



**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]	100 [7]	150 [10]	200 [14]	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]	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]	100 [7]	150 [10]	200 [14]	500 [260]	180 [81,6]	5.3
GHA 3 NK 3-B ● GHA 3 NK 4-B ■	80 [251]						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 ■	99 [313]						180 [81,6]	
GHA 2 NP 3-B ● GHA 2 NP 4-B ■	99 [313]	580 [480]	100 [7]	150 [10]	200 [14]	500 [260]	180 [81,6]	10.7
GHA 3 NP 3-B ● GHA 3 NP 4-B ■	99 [313]						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

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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

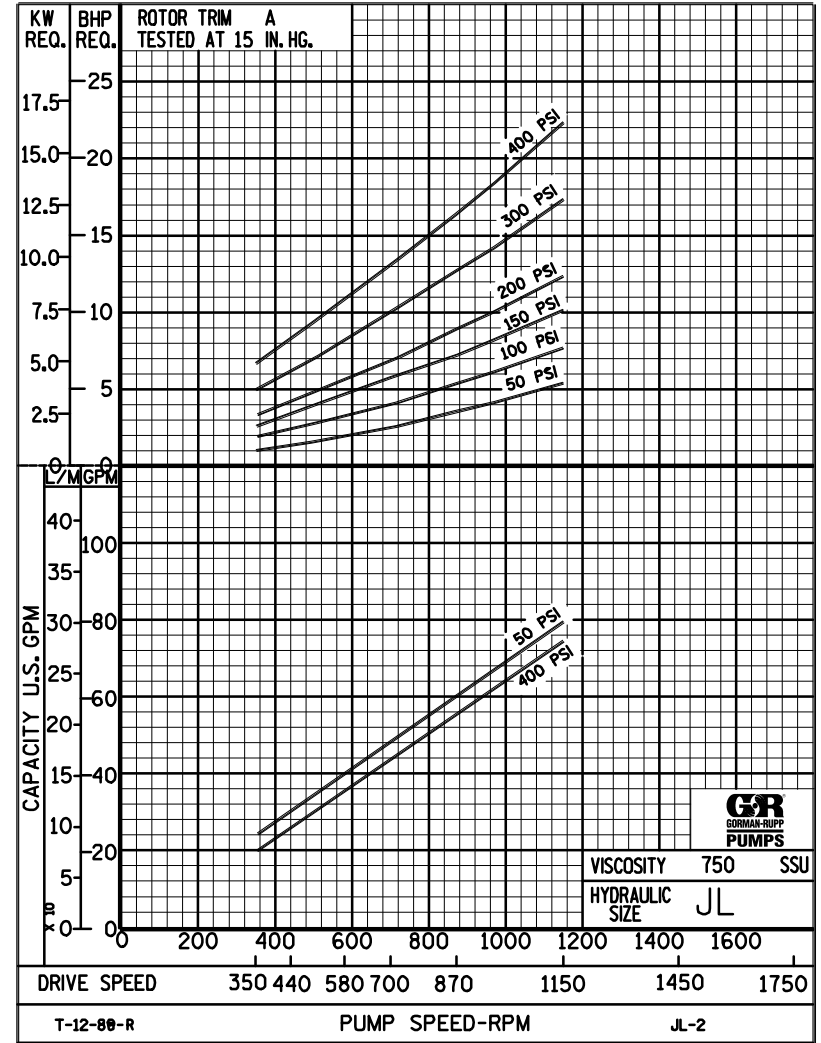
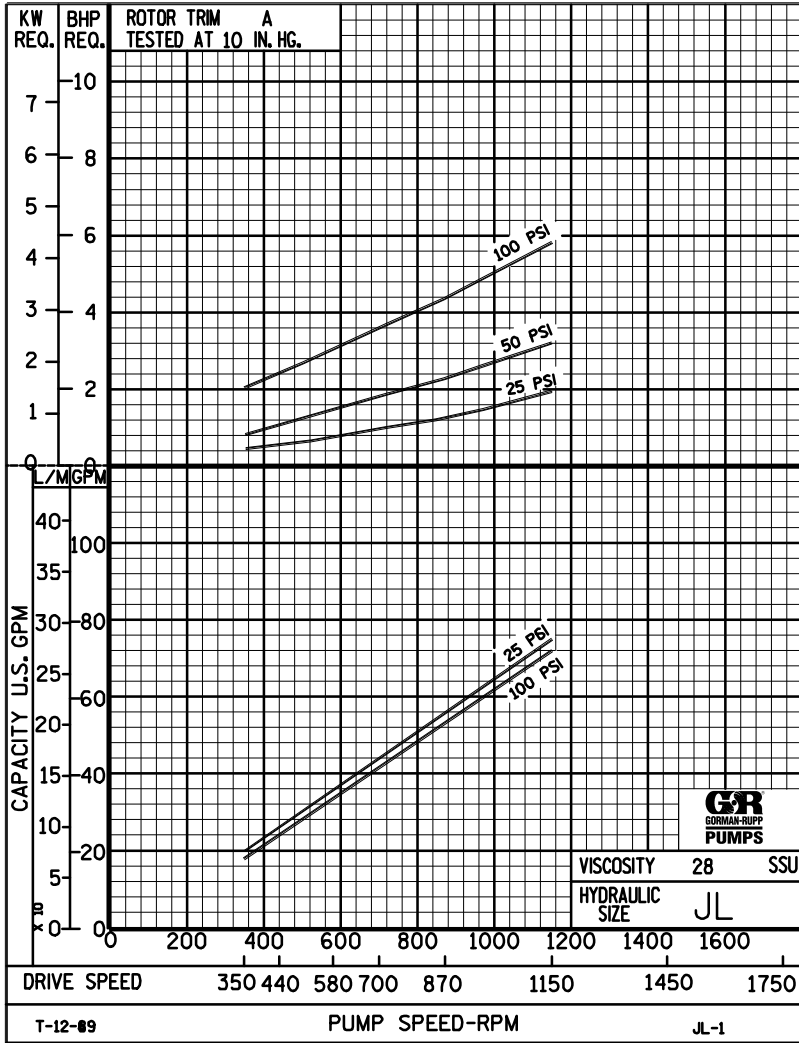
SPEED VS. CAPACITY/HORSEPOWER

JL Hydraulic Size

SEC. 500

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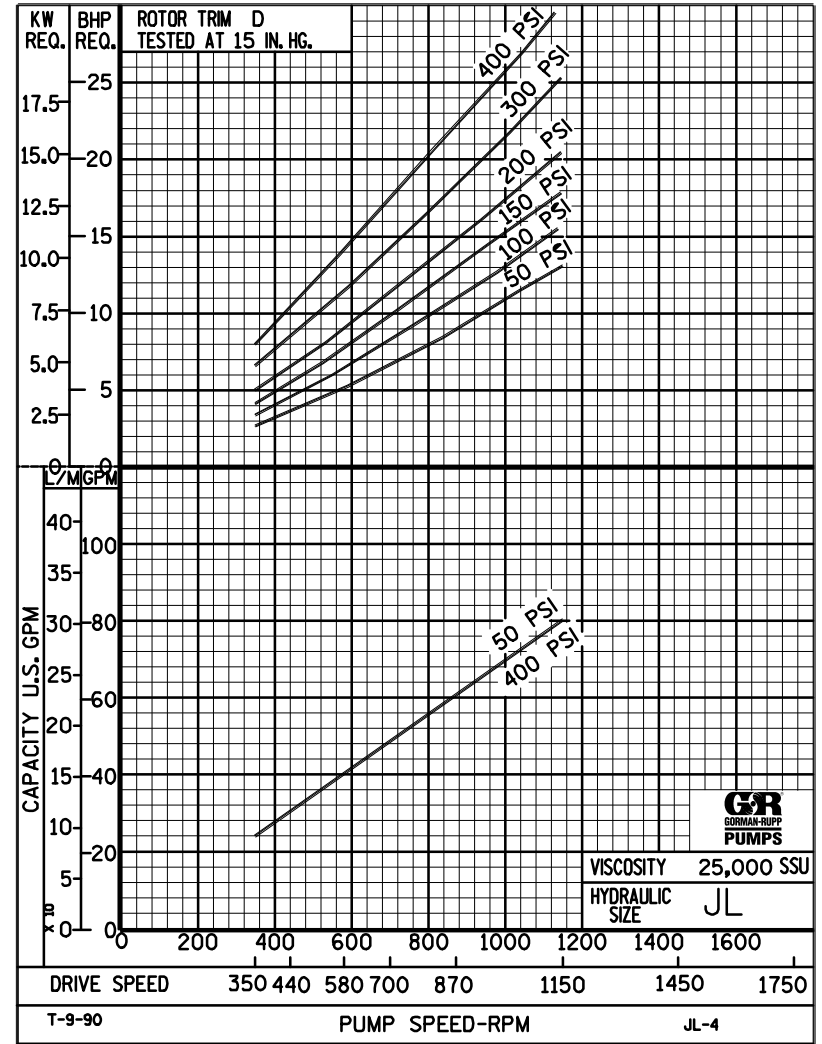
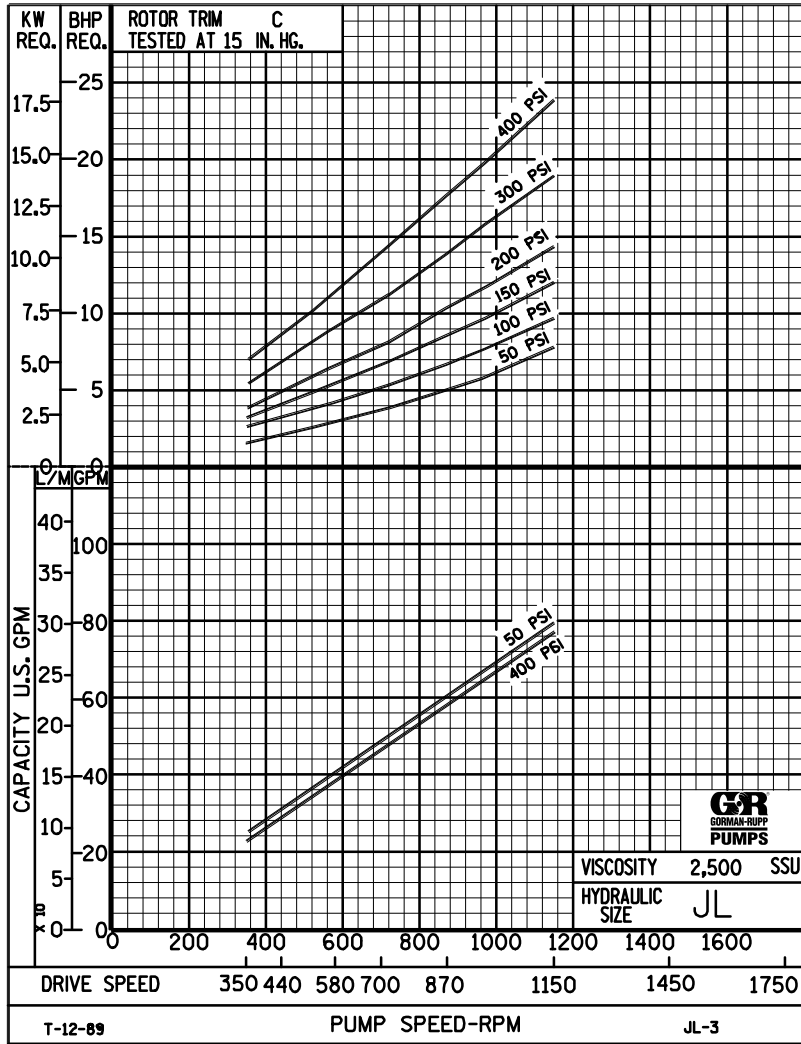
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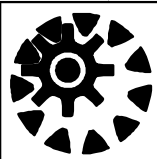
PERFORMANCE CURVES

SPEED VS. CAPACITY/HORSEPOWER

JL Hydraulic Size



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JL

PUMP HYDRAULIC SIZE CHART

SEC. 500

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**77 GPM
1150 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)														
					1½"	2"	2½"	3"	4"	LOW PRES R/V			HI PRES R/V		25	50	75	100	150	200	300	400							
77	1150	STD	28	4.3	.01	.01	.01	.01	.01	73	99	132				75	73	72	72										
			32		.13	.04	.02	.01	.01							2.0	3.2	4.5	5.8										
			38	4.3	.16	.05	.02	.01	.01	73	99	132	173				76	74	74	73	72								
			50		.19	.06	.03	.01	.01								2.1	3.4	4.7	6.0	8.8								
			70	4.3	.22	.07	.03	.01	.01	73	100	133	173	225			77	76	75	75	74	73							
			100		.25	.08	.03	.01	.01								2.4	3.7	5.0	6.2	9.0	12							
			150	4.3	.28	.09	.04	.02	.01	74	100	133	174	225			78	77	77	76	76	75	72	70					
			200		.31	.10	.04	.02	.01								2.7	4.1	5.3	6.5	9.1	12	17	22					
			300	4.3	.35	.11	.04	.02	.01	74	101	134	174	226			79	78	78	77	77	76	74	72					
			500		.38	.13	.06	.03	.01								3.6	4.9	6.0	7.6	9.8	12	17	22					
		750	4.3	.51	.19	.09	.04	.02	74	101	134	174	226			79	79	79	79	78	77	75	74						
		1,000		.68	.25	.12	.05	.02								4.2	5.4	6.6	7.7	10	12	17	22						
		2,000	4.8	1.35	.50	.25	.10	.04	75	103	136	176	228			79	79	79	79	79	78	77	76						
		3,500		2.36	.87	.43	.18	.06								6.3	7.4	8.5	9.7	12	14	19	24						
		5,000	5.1	3.37	1.24	.61	.26	.09	79	108	138	178	230			80	79	79	79	79	79	78	77						
		7,500		5.06	1.86	.92	.39	.13								8.4	9.5	11	12	14	17	21	26						
		10,000	5.5	6.74	2.48	1.22	.51	.17	83	113	142	182	234			80	80	79	79	79.5	79	78	78						
		15,000		10.1	3.72	1.83	.77	.26								10	12	12	14	17	19	23	28						
		20,000	5.8	13.5	4.96	2.44	1.02	.35	88	119	148	186	240			80	80	80	79	79	79	79	79						
		25,000		16.9	6.20	3.05	1.28	.43								12	13	14	16	18	21	25	30						
50,000	8.1	33.7	12.4	6.09	2.56	.86	94	125	154	192	246			80	80	79	79	79	79	78	78								
75,000		-	-	-	-	-								16	18	21	23	25	27	30	35								
100,000																													
150,000																													
200,000																													
250,000																													

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



JL

PUMP HYDRAULIC SIZE CHART

SEC. 500

**58 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)											
					1½"	2"	2½"	3"	4"	LOW PRES R/V		HI PRES R/V			MEDIUM DUTY AND HEAVY DUTY				HEAVY DUTY ONLY							
58	870	STD	28	2.8	.01	.01	.01	.01	.01	63	88	115			55	54	54	53								
			32		.08	.03	.01	.01	.01						1.2	2.3	3.3	4.4								
			38	2.8	.10	.03	.02	.01	.01	63	90	117	167			56	56	55	54	53						
			50		.12	.04	.02	.01	.01							1.3	2.5	3.5	4.5	6.7						
			70	2.8	.14	.04	.02	.01	.01	64	91	119	168	220			58	57	56	56	55	53				
			100		.15	.05	.02	.01	.01								1.3	2.6	3.6	4.5	6.7	8.7				
			150	2.8	.18	.06	.03	.01	.01	65	92	121	168	220			59	58	58	57	57	56	54	52		
			200		.19	.06	.03	.01	.01								1.5	2.9	3.8	4.7	6.9	8.7	12	16		
			300	2.8	.21	.06	.03	.01	.01	66	93	123	169	221			59	59	59	58	58	57	56	55		
			500		.26	.10	.05	.02	.01								1.8	3.4	4.1	5.1	7.0	8.8	13	16		
		750	2.8	.38	.14	.07	.03	.01	67	94	125	169	221			60	60	60	59	58	58	58	57			
		1,000		.51	.19	.09	.04	.02								3.0	3.5	4.4	5.3	7.1	8.9	13	16			
		2,000	3.4	1.02	.38	.19	.08	.03	71	96	125	169	223			60	60	60	60	60	59	58	58			
		3,500		1.78	.66	.32	.14	.05								4.4	5.0	5.8	6.7	8.6	10	14	18			
		5,000	3.7	2.54	.94	.46	.19	.07	73	98	127	171	225			60	60	60	60	60	60	59	58			
		7,500		3.81	1.40	.69	.29	.10								5.7	6.7	7.6	8.6	11	12	15	20			
		10,000	4.1	5.08	1.87	.92	.39	.13	75	100	129	173	227			60	60	60	60	60	60	59	58			
		15,000		7.61	2.80	1.38	.58	.20								6.8	8.0	9.0	9.8	12	13	17	21			
		20,000	4.4	10.2	3.74	1.84	.77	.26	79	104	129	175	227			60	60	60	60	60	59	59	58			
		25,000		12.7	4.67	2.30	.96	.33								8.2	8.9	9.8	11	13	15	18	22			
50,000	6.6	25.4	9.34	4.59	1.93	.65	83	108	133	179	231			60	60	60	60	60	59	59	58					
75,000		38.1	14.0	6.88	2.89	.98								10	11	13	14	16	18	22	26					
100,000	9.0	50.8	18.7	9.18	3.85	1.30	87	112	137	183	235			60	60	60	60	60	59	59	58					
150,000		-	-	-	-	-								12	14	15	16	19	21	25	29					
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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38 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)								
					1½"	2"	2½"	3"	4"	LOW PRES R/V			HI PRES R/V		MEDIUM DUTY AND HEAVY DUTY				HEAVY DUTY ONLY				
38	580	STD	28	1.8	.01	.01	.01	.01	.01	58	83	115	159	211	36	35	35	34	36	35	32		
			32		.04	.01	.01	.01	.01						.82	1.5	2.2	2.9					
			38	1.8	.05	.02	.01	.01	.01	58	83	115	159	211	37	36	35	35	33	36	35	32	
			50		.06	.02	.01	.01	.01						.88	1.6	2.3	2.9	4.3				
			70	1.8	.07	.02	.01	.01	.01	58	83	115	159	211	38	37	37	36	35	34	36	35	32
			100		.08	.02	.01	.01	.01						.91	1.6	2.3	3.0	4.3	5.5			
			150	1.8	.09	.02	.01	.01	.01	59	84	117	159	211	39	38	38	37	37	36	35	32	
			200		.09	.03	.01	.01	.01						1.1	1.7	2.4	3.0	4.4	5.5	8.2	11	
			300	1.8	.10	.04	.02	.01	.01	59	86	117	159	211	39	39	38	38	37	37	36	35	
			500		.17	.06	.03	.02	.01						1.3	1.9	2.8	3.2	4.4	5.6	8.3	11	
			750	1.8	.25	.09	.05	.02	.01	59	86	117	159	211	40	39	39	39	38	38	38	37	
			1,000		.33	.12	.06	.03	.01						1.7	2.4	3.1	3.6	4.7	5.8	8.4	11	
		2,000	2.4	.67	.25	.12	.05	.02	61	88	119	161	213	40	40	39	39	39	39	38	38		
		3,500		1.17	.43	.21	.09	.03						2.8	3.3	4.0	4.6	5.7	6.8	9.2	12		
		5,000	2.8	1.66	.61	.30	.13	.05	63	90	121	161	213	40	40	40	40	39	39	39	39		
		7,500		2.50	.92	.45	.19	.07						3.4	3.9	4.6	5.3	6.4	7.5	9.9	12		
		10,000	3.1	3.33	1.23	.60	.25	.09	65	92	124	161	215	40	40	40	40	39	39	39	39		
		15,000		4.99	1.84	.90	.38	.13						4.0	4.5	5.2	5.9	7.0	8.3	11	13		
		20,000	3.5	6.65	2.45	1.20	.51	.17	67	94	127	161	215	40	40	40	40	39	39	39	39		
		25,000		8.31	3.06	1.51	.63	.22						4.5	5.0	5.7	6.4	7.6	8.9	11	14		
		50,000	5.4	16.6	6.12	3.01	1.26	.43	71	98	131	165	219	40	40	40	40	39	39	39	39		
		75,000		24.9	9.18	4.51	1.89	.64						5.9	6.5	7.2	8.0	9.1	11	14	17		
		100,000	7.8	33.3	12.3	6.01	2.52	.85	75	102	135	169	223	40	40	40	40	39	39	39	39		
150,000	49.9	18.4		9.02	3.78	1.28	7.2	7.8						8.7	9.8	11	13	16	20				
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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**23 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)													
					1½"	2"	2½"	3"	4"	LOW PRES R/V		HI PRES R/V			MEDIUM DUTY AND HEAVY DUTY				HEAVY DUTY ONLY									
23	350	STD	28	1.4	.01	.01	.01	.01	.01	55	81	111			21	21	21	20										
			32		.02	.01	.01	.01	.01						.52	.85	1.3	1.8										
			38	1.4	.02	.01	.01	.01	.01	55	81	111	158			22	22	21	21	20								
			50		.03	.01	.01	.01	.01							.58	.90	1.4	1.8	2.6								
			70	1.4	.03	.01	.01	.01	.01	55	81	111	158	209			22	22	22	21	21	20						
			100		.03	.01	.01	.01	.01								.64	.98	1.4	1.8	2.6	3.3						
			150	1.4	.03	.01	.01	.01	.01	56	82	111	158	209			23	23	22	22	22	21	21	20				
			200		.04	.02	.01	.01	.01								.68	1.1	1.4	1.9	2.6	3.3	4.8	6.3				
			300	1.4	.06	.03	.01	.01	.01	56	82	111	158	209			23	23	23	23	22	22	21	21				
			500		.10	.04	.02	.01	.01								.80	1.2	1.6	1.9	2.7	3.3	4.8	6.4				
		750	1.4	.15	.06	.03	.01	.01	56	82	111	158	209			24	23	23	23	23	23	22	22					
		1,000		.20	.08	.04	.02	.01								1.1	1.5	1.8	2.1	2.8	3.5	5.0	6.6					
		2,000	1.8	.40	.15	.08	.03	.01	57	83	112	159	210			24	24	23	23	23	23	23	23					
		3,500		.71	.26	.13	.06	.02								1.6	2.1	2.3	2.7	3.5	4.2	5.5	7.1					
		5,000	2.2	1.01	.37	.18	.08	.03	58	84	113	160	211			24	24	24	24	23	23	23	23					
		7,500		1.51	.56	.28	.12	.04								2.0	2.4	2.7	3.1	3.8	4.6	5.8	7.5					
		10,000	2.6	2.01	.74	.37	.16	.05	59	86	114	161	212			24	24	24	24	23	23	23	23					
		15,000		3.02	1.11	.55	.23	.08								2.4	2.8	3.2	3.6	4.3	5.0	6.4	7.9					
		20,000	2.9	4.03	1.48	.73	.31	.11	61	88	115	161	212			24	24	24	24	24	23	23	23					
		25,000		5.03	1.85	.91	.38	.13								2.7	3.2	3.5	3.9	4.5	5.3	6.8	8.3					
50,000	4.6	10.1	3.71	1.82	.77	.26	63	90	117	163	214			24	24	24	24	24	23	23	23							
75,000		15.1	5.56	2.73	1.15	.39								3.6	4.0	4.4	4.9	5.6	6.5	8.2	9.8							
100,000	6.6	20.1	7.41	3.64	1.53	.52	66	93	120	166	217			24	24	24	24	24	23	23	23							
150,000		30.2	11.1	5.46	2.29	.77								4.3	4.8	5.3	5.8	6.5	7.7	9.5	11							
200,000	10.2	40.3	14.8	7.28	3.05	1.03	69	96	123	169	220			24	24	24	24	24	23	23	23							
250,000		-	-	-	-	-								4.9	5.7	6.1	6.7	7.5	9.2	11	13							

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