



**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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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**

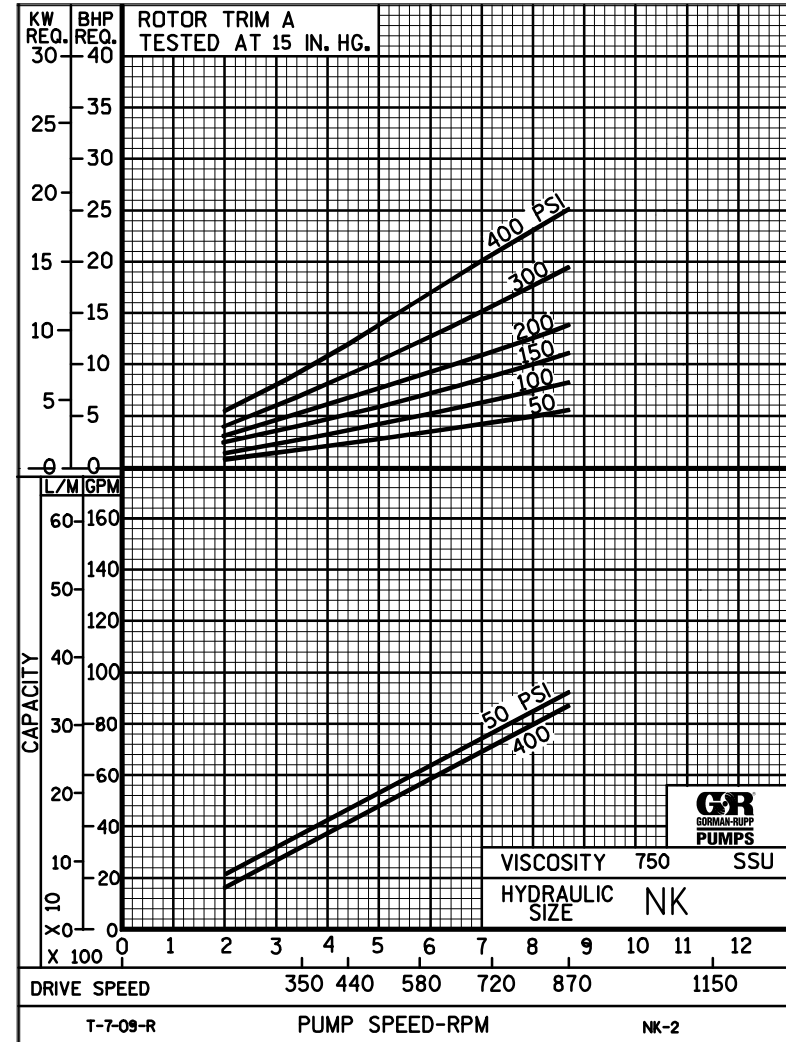
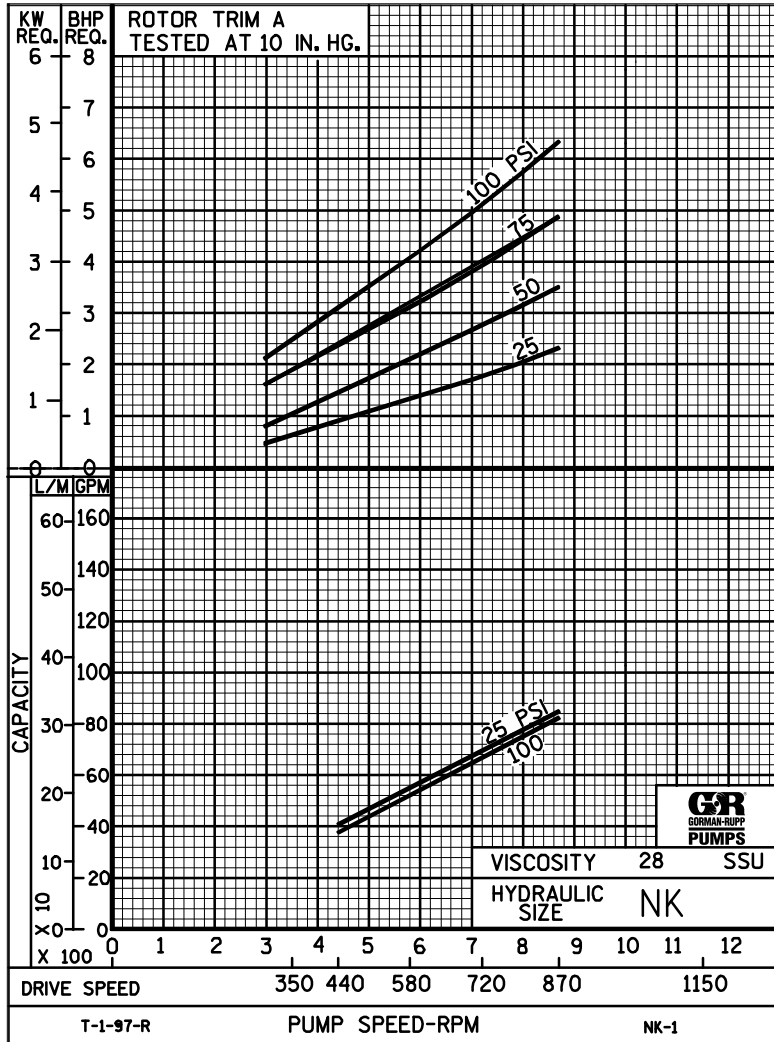


# PERFORMANCE CURVES

## SPEED VS. CAPACITY/HORSEPOWER

# NK

Hydraulic Size



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# PERFORMANCE CURVES

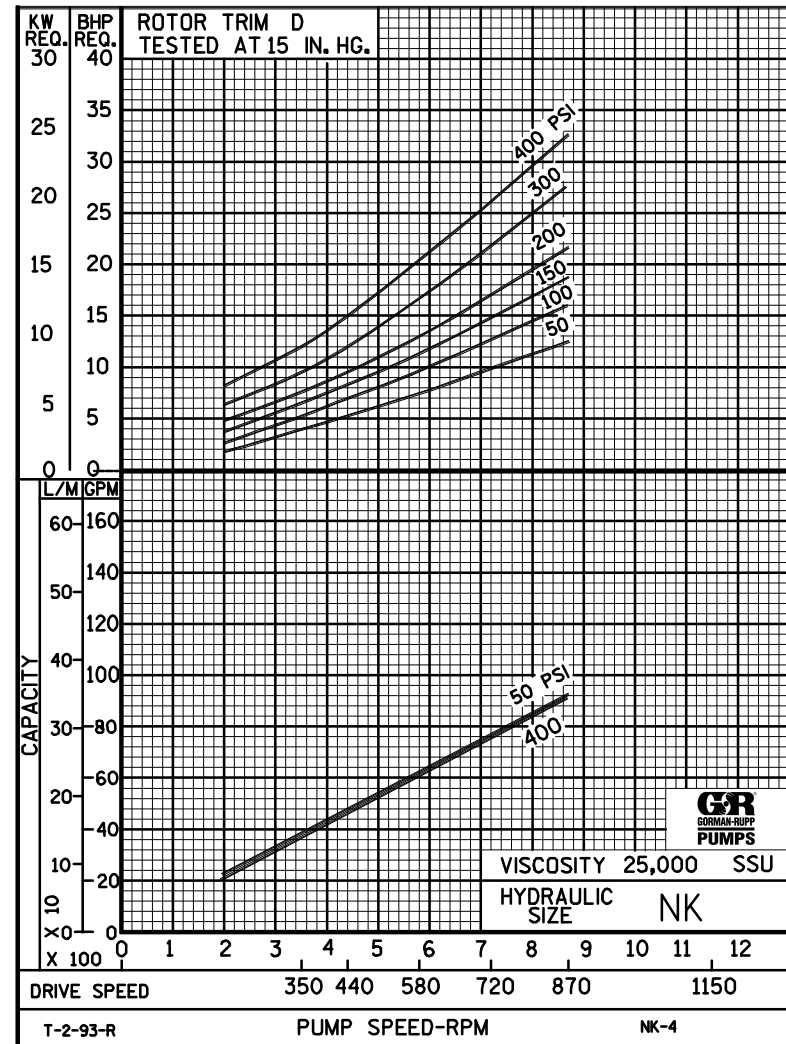
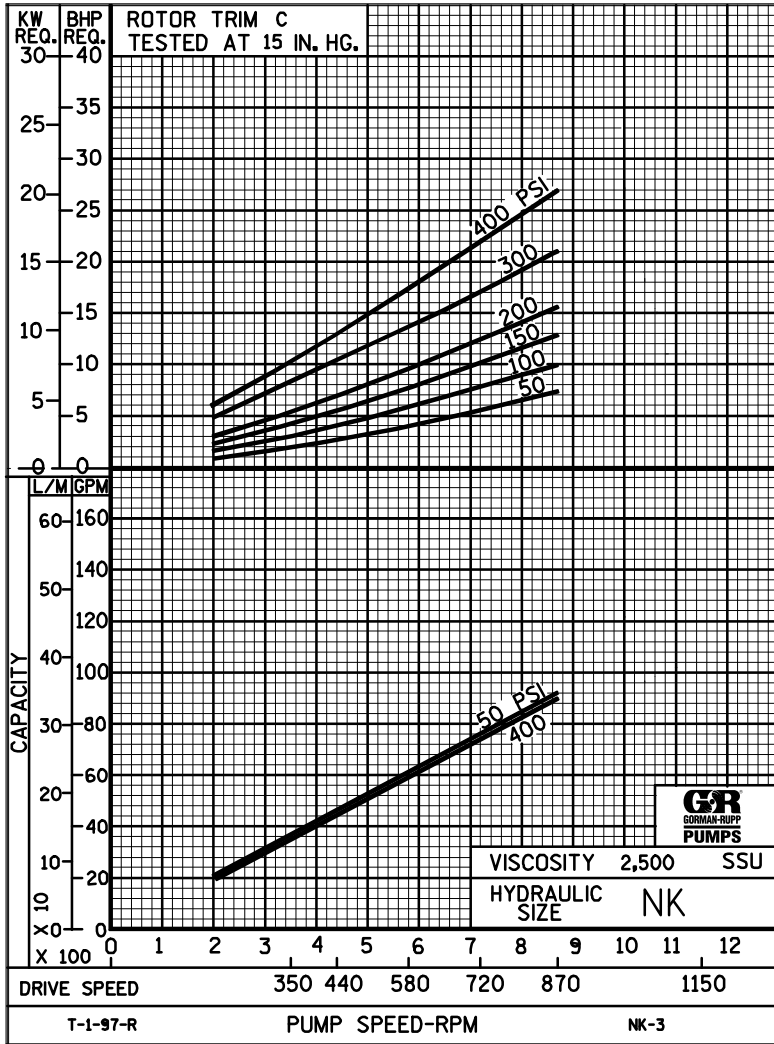
## SPEED VS. CAPACITY/HORSEPOWER

**NK** Hydraulic Size

SEC. 500

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# NK

## PUMP HYDRAULIC SIZE CHART

SEC. 500

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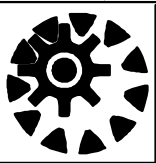
**90 GPM  
870 RPM**

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"	5"	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					
90	870	STD	28	3.1	.01	.01	.01	.01	.01	60	86	116			85	84	83	82					
			32		.05	.02	.01	.01	.01					2.2	3.5	4.9	6.4						
			38	3.1	.07	.03	.01	.01	.01	60	86	116	162			87	86	85	84	82			
			50		.08	.04	.01	.01	.01					2.4	3.6	5.0	6.6	9.5					
			70	3.1	.09	.04	.02	.01	.01	62	88	118	162	208		89	88	87	86	85	82		
			100		.10	.05	.02	.01	.01					3.0	4.1	5.5	7.0	9.9	13				
			150	3.1	.11	.05	.02	.01	.01	62	90	118	166	212		90	89	89	88	87	86	82	80
			200		.13	.06	.02	.01	.01					3.5	4.6	6.0	7.5	10	13	19	24		
			300	3.1	.14	.06	.02	.01	.01	64	92	120	166	216		91	90	90	90	89	88	85	82
			500		.15	.07	.03	.01	.01					4.3	5.4	6.8	8.1	11	13	19	25		
		750	3.1	.22	.11	.05	.02	.01	66	94	120	170	220		92	92	92	91	91	90	87	85	
		1,000		.29	.14	.06	.02	.01					4.7	5.6	7.1	8.5	11	14	20	25			
		2,000	3.6	.58	.29	.12	.04	.02	72	100	126	178	228		92	92	92	91	91	91	90	89	
		3,500		1.02	.50	.21	.07	.03					6.9	8.0	9.1	11	13	16	22	27			
		5,000	4.0	1.45	.71	.30	.10	.04	74	102	128	182	232		92	92	92	91	91	91	91	90.1	
		7,500		2.18	1.07	.45	.15	.06					8.2	9.4	11	12	15	18	23	29			
		10,000	4.5	2.90	1.43	.60	.20	.08	76	104	130	186	234		92	92	92	91	91	91	91	90.1	
		15,000		4.35	2.14	.90	.30	.12					9.8	11	13	14	17	20	25	31			
		20,000	4.9	5.80	2.85	1.20	.41	.17	78	106	132	190	238		92	92	92	92	92	91	91	91	
		25,000		7.25	3.56	1.50	.51	.21					12	13	15	16	19	22	27	33			
50,000																							
75,000																							
100,000																							
150,000																							
200,000																							
250,000																							

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







# NK

## PUMP HYDRAULIC SIZE CHART

SEC. 500

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**36 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"	5"	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					
36	350	STD	28	1.1	.01	.01	.01	.01	.01	54	80	106			32	31	31	30					
			32		.01	.01	.01	.01	.01						.73	1.3	1.9	2.5					
			38	1.1	.02	.01	.01	.01	.01	54	80	106	156			34	33	32	31	29			
			50		.02	.01	.01	.01	.01						.74	1.4	2.0	2.5	3.8				
			70	1.1	.02	.01	.01	.01	.01	55	81	108	157	208		35	34	33	32	31	28		
			100		.02	.01	.01	.01	.01							.77	1.5	2.1	2.6	3.8	4.8		
			150	1.1	.02	.01	.01	.01	.01	55	81	108	157	208		36	36	35	34	33	32	30	27
			200		.03	.01	.01	.01	.01							.80	1.6	2.2	2.7	3.9	4.9	7.2	10
			300	1.1	.04	.02	.01	.01	.01	56	82	110	159	210		37	36	36	35	34	33	32	31
			500		.06	.03	.01	.01	.01							.87	1.8	2.3	2.9	4.0	5.1	7.3	9.6
		750	1.1	.09	.05	.02	.01	.01	56	82	110	159	210		37	37	36	36	35	35	34	33	
		1,000		.12	.06	.03	.01	.01							1.1	2.0	2.6	3.2	4.5	5.7	8.1	10	
		2,000	1.4	.23	.12	.05	.02	.01	58	84	112	162	212		37	37	37	37	36	36	35	35	
		3,500		.41	.20	.09	.03	.01							1.5	2.3	2.9	3.5	4.6	5.8	8.2	11	
		5,000	1.6	.58	.29	.12	.04	.02	58	84	112	164	214		37	37	37	37	36	36	36	35	
		7,500		.87	.43	.18	.06	.03							1.9	2.8	3.3	3.9	5.1	6.2	8.7	11	
		10,000	1.9	1.16	.57	.24	.08	.04	60	86	114	166	216		37	37	37	37	36	36	36	36	
		15,000		1.74	.86	.36	.12	.05							2.6	3.3	3.9	4.5	5.7	6.8	9.3	11	
		20,000	2.2	2.32	1.14	.49	.16	.07	60	86	114	168	216		37	37	37	37	36	36	36	36	
		25,000		2.90	1.43	.60	.20	.08							3.5	4.0	4.6	5.1	6.4	7.5	9.8	12	
50,000	3.4	5.80	2.85	1.20	.41	.17	62	88	116	170	218		37	37	37	37	36	36	36	36			
75,000		8.70	4.27	1.79	.61	.25							4.9	5.6	6.4	7.1	8.3	9.7	12	14			
100,000	5.6	11.6	5.70	2.39	.81	.33	66	92	120	174	222		37	37	37	37	36	36	36	36			
150,000		17.4	8.55	3.59	1.21	.49							6.1	7.0	7.9	8.8	10	12	15	16			
200,000	8.8	23.2	11.4	4.78	1.61	.65	70	96	125	179	228		37	37	37	37	36	36	36	36			
250,000		29.0	14.3	5.97	2.02	.82							7.3	8.3	9.5	11	12	14	16	18			

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