



**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

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

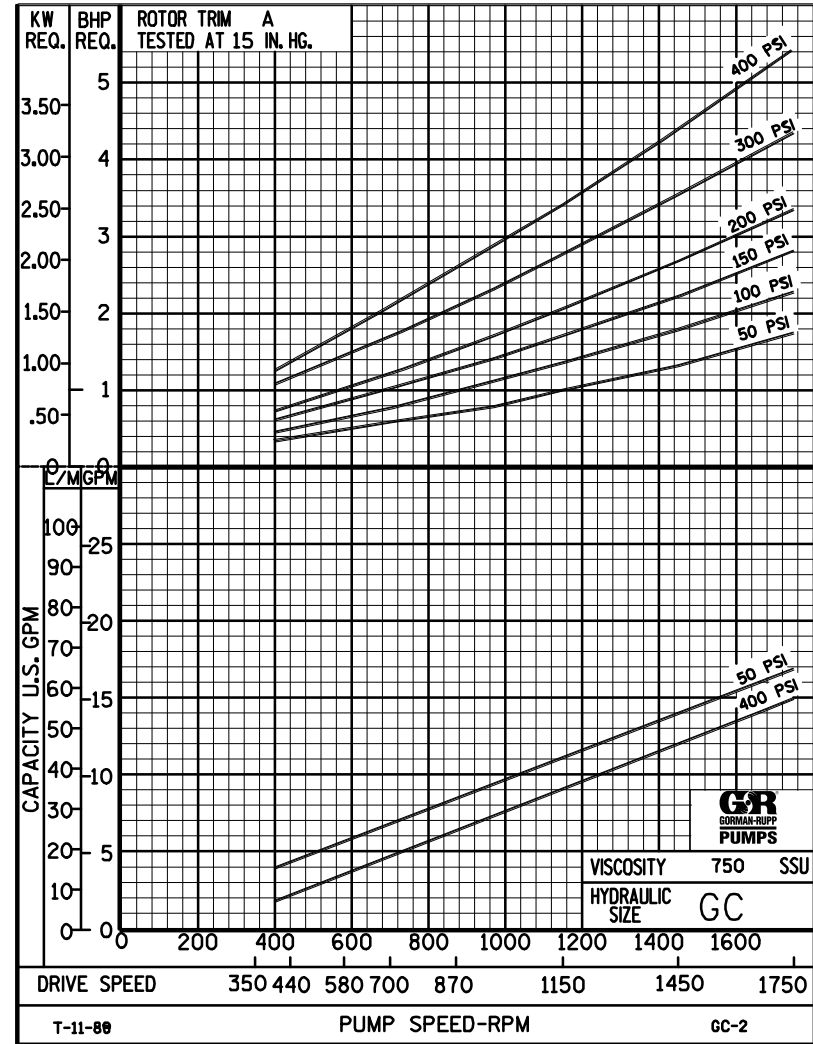
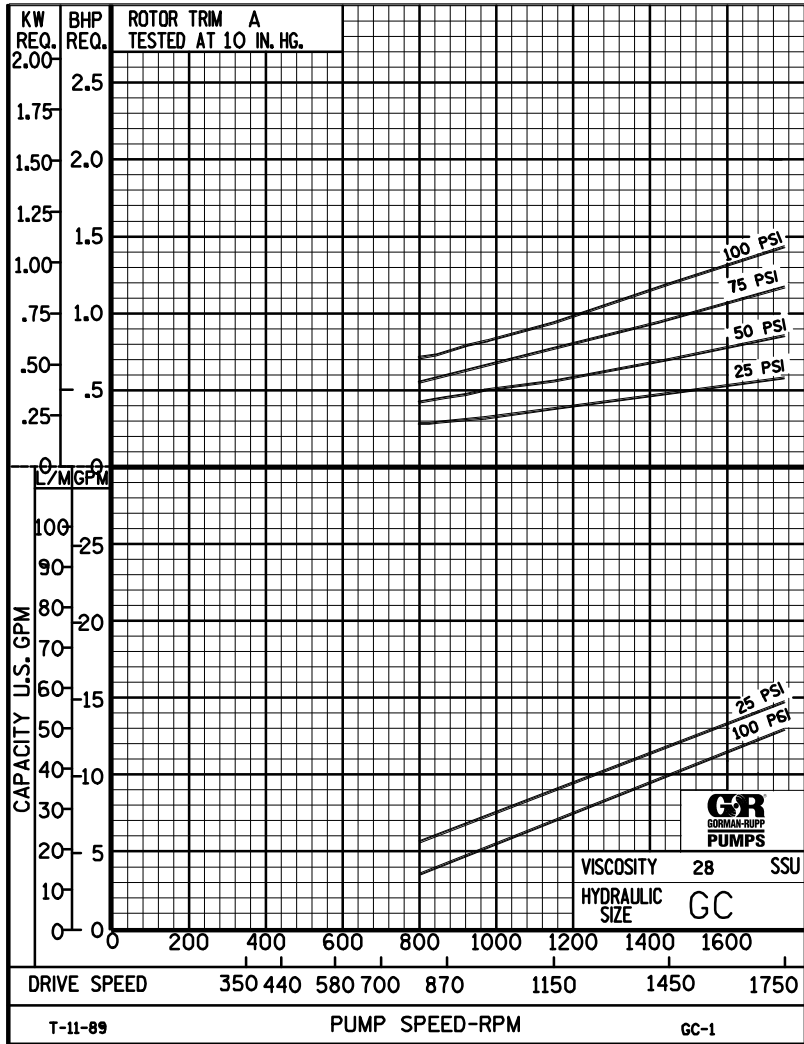
SECTION 545



PERFORMANCE CURVES

SPEED VS. CAPACITY/HORSEPOWER

GC Hydraulic Size



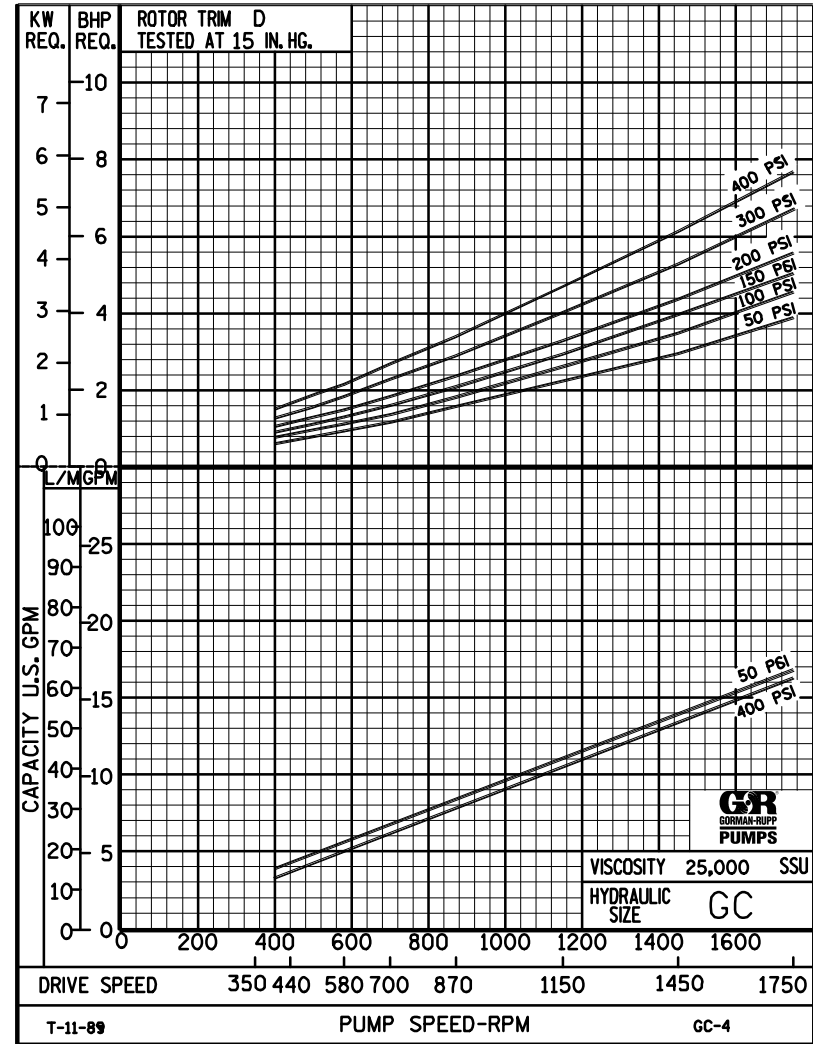
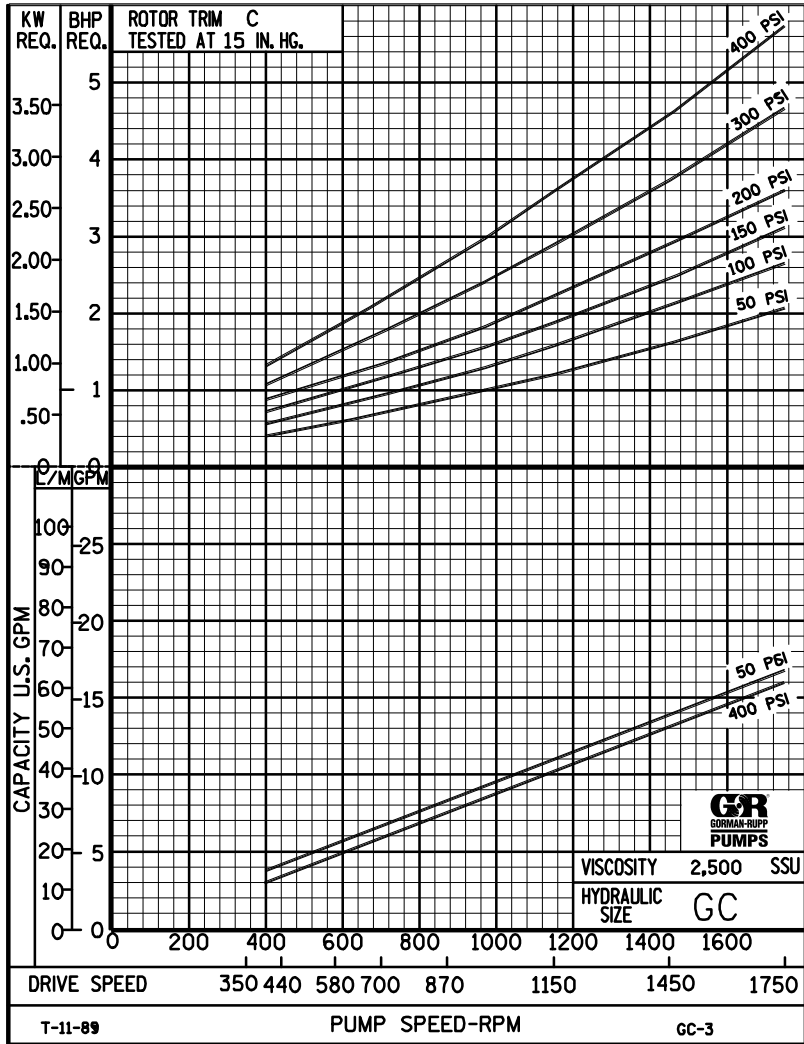
THE GORMAN-RUPP COMPANY • MANSFIELD, OHIO
 GORMAN-RUPP OF CANADA LIMITED • ST. THOMAS, ONTARIO, CANADA



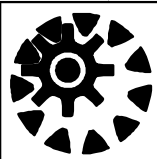
PERFORMANCE CURVES

SPEED VS. CAPACITY/HORSEPOWER

GC Hydraulic Size



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



GC

PUMP HYDRAULIC SIZE CHART

SEC. 500

Page 40

January 2010

**16 GPM
1750 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)														
					3/4"	1"	1 1/4"	1 1/2"	2"	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							
16	1750	STD	28	3.6	.01	.01	.01	.01	.01	60	87	112			14.0	13.0	13.0	12.0											
			32		.19	.06	.02	.01	.01						.58	.85	1.2	1.4											
			38	3.6	.24	.08	.02	.01	.01	60	87	112	162			15.0	14.0	14.0	13.0	12.0									
			50		.30	.10	.03	.01	.01							.88	1.0	1.3	1.6	2.2									
			70	3.6	.35	.11	.03	.02	.01	61	88	114	164	216			16.0	15.0	15.0	14.0	14.0	13.0							
			100		.40	.13	.03	.02	.01								1.1	1.2	1.5	1.8	2.3	2.8							
			150	3.6	.45	.16	.04	.02	.01	61	88	114	164	218			16.0	16.0	16.0	15.0	15.0	14.0	14.0	12.0					
			200		.50	.19	.06	.04	.01								1.2	1.4	1.7	2.0	2.5	3.1	4.1	5.2					
			300	3.6	.62	.24	.08	.04	.02	61	88	116	166	220			16.0	16.0	16.0	16.0	15.0	15.0	15.0	13.0					
			500		1.02	.39	.13	.07	.03								1.4	1.6	2.0	2.2	2.8	3.3	4.2	5.4					
		750	3.6	1.53	.59	.20	.11	.04	61	88	116	166	223			17.0	17.0	16.0	16.0	16.0	16.0	15.0	15.0						
		1,000		2.04	.78	.26	.14	.05								1.5	1.8	2.0	2.3	2.8	3.3	4.3	5.5						
				"C"	2,000	4.5	4.08	1.56	.52	.28	.11	63	91	116	166	223			17.0	16.0	16.0	16.0	16.0	16.0	16.0	15.0	15.0		
					3,500		7.14	2.72	.91	.49	.18								1.8	2.1	2.4	2.7	3.1	3.6	4.7	5.7			
					5,000	5.0	10.2	3.89	1.30	.70	.26	66	93	118	168	225			17.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0		
					7,500		15.3	5.83	1.95	1.05	.39								2.2	2.6	3.0	3.2	3.7	4.1	5.2	6.2			
					10,000	5.7	20.4	7.77	2.60	1.40	.52	69	95	120	170	225			17.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0		
					15,000		30.6	11.7	3.89	2.10	.78								2.8	3.2	3.5	3.8	4.3	4.8	5.9	6.9			
				20,000	6.1	40.8	15.6	5.19	2.80	1.03	73	98	123	173	225			16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0			
				25,000		51.0	19.4	6.49	3.50	1.29								3.4	3.9	4.2	4.6	5.0	5.6	6.6	7.7				
		50,000																											
		75,000																											
		100,000																											
		150,000																											
		200,000																											
		250,000																											

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



GC

PUMP HYDRAULIC SIZE CHART

SEC. 500

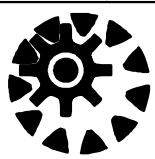
Page 41

January 2010

**10 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)												
					3/4"	1"	1 1/4"	1 1/2"	2"	LOW PRES R/V			HI PRES R/V		MEDIUM DUTY AND HEAVY DUTY				HEAVY DUTY ONLY								
10	1150	STD	28	2.0	.01	.01	.01	.01	.01	56	81	106				9.0	8.0	7.0	6.0								
			32		.08	.03	.01	.01	.01							.38	.56	.77	.94								
			38	2.0	.11	.04	.01	.01	.01	56	81	106	157				9.5	8.5	8.5	7.5	6.0						
			50		.13	.04	.01	.01	.01								.43	.62	.82	.99	1.6						
			70	2.0	.14	.05	.02	.01	.01	56	81	107	158	209				10.0	9.5	9.5	9.0	8.0	7.5				
			100		.14	.05	.02	.01	.01									.54	.78	1.0	1.2	1.7	1.9				
			150	2.0	.17	.07	.03	.02	.01	57	82	108	158	211				10.0	10.0	10.0	10.0	9.5	8.5	7.5	6.0		
			200		.30	.12	.04	.02	.01									.58	.82	1.0	1.2	1.7	2.0	2.7	3.4		
			300	2.0	.39	.15	.05	.02	.01	57	82	109	159	212				11.0	10.0	10.0	10.0	10.0	10.0	9.0	7.5		
			500		.64	.24	.08	.05	.02									.66	.95	1.2	1.4	1.8	2.0	2.8	3.5		
		750	2.0	.96	.36	.12	.07	.03	57	82	111	161	214				11.0	11.0	11.0	11.0	10.0	10.0	9.5	9.0			
		1,000		1.28	.49	.16	.09	.03									.73	1.0	1.2	1.4	1.8	2.1	2.9	3.5			
		2,000	2.5	2.55	.97	.33	.18	.07	58	85	112	162	214				11.0	11.0	11.0	11.0	10.0	10.0	10.0	10.0			
		3,500		4.46	1.70	.57	.31	.12									.91	1.3	1.5	1.7	2.0	2.3	3.0	3.7			
		5,000	2.9	6.38	2.43	.81	.44	.16	60	85	112	162	214				11.0	11.0	11.0	11.0	11.0	10.0	10.0	10.0			
		7,500		9.57	3.64	1.22	.66	.24									1.1	1.5	1.8	1.9	2.4	2.6	3.3	3.9			
		10,000	3.2	12.8	4.86	1.62	.88	.32	63	88	114	166	216				11.0	11.0	11.0	11.0	11.0	11.0	10.0	10.0			
		15,000		19.2	7.29	2.43	1.31	.49									1.3	1.9	2.1	2.2	2.7	2.9	3.6	4.3			
		20,000	3.5	25.5	9.71	3.24	1.75	.65	66	91	116	168	218				11.0	11.0	11.0	11.0	11.0	11.0	10.0	10.0			
		25,000		31.9	12.2	4.05	2.19	.81									1.7	2.3	2.4	2.6	2.9	3.3	4.0	4.7			
50,000	5.4	63.8	24.3	8.11	4.38	1.61	69	94	122	172	224				11.0	11.0	11.0	11.0	11.0	11.0	10.0	10.0					
75,000		95.7	36.4	12.2	6.56	2.42									2.6	3.6	3.8	4.0	4.5	5.2	6.0	6.8					
100,000																											
150,000																											
200,000																											
250,000																											

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



GC

PUMP HYDRAULIC SIZE CHART

SEC. 500

Page 42

January 2010

**8 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)														
					3/4"	1"	1 1/4"	1 1/2"	2"	LOW PRES R/V		HI PRES R/V			MEDIUM DUTY AND HEAVY DUTY				HEAVY DUTY ONLY										
8	870	STD	28	1.4	.01	.01	.01	.01	.01	56	81	106				6.5	5.5	4.5	4.0										
			32		.06	.02	.01	.01	.01							.28	.45	.61	.77										
			38	1.4	.07	.03	.01	.01	.01	56	81	106	157				7.0	6.5	6.0	5.5	4.5								
			50		.09	.03	.01	.01	.01								.39	.49	.65	.79	1.2								
			70	1.4	.10	.04	.01	.01	.01	56	81	107	158	209				7.5	7.5	7.0	6.5	6.0	5.5						
			100		.10	.04	.01	.01	.01									.42	.53	.71	.83	1.2	1.4						
			150	1.4	.15	.05	.02	.01	.01	57	82	108	158	211				8.0	8.0	7.5	7.5	7.5	7.0	6.0	4.5				
			200		.24	.08	.03	.02	.01									.44	.55	.74	.90	1.2	1.5	2.0	2.6				
			300	1.4	.31	.12	.04	.02	.01	57	82	109	159	212				8.5	8.0	8.0	8.0	7.5	7.0	6.5	5.5				
			500		.51	.19	.07	.04	.01									.52	.64	.80	.97	1.3	1.5	2.1	2.6				
			750	1.4	.77	.29	.10	.05	.02	57	82	111	161	214				8.5	8.5	8.0	8.0	8.0	8.0	7.0	6.5				
			1,000		1.02	.39	.14	.07	.03									.62	.71	.86	1.0	1.3	1.5	2.1	2.6				
		2,000	1.8	2.04	.78	.26	.14	.05	58	85	112	162	214				8.5	8.0	8.0	8.0	8.0	8.0	7.5	7.5					
		3,500		3.57	1.36	.46	.25	.09									.76	.90	1.0	1.4	1.5	1.6	2.2	2.7					
		5,000	2.1	5.01	1.94	.65	.35	.13	60	85	112	162	214				8.5	8.0	8.0	8.0	8.0	8.0	8.0	7.5					
		7,500		7.65	2.91	.97	.53	.19									.92	1.2	1.3	1.4	1.6	1.9	2.3	2.9					
		10,000	2.4	10.2	3.88	1.30	.70	.26	63	88	114	166	216				8.5	8.0	8.0	8.0	8.0	8.0	8.0	7.5					
		15,000		15.3	5.83	1.95	1.05	.39									1.1	1.4	1.5	1.6	1.8	2.1	2.6	3.2					
		20,000	2.7	20.4	7.77	2.59	1.40	.52	66	91	116	168	218				8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0					
		25,000		25.5	9.71	3.24	1.75	.65									1.2	1.6	1.7	1.8	2.1	2.3	2.9	3.4					
		50,000	4.3	51.1	19.4	6.50	3.50	1.29	68	93	120	170	222				8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0					
		75,000		76.5	29.1	9.73	5.25	1.93									1.8	2.5	2.6	2.7	3.0	3.3	3.8	4.3					
		100,000	6.2	102	38.9	13.0	7.00	2.58	70	95	122	172	224				8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0					
		150,000		153	58.0	19.5	10.5	3.87									2.3	3.1	3.3	3.4	3.6	3.9	4.4	5.0					
200,000																													
250,000																													

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



GC

PUMP HYDRAULIC SIZE CHART

SEC. 500

Page 43

January 2010

**5 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)													
					3/4"	1"	1 1/4"	1 1/2"	2"	LOW PRES R/V			HI PRES R/V		MEDIUM DUTY AND HEAVY DUTY				HEAVY DUTY ONLY									
5	580	STD	28	1.0	.01	.01	.01	.01	.01	55	80	105			4.0	3.5	3.0	2.5										
			32		.03	.01	.01	.01	.01						.19	.29	.40	.50										
			38	1.0	.04	.01	.01	.01	.01	55	80	105	156			4.5	4.0	3.5	3.0	2.5								
			50		.05	.02	.01	.01	.01							.21	.32	.45	.52	.76								
			70	1.0	.06	.02	.01	.01	.01	55	80	106	157	208			5.0	4.5	4.0	4.0	3.5	3.5						
			100		.07	.03	.01	.01	.01								.25	.34	.46	.54	.78	.93						
			150	1.0	.09	.04	.01	.01	.01	56	81	107	157	210			5.0	5.0	4.5	4.5	4.5	4.0	3.5	3.0				
			200		.17	.06	.02	.01	.01								.28	.36	.48	.59	.78	.95	1.3	1.3				
			300	1.0	.22	.08	.03	.02	.01	56	81	108	158	211			5.5	5.0	5.0	5.0	4.5	4.5	4.0	3.5				
			500		.35	.14	.05	.03	.01								.34	.42	.52	.63	.80	.97	1.3	1.6				
		750	1.0	.53	.20	.07	.04	.02	56	81	110	160	213			5.5	5.5	5.5	5.5	5.0	5.0	4.5	4.0					
		1,000		.70	.27	.09	.05	.02								.41	.46	.56	.65	.82	.99	1.4	1.7					
		2,000	1.3	1.40	.54	.18	.10	.04	57	84	111	161	213			5.5	5.5	5.5	5.5	5.0	5.0	5.0	4.5					
		3,500		2.46	.94	.31	.17	.06								.49	.59	.67	.77	.92	1.1	1.4	1.7					
		5,000	1.6	3.51	1.34	.45	.24	.09	59	84	111	161	213			5.5	5.5	5.5	5.5	5.5	5.5	5.0	5.0					
		7,500		5.26	2.00	.67	.36	.13								.61	.75	.84	.93	1.1	1.2	1.5	1.9					
		10,000	1.9	7.01	2.67	.89	.48	.18	62	87	113	165	215			5.5	5.5	5.5	5.5	5.5	5.5	5.0	5.0					
		15,000		10.5	4.00	1.34	.72	.27								.70	.89	.96	1.1	1.2	1.4	1.7	2.1					
		20,000	2.1	14.1	5.34	1.78	.96	.36	65	90	115	167	217			5.5	5.5	5.5	5.5	5.5	5.5	5.0	5.0					
		25,000		17.6	6.68	2.23	1.20	.44								.75	.94	1.0	1.1	1.3	1.5	1.9	2.2					
50,000	3.6	35.0	13.4	4.46	2.41	.89	67	92	119	169	221			5.5	5.5	5.5	5.5	5.5	5.5	5.0	5.0							
75,000		52.6	20.0	6.69	3.61	1.33								1.3	1.6	1.7	1.7	1.9	2.1	2.4	2.8							
100,000	5.4	70.2	26.7	8.92	4.81	1.77	69	94	121	171	223			5.5	5.5	5.5	5.5	5.5	5.5	5.0	5.0							
150,000		105	40.1	13.4	7.22	2.66								1.6	2.1	2.1	2.2	2.4	2.5	2.8	3.2							
200,000	8.6	140	53.4	17.8	9.63	3.54	75	100	129	179	235			5.5	5.5	5.5	5.5	5.5	5.5	5.0	5.0							
250,000		175	66.8	22.3	12.1	4.43								1.9	2.5	2.5	2.6	2.8	2.9	3.2	3.6							

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