

**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]	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

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 ■								
GHA 3 RM 3-B ● GHA 3 RM 4-B ■								
GHA 3 RP 3-B ● GHA 3 RP 4-B ■								
GHA 3 RR 3-B ● GHA 3 RR 4-B ■								
GHA 3 RS 3-B ● GHA 3 RS 4-B ■								
GHA 4 RS 3-B ● GHA 4 RS 4-B ■								
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 ■								
GHA 3 SU 3-B ● GHA 3 SU 4-B ■								
GHA 4 SU 3-B ● GHA 4 SU 4-B ■								

■ PORTS ARE COMPATIBLE WITH 125# ANSI CAST IRON FLANGES. ALL OTHER PORTS ARE TAPPED NPT FOR ANSI PIPE.

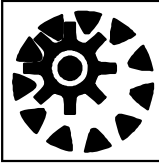
NOTE: PROPER PUMP APPLICATION REQUIRES CONSIDERATION OF ADDITIONAL FACTORS. PLEASE REVIEW APPLICATION GUIDE IN SECTION 500 OR CONSULT THE FACTORY.

GHA

**FOR GHA DRIVE OPTIONS
AND DIMENSIONS**

SEE

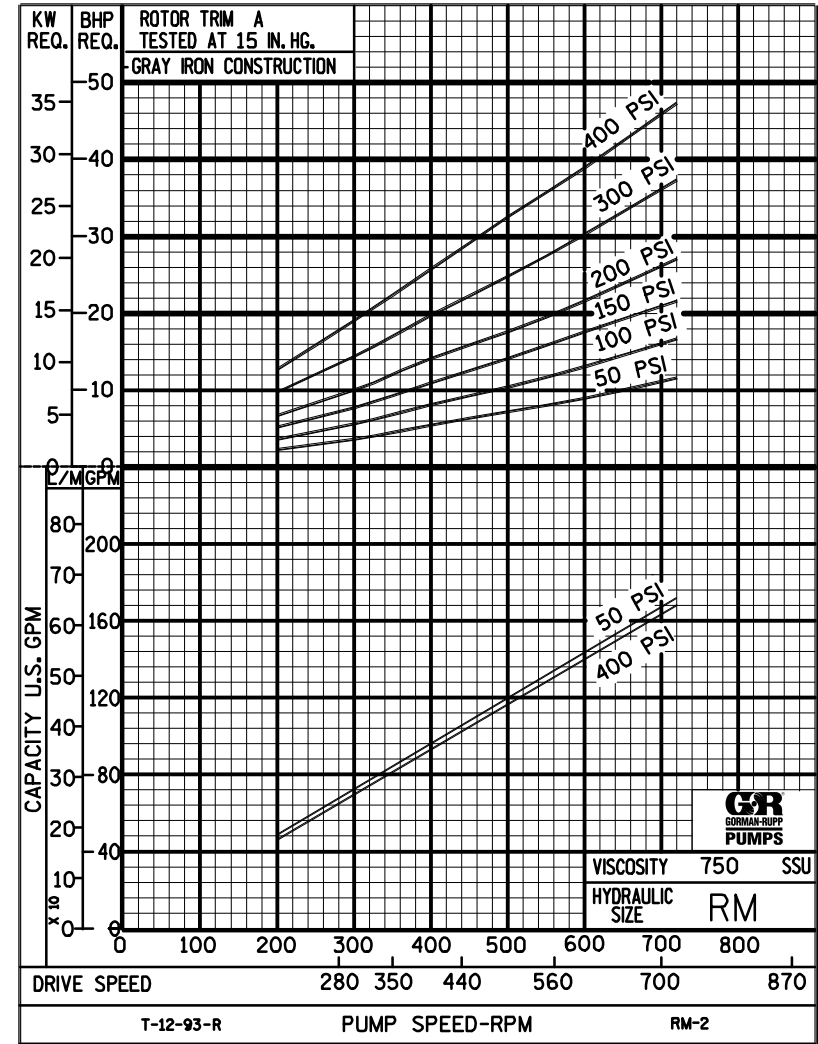
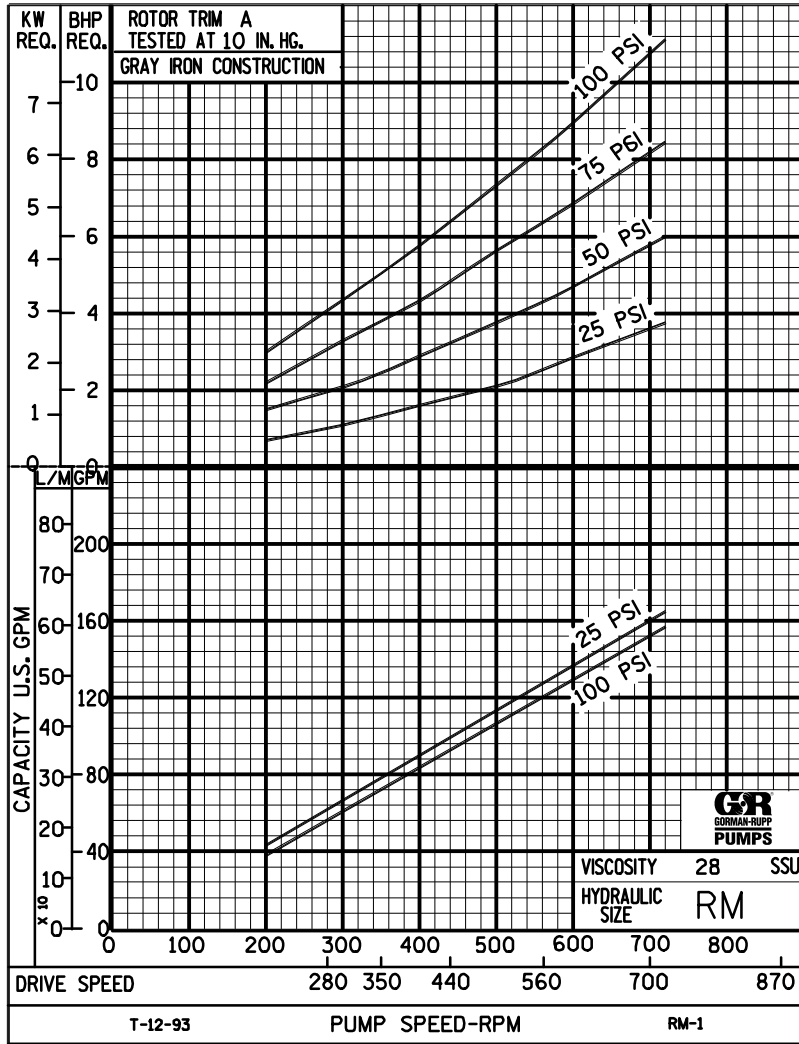
SECTION 545



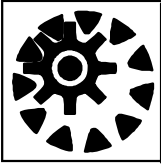
PERFORMANCE CURVES

SPEED VS. CAPACITY/HORSEPOWER

RM Hydraulic Size



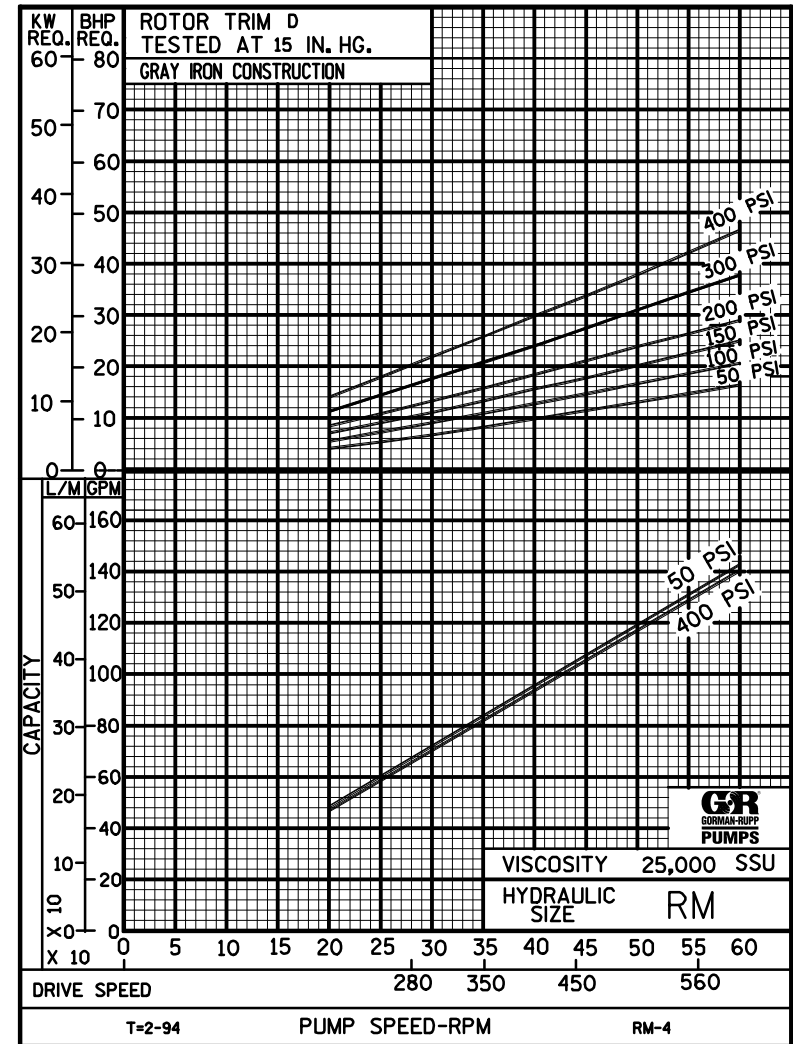
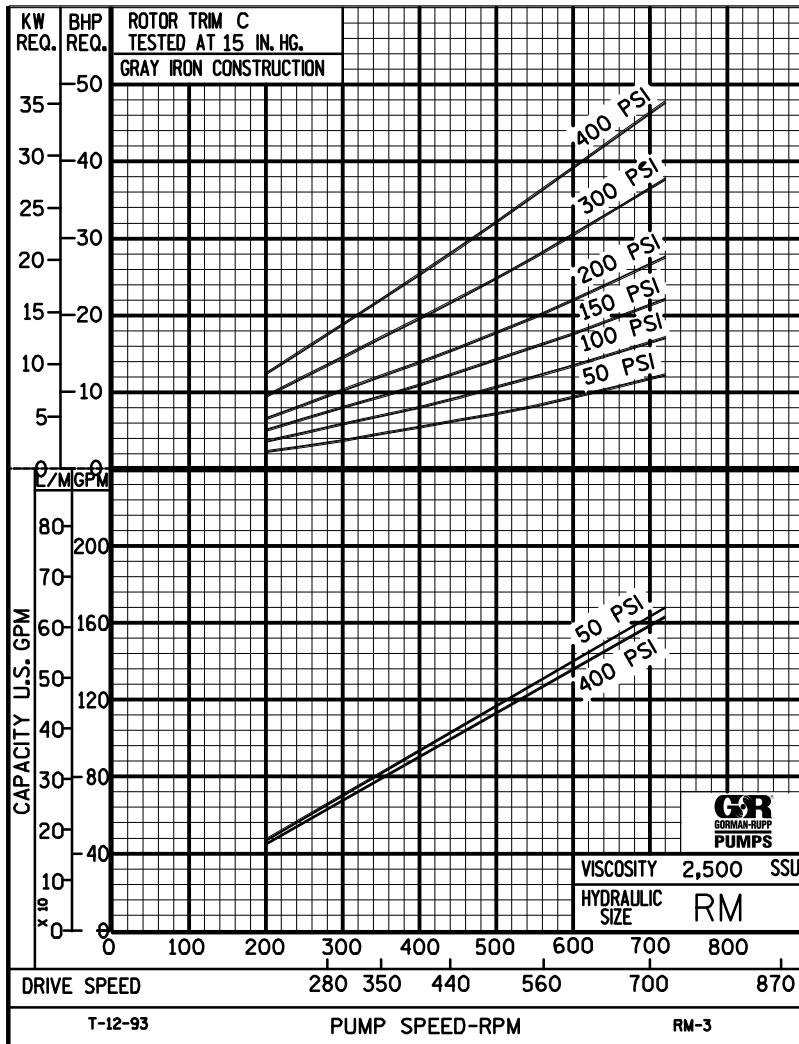
THE GORMAN-RUPP COMPANY • MANSFIELD, OHIO
 GORMAN-RUPP OF CANADA LIMITED • ST. THOMAS, ONTARIO, CANADA



PERFORMANCE CURVES

SPEED VS. CAPACITY/HORSEPOWER

RM Hydraulic Size



THE GORMAN-RUPP COMPANY • MANSFIELD, OHIO
GORMAN-RUPP OF CANADA LIMITED • ST. THOMAS, ONTARIO, CANADA



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												
					50	75	100	150	200	HEAVY DUTY																								
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

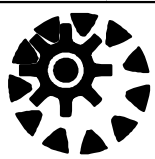
Page 107

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

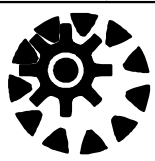
Page 108

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								
						50	75	100	150	200	25	50	75	100	150	200	300	400									
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	-	-	61	87	121	174	228		82	80	79	79	78	78	77	76				
			200		.12	.05	.02	-	-							3.3	4.1	5.8	6.9	9.1	12	17	22				
			300	1.3	.13	.04	.02	.01	-	65	90	123	176	230		83	82	81	81	80	80	80	80	79			
			500		.14	.07	.03	.01	-							3.4	4.2	5.9	7.1	9.3	12	17	22				
		750	1.4	.21	.10	.04	.01	-	67	93	124	177	231		84	83	83	82	82	82	82	81	81				
		1,000		.27	.13	.06	.02	-							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		83	82	82	81	81	80	80	79					
		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		83	83	83	82	82	81	80	80					
		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		83	83	82	82	82	82	81	81					
		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		84	83	83	83	83	82	82	82					
		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		84	83	83	83	83	82	82	82							
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		84	83	83	83	83	82	82	82							
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		84	83	83	83	83	82	82	82							
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.