

# Technical Document

Product Family | **Johnstone**

By SAMES-KREMLIN

Part Number | **900-001 Fluid Section**



## 900-001 SHOVEL FLUID SECTION



**IMPORTANT: READ THIS MANUAL CAREFULLY BEFORE INSTALLING, OPERATING, OR SERVICING THIS EQUIPMENT. Refer to Safety Instruction document 582184110**



**WHEN REPAIRING THE AIR MOTOR TURN OFF THE AIR SUPPLY AND BLEED THE MATERIAL PRESSURE FROM THE PUMPING SYSTEM.**

### SERVICE KITS

Use only SAMES-KREMLIN Inc. - replacement parts to insure compatibility and longest life.

- Fluid Section Repair Kit : 900-001RK
- Packing Gland Seal Kit: See Packing Gland

### SPECIFICATIONS

Johnstone Air Motor	Rexson Air Motor
6in. / 24:1	3000 -14cm / 20:1
8in. / 42:1	5000 -19cm / 37:1
10in. / 65:1	7000 - 25cm / 62:1
Volume cycle	197cc (12in <sup>3</sup> )
Outlet Port Size	1 1/4in. NPT
Operating Range	0-442 bar (6500 Psi)
Maximum viscosity	15,000,000cP (Heavy Duty Elevator)

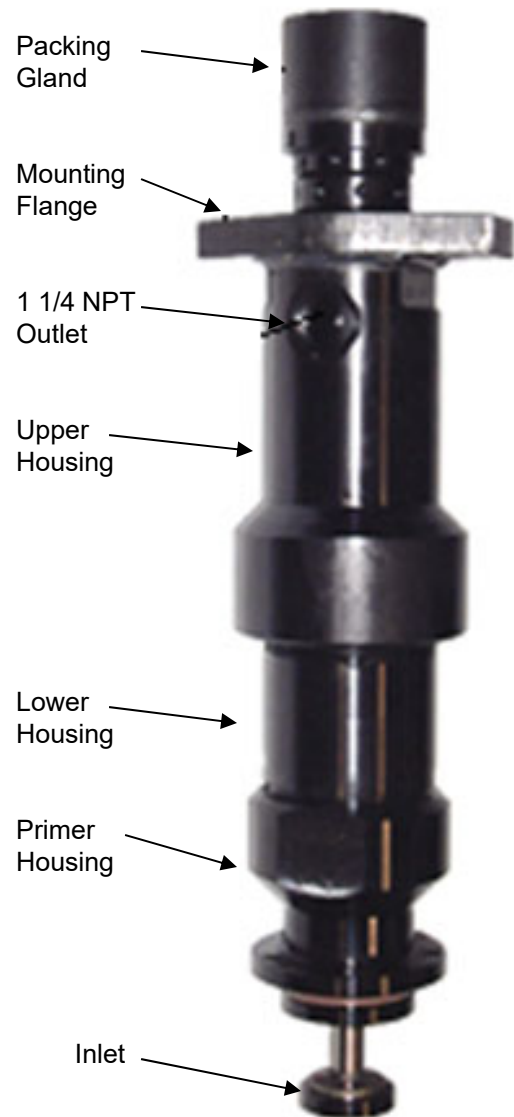


**DO NOT OPERATE AIR MOTOR AT PRESSURES ABOVE 100PSI (6.8 BAR).**

### MAINTENANCE SCHEDULE

EVERY BARREL CHANGE:

1. Check/Add oil to the Packing Gland. Fill the Packing Cup with type "T" lubricant 668-990-002 (Quart) 668-990-001(Gallon)
2. Bleed air from Fluid Section.
3. Check for material Leakage: (rebuild if leaking at the threads)
4. Check for pump signal stroking.  
(signal stroking is the displacement rod moving very quickly in a direction without a pump output). If the pump is signal stroking, bleed air from bleeder valve opposite the outlet port. If bleeding does not correct signal stroking rebuild Fluid Section.
5. Depressurize when not in use.



### OPERATION

The Pump is double acting (output in both directions).

When the Pump is going in the up direction the upper check closes and material is pumped out. The lower checks open allowing the lower chamber to be filled. The primer checks help bring viscous material into the chamber. In the down direction the upper check opens and the lower check closes allowing material to be pumped out. The different diameters of the piston rod displace the material.

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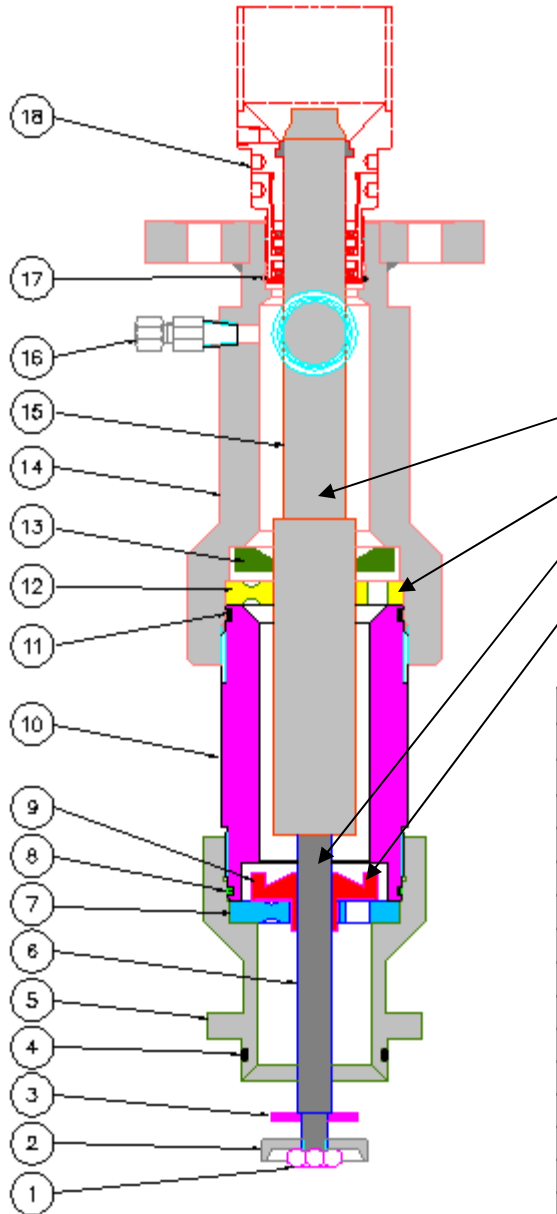
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## 900-001 Shovel Fluid Section



Caution: Do not over tighten the Housings.  
Maximum torque  
200 ft. Lbs. (272 N-m)



Fluid Section Pump Ratio			Vol. / Cycle
6 in	8 in	10 in	12.0 cubic In. (196.6 cc)
24:1	42:1	65:1	

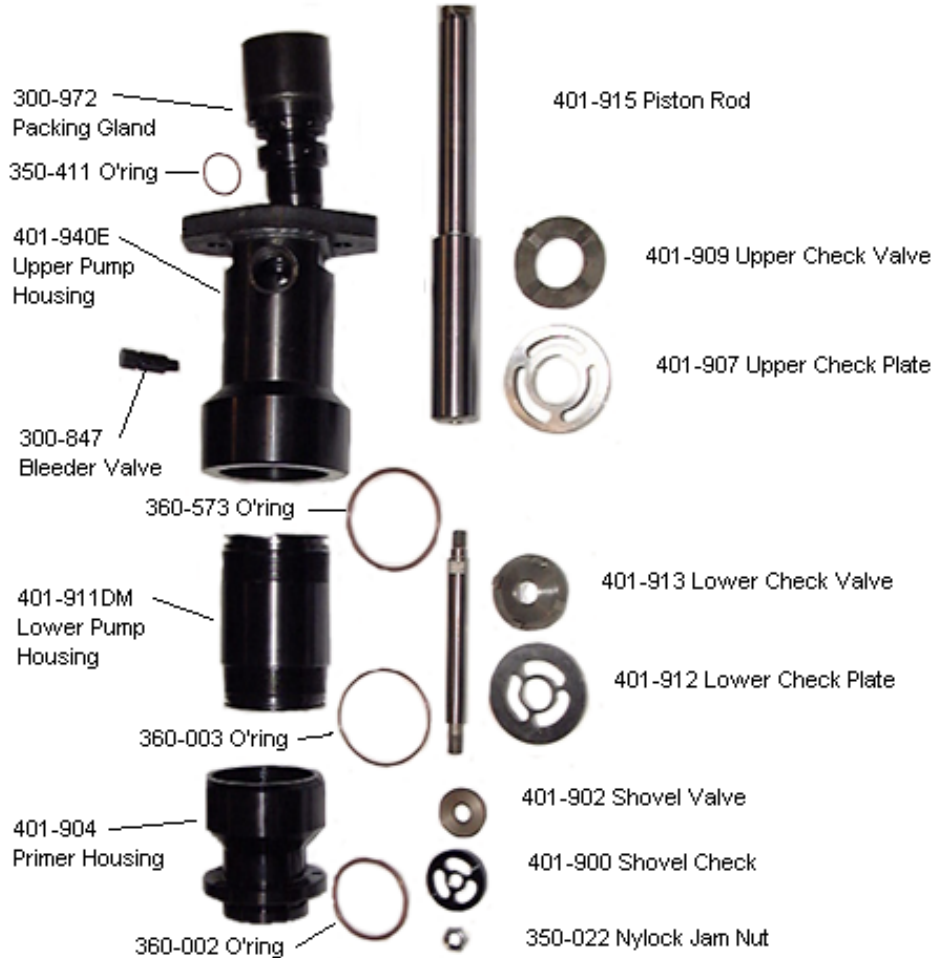
### Fluid Section Wear Tolerance Limits

- Displacement Rod Minimum O.D. = 1.9425.in
- Upper Check Plate Maximum I.D. = 1.9460 in.
- Primer Rod Minimum O.D. = 0.8461 in
- Lower Check Valve Maximum I.D. = 0.8500 in.

**Note:** The repair kit 900-001RK contains extra O-Rings that are used with older style assemblies.

Repair Kit 900-001RK (* indicates repair kit items)			
18	1	REF	Packing Gland Assembly
17*	1	350-411	O-Ring Viton
16*	1	300-847	Bleeder Valve 1/4 NPT
15*	1	401-915	Displacement Rod
14	1	401-940E	Upper Pump Housing
13*	1	401-909	Upper Check Valve
12*	1	401-907	Upper Check Plate
11*	1	360-573	O-Ring Viton
10	1	401-911DM	Lower Pump Housing
9*	1	401-913	Lower Check Valve
8*	1	360-003	O-Ring Viton
7*	1	401-912	Lower Check Plate
6*	1	401-903	Primer Rod
5	1	401-904	Primer Housing
4*	1	360-002	O-Ring Viton
3	1	401-902	Primer Check
2	1	401-900	Primer Plate
1*	1	350-022	Nylock Jam Nut 5/8-18
DET.	QTY.	PART No.	Description

900-001 Fluid Section – Exploded view



REMOVAL and INSTALL FROM PUMP



**WHEN REPAIRING THE AIR MOTOR TURN OFF THE AIR SUPPLY AND BLEED THE MATERIAL PRESSURE FROM THE PUMPING SYSTEM**  
 THE AIR MOTOR AND Fluid Section ARE VERY HEAVY.

- 1) Remove the Air Motor from the Pump.
  - a) Remove the Air Supply hose to the Air Motor.
  - b) Unscrew the 400-112 Collar that is attached to the Air Motor Piston Rod.
  - c) Remove the 3/4-10 Hex bolts that attach the spacer rods to the Fluid Section Flange.
  - d) Lift the Air Motor off of the Fluid Section.
- 2) Remove the 5 or 6 Hex Screws that hold the Primer Housing to the Follower Plate.
- 3) Remove the Fluid Section from the Follower Plate by lifting it straight out.
- 4) To install reverse steps 1-3.

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## 900-001 Fluid Section Rebuilding Instructions

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**DISASSEMBLY:**

- 1) Clamp the Upper Pump Housing in a vice.
- 2) Remove the Primer Check.
  - a) Hold the Piston Rod from moving using a 1 1/8" wrench.
  - b) Remove the Nylock Jam Nut using a 15/16" Socket
  - c) Unscrew the shovel Check (counter clockwise).
  - d) The Shovel Valve can slide off the Primer Rod.
- 3) Remove the Primer Housing using a Large Hex Wrench (counter clockwise).
- 4) Remove the Lower Check Plate from the Primer Housing.
  - a) Place the Primer housing so that the inlet is facing up.
  - b) Tap on the center of the Lower Check Plate using a soft dowel (wooden handle) until the Check plate drops from its counter bore.
- 5) Remove the Lower Pump Housing from the Upper Pump Housing using a Large pipe wrench (CCW).
- 6) Remove the Upper Check Plate from the Upper Pump Housing.
  - a) Using channel pliers hold the Gusset of the Upper Check Plate and spin the check plate until it is out of the Upper Pump Housing.
- 7) Remove the Upper Check Valve.
- 8) The Displacement Rod can be removed from the Packing Gland.
- 9) Remove the Packing Gland from the Upper Pump Housing using spanner wrench No. 350-652.
- 10) Remove the Bleeder Valve from the Upper Pump Housing 1/4" NPT.
- 11) Remove all the O-rings and discard.
- 12) Clean and Inspect all parts for damage.

**ASSEMBLY:**

- 1) Install the 350-411 O-ring into the Upper Housing packing gland bore and Lubricate.
- 2) Install the O-rings on the Lower Pump Housing and lubricate.
  - a) 360-573 O-ring goes on the Larger diameter.
  - b) 360-003 O-ring goes on the smaller diameter.
- 3) Clamp the Upper Pump Housing in a Vice and install the lubricated Packing Gland. Tighten with Spanner Wrench No. 350-652 to 30 Ft. Lbs.
- 4) Insert the Piston Rod into the Packing Gland through the lower end of the Upper Pump Housing. The Piston rod must be straight and spinning it helps to install it.
- 5) Install the Upper Check Valve (ears up) over the Piston rod.
- 6) Install the Upper Check Plate on the Piston rod and push it into the Upper Pump Housing. It must be fully seated. The Upper Check Plate can go on in either direction.
- 7) Install the Primer Rod into the Piston Rod. The Piloted end goes into the Piston Rod. Tighten to 30 Ft. Lbs.
- 8) Thread the Lower Pump Housing into the Upper Pump Housing and tighten. CAUTION DO NOT OVERTIGHTEN Maximum torque 200 Ft. Lbs.
- 9) Install the Lower Check Valve on the Primer Rod with the ears facing up.
- 10) With the Primer Housing inlet facing down install the Lower Check Plate. The Check Plate must be fully seated. The Check Plate can go in either direction.
- 11) Thread the Primer Housing onto the Lower Pump Housing and tighten. CAUTION DO NOT OVERTIGHTEN Maximum torque 200 Ft. Lbs.
- 12) Install the 360-002 O-ring on the Primer Housing.
- 13) Install the Primer Check valve on the Primer rod. Ground surface faces down.
- 14) Thread the Primer Plate on the Primer Rod hand tight. Tapered surface faces down.
- 15) Thread the Nylock Jam Nut on the primer Rod and tighten to 15 Ft. Lbs.
- 16) Install the Bleeder Valve in the Upper Pump Housing so that the outlet hole faces down. Use Pipe sealant.
- 17) Install Air Motor Connector into the Piston Rod. See drawing for proper settings



**TROUBLE SHOOTING**

**Problem**

**Cause**

**Solution**

**Fluid Section**

Material leakage from pump housing

Loose connections

Tighten threads on housing

Cut O’ring

Disassemble and replace o’ring

Check seated crooked in housing

Check for worn seat area in housings

Cracked housing

Replace housing

Pump running but not delivering material (not creating pressure)

Air lock in Fluid Section.

Open bleeder valve of Fluid Section (opposite of outlet)

Not enough down pressure on material

Elevator hand valve in down position. Increase down pressure on elevator.

No material available

Check material supply.

Lower check valve not closing or seating

Check for foreign object or worn parts, replace if needed.

Worn displacement, worn shovel rod on O.D.

Replace checks

Worn checks on I.D.

Clean checks

Pump not delivering material on up stroke (not creating pressure)

Foreign object on upper check, holding check open.

Replace upper check (See tolerance chart)

Worn upper check

Replace displacement rod (See tolerance chart)

Worn out displacement rod

See elevator (down pressure)

Check elevator down pressure

Open bleeder valve of Fluid Section (opposite of outlet)

Air lock in Fluid Section

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### TROUBLE SHOOTING

#### Problem

#### Cause

#### Solution

#### Fluid Section

Pump not delivering material on down stroke (not creating pressure)

Foreign object holding lower checks open

Worn out lower check

Worn out shovel rod.

Check for elevator down pressure

Air lock in Fluid Section.

Pump completely inoperative

Check air supply to pump

Check air motor for proper cycling

Check for proper connection

Check for elevator down pressure

Check for foreign objects in pump

Check for clogged or cured material in outlet line

Clean Checks

Replace lower check (See tolerance chart)

Replace shovel rod (See tolerance chart)

Check elevator down pressure

Open bleeder valve of Fluid Section (opposite of outlet)

Turn on air

See air motor (not cycling)

See connector settings 900-022

Check elevator down pressure.

Disassemble and clean

Disassemble and clean or replace.