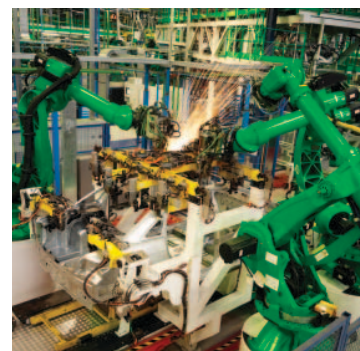


PGP500 Series Quick Ship Program

Gear Pumps



ENGINEERING YOUR SUCCESS.

Terms & Conditions PGP500 Series Quick Ship Program

Parker Hannifin Corporation is the world's leading diversified manufacturer of motion and control technologies and systems for a wide variety of commercial mobile, industrial and aerospace markets. Among their divisions, the Gear Pump Division engineers specialty products for unique applications in a wide range of industries including truck, refuse, material handling, construction, forestry, agriculture, and industrial. To meet distributor and customer demands for decreased lead-times, the Gear Pump Division is introducing the PGP500 Series Quick Ship Program.

Highlights from the program include...

- Products to support industrial specific applications
- Market competitive pricing
- Pumps (qty 1 to 4) shipped within three working days

Part number identification...

- The pump part numbers in the program do not have any special identifiers that are required to be included when ordered. Simply select your pump(s) from the list included in the PGP500 Series Quick Ship Program catalog or price file

How to order...

- Orders can be accepted via EDI, PHconnect, fax, email
- Only those pumps shown in the PGP500 Series Quick Ship Program catalog and price file are eligible
- Pump quantity 1 to 4 ships within 3 days
- Pump quantity 5+ ships at standard lead time

Please contact Parker Hannifin Corp., Gear Pump Division with any questions.



WARNING — User Responsibility

FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS AND/OR SYSTEMS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE.

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 products and systems and assuring that all performance, safety and warning requirements of the application are met.

The products described herein, including without limitation, product features, specifications, designs, availability and pricing, are subject to change by Parker Hannifin Corporation and its subsidiaries at any time without notice.

Offer of Sale

The items described in this document are hereby offered for sale by Parker Hannifin Corporation, its subsidiaries or its authorized distributors. This offer and its acceptance are governed by the provisions stated in the "Offer of Sale".

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PGP500 Series Quick Ship

- High Performance
- High Efficiency
- High Pressure Operation

PGP500 Series gear pumps are an advanced performance version of the international “bushing block” style pumps. PGP500 Series pumps offer superior performance, high efficiency and low noise operation at high operating pressures.

Advantages

- **Up to 275 bar (4000 psi) continuous operation**
High strength materials and large journal diameters provide low bearing loads for high pressure operation.
- **Low noise**
Gear profile and optimized flow metering provide reduced pressure pulsation and exceptionally quiet operation.
- **High efficiency**
Pressure balanced bearing blocks assure maximum efficiency under all operating conditions.
- **Easy conversion to multiple pump assemblies**
All pumps include an internal spline for assembly of multiple sections.

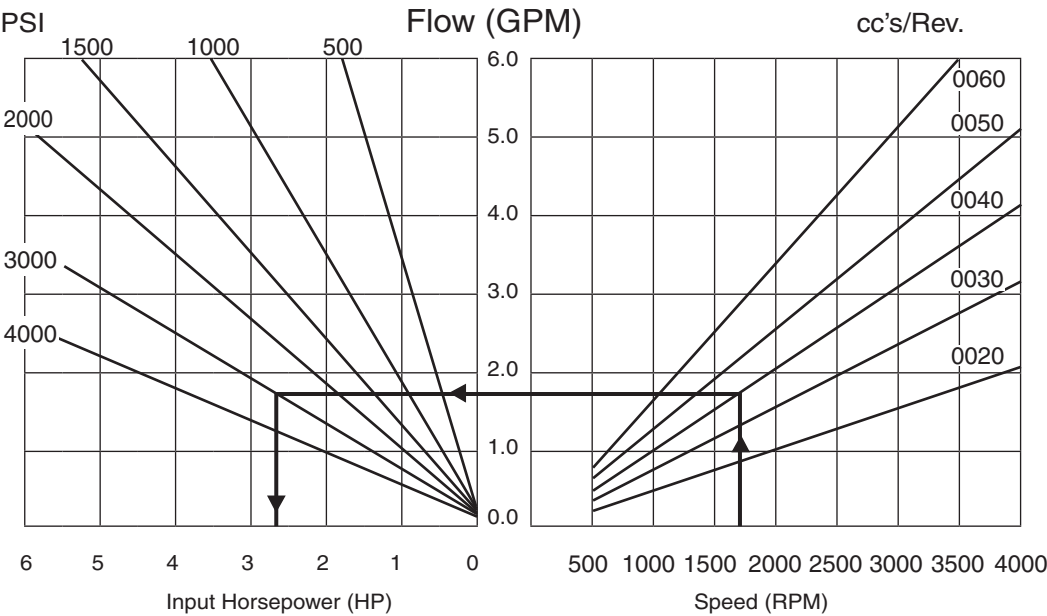
Characteristics

Product Features	Description
Pump Type	Heavy-duty, aluminum, external gear
Mounting	SAE 2-Bolt “A-A”, “A” and “B”
Ports	SAE straight thread on side
Shaft Style	SAE splined, keyed
Speed	500 - 4000 rpm
Theoretical Displ.	See tables on pages 2, 3 and 4 .
Drive	Drive direct with flexible coupling is recommended.
Axial / Radial Load	Units subject to axial or radial loads should be specified with an outboard bearing. Please contact Product Support for assistance.
Inlet Pressure	Operating range - 0.8 to 2 bar abs (12-29 psia). Minimum inlet pressure -0.25 bar abs (-3.6 psia). Short time w/o load. Max. pressure not to exceed 20 psig.
Outlet Pressure	See tables on pages 2, 3 and 4 .
Fluids	Mineral oil, fire resistant fluids: - water-oil emulsions 60/40, HFB - water-glycol, HFC - phosphate-esters, HFD



Product Features	Description
Fluid Temperature	Range of operating temperature -15 to +80°C (5 to 176° F). Max. permissible operating pressure dependent on fluid temperature. Temperature for cold start -20 to -15°C (-4 to 5° F) at speed ≤ 1500 rpm.
Fluid Viscosity	Range of operating viscosity 8 to 1000 centistokes max. Permissible operating pressure dependent on viscosity. Viscosity range for cold start 1000 to 2000 centistokes at operating pressure ≤10 bar (145 psi) and speed ≤1500 rpm.
Range of Ambient Temperature	-40°C to +70°C (-40°F to 158°F)
Filtration	According to ISO 4406 Cl. 16/13
Direction of Rotation (looking at the driveshaft)	Clockwise
Multiple Pump Assemblies	All pumps include an internal spline for assembly of multiple sections.

PGP505



PGP505

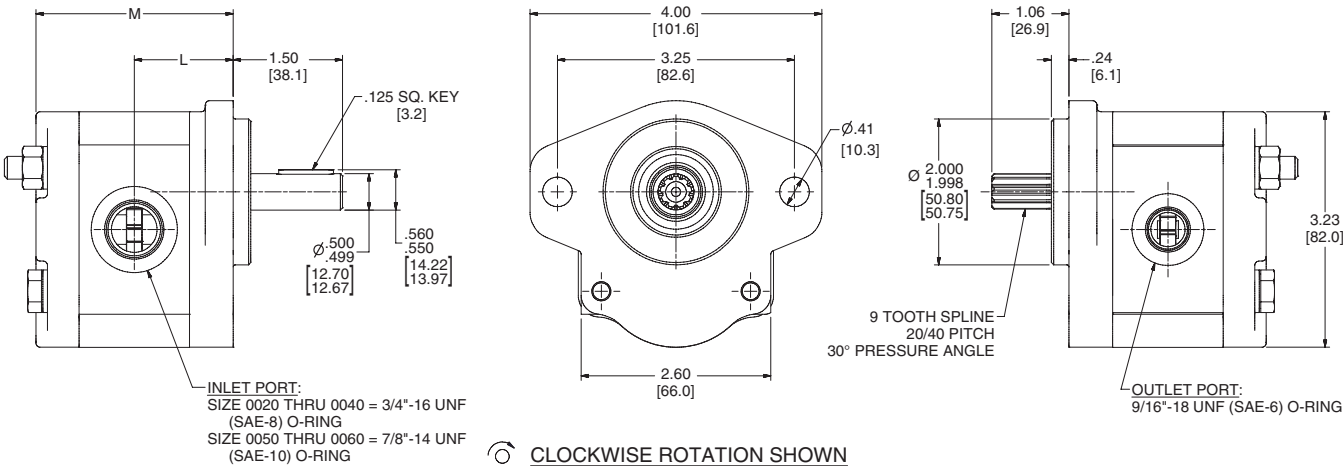
Instructions: To size a pump...

- Where RPM intersects displacement read GPM.
- Where GPM intersects PSI read HP.

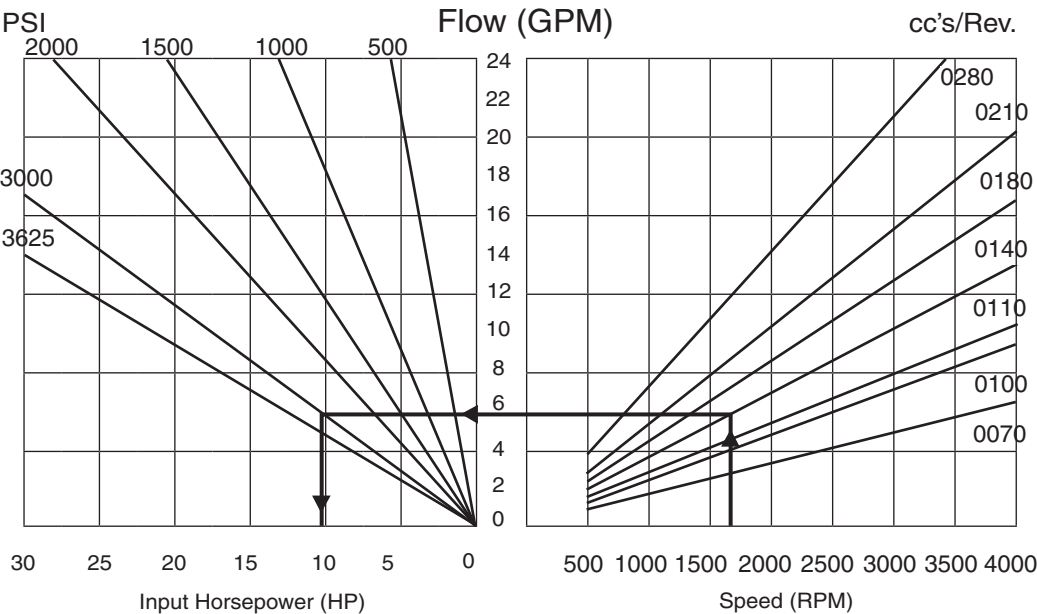
Example:

A motor operating at 1725 RPM with a 4.0 cc pump would produce a flow of 1.8 GPM. At 3000 PSI this would require a 3 HP motor.

PGP 505	Displacement		GPM (Liters)		PSI (bar)		RPM Maximum Speed	Dimensions Inches (mm)	
	Code	cc's/rev. (cu.in)	1725 RPM	Max. RPM	Continuous Pressure	Intermittent Pressure		L	M
	0020	2.0 (0.12)	0.90 (3.39)	1.79 (6.78)	3988 (275)	4350 (300)	4000	1.36 (34.4)	2.78 (70.6)
	0030	3.0 (0.18)	1.34 (5.09)	2.69 (10.18)	3988 (275)	4350 (300)	4000	1.41 (35.8)	2.89 (73.3)
	0040	4.0 (0.24)	1.79 (6.78)	3.58 (13.57)	3988 (275)	4350 (300)	4000	1.46 (37.1)	2.99 (76.0)
	0050	5.0 (0.31)	2.31 (8.76)	4.63 (17.53)	3988 (275)	4350 (300)	4000	1.52 (38.5)	3.10 (78.7)
	0060	6.0 (0.37)	2.76 (10.46)	5.76 (21.80)	3988 (275)	4350 (300)	3600	1.57 (39.8)	3.20 (81.3)



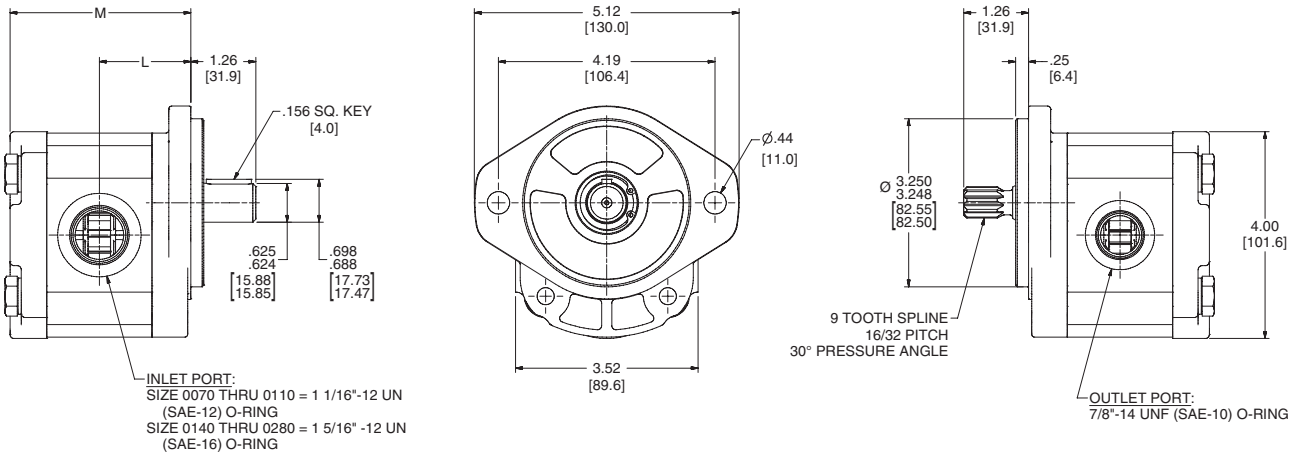
PGP511



PGP511
Instructions: To size a pump...
- Where RPM intersects displacement read GPM.
- Where GPM intersects PSI read HP.

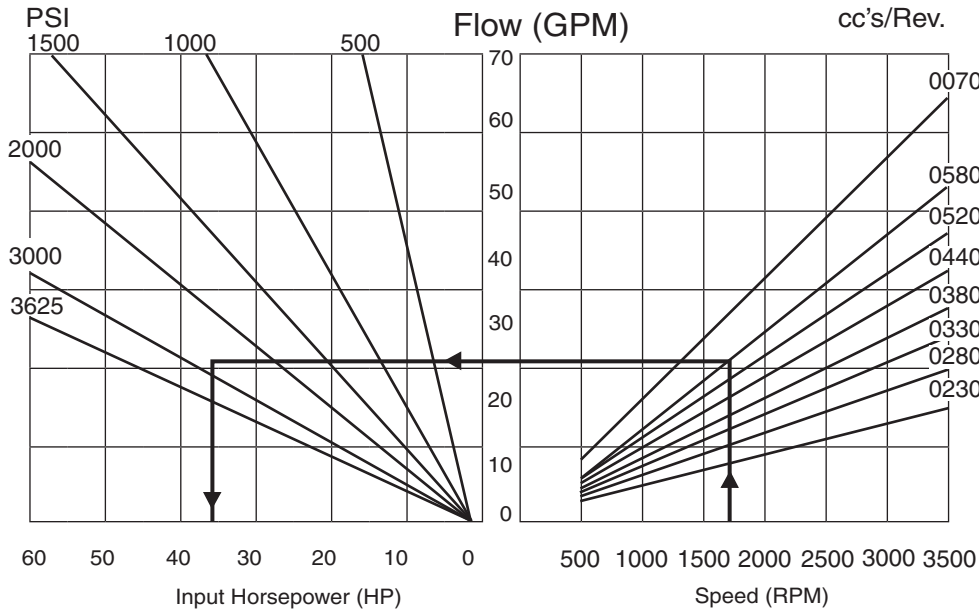
Example:
A motor operating at 1725 RPM with a 14.0 cc pump would produce a flow of 6.3 GPM. At 3000 PSI this would require a 11 HP motor.

PGP 511 Code	Displacement		GPM (Liters)		PSI (bar)		RPM Maximum Speed	Dimensions Inches (mm)	
	cc's/ rev.	(cu.in)	1725 RPM	Max. RPM	Continuous Pressure	Intermittent Pressure		L	M
0070	7.0	(0.43)	3.21 (12.16)	7.44 (28.16)	3625 (250)	3988 (275)	4000	1.79 (45.35)	3.67 (93.00)
0100	10.0	(0.61)	4.56 (17.24)	9.50 (35.96)	3625 (250)	3988 (275)	3600	1.88 (47.65)	3.85 (97.60)
0110	11.0	(0.67)	5.00 (18.94)	10.44 (39.51)	3625 (250)	3988 (275)	3600	1.91 (48.40)	3.91 (99.10)
0140	14.0	(0.85)	6.35 (24.03)	12.14 (45.95)	3625 (250)	3988 (275)	3300	2.00 (50.70)	4.09 (103.70)
0180	18.0	(1.10)	8.21 (31.09)	14.28 (54.05)	3625 (250)	3770 (260)	3000	2.12 (53.75)	4.33 (109.80)
0210	21.0	(1.28)	9.56 (36.18)	15.51 (58.71)	3410 (235)	3480 (240)	2800	2.25 (57.00)	4.59 (116.30)
0280	28.0	(1.71)	12.77 (48.34)	17.02 (64.42)	2685 (185)	2755 (190)	2300	2.40 (60.80)	4.55 (123.90)



CLOCKWISE ROTATION SHOWN

PGP517



PGP517

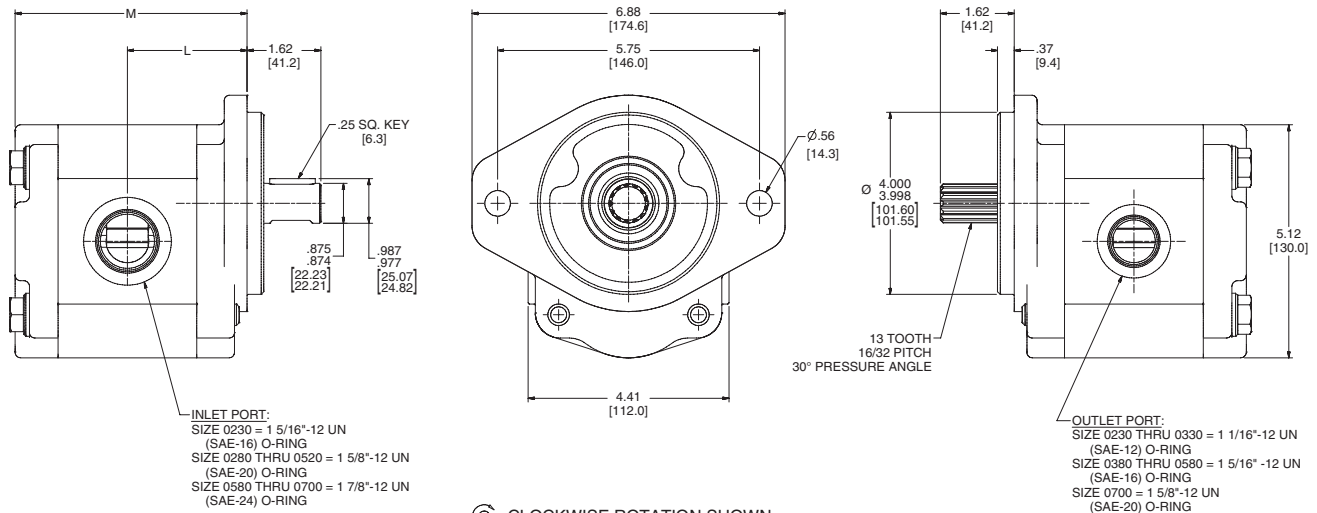
Instructions: To size a pump...

- Where RPM intersects displacement read GPM.
- Where GPM intersects PSI read HP.



Example:

A motor operating at 1725 RPM with a 58.0 cc pump would produce a flow of 26.4 GPM. At 2610 PSI this would require a 40 HP motor.

PGP 517	Displacement		GPM (Liters)		PSI (bar)		RPM Maximum Speed	Dimensions Inches (mm)	
	Code	cc's/rev. (cu.in)	1725 RPM	Max. RPM	Continuous Pressure	Intermittent Pressure		L	M
	0230	23.0 (1.40)	10.45 (39.57)	20.00 (75.71)	3625 (250)	3988 (275)	3300	2.63 (66.7)	5.19 (131.9)
	0280	28.0 (1.71)	12.77 (48.54)	22.95 (86.87)	3625 (250)	3988 (275)	3100	2.72 (69.2)	5.39 (136.9)
	0330	33.0 (2.01)	15.01 (56.82)	26.97 (102.11)	3625 (250)	3988 (275)	3100	2.82 (71.7)	5.59 (142.0)
	0380	38.0 (2.32)	17.32 (65.58)	30.13 (114.05)	3625 (250)	3698 (255)	3000	2.93 (74.3)	5.79 (147.0)
	0440	44.0 (2.68)	20.01 (75.76)	32.48 (122.97)	3190 (220)	3500 (240)	2800	3.04 (77.3)	6.03 (153.1)
	0520	52.0 (3.17)	23.67 (89.61)	35.68 (135.06)	2900 (200)	3118 (215)	2600	3.20 (81.3)	6.35 (161.2)
	0580	58.0 (3.54)	26.44 (100.07)	39.89 (150.83)	2610 (180)	2825 (295)	2600	3.32 (84.4)	6.59 (167.3)
	0700	70.0 (4.27)	31.89 (120.70)	46.21 (174.93)	2300 (160)	2535 (175)	2500	3.56 (90.9)	7.06 (179.4)






PGP505

Parker Part No.	Assembly Code	Description	
3319111534	PGP505M0020CJ1H1ND3D2B1B1	2cc cw 1/2"K 2AA ODT	
3319111526	PGP505M0030CJ1H1ND3D2B1B1	3cc cw 1/2"K 2AA ODT	
3319111528	PGP505M0040CJ1H1ND3D2B1B1	4cc cw 1/2"K 2AA ODT	
3319111530	PGP505M0050CJ1H1ND4D2B1B1	5cc cw 1/2"K 2AA ODT	
3319111532	PGP505M0060CJ1H1ND4D2B1B1	6cc cw 1/2"K 2AA ODT	
3319111535	PGP505M0020CA2H1ND3D2B1B1	2cc cw 9T-AA 2AA ODT	
3319111527	PGP505M0030CA2H1ND3D2B1B1	3cc cw 9T-AA 2AA ODT	
3319111529	PGP505M0040CA2H1ND3D2B1B1	4cc cw 9T-AA 2AA ODT	
3319111531	PGP505M0050CA2H1ND4D2B1B1	5cc cw 9T-AA 2AA ODT	
3319111533	PGP505M0060CA2H1ND4D2B1B1	6cc cw 9T-AA 2AA ODT	




3911832805 PGP505 Buna shaft seal soft goods kit
3911842390 PGP505 Viton shaft seal soft goods kit

PGP511

Parker Part No.	Assembly Code	Description	
3349116668	PGP511M0070CK1H2ND5D4B1B1	7cc cw 5/8"K 2A ODT	
3349116680	PGP511M0100CK1H2ND5D4B1B1	10cc cw 5/8"K 2A ODT	
3349116670	PGP511M0110CK1H2ND5D4B1B1	11cc cw 5/8"K 2A ODT	
3349116672	PGP511M0140CK1H2ND6D4B1B1	14cc cw 5/8"K 2A ODT	
3349116674	PGP511M0180CK1H2ND6D4B1B1	18cc cw 5/8"K 2A ODT	
3349116676	PGP511M0210CK1H2ND6D4B1B1	21cc cw 5/8"K 2A ODT	
3349116678	PGP511M0280CK1H2ND6D4B1B1	28cc cw 5/8"K 2A ODT	
3349116669	PGP511M0070CA1H2ND5D4B1B1	7cc cw 9T-A 2A ODT	
3349116681	PGP511M0100CA1H2ND5D4B1B1	10cc cw 9T-A 2A ODT	
3349116671	PGP511M0110CA1H2ND5D4B1B1	11cc cw 9T-A 2A ODT	
3349116673	PGP511M0140CA1H2ND6D4B1B1	14cc cw 9T-A 2A ODT	
3349116675	PGP511M0180CA1H2ND6D4B1B1	18cc cw 9T-A 2A ODT	
3349116677	PGP511M0210CA1H2ND6D4B1B1	21cc cw 9T-A 2A ODT	
3349116679	PGP511M0280CA1H2ND6D4B1B1	28cc cw 9T-A 2A ODT	

3911832824 PGP511 Buna shaft seal soft goods kit
3911842362 PGP511 Viton shaft seal soft goods kit

PGP517

Parker Part No.	Assembly Code	Description	
3339111802	PGP517M0230CM1H3ND6D5B1B1	23cc cw 7/8"K 2-B ODT	
3339111803	PGP517M0280CM1H3ND7D5B1B1	28cc cw 7/8"K 2-B ODT	
3339111804	PGP517M0330CM1H3ND7D5B1B1	33cc cw 7/8"K 2-B ODT	
3339111805	PGP517M0380CM1H3ND7D6B1B1	38cc cw 7/8"K 2-B ODT	
3339111806	PGP517M0440CM1H3ND7D6B1B1	44cc cw 7/8"K 2-B ODT	
3339111807	PGP517M0520CM1H3ND7D6B1B1	52cc cw 7/8"K 2-B ODT	
3339111809	PGP517M0580CM1H3ND8D6B1B1	58cc cw 7/8"K 2-B ODT	
3339111808	PGP517M0700CM1H3ND8D7B1B1	70cc cw 7/8"K 2-B ODT	
3339111527	PGP517M0230CD1H3ND6D5B1B1	23cc cw 13T-B 2-B ODT	
3339111529	PGP517M0280CD1H3ND7D5B1B1	28cc cw 13T-B 2-B ODT	
3339111530	PGP517M0330CD1H3ND7D5B1B1	33cc cw 13T-B 2-B ODT	
3339111531	PGP517M0380CD1H3ND7D6B1B1	38cc cw 13T-B 2-B ODT	
3339111532	PGP517M0440CD1H3ND7D6B1B1	44cc cw 13T-B 2-B ODT	
3339111533	PGP517M0520CD1H3ND7D6B1B1	52cc cw 13T-B 2-B ODT	
3339111810	PGP517M0580CD1H3ND8D6B1B1	58cc cw 13T-B 2-B ODT	
3339111534	PGP517M0700CD1H3ND8D7B1B1	70cc cw 13T-B 2-B ODT	

3911822071 PGP517 Buna shaft seal soft goods kit
3911832764 PGP517 Viton shaft seal soft goods kit

PZG Interchange to PGP505

PZG Part No.	Parker Part No.	Notes
PZG1AR020S1	3319111534	Ports are same as PZG
PZG1AR027S1	3319111526	Ports are same as PZG
PZG1AR041S1	3319111528	Ports are same as PZG
PZG1AR051S1	3319111530	Inlet is one size larger than PZG
PZG1AR061S1	3319111532	Inlet is one size larger than PZG
PZG1AR020S2	3319111535	Ports are same as PZG
PZG1AR027S2	3319111527	Ports are same as PZG
PZG1AR041S2	3319111529	Ports are same as PZG
PZG1AR051S2	3319111531	Inlet is one size larger than PZG
PZG1AR061S2	3319111533	Inlet is one size larger than PZG

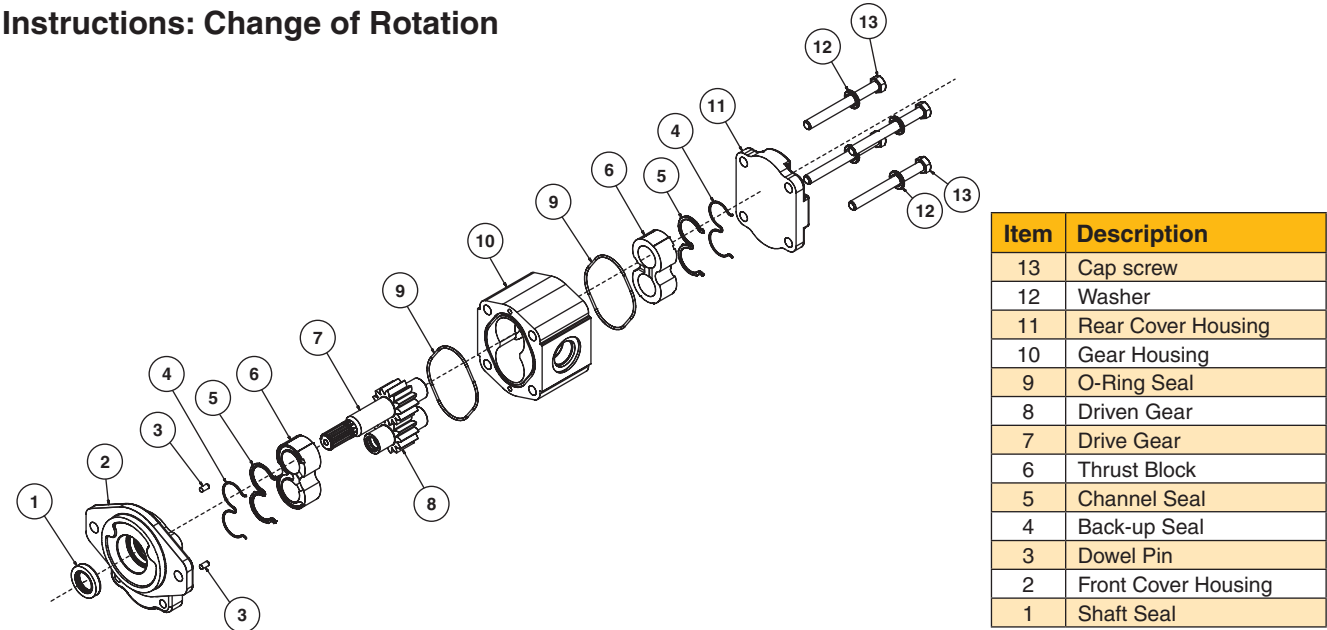
PZG Interchange to PGP511

PZG Part No.	Parker Part No.	Notes
PZG2AR070S1	3349116668	Ports are same as PZG
PZG2AR095S1	3349116680	Ports are same as PZG
PZG2AR113S1	3349116670	Ports are same as PZG
PZG2AR140S1	3349116672	Inlet is one size larger than PZG
PZG2AR178S1	3349116674	Inlet is one size larger than PZG
PZG2AR208S1	3349116676	Inlet is one size larger than PZG
PZG2AR279S1	3349116678	Inlet is one size larger than PZG
PZG2AR070S2	3349116669	Ports are same as PZG
PZG2AR095S2	3349116681	Ports are same as PZG
PZG2AR113S2	3349116671	Ports are same as PZG
PZG2AR140S2	3349116673	Inlet is one size larger than PZG
PZG2AR178S2	3349116675	Inlet is one size larger than PZG
PZG2AR208S2	3349116677	Inlet is one size larger than PZG
PZG2AR279S2	3349116679	Inlet is one size larger than PZG

PZG Interchange to PGP517

PZG Part No.	Parker Part No.	Notes
PZG3AR225S1	3339111802	Ports are same as PZG
PZG3AR264S1	3339111803	Inlet is one size larger than PZG
PZG3AR337S1	3339111804	Inlet is one size larger than PZG
PZG3AR394S1	3339111805	Inlet and outlet are one size larger than PZG
PZG3AR427S1	3339111806	Inlet and outlet are one size larger than PZG
PZG3AR514S1	3339111807	Inlet and outlet are one size larger than PZG
PZG3AR600S1	3339111809	Ports are same as PZG
PZG3AR696S1	3339111808	Outlet is one size larger than PZG
PZG3AR225S2	3339111527	Ports are same as PZG
PZG3AR264S2	3339111529	Inlet is one size larger than PZG
PZG3AR337S2	3339111530	Inlet is one size larger than PZG
PZG3AR394S2	3339111531	Inlet and outlet are one size larger than PZG
PZG3AR427S2	3339111532	Inlet and outlet are one size larger than PZG
PZG3AR514S2	3339111533	Inlet and outlet are one size larger than PZG
PZG3AR600S2	3339111810	Ports are same as PZG
PZG3AR696S2	3339111534	Outlet is one size larger than PZG

Instructions: Change of Rotation



Disassembly Instructions:

1. Where applicable, remove the drive coupling from the drive shaft using a suitable puller. The coupling must not be levered or hammered as this may cause internal pump damage.
2. If the pump has a keyed shaft, remove the key from the shaft. Lightly stone any burrs that may be on the shaft to prevent any damage to the seal during disassembly.
3. Clamp the pump in a vise using the front cover housing (2), with the drive shaft pointing down. Do not clamp on the machined pilot ring.
4. Scribe a line across the front cover housing (2), gear housing, (10) and rear cover housing (11). This will ensure proper alignment during reassembly.
5. Remove all the cap screws (13) and washers (12) from the assembly.
6. Remove the rear cover housing (11).
7. Lift the gear housing (10) off of the front cover housing (2), tapping the housing with a soft mallet, if necessary.
8. Remove the thrust block (6) noting the orientation of the channel seal (5).
9. Carefully remove the gears by pushing up on the drive gear (7). Remove the thrust block (6) noting its orientation.

Reassembly Instructions:

1. Rotate thrust block (6) 180° from original position and place on front cover housing (2). Make sure the back-up seals (4) and channel seals (5) are seated properly.
2. Seat seal O-rings (9) in the machined groove and rotate gear housing (10) 180° around the shaft axis and place onto shaft and cover (2). Readjust location dowel pins (3) if pulled out at disassembly.
Note from Disassembly Step 4 that the line on the gear housing (10) and front cover housing (2) should now be on opposite sides.
3. Slide the drive gear (7) through gear housing, bushing, and shaft seal. Be careful not to damage the shaft seal. Slide the driven gear (8) through the gear housing and into the bushing.
4. Rotate thrust block (6) 180° from original position and place on gears. Make sure the back-up seals (4) and channel seals (5) are seated properly.
5. From the original position, rotate the rear cover housing (11) 180° around the shaft axis and position it over the gear housing.
6. Replace the washers and bolts into the unit. Torque bolts in a diagonal pattern. Dry assembly torques are provided below. Do not over torque.
7. Rotate drive shaft with a small wrench to check for any binding.

SERIES	PGP/PGM505	PGP/PGM511	PGP/PGM517
Assembly Torque	300 in-lbs (25 ft-lbs)	420 in-lbs (35 ft-lbs)	1000 in-lbs (83 ft-lbs)

Parker Hannifin Corporation – Gear Pump Division

Offer of Sale

The items described in this document and other documents and descriptions provided by Parker Hannifin Corporation, its subsidiaries and its authorized distributors ("Seller") are hereby offered for sale at prices to be established by Seller. This offer and its acceptance by any customer ("Buyer") shall be governed by all of the following Terms and Conditions. Buyer's order for any item described in its document, when communicated to Seller verbally, or in writing, shall constitute acceptance of this offer. All goods, services or work described will be referred to as "Products".

1. **Terms and Conditions.** Seller's willingness to offer Products, or accept an order for Products, to or from Buyer is subject to these Terms and Conditions or any newer version of the terms and conditions found on-line at www.parker.com/saleterms/. Seller objects to any contrary or additional terms or conditions of Buyer's order or any other document issued by Buyer.

2. **Price Adjustments; Payments.** Prices stated on Seller's quote or other documentation offered by Seller are valid for 30 days, and do not include any sales, use, or other taxes unless specifically stated. Unless otherwise specified by Seller, all prices are F.C.A. Seller's facility (INCOTERMS 2010). Payment is subject to credit approval and is due 30 days from the date of invoice or such other term as required by Seller's Credit Department, after which Buyer shall pay interest on any unpaid invoices at the rate of 1.5% per month or the maximum allowable rate under applicable law.

3. **Delivery Dates; Title and Risk; Shipment.** All delivery dates are approximate and Seller shall not be responsible for any damages resulting from any delay. Regardless of the manner of shipment, title to any products and risk of loss or damage shall pass to Buyer upon placement of the products with the shipment carrier at Seller's facility. Unless otherwise stated, Seller may exercise its judgment in choosing the carrier and means of delivery. No deferment of shipment at Buyers' request beyond the respective dates indicated will be made except on terms that will indemnify, defend and hold Seller harmless against all loss and additional expense. Buyer shall be responsible for any additional shipping charges incurred by Seller due to Buyer's acts or omissions.

4. **Warranty.** Seller warrants that the Products sold hereunder shall be free from defects in material or workmanship for a period of twelve months from the date of delivery to Buyer or 2,000 hours of normal use, whichever occurs first. The prices charged for Seller's products are based upon the exclusive limited warranty stated above, and upon the following disclaimer: **DISCLAIMER OF WARRANTY: THIS WARRANTY COMPRISES THE SOLE AND ENTIRE WARRANTY PERTAINING TO PRODUCTS PROVIDED HEREUNDER. SELLER DISCLAIMS ALL OTHER WARRANTIES, EXPRESS AND IMPLIED, INCLUDING DESIGN, MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.**

5. **Claims; Commencement of Actions.** Buyer shall promptly inspect all Products upon delivery. No claims for shortages will be allowed unless reported to the Seller within 10 days of delivery. No other claims against Seller will be allowed unless asserted in writing within 30 days after delivery. Buyer shall notify Seller of any alleged breach of warranty within 30 days after the date the defect is or should have been discovered by Buyer. Any action based upon breach of this agreement or upon any other claim arising out of this sale (other than an action by Seller for an amount due on any invoice) must be commenced within 12 months from the date of the breach without regard to the date breach is discovered.

6. **LIMITATION OF LIABILITY.** UPON NOTIFICATION, SELLER WILL, AT ITS OPTION, REPAIR OR REPLACE A DEFECTIVE PRODUCT, OR REFUND THE PURCHASE PRICE. **IN NO EVENT SHALL SELLER BE LIABLE TO BUYER FOR ANY SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF, OR AS THE RESULT OF, THE SALE, DELIVERY, NON-DELIVERY, SERVICING, USE OR LOSS OF USE OF THE PRODUCTS OR ANY PART THEREOF, OR FOR ANY CHARGES OR EXPENSES OF ANY NATURE INCURRED WITHOUT SELLER'S WRITTEN CONSENT, EVEN IF SELLER HAS BEEN NEGLIGENT, WHETHER IN CONTRACT, TORT OR OTHER LEGAL THEORY. IN NO EVENT SHALL SELLER'S LIABILITY UNDER ANY CLAIM MADE BY BUYER EXCEED THE PURCHASE PRICE OF THE PRODUCTS.**

7. **User Responsibility.** The user, through its own analysis and testing, is solely responsible for making the final selection of the system and Product and assuring that all performance, endurance, maintenance, safety and warning requirements of the application are met. The user must analyze all aspects of the application and follow applicable industry standards and Product information. If Seller provides Product or system options, the user is responsible for determining that such data and specifications are suitable and sufficient for all applications and reasonably foreseeable uses of the Products or systems.

8. **Loss to 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, will be considered obsolete and may be destroyed by Seller after two consecutive years have elapsed without Buyer ordering the items 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. **Special Tooling.** A tooling charge may be imposed for any special tooling, including without limitation, dies, fixtures, molds and patterns, acquired to manufacture Products. 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 manufacture of the Products, even if such apparatus has been specially converted or adapted for such manufacture and 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.

10. **Buyer's Obligation; Rights of Seller.** To secure payment of all sums due or otherwise, Seller shall retain a security interest in the goods delivered and this agreement shall be deemed a Security Agreement under the Uniform Commercial Code. Buyer authorizes Seller as its attorney to execute and file on Buyer's behalf all documents Seller deems necessary to perfect its security interest.

11. **Improper use and Indemnity.** Buyer shall indemnify, defend, and hold Seller harmless from any claim, liability, damages, lawsuits, and costs (including attorney

fees), whether for personal injury, property damage, patent, trademark or copyright infringement or any other claim, brought by or incurred by Buyer, Buyer's employees, or any other person, arising out of: (a) improper selection, improper application or other misuse of Products purchased by Buyer from Seller; (b) any act or omission, negligent or otherwise, of Buyer; (c) Seller's use of patterns, plans, drawings, or specifications furnished by Buyer to manufacture Product; or (d) Buyer's failure to comply with these terms and conditions. Seller shall not indemnify Buyer under any circumstance except as otherwise provided.

12. **Cancellations and Changes.** Orders shall not be subject to cancellation or change by Buyer for any reason, except with Seller's written consent and upon terms that will indemnify, defend and hold Seller harmless against all direct, incidental and consequential loss or damage. Seller may change product features, specifications, designs and availability with notice to Buyer. 13. **Limitation on Assignment.** Buyer may not assign its rights or obligations under this agreement without the prior written consent of Seller.

14. **Force Majeure.** Seller does not assume the risk 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, strikes or labor disputes, acts of any government or government agency, acts of nature, delays or failures in delivery from carriers or suppliers, shortages of materials, or any other cause beyond Seller's reasonable control.

15. **Waiver and Severability.** Failure to enforce any provision of this agreement will not waive that provision nor will any such failure prejudice Seller's right to enforce that provision in the future. Invalidity of any provision of this agreement by legislation or other rule of law shall not invalidate any other provision herein. The remaining provisions of this agreement will remain in full force and effect.

16. **Termination.** Seller may terminate this agreement for any reason and at any time by giving Buyer thirty (30) days written notice of termination. Seller may immediately terminate this agreement, in writing, if Buyer: (a) commits a breach of any provision of this agreement (b) appoints a trustee, receiver or custodian for all or any part of Buyer's property (c) files a petition for relief in bankruptcy on its own behalf, or by a third party (d) makes an assignment for the benefit of creditors, or (e) dissolves or liquidates all or a majority of its assets.

17. **Governing Law.** This agreement and the sale and delivery of all Products hereunder shall be deemed to have taken place in and shall be governed and construed in accordance with the laws of the State of Ohio, as applicable to contracts executed and wholly performed therein and without regard to conflicts of laws principles. Buyer irrevocably agrees and consents to the exclusive jurisdiction and venue of the courts of Cuyahoga County, Ohio with respect to any dispute, controversy or claim arising out of or relating to this agreement.

18. **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 Section. Seller will defend and indemnify Buyer against allegations of infringement of U.S. patents, U.S. trademarks, copyrights, trade dress and trade secrets ("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 a Product sold pursuant to this Agreement 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 a Product 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 the Product, replace or modify the Product so as to make it noninfringing, or offer to accept return of the Product 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 Products 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 Product sold hereunder. The foregoing provisions of this Section shall constitute Seller's sole and exclusive liability and Buyer's sole and exclusive remedy for infringement of Intellectual Property Rights.

19. **Entire Agreement.** This agreement contains the entire agreement between the Buyer and Seller and constitutes the final, complete and exclusive expression of the terms of sale. All prior or contemporaneous written or oral agreements or negotiations with respect to the subject matter are herein merged.

20. **Compliance with Law, U. K. Bribery Act and U.S. Foreign Corrupt Practices Act.** Buyer agrees to comply with all applicable laws and regulations, including both those of the United Kingdom and the United States of America, and of the country or countries of the Territory in which Buyer may operate, including without limitation the U. K. Bribery Act, the U.S. Foreign Corrupt Practices Act ("FCPA") and the U.S. Anti-Kickback Act (the "Anti-Kickback Act"), and agrees to indemnify and hold harmless Seller from the consequences of any violation of such provisions by Buyer, its employees or agents. Buyer acknowledges that they are familiar with the provisions of the U. K. Bribery Act, the FCPA and the Anti-Kickback Act, and certifies that Buyer will adhere to the requirements thereof. In particular, Buyer represents and agrees that Buyer shall not make any payment or give anything of value, directly or indirectly to any governmental official, any foreign political party or official thereof, any candidate for foreign political office, or any commercial entity or person, for the purpose of influencing such person to purchase products or otherwise benefit the business of Seller.

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