

Gear Pump – High Performance Version

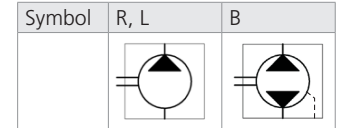
GP3

Displacement up to 100 cm³ (6.10 inch³) • p_{max} 320 bar (4600 PSI) • Speed from 350 to 3200 RPM



Technical Features

- › Operating pressure 290 bar, Peak pressure 320 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

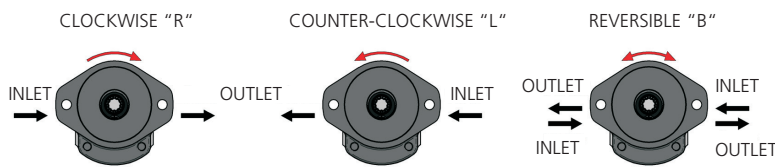
Nominal Size Parameters	Symbol	Unit	Displacement											
			10	13,5	17	22,5	27	34	43	51	61	71	82	100
Actual displacement	V _g	[cm ³]	10,14	13,76	17,39	22,46	27,53	34,05	43,47	51,44	61,59	71,01	81,87	99,98
		[in ³]	0.62	0.84	1.06	1.37	1.68	2.08	2.65	3.14	3.76	4.34	5.00	6.10
Rotation speed	nominal	n _n	1500											
	minimum	n _{min}	400			350								
	maximum	n _{max}	3200				3000	2500		2000		1800		
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}	[bar]	270	290			280	270	250	230	200	180	
		[PSI]	3916	4206			4061	3916	3625	3336	2901	2611		
	maximum	p _{2max}	[bar]	290	310			300	290	270	250	220	200	
		[PSI]	4206	4496			4351	4206	3916	3625	3191	2901		
	peak	p ₃	[bar]	300	320			310	300	280	260	230	210	
		[PSI]	4351	4641			4496	4351	4061	3771	3336	3046		
Nominal flow rate (min.) at n _n and p _{2n}	Q _n	[l min ⁻¹]	14,1	19,2	24,2	31,3	38,4	47,5	60,6	71,8	85,9	99,0	114,2	139,5
		[GPM]	3.72	5.07	6.39	8.27	10.14	12.55	16.01	18.97	22.69	26.15	30.17	36.85
Maximum flow rate at n _{max} and p _{2max}	Q _{max}	[l min ⁻¹]	31,9	43,4	54,8	70,8	86,8	100,6	119,9	131,7	145,6	153,9	161,3	177,3
		[GPM]	8.43	11.47	14.48	18.70	22.93	26.58	31.67	34.79	38.46	40.66	42.61	46.84
Nominal input power (max.) at n _n and p _{2n}	P _n	[kW]	8,0	11,7	14,8	19,2	23,5	29,0	35,8	40,8	45,3	48,0	48,2	52,9
		[kW]	18,4	26,7	33,8	43,7	53,5	62,1	71,6	76,0	78,2	76,6	70,6	70,6
Weight	m	[kg]												
		[lbs]												

- 1) *Inlet pressure in the reversible design can be up to **p₁ = 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) **p₃** 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		GP3 - 10 ...100 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 ≤ 200 bar		Class 21/18/15 acc. to ISO 4406
Max. degree of fluid contamination for p ₂ ≥ 200 bar		Class 20/17/14 acc. to ISO 4406

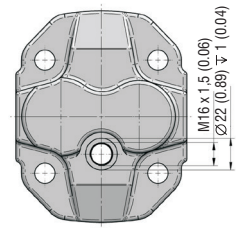
Direction of rotation, reversible design

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 with an orifice located in the cover or the flange.

Pressure in this port:
min. -0,3 bar (-4,4 PSI)
max. +0,5 bar (+7,3 PSI)



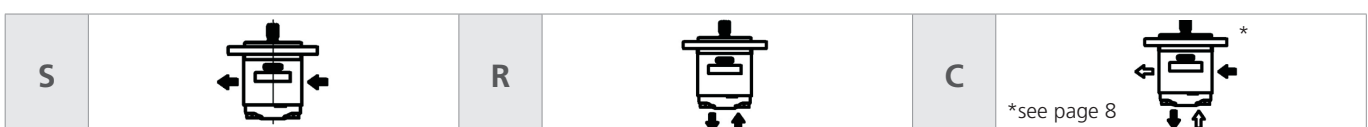
Ordering Code

Gear pump serie 3	GP3 - [] - [] - [] - [] - [] - [] - []		Shaft seal No designation 004 standard without shaft seal
	10 13,5 17 22,5 27 34	43 51 61 71 82 100	
Displacement			Seals NBR FPM (Viton) HNBR
Direction of rotation			Inlet / Outlet ports
	L R B		
Flange design			Ports orientation
	RL RM RN SC SE IA IB UA AL AM BA KB		
Shaft Type			
			CL CM DN DP DR DS DT DW KJ VO VP VQ

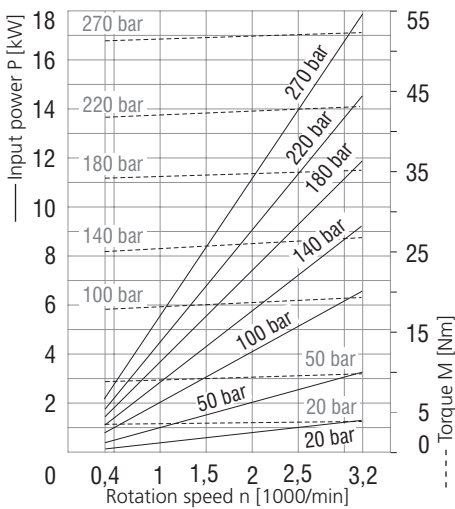
Combination of Flanges and Shafts

Flange Design	RL	RM	RN	SC	SE	IA/IB	UA	AL	AM	BA	KB
Shaft Type											
CL	●					●					
CM			●								
DN				●	●						
DP				●	●						
DR							●			●	
DS						●					
DT		●									●
DW								●	●	●	
KJ								●	●		
VO				●	●						
VP	●										
VQ	●	●									

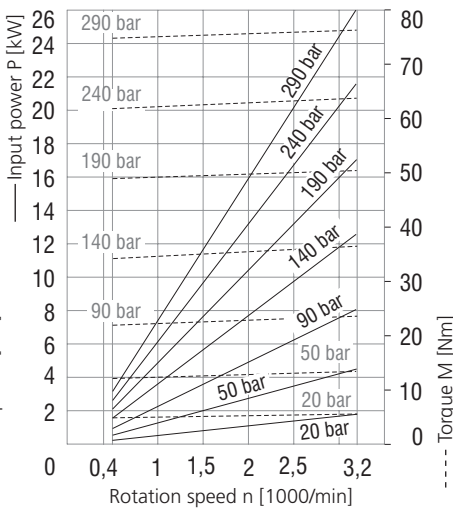
Port orientation



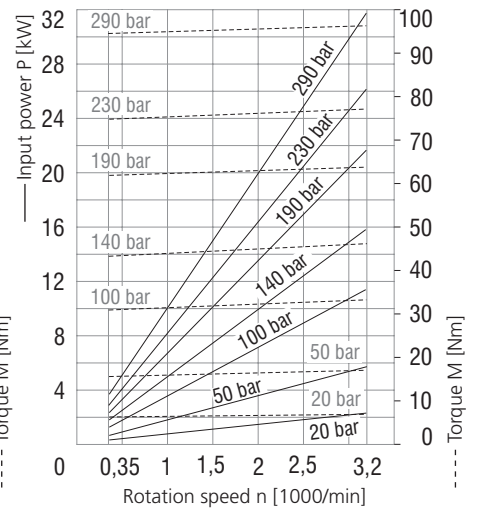
10 ccm



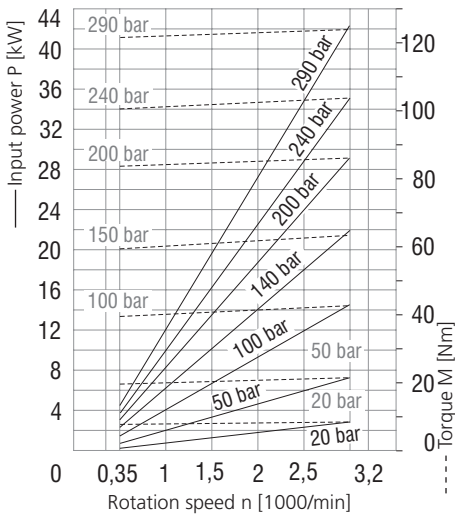
13,5 ccm



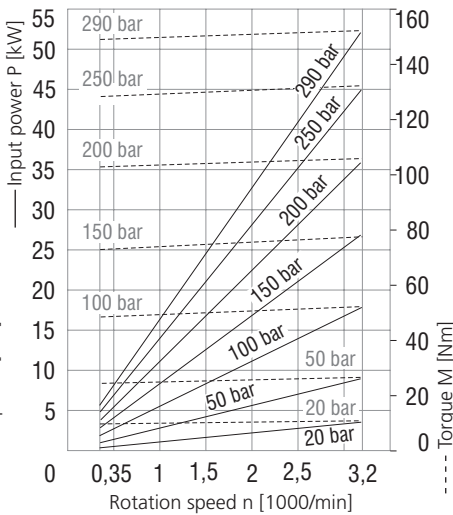
17 ccm



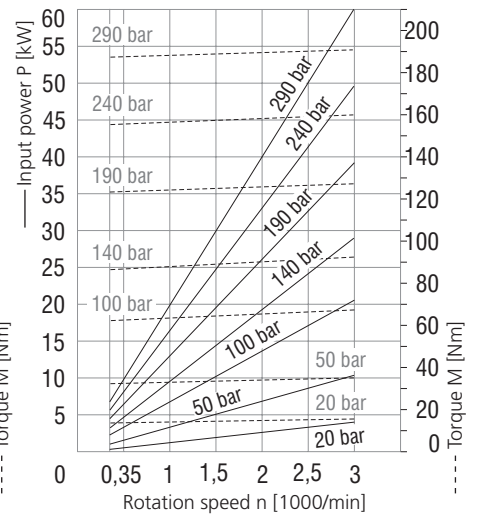
22,5 ccm



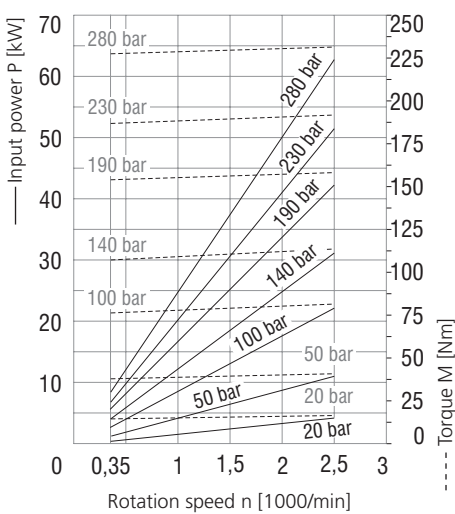
27 ccm



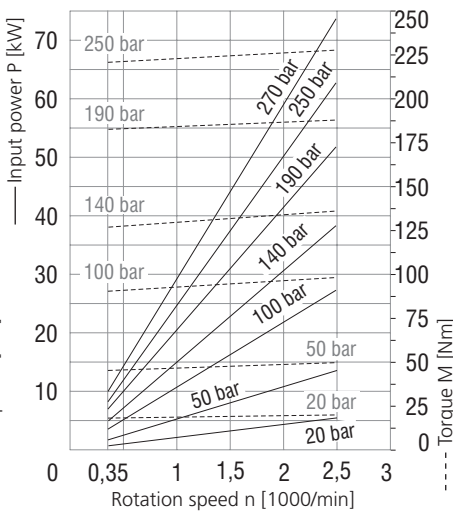
34 ccm



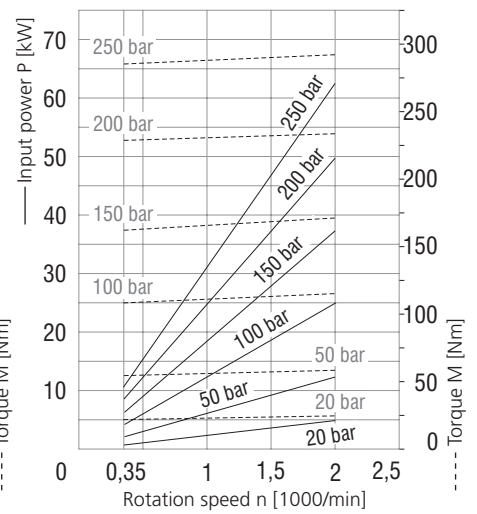
43 ccm



51 ccm

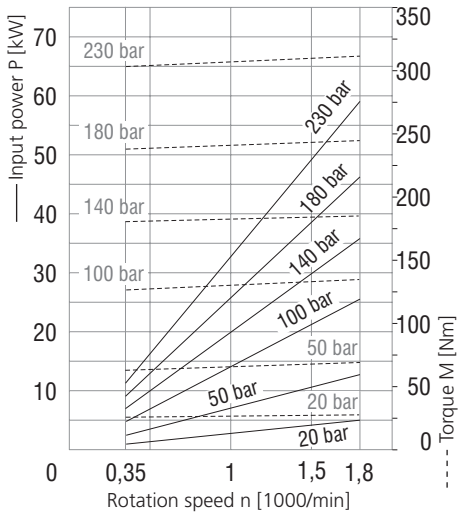


61 ccm

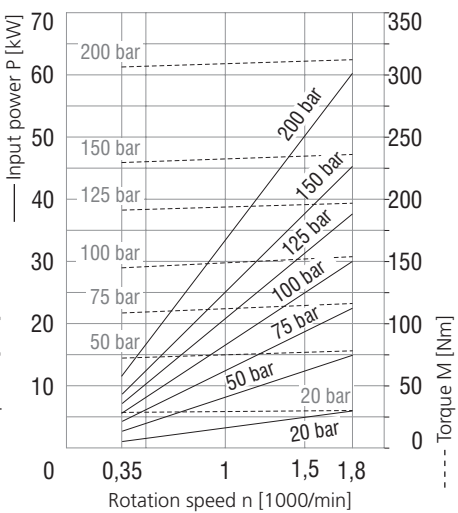


Characteristics measured at $v = 32 \text{ mm}^2/\text{s}$ (156 SUS)

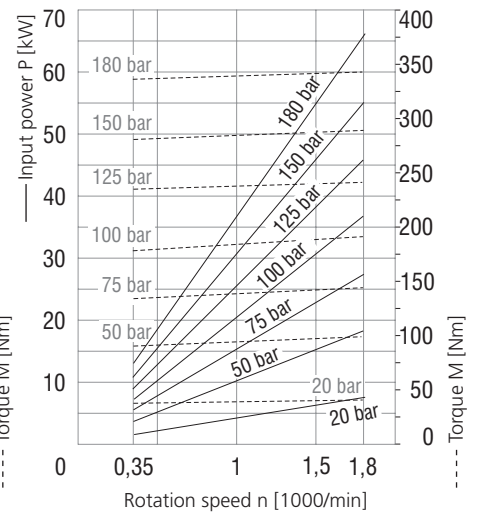
71 ccm



82 ccm



100 ccm



Ordering Code - Multiple Version

GP3 - [] / [] - [] - [] - [] - [] - [] - [] - []

Gear pump serie 3

Front pump (shaft side)	Rear pump
10	43
13,5	51
17	61
22,5	71
27	82
34	100

Displacement

Direction of rotation

Counter clockwise	L
Clockwise	R
Bi-directional	B

Flange design

RL	IB
RM	UA
RN	AL
SC	AM
SE	BA
IA	KB

Front pump

MI	UD	AC	
MJ	UE	AD	
ML	UH	AE	
MM	UI	EB	KE
MP	HI	EC	KF
GC	HJ	ED	SI
GD	HK	EE	SJ
GE	HL	KC	SK
GF	AB	KD	SL

Rear pump

Shaft seal

No designation
004

standard
without shaft seal

Seals

N
V
H

NBR
FPM (Viton)
HNBR

Inlet / Outlet ports

Always from left:
Inlet - Outlet

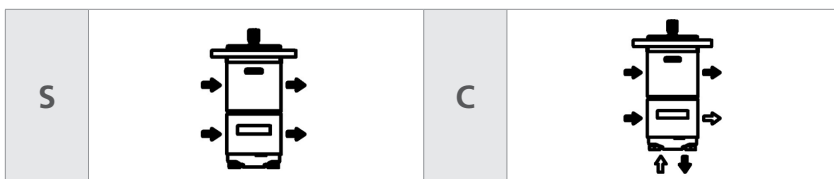
Ports orientation

Use blind plug for not used ports

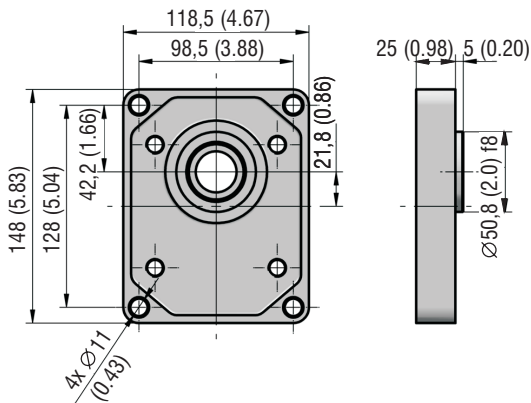
Shaft Type

S	CL	DT
C	CM	DW
	DN	KJ
	DP	VO
	DR	VP
	DS	VQ

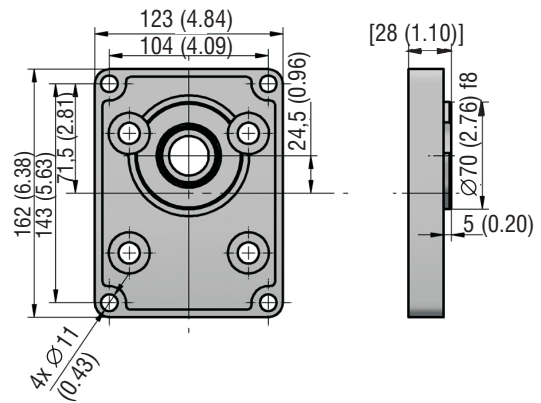
Port orientation



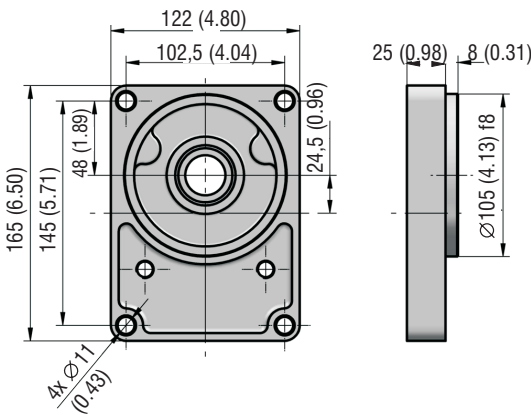
RL



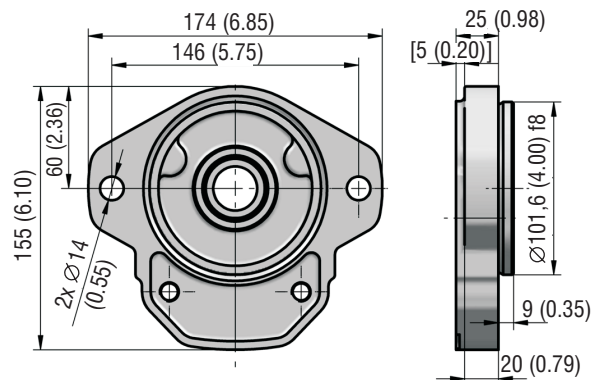
RM



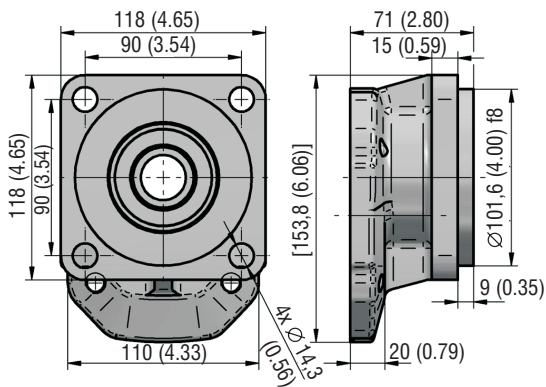
RN



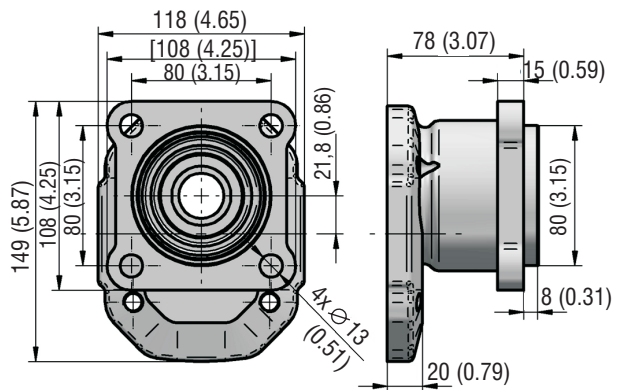
SC



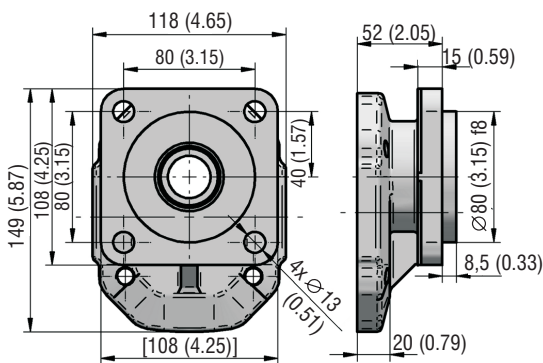
SE



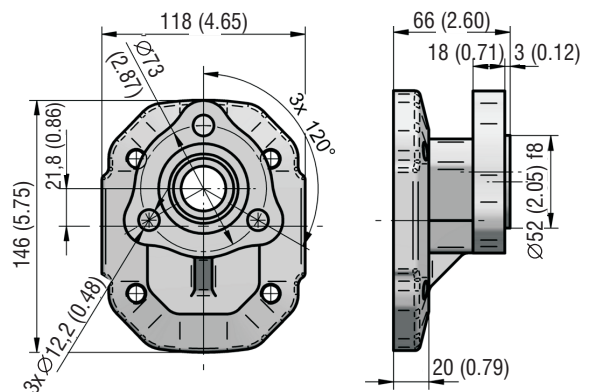
IA



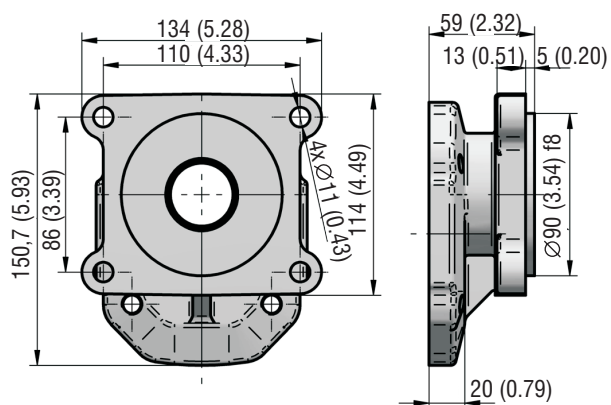
IB



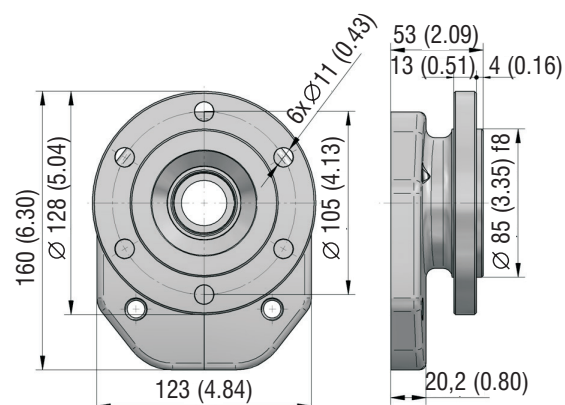
UA



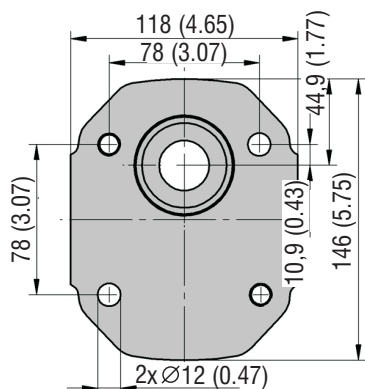
BA



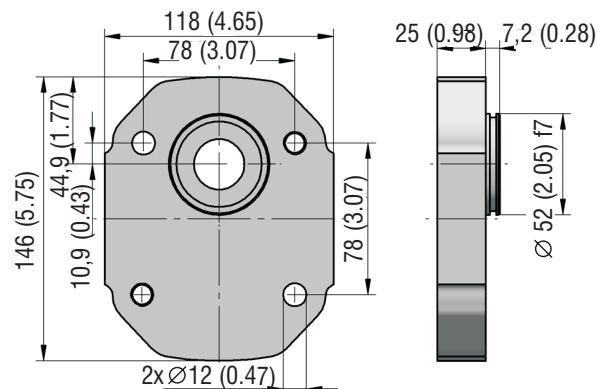
KB



AM



AL



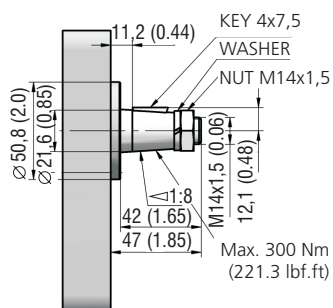
Shaft design in millimeters (inches)

A driving device must not generate an axial or a radial load of the pump shaft, unless this is exclusively permitted for the pump with a front-end bearing.

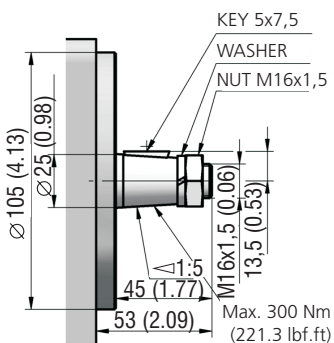
Ask producer for the version with front-end bearing.

Maximal torque for clutch between sections in multiple version is 220 Nm.

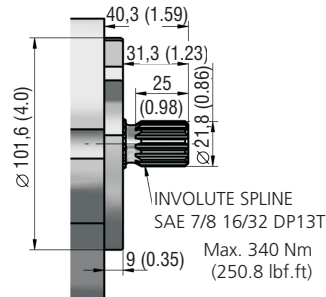
CL



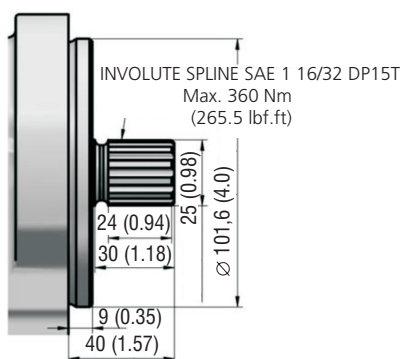
CM



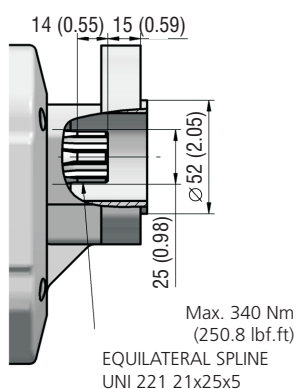
DN



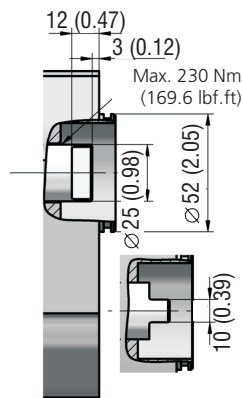
DP



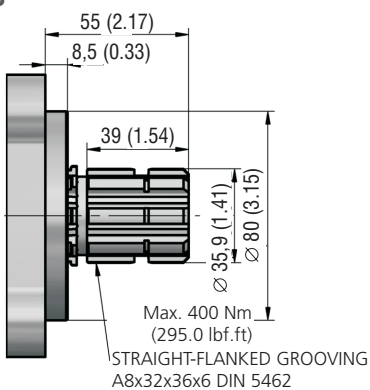
DR



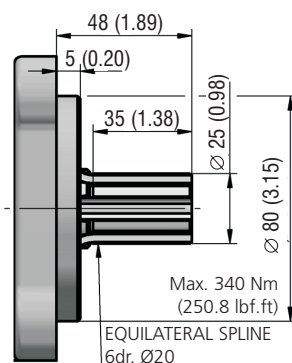
KJ



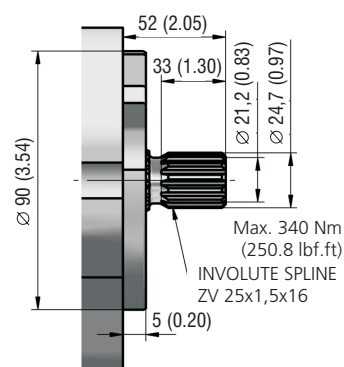
DS



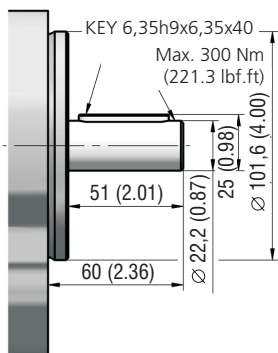
DT



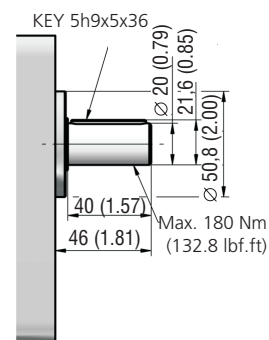
DW



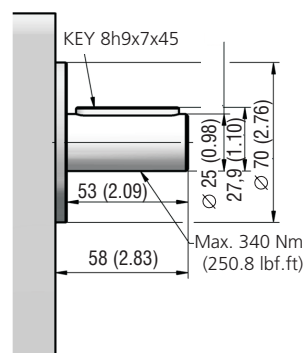
VO



VP

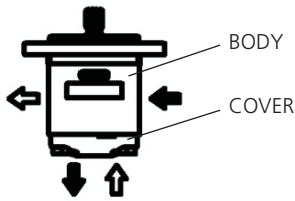


VQ



Ports design in millimeters (inches)

***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.

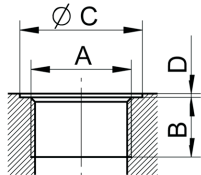
Sample: GP3-51R-RLCL-CGEGEGDGD-N

For Suction port in Cover, Pressure port in Body: GP3-51R-RLCL-CGEGD-N006
For Suction port in Body, Pressure port in Cover: GP3-51R-RLCL-CGEGD-N093

Other combinations for instance two suction ports, one pressure port describe in the order beside the code.

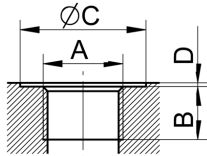
GP3-51R-RLCL-CGEGEGD-N Two suction ports, Pressure port in the Body.

Metric thread according to ISO 6149



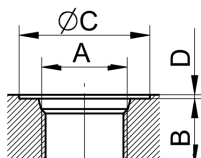
Displacement [cm ³ (in ³)]	Inlet Code	Dimension				Outlet Code	Dimension			
		A	B	C	D		A	B	C	D
to 51 (3.11) including	MM	M33x2	18 (0.71)	40 (1.57)	1 (0.04)	MJ	M27x2	16 (0.63)	33 (1.30)	1 (0.04)
above 51 (3.11)	MP	M48x2		56 (2.20)		MM	M33x2	18 (0.71)	40 (1.57)	
drain	MD	M16x1,5	14 (0.55)	22 (0.89)						
	ME	M18x1,5		24 (0.94)						

BSPP pipe thread according to 228-1



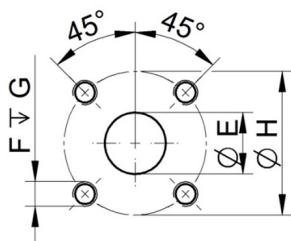
Displacement [cm ³ (in ³)]	Inlet Code	Dimension				Outlet Code	Dimension			
		A	B	C	D		A	B	C	D
to 17 (1.04) including	GC	G 1/2	14 (0.55)	33 (1.30)	1 (0.04)	GC	G 1/2	14 (0.55)	33 (1.30)	1 (0.04)
17 - 34 (1.04 - 2.07) including	GD	G 3/4	16 (0.63)	39 (1.54)		GD	G 3/4	16 (0.63)	39 (1.54)	
34 - 51 (2.07 - 3.11) including	GE	G 1	18 (0.71)	45 (1.77)		GE	G 1	18 (0.71)	45 (1.77)	
above 51 (3.11)	GF	G 1 1/4		57 (2.24)		GF	G 1	18 (0.71)	45 (1.77)	

UNF thread according to SAE



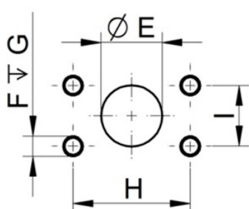
Displacement [cm ³ (in ³)]	Inlet Code	Dimension				Outlet Code	Dimension			
		A	B	C	D		A	B	C	D
to 17 (1.04) including	UE	1-1/16-12UNF	19 (0.75)	41 (1.61)	1 (0.04)	UD	7/8-14UNF	17 (0.67)	34 (1.34)	1 (0.04)
17 - 27 (1.04 - 1.65) including	UH	1-5/16-12UNF	23 (0.91)	49 (1.93)		UE	1-1/16-12UNF	19 (0.75)	41 (1.61)	
27 - 39 (1.65 - 2.38) including	UH			58 (2.28)		UH	1-5/16-12UNF	23 (0.91)	49 (1.93)	
above 39 (2.38)	UI	1-5/8-12UNF 2B								

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	HL	26 (1.02)	M10	16 (0.63)	51 (2.01)	HI	18 (0.71)	M8	16 (0.63)	40 (1.57)
	HK	25 (0.98)	M8		55 (2.17)	HJ				55 (2.17)

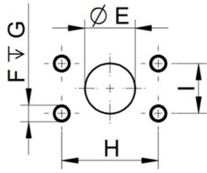
Flanged fittings according to SAE, metric thread



Displacement [cm ³ (in ³)]	Inlet Code	Dimension					Outlet Code	Dimension				
		E	F	G	H	I		E	F	G	H	I
to 61 (3.72) including	EC	25,4 (1.00)	M10	22 (0.87)	52,4 (2.06)	26,2 (1.03)	EB	9 (0.75)	M10	22 (0.87)	47,6 (1.87)	22,2 (0.87)
above 61 (3.72)	ED	30,5 (1.20)			58,7 (2.31)	30,2 (1.19)	EC	25,4 (1.00)			52,4 (2.06)	26,2 (1.03)
		EE	39,3 (1.55)	M12	27 (1.06)	69,8 (2.75)	35,7 (1.41)	ED	30,5 (1.20)		58,7 (2.31)	30,2 (1.19)

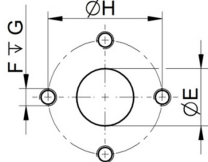
Ports design in millimeters (inches)

Flanged fittings according to SAE, UNC thread



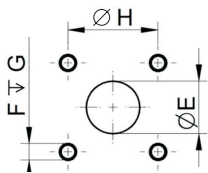
Displacement [cm ³ (in ³)]	Inlet Code	Dimension					Outlet Code	Dimension				
		E	F	G	H	I		E	F	G	H	I
to 61 (3.72) including	AC	25,4 (1.00)	3/8-16-UNC	22 (0.87)	52,4 (2.06)	26,2 (1.03)	AB	19 (0.75)	3/8-16-UNC	22 (0.87)	47,6 (1.87)	22,2 (0.87)
above 61 (3.72)	AD	30,5 (1.20)	7/16-14-UNC		58,7 (2.31)	30,2 (1.19)	AC	25,4 (1.00)				52,4 (2.06)
	AE	39,3 (1.55)	1/2-13-UNC	27 (1.06)	69,8 (2.75)	35,7 (1.41)	AD	30,5 (1.20)	7/16-14-UNC	29 (1.14)	58,7 (2.31)	30,2 (1.19)

Flanged fittings - „ cross “



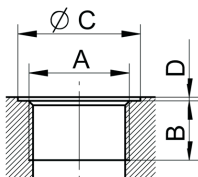
Displacement [cm ³ (in ³)]	Inlet Code	Dimension				Outlet Code	Dimension			
		E	F	G	H		E	F	G	H
ALL	KD	26 (1.02)	M10	16 (0.63)	51 (2.01)	KC	18 (0.71)	M8	16 (0.63)	40 (1.57)
	KF	25 (0.98)	M8		55 (2.17)	KE				55 (2.17)

Flanged fittings - „ square “



Displacement [cm ³ (in ³)]	Inlet Code	Dimension				Outlet Code	Dimension			
		E	F	G	H		E	F	G	H
to 43 (2.62) including	SL	23 (0.91)	M8	22 (0.87)	46 (1.81)	SK	16 (0.63)	M8	22 (0.87)	46 (1.81)
above 43 (2.62)	SJ	27 (1.06)	M10		54 (2.13)	SI	19 (0.75)			M10

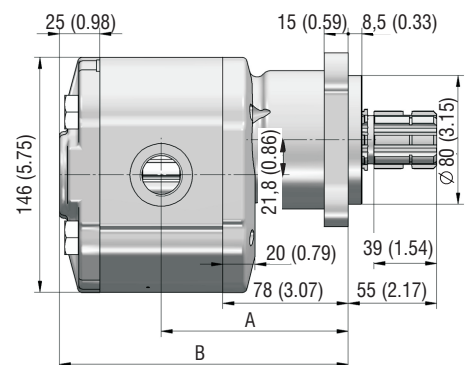
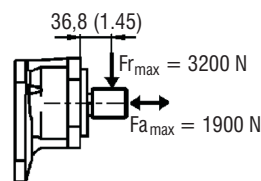
Drain



Displacement [cm ³ (in ³)]	Outlet Code	Dimension			
		A	B	C	D
ALL	MD	M16x1,5	14 (0.55)	22 (0.87)	1 (0.04)
	ME	M18x1,5		24 (0.94)	

GPP Pumps - basic design in millimeters (inches)

GP3-*R-IADS-SG*G*-N

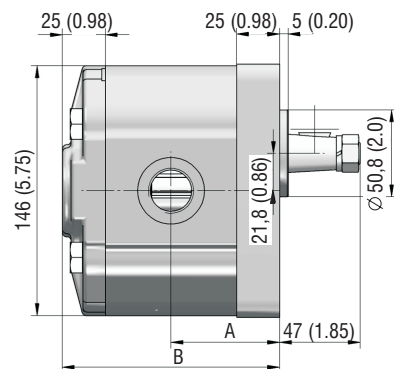


Displacement [cm ³ (in ³)/rev]	A	B	Displacement [cm ³ (in ³)/rev]	A	B
17 (1.06)	112 (4.41)	171 (6.73)	61 (3.76)	130,5 (5.14)	208 (8.20)
27 (1.68)	116,3 (4.58)	179,5 (7.07)	71 (4.34)	134,8 (5.31)	216,5 (8.52)
34 (2.08)	119 (4.69)	185 (7.28)	82 (5.00)	139,3 (5.48)	225,5 (8.88)
43 (2.65)	122,8 (4.43)	192,5 (7.58)	100 (6.10)	150,8 (5.94)	248,5 (9.78)
51 (3.14)	126,3 (4.97)	199,5 (7.85)			

GP3 Pumps - basic design in millimeters (inches)

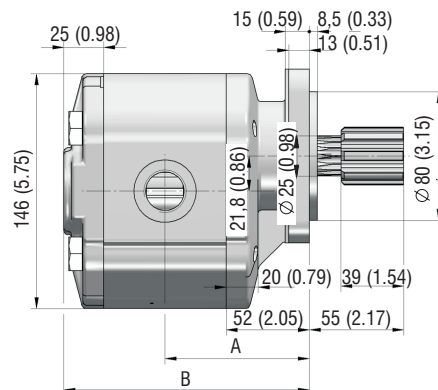
GP3-*R-RLCL-SG*G*-N

Displacement [cm ³ (in ³)/rev]	A	B	Displacement [cm ³ (in ³)/rev]	A	B
10 (0.62)	56 (2.20)	112 (4.41)	43 (2.65)	69,8 (2.75)	139,5 (5.49)
13,5 (0.84)	57,5 (2.26)	115 (4.53)	51 (3.14)	73,3 (2.89)	146,5 (5.77)
17 (1.06)	59 (2.32)	118 (4.65)	61 (3.76)	77,5 (3.05)	155 (6.10)
22,5 (1.37)	61,3 (2.41)	122,5 (4.82)	71 (4.34)	81,8 (3.22)	163,5 (6.44)
27 (1.68)	63,3 (2.49)	126,5 (4.98)	82 (5.00)	86,3 (3.40)	172,5 (6.79)
34 (2.08)	66 (2.60)	132 (5.20)	100 (6.10)	97,8 (3.85)	195,5 (7.70)



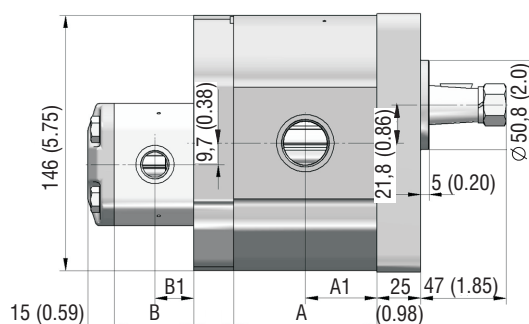
GP3-*R-IBDS-SG*G*-N

Displacement [cm ³ (in ³)/rev]	A	B	Displacement [cm ³ (in ³)/rev]	A	B
10 (0.62)	83 (3.27)	139 (5.47)	51 (3.14)	100,3 (3.95)	173,5 (6.83)
17 (1.06)	86 (3.39)	145 (5.71)	61 (3.76)	104,5 (4.11)	182 (7.17)
27 (1.68)	90,3 (3.56)	153,5 (6.04)	71 (4.34)	108,8 (4.28)	190,5 (7.85)
34 (2.08)	93 (3.66)	159 (6.26)	82 (5.00)	113,3 (4.46)	199,5 (6.44)
43 (2.65)	96,8 (3.81)	166,5 (6.56)	100 (6.10)	124,8 (4.91)	222,5 (8.76)



GP3-*/GP1-*L-RLCL-SM*M*/M*M*-N

Displacement [cm ³ (in ³)/rev]	A	A1	B	B1
17 / 1,6 (1.06 / 0.10)	68 (2.68)	34 (1.34)	38,3 (1.51)	19,2 (0.76)
17 / 2,5 (1.06 / 0.15)	68 (2.68)	34 (1.34)	41,5 (1.63)	20,8 (0.82)
17 / 3,6 (1.06 / 0.22)	68 (2.68)	34 (1.34)	45,6 (1.80)	22,8 (0.90)
27 / 1,6 (1.65 / 0.10)	76,5 (3.01)	38,3 (1.51)	38,3 (1.51)	19,2 (0.76)
27 / 2,5 (1.65 / 0.15)	76,5 (3.01)	38,3 (1.51)	41,5 (1.63)	20,8 (0.82)
27 / 3,6 (1.65 / 0.22)	76,5 (3.01)	38,3 (1.51)	45,6 (1.80)	22,8 (0.90)
34 / 1,6 (2.08 / 0.10)	82 (3.23)	41 (1.61)	38,3 (1.51)	19,2 (0.76)
34 / 2,5 (2.08 / 0.15)	82 (3.23)	41 (1.61)	41,5 (1.63)	20,8 (0.82)
34 / 3,6 (2.08 / 0.22)	82 (3.23)	41 (1.61)	45,6 (1.80)	22,8 (0.90)
43 / 1,6 (2.62 / 0.10)	89,5 (3.52)	44,8 (1.76)	38,3 (1.51)	19,2 (0.76)



GP3-*/GP2-*R-RLCL-SK*K*/K*K*-N

Displacement [cm ³ (in ³)/rev]	A	A1	B	B1
51 / 8 (3.11 / 0.49)	96,5 (3.78)	48,3 (1.90)	57 (2.24)	28,5 (1.12)
34 / 11 (2.08 / 0.67)	82 (3.23)	41 (1.61)	62,5 (2.46)	31,3 (1.23)
51 / 11 (3.11 / 0.67)	96,5 (3.78)	48,3 (1.90)	62,5 (2.46)	31,3 (1.23)

