

Gear Pump – High Performance Version

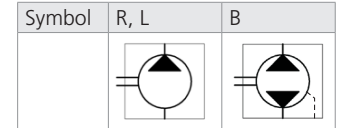
GP2

Displacement up to 31 cm³ (1.89 inch³) • p_{max} 310 bar (4500 PSI) • Speed from 500 to 4000 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



Technical Data

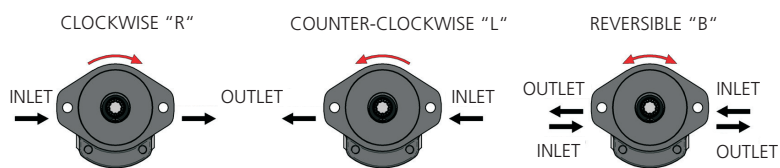
Nominal Size Parameters	Symbol	Unit	Displacement										
			4	5	6	8	10	12	16	20	22	25	31
Actual displacement	V_g	[cm ³]	4,03	5,00	6,02	8,05	10,00	12,08	16,10	20,12	22,00	25,16	31,21
		[in ³]	0.246	0.305	0.367	0.491	0.610	0.737	0.982	1.228	1.344	1.535	1.905
Rotation speed	nominal	n_n	1500										
	minimum	n_{min}	500										
	maximum	n_{max}	4000			3600			3200		3000	2800	2200
Pressure at inlet*	minimum	p_{1min}	-0,3 (-4.4 PSI)										
	maximum	p_{1max}	0,5 (7.3 PSI)										
Pressure at outlet**	max. continuous	p_{2n}	280				260			240	230	200	150
		[PSI]	4061				3771			3481	3336	2901	2176
	maximum	p_{2max}	290				280			250	240	220	170
		[PSI]	4206				4061			3626	3481	3191	2466
	peak	p_3	310				300			270	250	240	190
		[PSI]	4496				4351			3916	3626	3481	2756
Nominal flow rate (min.) at n_n and p_{2n}	Q_n	[l·min ⁻¹]	5,40	6,44	8,10	11,04	13,40	16,56	22,56	28,20	30,96	35,25	43,71
		[GPM]	1.43	1.70	2.14	2.92	3.54	4.37	5.96	7.45	8.18	9.31	11.55
Maximum flow rate at n_{max} and p_{2max}	Q_{max}	[l·min ⁻¹]	15,68	20,00	23,52	28,22	35,89	42,34	50,18	62,72	61,40	68,60	66,84
		[GPM]	4.14	5.28	6.21	7.45	9.48	11.19	13.26	16.57	16.22	18.12	17.66
Nominal input power (max.) at n_n and p_{2n}	P_n	[kW]	3,33	4,14	5,00	6,52	8,29	9,06	11,82	11,82	16,29	13,30	13,74
Maximum input power at n_{max} and p_{2max}	P_{max}	[kW]	8,77	11,86	13,15	15,78	21,32	22,04	26,12	29,02	31,00	26,46	21,91
Weight	m	[kg]	2,6	2,63	2,65	2,75	2,8	2,95	3,1	3,35	3,4	3,5	3,8
		[lbs]	5.73	5.80	5.84	6.06	6.17	6.50	6.83	7.39	7.50	7.72	8.38

- 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		GP2 - 4 ...31 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

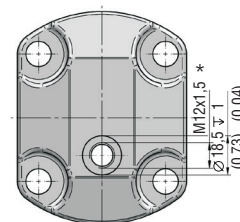
Direction of rotation, reversible design

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



The pumps B codes (Bi-directional) have an external drainage located in the cover.

Pressure in this port:
min. -0,3 bar (-4,4 PSI)
max. +0,5 bar (+7,3 PSI)
*Other port thread see section „Ports design“ (page 8).



Ordering Code

GP2 -	[]	-	[]	-	[]	-	[]	-	[]	-	[]	-	[]	-	[]	-	[]
Gear pump serie 2	4																
	5																
	6																
	8																
	10																
	12																
	16																
	20																
	22																
	25																
Displacement	31																
Direction of rotation																	
Counter clockwise		L															
Clockwise		R															
Bi-directional		B															
Flange design																	
			FB														
			RE														
			RF														
			RH														
			SB														
			SC														
			AH														
			AI														
			AJ														
			AK														
Shaft Type																	

Shaft seal
No designation standard
004 without shaft seal

Seals
N NBR
V FPM (Viton)
H HNBR

Inlet / Outlet ports
S
R
C

Ports orientation

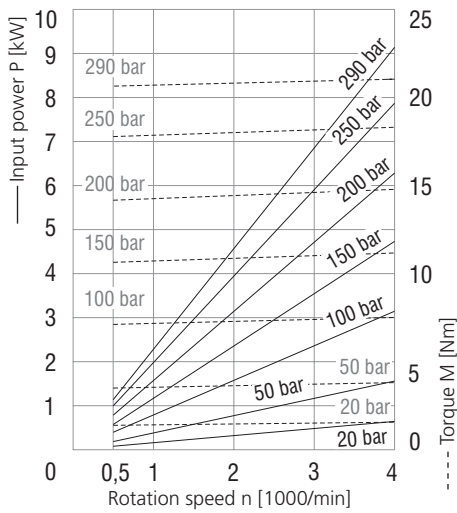
Ports orientation

S		*R		*C	
					**see page 8
					*Not available for Bi-directional pumps

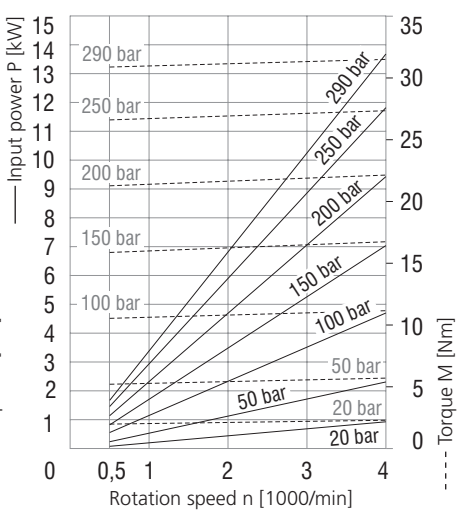
Combination of Flanges and Shafts

Flange Design	FB	RE	RF	RH	SB	SC	AH	AI	AJ	AK
Shaft Type										
CH		•								
CI		•								
CJ		•								
CK			•				•	•		
DD					•	•				
DF					•	•				
DH					•	•				
DI		•								
DJ			•				•	•		
DK	•									
DL				•						
KH									•	•
VJ					•	•				
VL		•								
VM					•	•				
VN	•									

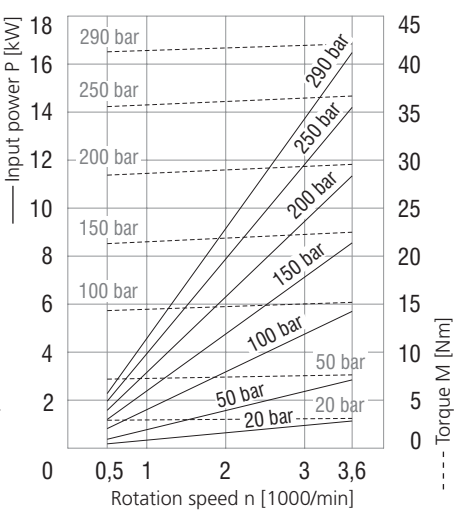
4 ccm



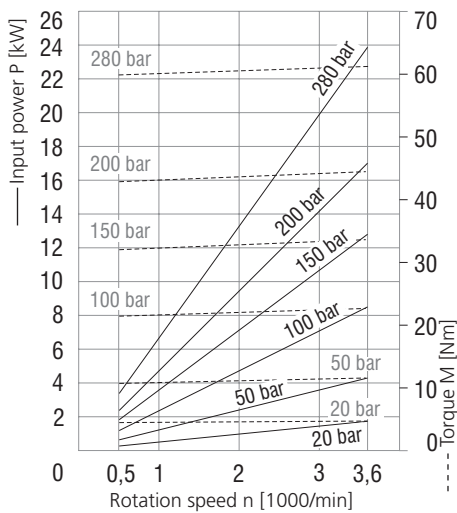
6 ccm



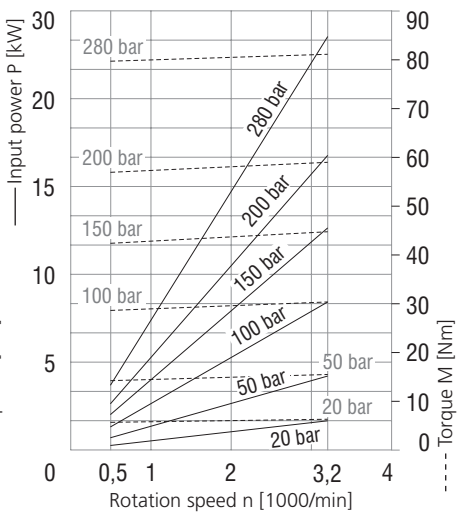
8 ccm



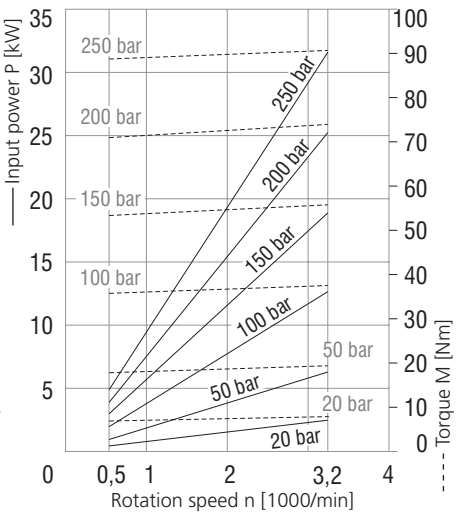
12 ccm



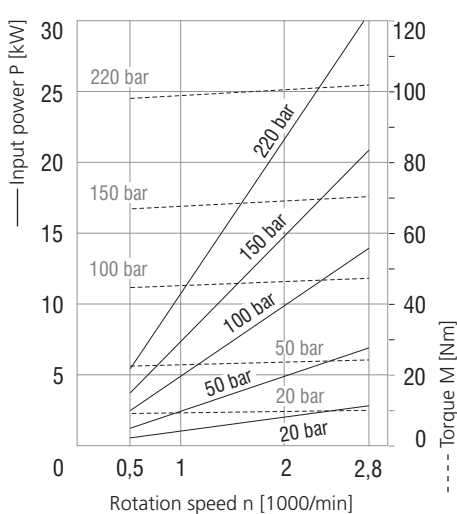
16 ccm



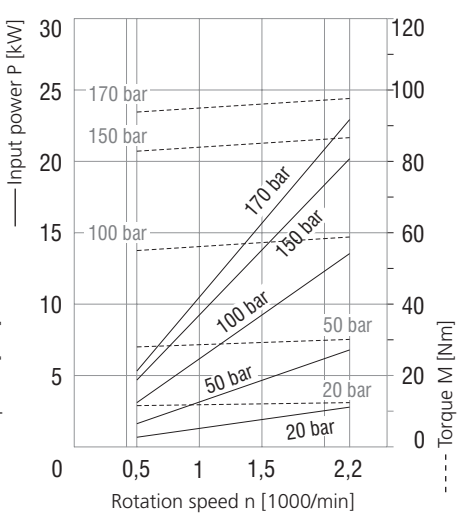
20 ccm



25 ccm



31 ccm



Ordering Code - Multiple Version

GP2 - [] / [] / [] - [] - [] - [] [] / [] / [] - [] []

Gear pump serie P

Front pump (shaft side) Middle pump Rear pump

Displacement

4	10	
5	12	22
6	16	25
8	20	31

Direction of rotation

Counter clockwise L
Clockwise R
Bi-directional B

Shaft seal

No designation standard
004 without shaft seal

Seals

NBR
FPM (Viton)
HNBR

MB UA HH
ME UB HI
MJ UD KA
GA UE KB
GC HE KC
GD HF KD
GE HK

Inlet / Outlet ports

Always from left: Inlet - Outlet

Ports orientation

Use blind plug for not used ports

S
C

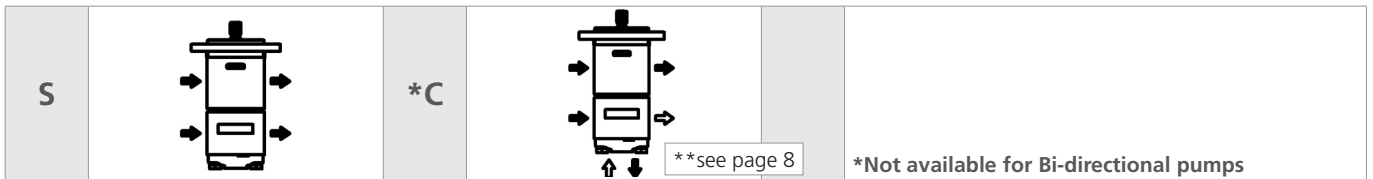
FB SC
RE AH
RF AI
RH AJ
SB AK

CH DI
CI DJ VL
CJ DK VJ
CK DL VM
DD KH VN

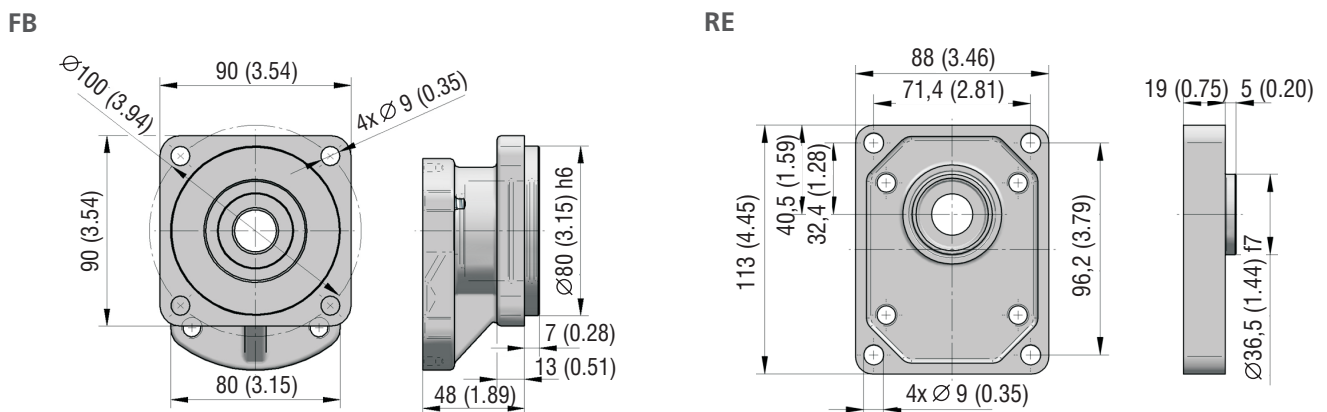
Flange design

Shaft Type

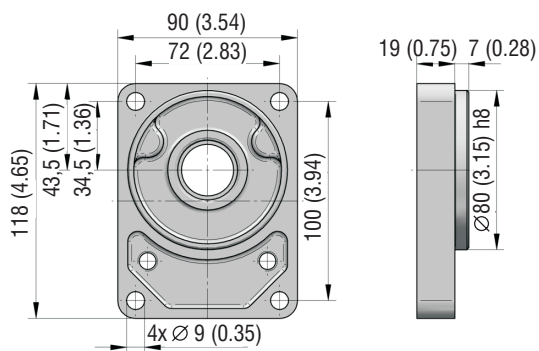
Ports orientation



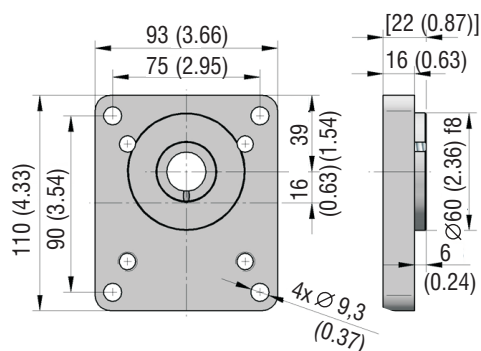
Flange design in millimeters (inches)



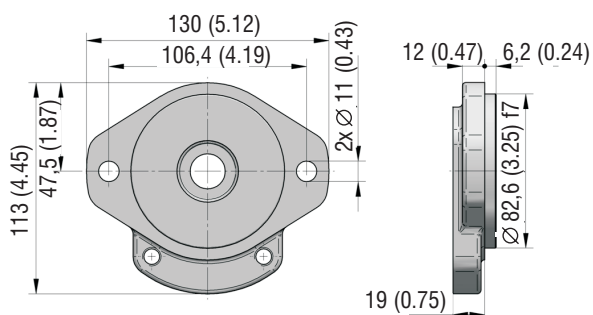
RF



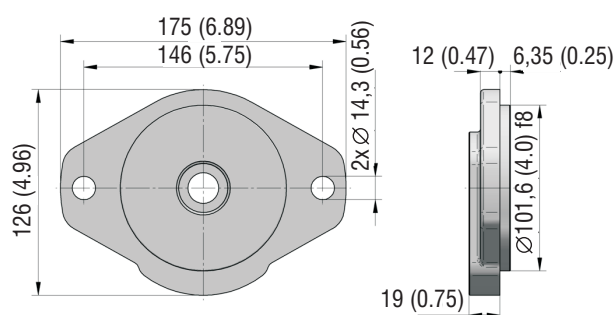
RH



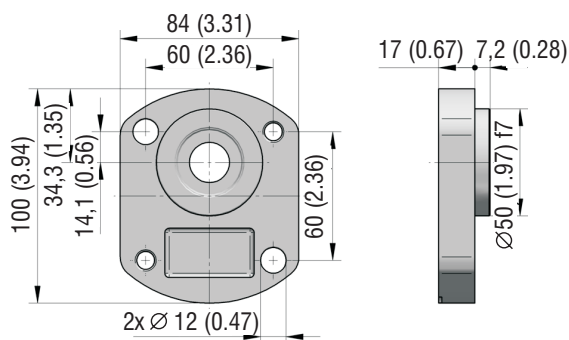
SB



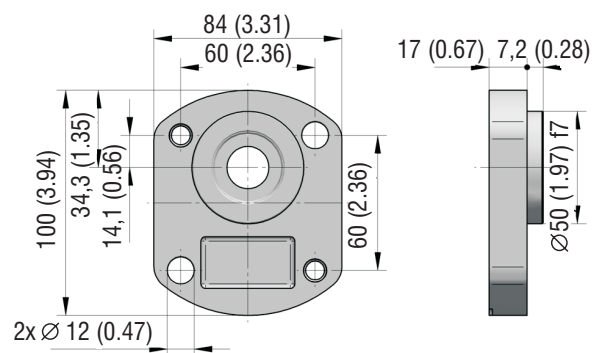
SC



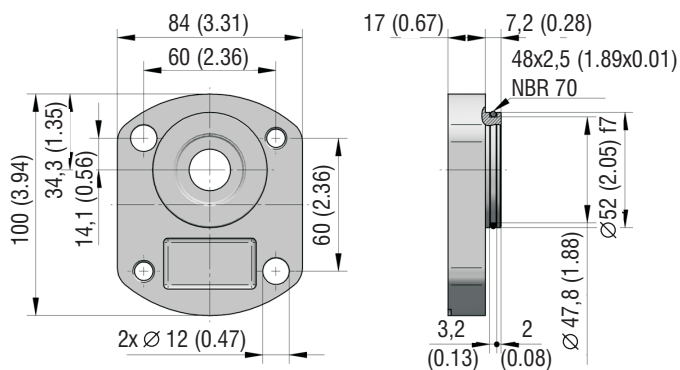
AH



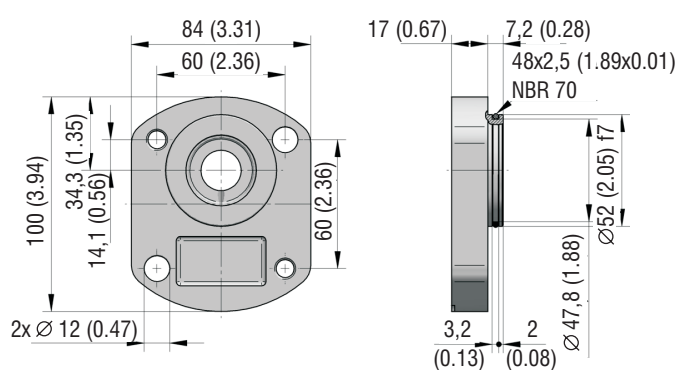
AI

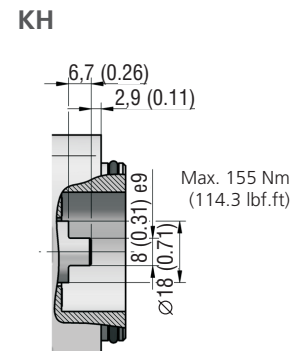
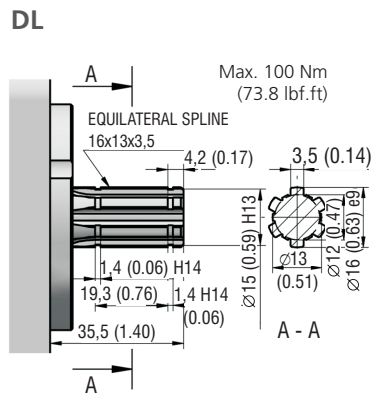
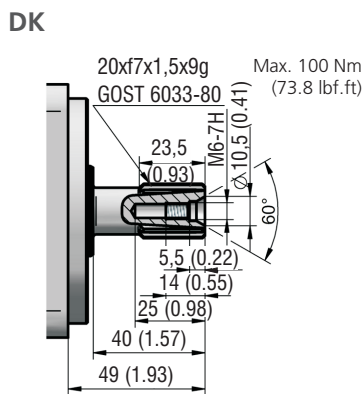
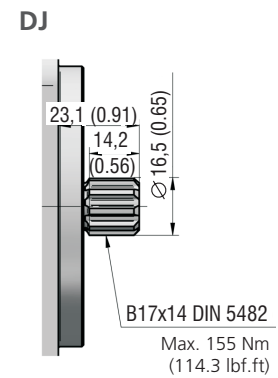
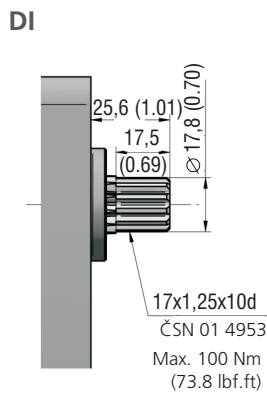
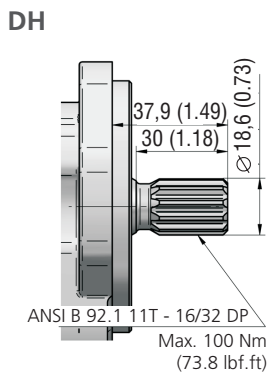
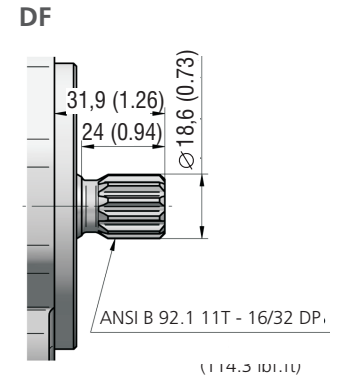
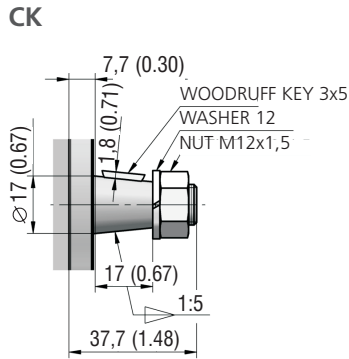
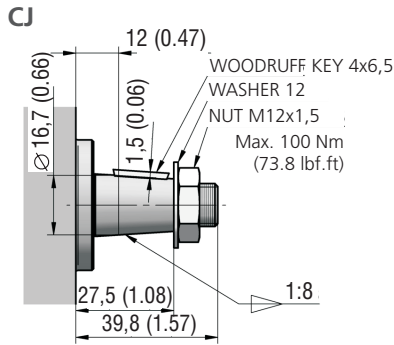
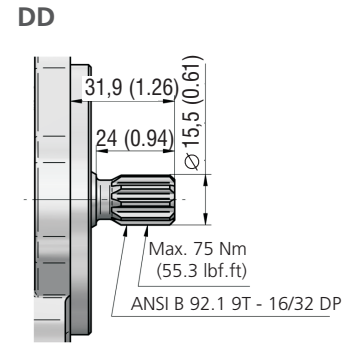
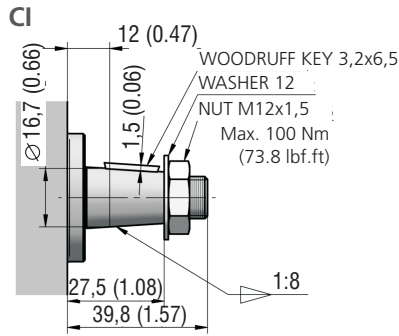
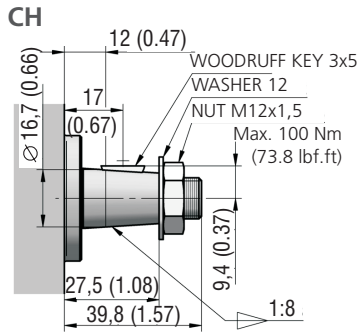


AJ

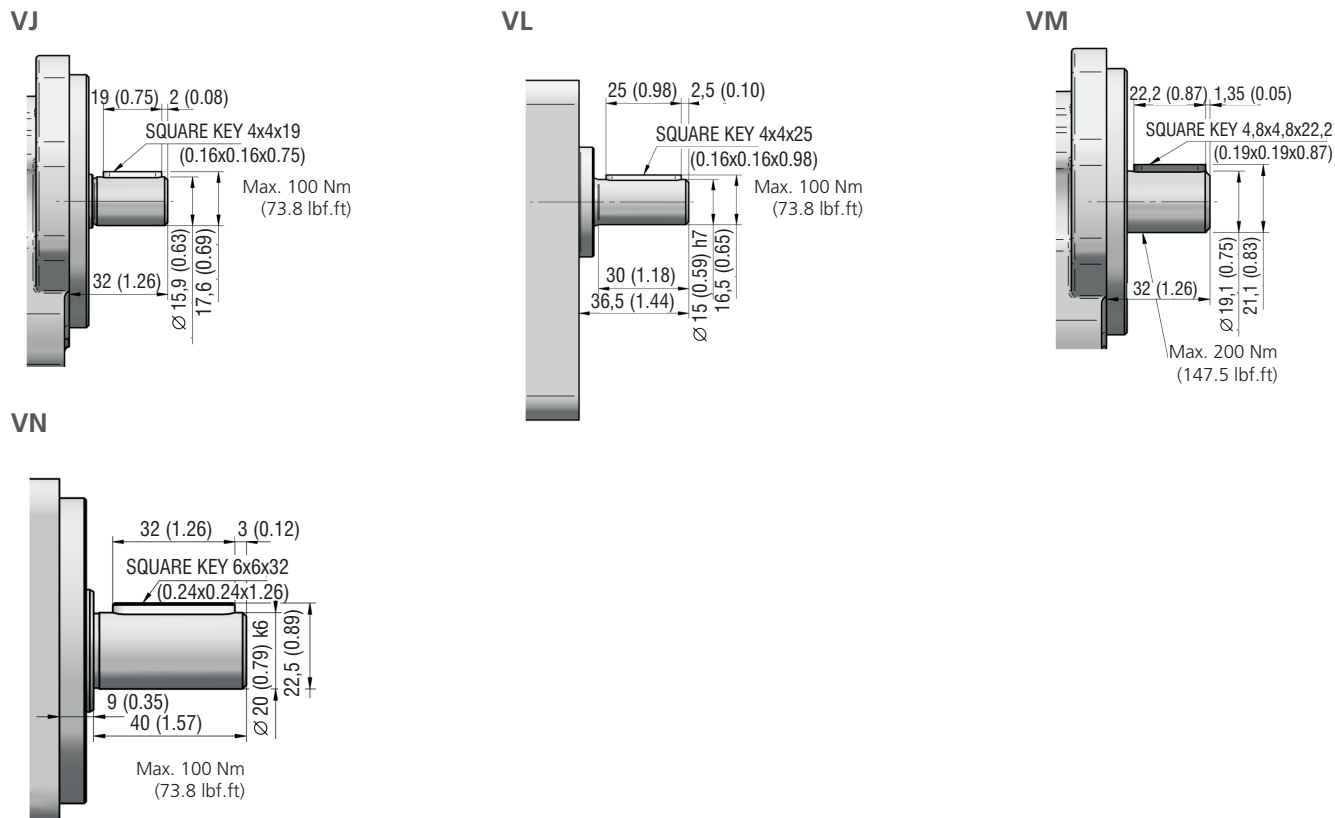


AK



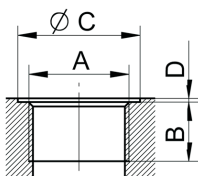


Shaft design in millimeters (inches)



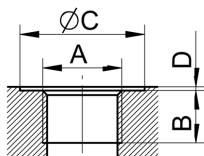
Ports design in millimeters (inches)

Metric thread according to ISO 6149



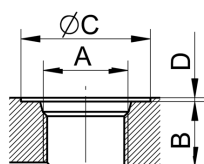
Displacement [cm ³ (in ³)]	Inlet Code	Dimension				Outlet Code	Dimension			
		A	B	C	D		A	B	C	D
ALL	MJ	M27x2	16 (0.63)	33 (1.30)	1 (0.04)	ME	M18x1,5	14 (0.55)	24 (0.94)	1 (0.04)

BSPP pipe thread according to ISO 228 -1



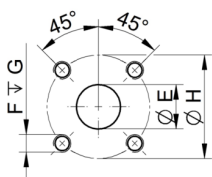
Displacement [cm ³ (in ³)]	Inlet Code	Dimension				Outlet Code	Dimension			
		A	B	C	D		A	B	C	D
to 10 (0.61)	GC	G1/2	14 (0.55)	33 (1.30)	1 (0.04)	GC	G1/2	14 (0.55)	33 (1.30)	1 (0.04)
10-25 (0.61-1.53)	GD	G3/4	16 (0.63)	39 (1.53)						
above 25 (1.53)	GE	G1	18 (0.71)	45 (1.77)						

UNF thread according to SAE



Displacement [cm ³ (in ³)]	Inlet Code	Dimension				Outlet Code	Dimension			
		A	B	C	D		A	B	C	D
to 10 (0.61)	UD	7/8-14 UNF-2B	17 (0.67)	34 (1.34)	1 (0.04)	UD	7/8-14 UNF-2B	17 (1.04)	33 (1.30)	1 (0.04)
11-31 (0.67-1.89)	UE	1-1/16-12 UNF-2B	19 (0.75)	41 (1.61)						

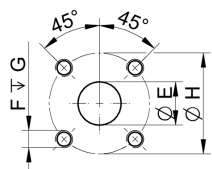
Flanged fittings according to DIN 8901/8902



Displacement [cm ³ (in ³)]	Inlet Code	Dimension				Outlet Code	Dimension			
		E	F	G	H		E	F	G	H
ALL	HF	20 (0.79)	M6	13 (0.51)	40 (1.57)	HE	15 (0.59)	M6	13 (0.51)	35 (1.38)
	HK	25 (0.98)	M8	13 (0.51)	55 (2.17)					

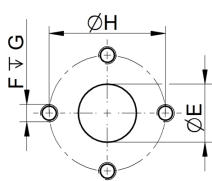
Note: H10H05 - for multiple version - for with one common inlet

Flanged fittings - „square“



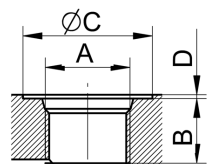
Displacement [cm ³ (in ³)]	Inlet Code	Dimension				Outlet Code	Dimension			
		E	F	G	H		E	F	G	H
ALL	HI	20 (0.79)	M8	13 (0.51)	40 (1.57)	HH	13,5 (0.53)	M6	13 (0.51)	30 (1.18)

Flanged fittings - „cross“



Displacement [cm ³ (in ³)]	Inlet Code	Dimension				Outlet Code	Dimension			
		E	F	G	H		E	F	G	H
ALL	KB	20 (0.79)	M8	13 (0.51)	40 (1.57)	KA	13,5 (0.53)	M6	13 (0.51)	30 (1.18)
to 10 (0.61)	KH	14 (0.55)			38 (1.50)	KH	14 (0.55)	M8		38 (1.50)
above 10 (0.61)	KI	19 (0.75)								

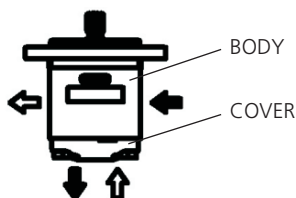
Drains:



Displacement [cm ³ (in ³)]	Inlet Code	Dimension			
		A	B	C	D
ALL	MB	M12x1,5	12 (0.47)	20 (0.79)	1 (0.04)
	GA	G1/4	12 (0.47)	45 (1.77)	
	UA	7/16-20 UNF-2B	13 (0.51)	21 (0.83)	
	UB	9/16-18 UNF-2B	14 (0.55)	25 (0.98)	

Standard Drain port thread: MB for „M“ Suction / Pressure Ports
 GA for „G“ Suction / Pressure Ports
 UA for „U“ Suction / Pressure Ports
 Other combination on request

****Port orientation**



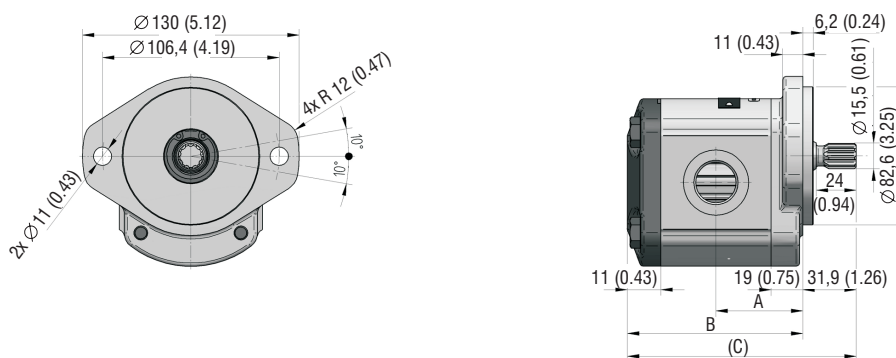
Only threaded ports (M, G, U) can be made in the cover.
 If all 4 ports are required, describe them in the code.

Sample: GP2-20R-RECH-CGDGDGCGC-N

For Suction port in Cover, Pressure port in Body: GP2-20R-RECH-CGDGC-N006
 For Suction port in Body, Pressure port in Cover: GP2-20R-RECH-CGDGC-N005

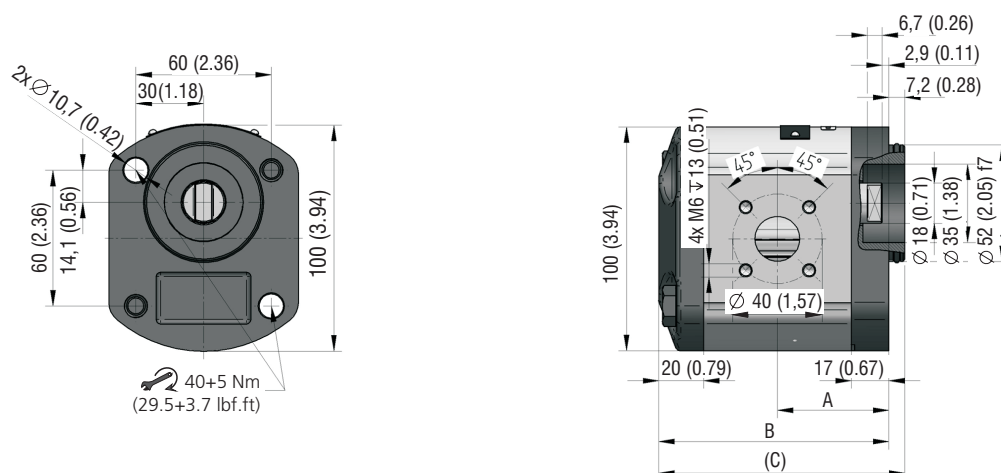
Other combinations for instance two suction ports, one pressure port describe in the order beside the code.
 GP2-20R-RECH-CGDGDGCGC-N Two suction ports, Pressure port in the Body.

GP2-*R-SBDD-SG*G*-N



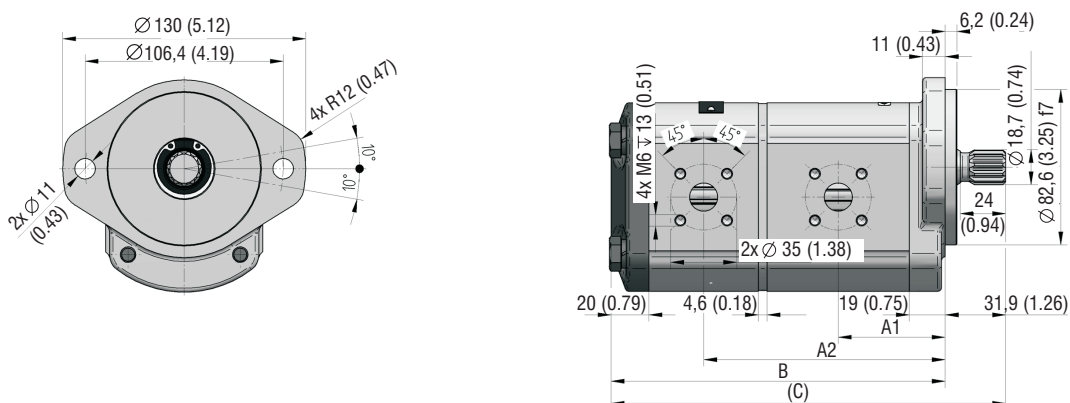
Displacement [cm ³ (in ³)/rev]	A	B	C	Displacement [cm ³ (in ³)/rev]	A	B	C
4 (0.24)	42,5 (1.67)	86,0 (3.39)	118,1 (4.65)	16 (0.98)	51,9 (2.04)	104,9 (4.13)	137,0 (5.39)
6 (0.37)	44,0 (1.73)	89,2 (3.51)	121,3 (4.78)	20 (1.22)	55,0 (2.17)	111,2 (4.38)	143,3 (5.64)
8 (0.49)	45,6 (1.80)	92,3 (3.63)	124,4 (4.90)	25 (1.53)	59,0 (2.32)	119,1 (4.69)	151,2 (5.95)
12 (0.73)	48,8 (1.92)	98,6 (3.88)	130,7 (5.15)	31 (1.89)	63,7 (2.51)	128,5 (5.06)	160,6 (6.32)

GP2-*R-AJKH-SH*H*-N



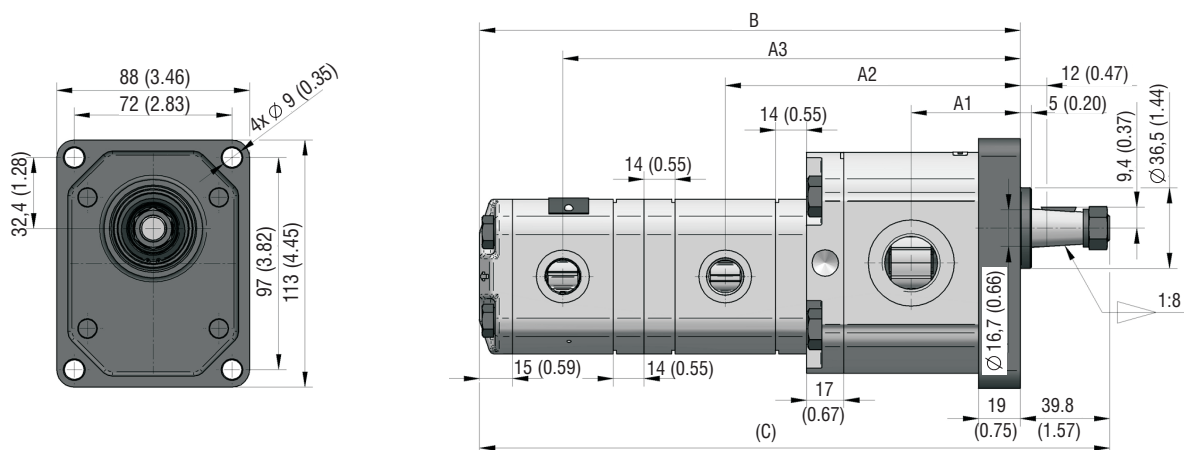
Displacement [cm ³ (in ³)/rev]	A	B	C	Displacement [cm ³ (in ³)/rev]	A	B	C
4 (0.24)	40,5 (1.59)	84,0 (3.31)	91,2 (3.59)	16 (0.98)	49,9 (1.96)	102,9 (4.05)	110,1 (4.33)
6 (0.37)	42,0 (1.65)	87,2 (3.43)	94,4 (3.72)	20 (1.22)	53,0 (2.09)	109,2 (4.30)	116,4 (4.58)
8 (0.49)	43,6 (1.72)	90,3 (3.56)	97,5 (3.84)	25 (1.53)	57,0 (2.24)	117,1 (4.61)	124,3 (4.89)
12 (0.73)	46,8 (1.84)	96,6 (3.80)	103,8 (4.09)	31 (1.89)	61,7 (2.43)	126,5 (4.98)	133,7 (5.26)

GP2-*/L-SBDF-SH*H*/H*H*-N



Displacement [cm ³ (in ³)/rev]	A1	A2	B	C
6 / 6 (0.37 / 0.37)	44,0 (1.73)	98,8 (3.89)	143,9 (5.67)	175,8 (6.92)
8 / 8 (0.49 / 0.49)	45,6 (1.80)	103,5 (4.07)	150,2 (5.91)	182,1 (7.17)
12 / 6 (0.73 / 0.37)	48,8 (1.92)	108,2 (4.26)	153,3 (6.04)	185,2 (7.29)
16 / 4 (0.98 / 0.24)	51,9 (2.04)	113,0 (4.45)	156,5 (6.16)	188,4 (7.42)
20 / 6 (1.22 / 0.37)	55,0 (2.17)	120,8 (4.76)	165,9 (6.53)	197,8 (7.79)

GP2-12/GP1-2,5/2,5L-RECH-SGDGC/GBGB/GBGB-N



Displacement [cm ³ (in ³)/rev]	A1	A2	A3	B	C
12 / 2,5 / 2,5 (0.73 / 0.15 / 0.15)	48,8 (1.92)	130,3 (5.13)	199,8 (7.87)	235,6 (9.28)	275,4 (10.84)