



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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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

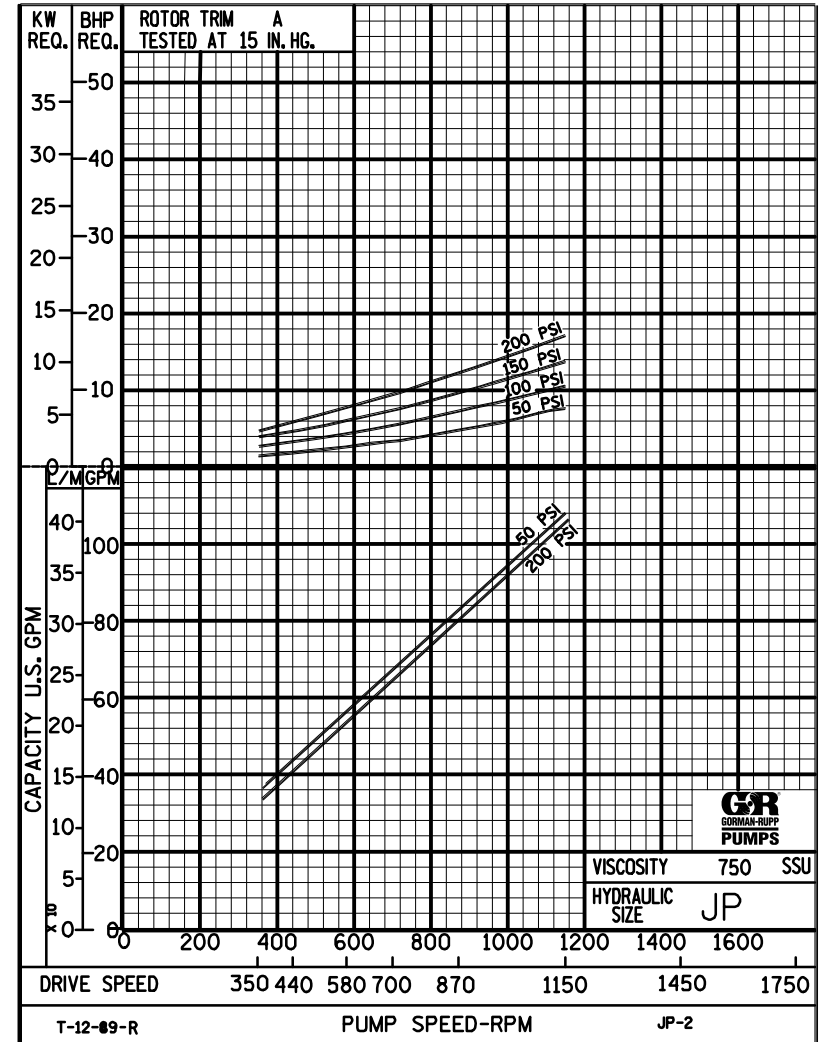
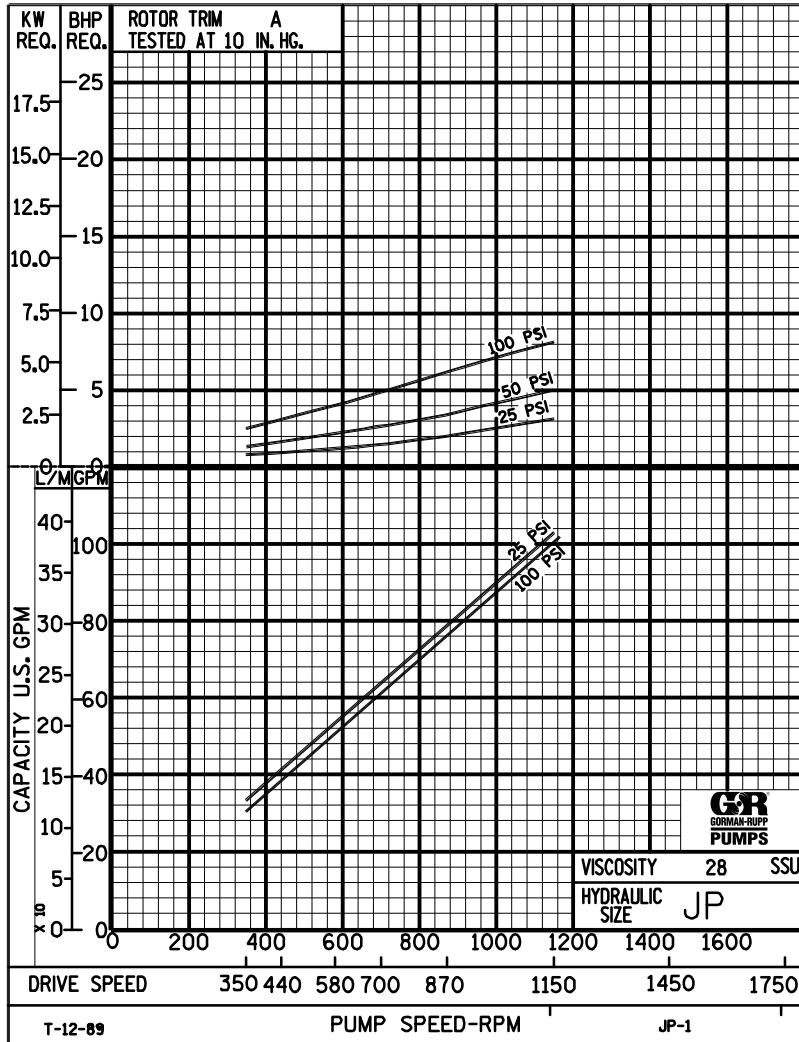
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Hydraulic
Size

SEC. 500

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PERFORMANCE CURVES

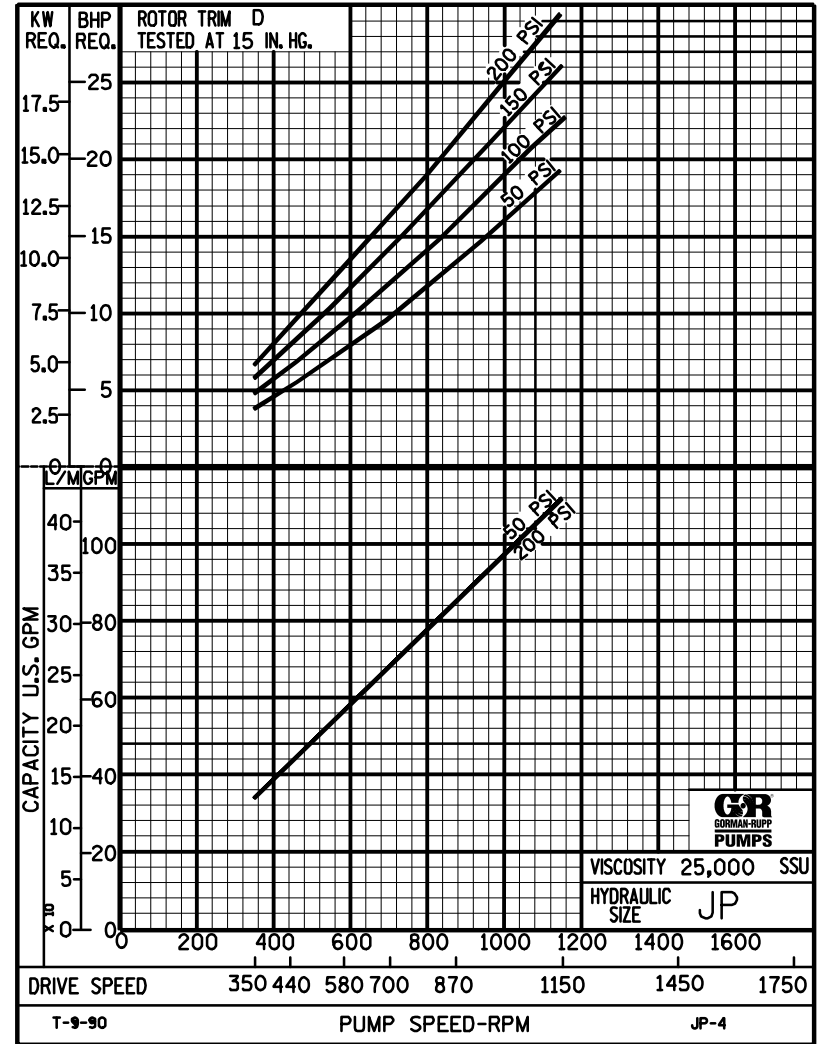
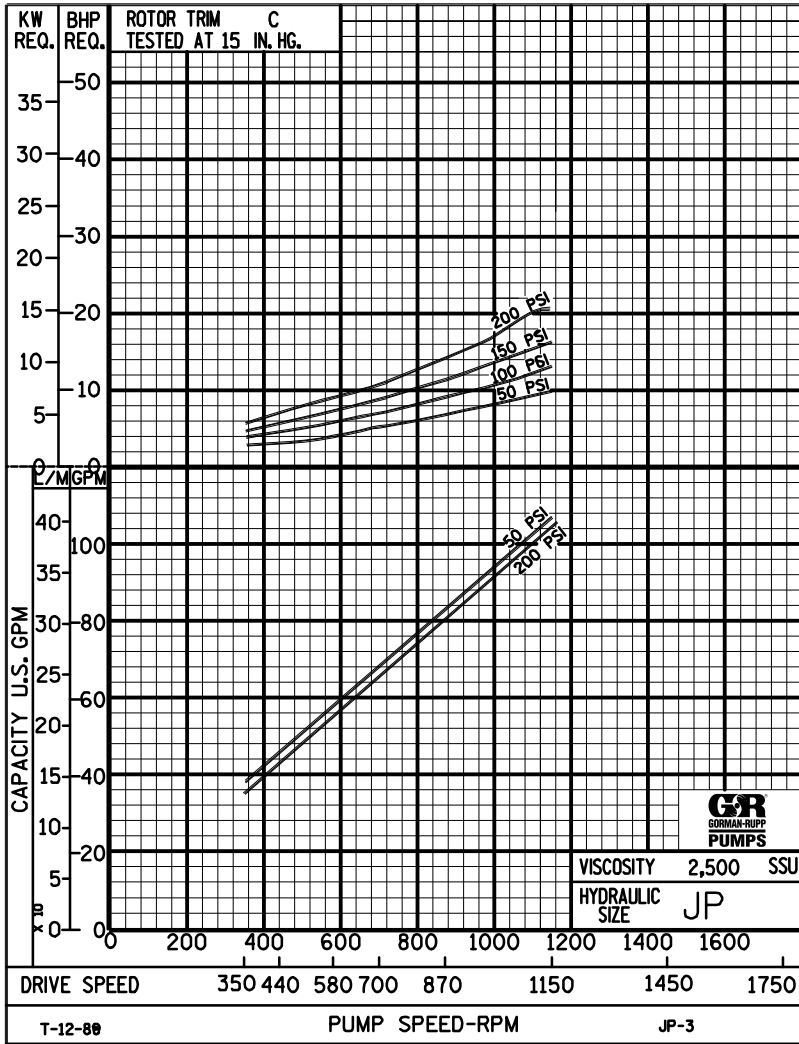
SPEED VS. CAPACITY/HORSEPOWER

JP Hydraulic Size

SEC. 500

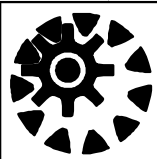
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PUMP HYDRAULIC SIZE CHART

SEC. 500

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**107 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				
107	1150	STD	28	4.8	.01	.01	.01	.01	.01	77	104	143											
			32		.23	.07	.03	.01	.01												103	100	100
			38	4.8	.29	.09	.04	.02	.01	78	105	144	188										
			50		.34	.11	.05	.02	.01														105
			70	4.8	.39	.12	.05	.02	.01	79	107	144	189	240									
			100		.44	.14	.06	.02	.01														
			150	4.8	.50	.15	.07	.03	.01	80	107	145	189	241									
			200		.54	.17	.07	.03	.01														
			300	4.8	.61	.19	.08	.03	.01	81	109	145	190	242									
			500		.64	.22	.09	.04	.01														
		750	4.8	.70	.26	.13	.06	.02	82	111	146	190	243										
		1,000		.94	.35	.17	.07	.03															109
		2,000	5.7	1.87	.69	.34	.14	.05	86	118	153	196	252										
		3,500		3.28	1.21	.59	.25	.09															109
		5,000	6.2	4.68	1.73	.85	.36	.12	90	123	156	200	256										
		7,500		7.02	2.59	1.27	.54	.18															110
		10,000	6.8	9.36	3.45	1.70	.71	.24	96	129	160	204	260										
		15,000		14.1	5.17	2.54	1.07	.36															110
		20,000	7.3	18.7	6.89	3.39	1.42	.48	102	135	164	208	264										
		25,000		23.4	8.62	4.23	1.78	.60															111
50,000																							
75,000																							
100,000																							
150,000																							
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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January 2010

**81 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					
81	870	STD	28	3.0	.01	.01	.01	.01	.01	74	100	133			77	75	75	74						
			32		.14	.04	.02	.01	.01						2.2	3.4	4.7	6.0						
			38	3.0	.18	.06	.03	.01	.01	74	100	133	174			78	77	76	75	75				
			50		.21	.07	.03	.01	.01							2.3	3.7	5.0	6.2	7.5				
			70	3.0	.24	.08	.03	.01	.01	74	101	134	174	226			79	78	78	77	76	75		
			100		.27	.09	.04	.02	.01								2.5	4.0	5.2	6.5	8.0	10		
			150	3.0	.31	.10	.04	.02	.01	75	101	134	175	226			81	79	79	78	78	77		
			200		.34	.11	.05	.02	.01								2.6	4.3	5.5	6.8	8.6	11		
			300	3.0	.38	.12	.05	.02	.01	75	102	135	175	227			81	81	80	79	79	78		
			500		.44	.13	.07	.03	.01								2.8	4.5	5.8	7.0	9.2	12		
		750	3.0	.53	.20	.10	.04	.02	75	102	135	175	227			82	81	81	80	80.5	80			
		1,000		.71	.26	.13	.06	.02								3.0	4.8	6.0	7.3	9.7	12			
		2,000	3.7	1.42	.52	.26	.11	.04	76	104	137	177	229			82	82	81	81	81	81			
		3,500		2.48	.92	.45	.19	.07								4.2	6.8	7.9	9.0	12	14			
		5,000	4.2	3.55	1.31	.64	.27	.09	80	109	139	179	231			83	83	82	82	82	82			
		7,500		5.32	1.96	.96	.41	.14								6.8	9.0	10	11	14	16			
		10,000	4.6	7.09	2.61	1.28	.54	.18	84	114	143	183	235			84	84	83	83	83	82			
		15,000		10.7	3.92	1.92	.81	.27								9.3	11	12	14	16	19			
		20,000	5.0	14.2	5.22	2.57	1.08	.37	89	120	149	187	241			85	84	84	84	84	83			
		25,000		17.7	6.52	3.21	1.35	.46								12	13	14	16	18	21			
50,000	7.6	35.5	13.1	6.41	2.69	.91	95	126	155	193	247			85	84	84	84	84	83					
75,000		-	-	-	-	-								17	18	21	23	24	27					
100,000																								
150,000																								
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

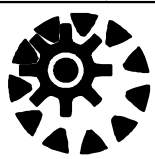
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**54 GPM
580 RPM**

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														
54	580	STD	28	1.9	.01	.01	.01	.01	.01	62	87	114			51	50	50	49															
			32		.07	.02	.01	.01	.01							1.5	2.3	3.1	4.0														
			38	1.9	.09	.03	.01	.01	.01	62	89	116	166			52	51	51	50	50													
			50		.10	.03	.02	.01	.01							1.6	2.5	3.3	4.2	5.0													
			70	1.9	.12	.04	.02	.01	.01	63	90	118	167	219		53	52	52	51	51	50												
			100		.14	.04	.02	.01	.01							1.7	2.7	3.5	4.4	5.4	6.9												
			150	1.9	.16	.05	.02	.01	.01	64	91	120	167	219		54	53	53	52	52	51												
			200		.17	.05	.02	.01	.01							1.8	2.9	3.7	4.5	5.8	7.3												
			300	1.9	.19	.06	.03	.01	.01	65	92	122	168	220		54	54	53	53	53	52												
			500		.24	.09	.05	.02	.01							1.9	3.0	3.9	4.7	6.2	7.8												
		750	1.9	.36	.13	.07	.03	.01	66	93	124	168	220		54	54	54	54	54	53													
		1,000		.47	.18	.09	.04	.01							2.0	3.2	4.0	4.9	6.5	8.2													
		2,000	2.6	.95	.35	.17	.07	.03	70	95	124	168	222		55	55	54	54	54	54													
		3,500		1.66	.61	.30	.13	.04							2.8	4.6	5.3	6.1	7.8	9.5													
		5,000	3.0	2.36	.87	.43	.18	.06	72	97	126	170	224		55	55	55	55	55	54													
		7,500		3.55	1.31	.64	.27	.09							4.6	6.0	6.8	7.6	9.3	11													
		10,000	3.5	4.73	1.74	.86	.36	.12	74	99	128	172	226		56	56	56	55	55	55													
		15,000		7.09	2.61	1.28	.54	.18							6.3	7.4	8.2	9.1	11	13													
		20,000	3.9	9.45	3.48	1.71	.72	.24	78	103	128	174	226		57	56	56	56	56	56													
		25,000		11.8	4.35	2.14	.90	.30							8.0	8.9	9.6	11	12	14													
50,000	6.1	23.6	8.70	4.27	1.79	.61	82	107	132	178	230		57	56	56	56	56	56															
75,000		35.5	13.1	6.41	2.69	.91							11	12	14	16	16	18															
100,000																																	
150,000																																	
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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January 2010

**32 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						
32	350	STD	28	1.3	.01	.01	.01	.01	.01	56	82	113			31	30	30	29							
			32		.03	.01	.01	.01	.01						.89	1.4	1.9	2.4							
			38	1.3	.04	.01	.01	.01	.01	56	82	113	159			31	31	30	30	30					
			50		.04	.02	.01	.01	.01							.94	1.5	2.0	2.5	3.0					
			70	1.3	.05	.02	.01	.01	.01	56	83	113	159	211			32	31	31	31	30.7	30.4			
			100		.06	.02	.01	.01	.01								1.0	1.6	2.1	2.6	3.2	4.1			
			150	1.3	.06	.02	.01	.01	.01	56	83	113	159	211			32	32	31	31	31	31			
			200		.06	.02	.01	.01	.01								1.1	1.7	2.2	2.7	3.5	4.4			
			300	1.3	.09	.03	.02	.01	.01	57	84	113	159	211			32	32	32	32	32	31			
			500		.14	.05	.03	.01	.01								1.1	1.8	2.3	2.8	3.7	4.7			
		750	1.3	.21	.08	.04	.02	.01	57	84	113	159	211			32	32	32	32	32	32				
		1,000		.28	.11	.05	.02	.01								1.2	1.9	2.4	2.9	3.9	5.0				
		2,000	2.0	.56	.21	.10	.04	.02	59	86	115	159	211			33	33	32	32	32	32				
		3,500		.98	.36	.18	.08	.03								1.7	2.7	3.2	3.6	4.7	5.7				
		5,000	2.4	1.40	.52	.26	.11	.04	61	88	117	160	212			33	33	33	33	33	32				
		7,500		2.10	.78	.38	.16	.06								2.7	3.6	4.1	4.5	5.6	6.6				
		10,000	2.9	2.80	1.03	.51	.21	.07	63	90	120	161	213			33	33	33	33	33	33				
		15,000		4.20	1.55	.76	.32	.11								3.8	4.5	4.9	5.4	6.5	7.5				
		20,000	3.2	5.60	2.06	1.02	.43	.15	66	93	123	161	213			34	34	34	33	33	33				
		25,000		7.00	2.58	1.27	.53	.18								4.8	5.3	5.8	6.3	7.4	8.4				
50,000	5.4	14.0	5.16	2.53	1.06	.36	69	96	126	164	216			34	34	34	33	33	33						
75,000		21.0	7.73	3.80	1.60	.54								6.7	7.3	8.2	9.4	9.8	11						
100,000	8.0	28.0	10.3	5.07	2.13	.72	73	100	130	168	220			34	34	34	33	33	33						
150,000		42.0	15.5	7.60	3.19	1.08								8.1	8.8	10	11	12	13						
200,000																									
250,000																									

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



JP

SEC. 500

PAGE 85.1

February 2025

**15 GPM
150 RPM**

NOMINAL		VISCOSITY		N.I.P.R.	FRICTION PIPE LOSS (PSI/FT) <small>(Schedule 40 Steel Pipe)</small>					CAPACITY (GPM)				H.P. REQUIRED					
GPM	RPM	ROTOR TRIM	(SSU)	(PSIa)	PIPE DIAMETER					MEDIUM-DUTY & HEAVY-DUTY				HEAVY-DUTY ONLY					
					2"	2½"	3"	4"	5"	DIFFERENTIAL PRESSURE (PSI)				150	200	300	400		
						25	50	75	100	150	200	300	400						
15	150	STD																	
				"D"															
					200,000	3.7	9.7	4.8	2	0.7	0.3	15.1	15.1	15.0	15.0	14.8	14.8	14.7	14.5
					399,999		19.3	9.5	4	1.3	0.6	2.6	2.8	3.1	3.3	3.5	3.9	4.5	5.0
					400,000	4.2						15.1	15.1	15.0	15.0	14.8	14.8	14.7	14.5
					599,999		NR	14.3	6	2	0.8	2.8	3.0	3.3	3.5	3.7	4.1	4.7	5.2
					600,000	5.1	NR					15.1	15.1	15.0	15.0	14.8	14.8	14.7	14.5
					799,999		NR	19	8	2.7	1.1	3.0	3.2	3.5	3.7	3.9	4.3	4.9	5.4
					800,000	5.6	NR					15.1	15.1	15.0	15.0	14.8	14.8	14.7	14.5
		1M	NR		23.8		10	3.4	1.4	3.3	3.5	3.8	4.0	4.2	4.6	5.2	5.7		

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