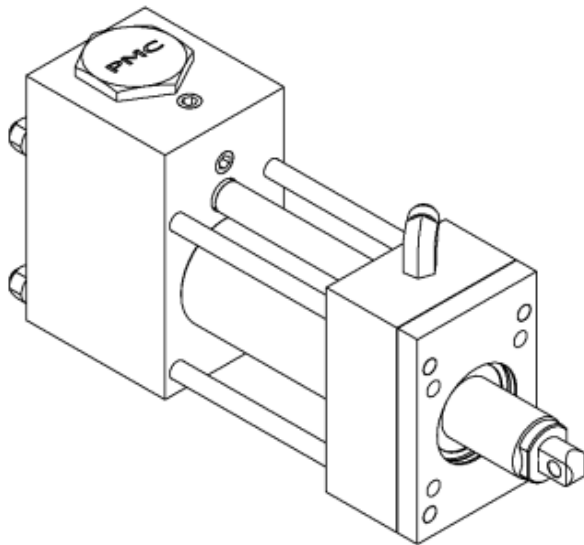




# POLYURETHANE MACHINERY CORPORATION



## Proportioning Pump Rebuild Kits

For Hydraulic, Heated, Plural Component  
Proportioners

For Professional Use Only

### Instructions



Subscribe to our channel,  
**Polyurethane Machinery  
Corporation PMC**, for video  
instructions.

**REVISION 1.0**

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***Before rebuilding your proportioning pumps, carefully read all the technical and safety documentation included in these instructions. Pay special attention to the information in order to know and understand the operation and the conditions of use of the proportioning pump. All of the information is aimed at improving user safety and avoiding possible breakdowns from the incorrect use of the proportioning pump.***



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## **WARRANTY**

Polyurethane Machinery Corporation (hereinafter "PMC") provides this **LIMITED WARRANTY** (hereinafter "Warranty") to the original purchaser (hereinafter "Customer") covering this equipment and the original PMC manufactured accessories delivered with the equipment (hereinafter "Product") against defects in material or workmanship of the Product (hereinafter "Defect" or "Defective") for a period of one (1) year from the date of first purchase as shown on the original PMC invoice (hereinafter "Warranty Period").

If during the Warranty Period under normal use, the Product is suspected by Customer to be Defective in material or workmanship, it is Customer's responsibility to contact PMC and return the Product to PMC as directed by PMC, freight prepaid. If PMC determines that the Product is Defective and that such Defect is covered by this Warranty, PMC will credit Customer for the reasonable freight charges incurred by Customer in returning the Defective Product to PMC, and PMC (or its authorized agent) will, at PMC's option, repair or replace the Product, subject to the following:

Original Invoice: The original invoice must be kept as proof of the date of first sale and the Product serial number. The Warranty does not cover any Product if the Original Invoice appears to have been modified or altered, or when the serial number on the Product appears to have been altered or defaced.

Product Maintenance: It is the Customer's responsibility to maintain the Product properly. See your maintenance schedule and owner's manual for details. The Warranty does not cover an improperly maintained Product.

Non-PMC Components and Accessories: Non-PMC manufactured components and accessories that are used in the operation of the Product are not covered by this Warranty. Such components and accessories shall be subject to the warranty offered to the Customer, if any, by the original manufacturer of such component or accessory.

Other Warranty Exclusions: The Warranty does not cover any Product that PMC determines has been damaged or fails to operate properly due to misuse, negligence, abuse, carelessness, neglect, or accident. By way of example only, this includes:

- Normal wear and tear.
- Improper or unauthorized installation, repair, alteration, adjustment or modification of the product.
- Use of heating devices, pumping equipment, dispensers, or other parts or accessories with the product that have not been approved or manufactured by PMC.
- Failure to follow the operating instructions and recommendations provided by PMC.
- Cosmetic damage.
- Fire, flood, "acts of God," or other contingencies beyond the control of PMC.



## WARRANTY

**THE WARRANTY DESCRIBED HEREIN IS THE EXCLUSIVE REMEDY FOR THE CUSTOMER AND IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS, IMPLIED, STATUTORY OR OTHERWISE, AND THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE AND ALL OTHER WARRANTIES ARE HEREBY DISCLAIMED. TO THE FULLEST EXTENT PERMITTED BY LAW, PMC SHALL NOT BE RESPONSIBLE, WHETHER BASED IN CONTRACT, TORT (INCLUDING, WITHOUT LIMITATION, NEGLIGENCE), WARRANTY OR ANY OTHER LEGAL OR EQUITABLE GROUNDS, FOR ANY CONSEQUENTIAL, INDIRECT, INCIDENTAL, LOST PROFITS, SPECIAL, PUNITIVE OR EXEMPLARY DAMAGES, WHETHER TO PERSON OR PROPERTY, ARISING FROM OR RELATING TO THE PRODUCT, EVEN IF PMC HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH LOSSES OR DAMAGES.**

Non-Warranty Service by PMC: If PMC determines that the suspected Defect of the Product is not covered by this Warranty, disposition of the Product will be made pursuant to the terms and conditions of PMC's written estimate on a time and materials basis.

Continuing Warranty for Products Repaired or Replaced under Warranty: Following the repair or replacement of a Product covered by this Warranty, such Product will continue to be subject to the original Warranty for the remainder of original Warranty Period or for three (3) months from the repair or replacement date, whichever is longer.

No Rights Implied: Nothing in the sale, lease or rental of any Product by PMC shall be construed to grant any right, interest or license in or under any patent, trademark, copyright, trade secret or other proprietary right or material owned by anyone; nor does PMC encourage the infringement of same.

Exclusive Warranty: This writing is the final, complete, and exclusive expression of the Warranty covering the Product. Any statements made by PMC, its employees or agents that differ from the terms of this Warranty shall have no effect. It is expressly understood that Customer's acceptance of this Warranty, by performance or otherwise, is upon and subject solely to the terms and conditions hereof, and any additional or different terms and conditions proposed or expressed by Customer or anyone, whether in writing or otherwise, are null and void unless specifically agreed to in writing by an Officer of PMC.



## **SAFETY AND HANDLING**

This chapter contains important information on the safety, handling, and use of your proportioning pumps.



***Before rebuilding the proportioning pumps, carefully read all the technical and safety documentation included in this manual. Pay special attention to the information to know and understand the operation and the conditions of use of the proportioning pumps. All of the information is aimed at enhancing User Safety and avoiding possible breakdowns derived from the incorrect use of the proportioning pumps.***

**WARNING!** Presents information to alert of a situation that might cause serious injuries if the instructions are not followed.

**CAUTION!** Presents information that indicates how to avoid damage to the Proportioner or how to avoid a situation that could cause minor injuries.

**NOTE!** Is relevant information of a procedure being carried out.

Careful study of this manual will enable the operator to know the characteristics of the proportioning pumps and the operating procedures. By following the instructions and recommendations contained herein, you will reduce the potential risk of accidents in the installation, use or maintenance of the proportioning pumps; you will provide a better opportunity for incident-free operation for a longer time, greater output and the possibility of detecting and resolving problems quickly and simply.

Keep this Operations Manual for future consultation of useful information at all times. If you lose this manual, ask for a new copy from your PMC Distributor or go online and visit our web site at [www.polymac-usa.com](http://www.polymac-usa.com).



## SAFETY AND HANDLING

The proportioning pumps have been designed and built for the application of polyurea chemical systems, polyurethane foam chemical systems, and some two-component epoxy systems.

***WARNING!*** The design and configuration of the proportioning pump does not allow its use in potentially explosive atmospheres, or the pressure and temperature limits described in the technical specifications of this manual to be exceeded.

Always use liquids and solvents that are compatible with the unit. If in doubt, consult your PMC Distributor.

When working with the proportioning pump, it is recommended that the operator wear suitable clothing and elements of personal protection, including, without limitation, gloves, protective goggles, safety footwear, and face masks. Use breathing equipment when working with the pumps in enclosed spaces or in areas with insufficient ventilation. The introduction and follow-up of safety measures must not be limited to those described in this manual. Before starting up the proportioner, a comprehensive analysis must be made of the risks derived from the products to be dispensed, the type of application, and the working environment.



***To prevent possible injury caused by incorrect handling of the raw materials and solvents used in the process, carefully read the Material Safety Data Sheet (MSDS) provided by your supplier.***

***Deal with the waste caused according to current regulations.***

***To avoid damage caused by the impact of pressurized fluids, do not open any connection or perform maintenance work on components subject to pressure until the pressure has been completely eliminated.***

***Use suitable protection when operating, maintaining or being present in the area where the equipment is functioning. This includes, but is not limited to, the use of protective goggles, gloves, shoes and safety clothing and breathing equipment.***

***The equipment includes components that reach high temperatures and can cause burns. Hot parts of the equipment must not be handled or touched until they have cooled completely.***

***To prevent serious injury through crushing or amputation, do not work with the equipment without the safety guards installed on the moving parts. Make sure that all the safety guards are correctly reinstalled at the end of the repair or maintenance work of the equipment.***



## **INCLUDED PARTS AND RECOMMENDED TOOLS**

<b>KT-07000 PUMP KIT A-SIDE 120</b>		
<b>PART NUMBER</b>	<b>QTY</b>	<b>DESCRIPTION</b>
PU-03000	1	TRIPLE LIP SEAL, 120 PUMP
PU-01016A-012	1	PISTON SEAL, 120 PUMP
PU-01013A	1	CYLINDER FLANGE GASKET
PU-03005	1	SHAFT BEARING, 120, "A" SIDE
PU-05041	1	PISTON BEARING; 120
PU-05029	1	PIN
PU-05030	1	SNAP RING
PU-03019	1	BULLET, 120
PU-03021	1	A SIDE SEAT TOOL
OR-00011A	2	O-RING
OR-00046A	2	O-RING
OR-00020A	2	O-RING
OR-00044A	1	O-RING
TN-04199	2	SHCS, BOLT, 3/8-24 X 2.5

<b>KT-07001 PUMP KIT R-SIDE 120</b>		
<b>PART NUMBER</b>	<b>QTY</b>	<b>DESCRIPTION</b>
PU-03000	1	TRIPLE LIP SEAL, 120 PUMP
PU-01016A-012	1	PISTON SEAL, 120 PUMP
PU-01013A	1	CYLINDER FLANGE GASKET
PU-03010	1	SHAFT BEARING, 120, "R" SIDE
PU-05041	1	PISTON BEARING; 120
PU-05029	1	PIN
PU-05030	1	SNAP RING
PU-03019	1	BULLET, 120
OR-00011A	2	O-RING
OR-00046A	2	O-RING
TN-04199	2	SHCS, BOLT, 3/8-24 X 2.5

<b>RECOMMENDED TOOLS</b>
<b>120 Pump Line</b>
9/16" Socket
Torque Wrench
1" Open Ended Wrench
5/16" Allen Wrench
Rubber Mallet



## INCLUDED PARTS AND RECOMMENDED TOOLS

<b>KT-07002</b> <b>PUMP KIT A-SIDE 80</b>		
PART NUMBER	QTY	DESCRIPTION
PU-03001	1	TRIPLE LIP SEAL, 80 PUMP
PU-03006	1	SHAFT BEARING, 80, "A" SIDE
PU-01016A-008	1	PISTON SEAL, 80 PUMP
PU-01013A	1	CYLINDER FLANGE GASKET
PU-05029-80	1	PIN
PU-05030-80	1	SNAP RING
PU-05042	1	PISTON BEARING, 80
PU-03020	1	BULLET, 80
PU-03016	1	RETAINING RING, 80, "A" SIDE
PU-03021	1	A SIDE SEAT TOOL
OR-00011A	2	O-RING
OR-00046A	2	O-RING
OR-00020A	2	O-RING
OR-00044A	1	O-RING
TN-04199	2	SHCS, BOLT, 3/8-24 X 2.5

<b>KT-07003</b> <b>PUMP KIT R-SIDE 80</b>		
PART NUMBER	QTY	DESCRIPTION
PU-03001	1	TRIPLE LIP SEAL, 80 PUMP
PU-03011	1	SHAFT BEARING, 80, "R" SIDE
PU-01016A-008	1	PISTON SEAL, 80 PUMP
PU-05030	1	SNAP RING
PU-01013A	1	CYLINDER FLANGE GASKET
PU-05029-80	1	PIN
PU-05042	1	PISTON BEARING, 80
PU-03020	1	BULLET, 80
OR-00011A	2	O-RING
OR-00046A	2	O-RING
TN-04199	2	SHCS, BOLT, 3/8-24 X 2.5

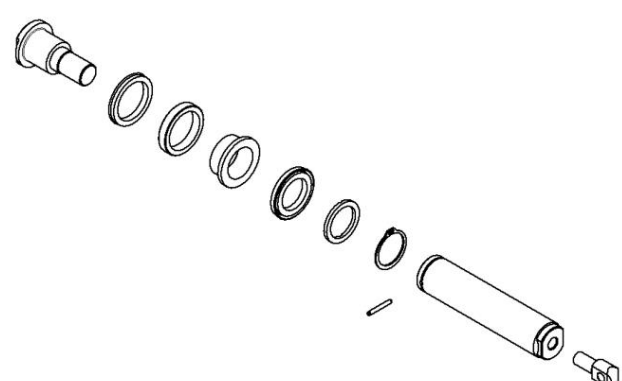
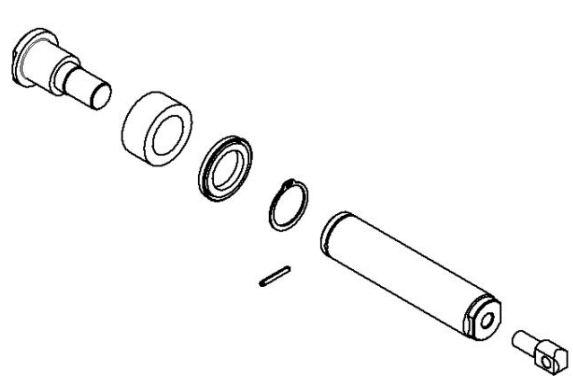
<b>RECOMMENDED TOOLS</b> <b>80 Pump Line</b>
9/16" Socket
Torque Wrench
7/8" Open Ended Wrench
5/16" Allen Wrench
Rubber Mallet



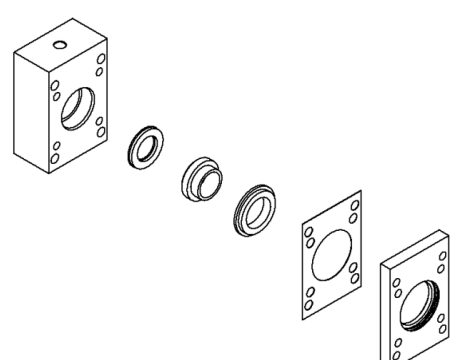
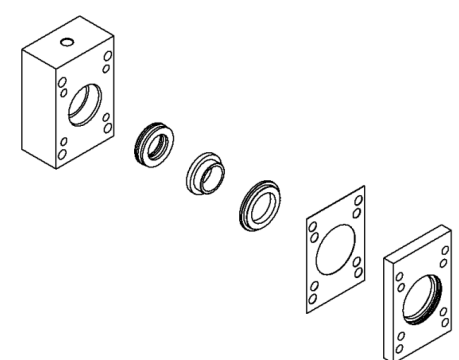


INCLUDED PARTS AND RECOMMENDED TOOLS

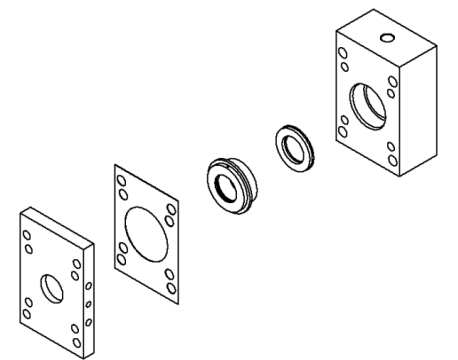
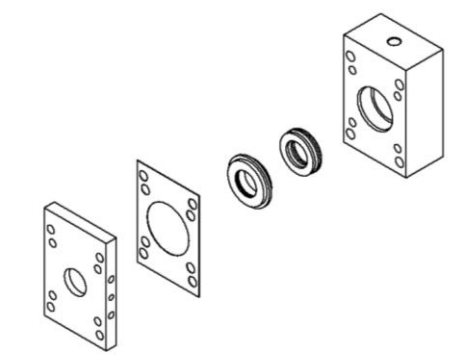
**NOTE!** Both configurations are fully compatible with each other.

Piston Seal Kits	
Original	Replaced with
	

Cylinder Seal Kits (A-Side)	
Original	Replaced with
	

Cylinder Seal Kits (R-Side)	
Original	Replaced with
	

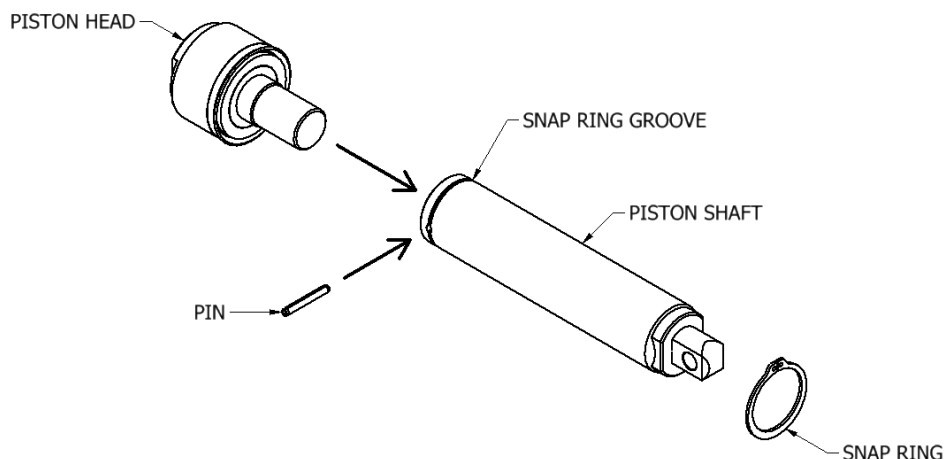
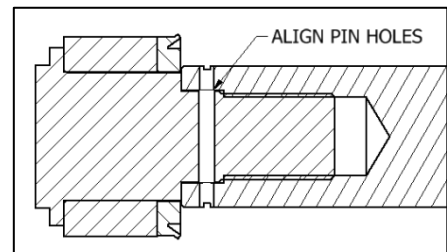
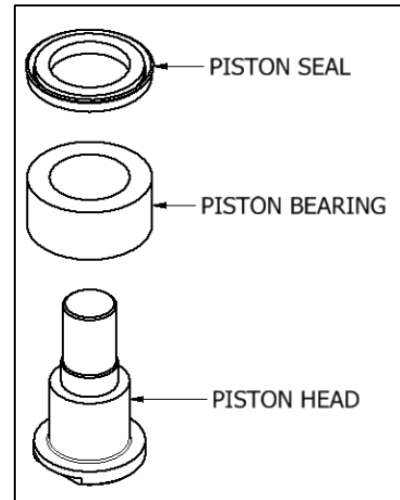


## **INSTRUCTIONS**

**CAUTION!** When rebuilding any pump, it is highly recommended to replace **ALL** O-rings and seals, regardless of condition. When replacing O-rings and seals, always apply liberal amounts of PMC approved grease (GP-LUBEGREASE) to both the O-ring or seal, as well as all corresponding sealing surfaces.

### **Piston Assembly**

1. Install the **Piston Bearing** onto the **Piston Head**.
2. Install the **Piston Seal** onto the **Piston Head**, making sure the U-cup faces away from the **Piston Bearing** (as shown).
3. Insert the **Piston Head** into the **Piston Shaft** and tighten. The pin holes should align.
4. Insert the **Pin**
5. Install the **Snap Ring** into the **snap ring groove** on the **Piston Rod**, being careful not to damage the surface of the **Piston Rod**.



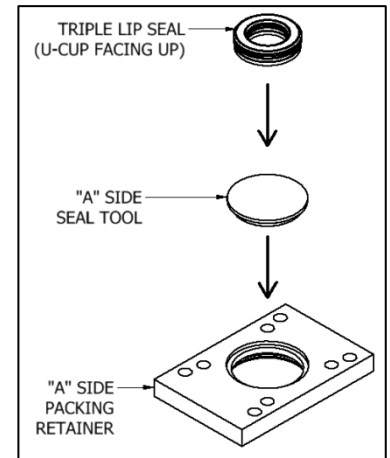
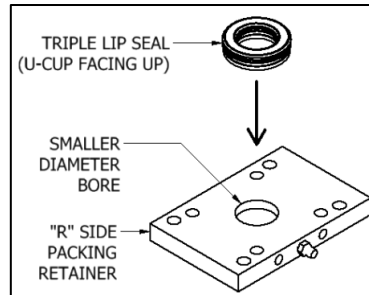


## INSTRUCTIONS

### Cylinder Assembly

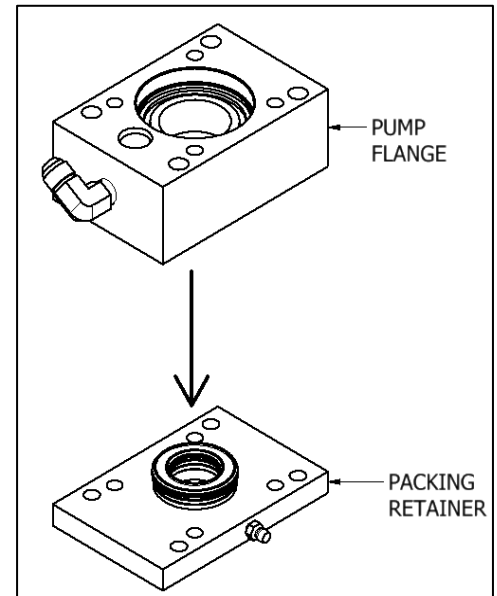
1. Lay the **Packing Retainer** on a flat surface.

- a. For “A” Side Pumps, lay the “**A**” **Side Packing Retainer** down (the side with the O-Ring groove is face down). Insert the “**A**” **Side Seal Tool** into the “**A**” **Side Packing Retainer**.



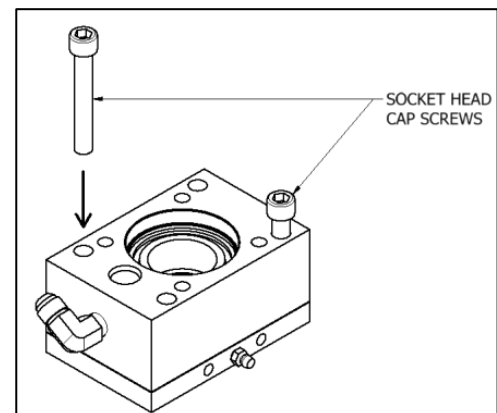
- b. For “R” Side Pumps, lay the “**R**” **Side Packing Retainer** down (the side with the **smaller diameter bore** should be facing up)

2. Lubricate (using PMC approved grease) the **Triple Lip Seal** and place it on top of the **Packing Retainer**, roughly centering it about the bore or seal tool.
3. Lubricate (using PMC approved grease) the bore of the **Pump Flange**, and carefully place the **Pump Flange** on top of the **Triple Lip Seal**, ensuring the **Triple Lip Seal** is centered in the bore of the **Pump Flange**.
4. Insert the **Socket Head Cap Screws** as shown and tighten until **HAND TIGHT**.



5. Using an Allen Wrench, tighten the **Socket Head Cap Screws** using the following procedure:
  - a. Tighten one of the screws 1-2 complete turns
  - b. Tighten the other screw 1-2 complete turns
  - c. Repeat until both screws are fully tightened

**CAUTION!** By alternating screws every 1-2 turns, the risk of damage to the seal due to improper installation is greatly reduced.

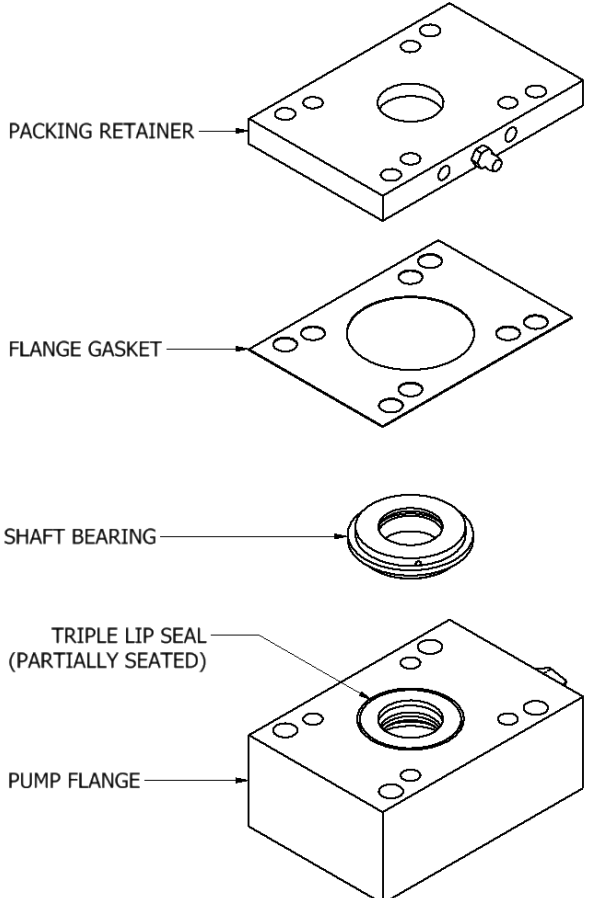
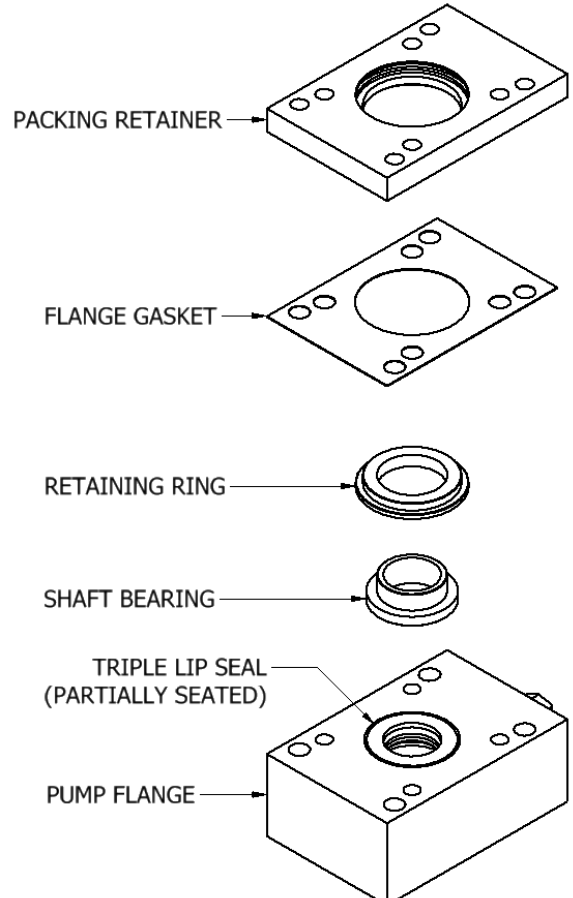
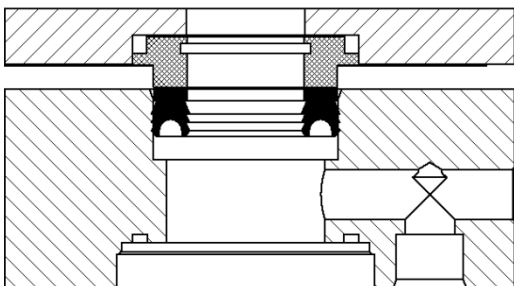
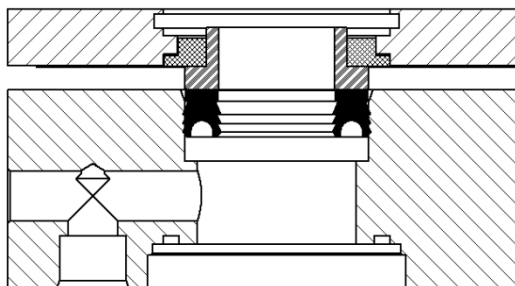




## INSTRUCTIONS

6. Place the **Pump Flange** on a flat surface with the **Triple Lip Seal** facing up.

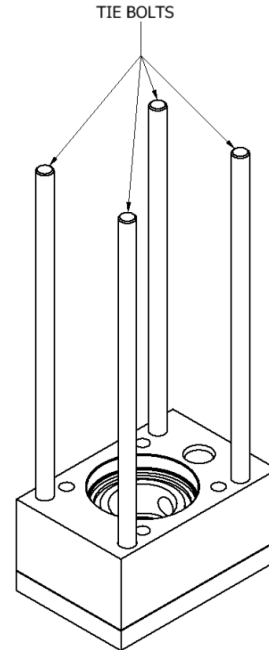
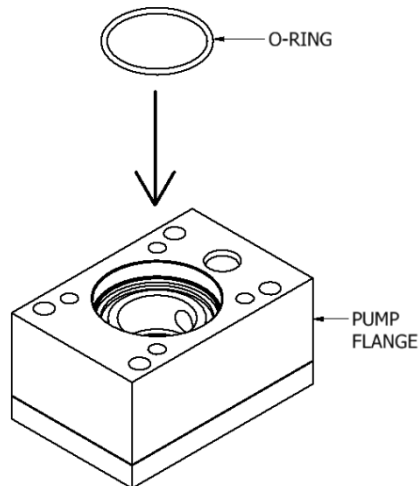
- a. When rebuilding R-Side Pumps (all sizes) and A-Side Pumps (size 120 ONLY), place the **Shaft Bearing** onto the **Triple Lip Seal**. The side of the **Shaft Bearing** with the smaller outside diameter should be facing the **Triple Lip Seal**.
- b. When rebuilding A-Side Pumps (size 80 or below), place the **Retaining Ring** on the **Triple Lip Seal** with the larger diameter facing down. Then slide the **Shaft Bearing** over the **Retaining Ring** with the smaller diameter facing up. See the diagram for proper orientation.

R-Side (all sizes) & A-Side (size 120)	R-Side (size 80 and below)
 <p>PACKING RETAINER</p> <p>FLANGE GASKET</p> <p>SHAFT BEARING</p> <p>TRIPLE LIP SEAL (PARTIALLY SEATED)</p> <p>PUMP FLANGE</p>	 <p>PACKING RETAINER</p> <p>FLANGE GASKET</p> <p>RETAINING RING</p> <p>SHAFT BEARING</p> <p>TRIPLE LIP SEAL (PARTIALLY SEATED)</p> <p>PUMP FLANGE</p>
	

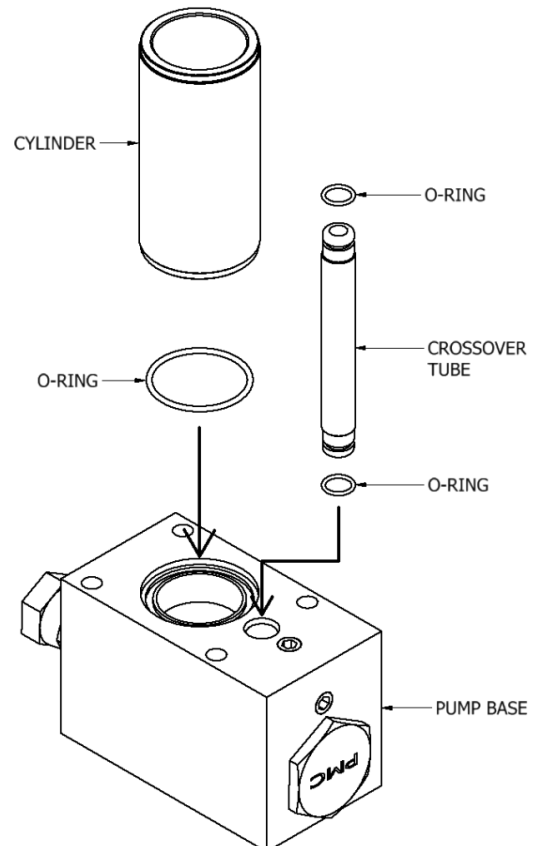


## INSTRUCTIONS

7. Lubricate (using PMC approved grease) the **O-Ring** and the groove in the **Pump Flange**, and install the **O-Ring** into the groove in the **Pump Flange**.
8. Install the **Tie Bolts** until they are flush with the **Packing Retainer**.



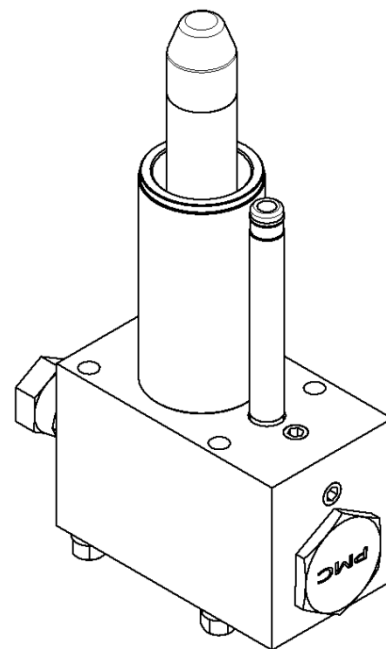
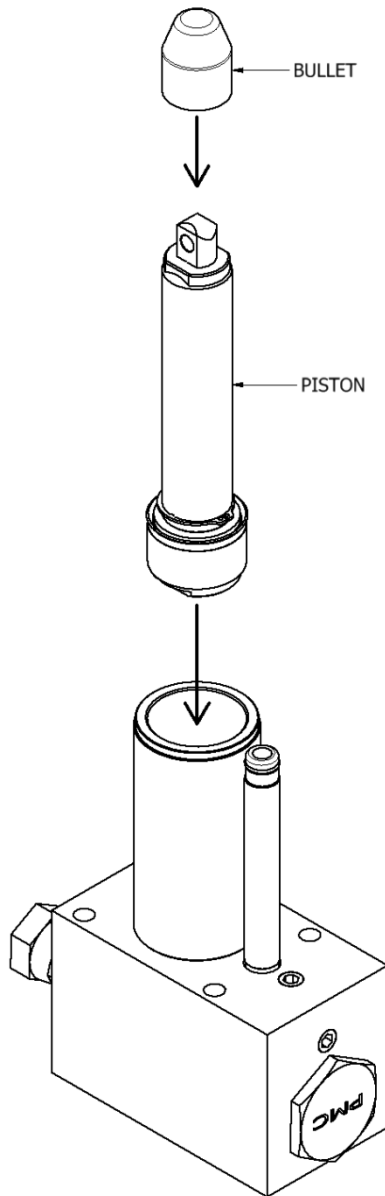
9. Place the **Pump Base** on a flat surface with the cylinder bore facing up (as shown below).
10. Lubricate (using PMC approved grease) the **O-Rings** and grooves on the **Crossover Tube**, and install the **O-Rings** into the grooves on the **Crossover Tube**.
11. Install the **Crossover Tube** into the **Pump Base**.
12. Lubricate (using PMC approved grease) the **O-Ring** and the groove in the **Pump Base**, and install the **O-Ring** into the groove in the **Pump Base**.
13. Lubricate (using PMC approved grease) the inside surface and both ends of the **Cylinder** and install it into the **Pump Base**.





## INSTRUCTIONS

14. Install the **Piston** into the **Cylinder**. Push the **Piston** in until it bottoms out.
15. Install the **Bullet** onto the **Piston** and lubricate the outside of the **Bullet** (using PMC approved grease).





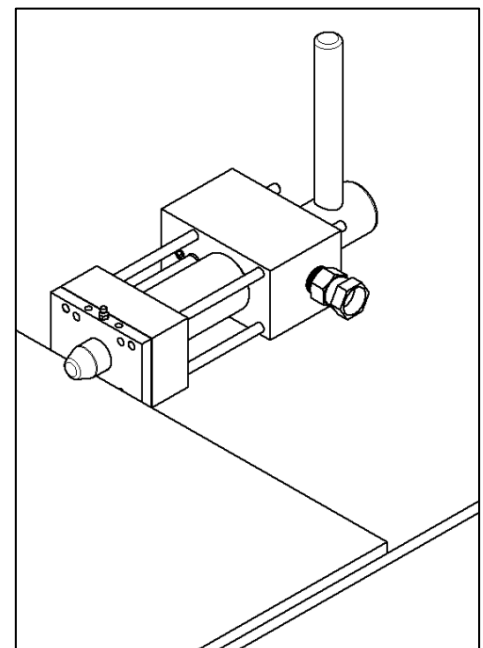
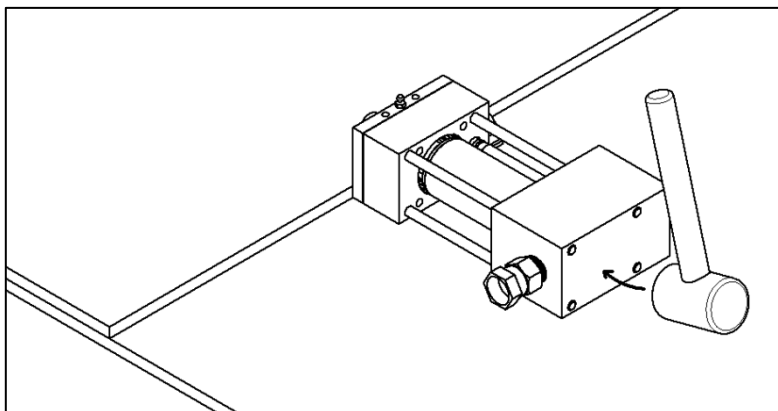
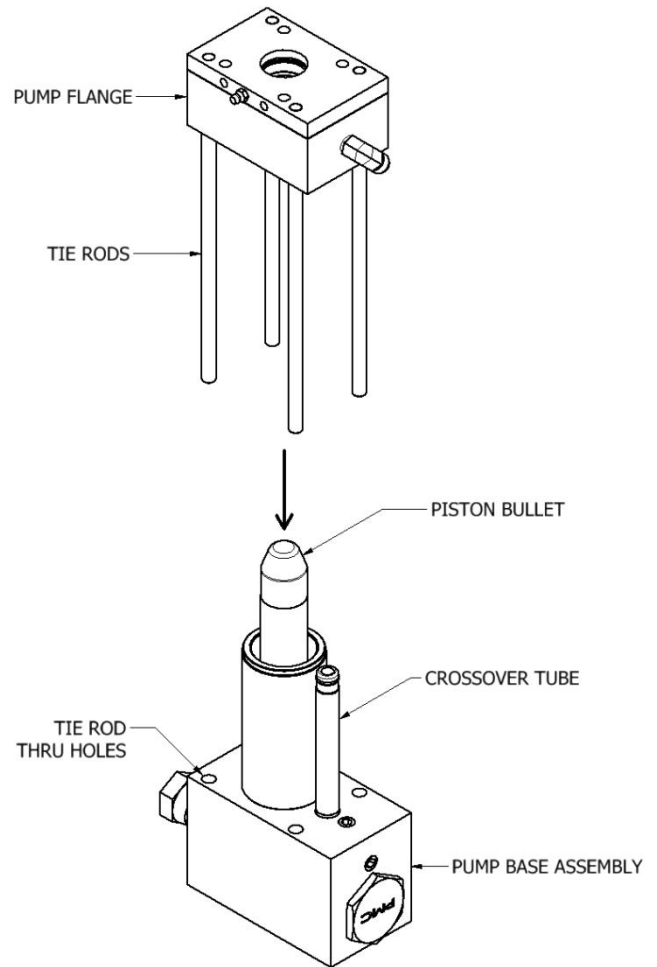
## INSTRUCTIONS

16. Ensure all sealing surfaces are lubricated (using PMC approved grease) and install the **Pump Flange** onto the **Pump Base Assembly** by lifting the **Pump Flange** over the **Pump Base Assembly** and simultaneously:

- Aligning and inserting the **Tie Rods** into the **Tie Rod Thru Holes**.
- Ensuring the **Piston Bullet** smoothly and evenly slides into the **Triple Lip Seal** (not shown) in the **Pump Flange** and exits through the other side of the **Pump Flange**.
- Aligning the **Crossover Tube** with the corresponding bore in the **Pump Flange**.

17. Lay the partially assembled **Pump** on its side, against a small ledge (as shown below). Ensure the ledge is small enough for the **Piston** to freely exit the **Pump Flange**.

18. Use a **Mallet** to **GENTLY TAP** the **Pump Base**. The **Tie Rods** should protrude from the **Pump Base**.



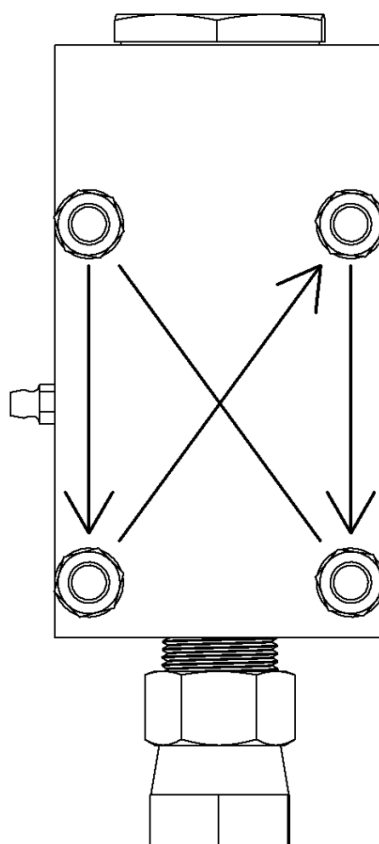
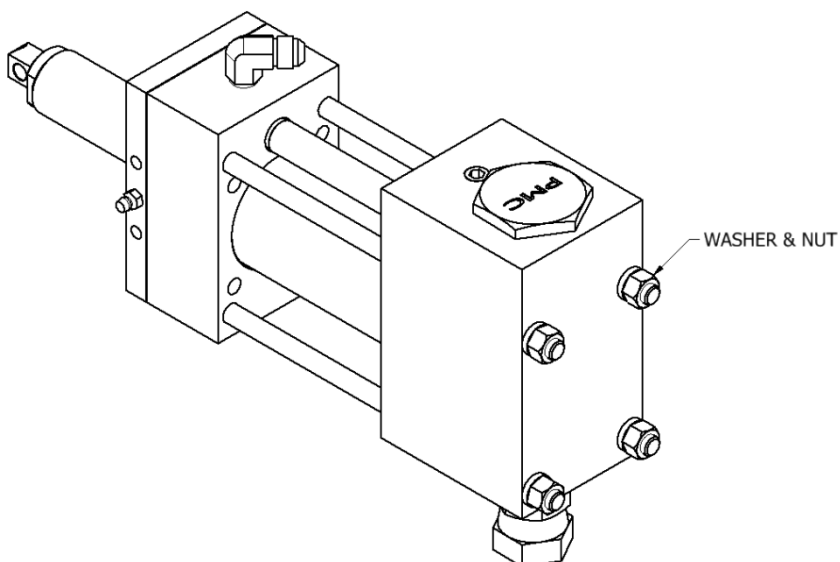


## INSTRUCTIONS

19. Remove the **Bullet**.

20. Add a **Washer** and **Nut** to each **Tie Rod** and tighten until **HAND TIGHT**.

21. Using a 9/16" socket and torque wrench, torque each **Nut** to 30 ft-lbs (41 N-m) in an X-pattern as shown.

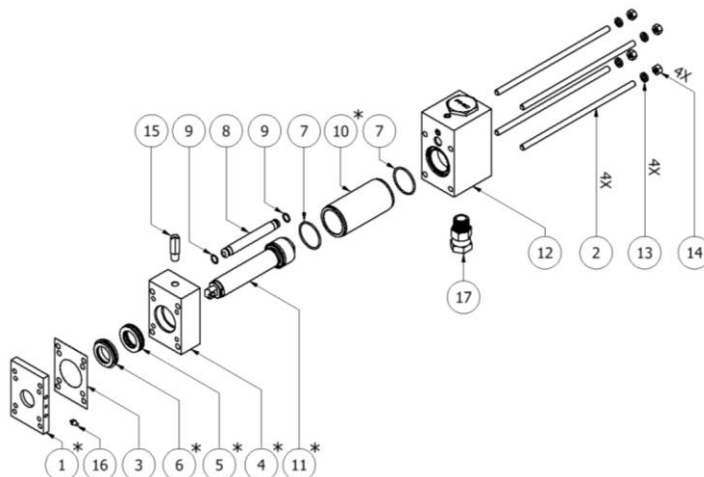






## PART IDENTIFICATION

### "R" Pump Assembly; Size 120 & 80 (PU-05002-120 & PU-05002-80)

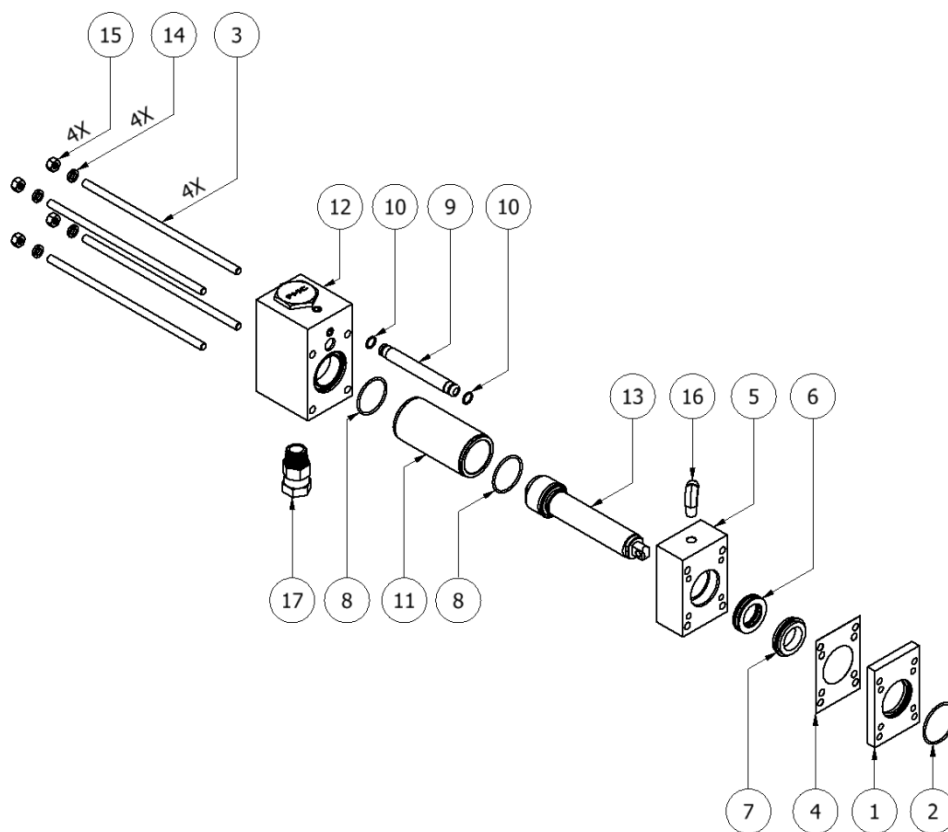


<b>"R" PUMP ASSEMBLY (PU-05002-120 &amp; PU-05002-80)</b>				
ITEM	QTY	PART NUMBER	DESCRIPTION	
1*	1	PU-05032	<b>PU-05002-120</b>	"R" PACKING RETAINER FLANGE; SIZE 120
	1	PU-05032-80	<b>PU-05002-80</b>	"R" PACKING RETAINER FLANGE; SIZE 80
2	4	PU-05026	TIE ROD; 3/8-24	
3	1	PU-01013A	CYLINDER FLANGE GASKET	
4*	1	PU-05014	<b>PU-05002-120</b>	PUMP FLANGE; SIZE 120
	1	PU-05014-80	<b>PU-05002-80</b>	PUMP FLANGE; SIZE 80
5*	1	PU-03000	<b>PU-05002-120</b>	TRIPLE LIP SEAL, 120
	1	PU-03001	<b>PU-05002-80</b>	TRIPLE LIP SEAL, 80
6*	1	PU-03010	<b>PU-05002-120</b>	SHAFT BEARING, 120, R
	1	PU-03011	<b>PU-05002-80</b>	SHAFT BEARING, 80, R
7	2	OR-00046A	O-RING #133; VITON 90D PUMP CYL	
8	1	PU-05017	CROSSOVER TUBE	
9	2	OR-00011A	O-RING; CROSSOVER TUBE #014	
10*	1	PU-05012	<b>PU-05002-120</b>	CYLINDER; SIZE 120
	1	PU-05012-80	<b>PU-05002-80</b>	CYLINDER; SIZE 80
11*	1	-	PISTON ASSEMBLY	
12	1	-	PUMP BASE ASSEMBLY	
13	4	PU-05027	WASHER	
14	4	PU-05028	NUT	
15	1	HI-05038	1/4 NPT X 9/16-18 JIC 90 DEG E	
16	1	TN-04186	GREASE FITTING	
17	1	HI-05016	3/4 MPT x 3/4 FPT SW	

\*Parts with an asterisk denote size specific parts. See Description Column for details



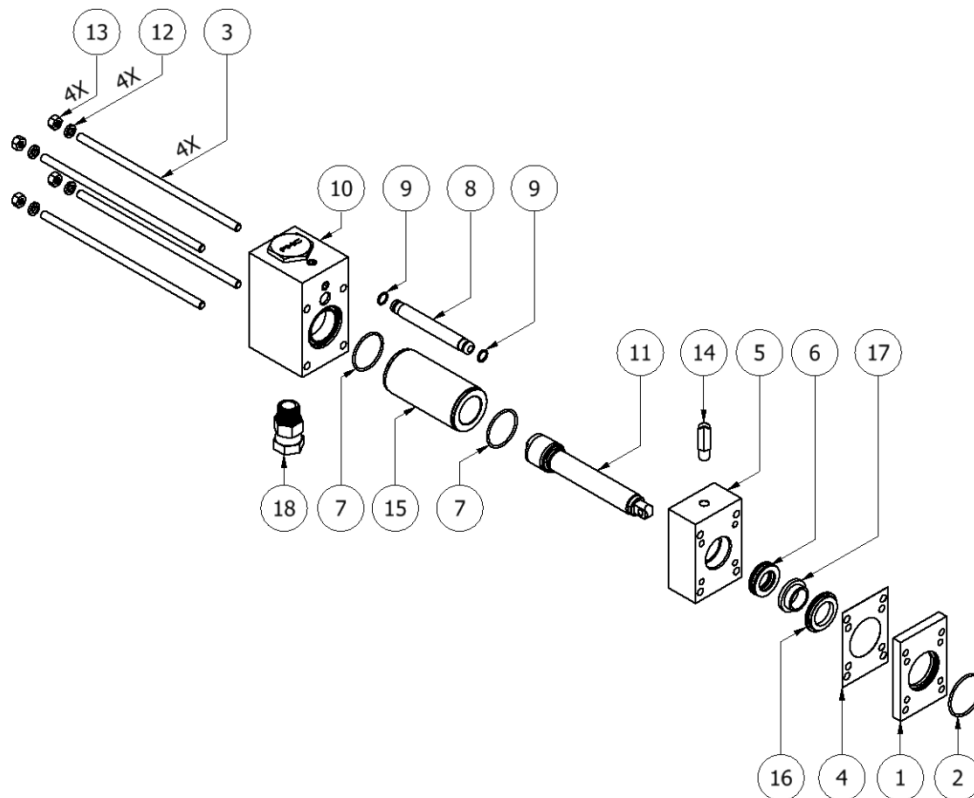
## **"A" Pump Assembly; Size 120** **(PU-05001-120)**



<b>"A" PUMP ASSEMBLY; SIZE 120 (PU-05001-120)</b>			
<b>ITEM</b>	<b>QTY</b>	<b>PART NUMBER</b>	<b>DESCRIPTION</b>
1	1	PU-05013	"A" PACKING RETAINER FLANGE
2	1	OR-00020A	#136 VITON LUBE CYLINDER O-RING
3	4	PU-05026	TIE ROD; 3/8-24
4	1	PU-01013A	CYLINDER FLANGE GASKET
5	1	PU-05014	PUMP FLANGE
6	1	PU-03000	TRIPLE LIP SEAL, 120
7	1	PU-03005	SHAFT BEARING, 120, A
8	2	OR-00046A	O-RING #133; VITON 90D PUMP CYL
9	1	PU-05017	CROSSOVER TUBE
10	2	OR-00011A	O-RING; CROSSOVER TUBE #014
11	1	PU-05012	CYLINDER
12	1	-	PUMP BASE ASSEMBLY
13	1	-	PISTON ASSEMBLY
14	4	PU-05027	WASHER
15	4	PU-05028	NUT
16	1	HI-05038	1/4 NPT X 9/16-18 JIC 90 DEG E
17	1	HI-05016	3/4 MPT X 3/4 FPT SW



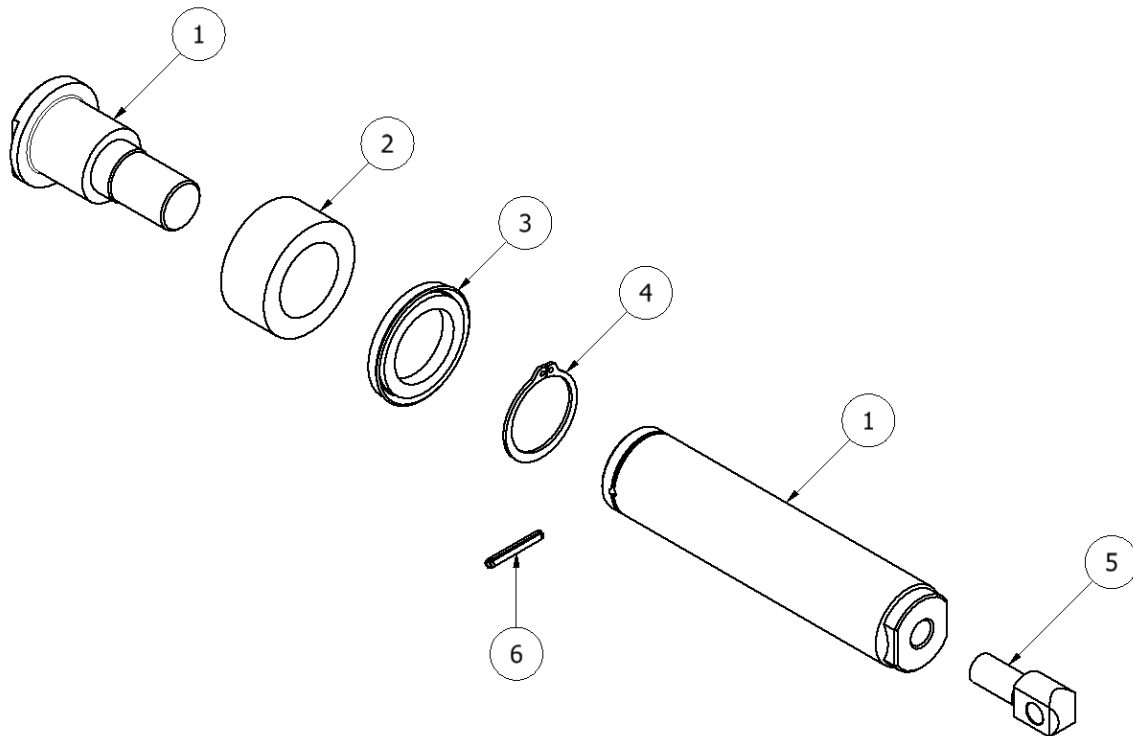
**"A" Pump Assembly; SIZE 80**  
**(PU-05001-80)**



<b>"A" PUMP ASSEMBLY (PU-05001-80)</b>			
<b>ITEM</b>	<b>QTY</b>	<b>PART NUMBER</b>	<b>DESCRIPTION</b>
1	1	PU-05013	"A" PACKING RETAINER FLANGE
2	1	OR-00020A	#136 VITON LUBE CYLINDER O-RING
3	4	PU-05026	TIE ROD; 3/8-24
4	1	PU-01013A	CYLINDER FLANGE GASKET
5	1	PU-05014-80	PUMP FLANGE
6	1	PU-03001	TRIPLE LIP SEAL, 80
7	2	OR-00046A	O-RING #133; VITON 90D PUMP CYL
8	1	PU-05017	CROSSOVER TUBE
9	2	OR-00011A	O-RING; CROSSOVER TUBE #014
10	1	-	PUMP BASE ASSEMBLY
11	1	-	PISTON ASSEMBLY
12	4	PU-05027	WASHER
13	4	PU-05028	NUT
14	1	HI-05038	1/4 NPT X 9/16-18 JIC 90 DEG E
15	1	PU-05012-80	CYLINDER
16	1	PU-03016	RETAINING RING, 80, 60, A
17	1	PU-03006	SHAFT BEARING, 80, A
18	1	HI-05016	3/4 MPT X 3/4 FPT SW



## PISTON ASSEMBLY



80 PUMP PISTON ASSEMBLY			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	PU-05011-80	PISTON SHAFT; SIZE 80
2	1	PU-05042	PISTON BEARING, 80
3	1	PU-01016A-008	PISTON SEAL; SIZE 80
4	1	PU-05030-80	80 SNAP RING
5	1	PU-05031	PISTON CLEVIS
6	1	PU-05029-80	80 SPRING PIN

120 PUMP PISTON ASSEMBLY			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	PU-05011-120	PISTON SHAFT; SIZE 120
2	1	PU-05041	PISTON BEARING, 120
3	1	PU-01016A-012	PISTON SEAL; SIZE 120
4	1	PU-05030	120 SNAP RING
5	1	PU-05031	PISTON CLEVIS
6	1	PU-05029	120 SPRING PIN



## **MANUAL REVISIONS**

Revision	Date	Changes	Approved
1.0	01NOV2015	Initial release of Pump Rebuild Instructions	Vadams