AMKUS® RESCUE SYSTEMS

SERVICE PROCEDURE
Seal Kit Installation (Level 3 Repair)

ion AMKUS RESCUE SYSTEMS

FOR IS281, IS320, IC700, IC750, ICT716, S281(M), S320(M), C700(M), C750(M), and CT716(M) TOOLS

DANGER **Only factory trained rescue tool repair technicians may diagnose and repair AMKUS equipment. Review and understand operational and safety instruction manual for each tool before performing this procedure.**

WARNING **It is the responsibility of the service technician to ensure the use of appropriate protective clothing and equipment. The chosen protective clothing and equipment must provide protection from potential hazards users may encounter while servicing or operating AMKUS rescue tools. Requirements for protective clothing and equipment are determined by the Authority Having Jurisdiction (AHJ).**

WARNING **To avoid serious personal injury, always remove the battery pack when performing maintenance or repairs.**

- **When necessary to install the battery while troubleshooting, exercise caution to avoid contact with energized circuits and all moving parts.**
- **The battery is rated 60VDC.**

1.0 PURPOSE

This service procedure outlines the process to replace all seals in IS281, IS320, IC700, IC750, ICT716, S281(M), S320(M), C700(M), C750(M), and CT716(M) tools.

This procedure shall be performed every 5 years, or more often if needed. This provides an opportunity to change all seals and fluid, as well as inspect internal components for damage/wear.

2.0 REQUIRED TOOLS

- 5 mm Hex Key
- Small Pry Bar/Flat Blade Screwdriver
- Clean Rags
- Seal Pick
- Pliers
- AMKUS MV1 Hydraulic Fluid
- Dead Blow Mallet
- 146 in-lb Torque Wrench
- 53 in-lb Torque Wrench
- VSA-120 blue Loctite®

3.0 PROCESS

3.1 CONTROL VALVE REMOVAL

1. Complete full front end service per Service Procedures **LIK-067** for cutter/combination tools or **LIK-069** for spreaders.

2. **For Ion Series Battery Powered Tools,** complete Section 3.1, Steps 1-7 of Service Procedure **LIK-061** to remove electronics.

3. Using a 5 mm hex key, remove **and discard** the fasteners securing the Control Valve to the Pump Housing. Figure 3.1 (3). Gently pry valve from tool with a flat blade screwdriver.

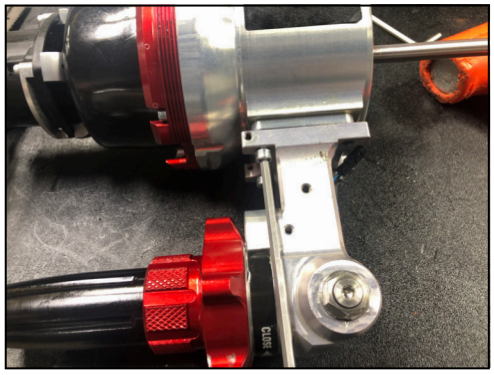

Figure 3.1 (3)

NOTICE **The strength of the fasteners holding the control valve to the pump housing is diminished after removal. Once removed, these fasteners must not be reused. Always install NEW fasteners.**

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3.2 SPOOL SEAL REPLACEMENT

1. Remove the exposed seals on the **KC0022 Port Spools**. Figure 3.2 (1).

2. Remove the port spools. If a tool is needed, place a rag or other soft material on the end of the tool to avoid damage to the spool. Figure 3.2 (2).

3. Remove remaining seals on the port spools. Figure 3.2 (3).

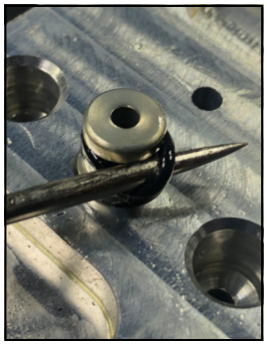

Figure 3.2 (1)

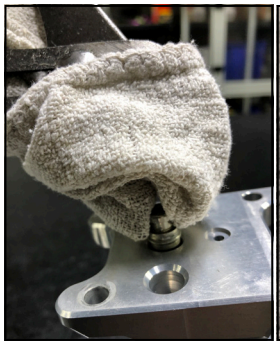

Figure 3.2 (2)

Figure 3.2 (3)

4. Apply light coat of MV1 hydraulic fluid to all new seals prior to installation.
5. **For Ion Series Battery Powered Tools,** replace the VO-008A O-ring in the control valve. Figure 3.2 (5).

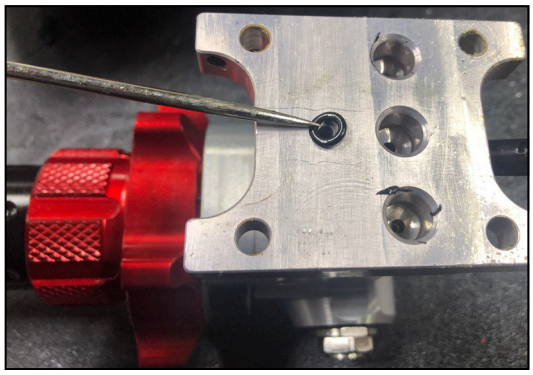

Figure 3.2 (5)

6. Install replacement seals on port spools. VOB-010A backup ring is installed first and the VO-010A O-ring is installed at the outer ends of the spool. Figure 3.2 (6).

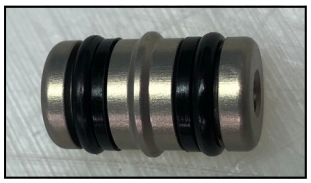

Figure 3.2 (6)

7. Seat port spools into control valve with gentle taps from a dead blow mallet. Figure 3.2 (7). Ion Series Tools have 3 port spools, Line Tools have 4.
8. Inspect the area around the spools to ensure no seals were damaged during installation.

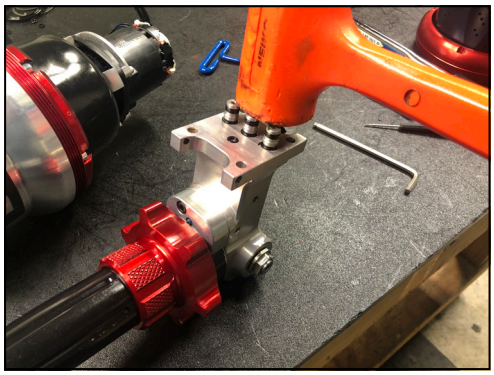

Figure 3.2 (7)

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3.3 PUMP HOUSING SEAL REPLACEMENT

1. Remove **and discard** the **V4215 Smalley Ring** retaining the center tube. Figure 3.3 (1).
2. Remove the Center Tube from the pump housing.

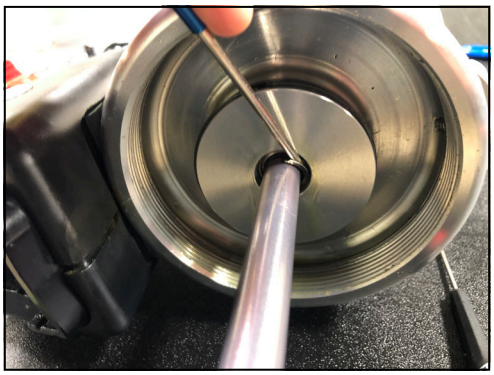

Figure 3.3 (1)

NOTICE **The strength of the Smalley Ring holding the center tube is diminished after removal. Once removed, these fasteners must not be reused. Always install a NEW Smalley ring in this area.**

3. Remove the KN0012 and KN0014 T-seals and back up rings from the pump housing.
4. Lubricate all seals with MV1 hydraulic fluid before installation.
   A. Ensure skive cuts on T-seal backup rings are nested and rotated to opposite sides of the seal. Figure 3.3 (4A).

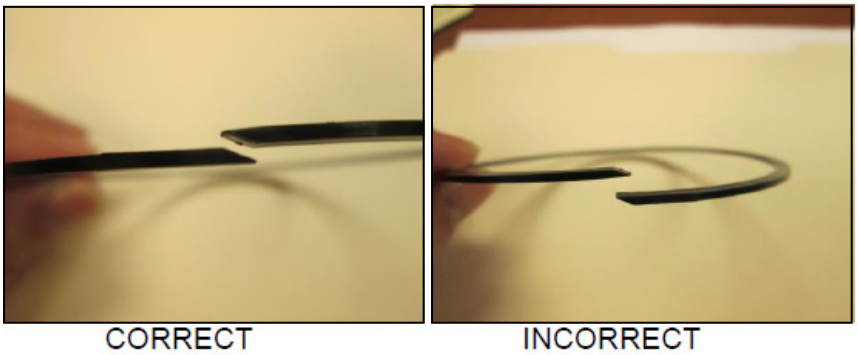

Figure 3.3 (4A)

   B. For external T-seals, tightly curl backup rings and squeeze for 10 seconds to ensure the seals seat properly. Figure 3.3 (4B).

Figure 3.3 (4B)

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5. Install new pump housing seals. Figure 3.3 (5).

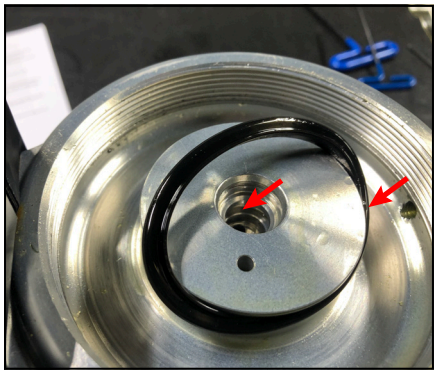

Figure 3.3 (5)

6. Install the center tube and secure with a **new** V4215 Smalley ring. Figure 3.3 (6).

Figure 3.3 (6)

3.4 CONTROL VALVE INSTALLATION

1. Install the control valve onto pump housing. Secure with four **new** VTM6Q1.0SH20 fasteners. Use VSA-120 blue Loctite® and **torque to 146 in-lb (16.5 N-m)**. Figure 3.4 (1).

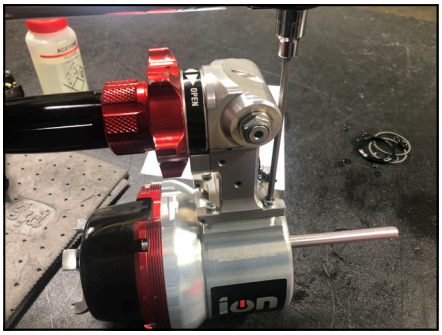

Figure 3.4 (1)

NOTICE **The strength of the fasteners holding the control valve to the pump housing is diminished after removal. Once removed, these fasteners must not be reused. Always install NEW fasteners.**

3.5 REAR SEAL REPLACEMENT (ION SERIES TOOLS ONLY)

1. Remove the six VTM5Q0.8SH20 fasteners securing the Outer Clamp Ring and remove the ring. Retain fasteners. Figure 3.5 (1).

Figure 3.5 (1)

2. Remove the VO-049 O-ring.
3. Apply light coat of MV1 hydraulic fluid to the new O-ring and install in the groove. Ensure it is fully seated and will not be pinched by outer clamp ring. Figure 3.5 (3).
4. Ensure the Bladder is seated properly on housing boss.

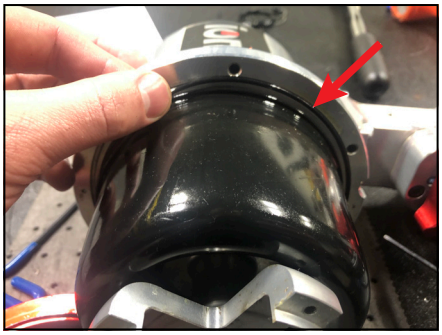

Figure 3.5 (4)

5. Reinstall outer clamp ring and secure with six fasteners removed in Step 1 of this section. Use VSA-120 blue Loctite. Install in an alternating star pattern and **torque to 53 in-lb (6 N-m)**.
6. Install electronics per Service Procedure **LIK-061**.

For questions regarding troubleshooting, testing, or repair, contact Service@AMKUS.com.

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