PGP 500 Series
PGM 500 Series

Single or Multiple Aluminum Pumps & Motors

Catalog HY09-0500/US

The Parker Hannifin Gear Pump Division Assures:

- Consistent quality
- Technical innovation
- Premier customer service

Worldwide Sales and Service

Parker operates sales and service centers in major industrial areas worldwide. Call 1-800-C-PARKER for more information, or for a synopsis of the Gear Pump Division, contact a Parker representative.

The Gear Pump Division's ability to engineer specialty products for unique applications has kept us at the forefront of technology, and ensured our position as the industry leader. Our success has come from providing a quality product with excellent sales and service support.

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

- Material Handling
- Construction
- Turf Care
- Forestry
- Agriculture
- Industrial

Parker Hannifin Corporation
Gear Pump Division
Youngstown, Ohio USA

Table of Contents

Pump/Motor Products

PGP/PGM 505
- Flows to 8 gpm
- Continuous pressures to 4000 psi
- Speeds to 4000 rpm
- Wide variety of integral valve options
- Single and bi-rotational motors

PGP/PGM 511
- Flows to 19 gpm
- Continuous pressures to 3625 psi
- Speeds to 4000 rpm
- Wide variety of integral valve options
- Single and bi-rotational motors

PGP/PGM 517
- Flows to 37 gpm
- Continuous pressures to 3600 psi
- Speeds to 3400 rpm
- Wide variety of integral valve options
- Single and bi-rotational motors

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PGP/PGM 500 Series

- **High Performance**
- **High Efficiency**
- **High Pressure Operation**

PGP/PGM 500 series gear pumps/motors are an advanced performance version of the international "bushing block" style pumps. PGP/PGM 500 series pumps/motors offer superior performance, high efficiency and low noise operation at high operating pressures. They are produced in three frame sizes (PGP/PGM 505, PGP/PGM 511, PGP/PGM 517) with displacements ranging from 2 to 52 cm^3 (.12 to 3.17 in^3/rev). A wide variety of standard options are available to meet specific application requirements worldwide.

PGP 500

Advantages

- **Up to 275 bar (4000 psi) continuous operation**
  High strength materials and large journal diameters provide low bearing loads for high pressure operation.
- **Low noise**
  PGP/PGM 505 and 517 - 13 tooth gear profile, PGP/PGM 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

Product Features	Description
Pump Type	Heavy-duty, aluminum, external gear
Mounting	SAE, rectangular, thru-bolt, and application specific
Ports	SAE/metric split flange, metric and others
Shaft Style	SAE splined, keyed, tapered, tang and specials.
Speed	500 - 4000 rpm, see tables on pages 6, 14 and 21.
Theoretical Displ.	See tables on pages 6, 14 and 21.
Drive	Drive direct with flexible coupling is recommended.
Axial / Radial Load	Units subject to axial or radial loads should be specified with an outboard bearing. Please contact Product Support for assistance.
Inlet Pressure	Operating range - 0.8 to 2 bar abs (12-29 psia).Minimum inlet pressure -0.25 bar abs (-3.6 psia). Short time w/o load. Max. pressure not to exceed 20 psig.
Outlet Pressure	See tables on pages 6, 14 and 21.
Fluids	Mineral oil, fire resistant fluids: - water-oil emulsions 60/40, HFB - water-glycol, HFC - phosphate-esters, HFD
Fluid Temperature	Range of operating temperature -15 to +80°C (5 to 176° F). Max. permissible operating pressure dependent on fluid temperature. Temperature for cold start -20 to -15°C (-4 to 5° F) at speed ≤ 1500 rpm.

Product Features	Description
Fluid Viscosity	Range of operating viscosity 8 to 1000 mm^2/s max. Permissible operating pressure dependent on viscosity. Viscosity range for cold start 1000 to 2000 centistokes at operating pressure ≤10 bar (145 psi) and speed ≤1500 rpm.
Range of Ambient Temperature	-40°C to +70°C (-40°F to 158°F)
Filtration	According to ISO 4406 Cl. 16/13
Flow Velocity	See table on page 28.
Direction of Rotation (looking at the driveshaft)	Clockwise, counter-clockwise or birotational. Note: Drive pump or motor only in indicated direction of rotation.
Multiple Pump Assemblies	- Available in two, three or four section configurations. - Max. shaft loading must conform to the limitations shown in the shaft loading rating tables on pages 9,18 and 25 in this catalog. - Max. load is determined by adding the torque values for each pumping section that will be simultaneously loaded.
Separate or Common Inlet Capability	Separate inlet configuration: - Each gear housing has individual inlet and outlet ports. Common inlet configuration: -Two gear sets share a common inlet. - Inlet port can be in either section.

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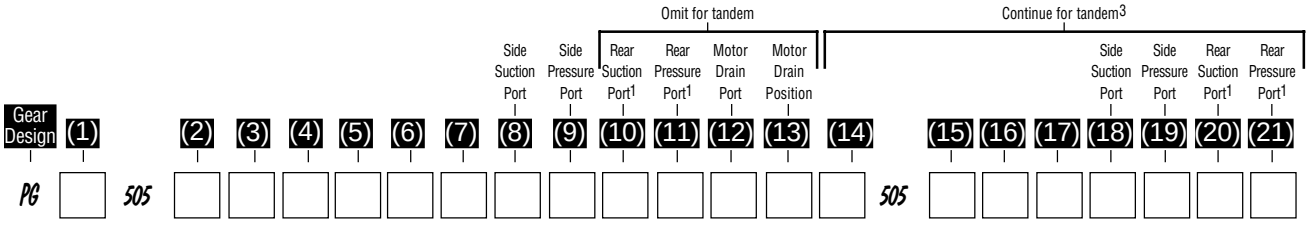
How to Specify



Pump/Motor (1)

P	***Pump***
M	***Motor***

Unit (2,15)

	Pump	Motor
A	***Single unit***	***Standard Motor w/o checks***
B	Multiple unit	Standard Motor w/ two checks
C	—	Standard Motor w/one anti cavitation check (ACC)
D	—	Motor w/check valve and restrictor

Displacement (3,16)

0020	***2.0 ccm (0.12 cir)***
0030	***3.0 ccm (0.18 cir)***
0040	***4.0 ccm (0.24 cir)***
0050	***5.0 ccm (0.31 cir)***
0060	***6.0 ccm (0.37 cir)***
0070	7.0 ccm (0.43 cir)
0080	8.0 ccm (0.49 cir)
0100	10.0 ccm (0.61 cir)
0110	11.0 ccm (0.67 cir)
0120	12.0 ccm (0.73 cir)

Rotation (4)

C	***Clockwise***
A	***Counter clockwise***
B	***Bi-directional motors only***

Shaft (5)

A1	9T, 16/32 Pitch, 32L, SAE "A" spline
A2	***9T, 20/40 Pitch, 27L, SAE "AA" spline***
J1	***Ø12.7, 3.2 Key, no thread, 38L, parallel***
K1	Ø15.88, 4.0 Key, no thread, 32L, SAE "A", parallel

Shaft End Covers (6)

A1	50.8x50.8 - Ø45.25 4bolt square flange
H1	***82.5 - Ø50.8 SAE "A-A" 2bolt flange***
H2	106.4 - Ø82.55 SAE "A" 2bolt flange

Shaft Seal (7,17)

X	No seal
N	***NBR***
V	FPM, FKM

Port Options (8,9,10,11,18,19,20,21)

B1	No ports
D2	***9/16" - 18 UNF thread***
D3	***3/4" - 16 UNF thread***
D4	7/8" - 14 UNF thread
D5*	1 1/16" - 12UN thread
*Not usable for rear ports	

Motor Drain Option2 (12)

B1	No drain
A	***7/16"-20 UNF thread***
C	9/16"-18 UNF thread

Drain Position2 (13)

2	Drain on bottom
3	Drain on top
4	***Rear drain***

Section Connection (14)

S	Separate inlets
C	Common inlets

NOTES:

1 Only coded for the last section.

2 Only for motors

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

4. Dimensions are in millimeters except where noted.

5. Distributor unit contains shaft with add on capability for multiples.

Please note all of the bold, italicized items on this page reflect Parker preferred product options.

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Gear Pump Division
Youngstown, Ohio USA

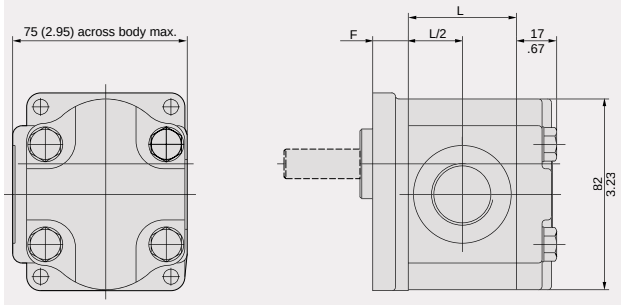
Specifications

Description	Code	*0020*	*0030*	*0040*	*0050*	0060	0070	0080	0090	0100	0110	0120
Displacements	cm^3/rev in^3/rev	***2*** ***0.12***	***3*** ***0.18***	***4*** ***0.24***	***5*** ***0.31***	6 0.37	7 0.43	8 0.49	9 0.55	10 0.61	11 0.67	12 0.73
Continuous Pressure	bar psi	***275*** ***3988***	***275*** ***3988***	***275*** ***3988***	***275*** ***3988***	275 3988	275 3988	275 3988	250 3625	250 3625	250 3625	220 3190
Intermittent Pressure	bar psi	***300*** ***4350***	***300*** ***4350***	***300*** ***4350***	***300*** ***4350***	300 4350	300 4350	300 4350	275 3988	275 3988	275 3988	220 3190
Minimum Speed @ Max. Outlet Pressure	rpm	***500***	***500***	***500***	***500***	500	500	500	500	500	500	500
Maximum Speed @ 0 Inlet & Max. Outlet Pressure	rpm	***4000***	***4000***	***4000***	***4000***	3600	3300	3000	2900	2800	2400	2400
Pump Input Power @ Max. Pressure and 1500 rpm	kW HP	***2*** ***2.68***	***2.3*** ***3.08***	***3*** ***4.02***	***3.8*** ***5.10***	4.5 6.03	5.3 7.11	6 8.05	6.5 8.72	6.9 9.25	7.6 10.19	8.4 11.26
Dimension "L"	mm in	***38.4*** ***1.51***	***41.1*** ***1.62***	***43.8*** ***1.72***	***46.5*** ***1.83***	49.1 1.93	51.8 2.04	54.5 2.15	57 2.24	59.8 2.35	62.5 2.46	65.2 2.57
Approximate Weight [1]	kg LB	***1.72*** ***3.80***	***2.22*** ***4.91***	***2.27*** ***5.02***	***2.32*** ***5.13***	2.38 5.26	2.43 5.37	2.48 5.48	2.53 5.59	2.58 5.70	2.63 5.81	2.68 5.92

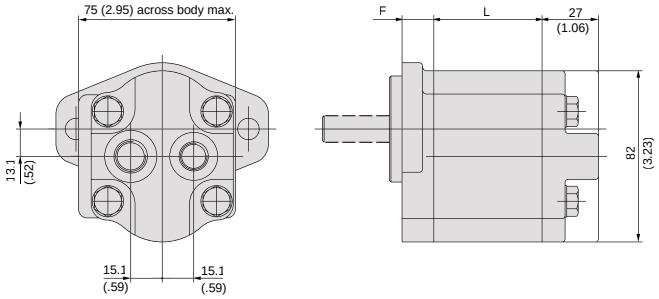
[1] Single pump with Shaft End Cover D3 and non ported Port End Cover.

Dimensions

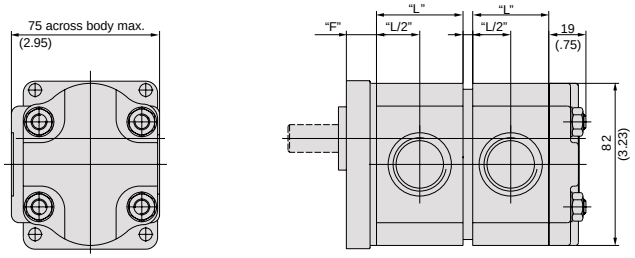
Single Unit



Single Unit with rear ports



Tandem Unit



NOTE:
Dimension "F" see shaft end covers on page 7
Dimension "L" see table above

Notes: 1. Dimensions are in millimeters (inches).
2. Dimensions are nominal except where noted.
3. Subscript and/or superscript numbers are tolerances.

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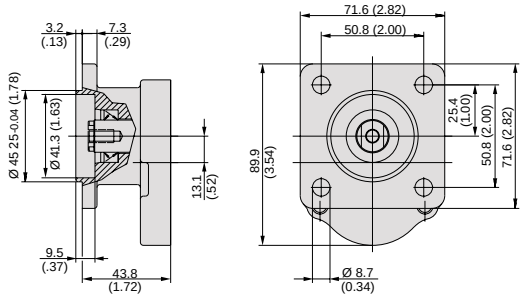
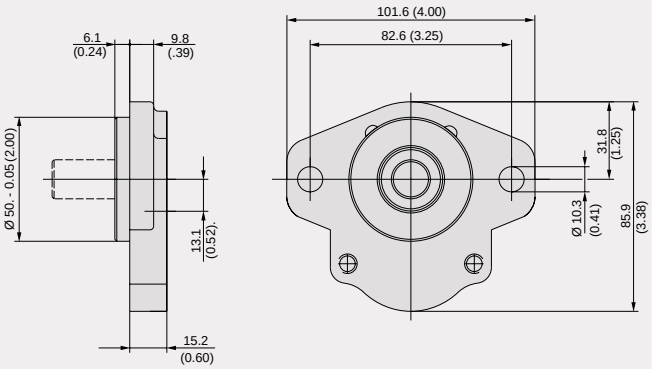
Shaft End Covers

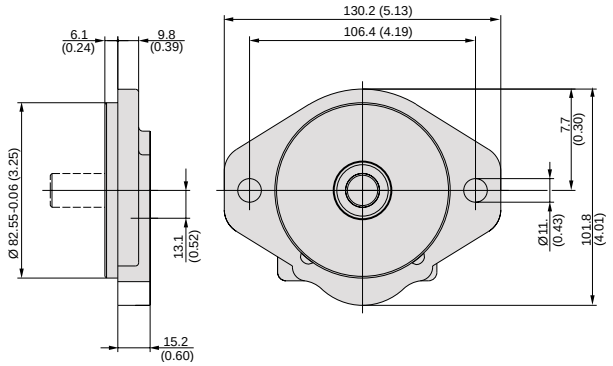
Code A1



Code H1



Code H2

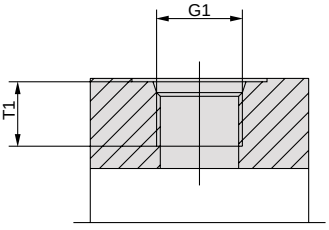


Notes: 1. Dimensions are in millimeters (inches).
2. Dimensions are nominal except where noted.
3. Subscript and/or superscript numbers are tolerances.

Porting

Code D2, D3, D4, D5
SAE straight thread
See table below for specific port dimensions.

Code	G1	T1
Thread	Thread	Dimensions
D2	***9/16"-18 UNF***	***12.7***
D3	***3/4"-16 UNF***	***14.3***
D4	7/8"-14 UNF	16.7
D5	1 1/16"-12 UN	19.0



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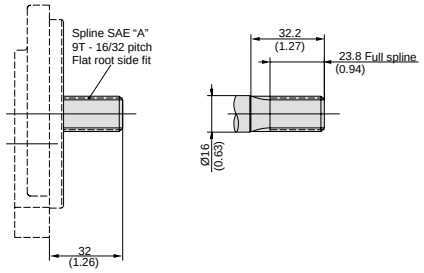
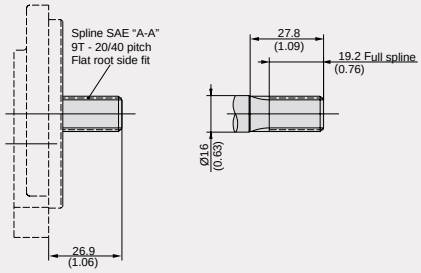
Drive Shaft

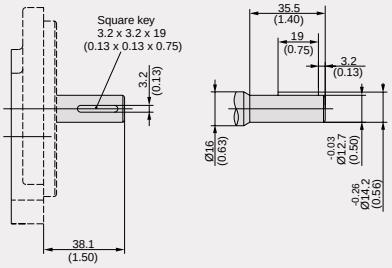
Code A1



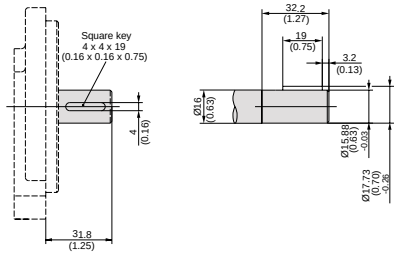
Code A2



Code J1



Code K1



Notes: 1. Dimensions are in millimeters (inches).
2. Dimensions are nominal except where noted.
3. Subscript and/or superscript numbers are tolerances.

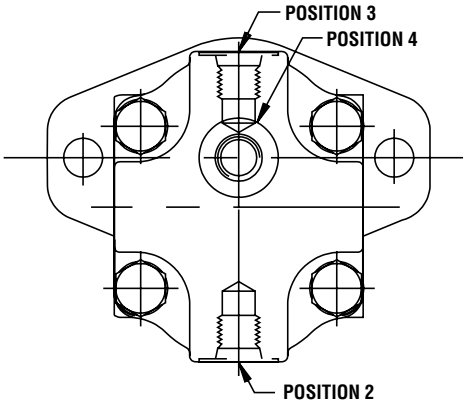
When applying a multiple section pump, the maximum drive shaft load is determined by adding the torque values for each pumping section that will be simultaneously loaded.

Shaft Load Capacity

Code	Description	Style	Torque Rating
A1	9T, 16/32 Pitch, SAE "A"	Spline	108Nm/954 in-lb
A2	***9T, 20/40 Pitch, SAE "A-A"***	***Spline***	***108Nm/954 in-lb***
J1	***Ø 12.7,3.2 Key, No thread, 38L***	***Parallel***	***43Nm/380in-lb***
K1	Ø 15.88, 4.0 Key. No Thread, 32L, SAE "A"	Parallel	85Nm/751in-lb
	Tandem Pump/Connecting Shaft	Spline	36Nm/318in-lb

$$\text{Torque [in-lb]} = \frac{\text{Displacement [in}^3\text{/rev]} \times \text{Pressure [psi]}}{5.72} \qquad \text{Torque [Nm]} = \frac{\text{Displacement [cc/rev]} \times \text{Pressure [bar]}}{57.2}$$

Drain Positions



Please note all of the bold, italicized items on this page reflect Parker preferred product options.

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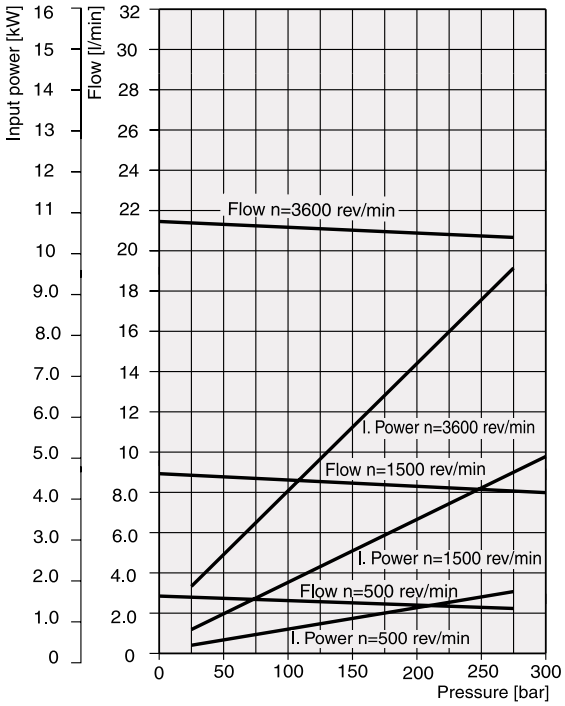
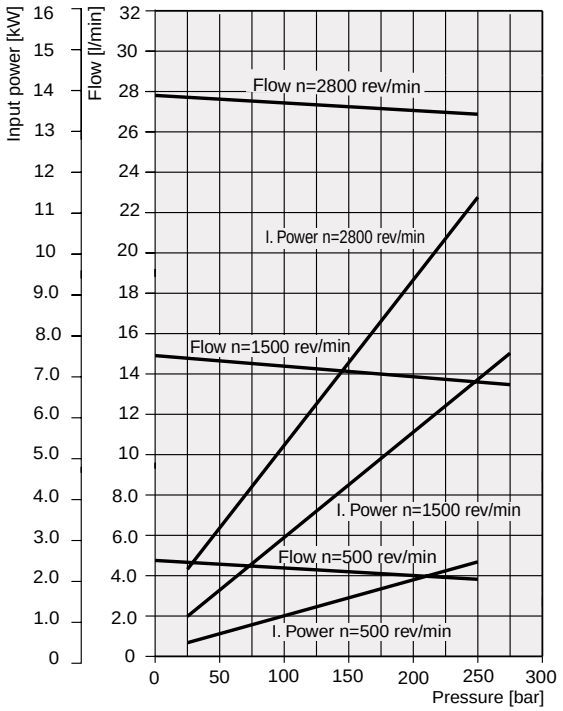
6.0 CC

Fluid Temperature = 45± 2°C
Viscosity = 36mm^2/s
Inlet Pressure = 0.9 + 0.1 bar absolute



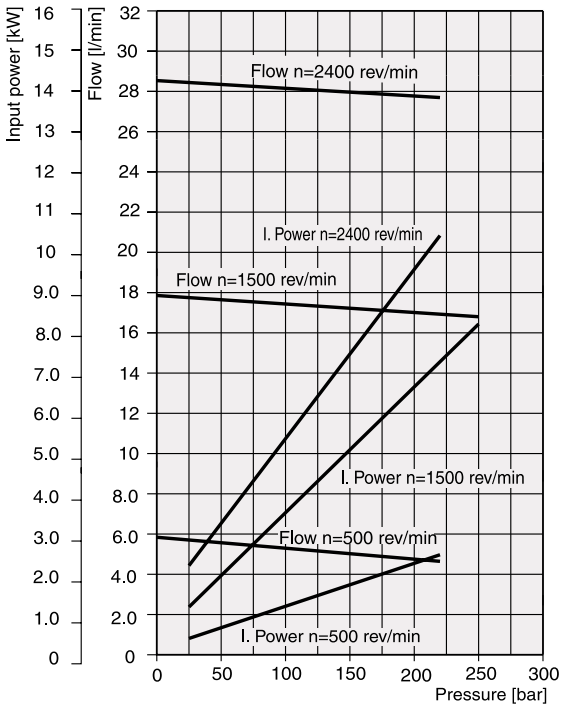
10.0 CC

Fluid Temperature = 45± 2°C
Viscosity = 36mm^2/s
Inlet Pressure = 0.9 + 0.1 bar absolute



12.0 CC

Fluid Temperature = 45± 2°C
Viscosity = 36mm^2/s
Inlet Pressure = 0.9 + 0.1 bar absolute



Performance data shown is based upon a series of laboratory tests and is not representative of any one unit.

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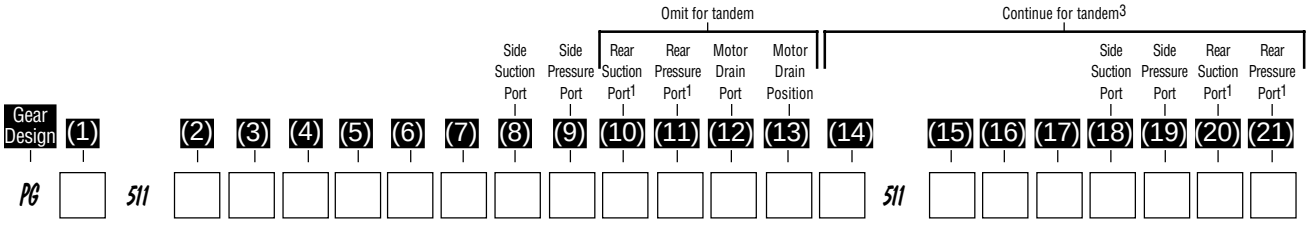
How to Specify



Pump/Motor (1)

P	***Pump***
M	***Motor***

Unit (2,15)

	Pump	Motor
A	***Single unit***	***Standard Motor w/o checks***
B	Multiple unit	Standard Motor w/ two checks
C	—	Standard Motor w/one anti cavitation check (ACC)
D	—	Standard Motor w. one ACC + restrictor

***** Only for displacement codes 0060 to 0280

Displacement (3,16)

0060	6.0 ccm (0.12 cir)
0070	***7.0 ccm (0.43 cir)***
0080	8.0 ccm (0.49 cir)
0100	***10.0 ccm (0.61 cir)***
0110	***11.0 ccm (0.67 cir)***
0140	***14.0 ccm (0.85 cir)***
0160	16.0 ccm (0.98 cir)
0180	***18.0 ccm (1.10 cir)***
0190	19.0 ccm (1.16 cir)
0210	***21.0 ccm (1.28 cir)***
0230	23.0 ccm (1.40 cir)
0270	27.0 ccm (1.65 cir)
0280	***28.0 ccm (1.71 cir)***
0310	31.0 ccm (1.89 cir)

Rotation (4)

C	***Clockwise***
A	***Counter clockwise***
B	***Bi-directional motors only***

Shaft(5)

A1	***9T, 16/32 Pitch, 32L, SAE "A" spline***
C1	11T, 16/32 Pitch, 38.2L, SAE 19-4 spline
C2	11T, 16/32 Pitch, 32.2L, SAE 19-4 spline
K1	***Ø15.88, 4.0 Key, no thread, 32L, SAE "A", parallel***
K4	Ø15.88, 4.0 Key, no thread, 58.7L, parallel
L1	Ø17.46, 4.8 Key, 7/16" UNF ext., 44.7L, parallel
L6	Ø19.05, 4.8 Key, no thread, 32L, parallel

Shaft End Covers (6)

D4	72.0x100.0 - Ø80 rectangular
H2	***106.4 - Ø82.55 SAE "A" 2bolt flange***
H3	146.1 - Ø101.6 SAE "B" 2bolt flange
Q2	60.0x60.0 - Ø50.0 w. shaft seal, O' 'thrubolt flange
Q4	60.0x60.0 - Ø50.0 w. shaft seal, O',thrubolt flange
J5	H2 with slots, spec 2bolt
L2	106.4 - Ø82.55 SAE "A" 2bolt, w. OBB + cont. drive shaft

Shaft Seal (7,17)

X	No seal
N	***NBR***
V	FPM, FKM
M	Double NBR
W	Double FPM

Port Options (8,9,10,11,18,19,20,21)

B1	No ports
D2	9/16" - 18 UNF thread
D3	3/4" - 16 UNF thread
D4	***7/8" - 14 UNF thread***
D5	***1 1/16" - 12UN thread***
D6[1]	***1 5/16" - 12 UN thread***
D7[2]	1 5/8" - 12 UN thread
D8[2]	1 7/8" - 12 UN thread

[1]Not usable for rear ports.
[2]Inlet port only. For 19cc and larger.

Motor Drain Option[2] (12)

B1	No drain
C	***9/16-18 UNF thread***

Drain Position[2] (13)

2	Drain on bottom
3	Drain on top
4	***Rear drain***
5	Drain right view on drive shaft
6	Drain left view on drive shaft

Section Connection (14)

S	Separate inlets
C	Common inlets

NOTES:

1 Only coded for the last section.

2 Only for motors

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

4. Dimensions are in millimeters except where noted.

Please note all of the bold, italicized items on this page reflect Parker preferred product options.

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Youngstown, Ohio USA

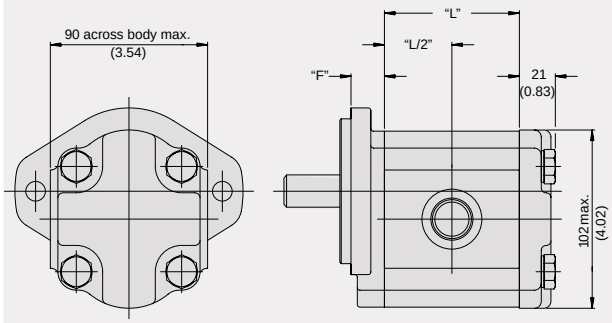
Specifications

Description	Code	0060	*0070*	0080	*0100*	*0110*	*0140*	0160	*0180*	0190	*0210*	0230	0270	*0280*	0310
Displacements	cm^3/rev in^3/rev	6 0.37	***7*** ***0.43***	8 0.49	***10*** ***0.61***	***11*** ***0.67***	***14*** ***0.85***	16 0.98	***18*** ***1.10***	19 1.16	***21*** ***1.28***	23 1.40	27 1.65	***28*** ***1.71***	31 1.89
Continuous Pressure	bar psi	250 3500	***250*** ***3500***	250 3500	***250*** ***3500***	***250*** ***3500***	***250*** ***3500***	250 3500	***250*** ***3400***	250 3250	***235*** ***3000***	225 2750	190 2350	***185*** ***2300***	165 2100
Intermittent Pressure	bar psi	275 3988	***275*** ***3988***	275 3988	***275*** ***3988***	***275*** ***3988***	***275*** ***3988***	275 3988	***260*** ***3770***	260 3770	***240*** ***3480***	235 3408	200 2900	***190*** ***2705***	170 2465
Minimum Speed @ Max. Outlet Pressure	rpm	500	***500***	500	***500***	***500***	***500***	500	***500***	500	***500***	500	500	***500***	500
Maximum Speed @ 0 Inlet & Max. Outlet Pressure	rpm	4000	***4000***	4000	***3600***	***3600***	***3300***	3000	***3000***	3000	***2800***	2800	2400	***2300***	2300
Pump Input Power @ Max. Pressure and 1500 rpm	kW HP	4.5 6.03	***5.25*** ***7.04***	6 8.05	***7.5*** ***10.06***	***8.3*** ***11.1***	***10.5*** ***14.0***	12 16.0	***13.5*** ***18.1***	14.3 19.1	***14.4*** ***19.3***	14.7 19.7	14.9 19.9	***15.8*** ***21.1***	16.7 22.4
Dimension "L"	mm in	51.8 2.04	***53.3*** ***2.10***	54.9 2.16	***57.9*** ***2.28***	***59.4*** ***2.34***	***64*** ***2.52***	67 2.64	***70.1*** ***2.76***	71.6 2.82	***76.6*** ***3.02***	77.6 3.06	83.7 3.30	***84.2*** ***3.31***	89.8 3.54
Approximate Weight [1]	kg LB	3.5 7.70	***3.5*** ***7.70***	3.6 7.90	***3.6*** ***7.90***	***3.7*** ***8.10***	***3.8*** ***8.40***	3.9 8.60	***4.0*** ***8.80***	4.0 8.80	***4.1*** ***9.00***	4.2 9.20	4.3 9.50	***4.4*** ***9.70***	4.5 9.9

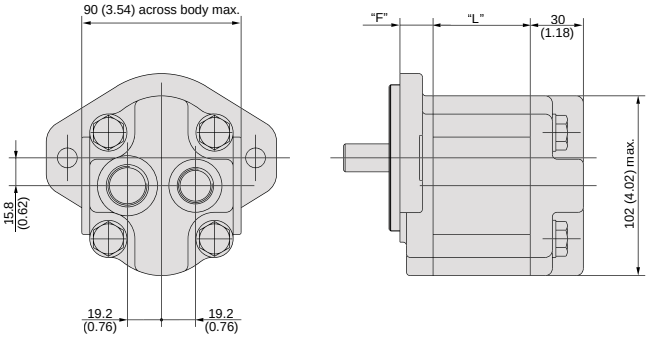
[1] Single pump with Shaft End Cover Q1 and non ported Port End Cover.

Dimensions

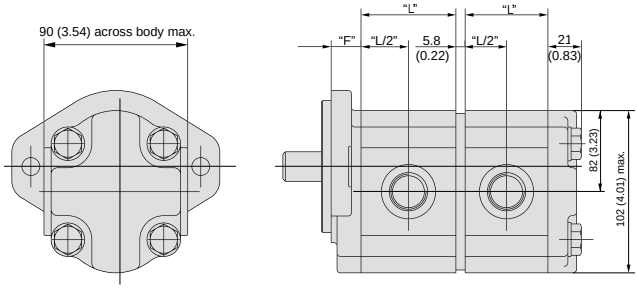
Single Unit



Single Unit with rear ports



Tandem Unit



NOTE:
Dimension "F" see shaft end covers on page 15
Dimension "L" see table above

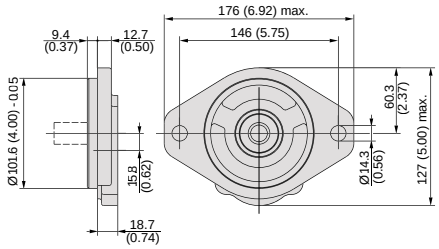
Notes: 1. Dimensions are in millimeters (inches).
2. Dimensions are nominal except where noted.
3. Subscript and/or superscript numbers are tolerances.

Please note all of the bold, italicized items on this page reflect Parker preferred product options.

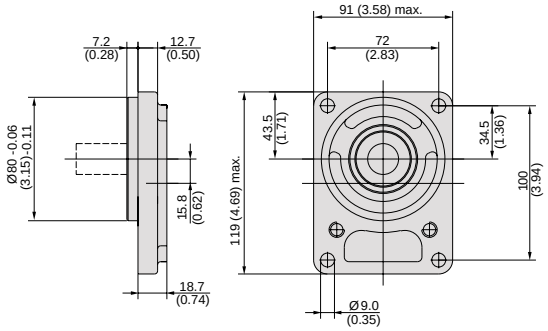
Parker Hannifin Corporation
Gear Pump Division
Youngstown, Ohio USA

Shaft End Covers

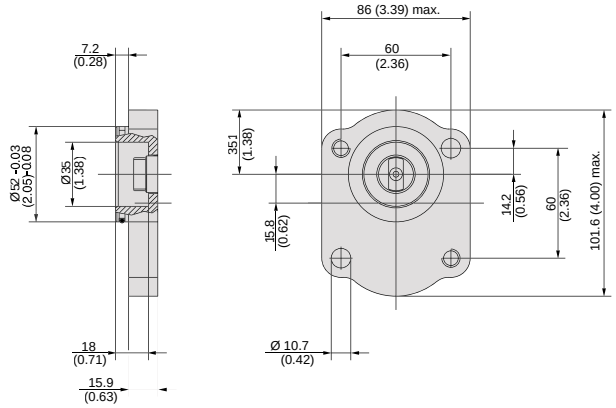
Code H3



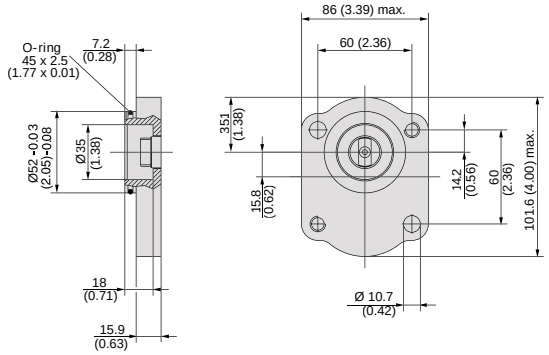
Code D4



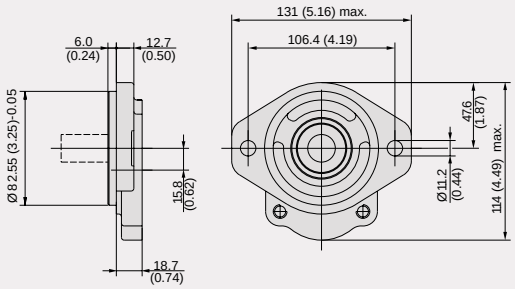
Code Q2



Code Q4



Code H2



Notes: 1. Dimensions are in millimeters (inches).
2. Dimensions are nominal except where noted.
3. Subscript and/or superscript numbers are tolerances.

Please note all of the bold, italicized items on this page reflect Parker preferred product options.

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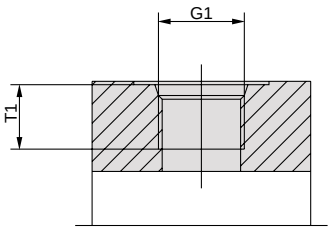
Porting

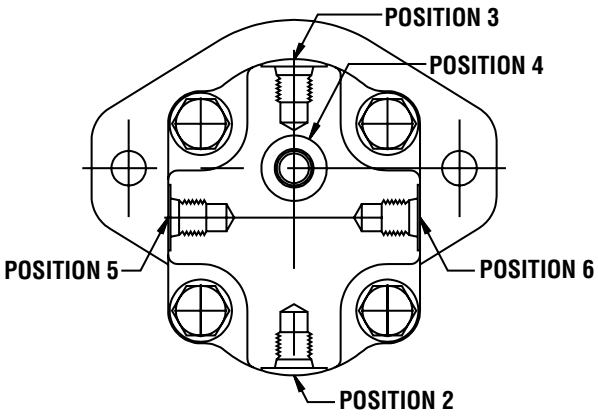
Code D
SAE straight thread
See table at right for specific port dimensions.



Code	G1 Thread	T1 Dimensions
D2	9/16"-18 UNF	12.7
D3	3/4"-16 UNF	14.3
D4	***7/8"-14 UNF***	***16.7***
D5	***1 1/16"-12 UN***	***19.0***
D6	***1 5/16"-12 UN***	***19.0***
D7	1 5/8"-12 UN	19.0
D8	1 7/8"-12 UN	19.0

Notes: 1. Dimensions are in millimeters (inches).
2. Dimensions are nominal except where noted.
3. Subscript and/or superscript numbers are tolerances.

Drain Positions



Shaft Load Capacity

Code	Description	Style	Torque Rating
A1	***9T, 16/32 Pitch, 32L, SAE "A"***	***Spline***	***86Nm/759in-lb***
C1	11T, 16/32 Pitch, 38.2L, SAE 19-4	Spline	184Nm/1625in-lb
C2	11T, 16/32 Pitch, 32.2L, SAE 19-4	Spline	184Nm/1625in-lb
K1	***Ø 15.88 4.0 Key, no thread, 32L, SAE "A"***	***Parallel***	***75Nm/662in-lb***
K4	Ø 15.88, 3.95 Key, no thread, 58.7L	Parallel	75Nm/662in-lb
L1	Ø 17.46, 4.8 Key, 7/16UNF ext., 44.2L	Parallel	112Nm/989in-lb
L6	Ø 19.05, 4.8 Key, no thread, 32L, SAE 19-1	Parallel	145Nm/1280in-lb
	Tandem pump Connecting Shaft	Spline	110Nm/971in-lb

When applying a multiple section pump, the maximum drive shaft load is determined by adding the torque values for each pumping section that will be simultaneously loaded.

$$\text{Torque [in-lb]} = \frac{\text{Displacement [in}^3\text{/rev] x Pressure [psi]}}{5.72} \qquad \text{Torque [Nm]} = \frac{\text{Displacement [cc/rev] x Pressure [bar]}}{57.2}$$

Please note all of the bold, italicized items on this page reflect Parker preferred product options.

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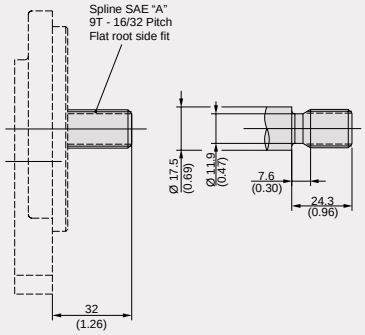
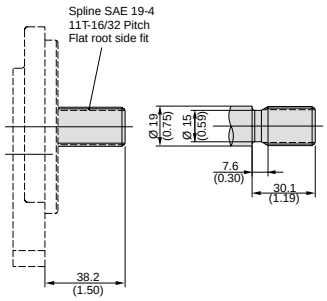
Gear Pump Division
Youngstown, Ohio USA

Drive Shaft

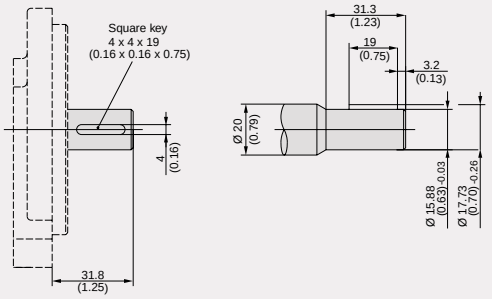
Code A1



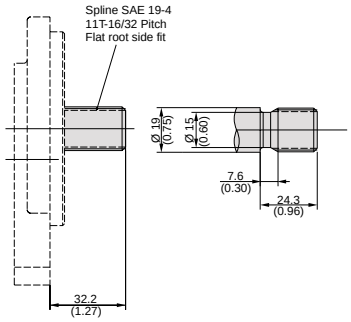
Code C1



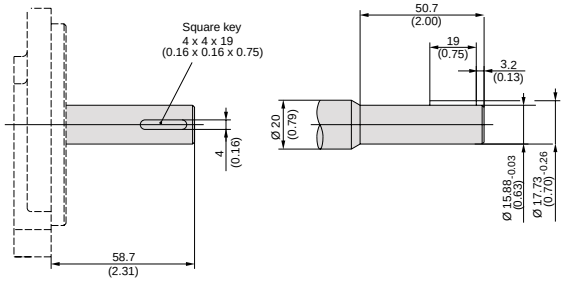
Code K1



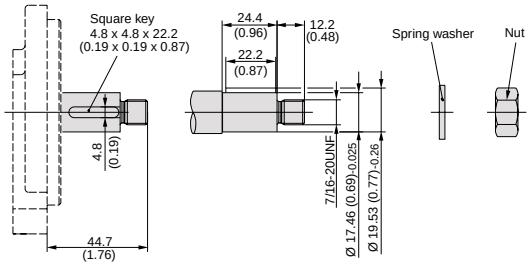
Code C2



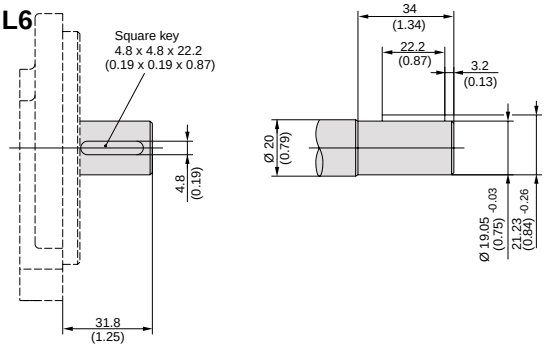
Code K4



Code L1



Code L6



Notes: 1. Dimensions are in millimeters (inches).
2. Dimensions are nominal except where noted.
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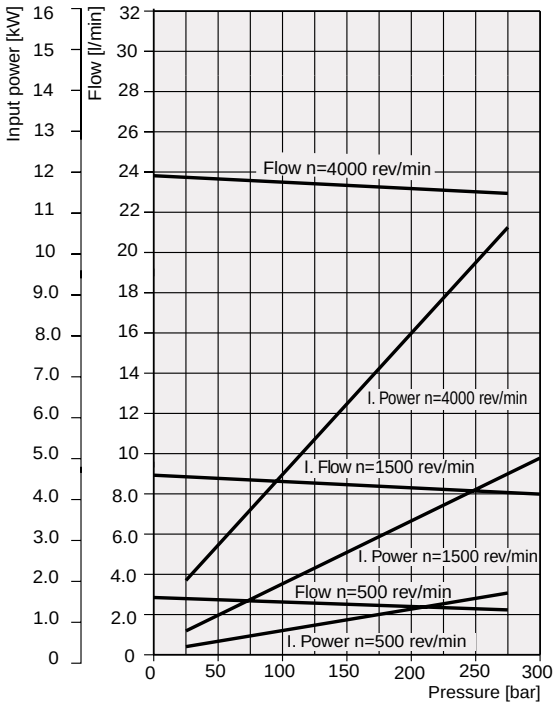
Please note all of the bold, italicized items on this page reflect Parker preferred product options.

Parker Hannifin Corporation
Gear Pump Division
Youngstown, Ohio USA

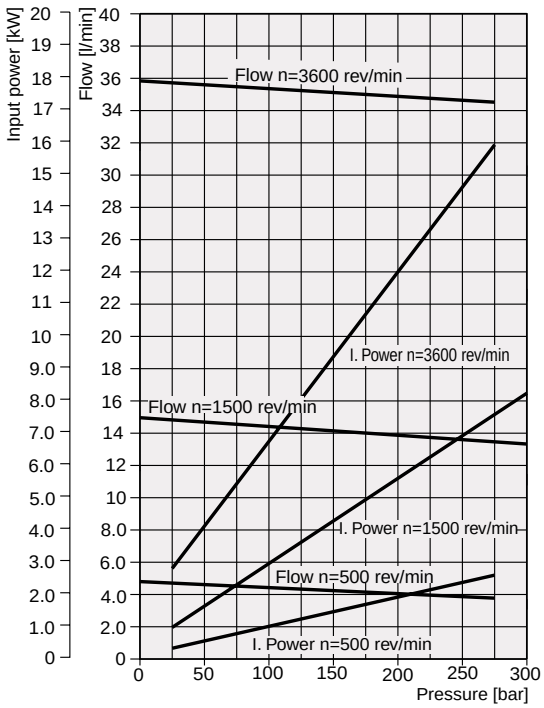
6.0 CC

Fluid Temperature = 45± 2°C
Viscosity = 36mm^2/s
Inlet Pressure = 0.9 + 0.1 bar absolute



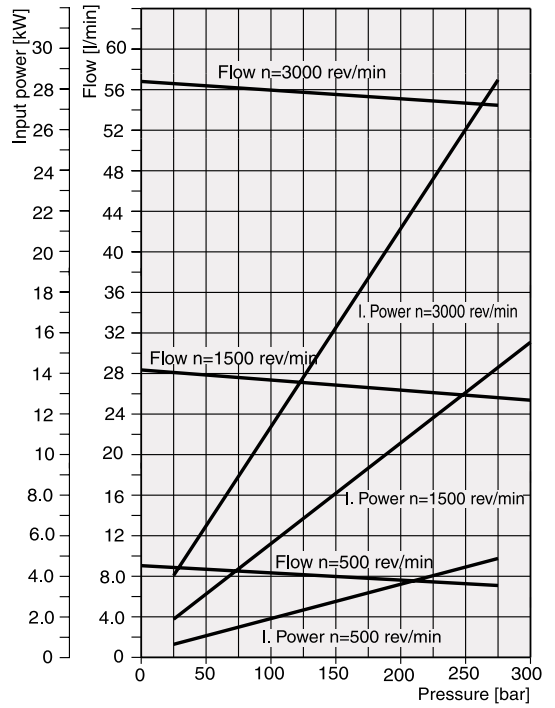
10.0 CC

Fluid Temperature = 45± 2°C
Viscosity = 36mm^2/s
Inlet Pressure = 0.9 + 0.1 bar absolute



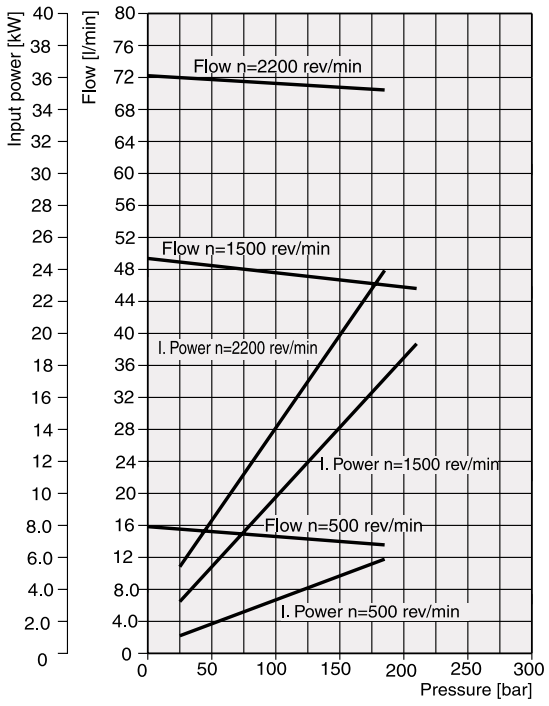
19.0 CC

Fluid Temperature = 45± 2°C
Viscosity = 36mm^2/s
Inlet Pressure = 0.9 + 0.1 bar absolute



33.0 CC

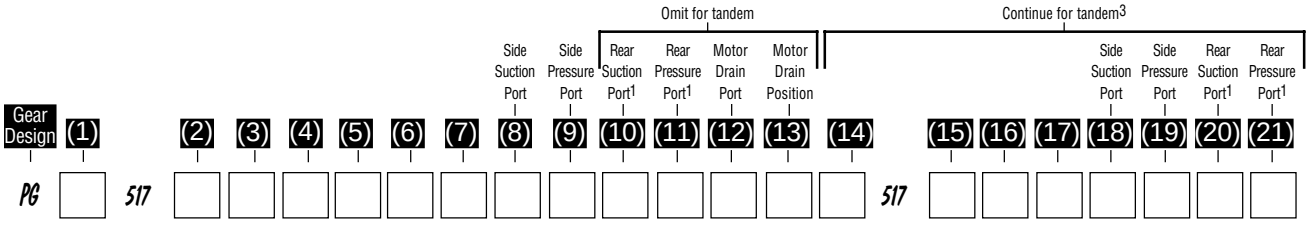
Fluid Temperature = 45± 2°C
Viscosity = 36mm^2/s
Inlet Pressure = 0.9 + 0.1 bar absolute



Performance data shown is based upon a series of laboratory tests and is not representative of any one unit.

Parker Hannifin Corporation
Gear Pump Division
Youngstown, Ohio USA

How to Specify



Box 1 Pump/Motor

P	***Pump***
M	Motor

Boxes 2,15 Unit

	Pump	Motor
A	***Single unit***	***Standard Motor w/o checks***
B	Multiple unit	Standard Motor w/ two checks
C	—	Standard Motor w/one anti cavitation check (ACC)
D	—	Motor w/check valve and restrictor

Boxes 3,16 Displacement

0140	14 ccm (0.85 cir)
0160	***16 ccm (0.98 cir)***
0190	19 ccm (1.16 cir)
0230	***23 ccm (1.40 cir)***
0250	25 ccm (1.53 cir)
0280	***28 ccm (1.71 cir)***
0330	33 ccm (2.01 cir)
0360	***36 ccm (2.20 cir)***
0380	38 ccm (2.32 cir)
0440	***44 ccm (2.68 cir)***
0520	***52 ccm (3.17 cir)***

Box 4 Rotation

C	***Clockwise***
A	***Counter clockwise***
B	***Bi-directional motors only***

Box 5 Shaft

D1	***13T, 16/32 Pitch, 41.2L, SAE "B" spline***
E1	15T, 16/32 Pitch, 46L, SAE "B-B" spline
M1	Ø22.2, 6.3 Key, no thread, 41.2L, SAE "B", parallel
M2	***Ø25.4, 6.3 Key, no thread, 46L, SAE "B-B", parallel***

Box 6 Shaft End Covers

H2	106.4 - Ø82.55 SAE "A" 2bolt flange
H3	***146.1 - Ø101.6 SAE "B" 2bolt flange***

Boxes 7,17 Shaft Seal

X	No seal
N	***NBR***
V	FPM, FKM

NOTES:

1 Only coded for the last section.

2 Only for motors

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

4. Dimensions are in millimeters except where noted.

Boxes 8,9,10,11,18,19,20,21 Port Options

B1	No ports
D3	3/4" - 16 UNF thread
D4	7/8" - 14 UNF thread
D5	1 1/16" - 12UN thread
D6	1 5/16" - 12 UN thread
D7*	1 5/8" - 12 UN thread
D8*	1 7/8" - 12 UN thread
*Not usable for rear ports	

Box 12 Motor Drain Option2

B1	No drain
C	***9/16-18 UNF thread***
P	M12x1.5 metric thread

Box 13 Drain Position2

2	Drain on bottom
3	Drain on top
4	***Rear drain***

Box 14 Section Connection

S	Separate inlets
C	Common inlets

Please note all of the bold, italicized items on this page reflect Parker preferred product options.

Parker Hannifin Corporation
Gear Pump Division
Youngstown, Ohio USA

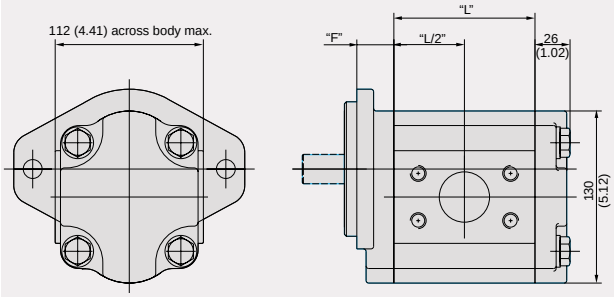
Specifications

Description	Code	0140	0160	0190	*0230*	0250	*0280*	0330	*0360*	0380	*0440*	*0520*
Displacements	cm^3/rev in^3/rev	14 0.85	16 0.98	19 1.16	***23*** ***1.40***	25 1.53	***28*** ***1.71***	33 2.01	***36*** ***2.20***	38 2.32	***44*** ***2.68***	***52*** ***3.17***
Continuous Pressure	bar psi	250 3625	250 3625	250 3625	***250*** ***3625***	250 3625	***250*** ***3625***	250 3625	***250*** ***3625***	250 3625	***220*** ***3190***	***200*** ***2900***
Intermittent Pressure	bar psi	275 3988	275 3988	275 3988	***275*** ***3988***	275 3988	***275*** ***3988***	275 3988	***275*** ***3988***	255 3698	***240*** ***3500***	***215*** ***3118***
Minimum Speed @Max. Outlet Pressure	rpm	500	500	500	***500***	500	***500***	500	***500***	500	***500***	***500***
Maximum Speed @ 0 Inlet & Max. Outlet Pressure	rpm	3400	3400	3300	***3300***	3100	***3100***	3100	***3000***	3000	***2800***	***2600***
Pump Input Power @ Max. Pressure and 1500 rpm	kW HP	9.6 12.87	11 14.75	13.1 17.57	***15.8*** ***21.19***	17.2 23.07	***19.3*** ***25.88***	22.7 30.44	***24.6*** ***32.99***	26.1 35.00	***27*** ***36.21***	***28.6*** ***38.35***
Dimension “L”	mm in	68.3 2.69	70.3 2.77	73.3 2.89	***77.4*** ***3.05***	79.4 3.13	***82.4*** ***3.24***	87.5 3.44	***90.5*** ***3.56***	92.5 3.64	***98.6*** ***3.88***	***106.7*** ***4.20***
Approximate Weight*	kg LB	7.92 17.50	8 17.68	8.12 17.95	***8.29*** ***18.32***	8.37 18.50	***8.5*** ***18.79***	8.7 19.23	***8.83*** ***19.51***	8.91 19.69	***9.16*** ***20.24***	***9.49*** ***20.97***

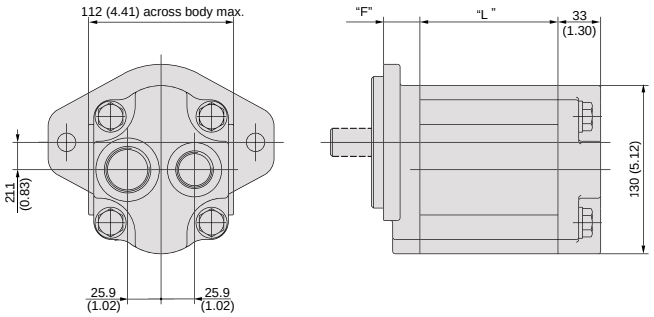
***Single pump with Shaft End Cover H3 and non ported Port End Cover.

Dimensions

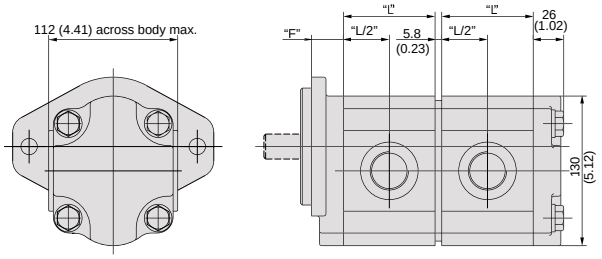
Single Unit



Single Unit with rear ports



Tandem Unit



NOTE:
Dimension "F" see shaft end covers on page 22
Dimension "L" see table above

Notes: 1. Dimensions are in millimeters (inches).
2. Dimensions are nominal except where noted.
3. Subscript and/or superscript numbers are tolerances.

Please note all of the bold, italicized items on this page reflect Parker preferred product options.

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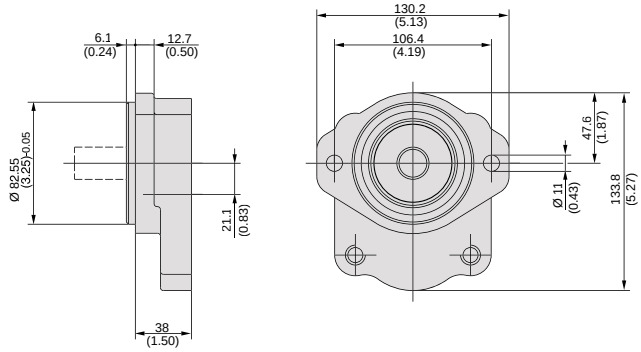
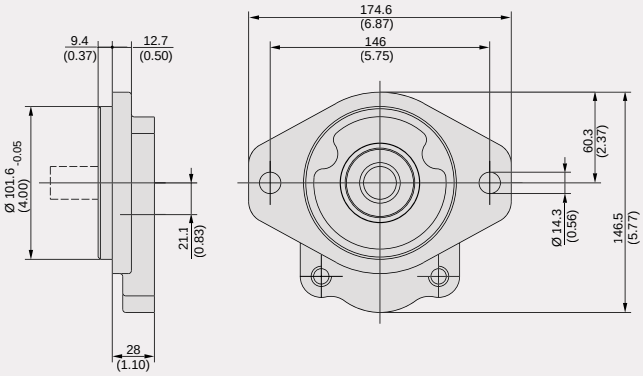
Gear Pump Division
Youngstown, Ohio USA

Shaft End Covers

Code H2/L2



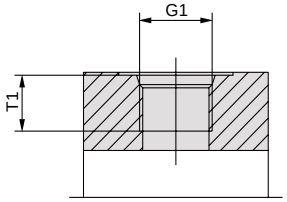
Code H3



Porting

Code D

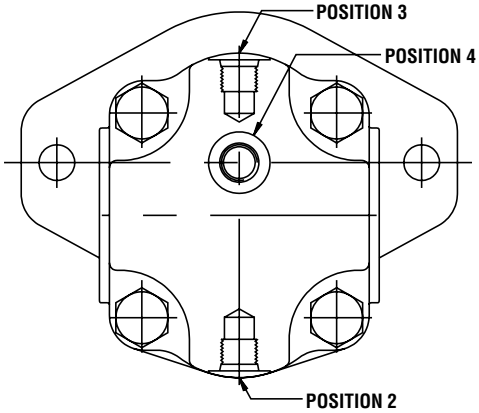
SAE straight thread
See table below for specific port dimensions.



Code	G1	T1
Thread	**Dimensions**	
D2	9/16"-18 UNF	12.7
D3	3/4"-16 UNF	14.3
D4	7/8"-14 UNF	16.7
D5	1 1/16"-12 UN	19.0
D6	1 5/16"-12 UN	19.0
D7	1 5/8"-12 UN	19.0
D8	1 7/8"-12 UN	19.0

Notes: 1. Dimensions are in millimeters (inches).
2. Dimensions are nominal except where noted.
3. Subscript and/or superscript numbers are tolerances.

Drain Positions



Please note all of the bold, italicized items on this page reflect Parker preferred product options.

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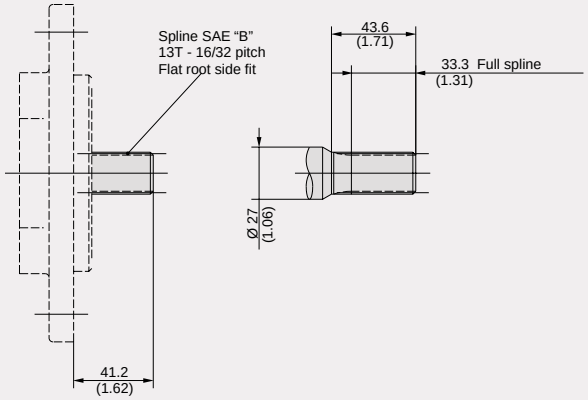
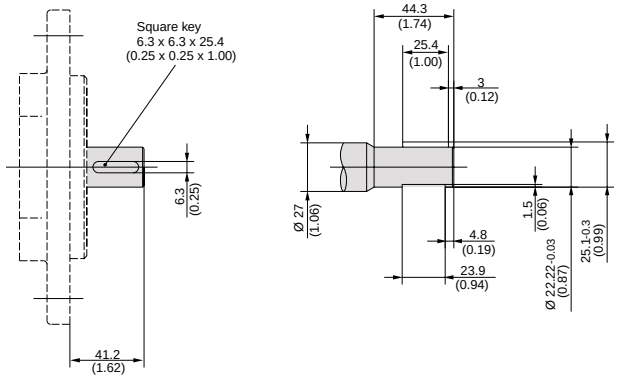
Drive Shaft

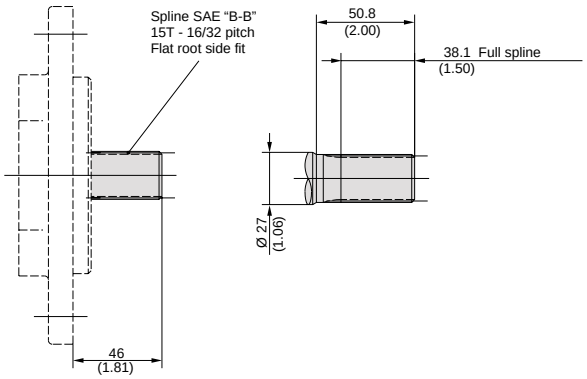
Code D1



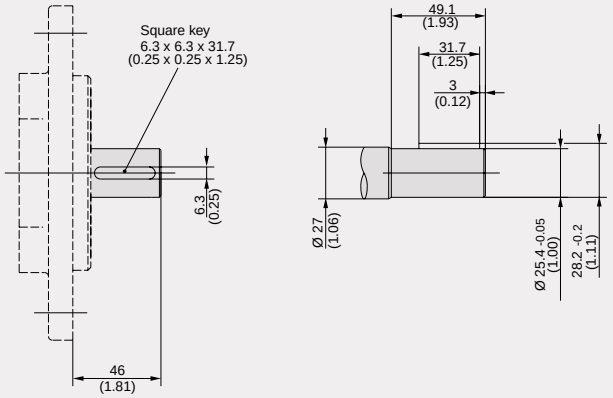
Code M1



Code E1



Code M2



Notes: 1. Dimensions are in millimeters (inches).
2. Dimensions are nominal except where noted.
3. Subscript and/or superscript numbers are tolerances.

Shaft Load Capacity

Code	Description	Style	Torque Rating
D1	***13T, 16/32 Pitch, 41.2L, SAE "B"***	***Spline***	***345Nm/3046in-lb***
E1	15T, 16/32 Pitch, 46L, SAE "B-B"	Spline	530Nm/4680in-lb
M1	Ø 22.2, 6.3 Key, no thread, 41.2L, SAE "B"	Parallel	251Nm/2216in-lb
M2	***Ø 25.4, 6.3 Key, no thread, 46L, SAE "B-B"***	***Parallel***	***395Nm/3488in-lb***
	Tandem pump Connecting Shaft	Spline	228Nm/2013in-lb

When applying a multiple section pump, the maximum drive shaft load is determined by adding the torque values for each pumping section that will be simultaneously loaded.

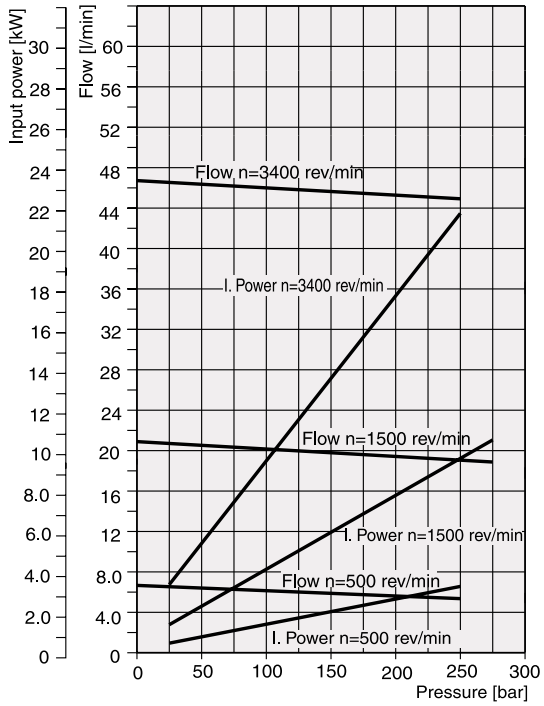
$$\text{Torque [in-lb]} = \frac{\text{Displacement [in}^3\text{/rev]} \times \text{Pressure [psi]}}{5.72} \qquad \text{Torque [Nm]} = \frac{\text{Displacement [cc/rev]} \times \text{Pressure [bar]}}{57.2}$$

Please note all of the bold, italicized items on this page reflect Parker preferred product options.

Parker Hannifin Corporation
Gear Pump Division
Youngstown, Ohio USA

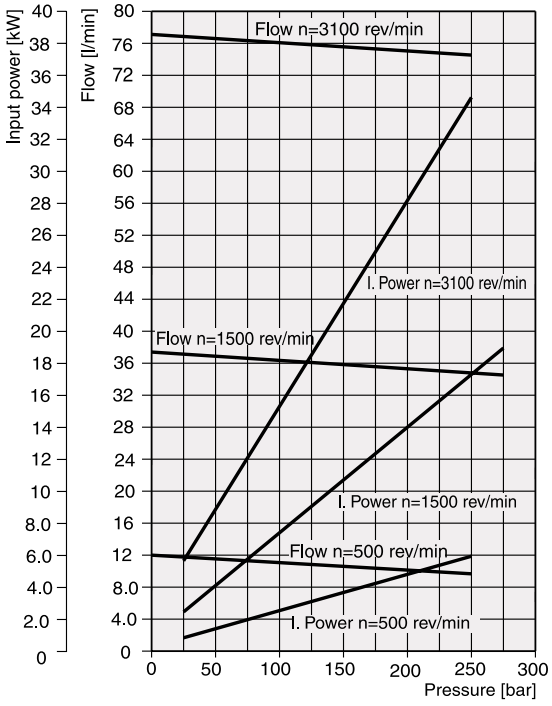
14.0 CC

Fluid Temperature = 45± 2°C
Viscosity = 36mm^2/s
Inlet Pressure = 0.9 + 0.1 bar absolute



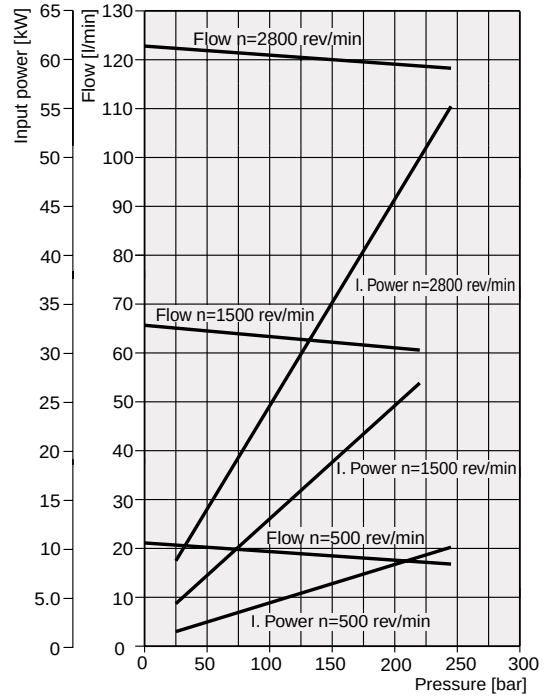
25.0 CC

Fluid Temperature = 45± 2°C
Viscosity = 36mm^2/s
Inlet Pressure = 0.9 + 0.1 bar absolute



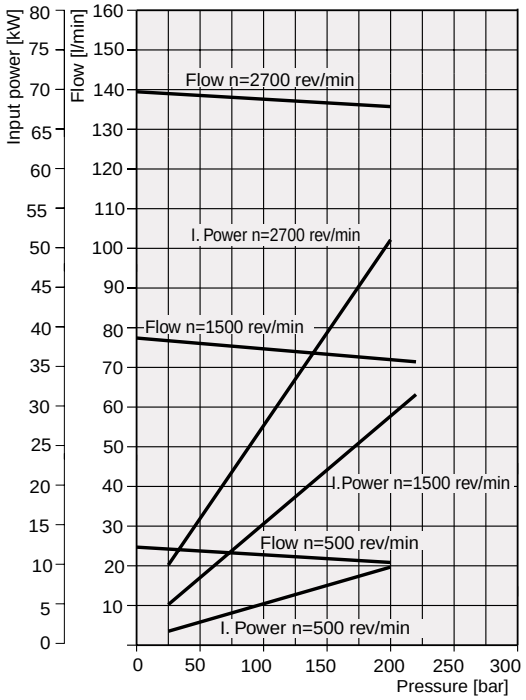
44.0 CC

Fluid Temperature = 45± 2°C
Viscosity = 36mm^2/s
Inlet Pressure = 0.9 + 0.1 bar absolute



52.0 CC

Fluid Temperature = 45± 2°C
Viscosity = 36mm^2/s
Inlet Pressure = 0.9 + 0.1 bar absolute



Performance data shown is based upon a series of laboratory tests and is not representative of any one unit.

Parker Hannifin Corporation
Gear Pump Division
Youngstown, Ohio USA

Integral Valve Options and Market Experience

This appendix provides overviews of the valves currently offered as well as options that are available from the wide range of Parker gear pumps and motors. Many valves are already in production for OEM customers on specific pumps or motors, while others have been supplied for prototype evaluation. A few valves are derivatives of valves already in production and can be produced for OEM customers. Parker's integral valve program was developed in response to requests from our OEM customers to reduce the number and total cost of components on their machines. We addressed this challenge by integrating the valves required for machine functions into our hydraulic pumps and motors. This integration has reduced the number of purchased components, eliminated many of the hydraulic hoses and associated fittings (and potential leak points), and reduced assembly labor costs on the production line.

Applications:	Implement Pumps (Single)	Implement Pumps (Tandem)	Triple and Quad Pumps	Two Stage Pumps	Power Steering Pumps	Power Steering/Fan Drive Pumps	Fan Drive Pumps	Direct Acting Relief Valves	Pilot Operated Relief Valves	Load Sensing Relief Valves	Solenoid Unloading Relief Valves	Unloaders for Tandem Pumps	Priority Flow Dividers	Load Sense Priority Valves	Single Accumulator Charge Pumps	Dual Accumulator Charge Pumps	Single Accumulator Charge Valves	Dual Accumulator Charge Valves	Load Sense Charge Valves	Modulating Brake Valves	Hydraulic Motors	Motors with Integral Relief Valves	Motors with Cross Port Relief Valves	Motors with Integral By-Pass Valves	Steering & Accumulator Charge Valve (STAC)	Custom Valve Manifolds	Brake Valve	Check Valve & Restrictor
Materials Handling																												
Electric Lift Trucks	•	•		•				•	•				•	•	•		•									•		
I.C. Powered Lift Trucks	•	•		•					•	•			•	•												•		
Rough Terrain Lift Trucks	•	•		•						•			•	•	•	•	•	•	•	•						•		
Turf Care and Grasscutting																												
Reel Commercial Mowers	•	•	•	•	•	•	•	•	•		•		•	•								•	•	•		•		•
Rotary Commercial Mowers	•	•	•	•	•	•	•	•	•		•		•	•								•	•	•		•		
Heavy Duty Industrial Mowers	•	•	•	•	•	•	•	•	•		•		•	•							•	•	•	•		•	•	•
Construction Equipment																												
Road Construction	•	•		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•			•	•	•
Wheel Loaders		•		•	•	•	•		•			•	•	•	•	•	•	•	•	•					•	•		
Backhoe-Loaders		•	•	•	•	•	•		•			•	•	•	•	•	•	•	•	•					•	•		
Cranes and Winches	•	•	•	•	•	•	•		•		•		•	•					•	•	•	•	•			•	•	
Haul Trucks			•	•	•									•	•	•	•	•								•		
Truck, Bus & Rec. Vehicles				•	•	•	•	•					•	•		•		•	•	•	•	•				•		
Municipal, Street Sweepers	•	•	•	•	•	•	•	•	•		•		•	•	•	•	•	•	•	•	•	•	•	•		•		

List of Available Pump Combinations

First pump	Second pump		
	PGP 505	**PGP 511**	**PGP 517**
PGP 505	X		
PGP 511		X	
PGP 517	X	X	X

Parker Hannifin Corporation
Gear Pump Division
Youngstown, Ohio USA

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If a claim is based on information provided by Buyer or if the design for an item delivered hereunder is specified in whole or in part by Buyer, Buyer shall defend and indemnify Seller for all costs, expenses or judgments resulting from any claim that such item infringes any patent, trademark, copyright, trade dress, trade secret or any similar right.

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Parker Hannifin Corporation

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