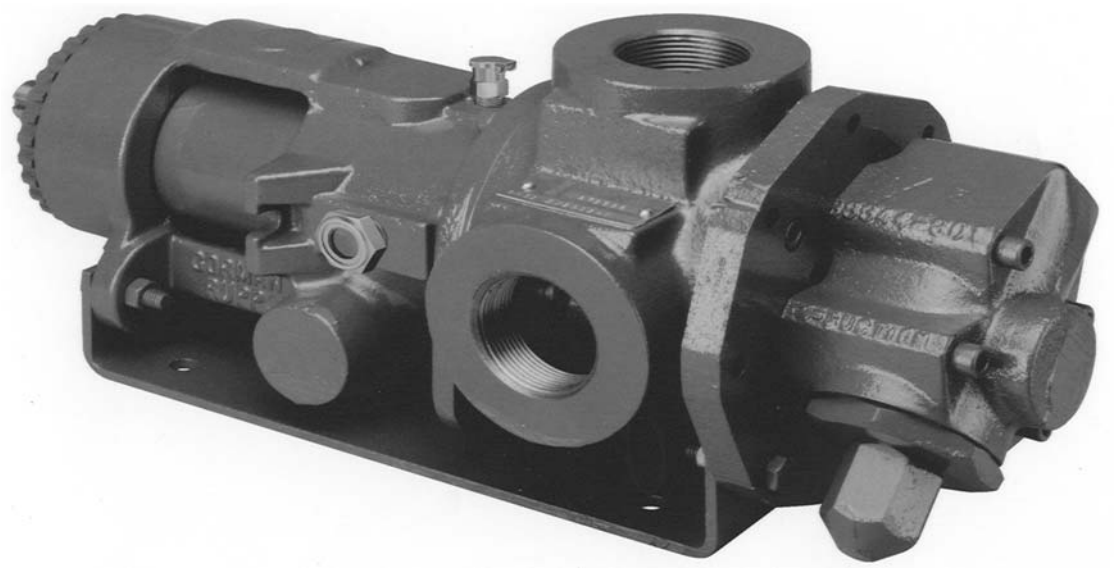
GORMAN-RUPP
ROTARY GEAR PUMPS

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

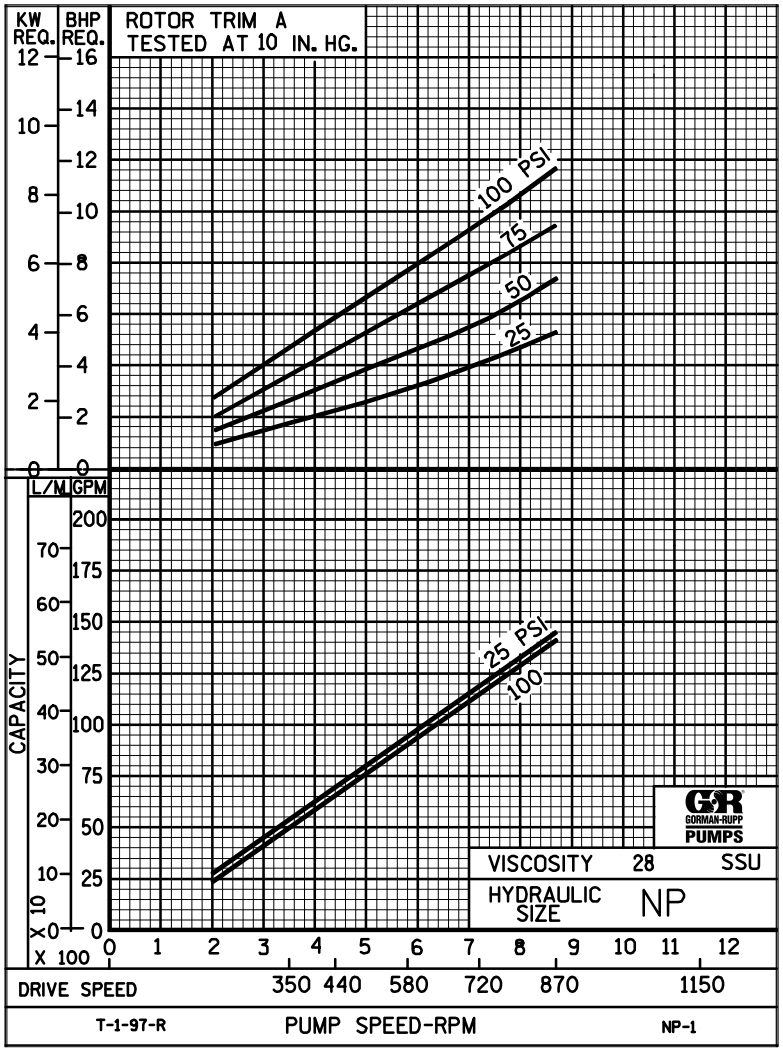
SEE

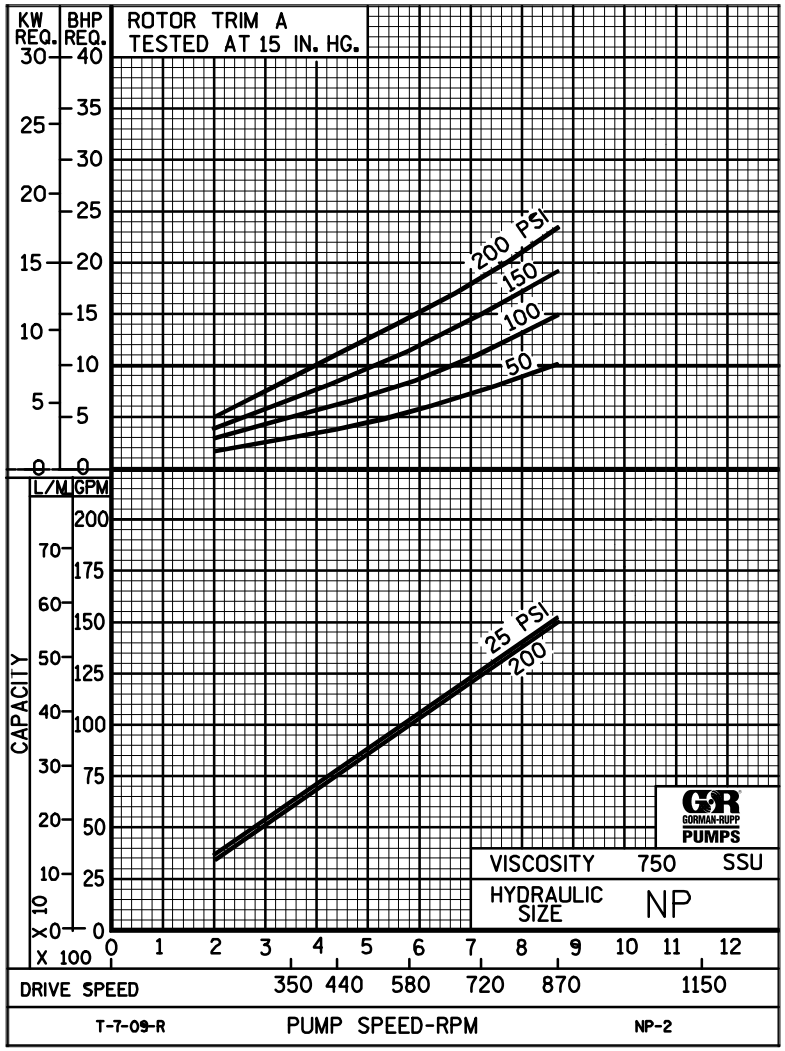
SECTION 545

PERFORMANCE CURVES

SPEED VS. CAPACITY/HORSEPOWER

NP Hydraulic Size





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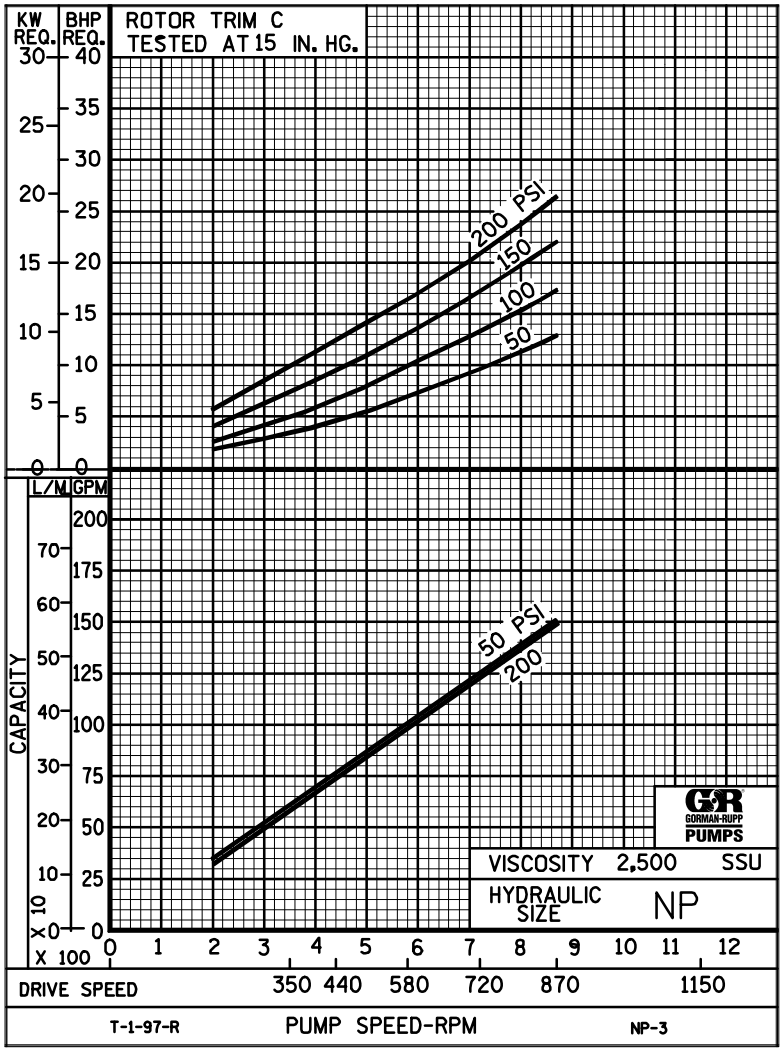
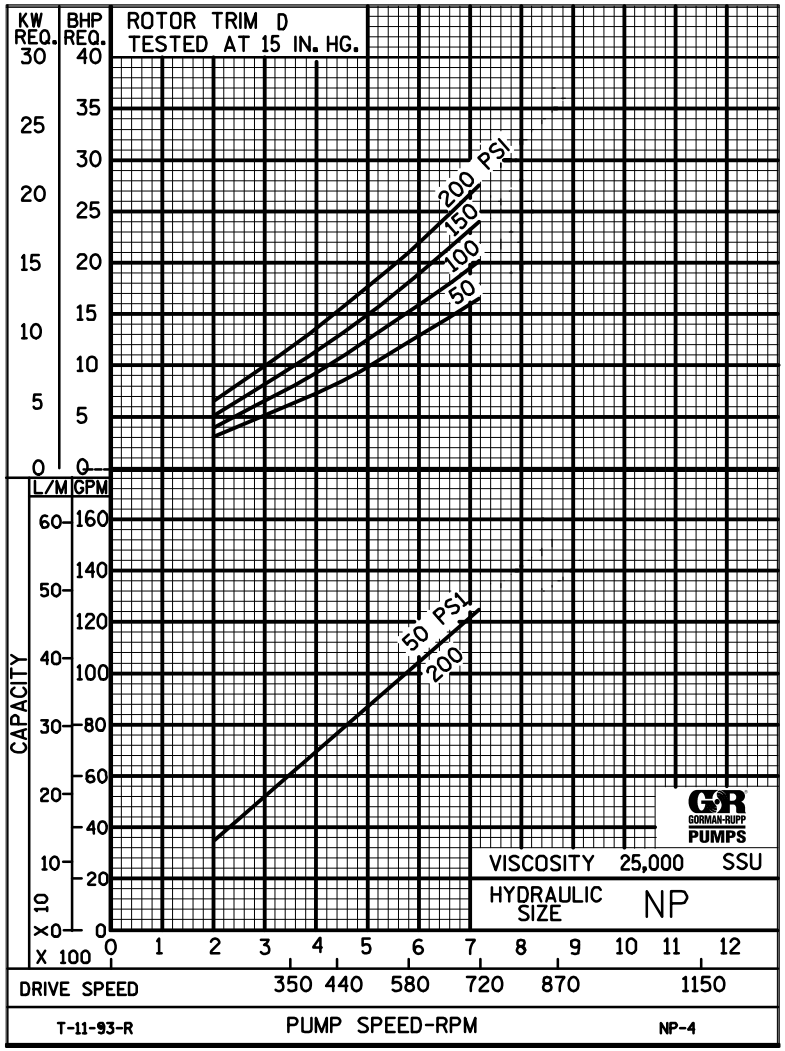
PERFORMANCE CURVES

SPEED VS. CAPACITY/HORSEPOWER

NP Hydraulic Size





GORMAN-RUPP
ROTARY GEAR PUMPS

NP

PUMP HYDRAULIC SIZE CHART

150 GPM
870 RPM

NOMINAL		ROTOR TRIM	VISCOSITY	N.I.P.R.	FRICTION PIPE LOSS (PSI/FT) (Based on Sch 40 Steel Pipe)					FULL BYPASS RELIEF VALVE PRESSURE (PSI)					CAPACITY (GPM) / H.P. REQUIRED							
															DIFFERENTIAL PRESSURE (PSI)							
										CRACKING PRESS. (PSI)					25	50	75	100	150	200	300	400
CAP. GPM	SPEED RPM		(SSU)	(PSIA)	PIPE DIAMETER					LOW PRES R/V			HI PRES R/V		MEDIUM DUTY AND HEAVY DUTY					HEAVY DUTY ONLY		
					2"	$2\frac{1}{2}$"	3"	4"	5"	50	75	100	150	200								
150	870	STD	28	4.2	.01	.01	.01	.01	.01	68	96	125			144	143	141	140				
			32		.13	.06	.02	.01	.01						5.3	7.4	9.6	12				
			38	4.2	.16	.07	.03	.01	.01	68	96	125	168		145	144	143	142	141			
			50		.19	.08	.03	.01	.01						5.5	7.6	9.8	12	17			
			70	4.2	.22	.09	.04	.01	.01	70	100	128	170	223	148	147	146	145	144	143		
			100		.24	.11	.04	.01	.01						6.0	8.0	10	13	17	21		
			150	4.2	.27	.12	.04	.01	.01	72	102	131	172	226	149	149	148	147	146	146		
			200		.30	.13	.05	.01	.01						6.9	8.7	11	13	18	22		
			300	4.2	.34	.15	.05	.01	.01	74	104	134	174	230	150	150	149	149	148	147		
			500		.39	.15	.05	.02	.01						7.9	9.6	12	14	19	23		
			750	4.2	.39	.19	.08	.03	.01	76	106	137	178	232	151	151	151	150	150	150		
			1,000		.49	.24	.10	.04	.02						8.9	11	13	15	20	24		
			2,000	5.8	.97	.48	.20	.07	.03	90	122	154	196	248	151	151	151	151	150	150		
		"C"	3,500		1.69	.83	.35	.12	.05						11	14	16	18	23	28		
			5,000	6.9	2.42	1.19	.50	.17	.07	100	134	168	208	262	151	151	151	151	150	150		
			7,500		3.63	1.78	.75	.25	.10						14	16	18	20	25	30		
			10,000	8.2	4.83	2.38	1.00	.34	.14	110	144	180	222	275	151	151	151	151	150	150		
			15,000		7.25	3.56	1.50	.51	.21						17	19	21	23	28	32		
			20,000																			
		"D"	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.

GORMAN-RUPP
ROTARY GEAR PUMPS

NP

PUMP HYDRAULIC SIZE CHART

99 GPM
580 RPM

NOMINAL		ROTOR TRIM	VISCOSITY	N.I.P.R.	FRICTION PIPE LOSS (PSI/FT) (Based on Sch 40 Steel Pipe)					FULL BYPASS RELIEF VALVE PRESSURE (PSI)					CAPACITY (GPM) / H.P. REQUIRED							
															DIFFERENTIAL PRESSURE (PSI)							
CAP. GPM	SPEED RPM		(SSU)	(PSIA)	PIPE DIAMETER					CRACKING PRESS. (PSI)					25	50	75	100	150	200	300	400
										LOW PRES R/V			HI PRES R/V		MEDIUM DUTY AND HEAVY DUTY					HEAVY DUTY ONLY		
					2"	2 1/2"	3"	4"	5"	50	75	100	150	200								
99	580	STD	28	2.5	.01	.01	.01	.01	.01	62	88	118			95	92	91	90				
			32		.06	.03	.01	.01	.01						3.2	4.6	6.2	7.8				
			38	2.5	.08	.03	.01	.01	.01	62	88	118	164		96	94	94	93	92			
			50		.09	.04	.02	.01	.01						3.2	4.7	6.3	7.9	11			
			70	2.5	.11	.05	.02	.01	.01	64	90	120	164	210	98	97	96	96	95	94		
			100		.12	.05	.02	.01	.01						3.3	4.7	6.4	8.0	11	14		
			150	2.5	.14	.06	.02	.01	.01	64	92	120	168	214	99	99	98	98	97	96		
			200		.15	.06	.03	.01	.01						3.5	4.9	6.5	8.1	11	14		
			300	2.5	.17	.06	.03	.01	.01	66	94	122	168	218	100	99	99	99	98	98		
			500		.17	.08	.04	.01	.01						4.0	5.1	6.8	8.2	11	15		
			750	2.5	.24	.12	.05	.02	.01	68	96	122	172	222	101	101	101	100	99	99		
			1,000		.32	.16	.07	.02	.01						4.5	5.9	7.1	8.9	12	15		
			2,000	3.2	.64	.32	.13	.05	.02	74	102	128	180	230	101	101	101	100	100	99		
		"C"	3,500		1.12	.55	.23	.08	.03						5.9	7.3	8.9	10	14	17		
			5,000	3.8	1.60	.79	.33	.11	.05	76	104	130	184	234	101	101	101	100	100	100		
			7,500		2.39	1.18	.50	.17	.07						7.1	9.0	10	12	15	18		
			10,000	4.5	3.19	1.57	.66	.22	.09	78	106	132	188	236	101	101	101	100	100	100		
			15,000		4.79	2.35	.99	.33	.14						8.9	11	13	14	17	20		
			20,000	5.2	6.38	3.14	1.32	.45	.18	80	108	134	192	240	101	101	101	100	100	100		
		"D"	25,000		7.97	3.92	1.64	.56	.23						11	12	14	15	18	21		
			50,000	9.0	16.0	7.83	3.29	1.11	.45	88	120	146	208	250	101	101	101	100	100	100		
			75,000		23.9	11.8	4.93	1.66	.68						17	23	25	27	30	33		
			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

NP

PUMP HYDRAULIC SIZE CHART

60 GPM
350 RPM

NOMINAL		ROTOR TRIM	VISCOSITY	N.I.P.R.	FRICTION PIPE LOSS (PSI/FT) (Based on Sch 40 Steel Pipe)					FULL BYPASS RELIEF VALVE PRESSURE (PSI)					CAPACITY (GPM) / H.P. REQUIRED							
															DIFFERENTIAL PRESSURE (PSI)							
CAP. GPM	SPEED RPM		(SSU)	(PSIA)	PIPE DIAMETER					CRACKING PRESS. (PSI)					25	50	75	100	150	200	300	400
										LOW PRES R/V			HI PRES R/V		MEDIUM DUTY AND HEAVY DUTY					HEAVY DUTY ONLY		
					2"	$2\frac{1}{2}$"	3"	4"	5"	50	75	100	150	200								
60	350	STD	28	1.5	.01	.01	.01	.01	.01	57	83	107			55	55	53	52				
			32		.02	.01	.01	.01	.01						1.8	2.7	3.8	4.8				
			38	1.5	.03	.02	.01	.01	.01	57	83	107	157		56	56	55	54	53			
			50		.04	.02	.01	.01	.01						1.9	2.8	3.9	4.9	6.7			
			70	1.5	.05	.02	.01	.01	.01	58	85	109	157	210	58	58	57	57	56	55		
			100		.05	.02	.01	.01	.01						2.0	2.9	3.9	4.9	6.8	8.8		
			150	1.5	.06	.03	.01	.01	.01	58	85	109	157	210	60	60	59	59	58	57		
			200		.06	.03	.01	.01	.01						2.1	3.0	4.0	5.0	6.9	8.9		
			300	1.5	.06	.03	.01	.01	.01	59	87	112	159	212	61	60	60	60	59	59		
			500		.10	.05	.02	.01	.01						2.2	3.1	4.1	5.0	6.9	9.0		
			750	1.5	.15	.07	.03	.01	.01	59	87	112	159	212	61	60	60	60	60	60		
			1,000		.20	.10	.04	.02	.01						2.3	3.3	4.2	5.0	7.0	9.1		
			2,000	2.1	.39	.19	.08	.03	.01	63	90	117	170	219	61	60	60	60	60	60		
		"C"	3,500		68	.33	.14	.05	.02						3.0	4.0	4.9	5.7	7.6	9.6		
			5,000	2.5	.97	.48	.20	.07	.03	64	90	117	170	219	61	60	60	60	60.3	60		
			7,500		1.45	.71	.30	.10	.04						3.6	4.6	5.0	6.3	8.2	10		
			10,000	3.1	1.93	.95	.40	.14	.06	65	92	120	174	225	61	60	60	60	60	60		
			15,000		2.90	1.43	.60	.20	.08						4.4	5.4	6.2	7.0	8.9	11		
			20,000	3.6	3.87	1.90	.80	.27	.11	65	92	120	174	225	61	60	60	60	60	60		
		"D"	25,000		4.83	2.37	1.00	.34	.14						5.1	6.0	7.0	7.9	9.7	12		
			50,000	6.5	9.66	4.75	1.99	.67	.27	70	98	126	179	232	61	60	60	60	60	60		
			75,000		14.5	7.12	2.99	1.01	.41						7.5	8.5	9.5	11	12	14		
			100,000	10.2	19.3	9.49	3.98	1.35	.55	75	104	132	185	238	61	60	60	60	60	60		
			150,000		29.0	14.3	5.97	2.02	.82						10	11	13	15	17	20		
			200,000																			
			250,000																			

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