



**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

**THE GORMAN-RUPP COMPANY • MANSFIELD, OHIO**  
GORMAN-RUPP OF CANADA LIMITED • ST. THOMAS, ONTARIO, CANADA

# 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.

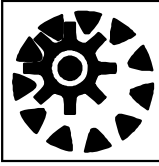
NOTE: PROPER PUMP APPLICATION REQUIRES CONSIDERATION OF ADDITIONAL FACTORS. PLEASE REVIEW APPLICATION GUIDE IN SECTION 500 OR CONSULT THE FACTORY.

# **GHA**

**FOR GHA DRIVE OPTIONS  
AND DIMENSIONS**

**SEE**

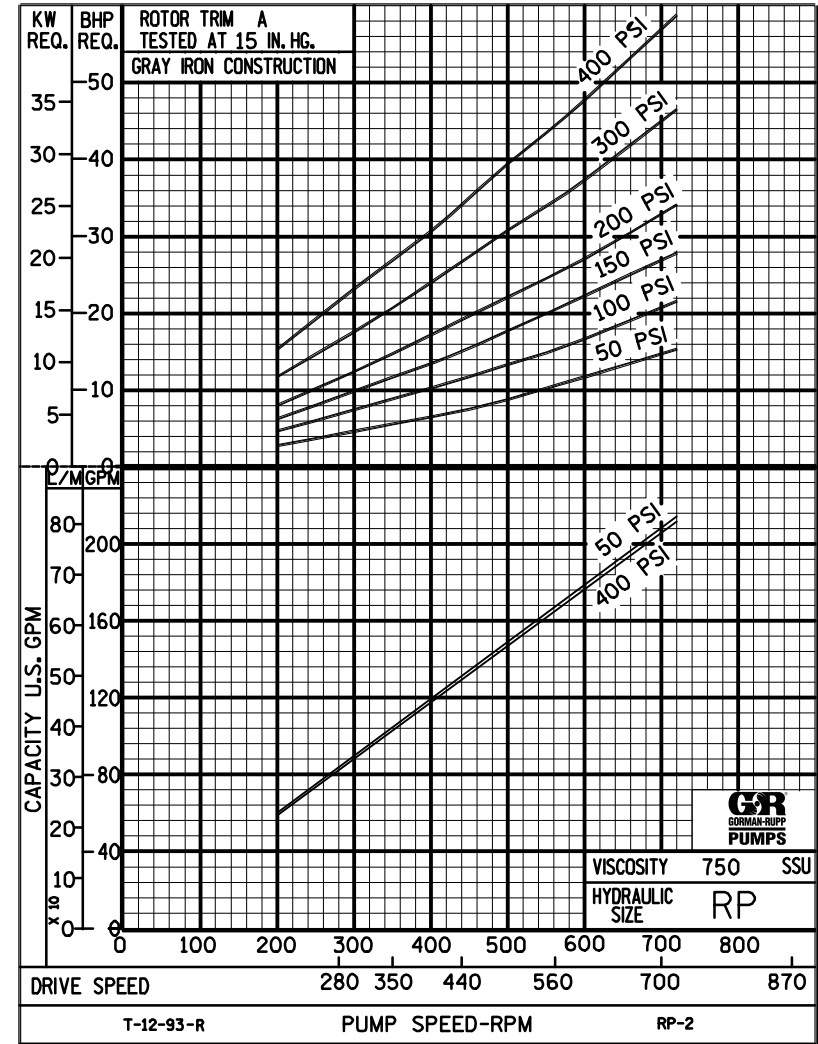
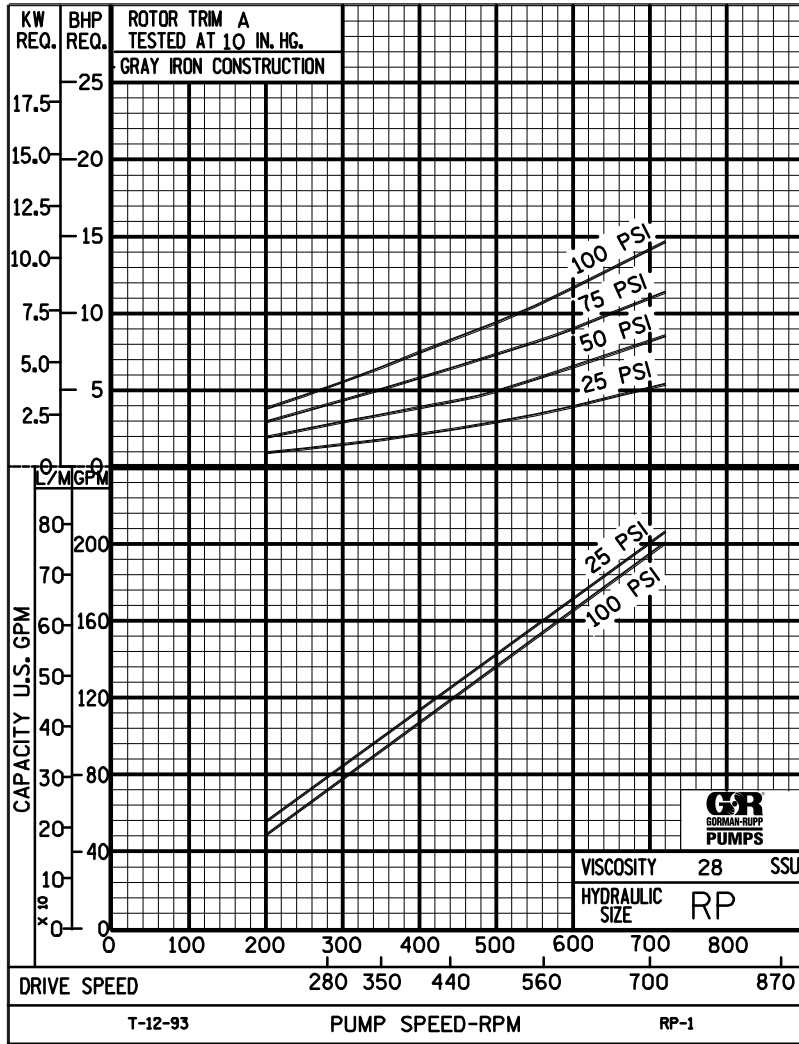
**SECTION 545**



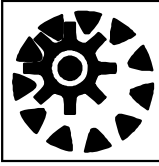
# PERFORMANCE CURVES

## SPEED VS. CAPACITY/HORSEPOWER

**RP** Hydraulic Size



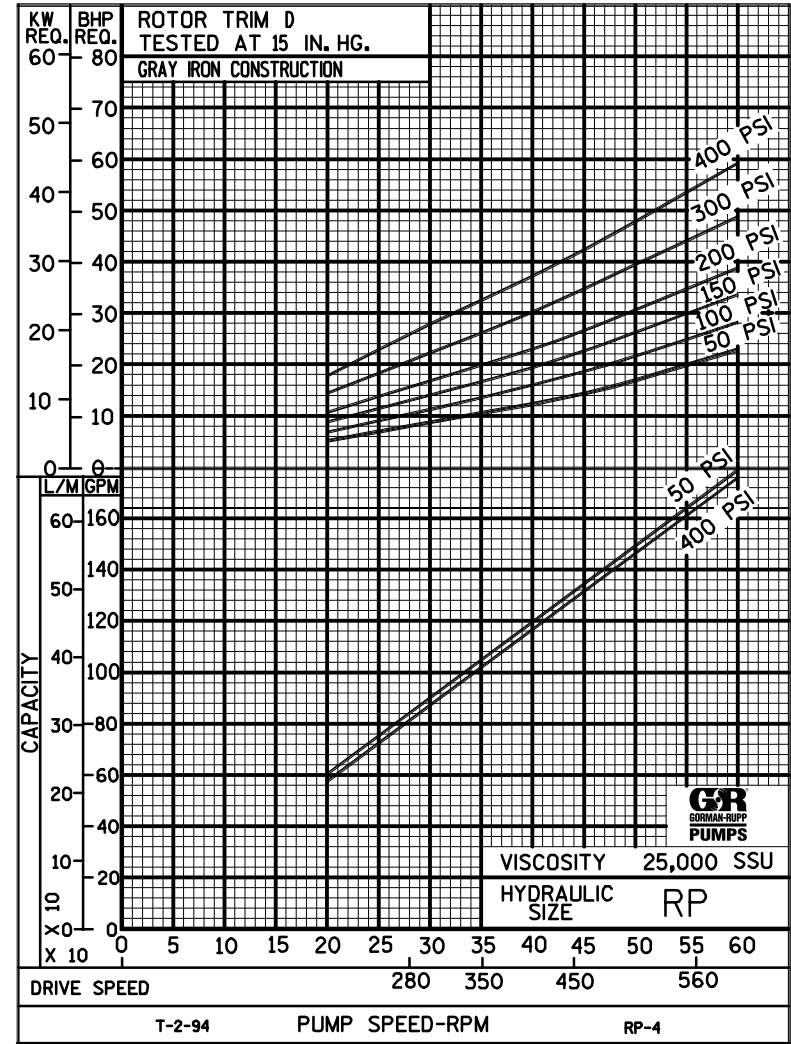
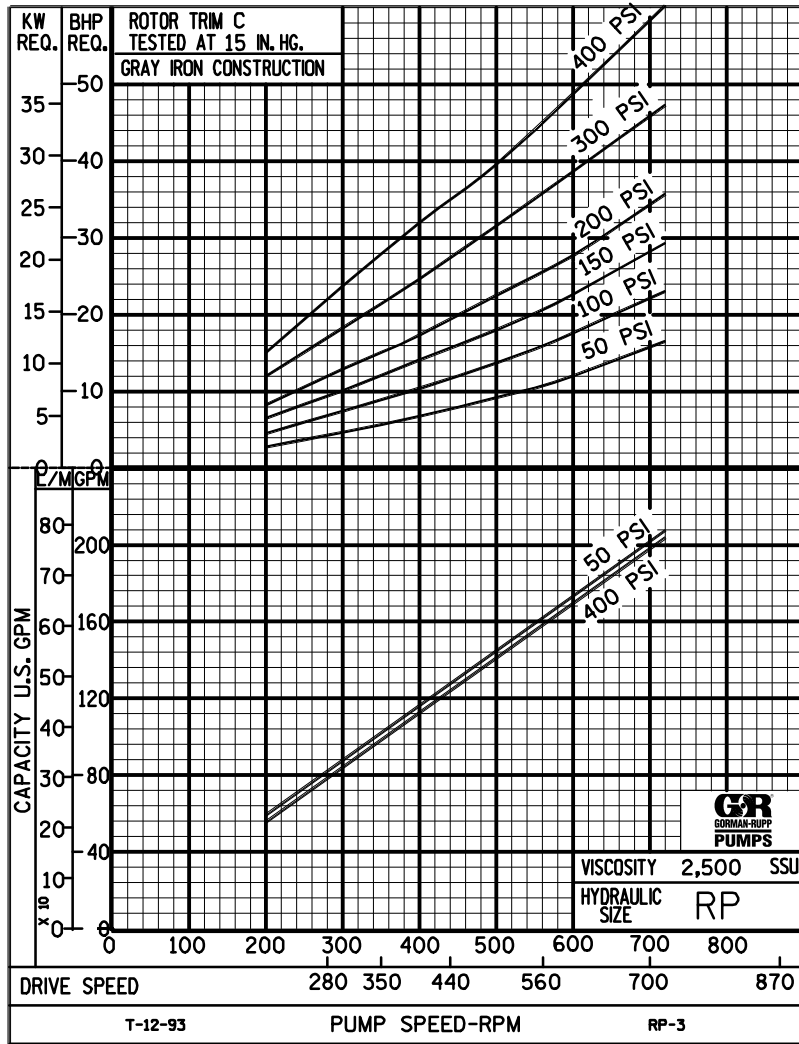
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# PERFORMANCE CURVES

## SPEED VS. CAPACITY/HORSEPOWER

**RP** Hydraulic Size



**THE GORMAN-RUPP COMPANY • MANSFIELD, OHIO**  
GORMAN-RUPP OF CANADA LIMITED • ST. THOMAS, ONTARIO, CANADA



# RP

## PUMP HYDRAULIC SIZE CHART

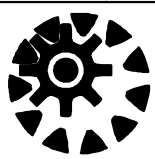
SEC. 500

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215 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				
215	720	STD	28	4.0	.31	.13	.04	.01	-	62	87	123	185		206	204	202	200								
			32		.33	.13	.04	.01	-						5.9	8.1	12	15								
			38	4.0	.35	.14	.05	.01	-	64	90	126	187		208	206	204	202	196							
			50		.38	.16	.05	.01	-						7.3	9.3	13	16	23							
			70	4.0	.42	.18	.06	.02	-	69	95	130	192	251		210	208	208	206	202	198					
			100		.46	.20	.07	.02	-							9.3	12	15	18	25	30					
			150	4.0	.51	.22	.08	.02	-	74	99	134	196	258		212	212	210	210	208	204	202	200			
			200		.55	.24	.08	.02	-							11	13	17	20	26	32	45	58			
			300	4.0	.61	.27	.10	.03	-	80	105	140	202	267		214	212	212	212	210	208	206	206			
			500		.72	.31	.11	.02	-							12	15	18	21	28	34	46	59			
			750	4.0	.51	.25	.10	.04	.01	84	110	144	206	274		214	214	214	214	214	212	212	212			
			1,000		.68	.33	.14	.05	.01							13	16	19	22	29	35	47	60			
		2,000	4.3	1.35	.66	.28	.09	.02	92	118	151	213	287		208	208	208	206	206	206	206	204				
		3,500		2.37	1.16	.49	.16	.03							15	17	20	24	30	36	48	61				
		5,000	4.7	3.38	1.66	.70	.24	.05	97	123	156	218	294		208	208	208	208	206	206	206	204				
		7,500		5.08	2.49	1.05	.35	.07							16	19	22	25	32	39	50	63				
		10,000	5.2	6.77	3.32	1.39	.47	.09	102	127	160	222	301		210	208	208	208	208	208	206	206				
		15,000		10.2	4.99	2.09	.71	.14							18	20	24	28	34	41	53	66				
		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.



# RP

## PUMP HYDRAULIC SIZE CHART

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**190 GPM  
640 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				
190	640	STD	28	3.2	.24	.10	.03	.01	-	60	85	122	180		184	181	179	177					
			32		.26	.10	.04	.01	-						4.9	7.3	10	13					
			38	3.2	.27	.11	.04	.01	-	63	88	124	183		185	182	180	179	174				
			50		.30	.13	.04	.01	-						6.2	8.9	12	15	19				
			70	3.2	.33	.14	.05	.01	-	67	92	128	187	248	187	185	183	178	176				
			100		.37	.16	.06	.02	-						7.9	10	13	16	21	28			
			150	3.2	.41	.17	.06	.02	-	71	97	132	191	253	189	187	186	185	183	181	179	176	
			200		.44	.19	.07	.02	-						8.9	12	15	18	22	29	39	50	
			300	3.2	.49	.21	.08	.02	-	77	102	136	196	260	190	189	188	188	187	185	184	183	
			500		.58	.25	.06	.02	-						10	13	16	19	24	30	40	50	
		750	3.2	.45	.22	.09	.03	.01	81	107	140	200	266	191	191	190	190	189	188	188	187		
		1,000		.60	.29	.12	.04	.01						11	13	16	19	24	30	41	51		
		2,000	3.5	1.19	.59	.25	.08	.02	88	114	146	207	276	186	185	185	184	183	183	182	180		
		3,500		2.09	1.03	.43	.15	.03						12	14	18	20	26	31	42	54		
		5,000	3.9	2.98	1.46	.61	.21	.04	93	119	150	211	281	187	186	185	185	184	184	184	181		
		7,500		4.47	2.20	.92	.31	.06						13	16	19	22	28	33	43	57		
		10,000	4.4	5.96	2.93	1.23	.41	.08	97	123	154	215	287	187	186	186	185	185	185	185	182		
		15,000		8.94	4.39	1.84	.62	.12						15	18	21	24	30	35	46	60		
		20,000	5.1	11.9	5.86	2.46	.83	.16	100	126	158	218	292	187	187	186	186	186	186	186	183		
		25,000		14.9	7.32	3.07	1.04	.20						17	20	23	27	32	37	48	63		
50,000																							
75,000																							
100,000																							
150,000																							
200,000																							
250,000																							

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





# RP

## PUMP HYDRAULIC SIZE CHART

SEC. 500

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155 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					
						50	75	100	150	200	25	50	75	100	150	200	300	400						
155	520	STD	28	2.3	.16	.07	.02	.01	-	57	84	120	178		148	145	143	141						
			32		.17	.07	.02	.01	-							3.3	5.3	7.9	10					
			38	2.3	.19	.08	.03	.01	-	60	86	122	180		149	147	145	143	138					
			50		.20	.09	.03	.01	-							4.6	6.7	9.1	11	16				
			70	2.3	.23	.10	.03	.01	-	63	89	124	183	242		151	149	147	146	143	140			
			100		.25	.11	.04	.01	-							5.9	7.9	10	12	17	22			
			150	2.3	.28	.12	.04	.01	-	66	93	127	186	246		153	152	150	150	148	146	144	141	
			200		.31	.13	.05	.01	-							6.7	8.8	11	13	18	22	31	40	
			300	2.3	.35	.15	.05	.01	-	72	98	131	190	251		154	153	153	152	151	150	149	148	
			500		.41	.12	.05	.02	-							7.6	9.8	12	14	18	23	32	41	
		750	2.3	.36	.18	.07	.03	-	75	101	134	193	254		155	155	154	154	153	153	152	152		
		1,000		.48	.24	.10	.03	.01							7.8	10	12	14	19	23	33	41		
		2,000	2.9	.97	.47	.20	.07	.01	82	110	139	199	260		152	151	151	150	149	149	148	146		
		3,500		1.69	.83	.35	.12	.02							8.6	11	13	16	20	24	34	42		
		5,000	3.3	2.42	1.19	.50	.17	.03	86	112	142	202	264		153	152	152	151	151	150	149	148		
		7,500		3.63	1.78	.75	.25	.05							11	13	14	18	23	27	36	44		
		10,000	3.8	4.83	2.37	1.00	.34	.07	89	115	145	205	268		154	153	153	152	152	151	151	149		
		15,000		7.25	3.56	1.49	.50	.10							14	16	19	20	25	29	38	47		
		20,000	4.3	9.67	4.75	1.99	.67	.13	93	118	148	207	272		155	154	154	153	153	152	152	151		
		25,000		12.1	5.94	2.49	.84	.16							16	18	21	23	28	32	41	49		
50,000	6.1	24.2	11.9	4.98	1.68	.33	98	124	151	212	276		155	154	154	153	153	152	152	151				
75,000		36.3	17.8	7.47	2.52	.49							22	24	27	30	34	39	48	57				
100,000																								
150,000																								
200,000																								
250,000																								

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



# RP

## PUMP HYDRAULIC SIZE CHART

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105 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														
105	350	STD	28	1.5	.07	.03	.01	-	-	55	82	118	175		98	95	93	92															
			32		.08	.03	.01	-	-							1.5	4.1	4.9	6.9														
			38	1.5	.09	.04	.01	-	-	57	83	119	176			99	97	95	94	90													
			50		.10	.04	.01	-	-							2.2	4.3	5.9	7.4	11													
			70	1.5	.11	.05	.02	-	-	59	86	121	177	230		101	99	98	97	95	94												
			100		.13	.05	.02	.01	-							2.9	4.9	6.8	8.3	11	15												
			150	1.5	.14	.06	.02	.01	-	63	89	123	179	233		103	102	101	100	99	98	97	95										
			200		.15	.07	.02	-	-							3.5	5.3	7.2	8.8	12	15	20	27										
			300	1.5	.18	.05	.02	.01	-	67	93	125	181	235		104	103	103	102	102	100	100	99										
			500		.16	.08	.03	.01	-							3.8	5.6	7.4	8.9	12	15	21	27										
			750	1.6	.24	.12	.05	.02	-	70	95	127	183	237		105	105	104	104	103	102	101	100	99									
			1,000		.32	.16	.07	.02	-							3.9	5.7	7.5	9.1	12	15	21	28										
			2,000	2.0	.64	.32	.13	.04	.01	75	100	130	185	241		103	103	102	102	101	100	99	98										
			3,500		1.13	.55	.23	.08	.02							4.1	6.2	7.9	9.8	13	16	22	29										
		5,000	2.4	1.61	.79	.33	.11	.02	78	104	132	187	243		104	103	103	103	102	101	100	100											
		7,500		2.42	1.19	.50	.17	.03							5.2	7.9	8.9	11	14	17	24	30											
		10,000	2.8	3.22	1.58	.66	.22	.04	81	106	134	189	245		104	104	104	103	103	102	101	100											
		15,000		4.83	2.37	1.00	.34	.07							6.4	9.2	10	12	15	19	25	31											
		20,000	3.3	6.45	3.17	1.33	.45	.09	83	108	136	190	247		105	105	104	104	104	103	103	102											
		25,000		8.06	3.96	1.66	.56	.11							7.5	10	11	13	16	20	26	32											
		50,000	5.0	16.1	7.92	3.32	1.12	.22	89	113	137	192	250		105	105	104	104	104	103	103	102											
		75,000		24.2	11.9	4.98	1.68	.33							11	13	14	16	20	23	29	35											
		100,000	6.9	32.2	15.8	6.64	2.24	.43	92	115	140	194	252		105	105	104	104	104	103	103	102											
		150,000		48.4	23.8	9.96	3.36	.65							15	16	18	19	22	26	32	37											
		200,000	8.7	64.5	31.7	13.3	4.48	.87	94	117	142	195	253		105	105	104	104	104	103	103	102											
		250,000		80.6	39.6	16.6	5.60	1.09							19	21	22	24	24	28	34	40											

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