

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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GORMAN-RUPP OF CANADA LIMITED • ST. THOMAS, ONTARIO, CANADA

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

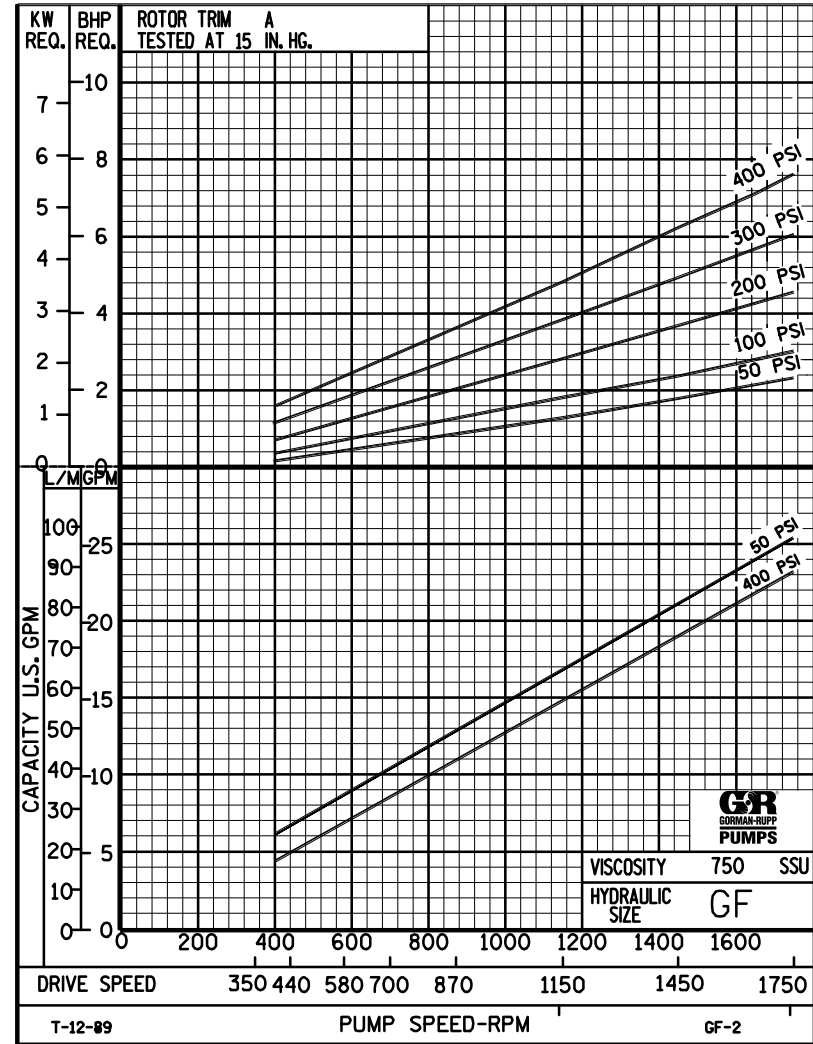
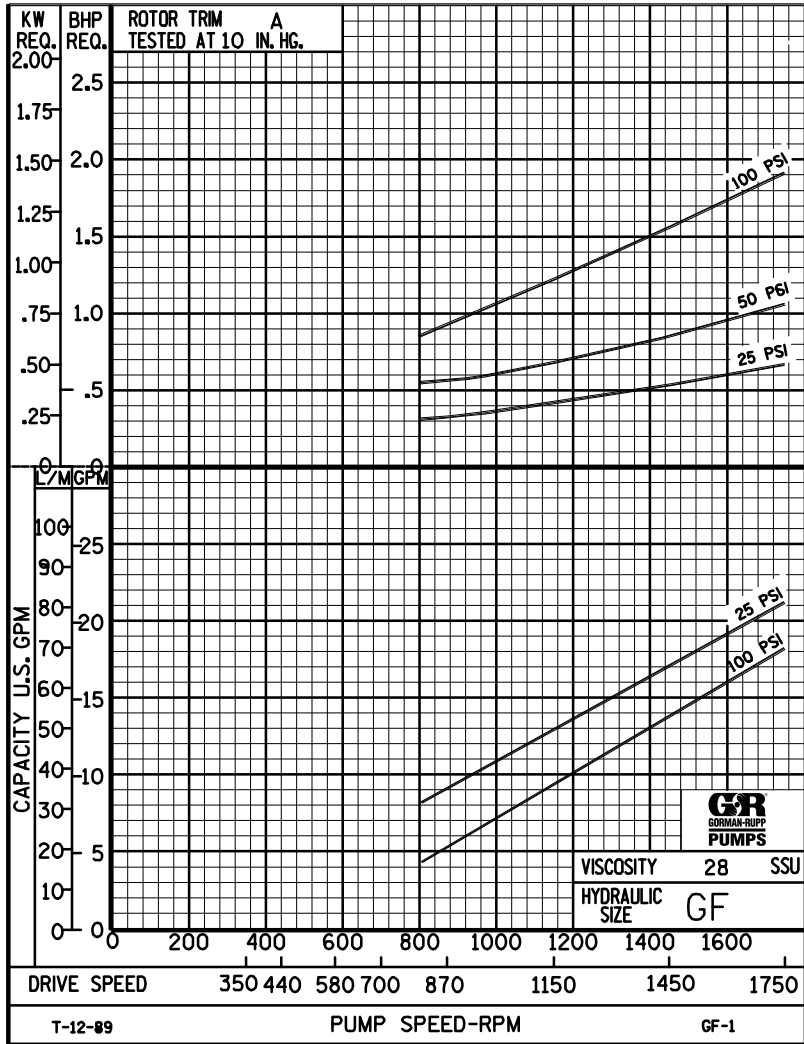
SECTION 545



PERFORMANCE CURVES

SPEED VS. CAPACITY/HORSEPOWER

GF Hydraulic Size



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PERFORMANCE CURVES

SPEED VS. CAPACITY/HORSEPOWER

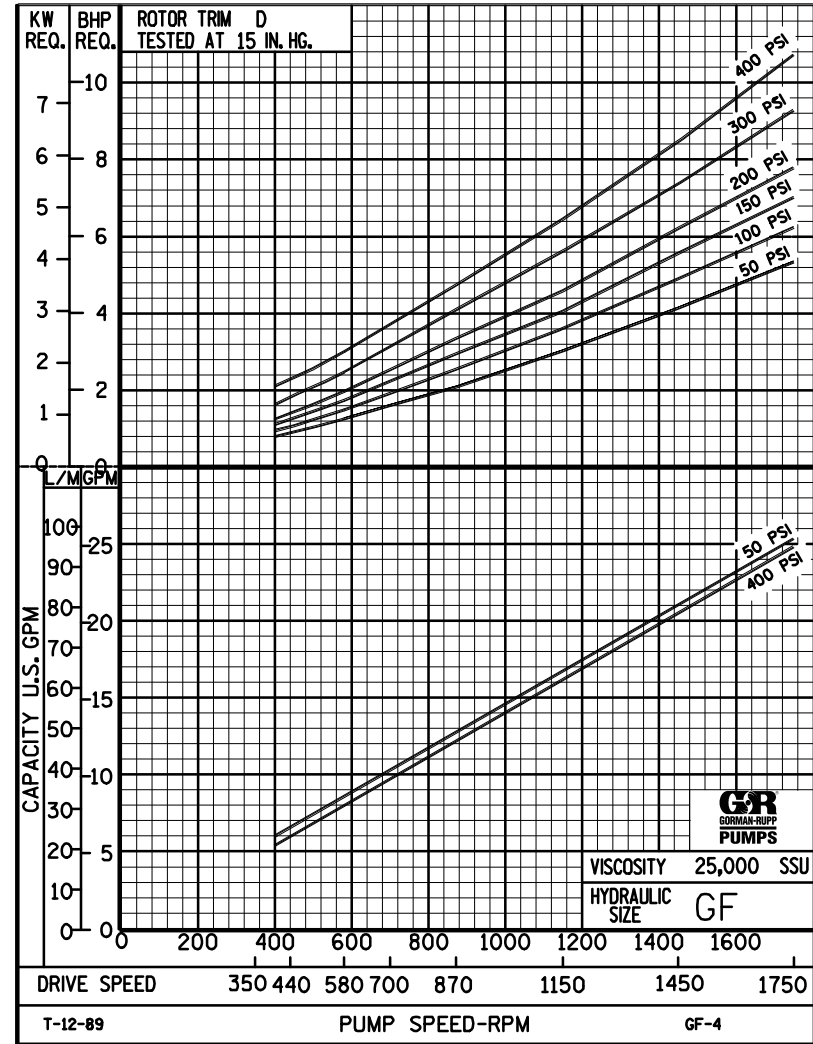
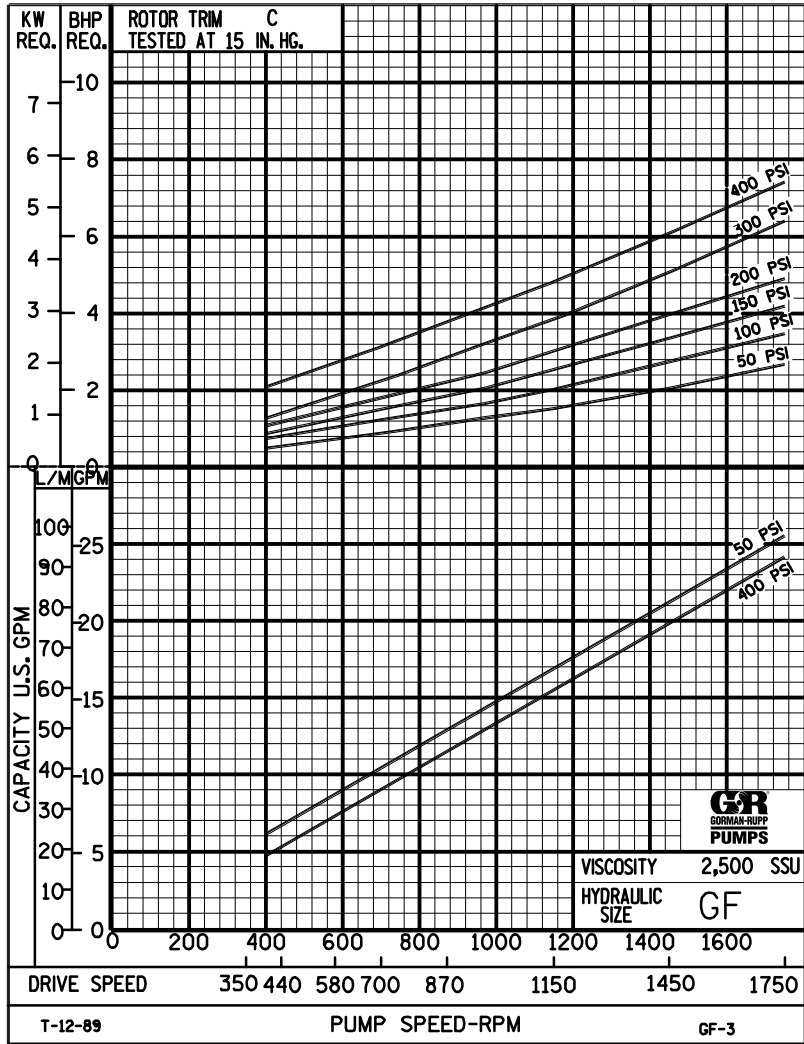
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Hydraulic Size

SEC. 500

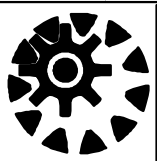
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PUMP HYDRAULIC SIZE CHART

SEC. 500

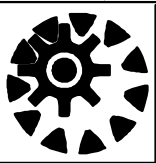
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**15 GPM
1150 RPM**

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)								
							LOW PRES R/V		HI PRES R/V			MEDIUM DUTY AND HEAVY DUTY				HEAVY DUTY ONLY							
		3/4"	1"	1 1/4"	1 1/2"	2"	50	75	100	150	200	25	50	75	100	150	200	300	400				
15	1150	STD	28	2.2	.01	.01	.01	.01	.01	59	86	111			13	11	10	9.5					
			32		.17	.06	.02	.01	.01					.56	.72	.96	1.2						
			38	2.2	.22	.07	.02	.01	.01	59	86	111	161			13	13	11	11	9.5			
			50		.27	.09	.03	.01	.01					.62	.78	1.0	1.3	1.8					
			70	2.2	.30	.10	.03	.01	.01	60	87	113	163	215		14	14	13	12	12	11		
			100		.36	.12	.03	.02	.01					.66	.83	1.1	1.4	1.9	2.4				
			150	2.2	.41	.14	.05	.02	.01	60	87	113	163	217		15	15	14	14	13	13	13	13
			200		.46	.18	.06	.03	.01					.78	.98	1.2	1.5	1.9	2.4	3.5	4.6		
			300	2.2	.58	.22	.08	.04	.02	60	87	115	165	219		16	15	15	15	15	14	14	13
			500		.96	.37	.12	.07	.03					.94	1.2	1.4	1.6	2.1	2.6	3.6	4.7		
		750	2.2	1.44	.55	.18	.10	.04	60	87	115	165	222		16	16	16	16	16	15	15	14	
		1,000		1.92	.73	.25	.13	.05					1.1	1.3	1.5	1.7	2.2	2.7	3.7	4.8			
		"C"	2,000	2.8	3.83	1.46	.49	.26	.10	62	90	115	165	222		17	17	16	16	16	16	15	15
			3,500		6.70	2.55	.85	.46	.17					1.4	1.8	2.0	2.1	2.6	3.1	4.1	5.1		
			5,000	3.2	9.57	3.64	1.22	.66	.24	65	92	117	167	224		17	17	16	16	16	16	16	16
			7,500		14.4	5.46	1.83	.99	.36					1.6	2.0	2.2	2.4	2.9	3.5	4.4	5.4		
			10,000	3.6	19.1	7.29	2.43	1.31	.49	68	94	119	169	224		17	17	16	16	16	16	16	16
			15,000		28.7	10.9	3.65	1.97	.73					1.9	2.4	2.7	3.0	3.5	4.0	4.8	5.9		
			20,000	3.9	38.3	14.6	4.87	2.63	.97	72	97	122	172	224		17	17	16	16	16	16	16	16
			25,000		47.8	18.2	6.08	3.28	1.21					2.2	2.8	3.2	3.5	4.0	4.5	5.3	6.5		
50,000	6.1		95.7	36.4	12.2	6.56	2.42	77	102	127	177	229		17	16	16	16	16	16	16	16		
75,000			144	54.6	18.3	9.85	3.63					3.6	4.5	5.1	5.7	6.3	6.8	7.7	8.8				
100,000																							
150,000																							
200,000																							
250,000																							

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



GF

PUMP HYDRAULIC SIZE CHART

SEC. 500

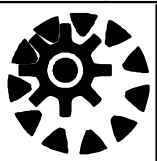
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**11 GPM
870 RPM**

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)												
					3/4"	1"	1 1/4"	1 1/2"	2"	LOW PRES R/V		HI PRES R/V			25	50	75	100	150	200	300	400					
11	870	STD	28	1.5	.01	.01	.01	.01	.01	57	82	107			9	8	7	6									
			32		.10	.03	.01	.01	.01							.32	.53	.71	.91								
			38	1.5	.13	.04	.01	.01	.01	57	82	107	158			10	9	8	7.5	6.5							
			50		.16	.05	.02	.01	.01							.50	.59	.85	1.1	1.4							
			70	1.5	.18	.06	.02	.01	.01	57	82	108	159	210			10	10	9.5	9	8	7					
			100		.21	.06	.02	.01	.01							.54	.63	.88	1.1	1.5	1.8						
			150	1.5	.26	.09	.03	.01	.01	58	83	109	159	212			11	11	10	10	10	9.5	9.5	8			
			200		.33	.12	.05	.02	.01							.61	.71	.94	1.2	1.5	1.8	2.5	3.3				
			300	1.5	.43	.16	.06	.03	.01	58	83	110	160	213			12	12	11	11	11	10	10	9.5			
			500		.70	.27	.09	.05	.02							.69	.81	1.0	1.3	1.6	1.9	2.5	3.5				
			750	1.5	1.05	.40	.14	.07	.03	58	83	112	162	215			12	12	12	12	12	11	11	11			
			1,000		1.41	.54	.18	.10	.04							.79	.93	1.1	1.3	1.7	2.0	2.6	3.6				
		2,000	2.0	2.81	1.07	.36	.19	.07	59	86	113	163	215			13	12	12	12	12	12	11	11				
		3,500		4.91	1.87	.63	.34	.13							.98	1.2	1.3	1.5	1.8	2.2	2.8	3.7					
		5,000	2.4	7.02	2.67	.89	.48	.18	61	86	113	163	215			13	12	12	12	12	12	12	11				
		7,500		10.5	4.00	1.34	.72	.27							1.3	1.5	1.7	1.9	2.2	2.6	3.2	4.1					
		10,000	2.7	14.0	5.34	1.78	.96	.36	64	89	115	167	217			13	12	12	12	12	12	12	12				
		15,000		21.1	8.01	2.68	1.45	.53							1.5	1.8	2.1	2.3	2.6	2.9	3.6	4.4					
		20,000	3.0	28.1	10.7	3.57	1.93	.71	67	92	117	169	219			13	12	12	12	12	12	12	12				
		25,000		35.1	13.4	4.46	2.41	.89							1.9	2.2	2.4	2.5	2.9	3.3	4.1	4.8					
		50,000	4.9	70.2	26.7	8.92	4.81	1.77	70	95	123	173	225			13	12	12	12	12	12	12	12				
		75,000		105	40.1	13.4	7.22	2.66							2.9	3.4	3.6	3.8	4.2	4.6	5.4	6.1					
		100,000	7.1	140	53.4	17.9	9.63	3.55	74	99	127	177	231			12	12	12	12	12	12	12	12				
		150,000		211	80.1	26.8	14.5	5.32							3.6	4.3	4.5	4.7	5.1	5.4	6.2	6.9					
200,000																											
250,000																											

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



GF

PUMP HYDRAULIC SIZE CHART

SEC. 500

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January 2010

8 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)								
		3/4"	1"	1 1/4"	1 1/2"	2"	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					
8	580	STD	28	1.1	.01	.01	.01	.01	.01	56	81	106			6	5	4.5	4					
			32		.06	.02	.01	.01	.01							.21	.35	.47	.61				
			38	1.1	.07	.03	.01	.01	.01	56	81	106	157			6.5	6	5.5	4.5	4			
			50		.09	.03	.01	.01	.01							.34	.40	.57	.74	.92			
			70	1.1	.10	.04	.01	.01	.01	56	81	107	158	209		7	6.5	6	6	5.5	4.5		
			100		.10	.04	.01	.01	.01							.36	.42	.59	.76	.98	1.2		
			150	1.1	.15	.05	.02	.01	.01	57	82	108	158	211		7.5	7.5	7	6.5	6.5	6	6	5
			200		.24	.08	.03	.02	.01							.41	.48	.63	.78	1.0	1.2	1.7	2.2
			300	1.1	.31	.12	.04	.02	.01	57	82	109	159	212		8	8	7.5	7	7	7	6.5	6
			500		.51	.19	.07	.04	.01							.46	.54	.69	.84	1.1	1.3	1.7	2.3
			750	1.1	.77	.29	.10	.05	.02	57	82	111	161	214		8.5	8	8	8	8	7	7.5	7
			1,000		1.02	.39	.14	.07	.03							.53	.62	.76	.89	1.1	1.4	1.7	2.4
		"C"	2,000	1.5	2.04	.78	.26	.14	.05	58	85	112	162	214		8.5	8.5	8	8	8	8	7.5	7.5
			3,500		3.57	1.36	.46	.25	.09							.66	.77	.88	.99	1.2	1.5	1.9	2.5
			5,000	1.9	5.01	1.94	.65	.35	.13	60	85	112	162	214		8.5	8.5	8	8	8	8	8	7.5
			7,500		7.65	2.91	.97	.53	.19							.84	.99	1.1	1.3	1.5	1.7	2.1	2.7
			10,000	2.2	10.2	3.88	1.30	.70	.26	63	88	114	166	216		8.5	8.5	8	8	8	8	8	7.5
			15,000		15.3	5.83	1.95	1.05	.39							1.0	1.2	1.3	1.4	1.6	1.9	2.4	2.9
			20,000	2.5	20.4	7.77	2.59	1.40	.52	66	91	116	168	218		8.5	8.5	8	8	8	8	8	8
			25,000		25.5	9.71	3.24	1.75	.65							1.0	1.2	1.4	1.5	1.7	2.0	2.5	3.0
			50,000	4.0	51.1	19.4	6.50	3.50	1.29	68	93	120	170	222		8.5	8.5	8	8	8	8	8	8
			75,000		76.5	29.1	9.73	5.25	1.93							1.6	1.9	2.1	2.2	2.4	2.7	3.2	3.7
			100,000	6.0	102	38.9	13.0	7.00	2.58	70	95	122	172	224		8.5	8	8	8	8	8	8	8
			150,000		153	58.3	19.5	10.5	3.87							2.1	2.5	2.6	2.7	3.0	3.2	3.7	4.2
200,000	9.4	204	77.7	26.0	14.0	5.15	76	101	130	180	236		8.5	8.5	8.5	8.5	8	8	8	8			
250,000		-	-	-	-	-							2.5	3.0	3.1	3.2	3.4	3.7	4.2	4.7			

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



GF

SEC. 500

PAGE 49.1

February 2025

3 GPM
200 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							
					1½"	2"	2½"	3"	4"	DIFFERENTIAL PRESSURE (PSI)				150	200	300	400				
						25	50	75	100	150	200	300	400								
3	200	STD																			
				"D"	200,000	2.3	5.3	1.9	0.95	0.4	0.1	2.8	2.8	2.8	2.8	2.8	2.8	2.7	2.7		
			399,999		10.5		3.9	1.9	0.8	0.3	0.8	0.9	0.9	1.0	1.1	1.2	1.3	1.4			
			400,000		2.6	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.7	2.7					
			599,999			1.0	1.0	1.0	1.1	1.2	1.3	1.4	1.5								
			600,000		3.2	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.7	2.7					
			799,999			1.1	1.1	1.1	1.2	1.3	1.4	1.5	1.6								
			800,000		3.5	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.7	2.7					
			1M			1.2	1.2	1.2	1.3	1.4	1.5	1.6	1.7								

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