



**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]					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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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

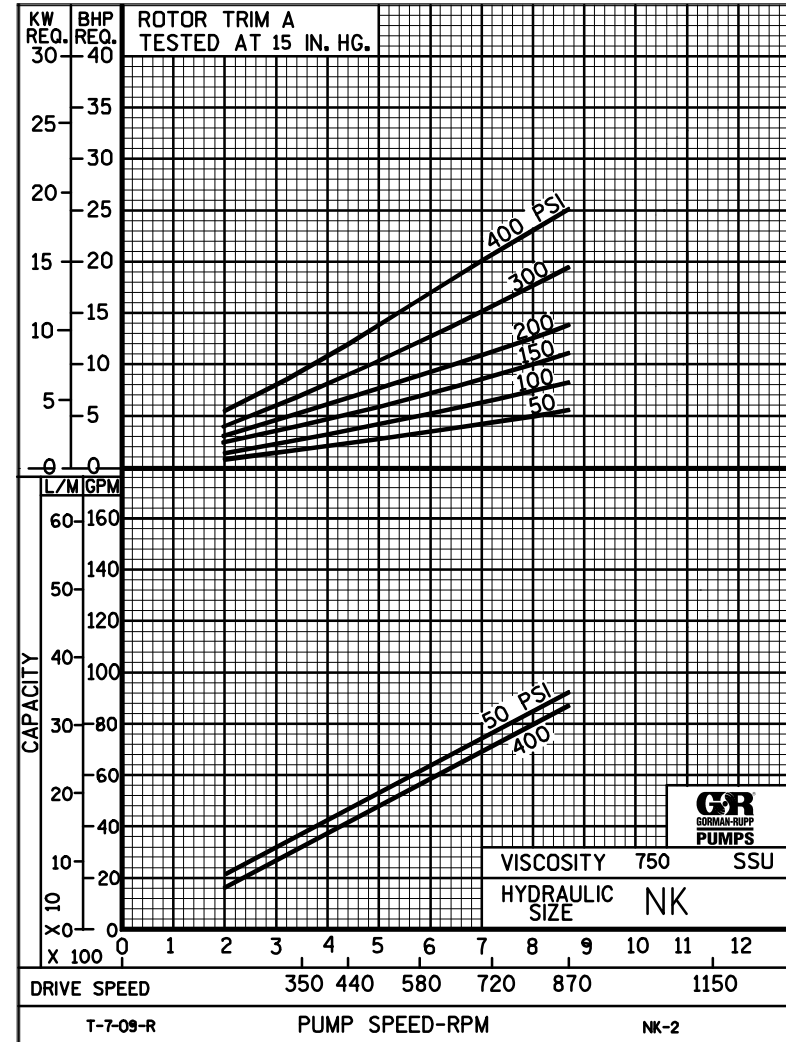
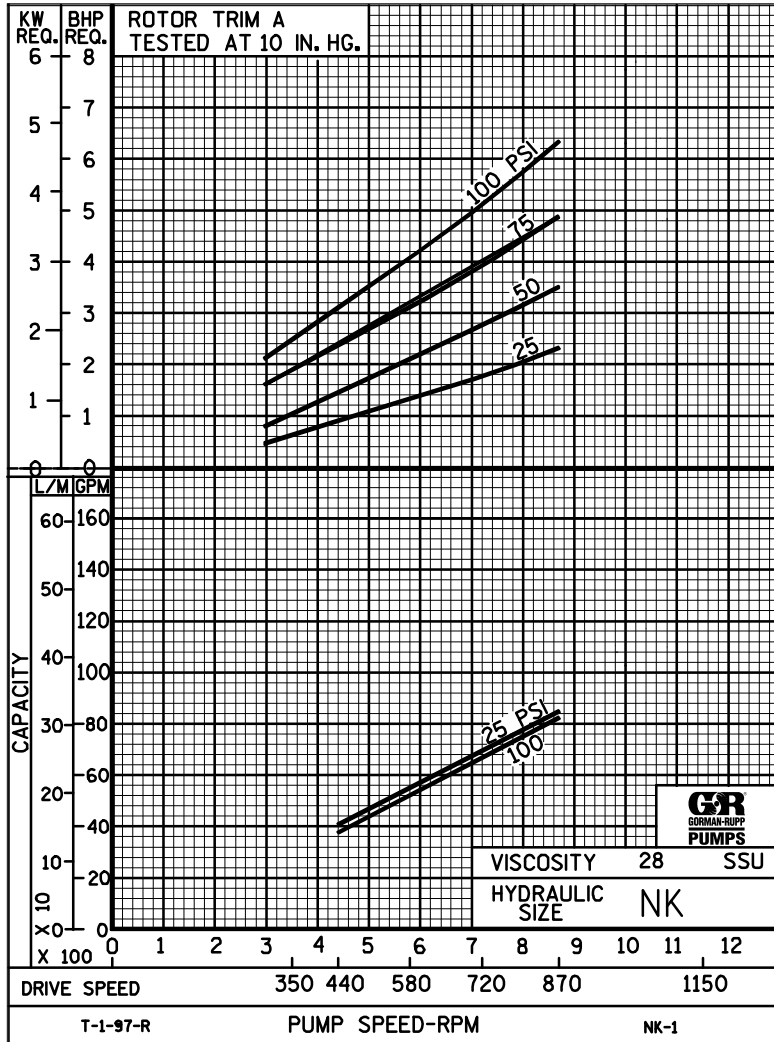
NK

Hydraulic Size

SEC. 500

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PERFORMANCE CURVES

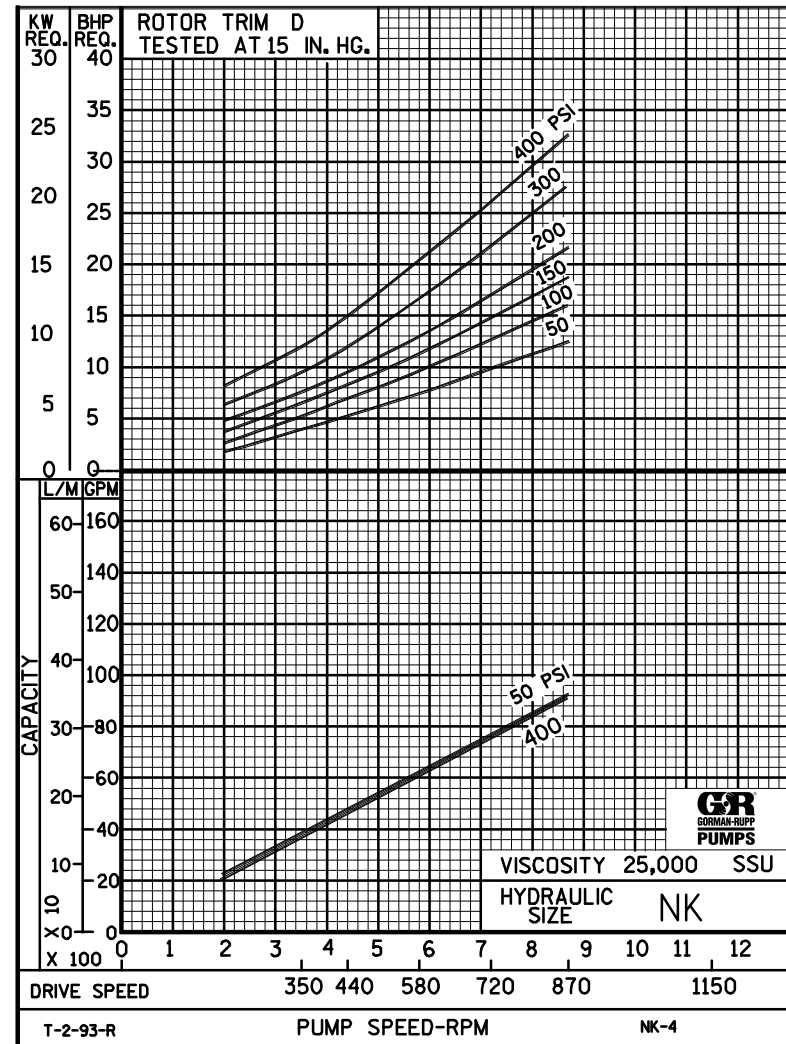
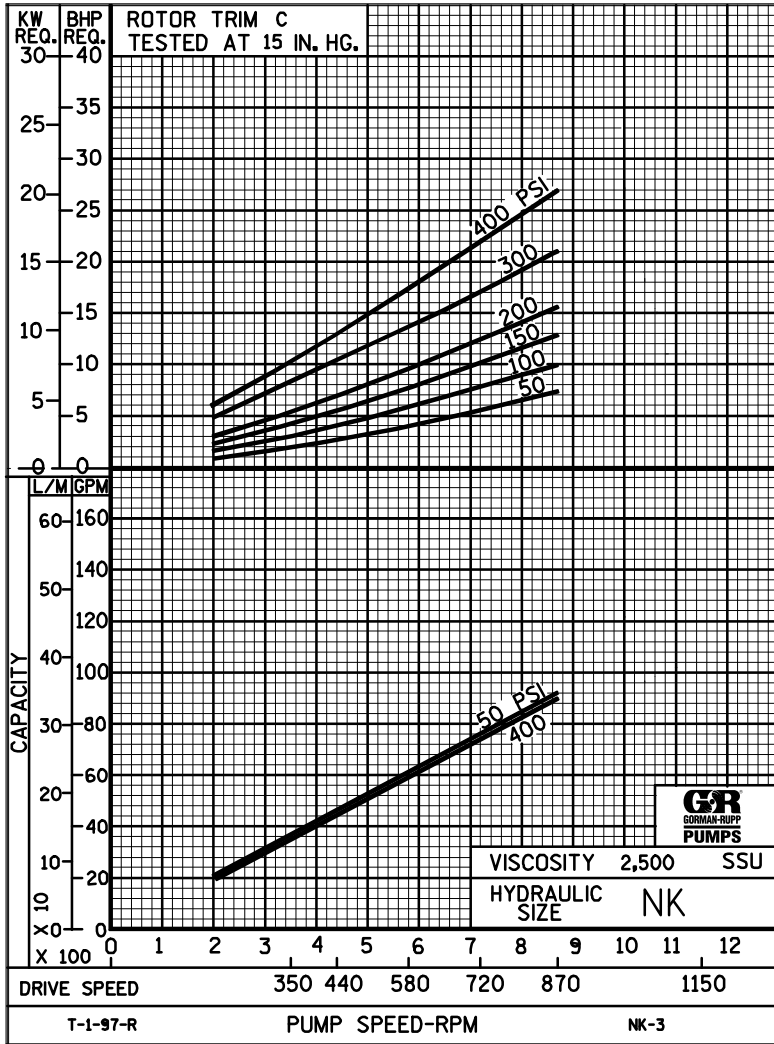
SPEED VS. CAPACITY/HORSEPOWER

NK Hydraulic Size

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PUMP HYDRAULIC SIZE CHART

SEC. 500

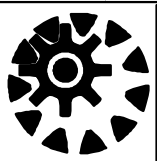
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**90 GPM
870 RPM**

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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**60 GPM
580 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	50	75	100	150	200	25	50	75	100	150	200	300	400						
60	580	STD	28	1.8	.01	.01	.01	.01	.01	57	83	107			55	53	53	52							
			32		.03	.01	.01	.01	.01							1.3	2.2	3.2	4.1						
			38	1.8	.03	.02	.01	.01	.01	57	83	107	157			56	55	54	54	52					
			50		.04	.02	.01	.01	.01							1.5	2.3	3.3	4.2	6.1					
			70	1.8	.05	.02	.01	.01	.01	58	85	109	157	210		58	57	57	56	55	54				
			100		.05	.02	.01	.01	.01							1.7	2.5	3.5	4.4	6.3	8.3				
			150	1.8	.06	.03	.01	.01	.01	58	85	109	157	210		60	59	58	58	57	56	53	48		
			200		.06	.03	.01	.01	.01							2.0	2.8	3.7	4.7	6.5	8.5	12	15		
			300	1.8	.06	.03	.01	.01	.01	59	87	112	159	212		61	60	59	59	58	58	55	52		
			500		.10	.05	.02	.01	.01							2.5	3.2	4.0	5.0	6.8	8.8	12	16		
		750	1.8	.15	.07	.03	.01	.01	59	87	112	159	212		61	61	60	60	60	59	57	55			
		1,000		.20	.10	.04	.02	.01							2.8	3.6	4.5	5.4	7.1	9.2	13	16			
		2,000	2.3	.39	.19	.08	.03	.01	63	90	117	170	219		61	61	61	60	60	60	59	59			
		3,500		.68	.33	.14	.05	.02							3.8	4.5	5.4	6.2	8.0	10	14	18			
		5,000	2.6	.97	.48	.20	.07	.03	64	90	117	170	219		62	61	61	61	60	60	60	59			
		7,500		1.45	.71	.30	.10	.04							4.6	5.4	6.2	7.0	8.8	11	14	19			
		10,000	2.9	1.93	.95	.40	.14	.06	65	92	120	174	225		62	61	61	61	61	60	60	59			
		15,000		2.90	1.43	.60	.20	.08							5.7	6.5	7.3	8.2	10	12	16	20			
		20,000	3.2	3.87	1.90	.80	.27	.11	65	92	120	174	225		62	62	61	61	61	61	60	60			
		25,000		4.83	2.38	1.00	.34	.14							6.9	7.6	8.5	9.5	11	13	17	21			
50,000	4.8	9.66	4.75	2.00	.67	.27	70	98	126	179	232		62	62	61	61	61	61	60	60					
75,000		14.5	7.12	2.99	1.01	.41							9.6	11	12	13	15	17	21	25					
100,000	6.5	19.3	9.49	3.98	1.35	.55	75	104	132	185	238		62	62	61	61	61	61	60	60					
150,000		-	-	-	-	-							12	13	14	15	18	21	26	32					
200,000																									
250,000																									

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



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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																		
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.