HOW TO CALCULATE GLYCOL CIRCULATION RATE TO DETERMINE GLYCOL PUMP SPEED

If your glycol flow rate is too high, it can overwhelm the reboiler and you will lose efficiency. If the glycol flow rate is too low, you will not be removing enough water vapor from your gas traveling through the contact tower to achieve your desired dew point level.

Use these instructions to learn how to determine how much glycol to circulate in a system to properly dehydrate your natural gas.

Step 1: Use the *Water Vapor Content of Gas* chart below to Identify your water content (W).

Step 2: Multiply your water content (W) by your gas flow rate (M).

Step 3: Multiply total water content (W x M) by the number of gallons of glycol needed to remove one pound of water (G). This will be between 3-5 gallons for a typical absorber design.

Step 4: Divide the total amount of circulated glycol per day by (24) to calculate the per-hour rate.

Step 5: Use the *Glycol Circulation Rate* chart below to identify your Kimray pump size and find the circulation rate closest to your calculated rate to determine the ideal pump speed. As a general rule, round up to the nearest stroke count. This is the pump speed needed to maintain your daily circulation rate.

FORMULA

$$\frac{(W \times M) \times G}{24} = \textbf{Circulation Rate (Gallons per Hour)}$$

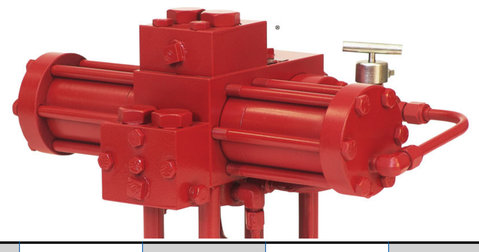
W = Water Vapor Content of Gas
M = Gas Flow Rate
G = Gallons of Glycol Needed to remove one pound of water (3-5 gallons typically)

Water Vapor Content of Gas

TEMP. (°F)	**WATER VAPOR CONTENT,** LBS. PER MILLION CUBIC FEET OF GAS (MMCF)											
	PRESSURE (PSI)											
	200	250	300	350	400	450	500	600	700	800	900	1000
60°	67	55	47	42	36	33	30	26	23	21	19	18
65°	79	64	55	48	43	38	35	30	27	24	22	21
70°	94	81	65	57	50	45	42	36	32	29	27	25
75°	110	90	76	68	60	54	47	42	37	34	31	28
80°	130	106	90	78	70	63	58	50	44	40	36	34
85°	153	123	103	90	81	74	67	58	47	45	42	39
90°	178	146	122	106	95	86	78	67	60	54	49	45
95°	207	169	142	123	110	97	91	77	67	62	57	53
100°	240	195	165	144	128	115	105	90	80	72	65	60
105°	280	225	190	166	149	133	119	102	92	85	75	70
110°	325	269	218	191	173	154	138	119	106	97	88	82
115°	370	296	260	221	198	177	159	134	120	111	100	91
120°	425	324	290	255	227	207	183	159	140	128	113	104

Glycol Circulation Rate

Using Glycol Circulation Rate and Pump Size to Determine Pump Speed (Strokes per Minute)



Count one stroke for each discharge of the pump.

MODEL #	**CIRCULATION RATE** (GALLONS PER HOUR)																
	PUMP SPEED (STROKES PER MINUTE)																
	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40
1720 PV	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40
4020 PV			12	14	16	18	20	22	24	26	28	30	32	34	36	38	40
9020 PV			27	31.5	36	40.5	45	49.5	54	58.6	63	67.5	72	76.5	81	85.5	90
21020 PV			79	92	105	118	131	144	157	171	184	197	210				
45020 PV			200	233	266	300	333	366	400	433	466						

It is not recommended to attempt to run pumps at speeds less or greater than those in the above table.

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