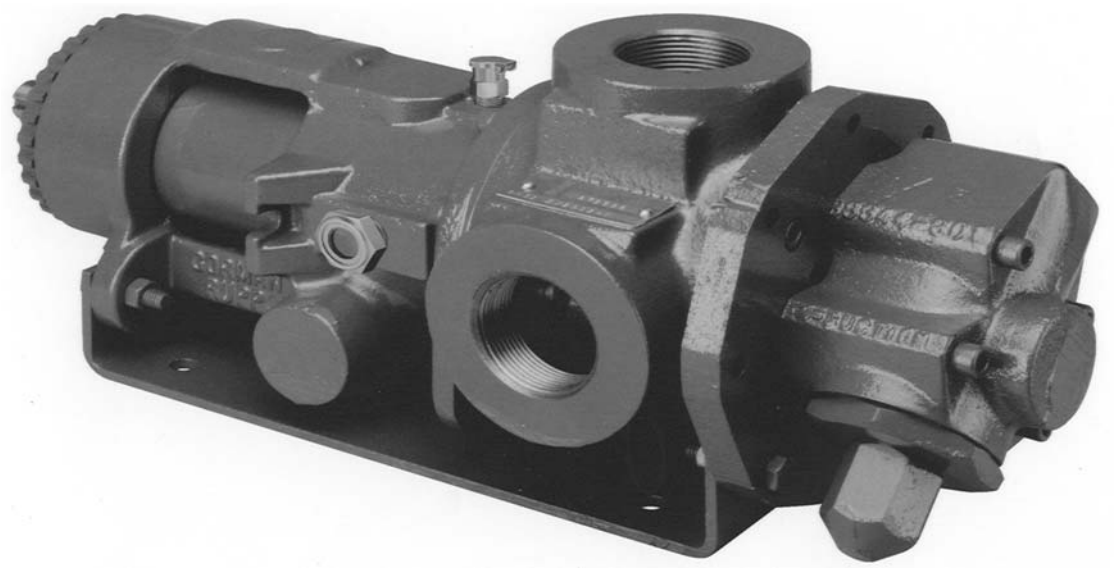
GORMAN-RUPP
ROTARY GEAR PUMPS

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

Standard Construction

EXTERIOR	ROTOR & IDLER	HSG PORTS	IDLER BUSHING	BACKHD BEARING	IDLER PIN	SHAFT	SHAFT SEALING		ROTATION	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 SIZE | SEAL | STYLE

MODEL NUMBER	NOM. CAPACITY-SPEED MAXIMUM GPM [LPM]	NOM. CAPACITY-SPEED MAXIMUM RPM 60 Hz [50 HZ]	MAXIMUM DIFFERENTIAL PRESSURE - PSI [BAR] BELOW 38 SSU [4 cSt]	38 TO 100 SSU [21 cSt]	100 TO 250,000 SSU [55,000 cSt]	MAXIMUM TEMP. °F [°C]	SHIPPING DATA ② Weight LBS [KG]	SHIPPING DATA Volume CU. FT.
GHA 1-1/2 GC 3-B ● GHA 1-1/2 GC 4-B ■	8 [25]	870 [720]	100 [7]	150 [10]	200 [14]	● 250 [119] ■ 500 [260]	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]					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]						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

Standard Models Cont'd

MODEL NUMBER	NOM. CAPACITY-SPEED MAXIMUM GPM [LPM]	NOM. CAPACITY-SPEED MAXIMUM RPM 60 Hz [50 HZ]	MAXIMUM DIFFERENTIAL PRESSURE - PSI [BAR] BELOW 38 SSU [4 cSt]	MAXIMUM DIFFERENTIAL PRESSURE - PSI [BAR] 38 TO 100 SSU [21 cSt]	MAXIMUM DIFFERENTIAL PRESSURE - PSI [BAR] 100 TO 250,000 SSU [55,000 cSt]	MAXIMUM TEMP. °F [°C]	SHIPPING DATA Weight LBS [KG]	SHIPPING DATA Volume 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]	350 [290]					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

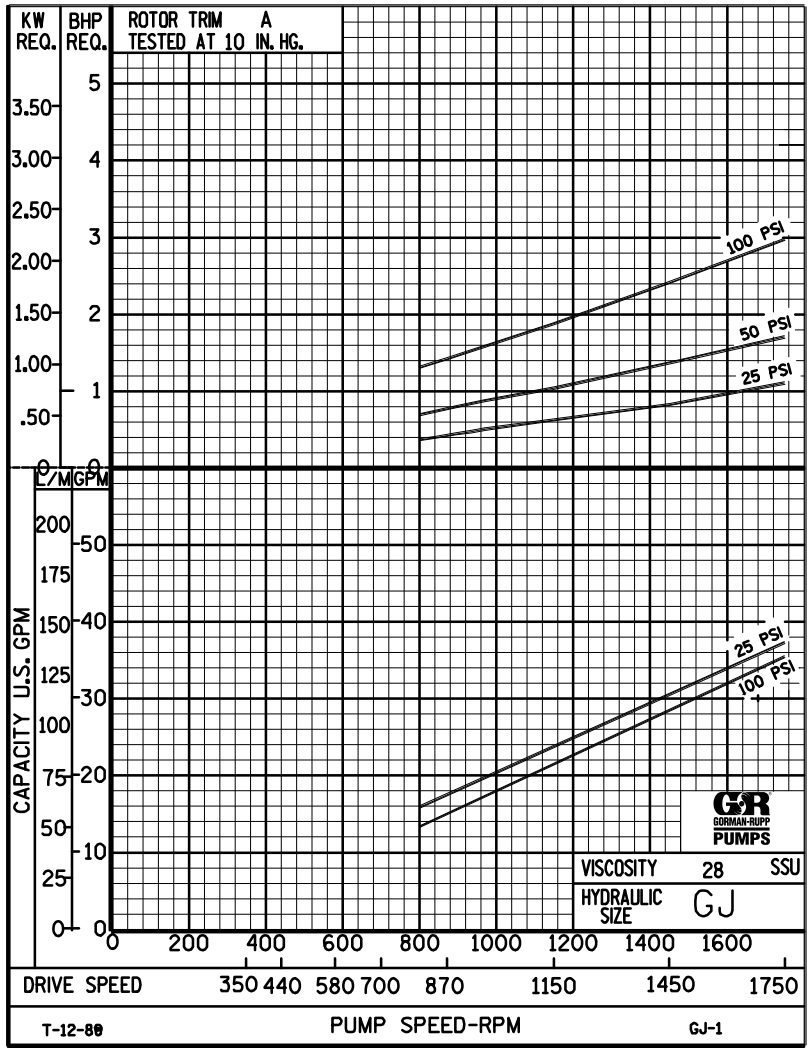
SEE

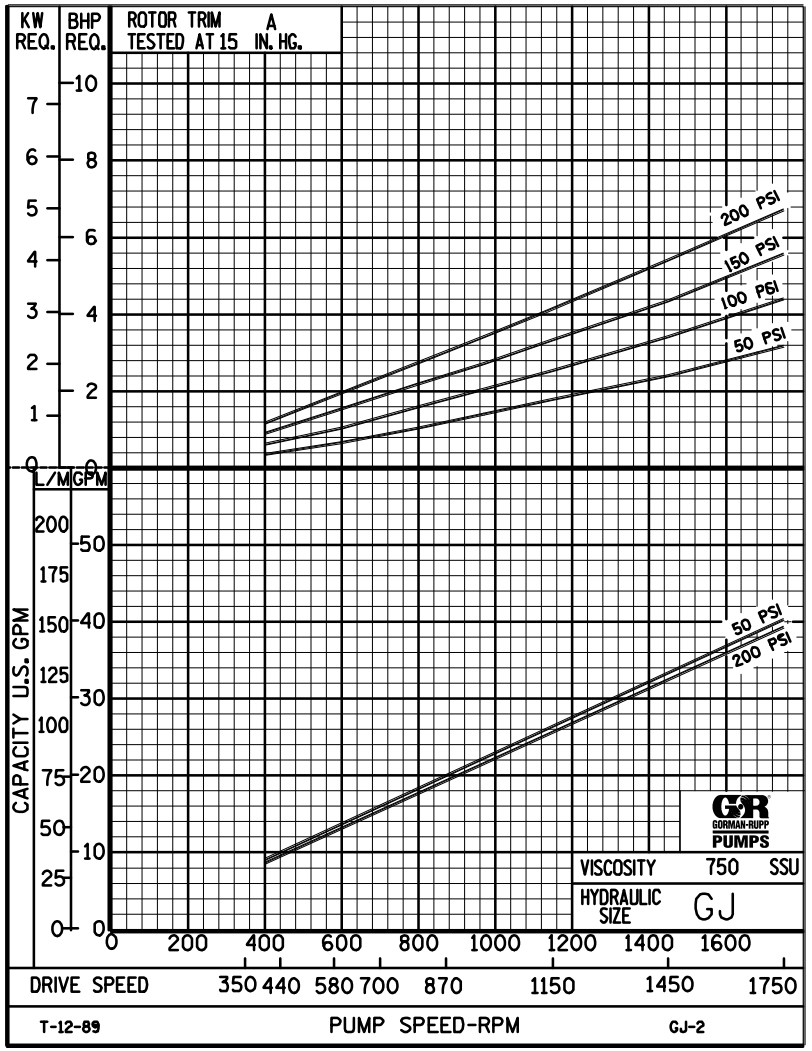
SECTION 545

PERFORMANCE CURVES

SPEED VS. CAPACITY/HORSEPOWER

GJ Hydraulic Size

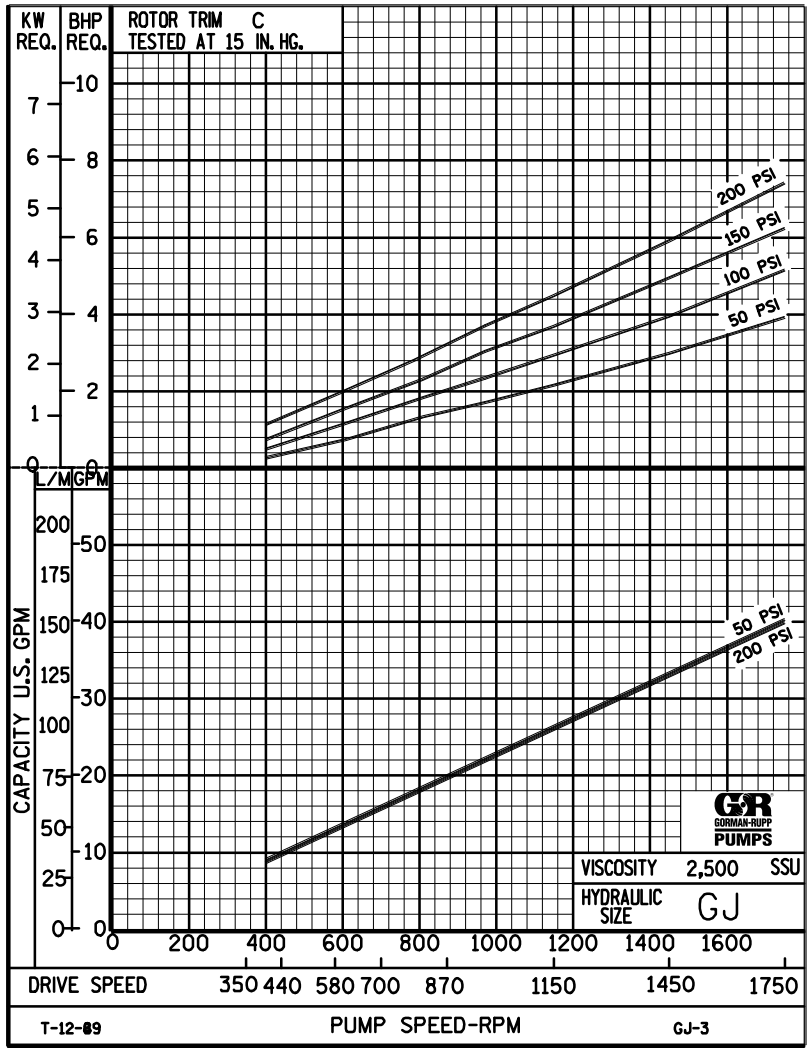


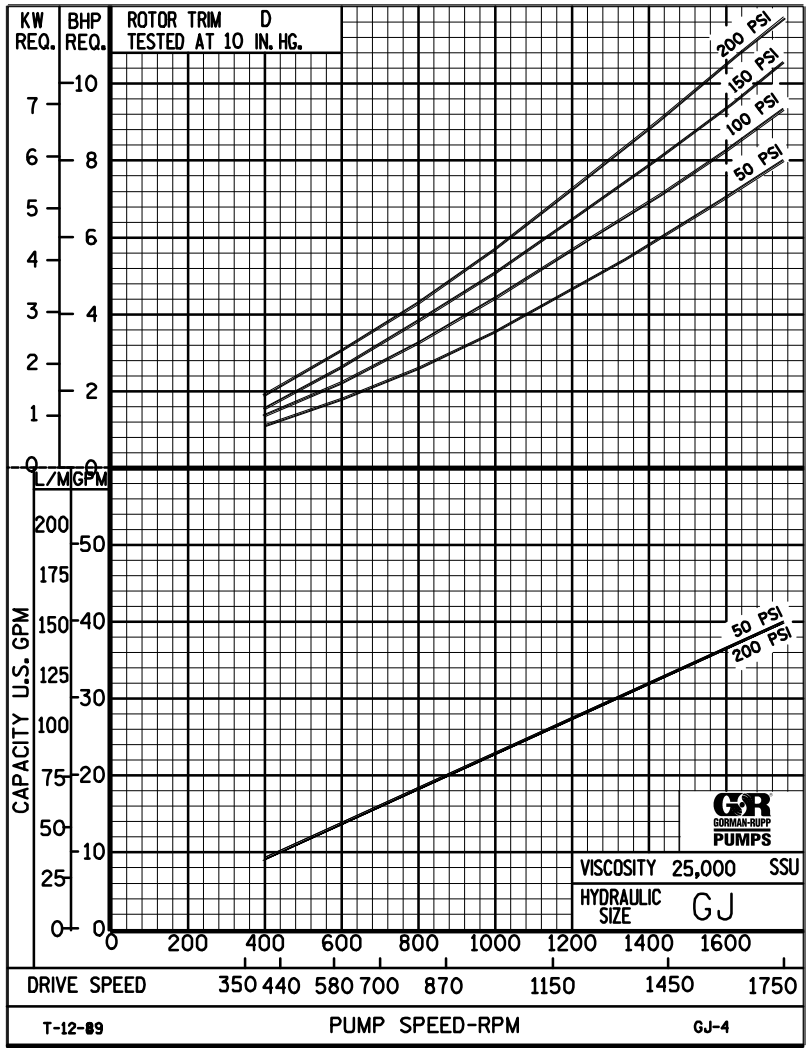


PERFORMANCE CURVES

SPEED VS. CAPACITY/HORSEPOWER

GJ Hydraulic Size





GORMAN-RUPP
ROTARY GEAR PUMPS

GJ

PUMP HYDRAULIC SIZE CHART

38 GPM
1750 RPM

NOMINAL CAP. GPM	NOMINAL SPEED RPM	ROTOR TRIM	VISCOSITY (SSU)	N.I.P.R. (PSIA)	FRICTION PIPE LOSS (PSI/FT) (Based on Sch 40 Steel Pipe) PIPE DIAMETER ¾"	1"	1¼"	1½"	2"	FULL BYPASS RELIEF VALVE PRESSURE (PSI) CRACKING PRESS. (PSI) LOW PRES R/V 50	75	100	HI PRES R/V 150	200	CAPACITY (GPM) / H.P. REQUIRED DIFFERENTIAL PRESSURE (PSI) 25	50	75	100	150	200	300	400
															MEDIUM DUTY AND HEAVY DUTY					HEAVY DUTY ONLY		
38	1750	STD	28	4.5	.02	.01	.01	.01	.01	74	100	127			37	36	36	35				
			32		.88	.28	.08	.04	.01						1.1	1.7	2.4	3.0				
			38	4.5	1.12	.35	.10	.05	.02	74	100	128	180		38	37	37	37	36			
			50		1.33	.44	.12	.06	.02						1.5	2.0	2.6	3.2	4.5			
			70	4.5	1.45	.46	.13	.06	.02	76	101	128	182	240	39	38	38	38	37	36		
			100		1.74	.56	.16	.08	.03						1.5	2.1	2.8	3.4	4.7	6.0		
			150	4.5	1.91	.63	.17	.08	.03	78	103	130	184	242	39	39	39	38	38	38		
			200		2.26	.72	.18	.09	.03						1.9	2.5	3.1	3.7	4.9	6.1		
			300	4.5	2.45	.81	.19	.10	.04	78	103	132	184	244	40	40	39	39	39	38		
			500		2.82	.92	.31	.17	.06						2.1	2.8	3.6	4.3	5.4	6.5		
			750	4.5	3.64	1.39	.46	.25	.09	80	105	134	186	246	40	40	40	40	39	39		
			1,000		4.85	1.85	.62	.33	.12						2.3	3.2	3.8	4.4	5.6	6.7		
		"C"	2,000	5.9	9.69	3.69	1.23	.67	.25	80	105	136	186	247	40	40	40	40	39	39		
			3,500		17.0	6.46	2.16	1.17	.43						3.3	3.9	4.6	5.1	6.3	7.4		
			5,000	6.8	24.3	9.23	3.08	1.66	.61	86	106	136	186	247	40	40	40	40	40	40		
			7,500		36.4	13.9	4.62	2.50	.92						4.8	5.3	5.9	6.5	7.6	8.8		
			10,000	7.7	48.5	18.5	6.16	3.33	1.23	92	117	142	192	247	40	40	40	40	40	40		
			15,000		72.7	27.7	9.24	4.99	1.84						6.0	6.7	7.2	7.8	9.0	10		
			20,000	8.5	97.0	36.9	12.3	6.65	2.45	98	123	148	198	248	40	40	40	40	40	40		
		"D"	25,000		121	46.1	15.4	8.31	3.06						7.4	8.0	8.7	9.4	11	12		
			50,000																			
			75,000																			
			100,000																			
			150,000																			
			200,000																			
			250,000																			

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

GORMAN-RUPP ROTARY GEAR PUMPS

GJ

PUMP HYDRAULIC SIZE CHART

25 GPM
1150 RPM

NOMINAL CAP. GPM	NOMINAL SPEED RPM	ROTOR TRIM	VISCOSITY (SSU)	N.I.P.R. (PSIA)	FRICTION PIPE LOSS (PSI/FT) (Based on Sch 40 Steel Pipe) PIPE DIAMETER ¾"	1"	1¼"	1½"	2"	FULL BYPASS RELIEF VALVE PRESSURE (PSI) CRACKING PRESS. (PSI) LOW PRES R/V 50	75	100	HI PRES R/V 150	200	CAPACITY (GPM) / H.P. REQUIRED DIFFERENTIAL PRESSURE (PSI) 25	50	75	100	150	200	300	400
															MEDIUM DUTY AND HEAVY DUTY					HEAVY DUTY ONLY		
25	1150	STD	28	2.5	.01	.01	.01	.01	.01	66	92	118			23	23	22	21				
			32		.42	.13	.04	.02	.01						.63	1.0	1.5	1.9				
			38	2.5	.53	.17	.05	.02	.01	66	92	118	170		24	24	23	22	21			
			50		.64	.21	.06	.03	.01						.95	1.2	1.6	2.0	2.6			
			70	2.5	.70	.23	.06	.03	.01	67	93	120	170	230	25	25	24	23	23	22		
			100		.85	.27	.08	.04	.01						1.2	1.4	1.7	2.1	3.0	3.7		
			150	2.5	.94	.32	.08	.04	.01	67	93	122	172	232	26	26	25	24	24	22		
			200		.97	.35	.10	.06	.02						1.3	1.5	1.9	2.3	3.1	3.8		
			300	2.5	.99	.37	.13	.07	.03	68	95	122	174	234	26	26	25	25	25	24		
			500		1.60	.61	.21	.11	.04						1.3	1.7	2.3	2.5	3.5	4.0		
			750	2.5	2.39	.91	.31	.17	.06	68	95	124	174	235	26	26	26	26	25	25		
			1,000		3.19	1.22	.41	.22	.08						1.3	1.8	2.2	2.5	3.3	4.2		
		"C"	2,000	3.4	6.38	2.43	.81	.44	.16	69	98	125	175	235	26	26	26	26	26	26		
			3,500		11.2	4.25	1.42	.77	.28						1.8	2.3	2.8	3.2	3.9	4.7		
			5,000	4.0	16.0	6.07	2.03	1.09	.41	78	105	130	180	237	26	26	26	26	26	26		
			7,500		23.9	9.10	3.04	1.64	.61						2.4	2.9	3.4	3.7	4.7	5.2		
			10,000	4.7	31.9	12.2	4.06	2.19	.81	87	112	137	187	237	26	26	26	26	26	26		
			15,000		47.8	18.2	6.08	3.28	1.21						2.9	3.7	4.2	4.5	5.4	6.0		
			20,000	5.2	63.8	24.3	8.11	4.38	1.61	87	112	137	187	237	26	26	26	26	26	26		
		"D"	25,000		79.7	30.4	10.2	5.47	2.02						4.0	4.5	4.9	5.3	6.1	6.8		
			50,000																			
			75,000																			
			100,000																			
			150,000																			
			200,000																			
			250,000																			

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

GORMAN-RUPP ROTARY GEAR PUMPS

GJ

PUMP HYDRAULIC SIZE CHART

19 GPM
870 RPM

NOMINAL CAP. GPM	NOMINAL SPEED RPM	ROTOR TRIM	VISCOSITY (SSU)	N.I.P.R. (PSIA)	FRICTION PIPE LOSS (PSI/FT) (Based on Sch 40 Steel Pipe) PIPE DIAMETER ¾"	1"	1¼"	1½"	2"	FULL BYPASS RELIEF VALVE PRESSURE (PSI) CRACKING PRESS. (PSI) LOW PRES R/V 50	75	100	HI PRES R/V 150	200	CAPACITY (GPM) / H.P. REQUIRED DIFFERENTIAL PRESSURE (PSI) 25	50	75	100	150	200	300	400
															MEDIUM DUTY AND HEAVY DUTY					HEAVY DUTY ONLY		
19	870	STD	28	1.7	.01	.01	.01	.01	.01	64	90	116			17	16	16	15				
			32		.26	.08	.02	.01	.01						.45	.79	1.1	1.4				
			38	1.7	.33	.11	.03	.02	.01	64	90	116	168		18	17	17	16	15			
			50		.40	.13	.04	.02	.01						.58	.81	1.1	1.5	2.2			
			70	1.7	.44	.14	.04	.02	.01	65	91	118	168	228	19	18	18	17	17	16		
			100		.53	.17	.05	.02	.01						.61	.85	1.3	1.6	2.4	2.7		
			150	1.7	.58	.19	.06	.03	.01	65	91	120	170	230	19	19	18	18	18	17		
			200		.62	.23	.08	.04	.01						.65	.90	1.4	1.6	2.6	3.0		
			300	1.7	.74	.28	.10	.05	.02	66	93	120	172	232	19	19	19	19	18	18		
			500		1.21	.46	.16	.09	.03						.77	1.1	1.4	1.7	2.7	3.1		
			750	1.7	1.82	.69	.23	.13	.05	66	93	122	172	233	20	20	19	19	19	19		
			1,000		2.43	.92	.31	.17	.06						.81	1.3	1.6	1.9	2.9	3.3		
		"C"	2,000	2.5	4.85	1.85	.62	.33	.12	67	96	123	173	233	20	20	20	19	19	19		
			3,500		8.48	3.23	1.08	.58	.22						1.2	1.5	1.9	2.1	3.1	3.4		
			5,000	3.1	12.1	4.61	1.54	.83	.31	76	103	128	178	235	20	20	20	20	19	19		
			7,500		18.2	6.92	2.31	1.25	.46						1.6	2.0	2.3	2.6	3.5	3.8		
			10,000	3.7	24.3	9.23	3.08	1.66	.61	85	110	135	185	235	20	20	20	20	19	19		
			15,000		36.4	13.9	4.62	2.50	.92						2.1	2.5	2.9	3.3	3.9	4.4		
			20,000	4.1	48.5	18.5	6.16	3.33	1.23	85	110	135	185	235	19	19	19	19	19	19		
		"D"	25,000		60.6	23.1	7.70	4.16	1.53						2.8	2.9	3.2	3.6	4.1	5.0		
			50,000	4.5	121	46.2	15.4	8.32	3.06	85	114	141	193	246	19	19	19	19	19	19		
			75,000		–	–	–	–	–						3.7	4.1	4.5	4.9	5.2	5.6		
			100,000																			
			150,000																			
			200,000																			
			250,000																			

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

GORMAN-RUPP
ROTARY GEAR PUMPS

GJ

PUMP HYDRAULIC SIZE CHART

13 GPM
580 RPM

NOMINAL CAP. GPM	NOMINAL SPEED RPM	ROTOR TRIM	VISCOSITY (SSU)	N.I.P.R. (PSIA)	FRICTION PIPE LOSS (PSI/FT) (Based on Sch 40 Steel Pipe) PIPE DIAMETER ¾"	1"	1¼"	1½"	2"	FULL BYPASS RELIEF VALVE PRESSURE (PSI) CRACKING PRESS. (PSI) LOW PRES R/V 50	75	100	HI PRES R/V 150	200	CAPACITY (GPM) / H.P. REQUIRED DIFFERENTIAL PRESSURE (PSI) 25	50	75	100	150	200	300	400
															MEDIUM DUTY AND HEAVY DUTY					HEAVY DUTY ONLY		
13	580	STD	28	1.2	.01	.01	.01	.01	.01	58	84	109			11	11	10	10				
			32		.13	.04	.01	.01	.01						.36	.60	.81	1.0				
			38	1.2	.17	.06	.02	.01	.01	58	84	109	159		12	11	11	11	10			
			50		.21	.07	.02	.01	.01						.47	.63	.93	1.2	1.7			
			70	1.2	.23	.08	.03	.01	.01	60	86	111	161	219	12	12	12	11	11	10		
			100		.28	.09	.03	.01	.01						.50	.69	.99	1.3	1.8	2.0		
			150	1.2	.34	.11	.04	.02	.01	60	86	111	162	220	13	12	12	12	12	11		
			200		.43	.15	.06	.03	.01						.57	.80	1.1	1.3	1.8	2.1		
			300	1.2	.52	.20	.07	.04	.01	62	88	113	164	222	13	13	13	12	12	12		
			500		.83	.34	.11	.06	.02						.66	.92	1.2	1.4	1.8	2.2		
			750	1.2	1.26	.49	.16	.09	.03	62	88	113	164	222	13	13	13	13	12.9	12		
			1,000		1.68	.65	.21	.12	.05						.74	1.1	1.3	1.5	1.9	2.2		
		"C"	2,000	1.9	3.23	1.32	.44	.24	.09	63	90	115	165	223	13	13	13	13	12	12		
			3,500		6.10	2.31	.77	.42	.16						.92	1.3	1.5	1.7	2.1	2.2		
			5,000	2.4	8.25	3.28	1.11	.58	.23	67	92	117	165	223	13	13	13	13	13	13		
			7,500		13.1	5.01	1.61	.89	.33						1.2	1.7	1.9	2.1	2.5	2.9		
			10,000	2.9	17.8	6.85	2.22	1.21	.45	70	96	120	166	224	13	13	13	13	13	13		
			15,000		25.2	9.90	3.41	1.83	.68						1.4	1.7	2.0	2.2	2.6	3.0		
			20,000	3.3	34.4	13.0	4.33	2.28	.91	74	99	122	166	224	13	13	13	13	13	13		
		"D"	25,000		45.3	16.8	5.54	3.01	1.11						1.6	1.8	2.1	2.3	2.7	3.1		
			50,000	5.5	85.2	32.6	11.2	6.22	2.21	84	109	132	176	234	13	13	13	13	13	13		
			75,000		132	48.8	16.9	9.31	3.28						2.4	2.6	2.9	3.1	3.6	3.9		
			100,000																			
			150,000																			
			200,000																			
			250,000																			

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

GORMAN-RUPP ROTARY GEAR PUMPS

GJ

5 GPM
200 RPM

NOMINAL		VISCOSITY		N.I.P.R	FRICTION PIPE LOSS (PSI/FT) (Schedule 40 Steel Pipe)					CAPACITY (GPM)				H.P. REQUIRED			
					PIPE DIAMETER					MEDIUM-DUTY & HEAVY-DUTY				HEAVY-DUTY ONLY			
										DIFFERENTIAL PRESSURE (PSI)							
GPM	RPM	ROTOR TRIM	(SSU)	(PSIa)	1½"	2"	2½"	3"	4"	25	50	75	100	150	200	300	400
5	200	STD															
		"D"	200,000	2.6	8.8	3.2	1.6	0.7	0.2	4.6	4.6	4.6	4.6	4.5	4.5	4.5	4.5
			399,999		17.5	6.5	3.2	1.3	0.5	1.2	1.2	1.2	1.3	1.5	1.6	1.9	2.2
			400,000	2.9						4.6	4.6	4.6	4.6	4.5	4.5	4.5	4.5
			599,999		NR	9.7	4.8	2	0.7	1.4	1.4	1.4	1.5	1.7	1.8	2.0	2.3
			600,000	3.6						4.6	4.6	4.6	4.6	4.5	4.5	4.5	4.5
			799,999		NR	12.9	6.3	2.7	0.9	1.6	1.6	1.6	1.7	1.9	2.0	2.2	2.5
			800,000	4						4.6	4.6	4.6	4.6	4.5	4.5	4.5	4.5
			1M		NR	16.1	7.9	3.3	1.1	1.9	1.9	1.9	2.0	2.2	2.3	2.5	2.7

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