

G Series

Group 2 gear pumps

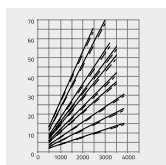


Roquet
making moves

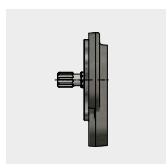
roquetgroup.com



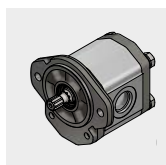
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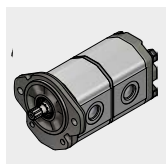
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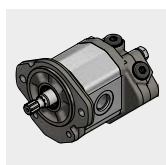
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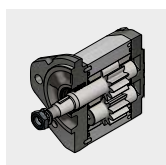
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Features

Roquet gear pumps offer:

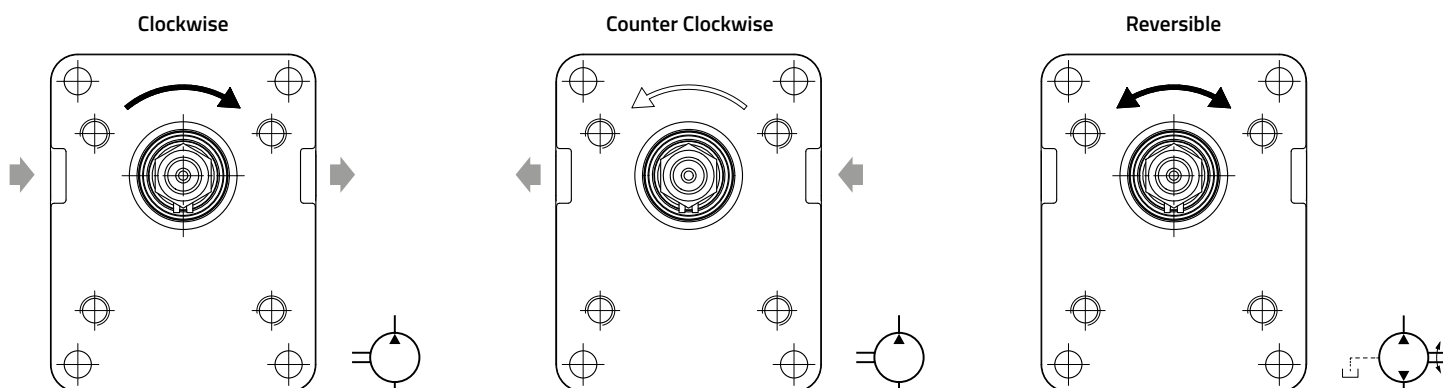
- High efficiency thanks to the specialized production processes.
- Axial compensation through floating bearings.
- High quality bushings for gear pumps.
- Aluminium or cast iron body.
- Front flange and back cover made of cast iron.
- NBR seals in the standard version.
- FKM seals available for high temperature applications.
- 100% of pumps delivered are tested.
- Option to create multiple pumps combining different Roquet pump models.
- Different multiple pumps inlets connected, common inlet & separate stages.
- Front flanges with outboard bearing configurations.
- Back covers with integrated valves.

Technical Information

Displacement range	4 – 27 cm ³ /rev
Shafts, flanges and ports	According to European, German and American standards
Direction of rotation	Clockwise, counter clockwise and reversible
Inlet port pressure range	0,7 – 3 bar (absolute pressure)
Fluid	Mineral oil - ISO 6743 type HM, HV o HG
Viscosity	Maximum viscosity allowed at start 800 cSt (mm ² /s)
Oil working temperature	Material NBR (-30/+80 °C) FKM (-20/+120 °C)
Cleanliness	ISO 4406 22/19/16

Direction of Rotation

The direction of rotation is always defined looking at the pump from the front flange.



Common Formulas

$$v = \frac{Q}{6 \cdot A} \quad [\text{m/s}]$$

$$Q = \frac{V \cdot n \cdot \eta_{\text{vol}}}{1000} \quad [\text{l/min}]$$

$$M = \frac{(V \cdot \Delta p)}{(62,8 \cdot \eta_{\text{hm}})} \quad [\text{N} \cdot \text{m}]$$

$$P = \frac{(Q \cdot \Delta p)}{(600 \cdot \eta_{\text{hm}})} \quad [\text{kW}]$$

v = fluid speed [m/s]

Q = pump flow [l/min]

A = tube section [cm²]

V = pump displacement [cm³/rev]

n = rotation speed [rev/min]

Δp = pressure difference [bar]

M = necessary driving torque [N · m]

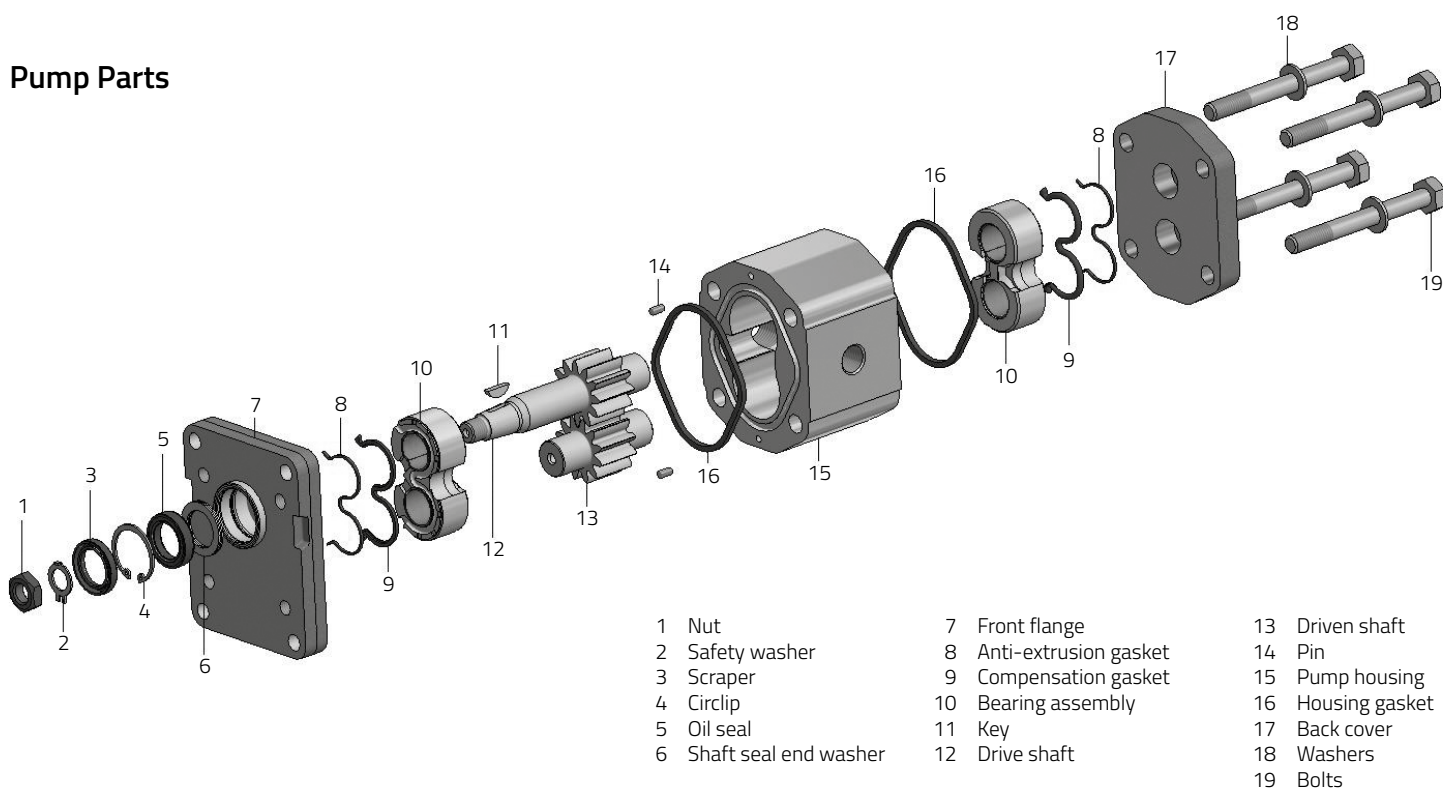
P = necessary driving power [kW]

η_{vol} = volumetric efficiency (~0,95) [%]

η_{hm} = hydromechanical efficiency (~0,85) [%]

Note: Use a minimum pressure of 20 bar to ensure the starting torque.

Pump Parts

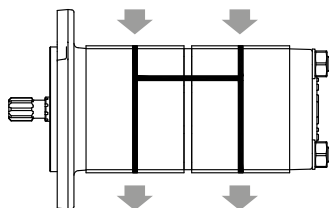


Installation Recommendations

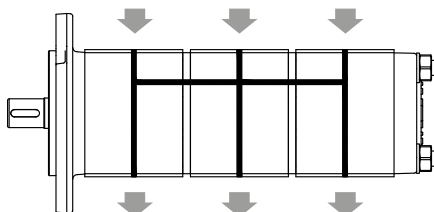
- Avoid radial and axial forces on the pump shaft for longer pump lifetime.
- The shafts of the pump and the motor have to be well aligned to avoid these forces.
- Elastic couplings are highly recommended.
- If these forces cannot be avoided, versions with outboard bearings can be offered.
- Avoid rotation speeds lower than those shown in the "technical data" section.
- Avoid pump starts under load at low temperatures.
- When starting, clean the whole installation before first run of system.
- Submerged installation recommended.
- If painting the pump, protect the seal area and the drive shaft to avoid possible oil leaks.
- In reversible pumps, if possible, connect the drain to tank.

Versions

Standard version (Inlets connected)



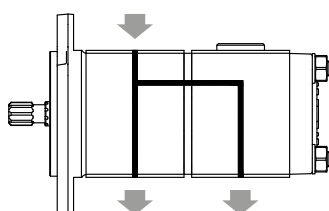
The oil can pass between sections.



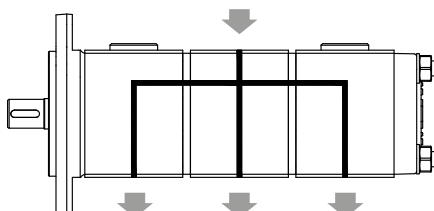
Reference

· Standard.

Common inlet



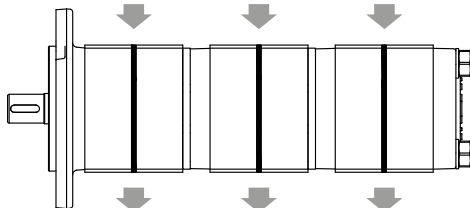
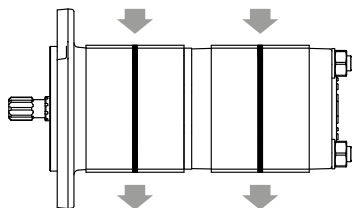
Designed to use less inlets than outlets.



Suffix

- CI1 (Common inlet, body 1 inlet prot).
- CI2 (Common inlet, body 2 inlet prot).

Separate stages version



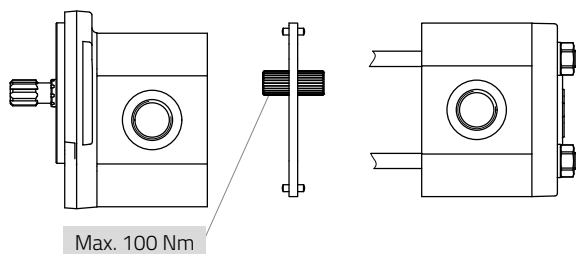
Note: The pump length and the intermediate flanges are different than the above ones.

· SS (Separate stages).

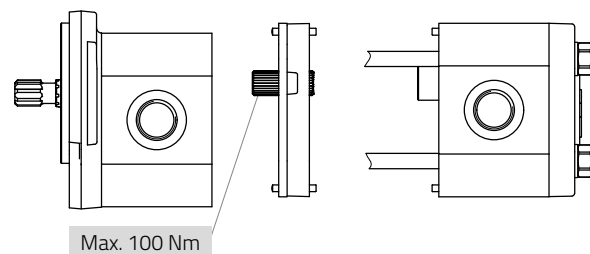
Driving Torques

Driving torques between pumps

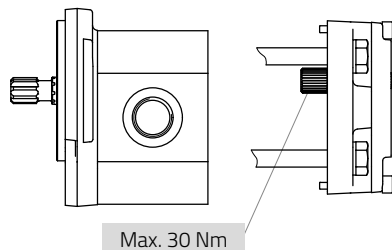
G+G - Common inlet



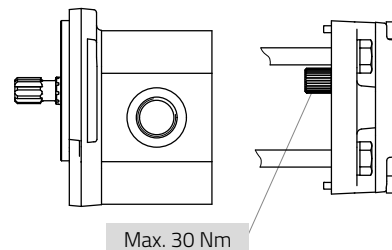
G+G - Separate stages

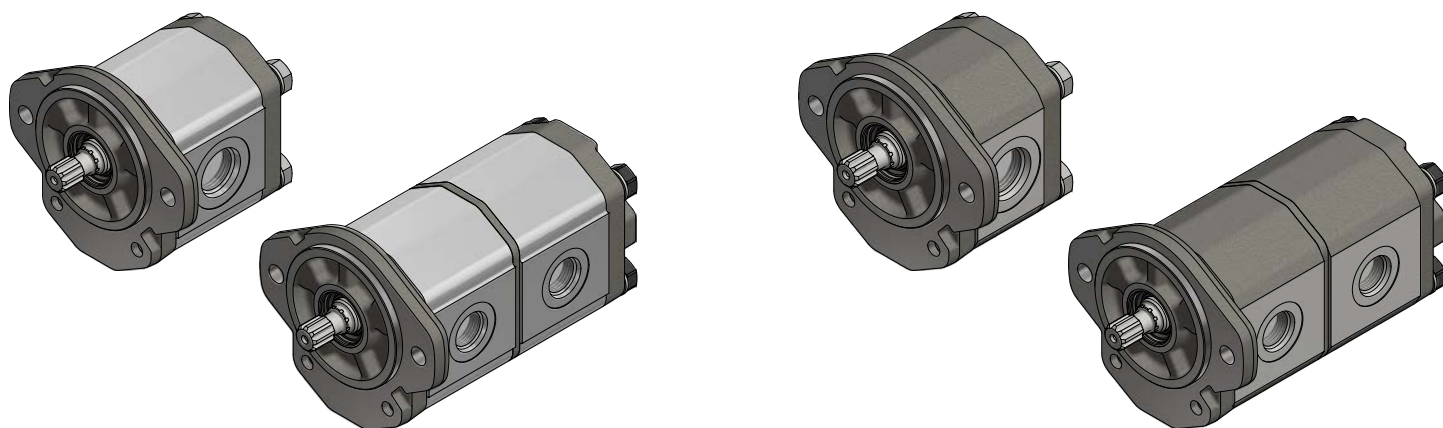


G+GS - Common inlet



G+GS - Separate stages





G Pump Technical Data (Aluminium body)

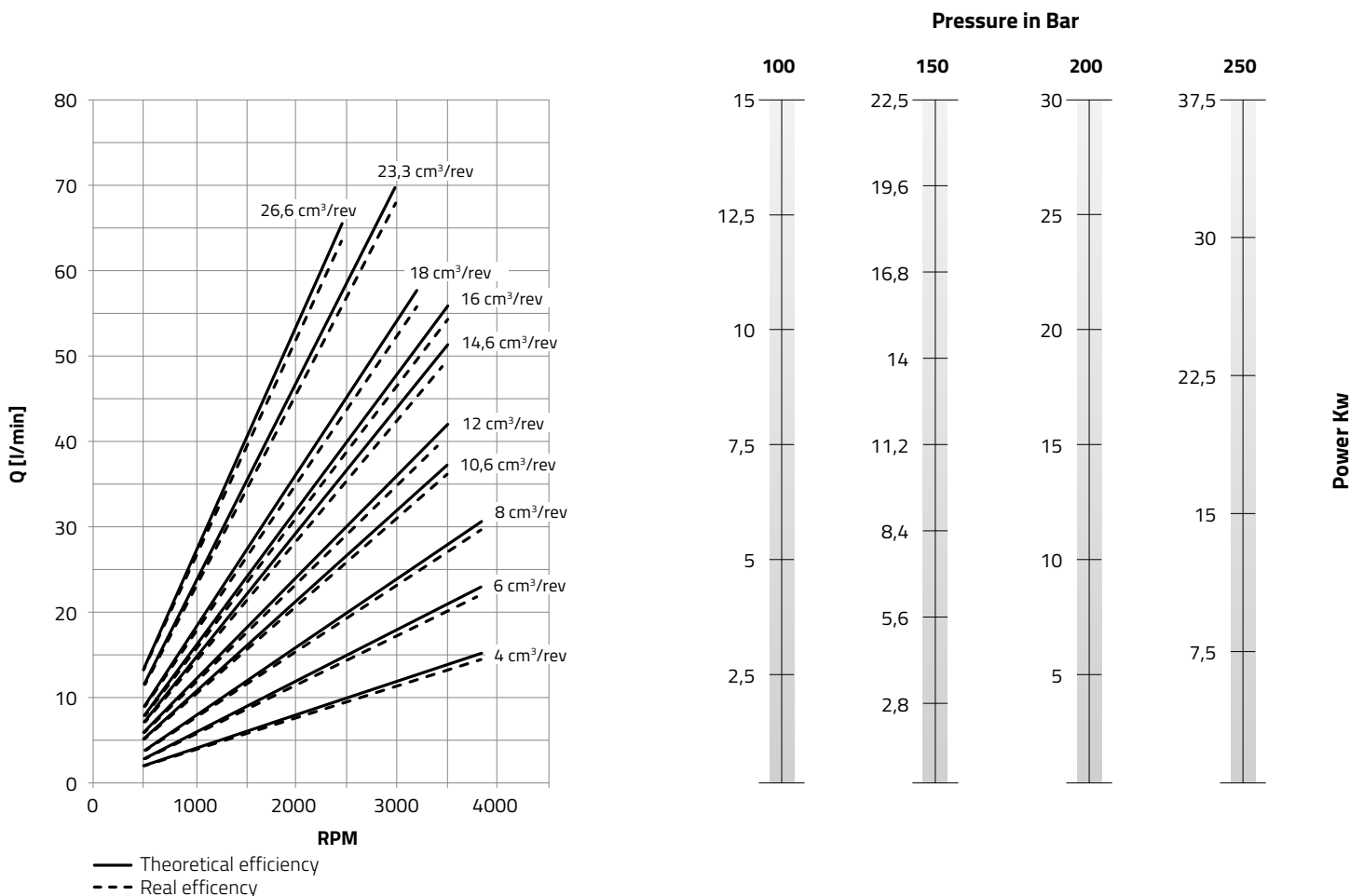
Displacement		cc/rev (in³/rev)	4 (0,24)	6 (0,37)	8 (0,49)	10,7 (0,65)	12 (0,73)	14,7 (0,89)	16 (0,98)	18 (1,10)	23,3 (1,42)	26,6 (1,62)
Cont. max. pressure		bar (psi)	275 (3990)					250 (3625)		225 (3265)	180 (2610)	170 (2465)
Intermittent max. pressure		bar (psi)	300 (4350)					275 (3990)		250 (3625)	200 (2900)	190 (2755)
Maximum peak pressure		bar (psi)	310 (4495)					285 (4135)		260 (3770)	210 (3045)	200 (2900)
R.P.M. at cont. pressure			3500			3000		2500		2300	2000	
Max. R.P.M			4000			3500				3200	3000	2500
Min. R.P.M. at given pressures	100 bar (1450 psi)	500										
	175 bar (2540 psi)	1100		1200	1000		850			750		
	250 bar (3625 psi)	1400			1300		1200		1100	–		
	300 bar (4350 psi)	1750			1500		–					

Note: Pressures obtained with flanged bodies.

GN Pump Technical Data (Cast iron body)

Displacement		cc/rev (in³/rev)	4 (0,24)	6 (0,37)	8 (0,49)	10,7 (0,65)	12 (0,73)	14,7 (0,89)	16 (0,98)	18 (1,10)	23,3 (1,42)	26,6 (1,62)	
Cont. max. pressure		bar (psi)	290 (4205)					275 (3990)		250 (3625)	225 (3265)	215 (3120)	
Intermittent max. pressure		bar (psi)	350 (5075)					330 (4785)		300 (4350)	260 (3770)	250 (3625)	
Maximum peak pressure		bar (psi)	360 (5220)					340 (4930)		310 (4495)	270 (3915)	260 (3770)	
R.P.M. at cont. pressure			3500			3000		2500		2300	2000		
Max. R.P.M			4000			3500					3200	3000	2500
Min. R.P.M. at given pressures	100 bar (1450 psi)	500											
	175 bar (2540 psi)	1100		1200	1000			850			750		
	250 bar (3625 psi)	1400			1300			1200		1100	–		
	300 bar (4350 psi)	1750			1500			–					

Flow, performance and power chart according to displacement

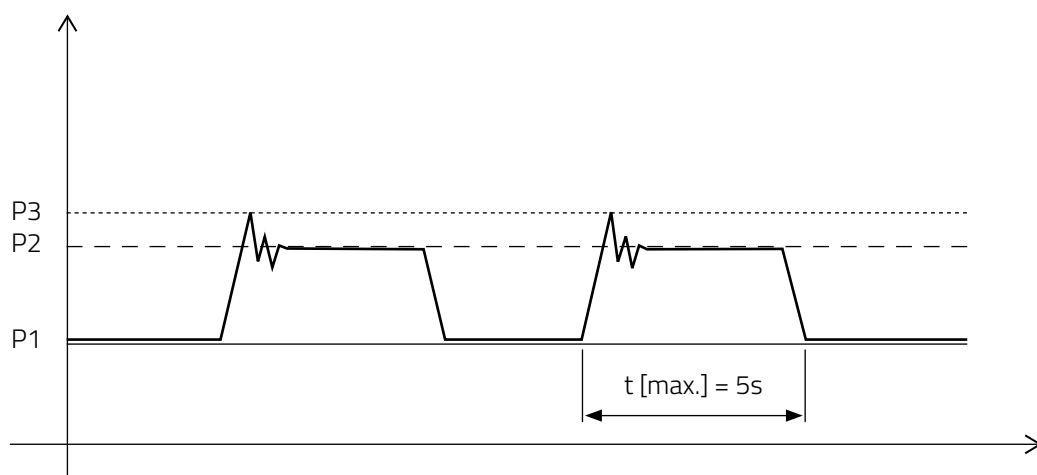


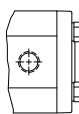
NOTE: The values shown in the above diagram have been obtained using 32cSt Kinematic viscosity oil.

Pressure Definition

Technical data tables show 3 levels of maximum pressure to which a pump can be used:

- P1 – Maximum continuous pressure ———
- P2 – Maximum intermittent pressure - - -
- P3 – Maximum peak pressure



Coding System								Optional				
1	G	15C	D	E	10	R		/	V	42	T***	-***
Type								Code				
1	Without pulley							Alternatives with Valves				
5	Pump with floating shaft and back-up bearing											
Model								Chamber Type				
G	Single – Aluminium body											
GN	Single – Cast iron body											
GM	Multiple (G+G)											
GNM	Multiple (GN+GN)											
GS	Multiple (G+G0)											
GNS	Multiple (GN+G0)											
Pump Displacement [cm³/rev] & [in³/rev]								Port Connection Forms				
4C	4,0	0,24	 R BSP thread									
6C	6,0	0,37										
8C	8,0	0,49										
11C	10,7	0,65										
12C	12,0	0,73										
15C	14,7	0,89										
16C	16,0	0,98										
18C	18,0	1,10										
23C	23,3	1,42	 S SAE thread									
27C	26,6	1,62										
Rotation Direction								Mounting Flange				
D	Clockwise											
I	Counter clockwise											
R	Reversible											
Drive Shaft Form								09 SAE A - 2 bolts 10 European flange 22 German standard - 2 bolts 23 German standard 89 SAE B - 2 bolts 00 Multiple pumps For more options see flanges				
D	SAE B - 13 teeth — SAE J498b											
E	European tapered 1:8											
G	SAE A - 9 teeth — SAE J498b											
H	SAE A - Ø15,88 straight											
J	German tapered 1:5											
K	SAE - 11 teeth — SAE J498b											
L	SAE Ø19,05 straight											
T	DIN-5482 - 9 teeth											
Q	Multiple pumps — (SS)											
Z	Multiple pumps — (CI)											
For more options see shafts												

[illegible][illegible]

Pumps with Integrated Valves

Relief valve

Tamper-proof sealable model and standard set pressure

Pressure range

V11	Set at 80 bar (5-80 bar)
V12	Set at 160 bar (85-175 bar)
V13	Set at 200 bar (180-250 bar)

Tamper-proof sealed model and specific set pressure

Pressure range

V41T***	5-80 bar
V42T***	85-175 bar
V43T***	180-250 bar

In the relief valve with tamper-proof cap, the signs *** have to be replaced by the set pressure (3 numbers) of the valve.

See minimum set pressure curve (page 22).

Example 1: 1G18CDE10R/V12

Example 2: 1G11CDE10R/V41T060

Flow control valve with relief valve

VC

@

V

@

Controlled flow

05	5 l/min
08	8 l/min
12	12 l/min
16	16 l/min
22	22 l/min

Tamper-proof sealable model and standard set pressure

Pressure range

11	Set at 80 bar (5-80 bar)
12	Set at 160 bar (85-175 bar)
13	Set at 200 bar (180-250 bar)

See minimum set pressure curve (page 23).

Example: 1G8CDE10R/VC05V13

Check valve

VA

See pressure diagram - flow (page 22).

Example: 1G11CDE10R/VA

Low pressure relief valve

VBPT**

The signs ** have to be replaced by the set pressure (2 numbers). See minimum set pressure curve (page 22).

Example: 1G15CDE10R/VBP14

Priority flow rate with relief valve

RC

@

V

@

Priority flow PF

05	5 l/min
06	6 l/min
08	8 l/min
10	10 l/min
12	12 l/min
14	14 l/min
16	16 l/min
18	18 l/min
20	20 l/min

Model without valve

00	Without relief valve
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Tamper-proof sealable model and standard set pressure

Pressure range

11	Set at 80 bar (5-80 bar)
12	Set at 160 bar (85-175 bar)
13	Set at 200 bar (180-250 bar)

Tamper-proof sealed model and specific set pressure

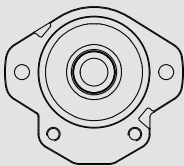
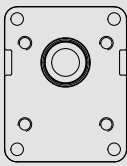
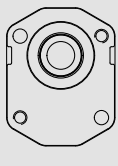
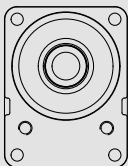
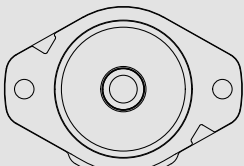
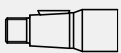
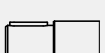
Pressure range

41T***	5-80 bar
42T***	85-175 bar
43T***	180-250 bar

In the relief valve with tamper-proof cap, the signs *** have to be replaced by the set pressure (3 numbers) of the valve. See minimum set pressure curve (page 23).

Example 1: 1G11CDE10R/RC08V41T060

Example 2: 1G16CDE10R/RC16V12

	09	10	22	23	89
					
	SAE A – 2 bolts	European	German – 2 Bolts	German	SAE B – 2 bolts
D  SAE B – 13 teeth					D 89
E  European tapered 1:8		E 10			
G  SAE A – 9 teeth	G 09				
H  SAE A – Ø15,88 straight	H 09				
J  German tapered 1:5			J 22	J 23	
K  SAE – 11 teeth	K 09				
L  SAE – Ø19,05 straight	L 09				
T  DIN-5482 – 9 teeth				T 23	

The table above contains only the most common combinations. Contact the sales department for different combinations.

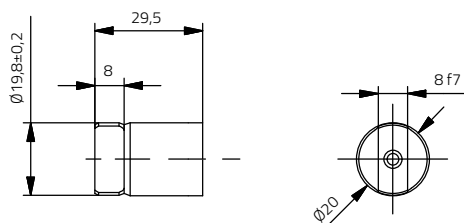
Drive Shafts

NOTE: The lengths of the shafts are given from the side A of the covers (see pages 14 and 15).

Shaft form B

Roquet

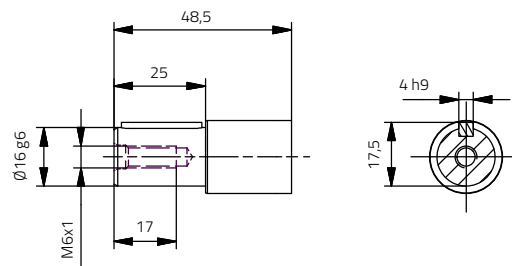
Max. driving torque 65 Nm



Shaft form C

UNE – Ø16 straight

Max. driving torque 55 Nm

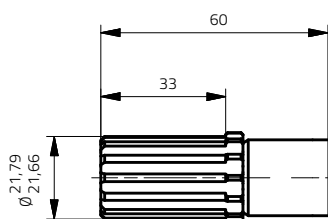


Shaft form D

SAE B – 13 teeth

Max. driving torque 100 Nm

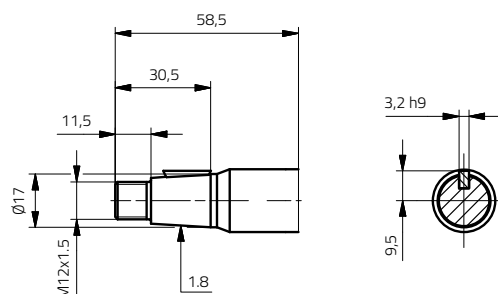
SAE J498b
13 teeth
Pitch 16/32
Side fit
Pressure angle 30 deg



Shaft form E

European tapered 1:8

Max. driving torque 160 Nm

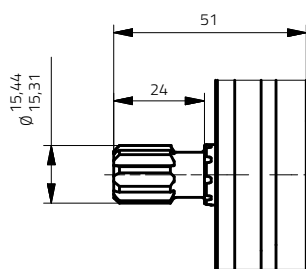


Shaft form G

SAE A – 9 teeth

Max. driving torque 110 Nm

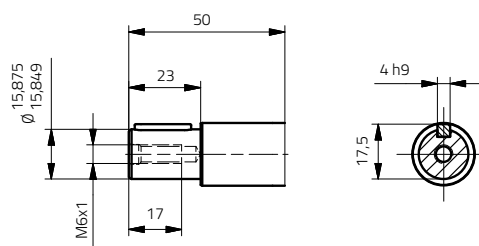
SAE J498b
9 teeth
Pitch 16/32
Side fit
Pressure angle 30 deg



Shaft form H

SAE A – Ø15,88 straight

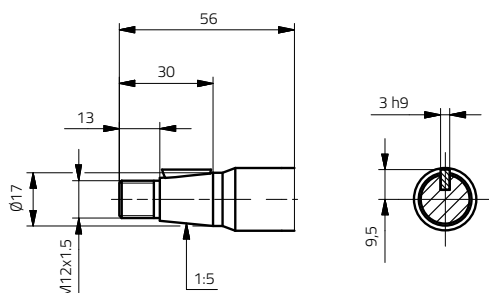
Max. driving torque 55 Nm



Shaft form J

German tapered 1:5

Max. driving torque 155 Nm

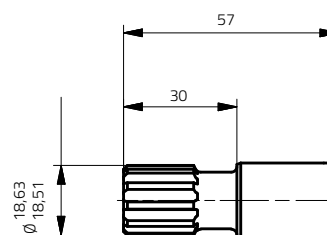


Shaft form K

SAE – 11 teeth

Max. driving torque 184 Nm

SAE J498b
11 teeth
Pitch 16/32
Side fit
Pressure angle 30 deg



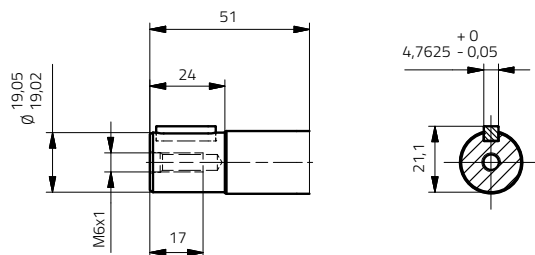
Drive Shafts

NOTE: The lengths of the shafts are given from the side A of the covers (see pages 14 and 15).

Shaft form L

SAE – Ø19,05 straight

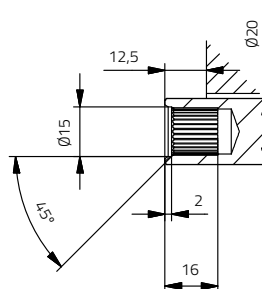
Max. driving torque 100 Nm



Shaft form Q

SAE B – 13 teeth

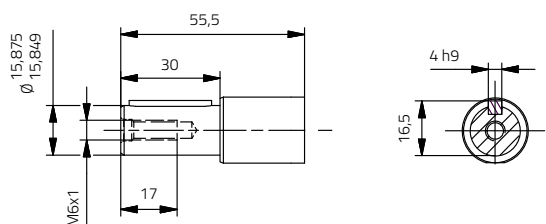
Max. driving torque 100 Nm



Shaft form R

SAE-A – Ø15,88 straight (Elongated)

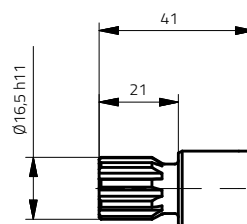
Max. driving torque 55 Nm



Shaft form T

DIN-5482 – 9 teeth

Max. driving torque 130 Nm

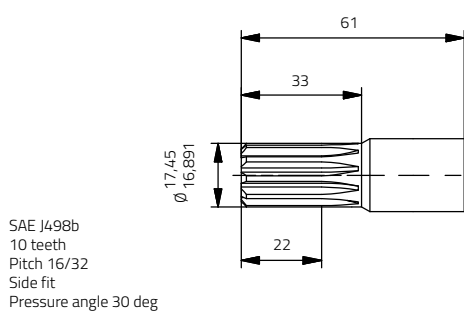


DIN-5482
9 teeth
B 17x14

Shaft form X1

SAE B – 10 teeth

Max. driving torque 140 Nm

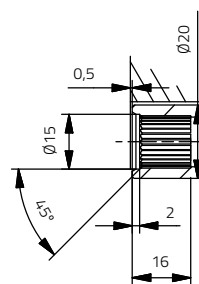


SAE J498b
10 teeth
Pitch 16/32
Side fit
Pressure angle 30 deg

Shaft form Z

SAE B – 13 teeth

Max. driving torque 100 Nm

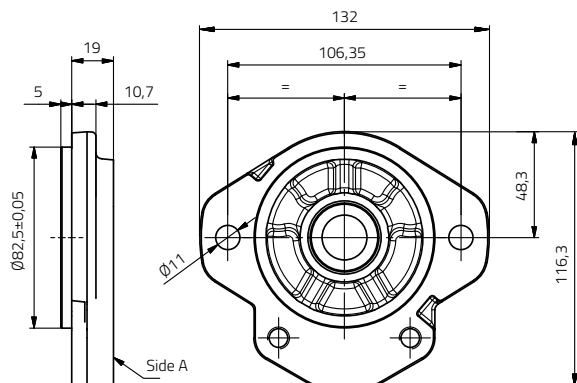


The shaft doesn't protrude

Front Flanges

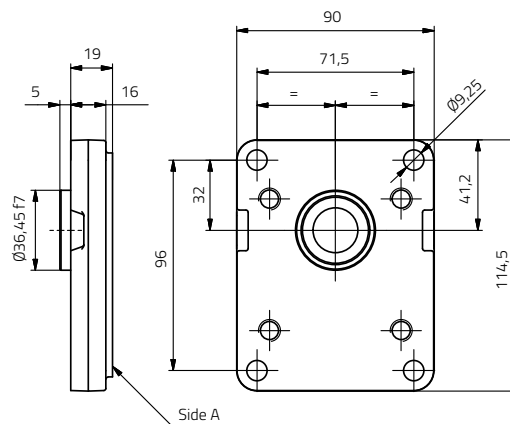
Front flange type 09

SAE A – 2 bolts



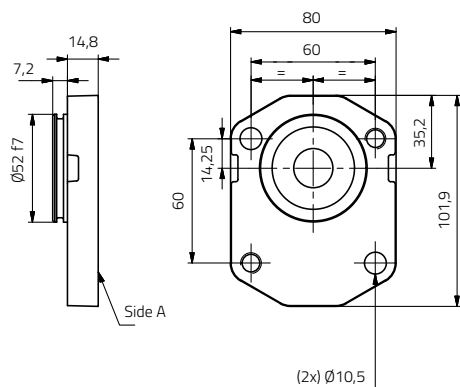
Front flange type 10

European standard



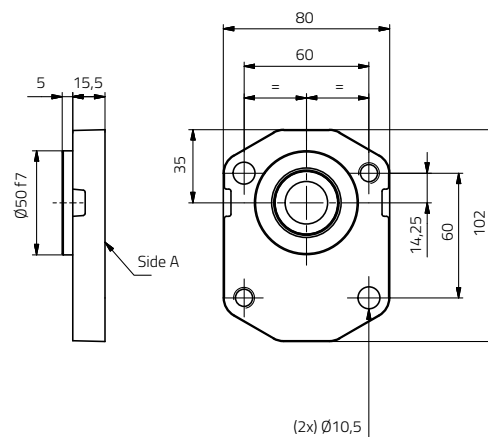
Front flange type 19

German standard – 2 bolts (Without shaft seal)



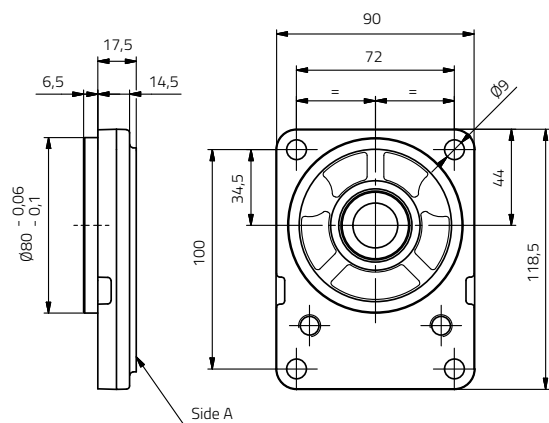
Front flange type 22

German standard – 2 bolts (With shaft seal)



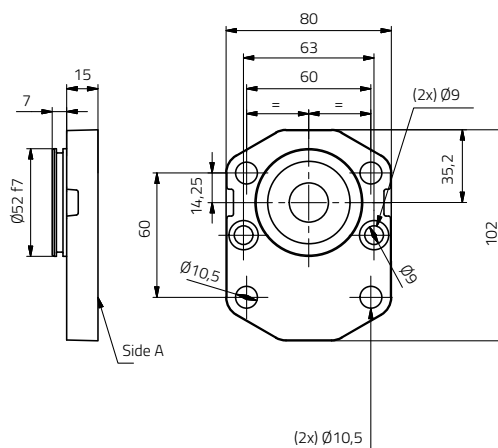
Front flange type 23

German standard



Front flange type 29

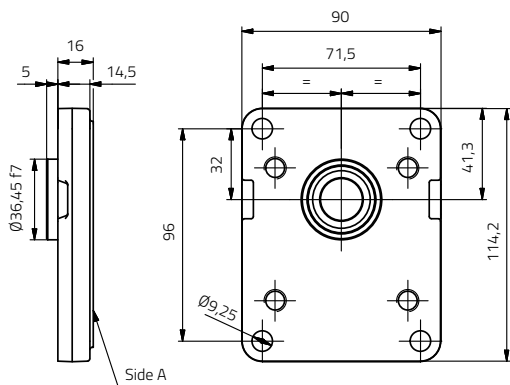
German standard (High pressure)



Front Flanges

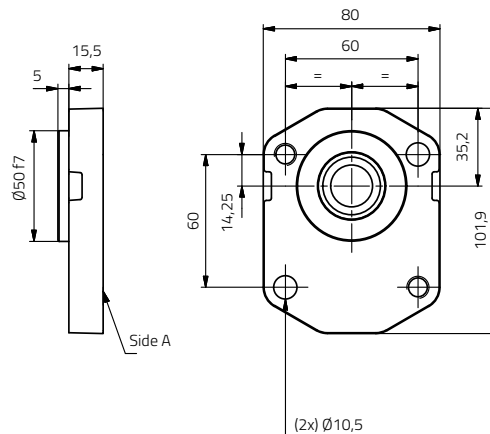
Front flange type 31

European standard for B shaft



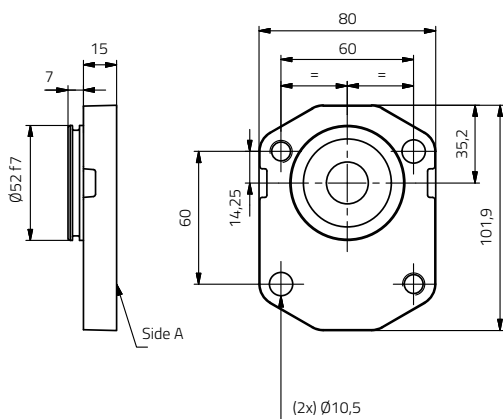
Front flange type 55

German standard – 2 bolts (opposed diagonal from 22 flange)



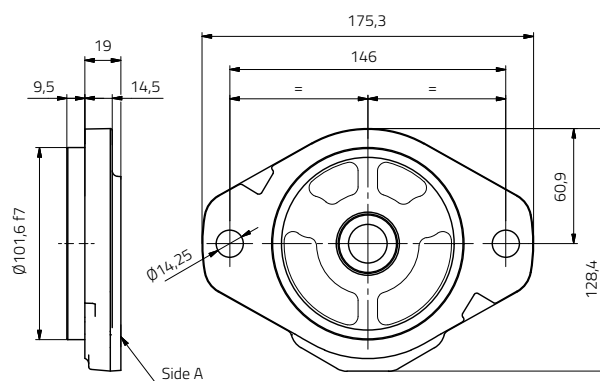
Front flange type 61

German standard – 2 bolts (opposed diagonal from 19 flange)

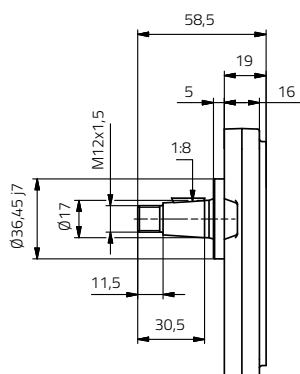


Front flange type 89

SAE B – 2 bolts



Example



NOTE: The useful length of the driveshaft varies depending on the front flange thickness.

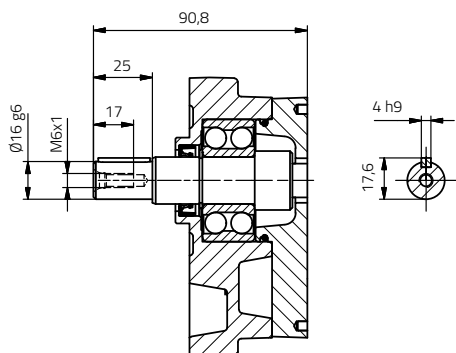
Front flanges and shaft with outrigger bearing

Maximum radial load 125 daN — Maximum axial load 125 daN

Shaft type C

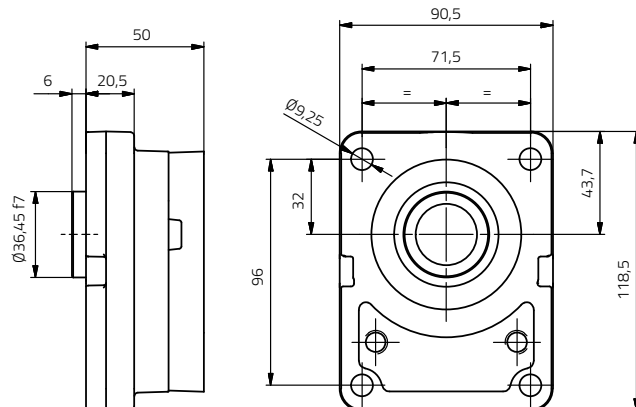
Straight Ø16

Max. driving torque 70 Nm



Front flange type 10

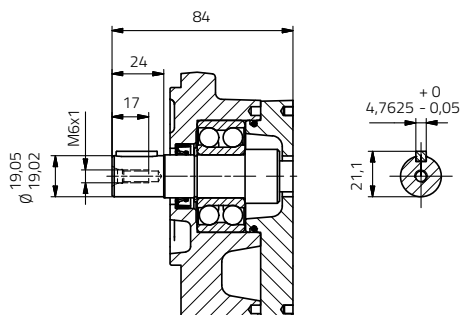
European standard



Shaft type L

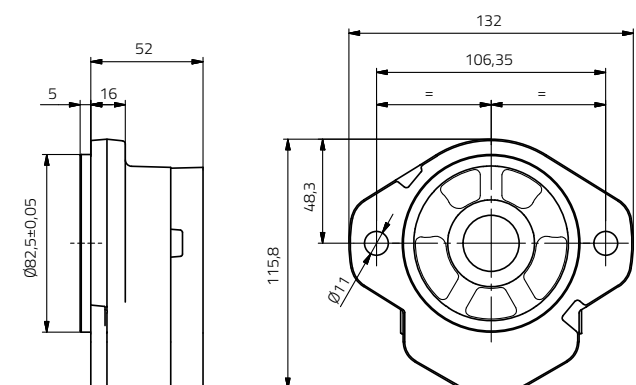
SAE – Ø19,05 Straight

Max. driving torque 100 Nm



Front flange type 09

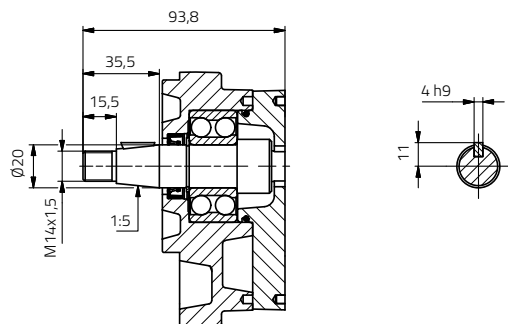
SAE A – 2 bolts



Shaft type V

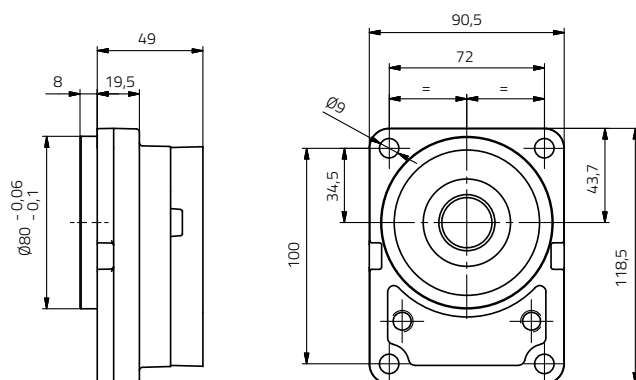
German tapered 1:5

Max. driving torque 100 Nm



Front flange type 23

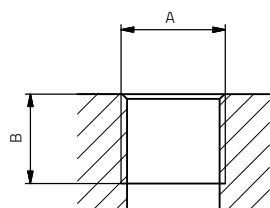
German standard



NOTE: Each drive shaft can be combined with any front flange.

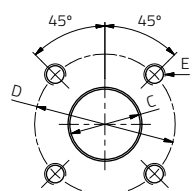
Ports

Side Ports



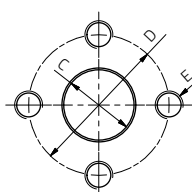
R Ports	1 rotation direction				Reversible	
Displacement [cm³/rev]	Suction		Pressure			
	A	B	A	B	A	B
4	3/8" BSP	15	3/8" BSP	15	3/8" BSP	15
6 ... 15	1/2" BSP	18	3/8" BSP	15	1/2" BSP	18
16 ... 27	3/4" BSP	17	1/2" BSP	18	3/4" BSP	17

Dimensions according to ISO 1179-1 (Parallel threads)



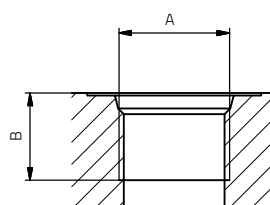
F Ports	1 rotation direction						Reversible		
Displacement [cm³/rev]	Suction			Pressure					
	C	D	E	C	D	E	C	D	E
4 ... 6	15	40	M6	15	35	M6	20	40	M6
8 ... 27	20	40	M6	15	35	M6	20	40	M6

Flanged ports - German standard



B Ports	1 rotation direction						Reversible		
Displacement [cm³/rev]	Suction			Pressure					
	C	D	E	C	D	E	C	D	E
4 ... 6	13,5	30	M6	13,5	30	M6	13,5	30	M6
8 ... 12	20	40	M8	15	30	M6	15	30	M6
15 ... 27	20	40	M8	15	30	M6	20	40	M8

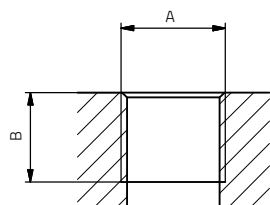
Flanged ports - European standard



S Ports	1 rotation direction				Reversible	
Displacement [cm³/rev]	Suction		Pressure			
	A	B	A	B	A	B
4 ... 27	1" 1/16-12 UNF	19	7/8"-14 UNF	17	7/8"-14 UNF	17

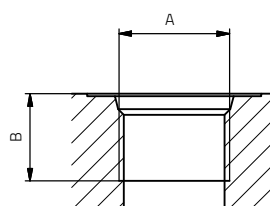
Dimensions according to ISO 11926-1 (Parallel threads)

Rear Ports



T Ports	1 rotation direction + Reversible			
	Suction		Pressure	
	A	B	A	B
Displacement [cm ³ /rev]				
4 ... 27	1/2" BSP	15	1/2" BSP	15

Dimensions according to ISO 1179-1 (Parallel threads)

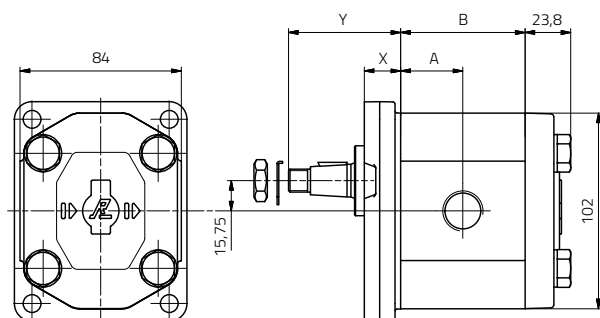


U Ports	1 rotation direction				Reversible	
Displacement [cm³/rev]	Suction		Pressure			
	A	B	A	B	A	B
4 ... 27	1" 1/16-12 UNF	19	7/8"-14 UNF	17	7/8"-14 UNF	17

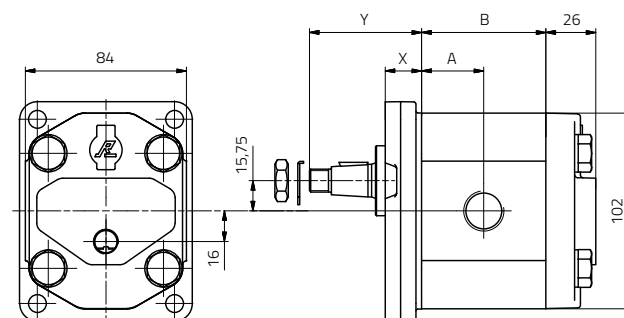
Dimensions according to ISO 11926-1 (Parallel threads)

Single Pumps (G)

Side Ports

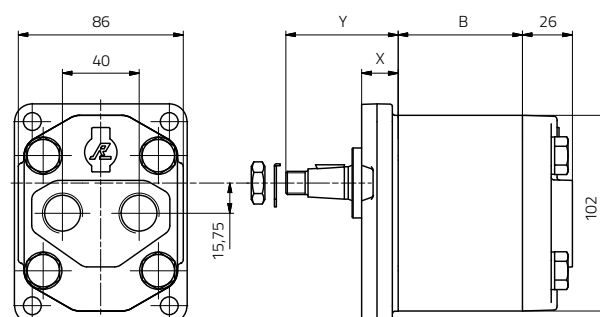


Single rotation

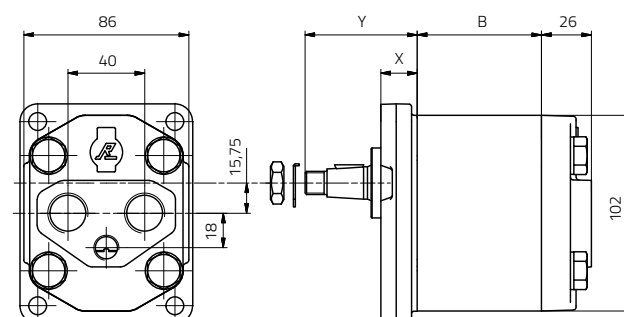


Reversible

Rear Ports



Single rotation



Reversible

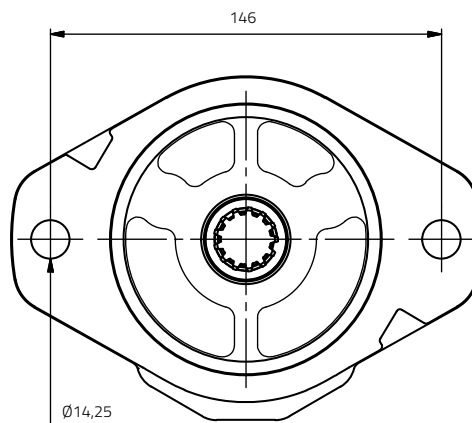
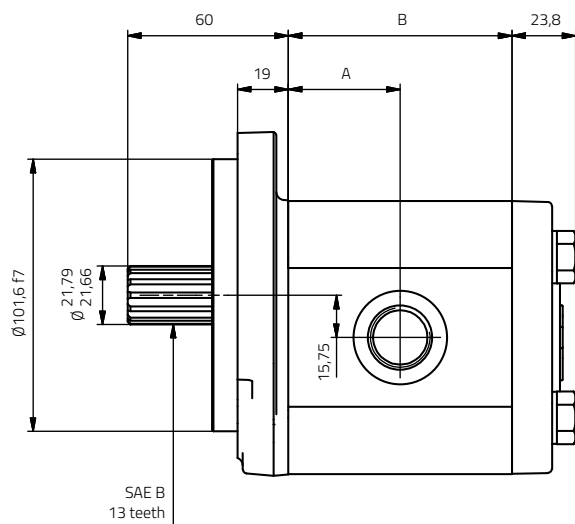
Displacement [cm ³ /rev]	A	B
4	23,4	46,8
6	25,2	50,3
8	26,8	53,5
10,7	29	58
12	30,3	60,5
14,7	32,4	64,8
16	33,5	67
18	35,3	70,5
23,3	39,8	79,5
26,7	41,8	83,5

Front flange type	X [mm]
09	19
10	19
19	14,8
22	15,5
23	17,5
29	15
31	16
55	15,5
61	16
89	19

Shaft type	Y [mm]
B	29,5
C	48,5
D	60
E	58,5
G	51
H	50
J	56
K	57
L	51
Q	12,5
R	55,5
T	41
X1	61
Z	0,5

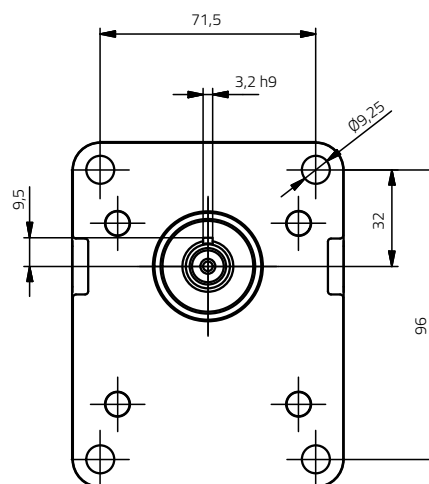
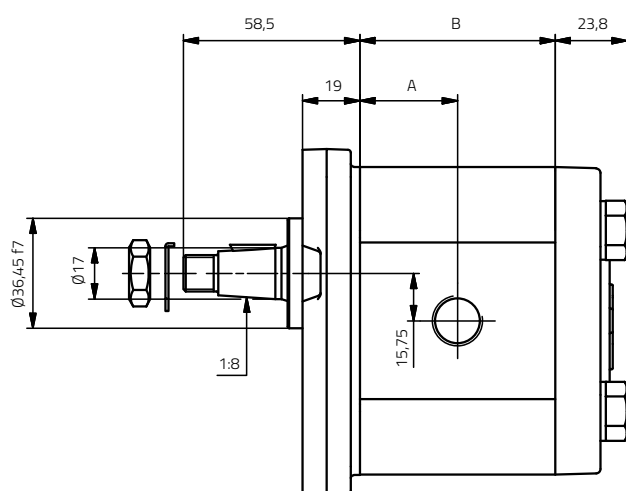
Configuration and dimension examples

1G@CDD89S



NOTE: Check general dimensions in the "dimensions" section (Page 18).

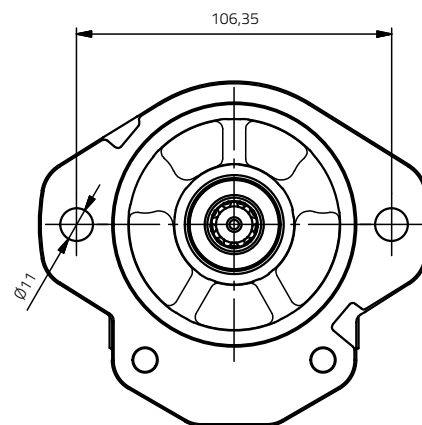
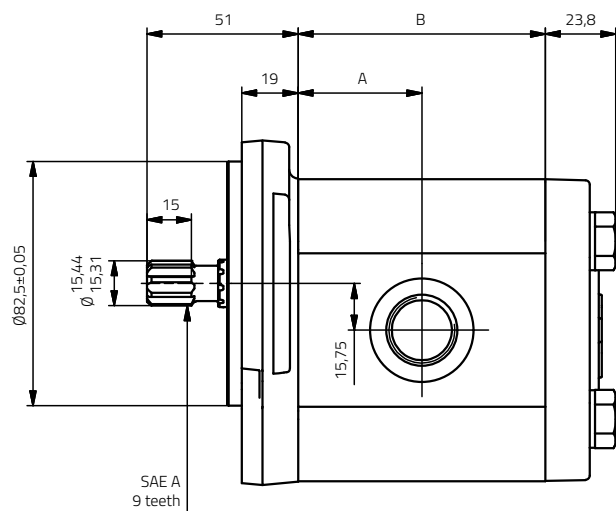
1G@CDE10R



NOTE: Check general dimensions in the "dimensions" section (Page 18).

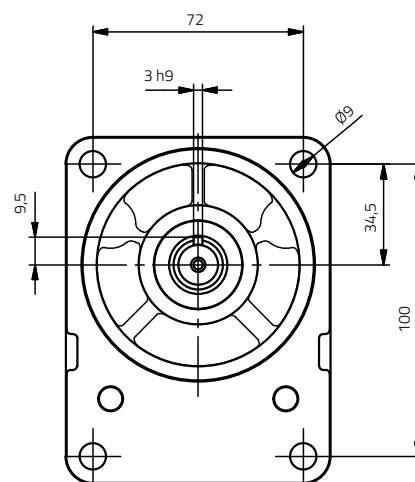
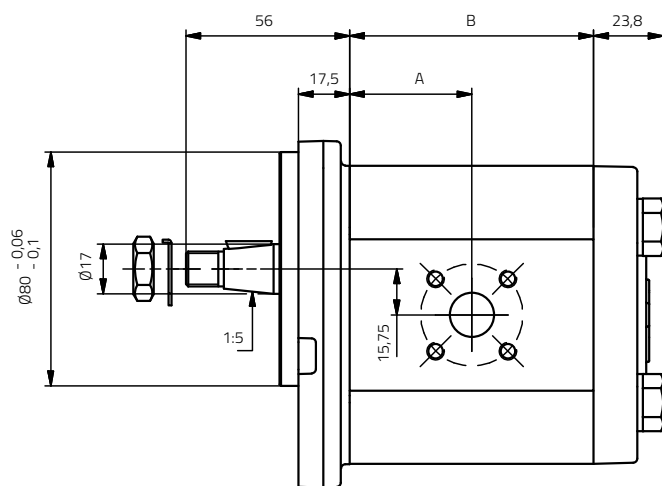
Configuration and dimension examples

1G@CDG09S



NOTE: Check general dimensions in the "dimensions" section (Page 18).

1G@CDJ23F

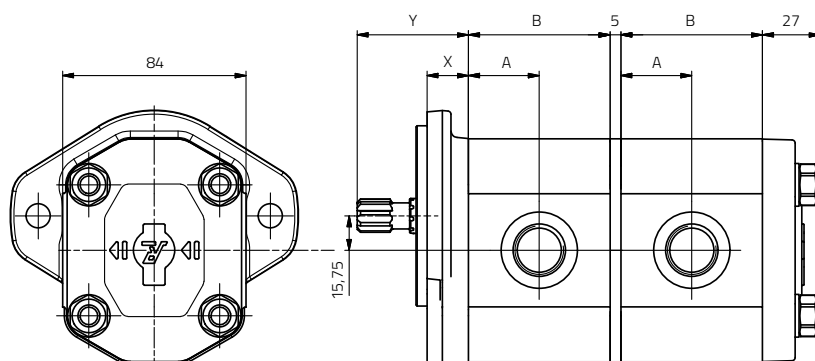


NOTE: Check general dimensions in the "dimensions" section (Page 18).

Multiple Pumps

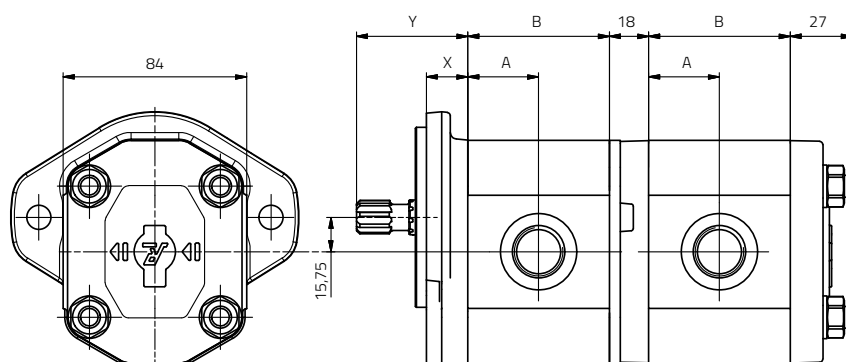
Multiple Pump G (GM)

Standard



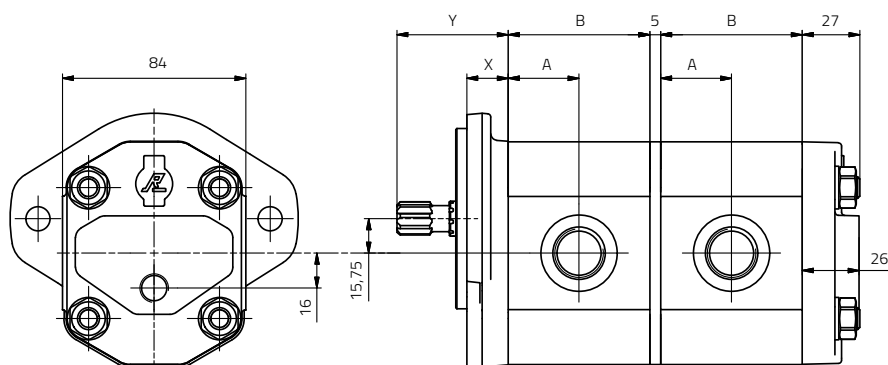
Multiple Pump G (GM)

Separate Stages



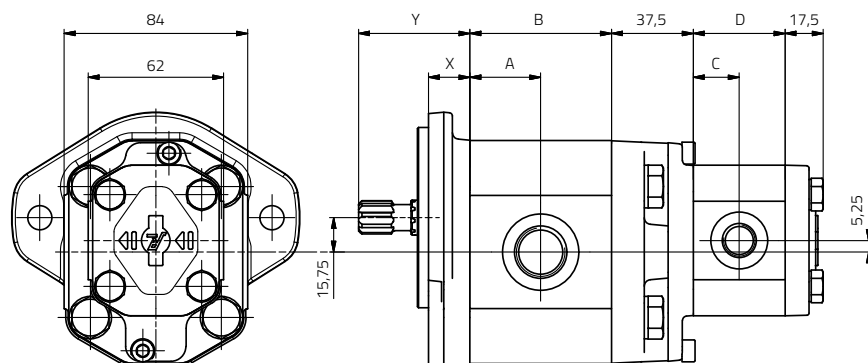
Multiple Pump G (GM)

Reversible



Multiple Pump G-G0 (GS)

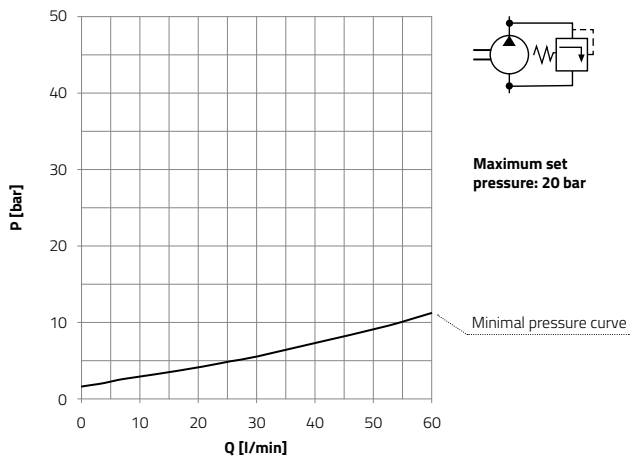
Standard
United Chambers
Separate Stages
Reversible



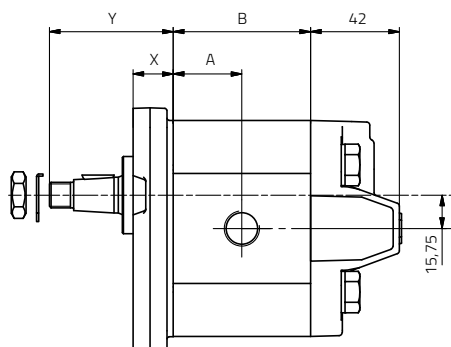
NOTE: Check general dimensions in the "dimensions" section (Page 18).

Low pressure relief valve

Minimum setting pressure diagram

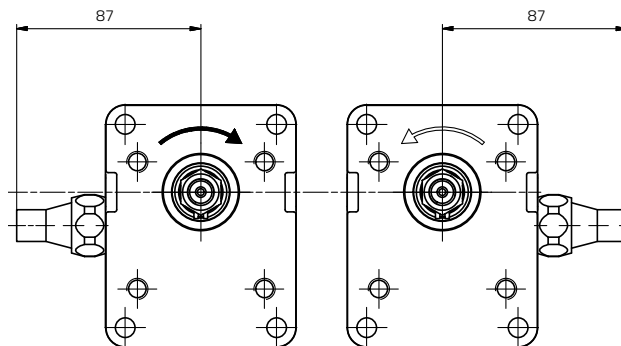
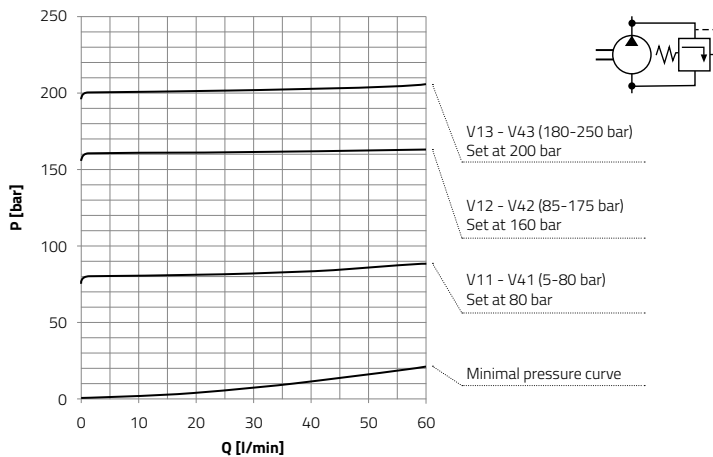


NOTE: The values shown in the above diagram have been obtained using a 32cSt kinematic viscosity oil.



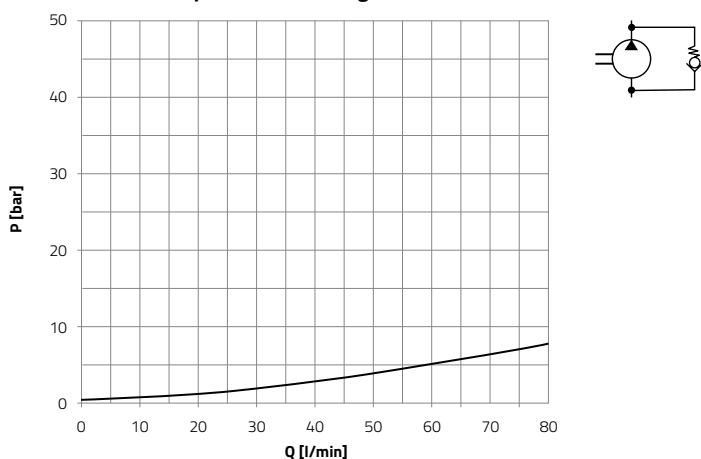
Relief valve

Relief valve pressure-flow diagram depending on pressure range

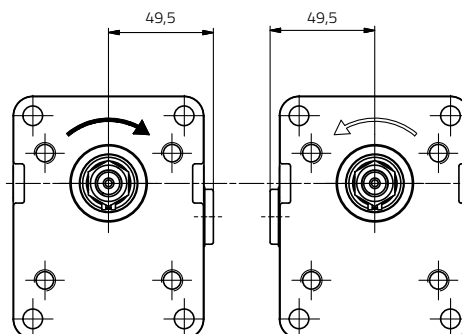
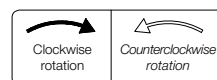
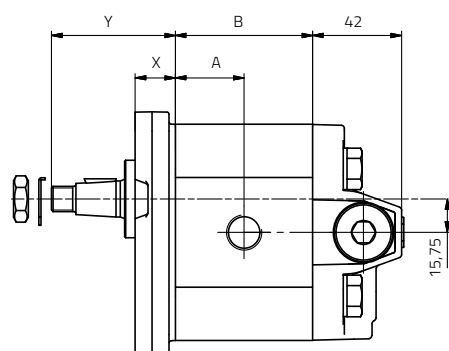


Check Valve

Check valve pressure-flow diagram



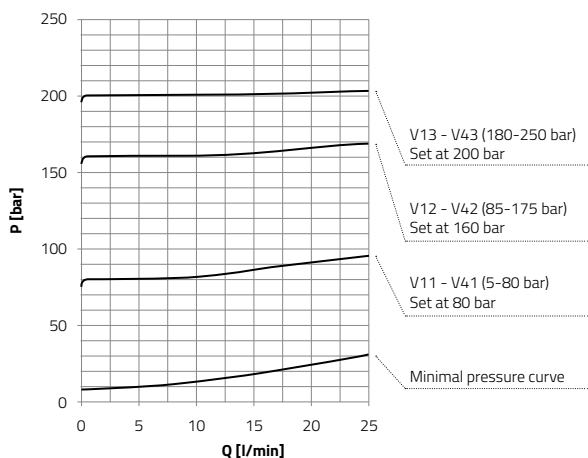
NOTE: The values shown in the above diagram have been obtained using a 32cSt kinematic viscosity oil.



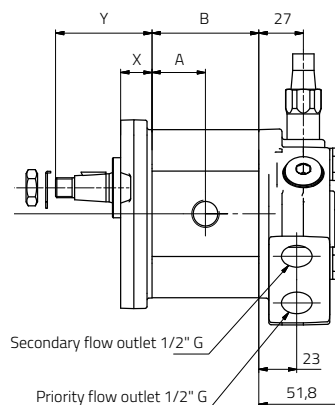
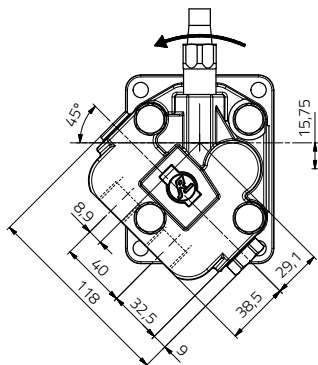
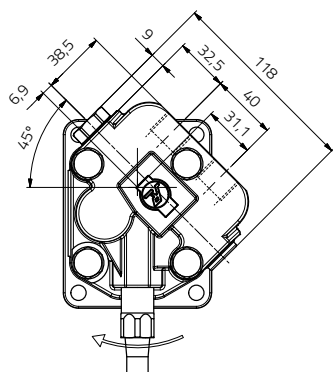
NOTE: Check general dimensions in the "dimensions" section (Page 18).

Priority Flow Valve

Relief valve pressure-flow diagram depending on pressure range

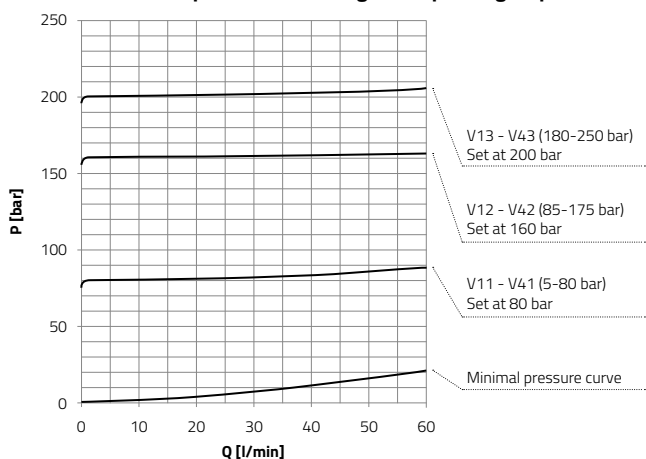


NOTE: The values shown in the above diagram have been obtained using a 32cSt kinematic viscosity oil.

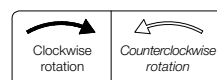
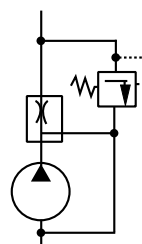
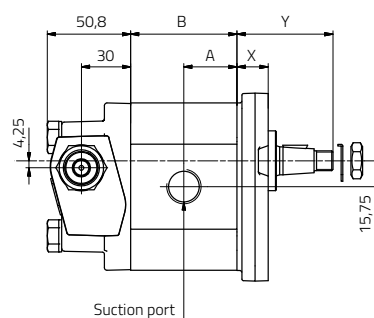
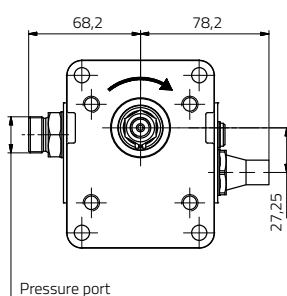
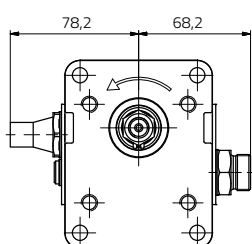


Flow Control Valve and Relief Valve

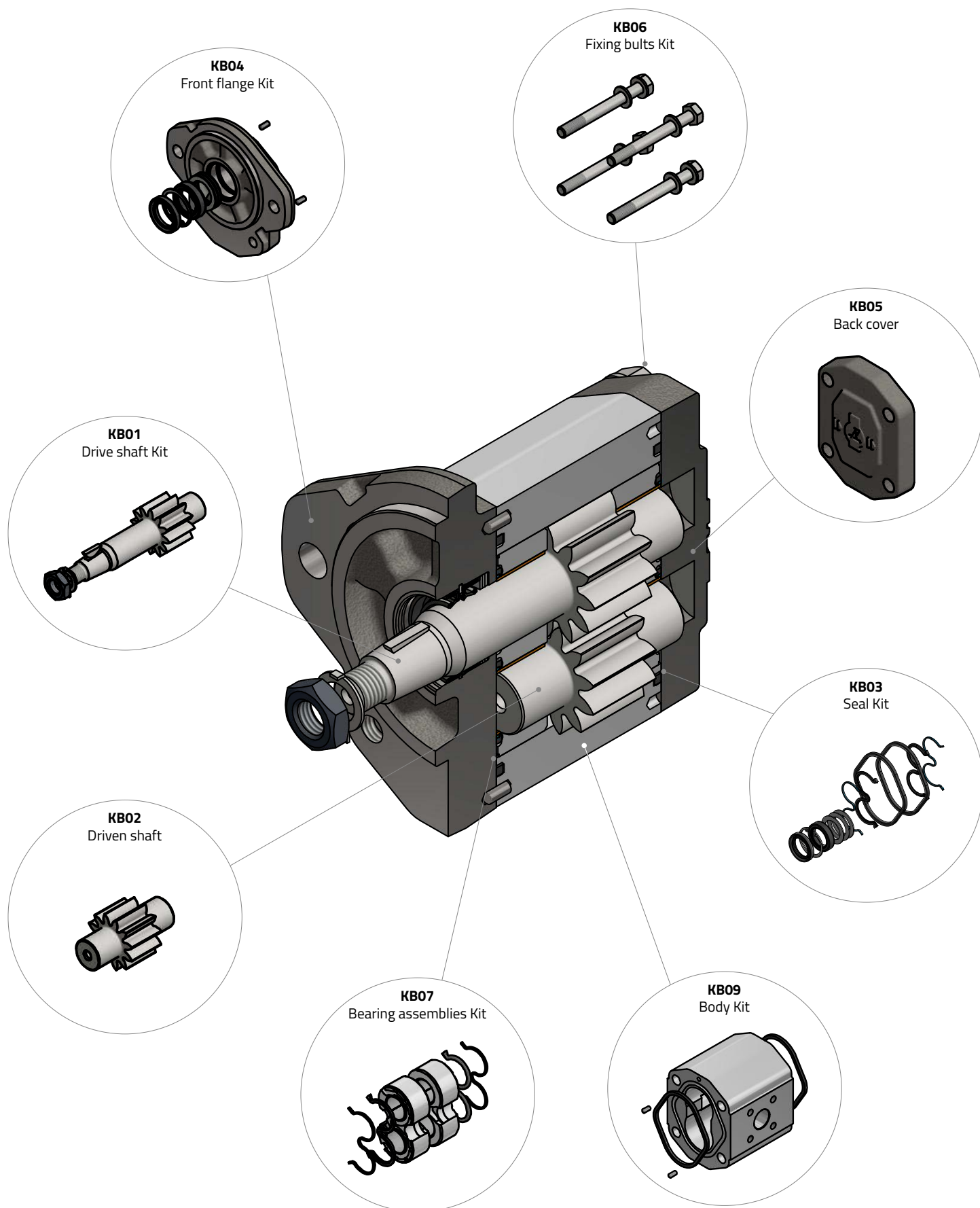
Relief valve pressure-flow diagram depending on pressure range



NOTE: The values shown in the above diagram have been obtained using a 32cSt kinematic viscosity oil.

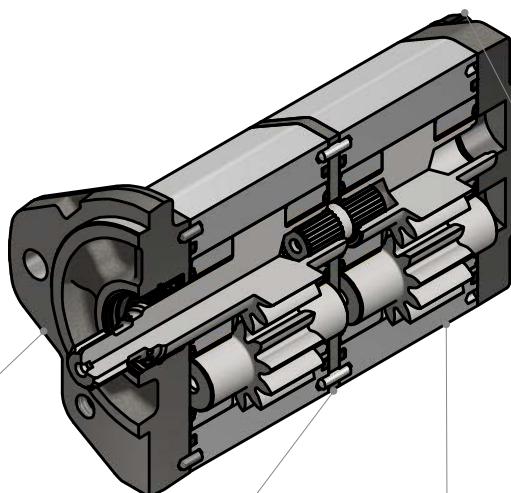


NOTE: Check general dimensions in the "dimensions" section (Page 18).

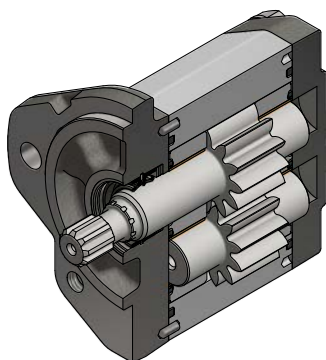


NOTE: For available reference contact the sales department or look in the spare parts catalogue.

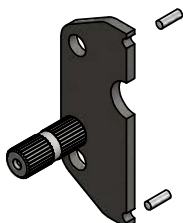
Type GM



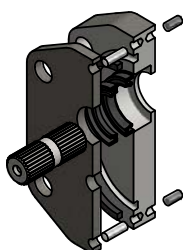
Standard pump
Example: 1G15CDG09S



KB08
Intermediate flange kit



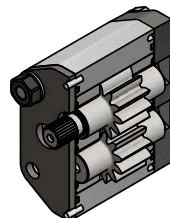
Common inlet



Separate stages

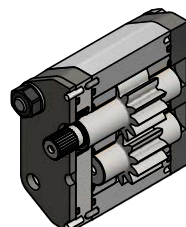
Rear standard and common inlet pump

Example: 1G15CDZ00S

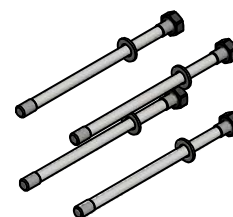


Rear separate stages pump

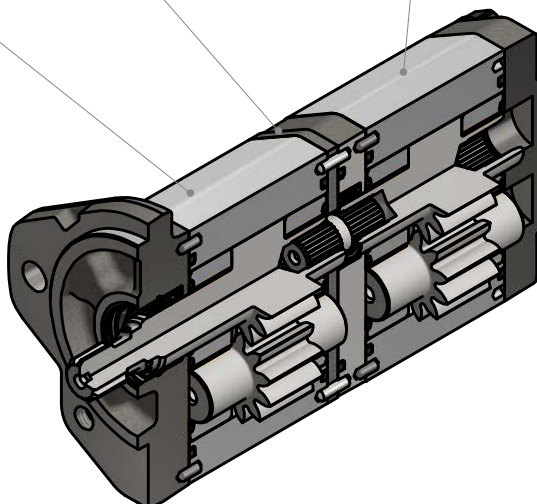
Example: 1G15CDQ00S



KB06
Rods Kit

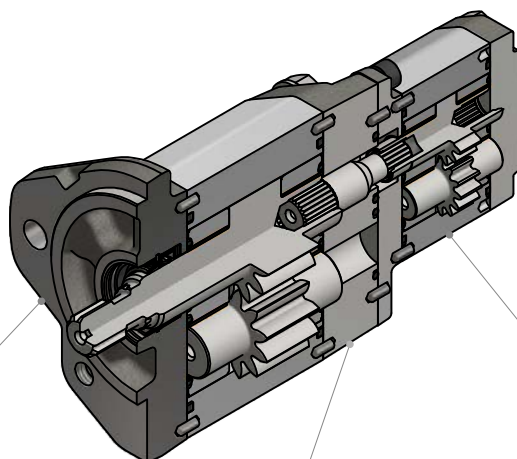


Separate stages type GM

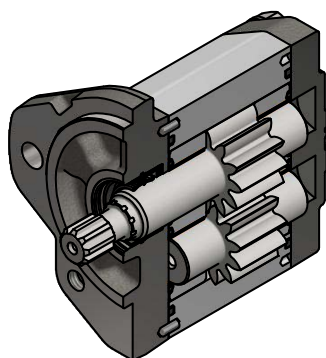


NOTE: A GM double pump can be assembled from a pump with standard reference and a pump with Z or Q shaft form for separate stages. The Z or Q kit are offered in order to transform the pump. For available reference contact the sales department or look at the spare parts catalogue.

Type GS

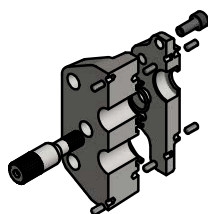


Standard front pump
Example: 1G15CDG09S



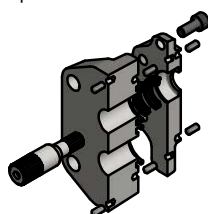
Common inlet intermediate flange kit

Example: KB0800G0G0D00-CID
Example: KB0800G0G0D00-CII

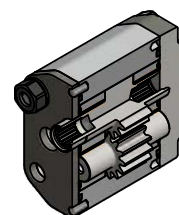


Standard intermediate flange kit and separate stages flange kit

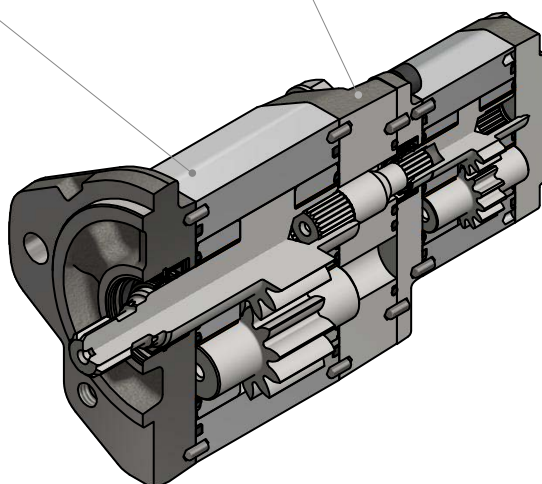
Example: KB0800G0G0D00
Example: KB0800G0G0D00-SS



Rear standard pump
Example: 1G03CDS00S



Separate stages type GS



NOTA: A GS double pump can be assembled from a pump with standard reference and a pump with S shaft. Is offered an intermediate flange kit for standard, common inlet or separate stages versions. For available reference contact the sales department or look at the spare parts catalogue.



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