



**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]							
GHA 2 JP 3-B ● GHA 2 JP 4-B ■	54 [169]							
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 ■	80 [251]							
GHA 2 NM 3-B ● GHA 2 NM 4-B ■	80 [251]							
GHA 3 NM 3-B ● GHA 3 NM 4-B ■	80 [251]							
GHA 2 NP 3-B ● GHA 2 NP 4-B ■	99 [313]	580 [480]				● 250 [119]	180 [81,6]	10.7
GHA 3 NP 3-B ● GHA 3 NP 4-B ■	99 [313]							

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

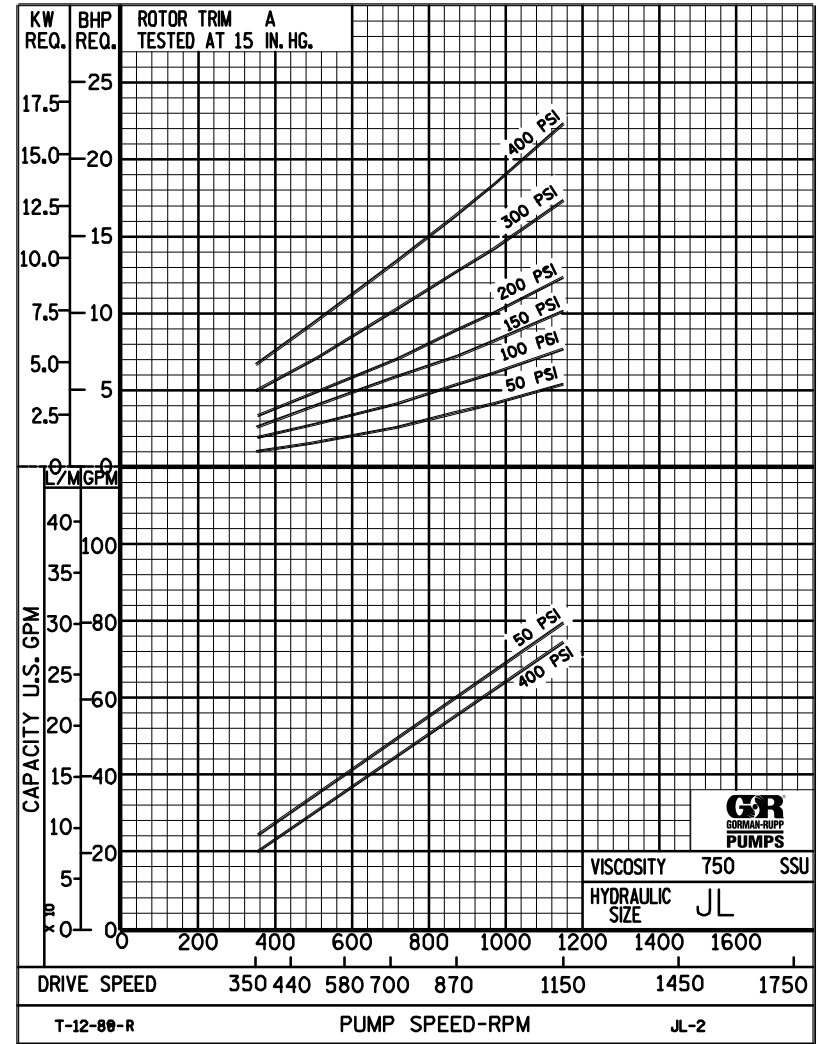
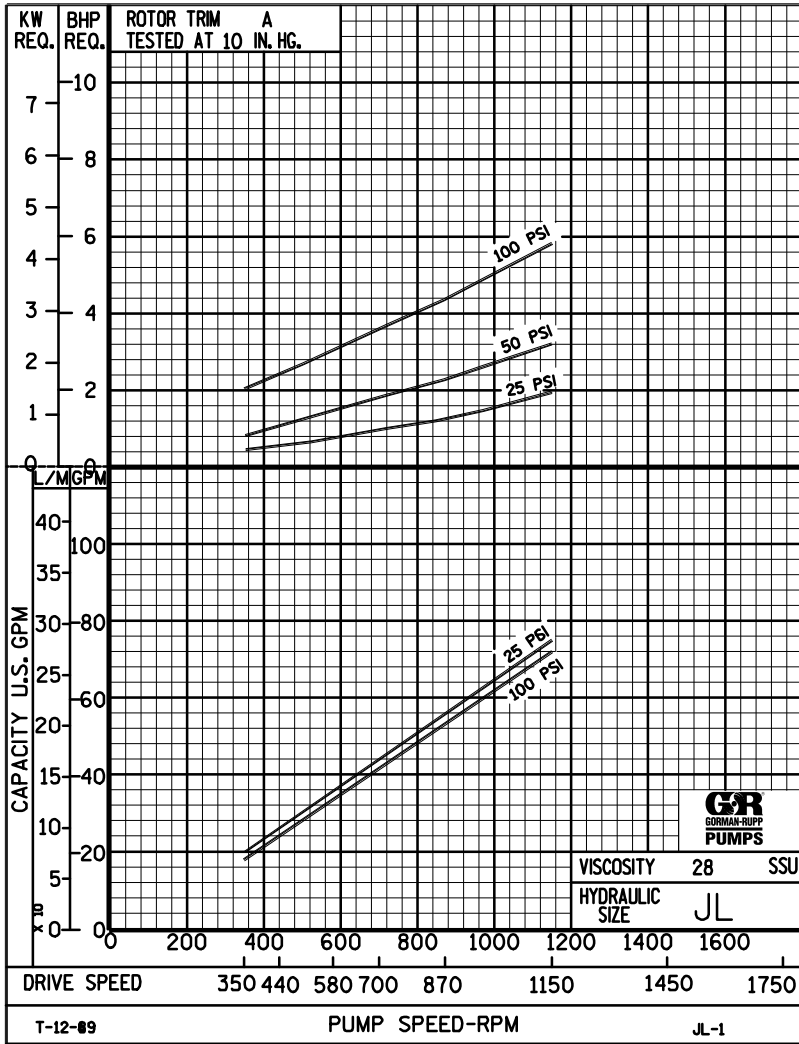
## SPEED VS. CAPACITY/HORSEPOWER

**JL** Hydraulic Size

SEC. 500

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# PERFORMANCE CURVES

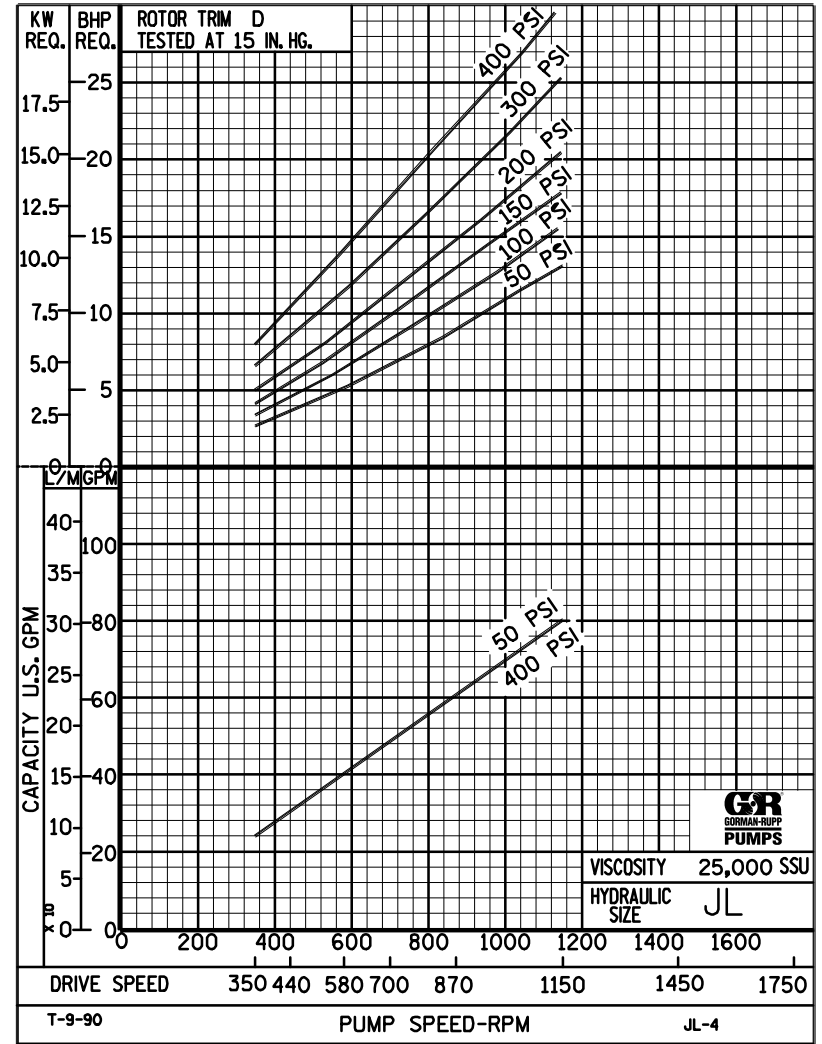
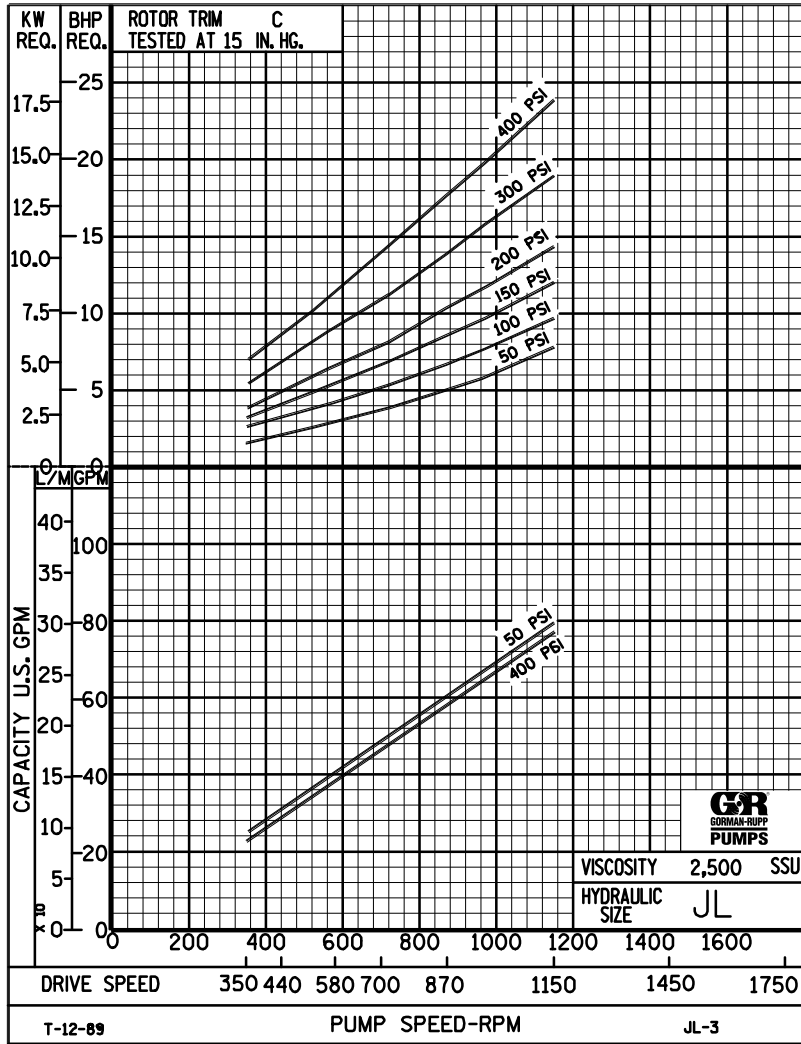
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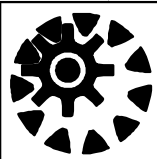
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**JL**

**PUMP HYDRAULIC SIZE CHART**

SEC. 500

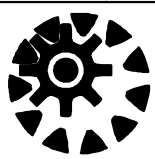
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**77 GPM  
1150 RPM**

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		HEAVY DUTY									
							50	75	100	150	200	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

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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)													
					1 1/2"	2"	2 1/2"	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.





**JL**

**PUMP HYDRAULIC SIZE CHART**

SEC. 500

**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				36	35	35	34										
			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			37	36	35	35	33									
			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								
			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							4.0	4.0	4.0	4.0	39	39	39	39							
		15,000		4.99	1.84	.90	.38	.13	65	92	124	161	215		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							4.0	4.0	4.0	4.0	39	39	39	39							
		25,000		8.31	3.06	1.51	.63	.22	67	94	127	161	215		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							4.0	4.0	4.0	4.0	39	39	39	39									
75,000		24.9	9.18	4.51	1.89	.64	71	98	131	165	219		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							4.0	4.0	4.0	4.0	39	39	39	39									
150,000		49.9	18.4	9.02	3.78	1.28	75	102	135	169	223		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.



**JL**

**PUMP HYDRAULIC SIZE CHART**

SEC. 500

**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.