

Gerotor Pump & Motor

Aluminum High Speed, Low Torque Series

Catalog HY09-PGG/MGG/US



The Parker Hannifin Gear Pump Division Assures:

- Consistent quality
- Technical innovation
- Premier customer service

Worldwide Sales and Service

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We manufacture hydraulic components for a wide range of industries including:

- Construction
- Refuse/dump truck
- Material handling
- Forestry
- Agriculture
- Industrial







WARNING

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This document and other information from Parker Hannifin Corporation, its subsidiaries and authorized distributors provide product and/or system options for further investigation by users having technical expertise. It is important that you analyze all aspects of your application and review the information concerning the product or system in the current product catalog. Due to the variety of operating conditions and applications for these products or systems, the user, through its own analysis and testing, is solely responsible for making the final selection of the products and systems and assuring that all performance, safety and warning requirements of the application are met.

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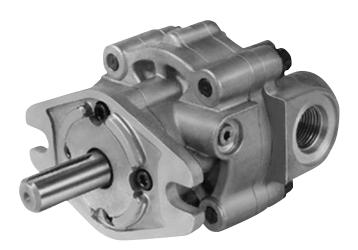
GEROTER PUMP & MOTOR:

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Offer of Sale

Specifications for Gerotor Pumps & Motors

- Gerotor design (HSLT)*
- Aluminum construction for optimum power to weight ratio
- Bi-directional
- High-pressure mechanical seals available for series application to 1000 PSI back pressure
- Roller bearings for long life
- Buna-N Seals are standard for petroleum and glycol based fluids.
- MGG Motor - Shaft speeds to 5000 RPM
- PGG Pump - Shaft speeds to 3500 RPM
- Up to 17 HP output for motors

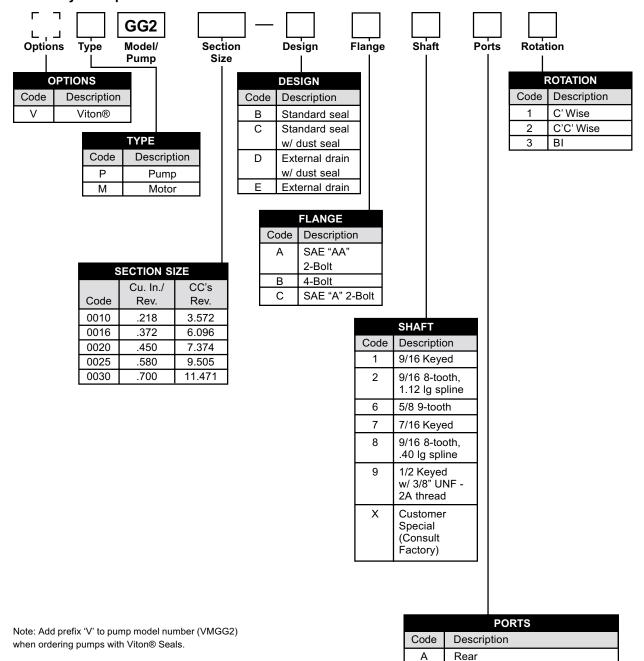
*High Speed / Low Torque





How to Order Gerotor Pumps & Motors:

Select the desired symbol (in the correct position) to construct a model code. **Assembly Example:**



Side w/ slotted by-pass valve Side w/ "T" handle by-pass valve

Customer Special (Consult Factory)

В

D

T X Side



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Specifications for MGG2 Series

Description	Hydraulic Motors
Flow Range	To 15 GPM (56.7 LTR)
Displacements T	o .700 C.I.R.(11.47 CC's/REV.)
Maximum Pressure to	
Maximum Speed to	5000 RPM
Rotation	Bi-Directional
Bearings	Roller
Construction	Aluminum



Performance Data

		Displa	Maximum Continuous Pressure		Maximum Speed			
Pump Model	US Gallons	Cubic Inches	Liters	Cubic Centimeters	Imperial Gallons	PSI	BAR	RPM
MGG20010	.0010	.218	.0039	3.572	.0008	2000	138	5000
MGG20016	.0016	.372	.0062	6.096	.0013	2000	138	5000
MGG20020	.0020	.450	.0078	7.374	.0016	2000	138	5000
MGG20025	.0025	.580	.0097	9.505	.0021	2000	138	5000
MGG20030	.0030	.700	.0116	11.471	.0025	1500	104	5000

When used in series circuits, back pressure is not to exceed 1000 (69.0 BAR) PSIG.

MGG Displacement

MODEL NO.		MGG20010	MGG20016	MGG20020	MGG20025	MGG20030
DISPLACEMENT PER REVOLUTI		.218 in. ³ (3.57 cm ³)	.372 in. ³ (6.094 cm ³)	.450 in. ³ (7.374 cm ³)	.580 in. ³ (9.50 cm ³)	.700 in. ³ (11.471 cm ³)
MAXIMUM RATED RPM		5000	5000	5000	5000	5000
RATED FLOW P 1000 RPM (NOI		.95 GPM (3.6 liters/min)	1.61 GPM (6.1 liters/min)	1.95 GPM (7.4 liters/min)	2.51 GPM (9.5 liters/min)	3.03 GPM (11.5 liters/min)
	CONTINUOUS	2000 PSI (138.0 bar)	2000 PSI (138.0 bar)	2000 PSI (138.0 bar)	2000 PSI (138.0 bar)	1500 PSI (103.5 bar)
RATED PRESSURE	INTERMITTENT	2500 PSI (172.5 bar)	2500 PSI (172.5 bar)	2500 PSI (172.5 bar)	2500 PSI (172.5 bar)	2000 PSI (138.0 bar)
OUTPUT TORQI (69.0 bar)	UE PER 1000 PSI*	35 inlbs. (40 kg-cm)	59 inlbs. (68 kg-cm)	72 inlbs. (83 kg-cm)	92 inlbs. (107 kg-cm)	111 inlbs. (128 kg-cm)
WEIGHT		2.8 pounds (1.25 kg)	3.0 pounds (1.36 kg)	3.1 pounds (1.41 kg)	3.3 pounds (1.50 kg)	3.5 pounds (1.59 kg)
SHAFT SIDE LO	AD**	170 lbs. (77.0 kg)	130 lbs. (59.0 kg)	110 lbs. (50.0 kg)	70 lbs. (31.7 kg)	30 lbs. (13.5 kg)

* THEORETICAL

** SIDE LOAD: Maximum Permissible Shaft Side Load at 2500 RPM and 1000 PSI (69.0 bar) (B-10 Bearing Life of 1000 Hrs.)

Never exceed the INTERMITTENT pressure rating or 5000 RPM

OIL TEMPERATURE:	Maximum recommended oil temperature 180° F (82.2° C)
OIL VISCOSITY:	Recommended viscosity 150 SUS (3.65 engler). (32 centistokes) Minimum recommended viscosity 60 SUS (2.1 engler) (13 centistokes)
FILTRATION:	Minimum recommended filtration 10 Micron.
END THRUST:	80 LBS. (36.3 kg.) maximum.



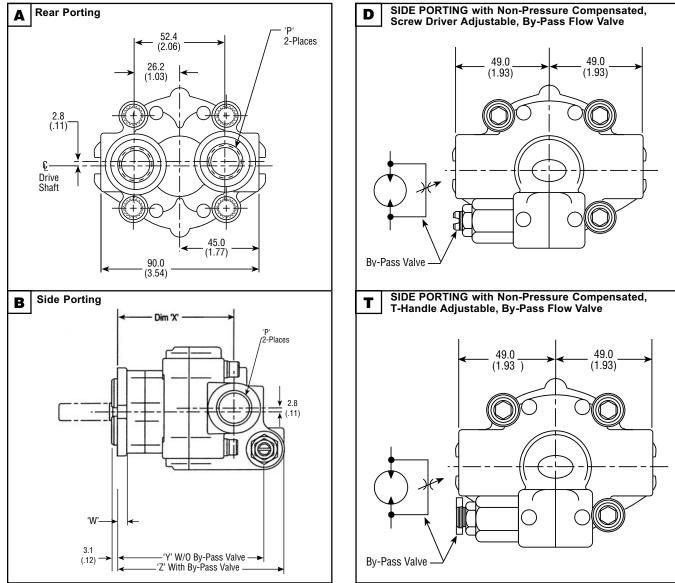
Mounting Dimensions

	DIMENSIONS					
MODEL NO.	'Χ'	'Υ'	'Z'			
MGG20010	72.6 (2.86)	91.9 (3.62)	105.7 (4.16)			
MGG20016	76.7 (3.02)	96.0 (3.78)	109.7 (4.32)			
MGG20020	78.7 (3.10)	98.3 (3.87)	112.0 (4.41)			
MGG20025	82.5 (3.25)	101.6 (4.00)	115.3 (4.54)			
MGG20030	85.8 (3.38)	105.1 (4.14)	118.9 (4.68)			

Inch equivalents for millimeter dimensions are shown in (**).

FLANGE	'W'	MODEL NO.	'P'
2-BOLT 'A-A'	6.3 (.25)		STRAIGHT TH'D 0-RING PORT PER
4-BOLT	6.3 (.25)		SAE SPEC. 514d
2-BOLT 'A'	9.5 (.38)	MGG20010	SAE 8
		MGG20016	SAE 8
		MGG20020	SAE 8
		MGG20025	SAE 10
		MGG20030	SAE 10

Cover Plates Available





Specifications for PGG2 Series

Description	Hydraulic Pumps
Flow Range	To 10 GPM (37.8 LTR)
Displacements T	o .700 C.I.R. (11.47 CC's/REV)
Maximum Pressure to	
Maximum Speed to	3500 RPM
Rotation	Bi-Directional
Bearings	Roller
Construction	All Aluminum



Performance Data

			acement/Re (Theoretica	Maxii Pres		Maximum Speed		
Pump Model	US Gallons	Cubic Inches	Liters	Cubic Centimeters	Imperial Gallons	PSI	BAR	RPM
PGG20010	.0010	.218	.0039	3.572	.0008	2000	138	3500
PGG20016	.0016	.372	.0062	6.096	.0013	2000	138	3500
PGG20020	.0020	.450	.0078	7.374	.0016	2000	138	3500
PGG20025	.0025	.580	.0097	9.505	.0021	2000	138	3500
PGG20030	.0030	.700	.0116	11.471	.0025	1500	104	3000

<u>CAUTION:</u> "Inlet vacuum" should not exceed 5" Hg at normal operating speed and temperature. Operation of pumps in excess of 5" Hg requires factory approval. Back pressure is limited to 20 PSIG maximum.

PGG2 Displacement

MODEL NO.	PGG20010	PGG20016	PGG20020	PGG20025	PGG20030
DISPLACEMENT	.218 in. ³	.372 in. ³	.450 in. ³	.580 in. ³	.700 in. ³
PER REVOLUTION	(3.57 cm ³)	(6.096 cm ³)	(7.374 cm ³)	(9.50 cm ³)	(11.471 cm ³)
MAXIMUM RATED RPM	3500	3500	3500	3500	3000
RATED FLOW PER	.95 GPM	1.61 GPM	1.95 GPM	2.51 GPM	3.03 GPM
1000 RPM (NOMINAL)	(3.6 liters/min)	(6.1 liters/min)	(7.4 liters/min)	(9.5 liters/min)	(11.5 liters/min)
MAXIMUM CONTINUO	US 2000 PSI	2000 PSI	2000 PSI	2000 PSI	1500 PSI
RATED	(138.0 bar)	(138.0 bar)	(138.0 bar)	(138.0 bar)	(103.5 bar)
PRESSURE INTERMITT	ENT 2500 PSI	2500 PSI	2500 PSI	2500 PSI	2000 PSI
	(172.5 bar)	(172.5 bar)	(172.5 bar)	(172.5 bar)	(138.0 bar)
HORSEPOWER HP (KgM/se	c)* .50 HP	.94 HP	1.14 HP	1.46 HP	1.77 HP
REQUIRED PER 1000 PSI	(38.0 KgM/sec)	(71.4 KgM/sec)	(86.6 KgM/sec)	(111.0 KgM/sec)	(134.6 KgM/sec)
WEIGHT	2.8 pounds	3.0 pounds	3.1 pounds	3.3 pounds	3.5 pounds
	(1.25 kg)	(1.36 kg)	(1.41 kg)	(1.50 kg)	(1.59 kg)
SHAFT SIDE LOAD**	170 lbs.	130 lbs.	110 lbs.	70 lbs.	30 lbs.
	(77.0 kg)	(59.0 kg)	(50.0 kg)	(31.7 kg)	(13.5 kg)

* THEORETICAL

** SIDE LOAD: Maximum Permissible Shaft Side Load at 2500 RPM and 1000 PSI (69.0 bar) (B-10 Bearing Life of 1000 Hrs.)

WARNING

Never exceed the INTERMITTENT pressure rating or 3500 RPM

OIL TEMPERATURE:	Maximum recommended oil temperature 180° F (82.2° C)
OIL VISCOSITY:	Recommended viscosity 150 SUS (3.65 engler). (32 centistokes) Minimum recommended viscosity 60 SUS (2.1 engler) (13 centistokes)
FILTRATION:	Minimum recommended filtration 10 Micron.
END THRUST:	80 LBS. (36.3 kg.) maximum.



Aluminum High-Speed, Low-Torque Series Gerotor Pump & Motor

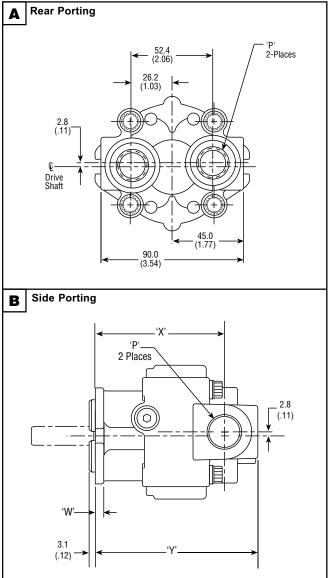
Mounting Dimensions

	DIMENSIONS				
MODEL NO.	'Χ'	'Υ'			
PGG20010	2.86 (72.6)	3.62 (91.9)			
PGG20016	3.02 (76.7)	3.78 (96.0)			
PGG20020	3.10 (78.7)	3.87 (98.3)			
PGG20025	3.25 (82.5)	4.00 (101.6)			
PGG20030	3.38 (85.8)	4.14 (105.1)			

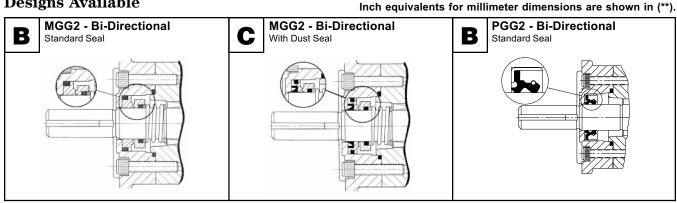
Inch equivalents for millimeter dimensions are shown in (**).

FLANGE	'W'	MODEL NO.	'P'
2-BOLT 'A-A'	.25 (6.3)		STRAIGHT THREAD 0-RING PORT PER
4-BOLT	.25 (6.3)		SAE SPEC. 514d
2-BOLT 'A'	.38 (9.5)	PGG20010	SAE 8
		PGG20016	SAE 8
		PGG20020	SAE 8
		PGG20025	SAE 10
		PGG20030	SAE 10

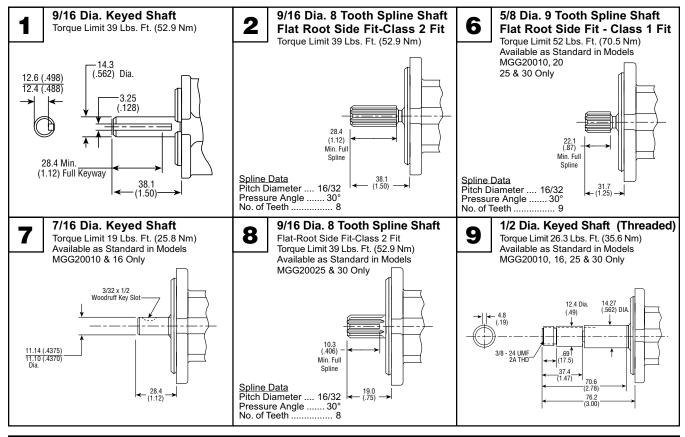
Cover Plates Available



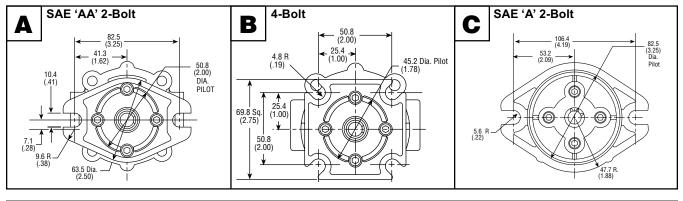
Designs Available



Shafts Available (Consult Factory for Shaft Models Not Listed.)

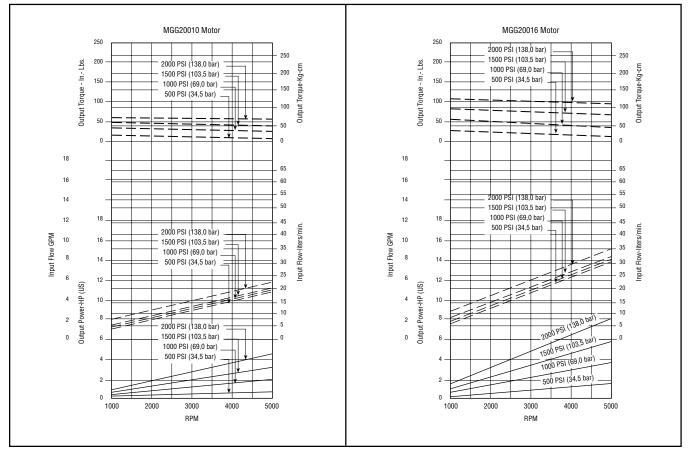


Mounting Flanges Available





MGG2 Torque and Speed Selection Charts



Motor Selection

MGG2 Hydraulic Motors are available in five basic models-each with its own input/output characteristics. To properly select a motor, two things must first be determined-the output torque (inch-pound) that the motor is to produce, and the speed requirement (RPM).

Example: It is required that a motor will deliver an output torque of 150 inch-pounds at a speed of 2500 RPM.

To select the motor (refer to MGG20030 chart):

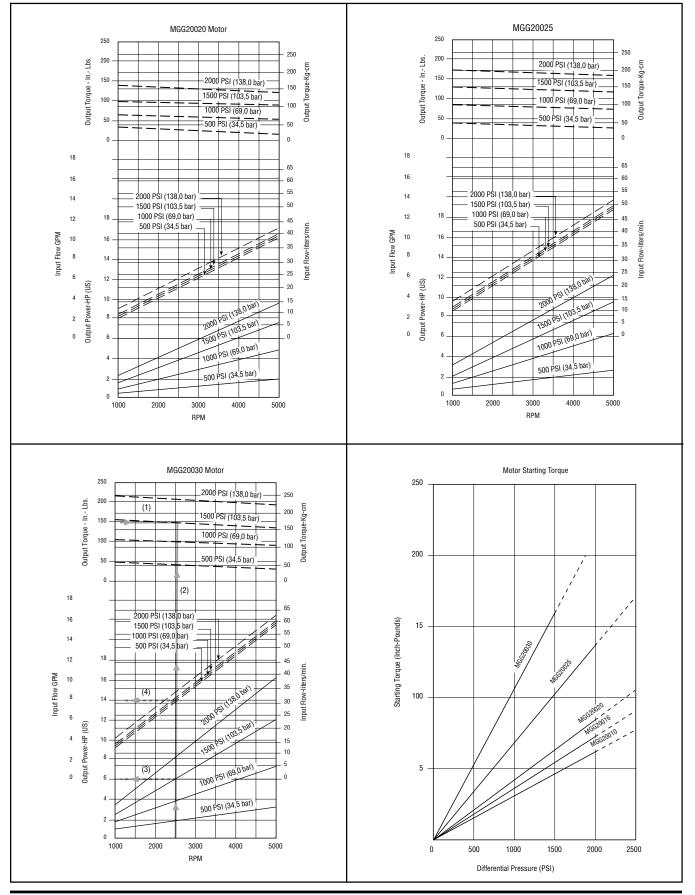
- 1. Draw a horizontal line (1) at 150 inch-pounds output torque. The MGG20025 and MGG20030 will both develop the required torque.
- Draw a vertical line (2) up from 2500 RPM. The point of intersection of the 2 lines indicates the working pressure required at the motor to develop 150 inch-pounds at 2500 RPM.
- 3. The output horsepower is determined by drawing a horizontal line (3) from the intersection of 2500 RPM and the working pressure required at the bottom of the charts.
- 4. The input flow to the motor is determined by drawing a horizontal line (4) from the intersection of 2500 RPM and working pressure required in the middle of the chart.

In this example, either the MGG20025 or the MGG20030 can be used. The MGG20025 will develop 150-inch pounds of output torque at 2500 RPM with a pump output (motor input) of 7 GPM at 1800 PSI. The output horsepower is 6.

The MGG20030 will develop 150 inch-pounds of output torque at 2500 RPM with a pump output (motor input) of 8 GPM at 1500 PSI. The output horsepower is 6.

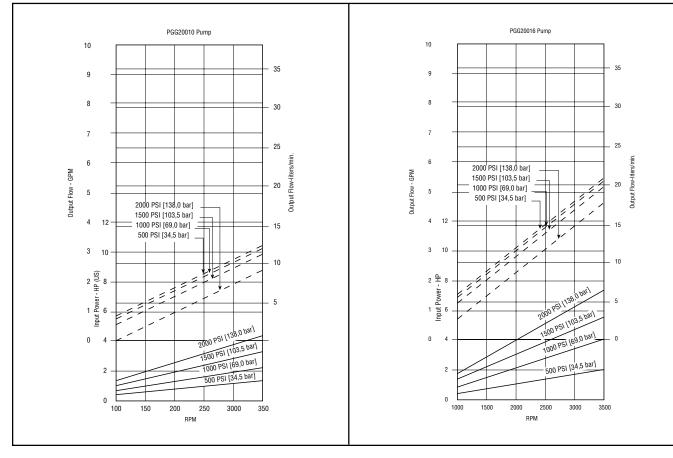


MGG2 Torque and Speed Selection Charts





PGG2 Flow, Pressure, Horsepower & RPM Selection Charts



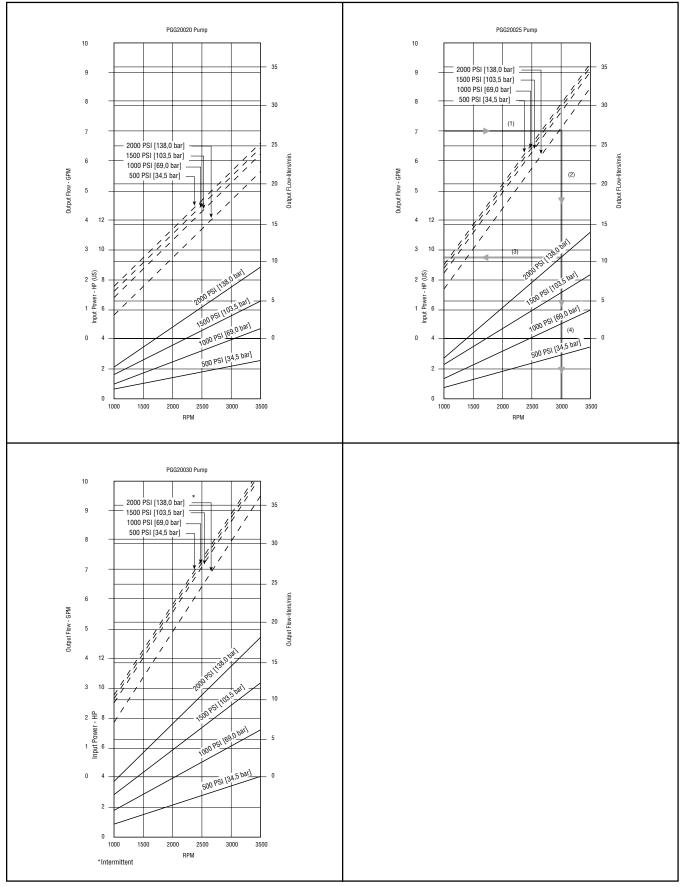
Pump Selection

Hydraulic pumps are available in five basic models—each with its own input/ output characteristics. To properly select a pump, four things must first be determined:

- 1. The desired output flow rate.
- 2. The maximum continuous pressure in the hydraulic system.
- 3. The input horsepower required to drive the pump.
- 4. The RPM at which the pump is to operate.
- Example: It is required that a pump deliver 7GPM at 2000 PSI, maximum continuous pressure.
- From the PGG2 Hydraulic Pump Performance Characteristics Charts, it is shown that only the model PGG20025 delivers 7GPM at a continuous pressure of 2000 PSI. NOTE: PGG20030 is limited to 1500 PSI continuous.
- 2. Draw line (1) from 7 GPM output flow to where it intersects the line representing 2000 PSI.
- 3. At the point of intersection, extend line (2) vertically down where it intersects 2000 PSI.
- 4. By drawing line (3) horizontally across from point of intersection, it is shown that input power requirement is approximately 9.75 HP.
- 5. By continuing line (4) vertically down, it is shown that input RPM must be 3000.



PGG2 Flow, Pressure, Horsepower & RPM Selection Charts





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2. Payment: Payment shall be made by Buyer net 30 days from the date of delivery of the items purchased hereunder. Amounts not timely paid shall bear interest at the maximum rate permitted by law for each month or portion thereof that the Buyer is late in making payment. Any claims by Buyer for omissions or shortages in a shipment shall be waived unless Seller receives notice thereof within 30 days after Buyer's receipt of the shipment.

3. Delivery: Unless otherwise provided on the face hereof, delivery shall be made F.O.B. Seller's plant. Regardless of the method of delivery, however, risk of loss shall pass to Buyer upon Seller's delivery to a carrier. Any delivery dates shown are approximate only and Seller shall have no liability for any delays in delivery.

4. Warranty: Seller warrants that the items sold hereunder shall be free from defects in material or workmanship for a period of 18 months from date of shipment from Parker Hannifin Corporation. THIS WARRANTY COMPRISES THE SOLE AND ENTIRE WARRANTY PERTAINING TO ITEMS PROVIDED HEREUNDER. SELLER MAKES NO OTHER WARRANTY, GUARANTEE, OR REPRESENTATION OF ANY KIND WHATSOEVER. ALL OTHER WARRANTIES, INCLUDING BUT NOT LIMITED TO, MERCHANTABILITY AND FITNESS FOR PURPOSE, WHETHER EXPRESS, IMPLIED, OR ARISING BY OPERATION OF LAW, TRADE USAGE, OR COURSE OF DEALING ARE HEREBY DISCLAIMED. NOTWITHSTANDING THE FOREGOING, THERE ARE NO WARRANTIES WHATSOEVER ON ITEMS BUILT OR ACQUIRED WHOLLY OR PARTIALLY, TO BUYER'S DESIGNS OR SPECIFICATIONS.

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6. Changes, Reschedules and Cancellations: Buyer may request to modify the designs or specifications for the items sold hereunder as well as the quantities and delivery dates thereof, or may request to cancel all or part of this order, however, no such requested modification or cancellation shall become part of the contract between Buyer and Seller unless accepted by Seller in a written amendment to this Agreement. Acceptance of any such requested modification or cancellation shall be at Seller's discretion, and shall be upon such terms and conditions as Seller may require.

7. Special Tooling: A tooling charge may be imposed for any special tooling, including without limitation, dies, fixtures, molds and patterns, acquired to manufacture items sold pursuant to this contract. Such special tooling shall be and remain Seller's property notwithstanding payment of any charges by Buyer. In no event will Buyer acquire any interest in apparatus belonging to Seller which is utilized in the notwithstanding any charges paid by Buyer. Unless otherwise agreed, Seller shall have the right to alter, discard or otherwise dispose of any special tooling or other property in its sole discretion at any time.

8. Buyer's Property: Any designs, tools, patterns, materials, drawings, confidential information or equipment furnished by Buyer or any other items which become Buyer's property, may be considered obsolete and may be destroyed by Seller after two (2) consecutive years have elapsed without Buyer placing an order for the items which are manufactured using such property, Seller shall not be responsible for any loss or damage to such property while it is in Seller's possession or control.

9. Taxes: Unless otherwise indicated on the face hereof, all prices and charges are exclusive of excise, sales, use, property, occupational or like taxes which may be imposed by any taxing authority upon the manufacture, sale or delivery of the items sold hereunder. If any such taxes must be paid by Seller or if Seller is liable for the collection of such tax, the amount thereof shall be in addition to the amounts for the items sold. Buyer agrees to pay all such taxes or to reimburse Seller therefore upon receipt of its invoice. If Buyer claims exemption from any sales, use or other tax imposed by any taxing authority, Buyer shall save Seller harmless from and against any such tax, together with any interest or penalties thereon which may be assessed if the items are held to be taxable.

10. Indemnity For Infringement of Intellectual Property Rights: Seller shall have no liability for infringement of any patents, trademarks, copyrights, trade dress, trade secrets or similar rights except as provided in this Part 10. Seller will defend and indemnify Buyer against allegations of infringement of U.S. Patents, U.S. Trademarks, copyrights, trade dress and trade secrets (hereinafter 'Intellectual Property Rights'). Seller will defend at its expense and will pay the cost of any settlement or damages awarded in an action brought against Buyer based on an allegation that an item sold pursuant to this contract infringes the Intellectual Property Rights of a third party. Seller's obligation to defend and indemnify Buyer is contingent on Buyer notifying Seller within ten (10) days after Buyer becomes aware of such allegations of infringement, and Seller having sole control over the defense of any allegations or actions including all negotiations for settlement or compromise. If an item sold hereunder is subject to a claim that it infringes the Intellectual Property Rights of a third party, Seller may, at its sole expense and option, procure for Buyer the right to continue using said item, replace or modify said item so as to make it noninfringing, or offer to accept return of said item and return the purchase price less a reasonable allowance for depreciation. Notwithstanding the foregoing, Seller shall have no liability for claims of infringement based on information provided by Buyer, or directed to items delivered hereunder for which the designs are specified in whole or part by Buyer, or infringements resulting from the modification, combination or use in a system of any item sold hereunder. The foregoing provisions of this Part 10 shall constitute Seller's sole and exclusive liability and Buyer's sole and exclusive remedy for infringement of Intellectual Property Rights.

If a claim is based on information provided by Buyer or if the design for an item delivered hereunder is specified in whole or in part by Buyer, Buyer shall defend and indemnify Seller for all costs, expenses or judgments resulting from any claim that such item infringes any patent, trademark, copyright, trade dress, trade secret or any similar right. **11. Force Majeure:** Seller does not assume the risk of and shall not be liable for delay or failure to perform any of Seller's obligations by reason of circumstances beyond the reasonable control of Seller (hereinafter 'Events of Force Majeure'). Events of Force Majeure shall include without limitation, accidents, acts of God, strikes or labor disputes, acts, laws, rules or regulations of any government or government agency, fires, floods, delays or failures in delivery of carriers or suppliers, shortages of materials and any other cause beyond Seller's control.

12. Entire Agreement/Governing Law: The terms and conditions set forth herein, together with any amendments, modifications and any different terms or conditions expressly accepted by Seller in writing, shall constitute the entire Agreement concerning the items sold, and there are no oral or other representations or agreements which pertain thereto. This Agreement shall be governed in all respects by the law of the State of Ohio. No actions arising out of the sale of the items sold hereunder or this Agreement may be brought by either party more than two (2) years after the cause of action accrues.

9/91P





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About Parker Hannifin Corporation

Parker Hannifin is a leading global motion-control company dedicated to delivering premier customer service. A Fortune 500 corporation listed on the New York Stock Exchange (PH), our components and systems comprise over 1,400 product lines that control motion in some 1,000 industrial and aerospace markets. Parker is the only manufacturer to offer its customers a choice of hydraulic, pneumatic, and electromechanical motion-control solutions. Our Company has the largest distribution network in its field, with over 7,500 distributors serving more than 350,000 customers worldwide.

Parker Hannifin Corporation

Parker's Charter

To be a leading worldwide manufacturer of components and systems for the builders and users of durable goods. More specifically, we will design, market and manufacture products controlling motion, flow and pressure. We will achieve profitable growth through premier customer service.

Product Information

North American customers seeking product information, the location of a nearby distributor, or repair services will receive prompt attention by calling the Parker Product Information Center at our toll-free number: 1-800-C-PARKER (1-800-272-7537). In the UK, a similar service is available by calling 0500-103-203.



The Climate & Industrial Controls Group

designs, manufactures and markets system-control and fluid-handling components and systems to refrigeration, air-conditioning and industrial customers worldwide.

The Fluid Connectors Group designs, manufactures and markets rigid and flexible connectors, and associated products used in pneumatic and fluid systems.

The Aerospace Group

design, manufacture and

servicing of control systems

and related high-technology

markets, while achieving

growth through premier

customer service.

is a leader in the development,

and components for aerospace





The Seal Group designs, manufactures and distributes industrial and commercial sealing devices and related products by providing superior quality and total customer satisfaction.

The Hydraulics Group designs, produces and markets a full spectrum of hydraulic compnents and systems to builders and users of industrial and mobile machinery and equipment.





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The Instrumentation Group is a global leader in the design, manufacture and distribution of highquality critical flow components for worldwide processinstrumentation, ultra-high-purity, medical and analytical applications.





Parker Hannifin Corporation Gear Pump Division 1775 Logan Avenue Youngstown, OH 44501 USA Tel: (330) 746-8011 Fax: (330) 746-1148 http://www.parker.com/gearpump

Catalog HY09-PGG/MGG/US, 5M, 10/03, T&M