

**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 ■	80 [251]							180 [81,6]	
GHA 2 NM 3-B ● GHA 2 NM 4-B ■								180 [81,6]	
GHA 3 NM 3-B ● GHA 3 NM 4-B ■	99 [313]							180 [81,6]	10.7
GHA 2 NP 3-B ● GHA 2 NP 4-B ■								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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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.

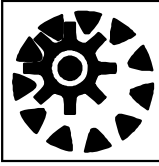
NOTE: PROPER PUMP APPLICATION REQUIRES CONSIDERATION OF ADDITIONAL FACTORS. PLEASE REVIEW APPLICATION GUIDE IN SECTION 500 OR CONSULT THE FACTORY.

# **GHA**

**FOR GHA DRIVE OPTIONS  
AND DIMENSIONS**

**SEE**

**SECTION 545**



# PERFORMANCE CURVES

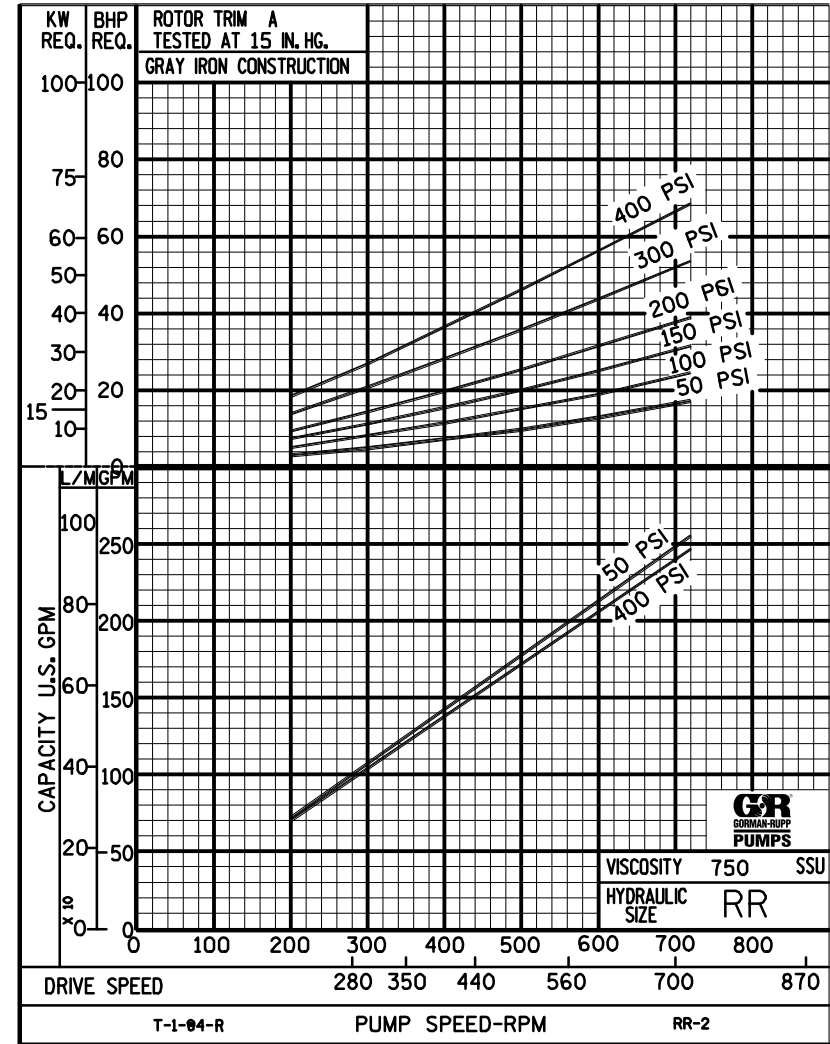
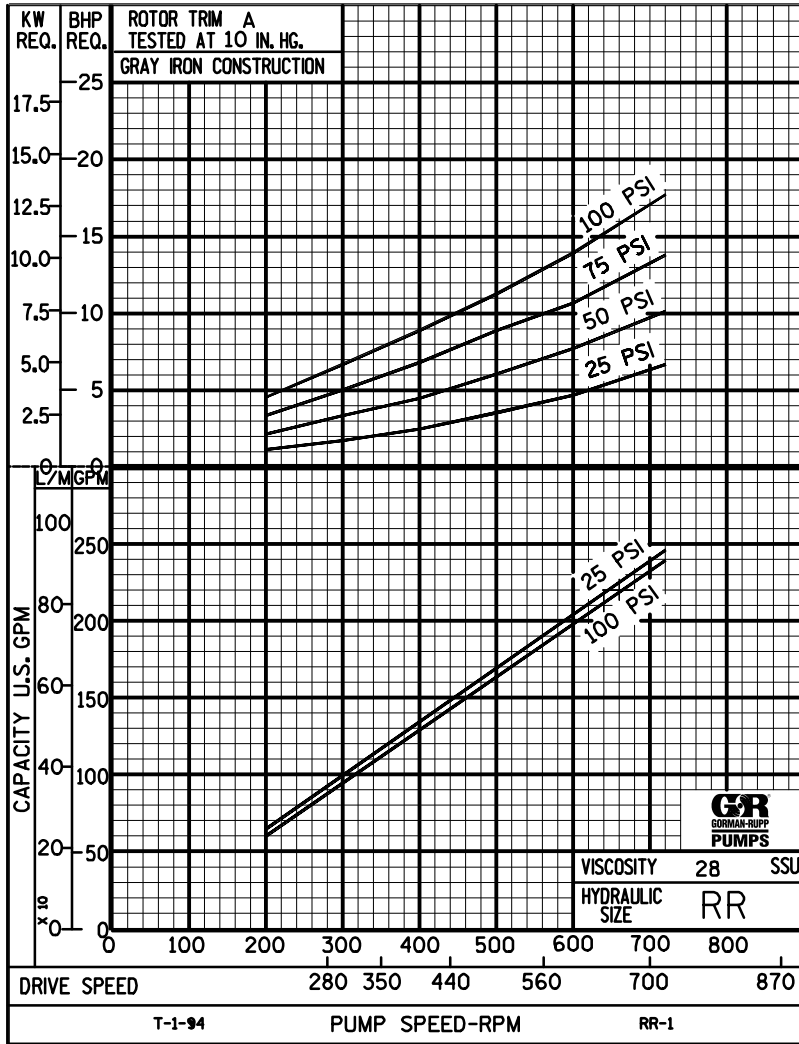
## SPEED VS. CAPACITY/HORSEPOWER

SEC. 500

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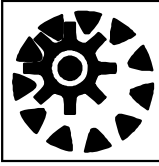
RR Hydraulic Size

January 2010



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# PERFORMANCE CURVES

## SPEED VS. CAPACITY/HORSEPOWER

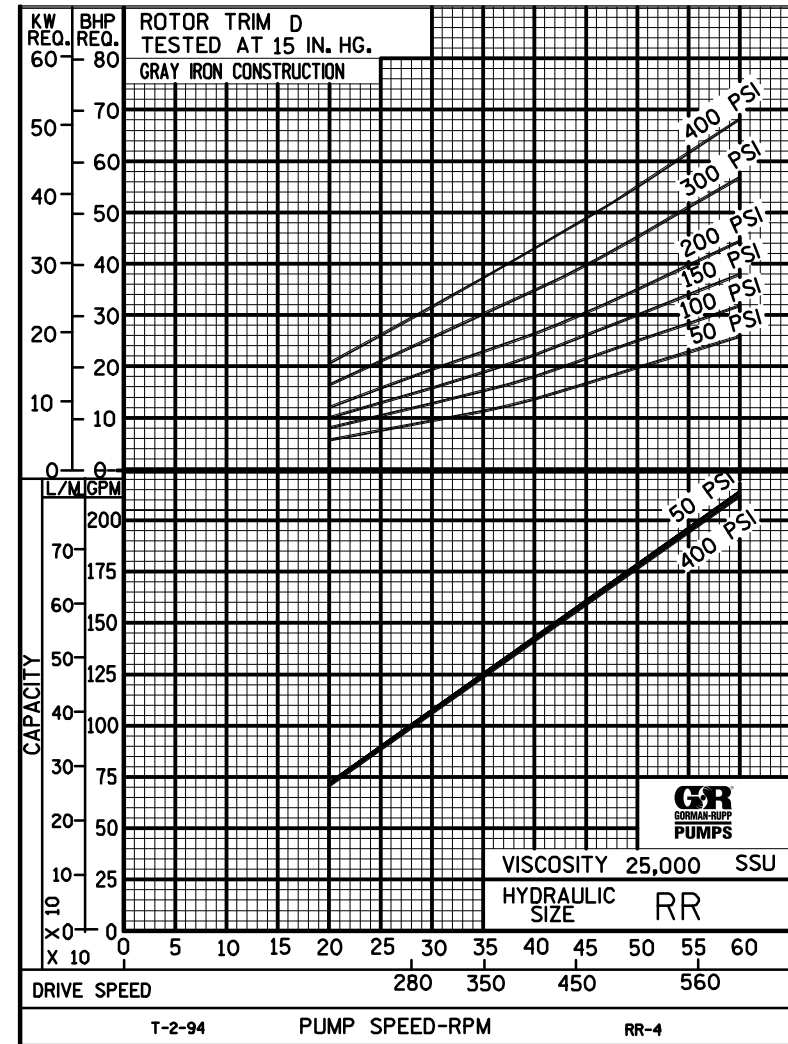
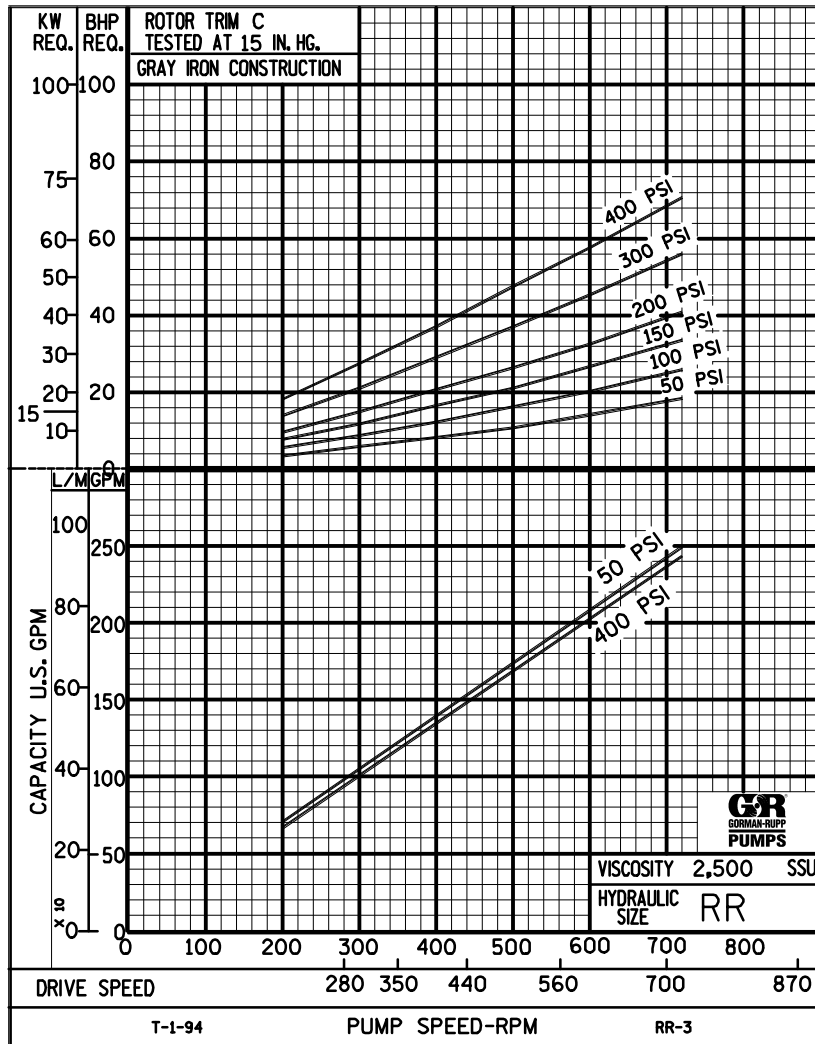
# RR

Hydraulic Size

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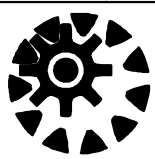
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# RR

## PUMP HYDRAULIC SIZE CHART

SEC. 500

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228 GPM  
640 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"	6"	LOW PRES R/V		HI PRES R/V			MEDIUM DUTY AND HEAVY DUTY				HEAVY DUTY ONLY					
228	640	STD	28	3.7	.37	.15	.05	.01	-	64	88	125	187		218	216	214	212						
			32		.39	.16	.05	.01	-						5.9	8.6	12	15						
			38	3.7	.41	.17	.06	.02	-	67	91	128	190		220	216	216	214	212					
			50		.45	.19	.06	.02	-						6.9	10	13	17	23					
			70	3.7	.49	.21	.07	.02	-	72	96	132	194	254	222	220	218	218	216	212				
			100		.54	.23	.08	.02	-						8.8	11	15	19	24	31				
			150	3.7	.60	.26	.09	.02	-	77	101	137	199	261	224	224	222	222	220	216	212	206		
			200		.64	.28	.10	.03	-						10	13	16	20	25	33	45	58		
			300	3.7	.72	.31	.11	.03	-	83	107	143	204	271	226	226	224	224	222	220	218	214		
			500		.83	.36	.13	.03	-						11	14	17	21	27	34	47	60		
		750	3.8	.95	.27	.11	.04	.01	87	112	147	209	279	228	228	226	226	224	224	222	220			
		1,000		.74	.36	.15	.05	.01						12	15	18	21	28	35	48	61			
		2,000	4.3	1.48	.73	.31	.10	.02	95	121	155	216	293	224	222	222	222	220	220	218	216			
		3,500		2.59	1.27	.53	.18	.04						14	17	21	23	30	36	50	63			
		5,000	4.7	3.71	1.82	.76	.26	.05	101	126	160	221	301	224	224	224	224	222	220	220	216			
		7,500		5.56	2.73	1.15	.39	.08						15	19	24	26	33	36	51	65			
		10,000	5.3	7.41	3.64	1.53	.52	.10	105	131	165	225	309	224	222	222	222	222	220	220	218			
		15,000		11.1	5.46	2.29	.77	.15						17	21	26	29	35	41	55	68			
		20,000	6.2	14.8	7.28	3.05	1.03	.20	108	135	169	228	315	224	224	222	222	222	222	220	220			
		25,000		18.5	9.10	3.82	1.29	.25						19	23	28	32	37	43	57	71			
50,000																								
75,000																								
100,000																								
150,000																								
200,000																								
250,000																								

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





# RR

## PUMP HYDRAULIC SIZE CHART

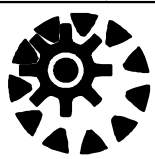
SEC. 500

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185 GPM  
520 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"	6"	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					
185	520	STD	28	2.6	.24	.10	.03	.01	-	59	85	122	179		177	173	172	171						
			32		.26	.10	.04	.01	-						3.9	6.5	9.4	12						
			38	2.6	.27	.11	.04	.01	-	62	88	124	182		178	174	174	173	169					
			50		.30	.13	.04	.01	-						4.9	7.3	11	14	18					
			70	2.6	.33	.14	.05	.01	-	66	91	127	186	247	181	178	177	176	173	170				
			100		.37	.16	.06	.02	-						6.1	8.6	12	15	20	24				
			150	2.6	.41	.17	.06	.02	-	70	96	131	190	252	183	181	180	179	177	175	171	166		
			200		.44	.19	.07	.02	-						6.9	9.2	13	17	21	25	35	46		
			300	2.6	.49	.21	.08	.02	-	76	101	135	195	259	185	183	182	182	180	178	177	173		
			500		.58	.25	.06	.02	-						7.8	10	14	18	22	26	37	48		
		750	2.7	.45	.22	.09	.03	.01	80	106	139	199	264	186	185	184	184	182	180	179	177			
		1,000		.60	.29	.12	.04	.01						7.9	11	14	18	22	27	38	49			
		2,000	3.5	1.19	.59	.25	.08	.02	87	113	145	206	274	182	181	181	181	180	179	177	175			
		3,500		2.09	1.03	.43	.15	.03						10	12	16	18	23	29	40	50			
		5,000	4.1	2.98	1.46	.61	.21	.04	92	118	149	210	280	183	183	182	182	182	180	179	177			
		7,500		4.47	2.20	.92	.31	.06						13	15	18	20	26	31	42	52			
		10,000	4.7	5.96	2.93	1.23	.41	.08	96	122	153	214	285	185	184	184	183	183	182	181	179			
		15,000		8.94	4.39	1.84	.62	.12						16	19	22	24	29	35	45	55			
		20,000	5.2	11.9	5.86	2.46	.83	.16	99	125	156	217	289	186	186	185	185	185	184	184	181			
		25,000		14.9	7.32	3.07	1.04	.20						19	21	24	26	32	37	48	58			
50,000	7.2	29.8	14.7	6.14	2.07	.40	106	132	161	223	297	186	186	185	185	185	184	184	181					
75,000		44.8	22.0	9.21	3.11	.60						26	29	31	34	39	45	56	66					
100,000																								
150,000																								
200,000																								
250,000																								

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



# RR

## PUMP HYDRAULIC SIZE CHART

SEC. 500

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125 GPM  
350 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"	6"	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					
125	350	STD	28	1.6	.11	.05	.02	-	-	55	83	119	176		117	114	113	112						
			32		.12	.05	.02	-	-					1.9	4.1	6.1	7.9							
			38	1.6	.13	.05	.02	.01	-	57	85	121	177		118	117	115	114	111					
			50		.15	.06	.02	.01	-					2.6	4.6	6.6	8.6	13						
			70	1.6	.16	.07	.02	.01	-	60	88	123	180	236	120	119	118	117	115	113				
			100		.18	.08	.03	.01	-					3.4	5.2	7.2	9.4	13	16					
			150	1.6	.21	.09	.03	.01	-	64	91	125	182	239	122	121	120	120	118	117	115	113		
			200		.22	.10	.03	.01	-						3.9	5.7	7.6	10	14	17	24	31		
			300	1.6	.25	.11	.02	.01	-	68	95	128	185	242	124	123	123	122	121	120	119	118		
			500		.20	.10	.04	.01	-						3.9	5.9	8.1	10	14	17	25	32		
		750	1.7	.30	.15	.06	.02	-	72	98	130	187	244	125	124	124	124	123	122	121	120			
		1,000		.40	.20	.08	.03	.01						4.1	6.2	8.4	10	14	17	25	32			
		2,000	2.2	.81	.40	.17	.06	.01	78	104	134	191	249	123	122	122	122	121	120	118	117			
		3,500		1.41	.69	.29	.10	.02						5.1	7.4	9.4	11	15	19	26	33			
		5,000	2.7	2.01	.99	.42	.14	.03	81	107	136	194	252	123	123	123	123	122	121	119	118			
		7,500		3.02	1.48	.62	.21	.04						6.2	8.3	11	12	16	20	27	34			
		10,000	3.4	4.03	1.98	.83	.28	.05	85	110	139	196	254	124	124	124	123	123	122	121	120			
		15,000		6.04	2.97	1.25	.42	.08						7.7	10	12	14	18	21	29	36			
		20,000	4.1	8.06	3.96	1.66	.56	.11	87	112	140	197	256	125	125	125	124	124	124	123	122			
		25,000		10.1	4.95	2.08	.70	.14						8.8	11	13	15	19	23	30	37			
50,000	6.2	20.1	9.90	4.15	1.40	.27	93	117	143	202	260	125	125	125	124	124	124	123	122					
75,000		30.2	14.9	6.23	2.10	.41						13	15	17	19	23	27	34	41					
100,000	8.1	40.3	19.8	8.30	2.80	.54	96	120	146	204	262	125	125	125	124	124	124	123	122					
150,000		60.4	29.7	12.5	4.20	.82						17	19	21	24	27	31	38	45					
200,000	9.8	80.6	39.6	16.6	5.60	1.09	98	122	148	205	264	125	125	125	124	124	124	123	122					
250,000		-	-	-	-	-						21	23	26	28	31	35	42	50					

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