



# 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]		
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]							
GHA 1-1/2 GH 3-B ● GHA 1-1/2 GH 4-B ■	15 [49]							
GHA 1-1/2 GJ 3-B ● GHA 1-1/2 GJ 4-B ■	19 [60]							
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]				■ 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]	

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.

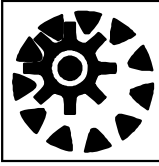
NOTE: PROPER PUMP APPLICATION REQUIRES CONSIDERATION OF ADDITIONAL FACTORS. PLEASE REVIEW APPLICATION GUIDE IN SECTION 500 OR CONSULT THE FACTORY.

# **GHA**

**FOR GHA DRIVE OPTIONS  
AND DIMENSIONS**

**SEE**

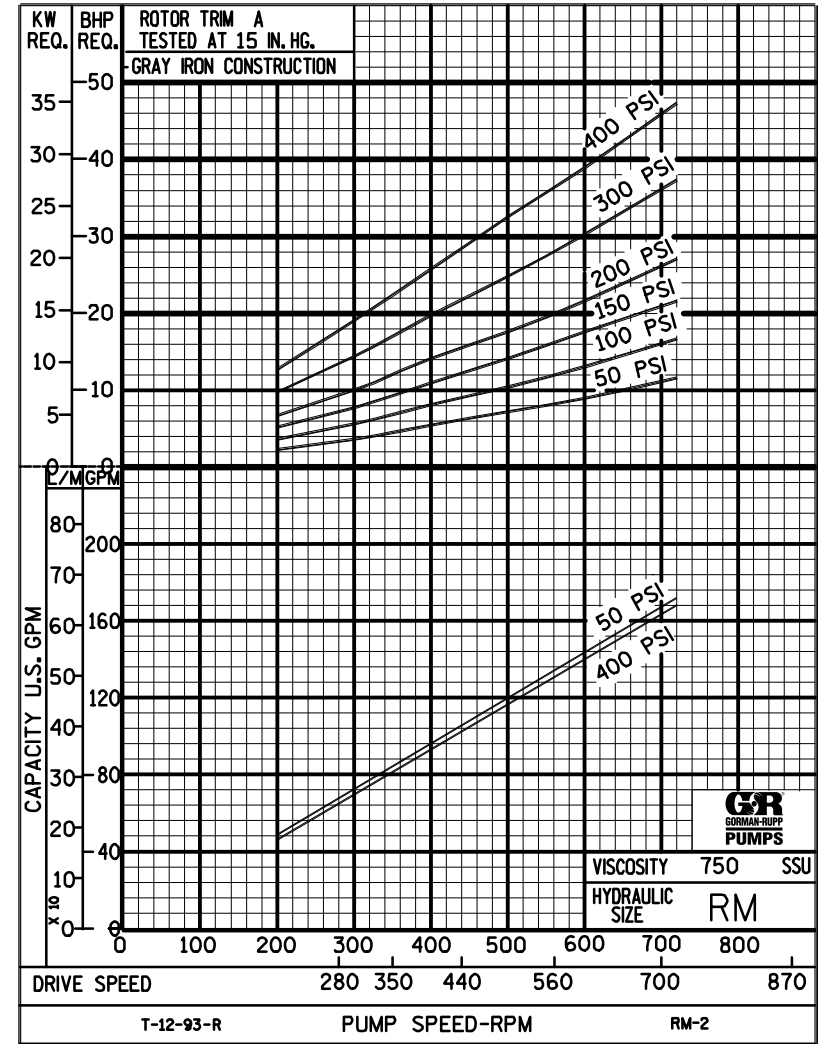
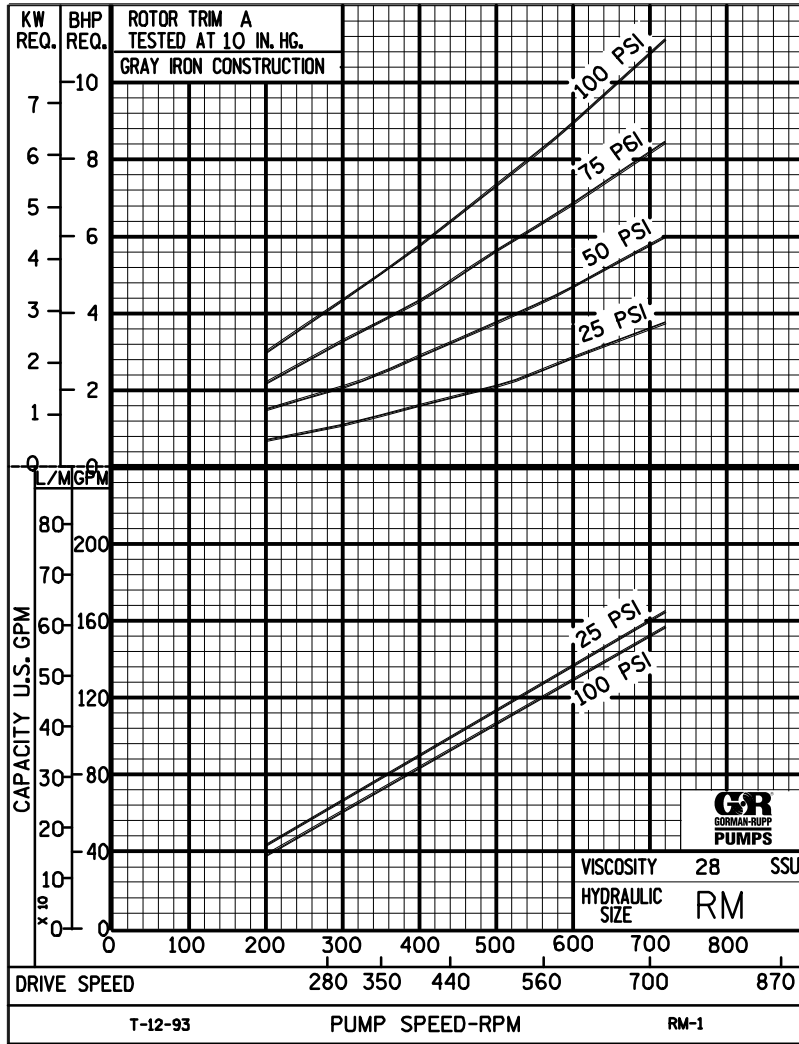
**SECTION 545**



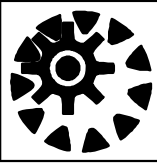
# PERFORMANCE CURVES

## SPEED VS. CAPACITY/HORSEPOWER

**RM** Hydraulic Size



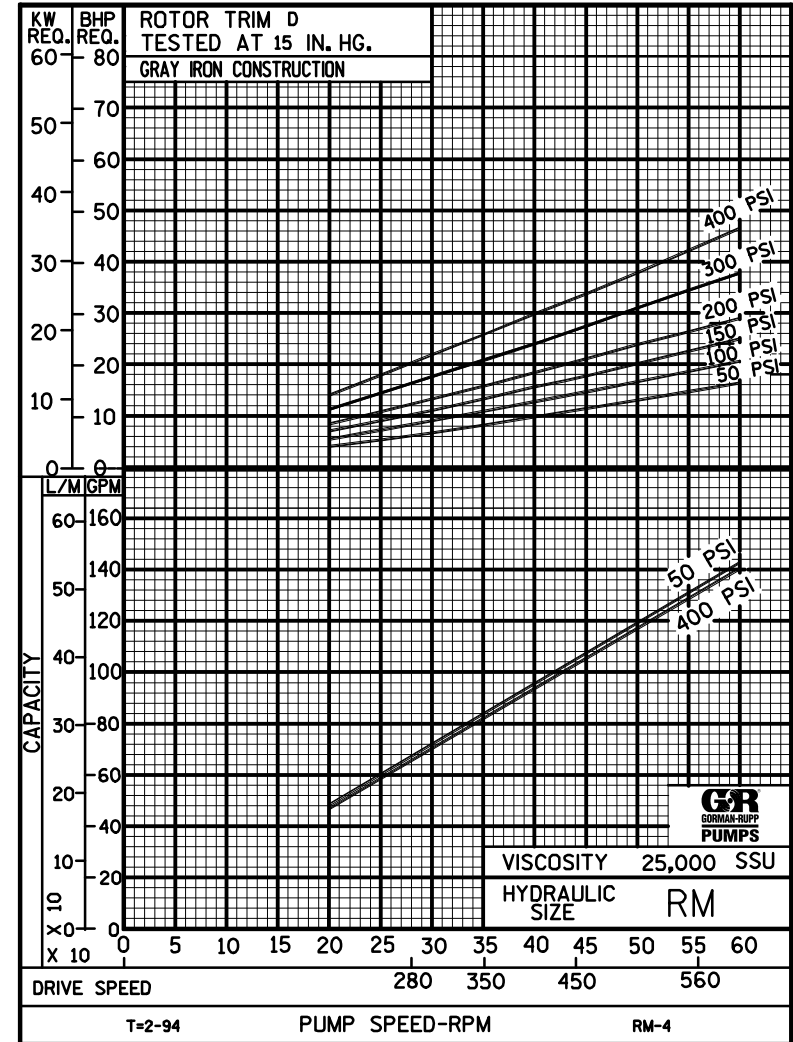
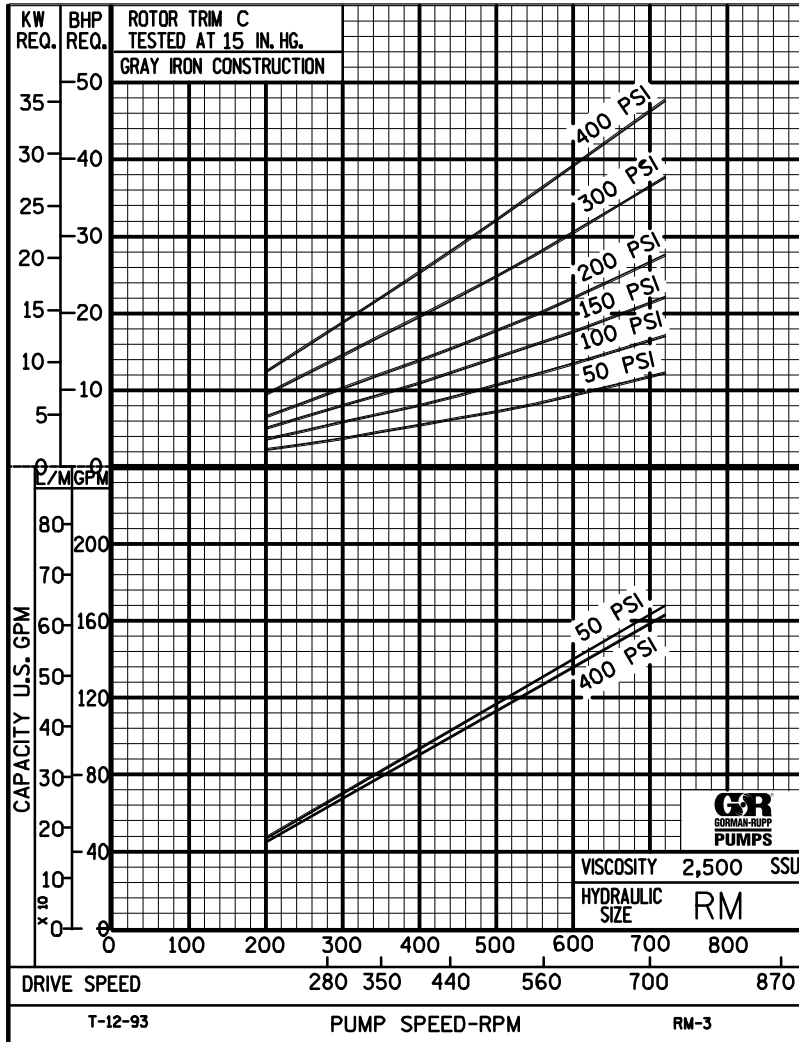
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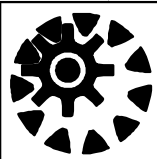
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# RM

## PUMP HYDRAULIC SIZE CHART

SEC. 500

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172 GPM  
720 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		25	50	75	100	150	200	300	400							
172	720	STD	28	3.1	.21	.08	.03	.01	-	58	84	121	178		165	161	159	157											
			32		.22	.09	.03	.01	-							4.1	6.2	9.1	11										
			38	3.1	.23	.10	.03	.01	-	61	87	123	181			166	163	160	159	155									
			50		.26	.11	.04	.01	-							5.2	7.8	10	13	18									
			70	3.1	.29	.12	.04	.01	-	65	90	126	185	245		168	166	164	162	160	158								
			100		.32	.14	.05	.01	-							6.8	9.2	12	14	20	25								
			150	3.1	.35	.15	.05	.01	-	69	94	130	188	250		170	168	167	166	164	163	161	158						
			200		.38	.16	.06	.02	-							7.8	10	13	15	21	26	36	47						
			300	3.1	.43	.19	.07	.02	-	74	100	134	193	256		171	170	170	169	168	166	166	165						
			500		.50	.22	.06	.02	-							8.9	11	14	16	22	27	37	47						
			750	3.2	.41	.20	.08	.03	.01	78	104	137	197	260		172	172	172	171	170	169	169	168						
			1,000		.55	.27	.11	.04	.01							9.4	12	14	17	22	27	37	48						
		2,000	3.4	1.10	.54	.23	.08	.01	85	111	143	203	269		169	168	168	168	167	167	165	163							
		3,500		1.92	.94	.40	.13	.03							11	13	16	18	23	28	38	49							
		5,000	3.6	2.74	1.35	.56	.19	.04	89	115	147	207	273		169	169	168	168	167	167	166	164							
		7,500		4.11	2.02	.85	.29	.06							11	14	17	19	24	29	39	50							
		10,000	3.9	5.48	2.69	1.13	.38	.07	93	119	150	211	278		170	169	169	168	168	168	167	165							
		15,000		8.22	4.04	1.69	.57	.11							13	15	17	21	26	31	41	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.



# RM

## PUMP HYDRAULIC SIZE CHART

SEC. 500

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153 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					
153	640	STD	28	2.5	.16	.07	.02	.01	-	57	84	120	178		145	142	139	137						
			32		.17	.07	.02	.01	-						3.3	6.1	7.9	10						
			38	2.5	.19	.08	.03	.01	-	60	86	122	180		146	144	141	140	137					
			50		.20	.09	.03	.01	-						4.5	6.8	9.1	11	16					
			70	2.5	.23	.10	.03	.01	-	63	89	124	183	242	148	146	144	143	141	139				
			100		.25	.11	.04	.01	-						5.9	8.1	10	12	17	23				
			150	2.5	.28	.12	.04	.01	-	66	93	127	186	246	150	149	148	147	145	144	142	139		
			200		.31	.13	.05	.01	-						6.7	9.2	11	13	18	23	32	41		
			300	2.5	.35	.15	.05	.01	-	72	98	131	190	251	152	151	150	150	149	148	146	145		
			500		.41	.12	.05	.02	-						7.8	10	12	14	19	24	33	42		
		750	2.6	.36	.18	.07	.03	-	75	101	134	193	254	153	152	152	152	151	150	150	149			
		1,000		.48	.24	.10	.03	.01						7.9	10	12	14	19	24	33	42			
		2,000	2.7	.97	.47	.20	.07	.01	82	110	139	199	260	151	150	150	149	149	148	147	146			
		3,500		1.69	.83	.35	.12	.02						8.8	11	13	15	20	24	33	43			
		5,000	2.9	2.42	1.19	.50	.17	.03	86	112	142	202	264	151	150	150	150	149	148	147	146			
		7,500		3.63	1.78	.75	.25	.05						10	13	15	16	21	26	35	45			
		10,000	3.2	4.83	2.37	1.00	.34	.07	89	115	145	205	268	151	151	150	150	150	149	148	147			
		15,000		7.25	3.56	1.49	.50	.10						12	14	16	18	23	28	36	47			
		20,000	3.5	9.67	4.75	1.99	.67	.13	92	118	147	207	270	152	151	151	150	150	150	149	148			
		25,000		12.1	5.94	2.49	.84	.16						14	16	18	20	25	30	39	50			
50,000	"D"																							
75,000																								
100,000	"D"																							
150,000																								
200,000	"D"																							
250,000																								

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





# RM

## PUMP HYDRAULIC SIZE CHART

SEC. 500

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125 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					
125	520	STD	28	1.9	.11	.05	.02	-	-	55	83	119	176		116	113	112	109					
			32		.12	.05	.02	-	-							2.3	4.1	7.1	9.8				
			38	1.9	.13	.05	.02	.01	-	57	85	121	177		118	115	113	111	108				
			50		.15	.06	.02	.01	-							3.5	5.1	7.9	10	14			
			70	1.9	.16	.07	.02	.01	-	60	88	123	180	236		120	118	117	115	113	110		
			100		.18	.08	.03	.01	-							4.5	6.1	8.9	11	15	18		
			150	1.9	.21	.09	.03	.01	-	64	91	125	182	239		122	121	120	119	117	115	113	111
			200		.22	.10	.03	.01	-							5.2	6.8	9.3	11	15	18	26	34
			300	1.9	.25	.11	.02	.01	-	68	95	128	185	242		124	123	122	121	120	119	118	117
			500		.20	.10	.04	.01	-							5.6	7.4	9.4	11	15	18	26	34
		750	2.0	.30	.15	.06	.02	-	72	98	130	187	244		125	124	124	123	123	122	122	121	
		1,000		.40	.20	.08	.03	.01							5.9	7.6	9.6	11	15	18	26	34	
		2,000	2.3	.81	.40	.17	.06	.01	78	104	134	191	249		123	122	122	121	120	120	118	118	
		3,500		1.41	.69	.29	.10	.02							6.7	8.4	11	12	16	19	26	34	
		5,000	2.6	2.01	.99	.42	.14	.03	81	107	136	194	252		123	123	122	122	121	121	119	119	
		7,500		3.02	1.48	.62	.21	.04							8.4	10	12	14	17	21	28	35	
		10,000	2.9	4.03	1.98	.83	.28	.05	85	110	139	196	254		124	123	123	122	122	122	120	120	
		15,000		6.04	2.97	1.25	.42	.08							10	12	14	16	19	23	30	37	
		20,000	3.2	8.06	3.96	1.66	.56	.11	87	112	140	197	256		124	124	123	123	123	123	122	121	
		25,000		10.1	4.95	2.08	.70	.14							12	13	16	17	21	25	32	39	
50,000	4.6	20.1	9.90	4.15	1.40	.27	93	117	143	202	260		124	124	123	123	123	123	122	121			
75,000		30.2	14.8	6.23	2.10	.41							16	18	20	22	26	30	38	45			
100,000																							
150,000																							
200,000																							
250,000																							

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



# RM

## PUMP HYDRAULIC SIZE CHART

SEC. 500

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85 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									
					50	75	100	150	200	50	75	100	150	200	25	50	75	100	150	200	300	400						
85	350	STD	28	1.3	.05	.02	.01	-	-	54	81	117	171		78	74	72	70										
			32		.06	.02	.01	-	-							1.3	3.1	4.1	5.2									
			38	1.3	.06	.03	.01	-	-	55	82	118	172		79	75	74	72	70									
			50		.07	.03	.01	-	-							2.1	3.1	4.8	6.1	7.9								
			70	1.3	.08	.04	.01	-	-	58	85	119	173	227		80	78	77	76	74	73							
			100		.09	.04	.01	-	-							2.8	3.8	5.3	6.6	8.6	11							
			150	1.3	.11	.05	.02	-	-							82	80	79	79	78	78	77	76					
			200		.12	.05	.02	-	-	61	87	121	174	228		3.3	4.1	5.8	6.9	9.1	12	17	22					
			300	1.3	.13	.04	.02	.01	-							83	82	81	81	80	80	80	79					
			500		.14	.07	.03	.01	-	65	90	123	176	230		3.4	4.2	5.9	7.1	9.3	12	17	22					
			750	1.4	.21	.10	.04	.01	-							84	83	83	82	82	82	82	81					
			1,000		.27	.13	.06	.02	-	67	93	124	177	231		3.4	4.3	6.0	7.2	9.4	12	17	22					
		2,000	1.6	.55	.27	.11	.04	.01							83	82	82	81	81	80	80	79						
		3,500		.96	.47	.20	.07	.01	73	97	127	179	233		3.6	5.1	6.2	7.9	9.8	12	17	22						
		5,000	1.8	1.37	.67	.28	.10	.02							83	83	83	82	82	81	80	80						
		7,500		2.05	1.01	.42	.14	.03	75	100	128	181	235		4.6	5.8	7.1	9.1	11	13	19	23						
		10,000	2.2	2.74	1.35	.56	.19	.04							83	83	82	82	82	82	81	81						
		15,000		4.11	2.02	.85	.29	.06	78	102	130	182	236		5.6	7.1	8.2	10	12	14	20	25						
		20,000	2.6	5.48	2.69	1.13	.38	.07							84	83	83	83	83	83	82	82						
		25,000		6.85	3.36	1.41	.48	.09	80	104	131	183	237		6.8	8.1	9.5	11	13	16	21	26						
		50,000	4.1	13.7	6.73	2.82	.95	.18							84	83	83	83	83	83	82	82						
		75,000		20.6	10.0	4.23	1.43	.28	85	108	133	185	239		10	12	14	15	17	19	25	30						
		100,000	5.6	27.4	13.5	5.64	1.90	.37							84	83	83	83	83	82	82	82						
		150,000		41.0	20.2	8.47	2.86	.55	87	110	134	186	240		13	15	17	18	22	24	30	35						
200,000	7.5	54.8	27.0	11.3	3.81	.74							84	83	83	83	83	82	82	82								
250,000		68.5	33.7	14.1	4.76	.92	89	112	135	187	241		15	17	19	20	26	27	33	39								

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