

SPUR GEAR PRODUCT LINE: COMPOSITE MAG DRIVE PUMPS

CMD Series™

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PRODUCT DESCRIPTION

The CMD Series™ Composite Mag Drive is a line of innovative non-metallic industrial gear pumps designed for optimal performance and simplicity of operation and maintenance. With absolutely no wetted metallic parts, the CMD Series™ is an ideal fit for many highly corrosive clean liquids used in the chemical processing, chemical dosing, pulp and paper and industrial water treatment industries.



E02 Model



E05 Model



E12 Model



E25 Model



E75 Model

RELATED PRODUCTS

Stainless Steel, 8127A Series™: Catalog Section 1703

Stainless Steel, 897 Series™: Catalog Section 1743

OPERATING RANGE

SERIES	NOMINAL FLOW		MAXIMUM PRESSURE		TEMPERATURE RANGE		VISCOSITY RANGE	
	GPM	LPM	PSI	Bar	°F	°C	SSU	cSt
CMD Series™	0.4 to 20	1.5 to 75	150	10	-40 to +150	-40 to +65	to 25,000	to 5,000

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FEATURES & BENEFITS

Simplified Operation and Reduced Maintenance

- Only 16 total fabricated parts in the CMD series pump, reducing inventory requirements.
- Front pull out design allow the pump to be easily serviced in place. Unique repair kits allows quick replacement of normal wear components without removing from the system, minimizing downtime.
- Self-aligning parts and piloted fits ensure proper assembly every time.
- Compression o-ring design adjusts internal clearances for thermal expansion or axial parts wear for longer service life.
- All wetted components are completely non-metallic for corrosion resistance in harsh environments.
- Liner provides wear protection to the casing.
- Self lubricating materials and geometry in the heavy duty bearings provide large wear areas.
- Single piece non-metallic gear/shaft assemblies.

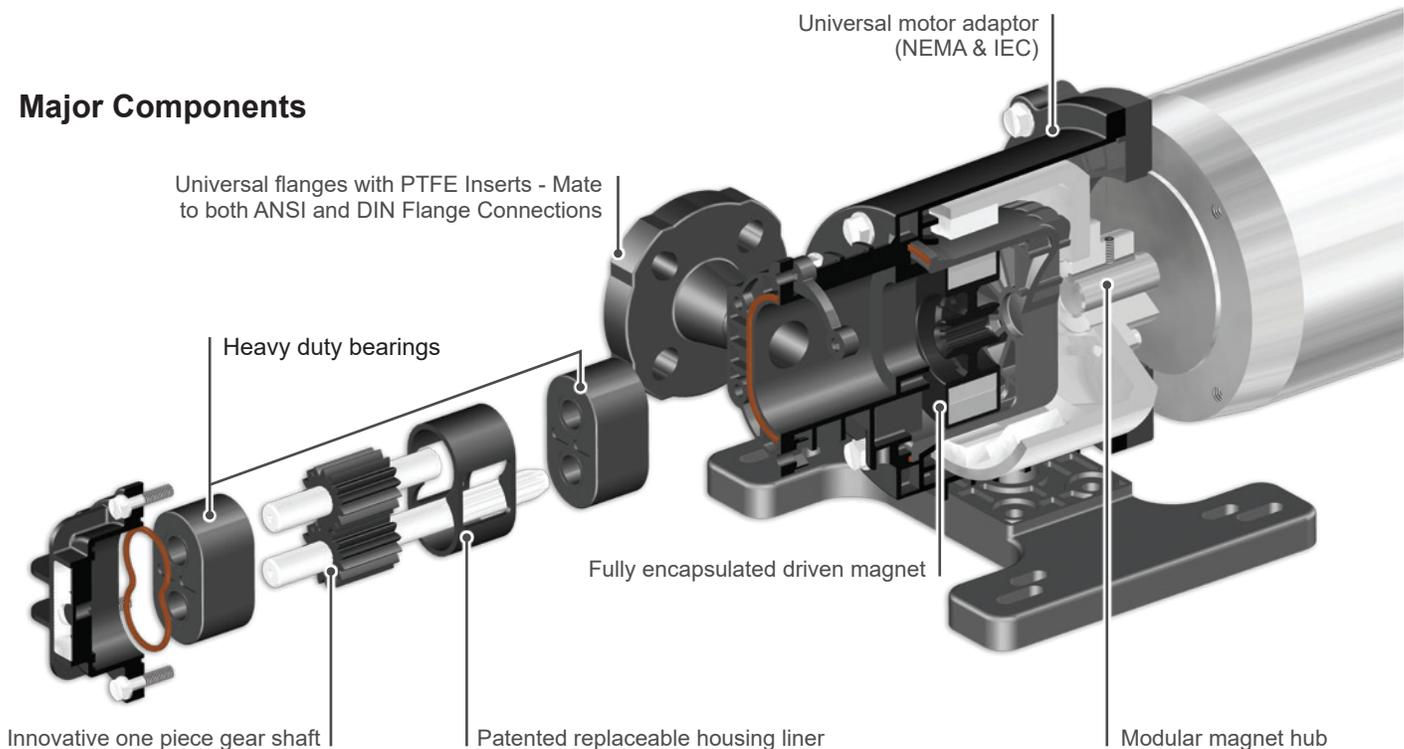
Innovative Mag Drive Design

- Magnet will self-align with no added fasteners or axial loads induced on the drive shaft.
- The **modular** drive magnet comes with interchangeable **magnet** adapter-hubs to adapt to either standard NEMA or IEC motors for each pump size, reducing inventory.
- **Non-metallic containment canister minimizes** heat rise and magnet inefficiencies due to eddy current losses common to metallic pumps.

Mounting Adaptability

- **Close-coupled motor to pump mounting** eliminates the cost and potential issues associated with pump and motor alignment.
- **Universal motor adapter** plate mates to multiple NEMA and IEC motors.
- PTFE flange inserts act as a gasket and can be reused or replaced to ensure a proper seal.
- Universal **flanges will mate with both** ANSI and DIN flange connections.
- Slotted mounting holes permit easy retrofitting in existing installations.

Major Components



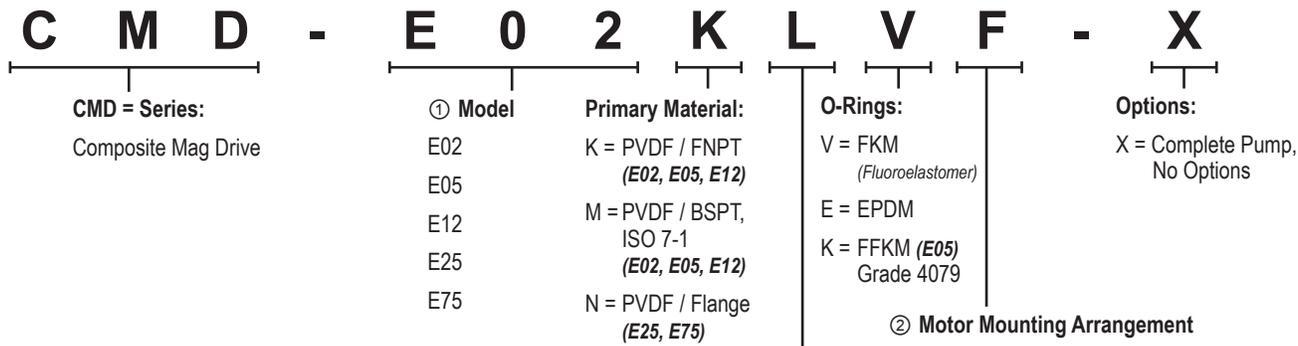
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MODEL NOMENCLATURE

Model numbers for the Viking CMD Series Mag Drive pump include the series designator, pump size, housing material and port style, bearing material, O-ring elastomers and mounting arrangement. The CMD Series™ is a non-configurable product. Feature combinations have been preset by the factory.



NOTES:

- ① U.S. Export Restriction apply to sizes E12, E25 and E75.
 - ② Motor mounting flanges are available to order. Motors are ordered separately as a line item. Customer is responsible for motor mounting. Option O 182/184C motor requires modified motor shaft and motor bolt pattern. Does not fit frames 182/184TC.
- Option Y is for bare pump with drive magnet but not motor mounting hardware (magnet hub or applicable motor adaptor). This is typically used as a spare pump until a specific motor has been identified.

Bearings:

- L = Carbon Graphite
- B = Carbon-Impregnated Silicon Carbide

② Motor Mounting Arrangement

- F = NEMA 56C (E02, E05, E12, E25)
- O = NEMA 143/5TC - 182/4C (E02, E05, E12, E25, E75)
- R = NEMA 182TC - 184TC (E75)
- W = NEMA 213TC - 215TC (E75)
- H = IEC 63 B34 (E02, E05, E12)
- K = IEC 80 B14/34 (E02, E05, E12)
- L = IEC 90 B14 (E25)
- P = IEC 100/112 B14 (E25, E75)
- Y = No Motor Mount Kit (E02, E05, E12, E25, E75)

CONSTRUCTION

Pump Construction	Casing/Head	Canister	Gears / Shaft Assembly	Bearings	Flange Inserts	O-Rings	Inner Magnet Assembly	Outer Magnet Assembly	Reinforcement Plates
Standard Construction	Carbon-filled PVDF	Carbon-filled PVDF	Carbon filled PTFE/Alumina ceramic	Carbon Graphite	PTFE w/o-ring	FKM	ETFE Encapsulated Neodymium	Nickel Plated Steel / Neodymium	Epoxy Coated Stainless Steel
Optional Materials	N/A	N/A	N/A	Graphite Impregnated Silicon Carbide	N/A	EPDM, FFKM Gr 4079 (E05 Only)	N/A	N/A	N/A

SPECIFICATIONS — UNMOUNTED PUMPS

Model Number	⑤ Ports			Nominal Pump Rating				Maximum Differential Pressure	Maximum Hydrostatic Pressure	⑥ Maximum Recommended Temperature	Approximate Shipping Weight (less motor)
	TYPE	SIZE in		GPM (LPM)	GPM (LPM)	PSIG (BAR)	PSIG (BAR)	°F. (°C.)	Pounds (KG)		
E02	NPT	ISO 7-1	1/4	0.4 (1.5)	0.34 (1.3)	150 (10)	200 (14)	150 (65)	4 (2)		
E05	NPT	ISO 7-1	3/8	1.5 (5.8)	1.3 (4.9)	150 (10)	200 (14)	150 (65)	9 (5)		
E12	NPT	ISO 7-1	3/4	3.2 (12.1)	2.6 (10.0)	150 (10)	200 (14)	150 (65)	10 (6)		
E25	ANSI Flg	DIN Flg.	1	6.5 (24.6)	5.5 (21.0)	150 (10)	200 (14)	150 (65)	26 (12)		
E75	ANSI Flg	DIN Flg.	1.5	20.0 (75.0)	16.5 (62.5)	150 (10)	200 (14)	150 (65)	44 (20)		

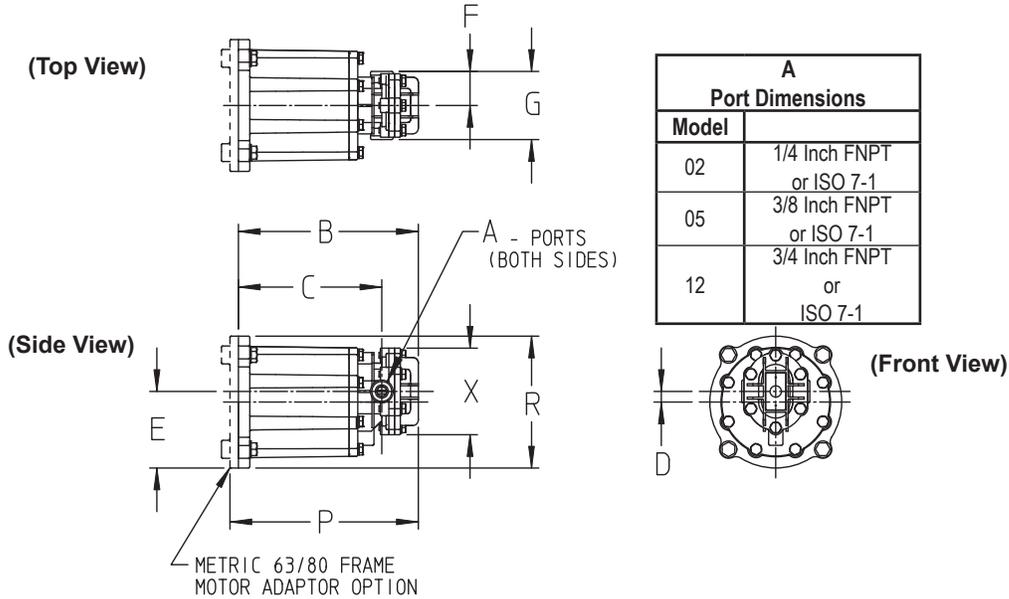
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DIMENSIONS — MODELS E02, E05, E12

These dimensions are average and not for construction purposes. Millimeter dimensions shown in parentheses.



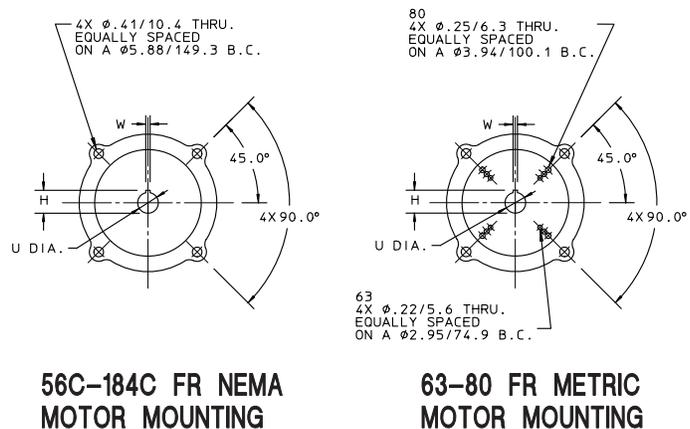
Pump Only

Model		B	C	D	E	F	G	P	R	X
E02	in	7.22	6.08	0.25	3.16	1.38	2.75	7.60	5.81	3.00
	mm	183.5	154.4	6.4	80.2	34.9	69.9	193.0	147.6	76.2
E05	in	7.92	6.31	0.47	3.37	1.50	3.50*	8.90	5.81	3.81
	mm	201.2	160.3	11.9	85.6	38.1	76.2	210.7	147.6	96.8
E12	in	8.54	6.63	0.47	3.37	1.88	3.75	8.93	5.81	3.81
	mm	217.0	168.3	11.9	85.6	47.6	95.3	226.6	147.6	96.8

* Port-to-port dimension was 3.00" prior to 2013.

Motor Flange

Motor Frame	U Shaft Diameter	W Key Width	H Key Height
56C	.626 (15.9)	.188 (4.7)	.71 (18.0)
140TC	.876 (22.2)	.188 (4.7)	.96 (24.5)
180C	.434 (11.0)	.159 (4.0)	.51 (12.9)
63	.750 (19.1)	.237 (6.0)	.865 (22.0)



Suction and discharge port is determined by shaft rotation.

Standard motor adaptor fits NEMA 56C, 143TC, 182C, and 184C frame motors Does not fit frames 182/184TC.

Metric motor adaptor option fits 63 and 80 frame motors.
Must use foot mounted C-faced motor of specific frame sizes.

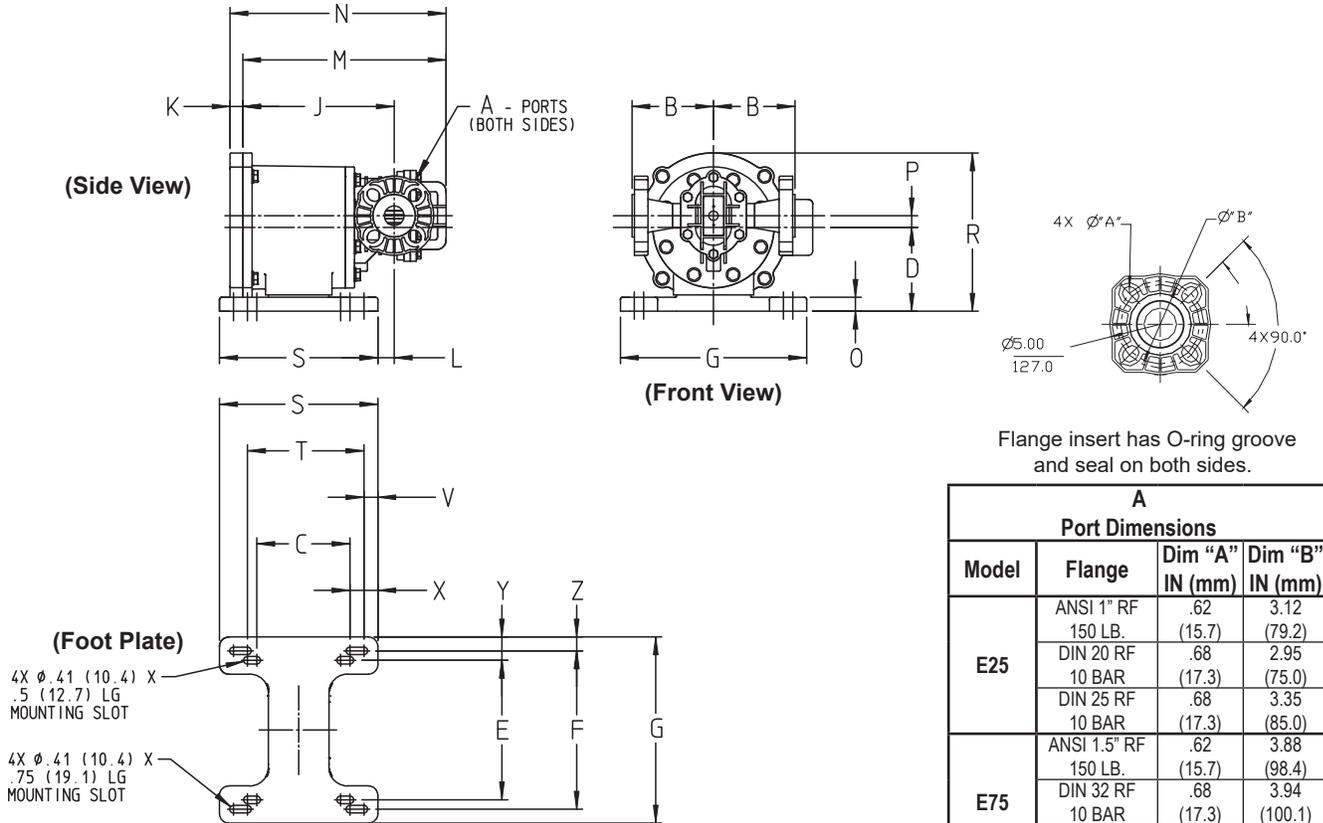
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DIMENSIONS — MODELS E25, E75

These dimensions are average and not for construction purposes. Millimeter dimensions shown in parentheses.



A Port Dimensions			
Model	Flange	Dim "A" IN (mm)	Dim "B" IN (mm)
E25	ANSI 1" RF	.62	3.12
	150 LB.	(15.7)	(79.2)
	DIN 20 RF	.68	2.95
	10 BAR	(17.3)	(75.0)
E75	DIN 25 RF	.68	3.35
	10 BAR	(17.3)	(85.0)
	ANSI 1.5" RF	.62	3.88
	150 LB.	(15.7)	(98.4)
E75	DIN 32 RF	.68	3.94
	10 BAR	(17.3)	(100.1)
	DIN 40 RF	.68	4.34
	10 BAR	(17.3)	(110.1)

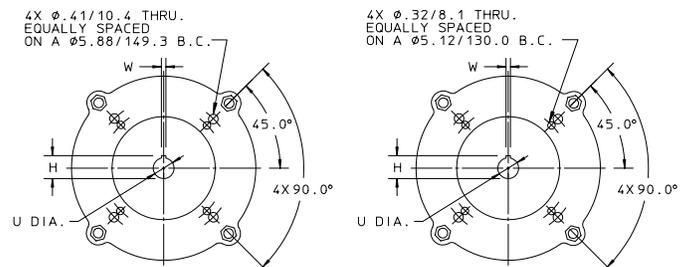
Pump Only

Model		B	C	D	E	F	G	J	K	L	M	N	O	P	R	S	T	V	X	Y	Z
E25	IN	4.38	2 X 5.00	4.50	2 X 7.50	2 X 8.50	10.00	8.12	0.69	0.88	10.91	11.60	0.75	0.62	8.50	8.50	2 X 6.25	2 x .75	2 x 1.50	2 x 1.25	2 X .75
	MM	111.1	127.0	114.3	190.5	215.9	254.0	206.4	17.5	22.2	277.1	294.6	19.1	15.8	215.9	215.9	158.8	19.0	38.1	31.7	19.0
E75	IN	5.00	2 X 5.00	5.38	2 X 7.50	2 X 8.50	10.00	9.50	1.00	2.25	13.77	14.77	0.75	0.93	10.12	8.50	2 x 6.25	2 x .75	2 x 1.50	2 x 1.25	2 X .75
	MM	127.1	127.0	136.5	190.5	215.9	254.0	241.3	25.4	57.1	349.6	375.0	19.1	23.6	257.2	215.9	158.8	19.0	38.1	31.7	19.0

Motor Flange

Motor Frame	U Shaft Diameter	W Key Width	H Key Height
56C	.626 (15.9)	.188 (4.7)	.71 (18.0)
140TC	.876 (22.2)	.188 (4.7)	.96 (24.5)
180C			
182TC ①	1.13 (28.6)	.252 (6.4)	1.24 (31.5)
184TC ①			
100	1.10 (28.0)	.317 (8.0)	1.24 (31.5)
112			

① Standard motor adaptor fits NEMA 56C, 143TC, 182C, and 184C frame motors Does not fit frames 182TC/184TC.



56-184C FR NEMA
MOTOR MOUNTING

100,112 FR METRIC
MOTOR MOUNTING

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SERIES CMD PUMP MODEL STRING

This table is used to develop the model number code for the features and mounting required.

Available Model	Code	Description	CMD- E _ _ _ _ _	
POSITIONS 1,2,3 PUMP SIZE	CMD	E02	SIZE E02 - MAX. CAPACITY 0.4 GPM (1.5 LPM) 1/4"-18 FNPT / 1/4"-19 BSPT, ISO 7-1	
		E05	SIZE E05 - MAX. CAPACITY 1.3 GPM (4.9 LPM) 3/8"-18 FNPT / 3/8"-19 BSPT, ISO 7-1	
		E12	SIZE E12 - MAX. CAPACITY 3.2 GPM (12.1 LPM) 3/4"-14 FNPT / 3/4"-14 BSPT, ISO 7-1	
		E25	SIZE E25 - MAX. CAPACITY 6.5 GPM (24.6 LPM) FLANGED 1"-150 ANSI / DIN 20/25	
		E75	SIZE E75 - MAX. CAPACITY 20.0 GPM (75.0 LPM) FLANGED 1 1/2"-150# ANSI / DIN 32/40	
POSITION 4 PRIMARY MATERIAL	02,05	K	CARBON-FILLED PVDF, FNPT	
	02,05	M	CARBON-FILLED PVDF, BSPT, ISO 7-1	
	Export Restrictions May Apply to the following sizes listed below			
	12	K	CARBON-FILLED PVDF, FNPT	
	12	M	CARBON-FILLED PVDF, BSPT, ISO 7-1	
POSITION 5 BEARINGS	02,05,12,25,75	L	CARBON	
		B	SILICON CARBIDE	
POSITION 6 O-RINGS	02,05,12,25,75	V	FLUOROELASTOMER (FKM)	
	02,05,12,25,75	E	EPDM	
	05	K	FFKM Grade 4079	
POSITION 7 MOTOR MOUNTING ARRANGEMENTS	02,05,12,25	F	NEMA 56C (C-face, rigid base, 5/8" shaft diameter, 4x 3/8"-16 tapped holes on a 5-7/8" bolt circle)	
	02,05,12,25,75	O	NEMA 143/5TC-182/4C (C-face, rigid base, 7/8" shaft diameter, 4x 3/8"-16 tapped holes on a 5-7/8" bolt circle)	
	75	R	NEMA 182TC-184TC (C-face, rigid base, 1-1/8" shaft diameter, 4x 1/2"-13 tapped holes on a 7-1/4" bolt circle)	
	75	W	NEMA 213TC-215TC (C-face, rigid base, 1-3/8" shaft diameter, 4x 1/2"-13 tapped holes on a 7-1/4" bolt circle)	
	02,05,12	H	IEC 63 B3/B14 (rigid base, face, 11 mm motor shaft diameter, 4x M5 tapped holes on a 75 mm bolt circle)	
	02,05,12	K	IEC 80 B3/B14 (rigid base, face, 19 mm motor shaft diameter, 4x M6 tapped holes on a 100 mm bolt circle)	
	25	L	IEC 90 B3/B14 (rigid base, face, 24 mm motor shaft diameter, 4x M8 tapped holes on a 115 mm bolt circle)	
25,75	P	IEC 100/112 B3/B14 (rigid base, face, 28 mm motor shaft diameter, 4x M8 tapped holes on a 130 mm bolt circle)		
02,05,12,25,75	Y	NO MOTOR MOUNTING KIT (Pump includes Drive Magnet)		
POSITION 8	02,05,12,25,75	-	DASH	
POSITION 9	02,05,12,25,75	X	STANDARD (COMPLETE PUMP - NO OPTIONS)	

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RELIEF VALVE INFORMATION

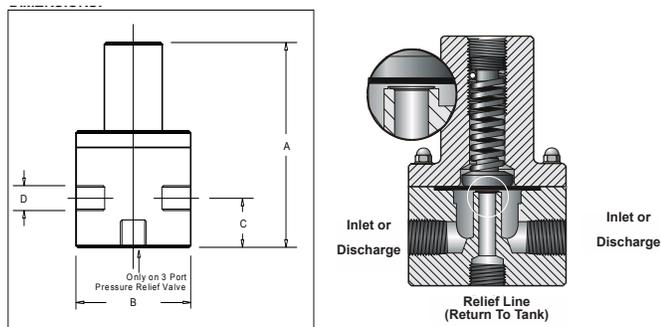
The CMD series pump is a positive displacement pump and requires some sort of over pressure protection, however, an internal relief valve is **not** provided as standard with this series.

Optional third party adjustable spring loaded diaphragm in-line pressure relief valves, constructed of either PVC or PVDF, are available in two or three port configurations. These in-line

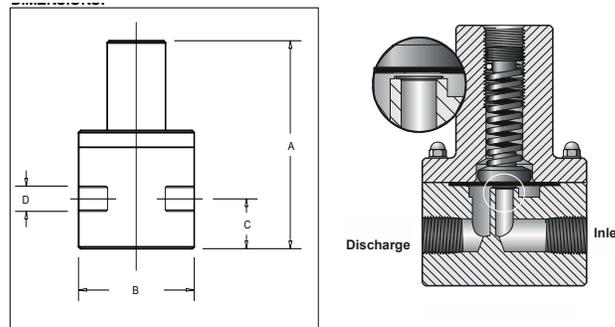
valves are easily set in the field for system pressures ranging between 0 - 150 PSI. Vendor recommendation is to set the pressure valve at 15 PSI above the system pressure. This pressure relief valve should be placed as close to the pump as possible without any other valves or accessories placed between the pump and relief valve.

DIMENSIONS

Three port Pressure Relief Valve

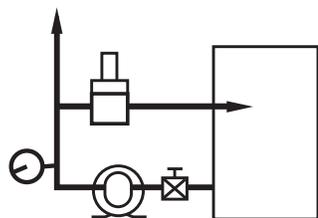


Two port Pressure Relief Valve

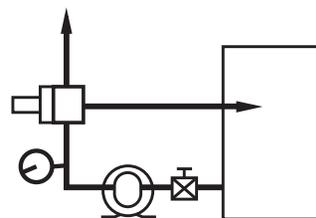


D	A	B (in)	C (in)	Ports	PN - PVC Construction	PN - PVDF Construction	Notes
1/2"	5.5	3.5	1.125	NPT	W777267-PVC	W777267-KYN	3rd bottom port option is piped as a return-to-tank line.
1"	5.8	3.5	1.25	NPT	W777259-PVC	W777259-KYN	3rd bottom port option is piped as a return-to-tank line.
1-1/2"	90	5.5	2.25	NPT	W777260-PVC	W777260-KYN	2 port straight line configuration, Discharge line would require a tee off. Line must be back to the tank.

TYPICAL PIPING EXAMPLES



Two-Port Valve Arrangement



Three-Port Valve Arrangement

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LIQUID COMPATIBILITY GUIDE

This list is intended as a general guide. The liquid compatibility of materials and elastomers has been compiled from many sources. Although the sources are believed reliable, the rating cannot be guaranteed. In any given case many factors such as concentration, temperature and the presence of impurities or trace elements may influence material performance.

For additional information, consult the CMD series pump selection software.
For specific questions, contact the factory for assistance.

Liquid List	Key: "A" Excellent "C" Questionable "X" Not Recommended							
	Wetted Parts							
	Primary Material	Shaft	Gears	Bearings & Wear Plates		O-Rings		
PVDF	Alumina Ceramic	PTFE	Carbon Graphite	Silicon Carbide (Option)	Fluoroelastomer (FKM)	EPDM (Option)	FFKM	
Acetaldehyde	X		A	A	A	X	A	A
Acetamide	C		A	A	A	A	A	A
Acetic Acid (Glacial)	A	A	A	A	A	X	A	A
Acetic Acid, Dilute (50% H2O)	A	A	A	A	A	X	A	A
Acetone	X	A	A	A	A	X	A	A
Acetonitrile			A	A	A	X	A	A
Acetylene Tetrachloride			A	A	A	X	X	A
Acrylonitrile	22°C		A	A	A	X	X	A
Adipic Acid	66°C		A	A	A	X	X	A
Allyl Chloride			A	A	A	X	X	A
Alum (Aluminum Ammonium Sulfate)	--		A	A	A	A	A	A
Aluminum Chloride	A	A	A	A	A	A	A	A
Aluminum Fluoride	A		A	A	A	A	A	A
Aluminum Hydroxide	A		A	A	A	X	A	A
Aluminum Nitrate	48°C		A	A	A	A	A	A
Aluminum Potassium Sulfate			A	A	A	A	A	A
Ammonia (Anhydrous)	X		A	A	A	X	A	A
Ammonia (Aqueous 30%)	X	A	A	A	A	X	A	A
Ammonium Chloride	A	A	A	A	A	A	A	A
Ammonium Fluoride			A	A	A	A	A	A
Ammonium Hydroxide	A	A	A	A	A	A	A	A
Ammonium Sulfate	A	A	A	A	A	X	A	A
Ammonium Sulfide	52°C		A	A	A	X	A	A
Aniline	38°C	A	A	A	A	X	A	A
Anthraquinone			A	A	A	A	A	A
Barium Chloride	A	A	A	A	A	A	A	A
Barium Hydroxide	A	A	A	A	A	A	A	A
Barium Sulfate	A	A	A	A	A	A	A	A
Barium Sulfide	A	A	A	A	A	A	A	A
Benzene	48°C		A	A	A	A	X	A
Benzene Sulfonic Acid		A	A	A	A	A	X	A
Benzoic Acid	A	A	A	A	A	A	X	A
Benzyl Alcohol		A	A	A	A	A	A	A
Benzyl Chloride				A	A	A	X	A
Borax	A	A	A	X	A	A	A	A
Boric Acid	A	A	A	A	A	A	A	A
Brine			A	X	A	A	A	A
Bromic Acid			A	X	A	X	X	A
Bromine (Dry)	A	A	A	X	A	A	X	A
Butadiene	A	A	A	A	A	A	A	A
Butane	A	A	A	A	A	A	X	A
Butanediol			A	A	A	A	A	A
n-Butyl Alcohol	A		A	A	A	A	A	A
Butyl Bromide			A	X	A	A	X	A
Butyl Chloride			A	A	A	A	X	A
Butyl Phenol			A	A	A	A	A	A
Calcium Bisulfate				A	A	A	A	A
Calcium Bisulfide	A		A	A	A	A	A	A
Calcium Carbonate	A	A	A	A	A	A	A	A
Calcium Chlorate	A	A	A	X	A	A	A	A
Calcium Chloride	A	A	A	A	A	A	A	A

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LIQUID COMPATIBILITY GUIDE (CONT'D)

Liquid List	Key: "A" Excellent "C" Questionable "X" Not Recommended							
	Wetted Parts							
	Primary Material	Shaft	Gears	Bearings & Wear Plates		O-Rings		
PVDF	Alumina Ceramic	PTFE	Carbon Graphite	Silicon Carbide (Option)	Fluoroelastomer (FKM)	EPDM (Option)	FFKM	
Calcium Hydroxide	48°C	A	A	A	A	A	A	A
Calcium Hypochlorite	A	A	A	X	A	A	A	A
Calcium Nitrate	A	A	A	A	A	A	A	A
Calcium Oxide	A	A	A	A	A	A	A	A
Calcium Sulfate	A	A	A	A	A	A	A	A
Carbon Disulfide	48°C	A	A	A	A	A	X	A
Carbon Tetrachloride	48°C	A	A	A	A	A	A	A
Carbonic Acid	A	A	A	A	A	A	X	A
Caustic Potash (10 and 50%)	A	A	A	A	A	X	A	A
Caustic Soda (10 and 50%)	A	A	A	A	A	X	A	A
Chlorinated Brine			A	X	A	A	A	A
Chlorinated Phenol			A	X	A	A	A	A
Chlorine (Dry)	A		A	X	A	A	X	A
Chlorine (Wet)	A	A	A	X	A	A	X	X
Chlorine Dioxide			A	A	A	A	X	X
Chloroacetic Acid (5-1/2 Cl2)	22°C	A	A	A	A	A	A	X
Copper Chloride	A	A	A	A	A	A	A	A
Copper Cyanide	A	A	A	A	A	A	A	A
Copper Fluoride		X	A	A	A	A	A	A
Copper Nitrate	A	A	A	A	A	A	A	A
Copper Sulfate	A	A	A	A	A	A	A	A
Cyclohexane	A	A	A	A	A	A	X	A
Cyclohexanol			A	A	A	A	X	A
Cyclohexanone	X	A	A	A	A	X	X	A
Dichloroacetic Acid			A	A	A	X	A	A
Dichloroethylene			A	A	A	A	X	A
Dichloropropionic Acid			A	A	A	A	A	A
Diethyl Benzene			A	A	A	A	X	A
Diethyl Ether			A	A	A	X	X	A
Diisobutylene			A	A	A	A	A	A
Dimethylamine	22°C	A	A	A	A	X	X	A
Epichlorohydrin	X		A	A	A	X	A	A
Ethyl Acetate	X	A	A	A	A	X	A	A
Ethyl Alcohol (Ethanol)		A	A	A	A	A	A	A
Ethylamine		A	A	A	A	X	A	X
Ethyl Chloride	A	A	A	A	A	A	X	A
Ethyl Chloroacetate			A	A	A	A	A	A
Ethylene Bromide	A		A	A	A	A	X	A
Ethylene Chlorohydrin	A		A	A	A	A	A	A
Ethylene Glycol		A	A	A	A	A	A	A
Ethylene Oxide	A	A	A	A	A	X	X	A
Ferric Chloride	A	A	A	A	A	A	A	A
Ferric Hydroxide			A	A	A	X	A	A
Ferric Nitrate	A	A	A	A	A	A	A	A
Ferric Sulfate	A	A	A	A	A	A	A	A
Ferrous Chloride	A	A	A	A	A	A	A	A
Ferrous Hydroxide			A	A	A	X	A	A
Ferrous Nitrate			A	A	A	A	A	A
Ferrous Sulfate	A	A	A	A	A	A	A	A
Fluorine (Gaseous)	22°C		X	X	A	X	X	A
Formaldehyde (37% in H ₂ O)	52°C	A	A	A	A	A	A	X
Freon 11		A	A	A	A	A	X	A
Freon 12	A		A	A	A	A	A	A
Freon 22	A		A	A	A	X	X	X
Furmaric Acid			A	A	A	A	A	A
Gasoline-Unleaded	A	A	A	A	A	A	X	A
Glycerol			A	A	A	A	A	A
Glycolic Acid	A		A	A	A	A	A	A
Glycol			A	A	A	A	A	A

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Liquid List	Key: "A" Excellent "C" Questionable "X" Not Recommended							
	Wetted Parts							
	Primary Material	Shaft	Gears	Bearings & Wear Plates		O-Rings		
PVDF	Alumina Ceramic	PTFE	Carbon Graphite	Silicon Carbide (Option)	Fluoroelastomer (FKM)	EPDM (Option)	FFKM	
Heptane	A	A	A	A	A	A	X	A
Hexane	A	A	A	A	A	A	X	A
Hydrobromic Acid (50%)		C	A	A	A	A	A	A
Hydrochloric Acid (20%)	A	A	A	A	A	A	A	A
Hydrochloric Acid (Conc.)	66°C	80°C	A	A	A	A	X	A
Hydrochloric Acid (Gas)	A		A	A	A	A	X	A
Hydrocyanic Acid	A		A	A	A	A	A	A
Hydrofluoric Acid (35%)	A	X	A	X	A	X	A	A
Hydrofluoric Acid (70%)	A	X	A	X	A	X	X	A
Hydrofluoric Acid (100%)	A	X	A	X	A	X	X	A
Hydrogen Cyanide	A	A	A	A	A	A	A	A
Hydrogen Peroxide (30%)	A	A	A	X	A	A	A	A
Hydrogen Peroxide (90%)	22°C	A	A	X	A	A	X	A
Hydrogen Sulfide (Dry)	A		A	A	A	X	A	A
Hydrogen Sulfide (Wet)	A	A	A	A	A	X	A	A
Hypochlorous Acid			A	X	A	A	A	A
Iodine (Dry)	66°C		A	X	A	X	A	A
Iodine (Wet)	66°C	A	A	X	A	A	A	A
Isobutyl Alcohol			A	A	A	A	A	A
Isopropylamine			A	A	A	X	X	A
Jet Fuel - JP4	A		A	A	A	A	X	A
Lactic Acid	53°C	A	A	A	A	A	A	A
Lauric Acid		A	A	A	A	A	A	A
Lauryl Chloride			A	A	A	A	A	A
Lauryl Sulfate			A	A	A	A	A	A
Linseed Oil	A		A	A	A	A	A	A
Lithium Bromide			A	X	A	A	X	A
Lithium Hydroxide			A	X	A	X	A	A
Lubricating Oil	A		A	A	A	A	X	A
Magnesium Carbonate	A	A	A	A	A	A	X	A
Magnesium Chloride	A	A	A	A	A	A	A	A
Magnesium Hydroxide	A	A	A	A	A	A	A	A
Magnesium Nitrate	A	A	A	A	A	A	A	A
Magnesium Sulfate	A	A	A	A	A	A	A	A
Maleic Acid	A	A	A	A	A	A	X	A
Maleic Anhydride	A		A	A	A	A	X	A
Malic Acid	A		A	A	A	A	X	A
Mercuric Chloride	A	A	A	A	A	A	A	A
Methacrylic Acid			A	A	A	X	A	A
Methyl Alcohol (Methanol)	A	A	A	A	A	X	A	A
Methyl Benzoate			A	A	A	A	X	A
Methyl Bromide	A		A	A	A	A	A	A
Methyl Chloride	A		A	A	A	A	X	A
Methyl Chloroform			A	A	A	X	A	A
Methyl Ethyl Ketone (MEK)	X	A	A	A	A	X	X	A
Methyl Sulfuric Acid			A	A	A	A	A	A
Methylene Bromide			A	A	A	A	X	A
Methylene Chloride	53°C	A	A	A	A	A	X	A
Methylene Iodide			A	A	A	A	X	A
Methyl Methacrylate	53°C		A	A	A	X	X	A
Monochlorobenzene			A	A	A	A	X	A
Monoethanolamine	C		A	A	A	X	A	A
Nickel Chloride	A	A	A	A	A	A	A	A
Nickel Nitrate	A	A	A	A	A	A	A	A
Nickel Sulfate	A	A	A	A	A	A	A	A
Nitric Acid (Conc. 70%)	X	A	A	X	A	A	X	A
Nitric Acid (50%)	53°C	A	A	X	A	A	X	A
Nitrous Acid	A	A	A	X	A	A	X	A
Oleic Acid	A	A	A	A	A	A	A	A

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Liquid List	Key: "A" Excellent "C" Questionable "X" Not Recommended							
	Wetted Parts							
	Primary Material	Shaft	Gears	Bearings & Wear Plates		O-Rings		
PVDF	Alumina Ceramic	PTFE	Carbon Graphite	Silicon Carbide (Option)	Fluoroelastomer (FKM)	EPDM (Option)	FFKM	
Oleum		A	A	X	A	A	X	A
Oxalic Acid	A	A	A	A	A	X	A	A
Perchloric Acid (72%)		A	A	A	A	A	X	A
Perchloric Acid (10%)		A	A	A	A	A	X	A
Perchloroethylene	A	A	A	A	A	A	X	A
Phenol (100%)	22°C	A	A	A	A	A	X	A
Phenol (10%)	A	A	A	A	A	A	X	A
Phosphoric Acid (30%)		A	A	A	A	A	A	A
Phosphoric Acid (85%)	A	A	A	A	A	A	A	A
Phosphorus Oxychloride		A	A	A	A	A	A	A
Phosphorus Pentachloride			A	A	A	A	A	A
Phosphorus Trichloride	48°C	A	A	A	A	A	A	A
Phthalic Anhydride	A	A	A	A	A	X	A	A
Potassium Aluminum Chloride			A	A	A	A	A	A
Potassium Bicarbonate	A	A	A	A	A	A	A	A
Potassium Bromate			A	A	A	A	A	A
Potassium Bromide	A	C	A	A	A	A	A	A
Potassium Carbonate	A	X		A	A	A	A	A
Potassium Chlorate	A	C	A	A	A	A	A	A
Potassium Chloride	A	A	A	A	A	A	A	A
Potassium Cyanide	A	X	A	A	A	A	A	A
Potassium Fluoride			A	A	A	A	A	A
Potassium Hydroxide (25%)	66°C	X	A	X	A	X	A	A
Potassium Hypochlorite	22°C	X	A	X	A	A	X	A
Potassium Nitrate	A	C	A	A	A	A	A	A
Potassium Perchlorate			A	X	A	A	X	A
Potassium Permanganate	A	A	A	A	A	A	A	A
Potassium Sulfate	A	A	A	A	A	A	A	A
Propionic Acid			A	A	A	A	A	A
Propyl Alcohol			A	A	A	A	A	A
Propylene Dichloride	A	A	A	A	A	A	X	A
Propylene Oxide	X	A	A	X	A	A	A	A
Salicylic Acid	A		A	A	A	A	A	A
Salt Brine	A		A	X	A	A	A	A
Sea Water	A	A	A	A	A	A	A	A
Silicon Tetrachloride			A	A	A	A	A	A
Silver Cyanide		A	A	A	A	X	A	A
Silver Nitrate	A		A	A	A	A	A	A
Sodium Acetate	A	A	A	A	A	X	A	A
Sodium Bicarbonate	A	A	A	A	A	A	A	A
Sodium Bisulfate	A	A	A	A	A	A	A	A
Sodium Borate (Borax)	A	A	A	A	A	A	A	A
Sodium Bromide	A	A	A	A	A	A	A	A
Sodium Carbonate	A	A	A	A	A	A	A	A
Sodium Chlorate	A	A	A	A	A	A	A	A
Sodium Chloride	A	A	A	A	A	A	A	A
Sodium Chromate	A	A	A	X	A	A	A	A
Sodium Cyanide	A	A	A	A	A	A	A	A
Sodium Dichromate	A	A	A	A	A	A	A	A
Sodium Ferrocyanide	A	A	A	A	A	A	A	A
Sodium Fluoride	A	X	A	A	A	A	A	A
Sodium Glutamate			A	A	A	A	A	A
Sodium Hydroxide (20%)	A	A	A	A	A	X	A	A
Sodium Hypochlorite	A	A	A	X	A	A	X	A
Sodium Hyposulfite			A	A	A	A	A	A
Sodium Iodide			A	A	A	A	X	A
Sodium Metasilicate			A	A	A	A	A	A
Sodium Nitrate	A	A	A	A	A	A	A	A
Sodium Nitrite	A	A	A	A	A	A	A	A

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Liquid List	Key: "A" Excellent "C" Questionable "X" Not Recommended							
	Wetted Parts							
	Primary Material	Shaft	Gears	Bearings & Wear Plates		O-Rings		
PVDF	Alumina Ceramic	PTFE	Carbon Graphite	Silicon Carbide (Option)	Fluoroelastomer (FKM)	EPDM (Option)	FFKM	
Sodium Perchlorate			A	A	A	A	A	A
Sodium Peroxide	A	A	A	X	A	A	A	A
Sodium Persulfate			A	A	A	A	A	A
Sodium Phosphate	A	A	A	A	A	A	A	A
Sodium Silicate	A	A	A	A	A	A	A	A
Sodium Sulfate	A	A	A	A	A	A	A	A
Sodium Sulfide	A	A	A	A	A	A	A	A
Sodium Sulfite	A	A	A	A	A	A	A	A
Sodium Thiosulfate	A	A	A	A	A	A	A	A
Stannous Chloride	A	A	A	A	A	A	A	A
Stannous Fluoride			A	X	A	A	A	A
Stearic Acid	A	A	A	A	A	A	A	A
Styrene Monomer			A	A	A	A	X	A
Succinic Acid			A	A	A	X	X	A
Sulfamic Acid			A	X	A	A	X	A
Sulfur (Molten)			A	X	A	A	X	A
Sulfur Dioxide	A	A	A	X	A	A	A	A
Sulfuric Acid (60%)	66°C	A	A	A	A	A	A	A
Sulfuric Acid (Conc.)	66°C	A	A	A	A	A	X	A
Sulfuric Acid (Fuming-Oleum)	X		A	X	A	A	X	A
Sulfurous Acid	A	A	A	A	A	A	X	A
Tannic Acid	A	A	A	A	A	A	X	A
Tartaric Acid	A	A	A	A	A	A	A	A
Tetrahydrofuran	22°C	A	A	A	A	X	X	A
Thionyl Chloride			A	A	A	A	X	A
Tin Tetrachloride			A	X	A	A	X	A
Titanium Tetrachloride			A	A	A	A	X	X
Toluene	79°C	A	A	A	A	A	X	A
Tributyl Phosphate	C	A	A	A	A	X	X	A
Trichloroacetic Acid	A		A	A	A	A	A	A
Trichloroethylene	A	A	A	A	A	A	X	A
Trichloromethane			A	A	A	A	X	A
Triethylamine	48°C	A	A	A	A	A	A	A
Trioxane			A	A	A	X	X	X
Turpentine	A	A	A	A	A	A	X	A
Urea (50% H2O)	A	C	A	A	A	X	X	A
Vinyl Acetate	A	C	A	A	A	X	X	A
Vinyl Chloride (Monomer)	22°C	A	A	A	A	A	X	A
Water	A	A	A	A	A	A	A	A
Wax (Paraffin)			A	A	A	A	X	A
Xylene	A	A	A	A	A	A	X	A
Zinc Acetate			A	A	A	X	A	A
Zinc Chloride	A	C	A	A	A	A	A	A
Zinc Hydrosulfite (10%)			A	A	A	A	A	A
Zinc Nitrate			A	A	A	A	A	A
Zinc Sulfide			A	A	A	A	A	A
Zinc Sulfate	A	C	A	A	A	A	A	A

ETFE = Ethylene Tetrafluoroethylene

PVDF = Polyvinylidene Fluoride

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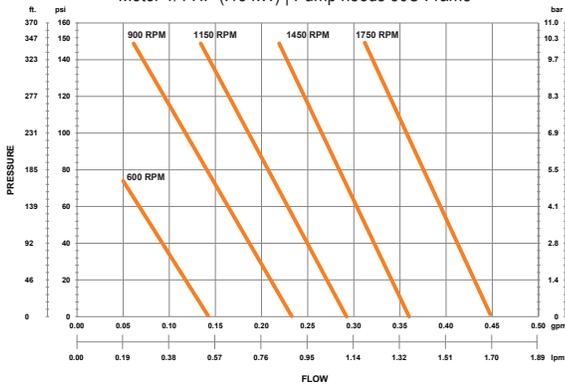
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FLOW CURVES

Note: For sizing reference only

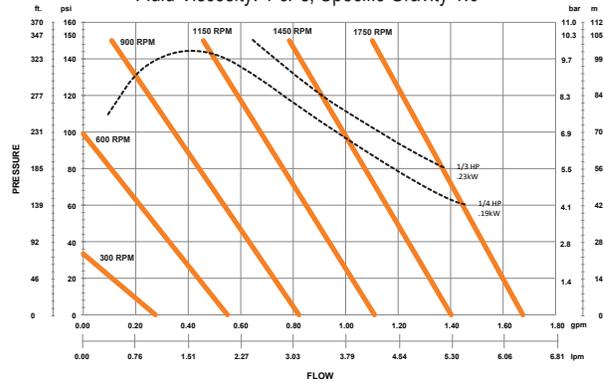
E02 MODEL

Fluid Viscosity: 1 cPs, Specific Gravity 1.0
Motor 1/4 HP (.18 kW) | Pump needs 56C Frame



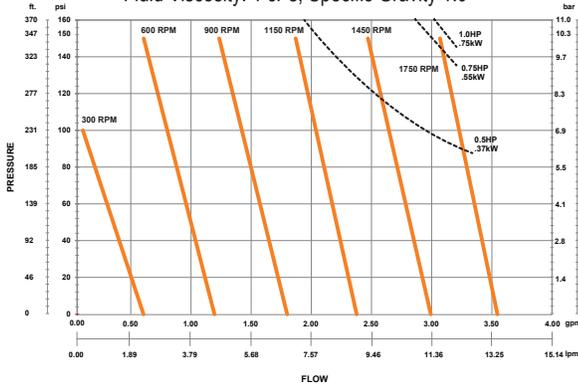
E05 MODEL

Fluid Viscosity: 1 cPs, Specific Gravity 1.0



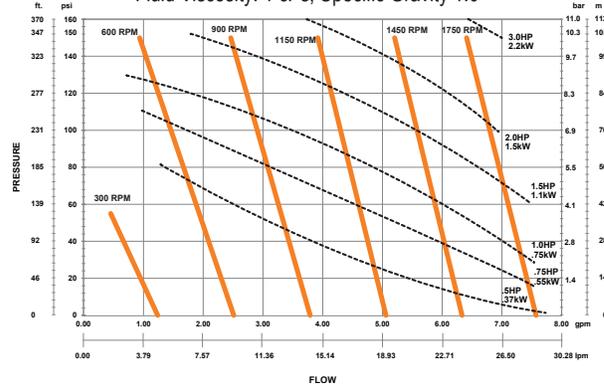
E12 MODEL

Fluid Viscosity: 1 cPs, Specific Gravity 1.0



E25 MODEL

Fluid Viscosity: 1 cPs, Specific Gravity 1.0



E75 MODEL

Fluid Viscosity: 1 cPs, Specific Gravity 1.0

