

ENGLISH LANGUAGE

BETTIS

SERVICE INSTRUCTIONS

LCD PAK SEAL INSTALLATION

FOR CBA SERIES ACTUATORS

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1.1 PURPOSE

The purpose of these instructions is to inform the reader/installer on the correct procedure for installing CBA torque-shaft seals, using Installation Rings that are designed specifically for this task and are included in CBA service kits. If instructions are followed, the chance for seal damage upon installation should be eliminated.

1.2 DEFINITIONS

Installation Ring – A rubber ring that comes with the CBA service kit to be installed into the snap ring groove of the torque-shaft prior to new seal installation.

LCD PAK Seal – A custom seal designed with a double sealing point surface. LCD stands for “Lip Cut Double.” The term “PAK” received its name from the “PolyPak” seal which is a combination of a PolyPak shell energized with an O-Ring expander. The LCD PAK seal used for the CBA does not contain an O-Ring expander.

1.3 SERVICE TOOL INFORMATION

There are many ways to install the LCD PAK seals, because different tools can be used to do so. In these instructions, basic shop tools that are commonly available were used to illustrate that it is not needed or important to use special tools.

1.4 LUBRICATION REQUIREMENTS

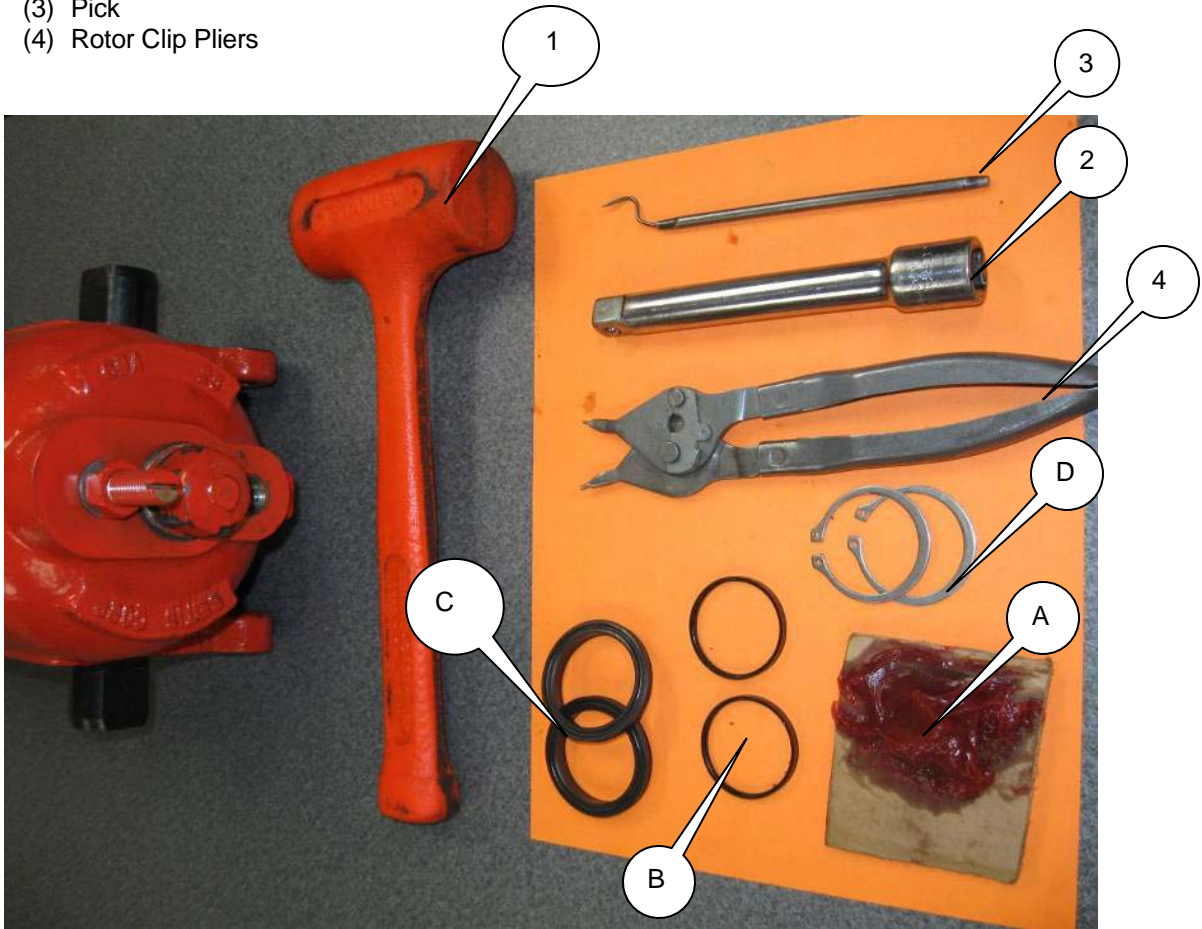
It is very important to not over-grease the seal upon installation. Over lubricating can cause problems during installation by halting the seal from seating all the way in the groove (if too much grease is between the seal and housing). As shown in the pictures below, use a light coat of grease on the seals when installing.

1.5 OTHER NOTES

The Installation Rings (or filler rings as commonly referred to), are disposable items as they only need to be used one time and are contained in the CBA service kits. However, it is possible to reuse them by picking instead of cutting them out of the rotor clip groove.

2.1 TOOLS USED

- (1) Plastic mallet
- (2) Socket extension (see 1.3 above)
- (3) Pick
- (4) Rotor Clip Pliers



2.2 KIT ITEMS

- (A) Grease
- (B) Two Installation Rings
- (C) Two LCD PAK seals
- (D) Two Rotor Clips

2.2 PROCEDURE

Step 1) Remove the Rotor Clip on side 1 of actuator housing using Rotor Clip Pliers



Step 2) Use the mallet to tap the torque-shaft inward with the use of an extension rod to expose the existing seal.



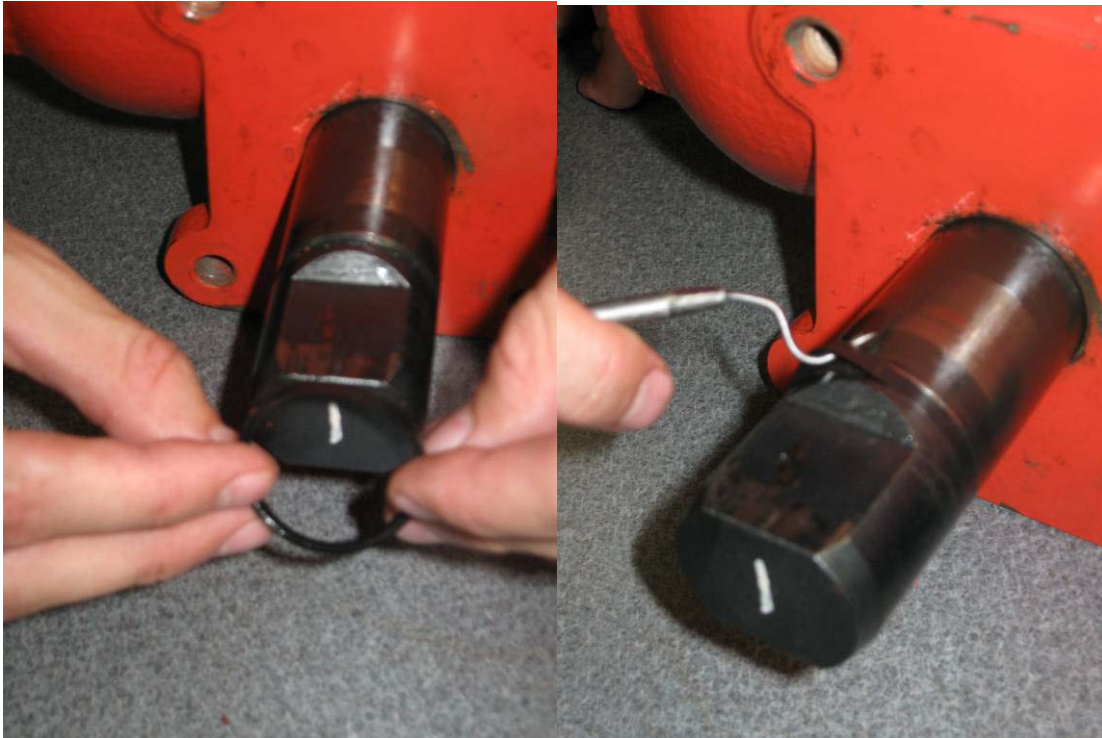
Step 3) Use the Pick to remove old seal and clear groove of old grease and debris.



Step 4) Turn actuator to second side (side 2) and use Rotor Clip Pliers to remove rotor clip, tap shaft to expose seal, remove old seal and clean groove by repeating steps 1-3.

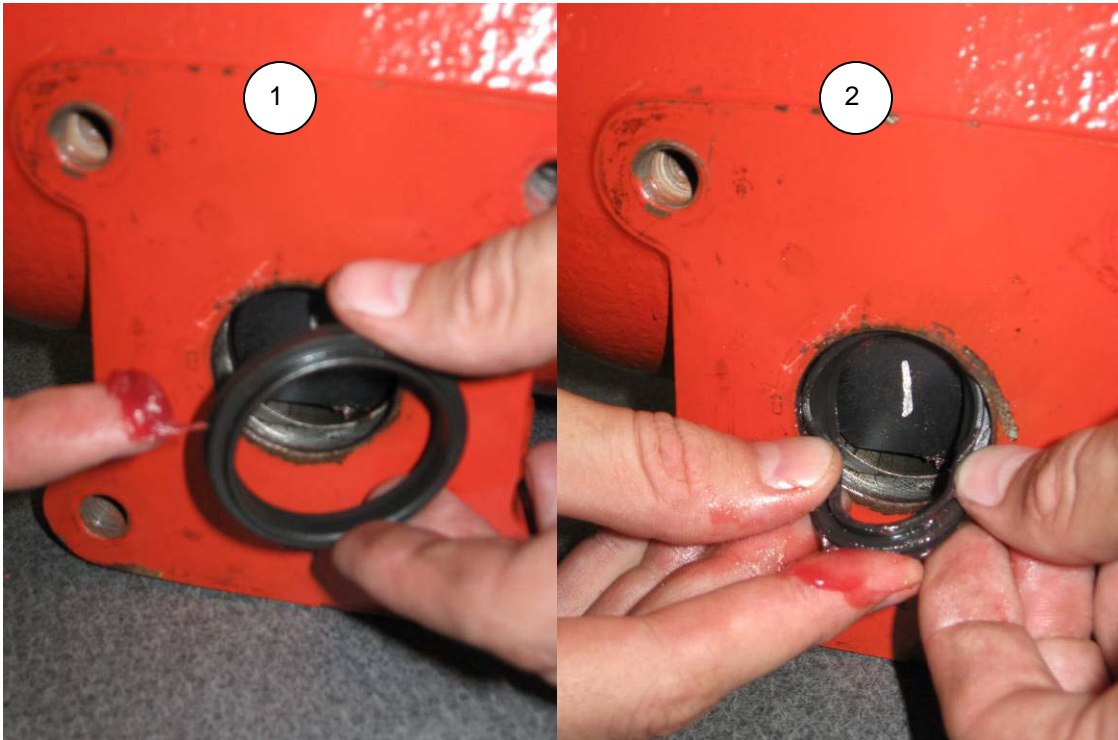


Step 5) Place Installation Ring into Rotor Clip groove of side 1. Use a pick or similar tool to aid installation. When shaft is fitted with ring, lightly grease ring surface.



Make sure that the Installation Ring is seated completely flush with the surface of the torque-shaft

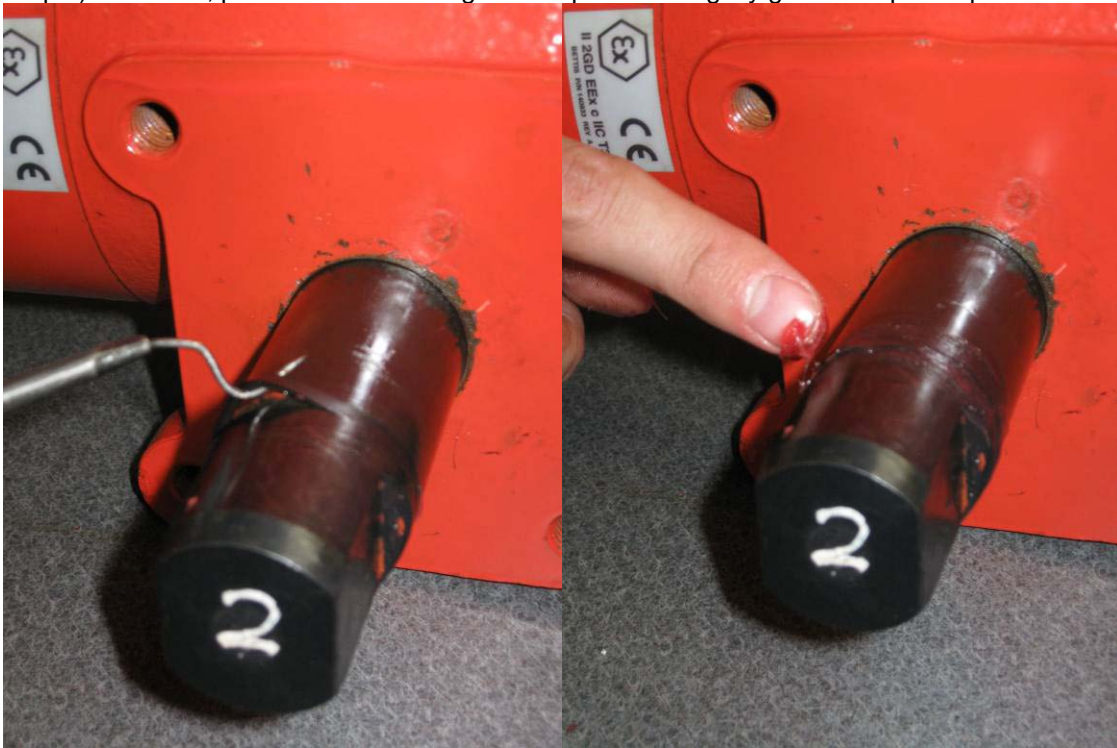
Step 6) Tap side one inward to expose seal groove. Install new seal after lightly greasing.



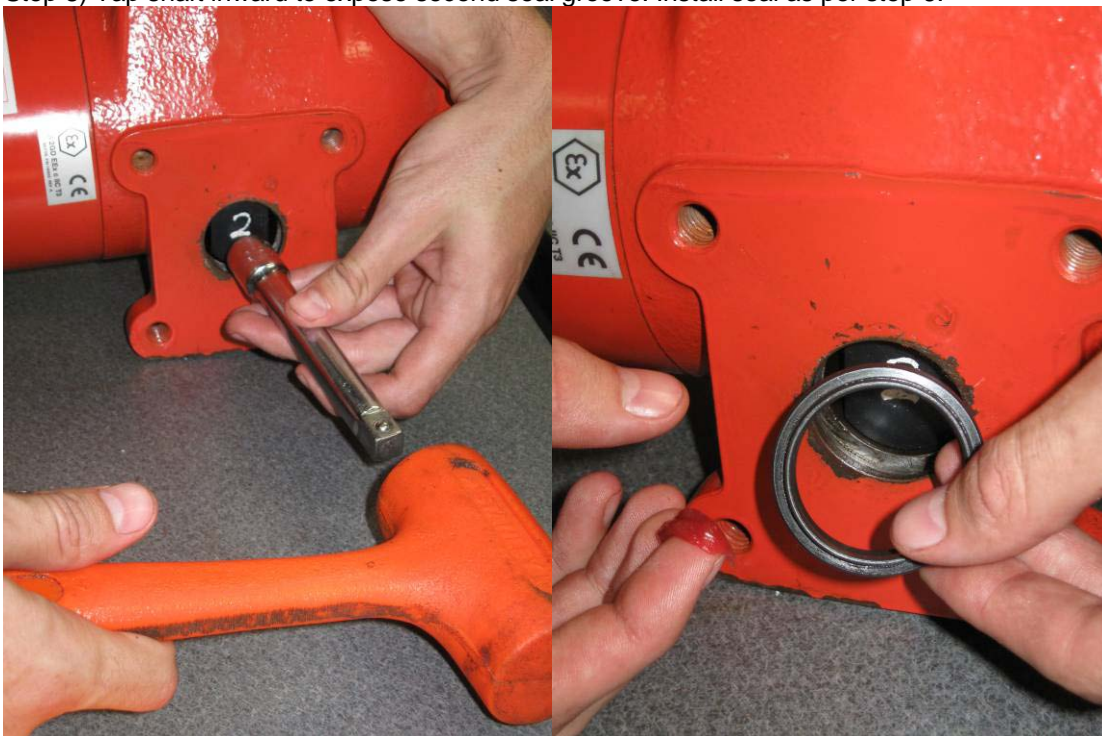
When installing, insert the top of the seal first, with the lip side inward towards shaft, then work the sides in. When the seal is mostly in, invert the bottom of the seal (see photo #3) into a wave like shape. When you release, the seal should seat itself smoothly into the groove. Press the seal in from all angles with your finger to make sure it is flush with the housing bore (see photo #4).



Step 7) On side 2, place Installation Rings on torque-shaft. Lightly grease as per step 5.



Step 8) Tap shaft inward to expose second seal groove. Install seal as per step 6.





Step 9) Carefully tap torque-shaft back through housing and newly installed seals. If resistance is felt (a bouncy feeling especially), gently tap forward and backward until it becomes easier.



Step 10) Remove side 1 Installation Ring and discard.



Step 11) On side 1, place Rotor Clip on torque-shaft. Tap this side towards the housing, pressing the Rotor Clip against the housing This makes it easier to remove the side 2 Installation Ring.



Step 12) Remove and discard side 2 Installation Seal and then install a new Rotor Clip



ECN	DATE	REV		BY *	DATE
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