BULLETIN
P-100_G
FEB. 2008

SERFILCO®

CORROSION RESISTANT PUMPS

for acids and caustics / salt water / chemical processing
waste treatment / fume scrubbers / plating solutions

VERTICAL CENTRIFUGAL

SERIES 'EF' & 'EHM'

EF

EHM

Materials: Hi-Temp PP, CPVC
Elastomers: EPDM, Viton
Length: 15" & 18"
Max. Flow: 650 U.S. GPM
Max. TDH: 175 feet
Motors: 7.5 – 15 HP
Bulletin: P-309

SERIES 'EH'

Materials: Hi-Temp PP, CPVC, PVDF†
Elastomers: EPDM, Viton
Length: 12" & 18"
Max. Flow: 185 U.S. GPM
Max. TDH: 145 feet
Motors: 1.0 – 7.5 HP
Bulletin: P-301

SERIES 'EO'

Materials: Hi-Temp PP, CPVC, PVDF†
Elastomers: EPDM, Viton
Length: 13-1/4"
Max. Flow: 92 U.S. GPM
Max. TDH: 68 feet
Motors: .3 – 2.0 HP
Bulletin: P-312

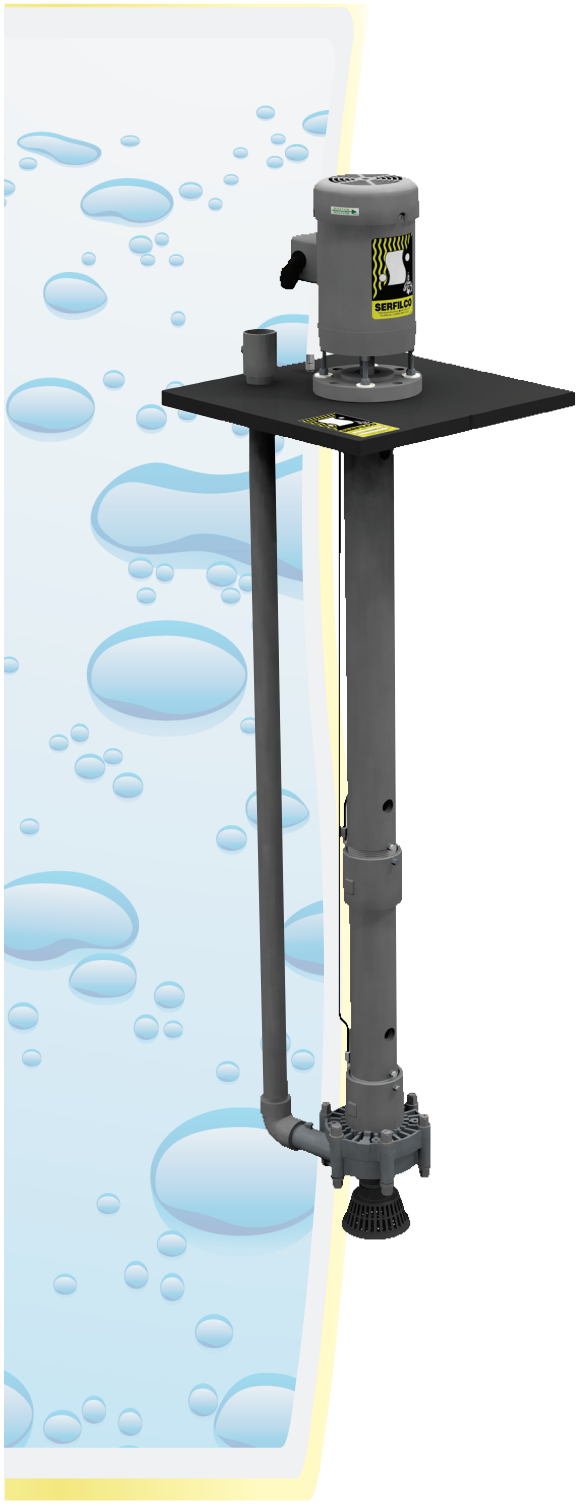
SERIES 'E'

Materials: Natural Polypropylene, CPVC, PVDF†
Elastomers: EPDM, Viton®
Length: 11-7/8"
Max. Flow: 20 U.S. GPM
Max. TDH: 15 feet
Motors: 1/8 HP
Bulletin: P-300

† *Engineered plastics may require export license*

VERTICAL CENTRIFUGAL

SERIES 'HB'



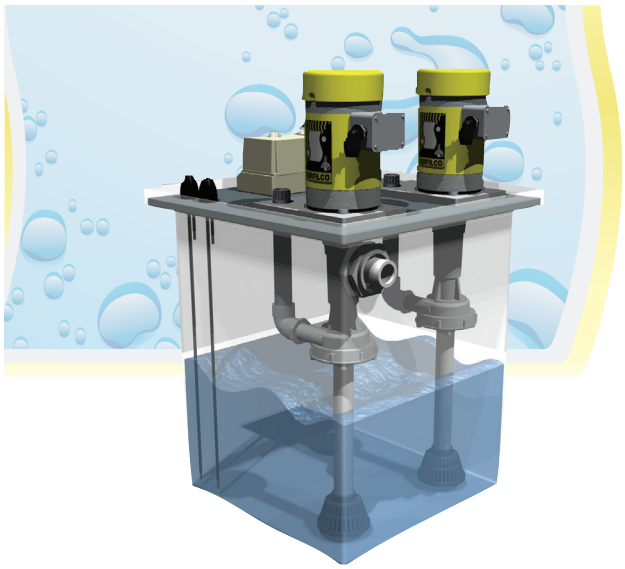
Materials: CPVC
Elastomers: EPDM, Viton
Length: 2 to 12 feet
Max. Flow: 150 U.S. GPM
Max. TDH: 130 feet
Motors: 1.5 – 7.5 HP
Bulletin: P-302

SERIES 'B'

Materials: CPVC
Elastomers: EPDM, Viton
Length: 2 to 12 feet
Max. Flow: 370 U.S. GPM
Max. TDH: 84 feet
Motors: 2.0 – 10.0 HP
Bulletin: P-303

VERTICAL CENTRIFUGAL

SERIES 'CPS'



Materials: CPVC
Elastomers: EPDM, Viton
Max. Flow: 92 U.S. GPM
Max. TDH: 68 feet
Motors: .3 – 1.5 HP
Bulletin: P-624
(Models also available in Hi-Temp PP, Cast Iron, 316 SS or PVDF, with flows to 1000+ GPM)

SERIES 'ECI' & 'ESS'

Materials: Cast Iron or Stainless Steel
Elastomers: EPDM, Viton
Length: to 13-44"
Max. Flow: 180 U.S. GPM
Max. TDH: 90 feet
Motors: .75 – 3.0 HP
Bulletin: P-307

MOTOR STARTERS

Materials: PVC enclosure (NEMA 4X)
Voltage: 115 to 600
Max. HP: 1/40 to 30
Type: Manual magnetic push-button or manual magnetic selector switch
Bulletin: A-103

LEVEL CONTROLS

Materials: CPVC, Polypropylene, PVDF† and Titanium
Length: 2 to 12 feet
Mounting: Pump, in-tank, outside tank
Type: Mechanical, vertical buoyancy, ultrasonic transmitter, RF capacitance
Bulletin: A-109, A-101

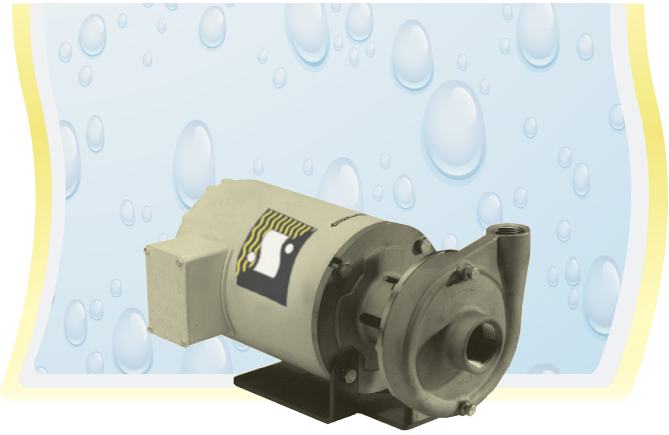
† *Engineered plastics may require export license*

MECHANICAL SEAL

SERIES 'RC'

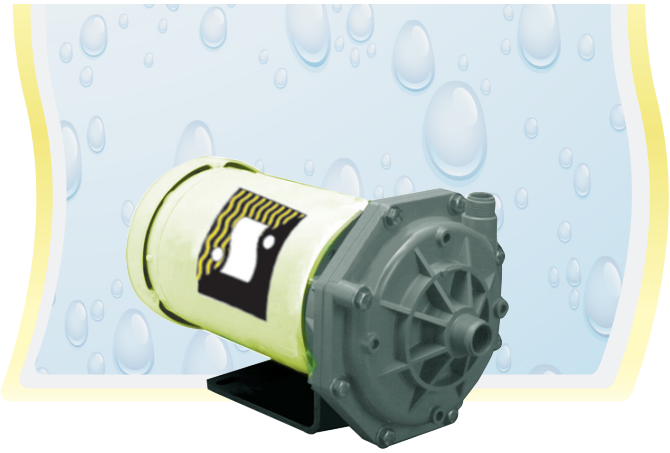
Materials: Cast Iron
Elastomers: EPDM, Viton
Seal: Single or double
Max. Flow: 420 U.S. GPM
Max. TDH: 82 feet
Motors: .3 – 7.5 HP
Bulletin: P-109

SERIES 'HCI' & 'HSS'



Materials: Cast Iron or Cast 316 Stainless Steel
Elastomers: EPDM, Viton
Seal: Single or double
Max. Flow: 160 U.S. GPM
Max. TDH: 90 feet
Motors: .5 – 3.0 HP
Bulletin: P-108

SERIES 'HH'



Materials: CPVC, PVDF†
Elastomers: EPDM, Viton
Seal: Single
Max. Flow: 68 U.S. GPM
Max. TDH: 167 feet
Motors: .5 – 5.0 HP
Bulletin: P-206

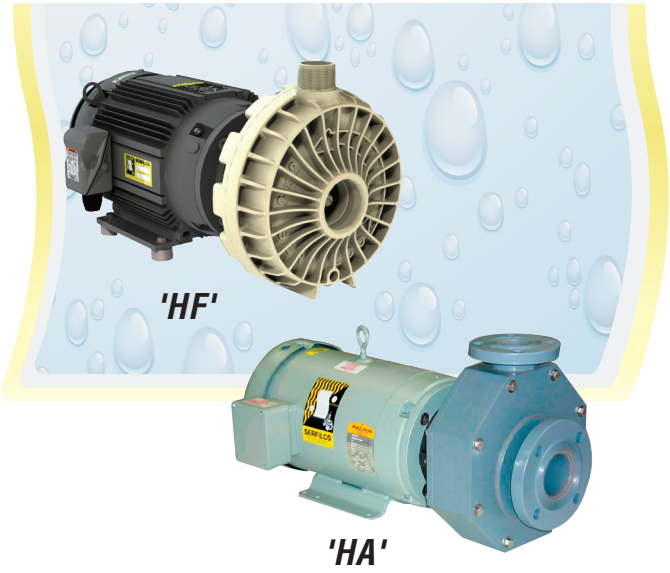
SERIES 'HN'

Materials: CPVC, PVDF†
Elastomers: EPDM, Viton
Seal: Single
Max. Flow: 135 U.S. GPM
Max. TDH: 88 feet
Motors: .5 – 5.0 HP
Bulletin: P-111

† *Engineered plastics may require export license*

MECHANICAL SEAL

SERIES 'HF' & 'HA'



Materials: CPVC, Hi-Temp PP
Elastomers: EPDM, Viton
Seal: Single or double
Max. Flow: 1200 U.S. GPM
Max. TDH: 170 feet
Motors: 3.0 – 30.0 HP
Bulletin: P-207

SERIES 'HE'

Materials: Hi-Temp PP, CPVC, PVDF†
Elastomers: EPDM, Viton
Seal: Single or double
Max. Flow: 175 U.S. GPM
Max. TDH: 130 feet
Motors: 1.5 – 7.5 HP
Bulletin: P-201

SERIES 'HK'

Materials: CPVC, PVDF†
Elastomers: EPDM, Viton
Seal: Single or double
Max. Flow: 78 U.S. GPM
Max. TDH: 53 feet
Motors: 0.3 – 0.75 HP
Bulletin: P-203

SERIES 'HC'

Materials: CPVC, PVDF†
Elastomers: EPDM, Viton
Seal: Single or double
Max. Flow: 35 U.S. GPM
Max. TDH: 47 feet
Motors: 1.0 – 1.5 HP
Bulletin: P-203

† *Engineered plastics may require export license*

MAGNETIC COUPLED

SERIES 'FE'

Materials: Polypropylene*, PVDF‡
Elastomers: EPDM, Viton
Max. Flow: 130 U.S. GPM
Max. TDH: 96 feet
Motors: .75 – 5.0 HP
Bulletin: P-518

SELF-PRIMING SERIES 'FES'

Materials: Polypropylene*, PVDF‡
Elastomers: EPDM, Viton
Max. Flow: 120 U.S. GPM
Max. TDH: 90 feet
Motors: .75 – 5.0 HP
Bulletin: P-519

SERIES 'M'

Materials: Polypropylene*, PVDF‡
Elastomers: EPDM, Viton
Max. Flow: 70 U.S. GPM
Max. TDH: 56 feet
Motors: .5 – 1.5 HP
Bulletin: P-509

PRIMING CHAMBER

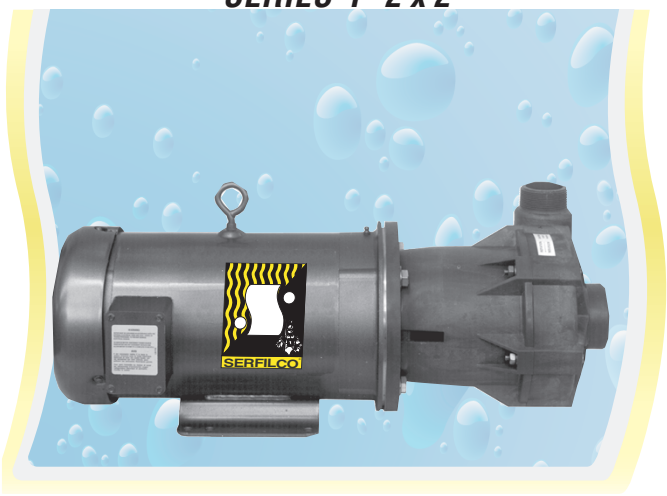
Materials: Polyethylene, PVC, Noryl, Polypropylene, Ryton, CPVC
Elastomers: EPDM, Viton
Max. Flow: To 180 U.S. GPM
Max. Lift: 2-6 feet
Bulletin: A-107

* *Glass reinforced* ‡ *Carbon reinforced*

† *Engineered plastics may require export license*

MAGNETIC COUPLED

SERIES 'F' 2 x 2

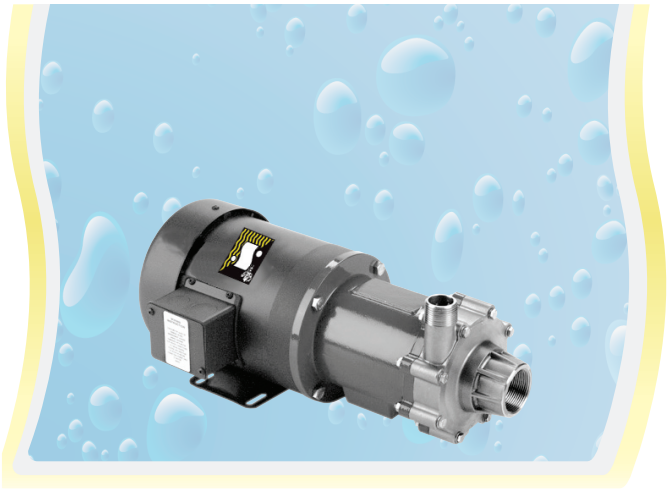


Materials: Polypropylene*, PVDF†
Elastomers: EPDM, Viton
Max. Flow: 255 U.S. GPM
Max. TDH: 135 feet
Motors: .75 – 7.5 HP
Bulletin: P-621

SERIES 'UC'

Materials: ETFE Lined Iron Casing
Elastomers: Viton, EPDM
Max. Flow: 330 U.S. GPM
Max. TDH: 320 feet
Motors: 3.0 – 20 HP
Bulletin: P-514

SERIES 'TM-SS'



Materials: 316 Stainless Steel
Elastomers: EPDM, Viton, Kalrez
Max. Flow: 160 U.S. GPM
Max. TDH: 79 feet
Motors: .75 – 5.0 HP
Bulletin: P-516

MODEL P-10 PUMP PROTECTOR DRI-STOP

P-10 *DRI-STOP*

MODEL P-10 PUMP PROTECTOR — **Type:** Digital motor load monitor
Bulletin: A-313

DRI-STOP — **Materials:** CPVC, PVDF†, Polypropylene, 316 Stainless Steel, Polysulfone
Elastomers: Viton
Type: Flow activated or pressure activated
Bulletin: A-105

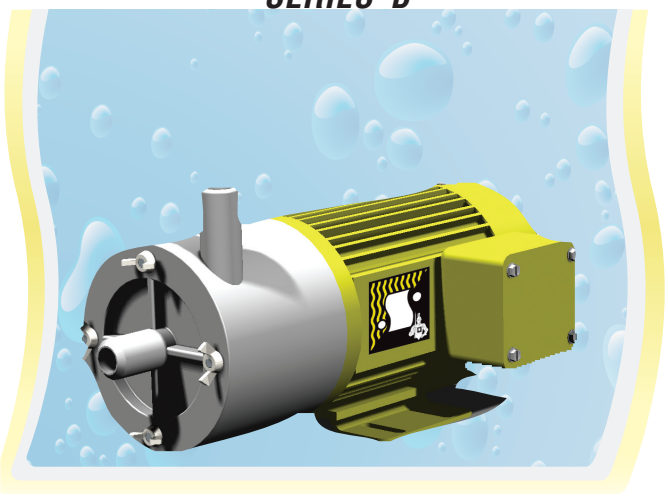
† *Engineered plastics may require export license*

MAGNETIC COUPLED

SERIES 'A'

Materials:	Hi temp PP, CPVC, PVDF†, ECTFE†
Elastomers:	EPDM, Viton
Max. Flow:	10 U.S. GPM
Max. TDH:	20 feet
Motors:	1/12 HP
Bulletin:	P-503

SERIES 'B'

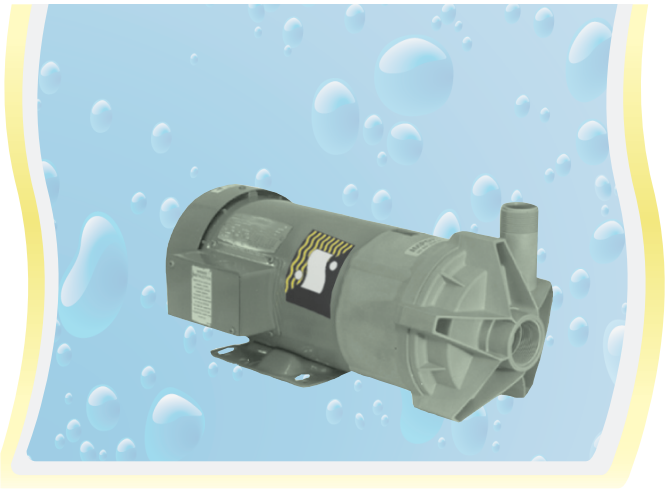


Materials:	Hi-Temp PP, CPVC, PVDF†, ECTFE
Elastomers:	EPDM, Viton
Max. Flow:	14 U.S. GPM
Max. TDH:	23 feet
Motors:	1/6 HP
Bulletin:	P-503

SERIES 'X'

Materials:	Polypropylene*, PVDF†, ETFE*†
Elastomers:	Viton
Max. Flow:	25 U.S. GPM
Max. TDH:	52 feet
Motors:	1/40 – 1/3 HP
Bulletin:	P-511

SERIES 'F'



Materials:	Polypropylene*, PVDF†
Elastomers:	EPDM, Viton
Max. Flow:	95 U.S. GPM
Max. TDH:	75 feet
Motors:	.75 – 3.0 HP
Bulletin:	P-621

* *Glass reinforced* † *Carbon reinforced*

† *Engineered plastics may require export license*

SELF-PRIMING

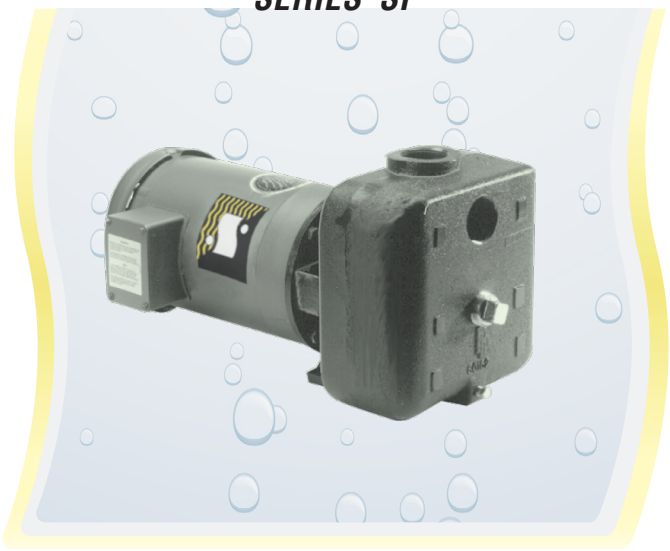
SERIES 'G'

Materials: Noryl, Ryton*
Elastomers: EPDM, Viton, Buna-N
Seal: Single
Max. Flow: 110 U.S. GPM
Max. TDH/Lift: 76 feet / Up to 15 feet
Motors: .5 – 3.0 HP
Bulletin: P-613

SERIES 'S'

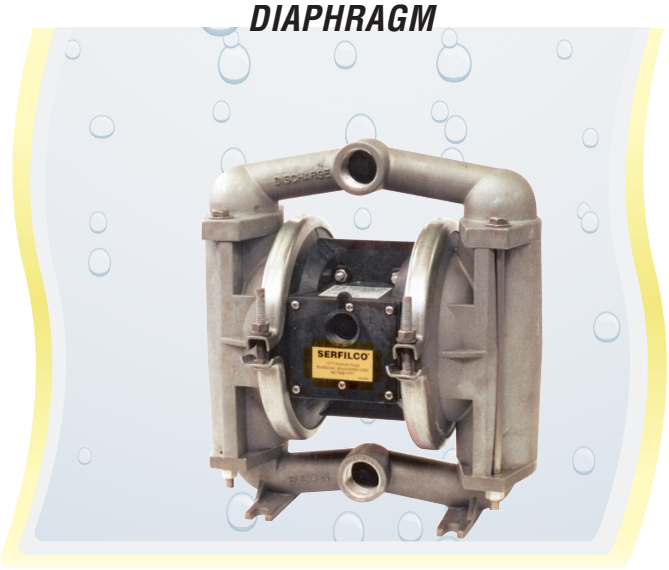
Materials: Polypropylene*, Polyester*, Ryton*
Elastomers: EPDM, Viton, Buna-N
Seal: Single
Max. Flow: 280 U.S. GPM
Max. TDH/Lift: 105 feet / Up to 25 feet
Motors: .5 – 5.0 HP
Bulletin: P-630

SERIES 'SP'



Materials: Cast iron
Elastomers: EPDM, Viton
Max. Flow: 142 U.S. GPM
Max. TDH/Lift: 90 feet / Up to 20 feet
Motors: 1.0 – 3.0 HP
Bulletin: P-600

DIAPHRAGM



Materials: Aluminum, Conductive Nylon, Nylon, polypropylene, PVDF†, stainless steel
Elastomers: Geolast®, TFE, Santoprene®, Viton
Max. Flow: 150 U.S. GPM
Max. TDH/Lift: 230 feet / Up to 15 feet
Bulletin: P-605

† *Engineered plastics may require export license*

HAND / DRUM

SERIES 'HP'

Materials: Polyester*, Ryton*, ECTFE†
Elastomers: EPDM, Viton
Max. Flow: 1 quart per cycle
Max. TDH: 25 feet
Motors: Manual operation
Bulletin: P-404

SERIES 'DP'

Materials: Polypropylene, PVDF†, CPVC, Hi Temp PP, 316 Stainless Steel, Viton
Length: 39", 47", 60" or 72"
Max. Flow: 33 U.S. GPM
Max. TDH: 35 feet
Motors: ODP, ENC, EXP-UL or Air
Bulletin: P-402

BATCH CONTROL SYSTEMS

Materials: Polypropylene, PVDF†
Operation: Enter the desired volume. The SERFILCO batch control system engages the motor, dispenses the required volume, then stops the motor automatically to complete the process.
Bulletin: P-412

SERIES 'AA', 'B', 'C' METERING

Materials: Polypropylene
Elastomers: PTFE†
Max. Flow: 22 U.S. GPH
Max. Pressure: 250 PSI
Motors: Electromagnetic, mechanical
Bulletin: P-605

† *Engineered plastics may require export license*

SELECT THE RIGHT PUMP

The selection of the proper pump for a particular application is dependent upon a number of factors, including, but not limited to, the following: material compatibility, pump size and type, pump speed and horsepower. Here are some guidelines to help you make the right choice.

MATERIAL COMPATIBILITY

Materials must be compatible with the fluids to be pumped. Most plating solutions and many chemicals are corrosive, so pump materials must resist chemical attack. Corrosionresistant chlorinated polyvinyl chloride (CPVC) pumps are made in many sizes to handle a variety of pressure ranges and flow rates. CPVC withstands temperatures to 200°F and somewhat higher at low pressures.

Polypropylene is suitable, but not as versatile as CPVC. Polyethylene, PVDF, Ryton®, Noryl® and PTFE are also available for specific solutions. Corrosion-resistant alloys are also available. Material used for seals and gaskets must be considered.

PUMP SELECTION

Most pumps are of horizontal design. They are available in many flow rate / pressure combinations with either direct drive or sealless magnetic-coupling. Which to choose? It depends on use conditions.

A direct drive pump requires careful seal selection to minimize wear and failure. Mechanical seals provide precision fit, are self-adjusting and are available water or product flushed. A closed-loop, double water flushed seal system also can be used when an external source of water is not available, or if the seal is to be self-contained.

Vertical pumps must have their drive motors mounted at the process tank. Fumes and mist from a plating bath or other corrosive process solution can be a problem, so protect the motor if necessary. Vertical pumps are often used to pump waste solution from sumps.

Drum pumps are narrow enough to self-prime liquids through the bung opening. To add chemical for pH control or to add plating brightener, use a diaphragm or piston type metering pump. Such pumps could be operated on timers or amp-hour meters.

WHAT SPEED AND HP?

Pump sizing is largely a matter of determining the desired pressure and flow rate. Centrifugal pumps are available with motor speeds of 1725 or 3450 RPM. The lower speed pump has half the flow, one-fourth the pressure and requires one-eighth the horsepower of the higher RPM model.

Pump ratings are based on moving liquid with a specific gravity of 1.0. For fluids with a specific gravity greater than 1.0, the required pump / motor horsepower of a direct drive pump can be determined by identifying the desired flow / pressure point on a performance curve and multiplying the indicated horsepower by the specific gravity of the fluid.

Many magnetic-coupled pumps are built with magnets capable of handling fluids with a specific gravity greater than 1.0. Care must be taken not to select a pump whose rating isn't adequate to handle the specific gravity of the fluid or the pump will lose synchronization and fail to pump. On some magnetic-coupled pumps, the impeller can be trimmed to pump higher specific gravity liquids.

In any match-up of pump and motor, make sure the piping is adequate. Piping too narrow can starve the pump and ruin efficiency.

Problems can abound, such as:

1. Chemicals may range in pH from 1 - 14.
2. Hot chemicals can cause suction cavitation that can reduce efficiency and cause noise, impeller wear and seal damage.
3. Cooling chemicals may produce crystalline formations which can abrade moving parts.
4. Liquids having an elevated specific gravity (above 1.0) will require a corresponding increase in pump motor horsepower.
5. Motors often operate in hot, unvented areas, requiring proper enclosure selection.

The Ten Commandments of Pumping

1. **Always read operating instructions.**
2. **Strain foreign objects from the pump.**
3. **Use siphon breakers on suction and discharge piping.**
4. **Provide proper electrical power with proper overload protection.**
5. **Never starve the pump; use oversize suction piping for distance, elevated temperatures, vaporization or high atmospheric elevations.**
6. **Carefully choose materials that contact the liquid.**
7. **Determine flow, pressure and size of pump required. Match the HP of drive motor to the specific gravity of the liquid being pumped.**
8. **Install a valve on a centrifugal pump discharge to prevent overloading the motor, or use a non-overloading motor for the entire performance range.**
9. **Keep adequate spare parts on hand.**
10. **Install standby pumps when uninterrupted pumping is mandatory.**

by Jack H. Berg
President, SERFILCO, Ltd.

Specifications subject to change without notice.

SERFILCO®
2900 MacArthur Blvd
Northbrook, IL 60062-2005 U.S.A.
Email: sales@serfilco.com
847-509-2900
800-323-5431
FAX: 847-559-1141
www.serfilco.com

CONTACT YOUR LOCAL REPRESENTATIVE