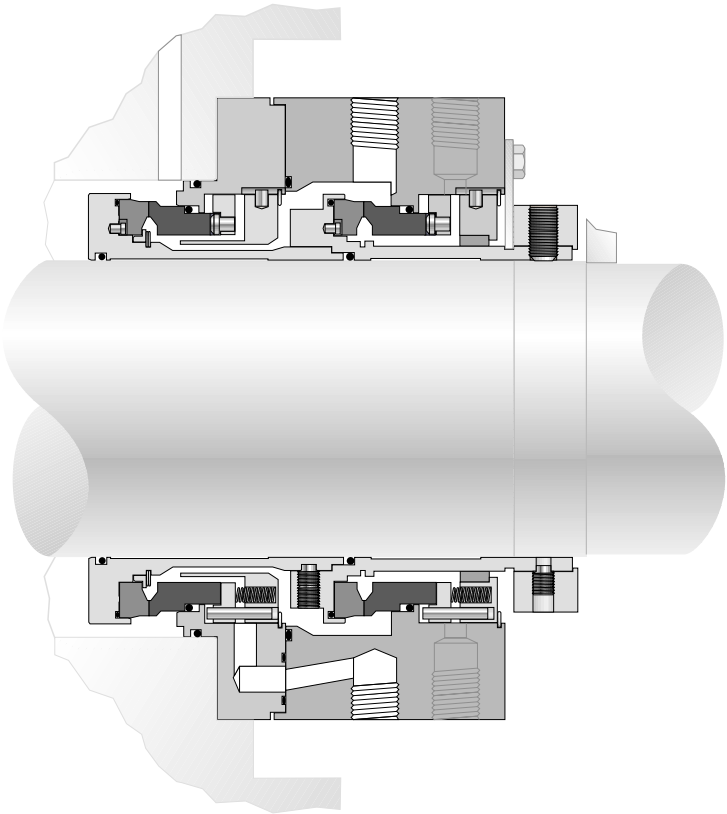
FLOWSERVE®

Flow Solutions Division

BW Seals
Durametallic Seals
Pacific Wietz Seals
Pac-Seal

Allpac MP

Dual-inline, cartridge seal for multiphase applications



Installation Instructions

Introduction

The Allpac MP is a dual-inline, cartridge seal specifically designed for multiphase twin-screw pumps. Four mechanical seal assemblies are installed on one pump. Each seal is identical; they are designed to fit in any location on the pump.

1 Equipment Check

1.1 **Follow site safety regulations** prior to equipment disassembly.
- Lock out motor and valves
- Wear designated personal safety equipment
- Relieve any pressure in the system
- Consult site MSDS files for hazardous material regulations

1.2 **Disassemble equipment** to allow access to seal installation area.

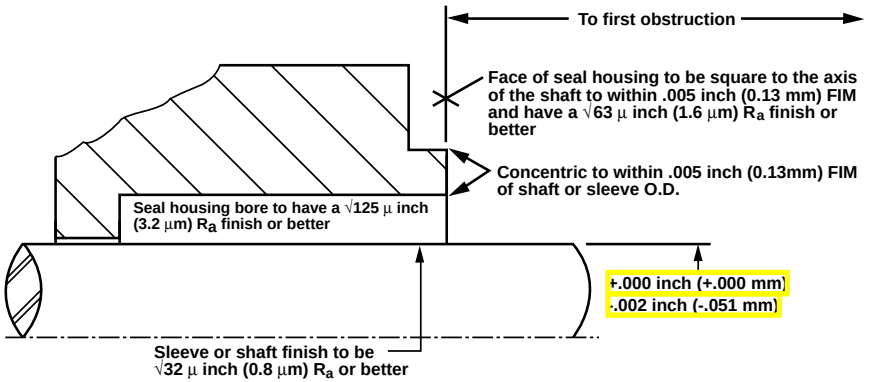
1.3 **Remove all burrs** and sharp edges from the shaft or sleeve including sharp edges of keyways and threads. Replace shaft or sleeve if worn in the sleeve gasket area. Make sure the seal housing bore and face are clean and free of burrs.

1.4 **Check requirements** for shaft, sleeve, and seal housing, **see Figure 1**.

Seal Chamber Requirements

Figure 1

Unless the assembly drawing states otherwise.



- **Bearings must be in good condition.**
- **Maximum lateral or axial movement of shaft (end play) = .010 inch (0.25mm) FIM**
- **Maximum shaft runout at face of seal housing = .003 inch (0.07mm) FIM**
- **Maximum dynamic shaft deflection at seal housing = .002 inch (0.05mm) FIM**

1.5 **Check assembly drawing** included with the cartridge seal for materials of construction, dimensions, and piping connections.

1.6 **Check shaft or sleeve O.D., box bore, and distance to the first obstruction** to ensure that they are dimensionally the same as shown on the seal assembly drawing.

1.7 **Check gland pilot and bolt holes** to ensure they are adaptable to the equipment and are the same as shown on the assembly drawing.

1.8 Handle all seal parts with care, they are manufactured to precise tolerances. The contacting surfaces of the rotating and stationary seal faces must be treated with particular care. These two surfaces are lapped flat to within three helium light bands (34.8 millionths of an inch). **Keep the seal faces perfectly clean at all times**.

2 Allpac MP Seal Installation

2.1 **Lubricate the shaft** or sleeve lightly with silicone lubricant before installing any seal parts.

2.2 Remove the sleeve gaskets, lubricate them with silicone lubricant, and reinstall in their grooves

2.3 **Lubricate the flange gasket** before installing onto the pilot diameter on the seal cartridge.

2.4 **Back out the drive collar set screws** slightly so that no portion of them extends inward past the sleeve ID.

2.5 **Install the complete cartridge seal assembly** on the shaft and position it with the seal oriented toward the pump. If at any time the seal requires a significant amount of force to position correctly, **STOP**, **BACK UP**, and assess the situation.

2.6 **Position the cartridge flange** against the seal chamber face and **tighten the gland stud nuts** evenly in a star pattern. The nuts can be torqued using ordinary wrenching techniques.

2.7 **Adjust the bearings, coupling and pump rotating assembly** so that the shaft is in its operating axial position. Any subsequent axial adjustment of the shaft requires resetting of the seal.

2.8 **Tighten the drive collar set screws** to the value specified on the assembly drawing. Improper installation torque can damage the screws or shaft or result in lower axial thrust retention of the drive collar.

2.9 Loosen the setting plate fasteners and **slide the setting plates away from the drive collar** and sleeve as far as possible. Tighten the setting plate fasteners so that the setting plates do not come loose during operation.

3 Barrier System Piping

3.1 Each dual cartridge seal has **pipe ports labeled** as shown in the assembly drawing.

3.2 The Allpac MP seal is designed to be operated with the seal flush and support systems as defined on the assembly drawing.

4 Operation

4.1 During **the first hour of operation**, seal performance should be monitored very closely:

- The temperature rise of the barrier fluid should be steady and should level out after an hour of operation. A quickly rising temperature or a temperature that does not seem to be leveling off signals a problem and should be thoroughly investigated.

- A sudden rise or decrease in barrier fluid, or a significant color change of barrier fluid signals off-design leakage and should be thoroughly investigated.
- A leakage rate of more than 30 drops per minute of the outboard seal signals off-design leakage and should be thoroughly investigated.
- Excessive vibration of the pump should be investigated immediately.

5 Repairs

This product is a precision sealing device. The design and dimension tolerances are critical to seal performance. Only parts supplied by Flowserve shall be used to repair the seal. These are available from numerous Flowserve stocking locations. To order replacement parts, refer to the part number, material code and description listed on the assembly drawing.

Decontaminate the seal assembly and return it to Flowserve with an order marked **"Repair or Replace." A signed certificate of decontamination** must be attached. **A Material Safety Data Sheet (MSDS) must be enclosed** for any product that came in contact with the seal. The seal assembly will be inspected and, if repairable, it will be rebuilt, tested and returned in its original condition.

Flowserve Corporation Flow Solutions Division

Primary Worldwide Flow Solutions Division Locations *Licensees, authorized agents, and affiliated companies located worldwide*

United States
Kalamazoo, MI
Phone 269-381-2650
Fax 269-381-8726

Canada
Edmonton, Alberta
Phone 780-463-7958
Fax 780-450-1241

Scarborough, Ontario
Phone 416-292-2877
Fax 416-292-5190

Netherlands
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Phone 31-165-581400
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Phone 81-720-85-5571
Fax 81-720-85-5575

Germany
Dortmund
Phone 49-231-6964-0
Fax 49-231-6964-248

www.flowserve.com

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