

# **MAGISTER** **HYDRAULICS**



**GEAR PUMPS AND MOTORS**

# CODING OF CATALOGUES

**HS - GPK - 05/012018**

<b>MH</b>	<b>-</b>	<b>GP</b>	<b>K</b>	<b>-</b>	<b>05</b>	<b>/</b>	<b>01</b>	<b>2018</b>
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MAGISTER  
HYDRAULICS

TYPE OF HYDRAULICMACHINES	TYPE	SERIES
Gear pumps	GP	K T
Gear motors	GM	K
Axial piston machines for closed circuit	A	C
Axial piston machines for open circuit		J
Bent-axis axial piston machines		B
Control valves	V	-
In-line mounting hydraulic valves	LV	-
Hydraulic cylinders	C	-
Quick-release coupling	Q	-
Hydrocomponents for truck applications	HCT	-

№ EDITION

MONTH OF  
ESTABLISHMENT

YEAR OF  
ESTABLISHMENT

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**GEAR PUMS SERIES «K»**



# FEATURES

Gear pumps **series "K"** are the most used in hydraulic units in the hydraulic systems of mobile machines and conform to international standards.

We use the advanced world's concepts; improving the technical characteristics of the product; use only high quality materials and hardware manufacturers the world at all stages of design and production. The quality management system conforms international standard ISO 9001: 2008.

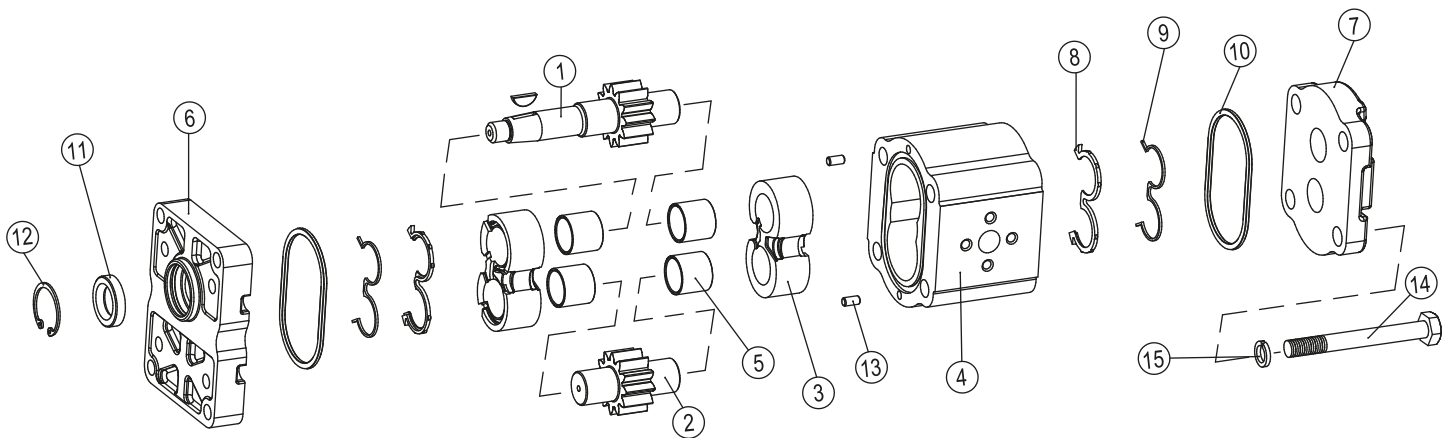
Gear pumps series "K" have high volumetric and mechanical efficiency, low noise and operate reliably in a variety hydraulic systems of mobile machinery.

- Dimensions of the pumps are according to international standards SAE, DIN, EUROPEAN.
- Gear pumps are supplied in next groups GP1K, GP2K, GP2.5K, GP3K, GP4K with displacements from 1 to 200 cm<sup>3</sup>/rev.
- Maximum continuous pressure up to 250 bar.
- Mounting flanges and rear covers are produced with aluminum or cast iron.
- Options built-in valves in rear cover.
- Multiple units available with separated or common inlet for stages.
- Pumps with bearing support for heavy duty applications.

# BASIC PARTS

Gear pumps series "K" are manufactured with thru-bolt of rolled aluminium, mounting flanges and rear covers either in aluminium or in cast iron for mobile machines.

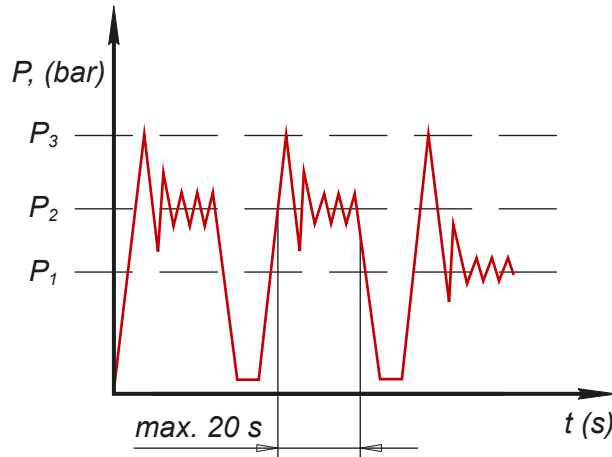
Gear pumps series "K" have high эксплуатационные and strength characteristics. The seals reduce internal flow of the fluid and to achieve a high volumetric efficiency.



- 1.** Drive shaft
- 2.** Driven shaft
- 3.** Bearing housing
- 4.** Body
- 5.** Slide bearing
- 6.** Mounting flange
- 7.** Rear cover
- 8.** Compensation seal
- 9.** Anti-extrusion plate
- 10.** Sealing ring
- 11.** Shaft seal
- 12.** Stop ring
- 13.** Centering pin
- 14.** Screw
- 15.** Washer



## DEFINITION OF PRESSURES



$P_3$  - peak pressure

$P_2$  - max. intermittent pressure (1/3 of working time)

$P_1$  - max. continuous pressure

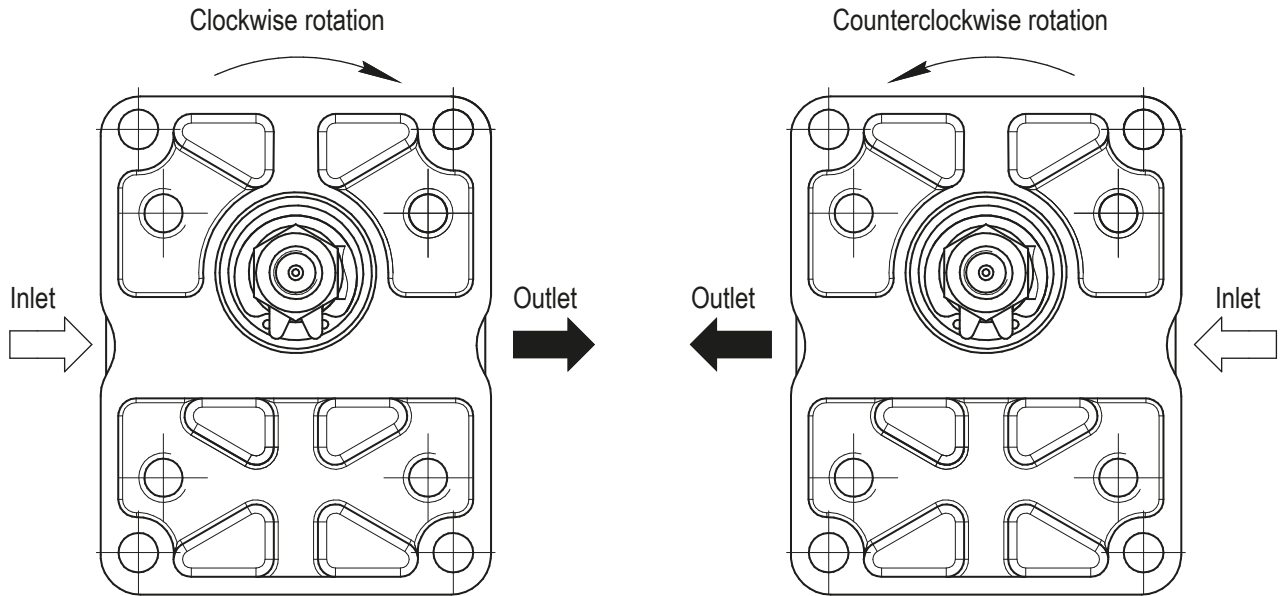
## WORKING CONDITIONS

Pump inlet pressure (absolute pressure)	0,5 ÷ 2,5 bar
Minimum operating fluid viscosity	10 mm <sup>2</sup> /sec
Max. starting viscosity (cold start)	1000 mm <sup>2</sup> /sec
Fluid viscosity recommended range	17 ÷ 65 mm <sup>2</sup> /sec
Fluid operating temperature range with NBR seals	-40 ÷ +100 °C
Fluid operating temperature range with FPM seals (Viton)	-20 ÷ +170 °C
Hydraulic fluid	mineral oil

## FILTRATION INDEX RECOMMENDED

Maximum continuous pressure	>200 bar	<200 bar
Contamination class ISO 4406	18/15	19/16
Contamination class NAS 1638	9	10
Achieved with filter $\beta_x=75$	15µm	25µm

## DEFINITION OF PUMP SHAFT ROTATIONAL DIRECTION



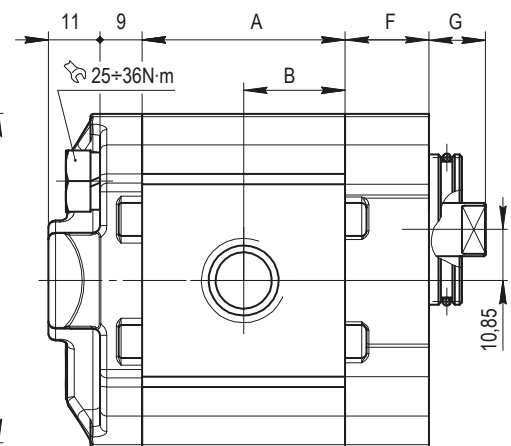
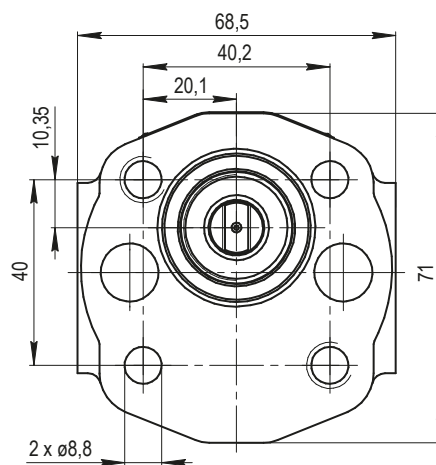
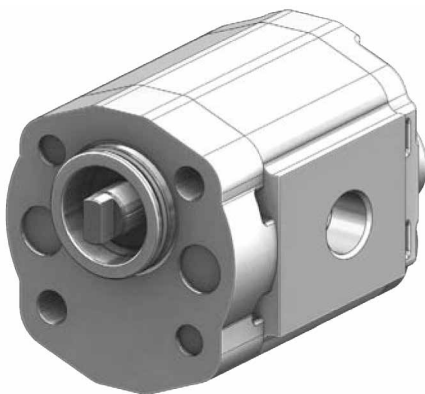
## FORMULAS

Flow	$Q = \frac{q \cdot n \cdot \eta_v}{1000}$	[l/min]	$q$ displacement (cm <sup>3</sup> /rev)
Input torque	$M = \frac{q \cdot \Delta p}{20 \cdot \pi \cdot \eta_m}$	[N·m]	$n$ speed (min <sup>-1</sup> ) $\eta_v$ volumetric efficiency (0,94 min)
Input power	$P = \frac{q \cdot n \cdot \Delta p \cdot 10^{-3}}{600 \cdot \eta_m}$	[kW]	$\Delta p$ pressure (bar) $\eta_m$ mechanical efficiency (0,88 min)
Volumetric efficiency at low rpm	$\eta_v' = 1 - \frac{n_{nom}}{n} (1 - \eta_v)$	[kW]	

# GEAR PUMPS GROUP 1

## TECHNICAL DATA AND ASSEMBLING DIMENSIONS

Type		GP1K1	GP1K1.2	GP1K1.6	GP1K2.1	GP1K2.5	GP1K3.2	GP1K3.5	GP1K4.2	GP1K5	GP1K6.2	GP1K7	GP1K8	GP1K10
Displacement	cm <sup>3</sup> /rev	1,0	1,2	1,6	2,1	2,5	3,2	3,5	4,2	5,0	6,2	7,0	8,0	10,0
Dimension A	mm	37,70	38,40	39,90	41,80	43,30	45,90	47,00	49,60	52,60	57,20	60,20	63,60	71,00
Dimension B	mm	18,85	19,20	19,95	20,90	21,65	22,95	23,50	24,80	26,30	28,60	30,10	31,80	35,50
Max. continuous pressure, P <sub>1</sub>	bar	250						240		230	220	210	170	140
Max. intermittent pressure, P <sub>2</sub>	bar	270						260		250	240	230	190	160
Peak pressure, P <sub>3</sub>	bar	290						280		270	260	250	210	180
Max. speed, n <sub>max</sub>	min <sup>-1</sup>	4000						3500					3200	
Min. speed at P <sub>1</sub> ≤ 100 bar, n <sub>min</sub>	min <sup>-1</sup>	750						650				600		
Weight	kg	0,83	0,85	0,87	0,91	0,93	0,96	0,98	1,00	1,05	1,16	1,20	1,26	1,32

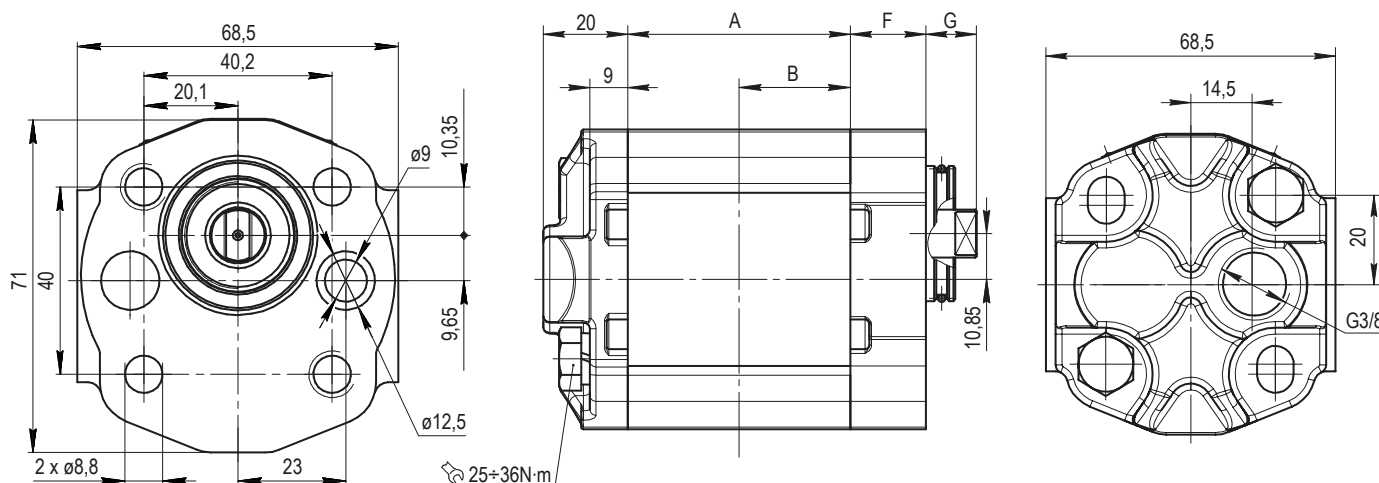


Ordering example  
GP1K4.2R-K212G

Dimension G = see section "Drive shafts"

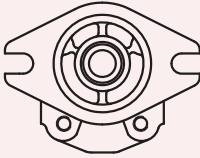
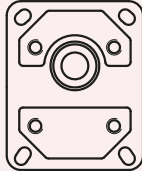
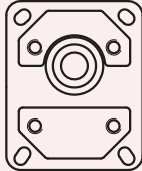
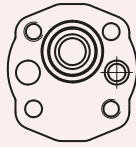
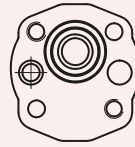
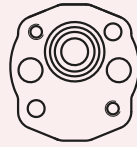
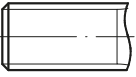
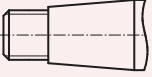
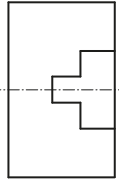
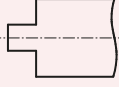
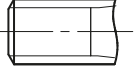
Dimension F = see section "Mounting flanges"

Type		GP1K1	GP1K1.2	GP1K1.6	GP1K2.1	GP1K2.5	GP1K3.2	GP1K3.5	GP1K4.2	GP1K5	GP1K6.2	GP1K7	GP1K8	GP1K10
Displacement	cm <sup>3</sup> /rev	1,0	1,2	1,6	2,1	2,5	3,2	3,5	4,2	5,0	6,2	7,0	8,0	10,0
Dimension A	mm	37,70	38,40	39,90	41,80	43,30	45,90	47,00	49,60	52,60	57,20	60,20	63,60	71,00
Dimension B	mm	18,85	19,20	19,95	20,90	21,65	22,95	23,50	24,80	26,30	28,60	30,10	31,80	35,50
Max. continuous pressure, P <sub>1</sub>	bar	250						240		230	220	210	170	140
Max. intermittent pressure, P <sub>2</sub>	bar	270						260		250	240	230	190	160
Peak pressure, P <sub>3</sub>	bar	290						280		270	260	250	210	180
Max. speed at P <sub>2</sub> , n <sub>max</sub>	min <sup>-1</sup>	4000						3500				3200		
Min. speed at P <sub>1</sub> =100 bar, n <sub>min</sub>	min <sup>-1</sup>	750					650				600			
Weight	kg	0,83	0,85	0,87	0,91	0,93	0,96	0,98	1,00	1,05	1,16	1,20	1,26	1,32



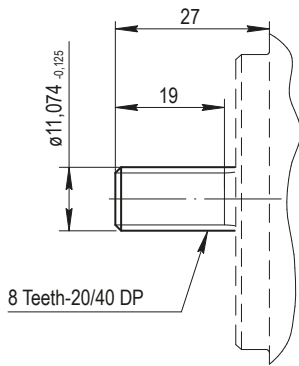
**Ordering example**  
**GP1K4.2R-K210GC-A**

Dimension G = see section "Drive shafts"  
 Dimension F = see section "Mounting flanges"

<p><b>GP1K</b></p>	 <p>SAE "A-A" 2 BOLTS</p>	 <p>EUROPEAN Ø25,4</p>	 <p>EUROPEAN Ø30</p>	 <p>GERMAN 2 BOLTS (RIGHT)</p>	 <p>GERMAN 2 BOLTS (LEFT)</p>	 <p>GERMAN 2 BOLTS</p>	
	 <p>SAE SPLINED (8 TEETH)</p>	B1 30					
	 <p>EUROPEAN TAPERED 1:8</p>		G1 60	G1 70			
	 <p>TANG DRIVE</p>				K1 10	K1 11	K1 12
	 <p>TANG DRIVE</p>				K2 10	K2 11	K2 12
	 <p>DIN 5482 SPLINED (6 TEETH)</p>	I1 30					

Present combination types of mounting flanges and shafts are used to serial production. The other combination and date of production, before ordering clarify with the manufacturer.

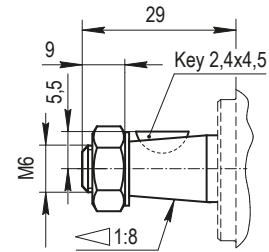
Max. torque 35 N·m



B1

SAE SPLINED (8 TEETH)

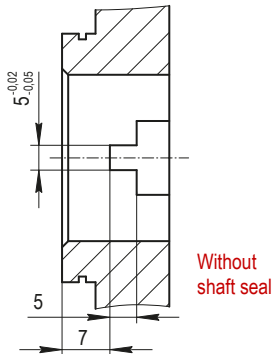
Max. torque 20 N·m



G1

EUROPEAN TAPERED 1:8

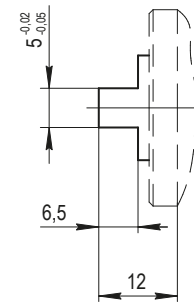
Max. torque 20 N·m



K1

TANG DRIVE

Max. torque 20 N·m

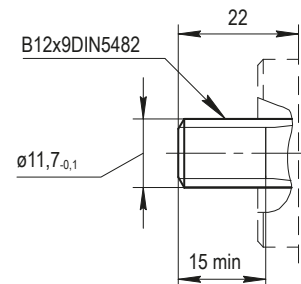


K2

TANG DRIVE

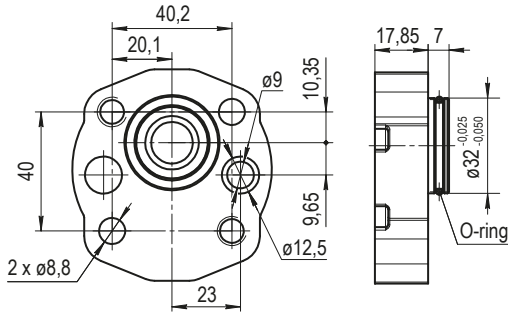
\*The torque on the output shaft for codes G1 K1, K2 should be restricted outlet pressure. Use formula on page 6 for calculation.

Max. torque 35 N·m



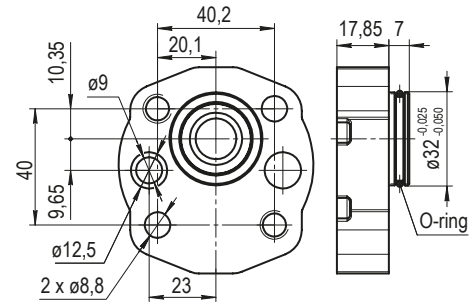
I1

DIN 5482 SPLINED (6 TEETH)



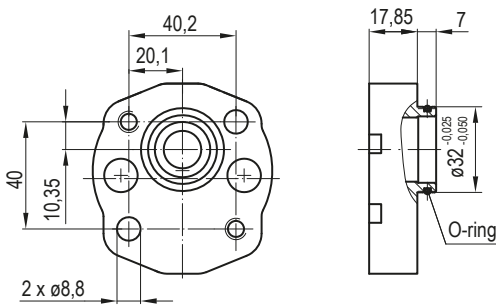
10

GERMAN 2 BOLTS (RIGHT)



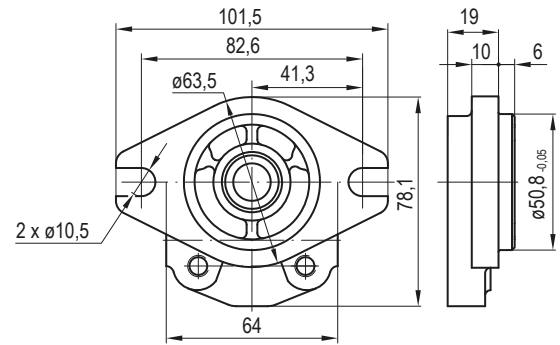
11

GERMAN 2 BOLTS (LEFT)



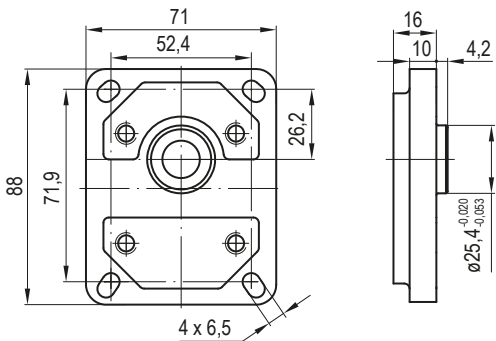
12

GERMAN 2 BOLTS



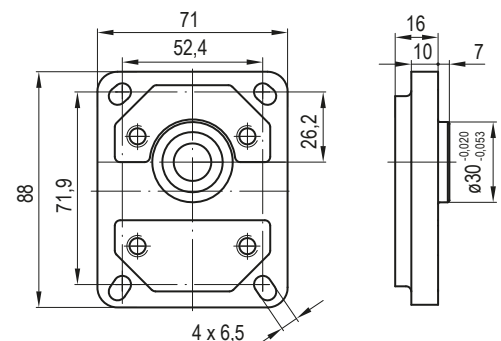
30

SAE "A-A" 2 BOLTS



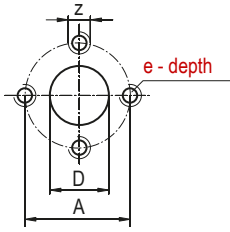
60

EUROPEAN Ø25,4



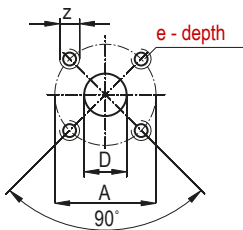
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EUROPEAN Ø30



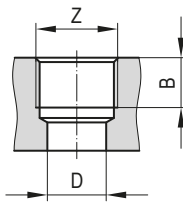
**B** EUROPEAN FLANGE

Type	Inlet				Outlet			
	D	A	z	e	D	A	z	e
GP1K1÷10	13	30	M6	12	13	30	M6	12



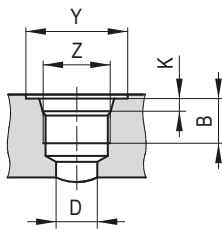
**C** GERMAN FLANGE

Type	Inlet				Outlet			
	D	A	z	e	D	A	z	e
GP1K1÷10	13	30	M6	12	13	30	M6	12



**E** METRIC THREADED

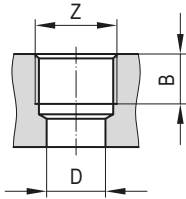
Type	Inlet			Outlet		
	Z	B	D	Z	B	D
GP1K1÷10	M18x1,5	15	13	M14x1,5	15	13



**F** SAE THREADED

Type	Inlet					Outlet				
	Z	B	D	Y	K	Z	B	D	Y	K
GP1K1÷5	9/16-18 UNF	15	12	26	2,5	9/16-18 UNF	15	12	26	2,5
GP1K6.2÷10	3/4-16 UNF		13	32		3/4-16 UNF		13	32	

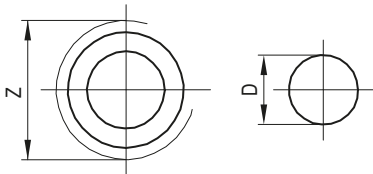




**G**

GAS THREADED (BSPP)

Type	Inlet			Outlet		
	Z	B	D	Z	B	D
GP1K1÷5	3/8" GAS	15	12	3/8" GAS	15	12
GP1K6.2÷10	1/2" GAS		13	1/2" GAS		13

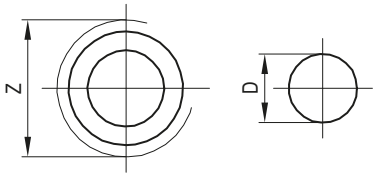


**GA**

GAS THREADED (BSPP)

Port positions only for back-front or side-front (code "A" or "C")

Type	Inlet	Outlet
	Z	D
GP1K1÷10	1/4" GAS	9

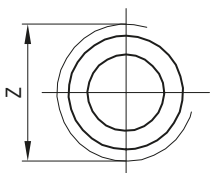


**GC**

GAS THREADED (BSPP)

Port positions only for back-front or side-front (code "A" or "C")

Type	Inlet	Outlet
	Z	D
GP1K1÷10	3/8" GAS	9



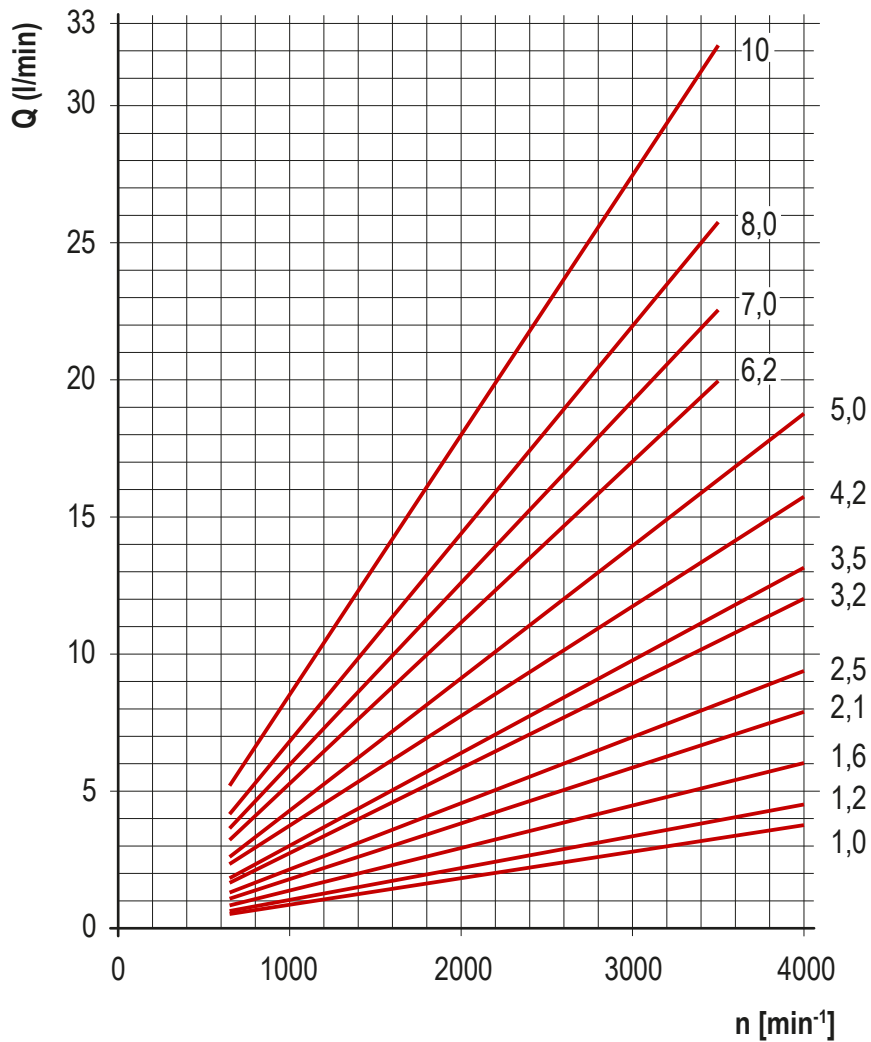
**GD**

GAS THREADED (BSPP)

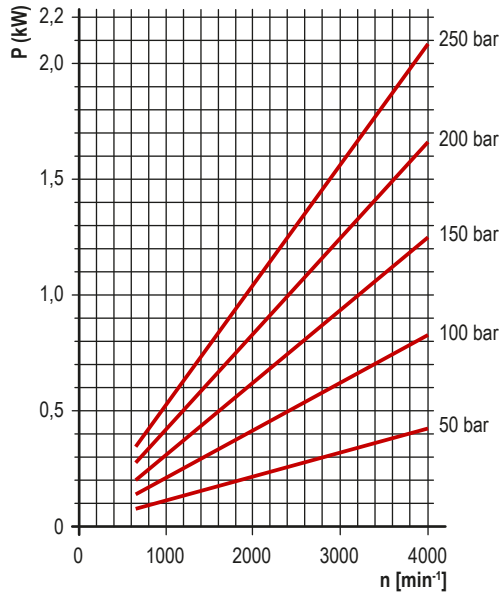
Port positions only for back inlet and back outlet (code "D")

Type	Inlet	Outlet
	Z	
GP1K1÷10	3/8" GAS	1/4" GAS

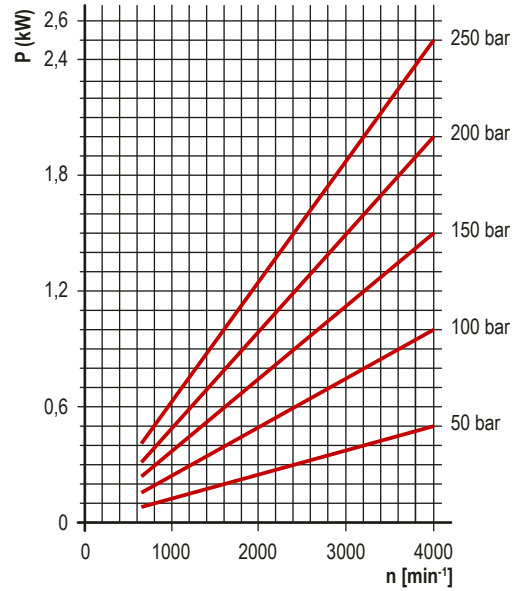
Performance curves carried out with oil viscosity at 30 mm<sup>2</sup>/sec, oil temperature at 50°C and max. continuous pressures for each type.



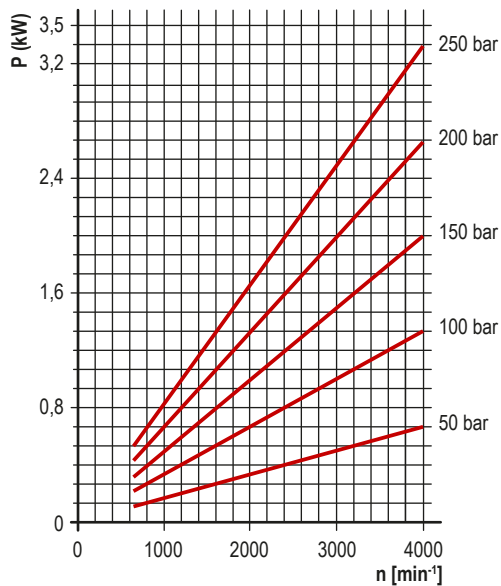
Performance curves carried out with oil viscosity at 30 mm<sup>2</sup>/sec and oil temperature at 50°C.



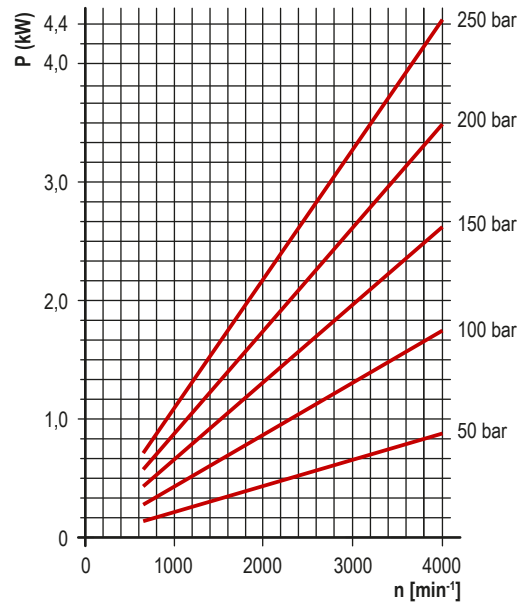
GP1K1



GP1K1.2

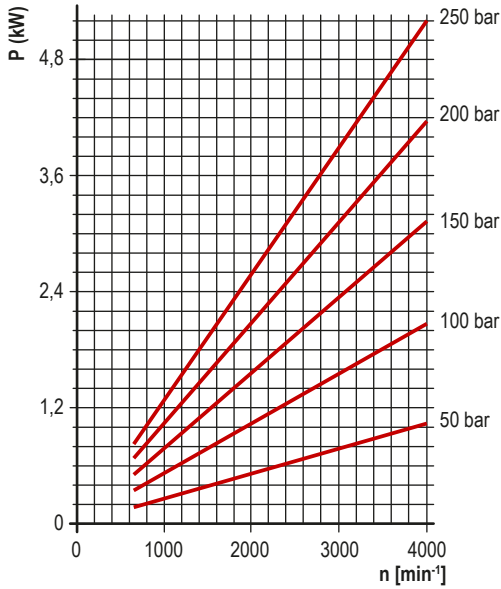


GP1K1.6

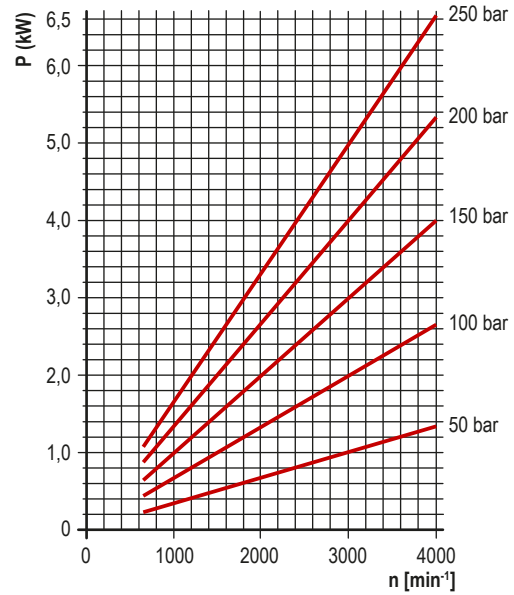


GP1K2.1

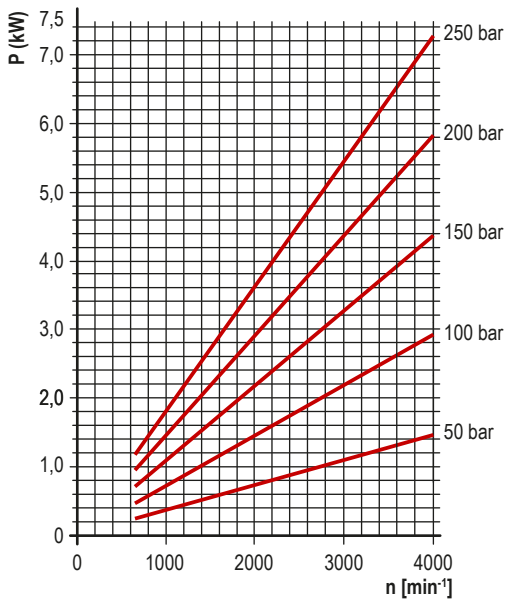
Performance curves carried out with oil viscosity at 30 mm<sup>2</sup>/sec and oil temperature at 50°C.



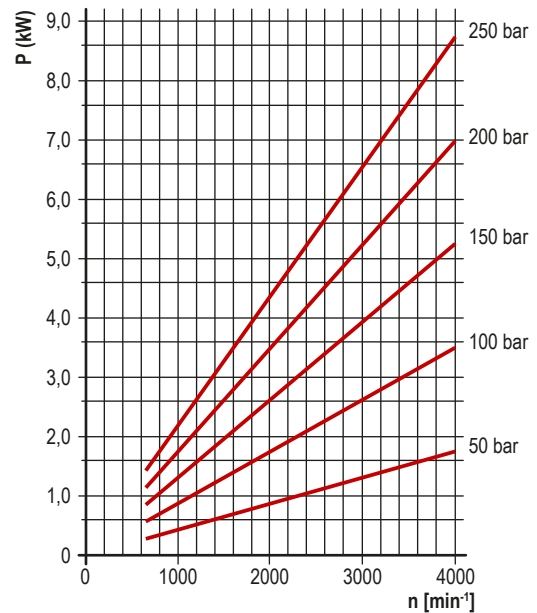
GP1K2.5



GP1K3.2

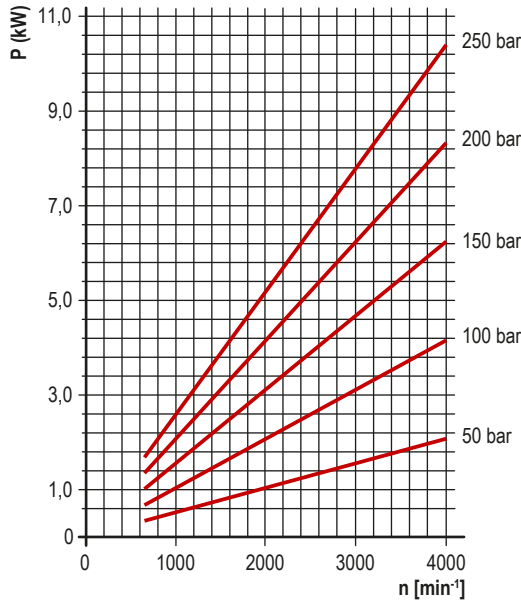


GP1K3.5

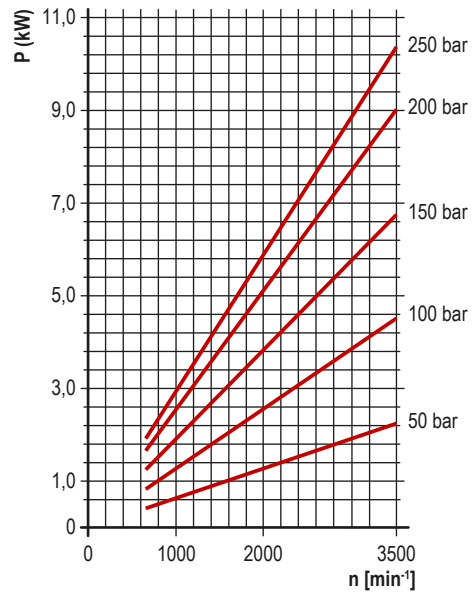


GP1K4.2

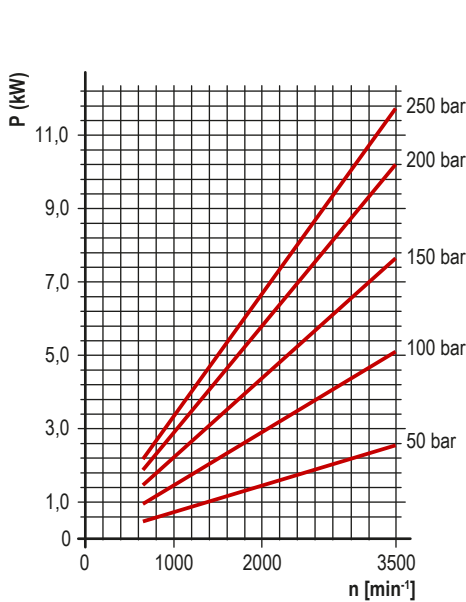
Performance curves carried out with oil viscosity at 30 mm<sup>2</sup>/sec and oil temperature at 50°C.



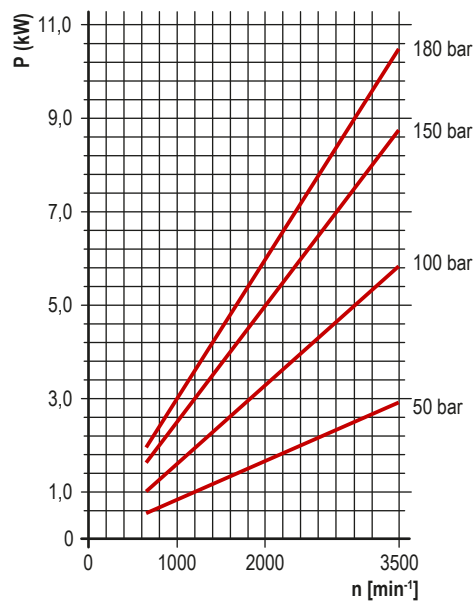
GP1K5



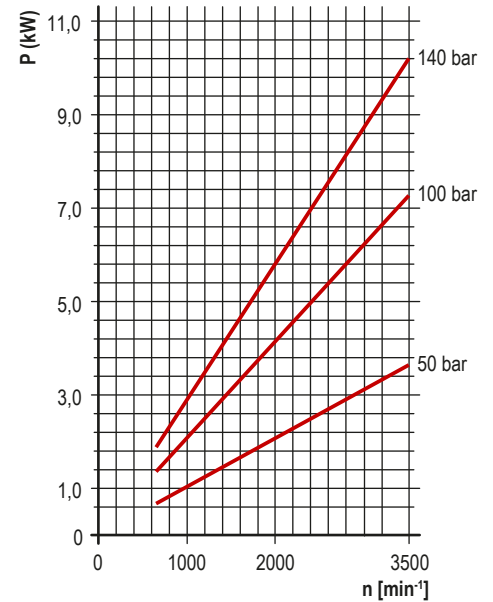
GP1K6.2



GP1K7



GP1K8



GP1K10

**GP 1 K 1.6 R - B1 30 F - - -**

GEAR PUMP	GP
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GROUP	1
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SERIES	K
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DISPLACEMENT	CODE
1,0 cm <sup>3</sup> /rev	1
1,2 cm <sup>3</sup> /rev	1.2
1,6 cm <sup>3</sup> /rev	1.6
2,1 cm <sup>3</sup> /rev	2.1
2,5cm <sup>3</sup> /rev	2.5
3,2 cm <sup>3</sup> /rev	3.2
3,5 cm <sup>3</sup> /rev	3.5
4,2 cm <sup>3</sup> /rev	4.2
5,0 cm <sup>3</sup> /rev	5
6,2 cm <sup>3</sup> /rev	6.2
7,0 cm <sup>3</sup> /rev	7
8,0 cm <sup>3</sup> /rev	8
10,0 cm <sup>3</sup> /rev	10

ROTATION	CODE
Clockwise	R
Counterclockwise	L

DRIVE SHAFTS	CODE
SAE SPLINED (8 TEETH)	B1
EUROPEAN TAPERED 1:8	G1
TANG DRIVE	K1
TANG DRIVE	K2
DIN 5482 SPLINED (6 TEETH)	I1

SPECIFICATION OF CONSUMER
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SEAL MATERIAL	CODE
NBR	
FPM (Viton)	V

PORTS POSITION	CODE
Side Inlet - side Outlet	
Back Inlet - front Outlet	A
Back Inlet - side Outlet	B
Side Inlet - front Outlet	C
Back Inlet - back Outlet	D

PORTS	CODE
EUROPEAN FLANGE	B
GERMAN FLANGE	C
METRIC THREADED	E
SAE THREADED	F
GAS THREADED (BSPP)	G
GAS THREADED (BSPP)	GA
GAS THREADED (BSPP)	GC
GAS THREADED (BSPP)	GD

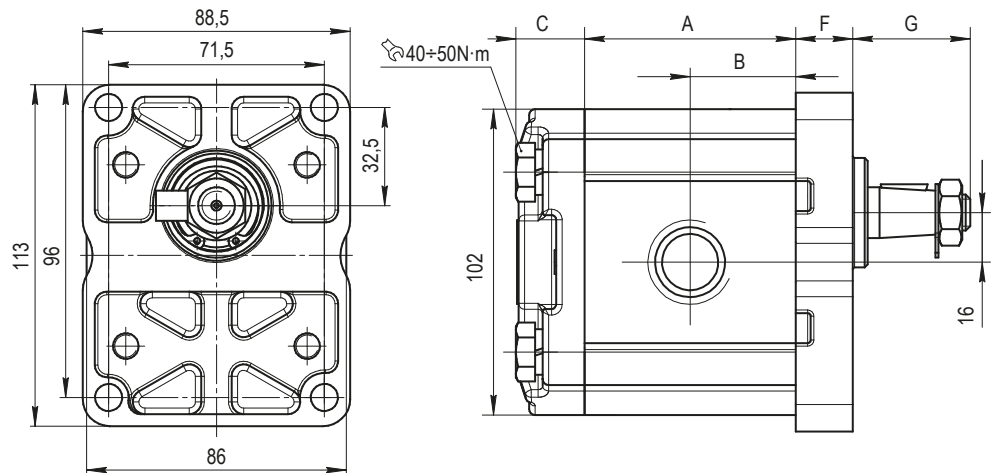
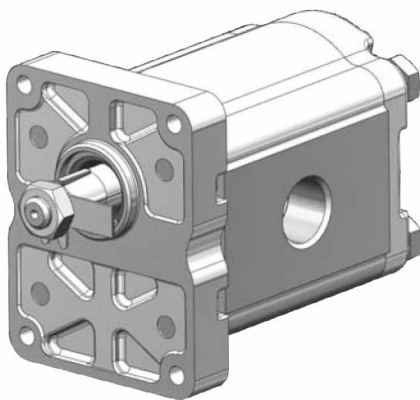
MOUNTING FLANGES	CODE
GERMAN 2 BOLTS (RIGHT)	10
GERMAN 2 BOLTS (LEFT)	11
GERMAN 2 BOLTS	12
SAE "A-A" 2 BOLTS	30
EUROPEAN Ø25,4	60
EUROPEAN Ø30	70

Specification of consumer assigned if necessary after clarify special conditions with the custome

# GEAR PUMPS GROUP 2

## TECHNICAL DATA AND ASSEMBLING DIMENSIONS



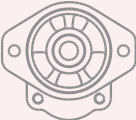





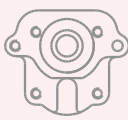







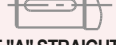




Type		GP2K4	GP2K5	GP2K6	GP2K8	GP2K10	GP2K11	GP2K12	GP2K14	GP2K15	GP2K16	GP2K17	GP2K19	GP2K20	GP2K23	GP2K25	GP2K28
Displacement	cm <sup>3</sup> /rev	4,5	5,6	6,3	8,2	10,0	11,3	12,5	14,0	15,0	16,0	17,0	19,0	20,0	22,5	24,8	28,0
Dimension A	mm	47,5	49,1	50,2	53,2	56,0	58,0	59,8	62,1	63,7	65,2	66,9	69,9	71,4	75,3	78,8	83,7
Dimension B	mm	23,7	24,55	25,1	26,6	28,0	29,0	29,9	31,05	31,85	32,6	33,45	34,95	35,7	37,65	39,4	41,9
Max. continuous pressure, P <sub>1</sub>	bar	250											220	210	190	170	150
Max. intermittent pressure, P <sub>2</sub>	bar	280											250	230	210	190	170
Peak pressure, P <sub>3</sub>	bar	300											270	250	230	210	190
Max. speed, n <sub>max</sub>	min <sup>-1</sup>	4000				3500						3000				2500	
Min. speed at P <sub>1</sub> ≤100 bar, n <sub>min</sub>	min <sup>-1</sup>	700					600						500				
Weight	kg	2,1	2,1	2,2	2,2	2,3	2,4	2,4	2,6	2,6	2,7	2,7	2,8	2,8	3,0	3,2	3,4



Ordering example  
GP2K10R-G262G

Dimension G = see section "Drive shafts"  
Dimension F = see section "Mounting flanges"  
Dimension C = see section "Rear covers"

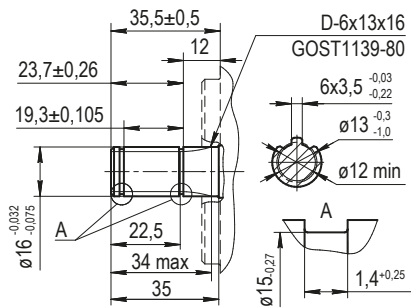
Weight shown are for pumps with aluminum covers. Weight for pumps with cast iron covers should be refined

	 GSTU 3-25-180-97	 SAE "A" 2 BOLTS	 EUROPEAN	 GERMAN Ø80	 GERMAN 2 BOLTS Ø50	 GERMAN 2 BOLTS Ø52	 GERMAN 4 BOLTS Ø52	 PERKINS
 GSTU 3-25-180-97	A1 01 A1 02							
 SAE "A" SPLINED (9 TEETH)		B2 31 B2 32						
 SAE "A" SPLINED (10 TEETH)		B3 31 B3 32						
 SAE "A" SPLINED (11 TEETH)		B4 31 B4 32						
 EUROPEAN TAPERED 1:8			G2 61 G2 62					G2 21
 GERMAN TAPERED 1:5				F2 81	F2 91 F2 92			
 SAE "A" STRAIGHT Ø15,87		H2 31 H2 32	H2 61 H2 62					
 SAE "A" STRAIGHT Ø19,05		H8 31 H8 32						
 SAE "A" STRAIGHT Ø19,05 LENGTH		H9 31 H9 32						
 TANG DRIVE						K3 93 K3 94	K3 95	
 TANG DRIVE					K4 91 K4 92			
 DIN 5482 SPLINED (9 TEETH)			I2 61 I2 62	I2 81	I2 91 I2 92			

Present combination types of mounting flanges and shafts are used to serial production. The other combination and date of production, before ordering clarify with the manufacturer.



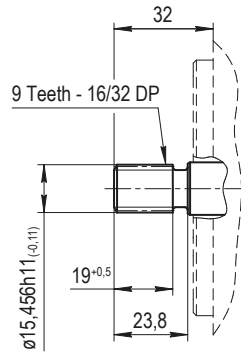
Max. torque 110 N·m



A1

GSTU 3-25-180-97

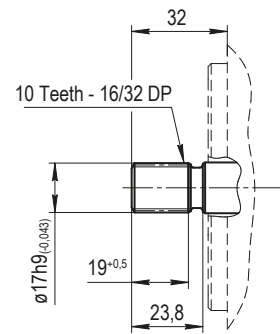
Max. torque 100 N·m



B2

SAE A SPLINED (9 TEETH)

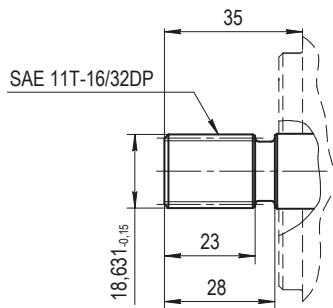
Max. torque 130 N·m



B3

SAE A SPLINED (10 TEETH)

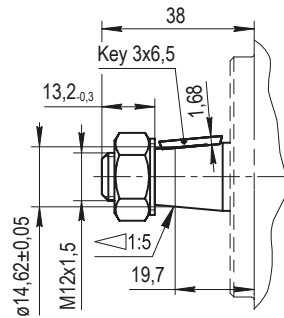
Max. torque 170 N·m



B4

SAE A SPLINED (11 TEETH)

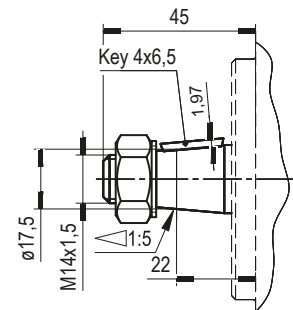
Max. torque 140 N·m



F2

GERMAN TAPERED 1:5

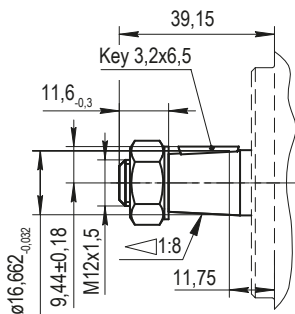
Max. torque 140 N·m



F6

GERMAN TAPERED 1:5

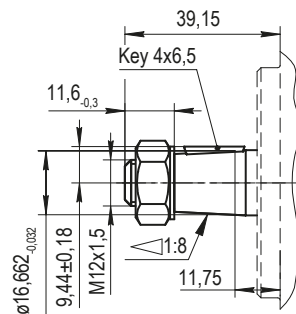
Max. torque 140 N·m



G2

EUROPEAN TAPERED 1:8

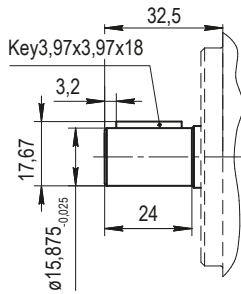
Max. torque 140 N·m



G6

EUROPEAN TAPERED 1:8

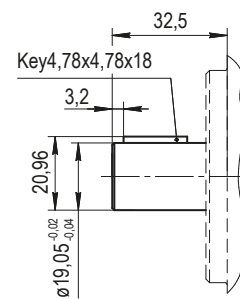
Max. torque 70 N·m



H2

SAE A STRAIGHT Ø15,87

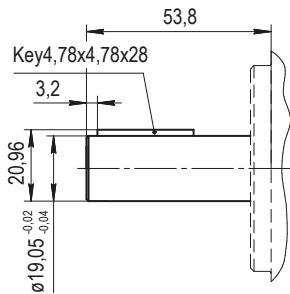
Max. torque 100 N·m



H8

SAE A STRAIGHT Ø19,05

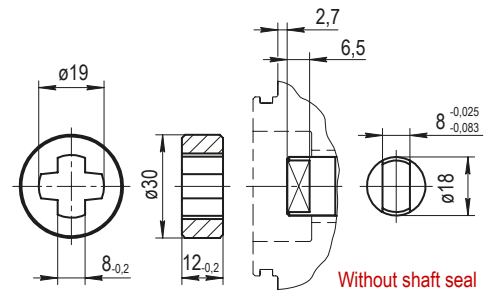
Max. torque 140 N·m



H9

SAE A STRAIGHT Ø19,05 LENGTH

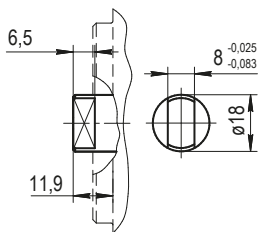
Max. torque 70 N·m



K3

TANG DRIVE FOR ELECTRIC MOTORS

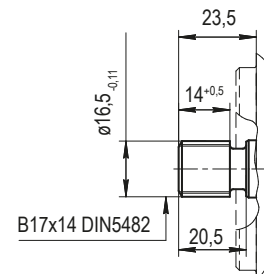
Max. torque 70 N·m



K4

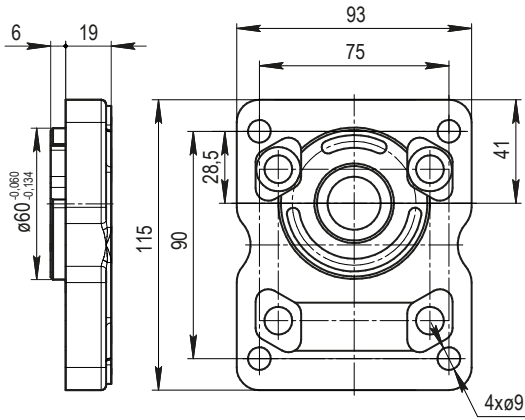
TANG DRIVE

Max. torque 110 N·m



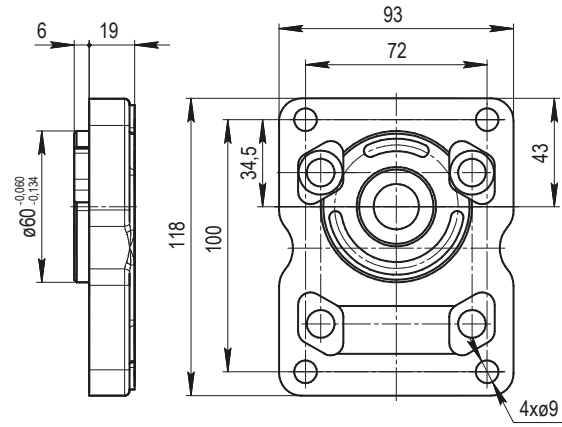
I2

DIN 5482 SPLINED (9 TEETH)



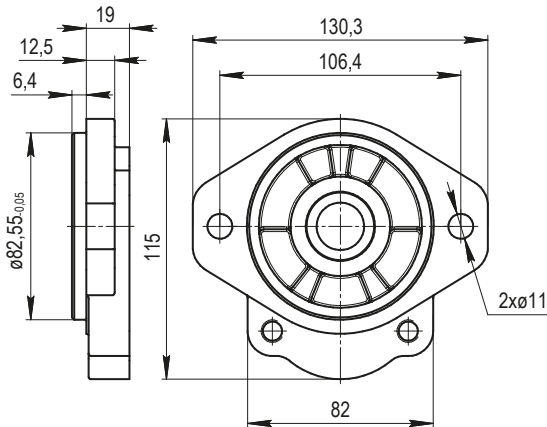
01

GSTU 3-25-180-97



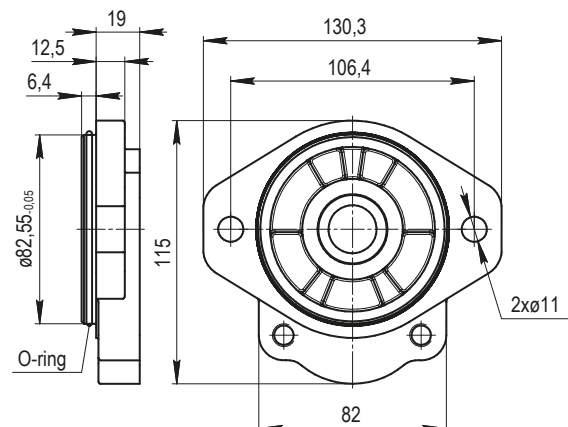
02

GSTU 3-25-180-97



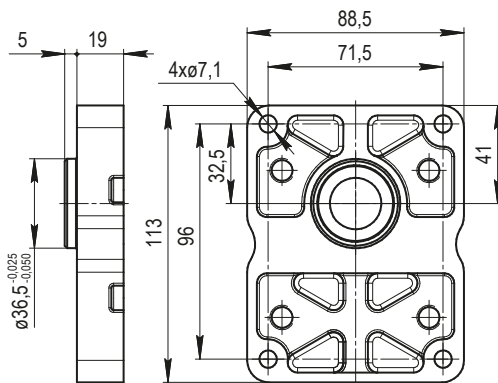
31

SAE A 2 BOLTS



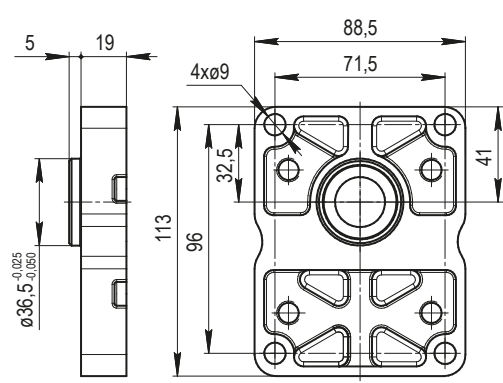
32

SAE A 2 BOLTS (WITH O-RING)



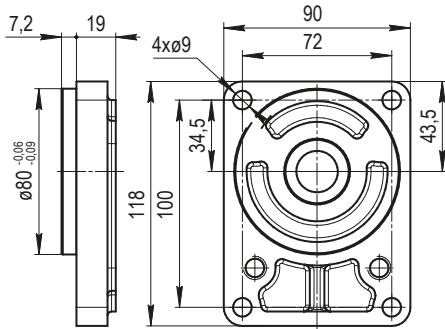
61

EUROPEAN (Ø7,1)

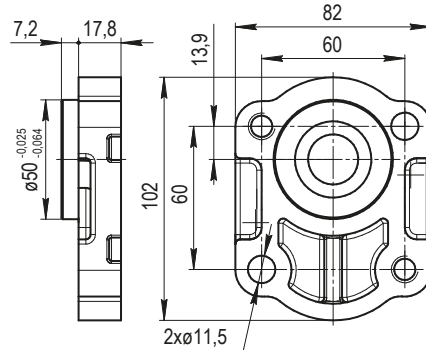


62

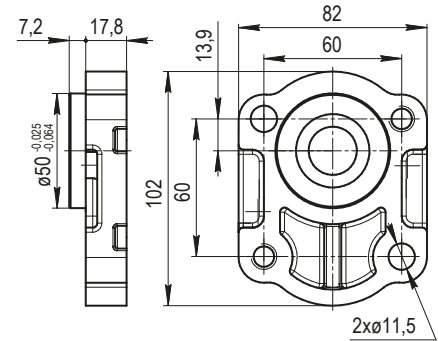
EUROPEAN (Ø9)



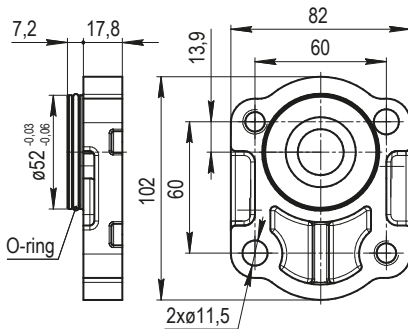
**81** GERMAN Ø80



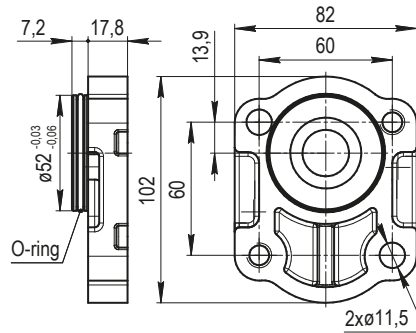
**91** GERMAN 2 BOLTS Ø50



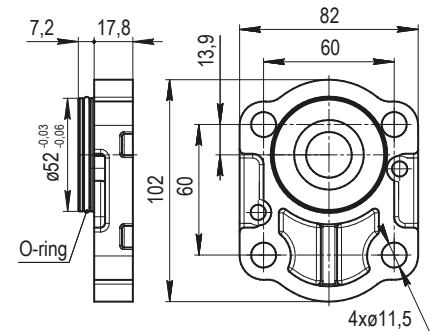
**92** GERMAN 2 BOLTS Ø50



**93** GERMAN 2 BOLTS Ø52

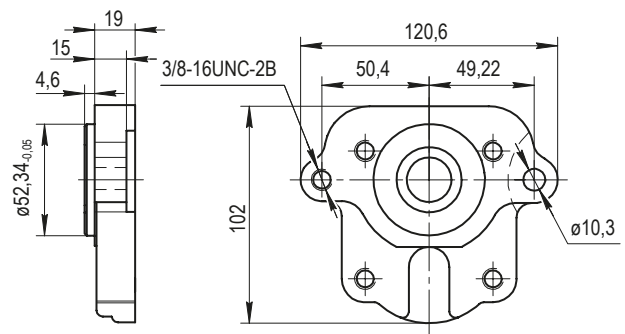


**94** GERMAN 2 BOLTS Ø52

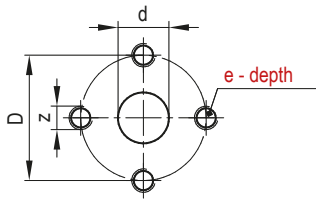


**95** GERMAN 4 BOLTS Ø52

**Important:** in case of assembling of pumps without shaft seals (mounting flanges 93, 94, 95), you have to keep the value of min. suction pressure (0.7 bar) in the vane between pump and coupling too.

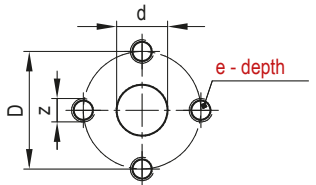


**21** MOUNTING FLANGE FOR PERKINS MOTOR



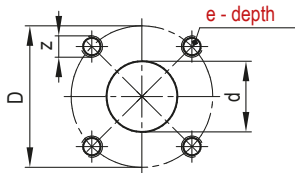
**A** GSTU 3-25-180-97

Type	Inlet				Outlet			
	d	D	z	e	d	D	z	e
GP2K4÷8	12	32	M6	13	12	32	M6	13
GP2K10÷14	14	38	M8		14			
GP2K15÷16	16				16			
GP2K19÷28	19				19			



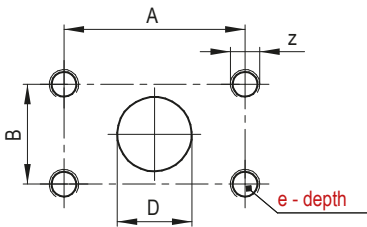
**B** EUROPEAN FLANGE

Type	Inlet				Outlet			
	d	D	z	e	d	D	z	e
GP2K4÷8	13	30	M6	13	13	30	M6	13
GP2K10÷28	19	40	M8		14			



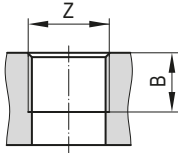
**C** GERMAN FLANGE

Type	Inlet				Outlet			
	d	D	z	e	d	D	z	e
GP2K4÷28	20	40	M6	13	15	35	M6	13



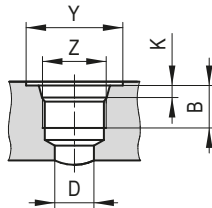
**D** SAE FLANGE (UNC)

Type	Inlet					Outlet				
	A	B	D	z	e	A	B	D	z	e
GP2K4÷12	38,1	17,48	13	5/16-18 UNC	14	38,1	17,48	13	5/16-18 UNC	14
GP2K14÷20	47,63	22,23	19	3/8-16 UNC						
GP2K22÷28	52,37	26,19	25							



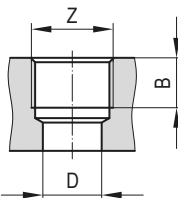
**E** METRIC THREADED

Type	Inlet		Outlet	
	Z	B	Z	B
GP2K4÷8	M18x1,5	16	M14x1,5	16
GP2K10÷12	M22x1,5		M18x1,5	
GP2K14÷28	M27x2			



**F** SAE THREADED

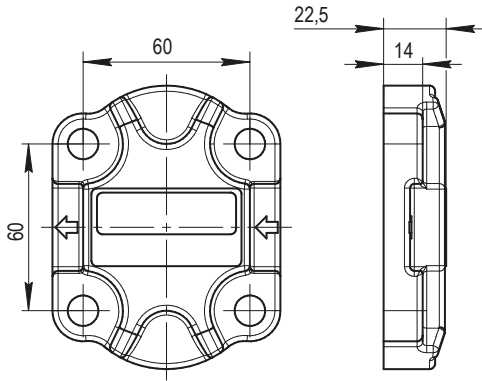
Type	Inlet					Outlet				
	Z	B	K	D	Y	Z	B	K	D	Y
GP2K4÷8	7/8-14 UNF (SAE #10)	14	2,5	13	32	7/8-14 UNF (SAE #10)	14	2,5	13	32
GP2K10÷28	1-1/16-12 UN (SAE #12)	16	3,3	20	42					



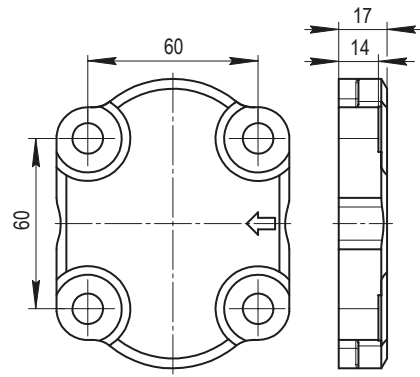
**G** GAS THREADED (BSPP)

Type	Inlet			Outlet		
	Z	B	D	Z	B	D
GP2K4÷8	1/2" GAS	16	13	1/2" GAS	16	13
GP2K10÷28	3/4" GAS	19	20			

**STANDARD REAR COVERS**

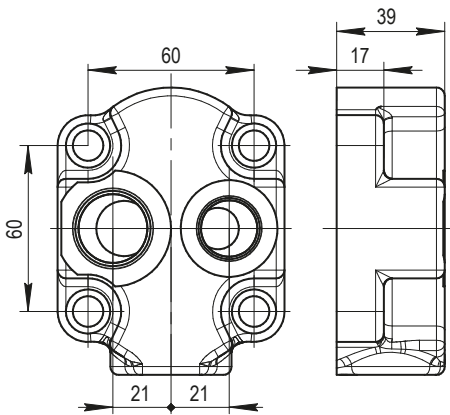


Aluminium

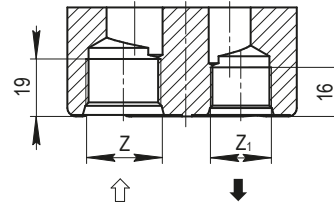


Cast iron

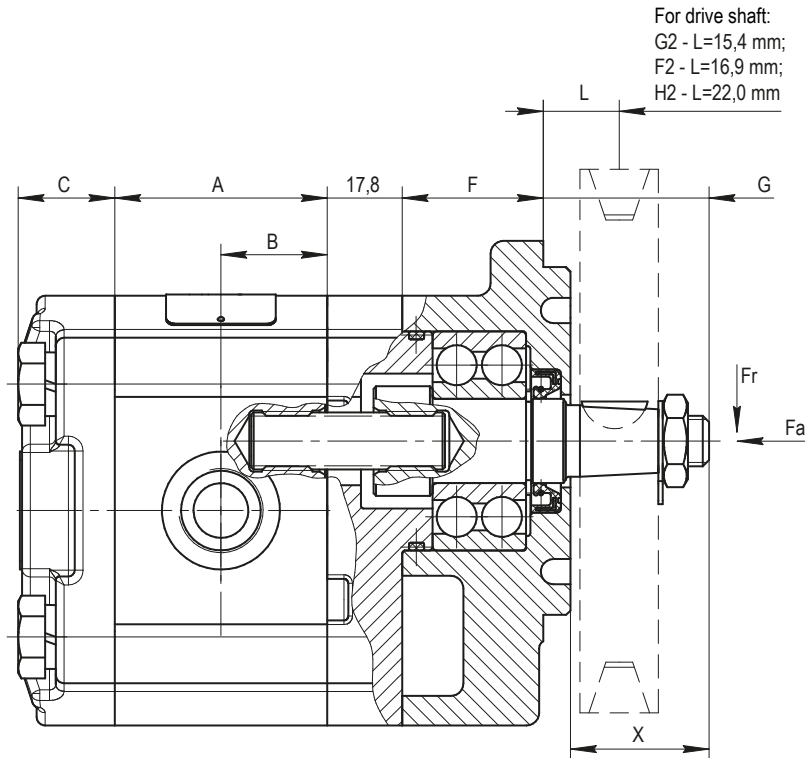
**REAR COVER WITH THREADED PORTS**



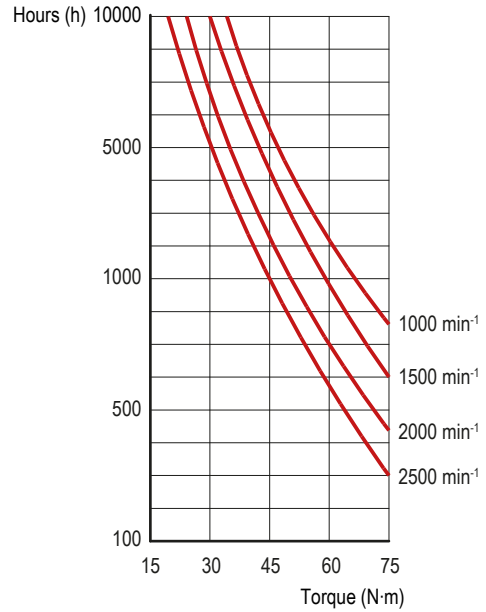
Cast iron



Inlet	Outlet
Z	Z <sub>1</sub>
M26x1,5	M18x1,5
1 1/16-12 UN	7/8-14 UNF
3/4" GAS	1/2" GAS



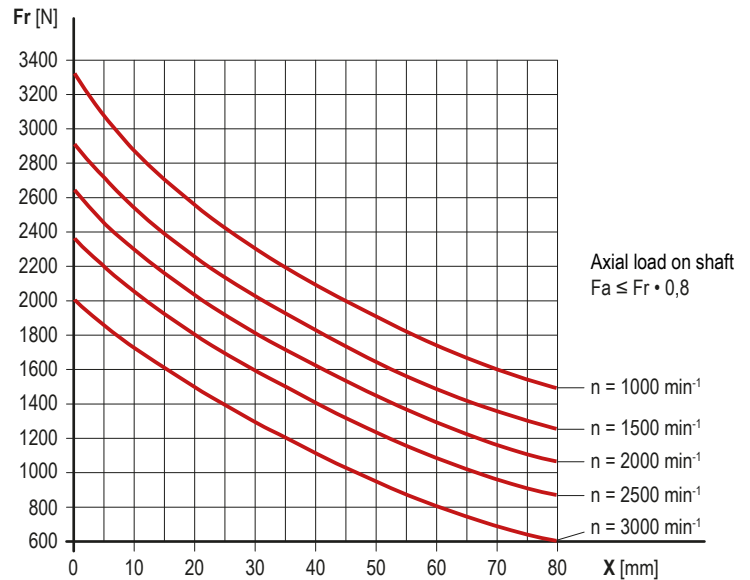
Service life under the following conditions:  
 pulley diameter = 90 mm.



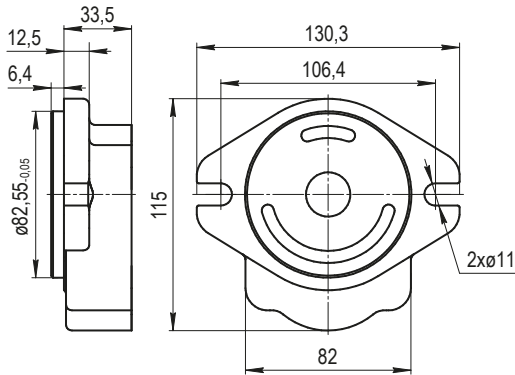
Ordering example  
**GP2K16R-F2C9F**

- Dimension A and B = see section "Technical data"
- Dimension G = see section "Drive shafts"
- Dimension F = see section "Mounting flanges with bearing support"
- Dimension C = see section "Rear covers"

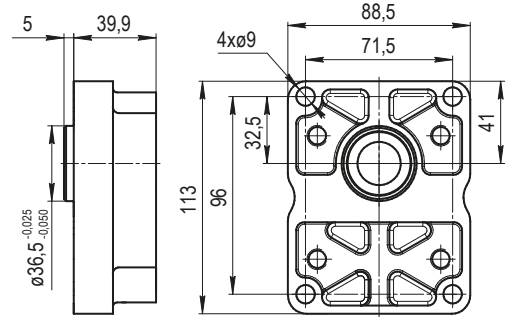
Working characteristic of outrigger bearing



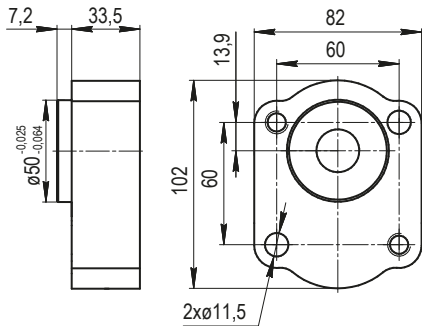




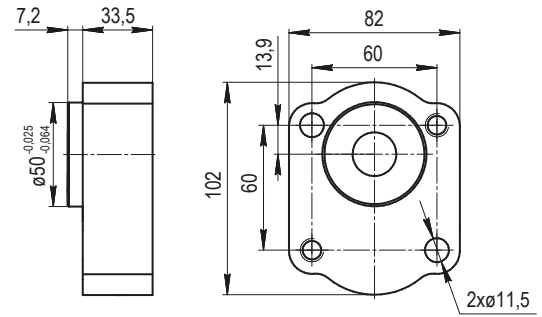
**C3** SAE A



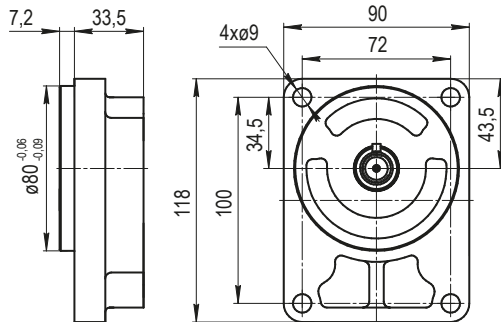
**C6** EUROPEAN



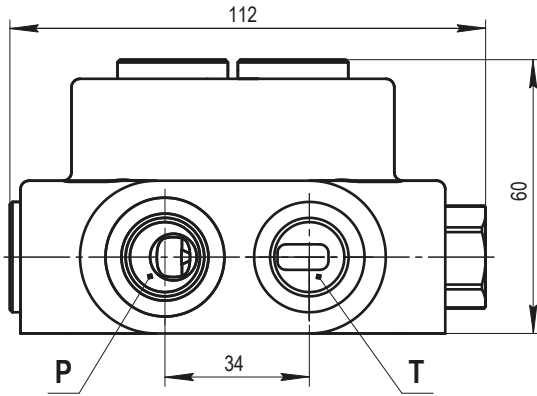
**C7** GERMAN  $\varnothing 50$



**C8** GERMAN  $\varnothing 50$

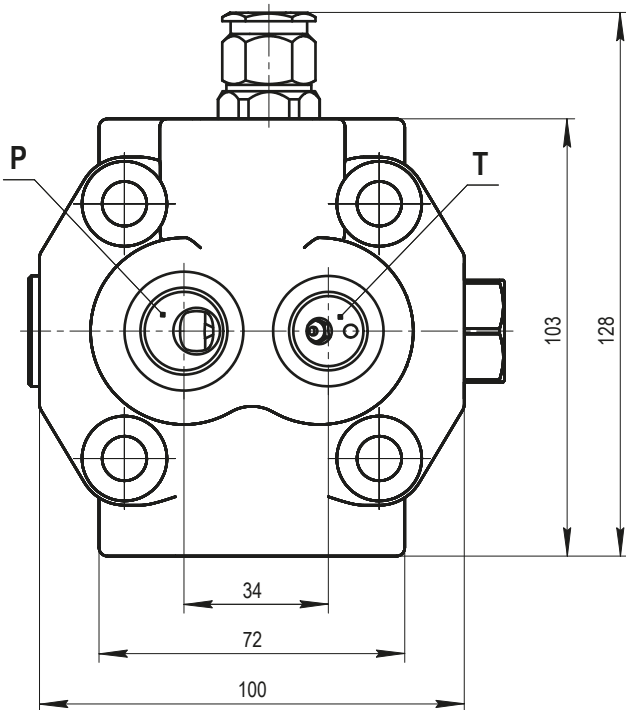


**C9** GERMAN  $\varnothing 80$

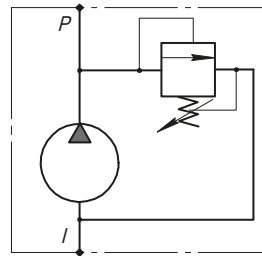


CODE	P	T
E	M20x1,5	M18x1,5
F	7/8"-14 UNF	3/4"-16 UNF
G	1/2" GAS	3/8" GAS

Pressure relief setting	bar	20÷280
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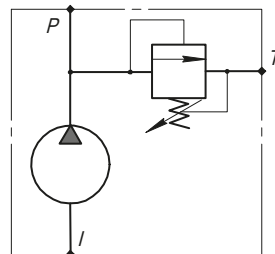


P - pressure line  
T - drain



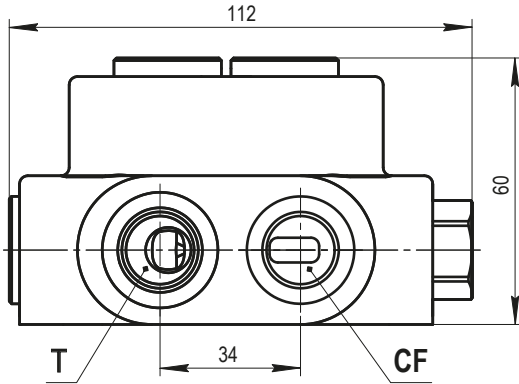
Return-to-suction relief valve

VR



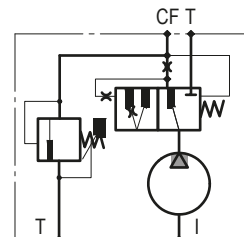
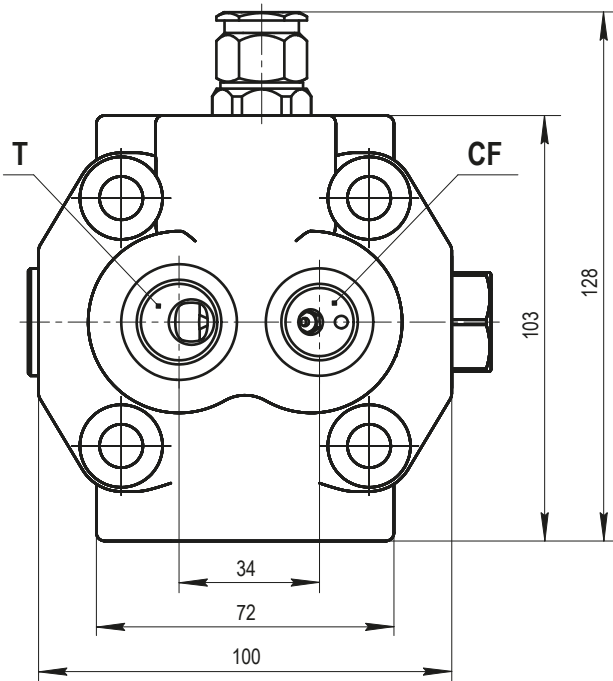
Return-to-tank relief valve

VR1



CODE	CF	T
E	M18x1,5	M18x1,5
F	3/4"-16 UNF	3/4"-16 UNF
G	3/8" GAS	3/8" GAS

Constant flow	l/min, ±10%	1.2	2	4.5	6	8	10
		12	14.5	18	20	23	25
Pressure relief setting	bar	20÷280					

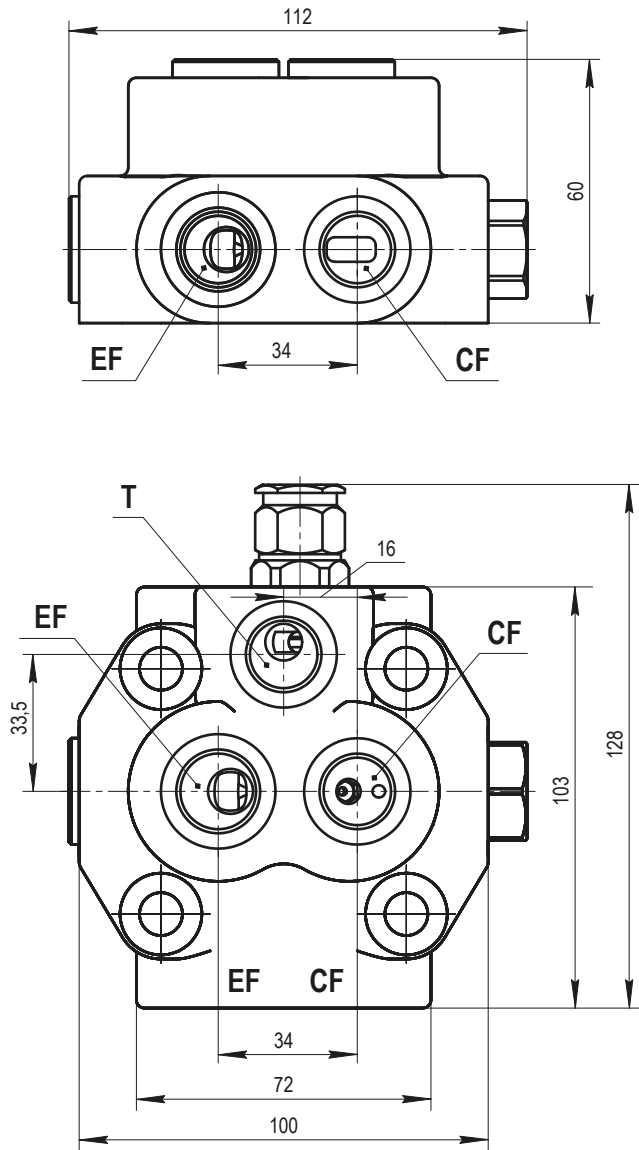


Constant flow valve with a relief and drain to tank

VQR

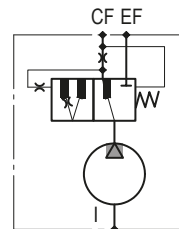
CF - constant flow

T - drain



CODE	CF	EF	T
E	M18x1,5	M20x1,5	M18x1,5
F	3/4"-16 UNF	7/8"-14 UNF	3/4"-16 UNF
G	3/8" GAS	1/2" GAS	3/8" GAS

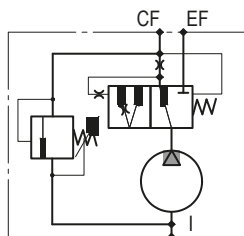
Priority flow	l/min, ±10%	1.2	2	4.5	6	8	10
		12	14.5	18	20	23	25
Pressure relief setting	bar	20÷280					



Priority flow divider

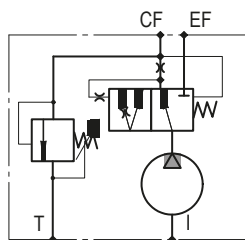
VP

- CF - priority flow
- EF - secondary flow
- T - drain



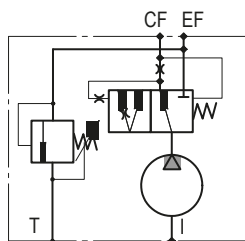
VPR

Priority flow divider with a relief in the priority line and return to the suction line



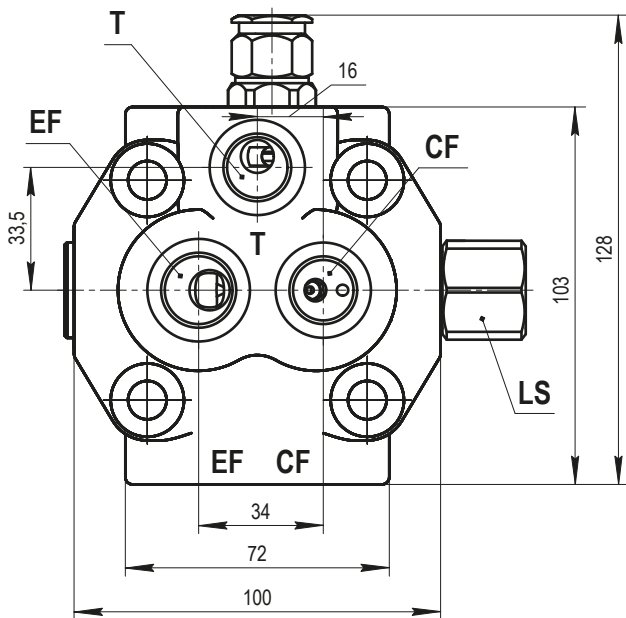
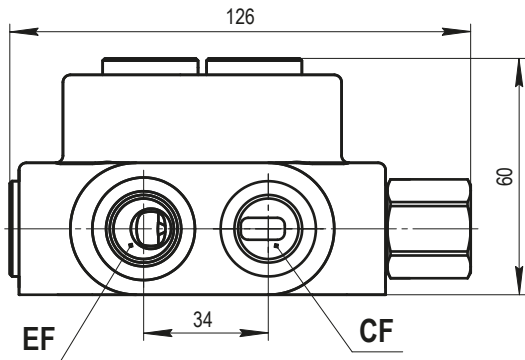
VPRT

Priority flow divider with a relief in the priority line and return to the tank



VPRET

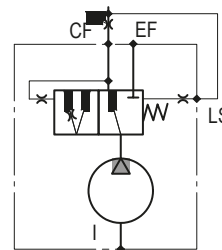
Priority flow divider with a relief in the secondary line and return to the tank



- CF** - priority flow
- EF** - secondary flow
- LS** - LS line
- T** - drain

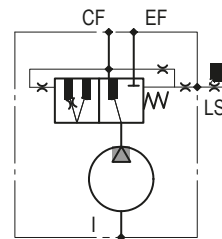
CODE	CF	EF	T	LS
E	M18x1,5	M20x1,5	M18x1,5	M14x1,5
F	3/4"-16 UNF	7/8"-14 UNF	3/4"-16 UNF	7/16"-20 UNF
G	3/8" GAS	1/2" GAS	3/8" GAS	1/4" GAS

LS signal	bar	4	7	10
Pressure relief setting	bar	20÷280		



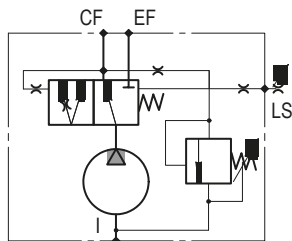
Priority flow divider  
with static LS control

VPLS



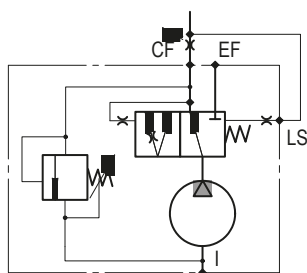
Priority flow divider  
with dynamic LS control

VPLD



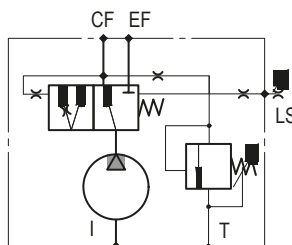
VPLRS

Priority flow divider with a static LS control, relief in the priority line and return to the suction line



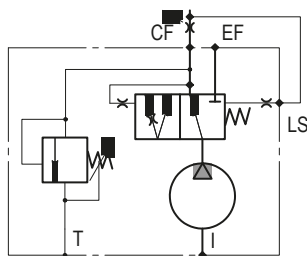
VPLRD

Priority flow divider with a dynamic LS control, relief in the priority line and return to the suction line



VPLRST

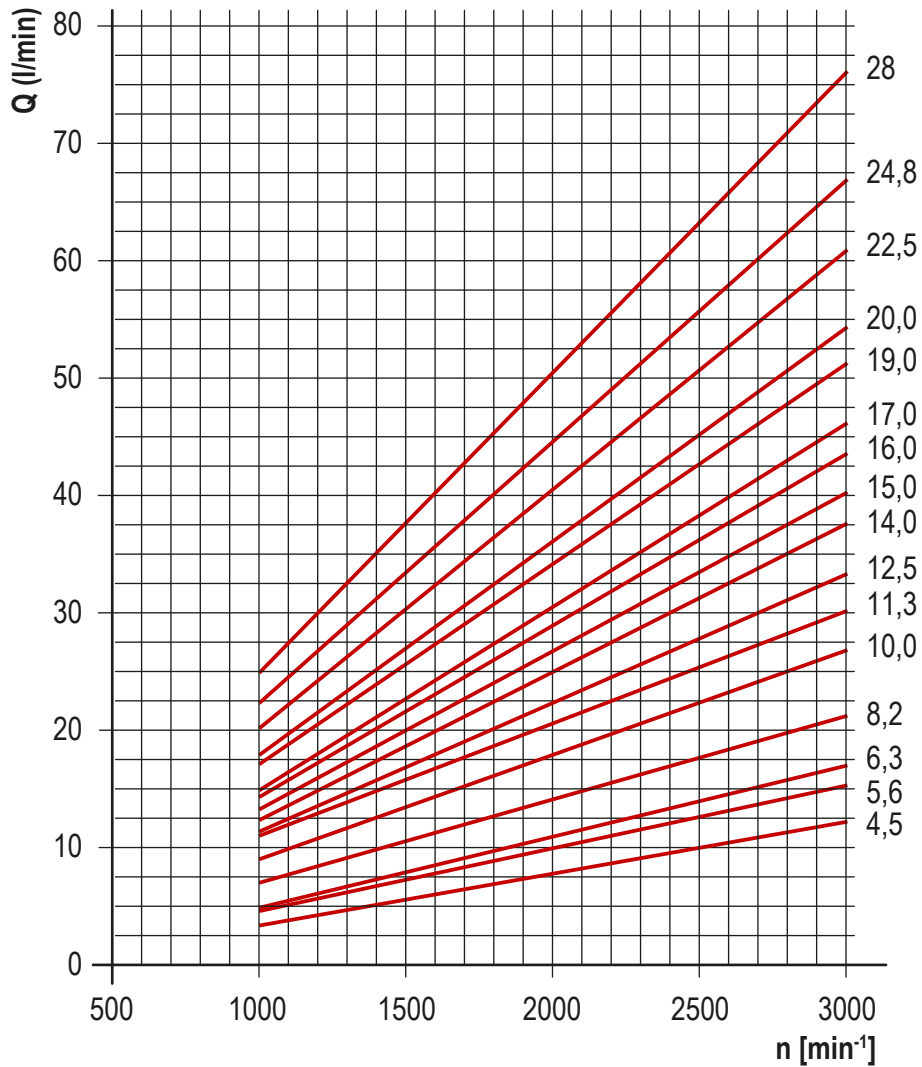
Priority flow divider with a static LS control, relief in the priority line and return to the tank



VPLRDT

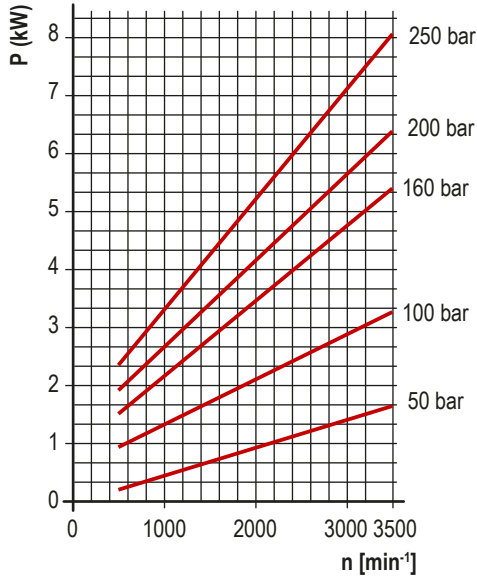
Priority flow divider with a dynamic LS control, relief in the priority line and return to the tank

Performance curves carried out with oil viscosity at 16 mm<sup>2</sup>/sec, oil temperature at 60°C and max. continuous pressures for each type.

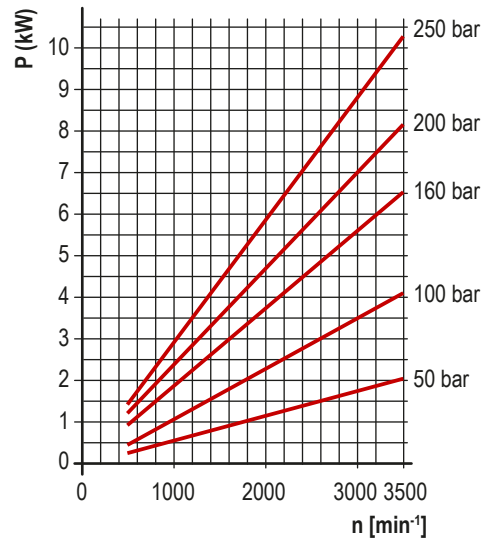




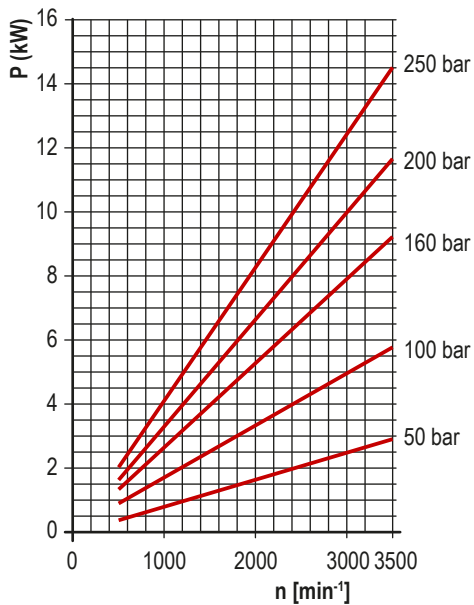
Performance curves carried out with oil viscosity at 16 mm<sup>2</sup>/sec and oil temperature at 60°C.



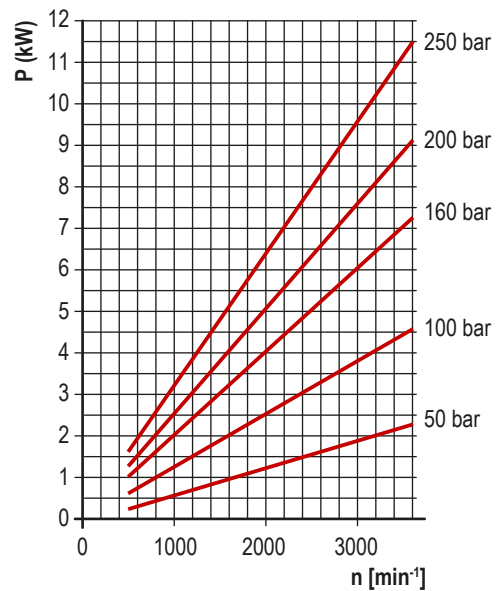
GP2K4



GP2K5

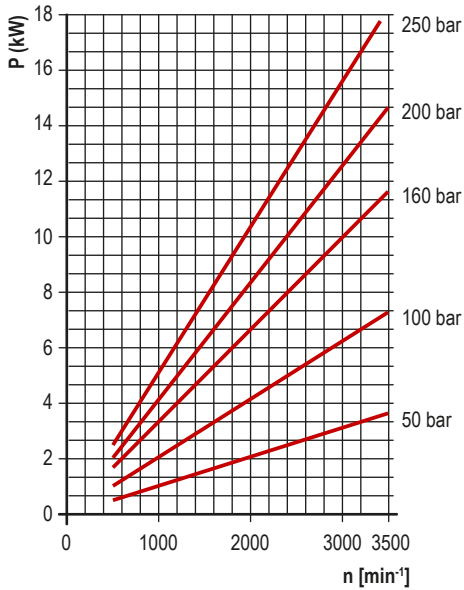


GP2K6

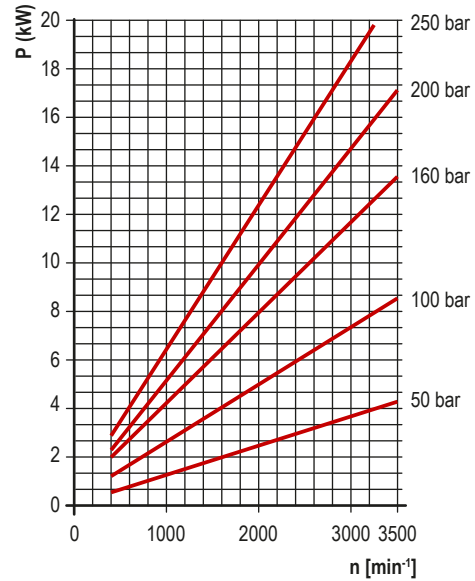


GP2K8

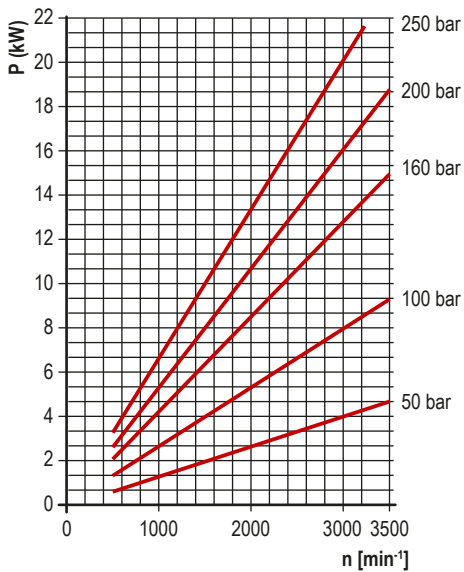
Performance curves carried out with oil viscosity at 16 mm<sup>2</sup>/sec and oil temperature at 60°C.



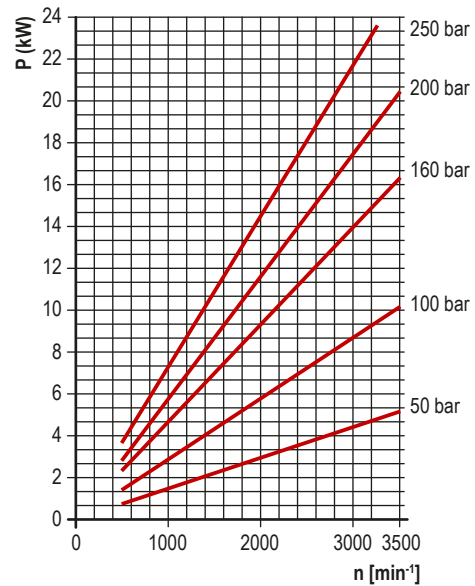
GP2K10



GP2K11

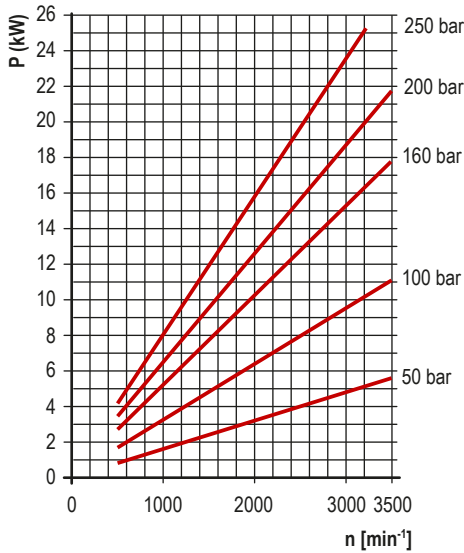


GP2K12

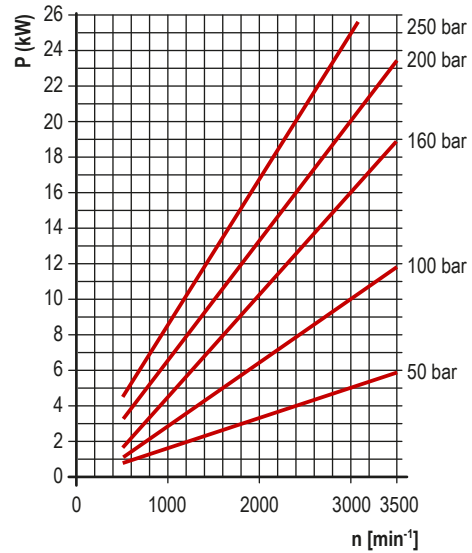


GP2K14

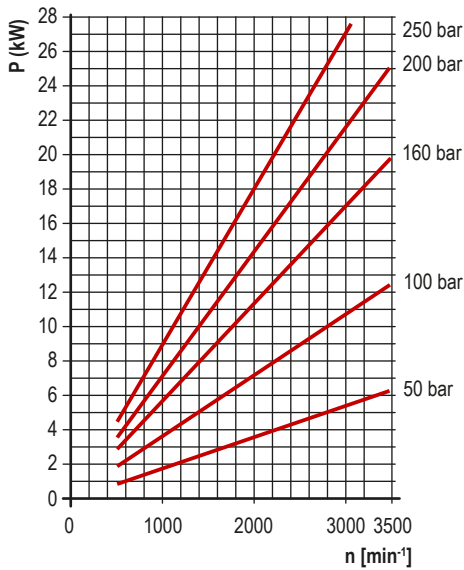
Performance curves carried out with oil viscosity at 16 mm<sup>2</sup>/sec and oil temperature at 60°C.



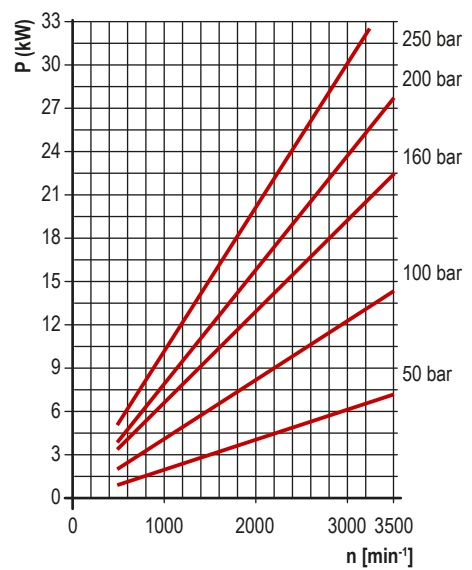
GP2K15



GP2K16

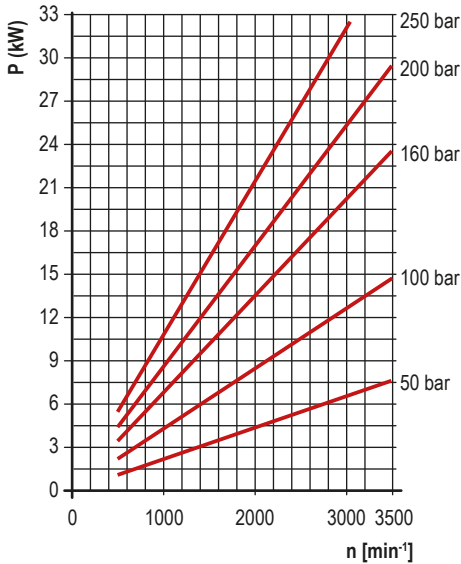


GP2K17

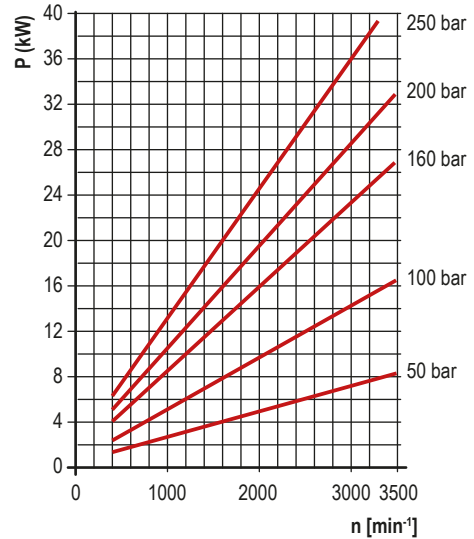


GP2K19

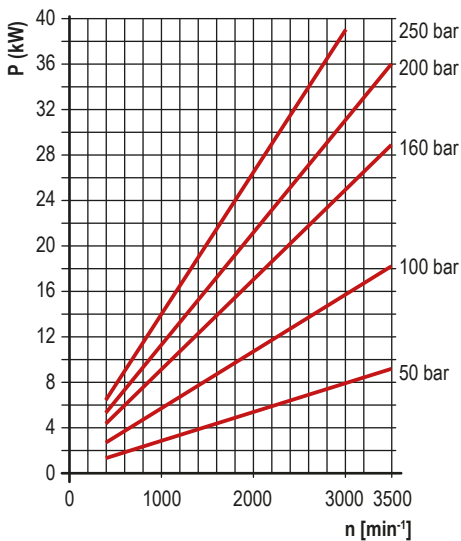
Performance curves carried out with oil viscosity at 16 mm<sup>2</sup>/sec and oil temperature at 60°C.



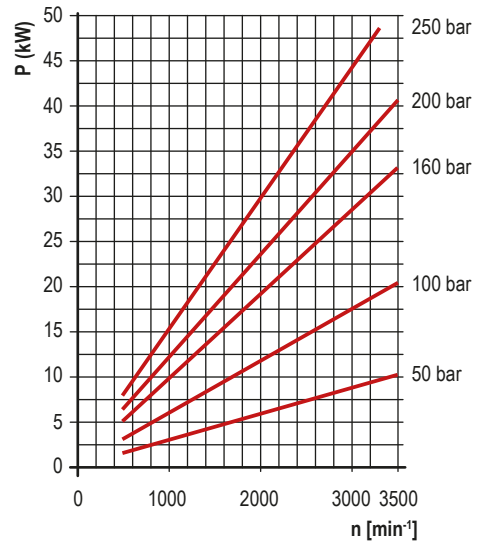
GP2K20



GP2K23



GP2K25



GP2K28

**GP 2 K 10 R - A1 01 A - 1 V - F - C3 - VR .../... F00**

GEAR PUMP	GP
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GROUP	2
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SERIES	K
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DISPLACEMENT	CODE
4,5 cm <sup>3</sup> /rev	4
5,6 cm <sup>3</sup> /rev	5
6,3 cm <sup>3</sup> /rev	6
8,2 cm <sup>3</sup> /rev	8
10 cm <sup>3</sup> /rev	10
11,3 cm <sup>3</sup> /rev	11
12,5 cm <sup>3</sup> /rev	12
14 cm <sup>3</sup> /rev	14
15 cm <sup>3</sup> /rev	15
16 cm <sup>3</sup> /rev	16
17 cm <sup>3</sup> /rev	17
19 cm <sup>3</sup> /rev	19
20 cm <sup>3</sup> /rev	20
22,5 cm <sup>3</sup> /rev	23
24,8 cm <sup>3</sup> /rev	25
28 cm <sup>3</sup> /rev	28

ROTATION	CODE
Clockwise	R
Counterclockwise	L
Reversible	B

DRIVE SHAFTS	CODE
NS 3-25-180-97	A1
SAE A SPLINED (9 TEETH)	B2
SAE A SPLINED (10 TEETH)	B3
SAE A SPLINED (11 TEETH)	B4
GERMAN TAPERED 1:5	F2
GERMAN TAPERED 1:5	F6
EUROPEAN TAPERED 1:8	G2
EUROPEAN TAPERED 1:8	G6
SAE A STRAIGHT Ø15,87	H2
SAE A STRAIGHT Ø19,05	H8
SAE A STRAIGHT Ø19,05 LENGTH	H9
TANG DRIVE FOR ELECTRIC MOTORS	K3
TANG DRIVE	K4
DIN 5482 SPLINED (9 TEETH)	I2

MOUNTING FLANGES	CODE
NS 3-25-180-97	01
NS 3-25-180-97	02
SAE A 2 BOLTS	31
SAE A 2 BOLTS (WITH O-RING)	32
EUROPEAN (Ø7,1)	61
EUROPEAN (Ø9)	62
GERMAN Ø80	81
GERMAN 2 BOLTS Ø50	91-92
GERMAN 2 BOLTS Ø52	93-94
GERMAN 4 BOLTS Ø52	95
MOUNTING FLANGE FOR PERKINS MOTOR	21

CUSTOMER CODE	CODE
...	G00
...	F00

Setting main relief valve (bar)
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Adjusted flow (l/min)
-----------------------

VALVES IN THE COVER	CODE
Adjustable main relief valve	VR
Flow regulator with excess flow to tank	VRT
Like VP with main relief valve	VQR
Priority flow divider with excess flow	VP
Like VP with main relief valve	VPR
Priority flow divider with Load-sensing	VPL
Electric unloading valve (12V)	EV1
Electric unloading valve (24V)	EV2

OUTRIGGER BEARINGS	CODE
SAE A	C3
EUROPEAN	C6
GERMAN Ø50	C7
GERMAN Ø50	C8
GERMAN Ø80	C9

MATERIAL OF COVERS	CODE
Aluminium	
Cast iron	F

SEAL MATERIAL	CODE
NBR (STANDARD)	
FKM	V

PORTS POSITION	CODE
Side Inlet - side Outlet	
Back Inlet - back Outlet	1

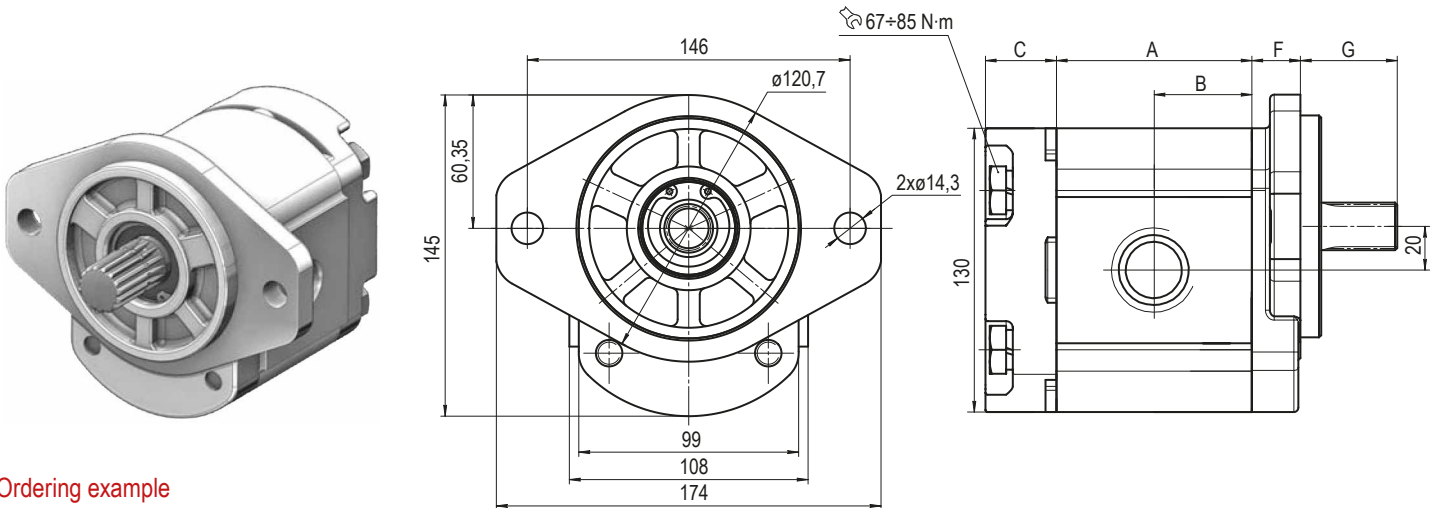
PORTS	CODE
NS 3-25-180-97	A
EUROPEAN FLANGE	B
GERMAN FLANGE	C
SAE FLANGE (UNC)	D
METRIC THREADED	E
SAE THREADED (ODT)	F
GAS THREADED (BSPP)	G

Specification of consumer assigned if necessary after clarify special conditions with the customer

# GEAR PUMPS GROUP 2.5

## TECHNICAL DATA AND ASSEMBLING DIMENSIONS

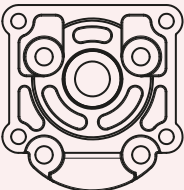
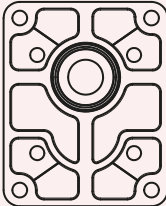
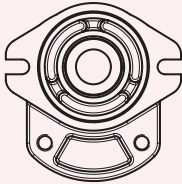
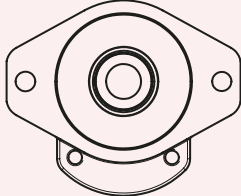
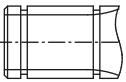

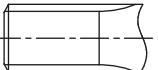
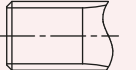
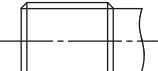
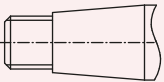

Type		GP2.5K16	GP2.5K19	GP2.5K20	GP2.5K23	GP2.5K25	GP2.5K28	GP2.5K30	GP2.5K32	GP2.5K36	GP2.5K37	GP2.5K38	GP2.5K40	GP2.5K45
Displacement	cm <sup>3</sup> /rev	16,0	19,0	20,0	23,0	25,0	28,0	30,0	32,0	36,0	37,0	38,0	40,0	45,0
Dimension A	mm	71,80	75,00	76,20	79,50	81,70	85,00	87,30	89,50	94,00	95,00	96,00	98,00	103,50
Dimension B	mm	35,90	37,50	38,10	39,75	40,85	42,50	43,65	44,75	47,00	47,50	48,00	49,00	51,75
Max. continuous pressure, P <sub>1</sub>	bar	250						230			200		170	
Max. intermittent pressure, P <sub>2</sub>	bar	280						250			220		190	
Peak pressure, P <sub>3</sub>	bar	300						260			240		210	
Max. speed, n <sub>max</sub>	min <sup>-1</sup>	3000										2750		2500
Min. speed at P <sub>1</sub> ≤ 100 bar, n <sub>min</sub>	min <sup>-1</sup>	700				600					500			
Weight	kg	4,8	4,9	5,0	5,1	5,2	5,3	5,5	5,6	5,8	5,8	5,9	6,0	6,2



Ordering example  
GP2.5K25R-B533G

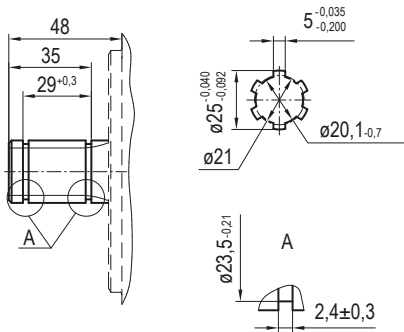
Dimension G = see section "Drive shafts"  
Dimension F = see section "Mounting flanges"  
Dimension C = see section "Rear covers"

Weight shown are for pumps with aluminum covers. Weight for pumps with cast iron covers should be refined

<p><b>GP2.5K</b></p>	 <p>GSTU 3-25-180-97</p>	 <p>EUROPEAN</p>	 <p>SAE A 2 BOLTS</p>	 <p>SAE B 2 BOLTS</p>
 <p>GSTU 3-25-180-97</p>	<p>A2 03</p>			
 <p>GSTU 3-25-180-97</p>	<p>A3 03</p>			
 <p>SAE A SPLINED (10 TEETH)</p>			<p>B3 31</p>	
 <p>SAE A SPLINED (11 TEETH)</p>			<p>B4 31</p>	
 <p>SAE B SPLINED (13 TEETH)</p>				<p>B5 33</p>
 <p>EUROPEAN TAPERED 1:8</p>		<p>G3 63</p>		
 <p>SAE B STRAIGHT Ø22,2</p>				<p>G3 33</p>

Present combination types of mounting flanges and shafts are used to serial production. The other combination and date of production, before ordering clarify with the manufacturer.

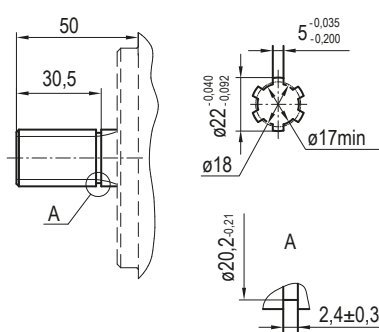
Max. torque 400 N·m



A2

GSTU 3-25-180-97

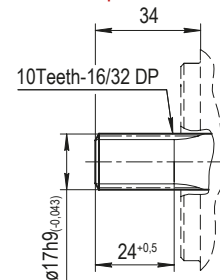
Max. torque 320 N·m



A3

GSTU 3-25-180-97

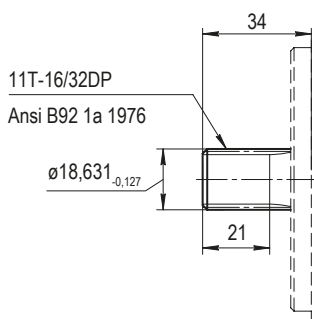
Max. torque 100 N·m



B3

SAE A SPLINED (10 TEETH)

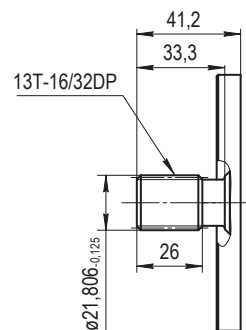
Max. torque 140 N·m



B4

SAE A SPLINED (11 TEETH)

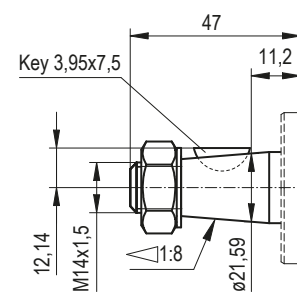
Max. torque 320 N·m



B5

SAE B SPLINED (13 TEETH)

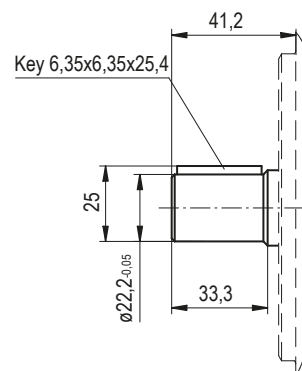
Max. torque 250 N·m



G3

EUROPEAN TAPERED 1:8

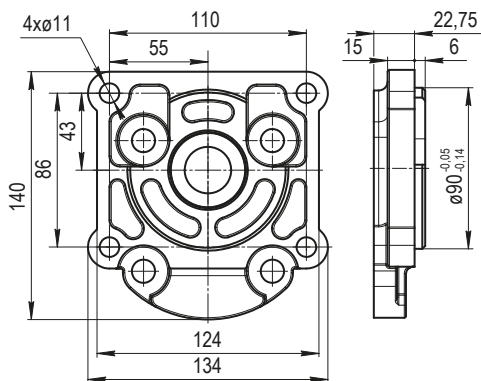
Max. torque 220 N·m



H3

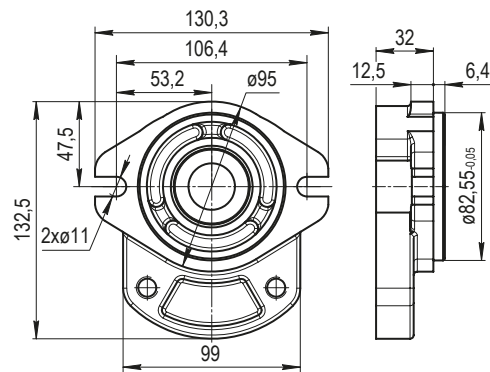
SAE B STRAIGHT Ø22,2





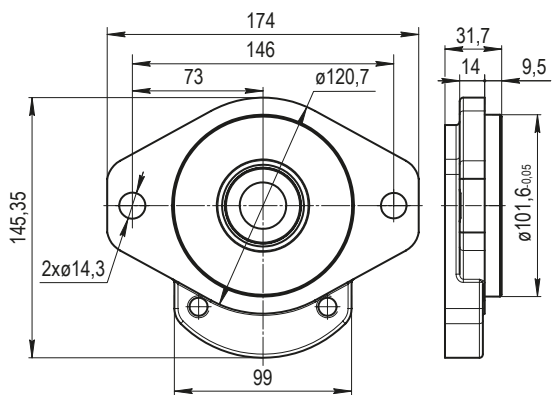
03

GSTU 3-25-180-97



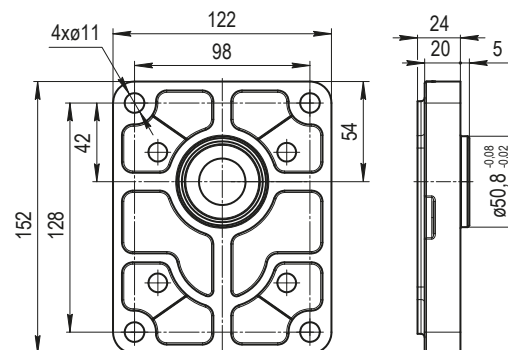
31

SAE A 2 BOLTS



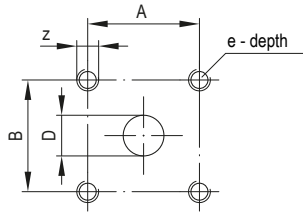
33

SAE B 2 BOLTS



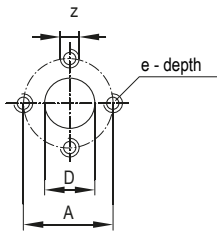
63

EUROPEAN



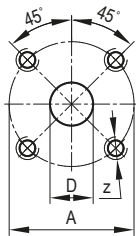
**A** GSTU 3-25-180-97

Type	Inlet					Outlet				
	D	A	B	z	e	D	A	B	z	e
GP2.5K16÷45	23,5	46	46	M8	17	23,5	46	46	M8	17



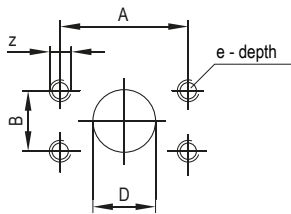
**B** EUROPEAN FLANGE

Type	Inlet				Outlet			
	D	A	z	e	D	A	z	e
GP2.5K16÷20	19	40	M8	13	13	30	M6	13
GP2.5K23÷45	25	51	M10	17	19	40	M8	17



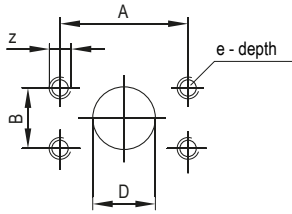
**C** GERMAN FLANGE

Type	Inlet				Outlet			
	D	A	z	e	D	A	z	e
GP2.5K16÷45	25	55	M8	17	19	55	M8	17



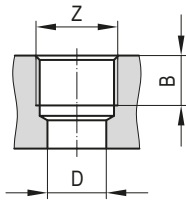
**D** SAE FLANGE (UNC)

Type	Inlet					Outlet				
	D	A	B	z	e	D	A	B	z	e
GP2.5K16÷45	25	52,4	26,2	3/8 16UNC	16	19	47,6	22,2	3/8 16UNC	14



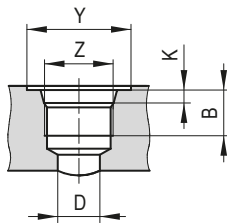
**W** SAE FLANGE (METRIC)

Type	Inlet					Outlet				
	D	A	B	z	e	D	A	B	z	e
GP2.5K16+45	25	52,4	26,2	M10	16	19	47,6	22,2	M10	16



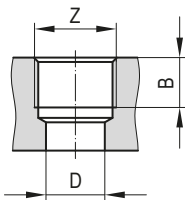
**E** METRIC THREADED

Type	Inlet			Outlet		
	Z	B	D	Z	B	D
GP2.5K16+23	M27x2	19	22	M22x1,5	16	18
GP2.5K25+45	M33x2	21	25	M27x2	19	22



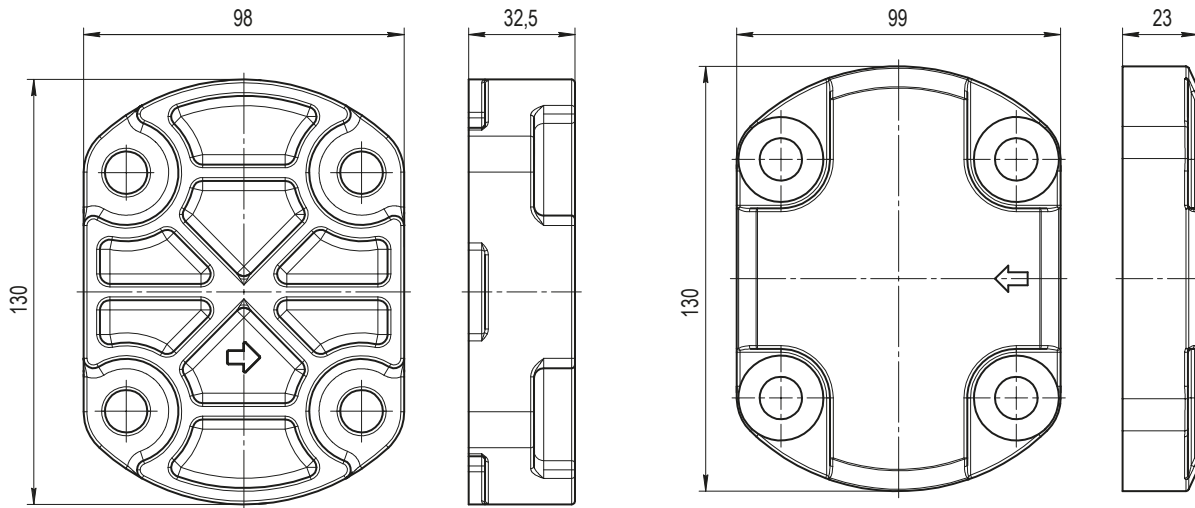
**F** SAE THREADED

Type	Inlet					Outlet				
	Z	B	D	Y	K	Z	B	D	Y	K
GP2.5K16+23	1-1/16-12 UN (SAE#12)	19	20	42	3,3	7/8-14 UNF (SAE#10)	19	15	32	2,5
GP2.5K25+45	1-5/16-12 UN (SAE#16)		23	51		1-1/16-12 UN (SAE#12)		20	42	3,3



**G** GAS THREADED

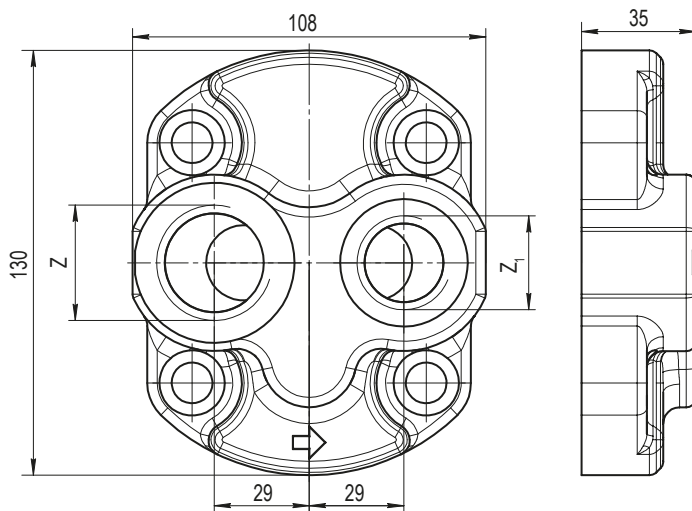
Type	Inlet			Outlet		
	Z	B	D	Z	B	D
GP2.5K16+23	3/4" GAS	19	20	1/2" GAS	16	13
GP2.5K25+45	1" GAS	21	27	3/4" GAS	19	20



Aluminium

Cast iron

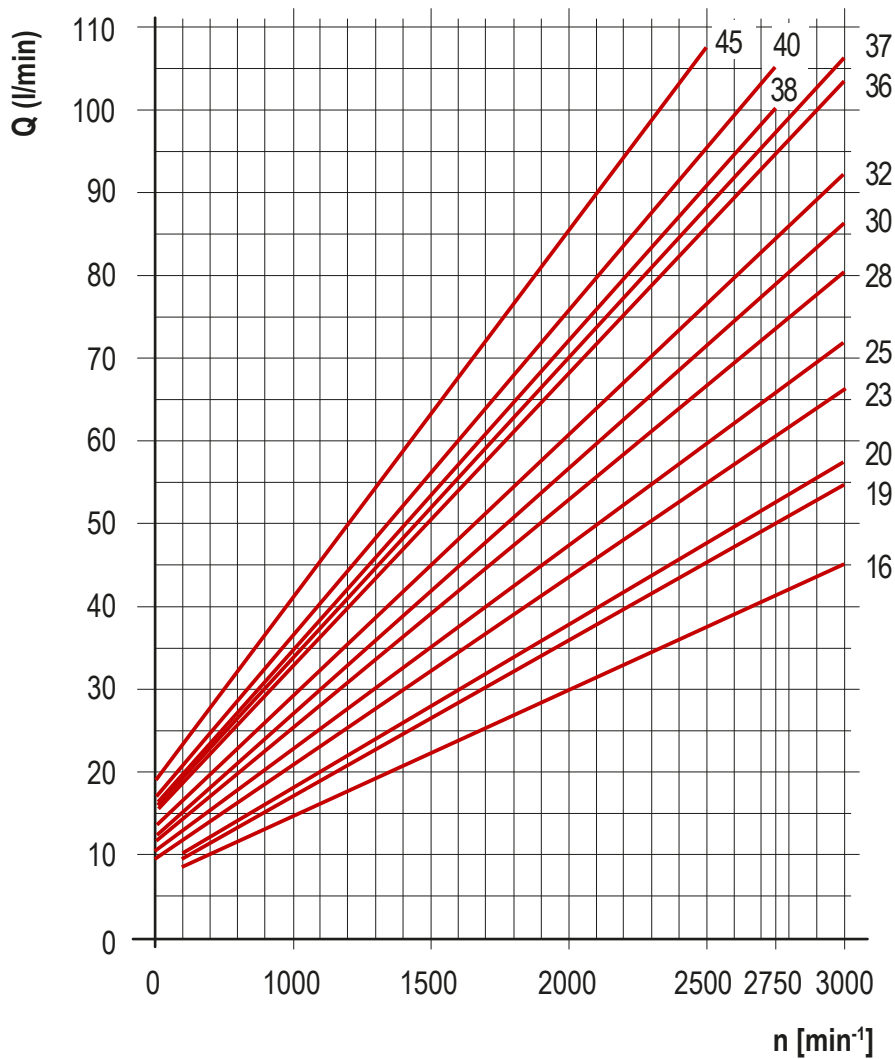
**STANDARD REAR COVERS**



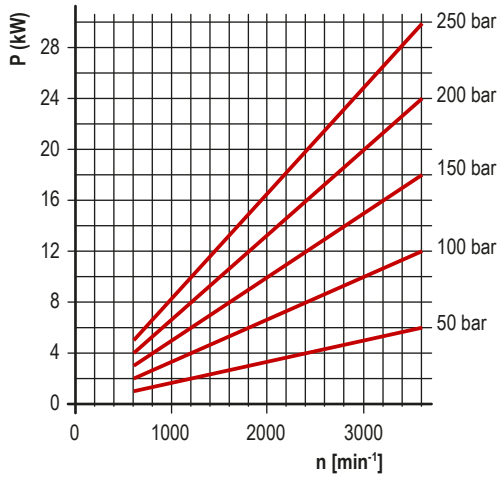
Type	Inlet	Outlet
	Z	Z <sub>1</sub>
GP2.5K16÷23	3/4" GAS	1/2" GAS
GP2.5K25÷45	1" GAS	3/4" GAS
GP2.5K16÷23	1 1/16-12 UN	7/8-14 UNF
GP2.5K25÷45	1 5/16-12 UN	1 1/16-12 UN

**REAR COVER WITH THREADED PORTS**

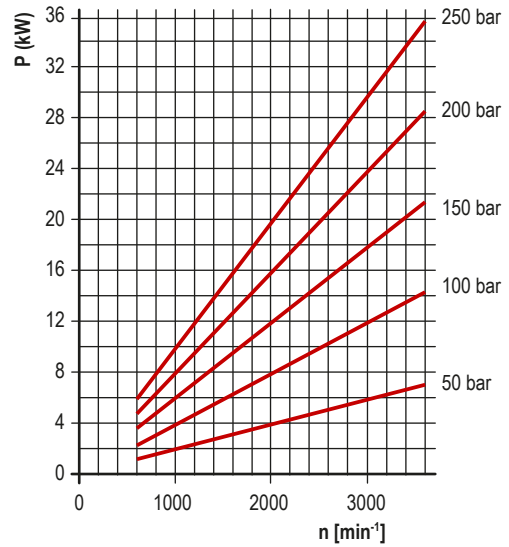
Performance curves carried out with oil viscosity at 16 mm<sup>2</sup>/sec, oil temperature at 60°C and max. continuous pressures for each type.



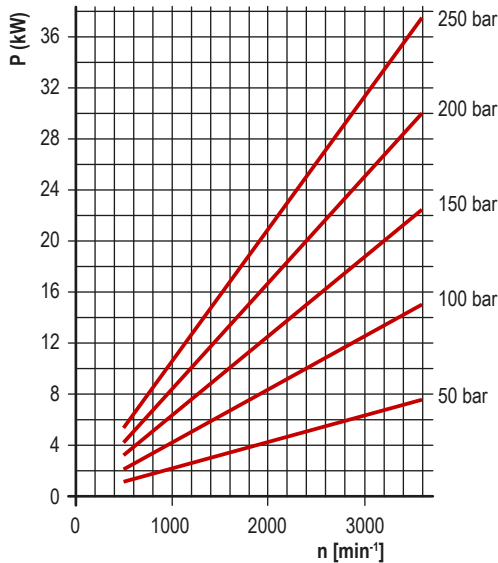
Performance curves carried out with oil viscosity at 16 mm<sup>2</sup>/sec and oil temperature at 60°C.



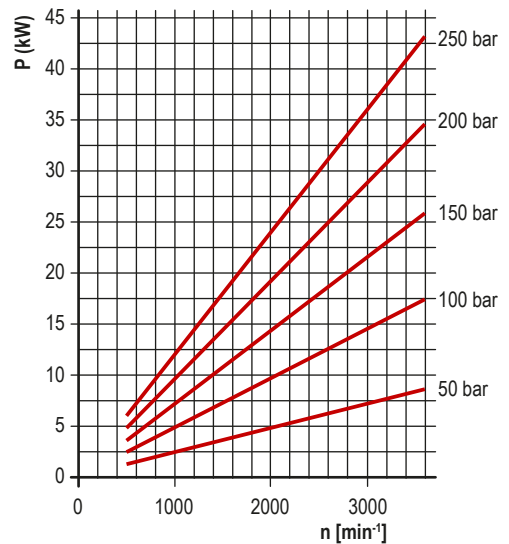
GP2.5K16



GP2.5K19

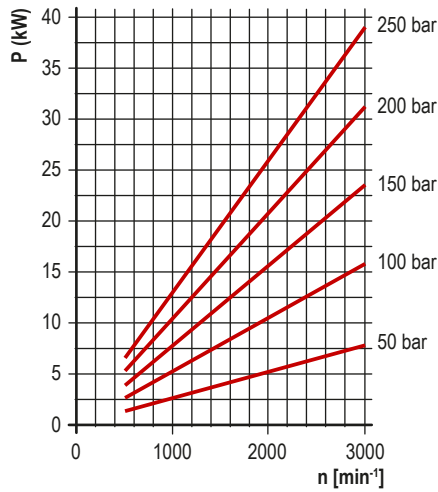


GP2.5K20

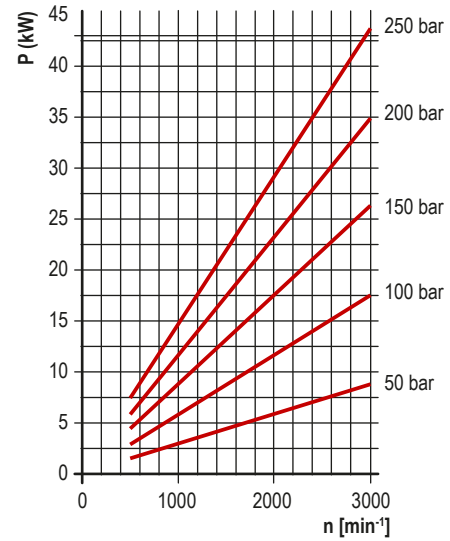


GP2.5K23

Performance curves carried out with oil viscosity at 16 mm<sup>2</sup>/sec and oil temperature at 60°C.



GP2.5K25



GP2.5K28

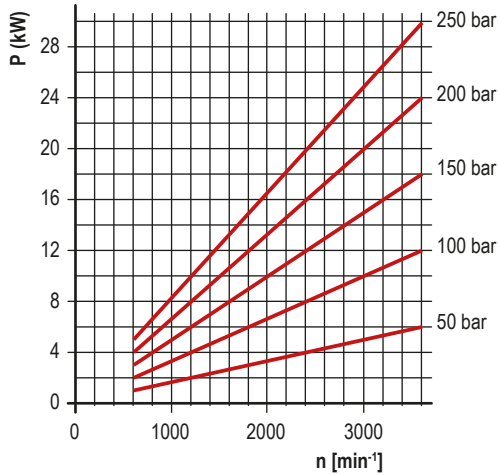


GP2.5K30

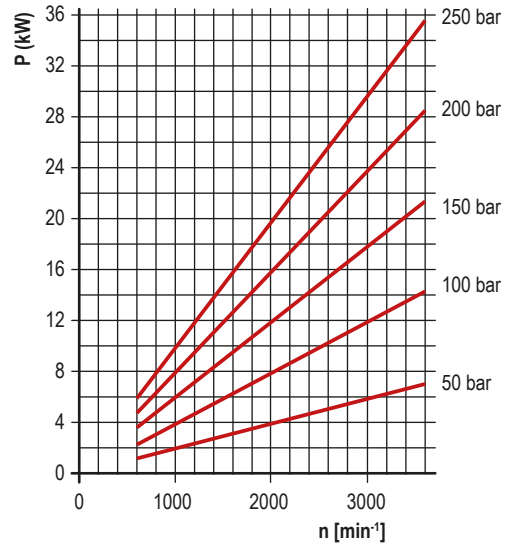


GP2.5K32

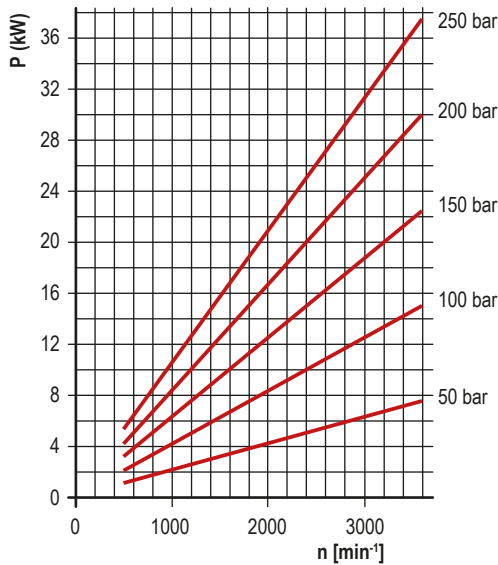
Performance curves carried out with oil viscosity at 16 mm<sup>2</sup>/sec and oil temperature at 60°C.



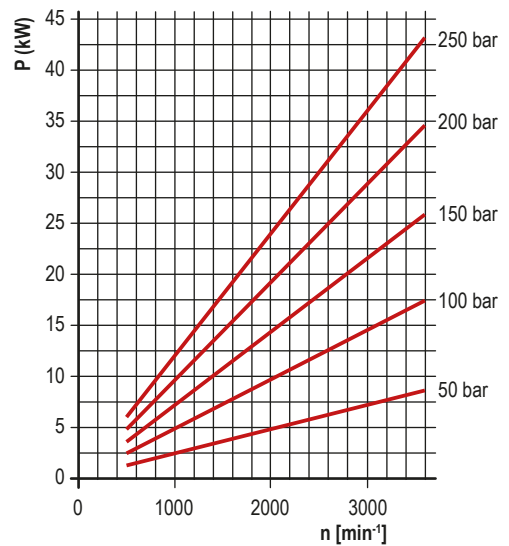
GP2.5K16



GP2.5K19

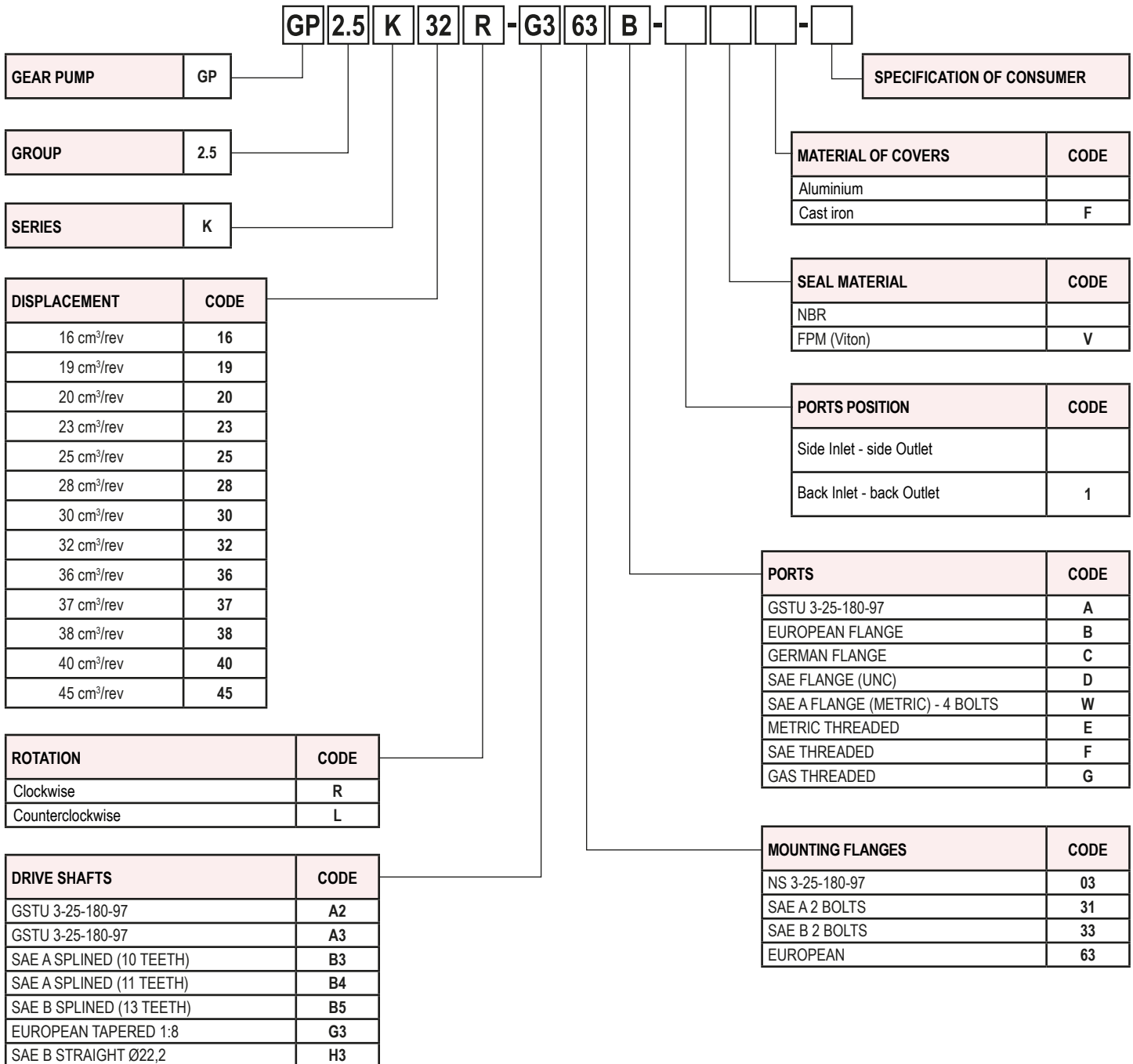


GP2.5K20



GP2.5K23



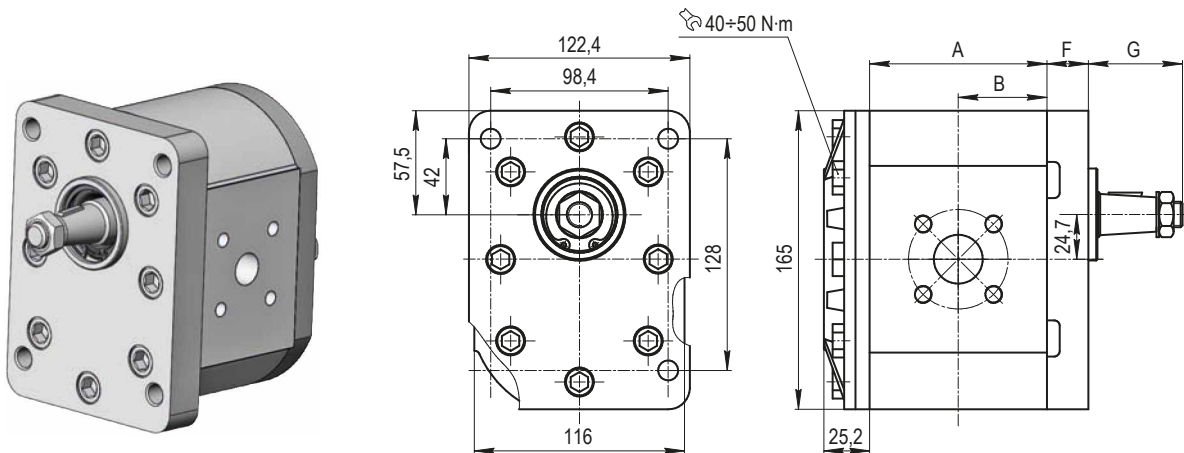


Specification of consumer assigned if necessary after clarify special conditions with the customer

# GEAR PUMPS GROUP 3

## TECHNICAL DATA AND ASSEMBLING DIMENSIONS

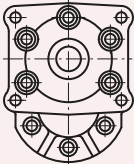
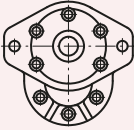
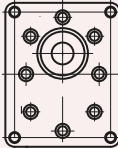
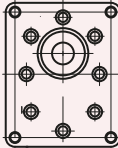
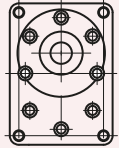
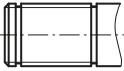
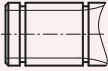



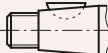
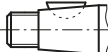


Type		GP3K20	GP3K23	GP3K25	GP3K28	GP3K32	GP3K36	GP3K40	GP3K45	GP3K50	GP3K56	GP3K63	GP3K71	GP3K80	GP3K90	
Displacement	cm <sup>3</sup> /rev	20	23	25	28	32	36	40	45	50	56	63	71	80	90	
Dimension A	mm	81,5	83,5	84,8	86,8	89,4	92,0	94,7	98,0	102,0	105,0	109,4	114,6	120,4	127,0	
Dimension B	mm	40,75	41,75	42,4	43,4	44,7	46,0	47,35	49,0	51,0	52,5	54,7	57,3	60,2	63,5	
Max. continuous pressure, P <sub>1</sub>	bar	250		250		240			230	210	200	190	170	160	150	
Max. intermittent pressure, P <sub>2</sub>	bar	270		270		260			250	230	220	210	190	180	170	
Peak pressure, P <sub>3</sub>	bar	300		290		280			270	250	230	220	200	190	180	
Max. speed, n <sub>max</sub>	min <sup>-1</sup>	3000									2500			2200		
Min. speed at P <sub>1</sub> ≤ 100 bar, n <sub>min</sub>	min <sup>-1</sup>	700									600					
Weight	kg	7,0	7,1	7,2	7,3	7,4	7,6	7,7	7,9	8,1	8,3	8,5	8,8	9,2	9,6	



Ordering example  
GP3K50R-G463B

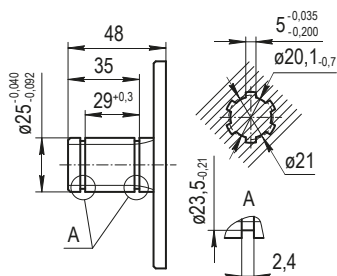
Dimension G = see section "Drive shafts"  
Dimension F = see section "Mounting flanges"

Weight shown are for pumps with aluminum covers. Weight for pumps with cast iron covers should be refined

<p><b>GP3K</b></p>	 GSTU 3-25-180-97	 SAE B 2 BOLTS	 EUROPEAN Ø50,8	 EUROPEAN Ø60,3	 GERMAN Ø105
 GSTU 3-25-180-97	A2 04				
 ГОСТ/NS6033-51	D4 04				
 SAE B SPLINED (13 TEETH)		B5 33			
 SAE BB SPLINED (15 TEETH)		B6 33			
 GERMAN TAPERED 1:5					F4 88
 EUROPEAN TAPERED 1:8			G4 63	G4 64	
 EUROPEAN TAPERED 1:8			G5 63	G5 64	
 SAE B STRAIGHT Ø22,2		H3 33			
 SAE BB STRAIGHT Ø25,4		H4 33			

Present combination types of mounting flanges and shafts are used to serial production. The other combination and date of production, before ordering clarify with the manufacturer.

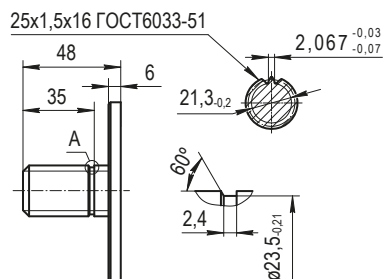
Max. torque 400 N·m



**A2**

GSTU 3-25-180-97

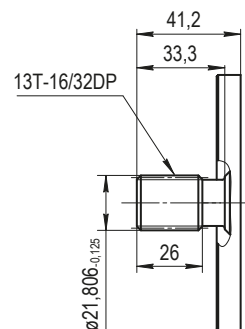
Max. torque 400 N·m



**D4**

GOCT/NS 6033-51

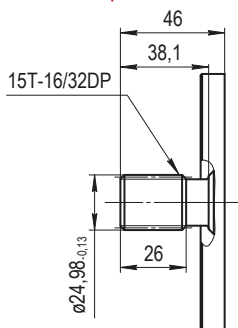
Max. torque 300 N·m



**B5**

SAE B SPLINED (13 TEETH)

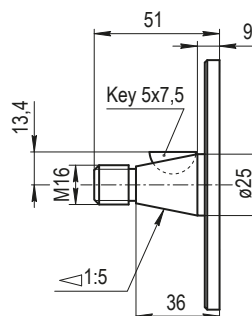
Max. torque 450 N·m



**B6**

SAE BB SPLINED (15 TEETH)

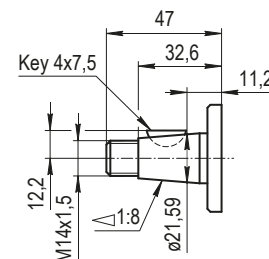
Max. torque 240 N·m



**F4**

GERMAN TAPERED 1:5

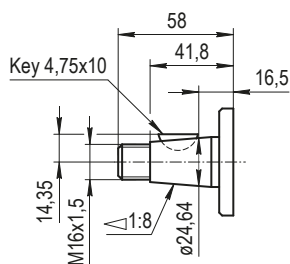
Max. torque 240 N·m



**G4**

EUROPEAN TAPERED 1:8

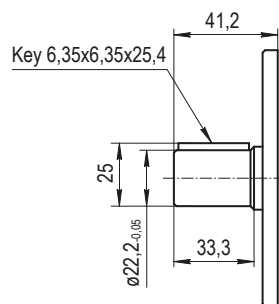
Max. torque 350 N·m



**G5**

EUROPEAN TAPERED 1:8

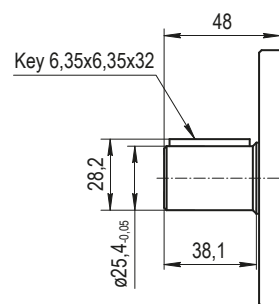
Max. torque 185 N·m



**H3**

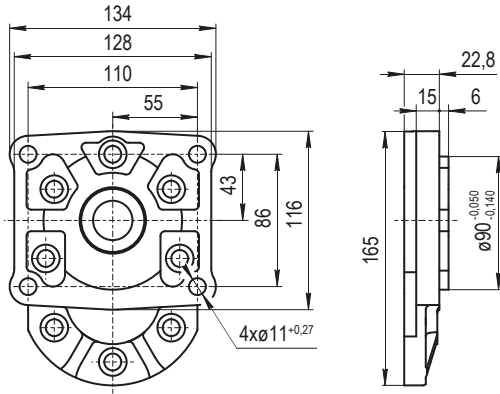
SAE B STRAIGHT  $\varnothing 22,2$

Max. torque 280 N·m



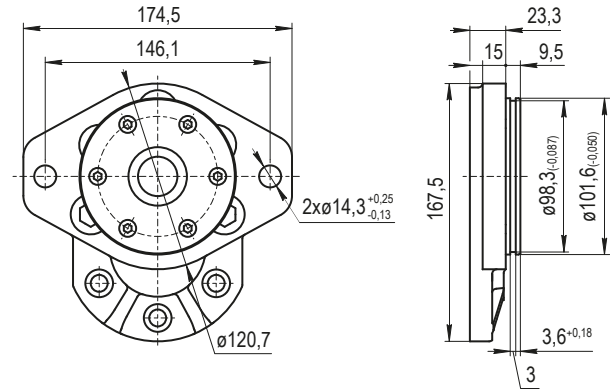
**H4**

SAE BB STRAIGHT  $\varnothing 25,4$



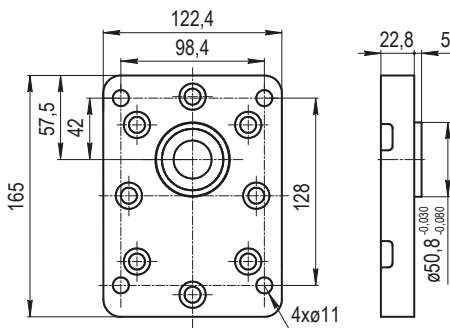
04

GSTU 3-25-180-97



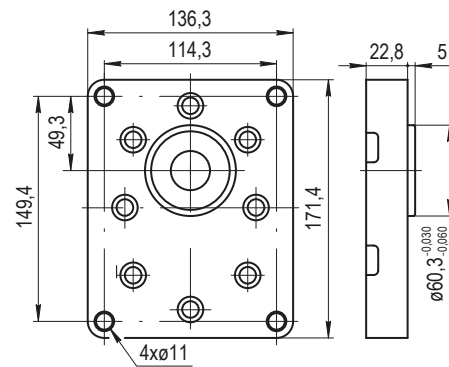
33

SAE B 2 BOLTS



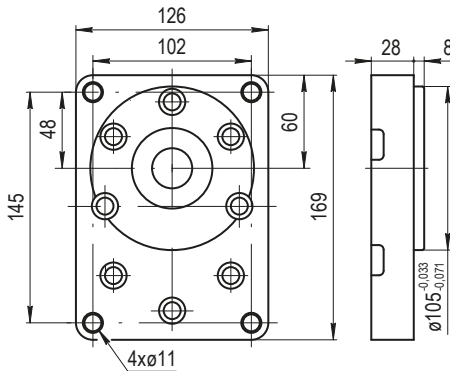
63

EUROPEAN Ø50,8



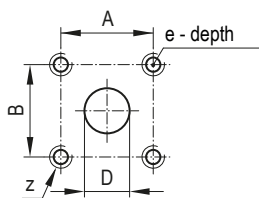
64

EUROPEAN Ø60,3



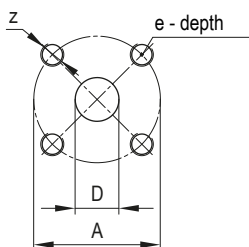
88

GERMAN Ø105



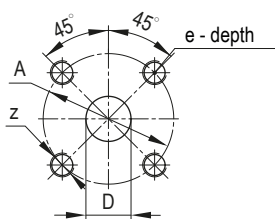
**A** GSTU 3-25-180-97

Type	Inlet					Outlet				
	A	B	D	z	e	A	B	D	z	e
GP3K20÷23	46		16	M8	16	46		16	M8	16
GP3K25÷28			19					19		
GP3K32÷36			23,5					23,5		
GP3K40÷56	54		28	M10		54	28	M10		
GP3K63÷90	42,88	77,77	32	M12		42,88	77,77	32	M12	



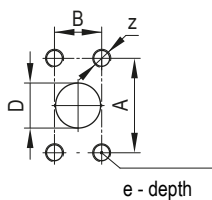
**B** EUROPEAN FLANGE

Type	Inlet				Outlet			
	D	A	z	e	D	A	z	e
GP3K20÷56	27	51	M10	18	19	40	M8	18
GP3K63÷90	32	62	M12		27	51	M10	



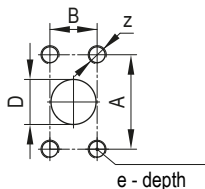
**C** GERMAN FLANGE

Type	Inlet				Outlet			
	D	A	z	e	D	A	z	e
GP3K20÷56	27	55	M8	16	19	55	M8	16



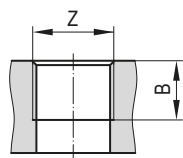
**D** SAE FLANGE (UNC)

Type	Inlet					Outlet				
	D	A	B	z	e	D	A	B	z	e
GP3K20÷32	25	52,4	26,2	3/8-16 UNC	16	19	47,6	22,2	3/8-16 UNC	16
GP3K36÷56	32	58,7	30,2	7/16-14 UNC		25	52,4	26,2		
GP3K63÷80	40	69,8	37,5	1/2-13 UNC		32	58,7	30,2	7/16-14 UNC	
GP3K90	45	77,8	42,9			40	69,8	37,5	1/2-13 UNC	



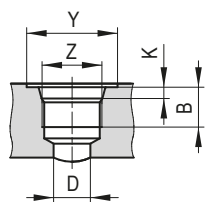
**W** SAE FLANGE (METRIC)

Type	Inlet					Outlet				
	D	A	B	z	e	D	A	B	z	e
GP3K20÷32	25	52,4	26,2	M10	16	19	47,6	22,2	M10	16
GP3K36÷56	32	58,7	30,2			25	52,4	26,2		
GP3K63÷80	40	69,8	37,5	M12		32	58,7	30,2		
GP3K90	45	77,8	42,9			40	69,8	37,5	M12	



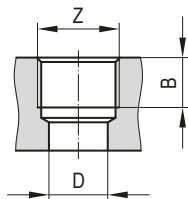
**E** METRIC THREADED

Type	Inlet		Outlet	
	Z	B	Z	B
GP3K20÷25	M26x1,5	24	M26x1,5	24
GP3K28÷50	M33x2		M33x2	
GP3K56÷90	M42x2		M42x2	



**F** SAE THREADED

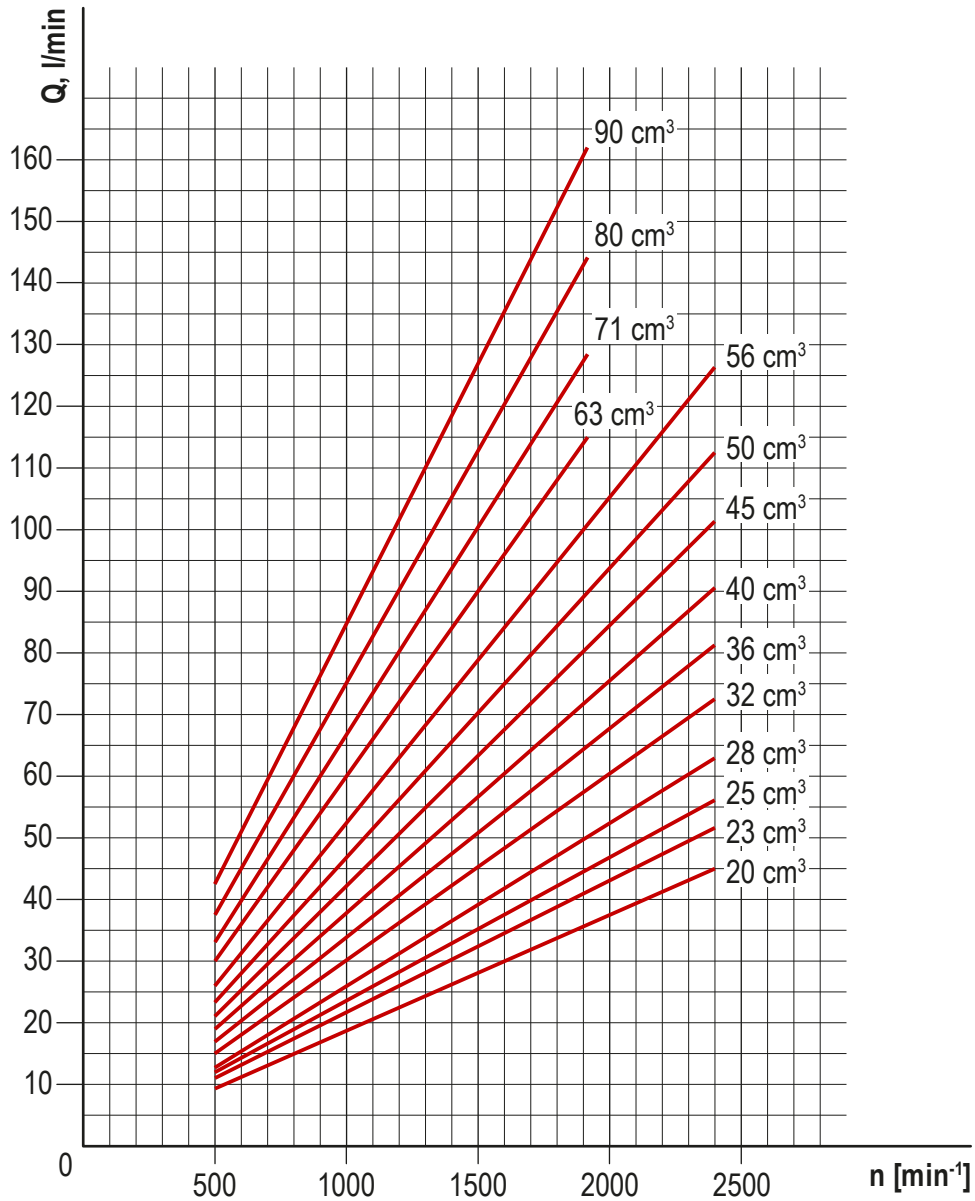
Type	Inlet					Outlet				
	Z	B	D	Y	K	Z	B	D	Y	K
GP3K20÷25	1 1/16-12 UN	19	20	41	3,3	1 1/16-12 UN	19	20	41	3,3
GP3K28÷36	1 5/16-12 UN	20	23	49						
GP3K40÷63	1 5/8-12 UN		30	58						
GP3K71÷90	1 7/8-12 UN	37	65							



**G** GAS THREADED

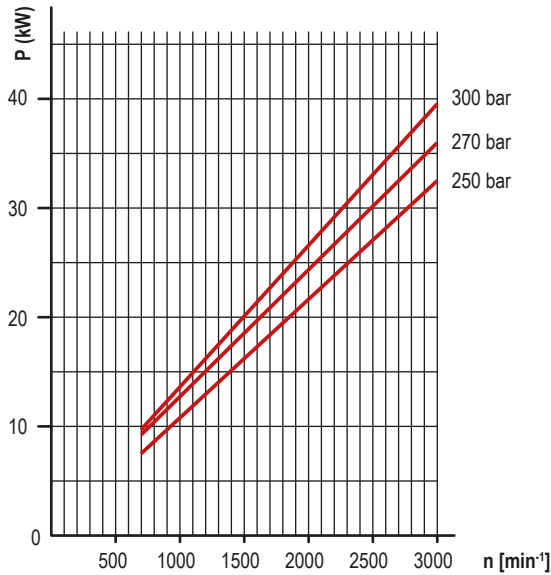
Type	Inlet			Outlet		
	Z	B	D	Z	B	D
GP3K20÷25	3/4" GAS	19	20	3/4" GAS	19	20
GP3K28÷50	1" GAS	21	27			
GP3K56÷71	1 1/4" GAS	21	33	1 1/4" GAS	21	33
GP3K80÷90	1 1/2" GAS	25	38			

Performance curves carried out with oil viscosity at 16 mm<sup>2</sup>/sec, oil temperature at 60°C and max. continuous pressures for each type.

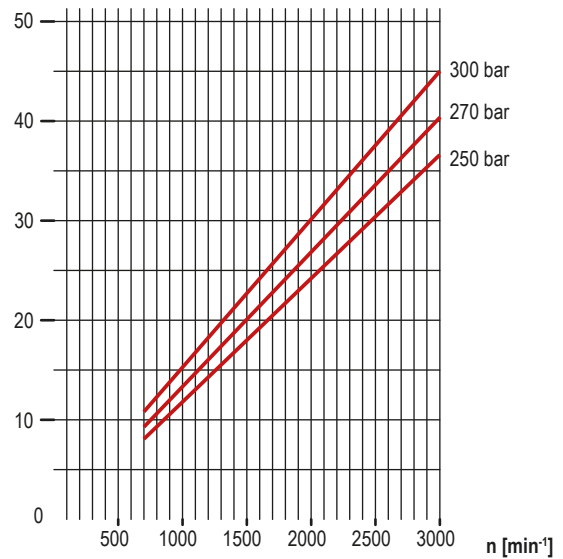




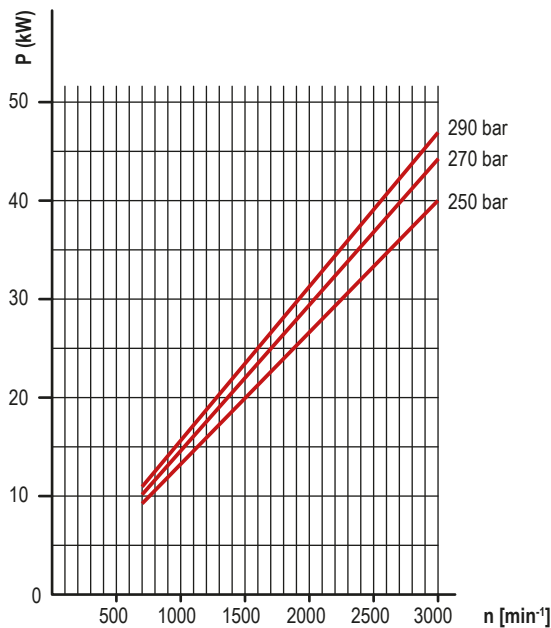
Performance curves carried out with oil viscosity at 16 mm<sup>2</sup>/sec and oil temperature at 60°C.



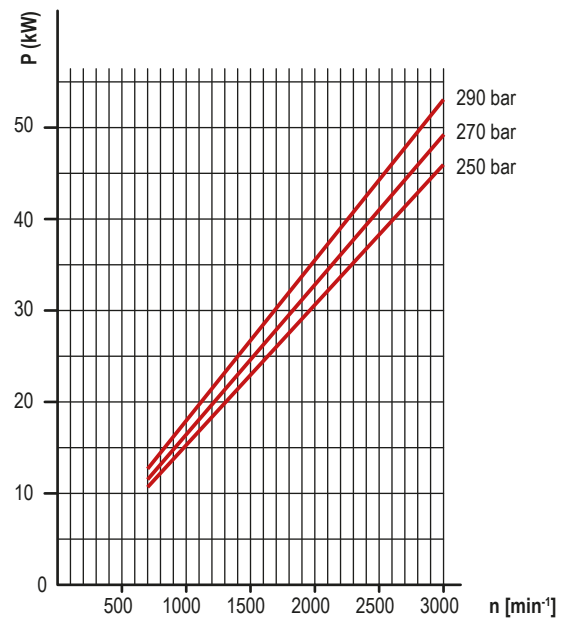
GP3K20



GP3K23

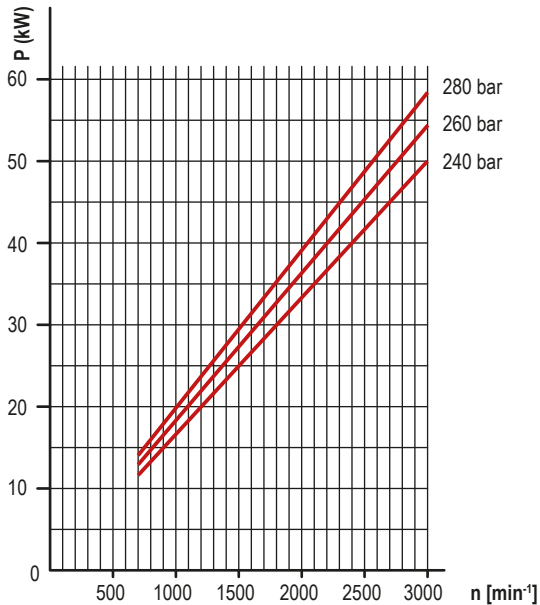


GP3K25

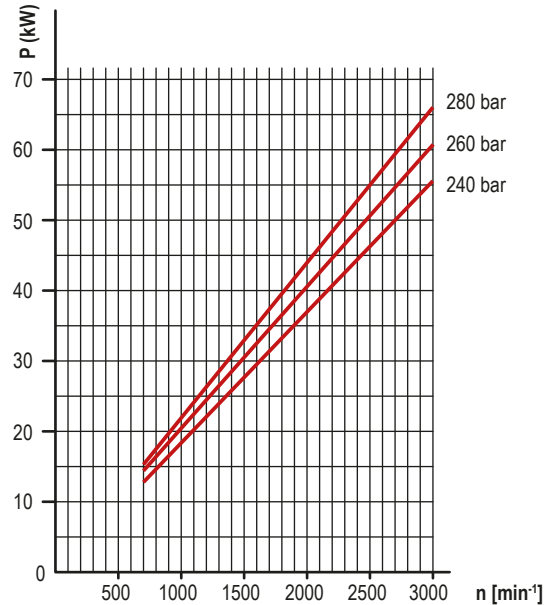


GP3K28

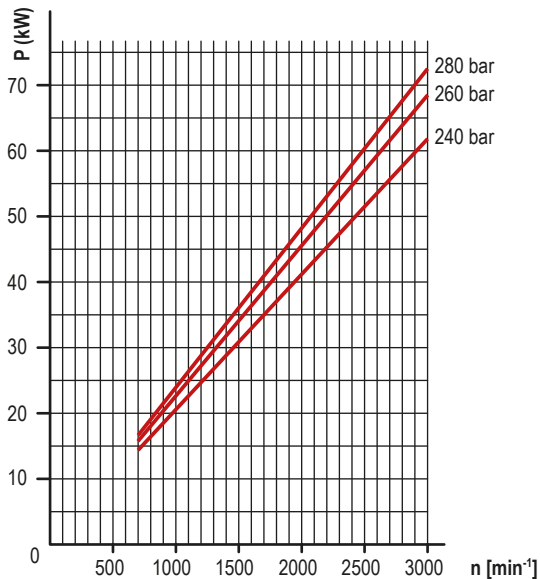
Performance curves carried out with oil viscosity at 16 mm<sup>2</sup>/sec and oil temperature at 60°C.



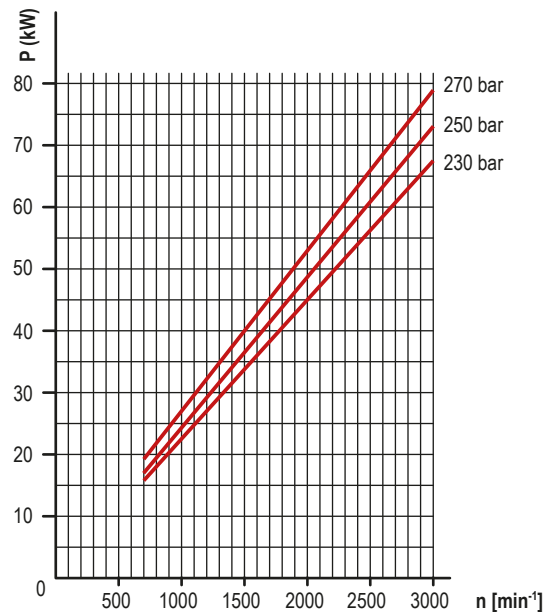
GP3K32



GP3K36

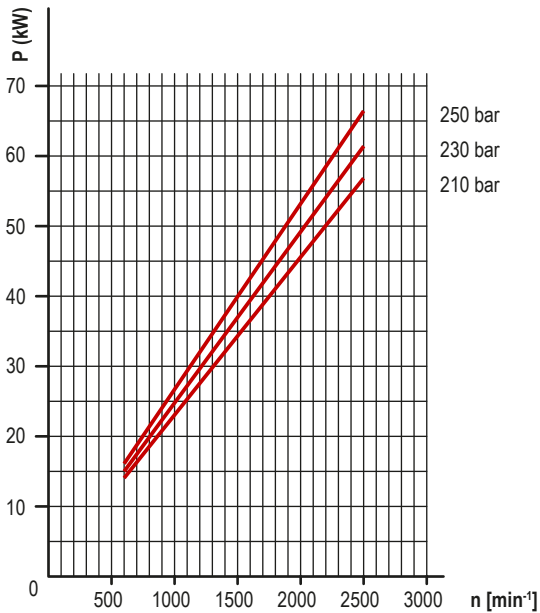


GP3K40

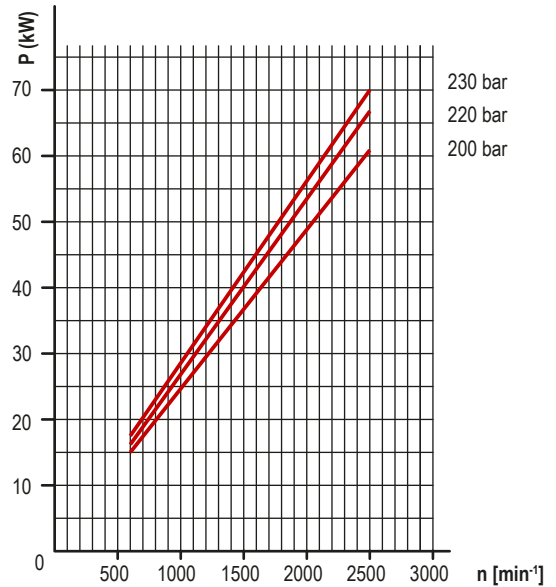


GP3K45

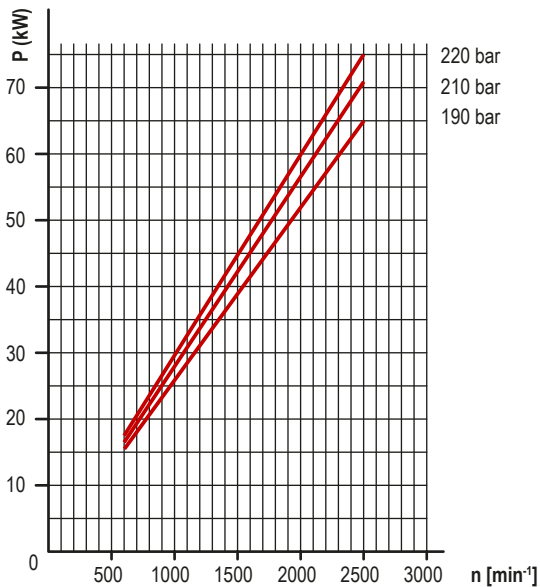
Performance curves carried out with oil viscosity at 16 mm<sup>2</sup>/sec and oil temperature at 60°C.



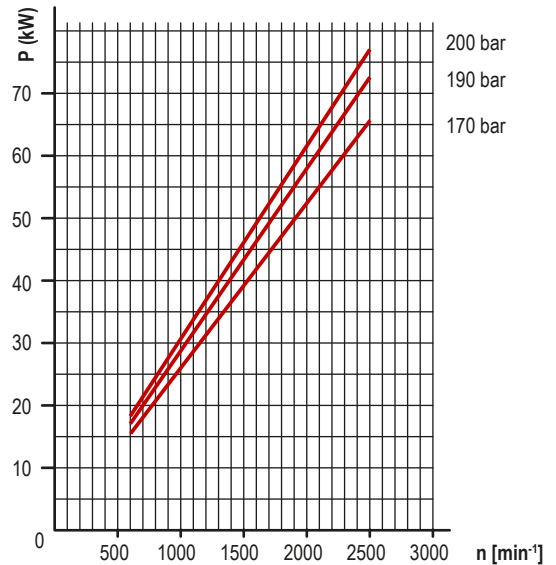
GP3K50



GP3K56

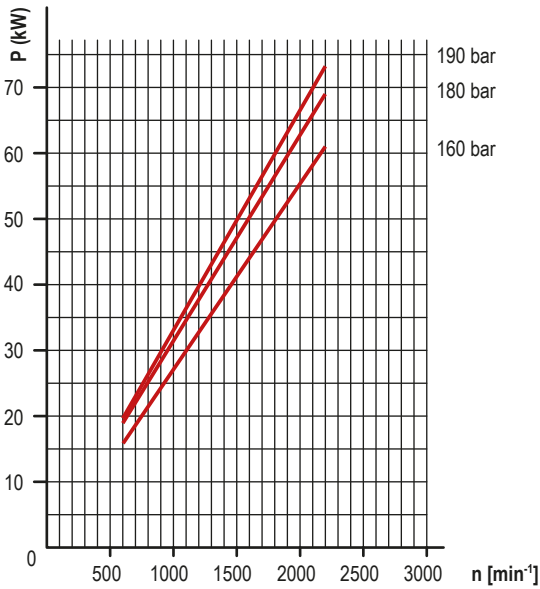


GP3K71

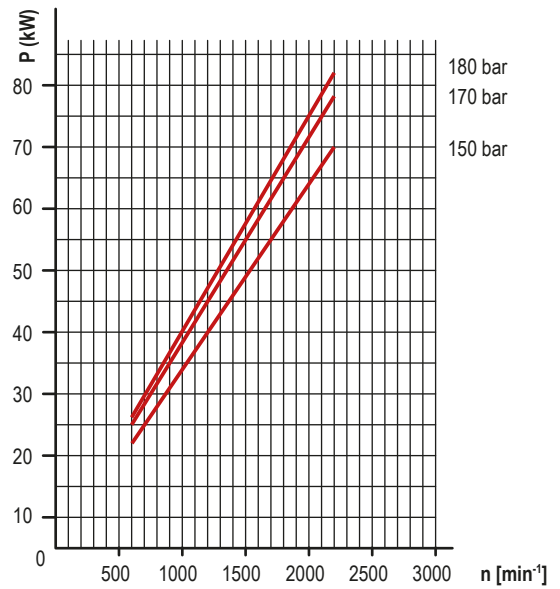


GP3K63

Performance curves carried out with oil viscosity at 16 mm<sup>2</sup>/sec and oil temperature at 60°C.



GP3K80



GP3K90

**GP 3 K 32 R - G4 63 B - - -**

GEAR PUMP	GP
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GROUP	3
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SERIES	K
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DISPLACEMENT	CODE
20 cm <sup>3</sup> /rev	20
23 cm <sup>3</sup> /rev	23
25 cm <sup>3</sup> /rev	25
28 cm <sup>3</sup> /rev	28
32 cm <sup>3</sup> /rev	32
36 cm <sup>3</sup> /rev	36
40 cm <sup>3</sup> /rev	40
45 cm <sup>3</sup> /rev	45
50 cm <sup>3</sup> /rev	50
56 cm <sup>3</sup> /rev	56
63 cm <sup>3</sup> /rev	63
71 cm <sup>3</sup> /rev	71
80 cm <sup>3</sup> /rev	80
90 cm <sup>3</sup> /rev	90

ROTATION	CODE
Clockwise	R
Counterclockwise	L

DRIVE SHAFTS	CODE
GSTU 3-25-180-97	A2
GOCT/NS6033-51	D4
SAE B SPLINED (13 TEETH)	B5
SAE BB SPLINED (15 TEETH)	B6
GERMAN TAPERED 1:5	F4
EUROPEAN TAPERED 1:8 (M14)	G4
EUROPEAN TAPERED 1:8 (M16)	G5
SAE B STRAIGHT Ø22,2	H3
SAE BB STRAIGHT Ø25,4	H4

SPECIFICATION OF CONSUMER
---------------------------

MATERIAL OF COVERS	CODE
Aluminium	
Cast iron	F

SEAL MATERIAL	CODE
NBR	
FPM (Viton)	V

PORTS	CODE
GSTU 3-25-180-97	A
EUROPEAN FLANGE	B
GERMAN FLANGE	C
SAE FLANGE (UNC)	D
SAE FLANGE (METRIC)	W
METRIC THREADED	E
SAE THREADED	F
GAS THREADED	G

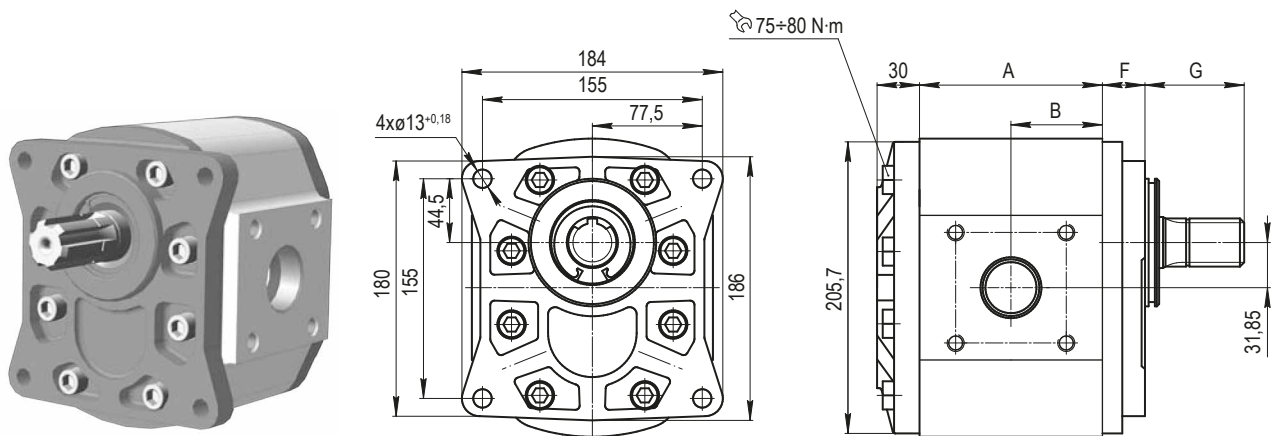
MOUNTING FLANGES	CODE
GSTU 3-25-180-97	04
SAE B 2 BOLTS	33
EUROPEAN Ø50,8	63
EUROPEAN Ø60,3	64
GERMAN Ø105	88

Specification of consumer assigned if necessary after clarify special conditions with the customer

# GEAR PUMPS GROUP 4

## TECHNICAL DATA AND ASSEMBLING DIMENSIONS

Type		GP4K63	GP4K71	GP4K80	GP4K90	GP4K100	GP4K112	GP4K125	GP4K140	GP4K150	GP4K160	GP4K170	GP4K180	GP4K190	GP4K200	
Displacement	cm <sup>3</sup> /rev	63	71	80	90	100	112	125	140	150	160	170	180	190	200	
Dimension A	mm	87,3	90,2	93,3	96,8	120	124,5	129	134,5	158	161,5	165,5	169	172,5	176	
Dimension B	mm	43,65	45,1	46,65	48,4	60	62,26	64,5	67,25	79	80,75	82,75	84,5	86,25	88	
Max. continuous pressure, P <sub>1</sub>	bar	220					200					160		140		
Max. intermittent pressure, P <sub>2</sub>	bar	240					220					180		160		
Peak pressure, P <sub>3</sub>	bar	260					230					200		180		
Max. speed, n <sub>max</sub>	min <sup>-1</sup>	3000					2400									
	min <sup>-1</sup>	2400					1920									
Min. speed at P <sub>i</sub> ≤ 100 bar, n <sub>min</sub>	min <sup>-1</sup>	500														
Weight	kg	7,0	7,1	7,2	7,3	7,4	7,6	7,7	7,9	8,1	8,3	8,5	8,8	9,2	9,6	



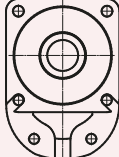
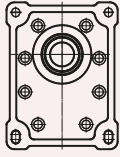
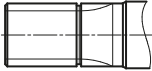
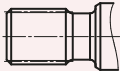
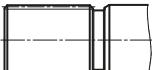
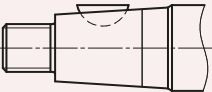
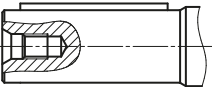
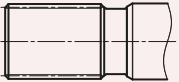


Ordering example  
GP4K100R-A405A

Dimension G = see section "Drive shafts"

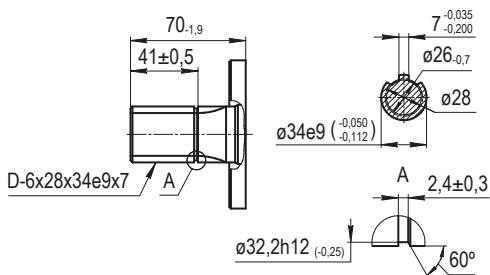
Dimension F = see section "Mounting flanges"

Weight shown are for pumps with aluminum covers. Weight for pumps with cast iron covers should be refined

<p><b>GP4K</b></p>	 <p>GSTU 3-25-180-97</p>	 <p>SAE B 2 BOLTS</p>	 <p>SAE C 4 BOLTS</p>	 <p>GERMAN</p>
 <p>GSTU 3-25-180-97</p>	<p>A4 05</p>			
 <p>SAE C SPLINED</p>		<p>B7 35</p>	<p>B7 36</p>	
 <p>SAE C-C SPLINED</p>		<p>B8 35</p>	<p>B8 36</p>	
 <p>EUROPEAN TAPERED 1:8</p>				<p>G7 86</p>
 <p>SAE C STREIGHT</p>		<p>H5 35</p>	<p>H5 36</p>	
 <p>DIN 5482 SPLINED (18TEETH)</p>				<p>I4 86</p>

Present combination types of mounting flanges and shafts are used to serial production. The other combination and date of production, before ordering clarify with the manufacturer.

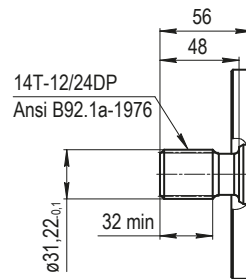
Max. torque 830 N·m



A4

GSTU 3-25-180-97

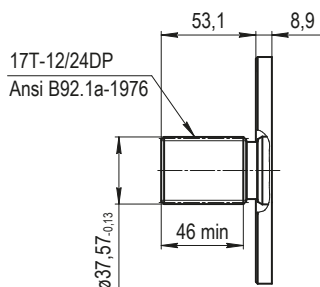
Max. torque 940 N·m



B7

SAE C SPLINED

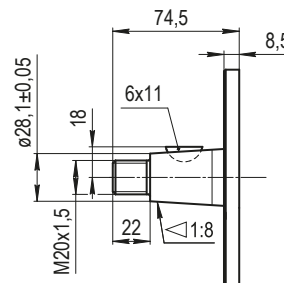
Max. torque 1270 N·m



B8

SAE C-C SPLINED

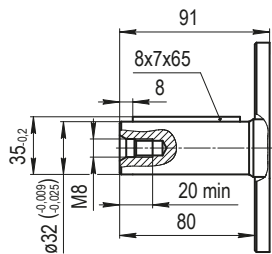
Max. torque 400 N·m



G7

EUROPEAN TAPERED 1:8

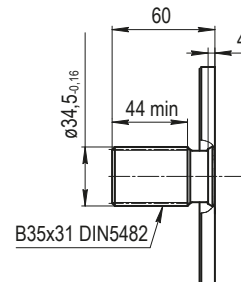
Max. torque 600 N·m



H5

SAE C STREIGHT

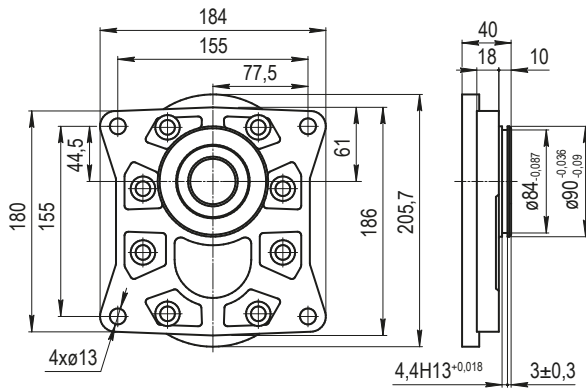
Max. torque 1100 N·m



I4

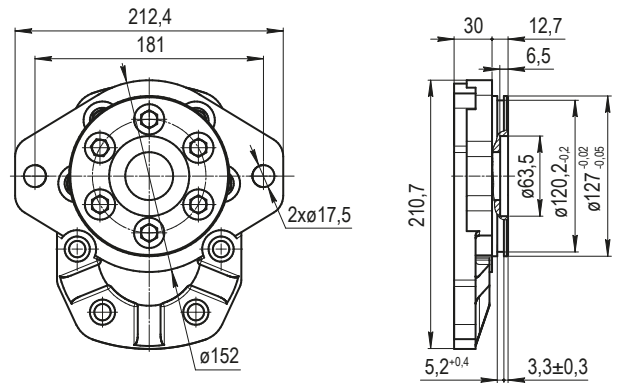
DIN 5482 SPLINED (18TEETH)





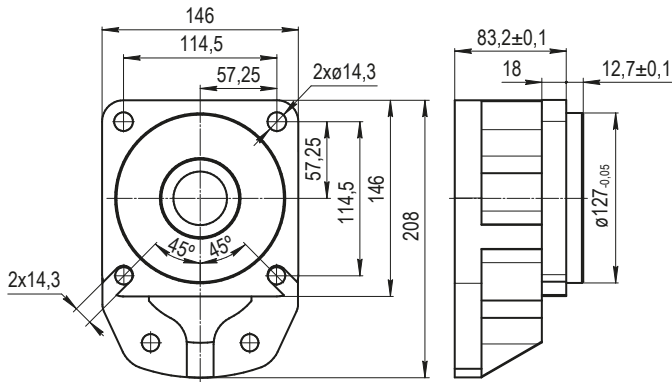
05

GSTU 3-25-180-97



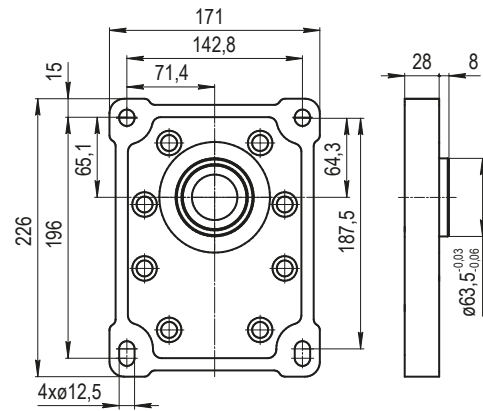
35

SAE B 2 BOLTS



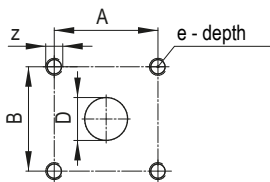
36

SAE B 4 BOLTS

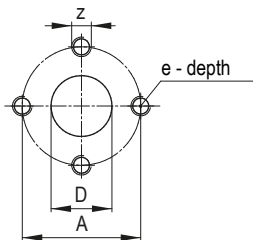


86

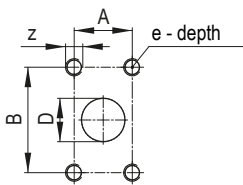
GERMAN Ø63,5



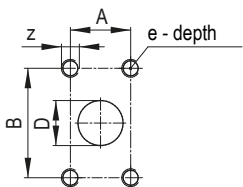
**A** GSTU 3-25-180-97



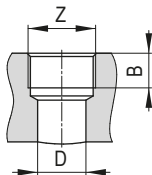
**B** EUROPEAN FLANGE



**D** SAE FLANGE (UNC)



**W** SAE FLANGE (METRIC)



**G** GAS THREADED

Type	Inlet					Outlet					
	A	B	D	z	e	A	B	D	z	e	
GP4K63÷90	42,88	77,77	32	M12	25	42,88	77,77	32	M12	25	
GP4K100÷140	78		46			78	46	M12			25
GP4K150÷200			60								

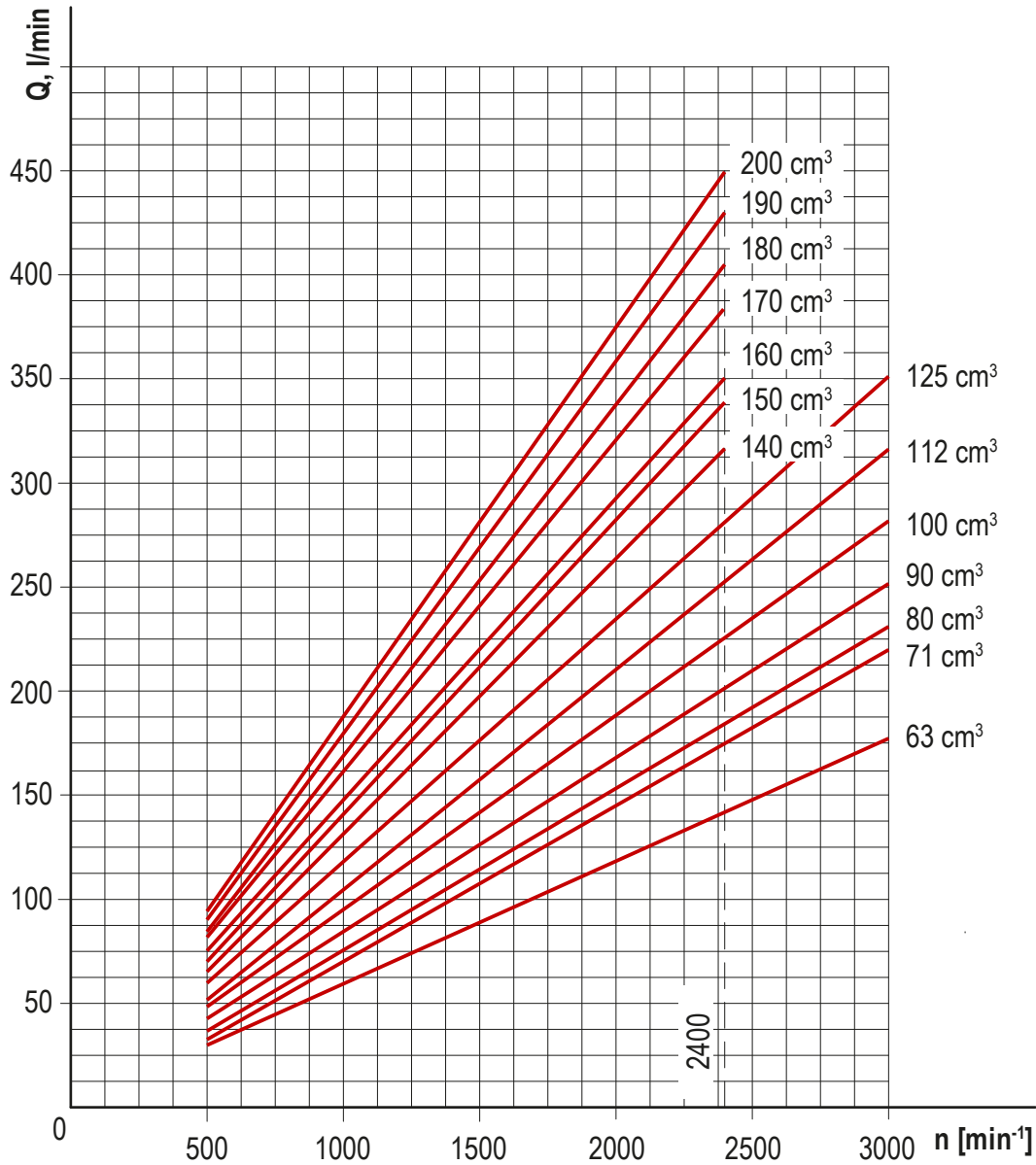
Type	Inlet				Outlet			
	D	A	z	e	D	A	z	e
GP4K63÷100	36	62	M10	21	30	56	M10	21
GP4K112÷170	46	72,5	M12	25	36	62		
GP4K180÷200	56	92			46	72,5	M12	25

Type	Inlet					Outlet				
	A	B	D	z	e	A	B	D	z	e
GP4K63÷90	35,71	69,85	38	1/2-13UNC	25	30,18	58,72	32	7/16-14UNC	21
GP4K100÷200	42,88	77,77	51			35,71	69,8	38	1/2-13UNC	25

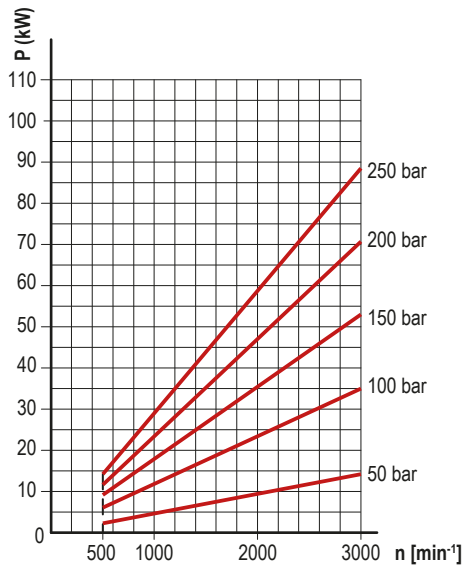
Type	Inlet					Outlet				
	A	B	D	z	e	A	B	D	z	e
GP4K63÷90	35,71	69,85	38	M12	25	30,18	58,72	32	M10	21
GP4K100÷200	42,88	77,77	51			35,71	69,85	38	M12	25

Type	Inlet			Outlet		
	Z	B	D	Z	B	D
GP4K63÷100	1 1/2" GAS	22,5	36	1 1/4" GAS	21,5	30
GP4K112÷170	1 3/4" GAS	25	-	1 1/2" GAS	22,5	36

Performance curves carried out with oil viscosity at 16 mm<sup>2</sup>/sec, oil temperature at 60°C and max. continuous pressures for each type.



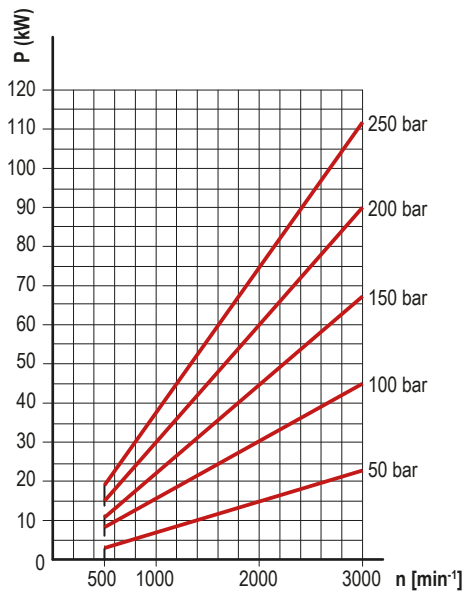
Performance curves carried out with oil viscosity at 16 mm<sup>2</sup>/sec and oil temperature at 60°C



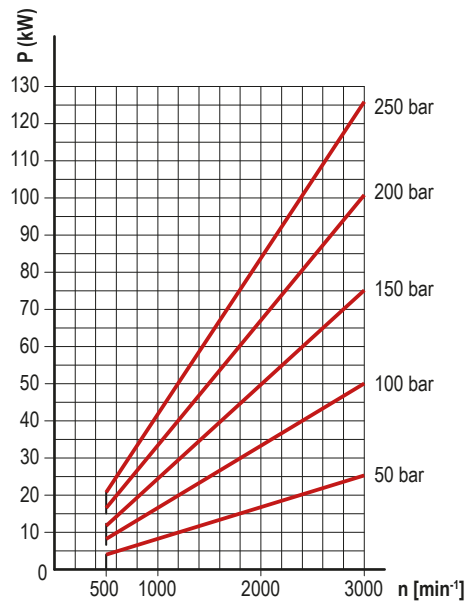
GP4K63



GP4K71

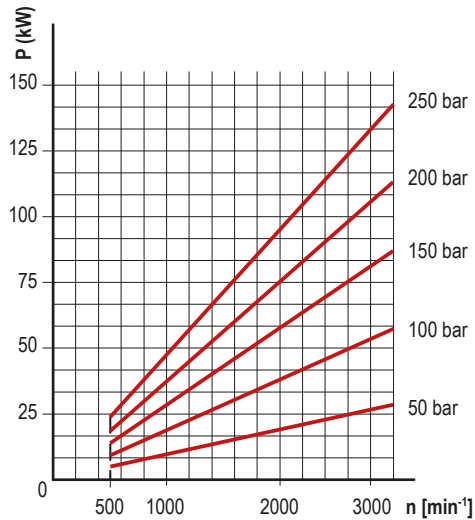


GP4K80

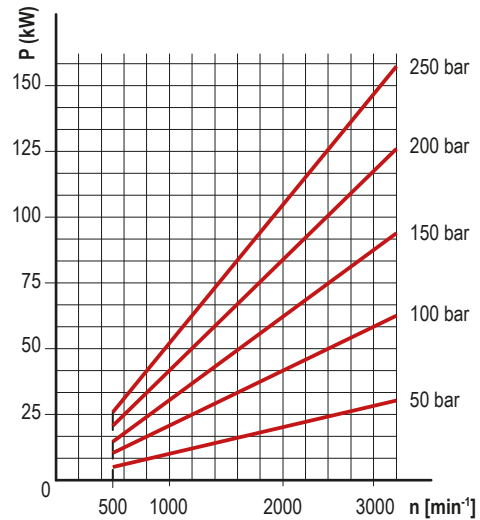


GP4K90

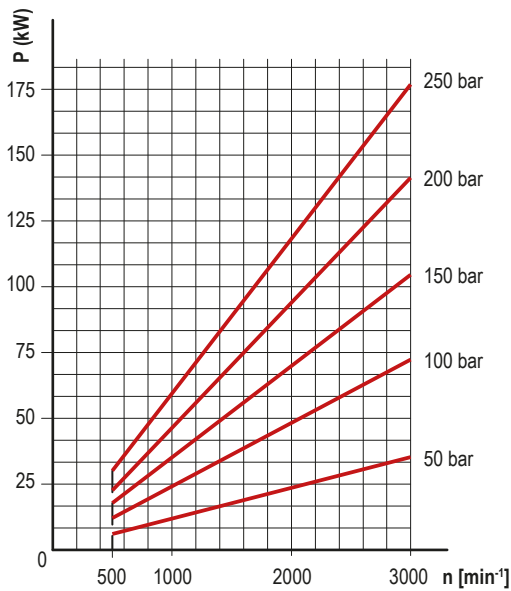
Performance curves carried out with oil viscosity at 16 mm<sup>2</sup>/sec and oil temperature at 60°C



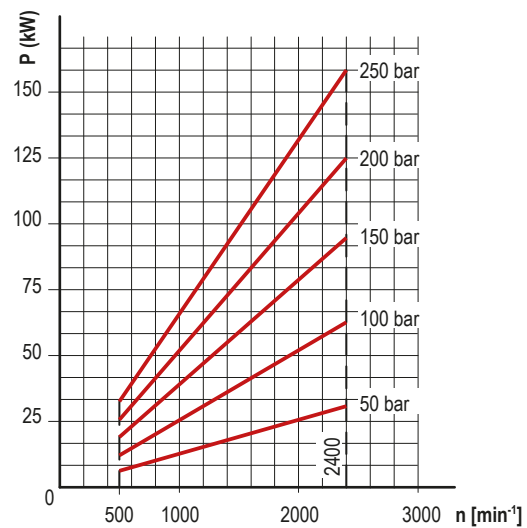
GP4K100



GP4K112

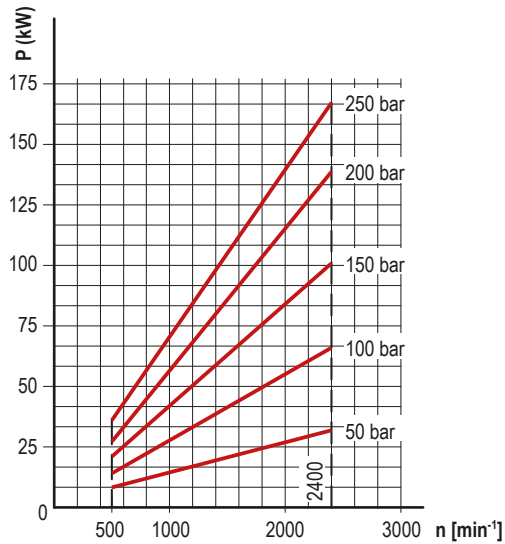


GP4K125

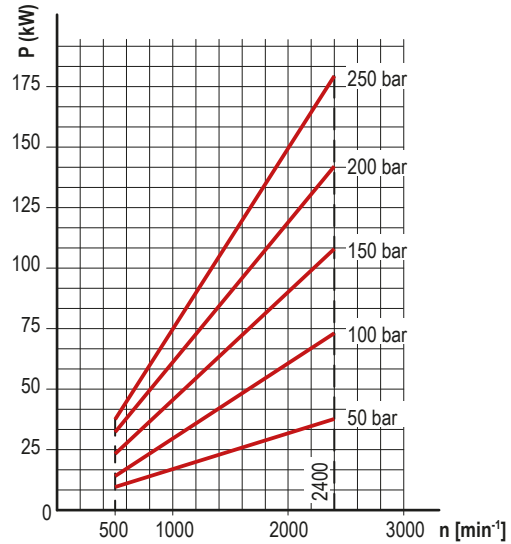


GP4K140

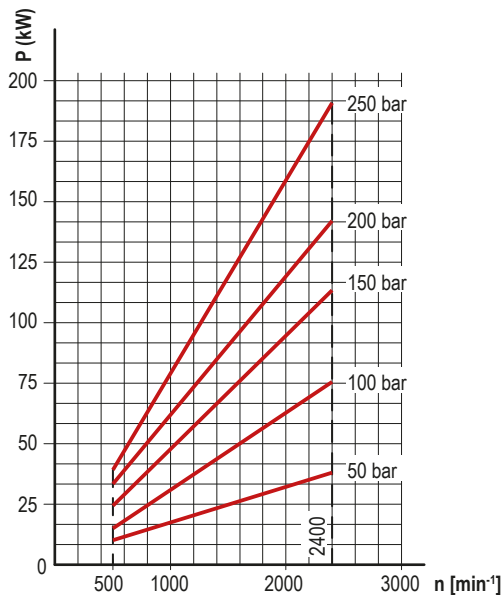
Performance curves carried out with oil viscosity at 16 mm<sup>2</sup>/sec and oil temperature at 60°C



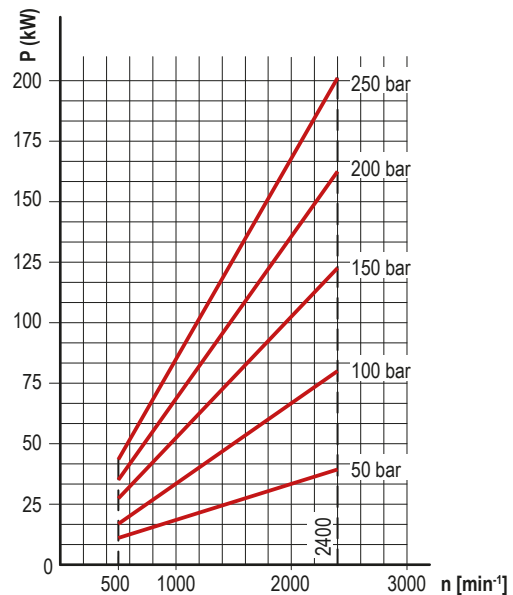
GP4K150



GP4K160

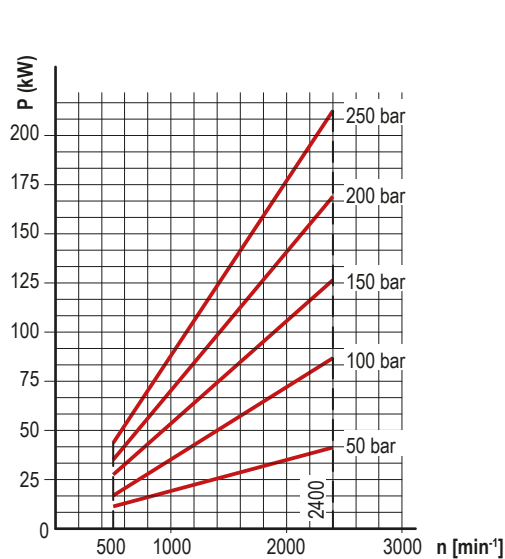


GP4K170

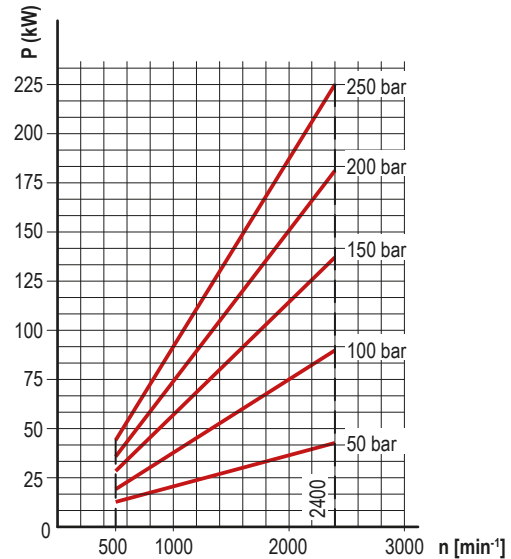


GP4K180

Performance curves carried out with oil viscosity at 16 mm<sup>2</sup>/sec and oil temperature at 60°C



GP4K190



GP4K200

**GP 4 K 63 R - G7 86 B -**

GEAR PUMP	GP
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GROUP	4
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SERIES	K
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DISPLACEMENT	CODE
63 cm <sup>3</sup> /rev	63
71 cm <sup>3</sup> /rev	71
80 cm <sup>3</sup> /rev	80
90 cm <sup>3</sup> /rev	90
100 cm <sup>3</sup> /rev	100
112 cm <sup>3</sup> /rev	112
125 cm <sup>3</sup> /rev	125
140 cm <sup>3</sup> /rev	140
150 cm <sup>3</sup> /rev	150
160 cm <sup>3</sup> /rev	160
170 cm <sup>3</sup> /rev	170
180 cm <sup>3</sup> /rev	180
190 cm <sup>3</sup> /rev	190
200 cm <sup>3</sup> /rev	200

ROTATION	CODE
Clockwise	R
Counterclockwise	L

DRIVE SHAFTS	CODE
NS 3-25-180-97	A4
SAE C SPLINED 14T	B7
SAE C-C SPLINED 17T	B8
EUROPEAN TAPERED 1:8	G7
SAE C STREIGHT Ø32	H5
DIN 5482 SPLINED 14T	I4

SPECIFICATION OF CONSUMER
---------------------------

MATERIAL OF COVERS	CODE
Aluminium	
Cast iron	F

SEAL MATERIAL	CODE
NBR	
FPM (Viton)	V

PORTS	CODE
NS 3-25-180-97	A
FLANGED PORTS EUROPEAN STANDARD	B
FLANGED PORTS SAE (METRIC)	W
FLANGED PORTS SAE (UNC)	D
GAS THREADED PORTS (BSPP)	G

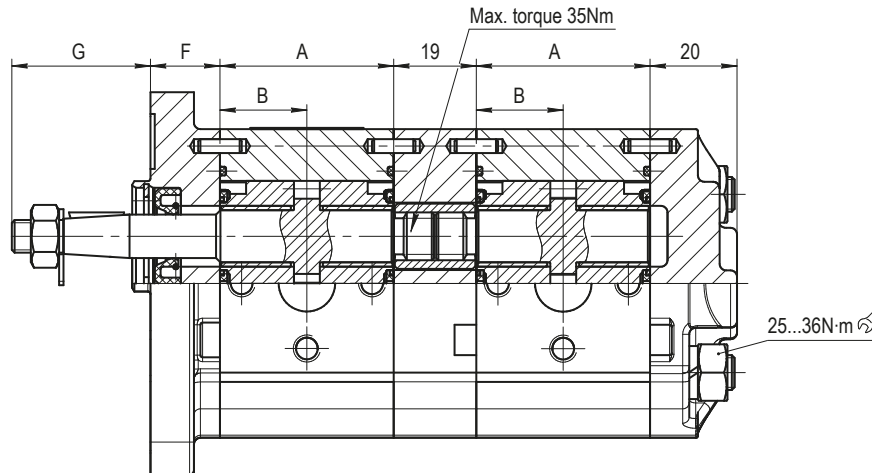
MOUNTING FLANGES	CODE
NS 3-25-180-97	05
SAE C 2 BOLTS	35
SAE C 4 BOLTS	36
GERMAN STANDARD	86

Specification of consumer assigned if necessary after clarify special conditions with the customer



# MULTIPLE PUMPS

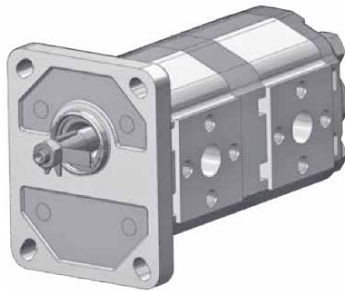
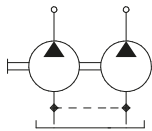
## MULTIPLE PUMPS GROUPS 1+1



### Ordering example

GP1K4.2/1K3.5R-G160BB

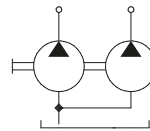
With inlet port on each body



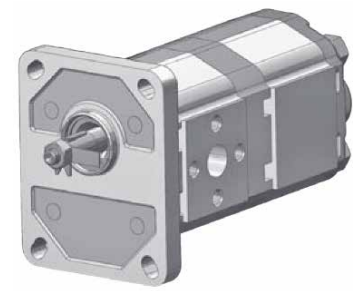
### Ordering example

GP1K4.2/1K3.5R-G160BB-TJ

With common inlet port



TJ



### STAGES 1 AND 2

Type		GP1K1	GP1K1.2	GP1K1.6	GP1K2.1	GP1K2.5	GP1K3.2	GP1K3.5	GP1K4.2	GP1K5	GP1K6.2	GP1K7	GP1K8	GP1K10
Dimension A	mm	37,70	38,40	39,90	41,80	43,30	45,90	47,00	49,60	52,60	57,20	60,20	63,60	71,00
Dimension B	mm	18,85	19,20	19,95	20,90	21,65	22,95	23,50	24,80	26,30	28,60	30,10	31,80	35,50

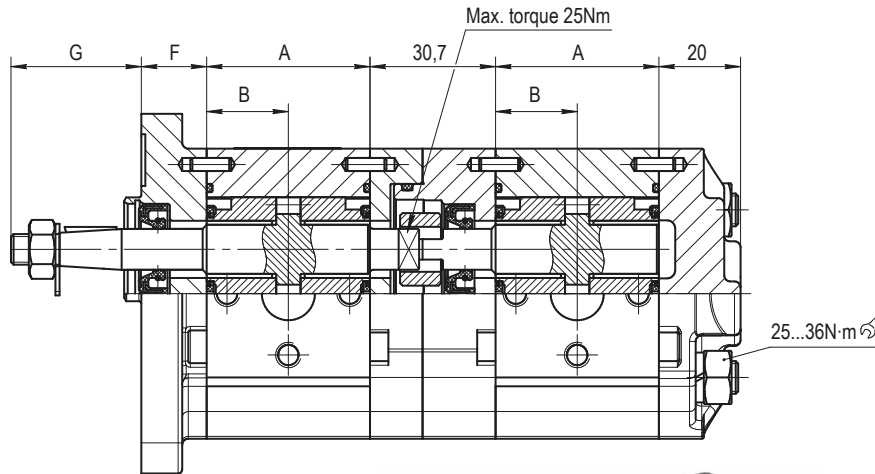
Others dimensions see: G = page 12, F = page 13

Overall and mounting dimensions are similar to single pumps.

A pump's torque is equal to the sum of all the pump sections' torques.

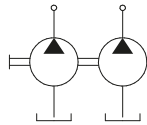
The total torque mustn't exceed the maximum permitted torque for a pump's driveshaft. For defining the maximum permitted torque of each section use the formula on page 6.

# MULTIPLE PUMPS GROUPS 1+1

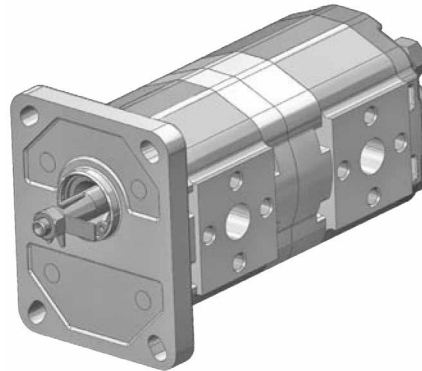


**Ordering example**  
GP1K4.2/1K3.5R-G160BB-TS

Separated stages



TS



## STAGES 1 AND 2

Type		GP1K1	GP1K1.2	GP1K1.6	GP1K2.1	GP1K2.5	GP1K3.2	GP1K3.5	GP1K4.2	GP1K5	GP1K6.2	GP1K7	GP1K8	GP1K10
Dimension A	mm	37,70	38,40	39,90	41,80	43,30	45,90	47,00	49,60	52,60	57,20	60,20	63,60	71,00
Dimension B	mm	18,85	19,20	19,95	20,90	21,65	22,95	23,50	24,80	26,30	28,60	30,10	31,80	35,50

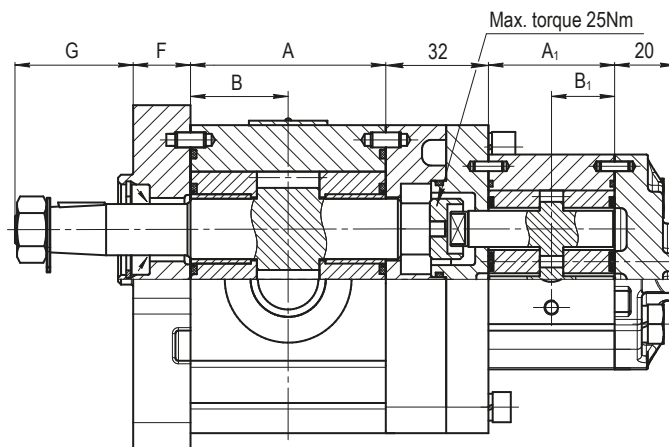
Others dimensions see: G = page 12, F = page 13

Overall and mounting dimensions are similar to single pumps.

A pump's torque is equal to the sum of all the pump sections' torques.

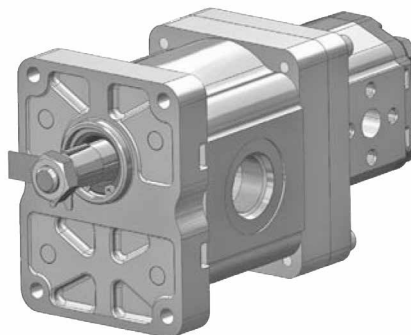
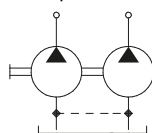
The total torque mustn't exceed the maximum permitted torque for a pump's driveshaft. For defining the maximum permitted torque of each section use the formula on page 6.

# MULTIPLE PUMPS GROUPS 2+1



**Ordering example**  
GP2K16/1K4.2L-G262FB

With inlet port on each body



		1 STAGE															
Type		GP2K4	GP2K5	GP2K6	GP2K8	GP2K10	GP2K11	GP2K12	GP2K14	GP2K15	GP2K16	GP2K17	GP2K19	GP2K20	GP2K23	GP2K25	GP2K28
Dimension A	mm	47,4	49,1	50,2	52,9	56,0	58,0	59,8	62,1	63,7	65,2	66,9	69,9	71,4	75,3	78,8	83,8
Dimension B	mm	23,7	24,55	25,1	26,45	28,0	29,0	29,9	31,05	31,85	32,6	33,45	34,95	35,7	37,65	39,4	41,9

		2 STAGE												
Type		GP1K1	GP1K1.2	GP1K1.6	GP1K2.1	GP1K2.5	GP1K3.2	GP1K3.5	GP1K4.2	GP1K5	GP1K6.2	GP1K7	GP1K8	GP1K10
Dimension A <sub>1</sub>	mm	37,70	38,40	39,90	41,80	43,30	45,90	47,00	49,60	52,60	57,20	60,20	63,60	71,00
Dimension B <sub>1</sub>	mm	18,85	19,20	19,95	20,90	21,65	22,95	23,50	24,80	26,30	28,60	30,10	31,80	35,50

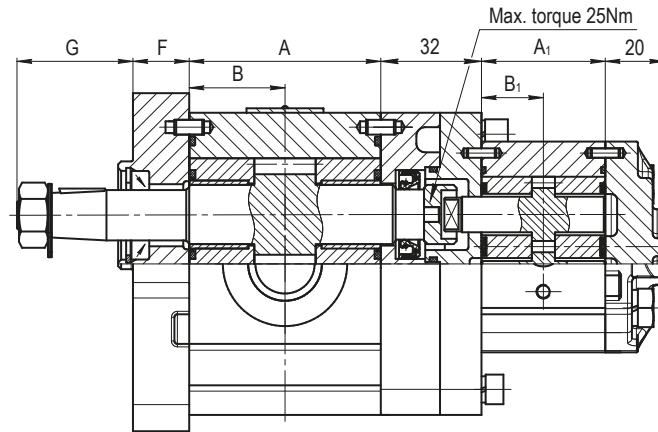
Others dimensions see: G = page 23-24, F = page 25-26

Overall and mounting dimensions are similar to single pumps.

A pump's torque is equal to the sum of all the pump sections' torques.

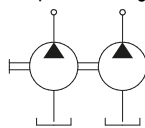
The total torque mustn't exceed the maximum permitted torque for a pump's driveshaft. For defining the maximum permitted torque of each section use the formula on page 6.

# MULTIPLE PUMPS GROUPS 2+1

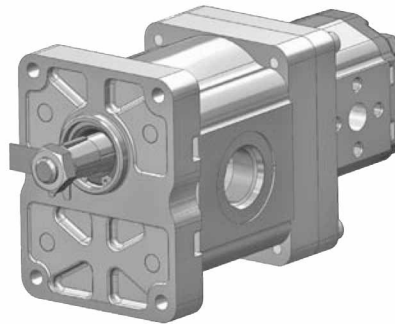


**Ordering example**  
GP2K16/1K4.2L-G262FB-TS

Separated stages



TS



		1 STAGE															
Type		GP2K4	GP2K5	GP2K6	GP2K8	GP2K10	GP2K11	GP2K12	GP2K14	GP2K15	GP2K16	GP2K17	GP2K19	GP2K20	GP2K23	GP2K25	GP2K28
Dimension A	mm	47,4	49,1	50,2	52,9	56,0	58,0	59,8	62,1	63,7	65,2	66,9	69,9	71,4	75,3	78,8	83,8
Dimension B	mm	23,7	24,55	25,1	26,45	28,0	29,0	29,9	31,05	31,85	32,6	33,45	34,95	35,7	37,65	39,4	41,9

		2 STAGE												
Type		GP1K1	GP1K1.2	GP1K1.6	GP1K2.1	GP1K2.5	GP1K3.2	GP1K3.5	GP1K4.2	GP1K5	GP1K6.2	GP1K7	GP1K8	GP1K10
Dimension A <sub>1</sub>	mm	37,70	38,40	39,90	41,80	43,30	45,90	47,00	49,60	52,60	57,20	60,20	63,60	71,00
Dimension B <sub>1</sub>	mm	18,85	19,20	19,95	20,90	21,65	22,95	23,50	24,80	26,30	28,60	30,10	31,80	35,50

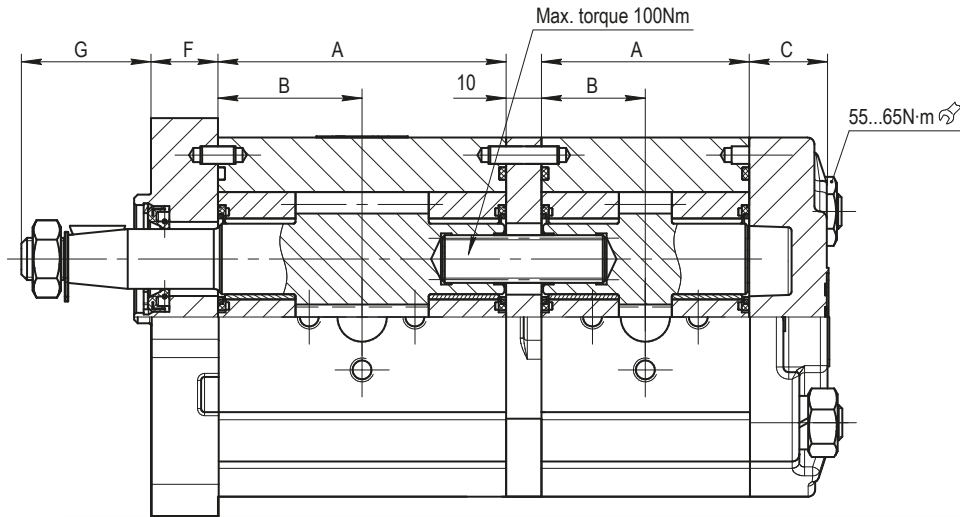
Others dimensions see: G = page 23-24, F = page 25-26

Overall and mounting dimensions are similar to single pumps.

A pump's torque is equal to the sum of all the pump sections' torques.

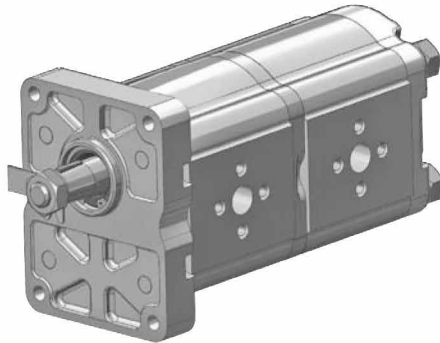
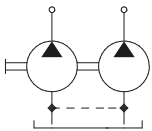
The total torque mustn't exceed the maximum permitted torque for a pump's driveshaft. For defining the maximum permitted torque of each section use the formula on page 6.

# MULTIPLE PUMPS GROUPS 2+2



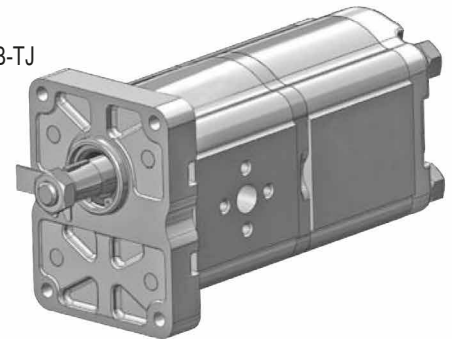
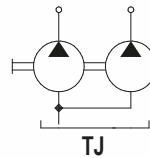
**Ordering example**  
GP2K11/2K11R-G262BB

With inlet port on each body



**Ordering example**  
GGP2K11/2K11R-G262BB-TJ

With common inlet port



## STAGES 1 AND 2

Type		GP2K4	GP2K5	GP2K6	GP2K8	GP2K10	GP2K11	GP2K12	GP2K14	GP2K15	GP2K16	GP2K17	GP2K19	GP2K20	GP2K23	GP2K25	GP2K28
Dimension A	mm	47,4	49,1	50,2	52,9	56,0	58,0	59,8	62,1	63,7	65,2	66,9	69,9	71,4	75,3	78,8	83,8
Dimension B	mm	23,7	24,55	25,1	26,45	28,0	29,0	29,9	31,05	31,85	32,6	33,45	34,95	35,7	37,65	39,4	41,9

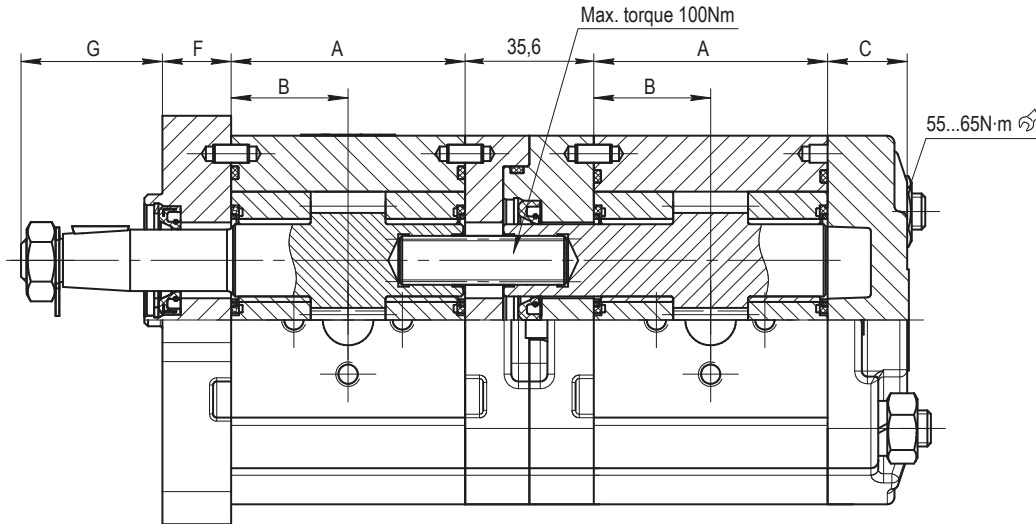
Overall and mounting dimensions are similar to single pumps.

Others dimensions see: G = page 23-24, F = page 25-26, C = page 29

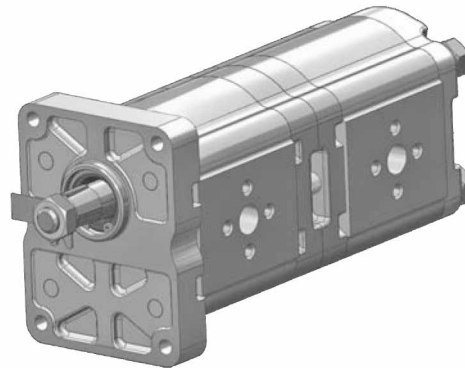
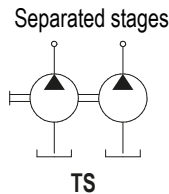
A pump's torque is equal to the sum of all the pump sections' torques.

The total torque mustn't exceed the maximum permitted torque for a pump's driveshaft. For defining the maximum permitted torque of each section use the formula on page 6.

# MULTIPLE PUMPS GROUPS 2+2



**Ordering example**  
GP2K11/2K11R-G262BB-TS



STAGES 1 AND 2

Type		GP2K4	GP2K5	GP2K6	GP2K8	GP2K10	GP2K11	GP2K12	GP2K14	GP2K15	GP2K16	GP2K17	GP2K19	GP2K20	GP2K23	GP2K25	GP2K28
Dimension A	mm	47,4	49,1	50,2	52,9	56,0	58,0	59,8	62,1	63,7	65,2	66,9	69,9	71,4	75,3	78,8	83,8
Dimension B	mm	23,7	24,55	25,1	26,45	28,0	29,0	29,9	31,05	31,85	32,6	33,45	34,95	35,7	37,65	39,4	41,9

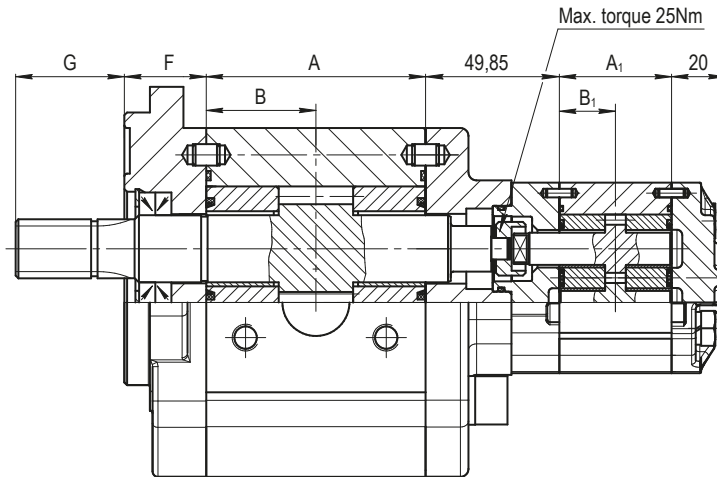
Others dimensions see: G = page 23-24, F = page 25-26, C = page 29

Overall and mounting dimensions are similar to single pumps.

A pump's torque is equal to the sum of all the pump sections' torques.

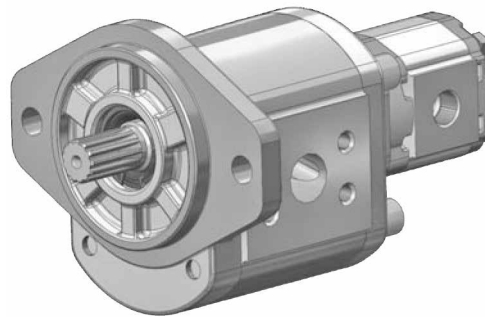
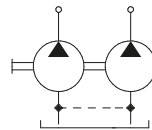
The total torque mustn't exceed the maximum permitted torque for a pump's driveshaft. For defining the maximum permitted torque of each section use the formula on page 6.

# MULTIPLE PUMPS GROUPS 2+2



**Ordering example**  
GP2.5K25/1K3.2R-B533CG

With inlet port on each body



1 STAGE														
Type		GP2.5K16	GP2.5K19	GP2.5K20	GP2.5K23	GP2.5K25	GP2.5K28	GP2.5K30	GP2.5K32	GP2.5K36	GP2.5K37	GP2.5K38	GP2.5K40	GP2.5K45
Dimension A	mm	71,80	75,00	76,20	79,50	81,70	85,00	87,30	89,50	94,00	95,00	96,00	98,00	103,50
Dimension B	mm	35,90	37,50	38,10	39,75	40,85	42,50	43,65	44,75	47,00	47,50	48,00	49,00	51,75

2 STAGE														
Type		GP1K1	GP1K1.2	GP1K1.6	GP1K2.1	GP1K2.5	GP1K3.2	GP1K3.5	GP1K4.2	GP1K5	GP1K6.2	GP1K7	GP1K8	GP1K10
Dimension A <sub>1</sub>	mm	37,70	38,40	39,90	41,80	43,30	45,90	47,00	49,60	52,60	57,20	60,20	63,60	71,00
Dimension B <sub>1</sub>	mm	18,85	19,20	19,95	20,90	21,65	22,95	23,50	24,80	26,30	28,60	30,10	31,80	35,50

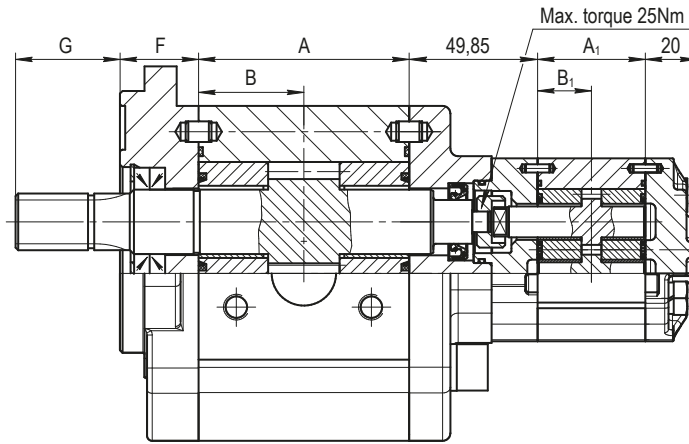
Others dimensions see: G = page 46, F = page 47

Overall and mounting dimensions are similar to single pumps.

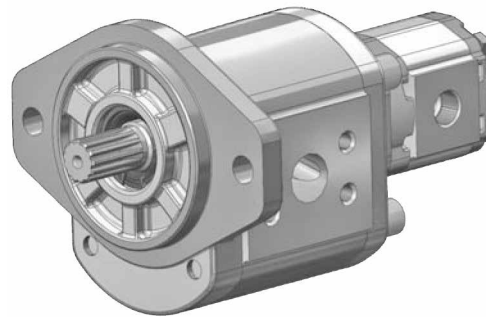
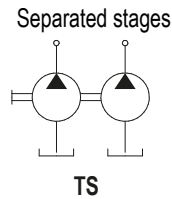
A pump's torque is equal to the sum of all the pump sections' torques.

The total torque mustn't exceed the maximum permitted torque for a pump's driveshaft. For defining the maximum permitted torque of each section use the formula on page 6.

# MULTIPLE PUMPS GROUPS 2.5+1



**Ordering example**  
GP2.5K25/1K3.2R-B533CG-TS



1 STAGE														
Type		GP2.5K16	GP2.5K19	GP2.5K20	GP2.5K23	GP2.5K25	GP2.5K28	GP2.5K30	GP2.5K32	GP2.5K36	GP2.5K37	GP2.5K38	GP2.5K40	GP2.5K45
Dimension A	mm	71,80	75,00	76,20	79,50	81,70	85,00	87,30	89,50	94,00	95,00	96,00	98,00	103,50
Dimension B	mm	35,90	37,50	38,10	39,75	40,85	42,50	43,65	44,75	47,00	47,50	48,00	49,00	51,75

2 STAGE														
Type		GP1K1	GP1K1.2	GP1K1.6	GP1K2.1	GP1K2.5	GP1K3.2	GP1K3.5	GP1K4.2	GP1K5	GP1K6.2	GP1K7	GP1K8	GP1K10
Dimension A <sub>1</sub>	mm	37,70	38,40	39,90	41,80	43,30	45,90	47,00	49,60	52,60	57,20	60,20	63,60	71,00
Dimension B <sub>1</sub>	mm	18,85	19,20	19,95	20,90	21,65	22,95	23,50	24,80	26,30	28,60	30,10	31,80	35,50

Others dimensions see: G = page 46, F = page 47

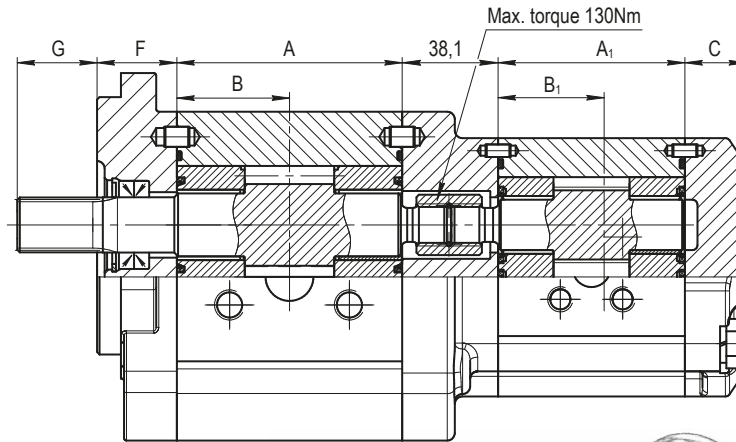
Overall and mounting dimensions are similar to single pumps.

A pump's torque is equal to the sum of all the pump sections' torques.

The total torque mustn't exceed the maximum permitted torque for a pump's driveshaft. For defining the maximum permitted torque of each section use the formula on page 6.

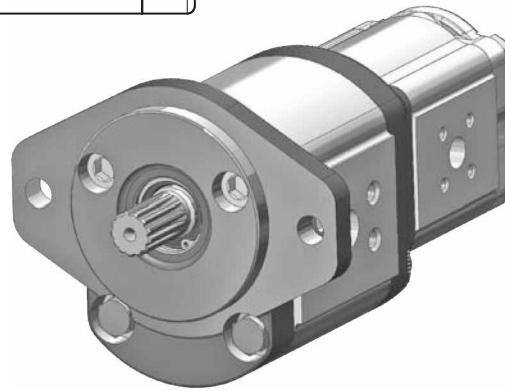
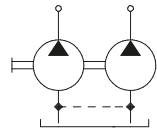


# MULTIPLE PUMPS GROUPS 2.5+2



**Ordering example**  
GP2.5K25/2K12R-B533CC-F

With inlet port on each body



1 STAGE														
Type		GP2.5K16	GP2.5K19	GP2.5K20	GP2.5K23	GP2.5K25	GP2.5K28	GP2.5K30	GP2.5K32	GP2.5K36	GP2.5K37	GP2.5K38	GP2.5K40	GP2.5K45
Dimension A	mm	71,80	75,00	76,20	79,50	81,70	85,00	87,30	89,50	94,00	95,00	96,00	98,00	103,50
Dimension B	mm	35,90	37,50	38,10	39,75	40,85	42,50	43,65	44,75	47,00	47,50	48,00	49,00	51,75

2 STAGE																	
Type		GP2K4	GP2K5	GP2K6	GP2K8	GP2K10	GP2K11	GP2K12	GP2K14	GP2K15	GP2K16	GP2K17	GP2K19	GP2K20	GP2K23	GP2K25	GP2K28
Dimension A <sub>1</sub>	mm	47,4	49,1	50,2	52,9	56,0	58,0	59,8	62,1	63,7	65,2	66,9	69,9	71,4	75,3	78,8	83,8
Dimension B <sub>1</sub>	mm	23,7	24,55	25,1	26,45	28,0	29,0	29,9	31,05	31,85	32,6	33,45	34,95	35,7	37,65	39,4	41,9

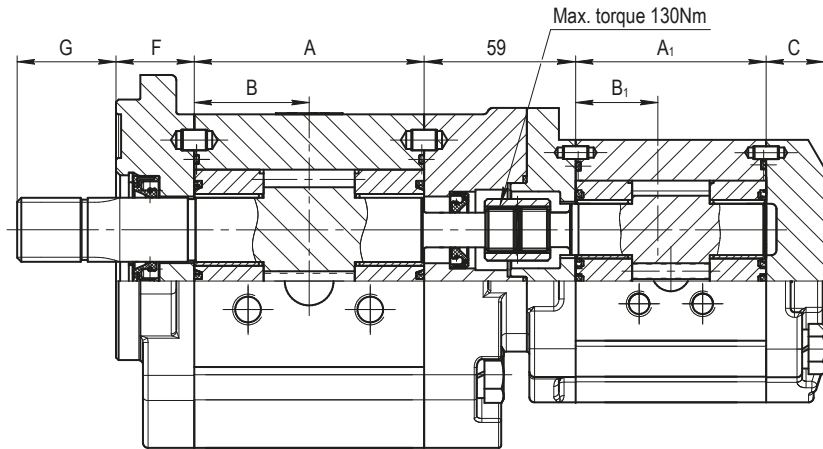
Others dimensions see: G = page 46, F = page 47, C = page 29

Overall and mounting dimensions are similar to single pumps.

A pump's torque is equal to the sum of all the pump sections' torques.

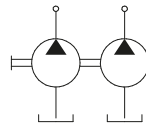
The total torque mustn't exceed the maximum permitted torque for a pump's driveshaft. For defining the maximum permitted torque of each section use the formula on page 6.

# MULTIPLE PUMPS GROUPS 2.5+2

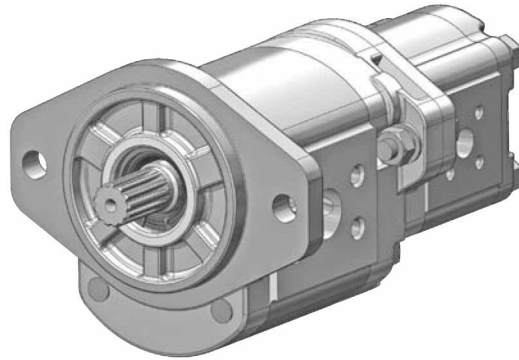


**Ordering example**  
GP2.5K25/2K12R-B533CC-TS

Separated stages



TS



1 STAGE														
Type		GP2.5K16	GP2.5K19	GP2.5K20	GP2.5K23	GP2.5K25	GP2.5K28	GP2.5K30	GP2.5K32	GP2.5K36	GP2.5K37	GP2.5K38	GP2.5K40	GP2.5K45
Dimension A	mm	71,80	75,00	76,20	79,50	81,70	85,00	87,30	89,50	94,00	95,00	96,00	98,00	103,50
Dimension B	mm	35,90	37,50	38,10	39,75	40,85	42,50	43,65	44,75	47,00	47,50	48,00	49,00	51,75

2 STAGE																	
Type		GP2K4	GP2K5	GP2K6	GP2K8	GP2K10	GP2K11	GP2K12	GP2K14	GP2K15	GP2K16	GP2K17	GP2K19	GP2K20	GP2K23	GP2K25	GP2K28
Dimension A <sub>1</sub>	mm	47,4	49,1	50,2	52,9	56,0	58,0	59,8	62,1	63,7	65,2	66,9	69,9	71,4	75,3	78,8	83,8
Dimension B <sub>1</sub>	mm	23,7	24,55	25,1	26,45	28,0	29,0	29,9	31,05	31,85	32,6	33,45	34,95	35,7	37,65	39,4	41,9

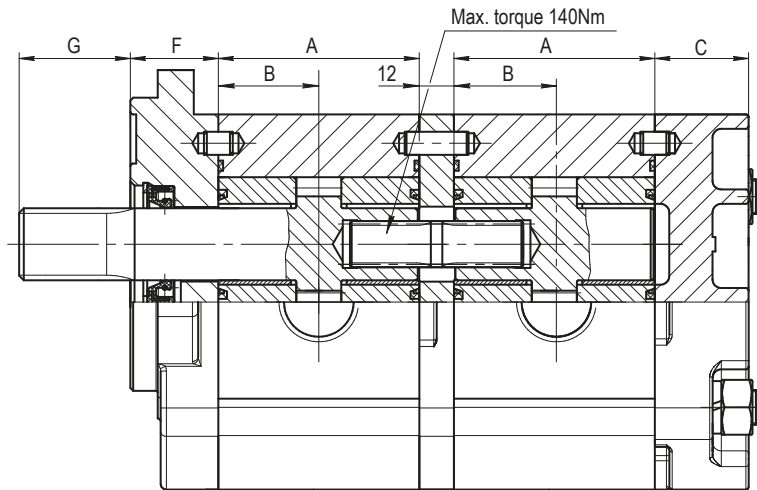
Others dimensions see: G = page 46, F = page 47, C = page 29

Overall and mounting dimensions are similar to single pumps.

A pump's torque is equal to the sum of all the pump sections' torques.

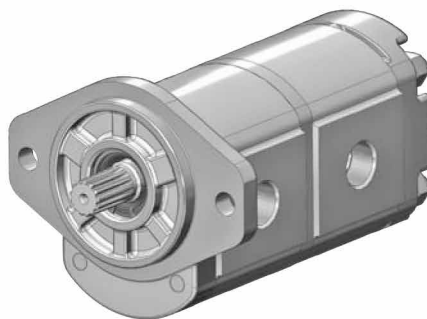
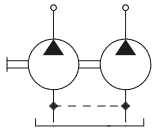
The total torque mustn't exceed the maximum permitted torque for a pump's driveshaft. For defining the maximum permitted torque of each section use the formula on page 6.

# MULTIPLE PUMPS GROUPS 2.5+2.5



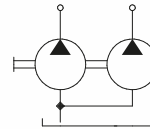
**Ordering example**  
GP2.5K25/2.5K20R-B533GG

With inlet port on each body

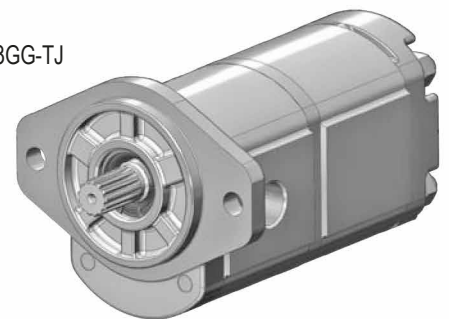


**Ordering example**  
GP2.5K25/2.5K20R-B533GG-TJ

With common inlet port



TJ



## STAGES 1 AND 2

Type		GP2.5K16	GP2.5K19	GP2.5K20	GP2.5K23	GP2.5K25	GP2.5K28	GP2.5K30	GP2.5K32	GP2.5K36	GP2.5K37	GP2.5K38	GP2.5K40	GP2.5K45
Dimension A	mm	71,80	75,00	76,20	79,50	81,70	85,00	87,30	89,50	94,00	95,00	96,00	98,00	103,50
Dimension B	mm	35,90	37,50	38,10	39,75	40,85	42,50	43,65	44,75	47,00	47,50	48,00	49,00	51,75

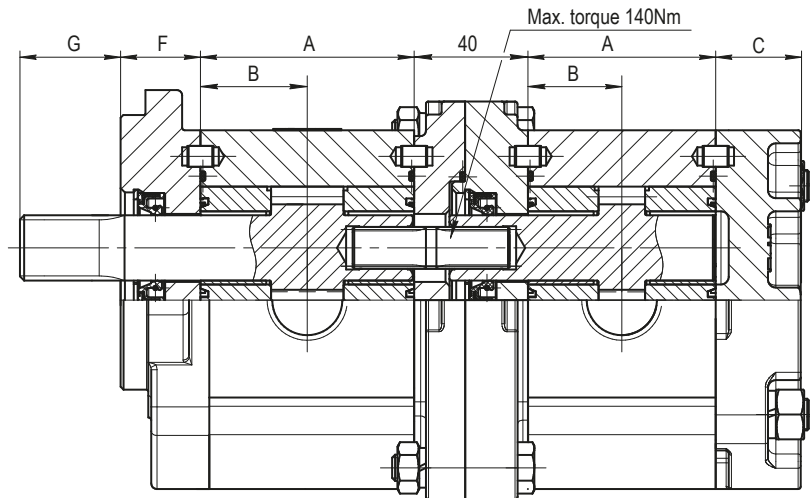
Others dimensions see: G = page 46, F = page 47, C = page 50

Overall and mounting dimensions are similar to single pumps.

A pump's torque is equal to the sum of all the pump sections' torques.

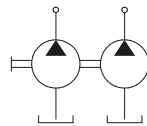
The total torque mustn't exceed the maximum permitted torque for a pump's driveshaft. For defining the maximum permitted torque of each section use the formula on page 6.

# MULTIPLE PUMPS GROUPS 2.5+2.5

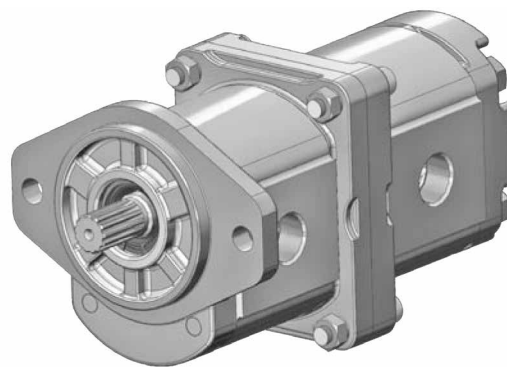


**Ordering example**  
GP2.5K25/2.5K20R-B533GG-TS

Separated stages



TS



		STAGES 1 AND 2												
Type		GP2.5K16	GP2.5K19	GP2.5K20	GP2.5K23	GP2.5K25	GP2.5K28	GP2.5K30	GP2.5K32	GP2.5K36	GP2.5K37	GP2.5K38	GP2.5K40	GP2.5K45
Dimension A	mm	71,80	75,00	76,20	79,50	81,70	85,00	87,30	89,50	94,00	95,00	96,00	98,00	103,50
Dimension B	mm	35,90	37,50	38,10	39,75	40,85	42,50	43,65	44,75	47,00	47,50	48,00	49,00	51,75

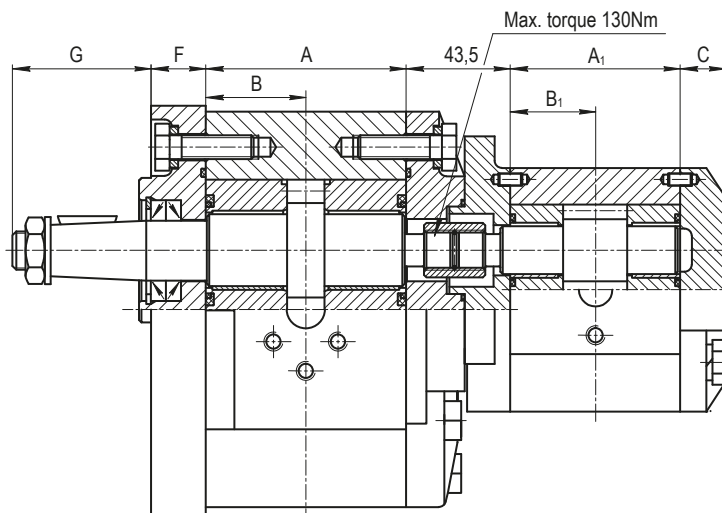
Others dimensions see: G = page 46, F = page 47, C = page 50

Overall and mounting dimensions are similar to single pumps.

A pump's torque is equal to the sum of all the pump sections' torques.

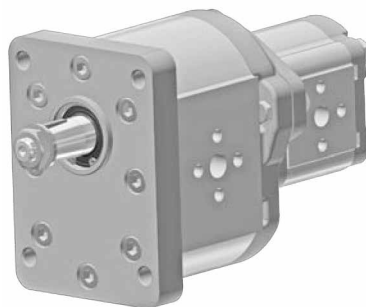
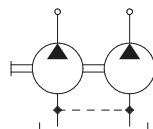
The total torque mustn't exceed the maximum permitted torque for a pump's driveshaft. For defining the maximum permitted torque of each section use the formula on page 6.

# MULTIPLE PUMPS GROUPS 3+2



**Ordering example**  
GP3K40/2K10R-G463BB

With inlet port on each body



1 STAGE															
Type		GP3K20	GP3K23	GP3K25	GP3K28	GP3K32	GP3K36	GP3K40	GP3K45	GP3K50	GP3K56	GP3K63	GP3K71	GP3K80	GP3K90
Dimension A	mm	81,5	83,5	84,8	86,8	89,4	92,0	94,7	98,0	102,0	105,0	109,4	114,6	120,4	127,0
Dimension B	mm	40,75	41,75	42,4	43,4	44,7	46,0	47,35	49,0	51,0	52,5	54,7	57,3	60,2	63,5

2 STAGE																	
Type		GP2K4	GP2K5	GP2K6	GP2K8	GP2K10	GP2K11	GP2K12	GP2K14	GP2K15	GP2K16	GP2K17	GP2K19	GP2K20	GP2K23	GP2K25	GP2K28
Dimension A1	mm	47,4	49,1	50,2	52,9	56,0	58,0	59,8	62,1	63,7	65,2	66,9	69,9	71,4	75,3	78,8	83,8
Dimension B1	mm	23,7	24,55	25,1	26,45	28,0	29,0	29,9	31,05	31,85	32,6	33,45	34,95	35,7	37,65	39,4	41,9

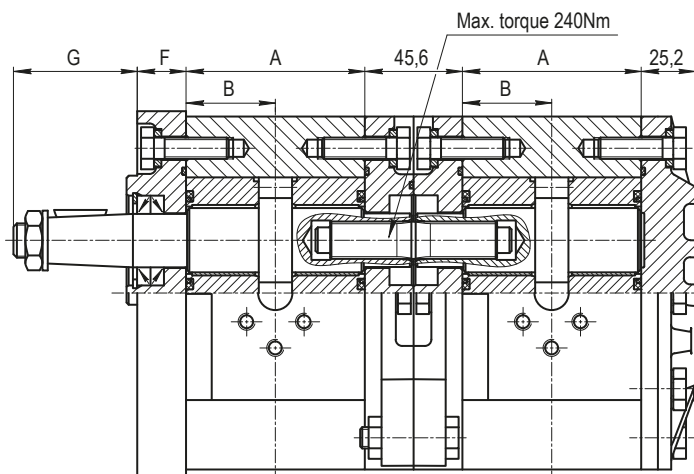
Others dimensions see: G = page 58, F = page 59, C = page 29

Overall and mounting dimensions are similar to single pumps.

A pump's torque is equal to the sum of all the pump sections' torques.

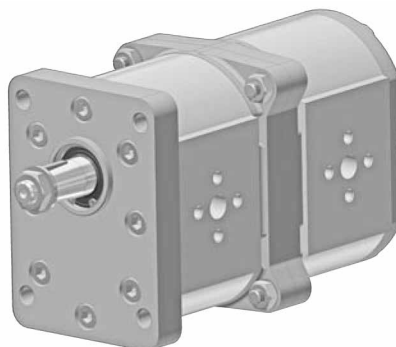
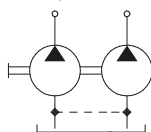
The total torque mustn't exceed the maximum permitted torque for a pump's driveshaft. For defining the maximum permitted torque of each section use the formula on page 6.

# MULTIPLE PUMPS GROUPS 3+3



**Ordering example**  
GP3K28K/3K28R-G463BB

With inlet port on each body



		1 STAGE													
Type		GP3K20	GP3K23	GP3K25	GP3K28	GP3K32	GP3K36	GP3K40	GP3K45	GP3K50	GP3K56	GP3K63	GP3K71	GP3K80	GP3K90
Dimension A	mm	81,5	83,5	84,8	86,8	89,4	92,0	94,7	98,0	102,0	105,0	109,4	114,6	120,4	127,0
Dimension B	mm	40,75	41,75	42,4	43,4	44,7	46,0	47,35	49,0	51,0	52,5	54,7	57,3	60,2	63,5

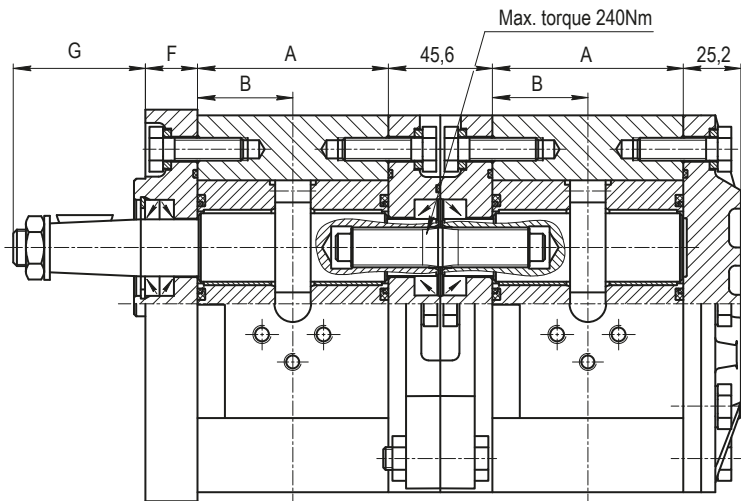
Others dimensions see: G = page 58, F = page 59

Overall and mounting dimensions are similar to single pumps.

A pump's torque is equal to the sum of all the pump sections' torques.

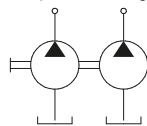
The total torque mustn't exceed the maximum permitted torque for a pump's driveshaft. For defining the maximum permitted torque of each section use the formula on page 6.

# MULTIPLE PUMPS GROUPS 3+3

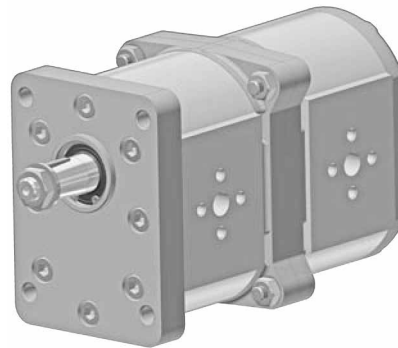


**Ordering example**  
GP3K32K/3K32R-G463BB-TS

Separated stages



TS



		1 STAGE													
Type		GP3K20	GP3K23	GP3K25	GP3K28	GP3K32	GP3K36	GP3K40	GP3K45	GP3K50	GP3K56	GP3K63	GP3K71	GP3K80	GP3K90
Dimension A	mm	81,5	83,5	84,8	86,8	89,4	92,0	94,7	98,0	102,0	105,0	109,4	114,6	120,4	127,0
Dimension B	mm	40,75	41,75	42,4	43,4	44,7	46,0	47,35	49,0	51,0	52,5	54,7	57,3	60,2	63,5

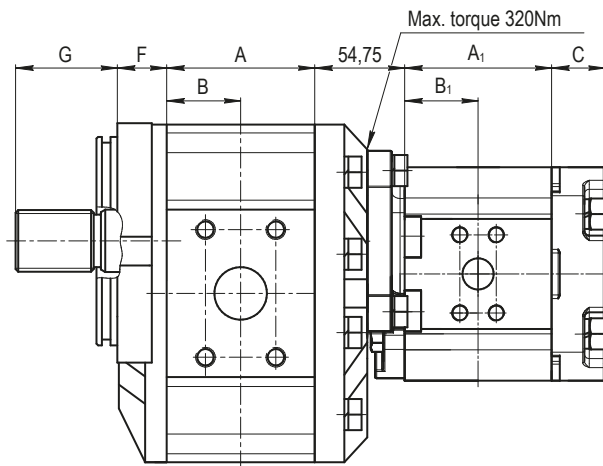
Others dimensions see: G = page 58, F = page 59

Overall and mounting dimensions are similar to single pumps.

A pump's torque is equal to the sum of all the pump sections' torques.

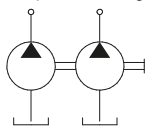
The total torque mustn't exceed the maximum permitted torque for a pump's driveshaft. For defining the maximum permitted torque of each section use the formula on page 6.

# MULTIPLE PUMPS GROUPS 4+2,5

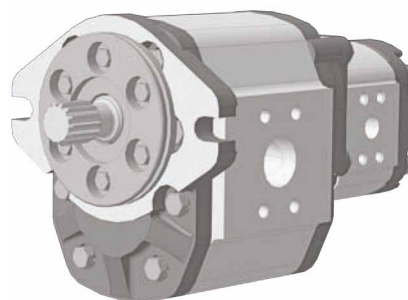


**Ordering example**  
GP4K63/2.5K16R-B633D-TS

Separated stages



TS



		1 STAGE													
Type		GP4K63	GP4K71	GP4K80	GP4K90	GP4K100	GP4K112	GP4K125	GP4K140	GP4K150	GP4K160	GP4K170	GP4K180	GP4K190	GP4K200
Dimension A	mm	87,3	90,2	93,3	96,8	120	124,5	129	134,5	158	161,5	165,5	169	172,5	176
Dimension B	mm	43,65	45,1	46,65	48,4	60	62,26	64,5	67,25	79	80,75	82,75	84,5	86,25	88

		2 STAGE												
Type		GP2.5K16	GP2.5K19	GP2.5K20	GP2.5K23	GP2.5K25	GP2.5K28	GP2.5K30	GP2.5K32	GP2.5K36	GP2.5K37	GP2.5K38	GP2.5K40	GP2.5K45
Dimension A1	mm	71,8	75,0	76,2	79,5	81,7	85,0	87,3	89,5	94,0	95,0	96,0	98,0	103,5
	mm	35,9	37,5	38,1	39,75	40,85	42,5	43,65	44,75	47,0	47,5	48,0	49,0	51,75

Others dimensions see: G = page 70, F = page 71, C = page 50

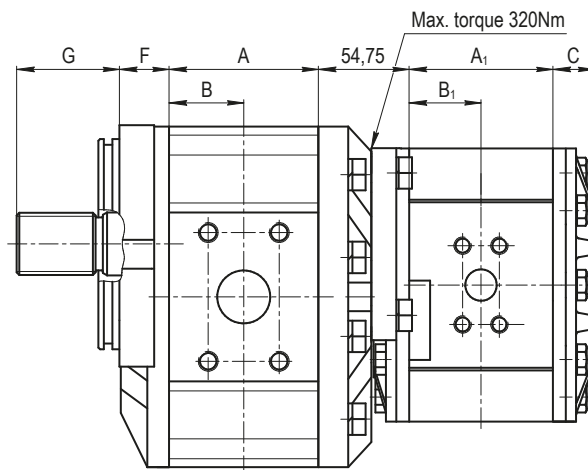
Overall and mounting dimensions are similar to single pumps.

A pump's torque is equal to the sum of all the pump sections' torques.

The total torque mustn't exceed the maximum permitted torque for a pump's driveshaft. For defining the maximum permitted torque of each section use the formula on page 6.

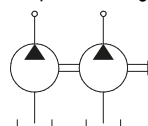


# MULTIPLE PUMPS GROUPS 4+3

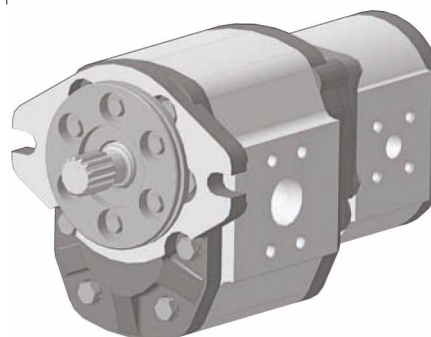


**Ordering example**  
GP4K63/3K20R-B633D-TS

Separated stages



TS



1 STAGE															
Type		GP4K63	GP4K71	GP4K80	GP4K90	GP4K100	GP4K112	GP4K125	GP4K140	GP4K150	GP4K160	GP4K170	GP4K180	GP4K190	GP4K200
Dimension A	mm	87,3	90,2	93,3	96,8	120	124,5	129	134,5	158	161,5	165,5	169	172,5	176
Dimension B	mm	43,65	45,1	46,65	48,4	60	62,26	64,5	67,25	79	80,75	82,75	84,5	86,25	88

2 STAGE															
Type		GP3K20	GP3K23	GP3K25	GP3K28	GP3K32	GP3K36	GP3K40	GP3K45	GP3K50	GP3K56	GP3K63	GP3K71	GP3K80	GP3K90
Dimension A	mm	81,5	83,5	84,8	86,8	89,4	92,0	94,7	98,0	102,0	105,0	109,4	114,6	120,4	127,0
Dimension B	mm	40,75	41,75	42,4	43,4	44,7	46,0	47,35	49,0	51,0	52,5	54,7	57,3	60,2	63,5

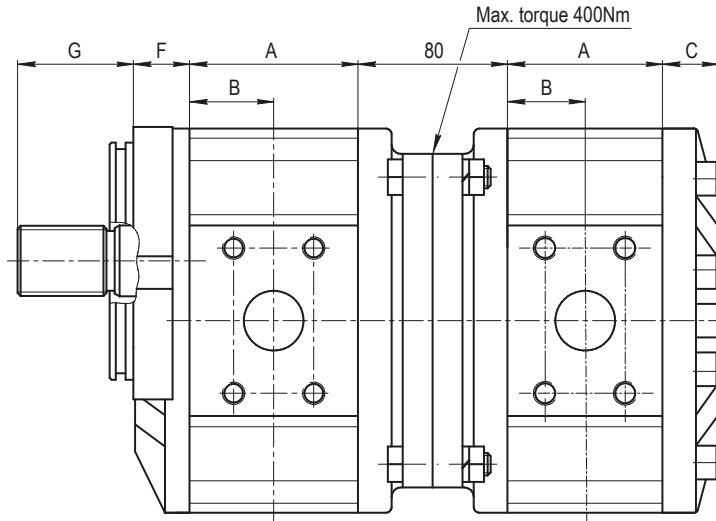
Others dimensions see: G = page 70, F = page 71, C = 25,2 mm

Overall and mounting dimensions are similar to single pumps.

A pump's torque is equal to the sum of all the pump sections' torques.

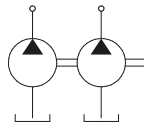
The total torque mustn't exceed the maximum permitted torque for a pump's driveshaft. For defining the maximum permitted torque of each section use the formula on page 6.

# MULTIPLE PUMPS GROUPS 4+4

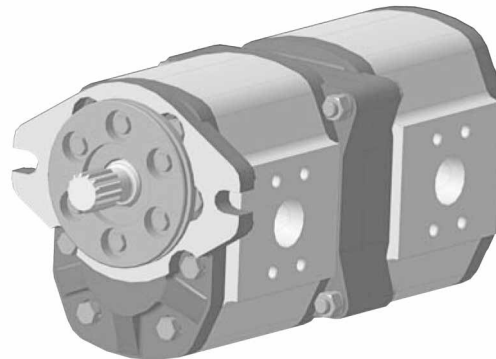


**Ordering example**  
GP4K63/4K63R-B633D-TS

Separated stages



TS



		1 STAGE													
Type		GP4K63	GP4K71	GP4K80	GP4K90	GP4K100	GP4K112	GP4K125	GP4K140	GP4K150	GP4K160	GP4K170	GP4K180	GP4K190	GP4K200
Dimension A	mm	87,3	90,2	93,3	96,8	120	124,5	129	134,5	158	161,5	165,5	169	172,5	176
Dimension B	mm	43,65	45,1	46,65	48,4	60	62,26	64,5	67,25	79	80,75	82,75	84,5	86,25	88

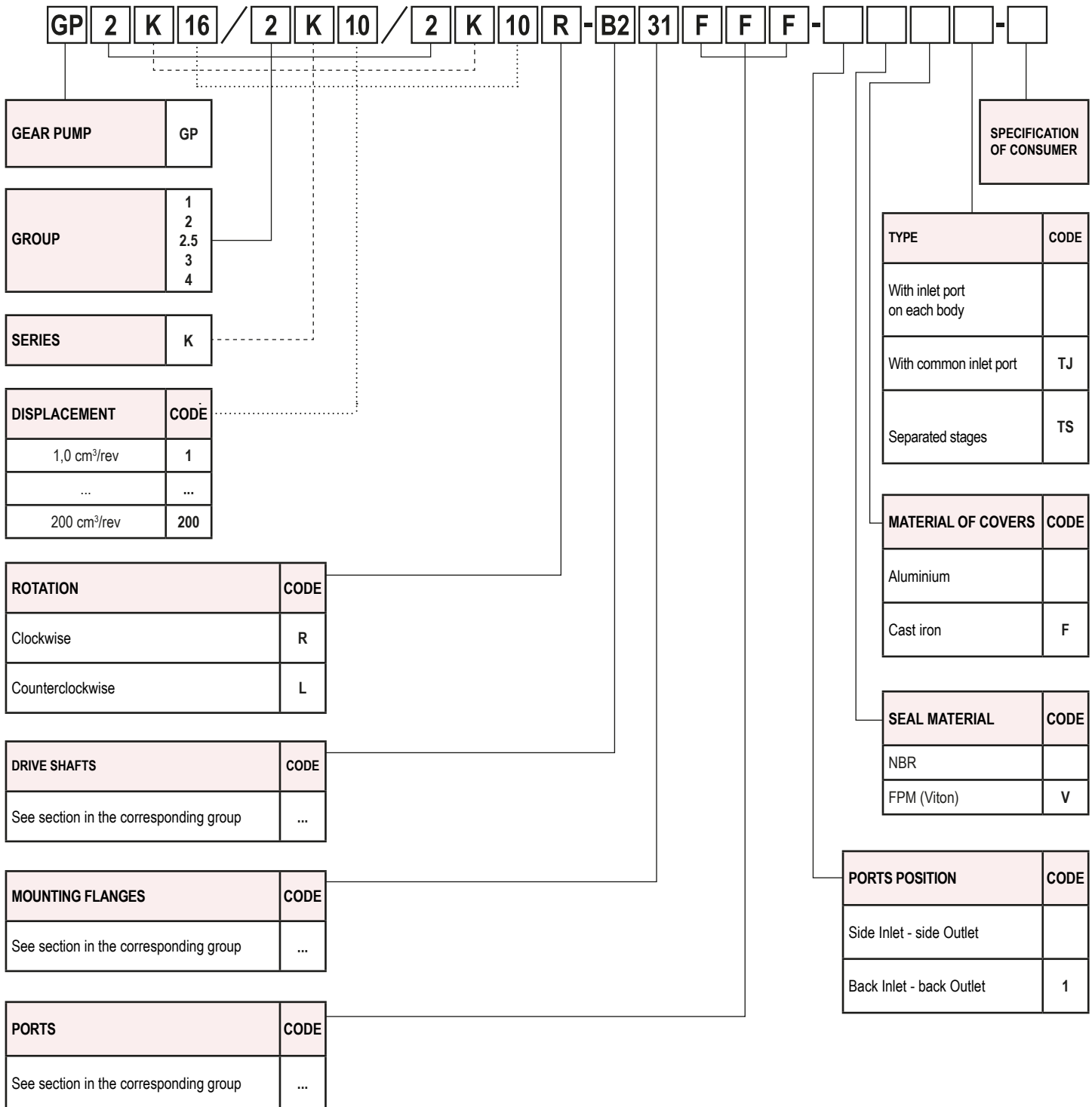
Others dimensions see: G = page 70, F = page 71, C = 30 mm

Overall and mounting dimensions are similar to single pumps.

A pump's torque is equal to the sum of all the pump sections' torques.

The total torque mustn't exceed the maximum permitted torque for a pump's driveshaft. For defining the maximum permitted torque of each section use the formula on page 6.

# ORDERING INSTRUCTIONS



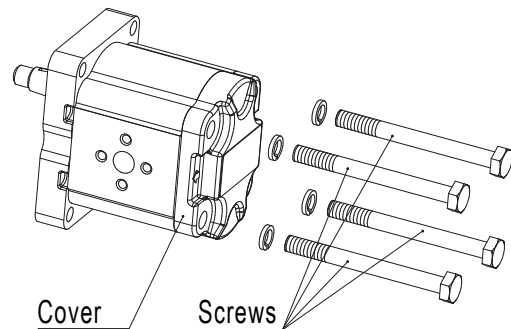
Specification of consumer assigned if necessary after clarify special conditions with the customer

## ROTATION CHANGING INSTRUCTIONS FOR PUMPS GROUP 2 - 2.5 - 3

Process of change direction shown at the example for pump with clockwise rotation.

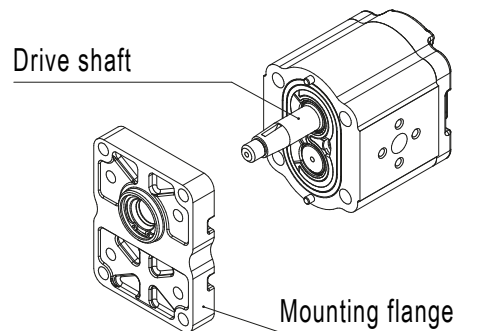
### STEP 1

- Unscrew and remove the screws completely.
- Put the pump mounting flange up.
- lubricate the drive shaft with grease to prevent damage to the shaft seal.



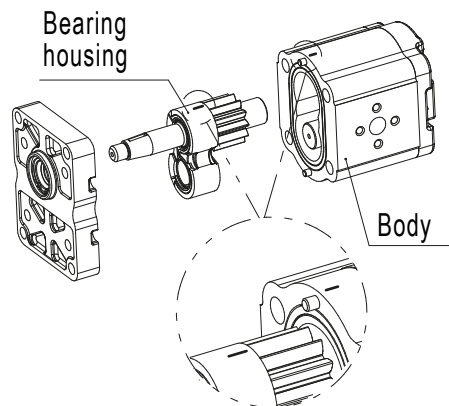
### STEP 2

- Remove the mounting flange.
- Verify that the compensation seal is correctly located in the body seat.



### STEP 3

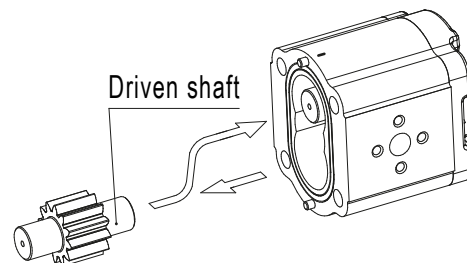
- Mark the position of the bearing housing (with marker) relative to the body.
- Remove the bearing housing and the drive shaft taking care to avoid driven shaft axial shifts.



## ROTATION CHANGING INSTRUCTIONS FOR PUMPS GROUP 2 - 2.5 - 3

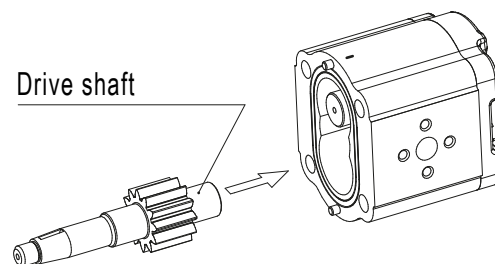
### STEP 4

- Draw out the driven shaft from its housing.
- Re-locate the driven shaft in the position previously occupied by the drive shaft.



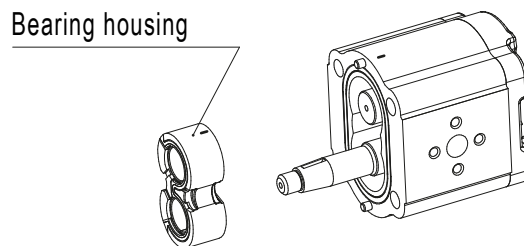
### STEP 5

- Re-locate the drive shaft in the position previously occupied by the driven shaft.



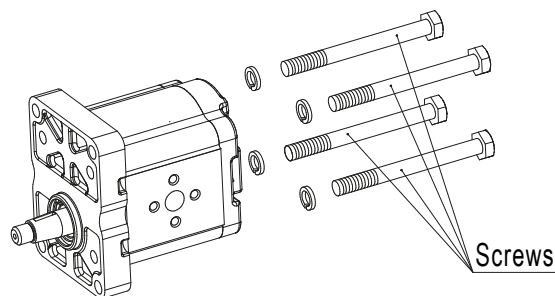
### STEP 6

- Replace the bearing housing taking care that:
  - Marks shall be located as in the picture.
  - Compensation seal and anti-extrusion plate are correctly located.



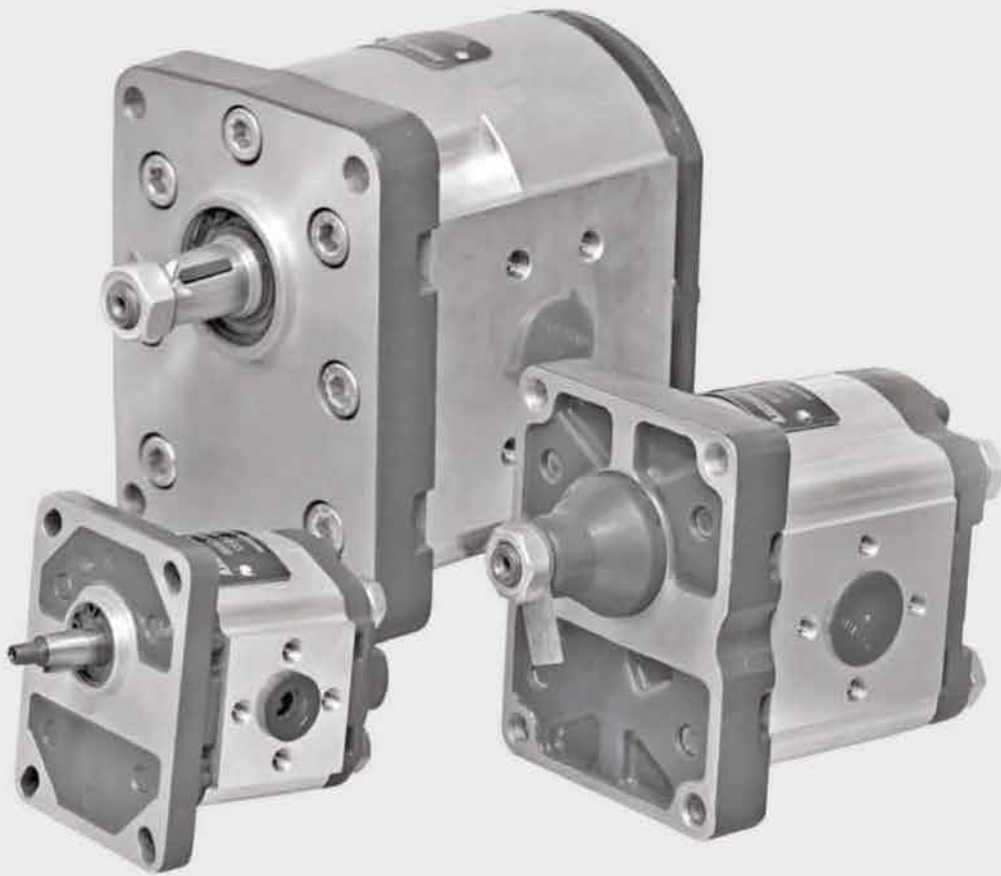
### STEP 7

- Clean body and mounting flange.
- Refit the mounting flange, turned 180° from its original position.
- Replace the clamp screws and tighten (torque - see section "Technical data").
- Check that the shaft rotates freely.



**IMPORTANT: TO AVOID A PERFORMANCE LOSS DO NOT CHANGE MOTOR ROTATION**

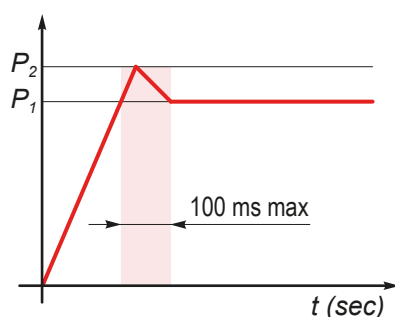
**GEAR MOTORS SERIES «K»**



## FEATURES

Gear motors “K” series are presented in the second and third groups group (from 6,3 to 71 cm<sup>3</sup>/rev) with unidirectional or reversible rotation the drive shaft. These units have range of the shafts and mounting flanges according to international standards. Gear motors have a wide application for the different machines and mechanisms , such like fan drives, working bodies mowers, air seeders etc.

### DEFINITION OF PRESSURES



$P_2$  - starting pressure

$P_1$  - max. continuous pressure

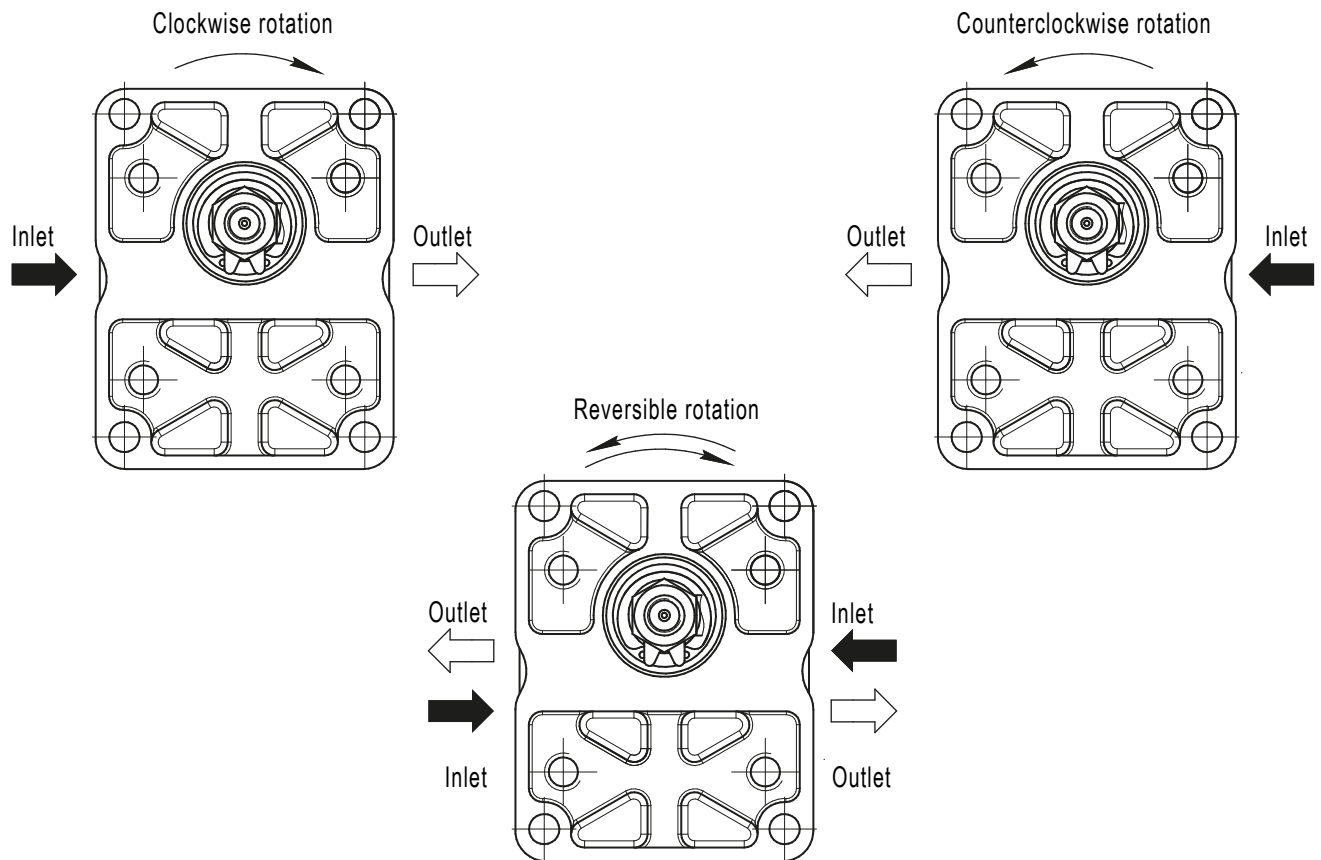
### WORKING CONDITIONS

Minimum operating fluid viscosity	10 mm <sup>2</sup> /sec
Max. starting viscosity (cold start)	1000 mm <sup>2</sup> /sec
Fluid viscosity recommended range	17 ÷ 65 mm <sup>2</sup> /sec
Fluid operating temperature range with NBR seals	-40 ÷ +100 °C
Fluid operating temperature range with FPM seals (Viton)	-20 ÷ +170 °C
Hydraulic fluid	mineral oil

### FILTRATION INDEX RECOMMENDED

Maximum continuous pressure	>200 bar	<200 bar
Contamination class ISO 4406	18/15	19/16
Contamination class NAS 1638	9	10
Achieved with filter $\beta_x=75$	15µm	25µm

## DEFINITION OF MOTOR SHAFT ROTATIONAL DIRECTION



## FORMULAS

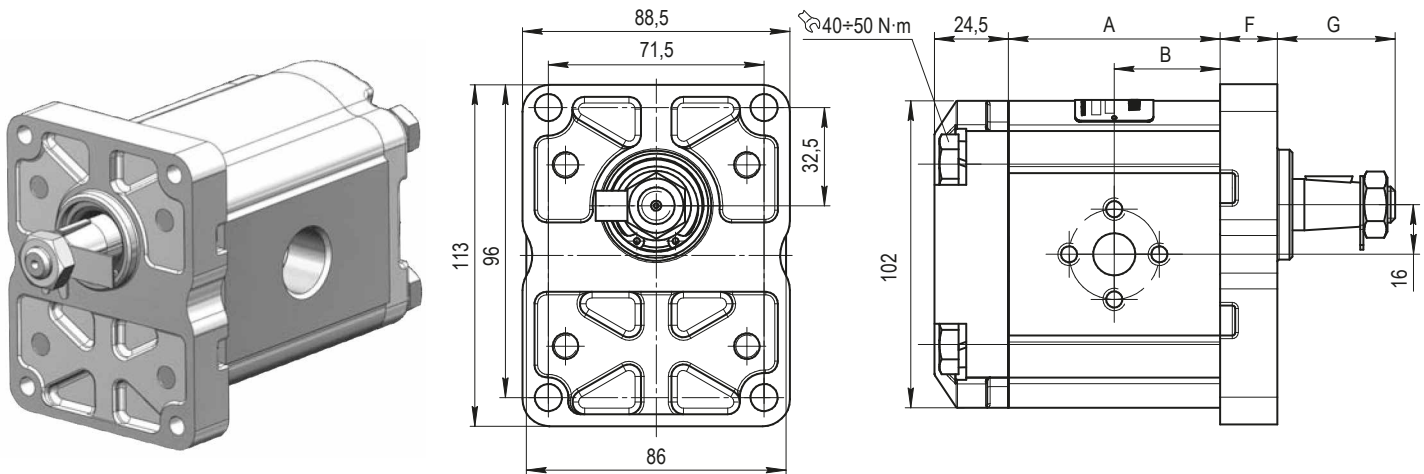
Input flow	$Q = \frac{q \cdot n}{1000 \cdot \eta_v} \quad [l/min]$	$q$ displacement ( $cm^3/rev$ ) $n$ speed ( $min^{-1}$ )
Output torque	$M = \frac{q \cdot \Delta p \cdot \eta_m}{20 \cdot \pi} \quad [N \cdot m]$	$\eta_v$ volumetric efficiency (0,94 min) $\eta_m$ mechanical efficiency (0,85min)
Output power	$P = \frac{Q \cdot \Delta p \cdot \eta_t}{600} \quad [kW]$	$\Delta p = P_{out} - P_{in}$ system pressure (bar) $\eta_t = \eta_v \cdot \eta_m$ overall efficiency



# GEAR MOTORS GROUP 2

## TECHNICAL DATA AND ASSEMBLING DIMENSIONS

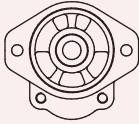
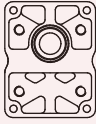



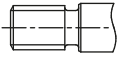
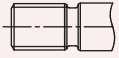
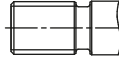
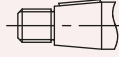
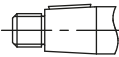
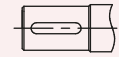
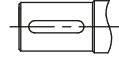
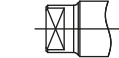
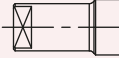
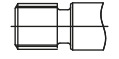
Type		GM2K6	GM2K8	GM2K10	GM2K11	GM2K12	GM2K14	GM2K15	GM2K16	GM2K17	GM2K19	GM2K20	GM2K23	GM2K25	
Displacement	cm <sup>3</sup> /rev	6,3	8,2	10,0	11,3	12,5	14,0	15,0	16,0	17,0	19,0	20,0	22,5	24,8	
Dimension A	mm	50,2	53,2	56,0	58,0	59,8	62,1	63,7	65,2	66,9	69,9	71,4	75,3	78,8	
Dimension B	mm	25,1	26,6	28,0	29,0	29,9	31,05	31,85	32,6	33,45	34,95	35,7	37,65	39,4	
Max. continuous pressure, P <sub>1</sub>	bar						250					220	210	190	170
Starting pressure, P <sub>2</sub>	bar						280					250	230	210	190
Min. speed at P <sub>1</sub> ≤100 bar, n <sub>min</sub>	min <sup>-1</sup>	700					600					500			
Max. speed, n <sub>max</sub>	min <sup>-1</sup>	4000	3600	3500		3400		3200			3000		2800		
Output torque at P <sub>1</sub>	N·m	20,8	27,1	33,5	37,8	41,8	46,9	50,8	54,1	57,5	56,6	57,5	58,6	57,7	
Weight	kg	2,4	2,5	2,6	2,7	2,7	2,9	2,9	3,0	3,0	3,1	3,1	3,4	3,6	



Ordering example  
GM2K10R-G262B

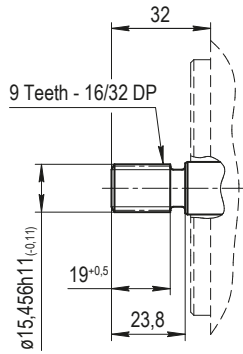
Dimension G = see section "Drive shafts"  
Dimension F = see section "Mounting flanges"

Weight shown are for motors with aluminum covers. Weight for motors with cast iron covers should be refined

<p><b>GM2K</b></p>	 SAE "A" 2 BOLTS	 EUROPEAN	 GERMAN Ø80	 GERMAN 2 BOLTS Ø50	 GERMAN 2 BOLTS Ø52
 SAE "A" SPLINED (9 TEETH)	B2 31 B2 32				
 SAE "A" SPLINED (10 TEETH)	B3 31 B3 32				
 SAE "A" SPLINED (11 TEETH)	B4 31 B4 32				
 GERMAN TAPERED 1:5			F2 81	F2 91 F2 92	
 EUROPEAN TAPERED 1:8		G2 61 G2 62			
 SAE "A" STRAIGHT Ø15,87	H2 31 H2 32	H2 61 H2 62			
 SAE "A" STRAIGHT Ø19,05	H8 31 H8 32				
 TANG DRIVE					K3 93 K3 94
 TANG DRIVE				K4 91 K4 92	
 DIN 5482 SPLINED (9 TEETH)			I2 61 I2 62	I2 81	I2 91 I2 92

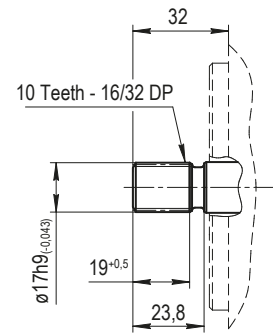
Present combination types of mounting flanges and shafts are used to serial production. The other combination and date of production, before ordering clarify with the manufacturer.

Max. torque 100 N·m



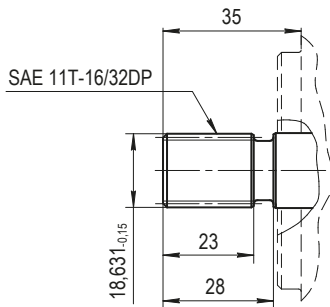
B2 SAE A SPLINED (9 TEETH)

Max. torque 130 N·m



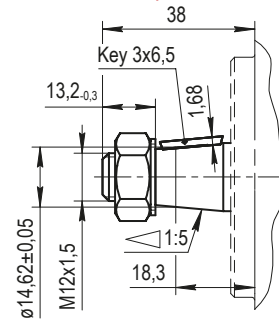
B3 SAE A SPLINED (10 TEETH)

Max. torque 170 N·m



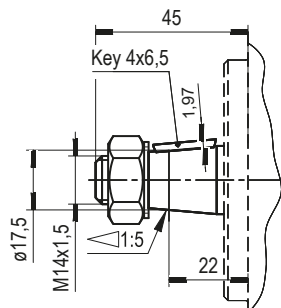
B4 SAE A SPLINED (11 TEETH)

Max. torque 140 N·m



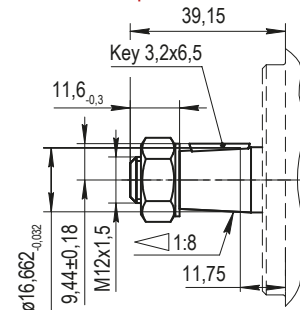
F2 GERMAN TAPERED 1:5

Max. torque 140 N·m

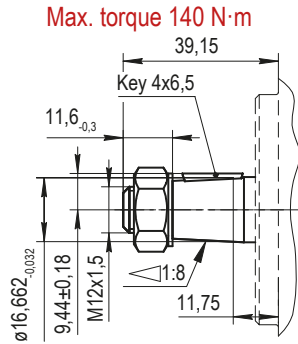


F6 GERMAN TAPERED 1:5

Max. torque 140 N·m

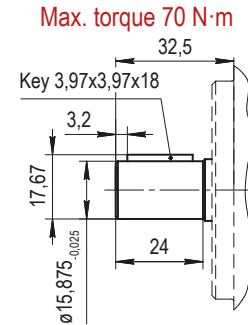


G2 EUROPEAN TAPERED 1:8



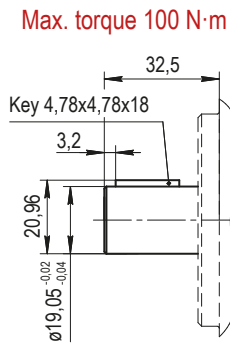
G6

EUROPEAN TAPERED 1:8



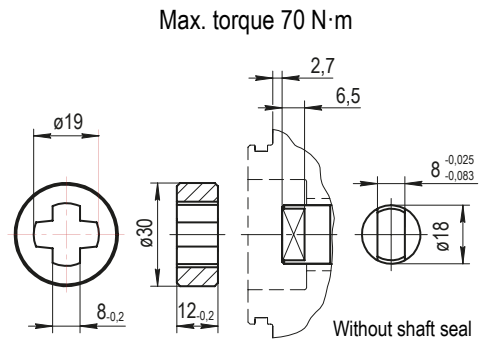
H2

SAE A STRAIGHT ∅15,87



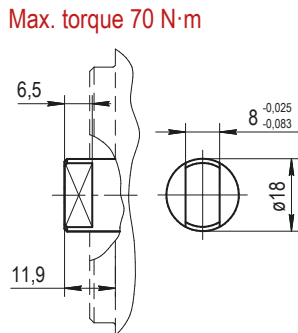
H8

SAE A STRAIGHT ∅19,05



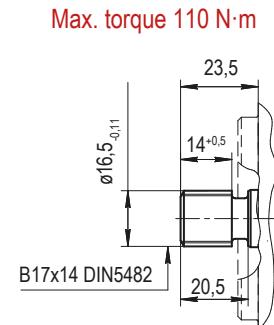
K3

TANG DRIVE



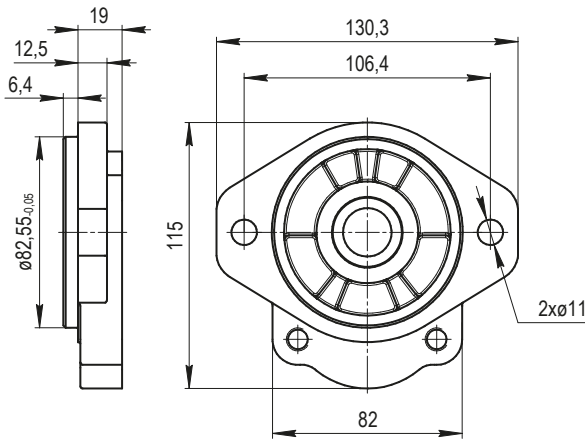
K4

TANG DRIVE



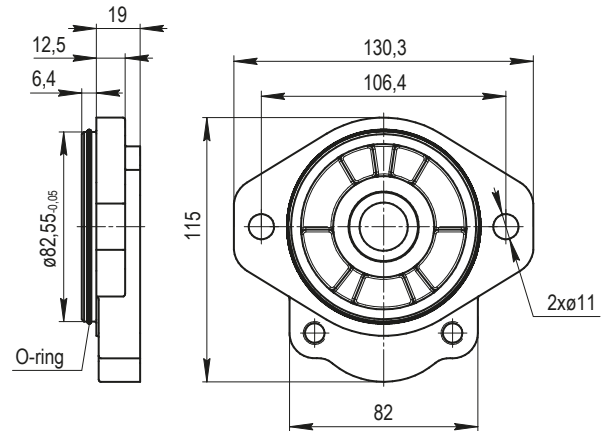
I2

DIN 5482 SPLINED (9 TEETH)



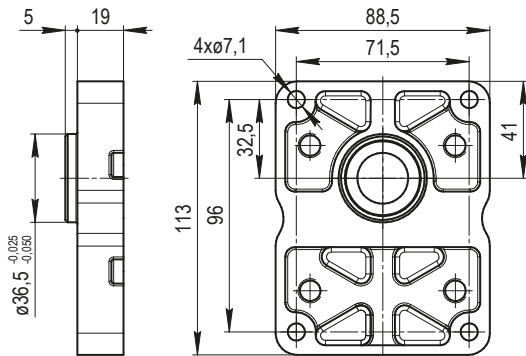
31

SAE A 2 BOLTS



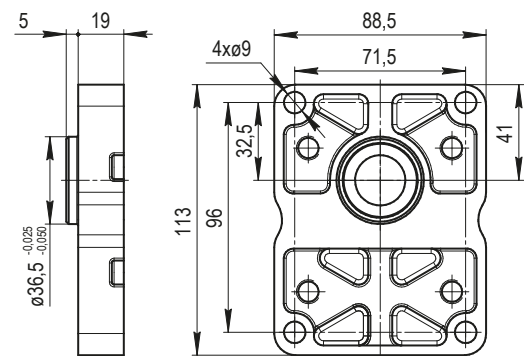
32

SAE A 2 BOLTS (WITH O-RING)



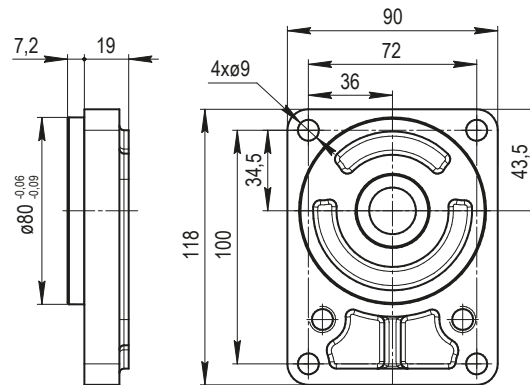
61

EUROPEAN ( $\varnothing 7,1$ )



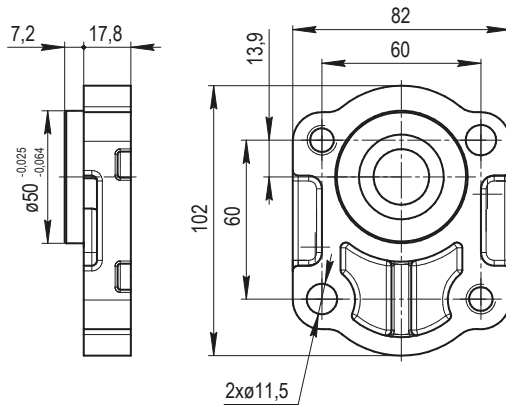
62

EUROPEAN ( $\varnothing 9$ )



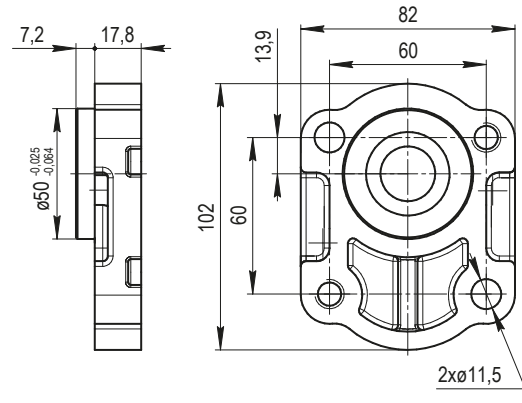
81

GERMAN  $\varnothing 80$



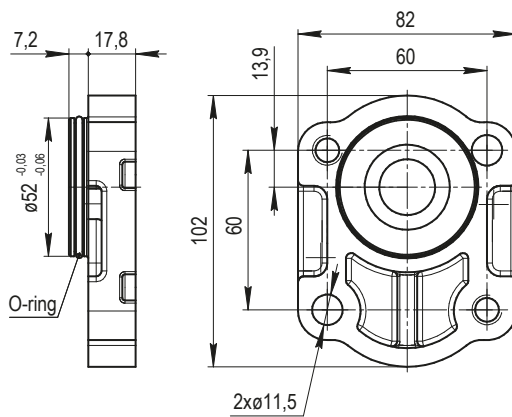
91

GERMAN 2 BOLTS  $\varnothing 50$



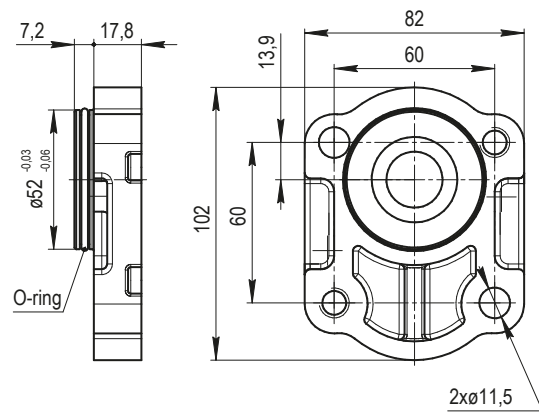
92

GERMAN 2 BOLTS  $\varnothing 50$



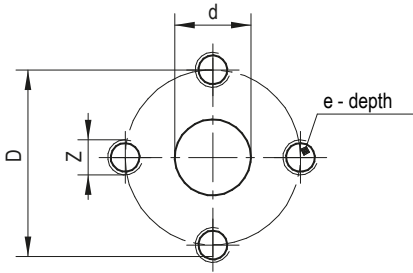
93

GERMAN 2 BOLTS  $\varnothing 50$



94

GERMAN 2 BOLTS  $\varnothing 52$

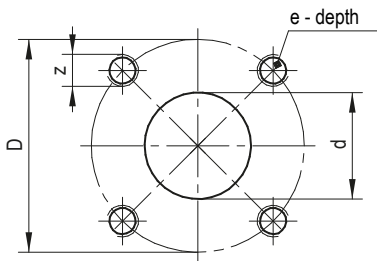


**B** EUROPEAN FLANGE

	Type	Inlet				Outlet			
		d	D	Z	e	d	D	Z	e
	GM2K6÷8	13	30	M6	13	13	30	M6	13
	GM2K10÷25	14				19	40	M8	

For reversible motors

	Type	Inlet				Outlet			
		d	D	Z	e	d	D	Z	e
	GM2K6÷12	13	30	M6	13	13	30	M6	13
	GM2K14÷25	19	40	M8		19	40	M8	

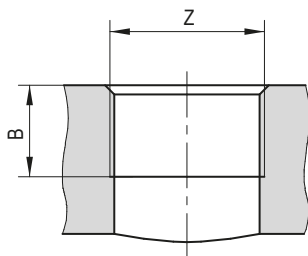


**C** GERMAN FLANGE

	Type	Inlet				Outlet			
		d	D	z	e	d	D	z	e
	GM2K6÷25	15	35	M6	13	20	40	M6	13

For reversible motors

	Type	Inlet				Outlet			
		d	D	z	e	d	D	z	e
	GM2K6÷12	15	35	M6	13	15	35	M6	13
	GM2K14÷25	20	40			20	40		

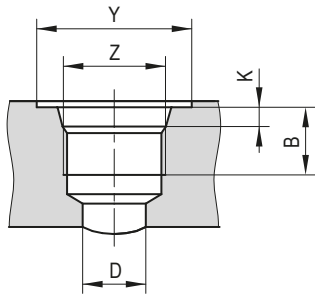


**E** METRIC THREADED

	Type	Inlet		Outlet	
		Z	B	Z	B
	GM2K6÷8	M14x1,5	16	M18x1,5	16
	GM2K10÷12	M18x1,5		M22x1,5	
	GM2K14÷25			M27x2	

For reversible motors

	Type	Inlet		Outlet	
		Z	B	Z	B
	GM2K6÷12	M22x1,5	16	M22x1,5	16
	GM2K14÷25	M27x2		M27x2	

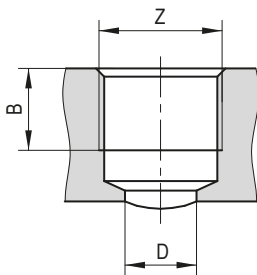


**F** SAE THREADED (ODT)

	Type	Inlet					Outlet				
		Z	B	K	D	Y	Z	B	K	D	Y
	GM2K6÷8	7/8-14 UNF (SAE #10)	14	2,5	13	34	7/8-14 UNF (SAE #10)	14	2,5	13	34
	GM2K10÷25						1-1/16-12 UN	16	3,3	20	41

For reversible motors

	Type	Inlet					Outlet				
		Z	B	K	D	Y	Z	B	K	D	Y
	GM2K6÷12	7/8-14 UNF (SAE #10)	14	2,5	13	34	7/8-14 UNF (SAE #10)	14	2,5	13	34
	GM2K14÷25	1-1/16-12 UN	16	3,3	20	41	1-1/16-12 UN	16	3,3	20	41



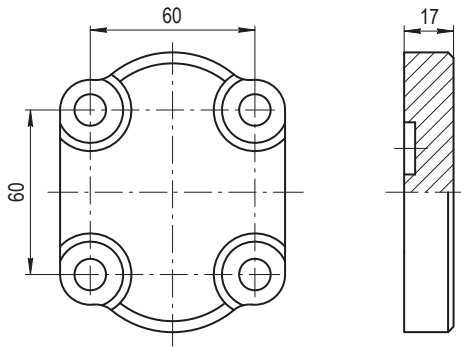
**G** GAS THREADED (BSPP)

	Type	Inlet			Outlet		
		Z	B	D	Z	B	D
	GM2K6÷8	1/2" GAS	16	13	1/2" GAS	16	13
	GM2K10÷25				3/4" GAS	19	20

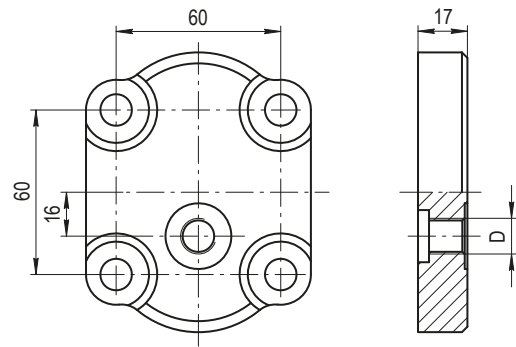
For reversible motors

	Type	Inlet			Outlet		
		Z	B	D	Z	B	D
	GM2K6÷12	1/2" GAS	16	13	1/2" GAS	16	13
	GM2K14÷25	3/4" GAS	19	20	3/4" GAS	19	20



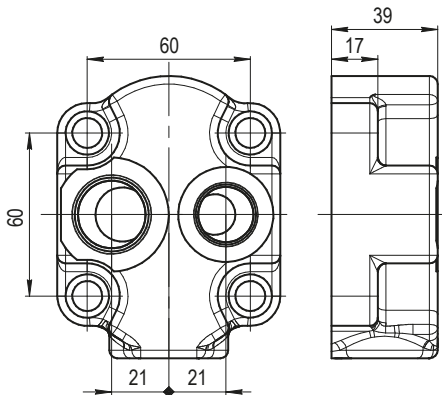


For unidirectional motors

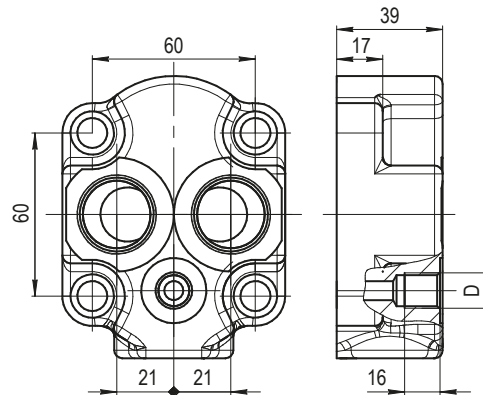


For reversible motors

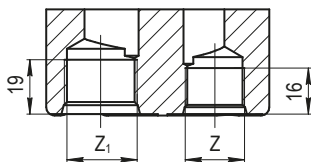
STANDARD REAR COVERS



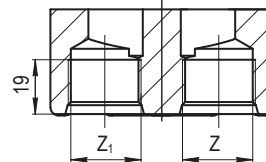
For unidirectional motors



For reversible motors



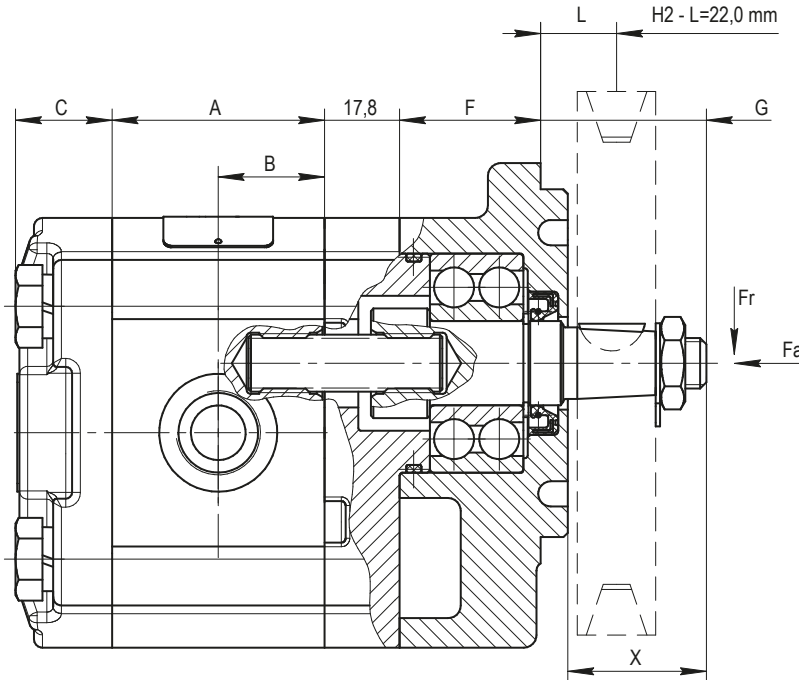
Inlet	Outlet
Z	Z <sub>1</sub>
M18x1,5	M26x1,5
7/8-14UNF	1 1/16-12UN
1/2" GAS	3/4" GAS



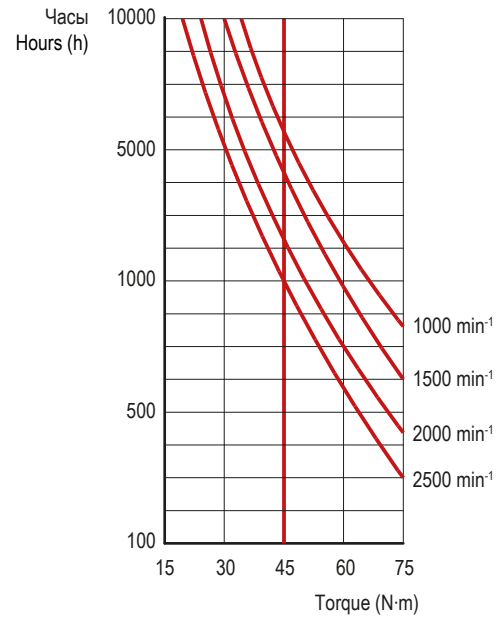
Inlet	Outlet	Drain
Z	Z <sub>1</sub>	D
M26x1,5	M26x1,5	M18x1,5
1 1/16-12UN	1 1/16-12UN	7/16-20UNF
3/4" GAS	3/4" GAS	G1/4

REAR COVER WITH THREADED PORTS

For drive shaft:  
 G2 - L=15,4 mm;  
 F2 - L=16,9 mm;  
 H2 - L=22,0 mm



Service life under the following conditions:  
 pulley diameter = 90 mm.



**Ordering example**  
**GM2K12R-F2C9F**

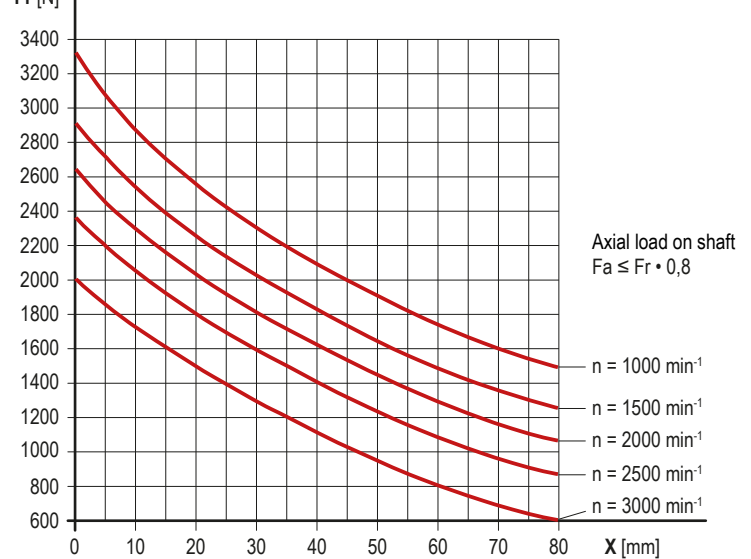
Dimension A and B = see section "Technical data"

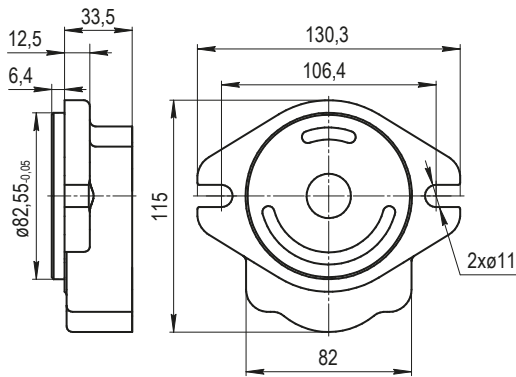
Dimension G = see section "Drive shafts"

Dimension F = see section "Mounting flanges with bearing support"

Dimension C = see section "Rear covers"

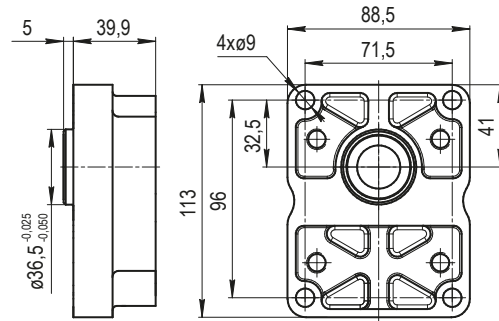
Working characteristic of outrigger bearing





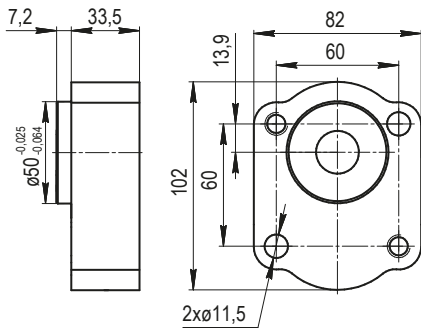
**C3**

SAE A



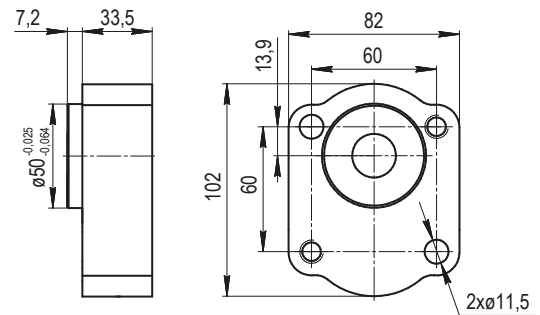
**C6**

EUROPEAN



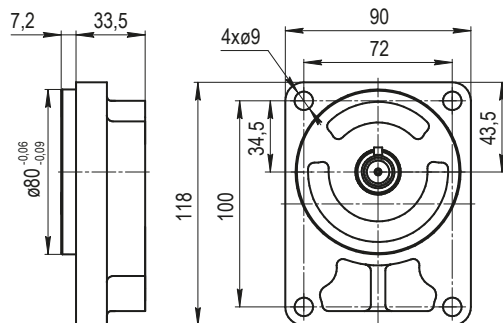
**C7**

GERMAN  $\varnothing 50$



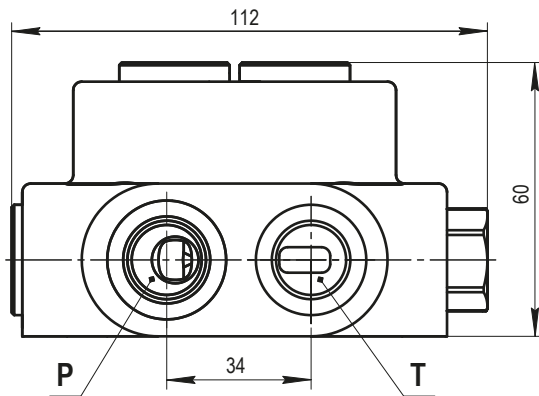
**C8**

GERMAN  $\varnothing 50$



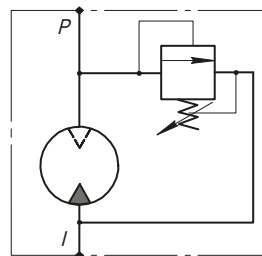
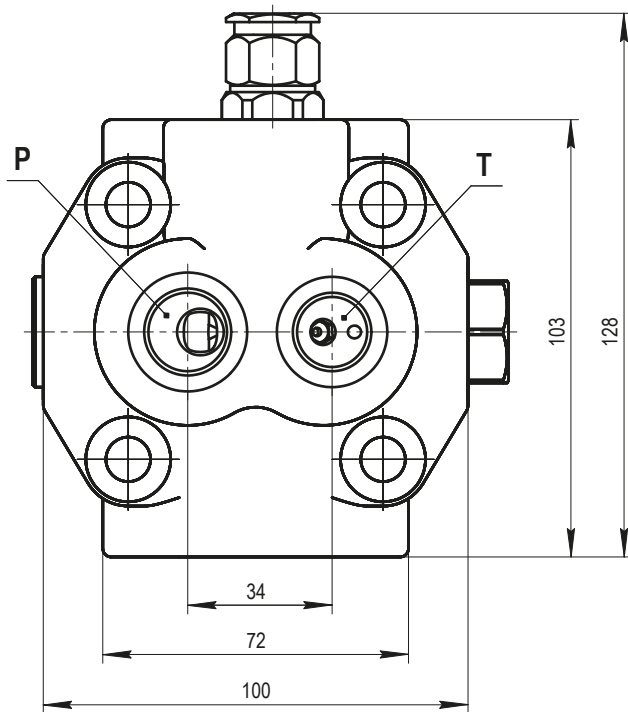
**C9**

GERMAN  $\varnothing 80$



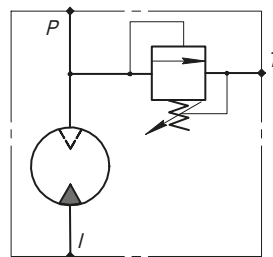
CODE	P	T
E	M20x1,5	M18x1,5
F	7/8"-14 UNF	3/4"-16 UNF
G	1/2" GAS	3/8" GAS

Pressure relief setting	bar	20÷280
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Return-to-suction relief valve

VR



Return-to-tank relief valve

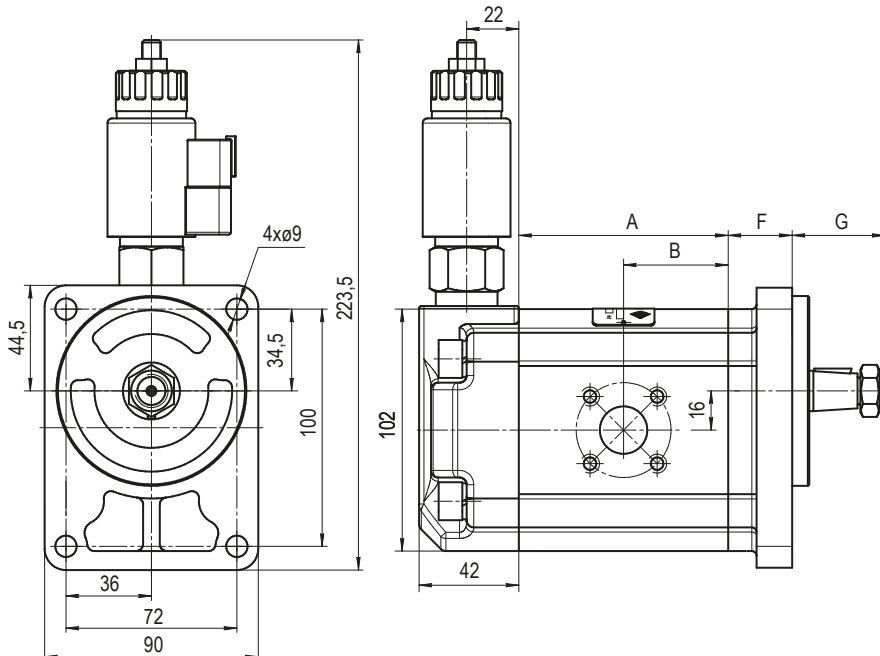
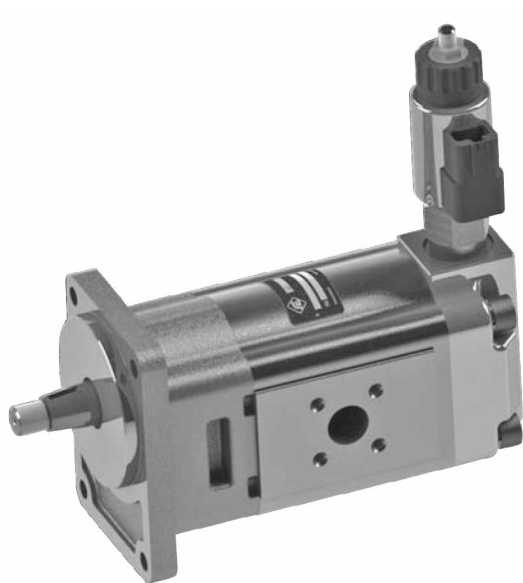
VR1

P - pressure line

T - drain

# VERSION WITH A RELIEF VALVE INTEGRATED INTO THE BACK COVER

**GM2K**

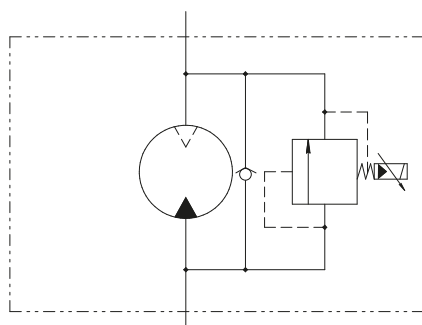


Ordering example  
GM2K16R-F2C9C-VE12-AA

Dimensions A and B = see section "Technical data"

Dimension G = see section "Drive shafts"

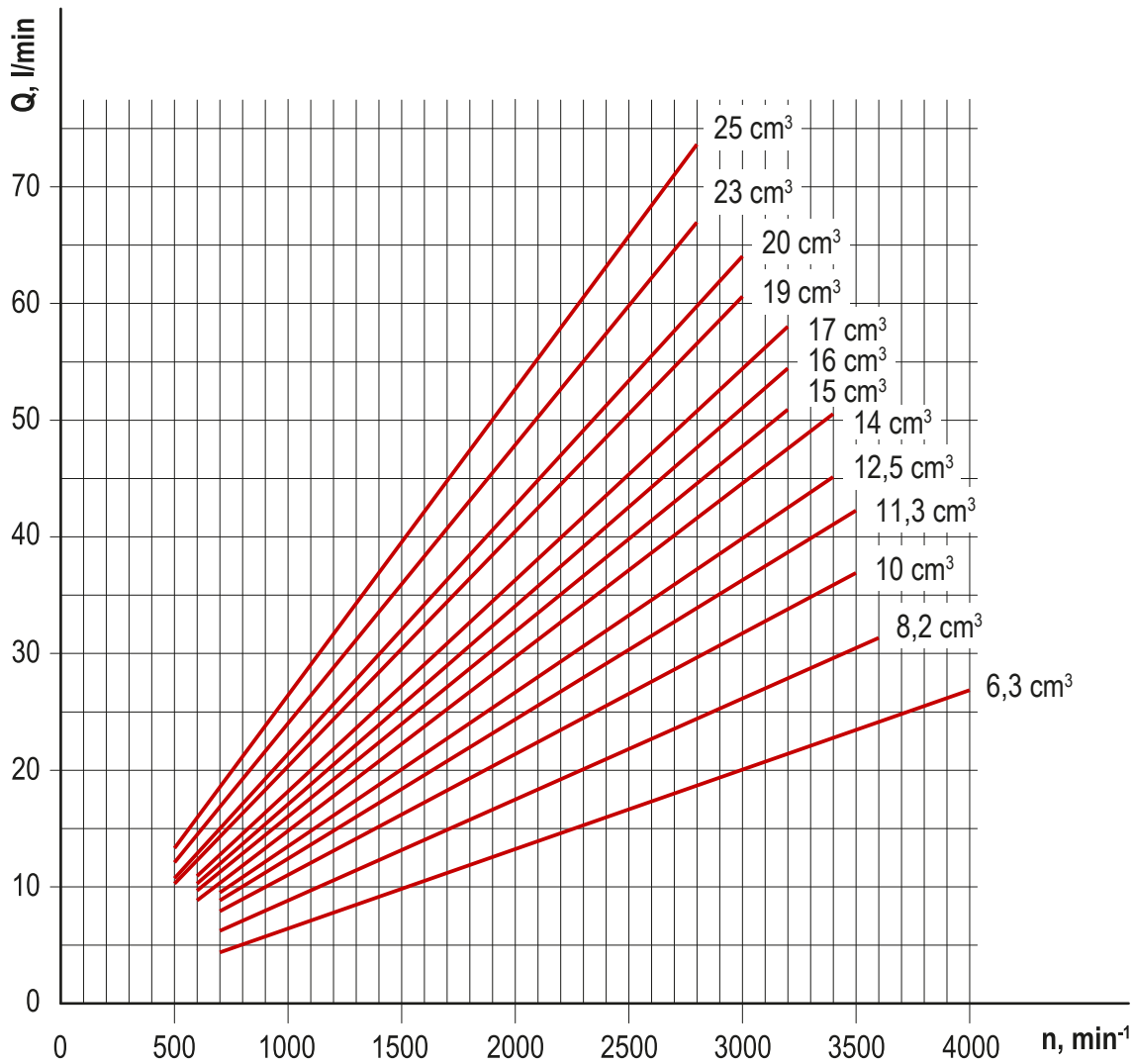
Dimension F = see section "Mounting flanges"



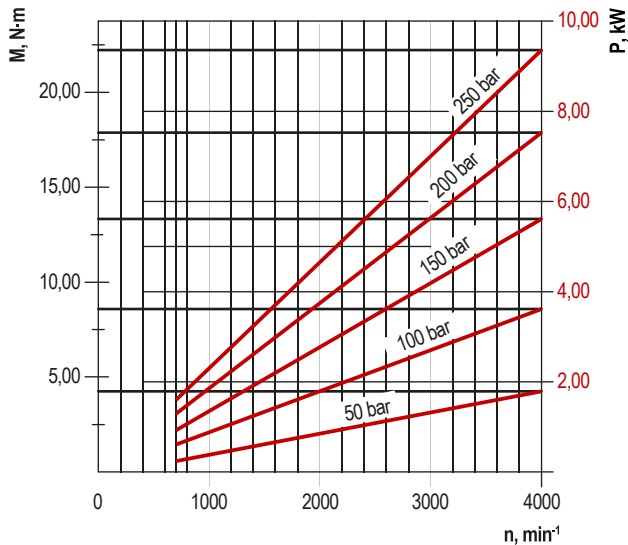
Power	1.4 A (12 VDC) 0.7 A (24 VDC)
PWM frequency	200 Hz
Coil resistance	7.2 Ω (12 VDC) 28.8 Ω (24 VDC)
Plug type	DIN 43650 Deutsch Lead wires

## ELECTRO-PROPORTIONAL RELIEF VALVE

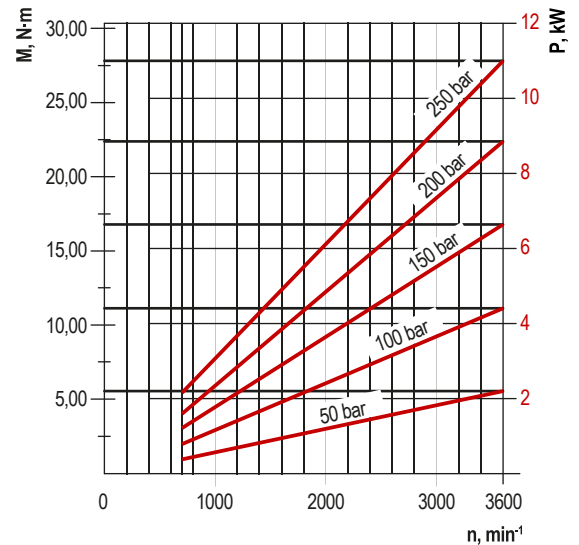
Performance curves carried out with oil viscosity at 16 mm<sup>2</sup>/sec, oil temperature at 60°C and max. continuous pressures for each type.



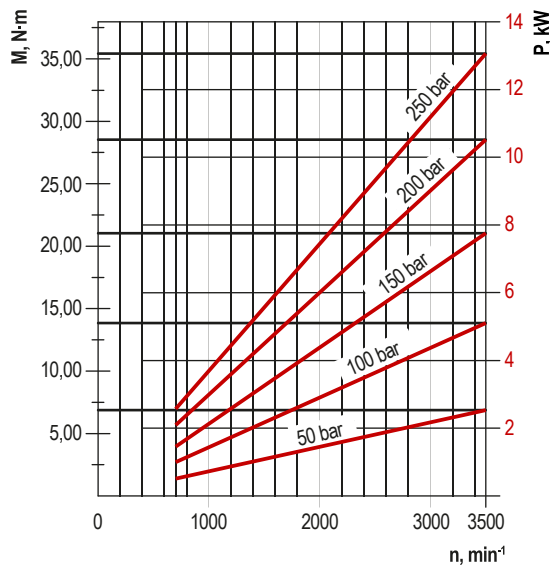
Performance curves carried out with oil viscosity at 16 mm<sup>2</sup>/sec and oil temperature at 60°C.



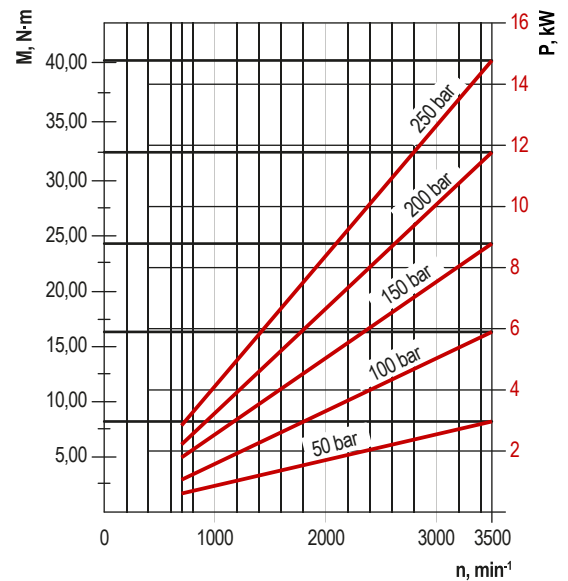
GM2K6



GM2K8

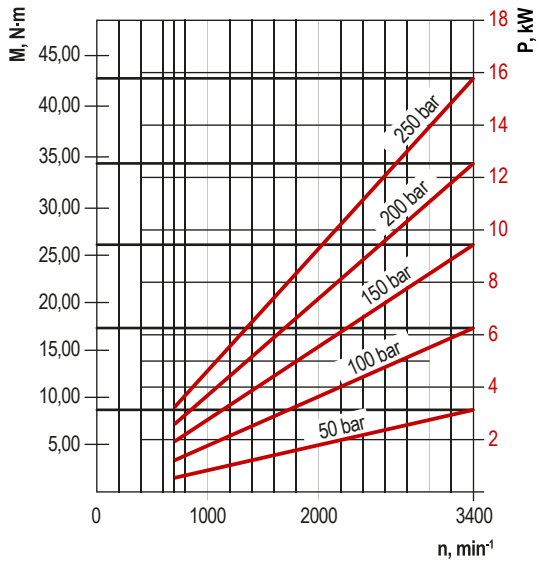


GM2K10

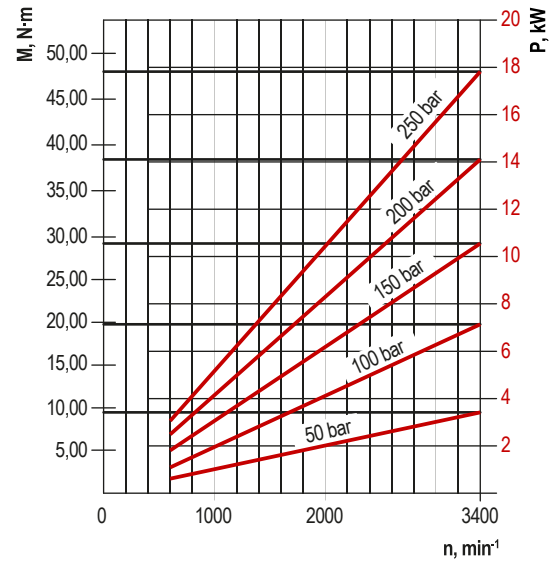


GM2K11

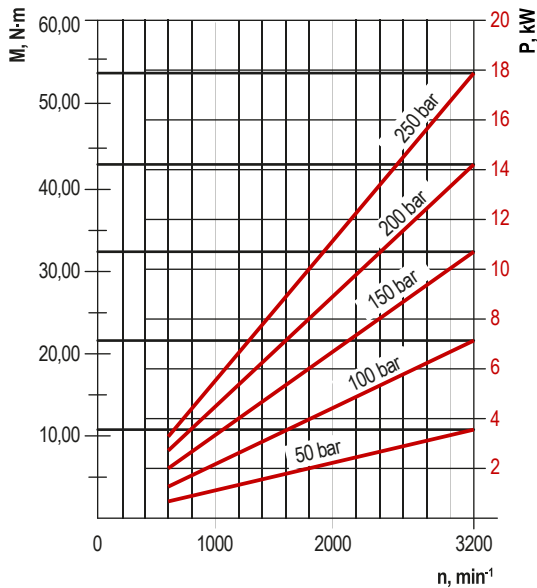
Performance curves carried out with oil viscosity at 16 mm<sup>2</sup>/sec and oil temperature at 60°C.



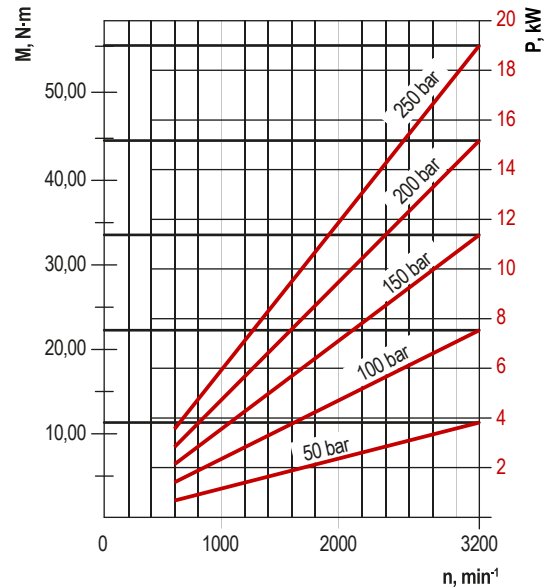
GM2K12



GM2K14



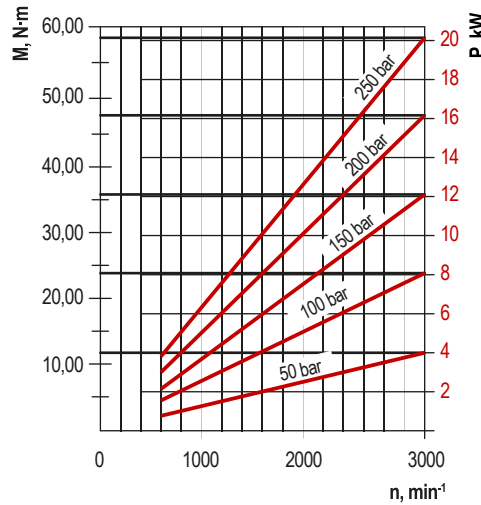
GM2K15



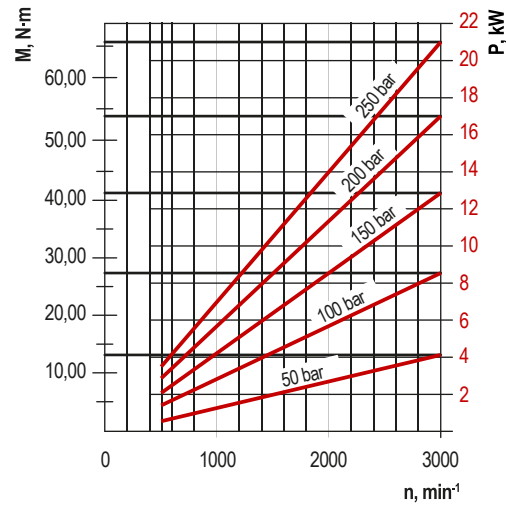
GM2K16



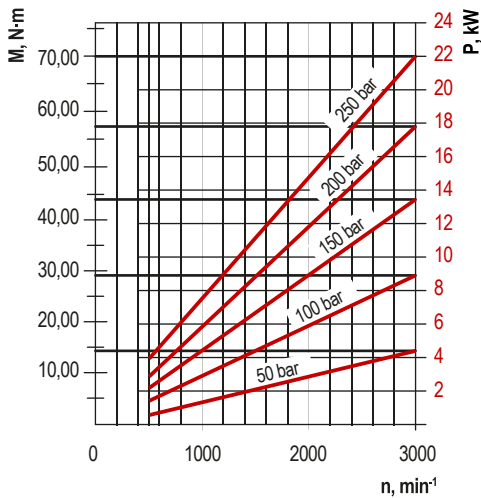
Performance curves carried out with oil viscosity at 16 mm<sup>2</sup>/sec and oil temperature at 60°C.



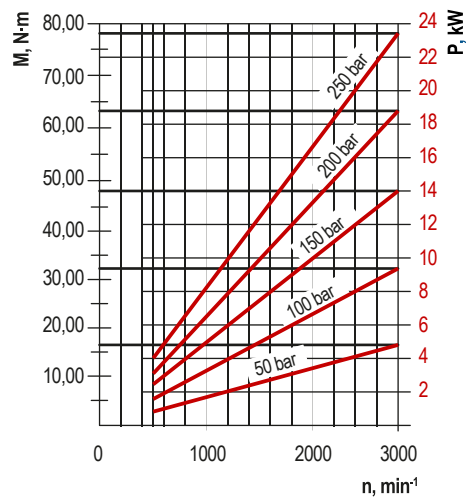
GM2K17



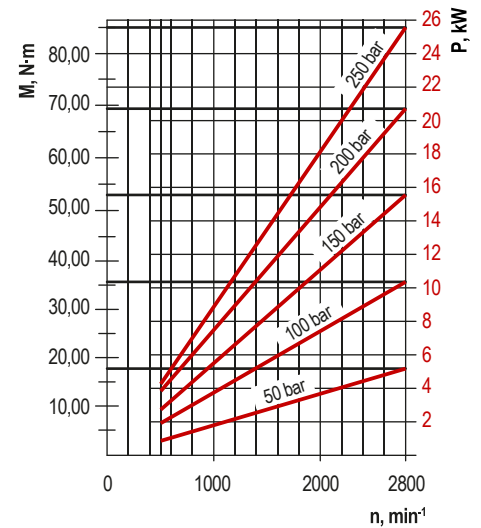
GM2K19



GM2K20



GM2K23



GM2K25

**GM 2 K 16 R - B2 31 F - - - - VE 12 - AA - -**

GEAR MOTOR	GM
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GROUP	2
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SERIES	K
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DISPLACEMENT	CODE
6,3 cm <sup>3</sup> /rev	6
8,2 cm <sup>3</sup> /rev	8
10 cm <sup>3</sup> /rev	10
11,3 cm <sup>3</sup> /rev	11
12,5 cm <sup>3</sup> /rev	12
14 cm <sup>3</sup> /rev	14
15 cm <sup>3</sup> /rev	15
16 cm <sup>3</sup> /rev	16
17 cm <sup>3</sup> /rev	17
19 cm <sup>3</sup> /rev	19
20 cm <sup>3</sup> /rev	20
22,5 cm <sup>3</sup> /rev	23
24,8 cm <sup>3</sup> /rev	25

ROTATION	CODE
Clockwise	R
Counterclockwise	L
Reversible	B

DRIVE SHAFTS	CODE
SAE A SPLINED (9 TEETH)	B2
SAE A SPLINED (10 TEETH)	B3
SAE A SPLINED (11 TEETH)	B4
GERMAN TAPERED 1:5	F2
EUROPEAN TAPERED 1:8	G2
SAE A STRAIGHT Ø15,87	H2
SAE A STRAIGHT Ø19,05	H8
TANG DRIVE FOR ELECTRIC MOTORS	K3
TANG DRIVE	K4
DIN 5482 SPLINED (9 TEETH)	I2

MOUNTING FLANGES	CODE
SAE A 2 BOLTS	31
SAE A 2 BOLTS (WITH O-RING)	32
EUROPEAN (Ø7,1)	61
EUROPEAN (Ø9)	62
GERMAN Ø80	81
GERMAN 2 BOLTS Ø50	91-92
GERMAN 2 BOLTS Ø52	93-94

### SPECIFICATION OF CONSUMER

CONNECTOR ELECTRICAL	CODE
DIN 43650	AA
Deutsch	DE
Lead wires	FL
AMP Jr	AJ

ELECTRICAL SUPPLY	CODE
1.4 A (12 VDC)	12
0.7 A (24 VDC)	24

TYPE OF VALVE	CODE
Valve of proportional pressure relieving	VE
Return-to-suction relief valve	VR
Return-to-tank relief valve	VR1

MATERIAL OF COVERS	CODE
Aluminium	
Cast iron	F

SEAL MATERIAL	CODE
NBR	
FPM (Viton)	V

PORTS POSITION	CODE
Side Inlet - side Outlet	
Back Inlet - back Outlet	1

PORTS	CODE
EUROPEAN FLANGE	B
GERMAN FLANGE	C
METRIC THREADED	E
SAE THREADED (ODT)	F
GAS THREADED (BSPP)	G

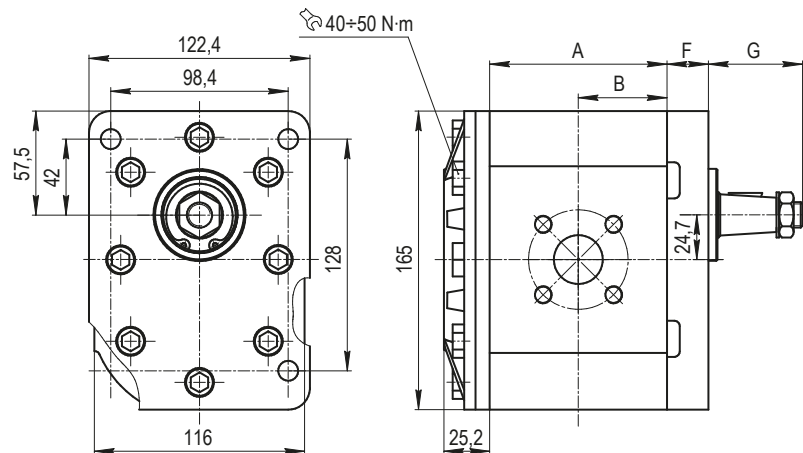
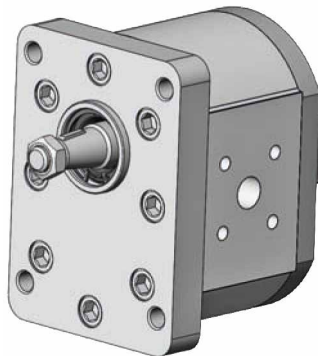
MOUNTING FLANGES WITH BEARING SUPPORT	CODE
SAE A	C3
EUROPEAN	C6
GERMAN Ø50	C7
GERMAN Ø50	C8
GERMAN Ø80	C9

Specification of consumer assigned if necessary after clarify special conditions with the customer

# GEAR MOTORS GROUP 3

## TECHNICAL DATA AND ASSEMBLING DIMENSIONS

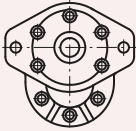
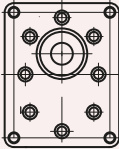
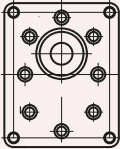
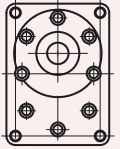
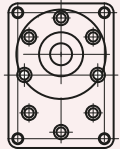








Type		GM3K20	GM3K23	GM3K25	GM3K28	GM3K32	GM3K36	GM3K40	GM3K45	GM3K50	GM3K56	GM3K63	GM3K71
Displacement	cm <sup>3</sup> /rev	20	23	25	28	32	36	40	45	50	56	63	71
Dimension A	mm	78,5	80,5	81,8	83,8	86,4	89	91,7	95,0	99	102	106,4	111,6
Dimension B	mm	39,25	40,25	40,9	41,9	43,2	44,5	45,85	47,5	49,5	51	53,2	55,8
Max. continuous pressure, P <sub>1</sub>	bar	250				240			230	210	200	190	170
Starting pressure, P <sub>2</sub>	bar	270				260			250	230	220	210	190
Min. speed at P <sub>1</sub> ≤ 100 bar, n <sub>min</sub>	min <sup>-1</sup>	700								600			
Max. speed, n <sub>max</sub>	min <sup>-1</sup>	3000								2500			
Output torque at P <sub>1</sub>	N·m	70	80,6	87,6	98,1	107,6	121,1	134,5	145	147,1	156,9	167,7	169,1
Weight	kg	6,9	7,0	7,1	7,2	7,3	7,5	7,6	7,8	8,1	8,3	8,5	8,8



Ordering example  
GM3K20R-B563B

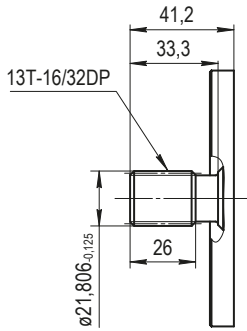
Dimension G = see section "Drive shafts"  
Dimension F = see section "Mounting flanges"

Weight shown are for motors with aluminum covers. Weight for motors with cast iron covers should be refined

<p><b>GM3K</b></p>	 SAE B 2 BOLTS	 EUROPEAN Ø50,8	 EUROPEAN Ø60,3	 GERMAN Ø105	 GERMAN Ø100
 SAE B SPLINED (13 TEETH)	B5 33				
 SAE BB SPLINED (15 TEETH)	B6 33				
 GERMAN TAPERED 1:5 (M14)				F4 88	F4 89
 GERMAN TAPERED 1:5 (M16)					F6 89
 EUROPEAN TAPERED 1:8 (M14)		G4 63	G4 64		
 EUROPEAN TAPERED 1:8 (M16)		G5 63	G5 64		
 SAE BB STRAIGHT Ø22,2	H3 33				
 SAE BB STRAIGHT Ø25,4	H4 33				

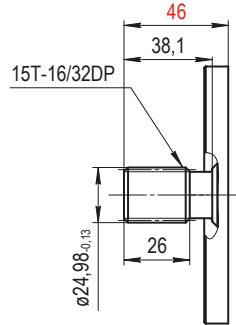
Present combination types of mounting flanges and shafts are used to serial production. The other combination and date of production, before ordering clarify with the manufacturer.

Max. torque 300 N·m



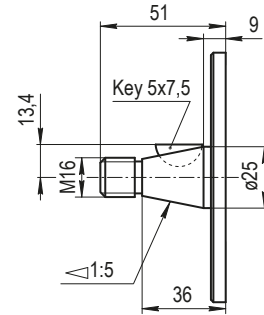
**B5** SAE B SPLINED (13 TEETH)

Max. torque 450 N·m



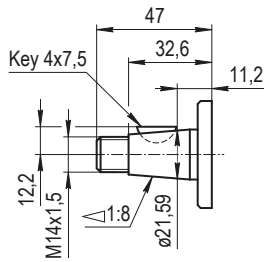
**B6** SAE BB SPLINED (15 TEETH)

Max. torque 240 N·m



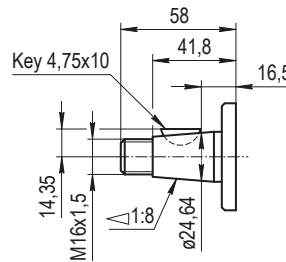
**F4** GERMAN TAPERED 1:5

Max. torque 240 N·m



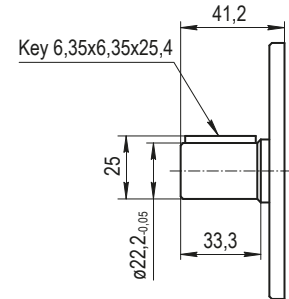
**G4** EUROPEAN TAPERED 1:8

Max. torque 350 N·m



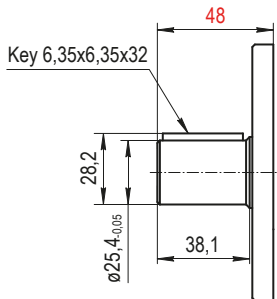
**G5** EUROPEAN TAPERED 1:8

Max. torque 185 N·m



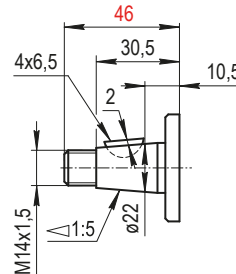
**H3** SAE B STRAIGHT Ø22.2

Max. torque 280 N·m

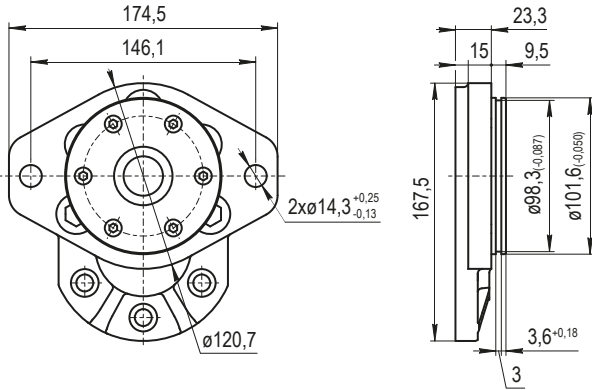


**H4** SAE BB STRAIGHT Ø25.4

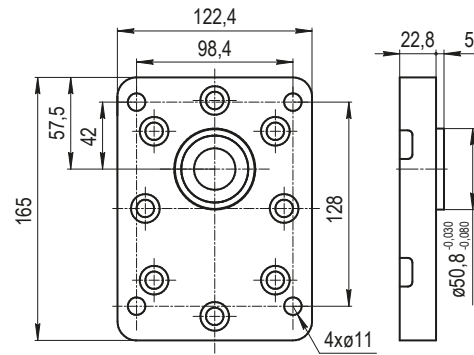
Max. torque 140 N·m



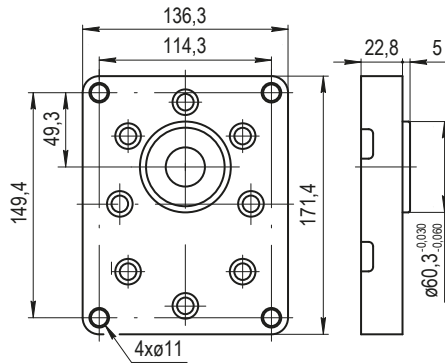
**F6** GERMAN TAPERED 1:5



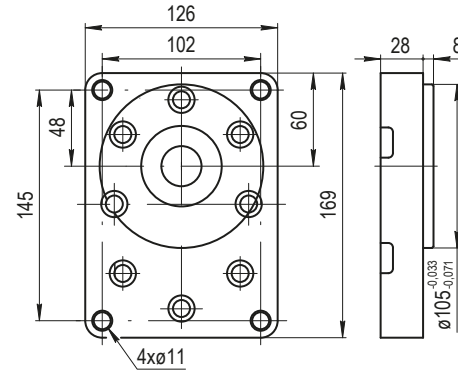
**33** SAE B 2 BOLTS



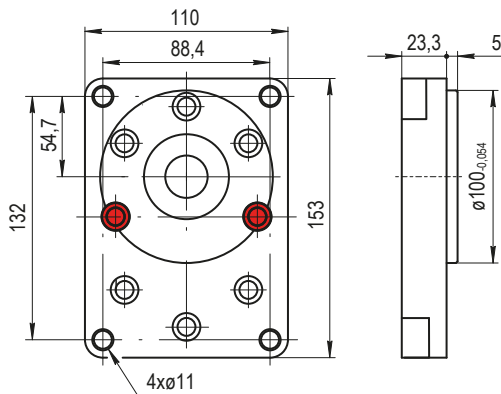
**63** EUROPEAN Ø50,8



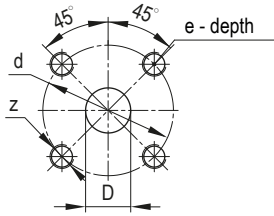
**64** EUROPEAN Ø60,3



**88** GERMAN Ø105



**89** GERMAN Ø100

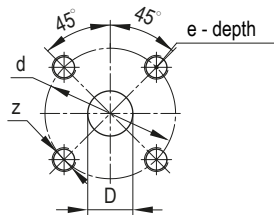


**B** EUROPEAN FLANGE

Type	Inlet				Outlet			
	d	D	z	e	d	D	z	e
GM3K20÷56	40	19	M8	18	51	27	M10	18

For reversible motors

Type	Inlet				Outlet			
	d	D	z	e	d	D	z	e
GM3K20÷56	51	27	M10	18	51	27	M10	18

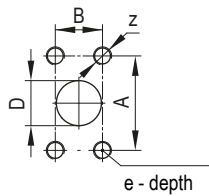


**C** GERMAN FLANGE

Type	Inlet				Outlet			
	d	D	z	e	d	D	z	e

For reversible motors

Type	Inlet				Outlet			
	d	D	z	e	d	D	z	e

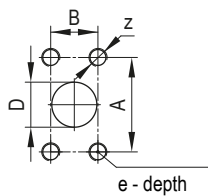


**D** SAE FLANGE (UNC)

Type	Inlet					Outlet				
	A	B	D	z	e	A	B	D	z	e
GM3K20÷32	47,6	22,2	19	3/8-16 UNC	16	52,4	26,2	25	7/16-14 UNC	16
GM3K36÷56	52,4	26,2	25			58,7	30,2	32		
GM3K63÷71	58,7	30,2	32			7/16-14 UNC	69,8	37,5		

For reversible motors

Type	Inlet					Outlet				
	A	B	D	z	e	A	B	D	z	e
GM3K20÷32	52,4	26,2	25	3/8-16 UNC	16	52,4	26,2	25	3/8-16 UNC	16
GM3K36÷56	58,7	30,2	32	7/16-14 UNC	16	58,7	30,2	32	7/16-14 UNC	16
GM3K63÷71	69,8	37,5	40	1/2-13 UNC	16	69,8	37,5	40	1/2-13 UNC	16

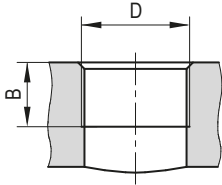


**W** SAE FLANGE (METRIC)

Type	Inlet					Outlet				
	A	B	D	z	e	A	B	D	z	e
GM3K20÷32	47,6	22,2	19	M10	16	52,4	26,2	25	M10	16
GM3K36÷56	52,4	26,2	25			58,7	30,2	32		
GM3K63÷71	58,7	30,2	32			69,8	37,5	40		

For reversible motors

Type	Inlet					Outlet				
	A	B	D	z	e	A	B	D	z	e
GM3K20÷32	52,4	26,2	25	M10	16	52,4	26,2	25	M10	16
GM3K36÷56	58,7	30,2	32			58,7	30,2	32		

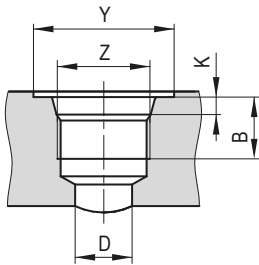


**E** METRIC THREADED

	Type	Inlet		Outlet	
		D	B	D	B
	GM3K20÷25	M26x1,5	24	M26x1,5	24
	GM3K28÷50	M33x2		M33x2	
	GM3K56÷71	M42x2		M42x2	

For reversible motors

	Type	Inlet		Outlet	
		D	B	D	B
	GM3K20÷32	M26x1,5	24	M26x1,5	24
	GM3K36÷56	M33x2		M33x2	
	GM3K63÷71	M42x2		M42x2	

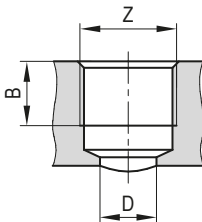


**F** SAE THREADED

	Type	Inlet					Outlet				
		Z	B	D	Y	K	Z	B	D	Y	K
	GM3K20÷25	1 1/16-12 UN	19	20	41	3,3	1 1/16-12 UN	19	20	41	3,3
	GM3K28÷36						1 5/16-12 UN				
	GM3K40÷63	1 5/16-12 UN	20	23	49		20	30	58		
	GM3K71	1 5/8-12 UN	30	58	1 7/8-12 UN		37	65			

For reversible motors

	Type	Inlet					Outlet				
		Z	B	D	Y	K	Z	B	D	Y	K
	GM3K20÷25	1 1/16-12 UN	19	20	41	3,3	1 1/16-12 UN	19	20	41	3,3
	GM3K28÷36						1 5/16-12 UN				
	GM3K40÷63	1 5/16-12 UN	20	23	49		20	23	49		
	GM3K71	1 5/8-12 UN	30	58	1 5/8-12 UN		30	58			



**G** GAS THREADED

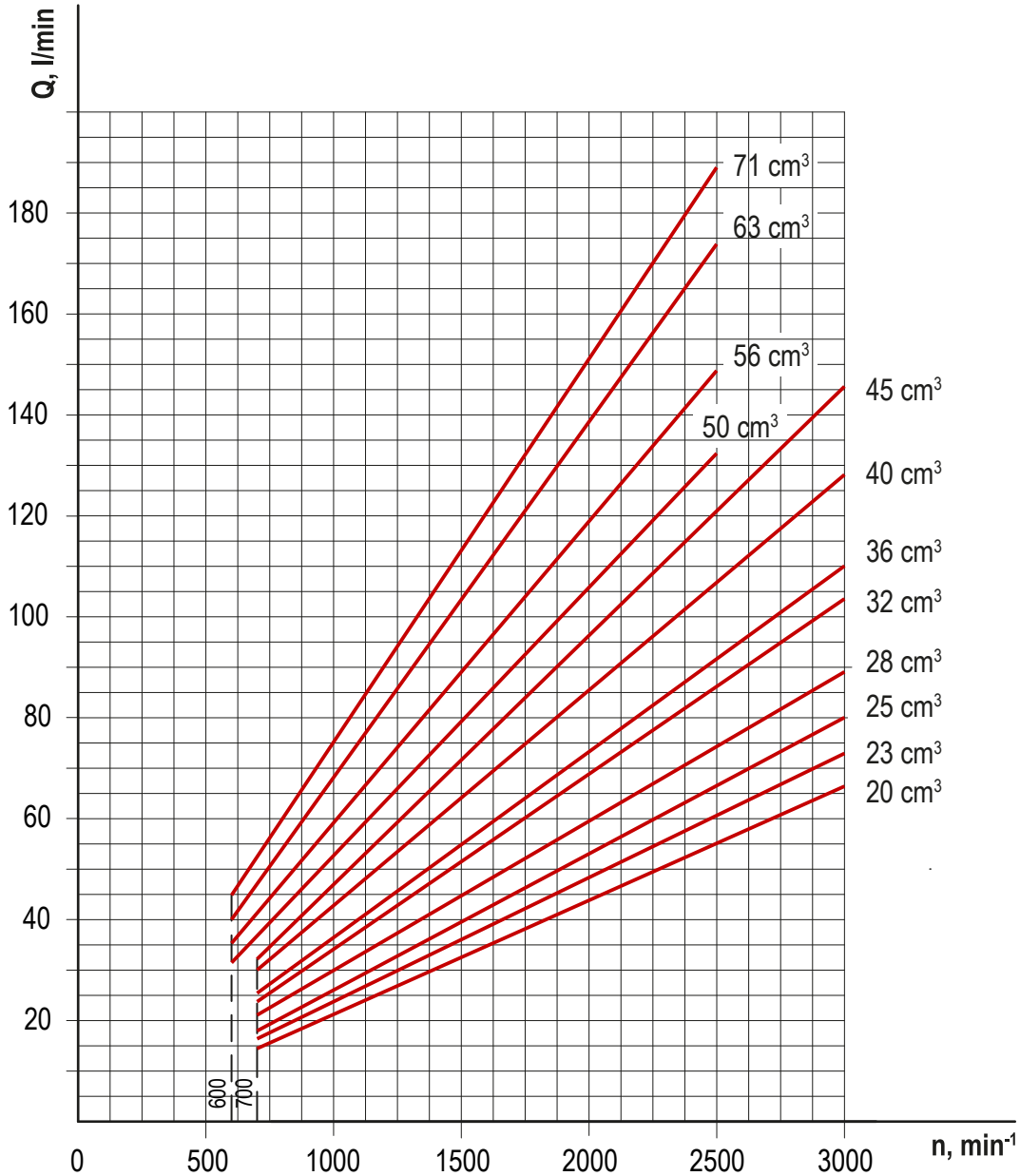
	Type	Inlet			Outlet		
		Z	B	D	Z	B	D
	GM3K20÷25	3/4" GAS	19	20	3/4" GAS	19	20
	GM3K28÷50	1" GAS	21	27	1" GAS	21	27
	GM3K56÷71	1 1/4" GAS	21	33	1 1/4" GAS	21	33

For reversible motors

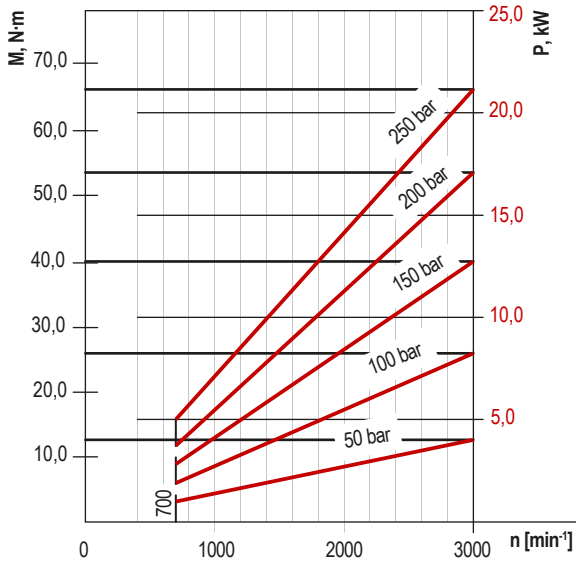
	Type	Inlet			Outlet		
		Z	B	D	Z	B	D
	GM3K20÷25	3/4" GAS	19	20	3/4" GAS	19	20
	GM3K28÷50	1" GAS	21	27	1" GAS	21	27
	GM3K56÷71	1 1/4" GAS	21	33	1 1/4" GAS	21	33



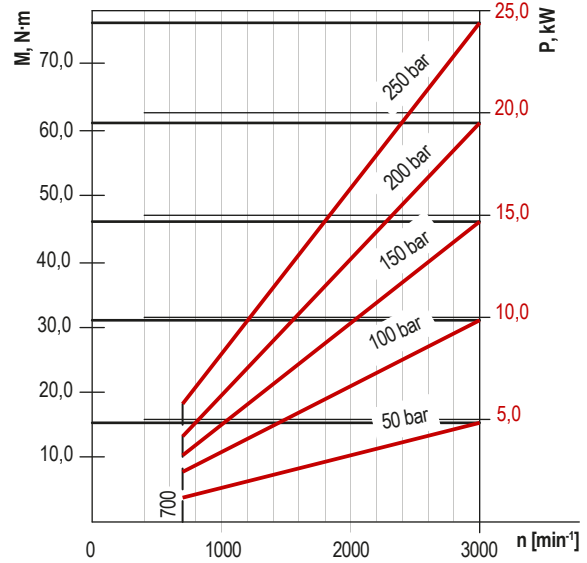
Performance curves carried out with oil viscosity at 16 mm<sup>2</sup>/sec, oil temperature at 60°C and max. continuous pressures for each type.



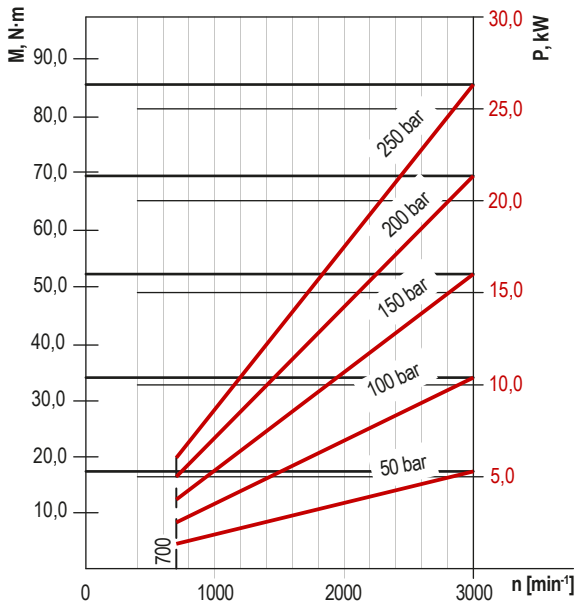
Performance curves carried out with oil viscosity at 16 mm<sup>2</sup>/sec and oil temperature at 60°C.



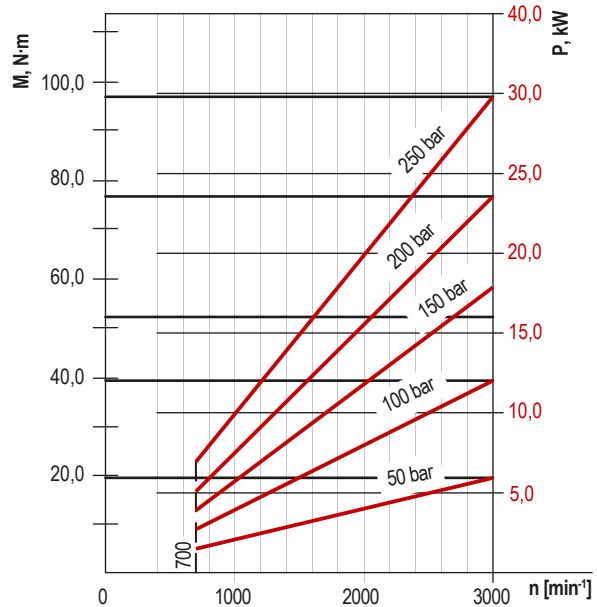
GM3K20



GM3K23

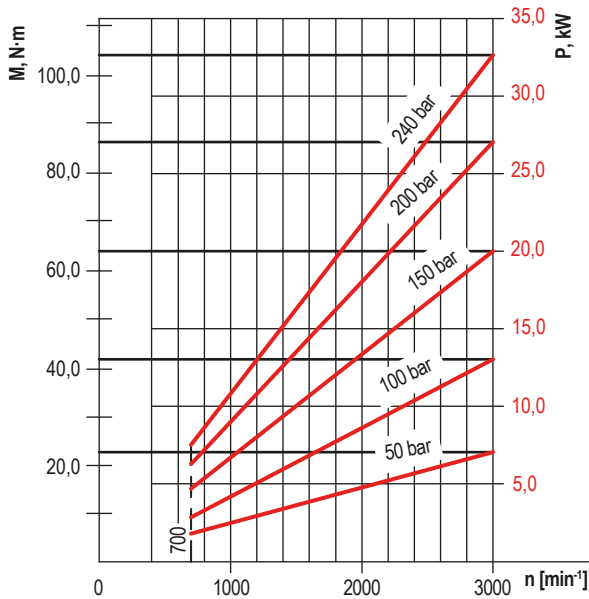


GM3K25

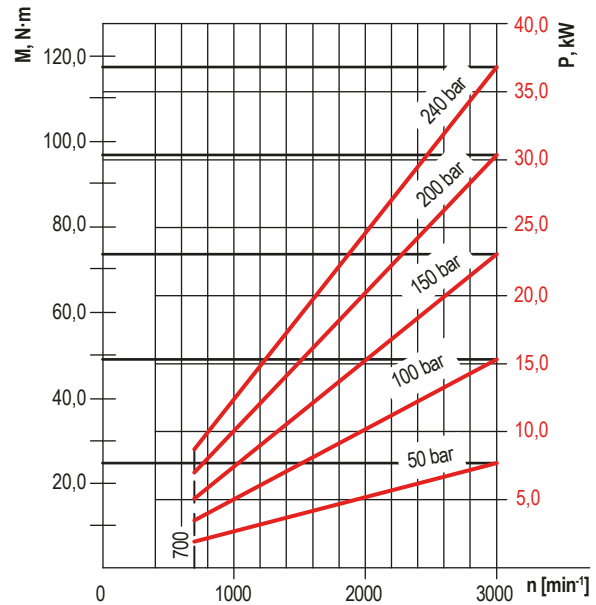


GM3K28

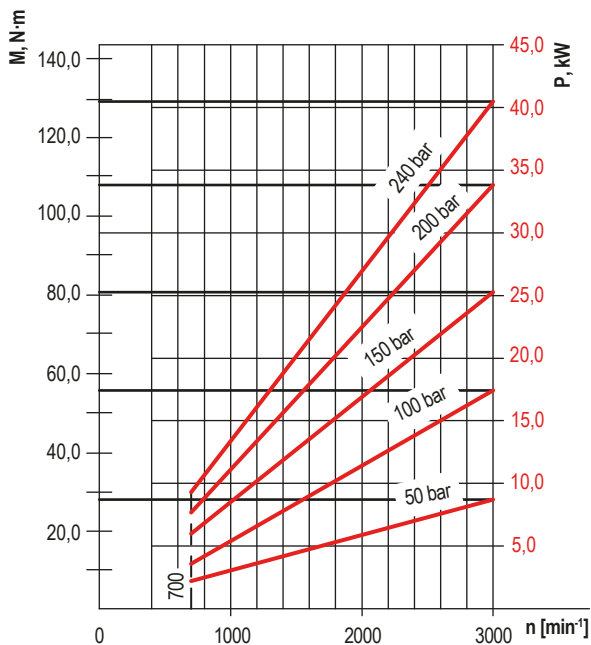
Performance curves carried out with oil viscosity at 16 mm<sup>2</sup>/sec and oil temperature at 60°C.



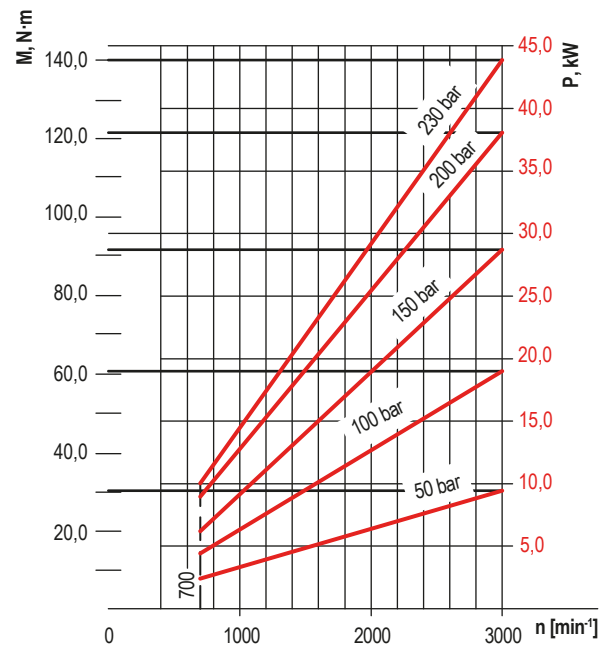
GM3K32



GM3K36

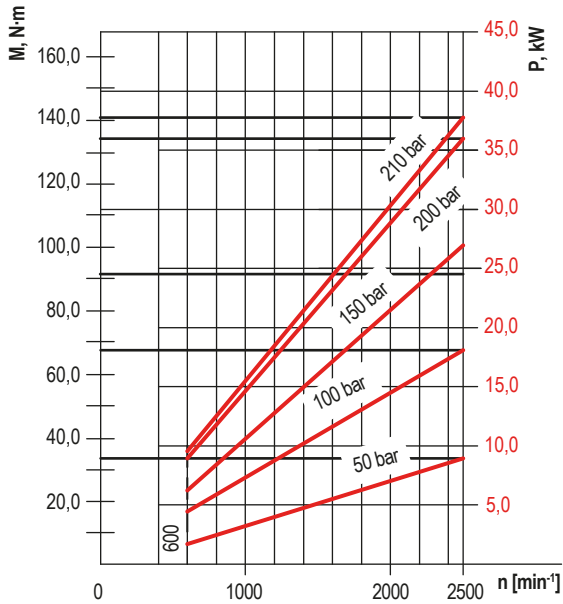


GM3K40

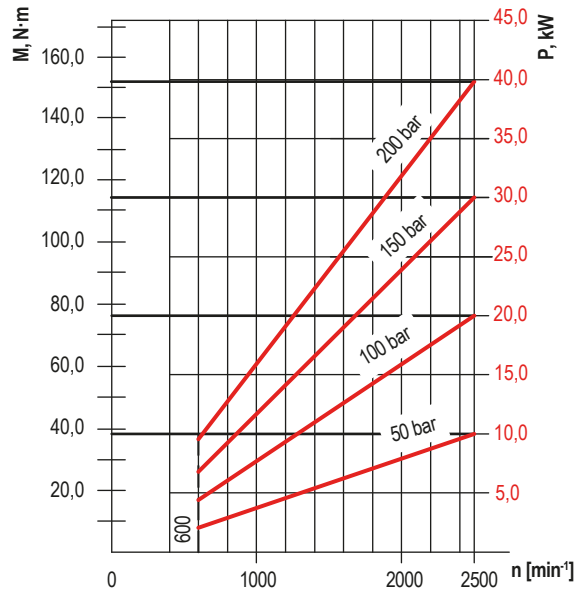


GM3K45

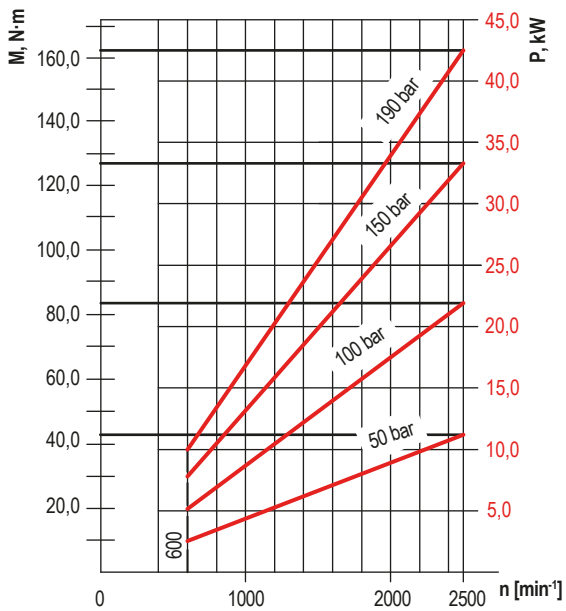
Performance curves carried out with oil viscosity at 16 mm<sup>2</sup>/sec and oil temperature at 60°C.



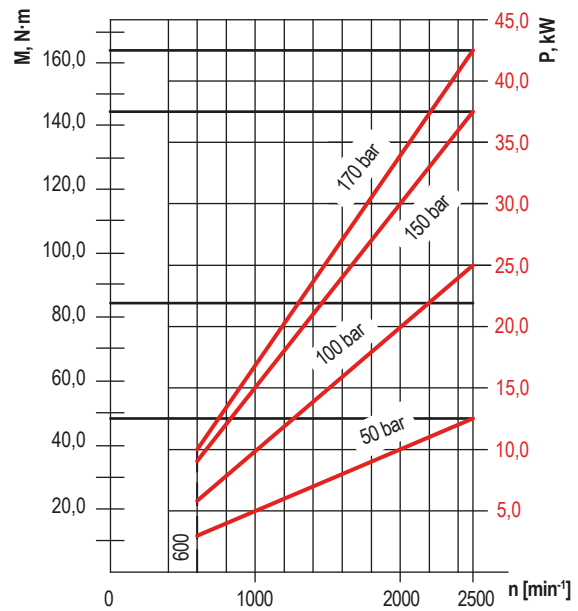
GM3K50



GM3K56



GM3K63



GM3K71

**GM 3 K 20 R - B5 63 B -**      

GEAR MOTOR	GM
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GROUP	3
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SERIES	K
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DISPLACEMENT	CODE
20 cm <sup>3</sup> /rev	20
23 cm <sup>3</sup> /rev	23
25 cm <sup>3</sup> /rev	25
28 cm <sup>3</sup> /rev	28
32 cm <sup>3</sup> /rev	32
36 cm <sup>3</sup> /rev	36
40 cm <sup>3</sup> /rev	40
45 cm <sup>3</sup> /rev	45
50 cm <sup>3</sup> /rev	50
56 cm <sup>3</sup> /rev	56
63 cm <sup>3</sup> /rev	63
71 cm <sup>3</sup> /rev	71

ROTATION	CODE
Clockwise	R
Counterclockwise	L
Reversible	B

DRIVE SHAFTS	CODE
SAE B SPLINED 13 TEETH	B5
SAE BB SPLINED 15 TEETH	B6
GERMAN TAPERED 1:5 (M16)	F4
GERMAN TAPERED 1:5 (M14)	F6
EUROPEAN TAPERED 1:8 (M14)	G4
EUROPEAN TAPERED 1:8 (M16)	G5
SAE B STRAIGHT Ø22,2	H3
SAE BB STRAIGHT Ø25,4	H4

SPECIFICATION OF CONSUMER

MATERIAL OF COVERS	CODE
Aluminium	
Cast iron	F

SEAL MATERIAL	CODE
NBR	
FPM (Viton)	V

PORTS	CODE
EUROPEAN FLANGE	B
GERMAN FLANGE	C
SAE FLANGE (UNC)	D
SAE FLANGE (METRIC)	W
METRIC THREADED	E
SAE THREADED	F
GAS THREADED	G

MOUNTING FLANGES	CODE
SAE B 2 bolts	33
EUROPEAN Ø50,8	63
EUROPEAN Ø60,3	64
GERMAN Ø105	88
GERMAN Ø100	89

Specification of consumer assigned if necessary after clarify special conditions with the customer

# ***RECOMMENDATIONS ON INSTALLATION***

Before mounting a gear pump (motor), please, check the hydraulic system (all its components). Early pump (motor) breakdown may occur due to non-observance of usage rules and the condition of the system.

## **WHEN INSTALLING YOU SHOULD KEEP THE NEXT REQUIREMENTS:**

1. Check the rotation of the pump (motor) to be consistent with the drive shaft one. To define the rotation direction, check the drive shaft: right - clockwise, left - counterclockwise.
2. The pump (motor) is mounted with the screws (nuts), avoiding warp, which can cause radial and axial loads. The screws should be fixed with lock washers.
3. When mounting corners, nipples and others clean the line and o-rings. Grease the o-rings. Inlet and delivery lines should be adjusted with the help of flange.
4. Check the fluid for contamination. If necessary change it. When changing the fluid, change the filter element and the tank valve.
5. After installation it's recommended to fulfill pump (motor) run in at low loads. Check all the components of hydraulic system



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