



# Hydraulic Pumps and Motors Catalogue

CAT.ASEAN\_HYG\_PAM\_ASMR\_MAY2017 (REV.1)

aerospace  
climate control  
electromechanical  
filtration  
fluid & gas handling  
**hydraulics**  
pneumatics  
process control  
sealing & shielding



ENGINEERING YOUR SUCCESS.

# Parker Hannifin Corporation

Parker can be found on and around everything that move. We manufacture highly engineered components and systems that facilitate motion and the controlled flow of liquids and gasses for a wide variety of global markets to increase our customers' productivity and profitability.

From flying aircraft and building infrastructure; to developing more efficient energy, advancing medical science and engineered materials, providing clean food and water, and supporting military efforts.

Parker's 55,000 employees bring it all together, partnering with our customers to help solve some of the world's greatest engineering challenges.



## Solving The World's Greatest Engineering

Our focus on solving some of the world's greatest engineering challenges sparks our passion for innovation and secures our future growth.

The development of more efficient energy sources; the desire to produce and distribute clean water; new drug discovery and medical advances; the building of infrastructure and transportation to support a growing population; the safe cultivation, transportation and preservation of food sources; emerging developments in defense; and the protection of our environment – all of these challenges drive Parker people forward, seeking new ways to innovate, combine technologies, collaborate, develop systems and partner with our customers to solve problems.

## Partnership in Motion From hidden costs to visible profits

Partnership is an important aspect of the Parker Hannifin business philosophy. We feel that together we can increase your productivity and profitability by utilizing all the products, services and systems in our portfolio.

Whether your needs is to develop sophisticated new machinery or to keep production lines running 24 hours a day, Parker is there to work with you to help you achieve your goals.

## History

The history of our great company is an interesting account of the transformation of technology over a period of nearly 100 years.

Founded in 1918, the evolution of the Parker Appliance Company into Parker Hannifin Corporation illustrates a legacy of innovation.

We believe our future growth is assured by honoring Parker's tradition of excellence and fair dealings.

|         |                          |
|---------|--------------------------|
| 1918    | Founded                  |
| 822,000 | Products Sold            |
| 58,151  | Customers                |
| 13,000  | Distribution/MRO Outlets |
| 1,200   | Markets                  |
| 316     | Manufacturing Plants     |
| 50      | Countries                |

## Parker Hannifin ASEAN & Australasia



### ASEAN Sales Office Presence

- **SINGAPORE** (Head Office)
- **MALAYSIA**  
Kuala Lumpur  
Penang  
Johor Bahru
- **INDONESIA**  
Jakarta
- **THAILAND**  
Bangkok
- **VIETNAM**  
Ho Chi Minh City
- **PHILIPPINES**  
Manila

### Australasia Sales Office Presence

- **SYDNEY** (Head Office)
- **AUSTRALIA**  
Perth  
Melbourne  
Brisbane  
Adelaide  
Mackay  
Newcastle
- **NEW ZEALAND**  
Auckland



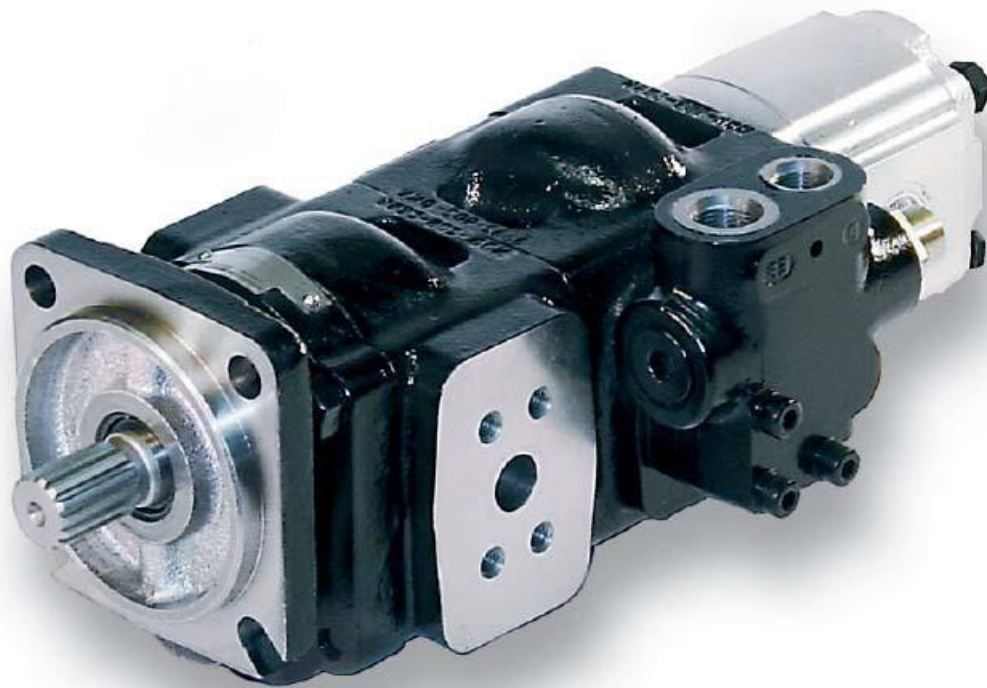
## Table of Content

|                                      |    |
|--------------------------------------|----|
| 1/ Fixed Displacement                | 5  |
| Gear Pumps And Motors                | 5  |
| Quick View                           | 6  |
| Parker 500 Series                    | 7  |
| Parker 300 Series                    | 20 |
| Parker 600 Series                    | 33 |
| Application Market                   | 43 |
| Literature                           | 44 |
| Vane Pumps                           | 45 |
| SDV Series                           | 46 |
| Single Pumps                         | 49 |
| Double Pumps                         | 54 |
| Triple Pumps                         | 60 |
| Application Market                   | 64 |
| Literature                           | 65 |
| LSHT Torqmotors™ and Nichols™ Motors | 66 |
| Specifications                       | 67 |
| TB Series                            | 69 |
| TE Series                            | 71 |
| Small Frame Options                  | 73 |
| TF Series                            | 74 |
| TG Series                            | 76 |
| TH Series                            | 78 |
| Large Frame Options                  | 80 |
| TK Series                            | 82 |
| Competitive Crossover                | 83 |
| Application Market                   | 84 |
| Literature                           | 85 |
| Axial Piston Pumps and Motors        | 86 |
| Axial Piston F11 Series              | 87 |
| Axial Piston F12 Series              | 90 |
| Application Market                   | 95 |
| Literature                           | 96 |

## Table of Content

|                                       |            |
|---------------------------------------|------------|
| <b>2/ Variable Displacement</b>       | <b>97</b>  |
| Pumps                                 | 98         |
| Quick View                            | 98         |
| PAVC Series                           | 99         |
| PAVC - Application Market/Literature  | 103        |
| PVP Series                            | 104        |
| PVP - Application Market/Literature   | 108        |
| P1/PD Series                          | 109        |
| P1/PD - Application Market/Literature | 114        |
| P2 Series                             | 117        |
| P2 - Application Market               | 122        |
| P2 - Literature                       | 123        |
| PV Plus Series                        | 124        |
| PV Plus - Application Market          | 129        |
| PV Plus - Literature                  | 130        |
| Motors                                | 131        |
| Quick View                            | 131        |
| V12 Bent Piston Series                | 132        |
| V14 Bent Piston Series                | 134        |
| Application Market                    | 138        |
| Literature                            | 139        |
| Transmission                          | 140        |
| Hydrostatic Pumps Goldcup Series      | 141        |
| Hydrostatic Motors Goldcup Series     | 147        |
| Application Market                    | 149        |
| Literature                            | 150        |
| <b>3/Truck Pumps</b>                  | <b>151</b> |
| Quick View                            | 152        |
| GPA/GP1 Series                        | 153        |
| F1 Pumps                              | 158        |
| F1 Motors                             | 162        |
| F2 Twin-flow Pumps                    | 164        |
| VP1 Pumps                             | 167        |
| Suction Fittings                      | 176        |
| Application Market                    | 178        |
| Literature                            | 179        |
| <b>4/Appendix</b>                     | <b>180</b> |
| Sizing                                | 180        |
| Useful Formula                        | 181        |
| Flow Capacity Chart                   | 182        |
| SAE Flanges and Shafts                | 183        |
| 4-Bolt SAE Ports Sizes                | 184        |





# Gear Pumps and Motors

1/ Fixed Displacement

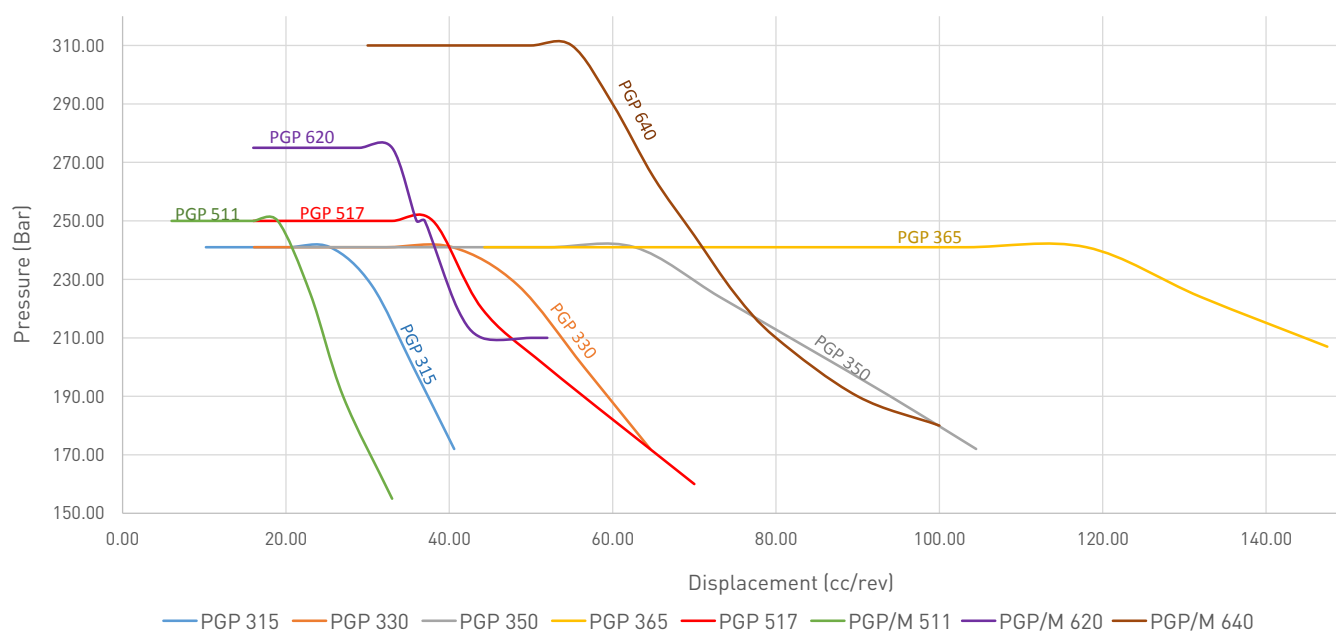


ENGINEERING YOUR SUCCESS.

## Product Table

|                    | CAST IRON |         |         |         |           |  | ALUMINIUM |  |  |
|--------------------|-----------|---------|---------|---------|-----------|--|-----------|--|--|
| Displacement (ccm) | PGP 300   |         |         | PGP 600 |           |  | PGP 500   |  |  |
| 0 - 10             |           |         |         |         |           |  |           |  |  |
| 20                 | PGP 315   |         |         |         | PGP/M 620 |  | PGP/M 511 |  |  |
| 30                 |           | PGP 330 |         |         |           |  |           |  |  |
| 40                 |           |         | PGP 350 |         |           |  |           |  |  |
| 50                 |           |         |         |         | PGP/M 640 |  |           |  |  |
| 60                 |           |         |         |         |           |  |           |  |  |
| 70                 |           |         |         |         |           |  |           |  |  |
| 80                 |           |         |         |         |           |  |           |  |  |
| 90                 |           |         |         |         |           |  |           |  |  |
| 100                |           |         |         |         |           |  |           |  |  |
| 110                |           |         |         |         |           |  |           |  |  |
| 120                |           |         |         |         |           |  |           |  |  |
| 130                |           |         |         |         |           |  |           |  |  |
| 140                |           |         |         |         |           |  |           |  |  |
| 150                |           |         |         |         |           |  |           |  |  |

## Pressure vs. Displacement



### High pressure operation

PGP 500 series pumps offer superior performance, high efficiency and low noise operation at high operating pressures. They are produced in three frame sizes, with displacements ranging from 0.8 to 70 cc/per rev. A wide variety of standard options are available to meet specific application requirements.

### Up to 250 bar continuous operation

High strength materials and large journal diameters provide low bearing loads for high pressure operation.

### Low Noise

PGP 505 and 517, 13 tooth gear profile, PGP 511, 12 tooth 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.

### Application Flexibility

International mounts and connections, integrated valve capabilities and common inlet multiple pump configurations provide unmatched design and application versatility.

### Characteristics

|                   |                                                                                                                                                                                                                                                                                                    |
|-------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Mounting          | SAE, rectangular, thru-bolt.                                                                                                                                                                                                                                                                       |
| Shaft             | SAE splined, keyed, tapered, parallel standard, tang drive on request.                                                                                                                                                                                                                             |
| Speed             | 500 – 4000 rpm, see table in catalogue                                                                                                                                                                                                                                                             |
| Axial/Radial Load | Units subject to axial, radial load must be specified with an outboard bearing.                                                                                                                                                                                                                    |
| Fluids            | Mineral oils, fire resistant fluids <ul style="list-style-type: none"> <li>- water-oil emulsion 60/40, HFB</li> <li>- water-glycol, HFC</li> <li>- phosphate-esters, HFD</li> </ul>                                                                                                                |
| Temperature       | Fluid range of operating temperature – 15 to 80 deg C                                                                                                                                                                                                                                              |
| Fluid Viscosity   | Range of operating viscosity 8 to 100 mm <sup>2</sup> /s max                                                                                                                                                                                                                                       |
| Filtration        | According to ISO 4406 Cl. 16/13                                                                                                                                                                                                                                                                    |
| Multiple Pumps    | <ul style="list-style-type: none"> <li>- Available in two, three, or four sections</li> <li>- Max shaft load must conform to limitations shown in catalogue</li> <li>- Max load is calculated by adding the torque values for each pumping sections that will be simultaneously loaded.</li> </ul> |

Heavy Duty Aluminum pumps & motors

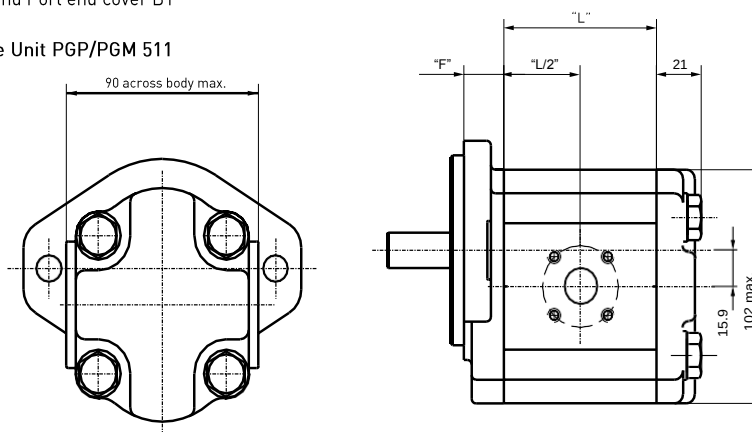


## PGP/PGM 511 Specification - Standard Displacements

| Pump Displacement                                 | Code                 | 0060 | 0080 | 0100 | 0110 | 0140 | 0160 | 0190 | 0230 | 0270 | 033  |
|---------------------------------------------------|----------------------|------|------|------|------|------|------|------|------|------|------|
|                                                   | cm <sup>3</sup> /rev | 6.0  | 8.0  | 10.0 | 11.0 | 14.0 | 16.0 | 19.0 | 23.0 | 27.0 | 33.0 |
| Max. Continuous Pressure                          | bar                  | 250  | 250  | 250  | 250  | 250  | 250  | 250  | 225  | 190  | 155  |
| Minimum Speed<br>@ 0 Inlet & Max. outlet pressure | rpm                  | 500  | 500  | 500  | 500  | 500  | 500  | 500  | 500  | 500  | 500  |
| Maximum Speed<br>@ 0 Inlet & Max. outlet pressure | rpm                  | 3500 | 3500 | 3500 | 3500 | 3500 | 3500 | 3250 | 2750 | 2350 | 2000 |
| Pump Input Power<br>@ Max. Pressure and 1500 rpm  | kW                   | 4.5  | 6.0  | 7.5  | 8.3  | 10.5 | 12.0 | 14.3 | 14.7 | 14.9 | 17.3 |
| Dimension "L"                                     | mm                   | 50.1 | 53.3 | 56.5 | 58.0 | 62.8 | 65.9 | 70.6 | 76.9 | 83.2 | 92.6 |
| Approximate Weight <sup>1)</sup>                  | kg                   | 3.40 | 3.47 | 3.55 | 3.57 | 3.71 | 3.79 | 3.91 | 4.06 | 4.21 | 4.45 |

<sup>1)</sup>Single pump with Flange Q1 and Port end cover B1

Single Unit PGP/PGM 511

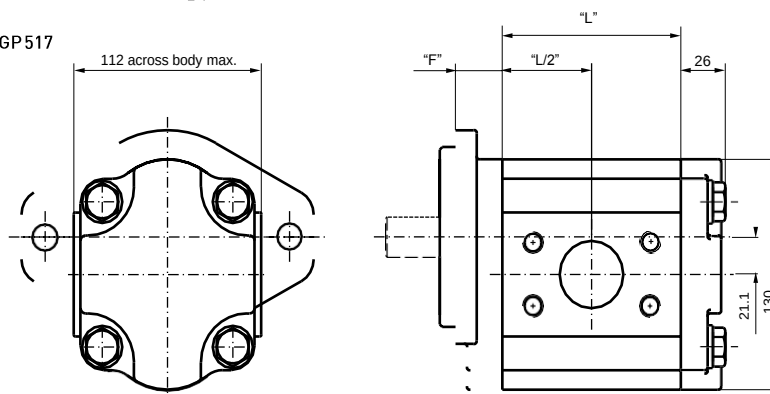


## PGP 517 Specification - Standard Displacements

| Pump Displacement                                 | Code                 | 0160 | 0190 | 0230 | 0280 | 0330 | 0380 | 0440 | 0520  | 0700  |
|---------------------------------------------------|----------------------|------|------|------|------|------|------|------|-------|-------|
|                                                   | cm <sup>3</sup> /rev | 16.0 | 19.0 | 23.0 | 28.0 | 33.0 | 38.0 | 44.0 | 52.0  | 70.0  |
| Max. Continuous Pressure                          | bar                  | 250  | 250  | 250  | 250  | 250  | 250  | 220  | 200   | 160   |
| Minimum Speed<br>@ 0 Inlet & Max. outlet pressure | rpm                  | 500  | 500  | 500  | 500  | 500  | 500  | 500  | 500   | 500   |
| Maximum Speed<br>@ 0 Inlet & Max. outlet pressure | rpm                  | 3400 | 3300 | 3300 | 3100 | 3000 | 3000 | 2800 | 2700  | 2400  |
| Pump Input Power<br>@ Max. Pressure and 1500 rpm  | kW                   | 11   | 13.1 | 15.8 | 19.3 | 22.7 | 26.1 | 27   | 28.6  | 31.2  |
| Dimension "L"                                     | mm                   | 70.3 | 73.3 | 77.4 | 82.4 | 87.5 | 92.5 | 98.6 | 106.7 | 124.9 |
| Approximate Weight <sup>1)</sup>                  | kg                   | 8.00 | 8.12 | 8.29 | 8.50 | 8.70 | 8.91 | 9.16 | 9.49  | 10.24 |

<sup>1)</sup>Single pump with Flange H3 and Port end cover B1

Single Unit PGP517



PGP511 Series Aluminum

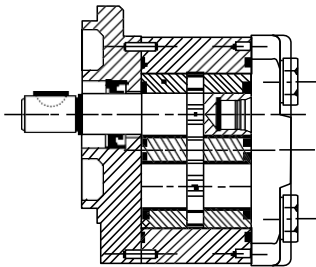
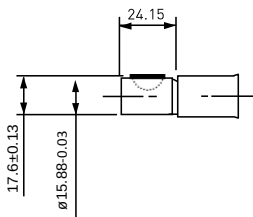
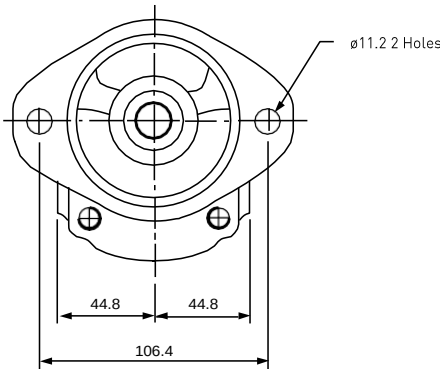
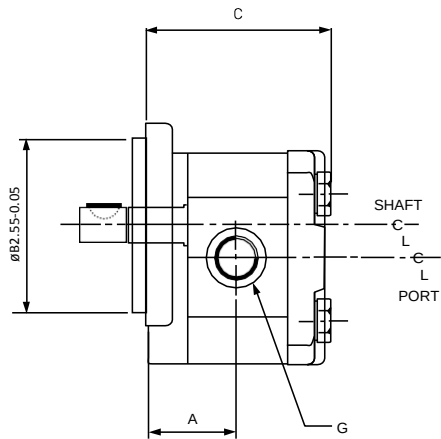
PGP511 Series Aluminum  
SAE "A" 2 Bolt Mount (Option Code "H2") 5/8"  
Keyed (Option Code "K1")  
Model Code: PGP511M XXX C K1H2 N DX DX B1B1



Sub Class CAQ

| DISP   | DIMENSION MM |       | INLET   | OUTLET  |         |         | PART NUMBER | PART NUMBER |
|--------|--------------|-------|---------|---------|---------|---------|-------------|-------------|
| cc/rev | A            | C     | "G" UNF | "G" UNF | Max RPM | Max Bar | Clockwise   | CCW         |
| 4      | 42.6         | 86.7  | 7/8"    | 3/4"    | 3500    | 250     | 3349116034  | 3349116034A |
| 6      | 44.1         | 89.8  | 1-1/16" | 7/8"    | 3500    | 250     | 3349116035  | 3349116035A |
| 8      | 45.7         | 83    | 1-1/16" | 7/8"    | 3500    | 250     | 3349116036  | 3349116036A |
| 10     | 47.3         | 96.1  | 1-1/16" | 7/8"    | 3500    | 250     | -           | -           |
| 11     | 48.1         | 97.7  | 1-5/16" | 1-1/16" | 3500    | 250     | 3349116031  | 3349116031A |
| 14     | 50.4         | 102.4 | 1-5/16" | 1-1/16" | 3500    | 250     | 3349116032  | 3349116032A |
| 16     | 52           | 105.6 | 1-5/16" | 1-1/16" | 3400    | 250     | 3349116033  | 3349116033A |
| 19     | 54.4         | 110.3 | 1-5/16" | 1-1/16" | 2900    | 220     | 3349116473  | 3349116473A |
| 23     | 57.5         | 116.6 | 1-5/8"  | 1-5/16" | 2750    | 210     | 3349116038  | 3349116038A |
| 27     | 60.7         | 122.9 | 1-5/8"  | 1-5/16" | 2300    | 180     | 3349116039  | 3349116039A |

Seal Kit 8611-023-00N



PGP511 Series Aluminum

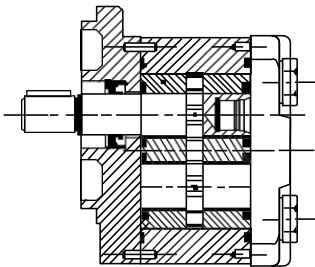
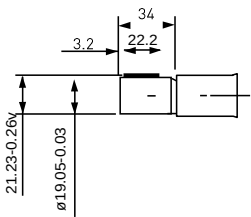
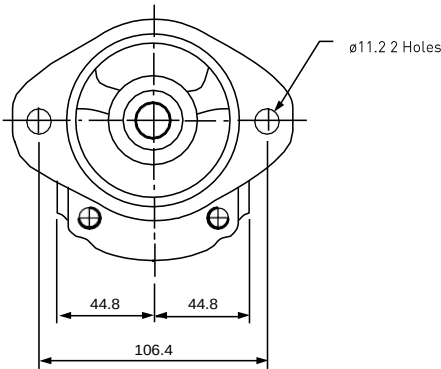
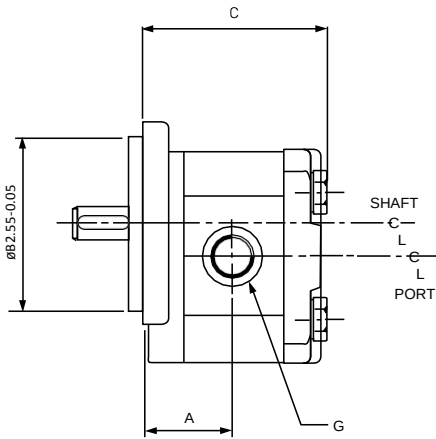


PGP511 Series Aluminum  
SAE "A" 2 Bolt Mount (Option Code "H2") 3/4"  
Keyed Shaft (Option Code "L6")  
Model Code: PGP511M XXX C L6 H2 N DXDX B1B1

Sub Class CAQ

| DISP   | DIMENSION MM |       | INLET   | OUTLET  |         |         | PART NUMBER | ORDER CODE  |
|--------|--------------|-------|---------|---------|---------|---------|-------------|-------------|
| cc/rev | A            | C     | "G" UNF | "G" UNF | Max RPM | Max Bar | Clockwise   | CCW         |
| 4      | 42.6         | 86.7  | 7/8"    | 3/4"    | 3500    | 250     | 3349116042  | 3349116042A |
| 6      | 44.1         | 89.8  | 1-1/16" | 7/8"    | 3500    | 250     | 3349116043  | 3349116043A |
| 8      | 45.7         | 83    | 1-1/16" | 7/8"    | 3500    | 250     | 3349116044  | 3349116044A |
| 10     | 47.3         | 96.1  | 1-5/16" | 1-1/16" | 3500    | 250     | 3349116045  | 3349116045A |
| 11     | 48.1         | 97.7  | 1-5/16" | 1-1/16" | 3500    | 250     | 3349116046  | 3349116046A |
| 14     | 50.4         | 102.4 | 1-5/16" | 1-1/16" | 3500    | 250     | 3349116047  | 3349116047A |
| 16     | 52           | 105.6 | 1-5/16" | 1-1/16" | 3400    | 250     | 3349116048  | 3349116048A |
| 19     | 54.4         | 110.3 | 1-5/8"  | 1-5/16" | 3250    | 250     | 3349116049  | 3349116049A |
| 23     | 57.5         | 116.6 | 1-5/8"  | 1-5/16" | 2750    | 210     | 3349116050  | 3349116050A |
| 27     | 60.7         | 122.9 | 1-5/8"  | 1-5/16" | 2300    | 180     | 3349116051  | 3349116051A |

Seal Kit 8611-023-Q1N





## PGP511 Series Aluminium



PGP511 Series Aluminum Gear Pumps SAE

"A" 2 Bolt Mount (Option Code "H2") 5/8" 9

Tooth Spline (Option Code "A1")

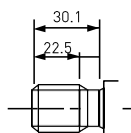
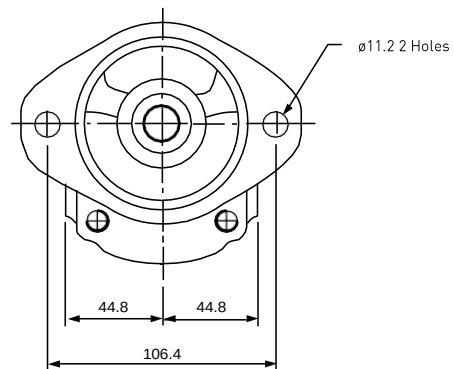
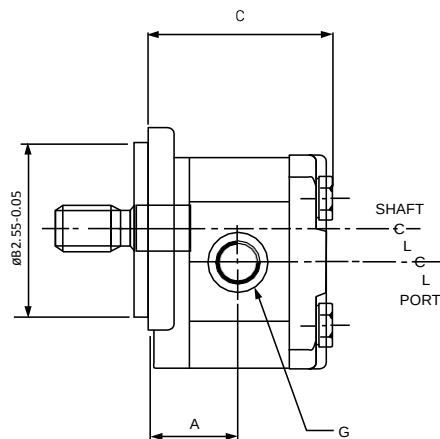
Model Code: PGP511M XXX C A1 H2 N DXDX B1B1

Sub Class CAQ

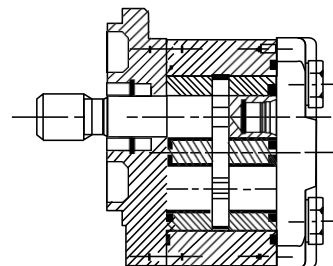
| DISP   | DIMENSION MM |       | INLET   | OUTLET  |         |         | ORDER CODE | ORDER CODE  |
|--------|--------------|-------|---------|---------|---------|---------|------------|-------------|
| cc/rev | A            | C     | "G" UNF | "G" UNF | Max RPM | Max Bar | Clockwise  | CCW         |
| 4      | 42.6         | 86.7  | 7/8"    | 3/4"    | 3500    | 250     | 3349111578 | 3349111578A |
| 6      | 44.1         | 89.8  | 1-1/16" | 7/8"    | 3500    | 250     | 3349111579 | 3349111579A |
| 8      | 45.7         | 93    | 1-1/16" | 7/8"    | 3500    | 250     | 3349111580 | 3349111580A |
| 10     | 47.3         | 96.1  | 1-5/16" | 1-1/16" | 3500    | 250     | 3349111581 | 3349111581A |
| 11     | 48.1         | 97.7  | 1-5/16" | 1-1/16" | 3500    | 250     | 3349111582 | 3349111582A |
| 14     | 50.4         | 102.4 | 1-5/16" | 1-1/16" | 3500    | 250     | 3349111583 | 3349111583A |
| 16     | 52           | 105.6 | 1-5/16" | 1-1/16" | 3400    | 250     | -          | -           |
| 19     | 54.4         | 110.3 | 1-5/8"  | 1-5/16" | 3250    | 250     | 3349111585 | 3349111585A |
| 23     | 57.5         | 116.6 | 1-5/8"  | 1-5/16" | 2750    | 210     | 3349111586 | 3349111586A |
| 27     | 60.7         | 122.9 | 1-5/8"  | 1-5/16" | 2300    | 180     | 3349111587 | 3349111587A |
| 31     | 63.8         | 129.2 | 1-5/8"  | 1-5/16" | 2100    | 160     | 3349111588 | 3349111588A |
| 33     | 65.4         | 132.3 | 1-5/8"  | 1-5/16" | 2000    | 150     | 3349111589 | 3349111589A |

Seal Kit

8611-023-00N



SAE INVOLUTE SPLINE  
9 TEETH - 16/32 PITCH  
FLAT ROOT SIDE FIT  
MAJOR DIA. 15.32 - 15.47  
MINOR DIA 12.281 MAX



## PGP511 Series Aluminium

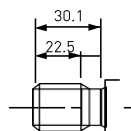
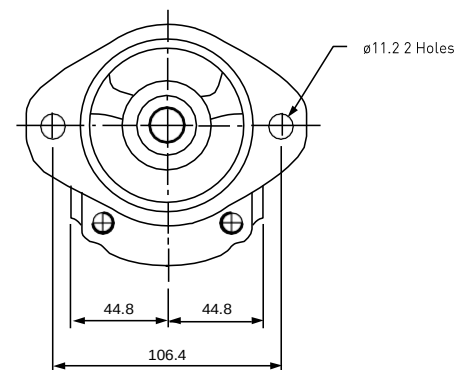
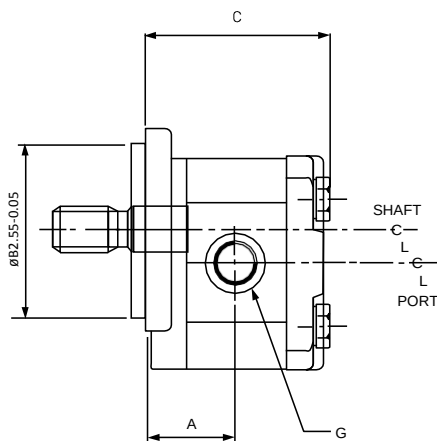


PGP511 Series Aluminum Gear Pumps SAE  
 "A" 2 Bolt Mount (Option Code "H2") 3/4" 11  
 Tooth Spline (Option Code "C1")  
 Model Code: PGP511M XXX C C1 H2 N DXDX B1B1

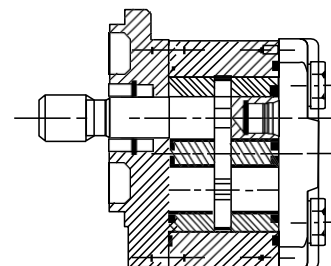
Sub Class CAQ

| DISP   | DIMENSION MM |       | INLET   | OUTLET  |         |         | ORDER CODE | ORDER CODE  |
|--------|--------------|-------|---------|---------|---------|---------|------------|-------------|
| cc/rev | A            | C     | "G" UNF | "G" UNF | Max RPM | Max Bar | Clockwise  | CCW         |
| 4      | 42.6         | 86.7  | 7/8"    | 3/4"    | 3500    | 250     | 3349111602 | 3349111602A |
| 6      | 44.1         | 89.8  | 1-1/16" | 7/8"    | 3500    | 250     | 3349111603 | 3349111603A |
| 8      | 45.7         | 93    | 1-1/16" | 7/8"    | 3500    | 250     | 3349111604 | 3349111604A |
| 10     | 47.3         | 96.1  | 1-5/16" | 1-1/16" | 3500    | 250     | -          | -           |
| 11     | 48.1         | 97.7  | 1-5/16" | 1-1/16" | 3500    | 250     | -          | -           |
| 14     | 50.4         | 102.4 | 1-5/16" | 1-1/16" | 3500    | 250     | 3349111607 | 3349111607A |
| 16     | 52           | 105.6 | 1-5/16" | 1-1/16" | 3400    | 250     | 3349111608 | 3349111608A |
| 19     | 54.4         | 110.3 | 1-5/8"  | 1-5/16" | 3250    | 250     | 3349111609 | 3349111609A |
| 23     | 57.5         | 116.6 | 1-5/8"  | 1-5/16" | 2750    | 210     | 3349111610 | 3349111610A |
| 27     | 60.7         | 122.9 | 1-5/8"  | 1-5/16" | 2300    | 190     | 3349111611 | 3349111611A |
| 31     | 63.8         | 129.2 | 1-5/8"  | 1-5/16" | 2100    | 165     | 3349111612 | 3349111612A |
| 33     | 65.4         | 132.3 | 1-5/8"  | 1-5/16" | 2000    | 155     | 3349111613 | 3349111613A |

Seal Kit 8611-023-Q1N



SAE INVOLUTE SPLINE 11  
 TEETH - 16/32 PITCH  
 FLAT ROOT SIDE FIT  
 MAJOR DIA. 18.50 - 18.63  
 MINOR DIA 15.456



PGP511 Series Aluminum

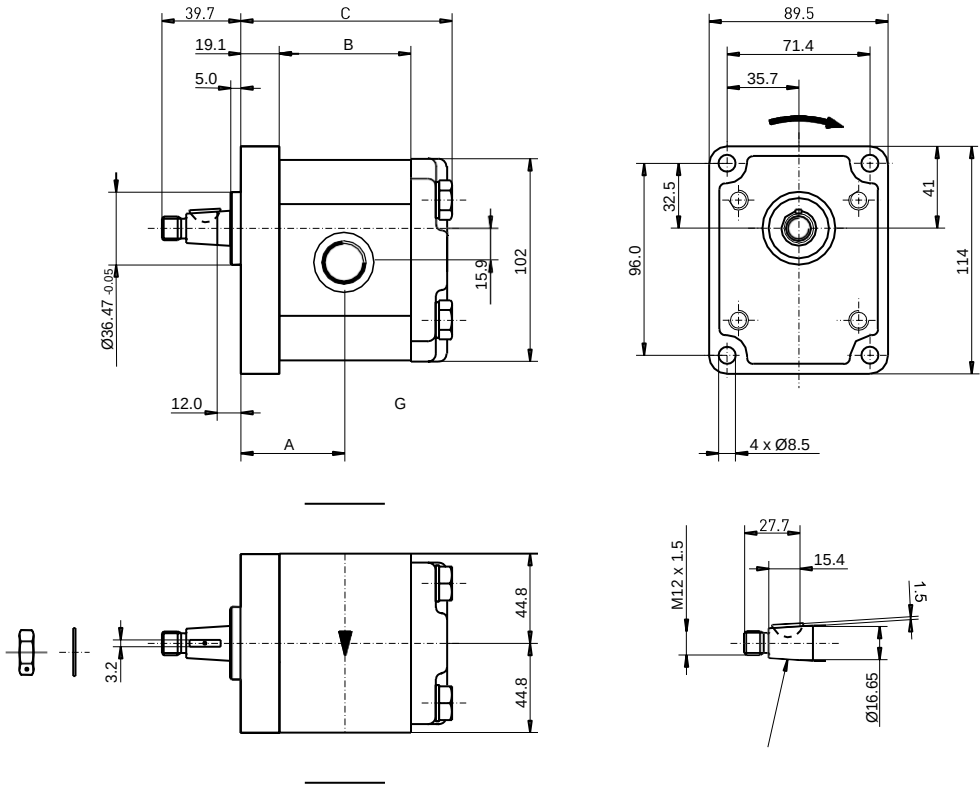


PGP511 Series Aluminum  
DIN Group 2, 4 Bolt Mount (Option Code "D3")  
1:8 Taper Shaft (Option Code "S2")  
Model Code: PGP511M XXX C S2 D3 N EXEX B1B1

Sub Class CAQ

| DISP<br>cc/rev | DIMENSION<br>MM |       | INLET    | OUTLET   |         |         | ORDER CODE | ORDER CODE  |
|----------------|-----------------|-------|----------|----------|---------|---------|------------|-------------|
|                | A               | C     | G        | G        | Max RPM | Max Bar | Clockwise  | CCW         |
| 4              | 42.6            | 86.7  | 3/4"-BSP | 1/2"-BSP | 3500    | 250     | 3349111711 | 3349111711A |
| 6              | 44.1            | 89.8  | 3/4"-BSP | 1/2"-BSP | 3300    | 250     | 3349111712 | 3349111712A |
| 8              | 45.7            | 93.0  | 3/4"-BSP | 1/2"-BSP | 3500    | 250     | 3349111713 | 3349111713A |
| 10             | 47.3            | 69.1  | 3/4"-BSP | 1/2"-BSP | 3500    | 250     | 3349116005 | 3349116005A |
| 11             | 48.1            | 97.7  | 3/4"-BSP | 1/2"-BSP | 3500    | 250     | 3349111714 | 3349111714A |
| 14             | 50.4            | 102.4 | 3/4"-BSP | 1/2"-BSP | 2800    | 250     | 3349111715 | 3349111715A |
| 16             | 52.0            | 105.6 | 3/4"-BSP | 1/2"-BSP | 2400    | 250     | 3349111716 | 3349111716A |
| 19             | 54.4            | 110.3 | 3/4"-BSP | 1/2"-BSP | 2000    | 250     | -          | -           |
| 23             | 57.5            | 116.6 | 3/4"-BSP | 1/2"-BSP | 1700    | 225     | 3349111718 | 3349111718A |
| 27             | 60.7            | 122.9 | 1"-BSP   | 3/4"-BSP | 2350    | 190     | 3349111719 | 3349111719A |
| 31             | 63.8            | 129.2 | 1"-BSP   | 3/4"-BSP | 2000    | 165     | 3349111720 | 3349111720A |
| 33             | 65.4            | 132.3 | 1"-BSP   | 3/4"-BSP | 1900    | 155     | 3349111721 | 3349111721A |

Seal Kit 8611-023-00N



# Parker 500 Series

## Preferred Model (PGP511, Single Pump)

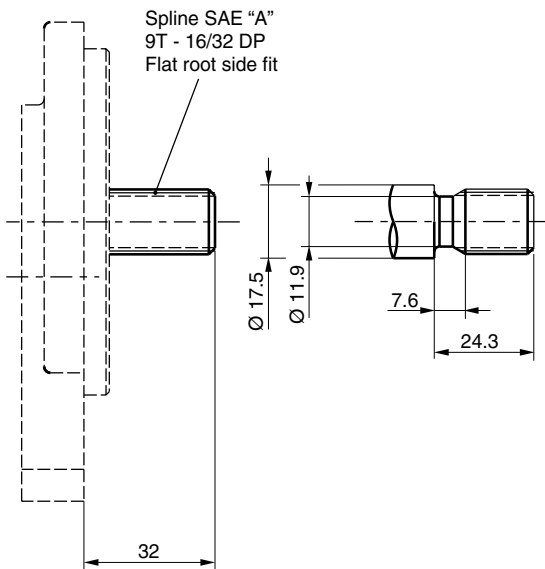
| Order Code | Model Code                | cc/rev | Shaft              | Mounting       | Seal | Port (Inlet) | Port (Outlet) | Rotation |
|------------|---------------------------|--------|--------------------|----------------|------|--------------|---------------|----------|
| 3349116125 | PGP511A0040CK1H2NE3E2B1B1 | 4      | Ø15.88, SAE"A" Key | SAE"A" 2 bolts | NBR  | 1/2 - 12 BSP | 3/8 - 19 BSP  | CW       |
| 3349112824 | PGP511A0040AA1H2VE5E3B1B1 | 4      | 9T, SAE"A" spline  | SAE"A" 2 bolts | FPM  | 3/4 - 14 BSP | 1/2 - 12 BSP  | CCW      |
| 3349111277 | PGP511A0060CK1H2NE5E3B1B1 | 6      | Ø15.88, SAE"A" Key | SAE"A" 2 bolts | NBR  | 3/4 - 14 BSP | 1/2 - 12 BSP  | CW       |
| 3349112534 | PGP511A0060AK1H2NE5E3B1B1 | 6      | Ø15.88, SAE"A" Key | SAE"A" 2 bolts | NBR  | 3/4 - 14 BSP | 1/2 - 12 BSP  | CCW      |
| 3349111044 | PGP511A0060CA1H2NE5E3B1B1 | 6      | 9T, SAE"A" spline  | SAE"A" 2 bolts | NBR  | 3/4 - 14 BSP | 1/2 - 12 BSP  | CW       |
| 3349112621 | PGP511A0060AA1H2NE5E3B1B1 | 6      | 9T, SAE"A" spline  | SAE"A" 2 bolts | NBR  | 3/4 - 14 BSP | 1/2 - 12 BSP  | CCW      |
| 3349111278 | PGP511A0080CK1H2NE5E3B1B1 | 8      | Ø15.88, SAE"A" Key | SAE"A" 2 bolts | NBR  | 3/4 - 14 BSP | 1/2 - 12 BSP  | CW       |
| 3349112505 | PGP511A0080AK1H2NE5E3B1B1 | 8      | Ø15.88, SAE"A" Key | SAE"A" 2 bolts | NBR  | 3/4 - 14 BSP | 1/2 - 12 BSP  | CCW      |
| 3349111562 | PGP511A0080CA1H2NE5E3B1B1 | 8      | 9T, SAE"A" spline  | SAE"A" 2 bolts | NBR  | 3/4 - 14 BSP | 1/2 - 12 BSP  | CW       |
| 3349112622 | PGP511A0080AA1H2NE5E3B1B1 | 8      | 9T, SAE"A" spline  | SAE"A" 2 bolts | NBR  | 3/4 - 14 BSP | 1/2 - 12 BSP  | CCW      |
| 3349116054 | PGP511A0100CK1H2NE5E3B1B1 | 10     | Ø15.88, SAE"A" Key | SAE"A" 2 bolts | NBR  | 3/4 - 14 BSP | 1/2 - 12 BSP  | CW       |
| 3349116130 | PGP511A0100CA1H2NE5E3B1B1 | 10     | 9T, SAE"A" spline  | SAE"A" 2 bolts | NBR  | 3/4 - 14 BSP | 1/2 - 12 BSP  | CW       |
| 3349112628 | PGP511A0100AA1H2NE5E3B1B1 | 10     | 9T, SAE"A" spline  | SAE"A" 2 bolts | NBR  | 3/4 - 14 BSP | 1/2 - 12 BSP  | CCW      |
| 3349111079 | PGP511A0110CK1H2NE5E3B1B1 | 11     | Ø15.88, SAE"A" Key | SAE"A" 2 bolts | NBR  | 3/4 - 14 BSP | 1/2 - 12 BSP  | CW       |
| 3349112103 | PGP511A0110AK1H2NB1B1E5E3 | 11     | Ø15.88, SAE"A" Key | SAE"A" 2 bolts | NBR  | 3/4 - 14 BSP | 1/2 - 12 BSP  | CCW      |
| 3349111039 | PGP511A0110CA1H2NE5E3B1B1 | 11     | 9T, SAE"A" spline  | SAE"A" 2 bolts | NBR  | 3/4 - 14 BSP | 1/2 - 12 BSP  | CW       |
| 3349112023 | PGP511A0110AA1H2NE5E3B1B1 | 11     | 9T, SAE"A" spline  | SAE"A" 2 bolts | NBR  | 3/4 - 14 BSP | 1/2 - 12 BSP  | CCW      |
| 3349111279 | PGP511A0140CK1H2NE5E3B1B1 | 14     | Ø15.88, SAE"A" Key | SAE"A" 2 bolts | NBR  | 3/4 - 14 BSP | 1/2 - 12 BSP  | CW       |
| 3349112905 | PGP511A0140AK1H2NE5E3B1B1 | 14     | Ø15.88, SAE"A" Key | SAE"A" 2 bolts | NBR  | 3/4 - 14 BSP | 1/2 - 12 BSP  | CCW      |
| 3349111563 | PGP511A0140CA1H2NE5E3B1B1 | 14     | 9T, SAE"A" spline  | SAE"A" 2 bolts | NBR  | 3/4 - 14 BSP | 1/2 - 12 BSP  | CW       |
| 3349112623 | PGP511A0140AA1H2NE5E3B1B1 | 14     | 9T, SAE"A" spline  | SAE"A" 2 bolts | NBR  | 3/4 - 14 BSP | 1/2 - 12 BSP  | CCW      |
| 3349111280 | PGP511A0160CK1H2NE5E3B1B1 | 16     | Ø15.88, SAE"A" Key | SAE"A" 2 bolts | NBR  | 3/4 - 14 BSP | 1/2 - 12 BSP  | CW       |
| 3349112362 | PGP511A0160AK1H2NE5E3B1B1 | 16     | Ø15.88, SAE"A" Key | SAE"A" 2 bolts | NBR  | 3/4 - 14 BSP | 1/2 - 12 BSP  | CW       |
| 3349111692 | PGP511A0160CK1H2NE6E5B1B1 | 16     | Ø15.88, SAE"A" Key | SAE"A" 2 bolts | NBR  | 1 - 11 BSP   | 3/4 - 14 BSP  | CW       |
| 3349112362 | PGP511A0160AK1H2NE5E3B1B1 | 16     | Ø15.88, SAE"A" Key | SAE"A" 2 bolts | NBR  | 3/4 - 14 BSP | 1/2 - 12 BSP  | CCW      |
| 3349111793 | PGP511A0160CA1H2NE5E3B1B1 | 16     | 9T, SAE"A" spline  | SAE"A" 2 bolts | NBR  | 3/4 - 14 BSP | 1/2 - 12 BSP  | CW       |
| 3349112367 | PGP511A0160AA1H2NE5E3B1B1 | 16     | 9T, SAE"A" spline  | SAE"A" 2 bolts | NBR  | 3/4 - 14 BSP | 1/2 - 12 BSP  | CCW      |
| 3349111092 | PGP511A0160AA1H2NE6E5B1B1 | 16     | 9T, SAE"A" spline  | SAE"A" 2 bolts | NBR  | 1 - 11 BSP   | 3/4 - 14 BSP  | CW       |
| 3349112895 | PGP511A0160AA1H2NE6E5B1B1 | 16     | 9T, SAE"A" spline  | SAE"A" 2 bolts | NBR  | 1 - 11 BSP   | 3/4 - 14 BSP  | CCW      |
| 3349111281 | PGP511A0190CK1H2NE5E3B1B1 | 19     | Ø15.88, SAE"A" Key | SAE"A" 2 bolts | NBR  | 3/4 - 14 BSP | 1/2 - 12 BSP  | CW       |
| 3349112547 | PGP511A0190AK1H2NE5E3B1B1 | 19     | Ø15.88, SAE"A" Key | SAE"A" 2 bolts | NBR  | 3/4 - 14 BSP | 1/2 - 12 BSP  | CCW      |
| 3349111477 | PGP511A0190CK1H2NE6E5B1B1 | 19     | Ø15.88, SAE"A" Key | SAE"A" 2 bolts | NBR  | 1 - 11 BSP   | 3/4 - 14 BSP  | CW       |
| 3349111312 | PGP511A0190CA1H2NE5E3B1B1 | 19     | 9T, SAE"A" spline  | SAE"A" 2 bolts | NBR  | 3/4 - 14 BSP | 1/2 - 12 BSP  | CW       |
| 3349112492 | PGP511A0190AA1H2NE5E3B1B1 | 19     | 9T, SAE"A" spline  | SAE"A" 2 bolts | NBR  | 3/4 - 14 BSP | 1/2 - 12 BSP  | CCW      |
| 3349116193 | PGP511A0190CA1H2NE6E5B1B1 | 19     | 9T, SAE"A" spline  | SAE"A" 2 bolts | NBR  | 1 - 11 BSP   | 3/4 - 14 BSP  | CW       |
| 3349112853 | PGP511A0190AA1H2NE6E5B1B1 | 19     | 9T, SAE"A" spline  | SAE"A" 2 bolts | NBR  | 1 - 11 BSP   | 3/4 - 14 BSP  | CCW      |
| 3349111026 | PGP511A0230CK1H2NE6E5B1B1 | 23     | Ø15.88, SAE"A" Key | SAE"A" 2 bolts | NBR  | 1 - 11 BSP   | 3/4 - 14 BSP  | CW       |
| 3349112468 | PGP511A0230AK1H2NE6E5B1B1 | 23     | Ø15.88, SAE"A" Key | SAE"A" 2 bolts | NBR  | 1 - 11 BSP   | 3/4 - 14 BSP  | CCW      |
| 3349111564 | PGP511A0230CA1H2NE6E5B1B1 | 23     | 9T, SAE"A" spline  | SAE"A" 2 bolts | NBR  | 1 - 11 BSP   | 3/4 - 14 BSP  | CW       |
| 3349112624 | PGP511A0230AA1H2NE6E5B1B1 | 23     | 9T, SAE"A" spline  | SAE"A" 2 bolts | NBR  | 1 - 11 BSP   | 3/4 - 14 BSP  | CCW      |
| 3349111024 | PGP511A0270CK1H2NE6E5B1B1 | 27     | Ø15.88, SAE"A" Key | SAE"A" 2 bolts | NBR  | 1 - 11 BSP   | 3/4 - 14 BSP  | CW       |
| 3349111942 | PGP511A0270CA1H2NE6E5B1B1 | 27     | 9T, SAE"A" spline  | SAE"A" 2 bolts | NBR  | 1 - 11 BSP   | 3/4 - 14 BSP  | CW       |
| 3349112494 | PGP511A0270AA1H2NE6E5B1B1 | 27     | 9T, SAE"A" spline  | SAE"A" 2 bolts | NBR  | 1 - 11 BSP   | 3/4 - 14 BSP  | CCW      |
| 3349111635 | PGP511A0310CK1H2NE6E5B1B1 | 31     | Ø15.88, SAE"A" Key | SAE"A" 2 bolts | NBR  | 1 - 11 BSP   | 3/4 - 14 BSP  | CW       |
| 3349111207 | PGP511A0310CA1H2NE6E5B1B1 | 31     | 9T, SAE"A" spline  | SAE"A" 2 bolts | NBR  | 1 - 11 BSP   | 3/4 - 14 BSP  | CW       |
| 3349112229 | PGP511A0310AA1H2NE6E5B1B1 | 31     | 9T, SAE"A" spline  | SAE"A" 2 bolts | NBR  | 1 - 11 BSP   | 3/4 - 14 BSP  | CCW      |
| 3349111433 | PGP511A0330CK1H2NE6E5B1B1 | 33     | Ø15.88, SAE"A" Key | SAE"A" 2 bolts | NBR  | 1 - 11 BSP   | 3/4 - 14 BSP  | CW       |
| 3349112287 | PGP511A0330AK1H2NE6E5B1B1 | 33     | Ø15.88, SAE"A" Key | SAE"A" 2 bolts | NBR  | 1 - 11 BSP   | 3/4 - 14 BSP  | CCW      |
| 3349111461 | PGP511A0330CA1H2NE6E6B1B1 | 33     | 9T, SAE"A" spline  | SAE"A" 2 bolts | NBR  | 1 - 11 BSP   | 1 - 11 BSP    | CW       |
| 3349112773 | PGP511A0330AA1H2NE6E5B1B1 | 33     | 9T, SAE"A" spline  | SAE"A" 2 bolts | NBR  | 1 - 11 BSP   | 3/4 - 14 BSP  | CCW      |

## Preferred Model (Single Motor)

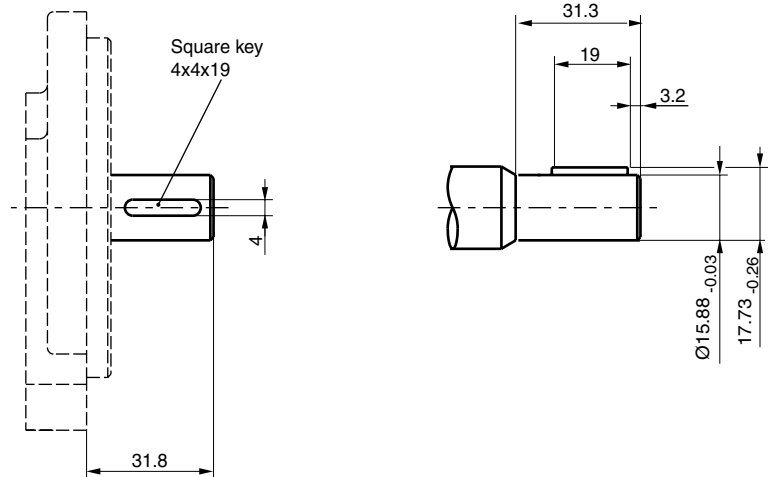
| Order Code | Model Code                  | cc/rev | Shaft                | Mounting        | Seal | Port (In & Out) | Rotation | Drain         |
|------------|-----------------------------|--------|----------------------|-----------------|------|-----------------|----------|---------------|
| 3349219458 | PGM511A0060BA1H2NE3E3B1B1G3 | 6      | 9T, SAE "A" spline   | SAE "A" 2 bolts | NBR  | 1/2 - 12 BSP    | BI       | Top, 1/4 BSP  |
| 3349219490 | PGM511A0080BK1H2NE3E3B1B1G4 | 8      | Ø15.88, SAE "A" Key  | SAE "A" 2 bolts | NBR  | 1/2 - 12 BSP    | BI       | Rear, 1/4 BSP |
| 3349219623 | PGM511A0100BA1H2NE3E3B1B1G4 | 10     | 9T, SAE "A" spline   | SAE "A" 2 bolts | NBR  | 1/2 - 12 BSP    | BI       | Rear, 1/4 BSP |
| 3349219494 | PGM511A0110BA1H2NE3E3B1B1G4 | 11     | 9T, SAE "A" spline   | SAE "A" 2 bolts | NBR  | 1/2 - 12 BSP    | BI       | Rear, 1/4 BSP |
| 3349219207 | PGM511A0140BK1H2NE3E3B1B1G4 | 14     | Ø15.88, SAE "A" Key  | SAE "A" 2 bolts | NBR  | 1/2 - 12 BSP    | BI       | Rear, 1/4 BSP |
| 3349219208 | PGM511A0160BK1H2NE3E3B1B1G4 | 16     | Ø15.88, SAE "A" Key  | SAE "A" 2 bolts | NBR  | 1/2 - 12 BSP    | BI       | Rear, 1/4 BSP |
| 3349219209 | PGM511A0190BK1H2NE3E3B1B1G4 | 19     | Ø15.88, SAE "A" Key  | SAE "A" 2 bolts | NBR  | 1/2 - 12 BSP    | BI       | Rear, 1/4 BSP |
| 3349219210 | PGM511A0230BK1H2NE3E3B1B1G4 | 23     | Ø15.88, SAE "A" Key  | SAE "A" 2 bolts | NBR  | 1/2 - 12 BSP    | BI       | Rear, 1/4 BSP |
| 3349219211 | PGM511A0270BK1H2NE5E5B1B1G4 | 27     | Ø15.88, SAE "A" Key  | SAE "A" 2 bolts | NBR  | 3/4 - 14 BSP    | BI       | Rear, 1/4 BSP |
| 3349219596 | PGM511A0310BK1H2NE5E5B1B1G6 | 31     | Ø19.05, SAE 19-1 Key | SAE "A" 2 bolts | NBR  | 3/4 - 14 BSP    | BI       | Left, 1/4 BSP |
| 3349219213 | PGM511B0330BK1H2NE5E5B1B1G4 | 33     | Ø15.88, SAE "A" Key  | SAE "A" 2 bolts | NBR  | 3/4 - 14 BSP    | BI       | Rear, 1/4 BSP |

## PGP/PGM 511 Drive Shaft

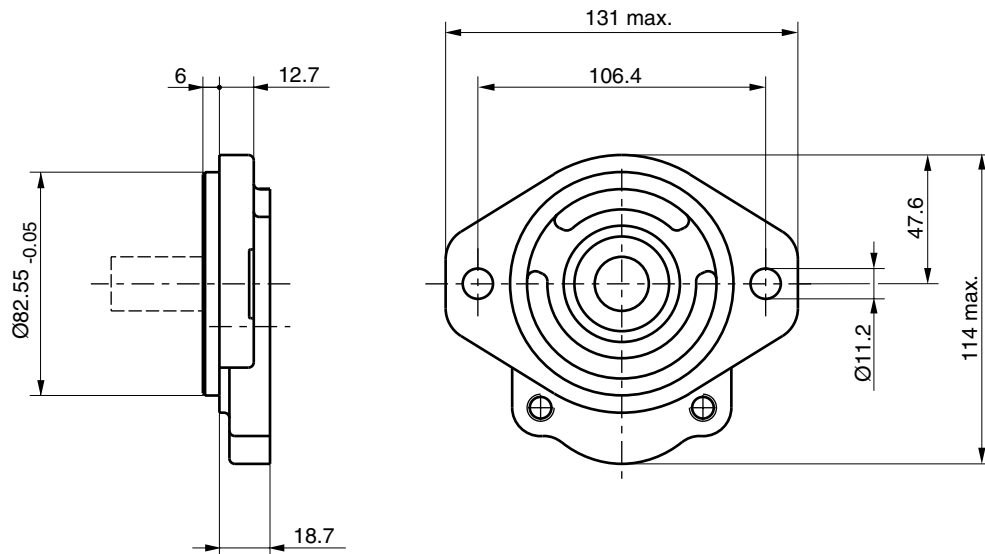
## Code A1



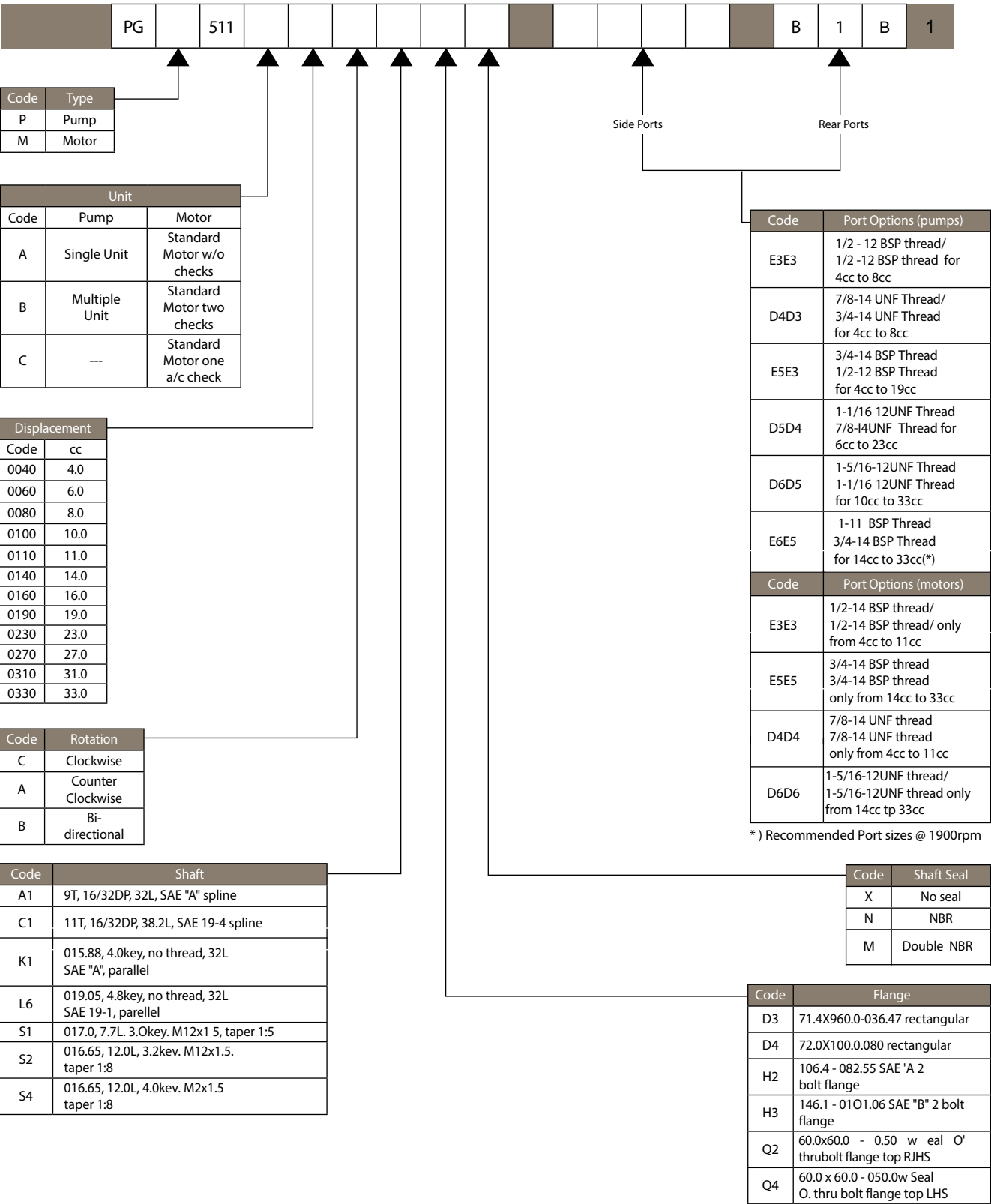
## Code K1



## Code H2



Data



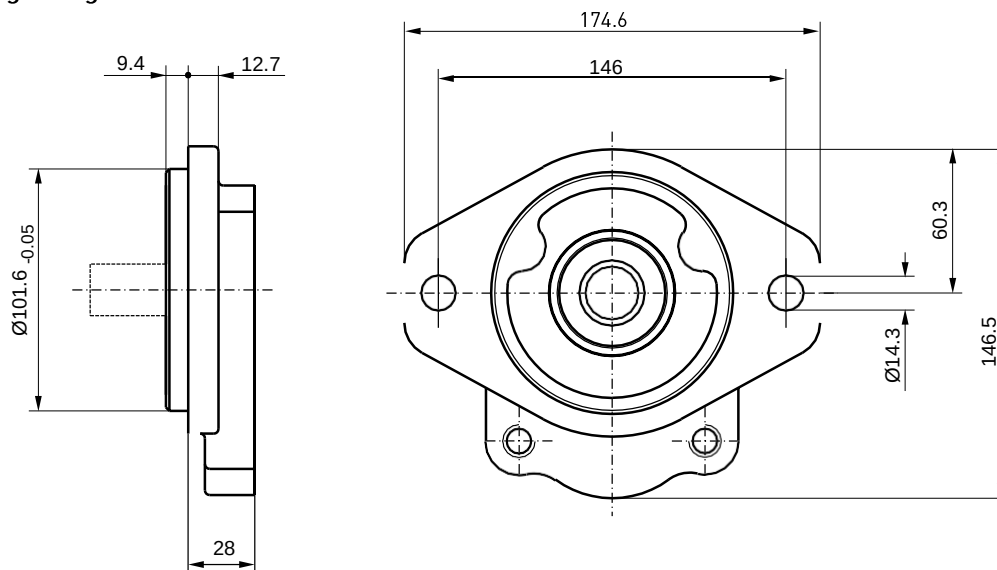
- Available Options
- Relief Valve
  - Priority Flow Divider
  - Load Sensing Priority Valve
  - Over-run check valve

## Preferred Model (PGP517, Single Pump)

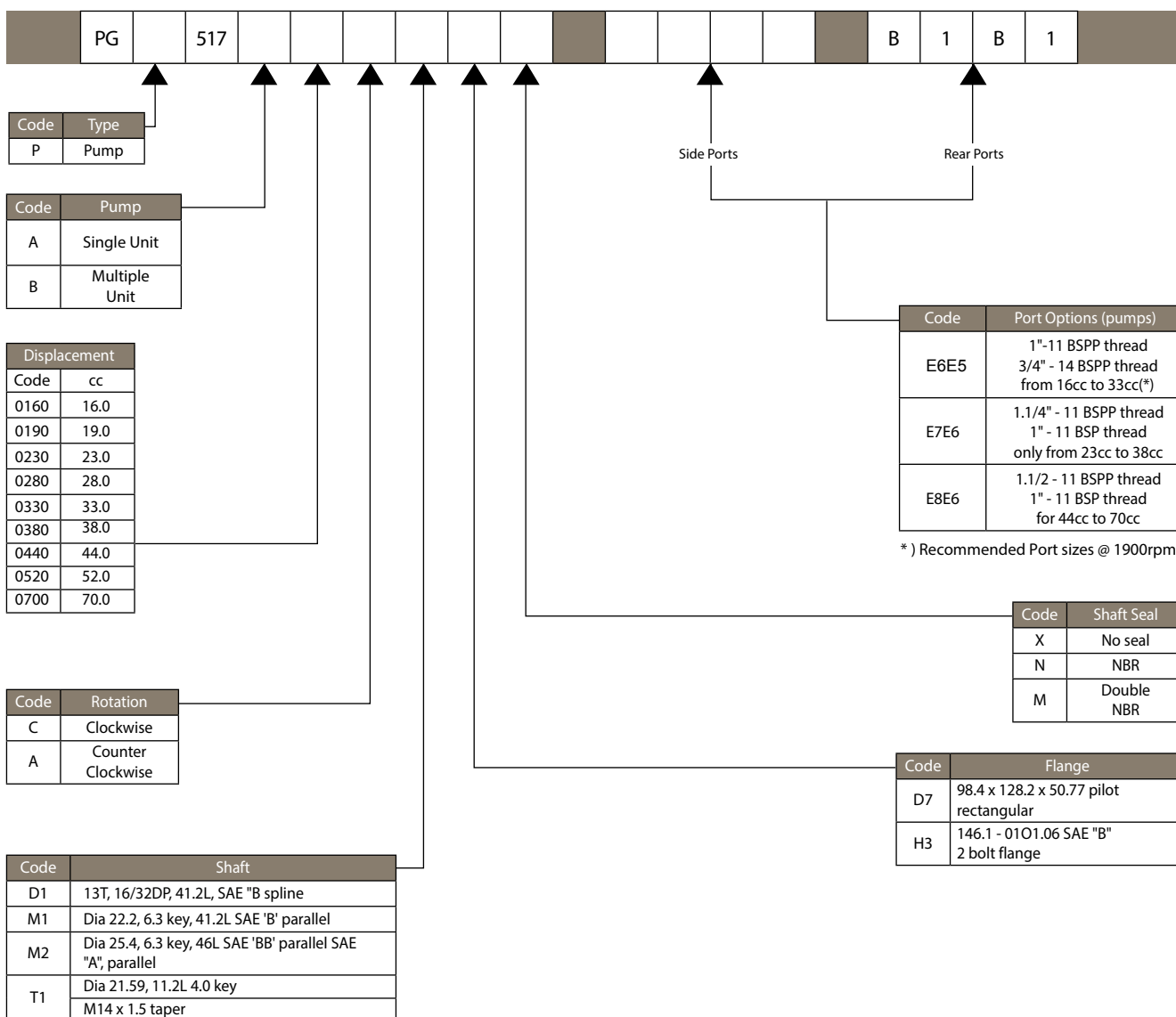
| Order Code | Model Code                | cc/rev | Shaft               | Mounting       | Seal | Port (Inlet)            | Port (Outlet)          | Rotation |
|------------|---------------------------|--------|---------------------|----------------|------|-------------------------|------------------------|----------|
| 3339111033 | PGP517A0230CD1H3NE6E5B1B1 | 23     | 13T, SAE"B" spline  | SAE"B" 2 bolts | NBR  | 1 - 11 BSP              | 3/4 - 16 BSP           | CW       |
| 3339111671 | PGP517A0230CD1H3NE7E6B1B1 | 23     | 13T, SAE"B" spline  | SAE"B" 2 bolts | NBR  | 1-1/4 - 11BSP           | 1 - 11 BSP             | CW       |
| 3339111779 | PGP517A0280CD1H3NE7E6B1B1 | 28     | 13T, SAE"B" spline  | SAE"B" 2 bolts | NBR  | 1-1/4 - 11BSP           | 1 - 11 BSP             | CW       |
| 3339112265 | PGP517A0280AD1H3NE7E5B1B1 | 28     | 13T, SAE"B" spline  | SAE"B" 2 bolts | NBR  | 1-1/4 - 11BSP           | 3/4 - 16 BSP           | CCW      |
| 3339111216 | PGP517A0280CD1H3NB1B1D6D5 | 28     | 13T, SAE"B" spline  | SAE"B" 2 bolts | NBR  | 1-5/16 - 12UNF          | 1-1/16 - 12 UNF        | CW       |
| 3339111192 | PGP517A0280CM1H3NE6E5B1B1 | 28     | Ø22.22, SAE"B" Key  | SAE"B" 2 bolts | NBR  | 1 - 11 BSP              | 3/4 - 16 BSP           | CW       |
| 3339111762 | PGP517A0330CD1H3NE7E6B1B1 | 33     | 13T, SAE"B" spline  | SAE"B" 2 bolts | NBR  | 1-1/4 - 11BSP           | 1 - 11 BSP             | CW       |
| 3339112411 | PGP517A0330AD1H3NE7E6B1B1 | 33     | 13T, SAE"B" spline  | SAE"B" 2 bolts | NBR  | 1-1/4 - 11BSP           | 1 - 11 BSP             | CCW      |
| 3339111379 | PGP517A0330CM1H3NE6E5B1B1 | 33     | Ø22.22, SAE"B" Key  | SAE"B" 2 bolts | NBR  | 1 - 11 BSP              | 3/4 - 16 BSP           | CW       |
| 3339111683 | PGP517A0330CM1H3ND7D6B1B1 | 33     | Ø22.22, SAE"B" Key  | SAE"B" 2 bolts | NBR  | 1-5/8 - 12 UNF          | 1-5/16 - 12 UNF        | CW       |
| 3339111701 | PGP517A0380CD1H3NE7E6B1B1 | 38     | 13T, SAE"B" spline  | SAE"B" 2 bolts | NBR  | 1-1/4 - 11BSP           | 1 - 11 BSP             | CW       |
| 3339111514 | PGP517A0380CM1H3ND7D6B1B1 | 38     | Ø22.22, SAE"B" Key  | SAE"B" 2 bolts | NBR  | 1-5/8 - 12 UNF          | 1-5/16 - 12 UNF        | CW       |
| 3339111494 | PGP517A0380CM1H3NE7E6B1B1 | 38     | Ø22.22, SAE"B" Key  | SAE"B" 2 bolts | NBR  | 1-1/4 - 11BSP           | 1 - 11 BSP             | CW       |
| 3339112373 | PGP517A0380AM1H3NE7E6B1B1 | 38     | Ø22.22, SAE"B" Key  | SAE"B" 2 bolts | NBR  | 1-1/4 - 11BSP           | 1 - 11 BSP             | CCW      |
| 3339111543 | PGP517A0440CD1H3NE8E6B1B1 | 44     | 13T, SAE"B" spline  | SAE"B" 2 bolts | NBR  | 1-1/2 - 11BSP           | 1 - 11 BSP             | CW       |
| 3339112381 | PGP517A0440AD1H3NB1B1E6E5 | 44     | 13T, SAE"B" spline  | SAE"B" 2 bolts | NBR  | 1 - 11 BSP              | 3/4 - 16 BSP           | CCW      |
| 3339111486 | PGP517A0440CM1H3NE7E6B1B1 | 44     | Ø22.22, SAE"B" Key  | SAE"B" 2 bolts | NBR  | 1-1/4 - 11BSP           | 1 - 11 BSP             | CW       |
| 3339112216 | PGP517A0440AM1H3ND7D5B1B1 | 44     | Ø22.22, SAE"B" Key  | SAE"B" 2 bolts | NBR  | 1-5/8 - 12 UNF          | 1-1/16 - 12 UNF        | CCW      |
| 3339111685 | PGP517A0520CD1H3NE8E6B1B1 | 52     | 13T, SAE"B" spline  | SAE"B" 2 bolts | NBR  | 1-1/2 - 11BSP           | 1 - 11 BSP             | CW       |
| 3339112418 | PGP517A0520AD1H3NE8E6B1B1 | 52     | 13T, SAE"B" spline  | SAE"B" 2 bolts | NBR  | 1-1/2 - 11BSP           | 1 - 11 BSP             | CCW      |
| 3339111510 | PGP517A0520CM1H3ND7D5B1B1 | 52     | Ø22.22, SAE"B" Key  | SAE"B" 2 bolts | NBR  | 1-5/8 - 12 UNF          | 1-1/16 - 12 UNF        | CW       |
| 3339112375 | PGP517A0520AM1H3NE7E6B1B1 | 52     | Ø22.22, SAE"B" Key  | SAE"B" 2 bolts | NBR  | 1-1/4 - 11BSP           | 1 - 11 BSP             | CCW      |
| 3339111592 | PGP517A0700CD1H3NE8E6B1B1 | 70     | 13T, SAE"B" spline  | SAE"B" 2 bolts | NBR  | 1-1/2 - 11BSP           | 1 - 11 BSP             | CW       |
| 3339112396 | PGP517A0700AD1H3NE8E6B1B1 | 70     | 13T, SAE"B" spline  | SAE"B" 2 bolts | NBR  | 1-1/2 - 11BSP           | 1 - 11 BSP             | CCW      |
| 3339111443 | PGP517A0700CM2H3NE7E6B1B1 | 70     | Ø25.4, SAE"B-B" Key | SAE"B" 2 bolts | NBR  | 1-1/4 - 11BSP           | 1 - 11 BSP             | CW       |
| 3339111743 | PGP517A0700CM1H3NP5P3B1B1 | 70     | Ø22.22, SAE"B" Key  | SAE"B" 2 bolts | NBR  | 38.1 mm<br>Split Flange | 25.4mm<br>Split Flange | CW       |

## PGP 517 Mounting Flange

Code H3/K6



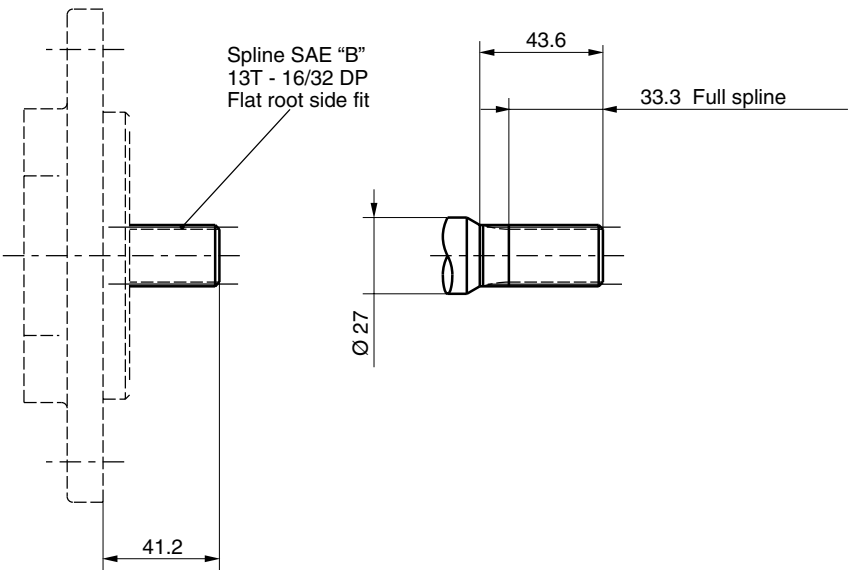
## Data



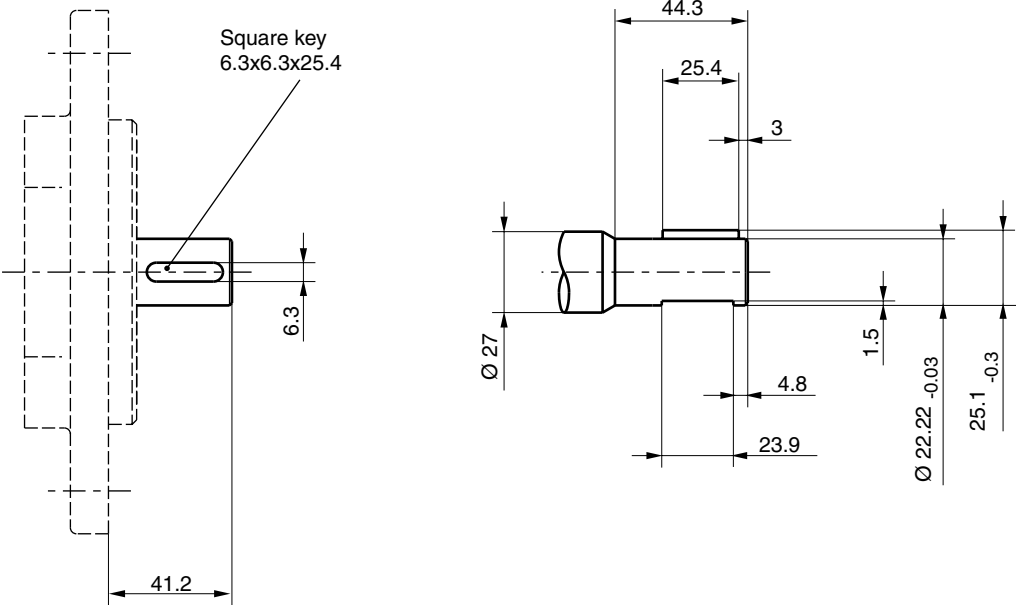


# Parker 500 Series

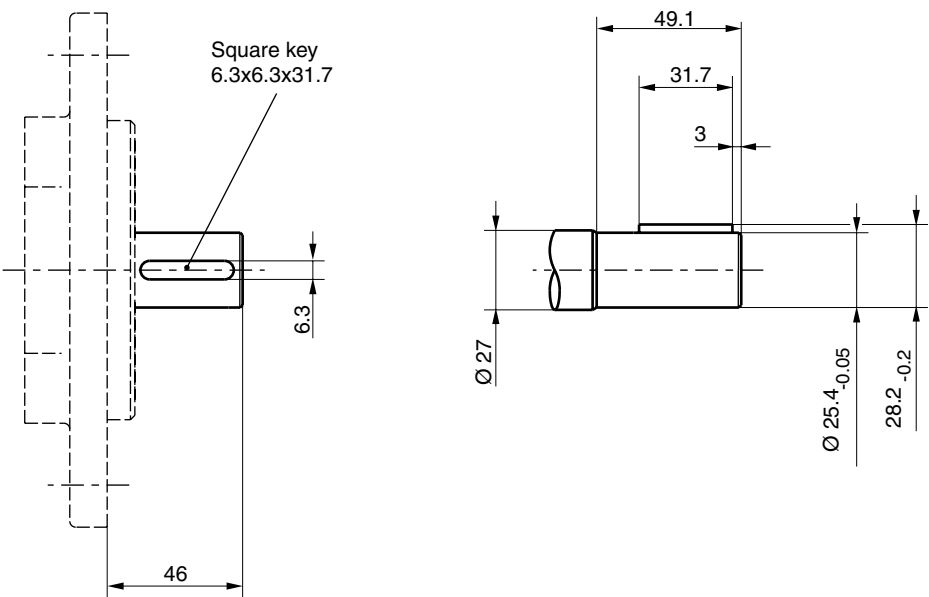
**PGP 517 Drive Shaft**  
**Code D1**



**Code M1**



**Code M2**



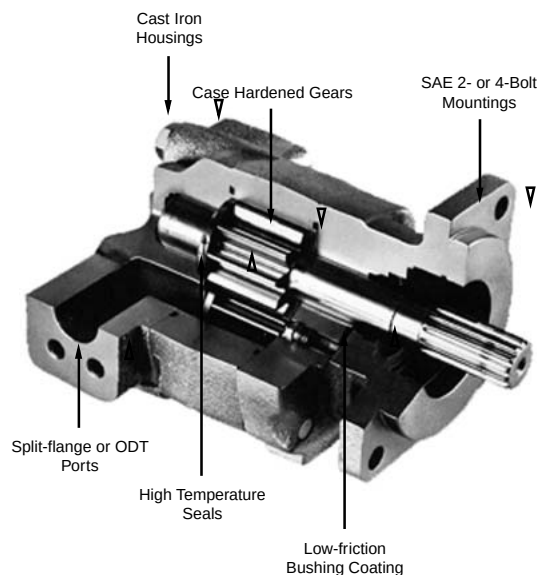
## 300 Series Cast Iron

Three-piece cast iron construction. Low friction bushing design. Heavy-duty application. Single, multiple, piggyback and thru-drive assemblies.

The PGP/PGM300 Series pumps and motors set the standard for superior performance and reliability in heavy-duty hydraulic application. The three-piece cast iron construction with large area, low-friction bushings provide strength, high efficiency, and long life in severe operating environments. The design includes an advanced thrust plate and seal configuration, which optimizes performance even in high temperature and low viscosity conditions.

The PGP300 Series pumps are available in single, multiple, piggyback, and thru-drive assemblies. Multiple pumps reduce mounting costs, allow for as small package size and common inlet capabilities. Assemblies up to six pumping sections are available. Piggyback pumps allow the combination of pump sections of different frame size to use a common inlet in tandem configuration.

The thru-drive feature allows an independent piston or gear pump to be mounted to a rear SAE drive pad. Multiple section motors are also available providing enhanced torque and speed control as well as smooth torque ripple. Relief valve, priority valve, load-sense unloading, and other integrated or bolt-on valve options are also available.



## PGP Cast Iron Specifications

|     | GEAR WIDTH          | 5     | 7     | 10    | 12     | 15     | 17     | 20    | 22     | 25     |
|-----|---------------------|-------|-------|-------|--------|--------|--------|-------|--------|--------|
|     |                     | 1/2"  | 3/4"  | 1"    | 1.1/4" | 1.1/2" | 1.3/4" | 2"    | 2.1/4" | 2.1/2" |
| 315 | HOUSING SIZE (IN)   | 0.9   | 1.14  | 1.4   | 1.64   | 1.9    | 2.14   | 2.4   |        |        |
|     | HOUSING SIZE (MM)   | 22.86 | 28.96 | 35.56 | 41.66  | 48.26  | 54.36  | 60.96 |        |        |
|     | DISPLACEMENT CC/REV | 10.2  | 15.2  | 20.3  | 25.4   | 30.5   | 35.6   | 40.6  |        |        |
|     | DISPLACEMENT CI/REV | 0.62  | 0.93  | 1.24  | 1.55   | 1.86   | 2.17   | 2.48  |        |        |
|     | PRESSURE (PSI)      | 3500  | 3500  | 3500  | 3500   | 3300   | 2900   | 2500  |        |        |
|     | PRESSURE (BAR)      | 241   | 241   | 241   | 241    | 228    | 200    | 172   |        |        |
| 330 | HOUSING SIZE (IN)   | 1     | 1.25  | 1.5   | 1.75   | 2      | 2.25   | 2.5   |        |        |
|     | HOUSING SIZE (MM)   | 25.4  | 31.75 | 38.1  | 44.45  | 50.8   | 57.15  | 63.5  |        |        |
|     | DISPLACEMENT CC/REV | 16.1  | 24.2  | 32.3  | 40.4   | 48.4   | 56.5   | 64.6  |        |        |
|     | DISPLACEMENT CI/REV | 0.98  | 1.48  | 1.97  | 2.46   | 2.95   | 3.45   | 3.94  |        |        |
|     | PRESSURE (PSI)      | 3500  | 3500  | 3500  | 3500   | 3500   | 3250   | 3000  |        |        |
|     | PRESSURE (BAR)      | 241   | 241   | 241   | 241    | 241    | 224    | 207   |        |        |
| 350 | HOUSING SIZE (IN)   | 1     | 1.25  | 1.5   | 1.75   | 2      | 2.25   | 2.5   | 2.75   | 3      |
|     | HOUSING SIZE (MM)   | 25.4  | 31.75 | 38.1  | 44.45  | 50.8   | 57.15  | 63.5  | 69.85  | 76.2   |
|     | DISPLACEMENT CC/REV | 20.9  | 31.3  | 41.8  | 52.2   | 62.7   | 73.1   | 83.6  | 94     | 104.5  |
|     | DISPLACEMENT CI/REV | 1.28  | 1.91  | 2.55  | 3.18   | 3.83   | 4.46   | 5.1   | 5.74   | 6.38   |
|     | PRESSURE (PSI)      | 3500  | 3500  | 3500  | 3500   | 3500   | 3250   | 3000  | 2750   | 2500   |
|     | PRESSURE (BAR)      | 241   | 241   | 241   | 241    | 241    | 224    | 207   | 190    | 172    |
| 365 | HOUSING SIZE (IN)   |       | 1.25  | 1.5   | 1.75   | 2      | 2.25   | 2.5   | 2.75   | 3      |
|     | HOUSING SIZE (MM)   |       | 31.75 | 38.1  | 44.45  | 50.8   | 57.15  | 63.5  | 69.85  | 76.2   |
|     | DISPLACEMENT CC/REV |       | 44.3  | 59    | 73.8   | 88.5   | 103.3  | 118   | 132    | 147.5  |
|     | DISPLACEMENT CI/REV |       | 2.7   | 3.6   | 4.5    | 5.4    | 6.3    | 7.2   | 8.05   | 9      |
|     | PRESSURE (PSI)      |       | 3500  | 3500  | 3500   | 3500   | 3500   | 3500  | 3250   | 3000   |
|     | PRESSURE (BAR)      |       | 241   | 241   | 241    | 241    | 241    | 241   | 224    | 207    |

Performance Data shown are the average results based on a series of tests of production units and are not necessarily representative of any one unit.

## PGP/PGM315 Series – Coding

## Cast Iron Bushing Design

Tandem: Repeat if Required

|     |     |     |     |     |     |     |     |     |     |     |      |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (6) | (7) | (10) |
|     | 3   | 1   | 5   |     |     |     |     |     |     |     |      |

| Pump/Motor (1) |                                    |
|----------------|------------------------------------|
| P              | Pump                               |
| M              | Motor (no tandem motors available) |

| Unit (2) |                           |
|----------|---------------------------|
| A        | Single Unit               |
| B        | Tandem Unit (flush studs) |
| L        | Unit with Extended studs  |

| Shaft End Cover (3) |                                              |
|---------------------|----------------------------------------------|
| 1                   | Pump, cw w/o O.B bearing                     |
| 2                   | Pump, ccw w/o O.B bearing                    |
| 4                   | Pump, cw with O.B bearing (Code 490 Only)    |
| 5                   | Pump, ccw with O.B bearing (Code 590 Only)   |
| 9                   | Motor bi-rot w/o O.B bearing +1/4" ODT drain |

| Shaft End Cover (4) |                            |
|---------------------|----------------------------|
| 90                  | 4 bolt 72x100mm 80mm pilot |
| 93                  | SAE 'A' 2 bolt             |
| 95                  | Pad mount for clutch       |
| 96                  | SAE 'B' 2 bolt             |

| Gear Housing (6) |       |
|------------------|-------|
| AB               | Pump  |
| EB               | Motor |

| Port End Cover (5)       |      |           |     |                         |          |           |     |                        |      |           |     |
|--------------------------|------|-----------|-----|-------------------------|----------|-----------|-----|------------------------|------|-----------|-----|
| (Side Ported)            |      |           |     | (Side Ported) (cont.)   |          |           |     | (Rear Ported)          |      |           |     |
| IN                       | OUT  | CW        | CCW | IN                      | OUT      | CW        | CCW | IN                     | OUT  | CW        | CCW |
| .                        | .    | .         | .   | .                       | .        | .         | .   | .                      | .    | .         | .   |
| SAE Split Flange (pump)  |      |           |     | OD Tube Porting (motor) |          |           |     | OD Tube Porting (pump) |      |           |     |
| 1"                       | 3/4" | EJ        | JE  | 1"                      | 1/2"     | VN-Double |     | 1-1/4"                 | 1"   | UC        | CU  |
| 1"                       | 1/2" | EK        | KE  | 3/4"                    | 3/4"     | VR-Double |     | 1-1/4"                 | 7/8" | UF        | FU  |
| 3/4"                     | 3/4" | EL        | LE  | 3/4"                    | 1/2"     | VQ-Double |     | 1-1/4"                 | 3/4" | UN        | NU  |
| 3/4"                     | 1/2" | EM        | ME  |                         |          |           |     | 1"                     | 1"   | UD        | DU  |
| 1"                       | -    | OE        | EO  |                         |          |           |     | 1"                     | 7/8" | UP        | PU  |
| 3/4"                     | -    | OF        | FO  |                         |          |           |     | 1"                     | 3/4" | UQ        | QU  |
| -                        | 3/4" | OJ        | JO  |                         |          |           |     | 1"                     | 5/8" | UR        | RU  |
| -                        | 1/2" | OL        | LO  |                         |          |           |     | 7/8"                   | 7/8" | LN        | NL  |
| SAE Split Flange (motor) |      |           |     | Unported (pump)         |          |           |     | 7/8"                   | 3/4" | LP        | PL  |
| 1"                       | 1"   | DR-Double |     | BI                      | Unported |           |     | 7/8"                   | 5/8" | LQ        | QL  |
| 3/4"                     | 3/4" | DS-Double |     |                         |          |           |     | 3/4"                   | 3/4" | LR        | RL  |
|                          |      |           |     |                         |          |           |     | 3/4"                   | 5/8" | LS        | SL  |
| OD Tube Porting (pump)   |      |           |     | OD Tube Porting (motor) |          |           |     | 3/4"                   | 1/2" | LT        | TL  |
| 1-1/4"                   | 1"   | FB        | BF  |                         |          |           |     | 1"                     | 1"   | RN-Double |     |
| 1-1/4"                   | 7/8" | FC        | CF  |                         |          |           |     | 3/4"                   | 3/4" | RQ-Double |     |
| 1-1/4"                   | 3/4" | FG        | GF  |                         |          |           |     | 1/2"                   | 1/2" | RS-Double |     |
| 1-1/4"                   | 5/8" | FJ        | JF  |                         |          |           |     |                        |      |           |     |
| 1"                       | 1"   | FL        | LF  |                         |          |           |     |                        |      |           |     |
| 1"                       | 7/8" | FV        | VF  |                         |          |           |     |                        |      |           |     |
| 1"                       | 3/4" | FW        | WF  |                         |          |           |     |                        |      |           |     |
| 1"                       | 5/8" | FX        | XF  |                         |          |           |     |                        |      |           |     |
| 7/8"                     | 7/8" | FY        | YF  |                         |          |           |     |                        |      |           |     |
| 7/8"                     | 3/4" | BG        | GB  |                         |          |           |     |                        |      |           |     |
| 3/4"                     | 3/4" | BJ        | JB  |                         |          |           |     |                        |      |           |     |
| 3/4"                     | 5/8" | BL        | LB  |                         |          |           |     |                        |      |           |     |
| 3/4"                     | 1/2" | BN        | NB  |                         |          |           |     |                        |      |           |     |
| 1 1/4"                   | -    | BV        | VB  |                         |          |           |     |                        |      |           |     |
| 1"                       | -    | BW        | WB  |                         |          |           |     |                        |      |           |     |
| 7/8"                     | -    | BX        | XB  |                         |          |           |     |                        |      |           |     |
| 3/4"                     | -    | BY        | YB  |                         |          |           |     |                        |      |           |     |
| -                        | 1"   | BZ        | ZB  |                         |          |           |     |                        |      |           |     |
| -                        | 7/8" | PD        | DP  |                         |          |           |     |                        |      |           |     |
| -                        | 3/4" | PE        | EP  |                         |          |           |     |                        |      |           |     |
| -                        | 5/8" | PM        | MP  |                         |          |           |     |                        |      |           |     |
| -                        | 1/2" | PN        | NP  |                         |          |           |     |                        |      |           |     |

## PGP/PGM315 Series – Coding

## Cast Iron Bushing Design

Tandem: Repeat if Required

|     |     |     |     |     |     |     |     |     |     |     |      |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (6) | (7) | (10) |
|     | 3   | 1   | 5   |     |     |     |     |     |     |     |      |

| Gear Width (7) |            |                        |                       |                   |
|----------------|------------|------------------------|-----------------------|-------------------|
|                | Gear Width | In. <sup>3</sup> /rev. | cm <sup>3</sup> /rev. | Max Pressure      |
| 05             | 1/2"       | .62                    | 10.2                  | 3500psi (241 bar) |
| 07             | 3/4"       | .93                    | 15.2                  | 3500psi (241 bar) |
| 10             | 1"         | 1.24                   | 20.3                  | 3500psi (241 bar) |
| 12             | 1-1/4"     | 1.55                   | 25.4                  | 3500psi (241 bar) |
| 15             | 1-1/2"     | 1.86                   | 30.5                  | 3300psi (228 bar) |
| 17             | 1-3/4"     | 2.17                   | 35.6                  | 2900psi (200 bar) |
| 20             | 2"         | 2.48                   | 40.6                  | 2500psi (172 bar) |

| Shaft Type (8)                             |                                                                                                 |
|--------------------------------------------|-------------------------------------------------------------------------------------------------|
| (For Single or Tandem Units -unless noted) |                                                                                                 |
| 97                                         | SAE "A" Keyed                                                                                   |
| 96                                         | SAE "A" Splined                                                                                 |
| 66                                         | SAE "B" Keyed                                                                                   |
| 65                                         | SAE "B" Splined                                                                                 |
| 56                                         | Clutch Pump Tapered, 5/16 - 24 thd. (internal), #6 Woodruff Keyed (single unit only); 1:4 taper |

| Bearing Carriers (9)                                                                                                            |      |      |     |    |                             |        |   |    |     |
|---------------------------------------------------------------------------------------------------------------------------------|------|------|-----|----|-----------------------------|--------|---|----|-----|
| (Dual Outlet – Pump Only)                                                                                                       |      |      |     |    | (Single Outlet - Pump Only) |        |   |    |     |
| Outlets: for clockwise porting the top port number comes first; or counter-clockwise porting the bottom port number comes first |      |      |     |    | IN                          | OUT    |   | CW | CCW |
|                                                                                                                                 |      |      |     |    | •                           | •      |   | •  | •   |
| SAE Split Flange                                                                                                                |      |      |     |    | SAE Split Flange            |        |   |    |     |
| IN                                                                                                                              | OUT  | CW   | CWW |    | 1-1/4"                      | 1-1/4" |   | CJ | JC  |
| •                                                                                                                               | •    | •    | •   |    | 1-1/4"                      | 1"     |   | CL | LC  |
| 1-1/4"                                                                                                                          |      |      |     |    | 1-1/4"                      | 3/4"   |   | CM | MC  |
| 1-1/4"                                                                                                                          |      |      |     |    | 1-1/4"                      | 1/2"   |   | HB | BH  |
| 1-1/4"                                                                                                                          |      |      |     |    | 1"                          | 1"     |   | HC | CH  |
| 1"                                                                                                                              |      |      |     |    | 1"                          | 3/4"   |   | HF | FH  |
| 1"                                                                                                                              |      |      |     |    | 1"                          | 1/2"   |   | HL | LH  |
| 1"                                                                                                                              |      |      |     |    | 3/4"                        | 3/4"   |   | HM | MH  |
| 1"                                                                                                                              |      |      |     |    | 3/4"                        | 1/2"   |   | HN | NH  |
| OD Tube Porting                                                                                                                 |      |      |     |    | OD Tube Porting             |        |   |    |     |
| 1-1/2"                                                                                                                          | 1"   | 1"   | JG  | GJ | 1-1/2"                      | 1-1/2" |   | KB | BK  |
| 1-1/2"                                                                                                                          | 1"   | 7/8" | KG  | GK | 1-1/2"                      | 1-1/4" |   | KC | CK  |
| 1-1/2"                                                                                                                          | 7/8" | 7/8" | LG  | GL | 1-1/2"                      | 1"     |   | KF | FK  |
| 1-1/2"                                                                                                                          | 1"   | 3/4" | MG  | GM | 1-1/2"                      | 7/8"   |   | KL | LK  |
| 1-1/2"                                                                                                                          | 3/4" | 3/4" | NG  | GN | 1-1/2"                      | 3/4"   |   | KM | MK  |
| 1-1/4"                                                                                                                          | 1"   | 1"   | PG  | GP | 1-1/4"                      | 1-1/4" |   | KN | NK  |
| 1-1/4"                                                                                                                          | 1"   | 7/8" | QG  | GQ | 1-1/4"                      | 1"     |   | KO | OK  |
| 1-1/4"                                                                                                                          | 7/8" | 7/8" | RG  | GR | 1-1/4"                      | 7/8"   |   | KP | PK  |
| 1-1/4"                                                                                                                          | 1"   | 3/4" | SG  | GS | 1-1/4"                      | 3/4"   |   | KQ | QK  |
| 1-1/4"                                                                                                                          | 3/4" | 3/4" | TG  | GT | 1-1/4"                      | 5/8"   |   | MB | BM  |
| 1-1/4"                                                                                                                          | 3/4" | 5/8" | UG  | GU | 1-1/4"                      | 1/2"   |   | ML | LM  |
| 1-1/4"                                                                                                                          | 3/4" | 1/2" | VG  | VG | 1"                          | 1"     |   | MN | NM  |
| 1-1/4"                                                                                                                          | 5/8" | 5/8" | WG  | GW | 1"                          | 7/8"   |   | MQ | QM  |
| 1-1/4"                                                                                                                          | 1/2" | 1/2" | XG  | GX | 1"                          | 3/4"   |   | MR | RM  |
| 1"                                                                                                                              | 1"   | 1"   | YG  | GY | 1"                          | 5/8"   |   | MS | SM  |
| 1"                                                                                                                              | 1"   | 7/8" | ZG  | GZ | 1"                          | 1/2"   |   | MT | TM  |
| 1"                                                                                                                              | 7/8" | 7/8" | RC  | CR | 3/4"                        | 3/4"   |   | MU | UM  |
| 1"                                                                                                                              | 1"   | 3/4" | SC  | CS | 3/4"                        | 5/8"   |   | MV | VM  |
| 1"                                                                                                                              | 3/4" | 3/4" | TC  | CT | 3/4"                        | 1/2"   |   | MW | WM  |
| 1"                                                                                                                              | 3/4" | 3/4" | VC  | CV | Common Inlet Passage        |        |   |    |     |
| 1"                                                                                                                              | 3/4" | 1/2" | WC  | CW | No Ports                    |        | C | D  |     |
| 1"                                                                                                                              | 5/8" | 5/8" | XC  | CX |                             |        |   |    |     |
| 1"                                                                                                                              | 1/2" | 1/2" | YC  | CY |                             |        |   |    |     |

| Assembly              |  |
|-----------------------|--|
| Available Option      |  |
| Priority Flow Control |  |

| Connecting Shaft (10)        |                  |
|------------------------------|------------------|
| For connecting tandem units. |                  |
| 1                            | Connecting Shaft |

## PGP/PGM330 Series Coding

## Cast Iron Bushing Design

Tandem: Repeat if Required

|     |     |     |     |     |     |     |     |     |     |     |      |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (6) | (7) | (10) |
|     | 3   | 3   | 0   |     |     |     |     |     |     |     |      |

| Pump/Motor (1) |       |
|----------------|-------|
| P              | Pump  |
| M              | Motor |

| Unit (2) |                                                              |
|----------|--------------------------------------------------------------|
| A        | Single Unit                                                  |
| B        | Tandem Unit (flush studs)                                    |
| C        | Single or Tandem with two-piece shaft (O.B bearing required) |
| L        | Unit with Extended Studs                                     |

| Shaft End Cover (3) |                                                 |
|---------------------|-------------------------------------------------|
| 1                   | Pump, cw, w/o O.B bearing                       |
| 2                   | Pump ccw w/o O.B, bearing                       |
| 4                   | Pump, cw with O.B, bearing                      |
| 5                   | Pump, ccw with O.B. bearing                     |
| 8                   | Motor bi-rot w/ O.B, bearing + 1/4" ODT drain   |
| 9                   | Motor, bi-rot w/o O.B, bearing + 1/4" ODT drain |

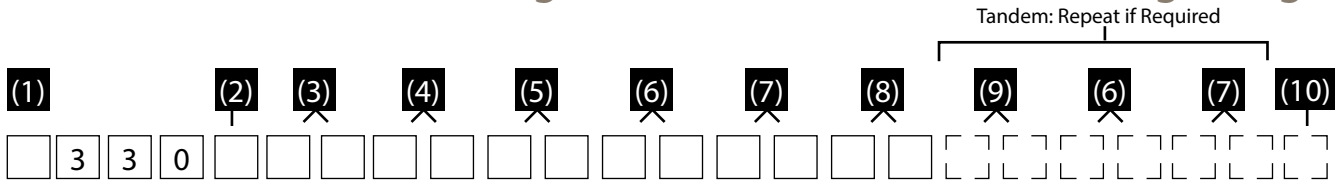
| Shaft End Cover (4) |                |
|---------------------|----------------|
| 42                  | SAE "B" 4 bolt |
| 78                  | SAE "C" 4 bolt |
| 97                  | SAE "B" 2 bolt |

| Port end covers (5)      |        |           |     |
|--------------------------|--------|-----------|-----|
| (Side Ported)            |        |           |     |
| IN                       | OUT    | CW        | CCW |
| .                        | .      | .         | .   |
| SAE Split Flange (pump)  |        |           |     |
| 1-1/2"                   | 1-1/4" | EJ        | JE  |
| 1-1/2"                   | 1"     | EK        | KE  |
| 1-1/4"                   | 1-1/4" | EL        | LE  |
| 1-1/4"                   | 1"     | EM        | ME  |
| 1"                       | 1"     | EN        | NE  |
| 1-1/2"                   | -      | OF        | FO  |
| 1-1/4"                   | -      | OG        | GO  |
| 1"                       | -      | OJ        | JO  |
| -                        | 1-1/4" | OM        | MO  |
| -                        | 1"     | ON        | NO  |
| SAE Split Flange (motor) |        |           |     |
| 1-1/4"                   | 1-1/4" | CS-Double |     |
| 1"                       | 1"     | CT-Double |     |
| 3/4"                     | 3/4"   | CV-Double |     |
| OD/Tube Porting (pump)   |        |           |     |
| 1-1/4"                   | 1"     | FJ        | JF  |
| 1"                       | 1"     | FL        | LF  |
| 1-1/4"                   | -      | BG        | GB  |
| 1"                       | -      | BJ        | JB  |
| -                        | 1"     | BN        | NB  |
| OD/Tube Porting (motor)  |        |           |     |
| 1-1/4"                   | 1-1/4" | VC-Double |     |
| 1"                       | 1"     | VN-Double |     |
| 3/4"                     | 3/4"   | VR-Double |     |

| Gear Housing (6) |       |
|------------------|-------|
| AB               | Pump  |
| EB               | Motor |

## PGP/PGM330 Series Coding

## Cast Iron Bushing Design



| Gear Width (7) |            |                       |                       |                   |
|----------------|------------|-----------------------|-----------------------|-------------------|
|                | Gear Width | in. <sup>3</sup> /rev | cm <sup>3</sup> /rev. | Max Pressure      |
| 05             | 1/2"       | .99                   | 16.1                  | 3500psi (241 bar) |
| 07             | 3/4"       | 1.48                  | 24.2                  | 3500psi (241 bar) |
| 10             | 1"         | 1.97                  | 32.3                  | 3500psi (241 bar) |
| 12             | 1-1/4"     | 2.46                  | 40.4                  | 3500psi (241 bar) |
| 15             | 1-1/2"     | 2.96                  | 48.4                  | 3500psi (241 bar) |
| 17             | 1-3/4"     | 3.45                  | 56.5                  | 3250psi (224 bar) |
| 20             | 2"         | 3.94                  | 64.5                  | 3000psi (207 bar) |

| Shaft Type (8)                             |                                 |
|--------------------------------------------|---------------------------------|
| For Single or Tandem Units - unless noted) |                                 |
| 7                                          | SAE "C" Spline (two-piece only) |
| 25                                         | SAE "B" Spline                  |
| 30                                         | SAE "B" Keyed                   |
| 98                                         | SAE "BB" Splined                |
| 43                                         | SAE "BB" Keyed                  |

| Bearing Carriers (9)                                                                                                             |  |          |  |         |                             |           |          |                  |         | Connecting Shaft (10)     |          |        |                         |           |                              |    |        |    |   |                          |           |           |    |         |        |           |        |    |  |  |    |  |    |  |
|----------------------------------------------------------------------------------------------------------------------------------|--|----------|--|---------|-----------------------------|-----------|----------|------------------|---------|---------------------------|----------|--------|-------------------------|-----------|------------------------------|----|--------|----|---|--------------------------|-----------|-----------|----|---------|--------|-----------|--------|----|--|--|----|--|----|--|
| (Dual Outlet - Pump Only)                                                                                                        |  |          |  |         | (Single Outlet - Pump Only) |           |          |                  |         | (Combined Outlet)         |          |        |                         |           | For connecting tandem units. |    |        |    |   |                          |           |           |    |         |        |           |        |    |  |  |    |  |    |  |
| Outlets: for clockwise porting the top port number comes first; or counter-clockwise porting the bottom port number comes first. |  |          |  |         | Outlet for front section.   |           |          |                  |         | Outlet for front section. |          |        |                         |           | 1 Connecting Shaft           |    |        |    |   |                          |           |           |    |         |        |           |        |    |  |  |    |  |    |  |
|                                                                                                                                  |  |          |  |         | IN<br>•                     |           | OUT<br>• |                  | CW<br>• |                           | CWW<br>• |        | IN<br>•                 |           |                              |    |        |    |   | OUT<br>•                 |           |           |    | CW<br>• |        | CWW<br>•  |        |    |  |  |    |  |    |  |
| IN<br>•                                                                                                                          |  | OUT<br>• |  | CW<br>• |                             | CWW<br>•  |          | SAE Split Flange |         |                           |          |        | SAE Split Flange (pump) |           |                              |    |        |    |   |                          |           |           |    |         |        |           |        |    |  |  |    |  |    |  |
| SAE Split Flange                                                                                                                 |  |          |  |         | 2"                          |           | 1-1/2"   |                  |         |                           | HB       |        | BH                      |           | 2"                           |    | 1-1/2" |    |   |                          | UN        |           | NU |         |        |           |        |    |  |  |    |  |    |  |
| 2"                                                                                                                               |  | 1-1/4"   |  | 1-1/4   |                             | AM        |          | MA               |         | 2"                        |          | 1-1/4" |                         |           |                              | HC |        | CH |   | 2"                       |           | 1-1/4"    |    |         |        | UO        |        | OU |  |  |    |  |    |  |
| 2"                                                                                                                               |  | 1-1/4"   |  | 1"      |                             | AN        |          | NA               |         | 2"                        |          | 1"     |                         |           |                              | HF |        | FH |   | 1-1/2"                   |           | 1-1/2"    |    |         |        | UP        |        | PU |  |  |    |  |    |  |
| 2"                                                                                                                               |  | 1"       |  | 1"      |                             | AP        |          | PA               |         | 1-1/2"                    |          | 1-1/2" |                         |           |                              | HL |        | LH |   | 1-1/2"                   |           | 1-1/4"    |    |         |        | UQ        |        | QU |  |  |    |  |    |  |
| 1-1/2"                                                                                                                           |  | 1-1/4"   |  | 1-1/4"  |                             | AT        |          | TA               |         | 1-1/2"                    |          | 1-1/4" |                         |           |                              | HM |        | MH |   | 1-1/4"                   |           | 1-1/4"    |    |         |        | UR        |        | RU |  |  |    |  |    |  |
| 1-1/2"                                                                                                                           |  | 1-1/4"   |  | 1"      |                             | AU        |          | UA               |         | 1-1/2"                    |          | 1"     |                         |           |                              | HN |        | NH |   |                          |           |           |    |         |        |           |        |    |  |  |    |  |    |  |
| 1-1/2"                                                                                                                           |  | 1"       |  | 1"      |                             | AV        |          | VA               |         | 1-1/4"                    |          | 1-1/4" |                         |           |                              | HO |        | OH |   | SAE Split Flange (motor) |           |           |    |         |        |           |        |    |  |  |    |  |    |  |
| 1-1/4"                                                                                                                           |  | 1-1/4"   |  | 1-1/4"  |                             | AW        |          | WA               |         | 1-1/4"                    |          | 1"     |                         |           |                              | HP |        | PH |   | 1-1/2"                   |           | 1-1/2"    |    |         |        | BB-Double |        |    |  |  |    |  |    |  |
| 1-1/4"                                                                                                                           |  | 1-1/4"   |  | 1"      |                             | AX        |          | XA               |         | 1"                        |          | 1"     |                         |           |                              | HQ |        | QH |   | 1-1/4"                   |           | 1-1/4"    |    |         |        | CC-Double |        |    |  |  |    |  |    |  |
| 1-1/4"                                                                                                                           |  | 1"       |  | 1"      |                             | AY        |          | YA               |         | 1-1/4"                    |          | 1"     |                         |           |                              | RS |        | SR |   | 1"                       |           | 1"        |    |         |        | EE-Double |        |    |  |  |    |  |    |  |
| 1"                                                                                                                               |  | 1"       |  | 1"      |                             | AZ        |          | ZA               |         |                           |          |        |                         |           | 3/4"                         |    | 3/4"   |    |   |                          | FF-Double |           |    |         |        |           |        |    |  |  |    |  |    |  |
|                                                                                                                                  |  |          |  |         | OD Tube Porting             |           |          |                  |         | OD Tube Porting (pump)    |          |        |                         |           |                              |    |        |    |   |                          |           |           |    |         |        |           |        |    |  |  |    |  |    |  |
| OD Tube Porting                                                                                                                  |  |          |  |         | 1 1/2"                      |           | 1 1/4"   |                  | -       |                           | KM       |        | MK                      |           | 1 1/2"                       |    | 1"     |    | - |                          | KN        |           | NK |         | 1-1/2" |           | 1-1/4" |    |  |  | PQ |  | QP |  |
| 1-1/2"                                                                                                                           |  | 1"       |  | 1"      |                             | GV        |          | VG               |         | 1 1/4"                    |          | 1 1/4" |                         | -         |                              | KO |        | OK |   | 1-1/4"                   |           | 1-1/4"    |    |         |        | PR        |        | RP |  |  |    |  |    |  |
| 1"                                                                                                                               |  | 1"       |  | 1"      |                             | GZ        |          | ZG               |         | 1 1/4"                    |          | 1"     |                         | -         |                              | KP |        | PK |   |                          |           |           |    |         |        |           |        |    |  |  |    |  |    |  |
|                                                                                                                                  |  |          |  |         | 1"                          |           | 1"       |                  | -       |                           | KQ       |        | QK                      |           |                              |    |        |    |   | OD Tube Porting (motor)  |           |           |    |         |        |           |        |    |  |  |    |  |    |  |
| 1-1/4"                                                                                                                           |  | 1-1/4"   |  |         |                             | NN-Double |          | 1"               |         | 1"                        |          |        |                         | QQ-Double |                              | 1" |        | 1" |   |                          |           | RR-Double |    |         |        |           |        |    |  |  |    |  |    |  |
|                                                                                                                                  |  |          |  |         | Common Inlet Passage (pump) |           |          |                  |         | No Ports                  |          |        |                         |           |                              |    | C      |    | D |                          |           |           |    |         |        |           |        |    |  |  |    |  |    |  |
| Available Assembly Options.                                                                                                      |  |          |  |         |                             |           |          |                  |         |                           |          |        |                         |           |                              |    |        |    |   |                          |           |           |    |         |        |           |        |    |  |  |    |  |    |  |

Available Assembly Options.

Piggyback

Priority Valve

Flow Dividers

## PGP/PGM350 Series Coding

## Cast Iron Bushing Design

Tandem: Repeat if Required

|     |     |     |     |     |     |     |     |     |     |     |      |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (6) | (7) | (10) |
|     | 3   | 5   | 0   |     |     |     |     |     |     |     |      |

| Pump/Motor (1) |       |
|----------------|-------|
| P              | Pump  |
| M              | Motor |

| Unit (2) |                                                              |
|----------|--------------------------------------------------------------|
| A        | Single Unit                                                  |
| B        | Tandem Unit (flush studs)                                    |
| C        | Single or Tandem with two-piece shaft (O.B bearing required) |
| L        | Unit with Extended Studs                                     |

| Shaft End Cover (3) |                                                 |
|---------------------|-------------------------------------------------|
| 1                   | Pump, cw, w/o O.B bearing                       |
| 2                   | Pump ccw w/o O.B, bearing                       |
| 4                   | Pump, cw with O.B, bearing                      |
| 5                   | Pump, ccw with O.B. bearing                     |
| 8                   | Motor bi-rot w/ O.B, bearing + 1/4" ODT drain   |
| 9                   | Motor, bi-rot w/o O.B, bearing + 1/4" ODT drain |

| Shaft End Cover (4) |                                            |
|---------------------|--------------------------------------------|
| 42                  | SAE "B" 4 bolt                             |
| 46                  | SAE "B" 2/4 bolt                           |
| 62                  | "ZF" 4 bolt (462 only) 80mm pilot, 80x80mm |
| 78                  | SAE "C" 4 bolt                             |
| 97                  | SAE "B" 2 bolt                             |
| 98                  | SAE "C" 2 bolt                             |

| Port end covers          |        |           |     |
|--------------------------|--------|-----------|-----|
| (Side Ported)            |        |           |     |
| IN                       | OUT    | CW        | CCW |
| •                        | •      | •         | •   |
| SAE Split Flange (pump)  |        |           |     |
| 2"                       | 1-1/2" | EC        | CE  |
| 2"                       | 1-1/4" | EF        | FE  |
| 2"                       | 1"     | EG        | GE  |
| 1-1/2"                   | 1-1/2" | EH        | HE  |
| 1-1/2"                   | 1-1/4" | EJ        | JE  |
| 1-1/2"                   | 1"     | EK        | KE  |
| 1-1/4"                   | 1-1/4" | EL        | LE  |
| 1-1/4"                   | 1"     | EM        | ME  |
| 1"                       | 1"     | EN        | NE  |
| 2"                       | -      | OE        | EO  |
| 1-1/2"                   | -      | OF        | FO  |
| 1-1/4"                   | -      | OG        | GO  |
| 1"                       | -      | OJ        | JO  |
| -                        | 1-1/2" | OL        | LO  |
| -                        | 1-1/4" | OM        | MO  |
| -                        | 1"     | ON        | NO  |
| SAE Split Flange (motor) |        |           |     |
| 1-1/2"                   | 1-1/2" | CR-Double |     |
| 1-1/4"                   | 1-1/4" | CS-Double |     |
| 1"                       | 1"     | CT-Double |     |
| 3/4"                     | 3/4"   | CV-Double |     |

| (Side Ported)           |          |           |     |
|-------------------------|----------|-----------|-----|
| IN                      | OUT      | CW        | CCW |
| •                       | •        | •         | •   |
| OD Tube Porting (pump)  |          |           |     |
| 1-1/2"                  | 1-1/4"   | FB        | BF  |
| 1-1/2"                  | 1"       | FC        | CF  |
| 1-1/4"                  | 1-1/4"   | FG        | GF  |
| 1-1/4"                  | 1"       | FJ        | JF  |
| 1"                      | 1"       | FL        | LF  |
| 1-1/2"                  | -        | BC        | CB  |
| 1-1/4"                  | -        | BG        | GB  |
| 1"                      | -        | BJ        | JB  |
| -                       | 1-1/4"   | BL        | LB  |
| -                       | 1"       | BN        | NB  |
| OD Tube Porting (motor) |          |           |     |
| 1-1/4"                  | 1-1/4"   | VC-Double |     |
| 1"                      | 1"       | VN-Double |     |
| 3/4"                    | 3/4"     | VR-Double |     |
| Unported (pump)         |          |           |     |
| Unported                |          | BI        | IB  |
| Unported (motor)        |          |           |     |
| BA                      | Unported |           |     |

| Gear Housing (6) |       |
|------------------|-------|
| AB               | Pump  |
| EB               | Motor |

## Parker 300 Series

## PGP/PGM350 Series Coding

## Cast Iron Bushing Design

Tandem: Repeat if Required

|     |     |     |     |     |     |     |     |     |     |     |      |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (6) | (7) | (10) |
|     | 3   | 5   | 0   |     |     |     |     |     |     |     |      |

| Gear Width (7) |            |                       |                       |                   |
|----------------|------------|-----------------------|-----------------------|-------------------|
|                | Gear Width | in. <sup>3</sup> /rev | cm <sup>3</sup> /rev. | Max Pressure      |
| 05             | 1/2"       | 1.28                  | 20.9                  | 3500psi (241 bar) |
| 07             | 3/4"       | 1.91                  | 31.3                  | 3500psi (241 bar) |
| 10             | 1"         | 2.55                  | 41.8                  | 3500psi (241 bar) |
| 12             | 1-1/4"     | 3.19                  | 52.2                  | 3500psi (241 bar) |
| 15             | 1-1/2"     | 3.83                  | 62.7                  | 3500psi (241 bar) |
| 17             | 1-3/4"     | 4.46                  | 73.1                  | 3250psi (224 bar) |
| 20             | 2"         | 5.10                  | 83.6                  | 3000psi (207 bar) |
| 22             | 2-1/4"     | 5.74                  | 94.0                  | 2750psi (190 bar) |
| 25             | 2-1/2"     | 6.38                  | 104.5                 | 2500psi (172 bar) |

| Shaft Type (8)                                        |                                |
|-------------------------------------------------------|--------------------------------|
| (For Single, Tandem or Two-piece Shaft -unless noted) |                                |
| 7                                                     | SAE "C" Spline                 |
| 11                                                    | SAE "C" Keyed                  |
| 25                                                    | SAE "B" Spline                 |
| 43                                                    | SAE "BB" Keyed                 |
| 98                                                    | SAE "BB" Splined (tandem only) |

| Bearing Carriers (9)                                                                                                             |        |        |     |    |                             |        |    |           |    |
|----------------------------------------------------------------------------------------------------------------------------------|--------|--------|-----|----|-----------------------------|--------|----|-----------|----|
| (Dual Outlet - Pump Only)                                                                                                        |        |        |     |    | (Single Outlet - Pump Only) |        |    |           |    |
| Outlets: for clockwise porting the top port number comes first; or counter-clockwise porting the bottom port number comes first. |        |        |     |    | Outlet for front section.   |        |    |           |    |
| IN                                                                                                                               | OUT    | CW     | CWW |    | IN                          | OUT    | CW | CWW       |    |
| •                                                                                                                                | •      | •      | •   |    | •                           | •      | •  | •         |    |
| SAE Split Flange                                                                                                                 |        |        |     |    | SAE Split Flange (pump)     |        |    |           |    |
| 2-1/2"                                                                                                                           | 1-1/4" | 1-1/4" | AF  | FA | 2"                          | 1-1/2" |    | UN        | NU |
| 2-1/2"                                                                                                                           | 1-1/4" | 1"     | AG  | GA | 2"                          | 1-1/4" |    | UO        | OU |
| 2-1/2"                                                                                                                           | 1"     | 1"     | AH  | HA | 1-1/2"                      | 1-1/2" |    | UP        | PU |
| 2"                                                                                                                               | 1-1/4" | 1-1/4" | AM  | MA | 1-1/2"                      | 1-1/4" |    | UQ        | QU |
| 2"                                                                                                                               | 1-1/4" | 1"     | AN  | NA | 1-1/4"                      | 1-1/4" |    | UR        | RU |
| 2"                                                                                                                               | 1"     | 1"     | AP  | PA |                             |        |    |           |    |
| 1-1/2"                                                                                                                           | 1-1/4" | 1-1/4" | AT  | TA | SAE Split Flange (motor)    |        |    |           |    |
| 1-1/2"                                                                                                                           | 1-1/4" | 1"     | AU  | UA | 2"                          | 2"     |    | AA-Double |    |
| 1-1/2"                                                                                                                           | 1"     | 1"     | AV  | VA | 1-1/2"                      | 1-1/2" |    | BB-Double |    |
| 1-1/4"                                                                                                                           | 1-1/4" | 1-1/4" | AW  | WA | 1-1/4"                      | 1-1/4" |    | CC-Double |    |
| 1-1/4"                                                                                                                           | 1-1/4" | 1"     | AX  | XA | 1"                          | 1"     |    | EE-Double |    |
| 1-1/4"                                                                                                                           | 1"     | 1"     | AY  | YA | 3/4"                        | 3/4"   |    | FF-Double |    |
| OD Tube Porting                                                                                                                  |        |        |     |    | OD Tube Porting (pump)      |        |    |           |    |
| 1-1/2"                                                                                                                           | 1"     | 1"     | GV  | VG | 2"                          | 1-1/2" |    | PE        | EP |
| 1-1/4"                                                                                                                           | 1"     | 1"     | GY  | YG | 2"                          | 1-1/4" |    | PM        | MP |
| 1"                                                                                                                               | 1"     | 1"     | GZ  | ZG | 1-1/2"                      | 1-1/2" |    | PN        | NP |
| 1-1/2"                                                                                                                           | 1"     | 1"     | GV  | VG | 1-1/2"                      | 1-1/4" |    | PQ        | QP |
| 1-1/4"                                                                                                                           | 1"     | 1"     | GY  | YG | 1-1/4"                      | 1-1/4" |    | PR        | RP |
| 1"                                                                                                                               | 1"     | 1"     | GZ  | ZG |                             |        |    |           |    |
|                                                                                                                                  |        |        |     |    | OD Tube Porting (motor)     |        |    |           |    |
|                                                                                                                                  |        |        |     |    | 1-1/2"                      | 1-1/2" |    | MM-Double |    |
|                                                                                                                                  |        |        |     |    | 1-1/4"                      | 1-1/4" |    | NN-Double |    |
|                                                                                                                                  |        |        |     |    | 1"                          | 1"     |    | QQ-Double |    |
|                                                                                                                                  |        |        |     |    | 3/4"                        | 3/4"   |    | RR-Double |    |

| Connecting Shaft (10)        |  |
|------------------------------|--|
| For connecting tandem units. |  |
| 1 Connecting Shaft           |  |

| Common Inlet Passage (pump) |  |   |   |
|-----------------------------|--|---|---|
| No Ports                    |  | C | D |

Available Assembly Options.

Piggyback  
Add-a-pump  
Flow Dividers



## PGP/PGM365 Series Coding

## Cast Iron Bushing Design

Tandem: Repeat if Required

|     |     |     |     |     |     |     |     |     |     |     |      |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (6) | (7) | (10) |
|     | 3   | 6   | 5   |     |     |     |     |     |     |     |      |

| Pump/Motor (1) |       |
|----------------|-------|
| P              | Pump  |
| M              | Motor |

| Unit (2) |                                                              |
|----------|--------------------------------------------------------------|
| A        | Single Unit                                                  |
| B        | Tandem Unit (flush studs)                                    |
| C        | Single or Tandem with two-piece shaft (O.B bearing required) |
| L        | Unit with Extended Studs                                     |

| Shaft End Cover (3) |                                                 |
|---------------------|-------------------------------------------------|
| 1                   | Pump, cw w/o O.B bearing                        |
| 2                   | Pump ccw w/o O.B, bearing                       |
| 4                   | Pump, cw with O.B, bearing                      |
| 5                   | Pump, ccw with O.B. bearing                     |
| 8                   | Motor bi-rot w/ O.B, bearing + 1/4" ODT drain   |
| 9                   | Motor, bi-rot w/o O.B, bearing + 1/4" ODT drain |

| Shaft End Cover (4) |                |
|---------------------|----------------|
| 42                  | SAE "B" 4 bolt |
| 78                  | SAE "C" 4 bolt |
| 97                  | SAE "B" 2 bolt |
| 98                  | SAE "C" 2 bolt |

| Port end cover (5)       |        |           |     |                         |          |           |     |
|--------------------------|--------|-----------|-----|-------------------------|----------|-----------|-----|
| (Side Ported)            |        |           |     | (Side Ported)           |          |           |     |
| IN                       | OUT    | CW        | CCW | IN                      | OUT      | CW        | CCW |
| •                        | •      | •         | •   | •                       | •        | •         | •   |
| SAE Split Flange (pump)  |        |           |     | OD Tube Porting (pump)  |          |           |     |
| 2"                       | 1-1/2" | EC        | CE  | 1-1/2"                  | 1-1/4"   | FB        | BF  |
| 2"                       | 1-1/4" | EF        | FE  | 1-1/2"                  | 1"       | FC        | CF  |
| 2"                       | 1"     | EG        | GE  | 1-1/4"                  | 1-1/4"   | FG        | GF  |
| 1-1/2"                   | 1-1/2" | EH        | HE  | 1-1/4"                  | 1"       | FJ        | JF  |
| 1-1/2"                   | 1-1/4" | EJ        | JE  | 1"                      | 1"       | FL        | LF  |
| 1-1/2"                   | 1"     | EK        | KE  | 1-1/2"                  | -        | BC        | CB  |
| 1-1/4"                   | 1-1/4" | EL        | LE  | 1-1/4"                  | -        | BG        | GB  |
| 1-1/4"                   | 1"     | EM        | ME  | 1"                      | -        | BJ        | JB  |
| 1"                       | 1"     | EN        | NE  | -                       | 1-1/4"   | BL        | LB  |
| 2"                       | -      | OE        | EO  | -                       | 1"       | BN        | NB  |
| 1-1/2"                   | -      | OF        | FO  |                         |          |           |     |
| 1-1/4"                   | -      | OG        | GO  | OD Tube Porting (motor) |          |           |     |
| 1"                       | -      | OJ        | JO  | 1-1/4"                  | 1-1/4"   | VC-Double |     |
| -                        | 1-1/2" | OL        | LO  | 1"                      | 1"       | VN-Double |     |
| -                        | 1-1/4" | OM        | MO  | 3/4"                    | 3/4"     | VR-Double |     |
| -                        | 1"     | ON        | NO  |                         |          |           |     |
|                          |        |           |     | Unported (pump)         |          |           |     |
| SAE Split Flange (motor) |        |           |     | Unported                |          | BI        | IB  |
| 1-1/2"                   | 1-1/2" | CR-Double |     |                         |          |           |     |
| 1-1/4"                   | 1-1/4" | CS-Double |     | Unported (motor)        |          |           |     |
| 1"                       | 1"     | CT-Double |     | BA                      | Unported |           |     |
| 3/4"                     | 3/4"   | CV-Double |     |                         |          |           |     |

| Gear Housing (6) |       |
|------------------|-------|
| AB               | Pump  |
| EB               | Motor |

## Parker 300 Series

## PGP/PGM365 Series Coding

## Cast Iron Bushing Design

Tandem: Repeat if Required

|     |     |     |     |     |     |     |     |     |     |     |      |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (6) | (7) | (10) |
|     | 3   | 6   | 5   |     |     |     |     |     |     |     |      |

| Gear Width (7) |            |                       |                       |                   |
|----------------|------------|-----------------------|-----------------------|-------------------|
|                | Gear Width | in. <sup>3</sup> /rev | cm <sup>3</sup> /rev. | Max Pressure      |
| 07             | 3/4"       | 2.70                  | 44.3                  | 3500psi (241 bar) |
| 10             | 1"         | 3.60                  | 59.0                  | 3500psi (241 bar) |
| 12             | 1-1/4"     | 4.50                  | 73.8                  | 3500psi (241 bar) |
| 15             | 1-1/2"     | 5.40                  | 88.5                  | 3500psi (241 bar) |
| 17             | 1-3/4"     | 6.30                  | 103.3                 | 3500psi (241 bar) |
| 20             | 2"         | 7.20                  | 118.0                 | 3500psi (241 bar) |
| 22             | 2-1/4"     | 8.10                  | 132.8                 | 3250psi (224 bar) |
| 25             | 2-1/2"     | 9.00                  | 147.5                 | 3000psi (207 bar) |

| Shaft Type (8)                             |                              |
|--------------------------------------------|------------------------------|
| For Single or Tandem Units - unless noted) |                              |
| 7                                          | SAE "C" Spline               |
| 11                                         | SAE "C" Keyed                |
| 25                                         | SAE "B" Spline (Single only) |

| Bearing Carriers (9)                                                                                                             |          |        |         |          |                             |          |  |         |                           |                          |          |  |                         |          |
|----------------------------------------------------------------------------------------------------------------------------------|----------|--------|---------|----------|-----------------------------|----------|--|---------|---------------------------|--------------------------|----------|--|-------------------------|----------|
| (Dual Outlet - Pump Only)                                                                                                        |          |        |         |          | (Single Outlet - Pump Only) |          |  |         |                           | (Combined Outlet)        |          |  |                         |          |
| Outlets: for clockwise porting the top port number comes first; or counter-clockwise porting the bottom port number comes first. |          |        |         |          | Outlet for front section.   |          |  |         | Outlet for front section. |                          |          |  |                         |          |
|                                                                                                                                  |          |        |         |          | IN<br>•                     | OUT<br>• |  | CW<br>• | CWW<br>•                  | IN<br>•                  | OUT<br>• |  | CW<br>•                 | CWW<br>• |
| IN<br>•                                                                                                                          | OUT<br>• |        | CW<br>• | CWW<br>• | SAE Split Flange            |          |  |         | SAE Split Flange (pump)   |                          |          |  |                         |          |
| SAE Split Flange                                                                                                                 |          |        |         |          | 2-1/2"                      | 1-1/2"   |  | CJ      | JC                        | 2-1/2"                   | 1-1/2"   |  | UC                      | CU       |
| 2-1/2"                                                                                                                           | 1-1/2"   | 1-1/2" | AC      | CA       | 2-1/2"                      | 1-1/4"   |  | CL      | LC                        | 2-1/2"                   | 1-1/4"   |  | UF                      | FU       |
| 2-1/2"                                                                                                                           | 1-1/2"   | 1-1/2" | AD      | DA       | 2-1/2"                      | 1"       |  | CM      | MC                        | 2"                       | 1-1/2"   |  | UN                      | NU       |
| 2-1/2"                                                                                                                           | 1-1/2"   | 1"     | AE      | EA       | 2"                          | 1-1/2"   |  | HB      | BH                        | 2"                       | 1-1/4"   |  | UO                      | OU       |
| 2-1/2"                                                                                                                           | 1-1/4"   | 1-1/4" | AF      | FA       | 2"                          | 1-1/4"   |  | HC      | CH                        | 1-1/2"                   | 1-1/2"   |  | UP                      | PU       |
| 2-1/2"                                                                                                                           | 1-1/4"   | 1"     | AG      | GA       | 2"                          | 1"       |  | HF      | FH                        | 1-1/2"                   | 1-1/4"   |  | UQ                      | QU       |
| 2-1/2"                                                                                                                           | 1"       | 1"     | AH      | HA       | 1-1/2"                      | 1-1/2"   |  | HL      | LH                        | 1-1/4"                   | 1-1/4"   |  | UR                      | RU       |
| 2"                                                                                                                               | 1-1/2"   | 1-1/2" | AJ      | JA       | 1-1/2"                      | 1-1/4"   |  | HM      | MH                        | SAE Split Flange (motor) |          |  |                         |          |
| 2"                                                                                                                               | 1-1/2"   | 1-1/4" | AK      | KA       | 1-1/2"                      | 1"       |  | HN      | NH                        | 2"                       | 2"       |  | AA-Double               |          |
| 2"                                                                                                                               | 1-1/2"   | 1"     | AL      | LA       | 1-1/4"                      | 1-1/4"   |  | HO      | OH                        | 1-1/2"                   | 1-1/2"   |  | BB-Double               |          |
| 2"                                                                                                                               | 1-1/4"   | 1-1/4" | AM      | MA       | 1-1/4"                      | 1"       |  | HP      | PH                        | 1-1/4"                   | 1-1/4"   |  | CC-Double               |          |
| 2"                                                                                                                               | 1-1/4"   | 1"     | AN      | NA       | 1"                          | 1"       |  | HQ      | QH                        | 1"                       | 1"       |  | EE-Double               |          |
| 2"                                                                                                                               | 1"       | 1"     | AP      | PA       | 2-1/2"                      | 1-1/2"   |  | NR      | RN                        | 3/4"                     | 3/4"     |  | FF-Double               |          |
| 1-1/2"                                                                                                                           | 1-1/2"   | 1-1/2" | AQ      | QA       | 1-1/4"                      | 1"       |  | RS      | SR                        | OD Tube Porting (pump)   |          |  |                         |          |
| 1-1/2"                                                                                                                           | 1-1/2"   | 1-1/4" | AR      | RA       | OD Tube Porting             |          |  |         | 2"                        | 1-1/2"                   |          |  | PE                      | EP       |
| 1-1/2"                                                                                                                           | 1-1/2"   | 1"     | AS      | SA       | 2"                          | 1-1/4"   |  | KB      | BK                        | 2"                       | 1-1/4"   |  | PM                      | MP       |
| 1-1/2"                                                                                                                           | 1-1/4"   | 1-1/4" | AT      | TA       | 2"                          | 1"       |  | KC      | CK                        | 1-1/2"                   | 1-1/2"   |  | PN                      | NP       |
| 1-1/2"                                                                                                                           | 1-1/4"   | 1"     | AU      | UA       | 1-1/2"                      | 1-1/2"   |  | KF      | FK                        | 1-1/2"                   | 1-1/4"   |  | PQ                      | QP       |
| 1-1/2"                                                                                                                           | 1"       | 1"     | AV      | VA       | 1-1/2"                      | 1-1/4"   |  | KL      | LK                        | 1-1/2"                   | 1-1/4"   |  | PR                      | RP       |
| 1-1/4"                                                                                                                           | 1-1/4"   | 1-1/4" | AW      | WA       | 1-1/2"                      | 1"       |  | KM      | MK                        | 1-1/4"                   | 1-1/4"   |  | OD Tube Porting (motor) |          |
| 1-1/4"                                                                                                                           | 1-1/4"   | 1"     | AX      | XA       | 1-1/2"                      | 1-1/4"   |  | KN      | NK                        | 1-1/2"                   | 1-1/2"   |  | ww-Double               |          |
| 1-1/4"                                                                                                                           | 1"       | 1"     | AY      | YA       | 1-1/4"                      | 1-1/4"   |  | KO      | OK                        | 1-1/4"                   | 1-1/4"   |  | NN-Double               |          |
| 1"                                                                                                                               | 1"       | 1"     | AZ      | ZA       | 1-1/4"                      | 1"       |  | KP      | PK                        | 1"                       | 1"       |  | QQ-Double               |          |
|                                                                                                                                  |          |        |         |          | 1"                          | 1"       |  | KQ      | QK                        | 3/4"                     | 3/4"     |  | RR-Double               |          |
| OD Tube Porting                                                                                                                  |          |        |         |          |                             |          |  |         |                           |                          |          |  |                         |          |
| 2"                                                                                                                               | 1-1/2"   | 1-1/2" | GJ      | JG       |                             |          |  |         |                           |                          |          |  |                         |          |
| 2"                                                                                                                               | 1-1/2"   | 1-1/4" | GK      | KG       |                             |          |  |         |                           |                          |          |  |                         |          |
| 2"                                                                                                                               | 1-1/2"   | 1"     | GL      | LG       |                             |          |  |         |                           |                          |          |  |                         |          |
| 2"                                                                                                                               | 1-1/4"   | 1-1/4" | GM      | MG       |                             |          |  |         |                           |                          |          |  |                         |          |
| 2"                                                                                                                               | 1-1/4"   | 1"     | GN      | NG       |                             |          |  |         |                           |                          |          |  |                         |          |
| 2"                                                                                                                               | 1"       | 1"     | GP      | PG       |                             |          |  |         |                           |                          |          |  |                         |          |
| 1-1/2"                                                                                                                           | 1-1/2"   | 1-1/2" | GQ      | QG       |                             |          |  |         |                           |                          |          |  |                         |          |
| 1-1/2"                                                                                                                           | 1-1/2"   | 1-1/4" | GR      | RG       |                             |          |  |         |                           |                          |          |  |                         |          |
| 1-1/2"                                                                                                                           | 1-1/2"   | 1"     | GS      | SG       |                             |          |  |         |                           |                          |          |  |                         |          |
| 1-1/2"                                                                                                                           | 1-1/4"   | 1-1/4" | GT      | TG       |                             |          |  |         |                           |                          |          |  |                         |          |
| 1-1/2"                                                                                                                           | 1-1/4"   | 1"     | GU      | UG       |                             |          |  |         |                           |                          |          |  |                         |          |
| 1-1/2"                                                                                                                           | 1"       | 1"     | GV      | VG       |                             |          |  |         |                           |                          |          |  |                         |          |
| 1-1/4"                                                                                                                           | 1-1/4"   | 1-1/4" | GW      | WG       |                             |          |  |         |                           |                          |          |  |                         |          |
| 1-1/4"                                                                                                                           | 1-1/4"   | 1"     | GX      | XG       |                             |          |  |         |                           |                          |          |  |                         |          |
| 1-1/4"                                                                                                                           | 1"       | 1"     | GY      | YG       |                             |          |  |         |                           |                          |          |  |                         |          |
| 1"                                                                                                                               | 1"       | 1"     | GZ      | ZG       |                             |          |  |         |                           |                          |          |  |                         |          |

| Connecting Shaft (10)        |
|------------------------------|
| For connecting tandem units. |
| 1 Connecting Shaft           |

Available Assembly Options.

Piggyback  
Add-a-pump  
Flow Dividers

## PGP315 Pump Performance Data

| Speed<br>RPM | Output Flow<br>input power | Gear Widths |      |      |        |        |        |      |
|--------------|----------------------------|-------------|------|------|--------|--------|--------|------|
|              |                            | 1/2"        | 3/4" | 1"   | 1-1/4" | 1-1/2" | 1-3/4" | 2"   |
| 900          | GPM                        | 2.0         | 3.2  | 4.4  | 5.5    | 6.7    | 7.9    | 9.0  |
|              | LPM                        | 8           | 12   | 17   | 21     | 26     | 30     | 34   |
|              | HP                         | 5           | 8    | 11   | 13     | 15     | 15     | 15   |
|              | kW                         | 4           | 6    | 8    | 10     | 11     | 11     | 11   |
| 1200         | GPM                        | 2.8         | 4.4  | 6.0  | 7.6    | 9.2    | 10.7   | 12.2 |
|              | LPM                        | 11          | 17   | 23   | 29     | 35     | 40     | 46   |
|              | HP                         | 7           | 11   | 14   | 18     | 20     | 21     | 20   |
|              | kW                         | 5           | 8    | 11   | 13     | 15     | 15     | 15   |
| 1500         | GPM                        | 3.6         | 5.6  | 7.7  | 9.6    | 11.6   | 13.5   | 15.4 |
|              | LPM                        | 14          | 21   | 29   | 36     | 44     | 51     | 58   |
|              | HP                         | 9           | 13   | 18   | 22     | 25     | 26     | 25   |
|              | kW                         | 7           | 10   | 13   | 16     | 19     | 19     | 19   |
| 1800         | GPM                        | 4.4         | 6.8  | 9.3  | 11.6   | 14.0   | 16.3   | 18.6 |
|              | LPM                        | 17          | 26   | 35   | 44     | 53     | 62     | 70   |
|              | HP                         | 11          | 16   | 21   | 27     | 30     | 31     | 30   |
|              | kW                         | 8           | 12   | 16   | 20     | 22     | 23     | 23   |
| 2100         | GPM                        | 5.2         | 8.1  | 10.9 | 13.6   | 16.4   | 19.1   | 21.8 |
|              | LPM                        | 20          | 30   | 41   | 51     | 62     | 72     | 83   |
|              | HP                         | 12          | 19   | 25   | 31     | 35     | 36     | 35   |
|              | kW                         | 9           | 14   | 18   | 23     | 26     | 27     | 26   |
| 2400         | GPM                        | 6.0         | 9.3  | 12.5 | 15.6   | 18.8   | 21.9   | 25.1 |
|              | LPM                        | 23          | 35   | 47   | 59     | 71     | 83     | 95   |
|              | HP                         | 14          | 21   | 28   | 35     | 40     | 41     | 40   |
|              | kW                         | 11          | 16   | 21   | 26     | 30     | 31     | 30   |
| 3000         | GPM                        | 7.7         | 11.7 | 15.7 | 19.6   | 23.7   | 27.6   | 31.5 |
|              | LPM                        | 29          | 44   | 59   | 74     | 90     | 104    | 119  |
|              | HP                         | 18          | 27   | 35   | 44     | 50     | 51     | 51   |
|              | kW                         | 13          | 20   | 26   | 33     | 37     | 38     | 38   |

Performance data shown are the average results based on a series of laboratory tests of production units and are not necessarily representative of any one unit. Tests were run with the oil reservoir temperature at 120°F viscosity 150 SU at 100°F.

Note: Pump output flow is at the maximum rated pressure.

## PGM315 Motor Performance Data

| Speed<br>RPM | Gear Width |      |          |      |          |       |          |       |          |       |
|--------------|------------|------|----------|------|----------|-------|----------|-------|----------|-------|
|              | 1"         |      | 1-1/4"   |      | 1-1/2"   |       | 1-3/4"   |       | 2"       |       |
|              | 3500 psi   |      | 3500 psi |      | 3300 psi |       | 2900 psi |       | 2500 psi |       |
|              | A          | B    | A        | B    | A        | B     | A        | B     | A        | B     |
| 900          | 7.1        | 665  | 8.3      | 830  | 9.6      | 940   | 10.9     | 965   | 12.2     | 950   |
|              | 27         | 75.1 | 32       | 93.8 | 37       | 106.2 | 41       | 109   | 46       | 107.3 |
| 1200         | 8.8        | 665  | 10.5     | 830  | 12.2     | 940   | 13.8     | 965   | 15.5     | 950   |
|              | 33         | 75.1 | 40       | 93.8 | 46       | 106.2 | 52       | 109   | 59       | 107.3 |
| 1500         | 10.6       | 660  | 12.6     | 825  | 14.7     | 935   | 16.7     | 955   | 18.8     | 945   |
|              | 40         | 74.6 | 48       | 93.2 | 56       | 105.6 | 63       | 107.9 | 71       | 106.8 |
| 1800         | 12.3       | 655  | 14.7     | 820  | 17.2     | 930   | 19.6     | 950   | 22.1     | 940   |
|              | 46         | 74   | 56       | 92.6 | 65       | 105.1 | 74       | 107.3 | 84       | 106.2 |
| 2100         | 14         | 655  | 16.8     | 820  | 19.7     | 930   | 22.5     | 950   | 25.4     | 940   |
|              | 53         | 74   | 64       | 92.6 | 75       | 105.1 | 85       | 107.3 | 96       | 106.2 |
| 2400         | 15.7       | 640  | 18.9     | 800  | 22.2     | 910   | 25.4     | 930   | 28.8     | 920   |
|              | 59         | 72.3 | 72       | 90.4 | 84       | 102.8 | 96       | 105.1 | 109      | 103.9 |
| 3000         | 19         | 640  | 23       | 800  | 27.2     | 905   | 31.2     | 925   | 35.3     | 915   |

A: Input Flow  
GPM/LPM

B: Output Torque  
IN-LBS/Nm

Note: In accordance with our policy of continuing product development, we reserve the right to change specifications in the catalog without notice.

## PGP330 Pump Performance Data

| Speed<br>RPM | Output Flow<br>input power | Gear Widths |      |      |        |        |        |      |
|--------------|----------------------------|-------------|------|------|--------|--------|--------|------|
|              |                            | 1/2"        | 3/4" | 1"   | 1-1/4" | 1-1/2" | 1-3/4" | 2"   |
| 900          | GPM                        | 3.2         | 5.1  | 7.0  | 8.8    | 10.6   | 12.4   | 14.3 |
|              | LPM                        | 12          | 19   | 26   | 33     | 40     | 47     | 57   |
|              | HP                         | 9           | 13   | 17   | 21     | 26     | 28     | 29   |
|              | kW                         | 6           | 10   | 13   | 16     | 19     | 21     | 22   |
| 1200         | GPM                        | 4.5         | 7.0  | 9.5  | 12.0   | 14.5   | 16.9   | 19.4 |
|              | LPM                        | 17          | 26   | 36   | 45     | 55     | 64     | 73   |
|              | HP                         | 11          | 17   | 23   | 28     | 34     | 37     | 39   |
|              | kW                         | 8           | 13   | 17   | 21     | 25     | 28     | 29   |
| 1500         | GPM                        | 5.8         | 8.9  | 12.1 | 15.2   | 18.3   | 21.4   | 24.5 |
|              | LPM                        | 22          | 34   | 46   | 57     | 69     | 81     | 93   |
|              | HP                         | 14          | 21   | 28   | 35     | 43     | 46     | 49   |
|              | kW                         | 11          | 16   | 21   | 26     | 32     | 34     | 36   |
| 1800         | GPM                        | 7.1         | 10.8 | 14.7 | 18.4   | 22.1   | 25.9   | 29.6 |
|              | LPM                        | 27          | 41   | 55   | 70     | 84     | 98     | 112  |
|              | HP                         | 17          | 26   | 34   | 43     | 51     | 55     | 58   |
|              | kW                         | 13          | 19   | 25   | 32     | 38     | 41     | 44   |
| 2100         | GPM                        | 8.4         | 12.7 | 17.2 | 21.6   | 26.0   | 30.3   | 34.7 |
|              | LPM                        | 32          | 48   | 65   | 82     | 98     | 115    | 131  |
|              | HP                         | 20          | 30   | 40   | 50     | 60     | 65     | 68   |
|              | kW                         | 15          | 22   | 30   | 37     | 44     | 48     | 51   |
| 2400         | GPM                        | 9.6         | 14.7 | 19.8 | 24.8   | 29.8   | 34.8   | 39.8 |
|              | LPM                        | 36          | 55   | 75   | 94     | 113    | 132    | 151  |
|              | HP                         | 23          | 34   | 45   | 57     | 68     | 74     | 78   |
|              | kW                         | 17          | 25   | 34   | 42     | 51     | 55     | 58   |
| 3000         | GPM                        | 12.2        | 18.5 | 24.9 | 31.2   | 37.5   | 43.8   | 50.1 |
|              | LPM                        | 46          | 70   | 94   | 118    | 142    | 166    | 190  |
|              | HP                         | 28          | 43   | 57   | 71     | 85     | 92     | 97   |
|              | kW                         | 21          | 32   | 42   | 53     | 64     | 69     | 73   |

Performance data shown are the average results based on a series of laboratory tests of production units and are not necessarily representative of any one unit. Tests were run with the oil reservoir temperature at 120°F viscosity 150 SU at 100°F.

Note: Pump output flow is at the maximum rated pressure.

## PGM330 Motor Performance Data

| Speed<br>RPM | Gear Width |       |          |       |          |       |          |       |          |       |
|--------------|------------|-------|----------|-------|----------|-------|----------|-------|----------|-------|
|              | 1"         |       | 1-1/4"   |       | 1-1/2"   |       | 1-3/4"   |       | 2"       |       |
|              | 3500 psi   |       | 3500 psi |       | 3500 psi |       | 3250 psi |       | 3000 psi |       |
|              | A          | B     | A        | B     | A        | B     | A        | B     | A        | B     |
| 900          | 10.1       | 1010  | 12.3     | 1270  | 14.5     | 1530  | 16.7     | 1665  | 19       | 1770  |
|              | 38         | 114.1 | 47       | 143.5 | 55       | 172.9 | 63       | 188.1 | 72       | 200   |
| 1200         | 12.8       | 1005  | 15.7     | 1265  | 18.6     | 1525  | 21.4     | 1660  | 24.3     | 1760  |
|              | 49         | 113.6 | 59       | 142.9 | 70       | 172.3 | 81       | 187.6 | 92       | 198.9 |
| 1500         | 15.6       | 1000  | 19.1     | 1255  | 22.6     | 1515  | 26.1     | 1650  | 29.6     | 1750  |
|              | 59         | 113   | 72       | 141.8 | 85       | 171.2 | 99       | 186.4 | 112      | 197.7 |
| 1800         | 18.4       | 995   | 22.5     | 1250  | 26.6     | 1505  | 30.8     | 1640  | 34.9     | 1740  |
|              | 69         | 112.4 | 85       | 141.2 | 101      | 170   | 116      | 185.3 | 132      | 196.6 |
| 2100         | 21.1       | 990   | 25.9     | 1240  | 30.7     | 1495  | 35.4     | 1625  | 40.2     | 1720  |
|              | 80         | 111.9 | 98       | 140.1 | 116      | 168.9 | 134      | 183.6 | 152      | 194.3 |
| 2400         | 23.9       | 985   | 29.3     | 1235  | 34.7     | 1480  | 40.1     | 1605  | 45.5     | 1695  |
|              | 90         | 111.3 | 111      | 139.5 | 131      | 167.2 | 152      | 181.3 | 172      | 191.5 |
| 3000         | 29.2       | 980   | 35.9     | 1230  | 42.6     | 1475  | 49.3     | 1595  | 56       | 1685  |
|              | 110        | 110.7 | 136      | 139.0 | 161      | 166.7 | 186      | 180.2 | 212      | 190.4 |

A: Input Flow  
GPM/LPM

B: Output Torque  
IN-LBS/Nm

Note: In accordance with our policy of continuing product development, we reserve the right to change specifications in the catalog without notice.

## PGP350 Pump Performance Data

| Speed | Output Flow | Gear Widths |      |      |        |        |        |      |        |        |
|-------|-------------|-------------|------|------|--------|--------|--------|------|--------|--------|
| RPM   | input power | 1/2"        | 3/4" | 1"   | 1-1/4" | 1-1/2" | 1-3/4" | 2"   | 2-1/4" | 2-1/2" |
| 900   | GPM         | 4           | 6.4  | 8.8  | 11.2   | 13.7   | 16.1   | 18.6 | 21     | 23.4   |
|       | LPM         | 15          | 24   | 33   | 42     | 52     | 61     | 70   | 79     | 89     |
|       | HP          | 11          | 17   | 22   | 28     | 33     | 36     | 38   | 39     | 40     |
|       | kW          | 8           | 12   | 17   | 21     | 25     | 27     | 28   | 29     | 30     |
| 1200  | GPM         | 5.6         | 8.8  | 12.1 | 15.4   | 18.7   | 21.9   | 25.2 | 28.4   | 31.7   |
|       | LPM         | 21          | 33   | 46   | 58     | 71     | 83     | 95   | 108    | 120    |
|       | HP          | 15          | 22   | 30   | 37     | 44     | 48     | 51   | 52     | 53     |
|       | kW          | 11          | 17   | 22   | 28     | 33     | 36     | 38   | 39     | 39     |
| 1500  | GPM         | 7.3         | 11.3 | 15.5 | 19.5   | 23.6   | 27.7   | 31.8 | 35.9   | 40     |
|       | LPM         | 28          | 43   | 59   | 74     | 89     | 105    | 120  | 136    | 151    |
|       | HP          | 18          | 28   | 37   | 46     | 55     | 60     | 63   | 65     | 66     |
|       | kW          | 14          | 21   | 28   | 34     | 41     | 45     | 47   | 49     | 49     |
| 1800  | GPM         | 8.9         | 13.8 | 18.8 | 23.6   | 28.6   | 33.5   | 38.4 | 43.3   | 48.3   |
|       | LPM         | 34          | 52   | 71   | 89     | 108    | 127    | 145  | 164    | 183    |
|       | HP          | 22          | 33   | 44   | 55     | 67     | 72     | 76   | 78     | 79     |
|       | kW          | 17          | 25   | 33   | 41     | 50     | 54     | 57   | 58     | 59     |
| 2100  | GPM         | 10.6        | 16.3 | 22.1 | 27.8   | 33.6   | 39.3   | 45.1 | 50.8   | 56.6   |
|       | LPM         | 40          | 62   | 84   | 105    | 127    | 149    | 171  | 191    | 214    |
|       | HP          | 26          | 39   | 52   | 65     | 78     | 84     | 89   | 91     | 92     |
|       | kW          | 19          | 29   | 39   | 48     | 58     | 63     | 66   | 68     | 69     |
| 2400  | GPM         | 12.2        | 18.8 | 25.4 | 31.9   | 38.5   | 45.1   | 51.7 | 58.2   | 64.8   |
|       | LPM         | 46          | 71   | 96   | 121    | 146    | 171    | 196  | 220    | 245    |
|       | HP          | 30          | 44   | 59   | 74     | 89     | 96     | 101  | 105    | 106    |
|       | kW          | 22          | 33   | 44   | 55     | 66     | 72     | 76   | 78     | 79     |

Performance data shown are the average results based on a series of laboratory tests of production units and are not necessarily representative of any one unit. Tests were run with the oil reservoir temperature at 120°F viscosity 150 SU at 100°F.

Note: Pump output flow is at the maximum rated pressure.

## PGM350 Motor Performance Data

| Speed<br>RPM | Gear Width |       |          |       |          |       |          |       |          |       |          |       |          |       |
|--------------|------------|-------|----------|-------|----------|-------|----------|-------|----------|-------|----------|-------|----------|-------|
|              | 1"         |       | 1-1/4"   |       | 1-1/2"   |       | 1-3/4"   |       | 2"       |       | 2-1/4"   |       | 2-1/2"   |       |
|              | 3500 psi   |       | 3500 psi |       | 3300 psi |       | 2900 psi |       | 2500 psi |       | 3250 psi |       | 3000 psi |       |
|              | A          | B     | A        | B     | A        | B     | A        | B     | A        | B     | A        | B     | A        | B     |
| 900          | 13.4       | 1320  | 16       | 1670  | 18.6     | 2025  | 21.2     | 2225  | 23.8     | 2350  | 26.4     | 2425  | 28.9     | 2450  |
|              | 51         | 149.1 | 61       | 188.7 | 70       | 228.8 | 80       | 251.4 | 90       | 265.5 | 100      | 274   | 110      | 276.8 |
| 1200         | 16.9       | 1315  | 20.4     | 1660  | 23.8     | 2015  | 27.2     | 2215  | 30.6     | 2340  | 34       | 2410  | 37.4     | 2435  |
|              | 64         | 148.6 | 77       | 187.6 | 90       | 227.7 | 103      | 250.3 | 116      | 264.4 | 129      | 272.3 | 142      | 275.1 |
| 1500         | 20.5       | 1300  | 24.7     | 1640  | 28.9     | 1990  | 33       | 2195  | 37.4     | 2315  | 41.7     | 2385  | 45.9     | 2410  |
|              | 77         | 146.9 | 93       | 185.3 | 110      | 224.8 | 126      | 248   | 142      | 261.6 | 158      | 269.5 | 174      | 272.3 |
| 1800         | 24         | 1295  | 29       | 1635  | 34.1     | 1980  | 39.2     | 2180  | 44.2     | 2300  | 49.3     | 2375  | 54.4     | 2395  |
|              | 91         | 146.3 | 110      | 184.7 | 129      | 223.7 | 148      | 246.3 | 167      | 259.9 | 187      | 268.3 | 206      | 270.6 |
| 2100         | 27.5       | 1285  | 33.4     | 1620  | 39.3     | 1965  | 45.2     | 2165  | 51.1     | 2285  | 57       | 2355  | 62.9     | 2380  |
|              | 104        | 145.2 | 126      | 183   | 149      | 222   | 171      | 244.6 | 193      | 258.2 | 216      | 266.1 | 238      | 268.9 |
| 2400         | 31         | 1265  | 37.7     | 1600  | 44.4     | 1940  | 51.2     | 2135  | 57.9     | 2255  | 64.9     | 2325  | 71.3     | 2350  |
|              | 117        | 142.9 | 143      | 180.8 | 168      | 219.2 | 194      | 241.2 | 219      | 254.8 | 245      | 262.7 | 270      | 265.5 |

A: Input Flow  
GPM/LPM

Note: In accordance with our policy of continuing product development, we reserve the right to change specifications in the catalog without notice.

B: Output  
Torque  
IN-LBS/Nm

## PGP365 Pump Performance Data

| Speed<br>RPM | output      |      |      |        |        |        |      |        |        |
|--------------|-------------|------|------|--------|--------|--------|------|--------|--------|
|              | input power | 3/4" | 1"   | 1-1/4" | 1-1/2" | 1-3/4" | 2"   | 2-1/4" | 2-1/2" |
| 900          | GPM         | 8    | 11.5 | 14.9   | 18.4   | 21.8   | 25.4 | 28.8   | 32.3   |
|              | LPM         | 30   | 44   | 57     | 70     | 83     | 96   | 109    | 122    |
|              | HP          | 24   | 31   | 39     | 47     | 55     | 63   | 66     | 67     |
|              | kW          | 18   | 23   | 29     | 35     | 41     | 47   | 49     | 50     |
| 1200         | GPM         | 11.5 | 16.2 | 20.8   | 25.5   | 30     | 34.7 | 39.3   | 44     |
|              | LPM         | 44   | 61   | 79     | 96     | 114    | 131  | 149    | 166    |
|              | HP          | 31   | 42   | 52     | 63     | 73     | 84   | 88     | 90     |
|              | kW          | 23   | 31   | 39     | 47     | 5      | 63   | 65     | 67     |
| 1500         | GPM         | 15   | 20.9 | 26.6   | 32.5   | 38.2   | 44.1 | 49.8   | 55.6   |
|              | LPM         | 57   | 79   | 101    | 123    | 145    | 167  | 188    | 211    |
|              | HP          | 39   | 52   | 66     | 79     | 92     | 105  | 110    | 112    |
|              | kW          | 29   | 39   | 49     | 59     | 68     | 78   | 82     | 84     |
| 1800         | GPM         | 18.5 | 25.6 | 32.5   | 39.5   | 46.4   | 53.4 | 60.3   | 67.3   |
|              | LPM         | 70   | 97   | 123    | 149    | 176    | 202  | 228    | 255    |
|              | HP          | 47   | 63   | 79     | 94     | 110    | 126  | 131    | 135    |
|              | kW          | 35   | 47   | 89     | 70     | 82     | 94   | 98     | 101    |
| 2100         | GPM         | 22   | 30.2 | 38.3   | 46.5   | 54.6   | 62.8 | 708    | 79     |
|              | LPM         | 83   | 114  | 145    | 176    | 207    | 238  | 268    | 299    |
|              | HP          | 55   | 73   | 92     | 110    | 128    | 147  | 153    | 157    |
|              | kW          | 41   | 55   | 68     | 82     | 96     | 110  | 114    | 117    |
| 2400         | GPM         | 25.6 | 34.9 | 44.2   | 535    | 62.8   | 72.1 | 81.4   | 90.7   |
|              | LPM         | 97   | 132  | 167    | 203    | 238    | 273  | 308    | 343    |
|              | HP          | 63   | 84   | 105    | 126    | 147    | 168  | 175    | 180    |
|              | kW          | 47   | 63   | 78     | 94     | 110    | 125  | 131    | 134    |

Performance data shown are the average results based on a series of laboratory tests of production units and are not necessarily representative of any one unit. Tests were run with the oil reservoir temperature at 120°F viscosity 150 SU at 100°F.

Note: Pump output flow is at the maximum rated pressure.

## PGM365 Motor Performance Data

| Speed<br>RPM | Gear Width |       |          |       |          |       |          |       |          |       |          |       |          |       |
|--------------|------------|-------|----------|-------|----------|-------|----------|-------|----------|-------|----------|-------|----------|-------|
|              | 1"         |       | 1-1/4"   |       | 1-1/2"   |       | 1-3/4"   |       | 2"       |       | 2-1/4"   |       | 2-1/2"   |       |
|              | 3500 psi   |       | 3500 psi |       | 3500 psi |       | 3250 psi |       | 3000 psi |       | 2750 psi |       | 2500 psi |       |
|              | A          | B     | A        | B     | A        | B     | A        | B     | A        | B     | A        | B     | A        | B     |
| 900          | 18.4       | 1865  | 22       | 2355  | 25.6     | 2860  | 29.2     | 3370  | 32.9     | 3850  | 36.5     | 4020  | 40.1     | 4125  |
|              | 70         | 210.7 | 83       | 266.1 | 97       | 323.1 | 111      | 380.8 | 124      | 435   | 138      | 454.2 | 152      | 466.1 |
| 1200         | 23.3       | 1845  | 28.1     | 2330  | 32.9     | 2830  | 37.6     | 3335  | 42.4     | 3810  | 47.2     | 3980  | 52       | 4080  |
|              | 88         | 208.5 | 106      | 263.3 | 124      | 319.7 | 142      | 376.8 | 160      | 430.5 | 179      | 449.7 | 197      | 461   |
| 1500         | 28.2       | 1815  | 34.1     | 2295  | 40.1     | 2780  | 46       | 3280  | 52       | 3750  | 57.9     | 3915  | 63.8     | 4020  |
|              | 107        | 205.1 | 129      | 259.3 | 152      | 314.1 | 174      | 370.6 | 197      | 423.7 | 219      | 442.3 | 242      | 454.2 |
| 1800         | 33.1       | 1805  | 40.2     | 2280  | 47.3     | 2765  | 54.4     | 3265  | 61.5     | 3730  | 68.6     | 3895  | 75.7     | 3995  |
|              | 125        | 203.9 | 152      | 257.6 | 179      | 312.4 | 206      | 368   | 233      | 421.4 | 260      | 440.1 | 287      | 451.4 |
| 2100         | 37.9       | 1755  | 46.2     | 2220  | 54.4     | 2690  | 62.8     | 3160  | 71.1     | 3610  | 79.3     | 3770  | 87.6     | 3865  |
|              | 144        | 198.3 | 175      | 250.8 | 206      | 303.9 | 238      | 357   | 269      | 407.9 | 300      | 426   | 332      | 436.7 |
| 2400         | 42.8       | 1705  | 52.3     | 2155  | 61.7     | 2615  | 71.2     | 3055  | 80.6     | 3490  | 90.1     | 3645  | 99.5     | 3740  |
|              | 162        | 192.6 | 198      | 243.5 | 234      | 295.5 | 269      | 345.2 | 305      | 394.3 | 341      | 411.8 | 377      | 422.6 |

A: Input Flow  
GPM/LPM

Note: In accordance with our policy of continuing product development, we reserve the right to change specifications in the catalog without notice.

B: Output  
Torque  
IN-LBS/Nm

## PGP Cast Iron Specifications

## 600 Series Cast Iron

## Features

- Patented interlocking body design
- 12 tooth gears, bronze balance plates
- Tandem, triple and cross-frame pumps available
- Common inlets available for tandem and triple pumps
- Continuous operating pressures up to 310 bar
- Production run-in available to suite OEM application conditions and to provide optimized volumetric efficiencies
- Pressure balanced design for high efficiency
- Reduced system noise levels compared to earlier models
- High power through-drive capability
- Wide range of integral valves for power steering, power brakes, fan drivers and implement hydraulics
- Load sense and solenoid operated unloading



## PGP/PGM620 Specification

| Pump Displacement                               | Code                 | 0160 | 0190 | 0230 | 0260 | 0290 | 0330 | 0360 | 0370 | 0410 | 0440 | 0450 | 0500 | 0520 |
|-------------------------------------------------|----------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|
|                                                 | cm <sup>3</sup> /rev | 16.0 | 19.0 | 23.0 | 26.0 | 29.0 | 33.0 | 36.0 | 37.0 | 41.0 | 44.0 | 45.0 | 50.0 | 52.0 |
| Max. Continuous Press. PGP 620                  | bar                  | 275  | 275  | 275  | 275  | 275  | 275  | 250  | 250  | 220  | 210  | –    | 210  | 210  |
| Max. Continuous Press. PGP 625                  | bar                  | –    | –    | –    | –    | –    | –    | 280* | –    | 280* | –    | 260* | 230* | –    |
| Minimum Speed<br>@ Max. outlet press.           | rpm                  | 500  | 500  | 500  | 500  | 500  | 500  | 500  | 500  | 500  | 500  | 500  | 500  | 500  |
| Maximum Speed<br>@ 0 Inlet & Max. outlet press. | rpm                  | 3500 | 3500 | 3500 | 3500 | 3500 | 3500 | 3500 | 3500 | 3500 | 3500 | 3500 | 3000 | 3000 |

## PGP/PGM640 Specification

| Pump Displacement                               | Code                 | 300  | 350  | 400  | 450  | 500  | 550  | 600  | 650  | 700  | 750  | 800  | 900  | 1000  |
|-------------------------------------------------|----------------------|------|------|------|------|------|------|------|------|------|------|------|------|-------|
|                                                 | cm <sup>3</sup> /rev | 30,0 | 35,0 | 40,0 | 45,0 | 50,0 | 55,0 | 60,0 | 65,0 | 70,0 | 75,0 | 80,0 | 90,0 | 100,0 |
| Max. Continuous Pressure                        | bar                  | 310  | 310  | 310  | 310  | 310  | 310  | 290  | 265  | 245  | 225  | 210  | 190  | 180   |
| Minimum Speed<br>@ Max. outlet press.           | rpm                  | 500  | 500  | 500  | 500  | 500  | 500  | 500  | 500  | 500  | 500  | 500  | 500  | 500   |
| Maximum Speed<br>@ 0 Inlet & Max. outlet press. | rpm                  | 3000 | 3000 | 3000 | 3000 | 3000 | 3000 | 3000 | 3000 | 3000 | 3000 | 3000 | 3000 | 3000  |



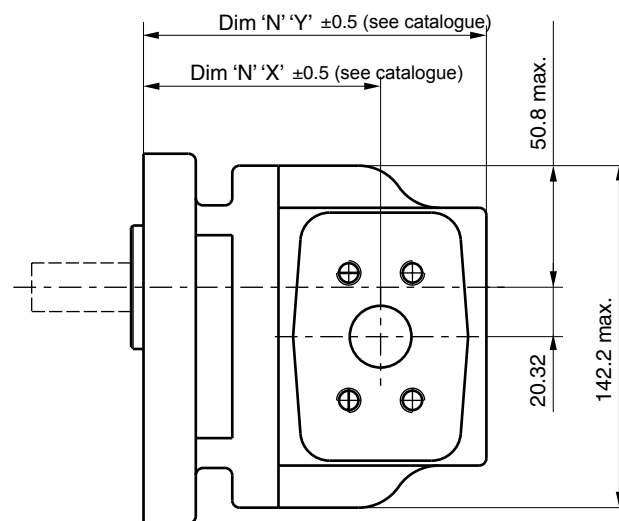
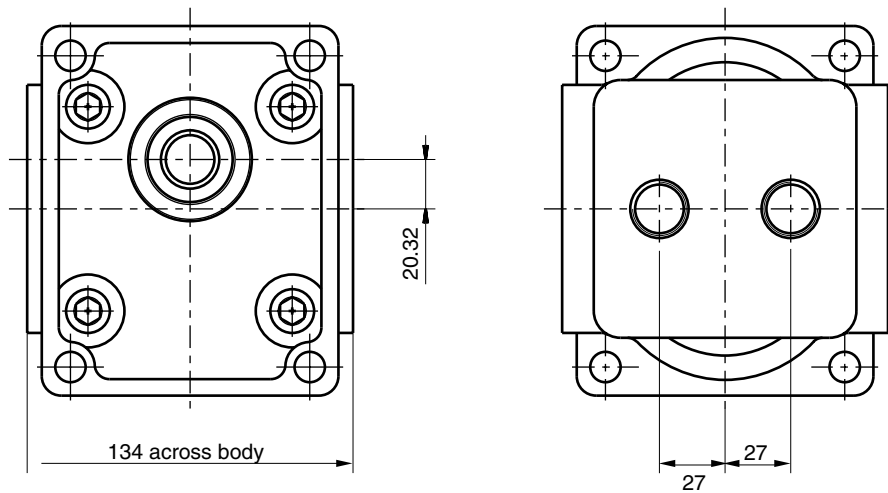
## Preferred Model (Single Pump)

| Order Code | Model Code                | cc/rev | Shaft                 | Mounting        | Seal | Port (Inlet)      | Port (Outlet)       | Rotation |
|------------|---------------------------|--------|-----------------------|-----------------|------|-------------------|---------------------|----------|
| 7029111052 | PGP620A0160CD1H3NE6E5B1B1 | 16     | 13T, SAE" B" spline   | SAE" B" 2 bolts | NBR  | 1 - 11 BSP        | 3/4 - 16 BSP        | CW       |
| 7029111161 | PGP620A0160CD1H2NJ7J5B1B1 | 16     | 13T, SAE" B" spline   | SAE" A" 2 bolts | NBR  | Ø20mm Square      | Ø15mm Square        | CW       |
| 7029111298 | PGP620A0160CD1H2NT3T2B1B1 | 16     | 13T, SAE" B" spline   | SAE" A" 2 bolts | NBR  | 25.4 mm Metric SF | 19.0 mm Metric SF   | CW       |
| 7029111316 | PGP620A0160CD1A3VT3T2B1B1 | 16     | 13T, SAE" B" spline   | SAE" B" 4 bolts | FPM  | 25.4 mm Metric SF | 19.0 mm Metric SF   | CW       |
| 7029112062 | PGP620A0190AD1H3NT3T2B1B1 | 19     | 13T, SAE" B" spline   | SAE" B" 4 bolts | NBR  | 25.4 mm Metric SF | 19.0 mm Metric SF   | CCW      |
| 7029111189 | PGP620A0190CD1H3NB1B1E6E5 | 19     | 13T, SAE" B" spline   | SAE" B" 2 bolts | NBR  | 1 - 11 BSP (rear) | 3/4 - 16 BSP (rear) | CW       |
| 7029111186 | PGP620A0190CD1H3NE6E5B1B1 | 19     | 13T, SAE" B" spline   | SAE" B" 2 bolts | NBR  | 1 - 11 BSP        | 3/4 - 16 BSP        | CW       |
| 7029112147 | PGP620A0190AD1H3NB1B1E6E5 | 19     | 13T, SAE" B" spline   | SAE" B" 2 bolts | NBR  | 1 - 11 BSP (rear) | 3/4 - 16 BSP (rear) | CCW      |
| 7029111168 | PGP620A0210CD1H3NE6E5B1B1 | 21     | 13T, SAE" B" spline   | SAE" B" 2 bolts | NBR  | 1 - 11 BSP        | 3/4 - 16 BSP        | CW       |
| 7029112054 | PGP620A0230AD1H3NE6E5B1B1 | 23     | 13T, SAE" B" spline   | SAE" B" 2 bolts | NBR  | 1 - 11 BSP        | 3/4 - 16 BSP        | CCW      |
| 7029112115 | PGP620A0230AD1H3VT3T2B1B1 | 23     | 13T, SAE" B" spline   | SAE" B" 2 bolts | FPM  | 25.4 mm Metric SF | 19.0 mm Metric SF   | CW       |
| 7029111098 | PGP620A0230CD1H3NE6E5B1B1 | 23     | 13T, SAE" B" spline   | SAE" B" 2 bolts | NBR  | 1 - 11 BSP        | 3/4 - 16 BSP        | CW       |
| 7029112187 | PGP620A0230AD1H3VT4T3B1B1 | 23     | 13T, SAE" B" spline   | SAE" B" 2 bolts | FPM  | 31.8 mm Metric SF | 25.4 mm Metric SF   | CCW      |
| 7029112107 | PGP620A0260AD1H3NT4T2B1B1 | 26     | 13T, SAE" B" spline   | SAE" B" 2 bolts | NBR  | 31.8 mm Metric SF | 19.0 mm Metric SF   | CCW      |
| 7029111112 | PGP620A0260CD1H3NE6E5B1B1 | 26     | 13T, SAE" B" spline   | SAE" B" 2 bolts | NBR  | 1 - 11 BSP        | 3/4 - 16 BSP        | CW       |
| 7029112192 | PGP620A0260AD1H3VT4T3B1B1 | 26     | 13T, SAE" B" spline   | SAE" B" 2 bolts | FPM  | 31.8 mm Metric SF | 25.4 mm Metric SF   | CCW      |
| 7029111287 | PGP620A0260CD1H3VT4T3B1B1 | 26     | 13T, SAE" B" spline   | SAE" B" 2 bolts | FPM  | 31.8 mm Metric SF | 25.4 mm Metric SF   | CW       |
| 7029111066 | PGP620A0260CT1D7NE6E5B1B1 | 26     | Ø21.59, Taper Key     | Ø50.77 Rectan   | NBR  | 1 - 11 BSP        | 3/4 - 16 BSP        | CW       |
| 7029111304 | PGP620A0260CD1H2NB1B1E6E5 | 26     | 13T, SAE" B" spline   | SAE" A" 2 bolts | NBR  | 1 - 11 BSP (rear) | 3/4 - 16 BSP (rear) | CW       |
| 7029111086 | PGP620A0290CD1H3NE6E5B1B1 | 29     | 13T, SAE" B" spline   | SAE" B" 2 bolts | NBR  | 1 - 11 BSP        | 3/4 - 16 BSP        | CW       |
| 7029112052 | PGP620A0290AD1H3NE6E5B1B1 | 29     | 13T, SAE" B" spline   | SAE" B" 2 bolts | NBR  | 1 - 11 BSP        | 3/4 - 16 BSP        | CCW      |
| 7029111151 | PGP620A0290CD1H3NT4T3B1B1 | 29     | 13T, SAE" B" spline   | SAE" B" 2 bolts | NBR  | 31.8 mm Metric SF | 25.4 mm Metric SF   | CW       |
| 7029111156 | PGP620A0290CD1H2NE6E5B1B1 | 29     | 13T, SAE" B" spline   | SAE" A" 2 bolts | NBR  | 1 - 11 BSP        | 3/4 - 16 BSP        | CW       |
| 7029111237 | PGP620A0290CT1D7NE6E5B1B1 | 29     | Ø21.59, Taper Key     | Ø50.77 Rectan   | NBR  | 1 - 11 BSP        | 3/4 - 16 BSP        | CW       |
| 7029111244 | PGP620A0290CD1H3VE7E5B1B1 | 29     | 13T, SAE" B" spline   | SAE" B" 2 bolts | FPM  | 1-1/4 - 11 BSP    | 3/4 - 16 BSP        | CW       |
| 7029111273 | PGP620A0290CT1D7NE7E5B1B1 | 29     | Ø21.59, Taper Key     | Ø50.77 Rectan   | NBR  | 1-1/4 - 11 BSP    | 3/4 - 16 BSP        | CW       |
| 7029111223 | PGP620A0330CM3H3NE6E5B1B1 | 33     | Ø25.4, SAE" B-B" Key  | SAE" B" 2 bolts | NBR  | 1 - 11 BSP        | 3/4 - 16 BSP        | CW       |
| 7029112070 | PGP620A0330AD1H3NT4T3B1B1 | 33     | 13T, SAE" B" spline   | SAE" B" 2 bolts | NBR  | 31.8 mm Metric SF | 25.4 mm Metric SF   | CCW      |
| 7029111001 | PGP620A0330CD1H3ND6D5B1B1 | 33     | 13T, SAE" B" spline   | SAE" B" 2 bolts | NBR  | 1 5/16-12 UNF     | 1 1/16-12 UNF       | CW       |
| 7029111072 | PGP620A0330CT1D7NB1B1E6E5 | 33     | Ø21.59, Taper Key     | Ø50.77 Rectan   | NBR  | 1 - 11 BSP (rear) | 3/4 - 16 BSP (rear) | CW       |
| 7029111087 | PGP620A0330CD1H3NT4T3B1B1 | 33     | 13T, SAE" B" spline   | SAE" B" 2 bolts | NBR  | 31.8 mm Metric SF | 25.4 mm Metric SF   | CW       |
| 7029111241 | PGP620A0330CD1H3NE7E5B1B1 | 33     | 13T, SAE" B" spline   | SAE" B" 2 bolts | NBR  | 1-1/4 - 11 BSP    | 3/4 - 16 BSP        | CW       |
| 7029112057 | PGP620A0330AD1H3NE6E5B1B1 | 33     | 13T, SAE" B" spline   | SAE" B" 2 bolts | NBR  | 1 - 11 BSP        | 3/4 - 16 BSP        | CCW      |
| 7029111079 | PGP620A0360CD1H3NE8E6B1B1 | 36     | 13T, SAE" B" spline   | SAE" B" 2 bolts | NBR  | 1-1/2 - 11 BSP    | 1 - 11 BSP          | CW       |
| 7029111257 | PGP620A0360CD1H3NE6E5B1B1 | 36     | 13T, SAE" B" spline   | SAE" B" 2 bolts | NBR  | 1 - 11 BSP        | 3/4 - 16 BSP        | CW       |
| 7029111076 | PGP620A0370CD1H3ND8D5B1B1 | 37     | 13T, SAE" B" spline   | SAE" B" 2 bolts | NBR  | 1 7/8-12 UNF      | 1 1/16-12 UNF       | CW       |
| 7029112046 | PGP620A0370AD1H3NE7E5B1B1 | 37     | 13T, SAE" B" spline   | SAE" B" 2 bolts | NBR  | 1-1/4 - 11 BSP    | 3/4 - 16 BSP        | CCW      |
| 7029111164 | PGP620A0370CD1H3NE7E5B1B1 | 37     | 13T, SAE" B" spline   | SAE" B" 2 bolts | NBR  | 1-1/4 - 11 BSP    | 3/4 - 16 BSP        | CW       |
| 7029111070 | PGP620A0370CD1H3NE6E5B1B1 | 37     | 13T, SAE" B" spline   | SAE" B" 2 bolts | NBR  | 1 - 11 BSP        | 3/4 - 16 BSP        | CW       |
| 7029112119 | PGP620A0370AD1H3VT5T3B1B1 | 37     | 13T, SAE" B" spline   | SAE" B" 2 bolts | FPM  | 38.1 mm Metric SF | 25.4 mm Metric SF   | CCW      |
| 7029111238 | PGP620A0410CD1H3WS4S3B1B1 | 41     | 13T, SAE" B" spline   | SAE" B" 2 bolts | DFPM | 1-1/4" SAE SF     | 1" SAE SF           | CW       |
| 7029111247 | PGP620A0410CD1H3NE7E5B1B1 | 41     | 13T, SAE" B" spline   | SAE" B" 2 bolts | NBR  | 1-1/4 - 11 BSP    | 3/4 - 16 BSP        | CW       |
| 7029111258 | PGP620A0410CD1H2NE8E6B1B1 | 41     | 13T, SAE" B" spline   | SAE" A" 2 bolts | NBR  | 1-1/2 - 11 BSP    | 1 - 11 BSP          | CW       |
| 7029111270 | PGP620A0440CE1H3NT5T3B1B1 | 44     | 15T, SAE" B-B" spline | SAE" B" 2 bolts | NBR  | 38.1 mm Metric SF | 25.4 mm Metric SF   | CW       |
| 7029111049 | PGP620A0460CD1H3NS5D6B1B1 | 46     | 13T, SAE" B" spline   | SAE" B" 2 bolts | NBR  | 1-1/2" SAE SF     | 1 5/16-12 UNF       | CW       |
| 7029111243 | PGP620A0460CD1H3NE7E6B1B1 | 46     | 13T, SAE" B" spline   | SAE" B" 2 bolts | NBR  | 1-1/4 - 11 BSP    | 1 - 11 BSP          | CW       |
| 7029111017 | PGP620A0500CT1D7NL3L2B1B1 | 50     | Ø21.59, Taper Key     | Ø50.77 Rectan   | NBR  | Ø27mm Diamond     | Ø19mm Diamond       | CW       |
| 7029111096 | PGP620A0500CD1H3NE7E5B1B1 | 50     | 13T, SAE" B" spline   | SAE" B" 2 bolts | NBR  | 1-1/4 - 11 BSP    | 3/4 - 16 BSP        | CW       |
| 7029111234 | PGP620A0500CD1H3VT5T3B1B1 | 50     | 13T, SAE" B" spline   | SAE" B" 2 bolts | FPM  | 38.1 mm Metric SF | 25.4 mm Metric SF   | CW       |
| 7029111094 | PGP620A0520CD1H3NE7E5B1B1 | 52     | 13T, SAE" B" spline   | SAE" B" 2 bolts | NBR  | 1-1/4 - 11 BSP    | 3/4 - 16 BSP        | CW       |
| 7029112039 | PGP620A0520AD1H3NE7E5B1B1 | 52     | 13T, SAE" B" spline   | SAE" B" 2 bolts | NBR  | 1-1/4 - 11 BSP    | 3/4 - 16 BSP        | CCW      |
| 7029112104 | PGP620A0520AD1H3NE8E6B1B1 | 52     | 13T, SAE" B" spline   | SAE" B" 2 bolts | NBR  | 1-1/2 - 11 BSP    | 1 - 11 BSP          | CCW      |



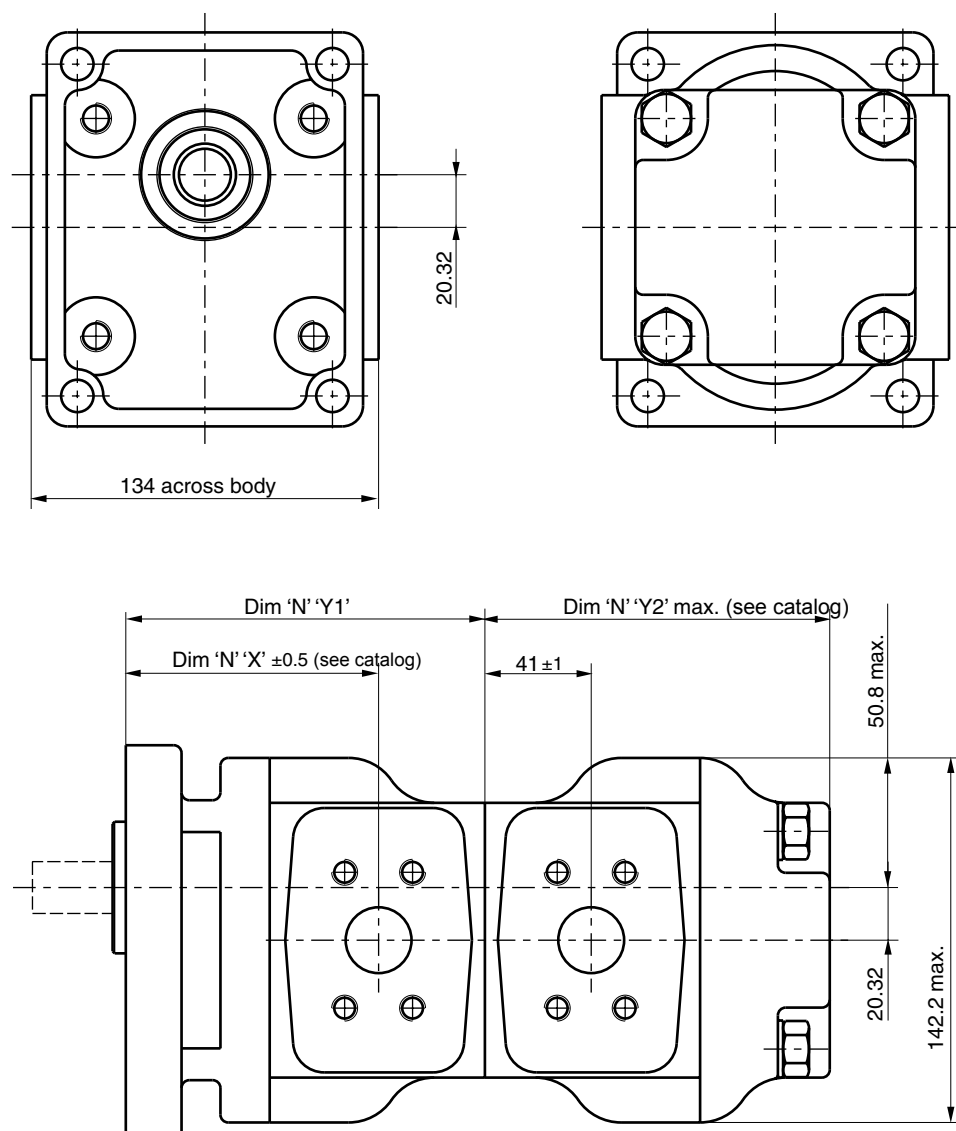
## Preferred Model (Single Motor)

| Order Code | Model Code                   | cc/rev | Shaft              | Mounting         | Seal | Port (Inlet)   | Port (Outlet)  | Rotation | Drain         |
|------------|------------------------------|--------|--------------------|------------------|------|----------------|----------------|----------|---------------|
| 7029219068 | PGM620A0190BD1H3VE5E5 B1B1G4 | 19     | 13T, SAE"B" spline | SAE"B" 2 bolts   | FPM  | 3/4 - 16 BSP   | 3/4 - 16 BSP   | BI       | Rear, 1/4 BSP |
| 7029219153 | PGM620A0230BD1H3HE5E5 B1B1G4 | 23     | 13T, SAE"B" spline | SAE"B" 2 bolts   | NBR  | 3/4 - 16 BSP   | 3/4 - 16 BSP   | BI       | Rear, 1/4 BSP |
| 7029219020 | PGM620A0290BD1H3HE5E5 B1B1G4 | 29     | 13T, SAE"B" spline | SAE"B" 2 bolts   | NBR  | 3/4 - 16 BSP   | 3/4 - 16 BSP   | BI       | Rear, 1/4 BSP |
| 7029219141 | PGM620A0290BT1D7NE5E5 B1B1G4 | 29     | Ø21.59, Taper Key  | Ø50.77 Rectan    | NBR  | 3/4 - 16 BSP   | 3/4 - 16 BSP   | BI       | Rear, 1/4 BSP |
| 7029219118 | PGM620A0330BT1D7VE7E7 B1B1G4 | 33     | Ø21.59, Taper Key  | Ø50.77 Rectan    | FPM  | 1-1/4 - 11 BSP | 1-1/4 - 11 BSP | BI       | Rear, 1/4 BSP |
| 7029219002 | PGM620A0330BD1H3HE5E5 B1B1G4 | 33     | 13T, SAE"B" spline | SAE"B" 2 bolts   | NBR  | 3/4 - 16 BSP   | 3/4 - 16 BSP   | BI       | Rear, 1/4 BSP |
| 7029218036 | PGM620A0360BT1L3NL2L2 B1B1G4 | 36     | Ø21.59, Taper Key  | SAE"B" 2/4 bolts | NBR  | Ø19 mm Diamond | Ø19 mm Diamond | BI       | Rear, 1/4 BSP |
| 7029219003 | PGM620A0370BD1H3HE5E5 B1B1G4 | 37     | 13T, SAE"B" spline | SAE"B" 2 bolts   | NBR  | 3/4 - 16 BSP   | 3/4 - 16 BSP   | BI       | Rear, 1/4 BSP |
| 7029218006 | PGM620A0410BD1L3VE6E6 B1B1G4 | 41     | 13T, SAE"B" spline | SAE"B" 2/4 bolts | FPM  | 1 - 11 BSP     | 1 - 11 BSP     | BI       | Rear, 1/4 BSP |



## Preferred Model (Tandem Pump)

| Order Code | Model Code                               | cc/rev  | Shaft                | Mounting       | Seal | Port (Inlet)      | Port (Outlet)     | Rotation |
|------------|------------------------------------------|---------|----------------------|----------------|------|-------------------|-------------------|----------|
| 7029121145 | PGP620B0210CD1H3NT4T3C-620A0210XB1T3B1B1 | 21 + 21 | 13T, SAE"B" Spline   | SAE"B" 2 bolts | NBR  | See ordering code | See ordering code | CW       |
| 7029121191 | PGP620B0210CD1H3WT3T2S-620A0160XT3T2B1B1 | 21+ 16  | 13T, SAE"B" Spline   | SAE"B" 2 bolts | DFPM | See ordering code | See ordering code | CCW      |
| 7029121190 | PGP620B0230CD1H3VT4T3S-620A0190XT4T3B1B1 | 23+ 19  | 13T, SAE"B" Spline   | SAE"B" 2 bolts | FPM  | See ordering code | See ordering code | CW       |
| 7029122064 | PGP620B0290AE1H3NT4T3S-620A0230XT4T3B1B1 | 29+ 23  | 15T, SAE"B-B" Spline | SAE"B" 2 bolts | NBR  | See ordering code | See ordering code | CCW      |
| 7029521109 | PGP620B0290CD1H3NE6E5S-511A0040NE5E3B1B1 | 29+ 4   | 13T, SAE"B" Spline   | SAE"B" 2 bolts | NBR  | See ordering code | See ordering code | CW       |
| 7029122073 | PGP620B0330AD1H3NT4T3S-620A0190XT3T2B1B1 | 33+ 19  | 13T, SAE"B" Spline   | SAE"B" 2 bolts | NBR  | See ordering code | See ordering code | CCW      |
| 7029121002 | PGP620B0370CE1A4MT5T2C-620A0370XB1T2B1B1 | 37+ 37  | 15T, SAE"B-B" Spline | SAE"C" 4 bolts | DNBR | See ordering code | See ordering code | CW       |
| 7029121082 | PGP620B0410CD1H3NS4S2S-620A0370XS4S3B1B1 | 41+ 37  | 13T, SAE"B" Spline   | SAE"B" 2 bolts | NBR  | See ordering code | See ordering code | CW       |
| 7029121166 | PGP620B0410CD1H3NE7E5S-620A0330XE7E5B1B1 | 41+ 33  | 13T, SAE"B" Spline   | SAE"A" 2 bolts | NBR  | See ordering code | See ordering code | CW       |
| 7029521128 | PGP620B0500CD1H2MS4E6S-511A0170XE5E3B1B1 | 50+ 17  | 13T, SAE"B" Spline   | SAE"A" 2 bolts | DNBR | See ordering code | See ordering code | CW       |



## Ordering code

Heavy-duty cast-iron Pumps and Motors  
Series PGP, PGM 620

|             |      |                         |      |              |          |       |        |            |                   |                    |                                 |                                  |
|-------------|------|-------------------------|------|--------------|----------|-------|--------|------------|-------------------|--------------------|---------------------------------|----------------------------------|
| <b>PG</b>   |      | <b>620<sup>1)</sup></b> |      |              |          |       |        |            |                   |                    |                                 |                                  |
| Gear Design | Type |                         | Unit | Displacement | Rotation | Shaft | Flange | Shaft Seal | Side Suction Port | Side Pressure Port | Rear Suction Port <sup>2)</sup> | Rear Pressure Port <sup>2)</sup> |

| Code | Type  |
|------|-------|
| P    | Pump  |
| M    | Motor |

| Code | Unit          |                                                   |
|------|---------------|---------------------------------------------------|
|      | Pump          | Motor                                             |
| A    | Single unit   | Standard Motor without checks                     |
| B    | Multiple unit | Standard Motor with two checks                    |
| C    | —             | Standard Motor w. one anti cavitation check (ACC) |

| Displacement |      |
|--------------|------|
| Code         | ccm  |
| 0160         | 16   |
| 0190         | 19   |
| 0230         | 23   |
| 0260         | 26   |
| 0290         | 29   |
| 0330         | 33   |
| 0360*        | 36*  |
| 0370         | 37   |
| 0410*        | 41*  |
| 0440         | 44   |
| 0450**       | 45** |
| 0500*        | 50*  |
| 0520         | 52   |

\* PGP, PGM 620 and PGP 625  
\*\*PGP 625 only

| Code | Rotation          |
|------|-------------------|
| C    | Clockwise         |
| A    | Counter clockwise |
| B    | bi-directional    |

| Code | Shaft Seal |
|------|------------|
| X    | No seal    |
| N    | NBR        |
| V    | FPM, FKM   |
| M    | Double NBR |
| W    | Double FPM |

| Code             | Shaft                                        |
|------------------|----------------------------------------------|
| D1               | 13T, 16/32DP, 41.2L, SAE "B" spline          |
| E1               | 15T, 16/32DP, 46L, SAE "B-B" spline          |
| M3               | Ø25.4, 6.3 Key, M8, 46L, SAE "B-B", parallel |
| T1               | Ø21.59, 11.2L, 4.0 Key, M14x1.5, taper 1:8   |
| T2 <sup>5)</sup> | Ø25.0, 12L, 5.0 Key, M16x1.5, taper 1:5      |

<sup>5)</sup> Non standard, on request only

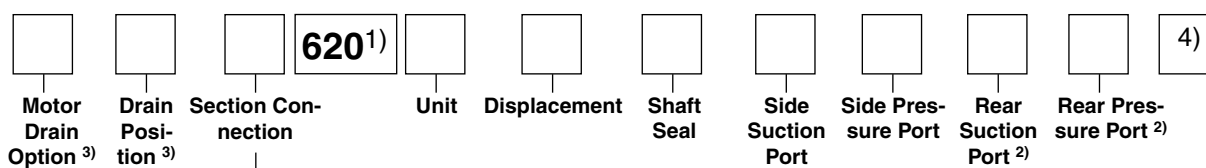
Not all variances of ordering codes can be offered. Please check available part numbers first.  
For not yet implemented part numbers or special requests please contact Parker Hannifin.

<sup>1)</sup> Available as PGP 625 with 36, 41, 45 and 50 cc/rev only.

<sup>2)</sup> Only coded for the last section.

<sup>3)</sup> Only for motors

## Ordering code

Heavy-duty cast-iron Pumps and Motors  
Series PGP, PGM 620

| Code | Section Connection |
|------|--------------------|
| S    | Separate inlets    |
| C    | Common inlets      |

| Code            | Drain Position  |
|-----------------|-----------------|
| 2 <sup>5)</sup> | Drain on bottom |
| 3 <sup>5)</sup> | Drain on top    |
| 4               | Rear drain      |

<sup>5)</sup> Non standard, on request only

| Code | Motor Drain Option |
|------|--------------------|
| B1   | no drain           |
| C    | 9/16-18 UNF thread |
| G    | 1/4 BSP thread     |

| Code | Flange                                    |
|------|-------------------------------------------|
| A3   | 89.8x89.8 - Ø101.6, SAE "B" 4 bolt square |
| A4   | 114.5x114.5 - Ø127, SAE "C" 4 bolt square |
| D7   | 98.4x128.2 - Ø50.77 rectangular           |
| H2   | 106.4 - Ø82.55 SAE "A" 2 bolt flange      |
| H3   | 146.1 - Ø101.6 SAE "B" 2 bolt flange      |
| L3   | 89.8x89.8 - 101.6 SAE "B" 2/4 bolt flange |

| Code               | Port Options               | Code               | Port Options                        |
|--------------------|----------------------------|--------------------|-------------------------------------|
| B1                 | No ports                   | S2 <sup>5)</sup> * | 3/4"-3/8-16 UNC SAE Split Flange    |
| D3 <sup>5)</sup>   | 3/4 - 16 UNF thread        | S3 <sup>5)</sup> * | 1"-3/8-16 UNC SAE Split Flange      |
| D4 <sup>5)</sup>   | 7/8 - 14 UNF thread        | S4 <sup>5)</sup> * | 1 1/4"-7/16-14 UNC SAE Split Flange |
| D5 <sup>5)</sup>   | 1 1/16 - 12 UN thread      | S5 <sup>5)</sup> * | 1 1/2"-1/2-13 UNC SAE Split Flange  |
| D6 <sup>5)</sup> * | 1 5/16 - 12 UN thread      | S6 <sup>5)</sup> * | 2"-1/2-13 UNC SAE Split Flange      |
| D7 <sup>5)</sup> * | 1 5/8 - 12 UN thread       | T2*                | 19.0 mm - M10 Metric Split Flange   |
| D8 <sup>5)</sup> * | 1 7/8 - 12 UN thread       | T3*                | 25.4 mm - M10 Metric Split Flange   |
| E3                 | 1/2 - 14 BSP thread        | T4*                | 31.8 mm - M10 Metric Split Flange   |
| E4                 | 5/8 - 14 BSP thread        | T5*                | 38.1 mm - M12 Metric Split Flange   |
| E5                 | 3/4 - 16 BSP thread        | T6*                | 50.8 mm - M12 Metric Split Flange   |
| E6*                | 1 - 11 BSP thread          |                    |                                     |
| E7*                | 1 1/4 - 11 BSP thread      |                    |                                     |
| E8*                | 1 1/2 - 11 BSP thread      |                    |                                     |
| J5*                | 15 mm - Ø35 mm - M6 square |                    |                                     |
| J7*                | 20 mm - Ø40 mm - M6 square |                    |                                     |
| J8*                | 18 mm - Ø55 mm - M8 square |                    |                                     |
| J9*                | 26 mm - Ø55 mm - M8 square |                    |                                     |
| L1*                | 13 mm-Ø30 mm-M6 diamond    |                    |                                     |
| L2*                | 19 mm-Ø40 mm-M8 diamond    |                    |                                     |
| L3*                | 27 mm-Ø51 mm-M10 diamond   |                    |                                     |

<sup>5)</sup> Non standard, on request only

\*) Not usable for rear ports

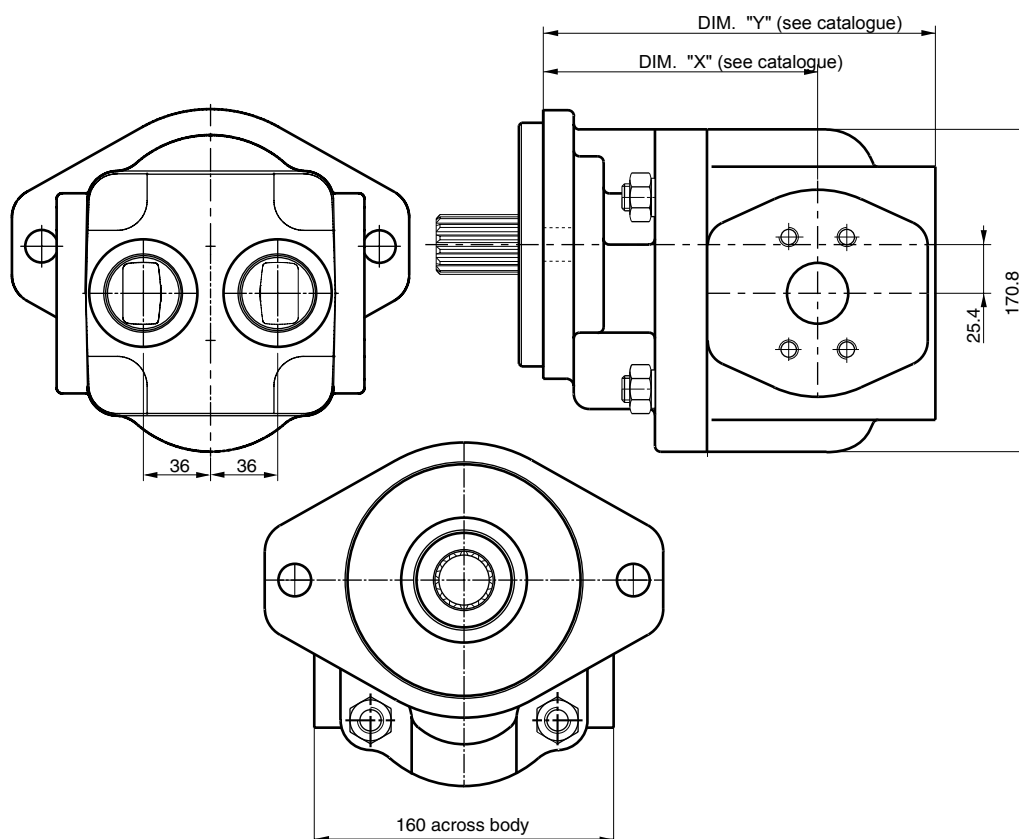
- 4) For further "B" triple unit repeat displacement, shaft seal between sections, side suction port, side pressure port, rear suction port, rear pressure port.

## PGP640



## Preferred Model (Single Pump)

| Order Code | Model Code                | cc/rev | Shaft                | Mounting       | Seal | Port (Inlet)      |
|------------|---------------------------|--------|----------------------|----------------|------|-------------------|
| 7049111062 | PGP640A0300CE4K3NE8E7B1B1 | 30     | 14T, SAE"C" spline   | SAE"C" 2 bolts | NBR  | 1-1/2 - 11 BSP    |
| 7049111129 | PGP640A0300CE1H3NE8E7B1B1 | 30     | 15T, SAE"B-B" spline | SAE"B" 2 bolts | NBR  | 1-1/2 - 11 BSP    |
| 7049111055 | PGP640A0400CD1H3NT4T3B1B1 | 40     | 13T, SAE"B" spline   | SAE"B" 2 bolts | NBR  | 31.8 mm Metric SF |
| 7049111122 | PGP640A0400CD1H3NT5T3B1B1 | 40     | 13T, SAE"B" spline   | SAE"B" 2 bolts | NBR  | 38.1mm Metric SF  |
| 7049111056 | PGP640A0400CE4A4WT4T2B1B1 | 40     | 14T, SAE"C" spline   | SAE"C" 4 bolts | NBR  | 31.8 mm Metric SF |
| 7049112020 | PGP640A0400AD1H3NT4T3B1B1 | 40     | 13T, SAE"B" spline   | SAE"B" 2 bolts | NBR  | 31.8 mm Metric SF |
| 7049112030 | PGP640A0400AE4A4NS5S3B1B1 | 40     | 14T, SAE"C" spline   | SAE"C" 4 bolts | NBR  | 1-1/2" SAE SF     |
| 7049111051 | PGP640A0450CE4A4NT5T3B1B1 | 45     | 14T, SAE"C" spline   | SAE"C" 4 bolts | NBR  | 38.1mm Metric SF  |
| 7049112012 | PGP640A0450AE4A4NT5T3B1B1 | 45     | 14T, SAE"C" spline   | SAE"C" 4 bolts | NBR  | 38.1mm Metric SF  |
| 7049111052 | PGP640A0500CD1H3NT4T2B1B1 | 50     | 13T, SAE"B" spline   | SAE"B" 2 bolts | NBR  | 31.8 mm Metric SF |
| 7049111016 | PGP640A0500CD1H3NT5T3B1B1 | 50     | 13T, SAE"B" spline   | SAE"B" 2 bolts | NBR  | 38.1mm Metric SF  |
| 7049112004 | PGP640A0500AE4A4NS5S3B1B1 | 50     | 14T, SAE"C" spline   | SAE"C" 4 bolts | NBR  | 1-1/2" SAE SF     |
| 7049112019 | PGP640A0550AD1H3NT5T3B1B1 | 55     | 13T, SAE"B" spline   | SAE"B" 2 bolts | NBR  | 38.1mm Metric SF  |
| 7049112027 | PGP640A0550AE1H3NT5T3B1B1 | 55     | 15T, SAE"B-B" spline | SAE"B" 2 bolts | NBR  | 38.1mm Metric SF  |
| 7049111050 | PGP640A0550CD1H3NT5T3B1B1 | 55     | 13T, SAE"B" spline   | SAE"B" 2 bolts | NBR  | 38.1mm Metric SF  |
| 7049111059 | PGP640A0600CD1H3NT5T3B1B1 | 60     | 13T, SAE"B" spline   | SAE"B" 2 bolts | NBR  | 38.1mm Metric SF  |
| 7049111015 | PGP640A0600CE4K3NT6T3B1B1 | 60     | 14T, SAE"C" spline   | SAE"C" 2 bolts | NBR  | 50.8mm Metric SF  |
| 7049111113 | PGP640A0600CE1H3VT6T4B1B1 | 60     | 15T, SAE"B-B" spline | SAE"B" 2 bolts | FPM  | 50.8mm Metric SF  |
| 7049112041 | PGP640A0600AE4K3NS6S4B1B1 | 60     | 14T, SAE"C" spline   | SAE"C" 2 bolts | NBR  | 2" SAE SF         |
| 7049111013 | PGP640A0650CE4A4NT6T5B1B1 | 65     | 14T, SAE"C" spline   | SAE"C" 4 bolts | NBR  | 50.8mm Metric SF  |
| 7049111022 | PGP640A0800CE4A4NT6T4B1B1 | 80     | 14T, SAE"C" spline   | SAE"C" 4 bolts | NBR  | 50.8mm Metric SF  |
| 7049112064 | PGP640A1000AE4K3NS6S4B1B1 | 100    | 14T, SAE"C" spline   | SAE"C" 2 bolts | NBR  | 2" SAE SF         |



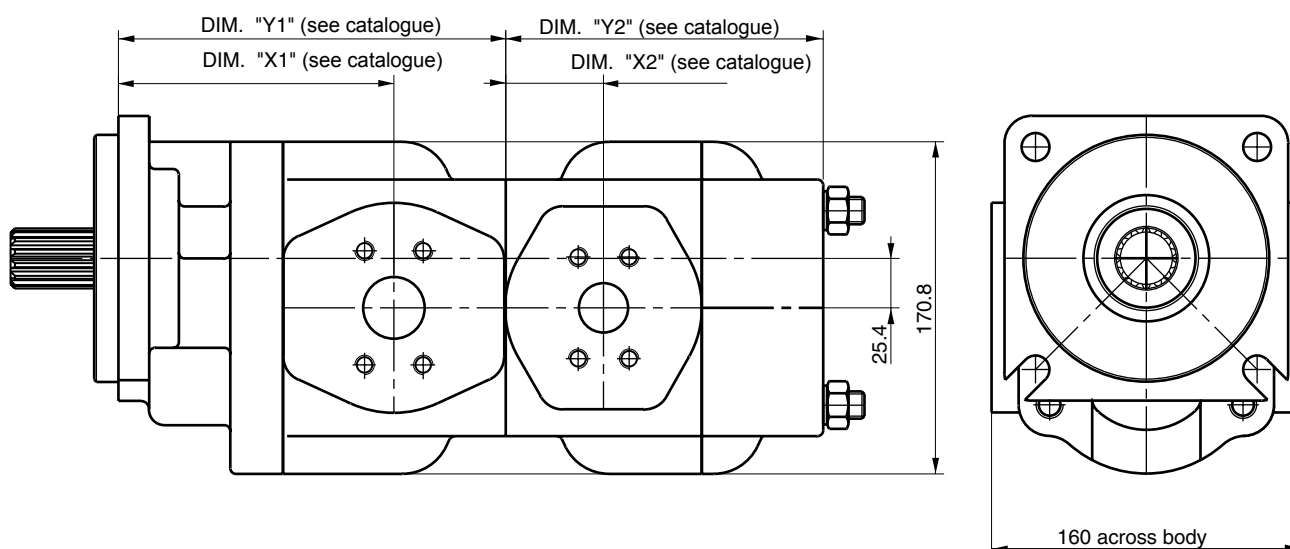
## Preferred Model (Single Motor)

| Order Code | Model Code                   | cc/rev | Shaft                | Mounting       | Seal | Port (Inlet)      |
|------------|------------------------------|--------|----------------------|----------------|------|-------------------|
| 7049219008 | PGM640B0500BD1A3TE7E 7B1B1B1 | 50     | 13T, SAE"B" spline   | SAE"B" 4 bolts | PTFE | 1-1/4 - 11 BSP    |
| 7049219004 | PGM640A0500BE4K3TT3T3 B1B1G4 | 50     | 14T, SAE"C" spline   | SAE"C" 2 bolts | PTFE | 25.4mm Metric SF  |
| 7049219022 | PGM640B0500BE4A4TT4T4 B1B1B1 | 50     | 14T, SAE"C" spline   | SAE"C" 4 bolts | PTFE | 31.8 mm Metric SF |
| 7049211004 | PGM640B0550CE1A3TT4T 4B1B1G4 | 55     | 15T, SAE"B-B" spline | SAE"B" 4 bolts | PTFE | 31.8 mm Metric SF |
| 7049219007 | PGM640A0600BE4K3TT3T3 B1B1G4 | 60     | 14T, SAE"C" spline   | SAE"C" 2 bolts | PTFE | 25.4mm Metric SF  |
| 7049219002 | PGM640B0750BE4A4TT4T4 B1B1B1 | 75     | 14T, SAE"C" spline   | SAE"C" 4 bolts | PTFE | 31.8 mm Metric SF |



## Preferred Model (Tandem Pump)

| Order Code | Model Code                                              | cc/rev           | Shaft                | Mounting       | Seal | Port (Inlet)      | Port (Outlet)     | Rotation |
|------------|---------------------------------------------------------|------------------|----------------------|----------------|------|-------------------|-------------------|----------|
| 7049521116 | PGP640B0400CD1H3NT5T3S-511A0110XE5E3B1B1                | 40+<br>11        | 13T, SAE"B" Spline   | SAE"B" 2 bolts | NBR  | See ordering code | See ordering code | CW       |
| 7049121027 | PGP640B0400CE4A4NE8E7S-640A0400XE8E7B1B1                | 40+<br>40        | 14T, SAE"C" Spline   | SAE"C" 4 bolts | NBR  | See ordering code | See ordering code | CW       |
| 7049532024 | PGP640B0450AD1H3NT5T3S-511B0190XJ7J5S-511A0110XJ7J5B1B1 | 45+<br>19+<br>11 | 13T, SAE"B" Spline   | SAE"B" 2 bolts | NBR  | See ordering code | See ordering code | CCW      |
| 7049122004 | PGP640B0500AE4A4MT6T3C-640A0400XB1T3B1B1                | 50+<br>40        | 14T, SAE"C" Spline   | SAE"C" 4 bolts | NBR  | See ordering code | See ordering code | CCW      |
| 7049521050 | PGP640B0550CD1H3NS5S3C-511A0230XE5E5B1B1                | 55+<br>23        | 13T, SAE"B" Spline   | SAE"B" 2 bolts | NBR  | See ordering code | See ordering code | CW       |
| 7049521031 | PGP640B0550CD1H3NS5S4C-511A0170XB1E3B1B1                | 55+<br>17        | 13T, SAE"B" Spline   | SAE"B" 2 bolts | NBR  | See ordering code | See ordering code | CW       |
| 7049532012 | PGP640B0550AE1A4NT4T3C-620B0290XE6E6S-620A0190XE6B1B1   | 55+<br>29+<br>19 | 15T, SAE"B-B" Spline | SAE"C" 4 bolts | NBR  | See ordering code | See ordering code | CW       |
| 7049522026 | PGP640B0800AE4A4NS6S4C-620A0260XB1S3B1B1                | 80+<br>26        | 14T, SAE"C" Spline   | SAE"C" 4 bolts | NBR  | See ordering code | See ordering code | CCW      |



## Ordering Code

Heavy-duty cast-iron Pumps and Motors  
Series PGP, PGM 640

|  |             |      |            |      |              |          |       |        |            |                   |                    |                                 |                                  |
|--|-------------|------|------------|------|--------------|----------|-------|--------|------------|-------------------|--------------------|---------------------------------|----------------------------------|
|  | <b>PG</b>   |      | <b>640</b> |      |              |          |       |        |            |                   |                    |                                 |                                  |
|  | Gear design | Type |            | Unit | Displacement | Rotation | Shaft | Flange | Shaft seal | Side Suction Port | Side Pressure Port | Rear Suction Port <sup>2)</sup> | Rear Pressure Port <sup>2)</sup> |

| Code | Type  |
|------|-------|
| P    | Pump  |
| M    | Motor |

| Code | Unit          |                                                   |
|------|---------------|---------------------------------------------------|
|      | Pump          | Motor                                             |
| A    | Single unit   | Standard Motor without checks                     |
| B    | Multiple unit | Standard Motor with two checks                    |
| C    | —             | Standard Motor w. one anti cavitation check (ACC) |

| Displacement |       |
|--------------|-------|
| Code         | ccm   |
| 0300         | 30.0  |
| 0350         | 35.0  |
| 0400         | 40.0  |
| 0450         | 45.0  |
| 0500         | 50.0  |
| 0550         | 55.0  |
| 0600         | 60.0  |
| 0650         | 65.0  |
| 0700         | 70.0  |
| 0750         | 75.0  |
| 0800         | 80.0  |
| 0900*        | 90.0  |
| 0100         | 100.0 |

\*) Non standard, on request only

| Code | Rotation          |
|------|-------------------|
| C    | Clockwise         |
| A    | Counter clockwise |
| B    | Bi-directional    |

| Code | Shaft                                 |
|------|---------------------------------------|
| D1   | 13T, 16/32DP, 41.2L, SAE "B" spline   |
| E1   | 15T, 16/32DP, 46.0L, SAE "B-B" spline |
| E4   | 14T, 12/24DP, 55.6L, SAE "C" spline   |
| N1   | 1 1/4" Keyed SAE-C                    |

| Code | Shaft Seal         |
|------|--------------------|
| X    | No seal            |
| N    | NBR                |
| V    | FPM                |
| T    | PTFE (motors only) |

| Code | Flange                                            |
|------|---------------------------------------------------|
| A3   | 89.8x89.8 - Ø101.06, SAE "B" 4 bolt square flange |
| A4   | 114.5x114.5 - Ø127, SAE "C" 4 bolt square flange  |
| H3   | 146.1 - Ø101.06 SAE "B" 2 bolt flange             |
| K3   | 181.0 - Ø127 SAE "C" 2 bolt flange                |

Not all variances of ordering codes can be offered. Please check available part numbers first. For not yet implemented part numbers or special requests please contact Parker Hannifin.

<sup>2)</sup> Only coded for the last section.

<sup>3)</sup> Only for motors

## Ordering code

Heavy-duty cast-iron Pumps and Motors  
Series PGP, PGM 640

|                                          |          |          |          |                                        |                                 |                       |            |                   |               |                         |                         |                                       |                                       |           |
|------------------------------------------|----------|----------|----------|----------------------------------------|---------------------------------|-----------------------|------------|-------------------|---------------|-------------------------|-------------------------|---------------------------------------|---------------------------------------|-----------|
| <b>B</b>                                 | <b>1</b> | <b>B</b> | <b>1</b> |                                        |                                 |                       | <b>640</b> |                   |               |                         |                         |                                       |                                       | <b>4)</b> |
| No rear ports<br>(rear ports on request) |          |          |          | Motor<br>Drain<br>Option <sup>3)</sup> | Drain<br>Position <sup>3)</sup> | Section<br>Connection | Unit       | Displace-<br>ment | Shaft<br>Seal | Side<br>Suction<br>Port | Side Pres-<br>sure Port | Rear<br>Suction<br>Port <sup>2)</sup> | Rear Pres-<br>sure Port <sup>2)</sup> |           |

| Code | Section Connection |
|------|--------------------|
| S    | Separate inlets    |
| C    | Common inlets      |

| Code | Drain Position  |
|------|-----------------|
| 2    | Drain on bottom |
| 3    | Drain on top    |
| 4    | Rear drain      |

| Code | Motor Drain Option |
|------|--------------------|
| B1   | no drain           |
| C    | 9/16-18 UNF thread |
| G    | 1/4 BSP thread     |

| Code               | Port Options                  | Code               | Port Options                           |
|--------------------|-------------------------------|--------------------|----------------------------------------|
| B1                 | No ports                      | S2 <sup>5)</sup> * | 3/4"-3/8-16 UNC<br>SAE Split Flange    |
| D5 <sup>5)</sup>   | 1 1/16 - 12 UN thread         | S3 <sup>5)</sup> * | 1"-3/8-16 UNC<br>SAE Split Flange      |
| D6 <sup>5)</sup> * | 1 5/16 - 12 UN thread         | S4 <sup>5)</sup> * | 1 1/4"-7/16-14 UNC<br>SAE Split Flange |
| D7 <sup>5)</sup> * | 1 5/8 - 12 UN thread          | S5 <sup>5)</sup> * | 1 1/2"-1/2-13 UNC<br>SAE Split Flange  |
| D8 <sup>5)</sup> * | 1 7/8 - 12 UN thread          | S6 <sup>5)</sup> * | 2"-1/2-13 UNC<br>SAE Split Flange      |
| E4                 | 5/8 - 14 BSP thread           | T2*                | 19.0 mm - M10<br>Metric Split Flange   |
| E5                 | 3/4 - 16 BSP thread           | T3*                | 25.4 mm - M10<br>Metric Split Flange   |
| E6*                | 1 - 11 BSP thread             | T4*                | 31.8 mm - M10<br>Metric Split Flange   |
| E7*                | 1 1/4 - 11 BSP thread         | T5*                | 38.1 mm - M12<br>Metric Split Flange   |
| E8*                | 1 1/2 - 11 BSP thread         | T6*                | 50.8 mm - M12<br>Metric Split Flange   |
| J8*                | 18 mm - Ø55 mm - M8<br>square |                    |                                        |
| J9*                | 26 mm - Ø55 mm - M8<br>square |                    |                                        |
| L2*                | 19 mm-Ø40 mm-M8<br>diamond    |                    |                                        |
| L3*                | 27 mm-Ø51 mm-M10<br>diamond   |                    |                                        |

<sup>5)</sup> Non standard, on request only

\*) Not usable for rear ports

<sup>4)</sup> For further "B" triple unit repeat displacement, shaft seal between sections, side suction port, side pressure port, rear suction port, rear pressure port.



## Market

## Applications

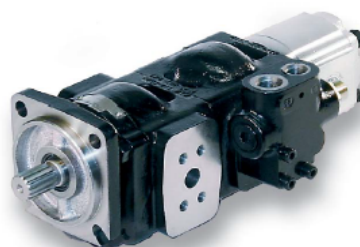
|                   |                                           |
|-------------------|-------------------------------------------|
| Agricultural      | Mower, Haypresses, Forwarder, Shredder    |
| Industrial        | Hydraulic Power Units                     |
| Construction      | Loader Backhoe, Wheel Loader, Telehandler |
| Material Handling | Forklift, Reachstacker, Crane             |
| Mining & Drilling | Drill Rig, Loader, Dump Truck             |



Ref: **Catalog HY09-0300/US**  
(PGP/M 315, 330, 350, 365)



Ref: **Catalogue HY30-3300/UK**  
(PGP/M 511, 517, 620, 640)



### Gear Pumps / Motors

Series PGP / PGM  
Fixed Displacement Pumps,  
Cast-Iron and Aluminium Designs

aerospace  
climate control  
electromechanical  
filtration  
fluid & gas handling  
hydraulics  
pneumatics  
process control  
sealing & shielding



ENGINEERING YOUR SUCCESS.



# Vane Pumps

1/ Fixed Displacement



ENGINEERING YOUR SUCCESS.

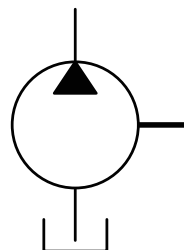
## Category

## Characteristics

The SDV fixed displacement vane pump range offers a quiet efficient solution in many lower and medium pressure applications.

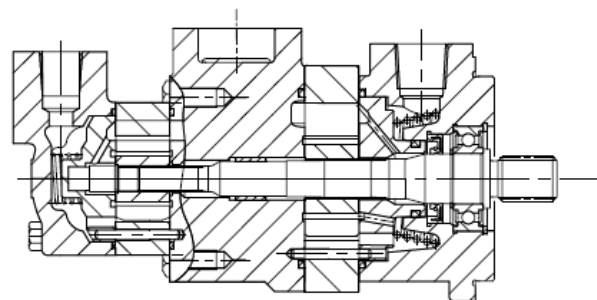
Numerous shaft options and porting combinations result in easier installations.

Single and double pump combinations, 7 displacements in each series.



## Features

- SDV 10 and SDV 20 Series
- Displacements 3.3 cc/rev - 42.4 cc/rev
- Speed range to 4200 RPM
- Pressure to 175 Bar
- Quiet Operation
- Various shaft and mount options
- Single and double pump options



| Series  | Size     | Displacement | Max speed                      | Max Pressure               |            | Mounting | Shafts                                  |
|---------|----------|--------------|--------------------------------|----------------------------|------------|----------|-----------------------------------------|
|         |          | [cc/rev]     | [rpm]                          | Int (bar)                  | Cont (bar) |          |                                         |
| SDV10   | 1        | 3.3          | 4200                           | 175                        | 160        | SAE A    | 3/4" key<br>5/8" 9T Spl<br>3/4" 11T Spl |
|         | 2        | 6.6          | 4200                           | 175                        | 160        |          |                                         |
|         | 3        | 9.8          | 3900                           | 175                        | 160        |          |                                         |
|         | 4        | 13.1         | 3000                           | 175                        | 160        |          |                                         |
|         | 5        | 16.4         | 2400                           | 175                        | 160        |          |                                         |
|         | 6        | 19.5         | 2100                           | 150                        | 140        |          |                                         |
|         | 7        | 22.8         | 1800                           | 140                        | 140        |          |                                         |
|         | 6        | 19.5         | 3600                           | 175                        | 160        |          |                                         |
| SDV20   | 7        | 22.8         | 2700                           | 175                        | 160        | SAE A    | 3/4" key<br>5/8" 9T Spl<br>3/4" 11T Spl |
|         | 8        | 26.5         | 2400                           | 175                        | 160        |          |                                         |
|         | 9        | 1807         | 2100                           | 175                        | 160        |          |                                         |
|         | 11       | 36.4         | 1800                           | 175                        | 160        |          |                                         |
|         | 12       | 39           | 1800                           | 150                        | 140        |          |                                         |
| SDV2010 | As Above | As selected  | Lower limit of selected sizes. | Operation of selected size |            | SAE B    | 7/8" key<br>7/8" 13T Spl                |
|         |          |              |                                |                            |            | 2-bolt   |                                         |
| SDV2020 | As Above | As selected  | Lower limit of selected sizes. | Operation of selected size |            | SAE B    | 7/8" key<br>7/8" 13T Spl                |
|         |          |              |                                |                            |            | 2-bolt   |                                         |



## SDV Series

Vane Pumps

## SDV10, SDV20 Series

## Category



| Code |  | Series |
|------|--|--------|
| 10   |  | SDV10  |
| 20   |  | SDV20  |

| Code |  | Rotation           |
|------|--|--------------------|
| L    |  | Counter-Clockwise  |
|      |  | Omit For Clockwise |

| Code |  | Mounting       |
|------|--|----------------|
| 1    |  | SAE 'A' 2 Bolt |

| Code | Inlet Port                     |                               |
|------|--------------------------------|-------------------------------|
|      | SDV10                          | SDV20                         |
| S    | 1 5/16"-12 SAE Straight Thread | 1 5/8"-12 SAE Straight Thread |
| P    | 1" NPTF Thread                 | 1" NPTF Thread                |
| B    | 1" BSPP Thread                 | 1" BSPP Thread                |

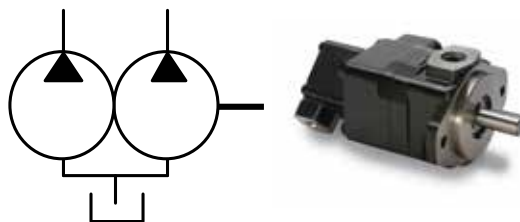
| Code |  | Displacement |
|------|--|--------------|
|      |  | <b>SDV20</b> |
| 6    |  | 19.5 cc/rev  |
| 7    |  | 22.8 cc/rev  |
| 8    |  | 26.5 cc/rev  |
| 9    |  | 29.7 cc/rev  |
| 11   |  | 36.4 cc/rev  |
| 12   |  | 39.0 cc/rev  |
| 13   |  | 42.4 cc/rev  |
|      |  | <b>SDV10</b> |
| 1    |  | 3.3 cc/rev   |
| 2    |  | 6.6 cc/rev   |
| 3    |  | 9.8 cc/rev   |
| 4    |  | 13.1 cc/rev  |
| 5    |  | 16.4 cc/rev  |
| 6    |  | 19.5 cc/rev  |
| 7    |  | 22.8 cc/rev  |

| Code |  | Outlet Port Location<br>(Viewed from cover end) |
|------|--|-------------------------------------------------|
| A    |  | Opposite Inlet Port                             |
| B    |  | 90° CCW from Inlet                              |
| C    |  | In Line with Inlet                              |
| D    |  | 90° CW from Inlet                               |

| Code | Shaft                         |                               |
|------|-------------------------------|-------------------------------|
|      | SDV10                         | SDV20                         |
| 1    | 3/4" Parallel Keypad          | 3/4" Parallel Keypad          |
| 11   | 5/8" 9T Spline Shaft          | 3/4" 11T Spline Shaft (Long)  |
| 38   | 3/4" 11T Spline Shaft (Short) | 3/4" 11T Spline Shaft (Short) |
| 62   |                               | 5/8" 9T Spline Shaft          |

| Code | Outlet Port                 |                             |
|------|-----------------------------|-----------------------------|
|      | SDV10                       | SDV20                       |
| S    | 3/4"-16 SAE Straight Thread | 3/4"-16 SAE Straight Thread |
| P    | 1/2"-NPTF Thread            | 1/2"-NPTF Thread            |
| B    | 1/2"-BSPP Thread            | 1/2"-BSPP Thread            |

## SDV2010, SDV2020 Series



| SDV  |  |                           |  |          |  |                                                 |  |                                               |  |
|------|--|---------------------------|--|----------|--|-------------------------------------------------|--|-----------------------------------------------|--|
| Code |  | Series                    |  | Mounting |  | Inlet Port                                      |  | Displacement (Shaft/Cover End)                |  |
| 2010 |  | SDV2010                   |  | 1        |  | 1-1/2" SAE 61 (2010)                            |  | SDV10                                         |  |
| 2020 |  | SDV2020                   |  |          |  | 2" SAE 61 (2020)                                |  | 1                                             |  |
|      |  |                           |  |          |  |                                                 |  | 2                                             |  |
|      |  |                           |  |          |  |                                                 |  | 3                                             |  |
|      |  |                           |  |          |  |                                                 |  | 4                                             |  |
|      |  |                           |  |          |  |                                                 |  | 5                                             |  |
|      |  |                           |  |          |  |                                                 |  | 6                                             |  |
|      |  |                           |  |          |  |                                                 |  | 7                                             |  |
|      |  |                           |  |          |  |                                                 |  | SDV20                                         |  |
|      |  |                           |  |          |  |                                                 |  | 6                                             |  |
|      |  |                           |  |          |  |                                                 |  | 7                                             |  |
|      |  |                           |  |          |  |                                                 |  | 8                                             |  |
|      |  |                           |  |          |  |                                                 |  | 9                                             |  |
|      |  |                           |  |          |  |                                                 |  | 11                                            |  |
|      |  |                           |  |          |  |                                                 |  | 12                                            |  |
|      |  |                           |  |          |  |                                                 |  | 13                                            |  |
| Code |  | Rotation                  |  | Code     |  | Position of Outlet Port (Viewed from cover end) |  | Code                                          |  |
|      |  | Omit for Clockwise        |  |          |  | SDV2010                                         |  | SDV2020                                       |  |
| L    |  | Counter-Clockwise         |  |          |  | AA                                              |  | AA                                            |  |
|      |  |                           |  |          |  | AB                                              |  | AB                                            |  |
|      |  |                           |  |          |  | AC                                              |  | AC                                            |  |
|      |  |                           |  |          |  | AD                                              |  | AD                                            |  |
|      |  |                           |  |          |  | Double Pump With #1 Outlet 90° CCW From Inlet   |  | Double Pump With #1 Outlet 90° CCW From Inlet |  |
|      |  |                           |  |          |  | BA                                              |  | BA                                            |  |
|      |  |                           |  |          |  | BB                                              |  | BB                                            |  |
|      |  |                           |  |          |  | BC                                              |  | BC                                            |  |
|      |  |                           |  |          |  | BD                                              |  | BD                                            |  |
|      |  |                           |  |          |  | Double Pump With #1 Outlet in Line With Inlet   |  | Double Pump With #1 Outlet in Line With Inlet |  |
|      |  |                           |  |          |  | CA                                              |  | CA                                            |  |
|      |  |                           |  |          |  | CB                                              |  | CB                                            |  |
|      |  |                           |  |          |  | CC                                              |  | CC                                            |  |
|      |  |                           |  |          |  | CD                                              |  | CD                                            |  |
|      |  |                           |  |          |  | Double Pump With #1 Outlet 90° CW From Inlet    |  | Double Pump With #1 Outlet 90° CW From Inlet  |  |
|      |  |                           |  |          |  | DA                                              |  | DA                                            |  |
|      |  |                           |  |          |  | DB                                              |  | DB                                            |  |
|      |  |                           |  |          |  | DC                                              |  | DC                                            |  |
|      |  |                           |  |          |  | DD                                              |  | DD                                            |  |
| Code |  | Outlet Port (Shaft End)   |  | Code     |  | Outlet Port (Shaft End)                         |  | Code                                          |  |
|      |  | S                         |  |          |  | B                                               |  |                                               |  |
|      |  | 1.0625-12 Straight Thread |  |          |  | 3/4" BSPP Thread                                |  |                                               |  |
| Code |  | Outlet Port (Cover End)   |  | Code     |  | Outlet Port (Cover End)                         |  |                                               |  |
|      |  | SDV2010                   |  |          |  | SDV2010                                         |  |                                               |  |
|      |  | S                         |  |          |  | B                                               |  |                                               |  |
|      |  | 3/4"-16 Straight Thread   |  |          |  | 1/2" BSPP Thread                                |  |                                               |  |
|      |  | SDV2020                   |  |          |  | SDV2020                                         |  |                                               |  |
|      |  | S                         |  |          |  | B                                               |  |                                               |  |
|      |  | 1.0625-12 Straight Thread |  |          |  | 3/4" BSPP Thread                                |  |                                               |  |
| Code |  | Shaft End                 |  |          |  |                                                 |  |                                               |  |
|      |  | 1                         |  |          |  | 7/8" Parallel Keyed                             |  |                                               |  |
|      |  | 11                        |  |          |  | 7/8" 13T Spline                                 |  |                                               |  |

## T7B, T6C, T7D, T7E Series

## Characteristics

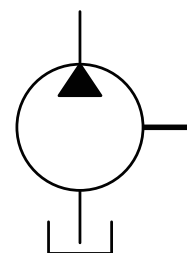
The Parker 'Denison' fixed displacement vane pump range offers a quieter more efficient solution to many high pressure applications.

Designed with versatility in mind, numerous shaft options and porting combinations result in easier installation.

The pumps will operate over a wide speed range with low to high viscosity fluids; and technical advantages in vane design offer high resistance to particle contamination.

Interchangeable cam rings allow multiple displacements within the same pump frame size.

An industrial or mobile type cartridge allows the pump to operate to its optimum in many environments. The cartridge concept simplifies pump maintenance reducing machine down time.



## Features

- 5 frame sizes – A, B, C, D, E
- Displacement 5.8cc/rev – 268cc/rev
- Speed to 3600 RPM
- Pressure to 320 Bar
- Quiet operation
- Various shaft and mount options
- Cartridge design
- Wide range of acceptable viscosity

| Example Model | Displacement (cc/rev)             | Max Pressure (Bar) | Speed (RPM) |
|---------------|-----------------------------------|--------------------|-------------|
|               | no. of cam ring displacements ( ) | Cont / Int         | Min/ Max    |
| T7B           | 5.8 - 31.8 (9)                    | 290 / 320          | 600 / 3600  |
|               | 35.0 - 45 (3)                     | 275 / 300          | 600 / 3000  |
|               | 50                                | 240 / 280          | 600 / 3000  |
| T6C           | 10.8 - 70.3 (10)                  | 240 / 275          | 600 / 2800  |
|               | 79.3                              | 240 / 275          | 600 / 2500  |
|               | 88.8 - 100 (2)                    | 160 / 210          | 600 / 2500  |
| T7D           | 44.0 - 99.2 (7)                   | 250 / 250          | 600 / 3000  |
|               | 113.4 - 120.6 (2)                 | 250 / 250          | 600 / 2800  |
|               | 137.5                             | 230 / 250          | 600 / 2500  |
|               | 145.7*                            | 210 / 240          | 600 / 2200  |
|               | 158.0*                            | 160 / 210          | 600 / 2200  |
| T7E           | 132.3 - 227.1 (9)                 | 210 / 240          | 600 / 2200  |
|               | 268.7                             | 75 / 90            | 600 / 2000  |

Data for HF-0, HF-2 for comparisons only \* Ten vane technology

## Greater Flow

Size A : 5,8 to 40 cc/rev  
 Size B : 5,8 to 50 cc/rev  
 Size C : 10,8 to 100 cc/rev  
 Size D : 44 to 158 cc/rev  
 Size E : 132,3 to 268,7 cc/rev

## Higher Pressure

Size A : up to 300 bar max  
 Size B : up to 320 bar max (300 bar for multiple pump)  
 Size C : up to 275 bar max  
 Size D : up to 280 bar max (250 bar for multiple pump)  
 Size E : up to 240 bar max

# Single Pumps

## Single pumps : speeds, pressure ratings

| Model of pump             | Series            | Theoretical Displacement Vi | Minimum Speed | Maximum Speed <sup>3)</sup> |                    | Maximum Pressure |       |                     |       |      |       |
|---------------------------|-------------------|-----------------------------|---------------|-----------------------------|--------------------|------------------|-------|---------------------|-------|------|-------|
|                           |                   |                             |               | HF-0, HF-1<br>HF-2          | HF-3, HF-4<br>HF-5 | HF-0, HF-2       |       | HF-1, HF-4,<br>HF-5 |       | HF-3 |       |
|                           |                   | ml/rev.                     |               | RPM                         | RPM                | Int.             | Cont. | Int.                | Cont. | Int. | Cont. |
|                           |                   |                             |               |                             |                    | bar              | bar   | bar                 | bar   | bar  | bar   |
| T6C                       | 003               | 10,8                        | 600           | 2800                        | 1800               | 275              | 240   | 210                 | 175   | 175  | 140   |
|                           | 005               | 17,2                        |               |                             |                    |                  |       |                     |       |      |       |
|                           | 006               | 21,3                        |               |                             |                    |                  |       |                     |       |      |       |
|                           | 008               | 26,4                        |               |                             |                    |                  |       |                     |       |      |       |
|                           | 010               | 34,1                        |               |                             |                    |                  |       |                     |       |      |       |
|                           | 012               | 37,1                        |               |                             |                    |                  |       |                     |       |      |       |
|                           | 014               | 46,0                        |               |                             |                    |                  |       |                     |       |      |       |
|                           | 017               | 58,3                        |               |                             |                    |                  |       |                     |       |      |       |
|                           | 020               | 63,8                        |               |                             |                    |                  |       |                     |       |      |       |
|                           | 022               | 70,3                        |               |                             |                    |                  |       |                     |       |      |       |
|                           | 025               | 79,3                        |               |                             |                    |                  |       |                     |       |      |       |
|                           | 028               | 88,8                        |               |                             |                    |                  |       |                     |       |      |       |
|                           | 031               | 100,0                       |               |                             |                    |                  |       |                     |       |      |       |
|                           | 031               | 100,0                       |               | 2500                        |                    | 210              | 160   |                     | 160   |      |       |
| T7D<br>T7DS               | B14               | 44,0                        | 600           | 3000                        | 1800               | 300              | 250   | 240                 | 210   | 175  | 140   |
|                           | B17               | 55,0                        |               |                             |                    |                  |       |                     |       |      |       |
|                           | B20               | 66,0                        |               |                             |                    |                  |       |                     |       |      |       |
|                           | B22               | 70,3                        |               |                             |                    |                  |       |                     |       |      |       |
|                           | B24               | 81,1                        |               |                             |                    |                  |       |                     |       |      |       |
|                           | B28               | 90,0                        |               |                             |                    |                  |       |                     |       |      |       |
|                           | B31               | 99,2                        |               |                             |                    |                  |       |                     |       |      |       |
|                           | B35               | 113,4                       |               |                             |                    |                  |       |                     |       |      |       |
|                           | B38               | 120,6                       |               |                             |                    |                  |       |                     |       |      |       |
|                           | B42               | 137,5                       |               |                             |                    |                  |       |                     |       |      |       |
|                           | 045 <sup>1)</sup> | 145,7                       |               |                             |                    |                  |       |                     |       |      |       |
|                           | 050 <sup>1)</sup> | 158,0                       |               |                             |                    |                  |       |                     |       |      |       |
|                           | 050 <sup>1)</sup> | 158,0                       |               | 2800                        |                    | 280              |       |                     |       |      |       |
|                           | 050 <sup>1)</sup> | 158,0                       |               | 2500                        |                    | 260              | 230   |                     |       |      |       |
| T7E <sup>2)</sup><br>T7ES | 042               | 132,3                       | 600           | 2200                        | 1800               | 240              | 210   | 210                 | 175   | 175  | 140   |
|                           | 045               | 142,4                       |               |                             |                    |                  |       |                     |       |      |       |
|                           | 050               | 158,5                       |               |                             |                    |                  |       |                     |       |      |       |
|                           | 052               | 164,8                       |               |                             |                    |                  |       |                     |       |      |       |
|                           | 054               | 171,0                       |               |                             |                    |                  |       |                     |       |      |       |
|                           | 057               | 183,3                       |               |                             |                    |                  |       |                     |       |      |       |
|                           | 062               | 196,7                       |               |                             |                    |                  |       |                     |       |      |       |
|                           | 066               | 213,3                       |               |                             |                    |                  |       |                     |       |      |       |
|                           | 072               | 227,1                       |               |                             |                    |                  |       |                     |       |      |       |
|                           | 085               | 268,7                       |               |                             |                    |                  |       |                     |       |      |       |
|                           | 085               | 268,7                       |               | 2000                        |                    | 90               | 75    | 75                  | 75    | 75   | 75    |
|                           | 085               | 268,7                       |               | 2000                        |                    | 90               | 75    | 75                  | 75    | 75   | 75    |
|                           | 085               | 268,7                       |               | 2000                        |                    | 90               | 75    | 75                  | 75    | 75   | 75    |
|                           | 085               | 268,7                       |               | 2000                        |                    | 90               | 75    | 75                  | 75    | 75   | 75    |

<sup>1)</sup> Ten vane technology.

<sup>2)</sup> For T7E, below 10 bar, please contact Parker.

<sup>3)</sup> Please be sure that the inlet velocity is under 1,9 m/sec. (see page 12, start-up & check-up).

For further information, or if the performance characteristics outlined here above do not meet your particular requirements, please consult your local Parker office.

HF-0, HF-2 = Antiwear Petroleum Base

HF-1 = Non Antiwear Petroleum Base

HF-3 = Water in oil Invert Emulsions

HF-4 = Water Glycols Solutions

HF-5 = Synthetic Fluids



# Single Pumps

## T6C Series

|      |   |     |   |   |   |    |   |   |   |   |    |
|------|---|-----|---|---|---|----|---|---|---|---|----|
| T6C* | - | B22 | - | 1 | R | 00 | - | B | 1 | - | ** |
|------|---|-----|---|---|---|----|---|---|---|---|----|

**Series – SAE B 2 bolts**  
J744 mounting flange

\*Rear drive option available, please contact Parker

**Displacement\***  
Volumetric displacement (ml/rev.)

|            |             |
|------------|-------------|
| B03 = 10,8 | B17 = 58,3  |
| B05 = 17,2 | B20 = 63,8  |
| B06 = 21,3 | B22 = 70,3  |
| B08 = 26,4 | B25 = 79,3  |
| B10 = 34,4 | B28 = 88,8  |
| B12 = 37,1 | B31 = 100,0 |
| B14 = 46,0 |             |

**Type of Shaft Tbc**

|                               |
|-------------------------------|
| 1 = keyed (SAE B) ø 22,2      |
| 2 = keyed (non SAE)           |
| 3 = splined (SAE B) 13 teeth  |
| 4 = splined (SAE BB) 15 teeth |

**Seal Class**

|                                                                        |
|------------------------------------------------------------------------|
| 1 = S1 BUNA N – 0.7 bar max. (for mineral oil)                         |
| 4 = S4 EPDM – 0.7 bar max. (for fire resistant fluids)                 |
| 5 = S5 VITON® – 0.7 bar max (for mineral oil and fire resistant fluid) |

**Design Letter**  
00 = Standard

**Direction of rotation (shaft end view)**

|                       |
|-----------------------|
| R = Clockwise         |
| L = Counter-clockwise |

**Porting Combination**  
00 = Standard

**Modifications**

P = Pressure port  
S = Suction port

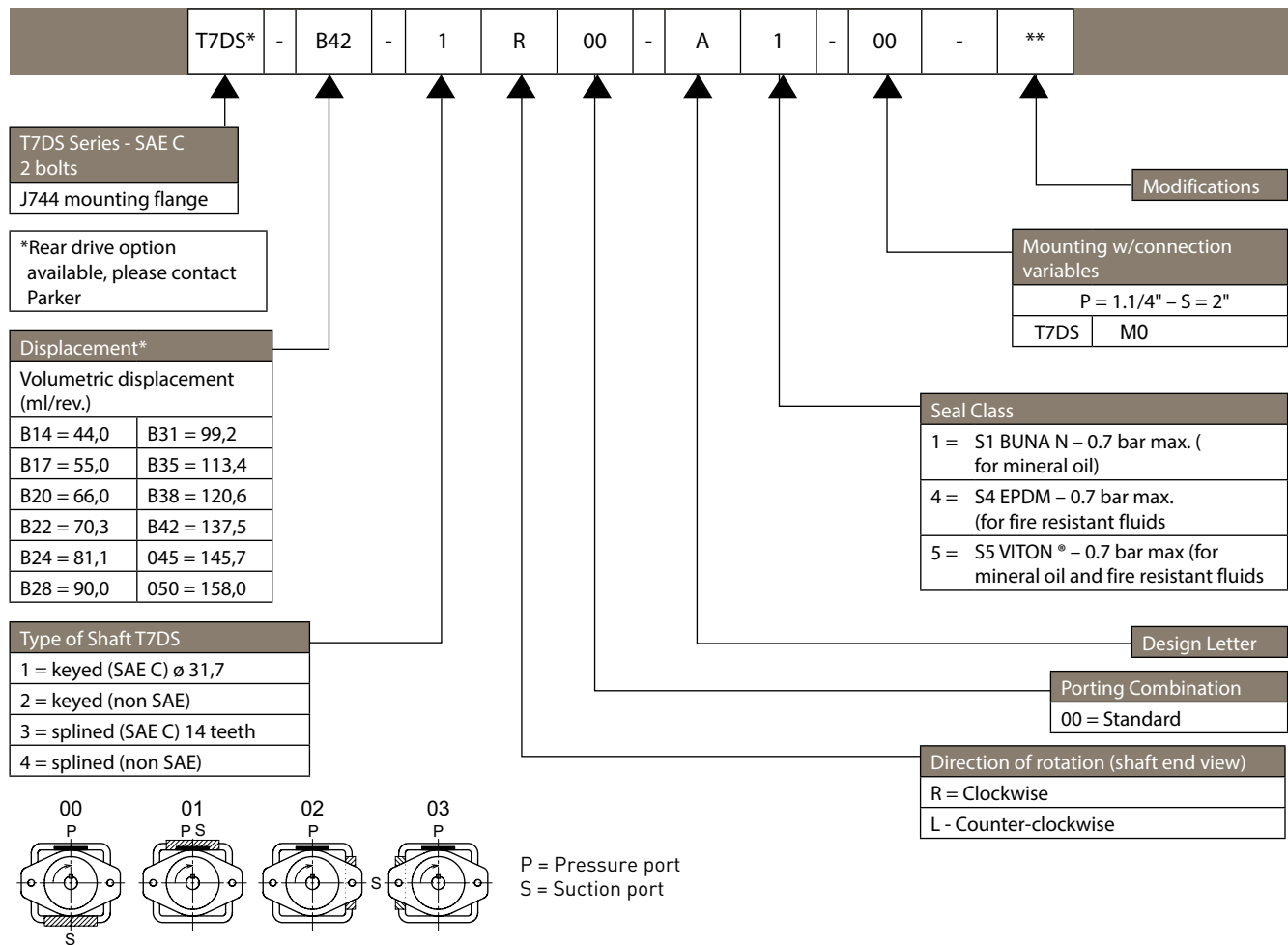
### Preferred Model (Single Pump)

| Order Code  | Model Code      | Order Code  | Model Code      | Order Code  | Model Code      |
|-------------|-----------------|-------------|-----------------|-------------|-----------------|
| 024-25776-0 | T6C B03 1R** B1 | 024-26308-0 | T6C B10 3R** B1 | 024-76142-0 | T6C B20 4R** B1 |
| 024-45547-0 | T6C B03 2R** B1 | 024-91712-0 | T6C B10 4R** B1 | 024-25785-0 | T6C B22 1R** B1 |
| 024-31574-0 | T6C B03 3R** B1 | 024-33205-0 | T6C B12 1R** B1 | 024-26200-0 | T6C B22 3R** B1 |
| 024-25777-0 | T6C B05 1R** B1 | 024-33684-0 | T6C B12 3R** B1 | 024-40259-0 | T6C B22 4R** B1 |
| 024-25822-0 | T6C B05 3R** B1 | 024-44462-0 | T6C B12 4R** B1 | 024-25829-0 | T6C B25 1R** B1 |
| 024-33561-0 | T6C B05 4R** B1 | 024-25782-0 | T6C B14 1R** B1 | 024-25787-0 | T6C B25 3R** B1 |
| 024-25778-0 | T6C B06 1R** B1 | 024-26199-0 | T6C B14 3R** B1 | 024-31575-0 | T6C B25 4L** B1 |
| 024-33221-0 | T6C B06 3R** B1 | 024-45857-0 | T6C B14 4R** B1 | 024-25788-0 | T6C B28 1R** B1 |
| 024-40681-0 | T6C B06 4R** B1 | 024-25515-0 | T6C B17 1R** B1 | 024-31990-0 | T6C B28 3R** B1 |
| 024-25779-0 | T6C B08 1R** B1 | 024-25783-0 | T6C B17 3R** B1 | 024-59567-0 | T6C B28 4R** B1 |
| 024-31591-0 | T6C B08 3R** B1 | 024-25784-0 | T6C B17 4R** B1 | 024-50670-0 | T6C B31 1R** B1 |
| 024-40263-0 | T6C B08 4R** B1 | 024-51407-0 | T6C B20 1R** B1 | 024-69280-0 | T6C B31 3R** B1 |
| 024-25781-0 | T6C B10 1R** B1 | 024-59895-0 | T6C B20 3R** B1 | 024-90191-0 | T6C B31 4R** B1 |

For other Seal Class  
S4 EPDM 024-XXXXX-4  
S5 VITON 024-XXXXX-5

For other Port Orientation  
024-XXXXX-001, 024-XXXXX-002, 024-XXXXX-003, etc  
For Chinese Version  
024-XXXXX-00S (to put "S" behind)

## T7DS Series



## Preferred Model (Single Pump)

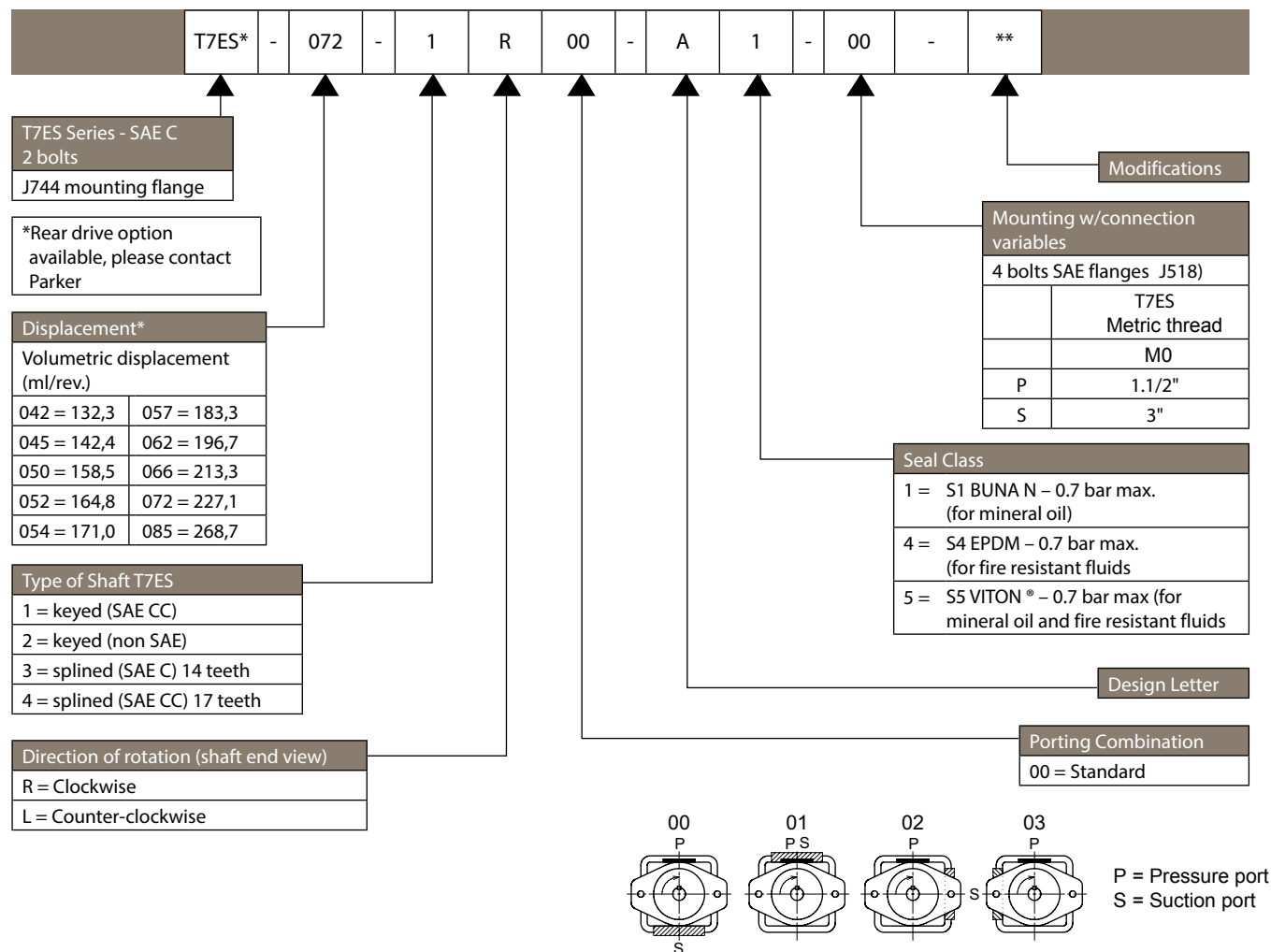
| Order Code  | Model Code         | Order Code  | Model Code         | Order Code  |
|-------------|--------------------|-------------|--------------------|-------------|
| 024-91385-0 | T7DS B14 1R** A1M0 | 024-76520-0 | T7DS B28 1R** A1M0 | 024-90844-0 |
| 054-37179-0 | T7DS B14 3R** A1M0 | 054-36601-0 | T7DS B28 3R** A1M0 | 024-90843-0 |
| 024-77856-0 | T7DS B17 1R** A1M0 | 024-90102-0 | T7DS B31 1R** A1M0 | 054-46379-0 |
| 054-38336-0 | T7DS B17 3R** A1M0 | 024-90835-0 | T7DS B31 3R** A1M0 | 024-90845-0 |
| 024-90687-0 | T7DS B20 1R** A1M0 | 024-76521-0 | T7DS B35 1R** A1M0 | 054-36188-0 |
| 024-92590-0 | T7DS B20 3R** A1M0 | 024-90837-0 | T7DS B35 3R** A1M0 | 024-90847-0 |
| 024-76333-0 | T7DS B22 1R** A1M0 | 024-90839-0 | T7DS B38 1R** A1M0 | 024-90846-0 |
| 054-34092-0 | T7DS B22 3R** A1M0 | 024-90840-0 | T7DS B38 3R** A1M0 | 054-46379-0 |
| 024-91339-0 | T7DS B24 1R** A1M0 | 024-76522-0 | T7DS B42 1R** A1M0 | 024-90848-0 |
| 024-90851-0 | T7DS B24 3R** A1M0 | 024-90842-0 | T7DS B42 3R** A1M0 | 054-38882-0 |

For other Seal Class  
S4 EPDM 024-XXXX-4  
S5 VITON 024-XXXX-5

For other Port Orientation  
024-XXXX-001, 024-XXXX-002, 024-XXXX-003, etc  
For Chinese Version  
024-XXXX-00S (to put "S" behind)

# Single Pumps

## T7ES Series



### Preferred Model (Single Pump)

| Order Code  | Model Code         | Order Code  | Model Code         | Order Code  |
|-------------|--------------------|-------------|--------------------|-------------|
| 024-93237-0 | T7ES 042 1R** A1M0 | 024-90855-0 | T7ES 052 1L** A1M0 | 054-46970-0 |
| 024-93229-0 | T7ES 042 3R** A1M0 | 024-93026-0 | T7ES 052 3R** A1M0 | 024-90861-0 |
| 054-36528-0 | T7ES 042 4R** A100 | 024-92300-0 | T7ES 054 1R** A1M0 | 024-90862-0 |
| 054-34115-0 | T7ES 045 1R** A1M0 | 054-37225-0 | T7ES 054 1L** A1M0 | 054-35025-0 |
| 024-94377-0 | T7ES 045 3R** A1M0 | 054-39133-0 | T7ES 054 3R** A1M0 | 024-90863-0 |
| 054-49372-0 | T7ES 045 4R** A1M0 | 024-93162-0 | T7ES 057 1R** A1M0 | 024-90864-0 |
| 024-90854-0 | T7ES 050 1R** A1M0 | 054-37907-0 | T7ES 057 1L** A1M0 | 054-48345-0 |
| 024-92004-0 | T7ES 050 3R** A1M0 | 024-94006-0 | T7ES 057 3R** A1M0 | 024-94346-0 |
| 054-49595-0 | T7ES 050 4R** A100 | 024-90858-0 | T7ES 062 1R** A1M0 | 054-38395-0 |
| 024-90856-0 | T7ES 052 1R** A1M0 | 024-90859-0 | T7ES 062 3R** A1M0 | 054-45944-0 |

For other Seal Class  
S4 EPDM 024-XXXXX-4  
S5 VITON 024-XXXXX-5

For other Port Orientation  
024-XXXXX-001, 024-XXXXX-002, 024-XXXXX-003, etc  
For Chinese Version  
024-XXXXX-00S (to put "S" behind)

## T7BB, T67CB, T6CC, T7DBS, T67DC, T7EBS, T67EC, T7EDS, T7EES Series

### Characteristics

The Parker 'Denison' fixed displacement vane pump range offers a quieter more efficient solution to many high pressure applications.

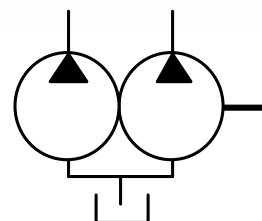
Designed with versatility in mind, numerous shaft options and porting combinations result in easier installation.

The pumps will operate over a wide speed range with low to high viscosity fluids; and technical advantages in vane design offer high resistance to particle contamination.

Interchangeable cam rings allow multiple displacements within the same pump frame size.

An industrial or mobile type cartridge allows the pump to operate to its optimum in many environments. The cartridge concept simplifies pump maintenance reducing machine down time.

Multiple cartridges in single housing with common suction minimise installation costs. Flow combinations for Hi-Low or multi-flow systems.



### Features

- 5 frame sizes – A, B, C, D, E
- Many combinations of frame sizes
- Displacement 5.8cc/rev – 268cc/rev
- Speed to 3600 RPM
- Pressure to 320 Bar
- Quiet operation
- Various shaft and mount options
- Cartridge design
- Wide range of acceptable viscosity
- Severe duty options available

| Example Model | Displacement (cc/rev)             | Max Pressure (Bar) | Speed (RPM) |
|---------------|-----------------------------------|--------------------|-------------|
|               | no. of cam ring displacements ( ) | Cont / Int         | Min/ Max    |
| T7BB          | 5.8 - 31.8 (9)                    | 290 / 320          | 600 / 3600  |
|               | 35.0 - 45 (3)                     | 275 / 300          | 600 / 3000  |
|               | 50                                | 240 / 280          | 600 / 3000  |
| T6CC          | 10.8 - 70.3 (10)                  | 240 / 275          | 600 / 2800  |
|               | 79.3                              | 240 / 275          | 600 / 2500  |
|               | 88.8 - 100 (2)                    | 160 / 210          | 600 / 2500  |
| T7DD          | 44.0 - 99.2 (7)                   | 250 / 250          | 600 / 3000  |
|               | 113.4 - 120.6 (2)                 | 250 / 250          | 600 / 2800  |
|               | 137.5                             | 230 / 250          | 600 / 2500  |
|               | 145.7*                            | 210 / 240          | 600 / 2200  |
|               | 158.0*                            | 160 / 210          | 600 / 2200  |
| T7EE          | 132.3 - 227.1 (9)                 | 210 / 240          | 600 / 2200  |
|               | 268.7                             | 75 / 90            | 600 / 2000  |

Data for HF-0, HF-2 for comparisons only \* Ten vane technology

# Double Pumps

## T7BBS Series

|       |   |     |     |   |   |   |    |   |   |   |    |   |    |
|-------|---|-----|-----|---|---|---|----|---|---|---|----|---|----|
| T7BBS | - | B10 | B10 | - | 1 | R | 00 | - | A | 1 | 01 | - | ** |
|-------|---|-----|-----|---|---|---|----|---|---|---|----|---|----|

**T7BBS Series - SAE B 2 bolts**  
J744 mounting flange

**Displacement P1 & P2**  
Volumetric displacement (ml/rev.)

|            |            |
|------------|------------|
| B02 = 5,8  | B09 = 28,0 |
| B03 = 9,8  | B10 = 31,8 |
| B04 = 12,8 | B11 = 35,0 |
| B05 = 15,9 | B12 = 41,0 |
| B06 = 19,8 | B14 = 45,0 |
| B07 = 22,5 | B15 = 50,0 |
| B08 = 24,9 |            |

**Type of Shaft T7BBS**

|                               |
|-------------------------------|
| 1 = keyed (non SAE)           |
| 2 = keyed (SAE B)             |
| 3 = splined (SAE B) 13 teeth  |
| 4 = splined (SAE BB) 15 teeth |

**Direction of rotation (shaft end view)**

|                       |
|-----------------------|
| R = Clockwise         |
| L = Counter-clockwise |

**Modifications**

**Mounting w/connection variables**  
4 bolts SAE flanges J518)

|    |                  |      |
|----|------------------|------|
|    | T7BBS UNC thread |      |
|    | 00               | 01   |
| P1 | 1"               | 3/4" |
| P2 | 3/4"             |      |
| S  | 2,1/2"           |      |

**Seal Class**

|                                                                        |
|------------------------------------------------------------------------|
| 1 = S1 BUNA N – 0.7 bar max. (for mineral oil)                         |
| 4 = S4 EPDM – 0.7 bar max. (for fire resistant fluids)                 |
| 5 = S5 VITON® – 0.7 bar max (for mineral oil and fire resistant fluid) |

**Design Letter**

**Porting Combination**  
00 = Standard

## T6CC Series

|      |   |   |     |   |     |   |   |    |   |   |    |   |    |
|------|---|---|-----|---|-----|---|---|----|---|---|----|---|----|
| T6CC | W | - | B22 | - | B08 | 1 | R | 00 | C | 1 | 00 | - | ** |
|------|---|---|-----|---|-----|---|---|----|---|---|----|---|----|

**T6CC Series - SAE B 2 bolts**  
J744 mounting flange

**Severe duty shaft option**

**Displacement P1 & P2**  
Volumetric displacement (ml/rev.)

|            |             |
|------------|-------------|
| B02 = 10,8 | B17 = 58,3  |
| B05 = 17,2 | B20 = 63,8  |
| B06 = 21,3 | B22 = 70,3  |
| B08 = 26,4 | B25 = 79,3  |
| B10 = 34,1 | B28 = 88,8  |
| B12 = 37,1 | B31 = 100,0 |
| B14 = 46,0 |             |

**Type of Shaft T6CC**

|                               |
|-------------------------------|
| 1 = keyed (non SAE)           |
| 3 = splined (SAE BB) 15 teeth |
| 5 = splined (SAE B) 13 teeth  |

**Severe duty shaft (T6CCW only)**

|                    |
|--------------------|
| 2 = keyed (SAE BB) |
|--------------------|

**Direction of rotation (shaft end view)**

|                       |
|-----------------------|
| R = Clockwise         |
| L = Counter-clockwise |

**Modifications**

**Mounting w/connection variables**

|    |                                 |                    |
|----|---------------------------------|--------------------|
| P1 | = 1" - S = 3"                   |                    |
|    | UNC thread                      |                    |
|    | 00                              | 01                 |
| P2 | 1"                              | 3/4" <sup>1)</sup> |
| P1 | = 1" - S = 2,1/2" <sup>2)</sup> |                    |
|    | UNC thread                      |                    |
|    | 10                              | 11                 |
| P2 | 1"                              | 3/4" <sup>1)</sup> |

<sup>1)</sup> up to 46ml/rev. max.  
<sup>2)</sup> up to 126ml/rev. max.  
Always select the largest cartridge in the front place.

**Seal Class**

|                                                                         |
|-------------------------------------------------------------------------|
| 1 = S1 BUNA N – 0.7 bar max. (for mineral oil)                          |
| 4 = S4 EPDM – 0.7 bar max. (for fire resistant fluids)                  |
| 5 = S5 VITON® – 0.7 bar max (for mineral oil and fire resistant fluids) |

**Design Letter**

**Porting Combination**  
00 = Standard

# Double Pumps

## T67CB

|       |   |   |     |   |     |   |   |   |    |   |   |   |    |   |    |
|-------|---|---|-----|---|-----|---|---|---|----|---|---|---|----|---|----|
| T67CB | W | - | B22 | - | B08 | - | 1 | R | 00 | - | A | 1 | 11 | - | ** |
|-------|---|---|-----|---|-----|---|---|---|----|---|---|---|----|---|----|

**T67CB Series - SAE B 2 bolts**  
J744 mounting flange

Severe duty shaft option

**Displacement P1**  
Volumetric displacement (ml/rev.)

|            |             |
|------------|-------------|
| B02 = 10,8 | B17 = 58,3  |
| B05 = 17,2 | B20 = 63,8  |
| B06 = 21,3 | B22 = 70,3  |
| B08 = 26,4 | B25 = 79,3  |
| B10 = 34,1 | B28 = 88,8  |
| B12 = 37,1 | B31 = 100,0 |
| B14 = 46,0 |             |

**Displacement P2**  
Volumetric displacement (ml/rev.)

|            |            |
|------------|------------|
| B02 = 5,8  | B09 = 28,0 |
| B03 = 9,8  | B10 = 31,8 |
| B04 = 12,8 | B11 = 35,0 |
| B05 = 15,9 | B12 = 41,0 |
| B06 = 19,8 | B14 = 45,0 |
| B07 = 22,5 | B15 = 50,0 |
| B08 = 24,9 |            |

**Severe duty shaft (T67CBW only)**  
2 = keyed (SAE BB)

**Type of Shaft**

|                               |
|-------------------------------|
| 1 = keyed (non SAE)           |
| 3 = splined (SAE BB) 15 teeth |
| 5 = splined (SAE B) 13 teeth  |

**Modification**

**Mounting w/connection variables**

|                                   |    |
|-----------------------------------|----|
| P1 = 1" - S = 3"                  |    |
| UNC thread                        |    |
| 00                                | 01 |
| P2                                | 1" |
| 3/4" <sup>1</sup>                 |    |
| P1 = 1" - S = 2,1/2" <sup>2</sup> |    |
| UNC thread                        |    |
| 10                                | 11 |
| P2                                | 1" |
| 3/4" <sup>1</sup>                 |    |

<sup>1</sup> up to 46ml/rev. max.  
<sup>2</sup> up to 126ml/rev. max.  
Always select the largest cartridge in the front place.

**Seal Class**

|                                                                        |
|------------------------------------------------------------------------|
| 1 = S1 BUNA N – 0.7 bar max. (for mineral oil)                         |
| 4 = S4 EPDM – 0.7 bar max. (for fire resistant fluids)                 |
| 5 = S5 VITON® – 0,7 bar max (for mineral oil and fire resistant fluid) |

**Design Letter**

**Porting Combination**  
00 = Standard

**Direction of rotation (shaft end view)**

|                       |
|-----------------------|
| R = Clockwise         |
| L = Counter-clockwise |

## T7DBS Series

|       |   |     |   |     |   |   |   |    |   |   |   |    |   |    |
|-------|---|-----|---|-----|---|---|---|----|---|---|---|----|---|----|
| T7DBS | - | B42 | - | B10 | - | 1 | R | 00 | - | A | 1 | 00 | - | ** |
|-------|---|-----|---|-----|---|---|---|----|---|---|---|----|---|----|

**T7DBS Series - SAE C 2 bolts**  
J744 mounting flange

**Displacement P1**  
Volumetric displacement (ml/rev.)

|            |             |
|------------|-------------|
| B14 = 44,0 | B31 = 99,2  |
| B17 = 55,0 | B35 = 113,4 |
| B20 = 66,0 | B38 = 120,6 |
| B22 = 70,3 | B42 = 137,5 |
| B24 = 81,1 | B45 = 145,7 |
| B28 = 90,0 | B50 = 158,0 |

**Displacement P2**  
Volumetric displacement (ml/rev.)

|            |            |
|------------|------------|
| B02 = 5,8  | B09 = 28,0 |
| B03 = 9,8  | B10 = 31,8 |
| B04 = 12,8 | B11 = 35,0 |
| B05 = 15,9 | B12 = 41,0 |
| B06 = 19,8 | B14 = 45,0 |
| B07 = 22,5 | B15 = 50,0 |
| B08 = 24,9 |            |

**Type of Shaft**

|                              |
|------------------------------|
| 1 = keyed (SAE C)            |
| 2 = keyed (non SAE)          |
| 3 = splined (SAE C) 14 teeth |
| 4 = splined (spec SAE C)     |

**Modifications**

**Mounting w/connection variables**  
4 bolts SAE flanges J518)

|                  |        |
|------------------|--------|
| UNC thread T7DBS |        |
| 00               | 01     |
| P1               | 1,1/4" |
| P2               | 1"     |
| S                | 3"     |
| 3"               |        |

**Seal Class**

|                                                                         |
|-------------------------------------------------------------------------|
| 1 = S1 BUNA N – 0.7 bar max. (for mineral oil)                          |
| 4 = S4 EPDM – 0.7 bar max. (for fire resistant fluids)                  |
| 5 = S5 VITON® – 0,7 bar max (for mineral oil and fire resistant fluids) |

**Design Letter**

**Porting Combination**  
00 = Standard

**Direction of rotation (shaft end view)**

|                       |
|-----------------------|
| R = Clockwise         |
| L = Counter-clockwise |

# Double Pumps

## T67DC Series

|       |   |     |   |     |   |   |    |   |   |   |    |   |    |
|-------|---|-----|---|-----|---|---|----|---|---|---|----|---|----|
| T67DC | W | B42 | - | B10 | 1 | R | 00 | - | A | 1 | 00 | - | ** |
|-------|---|-----|---|-----|---|---|----|---|---|---|----|---|----|

**T67DC Series - SAE C 2 bolts**  
J744 mounting flange

**Severe duty shaft option**

**Displacement P1**  
Volumetric displacement (ml/rev.)

|            |             |
|------------|-------------|
| B14 = 44,0 | B31 = 99,2  |
| B17 = 55,0 | B35 = 113,4 |
| B20 = 66,0 | B38 = 120,6 |
| B22 = 70,3 | B42 = 137,5 |
| B24 = 81,1 | B45 = 145,7 |
| B28 = 90,0 | B50 = 158,0 |

**Displacement P2**  
Volumetric displacement (ml/rev.)

|            |             |
|------------|-------------|
| B03 = 10,8 | B31 = 99,2  |
| B05 = 17,2 | B35 = 113,4 |
| B06 = 21,3 | B38 = 120,6 |
| B08 = 26,4 | B42 = 137,5 |
| B10 = 34,1 | B45 = 145,7 |
| B12 = 37,1 | B50 = 158,0 |
| B14 = 46,0 |             |

**Type of Shaft**

|                                           |                              |
|-------------------------------------------|------------------------------|
| 1 = keyed (SAE C)                         | 3 = splined (SAE C) 14 teeth |
| 2 = keyed (non SAE)                       | 4 = splined (spec SAE C)     |
| Type of Shaft - Severe duty (T67DCW only) |                              |
| 5 = keyed (non SAE)                       |                              |

**Modifications**

**Mounting w/connection variables**  
4 bolts SAE flanges J518)

|                  |                     |
|------------------|---------------------|
| UNC thread T7DBS |                     |
| P1               | 00 1,1/4" 01 1,1/4" |
| P2               | 1" 3/4"             |
| S                | 3" 3"               |

**Seal Class**

|     |                                                                     |
|-----|---------------------------------------------------------------------|
| 1 = | S1 BUNA N – 0.7 bar max. (for mineral oil)                          |
| 4 = | S4 EPDM – 0.7 bar max. (for fire resistant fluids)                  |
| 5 = | S5 VITON® – 0.7 bar max (for mineral oil and fire resistant fluids) |

**Design Letter**

**Porting Combination**  
00 = Standard

**Direction of rotation (shaft end view)**  
R = Clockwise  
L = Counter-clockwise

## T7DDS Series

|       |   |     |   |     |   |   |   |    |   |   |   |    |   |    |
|-------|---|-----|---|-----|---|---|---|----|---|---|---|----|---|----|
| T7DDS | - | B42 | - | B22 | - | 1 | R | 00 | - | A | 1 | 00 | - | ** |
|-------|---|-----|---|-----|---|---|---|----|---|---|---|----|---|----|

**T7DDS Series - SAE C 2+4 bolts**  
J744 mounting flange

**Displacement P1 & P2**  
Volumetric displacement (ml/rev.)

|            |             |
|------------|-------------|
| B14 = 44,0 | B31 = 99,2  |
| B17 = 55,0 | B35 = 113,4 |
| B20 = 66,0 | B38 = 120,6 |
| B22 = 70,3 | B42 = 137,5 |
| B24 = 81,1 | B45 = 145,7 |
| B28 = 90,0 | B50 = 158,0 |

**Type of Shaft**

|                       |                              |
|-----------------------|------------------------------|
| 1 = keyed (SAE C)     | 3 = splined (SAE C) 14 teeth |
| 2 = keyed (non SAECC) |                              |

**Modifications**

**Mounting w/connection variables**  
4 bolts SAE flanges J518)  
P1 & P2 = 1.1/4" - S = 4"

|       |            |
|-------|------------|
| Type  | UNC Thread |
| T7DDS | 00         |

**Seal Class**

|     |                                                                     |
|-----|---------------------------------------------------------------------|
| 1 = | S1 BUNA N – 0.7 bar max. (for mineral oil)                          |
| 4 = | S4 EPDM – 0.7 bar max. (for fire resistant fluids)                  |
| 5 = | S5 VITON® – 0.7 bar max (for mineral oil and fire resistant fluids) |

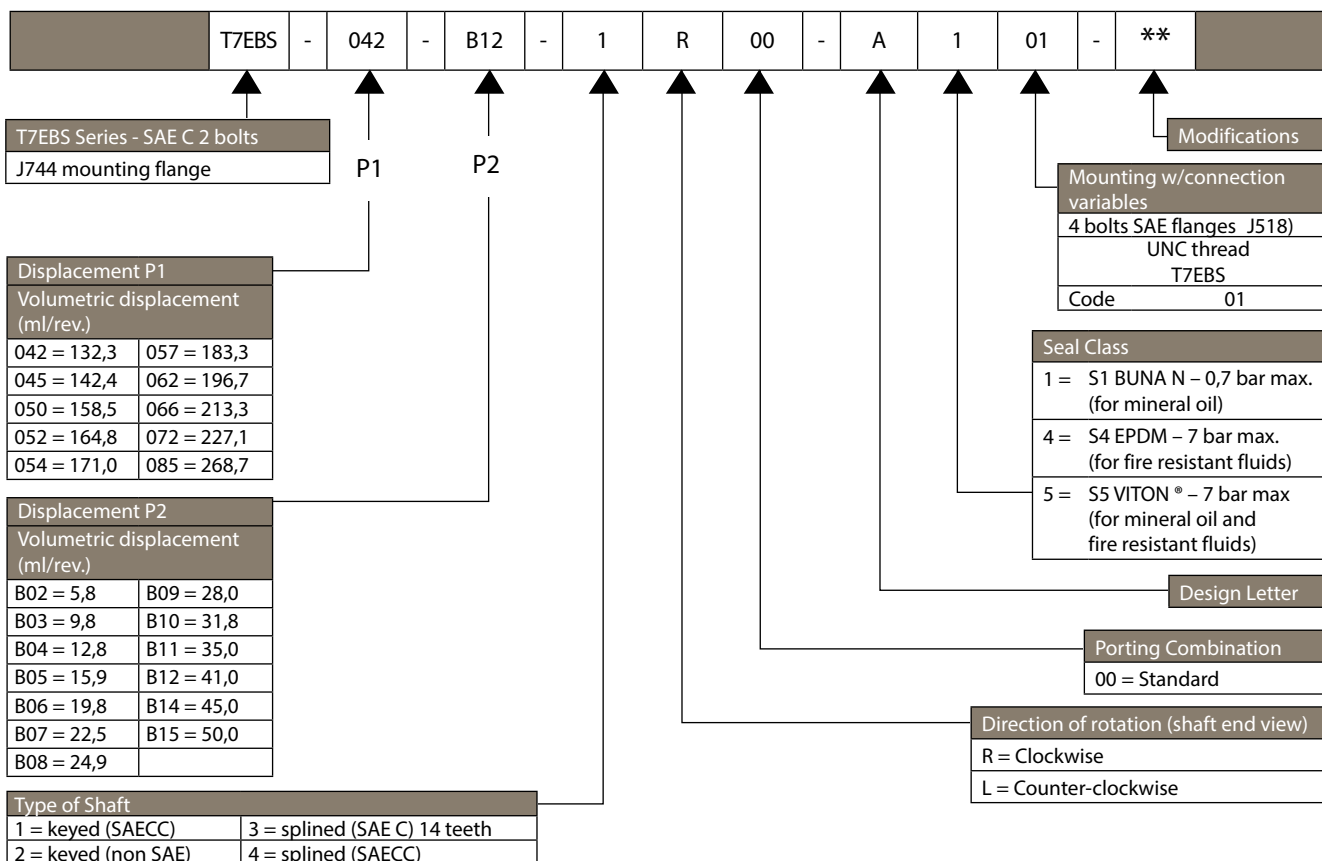
**Design Letter**

**Porting Combination**  
00 = Standard

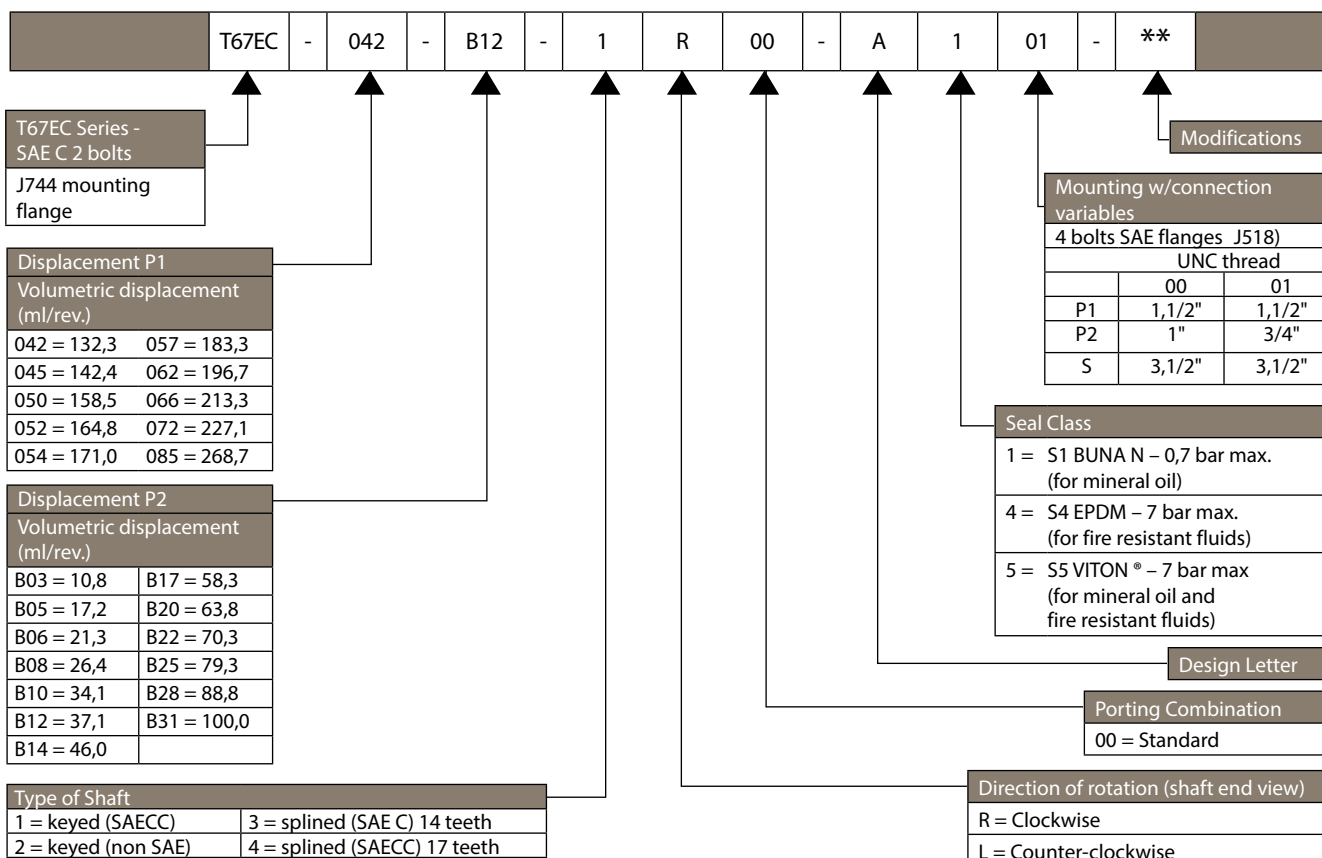
**Direction of rotation (shaft end view)**  
R = Clockwise  
L = Counter-clockwise

# Double Pumps

## T7EBS Series



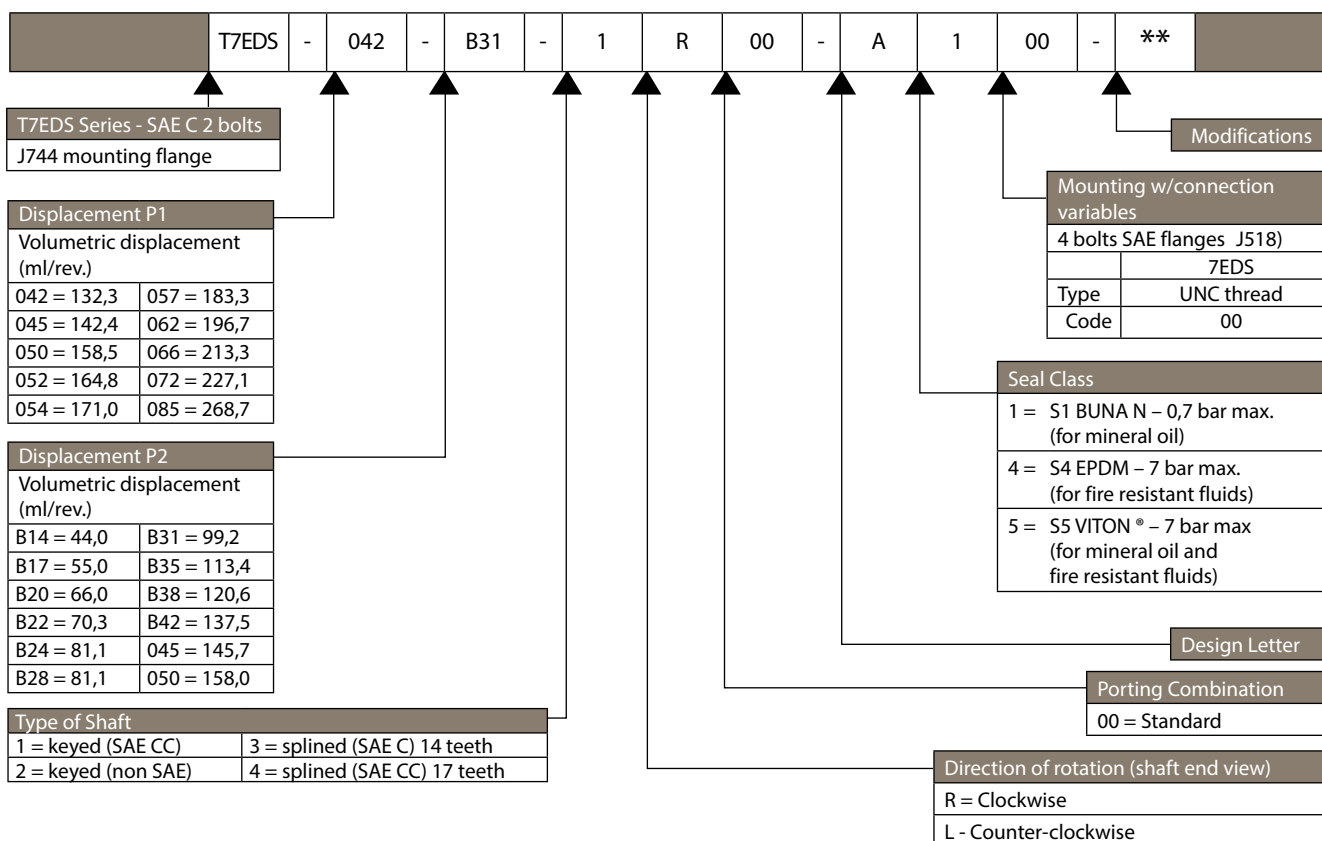
## T67EC Series



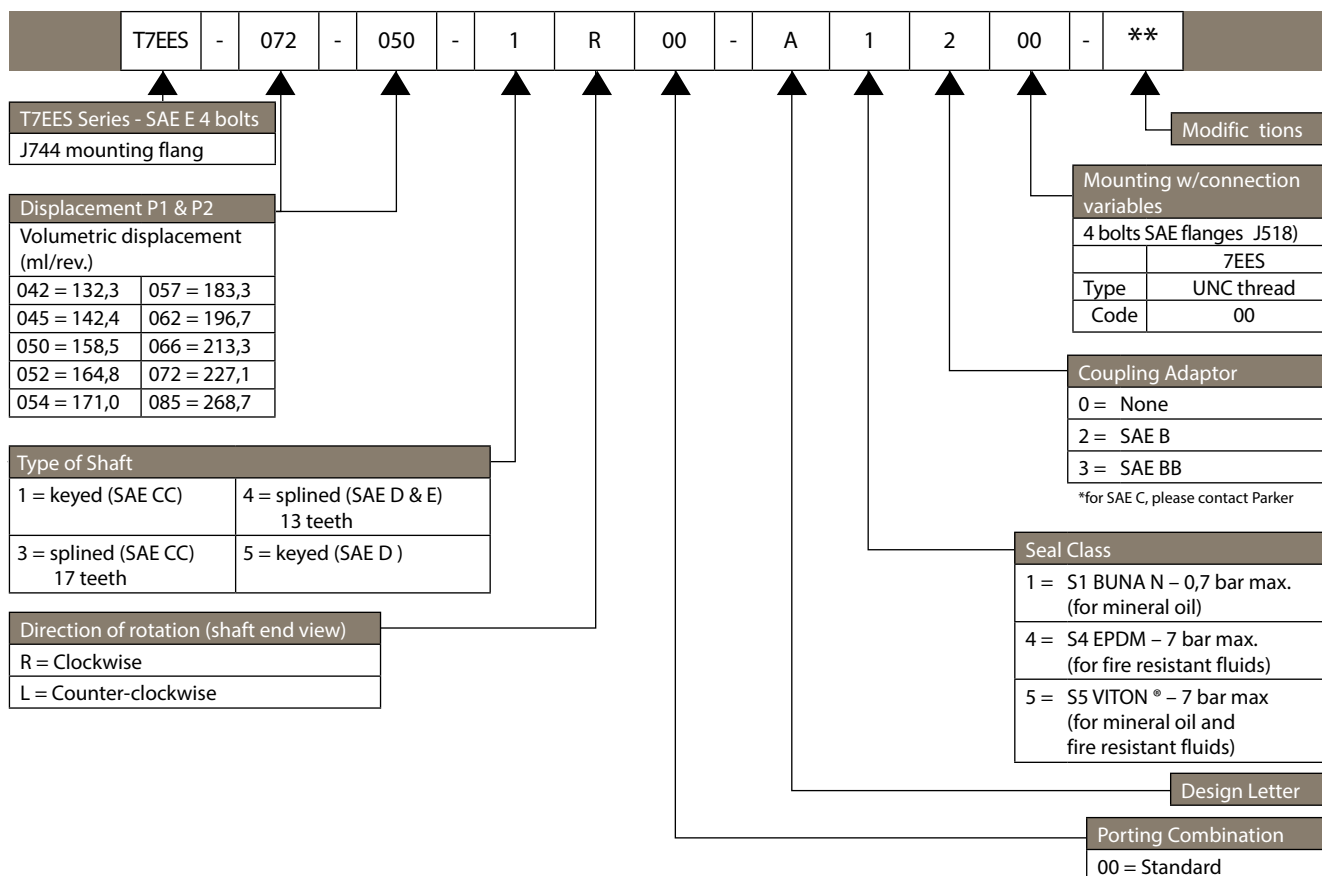


# Double Pumps

## T7EDS Series



## T7EES Series



## T67DBB, T67DCB, T6DCC, T67DDBS, T6DDCS, T67EDB(S), T6EDC(S) Series

## Characteristics

The Parker 'Denison' fixed displacement vane pump range offers a quieter more efficient solution to many high pressure applications.

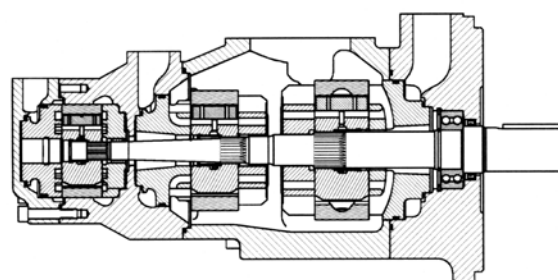
Designed with versatility in mind, numerous shaft options and porting combinations result in easier installation.

The pumps will operate over a wide speed range with low to high viscosity fluids; and technical advantages in vane design offer high resistance to particle contamination.

Interchangeable cam rings allow multiple displacements within the same pump frame size.

An industrial or mobile type cartridge allows the pump to operate to its optimum in many environments. The cartridge concept simplifies pump maintenance reducing machine down time.

Multiple cartridges in single housing with common suction minimise installation costs. Flow combinations for Hi-Low or multi-flow systems.



## Features

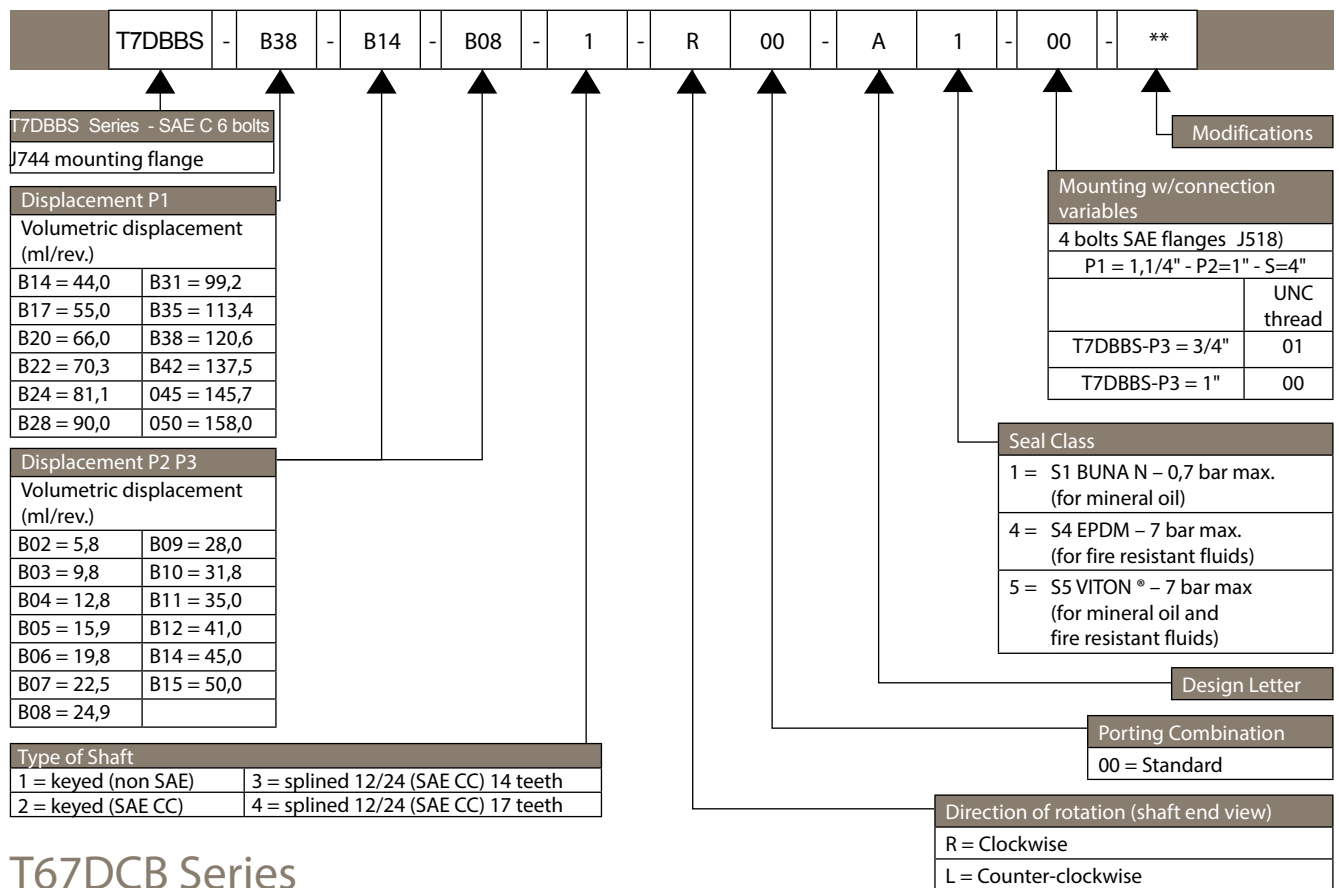
- 5 Frame sizes – A, B, C, D, E
- Many combinations of frame sizes
- Displacement 5.8cc/rev – 268cc/rev
- Speed to 3600 RPM
- Pressure to 320 Bar
- Quiet operation
- Various shaft and mount options
- Cartridge design
- Wide range of acceptable viscosity
- Severe duty options available

| Example Model | Displacement (cc/rev)             | Max Pressure (Bar) | Speed (RPM) |
|---------------|-----------------------------------|--------------------|-------------|
|               | no. of cam ring displacements ( ) | Cont / Int         | Min/ Max    |
| T67DBB        | 5.8 - 31.8 [9]                    | 290/320            | 600/3600    |
|               | 35.0 - 45 [3]                     | 275/300            | 600/3000    |
|               | 50                                | 240/280            | 600/3000    |
| T67DCC        | 10.8 - 70.3 [10]                  | 240/275            | 600/2800    |
|               | 79.3                              | 240/275            | 600/2500    |
|               | 88.8 - 100 [2]                    | 160/210            | 600/2500    |
| T7DDC         | 44.0 - 99.2 [7]                   | 250/250            | 600/3000    |
|               | 113.4 - 120.6 [2]                 | 250/250            | 600/2800    |
|               | 137.5                             | 230/250            | 600/2500    |
|               | 145.7*                            | 210/240            | 600/2200    |
|               | 458.0*                            | 160/210            | 600/2200    |
| T67EDC        | 132.3 - 227.1 [9]                 | 210/240            | 600/2200    |
|               | 268.7                             | 75/90              | 600/2000    |

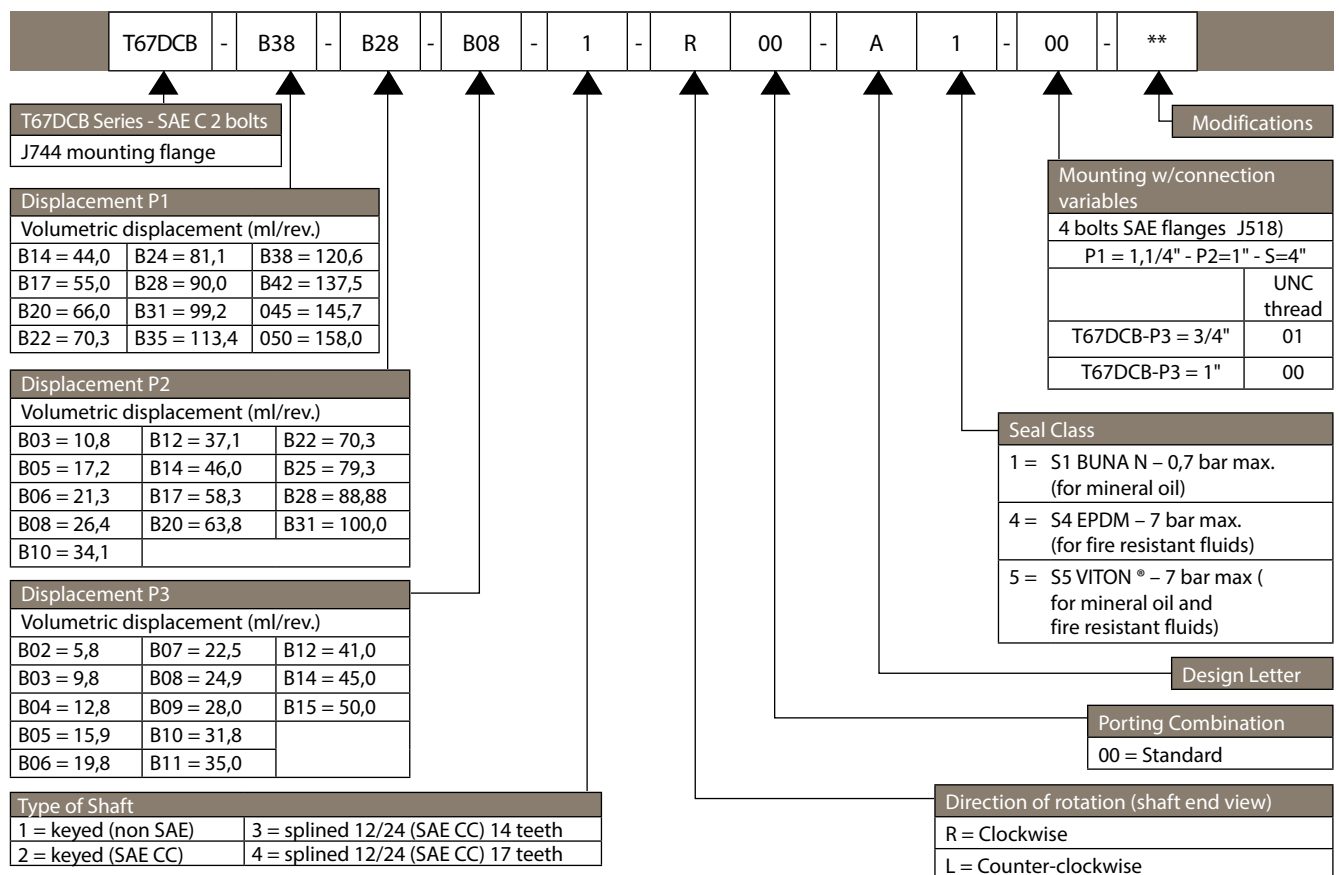
Data for HF-0, HF-2 for comparisons only \* Ten vane Technology

# Triple Pumps

## T7DBB Series

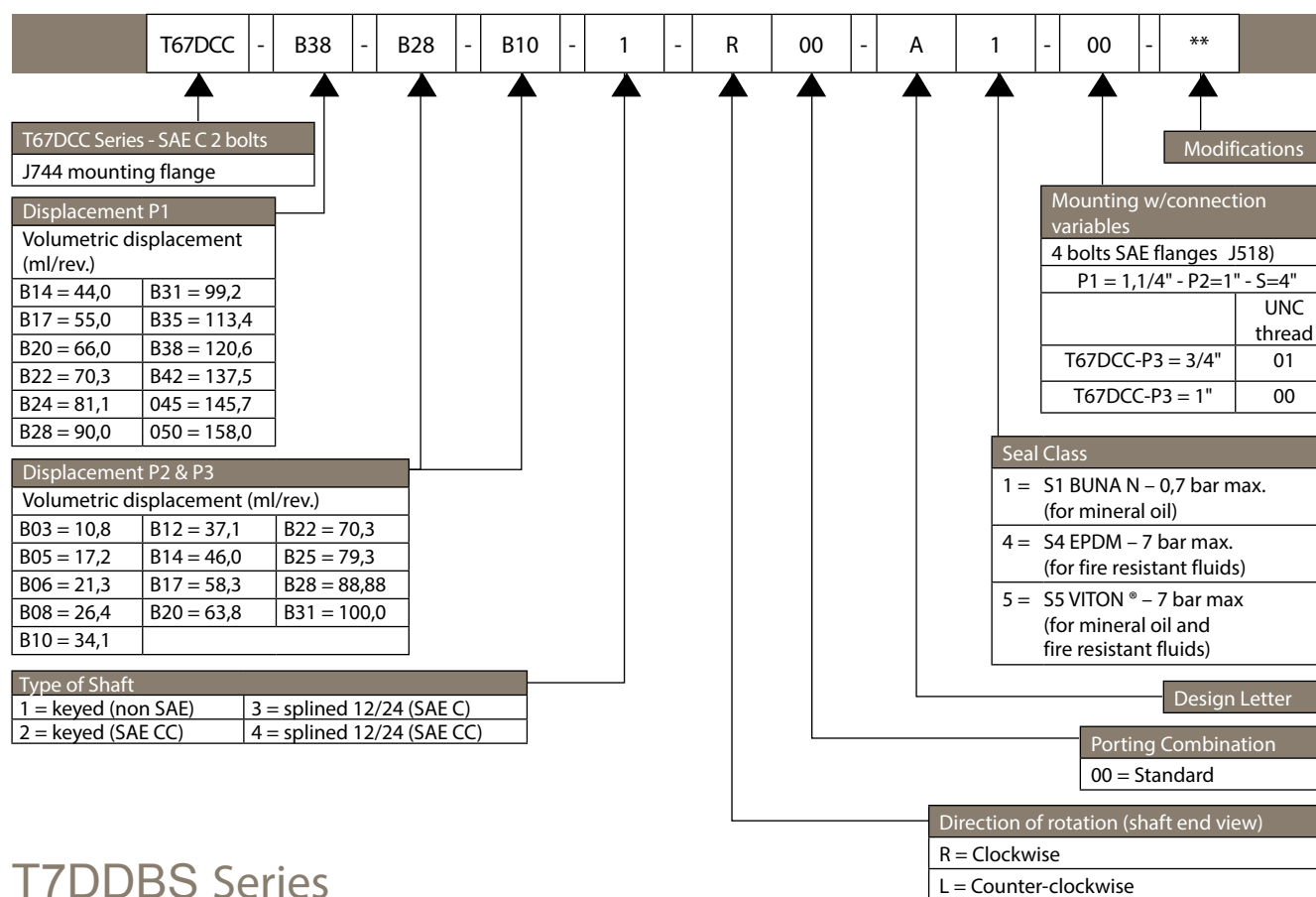


## T67DCB Series

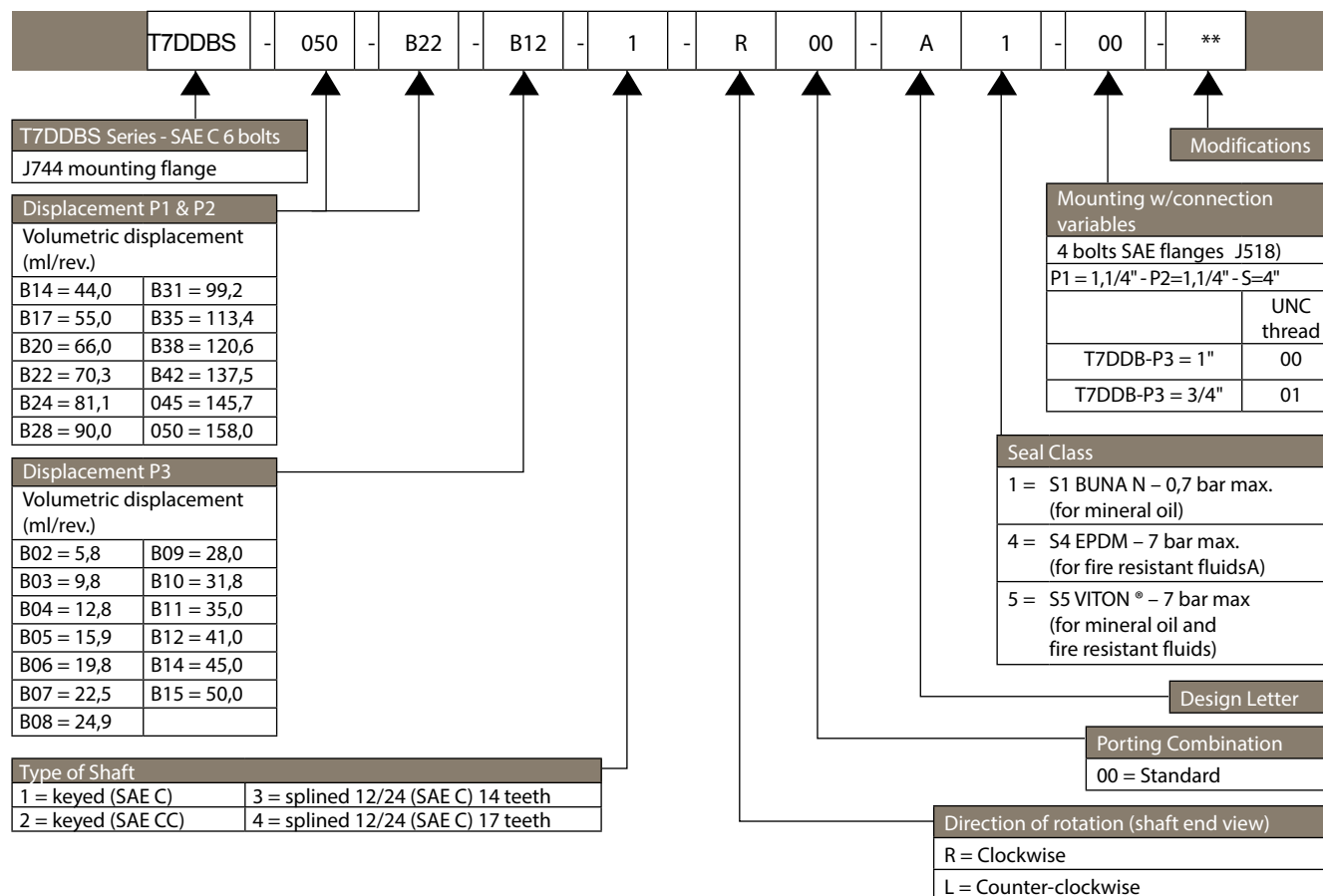


# Triple Pumps

## T67DCC Series



## T7DDBS Series



# Triple Pumps

## T67DDCS Series

|         |   |     |   |     |   |     |   |   |   |   |    |   |   |   |   |    |   |    |
|---------|---|-----|---|-----|---|-----|---|---|---|---|----|---|---|---|---|----|---|----|
| T67DDCS | - | 050 | - | B35 | - | B08 | - | 1 | - | R | 00 | - | A | 1 | - | 00 | - | ** |
|---------|---|-----|---|-----|---|-----|---|---|---|---|----|---|---|---|---|----|---|----|

**T67DDCS Series - SAE C 6 bolts**  
J744 mounting flange

**Displacement P1 & P2**  
Volumetric displacement (ml/rev.)

|            |             |
|------------|-------------|
| B14 = 44,0 | B31 = 99,2  |
| B17 = 55,0 | B35 = 113,4 |
| B20 = 66,0 | B38 = 120,6 |
| B22 = 70,3 | B42 = 137,5 |
| B24 = 81,1 | B45 = 145,7 |
| B28 = 90,0 | B50 = 158,0 |

**Displacement P3**  
Volumetric displacement (ml/rev.)

|            |            |             |
|------------|------------|-------------|
| B03 = 10,8 | B12 = 37,1 | B22 = 70,3  |
| B05 = 17,2 | B14 = 46,0 | B25 = 79,3  |
| B06 = 21,3 | B17 = 58,3 | B28 = 88,8  |
| B08 = 26,4 | B20 = 63,8 | B31 = 100,0 |
| B10 = 34,1 |            |             |

**Type of Shaft**

|                                     |
|-------------------------------------|
| 1 = keyed (SAE C)                   |
| 2 = keyed (SAE CC)                  |
| 3 = splined 12/24 (SAE C) 14 teeth  |
| 4 = splined 12/24 (SAE CC) 17 teeth |
| 5 = keyed (non SAE)                 |

**Mounting w/connection variables**  
4 bolts SAE flanges J518)  
P1 & P2 = 1,1/4" - S=4"  
UNC thread  
P3 1" v  
Code 00 01

**Seal Class**

|                                                                          |
|--------------------------------------------------------------------------|
| 1 = S1 BUNA N – 0,7 bar max.<br>(for mineral oil)                        |
| 4 = S4 EPDM – 7 bar max.<br>(for fire resistant fluids)                  |
| 5 = S5 VITON® – 7 bar max<br>(for mineral oil and fire resistant fluids) |

**Design Letter**

**Porting Combination**  
00 = Standard

**Direction of rotation (shaft end view)**  
R = Clockwise  
L = Counter-clockwise

**Modifications**

## T67EDCS Series

|         |   |     |   |     |   |     |   |   |   |   |    |   |   |   |   |    |   |    |
|---------|---|-----|---|-----|---|-----|---|---|---|---|----|---|---|---|---|----|---|----|
| T67EDCS | - | 062 | - | B35 | - | B10 | - | 2 | - | R | 00 | - | A | 1 | - | 00 | - | ** |
|---------|---|-----|---|-----|---|-----|---|---|---|---|----|---|---|---|---|----|---|----|

**T67EDCS Series - SAE E 4 bolts**  
J744 mounting flange

**Displacement P1**  
Volumetric displacement (ml/rev.)

|             |             |             |
|-------------|-------------|-------------|
| 042 = 132,3 | 054 = 171,0 | 066 = 213,3 |
| 045 = 142,4 | 057 = 183,3 | 072 = 227,1 |
| 050 = 158,5 | 062 = 196,7 | 085 = 268,7 |
| 052 = 164,8 |             |             |

**Displacement P2**  
Volumetric displacement (ml/rev.)

|            |             |             |
|------------|-------------|-------------|
| B14 = 44,0 | B24 = 81,1  | B38 = 120,6 |
| B17 = 55,0 | B28 = 90,0  | B42 = 137,5 |
| B20 = 66,0 | B31 = 99,2  | B45 = 145,7 |
| B22 = 70,3 | B35 = 113,4 | B50 = 158,0 |

**Displacement P3**  
Volumetric displacement (ml/rev.)

|            |            |             |
|------------|------------|-------------|
| B03 = 10,8 | B12 = 37,1 | B22 = 70,3  |
| B05 = 17,2 | B14 = 46,0 | B25 = 79,3  |
| B06 = 21,3 | B17 = 58,3 | B28 = 88,8  |
| B08 = 26,4 | B20 = 63,8 | B31 = 100,0 |
| B10 = 34,1 |            |             |

**Type of shaft**

|                                       |
|---------------------------------------|
| 2 = keyed (SAE D & E)                 |
| 3 = splined 8/16 (SAE D & E) 13 teeth |

**Mounting w/connection variables**  
4 bolts SAE flanges J518)  
P1 & P2 = 1,1/4" - S=4"  
UNC thread  
P3 = 1" 00  
P3 = 3/4" 01

**Seal Class**

|                                                                          |
|--------------------------------------------------------------------------|
| 1 = S1 BUNA N – 0,7 bar max.<br>(for mineral oil)                        |
| 4 = S4 EPDM – 7 bar max.<br>(for fire resistant fluids)                  |
| 5 = S5 VITON® – 7 bar max<br>(for mineral oil and fire resistant fluids) |

**Design Letter**

**Porting Combination**  
00 = Standard

**Direction of rotation (shaft end view)**  
R = Clockwise  
L = Counter-clockwise

**Modifications**



## Markets

## Applications

|                   |                                                                                        |
|-------------------|----------------------------------------------------------------------------------------|
| Industrial        | Injection Molding, Die casting Machines, Paper Industry, Presses & Compactor           |
| Construction      | Wheel Loader, Fan Drives                                                               |
| Recycling         | Shredders, Balers, Compactors, Vaccum Truck Systems, Refuse Trucks - ASL, Rear Loaders |
| Material Handling | Lift Trucks                                                                            |

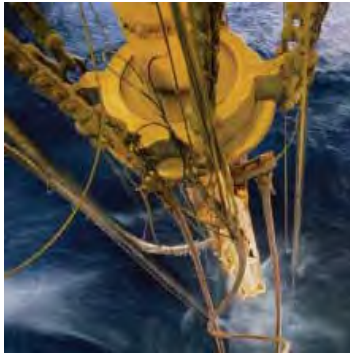


Ref. Catalogue : [HY0738-A/CH](#)



Ref. Catalogue : [HY13-15900-009/US,EU](#)





# LSHT Torqmotors™ and Nichols™ Motors

1/ Fixed Displacement



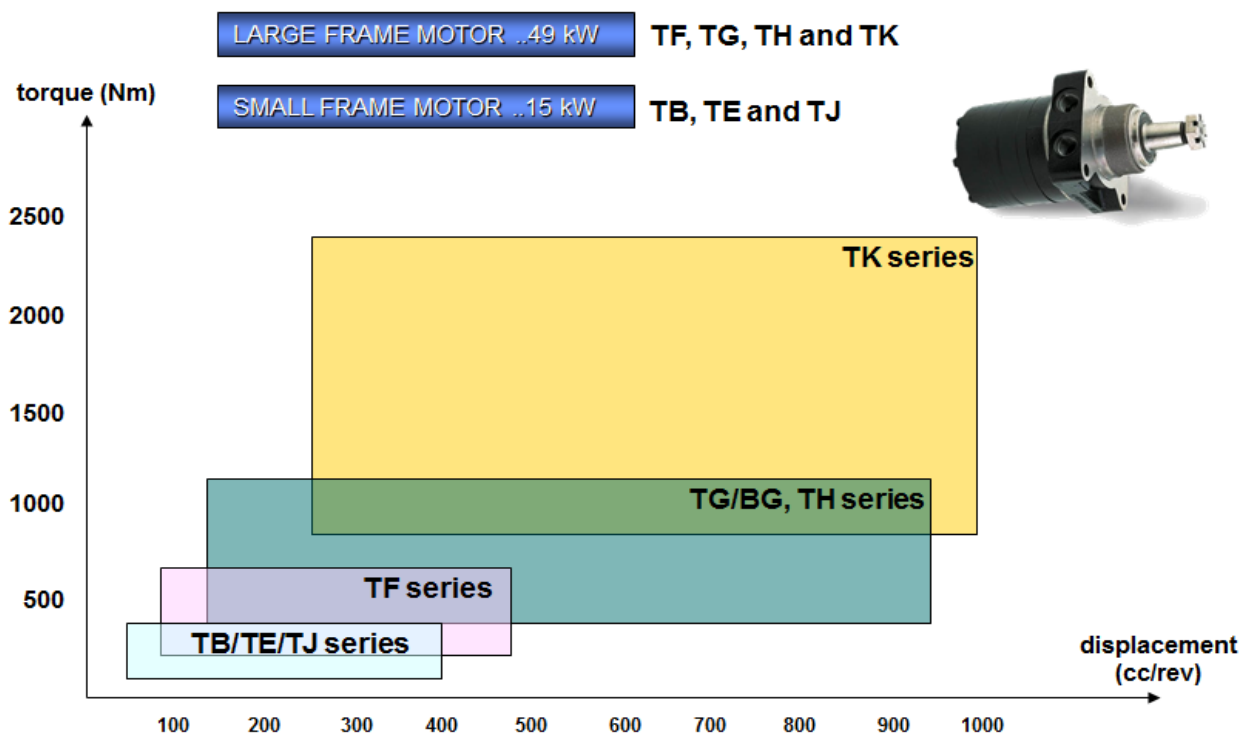
ENGINEERING YOUR SUCCESS.



## Specifications

Parker full line of high and low speed motors provide power ranging up to 15,000 inch-pounds of torque with speed ranging from 1/2 rpm to 13,000 rpm. A complete range of sizes is offered in gear, gerotor, vane and piston style operating configurations. Fixed and variable displacement motors are available. Parker hydraulic motors deliver excellent performance with high efficiency, true wear compensation and longer service life.

## Product Lines



| Motor Range | Displacement | Max Speed    | Max Oil Flow     | Max Differential Pressure | Max supply Pressure | Max Torque    | Max Performance |                      |
|-------------|--------------|--------------|------------------|---------------------------|---------------------|---------------|-----------------|----------------------|
| TB          | cc/rev       | cont rev/min | cont / int l/min | cont / int bar            | bar                 | cont / int Nm | max KW          | Max Side load at key |
| TB 0036     | 36           | 932          | 34 / 34          | 125 / 165                 | 190                 | 48 / 67       | 6.6             | TB 4,900 N           |
| TB 0045     | 41           | 805          | 34 / 34          | 125 / 165                 | 190                 | 64 / 88       | 7.2             |                      |
| TB 0050     | 49           | 678          | 34 / 34          | 125 / 165                 | 190                 | 78 / 107      | 7.5             |                      |
| TB 0065     | 65           | 511          | 34 / 34          | 125 / 165                 | 190                 | 107 / 145     | 7.8             |                      |
| TB 0080     | 82           | 409          | 34 / 34          | 125 / 165                 | 190                 | 135 / 184     | 7.8             |                      |
| TB 0100     | 98           | 454          | 45 / 45          | 125 / 165                 | 190                 | 157 / 217     | 10.2            |                      |
| TB 0130     | 130          | 430          | 45 / 57          | 125 / 165                 | 190                 | 220 / 297     | 13.4            |                      |
| TB 0165     | 163          | 343          | 45 / 57          | 120 / 155                 | 190                 | 273 / 346     | 12.4            |                      |
| TB 0195     | 195          | 287          | 45 / 57          | 125 / 145                 | 190                 | 340 / 400     | 12              |                      |
| TB 0230     | 228          | 246          | 45 / 57          | 103 / 138                 | 190                 | 316 / 427     | 11              |                      |
| TB 0260     | 260          | 216          | 45 / 57          | 100 / 131                 | 190                 | 350 / 465     | 10.5            |                      |
| TB 0295     | 293          | 191          | 45 / 57          | 97 / 125                  | 190                 | 383 / 499     | 10              |                      |
| TB 0330     | 328          | 171          | 45 / 57          | 93 / 114                  | 190                 | 413 / 509     | 9.1             |                      |
| TB 0365     | 370          | 151          | 45 / 57          | 86 / 105                  | 190                 | 440 / 540     | 8.7             |                      |
| TB 0390     | 392          | 143          | 45 / 57          | 83 / 100                  | 190                 | 428 / 525     | 7.8             |                      |

## Specifications

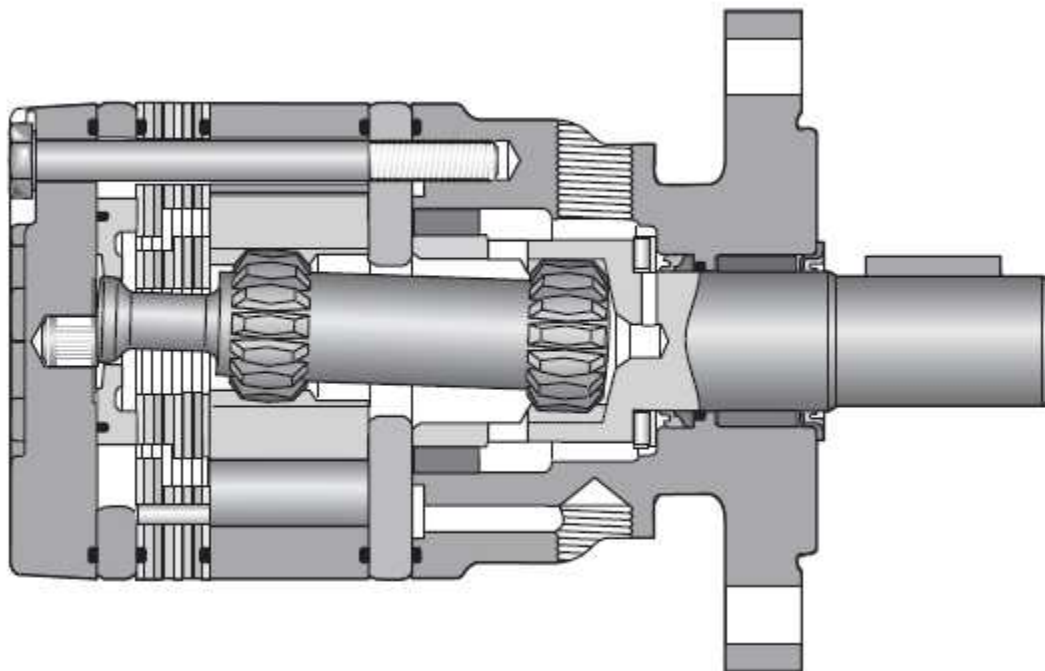
| Motor Range   | Displacement | Max Speed          | Max Oil Flow     | Max Differential Pressure | Max supply Pressure | Max Torque    | Max Performance |                               |
|---------------|--------------|--------------------|------------------|---------------------------|---------------------|---------------|-----------------|-------------------------------|
| TE / TJ       | cc/rev       | cont / int rev/min | cont / int l/min | cont / int bar            | bar                 | cont / int Nm | max KW          | Max Side load at key          |
| TE 0036       | 36           | 930 / 1160         | 35 / 42          | 140 / 190                 | 200                 | 55 / 70       | 8.5             | TE 6,650 N                    |
| TE 0045       | 41           | 810 / 990          | 35 / 42          | 140 / 190                 | 200                 | 70 / 100      | 10              |                               |
| TE 0050       | 50           | 725 / 935          | 35 / 45          | 140 / 175                 | 200                 | 90 / 115      | 11              |                               |
| TE 0065       | 66           | 705 / 940          | 45 / 60          | 140 / 175                 | 200                 | 125 / 160     | 15              |                               |
| TE 0080       | 82           | 560 / 750          | 45 / 60          | 140 / 175                 | 200                 | 160 / 200     | 15              |                               |
| TE 0100       | 98           | 470 / 630          | 45 / 60          | 140 / 175                 | 200                 | 190 / 240     | 15              |                               |
| TE 0130       | 130          | 350 / 470          | 45 / 60          | 140 / 175                 | 200                 | 255 / 320     | 15              |                               |
| TE 0165       | 163          | 280 / 375          | 45 / 60          | 140 / 175                 | 200                 | 310 / 395     | 15              |                               |
| TE 0195       | 196          | 235 / 315          | 45 / 60          | 140 / 175                 | 200                 | 390 / 480     | 15              |                               |
| TE 0230       | 228          | 265 / 330          | 60 / 75          | 120 / 150                 | 200                 | 380 / 480     | 15              |                               |
| TE 0260       | 261          | 230 / 290          | 60 / 75          | 110 / 140                 | 200                 | 400 / 525     | 15              |                               |
| TE 0295       | 293          | 200 / 255          | 60 / 75          | 100 / 130                 | 200                 | 410 / 520     | 13              |                               |
| TE 0330       | 326          | 185 / 235          | 60 / 75          | 100 / 120                 | 200                 | 430 / 530     | 13              |                               |
| TE 0365       | 370          | 150 / 200          | 60 / 75          | 95 / 110                  | 200                 | 467 / 558     | 11              |                               |
| TE 0390       | 392          | 152 / 190          | 60 / 75          | 85 / 100                  | 200                 | 435 / 540     | 10              |                               |
| TF            | cc/rev       | cont / int rev/min | cont / int l/min | cont / int bar            | bar                 | cont / int Nm | max KW          | Max Side load at key          |
| TF 0080       | 81           | 550 / 730          | 45 / 60          | 200 / 280                 | 300                 | 215 / 295     | 19              | TF 16,000 N                   |
| TF 0100       | 100          | 600 / 750          | 60 / 75          | 160 / 240                 | 300                 | 210 / 315     | 21              |                               |
| TF 0130       | 128          | 470 / 580          | 60 / 75          | 140 / 200                 | 300                 | 240 / 350     | 19              |                               |
| TF 0140       | 141          | 370 / 530          | 60 / 75          | 140 / 200                 | 300                 | 250 / 390     | 18              |                               |
| TF 0170       | 169          | 355 / 440          | 60 / 75          | 140 / 200                 | 300                 | 330 / 485     | 19              |                               |
| TF 0195       | 197          | 300 / 380          | 60 / 75          | 140 / 200                 | 300                 | 380 / 560     | 19              |                               |
| TF 0240       | 238          | 320 / 420          | 75 / 100         | 140 / 200                 | 300                 | 460 / 685     | 24              |                               |
| TF 0280       | 280          | 270 / 350          | 75 / 100         | 140 / 200                 | 300                 | 550 / 800     | 24              |                               |
| TF 0360       | 364          | 200 / 260          | 75 / 100         | 130 / 200                 | 300                 | 590 / 910     | 24              |                               |
| TF 0405       | 405          | 170 / 230          | 75 / 100         | 130 / 175                 | 300                 | 650 / 910     | 21              |                               |
| TF 0475       | 477          | 150 / 200          | 75 / 100         | 115 / 140                 | 300                 | 680 / 850     | 17              |                               |
| TG, BG, TH    | cc/rev       | cont / int rev/min | cont / int l/min | cont / int bar            | bar                 | cont / int Nm | max KW          | Max Side load at key          |
| TG/BG,TH 0140 | 140          | 530 / 710          | 75 / 100         | 200 / 280                 | 300                 | 400 / 545     | 33              | TG/BG 16,000 N<br>TH 21,360 N |
| TG/BG,TH 0170 | 169          | 440 / 575          | 75 / 100         | 200 / 280                 | 300                 | 485 / 670     | 33              |                               |
| TG/BG,TH 0195 | 195          | 380 / 510          | 75 / 100         | 200 / 280                 | 300                 | 560 / 770     | 33              |                               |
| TG/BG,TH 0240 | 237          | 320 / 420          | 75 / 100         | 200 / 280                 | 300                 | 685 / 945     | 32              |                               |
| TG/BG,TH 0280 | 280          | 270 / 350          | 75 / 100         | 200 / 280                 | 300                 | 800 / 1100    | 31              |                               |
| TG/BG,TH 0335 | 337          | 225 / 290          | 75 / 100         | 200 / 280                 | 300                 | 980 / 1350    | 30              |                               |
| TG/BG,TH 0405 | 405          | 185 / 245          | 75 / 100         | 170 / 240                 | 300                 | 960 / 1350    | 27              |                               |
| TG/BG,TH 0475 | 476          | 160 / 240          | 75 / 115         | 140 / 200                 | 300                 | 960 / 1400    | 28              |                               |
| TG/BG,TH 0530 | 529          | 140 / 215          | 75 / 115         | 140 / 170                 | 300                 | 1050 / 1280   | 23              |                               |
| TG/BG,TH 0625 | 624          | 120 / 185          | 75 / 115         | 120 / 160                 | 300                 | 1040 / 1360   | 20              |                               |
| TG/BG,TH 0785 | 786          | 95 / 145           | 75 / 115         | 100 / 140                 | 300                 | 1150 / 1490   | 17              |                               |
| TG/BG,TH 0960 | 958          | 78 / 119           | 75 / 115         | 70 / 100                  | 300                 | 925 / 1390    | 12              |                               |
| TK            | cc/rev       | cont / int rev/min | cont / int l/min | cont / int bar            | bar                 | cont / int Nm | max KW          | Max Side load at key          |
| TK 0250       | 251          | 520                | 114 / 133        | 240 / 310                 | 330                 | 815 / 1040    | 49              | TK 26,245 N                   |
| TK 0315       | 315          | 410                | 114 / 133        | 240 / 310                 | 330                 | 1030 / 1315   | 47              |                               |
| TK 0400       | 400          | 370                | 114 / 151        | 205 / 275                 | 290                 | 1150 / 1525   | 49              |                               |
| TK 0500       | 500          | 300                | 114 / 151        | 205 / 275                 | 290                 | 1440 / 1915   | 48              |                               |
| TK 0630       | 629          | 240                | 114 / 151        | 205 / 225                 | 240                 | 1620 / 1715   | 34              |                               |
| TK 0800       | 800          | 275                | 151 / 227        | 190 / 205                 | 240                 | 1915 / 2300   | 44              |                               |
| TK 1000       | 1000         | 220                | 151 / 227        | 175 / 190                 | 220                 | 2410 / 2660   | 35              |                               |

Intermittent operation rating applies to 10% of every minute

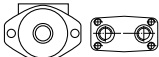
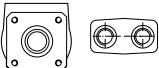
## Technical Information

This light to medium duty motor incorporates all the features of heavy duty motors. Design features include a high pressure shaft seal so external drains are never required, roller vane technology for automatic wear compensation, and full flow internal cooling and flushing. This is a very economical motor for most light to medium duty applications.

|                          |                                                                  |                                    |
|--------------------------|------------------------------------------------------------------|------------------------------------|
| 15 Displacements         | (2.2–24.0 in <sup>3</sup> /rev<br>36...390 cm <sup>3</sup> /rev) |                                    |
| Maximum Pressure         | Cont<br>(to 1800 psi)<br>...125 bar                              | Int<br>(to 2400 psi)<br>...165 bar |
| Maximum Oil Flow         | (to 15 gpm)<br>...57 lpm                                         |                                    |
| Maximum Speed            | (932 rpm)<br>932 rpm                                             |                                    |
| Maximum Torque           | Cont<br>(3897 lb in)<br>440 Nm                                   | Int<br>(4783 lb in)<br>540 Nm      |
| Maximum Side Load at Key | (to 1100 lb)<br>... 4900 N                                       |                                    |



## Ordering Information

|                | TB       | XXXX                                                                                  | XX | XX | 0 | XXXX |  |
|----------------|----------|---------------------------------------------------------------------------------------|----|----|---|------|--|
| Series         |          |                                                                                       |    |    |   |      |  |
| Displacement   |          |                                                                                       |    |    |   |      |  |
| Code           | cc/rev   | cu in <sup>3</sup> /rev                                                               |    |    |   |      |  |
| 0036           | 36       | 2.2                                                                                   |    |    |   |      |  |
| 0045           | 41       | 2.5                                                                                   |    |    |   |      |  |
| 0050           | 49       | 3.0                                                                                   |    |    |   |      |  |
| 0065           | 65       | 4.0                                                                                   |    |    |   |      |  |
| 0080           | 82       | 5.0                                                                                   |    |    |   |      |  |
| 0100           | 98       | 6.0                                                                                   |    |    |   |      |  |
| 0130           | 130      | 8.0                                                                                   |    |    |   |      |  |
| 0165           | 163      | 10.0                                                                                  |    |    |   |      |  |
| 0195           | 195      | 11.9                                                                                  |    |    |   |      |  |
| 0230           | 228      | 13.9                                                                                  |    |    |   |      |  |
| 0260           | 260      | 15.9                                                                                  |    |    |   |      |  |
| 0295           | 293      | 17.9                                                                                  |    |    |   |      |  |
| 0330           | 328      | 20.0                                                                                  |    |    |   |      |  |
| 0365           | 370      | 22.6                                                                                  |    |    |   |      |  |
| 0390           | 392      | 24.0                                                                                  |    |    |   |      |  |
| Options        | Code     | Options                                                                               |    |    |   |      |  |
|                | AAAB     | No Paint                                                                              |    |    |   |      |  |
|                | AAAA     | Black Paint                                                                           |    |    |   |      |  |
| Rotation       | Code     | Rotation                                                                              |    |    |   |      |  |
|                | 0        | Standard                                                                              |    |    |   |      |  |
|                |          |    |    |    |   |      |  |
| Mounting/Ports | Code     | Mounting/Ports                                                                        |    |    |   |      |  |
|                | AM       | SAE "A" 2 Bolt, 5/16-18 UNC Manifold                                                  |    |    |   |      |  |
|                |          |    |    |    |   |      |  |
|                | AS       | SAE "A" 2 Bolt, 7/8-14 SAE                                                            |    |    |   |      |  |
|                |          |    |    |    |   |      |  |
|                | FS       | 4 Bolt 7/8-14 SAE                                                                     |    |    |   |      |  |
|                |          |    |    |    |   |      |  |
| Shaft          | Code     | Shaft                                                                                 |    |    |   |      |  |
|                | 09       | 1" Straight w/0.38 Crosshole                                                          |    |    |   |      |  |
|                |          |    |    |    |   |      |  |
|                | 10<br>21 | 1" Keyed Standard                                                                     |    |    |   |      |  |
|                |          |    |    |    |   |      |  |
|                | 11       | 1" 6B Spline                                                                          |    |    |   |      |  |
|                |          |  |    |    |   |      |  |
|                | 13       | Long 1" Keyed                                                                         |    |    |   |      |  |
|                |          |  |    |    |   |      |  |
|                | 25       | 1" Tapered                                                                            |    |    |   |      |  |
|                |          |  |    |    |   |      |  |
|                | 26       | 25mm Keyed w/8mm Key                                                                  |    |    |   |      |  |
|                |          |  |    |    |   |      |  |

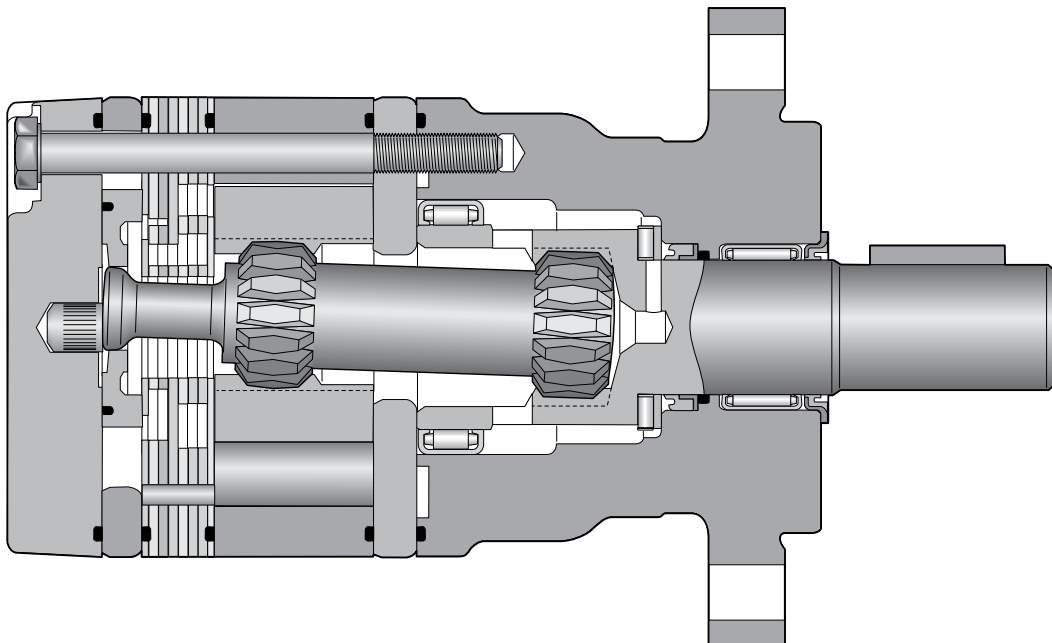
|                           |          |
|---------------------------|----------|
| Seal Kit – Standard       | SK000090 |
| Seal Kit – Viton          | SK000091 |
| High Temp Commutator Seal | 032861   |

## Technical Information

An improved medium duty low speed, high torque motor

This medium duty motor has higher pressure ratings than the TB motor, for applications requiring higher torque. Robust roller bearings withstand higher side loads and are suitable for chain and sprocket shaft connections. It uses high pressure shaft seals, robust roller bearings and high flow shaft seal cooling.

|                          |                                                                  |                                    |
|--------------------------|------------------------------------------------------------------|------------------------------------|
| 15 Displacements         | (2.2–24.0 in <sup>3</sup> /rev)<br>36...390 cm <sup>3</sup> /rev |                                    |
| Maximum Pressure         | Cont<br>(to 2030 psi)<br>...140 bar                              | Int<br>(to 2750 psi)<br>...190 bar |
| Maximum Oil Flow         | (to 20 gpm)<br>...75 lpm                                         |                                    |
| Maximum Speed            | (1000 rpm)<br>1000 rpm                                           |                                    |
| Maximum Torque           | Cont<br>(4139 lb in)<br>467 Nm                                   | Int<br>(5728 lb in)<br>648 Nm      |
| Maximum Side Load at Key | (to 1500 lb)<br>... 6650 N                                       |                                    |



Ordering Information

TE

XXXX

XX

XX

0

XXXX

Series

Displacement

Options

Code

Rotation

Code

Shaft

| Code | cc/rev | cu in³/rev |
|------|--------|------------|
| 0036 | 36     | 2.2        |
| 0045 | 41     | 2.5        |
| 0050 | 49     | 3.0        |
| 0065 | 65     | 4.0        |
| 0080 | 82     | 5.0        |
| 0100 | 98     | 6.0        |
| 0130 | 130    | 8.0        |
| 0165 | 163    | 10.0       |
| 0195 | 195    | 11.9       |
| 0230 | 228    | 13.9       |
| 0260 | 260    | 15.9       |
| 0295 | 293    | 17.9       |
| 0330 | 328    | 20.0       |
| 0365 | 370    | 22.6       |
| 0390 | 392    | 24.0       |

| Code | Options     |
|------|-------------|
| AAAB | No Paint    |
| AAAA | Black Paint |

| Code | Rotation |
|------|----------|
| 0    | Standard |

| Code | Mounting/Ports                       |
|------|--------------------------------------|
| AM   | SAE "A" 2 Bolt, 5/16-18 UNC Manifold |
| AS   | SAE "A" 2 Bolt, 7/8-14 SAE           |
| FS   | 4 Bolt 7/8-14 SAE                    |
| US   | Wheel Mount, 7/8-14 SAE              |

| Code     | Shaft                        |
|----------|------------------------------|
| 09       | 1" Straight w/0.38 Crosshole |
| 10<br>21 | 1" Keyed Standard            |
| 11       | 1" 6B Spline                 |
| 13       | Long 1" Keyed                |
| 25       | 1" Tapered                   |
| 26       | 25mm Keyed w/8mm Key         |

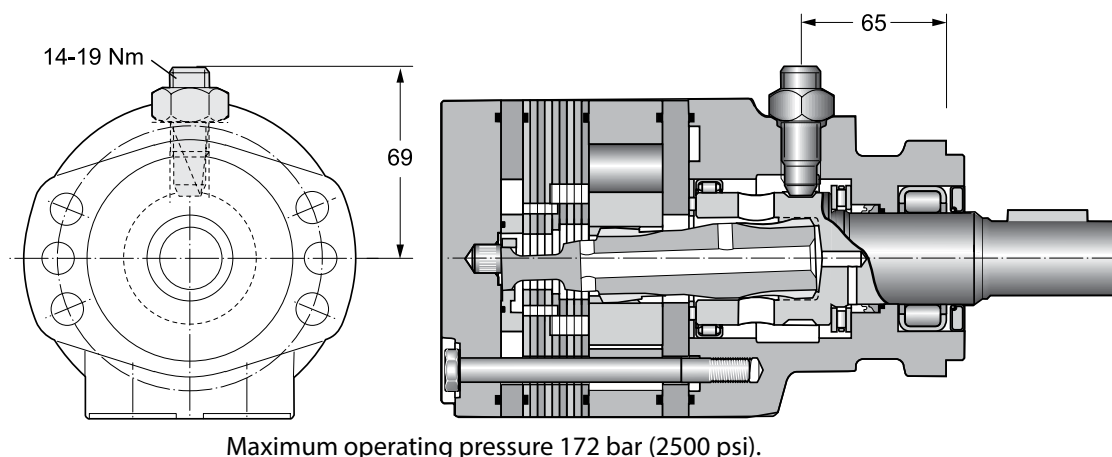
Seal Kit – Standard SK000090  
Seal Kit – Viton SK000091  
High Temp Commutator Seal 032861

# Small Frame Options

## Small Frame Speed Sensor

An economical sensor for speed readout

This rugged, weather resistant design is ideal for industrial and mobile applications. Applications include salt/sand/fertilizer spreader drives, conveyor drives and injection molder compression drives. The sensor is hall-effect type, which when externally powered outputs 30 square wave digital pulses per coupling shaft revolution. The connector is a user friendly universally available 4 pin polarized M12 connector allowing for simplified field service. The integrated design does not effect the side load capacity or performance of the torque motor.



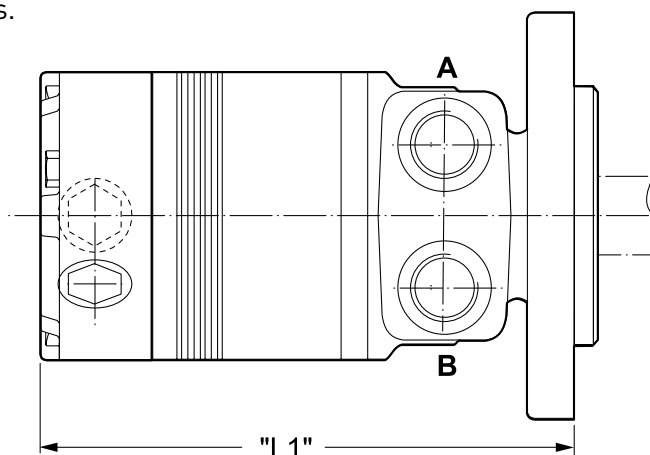
US equivalents for metric specifications are shown in ( ).

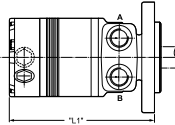
\* Option code FSAA is with a single black coat of paint

## Small Frame Internal Relief Valve

LSHT Torqmotors™ and Nichols™ Motors

This integrated internal relief valve is used for fixed pressure settings.



| Options |  | Operating pressure | Pressure bar (psi) |
|---------|-------------------------------------------------------------------------------------|--------------------|--------------------|
| BBCM    |                                                                                     |                    | 83 (1200)          |
| BBCK    |                                                                                     |                    | 120 (1740)         |
| BBCN    |                                                                                     |                    | 140 (2030)         |

Other options are available, please contact Parker.

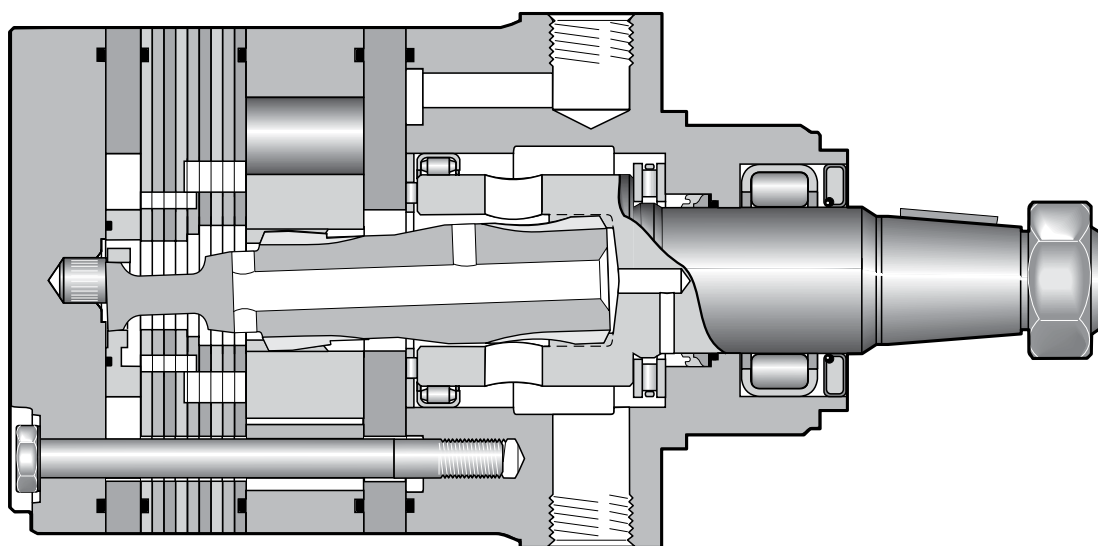


## Technical Information

A tough motor for tough applications

Sturdy construction throughout makes Parker's TF Series motors suitable for the most severe applications. The powertrain uses patented 60:40 spline geometry for strength. All splines are constantly flushed with cool fluid for durability. Roller vanes and sealed commutation assure high volumetric efficiency, smooth low speed operation and extended life.

|                          |                                                                    |                                    |
|--------------------------|--------------------------------------------------------------------|------------------------------------|
| 11 Displacements         | (4.9 - 29.1 in <sup>3</sup> /rev)<br>81...477 cm <sup>3</sup> /rev |                                    |
| Maximum Pressure         | Cont<br>(to 3000 psi)<br>...207 bar                                | Int<br>(to 4000 psi)<br>...276 bar |
| Maximum Oil Flow         | (to 25 gpm)<br>...95 lpm                                           |                                    |
| Maximum Speed            | (749 rpm)<br>749 rpm                                               |                                    |
| Maximum Torque           | Cont<br>(6027 lb in)<br>681 Nm                                     | Int<br>(8106 lb in)<br>916 Nm      |
| Maximum Side Load at Key | (to 3597 lb)<br>... 16000 N                                        |                                    |



Ordering Information

Series

TF

Displacement

| Code | cc/rev | cu in <sup>3</sup> /rev |
|------|--------|-------------------------|
| 0080 | 81     | 4.9                     |
| 0100 | 100    | 6.1                     |
| 0130 | 128    | 7.8                     |
| 0140 | 141    | 8.6                     |
| 0170 | 169    | 10.3                    |
| 0195 | 197    | 11.9                    |
| 0240 | 238    | 14.5                    |
| 0280 | 280    | 17.1                    |
| 0360 | 364    | 22.2                    |
| 0405 | 405    | 24.7                    |
| 0475 | 477    | 29.1                    |

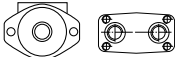
Options

| Code | Options     |
|------|-------------|
| AAAB | No Paint    |
| AAAA | Black Paint |

Rotation

| Code | Rotation                                                                                        |
|------|-------------------------------------------------------------------------------------------------|
| 0    | Standard<br> |

Mounting/Ports

| Code | Mounting/Ports                                                                                                         |
|------|------------------------------------------------------------------------------------------------------------------------|
| AM   | SAE "A" 2 Bolt, 5/16 UNC Manifold<br> |
| AS   | SAE "A" 2 Bolt, 7/8-14 SAE<br>      |
| BS   | SAE "B" 2 Bolt 7/8-14 SAE<br>       |
| MS   | Magneto, 7/8-14 SAE<br>             |
| US   | Wheel Mount, 7/8-14 SAE<br>         |

Shaft

| Code | Shaft                                                                                                          |
|------|----------------------------------------------------------------------------------------------------------------|
| 01*  | 1" 6B Spline<br>            |
| 02*  | 1" Keyed<br>                |
| 03   | 1 1/4" Keyed<br>          |
| 05   | 1 1/4 14 Tooth Spline<br> |
| 06   | 19 Tooth Spline<br>       |
| 07   | 15 Tooth Spline<br>       |
| 08   | 1 1/4 Tooth Spline<br>    |

Seal Kit Standard

SK000092

Seal Kit Viton

SK000093

High Temp Commutator Seal

032861

\*Coupling shaft ø 1 inch

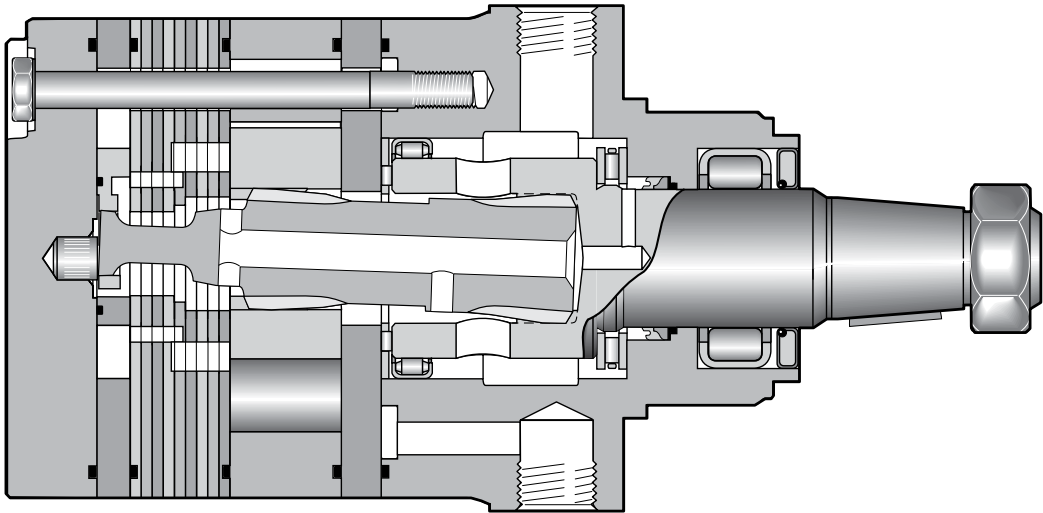
Max. torque cont./int. = 450/550 Nm

Technical Information

Exceptional strength and durability in a high performance motor  
The heart of Parker's TG Series powertrain, the Torqlink, is an extra heavy duty part includes patented 60:40 spline geometry. Rugged construction throughout allows the transmission of over 13,000 lb-in of torque. The entire powertrain is continually washed in cool, high flow fluid to assure long life.

Roller vanes and sealed commutator maintain high efficiency and provide smooth low speed performance.

|                          |                                                                     |                                    |
|--------------------------|---------------------------------------------------------------------|------------------------------------|
| 13 Displacements         | (8.6 - 58.5 in <sup>3</sup> /rev)<br>141...959 cm <sup>3</sup> /rev |                                    |
| Maximum Pressure         | Cont<br>(to 3000 psi)<br>...207 bar                                 | Int<br>(to 4000 psi)<br>...276 bar |
| Maximum Oil Flow         | (to 30 gpm)<br>...114 lpm                                           |                                    |
| Maximum Speed            | (660 rpm)<br>660 rpm                                                |                                    |
| Maximum Torque           | Cont<br>(9239 lb in)<br>1044 Nm                                     | Int<br>(12636 lb in)<br>1428 Nm    |
| Maximum Side Load at Key | (to 3597 lb)<br>... 16000 N                                         |                                    |



## Ordering Information

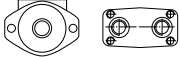
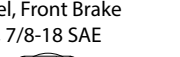
|  |    |      |    |    |   |      |  |
|--|----|------|----|----|---|------|--|
|  | TG | XXXX | XX | XX | 0 | XXXX |  |
|--|----|------|----|----|---|------|--|

**Series**

**Displacement**

| Code | cc/rev | cu in <sup>3</sup> /rev |
|------|--------|-------------------------|
| 0140 | 141    | 8.6                     |
| 0170 | 169    | 10.3                    |
| 0195 | 195    | 11.9                    |
| 0240 | 238    | 14.5                    |
| 0280 | 280    | 17.1                    |
| 0310 | 310    | 18.9                    |
| 0335 | 337    | 20.6                    |
| 0405 | 405    | 24.7                    |
| 0475 | 477    | 29.1                    |
| 0530 | 528    | 32.3                    |
| 0625 | 623    | 38.0                    |
| 0785 | 786    | 48.0                    |
| 0960 | 959    | 58.5                    |

**Mounting/Ports**

| Code | Mounting/Ports                                                                                                             |
|------|----------------------------------------------------------------------------------------------------------------------------|
| AM   | SAE "A" 2 Bolt, 5/16-18 UNC Manifold<br> |
| AS   | SAE "A" 2 Bolt, 7/8-14 SAE<br>          |
| MS   | 4 Bolt 7/8-14 SAE<br>                   |
| US   | Wheel, Front Brake Nose, 7/8-18 SAE<br> |

Seal Kit Standard SK000092  
 Seal Kit Viton SK000093  
 High Temp Commutator Seal 032861

**Options**

| Code | Options     |
|------|-------------|
| AAAB | No Paint    |
| AAAA | Black Paint |

**Rotation**

| Code | Rotation                                                                                        |
|------|-------------------------------------------------------------------------------------------------|
| 0    | Standard<br> |

**Shaft**

| Code | Shaft                                                                                                    |
|------|----------------------------------------------------------------------------------------------------------|
| 01*  | 1" 6B Spline<br>      |
| 03   | 1 1/4" Keyed<br>      |
| 05   | 1 1/4" 14 Tooth<br>   |
| 06   | 19 Tooth Spline<br> |
| 08   | 1 1/4" Taper<br>    |
| 19   | 1 3/8" Taper<br>    |

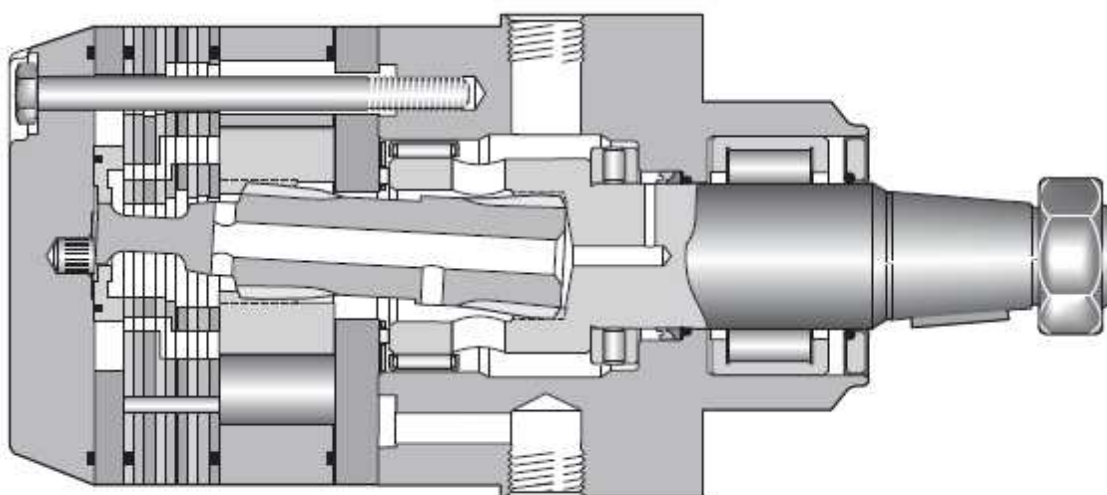
\*Coupling shaft ø 1 inch    Max. torque cont./int. = 450/550 Nm

## Technical Information

### A Rugged Motor for Heavy Duty, High Side Load Applications

This motor was designed for tough applications. A stout drive link with unique 60:40 spline geometry will transmit over 13,000 lb-in of torque. The 1-1/2" output shaft can support 7000 pounds of radial load. Efficiency is assured by the use of roller vanes and seal commutator. Durability is maintained by continually washing the power splines and shaft seal in cooling fluid.

|                          |                                                                     |                                    |
|--------------------------|---------------------------------------------------------------------|------------------------------------|
| 13 Displacements         | (8.6 - 58.5 in <sup>3</sup> /rev)<br>141...959 cm <sup>3</sup> /rev |                                    |
| Maximum Pressure         | Cont<br>(to 3000 psi)<br>...207 bar                                 | Int<br>(to 4000 psi)<br>...276 bar |
| Maximum Oil Flow         | (to 30 gpm)<br>...114 lpm                                           |                                    |
| Maximum Speed            | (660 rpm)<br>660 rpm                                                |                                    |
| Maximum Torque           | Cont<br>(8772 lb in)<br>991 Nm                                      | Int<br>(11876 lb in)<br>1342 Nm    |
| Maximum Side Load at Key | (to 4800 lb)<br>... 21360 N                                         |                                    |



Ordering Information

Series

TH

Displacement

| Code | cc/rev | cu in <sup>3</sup> /rev |
|------|--------|-------------------------|
| 0140 | 141    | 8.6                     |
| 0170 | 169    | 10.3                    |
| 0195 | 195    | 11.9                    |
| 0240 | 238    | 14.5                    |
| 0280 | 280    | 17.1                    |
| 0310 | 310    | 18.9                    |
| 0335 | 337    | 20.6                    |
| 0405 | 405    | 24.7                    |
| 0475 | 477    | 29.1                    |
| 0530 | 528    | 32.3                    |
| 0625 | 623    | 38.0                    |
| 0785 | 786    | 48.0                    |
| 0960 | 959    | 58.5                    |

Options

| Code | Options     |
|------|-------------|
| AAAB | No Paint    |
| AAAA | Black Paint |

Rotation

| Code | Rotation     |
|------|--------------|
| 0    | Standard<br> |

Mounting/Ports

| Code | Mounting/Ports                          |
|------|-----------------------------------------|
| PS   | SAE "B" 4 Bolt, 7/8-14 SAE<br>          |
| MS   | 4 Bolt 7/8-14 SAE<br>                   |
| US   | Wheel, Front Brake Nose, 7/8-18 SAE<br> |

Shaft

| Code | Shaft                 |
|------|-----------------------|
| 31   | 1 1/2" J501 Taper<br> |
| 32   | 1 1/2" Keyed<br>      |
| 36   | 1 1/2" 17 Tooth<br>   |

TH

XXXX

XX

XX

0

XXXX

Seal Kit StandardSK000092

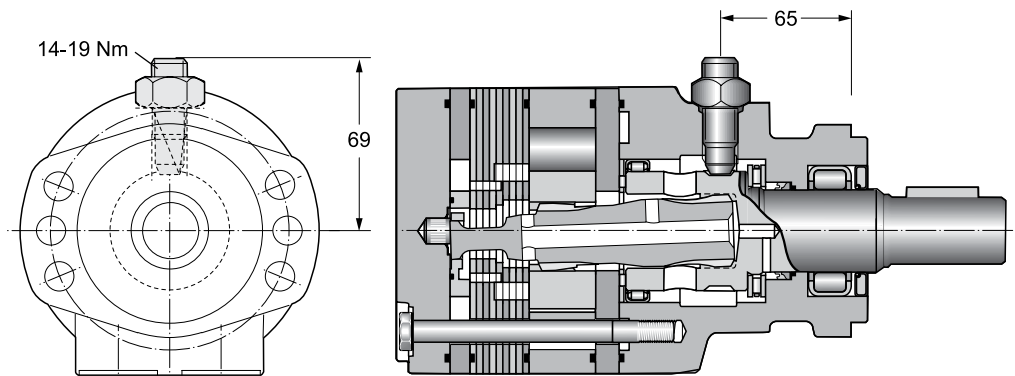
Seal Kit VitonSK000093

High Temp Commutator Seal032861

## Speed Sensor

An Economical sensor for speed readout

This rugged, weather resistant design is ideal for industrial and mobile applications. Applications include salt/ sand/ fertiliser spreader drives, conveyor and injection molder compression drives. The sensor is a hall effect type which when externally powered outputs 30 square wave digital pulses per coupling shaft revolution. The connector is a user friendly universally available 4 pin polarised M12 connector allowing for simplified field service. The integrated design does not effect the side load capacity or performance of the torque motor.



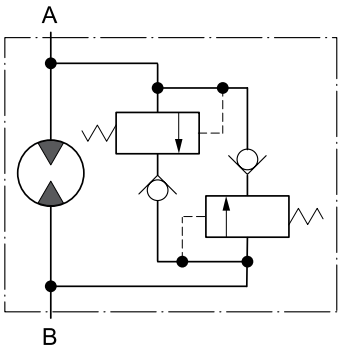
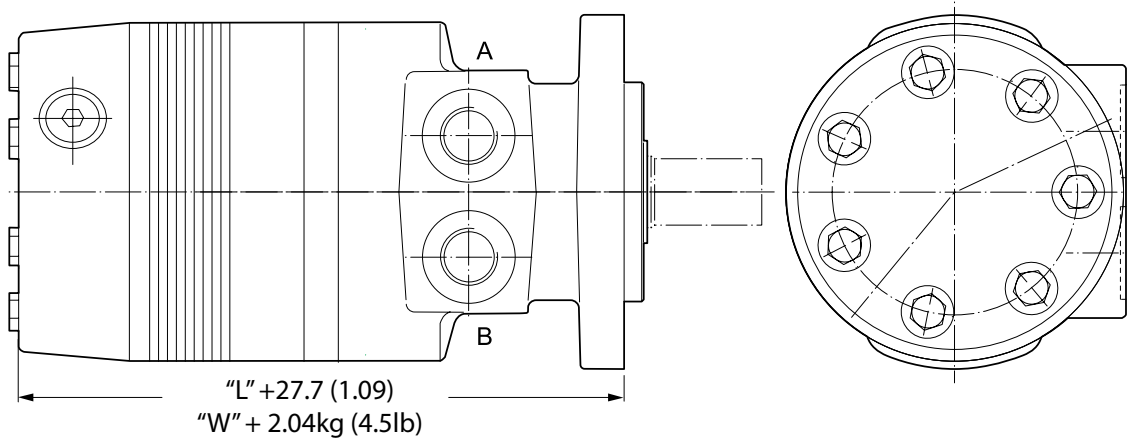
Maximum operating pressure 172 bar (2500 psi).

# Large Frame Options

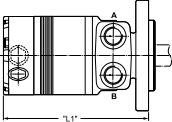
## Internal relief valve

Code: BBBA\*, BBBB\*, BBBC\*, BBBD\* or BBBG\*

This integrated internal relief valve is used for fixed pressure settings.



### Ordering system

| Options |  <div>Opening pressure</div> | Pressure bar (psi) |
|---------|-----------------------------------------------------------------------------------------------------------------|--------------------|
| *       |                                                                                                                 | 69 (1000)          |
| *       |                                                                                                                 | 138 (2000)         |
| *       |                                                                                                                 | 207 (3000)         |
| *       |                                                                                                                 | 276 (4000)         |
| *       |                                                                                                                 | 103 (1500)         |

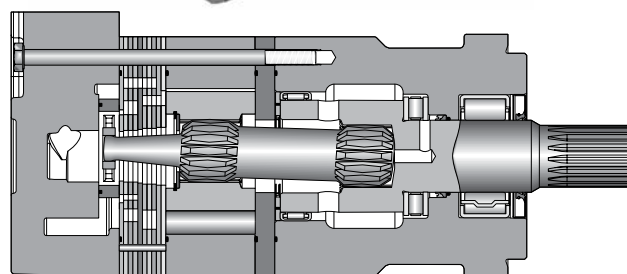


## Technical Information

Exceptional strength and durability in a high performance motor

The heart of Parker's TK Series powertrain, the torque link, is an extra heavy duty part that includes patented 60:40 spline geometry. Rugged construction throughout allows the transmission of over 23,000 lb-in of torque. The entire powertrain is continually washed in cool, high flow fluid to assure long life. Roller vanes and sealed commutator maintain high efficiency and provide smooth low speed performance.

|                          |                                                                        |                                    |
|--------------------------|------------------------------------------------------------------------|------------------------------------|
| 7 Displacements          | (15.3 to 61.1 in <sup>3</sup> /rev)<br>250...1000 cm <sup>3</sup> /rev |                                    |
| Maximum Pressure         | Cont<br>(to 3000 psi)<br>...241 bar                                    | Int<br>(to 4000 psi)<br>...310 bar |
| Maximum Oil Flow         | (to 60 gpm)<br>...227 lpm                                              |                                    |
| Maximum Speed            | (523 rpm)<br>523 rpm                                                   |                                    |
| Maximum Torque           | Cont<br>(21360 lb in)<br>2413 Nm                                       | Int<br>(23540 lb in)<br>2660 Nm    |
| Maximum Side Load at Key | (to 5900 lb)<br>... 26245 N                                            |                                    |



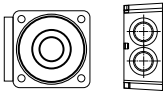
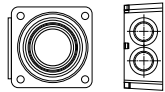
|  |    |      |    |    |   |      |  |
|--|----|------|----|----|---|------|--|
|  | TK | XXXX | X5 | XX | 0 | XXXX |  |
|--|----|------|----|----|---|------|--|

Series

| Displacement |        |                         |
|--------------|--------|-------------------------|
| Code         | cc/rev | cu in <sup>3</sup> /rev |
| 0250         | 250    | 15.3                    |
| 0315         | 315    | 19.2                    |
| 0400         | 400    | 24.4                    |
| 0500         | 500    | 30.5                    |
| 0630         | 630    | 38.4                    |
| 0800         | 800    | 48.8                    |
| 1000         | 1000   | 61.0                    |

| Options |             |
|---------|-------------|
| Code    | Options     |
| AAAB    | No Paint    |
| AAAA    | Black Paint |

| Code | Rear Port Rotation                                                                                |
|------|---------------------------------------------------------------------------------------------------|
| 0    | Standard<br> |

| Code | Mounting/Ports                                                                                                                        |
|------|---------------------------------------------------------------------------------------------------------------------------------------|
| K5   | Standard SAE CC,<br>1 5/16-12 SAE Rear Radical<br> |
| T5   | Wheel Mount,<br>1 5/16-12 SAE Rear Radical<br>     |

| Code | Shaft                                                                                                                    |
|------|--------------------------------------------------------------------------------------------------------------------------|
| 32   | 1 1/2" Keyed<br>                    |
| 36   | 1 1/2" 17 Tooth<br>12/24 Spline<br> |
| 63   | 1 3/4" Tapered<br>                  |
| 64   | 40mm Keyed<br>                      |

Seal Kit SK000167

# Competitive Crossover

Low Speed High Torque Motors

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# Application Market

## Market

## Applications

|                   |                                                                                                     |
|-------------------|-----------------------------------------------------------------------------------------------------|
| Agricultural      | Harvester, Bale Wrappers, Grass cutter, Mower, Conveyors,                                           |
| Marine & Offshore | Slewing, Winches, Cranes, Hoists                                                                    |
| Construction      | Rotating Pulverizer, Loaders, Concrete Trailers, Mini-Skid Steers, Tailgate Spreader, Dump/Spreader |
| Material Handling | Aerial Lift (Utility Trucks), Sorting graps, Wood Shredder, Walking-Floor Trailer                   |
| Mining & Drilling | Drill rig, Screener                                                                                 |





Ref. Catalogue : [HY13-15900-009/US,EU](#)

aerospace  
climate control  
electromechanical  
filtration  
fluid & gas handling  
**hydraulics**  
pneumatics  
process control  
sealing & shielding

**LSHT Torqmotors™  
and Nichols™ Motors**  
Catalog No. HY13-1590-009/US,EU

**Parker** ENGINEERING YOUR SUCCESS.



# Axial Piston Pumps and Motors

1/ Fixed Displacement



ENGINEERING YOUR SUCCESS.

# Axial Piston F11 Series

- Pressures up to 420 bar
- High overall efficiency (low losses)
- Accept high external shaft loads
- Good resistance to vibrations and temperature shocks
- Proven reliability
- Easy to service
- CETOP, ISO and SAE versions available



| Frame size* F11           | -05    | -6     | -10    | -12   | -14   | -19  |
|---------------------------|--------|--------|--------|-------|-------|------|
| Displacement (cc/rev)     | 4.9    | 6.0    | 9.8    | 12.5  | 14.3  | 19   |
| Max cont pressure (bar)   | 350    | 350    | 350    | 350   | 350   | 350  |
| Max operating speed (rpm) | 12,800 | 11,200 | 10,200 | 9,400 | 9,000 | 8100 |
| Weight (kg)               | 5      | 7.5    | 7.5    | 8.3   | 8.3   | 11   |

\* Use F12 for medium range displacement

## CETOP MOUNT

| Frame Size | Displacement | Order Code | Mount Dimension | Shaft Type | Description               |
|------------|--------------|------------|-----------------|------------|---------------------------|
| F11-005    | 4.9 cc/rev   | 3707249    | 80mm            | 18mm keyed | F11-005-MB-CV-K-000-000-0 |
| F11-006    | 6.0cc/rev    | 3703667    | 80mm            | 18mm keyed | F11-005-RB-CN-K-000-000-0 |
| F11-010    | 9.8 cc/rev   | 3706030    | 100mm           | 20mm keyed | F11-010-MB-CV-K-000-000-0 |
| F11-012    | 12.5 cc/rev  | 3787141    | 100mm           | 20mm keyed | F11-012-HB-CV-K-000-000-P |
| F11-014    | 14.3 cc/rev  | 3786585    | 100mm           | 25mm keyed | F11-014-HB-CV-K-000-000-P |
| F11-019    | 19.0 cc/rev  | 3703516    | 112mm           | 25mm keyed | F11-019-MB-CN-K-000-000-0 |

## ISO MOUNT

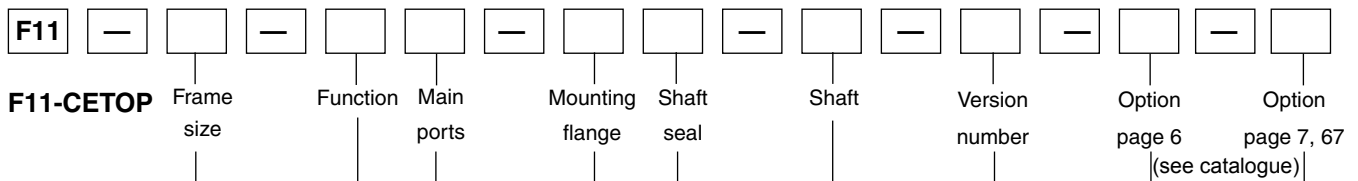
| Frame Size | Displacement | Order Code | Mount Dimension | Shaft Type      | Description               |
|------------|--------------|------------|-----------------|-----------------|---------------------------|
| F11-010    | 9.8 cc/rev   | 3785712    | 80mm            | 20mm key        | F11-010-MB-IV-K-000-000-0 |
| F11-010    | 9.8 cc/rev   | 3785239    | 80mm            | Spline Din 5480 | F11-010-MB-IV-D-000-000-0 |
| F11-012    | 12.5 cc/rev  | 3787067    | 80mm            | 20mm key        | F11-012-HB-IV-K-000-000-P |
| F11-014    | 14.3 cc/rev  | 3787340    | 80mm            | Spline Din 5480 | F11-014-HB-IV-D-000-000-P |

## SAE MOUNT

| Frame Size | Displacement | Order Code | Mount Dimension | Shaft Type     | Description               |
|------------|--------------|------------|-----------------|----------------|---------------------------|
| F11-006    | 6 cc/rev     | 3784783    | SAE B, 2 Bolt   | 20mm Key       | F11-006-MU-SV-K-000-000-0 |
| F11-010    | 9.8 cc/rev   | 3788026    | SAE B, 2 Bolt   | 20mm Key       | F11-010-MU-SV-K-000-000-0 |
| F11-012    | 12.5 cc/rev  | 3786605    | SAE B, 2 Bolt   | SAE B , Spline | F11-012-HU-SV-S-000-000-P |
| F11-014    | 14.3 cc/rev  | 3787420    | SAE B, 2 Bolt   | SAE B , Spline | F11-014-HU-SV-S-000-000-P |
| F11-019    | 19.0 cc/rev  | 3708433    | SAE B, 2 Bolt   | SAE B, Spline  | F11-019-RU-SV-S-000-000-0 |
| F11-019    | 19.0 cc/rev  | 3707031    | SAE B, 2 Bolt   | SAE B , Spline | F11-019-MU-SV-S-000-000-0 |

# Axial Piston F11 Series

## Ordering codes



| Frame size |                      |
|------------|----------------------|
| Code       | Displacem. (cm³/rev) |
| 005        | 4.9                  |
| 006        | 6.0                  |
| 010        | 9.8                  |
| 012        | 12.5                 |
| 014        | 14.3                 |
| 019        | 19.0                 |

| Frame size |                       | 5   | 6 | 10  | 12  | 14  | 19  |
|------------|-----------------------|-----|---|-----|-----|-----|-----|
| Code       | Function              |     |   |     |     |     |     |
| M          | Motor                 | x   | x | x   | -   | -   | x   |
| Q          | Motor, low noise      | x   | - | x   | x   | x   | x   |
| S          | Motor, high speed     | -   | - | (x) | (x) | (x) | (x) |
| H          | Motor, high pressure  | (x) | - | (x) | -   | -   | (x) |
| R          | Pump, clockwise rot'n | (x) | - | (x) | (x) | (x) | (x) |
| L          | Pump, counter clockw. | (x) | - | (x) | (x) | (x) | (x) |

For other versions, contact Parker Hannifin

| Frame size |                 | 5   | 6   | 10  | 12  | 14  | 19  |
|------------|-----------------|-----|-----|-----|-----|-----|-----|
| Code       | Main ports      |     |     |     |     |     |     |
| B          | BSP threads     | x   | x   | x   | x   | x   | x   |
| U          | SAE, UN threads | (x) | (x) | (x) | (x) | (x) | (x) |

| Frame size |                  | 5 | 6   | 10  | 12  | 14  | 19  |
|------------|------------------|---|-----|-----|-----|-----|-----|
| Code       | Mounting flange  |   |     |     |     |     |     |
| C          | CETOP flange     | x | x   | x   | x   | x   | x   |
| W          | Saw motor flange | - | (x) | (x) | (x) | (x) | (x) |

| Version number                  |  |
|---------------------------------|--|
| (assigned for special versions) |  |

| Frame size |                                                          | 5 | 6 | 10  | 12  | 14  | 19  |
|------------|----------------------------------------------------------|---|---|-----|-----|-----|-----|
| Code       | Option                                                   |   |   |     |     |     |     |
| 0000       | Standard                                                 | x | x | x   | x   | x   | x   |
| MUVR       | Make up/Anti cavitation valve clockwise rotation         | - | - | (x) | (x) | (x) | (x) |
| MUVL       | Make up/Anti cavitation valve counter clockwise rotation | - | - | (x) | (x) | (x) | (x) |

| Frame size |                  | 5   | 6   | 10  | 12  | 14  | 19  |
|------------|------------------|-----|-----|-----|-----|-----|-----|
| Code       | Shaft*           |     |     |     |     |     |     |
| K          | Metric key       | x   | x   | x   | x   | x   | x   |
| J          | Metric key       | (x) | (x) | (x) | (x) | -   | -   |
| P          | Metric key       | -   | -   | -   | -   | (x) | -   |
| A          | Spline, DIN 5480 | -   | (x) | (x) | (x) | -   | -   |
| D          | Spline, DIN 5480 | x   | x   | x   | x   | x   | x   |
| S          | Spline, SAE      | (x) | -   | -   | -   | -   | -   |
| V          | Tapered shaft    | -   | (x) | (x) | (x) | (x) | (x) |

\*See also dimensional drawings (see catalogue)

| Frame size |                                      | 5   | 6   | 10  | 12  | 14  | 19  |
|------------|--------------------------------------|-----|-----|-----|-----|-----|-----|
| Code       | Shaft seal                           |     |     |     |     |     |     |
| N          | NBR, low pressure                    | (x) | (x) | (x) | -   | -   | (x) |
| V          | FPM, high pressure, high temperature | x   | x   | x   | x   | x   | x   |
| S          | PTFE, high speed                     | -   | (x) | (x) | (x) | (x) | (x) |

x: Available

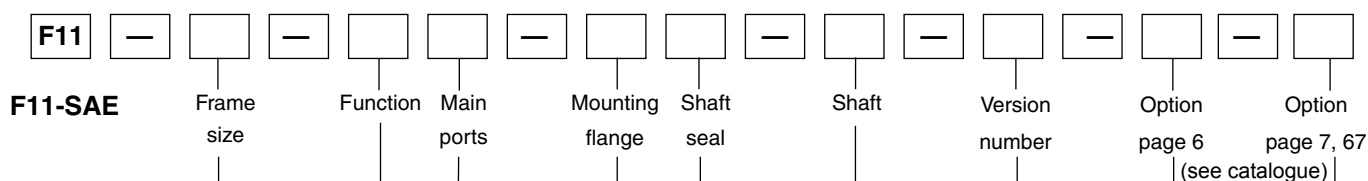
(x): Optional

- : Not available

| Frame size |                                           | 5   | 6   | 10  | 12  | 14  | 19  |
|------------|-------------------------------------------|-----|-----|-----|-----|-----|-----|
| Code       | Option                                    |     |     |     |     |     |     |
| 00         | Standard                                  | x   | x   | x   | x   | x   | x   |
| P_         | Prepared for speed sensor                 | -   | (x) | (x) | (x) | (x) | (x) |
| B_         | Power Boost and Prepared for speed sensor | -   | (x) | (x) | (x) | (x) | (x) |
| _T         | Painted Black                             | (x) | (x) | (x) | (x) | (x) | (x) |

# Axial Piston F11 Series

## Ordering codes



| Frame size |                                   |
|------------|-----------------------------------|
| Code       | Displacem. (cm <sup>3</sup> /rev) |
| 006        | 6.0                               |
| 010        | 9.8                               |
| 012        | 12.5                              |
| 014        | 14.3                              |
| 019        | 19.0                              |

| Version number                  |  |
|---------------------------------|--|
| (assigned for special versions) |  |

| Frame size |                                                          | 6 | 10  | 12  | 14  | 19  |
|------------|----------------------------------------------------------|---|-----|-----|-----|-----|
| Code       | Option                                                   |   |     |     |     |     |
| 0000       | Standard                                                 | x | x   | x   | x   | x   |
| MUVR       | Make up/Anti cavitation valve clockwise rotation         | - | (x) | (x) | (x) | (x) |
| MUVL       | Make up/Anti cavitation valve counter clockwise rotation | - | (x) | (x) | (x) | (x) |

| Frame size |                       | 6 | 10  | 12  | 14  | 19  |
|------------|-----------------------|---|-----|-----|-----|-----|
| Code       | Function              |   |     |     |     |     |
| M          | Motor                 | x | x   | -   | -   | x   |
| Q          | Motor, low noise      | - | x   | x   | x   | x   |
| S          | Motor, high speed     | - | (x) | (x) | (x) | (x) |
| H          | Motor, high pressure  | - | (x) | -   | -   | (x) |
| R          | Pump, clockwise rot'n | - | (x) | (x) | (x) | (x) |
| L          | Pump, counter clockw. | - | (x) | (x) | (x) | (x) |

For other versions, contact Parker Hannifin

| Frame size |                 | 6   | 10  | 12  | 14  | 19  |
|------------|-----------------|-----|-----|-----|-----|-----|
| Code       | Main ports      |     |     |     |     |     |
| U          | SAE, UN threads | x   | x   | x   | x   | x   |
| B          | BSP threads     | (x) | (x) | (x) | (x) | (x) |

| Frame size |               | 6   | 10  | 12  | 14  | 19  |
|------------|---------------|-----|-----|-----|-----|-----|
| Code       | Shaft*        |     |     |     |     |     |
| T          | SAE key       | -   | -   | -   | x   | x   |
| S          | SAE spline    | x   | x   | x   | x   | x   |
| K          | Metric key    | x   | x   | x   | x   | x   |
| J          | Metric key    | (x) | (x) | (x) | -   | -   |
| P          | Metric key    | -   | -   | -   | (x) | -   |
| V          | Tapered shaft | (x) | (x) | (x) | (x) | (x) |

\*See also dimensional drawings (see catalogue)

| Frame size |                 | 6 | 10 | 12 | 14 | 19 |
|------------|-----------------|---|----|----|----|----|
| Code       | Mounting flange |   |    |    |    |    |
| S          | SAE flange      | x | x  | x  | x  | x  |

| Frame size |                                      | 6   | 10  | 12  | 14  | 19  |
|------------|--------------------------------------|-----|-----|-----|-----|-----|
| Code       | Shaft seal                           |     |     |     |     |     |
| N          | NBR, low pressure                    | (x) | (x) | -   | -   | (x) |
| V          | FPM, high pressure, high temperature | x   | x   | x   | x   | x   |
| S          | PTFE, high speed                     | (x) | (x) | (x) | (x) | (x) |

x: Available

(x): Optional

- : Not available

| Frame size |                                           | 6   | 10  | 12  | 14  | 19  |
|------------|-------------------------------------------|-----|-----|-----|-----|-----|
| Code       | Option                                    |     |     |     |     |     |
| 00         | Standard                                  | x   | x   | x   | x   | x   |
| P_         | Prepared for speed sensor                 | (x) | (x) | (x) | (x) | (x) |
| B_         | Power Boost and Prepared for speed sensor | (x) | (x) | (x) | (x) | (x) |
| _T         | Painted Black                             | (x) | (x) | (x) | (x) | (x) |



# Axial Piston F12 Series

- Pressures up to 480 bar
- High power capability
- High overall efficiency
- Small envelope size
- ISO, SAE and cartridge versions available
- Proven reliability
- Easy to service



## Material Specifications

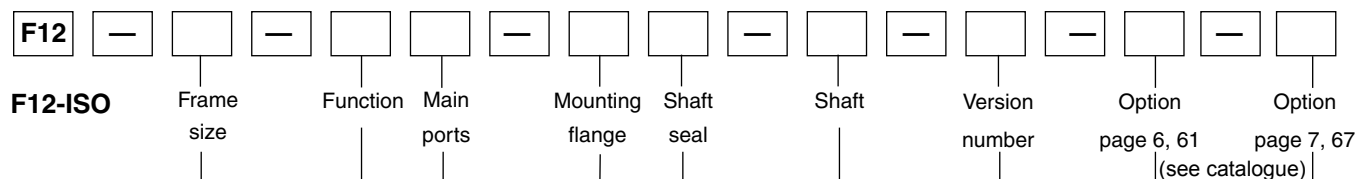
| Frame size F12                      | 30   | 40   | 60   | 80   | 90   | 110   | 125   | 150   | 250   |
|-------------------------------------|------|------|------|------|------|-------|-------|-------|-------|
| Displacement (cm <sup>3</sup> /rev) | 30.0 | 40.0 | 59.8 | 80.4 | 93.0 | 110.1 | 125.0 | 150.0 | 242.0 |
| Max cont pressure (bar)             | 420  | 420  | 420  | 420  | 350  | 420   | 420   | 350   | 350   |
| Max operating speed (rpm)           | 6700 | 6100 | 5300 | 4800 | 4600 | 4400  | 4200  | 3200  | 2700  |
| Weight (kg)                         | 12   | 16.5 | 21   | 26   | 26   | 36    | 36    | 70    | 77    |

## ISO MOUNT

| Frame Size | Displacement | Order Code | Mount Dimension | Shaft Type      | Description                   |
|------------|--------------|------------|-----------------|-----------------|-------------------------------|
| F12-030    | 30.0 cc/rev  | 3799844    | 100mm           | 30mm key        | F12-030-MF-IV-K-000-0000-00   |
| F12-030    | 30.0 cc/rev  | 3799843    | 100mm           | Spline Din 5480 | F12-030-MF-IV-D-000-0000-00   |
| F12-040    | 40.0 cc/rev  | 3799526    | 125mm           | 30mm key        | F12-040-MF-IV-K-000-0000-00   |
| F12-040    | 40.0 cc/rev  | 3799525    | 125mm           | Spline Din 5480 | F12-040-MF-IV-D-000-0000-00   |
| F12-060    | 59.8 cc/rev  | 3799989    | 125mm           | 35mm key        | F12-060-MF-IV-K-000-0000-00   |
| F12-060    | 59.8 cc/rev  | 3799988    | 125mm           | Spline Din 5480 | F12-060-MF-IV-D-000-0000-00   |
| F12-080    | 80.4 cc/rev  | 3780772    | 140mm           | 40mm key        | F12-080-MF-IV-K-000-0000-00   |
| F12-080    | 80.4 cc/rev  | 3780767    | 140mm           | Spline Din 5480 | F12-080-MF-IV-D-000-0000-00   |
| F12-090    | 93.0 cc/rev  | 3785609    | 140mm           | 40mm key        | F12-090-MF-IV-K-000-0000-00   |
| F12-090    | 93.0 cc/rev  | 3786986    | 140mm           | Spline Din 5480 | F12-090-MF-IV-D-000-0000-00   |
| F12-110    | 110.1 cc/rev | 3781534    | 160mm           | 45mm key        | F12-110-MF-IV-K-000-0000-00   |
| F12-110    | 110.1 cc/rev | 3781530    | 160mm           | Spline Din 5480 | F12-110-MF-IV-D-000-0000-00   |
| F12-125    | 125.0 cc/rev | 3785717    | 160mm           | 45mm key        | F12-125-MF-IV-K-000-0000-00   |
| F12-125    | 125.0 cc/rev | 3786589    | 160mm           | Spline Din 5480 | F12-125-MF-IV-D-000-0000-00   |
| F12-152    | 149.8 cc/rev | 3720451    | 200mm           | Spline Din 5480 | F12-152-SF- IV- K-000-0000-00 |

# Axial Piston F12 Series

## Ordering codes



| Frame size |                      |
|------------|----------------------|
| Code       | Displacem. (cm³/rev) |
| 030        | 30.0                 |
| 040        | 40.0                 |
| 060        | 59.8                 |
| 080        | 80.4                 |
| 090        | 93.0                 |
| 110        | 110.1                |
| 125        | 125.0                |
| 152        | 149.8                |
| 162        | 163.1                |
| 182        | 179.8                |

| Frame size | 30                            | 40  | 60  | 80  | 90  | 110 | 125 | 152 | 162 | 182 |
|------------|-------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Code       | Function                      |     |     |     |     |     |     |     |     |     |
| M          | Motor                         | x   | x   | x   | x   | x   | x   | x   | x   | x   |
| S          | Motor, high speed             | (x) | (x) | (x) | -   | -   | -   | (x) | (x) | (x) |
| R          | Pump, clockwise rotation      | (x) | (x) | (x) | (x) | (x) | (x) | -   | -   | -   |
| L          | Pump, counter clockwise rot'n | (x) | (x) | (x) | (x) | (x) | (x) | -   | -   | -   |

For other versions, contact Parker Hannifin

| Frame size | 30                      | 40 | 60 | 80 | 90 | 110 | 125 | 152 | 162 | 182 |
|------------|-------------------------|----|----|----|----|-----|-----|-----|-----|-----|
| Code       | Main ports              |    |    |    |    |     |     |     |     |     |
| F          | SAE 6000 psi flange     | x  | x  | x  | x  | x   | x   | x   | x   | x   |
| D          | SAE 6000 psi Horizontal | -  | -  | -  | -  | -   | -   | (x) | (x) | (x) |
| A          | SAE 6000 psi Axial      | -  | -  | -  | -  | -   | -   | (x) | (x) | (x) |
| K          | SAE 6000 psi Rear       | -  | -  | -  | -  | -   | -   | (x) | (x) | (x) |
| M          | SAE 6000 psi Side       | -  | -  | -  | -  | -   | -   | (x) | (x) | (x) |

| Frame size | 30              | 40 | 60 | 80 | 90 | 110 | 125 | 152 | 162 | 182 |
|------------|-----------------|----|----|----|----|-----|-----|-----|-----|-----|
| Code       | Mounting flange |    |    |    |    |     |     |     |     |     |
| I          | ISO flange      | x  | x  | x  | x  | x   | x   | x   | x   | x   |
| F          | ISO 200 flange  | -  | -  | -  | -  | -   | -   | x   | x   | x   |

| Version number                  |  |
|---------------------------------|--|
| (assigned for special versions) |  |

| Frame size | 30                   | 40  | 60  | 80  | 90  | 110 | 125 | 152 | 162 | 182 |
|------------|----------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Code       | Shaft*               |     |     |     |     |     |     |     |     |     |
| D          | DIN Spline, Standard | x   | x   | x   | x   | x   | x   | x   | x   | x   |
| A          | DIN Spline, Optional | -   | (x) | -   | -   | -   | -   | -   | -   | -   |
| Z          | DIN Spline, Optional | (x) | (x) | (x) | (x) | (x) | (x) | (x) | (x) | (x) |
| K          | Metric key, Standard | x   | x   | x   | x   | x   | x   | x   | x   | x   |
| J          | Metric key, Optional | -   | (x) | -   | -   | -   | -   | -   | -   | -   |
| H          | DIN Spline, Optional | -   | -   | -   | -   | -   | -   | (x) | (x) | (x) |
| G          | Metric key, Optional | -   | -   | -   | -   | -   | -   | (x) | (x) | (x) |
| P          | Metric key, Optional | (x) | -   | -   | -   | -   | -   | (x) | (x) | (x) |
| V          | Tapered shaft        | (x) | (x) | (x) | -   | -   | (x) | (x) | -   | -   |

\*See also dimensional drawings (see catalogue)

| Frame size       | 30                                                       | 40  | 60  | 80  | 90  | 110 | 125              | 152              | 162 | 182 |
|------------------|----------------------------------------------------------|-----|-----|-----|-----|-----|------------------|------------------|-----|-----|
| Code             | Option                                                   |     |     |     |     |     |                  |                  |     |     |
| 0000             | Standard                                                 | x   | x   | x   | x   | x   | x                | x                | x   | x   |
| L130             | Flushing valve 1.3 mm orifice                            | (x) | (x) | (x) | (x) | (x) | - <sup>(1)</sup> | - <sup>(1)</sup> | -   | -   |
| MUVR             | Make up/Anti cavitation valve clockwise rotation         | (x) | -   | -   | -   | -   | -                | -                | -   | -   |
| MUVL             | Make up/Anti cavitation valve counter clockwise rotation | (x) | -   | -   | -   | -   | -                | -                | -   | -   |
| P <sub>2</sub> R | Pressure relief valve clockwise rotation                 | (x) | (x) | (x) | -   | -   | -                | -                | -   | -   |
| P <sub>2</sub> L | Pressure relief valve counter clockwise rotation         | (x) | (x) | (x) | -   | -   | -                | -                | -   | -   |

| Frame size     | 30                                        | 40  | 60  | 80  | 90  | 110 | 125 | 152 | 162 | 182 |
|----------------|-------------------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Code           | Option                                    |     |     |     |     |     |     |     |     |     |
| 00             | Standard                                  | x   | x   | x   | x   | x   | x   | x   | x   | x   |
| P <sub>-</sub> | Prepared for speed sensor                 | (x) | (x) | (x) | (x) | (x) | (x) | (x) | (x) | (x) |
| B <sub>-</sub> | Power Boost and Prepared for speed sensor | (x) | -   | -   | -   | -   | -   | -   | -   | -   |
| _T             | Painted Black                             | (x) | (x) | (x) | (x) | (x) | (x) | (x) | (x) | (x) |

| Frame size | 30                                   | 40  | 60  | 80  | 90  | 110 | 125 | 152 | 162 | 182 |
|------------|--------------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Code       | Shaft seal                           |     |     |     |     |     |     |     |     |     |
| N          | NBR, low pressure                    | (x) | (x) | (x) | (x) | (x) | (x) | (x) | (x) | (x) |
| V          | FPM, high pressure, high temperature | x   | x   | x   | x   | x   | x   | x   | x   | x   |
| S          | PTFE, high speed                     | (x) | -   | -   | -   | -   | -   | -   | -   | -   |

- x: Available      (x): Optional      -: Not available  
 1) F12-110 and -125: Accessory valve block (see catalogue)  
 2) Pressure setting (see catalogue)

# Axial Piston F12 Series

- Pressures up to 480 bar
- High power capability
- High overall efficiency
- Small envelope size
- ISO, SAE and cartridge versions available
- Proven reliability
- Easy to service



## Material Specifications

| Frame size F12                      | 30   | 40   | 60   | 80   | 90   | 110   | 125   | 150   | 250   |
|-------------------------------------|------|------|------|------|------|-------|-------|-------|-------|
| Displacement (cm <sup>3</sup> /rev) | 30.0 | 40.0 | 59.8 | 80.4 | 93.0 | 110.1 | 125.0 | 150.0 | 242.0 |
| Max cont pressure (bar)             | 420  | 420  | 420  | 420  | 350  | 420   | 420   | 350   | 350   |
| Max operating speed (rpm)           | 6700 | 6100 | 5300 | 4800 | 4600 | 4400  | 4200  | 3200  | 2700  |
| Weight (kg)                         | 12   | 16.5 | 21   | 26   | 26   | 36    | 36    | 70    | 77    |

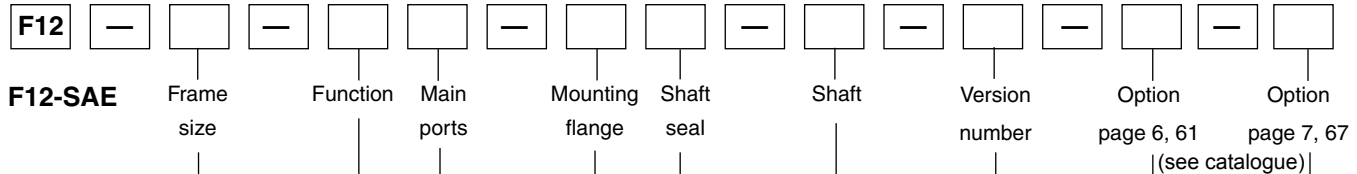
## SAE MOUNT

| Frame Size | Displacement | Order Code | Shaft Type          | Mounting      | Description                 |
|------------|--------------|------------|---------------------|---------------|-----------------------------|
| F12-030    | 30.0 cc/rev  | 3788947    | SAE B-B (1") Key    | SAE B, 2 Bolt | F12-030-MS-TV-T-000-0000-P  |
| F12-030    | 30.0 cc/rev  | 3799616    | SAE-B, Spline       | SAE B, 2 Bolt | F12-030-MS-TV-S-000-0000-00 |
| F12-030    | 30.0 cc/rev  | 3799852    | SAE B-B (1") Key    | SAE B-4 Bolt  | F12-030-MS-SV-T-000-0000-00 |
| F12-030    | 30.0 cc/rev  | 3799855    | SAE B, Spline       | SAE B-4 Bolt  | F12-030-MS-SV-S-000-0000-00 |
| F12-040    | 40.0 cc/rev  | 3799881    | SAE C (.1.250") Key | SAE B, 2 Bolt | F12-040-MS-TV-T-000-0000-00 |
| F12-040    | 40.0 cc/rev  | 3789033    | SAE C, Spline       | SAE B, 2 Bolt | F12-040-MS-TV-S-000-0000-P  |
| F12-040    | 40.0 cc/rev  | 3799533    | SAE C (1.250") Key  | SAE C, 4 Bolt | F12-040-MS-SV-T-000-0000-00 |
| F12-040    | 40.0 cc/rev  | 3799532    | SAE C, Spline       | SAE C, 4 Bolt | F12-040-MS-SV-S-000-0000-00 |
| F12-060    | 59.8 cc/rev  | 3799882    | SAE C (1.250") Key  | SAE B, 2 Bolt | F12-060-MS-TV-T-000-0000-00 |
| F12-060    | 59.8 cc/rev  | 3788092    | SAE C, Spline       | SAE B, 2 Bolt | F12-060-MS-TV-S-000-0000-P  |
| F12-060    | 59.8 cc/rev  | 3799999    | SAE C (.1.250") Key | SAE C, 4 Bolt | F12-060-MS-SV-T-000-0000-00 |
| F12-060    | 59.8 cc/rev  | 3799998    | SAE C, Spline       | SAE C, 4 Bolt | F12-060-MS-SV-S-000-0000-00 |
| F12-080    | 80.4 cc/rev  | 3780784    | SAE C-C (1.50") Key | SAE C, 4 Bolt | F12-080-MS-SV-T-000-0000-00 |
| F12-080    | 80.4 cc/rev  | 3780783    | SAE C-C, Spline     | SAE C, 4 Bolt | F12-080-MS-SV-S-000-0000-00 |
| F12-090    | 93.0 cc/rev  | 3785875    | SAE C-C, Spline     | SAE C, 4 Bolt | F12-090-MS-SV-S-000-0000-00 |
| F12-090    | 93.0 cc/rev  | 3786810    | SAE C-C, Spline     | SAE C, 4 Bolt | F12-090-MS-SV-S-000-0000-P  |
| F12-110    | 110.1 cc/rev | 3781542    | SAE D, Spline       | SAE D, 4 Bolt | F12-110-MS-SV-S-000-0000-00 |
| F12-125    | 125.0 cc/rev | 3785504    | SAE D (1.75") Key   | SAE D, 4 Bolt | F12-125-MS-SV-S-000-0000-00 |
| F12-152    | 149.7 cc/rev | 3720410    | SAE D, Spline       | SAE D, 4 Bolt | F12-152-SF-SV-S-000-0000-00 |
| F12-162    | 163.1 cc/rev | 3720412    | SAE D, Spline       | SAE D, 4 Bolt | F12-162-SF-SV-S-000-0000-00 |
| F12-182    | 179.8 cc/rev | 3720333    | SAE D, Spline       | SAE D, 4 Bolt | F12-182-SF-SV-S-000-0000-00 |
| F12-250    | 242.0 cc/rev | 3787187    | SAE D, Spline       | SAE D, 4 Bolt | F12-250-QF-SV-D-000-0000-00 |
| F12-250    | 242.0 cc/rev | 3787181    | DIN 5480            | SAE D, 4 Bolt | F12-250-QF-SV-D-000-0000-00 |

# Axial Piston F12 Series

Catalogue HY30-8249/UK

## Ordering codes



| Frame size |                                   |
|------------|-----------------------------------|
| Code       | Displacem. (cm <sup>3</sup> /rev) |
| 030        | 30.0                              |
| 040        | 40.0                              |
| 060        | 59.8                              |
| 080        | 80.4                              |
| 090        | 93.0                              |
| 110        | 110.1                             |
| 125        | 125.0                             |
| 152        | 149.8                             |
| 162        | 163.1                             |
| 182        | 179.8                             |
| 250        | 242.0                             |

| Frame size | 30                            | 40  | 60  | 80  | 90  | 110 | 125 | 152 | 162 | 182 | 250 |
|------------|-------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Code       | Function                      |     |     |     |     |     |     |     |     |     |     |
| M          | Motor                         | x   | x   | x   | x   | x   | x   | x   | x   | x   | -   |
| S          | Motor, high speed             | (x) | (x) | (x) | -   | -   | -   | (x) | (x) | (x) | -   |
| Q          | Motor                         | -   | -   | -   | -   | -   | -   | -   | -   | -   | x   |
| R          | Pump, clockwise rotation      | (x) | (x) | (x) | (x) | (x) | (x) | -   | -   | -   | (x) |
| L          | Pump, counter clockwise rot'n | (x) | (x) | (x) | (x) | (x) | (x) | -   | -   | -   | (x) |

For other versions, contact Parker Hannifin

| Frame size | 30                                    | 40  | 60  | 80  | 90  | 110 | 125 | 152 | 162 | 182 | 250 |
|------------|---------------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Code       | Main ports                            |     |     |     |     |     |     |     |     |     |     |
| S          | SAE 6000 psi flange                   | x   | x   | x   | x   | x   | x   | -   | -   | -   | -   |
| U          | SAE UN threads <sup>4)</sup>          | (x) | (x) | (x) | (x) | (x) | (x) | -   | -   | -   | -   |
| F          | SAE 6000 psi flange <sup>2)</sup>     | -   | -   | -   | -   | -   | -   | x   | x   | x   | x   |
| D          | SAE 6000 psi Horizontal <sup>2)</sup> | -   | -   | -   | -   | -   | -   | (x) | (x) | (x) | -   |
| A          | SAE 6000 psi Axial <sup>2)</sup>      | -   | -   | -   | -   | -   | -   | (x) | (x) | (x) | -   |
| K          | SAE 6000 psi Rear <sup>2)</sup>       | -   | -   | -   | -   | -   | -   | (x) | (x) | (x) | -   |
| M          | SAE 6000 psi Side <sup>2)</sup>       | -   | -   | -   | -   | -   | -   | (x) | (x) | (x) | -   |

| Frame size | 30              | 40 | 60 | 80 | 90  | 110 | 125 | 152 | 162 | 182 | 250 |
|------------|-----------------|----|----|----|-----|-----|-----|-----|-----|-----|-----|
| Code       | Mounting flange |    |    |    |     |     |     |     |     |     |     |
| S          | SAE 4 bolt      | x  | x  | x  | x   | x   | x   | x   | x   | x   | x   |
| R          | SAE 4 bolt      | -  | -  | -  | (x) | (x) | -   | -   | -   | -   | -   |
| T          | SAE 2 bolt      | x  | x  | x  | -   | -   | -   | -   | -   | -   | -   |

x: Available      (x): Optional      - : Not available

1) F12-110 and -125: Accessory valve block (see catalogue)

2) Metric threads

3) Pressure setting (see catalogue)

4) Not in combination with any valve options

| Version number                  |
|---------------------------------|
| (assigned for special versions) |

| Frame size | 30                   | 40  | 60  | 80  | 90  | 110 | 125 | 152 | 162 | 182 | 250 |
|------------|----------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Code       | Shaft*               |     |     |     |     |     |     |     |     |     |     |
| T          | SAE key, Standard    | x   | x   | x   | x   | x   | x   | x   | x   | x   | x   |
| R          | SAE key, Optional    | -   | -   | -   | (x) | (x) | -   | -   | -   | -   | -   |
| S          | SAE Spline, Optional | x   | x   | x   | x   | x   | x   | x   | x   | x   | x   |
| F          | SAE Spline, Optional | -   | -   | -   | (x) | (x) | -   | (x) | (x) | (x) | (x) |
| U          | SAE Spline, Optional | -   | -   | -   | (x) | (x) | -   | -   | -   | -   | -   |
| K          | Metric key, Standard | -   | -   | -   | -   | -   | -   | -   | -   | -   | x   |
| D          | Spline DIN 5480      | -   | -   | -   | -   | -   | -   | -   | -   | -   | (x) |
| V          | Tapered shaft        | (x) | (x) | (x) | -   | (x) | (x) | -   | -   | -   | -   |

\*See also dimensional drawings (see catalogue)

| Frame size        | 30                                                       | 40  | 60  | 80  | 90  | 110 | 125             | 152             | 162 | 182 | 250 |
|-------------------|----------------------------------------------------------|-----|-----|-----|-----|-----|-----------------|-----------------|-----|-----|-----|
| Code              | Option                                                   |     |     |     |     |     |                 |                 |     |     |     |
| 0000              | Standard                                                 | x   | x   | x   | x   | x   | x               | x               | x   | x   | x   |
| L130              | Flushing valve 1.3 mm orifice                            | (x) | (x) | (x) | (x) | (x) | - <sup>1)</sup> | - <sup>1)</sup> | -   | -   | -   |
| MUVR              | Make up/Anti cavitation valve clockwise rotation         | (x) | -   | -   | -   | -   | -               | -               | -   | -   | -   |
| MUVR              | Make up/Anti cavitation valve counter clockwise rotation | (x) | -   | -   | -   | -   | -               | -               | -   | -   | -   |
| P <sub>3)</sub> R | Pressure relief valve clockwise rotation                 | (x) | (x) | (x) | -   | -   | -               | -               | -   | -   | -   |
| P <sub>3)</sub> L | Pressure relief valve counter clockwise rotation         | (x) | (x) | (x) | -   | -   | -               | -               | -   | -   | -   |

| Frame size     | 30                                        | 40  | 60  | 80  | 90  | 110 | 125 | 152 | 162 | 182 | 250 |
|----------------|-------------------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Code           | Option                                    |     |     |     |     |     |     |     |     |     |     |
| 00             | Standard                                  | x   | x   | x   | x   | x   | x   | x   | x   | x   | x   |
| P <sub>-</sub> | Prepared for speed sensor                 | (x) | (x) | (x) | (x) | (x) | (x) | (x) | (x) | (x) | (x) |
| B <sub>-</sub> | Power Boost and Prepared for speed sensor | (x) | -   | -   | -   | -   | -   | -   | -   | -   | -   |
| T              | Painted Black                             | (x) | (x) | (x) | (x) | (x) | (x) | (x) | (x) | (x) | (x) |

| Frame size | 30                                   | 40  | 60  | 80  | 90  | 110 | 125 | 152 | 162 | 182 | 250 |
|------------|--------------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Code       | Shaft seal                           |     |     |     |     |     |     |     |     |     |     |
| N          | NBR, low pressure                    | (x) | (x) | (x) | (x) | (x) | (x) | (x) | (x) | (x) | -   |
| V          | FPM, high pressure, high temperature | x   | x   | x   | x   | x   | x   | x   | x   | x   | x   |
| S          | PTFE, high speed                     | (x) | -   | -   | -   | -   | -   | -   | -   | -   | -   |

# F11/F12 Spare Parts

## VALVE PLATES

| Frame Size | Displacement | Part Number | Design Detail                    | Weight (kg) |
|------------|--------------|-------------|----------------------------------|-------------|
| F11-005    | 4.9 cc/rev   | 3703652     | Valve Plate- Left Hand (Type L)  | 0.1         |
| F11-005    | 4.9 cc/rev   | 3703653     | Valve Plate- Right Hand (Type R) | 0.1         |
| F11-005    | 4.9 cc/rev   | 3707105     | Valve Plate- Motor H             | 0.1         |
| F11-010    | 9.8 cc/rev   | 3703590     | Valve Plate- Left Hand (Type L)  | 0.1         |
| F11-010    | 9.8 cc/rev   | 3703591     | Valve Plate- Right Hand (Type R) | 0.1         |
| F11-010    | 9.8 cc/rev   | 3707104     | Valve Plate- Motor H             | 0.1         |
| F11-012    | 12.5 cc/rev  | 3783095     | Valve Plate- Left Hand (Type L)  | 0.1         |
| F11-012    | 12.5 cc/rev  | 3783094     | Valve Plate- Right Hand (Type R) | 0.1         |
| F11-012    | 12.5 cc/rev  | 3782850     | Valve Plate- Motor H             | 0.1         |
| F11-014    | 14.3 cc/rev  | 3783095     | Valve Plate- Left Hand (Type L)  | 0.1         |
| F11-014    | 14.3 cc/rev  | 3783094     | Valve Plate- Right Hand (Type R) | 0.1         |
| F11-014    | 14.3 cc/rev  | 3782850     | Valve Plate- Motor H             | 0.1         |
| F11-019    | 19.0 cc/rev  | 3703440     | Valve Plate- Left Hand (Type L)  | 0.1         |
| F11-019    | 19.0 cc/rev  | 3703441     | Valve Plate- Right Hand (Type R) | 0.1         |
| F11-019    | 19.0 cc/rev  | 3706330     | Valve Plate- Motor H             | 0.1         |
| F12-030    | 30.0 cc/rev  | 3792037     | Valve Plate- Left Hand (Type L)  | 0.2         |
| F12-030    | 30.0 cc/rev  | 3791912     | Valve Plate- Right Hand (Type R) | 0.2         |
| F12-030    | 30.0 cc/rev  | 3782447     | Cylinder Barrel (Pump)           | 0.2         |
| F12-030    | 30.0 cc/rev  | 3791911     | Valve Plate- Motor M             | 0.2         |
| F12-040    | 40.0 cc/rev  | 3791573     | Valve Plate- Left Hand (Type L)  | 0.2         |
| F12-040    | 40.0 cc/rev  | 3791572     | Valve Plate- Right Hand (Type R) | 0.2         |
| F12-040    | 40.0 cc/rev  | 3782497     | Cylinder Barrel (Pump)           | 1.5         |
| F12-040    | 40.0 cc/rev  | 3793456     | Valve Plate- Motor M             | 0.2         |
| F12-060    | 59.8 cc/rev  | 3709859     | Valve Plate- Left Hand (Type L)  | 0.2         |
| F12-060    | 59.8 cc/rev  | 3709858     | Valve Plate- Right Hand (Type R) | 0.2         |
| F12-060    | 59.8 cc/rev  | 3781278     | Cylinder Barrel (Pump)           | 1.8         |
| F12-060    | 59.8 cc/rev  | 3791799     | Valve Plate- Motor M             | 0.2         |
| F12-080    | 80.4 cc/rev  | 3709709     | Valve Plate- Left Hand (Type L)  | 0.2         |
| F12-080    | 80.4 cc/rev  | 3709708     | Valve Plate- Right Hand (Type R) | 0.2         |
| F12-080    | 80.4 cc/rev  | 3782530     | Cylinder Barrel (Pump)           | TBA         |
| F12-080    | 80.4 cc/rev  | 3792773     | Valve Plate- Motor M             | 0.2         |
| F12-110    | 110.1 cc/rev | 3791577     | Valve Plate- Left Hand (Type L)  | 1.5         |
| F12-110    | 110.1 cc/rev | 3791576     | Valve Plate- Right Hand (Type R) | 0.5         |
| F12-110    | 110.1 cc/rev | 3782462     | Cylinder Barrel (Pump)           | 2.5         |
| F12-110    | 110.1 cc/rev | 3794369     | Valve Plate- Motor M             | 0.5         |

## SPARE PARTS KITS

| Order Code | Frame size | Description | Contain                                                 | Weight (kg) |
|------------|------------|-------------|---------------------------------------------------------|-------------|
| 3797031    | F11-005    | Type N      | Valveplate, Cylinder barrel, pistons and N seals        | 0.5         |
| 3797032    | F11-010    | Type N      | Valveplate, Cylinder barrel, pistons and N seals        | 0.7         |
| 3780159    | F11-010    | Type S      | Valveplate, Cylinder barrel, pistons and S seals        | 0.7         |
| 3797033    | F11-019    | Type N      | Valveplate, Cylinder barrel, pistons and N seals        | 1           |
| 3780160    | F11-019    | Type S      | Valveplate, Cylinder barrel, pistons and S seals        | 1           |
| 3787797    | F12-030    | Type M      | Valveplate, Cylinder barrel and pistons                 | 1.5         |
| 3787798    | F12-040    | Type M      | Valveplate, Cylinder barrel and pistons                 | 1.8         |
| 3787799    | F12-060    | Type M      | Valveplate, Cylinder barrel and pistons                 | 2.5         |
| 3787800    | F12-080    | Type M      | Valveplate, Cylinder barrel and pistons                 | 2.8         |
| 3787801    | F12-090    | Type M      | Valveplate, Cylinder barrel and pistons                 | 2.8         |
| 3787802    | F12-110    | Type M      | Valveplate, Cylinder barrel,needle bearings and pistons | 3.5         |
| 3787803    | F12-125    | Type M      | Valveplate, Cylinder barrel,needle bearings and pistons | 3.5         |
| 3787745    | F12-150    | Type M      | Valveplate, Cylinder barrel,needle bearings and pistons | 5.7         |

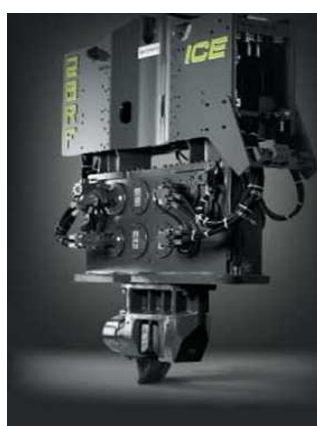


# Application Market

## Markets

## Applications

|                   |                                                                               |
|-------------------|-------------------------------------------------------------------------------|
| Forestry          | Saw Drives, Feller Bunchers, Skidder, Forwarder, Cranes, Mowers / Cutters     |
| Industrial        | Aircraft Test Stands                                                          |
| Marine            | Deck Cranes, Constant Tension Winches, Hatch Covers                           |
| Oil & Gas         | Nitrogen Pumpers, Frac Trucks, Coil Tubing                                    |
| Construction      | Skid Steer, Off-Highway Trucks, Fan Drives, Cranes, Dust Collector, Excavator |
| Mining            | Drill Rigs, Top Drives, Loaders, Subsurface Loaders, Tunneling Equipment      |
| Material Handling | Conveyor Drives, Truck Mounted Cranes, Mixers                                 |
| Recycling         | Shredders, Vacuum Truck Systems                                               |
| Military          | Fan Drives                                                                    |



Ref. Catalogue : [HY30-8249/UK](#)



## Hydraulic Motor/Pump

Series F11/F12  
Fixed Displacement



ENGINEERING YOUR SUCCESS.





# Pumps

2/ Variable Displacement



ENGINEERING YOUR SUCCESS.

# Variable Pump Product line

**High**

**Premier (420 bar) - 80, 110, 140, 200, 260**

**C Series (420 bar)- 81, 136**

**PV+ (350 bar) – 16, 23, 46, 92, 180, 270, 360**

**Gold Cup (350 bar) - 100, 120, 180, 230, 400, 500**

**P2/P3 (320 bar) - 60, 75, 105, 145**

**Medium**

**P1/PD (280 bar) - 18, 28, 45, 60, 75, 100, 140,**

**PVP (250 bar) - 16, 23, 33, 41, 48**

**Low**

**PAVC (210 bar) - 33, 38, 65, 100**


10 150 300 450 600

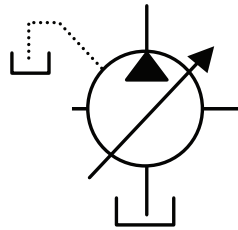
## Variable Axial Piston Pumps

### Features

- High Strength Cast-Iron Housing
- Built-In Supercharger Ensures High Speed Capability - 3000 RPM (2600 RPM PAVC100)
- Sealed Shaft Bearing
- Two Piece Design for Ease of Service
- Cartridge Type Controls - Field Changeable
- Replaceable Bronze Clad Port Plate
- Airbleed Standard for Quick Priming
- Hydrodynamic Cylinder Barrel Bearing
- Thru-Shaft (PAVC100 Only)
- Full Pressure Rating on Most Water Glycol Fluids
- Pump Case and Shaft Seal are Subjected to Inlet Pressure Only
- Filter and/or Cool Drain Line  
7 bar (100 PSI) Maximum

### Controls

- Pressure Compensation
- Load Sensing
- Power (Torque) Limiting
- Power and Load Sensing
- Remote Pressure Compensation
- Adjustable Maximum Volume Stop
- Low Pressure



### Quick Reference Data Chart

| Pump Model | Displacement<br>CM3/REV<br>(IN3/REV) | Pump Delivery<br>@ 21 bar (300 PSI) in<br>LPM (GPM) |              | *Approx. Noise Levels dB(A)<br>@ Full Flow 1800 RPM (1200 RPM) |                      |                       |                       | Input Power At<br>1800 RPM,<br>Maximum<br>Displacement &<br>207 bar (3000<br>PSI) | Operating<br>Speed RPM<br>(Maximum) | Pressure bar<br>(PSI)<br>Continuous<br>(Maximum) |
|------------|--------------------------------------|-----------------------------------------------------|--------------|----------------------------------------------------------------|----------------------|-----------------------|-----------------------|-----------------------------------------------------------------------------------|-------------------------------------|--------------------------------------------------|
|            |                                      |                                                     |              | 34 bar<br>(500 PSI)                                            | 69 bar<br>(1000 PSI) | 138 bar<br>(2000 PSI) | 207 bar<br>(3000 PSI) |                                                                                   |                                     |                                                  |
| PAVC33     | 33 (2.0)                             | 39.4 (10.4)                                         | 59.0 (15.6)  | 75 (69)                                                        | 76 (72)              | 78 (75)               | 79 (77)               | 21.3 kw<br>(28.5 hp)                                                              | 3000                                | 207 (3000)                                       |
| PAVC38     | 38 (2.3)                             | 45.0 (11.9)                                         | 67.8 (17.9)  | 75 (69)                                                        | 76 (72)              | 78 (75)               | 79 (77)               | 24.6 kw<br>(33.0 hp)                                                              | 3000                                | 207 (3000)                                       |
| PAVC65     | 65 (4.0)                             | 78.7 (20.8)                                         | 118.1 (31.2) | 77 (75)                                                        | 78 (76)              | 80 (78)               | 81 (79)               | 43.1 kw<br>(57.8 hp)                                                              | 3000                                | 207 (3000)                                       |
| PAVC100    | 100 (6.1)                            | 119.6 (31.6)                                        | 179.8 (47.5) | 83 (77)                                                        | 82 (78)              | 82 (79)               | 85 (80)               | 71.2 kw<br>(95.5 hp)                                                              | 2600                                | 207 (3000)                                       |

### Preferred Models

| Model           | Description                                               |
|-----------------|-----------------------------------------------------------|
| PAVC33R4226     | 33cc/rev, R/H rotation, rear ported, pressure comp        |
| PAVC332R4226    | 33cc/rev, R/H rotation, side ported, pressure comp        |
| PAVC38R4216     | 38cc/rev, R/H rotation, rear ported, pressure comp        |
| PAVC38L4216     | 38cc/rev, L/H rotation, rear ported, pressure comp        |
| PAVC38R42A16    | 38cc/rev, R/H rotation, rear ported, load sensing         |
| PAVC65R4213     | 65cc/rev, R/H rotation, rear ported, pressure comp        |
| PAVC65R42A13    | 65cc/rev, R/H rotation, rear ported, load sensing         |
| PAVC65BL4A13    | 65cc/rev, L/H rotation, rear ported, load sensing         |
| PAVC100R4222    | 100cc/rev, R/H rotation, rear ported, pressure comp       |
| PAVC10032R4222  | 100cc/rev, R/H rotation, top/bottom ported, pressure comp |
| PAVC10032R42A22 | 100cc/rev, R/H rotation, top/bottom ported, load sensing  |

# PAVC33-100 Conversion Parts & Spares

\*Please read footnote regarding series

## Seal Kits PAVC33-100

| Order Code      | Description       |
|-----------------|-------------------|
| SKPAVC3326/3816 | PAVC33-38 Nitrile |
| SKPAVC6513      | PAVC65 Nitrile    |
| SKPAVC10022     | PAVC100 Nitrile   |

## Rotating Group Kits PAVC33-100

| Order Code    | Description          |
|---------------|----------------------|
| RRKPAVC33R26  | PAVC33, RH Rotation  |
| RRKPAVC33L26  | PAVC33, LH Rotation  |
| RRKPAVC38R16  | PAVC38, RH Rotation  |
| RRKPAVC38L16  | PAVC38, LH Rotation  |
| RRKPAVC65R13  | PAVC65, RH Rotation  |
| RRKPAVC65L13  | PAVC65, LH Rotation  |
| RRKPAVC100R22 | PAVC100, RH Rotation |

## Shaft Ass'y PAVC33-100

| Order Code     | Description                                                |      |
|----------------|------------------------------------------------------------|------|
| 787057 + 22X19 | PAVC33-38 Shaft Ass'y, SAE'B' STR, 7/8" Keyed              | Omit |
| 787059         | PAVC33-38 Shaft Ass'y, SAE'B' 13T, Splined                 | B    |
| 787601 + 22X19 | PAVC33-38 (Option 9) Shaft Ass'y, SAE'B' STR, 7/8" Keyed   | Omit |
| 787602         | PAVC33-38 (Option 9) Shaft Ass'y, SAE'B' 13T, Splined      | B    |
| 787598         | PAVC65 Shaft Ass'y, SAE'C' STR, 1 1/4", Keyed              | Omit |
| 787599         | PAVC65 Shaft Ass'y, SAE'C' 14T, Splined                    | B    |
| 787577         | PAVC65 (Option 9) Shaft Ass'y, SAE'C' STR, 1 1/4" Keyed    | Omit |
| 787514         | PAVC65 (Option 9) Shaft Ass'y, SAE'C' 14T, Splined         | B    |
| 787592 + 22X31 | PAVC100 Shaft Ass'y, SAE'C' STR, 1 1/4" Keyed              | Omit |
| 787593         | PAVC100 Shaft Ass'y, SAE'C' 14T Splined                    | B    |
| 787594 + 22X45 | PAVC100 Shaft Ass'y, SAE'C-C' STR, 1 1/2" Keyed            | C    |
| 787595         | PAVC100 Shaft Ass'y, SAE'C-C' 17T, Splined                 | D    |
| 787613 + 22X31 | PAVC100 (Option 9) Shaft Ass'y, SAE'C' STR, 1 1/4" Keyed   | Omit |
| 787572         | PAVC100 (Option 9) Shaft Ass'y, SAE'C' 14T Splined         | B    |
| 787573 + 22X45 | PAVC100 (Option 9) Shaft Ass'y, SAE'C-C' STR, 1 1/2" Keyed | C    |
| 787574         | PAVC100 (Option 9) Shaft Ass'y, SAE'C-C' 17T, Splined      | D    |

## Through-drive Adapter Kit (Only for PAVC100)

| Order Code | Description                                          |     |
|------------|------------------------------------------------------|-----|
| 786925     | ADAPTER KIT SAE 'A-A' Pilot, 9T 20/40 pitch coupling | 6A3 |
| 786926     | ADAPTER KIT SAE 'A' Pilot, 9T 16/32 pitch coupling   | 6A4 |
| 787076     | ADAPTER KIT SAE 'B' Pilot, 13T 16/32 pitch coupling  | 6B3 |
| 787077     | ADAPTER KIT SAE 'B' Pilot, 15T 16/32 pitch coupling  | 6B4 |
| 787078     | ADAPTER KIT SAE 'C' Pilot, 14T 12/24 pitch coupling  | 6C3 |

## Port Plate PAVC33-100

| Order Code | Description            |
|------------|------------------------|
| 786427     | PAVC33-38, RH Rotation |
| 786428     | PAVC33-38, LH Rotation |
| 786881     | PAVC65, RH Rotation    |
| 786666     | PAVC65, LH Rotation    |
| 786678     | PAVC100, RH Rotation   |
| 786680     | PAVC100, LH Rotation   |

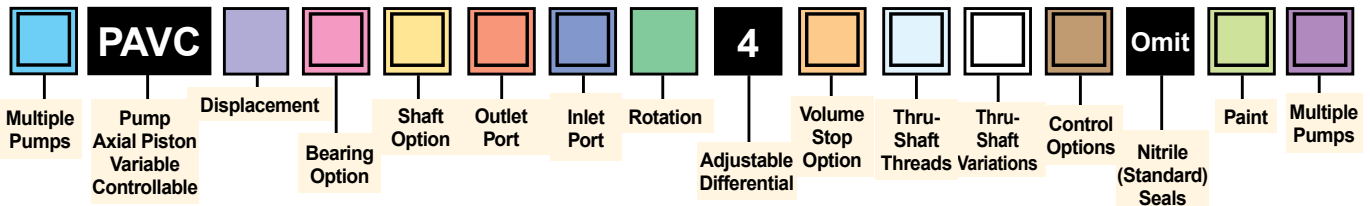
\*The above part numbers are taken from series pumps mentioned below.

Including PAVC 33 Series 26, PAVC38 Series 16, PAVC65 Series 13 PAVC100 Series 22

## PAVC Series

Catalog HY28-2662-CD/US  
Ordering Information

Pumps



| Code | Multiple Pumps                          |
|------|-----------------------------------------|
| Omit | Single Pump                             |
| —    | Factory Mounted to Rear of Another Pump |

| Code | Displacement in <sup>3</sup> /rev (cm <sup>3</sup> /rev) |
|------|----------------------------------------------------------|
| 33   | 2.0 (33)                                                 |
| 38   | 2.3 (38)                                                 |
| 65   | 4.0 (65)                                                 |
| 100  | 6.1 (100)                                                |

| Code | Bearing Option     |
|------|--------------------|
| Omit | Single Piece Shaft |
| 9*   | Dual Bearing       |

\* For applications where side loading may be experienced. Max. side load = 113.4 kg (250 lbs).

**Typical Applications:**  
Belt/chain drive  
Universal joint drive  
Massive couplings  
Foot mount installations

| Code | Shaft Option     |                     |
|------|------------------|---------------------|
|      | Size 33/38       | Size 65/100         |
| Omit | 7/8" Keyed SAE B | 1 1/4" Keyed SAE C  |
| B    | 13T Spline SAE B | 14T Spline SAE C    |
| C*   | —                | 1 1/2" Keyed SAE CC |
| D*   | —                | 17T Spline SAE CC   |

\* Size 100 only

| Code | Outlet Port |          |          |
|------|-------------|----------|----------|
|      | Outlet      | Location | Type     |
| Omit | Str. Thread | Top      | SAE/Inch |
| 3*   | Flange      | Top      | SAE/Inch |

\* Size 100 only

| Code | Inlet Port      |                 |                    |                  |
|------|-----------------|-----------------|--------------------|------------------|
|      | 33/38 Inlet     | 65 Inlet        | 100 Inlet          | Type             |
| Omit | Str. Thd., Rear | Str. Thd., Rear | Flange, Rear       | SAE/Inch Threads |
| 2    | Flange, Side    | Flange, Top     | Flange, Top/Bottom | SAE/Inch Threads |

| Code | Rotation* |
|------|-----------|
| R    | Right CW  |
| L    | Left CCW  |

\* Viewed from shaft end.

| Code | Volume Stop Options          |
|------|------------------------------|
| Omit | Volume Stop Plugged          |
| 2    | Maximum Volume Stop          |
| 5*   | Max. Volume Stop with O-ring |

\* Not available with Thru-Shaft option on Size 100.

| Code | Thru-Shaft Threads* |
|------|---------------------|
| Omit | No Thru-Shaft       |
| 6    | Thru-Shaft, UNC     |

\* Available on Size 100 only.

| Code | Thru-Shaft Variations                                                        |
|------|------------------------------------------------------------------------------|
| Omit | No Thru-Shaft Option                                                         |
| A3   | Thru-Shaft, SAE AA Pilot, 9 Tooth 20/40 Pitch Spline Coupling, PAVC 100 Only |
| A4   | Thru-Shaft, SAE A Pilot, 9 Tooth 16/32 Pitch Spline Coupling, PAVC 100 Only  |
| *B3  | Thru-Shaft, SAE B Pilot, 13 Tooth 16/32 Pitch Spline Coupling, PAVC 100 Only |
| *B4  | Thru-Shaft, SAE B Pilot, 15 Tooth 16/32 Pitch Spline Coupling, PAVC 100 Only |
| *C3  | Thru-Shaft, SAE C Pilot, 14 Tooth 12/24 Pitch Spline Coupling, PAVC 100 Only |

Inlet port option "2" or "8" (top/bottom) must be used with all Thru-Shaft pumps.

\* Use SAE C-C shaft on thru-shaft pump variation when combined input torque of front and rear pumps exceeds 565 N·m (5000 In-Lbs).

| Code  | Control Option                                                           |
|-------|--------------------------------------------------------------------------|
| Omit  | Standard Pressure Compensated Setting Pressure 41-207 bar (600-3000 PSI) |
| A     | Pressure & Flow (Load Sensing)                                           |
| *C    | Pressure, Flow & Power                                                   |
| *H    | Pressure Comp. & Power                                                   |
| **†M  | Remote Pressure                                                          |
| **†ME | Remote Pressure                                                          |
| †AM   | Remote Pressure & Flow                                                   |
| *†CM  | Remote Pressure, Flow & Power                                            |
| *†HM  | Remote Pressure & Power                                                  |

\* Power controlled pumps (H, C, HM or CM) must have maximum input power limit specifications at a particular drive speed (RPM) and compensator pressure setting (PSI) included with order. Power controlled pumps that do not have input power limit specifications, will be set at default setting (22.5 HP @ 1800 RPM and 3000 PSI) "H" & "C" (60 HP @ 1800 RPM and 3000 PSI) "HM" & "CM"

\*\* "M" may be remotely controlled; "ME" requires external pilot

† Pumps with M, ME, AM, CM or HM controls will be set to compensate at 207 bar (3000 PSI) unless Chart #1 specifies otherwise.

| Code | Painting |
|------|----------|
| Omit | No Paint |
| P    | Paint    |

| Code | Multiple Pumps               |
|------|------------------------------|
| Omit | Single Pump                  |
| —    | Pump Factory Mounted on Rear |

## Chart #1

| Item | Setting |
|------|---------|
| RPM  | —       |
| PSI  | —       |
| HP   | —       |
| GPM  | —       |

## Ordering Notes

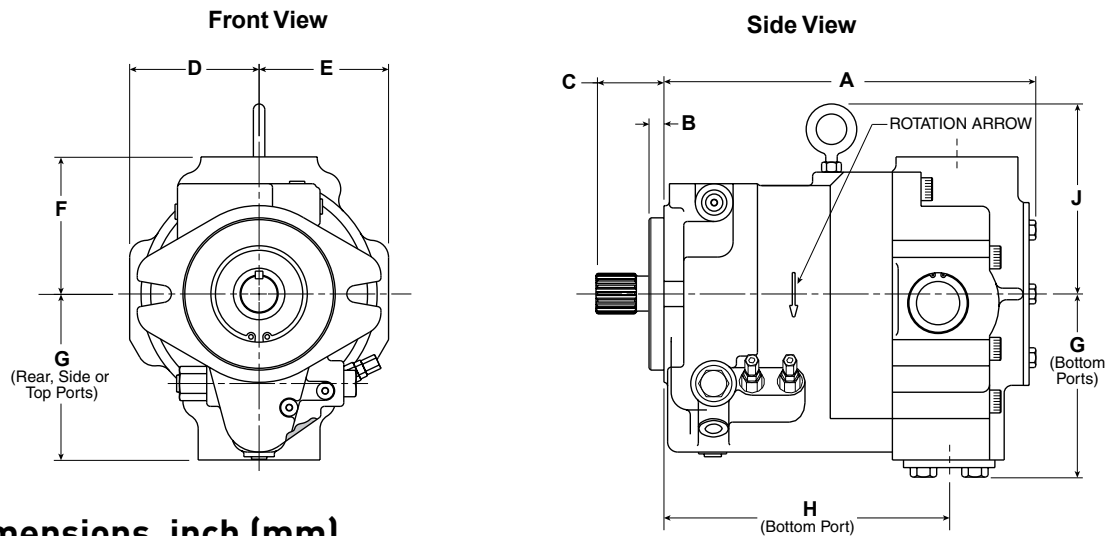
Unless otherwise specified, pump is shipped at maximum GPM (1800 RPM) and set to 69 bar (1000 PSI) [See † Exceptions].

When factory settings are required, the items shown in Chart #1 must be included with order.

= Omit if not required or to select standard option coded "omit".

## Piston Pumps (Mobile &amp; Industrial)

## PAVC Medium Pressure/Super Charged Piston Pumps

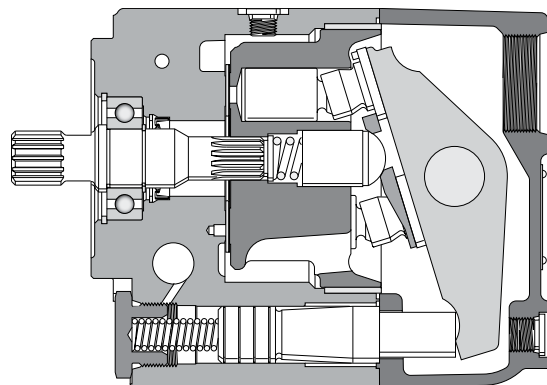


## Dimensions, inch (mm)

| Dim. | PAVC33/38     |               | PAVC65        |               | PAVC100        |                   |
|------|---------------|---------------|---------------|---------------|----------------|-------------------|
|      | Rear Ported   | Side Ported   | Rear Ported   | Top Ported    | Rear Ported    | Top/Bottom Ported |
| A    | 7.25 (184.15) | 7.32 (185.93) | 8.82 (224.03) | 8.82 (224.02) | 11.95 (303.53) | 12.21 (310.13)    |
| B    | 0.37 (9.39)   | 0.37 (9.37)   | 0.49 (12.45)  | 0.49 (12.44)  | 0.49 (12.44)   | 0.49 (12.44)      |
| C    | 2.31 (58.67)  | 2.31 (58.67)  | 2.19 (55.63)  | 2.19 (55.62)  | 2.19 (55.62)   | 2.19 (55.62)      |
| D    | 3.31 (84.07)  | 4.17 (105.92) | 4.00 (101.60) | 4.00 (101.60) | 4.25 (107.95)  | 4.25 (107.94)     |
| E    | 3.31 (84.07)  | 3.53 (89.66)  | 4.00 (101.60) | 4.00 (101.60) | 4.25 (107.95)  | 4.25 (107.94)     |
| F    | 2.50 (63.50)  | 2.50 (63.50)  | 3.50 (88.90)  | 3.38 (85.85)  | 4.62 (117.34)  | 4.50 (114.30)     |
| G    | 3.81 (96.77)  | 4.12 (104.65) | 4.56 (115.82) | 4.56 (115.82) | 5.57 (141.47)  | 6.25 (159.25)     |
| H    | —             | —             | —             | —             | —              | 9.37 (237.99)     |
| J    | —             | —             | —             | —             | 6.24 (158.49)  | 6.24 (159.49)     |

## Benefits/Features

- High strength cast-iron housing
- Built-in supercharger ensures high speed capability - 3000 RPM (2600 RPM PAVC100)
- Sealed shaft bearing
- Two-piece design for ease of service
- Cartridge type controls field changeable
- Replaceable bronze clad port plate
- Airbleed standard for quick priming
- Hydrodynamic cylinder barrel bearing
- Thru-shaft (PAVC100 only)
- Full pressure rating on most water glycol fluid
- Pump case and shaft seal are subjected to inlet pressure only
- Filter and/or cool drain line 100 PSI (7 BAR) maximum





## PAVC Mobile Application Market

| Market            | Applications                             |
|-------------------|------------------------------------------|
| Forestry          | Agricultural Applications                |
| Oil & Gas         | Nitrogen Pumpers, Cementers, Coil Tubing |
| Construction      | Fan Drives                               |
| Utility           | Cranes, Salt, Steel Mill                 |
| Harsh Environment | Salt & Sand Trucks                       |

## PAVC Industrial Application Market

| Markets           | Applications                                               |
|-------------------|------------------------------------------------------------|
| Industrial        | Power Units, Industrial Molding                            |
| Oil & Gas         | Oil Lift Pumps, Suitable for non mineral oil, Water Glycol |
| Material Handling | Conveyor Drives                                            |
|                   |                                                            |

## Literature

Ref. Catalogue : [HY28-2662-CD/US](#)

aerospace  
climate control  
electromechanical  
filtration  
fluid & gas handling  
hydraulics  
pneumatics  
process control  
sealing & shielding

**PAVC Medium Pressure  
Super Charged Piston Pumps**  
Variable Displacement For Open Circuits  
Catalog: HY28-2662-CD/US Effective: April 01, 2012

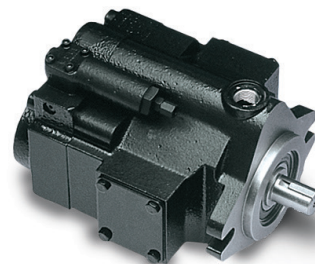
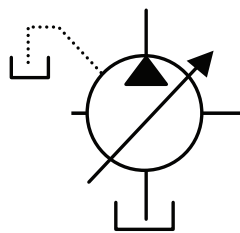
**Parker** ENGINEERING YOUR SUCCESS.



## Industrial Piston Pumps

### Characteristics

- High speed capability
- High strength cast-iron housing
- 100% of power available at through shaft
- Low noise levels – promote more comfortable operating environment
- Suitable for high water content fluid operation



### Features

- Continuous Pressure – up to 248 bar
- Through-shaft Capability
- Adjustable Maximum Volume Stop
- 4 Control Types for sizes 16, 23/33 cc/rev
- 5 Control Types for 41/48 cc/rev

### PVP Series Piston Pumps

|                     | PVP16          | PVP23          | PVP33          | PVP41          | PVP48          |
|---------------------|----------------|----------------|----------------|----------------|----------------|
| Max. Displacement   | 16 cc/rev      | 23 cc/rev      | 33 cc/rev      | 41 cc/rev      | 48 cc/rev      |
| Speed Rating:       | 600 – 3000 RPM | 600 – 3000 RPM | 600 – 3000 RPM | 600 – 2800 RPM | 600 – 2400 RPM |
| Cont. Outlet Press: | 248 bar        | 248 bar        | 248 bar        | 248 bar        | 248 bar        |
| Min. Inlet Press:*  | 0.17 bar       | 0.17 bar       | 0.17 bar       | 0.17 bar       | 0.17 bar       |
| Max. Inlet Press:   | 1.72 bar       | 1.72 bar       | 1.72 bar       | 1.72 bar       | 1.72 bar       |
| Input Power:**      | 13.1 kW        | 19.7 kW        | 27.2 kW        | 33.2 kW        | 40.3 kW        |

\* @ 1800 RPM, Maximum.

\*\* @ 1800 RPM, Maximum. Displacement and 248 bar

### Preferred Models

| Model        | Description                         |
|--------------|-------------------------------------|
| PVP1636L2    | 16cc/rev, L/H rotation, rear ported |
| PVP1636R2    | 16cc/rev, R/H rotation, rear ported |
| PVP16362R26T | 16cc/rev, R/H rotation, side ported |
| PVP2336R2    | 23cc/rev, R/H rotation, rear ported |
| PVP23362R2   | 23cc/rev, R/H rotation, side ported |
| PVP3336R2    | 33cc/rev, R/H rotation, rear ported |
| PVP33362L2   | 33cc/rev, L/H rotation, side ported |
| PVP33362R2   | 33cc/rev, R/H rotation, side ported |
| PVP4836C2L2  | 48cc/rev, L/H rotation, side ported |
| PVP4836CR2   | 48cc/rev, R/H rotation, rear ported |
| PVP4836C2R   | 48cc/rev, R/H rotation, side ported |

## Industrial Piston Pumps

## PVP16-40 Conversion Parts &amp; Spares

\*Please read footnote regarding series

## Compensators PVP - 16-40

| Order Code | Description                     |
|------------|---------------------------------|
| 787027-36  | PVP 16-48 Comp Flow & Press 'A' |
| 787028-36  | PVP 16-48 Comp Remote Press 'M' |
| 787010-36  | PVP 16-48 Comp Std Press 'Omit' |

## Horse power block Ass PVP 16-40

| Order Code | Description         |
|------------|---------------------|
| 787501     | PVP 16 'H' and 'C'  |
| 788055     | PVP 23-33 'H' & 'C' |
| 787823     | PVP 41-48 'H' & 'C' |

## Shafts PVP 16-40

| Order Code | Description                                |      |
|------------|--------------------------------------------|------|
| 787432     | PVP 16 Shaft SAE A STR, 3/4" Keyed         | omit |
| 787433     | PVP 16 Shaft SAE A STR Thru, 3/4" - Keyed  | omit |
| 787434     | PVP 16 Shaft SAE A SPL, 9 Tooth            | 'B'  |
| 787435     | PVP 16 Shaft SAE A SPL Thru, 9 Tooth       | 'B'  |
| 787436     | PVP 16 Shaft SAE A SPL, 11 Tooth           | 'C'  |
| 787437     | PVP 16 Shaft SAE A SPL Thru, 11 Tooth      | 'C'  |
| 787359     | PVP 23-33 Shaft SAE B STR, 7/8" Keyed      | omit |
| 787360     | PVP 23-33 Shaft SAE B STR Thru, 7/8" Keyed | omit |
| 787361     | PVP 23-33 Shaft SAE B SPL, 13 Tooth        | 'B'  |
| 787362     | PVP 23-33 Shaft SAE B SPL Thru, 13 Tooth   | 'B'  |
| 787363     | PVP 23-33 Shaft SAE BB STR, 1" Keyed       | omit |
| 787364     | PVP 23-33 Shaft SAE BB STR Thru, 1" Keyed  | 'B'  |
| 787365     | PVP 23-33 Shaft SAE BB SPL, 15 Tooth       | 'B'  |
| 787366     | PVP 23-33 Shaft SAE BB SPL Thru, 15 Tooth  | 'B'  |
| 787747     | PVP 41-48 Shaft SAE B STR, 7/8" Keyed      | omit |
| 787748     | PVP 41-48 Shaft SAE B SPL, 7/8" Keyed      | 'B'  |
| 787745     | PVP 41-48 Shaft SAE BB STR, 1"Keyed        | 'C'  |
| 787746     | PVP 41-48 Shaft SAE BB SPL, 1"Keyed        | 'D'  |

## Servo Piston PVP 16-40

| Order Code | Description |
|------------|-------------|
| 787943     | PVP 16 CC   |
| 788052     | PVP 23 CC   |
| 787939     | PVP 33 CC   |
| 787782     | PVP 41 CC   |
| 787770     | PVP 48 CC   |

## Port Plates PVP 16-40

| Order Code | Description           |
|------------|-----------------------|
| 787374     | PVP 16 RH Rotation    |
| 787375     | PVP 16 LH Rotation    |
| 787125     | PVP 23-33 RH Rotation |
| 787126     | PVP 23-33 LH Rotation |
| 787789     | PVP 41-48 RH Rotation |
| 787790     | PVP 41-48 LH Rotation |

\* The above part numbers are taken from series pumps mentioned below.  
Including PVP 16 Series 12, PVP 23/33 SERIES 20, PVP 41/48 SERIES 10,

# PVP Series

## Industrial Piston Pumps

### PVP16-48 Conversion Parts & Spares

\* Please read footnote regarding series

#### Seal Kits PVP 16-48

| Order Code    | Description       |
|---------------|-------------------|
| SKPVP1611     | PVP 16 Nitrile    |
| SKPVP16V11    | PVP 16 Viton      |
| SKPVP23/3320  | PVP 23/33 Nitrile |
| SKPVP23/33V20 | PVP 23/33 Viton   |
| SKPVP41/4810  | PVP 41/48 Nitrile |
| SKPVP41/48V10 | PVP 41/48 Viton   |

#### Through-drive PVP 16-48

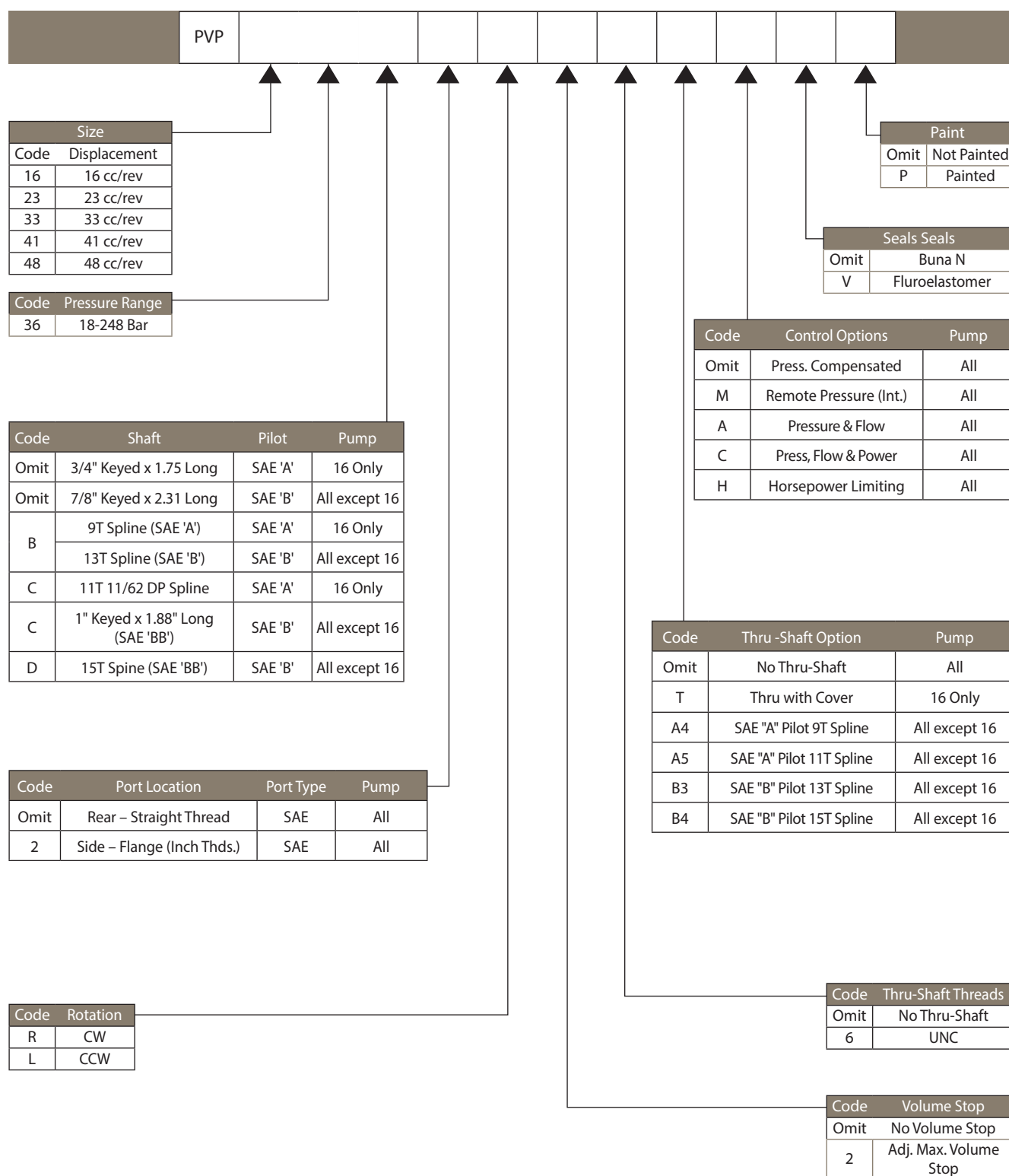
| Order Code | Description               |     |
|------------|---------------------------|-----|
| 787244     | PVP16 A Pilot 9T Spl      | 6A4 |
| 787236     | PVP23/33 A Pilot 9T Spl   | 6A4 |
| 787392     | PVP23/33 A Pilot 11T Spl  | 6A5 |
| 787239     | PVP23/33 B Pilot 13 T Spl | 6B3 |
| 787240     | PVP23/33 B Pilot 15 T Spl | 6B4 |
| 787236     | PVP41/48 A Pilot 9T Spl   | 6A4 |
| 787392     | PVP41/48 A Pilot 11T Spl  | 6A5 |
| 787239     | PVP41/48 B Pilot 13T Spl  | 6B3 |
| 787240     | PVP41/48 B Pilot 15T Spl  | 6B4 |

#### Rotating Group PVP 16-48

| Order Code     | Description           |
|----------------|-----------------------|
| RRKPVP16R12    | PVP 16 RH Rotation    |
| RRKPVP16L12    | PVP 16 LH Rotation    |
| RRKPVP23/33R20 | PVP 23/33 RH Rotation |
| RRKPVP23/33L20 | PVP 23/33 LH Rotation |
| RRKPVP41/48R11 | PVP 41/48 RH Rotation |
| RRKPVP41/48L11 | PVP 41/48 LH Rotation |

\* The above part numbers are taken from series pumps mentioned below.  
Including PVP 16 Series 12, PVP 23/33 SERIES 20, PVP 41/48 SERIES 10

## Industrial Piston Pumps



**Markets****Applications**

|                   |                                        |
|-------------------|----------------------------------------|
| Industrial        | Power Units, Industrial Molding, Press |
| Oil & Gas         | Oil Lift Pumps                         |
| Power Gen         | Turbine Start                          |
| Material Handling | Conveyor Drives                        |

**Literature**

Ref. Catalogue : [HY28-2662-CD/US](#)



**Series PVP**  
**Variable Volume**  
**Piston Pumps**

*Catalog HY28-2662-CD/US*  
*Revised June, 2012*



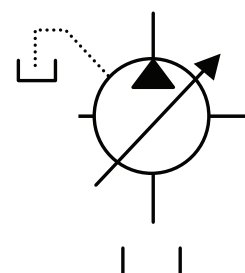
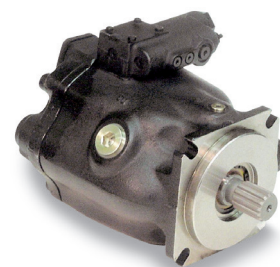
# P1-PD Series

## P1/PD Series for open circuits

18 cc/rev, 28 cc/rev, 45 cc /rev, 60 cc/rev, 75 cc/rev, 100 cc/rev, 140 cc/rev

### Characteristics:

- Variable displacement, axial, piston, P1 and PD pumps have been designed to meet the specific demands of mobile and industrial applications.
- Range expanded to cover 7 displacements – 18 cc/rev to 140 cc/rev.
- Mobile version P1, designed with an emphasis on speed capability achieves max RPM – 3600.
- Industrial version PD with reduced speed capability is designed for quieter operation.
- For open loop applications operating to 280 bar continuous pressure.
- Various port location options and full power through drive capability are other features offered by this range of pumps.



### Features:

- P1 – Mobile version – High Speed
- PD – Industrial version – Low noise
- Continuous pressure to 280 Bar
- Intermittent pressure to 320 Bar
- Peak pressure 350 bar
- Through drive capable
- Boosted inlet speeds to 3600 RPM
- Max & Min Volume Stop
- Wide variety of control options

| Series pump model         |                       |        | P1 018     | P1 028     | P1 045     | P1 060                   | P1 075     | P1 100     | P1 140     |
|---------------------------|-----------------------|--------|------------|------------|------------|--------------------------|------------|------------|------------|
| Displacement              | maximum               | cc/rev | 18         | 28         | 45         | 60                       | 75         | 100        | 140        |
|                           | continuous            | bar    | 280        |            |            |                          |            |            |            |
| Outlet pressure           | *intermittent         | bar    | 320        |            |            |                          |            |            |            |
|                           | peak                  | bar    | 350        |            |            |                          |            |            |            |
| Speed (mobile version) P1 | max. boosted inlet    | rpm    | 3600       | 3400       | 3100       | 2800                     | 2700       | 2500       | 2400       |
|                           | max. 1.0 bar absolute | rpm    | 3300       | 3200       | 2800       | 2500                     | 2400       | 2100       | 2100       |
|                           | max. 0.8 bar absolute | rpm    | 2900       | 2900       | 2400       | 2200                     | 2100       | 1900       | 1800       |
|                           | minimum               | rpm    | 600        |            |            |                          |            |            |            |
| Mounting                  |                       |        | A - 2 bolt | B - 2 bolt | B - 2 bolt | C - 2 bolt or C - 4 bolt |            | C - 4 bolt | D - 4 bolt |
|                           | Flange                | SAE    | 3/4"       | 1"         | 1"         | 1 1/4"                   | 1 1/4"     | 1 1/2"     | 1 3/4"     |
|                           | Keyed shaft           | SAE    | 3/4" 11T   | 1" 15T     | 1" 15T     | 1 1/4" 14T               | 1 1/4" 14T | 1 1/2" 17T | 1 3/4" 13T |
| Mounting                  | Splined shaft         | SAE    |            |            |            |                          |            | 1 1/4" 14T |            |
|                           | Splined shaft option  | SAE    | 5/8" 9T    | 7/8" 13T   | 7/8" 13T   |                          |            |            |            |
| Weight                    | End port              | kg     | 13.4       | 17.7       | 23         | 29                       | 30         | 51         | 66         |
|                           | Side port             | kg     | 14.2       | 18.1       | 24         | 30                       | 31         | 53         | 67         |
|                           | Thru drive            | kg     |            |            | 27         | 34                       | 35         | 55         | 82         |

\*Intermittent pressure is defined as less than 10% of operation time, not exceeding 6 successive seconds.

# P1-PD Series

## Preferred Model (Industrial)

| Model Code                | Description                                                     |
|---------------------------|-----------------------------------------------------------------|
| PD018PS02SR55BC00E1200000 | 18 cc/rev, R/H rotation, End ported, Pressure Comp, Key Shaft   |
| PD018PS02SR55BC00R1200000 | 18 cc/rev, R/H rotation, Side ported, Pressure Comp, Key Shaft  |
| PD028PS02SR55BC00R1200000 | 28 cc/rev, R/H rotation, Side ported, Pressure Comp, Key Shaft  |
| PD028PS02SR55BC00E1200000 | 28 cc/rev, R/H rotation, Side ported, Pressure Comp, Key Shaft  |
| PD045PS02SR55BC00R1000000 | 45 cc/rev, R/H rotation, Side Ported, Pressure Comp, Key Shaft  |
| PD045PS02SR55BL00R1000000 | 45 cc/rev, R/H rotation, Side Ported, Load Sense, Key Shaft     |
| PD060PS02SR55BC00S1000000 | 60 cc/rev, R/H rotation, Side Ported, Pressure Comp, Key Shaft  |
| PD060PS02SR55BL00S1000000 | 60 cc/rev, R/H rotation, Side Ported, Load Sense, Key Shaft     |
| PD075PS02SR55BC00S1000000 | 75 cc/rev, R/H rotation, Side ported, Pressure Comp, Key Shaft  |
| PD075PS02SR55BL00S1000000 | 75 cc/rev, R/H rotation, Side ported, Load Sense, Key Shaft     |
| PD100PS02SR55BC00S1000000 | 100 cc/rev, R/H rotation, Side ported, Pressure Comp, Key Shaft |
| PD100PS02SR55BL00S1000000 | 100 cc/rev, R/H rotation, Side ported, Load Sense, Key Shaft    |
| PD140PS02SR55BC00S1000000 | 140 cc/rev, R/H rotation, Side ported, Pressure Comp, Key Shaft |
| PD140PS02SR55BL00S1000000 | 140 cc/rev, R/H rotation, Side ported, Load Sense, Key Shaft    |

## Preferred Model (Mobile/Universal)

| Model Code                | Description                                                                        |
|---------------------------|------------------------------------------------------------------------------------|
| P1018PS02SRM5BC00E1200000 | 18 cc/rev, R/H rotation, End ported, Pressure Comp, Key Shaft, No paint            |
| P1018PS02SRM5BC00R1200000 | 18 cc/rev, R/H rotation, Side ported, Pressure Comp, Key Shaft, No paint           |
| P1018PS01SRM5BC00E120PB00 | 18 cc/rev, R/H rotation, End ported, Pressure Comp, Splined Shaft, Painted Black   |
| P1018PS01SLM5BC00E1200000 | 18 cc/rev, L/H rotation, End ported, Pressure Comp, Splined Shaft, No paint        |
| P1028PS02SRM5BC00E1200000 | 28 cc/rev, R/H rotation, End ported, Pressure Comp, Key Shaft, No paint            |
| P1028PS02SRM5BC00R1200000 | 28 cc/rev, R/H rotation, Side ported, Pressure Comp, Key Shaft, No paint           |
| P1028PS01SLM5BC00E1200000 | 28 cc/rev, L/H rotation, End ported, Pressure Comp, Splined Shaft, No paint        |
| P1028PS08SRM5BC00R100PB00 | 28 cc/rev, R/H rotation, Side ported, Pressure Comp, Splined Shaft, Painted Black  |
| P1028PS08SRM5BL00R120PB00 | 28 cc/rev, R/H rotation, Side ported, Load Sensing, Splined Shaft, Painted Black   |
| P1045PS02SRM5BC00E1200000 | 45 cc/rev, R/H rotation, End ported, Pressure Comp, Key Shaft                      |
| P1045PS02SRM5BC00R1000000 | 45 cc/rev, R/H rotation, Side ported, Pressure Comp, Key Shaft                     |
| P1045PS01SRM5BC00R1000000 | 45 cc/rev, R/H rotation, Side ported, Pressure Comp, Splined Shaft                 |
| P1045PS01SRM5BL00R1000000 | 45 cc/rev, R/H rotation, Side ported, Load Sense, Splined Shaft                    |
| P1045PS01SLM5BL00R1000000 | 45 cc/rev, L/H rotation, Side ported, Load Sense, Splined Shaft                    |
| P1045PS01SRU5AL00R1000000 | 45 cc/rev, R/H rotation, Side ported, Load Sense, Splined Shaft, Universal         |
| P1075PS02SRM5BC00S1000000 | 75 cc/rev, R/H rotation, Side ported, Pressure Comp, Key Shaft                     |
| P1075PS02SRM5BL00S1000000 | 75 cc/rev, R/H rotation, Side ported, Load Sense, Key Shaft                        |
| P1075PC01SRM5BC00S1000000 | 75 cc/rev, R/H rotation, Side ported, Pressure Comp, Splined Shaft, SAE'C' 2-bolts |
| P1075PC02SRM5BC00S1000000 | 75 cc/rev, R/H rotation, Side ported, Pressure Comp, Key Shaft, SAE'C' 2-bolts     |
| P1075PC01SRM5BL00S1000000 | 75 cc/rev, R/H rotation, Side ported, Load Sense, Splined Shaft, SAE'C' 2-bolts    |
| P1075PC01SLM5BL00S1000000 | 75 cc/rev, L/H rotation, Side ported, Load Sense, Splined Shaft, SAE'C' 2-bolts    |
| P1075PC02SRM5BL00S1000000 | 75 cc/rev, R/H rotation, Side ported, Load Sense, Key Shaft, SAE'C' 2-bolts        |
| P1100PS02SRM5BC00S1000000 | 100 cc/rev, R/H rotation, Side Ported, Pressure Comp, Key Shaft                    |
| P1100PS01SRM5BC00S1000000 | 100 cc/rev, R/H rotation, Side Ported, Pressure Comp, Splined Shaft                |
| P1100PS01SRM5BL00S1000000 | 100 cc/rev, R/H rotation, Side Ported, Load Sense, Splined Shaft                   |
| P1100PS01SLM5BL00S1000000 | 100 cc/rev, L/H rotation, Side Ported, Load Sense, Splined Shaft                   |
| P1100PS02SRU5BC00S1000000 | 100 cc/rev, R/H rotation, Side ported, Pressure Comp, Key Shaft, Universal         |
| P1140PS02SRM5BC00S1000000 | 140 cc/rev, R/H rotation, Side ported, Pressure Comp, Key Shaft                    |
| P1140PS01SRM5BC00S1000000 | 140 cc/rev, R/H rotation, Side ported, Pressure Comp, Splined Shaft                |
| P1140PS01SRM5BL00S1000000 | 140 cc/rev, R/H rotation, Side ported, Load Sense, Splined Shaft                   |
| P1140PS01SLM5BL00S1000000 | 140 cc/rev, L/H rotation, Side ported, Load Sense, Splined Shaft                   |
| P1140PS02SRU5BC00S1000000 | 140 cc/rev, R/H rotation, Side ported, Pressure Comp, Key Shaft, Universal         |



# P1-PD Series

## Seal Kits and Parts Kits

| Seal Kits | 18           | 28           | 45           | 60           | 75           | 100          | 140          |
|-----------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
|           | S2E-18709-5K | S2E-19118-5K | S2E-19066-5K | S2E-18697-5K | S2E-18004-5K | S2E-18460-5K | S2E-18158-5K |

Note: Seal kits contain all the seals required for any pump configuration.

| Rotating Group Kits                 | 18           | 28           | 45           | 60           | 75           | 100          | 140          |
|-------------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| CW Mobile P1                        | S2E-18710-0K | S2E-19119-0K | S2E-19067-0K | S2E-18698-0K | S2E-18032-0K | S2E-18485-0K | S2E-18489-0K |
| CW Mobile P1 with Ripple Chamber    | S2E-19205-0K | S2E-19209-0K | S2E-19235-0K | **           | **           | **           | **           |
| CCW Mobile P1                       | S2E-18711-0K | S2E-19120-0K | S2E-19068-0K | S2E-18699-0K | S2E-18033-0K | S2E-18486-0K | S2E-18490-0K |
| CCW Mobile P1 w/ Ripple Chamber     | S2E-19206-0K | S2E-19210-0K | S2E-19236-0K | **           | **           | **           | **           |
| CW Industrial PD                    | S2E-18712-0K | S2E-19121-0K | S2E-19069-0K | S2E-18700-0K | S2E-18483-0K | S2E-18487-0K | S2E-18491-0K |
| CW Industrial PD w/ Ripple Chamber  | S2E-19207-0K | S2E-19211-0K | S2E-19126-0K | **           | **           | **           | **           |
| CCW Industrial PD                   | S2E-18713-0K | S2E-19122-0K | S2E-19070-0K | S2E-18701-0K | S2E-18484-0K | S2E-18488-0K | S2E-18492-0K |
| CCW Industrial PD w/ Ripple Chamber | S2E-19208-0K | S2E-19212-0K | S2E-19127-0K | **           | **           | **           | **           |

Rotating Group Kit includes barrel s/a, pistons, retainer, washer, pins, port plate

| Torque Limiter Control Kits        | 45          | 60          | 75          | 100         | 140         |
|------------------------------------|-------------|-------------|-------------|-------------|-------------|
| Torque Limiter Kit for AMT Control | S2E-19102-5 | S2E-19033-5 | S2E-18720-5 | S2E-18888-5 | S2E-18963-5 |
| Torque Limiter Kit for ALT Control | See Note    |             | **          | **          | **          |
| Torque Limiter Kit for LOT         | **          | **          | S2E-18721-5 | S2E-18759-5 | S2E-18739-5 |

Torque Limiter Kits includes cartridge assembly, tubing and fittings.

**Note:** AM control can be converted to an AL control with conversion kit S2E-19117-0.

European customers will receive a solid spool in this kit. US customer will receive a set screw to plug orifice in spool.

### Minimum and Maximum Volume Stop

| Item # | Qty | 18          | 28          | 45            | 060 075 100 140           | Description5                   |
|--------|-----|-------------|-------------|---------------|---------------------------|--------------------------------|
| KIT    |     | S2E-19203-5 | S2E-19204-5 | S2E-19114-5   | S2E-18987-5K S2E-18988-5K | Adjustable Volume Stop         |
| KIT    |     | S2E-19608-5 | S2E-19609-5 | Use Above Kit |                           | Adjustable Minimum Volume Stop |

Maximum and minimum volume stops use the same components except where noted.

| Thru Drive Pad Coupling #70 | Thru Drive Couplings |             |             |             |             |             |             |             |
|-----------------------------|----------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
|                             | 18                   | 28          | 45          | 60          | 75          | 100         | 140         | O-ring      |
| SAE A, 9 Tooth              | S2E-19538-0          | S2E-19364-0 | 03E-94942-0 | 03E-93278-0 | 03E-93278-0 | 03E-94274-0 | 03E-93947-0 | 695-00237-0 |
| SAE A, 11 Tooth             | S2E-19726-0          | S2E-19391-0 | 03E-94943-0 | 03E-94724-0 | 03E-94724-0 | 03E-94657-0 | **          | 695-00237-0 |
| SAE B, 13 Tooth             | **                   | S2E-19365-0 | 03E-94945-0 | 03E-93277-0 | 03E-93277-0 | 03E-94273-0 | 03E-93946-0 | 695-00243-0 |
| SAE BB, 15 Tooth            | **                   | S2E-19409-0 | 03E-94361-0 | 03E-93279-0 | 03E-93279-0 | 03E-94272-0 | 03E-93945-0 | 695-00243-0 |
| SAE C, 14 Tooth             | **                   | **          | **          | 03E-93276-0 | 03E-93276-0 | 03E-94271-0 | 03E-93944-0 | 695-00251-0 |
| SAE CC, 17 Tooth            | **                   | **          | **          | **          | **          | 03E-94270-0 | 03E-93943-0 | 695-00251-0 |
| SAE D&E, 13 Tooth           | **                   | **          | **          | **          | **          | **          | 03E-93942-0 | 695-00259-0 |

# P1-PD Series

Pumps

## P1/ PD Series - 18cc, 28cc, 45cc

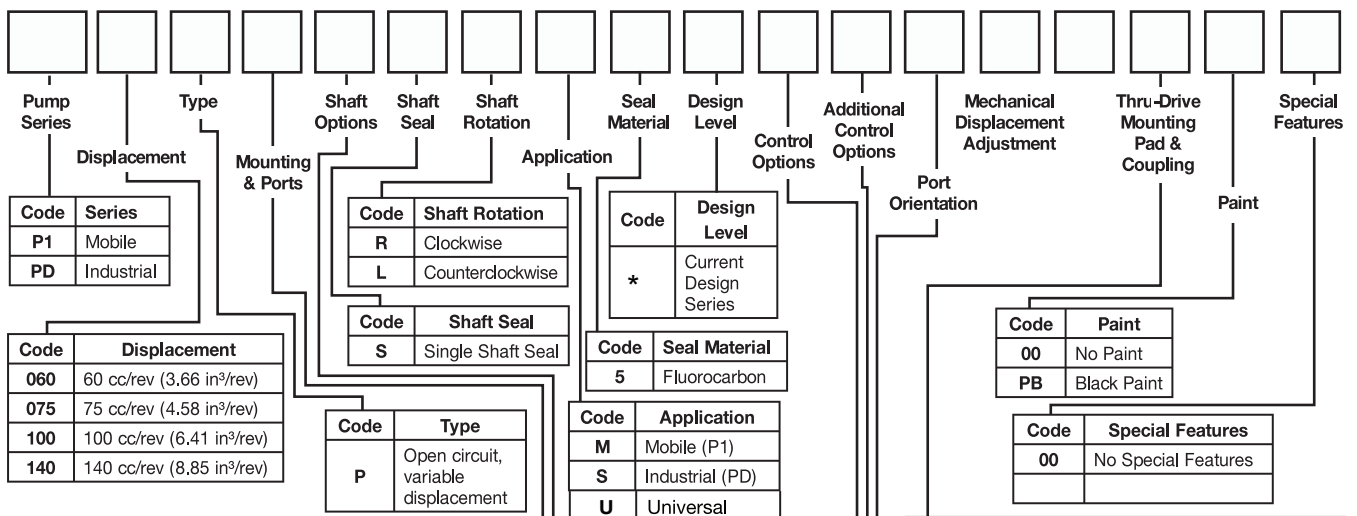
## Ordering Information

| Pump Series                                            | Displacement                                                                          | Type         | Mounting & Ports | Shaft Options       | Shaft Seal   | Shaft Rotation | Application         | Seal Material | Design Level         | Control Options | Additional Control Options | Port Orientation | Displacement Adjustment | Case-to-Inlet Check Valve | Thru-Drive Mounting Pad & Coupling | Paint | Special Features |  |  |  |  |  |  |
|--------------------------------------------------------|---------------------------------------------------------------------------------------|--------------|------------------|---------------------|--------------|----------------|---------------------|---------------|----------------------|-----------------|----------------------------|------------------|-------------------------|---------------------------|------------------------------------|-------|------------------|--|--|--|--|--|--|
| Code                                                   | Series                                                                                |              |                  |                     |              |                |                     | Code          | Design Level         |                 |                            |                  |                         |                           |                                    |       |                  |  |  |  |  |  |  |
| P1                                                     | Mobile                                                                                |              |                  |                     |              |                |                     | 5             | Fluorocarbon         |                 |                            |                  |                         |                           |                                    |       |                  |  |  |  |  |  |  |
| PD                                                     | Industrial                                                                            |              |                  |                     |              |                |                     |               |                      |                 |                            |                  |                         |                           |                                    |       |                  |  |  |  |  |  |  |
| Code                                                   | Displacement                                                                          |              |                  |                     |              |                |                     | Code          | Seal Material        |                 |                            |                  |                         |                           |                                    |       |                  |  |  |  |  |  |  |
| 018                                                    | 18 cc/rev<br>(1.10 in <sup>3</sup> /rev)                                              |              |                  |                     |              |                |                     | M             | Mobile (P1)          |                 |                            |                  |                         |                           |                                    |       |                  |  |  |  |  |  |  |
| 028                                                    | 28 cc/rev<br>(1.71 in <sup>3</sup> /rev)                                              |              |                  |                     |              |                |                     | S             | Industrial (PD)      |                 |                            |                  |                         |                           |                                    |       |                  |  |  |  |  |  |  |
| 045                                                    | 45 cc/rev<br>(2.75 in <sup>3</sup> /rev)                                              |              |                  |                     |              |                |                     | U             | Universal (045 Only) |                 |                            |                  |                         |                           |                                    |       |                  |  |  |  |  |  |  |
| Code                                                   | Type                                                                                  |              |                  |                     |              |                |                     | Code          | Shaft Rotation       |                 |                            |                  |                         |                           |                                    |       |                  |  |  |  |  |  |  |
| P                                                      | Open circuit, variable displacement                                                   |              |                  |                     |              |                |                     | R             | Clockwise            |                 |                            |                  |                         |                           |                                    |       |                  |  |  |  |  |  |  |
|                                                        |                                                                                       |              |                  |                     |              |                |                     | L             | Counterclockwise     |                 |                            |                  |                         |                           |                                    |       |                  |  |  |  |  |  |  |
| Code                                                   | Shaft Seal                                                                            |              |                  |                     |              |                |                     |               |                      |                 |                            |                  |                         |                           |                                    |       |                  |  |  |  |  |  |  |
| S                                                      | Single Shaft Seal                                                                     |              |                  |                     |              |                |                     |               |                      |                 |                            |                  |                         |                           |                                    |       |                  |  |  |  |  |  |  |
| Code                                                   | Mounting & Ports See Catalog Table for Complete Information                           |              |                  |                     |              |                |                     |               |                      |                 |                            |                  |                         |                           |                                    |       |                  |  |  |  |  |  |  |
|                                                        | 018 Mount                                                                             | 018 Threaded | Aux Ports        | 028 Mount           | 028 Threaded | Aux Ports      | 045 Mount           | 045 Threaded  | 4 Bolt Flange        | Aux Ports       |                            |                  |                         |                           |                                    |       |                  |  |  |  |  |  |  |
| S                                                      | 82-2 SAE A                                                                            | SAE 16/12    | SAE 4/6          | 101-2 SAE B         | SAE 20/12    | SAE 4/8        | 101-2 SAE B         | SAE 24/16     | 38/25mm Code 61      | SAE 4/10        |                            |                  |                         |                           |                                    |       |                  |  |  |  |  |  |  |
| Code                                                   | 018 Shaft Options                                                                     |              |                  | 028 Shaft Option    |              |                | 045 Shaft Option    |               |                      |                 |                            |                  |                         |                           |                                    |       |                  |  |  |  |  |  |  |
| 01                                                     | SAE A 11T Spline                                                                      |              |                  | SAE B-B 15T Spline  |              |                | SAE B-B 15T Spline  |               |                      |                 |                            |                  |                         |                           |                                    |       |                  |  |  |  |  |  |  |
| 02                                                     | SAE 19-1 Key .75" Dia.                                                                |              |                  | SAE Key 1" Dia. B-B |              |                | SAE Key 1" Dia. B-B |               |                      |                 |                            |                  |                         |                           |                                    |       |                  |  |  |  |  |  |  |
| 06                                                     | SAE A 9T Spline*                                                                      |              |                  | —                   |              |                | —                   |               |                      |                 |                            |                  |                         |                           |                                    |       |                  |  |  |  |  |  |  |
| 08                                                     |                                                                                       |              |                  | SAE B 13T Spline    |              |                | SAE B 13T Spline    |               |                      |                 |                            |                  |                         |                           |                                    |       |                  |  |  |  |  |  |  |
| * Not available with Thru-Drive                        |                                                                                       |              |                  |                     |              |                |                     |               |                      |                 |                            |                  |                         |                           |                                    |       |                  |  |  |  |  |  |  |
| Code                                                   | Control Options                                                                       |              |                  |                     |              |                |                     |               |                      |                 |                            |                  |                         |                           |                                    |       |                  |  |  |  |  |  |  |
| C0                                                     | Pressure Limiter, 80-280 bar Adjustment Range                                         |              |                  |                     |              |                |                     |               |                      |                 |                            |                  |                         |                           |                                    |       |                  |  |  |  |  |  |  |
| L0                                                     | Load sensing, 10-30 bar ΔP and Pressure Limiter 80-280 bar                            |              |                  |                     |              |                |                     |               |                      |                 |                            |                  |                         |                           |                                    |       |                  |  |  |  |  |  |  |
| L2                                                     | Load sensing, 10-30 bar ΔP and Pressure Limiter 80-280 bar with bleed orifice         |              |                  |                     |              |                |                     |               |                      |                 |                            |                  |                         |                           |                                    |       |                  |  |  |  |  |  |  |
| AE                                                     | Pilot Operated Pressure Limiter Control with Proportional Electronic Adjustment (12V) |              |                  |                     |              |                |                     |               |                      |                 |                            |                  |                         |                           |                                    |       |                  |  |  |  |  |  |  |
| AF                                                     | Pilot Operated Pressure Limiter Control with Proportional Electronic Adjustment (24V) |              |                  |                     |              |                |                     |               |                      |                 |                            |                  |                         |                           |                                    |       |                  |  |  |  |  |  |  |
| AN                                                     | Pilot Operated Control with ISO-4401 (NG6) Interface and Shipping Cover               |              |                  |                     |              |                |                     |               |                      |                 |                            |                  |                         |                           |                                    |       |                  |  |  |  |  |  |  |
| AM                                                     | Pilot Operated Pressure Limiter Control with Mechanical Adjustment and Vent Port      |              |                  |                     |              |                |                     |               |                      |                 |                            |                  |                         |                           |                                    |       |                  |  |  |  |  |  |  |
| AL                                                     | Load sense and Pressure limiter (P*45 TLO Only)                                       |              |                  |                     |              |                |                     |               |                      |                 |                            |                  |                         |                           |                                    |       |                  |  |  |  |  |  |  |
|                                                        |                                                                                       |              |                  |                     |              |                |                     |               |                      |                 |                            |                  |                         |                           |                                    |       |                  |  |  |  |  |  |  |
|                                                        |                                                                                       |              |                  |                     |              |                |                     |               |                      |                 |                            |                  |                         |                           |                                    |       |                  |  |  |  |  |  |  |
| Code                                                   | Thru-Drive Mounting Pad/ Coupling                                                     |              |                  |                     |              |                |                     |               |                      |                 |                            |                  |                         |                           |                                    |       |                  |  |  |  |  |  |  |
| 0                                                      | No Thru-Drive                                                                         |              |                  |                     |              |                |                     |               |                      |                 |                            |                  |                         |                           |                                    |       |                  |  |  |  |  |  |  |
| A                                                      | SAE 82-2 (A) Pilot & SAE A 9T Coupling                                                |              |                  |                     |              |                |                     |               |                      |                 |                            |                  |                         |                           |                                    |       |                  |  |  |  |  |  |  |
| H                                                      | SAE 82-2 (A) Pilot & SAE A 11T Coupling                                               |              |                  |                     |              |                |                     |               |                      |                 |                            |                  |                         |                           |                                    |       |                  |  |  |  |  |  |  |
| B*                                                     | SAE 101-2 (B) Pilot & SAE B 13T Coupling                                              |              |                  |                     |              |                |                     |               |                      |                 |                            |                  |                         |                           |                                    |       |                  |  |  |  |  |  |  |
| Q*                                                     | SAE 101-2 (B) Pilot & SAE B-B 15T Coupling                                            |              |                  |                     |              |                |                     |               |                      |                 |                            |                  |                         |                           |                                    |       |                  |  |  |  |  |  |  |
| *For sizes 028 & 045 only                              |                                                                                       |              |                  |                     |              |                |                     |               |                      |                 |                            |                  |                         |                           |                                    |       |                  |  |  |  |  |  |  |
| Code                                                   | Port Type                                                                             |              |                  |                     |              |                |                     |               |                      |                 |                            |                  |                         |                           |                                    |       |                  |  |  |  |  |  |  |
| 0*                                                     | Flange Ports                                                                          |              |                  |                     |              |                |                     |               |                      |                 |                            |                  |                         |                           |                                    |       |                  |  |  |  |  |  |  |
| 2                                                      | Threaded Ports                                                                        |              |                  |                     |              |                |                     |               |                      |                 |                            |                  |                         |                           |                                    |       |                  |  |  |  |  |  |  |
|                                                        | * size 18 with Thru-Drive only                                                        |              |                  |                     |              |                |                     |               |                      |                 |                            |                  |                         |                           |                                    |       |                  |  |  |  |  |  |  |
| Code                                                   | Displacement Adjustment                                                               |              |                  |                     |              |                |                     |               |                      |                 |                            |                  |                         |                           |                                    |       |                  |  |  |  |  |  |  |
| 0                                                      | None                                                                                  |              |                  |                     |              |                |                     |               |                      |                 |                            |                  |                         |                           |                                    |       |                  |  |  |  |  |  |  |
| 1*                                                     | Adjustable Maximum Displacement                                                       |              |                  |                     |              |                |                     |               |                      |                 |                            |                  |                         |                           |                                    |       |                  |  |  |  |  |  |  |
| 2*                                                     | Adjustable Minimum Displacement                                                       |              |                  |                     |              |                |                     |               |                      |                 |                            |                  |                         |                           |                                    |       |                  |  |  |  |  |  |  |
| 3*                                                     | Adjustable Max & Min Displacement                                                     |              |                  |                     |              |                |                     |               |                      |                 |                            |                  |                         |                           |                                    |       |                  |  |  |  |  |  |  |
| * Displacement adjustment not available on thru-drive. |                                                                                       |              |                  |                     |              |                |                     |               |                      |                 |                            |                  |                         |                           |                                    |       |                  |  |  |  |  |  |  |
| Code                                                   | Port Orientation                                                                      |              |                  |                     |              |                |                     |               |                      |                 |                            |                  |                         |                           |                                    |       |                  |  |  |  |  |  |  |
| E                                                      | End Ports                                                                             |              |                  |                     |              |                |                     |               |                      |                 |                            |                  |                         |                           |                                    |       |                  |  |  |  |  |  |  |
| R                                                      | Side Ports with Ripple Chamber                                                        |              |                  |                     |              |                |                     |               |                      |                 |                            |                  |                         |                           |                                    |       |                  |  |  |  |  |  |  |
| T                                                      | Side Ports with Thru-Drive 28 & 45 only                                               |              |                  |                     |              |                |                     |               |                      |                 |                            |                  |                         |                           |                                    |       |                  |  |  |  |  |  |  |
| Code                                                   | Additional Control Options                                                            |              |                  |                     |              |                |                     |               |                      |                 |                            |                  |                         |                           |                                    |       |                  |  |  |  |  |  |  |
| 0                                                      | None                                                                                  |              |                  |                     |              |                |                     |               |                      |                 |                            |                  |                         |                           |                                    |       |                  |  |  |  |  |  |  |
| T                                                      | Torque Limiter 45cc ALT, AMT only                                                     |              |                  |                     |              |                |                     |               |                      |                 |                            |                  |                         |                           |                                    |       |                  |  |  |  |  |  |  |

# P1-PD Series

## P1/ PD Series - 60cc, 75cc, 100cc, 140cc

## Ordering Information



| Code | Mounting & Ports See Catalog Table for Complete Information |                 |           |             |                 |           |             |                  |           |             |                  |           |
|------|-------------------------------------------------------------|-----------------|-----------|-------------|-----------------|-----------|-------------|------------------|-----------|-------------|------------------|-----------|
|      | 060 Mount                                                   | Flange Ports mm | Aux Ports | 075 Mount   | Flange Ports mm | Aux Ports | 100 Mount   | Flange Ports mm  | Aux Ports | 140 Mount   | Flange Ports mm  | Aux Ports |
| S    | SAE mounting with SAE ports                                 |                 |           |             |                 |           |             |                  |           |             |                  |           |
|      | 127-4 ( C )                                                 | 50/25 Code 61   | SAE 4/10  | 127-4 ( C ) | 50/25 Code 61   | SAE 4/10  | 127-4 ( C ) | 63/32 Code 61/62 | SAE 4/12  | 152-4 ( D ) | 63/32 Code 61/62 | SAE 4/16  |
| C*   | *SAE C 2 bolt mtg w/ SAE ports                              |                 |           |             |                 |           |             |                  |           |             |                  |           |
|      | 127-2 ( C )                                                 | 50/25 Code 61   | SAE 4/10  | 127-2 ( C ) | 50/25 Code 61   | SAE 4/10  | N/A         | N/A              | N/A       | N/A         | N/A              | N/A       |

\* 60cc/r and 75cc/r only

| Code | 060 Shaft Options | 075 Shaft Options | 100 Shaft Options  | 140 Shaft Options |
|------|-------------------|-------------------|--------------------|-------------------|
| 01   | SAE C 14T Spline  | SAE C 14T Spline  | SAE C-C 17T Spline | SAE D 13T Spline  |
| 02   | SAE C 32-1 Key    | SAE C 32-1 Key    | SAE C-C 38-1 Key   | SAE D 44-1 Key    |
| 06   | —                 | —                 | SAE C 14T Spline   | —                 |

| Code | Control Options                                                                       |
|------|---------------------------------------------------------------------------------------|
| C0   | Pressure Limiter, 80-280 bar Adjustment Range                                         |
| L0   | Load sensing 10-30 bar ΔP and Pressure Limiter 80-280 bar                             |
| L2   | Load sensing, 10-30 bar ΔP and Pressure Limiter 80-280 bar with bleed orifice         |
| AE   | Pilot Operated Pressure Limiter Control with Proportional Electronic Adjustment (12V) |
| AF   | Pilot Operated Pressure Limiter Control with Proportional Electronic Adjustment (24V) |
| AN * | Pilot Operated Control with ISO-4401 (NG6) Interface and Shipping Cover               |
| AM   | Pilot Operated Pressure Limiter Control with Mechanical Adjustment and Vent Port      |
| AL   | Load sense and pressure limiter (only with "T" Torque Limiter option)                 |

\* Not functional control as such

| Code | Mechanical Displacement Adjustment |
|------|------------------------------------|
| 0    | None                               |
| 1*   | Adjustable Maximum Displacement    |
| 2*   | Adjustable Minimum Displacement    |
|      | Adjustable Max & Min Displacement  |

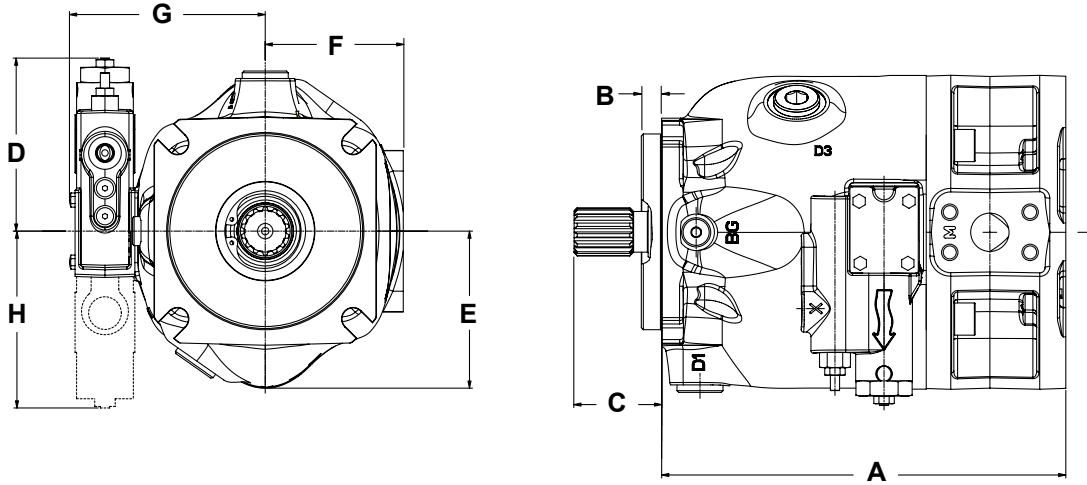
\* Displacement adjustment not available on thru-drive.

| Code | Port Orientation           |
|------|----------------------------|
| E    | End Ports                  |
| S    | Side Ports                 |
| T    | Side Ports with Thru-Drive |

| Code | Additional Control Options          |
|------|-------------------------------------|
| 0    | None                                |
| T    | Torque limiter AMT All Sizes        |
| T    | Torque limiter LOT 75,100,140       |
| T    | Torque limiter ALT 045 and 060 only |

# P1-PD Series

## Piston Pumps (Mobile & Industrial) P1/PD Medium Pressure Mobile Piston Pumps



### Dimensions, inch (mm)

| Series   | A             | B           | C Max.      | D          | E            | F           | G            | H Max.     |
|----------|---------------|-------------|-------------|------------|--------------|-------------|--------------|------------|
| P1/PD018 | 6.46 (164.2)  | 0.24 (6.2)  | 1.29 (32.8) | 4.72 (120) | 2.97 (75.5)  | 2.60 (66)   | 4.24 (107.7) | 4.80 (122) |
| P1/PD028 | 9.25 (235.5)  | 0.37 (9.5)  | 1.84 (46.8) | 4.72 (120) | 3.21 (81.5)  | 2.93 (74.5) | 4.48 (113.8) | 4.80 (122) |
| P1/PD045 | 9.00 (228.7)  | 0.37 (9.5)  | 1.84 (46.8) | 4.72 (120) | 3.63 (92.3)  | 2.92 (74.2) | 4.75 (120.7) | 4.80 (122) |
| P1/PD060 | 9.96 (253.0)  | 0.50 (12.7) | 2.24 (56.8) | 4.72 (120) | 3.98 (101.2) | 3.23 (82)   | 4.88 (123.9) | 4.80 (122) |
| P1/PD075 | 10.37 (263.5) | 0.50 (12.7) | 2.24 (56.8) | 4.72 (120) | 4.09 (103.8) | 3.54 (90)   | 5.03 (127.7) | 4.80 (122) |
| P1/PD100 | 13.37 (339.6) | 0.50 (12.7) | 2.47 (62.8) | 4.72 (120) | 4.61 (117.1) | 3.98 (101)  | 5.66 (143.7) | 4.80 (122) |
| P1/PD140 | 14.34 (364.3) | 0.50 (12.7) | 2.97 (75.5) | 4.72 (120) | 5.24 (133)   | 4.45 (113)  | 6.13 (155.7) | 4.80 (122) |

### Benefits/Features

- Compact overall package size
- Quiet operation
- Low flow ripple to further reduce noise
- Elastomer seals that eliminate gaskets and external leakage
- High operating efficiency for lower power consumption and reduced heat generation
- Simple hydraulic controls with "no-leak" adjustments
- SAE and ISO standard mounting flanges and ports
- Long life, tapered-roller shaft bearings
- Long life, low friction, hydrostatically balanced cam bearings
- Full power through-drive capability
- End or side inlet and outlet ports
- Case drain ports for horizontal or vertical, shaft-up mounting
- Optional minimum and maximum displacement adjustments
- Optional case-to-inlet check valve to extend shaft seal life
- Easy to service



**P1/PD**

# P1-PD Series

## P1 Mobile Application Market

| Markets      | Applications                                                                                 |
|--------------|----------------------------------------------------------------------------------------------|
| Forestry     | Feller Bunchers, Knuckle Boom Loader, Skidder, Forwarder, Cranes                             |
| Oil & Gas    | Nitrogen Pumpers, Cementers, Coil Tubing                                                     |
| Construction | ADTs, Fan Drives                                                                             |
| Mining       | Drill Rigs, Top Drives, Loaders, Dump Trucks, Tunneling Equipment                            |
| Power Gen    | Lube Oil Skids                                                                               |
| Recycling    | Shredders, Balers, Compactors, Vacuum Truck Systems, Refuse Trucks - ASL, Rear Loaders       |
| Military     | Fan Drives                                                                                   |
| Utility      | Cranes, Digger Derricks, Man Lifts, Cable Placers, Fan Drives, Horizontal Directional Drills |





# P1-PD Series

Pumps

## PD Industrial Application Market

### Markets

### Applications

|                   |                                        |
|-------------------|----------------------------------------|
| Industrial        | Power Units, Industrial Molding, Press |
| Oil & Gas         | Oil Lift Pumps                         |
| Power Gen         | Turbine Start                          |
| Material Handling | Conveyor Drives                        |



Literature  
Ref. Catalogue [HY28-1559-01/PT](#)



P1/PD Series  
Medium Pressure Axial Piston Pumps

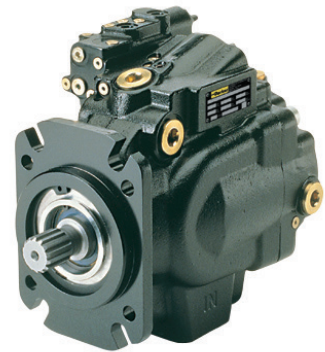
Variable Displacement  
Catalog HY28-2665-01/P1/EN  
Effective August 1, 2014



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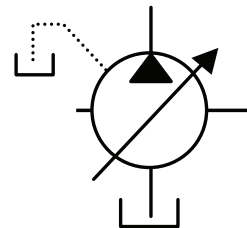
### Characteristics

- Low noise levels – rigid housing design and reduced pressure ripple
- Compact design and unique port layout
- High self priming speed extends service life
- Modular controls allow for future control variations



### Features

- Continuous Pressure – up to 320 bar
- Through-shaft Capability
- Adjustable Maximum Volume Stop
- 8 Control Options
- 4 Capacities from 60 cc/rev to 145 cc/rev



|                        | P2060     | P2075     | P2105      | P2145      |
|------------------------|-----------|-----------|------------|------------|
| Max. Displacement      | 60 cc/rev | 75 cc/rev | 105 cc/rev | 145 cc/rev |
| Speed:*                | 2800 RPM  | 2500 RPM  | 2300 RPM   | 2200 RPM   |
| Cont. Outlet Press:    | 320 bar   | 320 bar   | 320 bar    | 320 bar    |
| Min. Inlet Press.**    | 0.8 bar   | 0.8 bar   | 0.8 bar    | 0.8 bar    |
| Max. Inlet Press.**    | 10 bar    | 10 bar    | 10 bar     | 10 bar     |
| Max. Case Drain Press: | 0.5 bar   | 0.5 bar   | 0.5 bar    | 0.5 bar    |

\* Self-priming speed @ 1 bar (absolute)

\*\* @ Max Speed

| Preferred Models          | Description                                           |
|---------------------------|-------------------------------------------------------|
| P2060L00C1C25LA20N00T1A1P | 60cc/rev LH, Load Sense, 'C' 4 bolt Flange 'C' spline |
| P2060R00C1C25LA20N00T1A1P | 60cc/rev RH, Load Sense, 'C' bolt flange 'C' spline   |
| P2075L00C1C25LA20N00T1A1P | 75cc/rev LH, Load Sense, 'C' Flange 'C' spline        |
| P2075R00C1C25LA20N00T1A1P | 75cc/rev RH, Load Sense, 'C' Flange 'C' spline        |
| P2105L00C1C25LA20N00T1A1P | 105cc/rev LH, Load Sense, 'C' Flange 'C' spline       |
| P2105R00C1C25LA20N00T1A1P | 105cc/rev RH, Load Sense, 'C' Flange 'C' spline       |
| P2145L00C1C25LA20N00T1A1P | 145cc/rev LH, Load Sense, 'C' Flange 'C' spline       |
| P2145R00C1C25LA20N00T1A1P | 145cc/rev RH, Load Sense, 'C' Flange 'C' spline       |
| P2145R00D1D25LA20N00T1A1P | 145cc/rev RH, Load Sense, 'D' Flange 'D' spline       |
| P2145L00D1D25LA20N00T1A1P | 145cc/rev LH, Load Sense, 'D' Flange 'D' spline       |



## P2 Pump Compensator Options

| Compensator Option                                               | Pump Size^^ | Order Code                          |
|------------------------------------------------------------------|-------------|-------------------------------------|
| Press. Comp. (Pmax) – PA                                         | 75-145      | P2-075-0806-07N                     |
| Press. Comp. (Pmax) – PA                                         | 60          | P2-060-0806-07N                     |
| Remote Press. Comp. – RA                                         | 75-145      | P2-075-0806-05N                     |
| Remote Press. Comp. – RA                                         | 60          | P2-060-0806-05N                     |
| Load Sense<br>Without Bleed – LA                                 | 75-145      | P2-075-0806-01N                     |
| Load Sense Comp LA<br>Without Bleed                              | 60          | P2-060-0806-01N                     |
| Torque/LS/Pmax – 20-60%<br>Without Bleed – TA<br>With Bleed – TB | All         | P2-000-0803N                        |
| Torque/LS/Pmax – 50-90%<br>Without Bleed – TC<br>With Bleed – TD | P2060       | P2-000-0803N<br>plus P2-060-5022    |
|                                                                  | P2075       | P2-000-0803N<br>plus P2-075-5022    |
|                                                                  | P2105       | P2-000-0803N<br>plus P2-105-0229-20 |
|                                                                  | P2145       | P2-000-0803N<br>plus P2-145-0229-20 |

^^ Option not available if pump is not shown

## P2 Pump Shaft Options

| Shaft Option        | Pump Size^^ | Order Code      |
|---------------------|-------------|-----------------|
| SAE 'C' Keyed – C5  | P2060       | P2-060-0225-46  |
|                     | P2075       | P2-075-0225-46  |
|                     | P2105       | P2-105-0225-46  |
|                     | P2145       | P2-145-0225-146 |
| SAE 'C' Keyed – C6  | P2075       | P2-075-0225-48  |
|                     | P2105       | P2-105-0225-48  |
|                     | P2145       | P2-145-0225-148 |
| SAE 'D' Spline – D1 | P2105       | P2-105-0225-40  |
|                     | P2145       | P2-145-0225-140 |
| SAE 'D' Spline – D3 | P2145       | P2-145-0225-150 |

^^ Option not available if pump is not shown

## P2 Pump Through Drive Kits

| Thru-Drive Kits                    | Pump Size^^ | Order Code      |
|------------------------------------|-------------|-----------------|
| SAE "A" – 2 Bolt, 9T Spline – A1   | P2060       | P2-060-0215-01N |
|                                    | P2075       | P2-075-0215-01N |
|                                    | P2105       | P2-105-0215-01N |
|                                    | P2145       | P2-145-0215-01N |
| SAE "B" – 2 Bolt, 'B' Spline – B1  | P2060       | P2-060-0216-01N |
|                                    | P2075       | P2-075-0216-01N |
|                                    | P2105       | P2-105-0216-01N |
|                                    | P2145       | P2-145-0216-01N |
| SAE "B" – 2 Bolt, 'BB' Spline – B2 | P2060       | P2-060-0217-01N |
|                                    | P2075       | P2-075-0217-01N |
|                                    | P2105       | P2-105-0217-01N |
|                                    | P2145       | P2-145-0217-01N |
| SAE "C" – 2 Bolt, 'C' Spline – C1  | P2060       | P2-060-0218-01N |
|                                    | P2075       | P2-075-0218-01N |
|                                    | P2105       | P2-105-0218-01N |
|                                    | P2145       | P2-145-0218-01N |
| SAE "C" – 2 Bolt, 'CC' Spline – C2 | P2145       | P2-145-0219-01N |
| SAE "C" – 4 Bolt, 'C' Spline – C3  | P2060       | P2-060-0218-01N |
|                                    | P2075       | P2-075-0218-01N |
|                                    | P2105       | P2-105-0218-01N |
|                                    | P2145       | P2-145-0218-01N |
| SAE "C" – 4 Bolt, 'CC' Spline – C4 | P2145       | P2-145-0219-01N |
| SAE "D" – 4 Bolt, 'D' Spline – D3  | P2145       | P2-145-0220-01N |

^^ Option not available if pump is not shown

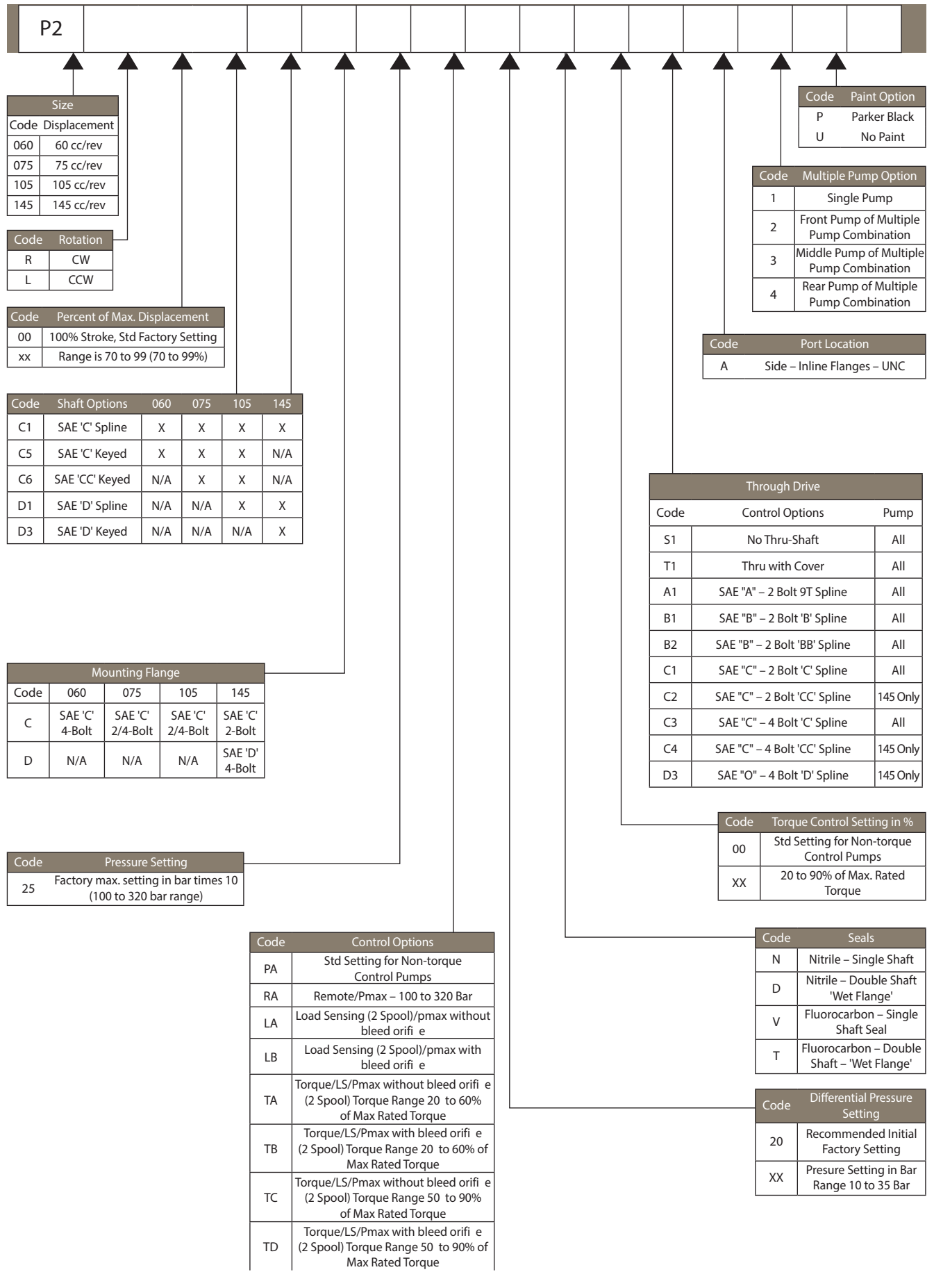
## P2 Piston Pump Spares

## P2 Seal Kits

|       | Seal Kit – Buna N |
|-------|-------------------|
| P2060 | SKP2060N12        |
| P2075 | SKP2/P3075N11     |
| P2105 | P2-105-0224N      |
| P2145 | P2-140-0230N      |

# P2 Series

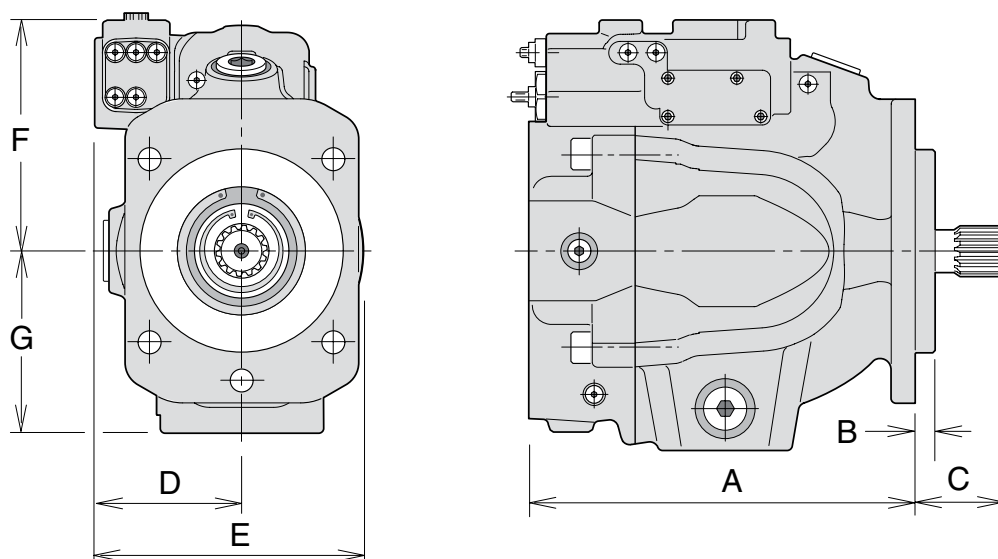
## Piston Pump Code Out



# P2 Series

## Piston Pumps (Mobile & Industrial)

### P2 High Pressure/High Speed Piston Pumps



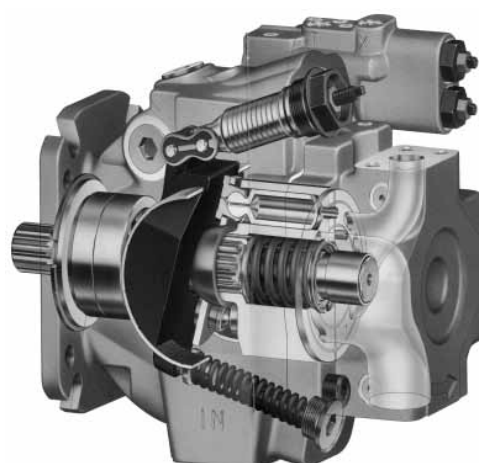
#### Dimensions, inch (mm)

| Series | A Max*       | B Max.      | C Max.      | D          | E Max.       | F          | G          |
|--------|--------------|-------------|-------------|------------|--------------|------------|------------|
| P2060  | 11.8 (299)   | 0.49 (12.5) | 2.19 (55.6) | 3.62 (92)  | 6.74 (171.3) | 5.55 (141) | 4.49 (114) |
| P2075  | 12.9 (327.5) | 0.49 (12.5) | 2.44 (62.0) | 4.41 (112) | 7.63 (193.8) | 5.71 (145) | 4.84 (123) |
| P2105  | 14.1 (358)   | 0.49 (12.5) | 2.98 (75.7) | 4.41 (112) | 8.35 (212.0) | 6.89 (175) | —          |
| P2145  | 14.7 (375)   | 0.50 (12.7) | 2.98 (75.7) | 4.65 (118) | 8.86 (225.0) | 7.13 (181) | 6.46 (164) |

\* With thru-shaft option

#### Benefits/Features

- Compact
- Low noise level
- Sealed shaft bearing
- Service friendly
- Reliable
- Long-lasting
- Flexible
- Easy to install
- High self-priming speed



# P2 Series

## Markets

## Applications

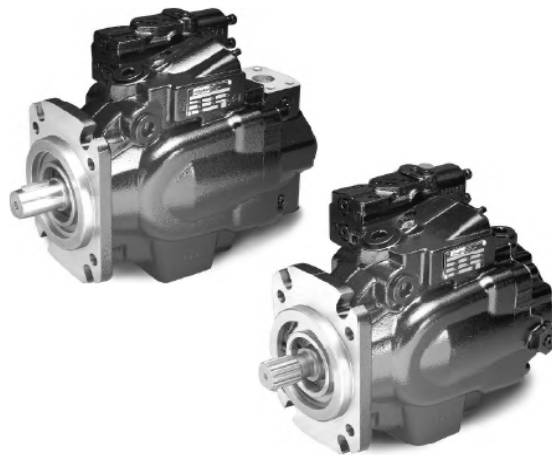
|                   |                                                          |
|-------------------|----------------------------------------------------------|
| Forestry          | Feller Bunchers, Knuckle Boom Loader, Skidder, Forwarder |
| Construction      | Wheel Loader, Dozers, Off-Highway Trucks,                |
| Mining            | Drill Rigs, Loaders                                      |
| Material Handling | Truck Mounted Cranes, Lift Trucks, Reachstacker          |
| Recycling         | Shredders, Balers, Compactors                            |



# P2 Series

## Literature

Ref. Catalogue [HY28-1559-01/PT](#)



### P2/P3 Series Piston Pumps Variable Displacement

Catalog: HY28-1559-01/PT  
Supersedes All Previous Versions

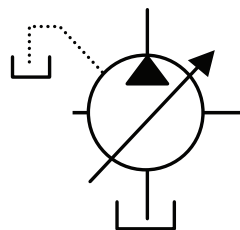
aerospace  
climate control  
electromechanical  
filtration  
fluid & gas handling  
hydraulics  
pneumatics  
process control  
sealing & shielding



ENGINEERING YOUR SUCCESS.

## Characteristics

- Continuous Pressure – up to 350 bar
- Through shaft Capability
- Low Outlet Flow Pulsation
- 7 Standard Control Options



## Feature

- Low noise levels
- Fast response
- Compact design
- Service friendly
- High self priming speed
- Through drive for 100% of nominal
- Modular controls

|                     | PV016/020/023/028           | PV032/040/046   | PV063/080/092          | PV140/180      | PV270      | PV360      |
|---------------------|-----------------------------|-----------------|------------------------|----------------|------------|------------|
| Max. Displacement   | 16/20/23 cc/rev             | 32/40/46 cc/rev | 63/80/92 cc/rev        | 140/180 cc/rev | 270 cc/rev | 360 cc/rev |
| Speed Rating:       | 3000 RPM                    | 2800 RPM        | 2800/2500/<br>2300 RPM | 2400/2200 RPM  | 1800 RPM   | 1750 RPM   |
| Cont. Outlet Press: | 350 bar                     | 350 bar         | 350 bar                | 350 bar        | 350 bar    | 350 bar    |
| Min. Inlet Press.   | 0.8 bar                     | 0.8 bar         | 0.8 bar                | 0.8 bar        | 0.8 bar    | 0.8 bar    |
| Max. Inlet Press.   | 16 bar                      | 16 bar          | 16 bar                 | 16 bar         | 16 bar     | 16 bar     |
| Input Power*:       | 15.5/19.5/<br>22.5/ 27.5 kW | 31/39/45 kW     | 6.1/78/7804 kW         | 138/175 kW     | 263 kW     | 350 kW     |

\* 1500 RPM and 350 bar.

| Model           | Description                                         |                             |
|-----------------|-----------------------------------------------------|-----------------------------|
| PV016R1K1T1NMMC | 16cc/rev, RH press. Comp. Keyed shaft metric flang  | Can be Converted from PV028 |
| PV020R1K1T1NMMC | 20cc/rev, RH press. Comp. Keyed shaft metric flang  | Can be Converted from PV028 |
| PV023R1K1T1NMMC | 23cc/rev, RH press. Comp. Keyed shaft metric flang  | Can be Converted from PV028 |
| PV028R1K1T1NMMC | 28cc/rev, RH press. Comp. Keyed shaft metric flang  |                             |
| PV032R1K1T1NMMC | 32cc/rev, RH press. Comp. Keyed shaft metric flang  | Can be Converted from PV046 |
| PV040R1K1T1NMMC | 40cc/rev, RH press. Comp. Keyed shaft metric flang  | Can be Converted from PV046 |
| PV046R1K1T1NMMC | 46cc/rev, RH press. Comp. Keyed shaft metric flang  |                             |
| PV063R1K1T1NMMC | 63cc/rev, RH press. Comp. Keyed shaft metric flang  | Can be Converted from PV092 |
| PV080R1K1T1NMMC | 80cc/rev, RH press. Comp. Keyed shaft metric flang  | Can be Converted from PV092 |
| PV092R1K1T1NMMC | 92cc/rev, RH press. Comp. Keyed shaft metric flang  |                             |
| PV140R1K1T1NMMC | 140cc/rev, RH press. Comp. Keyed shaft metric flang | Can be Converted from PV180 |
| PV180R1K1T1NMMC | 180cc/rev, RH press. Comp. Keyed shaft metric flang |                             |
| PV270R1K1T1NMMC | 270cc/rev, RH press. Comp. Keyed shaft metric flang |                             |



## Piston Pump Options

| Description                             | Through Drive Kit* | Coupling*     |
|-----------------------------------------|--------------------|---------------|
| PV016-028 to SAE A Pilot & Coupling 9T  | MK-PVBG1AMN42      | MK-PVBG1K1142 |
| PV016-028 to SAE B Pilot & Coupling 13T | MK-PVBG1BMN42      | MK-PVBG1K1342 |
| PV016-028 to PV016-28                   | MK-PVBG1JMN42      | MK-PVBG1K0142 |
|                                         |                    |               |
| PV032-046 to SAE A Pilot & Coupling 9T  | MK-PVBG2AMN40      | MK-PVBG2K1140 |
| PV032-046 to SAE B Pilot & Coupling 13T | MK-PVBG2BMN42      | MK-PVBG2K1340 |
| PV032-046 to PV016-028                  | MK-PVBG2JMN40      | MK-PVBG2K0140 |
| PV032-046 to PV032-046                  | MK-PVBG2KMN40      | MK-PVBG2K0240 |
|                                         |                    |               |
| PV063-092 to SAE A Pilot & Coupling 9T  | MK-PVBG3AMN41      | MK-PVBG3K1141 |
| PV063-092 to SAE B Pilot & Coupling 13T | MK-PVBG3BMN41      | MK-PVBG3K1341 |
| PV063-092 to SAE C Pilot & Coupling 14T | MK-PVBG3CMN41      | MK-PVBG3K1541 |
| PV063-092 to PV016-023                  | MK-PVBG3JMN41      | MK-PVBG3K0141 |
| PV063-092 to PV032-046                  | MK-PVBG3KMN41      | MK-PVBG3K0241 |
| PV063-092 to PV063-092                  | MK-PVBG3LMN41      | MK-PVBG3K0341 |
|                                         |                    |               |
| PV140-180 to SAE A Pilot & Coupling 9T  | MK-PVBG4AMN40      | MK-PVBG4K1140 |
| PV140-180 to SAE B Pilot & Coupling 13T | MK-PVBG4BMN40      | MK-PVBG4K1340 |
| PV140-180 to SAE C Pilot & Coupling 14T | MK-PVBG4CMN40      | MK-PVBG4K1540 |
| PV140-180 TO PV016-028                  | MK-PVBG4JMN40      | MK-PVBG4K0140 |
| PV140-180 TO PV032-046                  | MK-PVBG4KMN40      | MK-PVBG4K0240 |
| PV140-180 TO PV063-092                  | MK-PVBG4LMN40      | MK-PVBG4K0340 |
| PV140-180 TO PV140-180                  | MK-PVBG4LMN40      | MK-PVBG4K0440 |
|                                         |                    |               |
| PV270 to PV032-046                      | MK-PVBG5KMN40      | MK-PVBG5K0240 |
| PV270 to PV063-092                      | MK-PVBG5LMN40      | MK-PVBG5K0340 |
| PV270 to PV140-180                      | MK-PVBG5LMN40      | MK-PVBG5K0440 |
| PV270 to PV270                          | MK-PVBG5MMN40      | MK-PVBG5K0540 |

## Compensator Options\* Series 45 and up only

|                                                       | PV016-046  | PV063-092 | PV140-360  |
|-------------------------------------------------------|------------|-----------|------------|
| Pressure Compensated – MMC                            | PVCMAMCN1  | PVCMCMCN1 | PVCMEMCN1  |
| Pressure & Flow Comp. – MFC                           | PVCM AFCN1 | PVCMCFCN1 | PVCM EFCN1 |
| Pressure & Flow Comp. c/w Top Interface NG6/D03 – MF1 | PVCM AF1N1 | PVCMCF1N1 | PVCM EF1N1 |
| Remote Press Comp. – MRC                              | PVCMARCN1  | PVCMCRCN1 | PVCMERCN1  |
| Remote Press Comp. cc/w Top Interface NG6/D03 – MR1   | PVCMAR1N1  | PVCMCR1N1 | PVCMER1N1  |

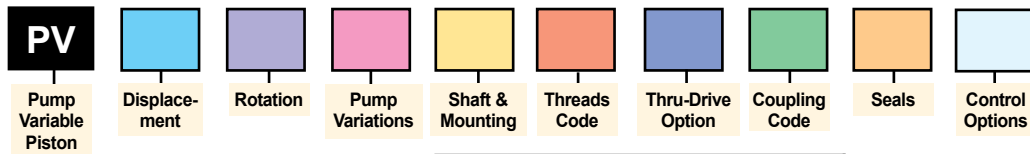
\* More Compensator Options Available on Request. Contact Parker.

## PV Plus Piston Pump Spares

## Seal Kits A

|                 | PV016-023    | PV032-046    | PV063-092    | PV140-180    | PV270        |
|-----------------|--------------|--------------|--------------|--------------|--------------|
| Seal Kit Buna N | SK-PVBG1N145 | SK-PVBG2N145 | SK-PVBG3N143 | SK-PVBG4N144 | SK-PVBG5N146 |
| Seal Kit Viton  | SK-PVBG1V145 | SK-PVBG2V145 | SK-PVBG2V143 | SK-PVBG4V144 | SK-PVBG5V146 |

## PVplus 016-046cc Model Ordering Code



| Code | Displacement in <sup>3</sup> /rev (cc/rev) |
|------|--------------------------------------------|
| 016  | .98 (16)                                   |
| 020  | 1.2 (20)                                   |
| 023  | 1.4 (23)                                   |
| 028  | 1.7 (28)                                   |
| 032  | 1.9 (32)                                   |
| 040  | 2.4 (40)                                   |
| 046  | 2.8 (46)                                   |

| Code | Rotation* |
|------|-----------|
| R    | CW        |
| L    | CCW       |

\*As viewed from shaft end.

| Code | Pump Variations                                 |
|------|-------------------------------------------------|
| 1    | Standard                                        |
| 9*   | Customized Displacement and/or Pressure Setting |

\*Specify in cc/rev and/or bar.

| Code | Shaft & Mounting                    |              |                                     |              |
|------|-------------------------------------|--------------|-------------------------------------|--------------|
|      | PV016/020/023                       |              | PV032/040/046                       |              |
|      | Shaft                               | Pilot        | Shaft                               | Pilot        |
| D    | 1" Keyed (SAE BB)                   | 4 Bolt SAE B | 1 1/4" Keyed (SAE C)                | 4 Bolt SAE C |
| E    | 15T Spline (SAE BB)                 | 4 Bolt SAE B | 14T Spline (SAE C)                  | 4 Bolt SAE C |
| K    | 25mm Keyed                          | 4 Bolt 100mm | 32mm Keyed                          | 4 Bolt 125mm |
| L    | W25 x 1.5 x 15 x 8f Spline DIN 5480 | 4-Bolt 100mm | W32 x 1.5 x 20 x 8f Spline DIN 5480 | 4 Bolt 125mm |

| Code | Threads Code |           |
|------|--------------|-----------|
|      | Port*        | Threads** |
| 1    | BSPP         | Metric    |
| 3    | UNF          | UNC       |
| 7    | ISO 6149     | UNC       |
| 8    | ISO 6149     | Metric    |

\*Drain, gage, and flushing ports.

\*\* Mounting and connecting threads

| Code           | Thru-Drive Option (1st Digit)       |
|----------------|-------------------------------------|
| T              | Single Pump Prepared for Thru-Drive |
|                | With Adapter for Second Pump        |
| Y <sup>1</sup> | SAE AA, Ø2.00in (Ø50.8mm)           |
| A              | SAE A, Ø3.25in (Ø82.55mm)           |
| B              | SAE B, Ø4.00in (Ø101.6mm)           |
| C <sup>2</sup> | SAE C, Ø5.00in (Ø127mm)             |
| G              | Metric, Ø2.48in (Ø63mm)             |
| H              | Metric, Ø3.15in (Ø80mm)             |
| J              | Metric, Ø3.94in (Ø100mm)            |
| K <sup>2</sup> | Metric, Ø4.92in (Ø125mm)            |

<sup>1</sup> Only for PV016 thru PV023<sup>2</sup> Only for PV032 and larger

\* Only for PV032 and larger

| Code | Coupling Code                         |
|------|---------------------------------------|
| 1    | Single pump, no coupling              |
| H    | with coupling 25 x 1.5 x 15, DIN 5480 |
| J    | with coupling 32 x 1.5 x 20, DIN 5480 |
| Y    | with coupling SAE A 9T-16/32 DP       |
| A    | with coupling SAE - 11T-16/32 DP      |
| B    | with coupling SAE B 13T-16/32 DP      |
| C    | with coupling SAE B-B 15T-16/32 DP    |
| D    | with coupling SAE C 14T-12/24 DP      |

| Code | Seals                     |
|------|---------------------------|
| N    | Nitrile                   |
| V    | Fluorocarbon              |
| W    | Nitrile w/PTFE Shaft Seal |
| P    | FPM w/PTFE Shaft Seal     |

| Code                              | Control Options                                                                                  |
|-----------------------------------|--------------------------------------------------------------------------------------------------|
| Standard Pressure Compensator     |                                                                                                  |
| 0 0 1                             | No Compensator                                                                                   |
| 1 0 0                             | With Cover Plate, No Control Function                                                            |
| M M                               | Standard pressure control, integrated pilot valve                                                |
| M R                               | Remote pressure control, integrated pilot valve                                                  |
| M F                               | Load Sensing (flow) control, integrated pilot valve                                              |
| M T                               | Two spool LS control                                                                             |
| Remote/Load Sense Compensator     |                                                                                                  |
| C                                 | Standard version <sup>1</sup>                                                                    |
| 1                                 | NG6 interface top side for pilot valves                                                          |
| W                                 | With unloading function, 24VDC solenoid <sup>1</sup>                                             |
| K                                 | Prop.-pilot valve type PVACRE...35 mounted                                                       |
| Z                                 | Without integrated pilot valve, NG6 interface, for mounting of accessory code PVAC               |
| P                                 | MT1 with mounted pilot valve PVAC1P <sup>2</sup>                                                 |
| Horsepower Compensator Control    |                                                                                                  |
| Nominal Horsepower at 1500 RPM    |                                                                                                  |
| B                                 | 3 kW (19.5 Nm Torque)                                                                            |
| C                                 | 4 kW (26 Nm Torque)                                                                              |
| D                                 | 5.5 kW (36 Nm Torque)                                                                            |
| E                                 | 7.5 kW (49 Nm Torque)                                                                            |
| G                                 | 11 kW (71 Nm Torque)                                                                             |
| H                                 | 15 kW (97 Nm Torque)                                                                             |
| K                                 | 18.5 kW (120 Nm Torque)                                                                          |
| M                                 | 22 kW (142 Nm Torque)                                                                            |
| S                                 | 30 kW (195 Nm Torque)                                                                            |
| Function                          |                                                                                                  |
| L                                 | Horsepower Compensator                                                                           |
| C                                 | Horsepower Compensator & Load Sensing                                                            |
| Variation                         |                                                                                                  |
| C                                 | Standard Version                                                                                 |
| 1                                 | NG 6 interface top side                                                                          |
| W                                 | With unloading function, 24 VDC solenoid                                                         |
| K                                 | Pro-pilot valve type PVARCE...35 mounted                                                         |
| Z                                 | Without integrated pilot valve, NG6 interface, for mounting of accessory code PAVC <sup>*4</sup> |
| B                                 | Without integrated pilot valve, without NG6 interface <sup>4</sup>                               |
| Electro Hydraulic Control Options |                                                                                                  |
| F P V                             | Proportional displacement control, no pressure compensation                                      |
| U P                               | Proportional displacement control, with pressure compensation                                    |

<sup>1</sup> Not for MT<sup>2</sup> Only for MT

## NOTES:

Compensator differential  $\Delta p$  is to be adjusted:Remote pressure comp., horsepower comp. 15  $\pm$  1 bar

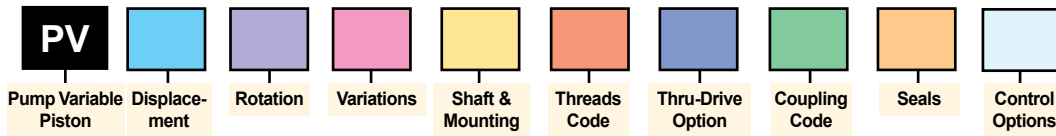
Load-sensing comp.

(not horsepower comp.) 10  $\pm$  1 bar (Codes MF\* and LS part of MT\*)

Consult catalog on CD for electrohydraulic control options. Items in red are standard.

# PV Plus Series

## PVplus 063-360cc Model Ordering Code



| Code | Displacement in <sup>3</sup> /rev (cc/rev) |
|------|--------------------------------------------|
| 063  | 3.8 (63)                                   |
| 080  | 4.8 (80)                                   |
| 092  | 5.6 (92)                                   |
| 140  | 8.5 (140)                                  |
| 180  | 10.9 (180)                                 |
| 270  | 16.5 (270)                                 |
| 360  | 22.0 (360)                                 |

| Code | Rotation* |
|------|-----------|
| R    | CW        |
| L    | CCW       |

\*As viewed from shaft end.

| Code | Pump Variations                                 |
|------|-------------------------------------------------|
| 1    | Standard                                        |
| 9*   | Customized Displacement and/or Pressure Setting |

\*Specify in cc/rev and/or bar.

| Code | Shaft & Mounting                    |               |                                   |               |                                   |               |
|------|-------------------------------------|---------------|-----------------------------------|---------------|-----------------------------------|---------------|
|      | PV063/080/092                       |               | PV140/180                         |               | PV270                             |               |
|      | Shaft                               | Pilot         | Shaft                             | Pilot         | Shaft                             | Pilot         |
| D    | 1 3/4" Keyed (SAE D)                | 4 Bolt SAE D  | 2" Keyed SAE F                    | 4 Bolt SAE D  | 2" SAE Keyed                      | 4 Bolt SAE E  |
| E    | 13T Spline (SAE D)                  | 4 Bolt SAE D  | 15T Spline SAE F                  | 4 Bolt SAE D  | 15T Spline SAE F                  | 4 Bolt SAE E  |
| F    |                                     |               | 1 3/4" Keyed SAE D                | 4 Bolt SAE D  |                                   |               |
| G    |                                     |               | 13T Spline SAE D                  | 4 Bolt SAE D  |                                   |               |
| K    | 40mm Keyed                          | 4 Bolt 160 mm | 50mm Keyed                        | 4 Bolt 160 mm | 65mm Keyed                        | 4 Bolt 200 mm |
| L    | W40 x 1.5 x 25 x 8f Spline DIN 5480 | 4 Bolt 160 mm | W50 x 2 x 24 x 9g Spline DIN 5480 | 4 Bolt 160 mm | W60 x 2 x 28 x 9g Spline DIN 5480 | 4 Bolt 200 mm |

| Code | Threads Code |           |
|------|--------------|-----------|
|      | Port*        | Threads** |
| 1    | BSPP         | Metric    |
| 3    | UNF          | UNC       |
| 4*** | BSPP-M14     | Metric    |
| 7    | ISO 6149     | UNC       |
| 8    | ISO 6149     | Metric    |

\* Drain, gage, and flushing ports.

\*\* Mounting and connecting threads

\*\*\* Only for PV063-PV180; pressure port 1 1/4" with 4xM14 instead of 4xM12

Items in red are standard.

| Code           | Thru-Drive Option (1st Digit)                                    |
|----------------|------------------------------------------------------------------|
| T              | Single Pump Prepared for Thru-Drive With Adapter for Second Pump |
| A              | SAE A, Ø3.25in (Ø82.55mm)                                        |
| B              | SAE B, Ø4.00in (Ø101.6mm)                                        |
| C              | SAE C, Ø5.00in (Ø127mm)                                          |
| D <sup>1</sup> | SAE D, Ø6.00in (Ø152.4) mm                                       |
| E <sup>2</sup> | SAE E, Ø6.50in (Ø165.1mm)                                        |
| G <sup>3</sup> | Metric, Ø2.48in (Ø63mm)                                          |
| H              | Metric, Ø3.15in (Ø80mm)                                          |
| J              | Metric, Ø3.94in (Ø100mm)                                         |
| K              | Metric, Ø4.92in (Ø125mm)                                         |
| L <sup>1</sup> | Metric, Ø6.30in (Ø160mm)                                         |
| M <sup>2</sup> | Metric, Ø7.87in (Ø200mm)                                         |

1 Only for PV063 and larger

2 Only for PV270

3 Only up to PV092

| Code | Coupling Code                         |
|------|---------------------------------------|
| 1    | Single pump, no coupling              |
| H    | with coupling 25 x 1.5 x 15, DIN 5480 |
| J    | with coupling 32 x 1.5 x 20, DIN 5480 |
| K    | with coupling 40 x 1.5 x 25, DIN 5480 |
| L    | with coupling 50 x 2 x 24, DIN 5480   |
| Y    | with coupling SAE A 9T-16/32 DP       |
| A    | with coupling SAE - 11T-16/32 DP      |
| B    | with coupling SAE B 13T-16/32 DP      |
| C    | with coupling SAE B-B 15T-16/32 DP    |
| D    | with coupling SAE C 14T-12/24 DP      |
| E    | with coupling SAE C - C               |
| F    | with coupling SAE D, E                |
| G    | with coupling SAE F                   |

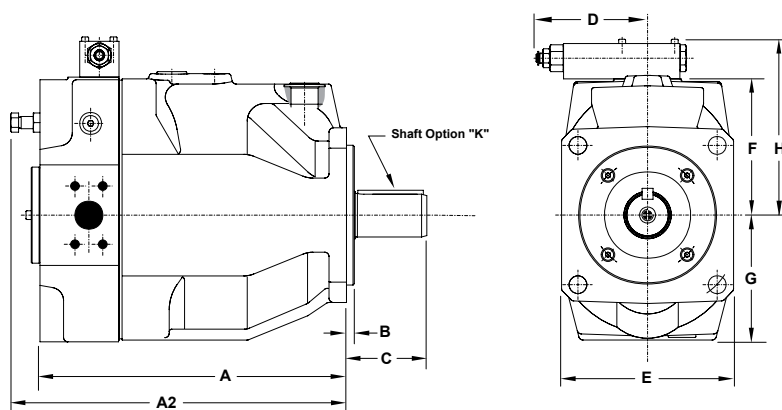
| Code | Seals                     |
|------|---------------------------|
| N    | Nitrile                   |
| V    | Fluorocarbon              |
| W    | Nitrile w/PTFE Shaft Seal |
| P    | FPM w/PTFE Shaft Seal     |

Consult catalog on CD for electrohydraulic control options.

| Code                                  | Control Options                                                                                   |
|---------------------------------------|---------------------------------------------------------------------------------------------------|
| Standard Pressure Compensator         |                                                                                                   |
| 0 0 1                                 | No Compensator                                                                                    |
| 1 0 0                                 | With Coverplate, No Control Function                                                              |
| M M                                   | Standard pressure control, integrated pilot valve                                                 |
| M R                                   | Remote pressure control, integrated pilot valve                                                   |
| M F                                   | Load Sensing (flow) control, integrated pilot valve                                               |
| M T                                   | Two spool LS control                                                                              |
| Remote/Load Sense Compensator         |                                                                                                   |
| C                                     | Standard version <sup>1</sup>                                                                     |
| 1                                     | NG6 interface top side for pilot valves                                                           |
| W                                     | With unloading function, 24VDC solenoid <sup>1</sup>                                              |
| K                                     | Prop.-pilot valve type PVACRE...35 mounted                                                        |
| Z                                     | Without integrated pilot valve, NG6 interface, for mounting of accessory code PVAC                |
| P                                     | MT1 with mounted pilot valve PVAC1P <sup>2</sup>                                                  |
| Horsepower Compensator Control        |                                                                                                   |
| Input Horsepower at 1500 RPM          |                                                                                                   |
| 11 kW (71 Nm Torque)                  |                                                                                                   |
| 15 kW (97 Nm Torque)                  |                                                                                                   |
| 18.5 kW (120 Nm Torque)               |                                                                                                   |
| 22 kW (142 Nm Torque)                 |                                                                                                   |
| 30 kW (195 Nm Torque)                 |                                                                                                   |
| 37 kW (240 Nm Torque)                 |                                                                                                   |
| 45 kW (290 Nm Torque)                 |                                                                                                   |
| 55 kW (355 Nm Torque)                 |                                                                                                   |
| 75 kW (485 Nm Torque)                 |                                                                                                   |
| 90 kW (585 Nm Torque)                 |                                                                                                   |
| 110 kW (715 Nm Torque)                |                                                                                                   |
| 132 kW (850 Nm Torque)                |                                                                                                   |
| 160 kW (850 Nm Torque)                |                                                                                                   |
| 180 kW (850 Nm Torque)                |                                                                                                   |
| 200 kW (850 Nm Torque)                |                                                                                                   |
| Function                              |                                                                                                   |
| Horsepower Compensator                |                                                                                                   |
| Horsepower Compensator & Load Sensing |                                                                                                   |
| Variation                             |                                                                                                   |
| C                                     | Standard Version                                                                                  |
| 1                                     | NG 6 interface top side                                                                           |
| W                                     | With unloading function, 24 VDC solenoid                                                          |
| K                                     | Pro-pilot valve type PVARCE...35 mounted                                                          |
| Z                                     | Without integrated pilot valve, NG6 interface, for mounting of accessory code PAVC <sup>(4)</sup> |
| B                                     | Without integrated pilot valve, without NG6 interface <sup>(4)</sup>                              |
| Electro Hydraulic Control Options     |                                                                                                   |
| F D V                                 | Proportional displacement control, no pressure                                                    |
| U D                                   | Proportional displacement control, with pressure compensation                                     |

## PVplus High Pressure Industrial

## Piston Pumps (Industrial)

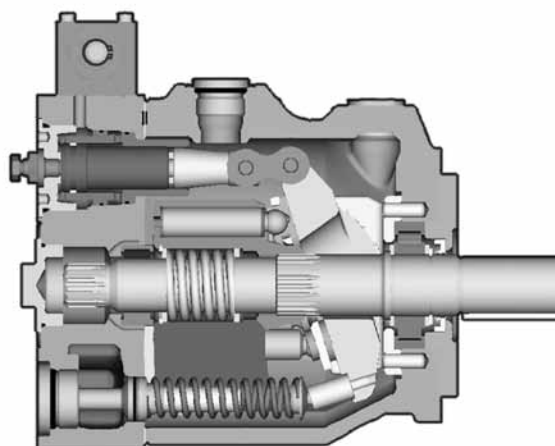


## Dimensions, inch (mm)

| Model         | A           | A2 Max.     | B        | C         | D Max.        | E          | F         | G         | H         |
|---------------|-------------|-------------|----------|-----------|---------------|------------|-----------|-----------|-----------|
| PV016/020/023 | 77.8 (195)  | 83.5 (212)  | 0.37 (9) | 2.0 (52)  | 0.49 (12.44)  | 5.2 (132)  | 3.7 (94)  | 3.1 (80)  | 5.5 (140) |
| PV032/040/046 | 89 (227)    | 96 (245)    | 0.50 (9) | 2.7 (68)  | 2.19 (55.62)  | 6.1 (156)  | 4.2 (107) | 3.6 (92)  | 6.0 (153) |
| PV063/080/092 | 112.9 (287) | 120.5 (306) | 0.50 (9) | 3.6 (92)  | 4.25 (107.95) | 8.0 (204)  | 5.3 (135) | 4.6 (118) | 7.1 (181) |
| PV140/180     | 138 (350)   | 152 (385)   | 0.50 (9) | 3.6 (92)  | 4.25 (107.95) | 7.8 (200)  | 6.2 (158) | 5.7 (145) | 8.0 (204) |
| PV270         | 186 (472.5) | 201 (510)   | 0.50 (9) | 4.5 (115) | —             | 10.4 (265) | 7.2 (184) | 6.9 (176) | 9.1 (230) |
| PV360         | 187.7 (477) | 201 (510)   | 0.50 (9) | 4.5 (115) | —             | 98.4 (250) | 7.2 (184) | 6.9 (176) | 9.1 (230) |

## Benefits/Features

- High strength cast-iron housing for high reliability and quiet operation
- Modular controls for field convertibility
- Large control piston for fast response
- Thru-shaft option with 100% thru torque capability
- Multiple pressure control with valves mounted directly on pump
- Pre-compression chamber to minimize over-all system noise
- High self-priming speed and cold start capability





## Markets

## Applications

|                   |                                                                                      |
|-------------------|--------------------------------------------------------------------------------------|
| Industrial        | Presses, Shears, Injection Molding, Aircraft Test Stands, Test Equipment, Simulators |
| Oil & Gas         | Nitrogen Pumpers, Cementers, Coil Tubing, Oil Lift Pumps                             |
| Construction      | Wheel Loader                                                                         |
| Mining            | Drill Rigs, Tunneling Equipment                                                      |
| Material Handling | Conveyor Drives, Apron Feeders, Rail Car Tippers, Mixers                             |
| Recycling         | Shredders, Balers, Compactors                                                        |



## Literature

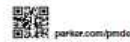
Ref. Catalogue **HY30-3245/UK**



### Axial Piston Pumps

Series PVplus  
Variable Displacement

aerospace  
climate control  
electromechanical  
filtration  
fluid & gas handling  
**hydraulics**  
pneumatics  
process control  
sealing & shielding



ENGINEERING YOUR SUCCESS.

## Our Variable motor program



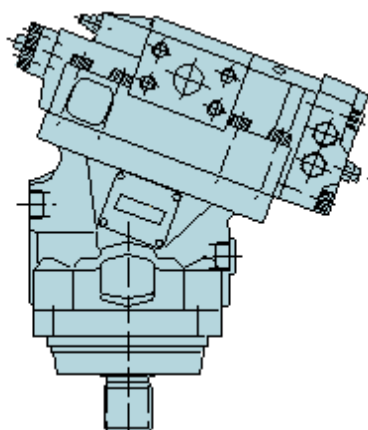
V12-60 -80



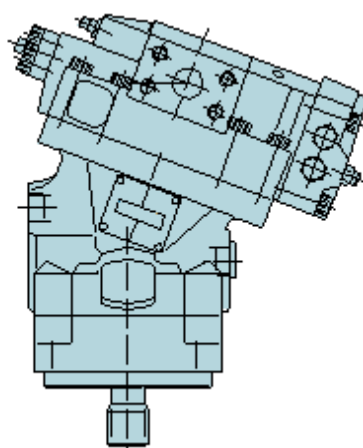
V14-110 -160

### Available motors

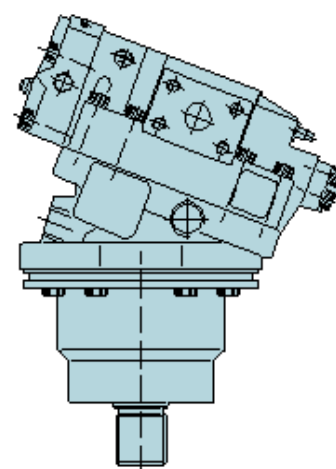
| Model | Frame size | Version   |  |
|-------|------------|-----------|--|
| V12   | 60         | ISO       |  |
| V12   | 60         | Cartridge |  |
| V12   | 60         | SAE       |  |
| V12   | 80         | ISO       |  |
| V12   | 80         | Cartridge |  |
| V12   | 80         | SAE       |  |
| V14   | 110        | ISO       |  |
| V14   | 110        | Cartridge |  |
| V14   | 110        | SAE       |  |
| V14   | 160        | ISO       |  |
| V14   | 160        | SAE       |  |



ISO



SAE



Cartridge

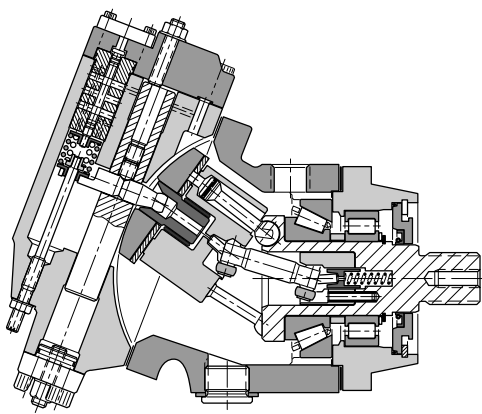


# V12 Bent Axis Series

- Very high operating speeds
- Displacement ratio 5:1
- Pressures up to 480 bar
- Very high power capability
- High starting torque
- Low weight
- High overall efficiency
- Axial or side ports
- Controls available for most needs
- ISO, SAE and cartridge versions



## Performance Characteristics



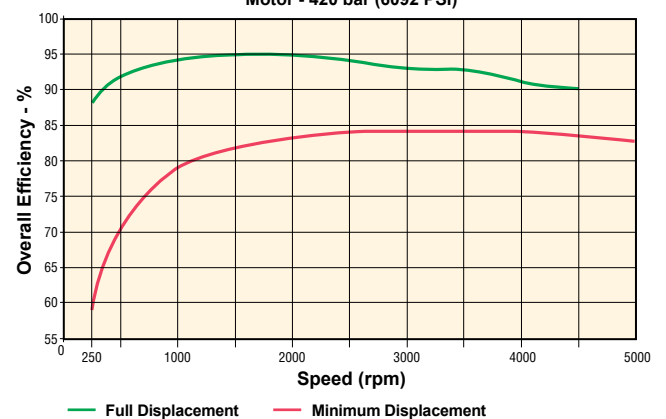
## Benefits/Features

- Tolerates very high speeds due to low weight pistons with laminated piston rings and a compact design of the rotating parts
- High output power; the overall efficiency remains high through-out the entire displacement range
- The 9-piston design provides high start-up torque and smooth motor operation
- Wide displacement ratio (5:1) Broad range of controls and accessory valves for most applications
- Small envelope size and a high power-to-weight ratio
- ISO, cartridge and SAE versions
- Low noise levels due to a very compact and sturdy design with smooth fluid pass ges
- Positive piston locking, strong synchronizing shaft, heavy-duty bearings and small number of parts add up to a compact and robust motor with long service life and proven reliability.

| Frame size V12                                  | 60   | 80   |
|-------------------------------------------------|------|------|
| Displacement max at 35° (cm <sup>3</sup> /rev)  | 60   | 80   |
| Displacement min at 6.5° (cm <sup>3</sup> /rev) | 12   | 16   |
| Max cont pressure (bar)                         | 420  | 420  |
| Max cont. operating speed (rpm)                 | 5600 | 5000 |
| Corner power cont (kW)                          | 235  | 280  |
| Weight (kg)                                     | 28   | 33   |

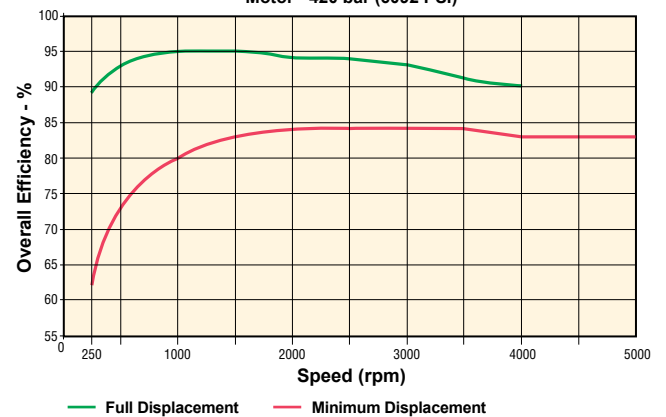
### V12-60 Series Overall Efficiency

Motor - 420 bar (6092 PSI)

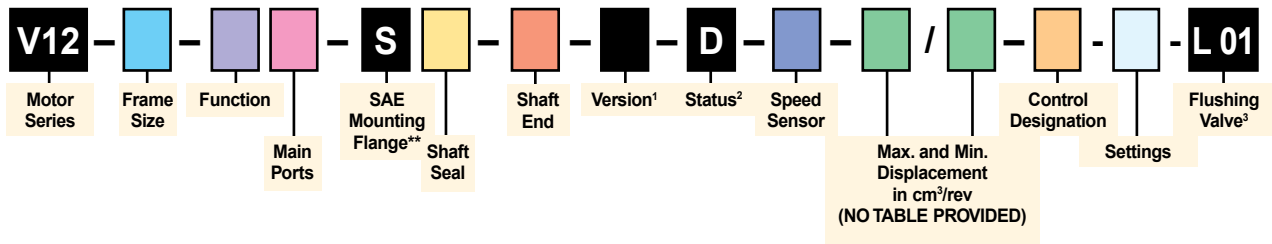


### V12-80 Series Overall Efficiency

Motor - 420 bar (6092 PSI)



## Ordering Code



| Code | Frame Size                |
|------|---------------------------|
| 60   | 3.66 in³/rev (60 cm³/rev) |
| 80   | 4.88 in³/rev (80 cm³/rev) |

| Code | Function                                              |
|------|-------------------------------------------------------|
| M    | Motor; normal end cap position (EO, EP, HO & HP only) |
| T    | Motor; normal end cap position (AC & AH only)         |

| Code | Main Ports*                        |
|------|------------------------------------|
| S    | SAE Flange; UN Threads, Side Ports |
| U    | SAE Flange; UN Threads, Rear Ports |

| Code | Shaft Seal | 60 | 80 |
|------|------------|----|----|
| V    | PPS        | x  | x  |

| Code | Shaft End***       | 60 | 80 |
|------|--------------------|----|----|
| S    | Spline (SAE J498b) | x  | x  |

| Code | Speed Sensor              |
|------|---------------------------|
| 0    | No Sensor                 |
| P    | Prepared for Speed Sensor |

| Code      | Control                                                                                  | 60  | 80  |
|-----------|------------------------------------------------------------------------------------------|-----|-----|
| AC I 01 I | Pressure Compensator, internal pilot pressure, internal servo supply                     | x   | x   |
| AC E 01 I | Pressure Compensator, external pilot pressure, internal servo supply                     | (x) | (x) |
| AH I 01 I | Pressure Compensator, hydraulic override internal pilot pressure, internal servo supply  | x   | x   |
| AH E 01 I | Pressure compensator, hydraulic override, external pilot pressure, internal servo supply | (x) | (x) |
| EOL 01 I  | Electrohydraulic, two-position, 12 VDC, internal servo supply                            | x   | x   |
| EOL 01 E  | Electrohydraulic, two-position, 12 VDC, external servo supply                            | (x) | (x) |
| EOH 01 I  | Electrohydraulic, two-position, 24 VDC, internal servo supply                            | x   | x   |
| EPL 01 I  | Electrohydraulic, proportional, 12 VDC, internal servo supply                            | x   | x   |
| EPL 01 E  | Electrohydraulic, proportional, 12 VDC, external servo supply                            | (x) | (x) |
| EPH 01 I  | Electrohydraulic, proportional, 24 VDC, internal servo supply                            | x   | x   |
| EPH 01 E  | Electrohydraulic, proportional, 24 VDC, external servo supply                            | (x) | (x) |
| HOS 01 I  | Hydraulic, two-position, standard version, internal servo supply                         | x   | x   |
| HOS 01 E  | Hydraulic, two-position, standard version, external servo supply                         | (x) | (x) |
| HPS 01 I  | Hydraulic, proportional, standard version, internal servo supply                         | x   | x   |
| HPS 01 E  | Hydraulic, proportional, standard version, external servo supply                         | (x) | (x) |

| Settings                                                                                                                                                                            |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>AC, AH:</b><br>Threshold Pressure: <b>2175.57, 2900.76, or 3625.94 PSI (150, 200 or 250 bar)</b><br>Modulating Pressure: <b>217.56, 362.59, 725.19 PSI (015, 025 or 050 bar)</b> |
| <b>EO, EP:</b><br>Threshold Current: <b>400 mA (12 VDC), 200 mA (24 VDC)</b><br>Modulating Current: <b>000 (EO), 600 mA (EP 12 VDC), 300 mA (EP 24 VDC)</b>                         |
| <b>HO, HP:</b><br>Threshold Pressure: <b>145.14 PSI (010 bar)</b><br>Modulating Pressure: <b>000 (HO), 217.56 or 362.59 PSI (HP) (000 (HO), 015 or 025 bar (HP))</b>                |

x = standard; (x) = option

\* Main ports also available with metric threads. See CD.

\*\* Cartridge and ISO options available. See CD.

\*\*\* DIN shaft ends also available. See CD.

¹ Factory issued for special versions

² Control pressure setting; max and min displacement screws sealed

³ Integrated flushing valve with standard nozzle. See CD for options.

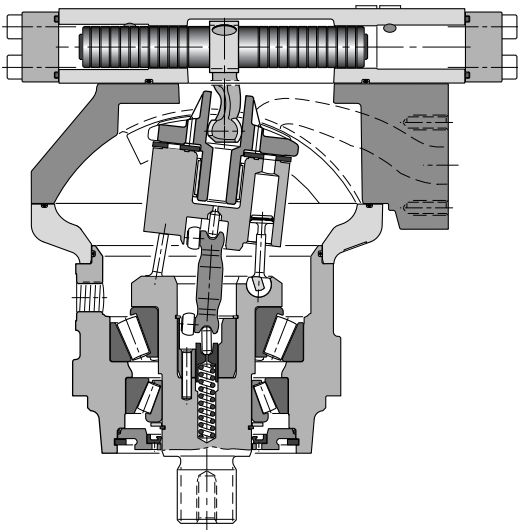
# V14 Bent Axis Series

- Operating pressures up to 480 bar
- High speeds thanks to low weight pistons with laminated piston rings and a very compact design of the rotating parts
- High over all efficiency throughout the entire displacement range
- 9 pistons provide high start-up torque and smooth operation
- Wide displacement range – 5:1
- Small envelope size and high power-to-weight ratio
- Low noise levels due to the compact, sturdy design and smooth fluid passages
- Positive piston locking, strong synchronizing shaft, heavy-duty bearings and a small number of parts add up to a very robust motor with long service life and proven reliability



| Frame size V14                                  | 110  | 160  |
|-------------------------------------------------|------|------|
| Displacement max at 35° (cm <sup>3</sup> /rev)  | 110  | 160  |
| Displacement min at 6.5° (cm <sup>3</sup> /rev) | 22   | 32   |
| Max cont pressure (bar)                         | 420  | 420  |
| Max cont. operating speed (rpm)                 | 5700 | 5000 |
| Corner power cont (kW)                          | 440  | 560  |
| Weight (kg)                                     | 54   | 68   |

## Performance Characteristics



## Applications

- Excavators
- Forestry machines
- Mining and drilling machines
- Wheel loaders
- Winch drives

## Optional equipment

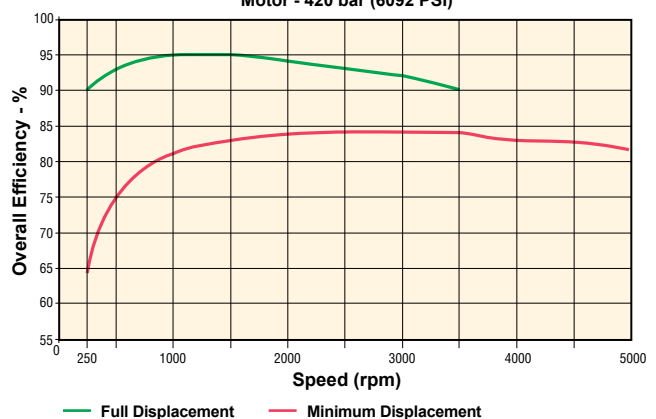
- Integrated sensors for speed and displacement
- Integrated flushing and pressure relief valves

## Additional benefits

- Improved speed capability
- Improved control performance
- Reduced number of parts
- Stronger shaft bearing support.

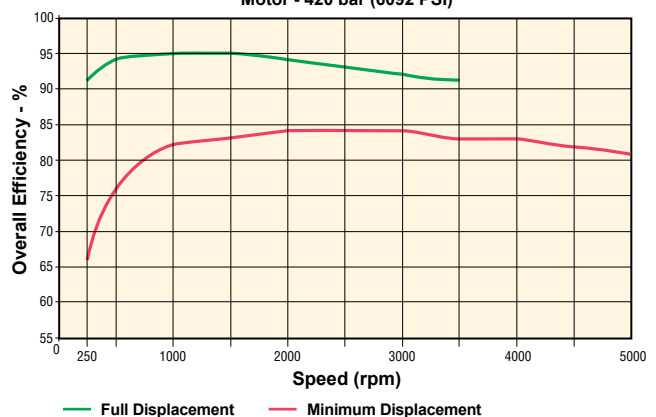
### V14-110 Series Overall Efficiency

Motor - 420 bar (6092 PSI)



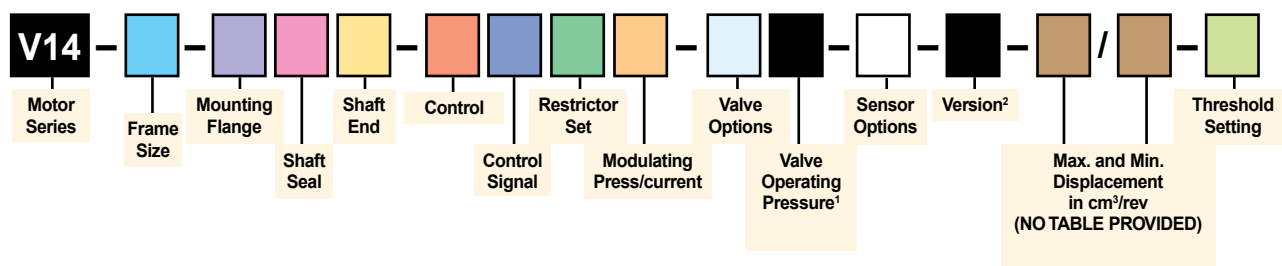
### V14-160 Series Overall Efficiency

Motor - 420 bar (6092 PSI)



# V14 Bent Axis Series

## Ordering Code



| Code | Frame Size                 |
|------|----------------------------|
| 110  | 6.71 in³/rev (110 cm³/rev) |
| 160  | 9.76 in³/rev (160 cm³/rev) |

| Code | Mounting Flange   |
|------|-------------------|
| S    | SAE version       |
| I    | ISO version       |
| C*   | Cartridge version |

\* 110 only

| Code | Shaft Seal                          |
|------|-------------------------------------|
| V    | FPM (High Temperature Fluorocarbon) |
|      |                                     |

| Code | Shaft End         |
|------|-------------------|
| S    | SAE (SAE Version) |
| C    | DIN (ISO Version) |
| D    | DIN (ISO Version) |

| Code | Control                                                                  |
|------|--------------------------------------------------------------------------|
| AC   | Pressure Compensator                                                     |
| AD   | Press. Compensator with electrohydraulic override and brake defeat valve |
| AH   | Pressure Compensator with hydraulic override                             |
| EO   | Electrohydraulic, two-position                                           |
| EP   | Electrohydraulic, proportional                                           |
| HO   | Hydraulic, two-position                                                  |
| HP   | Hydraulic, proportional                                                  |

| Code | Control Signal                     |
|------|------------------------------------|
| E    | External Pressure (AC, AH, HO, HP) |
| I    | Internal Pressure (AC, AD, AH)     |
| H    | 24 VDC (AD, EO, EP)                |
| L    | 12 VDC (AD, EO, EP)                |
| C    | Pressure Cut Off (EP, HP)          |

<sup>1</sup> Pressure Relief Valve opening pressure (bar)  
Alternately: Flushing Valve restrictor

<sup>2</sup> Factory issued for special versions

| Code | Control Restrictor Set (orifice dia. in mm) |
|------|---------------------------------------------|
| 1    | 0.7                                         |
| 2    | 0.8                                         |
| 3    | 1.0 (standard)                              |
| 4    | 1.2                                         |

| Code | Control Modulating Pressure/Current     |
|------|-----------------------------------------|
| N    | AC: 0 bar<br>EP: Non-selectable current |
| A    | 217.56 PSI (15 bar) (AC, HP)            |
| B    | 362.59 PSI (25 bar) (AC, HP)            |
| C    | 725.19 PSI (50 bar) (AC)                |

| Code | Valve Options         |
|------|-----------------------|
| N    | None                  |
| L    | Flushing Valve        |
| P    | Pressure Relief Valve |

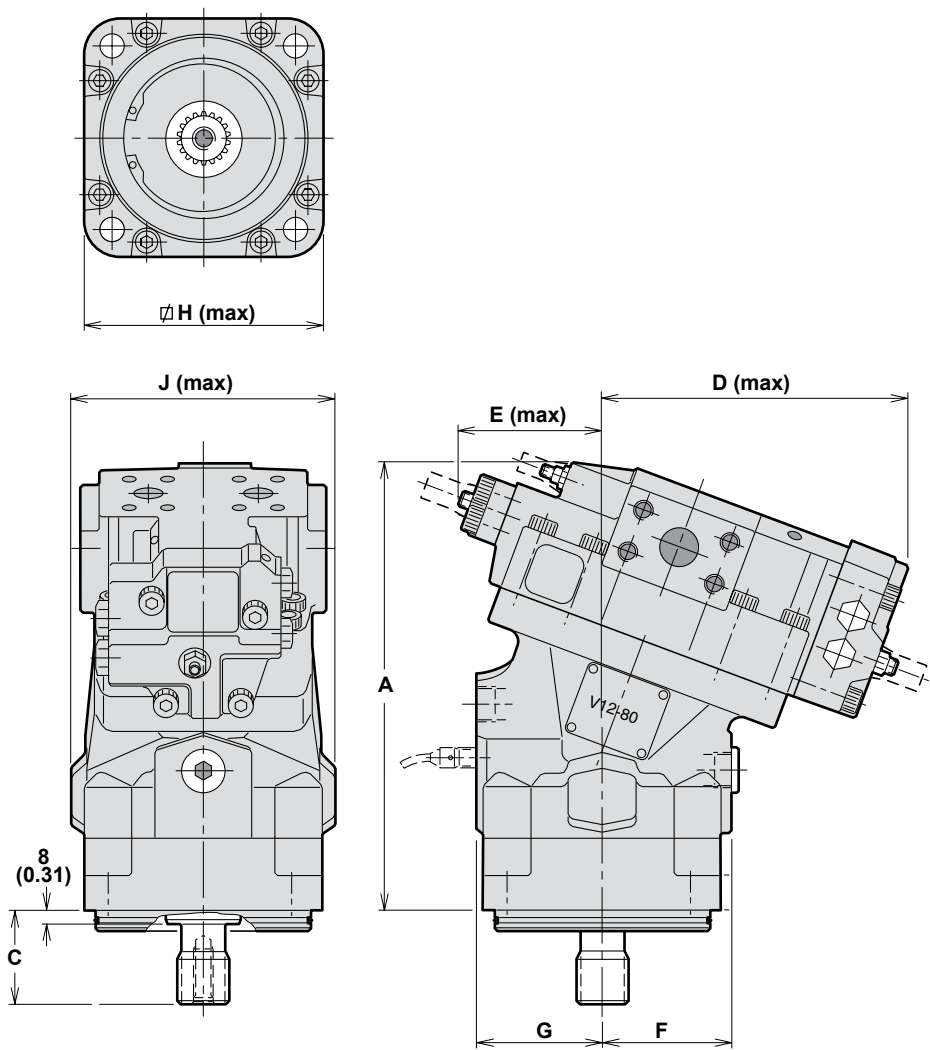
| Code | Sensor Options                                                        |
|------|-----------------------------------------------------------------------|
| N    | None                                                                  |
| C    | Prepared for Setting Piston Position and Shaft Speed Sensors (EP, HP) |
| D    | Setting Piston Position and Shaft Speed Sensors (EP, HP)              |
| L    | Setting Piston Position Sensor (EP, HP)                               |
| P    | Prepared for Speed Sensor                                             |
| S    | Speed Sensor                                                          |
| T    | Prepared for Setting Piston Position Sensor                           |

| Code | Threshold Setting                                                           |
|------|-----------------------------------------------------------------------------|
| ***  | Select pressure between 1450.38-5076.32 PSI (100-350 bar) (AC, AD, AH only) |
| 400  | 400 mA - 12 VDC (EO, EP only)                                               |
| 200  | 200 mA - 24 VDC (EO, EP only)                                               |
| 10   | 145.14 PSI (10 bar) (HO, HP only)                                           |

# V12/V14 Dimensions

## Motors (Mobile)

### V12 Small Frame Variable Displacement Bent-Axis Motors



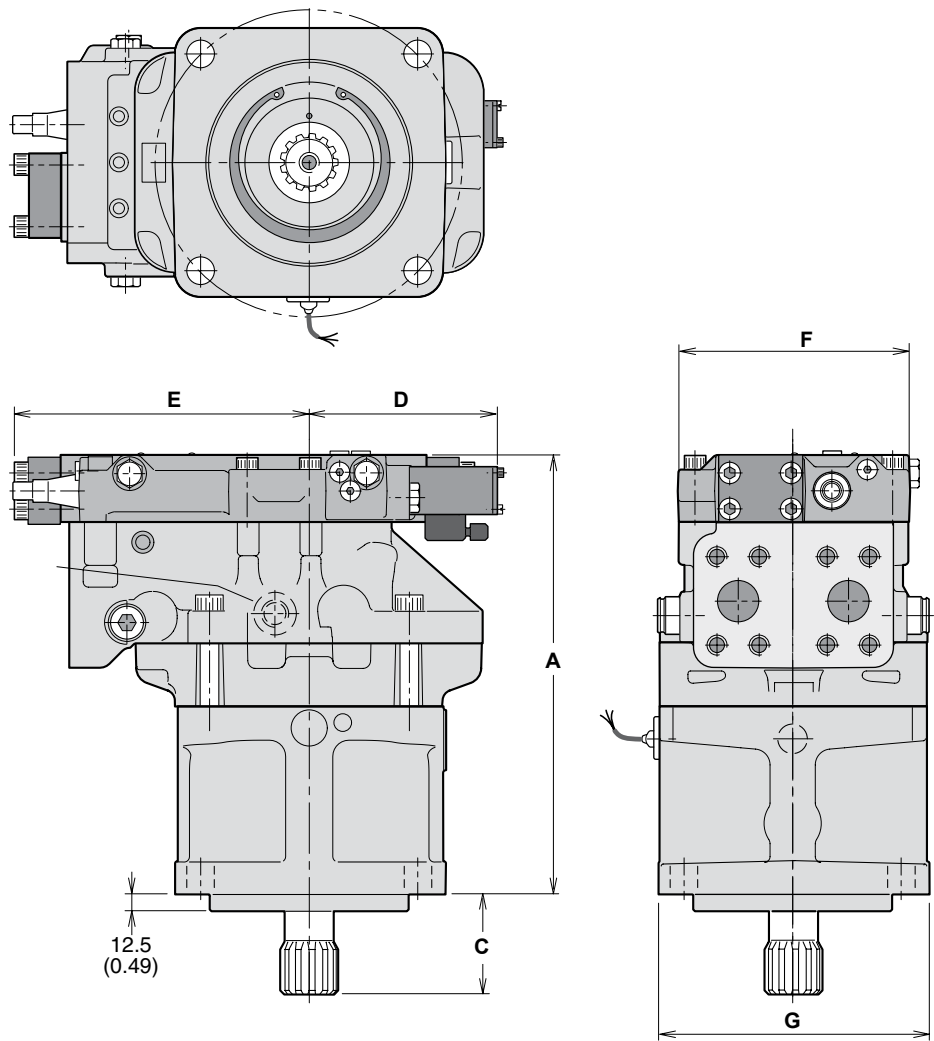
#### Dimensions, inch (mm)

| Series | A           | C max       | D max      | E max     | F         | G         | H max      | J max      |
|--------|-------------|-------------|------------|-----------|-----------|-----------|------------|------------|
| V12-60 | 10.51 (267) | 2.19 (55.6) | 7.40 (188) | 3.43 (87) | 3.03 (77) | 2.99 (76) | 5.87 (149) | 6.26 (159) |
| V12-80 | 11.02 (280) | 2.19 (55.6) | 7.60 (193) | 3.54 (90) | 3.15 (80) | 3.07 (78) | 5.87 (149) | 6.50 (165) |

# V12/V14 Dimensions

## Motors (Mobile)

### V14 Large Frame Variable Displacement Bent-Axis Motors



#### Dimensions, inch (mm)

| Series  | A           | C           | D          | E          | F          | G          |
|---------|-------------|-------------|------------|------------|------------|------------|
| V14-110 | 11.54 (293) | 2.93 (74.5) | 5.91 (150) | 8.19 (208) | 6.85 (174) | 8.03 (204) |
| V14-160 | 12.91 (328) | 2.95 (75)   | 5.47 (139) | 8.62 (219) | 6.85 (174) | 7.87 (200) |



# Application Market

## V12/V14 Motors Application Market

### Markets

### Applications

|                   |                                                                          |
|-------------------|--------------------------------------------------------------------------|
| Forestry          | Feller Bunchers, Skidder, Forwarder, Cranes                              |
| Marine            | Deck Cranes, Constant Tension Winches                                    |
| Construction      | Wheel Loader, Cranes, Excavator                                          |
| Mining            | Drill Rigs, Top Drives, Loaders, Subsurface Loaders, Tunneling Equipment |
| Power Gen         | Turbine Start                                                            |
| Material handling | Conveyor Drives, Truck Mounted Cranes, Mixers                            |
| Recycling         | Shredders                                                                |
| Military          | Fan Drives                                                               |





# V12/V14 Bent Axis Series

## Literature

Ref. Catalogue [HY30-8223/UK](#)



### Hydraulic Motors

Series V12, V14, T12  
Variable Displacement



ENGINEERING YOUR SUCCESS.



# Transmission

2/ Variable Displacement



ENGINEERING YOUR SUCCESS.

# Hydrostatic Pumps Goldcup Series

Transmission

P6 – 98 cc/rev, P7 – 119 cc/rev, P8 – 131 cc/rev, P11 – 180 cc/rev, P14 – 229 cc/rev,  
P24 – 403 cc/rev, P30 – 500 cc/rev

## Characteristics

DENISON Goldcup series package pumps contain within them all the circuit elements shown in the hydraulics schematic.

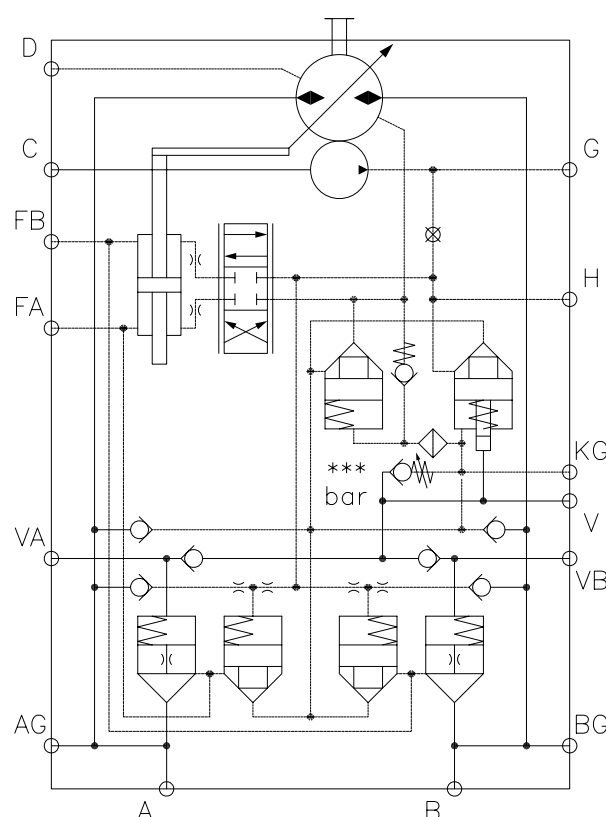
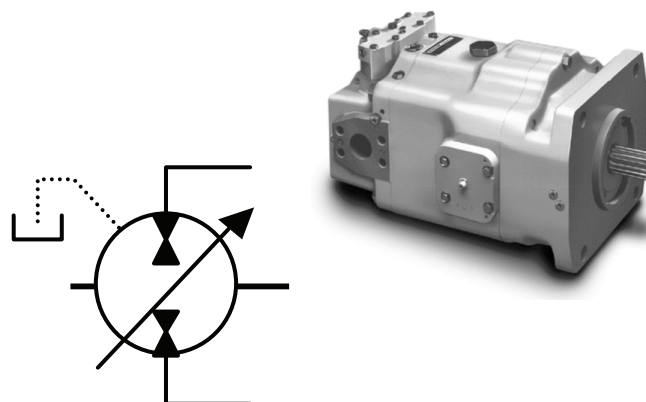
These include the rotary servo actuator, servo pressure relief valve, replenishing relief valve, and pressure compensator override controls. The pump can also incorporate the shuttle valve to strip hot oil from the transmission loop.

Goldcup series controls include rotary servo, hydraulic stroker, electric stroker, torque limiter and PQ control.

## Features

- 7 Displacement 98cc/rev – 500 cc/rev
- Pressure to 420 Bar
- Speed to 3000 RPM
- Low noise levels
- Wide variety of control options
- Displacement Indicator
- Full Power through drive
- Hot Oil Shuttle option
- System Flexibility

Please Note: Code out Overleaf



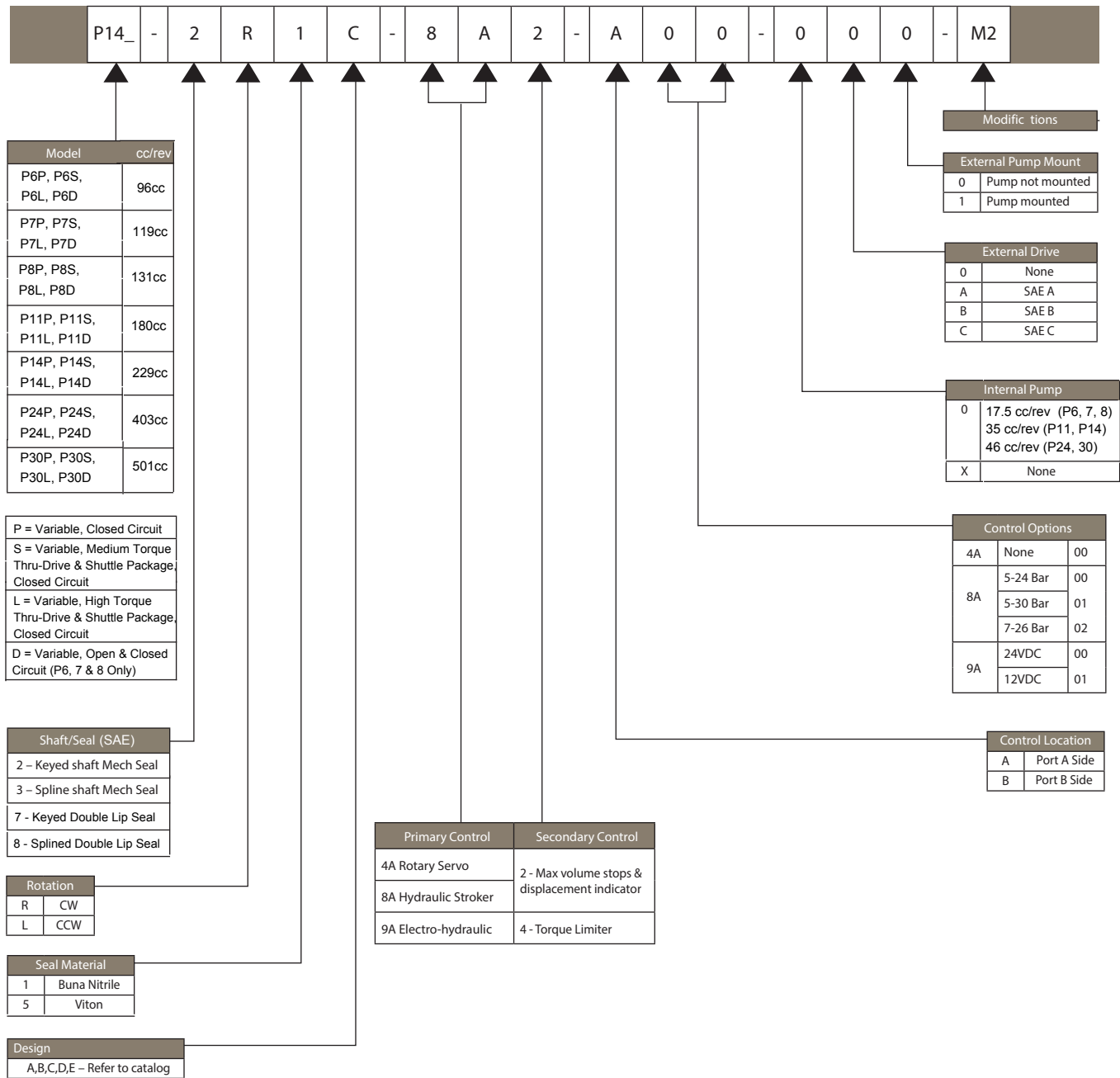
Maximum Pressure<sup>1</sup>

| Size | Intermittent | Continuous | Case | Maximum speed <sup>2</sup> | Weight | Mounting        | Shaft/            |
|------|--------------|------------|------|----------------------------|--------|-----------------|-------------------|
| P6   | 420 bar      | 345 bar    | 5.20 | 3000                       | 70     | SAE-C - 2 bolts | 1 1/4" Key or 14T |
| P7   | 420 bar      | 345 bar    | 5.20 | 3000                       | 70     | SAE-C - 2 bolts | 1 1/4" Key or 14T |
| P8   | 310 bar      | 250 bar    | 5.20 | 2100                       | 70     | SAE-C - 2 bolts | 1 1/4" Key or 14T |
| P11  | 420 bar      | 345 bar    | 5.20 | 2400                       | 136    | SAE-E - 4 bolts | 1 3/4" Key or 13T |
| P14  | 420 bar      | 345 bar    | 5.20 | 2400                       | 136    | SAE-E - 4 bolts | 1 3/4" Key or 13T |
| P24  | 345 bar      | 345 bar    | 5.20 | 2100                       | 295    | SAE-F - 4 bolts | 2" Key or 15T     |
| P30  | 345 bar      | 345 bar    | 5.20 | 1800                       | 304    | SAE-F - 4 bolts | 2" Key or 15T     |

# Hydrostatic Pumps Goldcup Series

Transmission

## Goldcup Model Code



### Standard Model

| Sizes 6,7,8          | Sizes 11,14          |
|----------------------|----------------------|
| P*P-****-4A2-*00-000 | P*P-****-4A2-*00-000 |
| P*P-****-8A2-*00-000 | P*P-****-8A2-*00-000 |
| P*P-****-9A2-*00-000 | P*P-****-9A2-*00-000 |

### Seal Kits

| Model   | Mod     | Seal Type | Shaft Type | Rotation | Complete Seal Kit | Shaft Seal Kit | Control Seal Kit |
|---------|---------|-----------|------------|----------|-------------------|----------------|------------------|
| 6, 7, 8 | C&A     | Buna N    | 2 & 3      | R&L      | S23-17026-0K      | S13-44302-0    | S23-17000-0      |
| 11, 14  | A & C   |           |            |          | S23-17032-0K      | S23-05992-0    |                  |
| 24, 30  | D,E & B |           |            |          | S23-11514-0K      | S23-11516-0    |                  |

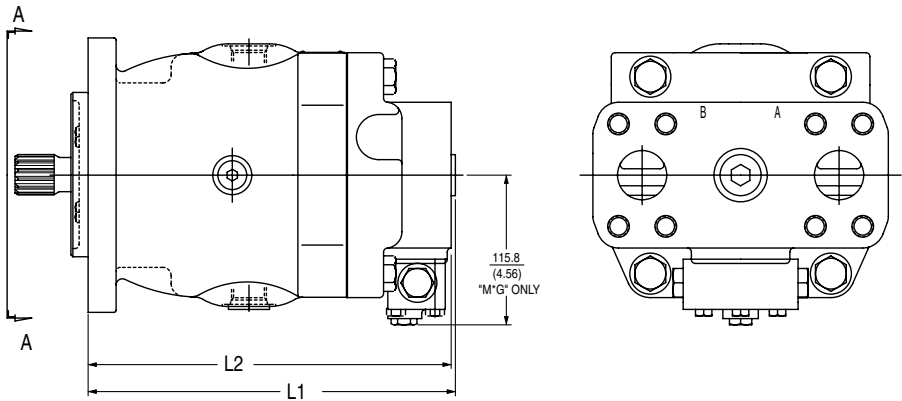
# Hydrostatic Pumps Goldcup Series

Transmission

Mobile & Industrial

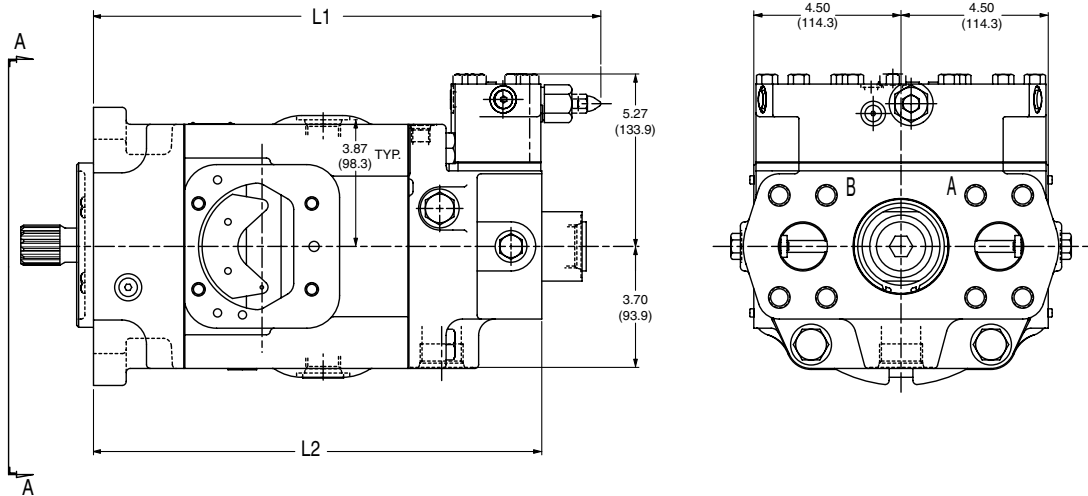
## Gold Cup Open & Closed Circuit Pumps & Motors for Hydrostatic Transmissions

M6  
M7  
M8  
M\*F Shown



| Mounting          | L1            | L2            |
|-------------------|---------------|---------------|
| SAE127-2 (SAE-C)  | 11.19 [284.2] | 11.06 [280.9] |
| SAE 152-4 (SAE-D) | 11.59 [294.3] | 11.46 [291.1] |

P6  
P7  
P8  
P\*P Shown



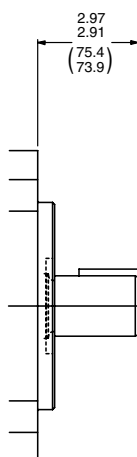
| Mounting          | L1            | L2            |
|-------------------|---------------|---------------|
| SAE127-2 (SAE-C)  | 15.51 [393.9] | 13.70 [348.0] |
| SAE 152-4 (SAE-D) | 16.85 [427.9] | 15.04 [382.1] |

# Hydrostatic Pumps Goldcup Series

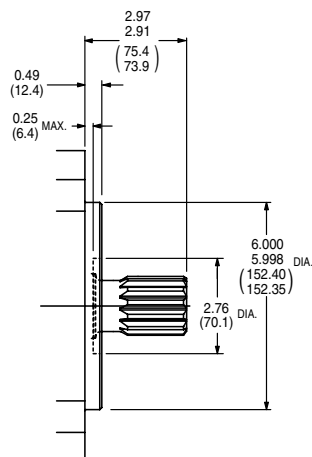
Transmission

## Mobile & Industrial Gold Cup Open & Closed Circuit Pumps & Motors for Hydrostatic Transmissions

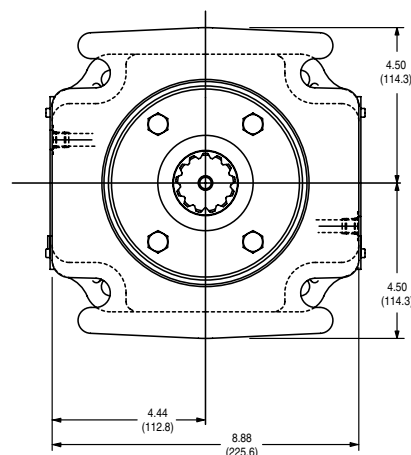
### Size 6, 7 and 8 Flange and Shaft Detail



Shaft Code 04  
SAE D Keyed

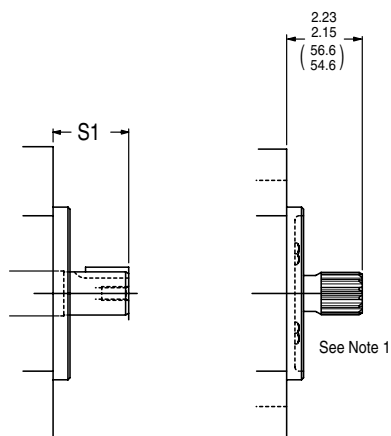


Shaft Code 05  
SAE D Spline

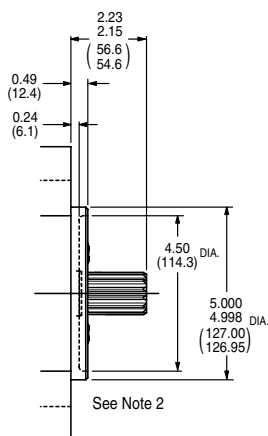


**VIEW A-A**  
FOR SAE 152-4  
("D" 4-BOLT)

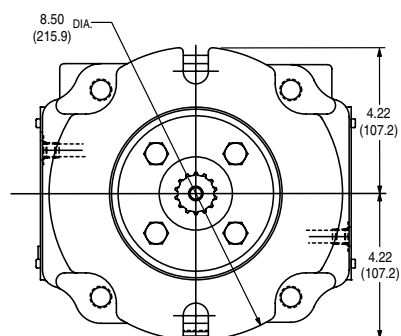
| Code   | S1                         |
|--------|----------------------------|
| 02, 07 | 2.23 (56.6)<br>2.15 (54.6) |
| 09, 10 | 3.36 (85.3)<br>3.28 (83.3) |



Shaft Codes  
02, 07, 09, 10  
SAE C Keyed



Shaft Codes 03 or 08  
SAE C Spline

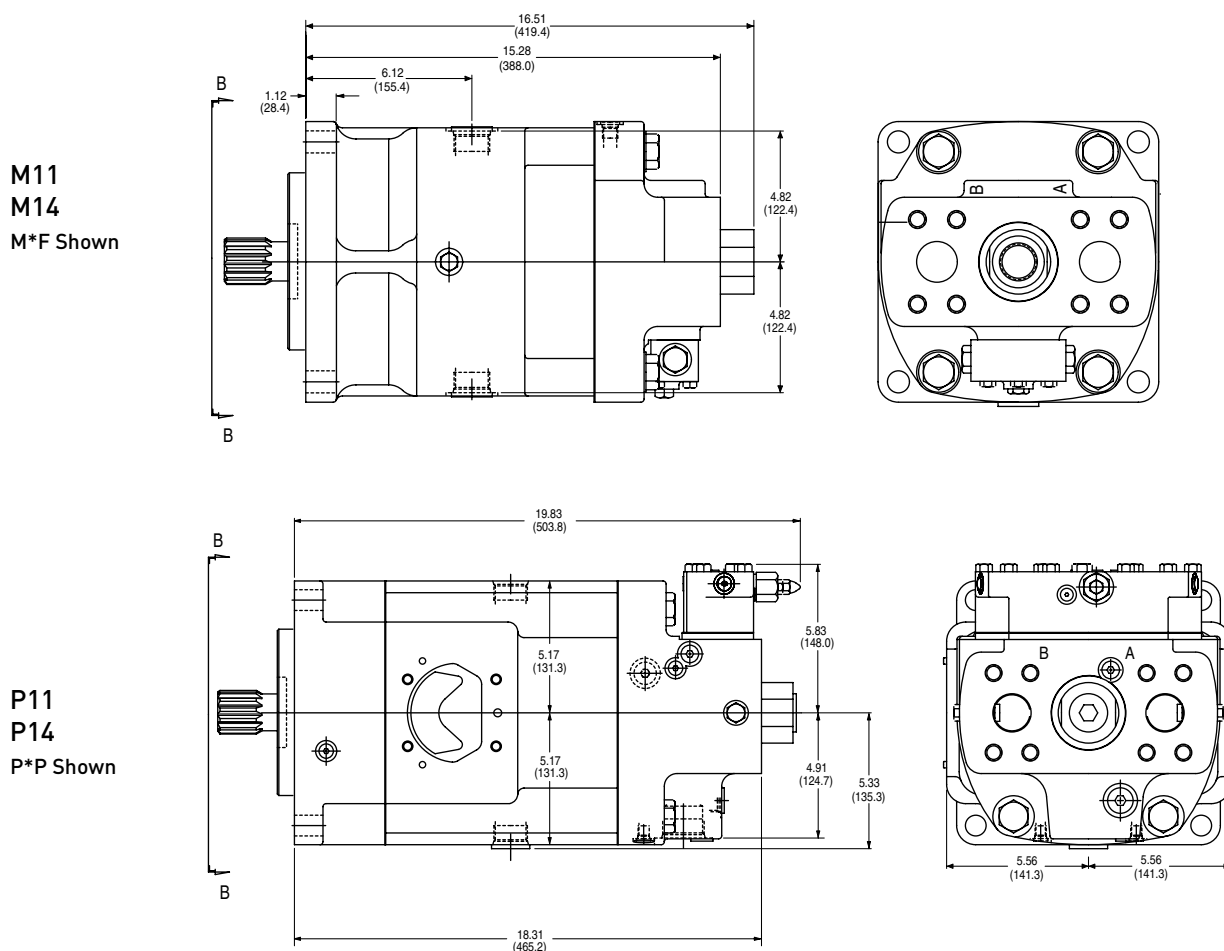


**VIEW A-A**  
FOR SAE 127-2  
("C" 2-BOLT)

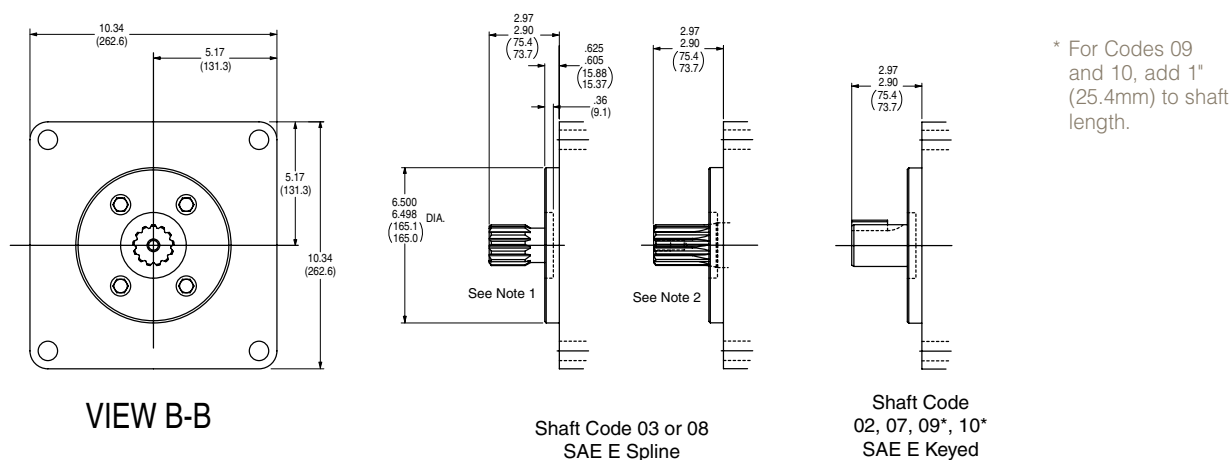
#### NOTES

- 1 Spline length for M\*F, M\*G, M\*H, M\*V, P\*S, P\*X, P\*D, P\*P, P\*V & P\*F.
- 2 Spline length for M\*R, M\*L, M\*M, M\*N, P\*L, P\*R.

Mobile & Industrial  
**Gold Cup Open & Closed Circuit Pumps & Motors for Hydrostatic Transmissions**



### Size 11 and 14 Flange and Shaft Detail



## NOTES

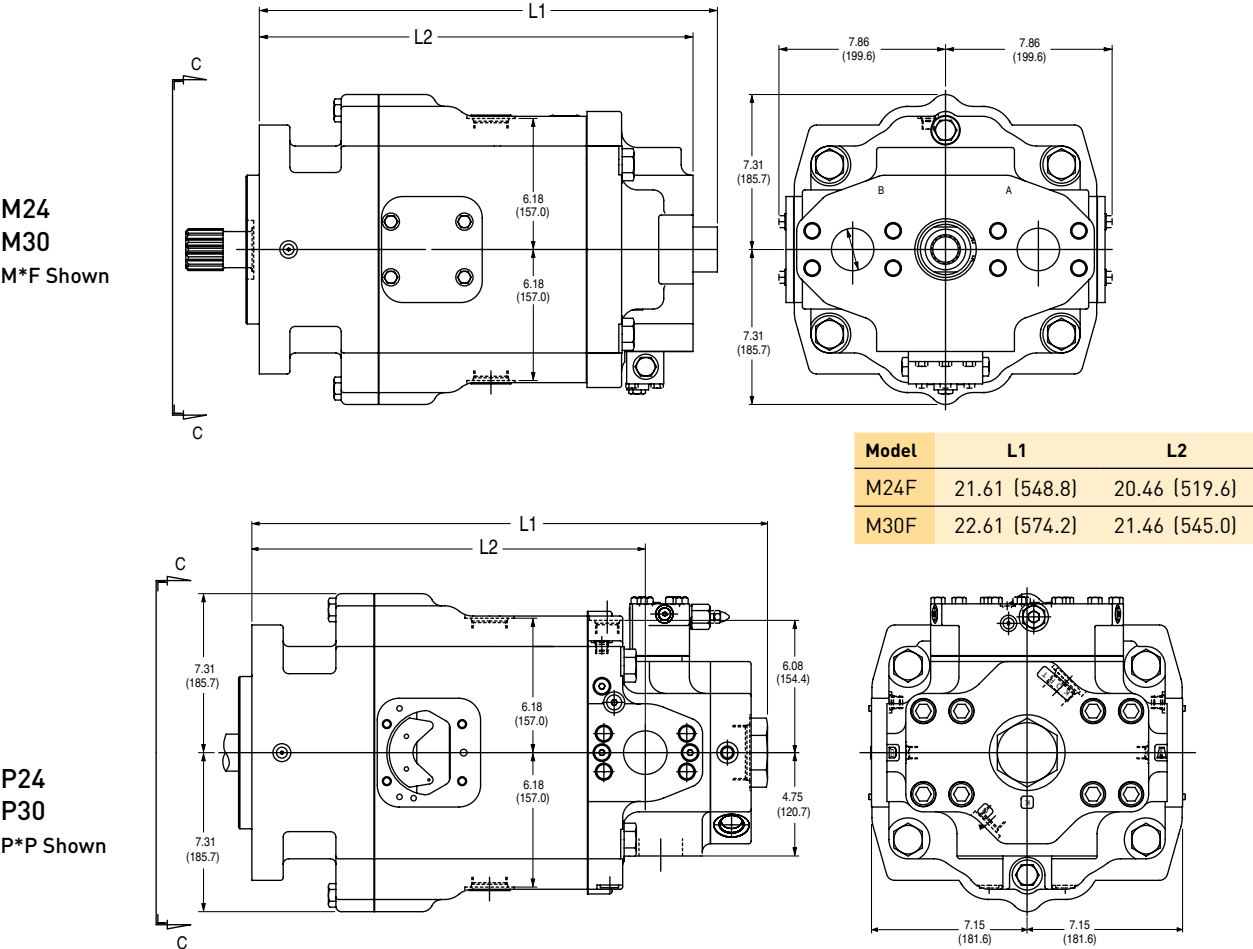
- 1 Spline length for M\*F, M\*G, M\*H, M\*V, P\*S, P\*X, P\*D, P\*P, P\*V & P\*F.  
2 Spline length for M\*R, M\*L, M\*M, M\*N, P\*L, P\*R.



# Hydrostatic Pumps Goldcup Series

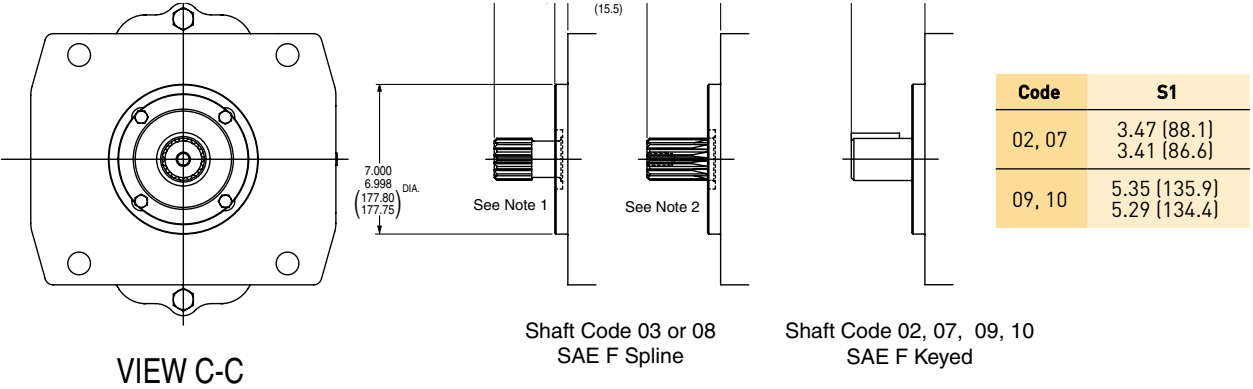
Transmission

Mobile & Industrial  
Gold Cup Open & Closed Circuit Pumps & Motors for Hydrostatic  
Transmissions



## Size 24 and 30 Flange and Shaft Detail

- NOTES  
 1 Spline length for M\*F, M\*G, M\*H, M\*V, P\*S, P\*X, P\*D, P\*P, P\*V & P\*F.  
 2 Spline length for M\*R, M\*L, M\*M, M\*N, P\*L, P\*R.

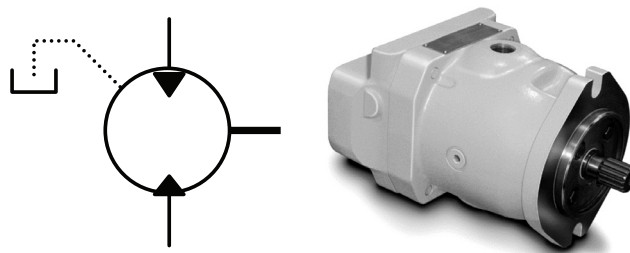


# Hydrostatic Motors Goldcup Series

Transmission

## Fix / Variable Displacement Motors

M6 -98 cc/rev, M7 -119 cc/rev,  
M11-180 cc/rev, M14 -229 cc/rev,  
M24 -403 cc/rev, M30 -500 cc/rev



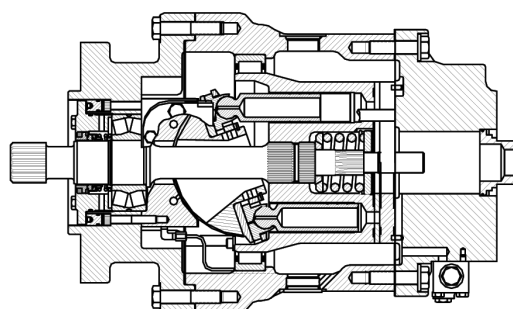
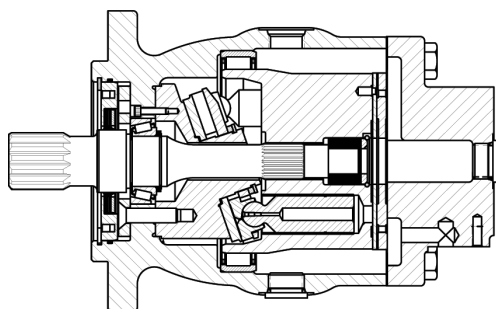
### Function:

- Goldcup fixed and variable transmission motors are suitable for the most demanding applications.
- Mounts and shaft options are standard SAE.
- Controls on variable motors include 2 speed or proportional hydraulic stroker with secondary reverse compensator an option.
- M6 / M7 fixed motors are available with cam options to reduce the displacement of standard motors.
- Both types of motor can be fitted with hot oil shuttle with or without orifices to limit the oil taken from the transmission loop.

### Features:

- 6 displacements 98cc/rev – 500 cc/rev
- Pressure to 420 Bar
- Speed to 3600 RPM
- Fixed and variable
- Low noise levels
- Wide variety of control options
- Hot Oil Shuttle option
- System Flexibility

Please Note: Code out Overleaf

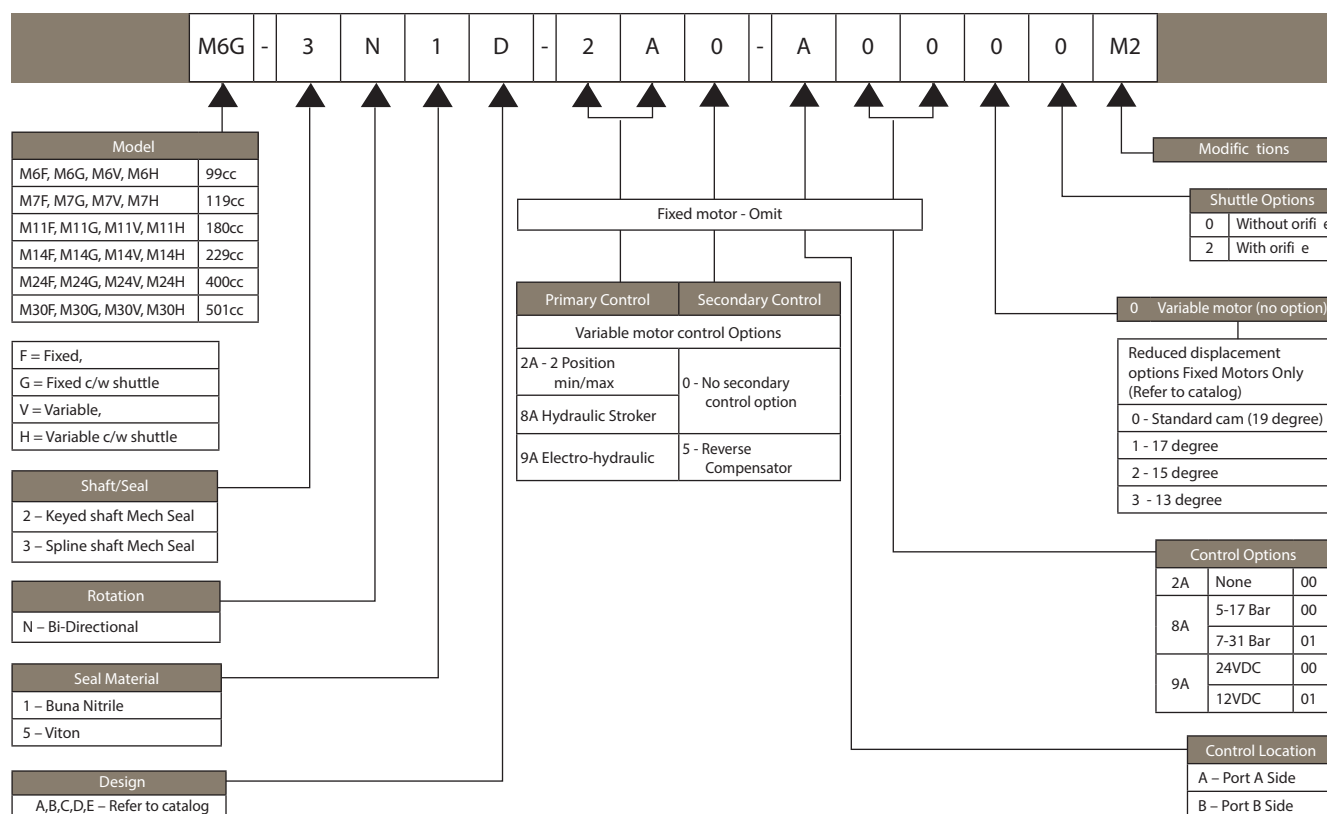


| Size | Maximum Displacement | Torque | Maximum Pressure (bar) |            |      | Maximum Speed (rpm) |                  |
|------|----------------------|--------|------------------------|------------|------|---------------------|------------------|
|      | (ml / rev)           |        | Intermittent           | Continuous | Case | 100% displacement   | 50% displacement |
| M6   | 98.3                 | 1.57   | 420                    | 345        | 5.20 | 3000                | 3600             |
| M7   | 118.8                | 1.89   |                        |            |      |                     |                  |
| M11  | 180.3                | 2.87   | 420                    | 345        | 5.20 | 2400                | 2800             |
| M14  | 229.5                | 3.62   |                        |            |      |                     |                  |
| M24  | 403.2                | 6.23   | 345                    | 345        | 5.20 | 2100                | 2100             |
| M30  | 501.5                | 7.97   | 345                    |            |      | 1800                | 1800             |

# Hydrostatic Motors Goldcup Series

Transmission

## Goldcup Model Code



### Standard Model

| Sizes 6,7       | Sizes 11,14     |
|-----------------|-----------------|
| M*F-*N1D        | M*V-*N1*-*0-*   |
| M*G-*N1D-0*     | M*H-*N1*-*0-*** |
| M*V-*N1*-*0-*   |                 |
| M*H-*N1*-*0-*** |                 |

### Seal Kits

| Model  | Mod   | Unit Type | Seal Type | Shaft Type | Rotation | Complete Seal Kit | Shaft Seal Kit | Control Seal Kit |
|--------|-------|-----------|-----------|------------|----------|-------------------|----------------|------------------|
| 6,7    | A,C   | Fixed     | Buna N    | 2 & 3      | R&L      | S23-00133-0       | S13-44302-0    |                  |
| 6,7    | D     | Fixed     |           |            |          | S23-03237-0       | 620-82066-0    |                  |
| 6,7    | A,C   | Variable  |           |            |          | S23-17743-0K      | S13-44302-0    | S23-17000-0      |
| 11,14  | A     | Fixed     |           |            |          | S23-00143-0K      | S23-05992-0    |                  |
| 11,14  | A     | Variable  |           |            |          | S23-17746-0K      | S23-05992-0    | S23-17000-0      |
| 24, 30 | D & A | Fixed     |           |            |          | S23-15128-0       | S23-11516-0    |                  |
| 24, 30 | D & A | Variable  |           |            |          | S23-05994-0K      | S23-11516-0    | S23-17000-0      |

## Markets

## Applications

|                   |                                                                        |
|-------------------|------------------------------------------------------------------------|
| Marine            | Deck Cranes, Constant Tension Winches, Steering Gear, Fin Stabilizers, |
| Oil & Gas         | Nitrogen Pumpers, Frac Trucks, Cementers, Coil Tubing                  |
| Mining            | Drill Rigs, Top Drives, Bucket Reclaimers                              |
| Power Gen         | Turbine Start                                                          |
| Material Handling | Mixers, Dewatering, Conveyor Drives, Shredders                         |

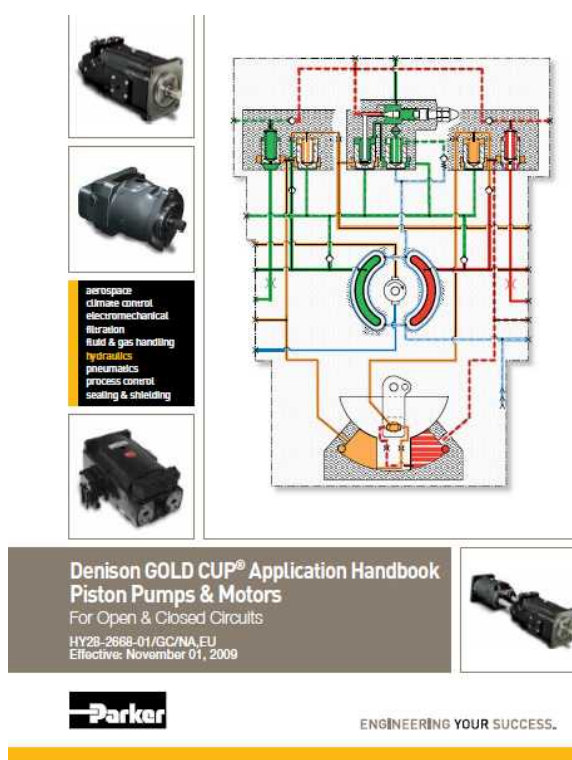




Ref. Catalogue : [HY28-2667-01/GC/NA,EU](#)



Application Handbook : [HY28-2668-01/GC/NA,EU](#)





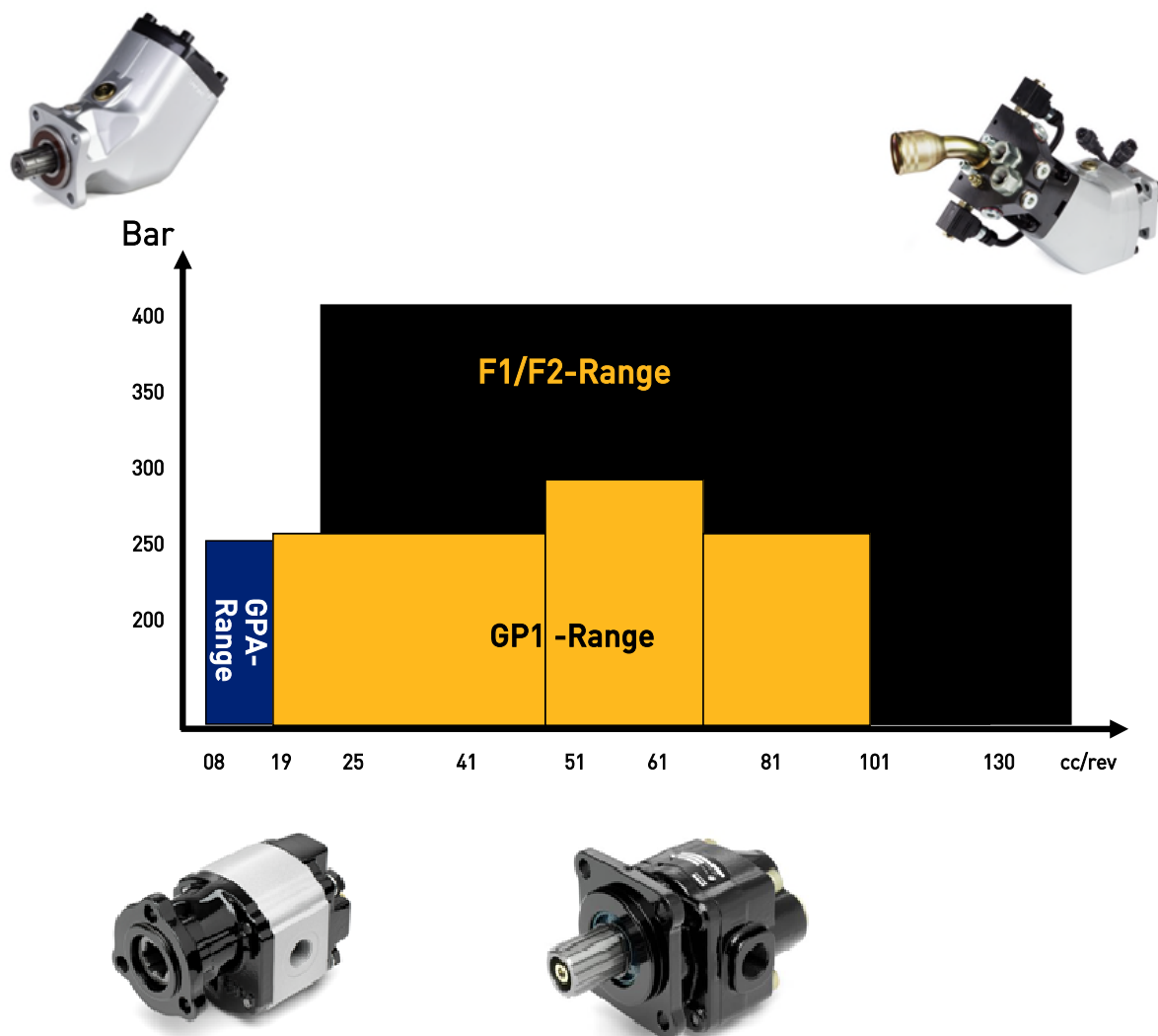
# Pumps and Motors

3/ Truck Pumps and Motors



ENGINEERING YOUR SUCCESS.

# Product Program – Fixed Displacement





## Light/medium duty pumps

Parker's truck gear pumps are ideal for operators of light trucks for their hydraulic power needs.

The GPA/GP1 series gear pumps are available to suit most applications. They are light and compact, and can be installed in either rear or side mount configuration thanks to their unique dual port layout.

The smaller GPA series is built with an extruded aluminum housing for minimum weight.

The larger GP1 pumps are built with compact cast iron housings for strength.

The gear pumps complement our heavy duty piston pumps and vane pumps.

The performance and characteristics are ideal for many light and/or intermittent applications, including the famous Parker reliability, and they are engineered with a long, trouble-free service life.



## Features

- Compact and light weight - easy to install even on small vehicles
- Quiet operation - low noise emissions are important in sensitive areas
- Robust and reliable - means a long, trouble-free service life
- Built for high rpm's - less sensitive to over-speeding
- Bi-directional - easy to install
- Side or rear mount - use the ports on the side or at the rear, whichever is most suitable for the application.

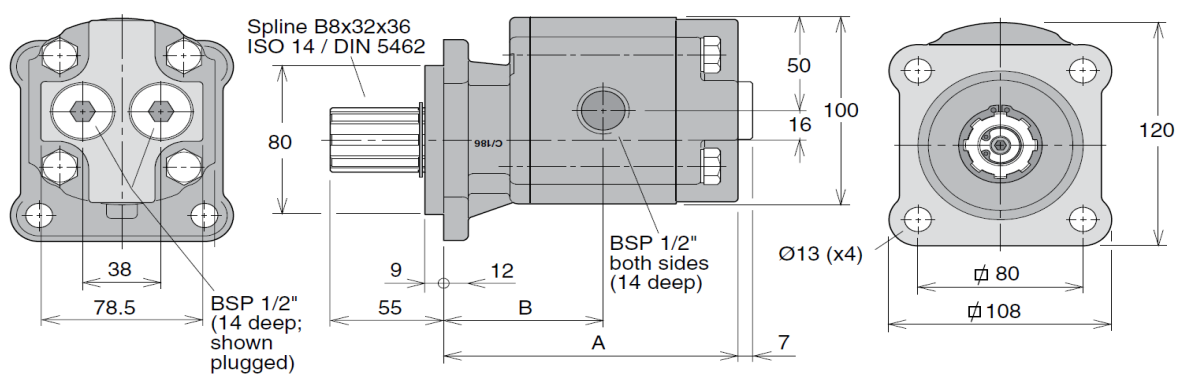
## Specifications

Series GPA (aluminium body; 3- and 4-bolt)

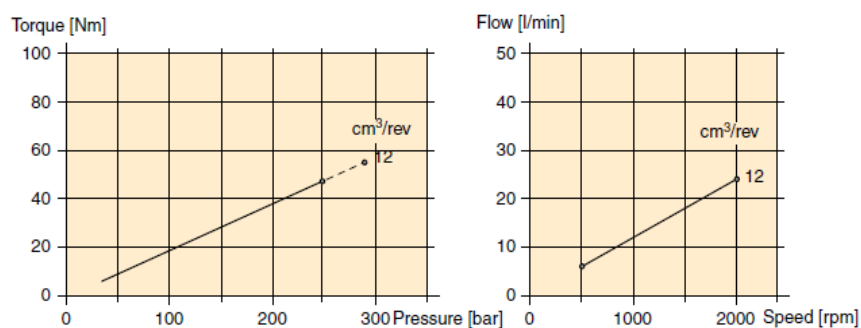
| Frame Size                               | 012  |
|------------------------------------------|------|
| Displacement [cm <sup>3</sup> /rev]      | 12   |
| Max Continuous Pressure [bar]            | 250  |
| Max Intermittent Pressure [bar]          | 270  |
| Max Peak Pressure [bar]                  | 290  |
| Speed [rpm] (at max continuous pressure) |      |
| Min                                      | 500  |
| Max                                      | 2000 |
| Weight [kg]                              | 4.8  |

Series GP1 (cast iron body; 3- and 4-bolt)

| Frame Size                               | 023  | 029  | 041  | 046  | 050  | 060  | 080  | 100  |
|------------------------------------------|------|------|------|------|------|------|------|------|
| Displacement [cm <sup>3</sup> /rev]      | 23   | 29   | 41   | 46   | 50   | 60   | 80   | 100  |
| Max Continuous Pressure [bar]            | 250  | 240  | 210  | 200  | 300  | 280  | 200  | 170  |
| Max Intermittent Pressure [bar]          | 300  | 290  | 260  | 250  | 310  | 290  | 210  | 180  |
| Max Peak Pressure [bar]                  | 300  | 290  | 260  | 250  | 320  | 300  | 220  | 190  |
| Speed [rpm] (at max continuous pressure) |      |      |      |      |      |      |      |      |
| Min                                      | 500  | 500  | 500  | 500  | 500  | 500  | 500  | 500  |
| Max                                      | 2000 | 2000 | 2000 | 2000 | 2000 | 1800 | 1600 | 1400 |
| Weight [kg]                              | 607  | 7.1  | 7.8  | 8.1  | 12.5 | 13.0 | 14.0 | 15.0 |



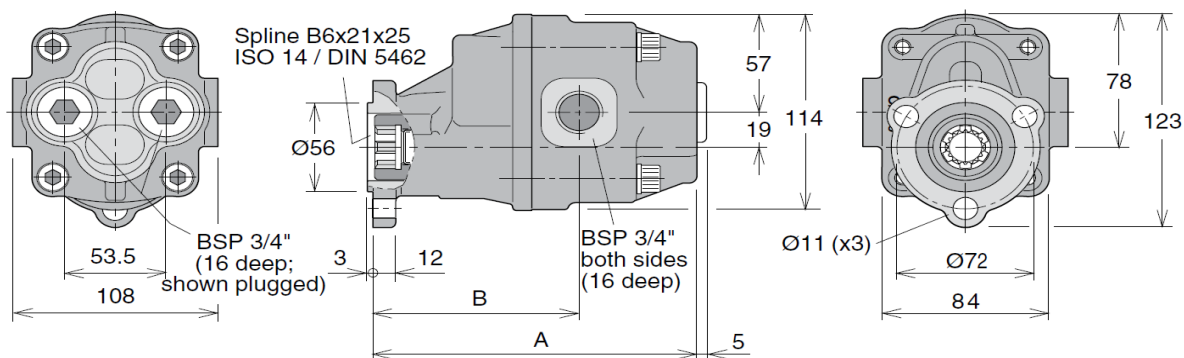
|            |     |
|------------|-----|
| Frame size | 012 |
| Dim. "A"   | 123 |
| Dim. "B"   | 72  |



|                        |                                    |
|------------------------|------------------------------------|
| Fluid temperature:     | -25 °C to +80 °C                   |
| Recommended viscosity: | 12 to 100 mm <sup>2</sup> /s (cSt) |
| Max viscosity:         | 750 mm <sup>2</sup> /s (cSt)       |

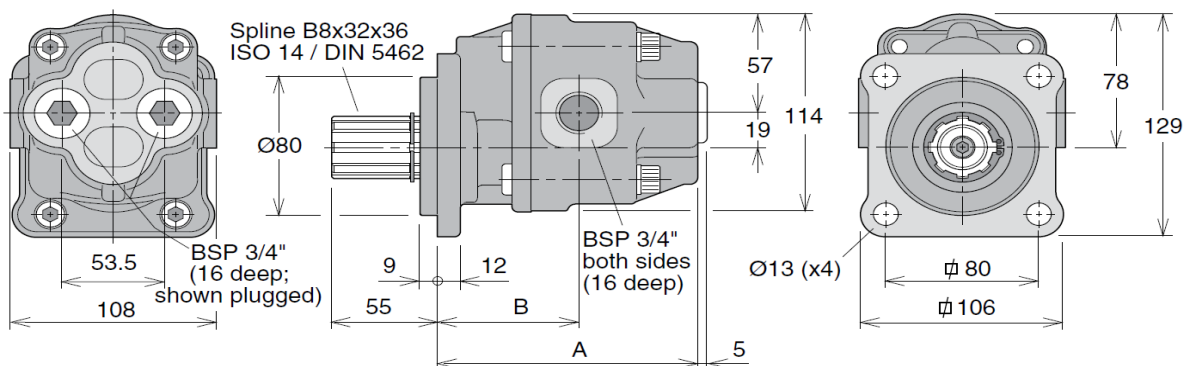
# GPA and GP1 Pumps

## GP1-023/-029/-041/-046 3-bolt

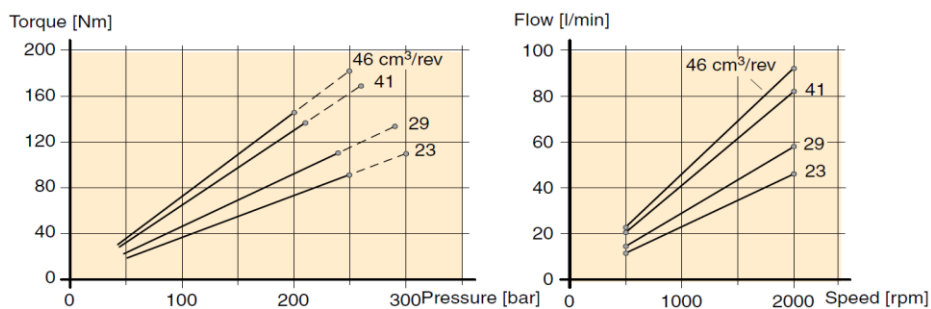


| Frame size | 023 | 029 | 041 | 046 |
|------------|-----|-----|-----|-----|
| Dim. "A"   | 166 | 171 | 188 | 196 |
| Dim. "B"   | 102 | 109 | 115 | 119 |

## GP1-023/-029/-041/-046 4-bolt



| Frame size | 023 | 029 | 041 | 046 |
|------------|-----|-----|-----|-----|
| Dim. "A"   | 131 | 136 | 153 | 161 |
| Dim. "B"   | 67  | 74  | 80  | 84  |



Diagrams reflect theoretical values  
 Direction of rotation: Bi-directional  
 Input pressure: 0.7 to 3.0 bar (absolute)

Fluid temperature: -25 °C to +80 °C  
 Recommended viscosity: 12 to 100 mm²/s (cSt)  
 Max viscosity: 750 mm²/s (cSt)

# GPA and GP1 Pumps

## Ordering code

Example:

**GPA- 008 - 4**

**A** Aluminium body

**1** Cast iron body

Frame size

**A = 008, 011, 014, 016 or 019**

**1 = 023, 029, 041, 046, 050, 060 or 080**

**4** 4 bolt flange

## Standard versions

### Aluminium 4 bolt

| Designation | Ordering no. |
|-------------|--------------|
| GPA-008-4   | 334 9113 940 |
| GPA-011-4   | 334 9113 941 |
| GPA-014-4   | 334 9113 942 |
| GPA-016-4   | 334 9113 943 |
| GPA-019-4   | 334 9113 944 |

### Cast iron 4 bolt

| Designation | Ordering no. |
|-------------|--------------|
| GP1-023-4   | 702 9113 913 |
| GP1-029-4   | 702 9113 914 |
| GP1-041-4   | 702 9113 916 |
| GP1-046-4   | 702 9113 917 |
| GP1-050-4   | 704 9113 911 |
| GP1-060-4   | 704 9113 912 |
| GP1-080-4   | 704 9113 914 |

**NOTE:** The pump does not include a suction fitting; it must be ordered separately.

Series F1 is a further development of our well known 'truck pump', the F1. The F1 offers many additional values for operators of cargo cranes, hook loaders, skip loaders, forest cranes, concrete mixers and similar truck applications.

Series F1 is a very efficient and straight forward pump design with unsurpassed reliability.

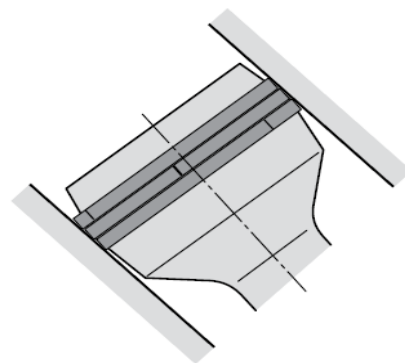
Its small envelope size gives a simple and inexpensive installation.

## Features of the F1 are:

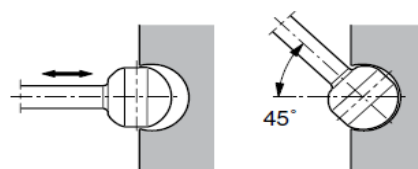
- High selfpriming speeds
- Operating pressures up to 400 bar
- High overall efficiency
- Low noise level
- Small installation dimensions
- Low weight

## ... thanks to:

- 45° bent-axis angle
- Optimal inlet port geometry in the end cap
- Single housing design
- Spherical pistons - high speeds
- Laminated piston rings - low leakage
- Positive synchronisation with timing gear
- Installation above the reservoir level possible
- Tolerates low temperatures and high temperature shocks
- Shaft end and mounting flange meet the ISO standard for all sizes



*F1 piston with laminated piston ring.*



*F1 piston-to-shaft locking.*

# F1 Pumps

| Frame size F1-                       | 25   | 41   | 51   | 61   | 81                 | 101                |
|--------------------------------------|------|------|------|------|--------------------|--------------------|
| Displacement [cm <sup>3</sup> /rev]  | 25.6 | 40.9 | 51.1 | 59.5 | 81.6               | 102.9              |
| Max flow <sup>1)</sup> [l/min]       |      |      |      |      |                    |                    |
| at 350 bar                           | 67   | 98   | 112  | 131  | 163 <sup>3)</sup>  | 185 <sup>3)</sup>  |
| at 400 bar                           | 56   | 86   | 97   | 113  | 143                | 160                |
| Max operating pressure [bar]         |      |      |      |      |                    |                    |
| continuous                           | 350  | 350  | 350  | 350  | 350                | 350                |
| intermittent                         | 400  | 400  | 400  | 400  | 400                | 400                |
| Shaft speed [rpm]                    |      |      |      |      |                    |                    |
| - short circuited pump (low press.)  | 2700 | 2700 | 2700 | 2700 | 2300               | 2300               |
| - max speed at 350 bar <sup>2)</sup> | 2600 | 2400 | 2200 | 2200 | 2000 <sup>3)</sup> | 1800 <sup>3)</sup> |
| at 400 bar <sup>2)</sup>             | 2200 | 2100 | 1900 | 1900 | 1750               | 1550 <sup>3)</sup> |
| Torque <sup>1)</sup> [Nm]            |      |      |      |      |                    |                    |
| at 350 bar                           | 142  | 227  | 284  | 331  | 453                | 572                |
| at 400 bar                           | 163  | 260  | 324  | 378  | 518                | 653                |
| Input power [kW]                     |      |      |      |      |                    |                    |
| - continuous                         | 31   | 46   | 52   | 61   | 76                 | 86                 |
| - intermittent <sup>4)</sup>         | 39   | 57   | 66   | 76   | 95                 | 108                |
| Weight [kg]                          | 8.5  | 8.5  | 8.5  | 8.5  | 12.5               | 12.5               |

1) Theoretical Values

2) Valid at an inlet pressure of 1.0 bar (abs.) when operating on mineral oil at a viscosity of 30 mm<sup>2</sup>/s (cSt).

3) Valid with 2 1/2" inlet (suction) line.

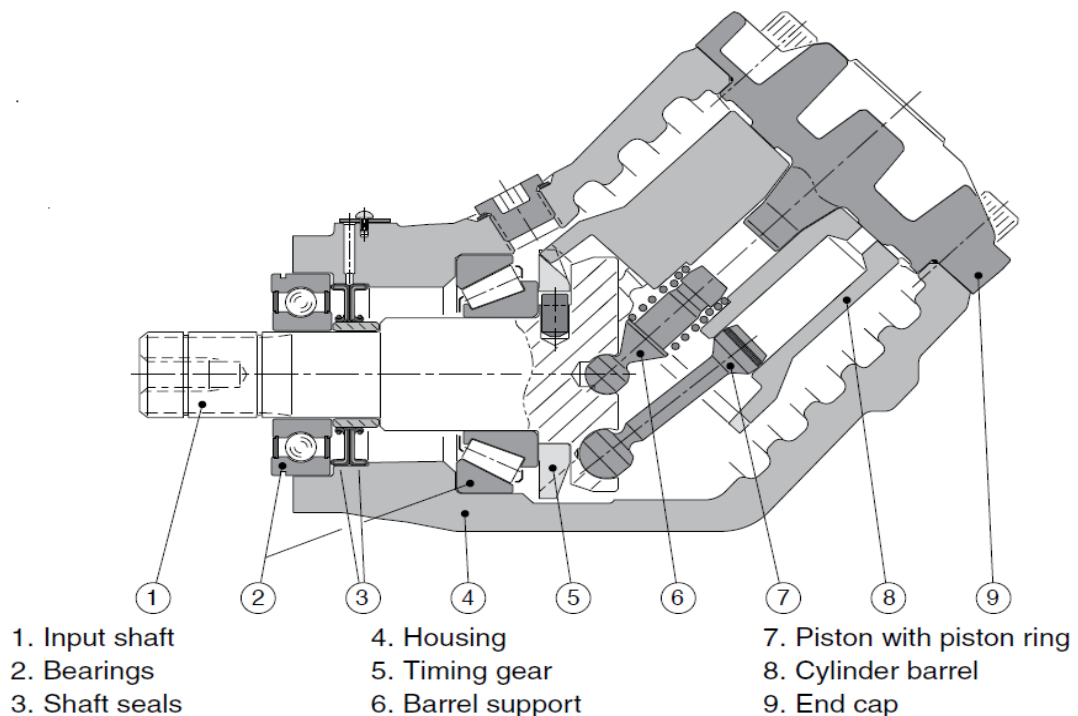
With 2" suction line: F1-81 – max 1400 rpm (Q ≈ 120 l/min);

F1-101 – max 1000 rpm (Q ≈ 120 l/min).

4) Max 6 seconds in any one minute.

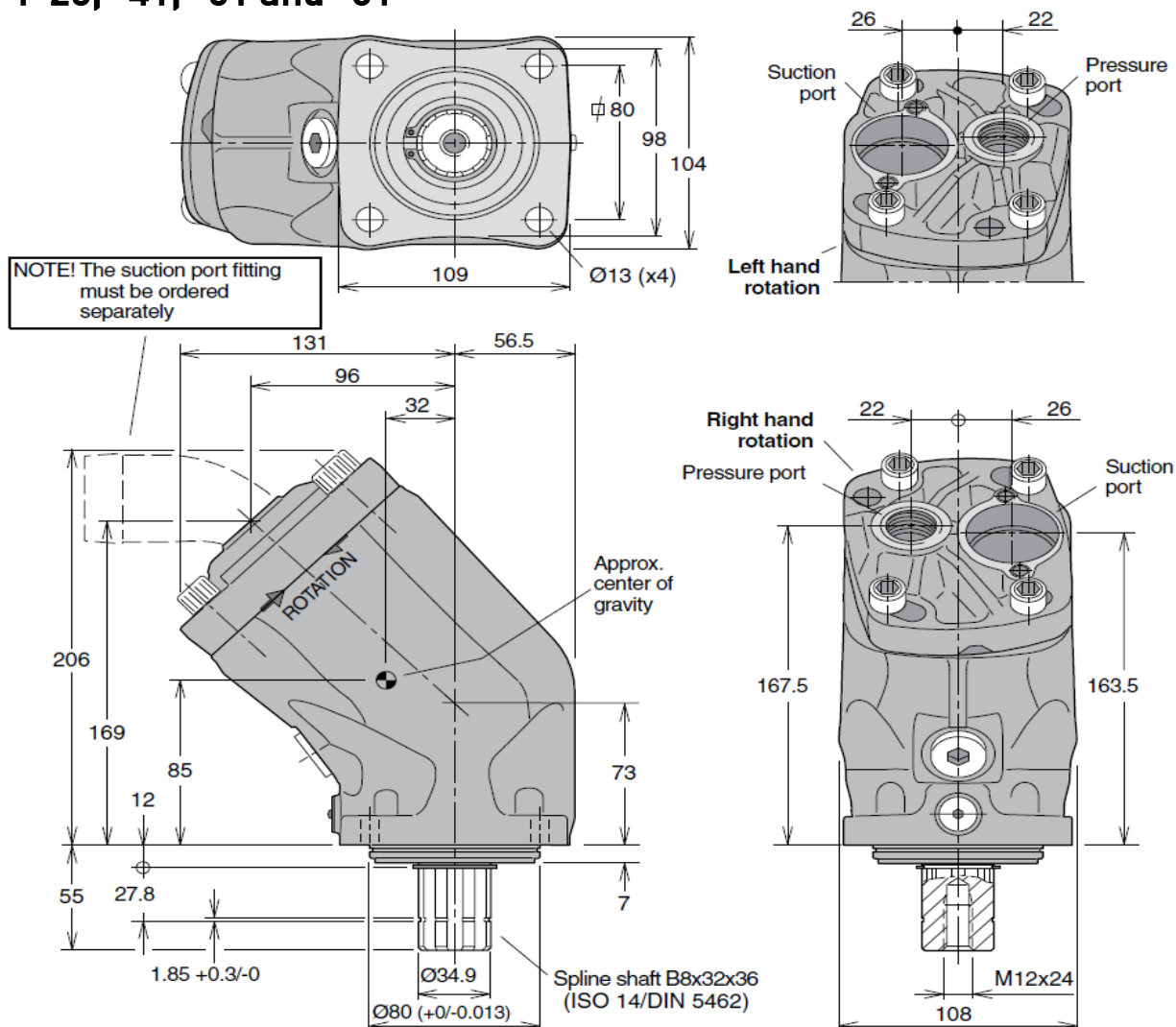
**NOTE:** For noise level information, contact Parker Hannifin

## Pump cross section





## F1-25, -41, -51 and -61



## Ordering code

Example

F1 frame size

25, 41, 51, 61, 81, or 101

Shaft rotation

R Right hand

L Left hand

**F1 - 81 - R**

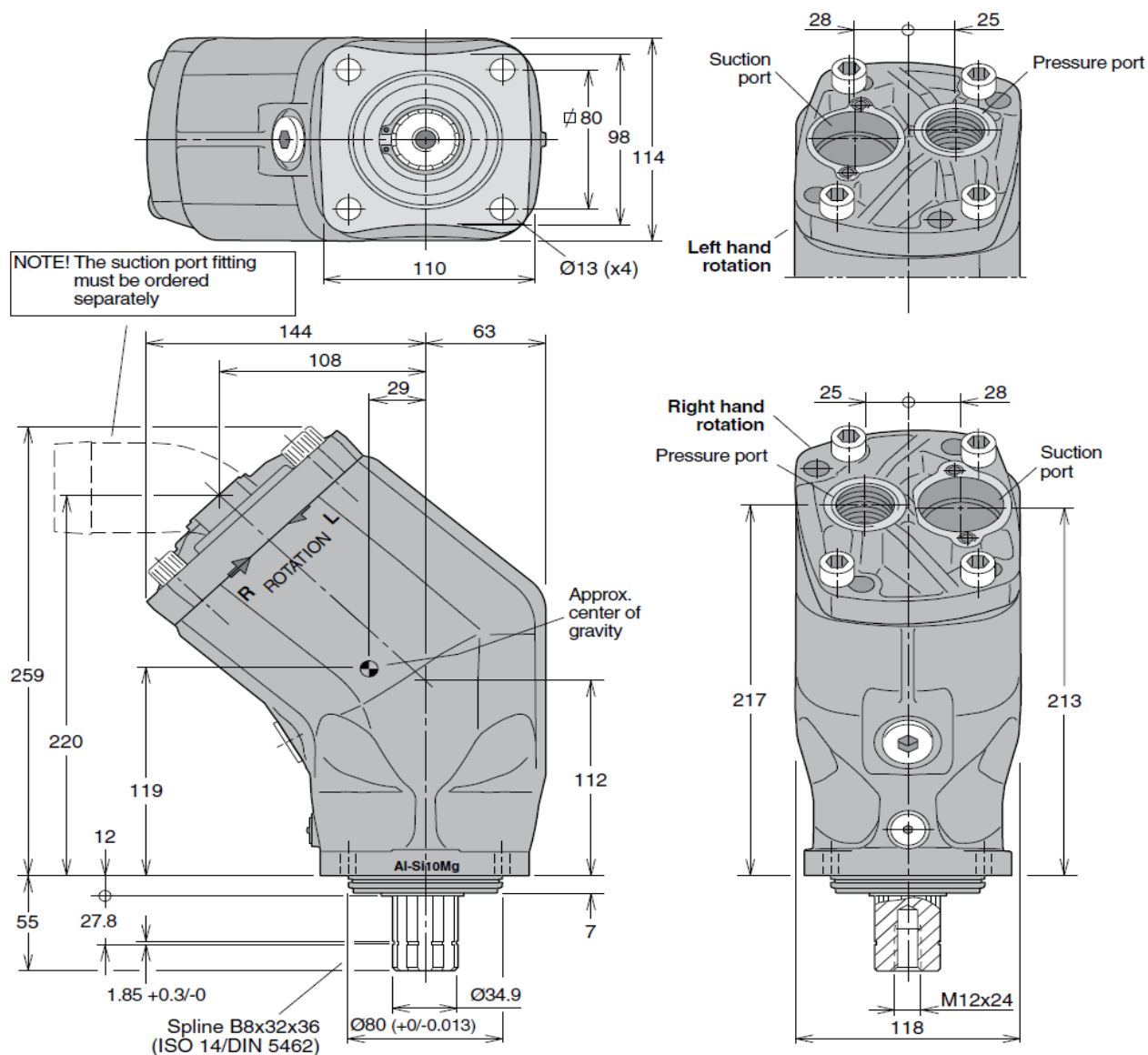
**NOTE:** The pump does not include a suction fitting; it must be ordered separately.

## Standard versions

| Designation | Ordering no. |
|-------------|--------------|
| F1-25-R     | 378 1024     |
| F1-25-L     | 378 1025     |
| F1-41-R     | 378 1040     |
| F1-41-L     | 378 1041     |
| F1-51-R     | 378 1050     |
| F1-51-L     | 378 1051     |
| F1-61-R     | 378 1060     |
| F1-61-L     | 378 1061     |

|          |         |
|----------|---------|
| Seal Kit | 3780868 |
|----------|---------|

## F1-81 and -101



## Port size

F1 frame size Pressure port

| F1 frame size | Pressure port 1) |
|---------------|------------------|
| -25           | 3/4"             |
| -41           | 3/4"             |
| -51           | 3/4"             |
| -61           | 3/4"             |
| -81           | 1"               |
| -101          | 1"               |

1) BSP thread (fitting not included)

## Standard versions

| Designation | Ordering no. |
|-------------|--------------|
| F1-81-R     | 378 1080     |
| F1-81-L     | 378 1081     |
| F1-101-R    | 378 1100     |
| F1-101-L    | 378 1101     |

### Features:

- Laminated piston rings - low leakage
- Positive synchronisation with timing gear
- Operating pressure up to 250 bar
- Tolerates low temperatures and high temperature shocks
- Shaft end and mounting flange meet the ISO standard for all sizes
- Tolerates high acceleration



# F1 Motors

| Motor frame size F1-                | 25-M  | 41-M  | 51-M  | 61-M  | 81-M  | 101-M | 121-M |
|-------------------------------------|-------|-------|-------|-------|-------|-------|-------|
| Displacement [cm <sup>3</sup> /rev] | 25.6  | 40.9  | 51.1  | 59.5  | 81.6  | 102.9 | 118,5 |
| Max operating pressure [bar]        |       |       |       |       |       |       |       |
| continuous                          | 250   | 250   | 250   | 250   | 250   | 250   | 250   |
| intermittent                        | 350   | 350   | 350   | 350   | 350   | 350   | 350   |
| Max Shaft speed [rpm]               |       |       |       |       |       |       |       |
| - continuous                        | 2 300 | 2 000 | 1 800 | 1 700 | 1 500 | 1 400 | 1300  |
| - intermittent                      | 3 000 | 2 700 | 2 400 | 2 200 | 2 000 | 1 800 | 1700  |
| Torque (theor.) [Nm]                |       |       |       |       |       |       |       |
| at 200 bar                          | 81    | 130   | 162   | 189   | 259   | 327   | 376   |
| at 350 bar                          | 142   | 227   | 284   | 331   | 453   | 572   | 658   |
| Max output power [kW]               |       |       |       |       |       |       |       |
| - continuous                        | 20    | 27    | 31    | 34    | 41    | 48    | 51    |
| - intermittent                      | 26    | 37    | 41    | 44    | 54    | 62    | 67    |
| Weight [kg]                         | 8.5   | 8.5   | 8.5   | 8.5   | 12.5  | 12.5  | 12.5  |

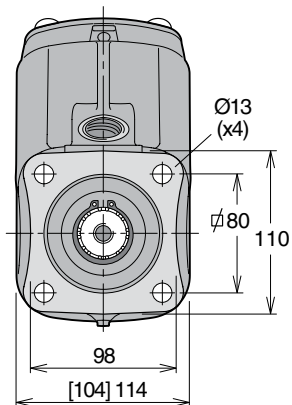
## Port size

## Standard versions

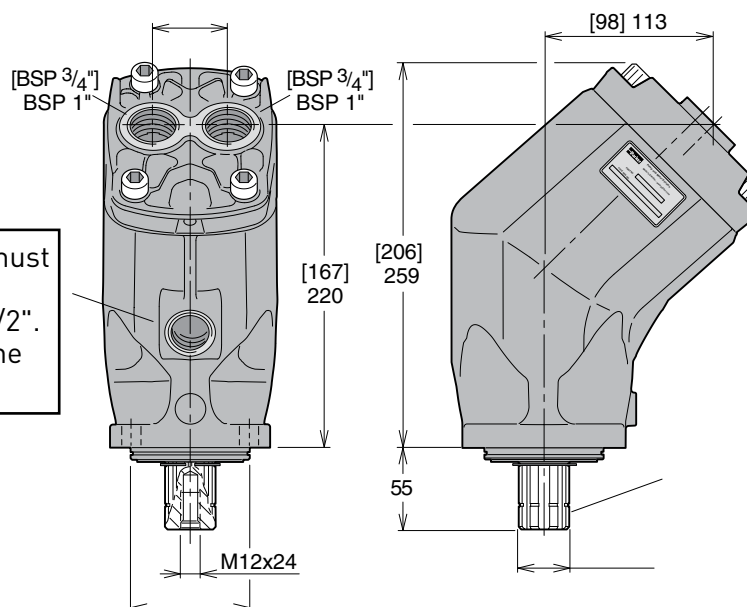
F1 - 81 - M  
F1 Motor frame size  
25, 41, 51, 61, 81, 101 or 121

| F1 motor frame size | Port size |
|---------------------|-----------|
| F1-25/41/51/61      | 3/4"      |
| -81/101/121         | 1"        |

| Designation | Ordering no. |
|-------------|--------------|
| F1-25-M     | 378 1724     |
| F1-41-M     | 378 1740     |
| F1-51-M     | 378 1750     |
| F1-61-M     | 378 1760     |
| F1-81-M     | 378 1780     |
| F1-101-M    | 378 1800     |
| F1-121-M    | 378 4120     |



**NOTE:** - Dimensions, in mm, are valid for all frame sizes, except those in brackets [ ] which are valid for F1-25/-41/-51/-61-M only.



Note ! Drain line must be mounted.  
Connection BSP 1/2".  
Maximum drain line pressure is 3 bar

## F2 Twin-flow pumps

Series F2 is a further development of the twin-flow version of series F1, the very first bent-axis truck pump on the market to feature two entirely independent flows.

With a suitable build-up of the hydraulic system, the main advantage with a twin-flow pump is that three different flows can be provided at the same engine speed.

The twin-flow pump makes it possible to further optimise the hydraulic system and offers:

- Less energy consumption
- Reduced risk of system overheating
- Lower weight
- Easier installation
- Standardised system solutions

The twin-flow pump makes it possible to operate two work functions that are independent of each other which leads to higher speed and an increased operating precision.

Another requirement can be a large and a small flow, or two equal flows. All of these alternatives are possible with the twin-flow pump.

The pump can be utilised to provide one flow at high system pressure, and, as soon as the pressure has decreased sufficiently, add the flow from the other circuit.

This eliminates the risk of exceeding the PTO power rating and, at the same time, provide an optimal driving.



### Typical twin-flow applications

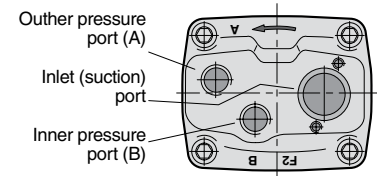
- Large truck loaders
- Forestry cranes
- Hook loaders/lift dumpers
- Tipper/crane combinations
- Refuse collecting vehicles

The pump shaft end/mounting flange meets the ISO standard and suits PTO direct mounting.

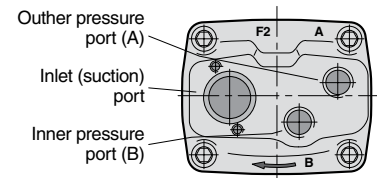
## Specifications

| Frame size F2-                                              | 42/42 | 53/53 | 55/28 | 70/35 | 70/70 |
|-------------------------------------------------------------|-------|-------|-------|-------|-------|
| Displacement [cm <sup>3</sup> /rev]                         |       |       |       |       |       |
| Port A                                                      | 43    | 54    | 55    | 69    | 68    |
| Port B                                                      | 41    | 52    | 28    | 36    | 68    |
| Max operating pressure [bar]                                |       |       |       |       |       |
| continuous                                                  | 350   | 350   | 350   | 350   | 300   |
| intermittent                                                | 400   | 400   | 400   | 400   | 350   |
| Max Shaft speed [rpm]                                       |       |       |       |       |       |
| (unloaded pump; low pressure)                               | 2550  | 2550  | 2550  | 2550  | 2550  |
| Max selfpriming speed [rpm]                                 |       |       |       |       |       |
| Ports A <sup>1) 2)</sup> and B <sup>1) 2)</sup> pressurised | 1800  | 1800  | 1800  | 1800  | 1650  |
| Port A <sup>2)</sup> unloaded, pressure in port B           | 2100  | 2100  | 2100  | 2100  | 2100  |
| Input power [kW]                                            |       |       |       |       |       |
| Max intermittent <sup>3)</sup>                              | 100   | 126   | 100   | 126   | 131   |
| Max continuous                                              | 88    | 110   | 88    | 110   | 112   |
| Weight [kg]                                                 | 19    | 19    | 19    | 19    | 19    |

## 'Left hand' and 'right hand' end caps



End cap for right hand rotating pump



End cap for left hand rotating pump

1) Valid with 2 1/2" inlet (suction) line;  
with 2" inlet line: 53/53 and 70/35 max 1 100 rpm  
42/42 and 55/28 max 1400 rpm. (q≈120 l/min)

2) Measured at 1.0 bar abs. inlet pressure.

**Please note:** A lower inlet pressure affects pump performance.

3) Max 6 seconds in any one minute.

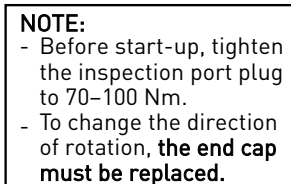
## Flow vs. shaft speed (theoretical)

| Pump speed [rpm]                                                               | 800 | 1000 | 1200 | 1400 | 1600 | 1800 | 1900 | 2000 | 2100 |
|--------------------------------------------------------------------------------|-----|------|------|------|------|------|------|------|------|
| F2-53/53 flow [l/min]                                                          |     |      |      |      |      |      |      |      |      |
| Port A                                                                         | 43  | 54   | 65   | 76   | 86   | 97   | -    | -    | -    |
| Port B                                                                         | 42  | 52   | 62   | 73   | 83   | 94   | 99   | 104  | 109  |
| Total (ports A + B)                                                            | 85  | 106  | 127  | 149  | 169  | 191  | -    | -    | -    |
| Note: 42/42 values is 80% of 53/53 values 70/70 values is 130% of 53/53 values |     |      |      |      |      |      |      |      |      |
| F2-70/35 flow [l/min]                                                          |     |      |      |      |      |      |      |      |      |
| Port A                                                                         | 55  | 69   | 83   | 97   | 110  | 124  | -    | -    | -    |
| Port B                                                                         | 29  | 36   | 43   | 50   | 58   | 65   | 68   | 72   | 76   |
| Total (ports A + B)                                                            | 84  | 105  | 126  | 147  | 168  | 189  | -    | -    | -    |
| Note: 55/28 values is 80% of 70/35 values                                      |     |      |      |      |      |      |      |      |      |

## Shaft torque vs. pressure (theoretical)

| Pressure [bar]                                                                 | 150 | 200 | 250 | 300 | 350 |
|--------------------------------------------------------------------------------|-----|-----|-----|-----|-----|
| F2-53/53 torque [Nm]                                                           |     |     |     |     |     |
| Port A                                                                         | 129 | 171 | 214 | 257 | 300 |
| Port B                                                                         | 124 | 165 | 206 | 248 | 289 |
| Total (ports A + B)                                                            | 253 | 336 | 420 | 505 | 589 |
| Note: 42/42 values is 80% of 53/53 values 70/70 values is 130% of 53/53 values |     |     |     |     |     |
| F2-70/35 torque [Nm]                                                           |     |     |     |     |     |
| Port A                                                                         | 164 | 219 | 274 | 329 | 383 |
| Port B                                                                         | 86  | 114 | 143 | 171 | 200 |
| Total (ports A + B)                                                            | 250 | 333 | 417 | 500 | 583 |
| Note: 55/28 values is 80% of 70/35 values                                      |     |     |     |     |     |

**NOTE:**  
The pump does not include a suction fitting; it must be ordered separately



166



The VP1 is a variable displacement pump for truck applications. It can be close-coupled to a gearbox PTO (power take-off) or to a coupling independent PTO (e.g. an engine PTO) which meets ISO standard 7653-1985.

An application that makes full use of all the features of the VP1 is truck cranes with a load sensing system. The complex systems of refuse collection vehicles and sewage trucks as well as various combinations of tippers, cranes, snow ploughs, and salt/sand spreaders can also be greatly simplified and optimised with the VP1 pump.

The VP1 provides the hydraulic system with the correct amount of fluid at precisely the right moment, effectively reducing energy consumption and heat generation. This means a smoother and quieter hydraulic system with much reduced impact on the environment.

The VP1 is highly efficient and extremely light. It is reliable, economical and easy to install. The four frame sizes, VP1-045, -075, -095, -110 and -130 have small installation dimensions.

### Design

#### Large angle - compact design

The pump design permits a large angle, 20°, between piston and slipper shoe/swashplate, providing compactness and small outer dimensions.

#### Tandem coupling

The through-shaft on VP1-45/-75 permits tandem coupling of an additional pump, such as a series F1 fixed displacement pump.

#### Long life

The VP1 is designed for trucks with hydraulic load sensing systems. It is sturdy, yet simple, with few moving parts. The result is a reliable pump with long service life.



The VP1 is suitable for all load sensing systems, regardless of make.

### Features

- Variable displacement
- Low noise level
- High power-to-weight ratio
- Compact and light
- Highly efficient
- Sturdy design
- Withstands low temperatures
- Can be close coupled and tandem mounted.

(tandem coupling only for VP1-45/-75)

### Retainer plate

The retainer plate (refer to the cut-away illustration in chapter 8) is of a heavy duty design which makes the pump withstand high shaft speeds and fast speed changes.(e. g. engine PTO).

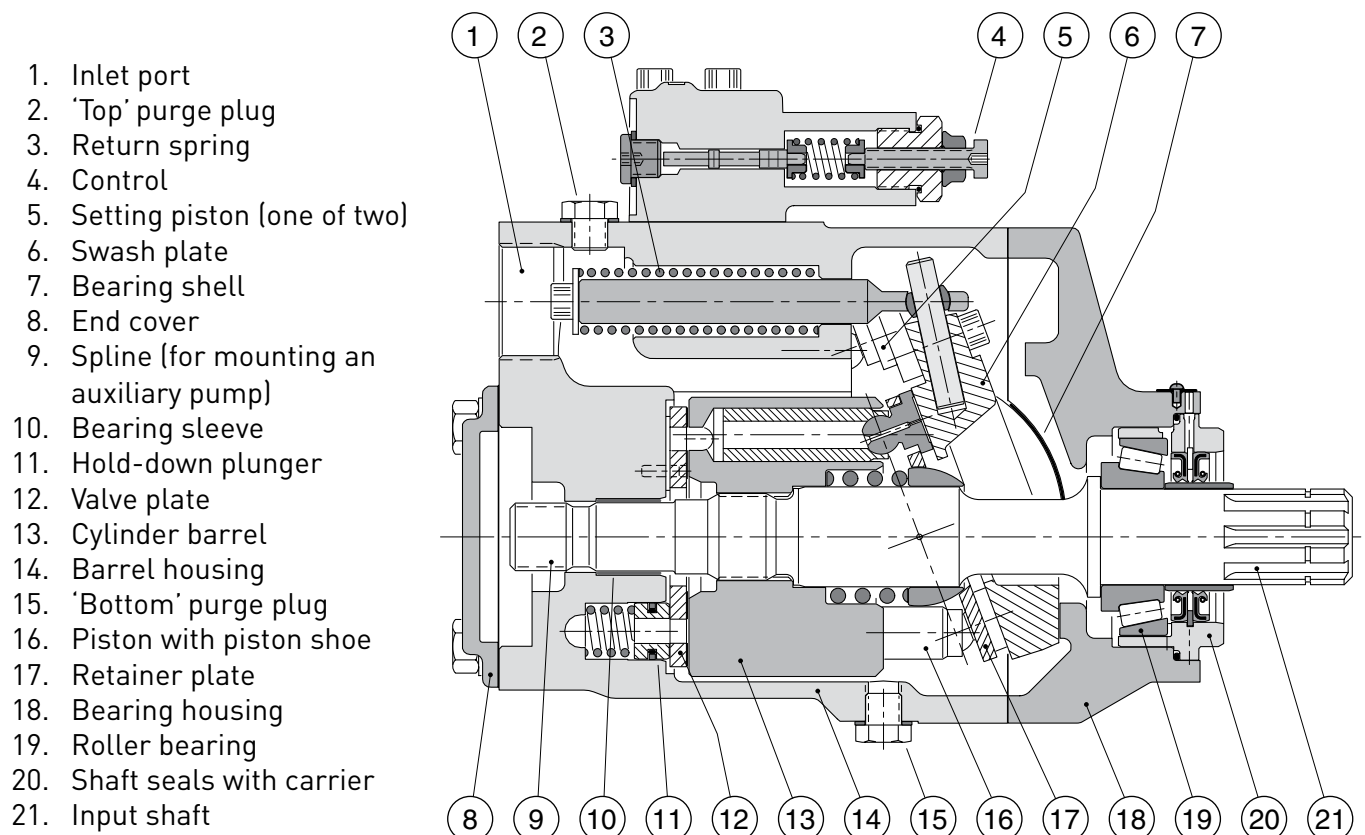
## Specifications

| Frame size VP1--                             | 045           | 075     | 095     | 110     | 130     |
|----------------------------------------------|---------------|---------|---------|---------|---------|
| Displacement [cm <sup>3</sup> /rev]          | 45            | 75      | 95      | 110     | 128     |
| Max operating pressure [bar]                 |               |         |         |         |         |
| continuous                                   | 350           | 350     | 400     | 400     | 400     |
| intermittent <sup>1)</sup>                   | 400           | 400     | 420     | 420     | 420     |
| Mass moment of inertia J [kgm <sup>2</sup> ] | 0.00606       | 0.00606 | 0.00681 | 0.00690 | 0.00690 |
| Selfpriming speed <sup>2)</sup> [rpm]        |               |         |         |         |         |
| 2" suction line, max                         | 2200          | 1700    | 1250    | 1100    | 900     |
| 2 1/2" suction line, max                     | 2400          | 2100    | 1750    | 1500    | 1300    |
| 3" suction line, max                         | -             | -       | 2200    | 2100    | 1900    |
| Max Speed unloaded [rpm]                     |               |         |         |         |         |
| (in bypass mode, no flow)                    | 3000          | 3000    | 3000    | 3000    | 3000    |
| Control type                                 | LS            |         |         |         |         |
| Shaft end spline                             | DIN 5462      |         |         |         |         |
| Mounting flange                              | ISO 7653-1985 |         |         |         |         |
| Weight (with control) [kg]                   | 27            |         |         |         |         |

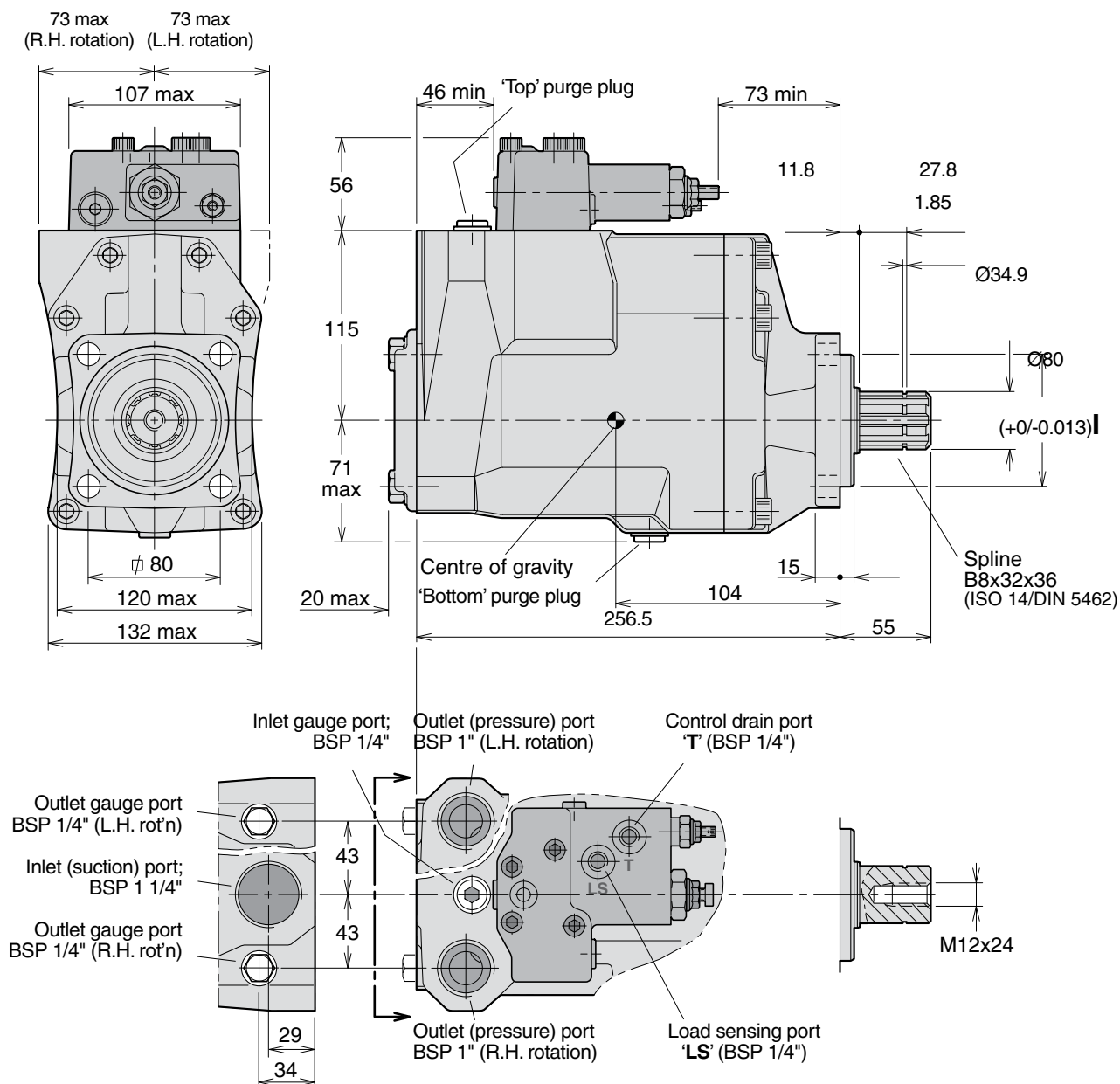
1) Max 6 seconds in any one minute.

2) At an inlet pressure of 1.0 bar (abs.) with mineral oil at a viscosity of 30 mm<sup>2</sup>/s (cSt).

## VP1-045/-075 cross section



## VP1-045 and -075

**IMPORTANT**

The control is *not* drained through the pump case. An external line *must be installed* between the control drain port 'T' and the reservoir.

**NOTE:** The pump does not include a suction fitting; it must be ordered separately. See chapter 11.

## LS valve block VP1-045/075

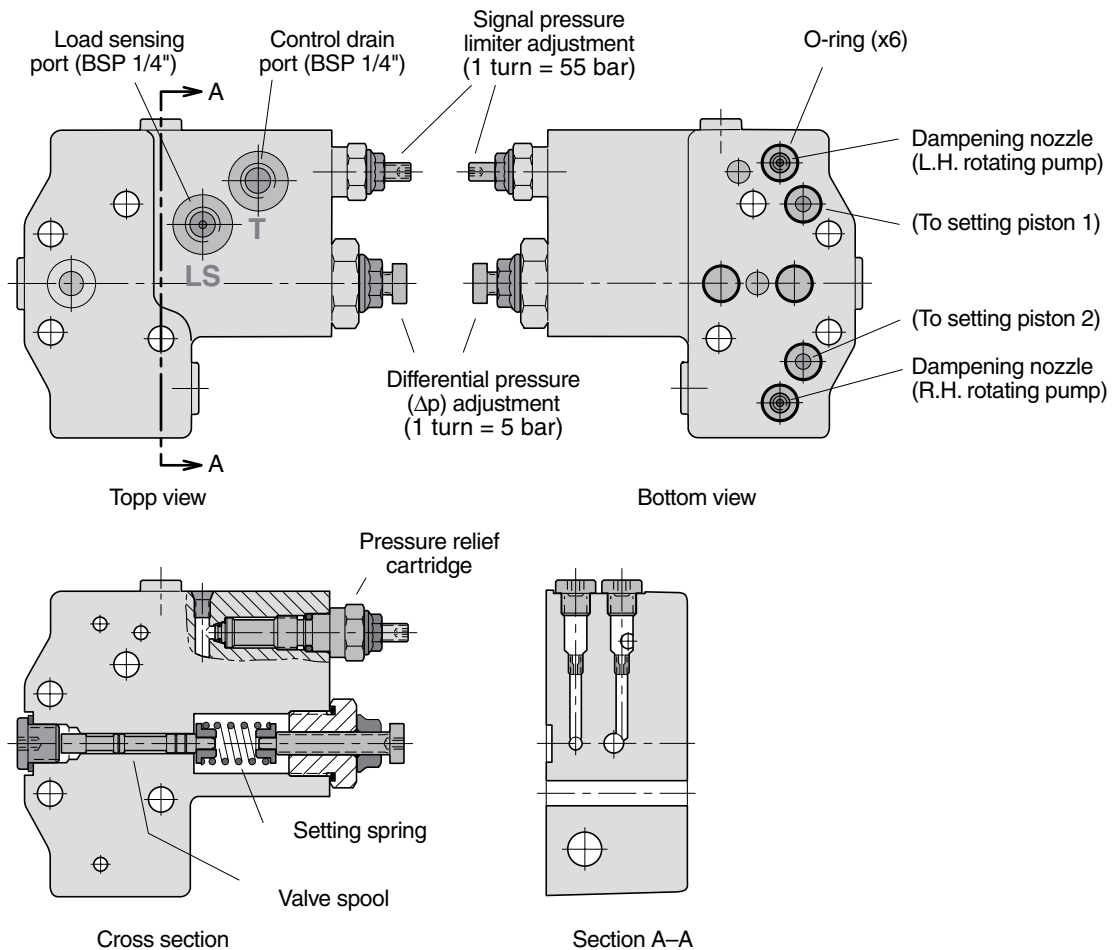


Fig. 2. LS valve block.

LS\_block\_GB.eps  
Leif A./020115

## Through-shaft coupling VP1-045/075

The VP1 pump has a through-shaft which means that an additional pump, such as a fixed displacement F1, can be installed in tandem with the VP1 by means of an adaptor kit (fig. 3).

### NOTE:

The bending moment caused by the weight of a tandem assembly normally exceeds that allowed by the PTO. To prevent damage, the auxiliary pump should be supported by a bracket attached to the gearbox; it *must not* be fastened to the truck chassis. Likewise, when the tandem assembly is installed on a separate bracket and driven by a cardan shaft, the auxiliary pump should have a support attached to the pump bracket.

### IMPORTANT

Contact Parker Hannifin for additional information when considering tandem mounting a second VP1 pump.

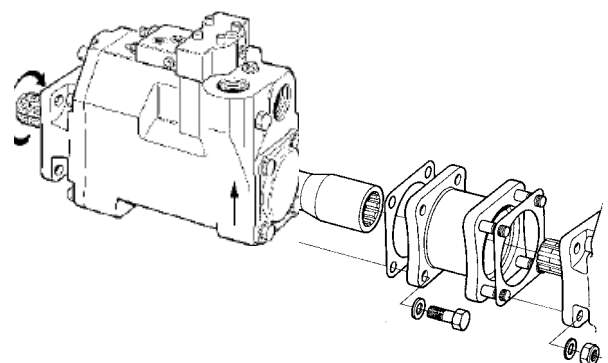
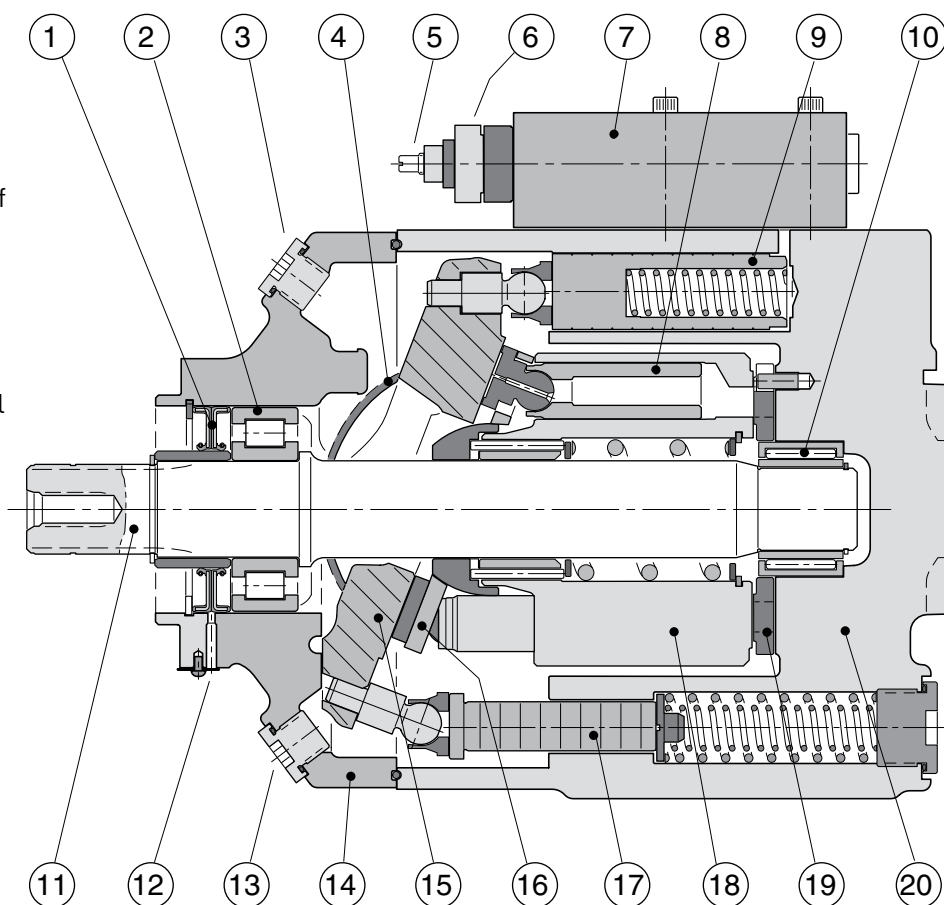


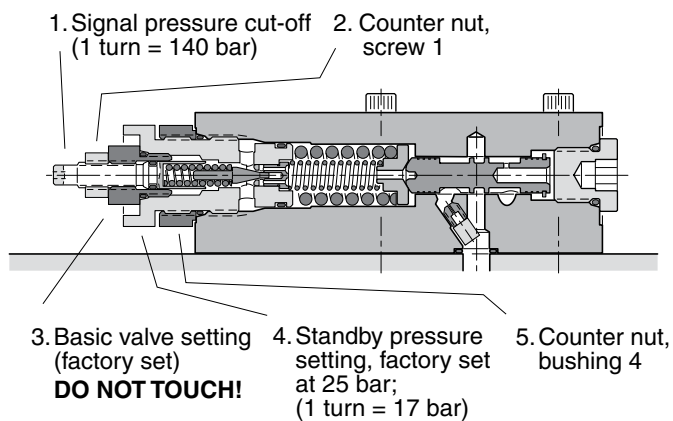
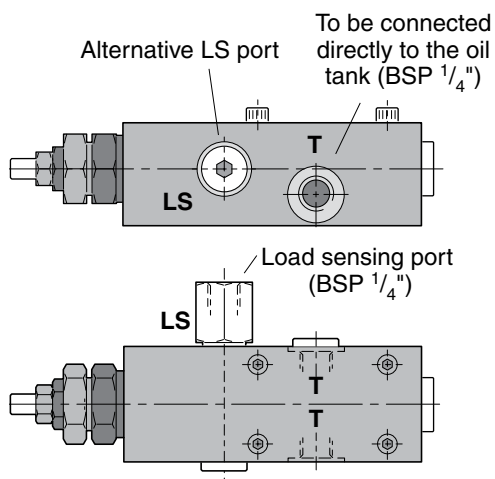
Fig. 3. Adaptor kit (P/N 379 7795) for tandem coupling.

## VP1-095/-110/-130 cross section

1. Shaft seal
2. Roller bearing
3. 'Upper' purge plug
4. Bearing shell
5. Setting screw (pressure relief valve)
6. Setting bushing (standby pressure)
7. Control
8. Piston with piston shoe
9. 'Upper' setting piston (control pressure)
10. Needle bearing
11. Shaft
12. Drain hole, shaft seals
13. 'Lower' purge plug
14. Bearing housing
15. Swash plate
16. Retainer plate
17. 'Lower' setting piston (pump pressure)
18. Cylinder barrel
19. Valve plate
20. Barrel housing



## LS control (for VP1-095/-110/-130)



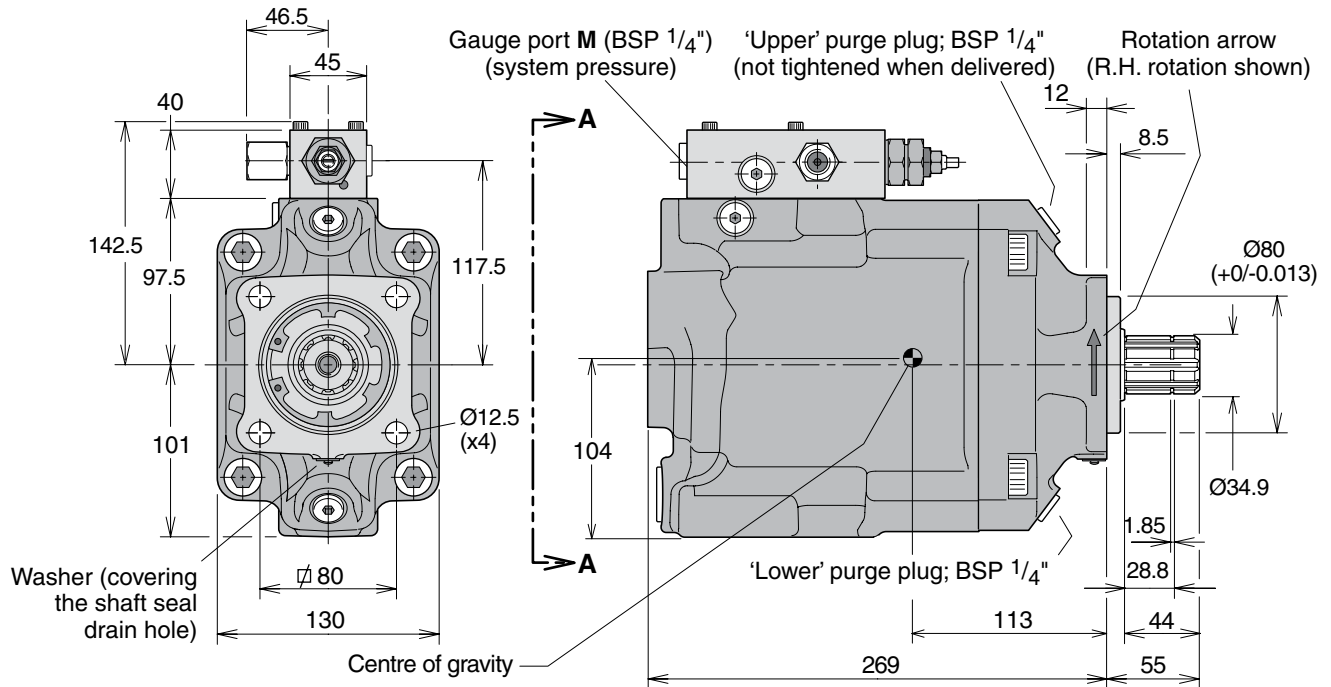
LS control cross section.

LS control ports.

**NOTE:** Always run a function, after adjusting the standby pressure or the max pressure setting, before you read the value.

| Item | Wrench / dimension     |
|------|------------------------|
| 1    | Hex Head Wrench / 4 mm |
| 2    | Wrench / 13 mm         |
| 3    | <b>DO NOT TOUCH</b>    |
| 4    | Wrench / 27 mm         |
| 5    | Wrench / 27 mm         |

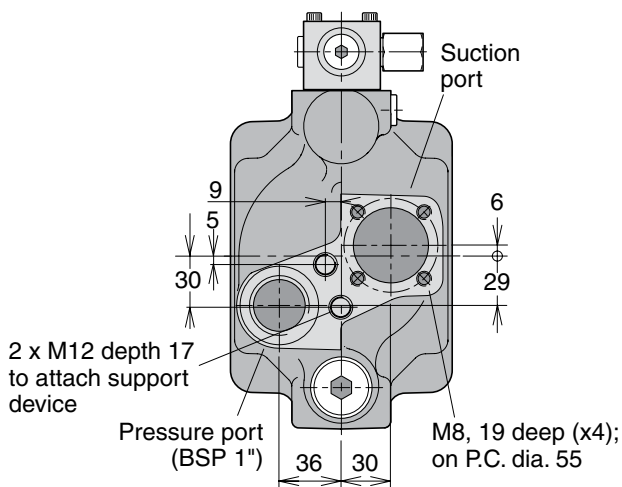
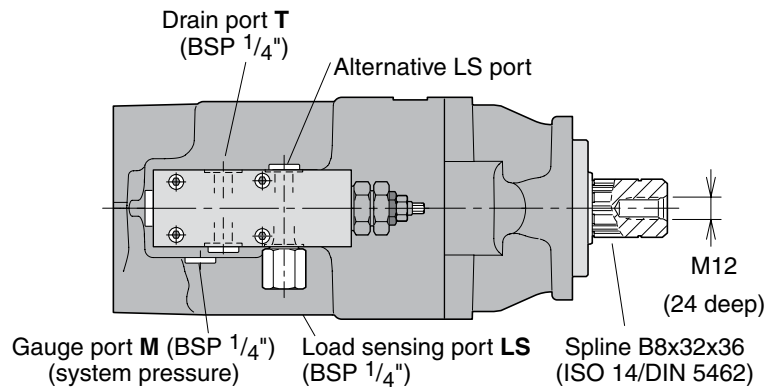
## VP1-095/-110/-130



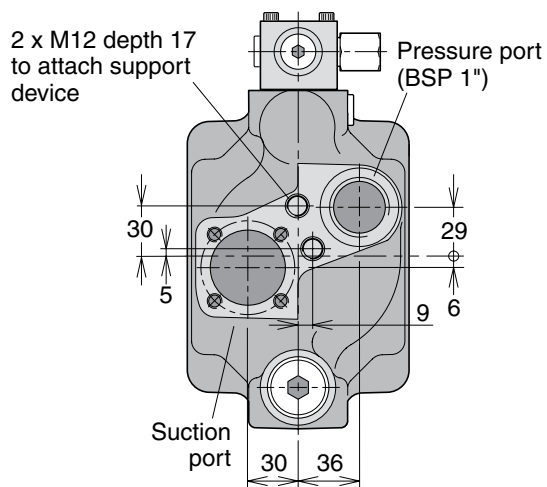
**NOTE:** The pump **does not** include a suction fitting; it must be ordered separately. See chapter 11.

**IMPORTANT!**

The control is **not** drained through the pump case; an external drain line must be installed from control port T and, directly, to the oil tank.



**View A-A**  
**Left hand rotating pump**



**View A-A**  
**Right hand rotating pump**

## Ordering information

Example: **VP1 - 045 - L**

Frame size

**045, 075, 095, 110 or 130**

Direction of rotation

**L** Left hand

**R** Right hand

### NOTE:

The VP1 is uni-directional.

Consequently, the desired direction of rotation must be stated *when ordering*.

## Standard model numbers

| Designation | Ordering no. | Ordering no. |
|-------------|--------------|--------------|
|             | No Paint     | Black Paint  |
| VP1-045-R   | 378 0334     | 378 6169     |
| VP1-045-L   | 378 0335     | 378 6170     |
| VP1-075-R   | 378 0336     | 378 6171     |
| VP1-075-L   | 378 0337     | 378 6172     |
| VP1-095-R   | 378 6000     | 378 6003     |
| VP1-095-L   | 378 6001     | 378 6002     |
| VP1-110-R   | 378 4110     | 378 3814     |
| VP1-110-L   | 378 4111     | 378 3815     |
| VP1-130-R   | 378 4500     | 378 4528     |
| VP1-130-L   | 378 4501     | 378 4529     |

## VP1 in load sensing systems

When installed in a load sensing system, the VP1 supplies the correct amount of flow required by the various work functions currently engaged.

This means that energy consumption and heat generation are minimised and much reduced in comparison with a fixed displacement pump used in the same system.

Diagram 1 shows the required power (flow times pressure) in a constant flow system with a fixed displacement pump.

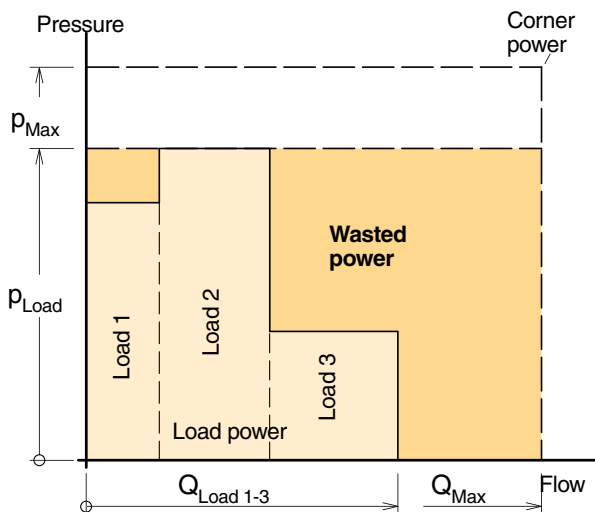


Diagram 1. Constant flow system with a fixed displacement pump.

Diagram 2 shows the sharply reduced power requirement in a load sensing system with a variable displacement pump such as the VP1.

In both cases the pump pressure is slightly higher than what is required by the heaviest load ('Load 2') but the VP1, because of the much smaller flow being delivered, needs only the power indicated by the shaded area 'Load power'.

In a constant flow system, on the other hand, excess fluid is shunted to tank and the corresponding power, 'Wasted power' (shown in diagram 1), is a heat loss.

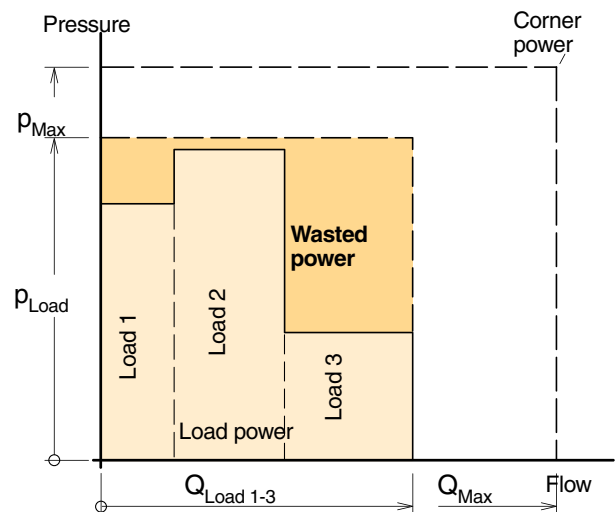


Diagram 2. Constant flow system with a variable displacement pump (e.g. VP1).

## Systems comparison

| System           | Constant flow  | Load-sensing        |
|------------------|----------------|---------------------|
| Pump             | Fixed displ.   | VP1 variable displ. |
| Pump adjustments | Pressure only  | Pressure and flow   |
| Load*            | Some influence | Some influence      |
| Energy           |                |                     |
| consumption      | High           | Low                 |
| Heat generation  | High           | Low                 |

\* Simultaneous operation of loads with non-equal flows and pressures; refer to the above diagrams.



## LS load sensing control function

Refer to corresponding hydraulic schematic below.

A selected 'opening' of the directional control valve spool corresponds to a certain flow to the work function. This flow, in turn, creates a pressure differential over the spool and, consequently, also a  $\Delta p$  between the pump outlet and the LS port.

When the differential pressure decreases (e.g. the directional valve is 'opened' further) the  $\Delta p$  also decreases and the LS valve spool moves to the left. The pressure to the setting pistons then decreases and the pump displacement increases.

The increase in pump displacement stops when the  $\Delta p$  finally reaches the setting (e.g. 25 bar) and the forces acting on the valve spool are equal.

If there is no LS signal pressure (e.g. when the directional valve is in the neutral, no-flow position) the pump only delivers sufficient flow to maintain the standby pressure as determined by the  $\Delta p$  setting.

## LS control adjustments

### Pressure limiter

| Pump size        | Factory setting | Max pressure intermittent [bar] |
|------------------|-----------------|---------------------------------|
|                  | [bar]           |                                 |
| VP1-045/075      | 350             | 400                             |
| VP1- 095/110/130 | 350             | 420                             |

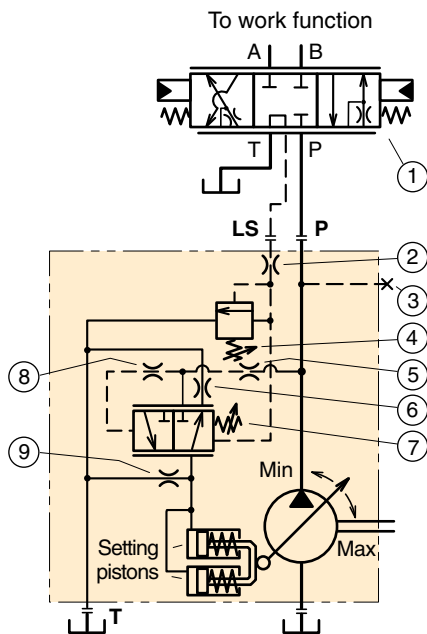
### LS load sensing valve

| Pump size        | Factory setting [bar] | Min pressure [bar] | Max pressure [bar] |
|------------------|-----------------------|--------------------|--------------------|
| VP1-045/075      | 25                    | 20                 | 35                 |
| VP1- 095/110/130 | 25                    | 15                 | 40                 |

The factory setting, and the standard orifice sizes shown in the corresponding schematic below, will usually provide an acceptable directional valve characteristic as well as system stability.

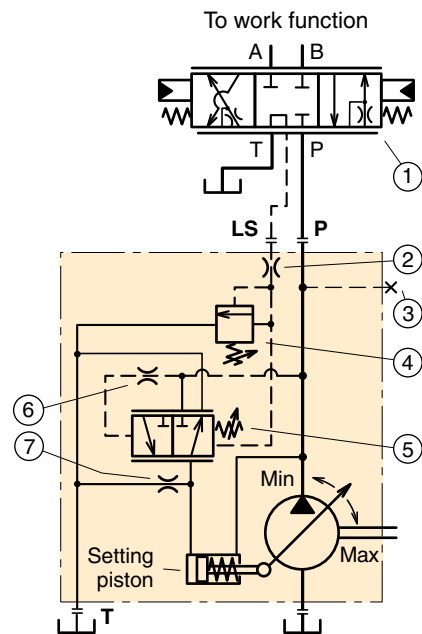
For additional information, contact Parker Hannifin.

Hydraulic schematic for VP1-45/75



1. Directional, load sensing control valve
2. Load signal orifice (1.0 mm; fixed)
3. Gauge port
4. Signal pressure limiter adjustment
5. System pressure dampening nozzle (2.0 mm)
6. Return line nozzle (0.6 mm)
7. Standby ( $\Delta p$ ) pressure adjustment
8. System pressure dampening orifice (fixed)
9. Bleed-off nozzle (0.6 mm).

Hydraulic schematic for VP1-095/-110/-130



1. Directional, load sensing control valve
2. Load signal orifice (0.8 mm)
3. Gauge port
4. Signal pressure limiter adjustment
5. Standby ( $\Delta p$ ) pressure adjustment
6. System pressure dampening orifice (fixed)
7. Bleed-off nozzle (1.2 mm)

# BLA

## General information

The BLA boost unit simplifies the building of closed or semi-closed hydrostatic transmissions.

### Main features are:

- Replaces conventional charge pump and corresponding valves in many applications
- Allows pump speeds above normal selfpriming speed
- Suitable for system flow rates to 400 l/min
- Includes filter
- Simple construction - no moving/wear parts
- Cost-effective installation
- Small tank size
- Helps in building a low-cost hydrostatic transmission.

## Description

In a closed circuit hydrostatic transmission, a charge pump is normally included with the main pump, providing make-up fluid which replaces pump and motor volumetric losses. It also maintains sufficient pump inlet pressure to avoid cavitation.

The BLA boost unit replaces the charge pump in many applications, when the following conditions are met:

- The max-to-min pump flow ratio does not exceed 2:1
- System pressure changes gradually without frequent and pronounced pressure peaks
- The line length between pump and boost unit is relatively short.

There are two basic sizes of the BLA boost unit:

- BLA 4 (to 160 l/min pump flow)
- BLA 6 (to 400 l/min).

The main part of the unit is an aluminium housing with a built-in nozzle and an injector; refer to the cross section to the right.

When fluid flows from the motor outlet port through the unit and to the pump inlet port, the increased fluid velocity between the nozzle and injector creates a low pressure zone causing additional fluid to be drawn from tank into the main circuit.

Also, pressure increases after the injector, allowing the pump to be operated at speeds higher than the self-priming speed. The 'boost pressure' increases with flow.

The housing includes ports that should be connected to the pump and motor drain ports respectively.

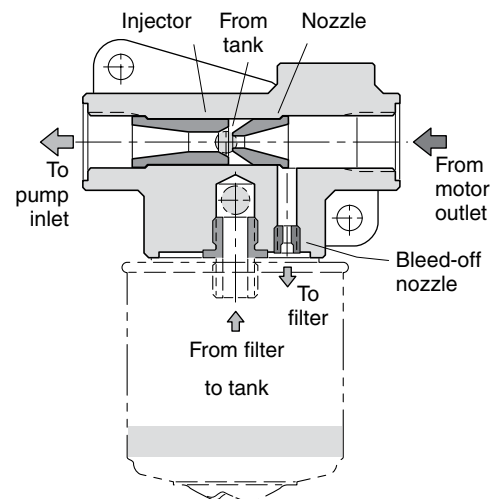
An additional bleed-off nozzle diverts approx. 10% of the main flow through the cartridge filter before being directed to the tank.

## Typical applications:

- Fan drives
- Propeller drives
- Generator drives
- Pump drives.

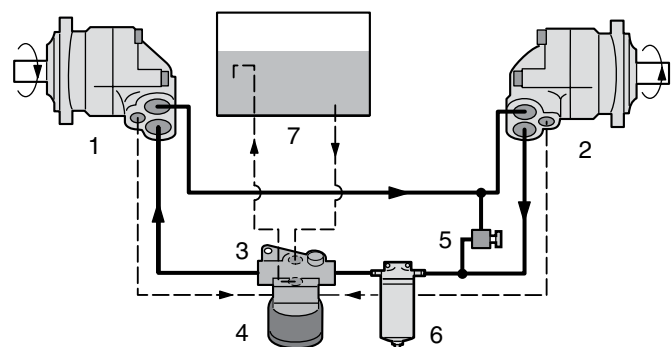
## Oil cooling

An oil cooler is usually required in the hydraulic system, in order to remove the heat that is generated in the main circuit. A full-flow oil cooler should be installed in the return line between the motor and the boost unit.



*BLA boost unit cross section.*

## Boost unit installation



- |                                          |                                     |
|------------------------------------------|-------------------------------------|
| 1. Pump                                  | 5. Pressure relief valve            |
| 2. Motor                                 | 6. Full-flow filter (when required) |
| 3. Boost unit (with injector and nozzle) | 7. Reservoir                        |
| 4. Filter cartridge                      |                                     |

For more information please see our technical catalogue BLA boost unit HY17-8224/UK

# Suction fittings

for series F1, F2 and T1 pumps also VP1-095, -110 and -130

A 'suction fitting' consists of a straight, 45°, 90° or 135° suction fitting, clamps, cap screws and O-ring.

## Suctions fittings for VP1-045/075

### 'Straight' suction fittings for F1, F2, T1, VP1-095/-110/-130

| Ordering no.           | A mm | B mm | C dia. mm (in.) |
|------------------------|------|------|-----------------|
| 378 0635 <sup>1)</sup> | 0    | 85   | 38 (1½")        |
| 378 0636 <sup>2)</sup> | 17   | 136  | 50 (2")         |
| 378 0637 <sup>3)</sup> | 25   | 145  | 63 (2½")        |
| 378 3523 <sup>3)</sup> | 32   | 174  | 75 (3")         |

### 45° suction fittings for F1, F2, T1, VP1-095/-110/-130

| Ordering no.           | A mm | B mm | C dia. mm (in.) |
|------------------------|------|------|-----------------|
| 378 1234 <sup>1)</sup> | 60   | 104  | 32 (1¼")        |
| 378 0633 <sup>1)</sup> | 60   | 104  | 38 (1½")        |
| 378 0364 <sup>2)</sup> | 67   | 110  | 50 (2")         |
| 378 0634 <sup>3)</sup> | 75   | 117  | 63 (2½")        |
| 378 3367 <sup>3)</sup> | 95   | 138  | 75 (3")         |
| 378 1062               | 67   | 110  | 40              |
| 378 0975               | 67   | 110  | 45              |
| 378 0965               | 67   | 110  | 48              |

### 90° suction fittings for F1, F2, T1, VP1-095/-110/-130

| Ordering no.           | A mm | B mm | C dia. mm (in.) |
|------------------------|------|------|-----------------|
| 378 0978 <sup>1)</sup> | 126  | 83   | 38 (1½")        |
| 378 0979 <sup>2)</sup> | 135  | 83   | 50 (2")         |
| 378 1980 <sup>3)</sup> | 147  | 83   | 63 (2½")        |
| 378 0976               | 135  | 83   | 45              |
| 378 8690 <sup>3)</sup> | 185  | 83   | 75 (3")         |

### 145° suction fitting for F1, F2, T1, VP1-095/-110/-130

| Ordering no. | A mm | B mm | C dia. mm (in.) |
|--------------|------|------|-----------------|
| 378 1867     | 165  | 73   | 50 (2")         |

1) Recommended for frame size F1-25.

2) Recommended for frame size F1-41,-51,-61,-81, -101.

3) [3 clamps and 3 screws]

## Spare parts

Additional Hold-down-clamp kit consists of:

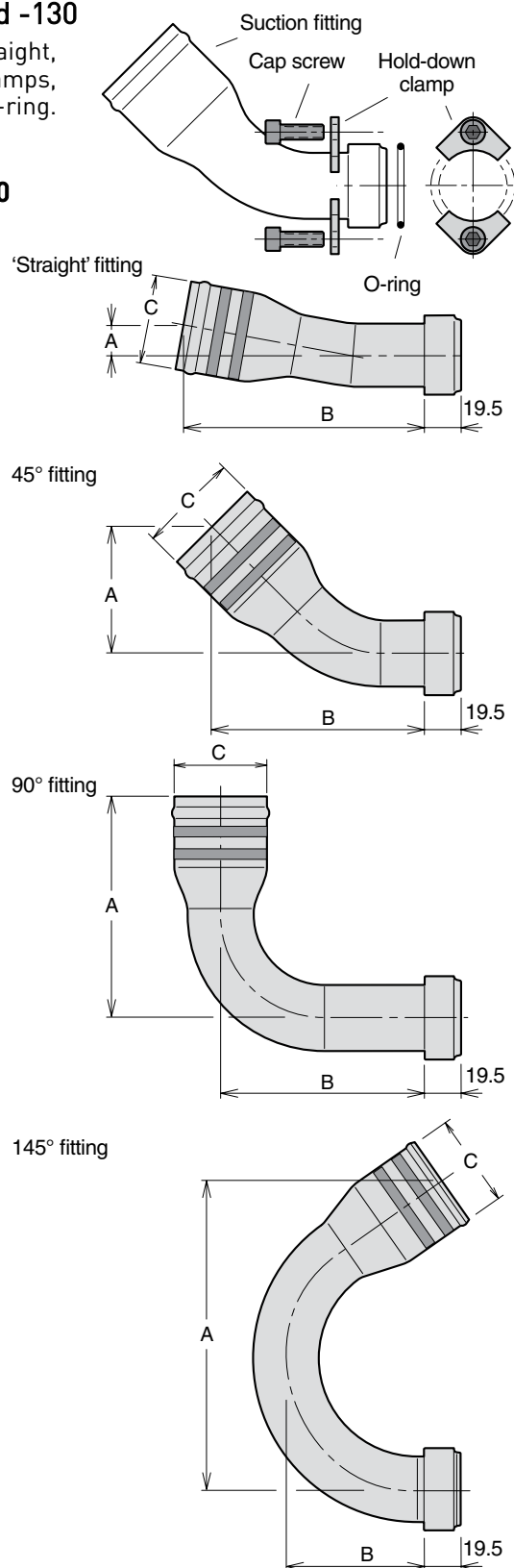
hold-down-clamp cap screw and O-ring

Ordering no. 378 1321

Additional Hold-down-clamp kit for mounting on

BPV Ordering no. 378 2439

**NOTE:** A suction fitting *must be ordered separately* (not included with the pump).

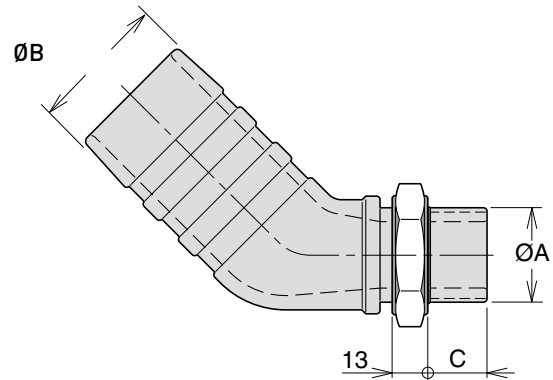


## Suitable suction adapters for F1 with BSP port threads 45°

### adapter

| Ordering no. | A mm   | B mm   | C dia. mm (in.) |
|--------------|--------|--------|-----------------|
| 00509035016  | 1"     | 2"     | 18              |
| 00509035116  | 1 1/4" | 2"     | 18              |
| 00509021916  | 1 1/4" | 2 1/2" | 18              |

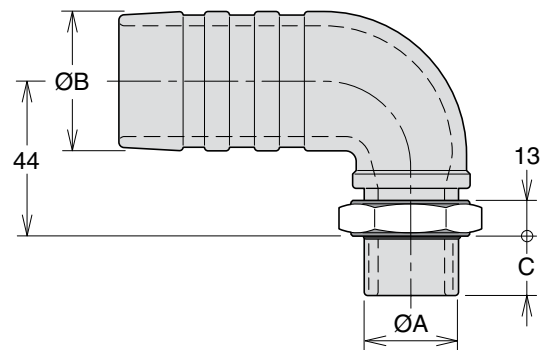
\* BSP threads



### 90° adapter

| Ordering no. | A mm   | B mm | C dia. mm (in.) |
|--------------|--------|------|-----------------|
| 00509034516  | 1"     | 2"   | 18              |
| 00509034616  | 1 1/4" | 2"   | 18              |

\* BSP threads

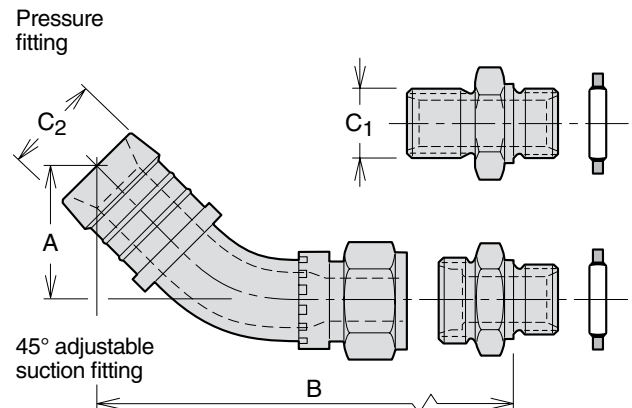


## Fitting kits for VP1-045 and -075 pumps

### Kits with 45° suction fitting

| Pump size.   | Ordering no.    | C <sub>1</sub> | ØC <sub>2</sub> | A  | B   |
|--------------|-----------------|----------------|-----------------|----|-----|
| VP1-045/075  | <b>379 9563</b> | BSP 3/4"       | 2"              | 71 | 154 |
| VP1-045/075* | <b>379 9562</b> | BSP 1"         | 2 1/2"          | 64 | 147 |

\* Above 100 l/min



**NOTE:** A suction fitting *must be ordered separately* (not included with the pump).

## GPA/GP1, F1/F2 Truck Pumps &amp; Motors Application Market

| Markets           | Applications                                              |
|-------------------|-----------------------------------------------------------|
| Forestry          | Knuckle Boom Loader, Cranes, Mowers / Cutters             |
| Construction      | Off-Highway Trucks, Fan Drives, Hookloader, Tipper        |
| Mining            | Dump Trucks                                               |
| Material Handling | Truck Mounted Cranes, Lift Trucks, Tow truck, Small Crane |
| Recycling         | Vaccum Truck Systems, Refuse Trucks - ASL, Rear Loaders   |
| Military          | Fan Drives                                                |



Ref. Catalogue : **HY30-8200/UK**



## Truck Hydraulics

Series GPA, GP1, F1, F2, T1, VP1,  
Fixed and Variable Displacement Pumps,  
Motors and Accessories



ENGINEERING YOUR SUCCESS.



# Sizing

Link : <http://www.parkergearpump.com/TechnicalSupportUS.aspx>


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US Version | Metric Version

### PUMP DRIVE REQUIREMENTS

|                                                                                                                                                                                                            |                                                                                                                                                                              |                                                                                                                                                                              |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Find Horsepower:</b><br>Flow = <input type="text"/> GPM<br>Pressure = <input type="text"/> PSI<br>Pump Eff. = <input type="text"/><br><b>CALCULATE</b><br>Horsepower = $GPM * PSI / (1714 * Pump\ Eff)$ | <b>Find PSI:</b><br>HP = <input type="text"/><br>GPM = <input type="text"/><br>Pump Eff. = <input type="text"/><br><b>CALCULATE</b><br>PSI = $(1714 * HP * Pump\ Eff) / GPM$ | <b>Find GPM:</b><br>HP = <input type="text"/><br>PSI = <input type="text"/><br>Pump Eff. = <input type="text"/><br><b>CALCULATE</b><br>GPM = $(1714 * HP * Pump\ Eff) / PSI$ |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### PUMP OUTPUT

|                                                                                                                                                                        |                                                                                                                                                                         |                                                                                                                                                                                |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Find Pump GPM:</b><br>Displacement = <input type="text"/> Cu.In<br>Pump RPM = <input type="text"/> RPM<br><b>CALCULATE</b><br>Pump GPM = $Cu.In * RPM / (231Cu.In)$ | <b>Find Pump Cubic Inch Disp:</b><br>GPM = <input type="text"/> Cu.In<br>Pump RPM = <input type="text"/> RPM<br><b>CALCULATE</b><br>Cu.In.Disp = $GPM * 231Cu.In / RPM$ | <b>Find Pump RPM:</b><br>Gallons Per Minute = <input type="text"/> GPM<br>Displacement = <input type="text"/> Cu.In<br><b>CALCULATE</b><br>Pump RPM = $GPM * 231Cu.In / Cu.In$ |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### MOTOR SPEED

|                                                                                                                                                           |                                                                                                                                                  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Find RPM(MOTOR):</b><br>HP = <input type="text"/><br>TORQUE = <input type="text"/> in-lbs<br><b>CALCULATE</b><br>RPM = $(HP * 63025) / TORQUE(in-lbs)$ | <b>Find HP:</b><br>RPM = <input type="text"/><br>TORQUE = <input type="text"/> in-lbs<br><b>CALCULATE</b><br>HP = $TORQUE(in-lbs) * RPM / 63025$ |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|



# Useful Formula

## Basic formulas for hydraulic motors

Flow (q)

$$q = \frac{D \times n}{1000 \times \eta_v} \text{ [l/min]}$$

D - displacement [cm<sup>3</sup>/rev]

n - shaft speed [rpm]

 $\eta_v$  - volumetric efficiency $\Delta p$  - differential pressure [bar]

(between inlet and outlet)

 $\eta_{hm}$  - mechanical efficiency $\eta_t$  - overall efficiency( $\eta_t = \eta_v \times \eta_{hm}$ )

Torque (M)

$$M = \frac{D \times \Delta p \times \eta_{hm}}{63} \text{ [Nm]}$$

Power (P)

$$P = \frac{q \times \Delta p \times \eta_t}{600} \text{ [kW]}$$

## Basic formulas for hydraulic pumps

Flow (q)

$$q = \frac{D \times n \times \eta_v}{1000} \text{ [l/min]}$$

D - displacement [cm<sup>3</sup>/rev]

n - shaft speed [rpm]

 $\eta_v$  - volumetric efficiency $\Delta p$  - differential pressure [bar]

(between inlet and outlet)

 $\eta_{hm}$  - mechanical efficiency $\eta_t$  - overall efficiency( $\eta_t = \eta_v \times \eta_{hm}$ )

Torque (M)

$$M = \frac{D \times \Delta p}{63 \times \eta_{hm}} \text{ [Nm]}$$

Power (P)

$$P = \frac{q \times \Delta p}{600 \times \eta_t} \text{ [kW]}$$

## Conversion factors

|                         |                             |
|-------------------------|-----------------------------|
| 1 kg.....               | 2.20 lb                     |
| 1 N.....                | 0.225 lbf                   |
| 1 Nm.....               | 0.738 lbf ft                |
| 1 bar.....              | 14.5 psi                    |
| 1 l.....                | 0.264 US gallon             |
| 1 cm <sup>3</sup> ..... | 0.061 cu in                 |
| 1 mm.....               | 0.039 in                    |
| 1 °C.....               | $\frac{5}{9}(\text{°F}-32)$ |
| 1 kW.....               | 1.34 hp                     |

## Conversion factors

|                  |                             |
|------------------|-----------------------------|
| 1 lb.....        | 0.454 kg                    |
| 1 lbf.....       | 4.448 N                     |
| 1 lbf ft.....    | 1.356 Nm                    |
| 1 psi.....       | 0.068948 bar                |
| 1 US gallon..... | 3.785 l                     |
| 1 cu in.....     | 16.387 cm <sup>3</sup>      |
| 1 in.....        | 25.4 mm                     |
| 1 °F.....        | $\frac{9}{5}\text{°C} + 32$ |
| 1 hp.....        | 0.7457 kW                   |

### FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS 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 or system options for further investigation by users having technical expertise.

The user, through its own analysis and testing, is solely responsible for making the final selection of the system and components 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, follow applicable industry standards, and follow the information concerning the product in the current product catalog and in any other materials provided from Parker or its subsidiaries or authorized distributors.

To the extent that Parker or its subsidiaries or authorized distributors provide component or system options based upon data or specifications provided by the user, the user is responsible for determining that such data and specifications are suitable and

sufficient for all applications and reasonably foreseeable uses of the components or systems.

# Flow Capacity Chart

## Flow Capacity Nomogram

### Flow Capacities of Parker Hose at Recommended Flow Velocities

The chart below is provided as an aid in the determination of the correct hose size.

**Example:** at 10 gallons per minute (gal/min), what is the proper hose size within the recommended velocity range for pressure lines?

Locate 10 gallons per minute in the left-hand column and 20 feet per second in the right-hand column (the maximum recommended velocity range for pressure lines). Lay a straight line across these two points. The inside diameter shown in the centre column is above -6 so we have to use -8 (1/2").

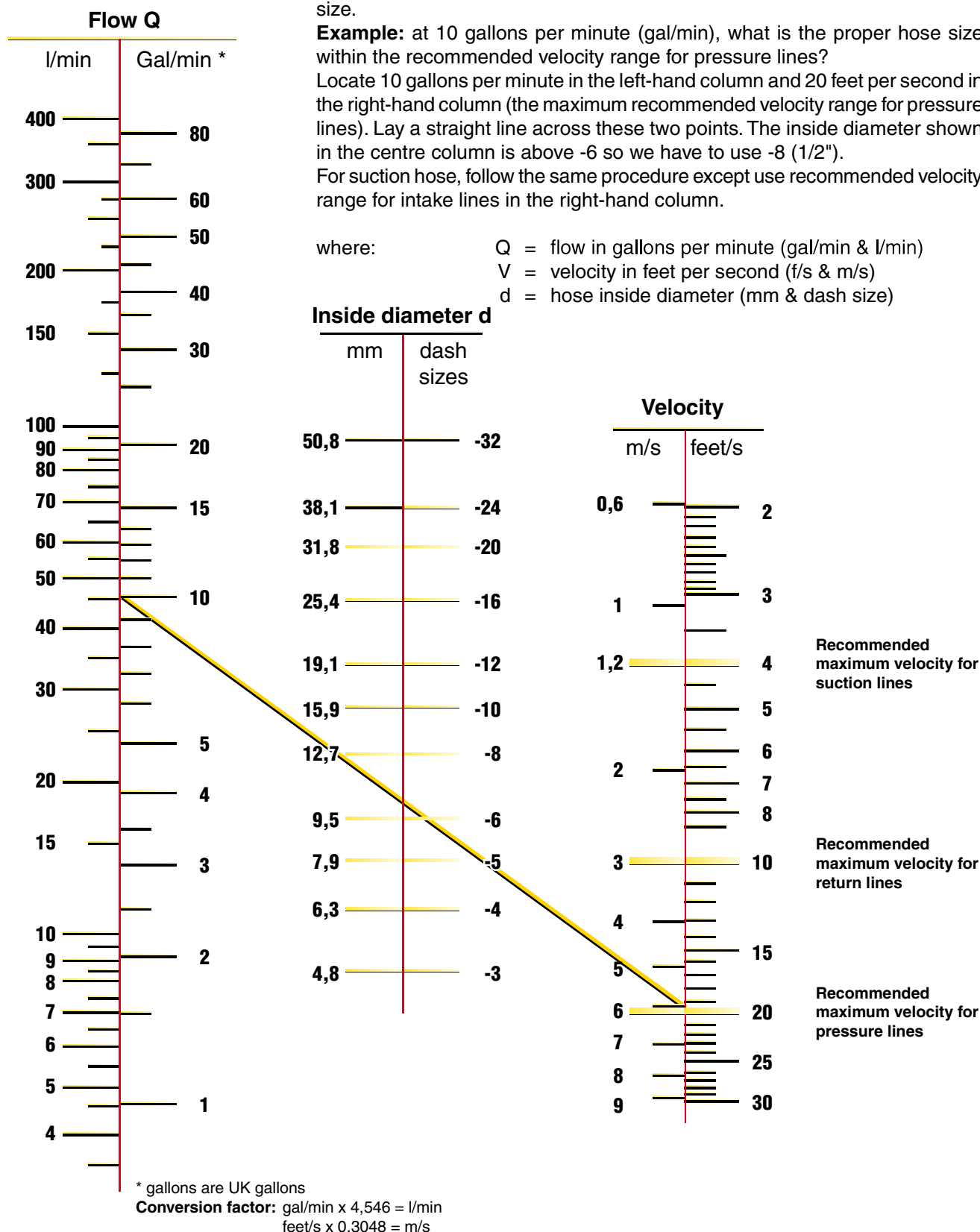
For suction hose, follow the same procedure except use recommended velocity range for intake lines in the right-hand column.

where:

Q = flow in gallons per minute (gal/min & l/min)

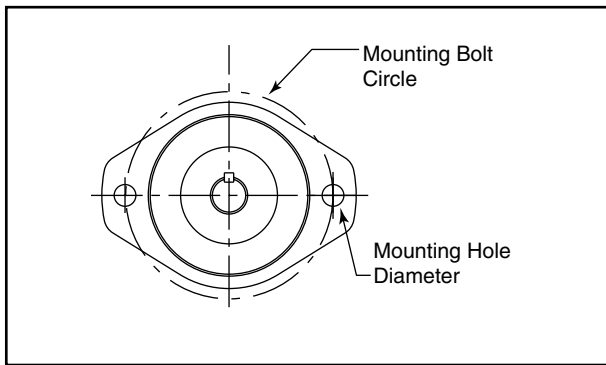
V = velocity in feet per second (f/s & m/s)

d = hose inside diameter (mm & dash size)



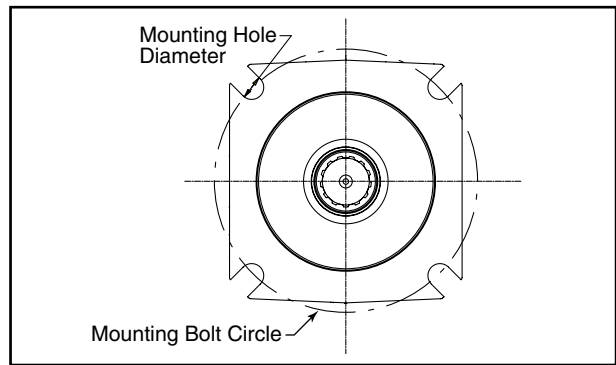
\* Recommended velocities are according to hydraulic fluids of maximum viscosity 315 S.S.U. at 38°C working at roomtemperature within 18° and 68°C.

# SAE Flanges and Shafts



**NFPA Standard**  
**Two-Bolt Pump/Motor Mounting Flanges**

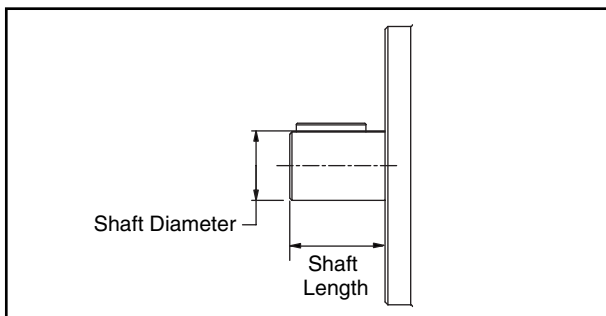
| Flange Code | SAE No. | SAE hp Rating <sup>1</sup> | Mtg. Bolt Circle | Mtg. Hole Dia. | Pilot Dia. | Pilot Ht. |
|-------------|---------|----------------------------|------------------|----------------|------------|-----------|
| 50-2        | N/A     | N/A                        | 3¼               | 13/32          | 1          | ¼         |
| 82-2        | A       | 10                         | 43/16            | 7/16           | 3¼         | ¼         |
| 101-2       | B       | 25                         | 5¾               | 9/16           | 4          | 3/8       |
| 127-2       | C       | 50                         | 7⅞               | 11/16          | 5          | ½         |
| 152-2       | D       | 100                        | 9                | 13/16          | 6          | ½         |
| 165-2       | E       | 200                        | 12½              | 1⅛             | 6½         | 5/8       |
| 177-2       | F       | 300                        | 1325/32          | 1⅛             | 7          | 5/8       |



**NFPA Standard**  
**Four-Bolt Pump/Motor Mounting Flanges**

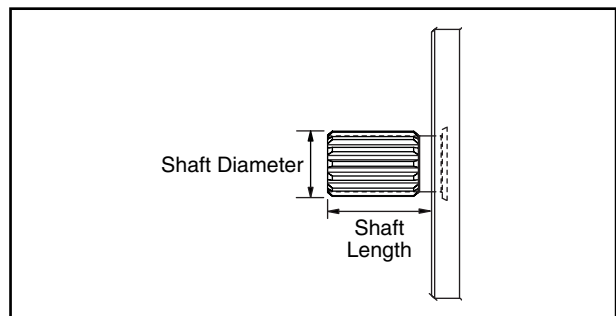
| Flange Code | SAE No. | SAE hp Rating <sup>1</sup> | Mtg. Bolt Circle | Mtg. Hole Dia. | Pilot Dia. | Pilot Ht. |
|-------------|---------|----------------------------|------------------|----------------|------------|-----------|
| 101-4       | B       | 25                         | 5                | 9/16           | 4          | 3/8       |
| 127-4       | C       | 50                         | 63/8             | 11/16          | 5          | ½         |
| 152-4       | D       | 100                        | 9                | 13/16          | 6          | ½         |
| 165-4       | E       | 200                        | 12½              | 1⅛             | 6½         | 5/8       |
| 177-4       | F       | 300                        | 1325/32          | 1⅛             | 7          | 5/8       |

<sup>1</sup> 1750 rpm electric motor



**NFPA Standard**  
**Straight Shafts without Thread**

| Shaft Code | SAE Ref. <sup>2</sup> | Shaft Dia. | Short Shaft Length | Long Shaft Length | Key Width |
|------------|-----------------------|------------|--------------------|-------------------|-----------|
| 13-1       | N/A                   | ½          | ¾                  | N/A               | ⅛         |
| 16-1       | A                     | 5/8        | 15/16              | 2                 | 5/32      |
| 22-1       | B                     | 7/8        | 15/16              | 2½                | ¼         |
| 25-1       | B-B                   | 1          | 1½                 | 2¾                | ¼         |
| 32-1       | C                     | 1¼         | 1⅞                 | 3                 | 5/16      |
| 38-1       | C-C                   | 1½         | 2⅞                 | 3¼                | 3/8       |
| 44-1       | D, E                  | 1¾         | 2⅞                 | 3⅝                | 7/16      |



**NFPA Standard**  
**30° Involute Spline Shafts**

| Shaft Code | SAE Ref. <sup>2</sup> | Shaft Dia. | Shaft Length | Spline Specifications |
|------------|-----------------------|------------|--------------|-----------------------|
| 13-4       | N/A                   | ½          | ¾            | 9T, 20/40 DP          |
| 16-4       | A                     | 5/8        | 15/16        | 9T, 16/32 DP          |
| 22-4       | B                     | 7/8        | 15/16        | 13T, 16/32 DP         |
| 25-4       | B-B                   | 1          | 1½           | 15T, 16/32 DP         |
| 32-4       | C                     | 1¼         | 1⅞           | 14T, 12/24 DP         |
| 38-4       | C-C                   | 1½         | 2⅞           | 17T, 12/24 DP         |
| 44-4       | D, E                  | 1¾         | 2⅞           | 13T, 8/16 DP          |
| 50-4       | N/A                   | 2          | 3⅞           | 15T, 8/16 DP          |

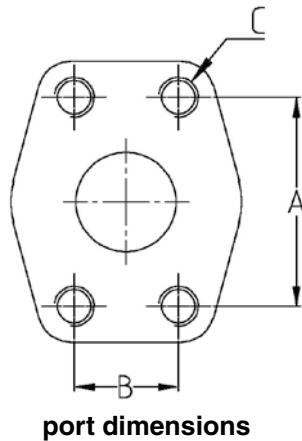
<sup>2</sup> Indicates matching SAE front flange for each shaft diameter.

## 4-Bolt SAE Port Sizes

### 4-Bolt Split Flange

A 4-bolt split flange is used to attach the flange fittings to their ports.

- Standard Code 61  
for 3000 to 5000 psi max., depending on size
- High Pressure Code 62  
for 6000 psi max. regardless of size



### CODE 61 - SAE 3000 psi

| Flange | Size | A<br>(mm) | B<br>(mm) | C<br>(inch)   (metr.) |           |
|--------|------|-----------|-----------|-----------------------|-----------|
| 1/2"   | -8   | 38.1      | 17.5      | 5/16-18               | M8x1,25   |
| 3/4"   | -12  | 47.6      | 22.3      | 3/8-16                | M10x1,5   |
| 1"     | -16  | 52.4      | 26.2      | 3/8-16                | M10x1,5   |
| 1-1/4" | -20  | 58.7      | 30.2      | 7/16-14               | M10x1,5   |
| 1-1/2" | -24  | 69.9      | 35.7      | 1/2-13                | M12x1,75  |
| 2"     | -32  | 77.8      | 42.8      | 1/2-13                | M12x1,75* |

### CODE 62 - SAE 6000 psi

| Flange | Size | A<br>(mm) | B<br>(mm) | C<br>(inch)   (metr.) |           |
|--------|------|-----------|-----------|-----------------------|-----------|
| 1/2"   | -8   | 40.5      | 18.2      | 5/16-18               | M8x1,25   |
| 3/4"   | -12  | 50.8      | 23.8      | 3/8-16                | M10x1,5   |
| 1"     | -16  | 57.2      | 27.8      | 7/16-14               | M12x1,75  |
| 1-1/4" | -20  | 66.7      | 31.8      | 1/2-13                | M12x1,75* |
| 1-1/2" | -24  | 79.4      | 36.5      | 5/8-11                | M16x2     |
| 2"     | -32  | 96.8      | 44.4      | 3/4-10                | M20x2,5   |

\*M14x2 still used in the market but no longer in accordance with ISO6162

## REGIONAL HEAD OFFICE (ASEAN & AUSTRALASIA )



### **PARKER HANNIFIN SINGAPORE PTE LTD**



### **PARKER HANNIFIN PHILIPPINES**



### **PARKER HANNIFIN BRUNEI**

No. 11, Fourth Chin Bee Road,  
Singapore 619702,  
SINGAPORE

Ph : + 65 6887 6300

Fax : + 65 6265 5125



### **PARKER HANNIFIN (AUSTRALIA) PTY LIMITED.**

9 Carrington Road  
Castle Hill  
NSW  
Australia  
2154

Ph : +61 (0) 2 9842 5150

Fax: +61 (0) 2 9842 5111



### **PARKER HANNIFIN INDUSTRIAL MALAYSIA**

No. 11, Persiaran Pasak Bumi,  
Seksyen U8, Bukit Jelutong Industrial Park,  
40150 Shah Alam, Selangor,  
MALAYSIA

Ph : + 60 3 7849 0800

Fax : + 60 3 7872 4348



### **PARKER HANNIFIN (NZ) LTD**

5 Bowden Road  
Mt. Wellington  
Auckland  
New Zealand  
1060

Ph : +64 (0) 9574 1744

Fax : +64 (0) 9573 0207



### **P.T. PARKER HANNIFIN INDONESIA**

Wisma Contromatic, Jalan Kapten Soebijanto  
Djodjohadikusumo, Kav. Sunburst Block CBD II No.15  
BSD (Bumi Serpong Damai), Tangerang 15322,  
INDONESIA

Ph : + 62 21 2977 7900

Fax : + 62 21 2977 7935



### **PARKER HANNIFIN THAILAND CO., LTD.**



### **PARKER HANNIFIN CAMBODIA**



### **PARKER HANNIFIN LAOS**



### **PARKER HANNIFIN MYANMAR**

1265 Rama 9 Road  
Suanluang, 10250  
Bangkok,  
THAILAND

Ph : +66 2186 7000

Fax : +66 2374 1645



### **PARKER HANNIFIN VIETNAM CO., LTD**

4th Floor, VRG office building,  
177 Hai Ba Trung, Ward 6, District 3  
Ho Chi Minh City,  
VIETNAM

Ph : + 84 8 3825 0856

Fax : + 84 8 3825 0884