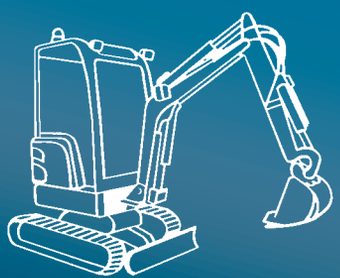
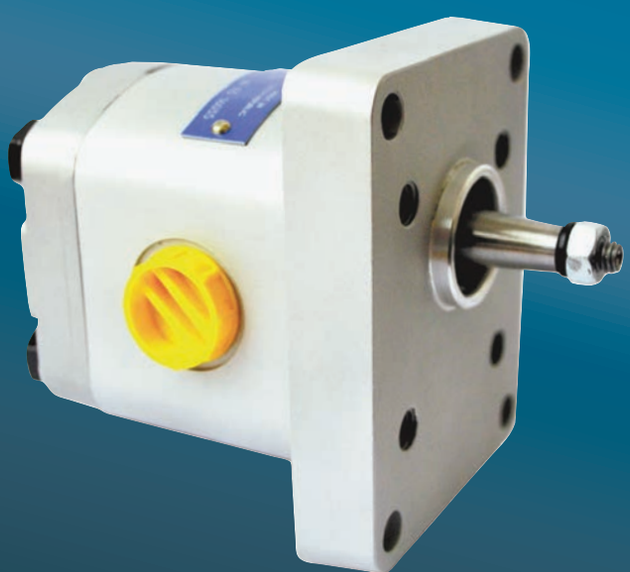
jihostroj
AERO TECHNOLOGY & HYDRAULICS





Displacement from 0.8 to 11.8 ccm
Pressure up to 280 bar
Speed from 500 to 5000 RPM

GEAR MOTORS
PM23

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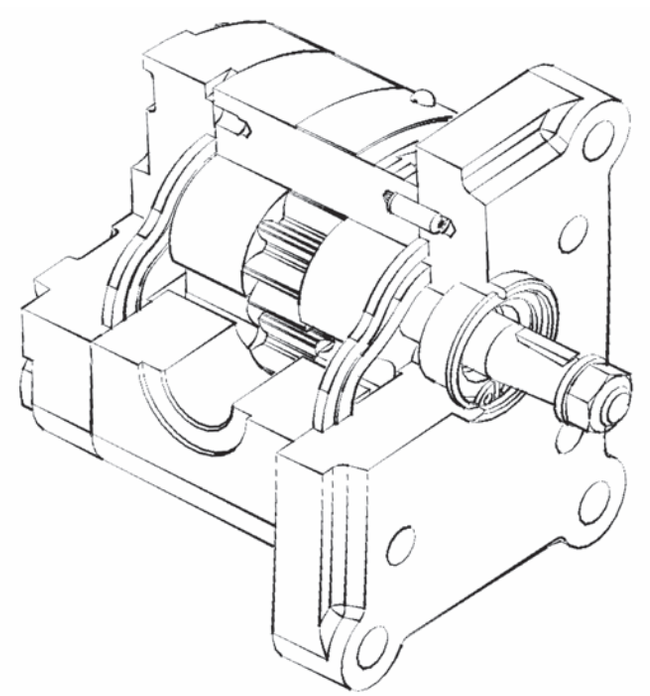
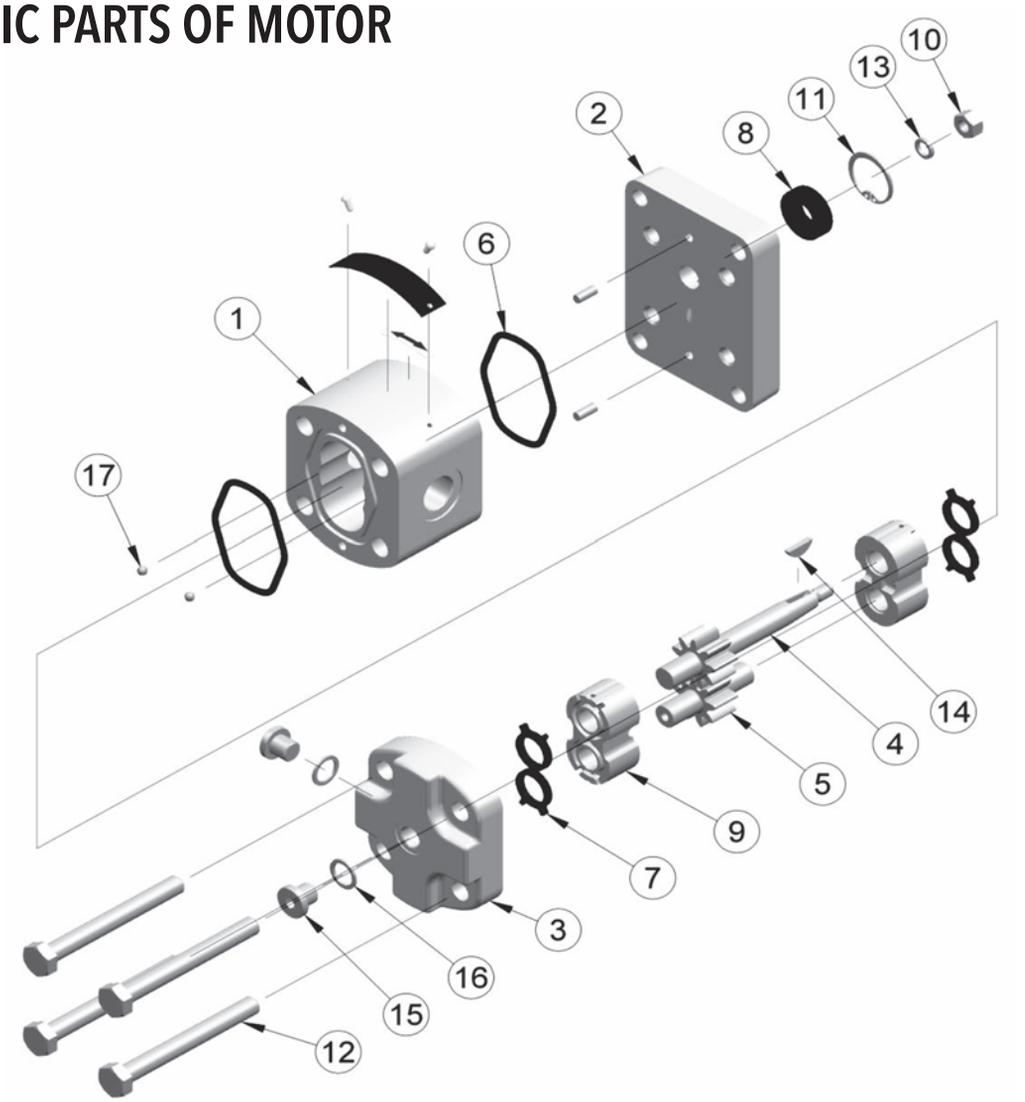


DESCRIPTION

- Gear motors are used for transformation of liquid pressure head in mechanical energy. PM23 series motors are designed for advanced hydraulic systems with lower capacity (approximately up to 8 kW) with high operational reliability and long service life. They have been produced in both one-way and reversible version with internal or external drainage. A wide variety of designs with diverse drives, connecting flanges, fluid inlets and outlets enable the motors to be used in hydraulic systems of both fixed and mobile machines and equipment. Types of connections and flanges as well as the other connecting dimensions correspond to all worldwide standards.
- The motors are made of high-quality aluminium alloys with steel gear-wheels and they are equipped with hydraulic axial play compensation of new generation ensuring stable performance and torsion moment within the entire range of speeds and temperatures. As for their dimensions, PM23 motors are fully interchangeable with PM and PM2 motors.

BASIC PARTS OF MOTOR



1. Body
2. Flange
3. Cover
4. Driving gear
5. Driven gear
6. Peripheral sealing
7. Balancing sealing
8. Shaft seal
9. Bearing sleeves
10. Nut
11. Safety ring
12. Bolts
13. Spring washer
14. Woodruff key
15. Plug
16. Seal ring AL
17. Steel marble

PARAMETER TABLE

One direction motors

Nominal Size Parameters		Sym.	Unit	PM23 0.80	PM23 1.20	PM23 1.60	PM23 2.10	PM23 2.50	PM23 3.30	PM23 3.60
Actual displacement		V_g	[cm^3]	0.85	1.25	1.68	2.08	2.51	3.32	3.61
Rotation speed	nominal	n_n	[min^{-1}]	1500	1500	1500	1500	1500	1500	1500
	maximum	n_{max}	[min^{-1}]	5000	5000	4500	4500	4000	4000	4000
	minimum	n_{min}	[min^{-1}]	800	800	600	600	500	500	500
Pressure at outlet	maximum	p_{1max}	[bar]	0.5	0.5	0.5	0.5	0.5	0.5	0.5
	minimum	p_{1min}	[bar]	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3
Pressure at inlet	max. continuous	p_{2n}	[bar]	280	280	280	280	280	280	260
	maximum	p_{2max}	[bar]	300	300	300	300	300	300	280
	peak	p_3	[bar]	310	310	310	310	310	310	290
Nominal input flow rate (max.) at n_n and p_{2n}		Q_n	[$dm^3.min^{-1}$]	1.41	2.12	2.73	3.58	4.17	5.50	6.00
Maximum input flow rate at n_{max} and p_{2max}		Q_{max}	[$dm^3.min^{-1}$]	4.26	6.38	7.66	10.05	10.64	14.04	15.32
Nominal output power (min.) at n_n and p_{2n}		P_n	[kW]	0.30	0.53	0.71	0.95	1.23	1.63	1.64
Maximum output power at n_{max} a p_{2max}		P_{max}	[kW]	1.06	1.88	2.27	3.04	3.51	4.65	4.72
Nominal Torque at n_n and p_{2n}		M	[Nm]	3.21	4.81	6.42	8.42	10.03	13.24	13.41
Weight		m	[kg]	0.82	0.84	0.85	0.87	0.89	0.92	0.93

One direction motors

Nominal Size Parameters		Sym.	Unit	PM23 4.40	PM23 4.80	PM23 5.80	PM23 6.20	PM23 7.90	PM23 11.80
Actual displacement		V_g	[cm^3]	4.39	4.79	5.80	6.21	7.89	11.79
Rotation speed	nominal	n_n	[min^{-1}]	1500	1500	1500	1500	1500	1500
	maximum	n_{max}	[min^{-1}]	4000	3800	3800	3500	3000	1800
	minimum	n_{min}	[min^{-1}]	500	500	500	500	500	500
Pressure at outlet	maximum	p_{1max}	[bar]	0.5	0.5	0.5	0.5	0.5	0.5
	minimum	p_{1min}	[bar]	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3
Pressure at inlet	max. continuous	p_{2n}	[bar]	250	230	200	180	160	100
	maximum	p_{2max}	[bar]	270	250	220	200	180	150
	peak	p_3	[bar]	280	260	230	210	190	160
Nominal input flow rate (max.) at n_n and p_{2n}		Q_n	[$dm^3.min^{-1}$]	7.33	8.00	9.67	10.33	13.17	19.67
Maximum input flow rate at n_{max} and p_{2max}		Q_{max}	[$dm^3.min^{-1}$]	18.72	19.40	23.45	23.09	25.21	22.60
Nominal output power (min.) at n_n and p_{2n}		P_n	[kW]	1.92	1.93	2.03	1.96	2.21	2.06
Maximum output power at n_{max} a p_{2max}		P_{max}	[kW]	5.53	5.31	5.66	5.07	4.97	3.71
Nominal Torque at n_n and p_{2n}		M	[Nm]	15.76	15.81	16.62	15.99	18.11	16.90
Weight		m	[kg]	0.96	0.98	1.02	1.04	1.10	1.25

One direction motors

Nominal Size Parameters		Sym.	Unit	PM23 1.00	PM23 2.30	PM23 2.65	PM23 6.40	PM23 7.00	PM23 10.00
Actual displacement		V_g	[cm^3]	1.02	2.30	2.67	6.42	7.00	10.00
Rotation speed	nominal	n_n	[min^{-1}]	1500	1500	1500	1500	1500	1500
	maximum	n_{max}	[min^{-1}]	5000	4500	4500	3500	3000	1800
	minimum	n_{min}	[min^{-1}]	800	500	500	500	500	500
Pressure at outlet	maximum	p_{1max}	[bar]	0.5	0.5	0.5	0.5	0.5	0.5
	minimum	p_{1min}	[bar]	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3
Pressure at inlet	max. continuous	p_{2n}	[bar]	280	280	280	180	170	100
	maximum	p_{2max}	[bar]	300	300	300	200	190	150
	peak	p_3	[bar]	310	310	310	210	200	160
Nominal input flow rate (max.) at n_n and p_{2n}		Q_n	[$dm^3.min^{-1}$]	1.76	4.06	4.52	10.67	11.67	16.67
Maximum input flow rate at n_{max} and p_{2max}		Q_{max}	[$dm^3.min^{-1}$]	5.32	11.01	12.69	23.83	22.34	19.15
Nominal output power (min.) at n_n and p_{2n}		P_n	[kW]	0.36	1.05	1.31	2.02	2.08	1.75
Maximum output power at n_{max} a p_{2max}		P_{max}	[kW]	1.28	3.36	4.21	5.24	4.66	3.15
Nominal Torque at n_n and p_{2n}		M	[Nm]	4.01	9.22	10.63	16.50	17.05	14.32
Weight		m	[kg]	0.83	0.88	0.90	1.05	1.08	1.20

Reversible motors

Nominal Size Parameters		Sym.	Unit	PM23 0.80	PM23 1.20	PM23 1.60	PM23 2.10	PM23 2.50	PM23 3.30	PM23 3.60
Actual displacement		V_g	[cm^3]	0.85	1.25	1.68	2.08	2.51	3.32	3.61
Rotation speed	nominal	n_n	[min^{-1}]	1500	1500	1500	1500	1500	1500	1500
	maximum	n_{max}	[min^{-1}]	5000	5000	4500	4500	4000	4000	4000
	minimum	n_{min}	[min^{-1}]	800	800	600	600	500	500	500
Pressure at outlet	maximum	p_{1max}	[bar]	210	210	210	210	210	210	190
	minimum	p_{1min}	[bar]	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3
Pressure at inlet	max. continuous	p_{2n}	[bar]	280	280	280	280	280	280	260
	maximum	p_{2max}	[bar]	300	300	300	300	300	300	280
	peak	p_3	[bar]	310	310	310	310	310	310	290
Nominal input flow rate (max.) at n_n and p_{2n}		Q_n	[$dm^3.min^{-1}$]	1.41	2.12	2.73	3.58	4.17	5.50	6.00
Maximum input flow rate at n_{max} and p_{2max}		Q_{max}	[$dm^3.min^{-1}$]	4.26	6.38	7.66	10.05	10.64	14.04	15.32
Nominal output power (min.) at n_n and p_{2n}		P_n	[kW]	0.30	0.53	0.71	0.95	1.23	1.63	1.64
Maximum output power at n_{max} a p_{2max}		P_{max}	[kW]	1.06	1.88	2.27	3.04	3.51	4.65	4.72
Nominal Torque at n_n and p_{2n}		M	[Nm]	3.21	4.81	6.42	8.42	10.03	13.24	13.41
Weight		m	[kg]	0.82	0.84	0.85	0.87	0.89	0.92	0.93

External drainage must be used in case of the reversible design.

Reversible motors

Nominal Size Parameters		Sym.	Unit	PM23 4.40	PM23 4.80	PM23 5.80	PM23 6.20	PM23 7.90	PM23 11.80
Actual displacement		V_g	[cm^3]	4.39	4.79	5.80	6.21	7.89	11.79
Rotation speed	nominal	n_n	[min^{-1}]	1500	1500	1500	1500	1500	1500
	maximum	n_{max}	[min^{-1}]	4000	3800	3800	3500	3000	1800
	minimum	n_{min}	[min^{-1}]	500	500	500	500	500	500
Pressure at outlet	maximum	p_{1max}	[bar]	180	160	130	110	90	30
	minimum	p_{1min}	[bar]	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3
Pressure at inlet	max. continuous	p_{2n}	[bar]	250	230	200	180	160	100
	maximum	p_{2max}	[bar]	270	250	220	200	180	150
	peak	p_3	[bar]	280	260	230	210	190	160
Nominal input flow rate (max.) at n_n and p_{2n}		Q_n	[$dm^3.min^{-1}$]	7.33	8.00	9.67	10.33	13.17	19.67
Maximum input flow rate at n_{max} and p_{2max}		Q_{max}	[$dm^3.min^{-1}$]	18.72	19.40	23.45	23.09	25.21	22.60
Nominal output power (min.) at n_n and p_{2n}		P_n	[kW]	1.92	1.93	2.03	1.96	2.21	2.06
Maximum output power at n_{max} a p_{2max}		P_{max}	[kW]	5.53	5.31	5.66	5.07	4.97	3.71
Nominal Torque at n_n and p_{2n}		M	[Nm]	15.76	15.81	16.62	15.99	18.11	16.90
Weight		m	[kg]	0.96	0.98	1.02	1.04	1.10	1.25

Reversible motors

Nominal Size Parameters		Sym.	Unit	PM23 1.00	PM23 2.30	PM23 2.65	PM23 6.40	PM23 7.00	PM23 10.00
Actual displacement		V_g	[cm^3]	1.02	2.30	2.67	6.42	7.00	10.00
Rotation speed	nominal	n_n	[min^{-1}]	1500	1500	1500	1500	1500	1500
	maximum	n_{max}	[min^{-1}]	5000	4500	4500	3500	3000	1800
	minimum	n_{min}	[min^{-1}]	800	500	500	500	500	500
Pressure at outlet	maximum	p_{1max}	[bar]	210	210	210	110	100	30
	minimum	p_{1min}	[bar]	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3
Pressure at inlet	max. continuous	p_{2n}	[bar]	280	280	280	180	170	100
	maximum	p_{2max}	[bar]	300	300	300	200	190	150
	peak	p_3	[bar]	310	310	310	210	200	160
Nominal input flow rate (max.) at n_n and p_{2n}		Q_n	[$dm^3.min^{-1}$]	1.76	4.06	4.52	10.67	11.67	16.67
Maximum input flow rate at n_{max} and p_{2max}		Q_{max}	[$dm^3.min^{-1}$]	5.32	11.01	12.69	23.83	22.34	19.15
Nominal output power (min.) at n_n and p_{2n}		P_n	[kW]	0.36	1.05	1.31	2.02	2.08	1.75
Maximum output power at n_{max} a p_{2max}		P_{max}	[kW]	1.28	3.36	4.21	5.24	4.66	3.15
Nominal Torque at n_n and p_{2n}		M	[Nm]	4.01	9.22	10.63	16.50	17.05	14.32
Weight		m	[kg]	0.83	0.88	0.90	1.05	1.08	1.20

FORMULAS USED FOR CALCULATION

Flow rate
Q

$$Q = \frac{V_g \cdot n}{1000} \cdot \eta_v \quad [dm^3 \cdot min^{-1}]$$

V_g [cm^3] pump displacement
n [min^{-1}] rotation speed
η_v [–] volumetric efficiency

Displacement
V_g

$$V_g = \frac{Q \cdot 1000}{n \cdot \eta_v} \quad [cm^3]$$

Torque
M_k

$$M_k = \frac{V_g \cdot p}{20 \cdot \pi \cdot \eta_m} \quad [Nm]$$

p [bar] required pressure at outlet
η_m [–] mechanical efficiency

Input power
P

$$P = \frac{V_g \cdot n \cdot p}{600 \cdot 1000 \cdot \eta_t} \quad [kW]$$

η_t [–] total efficiency

PUMP EFFICIENCIES

Volumetric efficiency
η_v

It determines the amount of flow losses. Its value is $\eta_v = 0{,}92 \div 0{,}98$ (depending on rotation speed, viscosity of working liquid and outlet pressure). It can be expressed as follows:

$$\eta_v = \frac{Q_{act.}}{Q_{theor}} \quad [–]$$

$Q_{act.}$ [$dm^3 \cdot min^{-1}$] actual flow rate
Q_{theor} [$dm^3 \cdot min^{-1}$] theoretical flow rate

Mechanical efficiency
η_m

It determines mechanical losses. Its value is about $\eta_m = 0{,}85$.
It can be expressed as follows:

$$\eta_m = \frac{M_{theor}}{M_{act.}} \quad [–]$$

$M_{act.}$ [Nm] actual torque
M_{theor} [Nm] theoretical torque

Total efficiency
η_t

t is defined as product of η_n and η_m
and determines difference between theoretical and actual required input power:

$$\eta_t = \eta_v \cdot \eta_m = \frac{P_{theor}}{P_{act.}} \quad [–]$$

$P_{act.}$ [kW] actual input power
P_{theor} [kW] theoretical input power

WORKING LIQUID

- Mineral oils for hydraulic drives
- Hydraulic liquids based on plant oils suitable for hydraulic drives

Liquid temperature

- t = –20 ÷ +80 [°C]
  when used with FKM (Viton) seal up to 120 [°C]

Cinematic viscosity

- Recommended (during continuous operation): $\nu = 20 \div 80 \cdot 10^{-6}\ [m^2 \cdot s^{-1}]$
- Maximum (cold starting, at viscosity >1000, operating pressure <10 bar is permissible, speed <1500·min^{-1}): $\nu = 1200 \cdot 10^{-6}\ [m^2 \cdot s^{-1}]$
- Minimum (operating mode at $10 \cdot 10^{-6}$ up $20 \cdot 10^{-6}$ should be consulted with manufacturer): $\nu = 10 \cdot 10^{-6}\ [m^2 \cdot s^{-1}]$

Filtration coefficient β_α

$\beta_{25}\ 75 \geq$ (for pressure $p_2 < 200$ bar)
$\beta_{10}\ 75 \geq$ (for pressure $p_2 > 200$ bar)

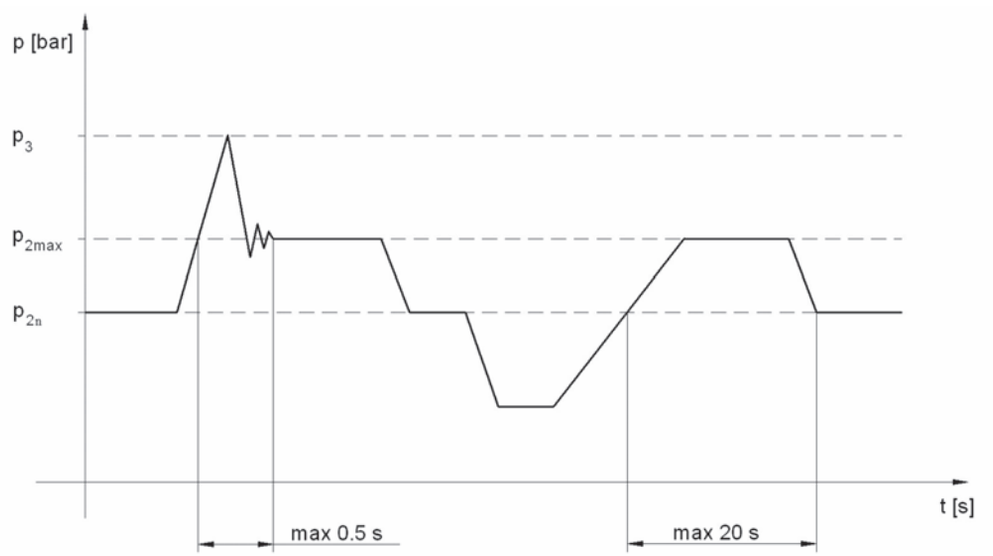
Liquid contamination class according to ISO 4406

21/18/15 (for pressure $p_2 < 200$ bar)
20/17/14 (for pressure $p_2 > 200$ bar)

Liquid contamination class according to NAS 1638

10 (for pressure $p_2 < 200$ bar)
8 (for pressure $p_2 > 200$ bar)

PRESSURE LOAD



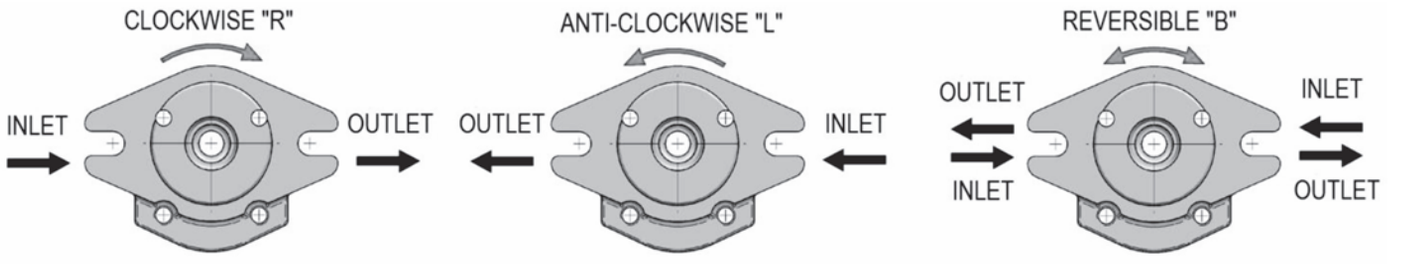
p_{2n}	**max. contin. pressure**	Max. working pressure, at which the pump can be operated without time limitation.
p_{2max}	**max. pressure**	Maximum pressure permissible for a short time, max. 20s.
p_3	**peak pressure**	Short-time pressure (fractions of a second) arising in case of a sudden change of the operating mode; any excess of this pressure during operation is impermissible.

OTHER REQUIREMENTS

- All the matters affecting technical parameters and properties of the motor are given in respective operating manuals, technical specifications and test specifications of the manufacturer.

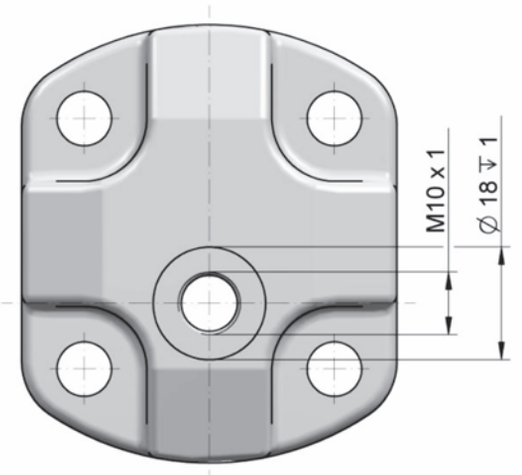
DIRECTION OF ROTATION

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

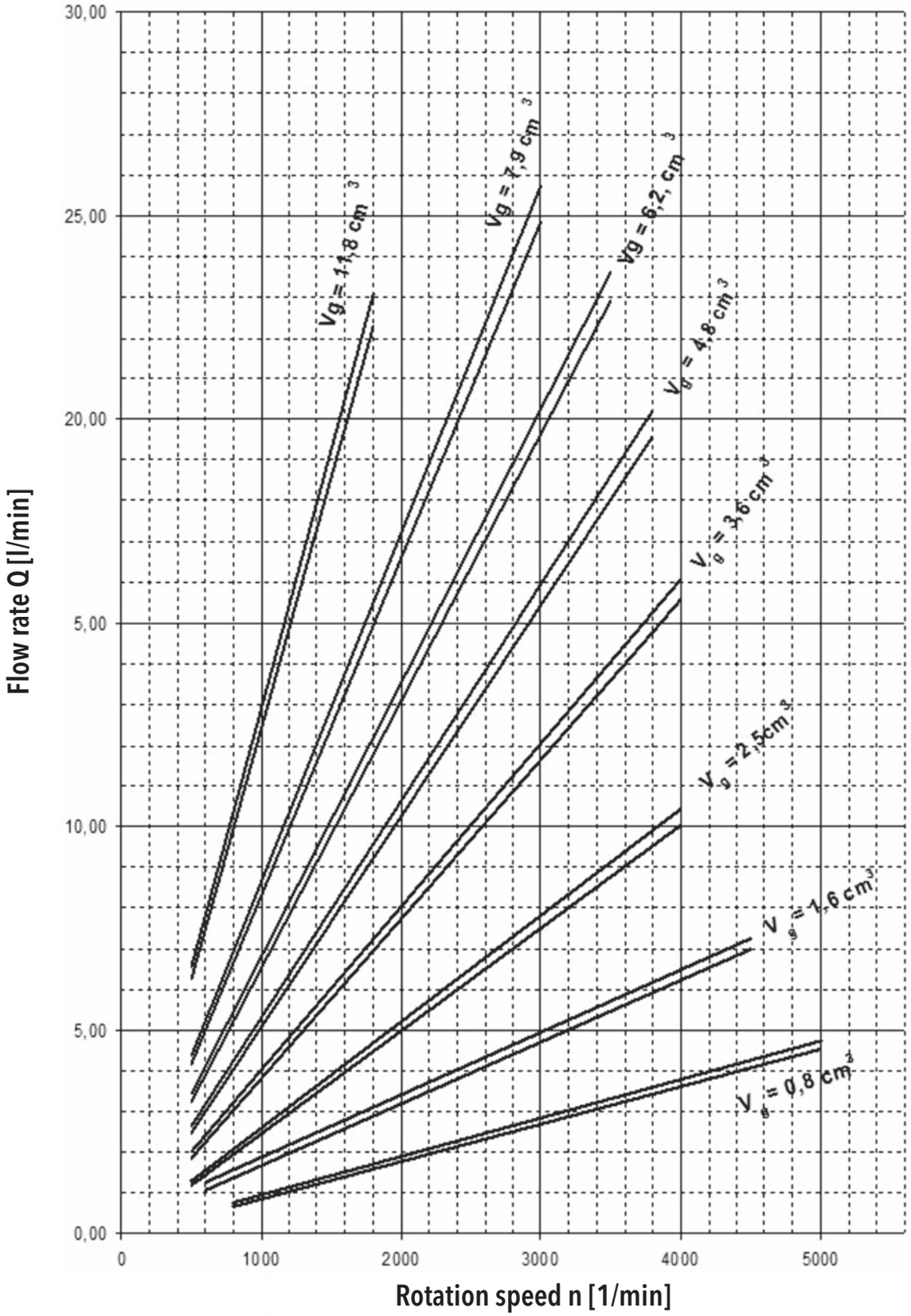


REVERSIBLE DESIGN

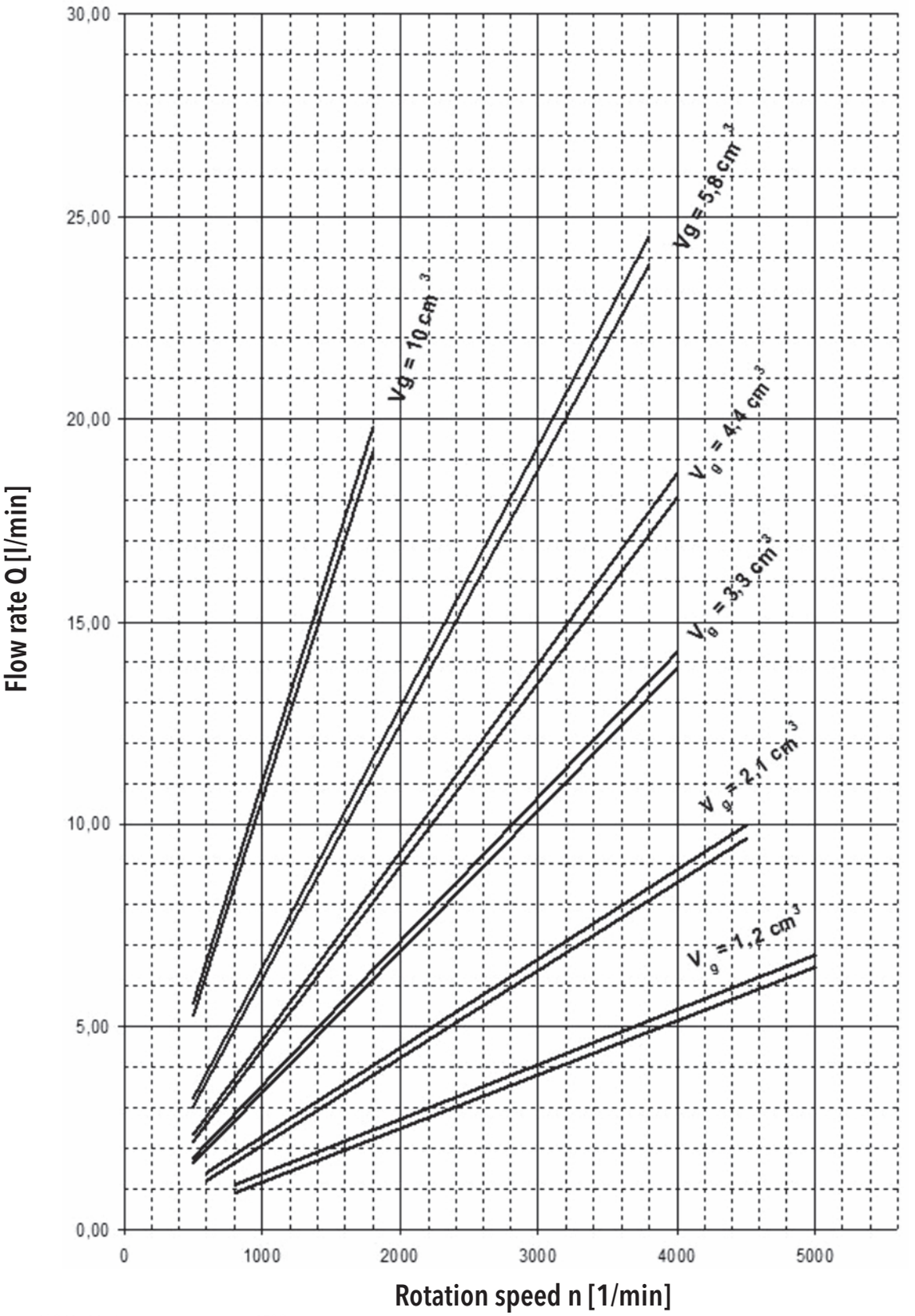
- The motors with the possibility of bidirectional rotation have a different internal arrangement requiring drainage. Two types are used - internal and external. The internal drainage is always interconnected with the outlet by means of valves. The external drainage is solved by an orifice located in the cover opposite the driven gear.



PM23 FLOW RATE AND POWER CURVES

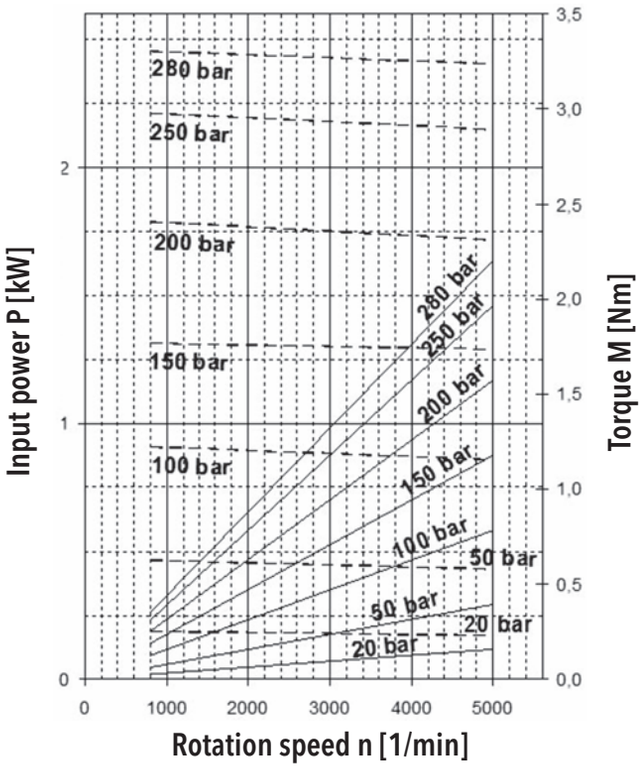


Above curves apply to ISO V_g 46 oil at temperature t = 45°C.

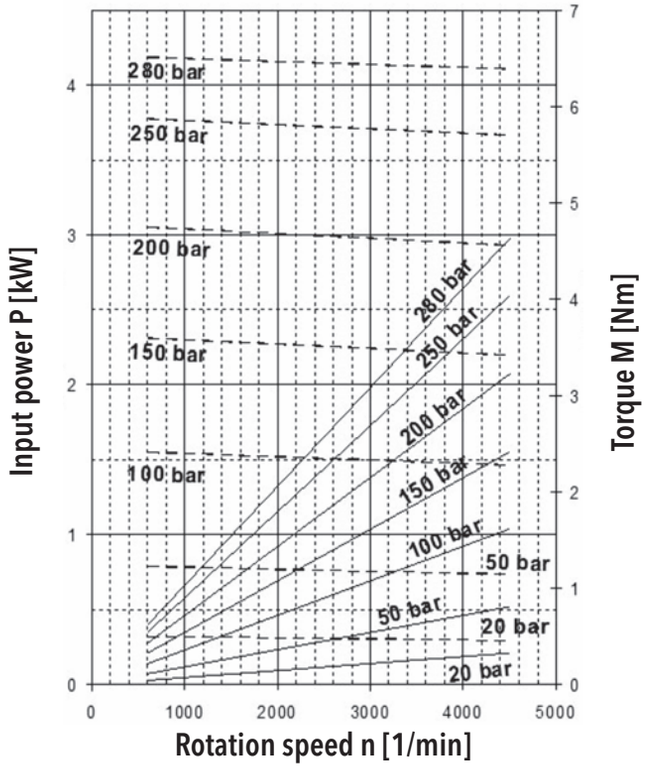


Above curves apply to ISO V_g 46 oil at temperature t = 45°C.

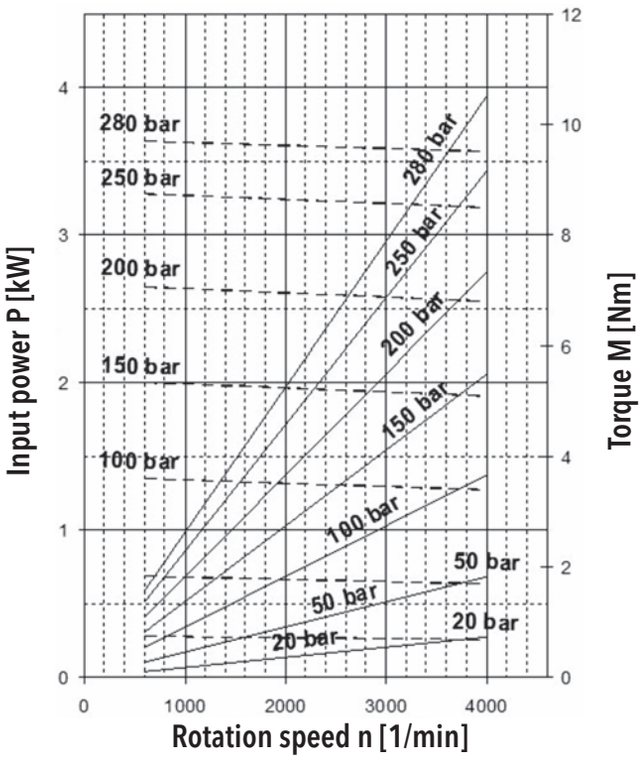
0,80 cm³



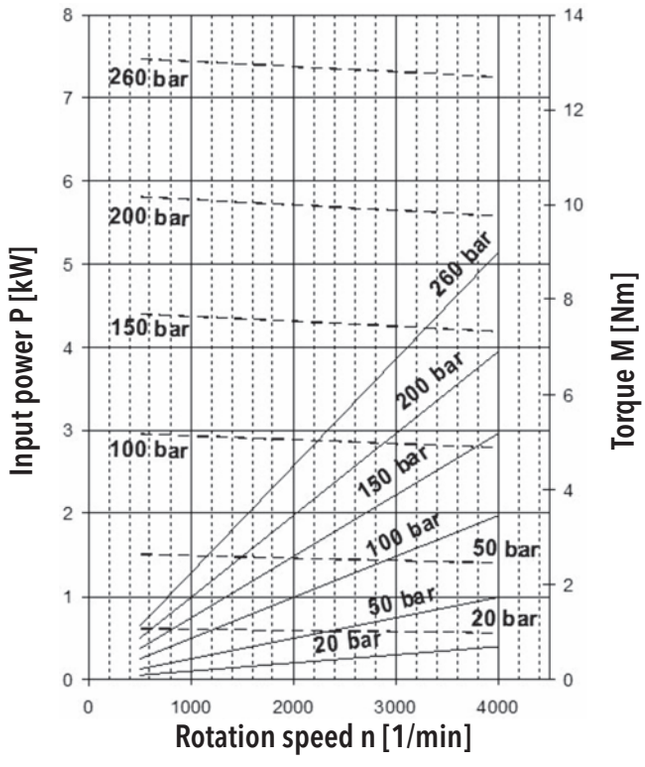
1,60 cm³



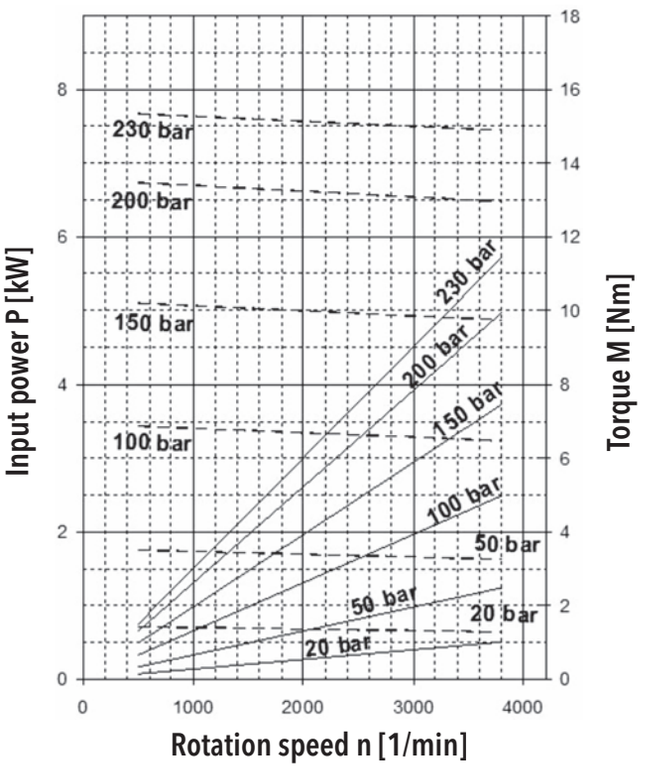
2,50 cm³



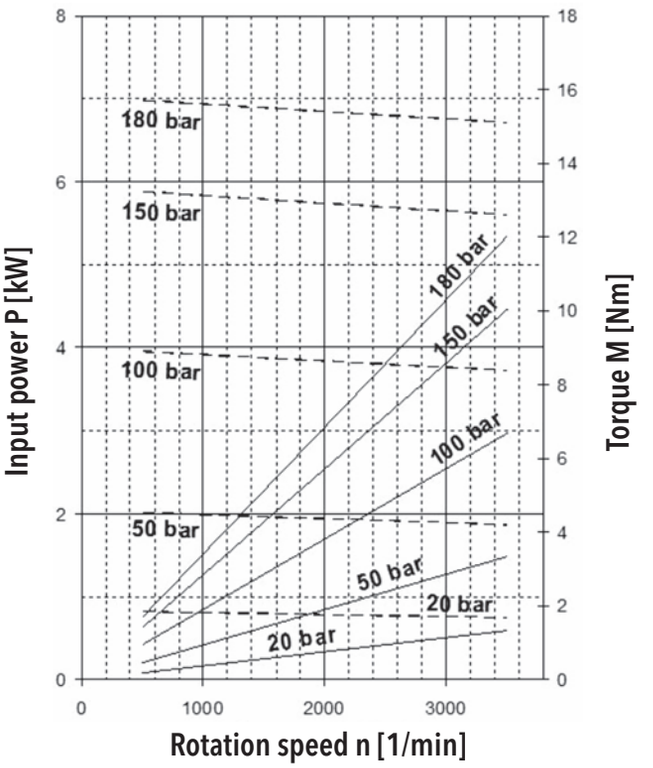
3,60 cm³



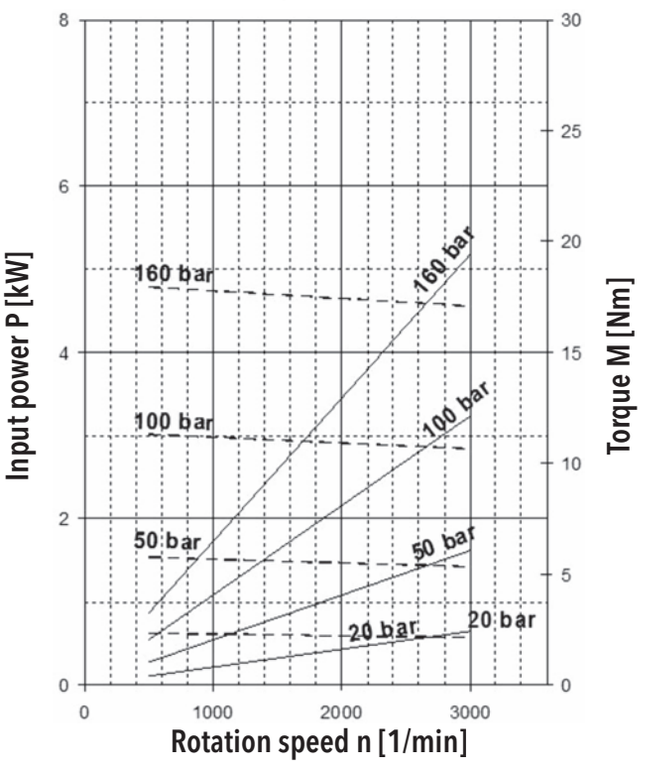
4,80 cm³



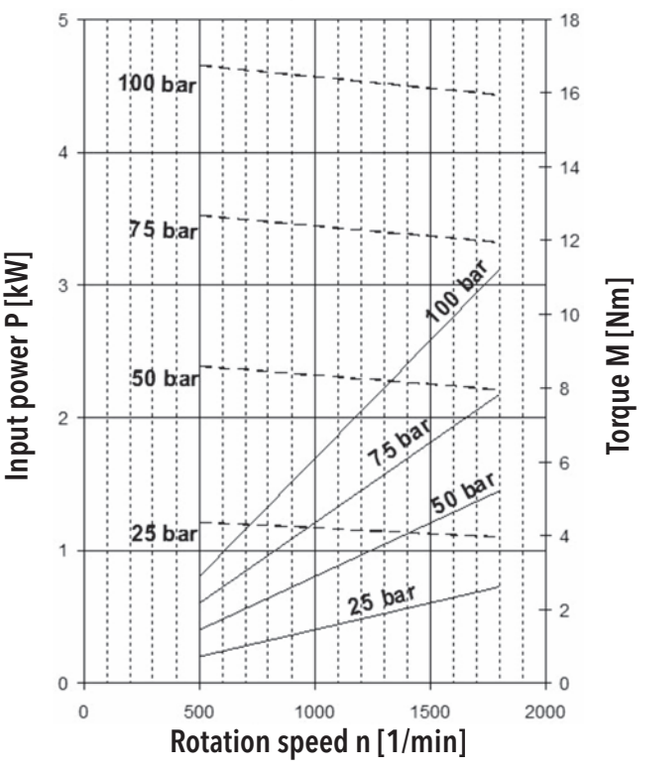
6,20 cm³



7,90 cm³



11,80 cm³



ORDER KEY

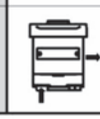
PM23 - 3,3 R - S01 D01 - S G02 G01 - V . 004

Code	Displacement [cm³]
0,8	0,855
1,0	1,016
1,2	1,257
1,6	1,686
2,1	2,086
2,3	2,301
2,5	2,514
2,65	2,674
3,3	3,316
3,6	3,611
4,4	4,386
4,8	4,787
5,8	5,804
6,2	6,205
6,4	6,419
7,0	7,007
7,9	7,890
10,0	10,003
11,8	11,795
XX	Other displacement on request

Code	Direction of rotation
R	Clockwise
L	Anti-clockwise
B	Bi-directional

Code	Type
PM23	PM23 series motor

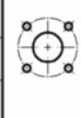
Code	Flange design	
R02		Rectangular flange, centre ring Ø 25,4 Spacing screw 52,4x71,9
S01		SAE A - A
A03		Flange with through bolts centre ring Ø 32 with O-ring (deep center ring 7)
A04		Flange with through bolts centre ring Ø 32 s O-ring (deep center ring 8)
A05		Flange with through bolts centre ring Ø 32 s O-ring (narrow desing)
A06		Flange with through bolts centre ring Ø 32 (narrow desing)
Z		Special design

Code	Location of inlets and outlets	
S		Side (in body)
R		Axial (in cover)
F		Axial (in flange)
A		Axial (inlet in cover, outlet in flange)
C		Combination (inlet in body outlet in flange)
D		Combination (inlet in cover outlet in body)

Code	Drive shaft design	
C02		Traper 1:8 Key 2,5x3,7
C03		Traper 1:8 Key 2,4x5 Ø13
C04		Traper 1:5 Key 2x2,6-D7
K03		Cross coupling
K04		Cross coupling
V02		Cylindric Key 3h9x3x22
V03		Cylindric Key 3,2x3,2x19,4
V04		Cylindric Key 3m6x14
V05		Cylindric Key 3h9x3x10
D01		Involute spline
Z		Special design

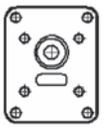
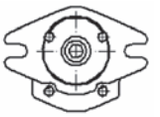
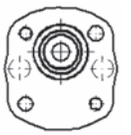
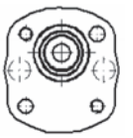
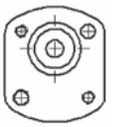
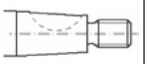
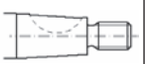
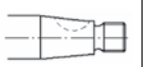
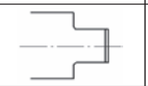
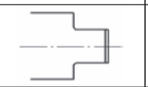
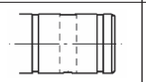
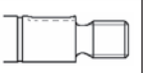
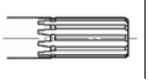
Code	Special arrangements
-	No special arrangements
001	With front end bearing
002	With relief valve
004	Without shaft seal

Code	Sealing material
N	NBR
V	FKM (VITON)
C	CR (CHLOROPREN)

Code	Liquid inlet and outlet connection shape	
M02		Thread M12x1,5
M03		Thread M14x1,5
M05		Thread M18x1,5
M06		Thread M20x1,5
M07		Thread M22x1,5
G01		Thread BSP G1/4
G02		Thread BSP G3/8
G03		Thread BSP G1/2
U02		Thread 9/16–18 UNF-2B
U03		Thread 3/4–16 UNF-2B
U04		Thread 7/8–14 UNF-2B
H01		Flanged fitting Ø 8 Square 4xM5 Ø26
H02		Flanged fitting Ø 10 Square 4xM5 Ø26
H03		Flanged fitting Ø 8 Square 4xM6 Ø30
H04		Flanged fitting Ø12 Square 4xM6 Ø30
P01		Inlet / outlet in flange
Z		Special design

An example of designation for the PM23 clockwise motor with displacement of 4.4 cm³, SAE A-A flange; involute spline; BSP side inlets in the body and FKM sealing, with front-end bearing: **P23-3.3R-S01D01-SG02G01-V.001**

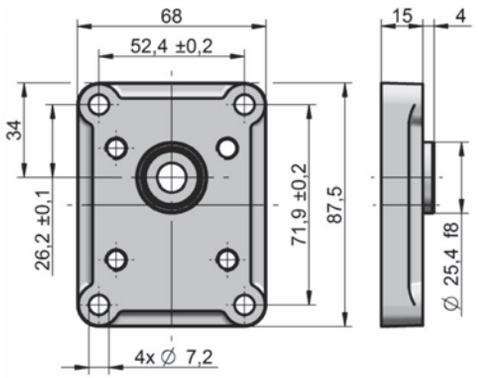
COMBINATIONS OF FLANGES AND SHAFTS

			FLANGE DESIGN					
			R02	S01	A03	A04	A05	A06
								
DRIVE SHAFT	C02		●		●			
	C03		●		●	●		
	C04		●		●			
	K03				●		●	
	K04		○			●	●	●
	V02		○	●				
	V03			●				
	V04				●			
	V05		●					
	D01				●			

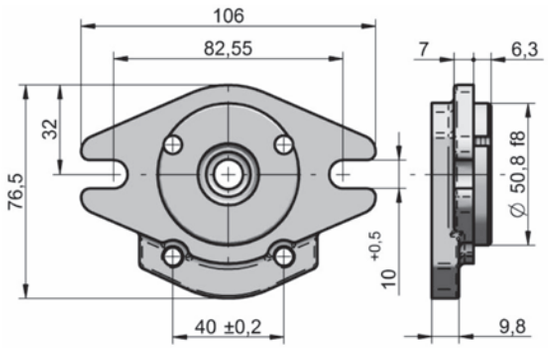
● – SUGGESTED ○ – POSSIBLE

FLANGES DESIGN

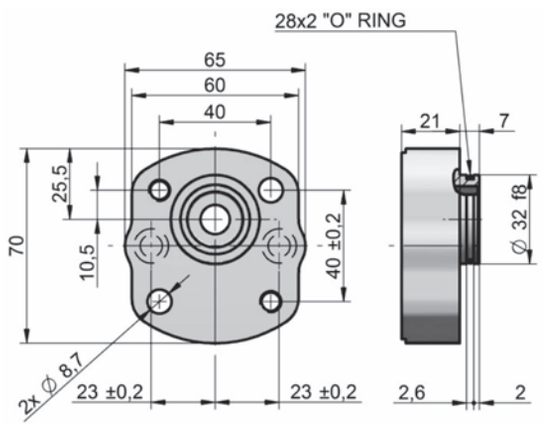
R02:



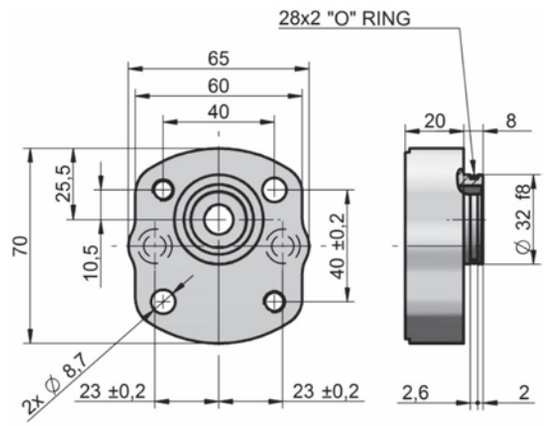
S01:



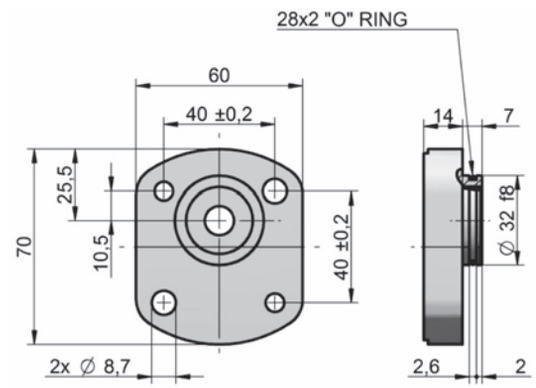
A03:



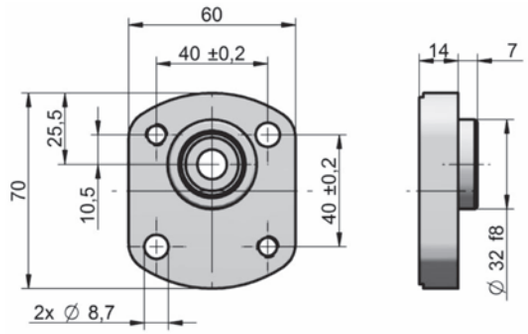
A04:



A05:

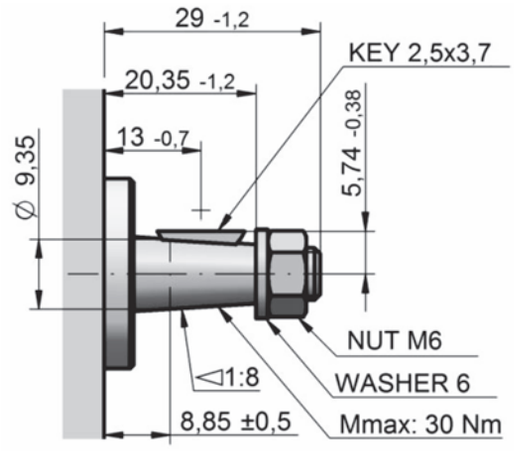


A06:

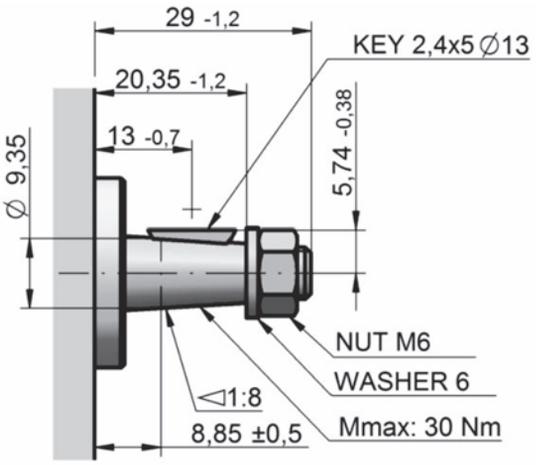


DRIVE SHAFTS

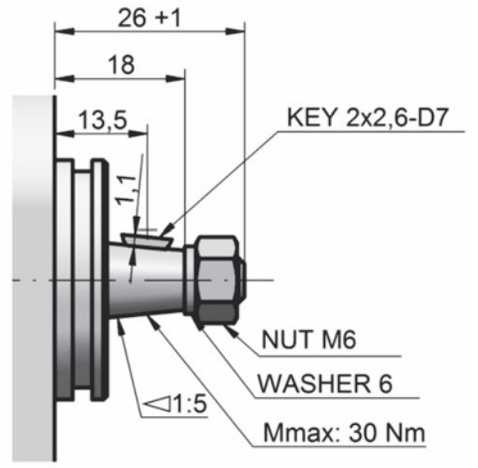
C02:



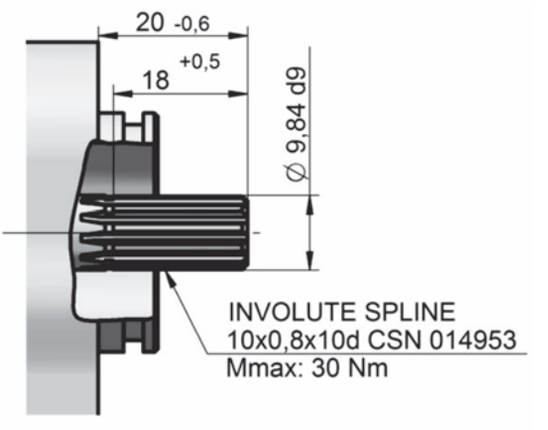
C03:



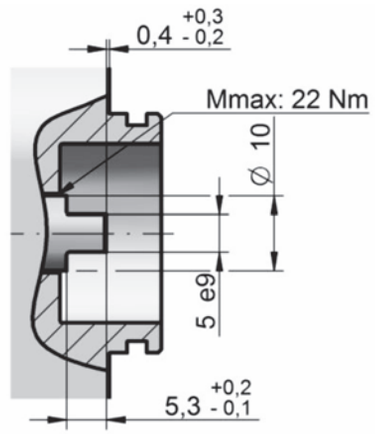
C04:



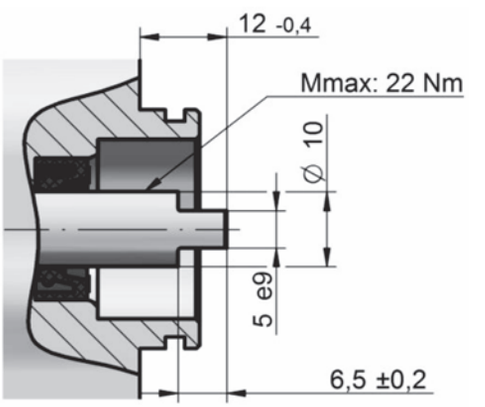
D01:



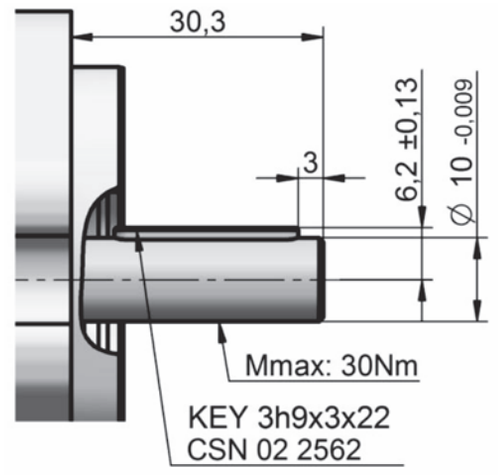
K03:



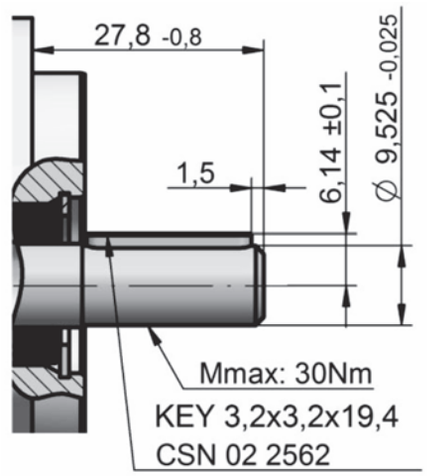
K04:



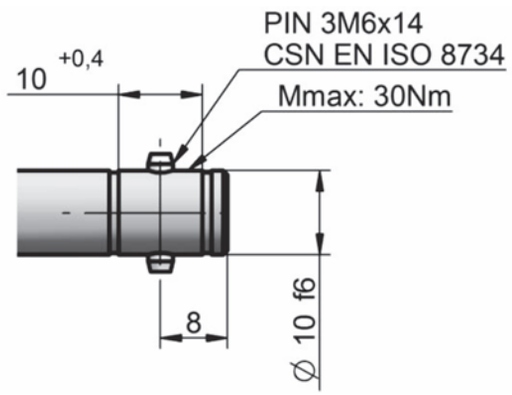
V02:



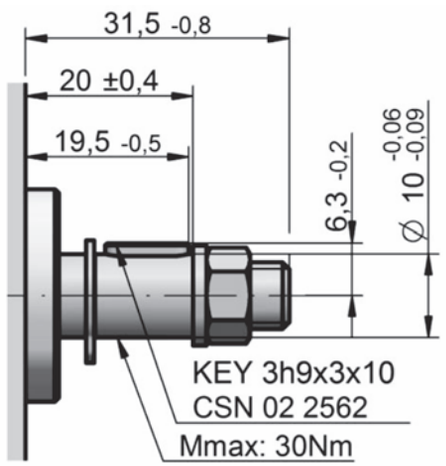
V03:



V04:

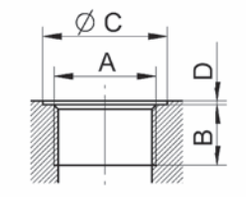


V05:



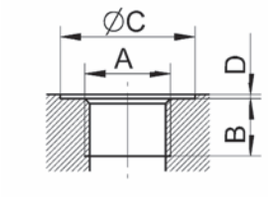
LIQUID INLET AND OUTLET CONNECTION

Metric thread according to ISO 6149



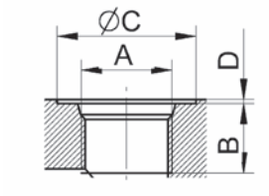
Displacement [cm³]	Code	Inlet				Code	Outlet			
		A	B	C	D		A	B	C	D
all	M03	M 14x1.5	13	26	1	M02	M 12x1.5	12	20	1
0.8 - 3.3	M03	M 14x1.5	13	26	1	M03	M 14x1.5	13	26	1
all	M04	M 16x1.5	14	22	1	M04	M 16x1.5	14	22	1
all	M05	M 18x1.5	13	30	1	M05	M 18x1.5	13	30	1
all	M06	M 20x1.5	14	26	1	M02 – M05				
3.3 - 11.8	M07	M 22x1.5	13	35	1	M02 – M05				

BSPP pipe thread according to ISO 228-1



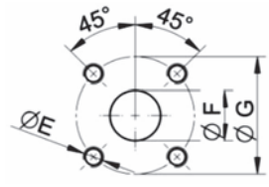
Displacement [cm³]	kód	Inlet				kód	Outlet			
		A	B	C	D		A	B	C	D
all	G02	G 3/8"	13	24	1	G01	G 1/4"	13	26	1
all	G02	G 3/8"	13	24	1	G02	G 3/8"	13	24	1
all	G03	G 1/2"	13	34	1	G03	G 1/2"	13	34	1

UNF thread according to SAE



Displacement [cm³]	kód	Inlet				kód	Outlet			
		A	B	C	D		A	B	C	D
all	U03	3/4–16 UNF	13	24.6	1	U02	9/16–18 UNF	13	24.6	1
all	U04	7/8–14 UNF	16	34.0	1	U03	3/4–16 UNF	13	30.0	1

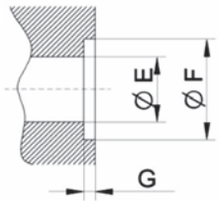
Flanged fittings according to DIN 8901/8902



Displacement [cm³]	kód	Inlet			kód	Outlet		
		A	B	C		A	B	C
all	H01	M5, depth 12	8	26	H01	M5, depth 12	8	26
all	H02	M5, depth 12	10	26	H02	M5, depth 12	10	26
all	H03	M6, depth 12	8	30	H03	M6, depth 12	8	30
all	H04	M6, depth 12	12	30	H04	M6, depth 12	12	30

NOTE: All inlets and outlets can be combination

Inlet / Outlet in flange

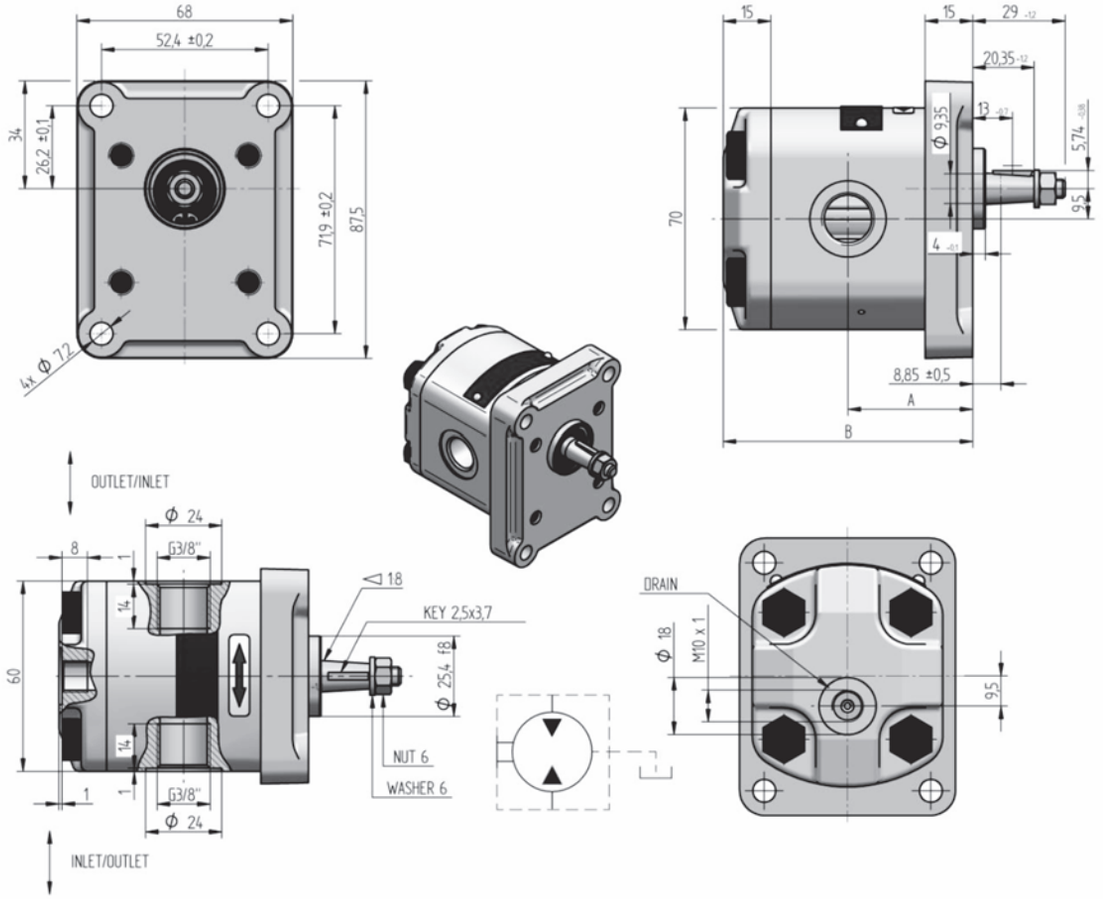


Code	Outlet		
	E	F	G
P01	8	12.4	1.4

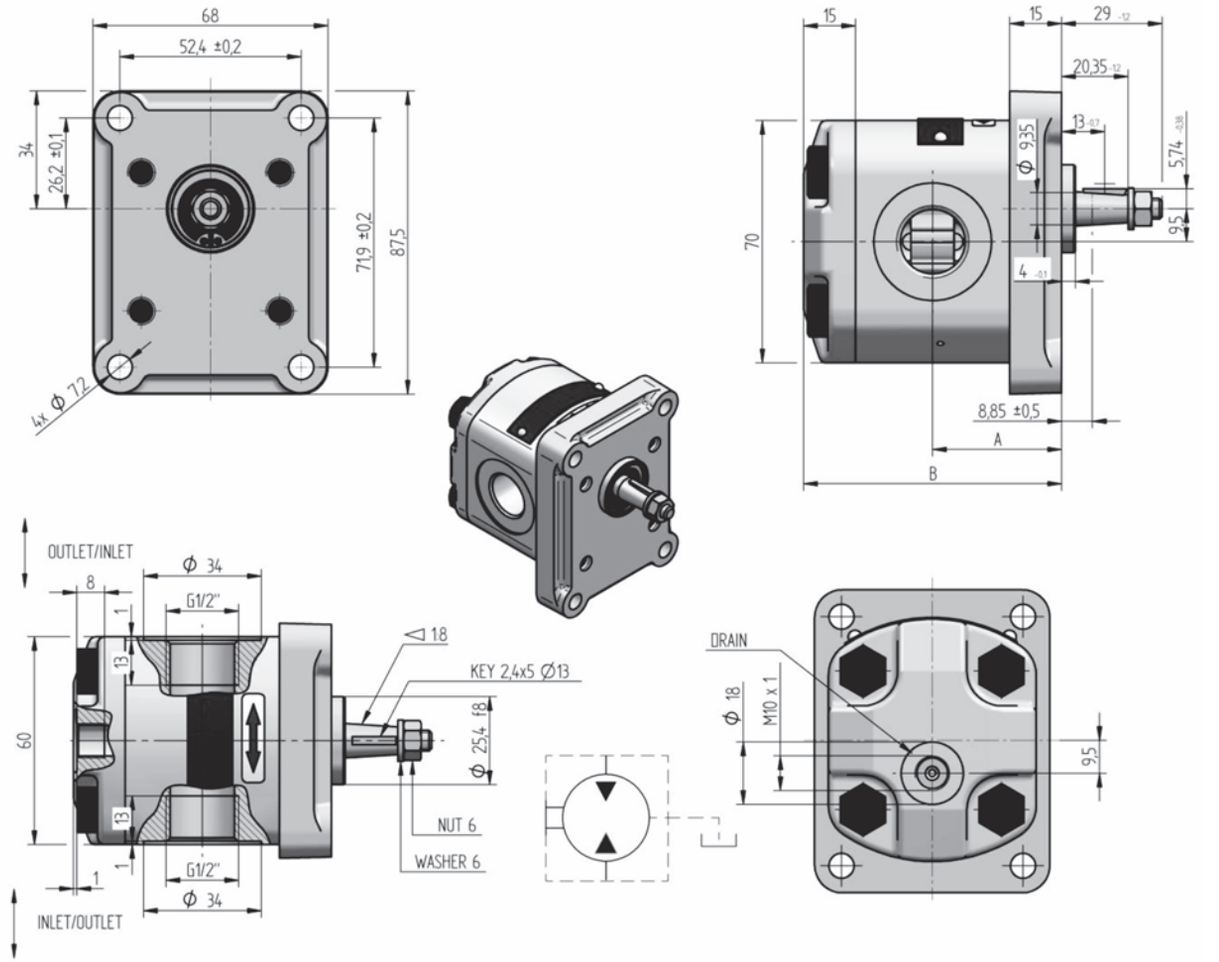
Drains

Displacement [cm³]	Code	Outlet			
		A	B	C	D
all	M01	M 10 x 1	8	15	1

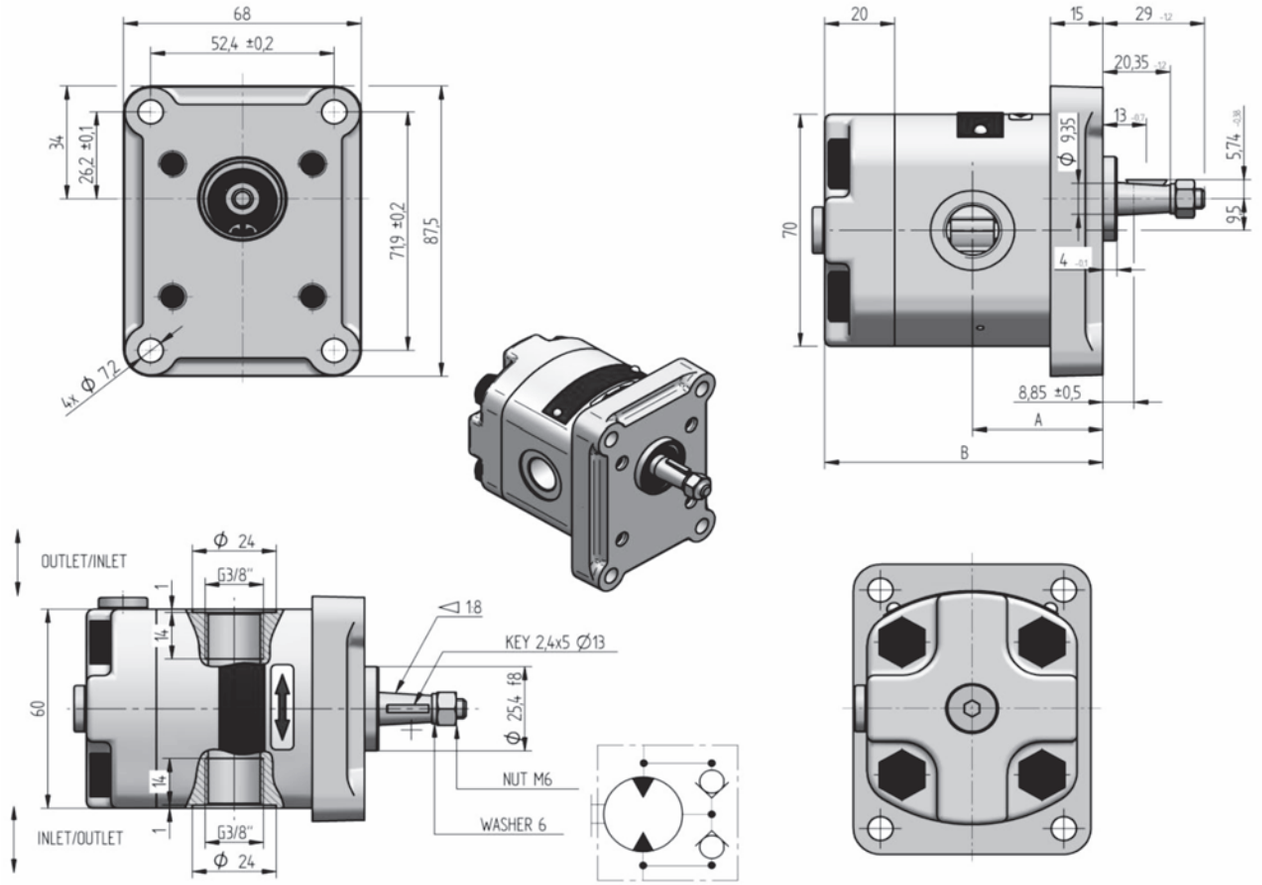
CATALOGUE SHETS OF PM23 SERIES BASIC DESIGNS



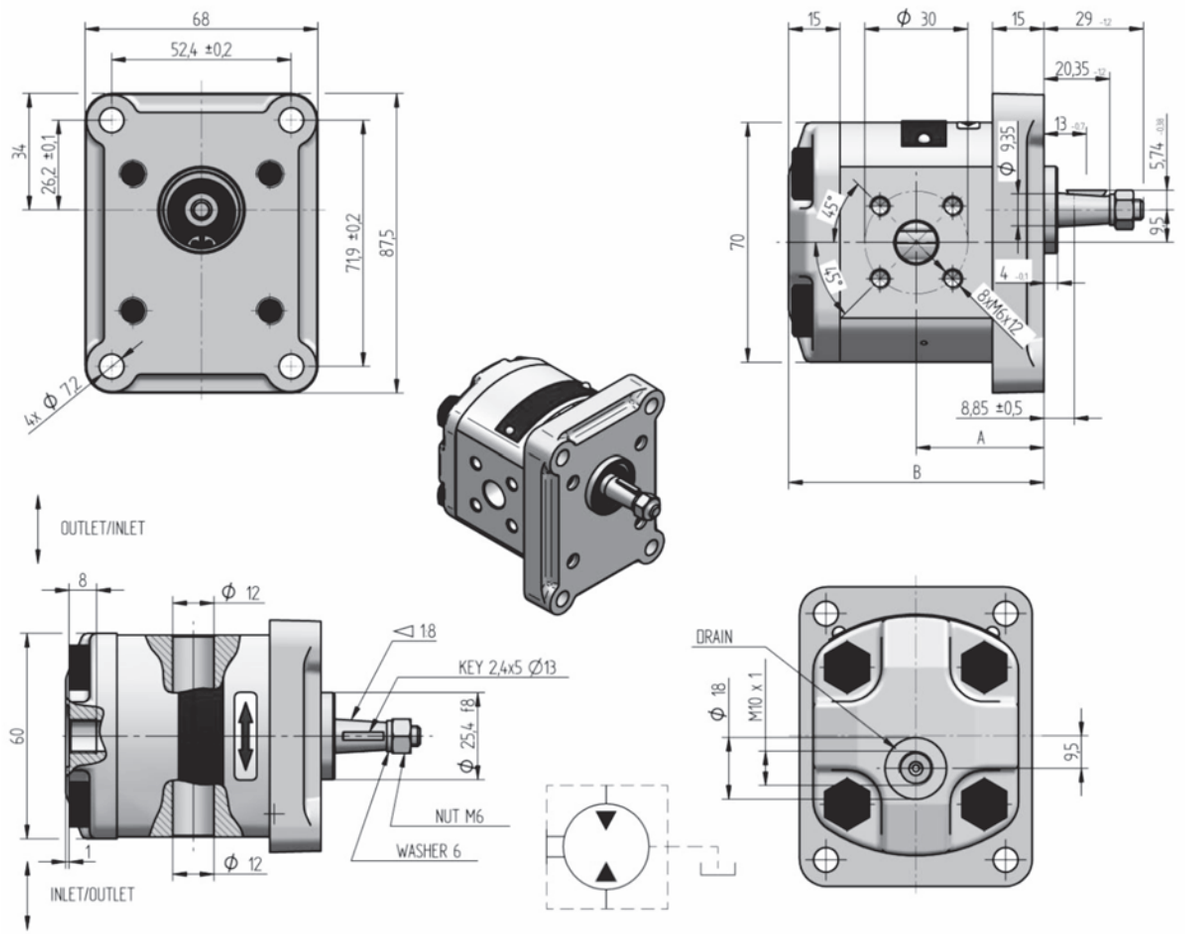
Order key	purch. code	direct. of rot.	displa-cement [cm³/1]	nom. press. [bar]	speed MIN. [min⁻¹]	speed MAX. [min⁻¹]	dimension A [mm]	dimension B [mm]
PM23-7.9B-R02C03-SG02G02-N		B	7.9	160	500	3 000	45.8	91.6
PM23-6.2B-R02C03-SG02G02-N		B	6.2	180	500	3 500	42.6	85.3
PM23-5.8B-R02C03-SG02G02-N		B	5.8	200	500	3 800	41.9	83.8
PM23-4.8B-R02C03-SG02G02-N		B	4.8	230	500	3 800	40.0	80.0
PM23-4.4B-R02C03-SG02G02-N	187 9401	B	4.4	250	500	4 000	39.2	78.5
PM23-3.6B-R02C03-SG02G02-N		B	3.6	260	500	4 000	37.8	75.6
PM23-3.3B-R02C03-SG02G02-N		B	3.3	280	500	4 000	37.2	74.5
PM23-2.5B-R02C03-SG02G02-N		B	2.5	280	500	4 000	35.7	71.5
PM23-2.1B-R02C03-SG02G02-N		B	2.1	280	600	4 500	34.9	69.9
PM23-1.6B-R02C03-SG02G02-N		B	1.6	280	600	4 500	34.1	68.3
PM23-1.2B-R02C03-SG02G02-N		B	1.2	280	800	5 000	33.4	66.8
PM23-0.8B-R02C03-SG02G02-N		B	0.8	280	800	5 000	32.6	65.3



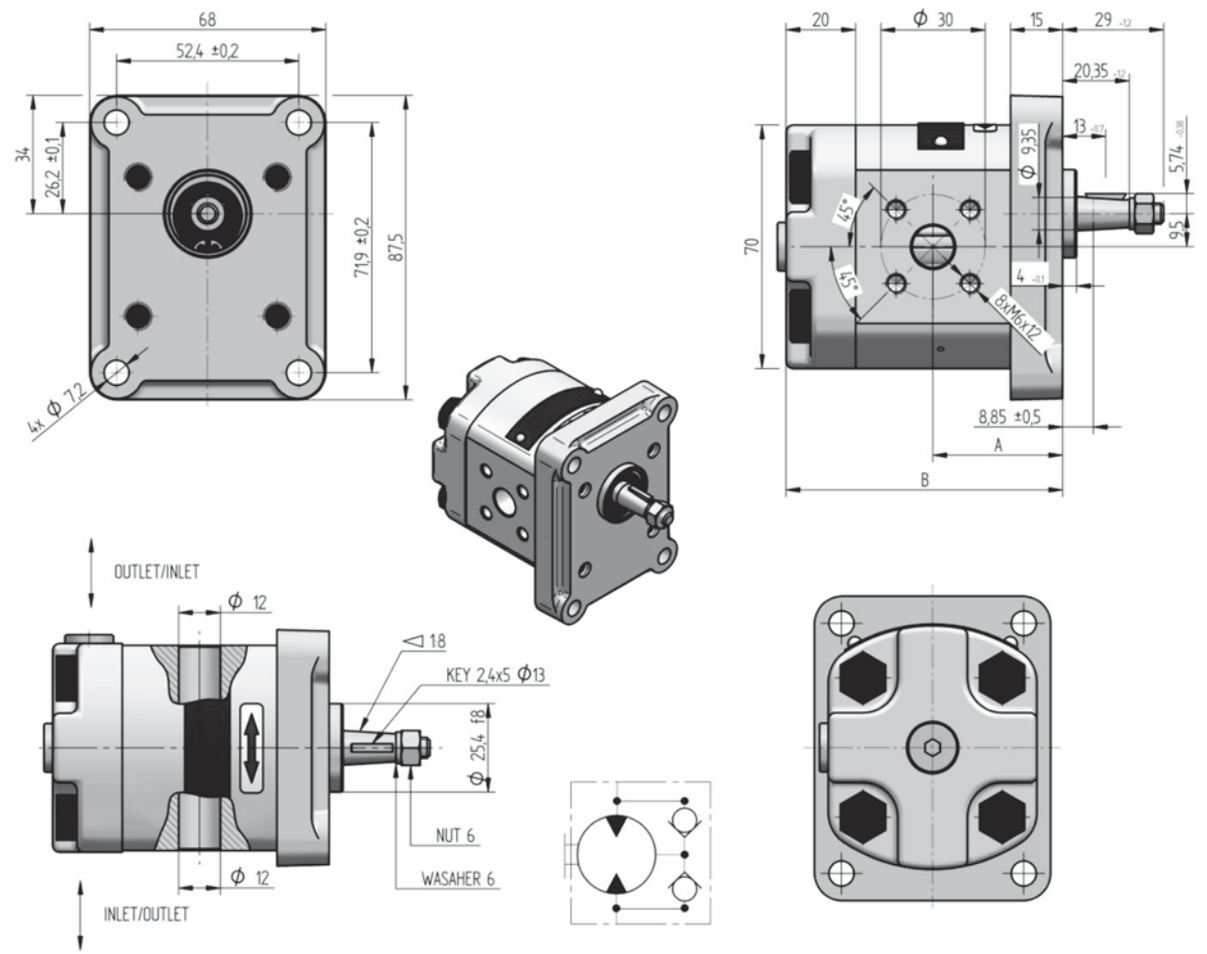
Order key	purch. code	direct. of rot.	displa-cement [cm³/1]	nom. press. [bar]	speed MIN. [min⁻¹]	speed MAX. [min⁻¹]	dimension A [mm]	dimension B [mm]
PM23-7.9B-R02C03-SG02G02-N		B	7.9	160	500	3 000	45.8	91.6
PM23-6.2B-R02C03-SG02G02-N		B	6.2	180	500	3 500	42.6	85.3
PM23-5.8B-R02C03-SG02G02-N		B	5.8	200	500	3 800	41.9	83.8
PM23-4.8B-R02C03-SG02G02-N		B	4.8	230	500	3 800	40.0	80.0
PM23-4.4B-R02C03-SG02G02-N		B	4.4	250	500	4 000	39.2	78.5
PM23-3.6B-R02C03-SG02G02-N		B	3.6	260	500	4 000	37.8	75.6
PM23-3.3B-R02C03-SG02G02-N	187 9402	B	3.3	280	500	4 000	37.2	74.5
PM23-2.5B-R02C03-SG02G02-N		B	2.5	280	500	4 000	35.7	71.5
PM23-2.1B-R02C03-SG02G02-N		B	2.1	280	600	4 500	34.9	69.9
PM23-1.6B-R02C03-SG02G02-N		B	1.6	280	600	4 500	34.1	68.3
PM23-1.2B-R02C03-SG02G02-N		B	1.2	280	800	5 000	33.4	66.8
PM23-0.8B-R02C03-SG02G02-N		B	0.8	280	800	5 000	32.6	65.3



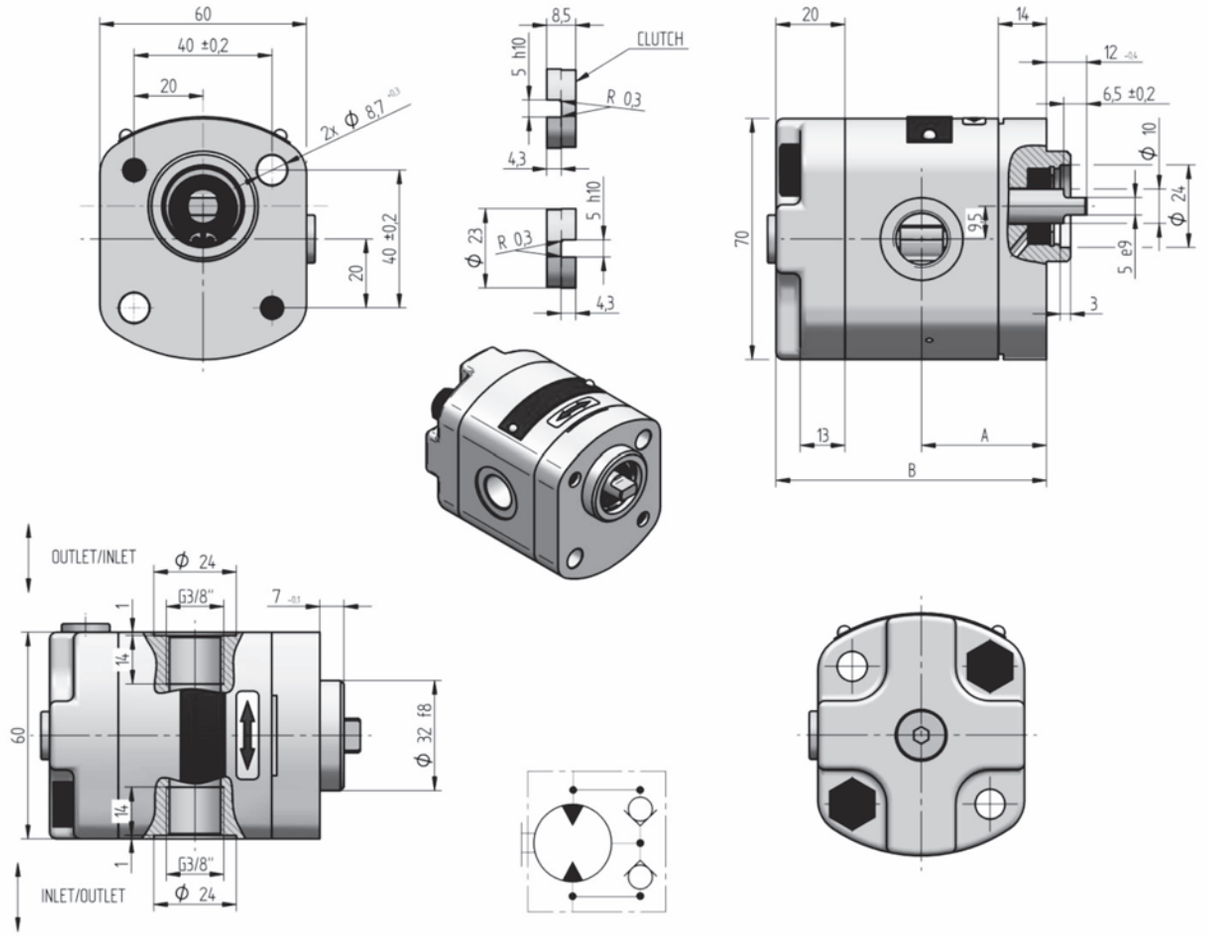
Order key	purch. code	direct. of rot.	displa-cement [cm³/1]	nom. press. [bar]	speed MIN. [min⁻¹]	speed MAX. [min⁻¹]	dimension A [mm]	dimension B [mm]
PM23-7.9B-R02C03-SG02G02-N.009		B	7.9	160	500	3 000	45.8	96.6
PM23-6.2B-R02C03-SG02G02-N.009		B	6.2	180	500	3 500	42.6	90.3
PM23-5.8B-R02C03-SG02G02-N.009		B	5.8	200	500	3 800	41.9	88.8
PM23-4.8B-R02C03-SG02G02-N.009		B	4.8	230	500	3 800	40.0	85.0
PM23-4.4B-R02C03-SG02G02-N.009		B	4.4	250	500	4 000	39.2	83.5
PM23-3.6B-R02C03-SG02G02-N.009		B	3.6	260	500	4 000	37.8	80.6
PM23-3.3B-R02C03-SG02G02-N.009		B	3.3	280	500	4 000	37.2	79.5
PM23-2.5B-R02C03-SG02G02-N.009		B	2.5	280	500	4 000	35.7	76.5
PM23-2.1B-R02C03-SG02G02-N.009		B	2.1	280	600	4 500	34.9	74.9
PM23-1.6B-R02C03-SG02G02-N.009		B	1.6	280	600	4 500	34.1	73.3
PM23-1.2B-R02C03-SG02G02-N.009		B	1.2	280	800	5 000	33.4	71.8
PM23-0.8B-R02C03-SG02G02-N.009		B	0.8	280	800	5 000	32.6	70.3



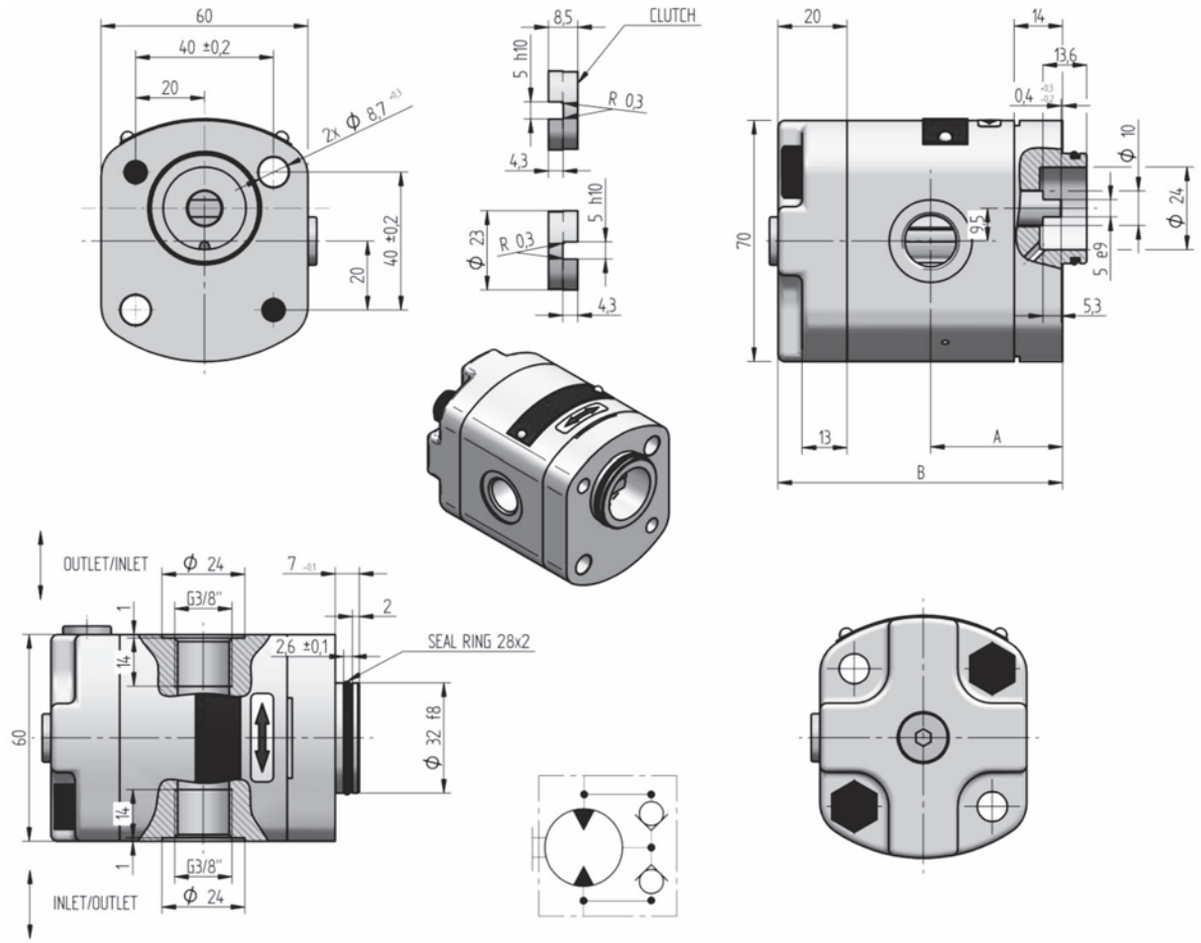
Order key	purch. code	direct. of rot.	displa-cement [cm³/1]	nom. press. [bar]	speed MIN. [min⁻¹]	speed MAX. [min⁻¹]	dimension A [mm]	dimension B [mm]
PM23-7.9B-R02C03-SH04H04-N		B	7.9	160	500	3 000	45.8	91.6
PM23-6.2B-R02C03-SH04H04-N		B	6.2	180	500	3 500	42.6	85.3
PM23-5.8B-R02C03-SH04H04-N		B	5.8	200	500	3 800	41.9	83.8
PM23-4.8B-R02C03-SH04H04-N		B	4.8	230	500	3 800	40.0	80.0
PM23-4.4B-R02C03-SH04H04-N		B	4.4	250	500	4 000	39.2	78.5
PM23-3.6B-R02C03-SH04H04-N		B	3.6	260	500	4 000	37.8	75.6
PM23-3.3B-R02C03-SH04H04-N		B	3.3	280	500	4 000	37.2	74.5
PM23-2.5B-R02C03-SH04H04-N		B	2.5	280	500	4 000	35.7	71.5
PM23-2.1B-R02C03-SH04H04-N		B	2.1	280	600	4 500	34.9	69.9
PM23-1.6B-R02C03-SH04H04-N		B	1.6	280	600	4 500	34.1	68.3
PM23-1.2B-R02C03-SH04H04-N		B	1.2	280	800	5 000	33.4	66.8
PM23-0.8B-R02C03-SH04H04-N		B	0.8	280	800	5 000	32.6	65.3



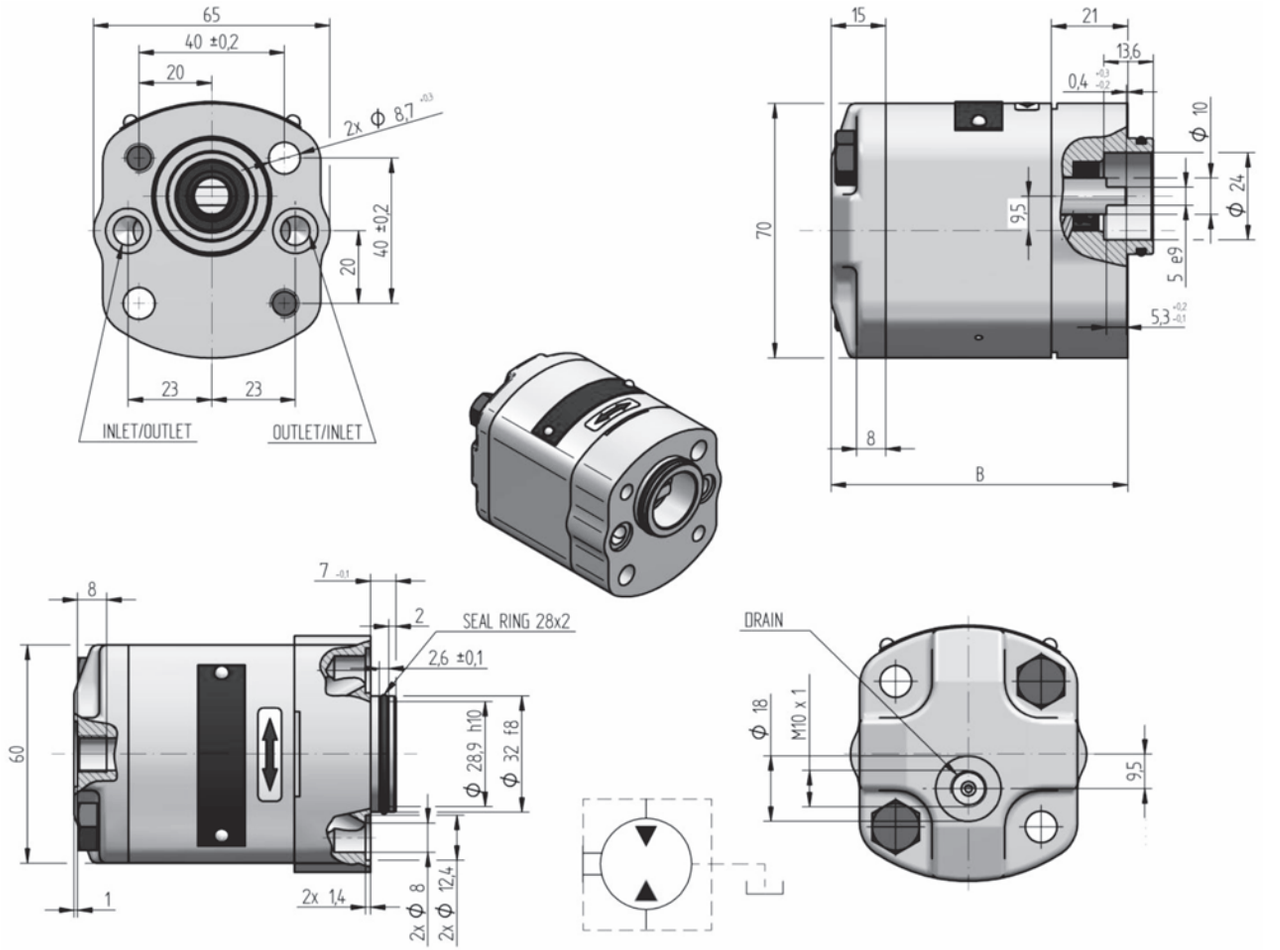
Order key	purch. code	direct. of rot.	displa-cement [cm³/1]	nom. press. [bar]	speed MIN. [min⁻¹]	speed MAX. [min⁻¹]	dimension A [mm]	dimension B [mm]
PM23-7.9B- R02C03-SH04H04-N.009		B	7.9	160	500	3 000	45.8	96.6
PM23-6.2B- R02C03-SH04H04-N.009		B	6.2	180	500	3 500	42.6	90.3
PM23-5.8B- R02C03-SH04H04-N.009		B	5.8	200	500	3 800	41.9	88.8
PM23-4.8B- R02C03-SH04H04-N.009		B	4.8	230	500	3 800	40.0	85.0
PM23-4.4B- R02C03-SH04H04-N.009		B	4.4	250	500	4 000	39.2	83.5
PM23-3.6B- R02C03-SH04H04-N.009		B	3.6	260	500	4 000	37.8	80.6
PM23-3.3B- R02C03-SH04H04-N.009		B	3.3	280	500	4 000	37.2	79.5
PM23-2.5B- R02C03-SH04H04-N.009		B	2.5	280	500	4 000	35.7	76.5
PM23-2.1B- R02C03-SH04H04-N.009		B	2.1	280	600	4 500	34.9	74.9
PM23-1.6B- R02C03-SH04H04-N.009		B	1.6	280	600	4 500	34.1	73.3
PM23-1.2B- R02C03-SH04H04-N.009		B	1.2	280	800	5 000	33.4	71.8
PM23-0.8B- R02C03-SH04H04-N.009		B	0.8	280	800	5 000	32.6	70.3



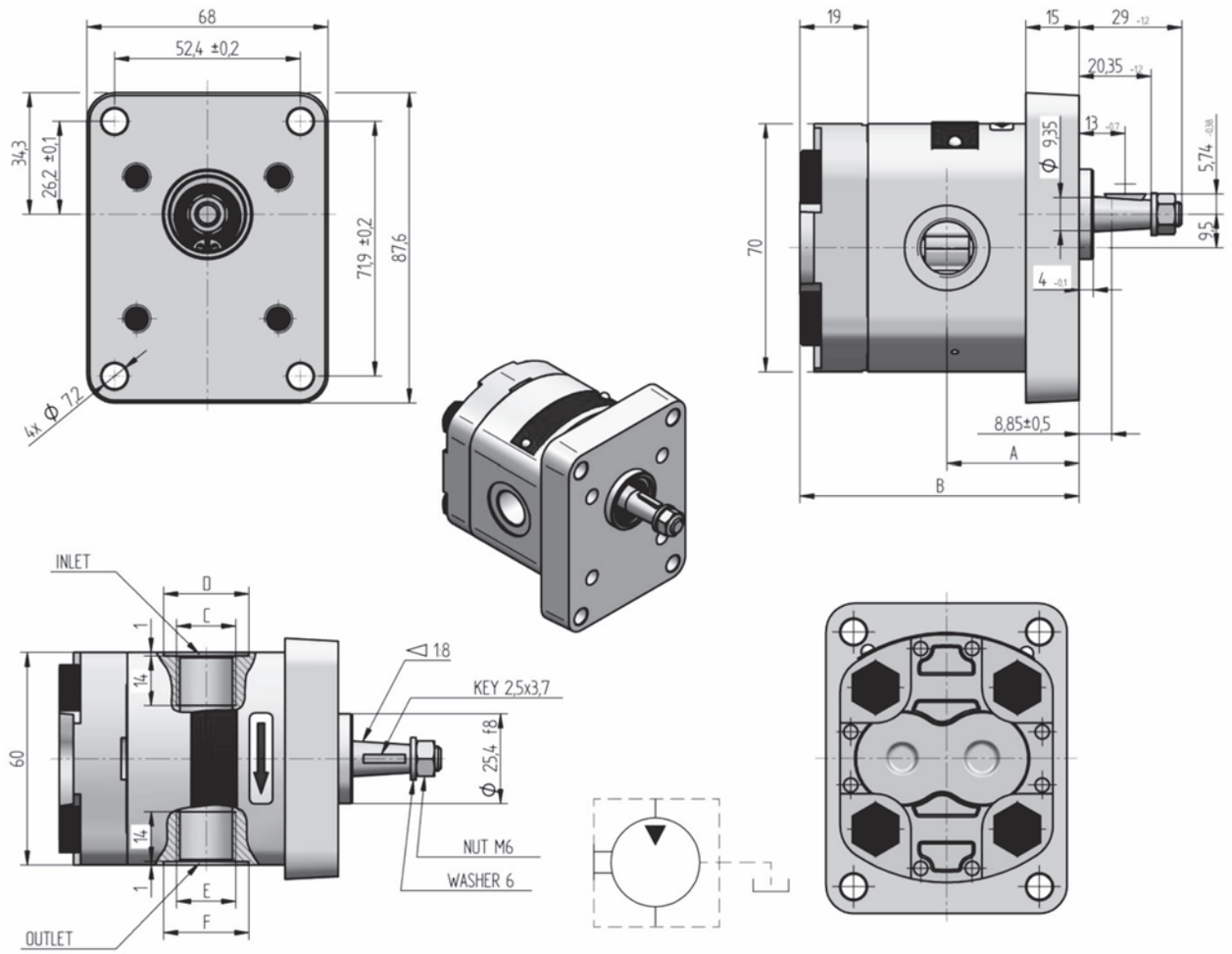
Order key	purch. code	direct. of rot.	displa-cement [cm³/1]	nom. press. [bar]	speed MIN. [min⁻¹]	speed MAX. [min⁻¹]	dimension A [mm]	dimension B [mm]
PM23-7.9B-A06K04-SG02G02-N.009		B	7.9	160	500	3 000	44.8	95.6
PM23-6.2B-A06K04-SG02G02-N.009		B	6.2	180	500	3 500	41.6	89.3
PM23-5.8B-A06K04-SG02G02-N.009		B	5.8	200	500	3 800	40.9	87.8
PM23-4.8B-A06K04-SG02G02-N.009		B	4.8	230	500	3 800	39.0	84.0
PM23-4.4B-A06K04-SG02G02-N.009		B	4.4	250	500	4 000	38.2	82.5
PM23-3.6B-A06K04-SG02G02-N.009		B	3.6	260	500	4 000	36.8	79.6
PM23-3.3B-A06K04-SG02G02-N.009		B	3.3	280	500	4 000	36.2	78.5
PM23-2.5B-A06K04-SG02G02-N.009		B	2.5	280	500	4 000	34.7	75.5
PM23-2.1B-A06K04-SG02G02-N.009		B	2.1	280	600	4 500	33.9	73.9
PM23-1.6B-A06K04-SG02G02-N.009		B	1.6	280	600	4 500	33.1	72.3
PM23-1.2B-A06K04-SG02G02-N.009		B	1.2	280	800	5 000	32.4	70.8
PM23-0.8B-A06K04-SG02G02-N.009		B	0.8	280	800	5 000	31.6	69.3



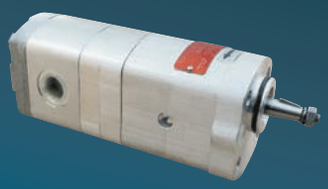
Order key	purch. code	direct. of rot.	displa-cement [cm³/1]	nom. press. [bar]	speed MIN. [min⁻¹]	speed MAX. [min⁻¹]	dimension A [mm]	dimension B [mm]
PM23-7.9B-A05K03-SG02G02-N.009		B	7.9	160	500	3 000	44.8	95.6
PM23-6.2B-A05K03-SG02G02-N.009		B	6.2	180	500	3 500	41.6	89.3
PM23-5.8B-A05K03-SG02G02-N.009		B	5.8	200	500	3 800	40.9	87.8
PM23-4.8B-A05K03-SG02G02-N.009		B	4.8	230	500	3 800	39.0	84.0
PM23-4.4B-A05K03-SG02G02-N.009	187 9400	B	4.4	250	500	4 000	38.2	82.5
PM23-3.6B-A05K03-SG02G02-N.009		B	3.6	260	500	4 000	36.8	79.6
PM23-3.3B-A05K03-SG02G02-N.009		B	3.3	280	500	4 000	36.2	78.5
PM23-2.5B-A05K03-SG02G02-N.009		B	2.5	280	500	4 000	34.7	75.5
PM23-2.1B-A05K03-SG02G02-N.009		B	2.1	280	600	4 500	33.9	73.9
PM23-1.6B-A05K03-SG02G02-N.009		B	1.6	280	600	4 500	33.1	72.3
PM23-1.2B-A05K03-SG02G02-N.009		B	1.2	280	800	5 000	32.4	70.8
PM23-0.8B-A05K03-SG02G02-N.009		B	0.8	280	800	5 000	31.6	69.3

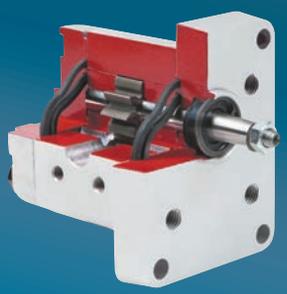


Order key	purch. code	direct. of rot.	displa-cement [cm³/1]	nom. press. [bar]	speed MIN. [min⁻¹]	speed MAX. [min⁻¹]	dimension B [mm]
PM23-7.9B-A03K03-FP01P01-N		B	7.9	160	500	3 000	97.6
PM23-6.2B-A03K03-FP01P01-N	187 9893	B	6.2	180	500	3 500	91.3
PM23-5.8B-A03K03-FP01P01-N	187 9892	B	5.8	200	500	3 800	89.8
PM23-4.8B-A03K03-FP01P01-N		B	4.8	230	500	3 800	86.0
PM23-4.4B-A03K03-FP01P01-N	187 9960	B	4.4	250	500	4 000	84.5
PM23-3.6B-A03K03-FP01P01-N		B	3.6	260	500	4 000	81.6
PM23-3.3B-A03K03-FP01P01-N		B	3.3	280	500	4 000	80.5
PM23-2.5B-A03K03-FP01P01-N		B	2.5	280	500	4 000	77.5
PM23-2.1B-A03K03-FP01P01-N		B	2.1	280	600	4 500	75.9
PM23-1.6B-A03K03-FP01P01-N		B	1.6	280	600	4 500	74.3
PM23-1.2B-A03K03-FP01P01-N		B	1.2	280	800	5 000	72.8
PM23-0.8B-A03K03-FP01P01-N		B	0.8	280	800	5 000	71.3



Order key	purch. code	direct. of rot.	displa-cement [cm³/1]	nom. press. [bar]	speed MIN. [min⁻¹]	speed MAX. [min⁻¹]	dimension A [mm]	dimension B [mm]
PM23-7.9L-R02C02-SG02G02-N	187 9987	L	7.9	160	500	3 000	45.8	95.6
PM23-6.2L-R02C02-SG02G02-N	187 9804	L	6.2	180	500	3 500	42.6	89.3
PM23-5.8L-R02C02-SG02G02-N	187 9986	L	5.8	200	500	3 800	41.9	87.8
PM23-4.8L-R02C02-SG02G02-N	187 9985	L	4.8	230	500	3 800	40.0	84.0
PM23-4.4L-R02C02-SG02G02-N	187 9954	L	4.4	250	500	4 000	39.2	82.5
PM23-3.6L-R02C02-SG02G02-N	187 9951	L	3.6	260	500	4 000	37.8	79.6
PM23-3.3L-R02C02-SG02G02-N	187 9984	L	3.3	280	500	4 000	37.2	78.5
PM23-2.5L-R02C02-SG02G02-N	187 9950	L	2.5	280	500	4 000	35.7	75.5
PM23-2.1L-R02C02-SG02G02-N	187 9983	L	2.1	280	600	4 500	34.9	73.9
PM23-1.6L-R02C02-SG02G02-N	187 9890	L	1.6	280	600	4 500	34.1	72.3
PM23-1.2L-R02C02-SG02G02-N	187 9903	L	1.2	280	800	5 000	33.4	70.8
PM23-0.8L-R02C02-SG02G02-N	187 9982	L	0.8	280	800	5 000	32.6	69.3





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