psi (103 bar) using an Allen wrench. Tighten nut.
3. Swing Relief.
   a. Monitor pressure gauge at quick-connect (G port) on main valve.
   b. Ensure turntable lock is engaged.
   c. Bottom out Swing Right function.
   d. Loosen nut at swing right relief and adjust pressure to 1200 psi (83 bar) using an Allen wrench. Tighten nut.
   e. Bottom out Swing Left function.
   f. Loosen nut at swing left relief and adjust pressure to 1200 psi (83 bar) using an Allen wrench. Tighten nut.
4. Extend-A-Reach Relief.
   a. Monitor pressure gauge at quick-connect on main valve at Port 8.
   b. Bottom out Extend-A-Reach Up function.
   c. Loosen nut at extend-a-reach up relief and adjust pressure to 3000 psi (207 bar) using an Allen wrench. Tighten nut.
   d. Monitor pressure gauge at quick-connect on main valve at Port 7.
   e. Bottom out Extend-A-Reach Down function.
   f. Loosen nut at extend-a-reach down relief and adjust pressure to 1400 psi (97 bar) using an Allen wrench. Tighten nut.
5. Platform Rotate Relief.
   a. Monitor pressure gauge at quick-connect on main valve.
   b. Bottom out Rotate Right function.
   c. Loosen nut on rotate right relief and adjust pressure to 2500 psi (172 bar). Tighten nut.
   d. Bottom out Rotate Left function.
   e. Loosen nut on rotate left relief and adjust pressure to 2500 psi (172 bar). Tighten nut.
6. Platform Level Relief.
   a. Monitor pressure gauge at quick-connect on main valve at Port 11.
   b. Bottom out Platform Level Down function.
   c. Loosen nut on platform level down relief and adjust to 2200 psi (152 bar).Tighten nut.
   d. Monitor pressure gauge at quick-connect on main valve at Port 12.
   e. Bottom out Platform Level Up function.
   f. Loosen nut on platform level up relief and adjust to 2500 psi (172 bar). Tighten nut.

Frame Mounted Valves



Back out steer adjustments to start setting pressures.

1. Rear Steer.



   a. Steer Select Switch should be in crab or compound steer.
   b. Operate steer switch right or left to set rear steer pressure.
   c. Pressure should be 2850 psi (197 bar).

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