OPW Engineered Systems **INSTRUCTIONS**

H-10320-PA
MAY, 2000

FOR REPAIR OF OPW® KAMVALOK® COUPLERS 1 1/2" & 2"

TEAR DOWN INSTRUCTIONS

WARNING: OPW can not be held responsible for the integrity of a Field rebuilt product. To minimize the possibility of physical injury and obtain the best possible functioning product after rebuilding, it is strongly recommended that the procedures outlined be followed to Tear down, Re-assemble and Test the product before placing the unit back into service. Reference the enclosed illustration to facilitate identification of parts.

1 After removal of the MAIN GASKET you may notice the absence of either a SNAP RING or THREADED RETAINER, in this case proceed to step #2.

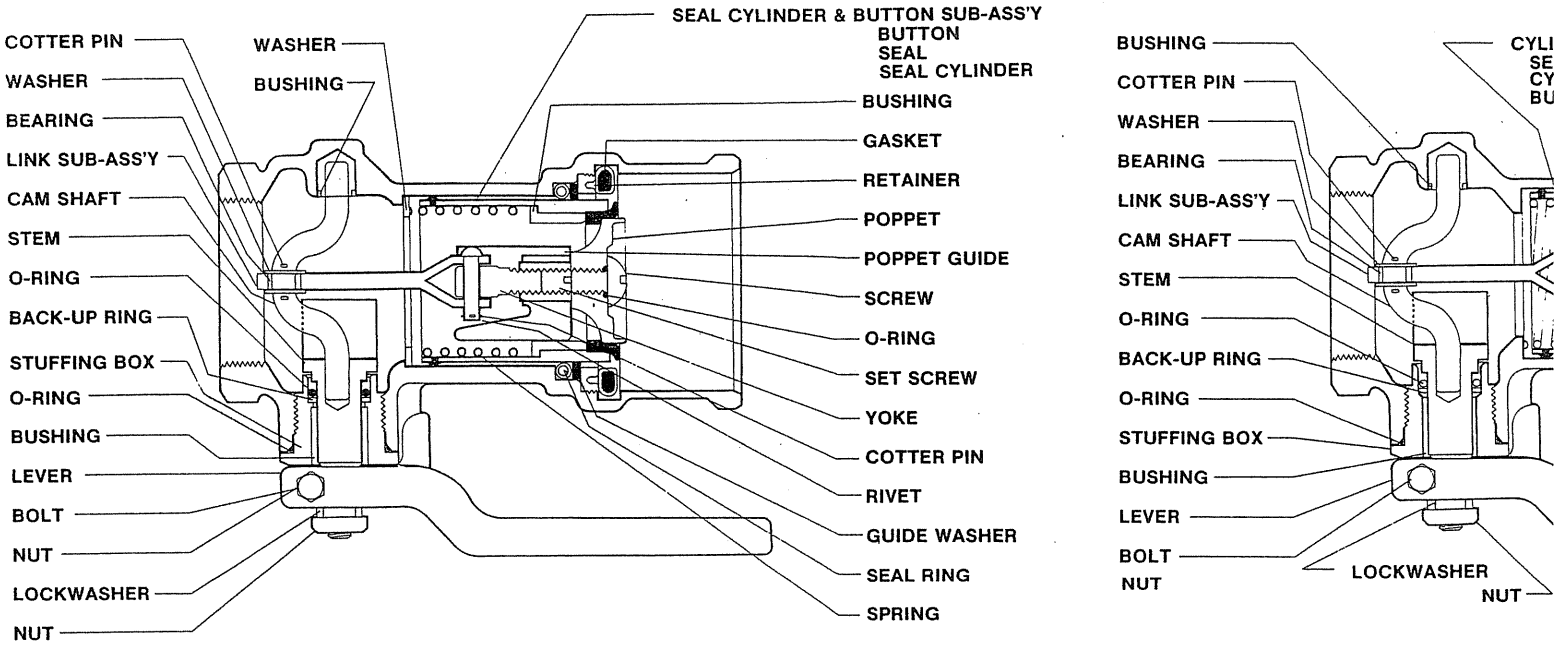
1A With Valve in closed position, remove MAIN GASKET from coupler end. Using screw driver, or needle nose pliers remove RETAINING RING, GUIDE WASHER and SEAL CYLINDER SEAL from BODY being careful not to mar or damage sealing surfaces in BODY or on external surface of SEAL CYLINDER. On stainless steel units with threaded RETAINING RINGS versus snap rings, a spanner wrench type tool may be required to unthread and remove the RING from the BODY. Open and close LEVER several times to dislodge GUIDE WASHER and SEAL. Should SEAL remain lodged, use a small pointed tool (stylus) and pry SEAL from groove or seat.

2 Reassemble MAIN GASKET into BODY. Position DUMMY ADAPTOR in coupler end and secure by locking with (2) CAM ARMS. The ADAPTOR end from Kamvalok Adaptor may be used as DUMMY ADAPTOR.

3 Loosen NUT on end of STEM. Loosen NUT on BOLT through operating LEVER. Remove NUT and BOLT from LEVER. Slide LEVER off STEM exposing STUFFING BOX.

4 Remove STUFFING BOX from BODY by unthreading over end of STEM exercising care not to mar or damage sealing surface in stuffing box boss. Remove old stuffing box "O" ring. Discard SEAL RING. On units with BUSHING in STUFFING BOX, carefully remove and discard BUSHING.

5 On units utilizing the two piece STEM and CRANK SHAFT mechanism, remove STEM from BODY through opening in stuffing box boss. Remove SEAL RING from STEM. Discard seal ring. Exercise care to prevent damage to sealing surfaces inside STUFFING BOX or on STEM. (See step #7).



6 Using needle nose pliers, remove (2) COTTER PINS from CAM SHAFT. Slide (1) WASHER and link BEARING towards opening in boss to facilitate removal of CAM SHAFT. Manipulate CAM SHAFT to disengage from LINK and BEARING in BODY boss. Remove CAM SHAFT through stuffing box opening in BODY. Remove BEARING and (2) WASHERS from CAM SHAFT and discard. Do not discard CAM SHAFT.

7 If unit being repaired utilizes a (1) piece STEM-CAM SHAFT mechanism versus the two piece unit, proceed as follows: Using needle nose pliers remove (2) COTTER PINS from CAM SHAFT. Slide or push (1) WASHER and link BEARING towards opening in boss to facilitate CAM SHAFT removal. Discard COTTER PINS. Manually manipulate CAM SHAFT to disengage from LINK and BEARING in BODY boss. Remove CAM SHAFT by sliding through YOKE and out through opening in Stuffing Box boss. Remove and discard "O" ring SEAL on shaft. Handle cam shaft carefully to avoid damage in sealing surface area.

8 Lift out POPPET, POPPET GUIDE and LINK sub-assembly through SEAL CYLINDER and opening in DUMMY ADAPTOR. Note: DUMMY ADAPTOR must remain in locked position in BODY for all tear down operations. Remove SCREW and SEAL RING from top of POPPET. Remove SEAL RING from SCREW. Discard old SEAL RING. Care again must be exercised to prevent damage to sealing surface of POPPET.

WARNING: Extreme care must be exercised when removing SEAL CYLINDER from BODY to avoid possible personal injury and prevent damage which could result in a non-repairable product.

9 If you have a unit with no RETAINING RING remove the SEAL CYLINDER in the following manner: Turn the unit over so that the coupler end is on the table. While maintaining approximately 30 to 35 pounds of downward pressure open both CAM ARMS and allow the SPRING to push the SEAL CYLINDER and DUMMY ADAPTOR out of the unit. The BUTTONS on the SEAL CYLINDER may prevent the CYLINDER from leaving the BORE. You can disengage the BUTTONS from the CYLINDER "O" ring by applying gentle pressure to the bottom of the SEAL CYLINDER thru the threaded end of the coupler.

CAUTION: Always be sure to apply downward pressure on the unit during this procedure to prevent the uncontrolled release of the spring loaded parts which could inflict injury. With the SEAL CYLINDER removed refer to step #9A for further instructions on Kamvalok disassembly.

9A SEAL CYLINDER and BUTTON S/A should be removed in the following manner: manually compress DUMMY ADAPTOR in BODY maintaining approximately 30 to 35 pounds downard force on ADAPTOR to overcome spring pressure tending to force S/A upward in BODY when CAM ARMS are unlocked. Failure to hold down ADAPTOR and SEAL CYLINDER will result in forcible ejection of SEAL CYLINDER from BODY. Slowly decrease manual pressure on ADAPTOR allowing SEAL CYLINDER to move upward in BODY until SPRING reaches fully unloaded height. Remove DUMMY ADAPTOR from BODY. Remove SEAL CYLINDER and BUTTON S/A, SPRING and SPRING GUIDE from BODY. Extreme care should again be exercised to avoid any damage to outside diameter of SEAL CYLINDER and inside diameter of BODY which could result in a leaking valve, or produce excessive wear on BUTTONS. Remove BUTTONS from outside of SEAL CYLINDER. Discard old BUTTONS. On units utilizing bonded nose seals, discard SEAL CYLINDER if nose seal is defective. On stainless steel units, remove and discard Teflon NOSE SEAL.

CAUTION: Prior to reassembly of Valve, clean and visually inspect all sealing surfaces on the following parts for obvious nicks, scratches or damage. Any damage in these sealing areas is cause for rejection. Reuse of damaged parts could result in an un-safe, or leaky product. Parts to be inspected include BODY, POPPET, SEAL CYLINDER, STUFFING BOX, SHAFT and CAM-SHAFT STEM.

REASSEMBLY INSTRUCTIONS

Poppet Sub-Assembly

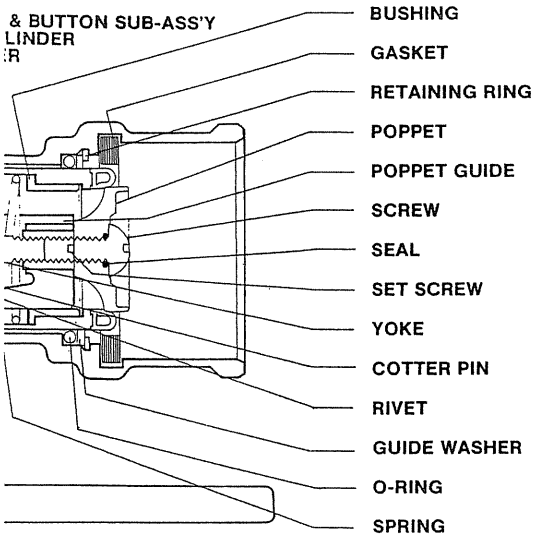
1 On units with non-metallic POPPET GUIDE, press new wing guide onto poppet shank.
2 Manually thread LINK into POPPET, approximately four turns.

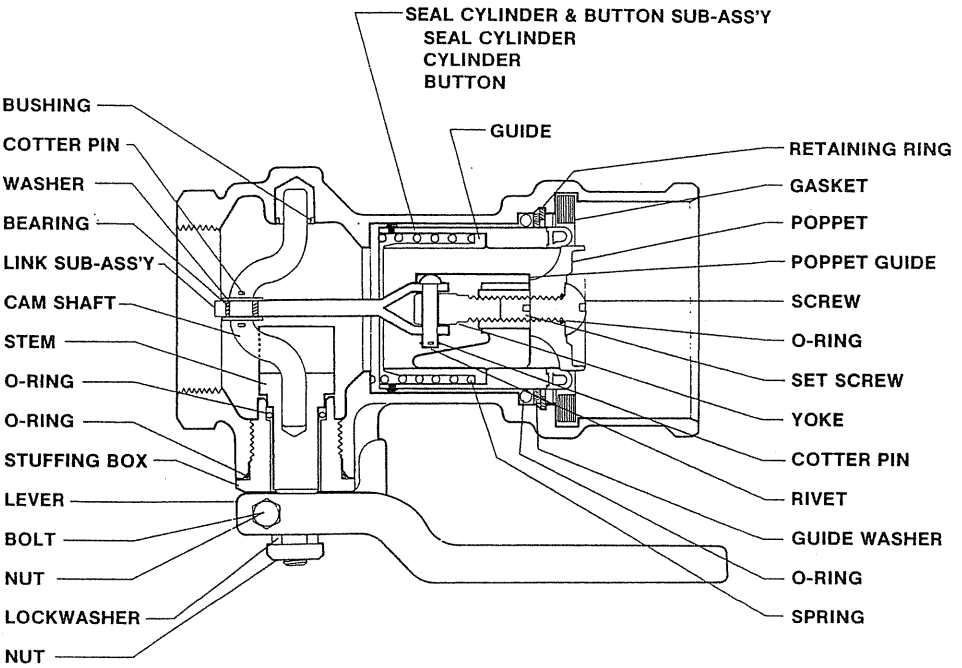
Cam Shaft Sub-Assembly

1 Insert one COTTER PIN in (1) CAM SHAFT hole and lock in place by flaring PIN.
2 Slide (1) WASHER on CAM SHAFT to position against COTTER PIN.
3 Slide yoke BEARING into position on CAM SHAFT adjacent to WASHER.

Stuffing Box Sub-Assembly

1 On units requiring BUSHING, press BUSHING into STUFFING BOX I.D.
2 Place SEAL (greased) on STUFFING BOX O.D. under head. Important, all lubricating greases must be compatible with SEAL materials to avoid destruction of elastomeric properties.





PRODUCT REASSEMBLY

1 Press new guide BUTTONS into outside diameter of SEAL CYLINDER. Apply light coat of suitable grease to O.D. of SEAL CYLINDER.

2 On units utilizing Teflon nose seal, press SEAL into seat on SEAL CYLINDER.

3 Place SPRING GUIDE in position inside SEAL CYLINDER.

3A If you have a unit with no RETAINING RINGS, you will insert the MAIN SEAL CYLINDER "O" ring into the BODY at this time. Grease the "O" ring lightly and work it into the groove in the BODY. If a new Teflon encapsulated "O" ring is being used follow extreme caution as to not damage or bend it during installation. To install the Teflon "O" ring you should grease the "O" ring lightly and insert it into the BODY so that it is below the groove. Carefully start one side of the ring into the groove and gently pull the rest of the ring into the groove by working around the I.D. of the ring in both directions from your starting point.

4 Extreme care should be taken when working the SEAL CYLINDER back into the BORE past the MAIN BODY "O" ring. Generously grease the bottom half of the CYLINDER O.D. and with a gentle downward pressure work the BUTTONS past the "O" ring. Proceed with the rest of the instructions as written.

4A Insert SPRING and SEAL CYLINDER with SPRING GUIDE into BODY. Utilizing DUMMY ADAPTOR, compress SPRING GUIDE and SEAL CYLINDER into BODY exercising care not to damage BUTTONS. Close CAM ARMS to secure ADAPTOR in place. Note: Leave out MAIN GASKET in BODY for this and subsequent operations.

5 Insert POPPET S/A and LINKAGE S/A through I.D. of ADAPTOR and SEAL CYLINDER with POPPET resting on nose seal of SEAL CYLINDER. Linkage S/A should extend downward toward stuffing box area.

6 Insert CAM SHAFT S/A through stuffing box opening and manipulate cam shaft through opening in LINK. Position cam shaft BEARING in place in opening through LINK.

7 Slide second WASHER onto cam shaft and install cotter pin in position on shaft adjacent to washer and secure.

8 Grease new SHAFT SEAL RING with suitable lubricant and position SEAL on STEM.

9 Insert end of cam shaft opposite stuffing box opening into BEARING in BODY boss and press into BEARING.

10 Insert STEM into BODY with slot in STEM engaging CAM SHAFT On units utilizing (1) piece CAM SHAFT this operation is not required.

11 Place new SEAL on O.D. of STUFFING BOX and under head. Lubricate threads and position STUFFING BOX over STEM. Thread into BODY and tighten.

12 With POPPET bottomed out and resting against nose seal of SEAL CYLINDER, slide operating LEVER onto squares of STEM until LEVER bumps shoulder of STEM. To ensure proper location of operating LEVER, LEVER should be pushed on at 4 o'clock and locked over center feature is noticeable at 6 o'clock position with coupler end of BODY resting on flat surface.

13 Place lock washer over end of STEM and thread on JAM NUT.

14 Insert BOLT through holes in LEVER and thread on NUT.

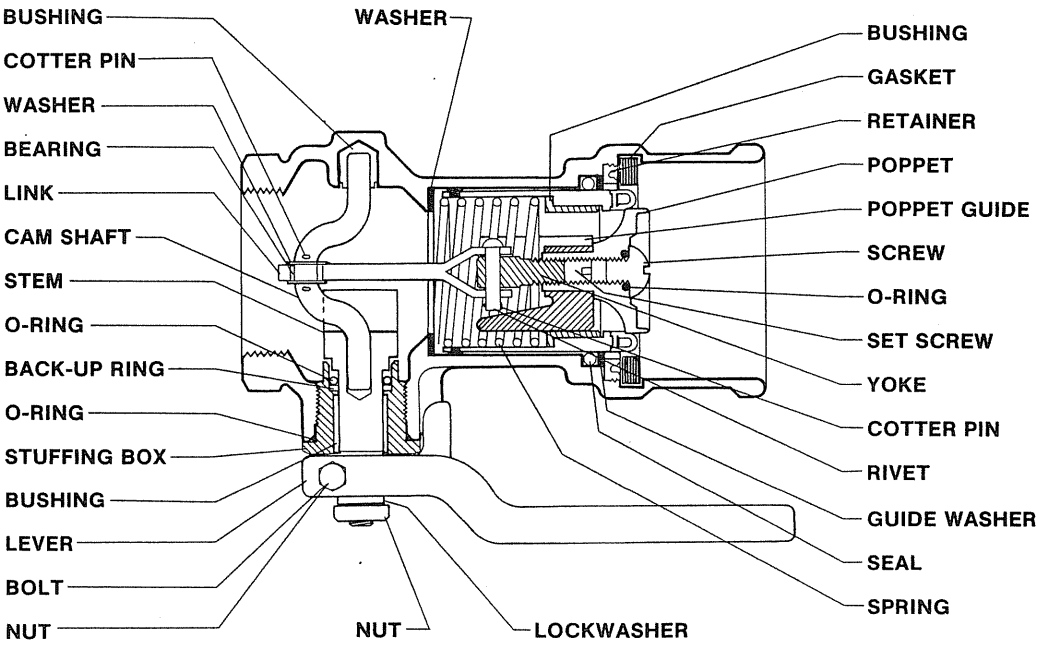
15 Tighten NUTS to secure LEVER. (Tighten cross BOLT and NUT first, then tighten JAM NUT.

16 Adjust POPPET by opening Valve and threading POPPET up or down as required. POPPET is properly adjusted when Valve is in closed position and the nose seal on the SEAL CYLINDER is just barely disengaged from the face of the Adaptor. Note: Main Gasket is not on BODY for all assembly operations from step #4.

17 When POPPET is correctly adjusted, insert Set Screw in center hole in POPPET and thread in with allen wrench until screw bottoms out against threaded end of yoke. Tighten hand tight.

18 Place new greased "O" RING under head of POPPET screw and thread into center hole in POPPET (metal to metal stop).

19 With Valve in closed position, unlock CAM ARMS on BODY and remove DUMMY ADAPTOR.



20 Grease main "O" ring SEAL. Insert SEAL, GUIDE WASHER and RETAINING RING in groove between BODY and SEAL CYLINDER. Press downward until RETAINING RING snaps into place. On units with threaded RETAINING RINGS, thread ring into BODY with spanner type wrench until surface (top) of retaining ring is level, or even with plane of MAIN GASKET seat. Install MAIN GASKET.

21 Operate LEVER five (5) times without Adaptor. Open and close valve and check to see that SEAL CYLINDER follows POPPET in open position. Should the cylinder fail to follow the poppet, or if it follows too slowly, this indicates a product malfunction and is cause for rejection.

TEST PROCEDURE

1 Utilizing air under water method and Valve in closed position pressurize Valve to 5 psi. Check for leaks in Stuffing Box and Main Poppet areas. Assemble OPW product #1660-P in Valve and secure with CAM ARMS. Open Valve and check for leaks in Stuffing Box and Main Gasket areas.

2 With Valve still in open position and 1660-P secure in place increase air pressure to 30 psi and check for leaks. Reduce pressure to zero psi. Close valve. Remove Plug. Increase pressure to 30 psi and check for leaks in Stuffing Box and Main Poppet areas. Do not open Valve while under 30 psi pressure. Reduce pressure to zero psi.

3 Test for feel of lock-over-center feature when Valve is coupled to an assembled OPW Kamvalok Adaptor.

Note: Any leakage evident in pressure testing indicates an unsafe Valve and is cause for rejection. Failure to lock-over-center is cause for rejection.

IMPORTANT NOTE:

Under a new EPA regulation (reference: Code 40 CFR 261, Volume 55 Federal Register, 3/29/90, pp. 11798-11877), the disposal of KALREZ* compounds may be classified as hazardous waste because of the amount of lead extracted by the Toxicity Characteristic Leaching procedure exceeds the regulatory limit must be disposed of in compliance with federal, state, and local regulations for hazardous waste. For now, you should be aware that disposal of these KALREZ perfluoroelastomer parts may require compliance with Resource Conservation Recovery Act Regulations.

OPW Engineered Systems

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