



GHA SERIES
EXTREME DUTY ABRASIVE
G, J, N, R & S HYD SIZE
ROTARY GEAR PUMP



The GHA series is designed for applications in the operating ranges noted below. These units are available with head and backhead jackets for temperature control, and packing or carbide mechanical seal options described on the following pages.

This abrasive handling, extreme duty series, provides superior wear resistance. The design also provides superior rotor shaft support and an integral, maintenance-free radial/thrust bearing for reduced deflection and wear. Reduced speeds enable service over extended periods. Information such as percentage, size and hardness of solids present in the liquid are useful to estimate pump life.

FEATURES

*HARDENED, WEAR RESISTANT GEARS,
 HOUSING, HEAD, PIN, AND BUSHING*
*HARD FACE, WEAR RESISTANT
 MECHANICAL SEAL*
OVERSIZED TAPERED SEAL CAVITY
*HEAVY DUTY NEEDLE ROLLER
 BEARING*
*ROTOR END CLEARANCE EXTERNALLY
 ADJUSTABLE*
*FLEXIBLE SEAL DESIGN ALLOWS FOR
 A VARIETY OF INDUSTRY
 STANDARD SEALS OR PACKING*
BALL BEARING THRUST CONTROL

OPERATING RANGE

CAPACITY (GPM) : (8 TO 325)
 [LPM] : [25 TO 1020]

PRESSURE (PSI) : [0 TO 200]
 [BAR] : [0 TO 14]

VISCOSITY (SSU) : (28 TO 250,000)
 [cSt] : [1 TO 55,000]

TEMPERATURE (F) : (-60° TO 500°)
 [C] : [-51° TO 260°]

APPLICATIONS

USE WITH ANY LIQUID
 COMPATIBLE WITH
 CAST IRON

- ★ PAINTS
- ★ INKS
- ★ ADHESIVES
- ★ WASTE LIQUIDS
- ★ EMULSIONS
- ★ FILTERING

EXTER- IOR	ROTOR & IDLER	HSG PORTS	IDLER BUSHING	BACKHD BEARING	IDLER PIN	SHAFT	SHAFT SEALING		ROTA- TION	INTERNAL RELIEF VALVE	
							MECHANICAL SEAL ●	PACKING ■		MATERIAL	SETTING
CAST IRON	HARD IRON	90° TAPPED/ FLNG'D	SILICON CARBIDE	① NEEDLE BEARING	TUNGSTEN CARBIDE	HARD. STEEL	SILICON CARB. SILICON CARB. VITON	ARAMID FIBER W/GRAPHITE	C.W.	DUCTILE IRON	75 PSI [5 BAR]

Standard Models

G H A 2 NK 3 - B
 | | | | | | |
 GEAR DUTY DESIGN PORT SIZE HYDRAULIC SEAL STYLE
 SIZE SIZE

MODEL NUMBER	NOM. CAPACITY-SPEED		MAXIMUM				SHIPPING DATA		
	MAXIMUM		DIFFERENTIAL PRESSURE - PSI [BAR]			TEMP.	② Weight	Volume	
	GPM [LPM]	RPM 60 Hz [50 HZ]	BELOW 38 SSU [4 cSt]	38 TO 100 SSU [21 cSt]	100 TO 250,000 SSU [55,000 cSt]	°F [°C]			LBS [KG]
GHA 1-1/2 GC 3-B ● GHA 1-1/2 GC 4-B ■	8 [25]	870 [720]						57 [25,9]	2.9
GHA 1-1/2 GF 3-B ● GHA 1-1/2 GF 4-B ■	11 [36]							57 [25,9]	
GHA 1-1/2 GH 3-B ● GHA 1-1/2 GH 4-B ■	15 [49]							57 [25,9]	
GHA 1-1/2 GJ 3-B ● GHA 1-1/2 GJ 4-B ■	19 [60]							57 [25,9]	
GHA 2 JJ 3-B ● GHA 2 JJ 4-B ■	28 [88]		100 [7]	150 [10]	200 [14]	● 250 [119]		144 [65,5]	5.3
GHA 2 JL 3-B ● GHA 2 JL 4-B ■	38 [121]							144 [65,5]	
GHA 2 JP 3-B ● GHA 2 JP 4-B ■	54 [169]							144 [65,5]	
GHA 2 NK 3-B ● GHA 2 NK 4-B ■	60 [188]	580 [480]				■ 500 [260]		180 [81,6]	5.3
GHA 3 NK 3-B ● GHA 3 NK 4-B ■								180 [81,6]	
GHA 2 NM 3-B ● GHA 2 NM 4-B ■	80 [251]							180 [81,6]	
GHA 3 NM 3-B ● GHA 3 NM 4-B ■								180 [81,6]	
GHA 2 NP 3-B ● GHA 2 NP 4-B ■	99 [313]							180 [81,6]	
GHA 3 NP 3-B ● GHA 3 NP 4-B ■								180 [81,6]	10.7

STANDARD MODELS CONT.

① EXCEPT "S" SIZE AND 4-B MODELS (SILICON CARBIDE BUSHING).

② FOR 4-B UNIT WEIGHT, REFER TO GHS SECTION

● MECHANICAL SEAL
■ PACKING

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Standard Models Cont'd

MODEL NUMBER	NOM. CAPACITY-SPEED		MAXIMUM				SHIPPING DATA		
	MAXIMUM		DIFFERENTIAL PRESSURE - PSI [BAR]			TEMP.	Weight	Volume	
	GPM [LPM]	RPM 60 Hz [50 HZ]	BELOW 38 SSU [4 cSt]	38 TO 100 SSU [21 cSt]	100 TO 250,000 SSU [55,000 cSt]	°F [°C]	LBS [KG]	CU. FT.	
GHA 2 RM 3-B ● GHA 2 RM 4-B ■	85 [271]	350 [290]	100 [7]	150 [10]	200 [14]	● 250 [119] ■ 500 [260]	357 [162]	10.7	
GHA 2-1/2 RM 3-B ● GHA 2-1/2 RM 4-B ■							357 [162]		
GHA 3 RM 3-B ● GHA 3 RM 4-B ■							357 [162]		
GHA 3 RP 3-B ● GHA 3 RP 4-B ■							105 [339]		357 [162]
GHA 3 RR 3-B ● GHA 3 RR 4-B ■							125 [402]		357 [162]
GHA 3 RS 3-B ● GHA 3 RS 4-B ■							146 [465]		357 [162]
GHA 4 RS 3-B ● GHA 4 RS 4-B ■							146 [465]		357 [162]
GHA 3 SR 3-B ● GHA 3 SR 4-B ■	210 [660]	350 [290]	100 [7]	150 [10]	200 [14]	● 400 [204] ■ 500 [260]	530 [240]	17.3	
GHA 4 SR 3-B ● GHA 4 SR 4-B ■							530 [240]		
GHA 3 SU 3-B ● GHA 3 SU 4-B ■							325 [1020]		530 [240]
GHA 4 SU 3-B ● GHA 4 SU 4-B ■									530 [240]

PORTS ARE COMPATIBLE WITH 125# ANSI CAST IRON FLANGES. ALL OTHER PORTS ARE TAPPED NPT FOR ANSI PIPE.

NOTE: PROPER PUMP APPLICATION REQUIRES CONSIDERATION OF ADDITIONAL FACTORS. PLEASE REVIEW APPLICATION GUIDE IN SECTION 500 OR CONSULT THE FACTORY.

GHA

**FOR GHA DRIVE OPTIONS
AND DIMENSIONS**

SEE

SECTION 545



PERFORMANCE CURVES

SPEED VS. CAPACITY/HORSEPOWER

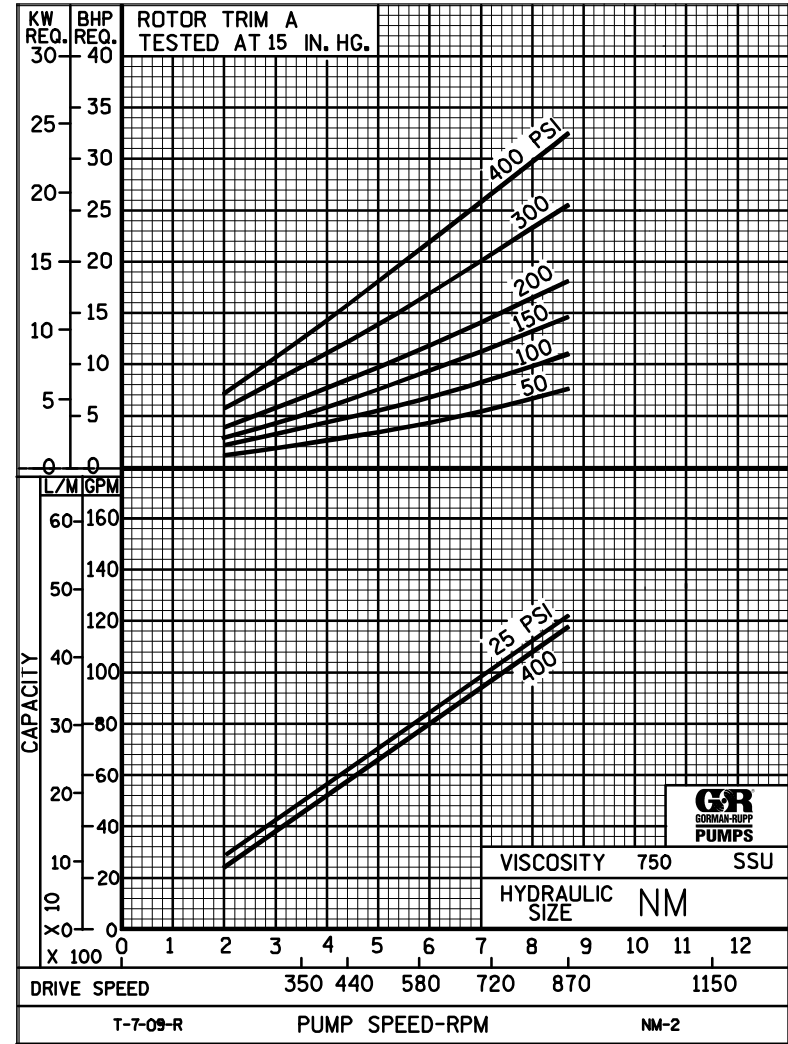
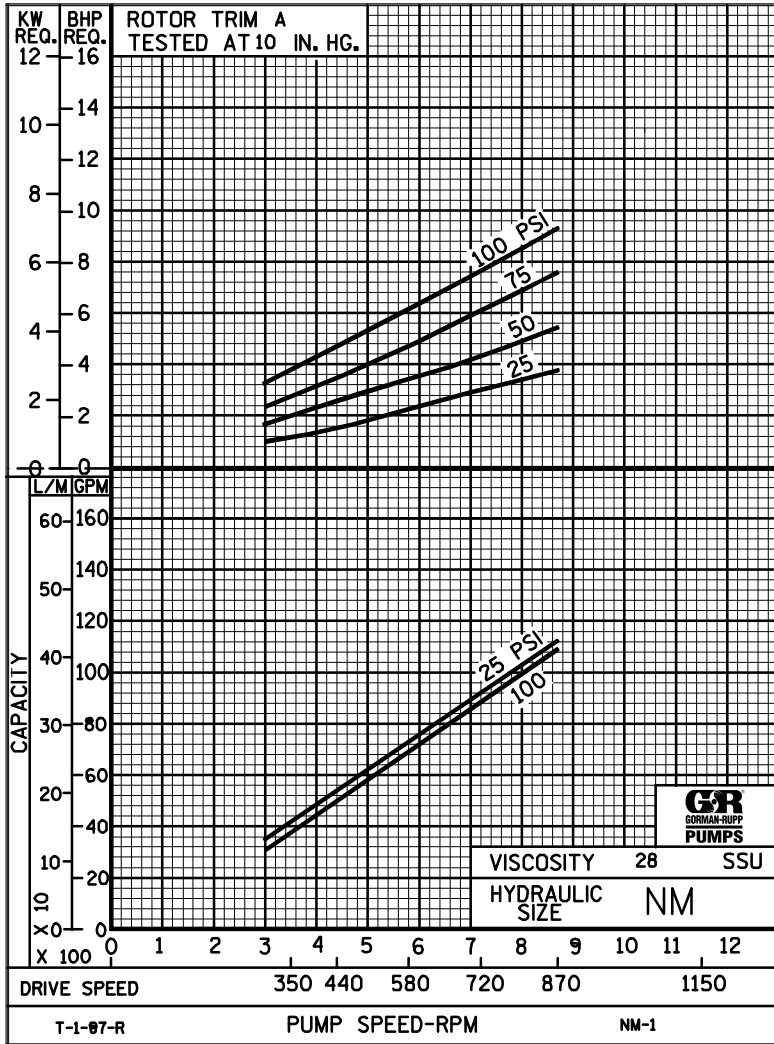
NM

Hydraulic Size

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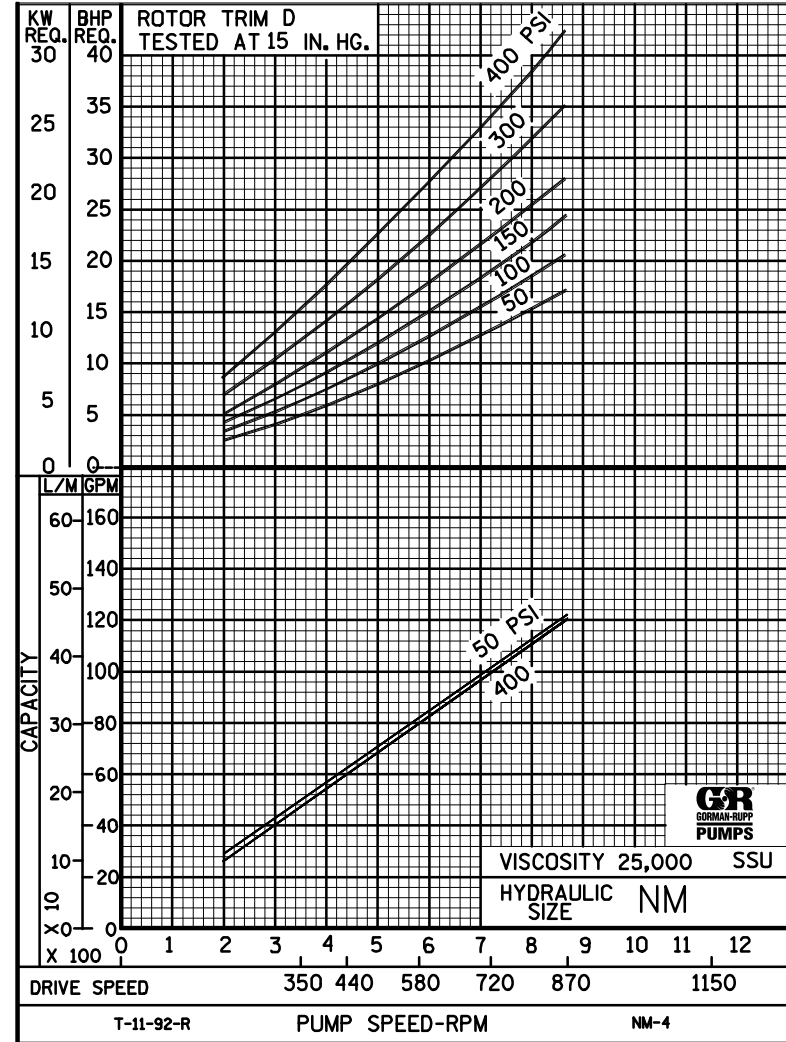
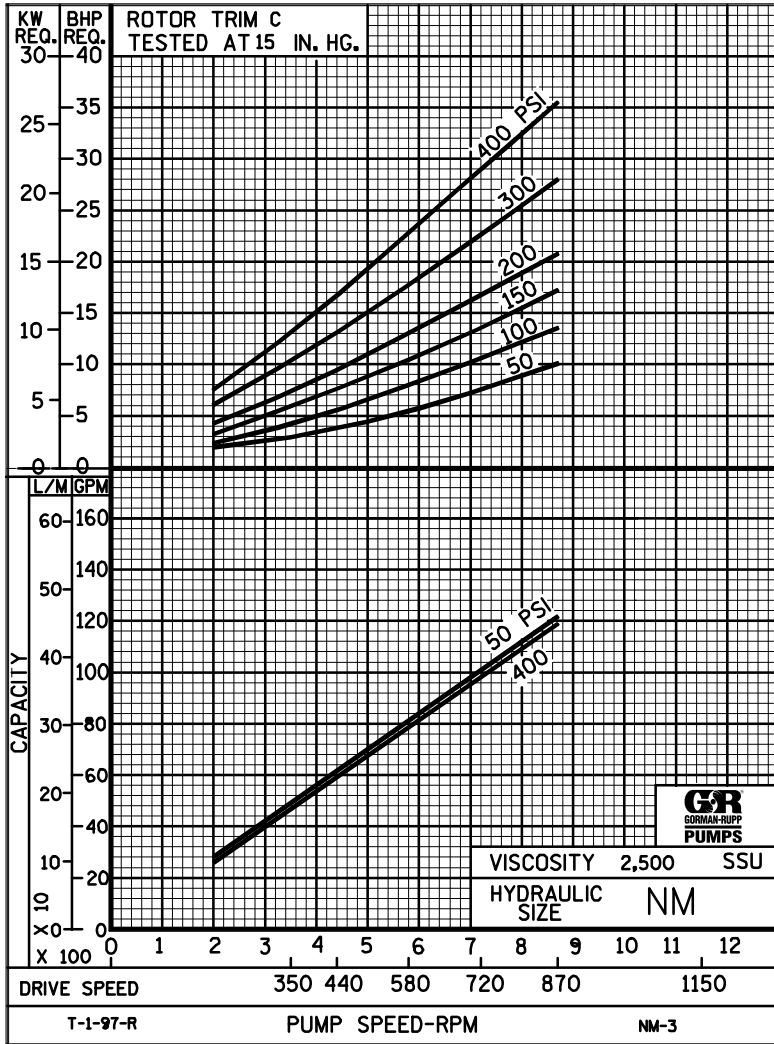


PERFORMANCE CURVES

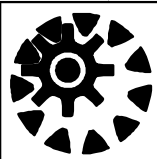
SPEED VS. CAPACITY/HORSEPOWER

NM

Hydraulic Size



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NM

PUMP HYDRAULIC SIZE CHART

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120 GPM
870 RPM

NOMINAL		ROTOR TRIM	VISCOSITY (SSU)	N.I.P.R. (PSIA)	FRICTION PIPE LOSS (PSI/FT) <small>(Based on Sch 40 Steel Pipe)</small>					FULL BYPASS RELIEF VALVE PRESSURE (PSI)					CAPACITY (GPM) / H.P. REQUIRED													
CAP. GPM	SPEED RPM				PIPE DIAMETER					CRACKING PRESS. (PSI)					DIFFERENTIAL PRESSURE (PSI)													
					2"	2 1/2"	3"	4"	5"	LOW PRES R/V			HI PRES R/V		MEDIUM DUTY AND HEAVY DUTY				HEAVY DUTY ONLY									
							50	75	100	150	200	25	50	75	100	150	200	300	400									
120	870	STD	28	3.8	.01	.01	.01	.01	.01	64	92	118			113	111	110	109										
			32		.09	.04	.02	.01	.01						3.9	5.5	7.8	9.5										
			38	3.8	.11	.05	.02	.01	.01	64	92	118	166			116	115	114	113	110								
			50		.13	.06	.02	.01	.01							4.0	5.6	7.9	9.6	13								
			70	3.8	.15	.07	.02	.01	.01	66	94	122	168	220			119	118	117	116	113	112						
			100		.17	.07	.03	.01	.01								4.3	6.0	8.0	9.6	13	17						
			150	3.8	.19	.08	.03	.01	.01	66	94	124	171	222			120	120	119	118	116	116	115	109				
			200		.20	.09	.03	.01	.01								4.8	6.3	8.1	9.8	13	17	24	31				
			300	3.8	.23	.10	.03	.01	.01	68	96	127	173	224			121	121	120	120	118	117	117	112				
			500		.24	.10	.04	.02	.01								5.6	7.1	8.9	10	14	18	25	32				
		750	3.8	.29	.14	.06	.02	.01	70	98	130	175	226			122	122	121	121	119	119	118	115					
		1,000		.39	.19	.08	.03	.01								6.7	8.0	9.8	11	15	19	26	33					
		2,000	4.9	.78	.38	.16	.06	.02	78	106	136	182	232			122	122	122	121	121	121	119	118					
		3,500		1.36	.67	.28	.10	.04								9.1	10	12	14	18	21	28	36					
		5,000	5.6	1.93	.95	.40	.14	.06	82	108	138	185	235			122	122	122	121	121	121	119	118					
		7,500		2.90	1.43	.60	.20	.08								11	12	14	16	20	24	30	38					
		10,000	6.3	3.87	1.90	.80	.27	.11	84	110	140	188	239			122	121	121	121	121	121	120	119					
		15,000		5.80	2.85	1.20	.41	.17								13	15	17	19	22	26	33	40					
		20,000	6.9	7.73	3.80	1.60	.54	.22	84	112	142	192	242			122	121	121	121	121	121	121	120					
		25,000		9.66	4.75	1.99	.67	.27								15	17	19	21	25	28	35	42					
50,000																												
75,000																												
100,000																												
150,000																												
200,000																												
250,000																												

(NOTE) For speeds not shown on the pump hydraulic charts, consult factory.



NM

PUMP HYDRAULIC SIZE CHART

SEC. 500

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**80 GPM
580 RPM**

NOMINAL		ROTOR TRIM	VISCOSITY (SSU)	N.I.P.R. (PSIA)	FRICTION PIPE LOSS (PSI/FT) (Based on Sch 40 Steel Pipe)					FULL BYPASS RELIEF VALVE PRESSURE (PSI)					CAPACITY (GPM) / H.P. REQUIRED										
CAP. GPM	SPEED RPM				PIPE DIAMETER					CRACKING PRESS. (PSI)					DIFFERENTIAL PRESSURE (PSI)										
					2"	2 1/2"	3"	4"	5"	LOW PRES R/V		HI PRES R/V			MEDIUM DUTY AND HEAVY DUTY				HEAVY DUTY ONLY						
							50	75	100	150	200	25	50	75	100	150	200	300	400						
80	580	STD	28	2.1	.01	.01	.01	.01	.01	58	84	114			73	72	71	70							
			32		.04	.02	.01	.01	.01						2.6	3.7	4.6	6.2							
			38	2.1	.05	.02	.01	.01	.01	58	84	114	160			76	75	74	73	71					
			50		.06	.03	.01	.01	.01							2.6	3.8	4.6	6.3	8.7					
			70	2.1	.07	.03	.01	.01	.01	60	86	116	160	206			78	78	77	76	74	73			
			100		.08	.04	.02	.01	.01								2.7	3.8	4.8	6.4	8.8	11			
			150	2.1	.10	.04	.02	.01	.01	60	88	116	164	210			80	79	79	78	76	76	73	72	
			200		.10	.05	.02	.01	.01								2.8	3.9	4.9	6.4	8.9	11	16	21	
			300	2.1	.10	.05	.02	.01	.01	62	90	118	164	214			81	80	80	79	78	78	75	75	
			500		.13	.07	.03	.01	.01								3.1	4.1	5.2	6.5	9.0	12	16	21	
		750	2.1	.20	.10	.04	.02	.01	64	92	118	168	218			81	81	81	81	79	79	77	77		
		1,000		.26	.13	.06	.02	.01								3.6	4.6	5.7	6.9	9.4	12	17	22		
		2,000	2.8	.52	.26	.11	.04	.02	70	98	124	176	226			81	81	81	81	80	80	78	78		
		3,500		.90	.45	.19	.07	.03								5.0	6.0	7.0	8.3	11	13	18	23		
		5,000	3.3	1.29	.64	.27	.09	.04	72	100	126	180	230			81	81	81	81	80	80	79	79		
		7,500		1.93	.95	.40	.14	.06								6.0	7.0	8.1	9.3	12	14	19	24		
		10,000	3.9	2.58	1.27	.53	.18	.07	74	102	128	184	232			81	81	81	81	81	80	79	79		
		15,000		3.87	1.90	.80	.27	.11								7.1	8.4	9.5	11	13	16	21	25		
		20,000	4.4	5.16	2.53	1.06	.36	.15	76	104	130	188	236			81	81	81	81	80	80	80	79		
		25,000		6.44	3.17	1.33	.45	.18								8.3	9.7	11	12	15	17	22	27		
50,000	6.9	12.9	6.33	2.66	.90	.36	84	116	142	204	246			81	81	81	81	80	80	80	79				
75,000		19.4	9.49	3.98	1.35	.55								12	14	16	17	20	23	26	31				
100,000																									
150,000																									
200,000																									
250,000																									

(NOTE) For speeds not shown on the pump hydraulic charts, consult factory.



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PUMP HYDRAULIC SIZE CHART

SEC. 500

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**48 GPM
350 RPM**

NOMINAL		ROTOR TRIM	VISCOSITY (SSU)	N.I.P.R. (PSIA)	FRICTION PIPE LOSS (PSI/FT) <small>(Based on Sch 40 Steel Pipe)</small>					FULL BYPASS RELIEF VALVE PRESSURE (PSI)					CAPACITY (GPM) / H.P. REQUIRED													
CAP. GPM	SPEED RPM				PIPE DIAMETER					CRACKING PRESS. (PSI)					DIFFERENTIAL PRESSURE (PSI)													
					2"	2 1/2"	3"	4"	5"	LOW PRES R/V			HI PRES R/V		MEDIUM DUTY AND HEAVY DUTY				HEAVY DUTY ONLY									
							50	75	100	150	200	25	50	75	100	150	200	300	400									
48	350	STD	28	1.3	.01	.01	.01	.01	.01	56	82	108			43	42	40	40										
			32		.02	.01	.01	.01	.01						1.2	2.0	3.0	3.8										
			38	1.3	.02	.01	.01	.01	.01	56	82	108	158			46	45	44	43	42								
			50		.03	.01	.01	.01	.01							1.2	2.0	3.0	3.8	5.2								
			70	1.3	.03	.02	.01	.01	.01	57	83	110	159	210			47	47	46	45	44	42						
			100		.04	.02	.01	.01	.01								1.3	2.1	3.1	3.8	5.2	6.5						
			150	1.3	.04	.02	.01	.01	.01	57	83	110	159	210			48	48	47	46	45	44	43	42				
			200		.04	.02	.01	.01	.01								1.4	2.2	3.1	3.8	5.2	6.5	9.3	12				
			300	1.3	.05	.03	.01	.01	.01	58	84	112	161	212			49	49	48	47	46	45	45	44				
			500		.08	.04	.02	.01	.01								1.6	2.2	3.1	3.9	5.3	6.7	9.6	13				
			750	1.3	.12	.06	.03	.01	.01	58	84	112	161	212			49	49	49	48	47	47	46	46				
			1,000		.16	.08	.04	.01	.01								1.8	2.3	3.1	3.9	5.3	6.8	9.8	13				
		2,000	1.7	.31	.15	.07	.02	.01	60	86	114	164	214			49	49	49	48	48	48	47	47					
		3,500		.54	.27	.11	.04	.02								2.6	3.2	4.0	4.7	6.3	7.6	11	13					
		5,000	2.1	.78	.38	.16	.06	.03	60	86	114	168	216			49	49	49	49	48	48	48	47					
		7,500		1.16	.57	.24	.08	.04								3.1	3.7	4.5	5.2	6.8	8.1	11	14					
		10,000	2.5	1.55	.76	.32	.11	.05	62	88	116	168	218			49	49	49	49	48	48	48	47					
		15,000		2.32	1.14	.48	.16	.07								3.6	4.3	5.0	5.8	7.3	8.7	12	15					
		20,000	3.0	3.09	1.52	.64	.22	.09	62	88	116	170	218			49	49	49	49	48	48	48	47					
		25,000		3.87	1.90	.80	.27	.11								4.2	4.7	5.5	6.3	7.7	9.3	12	15					
		50,000	4.4	7.73	3.80	1.60	.54	.22	64	90	118	172	220			49	49	49	49	48	48	48	47					
		75,000		11.6	5.70	2.39	.81	.33								5.5	6.3	7.0	8.1	9.6	11	14	17					
		100,000	7.8	15.5	7.60	3.19	1.08	.44	68	94	122	176	224			49	49	49	49	48	48	48	47					
		150,000		23.2	11.4	4.78	1.61	.65								7.0	7.8	8.6	10	12	13	16	19					
200,000	12.3	30.9	15.2	6.37	2.15	.87	72	98	127	181	230			49	49	49	49	48	48	48	47							
250,000		38.7	19.0	7.97	2.69	1.09								8.9	9.3	10	12	14	16	18	22							

(NOTE) For speeds not shown on the pump hydraulic charts, consult factory.



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18 GPM
125 RPM

NOMINAL		VISCOSITY		N.I.P.R.	FRICTION PIPE LOSS (PSI/FT) <small>(Schedule 40 Steel Pipe)</small>					CAPACITY (GPM)				H.P. REQUIRED								
GPM	RPM	ROTOR TRIM	(SSU)	(PSIa)	PIPE DIAMETER					MEDIUM-DUTY & HEAVY-DUTY				HEAVY-DUTY ONLY								
					2½"	3"	4"	5"	6"	DIFFERENTIAL PRESSURE (PSI)				150	200	300	400					
						25	50	75	100	150	200	300	400									
18	125	STD																				
				"D"																		
			200,000	2.9	5.7	2.4	0.8	0.3	0.2	17.7	17.7	17.5	17.5	17.4	17.4	17.2	17.0					
			399,999		11.4	4.8	1.6	0.7	0.3	2.6	2.9	3.1	3.4	3.9	4.2	4.6	5.0					
			400,000	3.2	17.1	7.2	2.4	1	0.5	17.7	17.7	17.5	17.5	17.4	17.4	17.2	17.0					
			599,999							2.8	3.1	3.4	3.6	4.1	4.6	5.0	5.4					
			600,000	4	22.8	9.6	3.2	1.3	0.6	17.7	17.7	17.5	17.5	17.4	17.4	17.2	17.0					
			799,999							3.0	3.3	3.5	3.8	4.3	4.8	5.2	5.6					
			800,000	4.4	NR	12	4	1.6	0.8	17.7	17.7	17.5	17.5	17.4	17.4	17.2	17.0					
			1M							3.2	3.5	3.7	4.0	4.5	5.1	5.5	5.9					

(NOTE) For speeds not shown on the pump hydraulic charts, consult factory.