

**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]					● 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]	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]	80 [251]				■ 500 [260]	180 [81,6]	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 ■								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]	180 [81,6]	10.7
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.

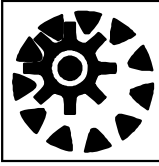
NOTE: PROPER PUMP APPLICATION REQUIRES CONSIDERATION OF ADDITIONAL FACTORS. PLEASE REVIEW APPLICATION GUIDE IN SECTION 500 OR CONSULT THE FACTORY.

# **GHA**

**FOR GHA DRIVE OPTIONS  
AND DIMENSIONS**

**SEE**

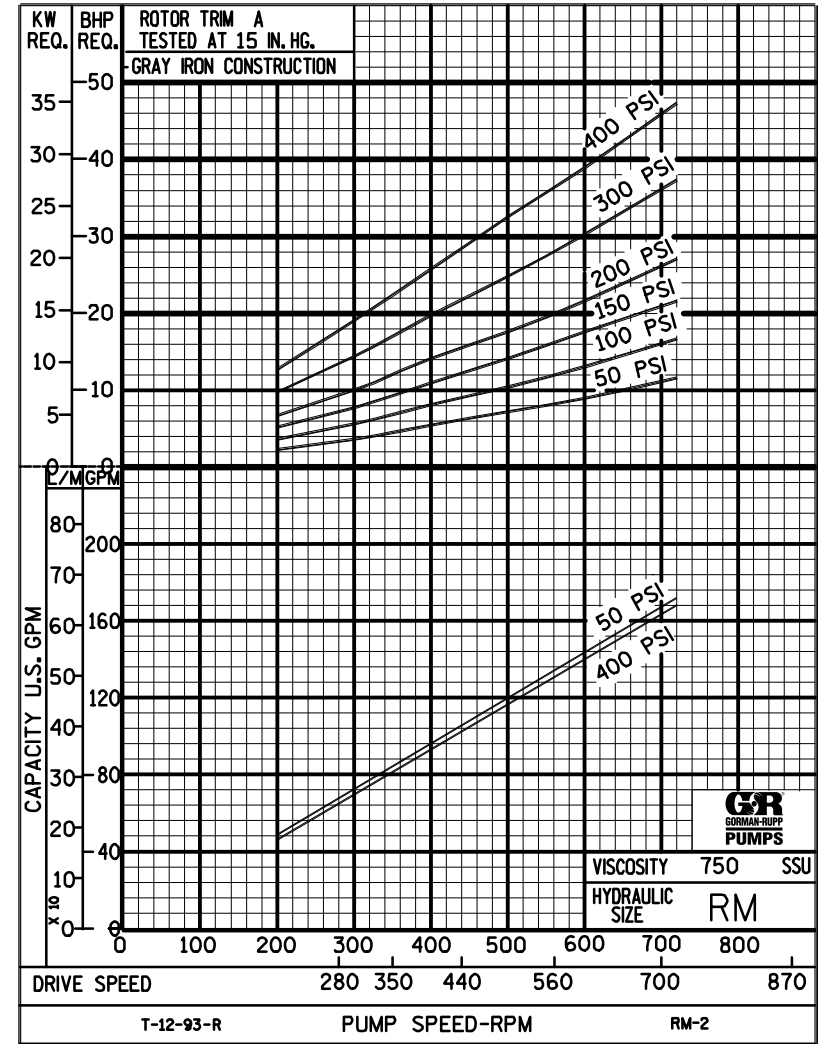
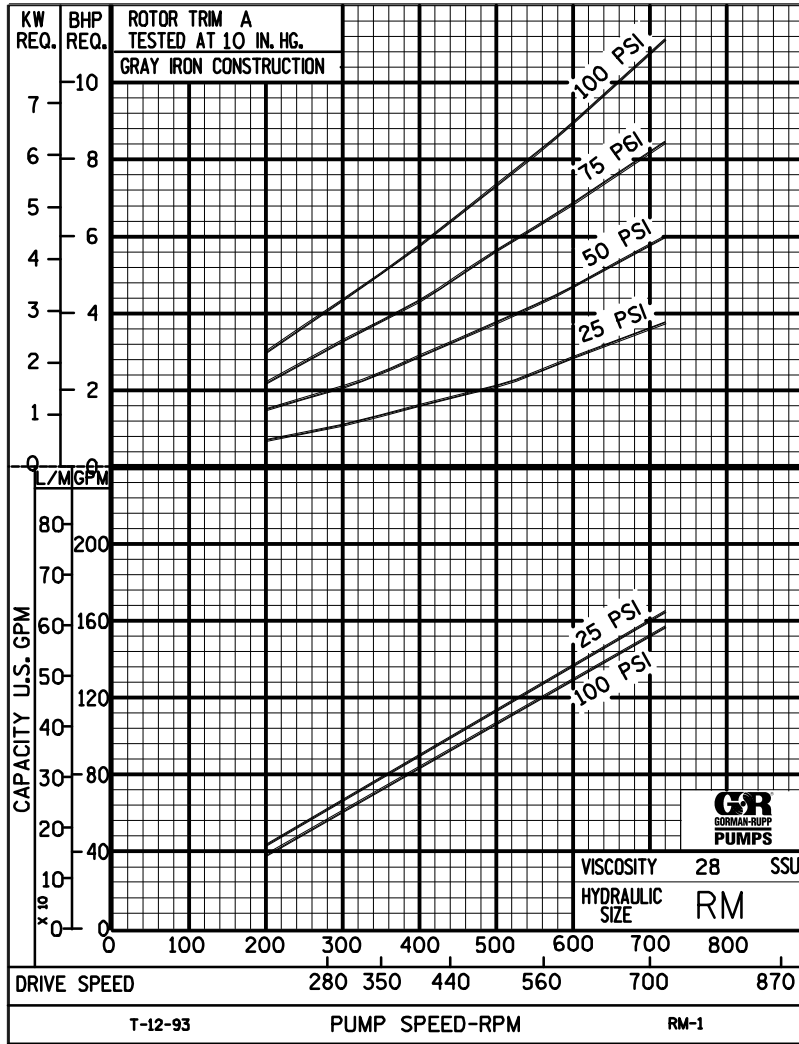
**SECTION 545**



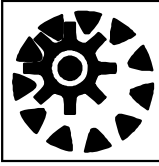
# PERFORMANCE CURVES

## SPEED VS. CAPACITY/HORSEPOWER

**RM** Hydraulic Size



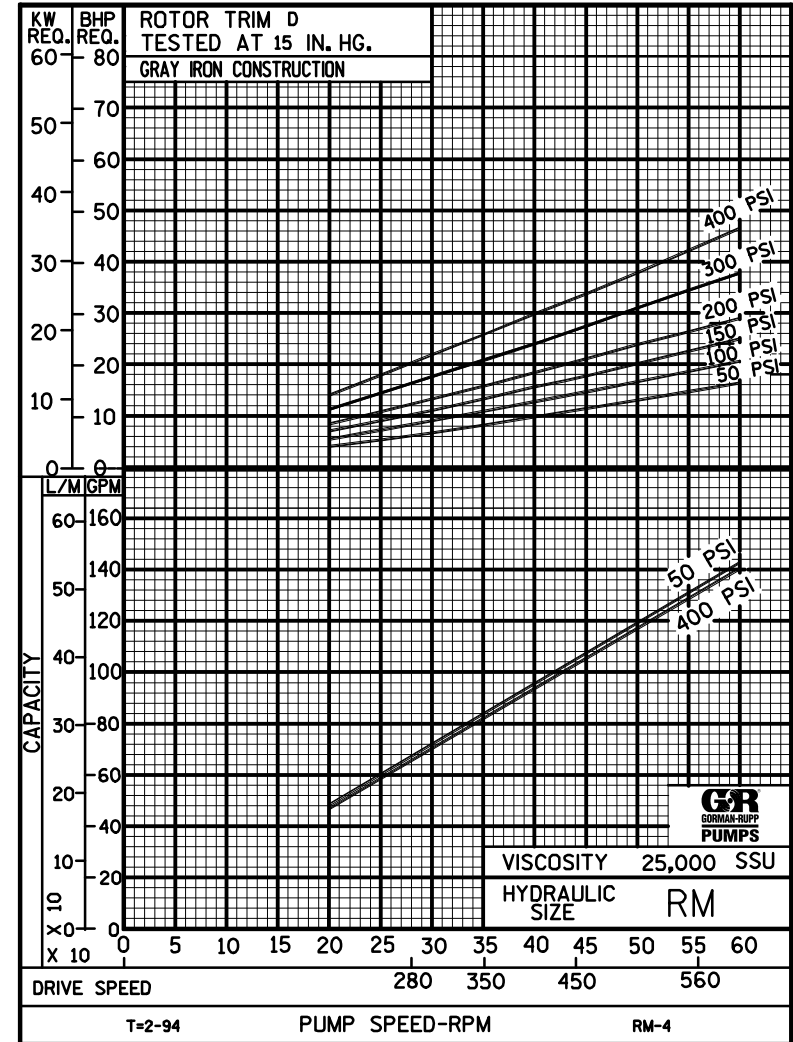
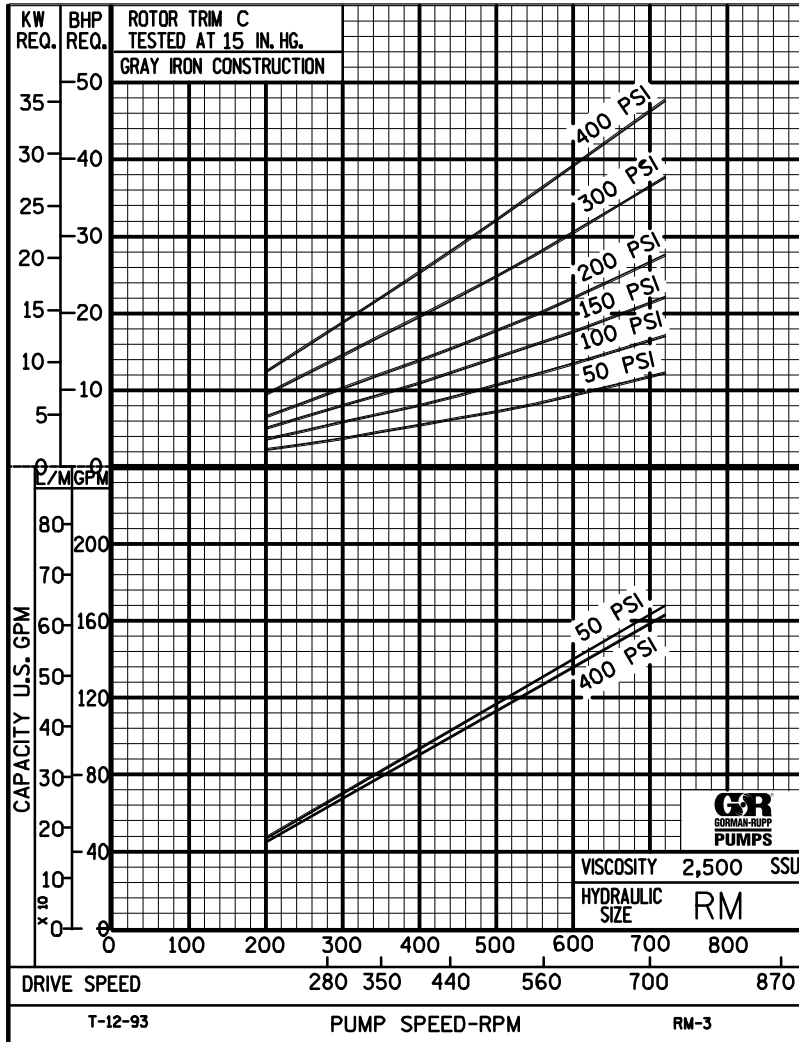
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# PERFORMANCE CURVES

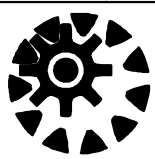
## SPEED VS. CAPACITY/HORSEPOWER

**RM** Hydraulic Size



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# 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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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					
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	82	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	82	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.