



**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 LBS [KG]	Volume CU. FT.
	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]	100 [7]	150 [10]	200 [14]	250 [119]	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]	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]	100 [7]	150 [10]	200 [14]	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 ■	80 [251]						180 [81,6]	
GHA 3 NM 3-B ● GHA 3 NM 4-B ■	80 [251]						180 [81,6]	
GHA 2 NP 3-B ● GHA 2 NP 4-B ■	99 [313]	580 [480]	100 [7]	150 [10]	200 [14]	500 [260]	180 [81,6]	10.7
GHA 3 NP 3-B ● GHA 3 NP 4-B ■	99 [313]						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

**THE GORMAN-RUPP COMPANY • MANSFIELD, OHIO**  
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.

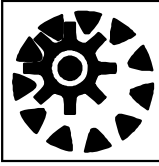
NOTE: PROPER PUMP APPLICATION REQUIRES CONSIDERATION OF ADDITIONAL FACTORS. PLEASE REVIEW APPLICATION GUIDE IN SECTION 500 OR CONSULT THE FACTORY.

# **GHA**

**FOR GHA DRIVE OPTIONS  
AND DIMENSIONS**

**SEE**

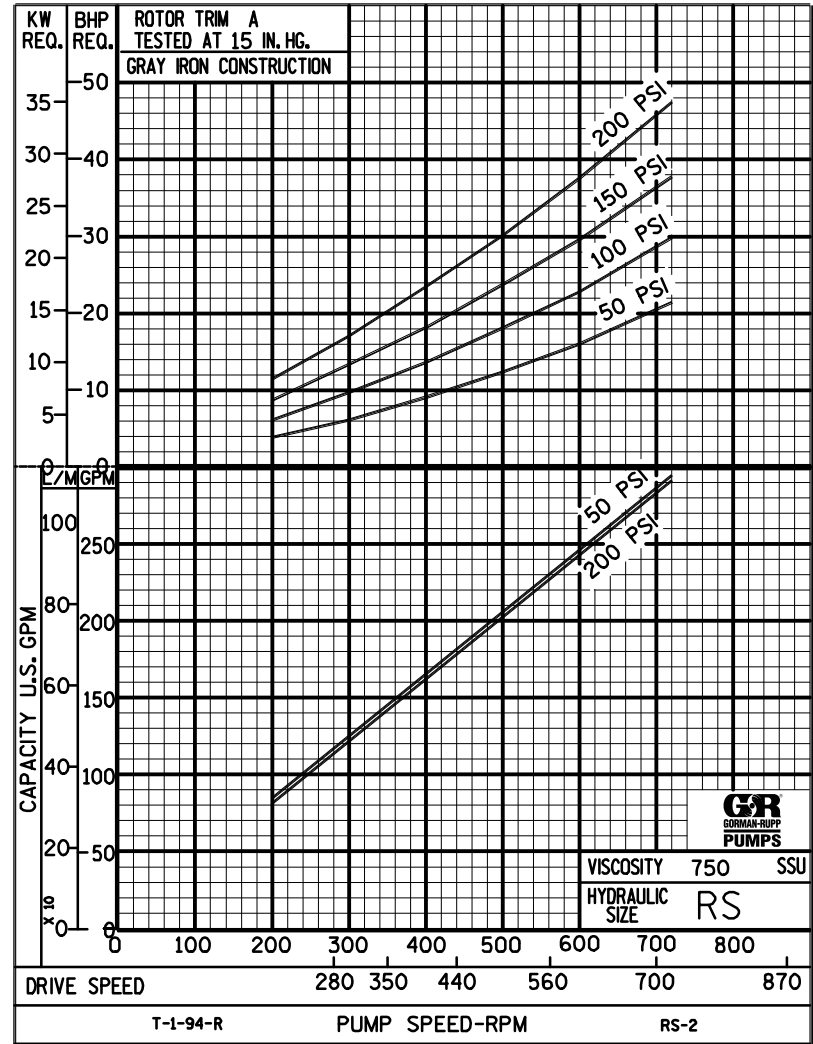
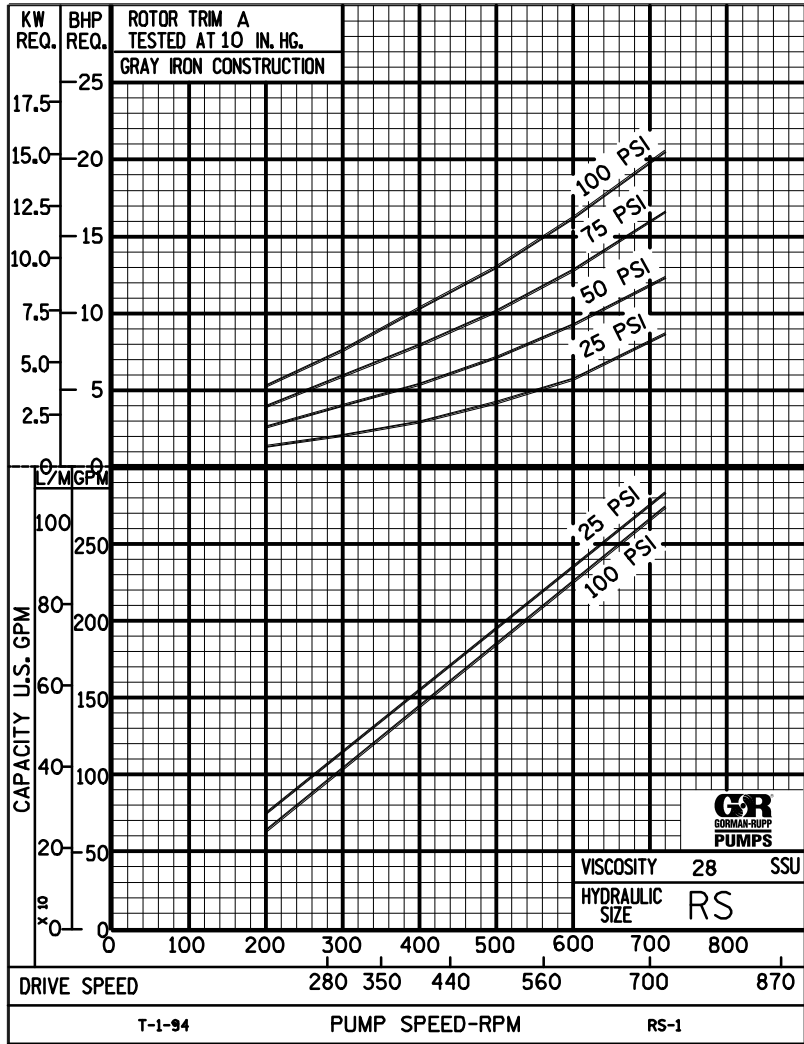
**SECTION 545**



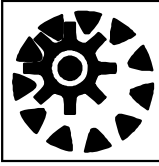
# PERFORMANCE CURVES

## SPEED VS. CAPACITY/HORSEPOWER

**RS** Hydraulic Size



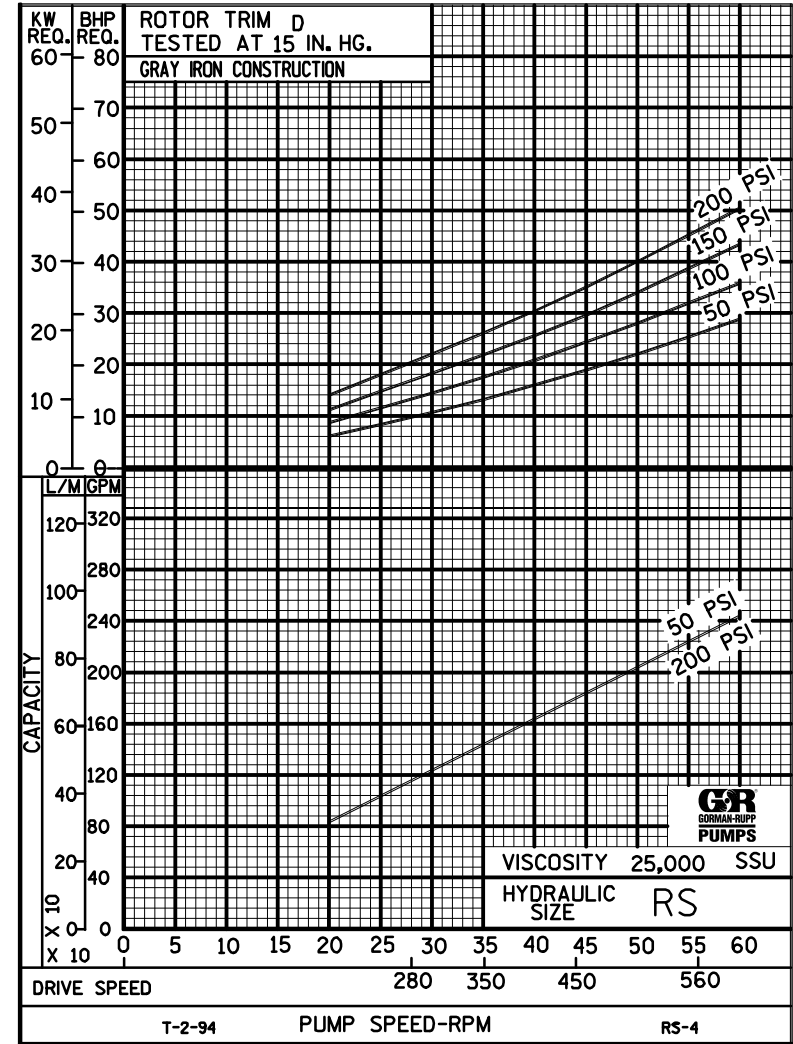
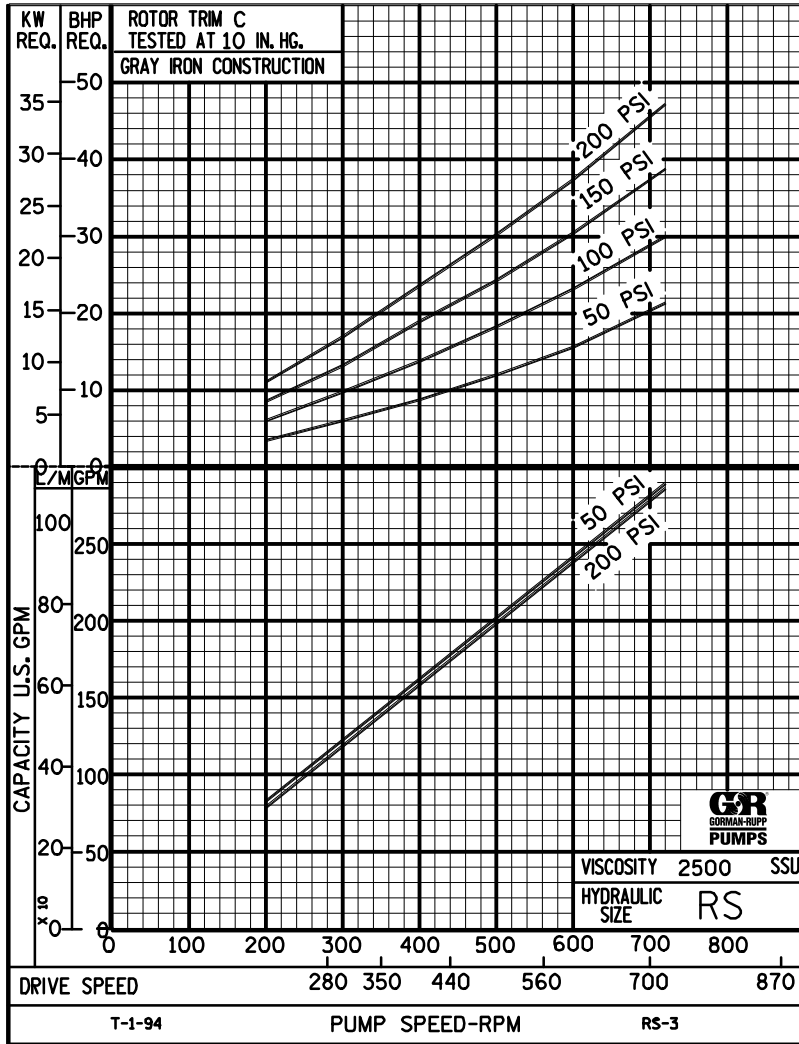
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# PERFORMANCE CURVES

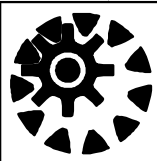
## SPEED VS. CAPACITY/HORSEPOWER

**RS** Hydraulic Size



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# RS

## PUMP HYDRAULIC SIZE CHART

SEC. 500

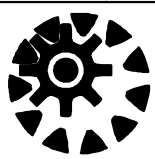
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**295 GPM  
720 RPM**

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		HEAVY DUTY									
							50	75	100	150	200	25	50	75	100	150	200	300	400					
295	720	STD	28	6.3	.61	.24	.08	.02	-	70	90	129	199	284	280	276	274							
			32		.64	.26	.09	.02	-					9.5	13	17	22							
			38	6.3	.67	.27	.09	.02	-	73	95	132	202	286	284	280	276	272						
			50		.71	.30	.10	.03	-					12	16	20	24	31						
			70	6.3	.78	.33	.11	.03	-	79	101	138	207	264	288	286	284	282	278	274				
			100		.85	.36	.13	.03	-					14	18	22	27	33	44					
			150	6.3	.93	.39	.14	.04	.01	85	107	144	211	276	292	290	288	286	284	282				
			200		1.00	.42	.15	.04	.01						16	20	24	28	35	45				
			300	6.3	1.10	.47	.17	.05	.01	92	116	152	218	292	294	292	292	290	290	286				
			500		1.27	.55	.20	.06	.01						17	21	25	30	37	47				
		750	6.3	1.44	.63	.15	.05	.01	98	122	158	222	304	296	294	294	294	294	292					
		1,000		1.59	.47	.20	.07	.01						17	22	26	30	38	47					
		2,000	6.7	1.90	.93	.39	.13	.03	108	134	169	230	326	290	290	288	288	288	286					
		3,500		3.33	1.63	.69	.23	.04						18	22	26	31	40	48					
		5,000	7.1	4.75	2.34	.98	.33	.06	114	140	176	235	339	290	290	290	288	288	286					
		7,500		7.13	3.50	1.47	.50	.10						20	23	28	32	41	49					
		10,000	7.6	9.51	4.67	1.96	.66	.13	120	147	182	240	352	290	290	290	290	288	288					
		15,000		14.3	7.01	2.94	.99	.19						24	27	30	34	43	52					
		20,000																						
		25,000																						
50,000																								
75,000																								
100,000																								
150,000																								
200,000																								
250,000																								

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



# RS

## PUMP HYDRAULIC SIZE CHART

SEC. 500

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**265 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					
265	640	STD	28	4.8	.48	.19	.06	.02	-	67	89	127	193		252	248	244	240						
			32		.50	.20	.07	.02	-						7.5	11	15	18						
			38	4.8	.52	.21	.07	.02	-	71	93	130	196		254	250	246	244	238					
			50		.56	.23	.08	.02	-						9.4	13	17	20	28					
			70	4.8	.62	.26	.09	.02	-	76	98	135	201	259	256	254	252	250	246	240				
			100		.68	.29	.10	.03	-						11	15	19	22	29	38				
			150	4.8	.74	.32	.11	.03	-	81	104	141	205	269	260	258	256	254	252	248				
			200		.80	.34	.12	.03	-						12	16	20	23	31	39				
			300	4.8	.89	.38	.14	.04	.01	88	112	148	211	282	262	260	258	258	256	254				
			500		1.03	.44	.16	.03	.01						13	17	21	25	32	41				
		750	5.0	1.17	.51	.13	.04	.01	92	118	153	216	292	264	262	262	260	260	258					
		1,000		.84	.41	.17	.06	.01						14	18	22	25	32	41					
		2,000	5.5	1.68	.82	.35	.12	.02	102	128	162	224	310	258	258	258	256	256	254					
		3,500		2.93	1.44	.60	.20	.04						15	18	22	26	34	41					
		5,000	6.0	4.19	2.06	.86	.29	.06	107	134	168	229	321	258	258	258	256	256	256					
		7,500		6.29	3.09	1.29	.44	.08						18	20	24	28	36	43					
		10,000	6.7	8.38	4.12	1.73	.58	.11	112	140	173	234	331	258	258	258	258	256	256					
		15,000		12.6	6.17	2.59	.87	.17						20	23	27	30	38	45					
		20,000	7.8	16.8	8.23	3.45	1.16	.23	116	144	181	237	339	260	260	260	258	258	256					
		25,000		21.0	10.3	4.32	1.46	.28						23	26	29	32	40	48					
50,000																								
75,000																								
100,000																								
150,000																								
200,000																								
250,000																								

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





# RS

## PUMP HYDRAULIC SIZE CHART

SEC. 500

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**212 GPM  
520 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					
212	520	STD	28	3.2	.31	.13	.04	.01	-	62	87	123	185		204	200	196	192						
			32		.33	.13	.04	.01	-						4.9	7.9	11	14						
			38	3.2	.35	.14	.05	.01	-	64	90	126	187		206	202	198	196	190					
			50		.38	.16	.05	.01	-						6.3	9.1	12	16	21					
			70	3.2	.42	.18	.06	.02	-	69	95	130	192	251	208	206	202	200	196	192				
			100		.46	.20	.07	.02	-						7.9	10	14	17	23	30				
			150	3.2	.51	.22	.08	.02	-	74	99	134	196	258	212	208	206	206	204	200				
			200		.55	.24	.08	.02	-						8.9	12	15	18	24	31				
			300	3.2	.61	.27	.10	.03	-	80	105	140	202	267	212	212	210	208	208	206				
			500		.72	.31	.11	.02	-						9.6	13	16	19	25	32				
		750	3.3	.51	.25	.10	.04	.01	84	110	144	206	274	214	214	212	212	210	210					
		1,000		.68	.33	.14	.05	.01						10	13	16	19	25	32					
		2,000	4.1	1.35	.66	.28	.09	.02	92	118	151	213	287	212	212	210	210	208	206					
		3,500		2.37	1.16	.49	.16	.03						11	14	17	19	26	33					
		5,000	4.6	3.38	1.66	.70	.24	.05	97	123	156	218	294	212	212	210	210	210	208					
		7,500		5.08	2.49	1.05	.35	.07						14	16	20	23	29	36					
		10,000	5.3	6.77	3.32	1.39	.47	.09	102	127	160	222	301	212	212	212	212	210	210					
		15,000		10.2	4.99	2.09	.71	.14						18	20	24	27	33	39					
		20,000	5.8	13.5	6.65	2.79	.94	.18	104	131	164	224	305	212	212	212	212	210	210					
		25,000		16.9	8.31	3.49	1.18	.23						20	23	27	30	36	43					
50,000	8.2	33.8	16.6	6.97	2.35	.46	113	138	170	232	317	212	212	212	212	210	210							
75,000		50.8	24.9	10.5	3.53	.68						28	31	34	38	45	51							
100,000																								
150,000																								
200,000																								
250,000																								

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



# RS

## PUMP HYDRAULIC SIZE CHART

SEC. 500

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146 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)					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						
146	350	STD	28	1.8	.16	.07	.02	.01	-	56	84	120	177		135	131	128	124							
			32		.17	.07	.02	.01	-						2.6	4.9	6.9	9.1							
			38	1.8	.19	.08	.03	.01	-	59	86	122	179		136	133	130	127	121						
			50		.20	.09	.03	.01	-						3.2	5.6	7.8	9.4	15						
			70	1.8	.23	.10	.03	.01	-	62	89	124	182	241		139	136	134	131	127	125				
			100		.25	.11	.04	.01	-							3.9	6.1	8.7	10	15	19				
			150	1.8	.28	.12	.04	.01	-	65	92	126	185	244		142	139	138	136	133	132				
			200		.31	.13	.05	.01	-							4.8	6.7	9.1	11	15	20				
			300	1.8	.35	.15	.05	.01	-	71	97	130	189	249		143	142	141	140	138	137				
			500		.41	.12	.05	.02	-							4.9	7.3	9.2	11	16	20				
		750	1.9	.36	.18	.07	.03	-	74	100	133	192	252		145	144	144	143	142	141					
		1,000		.48	.24	.10	.03	.01							5	7.6	9.4	12	16	20					
		2,000	2.5	.97	.47	.20	.07	.01	81	109	138	197	257		143	142	142	141	140	139					
		3,500		1.69	.83	.35	.12	.02							5.2	9.5	10	12	17	21					
		5,000	3.0	2.42	1.19	.50	.17	.03	85	111	141	200	261		143	143	142	142	141	140					
		7,500		3.63	1.78	.75	.25	.05							6.9	9.3	12	13	19	22					
		10,000	3.7	4.83	2.37	1.00	.34	.07	88	114	144	203	265		144	143	142	142	142	141					
		15,000		7.25	3.56	1.49	.50	.10							8.8	11	14	15	20	24					
		20,000	4.4	9.67	4.75	1.99	.67	.13	91	116	145	204	267		144	143	143	143	142	142					
		25,000		12.1	5.94	2.49	.84	.16							11	13	15	17	22	26					
50,000	6.8	24.2	11.9	4.98	1.68	.33	97	122	149	210	272		144	143	143	143	142	142							
75,000		36.3	17.8	7.47	2.52	.49							15	18	20	23	27	32							
100,000	9.0	48.4	23.8	9.96	3.36	.65	101	125	152	212	275		144	143	143	143	142	142							
150,000		72.5	35.6	14.9	5.04	.98							20	23	25	28	33	37							
200,000																									
250,000																									

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