

**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

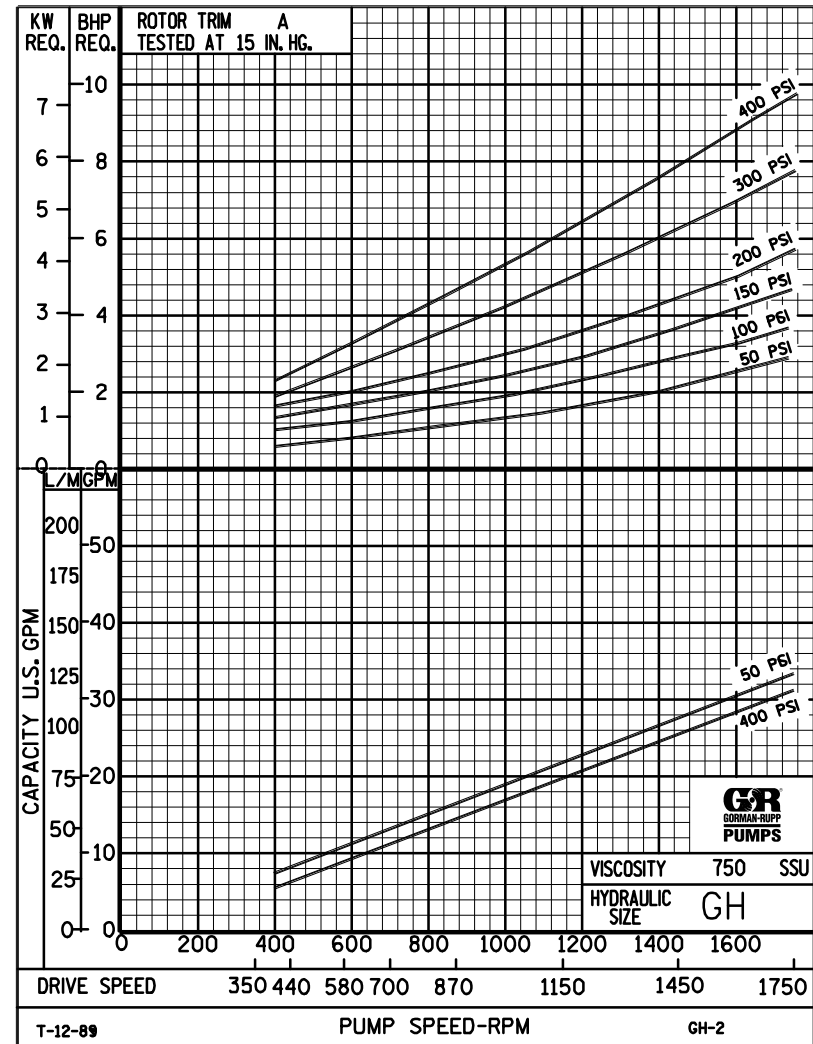
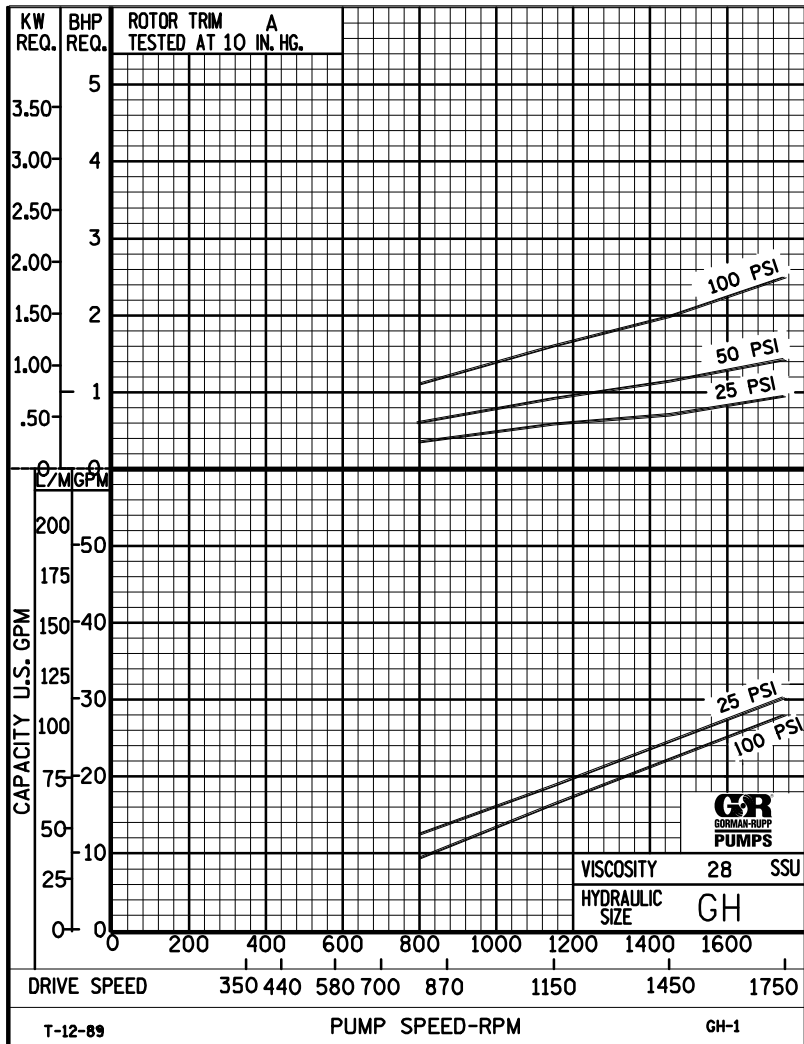
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Hydraulic Size

SEC. 500

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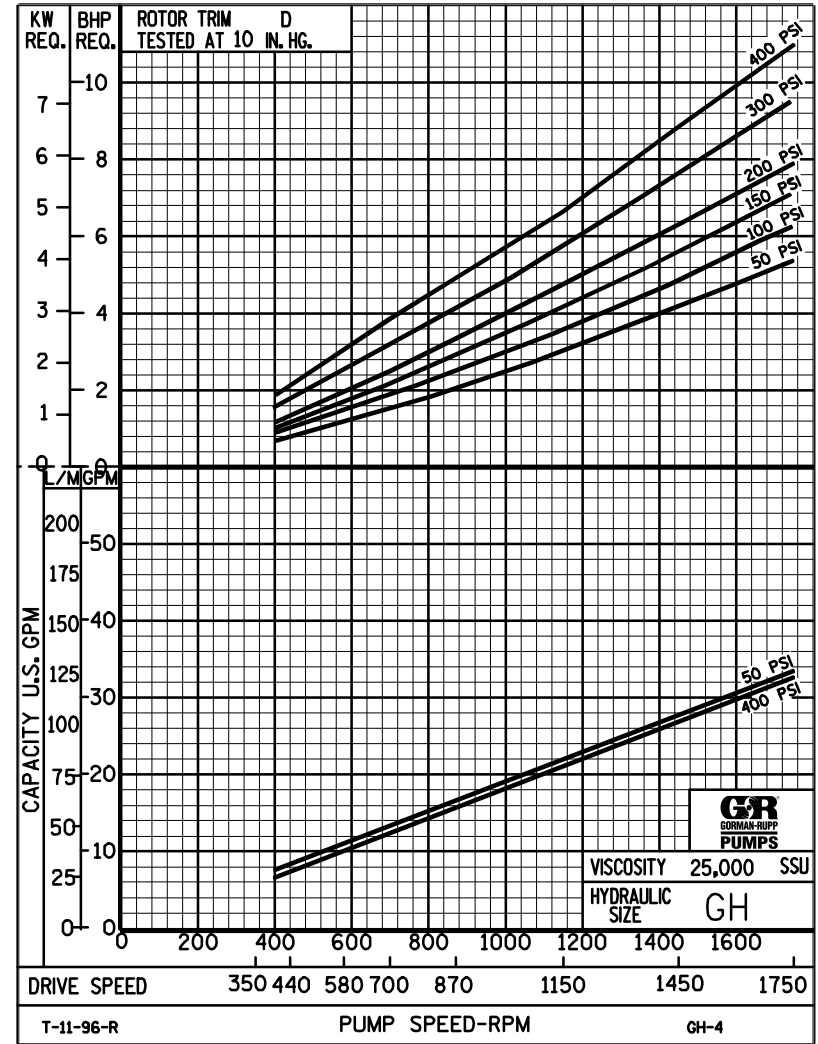
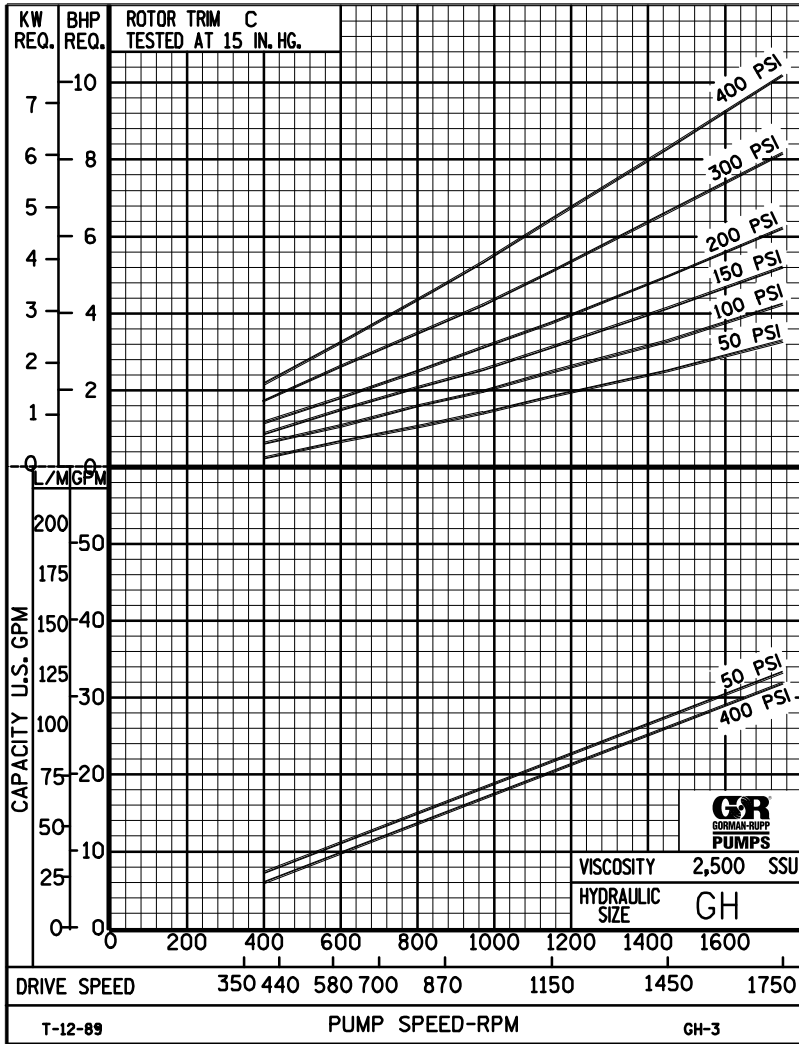


PERFORMANCE CURVES

SPEED VS. CAPACITY/HORSEPOWER

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Hydraulic Size



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PUMP HYDRAULIC SIZE CHART

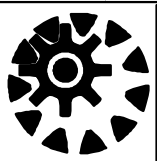
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**31 GPM
1750 RPM**

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

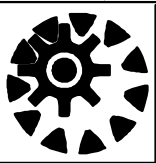
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**20 GPM
1150 RPM**

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			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						
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	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
					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
					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
				"D"	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
					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		
		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.



GH

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				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	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	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.

