

PGP 500 pumps offer superior performance, high efficiency and low noise operation at high operating pressures. They are produced in four frame sizes (PGP 502, PGP 505, PGP 511, PGP 517) with displacements ranging from 0.8 to 70 cm³/rev. A wide variety of standard options is available to meet specific application requirements.

Characteristics

- **Up to 280 bar continuous operation**
High strength materials and large journal diameters provide low bearing loads for high pressure operation.
- **Low noise**
PGP 502 - 9 tooth gear profile, 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.

Characteristics

Pump type	Heavy-duty, aluminium, external gear.
Mounting	SAE, rectangular, thru-bolt standard specials on request.
Ports	SAE and metric split flanges and others
Shaft style	SAE splined, keyed, tapered, cylindrical tang drive, specials on request
Speed	500 - 5000 rpm, see Technical Data
Theor. displacement	See Technical Data
Drive	Drive direct with flexible coupling is recommended.
Axial / Radial load	Units subject to axial or radial loads must be specified with an outboard bearing.
Inlet pressure	Operating range 0.8 to 2 bar abs. Min. inlet pressure 0.5 bar abs. Short time without load. Consultation is recommended.
Outlet pressure	See Technical Data
Pressure rising rate	Max. 3000 bar/s
Flow velocity	See Nomograph for Pipe Velocity
Hydraulic fluids	Hydraulic oil HLP, DIN 51524-2
Fluid temperature	Range of operating temperature -15 to +80 °C. Max. permissible operating pressure dependent on fluid temperature. Temperature for cold start -20 to -15 °C at speed ≤ 1500 rpm. Max. permissible operating pressure dependent on fluid temperature.



- **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.
- **Large range of integrated valves**

Fluid viscosity	Range of operating viscosity 8 to 1000 mm ² /s (511 & 517) 20 to 1000 mm ² /s (502 & 505) Max. permissible operating pressure dependent on viscosity. Viscosity range for cold start 1000 to 2000 mm ² /s at operating pressure p ≤ 10 bar and speed n ≤ 1500 rpm.
Range of ambient temperature	-40 °C to +70 °C
Filtration	According to ISO 4406 Cl. 19/17/13
Direction of rotation (looking at the drive shaft)	Clockwise, counter-clockwise or double. Attention! Drive pump only in indicated direction of rotation.
Multiple pump assemblies	• Available in two or three section the limitations shown in the shaft loading rating table in this catalogue. • 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.

PG		511										
Gear Design	Type		Unit	Displacement	Rotation	Shaft	Flange	Shaft Seal	Side Suction Port	Side Pressure Port	Rear Suction Port ¹⁾	Rear Pressure Port ¹⁾

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)
D	—	Standard Motor w. one ACC + restrictor
M	Single distributor unit	—

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

Code	Displacement*
Code	ccm
0060	6.0
0080	8.0
0100	10.0
0110	11.0
0140	14.0
0160	16.0
0190	19.0
0230	23.0
0270	27.0
0330	33.0

Code	Rotation
C	Clockwise
A	Counter clockwise
B	bi-directional

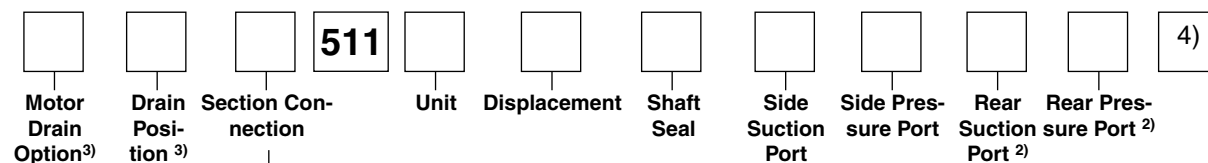
Code	Shaft
A1	9T, 16/32DP, 32L, SAE "A" spline
C1	11T, 16/32DP, 38.2L, SAE 19-4 spline
K1	Ø15.88, 4.0Key, no thread, 32L, SAE "A", parallel
L6	Ø19.05, 4.8 Key, no thread, 32L, SAE 19-1, parallel
S1	Ø17.0, 7.7L, 3.0 Key, M12x1.5, taper 1:5
S2	Ø16.65, 12.0L, 3.2 Key, M12x1.5, taper 1:8
V5	8x6.5 short shaft, tang drive
S8*	Ø20, 9.4L, 4.0 Key, M14x1.5, taper 1:5
F5	B8x32x36 DIN ISO 14 spline (similar to DIN 5462)

*) To be used with outboard bearing only

*) Others on request

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.

¹⁾ Only coded for the last section.



Code	Section Connection
S	Separate inlets
C	Common inlets

Code	Drain Position
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

Code	Motor Drain Option
B1	no drain
A ²⁾	7/16-20 UNF thread
C	9/16-18 UNF thread
G	1/4 BSP thread
N ²⁾	M10x1 metric thread
P ²⁾	M12x1.5 metric thread

2) Non standard, on request only

Code	Flange
D3	71.4x96.0 - Ø36.47 rectangular
D4	72.0x100.0 - Ø80 rectangular
H2	106.4 - Ø82.55 SAE "A" 2 bolt flange
H3	146.1 - Ø101.6 SAE "B" 2 bolt flange
Q1 ²⁾	60.0x60.0 - Ø52.0 w/o seal ,O' thru bolt flange
Q2	60.0x60.0 - Ø50.0 w. seal ,O' thru bolt flange
Q3 ²⁾	60.0x60.0 - Ø52.0 w/o seal ,O' thru bolt flange
Q4	60.0x60.0 - Ø50.0 w. seal ,O', thru bolt flange
F4	72.0x100.0 - Ø80.0 rect., w. OBB and cont. drive shaft
C3	80x80 - Ø80.0 4 bolt flange

2) Non standard, on request only

Code	Port Options	Code	Port Options
B1	No ports	L1*	13 mm - Ø30 mm - M6 diamond
D2 ²⁾	9/16 - 18 UNF thread	L2*	19 mm - Ø40 mm - M8 diamond
D3 ²⁾	3/4 - 16 UNF thread	N1 ²⁾ *	1/2"-5/16-18UNC SAE Split Flange
D4 ²⁾	7/8 - 14 UNF thread	N2 ²⁾ *	3/4"-3/8-16UNC SAE Split Flange
D5 ²⁾	1 1/16 - 12 UN thread	N3 ²⁾ *	1"-3/8-16UNC SAE Split Flange
D6 ²⁾ *	1 5/16 - 12 UN thread	N4 ²⁾ *	1 1/4"-7/16-14UNC SAE Split Flange
D7 ²⁾ *	1 5/8 - 12 UN thread	P1*	12.7 mm - M8 1/2" Metric Split Flange
E2	3/8 - 19 BSP thread	P2*	19.0 mm - M10 3/4" Metric Split Flange
E3	1/2 - 12 BSP thread	P3*	25.4 mm - M10 1" Metric Split Flange
E4*	5/8 - 14 BSP thread	P4*	31.8 mm - M10 1 1/4" Metric Split Flange
E5*	3/4 - 14 BSP thread		
E6*	1 - 11 BSP thread		
E7*	1 1/4 - 11 BSP thread		
G1 ²⁾	M14x1.5 thread		
G3 ²⁾	M18x1.5 thread		
G4 ²⁾	M22x1.5 thread		
G5 ²⁾ *	M26x1.5 thread		
G7 ²⁾ *	M30x1.5 thread		
J3 ²⁾ *	8 mm - Ø30 mm - M6 square		
J4 ²⁾ *	12 mm - Ø30 mm - M6 square		
J5*	15 mm - Ø35 mm - M6 square		
J6 ²⁾ *	15 mm - Ø40 mm - M8 square		
J7*	20 mm - Ø40 mm - M6 square		
J8*	18 mm - Ø55 mm - M8 square		
J9*	26 mm - Ø55 mm - M8 square		

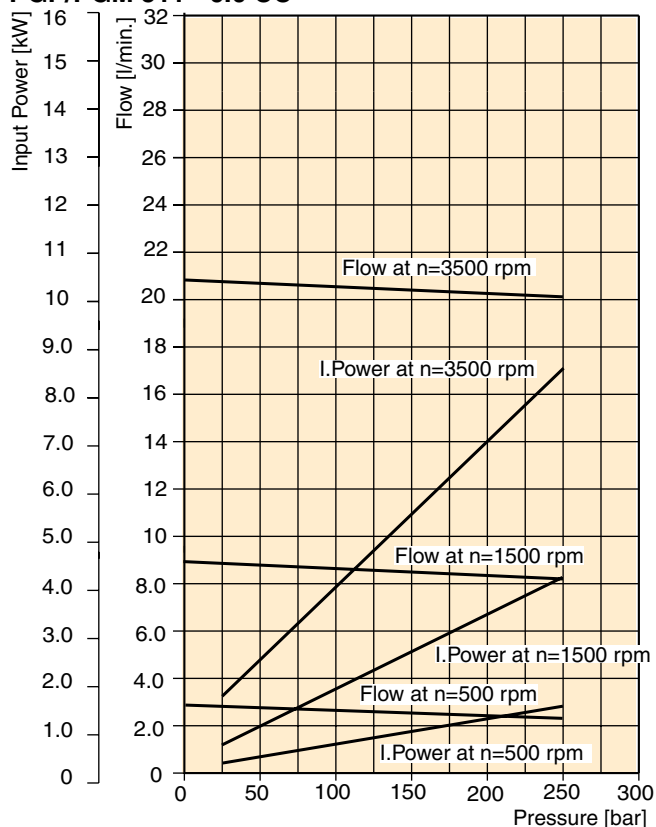
2) Non standard, on request only

*) Not usable for rear ports

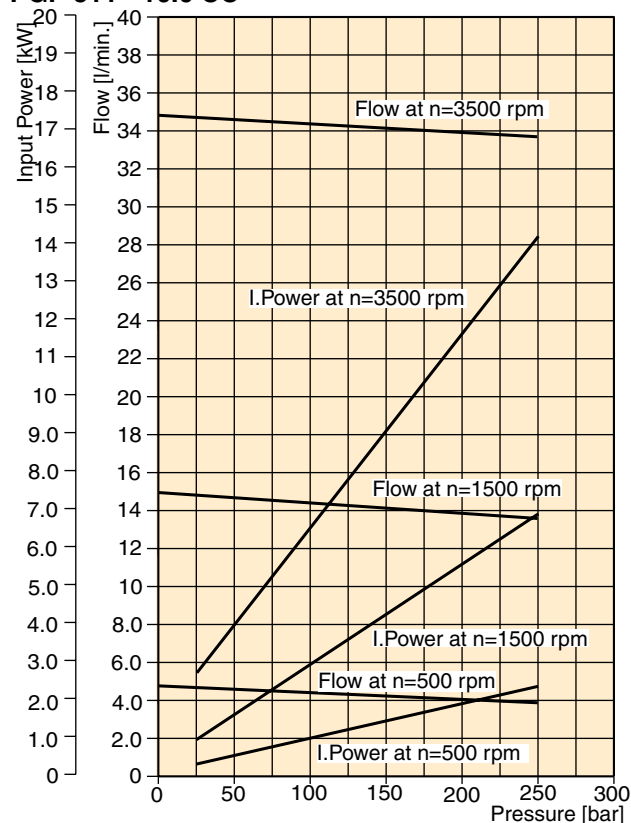
³⁾ Only for motors

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

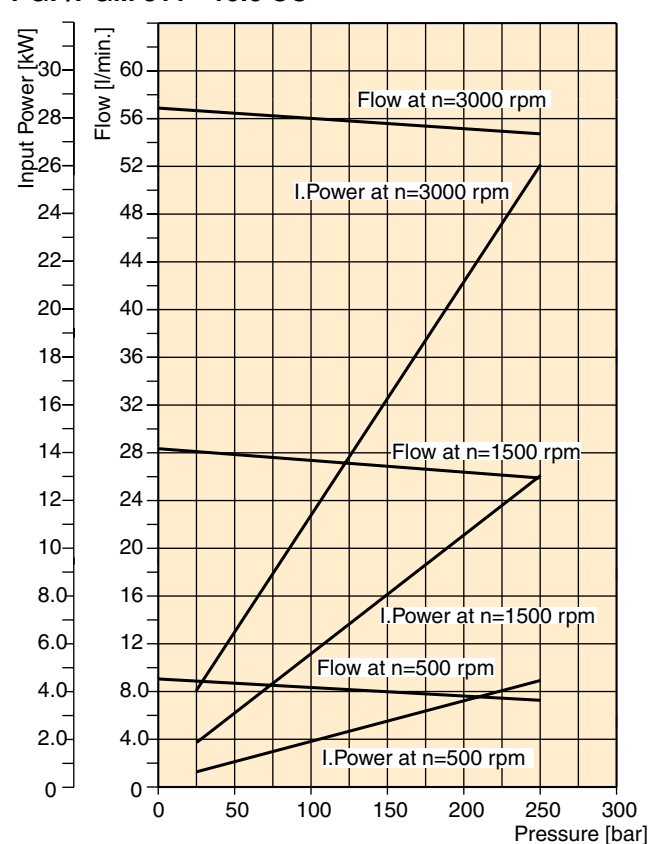
PGP/PGM 511 - 6.0 CC



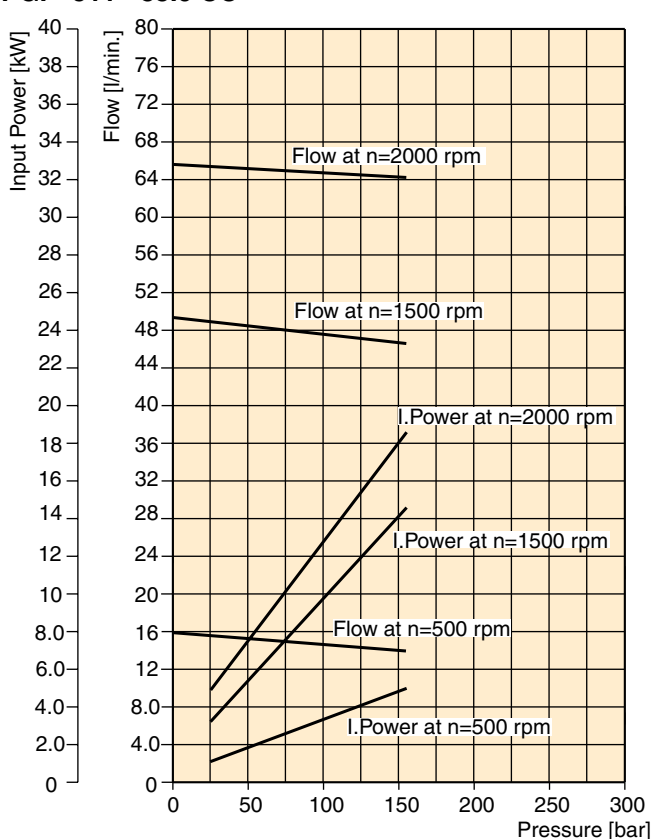
PGP 511 - 10.0 CC



PGP/PGM 511 - 19.0 CC



PGP 511 - 33.0 CC



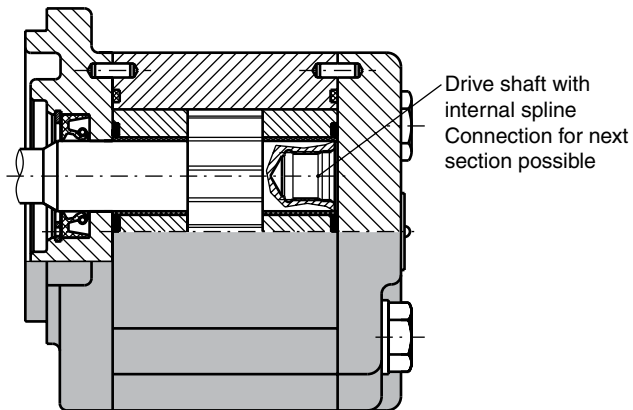
Fluid Temperature = $45 \pm 2^\circ\text{C}$
Viscosity = $36 \text{ mm}^2/\text{s}$
Inlet Pressure = $0.9 + 0.1 \text{ bar absolute}$

PGP/PGM 511 Specification - Standard Displacements

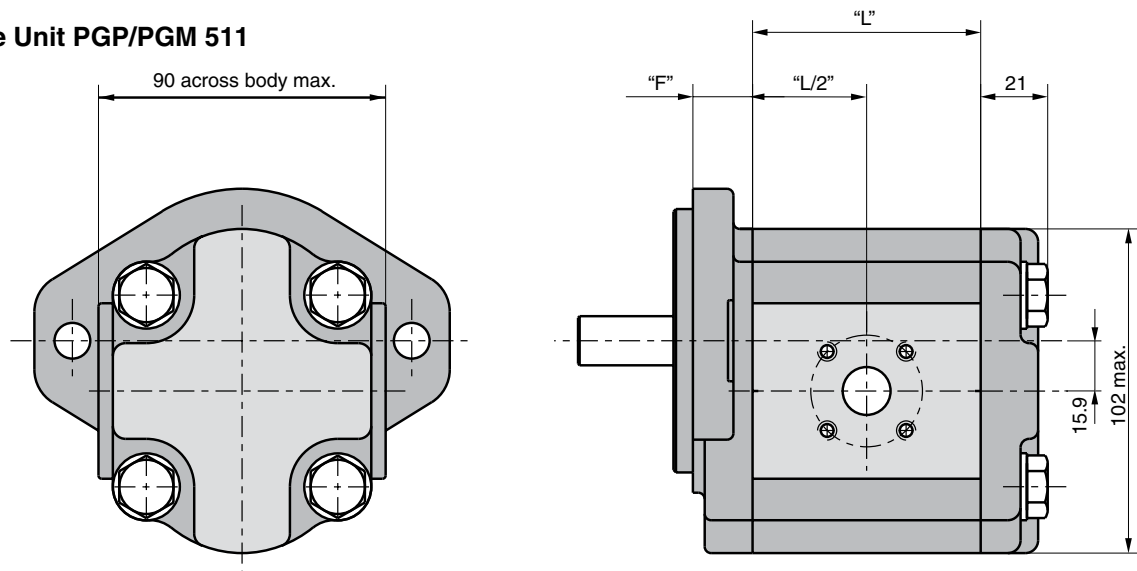
Pump Displacement	Code	0060	0080	0100	0110	0140	0160	0190	0230	0270	0330
	cm ³ /rev	6.0	8.0	10.0	11.0	14.0	16.0	19.0	23.0	27.0	33.0
Max. Continuous Pressure	bar	250	250	250	250	250	250	250	225	190	155
Minimum Speed @ 0 Inlet & Max. outlet pressure	rpm	500	500	500	500	500	500	500	500	500	500
Maximum Speed @ 0 Inlet & Max. outlet pressure	rpm	3500	3500	3500	3500	3500	3500	3250	2750	2350	2000
Pump Input Power @ 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 ¹⁾	kg	3.40	3.47	3.55	3.57	3.71	3.79	3.91	4.06	4.21	4.45

¹⁾ Single pump with Flange Q1 and Port end cover B1

Distributor Unit PGP 511



Single Unit PGP/PGM 511

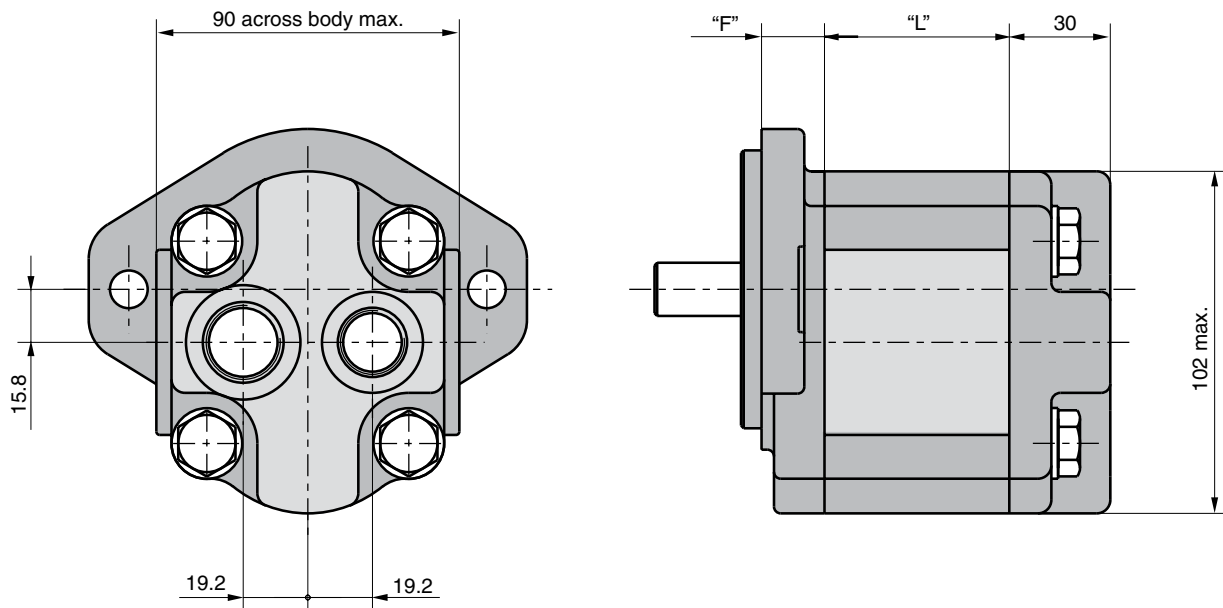


Dimension "L" see table above

Dimension "F" see flanges on pages 31 to 34

Dimension Shafts see pages 38 to 40

Single Unit PGP/PGM 511 with rear ports

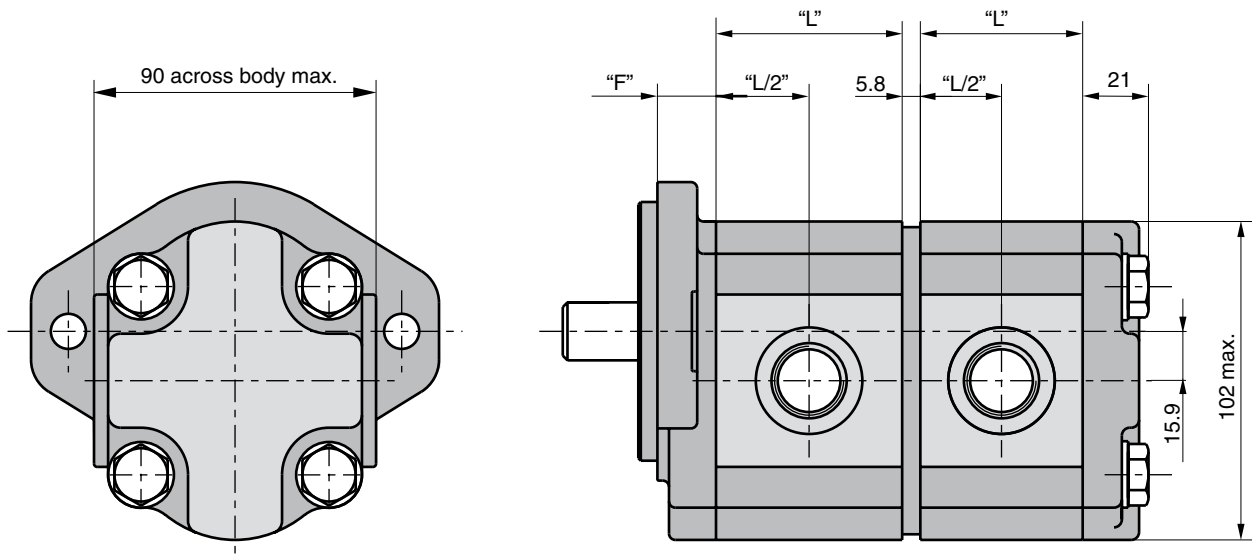


Dimension "L" see table on page 29

Dimension "F" see flanges on pages 31 to 34

Dimension Shafts see pages 38 to 40

Tandem Unit PGP/PGM 511



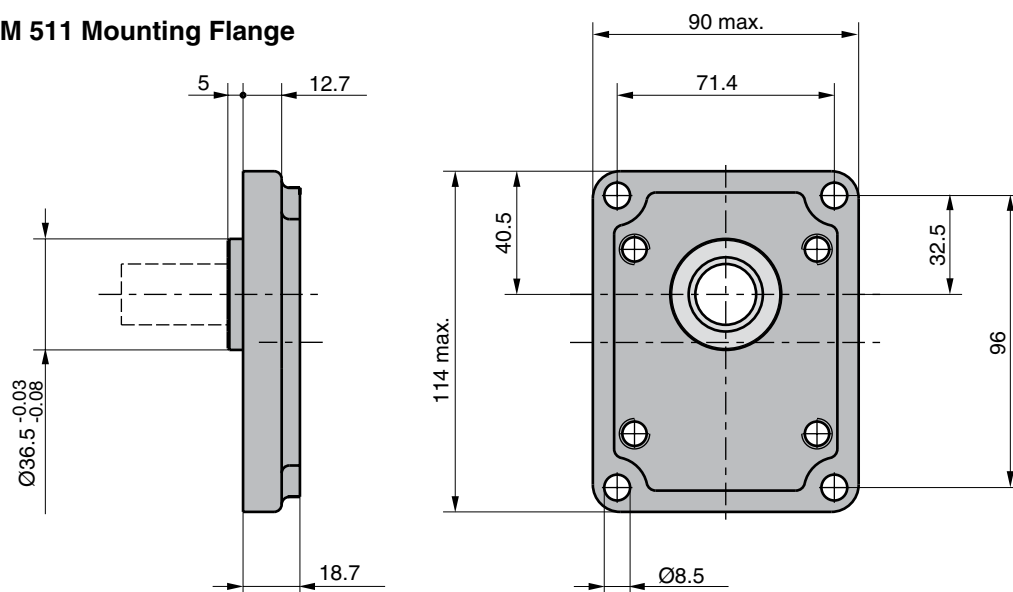
Dimension "L" see table on page 29

Dimension "F" see flanges on pages 31 to 34

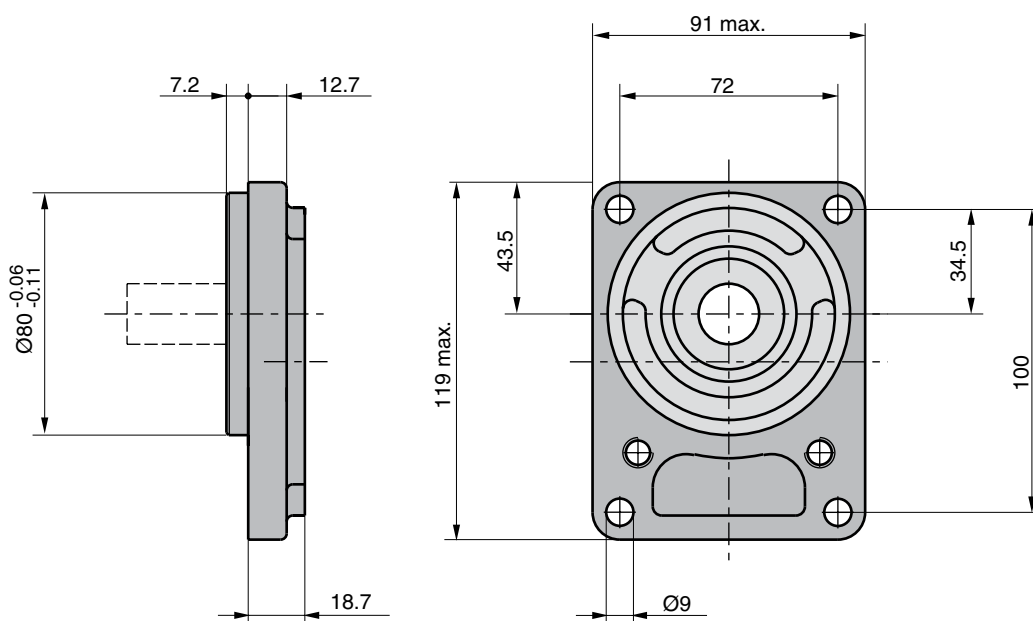
Dimension Shafts see pages 38 to 40

PGP/PGM 511 Mounting Flange

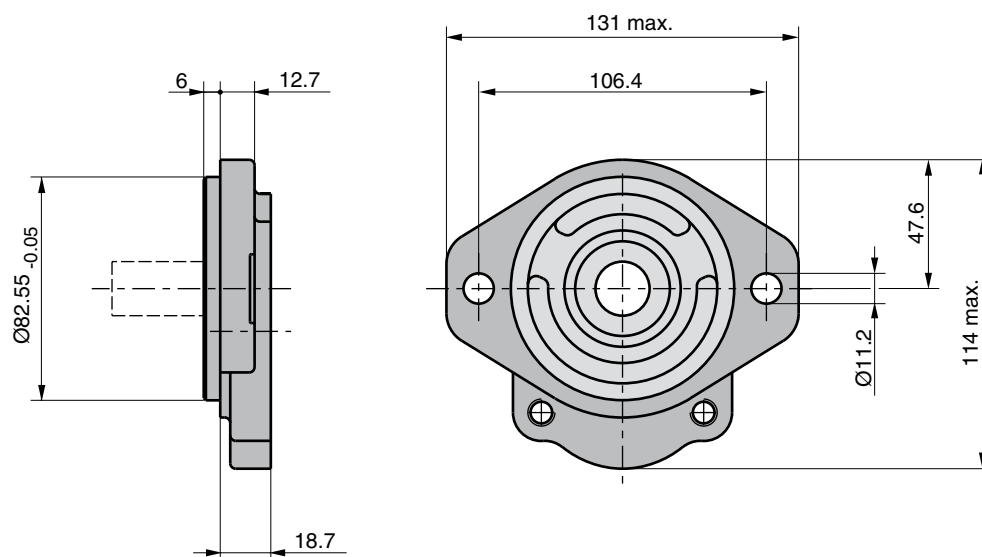
Code D3



Code D4

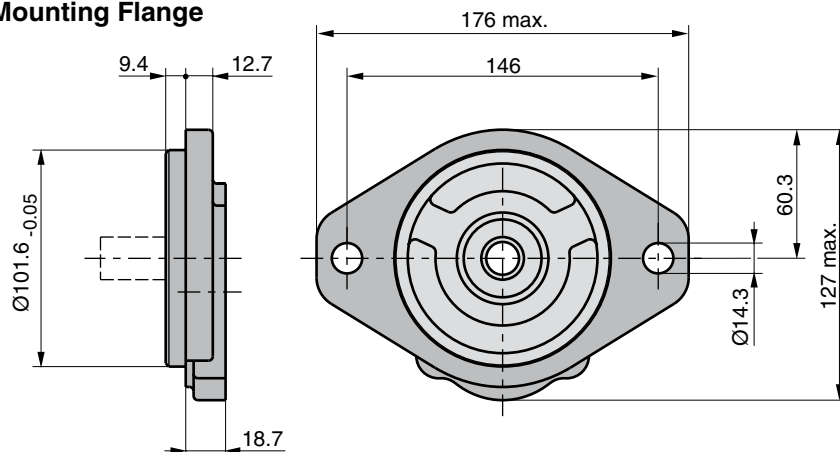


Code H2

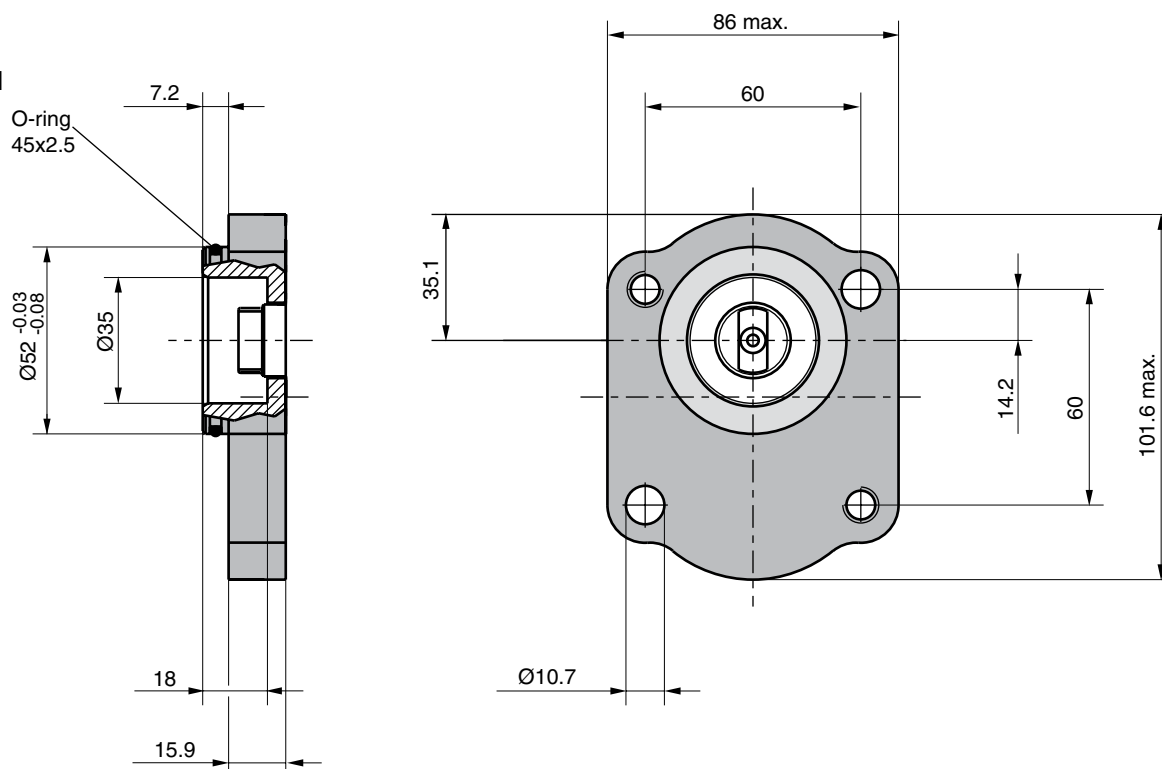


PGP/PGM 511 Mounting Flange

Code H3

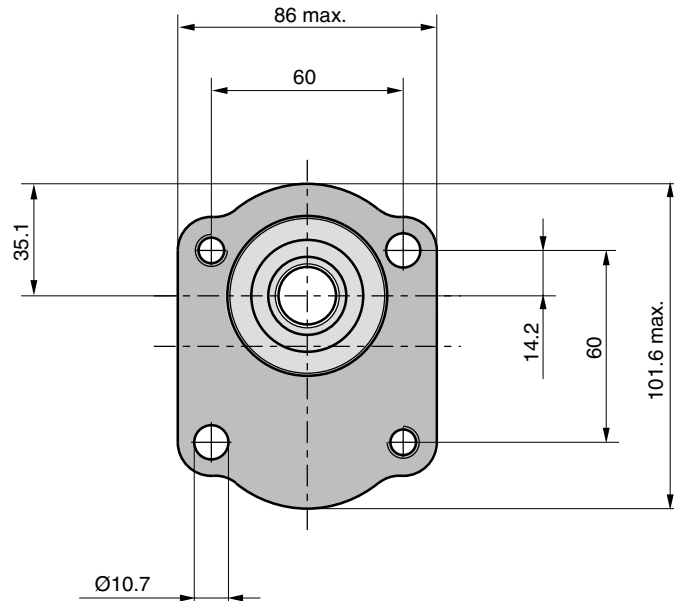
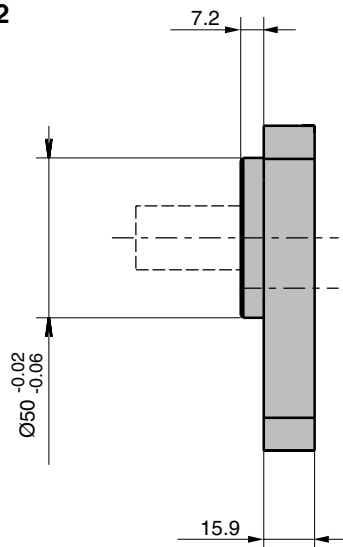


Code Q1

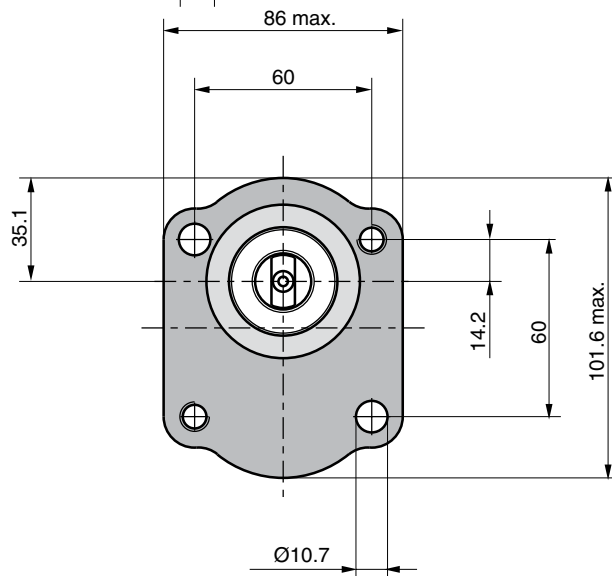
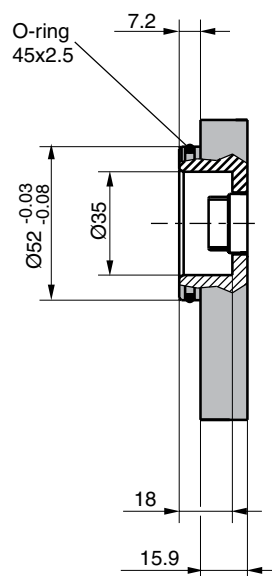


PGP/PGM 511 Mounting Flange

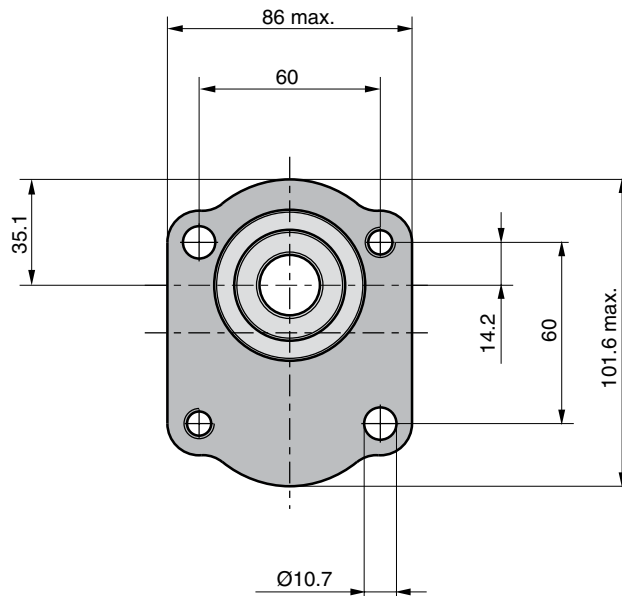
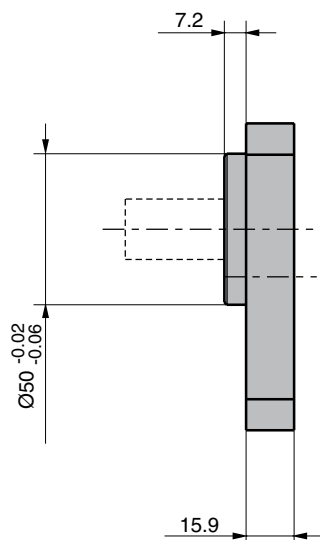
Code Q2



Code Q3

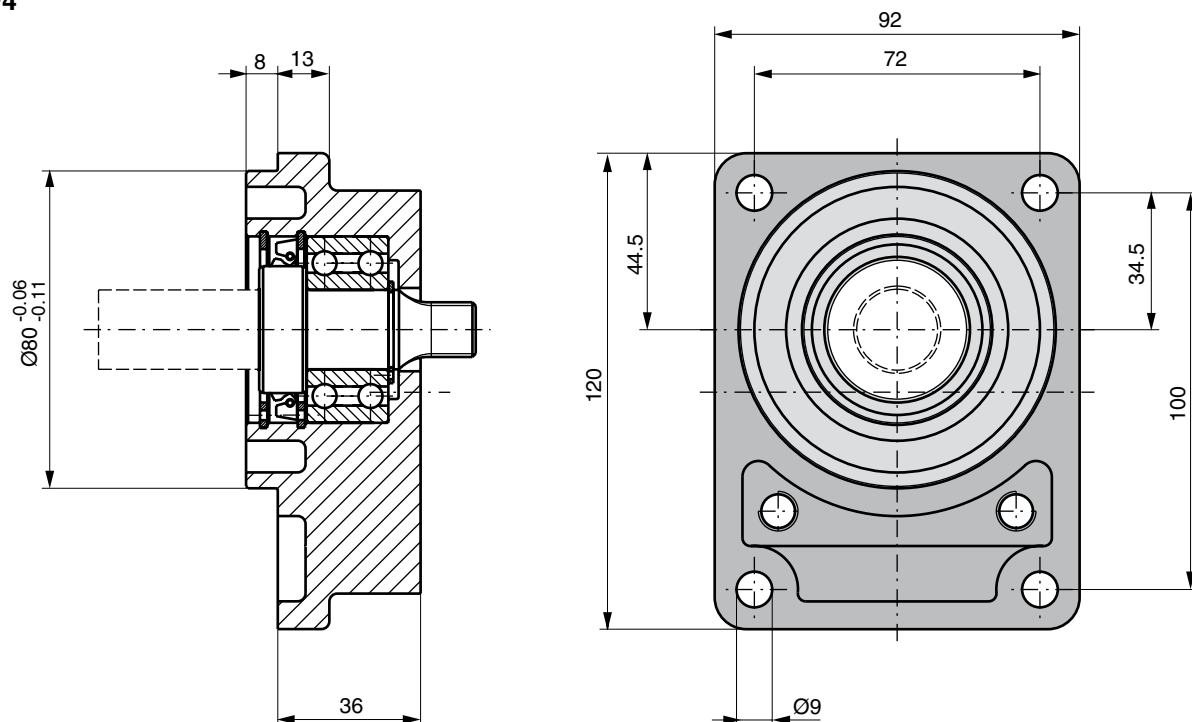


Code Q4

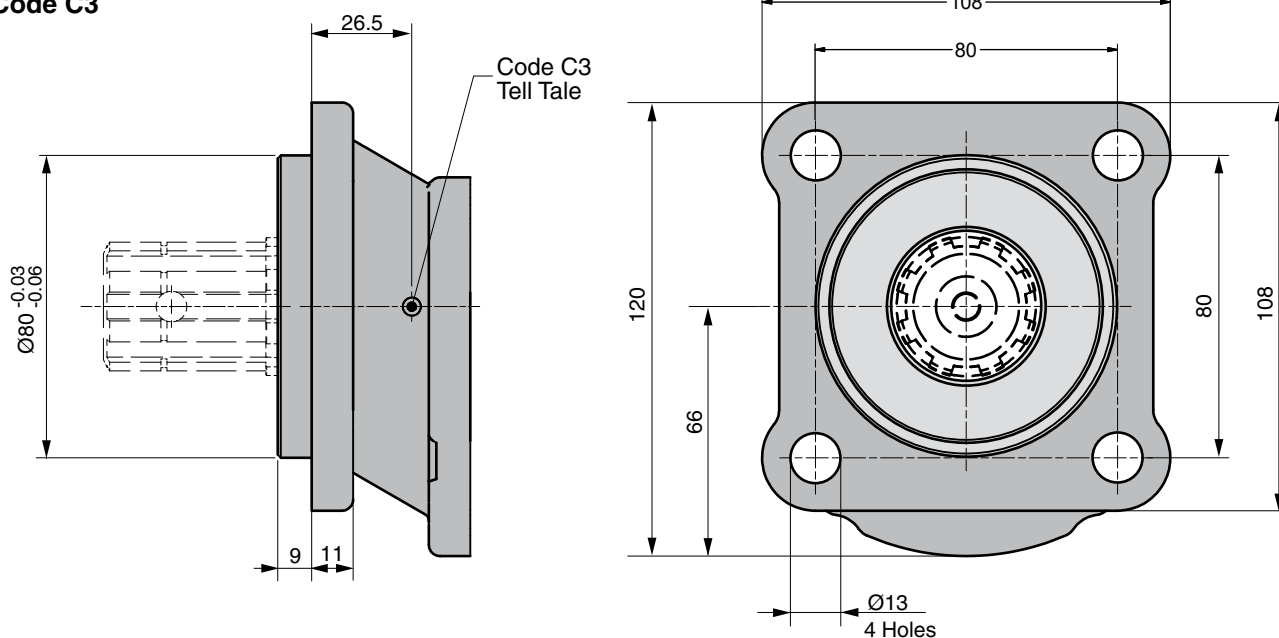


PGP/PGM 511 Mounting Flange

Code F4



Code C3



Outboard Bearing PGP-PGM 511

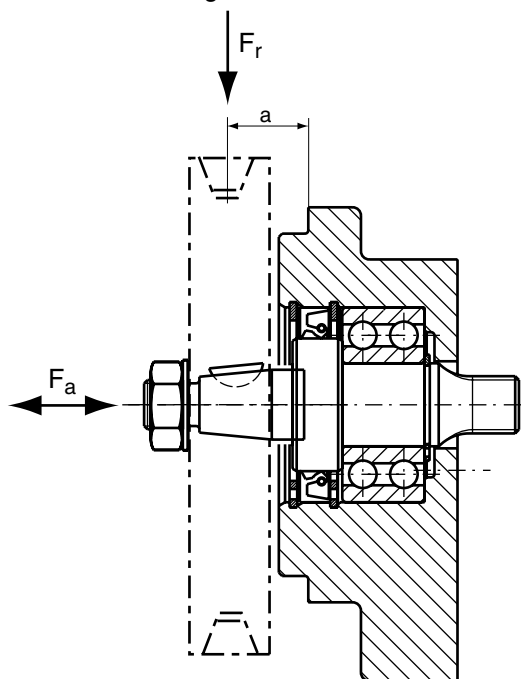
Bearing loads for code F4

Units subject to axial or radial loads, for instance drive with V-belts or gear wheels, must be specified with an outboard bearing.

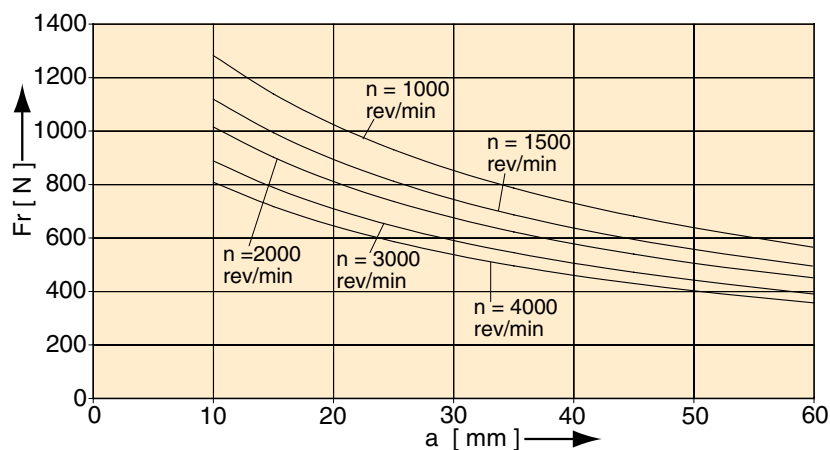
The diagrams below show the maximum axial or radial loads that can be tolerated referred to a bearing life of $L_H = 1000$ h.

F_r is reduced by 0,7 F_a when axial loading is applied.

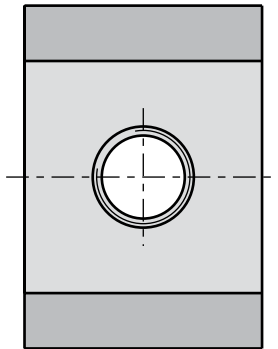
Outboard Bearing Code F4



Shaft load for outboard bearings PGP/PGM 511



PGP/PGM 511 Porting

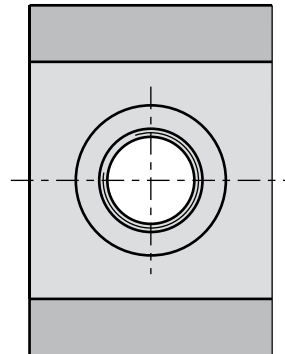
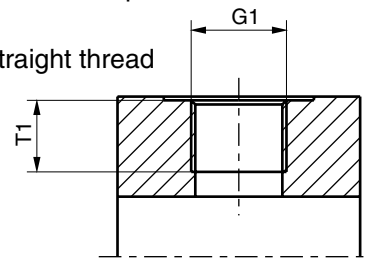


Code E

British Standard Pipe

Code G

Metric straight thread



Code D

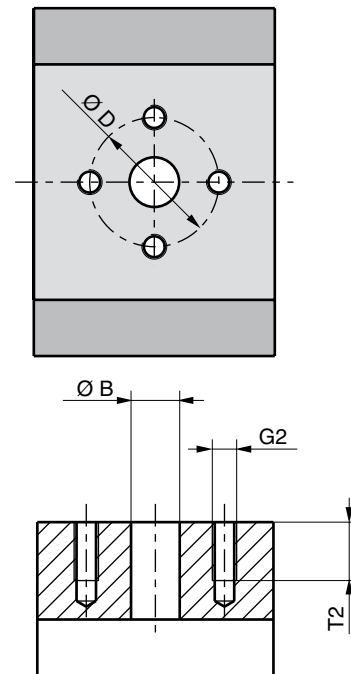
SAE straight thread

PGP/PGM 511

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
E2	3/8-19 BSP	12.0
E3	1/2-14 BSP	14.0
E4	5/8-14 BSP	16.3
E5	3/4-16 BSP	16.0
E6	1-11 BSP	18.0
E7	1 1/4-11 BSP	20.0
G1	M 14x1.5	12.0
G3	M 18x1.5	12.0
G4	M 22x1.5	14.0
G5	M 26x1.5	16.0
G7	M 30x1.5	12.0

Code L

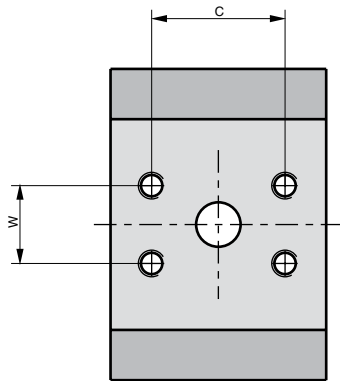
4-Bolt flange



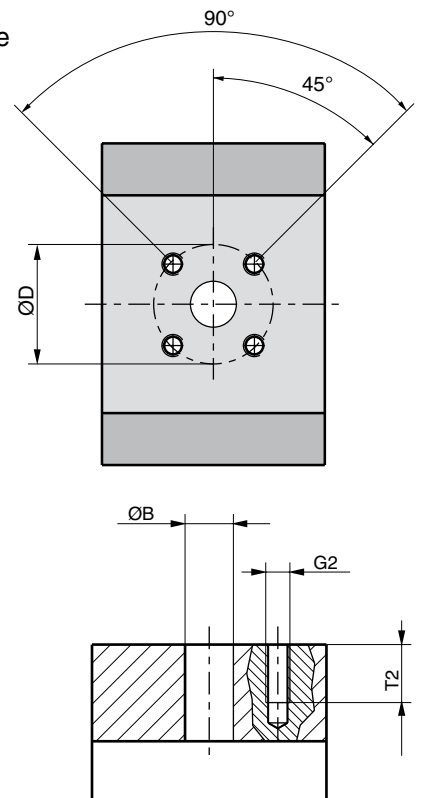
PGP/PGM 511 Porting

Code N
 SAE Split flange

Code P
 SAE Split flange
 metric thread



Code J
 European flange

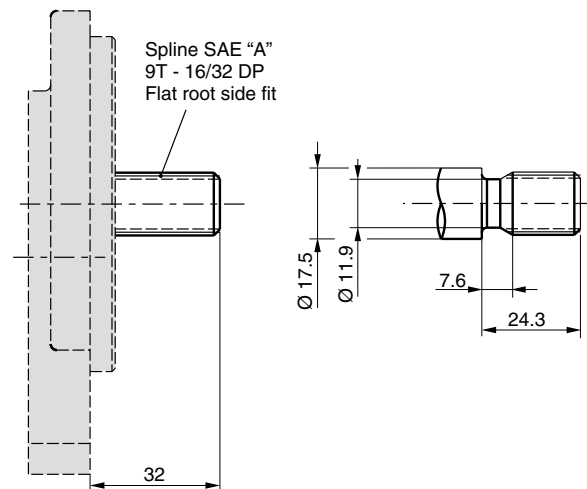


PGP/PGM 511

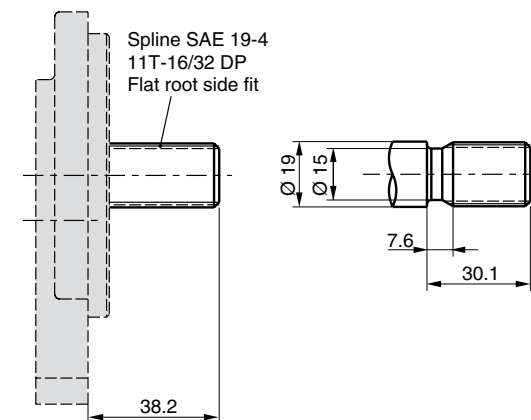
Code	G2	Ø B	Ø D	S	C	W	T2
	Thread	Dimensions					
J3	M6	8.0	30.0				12.0
J4	M6	12.0	30.0				12.0
J5	M6	15.0	35.0				12.5
J6	M8	15.0	40.0				15.0
J7	M6	20.0	40.0				13.0
J8	M8	18.0	55.0				15.0
J9	M8	26.0	55.0				15.0
K1	5/16-18 UNC	19.0		30.48			15.0
K2	M8	19.0		30.48			15.0
K3	M6	19.0		32.00			13.0
K4	M6	16.0		25.15			13.0
L1	M6	13.0	30.0				13.0
L2	M8	19.0	40.0				15.0
N1	5/16-18 UNC	12.7			38.10	17.48	15.0
N2	3/8-16 UNC	19.0			47.63	22.23	14.0
N3	3/8-16 UNC	25.4			52.37	26.19	20.6
N4	7/16-14 UNC	31.8			58.72	30.17	20.6
P1	M8	12.7			38.10	17.48	15.0
P2	M10	19.0			47.63	22.23	20.6
P3	M10	25.4			52.37	26.19	21.4
P4	M10	31.8			58.72	30.17	20.6

PGP/PGM 511 Drive Shaft

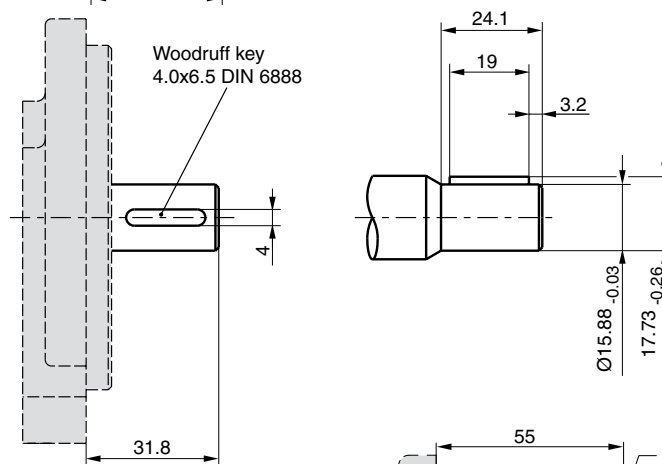
Code A1



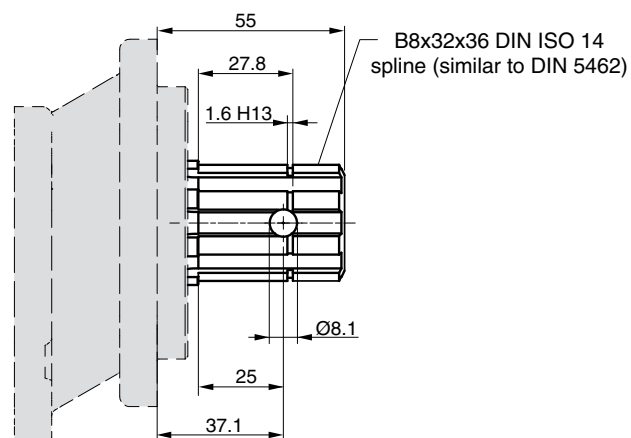
Code C1



Code K1

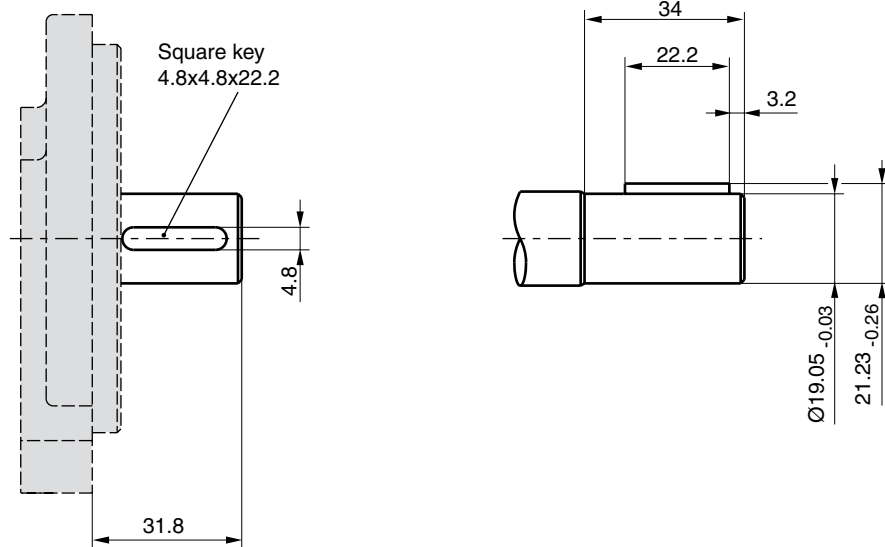


Code F5

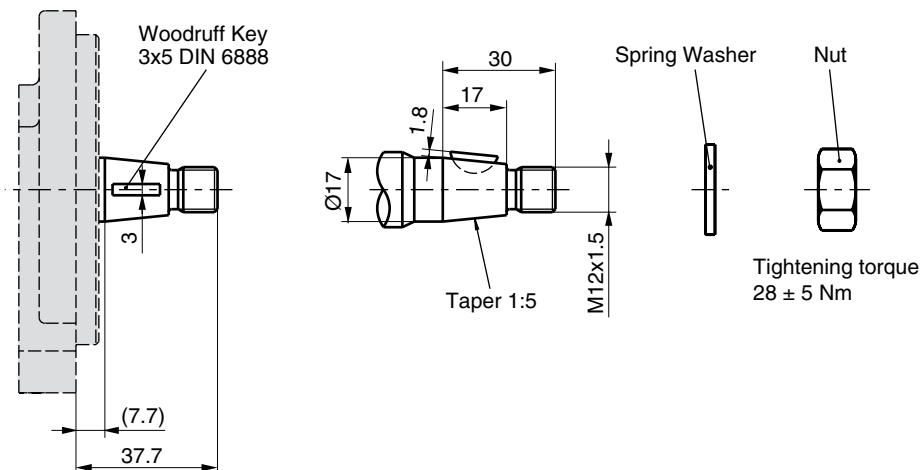


PGP/PGM 511 Drive Shaft

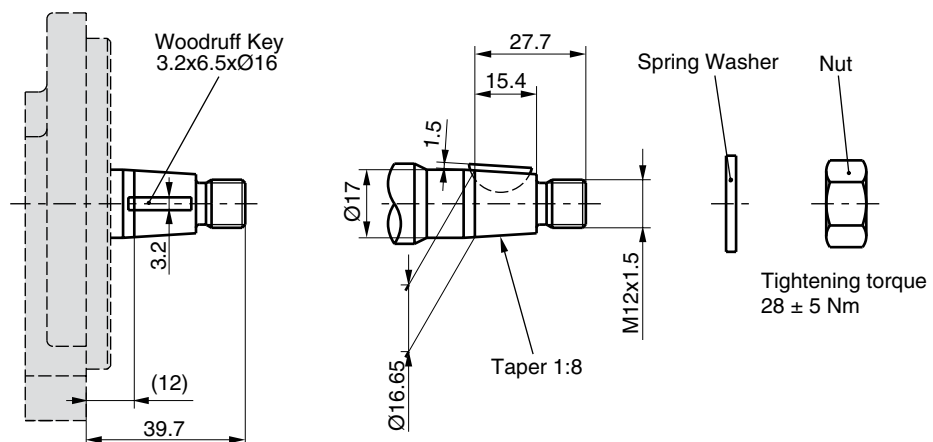
Code L6



Code S1

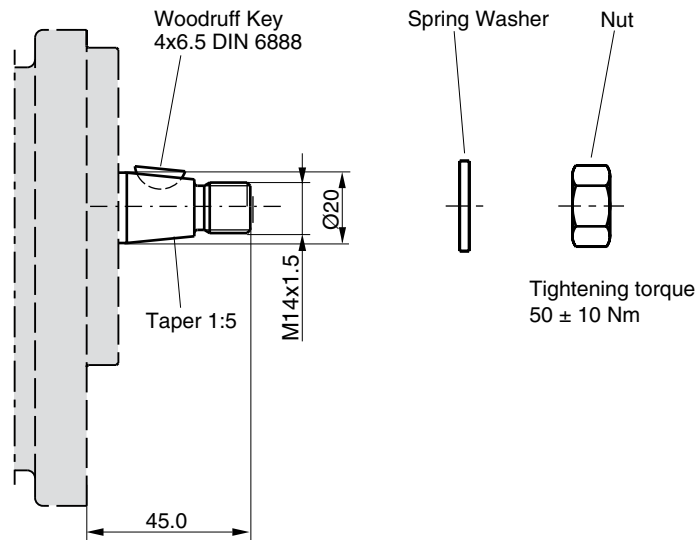


Code S2

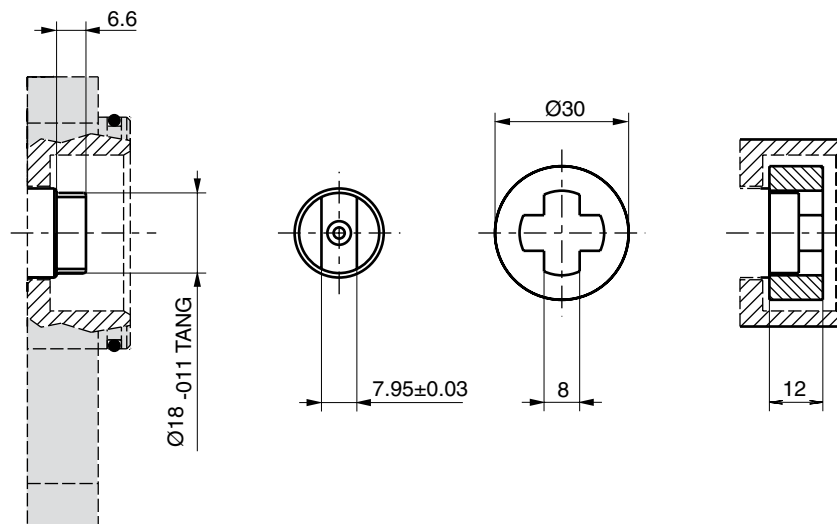


PGP/PGM 511 Drive Shaft

Code S8



Code V5



PGP/PGM 511 - Shaft Load Capacity

Code	Description	Torque Rating [Nm]
A1	9T, 16/32DP, 32L, SAE“A” spline	86
C1	11T, 16/32DP, 38.2L, SAE 19-4 spline	166
F5	B8x32x36 DIN ISO 14 (similar to DIN 5462) spline	166
K1	Ø15.88, 4.0 KEY, no thread, 32L, SAE“A” parallel	75
L6	Ø19.05, 4.8 KEY, no thread, 32L, SAE 19-1 parallel	145
S1	Ø17.0, 7.7L, 3.0 KEY, M12x1.5 taper 1:5	193
S2	Ø16.65, 12.0L, 3.2 KEY, M12x1.5 taper 1:8	198
S8	Ø20, 9.4L, 4.0 KEY, M14x1.5 taper 1:5	110
V5	8x6.5 short shaft tang drive	60
	Multiple pump connection shaft	110

$$\text{Torque [Nm]} = \frac{\text{Displacement [cm}^3\text{/rev]} \times \text{Pressure [bar]}}{57.2}$$

