



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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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

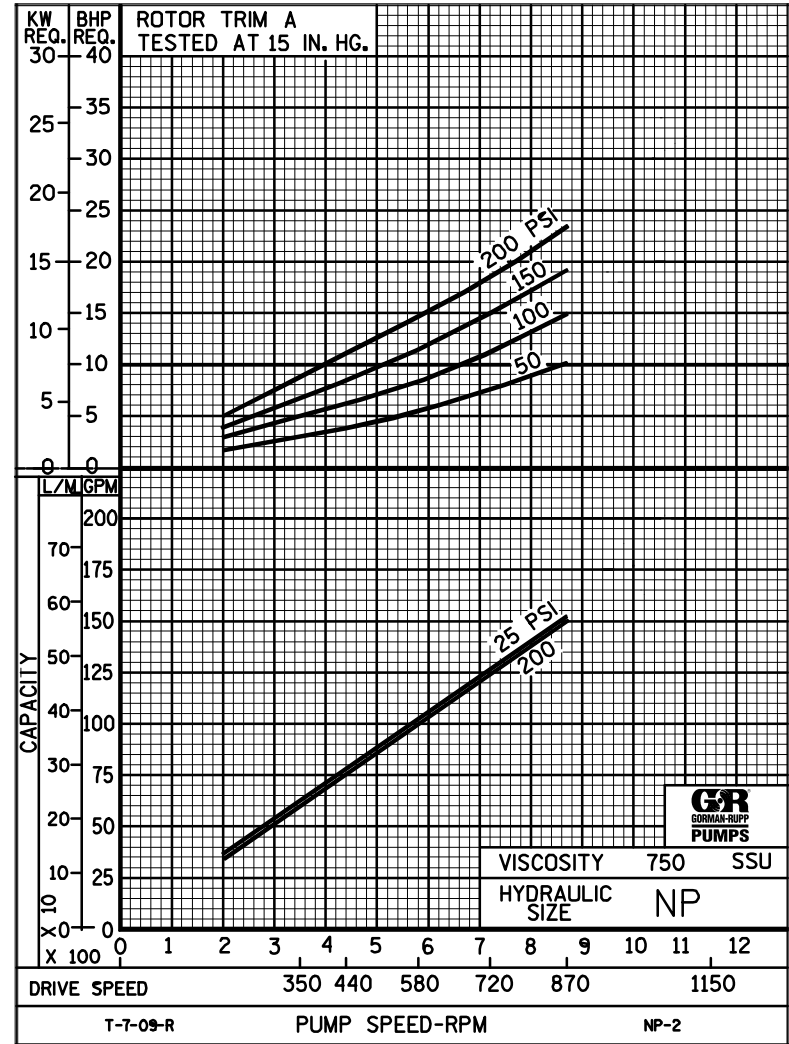
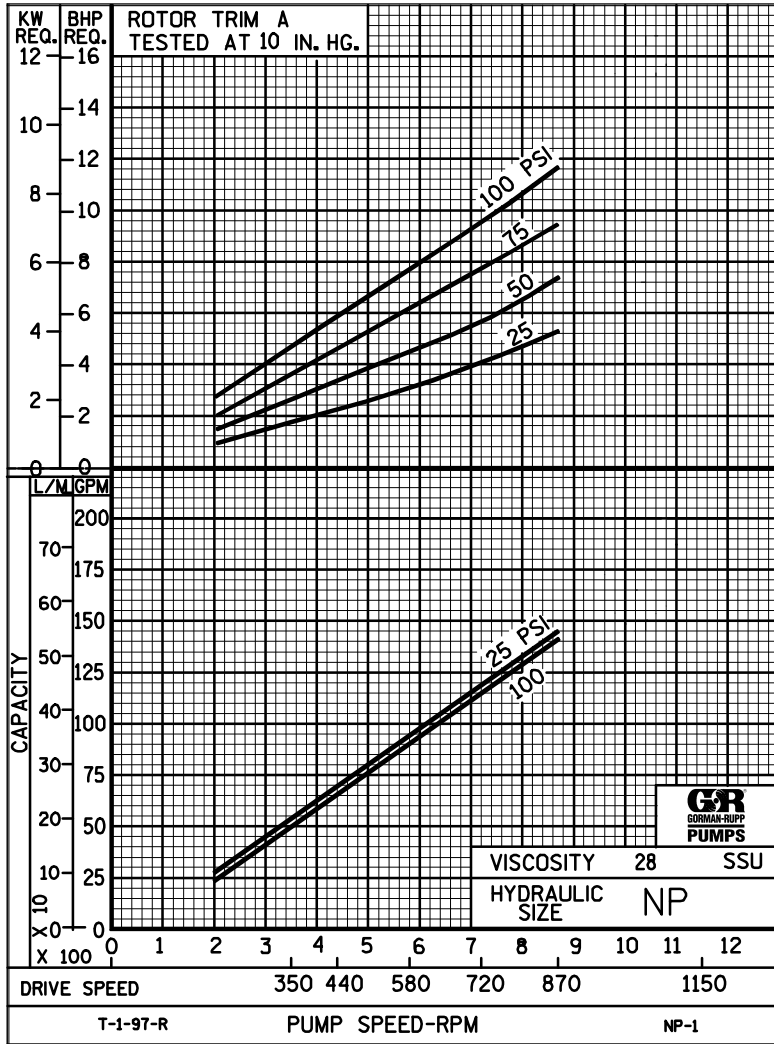
NP

 Hydraulic Size

SEC. 500

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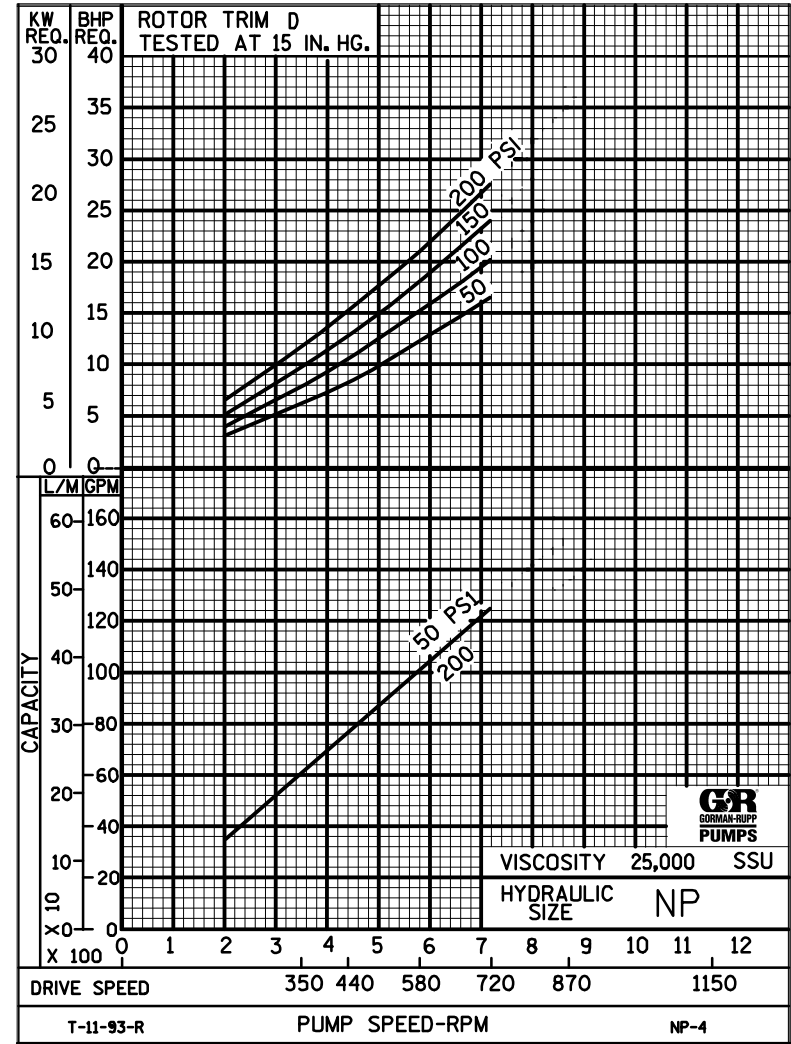
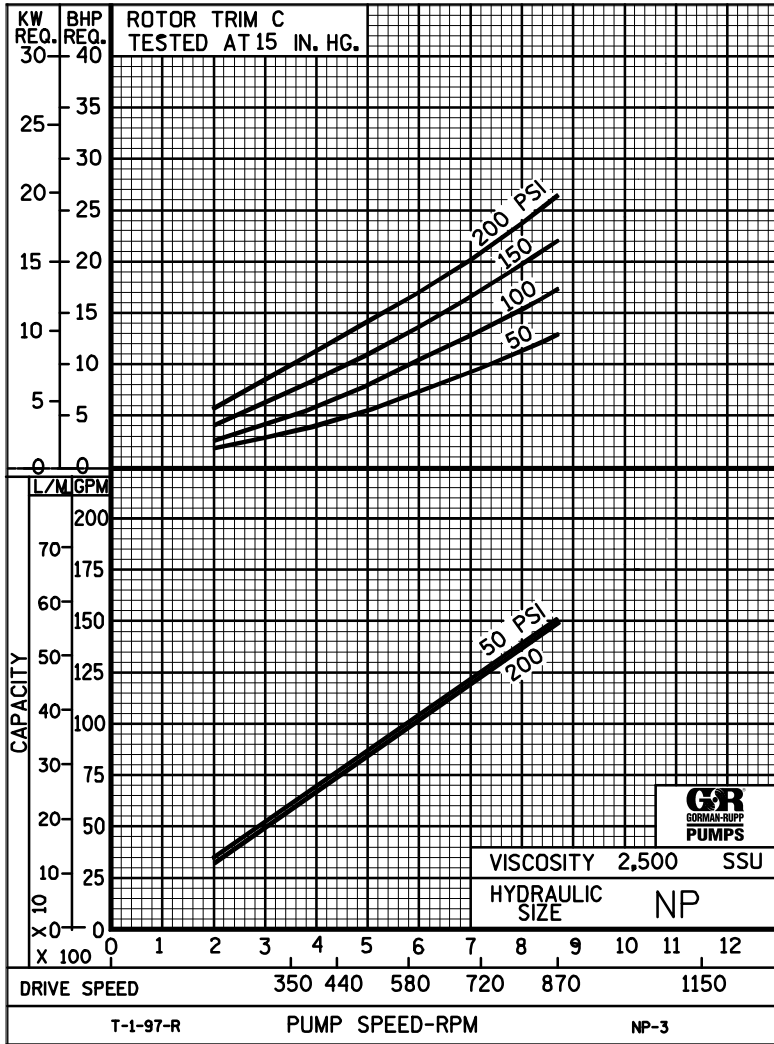
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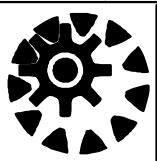
PERFORMANCE CURVES

SPEED VS. CAPACITY/HORSEPOWER

NP Hydraulic Size



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NP

PUMP HYDRAULIC SIZE CHART

SEC. 500

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150 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				
150	870	STD	28	4.2	.01	.01	.01	.01	.01	68	96	125			144	143	141	140				
			32		.13	.06	.02	.01	.01					5.3	7.4	9.6	12					
			38	4.2	.16	.07	.03	.01	.01	68	96	125	168			145	144	143	142	141		
			50		.19	.08	.03	.01	.01					5.5	7.6	9.8	12	17				
			70	4.2	.22	.09	.04	.01	.01	70	100	128	170	223			148	147	146	145	144	143
			100		.24	.11	.04	.01	.01					6.0	8.0	10	13	17	21			
			150	4.2	.27	.12	.04	.01	.01	72	102	131	172	226			149	149	148	147	146	146
			200		.30	.13	.05	.01	.01					6.9	8.7	11	13	18	22			
			300	4.2	.34	.15	.05	.01	.01	74	104	134	174	230			150	150	149	149	148	147
			500		.39	.15	.05	.02	.01					7.9	9.6	12	14	19	23			
		750	4.2	.39	.19	.08	.03	.01	76	106	137	178	232			151	151	151	150	150	150	
		1,000		.49	.24	.10	.04	.02					8.9	11	13	15	20	24				
		2,000	5.8	.97	.48	.20	.07	.03	90	122	154	196	248			151	151	151	151	150	150	
		3,500		1.69	.83	.35	.12	.05					11	14	16	18	23	28				
		5,000	6.9	2.42	1.19	.50	.17	.07	100	134	168	208	262			151	151	151	151	150	150	
		7,500		3.63	1.78	.75	.25	.10					14	16	18	20	25	30				
		10,000	8.2	4.83	2.38	1.00	.34	.14	110	144	180	222	275			151	151	151	151	150	150	
		15,000		7.25	3.56	1.50	.51	.21					17	19	21	23	28	32				
		20,000																				
		25,000																				
50,000																						
75,000																						
100,000																						
150,000																						
200,000																						
250,000																						

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



NP

PUMP HYDRAULIC SIZE CHART

SEC. 500

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99 GPM
580 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										
99	580	STD	28	2.5	.01	.01	.01	.01	.01	62	88	118				95	92	91	90							
			32		.06	.03	.01	.01	.01							3.2	4.6	6.2	7.8							
			38	2.5	.08	.03	.01	.01	.01	62	88	118	164				96	94	94	93	92					
			50		.09	.04	.02	.01	.01								3.2	4.7	6.3	7.9	11					
			70	2.5	.11	.05	.02	.01	.01	64	90	120	164	210			98	97	96	96	95	94				
			100		.12	.05	.02	.01	.01								3.3	4.7	6.4	8.0	11	14				
			150	2.5	.14	.06	.02	.01	.01	64	92	120	168	214			99	99	98	98	97	96				
			200		.15	.06	.03	.01	.01								3.5	4.9	6.5	8.1	11	14				
			300	2.5	.17	.06	.03	.01	.01	66	94	122	168	218			100	99	99	99	98	98				
			500		.17	.08	.04	.01	.01								4.0	5.1	6.8	8.2	11	15				
		750	2.5	.24	.12	.05	.02	.01	68	96	122	172	222			101	101	101	100	99	99					
		1,000		.32	.16	.07	.02	.01								4.5	5.9	7.1	8.9	12	15					
		2,000	3.2	.64	.32	.13	.05	.02	74	102	128	180	230			101	101	101	100	100	99					
		3,500		1.12	.55	.23	.08	.03								5.9	7.3	8.9	10	14	17					
		5,000	3.8	1.60	.79	.33	.11	.05	76	104	130	184	234			101	101	101	100	100	100					
		7,500		2.39	1.18	.50	.17	.07								7.1	9.0	10	12	15	18					
		10,000	4.5	3.19	1.57	.66	.22	.09	78	106	132	188	236			101	101	101	100	100	100					
		15,000		4.79	2.35	.99	.33	.14								8.9	11	13	14	17	20					
		20,000	5.2	6.38	3.14	1.32	.45	.18	80	108	134	192	240			101	101	101	100	100	100					
		25,000		7.97	3.92	1.64	.56	.23								11	12	14	15	18	21					
50,000	9.0	16.0	7.83	3.29	1.11	.45	88	120	146	208	250			101	101	101	100	100	100							
75,000		23.9	11.8	4.93	1.66	.68								17	23	25	27	30	33							
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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**60 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					
60	350	STD	28	1.5	.01	.01	.01	.01	.01	57	83	107			55	55	53	52					
			32		.02	.01	.01	.01	.01					1.8	2.7	3.8	4.8						
			38	1.5	.03	.02	.01	.01	.01	57	83	107	157			56	56	55	54	53			
			50		.04	.02	.01	.01	.01					1.9	2.8	3.9	4.9	6.7					
			70	1.5	.05	.02	.01	.01	.01	58	85	109	157	210		58	58	57	57	56	55		
			100		.05	.02	.01	.01	.01					2.0	2.9	3.9	4.9	6.8	8.8				
			150	1.5	.06	.03	.01	.01	.01	58	85	109	157	210		60	60	59	59	58	57		
			200		.06	.03	.01	.01	.01					2.1	3.0	4.0	5.0	6.9	8.9				
			300	1.5	.06	.03	.01	.01	.01	59	87	112	159	212		61	60	60	60	59	59		
			500		.10	.05	.02	.01	.01					2.2	3.1	4.1	5.0	6.9	9.0				
		750	1.5	.15	.07	.03	.01	.01	59	87	112	159	212		61	60	60	60	60	60			
		1,000		.20	.10	.04	.02	.01					2.3	3.3	4.2	5.0	7.0	9.1					
		2,000	2.1	.39	.19	.08	.03	.01	63	90	117	170	219		61	60	60	60	60	60			
		3,500		.68	.33	.14	.05	.02					3.0	4.0	4.9	5.7	7.6	9.6					
		5,000	2.5	.97	.48	.20	.07	.03	64	90	117	170	219		61	60	60	60	60.3	60			
		7,500		1.45	.71	.30	.10	.04					3.6	4.6	5.0	6.3	8.2	10					
		10,000	3.1	1.93	.95	.40	.14	.06	65	92	120	174	225		61	60	60	60	60	60			
		15,000		2.90	1.43	.60	.20	.08					4.4	5.4	6.2	7.0	8.9	11					
		20,000	3.6	3.87	1.90	.80	.27	.11	65	92	120	174	225		61	60	60	60	60	60			
		25,000		4.83	2.37	1.00	.34	.14					5.1	6.0	7.0	7.9	9.7	12					
50,000	6.5	9.66	4.75	1.99	.67	.27	70	98	126	179	232		61	60	60	60	60	60					
75,000		14.5	7.12	2.99	1.01	.41					7.5	8.5	9.5	11	12	14							
100,000	10.2	19.3	9.49	3.98	1.35	.55	75	104	132	185	238		61	60	60	60	60	60					
150,000		29.0	14.3	5.97	2.02	.82					10	11	13	15	17	20							
200,000																							
250,000																							

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