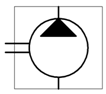
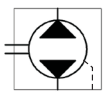
Gear Pump – High Performance Version

GP2

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

Technical Features

- Nominal pressure 280 bar, peak pressure 310 bar
- High quality aluminum alloys pump with axial play compensation
- Low noise level in whole operating range
- High operational reliability and long service life
- High volumetric efficiency up to 98%
- International standards flanges as per SAE, ISO, DIN, GHOST

Symbol	R, L	B
		

Technical Data

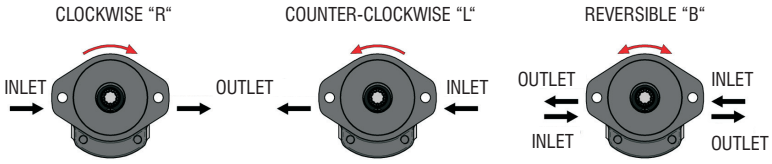
Nominal Size Parameters		Symbol	Unit	Displacement										
				4	5	6	8	10	12	16	20	22	25	31
Actual displacement		V_g	[cm³]	4,03	5,00	6,02	8,05	10,00	12,08	16,10	20,12	22,00	25,16	31,21
			[in³]	0.246	0.305	0.367	0.491	0.610	0.737	0.982	1.228	1.344	1.535	1.905
Rotation speed	nominal	n_n	[min⁻¹]	1500										
	minimum	n_{min}	[min⁻¹]	500										
	maximum	n_{max}	[min⁻¹]	4000			3600			3200		3000	2800	2200
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			240	230	200	150
			[PSI]	4061				3771			3481	3336	2901	2176
	maximum	p_{2max}	[bar]	290				280			250	240	220	170
			[PSI]	4206				4061			3626	3481	3191	2466
	peak	p_3	[bar]	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.

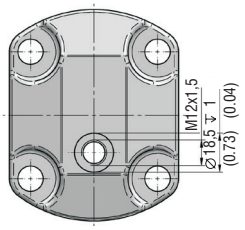
Gear Pump / Size		GP2 - 4 ...31 ccm
Volumetric efficiency	%	92 ÷ 98
Mechanical efficiency	%	85
Fluid temperature range (NBR)	°C (°F)	-20...80 (-4...176)
Fluid temperature range (FPM)	°C (°F)	-20...120 (-4...248)
Viscosity range	mm²/s (SUS)	20 ...80 (97 ...390), 1200 (5849) for cold start
Hydraulic fluid		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 (bidirectional) have an external drainage with an orifice located in the cover.



Ordering Code

GP2 - ☐ ☐ - ☐ ☐ - ☐ ☐ ☐ ☐ - ☐ - ☐

Gear pump serie 2

Displacement

4
5
6
8
10
12
16
20
22
25
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

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

Ports orientation

S
R
C

Inlet / Outlet ports

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

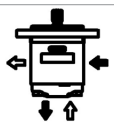
Seals

N	NBR
V	FPM (Viton)
H	HNBR

Shaft seal

004	without shaft seal
001 - 014	see tab. 01
	omit for standard

Ports orientation

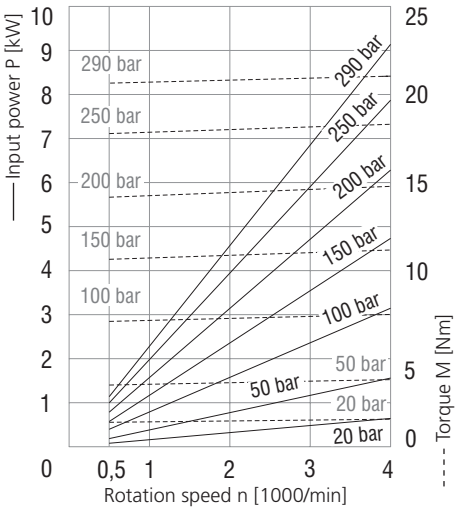
S		R		C	

Combination of Flanges and Shafts

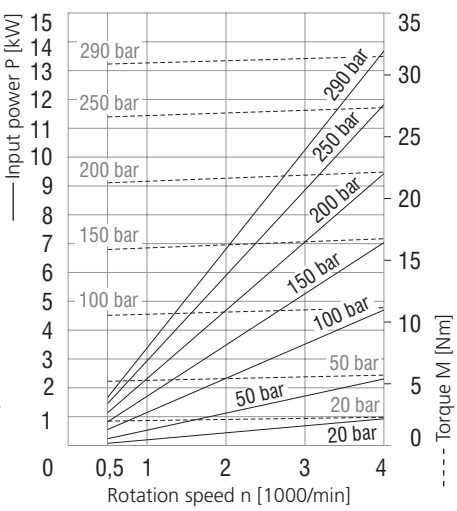
Flange Design	FB	RE	RF	RH	SB	SC	AH	AI	AJ	AK
Shaft Type										
CH		●								
CI		●								
CJ		●								
CK			●				●	●		
DD					●	●				
DF					●	●				
DH					●	●				
DI		●								
DJ			●				●	●		
DK	●									
DL				●						
KH									●	●
VJ					●	●				
VL		●								
VM					●	●				
VN	●									

Characteristics measured at ν = 32 mm²/s (156 SUS)

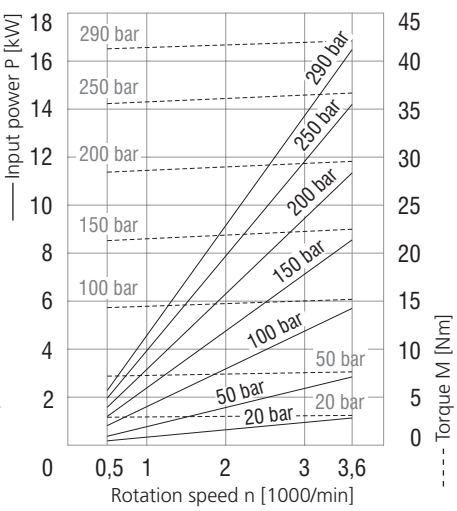
4 ccm



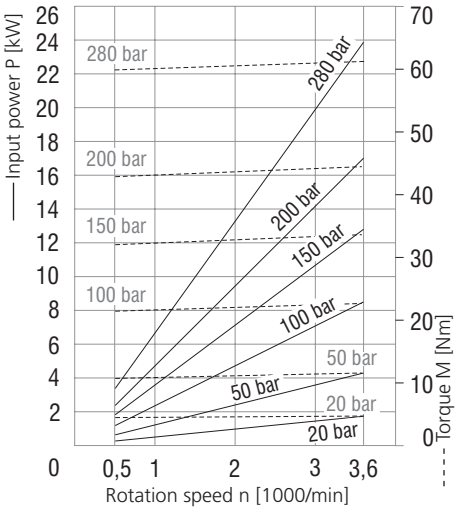
6 ccm



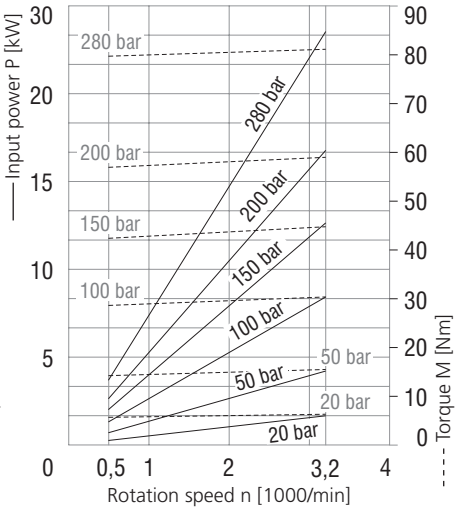
8 ccm



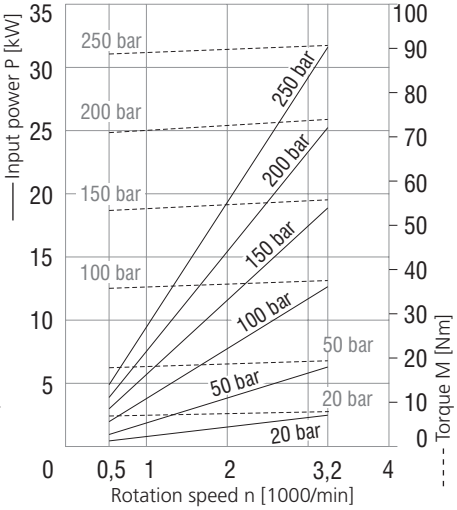
12 ccm



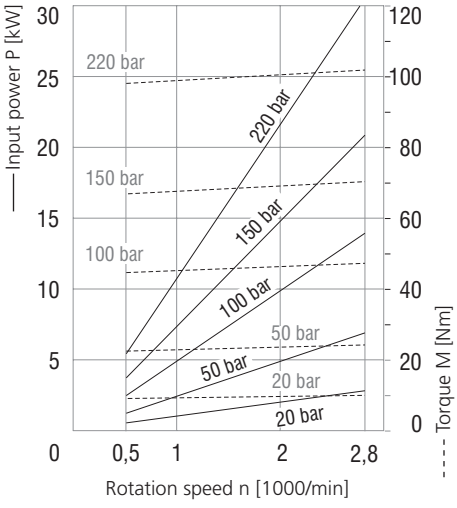
16 ccm



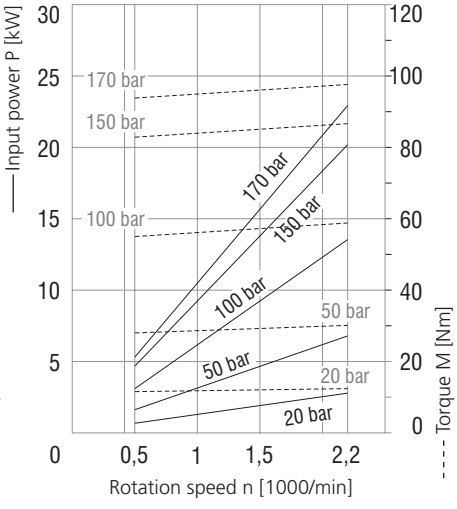
20 ccm



25 ccm



31 ccm



Ordering Code - Multiple Version

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

Gear pump serie P

Displacement

Front pump (shaft side)	Middle pump	Rear pump
4	10	
5	12	22
6	16	25
8	20	31

Direction of rotation

Counter clockwise	L
Clockwise	R
Bi-directional	B

Flange design

FB	SC
RE	AH
RF	AI
RH	AJ
SB	AK

Shaft Type

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

Front pump / Middle pump / Rear pump

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

S	
C	Use bling plug for not used ports

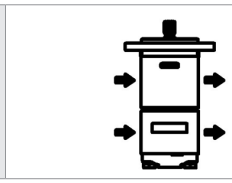
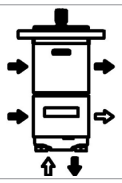
Seals

N	NBR
V	FPM (Viton)
H	HNBR

Shaft seal

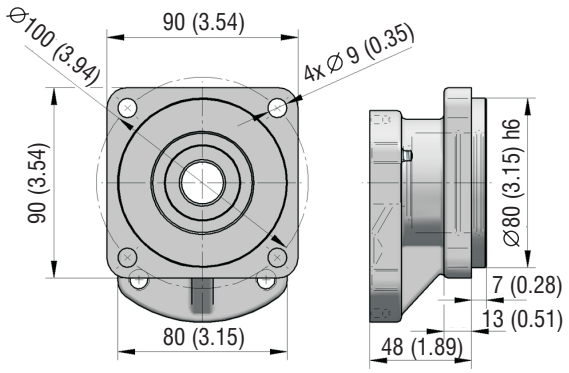
No designation	standard
004	without shaft seal
009	customized

Ports orientation

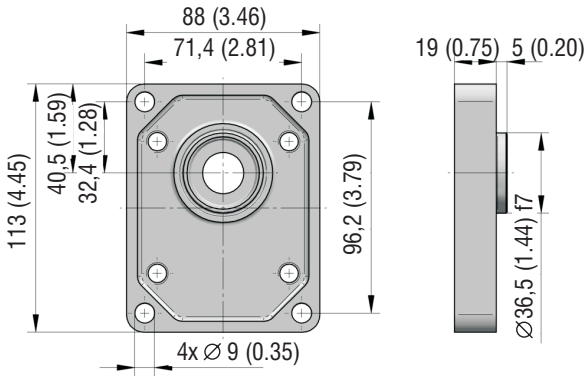
S	
C	

Flange design in millimeters (inches)

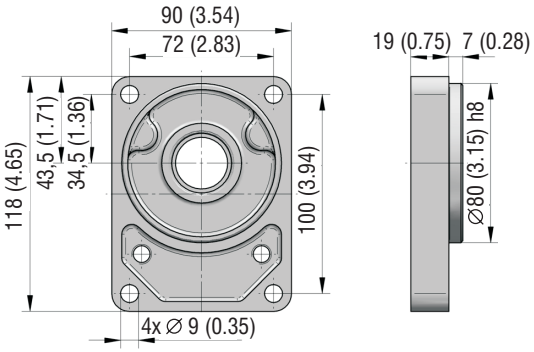
FB



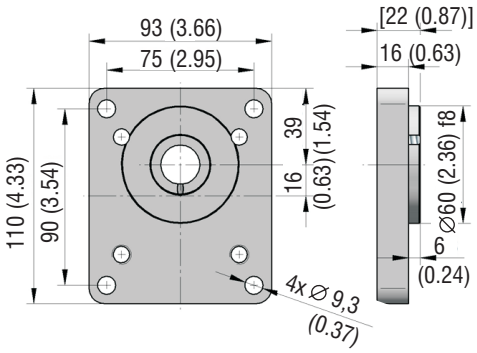
RE



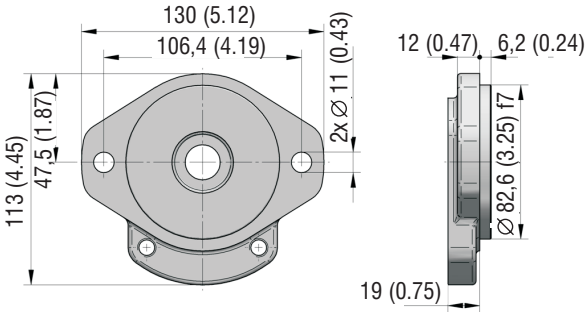
RF



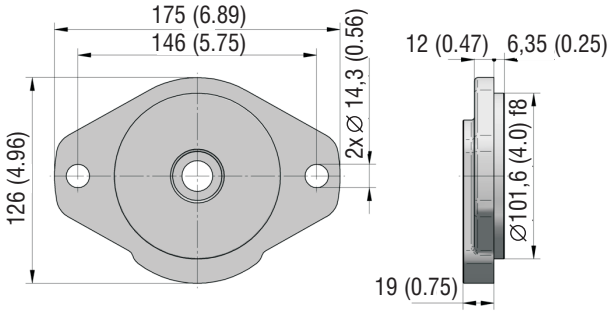
RH



SB



SC



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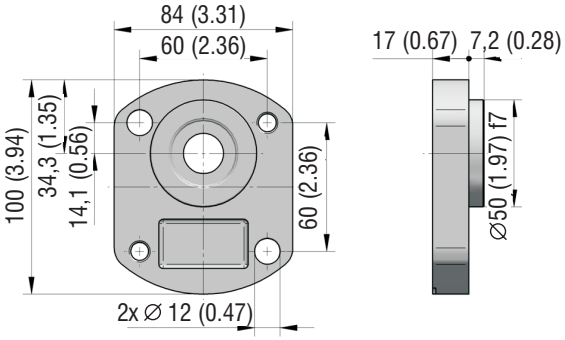

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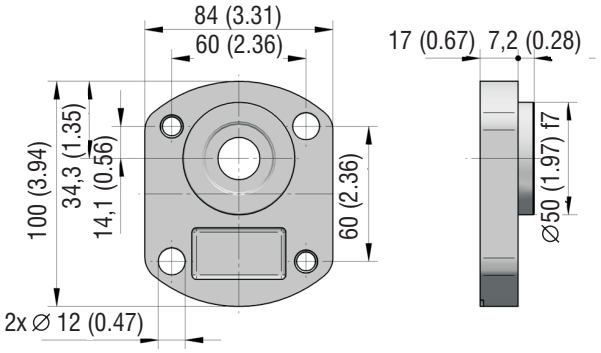

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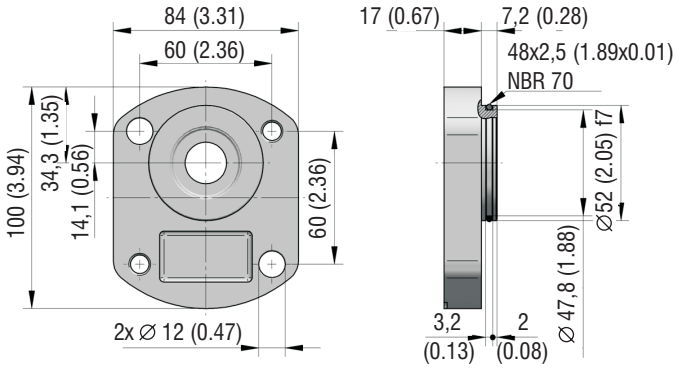

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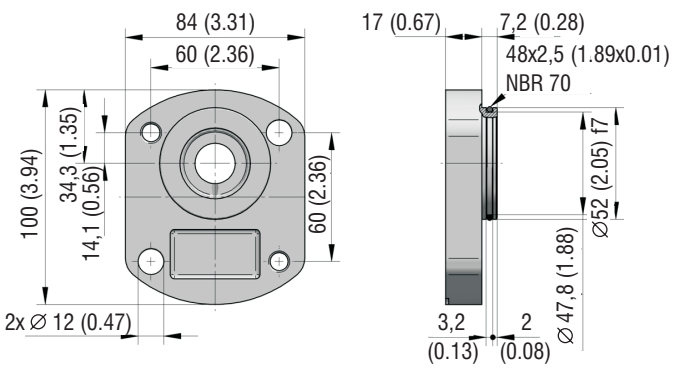

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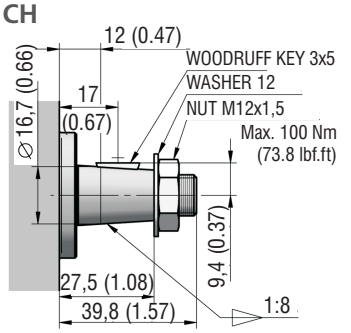
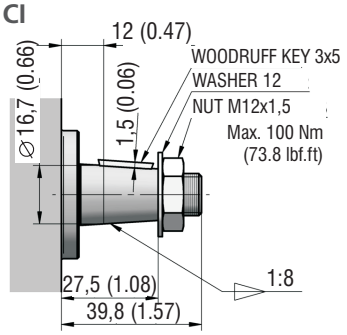


CI



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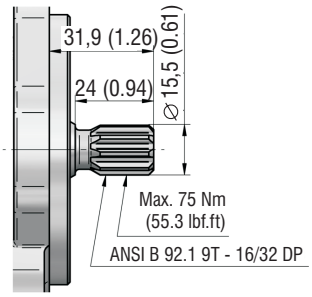
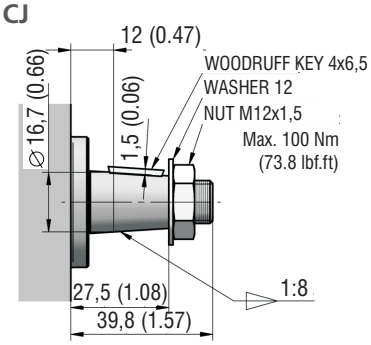


CJ



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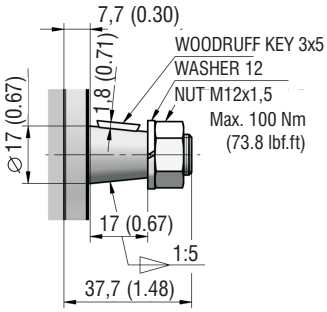

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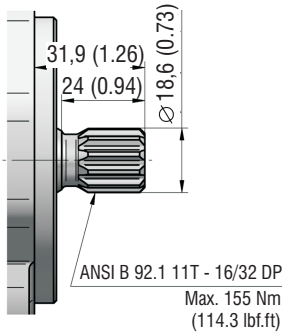

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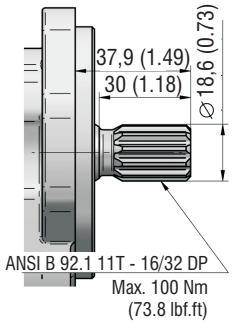

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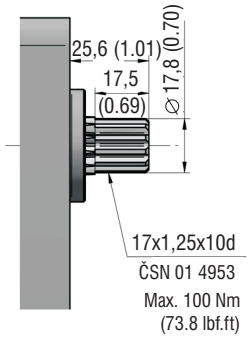

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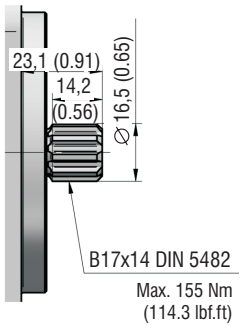

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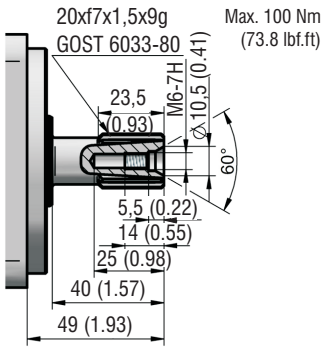

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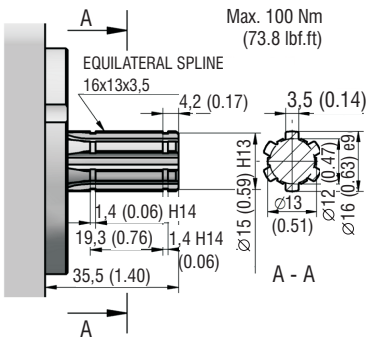
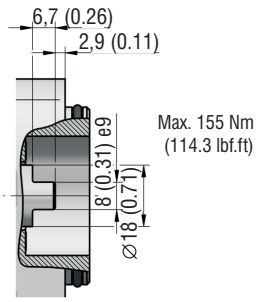
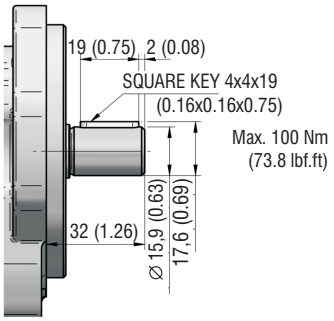


KH

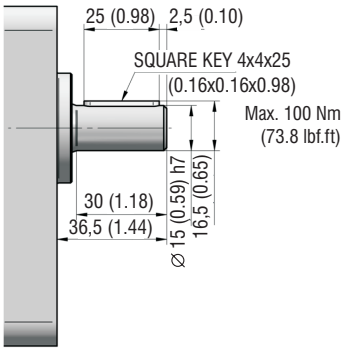


Shaft design in millimeters (inches)

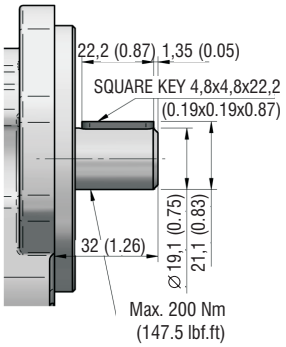
VJ



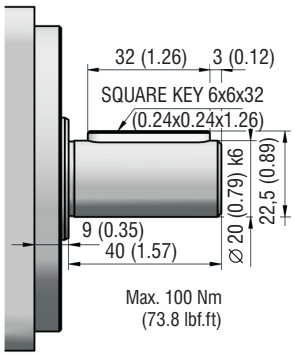
VL



VM

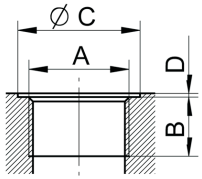


VN



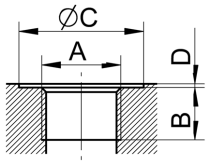
Ports design in millimeters (inches)

Metric thread according to ISO 6149



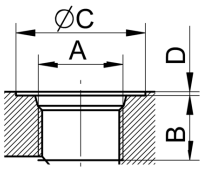
Displacement cm³(in³)]	Inlet Code	Dimension				Outlet Code	Dimension			
		A	B	C	D		A	B	C	D
ALL	MJ	M27x2	16 (0.63)	33 (1.30)	1 (0.04)	ME	M18x1,5	14 (0.55)	24 (0.94)	1 (0.04)

BSPP pipe thread according to ISO 228 -1



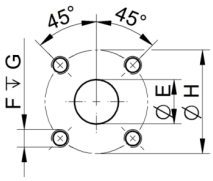
Displacement cm³(in³)]	Inlet Code	Dimension				Outlet Code	Dimension			
		A	B	C	D		A	B	C	D
to 10 (0.61)	GC	G1/2	14 (0.55)	33 (1.30)	1 (0.04)	GC	G1/2	14 (0.55)	33 (1.30)	1 (0.04)
10-25 (0.61-1.53)	GD	G3/4	16 (0.63)	39 (1.53)		GD	G3/4	16 (0.63)	39 (1.53)	
above 25 (1.53)	GE	G1	18 (0.71)	45 (1.77)						

UNF thread according to SAE



Displacement cm³(in³)]	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)						

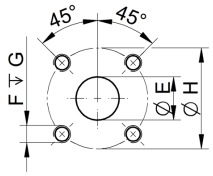
Flanged fittings according to DIN 8901/8902



Displacement cm³(in³)]	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)					

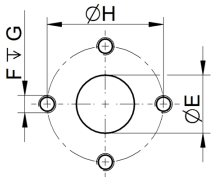
Note: H10H05 - for multiple version - for with one common inlet

Flanged fittings - „square"



Displacement cm³(in³)]	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"

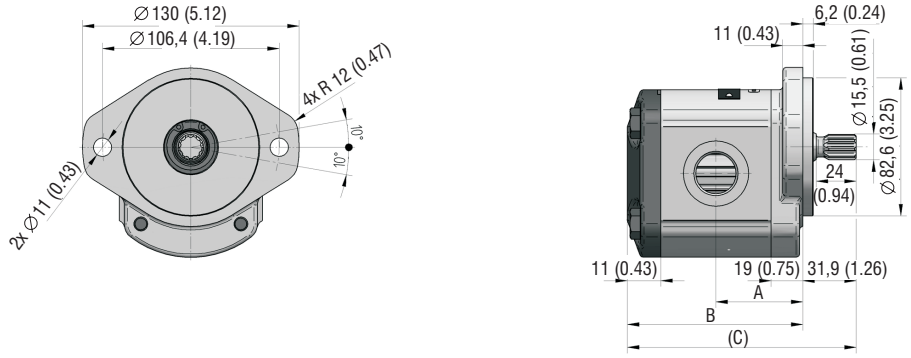


Displacement cm³(in³)]	Inlet Code	Dimension				Outlet Code	Dimension			
		E	F	G	H		E	F	G	H
ALL	KB	20 (0.79)	M8	13 (0.51)	40 (1.57)	KA	13,5 (0.53)	M6	13 (0.51)	30 (1.18)
to 10 (0.61)	KH	14 (0.55)			38 (1.50)	KH	14 (0.55)	M8		38 (1.50)
above 10 (0.61)	KI	19 (0.75)								

Drains:

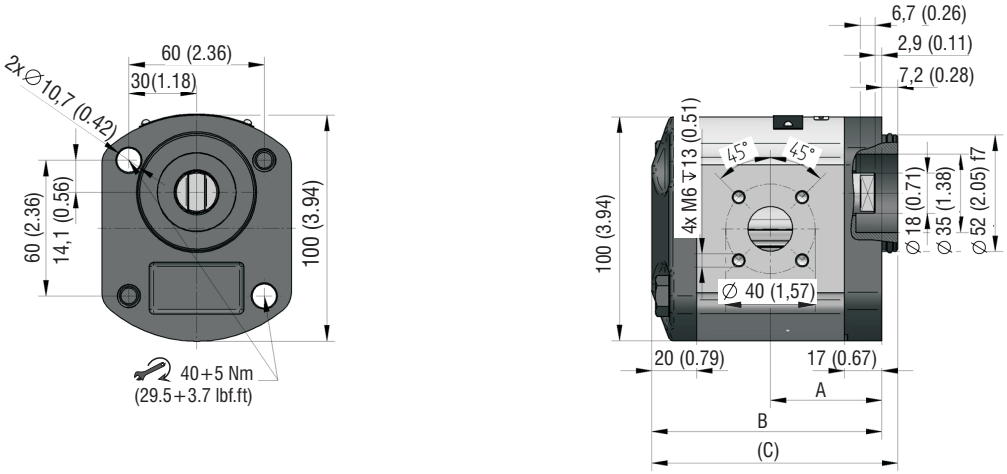
Displacement cm³(in³)]	Inlet Code	Dimension			
		A	B	C	D
ALL	MB	M12x1,5	12 (0.47)	20 (0.79)	1 (0.04)
	GA	G1/4	12 (0.47)	45 (1.77)	
	UA	7/16-20 UNF-2B	13 (0.51)	21 (0.83)	
	UB	9/16-18 UNF-2B	14 (0.55)	25 (0.98)	

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



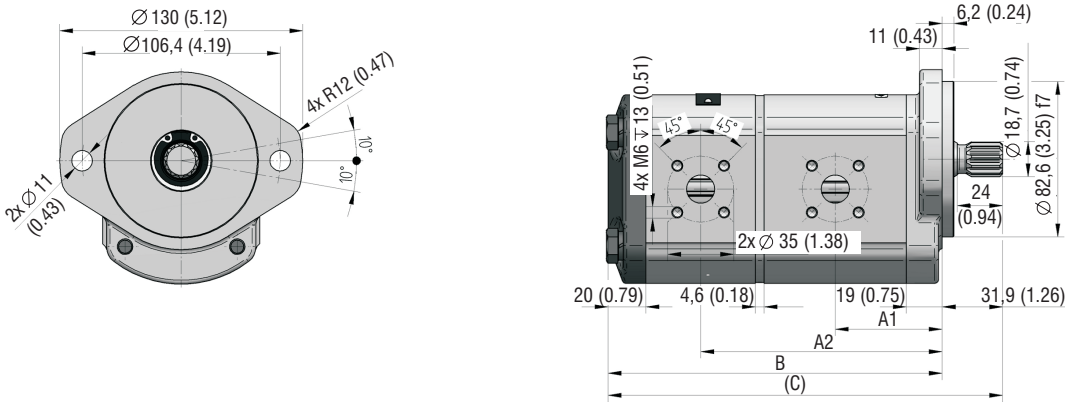
Displacement [cm³(in³)/rev]	A	B	C	Displacement [cm³(in³)/rev]	A	B	C
4 (0.24)	42,5 (1.67)	86,0 (3.39)	118,1 (4.65)	16 (0.98)	51,9 (2.04)	104,9 (4.13)	137,0 (5.39)
6 (0.37)	44,0 (1.73)	89,2 (3.51)	121,3 (4.78)	20 (1.22)	55,0 (2.17)	111,2 (4.38)	143,3 (5.64)
8 (0.49)	45,6 (1.80)	92,3 (3.63)	124,4 (4.90)	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



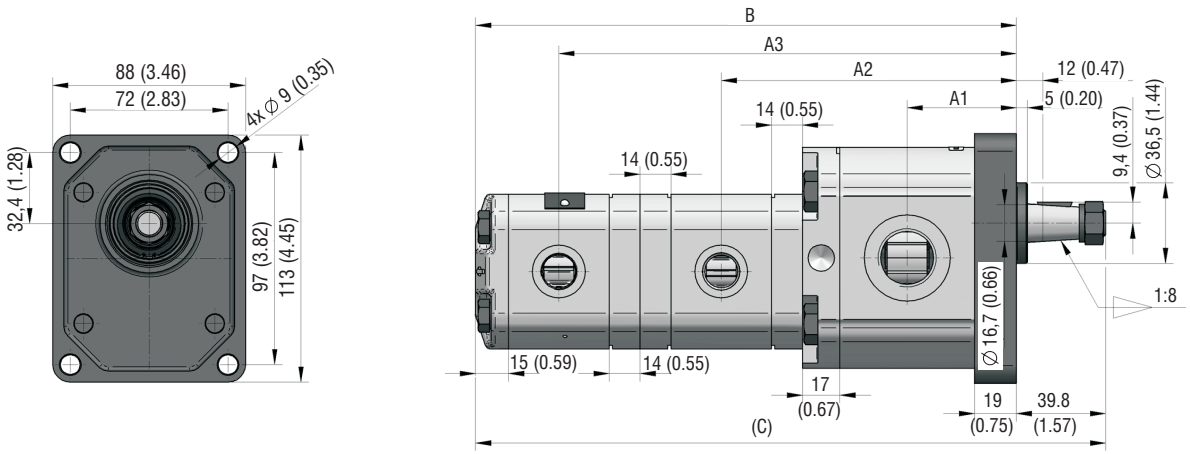
Displacement [cm³(in³)/rev]	A	B	C	Displacement [cm³(in³)/rev]	A	B	C
4 (0.24)	40,5 (1.59)	84,0 (3.31)	91,2 (3.59)	16 (0.98)	49,9 (1.96)	102,9 (4.05)	110,1 (4.33)
6 (0.37)	42,0 (1.65)	87,2 (3.43)	94,4 (3.72)	20 (1.22)	53,0 (2.09)	109,2 (4.30)	116,4 (4.58)
8 (0.49)	43,6 (1.72)	90,3 (3.56)	97,5 (3.84)	25 (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 [cm³(in³)/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 [cm³(in³)/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)