

Gear Pump – High Performance Version

GP1

Displacement up to 11,8 cm³ (0.72 inch³) • p_{max} 310 bar (4500 PSI) • Speed from 500 to 5000 RPM


Technical Features

- › Operating pressure 280 bar, Peak pressure 310 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, GOST

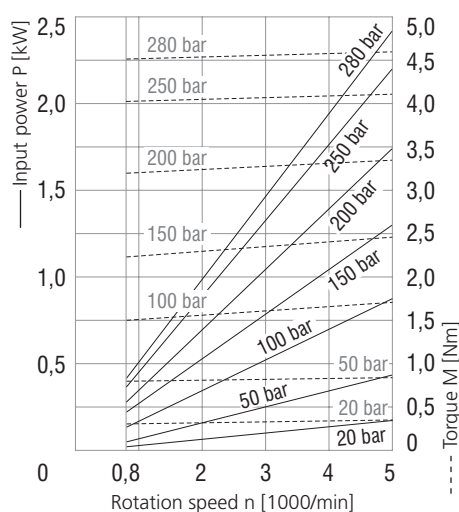
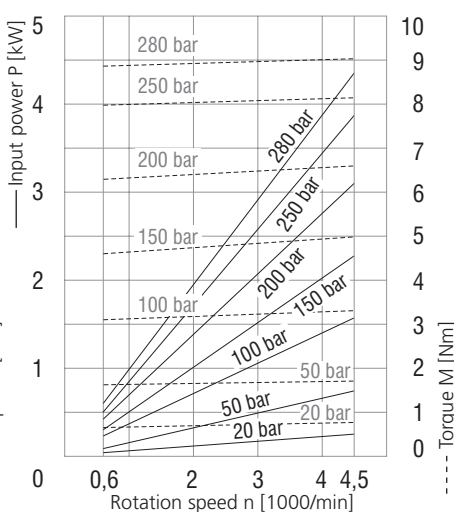
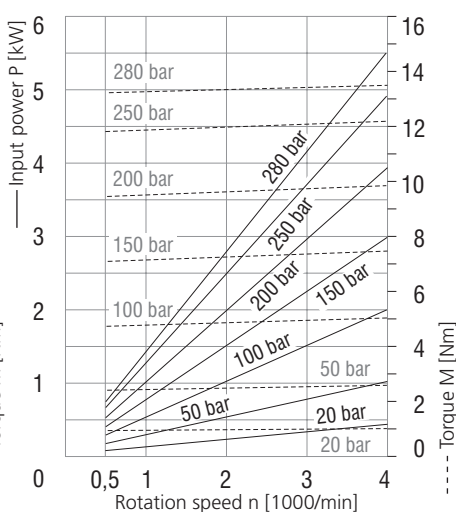
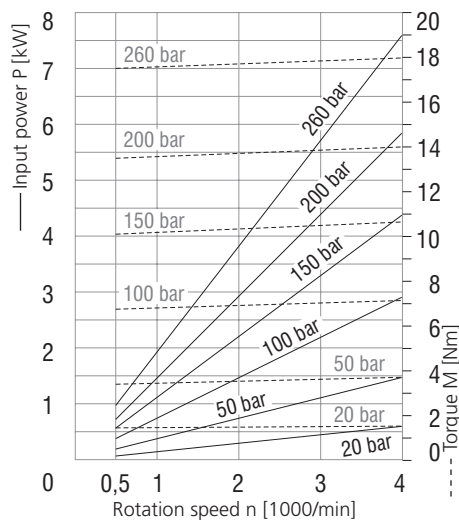
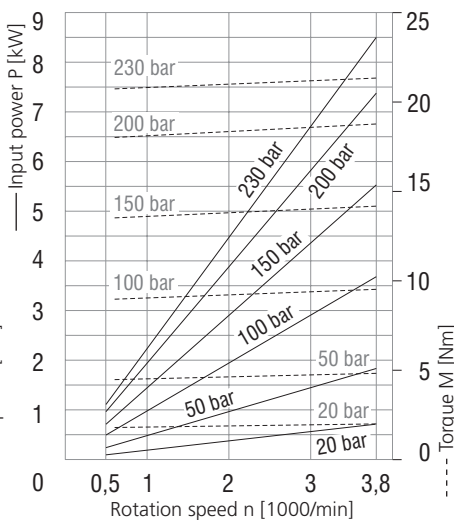
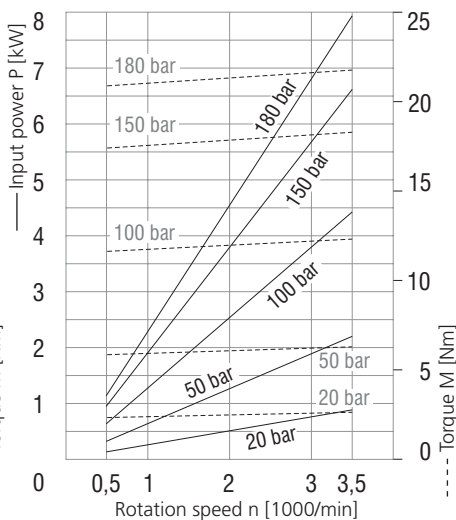
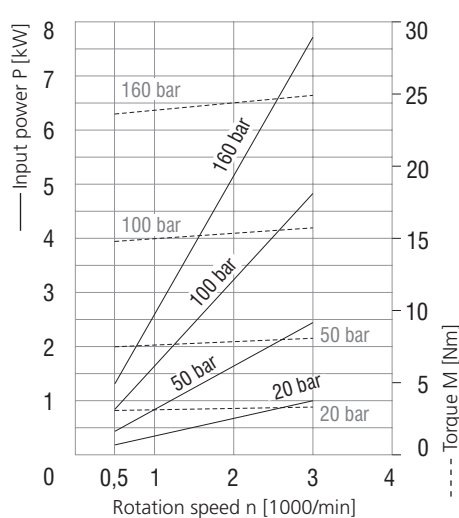
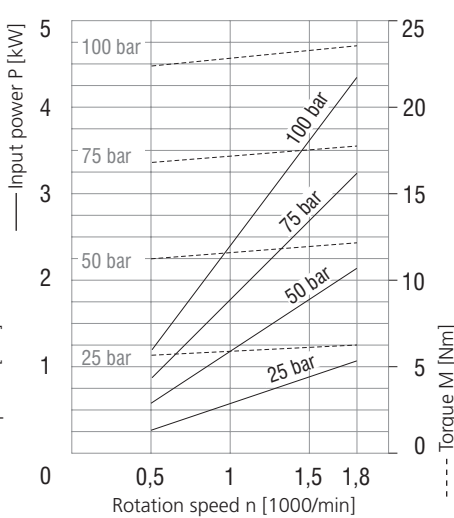
Symbol	R, L	B

Technical Data

Nominal Size Parameters		Symbol	Unit	Displacement														
				0,8	1,2	1,6	2,1	2,5	3,3	3,6	4,4	4,8	5,8	6,2	7,0	7,9	10,0	11,8
Actual displacement		V _g	[cm³]	0,855	1,257	1,686	2,086	2,514	3,316	3,611	4,386	4,787	5,804	6,205	7,007	7,890	10,003	11,795
			[in³]	0.052	0.077	0.103	0.127	0.153	0.202	0.220	0.268	0.292	0.354	0.379	0.428	0.481	0.610	0.720
Rotation speed	nominal	n _n	[min ⁻¹]	1500														
	minimum	n _{min}	[min ⁻¹]	800		600		500										
	maximum	n _{max}	[min ⁻¹]	5000		4500		4000				3800		3500	3000		1800	
Pressure at inlet*	minimum	p _{1min}	[bar]	-0,3 (-4.4 PSI)														
	maximum	p _{1max}	[bar]	0,5 (7.3 PSI)														
Pressure at outlet**	max. continuous	p _{2n}	[bar]	280					260	250	230	200	180	170	160	100		
			[PSI]	4061					3771	3625	3336	2901	2611	2466	2321	1450		
	maximum	p _{2max}	[bar]	300					280	270	250	220	200	190	180	150		
			[PSI]	4351					4061	3916	3625	3191	2901	2756	2611	2176		
	peak	p ₃	[bar]	310					290	280	260	230	210	200	190	160		
			[PSI]	4496					4206	4061	3771	3336	3046	2901	2756	2321		
Nominal flow rate (min.) at n _n and p _{2n}		Q _n	[l·min ⁻¹]	1,07	1,60	2,13	2,71	3,35	4,54	4,98	6,06	6,61	8,00	8,56	9,65	10,90	13,90	16,30
			[GPM]	0.28	0.42	0.56	0.72	0.88	1.20	1.32	1.60	1.75	2.11	2.26	2.55	2.88	3.67	4.31
Maximum flow rate at n _{max} and p _{2max}		Q _{max}	[l·min ⁻¹]	3,92	5,88	7,06	9,26	9,80	12,94	14,11	17,25	17,88	21,60	21,27	20,58	23,23	17,64	20,82
			[GPM]	1.04	1.55	1.87	2.45	2.59	3.42	3.73	4.56	4.72	5.71	5.62	5.44	6.14	4.66	5.50
Nominal input power (max.) at n _n and p _{2n}		P _n	[kW]	0,7	1,04	1,39	1,72	2,07	2,97	3,35	3,23	3,24	3,41	3,29	3,50	3,71	2,94	3,47
Maximum input power at n _{max} and p _{2max}		P _{max}	[kW]	2,51	3,70	4,96	5,52	6,65	7,80	7,93	9,29	8,29	9,51	8,52	7,83	8,35	5,30	6,06
Weight		m	[kg]	0,82	0,84	0,85	0,87	0,89	0,92	0,93	0,96	0,98	1,02	1,04	1,08	1,10	1,20	1,25
			[lbs]	1.81	1.85	1.87	1.92	1.96	2.03	2.05	2.12	2.16	2.25	2.29	2.38	2.43	2.65	2.76

- 1) *Inlet pressure in the reversible design can be up to $p_1 = p_{2n} - 70$ bar max. External drainage must be used in case of the reversible design.
- 2) **Outlet pressure in the reversible design is 10% lower than shown in the table (depending on operating conditions).
- 3) p_{2n} maximum continuous pressure - maximum working pressure, at which the pump can be operated without time limitation.
- 4) p_{2max} maximum pressure - maximum pressure permissible for a short time, max. 20 s.
- 5) 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 - 0,8 ...11,8 ccm
Volumetric efficiency	%	92 ÷ 98
Mechanical efficiency	%	85
Fluid temperature range (NBR)	°C (°F)	-20...80 (-4...176)
Fluid temperature range (FPM)	°C (°F)	-20...120 (-4...248)
Viscosity range	mm ² /s (SUS)	20 ...80 (97 ...390), 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

0,8 ccm

1,6 ccm

2,5 ccm

3,6 ccm

4,8 ccm

6,2 ccm

7,9 ccm

11,8 ccm


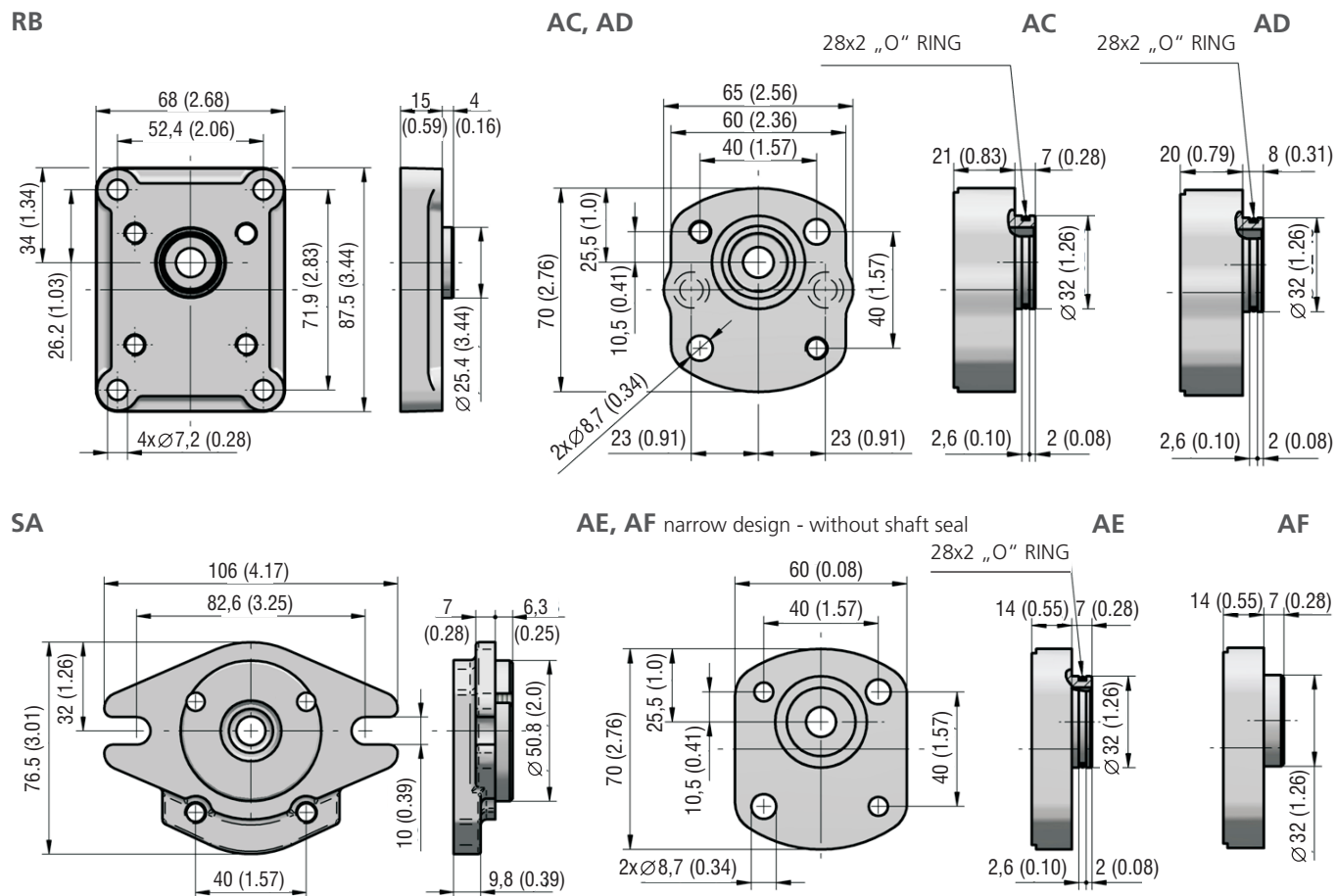
Ordering Code - Multiple Version

	GP1	- 3,3 / 3,3	R	- SA	DA	- S	GBGB / GBGB	- V	004	
Gear pump serie 1		Front pump (shaft side)					Front pump (shaft side) - inlet, outlet port			Shaft seal standard without shaft seal
		Rear pump					Rear pump - inlet, outlet port.			
Displacement										
Direction of rotation										
Counter clockwise										
Clockwise										
Bi-directional										
Flange design										
*G Customized										

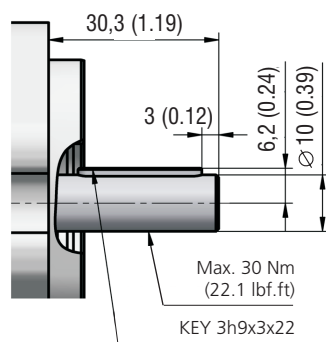
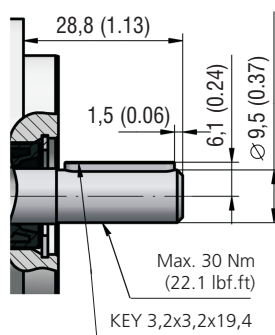
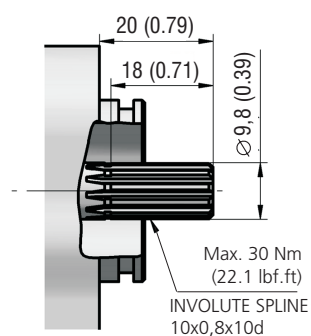
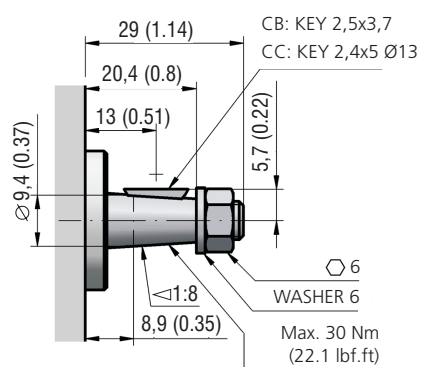
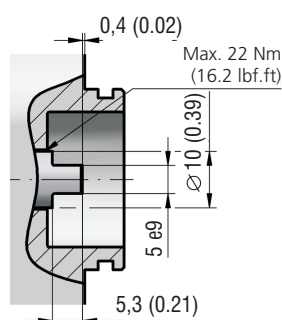
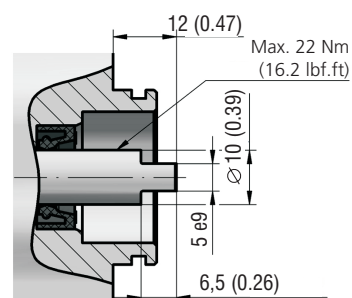
Ports orientation

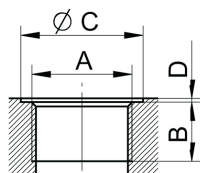
S		*C		*Not available for Bi-directional pumps
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Flange design in millimeters (inches)



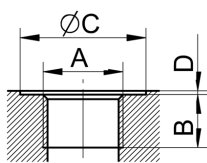
Shaft design in millimeters (inches)

VB

VC

DA

CB, CC

KC

KD

Ports design in millimeters (inches)

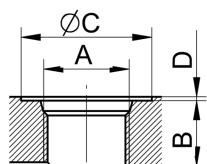
Metric thread according to ISO 6149


Displacement [cm ³ (in ³)]	Inlet Code	Dimension				Outlet Code	Displacement [cm ³ (in ³)]
		A	B	C	D		
	xx	M12x1,5	12 (0.47)	20 (0.79)	1 (0.04)	MB	ALL
0,18-0,5 (0.01-0.03)	MC	M14x1,5	13 (0.51)	26 (1.02)		MC	ALL
ALL	MD	M16x1,5	14 (0.55)	22 (0.89)		MD	ALL
ALL	ME	M18x1,5	13 (0.51)	30 (1.18)		ME	ALL
ALL	MF	M20x1,5	14 (0.55)	26 (1.02)		xx	
3,3-11,8 (0.20-0.72)	MH	M22x1,5	13 (0.51)	35 (1.38)		xx	
DRAIN	MA	M10x1	8 (0.31)	15 (0.59)		xx	

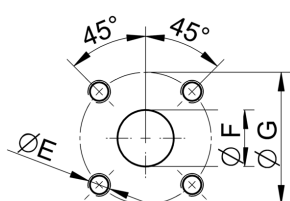
Ports design in millimeters (inches)

BSPP pipe thread according to 228-1


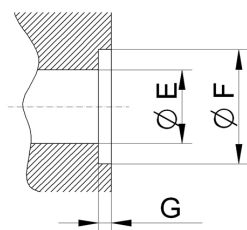
Displacement [cm ³ (in ³)]	Inlet Code	Dimension				Outlet Code
		A	B	C	D	
ALL	xx	G1/4	13 (0.51)	26 (1.02)	1 (0.04)	GA
	GB	G3/8		24 (0.94)		GB
	GC	G1/2		34 (1.34)		GC

UNF thread according to SAE


Displacement [cm ³ (in ³)]	Inlet Code	Dimension				Outlet Code
		A	B	C	D	
ALL	xx	9/16-18UNF	13 (0.51)	24,6 (0.97)	1 (0.04)	UB
	UC	3/4-16UNF				UC
	UD	7/8-14UNF	16 (0.63)	34 (1.34)		xx

Flanged fittings according to DIN 8901/8902


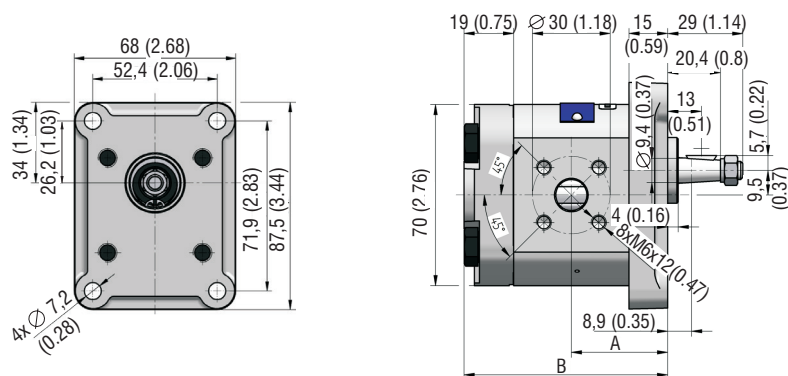
Displacement [cm ³ (in ³)]	Inlet Code	Dimension			Outlet Code
		E	F	G	
ALL	HA	M5, depth 12	8 (0.31)	26 (1.02)	HA
	HB		10 (0.39)		HB
	HC	M6 depth 12	8 (0.31)	30 (1.18)	HC
	HD		12 (0.47)		HD

Inlet / Outlet in flange


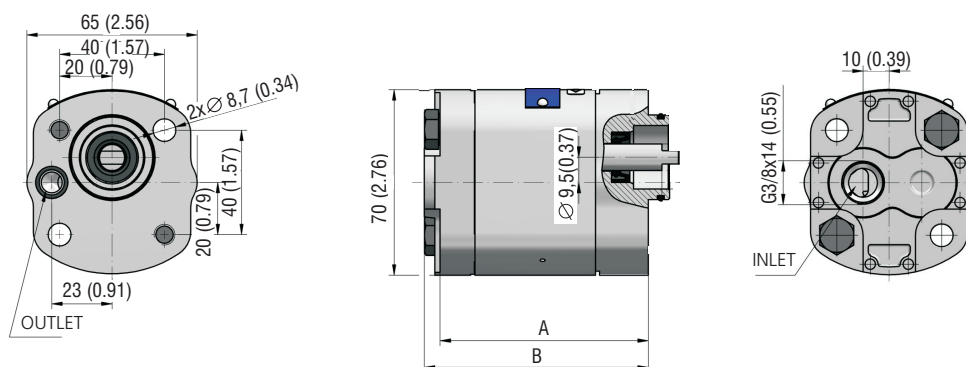
Code	Dimension		
	E	F	G
PA	8 (0.31)	12,4 (0.49)	1,4 (0.06)

Technical drawings of the 1000 Series 1/2" valve. The left drawing is a front view showing a hexagonal body with a central port and four side ports. Dimensions include: overall width 103 (4.06), inner width 82.5 (3.25), overall height 76.5 (3.01), bottom width 60 (2.36), and side port height 10.5 (0.41). The right drawing is a side view showing the valve's profile. Dimensions include: overall height 70 (2.76), top flange width 19 (0.75), top flange thickness 7 (0.28), top flange outer diameter 28.8 (1.13), side port height 1.5 (0.06), side port outer diameter 6.1 (0.24), side port length 9.5 (0.37), bottom flange width 15 (0.59), bottom flange thickness 6.3 (0.25), and bottom flange outer diameter 19 (0.75). The drawing also indicates dimensions A and B for the side port and body respectively.

GP1-*R-RBCC-SHDUD-N

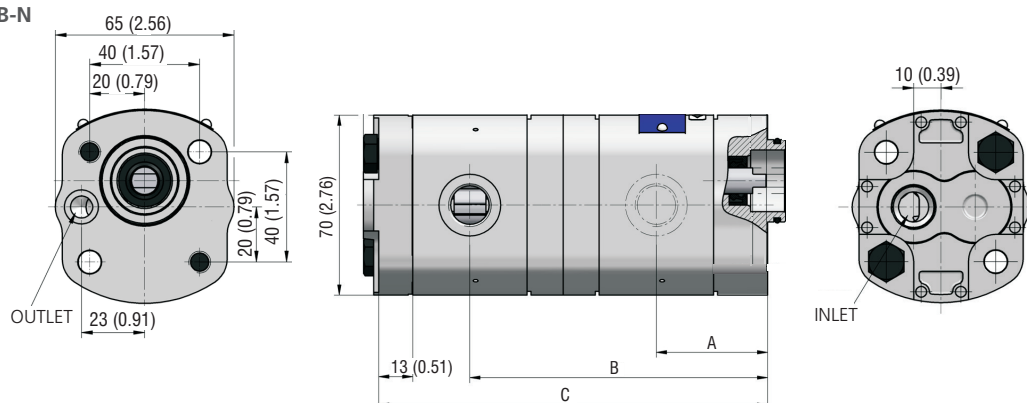


GP1-*L-ADKD-AGBPA-N

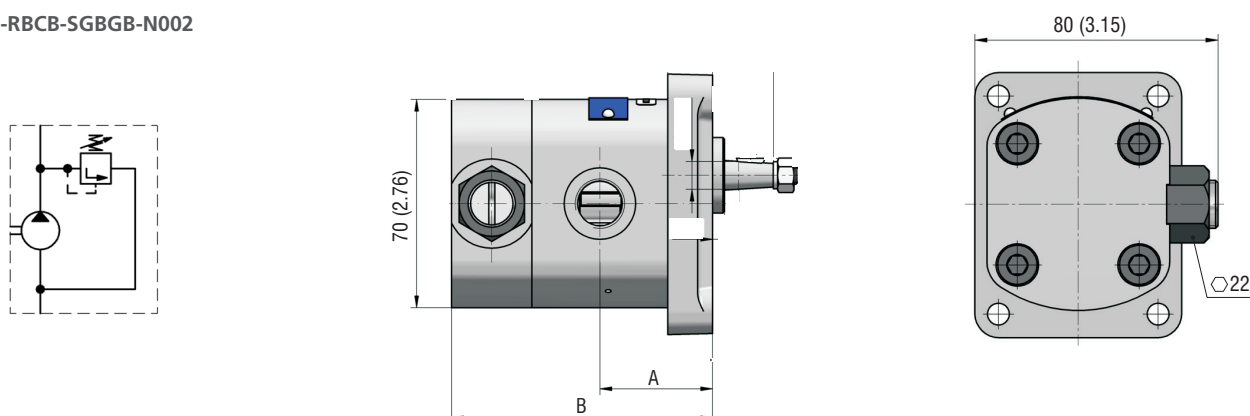


Displacement [cm ³ (in ³)/rev]	A	B	Displacement [cm ³ (in ³)/rev]	A	B
0,8 (0.05)	68,3 (2.69)	74,3 (2.93)	3,6 (0.22)	78,6 (3.09)	84,6 (3.33)
1,2 (0.07)	69,8 (2.75)	75,8 (2.98)	4,4 (0.27)	81,5 (3.21)	81,5 (3.21)
1,6 (0.10)	71,3 (2.81)	77,3 (3.04)	4,8 (0.29)	83,0 (3.27)	89,0 (3.50)
2,1 (0.13)	72,9 (2.87)	78,9 (3.11)	5,8 (0.35)	86,8 (3.42)	92,8 (3.65)
2,5 (0.15)	74,5 (2.93)	80,5 (3.17)	6,2 (0.38)	88,3 (3.48)	94,3 (3.71)
3,3 (0.20)	77,5 (3.05)	83,5 (3.29)	7,9 (0.48)	94,6 (3.72)	100,6 (3.96)

GP1 Pumps - basic design in millimeters (inches)

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


Displacement [cm ³ (in ³)/rev]	A	B	C	Displacement [cm ³ (in ³)/rev]	A	B	C
1,6 / 4,8 (0.10 / 0.29)	40,1 (1.58)	112,3 (4.42)	150,3 (5.92)	3,3 / 4,4 (0.20 / 0.27)	43,2 (1.70)	117,7 (4.63)	155,0 (6.10)
1,6 / 5,8 (0.10 / 0.35)	40,1 (1.58)	114,2 (4.50)	154,1 (6.07)	6,2 / 1,6 (0.38 / 0.10)	48,6 (1.91)	123,4 (4.86)	155,6 (6.13)
1,6 / 6,2 (0.10 / 0.38)	40,1 (1.58)	115,0 (4.53)	155,6 (6.13)	7,9 / 1,2 (0.48 / 0.07)	51,8 (2.04)	129,0 (5.08)	160,4 (6.31)
2,5 / 4,4 (0.15 / 0.27)	41,7 (1.64)	114,7 (4.52)	152,0 (5.98)	7,9 / 2,5 (0.48 / 0.15)	51,8 (2.04)	131,4 (5.17)	165,1 (6.50)
2,5 / 4,8 (0.15 / 0.29)	41,7 (1.64)	115,5 (4.55)	153,5 (6.04)				

GP1-*R-RBCB-SGBGB-N002


Displacement [cm ³ (in ³)/rev]	A	B	Displacement [cm ³ (in ³)/rev]	A	B
0,8 (0.05)	32,6 (1.28)	77,3 (3.04)	3,6 (0.22)	37,8 (1.49)	87,6 (3.45)
1,2 (0.07)	33,4 (1.31)	78,8 (3.10)	4,4 (0.27)	39,2 (1.54)	90,5 (3.56)
1,6 (0.10)	34,1 (1.34)	80,3 (3.16)	4,8 (0.29)	40,0 (1.57)	92,0 (3.62)
2,1 (0.13)	34,9 (1.37)	81,9 (3.22)	5,8 (0.35)	41,9 (1.65)	95,8 (3.77)
2,5 (0.15)	35,7 (1.41)	83,5 (3.29)	6,2 (0.38)	42,6 (1.68)	97,3 (3.83)
3,3 (0.20)	37,2 (1.46)	86,5 (3.41)	7,9 (0.48)	45,8 (1.80)	103,6 (4.08)

GP1 Pumps - special design in millimeters (inches)

Single pump GP1-L-AGCG-AGBPA-N014**
Double pump GP1-/**L-AGCG-CGBPA/GBGBGB-N014**
014 - Special design for SMA 05 hydraulic units:
Flange AE with pressure port PA
Shaft prolonged
