

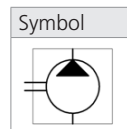
## Gear Pump – High Performance

### GP1

 Displacement up to 9.8 cm<sup>3</sup> (0.55 inch<sup>3</sup>) •  $p_{\max \text{ cont.}}$  250 bar (3600 PSI) • Speed from 750 to 3500 RPM


#### Technical Features

- › Operating pressure 250 bar, Peak pressure 280 bar
- › High-strength quality aluminum alloys pump with axial play compensation
- › Low noise level in whole operating range
- › High operational reliability and service life for 3000 operation hours
- › High volumetric efficiency up to 98 %
- › International standard flanges acc.to SAE, ISO, DIN



#### Technical Data

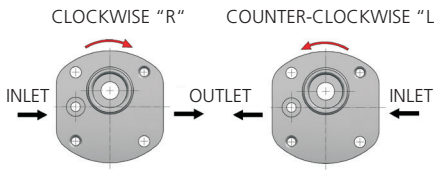
Nominal Size Parameters		Symbol	Unit	Displacement														
			Code	1	1,25	1,6	2	2,5	3,15	3,65	4,2	5	5,7	6,1	7,4	8	8,5	9,8
Actual displacement		V <sub>g</sub>	[cm³]	1.0	1.25	1.6	2.0	2.5	3.15	3.65	4.2	5.0	5.7	6.1	7.4	8.0	8.5	9.8
			[in³]	0.061	0.076	0.098	0.122	0.153	0.192	0.223	0.256	0.305	0.348	0.372	0.452	0.488	0.519	0.598
Rotation speed	nominal	n <sub>n</sub>	[min <sup>-1</sup> ]	1500														
	minimum	n <sub>min</sub>	[min <sup>-1</sup> ]	750														
	maximum	n <sub>max</sub>	[min <sup>-1</sup> ]	3500								3000			2500		2000	
Pressure at inlet	minimum	p <sub>1min</sub>	[bar]	-0.2 (-2.9 PSI)														
	maximum	p <sub>1max</sub>	[bar]	0.5 (7.3 PSI)														
Pressure at outlet	max. continuous	p <sub>2n</sub>	[bar]	250								200			180	150	120	
			[PSI]	3625								2900			2610	2175	1740	
	maximum	p <sub>2max</sub>	[bar]	270								260	220	190	155	130		
			[PSI]	3915								3770	3190	2755	2248	1885		
	peak	p <sub>3</sub>	[bar]	280								270	230	200	160	140		
			[PSI]	4060								3915	3335	2900	2320	2030		
Nominal flow rate (min.) at n <sub>n</sub> and p <sub>2n</sub>		Q <sub>n</sub>	[l·min <sup>-1</sup> ]	1.4	1.74	2.23	2.82	3.53	4.44	5.15	5.92	7.05	8.12	8.69	10.55	11.4	12.11	13.97
			[GPM]	0.37	0.46	0.59	0.74	0.93	1.17	1.36	1.56	1.86	2.15	2.30	2.79	3.01	3.20	3.69
Maximum flow rate at n <sub>max</sub> and p <sub>2max</sub>		Q <sub>max</sub>	[l·min <sup>-1</sup> ]	3.26	4.07	5.21	6.58	8.23	10.36	12.01	13.82	14.1	16.25	14.49	17.58	15.2	16.15	18.62
			[GPM]	0.86	1.08	1.38	1.74	2.17	2.74	3.17	3.65	3.72	4.29	3.83	4.64	4.02	4.27	4.92
Nominal input power (max.) at n <sub>n</sub> and p <sub>2n</sub>		P <sub>n</sub>	[kW]	0.73	0.91	1.16	1.47	1.84	2.31	2.68	3.08	3.67	3.38	3.62	3.96	3.56	3.78	3.49
Maximum input power at n <sub>max</sub> and p <sub>2max</sub>		P <sub>max</sub>	[kW]	1.83	2.29	2.93	3.70	4.63	5.83	6.76	7.77	7.64	7.45	6.64	6.96	4.91	5.22	5.04

- 1)  $p_{2n}$  maximum continuous pressure - maximum working pressure, at which the pump can be operated without time limitation.
- 2)  $p_{2\max}$  maximum pressure - maximum pressure permissible for a short time, max. 20 s.
- 3)  $p_3$  peak pressure - short-time pressure (fractions of a second) arising in case of a sudden change of the operating mode; any excess of this pressure during operation is impermissible.

Gear Pump / Size		GP1 - 1,0 ... 9,8 ccm
Volumetric efficiency	%	92 ÷ 98
Mechanical efficiency	%	85
Fluid temperature range (NBR)	°C (°F)	-25 ... 80 (-13 ... 176)
Viscosity range	mm <sup>2</sup> /s (SUS)	16 ... 200 (75 ... 927), 1200 (5849) for cold start
Hydraulic fluid		Hydraulic oils of power classes (HL, HLP) to DIN 51524
Max. degree of fluid contamination for $p_2 \leq 200$ bar		Class 21/18/15 acc. to ISO 4406
Max. degree of fluid contamination for $p_2 \geq 200$ bar		Class 20/17/14 acc. to ISO 4406

### Direction of rotation

Determine direction of rotation by looking at the drive shaft.  
The pump can be used only in the specified direction of rotation.



### Ordering Code

**10-position code**

**GP1** - **Displacement** - **Direction of rotation** - **Flange design** - **N9**

**Gear pump series 1**

1  
1,25  
1,6  
2  
2,5  
3,15  
3,65  
4,2  
5  
5,7  
6,1  
7,4  
8  
8,5  
9,8

**Displacement**

**Direction of rotation**

Counter clockwise  
Clockwise

**Flange design**

Customized

**No designation 04**

**Shaft seal**

standard  
without shaft seal

**Seals**

NBR









**Inlet / Outlet ports**

**Ports orientation**

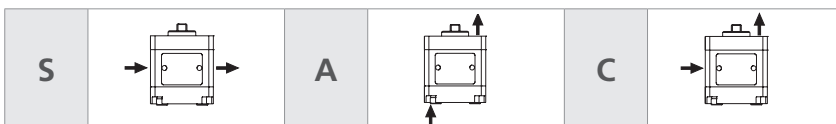
**Shaft Type**

Customized

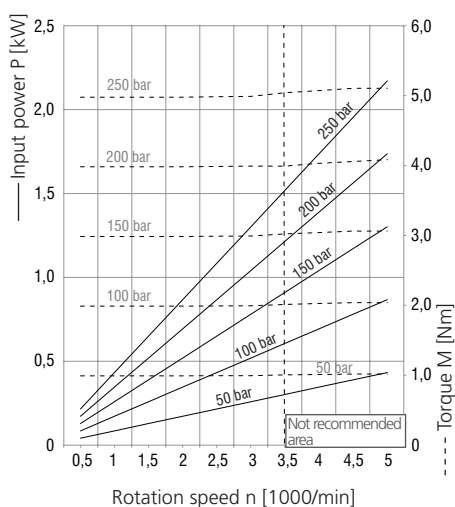
## Combination of Flanges and Shafts

Code	Drive Shafts	Flange Design	RB	SA	AC	AE
						
CB, CC			●		●	
CD					●	●
KC, KD					●	●
VE				●		
DE					●	

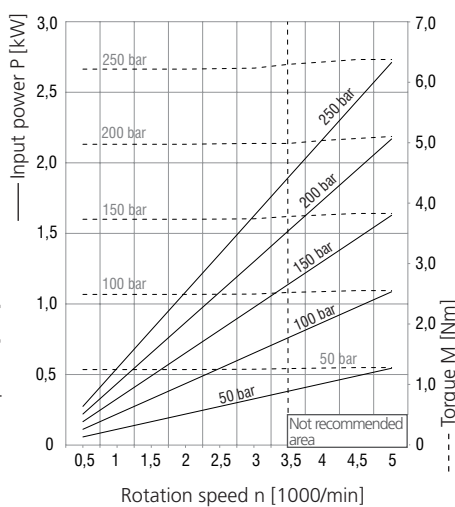
## Ports orientation



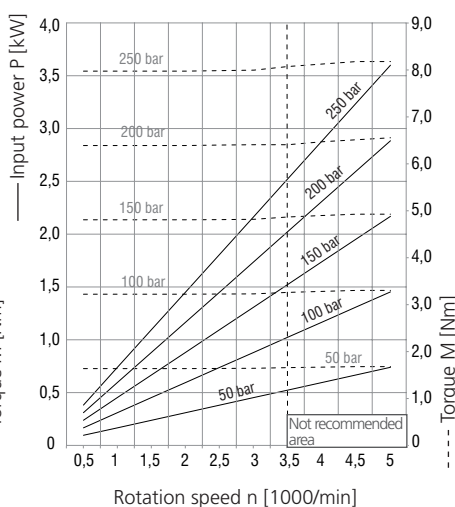
### 1 ccm



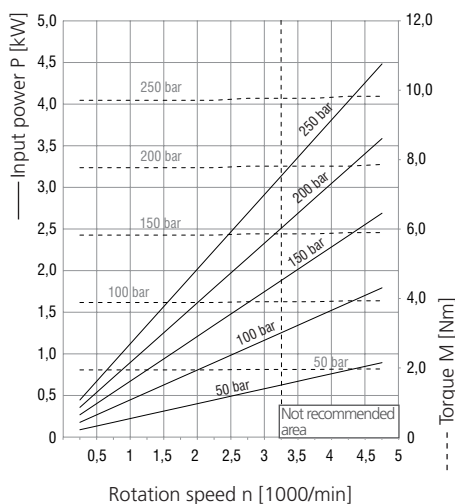
### 1,25 ccm



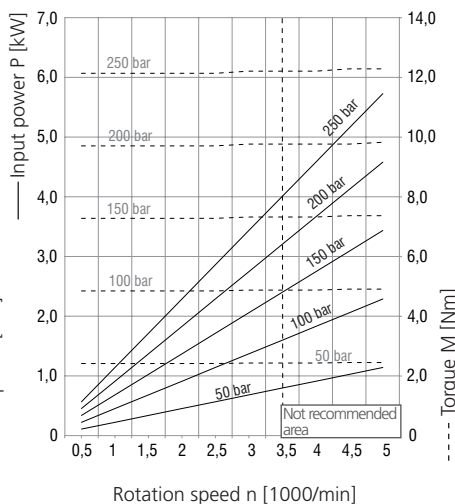
### 1,6 ccm



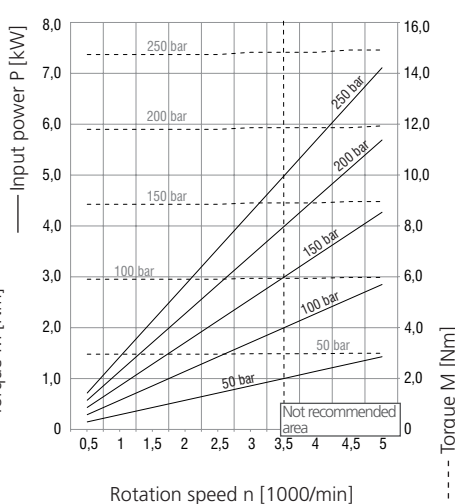
### 2 ccm



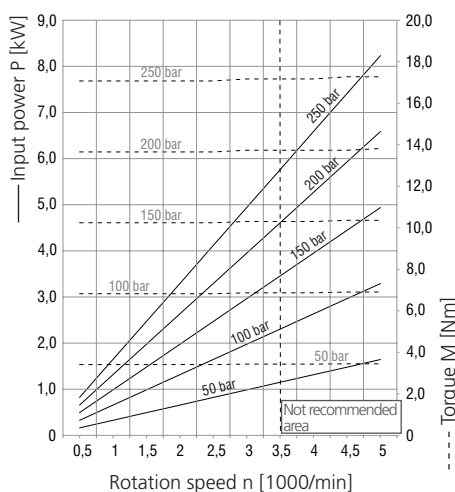
### 2,5 ccm



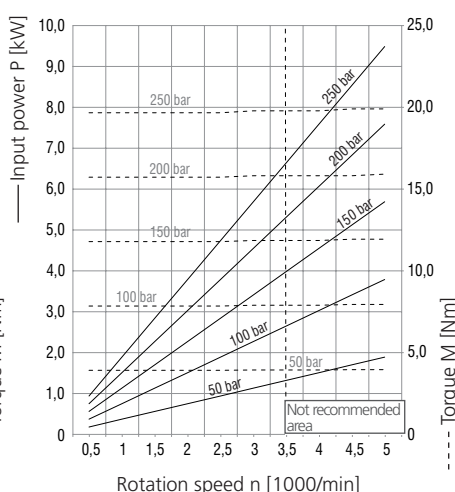
### 3,15 ccm



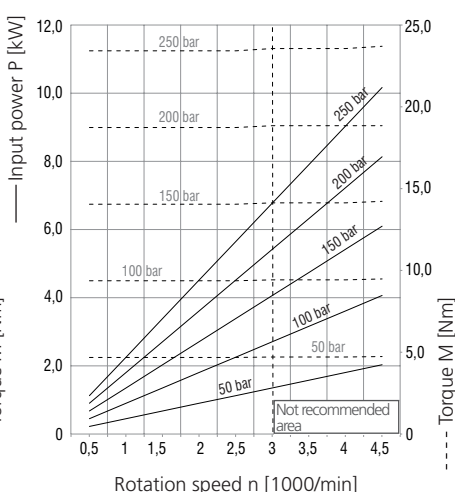
### 3,65 ccm



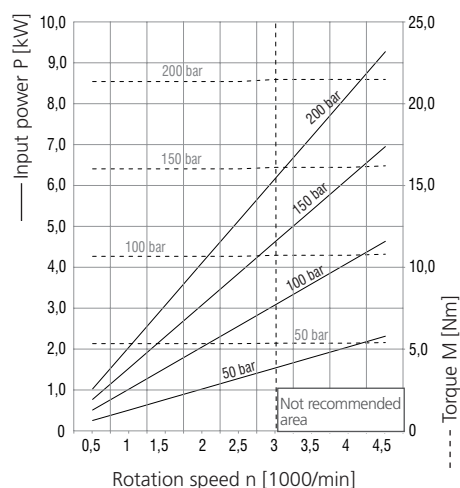
### 4,2 ccm



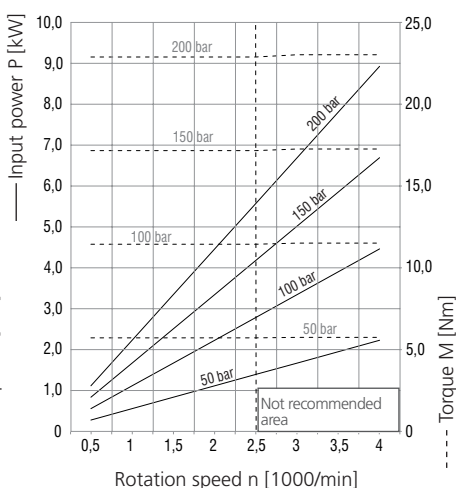
### 5 ccm



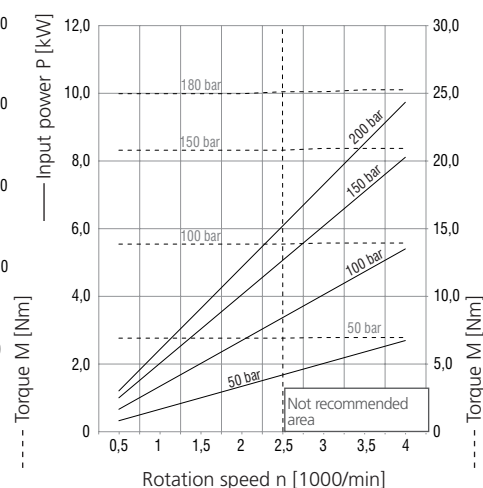
### 5,7 ccm



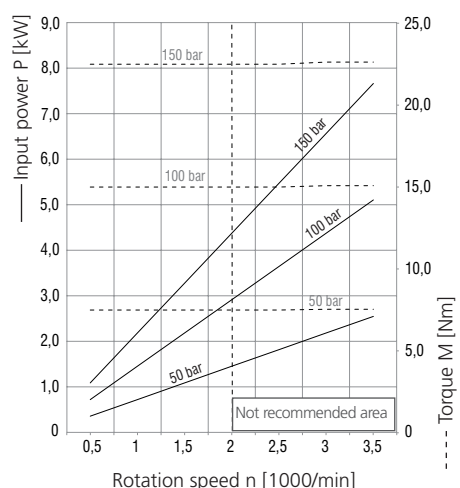
### 6,1 ccm



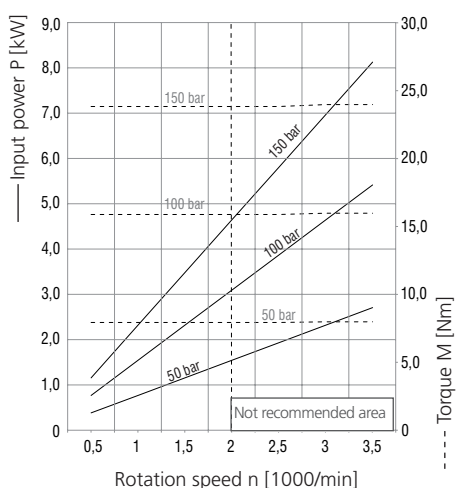
### 7,4 ccm



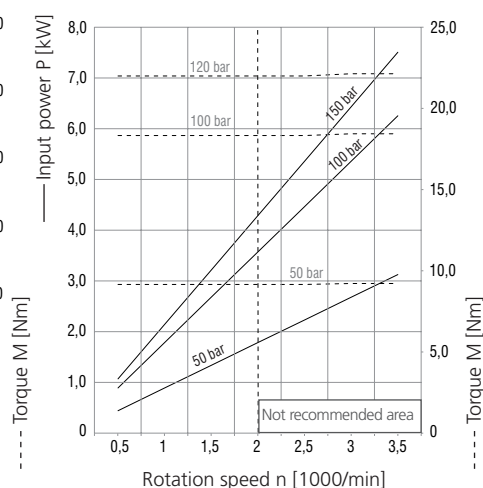
### 8 ccm



### 8,5 ccm



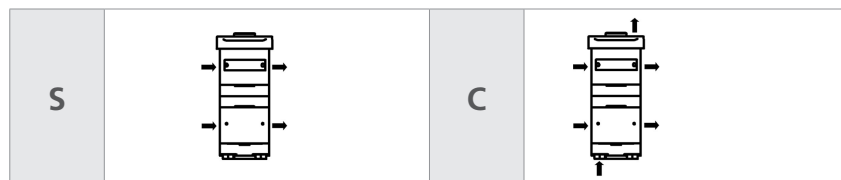
### 9,8 ccm



# Ordering Code - Multiple Version

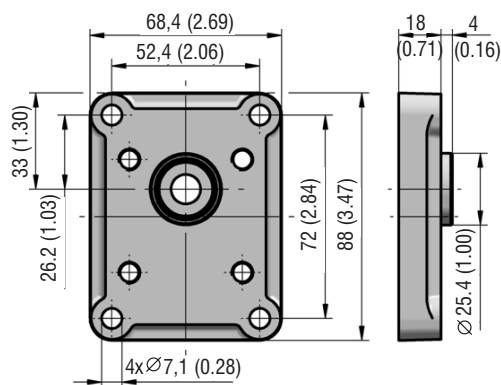
<b>GP1</b> -	<b>3,15</b> / <b>3,15</b>	<b>R</b> -	<b>SA</b>	<b>VE</b> -	<b>S</b>	<b>GBGB</b> / <b>GBGB</b> -	<b>N9</b>	<b>04</b>
<b>Gear pump serie 1</b>	Front pump (shaft side) Rear pump					Front pump (shaft side) - inlet, outlet port Rear pump - inlet, outlet port.		<b>No designation</b> <b>04</b> Shaft seal standard without shaft seal
<b>Displacement</b>								<b>Seals</b> NBR
<b>Direction of rotation</b> Counter clockwise Clockwise		L R	AC AE AG RB SA *G	CB CC CD DE KC KD VE *G				<b>Inlet / Outlet ports</b>
<b>Flange design</b> Customized					S C			<b>Ports orientation</b> Use blind plug for not used suction ports <b>Shaft Type</b> Customized

## Ports orientation

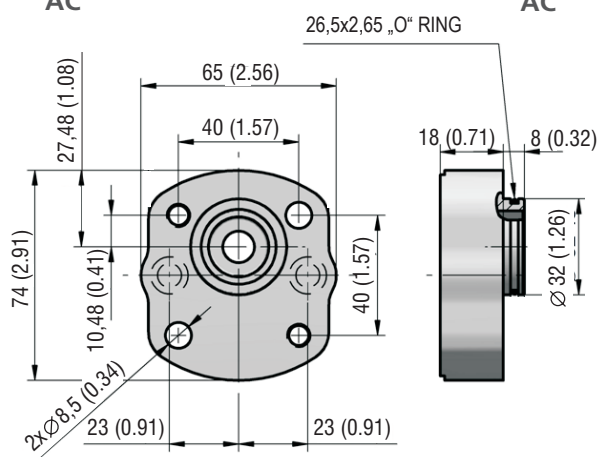


## Flange design in millimeters (inches)

**RB**

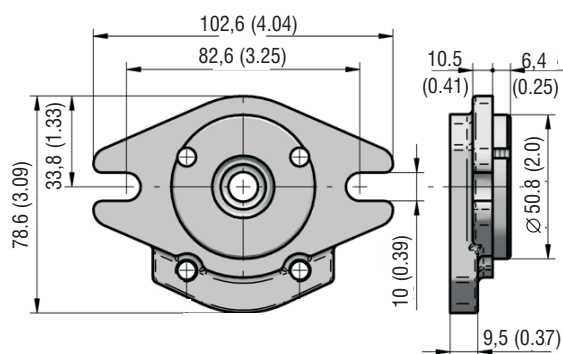


**AC**

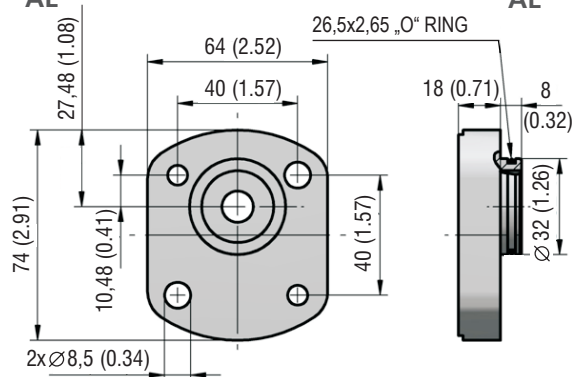


**AC**

**SA**



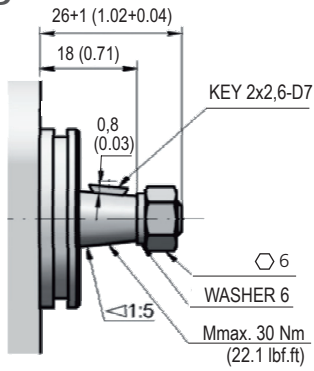
**AE**



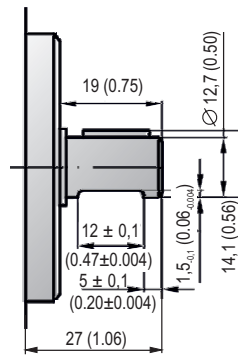
**AE**

## Shaft design in millimeters (inches)

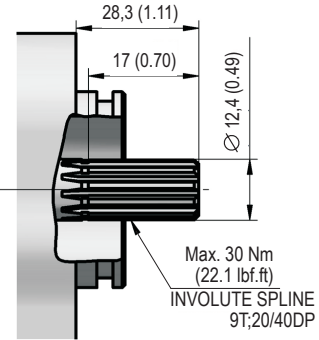
CD



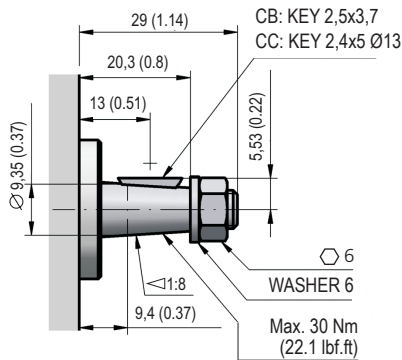
VE



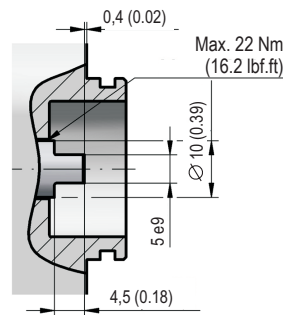
DE



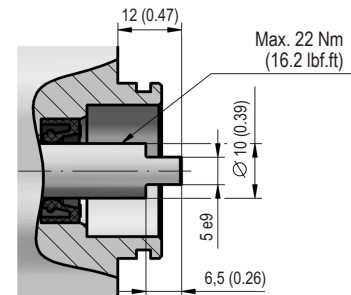
CB, CC



KC

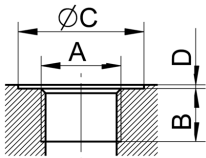


KD



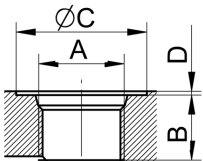
## Ports design in millimeters (inches)

BSPP pipe thread according to 228-1



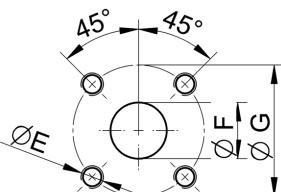
Displacement [cm <sup>3</sup> (in <sup>3</sup> )]	Inlet Code	Dimension				Outlet Code
		A	B	C	D	
1.0-2.5 (0.061-0.153)	GB	G 3/8	14 (0.55)	24 (0.94)	1 (0.04)	GB
3.15-9.8 (0.192-0.598)	GC	G 1/2		34 (1.34)		GB

UNF thread according to SAE



Displacement [cm <sup>3</sup> (in <sup>3</sup> )]	Inlet Code	Dimension				Outlet Code	Dimension			
		A	B	C	D		A	B	C	D
1.0-6.1 (0.192-0.372)	UC	3/4-16UNF	13 (0.51)	24.6 (0.94)	1(0.04)	UB	9/16-18UNF	13 (0.51)	24.6 (0.94)	1(0.04)
7.4-9.8 (0.452-0.598)	UD	7/8-14UNF	16 (0.63)	34 (1.34)		UC	3/4-16UNF	13 (0.51)	24.6 (0.94)	

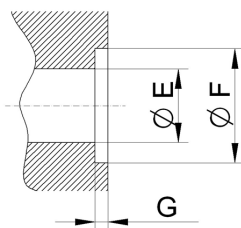
Flanged fittings according to DIN 8901/8902



Displacement [cm <sup>3</sup> (in <sup>3</sup> )]	Inlet Code	Dimension			Outlet Code
		E	F	G	
ALL	HD	M6	12 (0.47)	30 (1.18)	HD

## Ports design in millimeters (inches)

### Inlet / Outlet in flange



Code	Dimension		
	E	F	G
PA	8 (0.31)	12.4 (0.49)	1.4 (0.06)

## GP1 Pumps - special design in millimeters (inches)

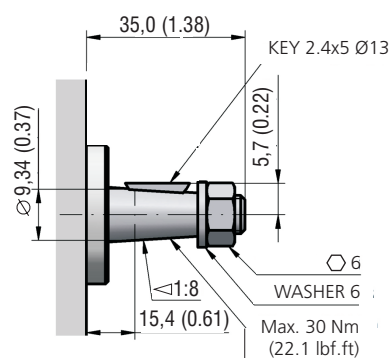
Single pump GP1-\*\*L-AGCG-AGBPA-N914

Double pump GP1-\*\*/\*\*L-AGCG-CGBPA/GBGBGB-N914

914 - Special design for SMA 05 hydraulic units:

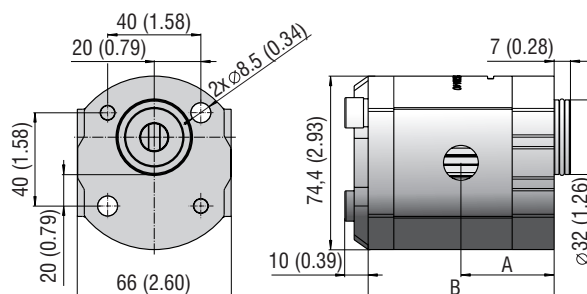
Flange AE with pressure port PA

Shaft prolonged



## GP1 Pumps - basic design in millimeters (inches)

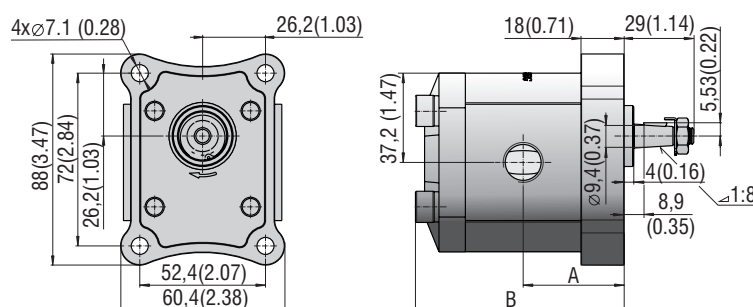
GP1-\*R(L)-ACKC-SGBGB-N



Displacement [cm³(in³)/rev]	A	B	Displacement [cm³(in³)/rev]	A	B
1 (0.06)	39.1 (1.54)	71 (2.79)	5 (0.31)	47.1 (1.85)	87.2 (3.43)
1.25 (0.08)	39.5 (1.56)	72 (2.83)	5.7 (0.35)	48.5 (1.91)	90.1 (3.54)
1.6 (0.10)	40.3 (1.59)	73.6 (2.87)	6.1 (0.37)	49.4 (1.95)	91.8 (3.58)
2 (0.12)	41.1 (1.62)	75.2 (2.95)	7.4 (0.45)	52.1 (2.05)	97.2 (3.82)
2.5 (0.15)	42.1 (1.66)	77.2 (3.03)	8 (0.49)	53.4 (2.10)	99.7 (3.89)
3.15 (0.19)	43.5 (1.71)	79.8 (3.11)	8.5 (0.52)	54.4 (2.14)	101.7 (3.98)
3.65 (0.22)	44.4 (1.75)	81.9 (3.19)	9.8 (0.60)	57 (2.24)	107 (4.21)
4.2 (0.26)	45.5 (1.79)	84.1 (3.31)			

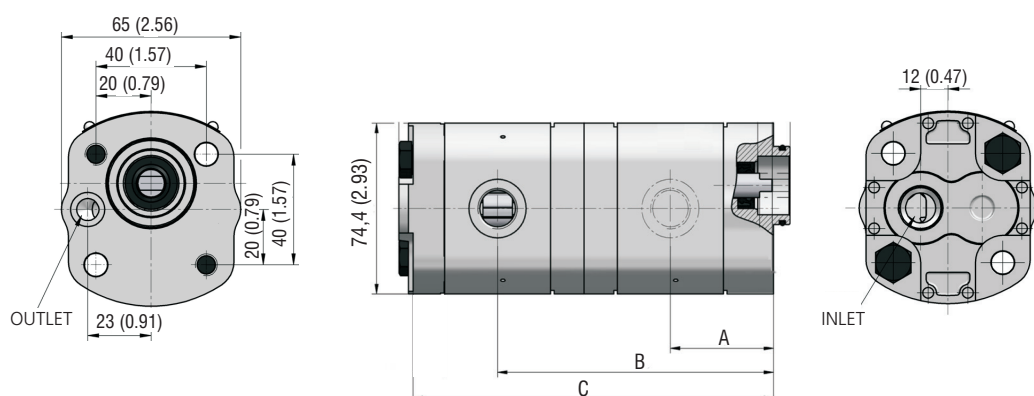
GP1 Pumps - basic design in millimeters (inches)

GP1-\*R(L)-RBCC-SGBGB-N



Displacement [cm <sup>3</sup> (in <sup>3</sup> )/rev]	A	B	Displacement [cm <sup>3</sup> (in <sup>3</sup> )/rev]	A	B
1 (0.06)	39.1 (1.54)	81 (3.19)	5 (0.31)	47.1 (1.85)	97.2 (3.83)
1.25 (0.08)	39.5 (1.56)	82 (3.23)	5.7 (0.35)	48.5 (1.91)	100.1 (3.94)
1.6 (0.10)	40.3 (1.59)	83.6 (3.29)	6.1 (0.37)	49.4 (1.95)	101.8 (4.01)
2 (0.12)	41.1 (1.62)	85.2 (3.35)	7.4 (0.45)	52.1 (2.05)	107.2 (4.22)
2.5 (0.15)	42.1 (1.66)	87.2 (3.43)	8 (0.49)	53.4 (2.10)	109.7 (4.32)
3.15 (0.19)	43.5 (1.71)	89.8 (3.54)	8.5 (0.52)	54.4 (2.14)	111.7 (4.40)
3.65 (0.22)	44.4 (1.75)	91.9 (3.62)	9.8 (0.60)	57 (2.24)	117 (4.61)
4.2 (0.26)	45.5 (1.79)	94.1 (3.71)			

GP1-\*/\*L-ACKA-CGBPA/GBGBGB-N



Displacement [cm <sup>3</sup> (in <sup>3</sup> )/rev]	A	B	C	Displacement [cm <sup>3</sup> (in <sup>3</sup> )/rev]	A	B	C
1.6 / 5 (0.10 / 0.31)	40.3 (1.59)	128.7 (5.07)	168.8 (6.65)	2.5 / 5 (0.15 / 0.31)	42.1 (1.66)	132.3 (5.21)	172.4 (6.79)
1.6 / 5.7 (0.10 / 0.35)	40.3 (1.59)	130.1 (5.12)	171.7 (6.76)	3.15 / 4.2 (0.19 / 0.26)	43.5 (1.71)	133.3 (5.25)	171.9 (6.77)
1.6 / 6.1 (0.10 / 0.37)	40.3 (1.59)	131 (5.16)	173.7 (6.84)	6.1 / 1.6 (0.37 / 0.10)	49.4 (1.95)	140.1 (5.52)	173.4 (6.83)
2.5 / 4.2 (0.15 / 0.26)	42.1 (1.66)	130.7 (5.15)	169.3 (6.67)				