

Glycol Pump

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NOTE

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Introduction

The Glycol Pump utilizes the energy of wet glycol at absorber pressure as a source of power to circulate the glycol in a gas dehydrator. The pump transfers the energy available from the wet glycol, at absorber pressure, to an "equivalent" volume of dry glycol at reboiler pressure. In order to circulate the glycol, additional energy is needed to overcome friction losses within the pump and connecting piping. This additional energy is supplied by gas at absorber pressure.

Summary:	
Pump Description	Energy Exchange
Normal Service	Glycol
Connection Size:	See table 4, page 6
Connection Type:	NPT
Operating Range:	300 - 2000 psi for PV 100 - 500 psi for SC
Temperature:	Standard -30° to 200°

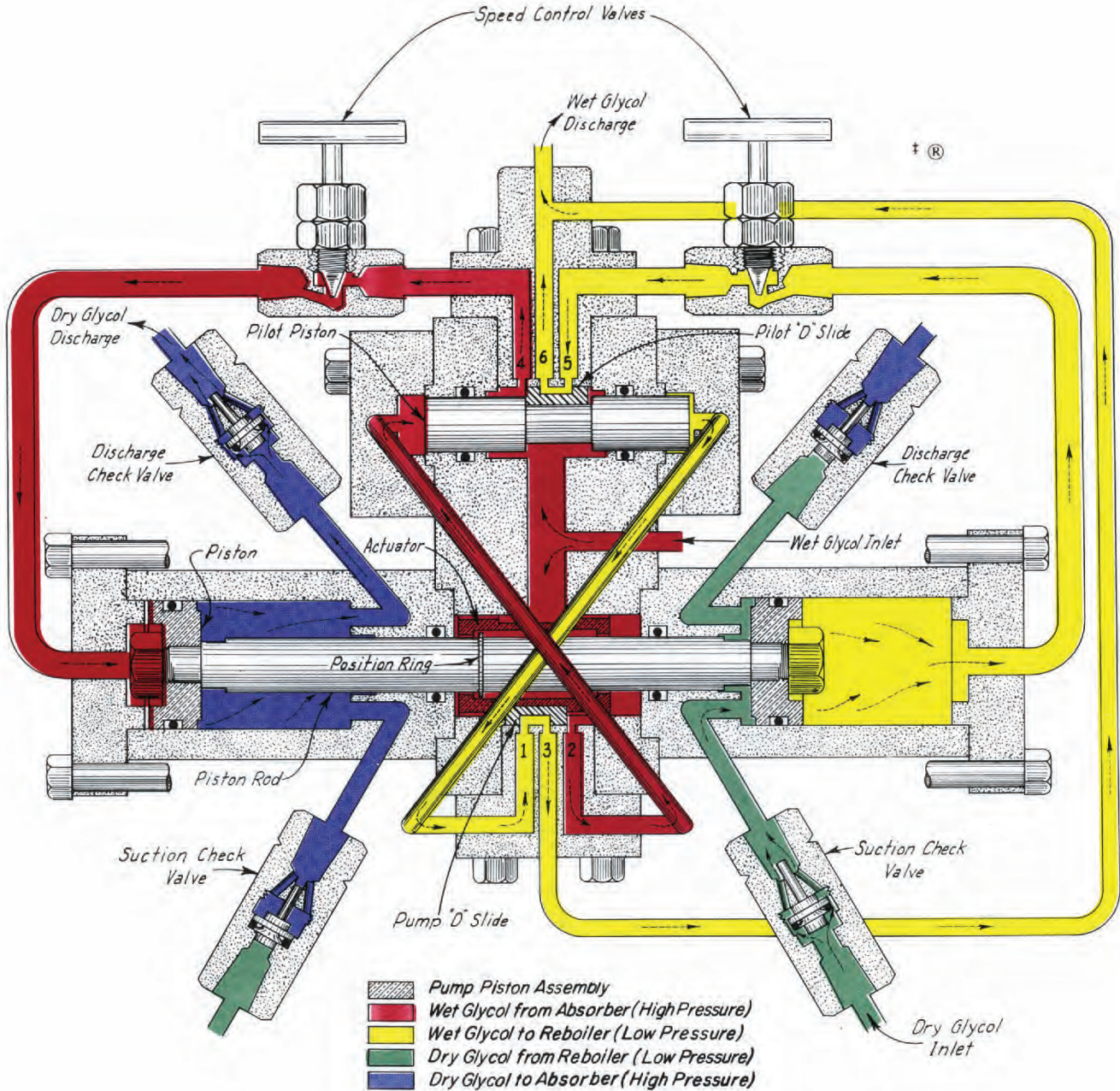


Figure 1

Principles of Operation

The Kimray glycol pump is double acting, powered by wet glycol and a small quantity of gas at absorber pressure (Red). Yellow denotes wet glycol (Blue) is being pumped to the absorber. Green is dry glycol suction from the reboiler.

Wet glycol (Red) from the absorber flows through port #4 and of the pump piston assembly, moving this assembly from left to right. Dry glycol (Blue) is being pumped from the left cylinder to the absorber while the right cylinder is being filled with dry glycol (Green) from the reboiler.

At the same time wet glycol (Yellow) is discharging from the right end of the pump piston assembly to a low pressure or atmospheric system. As the pump piston assembly nears the end of its stroke, the position ring on the piston rod contacts the right end of the actuator. Further movement to the right moves the actuator and pump "D" slide to uncover port number one and communicate ports two and three. This exhausts wet glycol (Red) to the right end of the pilot position. this causes the pilot piston and pilot "D" slide to be driven from right to left.

In its new position, the pilot "D" slide uncovers port number five and communicate ports number four and six. This exhausts wet glycol (Red) from the left end of the pump piston assembly through ports four and six to the low pressure wet glycol (Yellow) system. Ports number 5 (which was communicated with port number 6) now admits wet glycol (Red) through the right hand speed control valve to the right end of the pump piston assembly. The pump piston assembly now starts the stroke from right to left. Follow above procedure reversing directions of flow.

Actions of each of the two basic pumps are completely dependent upon the other. The pilot "D" slide actuated by the pilot piston alternately feeds, and exhausts absorber pressure to the power cylinders at opposite ends of the piston rod assembly. Likewise, the pump "D" slide actuated by the piston rod assembly alternately feeds and exhausts absorber pressure to opposite ends of the pilot piston.

The force to circulate glycol within the dehydration system is supplied by absorber pressure acting on the area of the piston rod at its o-ring seals. The area of the piston rod is approximately 20 percent of that of the pressure acting on the area of the piston. Neglecting pump friction and line losses, the resultant force is sufficient to produce a theoretical discharge pressure 25 percent greater than absorber pressure. The theoretical discharge pressure, for example, at 1500 psig absorber pressure would be 1875 psig. This theoretical "over-pressure" would develop against a block discharge line but is not sufficient to cause damage or create a hazard.

Approximately 25 to 30 psig pressure is required to overcome pump friction leaving the additional "over pressure" for the losses and circulation. It is recommended that these losses be held to approximately 10 percent of the absorber pressure or as noted in catalog.

Two speed control valves are provided to regulate the flow of wet glycol and gas to and from the power cylinders. Reversing the direction of flow through the speed control valves provides a flushing action which cleans the valve orifices.

If the wet glycol, returning to the pump from the absorber were to be completely fill the cylinder, no additional gas would be needed. However, the wet glycol will only occupy approximately 65 percent of the total volume of the cylinder and connecting tubing leaving 35 percent to be filled by gas from the absorber. This gas volume amounts to 1.7S.C.F. per gallon of dry glycol at 300 psig absorber pressure and 8.3S.C.F. at 1500 psig and may be considered as continuing power cost for pump operation. This gas can be utilized in the regeneration process of the dehydrator for "rolling" and "stripping" purposes. It may also be recovered in a low pressure glycol gas separator and used to fire the reboiler. By supplying some absorber gas to the cylinders, the wet glycol level is maintained at the wet glycol outlet connection on the absorber and eliminates the need of a liquid level controller and its attendant problems. Excess liquids such as hydrocarbons are removed from the absorber at approximately 55 percent of the pump rate, reducing the hazard of dumping a large volume of hydrocarbons into the reboiler as would be the case with a liquid level controller.

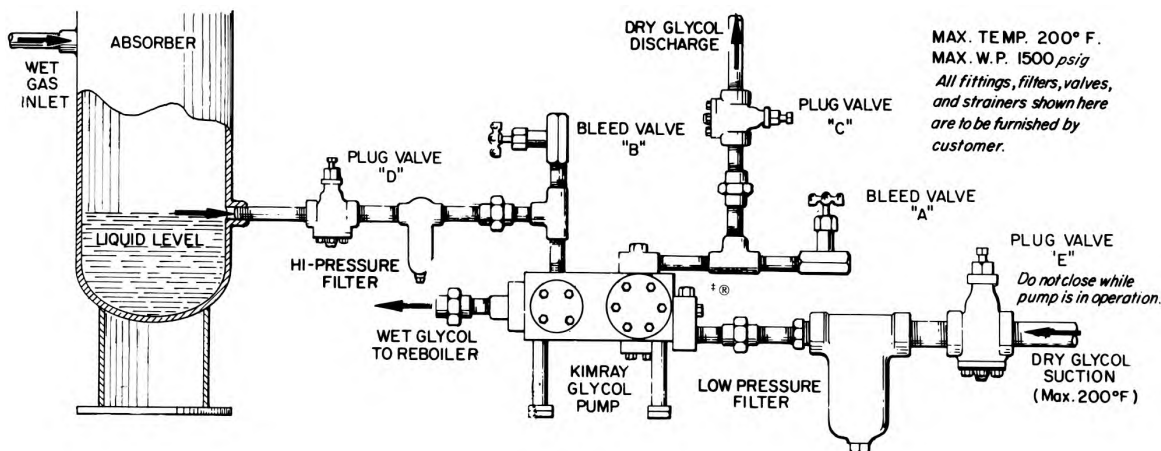


Figure 2

SYSTEM SHUTDOWN

1. Close plug valve "D" Allow pump to stop running.
2. Close plug valve "C" and "E".
3. Bleed pressure from bleed valve "A" and "B".

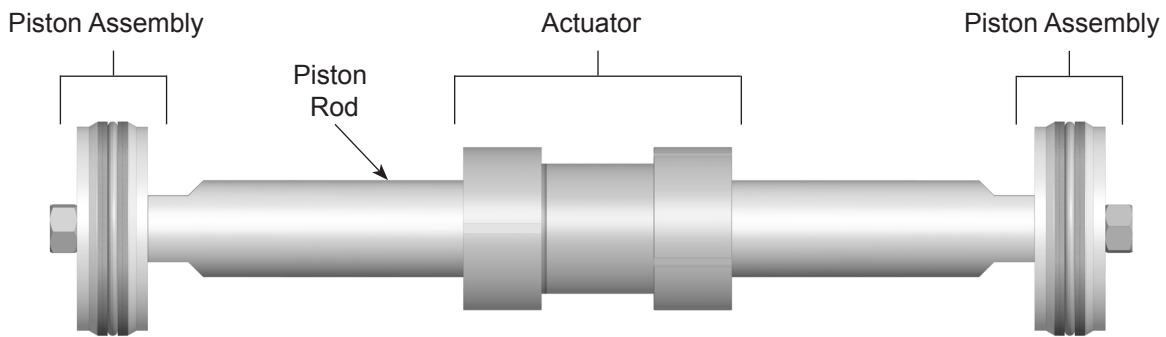


Figure 3

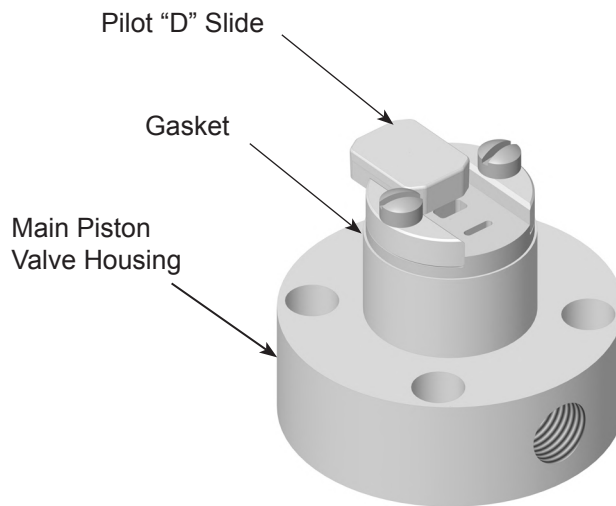


Figure 4

Table 1 - PV & SC Series Glycol Pumps						
Model Number	Capacity Gal. / Hr. (Liters / Hr.)		Rate Strokes / Minutes		Operating Pressure psig (bar)	
	Min.	Max.	Min.	Max.	Min.	Max.
1720PV	8 (30.3)	40 (151)	12	40	300 (20.6)	2000 (137)
4020PV	12 (45.4)	40 (151)	12	40	300 (20.6)	2000 (137)
9020PV	27 (102)	90 (340)	12	40	300 (20.6)	2000 (137)
21020PV	66 (250)	210 (795)	10	32	400 (27.5)	2000 (137)
45020PV	166 (628)	450 (1700)	10	28	400 (27.5)	2000 (137)
2015SC	8 (30.3)	20 (75.7)	5	55	100 (8.9)	500 (34.4)
5015SC	12 (45.4)	50 (189)	10	50	100 (8.9)	500 (34.4)
10015SC	22 (83.3)	100 (379)	10	48	100 (8.9)	500 (34.4)
20015SC	60 (227)	200 (757)	10	40	100 (8.9)	500 (34.4)

Maximum design pressure for P.V. is 2000 psig and S.C. Model is 1500 psig.

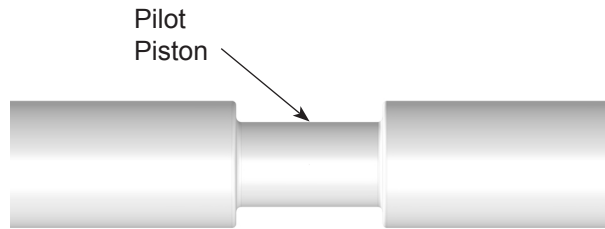


Figure 5

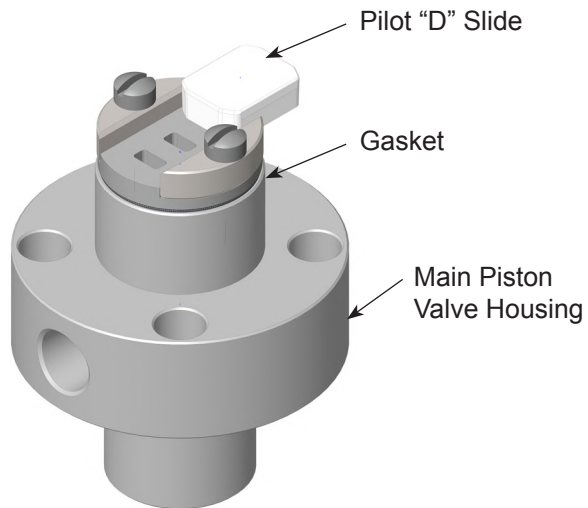


Figure 6

Table 2 - Pressure Rating		
Pressure Volume PV & SC Pump		
Type	Max. Gallons Per Hour	Operating Pressure
1720 PV	40	300 to 2000 psig Max
4020 PV	40	300 to 2000 psig Max.
9020 PV	90	300 to 2000 psig Max.
21020 PV	210	400 to 2000 psig Max.
45020 PV	450	400 to 2000 psig Max.
2015 SC	20	100 to 500 psig Max
5015 SC	50	100 to 500 psig Max
10015 SC	100	100 to 500 psig Max
20015 SC	200	100 to 500 psig Max

Circulating pump for gas glycol dehydrators.
 Circulating pump for gas amine desulphurizers.

Pump **PV** Working pressure of **300 - 2000 psig**.
 Pump **SC** Working pressure of **100 - 500 psig**

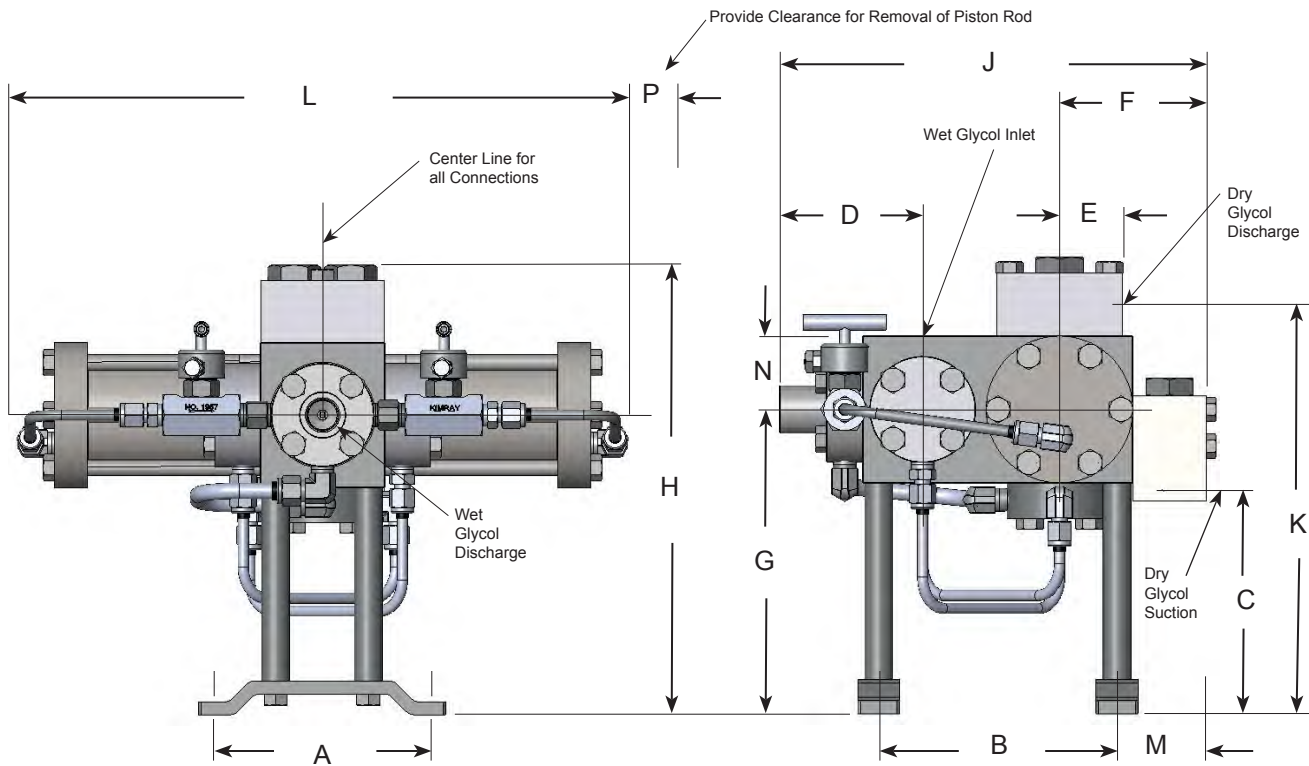


Figure 7

Table 3 - Glycol Pump Dimensions

Model PV, SC	A	B	C	D	E	F	G	H	J	K	L	M	N	P
1720 PV	5 1/4 in. (133 mm)	5 11/16 in. (144 mm)	5 3/4 in. (146 mm)	5 7/16 in. (87 mm)	1 1/2 in. (38 mm)	3 1/2 in. (88 mm)	7 1/4 in. (184 mm)	10 7/8 in. (276 mm)	10 3/16 in. (258 mm)	9 5/8 in. (244 mm)	15 in. (381 mm)	2 1/8 in. (53 mm)	1 3/4 in. (44 mm)	3 in. (76 mm)
4020 PV & 2015 SC	5 1/4 in. (133 mm)	5 11/16 in. (144 mm)	5 3/4 in. (146 mm)	5 7/16 in. (87 mm)	1 1/2 in. (38 mm)	3 1/2 in. (88 mm)	7 1/4 in. (184 mm)	10 7/8 in. (276 mm)	10 3/16 in. (258 mm)	9 5/8 in. (244 mm)	15 in. (381 mm)	2 1/8 in. (53 mm)	1 3/4 in. (44 mm)	3 in. (76 mm)
9020 PV & 5015 SC	6 1/4 in. (158 mm)	5 11/16 in. (144 mm)	6 3/8 in. (161 mm)	5 in. (127 mm)	1 3/4 in. (44 mm)	4 1/4 in. (107 mm)	8 3/4 in. (222 mm)	13 1/4 in. (336 mm)	13 7/8 in. (352 mm)	11 3/4 in. (289 mm)	20 in. (508 mm)	2 1/2 in. (63 mm)	2 in. (50 mm)	3 in. (76 mm)
21020 PV & 10015 SC	7 5/8 in. (193 mm)	10 1/8 ± 1/8 (257 mm)	7 in. (177 mm)	5 3/8 in. (136 mm)	2 1/4 in. (57 mm)	5 3/4 in. (146 mm)	9 1/4 in. (234 mm)	14 3/4 in. (374 mm)	16 5/8 in. (422 mm)	13 in. (330 mm)	24 in. (608 mm)	3 3/16 in. (80 mm)	2 1/2 in. (63 mm)	4 in. (101 mm)
45020 PV & 20015 SC	10 3/4 in. (273 mm)	14 ± 1/8 (355 mm)	9 in. (228 mm)	6 5/8 in. (168 mm)	2 5/8 in. (66 mm)	6 1/2 in. (165 mm)	11 3/8 in. (288 mm)	19 in. (482 mm)	21 1/8 in. (536 mm)	16 3/8 in. (415 mm)	34 in. (863 mm)	3 3/4 in. (95 mm)	3 1/2 in. (88 mm)	6 in. (152 mm)

Table 4 - Glycol Pump Specifications

Model Number	Max. Cap		Size of Pipe Connections	Mounting Bolts	Approx. Weight	Max. Strokes Per Minute	Glycol Output Strokes / Gal.	Glycol Output Gal. / Strokes
	G.P.M	G.P.H						
1720 PV	.67	40	1/2 in NPT (12 mm)	3/8 in. dia (9.42 mm)	66 lbs (29.93 kg)	40	59	0.017
4020 PV	.67	40	1/2 in NPT (12 mm)	3/8 in. dia (9.42 mm)	66 lbs (29.93 kg)	40	59	0.017
9020 PV	1.5	90	3/4 in NPT (19 mm)	1/2 in. dia (12 mm)	119 lbs (53.97 kg)	40	26.3	0.038
21020 PV	3.5	210	1 in NPT (25 mm)	1/2 in. dia (12 mm)	215 lbs (97.52 kg)	32	9	0.111
45020 PV	7.5	450	1 1/2 in NPT (38 mm)	1/2 in. dia (12 mm)	500 lbs (22.68 kg)	28	3.5	0.283
2015 SC	.33	20	1/2 in NPT (12 mm)	3/8 in. dia (9.52 mm)	66 lbs (29.93 kg)	55	147	0.0068
5015 SC	.83	50	3/4 in NPT (19 mm)	1/2 in. dia (12 mm)	119 lbs (53.97 kg)	50	52	0.019
10015 SC	1.67	100	1 in NPT (25 mm)	1/2 in. dia (12 mm)	215 lbs (97.52 kg)	48	25	0.040
20015 SC	3.33	200	1 1/2 in NPT (38 mm)	1/2 in. dia (12 mm)	500 lbs (22.68 kg)	40	8.8	0.114

Valve Components	Standard	Optional
Body	Ductile, ASTM A395	
Suction Block	Ductile, ASTM A395	
Discharge Block	Ductile, ASTM A395	
Main Valve Housing	Steel	
Pilot Valve Housing	Steel	
Port Plates	Stellite 3	
Cylinder Heads	Ductile, ASTM A395	
Pilot Piston Caps	Ductile, ASTM A395	
Cylinders	Stainless Steel	
Pistons	Steel	
Pilot Pistons	17-4 PH Stainless Steel	
Piston Rod	17.4 PH Stainless Steel	
Piston Rod Glands	Ductile, ASTM A395	
Fittings	Steel	SS6
Tubing	304 Stainless Steel	SS6
O-Rings	Nitrile	Viton®, Afias®, HSN
Backups	Glass Filled Teflon	

Part Name	Quantity Required	4020 PV to 2015 SC	9020 PV to 10015 SC	21020 PV to 10015 SC	45020 PV to 20015 SC
Cylinder Liner	2	2108	2373	2412	‡1505
Piston	2	1506	776	1507	1508
Piston Seal Retainer	2	1509	1510	1511	1512
Piston "O" Ring	2	156	773	774	329
Back-up Ring	4	1513	1457	1458	772
"O" Ring	2	154	154	155	1107
Lock Nut (Piston)	2	* _	906	175	1140
Cylinder "O" Ring	2	773	774	329	

* The piston is the nut for this model and is furnished with a socket head set screw.

‡Full cylinder only.

‡Model 20015 SC only, requires 8, No. 772 Back-up rings.

Table 7 - Elastomer Options		
Part	Standard Material	Optional Material
O-Rings	HSN	Viton®, Aflas®

Table 8 - Elastomer Specifications									
		ELASTOMERS							
		AFLAS	ETHYLENE PROPYLENE	VITON	HIGHLY SATURATED NITRILE	BUNA-N	LOW TEMP. BUNA-N	POLY- ACRY- LATE	GEO- THERMAL EPDM
Kimray Suffix		AF	EP	V	HSN	-	LTN	H	GEP
Resistance	Abrasion	GE	GE	G	G	G	G	G	GE
	Acid	E	G	E	E	F	F	P	G
	Chemical	E	E	E	FG	FG	FG	P	E
	Cold	P	GE	PF	G	G	E	P	GE
	Flame	E	P	E	P	P	P	P	P
	Heat	E	G	E	E	G	G	E	E
	Oil	E	P	E	E	E	E	E	F
	Ozone	E	E	E	G	P	P	E	E
	Set	PF	GE	E	GE	GE	GE	F	GE
	Tear	PF	GE	F	FG	FG	FG	FG	GE
	Water/Steam	GE	E	P	E	FG	FG	P	E
	Weather	E	E	E	G	F	F	E	E
	CO2	GE	GE	PG	GE	FG	FG	P	GE
	H2S	E	P	P	FG	P	P	P	F
	Methanol	PF	G	PF	P	P	P	P	G
Properties	Dynamic	GE	GE	GE	GE	GE	GE	F	GE
	Electrical	E	E	F	F	F	F	F	E
	Impermeability	G	G	G	G	G	G	E	G
	Tensile Strength	FG	GE	GE	E	GE	GE	F	GE
	Temp. Range (°F)	+30° to +500°F	-65° to +300°F	-10° to +350°F	-15° to +300°F	-30 to 200	-65 to 225	±0° to +300°F	0 to 500
	Temp. Range (°C)	0° to +260°C	-54° to +148°C	-23° to +177°C	-26° to +149°C	-34 to 121	-53 to 107	-17° to 149°C	-17 to 260
	Form	O	O	O	O	O	O	O	O

RATINGS: P-POOR, F-FAIR, G-GOOD, E-EXCELLENT

Table 9 - Glycol Pump Parameters

Pump	Bore	Rod Diameter	Stroke	Minimum Working Pressure	Maximum Working Pressure	Minimum Stroke / Minute	Maximum Stroke / Minute	Minimum Gallons / Hour	GPH Per Stroke / Minute	Glycol Output Stroke / Gallon.	Glycol Output Gallon / Stroke	Maximum Gallons / Hour
1720 PV	1.750 (44 mm)	.750 (19 mm)	2.000 (50 mm)	300 (20.6 bar)	2000 (137 bar)	8	40	8	1.00	59	0.017	40
4020 PV	1.750 (44 mm)	.750 (19 mm)	2.000 (50 mm)	300 (20.6 bar)	2000 (137 bar)	12	40	12	1.00	59	0.017	40
9020 PV	2.250 (57 mm)	1.000 (25.4 mm)	2.750 (69 mm)	300 (20.6 bar)	2000 (137 bar)	12	40	27	2.25	26.3	0.038	90
21020 PV	3.250 (82 mm)	1.375 (34 mm)	3.750 (95 mm)	400 (27.5 bar)	2000 (137 bar)	10	32	66	6.56	9	0.111	210
45020 PV	4.500 (114 mm)	2.000 (50 mm)	5.125 (130 mm)	400 (27.5 bar)	2000 (137 bar)	10	28	166	16.07	3.5	0.283	450
2015 SC	1.250 (31 mm)	.750 (19 mm)	2.000 (50 mm)	100 (6.89 bar)	500 (34.4 bar)	10	55	8	0.36	147	0.0068	20
5015 SC	1.750 (44 mm)	1.000 (25.4 mm)	2.750 (69 mm)	100 (6.89 bar)	500 (34.4 bar)	10	50	12	1.00	52	0.019	50
10015 SC	2.250 (57 mm)	1.375 (34 mm)	3.750 (95 mm)	100 (6.89 bar)	500 (34.4 bar)	10	48	22	2.08	25	0.040	100
20015 SC	3.250 (82 mm)	2.000 (50 mm)	5.125 (130 mm)	100 (6.89 bar)	500 (34.4 bar)	10	40	60	5.00	8.8	0.114	200

Circulation Rate Graph

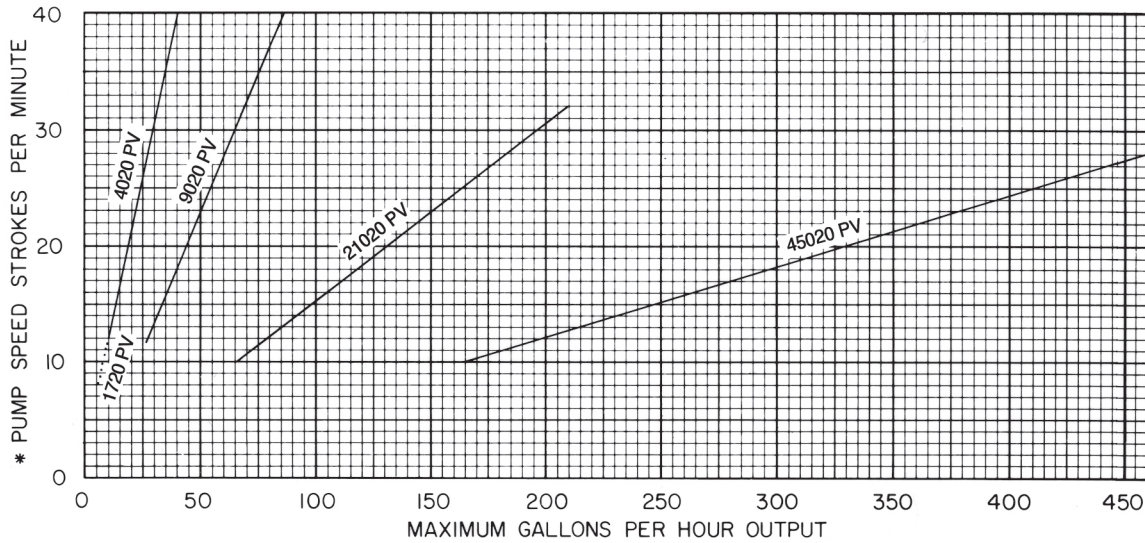


Figure 8

* It is not recommended to attempt to run pumps at speeds less than those indicated in the above graph.

Table 10 - PV Glycol Pumps

Operating Pressure psig	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500
Cut. Ft./Gallon @ 14.4 & 60°F	1.7	2.3	2.8	3.4	3.9	4.5	5.0	5.6	6.7	6.7	7.2	7.9	8.3

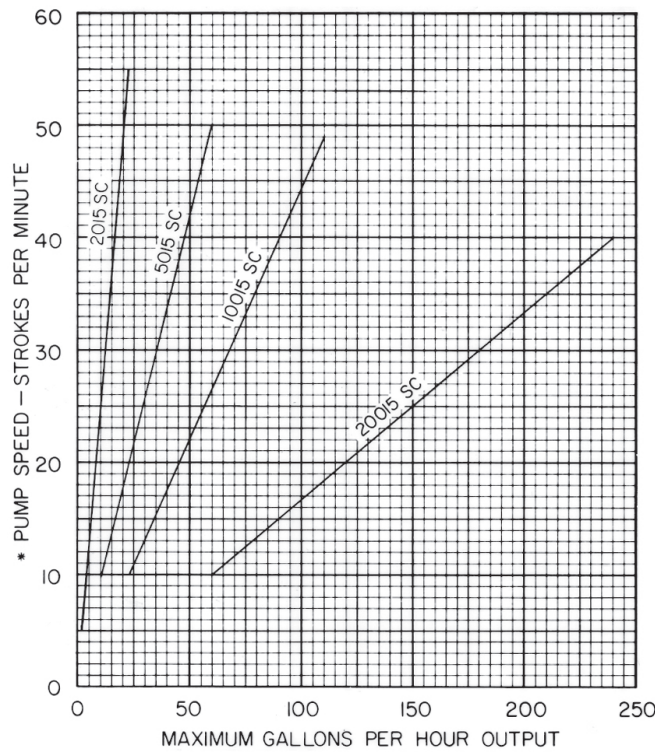
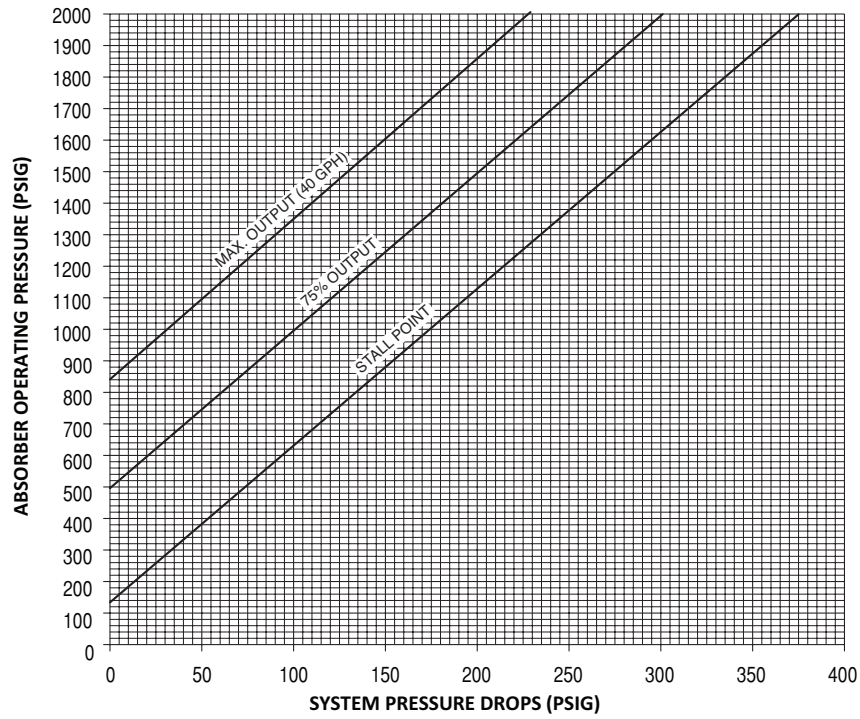


Figure 9

* It is not recommended to attempt to run pumps at speeds less than those indicated in the above graph..

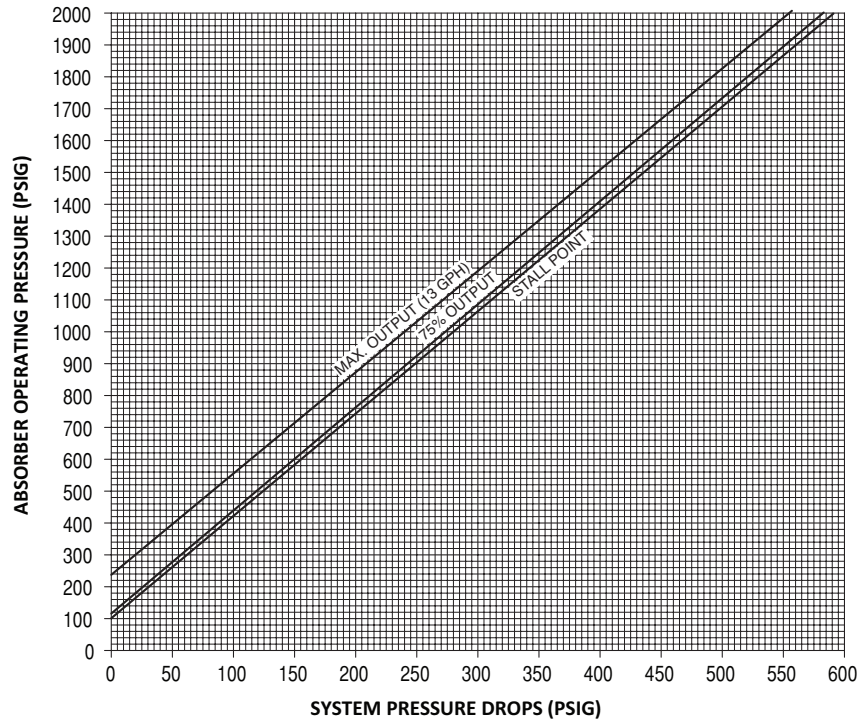
Table 11 - PV Glycol Pumps

Operating Pressure psig	100	200	300	400
Cut. Ft./Gallon @ 14.4 & 60°F	1.7	2.3	2.8	3.4

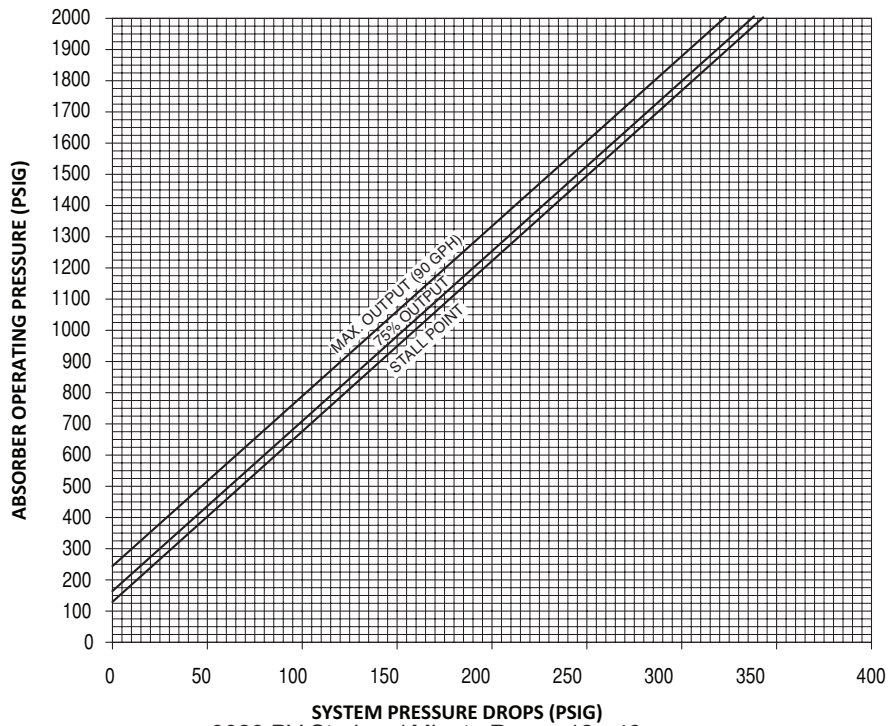


1720 PV Strokes / Minute Range 8 - 40

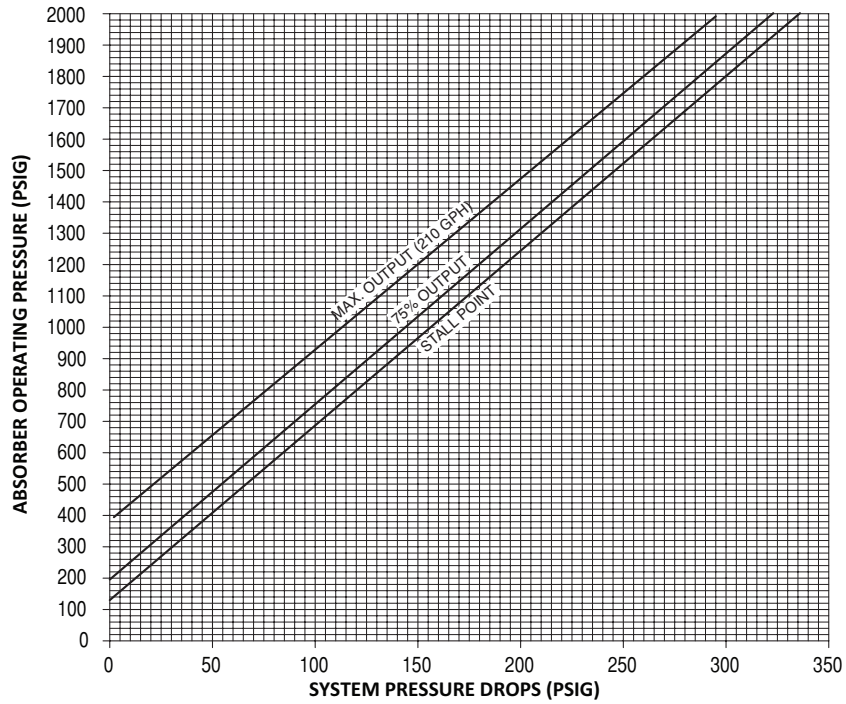
Figure 10



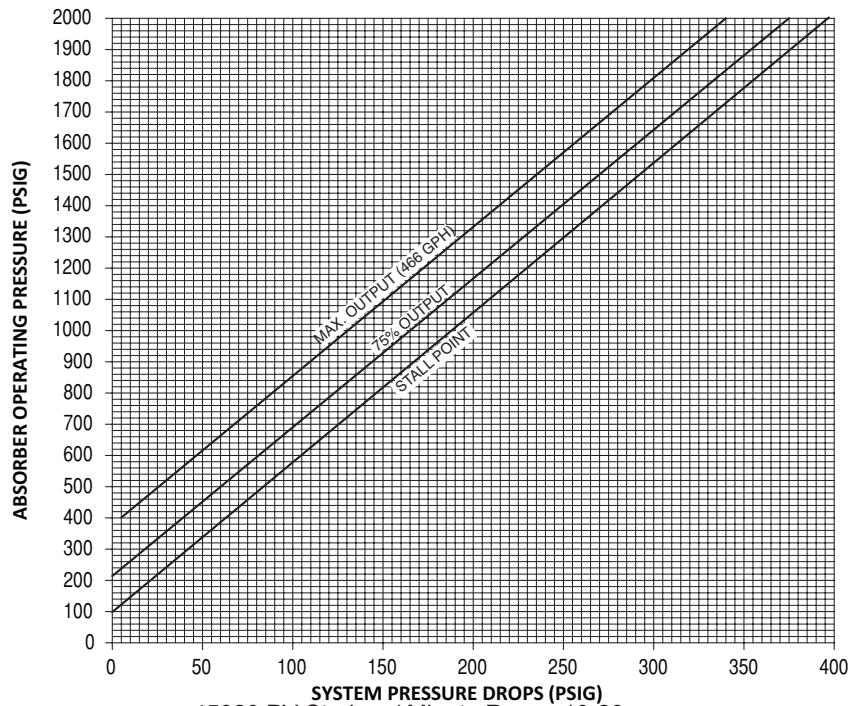
4020 PV Strokes / Minute Range 12 - 40
Figure 11



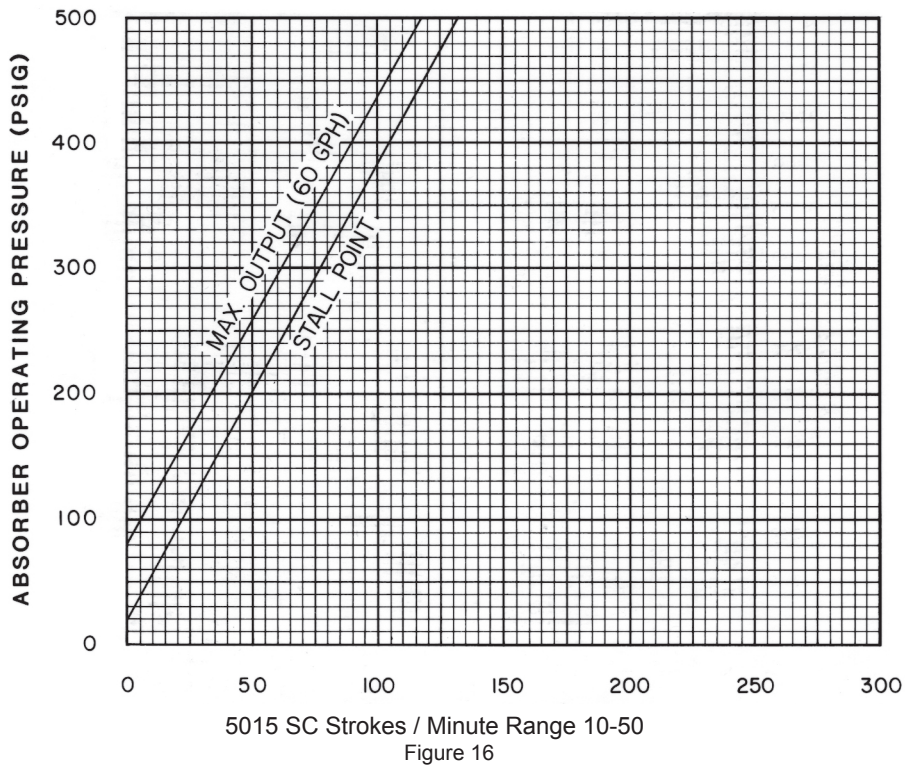
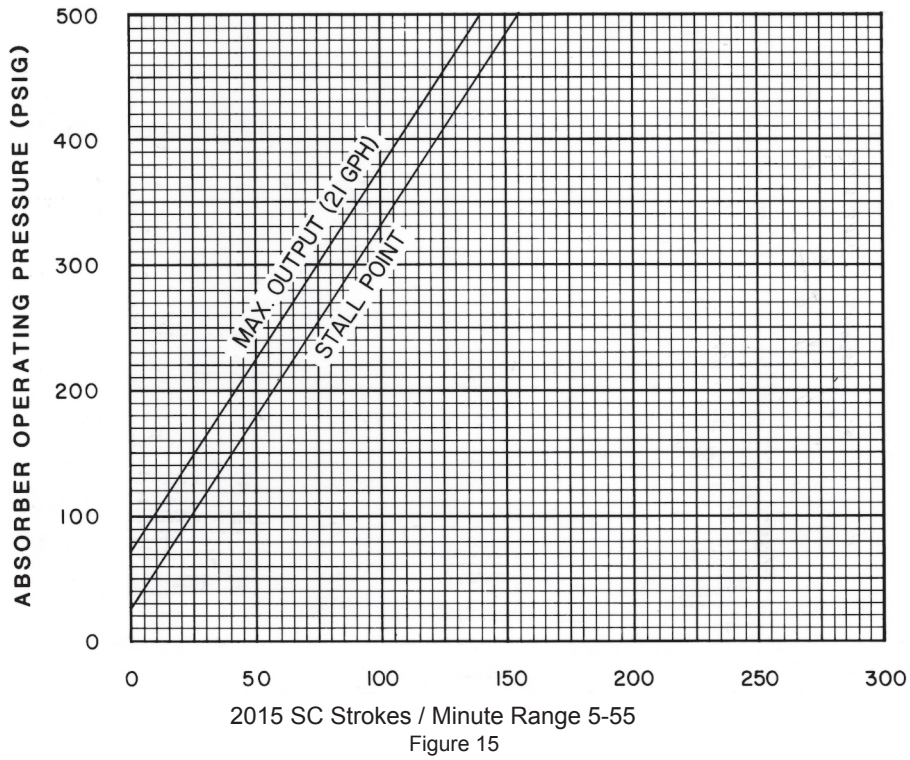
9020 PV Strokes / Minute Range 12 - 40
Figure 12



21020 PV Strokes / Minute Range 10-32
Figure 13



45020 PV Strokes / Minute Range 10-28
Figure 14



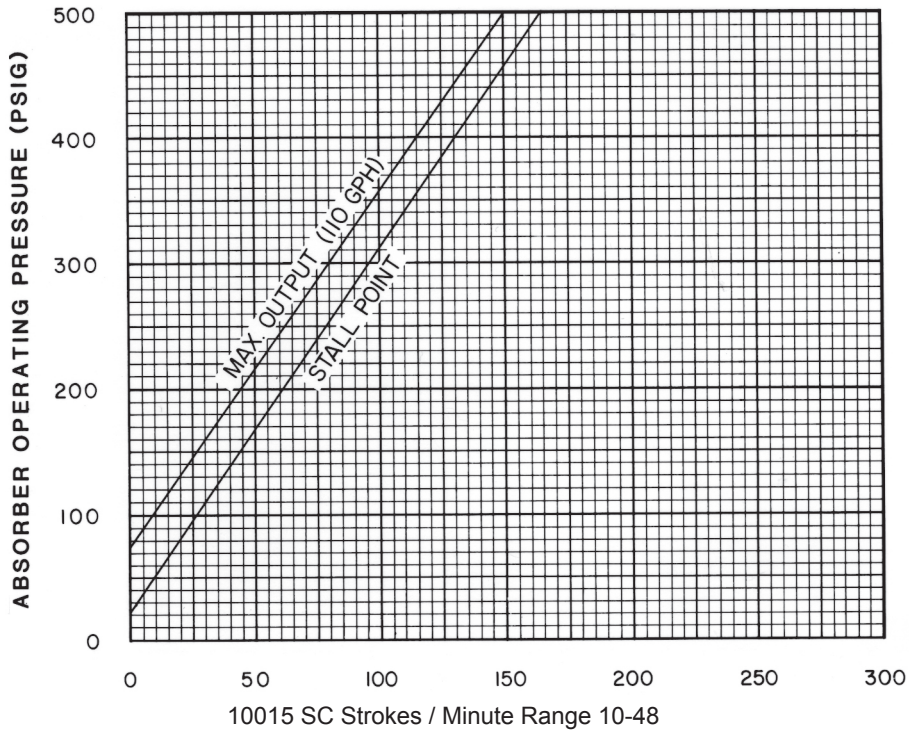


Figure 17

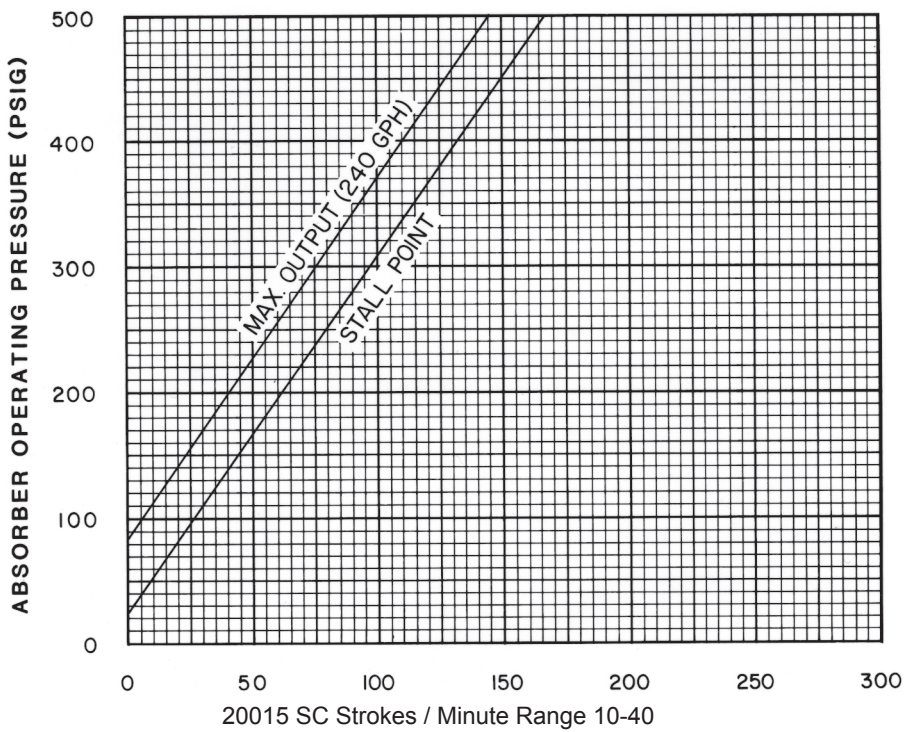


Figure 18

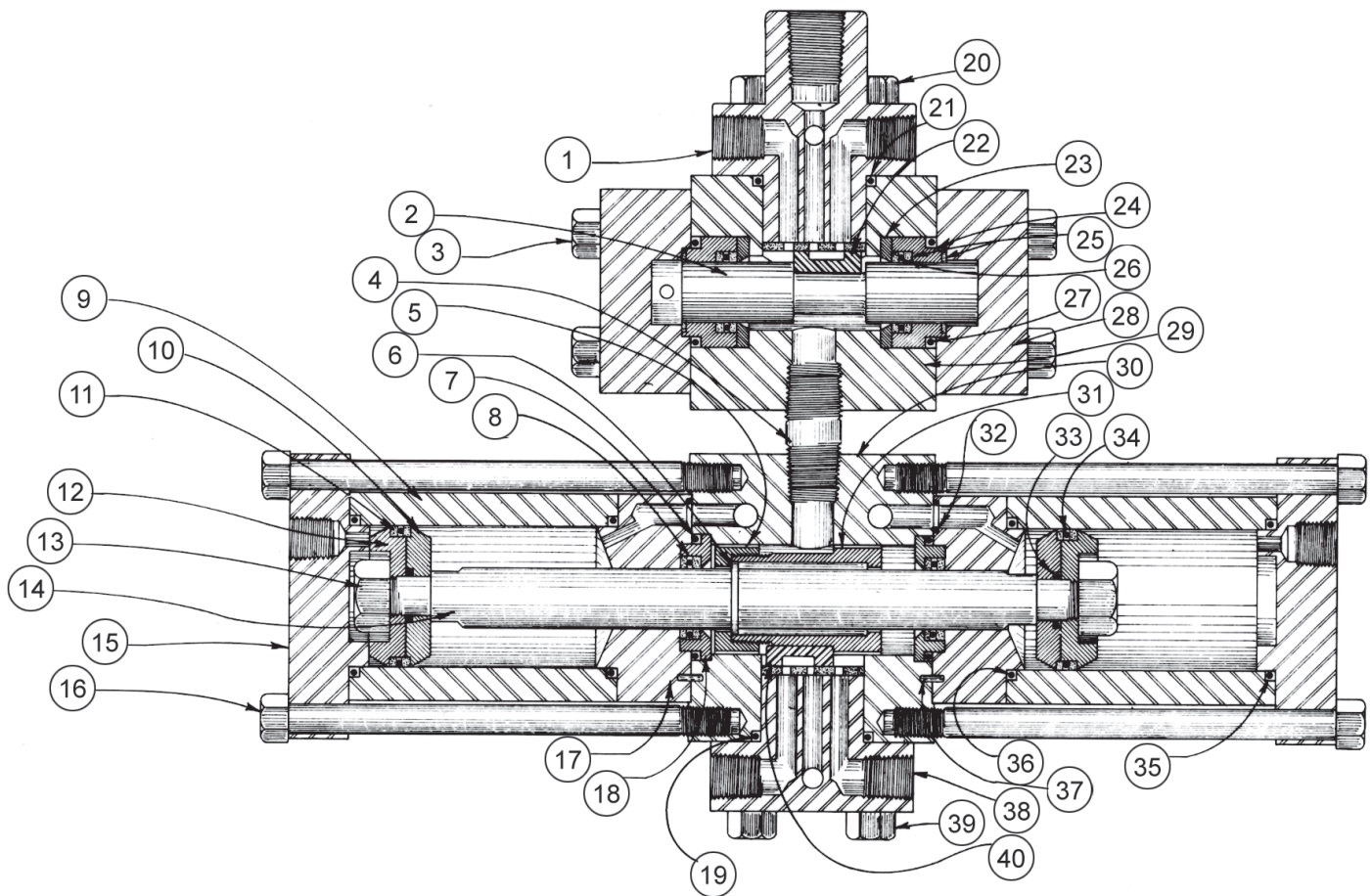


Figure 19

Key Description

- | | | |
|----------------------------------------------------------|--------------------------------------|--------------------------------------|
| 1 Pilot Piston Valve Housing, Steel | 14 Piston Rod, Stainless Steel | 28 Pilot Piston Cap, Ductile Iron |
| 2 Pilot Piston, Stainless Steel | 15 Cylinder Head, Ductile Iron | 29 Body (Pilot Piston), Ductile Iron |
| 3 Screw, Plated Steel | 16 Screw, plated Steel | 30 Body (Main Piston), Ductile Iron |
| 4 Nipple, Plated Steel | 17 Piston Rod Gland, Ductile Iron | 31 "D" Slide Actuator, Steel |
| 5 Actuator Cap, Steel | 18 Piston Rod Seal Retainer, Steel | 32 O-Ring, Nitrile |
| 6 Snap Ring, Stainless Steel | 19 O-Ring, Nitrile | 33 O-Ring, Nitrile |
| 7 O-Ring, Nitrile | 20 Screw, Plated Steel | 34 O-Ring, Nitrile |
| 8 O-Ring & Back Up, Nitrile & Teflon | 21 O-Ring, Nitrile | 35 O-Ring, Nitrile |
| 9 Cylinder, PV - Stainless Steel
SC - Stainless Steel | 22 "D" Slide, Nylon | 36 O-Ring, Nitrile |
| 10 Piston Seal Retainer, Steel | 23 Pilot Piston Seal Retainer, Steel | 37 Index Pin, Stainless Steel |
| 11 Back Up, Teflon | 24 Pilot Piston Bearing, Steel | 38 Main Piston Valve Housing, Steel |
| 12 Piston, Steel | 25 Back Up, Teflon | 39 Screw, Plated Steel |
| 13 Nut, Plated Steel | 26 O-Ring, Nitrile | 40 "D" Slide, Nylon |
| | 27 O-Ring, Nitrile | |

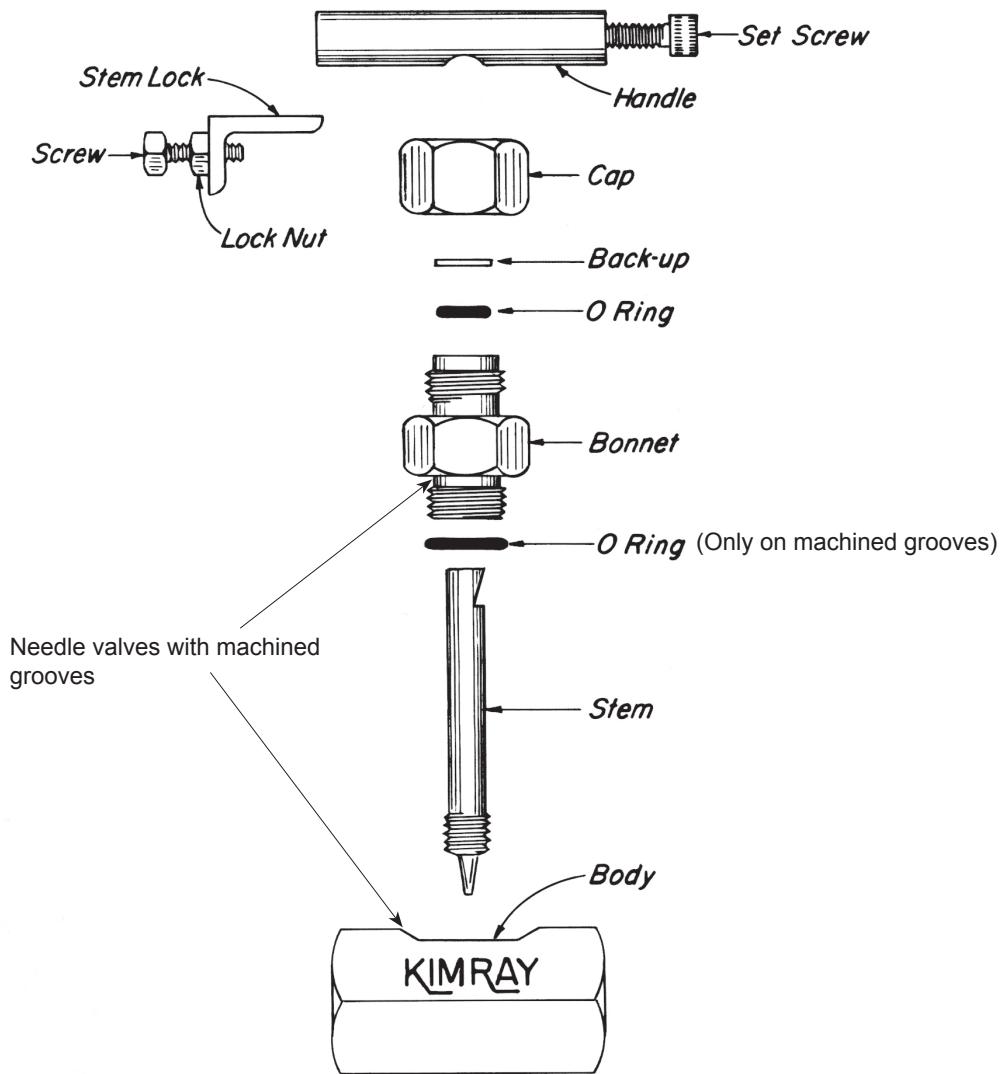


Figure 20

Table 12 - 6000 PSIG W.P. NEEDLE VALVES

N.P.T SIZE	VALVE NO.	ORFICE SIZE	PUMP SIZE	BODY	BONNET	CAP	STEM	HANDLE	SET SCREW	BACK UP	O-RING	O-RING	STEM LOCK	STEM LOCK ASSY	SCREW	LOCK NUT
TYPE 303 STAINLESS STEEL STANDARD ON ALL PUMPS EXCEPT 45015 PV PUMP																
1/4 in.	1911	1/16 in.	1720	1911A	1603D	1603F	1957A	1603B	1964	1978	638	265	6746	2271A	2274	2275
1/4 in.	1957	1/8 in.	4020	1957C	1603D	1603F	1957A	1603B	1964	1978	638	265	6746	2271A	2274	2275
3/8 in.	1956	3/16 in.	9020	1956C	1955D	1955F	1956A	1955B	1963	1979	153	2631	6747	2270A	2274	2275
1/2 in.	1955	9/32 in.	21020	1955C	1955D	1955F	1956A	1955B	1963	1979	153	2631	6747	2270A	2274	2275
CARBON STEEL STANDARD ON 45015 PV PUMP ONLY																
3/4 in.	1954	13/32 in.	45020	1954C	1954D	1954F	1954A	1954B	1962	1980	154	2131	6748	2269A	2274	2275
TYPE 316 STAINLESS STEEL - AVAILABLE ON SPECIAL ORDER AND EXTRA COST																
1/4 in.	1911S6	1/16 in.	1720	1911A6	1603D6	1603F6	1957A	1603B	1964	1978	638	265	6746		2274	2275
1/4 in.	1957S6	1/8 in.	4020	1957C6	1603D6	1603F6	1957A	1603B	1964	1978	638	265	6746		2274	2275
3/8 in.	1956S6	3/16 in.	9020	1956C6	1955D6	1955F6	1956A	1955B	1963	1979	153	2631	6747		2274	2275
1/2 in.	1955S6	9/32 in.	21020	1955C6	1955D6	1955F6	1955A	1955B	1963	1979	153	2631	6747		2274	2275
3/4 in.	1954S6	13/32 in.	45020	1954C6	1954D6	1954F6	1954A	1954B	1962	1980	154	2131	6748		2274	2275

Table 13 - Glycol Pump						
Pump Size	Cage No.	Dart No.	Suction Back-Up	Dis Back-Up	Scrubber O-Ring	Teflon Dart Without Cage
1720 PV 2015 SC	1941	1940	1907	1666	647	1735
5015 SC 9020 PV	1938	1937	1908	1667	647	1736
10015 SC 21020 PV	1933	1932	1909	1668	153	1737
20015 SC 45020 PV	1935	1934	2445	1669	265	1738

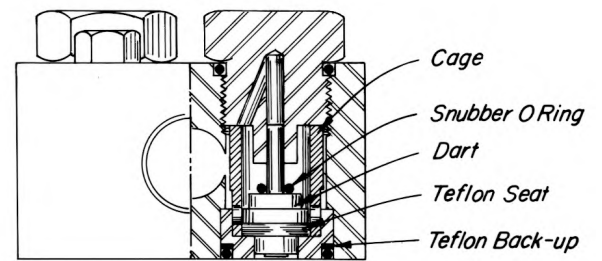
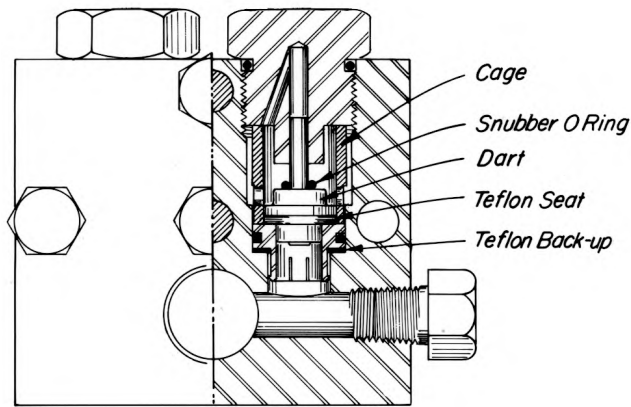
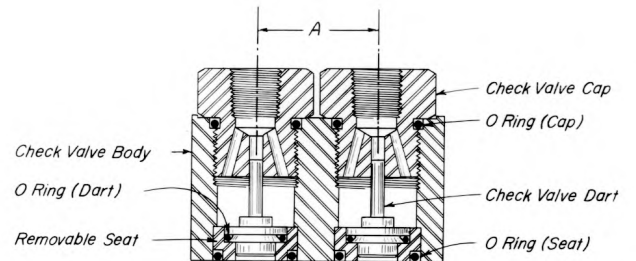
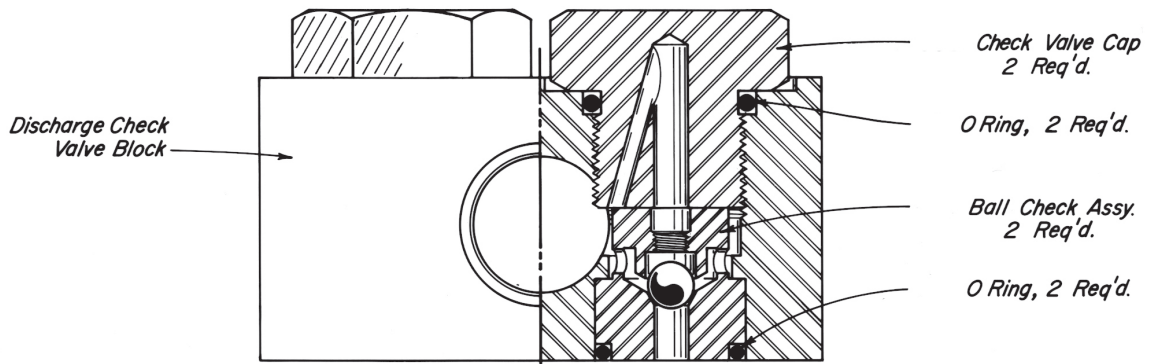
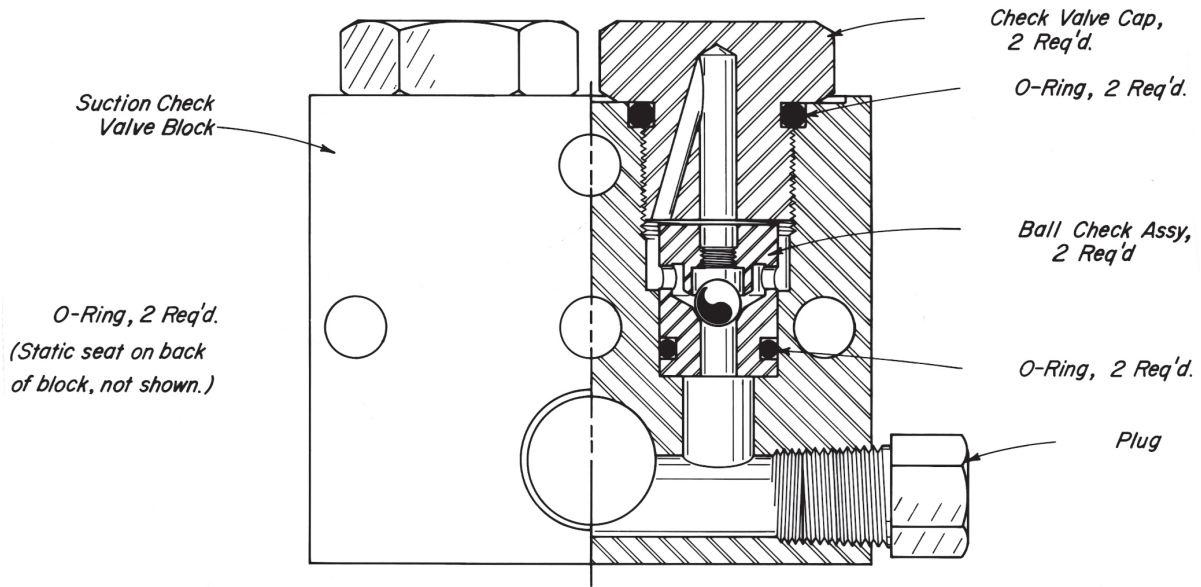


Table 14 - Split Discharge						
Part Name	Qty Req'd	1720 PV	4020 PV and 2015 SC	9020 PV and 5015 SC	21020 PV and 10015 SC	45020 PV and 20015 SC
Check Valve Body	1	1940	1907	1195	1196	1197
"O"-Ring Seat	2	1937	1908	1151	156	801
Removable Seat	2	1932	1909	1131	1133	1173
Rev. Rem. Seat	2	1934	2445	1948	1949	1950
"O"-Ring Dart	2	855	855	154	924	156
Dart	2	1307	1307	853	854	1163
"O"-Ring Cap	2	155	155	156	157	801
Check Valve Cap	2	1327	1327	1114	1199	1198
Tapped Hole Size	NPT	1/4 in.	1/4 in.	3/8 in.	1.2 in.	3/4 in.
Dimension "A"	Inches	1 1/2 in.	1 1/2 in.	1 11/16	2 5/16	3



Split Discharge



Base Codes for Kimray Glycol Pumps

Once all spaces are filled, remove all dashes and condense without spaces.

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Base Code		Trim Material		Elastomer		Certification	
Code	Description	Code	Description	Code	Description	Code	Description
Three character base code from page ii		-	Standard	-	Standard (Buna-N)	-	No Certifications
				AF	Alias	MTR	Material Test Reports (i.e. Steel Casting)
				HSN	High Saturated Nitrile		
				V	Viton	SPT	Static Pressure Tests

Code	Description
GAB	4020 PV Glycol Pump
GAC	2015 SC Glycol Pump
GAD	1720 PV Glycol Pump
GAF	9020 PV Glycol Pump
GAG	5015 SC Glycol Pump
GAH	21020 PV Glycol Pump
GAI	10015 SC Glycol Pump
GAJ	45020 PV Glycol Pump
GAK	20015 SC Glycol Pump

Kimray is an ISO 9001- certified manufacturer.
Kimray quality assurance process maintains strict controls
of materials and the certification of parts used in Kimray glycol pumps.