

 **ADVANCE**
1000 / 3000 / 4000

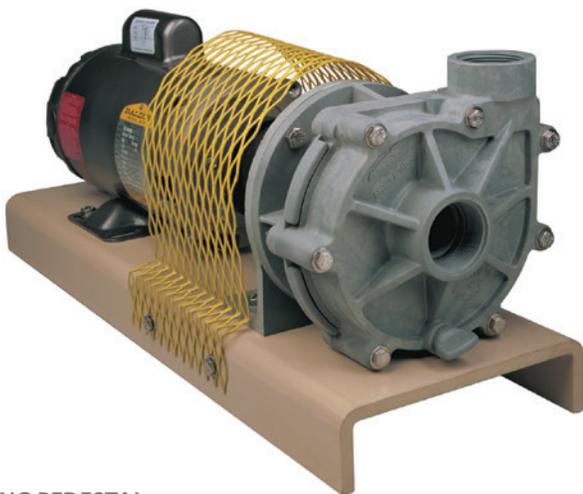


PRODUCT SPECIFICATIONS
PERFORMANCE CURVES
PRODUCT PHOTOS



CLOSE-COUPLED AND EXTENSION BRACKET

Advance is designed to mount directly to NEMA 56J motors (C-face, threaded shaft), which are readily available in 1 \emptyset and 3 \emptyset , ODP, TEFC & TENV configurations. An extension bracket and 316 S.S. extension shaft are available to enable the use of a NEMA 56C motor (C-face, keyed shaft), which are also available in explosion-proof & chemical duty configurations.



BEARING PEDESTAL

A heavy-duty, bearing pedestal mount power frame is available for long coupling to a variety of motors, PTO, and engine drives.

DESIGN

Advance is molded out of high-quality glass-filled Noryl[®], which gives it many advantages. It has good resistance to most acids, alkalis and inorganics. Noryl[®] has excellent tensile strength, very low water absorption, and a continuous temperature rating of 194° F.

We also offer the Advance line in polypropylene. The design of the pump, coupled with the chosen resins, produces a strong, durable, versatile unit. When used with the patented Impenatra[®] seal, the fluid pumped does not contact any metal parts. This allows it to properly handle many applications at a fraction of the cost of exotic alloys.

Engineered for high efficiency, Advance impellers are available as semi-open or enclosed to accommodate a wide variety of flows, pressures and fluids.

APPLICATIONS

Typical applications serviced by Advance include transfer of chemical process fluids, laser coolers, filtration systems, deionized water transfer, waste water reclamation, pressure spray systems, fountains, plating chemical transfer and recirculation, fume scrubbers, and pollution control equipment.

CORROSION RESISTANCE

Here is a small sampling of the chemicals handled:

- Sodium Hydroxide (10%)
- Ammonium Hydroxide (10%)
- Sodium Bicarbonate (SAT.)
- Ammonium Phosphate (SAT.)
- Potassium Bicarbonate (SAT.)
- Demineralized Water
- Ferric Chloride (SAT.)
- Ethylene Glycol
- Acetic Acid (10%)
- Nitric Acid (10%)
- Hydrochloric Acid (10%, 37%)
- Sulphuric Acid (10%, 60%)
- Nickel Plating Solutions

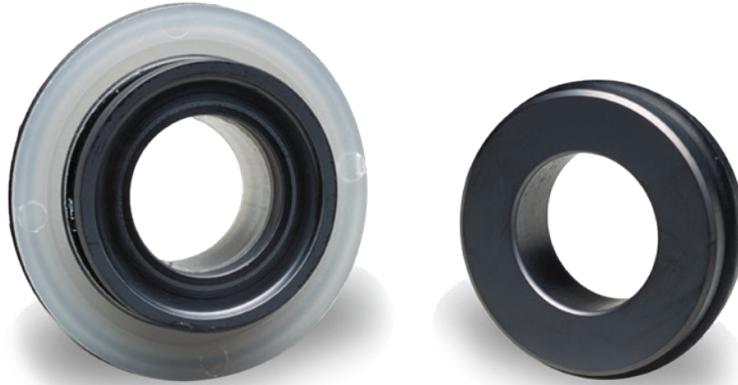
VERSATILITY

The pump can be close coupled to a 56J motor or mounted to a bearing pedestal. Both single and three phase motors in ODP and TEFC enclosures are readily available. An adapter kit is available to convert a 56C keyed-shaft motor to a 56J mount. A variety of elastomers, seals, impellers, and motors, can be combined to meet your exact requirements. All units are bench tested prior to shipping.

MARKETING

We are structured to sell unassembled pump ends, as well as completely assembled pump and motor units. We specialize in serving OEM's and distributors throughout the world.

IMPENATRA®



WHAT'S DIFFERENT ABOUT THE IMPENATRA®?

- A proven, balanced design approach which eliminates hang up.
- Seal case is precision-molded of chemical-resistant thermoplastic.
- All metal surfaces, springs and shafts are isolated from fluid contact.
- Easily handles a wide range of chemical solutions including most acids, bases and inorganics.
- Every seal is individually inspected to ensure consistent quality and is readily available.

A unique, patented design in mechanical seals is available from Advance. The Impenatra® seal is a radically new approach to solve many shaft sealing problems. When used with the Advance® line of pumps, it isolates all metallic parts from contact with the fluid.

Alternately, corrosive chemicals require seals made of exotic alloys. The high prices and long lead times are objectionable. The Impenatra® seal offers a solution to both problems.

WHAT THIS MEANS TO YOU.

- UNPRECEDENTED CORROSION RESISTANCE, protects from attack by contained fluid and from surrounding environment.
- Easy to install, field adjustment not required.
- Offers good versatility at an excellent price.
- Reliability, due to simplicity of design and quality components.

TECHNICAL DATA:

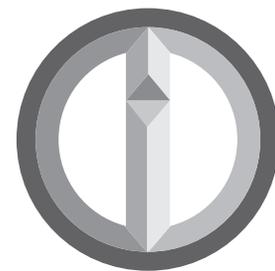
Seal Type - Stationary spring, reverse mount
Maximum Temperature - 194°F

MATERIALS OF CONSTRUCTION:

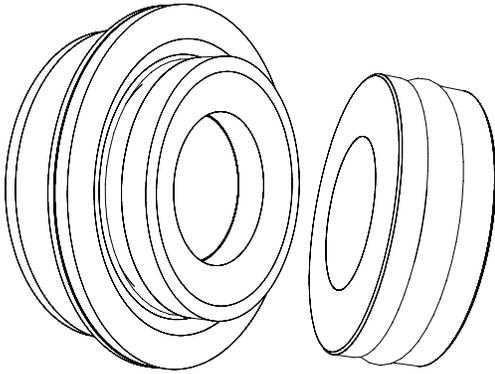
1. Seal case - injection molded polypropylene
2. Seal face - carbon graphite resin, binderless graphite or silicon carbide
3. Seal seat - high purity ceramic or silicon carbide
4. Elastomers - EPDM, Viton®, Kalrez® and Aflas®

EXAMPLE CORROSION RESISTANCE:

- Deionized Water
- Ferrous Chloride 100%
- Hydrochloric Acid 37%
- Hypo Acid Fixing Baths
- Nitric Acid 10%
- Phosphoric Acid
- Photographic Developers
- Plating Solutions
- Sodium Hydroxide
- Sodium Hypochlorite
- Sulfonic Acid (aerated)
- And much more...

**IMPENATRA®**

Impenatra® II and Advance® are registered trademarks of MDM Incorporated. Viton® and Kalrez® are registered trademarks of Dupont. Noryl® is a registered trademark of SABIC. Aflas® is a registered trademark of Asahi Glass Co., Ltd.



The Impenatra® is a non-metallic, reverse-mount 5/8" mechanical seal. It has a wide range of seal faces and elastomers to provide a broad range of chemical compatibility. The following application guide is presented as an aid in selecting the appropriate Impenatra® seal for your application. It is not to be considered complete, nor is it a guarantee of chemical compatibility or suitability.

The Impenatra® seal utilize the same polypropylene case and can be used in the Advance 1000 and 3000 models as well as other pumps based on the NEMA 56J reverse-mount type seal. Please contact the factory for more information.

MDM P/N	Code	Materials	Uses
1000.0421	E9-V-C	Carbon Graphite Head, Viton® Trim, Ceramic Mating Ring, Polypropylene Case	For most acids and inorganics. HCl 20% to 80F (26.7C); 37% to 110F (43C); H2SO4 98% to 140F (60C); FeCl3 to 86F (30C)
1000.0422	E9-E-C	Carbon Graphite Head, EPDM Trim, Ceramic Mating Ring, Polypropylene Case	For dilute caustic (Sodium Hydroxide NaOH) applications, KOH, Formaldehyde CH2O, alcohols and DI water.
1000.0423	E9-V-SC	Carbon Graphite Head, Viton® Trim, Silicon Carbide Mating Ring, Polypropylene Case	For Hydrofluoric Acid HF. FeCl3 to 86F (30C)
1000.0424	E9-E-SC	Carbon Graphite Head, EPDM Trim, Silicon Carbon Mating Ring, Polypropylene Case	For caustic solutions of high concentration or elevated temperatures. NaOH 45-50% to 86F (30C)
1000.0441	E43-V-C	Graphite Head, Viton® Trim, Ceramic Mating Ring, Polypropylene Case	For bleach solutions up to 14% Sodium Hypochlorite NaOCl to 86F (30C)
1000.0442	E43-E-C	Graphite Head, EPDM Trim, Ceramic Mating Ring, Polypropylene Case	For bleach solutions where caustic will contact seal.
1000.0443	E43-V-SC	Graphite Head, EPDM Trim, Silicon Carbon Mating Ring, Polypropylene Case	For acidic solutions that will attack carbon graphite and ceramic.
1000.0444	E43-E-SC	Graphite Head, Viton® Trim, Silicon Carbide Mating Ring, Polypropylene Case	For basic solutions that will attack carbon graphite and ceramic.
1000.0451	ESC-V-SC	Silicon Carbide Head, Viton® Trim, Silicon Carbide Mating Ring, Polypropylene Case	For applications that would normally attack the carbon graphite or ceramic parts, such as concentrated bleach, abrasive solutions or acidic solutions with crystalline solids
1000.0452	ESC-E-SC	Silicon Carbide Head, EPDM Trim, Silicon Carbide Mating Ring, Polypropylene Case	For bleach solutions where caustic will contact seal.


VARIABLE FREQUENCY DRIVE (VFD)

Advance pumps in combination with a variable frequency drive (VFD) result in a versatile pumping system with the lowest total cost of ownership. This is accomplished by slower operating speeds with a larger more efficient impeller, reducing energy consumption and increasing service life. Pump purchases should be seen as power and labor contracts, since operating cost will far exceed acquisition cost.

The design experts at MDM will size the pump to meet maximum system flow and validate whether a VFD is appropriate for your pumping application. Below is a list of potential operating benefits.

Aegis ground rings and insulated bearings can be provided for additional protection for VFD applications.

BENEFITS

- Reducing rotational speed will draw less electrical power compared to valve throttling.
- Increased service life by lowering rotational speed (seals, bearings and motor).
- Ability to integrate with system automation and monitoring. Rotational speed can be controlled to maintain a desired flowrate as system pressure demands fluctuate.
- Inherent soft starting reduces wear on motor and other system components such as piping and valves.
- Voltage being supplied to the motor is optimized based on the operating load, thus maintaining the right amount of motor slip.
- Some utilities offer rebates for installing VFDs in new or retrofit work.

BASKET STRAINER (PF)

Our medium duty PF model strainers have a clear or gray PVC body and a basket made of stainless steel or acrylonitrile butadiene styrene (ABS). The standard port dimension is 2" with a female thread. With the PF model strainer you can expect higher quality molding processing, finer materials and excellent performance.



SIZE	BODY COLOR	PART NUMBER	O-RINGS	MATERIAL
2" (500 CI)	Clear	24170488	Buna	PVC / ABS / SS
2" (500 CI)	Gray	24170496	Buna	PVC / ABS / SS

ADVANCE 2020 PUMP OPTIONS (60 HZ)

MDM PUMP	ADVANCE 1000	ADVANCE 3000	ADVANCE 4000
ALLOWABLE FLOWRATE RANGE (GPM) ₁	5 - 135	10 - 70	15 - 185
ALLOWABLE PRESSURE RANGE (FT) ₁	5 - 85	5 - 155	10 - 80
MAXIMUM EFFICIENCY	67%	56%	75%
MOTOR POWER (HP)	1/2 - 5	1/2 - 5	1/2 - 5
POWER OPTIONS (VOLTAGE / PHASE)	110-220V / 1Ø or 230-460V / 3Ø	110-220V / 1Ø or 230-460V / 3Ø	110-220V / 1Ø or 230-460V / 3Ø
NEMA MOTOR FRAME ₂	56J (OR) 56C	56J (OR) 56C	56J (OR) 56C
PUMP WET END MATERIAL	Noryl® or Polypropylene	Noryl® or Polypropylene	Polypropylene
MECHANICAL SEAL	Impenatra® (Non Metallic)	Impenatra® (Non Metallic)	Impenatra® (Non Metallic)
IMPELLER TYPE	Enclosed or Semi-Open	Enclosed or Semi-Open	Enclosed or Semi-Open
IMPELLER MATERIAL	Noryl® or Polypropylene	Noryl® or Polypropylene	Noryl® or Polypropylene

1) Allowable Operating Range (AOR) is between 50% & 140% of Best Efficiency Point (BEP).

2) Close Coupled or Pedestal Mounted.

