

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-P7



GENERAL SPECIFICATIONS

SPECIFICATION		Units	P1	P2	P3	P4	P5	P6	P7
Port Size & Type*	ANSI 150#	in	3/4	3/4	3/4	3/4	1 1/2	1 1/2	1 1/2
	DIN PN16	mm	20	20	20	20	40	40	40
Theoretical Displacement ¹	gal/rev L/rev		.000828 .00313	.00138 .00522	.00193 .00731	.00289 .01094	.00491 .01858	.00675 .02555	.00859 .03251
Max Speed	RPM		1750	1750	1750	1750	1750	1750	1750
Max Flow Rate ¹	GPM		1.4	2.4	3.4	5.0	8.6	11.8	15.0
	LPM		5.5	9.1	12.8	19.1	32.5	44.7	56.9
Max Differential Pressure	PSI		100	100	100	100	100	100	100
	bar		7	7	7	7	7	7	7
Max Allowable Pressure ²	PSIG		275	275	275	275	275	275	275
	barg		19	19	19	19	19	19	19
Max Temperature	°F		200	200	200	200	200	200	200
	°C		93	93	93	93	93	93	93
NPSHR @ Max Speed	ft		2	2	2	3	5.2	5.2	4
	m		0.6	0.6	0.6	0.9	1.6	1.6	1.2
Suction Lift (Dry)	ft		1.5	2	4	6	6	7	7
	m		0.45	0.6	1.2	1.8	1.8	2.1	2.1
Weight, less motor (approx.)	lbs		42	42	42	42	63	63	63
	kg		19	19	19	19	29	29	29

* Raised Face (RF) Flanges

¹ Based on Maximum Speed and zero Differential Pressure.

² Based on pressure rating of Flanges at ambient temperature.

MATERIALS AVAILABLE

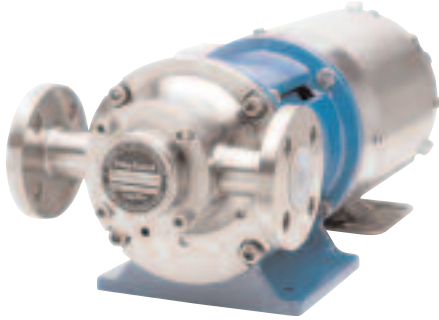
BODY	GEARS	WEAR PLATES	BEARINGS	SHAFTS
SS-PFA Plastic-Lined	PEEK Kynar Ryton Teflon	Silicon Carbide ¹ Carbon-60 Teflon	Silicon Carbide ¹ Carbon-60	Silicon Carbide ¹ Ceramic Zirconia ²

¹ Self-sintered SiC

² Transformation Toughened Zirconia (TTZ)

POLYMER-LINED STAINLESS STEEL GEAR PUMP

MODEL
P1



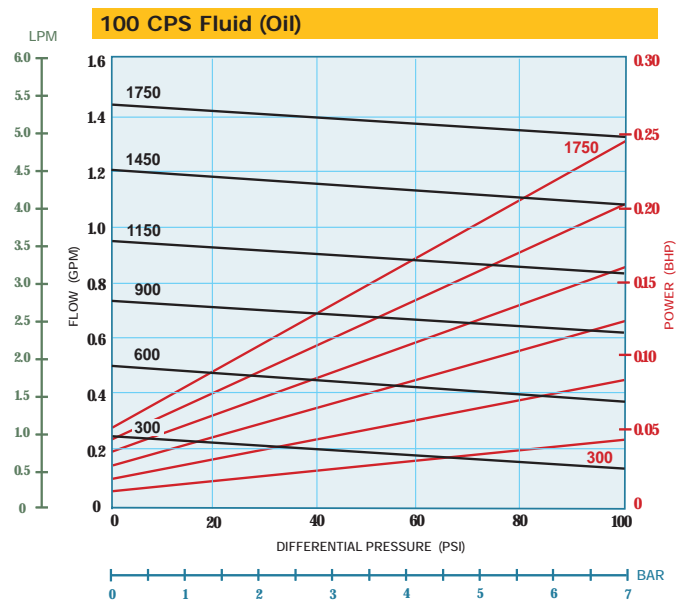
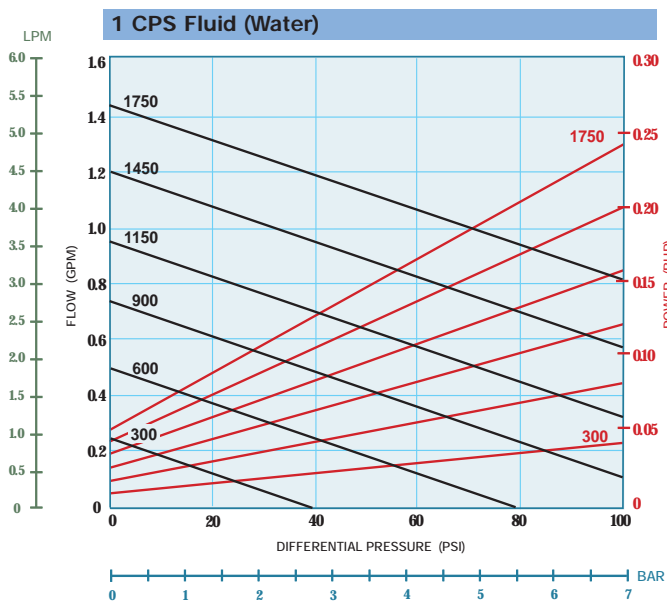
MAG-DRIVE, CLOSE-COUPLED

Port Size & Type	ANSI	3/4" 150# RF Flanges
	DIN	20 mm PN16 RF Flanges
Theoretical Displacement ¹		.000828 gal/rev (.00313 L/rev)
Max Speed		1750 RPM
Max Flow Rate ¹		1.4 GPM (5.5 LPM)
Max Differential Pressure		100 PSI (7 bar)
Max Allowable Pressure ²		275 PSIG (19 barg)
Max Temperature		200°F (93°C)
NPSHR @ Max Speed		2 ft (0.6 m)
Suction Lift (Dry)		1.5 ft (0.45 m)
Gear Type		Spur, External
Bearing Type		Sleeve /Journal
Motor Frame Sizes	NEMA	56C, 143TC, 145TC
	IEC	71, 80, 90 – B5 Flange
Weight, less motor (approx.)		42 lbs (19 kg)

¹ Based on Maximum Speed and zero Differential Pressure.

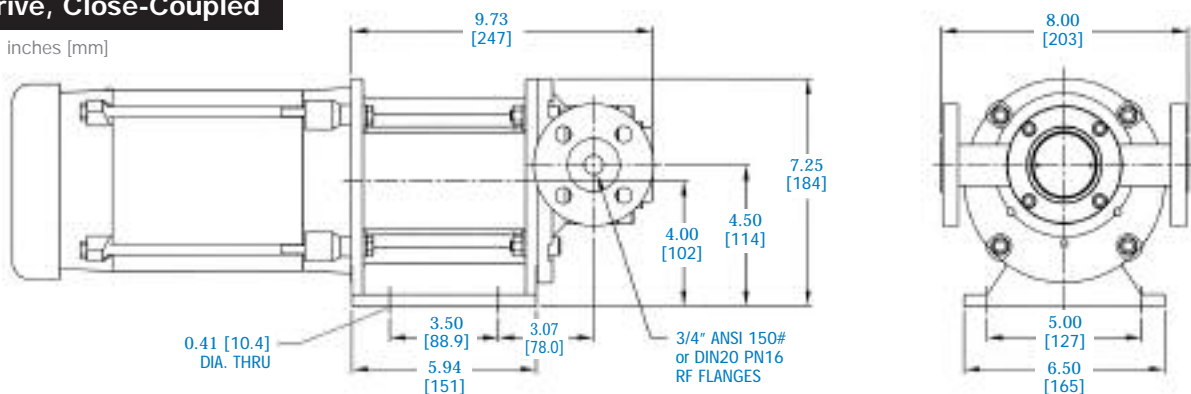
² Based on pressure rating of Flanges at ambient temperature.

PERFORMANCE CURVES



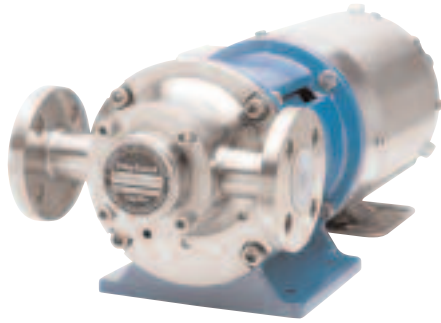
P1: Mag-Drive, Close-Coupled

Dimensional Data: inches [mm]



POLYMER-LINED STAINLESS STEEL GEAR PUMP

MODEL
P2



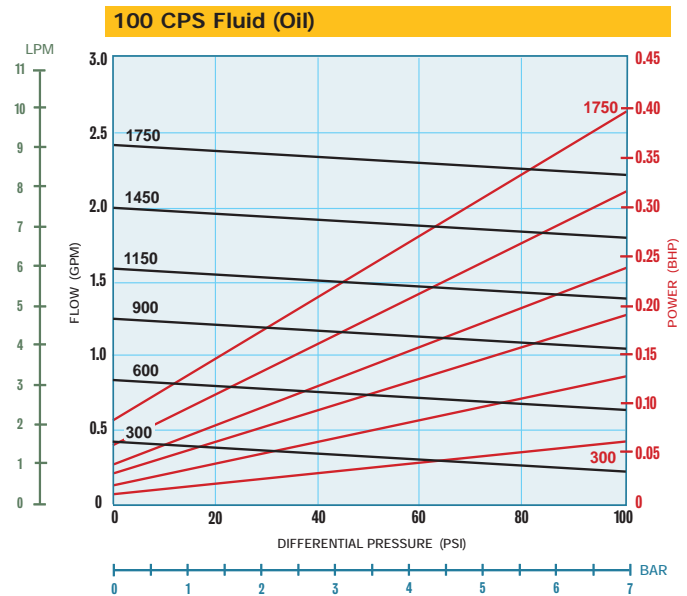
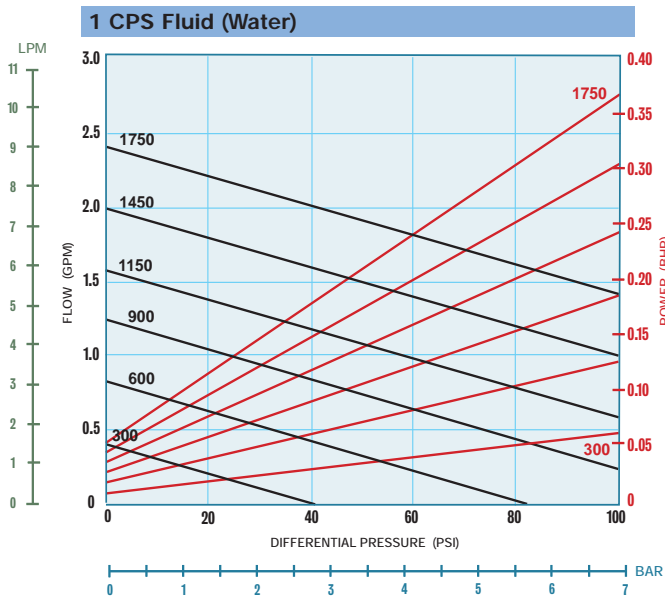
MAG-DRIVE, CLOSE-COUPLED

Port Size & Type	ANSI	3/4" 150# RF Flanges
	DIN	20 mm PN16 RF Flanges
Theoretical Displacement ¹		.00138 gal/rev (.00522 L/rev)
Max Speed		1750 RPM
Max Flow Rate ¹		2.4 GPM (9.1 LPM)
Max Differential Pressure		100 PSI (7 bar)
Max Allowable Pressure ²		275 PSIG (19 barg)
Max Temperature		200°F (93°C)
NPSHR @ Max Speed		2 ft (0.6 m)
Suction Lift (Dry)		2 ft (0.6 m)
Gear Type		Spur, External
Bearing Type		Sleeve /Journal
Motor Frame Sizes	NEMA	56C, 143TC, 145TC
	IEC	71, 80, 90 - B5 Flange
Weight, less motor (approx.)		42 lbs (19 kg)

¹ Based on Maximum Speed and zero Differential Pressure.

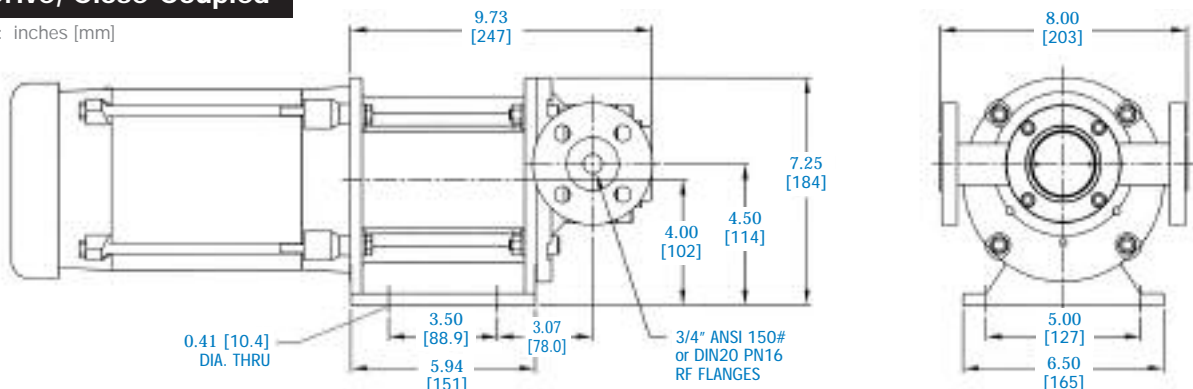
² Based on pressure rating of Flanges at ambient temperature.

PERFORMANCE CURVES

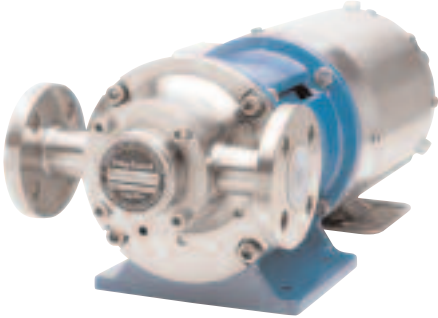


P2: Mag-Drive, Close-Coupled

Dimensional Data: inches [mm]



MODEL **P3**

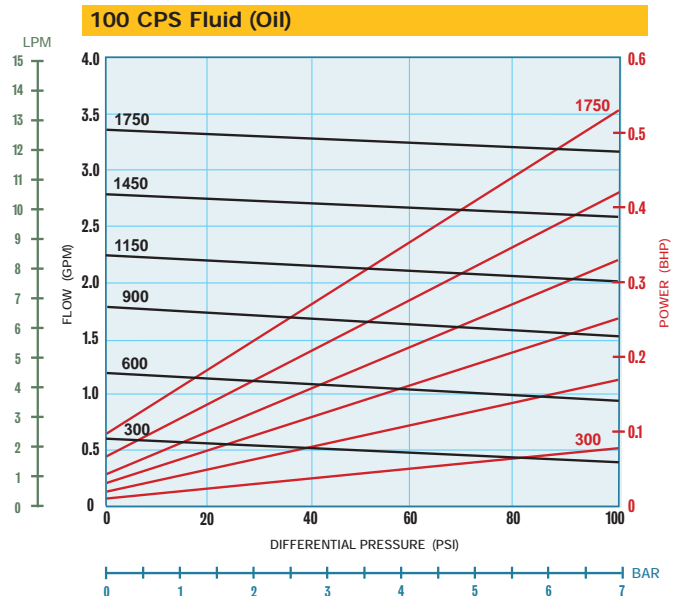
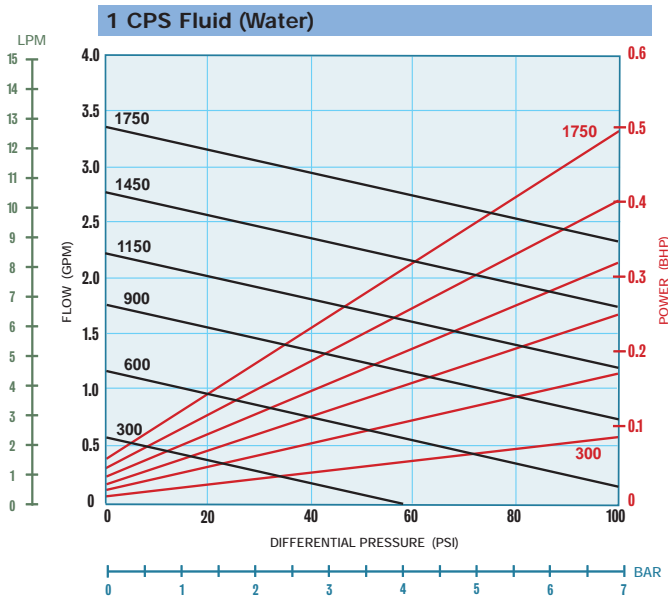


MAG-DRIVE, CLOSE-COUPLED

Port Size & Type	ANSI	3/4" 150# RF Flanges
	DIN	20 mm PN16 RF Flanges
Theoretical Displacement ¹		.00193 gal/rev (.00731 L/rev)
Max Speed		1750 RPM
Max Flow Rate ¹		3.4 GPM (12.8 LPM)
Max Differential Pressure		100 PSI (7 bar)
Max Allowable Pressure ²		275 PSIG (19 barg)
Max Temperature		200°F (93°C)
NPSHR @ Max Speed		2 ft (0.6 m)
Suction Lift (Dry)		4 ft (1.2 m)
Gear Type		Spur, External
Bearing Type		Sleeve /Journal
Motor Frame Sizes	NEMA	56C, 143TC, 145TC
	IEC	71, 80, 90 - B5 Flange
Weight, less motor (approx.)		42 lbs (19 kg)

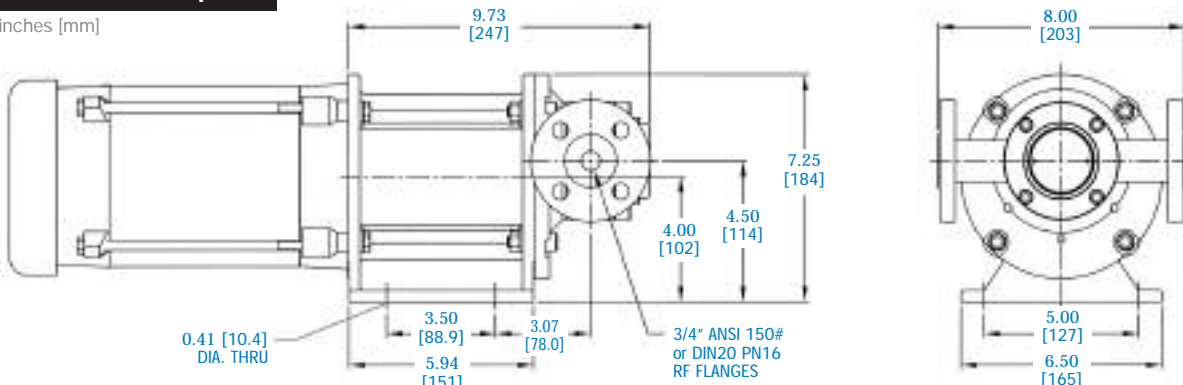
¹ Based on Maximum Speed and zero Differential Pressure.
² Based on pressure rating of Flanges at ambient temperature.

PERFORMANCE CURVES



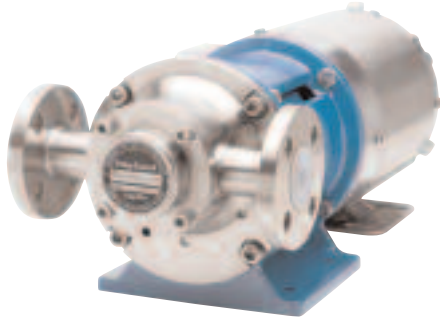
P3: Mag-Drive, Close-Coupled

Dimensional Data: inches [mm]



POLYMER-LINED STAINLESS STEEL GEAR PUMP

MODEL **P4**



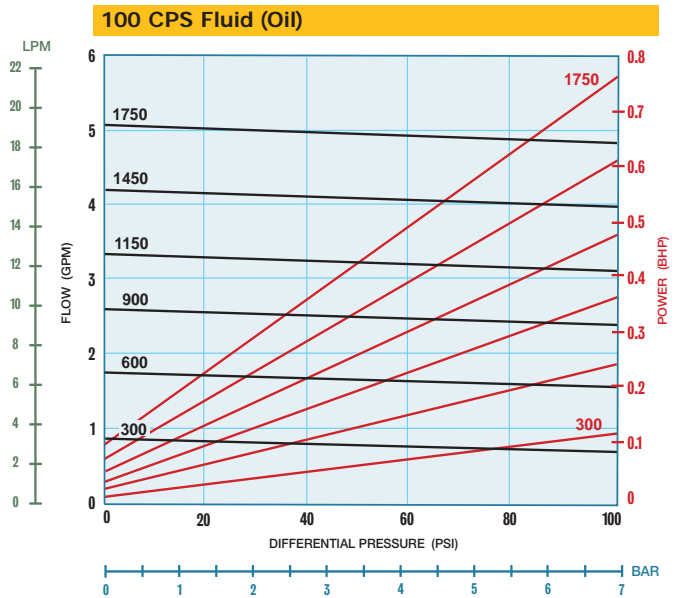
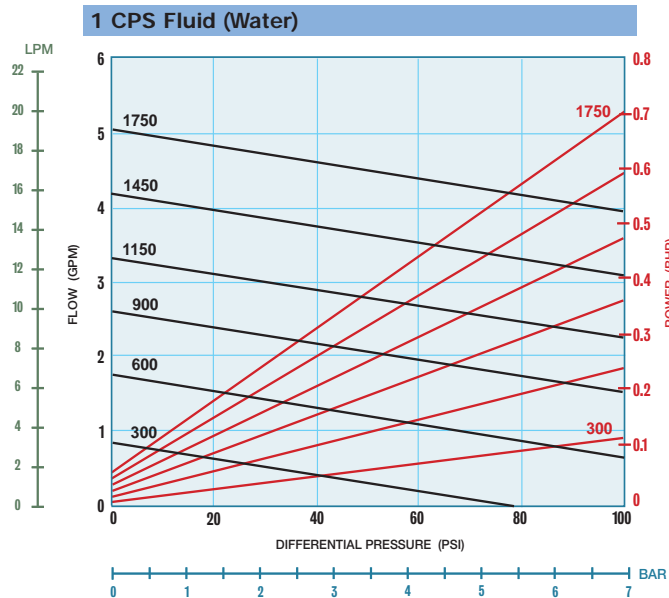
MAG-DRIVE, CLOSE-COUPLED

Port Size & Type	ANSI	3/4" 150# RF Flanges
	DIN	20 mm PN16 RF Flanges
Theoretical Displacement ¹		.00289 gal/rev (.01094 L/rev)
Max Speed		1750 RPM
Max Flow Rate ¹		5.0 GPM (19.1 LPM)
Max Differential Pressure		100 PSI (7 bar)
Max Allowable Pressure ²		275 PSIG (19 barg)
Max Temperature		200°F (93°C)
NPSHR @ Max Speed		3 ft (0.9 m)
Suction Lift (Dry)		6 ft (1.8 m)
Gear Type		Spur, External
Bearing Type		Sleeve /Journal
Motor Frame Sizes	NEMA	56C, 143TC, 145TC
	IEC	71, 80, 90 - B5 Flange
Weight, less motor (approx.)		42 lbs (19 kg)

¹ Based on Maximum Speed and zero Differential Pressure.

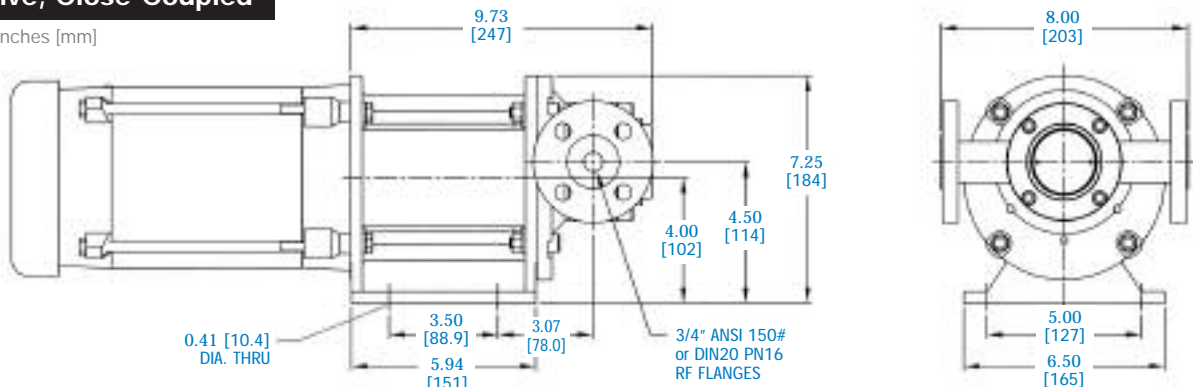
² Based on pressure rating of Flanges at ambient temperature.

PERFORMANCE CURVES



P4: Mag-Drive, Close-Coupled

Dimensional Data: inches [mm]



POLYMER-LINED STAINLESS STEEL GEAR PUMP

MODEL **P5**

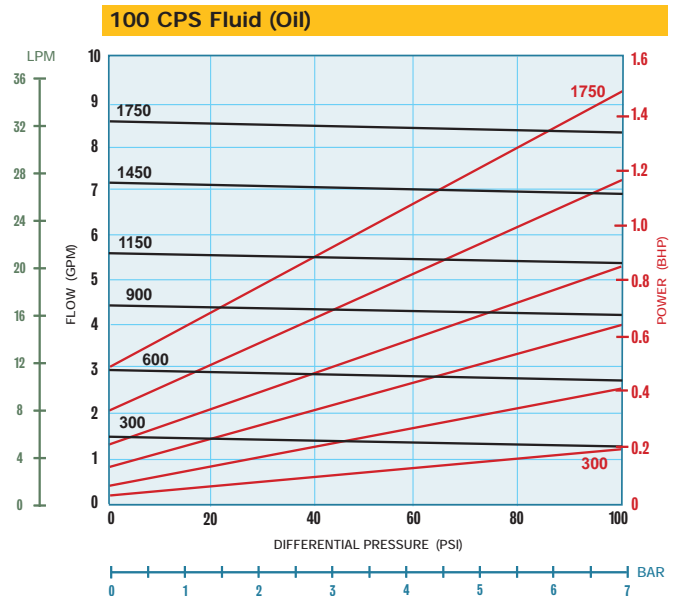
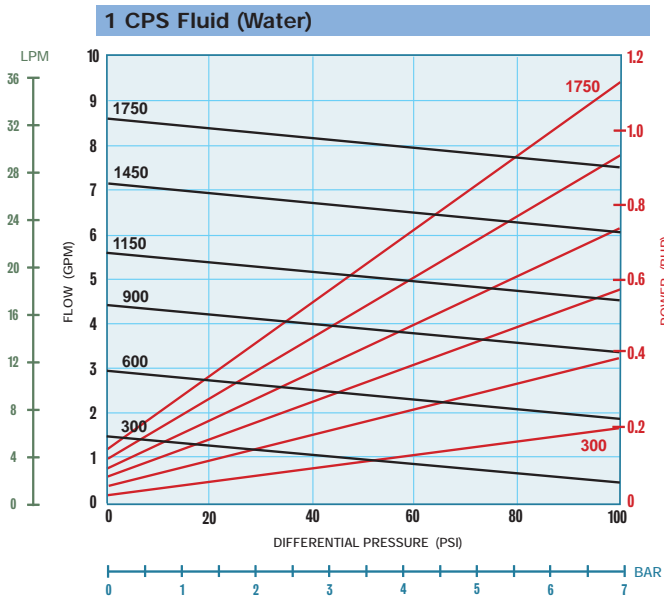


MAG-DRIVE, CLOSE-COUPLED

Port Size & Type	ANSI	1 1/2" 150# RF Flanges
	DIN	40 mm PN16 RF Flanges
Theoretical Displacement ¹		.00491 gal/rev (.01858 L/rev)
Max Speed		1750 RPM
Max Flow Rate ¹		8.6 GPM (32.5 LPM)
Max Differential Pressure		100 PSI (7 bar)
Max Allowable Pressure ²		275 PSIG (19 barg)
Max Temperature		200°F (93°C)
NPSHR @ Max Speed		5.2 ft (1.6 m)
Suction Lift (Dry)		6 ft (1.8 m)
Gear Type		Spur, External
Bearing Type		Sleeve /Journal
Motor Frame Sizes	NEMA	56C, 143TC, 145TC, 182TC, 184TC
	IEC	71, 80, 90, 100, 112 – B5 Flange
Weight, less motor (approx.)		63 lbs (29 kg)

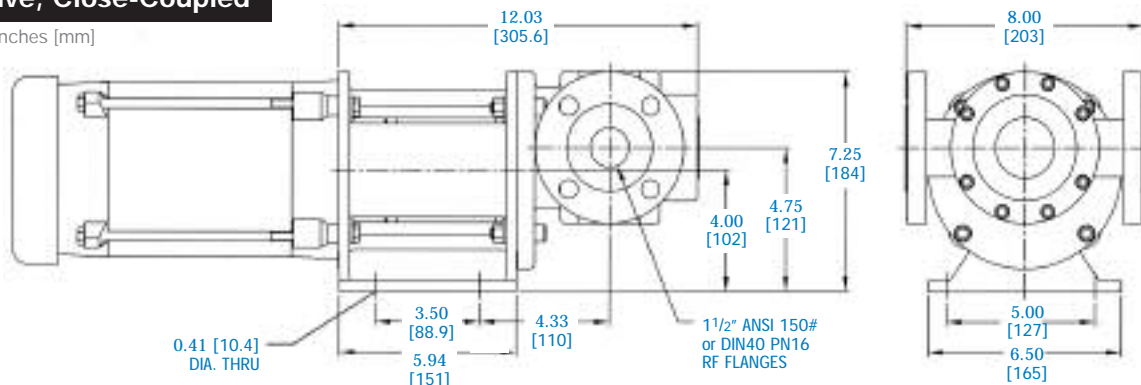
¹ Based on Maximum Speed and zero Differential Pressure.
² Based on pressure rating of Flanges at ambient temperature.

PERFORMANCE CURVES



P5: Mag-Drive, Close-Coupled

Dimensional Data: inches [mm]



POLYMER-LINED STAINLESS STEEL GEAR PUMP

MODEL **P6**

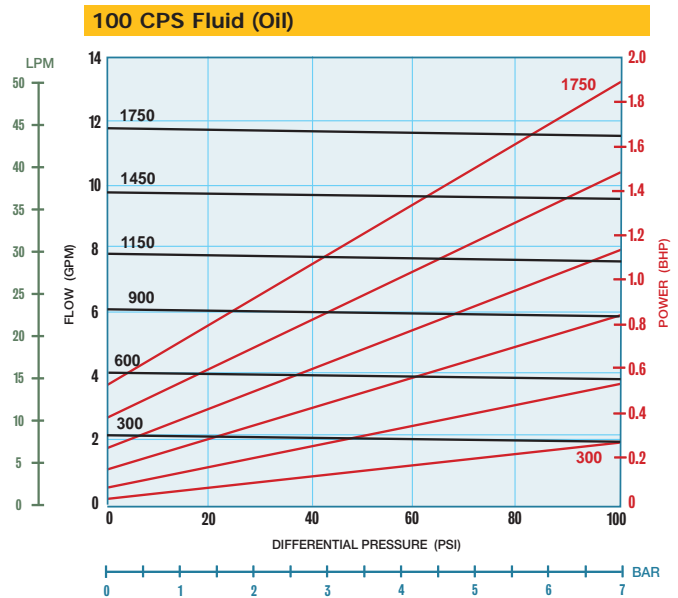
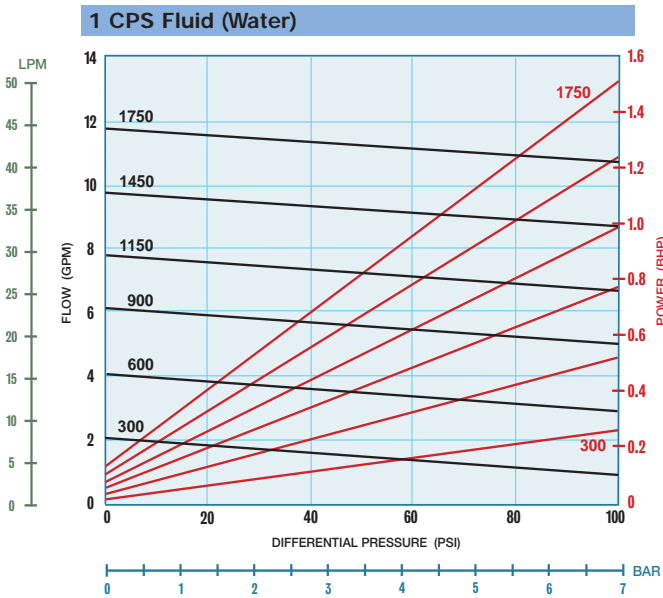


MAG-DRIVE, CLOSE-COUPLED

Port Size & Type	ANSI	1 1/2" 150# RF Flanges
	DIN	40 mm PN16 RF Flanges
Theoretical Displacement ¹		.00675 gal/rev (.02555 L/rev)
Max Speed		1750 RPM
Max Flow Rate ¹		11.8 GPM (44.7 LPM)
Max Differential Pressure		100 PSI (7 bar)
Max Allowable Pressure ²		275 PSIG (19 barg)
Max Temperature		200°F (93°C)
NPSHR @ Max Speed		5.2 ft (1.6 m)
Suction Lift (Dry)		7 ft (2.1 m)
Gear Type		Spur, External
Bearing Type		Sleeve /Journal
Motor Frame Sizes	NEMA	56C, 143TC, 145TC, 182TC, 184TC
	IEC	71, 80, 90, 100, 112 - B5 Flange
Weight, less motor (approx.)		63 lbs (29 kg)

¹ Based on Maximum Speed and zero Differential Pressure.
² Based on pressure rating of Flanges at ambient temperature.

PERFORMANCE CURVES



P6: Mag-Drive, Close-Coupled

Dimensional Data: inches [mm]

