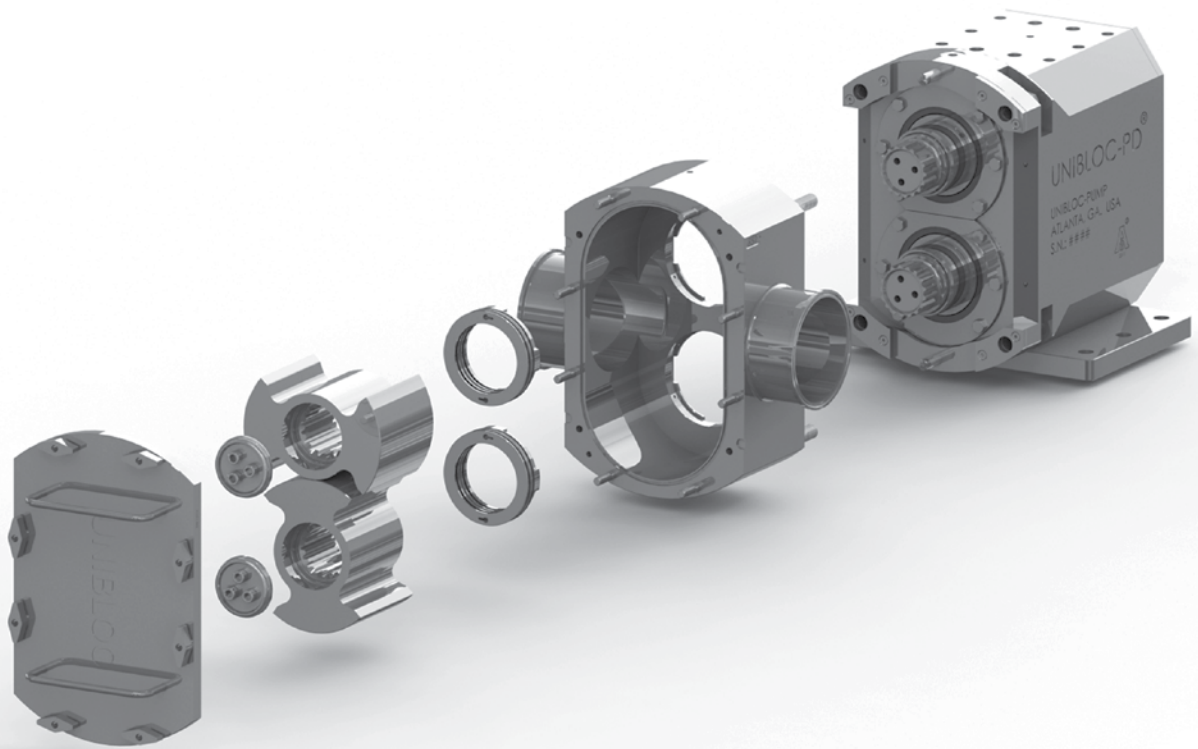


UNIBLOC®-PD

Operation & Service Manual

Models: 600-677



Original Instructions

MANUAL NO.: PD600-677 REVISION: 09/2026



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Revision Date: 09/2026
Manual No.: PD600-677

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1.0 General

1.1 Declaration of Conformity



EU Declaration of Conformity

We hereby declare that the following machinery is intended for installation into a machine or to be assembled with other machines into a machine. It must not be put into service until the machinery into which it is incorporated has been declared in conformity with the provisions of the Machinery Directive 2006/42/EC

Manufacturer Unibloc Hygienic Technologies US LLC 1650 Airport Rd Kennesaw, Ga 30144	Manufacturer Unibloc Hygienic Technologies Germany GmbH Stromberger Strasse 197 D-59269 Beckum Germany
Model name:	UNIBLOC-PD UNIBLOC-GP
Model design:	PD200-677 GP200-450
Serial Number:	*****
Applied harmonized standards:	EN ISO 12100:2010 - Safety of machinery EN ISO 13857:2019 - Safety Distances EC 2023/2006 - GMP For Materials in Contact with Food EC 1935/2004 - Materials and Articles in contact with Food EU NO 10/2011 - Plastic Articles in contact with Food

A technical construction file for this machinery is retained at the above address.

Signed,

Rob Grantham-Hill
Associate Director of Global Engineering
July 2026



**UNIBLOC**
PUMPS

**FLOTRONIC**
ONE-NOU PUMPS

**HYGENITEC**
FLOW CONTROL

**STANDARD**
PUMP

1650 Airport Road, Ste 110 Kennesaw, Georgia 30144 USA p 770-218-8900

unibloctech.com

1.2 General Description

UNIBLOC-PD is a positive displacement rotary lobe pump. It may be supplied with a drive unit (fig. 1.1) or without a drive unit (fig. 1.2). When supplied with a drive unit it is called **UNIBLOC-PD** assembly. Fig. 1.1 indicates various parts of an assembly. UNIBLOC-PD Models 600-677 can be supplied in 2 different series; 5000 series with stainless steel bearing housing or 3000 series with painted steel bearing housing. Each model can be mounted with the inlet and outlet ports in horizontal or vertical orientation. The orientation can be modified using either a foot for horizontal port orientation or a pedestal for vertical port orientation (fig 1.3). Port orientation should be specified when ordering.

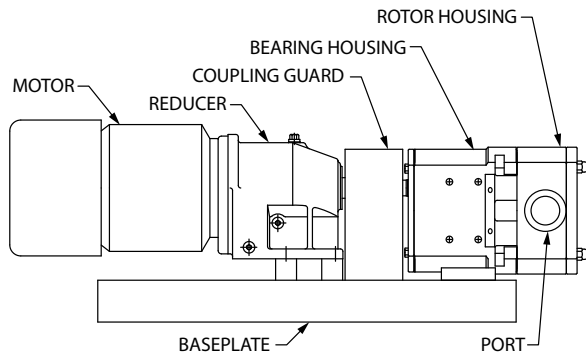


fig. 1.1

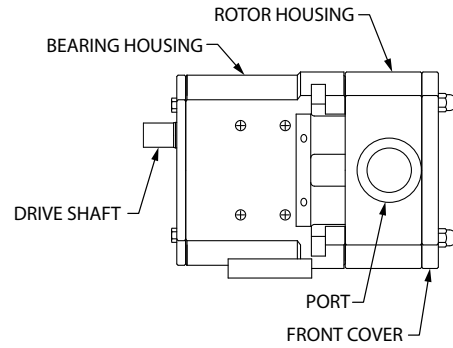
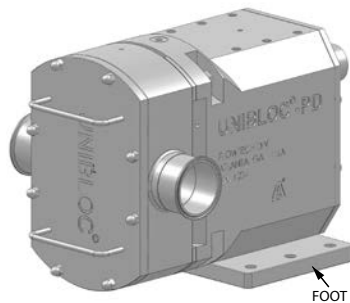
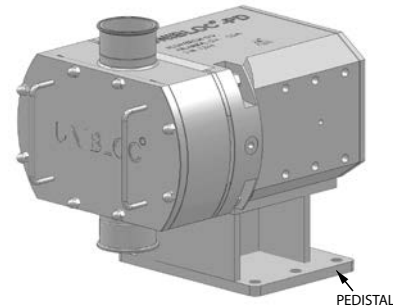


fig. 1.2



Horizontal Porting



Vertical Porting

fig. 1.3

1.2.1 Limitation

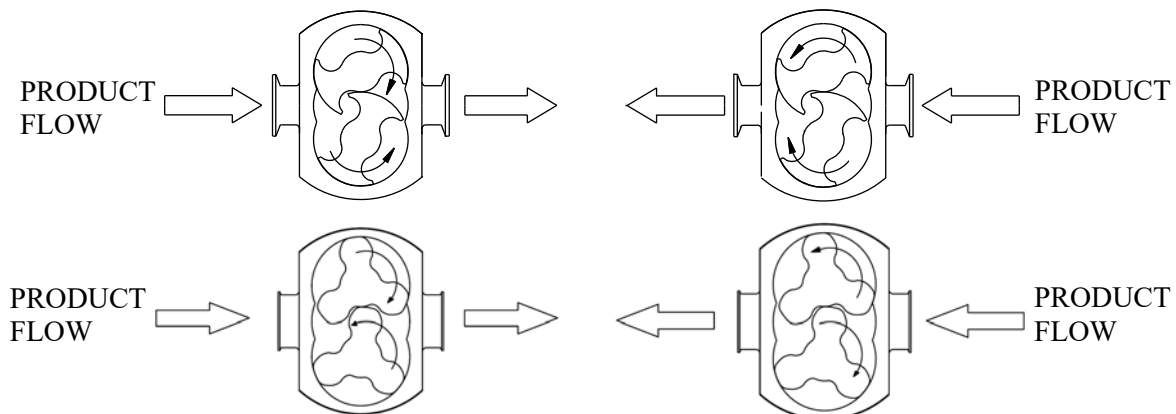


fig. 1.4

The pump is designed to operate in both directions without modifications (see fig. 1.4) and should be used for the duty for which it has been specified. The operating pressure, speed and temperature limits have been selected at the time of order and **MUST BE ADHERED TO**. These details are stated on the original order documentation. If not available, documentation may be obtained from your supplier by referencing the pump serial number and/or invoice number.

1.2.2 Noise Emission

Under certain operating conditions, pumps and/or drives and/or the systems within which they are installed can produce sound pressure levels that exceed 80dB. In such cases ear protection should be used.

1.2.3 Marking – Standard

Standard marking is machined on the side of pumps' bearing housing. Pump size is machined on rotor housing next to the ports. See figure 1.4 for details.

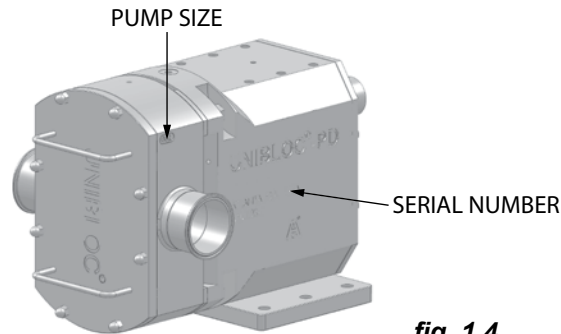


fig. 1.4

2.0 Safety

2.1 General

This information must be read carefully before installation, operation or servicing. The safety instruction must always be available for the pump operator. The following symbols are used.



WARNING: Indicates instructions that can affect personal safety if not followed.



WARNING: Indicates electrical voltage instructions that can affect personal safety if not followed.



ATTENTION: Indicates instructions to be considered for safe operation and to protect the pump and pump unit.

2.2 Safety Instructions

Incorrect installation, operation or maintenance of the equipment can cause serious personal injury and/or damage to the equipment and will invalidate the warranty. Make sure the pipes are well supported as the pump is not meant to serve this purpose. Keep in mind that pipes filled with liquid are very heavy. See fig. 2.1 for recommended pipe layout.

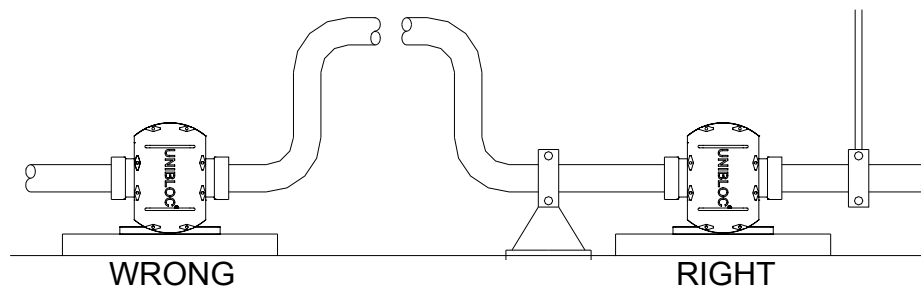


fig. 2.1

-  Pump or pump assembly must be electrically connected by authorized personnel, follow the motor instructions supplied in case of assembly.
-  Never operate the pump if the front cover and/or suction/discharge pipe-work are not in place. Make sure they are properly installed, see fig. 2.1. Likewise, never operate the pump if other protection such as coupling and shaft guards are missing or incorrectly installed.
-  Never stick your appendages or other foreign objects inside the rotor housing, connections to the rotor housing, front cover or in the back cover if there is any possibility that the pump shafts may rotate.
-  Do not exceed the pump's maximum operating pressure, speed or temperature. Do not modify the operating parameters/system for which the unit was originally supplied for without first consulting your local supplier.
-  Pump installation and operation must always comply with prevailing health and safety regulations.
-  Always make sure the alignment with the drive unit is within proper tolerances. Misalignment between the pump, drive and coupling will result in premature wear, increased operating temperature and noisier environment.
See figure 2.2 for vertical misalignment: Place shims under pump or drive; 0.25mm (0.01inch) max deviation.
See figure 2.3 for horizontal misalignment: Move pump or drive horizontally; 0.25mm (0.01inch) max deviation.
See figure 2.4 for angular misalignment: Rotate pump or drive; 1° max deviation

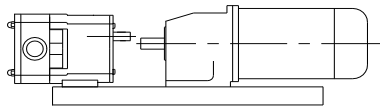


fig. 2.2

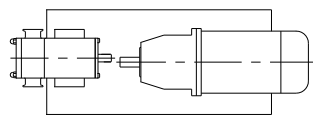


fig. 2.3

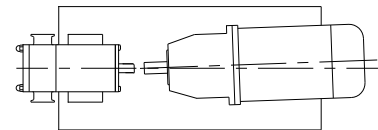


fig. 2.4

-  Avoid any direct contact with hot surfaces of the pump or drive unit. If the surface temperature of the system exceeds 68°C (155°F), the system must be marked with a warning sign for “hot surface”.
-  ALWAYS DISCONNECT THE POWER SUPPLY when performing any kind of maintenance. Make sure the power can not be switched by locking it. Allow the pump and associated parts to cool down to a safe handling temperature.
-  Never operate the pump with either the suction side or the pressure side blocked.
-  Never operate the pump without the front cover installed properly.
-  Always make sure any safety/relief valves are depressurized or relieved before dismantling.
-  Always ensure correct rotation of pump with flow direction before start.

ATTENTION

Installation of safety equipment to prevent pump from exceeding maximum allowable pressure is recommended. If an integrated safety relief valve is installed, do not allow extended periods of recirculation through the valve. Unibloc-Pump can either integrate a safety valve with the front cover, or supply one as a separate unit. Please contact your supplier.

ATTENTION

Installation of a non-return device is recommended to prevent reverse flow in the pump when it is being turned off. Unibloc-Pump can supply a check valve as non-returning device. Please contact your supplier.

ATTENTION

Check the pump and motor assembly for adequate oil prior startup.

ATTENTION

Make sure the pump and pipe systems are clean and free from debris or any foreign material before start up.

ATTENTION

Do not install the pump into a system where it may run dry (i.e. without a supply of pumped media)

unless it is assembled with a flushed shaft seal that is properly installed with a fully operational flushing system.

ATTENTION

Installation of pressure gauges/sensors in conjunction with the pump's suction and discharge connections is recommended to be able to monitor the pumps pressure.

ATTENTION

When cleaning manually or by CIP, SIP methods, the operator must ensure that a suitable procedure is used in accordance with the systems requirements.

ATTENTION

If operating with a pulley, proper support must be selected to prevent excessive bearing wear and bending of the shaft. See fig. 2.5. Additional safety guards are a must.

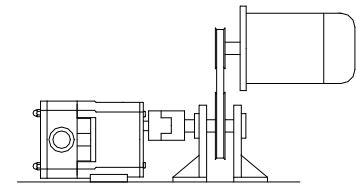


fig. 2.5

3.0 Installation

3.1 Handling and Storage



Caution must be taken when lifting the pump or pump unit. For all parts over 20kg (44lbs) we recommend the use of a lifting device or lifting arrangement when unpacking or moving. Check the weight guide in section 6.0 for details. See fig. 3.1 and 3.2 for lifting guidance. For large pumps, lifting eyes will be supplied with the pump to assist in lifting/moving.

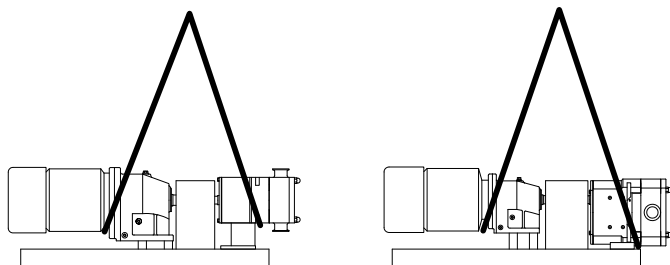


fig. 3.1

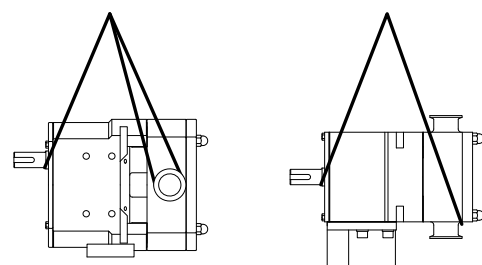


fig. 3.2

When you receive your product please follow these steps:

- Check packaging for any damage in transit
- Check the packing slip against received goods
- If an assembly, make sure the manual for the drive unit is included
- Visually inspect the product for any signs of damage
- Report any damage immediately to the carrier

If installation of the pump is delayed, store and protect the unit properly by:

- Not removing plastic port protectors.
- Selecting a clean, dry storage location free from vibration. In a moist or dusty atmosphere, further protect the pump/assembly with suitable cover.

3.2 System Design

When a pump is to be incorporated in a system, it is considered good practice to minimize the length of the pipes and the number of fittings and any other restrictions to product flow. Always consider the following when designing a system:

- Confirm the Net Positive Suction Head-NPSH available from the system exceeds the NPSH required from the pump to ensure smooth operation and avoid cavitation.
- Avoid suction lifts and manifold/common suction lines for two pumps running in parallel, as this may cause vibration or cavitation.
- Protect the pump from unintended blockage from nuts, bolts, welding slag, etc, by installing a strainer. Also protect the pump from unintended operation against a closed valve by installing a safety/pressure relief valve. Strainers and relief valves can be provided by Unibloc-Pump.
- Install monitoring equipment on suction and pressure side of pump for diagnostic purposes.
- Install shut-off valves on suction and pressure side to isolate pump when service is necessary.
- Make sure the pipes are well supported. Do not use the pump to support the piping. See figure 2.1
- Make the necessary piping arrangement if pump is supplied with a flushed seal or if the housing is jacketed for heating/cooling.
- Do not expose pump to rapid temperature changes, this may seize the pump as a result from thermal shock.
- Allow at least 1m (3.3ft) free space around the pump for easy maintenance access.

Figure 3.3 shows a typical recommended design and required components for safe operation of the pump. All components are available from Unibloc-Pump. Contact your supplier.

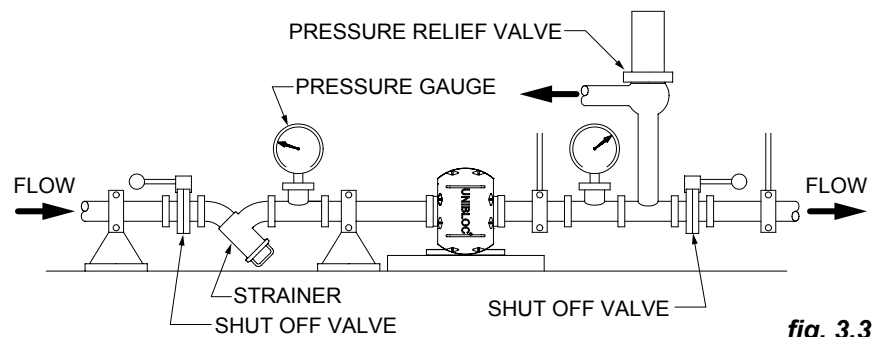


fig. 3.3

3.3 Flushed Seal Arrangement

The flushed seal arrangement cools and lubricates the shaft seal area. All flushed seals must be installed in a proper system; otherwise the seal will NOT OPERATE CORRECTLY. The flushing system also works as a barrier between the environment and the pumped media.

3.3.1 Single and Double Mechanical Seal Flushing/Cooling

DOUBLE MECHANICAL SHAFT SEALS MUST BE FITTED WITH FLUSHING SYSTEMS THAT WILL COOL AND LUBRICATE THEM, OTHERWISE THE SEALS WILL BE DAMAGED. The flushing system also provides a barrier of protection between the environment and the pumped media. The fluid in this system must be flowing before or at the same time the pump is engaged.

Flushing systems are normally not included with the pump. The piping arrangements and system components shown in fig. 3.4, 3.5 and 3.6 are recommended for satisfactory operation of the seals and to insure containment of the pumped liquid. Unless otherwise indicated, penetrations to the housing for flushing are 1/8" NPTF. The minimum flow rate for the flushing system is 1 lpm (0.3 gpm) or a rate that will keep the temperature of the seals within 5°C (9°F) of the pumped media. The pressure of the flushing system is dependent upon the requirements of the pumping application. As a guide, when the flushing system pressure is higher than that of the pumped media, the flushed liquid will enter into the media if the seal fails. Likewise, if the pumped media has a higher pressure than the flushing system, the media will enter into the flushing system if the seal fails. This is usually beneficial in cases when the pumped media is extremely hazardous, as it may be safely contained and disposed of properly.

Recommended Flush System Arrangement: PD600 & PD650

HORIZONTAL PUMP PORTS

VERTICAL PUMP PORTS

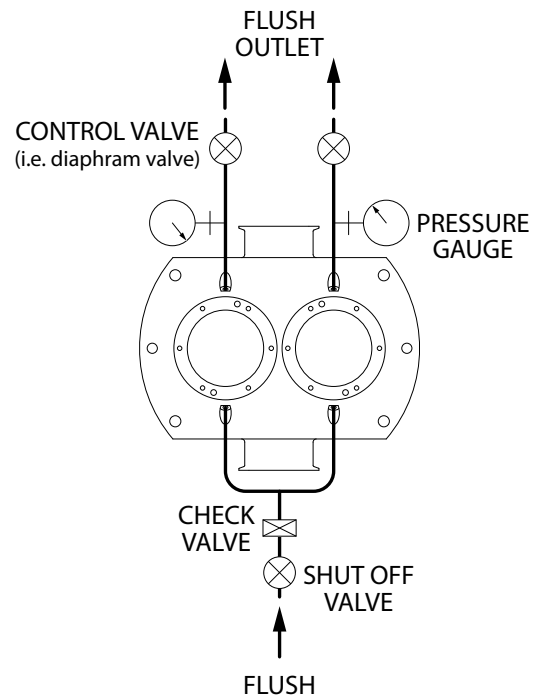
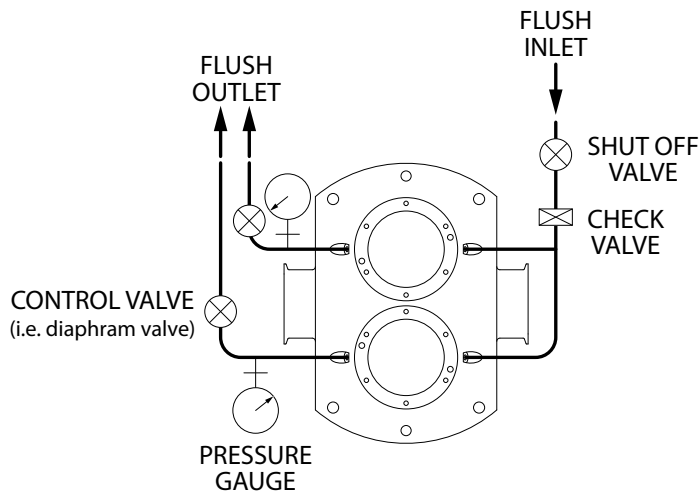


fig. 3.4

Alternative Flush System Arrangement: PD600 & PD650

The illustrations below in figure 3.5 show alternative methods of arranging the flushing system and its components. Although not ideal, they are adequate for less critical pump applications.

HORIZONTAL PUMP PORTS

VERTICAL PUMP PORTS

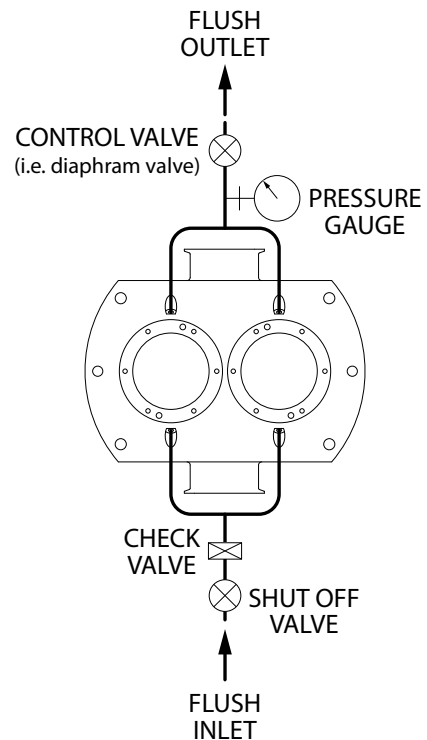
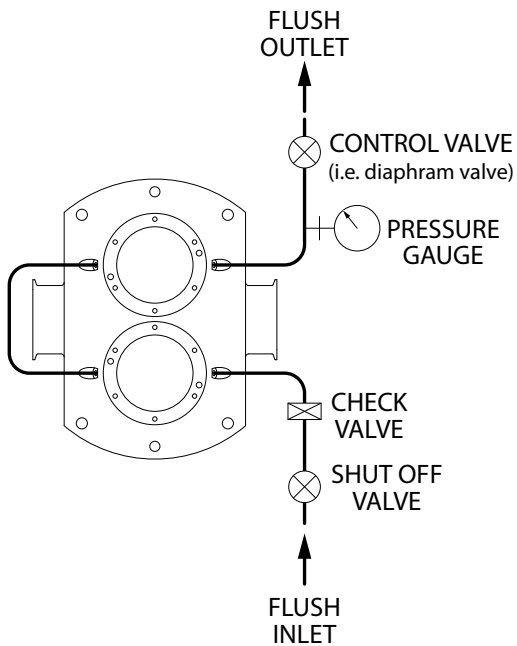


fig. 3.5

Recommended Flush System Arrangement: PD602, PD652 & PD677

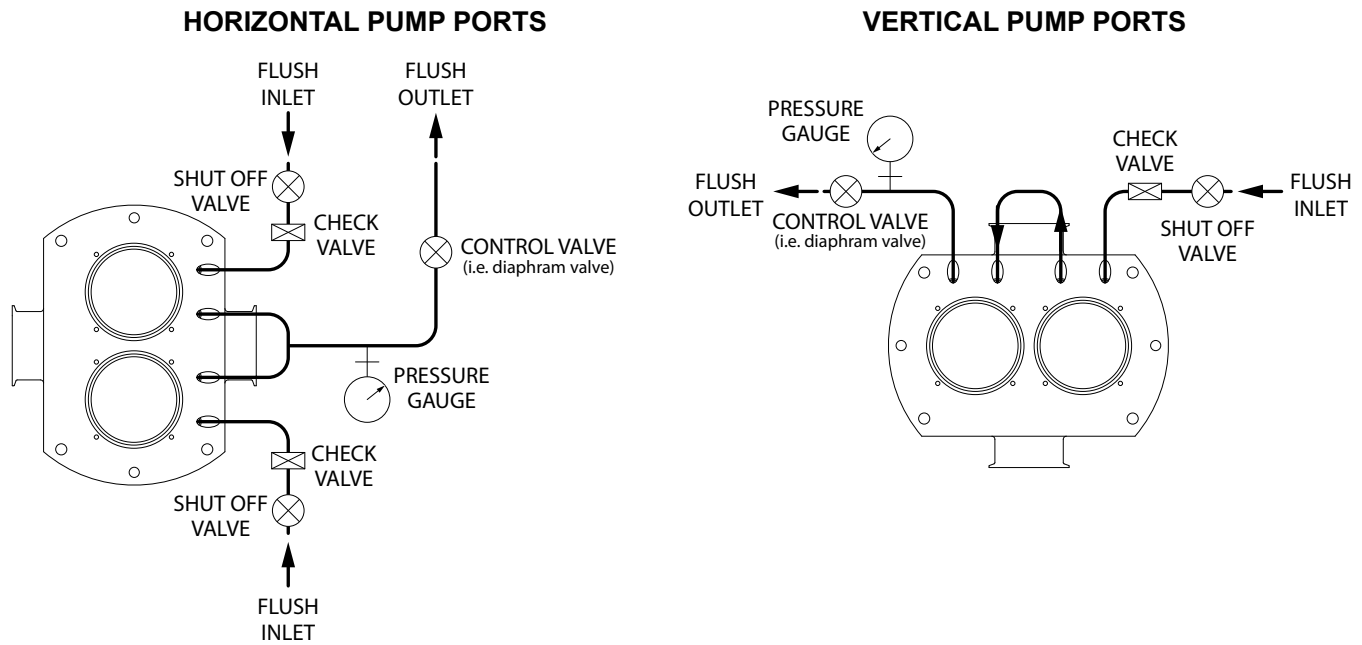


fig. 3.6

3.3.2 Double O-Ring & O-Lip Seal Flushing/Cooling

Double o-ring shaft seals, like the double mechanical seals, must also be fitted with flushing systems that will cool and lubricate them, otherwise the seals will NOT OPERATE CORRECTLY. The flushing system may be arranged the same as the double mechanical seals, shown in figures 3.4-3.6. The double o-ring seals may also be lubricated with grease if the pump application justifies doing so. In this case, the seal flush chambers are filled through grease nipples with approved grease that is suitable for use with the pumped media. **Unibloc recommends using Lubriplate Synxtreme FG-2 calcium sulfonate complex grease.** The chambers must be filled completely for proper operation. This can be accomplished by over pressurizing the chambers such that grease will be squeezed out of the seals along the shafts and into the rotor housing.

3.4 Pre-Start Check List

- ☐ Check the pipes to make sure they have been purged of debris. Any remaining particles larger than 0.002 in. (0.05 mm) can damage the pump if they enter it. A filtering device installed before the pump inlet is highly recommended to insure safe and proper operation. Since such a device will restrict the flow to the pump, it is necessary to verify that the net positive suction head (NPSH) available is not reduced below that required by the pump. **Unibloc-Pump stocks in-line strainers which will prevent hazardous objects from entering the pump and will capture them for easy removal from the system.**
- ☐ Check all obstructions to make sure they have been removed from pipe or pump.
- ☐ Check pump connections and make sure they are tight.
- ☐ Check lubricant levels to make sure they are correct.
- ☐ Check that safety guards are in place.
- ☐ Check inlet and outlet valve to make sure they are open and functional.
- ☐ Check the seal flushing is connected and activated, if applicable.

4.0 Maintenance



BEFORE ANY MAINTENANCE TAKES PLACE: TURN OFF POWER SUPPLY TO THE MOTOR.

4.1 Clean In Place, CIP

The pump can be manually cleaned or by Cleaned In Place (CIP). The following is an example of suggested CIP procedure. However, specific advice for each application can be obtained from your pump supplier.

If the temperature difference between the process liquid, or the pump, and the cleaning media is greater than 10° C (18° F), stop the pump and then introduce the cleaning liquid. If the liquid is not gravity fed and the pump must draw the liquid from a supply vessel, run the pump until it is filled and then stop. Allow the pump to adjust to the cleaning liquid temperature and then continue running the pump at normal speed. If the pump has double mechanical seals, they must be continued to be flushed during the CIP process. The length of time necessary to clean the pump and the type of liquid used is dependent on the type of process liquid and its characteristics.



Never touch the pump or the pipelines as they can be extremely hot.



Always use rubber gloves and protective goggles if handling caustic substances.

ATTENTION

The rotors and shaft seals in the pump have been selected for specific temperature and pressure conditions. Verify with Unibloc-Pump or the documentation supplied with the pump that the operating parameters are not exceeded.

ATTENTION

Always rinse well with clean water after using cleaning agent.

4.2 Steam In Place, SIP

The pump can be manually cleaned or cleaned with Steam In Place (SIP). Following is an example of suggested SIP procedure. However, specific advice for each application can be obtained from your pump supplier.

Stop the pump and introduce steam into the system. If the pump must be operated, allow it to adjust to the steam temperature and then run it between 50-100 rpm. If the pump has double mechanical seals, they must continue to be flushed during the SIP process. The length of time necessary to steam the pump is dependent on the type of process liquid used and its characteristics. After the SIP process is complete, allow the pump to return to ambient temperature or to the temperature of the process liquid. Resume normal operation to remove condensate or to begin pumping another media.



Never touch the pump or the pipelines as they can be extremely hot.



Always use rubber gloves and protective goggles if handling caustic substances.

ATTENTION

The rotors and shaft seals in the pump have been selected for specific temperature and pressure conditions. Verify with Unibloc-Pump or the documentation supplied with the pump that the operating parameters are not exceeded.

ATTENTION

Always rinse well with clean water after using cleaning agent.

4.3 Maintenance Schedule and Recommended Spare Parts

It is recommended to install pressure gauges on both sides of the pump so that any problems with the pump or pipelines can be monitored. It is also recommended to have shut-off valves on both sides for easy isolation of pump if manual service is required.

The **UNIBLOC-PD** bearing housing is supplied permanently lubricated with nitrile seals. However, for certain applications and at the user's request, drain plugs and a vent will be supplied. When applications exceed constant service temperatures of 180° C (356° F) a vent and high temperature lubricant must be used. For such cases, contact Unibloc-Pump or your supplier for an adequate service schedule.

Recommended weekly maintenance control to include:

- Control of oil levels in pump bearing housing and gear reducer. (Change once per year or after 2000 hours of operation, whichever comes first)
- Control of oil seal leakage
- Control of shaft seal leakage
- Control of pump medium leakage

ATTENTION

Allow the pump to cool down after shut down prior to inspection.

Recommended spare parts

- 1 set of shaft seals Qty 2
- 1 set of front oil seals Qty 2
- 1 set of rear oil seals Qty 1
- 1 wet-end o-ring kit Qty 1 (5 o-rings)
- 1 wet-end o-ring kit (for Metal Rotors) Qty 1 (5-9 o-rings depending on shaft style)

4.4 Shaft Seal Service

⚠ DISENGAGE POWER TO THE MOTOR before proceeding with the following steps. If the pump is connected to piping, depressurize the system and close valves on both the suction and discharge sides to isolate the pump from the rest of the system. Disconnect the piping from the pump. If service is to be performed while the pump is still mounted to the system, disconnect the motor drive coupling or the electrical connection to the motor.

ATTENTION

To aid in the removal and installation of the shaft seals, use plastic mounting sleeves with the same diameter as the shafts seal area. The sleeves also protect the seals from the shaft splines. They can be obtained from Unibloc-Pump. Contact your supplier for details.

4.4.1 Front Cover & Rotor Removal

4.4.1.1 Front Cover Removal

Remove the **Front Cover Nuts**, **Front Cover**, and **Front Cover O-ring** (see fig. 4.1).

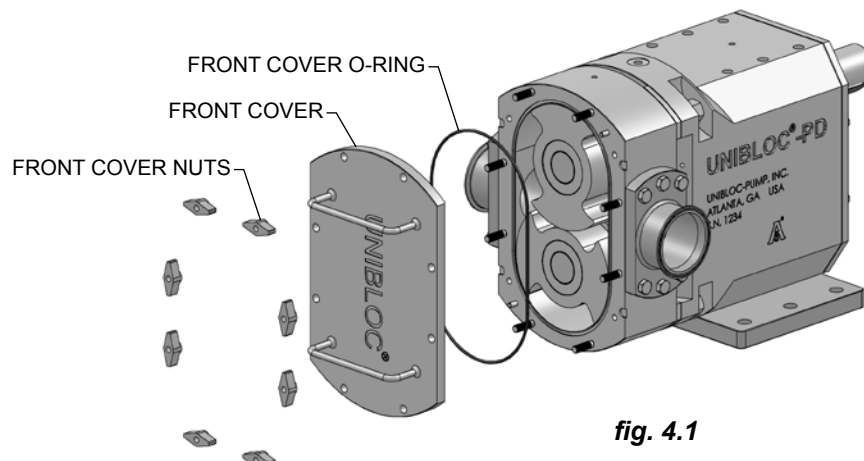


fig. 4.1

4.4.1.2 Rotor Removal- QuickStrip® Rotors

QuickStrip® Rotors do not require locking mechanisms and can simply be removed from the rotor housing by sliding them off the shafts. Be sure to place the rotors in a safe place while maintaining the pump, as they can be easily damaged. Proceed to the respective shaft seal maintenance section once the rotors have been removed (see fig.4.2).

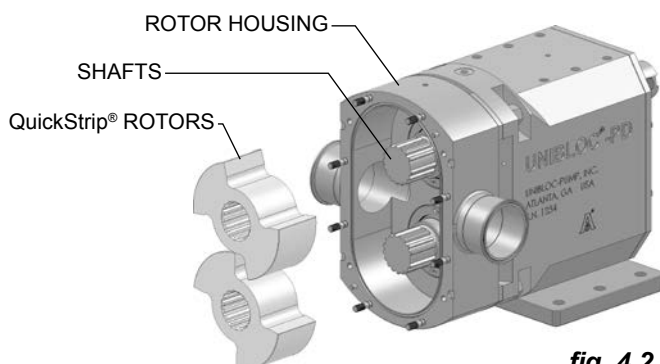


fig. 4.2

4.4.1.3 Rotor Removal- Stainless Steel Rotors

If the pump has **Stainless Steel Rotors**, place a nonmetal object (e.g. screwdriver handle) between the rotors to keep them from turning before removing rotor bolts.

4.4.1.3.1 Three-Bolt Style Shafts

Remove the six **Rotor Bolts**, **Rotor Bolt O-rings**, **Rotor Bolt Washers**, and **Rotor Bolt Washer O-rings**. Slide the **Rotors** off the **Shafts**. If the rotors will not slide off they can be removed simultaneously with the **Rotor Housing**. Unless they are being replaced, **DO NOT USE PLIERS OR CHANNEL LOCKS TO REMOVE THE ROTORS. THEY WILL BE DAMAGED**. Be sure to place the rotors in a safe place while maintaining the pump as they can be easily damaged (see fig. 4.3).

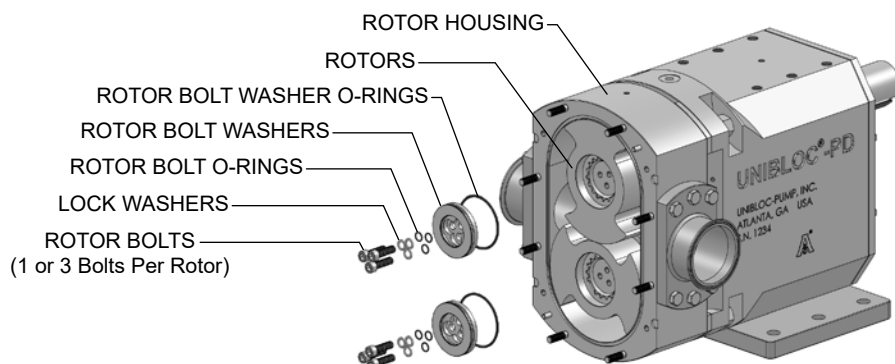


fig. 4.3

4.4.1.3.2 Single-Bolt Style Shafts (602, 652 & 677 models only)

Remove the two **Rotor Bolts** (requires special tool, P.N. 6007-2, see section 6.3.2), **Rotor Locking Nuts** and **O-rings**. Slide the **Rotors** off the **Shafts**. If the rotors will not slide off they can be removed simultaneously with the **Rotor Housing**. Unless they are being replaced, **DO NOT USE PLIERS OR CHANNEL LOCKS TO REMOVE THE ROTORS. THEY WILL BE DAMAGED**. Be sure to place the rotors in a safe place while maintaining the pump as they can be easily damaged (see fig. 4.4).

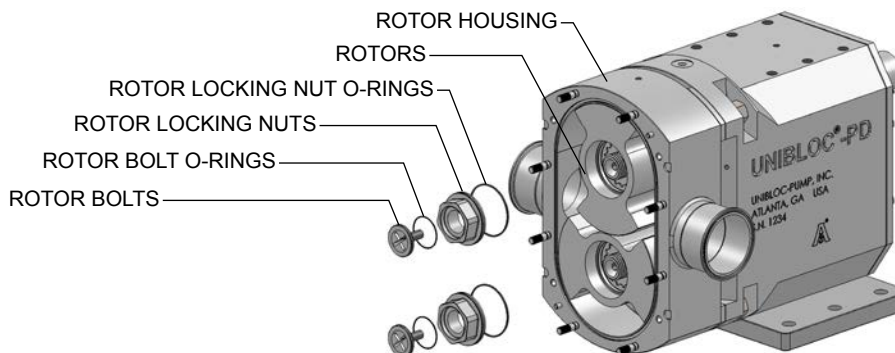


fig. 4.4

4.4.1.4 Cover and Rotor Removal- FoodFirst

FoodFirst Rotors do not require locking mechanisms and work in tandem with the **FoodFirst Front Cover**. The FoodFirst system utilizes two sets of removable wear rings. One set of wear rings are located in the front cover (**Front Cover Wear Rings**) while the other set are located in the rotors (**Rotor Wear Rings**). It is important to take care when maintaining FoodFirst pumps. Damage to the wear rings, rotors, and front cover may prevent the pump from operating as intended.

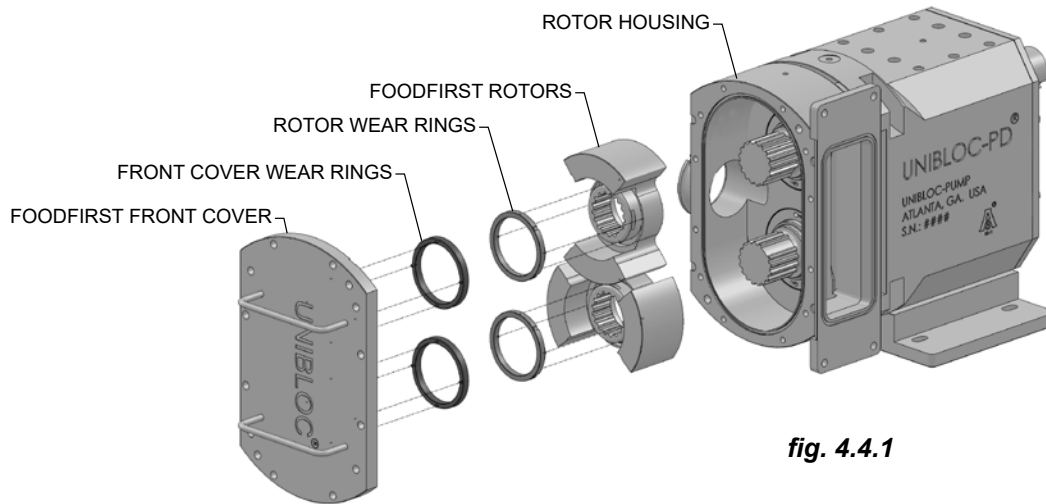


fig. 4.4.1

4.4.1.4.0 FoodFirst Front Cover Removal (reference figs. 4.1, 4.4.1)

Remove the **Front Cover Nuts** (see fig. 4.1). Carefully remove the **FoodFirst Front Cover**, taking caution not to damage the **Wear Rings**. The **Rotor Wear Rings** may adhere to the **Front Cover Wear Rings** and dislodge from the **Rotors** during **Front Cover** removal. Store any loose wear rings in a safe place.

4.4.1.4.1 FoodFirst Front Cover Wear Ring Removal- Standard Front Cover (ref. fig. 4.4.2)

The **Front Cover Wear Rings** may be removed from the **Front Cover** by gently pulling them out of the cover. Once removed, be sure to store wear rings in a safe place.

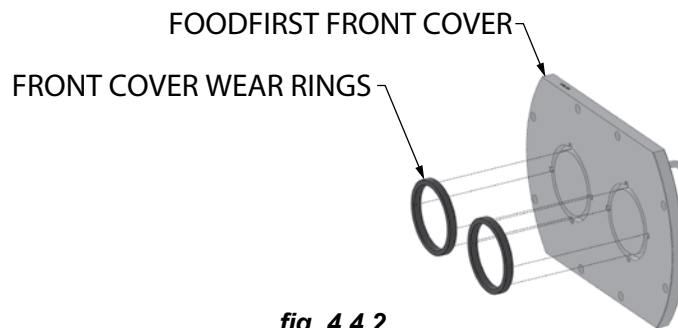


fig. 4.4.2

4.4.1.4.2 FoodFirst Front Cover Wear Ring Removal- High Pressure (HP) Cover (ref. fig. 4.4.3)

The **Front Cover Wear Rings** may be removed from the **Front Cover** by gently pulling them from the spigots. Once removed, be sure to store wear rings in a safe place.

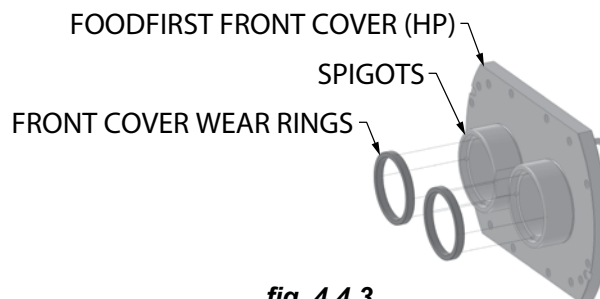


fig. 4.4.3

4.4.1.4.3 FoodFirst Rotor Removal (reference fig. 4.4.1)

Each **FoodFirst Rotor** is composed of two parts, a **Rotor** and a **Rotor Wear Ring**. During assembly and operation the **Rotor Wear Ring** is seated in a groove on the Rotor. When maintaining the pump, the **Rotor Wear Ring(s)** may dislodge from the **Rotor(s)** during **Front Cover** removal. If the **Rotor Wear Ring(s)** are still seated in the **Rotors** after cover removal, they can be removed once the rotors have been removed from the **Rotor Housing**. Remove the **Rotors** from the **Rotor Housing** by sliding them off the shafts. Be sure to place the rotors in a safe place while maintaining the pump, as they can be easily damaged.

4.4.1.4.4 FoodFirst Rotor Wear Ring Removal (reference fig. 4.4.5)

The **Rotor Wear Rings** may be removed from the **Rotors** by gently prying them with a small flat head screwdriver. Screwdriver slots are located along the perimeter of the wear rings to aid in removal. Once removed, be sure to store wear rings in a safe place.

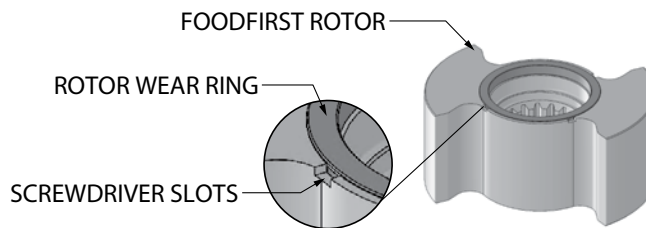


fig. 4.4.5

4.4.1.4.5 FoodFirst Rotor Wear Ring Installation (reference fig. 4.4.6)

Thoroughly clean **Rotors** and **Wear Rings** before installing. Inspect **Rotor Wear Rings** for excessive wear and damage. If damaged, replace **Wear Rings** with new ones. If **Rotor Wear Ring** is not damaged, it is important to ensure that it is within the acceptable wear range (see section 6.5). To check wear level, insert the wear ring into the rotor by aligning the wear ring dowel pins with the rotor dowel holes. If the **Rotor Wear Ring** is within the acceptable wear range (see section 6.5), remove the wear ring and place a generous amount of food grade grease on each dowel pin before aligning and installing the wear ring for final installation.

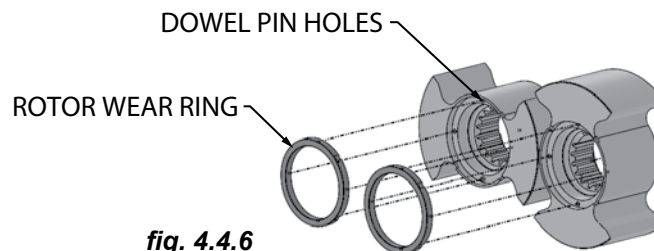


fig. 4.4.6

4.4.1.4.6 FoodFirst Rotor Installation (reference fig. 4.4.1)

With the **Rotor Wear Ring** installed, align missing rotor spline with missing shaft spline and slide rotor onto shaft.

4.4.1.4.7 FoodFirst Front Cover Wear Ring Installation (reference fig. 4.4.7, section 6.5)

Thoroughly clean **Front Cover** and **Wear Rings** before installing. Inspect **Front Cover Wear Rings** for excessive wear and damage. If damaged, replace **Wear Rings** with new ones. If **Cover Wear Ring** is not damaged, it is important to ensure that it is within the acceptable wear range (see section 6.5). To check wear level, insert the wear ring into the cover by aligning the wear ring dowel pins with the cover dowel holes. If the **Cover Wear Ring** is within the acceptable wear range (see section 6.5), remove the wear ring and place a generous amount of food grade grease on each dowel pin before aligning and installing the wear ring for final installation.

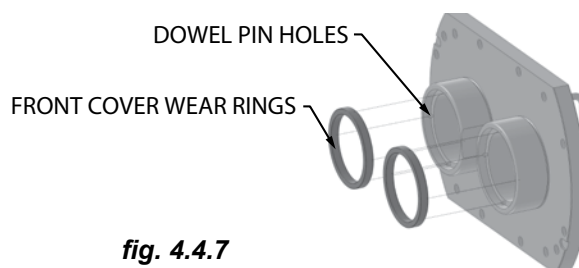


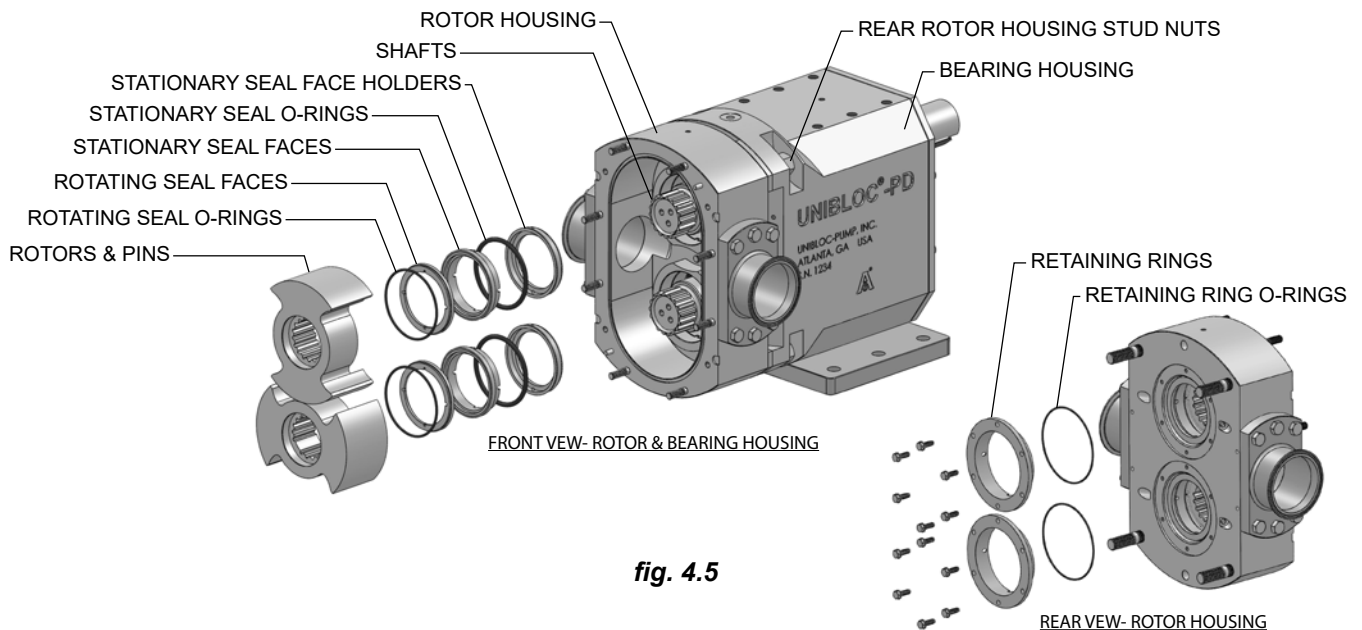
fig. 4.4.7

4.4.2 Single Mechanical Seal

This type of shaft seal is used in most applications with products that have a viscosity of less than 14,000 cPs. The maximum rotational speed of this seal is 600 rpm and the maximum service pressure is 20.7 bar (300 psig). The seal materials available are stainless steel, carbon, and silicone carbide. The standard o-rings supplied in these seals are Viton or EPDM, either food or FDA grade, but may be replaced with other materials as applications dictate. The seal can be serviced without removing the rotor housing.

4.4.2.1.1 Single Mechanical Seal Removal- MODELS: PD600, PD650, PD675 (reference figs. 4.1, 4.5)

Slide the stainless steel **Rotors** off the shafts. If the rotors will not slide off they can be removed simultaneously with the **Rotor Housing**. Unless they are being replaced, **DO NOT USE PLIERS OR CHANNEL LOCKS TO REMOVE THE ROTORS. THEY WILL BE DAMAGED.** The **Rotating Seal Faces**, **Pins**, and **Rotating Seal O-rings** are assembled inside the **Rotors** and will slide out with them. Slide the **Stationary Seal Face**, **Stationary Seal O-rings**, and **Stationary Seal Holders** out of the housing. To avoid damage, handle and store the loose **Rotating Seal Faces** and the **Stationary Seal Faces** so that their lapped sealing surfaces do not get scratched. If servicing the **Bearing Housing**, remove the **Rotor Housing** by first loosening the **Rear Rotor Housing Stud Nuts**. Use a hoist and eye bolt to support the **Rotor Housing**. Tap on the ports with a rubber mallet and pull the **Rotor Housing** off. Unless being serviced, the **Retaining Rings** may remain attached to the **Rotor Housing**.



4.4.2.1.2 Single Mechanical Seal Installation- MODELS: PD600, PD650, PD675 (reference figs. 4.1, 4.5, 4.15)

Clean all components prior to installing the seals. If the **Rotor Housing** was removed, attach it to the **Bearing Housing** first. Make sure **Retaining Rings** with **Retaining Ring O-rings** are attached to the **Rotor Housing**. Using an eye bolt, hoist the rotor housing on the **Dowel Pins** (see fig. 4.15 on pg. 24) and slide it on, while at the same time threading on the **Rear Rotor Housing Stud Nuts**. Tap the **Rotor Housing** with a rubber mallet to seat it properly against the **Bearing Housing**. Tighten the **Rear Rotor Housing Stud Nuts** in a cross pattern. Place the **Stationary Seal Face Holders** against the **Stationary Seal Faces** so that the pins slide into the slots. Moisten the **Stationary Seal O-rings** with water or coat them with a lubricant that is acceptable for contact with the product. Slide these components in the rotor housing bores. If removed from the rotors, lubricate **Rotating Seal O-rings** and slide them in the rotors together with the **Rotating Seal Faces** locating them on the seal pocket **Pins** on the back side of the **Rotors**. The **Rotating Seal Faces** must be pressed in evenly so that the **Rotating Seal O-rings** do not come off. They have been installed correctly if they do not fall out when tilting the rotors. Do not use objects that will scratch the **Rotating Seal Faces**' surface to push them in. Place a product compatible lubricant on the sealing surfaces of the **Stationary Seal Faces** and **Rotating Seal Faces**. Slide the **Rotors** on the **Shafts**. Proceed to section 4.4.6 to complete the installation.

4.4.2.2.1 Single Mechanical Seal Removal- MODELS: PD602, PD652, PD677 (reference figs. 4.1 , 4.6)

Slide the stainless steel **Rotors** off the shafts. If the rotors will not slide off they can be removed simultaneously with the **Rotor Housing**. Unless they are being replaced, **DO NOT USE PLIERS OR CHANNEL LOCKS TO REMOVE THE ROTORS. THEY WILL BE DAMAGED.** The **Rotating Seal Faces**, **Pins**, and **Rotating Seal O-rings** are assembled inside the **Rotors** and will slide out with them. Slide the **Stationary Seal Face**, **Stationary Seal O-rings**, and **Stationary Seal Holders** out of the housing. To avoid damage, handle and store the loose **Rotating Seal Faces** and the **Stationary Seal Faces** so that their lapped sealing surfaces do not get scratched. If servicing the **Bearing Housing**, remove the **Rotor Housing** by first loosening the **Rear Rotor Housing Stud Nuts**. Use a hoist and eye bolt to support the **Rotor Housing**. Tap on the ports with a rubber mallet and pull the **Rotor Housing** off. Unless being serviced, the **Retaining Rings** may remain attached to the **Rotor Housing**.

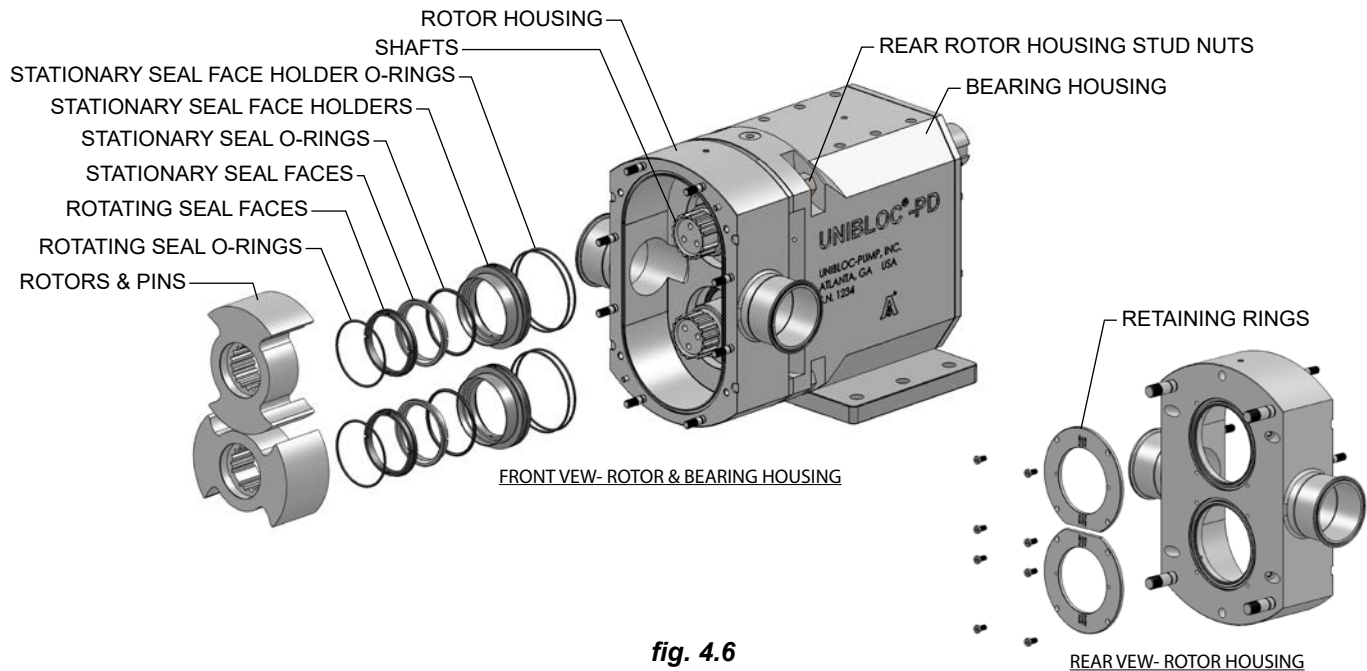


fig. 4.6

4.4.2.2.2 Single Mechanical Seal Installation- MODELS: PD602, PD652, PD677 (reference figs. 4.1, 4.6, 4.15)

Clean all components prior to installing the seals. If the **Rotor Housing** was removed, attach it to the **Bearing Housing** first. Make sure **Retaining Rings** are attached to the **Rotor Housing**. Using an eye bolt, hoist the rotor housing on the **Dowel Pins** (see fig. 4.15 on pg. 24) and slide it on, while at the same time threading on the **Rear Rotor Housing Stud Nuts**. Tap the **Rotor Housing** with a rubber mallet to seat it properly against the **Bearing Housing**. Tighten the **Rear Rotor Housing Stud Nuts** in a cross pattern. Place the **Stationary Seal Faces** against the **Stationary Seal Face Holders** so that the pins slide into the slots. Moisten the **Stationary Seal Face Holder O-Rings** with water or coat them with a lubricant that is acceptable for contact with the product. Slide these components in the rotor housing bores. If removed from the rotors, lubricate **Rotating Seal O-rings** and slide them in the rotors together with the **Rotating Seal Faces** locating them on the seal pocket **Pins** on the back side of the the **Rotors**. The **Rotating Seal Faces** must be pressed in evenly so that the **Rotating Seal O-rings** do not come off. They have been installed correctly if they do not fall out when tilting the rotors. Do not use objects that will scratch the **Rotating Seal Faces'** surface to push them in. Place a product compatible lubricant on the sealing surfaces of the **Stationary Seal Faces** and **Rotating Seal Faces**. Slide the **Rotors** on the **Shafts**. Proceed to section 4.4.6 to complete the installation.

4.4.3 Double Mechanical Seal- MODELS: PD600, PD650, PD675 (reference fig. 4.7)

This type of shaft seal is used in most applications with products that have a viscosity of less than 14,000 cPs. The maximum rotational speed of this seal is 600 rpm and the maximum service pressure is 20.7 bar (300 psig). The flushed double mechanical seal uses the same Rotating Seal Faces (primary), Stationary Seal Faces (primary), O-rings, Retaining Rings, and Pins as the single mechanical seals discussed in section 4.4.2. See section 3.3.1 for more information about flushing systems. The seal can be serviced without removing the Rotor Housing.

4.4.3.1.1 Double Mechanical Seal Removal (reference figs. 4.1, 4.7)

Slide the stainless steel **Rotors** off the shafts. If the rotors will not slide off they can be removed simultaneously with the **Rotor Housing**. Unless they are being replaced, **DO NOT USE PLIERS OR CHANNEL LOCKS TO REMOVE THE ROTORS. THEY WILL BE DAMAGED.** The **Rotating Seal Faces (primary)**, **Pins**, and **Rotating Seal Face O-rings (primary)** are assembled inside the **Rotors** and will slide out with them. Slide the **Stationary Seal Faces (primary)**, **Stationary Seal O-rings (primary)**, **Stationary Seal Faces (secondary)**, **Stationary Seal Face O-rings (secondary)**, **Rotating Seal Faces (secondary)**, and **Rotating Seal Face O-rings (secondary)** out of the **Rotor Housing**. To avoid damage, handle and store the loose **Rotating Seal Faces** and the **Stationary Seal Faces** so that their lapped sealing surfaces do not get scratched. If servicing the **Bearing Housing**, remove the **Rotor Housing** by first loosening the **Rear Rotor Housing Stud Nuts**. Use a hoist and eye bolt to support the **Rotor Housing**. Tap on the ports with a rubber mallet and pull the **Rotor Housing** off. Unless being serviced, the **Retaining Rings** may remain attached to the **Rotor Housing**.

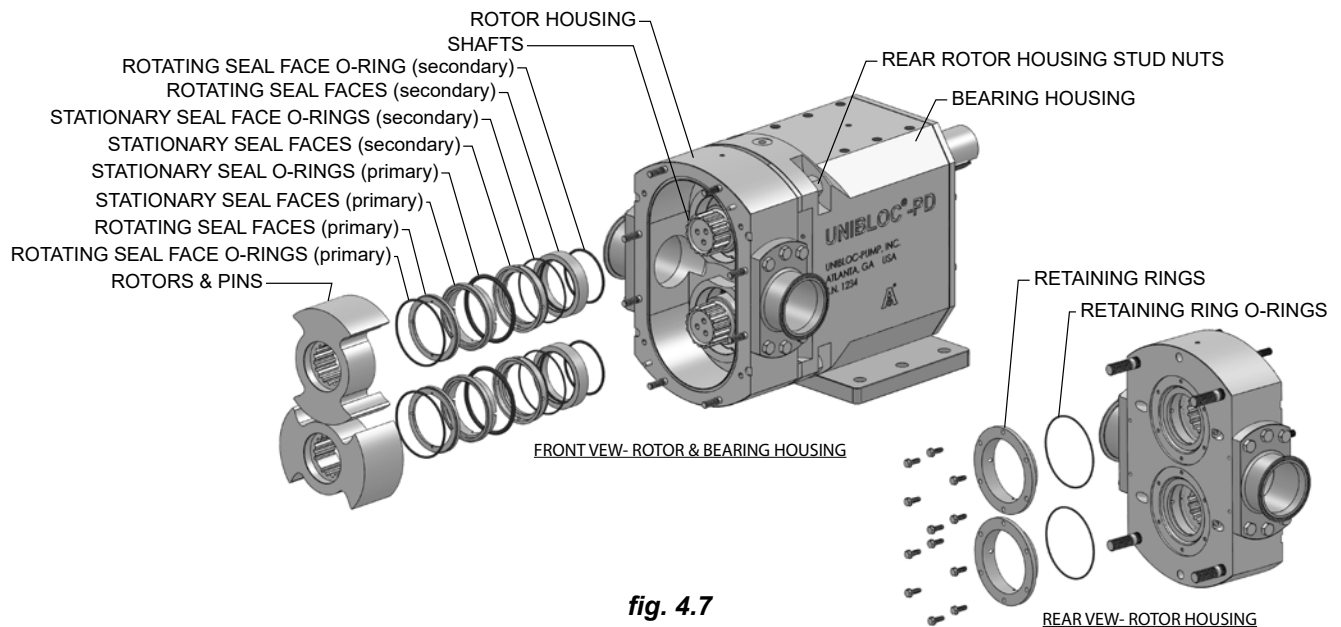


fig. 4.7

4.4.3.1.2 Double Mechanical Seal Installation (reference figs. 4.1, 4.7, 4.15)

Clean all components prior to installing the seals. If the **Rotor Housing** was removed, attach it to the **Bearing Housing** first. Make sure **Retaining Rings** are attached to the **Rotor Housing**. Using an eye bolt, hoist the rotor housing on the **Dowel Pins** (see fig. 4.15 on pg. 24) and slide it on, while at the same time threading on the **Rear Rotor Housing Stud Nuts**. Tap the **Rotor Housing** with a rubber mallet to seat it properly against the **Bearing Housing**. Tighten the **Rear Rotor Housing Stud Nuts** in a cross pattern. Slide the **Rotating Seal Faces (secondary)** with **Rotating Seal Face O-rings (secondary)** installed onto the **Shafts**. Place the **Stationary Seal Faces (primary)** against the **Stationary Seal Faces (secondary)** so that the pins slide into the slots. Moisten the **Stationary Seal Face O-rings** with water or coat them with a lubricant that is acceptable for contact with the product. Slide these components in the rotor housing bores. If removed from the rotors, lubricate **Rotating Seal Face O-rings** and slide them in the rotors together with the **Rotating Seal Faces (primary)** locating them on the seal pocket **Pins**.

The **Rotating Seal Faces (primary)** must be pressed in evenly so that the **Rotating Seal Face O-rings (primary)** do not come off. They have been installed correctly if they do not fall out when tilting the rotors. Do not use objects that will scratch the **Rotating Seal Faces'** surface to push them in. Place a product compatible lubricant on the sealing surfaces of the **Stationary Seal Faces (primary)** and **Rotating Seal Faces (primary)**. Slide the **Rotors** on the **Shafts**. Proceed to section 4.4.6 to complete the installation.

4.4.4 Triple O-Lip® Seal- MODELS: PD600 to PD677 (reference figs. 4.1, 4.8)

This type of seal is most frequently used with liquids that are very difficult to seal because of high viscosity. The seal comes as a single cartridge that is easily serviced. The maximum shaft rotational speed for this seal is 500 RPM and the maximum service pressure should not exceed 10 bar (150 psig). The seal does not require external lubrication and can be run dry for short periods. As an option, the seal can also be flushed providing an added barrier of protection. Flushing systems may be arranged as shown in figures 3.4-3.6. The seal can be serviced without removing the rotor housing.

4.4.4.1 Triple O-Lip® Seal Removal (reference figs. 4.1, 4.8)

Slide the **Rotors** off the **Shafts**. If the rotors will not slide off they can be removed simultaneously with the **Rotor Housing**. Unless they are being replaced, **DO NOT USE PLIERS OR CHANNEL LOCKS TO REMOVE THE ROTORS. THEY WILL BE DAMAGED.** Push the **Seal Cartridges** out of the **Rotor Housing** bores. Remove the **Seal Cartridge O-rings**. Slide off the **Wear Sleeves**. If servicing the **Bearing Housing**, remove the **Rotor Housing** by first disconnecting the flushing system, if applicable, and loosening the **Rear Rotor Housing Stud Nuts**. Use a hoist and eye bolt to support the **Rotor Housing**. Tap on the ports with a rubber mallet and pull the **Rotor Housing** off. The **Retainer Rings** do not have to be removed to service the seal.

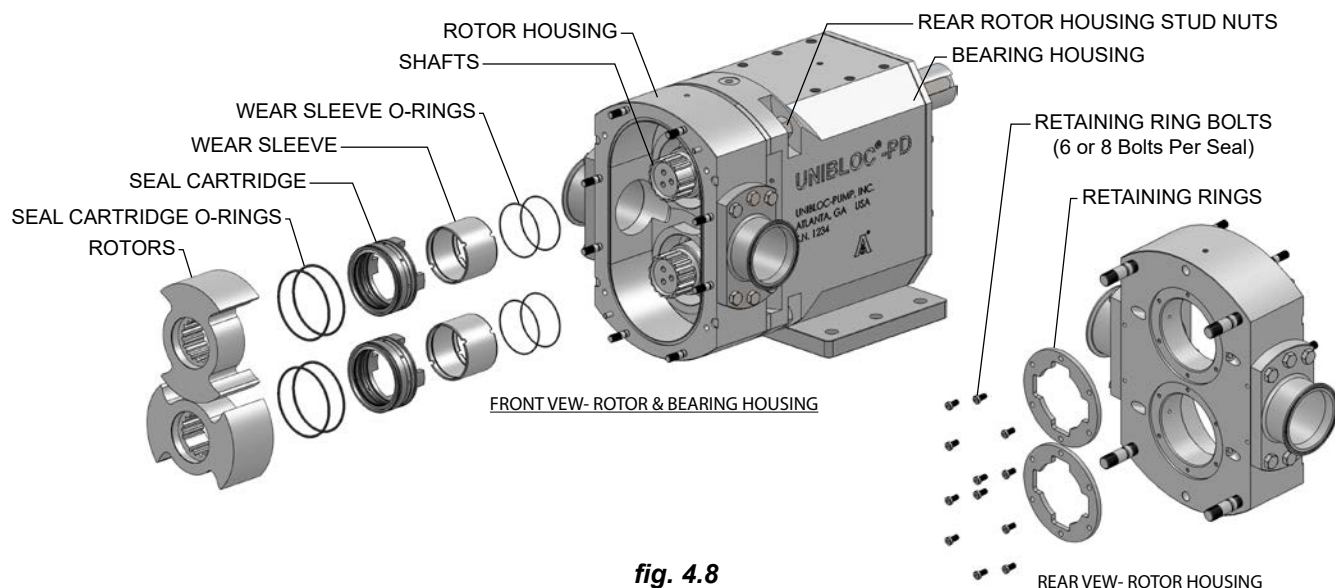


fig. 4.8

4.4.4.2 Triple O-Lip® Seal Installation (reference figs. 4.1, 4.8, 4.15)

Clean all components prior to installing the seals. If the **Rotor Housing** was removed, assemble it to the **Bearing Housing** first. Make sure **Retainer Rings** are attached to the **Rotor Housing**. Using an eye bolt, hoist the rotor housing on the **Dowel Pins** (see fig. 4.15 on pg. 24) and slide it on, while at the same time threading on the **Rear Rotor Housing Stud Nuts**. Tap the **Rotor Housing** with a rubber mallet to seat it properly against the **Bearing Housing**. Tighten the **Rear Rotor Housing Stud Nuts** in a cross pattern. Check the **Wear Sleeves** for excessive wear. If grooves are noticeable, the sleeves may have to be replaced, otherwise the seal may not function properly or may fail prematurely. Coat all **O-rings**, **Shafts**, and the seal surface of the **Wear Sleeves** with a lubricant that is acceptable for contact with the product. Slide the **Wear Sleeves** on the **Shafts** and locate on the **Anti-Rotation Pins**. Slide mounting

sleeve **6192B** (see section 6.3.2) over the splined end of the shaft and lubricate the surface of the mounting sleeve. Place new **Seal Cartridge O-rings** into the grooves on the outside of the **Seal Cartridges**. Slide the **Seal Cartridge** on the mounting sleeve. Rotate the **Seal Cartridge** if necessary so that it will slide in the slots of the **Retainer Ring**. Tap the **Seal Cartridge** into the **Rotor Housing** seal bore using mounting sleeve **6192A** (see section 6.3.2). When properly installed the **Seal Cartridge** will bottom out against the **Retainer Ring** and will be flush or slightly below the seal bore face. Remove the mounting sleeves and repeat for the other **Shaft**. Slide the **Rotors** on the **Shafts**. See section 4.4.6 for completing the installation.

4.4.5 Double O-Ring Seal

This type of seal uses two o-rings to seal against a rotating shaft. It is most frequently used when the liquid viscosity is greater than 2,000 cPs or is sticky. The maximum shaft rotational speed for this seal is 350 rpm and the maximum service pressure should not exceed 8 bar (115 psig). This seal must never be allowed to run dry because the o-rings will be damaged. It must be lubricated with grease or a flushing system as discussed in section 3.3. This seal also uses the pumped product as a lubricant. **The rotor housing must be removed to service the rear loaded Double O-Ring Seal on the PD600, PD650, and PD675 models.**

4.4.5.1.1 Double O-Ring Seal Removal (REAR LOADED)- MODELS: PD600, PD650, PD675 (reference figs. 4.1, 4.9)

Slide the **Rotors** off the **Shafts**. If the rotors will not slide off they can be removed simultaneously with the **Rotor Housing**. Unless they are being replaced, **DO NOT USE PLIERS OR CHANNEL LOCKS TO REMOVE THE ROTORS. THEY WILL BE DAMAGED.** To remove the **Rotor Housing** disconnect the flushing system, if applicable, and loosen the **Rear Rotor Housing Stud Nuts**. Use a hoist and eye bolt to support the **Rotor Housing**. Tap on the ports with a rubber mallet and pull the **Rotor Housing** off. Remove the **Seal Flush Housing Bolts** and slide out the **Seal Flush Housing**. Remove the **Seal Flush Housing O-rings (inner and outer)**. Slide off the **Wear Sleeves** and remove the **Wear Sleeve O-rings**.

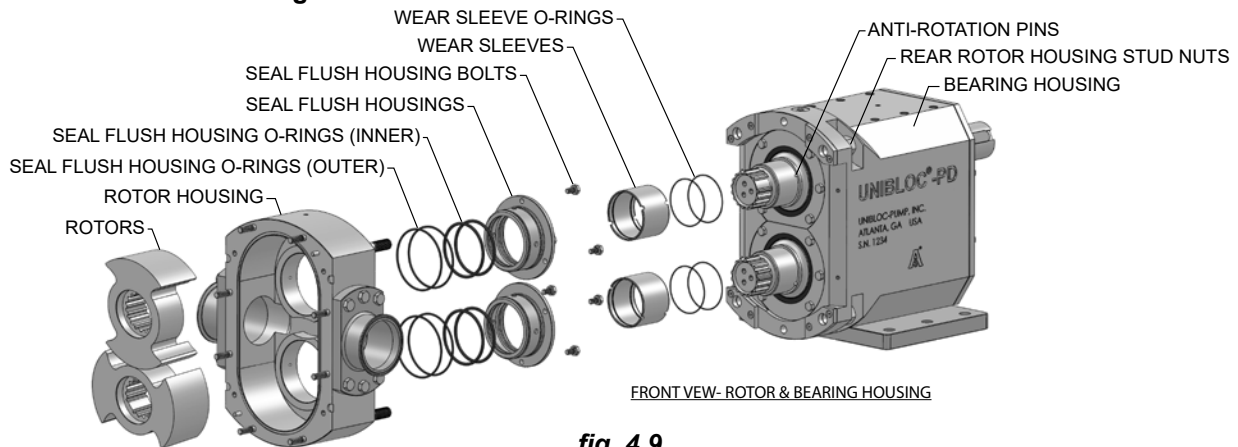


fig. 4.9

4.4.5.1.2 Double O-Ring Seal Installation (REAR LOADED)- MODELS: PD600, PD650, PD675 (reference figs. 4.1, 4.9, 4.15)

Clean all components prior to installing the seals. Check the **Wear Sleeves** for excessive wear. If grooves are noticeable, the sleeves may have to be replaced. Otherwise, the inner **Seal Flush Housing O-rings** may not seal properly or may fail prematurely. Coat all surfaces that will have contact with o-rings with a lubricant approved for contact with the pumped product. Place new **Seal Flush Housing O-rings (inner and outer)** into the grooves of the **Seal Flush Housings**. Attach the **Seal Flush Housings** to the **Rotor Housing** with the **Seal Flush Housing Bolts**. Place new **Wear Sleeve O-rings** into the grooves of the **Wear Sleeves**. Slide the **Wear Sleeves** on the **Shafts** and locate on the **Anti-Rotation Pins**. Using a lifting eye bolt, hoist the **Rotor Housing** on the **Dowel Pins** (see fig. 4.15 on pg. 24) and slide it on, while at the same time threading on the **Rear Rotor Housing Stud Nuts**. Tap the housing with a rubber mallet to seat it properly against the **Bearing Housing**. Tighten the **Rear Rotor Housing Stud Nuts** in a cross pattern. Slide the **Rotors** on the **Shafts**. See section 4.4.6 for completing the installation. It is imperative that the cavity between **Seal Flush Housing O-rings (inner)** is filled with product compatible grease or the flushing system is reconnected before operation is resumed.

4.4.5.2.1 Double O-Ring Seal Removal (FRONT LOADED)- MODELS: PD600, PD650, PD675 (reference figs. 4.1, 4.9, 4.10)

Slide the **Rotors** off the **Shafts**. If the rotors will not slide off they can be removed simultaneously with the **Rotor Housing**. Unless they are being replaced, **DO NOT USE PLIERS OR CHANNEL LOCKS TO REMOVE THE ROTORS. THEY WILL BE DAMAGED**. Pry the **Seal Cartridges** from rear of **Rotor Housing**. The **Wear Sleeves** may come out with the **Seal Cartridges**. If so, remove the **Wear Sleeves** from the **Seal Cartridges** and remove the **Seal Cartridge O-rings** (inner & outer). Remove **Wear Sleeves** from shafts if they did not come out with the **Seal Cartridges**. Once off the **Shafts**, remove the **Wear Sleeve O-rings**. If servicing the **Bearing Housing**, remove the **Rotor Housing** by first disconnecting the flushing system, if applicable, and loosening the **Rear Rotor Housing Stud Nuts**. Use a hoist and eye bolt to support the **Rotor Housing**. Tap on the ports with a rubber mallet and pull the **Rotor Housing** off. The **Retaining Rings** do not have to be removed to service the seal.

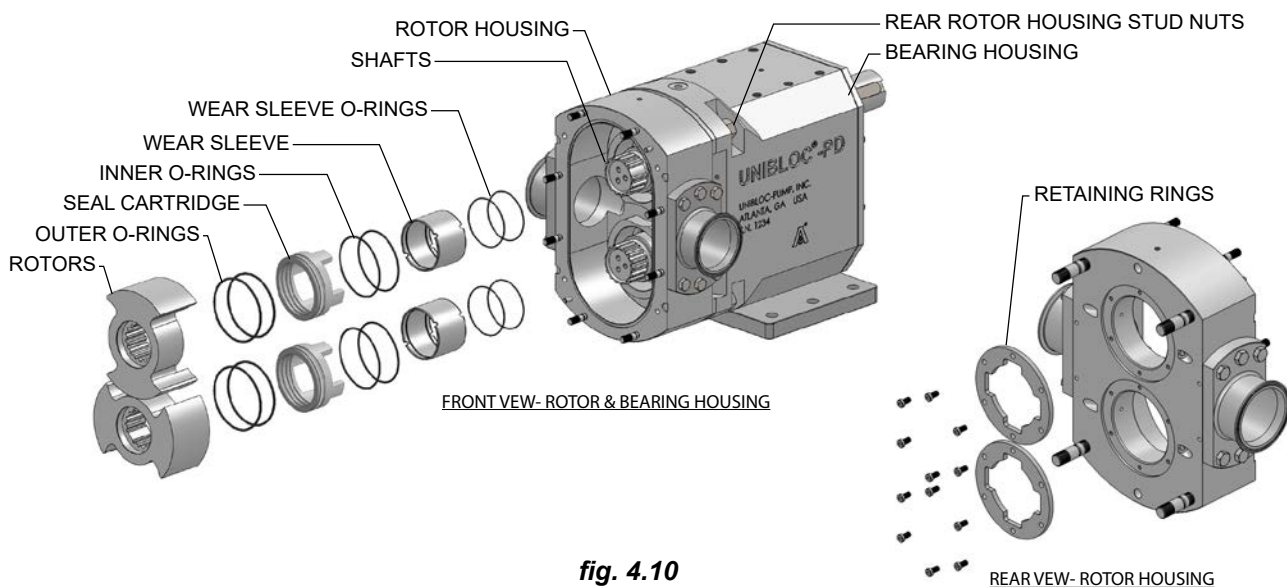


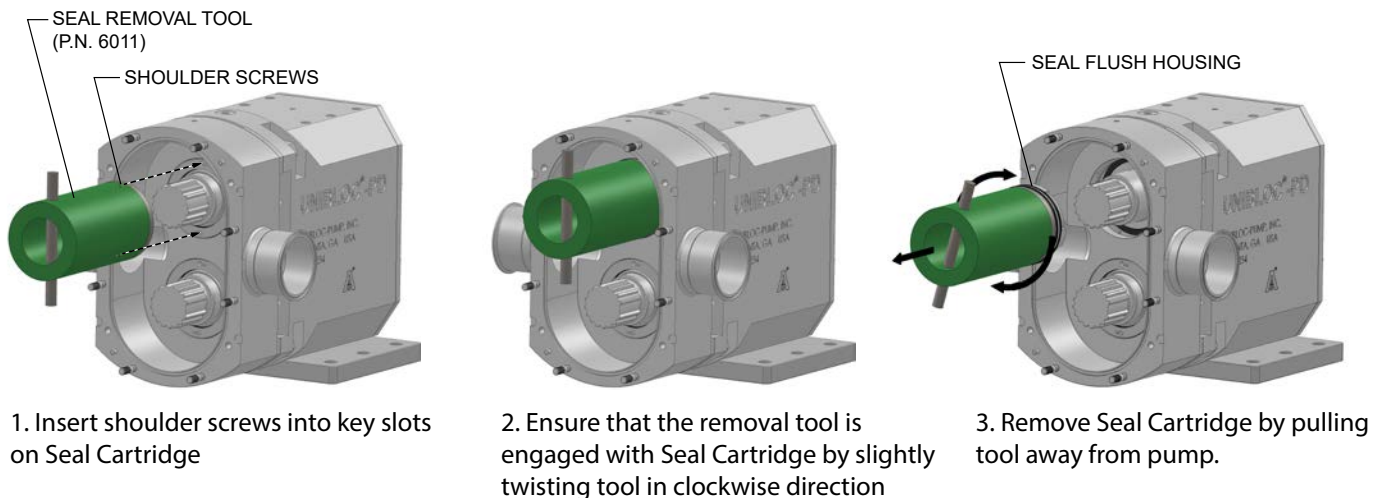
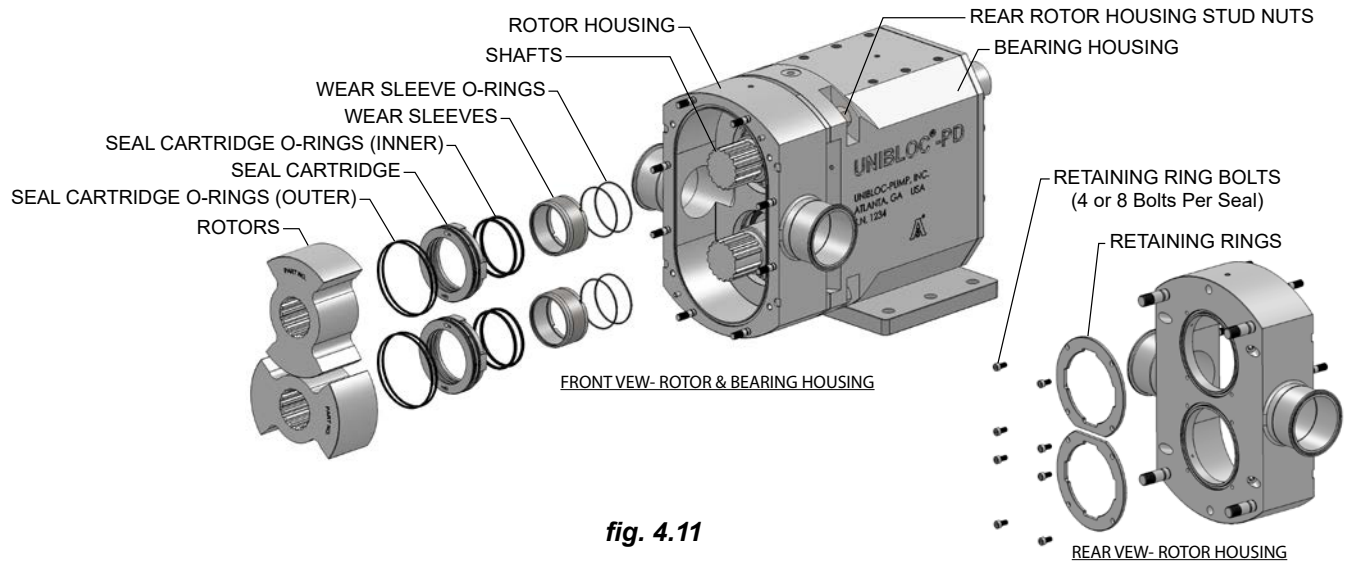
fig. 4.10

4.4.5.2.2 Double O-Ring Seal Installation (FRONT LOADED)-MODELS: PD600, PD650, PD675 (reference figs. 4.1, 4.9, 4.10, 4.15)

Clean all components prior to installing the seals. If the **Rotor Housing** was removed, assemble it to the **Bearing Housing** first. Make sure **Retainer Rings** are attached to the **Rotor Housing**. Using an eye bolt, hoist the rotor housing on the **Dowel Pins** (see fig. 4.15 on pg. 24) and slide it on, while at the same time threading on the **Rear Rotor Housing Stud Nuts**. Tap the **Rotor Housing** with a rubber mallet to seat it properly against the **Bearing Housing**. Tighten the **Rear Rotor Housing Stud Nuts** in a cross pattern. Check the **Wear Sleeves** for excessive wear. If grooves are noticeable, the sleeves may have to be replaced, otherwise the seal may not function properly or may fail prematurely. Coat all **O-rings**, **Shafts**, and the seal surface of the **Wear Sleeves** with a lubricant that is acceptable for contact with the product. Slide the **Wear Sleeves** on the **Shafts** and locate on the **Anti-Rotation Pins** (see fig. 4.9). Slide mounting sleeve **6192B** (see section 6.3.2) over the splined end of the shaft and lubricate the surface of the mounting sleeve. Place new **Seal Cartridge O-rings** into the grooves on the outside and inside of the **Seal Cartridges**. Slide the **Seal Cartridge** on the mounting sleeve. Rotate the **Seal Cartridge** if necessary so that it will slide in the slots of the **Retainer Ring**. Tap the **Seal Cartridge** into the **Rotor Housing** seal bore using mounting sleeve **6192A** (see section 6.3.2). When properly installed the **Seal Cartridge** will bottom out against the **Retainer Ring** and will be flush or slightly below the seal bore face. Remove the mounting sleeves and repeat for the other **Shaft**. Slide the **Rotors** on the **Shafts**. See section 4.4.6 for completing the installation.

4.4.5.3.1 Double O-Ring Seal Removal- MODELS: PD602, PD652, PD677 (reference figs. 4.1, 4.11, 4.12)

Slide the **Rotors** off the **Shafts**. If the rotors will not slide off they can be removed simultaneously with the **Rotor Housing**. Unless they are being replaced, **DO NOT USE PLIERS OR CHANNEL LOCKS TO REMOVE THE ROTORS. THEY WILL BE DAMAGED.** Pry the **Seal Cartridges** from rear of **Rotor Housing**. Alternately, the **Seal Cartridges** can be removed with the use of the Double O-ring Seal removal tool **6011** (see fig. 4.12 and section 6.3.2). The **Wear Sleeves** may come out with the **Seal Cartridges**. If so, remove the **Wear Sleeves** from the **Seal Cartridges** and remove the **Seal Cartridge O-rings** (inner & outer). Remove **Wear Sleeves** from shafts if they did not come out with the **Seal Cartridges**. Once off the **Shafts**, remove the **Wear Sleeve O-rings**. If servicing the **Bearing Housing**, remove the **Rotor Housing** by first disconnecting the flushing system, if applicable, and loosening the **Rear Rotor Housing Stud Nuts**. Use a hoist and eye bolt to support the **Rotor Housing**. Tap on the ports with a rubber mallet and pull the **Rotor Housing** off. The **Retaining Rings** do not have to be removed to service the seal.



Double O-ring Seal Removal with Seal Removal Tool

fig. 4.12

4.4.5.3.2 Double O-Ring Seal Installation- MODELS: PD602, PD652, PD677 (reference figs. 4.1, 4.9, 4.11)

Clean all components prior to installing the seals. Check the **Wear Sleeves** and **Wear Sleeve O-rings** for excessive wear. If grooves are noticeable, the **Wear Sleeves** may have to be replaced. Otherwise, the inner **Seal Cartridge O-rings** may not seal properly or may fail prematurely. Coat all surfaces that will have contact with o-rings with a lubricant approved for contact with the pumped product. Place new **Wear Sleeve O-rings** into the grooves of the **Wear Sleeves**. Slide the **Wear Sleeves** on the **Shafts** and locate on the **Anti-Rotation Pins** (see fig. 4.9). Place new **Seal Cartridge O-rings (inner and outer)** into the grooves of the **Seal Cartridges**. Rotate the **Seal Cartridge** if necessary so that it will slide in the slots of the **Retainer Ring**. Tap the **Seal Cartridge** into the **Rotor Housing** seal bore using the seal installation tool **6012** (see section 6.3.2). When properly installed the **Seal Cartridge** will bottom out against the **Retainer Ring** and will be flush or slightly below the seal bore face. Slide the **Rotors** on the **Shafts**. See section 4.4.6 for completing the installation.

4.4.6 Seal Installation- Final Steps (reference fig. 4.1, 4.13, 4.15, 4.27)

See section 6.3 for torque limits. For QuickStrip® rotors (see fig. 4.2), visually check that the rotors are below the front surface of the rotors housing. If they are not, remove the rotors and check that the shaft seals have been properly installed. Insert the rotors and turn them to make sure they do so freely. Place the **Front Cover O-ring** in the groove on the front of the **Rotor Housing**. Make sure all **Front Cover Studs** are torqued. Place the **Front Cover** on the pins (if present) and install and tighten the **Front Cover Stud Nuts** according to the specified torque. Check the oil level in the bearing housing as described in section 6.2. If flushed seals were installed, reconnect the flush tubing. Refer to section 3.3 before starting the pump.

For stainless steel rotors, if the **Rotor Bolt Washers** were removed, replace and lubricate the **Rotor Bolt Washer O-rings** and **Rotor Bolt O-rings**. Slide **Rotor Bolt Washers** into the **Rotors**. Place a nonmetal object between the rotors to keep them from turning. Install the **Rotor Bolts** in the **Shaft** ends but do not torque them (see fig. 4.13). Remove the nonmetal object and turn the rotors to make sure they do so freely. Measure the clearances between the **Rotor Housing** and the **Rotors**. Compare these values with those listed in section 6.3. If the measured clearances at positions 1-7, 8, and 10 are smaller than those listed, the rotors must be ground and polished to achieve the correct values. If the measured clearances at positions 9 and 11 are not within the tolerances listed the rotor housing must be shimmed by removing it and changing the **Shims** as instructed in section 4.5 (see fig. 4.7).

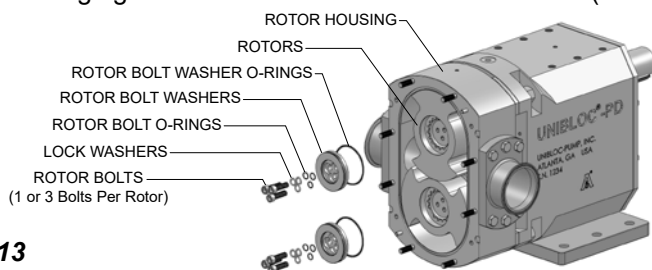


fig. 4.13

If the clearances are correct, tighten the **Rotor Bolts** (in a circular pattern, multiple times) to the torque specified in section 6.3.1. Make sure all **Front Cover Studs** are torqued. Place the **Front Cover O-ring** in the groove on the front of the **Rotor Housing**. Place the **Front Cover** on the **Rotor Housing Dowel Pins** (if present) and tighten the **Front Cover Stud Nuts** according to the specified torque (see fig. 4.14). Check the oil level in the **Bearing Housing** as described in section 6.2. If flushed seals were installed, reconnect the flush tubing. Refer to section 3.3 before starting the pump.

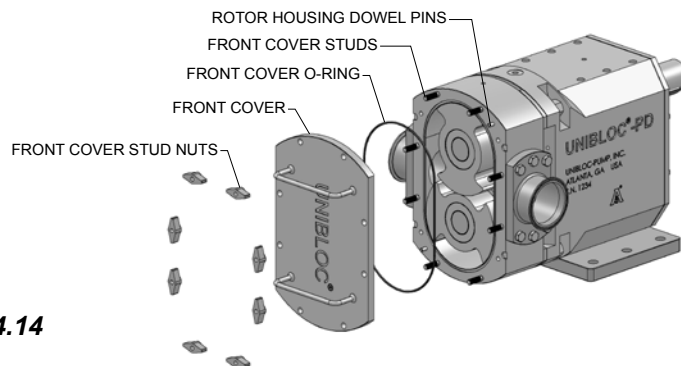


fig. 4.14

4.5 Bearing Housing Maintenance and Service

(reference fig. 4.15)

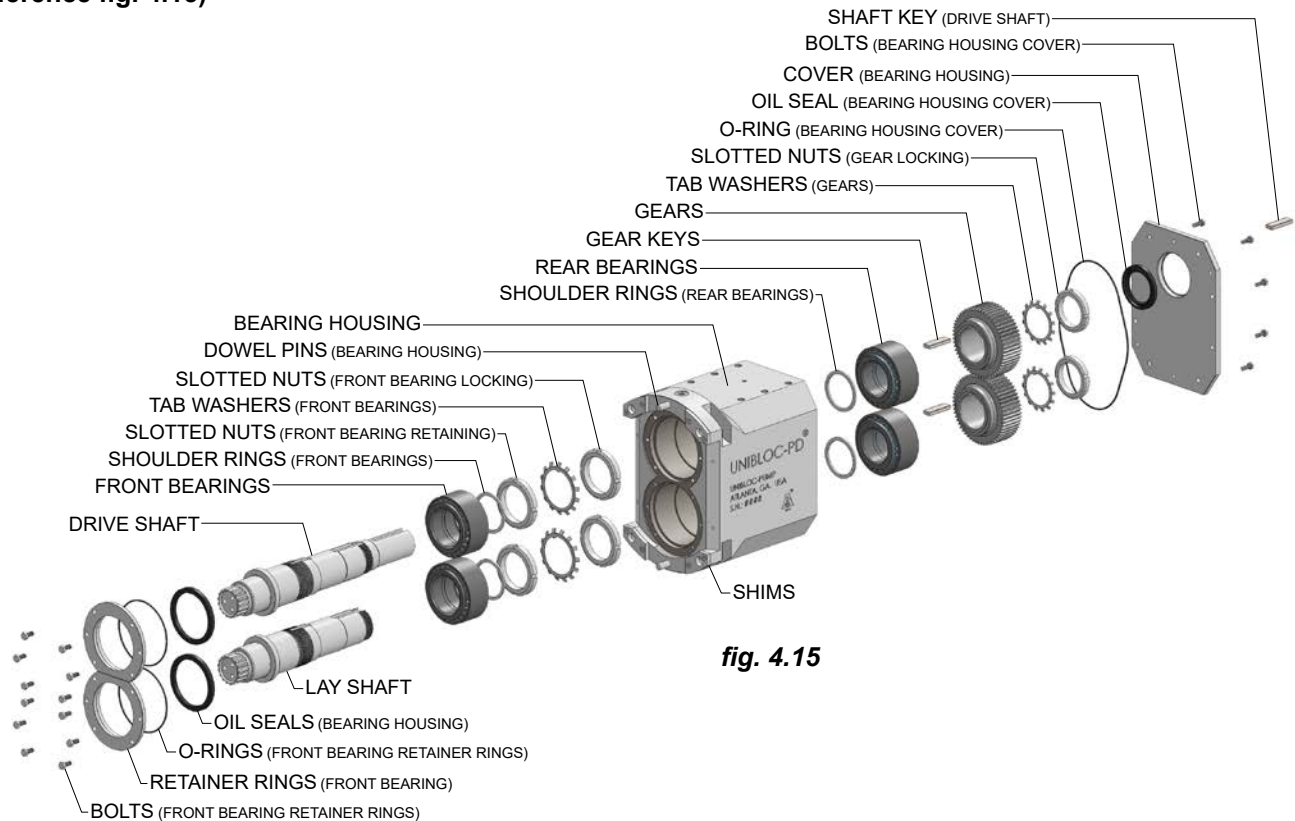


fig. 4.15

The UNIBLOC-PD bearing housing contains a single lubricating oil chamber. The oil level should be checked at regular intervals and the oil should be changed once per year or after 2000 hours of operation, whichever occurs first. When applications exceed constant service temperatures of 180°C (356°F) high temperature lubricants must be used. For such cases, contact Unibloc-Pump or an authorized service center for a service schedule.

Before proceeding with the following steps, **DISENGAGE POWER TO THE MOTOR**. If the pump is connected to piping, **depressurize the system and close valves on both the suction and discharge sides to isolate the pump from the rest of the system**. Disconnect the piping and remove the pump from the system using eye bolts on both the **Rotor Housing** and the **Bearing Housing**. Removal of the wet end of the pump (i.e. the cover, rotors, rotor housing, and shaft seals) must be completed first before the bearing housing is dismantled. The method of removing these parts is dependent upon the type of shaft seals the pump has and is outlined in section 4.4.

4.5.1 Bearing Housing Disassembly

(reference fig. 4.15)

Remove the front cover, rotors, housing and shaft seals as described in section 4. Drain oil from the **Bearing Housing** by removing the appropriate drain plug as shown in section 6.2. Remove the **Drive Shaft Key** and the **Bearing Housing Cover**. Open the tab on the **Tab Washers (gears)** and remove them and the **Slotted Nuts (gear locking)**. Remove the **Gears** using a gear puller and the M8 tapped holes on the gears. Remove the **Gear Keys**. The **Gears** can also be removed when pressing out the **Shafts**, but the **Gear Keys** will have to be removed simultaneously. Unbolt and remove the **Retainer Rings (front bearing)**. Install the assembly plate (contact Unibloc-Pump for details) on the **Dowel Pins (bearing housing)** and bolt to the **Bearing Housing**. Turn the pump so the **Drive Shaft** points up. The plate will catch the shafts when they are pressed out. Pressing on the **Drive Shaft** end of the pump, use a hydraulic press to remove the **Drive and Lay Shafts**. The **Front Bearings** will come out assembled to the **Shafts**. The **Gears** will also come out if not removed previously. Remove the assembly plate and shafts. Remove the **Slotted Nuts (front bearing retaining)** and **Tab Washers (front bearing)** holding the **Front Bearings**. Do not fix the shaft such that the shaft seal or oil seal areas are damaged. Press off the **Front Bearings** only if they need to be replaced. Slide or press out the **Rear Bearings** using assembly 6190B (see section 6.3.2). Each bearing set must remain together.

4.5.2 Bearing Housing Assembly

The following steps assume that the pump has been completely disassembled. Make sure all parts are clean and free of debris before proceeding. New **Oil Seals** and **O-Rings** are required to complete the assembly, as well as new **Bearings**, if applicable. Lubricate all bearing, gear, oil seal, and shaft contact surfaces with oil. These surfaces are highlighted in red below (see fig. 4.16).

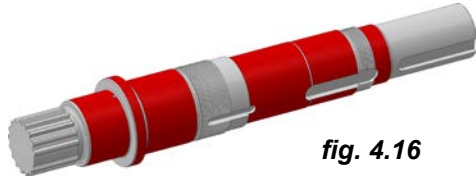


fig. 4.16

Slide the **Front Bearings** on the **Drive and Lay Shafts** (see fig. 4.17).

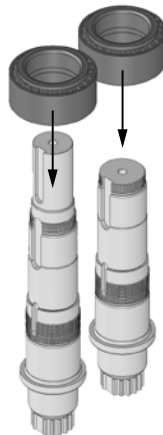


fig. 4.17

Fix the **Drive and Lay Shafts** taking care not to damage the shaft seal and oil seal areas. Press on the **Front Bearings** using a hydraulic press and sleeve. Place a clean, smooth steel plate on the splined end of the shaft to protect it. Assembly sleeve **6190A** with the proper bearing contact lip and guide is available from Unibloc-Pump (see section 6.3.2). Make sure the sleeve does not damage the threads or surfaces of the shaft (see fig. 4.18).

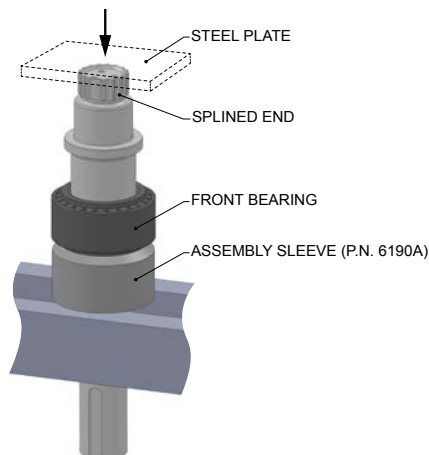


fig. 4.18

If press is not available, it is possible to install the bearings by heating them before placing on the shafts. For detailed instructions contact your distributor or Unibloc-Pump.

Make sure the bearings seat firmly against the shaft shoulders (see fig. 4.19).

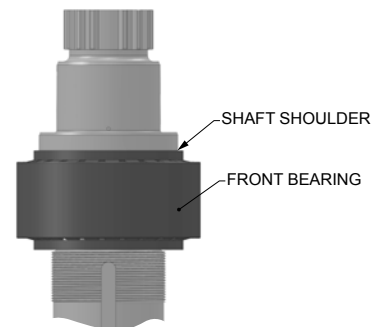


fig. 4.19

Slide on the **Shoulder Rings (Front Bearing)**. Thread on the first **Slotted Nuts (Front Bearing Retaining)** and tighten to secure the shoulder rings to the bearings. Slide on the **Tab Washers (Front Bearing)** and then thread on the **Slotted Nuts (Front Bearing Locking)** and tighten. Lock both slotted nuts by bending at least one tab washer tab into each nut (see fig. 4.20).

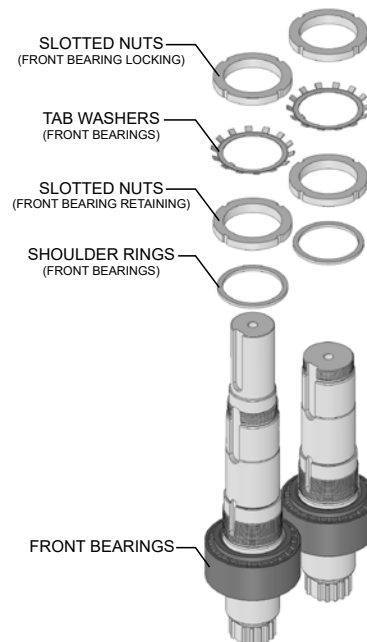


fig. 4.20

Slide the shafts into the bearing housing. Place a clean, smooth steel plate on the **Splined Ends** of the shafts to protect them. Press them so that the front bearings are seated firmly against the gearbox bore shoulder (see fig. 4.21).

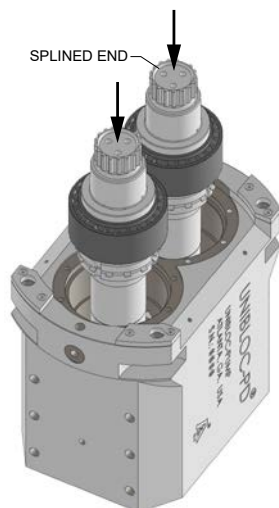


fig. 4.21

Place new **Oil Seals** and **O-rings** in the **Retainer Rings**. Bolt the rings to the **Bearing Housing** (see fig. 4.22).

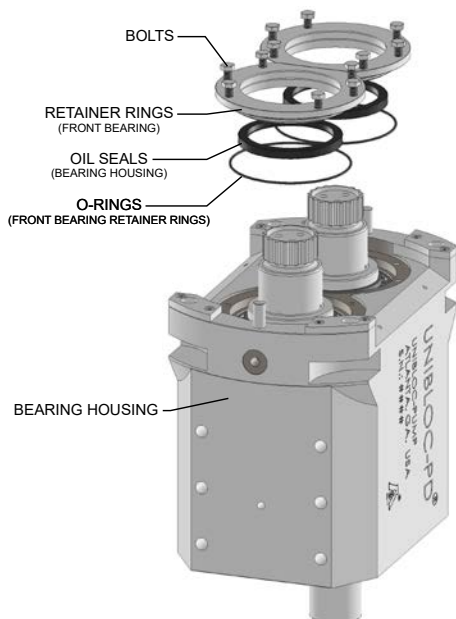


fig. 4.22

Turn the **Bearing Housing** over. Slide the **Shoulder Rings (rear bearing)** to the shaft shoulders. Press the **Rear Bearing** firmly in place against the **Shoulder Rings (rear bearing)**. **Assembly Sleeve 6190B** with the proper bearing contact lip is available from Unibloc-Pump (see section 6.3.2). Make sure the sleeve does not damage the threads or surfaces of the shaft (see fig. 4.23)

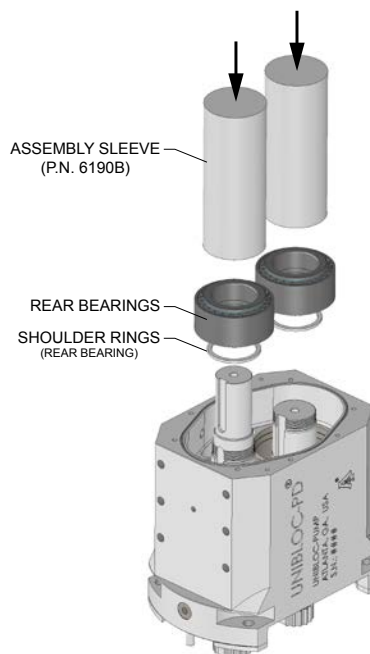


fig. 4.23

Insert the **Gear Keys** and slide the **Gears** on (see fig. 4.15), making sure the timing marks on the gears are aligned correctly (see fig. 4.24).

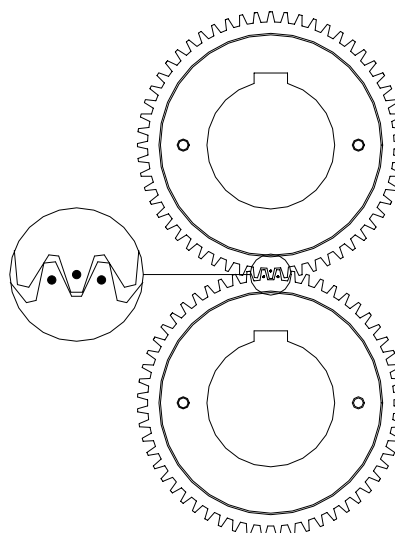


fig. 4.24

Press the **Gears** using the **Assembly Sleeve 6190B** (see section 6.3.2) to insure firm contact with the **Bearings**. Slide on the **Tab Washers** and the **Slotted Nuts**. Tighten the **Slotted Nuts** and measure the torque required to turn the shafts. Lock the **Slotted Nuts** with the **Tab Washer** when the correct torque is achieved (see fig. 4.25).

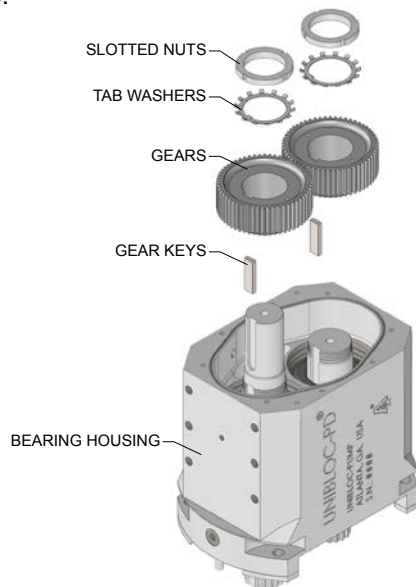


fig. 4.25

Fill the cavity containing the gears with oil until it reaches the oil level check hole. Place a new **O-ring** in the groove on the back of the **Bearing Housing**. Insert a new **Oil Seal** into the **Cover** and secure the **Cover** to the **Bearing Housing** with the **Bolts**. Tap in the **Drive Shaft Key** (see fig. 4.26).

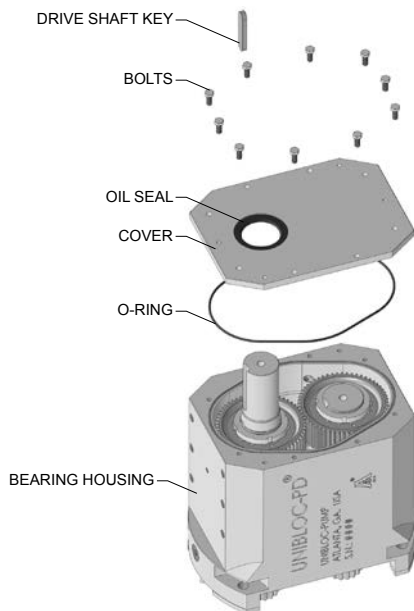


fig. 4.26

Check that the **Shims** and **Shim Plates** are attached to the **Bearing Housing**. If they have been damaged or are missing use the shim sizes indicated on the pump test certificate. Insert the **Dowel Pins** into the **Bearing Housing** (see fig. 4.27).

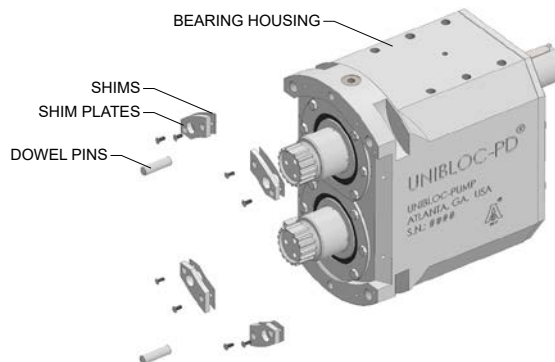


fig. 4.27

To continue with the assembly, see the shaft seal installation instructions in section 4.4.

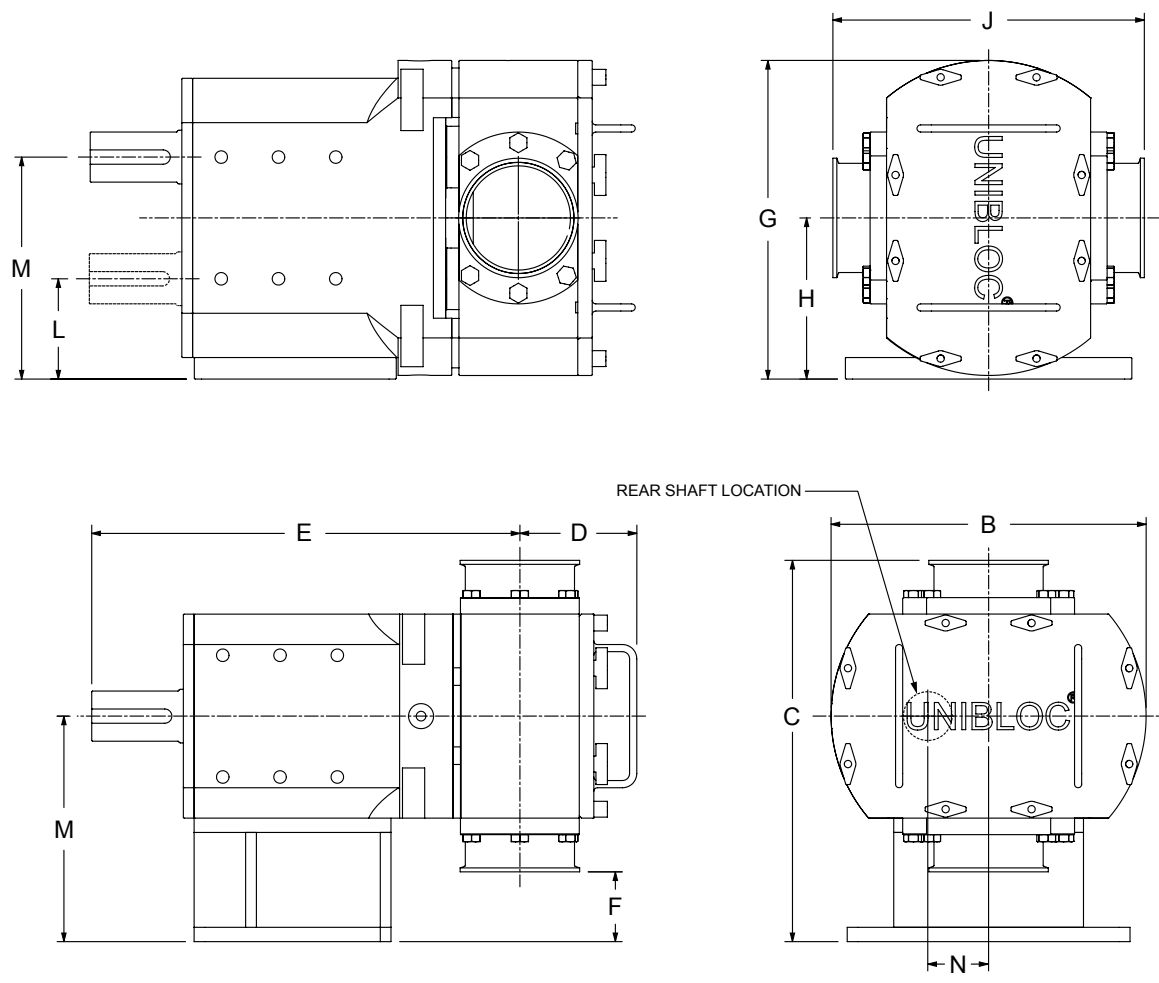
5.0 Troubleshooting

PROBLEM	POSSIBLE CAUSE	SOLUTION
A. No flow, but pump turns; pump does not prime	- Motor turning in wrong direction - Air pocket in pipe or pump. - NPSHA too low. - Pump runs too slow. - Viscosity too high. - Obstruction in discharge piping, valve closed.	- Reverse motor. - Fill pipe and pump with liquid. Check pipe fittings for leaks. - Increase suction pipe diameter or shorten suction pipe length. Decrease pump speed. Raise feed tank or supply liquid level. - Increase speed. - Lower viscosity if possible. - Remove obstruction, open valve.
B. Capacity too low, but pump turns	- NPSHA too low. - Pump runs too slow. - Increased slip in pump. - Discharge pressure higher than expected. - Front cover not tight. - O-ring installed in front cover is too thick.	- See A-3 - Increase speed. - Check rotor clearances; replace worn parts if necessary. - Check discharge piping for closed valves or obstructions. Increase pump speed BUT DO NOT EXCEED PRESSURE LIMITS OF PUMP. Increase discharge pipe size. Increase pump size. - Tighten cover nuts to torques specified in section 6.3.1. - Replace front cover o-ring with correct size.
C. Pump is noisy, cavitating	- Collapsed suction hose. - Liquid temperature too high. - Speed too high. - Viscosity higher than Expected - NPSHA too low. - Suction side valve closed	- Use reinforced hose or rigid piping. - Reduce speed, increase NPSHA. - Decrease speed. - Decrease speed, increase pump size. - See A-3. - Open valve, check suction side piping for obstructions
D. Rotors gall, pump seizes	- Liquid temperature too high. - Rotor clearances incorrect. - Loose rotor bolts/housing studs. - Bearings worn. - Gears worn. - Foreign particles in pump. - Particles in product too large. - Discharge pressure too high.	- Lower temperature or increase Rotor clearances. - Adjust to factory recommended clearances. - Tighten or replace if necessary. - Replace bearings. - Replace gears. - Install suction side filter. - Increase rotor clearances. Use plastic rotors. Increase pump size. - See B-4.

PROBLEM	POSSIBLE CAUSE	SOLUTION
E. Pump is noisy	1. Cavitation. 2. Liquid contains air. 3. Discharge pressure too high.	1. See C. 2. Check pump shaft seals for leaks. Check suction side pipe fittings for leaks. Increase NPSHA. 3. Check suction and discharge piping for closed valves or obstructions. Increase pump size.
F. Motor overheating	1. Motor size too small. 2. Discharge pressure too high. 3. Viscosity higher than expected. 4. Motor & pump misalignment.	1. Increase motor size. 2. Lower pump speed. Lower pressure. Check suction and discharge piping for closed valves or obstructions. 3. Decrease pump speed. Increase pipe size or shorten discharge pipe length. 4. Correct alignment.
G. Shaft seals leak	1. Worn parts. 2. Seals have been operated without product in pump or without flushing liquid. 3. Seal incompatible with liquid	1. Replace seals and/or o-rings. 2. Operate pump only when liquids Can come in contact with seals. Replace worn seal parts. 3. Contact factory for proper seal selection, operation, and replace if necessary.

6.0 Technical Data

6.1 General Dimensions and Weights



UNIBLOC MODEL	A	B	C	D	E	F	G	H	J	L	M	N	Ø	WEIGHT KG (LBS.)
600/602	4"	440 (17.3)	573 (22.5)	88 (3.46)	574 (22.6)	98 (3.86)	445 (17.5)	225 (8.86)	435 (17.1)	140 (5.51)	310 (12.2)	85 (3.35)	70 (2.76)	900 (410)
650/652	4" or 6"			113 (4.45)	599 (23.6)									970 (440)
677	6" or 8"			138 (5.43)	624 (24.6)									1050 (476)

6.2 Lubricants and Bearing Housing Oil Specification

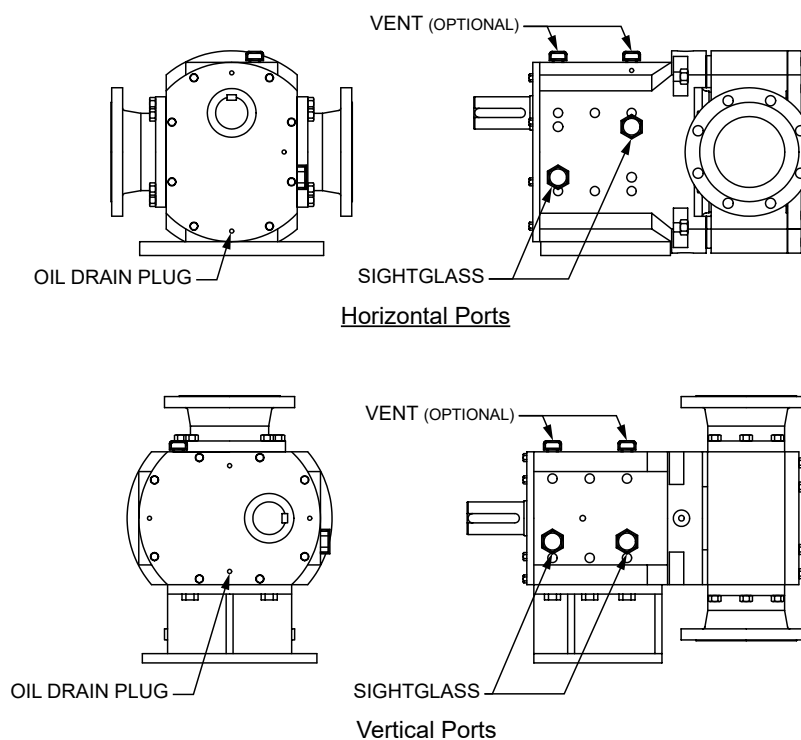
UNIBLOC-PD pumps are factory shipped with Lubriplate® SFGO Ultra-150 PAO-Based Synthetic Food Machinery Grade Fluid. This lubricant meets FDA 21 CFR 178.3570 and FDA 21 CFR 172.882 and has a temperature rating of -42°C (-43°F) to 257°C (495°F). The following is a list of other synthetic lubricants that may be used.

RECOMMENDED LUBRICANTS		
MANUFACTURER	LUBRICANT NAME	TEMP. RANGE, °C (°F)
Mobile	SHC 627	-23...121 (-10...250)
	SHC 634	121...152 (250...305)
Exxon	Spartan EP 100	-23...121 (-10...250)
	Spartan EP 150	121...152 (250...305)
Shell	Spirax S 75W90	-23...152 (-10...305)
Sentinel	S140	-26...288 (-15...550)

BEARING HOUSING CAPACITY
4.5 LITERS

ATTENTION Before checking the oil levels **DISENGAGE THE POWER SUPPLY TO THE MOTOR.**

To check the oil in the bearing housing the pump must first be stopped. Once the oil settles, it should be visible in the gearbox sightglasses. If not, remove the vents and add oil until visible in the sightglass. If the gearbox does not have sightglasses, remove the oil level check plug. If oil does not come out of these holes, it must be added through the vent holes until it starts to do so. Reattach the vents and oil plugs and resume operation.



6.3 Torque Requirements & Special Tools

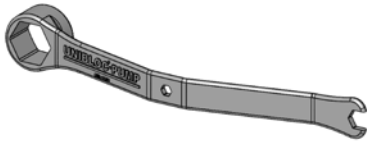
6.3.1 Torque Requirements

The following table lists torque settings. Contact Unibloc-Pump or an authorized service center for torque requirements for applications with service pressures exceeding 21 bar (300 psig).

PART	TOOL (Size)	TORQUE SETTING N·m (ft·lb)
REAR ROTOR HOUSING STUD NUTS	WRENCH (30MM)	60 (44)
ROTOR BOLTS (SINGLE-BOLT STYLE SHAFTS)	SOCKET W/ P.N. 6007-2 (17MM)	122 (90)
ROTOR BOLTS (THREE-BOLT STYLE SHAFTS)	HEX KEY (10MM)	73 (54)
ROTOR LOCK NUT (SINGLE-BOLT STYLE SHAFTS)	SOCKET (65MM)	434 (320)
FRONT COVER STUD NUTS	WRENCH (19MM)	50 (37)
BEARING HOUSING COVER BOLTS	SOCKET (17MM)	40 (30)
FRONT BEARING RETAINER RING BOLTS	SOCKET/ WRENCH (17MM)	50 (37)

6.3.2 Special Tools

There are only a few special tools needed to assemble Unibloc PD600 Series pumps in a safe and secure way. Please contact your pump supplier for ordering information.



P.N. 6010-2

65mm Wrench for Single-Bolt style shafts (PD602/652/677 Models Only)



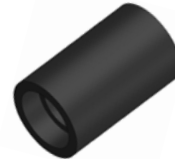
P.N. 6007-2

Rotor Bolt Removal Tool (PD602/652/677 Models Only)



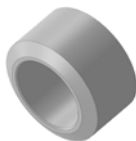
P.N. 6011

Double O-Ring Seal Removal Tool (PD602/652/677 Models Only)



P.N. 6012

Seal Installation Tool (PD602/652/677 Models Only)



P.N. 6190A

Front Bearing Assembly Sleeve

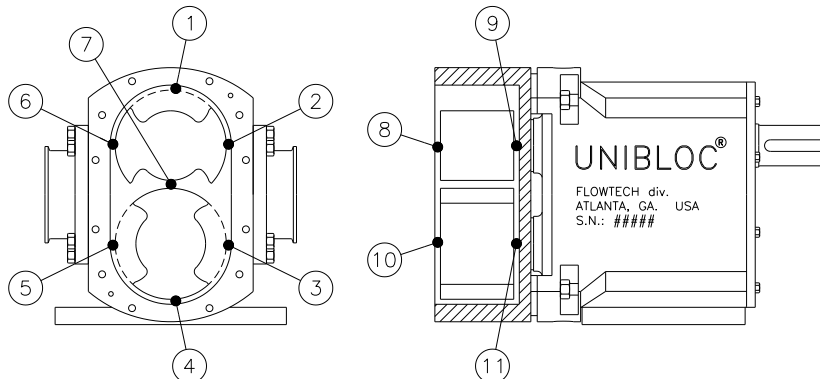


P.N. 6190B

Rear Bearing Assembly Sleeve

6.4 Rotor Clearances

The tables below list the clearances between the rotor housing and the rotors. If the rotor class is not known you must contact your pump supplier to retrieve the correct clearance information. Always refer to pump serial number and/or have process conditions available.



High Temp./Low Pressure Applications

Class B Stainless Steel Rotors, x0.01 mm (x0.001in.)				
UNIBLOC MODEL	POSITION			
	1-6	7	8 & 10	9 & 11
600/602	22-24 (8.7-9.4)	14-16 (5.5-6.3)	35-37 (13.8-14.6)	12-14 (4.7-5.5)
650/652	35-37 (13.8-14.6)	14-16 (5.5-6.3)	44-46 (17.3-18.1)	14-16 (5.5-6.3)
677	CONTACT UNIBLOC-PUMP FOR CLEARANCES			
Class C Stainless Steel Rotors, x0.01 mm (x0.001in.)				
600/602	35-37 (13.8-14.6)	16-18 (6.3-7.1)	54-56 (21.3-22.0)	14-16 (5.5-6.3)
650/652	44-46 (17.3-18.1)	16-18 (6.3-7.1)	67-69 (26.4-27.2)	16-18 (6.3-7.1)
677	CONTACT UNIBLOC-PUMP FOR CLEARANCES			
Class D Stainless Steel Rotors, x0.01 mm (x0.001in.)				
600/602	42-44 (16.5-17.3)	21-23 (8.3-9.1)	72-74 (28.3-29.1)	17-19 (6.7-7.5)
650/652	51-53 (20.1-20.9)	21-23 (8.3-9.1)	87-89 (34.3-35.0)	20-22 (7.9-8.7)
677	CONTACT UNIBLOC-PUMP FOR CLEARANCES			
Class E Stainless Steel Rotors, x0.01 mm (x0.001in.)				
600/602	50-52 (19.7-20.5)	25-27 (9.8-10.6)	90-92 (35.4-36.2)	21-23 (8.3-9.1)
650/652	58-60 (22.8-23.6)	25-27 (9.8-10.6)	107-109 (42.1-42.9)	24-26 (9.4-10.2)
677	CONTACT UNIBLOC-PUMP FOR CLEARANCES			

Low Temp./High Pressure Applications

Class B Stainless Steel Rotors, x0.01 mm (x0.001in.)				
UNIBLOC MODEL	POSITION			
	1-6	7	8 & 10	9 & 11
600/602	22-24 (8.7-9.4)	14-16 (5.5-6.3)	35-37 (13.8-14.6)	12-14 (4.7-5.5)
650/652	35-37 (13.8-14.6)	14-16 (5.5-6.3)	44-46 (17.3-18.1)	14-16 (5.5-6.3)
677	CONTACT UNIBLOC-PUMP FOR CLEARANCES			
Class C Stainless Steel Rotors, x0.01 mm (x0.001in.)				
600/602	35-37 (13.8-14.6)	16-18 (6.3-7.1)	50-55 (19.7-21.7)	15-20 (5.9-7.9)
650/652	44-46 (17.3-18.1)	16-18 (6.3-7.1)	55-65 (21.7-25.6)	20-30 (7.9-11.8)
677	CONTACT UNIBLOC-PUMP FOR CLEARANCES			
Class D Stainless Steel Rotors, x0.01 mm (x0.001in.)				
600/602	42-44 (16.5-17.3)	21-23 (8.3-9.1)	65-70 (25.6-27.6)	20-25 (7.9-9.8)
650/652	51-53 (20.1-20.9)	21-23 (8.3-9.1)	70-80 (27.6-31.5)	30-40 (11.8-15.7)
677	CONTACT UNIBLOC-PUMP FOR CLEARANCES			
Class E Stainless Steel Rotors, x0.01 mm (x0.001in.)				
600/602	50-52 (19.7-20.5)	25-27 (9.8-10.6)	75-85 (29.5-33.5)	25-35 (9.8-13.8)
650/652	58-60 (22.8-23.6)	25-27 (9.8-10.6)	95-105 (37.4-41.3)	35-45 (13.8-17.7)
677	CONTACT UNIBLOC-PUMP FOR CLEARANCES			

6.5 FoodFirst Wear Ring Ranges

FoodFist Wear Rings are designed to be replaced once worn past the minimum value on the table below. Measurement should be taken with clean wear ring firmly seated in clean rotor or clean front cover. Measurement is taken from face of wear ring to face of rotor or front cover.

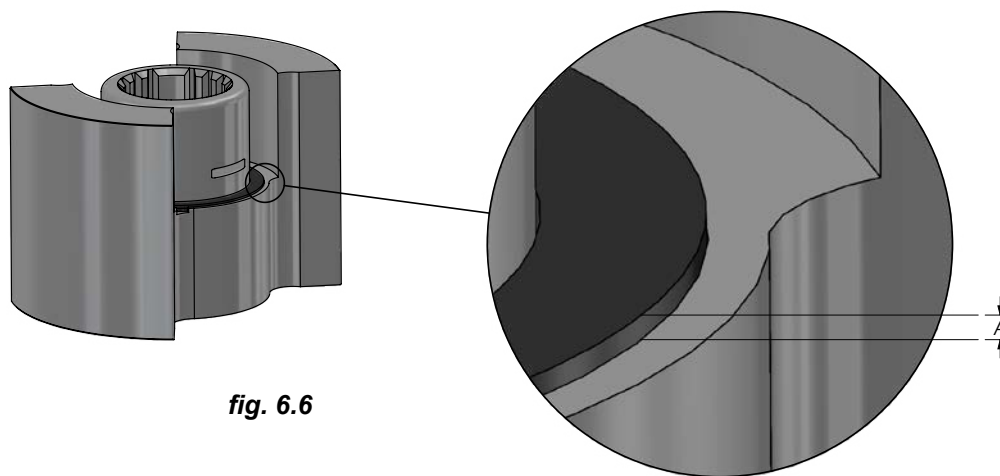


fig. 6.6

ROTOR WEAR RING WEAR RANGE (ref. fig. 6.6)

DIMENSION	ACCEPTABLE RANGE	DISCARD & REPLACE
A	1.3mm to 1.0mm	LESS THAN 1.0mm

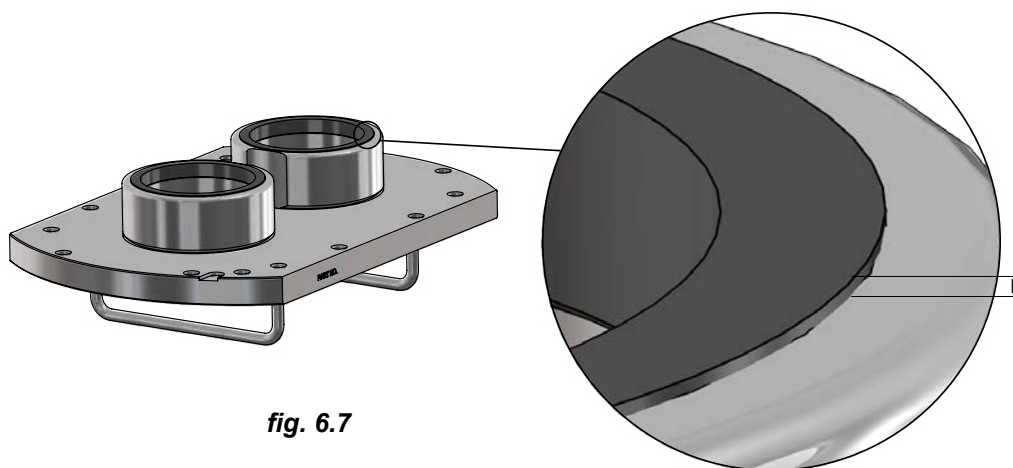


fig. 6.7

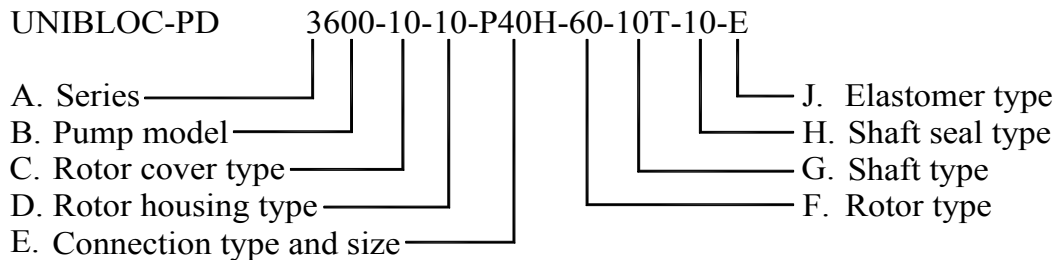
FRONT COVER WEAR RING WEAR RANGE (ref. fig. 6.7)

DIMENSION	ACCEPTABLE RANGE	DISCARD & REPLACE
B	0.8mm to 0.4mm	LESS THAN 0.4mm

7.0 Pump Identification and Spare Parts

7.1 Pump Identification

Each pump has a unique serial number machined into the bearing housing. See detailed description under section 1.2.3. Each serial number is linked to a unique build code. Below is an example of a build code.



A. Series:

- 5000 -stainless rotor housing and gearbox
- 3000 -stainless rotor housing, steel gearbox

B. Pump Model

- 600 -UNIBLOC 600
- 602 -UNIBLOC 602
- 650 -UNIBLOC 650
- 652 -UNIBLOC 652
- 677 -UNIBLOC 677

C. Rotor Cover Type

- 10 -standard cover
- 15 -standard cover with cooling/heating jacket
- 20 -pressure relief cover
- X -custom

D. Rotor Housing Type

- 10 -standard sanitary housing
- 15 -standard housing with cooling/heating jacket

E. Connection Type & Size

- P -sanitary clamp
- AF -150# ANSI flange
- AF3 -300# ANSI flange
- DF -DIN flange
- L -ACME thread
- RI -rectangular inlet
- X -custom
- 40 -4.0 inch
- 60 -6.0 inch
- 80 -8.0 inch
- H -horizontal port configuration
- V -vertical port configuration

F. Rotor Type

- 20 -Class A, PET polymer (60°C)
- 21 -Class B, PET polymer (100°C)
- 60 -Class C, 316 stainless steel (125°C)
- 61 -Class D, 316 stainless steel (165°C)
- 62 -Class E, 316 stainless steel (205°C)
- X -custom

G. Shaft Type

- 10 -316L stainless steel std. shaft for metallic rotor
- 15 -316L stainless steel std. shaft for nonmetallic rotor
- 40 -high strength stainless steel std shaft for metallic rotor
- T -top mounted drive shaft
- B -bottom mounted drive shaft

H. Shaft Seal Type

- 12A -single mechanical- silicon carbide vs. tungsten carbide
- 12B -single mechanical- silicon carbide vs silicon carbide
- 32 -double mechanical
- 61 -double o-ring seal
- 72 -triple O-Lip® seal

J. Elastomer Type

- E -EPDM
- K -Kalrez
- N -Buna N
- S -Silicone
- T -Teflon encapsulated Viton
- V -Viton

7 .2 Spare Parts

ITEM NO.	DESCRIPTION	PART NUMBER	QTY.
1	O-RING	4840	4
2	SHAFT SLEEVE	*	2
3	M10 X 25 HEX BOLT	M10 X 25	12
4	OIL SEAL RETAINER RING	3772	2
5	O-RING	4220	2
6	FRONT OIL SEAL	4145	2
7	DRIVE SHAFT	SEE TABLE	1
8	LAY SHAFT	SEE TABLE	1
9	22 X 14 X .68 KEY	4720	2
10	20 X 12 X 1.12 KEY	4721	1
11	FRONT BEARING	3770	2
12	FRONT BEARING SHOULDER RING	3771	2
13	M95 X 2P SLOTTED NUT	4442	4
14	M95 TAB WASHER	4520	2
15	M16 X 50 DOWEL PIN	4620	2
16	M6 X 16 SS FLAT-HEAD SOCKET CAP SCREW	M6 X 16	8
17	SHIM PLATE	3675	4
18	SHIMS	3676	---
19	BEARING HOUSING	3541	1
20	REAR BEARING SHOULDER RING	3796	2
21	REAR BEARING	3795	2
22	GEAR	3620	2
23	M80 TAB WASHER	4521	2
24	M80 X 2P SLOTTED NUT	4443	2
25	REAR OIL SEAL	4140	1
26	BEARING HOUSING COVER O-RING	4241	1
27	BEARING HOUSING COVER	3593	1
28	M10 X 25 HEX BOLT	M10 X 25	8

* PD600/650: PART NUMBER= 4945
PD602/652/677: PART NUMBER= 2-4945C
--- CONTACT UNIBLOC-PUMP FOR MORE INFORMATION

PUMP MODEL	ROTOR TYPE	SHAFTS		PART NUMBER
		ROTOR LOCKING	DRIVE SHAFT	
PD600	QUICKSTRIP	N/A	3441A	3491
	STAINLESS STEEL	3-BOLT	3440A	3490
PD650	QUICKSTRIP	N/A	3444A	3494
	STAINLESS STEEL	3-BOLT	3443A	3493
PD602	QUICKSTRIP	N/A	2-3441A	2-3491
	STAINLESS STEEL	1-BOLT	2-3440A	2-3490
	STAINLESS STEEL	3-BOLT	2-3440B	2-3490B
PD652	QUICKSTRIP	N/A	2-3444A	2-3494
	STAINLESS STEEL	1-BOLT	2-3443A	2-3493B
	STAINLESS STEEL	3-BOLT	2-3443B	2-3493B
PD677	QUICKSTRIP	N/A	2-3447A	2-3497
	STAINLESS STEEL	1-BOLT	2-3446	2-3496
	STAINLESS STEEL	3-BOLT	2-3446B	2-3496B

UNLESS OTHERWISE NOTED:
DECIMALS: 0.00 ± 0.015
ANGULAR: 0.00° ± 0.01°
TOLERANCES: 0.000 ± 0.006

MATERIAL

FINISH (UNLESS NOTED ON DWG.)

WEIGHT

SCALE

UNIBLOC
Hygienic Technologies

DWG. TITLE: BEARING HOUSING ASSEMBLY

DATE: 6/23/15

BY: DAP

CHECKED: []

APPROVED: []

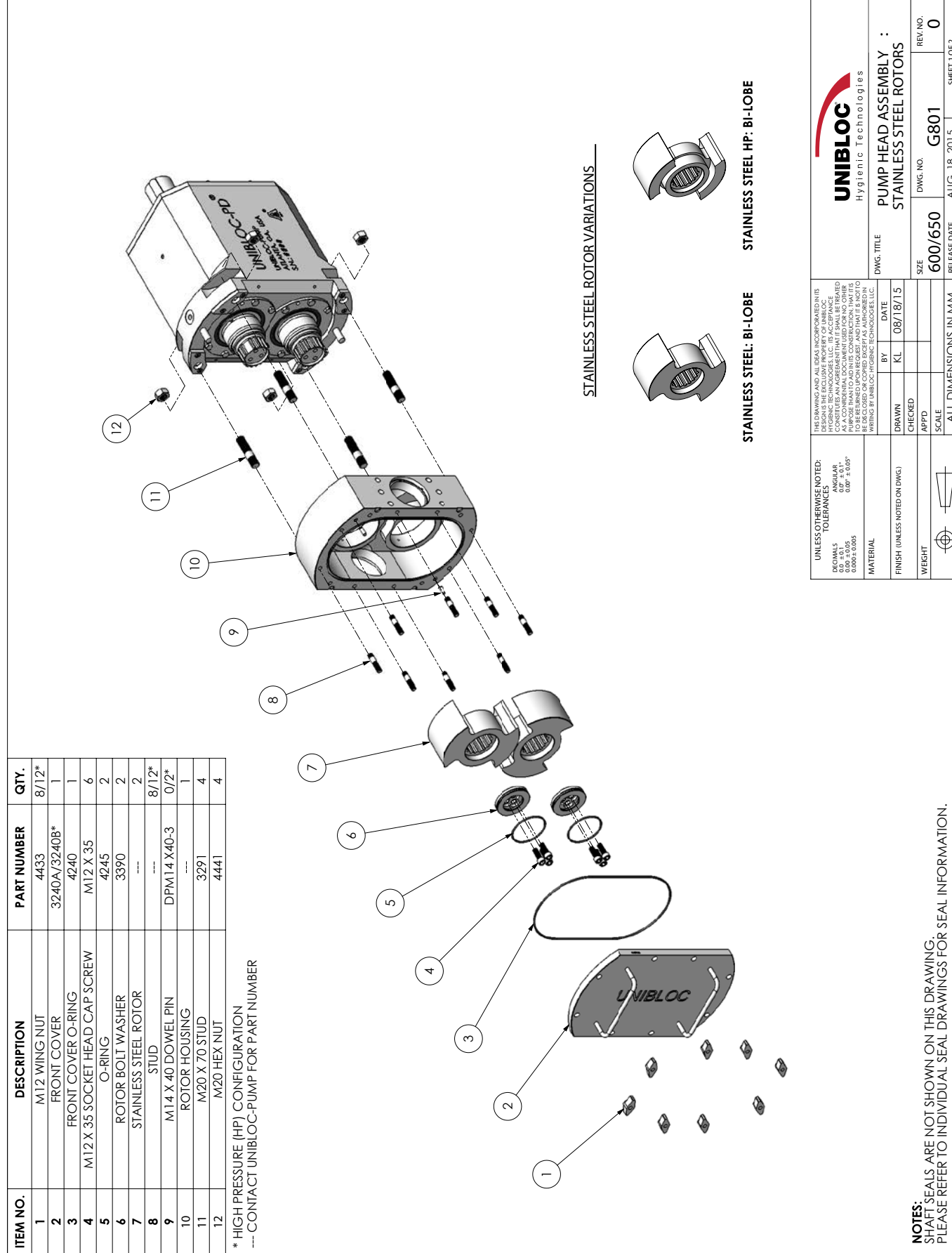
SIZE: 600/602 SRS

DWG. NO.: G800

REV. NO.: 0

RELEASE DATE: JULY 27, 2015

SHEET 1 OF 2



NOTES:
 SHAFT SEALS ARE NOT SHOWN ON THIS DRAWING.
 PLEASE REFER TO INDIVIDUAL SEAL DRAWINGS FOR SEAL INFORMATION.

UNIBLOC
Hygienic Technologies

PUMP HEAD ASSEMBLY :
STAINLESS STEEL ROTORS

DWG. NO. **G801**

SIZE **600/650**

REV. NO. **0**

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DWG. TITLE

DATE

BY

KL

08/18/15

CHECKED

APPD

SCALE

ALL DIMENSIONS IN MM

ITEM NO.	DESCRIPTION	PART NUMBER	QTY.
1	M12 WING NUT	4433	8
2	FRONT COVER	3240A	1
3	FRONT COVER O-RING	4240	1
4	QUICKSTRIP® ROTOR	---	2
5	---	8	
6	ROTOR HOUSING	---	1
7	M20 X 70 STUD	3291	4
8	M20 HEX NUT	4441	4

--- CONTACT UNIBLOC-PUMP FOR PART NUMBER

QUICKSTRIP® ROTOR VARIATIONS

POLYFLEX® BI-LOBE

DURACORE® BI-LOBE

NOTES:
 SHAFT SEALS ARE NOT SHOWN ON THIS DRAWING.
 PLEASE REFER TO INDIVIDUAL SEAL DRAWINGS FOR SEAL INFORMATION.

		PUMP HEAD ASSEMBLY :	
		QUICKSTRIP ROTORS	
DWG. TITLE QUICKSTRIP ROTORS		SIZE 600/650	DWG. NO. G802
RELEASE DATE AUG. 19, 2015		REV. NO. 0	

UNLESS OTHERWISE NOTED:
 TOLERANCES:
 DECIMALS: 0.0 ± 0.15, 0.005 ± 0.005
 ANGULAR: 0.0° ± 0.1°, 0.0° ± 0.05°

MATERIAL: FINISH (UNLESS NOTED ON DWG.)
 WEIGHT: SCALE: ALL DIMENSIONS IN MM

ITEM NO.	DESCRIPTION	PART NUMBER	QTY.
1	M12 WING NUT	4433	8/12*
2	FRONT COVER	3240A/2-3241B-42B*	1
3	FRONT COVER O-RING	4240C	1
4	M12 X 35 SOCKET HEAD CAP SCREW	M12 X 35	6
5	O-RING	4272	6
6	O-RING	4200	2
7	ROTOR BOLT WASHER	2-3390	2
8	STAINLESS STEEL ROTOR (BI OR TRI-LOBE)	---	2
9	STUD	---	8/12*
10	M8 X 20 DOWEL PIN	4605	0/2*
11	ROTOR HOUSING	---	1
12	M20 X 70 STUD	3291	4
13	M20 HEX NUT	4441	4

* HIGH PRESSURE (HP) CONFIGURATION
 --- CONTACT UNIBLOC-PUMP FOR PART NUMBER

STAINLESS STEEL: BI-LOBE

STAINLESS STEEL HP: BI-LOBE

STAINLESS STEEL: TRI-LOBE

UNLESS OTHERWISE NOTED:
 DECIMALS
 0.0 ± 0.15
 0.00 ± 0.05
 0.000 ± 0.005

TOLERANCES:
 ANGULAR
 0.0° ± 0.1°
 0.0° ± 0.05°

MATERIAL

FINISH (UNLESS NOTED ON DWG.)

WEIGHT

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BY DATE
 DRAWN KL 08/18/15
 CHECKED
 APP'D

SCALE

ALL DIMENSIONS IN MM

UNIBLOC
Hygienic Technologies

DWG. TITLE: PUMP HEAD ASSEMBLY :
STAINLESS STEEL ROTORS- 3 BOLT LOCKING

SIZE: 602/652/677

REV. NO. 0

RELEASE DATE: AUG. 18, 2015

SHEET 1 OF 2

NOTES:
 SHAFT SEALS ARE NOT SHOWN ON THIS DRAWING.
 PLEASE REFER TO INDIVIDUAL SEAL DRAWINGS FOR SEAL INFORMATION.

ITEM NO.	DESCRIPTION	PART NUMBER	QTY.
1	M12 WING NUT	4433	8/12*
2	FRONT COVER	3240A/2-3241B-42B*	1
3	FRONT COVER O-RING	4240C	1
4	O-RING	4233	2
5	ROTOR BOLT	2-3392A	2
6	O-RING	4201	2
7	ROTOR LOCKING NUT	2-3393	2
8	STAINLESS STEEL ROTOR (BI OR TRI-LOBE)	---	2
9	STUD	---	8/12*
10	M8 X 20 DOWEL PIN	4605	0/2*
11	ROTOR HOUSING	---	1
12	M20 X 70 STUD	3291	4
13	M20 HEX NUT	4441	4

* HIGH PRESSURE (HP) CONFIGURATION
 --- CONTACT UNIBLOC-PUMP FOR PART NUMBER

STAINLESS STEEL ROTOR VARIATIONS

STAINLESS STEEL: BI-LOBE

STAINLESS STEEL HP: BI-LOBE

STAINLESS STEEL: TRI-LOBE

UNLESS OTHERWISE NOTED:

DECIMALS
 0.0 ± 0.15
 0.00 ± 0.05
 0.005 ± 0.005

ANGULAR
 0.0° ± 0.1°
 0.0° ± 0.05°

MATERIAL

FINISH (UNLESS NOTED ON DWG.)

WEIGHT

SCALE

ALL DIMENSIONS IN MM

UNIBLOC
Hygienic Technologies

DWG. TITLE: PUMP HEAD ASSEMBLY :
 STAINLESS STEEL ROTORS- 1 BOLT LOCKING

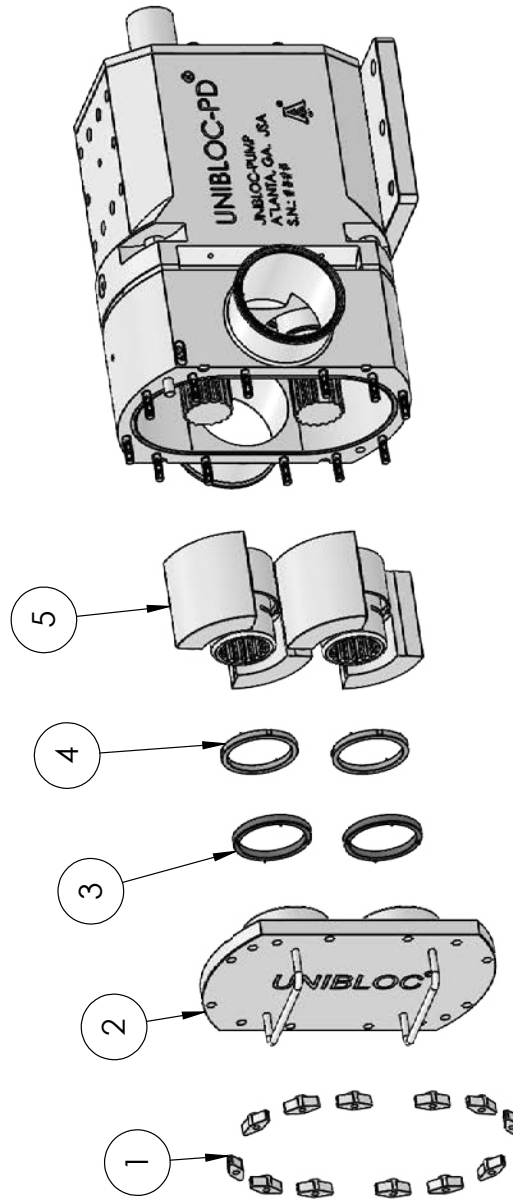
SIZE: 602/652/677
 DWG. NO. G803B
 RELEASE DATE: AUG. 18, 2015

REV. NO. 0

SHEET 1 OF 2

NOTES:
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 PLEASE REFER TO INDIVIDUAL SEAL DRAWINGS FOR SEAL INFORMATION.

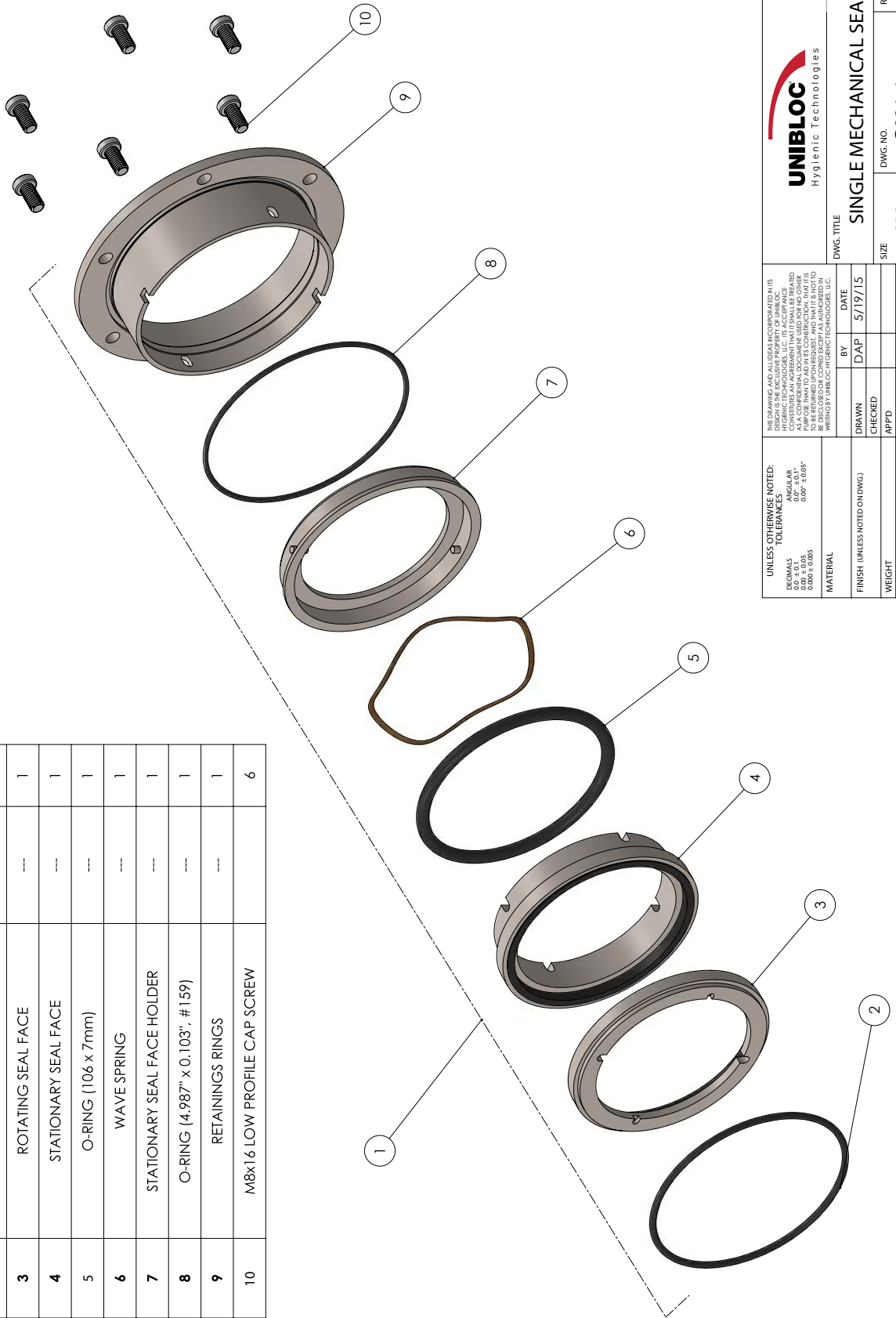
ITEM NO.	DESCRIPTION	PART NUMBER		QTY.
1	WING NUT (FRONT COVER): M12	4433-2	4433-2	12
2	ROTOR HOUSING COVER	2-3241BFF	2-3242BFF	1
3	COVER WEAR RING	2-4945CFF	2-4945CFF	2
4	ROTOR WEAR RING	2-4945RFF	2-4945RFF	2
5	FOOD FIRST BI-LOBE ROTOR	2-3340HPFF	2-3346HPFF	2
	PUMP SERIES	PD602	PD677	



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BY	DATE	DWG. TITLE	
DRAWN JH	3/29/21	PUMP HEAD ASSEMBLY: FOOD FIRST	
CHECKED		SIZE	REV. NO.
APPROD		PD602 SR5	G826 0
SCALE		RELEASE DATE	MAR. 29, 2021
ALL DIMENSIONS IN MM. [IN]		SHEET 1 OF 1	



ITEM NO.	DESCRIPTION	PART NO.	QTY.
1	SINGLE MECHANICAL SEAL	5193R	1
2	O-RING (4.359" x 0.139", #245)	----	1
3	ROTATING SEAL FACE	----	1
4	STATIONARY SEAL FACE	----	1
5	O-RING (106 x 7mm)	----	1
6	WAVE SPRING	----	1
7	STATIONARY SEAL FACE HOLDER	----	1
8	O-RING (4.987" x 0.103", #159)	----	1
9	RETAINING RINGS	----	1
10	M8x16 LOW PROFILE CAP SCREW	----	6

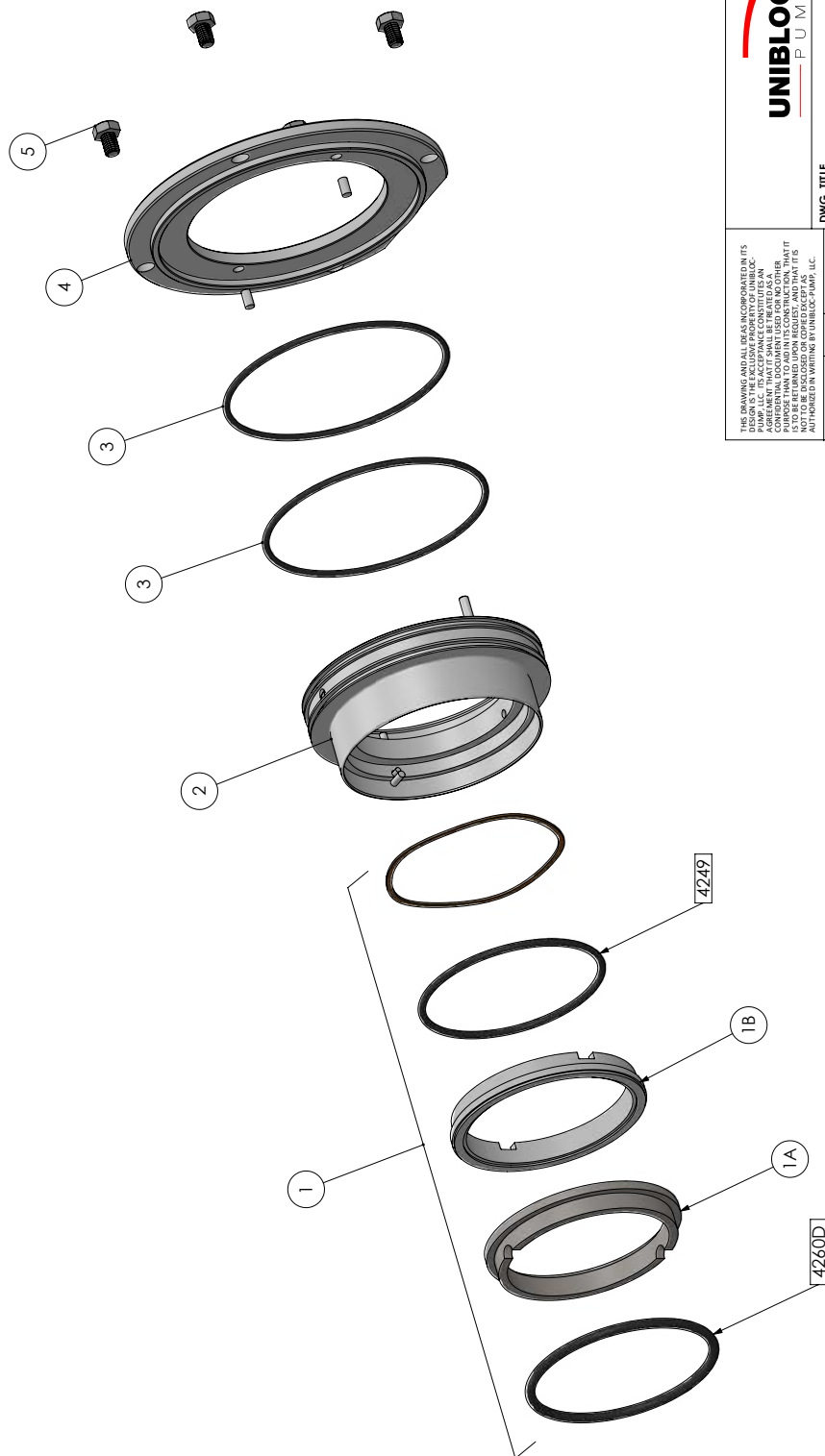


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	DRAWN	DAP	5/19/15	
	CHECKED			
	APPD			
FINISH (UNLESS NOTED OTHERWISE)				
WEIGHT				
SCALE				
ALL DIMENSIONS IN MM				

UNIBLOC Hygienic Technologies		DWG. TITLE SINGLE MECHANICAL SEAL	
SIZE	600SR	DWG. NO.	G821-1
RELEASE DATE	MAY 19, 2015	REV. NO.	0
		SHEET 1 OF 2	

TABLE 1			
ITEM NO.	PART NO.	DESCRIPTION	QTY.
1	REFERENCE TABLE 2	SINGLE MECHANICAL SEAL FACE KIT	1
2	2-4940C	STATIONARY SEAL FACE HOLDER	1
3	4841	O-RING	2
4	2-4940A	RETAINING RING	1
5	HMB8x12	M8x12 HEX BOLT	4

TABLE 2			
KIT NO.	ITEM NO.	PART NO.	DESCRIPTION
2-5191KIT	1A	2-519R-TC	ROTATING SEAL FACE: TUNGSTEN CARBIDE
	1B	2-519S-SIC	STATIONARY SEAL FACE: SILICON CARBIDE
2-5192KIT	1A	2-519R-C	ROTATING SEAL FACE: CARBON
	1B	2-519S-TC	STATIONARY SEAL FACE: TUNGSTEN CARBIDE
2-5193KIT	1A	2-519R-SIC	ROTATING SEAL FACE: SILICON CARBIDE
	1B	2-519S-SIC	STATIONARY SEAL FACE: SILICON CARBIDE
2-5195KIT	1A	2-519R-TC	ROTATING SEAL FACE: TUNGSTEN CARBIDE
	1B	2-519S-TC	STATIONARY SEAL FACE: TUNGSTEN CARBIDE

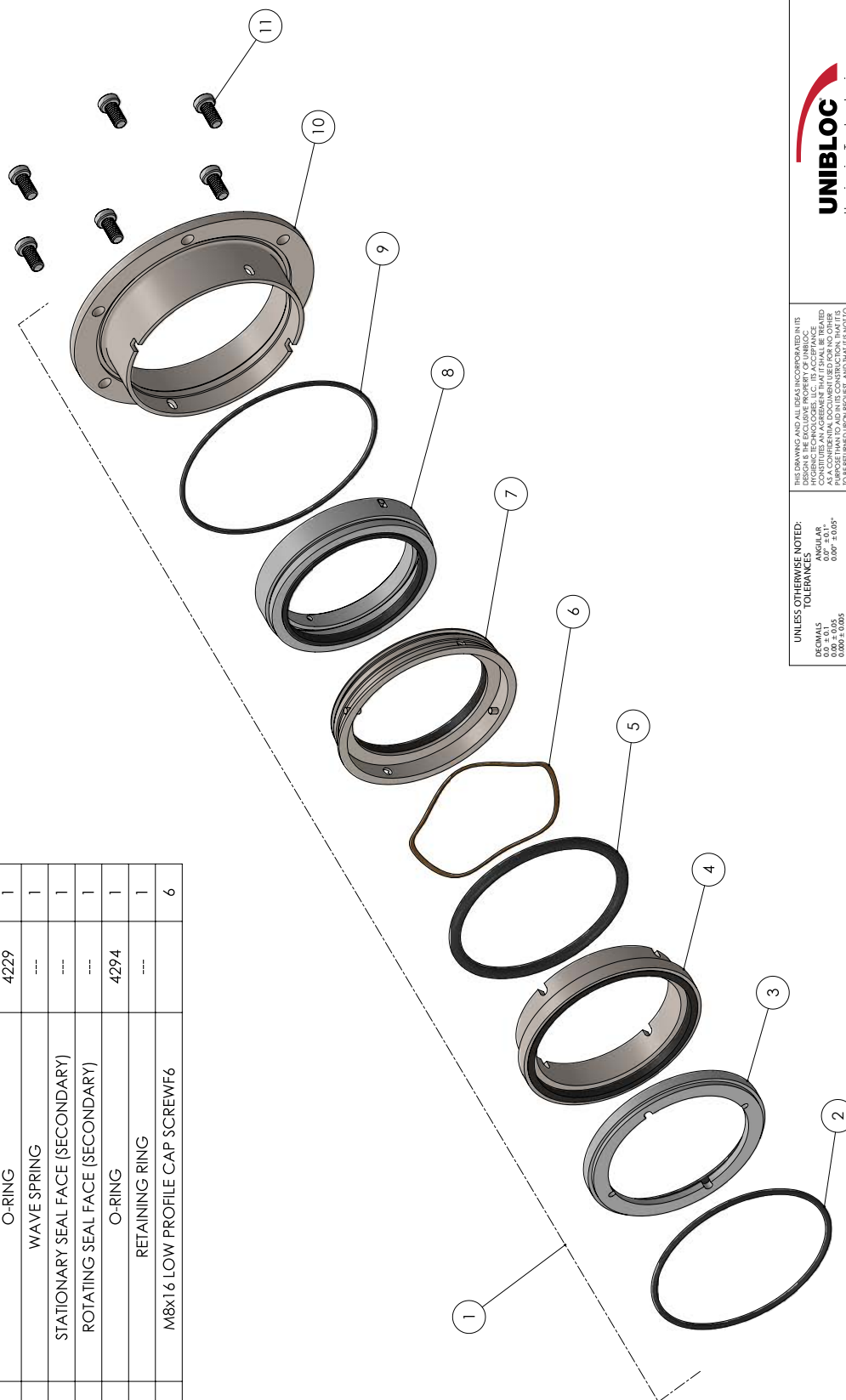


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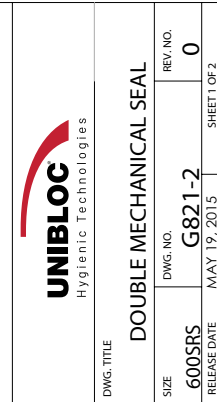
DWG. TITLE			
SINGLE MECHANICAL SEAL			
DRAWN	BY	DATE	
CHECKED	DAP	5/18/2015	
APPD			
SCALE			
SIZE		DWG. NO.	REV. NO.
602SRS		2-5191-95	2
RELEASE DATE		MAR. 23, 2021	SHEET 1 OF 2

ITEM NO.	DESCRIPTION	PART NO.	QTY.
1	DOUBLE MECHANICAL SEAL	5293R	1
2	O-RING	4215	1
3	ROTATING SEAL FACE (PRIMARY)	-----	1
4	STATIONARY SEAL FACE (PRIMARY)	-----	1
5	O-RING	4229	1
6	WAVE SPRING	-----	1
7	STATIONARY SEAL FACE (SECONDARY)	-----	1
8	ROTATING SEAL FACE (SECONDARY)	-----	1
9	O-RING	4294	1
10	RETAINING RING	-----	1
11	M8x16 LOW PROFILE CAP SCREWF6	-----	6

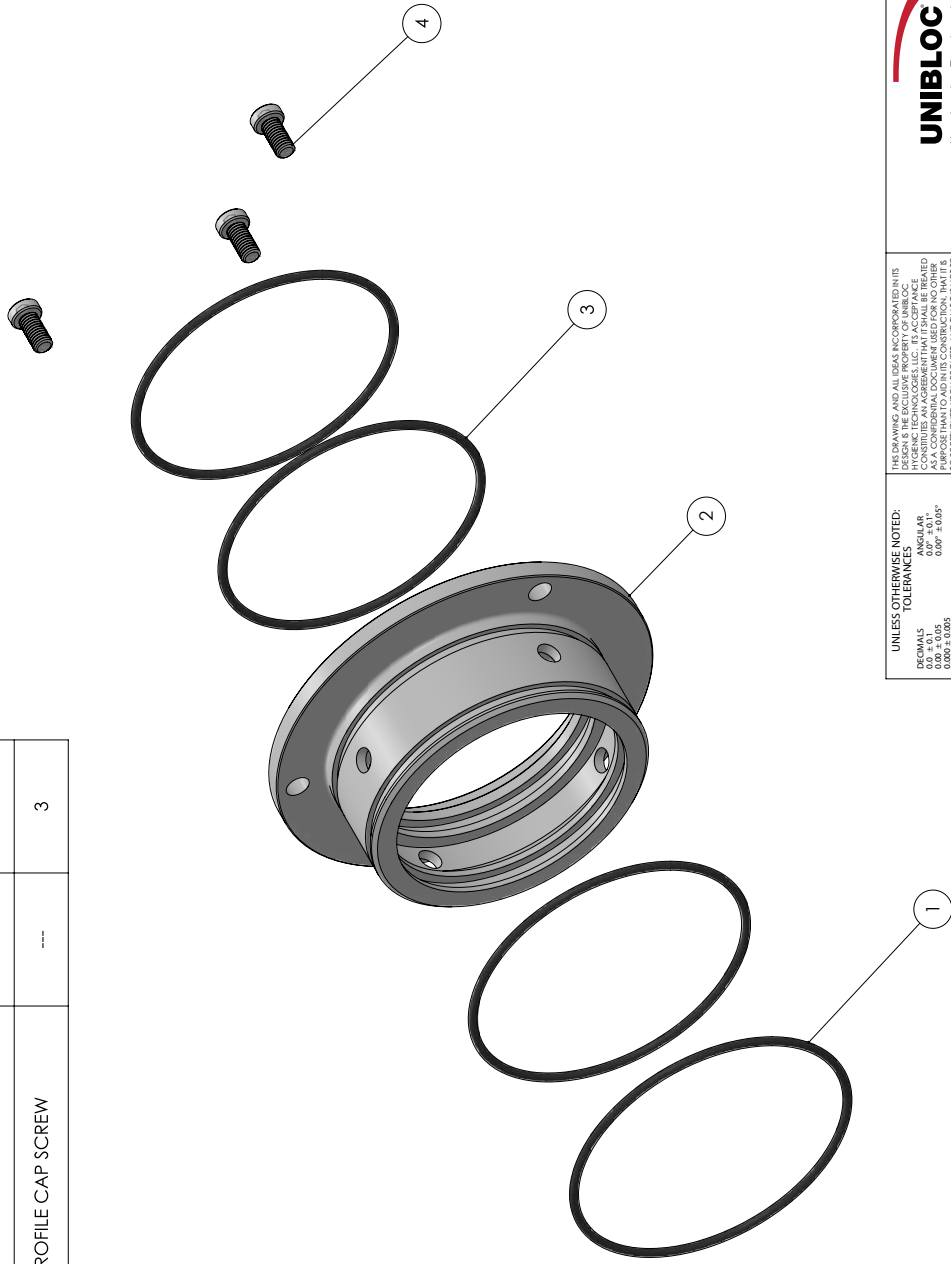


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	BY	DATE
	DAP	5/19/15
	CHECKED	
WEIGHT	APPD	
	SCALE	
ALL DIMENSIONS IN MM		

UNLESS OTHERWISE NOTED: DECIMALS 0.0 ± 0.1 0.1 ± 0.15 0.000 ± 0.005		TOLERANCES ANGULAR	
		0.0° ± 0.1°	
		0.1° ± 0.15°	
		0.000° ± 0.005°	
MATERIAL		FINISH (UNLESS NOTED OTHERWISE)	
WEIGHT		SCALE	
ALL DIMENSIONS IN MM		BY DATE	
DRAWN		DAP	5/19/15
CHECKED			
APPD			
DWG. TITLE		DOUBLE MECHANICAL SEAL	
SIZE		DWG. NO.	G821-2
600SRS		REV. NO.	0
RELEASE DATE		MAY 19, 2015	SHEET 0 OF 2



ITEM NO.	DESCRIPTION	PART NO.	QTY.
1	OUTER O-RING	4248	2
2	DOUBLE O-RING SEAL HOUSING	4942	1
3	INNER O-RING	4249	2
4	M8x16 LOW PROFILE CAP SCREW	----	3

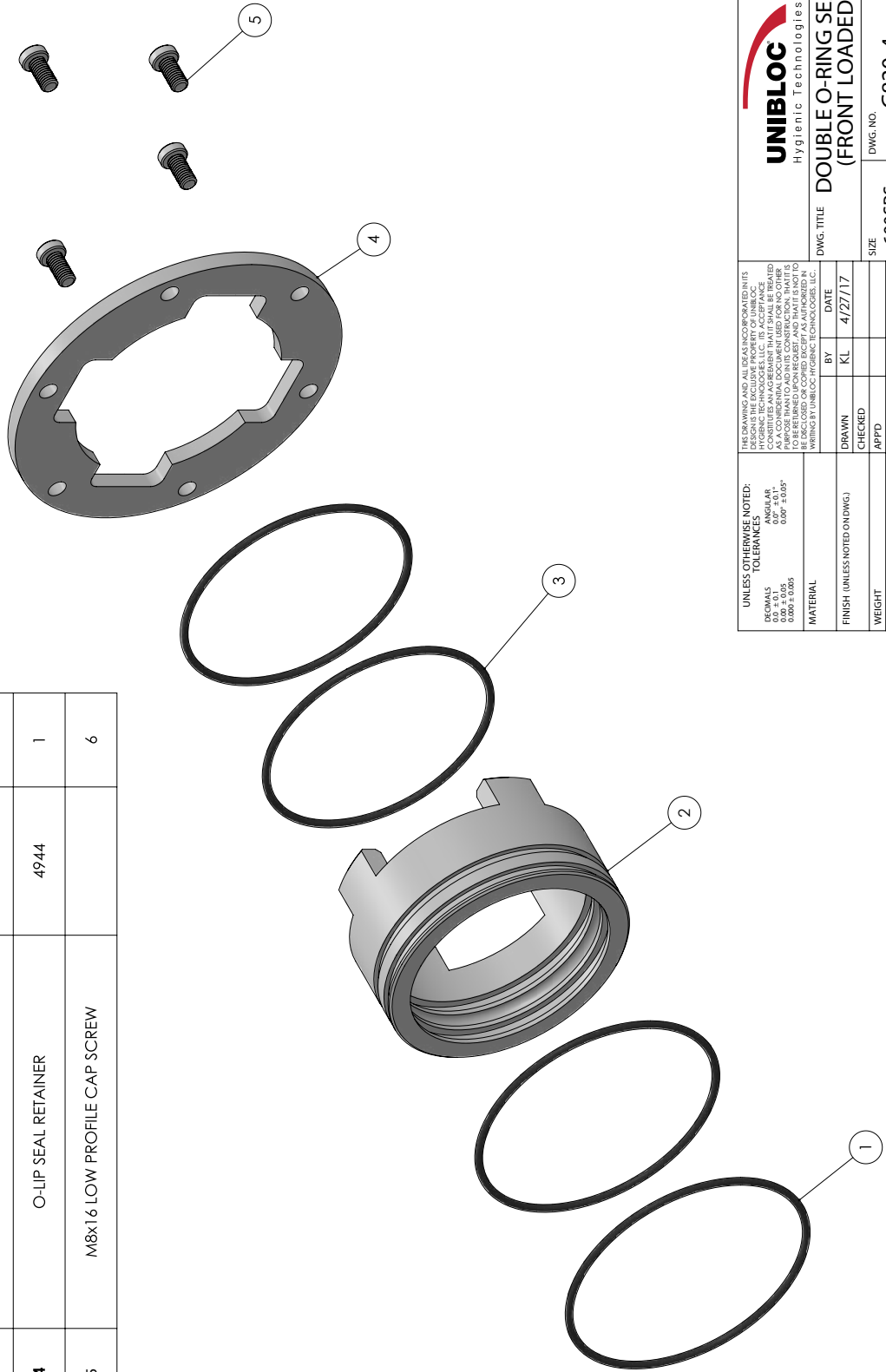


UNLESS OTHERWISE NOTED:
 DECIMALS
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 0.1 ± 0.15
 0.000 ± 0.005
 ANGULAR
 0.0° ± 0.1°
 0.1° ± 0.5°

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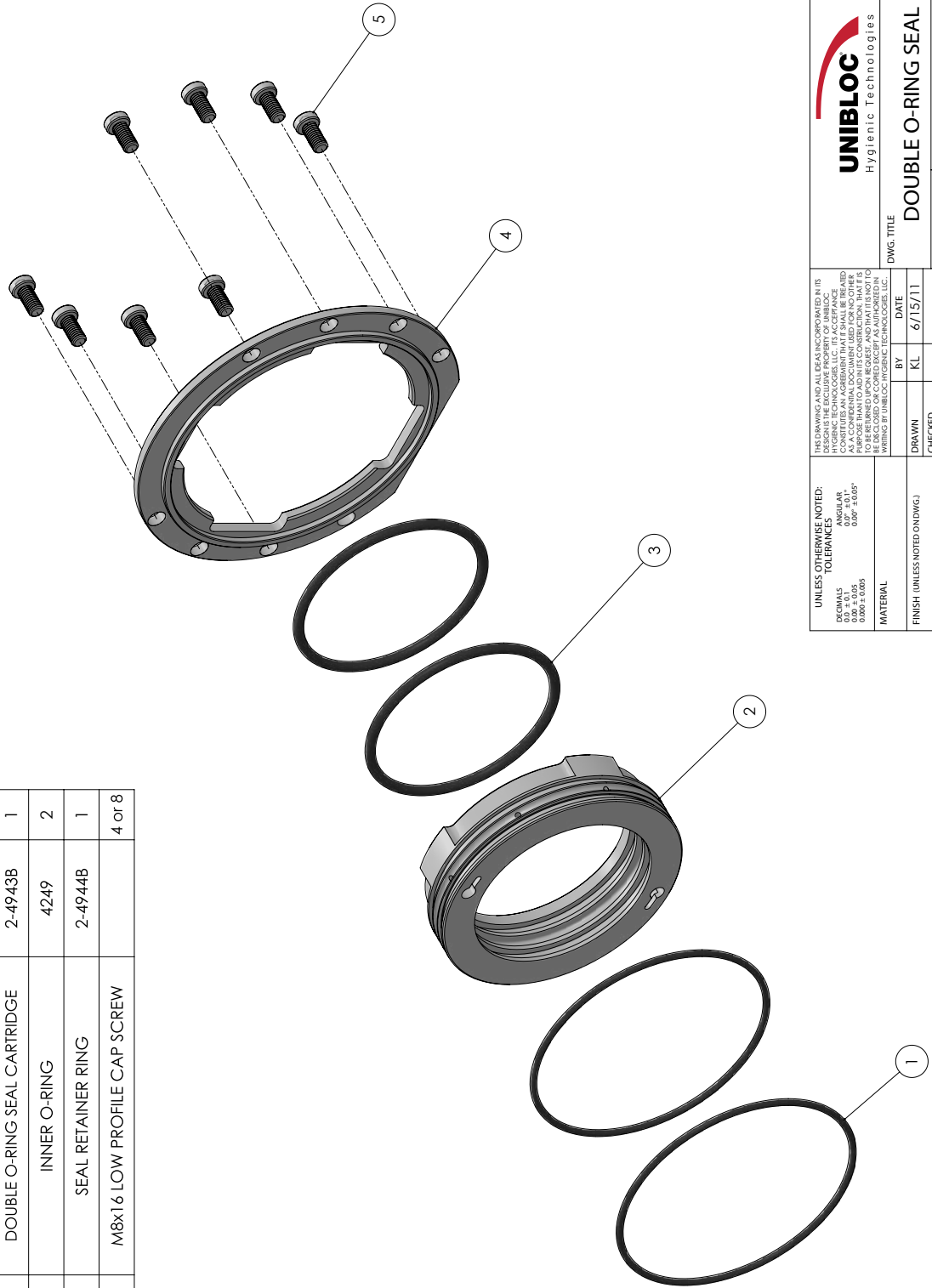
 UNIBLOC Hygienic Technologies		DWG. TITLE DOUBLE O-RING SEAL (REAR LOADED)	
SIZE 600SRS	DWG. NO. G820-2	REV. NO. 0	RELEASE DATE MAY 20, 2015
ALL DIMENSIONS IN MM			

ITEM NO.	DESCRIPTION	PART NO.	QTY.
1	OUTER O-RING	4248	2
2	DOUBLE O-RING SEAL CARTRIDGE	4942B	1
3	INNER O-RING	4249	2
4	O-LIP SEAL RETAINER	4944	1
5	M8x16 LOW PROFILE CAP SCREW		6



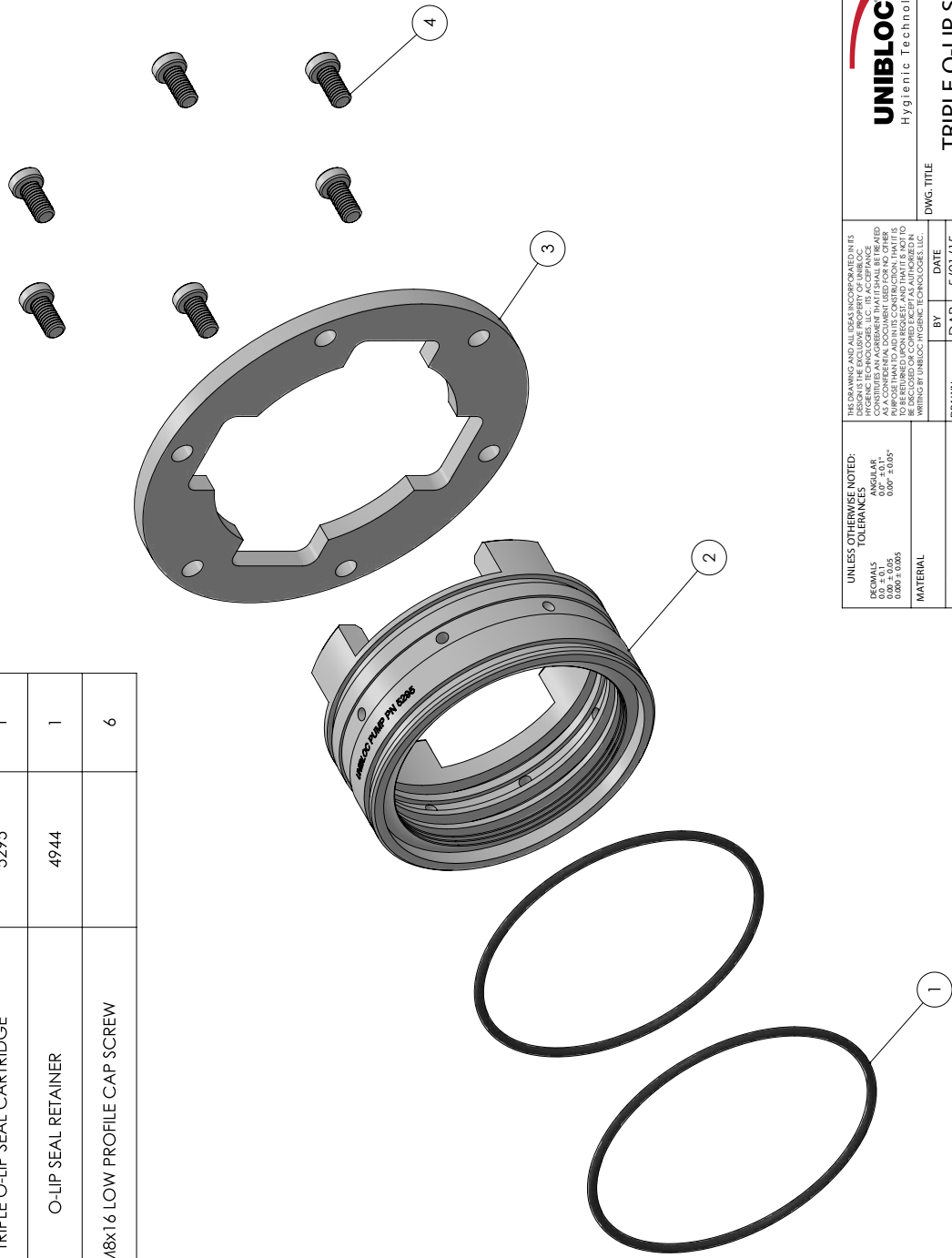
UNLESS OTHERWISE NOTED: TOLERANCES DECIMALS 0.0 ± 0.1 0.1 ± 0.15 0.005 ± 0.005 MATERIAL <
--

ITEM NO.	DESCRIPTION	PART NO.	QTY
1	OUTER O-RING	4841	2
2	DOUBLE O-RING SEAL CARTRIDGE	2-4943B	1
3	INNER O-RING	4249	2
4	SEAL RETAINER RING	2-4944B	1
5	M8x16 LOW PROFILE CAP SCREW		4 or 8



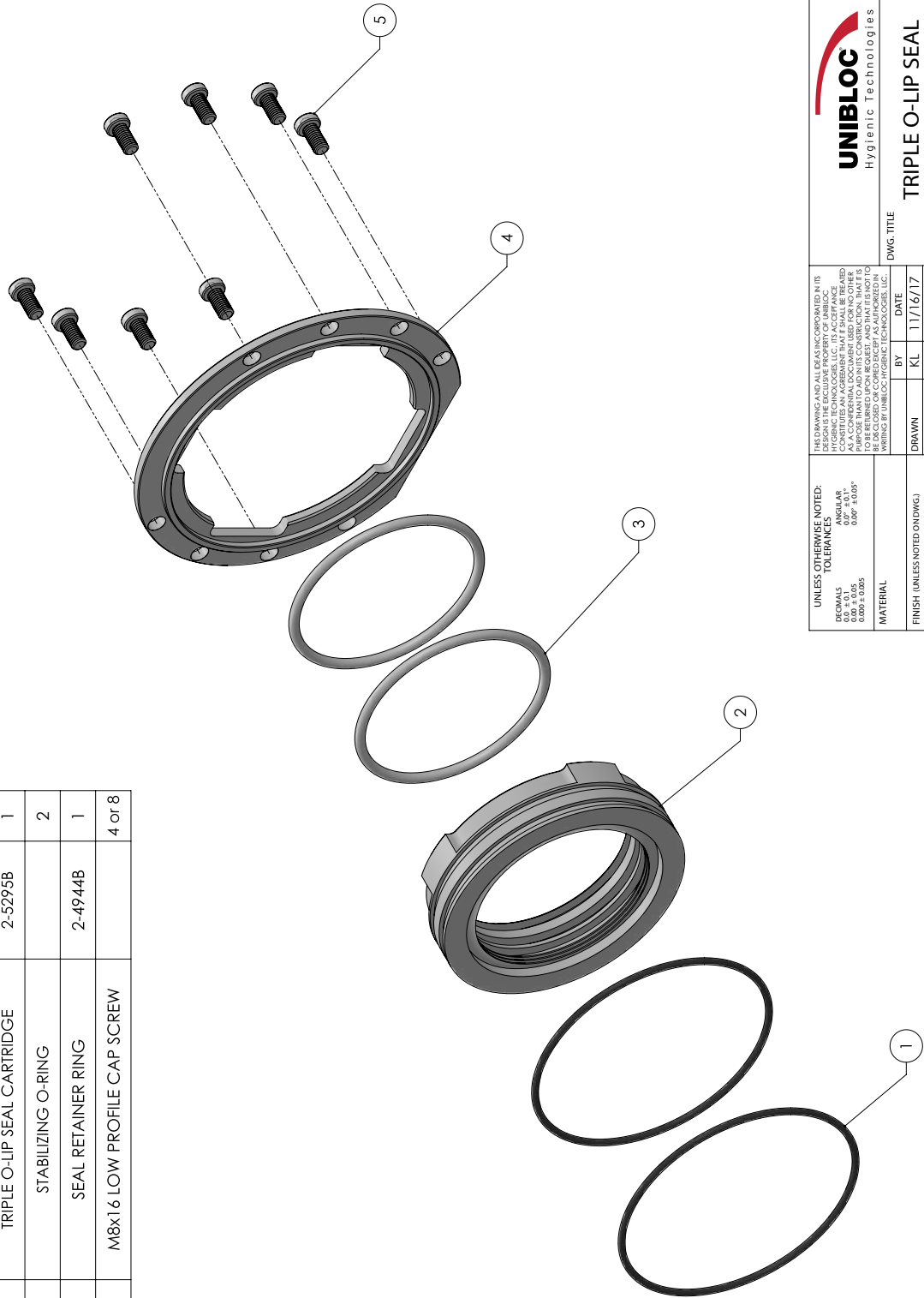
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MATERIAL	FINISH (UNLESS NOTED OTHERWISE)	DRAWN	BY	DATE	DWG. TITLE
WEIGHT		CHECKED	KL	6/15/11	DOUBLE O-RING SEAL
		APPD			SIZE
		SCALE			602 SRS
					DWG. NO.
					G2-803
					REV. NO.
					2
					RELEASE DATE
					MAR. 17, 2017
					SHEET 1 OF 2

ITEM NO.	DESCRIPTION	PART NO.	QTY.
1	O-RING	4298	2
2	TRIPLE O-LIP SEAL CARTRIDGE	5295	1
3	O-LIP SEAL RETAINER	4944	1
4	M8x16 LOW PROFILE CAP SCREW		6

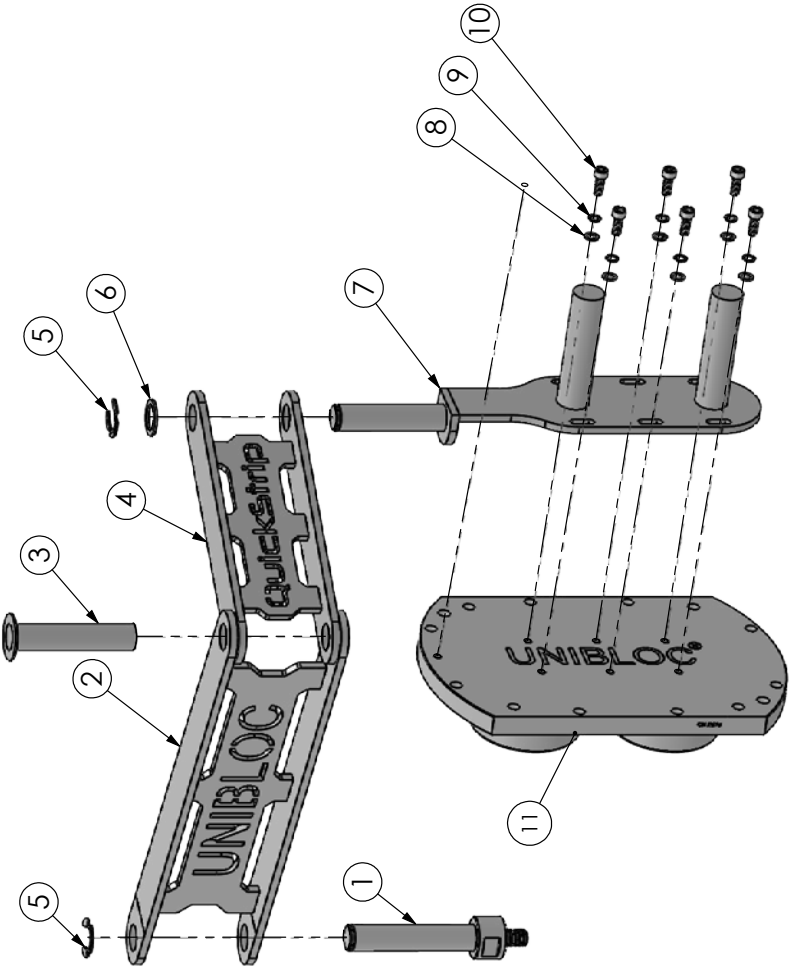


UNLESS OTHERWISE NOTED: DECIMALS 0.0 ± 0.1 0.1 ± 0.15 0.005 ± 0.005 TOLERANCES ANGULAR 0.0° ± 0.1° 0.0° ± 0.5° 0.0° ± 0.05° MATERIAL FINISH (UNLESS NOTED OTHERWISE) WEIGHT	UNLESS OTHERWISE NOTED: THIS DRAWING AND ALL DIMENSIONS ARE THE PROPERTY OF UNIBLOC HYGIENIC TECHNOLOGIES, LLC. ITS ACCEPTANCE OF THIS DRAWING DOES NOT CONSTITUTE A WARRANTY OR ENDORSEMENT OF ANY OTHER PRODUCT OR SERVICE. UNIBLOC HYGIENIC TECHNOLOGIES, LLC. SHALL NOT BE LIABLE FOR ANY DAMAGES, INCLUDING CONSEQUENTIAL DAMAGES, ARISING FROM THE USE OF THIS DRAWING. THIS DRAWING IS THE PROPERTY OF UNIBLOC HYGIENIC TECHNOLOGIES, LLC. IT IS TO BE USED FOR THE PURPOSES SPECIFIED AND IS NOT TO BE REPRODUCED OR COPIED WITHOUT THE WRITTEN PERMISSION OF UNIBLOC HYGIENIC TECHNOLOGIES, LLC.		UNIBLOC Hygienic Technologies
	DATE 5/21/15 DRAWN DAP CHECKED APPROVED SCALE ALL DIMENSIONS IN MM	BY DATE 5/21/15 DRAWN CHECKED APPROVED SCALE ALL DIMENSIONS IN MM	DWG. TITLE TRIPLE O-LIP SEAL SIZE 600SFS REV. NO. 1 RELEASE DATE JUNE 24, 2015 SHEET 1 OF 2

ITEM NO.	DESCRIPTION	PART NO.	QTY
1	OUTER O-RING	4841	2
2	TRIPLE O-LIP SEAL CARTRIDGE	2-5295B	1
3	STABILIZING O-RING		2
4	SEAL RETAINER RING	2-4944B	1
5	M8x16 LOW PROFILE CAP SCREW		4 or 8



		THE DRAWING IS A PRELIMINARY DESIGN AND IS NOT TO BE USED FOR CONSTRUCTION WITHOUT THE WRITING OF UNIBLOC HYGIENIC TECHNOLOGIES, LLC.		TRIPLE O-LIP SEAL	
		UNLESS OTHERWISE NOTED: TOLERANCES: DECIMALS 0.0 ± 0.1 0.005 ± 0.005 0.002 ± 0.005	ANGULAR 0.0° ± 0.1° 0.0° ± 0.05°	BY KL	DATE 11/16/17
MATERIAL		DRAWN	CHECKED	SIZE 602 SRS	
FINISH (UNLESS NOTED OTHERWISE)		APPD	SCALE	DWG. NO. G2-805	REV. NO. 1
WEIGHT		ALL DIMENSIONS IN MM		RELEASE DATE MAR. 17, 2017	SHEET 1 OF 2



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	THP-M20	THREADED HINGE PIN	1
2	SA3242-2	LONG ARM	1
3	SA3242-13	HINGE PIN	1
4	SA3242-3	SHORT ARM	1
5	94751A785	RETAINING RING	2
6	98126A855	WASHER	1
7	SAH3242-5	COVER BRACKET	1
8	WM10x18	M10 WASHER	6
9	LWM10	M10 SPLIT WASHER	6
10	SBM10x25	SOCKET HEAD BOLT: M10x25	6
11	REF. TABLE 2	---	-

TABLE 2

COVER PART NO.	ASS. ASSEM. NO.	DESCRIPTION
2-3241BSAHC-1L	---	PD602 HP FRONT COVER: HOR. SWING ARM
2-3242BSAHC-1L	2-3242BSAH-1L	PD652/677 HP FRONT COVER: HOR. SWING ARM
2-3241BFFSAHC-1L	2-3241BFFSAH-1L	PD602 FF FRONT COVER: HOR. SWING ARM
2-3242BFFSAHC-1L	2-3242BFFSAH-1L	PD652/677 FF FRONT COVER: HOR. SWING ARM

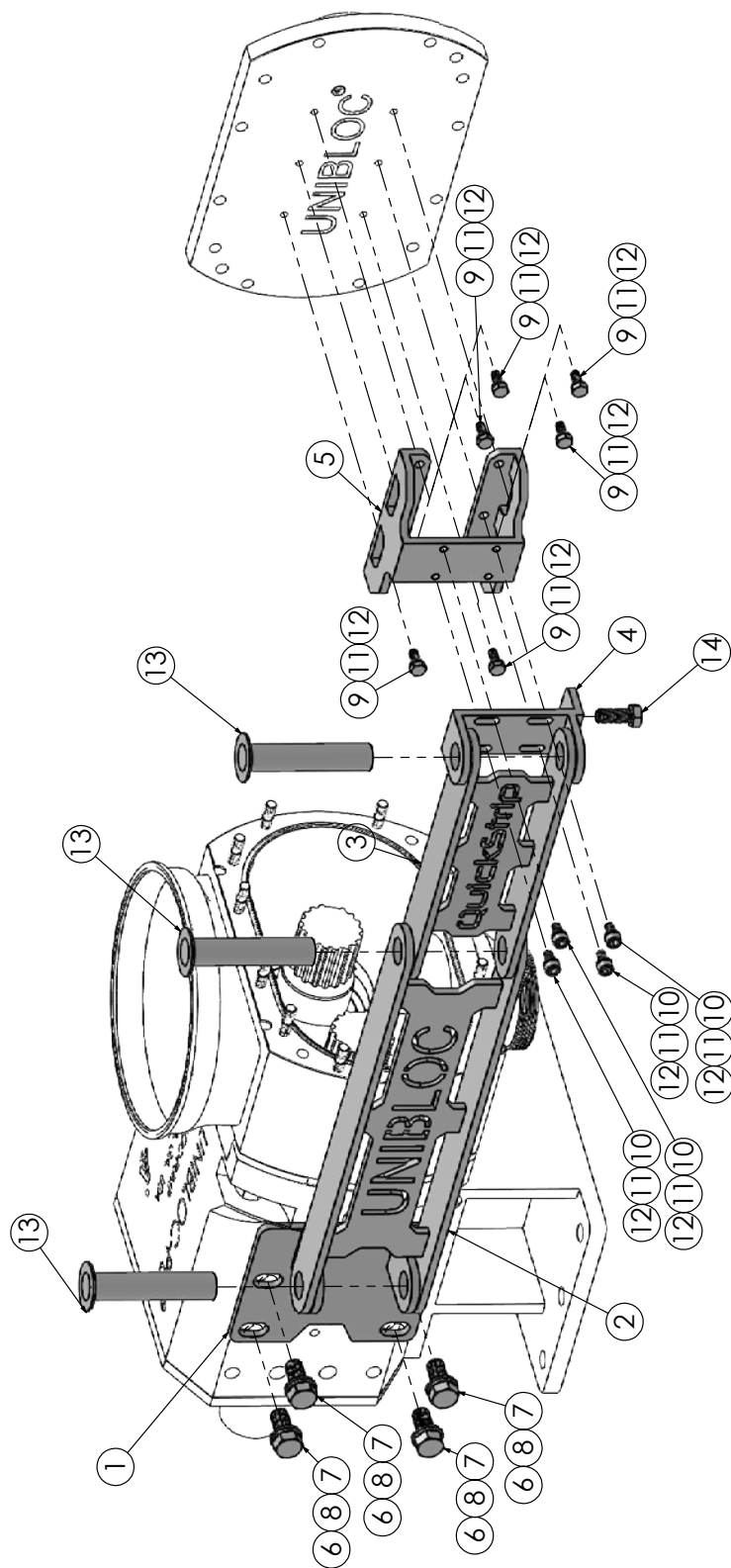
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BY	DATE	DWG. TITLE
DRAWN JH	05/03/19	HORIZONTAL SWING ARM ASSEMBLY
CHECKED		SIZE
APPD		602SRS
SCALE		DWG. NO. 2-3241SAH-42SAH
		REV. NO. 1
		RELEASE DATE FEB. 22, 2021
		SHEET 1 OF 2

ALL DIMENSIONS IN MM. [IN.]



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	SAV3242-1	MOUNTING BRACKET	1
2	SA3242-2	LONG ARM	1
3	SA3242-3	SHORT ARM	1
4	SAV3242-4	COVER BRACKET HINGE	1
5	SAV3242-5	COVER BRACKET	1
6	WM20	M20 WASHER	4
7	HBM20x45	M20x45 HEX HEAD BOLT	4
8	LWM20	M20 SPLIT WASHER	4
9	HBM10x25	M10x25 HEX BOLT	6
10	SBM10x20	M10x20 SOCKET HEAD BOLT	4
11	LWM10	M10 SPLIT WASHER	10
12	WM10x18	M10 WASHER	10
13	SA3242-13	HINGE PIN	3

2-3241BSAVC-1L	PD602 HP FRONT COVER FOR VERT. SWING ARM
2-3242BSAVC-1L	PD652/677 HP FRONT COVER FOR VERT. SWING ARM
2-3241BFFSAVC-1L	PD602 FOODFIRST FRONT COVER FOR VERT. SWING ARM
2-3242BFFSAVC-1L	PD652/677 FOODFIRST FRONT COVER FOR VERT. SWING ARM
PART NO.	DESCRIPTION
ASSOCIATED PARTS	

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TOLERANCES	DECIMALS	ANGULAR	FINISH (UNLESS NOTED ON DWG.)
0.00 ± 0.005	0.00 ± 0.05	0.007 ± 0.05°	SCALE
MATERIAL	BY	DATE	WEIGHT
	KL	5/16/19	
	CHECKED		
	APPD		
	SCALE		
	DWG. NO.	602SRS	REV. NO.
	SAV32		5
	RELEASE DATE	JAN. 18, 2022	SHEET 1 OF 2



VERTICAL SWING ARM ASSEMBLY

Notes:

Pump Size: _____

Pump SN: _____

[illegible]

WARRANTY

Unibloc Hygienic Technologies, LLC ("Unibloc") warrants that its product will be free from defects in material and workmanship which results in noncompliance with the Specifications for such product. This warranty shall begin upon delivery and continue for a period of one (1) year from such date. If during this period the product does not comply with its specifications as a result of defects in material or workmanship, contact Unibloc to arrange return of the faulty product, shipping prepaid and fully insured, to an authorized Unibloc service facility. If upon inspection of the item in question, defects in workmanship or materials are revealed, Unibloc's sole obligation under this warranty shall be to supply a repair or replacement for any defective part of a product, and to return such product to the customer by shipping it EX WORKS (as defined in Incoterms 2020) the service facility. Unibloc shall not be required to supply any labor for repairs or replacement of parts. This warranty is void if the product has not been used as recommended or instructed, has been altered or used with unauthorized accessories, has been subject to misuse, abuse or accident, or has been damaged due to causes not related to poor workmanship or defective materials. All parts or components not manufactured by Unibloc are warranted only to the extent of the warranty of the respective manufacturers.

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