



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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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

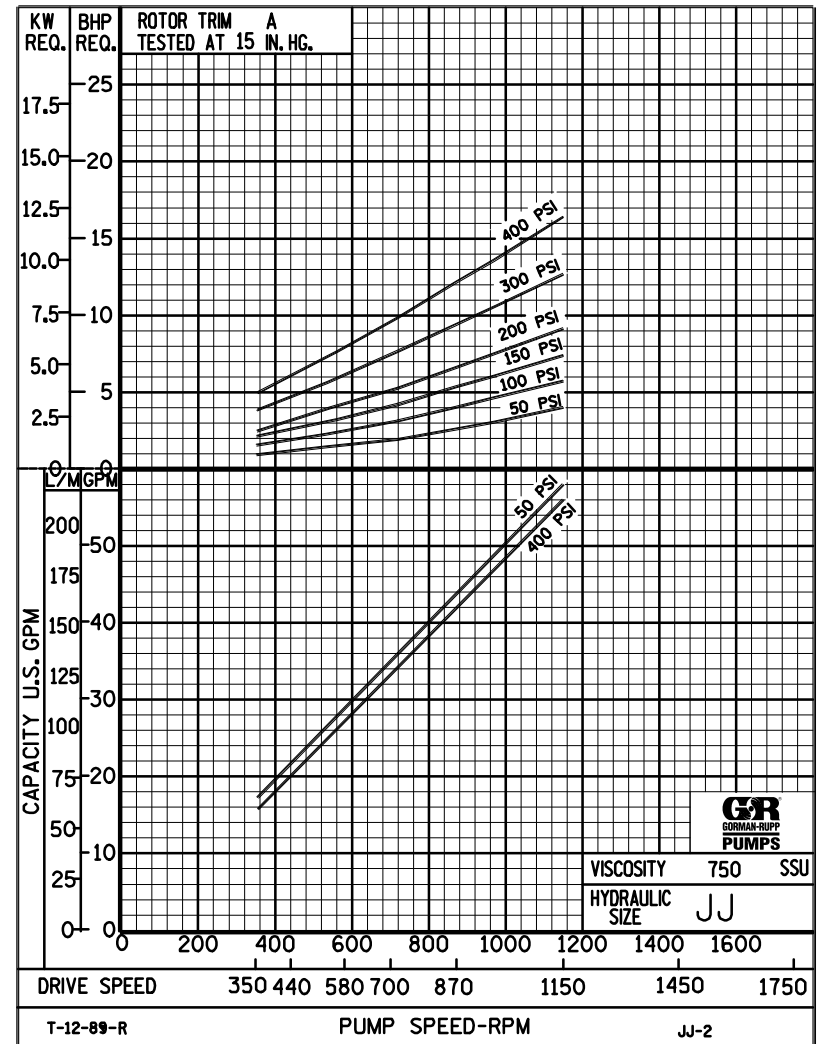
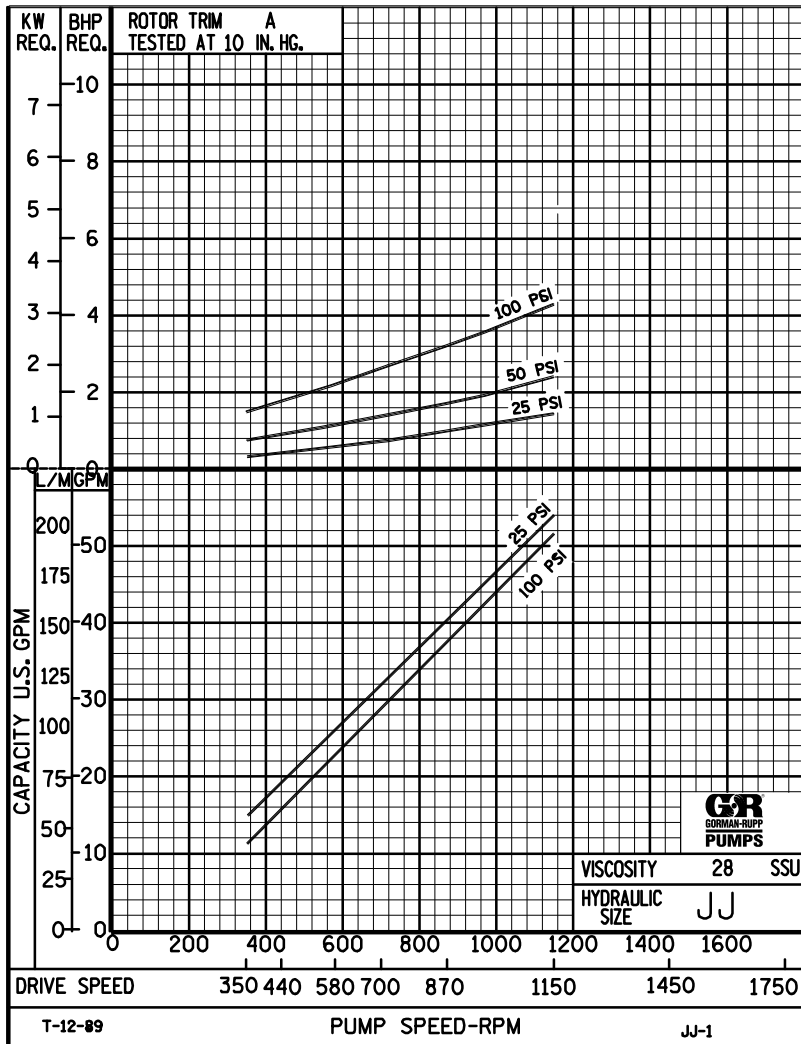
JJ

Hydraulic
Size

SEC. 500

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PERFORMANCE CURVES

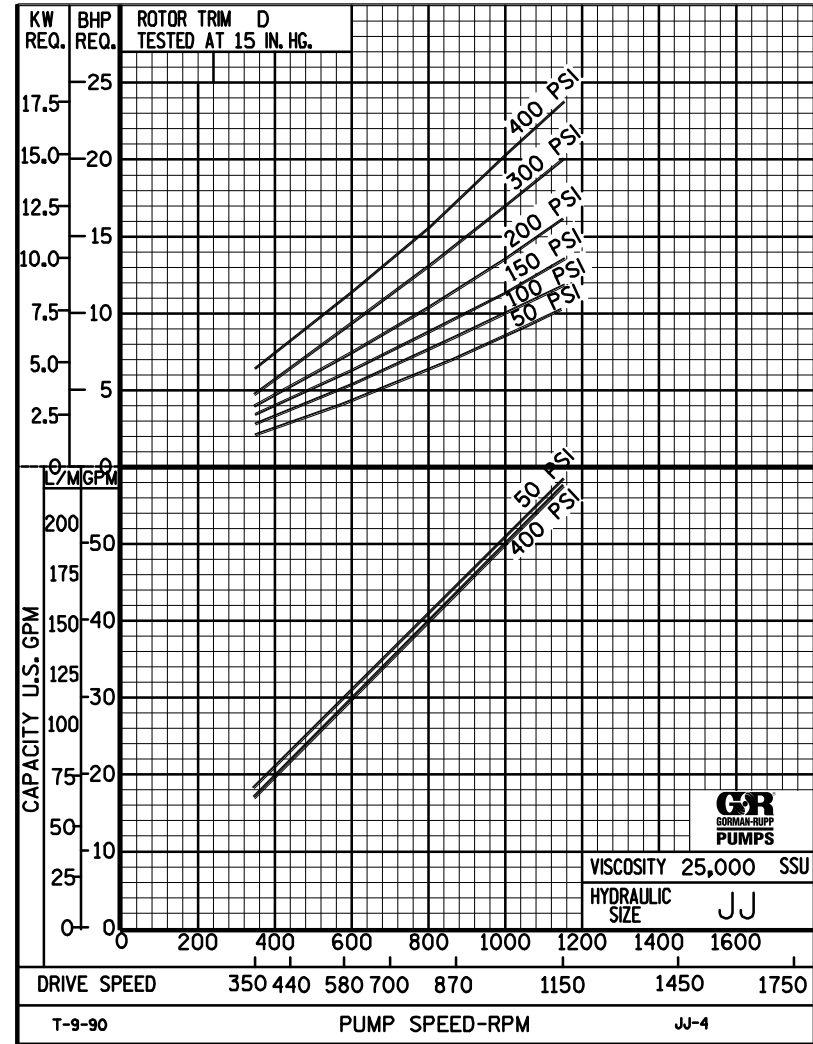
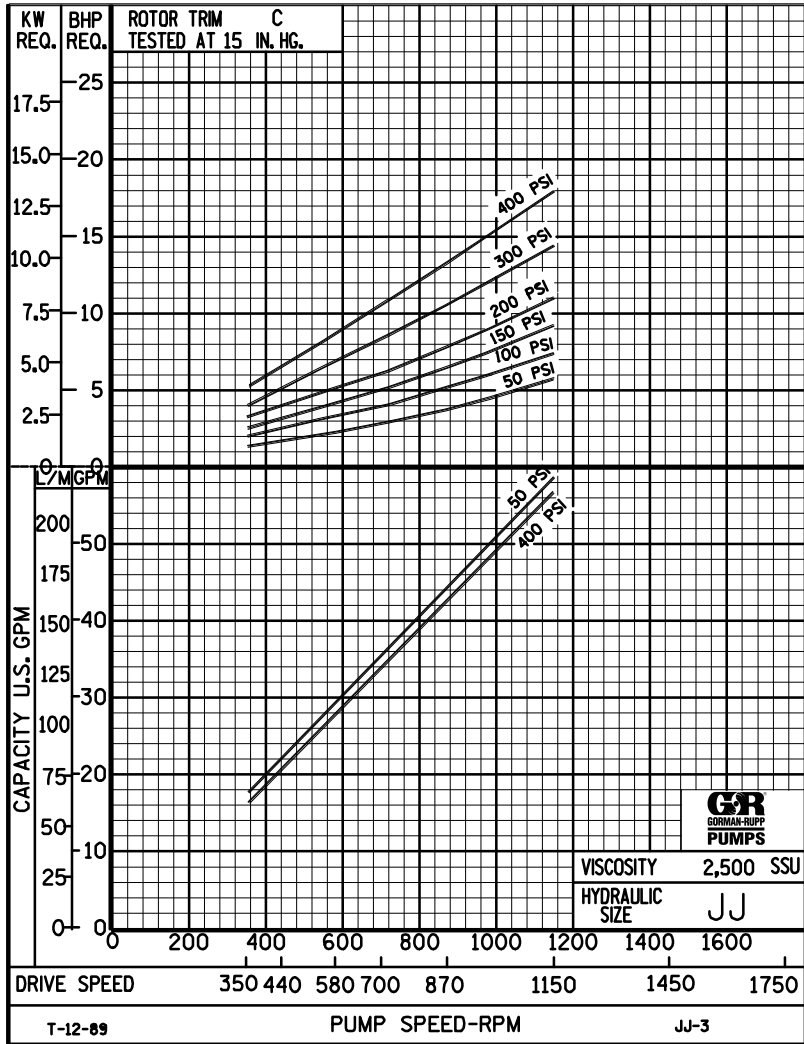
SPEED VS. CAPACITY/HORSEPOWER

JJ Hydraulic Size

SEC. 500

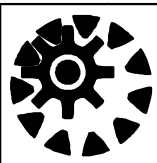
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JJ

SEC. 500

**56 GPM
1150 RPM**

PUMP HYDRAULIC SIZE CHART

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				
56	1150	STD	28	4.0	.01	.01	.01	.01	.01	62	87	114				54	52	52	51							
			32		.07	.02	.01	.01	.01							1.0	2.4	3.3	4.3							
			38	4.0	.09	.03	.01	.01	.01	62	89	116	166				55	54	53	53	51					
			50		.11	.03	.02	.01	.01								1.6	2.5	3.5	4.4	6.4					
			70	4.0	.13	.04	.02	.01	.01	63	90	118	167	219			56	55	55	54	53	52				
			100		.15	.05	.02	.01	.01								1.8	2.7	3.6	4.6	6.5	8.7				
			150	4.0	.16	.05	.02	.01	.01	64	91	120	167	219			57	56	56	55	54	54	53	52		
			200		.18	.05	.02	.01	.01								2.1	3.0	3.9	4.8	6.6	8.7	12	16		
			300	4.0	.20	.06	.03	.01	.01	65	92	122	168	220			57	57	57	56	56	55	55	54		
			500		.25	.09	.05	.02	.01								2.8	3.6	4.6	5.4	7.1	9.0	13	16		
		750	4.0	.37	.14	.07	.03	.01	66	93	124	168	220			58	58	57	57	57	57	56	56			
		1,000		.49	.18	.09	.04	.02								3.2	4.0	4.9	5.7	7.4	9.2	13	16			
		2,000	4.3	.98	.36	.18	.08	.03	70	95	124	168	222			58	58	58	58	58	57	57	56			
		3,500		1.72	.63	.31	.13	.05								4.6	5.7	6.6	7.4	9.2	11	14	18			
		5,000	4.5	2.45	.90	.44	.19	.06	72	97	126	170	224			59	58	58	58	58	58	57	57			
		7,500		3.68	1.35	.67	.28	.10								6.6	7.3	8.0	8.8	11	13	16	20			
		10,000	4.7	4.90	1.81	.89	.37	.13	74	99	128	172	226			59	58	58	58	58	58	57	57			
		15,000		7.35	2.71	1.33	.56	.19								8.8	9.0	10	11	13	15	18	2.0			
		20,000	4.9	9.80	3.61	1.77	.74	.25	78	103	128	174	226			58	58	58	58	58	58	57	57			
		25,000		12.3	4.51	2.22	.93	.31								9.7	10	11	12	14	16	20	24			
50,000	6.9	24.5	9.02	4.43	1.86	.63	82	107	132	178	230			58	58	58	58	58	58	57	57					
75,000		-	-	-	-	-								15	16	16	18	19	22	25	30					
100,000																										
150,000																										
200,000																										
250,000																										

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



JJ

PUMP HYDRAULIC SIZE CHART

SEC. 500

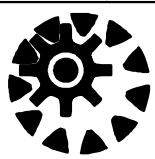
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**42 GPM
870 RPM**

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						
							50	75	100	150	200	25	50	75	100	150	200	300	400						
42	870	STD	28	2.7	.01	.01	.01	.01	.01	60	85	117			40	39	39	38							
			32		.04	.01	.01	.01	.01						.98	1.7	2.5	3.2							
			38	2.7	.06	.02	.01	.01	.01	60	85	117	161			41	40	40	39	38					
			50		.07	.02	.01	.01	.01							1.1	1.8	2.5	3.3	4.8					
			70	2.7	.08	.03	.01	.01	.01	60	85	117	161	213			42	42	41	40.8	40	39			
			100		.09	.03	.01	.01	.01								1.1	1.9	2.6	3.3	4.9	6.4			
			150	2.7	.10	.03	.01	.01	.01	61	86	119	161	213			43	42	42	42	41	41	40	39	
			200		.10	.03	.01	.01	.01								1.3	2.0	2.7	3.4	4.9	6.5	9.1	12	
			300	2.7	.11	.04	.02	.01	.01	61	88	119	161	213			43	43	43	42	42	42	41	41	
			500		.19	.07	.03	.02	.01								1.8	2.4	3.0	3.7	5.0	6.6	9.2	12	
		750	2.7	.28	.10	.05	.02	.01	61	88	119	161	213			43	43	43	43	43	42	42	42		
		1,000		.37	.14	.07	.03	.01								2.4	2.6	3.3	4.0	5.4	6.7	9.4	13		
		2,000	3.1	.74	.27	.13	.06	.02	63	90	121	163	215			44	44	43	43	43	43	42	42		
		3,500		1.29	.47	.23	.10	.03								3.0	3.7	4.5	5.2	6.5	7.8	11	13		
		5,000	3.4	1.84	.68	.33	.14	.05	65	92	123	163	215			44	44	44	43	43	43	43	42		
		7,500		2.76	1.02	.50	.21	.07								4.6	5.3	6.0	6.6	7.8	9.1	12	15		
		10,000	3.7	3.68	1.35	.67	.28	.10	67	94	126	163	217			44	44	44	44	43	43	43	42		
		15,000		5.51	2.03	1.00	.42	.14								5.5	6.3	7.0	7.7	9.0	10	13	16		
		20,000	3.9	7.35	2.71	1.33	.56	.19	69	96	129	163	217			44	44	44	44	43	43	43	42		
		25,000		9.19	3.38	1.66	.70	.24								6.4	7.0	7.7	8.5	10	11	14	17		
50,000	5.8	18.4	6.76	3.32	1.40	.47	73	100	133	167	221			44	44	44	44	43	43	43	42				
75,000		27.6	10.2	4.99	2.09	.71								9.6	10	11	12	13	15	18	21				
100,000	7.8	36.8	13.5	6.65	2.79	.94	77	104	137	171	225			44	44	44	44	43	43	43	42				
150,000		-	-	-	-	-								12	13	14	15	16	19	21	24				
200,000																									
250,000																									

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



JJ

PUMP HYDRAULIC SIZE CHART

SEC. 500

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**28 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									
28	580	STD	28	1.7	.01	.01	.01	.01	.01	54	80	111			26	25	25	24										
			32		.02	.01	.01	.01	.01						.61	1.2	1.7	2.2										
			38	1.7	.03	.01	.01	.01	.01	54	80	111	157			26	26	26	25	24								
			50		.03	.01	.01	.01	.01							.64	1.2	1.7	2.2	3.4								
			70	1.7	.04	.01	.01	.01	.01	54	81	111	157	209			27	27	26	26	25	24						
			100		.05	.02	.01	.01	.01								.69	1.2	1.8	2.2	3.4	4.2						
			150	1.7	.05	.02	.01	.01	.01	54	81	111	157	209			28	28	27	27	26	26	25	25				
			200		.05	.02	.01	.01	.01								.77	1.3	1.8	2.3	3.4	4.2	6.0	7.9				
			300	1.7	.08	.03	.01	.01	.01	55	82	111	157	209			28	28	28	27	27	27	26	26				
			500		.12	.05	.02	.01	.01								.90	1.5	1.9	2.4	3.4	4.2	6.0	7.9				
		750	1.7	19	.07	.03	.02	.01	55	82	111	157	209			29	28	28	28	28	28	27	27					
		1,000		.25	.09	.05	.02	.01								1.3	1.8	2.2	2.7	3.5	4.3	6.3	8.1					
		2,000	2.1	.49	.18	.09	.04	.01	57	84	113	157	209			29	29	29	28	28	28	28	27					
		3,500		.86	.32	.16	.07	.02								2.2	2.6	3.1	3.5	4.4	5.3	7.2	9.0					
		5,000	2.4	1.23	.45	.22	.09	.03	59	86	115	158	210			29	29	29	29	28	28	28	28					
		7,500		1.84	.68	.33	.14	.05								2.8	3.2	3.6	4.1	5.0	5.9	7.8	9.6					
		10,000	2.7	2.45	.90	.44	.19	.06	61	88	118	159	211			29	29	29	29	29	29	28	28					
		15,000		3.68	1.35	.67	.28	.10								3.3	3.7	4.2	4.7	5.6	6.6	8.5	10					
		20,000	3.0	4.90	1.81	.89	.37	.13	64	91	121	159	211			30	29	29	29	29	29	29	28					
		25,000		6.13	2.26	1.11	.47	.16								3.7	4.2	4.7	5.1	6.2	7.1	9.0	11					
50,000	4.6	12.3	4.51	2.22	.93	.31	67	94	124	162	214			30	29	29	29	29	29	29	28							
75,000		18.4	6.76	3.32	1.40	.47								5.6	6.2	6.7	7.4	8.0	9.6	11	14							
100,000	6.6	24.5	9.02	4.43	1.86	.63	71	98	128	166	218			30	29	29	29	29	29	29	28							
150,000		36.8	13.5	6.65	2.79	.94								7.0	7.8	8.4	9.3	9.6	12	13	16							
200,000	10.0	49.0	18.0	8.86	3.72	1.25	74	101	131	169	221			30	29	29	29	29	29	29	28							
250,000		-	-	-	-	-								8.4	9.4	9.9	11	11	13	15	17							

(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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17 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						
							50	75	100	150	200	25	50	75	100	150	200	300	400						
17	350	STD	28	1.2	.01	.01	.01	.01	.01	53	79	109			15	15	15	14							
			32		.01	.01	.01	.01	.01						.33	.61	1.0	1.3							
			38	1.2	.01	.01	.01	.01	.01	53	79	109	156			16	15	15	15	14					
			50		.02	.01	.01	.01	.01							.37	.64	1.0	1.4	2.1					
			70	1.2	.02	.01	.01	.01	.01	53	79	109	156	207			16	16	16	15	15	15			
			100		.02	.01	.01	.01	.01								3.9	.69	1.1	1.4	2.1	2.8			
			150	1.2	.02	.01	.01	.01	.01	54	80	109	156	207			17	16	16	16	16	15	15	14	
			200		.03	.01	.01	.01	.01								.48	.74	1.1	1.4	2.1	2.8	3.7	4.8	
			300	1.2	.05	.02	.01	.01	.01	54	80	109	156	207			17	17	17	16	16	16	16	15	
			500		.08	.03	.02	.01	.01								.63	.82	1.1	1.5	2.1	2.8	3.7	4.8	
		750	1.2	.11	.04	.02	.01	.01	54	80	109	156	207			17	17	17	17	17	16	16	16		
		1,000		.15	.06	.03	.01	.01								.76	1.0	1.3	1.6	2.2	2.8	3.8	4.9		
		2,000	1.7	.30	.11	.06	.02	.01	55	81	110	157	208			17	17	17	17	17	17	16	16		
		3,500		.52	.19	.10	.04	.01								1.3	1.6	1.8	2.1	2.7	3.1	4.3	5.4		
		5,000	2.0	.75	.28	.14	.06	.02	56	82	111	158	209			17	17	17	17	17	17	17	17		
		7,500		1.12	.41	.20	.09	.03								1.6	1.9	2.2	2.4	3.0	3.5	4.6	5.7		
		10,000	2.3	1.49	.55	.27	.11	.04	57	84	112	159	210			17	17	17	17	17	17	17	17		
		15,000		2.23	.82	.40	.17	.06								1.8	2.2	2.5	2.8	3.4	3.9	5.0	6.2		
		20,000	2.5	2.98	1.10	.54	.23	.08	59	86	113	159	210			18	17	17	17	17	17	17	17		
		25,000		3.72	1.37	.67	.28	.10								2.0	2.5	2.8	3.0	3.7	4.3	5.4	6.5		
50,000	3.9	7.44	2.74	1.35	.57	.19	61	88	115	161	212			18	17	17	17	17	17	17	17				
75,000		11.2	4.11	2.02	.85	.29								3.0	3.7	4.0	4.4	4.6	5.9	6.7	8.1				
100,000	5.6	14.9	5.48	2.69	1.13	.38	64	91	118	164	215			18	17	17	17	17	17	17	17				
150,000		22.3	8.21	4.04	1.69	.57								3.7	4.7	5.0	5.4	5.7	7.0	7.8	9.3				
200,000	8.4	29.8	11.0	5.38	2.26	.76	67	94	121	167	218			18	17	17	17	17	17	17	17				
250,000		37.2	13.7	6.73	2.82	.95								4.5	5.6	5.9	6.4	6.5	8.1	8.7	10				

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