

# CHEMSTEEL™ PUMP

## CHEMSTEEL PUMPS SERIES SM417 M



### FEATURES

Gear/bearing design allows for “trimming” for optimizing the pump’s maximum flow to reach minimum turndown or to match flow to a specific OEM’s requirement.

Special materials combinations are available for specific liquids:

- Stainless or Alloy C housing construction.
- Gears available in metallic 316 stainless, W88 stainless and Alloy C. Also in polytetrafluoroethylene, polyphenylenesulfide and polyetheretherketone.
- Shafts are 316 stainless steel or Alloy C.
- Bearings available in Carbon and polytetrafluoroethylene.

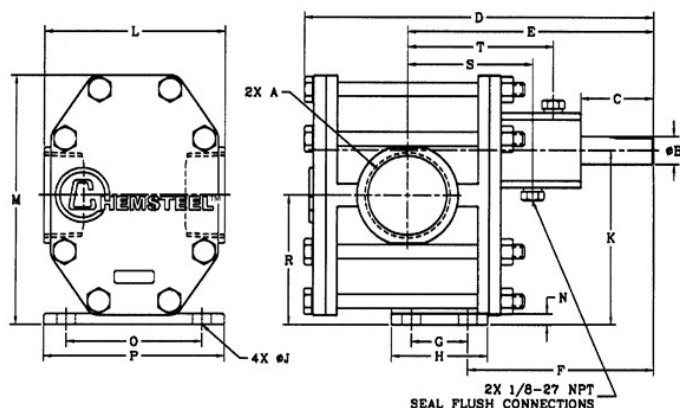
### DRIVE

The pump is driven directly from the electric motor shaft by means of a flexible coupling. A close-coupled adapter connects the pump to the motor.

### LIQUIDS AND TEMPERATURE

This pump is suitable to handle clear lubricating and non-lubricating fluids at temperatures to 450F. These pumps will handle viscous fluids to 100,000 cps (462,000 SSU) at reduced shaft speeds.

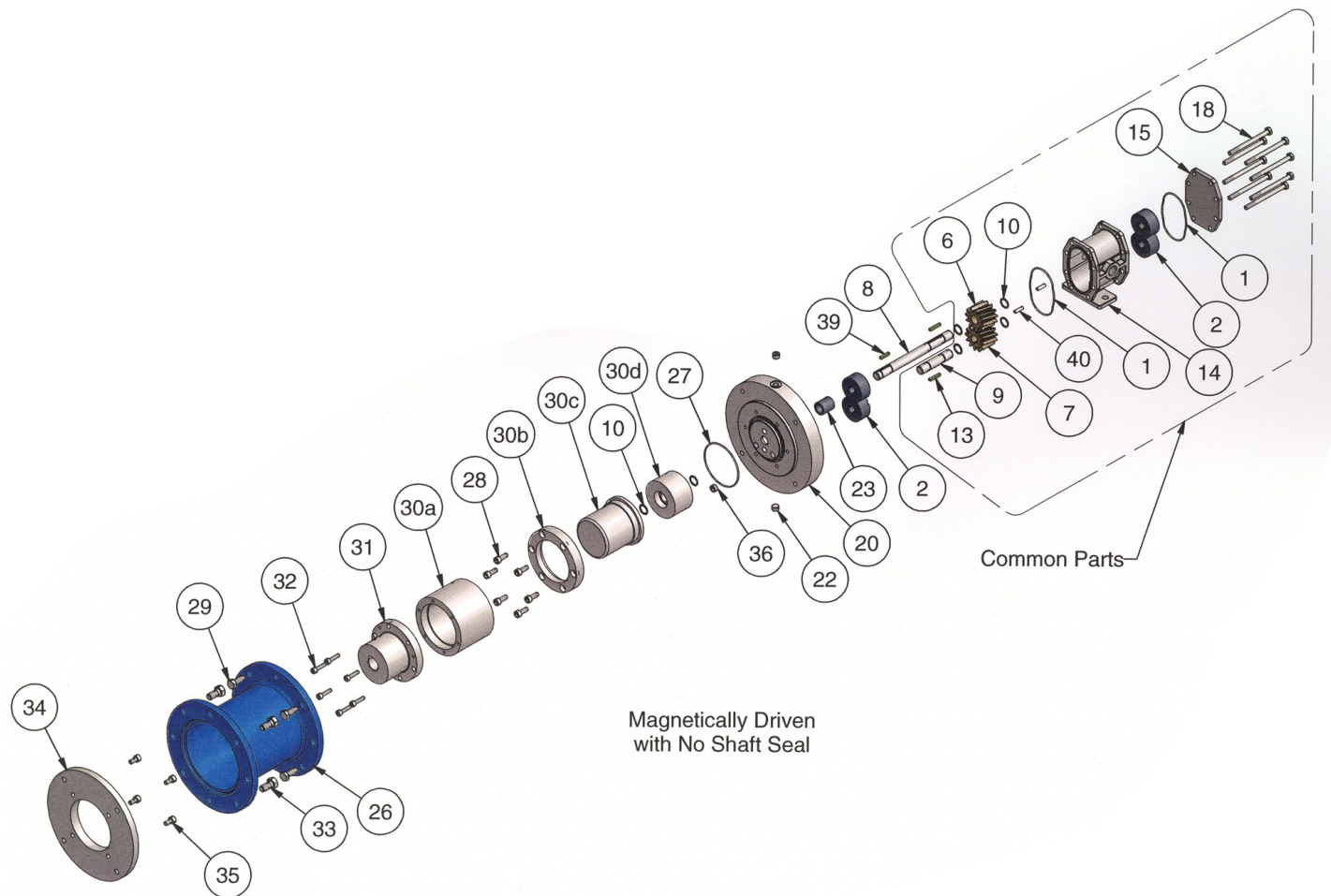
### PERFORMANCE



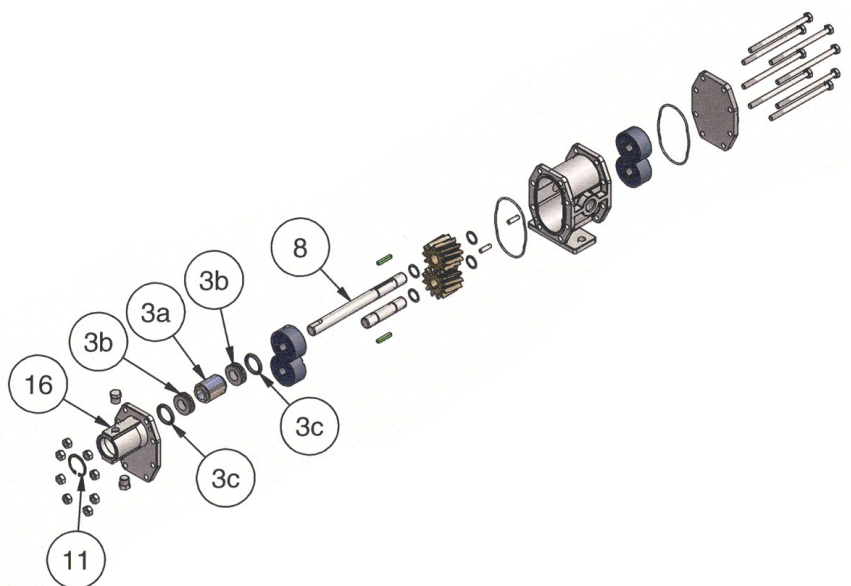
## **SUCTION LIFT**

This pump has a suction lift capability of 20 feet for a new pump. Though gear pumps are self-priming, a foot valve is recommended. If possible, wet gears with the liquid to be pumped for the first dry start. Liquid retained in the system and gear chambers serves to wet the pump on subsequent starts.

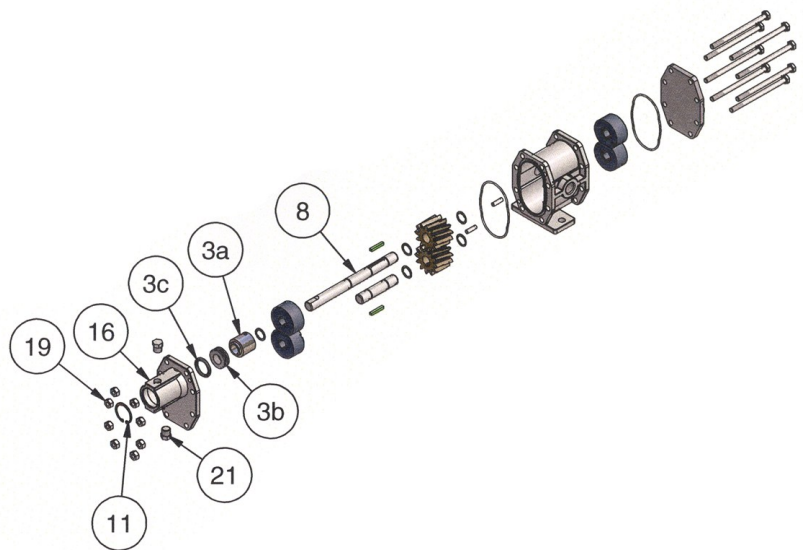
## EXPLODED VIEW AND PARTS LIST



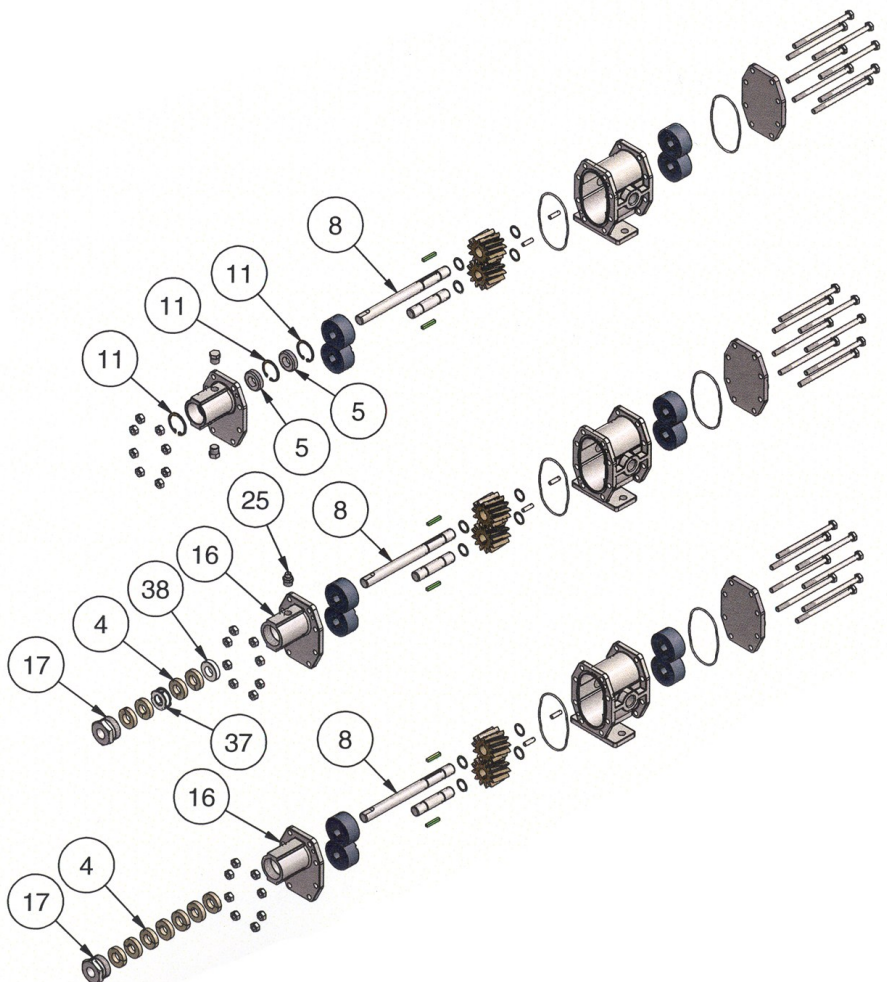
Shaft Seal Codes "H" & "G"  
Double Mechanical Seals



Shaft Seal Codes "A", "B", "C", "D", "F" & "J"  
Single Mechanical Seals



Shaft Seal Code "L"  
Two Lip Seals



Shaft Seal Codes "R", "S" & "T"  
Packing with Lantern Ring

Shaft Seal Codes "N", "P" & "Q"  
Packing



# CHEMkit Parts

No.	Part No.	Part Name	Req.	GEAR CODE															
				1	2	3	4	5	6	7	8	9	A	B	C	E	F		
6	9750-01A	Drive Gear-Ryton PPS	1																
6	9663-01A	Drive Gear-316 SS	1																
6	9396-01A	Drive Gear-PEEK	1																
6	8855-01A	Drive Gear-Alloy C	1																
6	8878-01A	Drive Gear-W 88	1																
6	8879-01A	Drive Gear-Teflon	1																
7	9750-02A	Idle Gear- Ryton PPS	1																
7	9663-02A	Idle Gear-316 SS	1																
7	9396-02A	Idle Gear-PEEK	1																
7	8855-02A	Idle Gear-Alloy C	1																
7	8878-02A	Idle Gear-W 88	1																
7	8879-02A	Idle Gear-Teflon	1																

				SEAL CODE's																MAG CODE's	
				A	B	C	D	F	G	H	J	Z	L	N	P	Q	R	S	T	M	W
1	9355-040	O-Ring Body -Teflon Encapsulating Silicone	2																		
3	32923	Single Mech. Stainless Wedge Carb/Ceramic/TFE/Kalrez	1																		
3	32924	Single Mech. Alloy C Wedge Carb/Ceramic/TFE/Kalrez	1																		
3	33071	Single Mech. Stainless Wedge Carb/SilCarb/TFE/Kalrez	1																		
3	33072	Single Mech. Alloy C Wedge Carb/SilCarb/TFE/Kalrez	1																		
3	32917	Single Mechanical Bellows Carb/Ceramic/Viton/Viton	1																		
3	33074	Single Mechanical Bellows SilCarb/Silcarb/EPDM/EPDM	1																		
3	33077	Double Mechanical Wedge Carb/SilCarb/TFE/Kalrez	1																		
3	33080	Double Mechanical Bellows Carb/Ceramic/Viton/Viton	1																		
3	33108	Single Mechanical Bellows SilCarb/Silcarb/Viton/Viton	1																		
4	8397	Packing Ring Teflon with Graphite	7 or 4																		
4	9609	Packing Ring, Grafoil	7 or 4																		
4	2497	Packing Ring, Teflon	7 or 4																		
5	2750	Lip Seal	2																		
8	2442	Drive Shaft - Single Mechanical Seals (Stainless)	1																		
8	2446	Drive Shaft - Single Mechanical Seals (Alloy C)	1																		
8	2443	Drive Shaft (Stainless)	1																		
8	2447	Drive Shaft (Alloy C)	1																		
8	2445	Drive Shaft - Mag (Stainless)	1																		
8	2449	Drive Shaft - Mag (Alloy C)	1																		
9	2444	Idle Shaft (Stainless)	1																		
9	2448	Idle Shaft (Alloy C)	1																		
10	5382	Clip, Retaining (Stainless)	4.5, or 6																		
10	2066	Clip, Retaining (Alloy C)	4.5, or 6																		
11	7557	Retaining Ring	3																		
11	9845	Retaining Ring	1																		
39	2474	Key	1																		
14	8953	Key	2																		

## Other Parts

				SEAL CODE's																MAG CODE's	
				A	B	C	D	F	G	H	J	Z	L	N	P	Q	R	S	T	M	W
14	8848S-1	Body with 3/4" NPT Ports (Stainless)	1																		
14	8848H-1	Body with 3/4" NPT Ports (Alloy C)	1																		
15	8849S-1	Rear Cover (Stainless)	1																		
15	8849H-1	Rear Cover (Alloy C)	1																		
16	8850S-3	Front Cover, Single/ Double Mechanical (Stainless)	1																		
16	8850H-3	Front Cover, Single/ Double Mechanical (Alloy C)	1																		
16	8851S-5	Front Cover, Lip (Stainless)	1																		
16	8851S-1	Front Cover, Packing (Stainless)	1																		
16	8851H-1	Front Cover, Packing (Alloy C)	1																		
16	8851S-3	Front Cover, Lantern Packing (Stainless)	1																		
16	8851H-3	Front Cover, Lantern Packing (Alloy C)	1																		
17	8347	Pack Nut (Stainless)	1																		
17	8898	Pack Nut (Alloy C)	1																		
18	9366-110	Hex Head Cap Screws	8																		
18	9366-101	Hex Head Cap Screws (Mag)	8																		
19	9368	Hex Nuts	8																		
40	9794	Dowel Pin	2																		
21	6600-01	Hex Head Pipe Plug (Stainless)	2																		
21	6600-02	Hex Head Pipe Plug (Alloy C)	2																		
25	5390-01	Grease Lubrication Fitting	1																		
38	2697	Starter Ring	1																		
37	2673	Lantern Ring	1																		
22	2919-01	Allen Head Pipe Plug (Stainless)	2																		
22	2919-02	Allen Head Pipe Plug (Alloy C)	2																		
20	2489S-4	Pump Adapter (Stainless)	1																		
20	2489H-4	Pump Adapter (Alloy C)	1																		
26	2099-C	Bell Housing	1																		
27	9355-038	O-Ring, Containment Can -Teflon Encapsulating Silicone	1																		
28	2479-016	Socket Head Cap Screws (Can Flange)	6																		
29	2484-020	Hex Head Cap Screws (Bell/Pump Adapter)	4																		
30a b c d	2023-16NS	Magnet Kit, Neo (Stainless)	1																		
30a b c d	2023-16NH	Magnet Kit, Neo (Alloy C)	1																		
30a b c d	2023-16SS	Magnet Kit, Sam C (Stainless)	1																		
30a b c d	2023-16SH	Magnet Kit, Sam C (Alloy C)	1																		
36	2919H-015	0.015" Orifice Plug	1																		

31,32,33,34,35	catalog	Mag - Power End Kit (motor hub, adapters, hardware)
	2464	Optional Mag Foot Kit (not shown)
	catalog	Sealed - Close Coupled Adapter Kit (not shown- faceplate, motor adapter, couplings, hardware)
	catalog	Sealed- Long Mount Bedplate Kits (not shown - base, shims, couplings, coupling guard, hardware)
	catalog	Motors (not shown)
	catalog	Pressure Relief Valve (not shown)

Mag Chemsteel Option Suffix	Power Kit Part No.	Motor Frame		AC*	D	2F	H	AE	AD	*O	*XO	*XP
M1	MC4H56	56C	INCHES	20.21	3.50	3	.34 SLOT	11.84	5.31	6.81	2.25	7.16
			MILLIMETERS	513.3	88.9	76.2	8.6 SLOT	300.7	134.9	173	57.2	181.9
M2	MC4J45T	143TC/145TC	INCHES	23.59	3.5	4.00/5.00	0.34	12.16	5.31	6.81	2.25	7.16
			MILLIMETERS	599.2	88.9	101.6/127	8.6	308.9	134.9	173	57.2	181.9
M3	MC4F71E	IEC 71C, B14 FACE	INCHES	19.73	2.8	3.54	.28 SLOT	10.46	4.00	5.14	N/A	4.13
			MILLIMETERS	501.1	71	89.9	7.1 SLOT	265.7	101.6	130.6	N/A	104.9
M4	MC4T80E	IEC 80C, B14 FACE	INCHES	21.38	3.15	3.94	.39 SLOT	11.64	4.51	6	N/A	4.72
			MILLIMETERS	543.1	80	100.1	9.9 SLOT	295.7	114.6	152.4	N/A	119.9
M5	MC4U90E	IEC 90SC/90LC, B14 FACE	INCHES	22.48	3.54	3.94/4.92	.39 SLOT	11.88	5.12/4.25	6.81/6.53	N/A	5.51
			MILLIMETERS	571	90	100.1/125	9.9 SLOT	301.8	130/108	173/165.9	N/A	140
M6	MC4K84T	182TC/184TC	INCHES	24.3	4.5	4.5	0.41	13.37	6.38	8.75	2.25	9.09
			MILLIMETERS	617	114	114.3	10.4	339.6	162.1	222.3	57.2	231

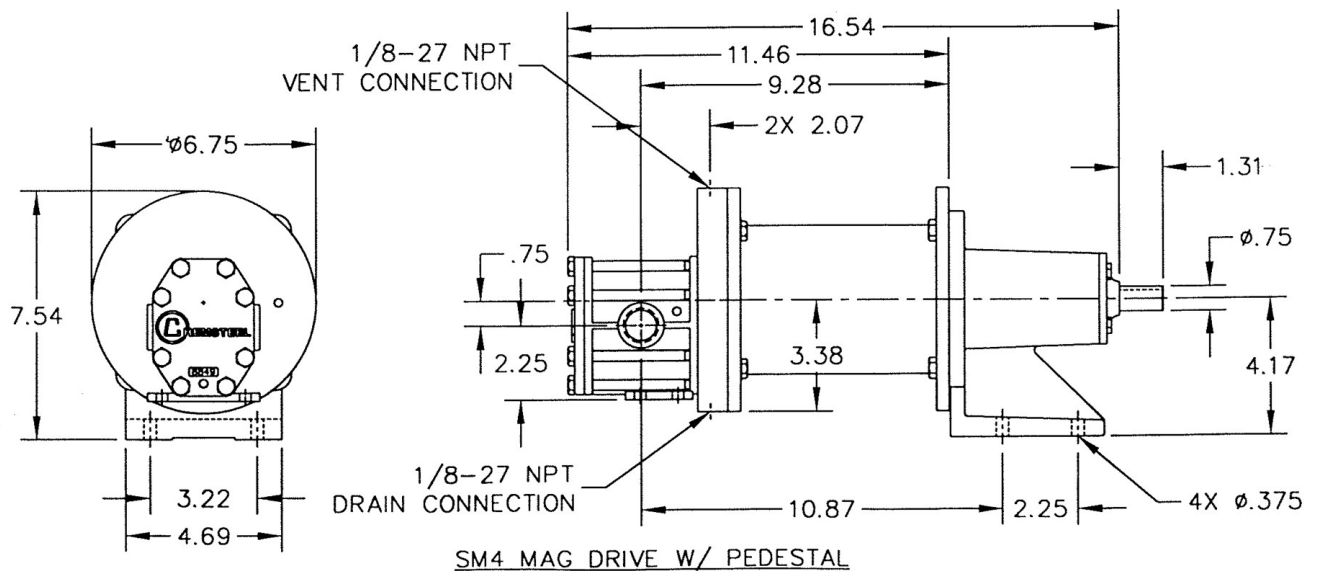
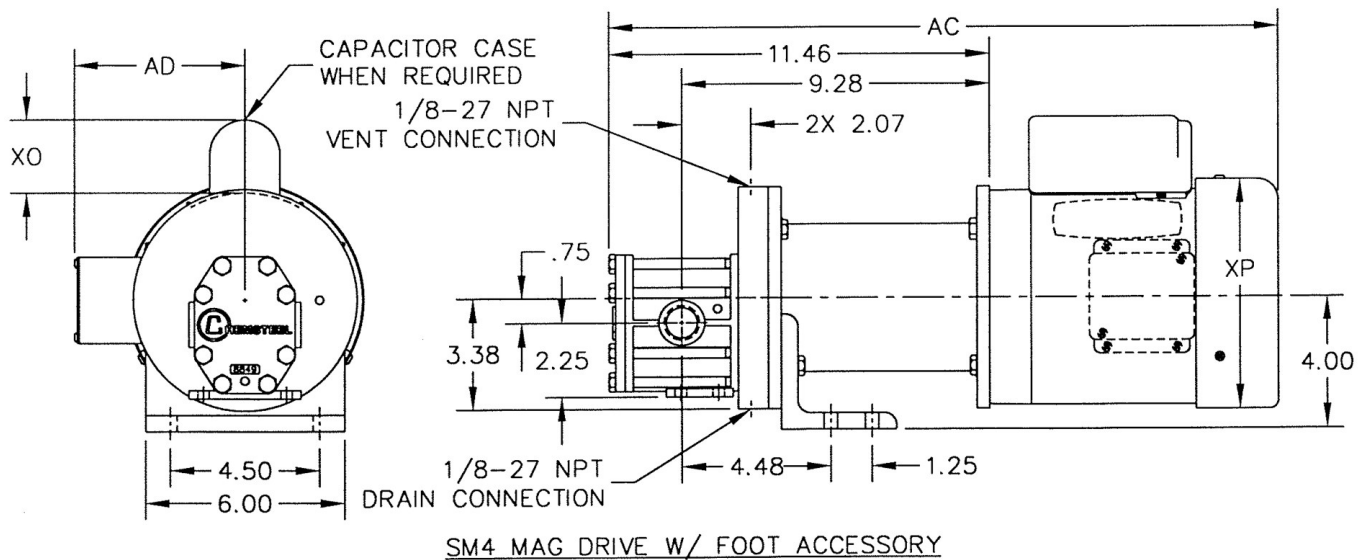
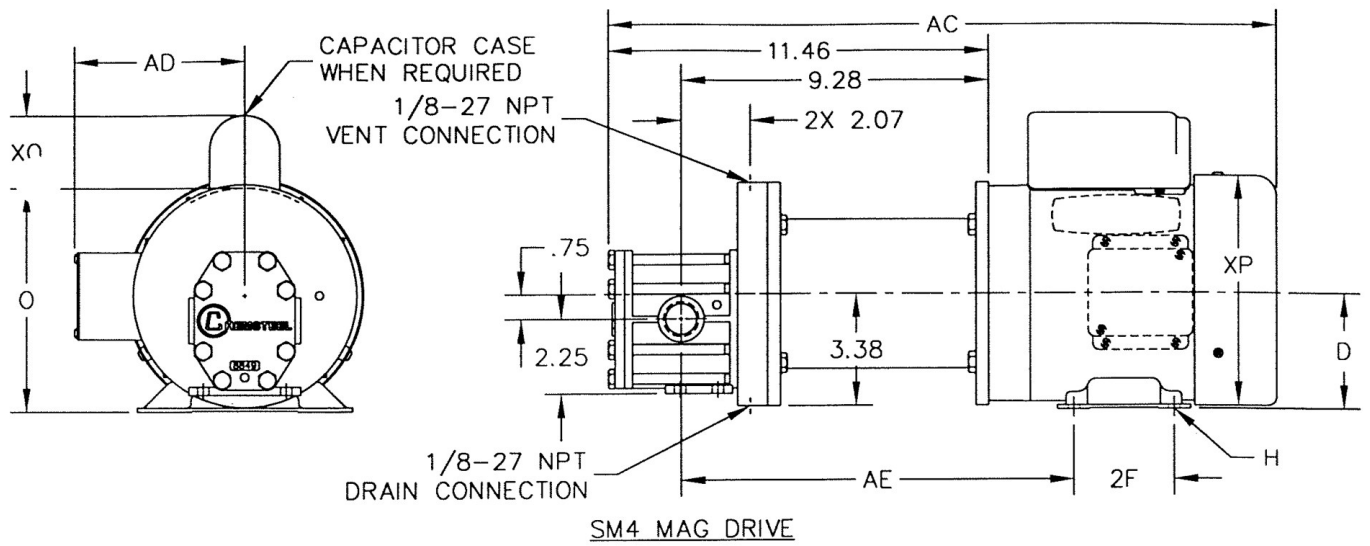
\* Dimensions AC, O XO and XP may vary depending on HP, Enclosure, Speed and Manufacturer



Series	Model	Repair Kit
SM417 M	SM41739CM-M2	SM41739CM-M2K
	SM41739CM	SM41739CMK
	SM4171FPW-T97	SM4171FPW-T97K
	SM4171FPW-T47	SM4171FPW-T47K
	SM4171FPW	SM4171FPWK
	SM4171FJW-X3-M53	SM4171FJW-X3-M53K
	SM4171FJW-M53	SM4171FJW-M53K
	SM4171FCW-M6	SM4171FCW-M6K
	SM4171FCW-M2	SM4171FCW-M2K
	SM4171FCW	SM4171FCWK
	SM4171BCW-M1	SM4171BCW-M1K
	SM4171BCW	SM4171BCWK
	SM41716PW-T5M2	SM41716PW-T5M2K
	SM41716PW-M2	SM41716PW-M2K
	SM41716JW-M4	SM41716JW-M4K
	SM41716JW-M1	SM41716JW-M1K
	SM41716JW	SM41716JWK
	SM41716CW-X2-T87	SM41716CW-X2-T87K
	SM41716CW-X2	SM41716CW-X2K
	SM41716CW-N87	SM41716CW-N87K
	SM41716CW-M81	SM41716CW-M81K
	SM41716CW-M2	SM41716CW-M2K
	SM41716CWM1-T97	SM41716CWM1-T97K
	SM41716CW-M1	SM41716CW-M1K
	SM41716CW	SM41716CWK

**DIMENSIONS**





## MODEL CHART

MODEL	SM417
Maximum Flow (gpm) @1750 RPM	10
Theoretical Displacement (cc/revolution)	27
Maximum Differential Pressure (psig)	110
Maximum System Pressure (psig)	225
Maximum Speed (RPM)	1800
Maximum Fluid Temperature	450° F
Minimum Fluid Temperature	-50° F
NPSHR @ 1750 (feet)	6
Standard Port Size	3/4 inch FNPT
weight-less motor (lbs)	35

## MAINTENANCE

A three-part housing provides easy disassembly and service. Full size bearings match the gear diameter, and eliminate the need for separate wear plates. TFE encapsulating silicone o-ring pump housing seals provide elastic memory to assure an effective long lasting seal and thus avoiding the re-torquing required of pumps using pure TFE. To order a CHEMKIT™ parts kit, simply add a "K" to the end of the model number. A repair kit contains the following parts: bearings, gears, o-rings, shafts, keys, c clips, and retaining ring.

## LIFE CYCLE/COST OF OWNERSHIP

Pump design and materials selection, together provide the longest life available from a gear pump.

Key attributes include:

- Gear & bearing combinations of metallic and nonmetallic wear surfaces.
- Slotted bearings to lubricate shaft and gear surfaces.
- Hydraulic porting to balance axial thrust and to reduce wear.
- Ample port sizing to reduce the likelihood of cavitation when inlet pressure is marginal.
- Effective housing seals with elastic memory prevent leakage of corrosives.
- Recirculation heat port versatility.
- Containment can flush & drain connections.

## FIT

Connections are 3/4" female NPT or BSPT, pump hardware is metric and close couple adapters mount to both NEMA and IEC standard motor frame sizes for worldwide acceptance. The port size is the same as competitive pumps.