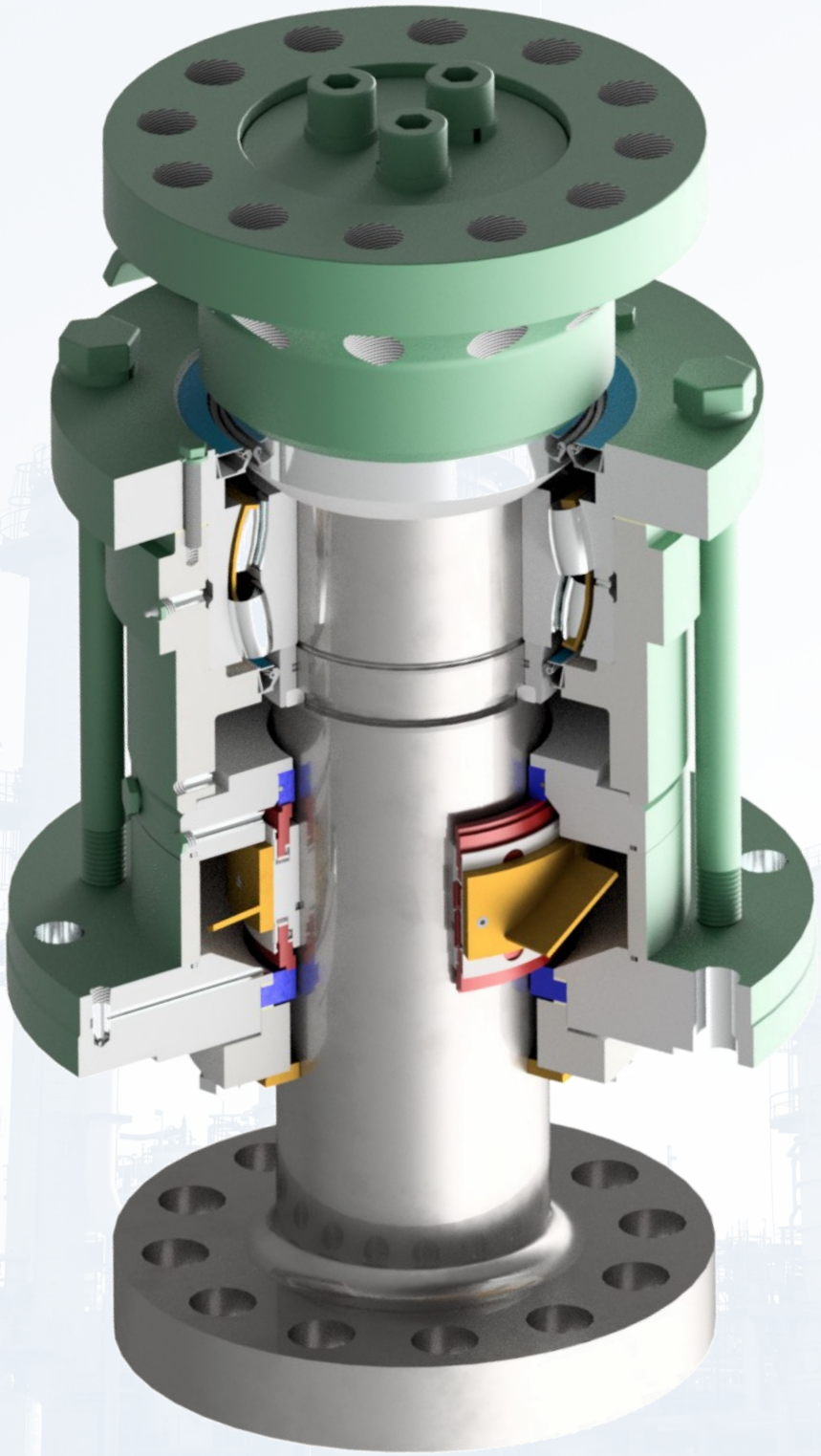
PPC
MECHANICAL SEALS™



Mixer Seals

Engineered and reconditioned mixer seal assemblies

CREATING SEALING SOLUTIONS THROUGH INNOVATIVE ENGINEERING

MADE IN THE USA

PPC MECHANICAL SEALS™

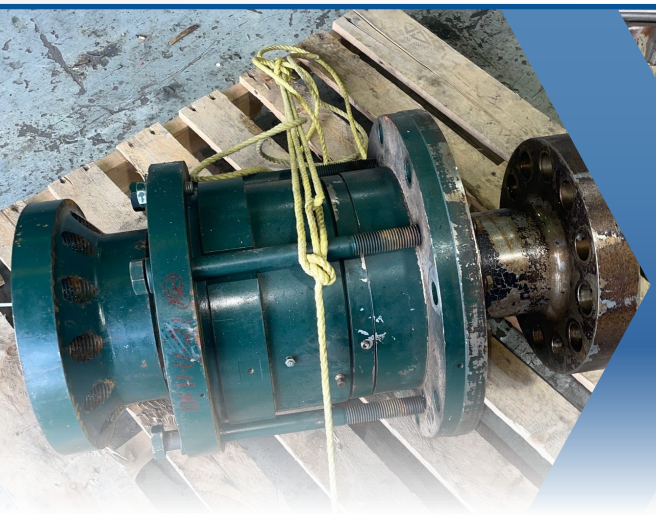
Mixer Seals

OVERVIEW

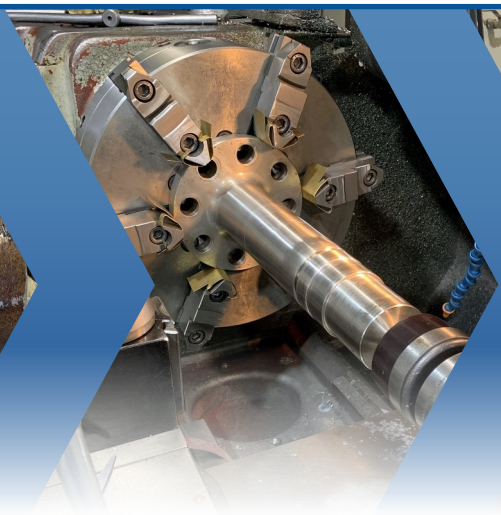
One of PPC Mechanical Seals competitive advantages in the marketplace is our knowledge, experience, and facilities to repair and recondition all major brands of mixer seals, including but not limited to: SPX (Lightnin, Philadelphia), NOV (Chemineer), Fusion, Ekato, De Dietrich, Pfaudler, and others. In addition, we can manufacture and design completely new seals for your units. PPC utilizes a dedicated mixer seal repair cell and is experienced in handling shaft diameters up to 9"+ inches. Our dedicated cell and experience means that PPC has the fastest turnaround in the industry for these types of seals.

PPC has one of the most complete and comprehensive programs for repairing mixer seal assemblies. We routinely handle all types of seals, including those with stub shafts, bearing assemblies, glass components, dry running seals and gas seals. The seals are completely disassembled, cleaned, and thoroughly inspected by our Quality Control department. PPC evaluates all critical tolerances and fits to ensure "like new" condition of the complete assembly. Upon completion of our repair, we will assemble and statically test the seal.

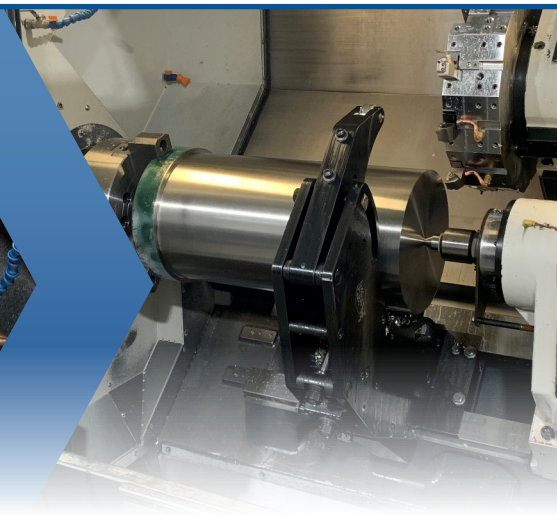
SEAL REPAIR PROCESS



CARTRIDGE ARRIVAL



POLISHING & REPAIR



MANUFACTURING

QUALITY CONTROL

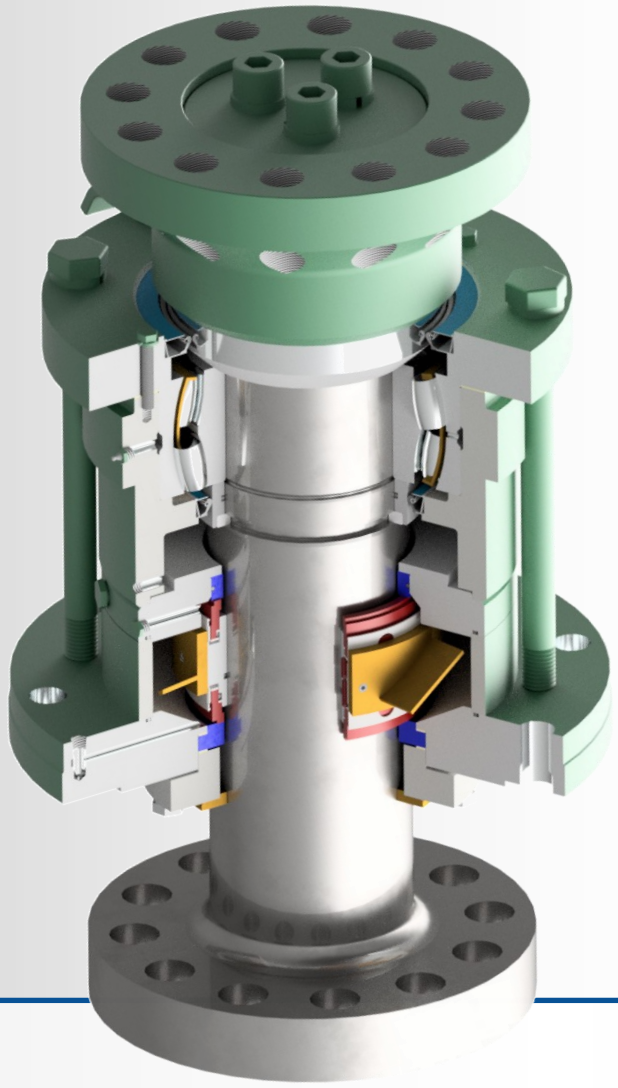
SEAL & BEARING ASSEMBLY

PRESSURE TEST

PPC MECHANICAL SEALS™

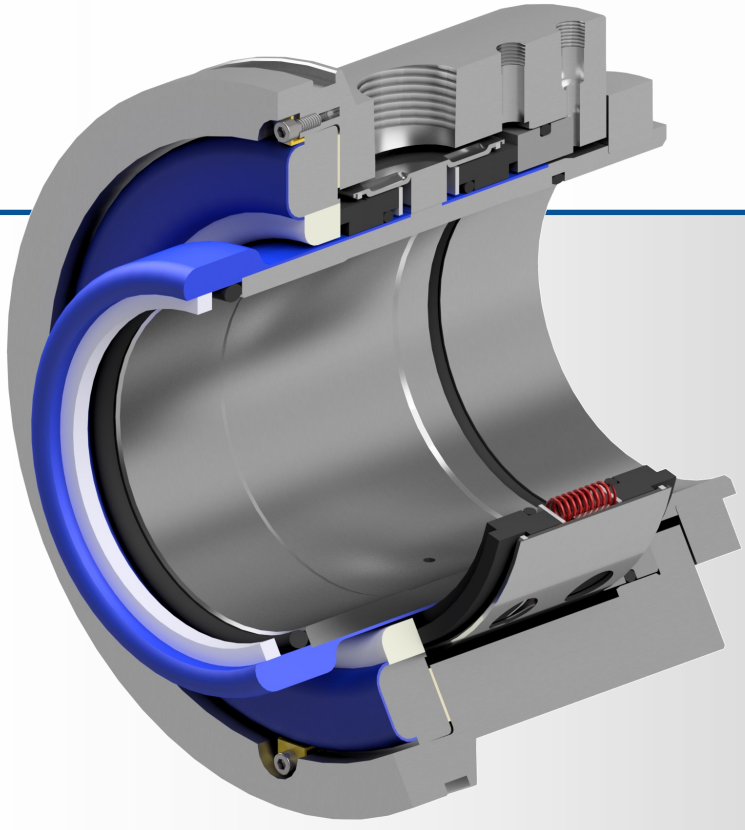
Mixer Seals

TYPICAL MIXER ASSEMBLIES



CARTRIDGE ASSEMBLIES WITH STUB SHAFT

- PPC can repair existing mixer seal cartridges, including the manufacture of new stub shafts from alloy steels, stainless steels, and nickel alloys.
- Potential upgrades include the addition of large volume pumping rings (shown left in gold) and premium face materials.
- Integrated bearing assemblies are typical in mixer repairs. PPC verifies critical journal dimensions for proper operation, presses the bearing assembly, and greases the bearing cavity.
- Upgrading to hydraulically balanced designs not only reduces seal face generated heat, but can also eliminate O-ring etching on the stub shaft, preventing a costly repair.
- Upon request, PPC can complete dye-penetrant NDE within our facilities on repaired stub shafts to identify any fatigue crack formations, and prevent in-service component failure.



SLEEVE-MOUNTED CARTRIDGE ASSEMBLIES

- PPC has worked with several variations of sleeve-mounted cartridge designs, including sanitary electropolished pharmaceutical seals, seals with glass-lined components and seals with no wetted metal for applications involving aggressive reactions.
- Dry-running designs for sensitive products are also available, utilizing advanced face design and specialized materials to provide enhanced seal life in non-lubricating conditions.

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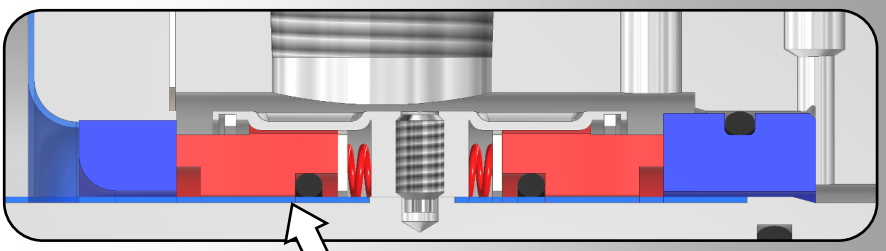
TYPICAL SEAL ARRANGEMENTS

Mixer Seals

H1 DOUBLE

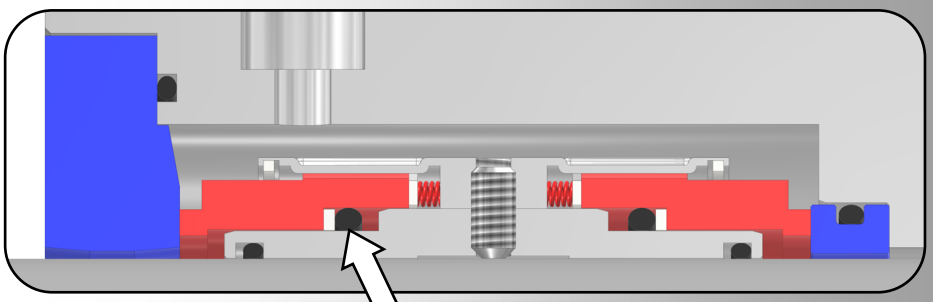
- The H1 series of seals have provided decades of success in mixer applications. The H1 is an unbalanced, pusher style seal with a rugged design, and is commonly found in double seal arrangements.
- Available in both liquid and dry-running arrangements, the H1 double can be engineered for nearly any equipment and application, including glass-lined reactors with no wetted metal.



In glass-lined reactors, seal design allows for no wetted metal, as the seal faces and O-rings seal off against the lining

HB2/HB1 DOUBLE

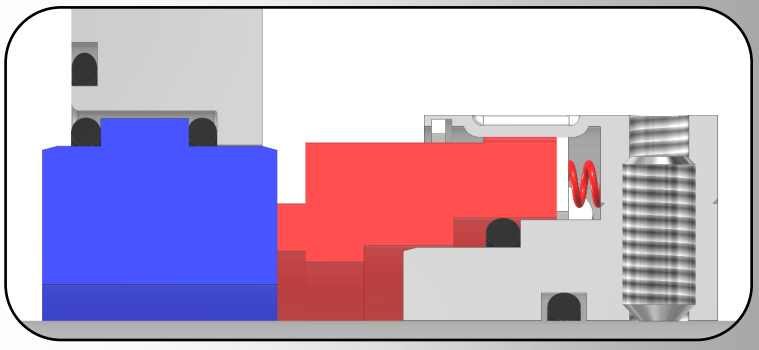
- For more demanding applications, PPC offers our HB1 and HB2 seal designs in liquid and dry-running arrangements for mixers and reactors. Both seal types are hydraulically balanced to reduce load and heat generation at the sealing faces.
- In addition, The HB2 is double balanced to handle pressure reversals without the opening of the seal faces.



HB2 seal design uses double balanced dynamic O-ring design to handle pressure reversals from process upset conditions or loss of barrier pressure

HB2M SINGLE

- The HB2M is a single outside mounted dry running seal designed specifically for use on top entry mixer and agitator services.
- This contacting dry running design is bi-directional, eliminates the need for a barrier fluid system, and has the capability to handle high runout.



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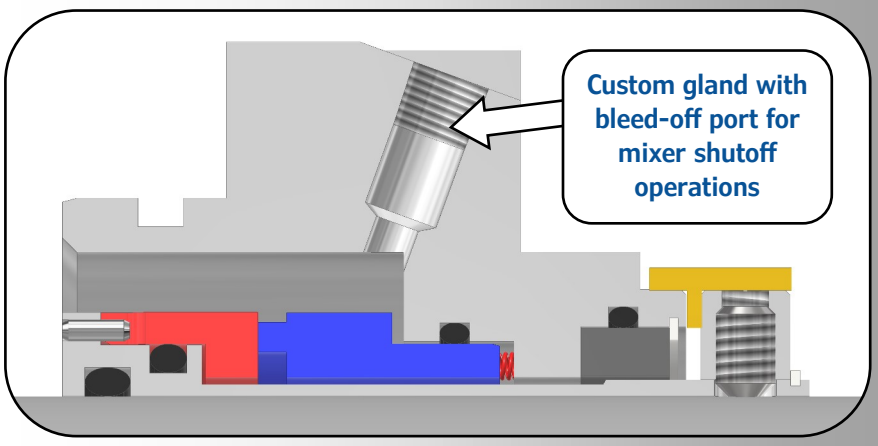
ADDITIONAL MIXER ASSEMBLIES

Mixer Seals

PPC has the capability to adapt our other seal lines into mixer arrangements as well. This may involve increased internal clearances or the addition of an integrated support bearing. We may also reverse engineer any OEM seal installed on existing equipment and upgrade materials for increased performance.

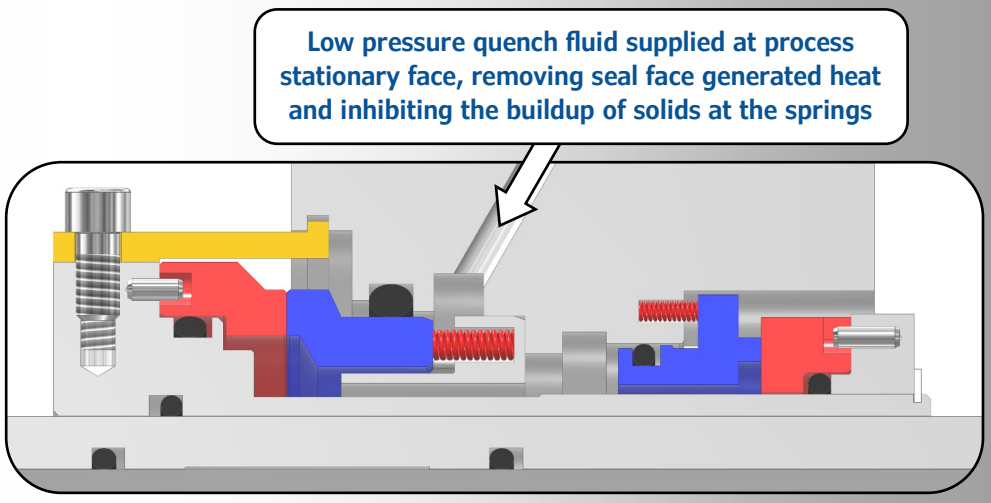
1500F SINGLE CARTRIDGE

- Adapting core components from the 1500 Series, the 1500F (F represents engineered design) seal can be modified to fit a variety of mixer applications.
- Examples include custom glands with bleed-off ports for side-entry mixers, as well as designs with an integrated bearing for increased support (and less deflection) at the seal.



PSQ CARTRIDGE

- Originally designed for horizontal bead mills, the PSQ is an engineered solution utilizing heavy-duty slurry sealing faces for the process with a low-pressure quench seal as a backup.
- A cooling medium is circulated through the seal removing heat from the inner slurry faces, and is contained by the outer quench seal faces, maximizing seal reliability.



PF SINGLE

- An upgrade of the Type 'F' seal commonly found in Jensen side-entry mixers, the PF seal features premium carbon and carbide materials, increasing seal life and performance capabilities.

B2 SINGLE

- Featuring a full convolution elastomer bellows and large single spring, the B2 single mixer seal is designed for applications where pusher seals (dynamic O-rings) have the tendency to hang up. Successful applications have included side-entry crude and brewery applications.

PPC MECHANICAL SEALS™

Mixer Seals

MATERIALS OF CONSTRUCTION

Metallurgy & Linings: 316 SS Standard, Glass & Tantalum linings where specified
Other materials available, including Duplex SS, Alloy C-276 & Titanium

Seal Face Options:

Standard	Optional
Carbon (Resin-filled)	Carbon (Metal-filled)
Sintered Silicon Carbide	316 SS/ Stellite
Reaction Bonded Silicon Carbide	316 SS/ Chrome-Oxide
Tungsten Carbide, Nickel Bound	Diamond-treated Sint. Silicon Carbide
	Ceramic

Secondary Seals: FKM, EPDM, AFLAS®, Perfluoroelastomers (FFKM/ Kalrez®/ Chemraz®)
Other materials available upon request

Springs: Alloy C-276, 316 SS

AFLAS® is a registered trademark of Asahi Glass Co., Ltd.
Kalrez® is a registered trademark of E. I. du Pont de Nemours and Company
Chemraz® is a registered trademark of Greene, Tweed & Company

SEALED EQUIPMENT

- Lightnin (SPX)
- Philadelphia (SPX)
- Chemineer (NOV)
- Fusion
- Plenty (SPX)
- Pfaudler
- De Dietrich
- Ekato
- Brawn
- Jensen
- and more...

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