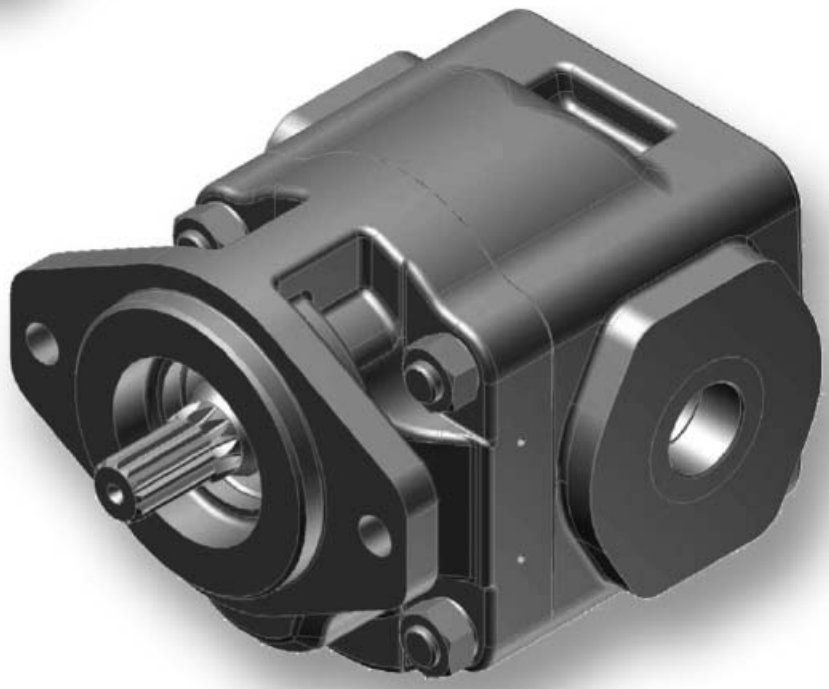

Gear Motors

Series PGM
Fixed Displacement Motors, Aluminium and Cast-Iron Designs

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

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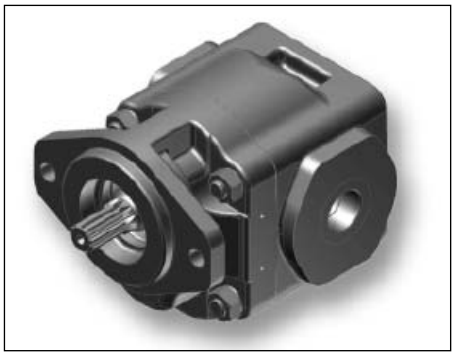
PGM 500
Heavy-duty Aluminium Body Gear Motors

Motor PGM 511 Displacement	Code	0060	0080	0100	0110	0140	0160	0190	0230	0270	033
	cm³/rev	6.0	8.0	10.0	11.0	14.0	16.0	19.0	23.0	27.0	33.0
Max. Working Pressure	bar	250	250	250	250	250	250	250	225	190	155
Minimum Speed of rotation	rpm	500	500	500	500	500	500	500	500	500	500
Maximum Speed of rotation	rpm	3500	3500	3500	3500	3500	3500	3250	2750	2350	2000
Maximum Motor input flow	l/min	21	28	35	38.5	49	56	61.8	63.3	63.5	66
Typical torque at work pressure	Nm	21.5	28.6	35.8	39.4	50.1	57.3	68.0	74.1	73.5	73.3
Approximate Weight	kg	3.40	3.47	3.55	3.57	3.71	3.79	3.91	4.06	4.21	73.3

PGM 600
Heavy-duty Cast-iron Body Gear Motors



Motor PGM 620 Displacement	Code	0160	0190	0230	0260	0290	0330	0360	0370	0410	0440	0500	0520
	cm³/rev	16.0	19.0	23.0	26.0	29.0	33.0	36.0	37.0	41.0	44.0	50.0	52.0
Max. Working Pressure	bar	275	275	275	275	275	275	250	250	220	210	210	210
Minimum Speed of rotation	rpm	500	500	500	500	500	500	500	500	500	500	500	500
Maximum Speed of rotation	rpm	3500	3500	3500	3500	3500	3500	3500	3500	3500	3500	3000	3000
Maximum Motor input flow	l/min	56	66.5	80.5	91	102	116	126	130	144	154	150	156
Typical torque at work pressure	Nm	63.0	74.8	90.6	102.4	114.2	130.0	128.9	132.5	129.2	132.4	150.4	156.4
Approx. Weight	kg	12.0	12.1	12.2	12.3	12.6	12.7	12.8	12.9	13.0	13.1	13.3	13.4

Motor PGM 640 Displacement	Code	300	350	400	450	500	550	600	650	700	750	800	900	1000
	cm³/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. Working Pressure	bar	310	310	310	310	310	310	290	265	245	225	210	190	180
Minimum Speed of rotation	rpm	500	500	500	500	500	500	500	500	500	500	500	500	500
Maximum Speed of rotation	rpm	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000
Maximum Motor input flow	l/min	90	105	120	135	150	165	180	195	210	225	240	270	300
Typical torque at work pressure	Nm	133.2	155.4	177.6	199.8	222.0	244.2	249.2	246.7	245.7	241.7	240.6	245.0	258.0
Aprox. Weight	Kg	20.6	20.6	21.2	21.2	22.0	22.0	22.6	22.6	23.3	23.3	25.0	25.5	25.5

Parker Hannifin
Pump and Motor Division
Chemnitz, Germany

PGM 500 motors offer superior performance, high efficiency and low noise operation at high operating pressures. They are produced in size PGM 511 with displacements ranging from 6 to 33 cm³/rev. A wide variety of standard options is available to meet specific application requirements.

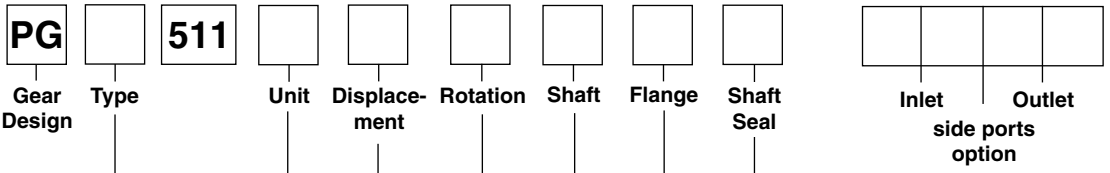
Characteristics

- **Up to 250 bar continuous operation**
  High strength materials and large journal diameters provide low bearing loads for high pressure operation.
- **Low noise**
  A12 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 provide unmatched design and application versatility for example in fan drives, lawn mowers or construction equipment.

Characteristics

Motor 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 - 3500 rpm, see Technical Data
Theor. displacement	See Technical Data
Axial / Radial load	Units subject to axial or radial loads must be specified with an outboard bearing.
Outlet pressure	The outlet pressure for motors w/o drain line must be smaller as the max. allowable pressure of the shaft seal.
Inlet 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.

Fluid viscosity	Range of operating viscosity 8 to 1000 mm²/s Max. permissible operating pressure dependent on viscosity. Viscosity range for cold start 1000 to 2000 mm²/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 motor only in indicated direction of rotation.



Code	Type
M	Motor

Code	Unit
	Motor
A	Standard Motor without checks
B	Standard Motor with two checks
C	Standard Motor w. one anti cavitation check (ACC)
D	Standard Motor w. one ACC + restrictor

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

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, 4.8Key, no thread, 32L, SAE 19-1, parallel
S1	Ø17.0, 7.7L, 3.0Key, 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

*) To be used with outboard bearing only

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

*) Others on request

Code	Rotation
C	Clockwise
A	Counter clock-wise
B	bi-directional

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.

B	1	B	1		
No rear ports (rear ports on request)				**Motor Drain Option**	**Drain Posi-tion**

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	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	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
Q2	60.0x60.0 - Ø50.0 w. seal ‚O' 'thrubolt flange
Q4	60.0x60.0 - Ø50.0 w. seal ‚O',thrubolt flange
F4	72.0x100.0 - Ø80.0 rect., w. OBB and cont. drive shaft

Code	Port Options
B1	No ports
D3[2)]	3/4 - 16 UNF thread
D4[2)]	7/8 - 14 UNF thread
D5[2)]	1 1/16 - 12 UN thread
D6[2)]*	1 5/16 - 12 UN thread
D7[2)]*	1 5/8 - 12 UN thread
E3	1/2 - 12 BSP thread
E4*	5/8 - 14 BSP thread
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
J4[2)]*	12 mm - Ø30 mm - M6 square
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
T1*	12.7 mm - M8 Metric Split Flange
T2*	19.0 mm - M10 Metric Split Flange
T3*	25.4 mm - M10 Metric Split Flange

*) Not usable for rear ports

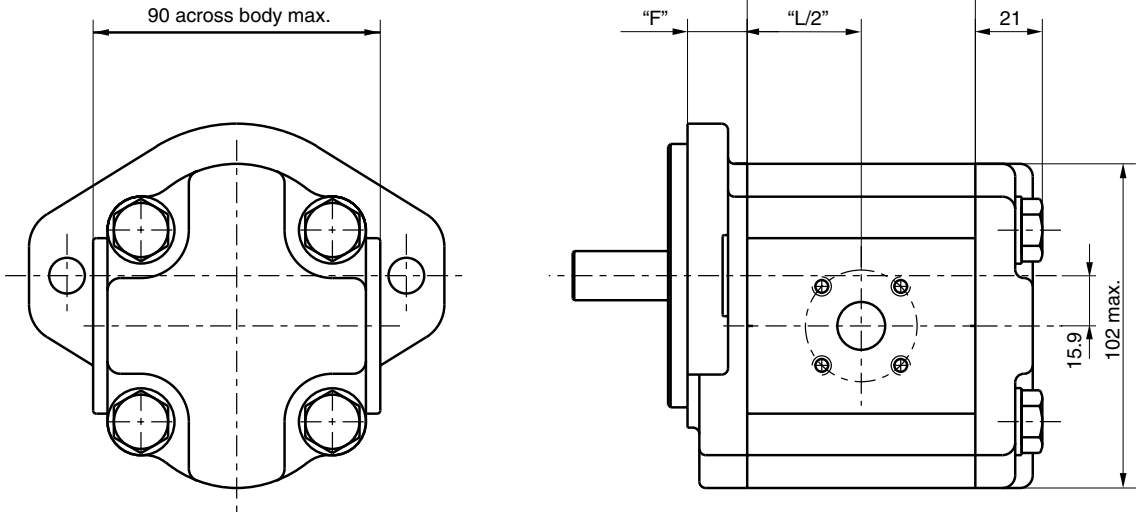
Example: J7 = inlet port
J7 = outlet port

PGM 511 Specification - Standard Displacements

Motor Displacement	Code	0060	0080	0100	0110	0140	0160	0190	0230	0270	033
	cm³/rev	6.0	8.0	10.0	11.0	14.0	16.0	19.0	23.0	27.0	33.0
Max. Working Pressure	bar	250	250	250	250	250	250	250	225	190	155
Minimum Speed of rotation	rpm	500	500	500	500	500	500	500	500	500	500
Maximum Speed of rotation	rpm	3500	3500	3500	3500	3500	3500	3250	2750	2350	2000
Typical torque at work pressure	Nm	21.5	28.6	35.8	39.4	50.1	57.3	68.0	74.1	73.5	73.3
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	73.3

[1] Single motor with Flange Q2 and Port end cover B1

Single Unit PGM 511



Dimension "L" see table above
Dimension "F" see flanges on pages 7 to 9
Dimension Shafts see pages 12 to 14

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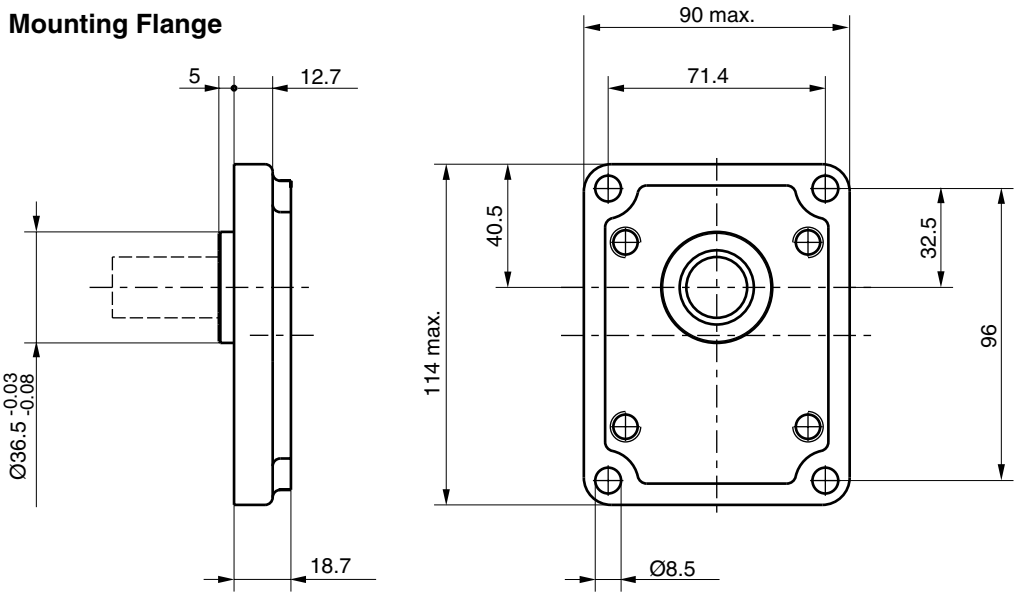
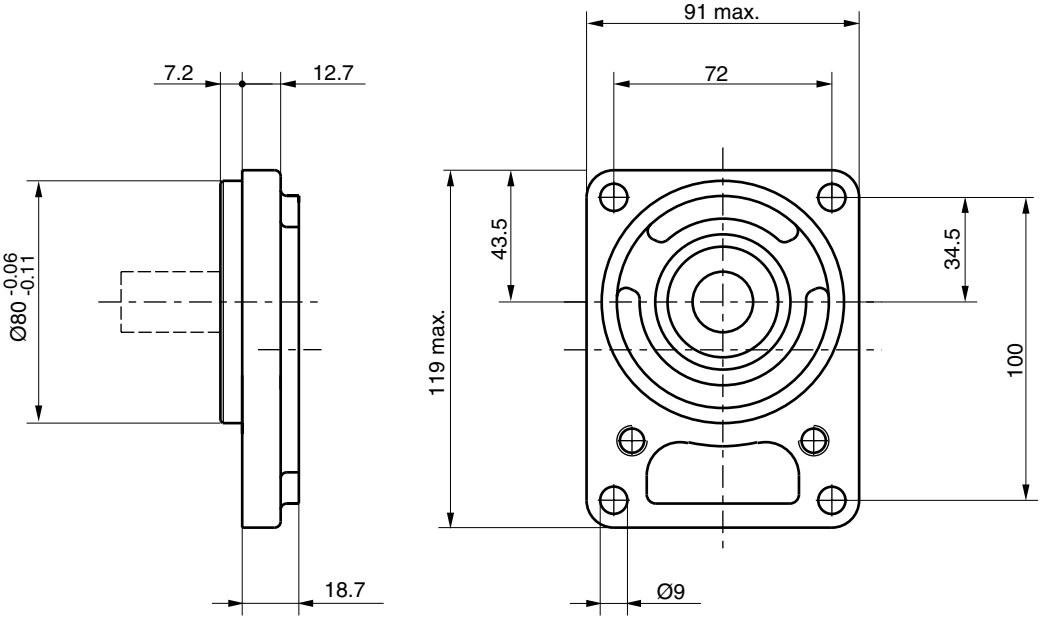
Pump and Motor Division
Chemnitz, Germany

PGM 511 Mounting Flange

Code D3



Code D4



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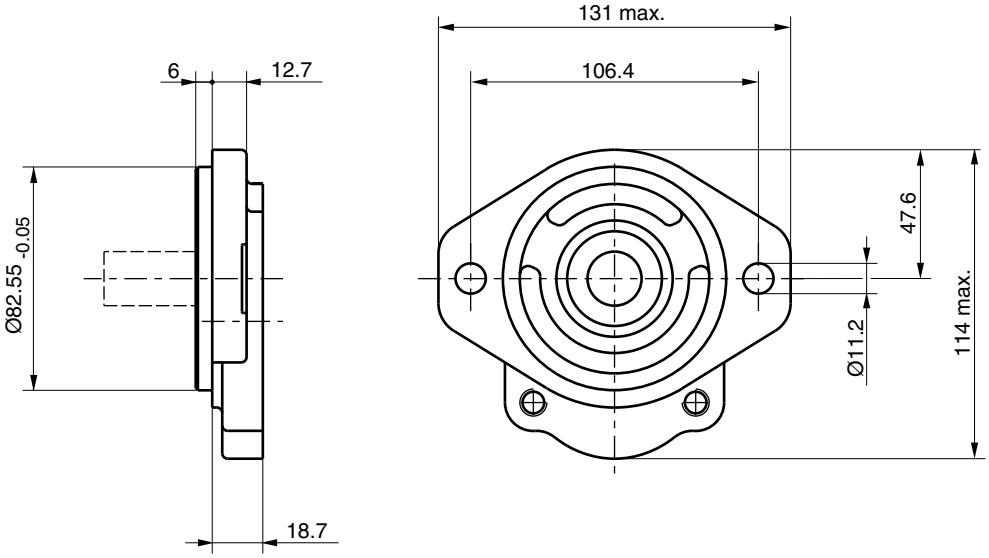
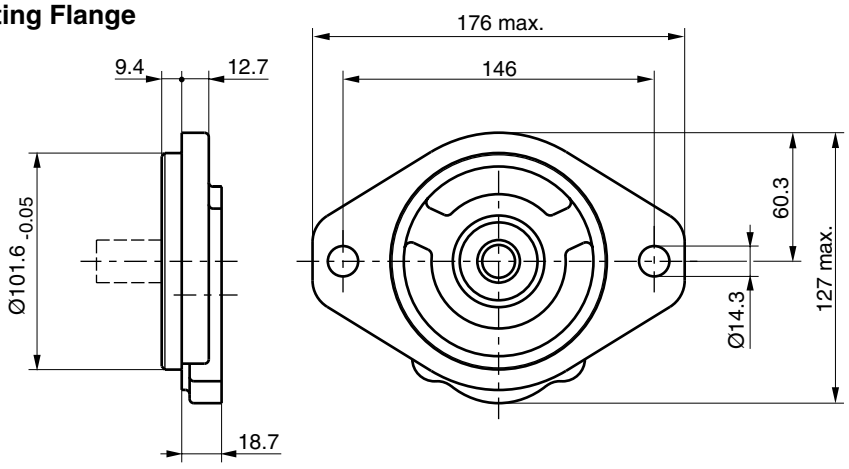
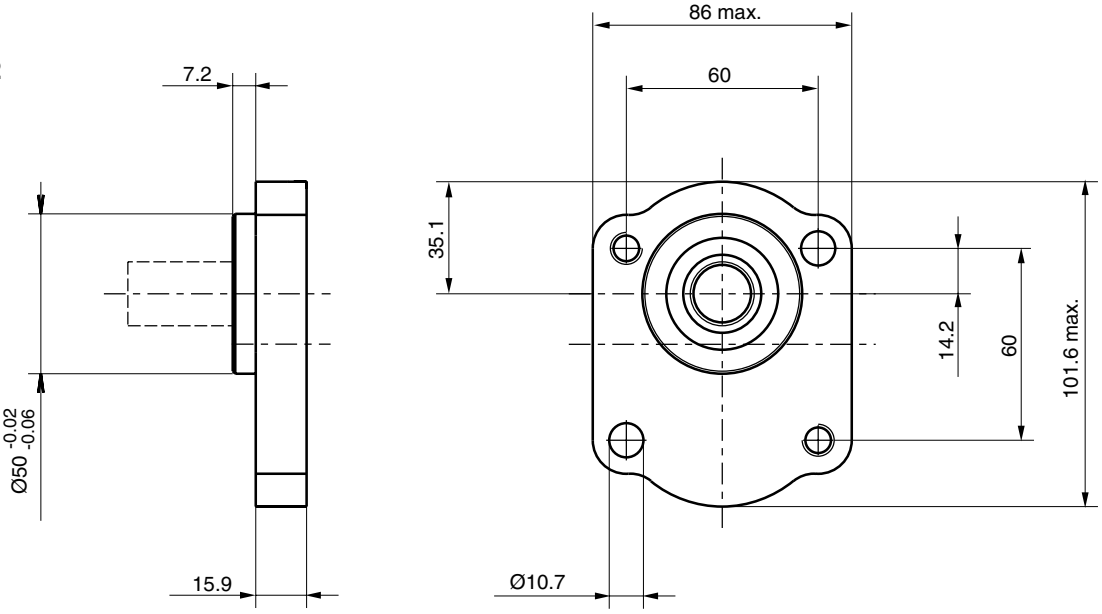


PGM 511 Mounting Flange

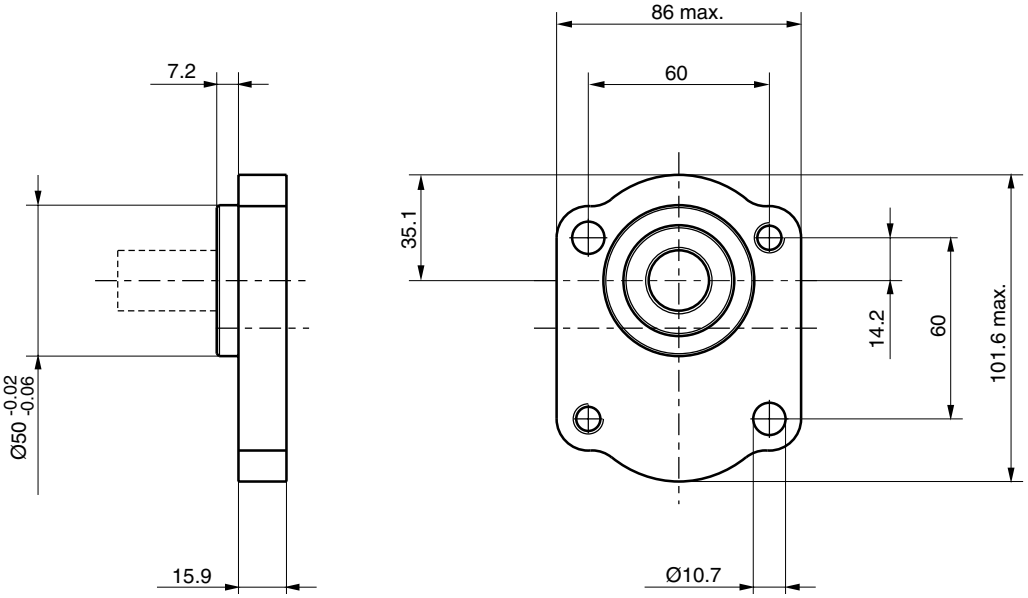
Code H3



Code Q2

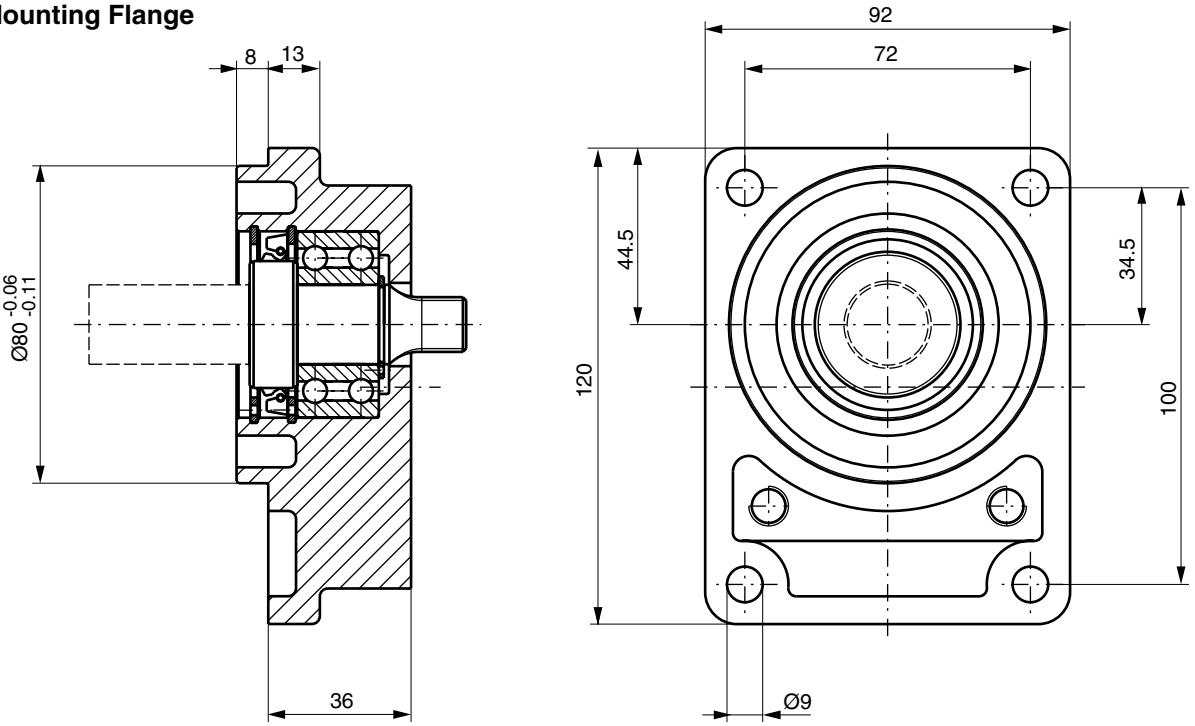


Code Q4



PGM 511 Mounting Flange

Code F4



Outboard Bearing PGM 511

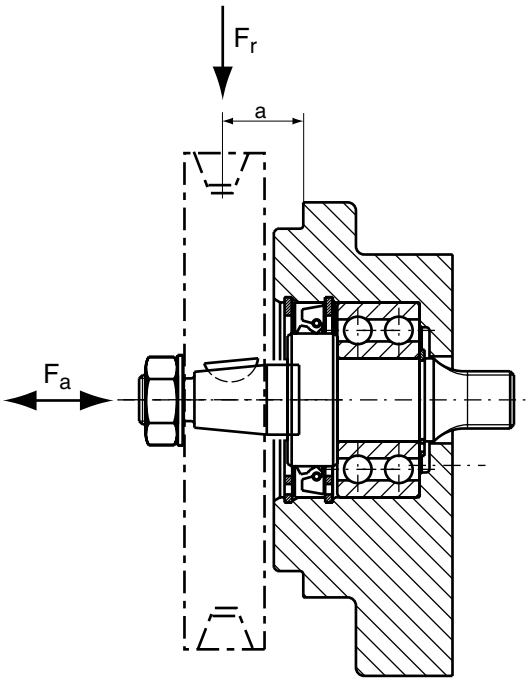
Bearing loads for code F4

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

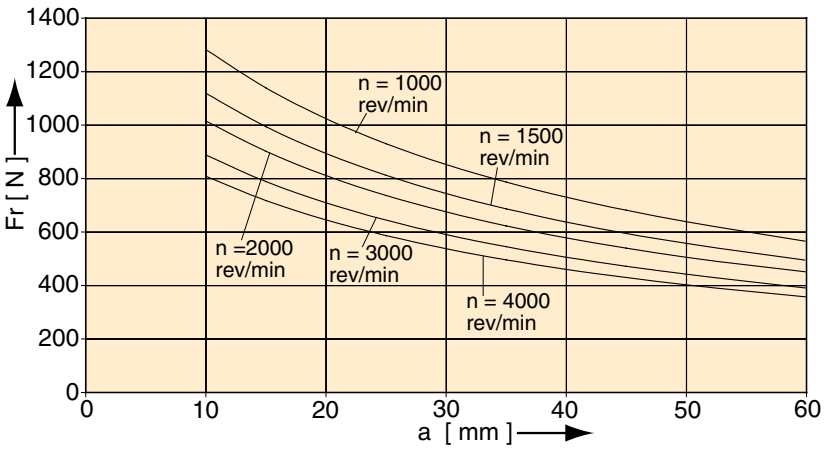
The diagrams below show the maximum axial or radial loads that can be tolerated referred to a bearing life of L_H = 1000 h.

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

Outboard Bearing Code F4



Shaft load for outboard bearings PGM 511



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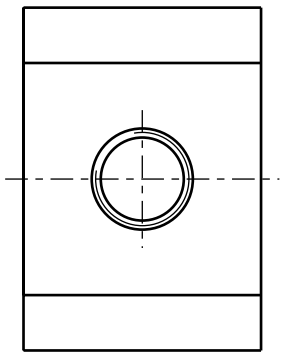
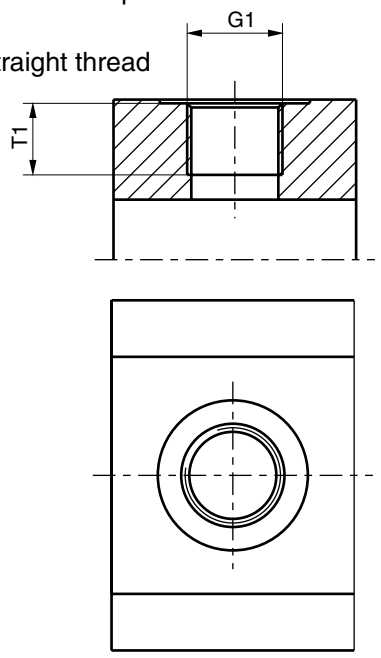
Pump and Motor Division
Chemnitz, Germany

PGM 511 Porting



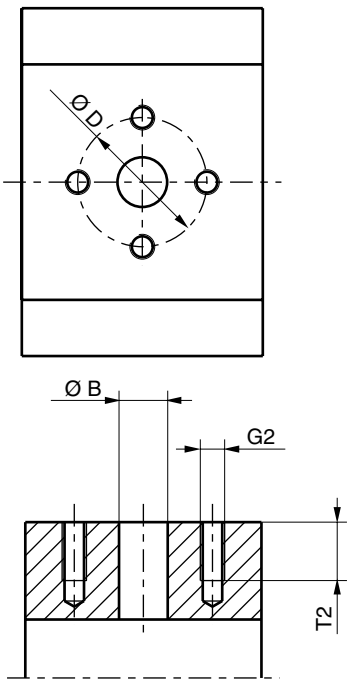
Code E
British Standard Pipe

Code G
Metric straight thread



Code D
SAE straight thread

Code L
4-Bolt flange



PGM 511

Code	G1	T1
	Thread	Dimensions
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
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

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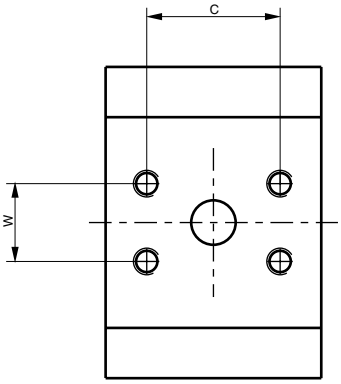
Chemnitz, Germany

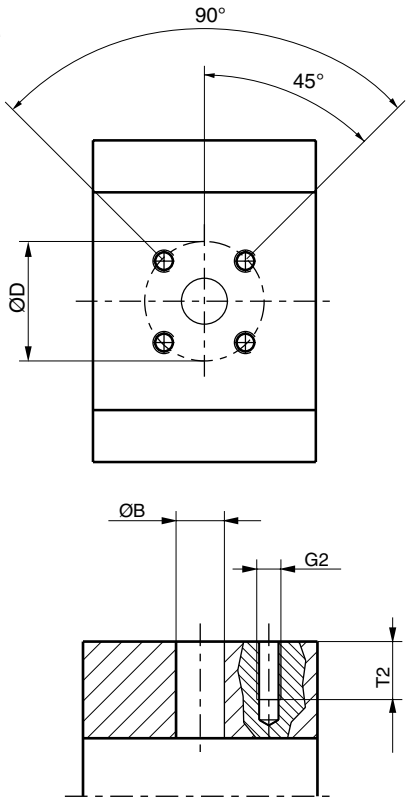
PGM 511 Porting

Code N
SAE Split flange

Code T
SAE Split flange
metric thread



Code J
European flange

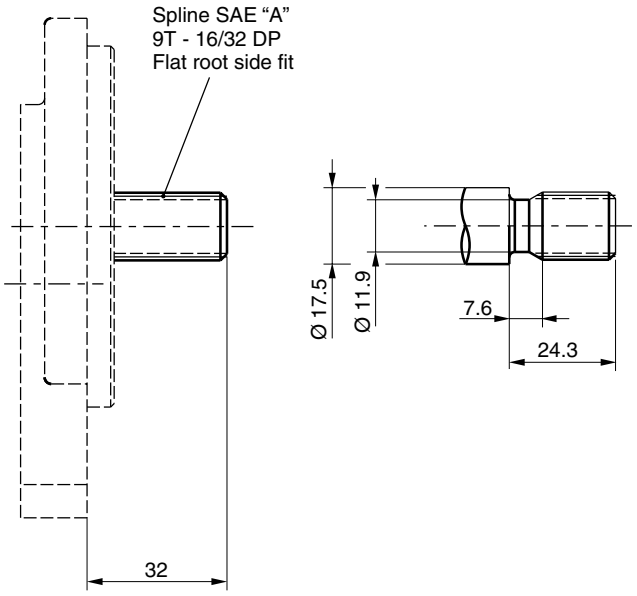


PGM 511

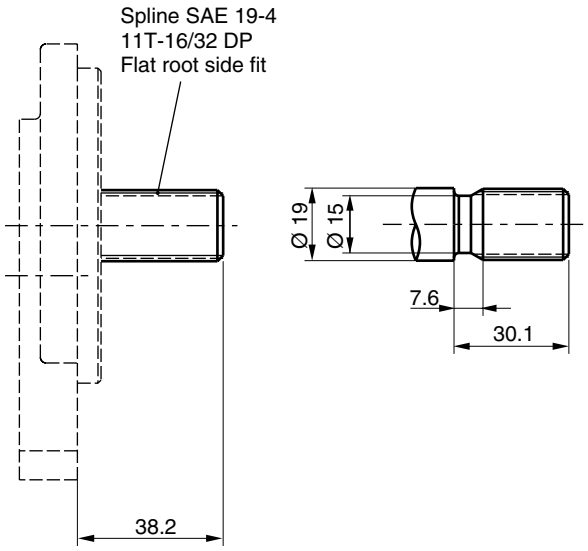
Code	G2	∅ B	∅ D	S	C	W	T2
	Thread	Dimensions					
J4	M6	12.0	30.0				12.0
J5	M6	15.0	35.0				12.5
J7	M6	20.0	40.0				13.0
J8	M8	18.0	55.0				15.0
J9	M8	26.0	55.0				15.0
L1	M6	13.0	30.0				13.0
L2	M8	19.0	40.0				15.0
T1	M8	12.7			38.10	17.48	15.0
T2	M10	19.0			47.63	22.23	20.6
T3	M10	25.4			52.37	26.19	21.4

PGM 511 Drive Shaft

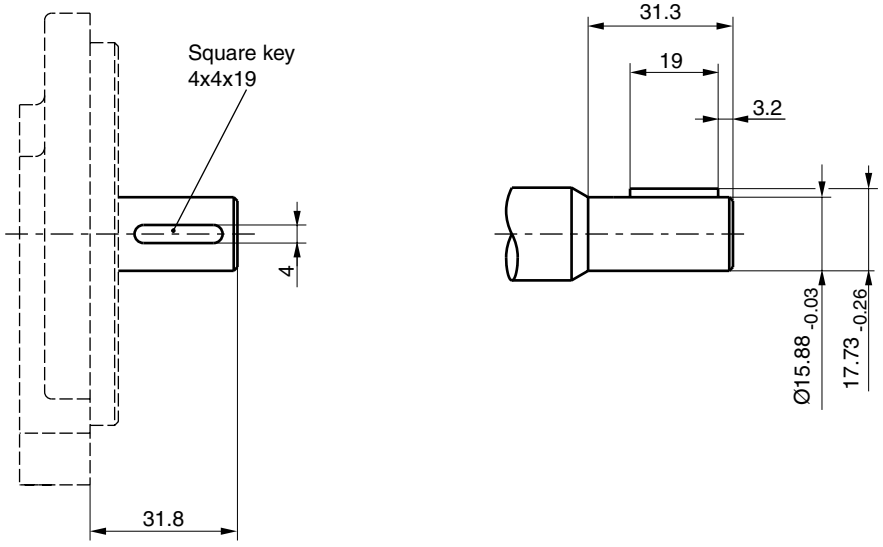
Code A1



Code C1



Code K1



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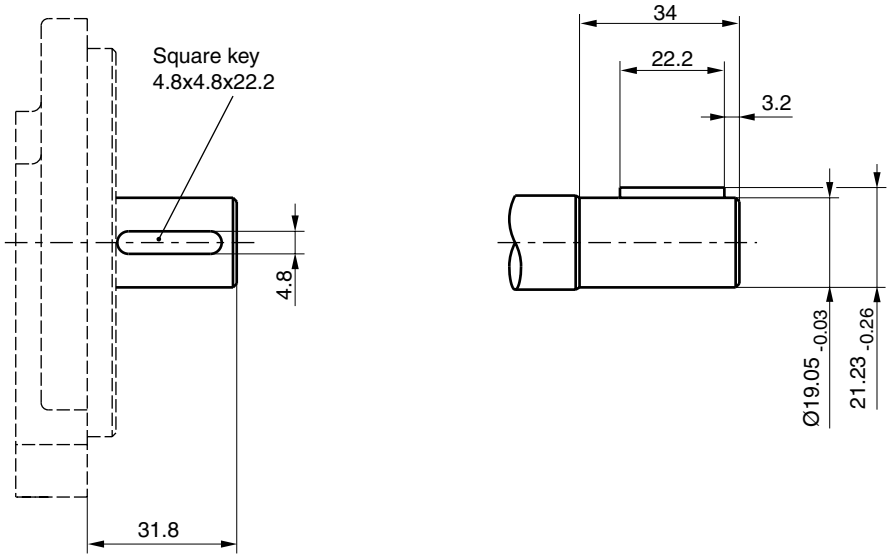
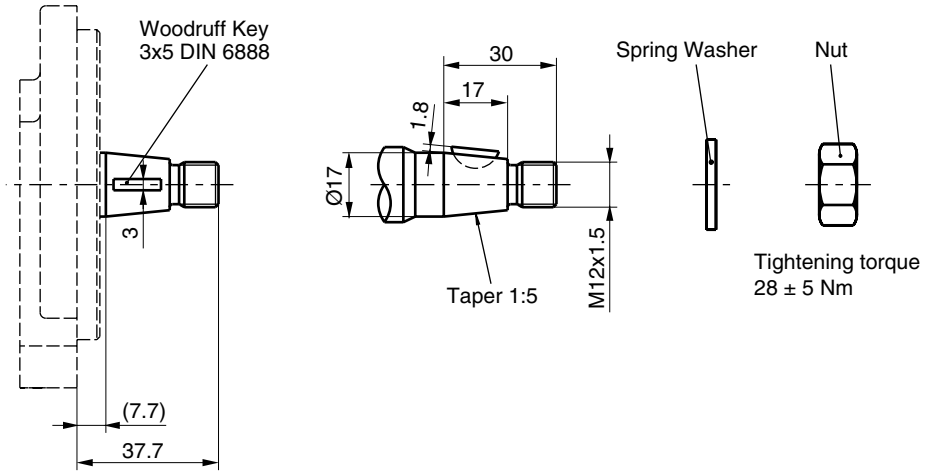
Chemnitz, Germany

PGM 511 Drive Shaft

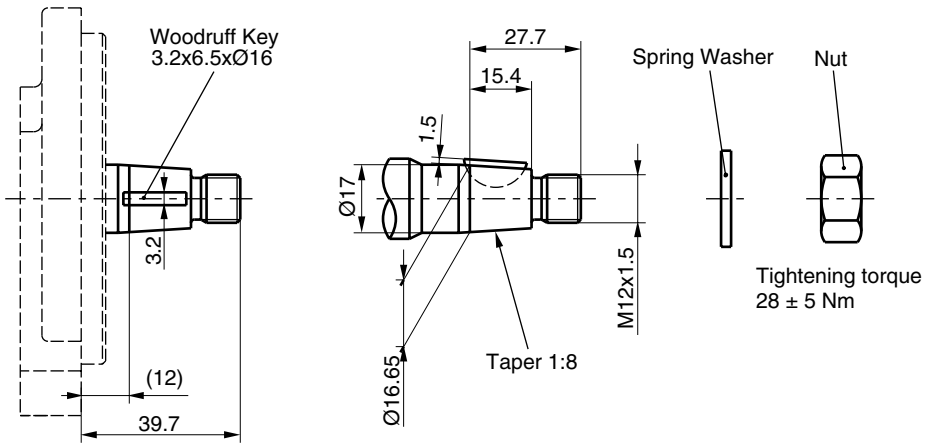
Code L6



Code S1

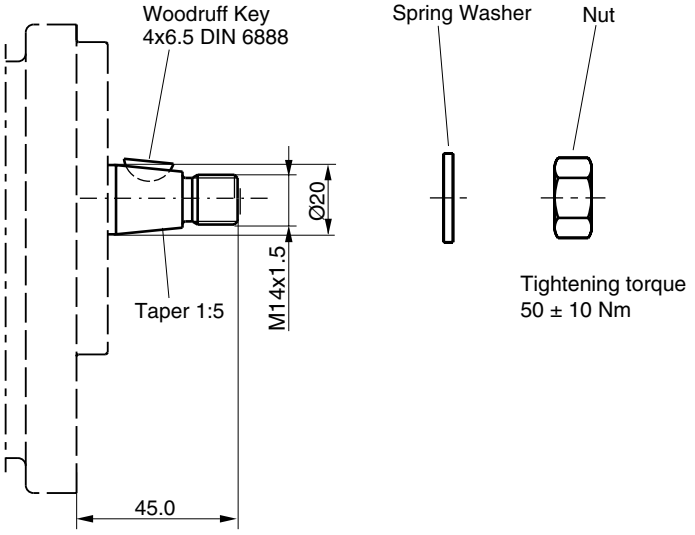


Code S2

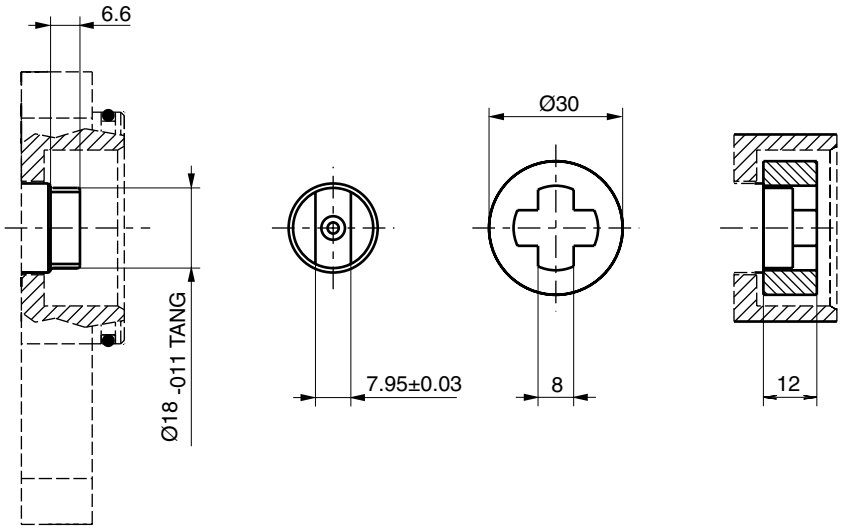


PGM 511 Drive Shaft

Code S8



Code V5



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	184
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

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

Shaft loads PGM 500

Code	Description	Type	Torque rating [Nm]
			PGM511
A1	9T, 16/32DP, 32L, SAE "A"	splined	86
C1	11T, 16/32DP, 38.2L, SAE 19-4	splined	184
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	Ø20.0, 9.0L, 4.0 key, M14x1.5	taper 1:5	110
	Connecting shaft for multiple units		110

Formula to calculate shaft load

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

Hydraulic fluids

Type	Fluid composition	Max. working pressure [bar]	Max. speed [min-1]	Temperature	Seal
Hydraulic fluid	Mineral oil based on hydraulic fluid acc. to ISO/DIN	See table drawings	See table drawings	-15 ... +80 °C -15 ... +120 °C	NBR FPM
HFB	Water-in-oil emulsion 40/60	140	1500	+2 ... +65 °C	NBR
HFC*	Water-glycol 40/60	140	1500	-15 ... +65 °C	NBR
HFD	Phosphate ester	140	1500	-10 ... +80 °C	FPM

* to be used with cast iron motors only

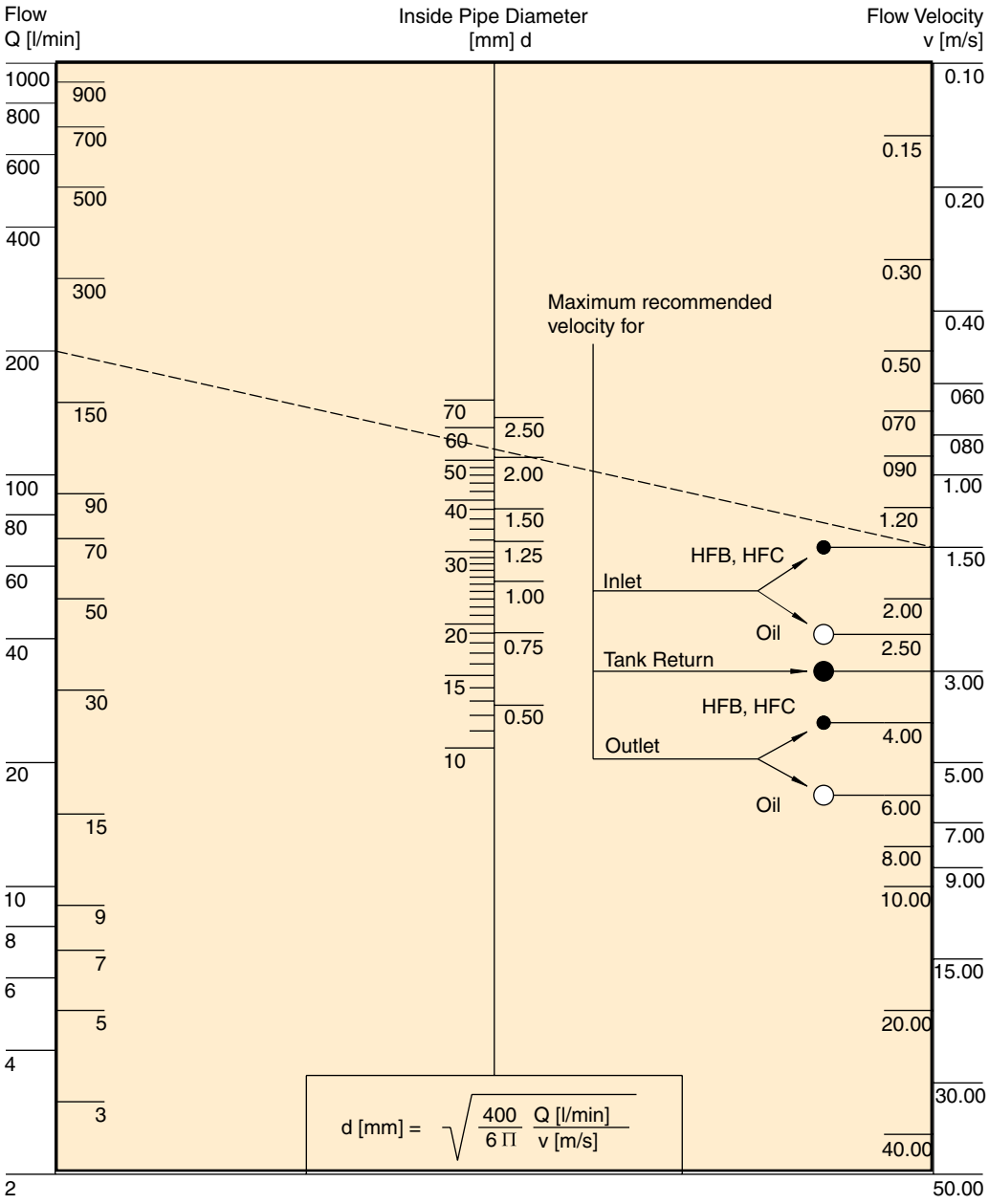
Parker does not give an explicit recommendation for certain fluid product, fluid brand or fluid manufacturer
The risk of using different kind of fluids has to be taken by the customer.

Flanges for suction and discharge ports

Please refer to Parker Bulletin 4040/UK.

Standard Seal Kits for motors 500

Model Code	Motor Series	TDN
PGM 511	Motor (Bi + Uni-Rot.)	8301-023-00N
	Motor(large size shaft)	8301-023-Q1M
("S2F3", "S8F4")	Motor with outboard bearing	3911832704
	Motor with plain bearing	8772-023-00S
	Motor FPM	8301-023-00M
	Motor FPM (large shaft)	3911832086
	Motor FPM with bearing	3911832087



Parker Hannifin
Pump and Motor Division
Chemnitz, Germany

Single Pressure Relief Valve

Comments:

Integral relief valve to protect the motor.

Motors with this valve may be applied in series with relief valve providing a limit to the pressure differential, and hence, the output torque.

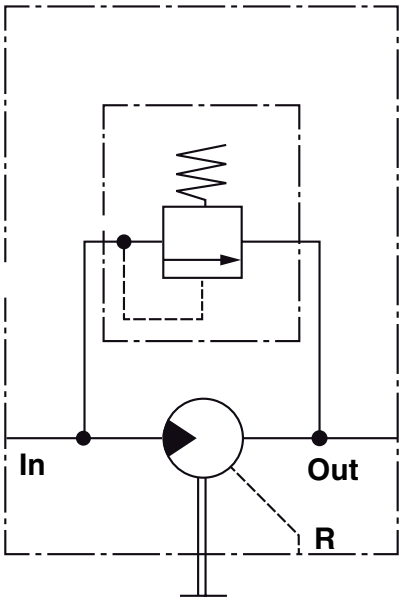
Variations for PGM 511

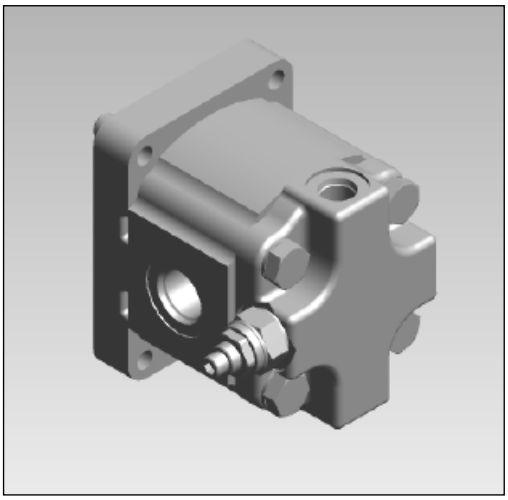
adjustable, with internal or external drain

Applications

Fan Drives, Mower Blade Drives, Compressor Drives and Water Pump Drives

Motor Range	
Ranges	PGM 511
Maximum Flow	75 lpm
Pressure Range	25-250 bar





Single Pressure Relief Valve with Anti-Cavitation

Comments:

Motors fitted with this relief valve may be applied in series with relief valve providing a limit to the pressure differential, and hence, the output torque.
The check valve allows the motor and driven load to “spool down” when the fluid supply is shut off or reduced due to engine speed fluctuations.
In series operation, the check valve permits the motor to come to a controlled stop should the outlet flow be suddenly blocked.
This valve reduces the risk of damaging the motor or blowing a hydraulic line.
Motors fitted with this valve are available with side or rear facing ports.

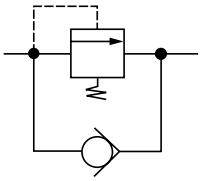
Variations for PGM 511

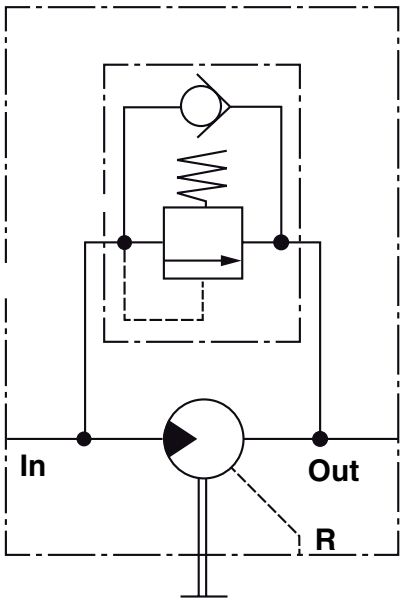
non-adjustable, with reverse flow check with internal or external drain

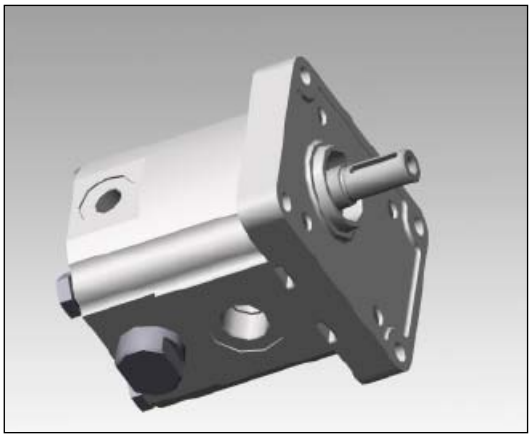
Applications

Fan Drives, Mower Blade Drives, Compressor Drives and Water Pump Drives

Motor Range PGM 511	
Pressure Range	35-250 bar
Maximum Flow	100 lpm

Motor Range PGM 511	
	
CODE	**Pressure bar**
RMAF	50
RMAP	90
RMAR	100
RMAV	120
RMBB	150
RMBD	160
RMBK	190
RMBP	210
RMBT	230





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Pump and Motor Division
Chemnitz, Germany

Cross Port Pressure Relief Valves

Comments:

Integral cross port relief to protect motor and to limit torque in both directions of rotation.
Motors fitted with this relief valve cover may be operated in series with other motors downstream when using external case drain.
Limited change to the factory set is possible .
Side ports are standard in order to minimize overall length.

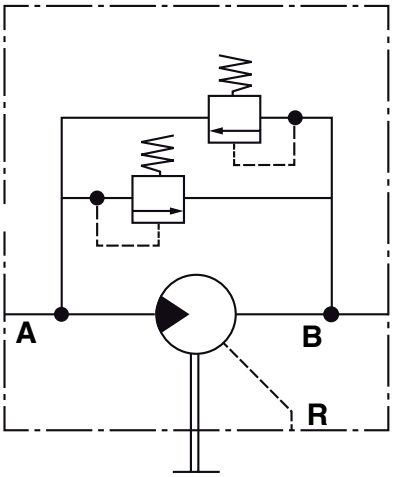
Variations for PGM 511

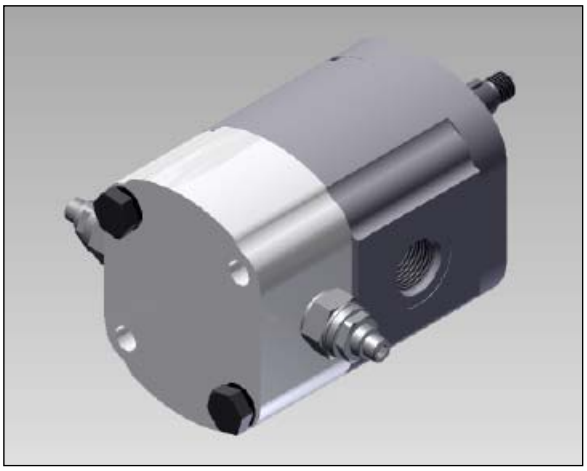
adjustable with internal and external drain

Applications

Fan Drives, Mower Reel Drives, and all low-medium power reversible drives

Motor Range	
Ranges	PGM 511
Maximum Flow	75 lpm
Pressure Range	25-250 bar





Cross Port Pressure Relief Valves with Anti-Cavitation

Comments:

Motors fitted this relief valve may be applied in series or in hydraulic transmission with relief valve providing a limit to the pressure differential, and hence, the output torque.
The check valves allow flow to return to the inlet of the motor to prevent cavitation.
Motor available with side ports, rear ports or combination of side and rear ports.

Variations for PGM 511

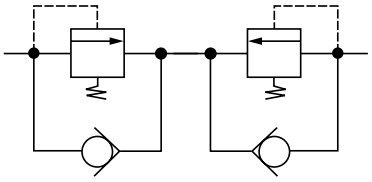
non-adjustable with internal or external drain

Applications

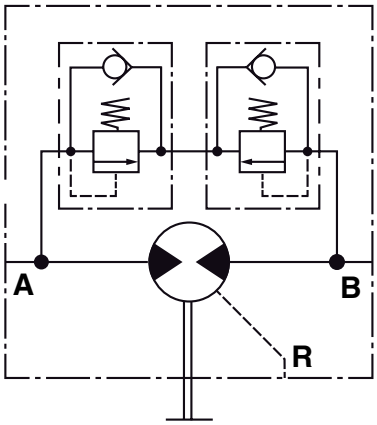
Fan Drives, Mower Blade Drives, Water Pump Drives and reversible hydrostatic transmissions

Motor Range PGM 511	
Pressure Range	35-250 bar
Maximum Flow	100 lpm

Motor Range PGM 511



CODE	Pressure bar
RMCF	50
RMCP	90
RMCR	100
RMCV	120
RMDB	150
RMDD	160
RMDK	190
RMDP	210
RMDT	230



Cross Port Pressure Relief Valves with Anti-Cavitation + Check Valves

Comments:

Motors with cross-port relief valve and anti-cavitation check valves in case drain passages are suitable for open-circuit applications with closed center valves and hydrostatic transmissions. The check valves allow flow to return to the inlet of the motor to prevent cavitation.
For winches, make up flow at low pressure is introduced at the case drain port.

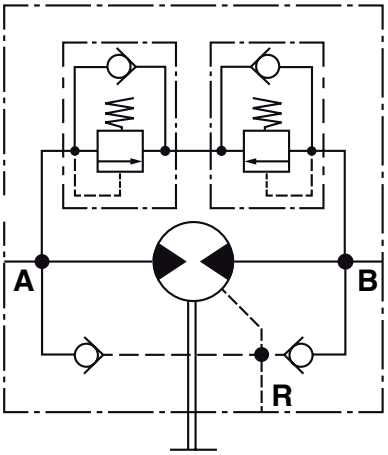
Variations for PGM 511

non-adjustable, with reverse flow check with internal or external drain

Applications

Fan Drives, Mower Blade Drives, Water Pump Drives and reversible hydrostatic transmissions, vibration drives on vibratory, rollers and winches

Motor Range PGM 511	
Pressure Range	25-250 bar
Maximum Flow	100 lpm



Solenoid Proportional Pressure Relief Valve

Comments:

In a fan drive circuit fan speed is adjusted by providing a varying Pulse Width Modulated electrical current signal to the proportional relief valve which controls the flow to the fan motor. The proportional valve is typically a normal closed type to assure failsafe full fan speed in case of a lost signal.
The anti-cavitation check valve allows the motor to spin freely when the fan is powered down.

Variations for PGM 511

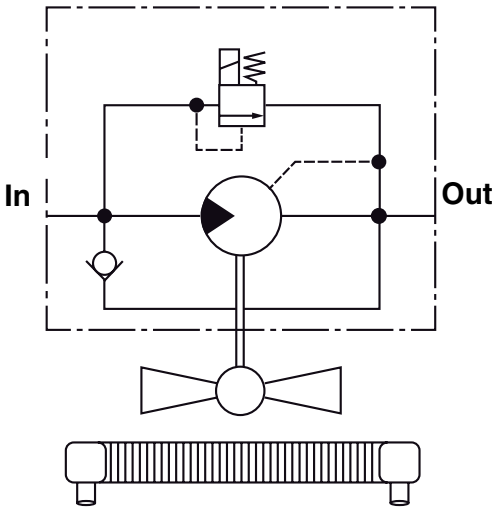
normally open valves, increasing pressure with increasing current
normally closed valves, decreasing pressure with increasing current with internal or tank return

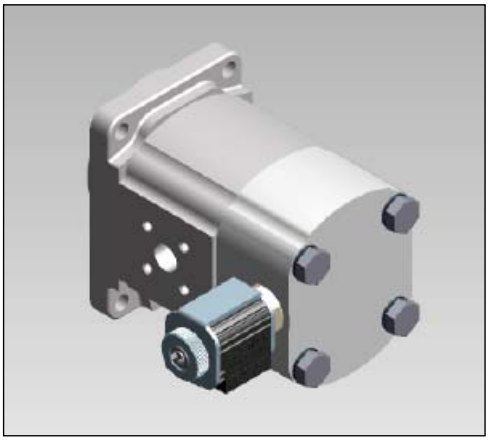
Applications

Fan Drives

Motor Range	
Ranges	PGM 511
Maximum Flow	95 lpm

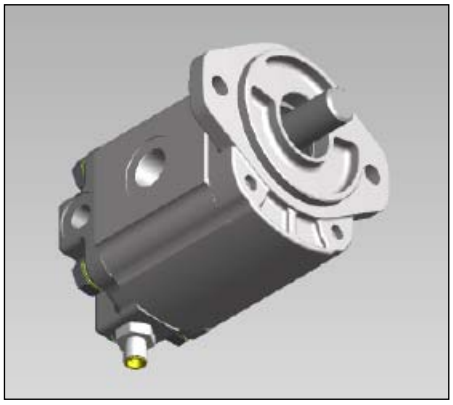
Pressure Range	
Pressure Range	standby pressure differential: 5 bar max. : equal to the max. pressure rating of the motor
Standard Pressure Relief Settings	100 / 210 / 350 bar other`s on request
Termination	on request



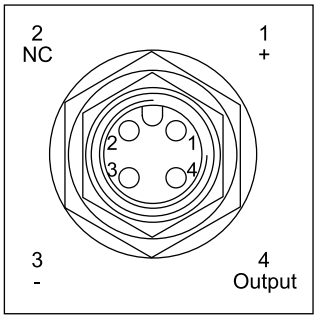


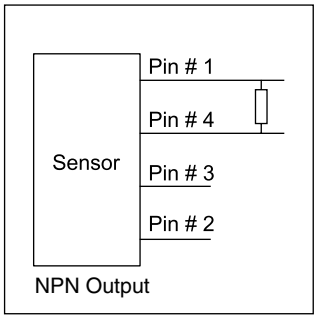
Speed Sensor

This rugged, weather resistant speed sensor is a Hall effect device. When externally powered, 30 square wave digital pulses per output shaft revolution are produced. By signal multiplication, 60 pulses per revolution can be obtained. The installation of this economical sensor does not affect the torque or side load capability of the motor into which it is installed.
The sensor has reverse polarity protection but no short circuit protection.



Speed sensor data	
Operating voltage range	4.5...24 V (DC)
Operating temperature	-30°...100° C
Operating frequency range	0...10 KHZ
Sink current	0...20 mA (max.)
Connection	4 Pin (12mm) DIN Standard





Formula pull-up resistor value (0.25 Watt, 5% tol.)

$$\frac{\text{Courant/Tensione } 4.5...24\text{ V}}{\text{Sink current } 0...20\text{ mA}} = \text{Resistor k Ohm}$$

State: off (95% +V)

+ V

State: on (max. 0.4 V DC)

0 V

Parker Hannifin
Pump and Motor Division
Chemnitz, Germany

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Over many years Parker Hydraulics has supplied gear pumps and motors for mobile and industrial markets worldwide, especially for materials handling, commercial grass cutting and construction equipment applications. Many Parker pumps and motors have been developed and tested for the specific needs of these industries.

Parker's defined strategy to provide engineered solutions, coupled with an award winning flexible manufacturing system, has resulted in a wide range of SAE/DIN/European and other special options being available as standard.

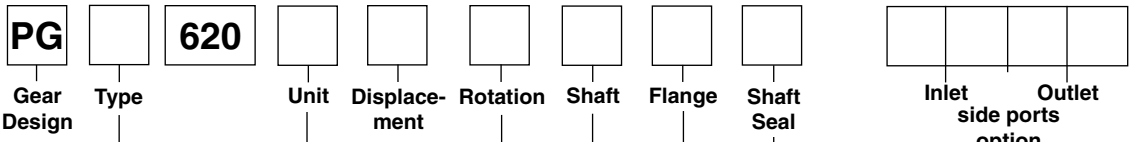
Features

- Patented interlocking body design
- 12 tooth gears, bronze balance plates
- 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
- Wide range of integral valves for power steering, power brakes, fan drivers and implement hydraulics

Characteristics

Motor type	Heavy-duty, cast iron, 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 - 3500 rpm, see Technical Data
Theor. displacement	See Technical Data
Axial / Radial load	Units subject to axial or radial loads must be specified with an outboard bearing.
Outlet pressure	The outlet pressure for motors w/o drain line must be smaller as the max. allowable pressure of the shaft seal.
Inlet pressure	See Technical Data
Flow velocity	See Nomograph for Pipe Velocity
Pressure rising rate	Max. 3000 bar/s
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.

Fluid viscosity	Range of operating viscosity 8 to 1000 mm²/s. Max. permissible operating pressure dependent on viscosity. Viscosity range for cold start 1000 to 2000 mm²/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 motor only in indicated direction of rotation.



Code	Type
M	Motor

Code	Unit
	Motor
A	Standard Motor without checks
B	Standard Motor with two checks
C	Standard Motor w. one anti cavitation check (ACC)

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

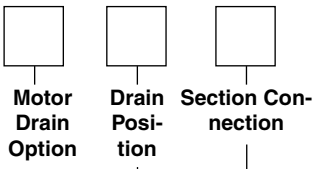
Displacement	
Code	ccm
0160	16
0190	19
0230	23
0260	26
0290	29
0330	33
0360	36
0370	37
0410	41
0440	44
0500	50
0520	52

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, 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[5)]	Ø25.0, 12L, 5.0 Key, M16x1.5, taper 1:5

[5)] 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.



Code	Section Connection
S	Separate inlets
C	Common inlets

Code	Drain Position
2[5)]	Drain on bottom
3[5)]	Drain on top
4	Rear drain

[5)] 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

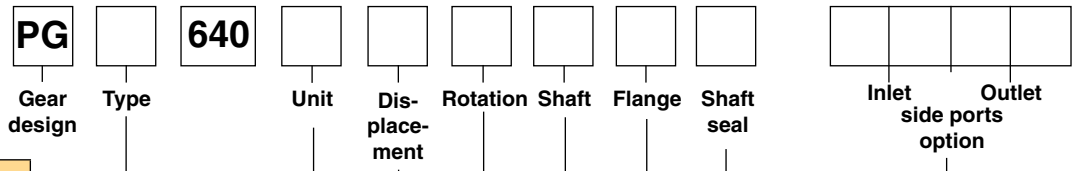
Code	Port Options
B1	No ports
D3[5)]	3/4 - 16 UNF thread
D4[5)]	7/8 - 14 UNF thread
D5[5)]	1 1/16 - 12 UN thread
D6[5)]*	1 5/16 - 12 UN thread
D7[5)]*	1 5/8 - 12 UN thread
D8[5)]*	1 7/8 - 12 UN thread
E3	1/2 - 14 BSP thread
E4	5/8 - 14 BSP thread
E5	3/4 - 16 BSP thread
E6*	1 - 11 BSP thread
E7*	1 1/4 - 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
L2*	19 mm-Ø40 mm-M8 diamond
L3*	27 mm-Ø51 mm-M10 diamond

Example: E5 = inlet port
E5 = outlet port

Code	Port Options
S2[5)]*	3/4"-3/8-16 UNC SAE Split Flange
S3[5)]*	1"-3/8-16 UNC SAE Split Flange
S4[5)]*	1 1/4"-7/16-14 UNC SAE Split Flange
S5[5)]*	1 1/2"-1/2-13 UNC SAE Split Flange
S6[5)]*	2"-1/2-13 UNC SAE Split Flange
T2*	19.0 mm - M10 Metric Split Flange
T3*	25.4 mm - M10 Metric Split Flange
T4*	31.8 mm - M10 Metric Split Flange
T5*	38.1 mm - M12 Metric Split Flange
T6*	50.8 mm - M12 Metric Split Flange

[5)] Non standard, on request only

*) Not usable for rear ports



Code	Type
M	Motor

Code	Unit
	Motor
A	Standard Motor without checks
B	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.

Parker Hannifin
Pump and Motor Division
Chemnitz, Germany

B	1	B	1		
No rear ports (rear ports on request)				**Motor Drain Option**	**Drain Posi-tion**

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
B1	No ports
D5[5)]	1 1/16 - 12 UN thread
D6[5)]*	1 5/16 - 12 UN thread
D7[5)]*	1 5/8 - 12 UN thread
D8[5)]*	1 7/8 - 12 UN thread
E4	5/8 - 14 BSP thread
E5	3/4 - 16 BSP thread
E6*	1 - 11 BSP thread
E7*	1 1/4 - 11 BSP thread
E8*	1 1/2 - 11 BSP thread
J8*	18 mm - Ø55 mm - M8 square
J9*	26 mm - Ø55 mm - M8 square
L2*	19 mm-Ø40 mm-M8 diamond
L3*	27 mm-Ø51 mm-M10 diamond

Example: E7 = inlet port
E7 = outlet port

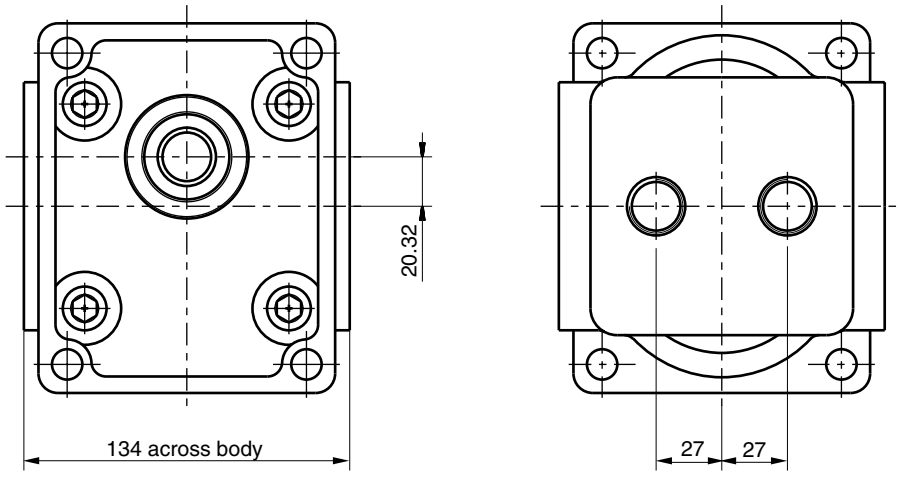
Code	Port Options
S2[5)]*	3/4"-3/8-16 UNC SAE Split Flange
S3[5)]*	1"-3/8-16 UNC SAE Split Flange
S4[5)]*	1 1/4"-7/16-14 UNC SAE Split Flange
S5[5)]*	1 1/2"-1/2-13 UNC SAE Split Flange
S6[5)]*	2"-1/2-13 UNC SAE Split Flange
T2*	19.0 mm - M10 Metric Split Flange
T3*	25.4 mm - M10 Metric Split Flange
T4*	31.8 mm - M10 Metric Split Flange
T5*	38.1 mm - M12 Metric Split Flange
T6*	50.8 mm - M12 Metric Split Flange

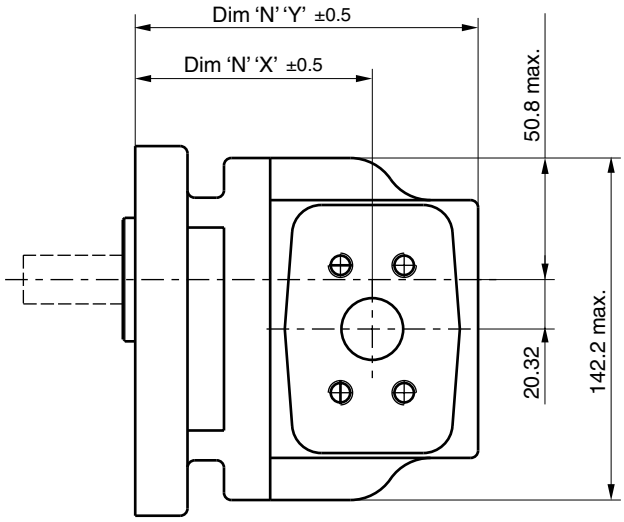
[5)] Non standard, on request only

*) Not usable for rear ports

PGM 620 Specification - Standard Displacements - Single Unit

Motor Displacement	Code	0160	0190	0230	0260	0290	0330	0360	0370	0410	0440	0500	0520
	cm³/rev	16.0	19.0	23.0	26.0	29.0	33.0	36.0	37.0	41.0	44.0	50.0	52.0
Max. Working Pressure	bar	275	275	275	275	275	275	250	250	220	210	210	210
Minimum Speed of rotation	rpm	500	500	500	500	500	500	500	500	500	500	500	500
Maximum Speed of rotation	rpm	3500	3500	3500	3500	3500	3500	3500	3500	3500	3500	3000	3000
Typical torque at work pressure	Nm	63.0	74.8	90.6	102.4	114.2	130.0	128.9	132.5	129.2	132.4	150.4	156.4
Dimension "X"	mm	79.2	82.5	86.9	90.2	93.5	97.9	101.2	102.3	106.7	110.0	116.6	118.8
Dimension "Y"	mm	122.7	126.0	130.4	133.7	137.0	141.4	144.7	145.8	150.2	153.5	160.1	162.3
Approx. Weight	kg	12.0	12.1	12.2	12.3	12.6	12.7	12.8	12.9	13.0	13.1	13.3	13.4

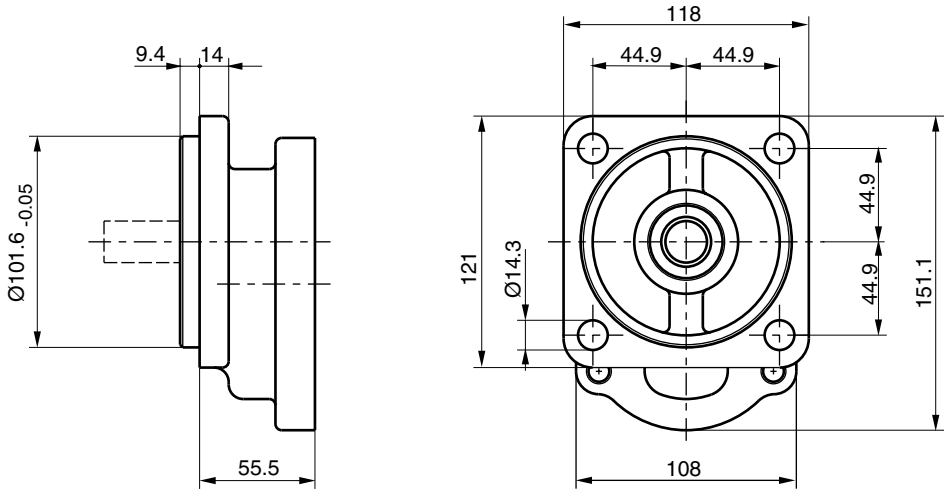




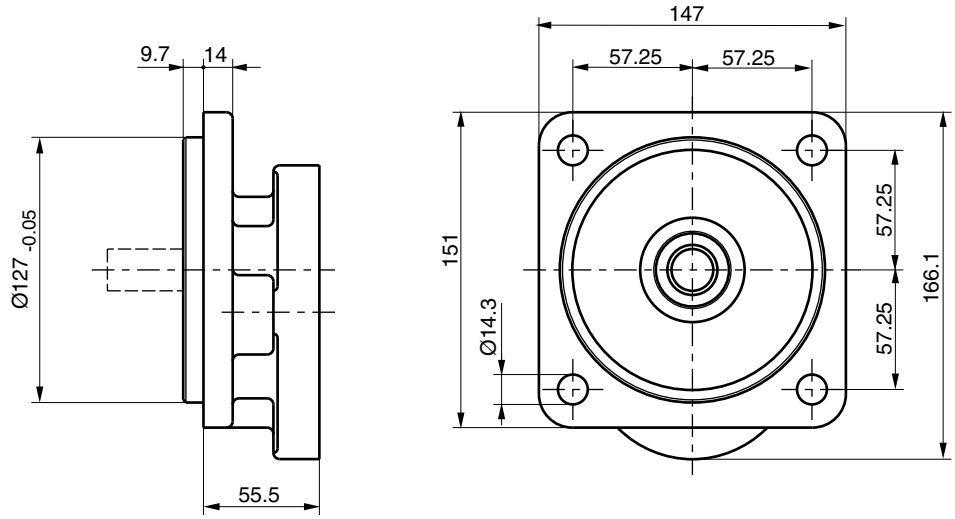
Dimension Flanges see pages 9 and 10
Dimension Shafts see pages 13 and 14

PGM 620 Mounting Flange

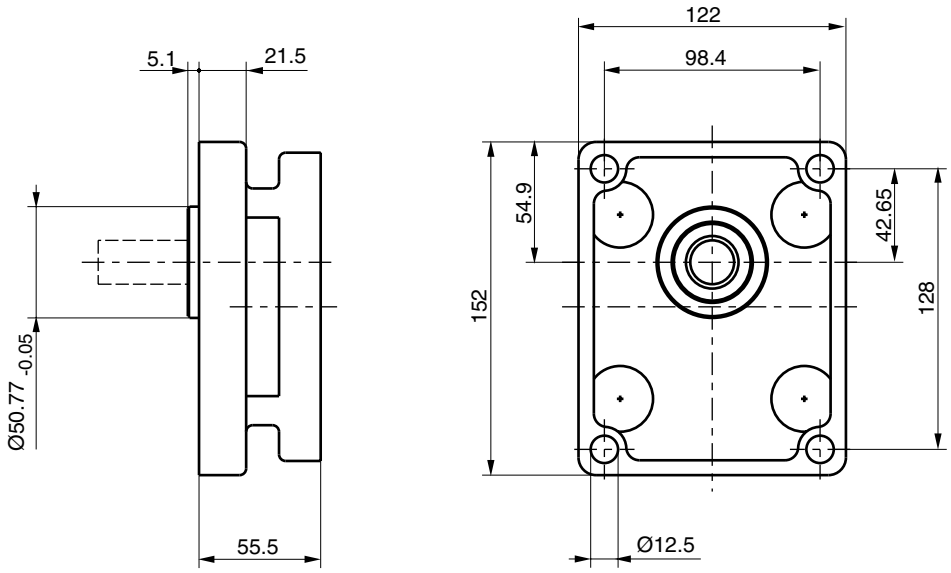
Code A3



Code A4

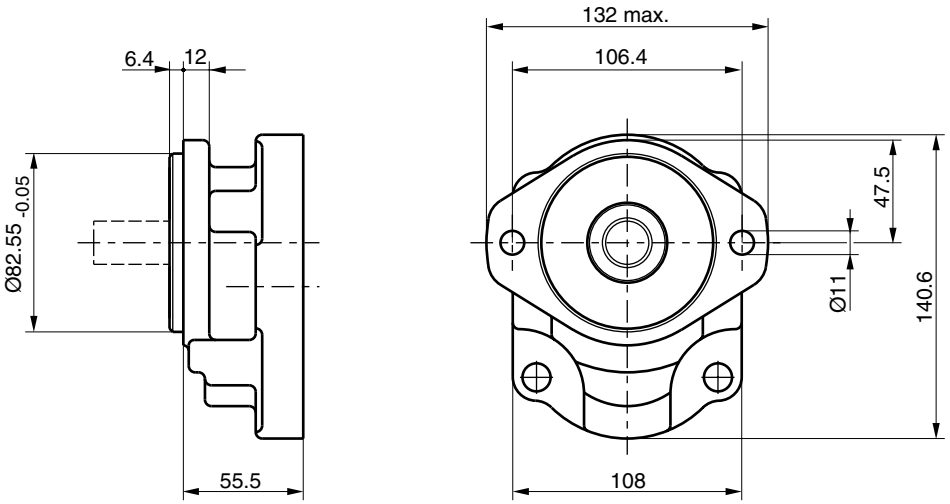


Code D7

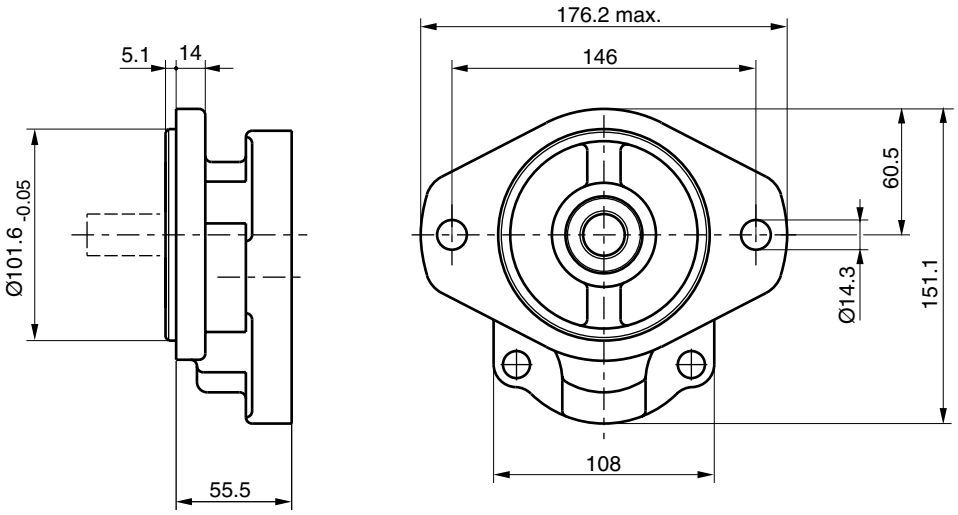


PGM 620 Mounting Flange

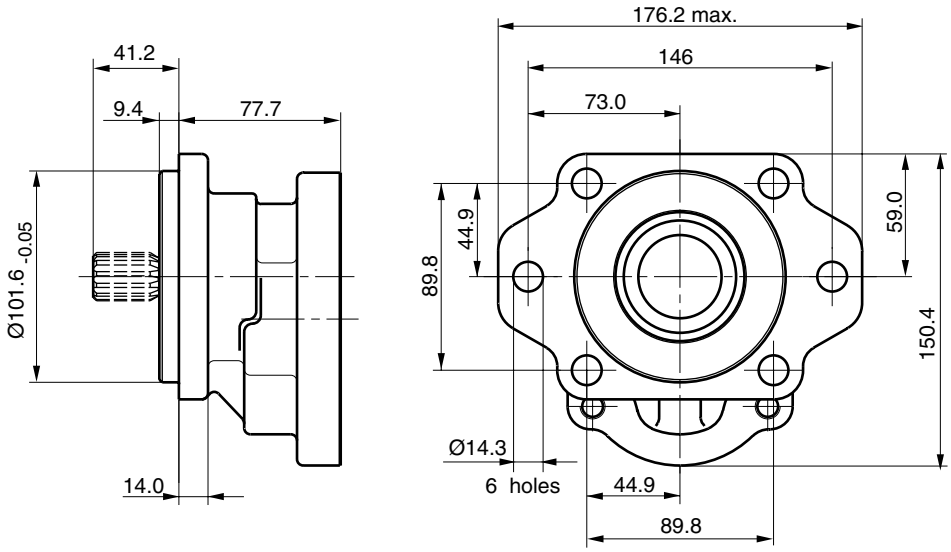
Code H2



Code H3

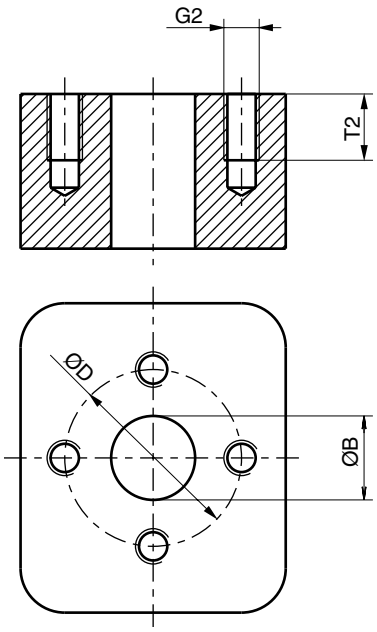


Code L3

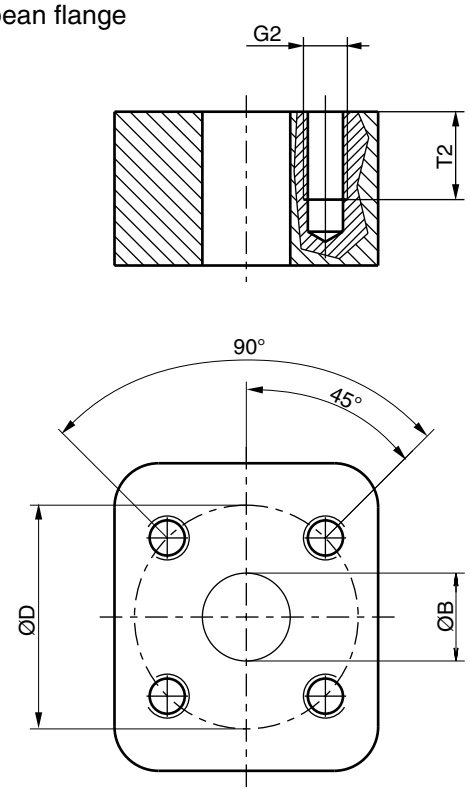


PGM 620 Porting

Code L
4-Bolt flange



Code J
European flange

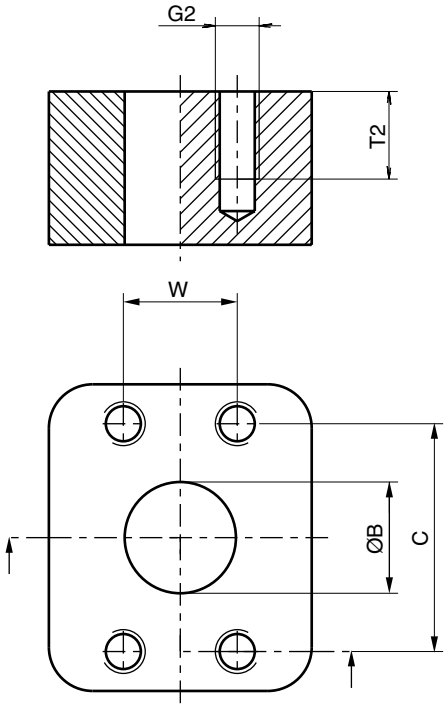


PGM 620

Code	G2	∅B	∅D	C	W	T2
	Thread	Dimensions				
J5	M6	15.0	35.0			12.5
J7	M6	20.0	40.0			13.0
J8	M8	18.0	55.0			15.0
J9	M8	26.0	55.0			15.0
L2	M8	19.0	40.0			15.0
L3	M10	27.0	51.0			18.0
S2	3/8-16 UNC	19.0		47.63	22.23	14.0
S3	3/8-16 UNC	25.4		52.37	26.19	20.6
S4	7/16-14 UNC	31.8		58.72	30.17	20.6
S5	1/2-13 UNC	38.1		69.82	35.71	20.6
S6	1/2-13 UNC	50.8		77.77	42.88	20.6
T2	M10	19.0		47.63	22.23	20.6
T3	M10	25.4		52.37	26.19	21.4
T4	M10	31.8		58.72	30.17	20.6
T5	M12	38.1		69.82	35.71	20.6
T6	M12	50.8		77.77	42.88	20.6

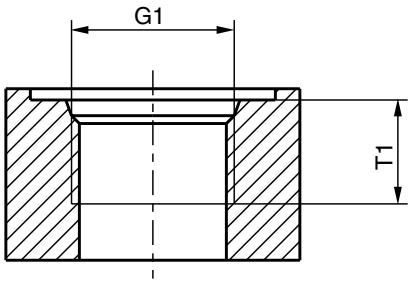
Code S
SAE split flange

Code T
SAE split flange metric thread

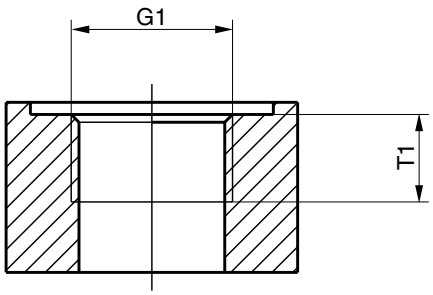


PGM 620 Porting

Code D
SAE straight thread



Code E
BSP - thread

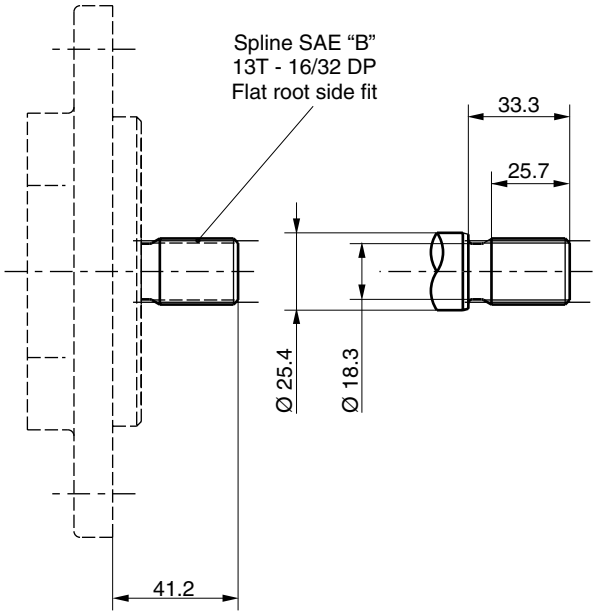


PGM 620

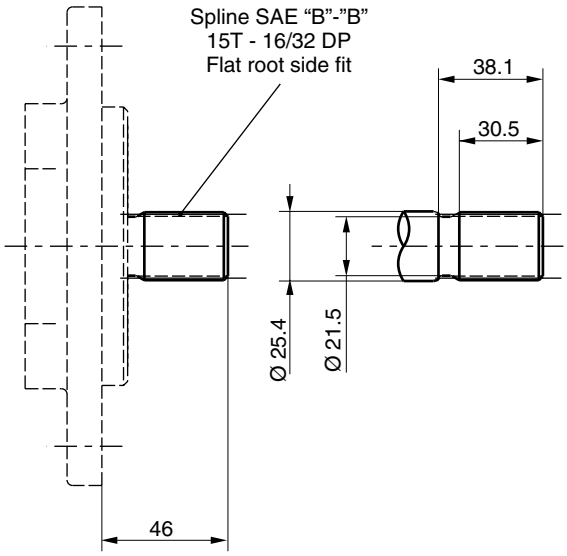
Code	G1	T1
	Thread	Dimensions
D3	3/4-16 UNF	14.3
D4	7/8-14 UNF	16.7
D5	1 1/16-12 UN	19.0
D6	1 5/16-12 UN	19.0
D7	1 5/8-12 UN	19.0
D8	1 7/8-12 UN	19.0
E3	1/2-14 BSP	14.0
E4	5/8-14 BSP	16.3
E5	3/4-16 BSP	16.0
E6	1-11 BSP	18.0
E7	1 1/4-11 BSP	20.0
E8	1 1/2-11 BSP	22.0

PGM 620 Drive Shaft

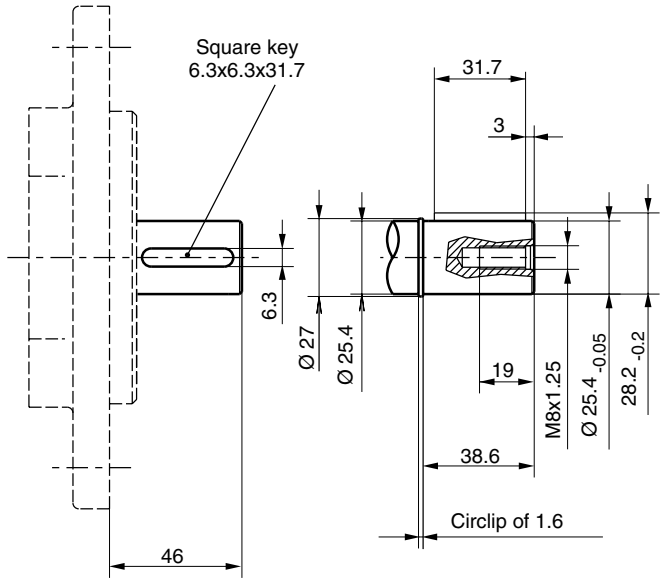
Code D1



Code E1

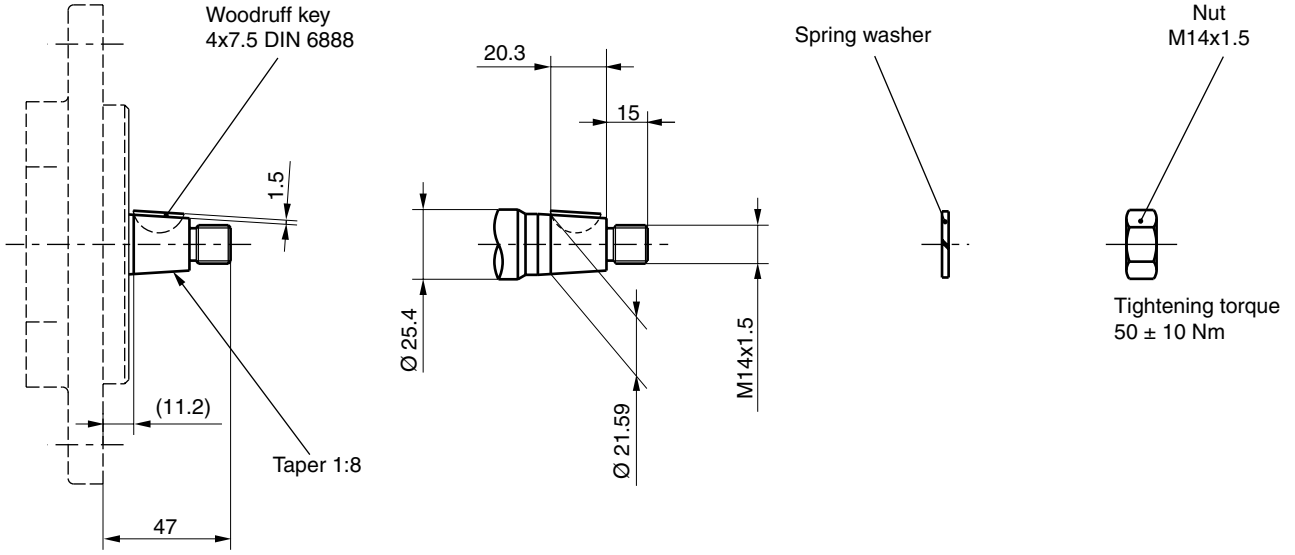


Code M3

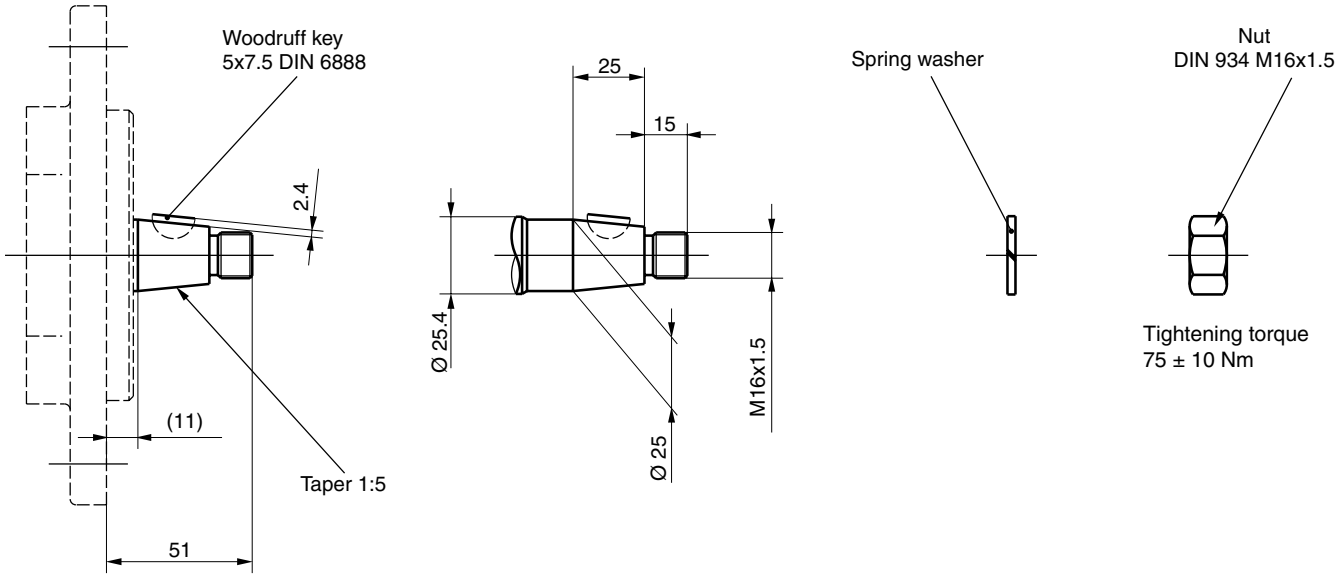


PGM 620 Drive Shaft

Code T1



Code T2



PGM 620- Shaft Load Capacity

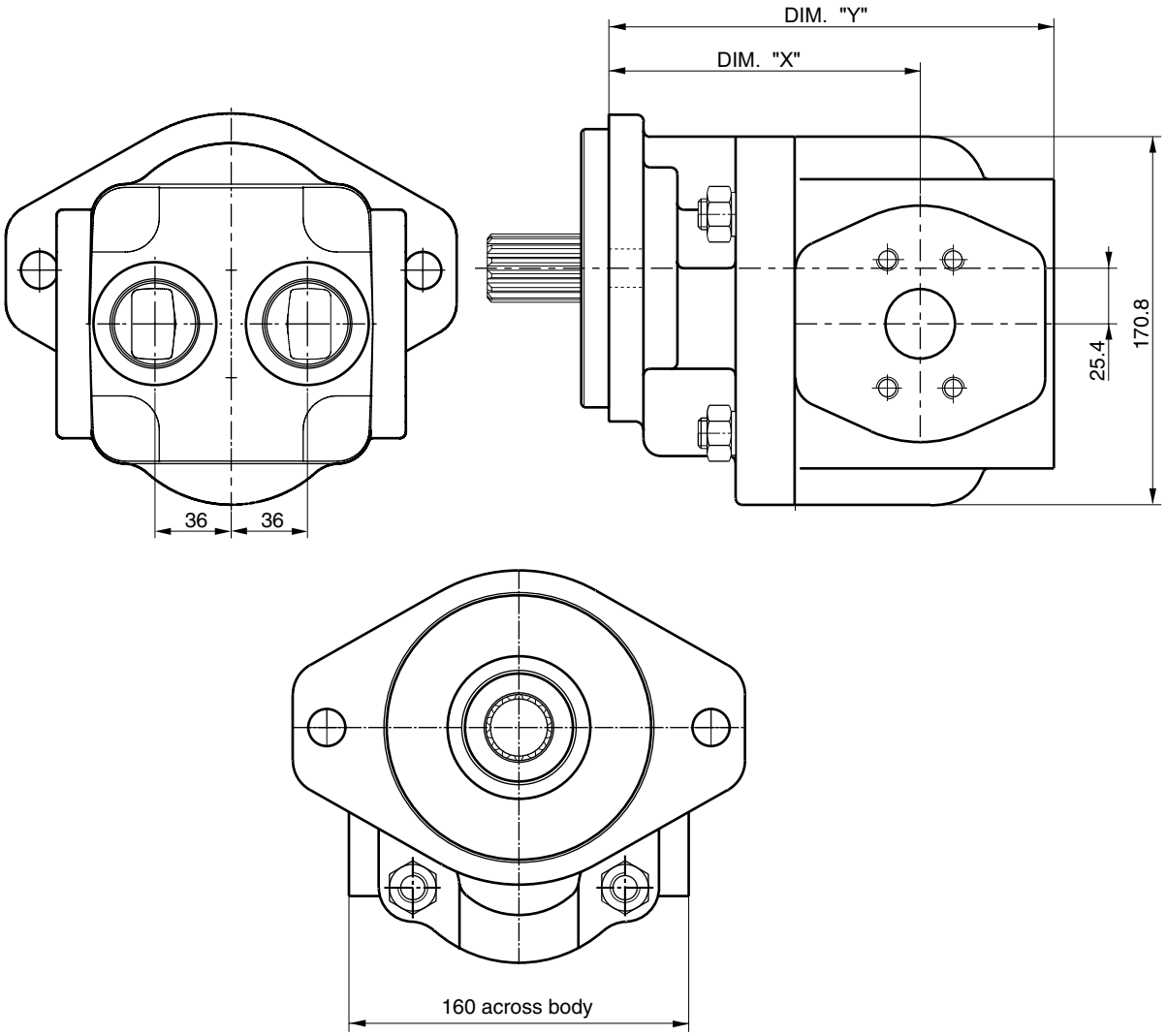
Code	Description		Torque Rating [Nm]
D1	13T, 16/32 DP, 41.2L, SAE “B“	spline	272
E1	15T, 16/32 DP, 46L, SAE “B-B“	spline	460
M3	Ø25.4, 6.3 KEY, M8, 46L, SAE “B-B“	parallel	325
T1	Ø21.59, 11.2L, 4.0 KEY, M14x1.5	taper 1:8	218
T2	Ø25.0, 12.0 L, 5.0 KEY, M16x1.5	taper 1:5	350
	Multiple pump connection shaft		228

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

Parker Hannifin
Pump and Motor Division
Chemnitz, Germany

PGM 640 Specification - Standard Displacements - Single Unit

Motor Displacement	Code	300	350	400	450	500	550	600	650	700	750	800	900	1000
	cm³/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. Working Pressure	bar	310	310	310	310	310	310	290	265	245	225	210	190	180
Minimum Speed of rotation	rpm	500	500	500	500	500	500	500	500	500	500	500	500	500
Maximum Speed of rotation	rpm	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000
Typical torque at work pressure	Nm	133.2	155.4	177.6	199.8	222.0	244.2	249.2	246.7	245.7	241.7	240.6	245.0	258.0
Dimension "X"	mm	128.6	128.6	131.8	131.8	135.6	135.6	138.4	138.4	142.2	142.2	142.2	149.8	149.8
Dimension "Y"	mm	176.1	176.1	182.7	182.7	189.3	189.3	195.8	195.8	203.2	203.2	203.2	216.4	216.4
Aprox. Weight	Kg	20.6	20.6	21.2	21.2	22.0	22.0	22.6	22.6	23.3	23.3	25.0	25.5	25.5

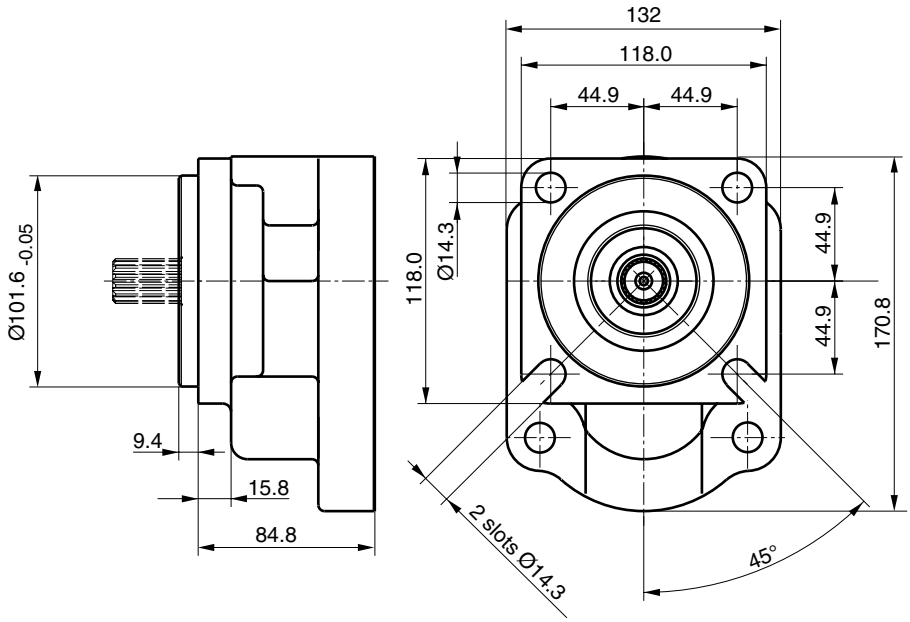


Dimension Flanges see pages 16 and 17
Dimension Shafts see page 20

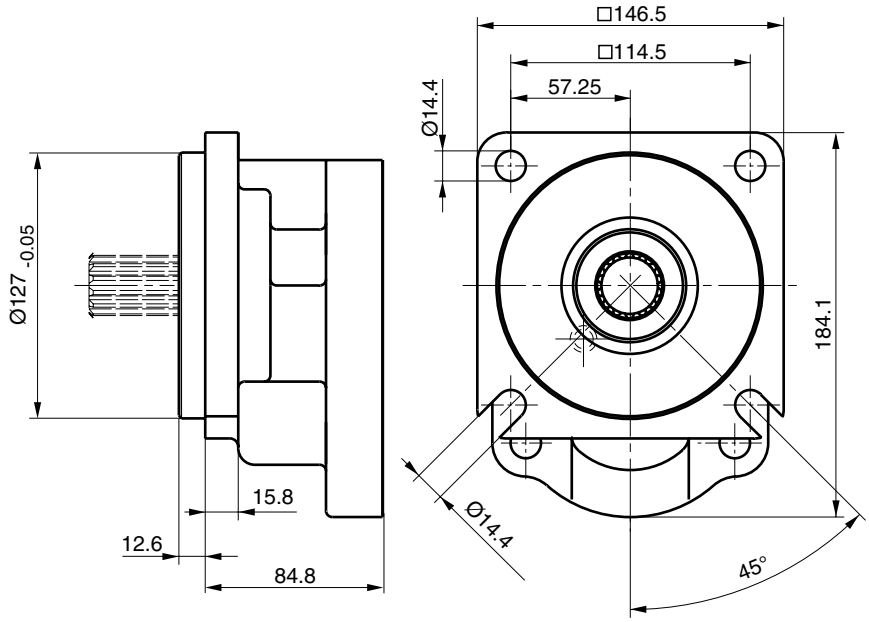
Parker Hannifin
Pump and Motor Division
Chemnitz, Germany

PGM 640 Mounting Flange

Code A3

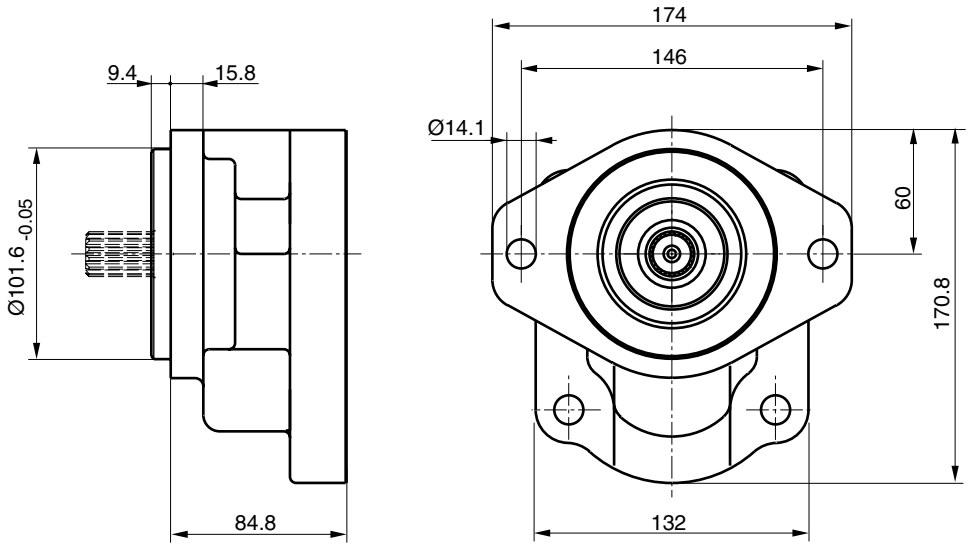


Code A4

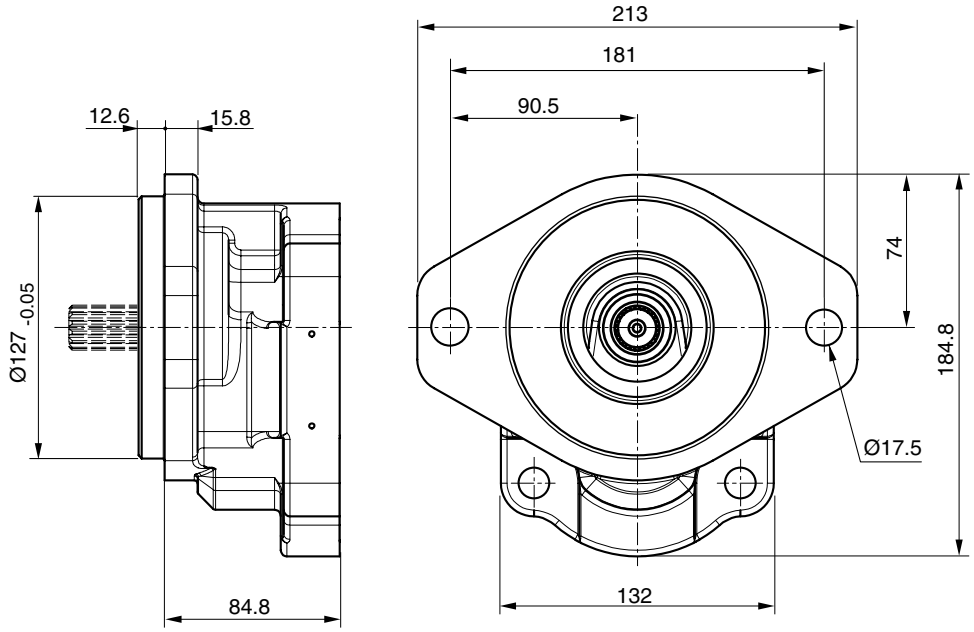


PGM 640 Mounting Flange

Code H3

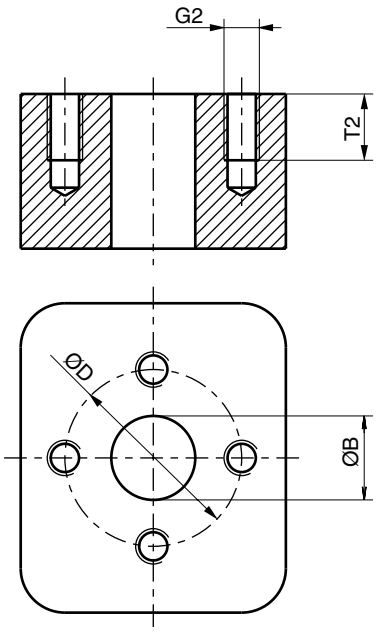


Code K3

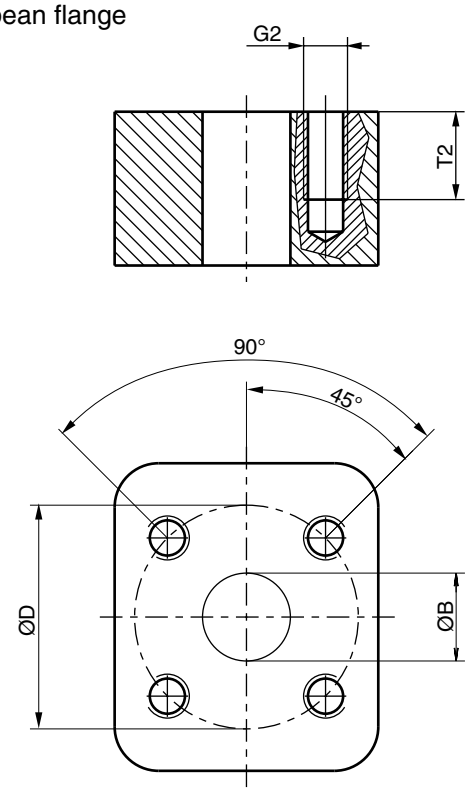


PGM 640 Porting

Code L
4-Bolt flange



Code J
European flange

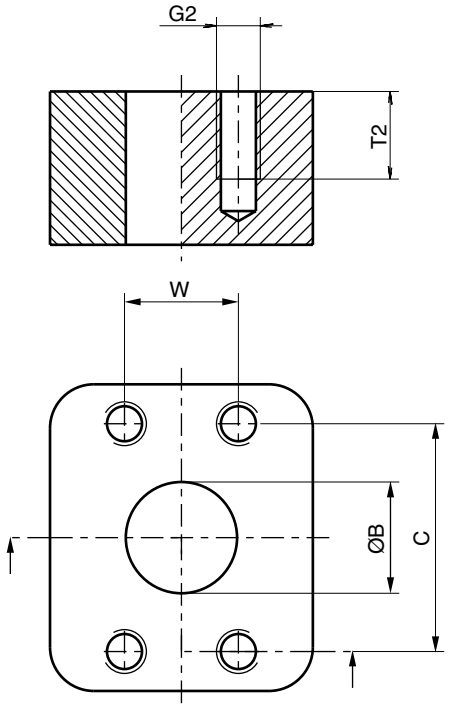


PGM 640

Code	G2	∅B	∅D	C	W	T2
	Thread	Dimensions				
J8	M8	18.0	55.0			15.0
J9	M8	26.0	55.0			15.0
L2	M8	19.0	40.0			15.0
L3	M10	27.0	51.0			18.0
S2	3/8-16 UNC	19.0		47.63	22.23	14.0
S3	3/8-16 UNC	25.4		52.37	26.19	20.6
S4	7/16-14 UNC	31.8		58.72	30.17	20.6
S5	1/2-13 UNC	38.1		69.82	35.71	20.6
S6	1/2-13 UNC	50.8		77.77	42.88	20.6
T2	M10	19.0		47.63	22.23	20.6
T3	M10	25.4		52.37	26.19	21.4
T4	M10	31.8		58.72	30.17	20.6
T5	M12	38.1		69.82	35.71	20.6
T6	M12	50.8		77.77	42.88	20.6

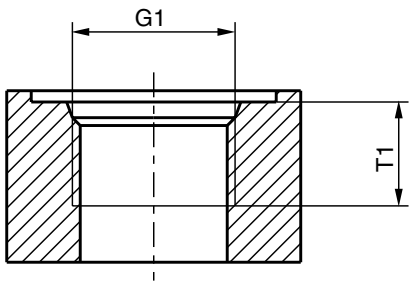
Code S
SAE split flange

Code T
SAE split flange metric thread

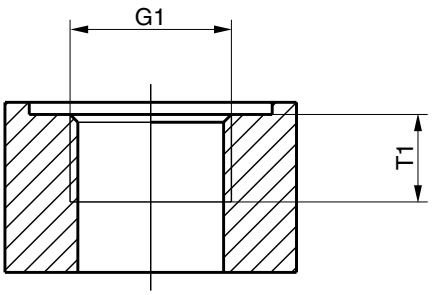


PGM 640 Porting

Code D
SAE straight thread



Code E
BSP - thread

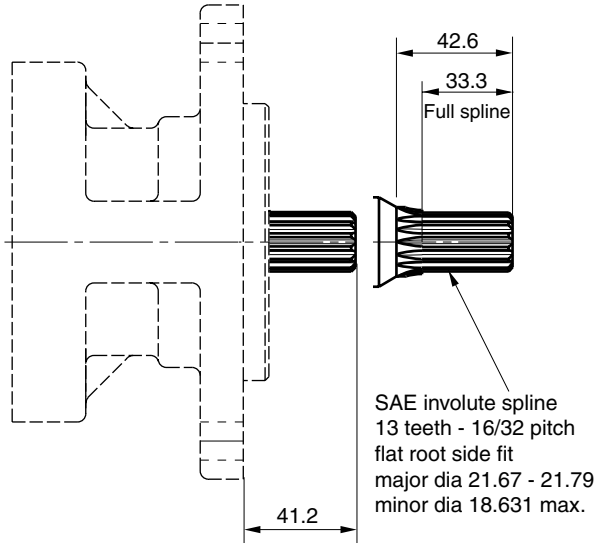


PGM 640

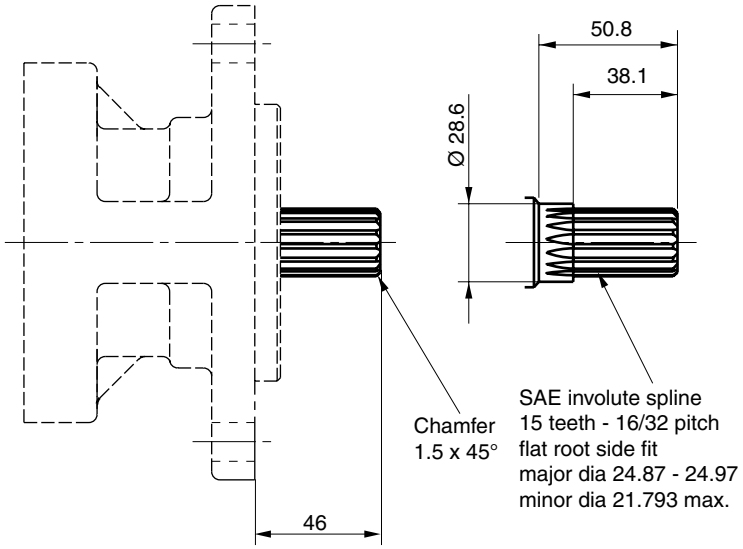
Code	G1	T1
	Thread	Dimensions
D5	1 1/16-12 UN	19.0
D6	1 5/16-12 UN	19.0
D7	1 5/8-12 UN	19.0
D8	1 7/8-12 UN	19.0
E4	5/8-14 BSP	16.3
E5	3/4-16 BSP	16.0
E6	1-11 BSP	18.0
E7	1 1/4-11 BSP	20.0
E8	1 1/2-11 BSP	22.0

PGM 640 Drive Shaft

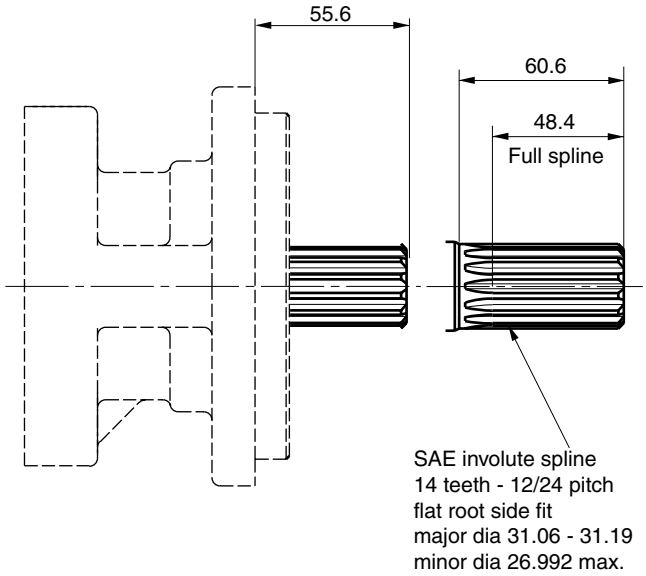
Code D1



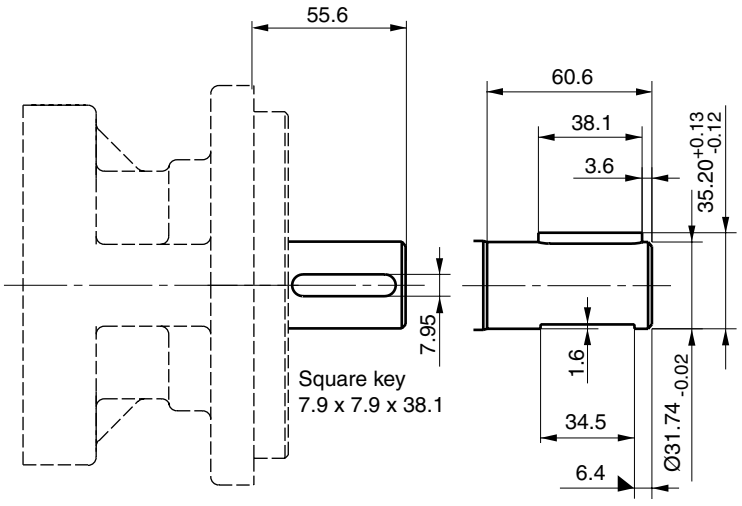
Code E1



Code E4



Code N1



Shaft loads PGM 600

Code	Description	Type	Torque rating 620 [Nm]	Torque rating 640 [Nm]
D1	13T, 16/32 DP, 41.2L, SAE "B"	splined	272	328
E1	15T, 16/32 DP, 46.0L, SAE "B-B"	splined	460	503
E4	14T, 12/24 DP, 55.6L, SAE "C"	splined	—	960
M3	Ø25.4, 6.3 KEY, M8, 46L, SAE "B-B"	parallel	325	—
T1	Ø21.59, 11.2L, 4.0key, M14x1.5	tapered 1:8	218	—
T2	Ø25.0, 12.0L, 5.0 KEY, M16x1.5	taper 1:5	301	—
N1	1 1/4" SAE-C	keyed	—	678
	connecting shaft		228	407

Formula to calculate shaft load

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

Hydraulic fluids

Type	Fluid composition	Max. working pressure [bar]	Max. speed [min-1]	Temperature	Seal
Hydraulic fluid	Mineral oil based on hydraulic fluid acc. to ISO/DIN	See table drawings	See table drawings	-15 ... +80 °C -15 ... +120 °C	NBR FPM
HFB	Water-in-oil emulsion 40/60	140	1500	+2 ... +65 °C	NBR
HFC*	Water-glycol 40/60	140	1500	-15 ... +65 °C	NBR
HFD	Phosphate ester	140	1500	-10 ... +80 °C	FPM

* to be used with cast iron motors only

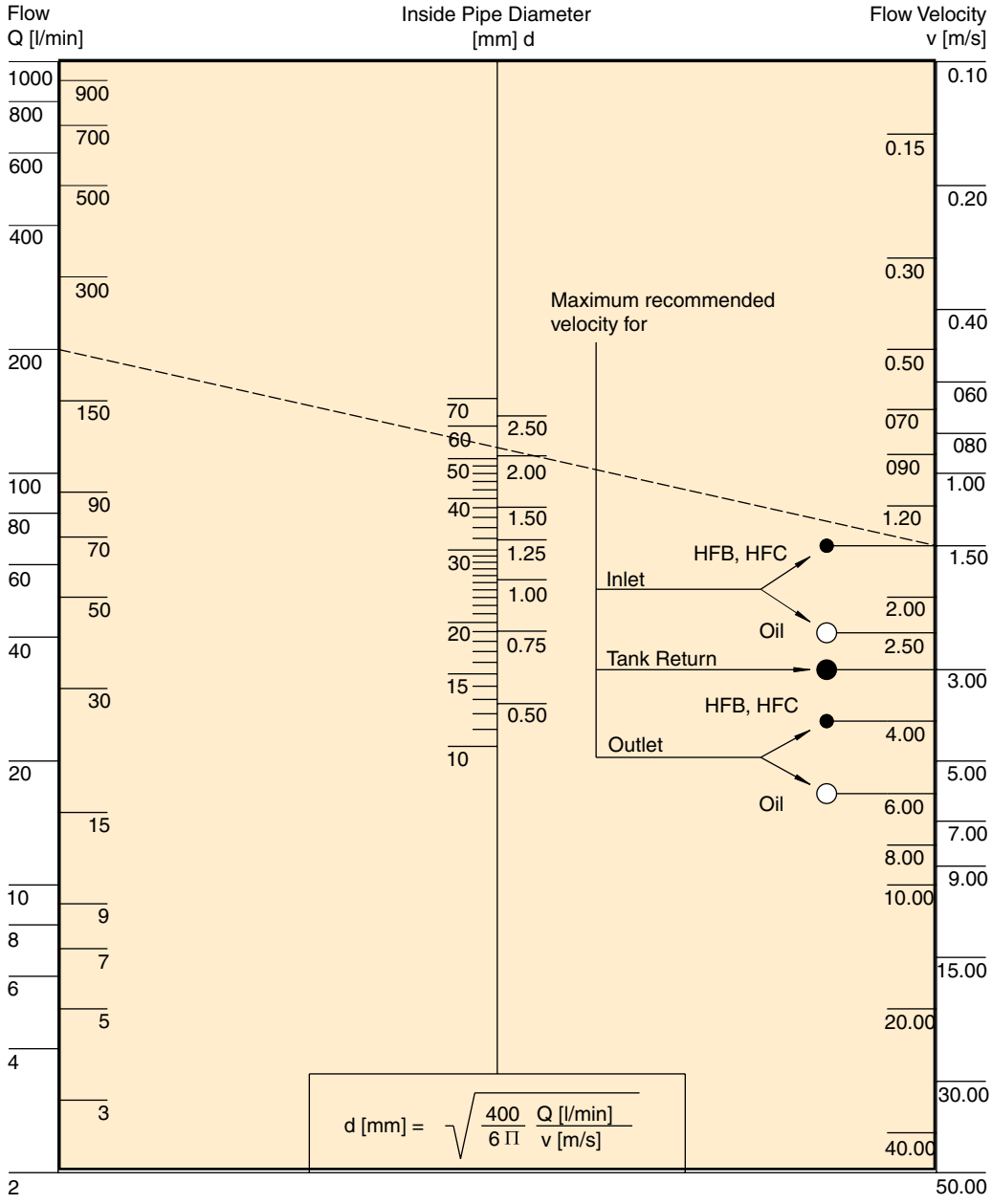
Parker does not give an explicit recommendation for certain fluid product, fluid brand or fluid manufacturer
The risk of using different kind of fluids has to be taken by the customer.

Flanges for suction and discharge ports

Please refer to Parker Bulletin 4040/UK.

Standard Seal Kits for motors 600

Model Code	Motor Series	TDN
PGM 620	Motor (Bi + Uni-Rot.)	8782-023-00N
	Motor (Bi + Uni-Rot.)-FPM	8782-023-00V
PGM 640	Motor (Bi+Uni-Rotat.)	3911801451



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Pump and Motor Division
Chemnitz, Germany

Single Pressure Relief Valve

Comments:

Integral relief valve to protect the motor.

Motors with this valve may be applied in series with relief valve providing a limit to the pressure differential, and hence, the output torque.

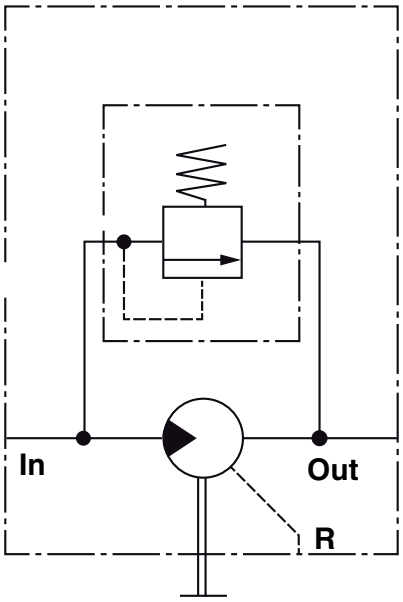
Variations for PGM 620 / PGM 640

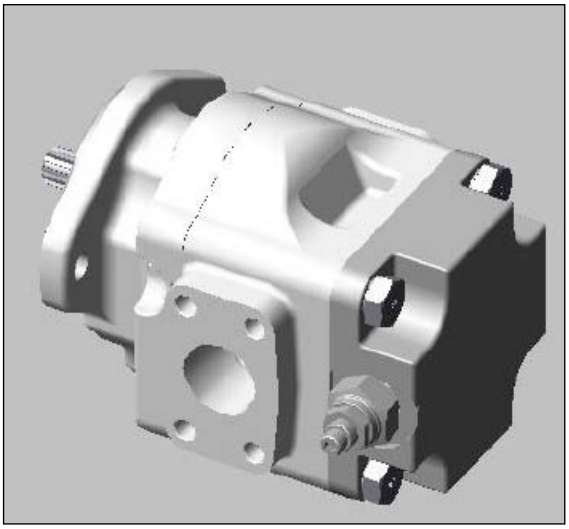
adjustable, with internal or external drain

Applications

Fan Drives, Mower Blade Drives, Compressor Drives and Water Pump Drives

Motor Range		
Ranges	PGM 620	PGM 640 .
Maximum Flow	113 lpm	113 lpm
Pressure Range	25-280 bar	25-310 bar





Single Pressure Relief Valve with Anti-Cavitation

Comments:

Motors fitted with this relief valve may be applied in series with relief valve providing a limit to the pressure differential, and hence, the output torque.
The check valve allows the motor and driven load to “spool down” when the fluid supply is shut off or reduced due to engine speed fluctuations.
In series operation, the check valve permits the motor to come to a controlled stop should the outlet flow be suddenly blocked.
This valve reduces the risk of damaging the motor or blowing a hydraulic line.
Motors fitted with this valve are available with side or rear facing ports.

Variations for PGM 620 / PGM 640

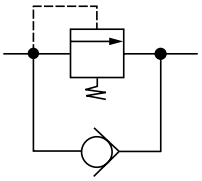
non-adjustable, with reverse flow check with internal or external drain

Applications

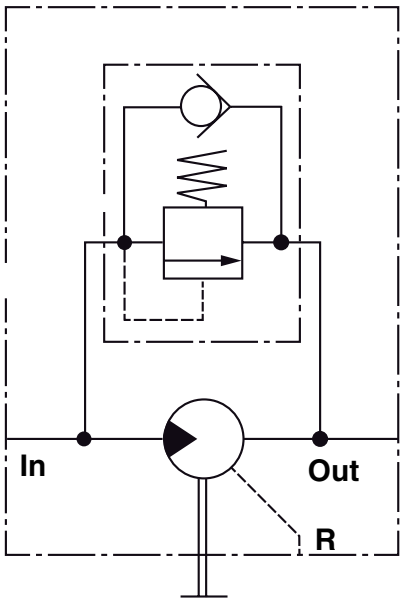
Fan Drives, Mower Blade Drives, Compressor Drives and Water Pump Drives

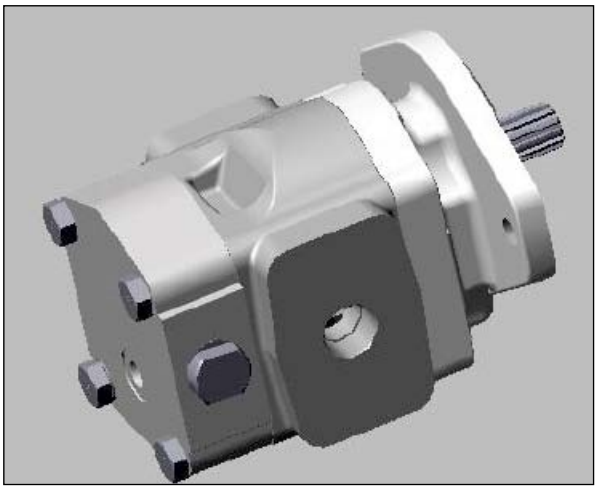
Motor Range PGM 620 / PGM 640	
Pressure Range	35-250 bar
Maximum Flow	100 lpm

Motor Range PGM 620 / PGM 640



CODE	Pressure bar
RMAF	50
RMAP	90
RMAR	100
RMAV	120
RMBB	150
RMBD	160
RMBK	190
RMBP	210
RMBT	230





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Chemnitz, Germany

Cross Port Pressure Relief Valves

Comments:

Integral cross port relief to protect motor and to limit torque in both directions of rotation.
Motors fitted with this relief valve cover may be operated in series with other motors downstream when using external case drain.
Limited change to the factory set is possible .
Side ports are standard in order to minimize overall length.

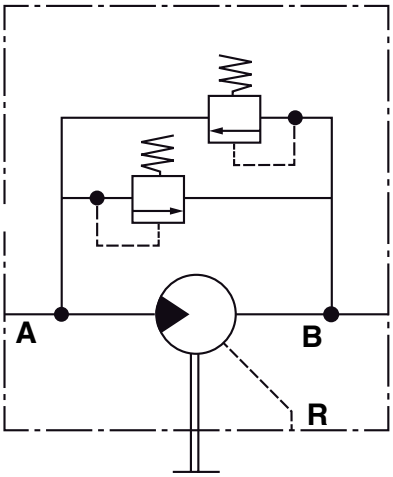
Variations for PGM 620 / PGM 640

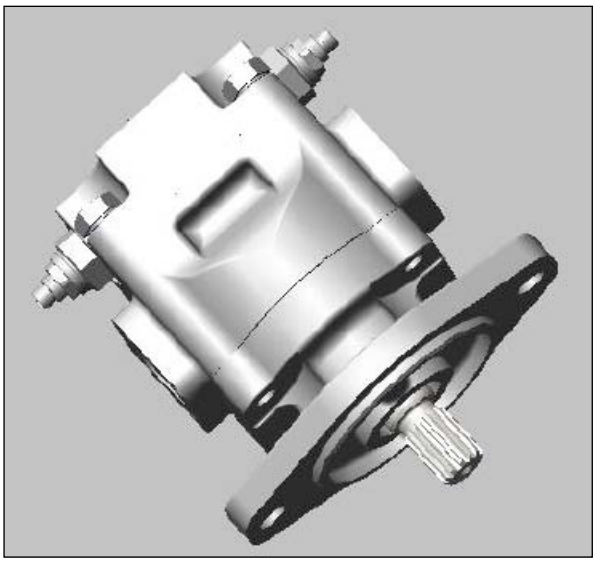
adjustable with internal and external drain

Applications

Fan Drives, Mower Reel Drives, and all low-medium power reversible drives

Motor Range		
Ranges	PGM 620	PGM 640 .
Maximum Flow	113 lpm	113 lpm
Pressure Range	25-280 bar	25-310 bar





Cross Port Pressure Relief Valves with Anti-Cavitation

Comments:

Motors fitted this relief valve may be applied in series or in hydraulic transmission with relief valve providing a limit to the pressure differential, and hence, the output torque.
The check valves allow flow to return to the inlet of the motor to prevent cavitation.
Motor available with side ports, rear ports or combination of side and rear ports.

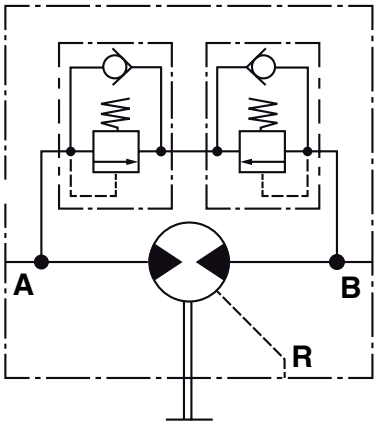
Variations for PGM 620 / PGM 640

non-adjustable with internal or external drain

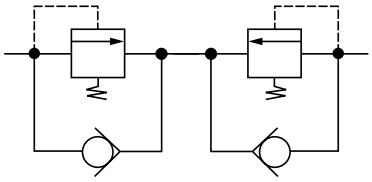
Applications

Fan Drives, Mower Blade Drives, Water Pump Drives and reversible hydrostatic transmissions

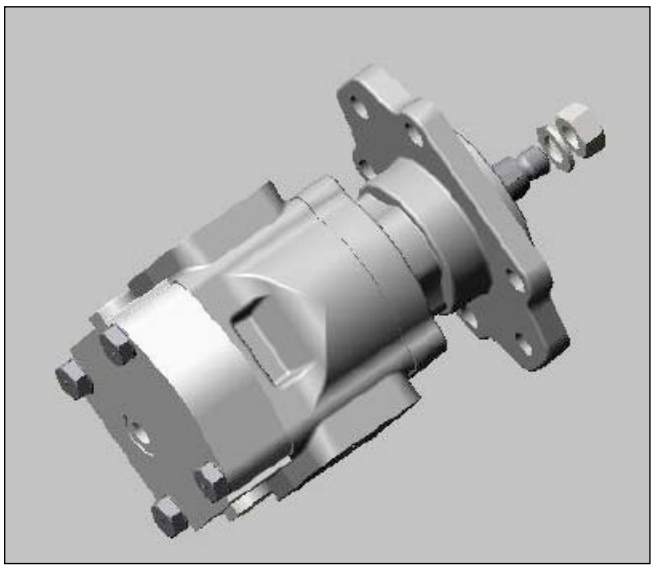
Motor Range PGM 620 / PGM 640	
Pressure Range	35-250 bar
Maximum Flow	100 lpm



Motor Range PGM 620 / PGM 640



CODE	Pressure bar
RMCF	50
RMCP	90
RMCR	100
RMCV	120
RMDB	150
RMDD	160
RMDK	190
RMDP	210
RMDT	230



Cross Port Pressure Relief Valves with Anti-Cavitation + Check Valves

Comments:

Motors with cross-port relief valve and anti-cavitation check valves in case drain passages are suitable for open-circuit applications with closed center valves and hydrostatic transmissions. The check valves allow flow to return to the inlet of the motor to prevent cavitation.
For winches, make up flow at low pressure is introduced at the case drain port.

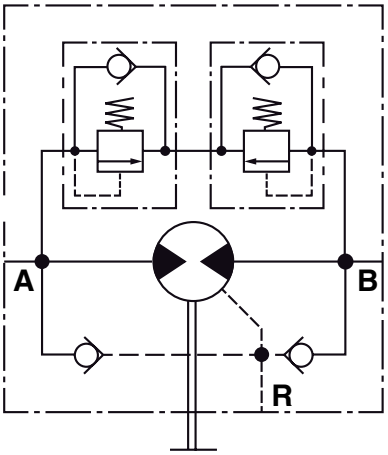
Variations for PGM 620 / PGM 640

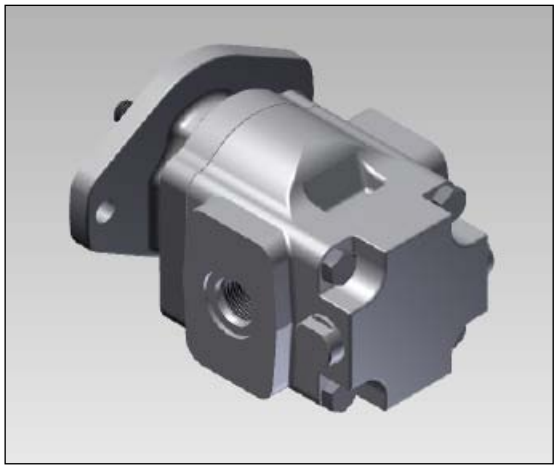
non-adjustable, with reverse flow check with internal or external drain

Applications

Fan Drives, Mower Blade Drives, Water Pump Drives and reversible hydrostatic transmissions, vibration drives on vibratory, rollers and winches

Motor Range PGM 620 / PGM 640	
Pressure Range	25-250 bar
Maximum Flow	100 lpm





Solenoid Proportional Pressure Relief Valve

Comments:

In a fan drive circuit fan speed is adjusted by providing a varying Pulse Width Modulated electrical current signal to the proportional relief valve which controls the flow to the fan motor. The proportional valve is typically a normal closed type to assure failsafe full fan speed in case of a lost signal.
The anti-cavitation check valve allows the motor to spin freely when the fan is powered down.

Variations for PGM 620 / PGM 640

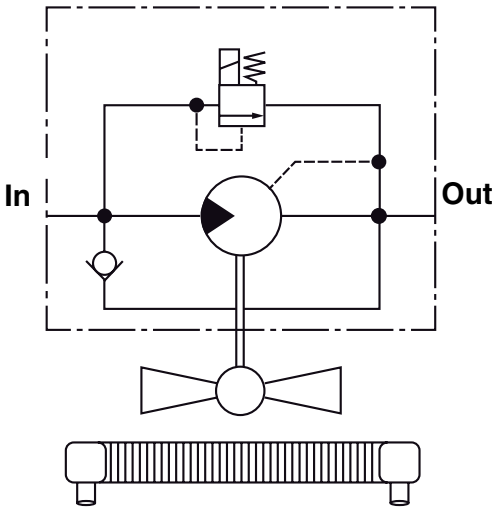
normally open valves, increasing pressure with increasing current
normally closed valves, decreasing pressure with increasing current with internal or tank return

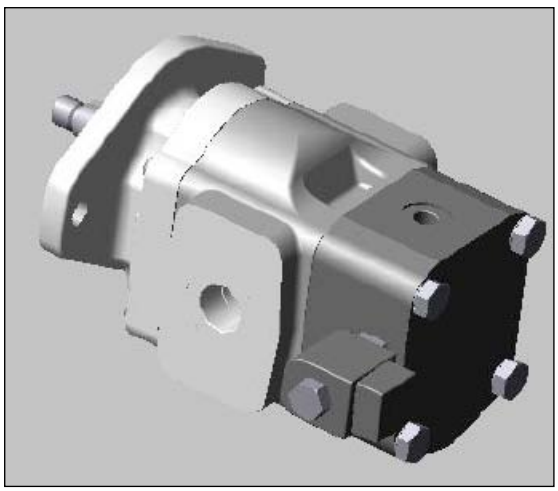
Applications

Fan Drives

Motor Range		
Ranges	PGM 620	PGM 640 .
Maximum Flow	95 lpm	95 lpm

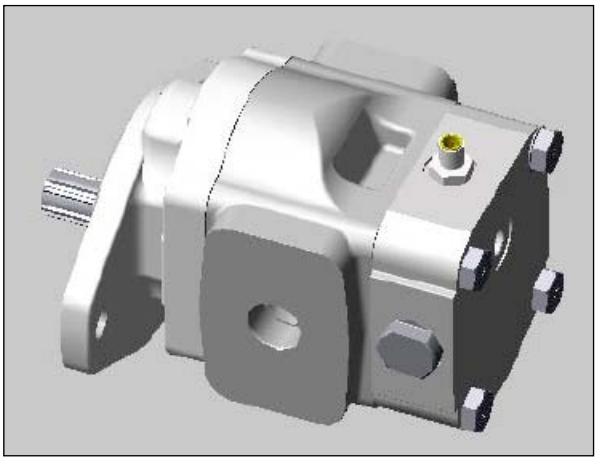
Pressure Range	
Pressure Range	standby pressure differential: 5 bar max. : equal to the max. pressure rating of the motor
Standard Pressure Relief Settings	100 / 210 / 350 bar other`s on request
Termination	on request



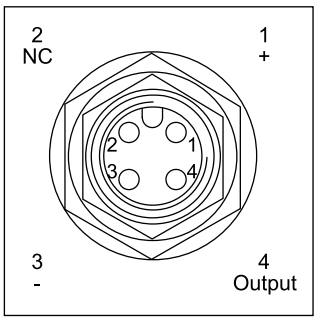


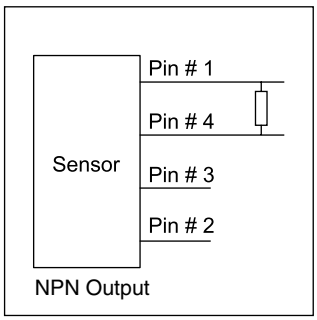
Speed Sensor

This rugged, weather resistant speed sensor is a Hall effect device. When externally powered, 30 square wave digital pulses per output shaft revolution are produced. By signal multiplication, 60 pulses per revolution can be obtained. The installation of this economical sensor does not affect the torque or side load capability of the motor into which it is installed.
The sensor has reverse polarity protection but no short circuit protection.



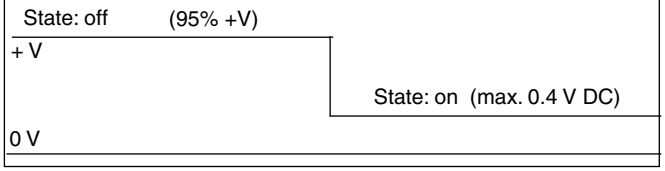
Speed sensor data	
Operating voltage range	4.5...24 V (DC)
Operating temperature	-30°...100° C
Operating frequency range	0...10 KHZ
Sink current	0...20 mA (max.)
Connection	4 Pin (12mm) DIN Standard





Formula pull-up resistor value (0.25 Watt, 5% tol.)

$$\frac{\text{Courant/Tensione } 4.5...24\ \text{V}}{\text{Sink current } 0...20\ \text{mA}} = \text{Resistor k Ohm}$$



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