

Liquiflo®

The Liquiflo **Poly-Guard™**
Polymer-Lined Stainless Steel Gear Pump

The Ultimate Solution for Pumping
Corrosive Chemicals



A Revolutionary Innovation in Chemical Pump Technology...

Combines the chemical resistance of **Fluoro-Polymers**
with the strength of **Stainless Steel**

Poly-Guard™ SERIES

POLYMER-LINED STAINLESS STEEL GEAR PUMP



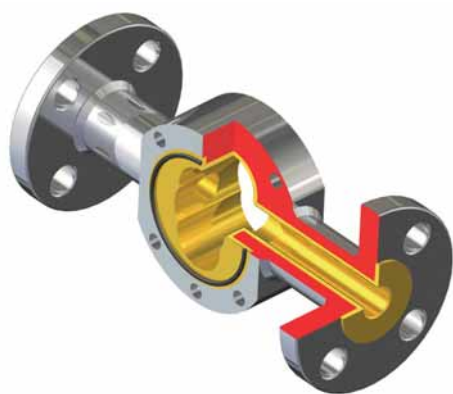
Description: THE TOUGHEST COMBINATION...

Liquiflo has long recognized the need for a Plastic Rotary Positive Displacement Pump for the chemical industry. While engineered plastics offered unsurpassed chemical resistance to virtually any fluid, they severely lacked the mechanical strength, integrity and safety of high-alloy metals. Therefore, the challenge was to use a combination of metal and plastic to produce a highly corrosion resistant pump that was safe to use in industrial applications. We chose a Fluoro-Polymer for its superior chemical resistance, and Stainless Steel for its strength and corrosion resistance (giving the pump one more layer of protection). Liquiflo perfected a specialized molding and machining technique for mechanically bonding, stabilizing and machining the plastic to the precise tolerances required to make a positive displacement pump.

The ultimate outcome was the Poly-Guard™, which combines the chemical resistance of a Fluoro-Polymer with the strength of Stainless Steel.

Typical Uses & Applications

The **Poly-Guard™** is an excellent choice for inorganic acids, bases and salts. The Poly-Guard™, with its tough Stainless Steel exterior and chemically resistant Fluoro-Polymer interior, offers the ultimate solution for your most difficult chemical applications. These pumps are durable, safe and corrosion resistant, and unlike fiber-reinforced plastic pumps, they can also be used in high purity services where contamination from process system components must be avoided.



Typical Chemicals

Hydrochloric Acid
Ferric Chloride
Sulfuric Acid
Hydrofluoric Acid
Sodium Hypochlorite
Nitric Acid
Sodium Hydroxide
Chromic Acid
Fluorosilicic Acid
Hydrogen Bromide
Bromine

Markets

Chemical
 Water Treatment
 Pharmaceutical
 Pulp & Paper
 Electronics
 Food & Beverage
 High Purity Service
 ...etc.

Metering

Gear pumps, due to their nearly **pulseless flow**, are preferred in many metering applications. When used with a VFD in a PID-controlled feedback loop, the pump can deliver exceptionally accurate flow. The input signal can be based on many different parameters – pH and flow rate being two of the most common.

Advantages

- ▶ The Poly-Guard™ offers both internal and external protection against corrosive fluids and harsh environments
- ▶ Strong Stainless Steel body handles pipe stresses and typical treatments found in industrial environments
- ▶ Fluoro-Polymer-lined for ultimate protection against any corrosive liquids, such as Acids, Caustics, Inorganic Salts and others
- ▶ A variety of non-metallic materials for internal components such as PEEK, Kynar (PVDF), Graphite-Grade Carbon and Silicon Carbide, were chosen for exceptional wear resistance and chemical compatibility, allowing pump to be optimized for the intended service
- ▶ Ideal for high purity services where contact with metal parts must be avoided (All wetted parts are non-metallic)
- ▶ Sealless Mag-Drive configuration prevents leakage and eliminates seal maintenance
- ▶ Rotary Gear Pump design deliverer a smooth, pulseless flow which is desirable for both metering and transfer applications
- ▶ Close-Coupled configuration simplifies installation and maintains perfect alignment of pump and motor
- ▶ Product is extremely simple in design and easy to maintain and repair
- ▶ Available in 9 sizes to match your flow requirements up to 25 GPM (95 LPM)

Liquiflo **POLY-GUARD™** SERIES Polymer-Lined Stainless Steel Pump The **Ultimate Solution** for Pumping **Corrosive Chemicals**

THE TOUGHEST EXTERIOR

An extremely durable 316 Stainless Steel body clearly sets the Poly-Guard™ apart from all other plastic pumps. Its strong and chemically resistant body truly makes the Poly-Guard™ the perfect match for harsh industrial environments.

THE MOST CHEMICALLY RESISTANT INTERIOR

Fluoro-Polymer Plastic Lining resists the most corrosive chemicals

All inside surfaces contain a molded layer of Fluoro-Polymer – the most chemically resistant of all plastics. This layer (shown in gold) is molded, mechanically fastened and chemically bonded to the Stainless Steel outer casing; then precision-machined to close tolerances.

This combination of the toughest exterior and the most chemically resistant interior is the ultimate solution for your most difficult pumping applications.

STAINLESS STEEL FLANGES

STAINLESS STEEL BODY

STAINLESS STEEL CONTAINMENT CAN

SHAFTS

BEARINGS

WEAR PLATES

GEARS

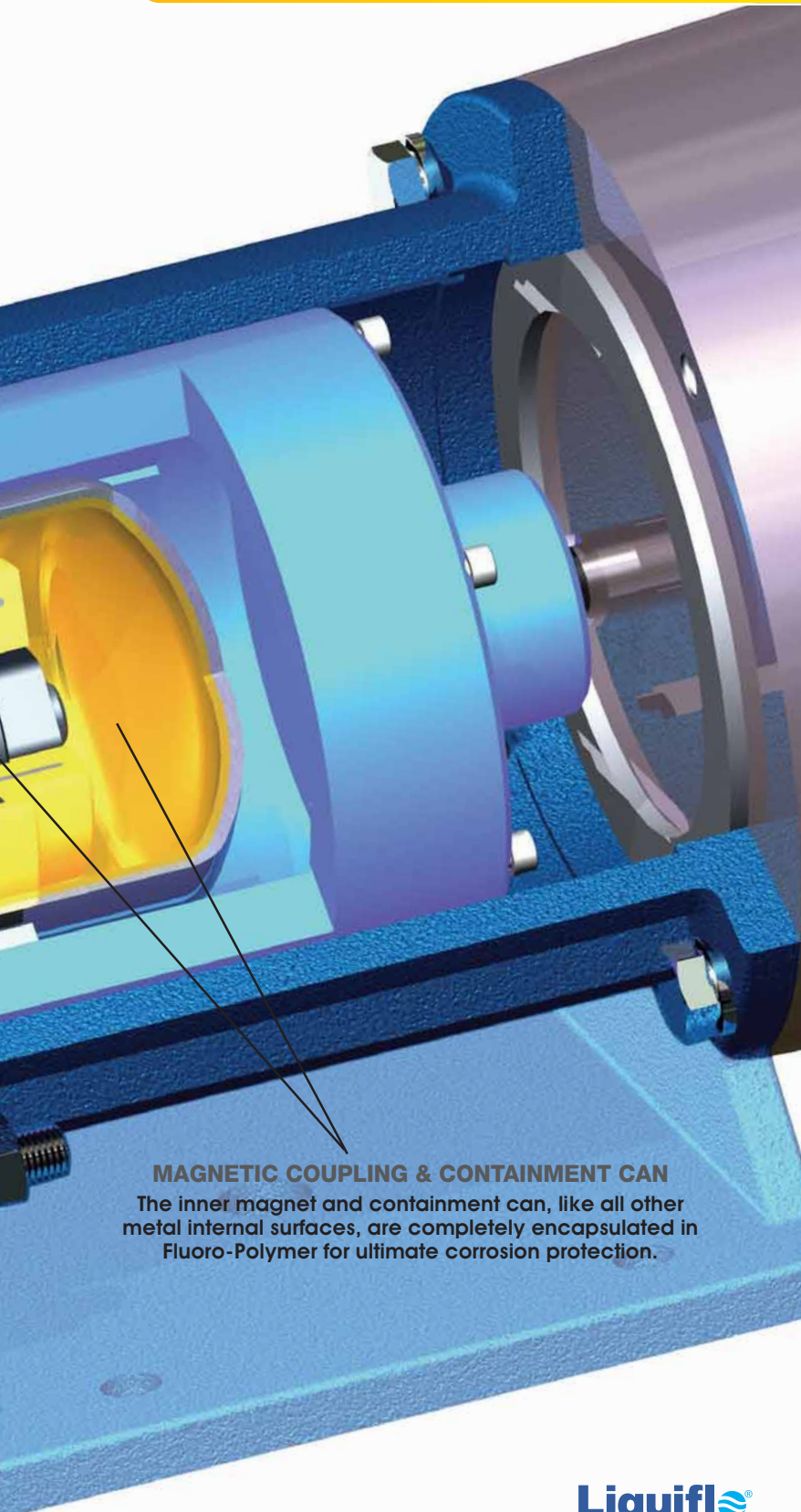
FLEXIBLE SELECTION OF INTERNAL COMPONENTS

The Poly-Guard™ uses internal components made from engineered materials that offer exceptional wear properties and chemical resistance. The selection of these materials – PEEK, Kynar, Graphite Carbon or Silicon Carbide – can be optimized for virtually any application.

PolyGuard™

Stainless Steel Gear Pump

Combines the chemical resistance of Fluoro-Polymers with the strength of Stainless Steel



MAGNETIC COUPLING & CONTAINMENT CAN
The inner magnet and containment can, like all other metal internal surfaces, are completely encapsulated in Fluoro-Polymer for ultimate corrosion protection.

THE FLUORO-POLYMER LINER

The interior walls of the Stainless Steel housing are encased with perfluoroalkoxy plastic, which is a type of Fluoro-Polymer commonly known by its initialism, PFA. PFA was chosen because it's the most chemically resistant of all moldable plastics. In the Poly-Guard™ design, the PFA is supported by the Stainless Steel housing; therefore, no additional reinforcements (such as fiber fillers which are necessary to strengthen an all plastic pump) are needed. In fiber reinforced plastic pumps, these fillers can significantly reduce the chemical resistance of the plastic and potentially allow wicking of the chemical along the fiber matrix.

INTERNAL COMPONENTS

The Poly-Guard™ pump is offered with a wide selection of materials for its internal components. With Liquiflo's many years of experience in pumping extremely difficult chemicals, we can maximize the performance and reliability of the Poly-Guard™ for virtually any application. In several applications, by optimizing component selection, Liquiflo has exceeded 40,000 hours of MTBR (mean time between replacement).

SHAFTS Self-Sintered Silicon Carbide (SiC) for extreme wear resistance and chemical resistance.

BEARINGS Silicon Carbide Bearings for extreme life and wear resistance, or Carbon 60 Bearings for flexibility and dry-running capability.

GEARS Choice of PEEK or Kynar Gears to optimize performance for chemical applications.



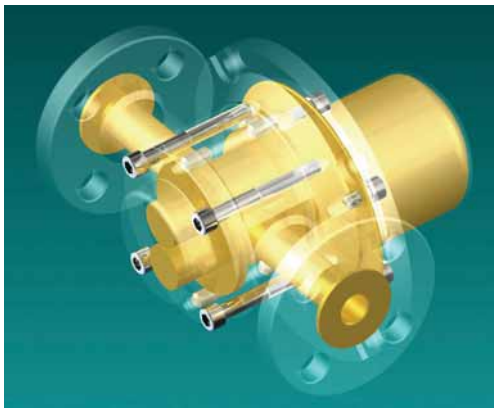
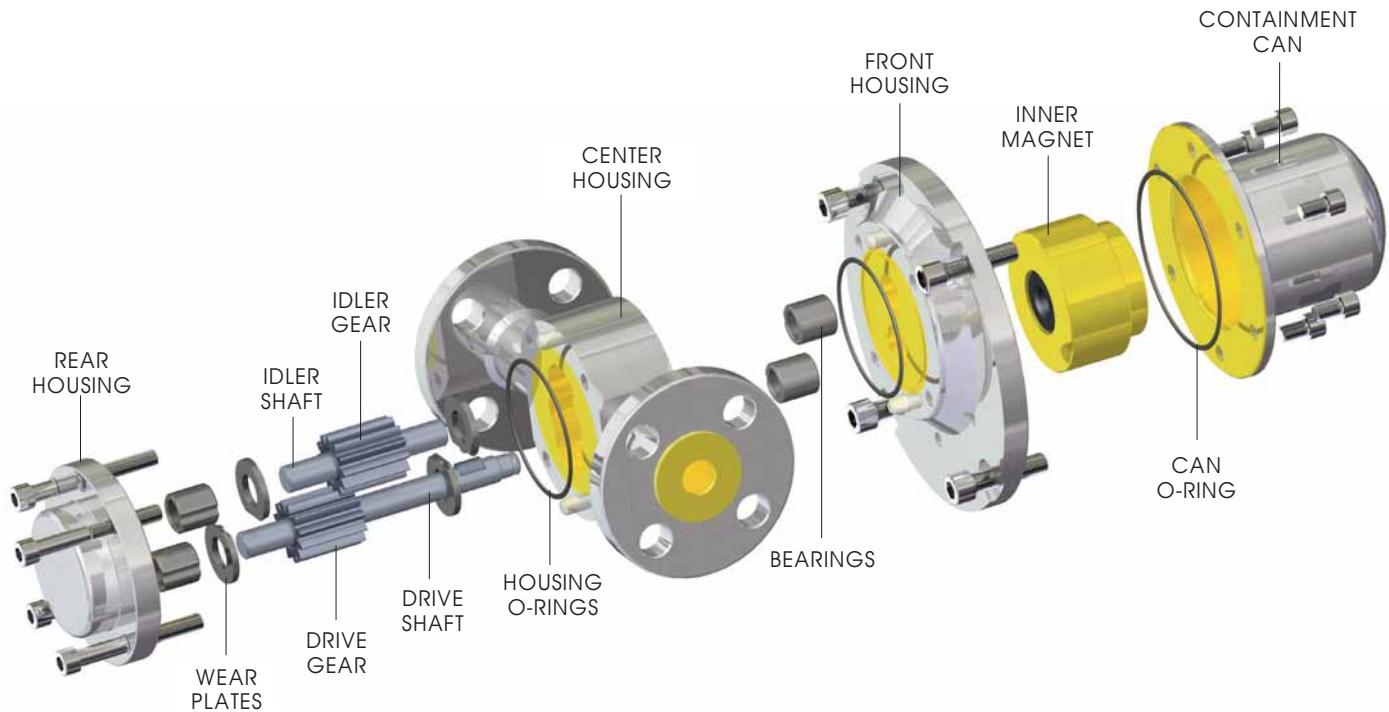
CONTAINMENT CAN

The standard containment can material is PTFE-Lined Stainless Steel, which provides both extreme chemical resistance and high-pressure capability.

REPAIR KITS

These pumps are extremely simple to repair and maintain. Either individual parts or complete repair kits that contain all internal components are available to economically rebuild the pump to like-new condition.





The **Poly-Guard™** Series pumps offer a durably constructed outer Stainless Steel body with a heavily layered Fluoro-Polymer (PFA) internal lining. This highly chemically resistant PFA lining is mechanically attached and bonded to the internal stainless steel surfaces using a specialized molding process, effectively isolating the fluid being pumped from any metal surfaces. Fluoro-Polymers exhibit the highest corrosion resistance of any plastics. This combination of stainless steel on the outside and Fluoro-Polymer on the inside gives the Poly-Guard™ the full strength and integrity of a metal pump with the ultimate corrosion resistance of a Fluoro-Polymer.

(Polymer lining is shown in gold)

Case History

A water supply authority was required to fluoridate the water system for a large metropolitan area. The method chosen was metered injection of concentrated Hydrofluorosilicic Acid into the water supply. Any process interruption or fluid leakage would be unacceptable. Originally, diaphragm metering pumps were specified; however, they were found to be unsatisfactory due to leakage as a result of diaphragm failure. They then chose a gear pump with an Alloy-C body; however, the Alloy-C was severely attacked by the acid, resulting in fluid leakage within a month. Liquiflo was then approached to help them find a solution. Liquiflo recognized that an all metal pump was not acceptable from a corrosion standpoint. It was also known that glass and carbon were incompatible with this highly corrosive acid. This eliminated the option of using an all plastic pump that used carbon or glass fiber reinforcement. The solution was the Poly-Guard™ pump with PFA lining, Stainless Steel body, unfilled PVDF gears, and Silicon Carbide wear plates, bearings and shafts. These pumps have now been in service in excess of 18 months with zero down time due to fluid leakage or degraded performance.

MODELS

P1-P4



MODELS

P5-P9



GENERAL SPECIFICATIONS

SPECIFICATION		P1	P2	P3	P4	P5	P6	P7	P8	P9	Units
Port Size & Type ¹	ANSI 150#	3/4	3/4	3/4	3/4	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	in
	DIN PN16	20	20	20	20	40	40	40	40	40	mm
Max Speed		1750	1750	1750	1750	1750	1750	1750	1750	1750	RPM
Flow Rates ² @ Differential Pressure	0 PSI 0 bar	1.4	2.3	3.1	4.9	8.5	11.3	14.2	18.8	25.0	GPM LPM
	50 PSI 3.4 bar	0.94	1.8	2.6	4.2	7.9	10.6	13.4	17.8	23.8	GPM LPM
	100 PSI 6.9 bar	0.61	1.4	2.2	3.7	7.4	10.0	12.7	17.0	23.1 * 87.6 *	GPM LPM
Max Differential Pressure		100 6.9	100 6.9	100 6.9	100 6.9	100 6.9	100 6.9	100 6.9	100 6.9	80 5.5	PSI bar
Max Allowable Pressure ³		275 19	275 19	275 19	275 19	275 19	275 19	275 19	275 19	275 19	PSIG barg
Max Temperature ⁴		200 93	200 93	200 93	200 93	200 93	200 93	200 93	200 93	200 93	°F °C
NPSHR @ Max Speed		2 0.6	2 0.6	2 0.6	3 0.9	5.2 1.6	5.2 1.6	4 1.2	3 0.9	3 0.9	ft (a) m (a)
Suction Lift (Dry)		1 0.3	1 0.3	2 0.6	3 0.9	3 0.9	3.5 1.1	3.5 1.1	5 1.5	6 1.8	ft m
Weight, less motor (approx.)		42 19	42 19	42 19	42 19	63 29	63 29	63 29	70 32	70 32	lbs kg

1 New Poly-Guard Pumps have Universal ANSI/DIN Raised Face (RF) Flanges.

2 Based on average test data with water at room temperature and maximum pump speed of 1750 RPM.

3 Based on pressure rating of Flanges at ambient temperature. Pressure derating is required above 100°F (38°C)

4 Pump may require trimmed gears depending on the material and temperature.

* Specified @ 80 PSI (5.5 bar)

MATERIALS AVAILABLE

Body	Gears & Keys	Wear Plates	Bearings	Shafts	Containment Can	O-Rings
• 316 SS-PFA Lined	• PEEK ¹ • Kynar ²	• Silicon Carbide ³ • Carbon-60 ⁴	• Silicon Carbide ³ • Carbon-60 ⁴	• Silicon Carbide ³	• SS-PTFE Lined	• EPDM (Sulfur-free) • Viton (Type A) • FFKM ⁵

1 Bearing Grade PEEK

2 PVDF/FDA Grade

3 Self-Sintered SiC

4 Graphite Grade

5 Perfluoroelastomer, Kalrez 4079 or equivalent grade

POLYMER-LINED STAINLESS STEEL GEAR PUMP

MODEL **P1**



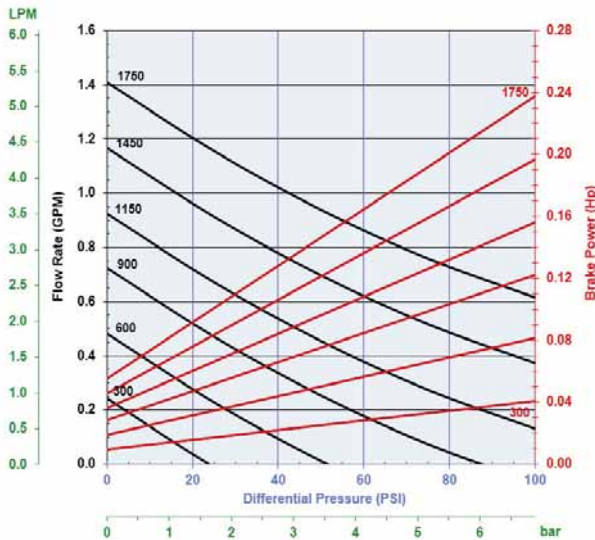
MAG-DRIVE, CLOSE-COUPLED

Port Size & Type ¹	ANSI	3/4" 150# RF Flanges
	DIN	20 mm PN16 RF Flanges
Max Speed		1750 RPM
Max Flow Rate ²		1.4 GPM (5.3 LPM)
Max Differential Pressure		100 PSI (6.9 bar)
Max Allowable Pressure ³		275 PSIG (19 barg)
Max Temperature ⁴		200°F (93°C)
Min Temperature		32°F (0°C)
NPSHR @ Max Speed		2 ft (a) [0.6 m (a)]
Suction Lift (Dry)		1 ft (0.3 m)
Gear Type		Spur, External
Bearing Type		Sleeve /Journal
Motor Frame Sizes	NEMA	56C thru 145TC
	IEC	71 thru 90 – B5 Flange
Weight, less motor (approx.)		42 lbs (19 kg)

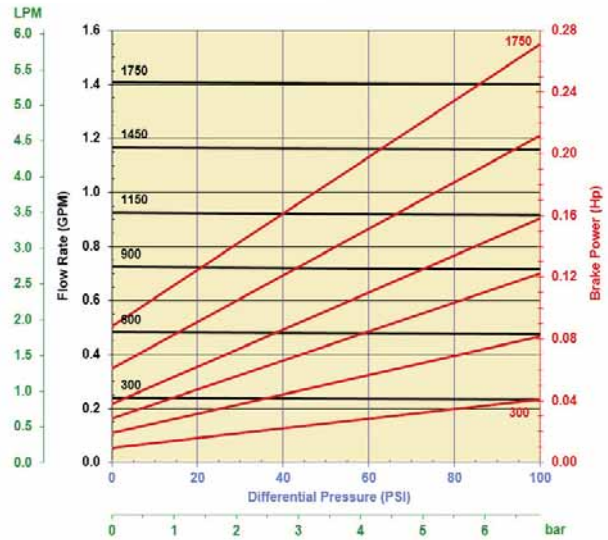
- 1 Pump has Universal ANSI/DIN Raised Face (RF) Flanges.
- 2 Typical test value at Maximum Speed and zero Differential Pressure.
- 3 Based on Pressure Rating of Flanges up to 100°F (38°C).
- 4 Trimmed Gears may be required depending on material and temperature.

PERFORMANCE CURVES

1 cP Fluid (Water)

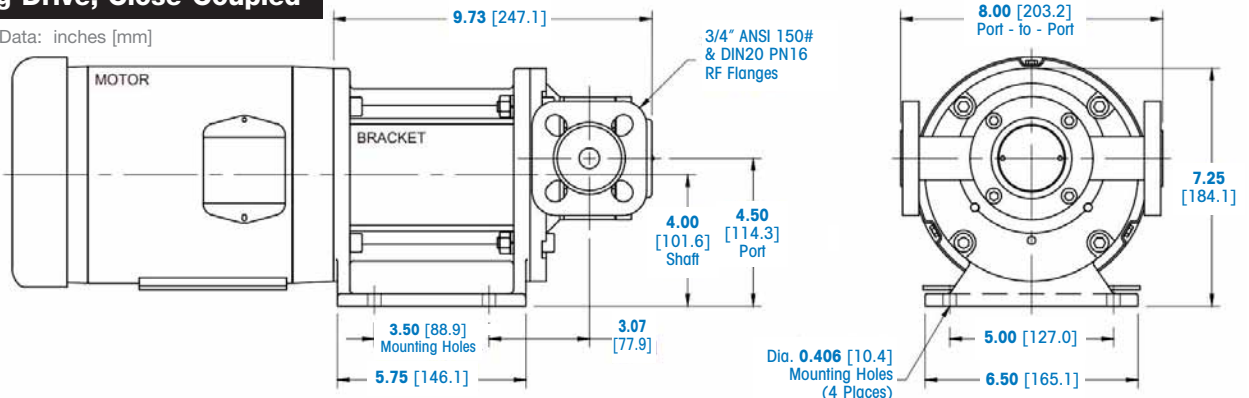


100 cP Fluid (Oil)



P1: Mag-Drive, Close-Coupled

Dimensional Data: inches [mm]



POLYMER-LINED STAINLESS STEEL GEAR PUMP

MODEL **P2**



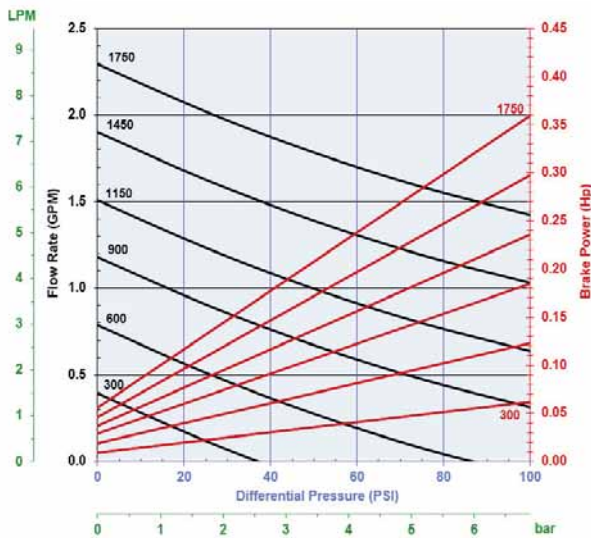
MAG-DRIVE, CLOSE-COUPLED

Port Size & Type ¹	ANSI	3/4" 150# RF Flanges
	DIN	20 mm PN16 RF Flanges
Max Speed		1750 RPM
Max Flow Rate ²		2.3 GPM (8.7 LPM)
Max Differential Pressure		100 PSI (6.9 bar)
Max Allowable Pressure ³		275 PSIG (19 barg)
Max Temperature ⁴		200°F (93°C)
Min Temperature		32°F (0°C)
NPSHR @ Max Speed		2 ft (a) [0.6 m (a)]
Suction Lift (Dry)		1 ft (0.3 m)
Gear Type		Spur, External
Bearing Type		Sleeve /Journal
Motor Frame Sizes	NEMA	56C thru 145TC
	IEC	71 thru 90 – B5 Flange
Weight, less motor (approx.)		42 lbs (19 kg)

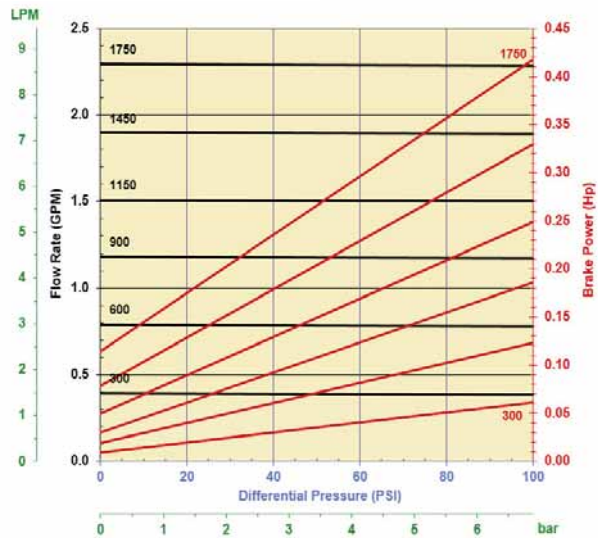
- 1 Pump has Universal ANSI/DIN Raised Face (RF) Flanges.
- 2 Typical test value at Maximum Speed and zero Differential Pressure.
- 3 Based on Pressure Rating of Flanges up to 100°F (38°C).
- 4 Trimmed Gears may be required depending on material and temperature.

PERFORMANCE CURVES

1 cP Fluid (Water)

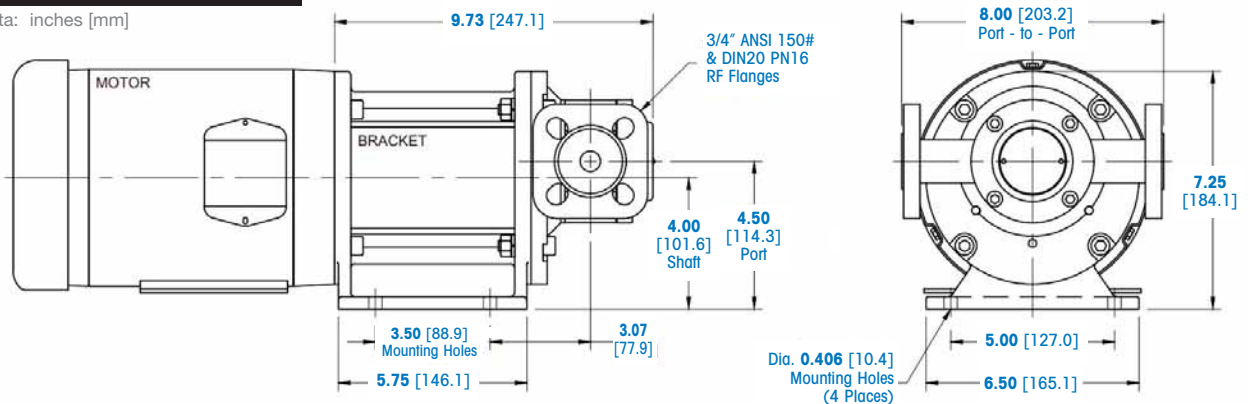


100 cP Fluid (Oil)



P2: Mag-Drive, Close-Coupled

Dimensional Data: inches [mm]



POLYMER-LINED STAINLESS STEEL GEAR PUMP

MODEL **P3**



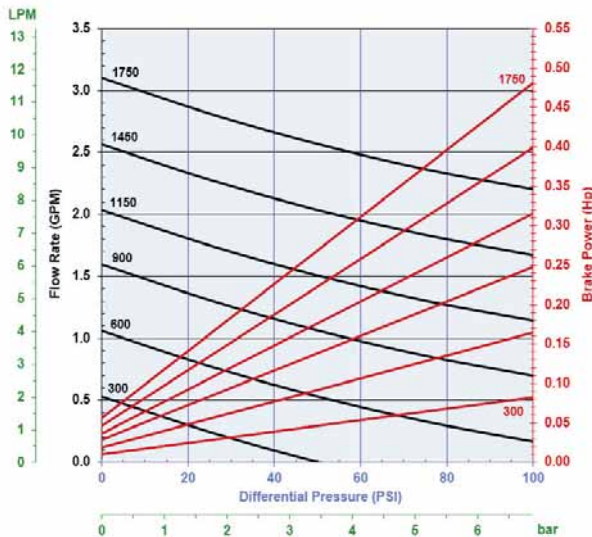
MAG-DRIVE, CLOSE-COUPLED

Port Size & Type ¹	ANSI	3/4" 150# RF Flanges
	DIN	20 mm PN16 RF Flanges
Max Speed		1750 RPM
Max Flow Rate ²		3.1 GPM (11.7 LPM)
Max Differential Pressure		100 PSI (6.9 bar)
Max Allowable Pressure ³		275 PSIG (19 barg)
Max Temperature ⁴		200°F (93°C)
Min Temperature		32°F (0°C)
NPSHR @ Max Speed		2 ft (a) [0.6 m (a)]
Suction Lift (Dry)		2 ft (0.6 m)
Gear Type		Spur, External
Bearing Type		Sleeve /Journal
Motor Frame Sizes	NEMA	56C thru 145TC
	IEC	71 thru 90 – B5 Flange
Weight, less motor (approx.)		42 lbs (19 kg)

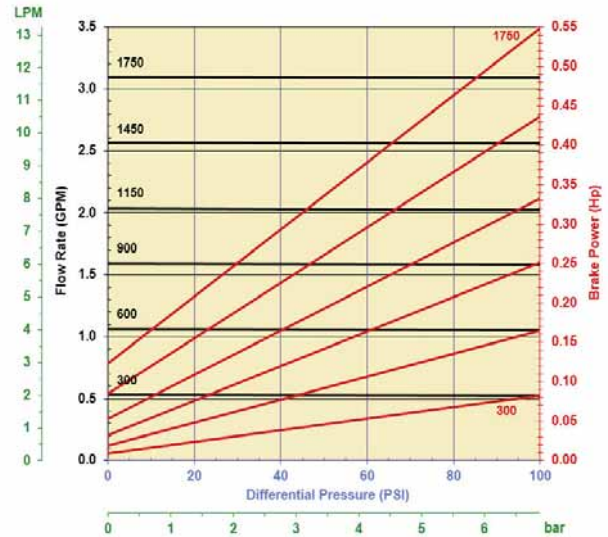
- 1 Pump has Universal ANSI/DIN Raised Face (RF) Flanges.
- 2 Typical test value at Maximum Speed and zero Differential Pressure.
- 3 Based on Pressure Rating of Flanges up to 100°F (38°C).
- 4 Trimmed Gears may be required depending on material and temperature.

PERFORMANCE CURVES

1 cP Fluid (Water)

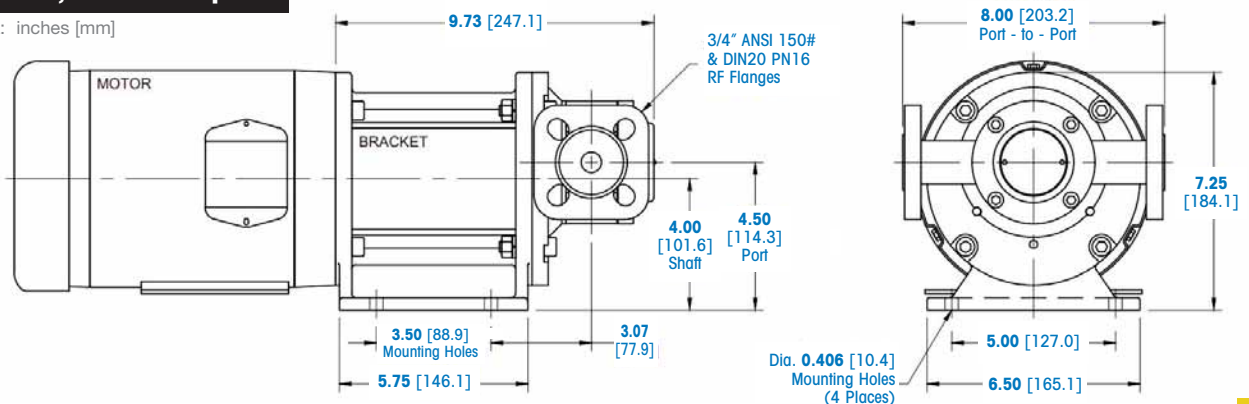


100 cP Fluid (Oil)



P3: Mag-Drive, Close-Coupled

Dimensional Data: inches [mm]



POLYMER-LINED STAINLESS STEEL GEAR PUMP

MODEL **P4**



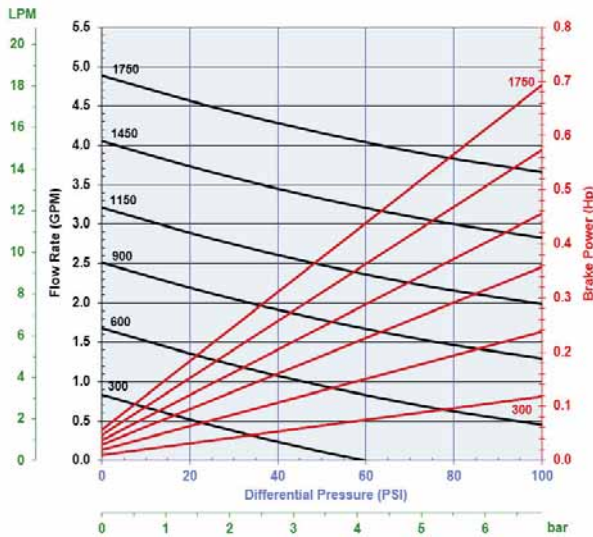
MAG-DRIVE, CLOSE-COUPLED

Port Size & Type ¹	ANSI	3/4" 150# RF Flanges
	DIN	20 mm PN16 RF Flanges
Max Speed		1750 RPM
Max Flow Rate ²		4.9 GPM (18.5 LPM)
Max Differential Pressure		100 PSI (6.9 bar)
Max Allowable Pressure ³		275 PSIG (19 barg)
Max Temperature ⁴		200°F (93°C)
Min Temperature		32°F (0°C)
NPSHR @ Max Speed		3 ft (a) [0.9 m (a)]
Suction Lift (Dry)		3 ft (0.9 m)
Gear Type		Spur, External
Bearing Type		Sleeve / Journal
Motor Frame Sizes	NEMA	56C thru 145TC
	IEC	71 thru 90 - B5 Flange
Weight, less motor (approx.)		42 lbs (19 kg)

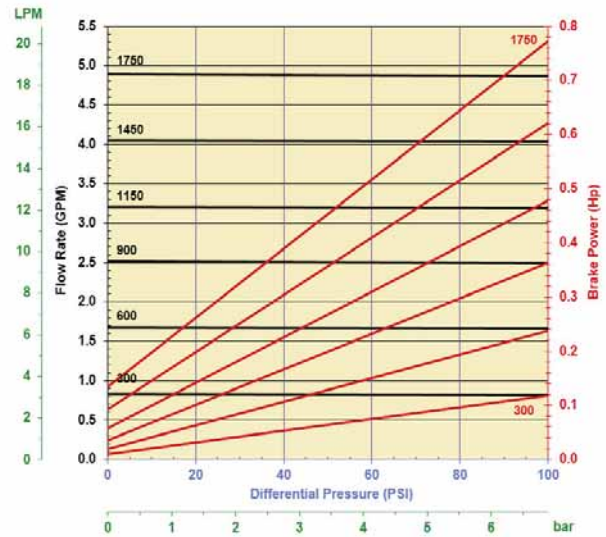
- 1 Pump has Universal ANSI/DIN Raised Face (RF) Flanges.
- 2 Typical test value at Maximum Speed and zero Differential Pressure.
- 3 Based on Pressure Rating of Flanges up to 100°F (38°C).
- 4 Trimmed Gears may be required depending on material and temperature.

PERFORMANCE CURVES

1 cP Fluid (Water)

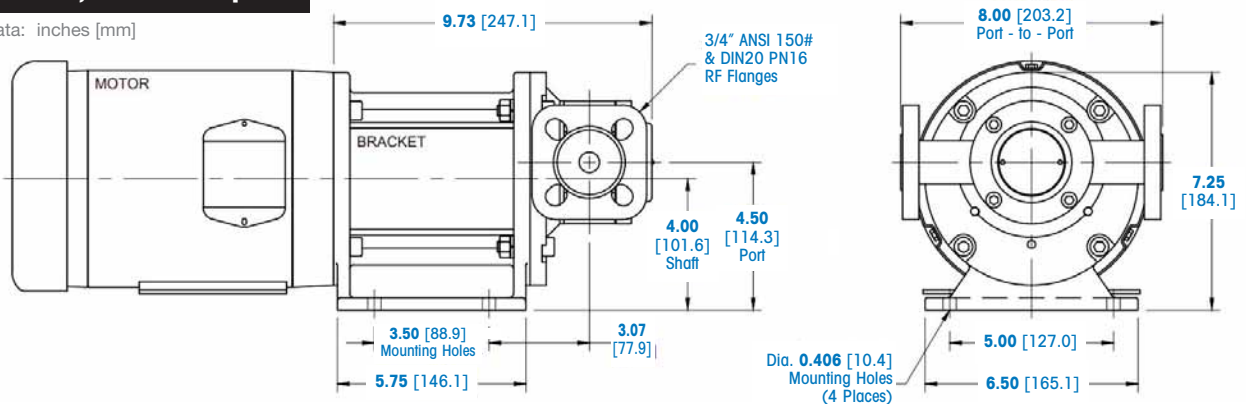


100 cP Fluid (Oil)



P4: Mag-Drive, Close-Coupled

Dimensional Data: inches [mm]



POLYMER-LINED STAINLESS STEEL GEAR PUMP

MODEL **P5**



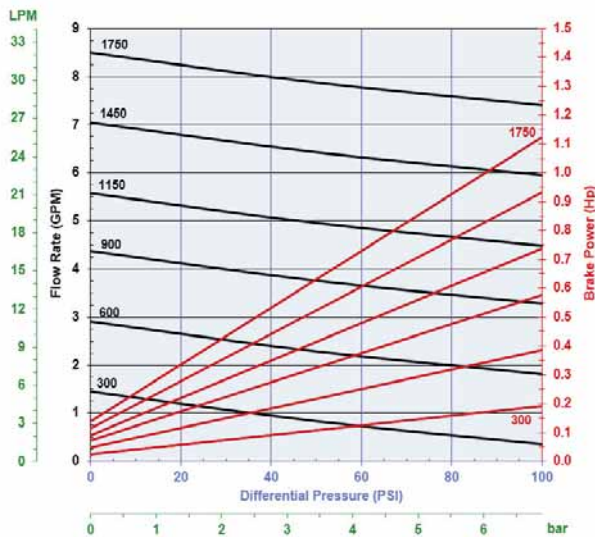
MAG-DRIVE, CLOSE-COUPLED

Port Size & Type ¹	ANSI	1 1/2" 150# RF Flanges
	DIN	40 mm PN16 RF Flanges
Max Speed		1750 RPM
Max Flow Rate ²		8.5 GPM (32.1 LPM)
Max Differential Pressure		100 PSI (6.9 bar)
Max Allowable Pressure ³		275 PSIG (19 barg)
Max Temperature ⁴		200°F (93°C)
Min Temperature		32°F (0°C)
NPSHR @ Max Speed		5.2 ft (a) [1.6 m (a)]
Suction Lift (Dry)		3 ft (0.9 m)
Gear Type		Spur, External
Bearing Type		Sleeve /Journal
Motor Frame Sizes	NEMA	56C thru 184TC
	IEC	71 thru 112 - B5 Flange
Weight, less motor (approx.)		63 lbs (29 kg)

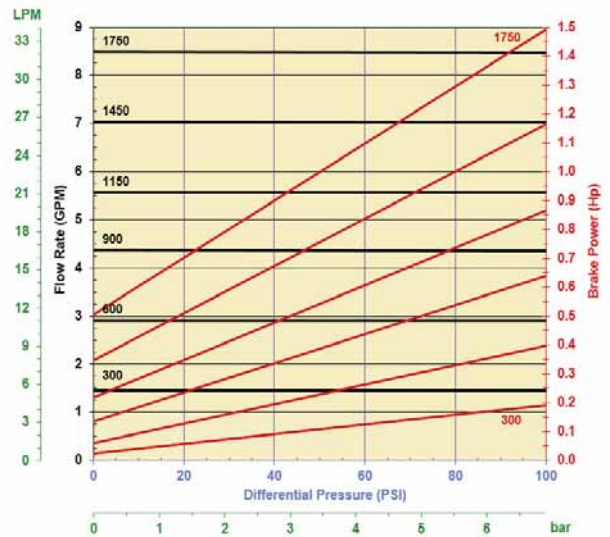
- 1 Pump has Universal ANSI/DIN Raised Face (RF) Flanges.
- 2 Typical test value at Maximum Speed and zero Differential Pressure.
- 3 Based on Pressure Rating of Flanges up to 100°F (38°C).
- 4 Trimmed Gears may be required depending on material and temperature.

PERFORMANCE CURVES

1 cP Fluid (Water)

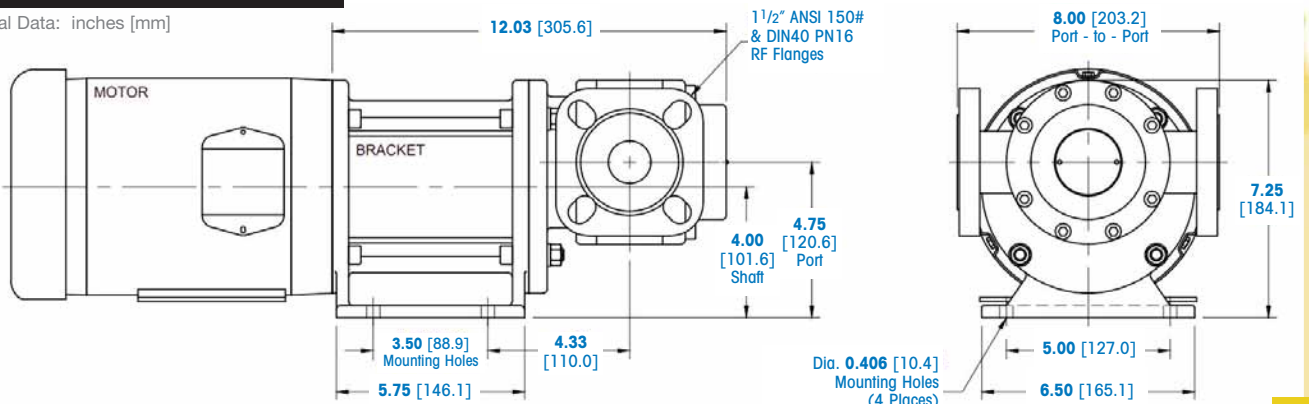


100 cP Fluid (Oil)



P5: Mag-Drive, Close-Coupled

Dimensional Data: inches [mm]



MODEL **P6**



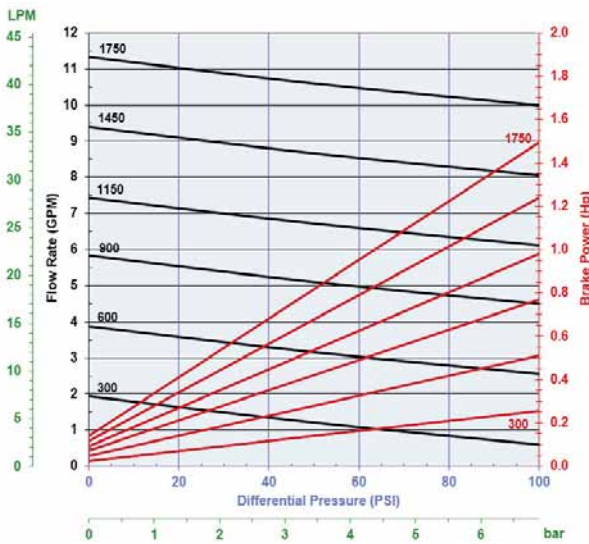
MAG-DRIVE, CLOSE-COUPLED

Port Size & Type ¹	ANSI	1 1/2" 150# RF Flanges
	DIN	40 mm PN16 RF Flanges
Max Speed		1750 RPM
Max Flow Rate ²		11.3 GPM (42.9 LPM)
Max Differential Pressure		100 PSI (6.9 bar)
Max Allowable Pressure ³		275 PSIG (19 barg)
Max Temperature ⁴		200°F (93°C)
Min Temperature		32°F (0°C)
NPSHR @ Max Speed		5.2 ft (a) [1.6 m (a)]
Suction Lift (Dry)		3.5 ft (1.1 m)
Gear Type		Spur, External
Bearing Type		Sleeve / Journal
Motor Frame Sizes	NEMA	56C thru 184TC
	IEC	71 thru 112 - B5 Flange
Weight, less motor (approx.)		63 lbs (29 kg)

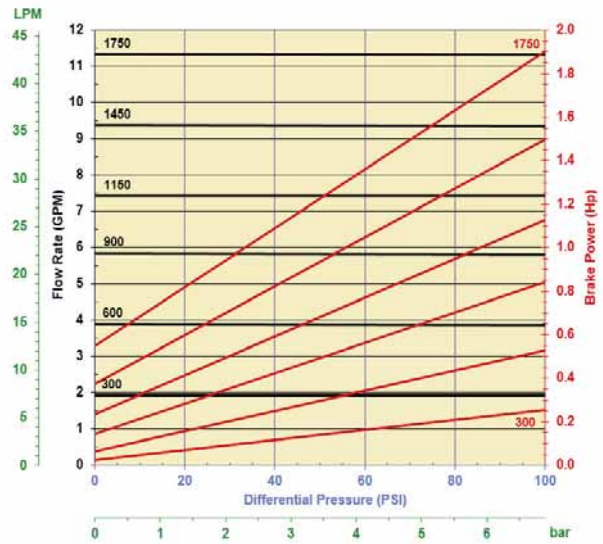
- 1 Pump has Universal ANSI/DIN Raised Face (RF) Flanges.
- 2 Typical test value at Maximum Speed and zero Differential Pressure.
- 3 Based on Pressure Rating of Flanges up to 100°F (38°C).
- 4 Trimmed Gears may be required depending on material and temperature.

PERFORMANCE CURVES

1 cP Fluid (Water)

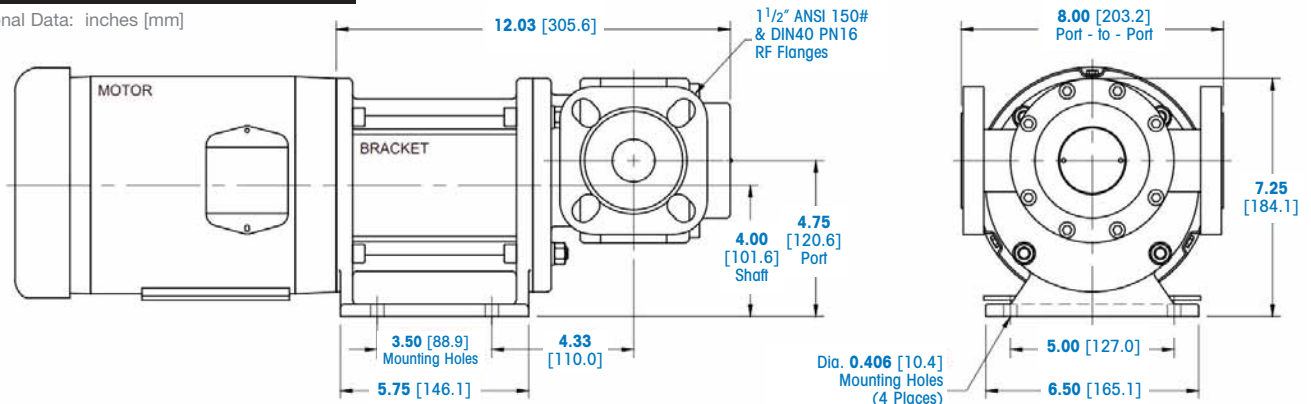


100 cP Fluid (Oil)



P6: Mag-Drive, Close-Coupled

Dimensional Data: inches [mm]



POLYMER-LINED STAINLESS STEEL GEAR PUMP

MODEL **P7**



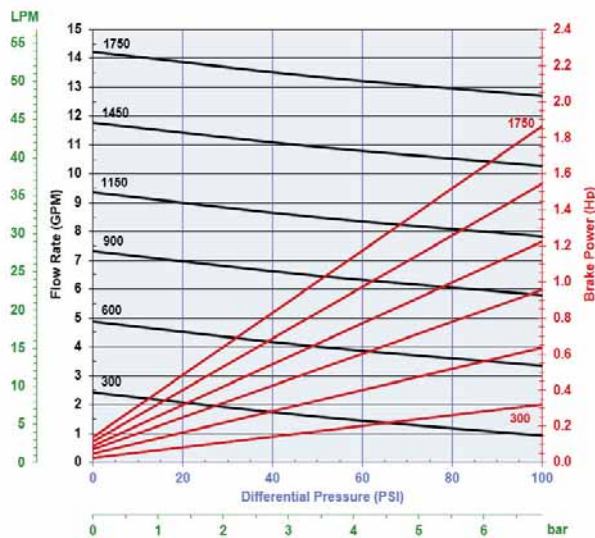
MAG-DRIVE, CLOSE-COUPLED

Port Size & Type ¹	ANSI	1 1/2" 150# RF Flanges
	DIN	40 mm PN16 RF Flanges
Max Speed	1750 RPM	
Max Flow Rate ²	14.2 GPM (53.8 LPM)	
Max Differential Pressure	100 PSI (6.9 bar)	
Max Allowable Pressure ³	275 PSIG (19 barg)	
Max Temperature ⁴	200°F (93°C)	
Min Temperature	32°F (0°C)	
NPSHR @ Max Speed	4 ft (a) [1.2 m (a)]	
Suction Lift (Dry)	3.5 ft (1.1 m)	
Gear Type	Spur, External	
Bearing Type	Sleeve /Journal	
Motor Frame Sizes	NEMA	56C thru 184TC
	IEC	71 thru 112 - B5 Flange
Weight, less motor (approx.)	63 lbs (29 kg)	

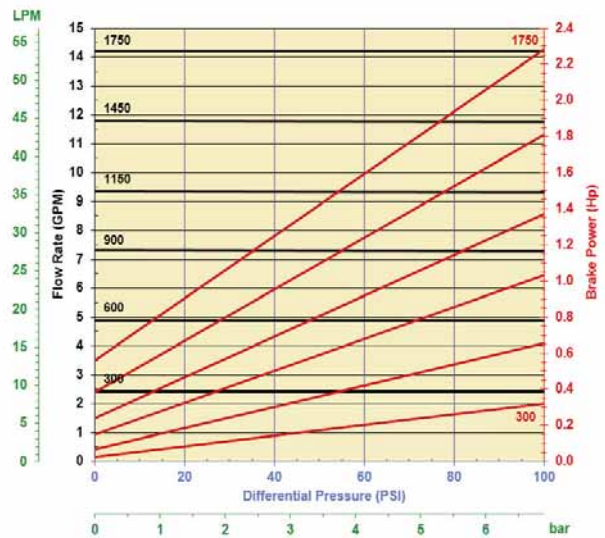
- 1 Pump has Universal ANSI/DIN Raised Face (RF) Flanges.
- 2 Typical test value at Maximum Speed and zero Differential Pressure.
- 3 Based on Pressure Rating of Flanges up to 100°F (38°C).
- 4 Trimmed Gears may be required depending on material and temperature.

PERFORMANCE CURVES

1 cP Fluid (Water)

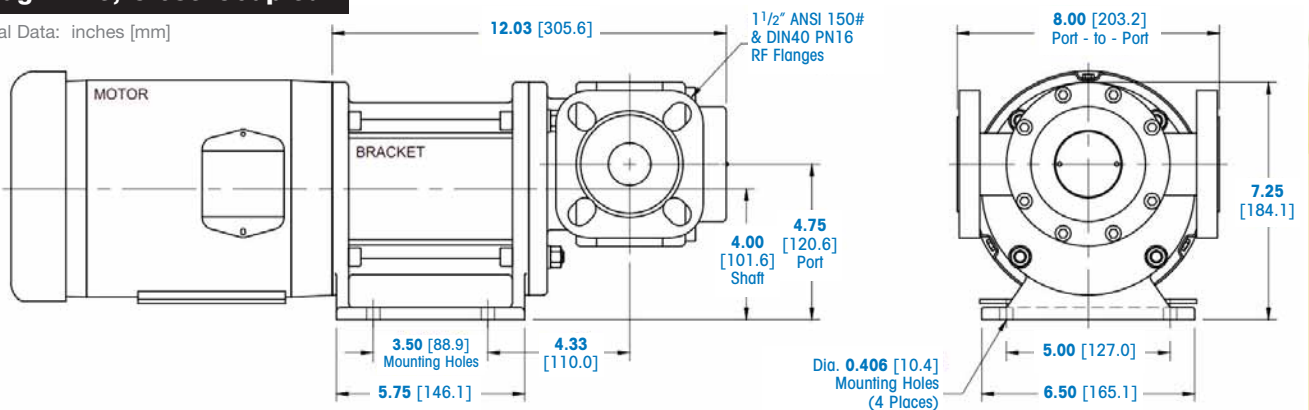


100 cP Fluid (Oil)



P7: Mag-Drive, Close-Coupled

Dimensional Data: inches [mm]



POLYMER-LINED STAINLESS STEEL GEAR PUMP

MODEL **P8**



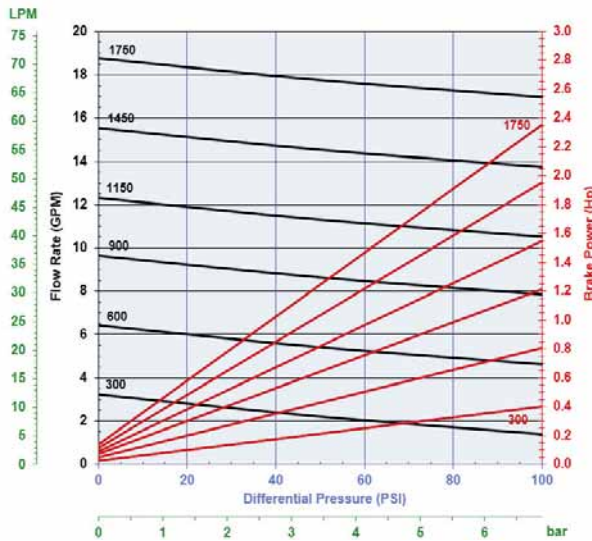
MAG-DRIVE, CLOSE-COUPLED

Port Size & Type ¹	ANSI	1 1/2" 150# RF Flanges
	DIN	40 mm PN16 RF Flanges
Max Speed		1750 RPM
Max Flow Rate ²		18.8 GPM (71.0 LPM)
Max Differential Pressure		100 PSI (6.9 bar)
Max Allowable Pressure ³		275 PSIG (19 barg)
Max Temperature ⁴		200°F (93°C)
Min Temperature		32°F (0°C)
NPSHR @ Max Speed		3 ft (a) [0.9 m (a)]
Suction Lift (Dry)		5 ft (1.5 m)
Gear Type		Spur, External
Bearing Type		Sleeve / Journal
Motor Frame Sizes	NEMA	56C thru 184TC
	IEC	71 thru 112 - B5 Flange
Weight, less motor (approx.)		70 lbs (32 kg)

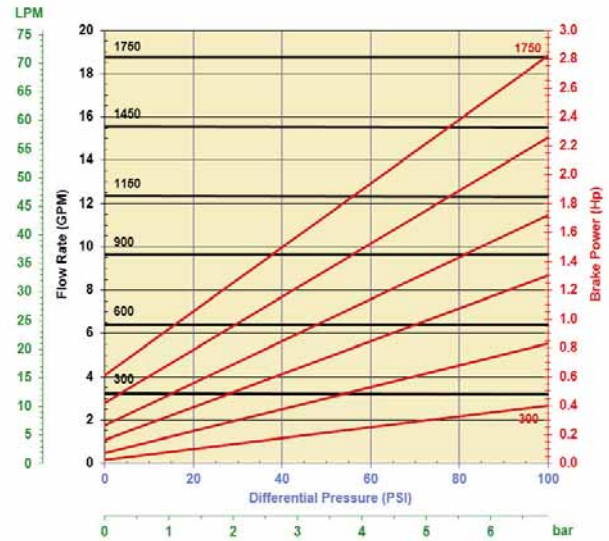
- 1 Pump has Universal ANSI/DIN Raised Face (RF) Flanges.
- 2 Typical test value at Maximum Speed and zero Differential Pressure.
- 3 Based on Pressure Rating of Flanges up to 100°F (38°C).
- 4 Trimmed Gears may be required depending on material and temperature.

PERFORMANCE CURVES

1 cP Fluid (Water)

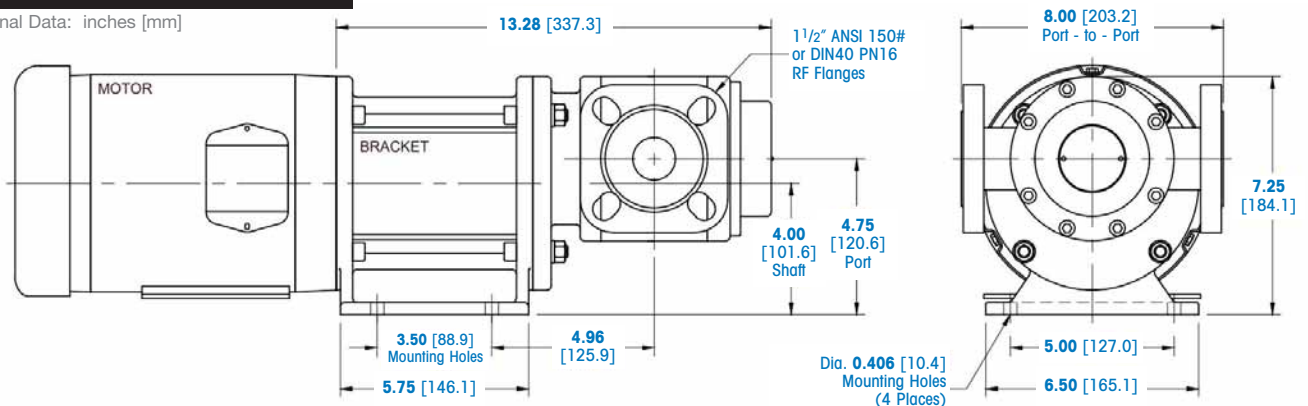


100 cP Fluid (Oil)



P8: Mag-Drive, Close-Coupled

Dimensional Data: inches [mm]



POLYMER-LINED STAINLESS STEEL GEAR PUMP

MODEL **P9**



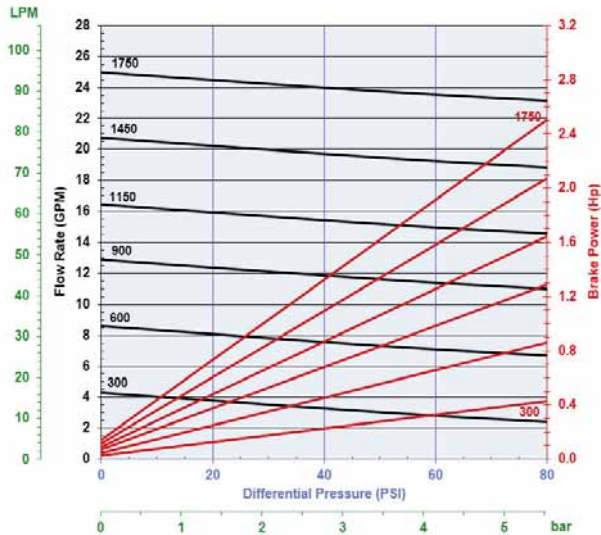
MAG-DRIVE, CLOSE-COUPLED

Port Size & Type ¹	ANSI	1 1/2" 150# RF Flanges
	DIN	40 mm PN16 RF Flanges
Max Speed		1750 RPM
Max Flow Rate ²		25.0 GPM (94.6 LPM)
Max Differential Pressure		80 PSI (5.5 bar)
Max Allowable Pressure ³		275 PSIG (19 barg)
Max Temperature ⁴		200°F (93°C)
Min Temperature		32°F (0°C)
NPSHR @ Max Speed		3 ft (a) [0.9 m (a)]
Suction Lift (Dry)		6 ft (1.8 m)
Gear Type		Spur, External
Bearing Type		Sleeve /Journal
Motor Frame Sizes	NEMA	56C thru 184TC
	IEC	71 thru 112 - B5 Flange
Weight, less motor (approx.)		70 lbs (32 kg)

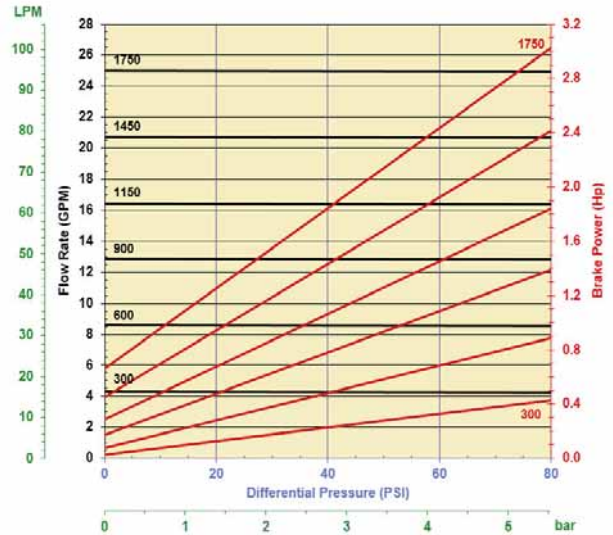
- 1 Pump has Universal ANSI/DIN Raised Face (RF) Flanges.
- 2 Typical test value at Maximum Speed and zero Differential Pressure.
- 3 Based on Pressure Rating of Flanges up to 100°F (38°C).
- 4 Trimmed Gears may be required depending on material and temperature.

PERFORMANCE CURVES

1 cP Fluid (Water)

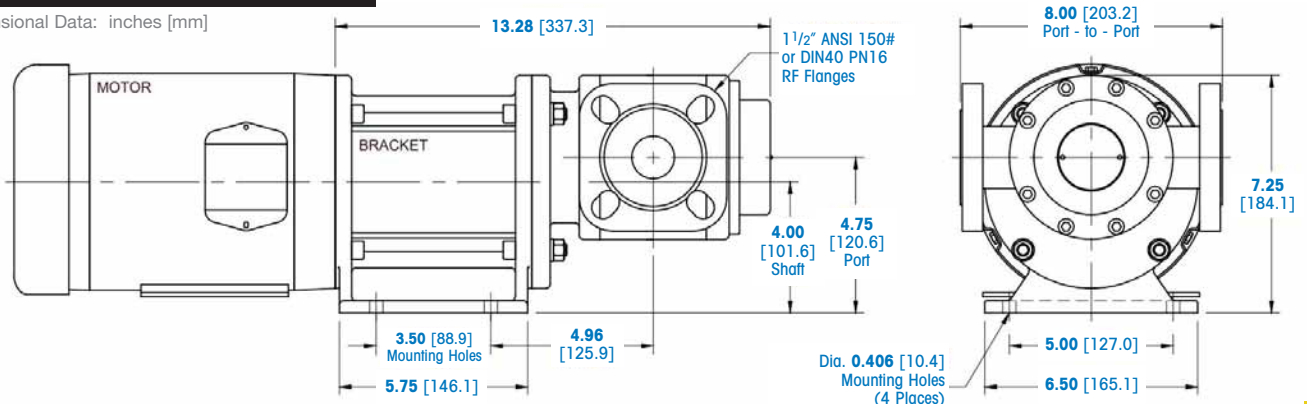


100 cP Fluid (Oil)



P9: Mag-Drive, Close-Coupled

Dimensional Data: inches [mm]



Typical Chemical Applications for Poly-Guard® Series Pumps

App. #	Chemical	Formula	Typical Pump Model Code	Internal Materials			
				Gears & Keys	Wear Plates & Bearings	Shafts	O-Rings
1	Aluminum Chloride	AlCl ₃ (aq.)	PXUPPEEY10BVZ	PEEK	Carbon	SiC	Viton
2	Aluminum Potassium Sulfate	AlK(SO ₄) ₂ (aq.)	PXUPPEEY10BVZ	PEEK	Carbon	SiC	Viton
3	Aluminum Sulfate	Al ₂ (SO ₄) ₃ (aq.)	PXUPPEEY10BVZ	PEEK	Carbon	SiC	Viton
4	Ammonium Chloride	NH ₄ Cl (aq.)	PXUPPEEY10BVZ	PEEK	Carbon	SiC	Viton
5	Ammonium Hydroxide	NH ₄ OH (aq.)	PXUPPEEY10BEZ	PEEK	Carbon	SiC	EPDM
6	Ammonium Nitrate	NH ₄ NO ₃ (aq.)	PXUPPEEY10BVZ	PEEK	Carbon	SiC	Viton
7	Ammonium Sulfate	(NH ₄) ₂ SO ₄ (aq.)	PXUPPEEY10BEZ	PEEK	Carbon	SiC	EPDM
8	Aqua Regia	Conc. HCl/HNO ₃ (3:1)	PXUKKBBY10BVZ	Kynar	SiC	SiC	Viton
9	Barium Hydroxide	Ba(OH) ₂ (aq.)	PXUPPEEY10BVZ	PEEK	Carbon	SiC	Viton
10	Boric Acid	H ₃ BO ₃ (aq.)	PXUPPEEY10BVZ	PEEK	Carbon	SiC	Viton
11	Brine (sodium chloride)	NaCl (aq.)	PXUPPEEY10BVZ	PEEK	Carbon	SiC	Viton
12	Bromine, anhydrous or wet	Br ₂	PXUKKBBY10BVZ	Kynar	SiC	SiC	Viton
13	Calcium Chloride	CaCl ₂ (aq.)	PXUPPEEY10BVZ	PEEK	Carbon	SiC	Viton
14	Calcium Hydroxide	Ca(OH) ₂ (aq.)	PXUPPBBY10BVZ	PEEK	SiC	SiC	Viton
15	Calcium Hypochlorite	Ca(ClO) ₂ (aq.)	PXUPPEEY10BVZ	PEEK	Carbon	SiC	Viton
16	Carbonic Acid	H ₂ CO ₃ (aq.)	PXUKKBBY10BVZ	Kynar	SiC	SiC	Viton
17	Chromic Acid	H ₂ CrO ₄ (aq.)	PXUPPBBY10BVZ	PEEK	SiC	SiC	Viton
18	Citric Acid	C ₃ H ₄ OH(COOH) ₃ (aq.)	PXUPPEEY10BVZ	PEEK	Carbon	SiC	Viton
19	Copper Sulfate	CuSO ₄ (aq.)	PXUPPEEY10BVZ	PEEK	Carbon	SiC	Viton
20	Ethylene Glycol	C ₂ H ₄ (OH) ₂ (aq. or anhyd.)	PXUPPEEY10BVZ	PEEK	Carbon	SiC	Viton
21	Ferric Chloride	FeCl ₃ (aq.)	PXUKKBBY10BVZ	Kynar	SiC	SiC	Viton
22	Ferric Sulfate	Fe ₂ (SO ₄) ₃ (aq.)	PXUPPEEY10BVZ	PEEK	Carbon	SiC	Viton
23	Fluorinert® FC-72	C ₆ F ₁₄ (main component)	PXUPPBBY10BVZ	PEEK	SiC	SiC	Viton
24	Fluosilicic Acid	H ₂ SiF ₆ (aq.)	PXUKKEEY10BKZ	Kynar	Carbon	SiC	FFKM
25	Hydrobromic Acid	HBr (aq.)	PXUKKEEY10BVZ	Kynar	Carbon	SiC	Viton
26	Hydrochloric Acid	HCl (aq.)	PXUPPEEY10BVZ	PEEK	Carbon	SiC	Viton
27	Hydrofluoric Acid	HF (aq.)	PXUKKEEY10BKZ	Kynar	Carbon	SiC	FFKM
28	Hydrogen Peroxide	H ₂ O ₂ (aq.)	PXUKKBBY10BVZ	Kynar	SiC	SiC	Viton
29	Lactic Acid	C ₃ H ₆ O ₃ (aq. or anhyd.)	PXUPPEEY10BVZ	PEEK	Carbon	SiC	Viton
30	Maleic Acid	C ₄ H ₄ O ₄ (aq.)	PXUPPEEY10BVZ	PEEK	Carbon	SiC	Viton

X = 1 thru 9 (Model Number & Capacity)
Y = 0 thru 4 (P1-P4 Motor Frame Size)
Y = 0 thru 5, 8 (P5-P9 Motor Frame Size)
Z = U (P1-P4 Magnetic Coupling Size)
Z = B (P5-P9 Magnetic Coupling Size)

Typical Chemical Applications for Poly-Guard[®] Series Pumps (continued)

App. #	Chemical	Formula	Typical Pump Model Code	Internal Materials			
				Gears & Keys	Wear Plates & Bearings	Shafts	O-Rings
31	Nitric Acid	HNO ₃ (aq.)	PXUKKEEY10BKZ	Kynar	Carbon	SiC	FFKM
32	Nitrous Acid	HNO ₂ (aq.)	PXUPPEEY10BEZ	PEEK	Carbon	SiC	EPDM
33	Oleic Acid	C ₁₈ H ₃₄ O ₂	PXUPPEEY10BKZ	PEEK	Carbon	SiC	FFKM
34	Oxalic Acid	C ₂ H ₂ O ₄ (aq.)	PXUPPEEY10BVZ	PEEK	Carbon	SiC	Viton
35	Peracetic Acid	CH ₃ CO ₃ H (aq.)	PXUKKBBY10BEZ	Kynar	SiC	SiC	EPDM
36	Perchloric Acid	HClO ₄ (aq.)	PXUKKBBY10BVZ	Kynar	SiC	SiC	Viton
37	Phosphoric Acid	H ₃ PO ₄ (aq.)	PXUPPEEY10BVZ	PEEK	Carbon	SiC	Viton
38	Phthalic Acid	C ₆ H ₄ (COOH) ₂ (aq.)	PXUPPEEY10BEZ	PEEK	Carbon	SiC	EPDM
39	Potassium Hydroxide	KOH (aq.)	PXUPBBY10BEZ	PEEK	SiC	SiC	EPDM
40	Potassium Nitrate	KNO ₃ (aq.)	PXUPPEEY10BVZ	PEEK	Carbon	SiC	Viton
41	Potassium Permanganate	KMnO ₄ (aq.)	PXUPPEEY10BEZ	PEEK	Carbon	SiC	EPDM
42	Propylene Glycol	C ₃ H ₆ (OH) ₂ (aq. or anhyd.)	PXUPPEEY10BEZ	PEEK	Carbon	SiC	EPDM
43	Silver Nitrate	AgNO ₃ (aq.)	PXUKKBBY10BVZ	Kynar	SiC	SiC	Viton
44	Sodium Bicarbonate	NaHCO ₃ (aq.)	PXUPPEEY10BVZ	PEEK	Carbon	SiC	Viton
45	Sodium Bisulfite	NaHSO ₃ (aq.)	PXUPPEEY10BVZ	PEEK	Carbon	SiC	Viton
46	Sodium Chlorate	NaClO ₃ (aq.)	PXUPPEEY10BEZ	PEEK	Carbon	SiC	EPDM
47	Sodium Chlorite	NaClO ₂ (aq.)	PXUKKBBY10BEZ	Kynar	SiC	SiC	EPDM
48	Sodium Cyanide	NaCN (aq.)	PXUPPEEY10BVZ	PEEK	Carbon	SiC	Viton
49	Sodium Hydroxide	NaOH (aq.)	PXUPPEEY10BEZ	PEEK	Carbon	SiC	EPDM
50	Sodium Hypochlorite	NaClO (aq.)	PXUKKBBY10BVZ	Kynar	SiC	SiC	Viton
51	Sodium Peroxide	Na ₂ O ₂ (aq.)	PXUPPEEY10BVZ	PEEK	Carbon	SiC	Viton
52	Sodium Pyrophosphate	Na ₄ P ₂ O ₇ (aq.)	PXUPPEEY10BVZ	PEEK	Carbon	SiC	Viton
53	Sodium Sulfide	Na ₂ S (aq.)	PXUPPEEY10BVZ	PEEK	Carbon	SiC	Viton
54	Sulfuric Acid	H ₂ SO ₄ (aq. or anhyd.)	PXUKKEEY10BVZ	Kynar	Carbon	SiC	Viton
55	Sulfurous Acid	H ₂ SO ₃ (aq.)	PXUPPEEY10BVZ	PEEK	Carbon	SiC	Viton
56	Toluenesulfonic Acid	C ₆ H ₄ CH ₃ SO ₃ H (aq.)	PXUKKEEY10BEZ	Kynar	Carbon	SiC	EPDM
57	Urea	CO(NH ₂) ₂ (aq.)	PXUPPEEY10BVZ	PEEK	Carbon	SiC	Viton
58	Water, deionized	H ₂ O	PXUKKBBY10BVZ	Kynar	SiC	SiC	Viton

X = 1 thru 9 (Model Number & Capacity)
Y = 0 thru 4 (P1-P4 Motor Frame Size)
Y = 0 thru 5, 8 (P5-P9 Motor Frame Size)
Z = U (P1-P4 Magnetic Coupling Size)
Z = B (P5-P9 Magnetic Coupling Size)

PUMP MODEL CODING

PolyGuard™ SERIES POLYMER-LINED STAINLESS STEEL GEAR PUMP

Selection & Availability

EXAMPLE:

P3UPPBB110BVU, designates a Model P3 Pump with the following mat'l selection.

P3	U	P	P	B	B	1	1	0	B	V	U
1	2	3	4	5	6	7	8	9	10	11	12

Pos.	Description	Selection
1	Pump Model	P3 P3 Pump
2	Body Mat'l/Ports	U SS/PFA & ANSI/DIN Flg.
3	Drive Gear Mat'l	P PEEK
4	Idler Gear Mat'l	P PEEK
5	Wear Plate Mat'l	B Silicon Carbide
6	Bearing Mat'l	B Silicon Carbide
7	Motor Frame Size	1 0.875" (143/145TC)
8	Containment Can	1 SS/PTFE-Lined
9	Bearing Flush	0 None
10	Shafts	B Silicon Carbide
11	O-Rings	V Viton
12	Mag Coupling	U MCU

Liquiflo's Model Code describes both the pump's size and materials selected. This model code is required for the future identification of your pump when reordering either a pump or replacement parts.

- Available
- ⊗ Not Available
- CF Contact Factory

Flanges available: ANSI & DIN

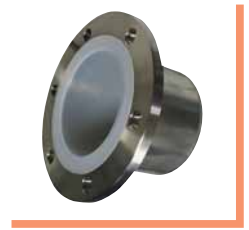
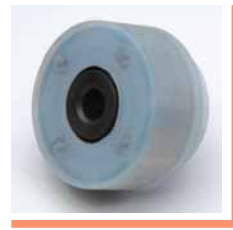
CONNECTION SIZES

	P1 - P4	P5 - P9
ANSI 150#	3/4	1 1/2
DIN PN16	20	40

Sample Model No. **P3 U P P B B 1 1 0 B V U**

Position No. 1 2 3 4 5 6 7 8 9 10 11 12

Position Model	1 Pump Model	P1	P2	P3	P4	P5	P6	P7	P8	P9
Position Body Material & Port Type	2 U = SS/PFA-Lined & Universal ANSI/DIN Flanges	■	■	■	■	■	■	■	■	■
Position Drive Gear	3 P = PEEK K = Kynar	■	■	■	■	■	■	■	■	■
Position Idler Gear	4 P = PEEK K = Kynar	■	■	■	■	■	■	■	■	■
Position Wear Plates	5 B = Silicon Carbide E = Carbon 60	■	■	■	■	■	■	■	■	■
Position Bearings	6 B = Silicon Carbide E = Carbon 60	■	■	■	■	■	■	■	■	■
Position Motor Frame Size	7 0 = 0.625" (NEMA 56C) 1 = 0.875" (NEMA 143/145TC) 2 = 14 mm (IEC 71 - B5) 3 = 19 mm (IEC 80 - B5) 4 = 24 mm (IEC 90 - B5) 5 = 1.125" (NEMA 182/184TC) 8 = 28 mm (IEC 100/112 - B5)	■	■	■	■	■	■	■	■	■
Position Containment Can	8 1 = SS/PTFE-Lined	■	■	■	■	■	■	■	■	■
Position Bearing Flush	9 0 = Standard Housings (without Bearing Flush)	■	■	■	■	■	■	■	■	■
Position Shafts	10 B = Silicon Carbide	■	■	■	■	■	■	■	■	■
Position O-Rings	11 E = EPDM V = Viton K = Kalrez (FFKM)	■	■	■	■	■	■	■	■	■
Position Magnetic Coupling	12 U = (MCU) 75 in-lbs B = (MCB) 125 in-lbs	■	■	■	■	⊗	⊗	⊗	⊗	⊗
Suffix Trim Options	- 8 = Temperature Trim - 9D = Viscosity Trim (double clearance) - 9T = Viscosity Trim (triple clearance)	■	■	■	■	■	■	■	■	■



Copyright © 2024 Liquiflo
All rights reserved. 08-1 PFA

tel. 908.518.0777
fax. 908.518.1847
www.liquiflo.com

443 North Avenue
Garwood
New Jersey
07027
USA

Since 1972,
Liquiflo pumps have
handled thousands
of difficult chemicals