



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]					● 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]	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]	80 [251]				■ 500 [260]	180 [81,6]	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 ■								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]	180 [81,6]	10.7
GHA 3 NP 3-B ● GHA 3 NP 4-B ■								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

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.

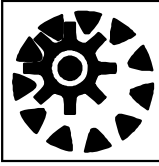
NOTE: PROPER PUMP APPLICATION REQUIRES CONSIDERATION OF ADDITIONAL FACTORS. PLEASE REVIEW APPLICATION GUIDE IN SECTION 500 OR CONSULT THE FACTORY.

GHA

**FOR GHA DRIVE OPTIONS
AND DIMENSIONS**

SEE

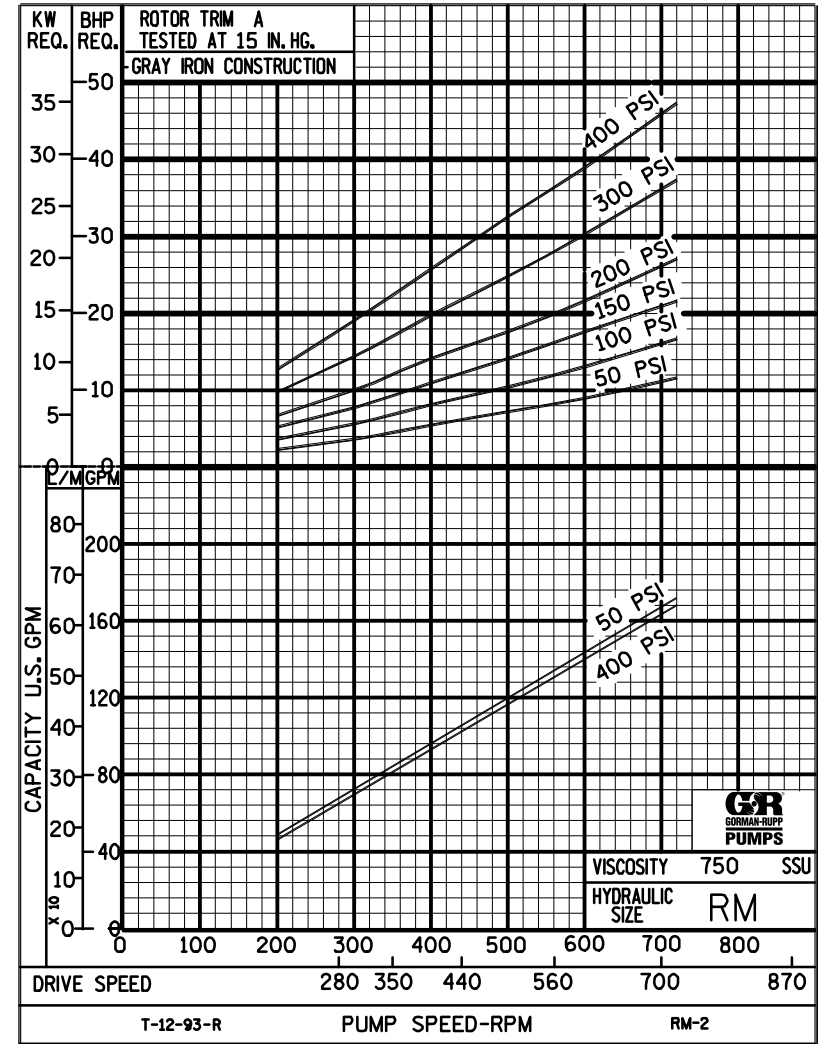
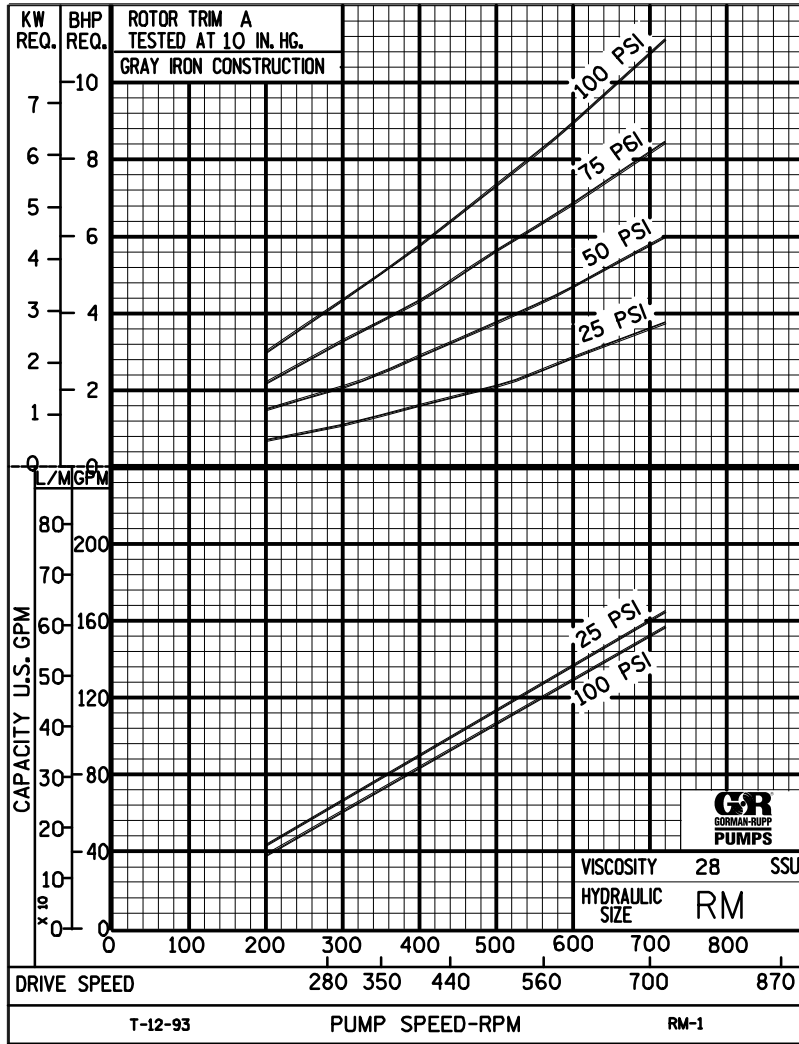
SECTION 545



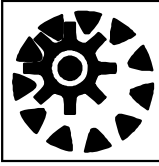
PERFORMANCE CURVES

SPEED VS. CAPACITY/HORSEPOWER

RM Hydraulic Size



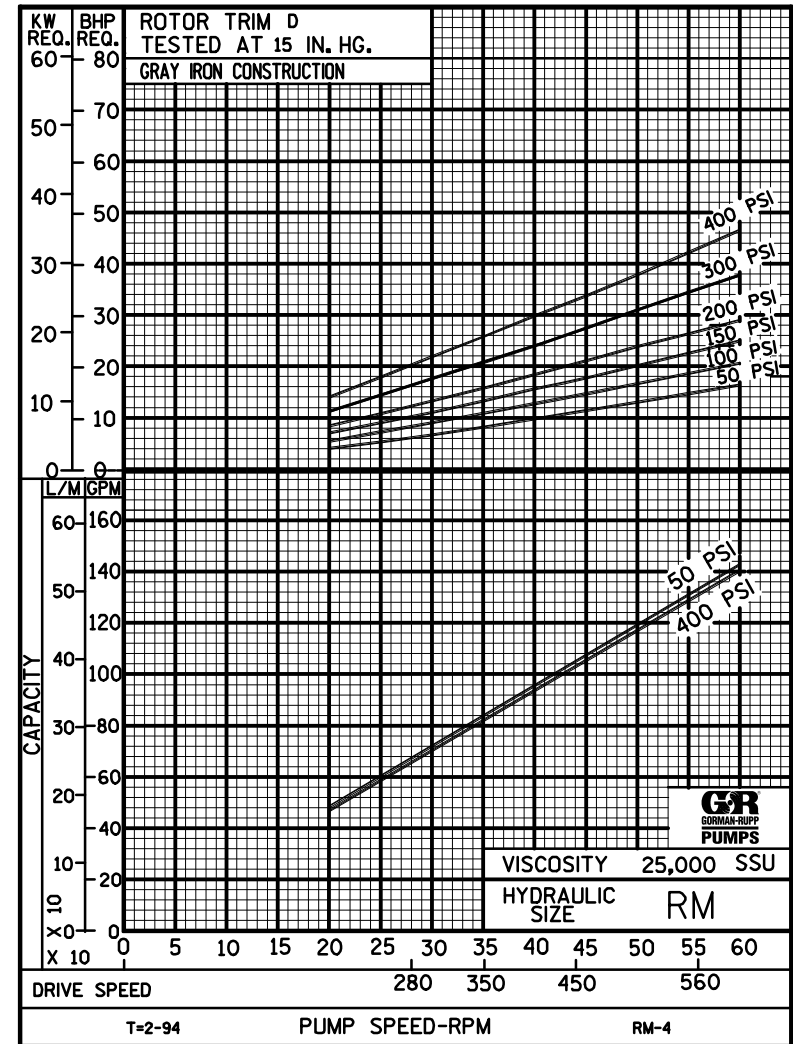
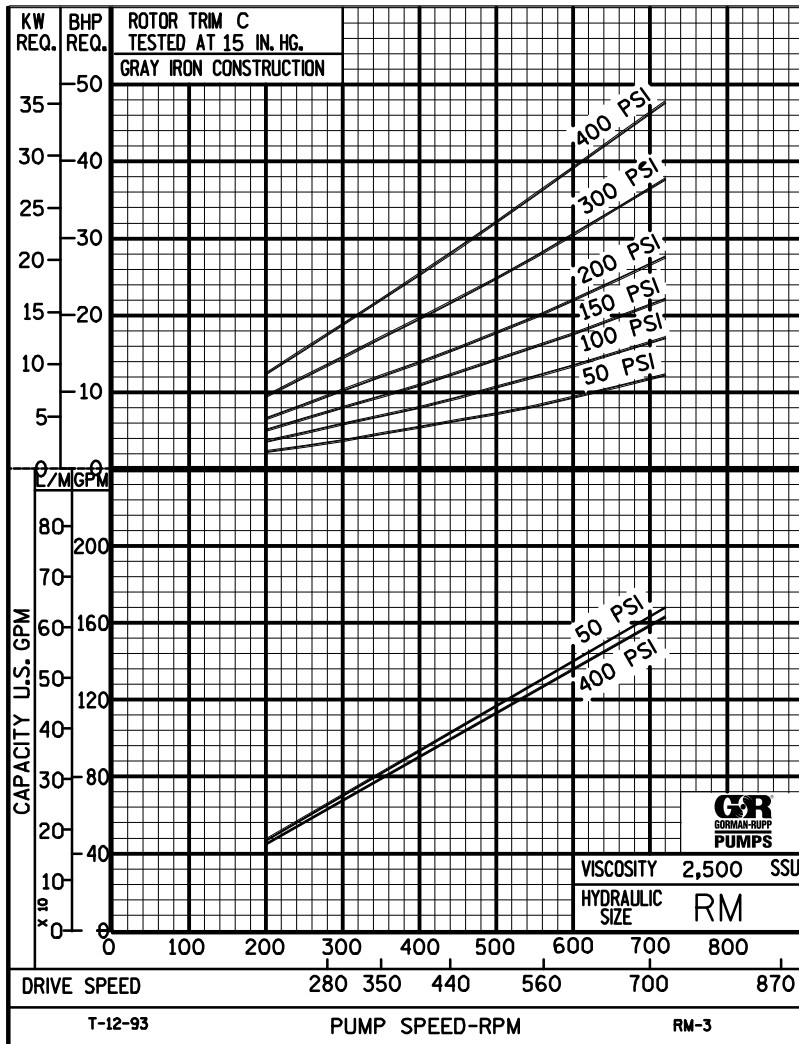
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PERFORMANCE CURVES

SPEED VS. CAPACITY/HORSEPOWER

RM Hydraulic Size



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RM

PUMP HYDRAULIC SIZE CHART

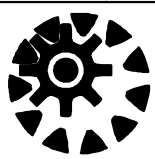
SEC. 500

Page 106
January 2010

172 GPM
720 RPM

NOMINAL		ROTOR TRIM	VISCOSITY (SSU)	N.I.P.R. (PSIA)	FRICTION PIPE LOSS (PSI/FT) (Based on Sch 40 Steel Pipe)					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"	6"	LOW PRES R/V			HI PRES R/V		25	50	75	100	150	200	300	400		
172	720	STD	28	3.1	.21	.08	.03	.01	-	58	84	121	178		165	161	159	157				
			32		.22	.09	.03	.01	-						4.1	6.2	9.1	11				
			38	3.1	.23	.10	.03	.01	-	61	87	123	181		166	163	160	159	155			
			50		.26	.11	.04	.01	-						5.2	7.8	10	13	18			
			70	3.1	.29	.12	.04	.01	-	65	90	126	185	245	168	166	164	162	160	158		
			100		.32	.14	.05	.01	-						6.8	9.2	12	14	20	25		
			150	3.1	.35	.15	.05	.01	-	69	94	130	188	250	170	168	167	166	164	163	161	158
			200		.38	.16	.06	.02	-						7.8	10	13	15	21	26	36	47
			300	3.1	.43	.19	.07	.02	-	74	100	134	193	256	171	170	170	169	168	166	166	165
			500		.50	.22	.06	.02	-						8.9	11	14	16	22	27	37	47
		750	3.2	.41	.20	.08	.03	.01	78	104	137	197	260	172	172	172	171	170	169	169	168	
		1,000		.55	.27	.11	.04	.01						9.4	12	14	17	22	27	37	48	
		2,000	3.4	1.10	.54	.23	.08	.01	85	111	143	203	269	169	168	168	168	167	167	165	163	
		3,500		1.92	.94	.40	.13	.03						11	13	16	18	23	28	38	49	
		5,000	3.6	2.74	1.35	.56	.19	.04	89	115	147	207	273	169	169	168	168	167	167	166	164	
		7,500		4.11	2.02	.85	.29	.06						11	14	17	19	24	29	39	50	
		10,000	3.9	5.48	2.69	1.13	.38	.07	93	119	150	211	278	170	169	169	168	168	168	167	165	
		15,000		8.22	4.04	1.69	.57	.11						13	15	17	21	26	31	41	52	
		20,000																				
		25,000																				
50,000																						
75,000																						
100,000																						
150,000																						
200,000																						
250,000																						

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



RM

PUMP HYDRAULIC SIZE CHART

SEC. 500

Page 107
January 2010

153 GPM
640 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"	6"	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					
153	640	STD	28	2.5	.16	.07	.02	.01	-	57	84	120	178		145	142	139	137						
			32		.17	.07	.02	.01	-							3.3	6.1	7.9	10					
			38	2.5	.19	.08	.03	.01	-	60	86	122	180		146	144	141	140	137					
			50		.20	.09	.03	.01	-							4.5	6.8	9.1	11	16				
			70	2.5	.23	.10	.03	.01	-	63	89	124	183	242		148	146	144	143	141	139			
			100		.25	.11	.04	.01	-							5.9	8.1	10	12	17	23			
			150	2.5	.28	.12	.04	.01	-	66	93	127	186	246		150	149	148	147	145	144	142	139	
			200		.31	.13	.05	.01	-							6.7	9.2	11	13	18	23	32	41	
			300	2.5	.35	.15	.05	.01	-	72	98	131	190	251		152	151	150	150	149	148	146	145	
			500		.41	.12	.05	.02	-							7.8	10	12	14	19	24	33	42	
		750	2.6	.36	.18	.07	.03	-	75	101	134	193	254		153	152	152	152	151	150	150	149		
		1,000		.48	.24	.10	.03	.01							7.9	10	12	14	19	24	33	42		
		2,000	2.7	.97	.47	.20	.07	.01	82	110	139	199	260		151	150	150	149	149	148	147	146		
		3,500		1.69	.83	.35	.12	.02							8.8	11	13	15	20	24	33	43		
		5,000	2.9	2.42	1.19	.50	.17	.03	86	112	142	202	264		151	150	150	150	149	148	147	146		
		7,500		3.63	1.78	.75	.25	.05							10	13	15	16	21	26	35	45		
		10,000	3.2	4.83	2.37	1.00	.34	.07	89	115	145	205	268		151	151	150	150	150	149	148	147		
		15,000		7.25	3.56	1.49	.50	.10							12	14	16	18	23	28	36	47		
		20,000	3.5	9.67	4.75	1.99	.67	.13	92	118	147	207	270		152	151	151	150	150	150	149	148		
		25,000		12.1	5.94	2.49	.84	.16							14	16	18	20	25	30	39	50		
50,000	"D"																							
75,000																								
100,000																								
150,000																								
200,000																								
250,000																								

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



RM

PUMP HYDRAULIC SIZE CHART

SEC. 500

Page 108

January 2010

125 GPM
520 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"	6"	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			
125	520	STD	28	1.9	.11	.05	.02	-	-	55	83	119	176	116	113	112	109					
			32		.12	.05	.02	-	-					2.3	4.1	7.1	9.8					
			38	1.9	.13	.05	.02	.01	-	57	85	121	177	118	115	113	111	108				
			50		.15	.06	.02	.01	-					3.5	5.1	7.9	10	14				
			70	1.9	.16	.07	.02	.01	-	60	88	123	180	236	120	118	117	115	113	110		
			100		.18	.08	.03	.01	-					4.5	6.1	8.9	11	15	18			
			150	1.9	.21	.09	.03	.01	-	64	91	125	182	239	122	121	120	119	117	115	113	111
			200		.22	.10	.03	.01	-					5.2	6.8	9.3	11	15	18	26	34	
			300	1.9	.25	.11	.02	.01	-	68	95	128	185	242	124	123	122	121	120	119	118	117
			500		.20	.10	.04	.01	-					5.6	7.4	9.4	11	15	18	26	34	
		750	2.0	.30	.15	.06	.02	-	72	98	130	187	244	125	124	124	123	123	122	122	121	
		1,000		.40	.20	.08	.03	.01					5.9	7.6	9.6	11	15	18	26	34		
		2,000	2.3	.81	.40	.17	.06	.01	78	104	134	191	249	123	122	122	121	120	120	118	118	
		3,500		1.41	.69	.29	.10	.02					6.7	8.4	11	12	16	19	26	34		
		5,000	2.6	2.01	.99	.42	.14	.03	81	107	136	194	252	123	123	122	122	121	121	119	119	
		7,500		3.02	1.48	.62	.21	.04					8.4	10	12	14	17	21	28	35		
		10,000	2.9	4.03	1.98	.83	.28	.05	85	110	139	196	254	124	123	123	122	122	122	120	120	
		15,000		6.04	2.97	1.25	.42	.08					10	12	14	16	19	23	30	37		
		20,000	3.2	8.06	3.96	1.66	.56	.11	87	112	140	197	256	124	124	123	123	123	123	122	121	
		25,000		10.1	4.95	2.08	.70	.14					12	13	16	17	21	25	32	39		
50,000	4.6	20.1	9.90	4.15	1.40	.27	93	117	143	202	260	124	124	123	123	123	123	122	121			
75,000		30.2	14.8	6.23	2.10	.41					16	18	20	22	26	30	38	45				
100,000																						
150,000																						
200,000																						
250,000																						

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



RM

PUMP HYDRAULIC SIZE CHART

SEC. 500

Page 109
January 2010

**85 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"	6"	LOW PRES R/V		HI PRES R/V			MEDIUM DUTY AND HEAVY DUTY				HEAVY DUTY ONLY										
85	350	STD	28	1.3	.05	.02	.01	-	-	54	81	117	171		78	74	72	70											
			32		.06	.02	.01	-	-								1.3	3.1	4.1	5.2									
			38	1.3	.06	.03	.01	-	-	55	82	118	172		79	75	74	72	70										
			50		.07	.03	.01	-	-								2.1	3.1	4.8	6.1	7.9								
			70	1.3	.08	.04	.01	-	-	58	85	119	173	227		80	78	77	76	74	73								
			100		.09	.04	.01	-	-								2.8	3.8	5.3	6.6	8.6	11							
			150	1.3	.11	.05	.02	-	-							82	80	79	79	78	78	77	76						
			200		.12	.05	.02	-	-	61	87	121	174	228		3.3	4.1	5.8	6.9	9.1	12	17	22						
			300	1.3	.13	.04	.02	.01	-							83	82	81	81	80	80	80	79						
			500		.14	.07	.03	.01	-	65	90	123	176	230		3.4	4.2	5.9	7.1	9.3	12	17	22						
		750	1.4	.21	.10	.04	.01	-							84	83	83	82	82	82	82	81							
		1,000		.27	.13	.06	.02	-	67	93	124	177	231		3.4	4.3	6.0	7.2	9.4	12	17	22							
		2,000	1.6	.55	.27	.11	.04	.01							73	97	127	179	233										
		3,500		.96	.47	.20	.07	.01								3.6	5.1	6.2	7.9	9.8	12	17	22						
		5,000	1.8	1.37	.67	.28	.10	.02							75	100	128	181	235										
		7,500		2.05	1.01	.42	.14	.03								4.6	5.8	7.1	9.1	11	13	19	23						
		10,000	2.2	2.74	1.35	.56	.19	.04							78	102	130	182	236										
		15,000		4.11	2.02	.85	.29	.06								5.6	7.1	8.2	10	12	14	20	25						
		20,000	2.6	5.48	2.69	1.13	.38	.07							80	104	131	183	237										
		25,000		6.85	3.36	1.41	.48	.09								6.8	8.1	9.5	11	13	16	21	26						
50,000	4.1	13.7	6.73	2.82	.95	.18							85	108	133	185	239												
75,000		20.6	10.0	4.23	1.43	.28								10	12	14	15	17	19	25	30								
100,000	5.6	27.4	13.5	5.64	1.90	.37							87	110	134	186	240												
150,000		41.0	20.2	8.47	2.86	.55								13	15	17	18	22	24	30	35								
200,000	7.5	54.8	27.0	11.3	3.81	.74							89	112	135	187	241												
250,000		68.5	33.7	14.1	4.76	.92								15	17	19	20	26	27	33	39								

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



RM

SEC. 500

PAGE 109.1

February 2025

24 GPM
100 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							
					2½"	3"	4"	5"	6"	DIFFERENTIAL PRESSURE (PSI)											
										25	50	75	100	150	200	300	400				
24	100	STD																			
				"D"																	
					200,000	2.3	7.6	3.2	1.1	0.4	0.2	24	24	24	24	24	24	23	23		
					399,999		15.2	6.4	2.2	0.9	0.4	3.6	4.1	4.5	4.9	5.6	6.4	7.1	7.7		
					400,000	2.6						24	24	24	24	24	24	23	23		
					599,999		23	9.6	3.2	1.3	0.6	4.1	4.5	4.9	5.3	6.0	6.8	7.6	8.2		
			600,000	3.2						24	24	24	24	24	24	23	23				
			799,999		NR	13	4.3	1.8	0.8	4.5	4.9	5.3	5.7	6.4	7.2	7.9	8.6				
			800,000	3.5						24	24	24	24	24	24	23	23				
			1M		NR	16	5.4	2.2	1	5.0	5.3	5.7	6.1	6.8	7.6	8.4	9.1				

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