

MAGNETIC DRIVE CENTRIFUGAL PUMPS SERIES **UC** (ETFE-LINED)



MAGNETIC DRIVE CENTRIFUGAL PUMPS

UC SERIES



ULTRA RELIABLE

Engineered for extreme reliability in the most extreme chemical processing applications, UC Series is a magnetically driven, ANSI dimensional pump. It is constructed from tough ductile iron with DuPont Tefzel® (ETFE) lining for superior corrosion resistance.

ULTRA DURABLE

Industry's lowest radial loads are the result of a modified concentric volute or partial splitter casing depending upon model, fully supported shaft and self-aligning dual bushings designed for optimum alignment preventing premature wear. Careful design balances axial forces inside the pump controlling excess thrust loads. Complete encapsulation of inner drive magnets in ETFE ensures ultimate corrosion protection. These are just some of the features designed into the UC Series pumps to ensure optimum pump life.

ULTRA SEALLESS

Powerful neodymium magnets drive the impeller through a carbon-filled ETFE lined barrier for dependable, leak-free operation with no environmental emissions, no power-robbing double mechanical seals and no seal support systems.

PROPERTIES / APPLICATIONS

PROPERTIES AT A GLANCE

- Close-coupled design
- Material PP or PVDF
- Neodymium magnets on every model
- Replaceable shaft and bushing
- ISO 1940 G2.5 balancing
- Mounts to NEMA and IEC motor frames
- Easy Set measurement-free outer drive
- Mounts to motor without disassembly
- Back pullout design
- CE certified
- ATEX 2014/34/EU available

TECHNICAL DATA

- **System pressure:** up to 20 bar
- **Max. Temp.:** 121°C
- **Max. Viscosity:** over 200 cP
- **Specific Gravity:** over 1,8 kg/dm³
- **Flanges:** ANSI , ISO/DIN
- **Casing:** ANSI/ASME B73, 1 m
- **Certifications:** CE, ATEX
- **Motor frames:** NEMA 143 up to 365
IEC: 90 up to 225

APPLICATIONS

- Chemical Processes
- Steel Processing
- Water & Wastewater
- Electronics Manufacturing
- Surface Finishing
- Paper Mills
- Biofuels
- Fume Scrubbing
- Metal Plating
- Pharmaceutical

TYPICAL CHEMICALS

- Sodium hydroxide
- Sulfuric acid
- Hydrochloric acid
- Sodium hypochlorite
- Plating solutions
- Corrosive blends
- Wastewater
- Solvents



MATERIAL OPTIONS

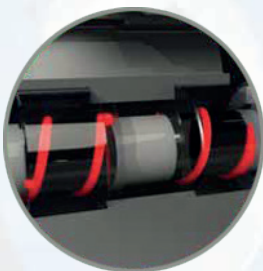
CASING, SHAFT SUPPORT, FRONT THRUST RING

Cast ductile iron with Tefzel® lining, carbon fiber reinforced ETFE, alpha sintered silicon carbide



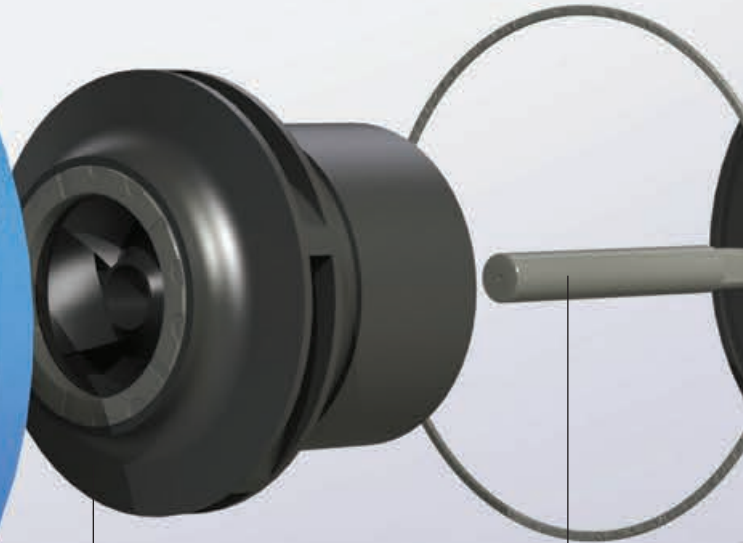
IMPELLER ASSEMBLY, IMPELLER THRUST RING, IMPELLER DRIVE HUB, BUSHINGS

Carbon fiber reinforced ETFE, Fluorosint® or alpha sintered SiC, neodymium iron boron magnets, SiC (carbon or Dri-Coat SiC optional)



Dual Bushings

Dual bushings reduce stress by 1/3. Self-aligning design avoids premature wear due to bushing misalignment. Spiral groove pathway enhances fluid flow with a pumping action for the best cooling.



SHAFT, HOUSING O-RING

Alpha sintered SiC (Dri-Coat SiC optional), FKM (EPDM, Kalrez®, Simriz®, FEP encapsulated FKM optional)

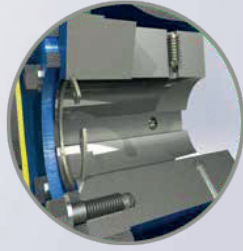


Rugged Shaft

A single geometry, high strength, simply supported shaft for maximum durability. Shaft is supported in both the front and the back of the pump resulting in virtually no deflection like can be potentially found in cantilevered designs.

Easy Set Outer Drive

Hub has Easy Set Drive feature to ensure perfect magnet alignment and easy installation. No measuring required! Simply slide drive onto motor shaft until it is against the locating ring.



DRIVE ASSEMBLY

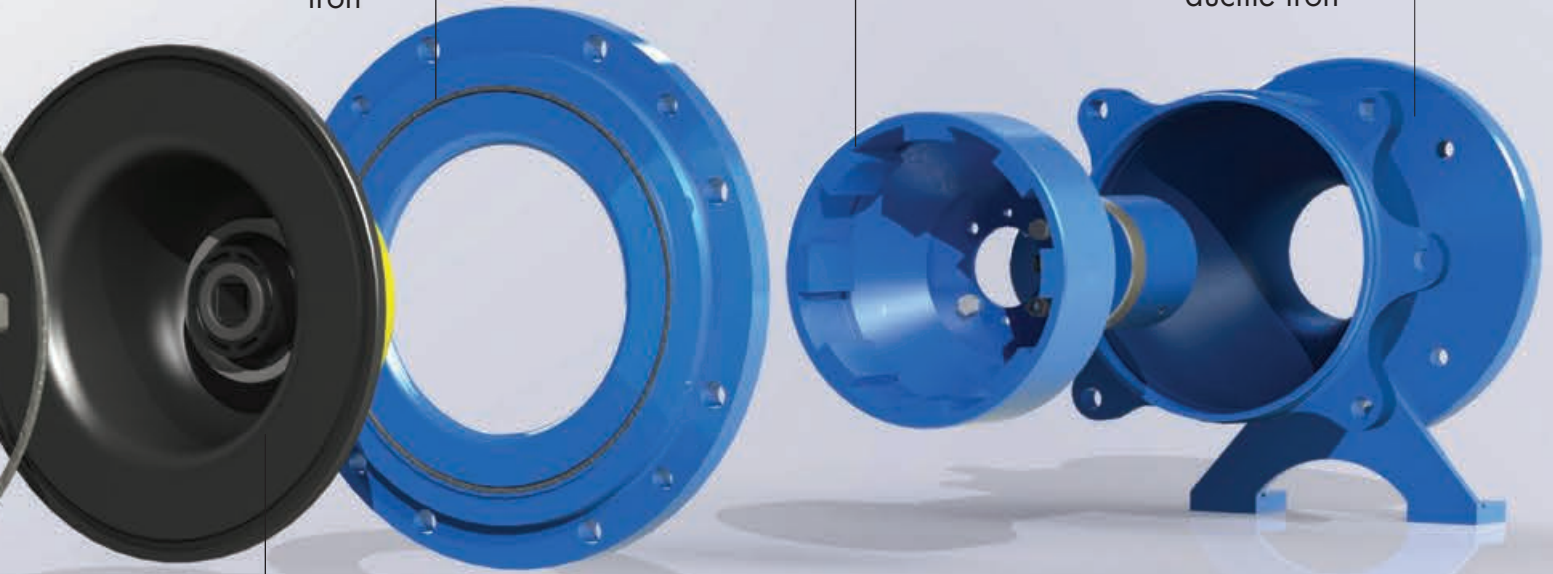
Nickel-plated neodymium iron boron magnets/ductile iron

CLAMP RING

Ductile iron

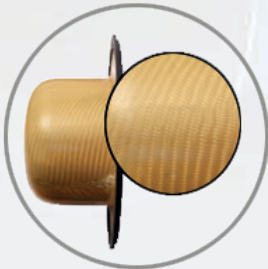
MOTOR ADAPTER

Heavy duty ductile iron



REAR SEALING RING, BARRIER, REAR THRUST RING

Moly-filled PTFE, molded CFR-ETFE liner with woven glass-filled vinyl ester or epoxy resin/Kevlar® external shell, high purity ceramic or alpha sintered SiC

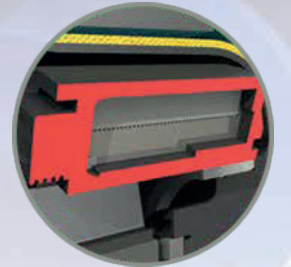


High Strength Barrier

Wetted interior is injection molded from ETFE for optimum chemical resistance. Non-wetted exterior shell is manufactured from compression molded vinyl ester/glass fiber or epoxy resin/Kevlar® for superior strength. The two pieces are bonded together and suitable for vacuum service applications.

Magnet Encapsulation

High strength magnets are completely encapsulated and hermetically sealed by a single shot ETFE molding process for complete corrosion protection. Each inner drive is vacuum tested to ensure quality and reliability.



Vapor Protection Package

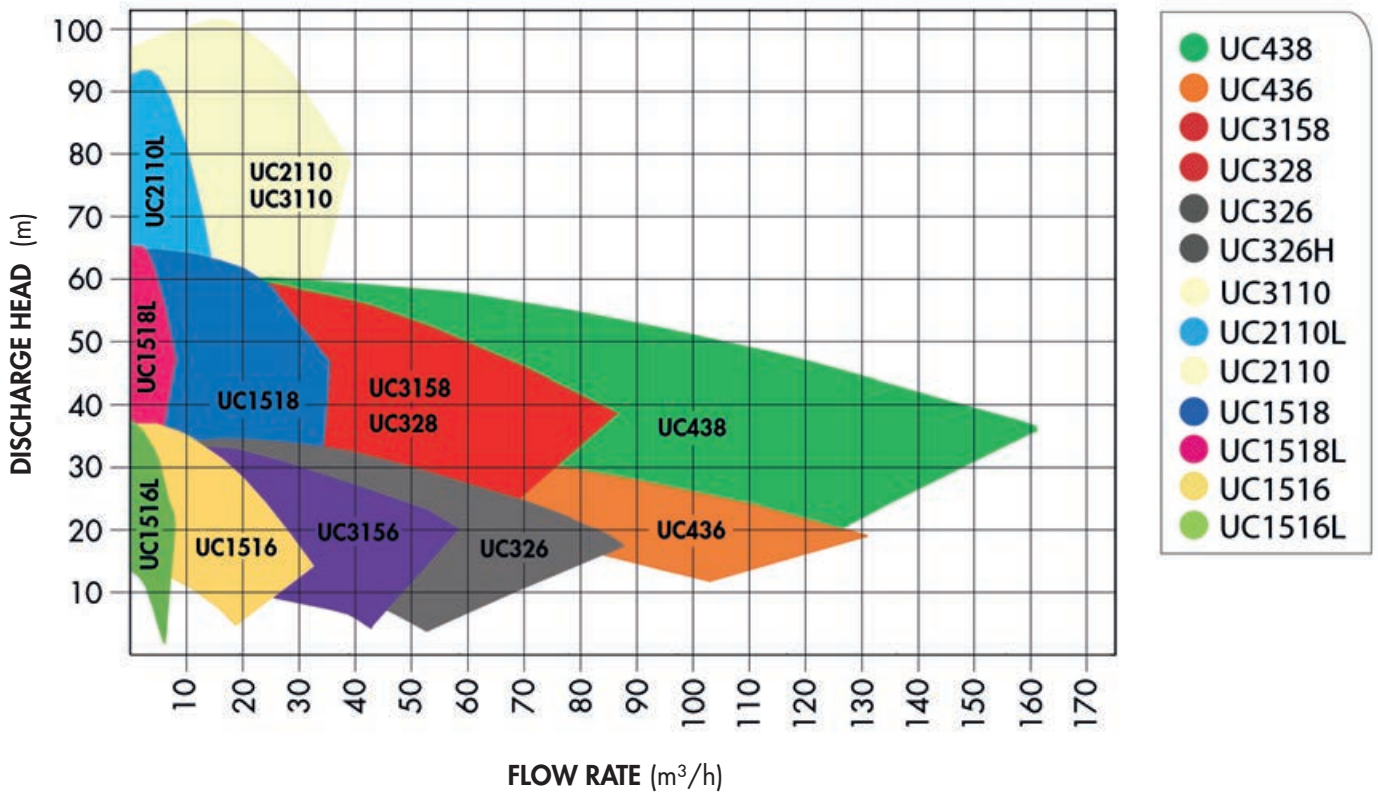
Non-wetted O-rings help protect the outer drive and motor face from exposure to corrosive vapors.



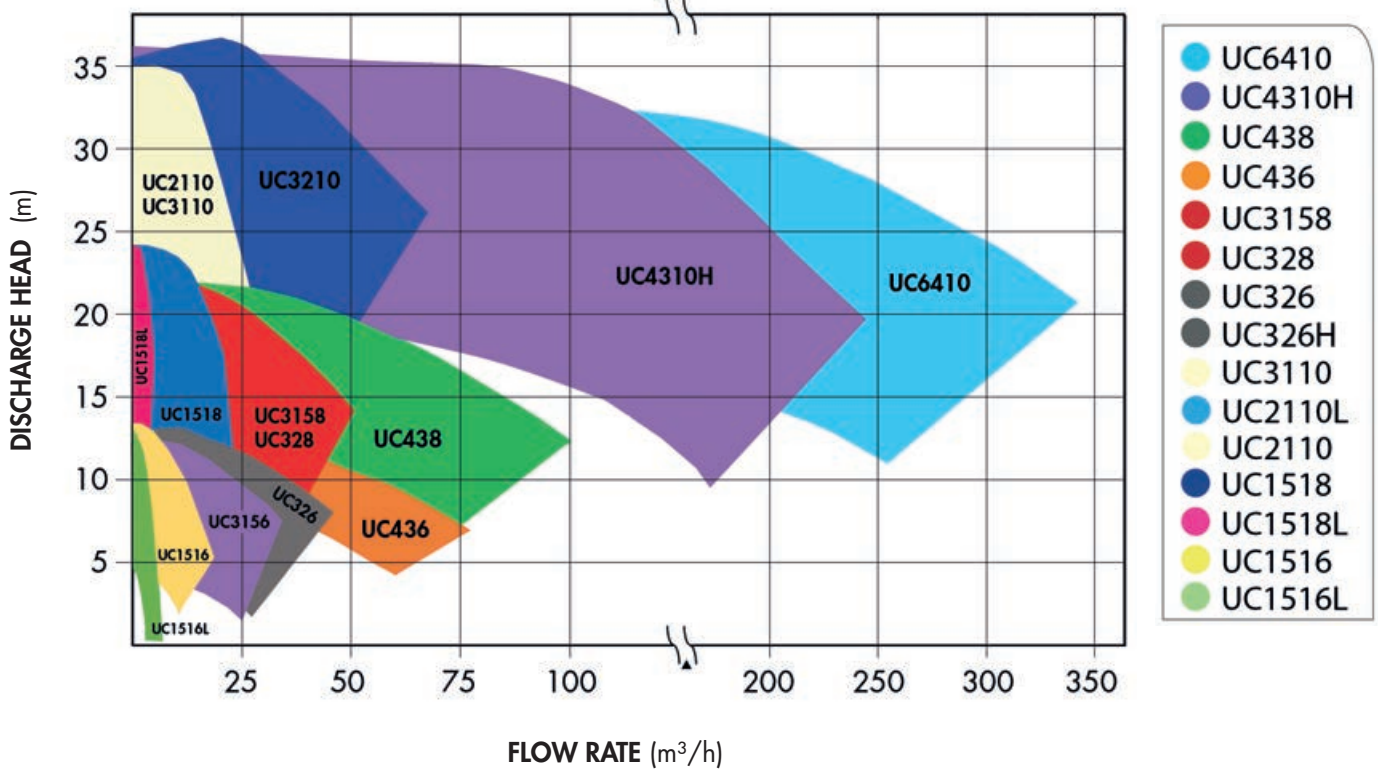
Kalrez® and Kevlar® are a registered trademarks of DuPont Performance Elastomers. Simriz® Perfluoroelastomer is a registered trademark of the Simrit® division of Freudenberg-NOK. Fluorosint® is a registered trademark of Quadrant DSM Engineering Plastic Products.

CHARACTERISTIC CURVES

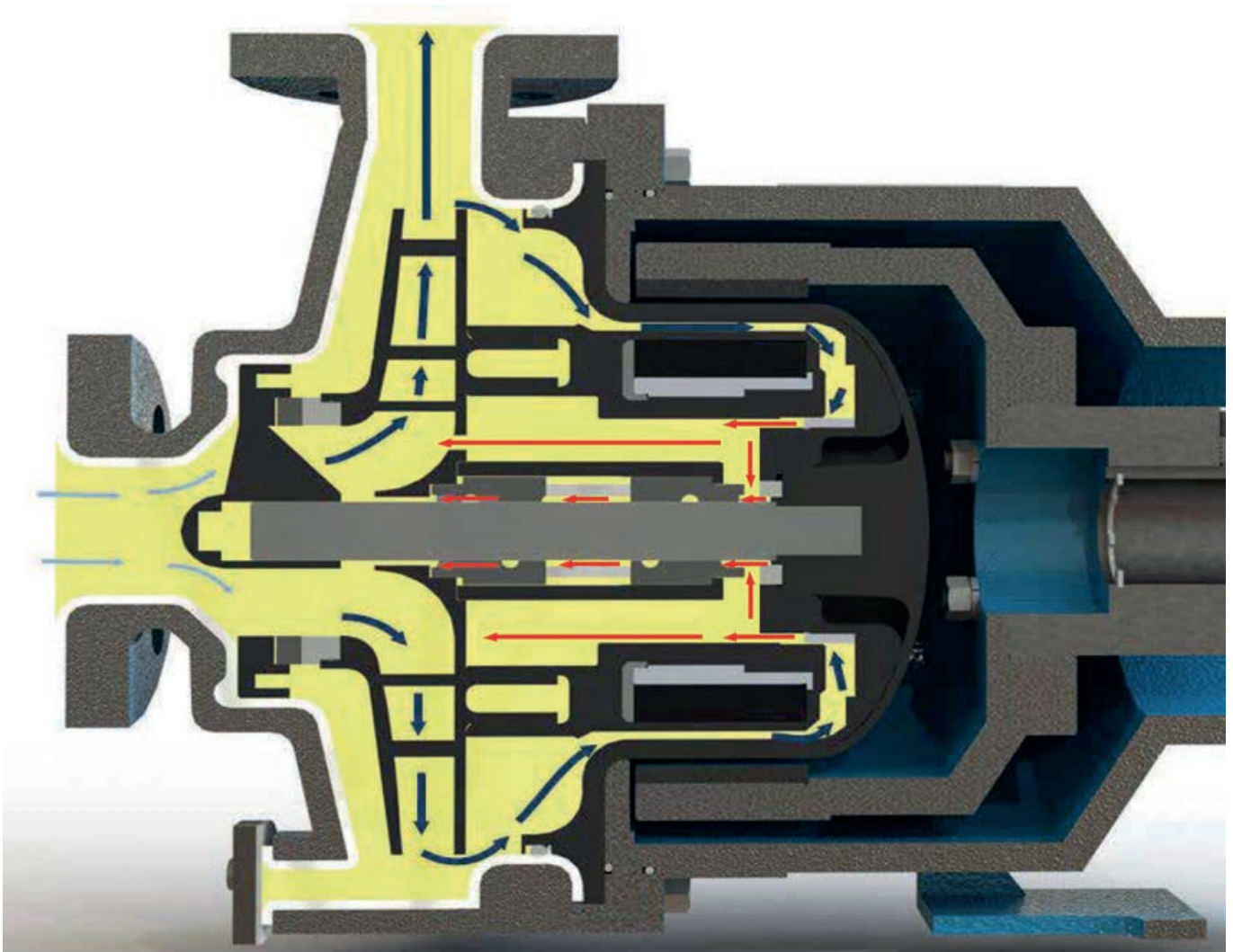
2.900 rpm (50 Hz)



1.450 rpm (50 Hz)



UC THRUST AND INTERNAL CIRCULATION



Unlike conventional sealed centrifugal pumps, the hydraulic radial and axial thrust loads must be absorbed internally by a magnetic drive pump. The UC Series has been engineered to reduce these loads in order to maximize the wear life of the components. The shaft and bushings are designed for minimal shaft stress and deflection. The axial loads are primarily balanced by a rear radial sealing ring.

The liquid enters the pump at suction pressure (**light blue arrows**) and is accelerated in the impeller, gaining velocity head. The liquid then decelerates in the housing where much of the velocity head is converted into static pressure (**dark blue arrows**) before exiting through the discharge.

Some of the pressurized liquid flows to the rear of the impeller drive and proceeds through an annular orifice (**red arrows**) formed between the inner magnetic drive bore and a stationary sealing ring on the barrier liner. The size of the orifice, bushing groove and impeller balance holes (some sizes) are designed to minimize axial thrust as well as provide fluid to lubricate and cool the shaft / bushing interface.

After exiting the orifice, the flow splits with some going through the bushing to the pump suction (this flow is enhanced by the spiral shape of the bushing groove acting as a small pumping ring) and the remainder flows through the impeller balance holes (some sizes) to the pump suction.

CONCENTRIC VOLUTE

Finish Thompson uses a variety of housing styles to help control radial load. The method chosen by our engineers is dependent upon the pump's internal design and each work equally well. The result is the pump can be operated at any flow rate across the performance curve without increasing radial loads.

MODIFIED CONCENTRIC VOLUTE

TYPES UC1516 / UC1516L / UC1518 / UC326 / UC326H / UC328 / UC3158



- The modified concentric volute housing shape is nearly circular.
- This allows the pressure on the periphery of the impeller to be uniform.
- This reduces radial load to very low levels at all flows.



PARTIAL SPLITTER

TYPES UC436 / UC438



- The partial splitter is a wall in the housing that allows the pressure to be balanced by creating equal and opposing pressure resulting in a very low radial load.
- This design is used on certain medium to high flow pumps and helps control radial load to very low levels at all flows.



CONVENTIONAL VOLUTE

TYPES UC4310H / UC6410



- The conventional volute is used on high flow pumps designed for operation at 4-pole motor speeds or lower.
- The volute design at these speeds inherently has very low radial loads at all flows.
- This geometry provides maximum hydraulic efficiency.



MODULAR DESIGN

THE MODULAR DESIGN OF THE UC SERIES PUMPS PROVIDES:

- Maximum Flexibility - Two piece impeller, inner drive magnet and outer drive magnet can be separated.
- Lower Inventory Cost - Common replaceable parts for pumps in the same group.
- Ease of Repair - Simplifies maintenance with individually replaceable, lower cost wear parts and requires no special tools or heat welding.

TWO PIECE IMPELLER

Impeller is securely mounted to inner drive magnet with a tapered press fit and easily replaced in the field.

- Eliminates need to purchase expensive single piece impeller magnet assembly.
- Easy to change impeller diameters at lower cost.
- Impeller thrust ring is field replaceable.
- Allows a pump end to be converted to fit multiple applications.



MOTOR ADAPTER

Motor adapter fits multiple motor frame sizes.

- Eliminates the need for specialized individual motor adapter flanges.
- Simplifies installation and inventory.
- Optional bronze bump ring makes it suitable for hazardous areas and is ATEX certified providing maximum safety.
- Two jack screws facilitate assembly and disassembly.

OUTER DRIVE MAGNET/SHAFT ADAPTERS

Dynamically balanced outer drive magnet assembly is fitted securely to the shaft adapter with four bolts on all sizes.

- Single drive magnet fits multiple motor shaft adapters.
- Adapters are machined to fit each motor shaft diameter.
- All shaft adapters feature Easy Set Drive and alignment studs for ease of assembly.
- Easily identifiable multiple pole drive magnets match strength to motor power reducing cost.



ACCESSORIES

Digital Power Monitor

Tank unloading/emptying, vortexing, startup errors and system upset all can result in run dry conditions. A power monitor is programmed to use the pump's motor as a sensor to almost instantly sense a drop in power when a pump runs dry and can quickly shut the pump down before damage can occur. It monitors the power used only by the pump and eliminates losses in the motor.



Available in:
1 phase 100-240 VAC
3 phase 100-240 VAC
3 phase 380-500 VAC
3 phase 500-690 VAC

Base Plates

Provides a sturdy mounting for the pump/motor
Raises pump off floor to reduce exposure to corrosive liquids. Available in epoxy painted steel, fiberglass and 316L stainless steel (UCI models only).
Factory mounting includes stainless steel hardware and shims.



Dri-Coat Option

Dri-Coat Technology gives silicon carbide components the ability to run dry for brief periods. An advanced coating technique deposits a thin layer of specialized carbon over the silicon carbide bushings and shaft. The resulting diamond-like coating (DLC) is very hard, chemically inert and has a very low coefficient of friction, which provides run dry protection.



UC with Long-Coupled Bearing Frame

Utilizes pump bearing frame and flex coupling between pump and motor.



Bronze Bump Ring

When added to the motor adapter, this option provides a non-sparking surface making the pump suitable for applications in hazardous areas. With this option the pump is ATEX certified and meets the requirements of Group II, Category 2 equipment.



REPLACEABLE WEAR PARTS

All wear parts are made from highly corrosion resistant materials and are able to withstand repeated use in chemical applications. They are easily field replaceable.



O-Rings

FKM, EPDM, Kalrez®, Simriz®

Bushings

Alpha sintered silicon carbide bushings (Carbon bushing or dri-coat alpha sintered silicon carbide bushing optional)

Rear sealing ring

Molybdenum disulfide filled PTFE

Shaft

Replaceable alpha sintered silicon carbide (Dri-coat alpha sintered silicon carbide optional)

Front/Impeller thrust ring

Fluorosint® or alpha sintered silicon carbide

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