

# 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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# 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.

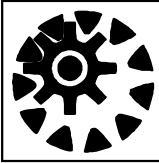
NOTE: PROPER PUMP APPLICATION REQUIRES CONSIDERATION OF ADDITIONAL FACTORS. PLEASE REVIEW APPLICATION GUIDE IN SECTION 500 OR CONSULT THE FACTORY.

# **GHA**

**FOR GHA DRIVE OPTIONS  
AND DIMENSIONS**

**SEE**

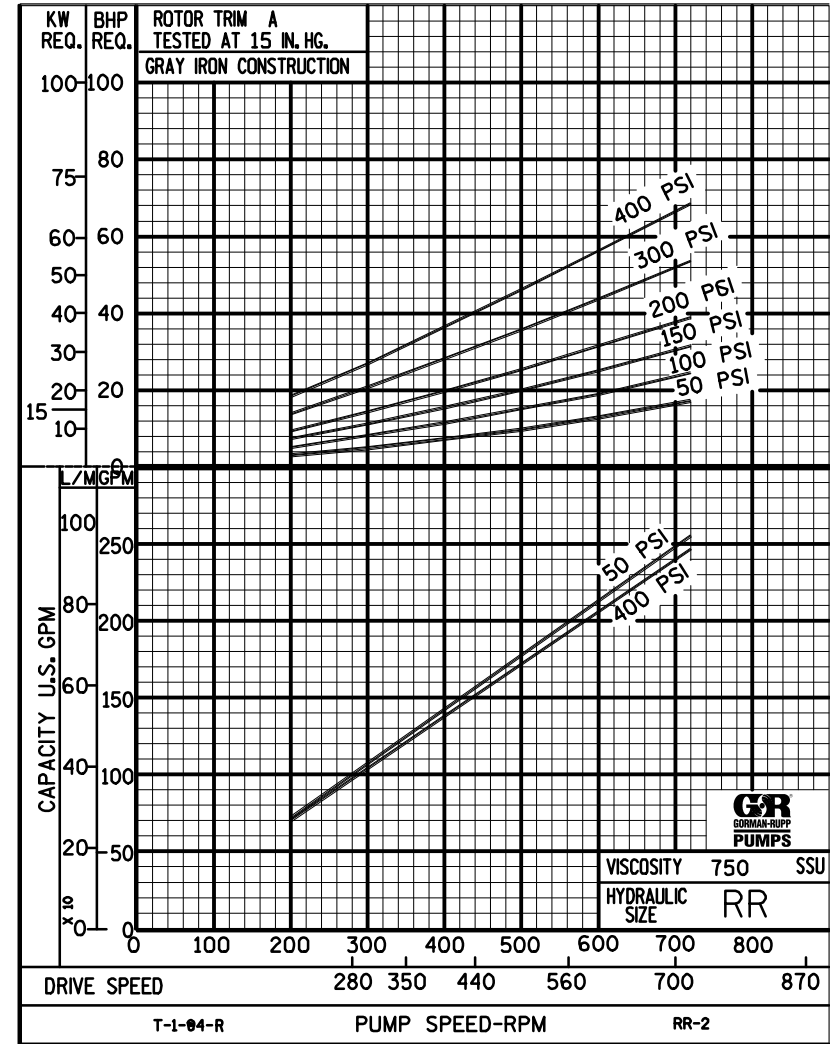
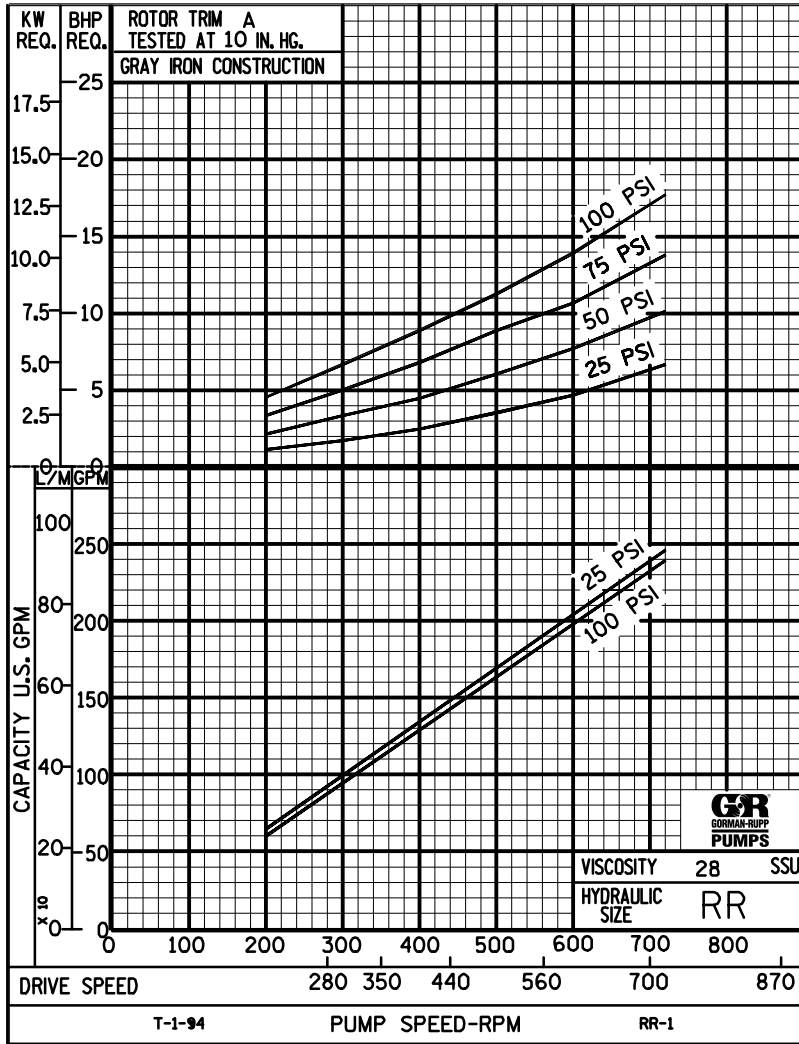
**SECTION 545**



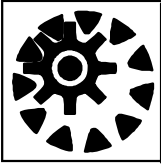
# PERFORMANCE CURVES

## SPEED VS. CAPACITY/HORSEPOWER

RR Hydraulic Size



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# PERFORMANCE CURVES

## SPEED VS. CAPACITY/HORSEPOWER

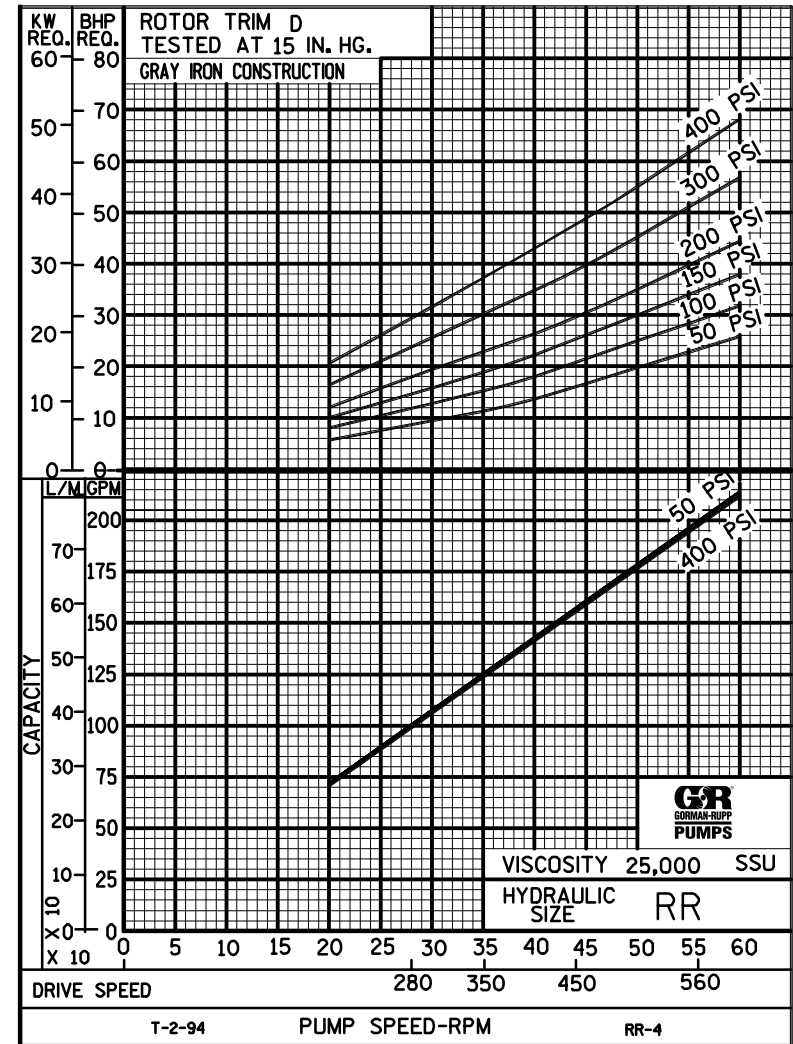
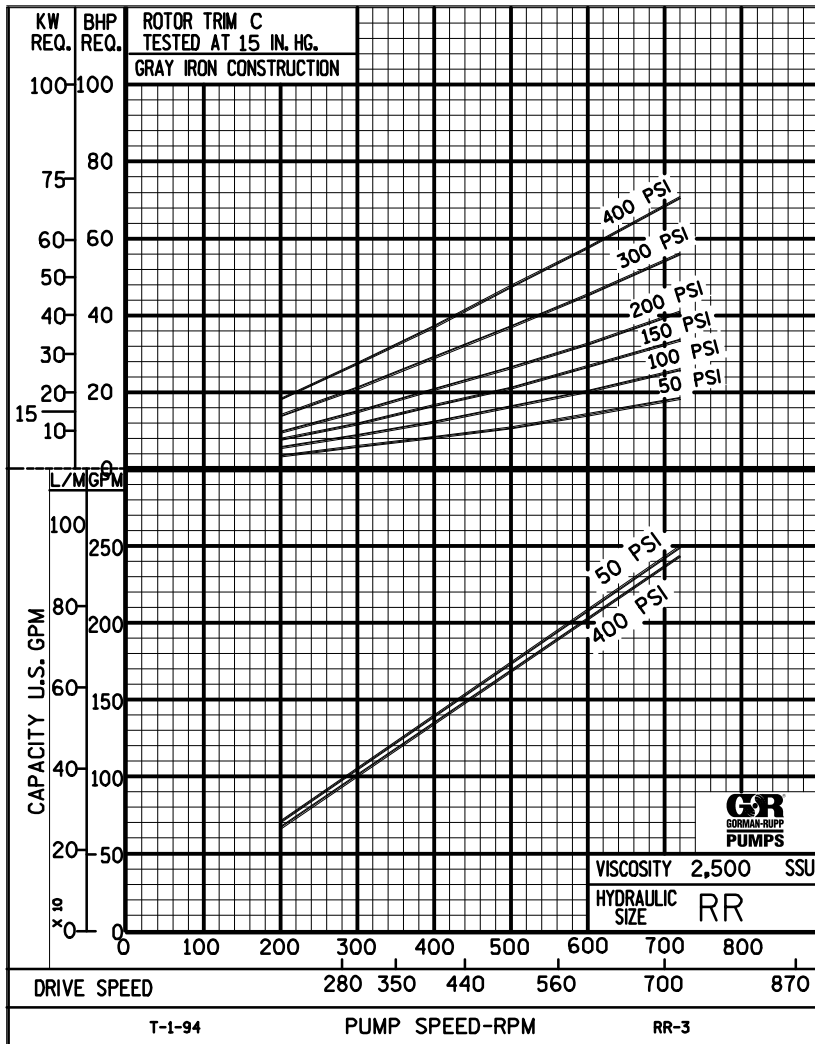
# RR

Hydraulic Size

SEC. 500

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# RR

## PUMP HYDRAULIC SIZE CHART

SEC. 500

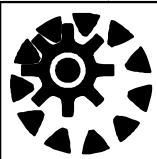
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228 GPM  
640 RPM

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					
							50	75	100	150	200	25	50	75	100	150	200	300	400					
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	-						224	224	222	222	220	216	212	206		
			200		.64	.28	.10	.03	-	77	101	137	199	261	10	13	16	20	25	33	45	58		
			300	3.7	.72	.31	.11	.03	-						226	226	224	224	222	220	218	214		
			500		.83	.36	.13	.03	-	83	107	143	204	271	11	14	17	21	27	34	47	60		
		750	3.8	.95	.27	.11	.04	.01						228	228	226	226	224	224	222	220			
		1,000		.74	.36	.15	.05	.01	87	112	147	209	279	12	15	18	21	28	35	48	61			
		2,000	4.3	1.48	.73	.31	.10	.02						224	222	222	222	220	220	218	216			
		3,500		2.59	1.27	.53	.18	.04	95	121	155	216	293	14	17	21	23	30	36	50	63			
		5,000	4.7	3.71	1.82	.76	.26	.05						224	224	224	224	222	220	220	216			
		7,500		5.56	2.73	1.15	.39	.08	101	126	160	221	301	15	19	24	26	33	36	51	65			
		10,000	5.3	7.41	3.64	1.53	.52	.10						224	222	222	222	222	220	220	218			
		15,000		11.1	5.46	2.29	.77	.15	105	131	165	225	309	17	21	26	29	35	41	55	68			
		20,000	6.2	14.8	7.28	3.05	1.03	.20						224	224	222	222	222	222	220	220			
		25,000		18.5	9.10	3.82	1.29	.25	108	135	169	228	315	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												
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

125 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)					25 50 75 100 150 200 300 400				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						
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.