

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]		
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]							
GHA 1-1/2 GH 3-B ● GHA 1-1/2 GH 4-B ■	15 [49]							
GHA 1-1/2 GJ 3-B ● GHA 1-1/2 GJ 4-B ■	19 [60]							
GHA 2 JJ 3-B ● GHA 2 JJ 4-B ■	28 [88]	580 [480]	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]	

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.

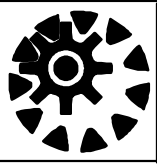
NOTE: PROPER PUMP APPLICATION REQUIRES CONSIDERATION OF ADDITIONAL FACTORS. PLEASE REVIEW APPLICATION GUIDE IN SECTION 500 OR CONSULT THE FACTORY.

GHA

**FOR GHA DRIVE OPTIONS
AND DIMENSIONS**

SEE

SECTION 545



PERFORMANCE CURVES

SPEED VS. CAPACITY/HORSEPOWER

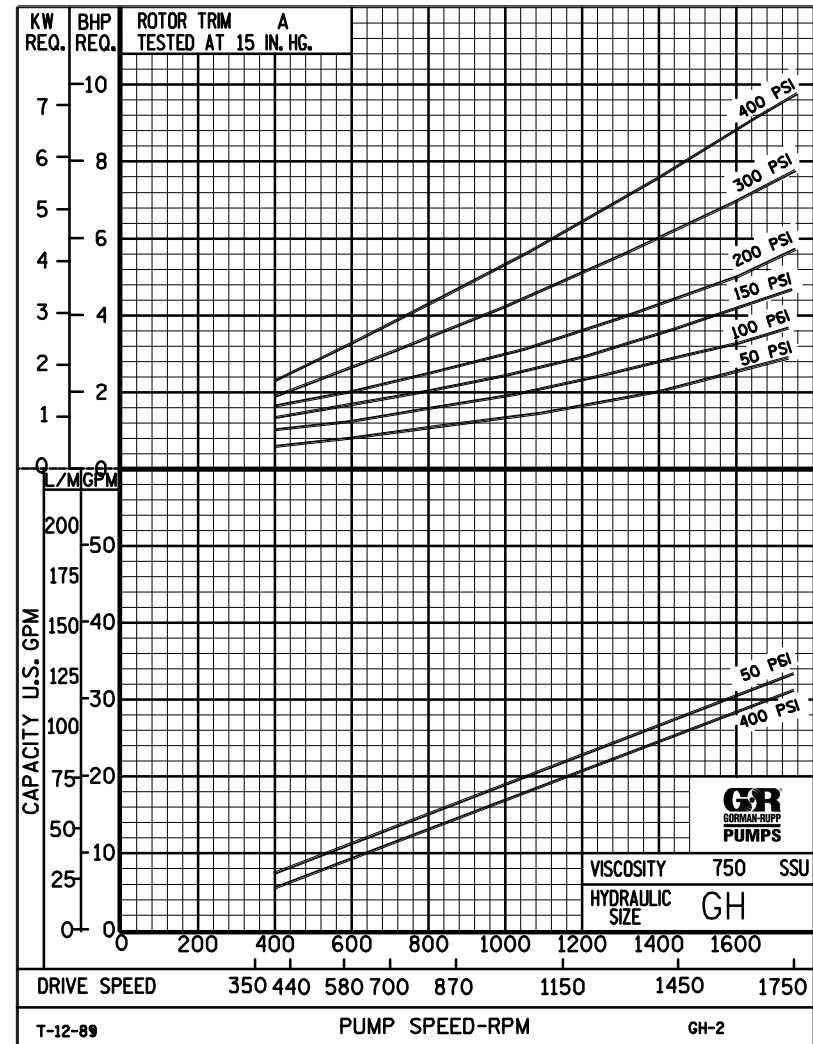
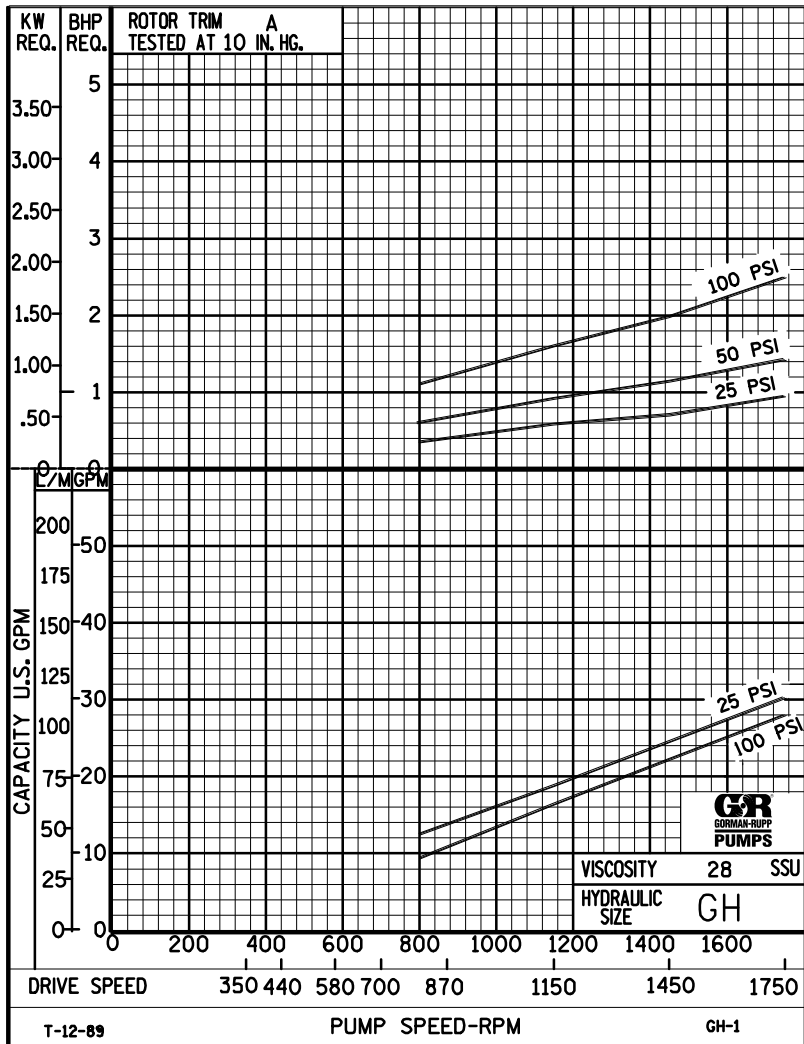
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Hydraulic Size

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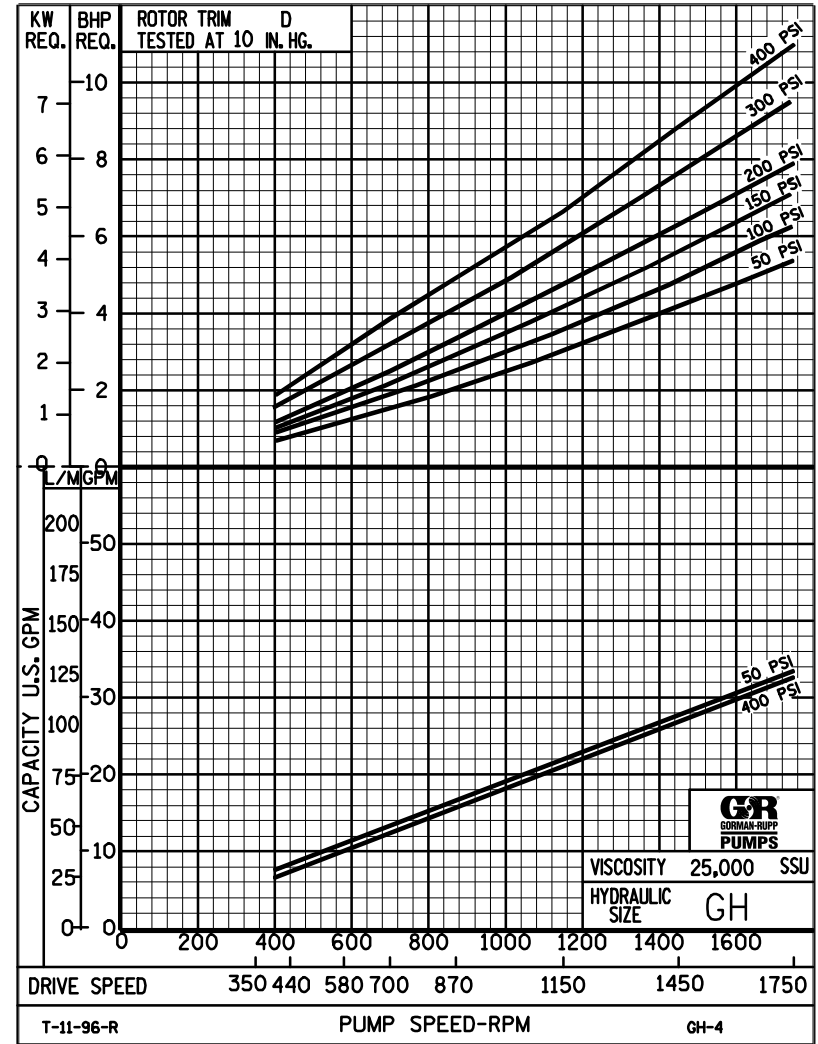
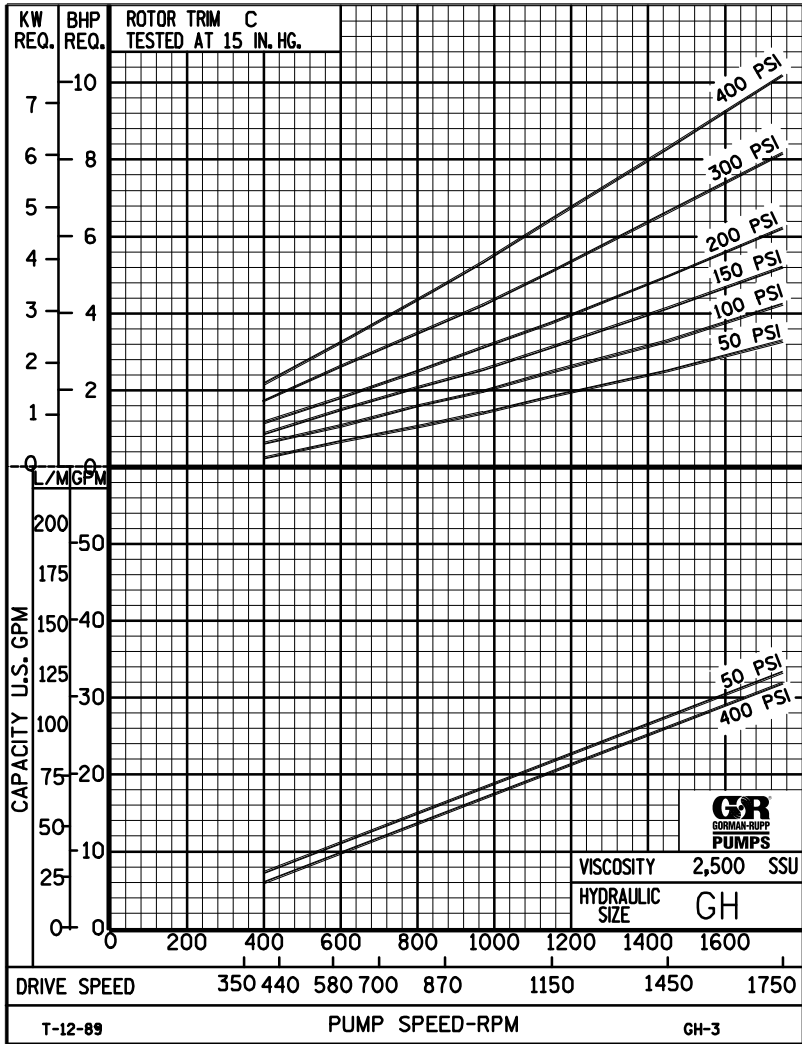


PERFORMANCE CURVES

SPEED VS. CAPACITY/HORSEPOWER

GH

Hydraulic Size



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PUMP HYDRAULIC SIZE CHART

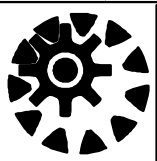
SEC. 500

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**31 GPM
1750 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											
					PIPE DIAMETER					CRACKING PRESS. (PSI)					DIFFERENTIAL PRESSURE (PSI)											
CAP. GPM	SPEED RPM				3/4"	1"	1 1/4"	1 1/2"	2"	LOW PRES R/V					MEDIUM DUTY AND HEAVY DUTY				HEAVY DUTY ONLY							
										50	75	100	150	200	25	50	75	100	150	200	300	400				
31	1750	STD	28	4.2	.01	.01	.01	.01	.01	68	97	126			30	29	28	28								
			32		.61	.19	.05	.03	.01							.95	1.4	2.0	2.5							
			38	4.2	.78	.25	.07	.03	.01	68	97	126	176			31	30	29	29	28						
			50		.93	.30	.08	.04	.01							1.2	1.8	2.5	2.7	3.9						
			70	4.2	1.02	.35	.09	.05	.02	70	99	128	176	230		32	31	31	30	29	29					
			100		1.22	.39	.11	.05	.02							1.4	2.0	2.6	3.0	4.2	5.0					
			150	4.2	1.35	.44	.12	.06	.02	72	101	130	176	232		32	32	32	31	31	30	29	28			
			200		1.58	.52	.13	.07	.03							1.6	2.3	2.8	3.3	4.4	5.2	7.3	9.3			
			300	4.2	1.80	.61	.16	.08	.03	72	101	130	177	234		33	32	32	32	31	31	30	30			
			500		1.98	.75	.25	.14	.05							1.9	2.8	3.1	3.7	4.8	5.6	7.5	9.6			
		750	4.2	2.97	1.13	.38	.21	.08	74	102	132	177	235		33	33	33	33	32	32	31	30				
		1,000		3.96	1.51	.51	.27	.10							2.0	3.0	3.5	3.8	5.0	5.8	7.7	9.8				
		2,000	5.5	7.91	3.01	1.00	.54	.20	76	103	133	178	238		33	33	33	33	33	32	32	31				
		3,500		13.9	5.27	1.76	.95	.35							2.2	3.3	4.0	4.5	5.5	6.5	8.4	11				
		5,000	6.3	20.0	7.53	2.52	1.36	.50	80	105	137	180	240		33	33	33	33	33	32	32	31				
		7,500		29.7	11.3	3.77	2.04	.75							2.9	4.4	5.0	5.4	6.4	7.3	9.2	11.0				
		10,000	7.1	39.6	15.1	5.03	2.71	1.00	84	109	140	182	242		33	33	33	33	33	32	32	32				
		15,000		59.3	22.6	7.54	4.07	1.50							3.7	5.5	6.0	6.6	7.6	8.5	10	12				
		20,000	7.8	79.1	30.1	10.1	5.43	2.00	88	113	144	184	244		33	33	33	33	33	32	32	32				
		25,000		98.9	37.6	12.6	6.78	2.50							4.7	6.8	7.4	7.9	8.9	9.9	12	14				
50,000																										
75,000																										
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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**20 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)																
		3/4"	1"	1 1/4"	1 1/2"	2"	LOW PRES R/V					MEDIUM DUTY AND HEAVY DUTY				HEAVY DUTY ONLY															
							50	75	100	150	200	25	50	75	100	150	200	300	400												
20	1150	STD	28	2.3	.01	.01	.01	.01	.01	63	89	114			18	18	17	16													
			32		.28	.09	.03	.01	.01							.58	.91	1.3	1.6												
			38	2.3	.36	.12	.03	.02	.01	63	89	114	164			19	19	18	17	17											
			50		.44	.14	.04	.02	.01							.66	1.1	1.4	1.7	2.3											
			70	2.3	.49	.15	.04	.02	.01	64	90	116	166	228		20	20	19	18	18	17										
			100		.58	.19	.05	.02	.01							.83	1.2	1.6	1.9	2.6	2.9										
			150	2.3	.64	.21	.06	.03	.01	64	90	116	166	228		21	20	20	19	18	18	17	16								
			200		.68	.25	.08	.04	.02							.91	1.3	1.7	2.0	2.8	3.3	4.5	5.9								
			300	2.3	.78	.30	.10	.06	.02	65	91	120	167	230		21	21	21	20	20	19	19	18								
			500		1.28	.49	.16	.09	.03							1.0	1.5	1.8	2.1	2.9	3.5	4.9	6.0								
			750	2.3	1.92	.73	.24	.13	.05	65	91	120	167	230		22	21	21	21	21	21	20	20								
			1,000		2.55	.97	.33	.18	.07							1.2	1.7	2.2	2.4	3.0	3.6	4.9	6.2								
				"C"	2,000	3.1	5.10	1.94	.65	.35	.13	66	92	121	168	230	22	21	21	21	21	21	21	21	21	21	20				
					3,500		8.93	3.40	1.14	.61	.23							1.3	1.9	2.2	2.5	3.1	3.8	5.1	6.4						
					5,000	3.6	12.8	4.86	1.62	.88	.32	73	95	123	170	230	22	22	21	21	21	21	21	21	21	21	21	21			
					7,500		19.1	7.29	2.43	1.31	.49							1.7	2.5	2.7	3.0	3.7	4.4	5.6	6.9						
					10,000	4.1	25.5	9.71	3.24	1.75	.65	76	97	126	170	230	22	22	22	21	21	21	21	21	21	21	21	21			
					15,000		38.3	14.6	4.86	2.63	.97							2.6	3.0	3.4	3.7	4.4	5.1	6.3	7.6						
				20,000	4.6	51.0	19.4	6.49	3.50	1.29	79	101	128	172	230	22	22	22	21	21	21	21	21	21	21	21	21				
				25,000		63.8	24.3	8.11	4.38	1.61							3.5	3.7	4.1	4.4	5.1	5.7	7.0	8.3							
				50,000	7.3	128	48.6	16.2	8.75	3.22	84	107	132	178	235	22	22	22	21	21	21	21	21	21	21	21	21				
				75,000		191	72.8	24.3	13.1	4.83							5.4	5.7	6.3	6.8	7.4	8.2	9.6	11							
				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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**15 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										
					PIPE DIAMETER					CRACKING PRESS. (PSI)					DIFFERENTIAL PRESSURE (PSI)										
CAP. GPM	SPEED RPM				¾"	1"	1¼"	1½"	2"	LOW PRES R/V					MEDIUM DUTY AND HEAVY DUTY				HEAVY DUTY ONLY						
										50	75	100	150	200	25	50	75	100	150	200	300	400			
15	870	STD	28	1.6	.01	.01	.01	.01	.01	59	86	111			14	13	12	11							
			32		.17	.06	.02	.01	.01							.42	.68	.98	1.2						
			38	1.6	.22	.07	.02	.01	.01	59	86	111	161			14	14	13	12	12					
			50		.27	.09	.03	.01	.01							.48	.74	1.0	1.3	1.8					
			70	1.6	.30	.10	.03	.01	.01	60	87	113	163	215		15	14	14	13	13	13				
			100		.36	.12	.03	.02	.01							.67	.89	1.1	1.4	1.8	2.3				
			150	1.6	.41	.14	.05	.02	.01	60	87	113	163	217		16	15	15	14	14	14	13	12		
			200		.46	.18	.06	.03	.01							.74	.96	1.2	1.5	1.9	2.4	3.4	4.3		
			300	1.6	.58	.22	.08	.04	.02	60	87	115	165	219		16	16	15	15	15	15	14	13		
			500		.96	.37	.12	.07	.03							.82	1.0	1.3	1.5	2.0	2.5	3.5	4.5		
			750	1.6	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							.89	1.1	1.4	1.6	2.1	2.6	3.6	4.6			
		"C"	2,000	2.2	3.83	1.46	.49	.26	.10	62	90	115	165	222		16	16	16	16	16	16	15	15		
			3,500		6.70	2.55	.85	.46	.17							1.1	1.3	1.5	1.8	2.3	2.8	3.8	4.8		
			5,000	2.7	9.57	3.64	1.22	.66	.24	65	92	117	167	224		16	16	16	16	16	16	16	15		
			7,500		14.4	5.46	1.83	.99	.36							1.4	1.6	1.9	2.2	2.7	3.2	4.0	5.1		
			10,000	3.1	19.1	7.29	2.43	1.31	.49	68	94	119	169	224		16	16	16	16	16	16	16	16		
			15,000		28.7	10.9	3.65	1.97	.73							1.9	2.1	2.4	2.7	3.2	3.7	4.6	5.6		
			20,000	3.5	38.3	14.6	4.87	2.63	.97	72	97	122	172	224		16	16	16	16	16	16	16	16		
			25,000		47.8	18.2	6.08	3.28	1.21							2.4	2.6	2.9	3.1	3.7	4.2	5.1	6.1		
			50,000	5.8	95.7	36.4	12.2	6.56	2.42	77	102	127	177	229		16	16	16	16	16	16	16	16		
			75,000		144	54.6	18.3	9.85	3.63							3.8	4.0	4.3	4.5	5.0	5.5	6.5	7.5		
"D"	100,000		8.4	191	72.8	24.3	13.1	4.83	85	110	135	185	239		16	16	16	16	16	16	16				
	150,000		-	-	-	-								4.6	4.8	5.1	5.4	5.8	6.4	7.3	8.3				
	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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10 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)											
					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							
10	580	STD	28	1.2	.01	.01	.01	.01	.01	56	81	106				9	8.5	8	7.5							
			32		.08	.03	.01	.01	.01							.25	.41	.59	.73							
			38	1.2	.11	.04	.01	.01	.01	56	81	106	157				9.5	9	8.5	8	7.5					
			50		.13	.04	.01	.01	.01							.29	.45	.63	.80	1.1						
			70	1.2	.14	.05	.02	.01	.01	56	81	107	158	209			10	9.5	9.5	9	8.5	8.5				
			100		.14	.05	.02	.01	.01							.40	.54	.69	.84	1.1	1.4					
			150	1.2	.17	.07	.03	.02	.01	57	82	108	158	211			10	10	10	9.5	9.5	9	9	8		
			200		.30	.12	.04	.02	.01							.45	.58	.73	.88	1.2	1.4	2.0	2.6			
			300	1.2	.39	.15	.05	.02	.01	57	82	109	159	212			11	10	10	10	10	9.5	9.5	9		
			500		.64	.24	.08	.05	.02								.49	.62	.77	.92	1.2	1.5	2.1	2.7		
		750	1.2	.96	.36	.12	.07	.03	57	82	111	161	214			11	11	10	10	10	10	10	9.5			
		1,000		1.28	.49	.16	.09	.03								.54	.66	.82	.97	1.3	1.6	2.2	2.8			
				"C"	2,000	1.7	2.55	.97	.33	.18	.07	58	85	112	162	214		11	11	11	10	10	10	10	10	
					3,500		4.46	1.70	.57	.31	.12							.64	.76	.91	1.1	1.4	1.7	2.3	2.9	
					5,000	2.1	6.38	2.43	.81	.44	.16	60	85	112	162	214		11	11	11	11	10	10	10	10	10
					7,500		9.57	3.64	1.22	.66	.24							.82	.97	1.1	1.3	1.6	1.9	2.4	3.0	
					10,000	2.5	12.8	4.86	1.62	.88	.32	63	88	114	166	216		11	11	11	11	10	10	10	10	10
					15,000		19.2	7.29	2.43	1.31	.49							1.1	1.3	1.4	1.6	1.9	2.2	2.8	3.4	
				20,000	2.9	25.5	9.71	3.24	1.75	.65	66	91	116	168	218		11	11	11	11	10	10	10	10	10	
				25,000		31.9	12.2	4.05	2.19	.81							1.4	1.5	1.7	1.9	2.2	2.5	3.2	3.9		
		50,000	4.8	63.8	24.3	8.11	4.38	1.61	69	94	122	172	224		11	11	11	11	10	10	10	10	10			
		75,000		95.7	36.4	12.2	6.56	2.42							2.0	2.2	2.4	2.5	2.9	3.2	3.9	4.6				
		100,000	7.1	128	48.6	16.2	8.75	3.22	73	98	126	176	230		11	11	11	11	10	10	10	10	10			
		150,000		191	72.9	24.3	13.1	4.83							2.5	2.8	3.0	3.2	3.5	3.9	4.5	5.2				
		200,000																								
		250,000																								

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



GH

SEC. 500

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4 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						
4	200	STD																	
				"D"															
					200,000	2.4	7	2.6	1.3	0.5	0.2	3.8	3.8	3.8	3.8	3.8	3.8	3.7	3.7
					399,999		14	5.2	2.5	1.1	0.4	1.1	1.2	1.4	1.5	1.7	1.8	2.0	2.1
					400,000	2.7						3.8	3.8	3.8	3.8	3.8	3.8	3.7	3.7
					599,999		21	7.7	3.8	1.6	0.5	1.3	1.4	1.5	1.7	1.9	2.0	2.1	2.2
					600,000	3.3						3.8	3.8	3.8	3.8	3.8	3.8	3.7	3.7
					799,999		NR	10.3	5.1	2.1	0.7	1.4	1.5	1.6	1.8	2.0	2.1	2.2	2.3
					800,000	3.6						3.8	3.8	3.8	3.8	3.8	3.8	3.7	3.7
					1M		NR	12.9	6.3	2.7	0.9	1.6	1.9	1.9	1.9	2.1	2.2	2.3	2.4

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