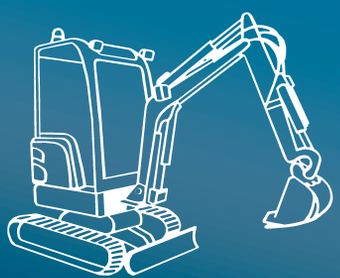
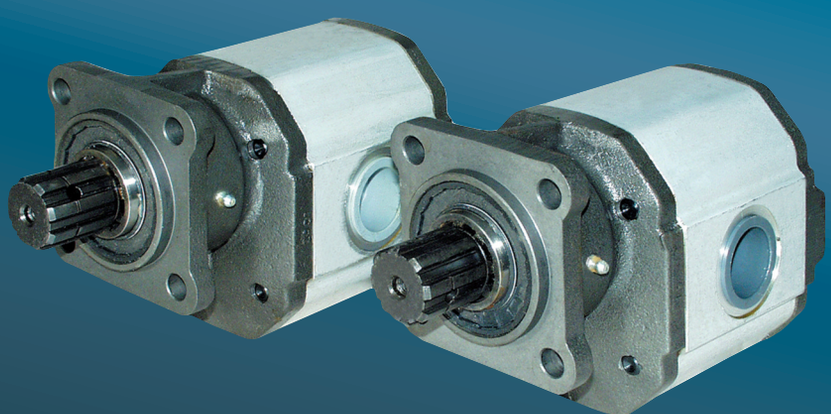
jihostroj
AERO TECHNOLOGY & HYDRAULICS



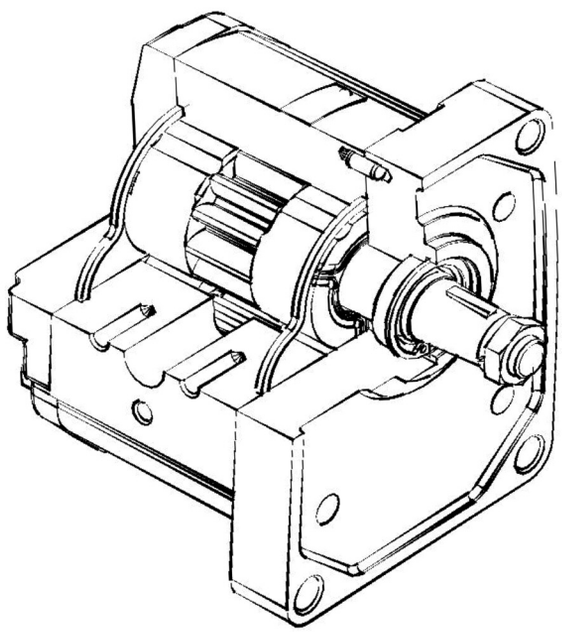


Displacement from 10 to 100 ccm
Pressure up to 290 bar
Speed from 400 to 3200 RPM

GEAR MOTORS
QM2

TABLE OF CONTENTS

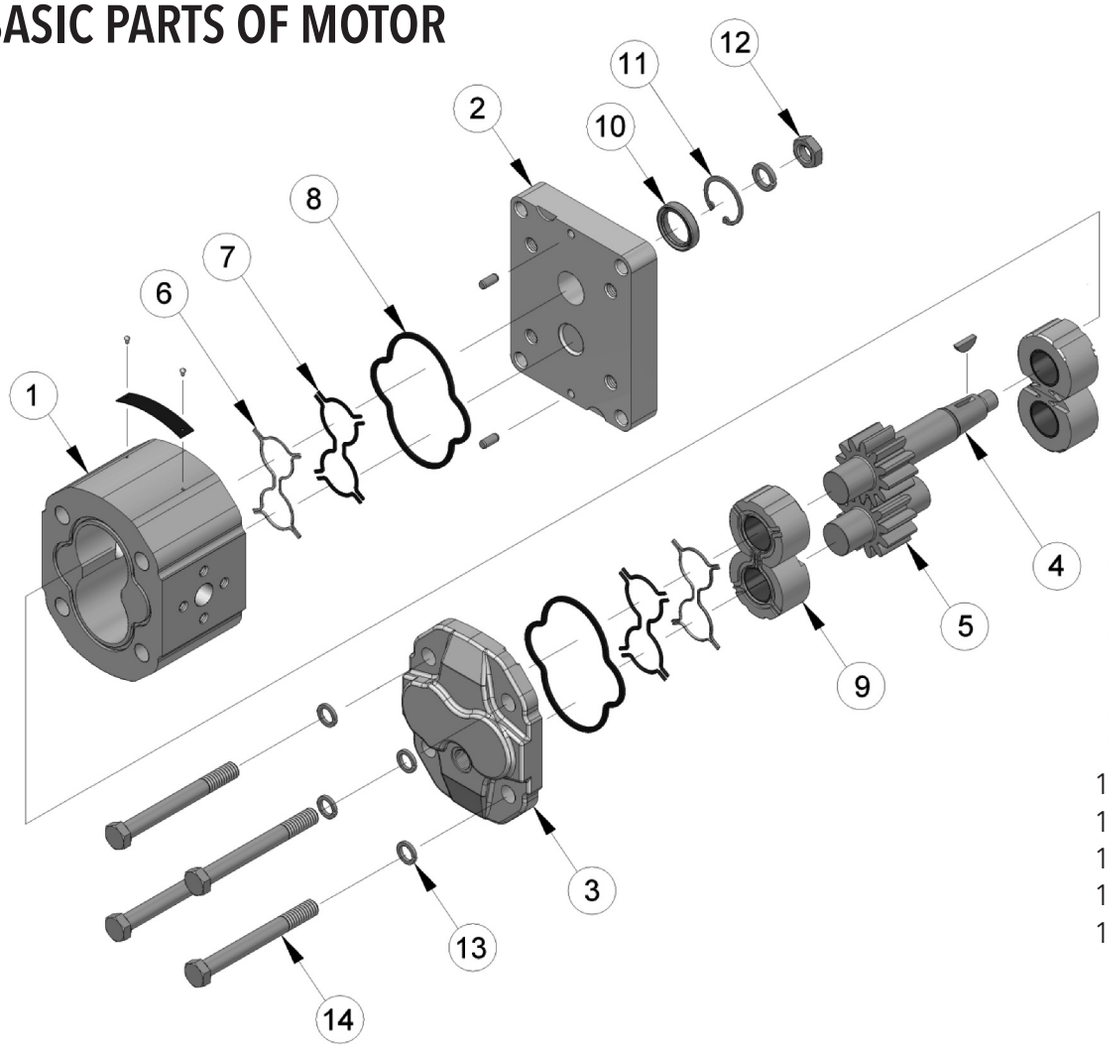
DESCRIPTION 2
BASIC PARTS OF MOTOR 2
PARAMETER TABLE (One direction motors and reversible motors) 3
FORMULAS USED FOR CALCULATION 5
MOTOR EFFICIENCIES 5
WORKING LIQUID 6
PRESSURE LOAD 6
OTHER REQUIREMENTS 7
DIRECTION OF ROTATION 7
REVERSIBLE DESIGN 7
MOTOR WITH A FRONT-END BEARING 8
QM2 FLOW RATE AND POWER CURVES 9
ORDER KEY 13
COMBINATION OF FLANGES AND SHAFTS 14
FLANGE DESIGN 15
DRIVE SHAFTS 16
COMBINATION OF LIQUID INLETS AND OUTLETS 18
CATALOGUE SHEETS OF QM2 SERIES BASIC DESIGN 20
NOTES 25



DESCRIPTION

- Gear motors are used for transformation of liquid pressure head in mechanical energy. QM2 series motors with external teeth are due to their simple construction, compact dimensions and a wide range of types applicable in modern hydraulic systems, handling equipment as well as mobile hydraulic systems. Flange types used as well as the form of working liquid inlet and outlet comply with all worldwide standards. The QM2 series covers the range of displacements from 10 to 100 cm^3/rev.
- The basic version consists of several parts. The body is made of a heavy duty aluminium alloy, engine cover and flange of grey iron or eventually aluminium alloy, and gear wheels of heavy duty steel. Axle pins with a high surface duality are imbedded in sliding sleeves, continuously lubricated and cooled by a stream of working liquid. QM2 series motors can be delivered in one-way design as clockwise or anti-clockwise rotating engines; they are also available in reversible version.

BASIC PARTS OF MOTOR



1. Body
2. Flange
3. Cover
4. Driving gear
5. Driven gear
6. Sealing protective plate
7. Balancing sealing
8. Peripheral sealing
9. Bearing sleeves
10. Shaft seal
11. Safety ring
12. Nut
13. Spring washer
14. Bolts

PARAMETER TABLE

One direction motors

Nominal Size Parameters		Sym.	Unit	QM2 10.0	QM2 13.5	QM2 17.0	QM2 22.5	QM2 27.0	QM2 34.0
Actual displacement		V_g	[cm^3]	10.14	13.76	17.39	22.46	27.53	34.05
Rotation speed	nominal	n_n	[min^{-1}]	1500	1500	1500	1500	1500	1500
	minimum	n_{min}	[min^{-1}]	600	600	500	500	500	500
	maximum	n_{max}	[min^{-1}]	3200	3200	3200	3200	3200	3000
Pressure at outlet	minimum	p_{1min}	[bar]	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3
	maximum	p_{1max}	[bar]	0.5	0.5	0.5	0.5	0.5	0.5
Pressure at inlet	max. continuous	p_{2n}	[bar]	270	290	290	290	290	290
	maximum	p_{2max}	[bar]	290	310	310	310	310	310
	peak	p_3	[bar]	300	320	320	320	320	320
Nominal input flow rate (max.) at n_n and p_{2n}		Q_n	[$dm^3.min^{-1}$]	17.7	24.0	30.3	39.2	45.9	56.8
Maximum input flow rate at n_{max} and p_{2max}		Q_{max}	[$dm^3.min^{-1}$]	37.7	51.2	63.2	81.7	97.9	113.5
Nominal output power (min.) at n_n and p_{2n}		P_n	[kW]	5.8	8.5	10.7	13.8	17.0	21.0
Maximum output power at n_{max} a p_{2max}		P_{max}	[kW]	13.3	19.3	24.4	31.6	38.7	44.9
Nominal Torque at n_n and p_{2n}		M	[Nm]	37.0	54.0	68.2	88.1	108.0	133.6
Weight		m	[kg]	7.9	8.0	8.1	8.2	8.4	8.6

Nominal Size Parameters		Sym.	Unit	QM2 43.0	QM2 51.0	QM2 61.0	QM2 71.0	QM2 82.0	QM2 100.0
Actual displacement		V_g	[cm^3]	43.47	51.44	61.59	71.01	81.87	99.98
Rotation speed	nominal	n_n	[min^{-1}]	1500	1500	1500	1500	1500	1500
	minimum	n_{min}	[min^{-1}]	400	400	400	400	400	400
	maximum	n_{max}	[min^{-1}]	2800	2600	2400	2200	2000	1800
Pressure at outlet	minimum	p_{1min}	[bar]	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3
	maximum	p_{1max}	[bar]	0.5	0.5	0.5	0.5	0.5	0.5
Pressure at inlet	max. continuous	p_{2n}	[bar]	280	270	250	230	200	180
	maximum	p_{2max}	[bar]	300	290	270	250	220	200
	peak	p_3	[bar]	310	300	280	260	230	210
Nominal input flow rate (max.) at n_n and p_{2n}		Q_n	[$dm^3.min^{-1}$]	72.5	85.7	102.7	118.4	136.5	166.6
Maximum input flow rate at n_{max} and p_{2max}		Q_{max}	[$dm^3.min^{-1}$]	135.2	148.6	164.2	173.6	181.9	200.0
Nominal output power (min.) at n_n and p_{2n}		P_n	[kW]	25.9	29.5	32.7	34.7	34.8	38.2
Maximum output power at n_{max} a p_{2max}		P_{max}	[kW]	51.7	54.9	56.5	55.3	51.0	51.0
Nominal Torque at n_n and p_{2n}		M	[Nm]	164.7	187.9	208.3	220.9	221.5	243.5
Weight		m	[kg]	9.0	9.2	9.5	9.8	10.1	11.2

Reversible motors

Nominal Size Parameters		Sym.	Unit	QM2 10.0	QM2 13.5	QM2 17.0	QM2 22.5	QM2 27.0	QM2 34.0
Actual displacement		V_g	[cm^3]	10.14	13.76	17.39	22.46	27.53	34.05
Rotation speed	nominal	n_n	[min^{-1}]	1500	1500	1500	1500	1500	1500
	minimum	n_{min}	[min^{-1}]	600	600	500	500	500	500
	maximum	n_{max}	[min^{-1}]	3200	3200	3200	3200	3200	3000
Pressure at outlet	minimum	p_{1min}	[bar]	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3
	maximum	p_{1max}	[bar]	170	190	190	190	190	190
Pressure at inlet	max. continuous	p_{2n}	[bar]	240	260	260	260	260	260
	maximum	p_{2max}	[bar]	260	280	280	280	280	280
	peak	p_3	[bar]	270	290	290	290	290	290
Nominal input flow rate (max.) at n_n and p_{2n}		Q_n	[$dm^3.min^{-1}$]	17.7	24.0	30.3	39.2	45.9	56.8
Maximum input flow rate at n_{max} and p_{2max}		Q_{max}	[$dm^3.min^{-1}$]	37.7	51.2	63.2	81.7	97.9	113.5
Nominal output power (min.) at n_n and p_{2n}		P_n	[kW]	5.8	8.5	10.7	13.8	17.0	21.0
Maximum output power at n_{max} a p_{2max}		P_{max}	[kW]	13.3	19.3	24.4	31.6	38.7	44.9
Nominal Torque at n_n and p_{2n}		M	[Nm]	37.0	54.0	68.2	88.1	108.0	133.6
Weight		m	[kg]	7.9	8.0	8.1	8.2	8.4	8.6

Nominal Size Parameters		Sym.	Unit	QM2 43.0	QM2 51.0	QM2 61.0	QM2 71.0	QM2 82.0	QM2 100.0
Actual displacement		V_g	[cm^3]	43.47	51.44	61.59	71.01	81.87	99.98
Rotation speed	nominal	n_n	[min^{-1}]	1500	1500	1500	1500	1500	1500
	minimum	n_{min}	[min^{-1}]	400	400	400	400	400	400
	maximum	n_{max}	[min^{-1}]	2800	2600	2400	2200	2000	1800
Pressure at outlet	minimum	p_{1min}	[bar]	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3
	maximum	p_{1max}	[bar]	180	170	160	140	110	90
Pressure at inlet	max. continuous	p_{2n}	[bar]	250	240	230	210	180	160
	maximum	p_{2max}	[bar]	270	260	250	230	200	180
	peak	p_3	[bar]	280	270	260	240	210	190
Nominal input flow rate (max.) at n_n and p_{2n}		Q_n	[$dm^3.min^{-1}$]	72.5	85.7	102.7	118.4	136.5	166.6
Maximum input flow rate at n_{max} and p_{2max}		Q_{max}	[$dm^3.min^{-1}$]	135.2	148.6	164.2	173.6	181.9	200.0
Nominal output power (min.) at n_n and p_{2n}		P_n	[kW]	25.9	29.5	32.7	34.7	34.8	38.2
Maximum output power at n_{max} a p_{2max}		P_{max}	[kW]	51.7	54.9	56.5	55.3	51.0	51.0
Nominal Torque at n_n and p_{2n}		M	[Nm]	164.7	187.9	208.3	220.9	221.5	243.5
Weight		m	[kg]	9.0	9.2	9.5	9.8	10.1	11.2

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

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

- $t = -20 \div +80$ [°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 $\beta\alpha$

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

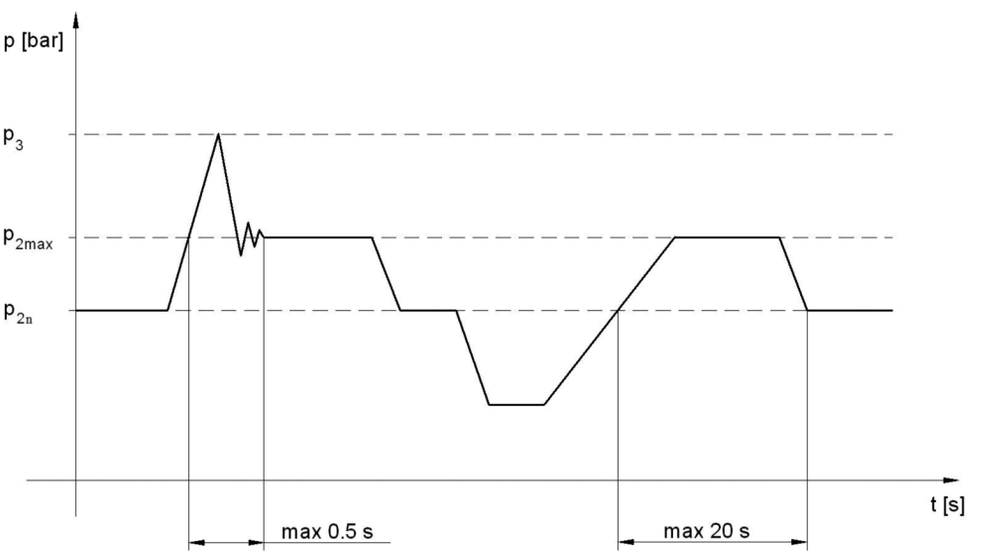
Liquid contamination class according to ISO 4406

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



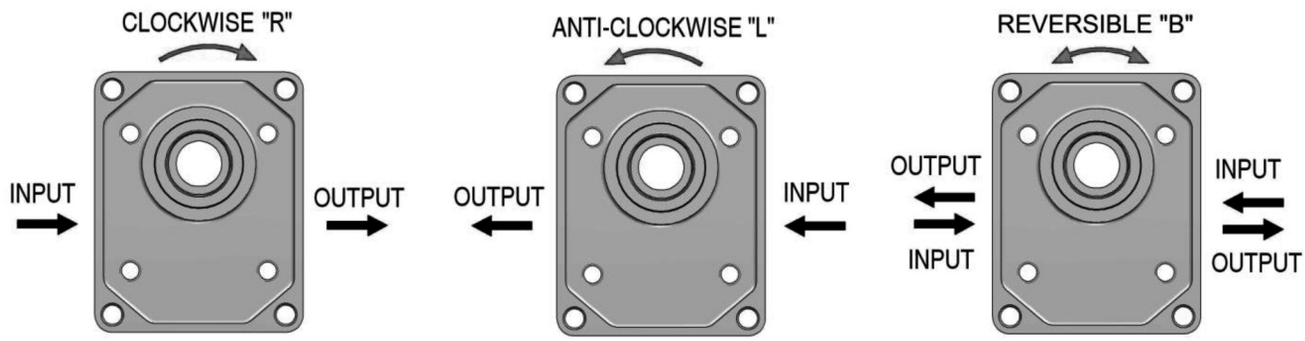
p_{2n}	**max. contin. pressure**	Max. working pressure, at which the pump can be operated without time limitation.
p_{2max}	**max. pressure**	Maximum pressure permissible for a short time, max. 20s.
p_3	**peak pressure**	Short-time pressure (fractions of a second) arising in case of a sudden change of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

OTHER REQUIREMENTS

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

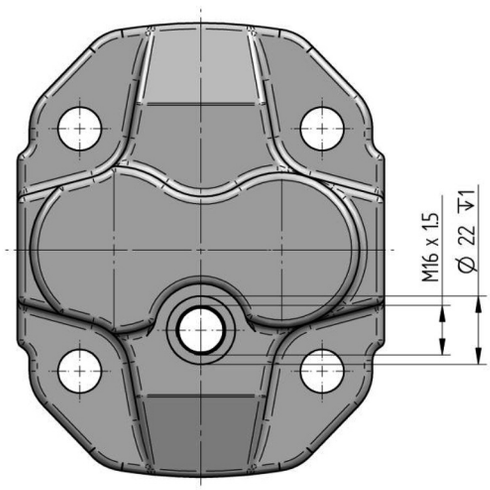
DIRECTION OF ROTATION

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

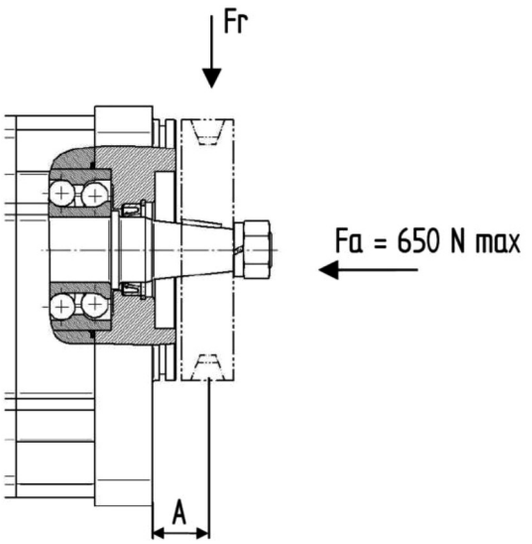


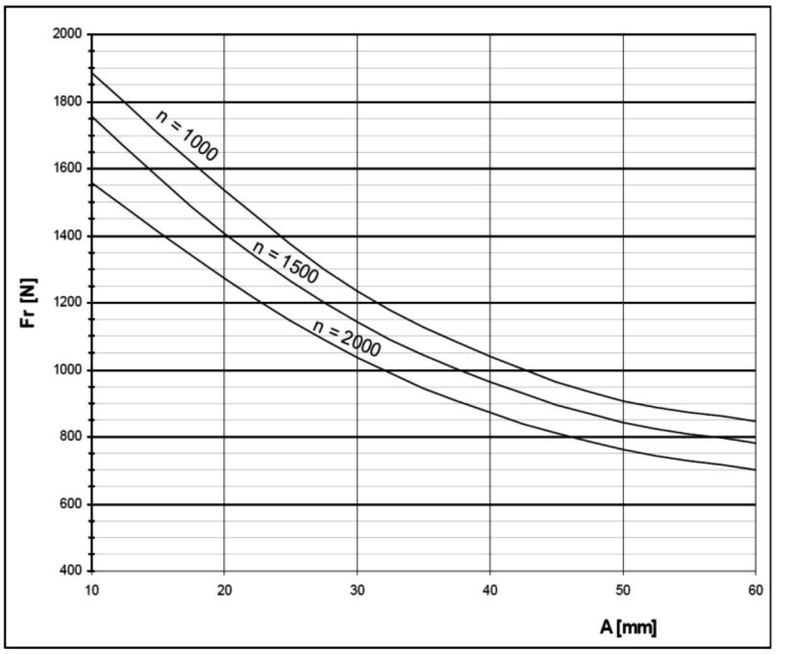
REVERSIBLE DESIGN

- 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.



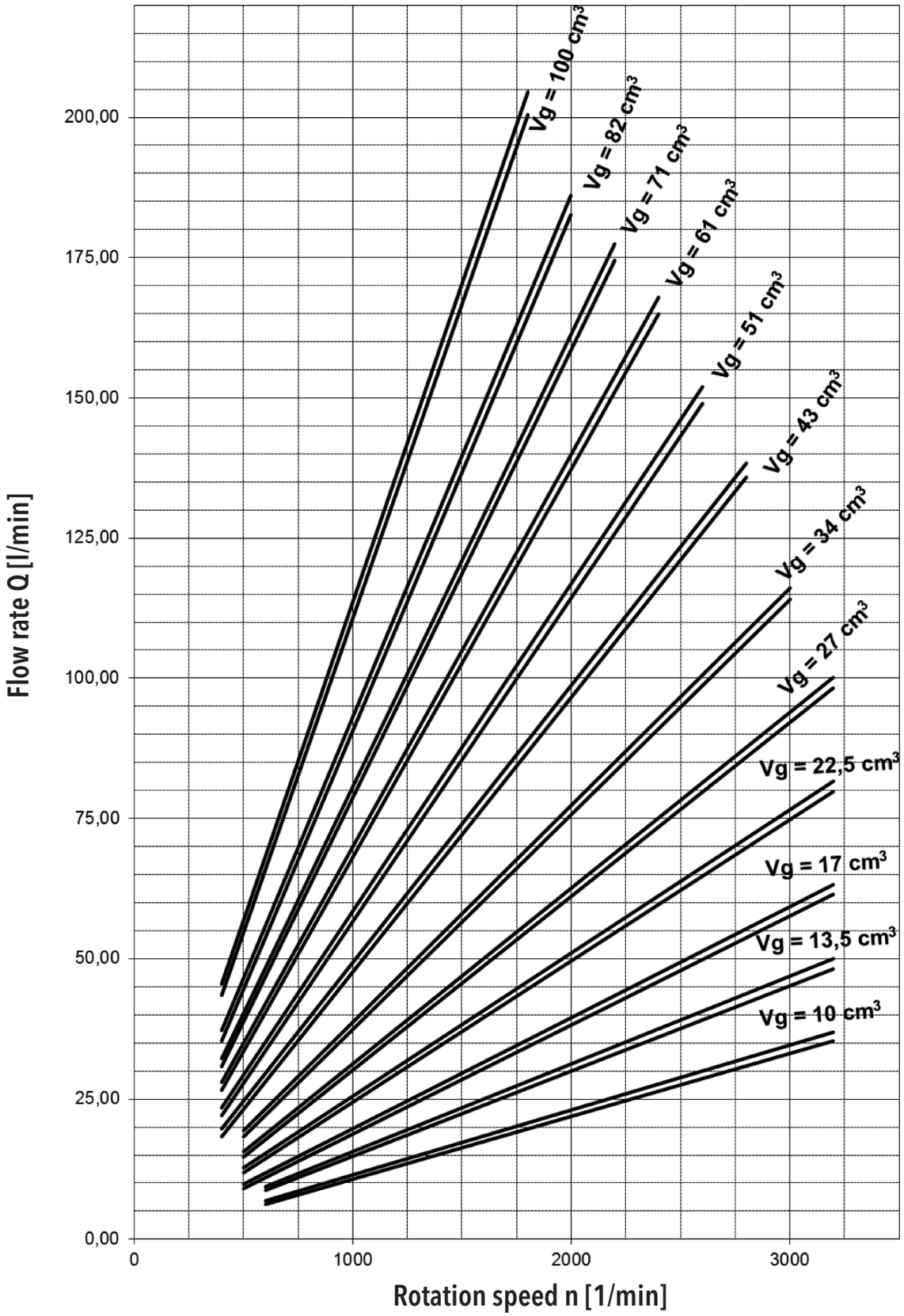
MOTOR WITH FRONT-END BEARING





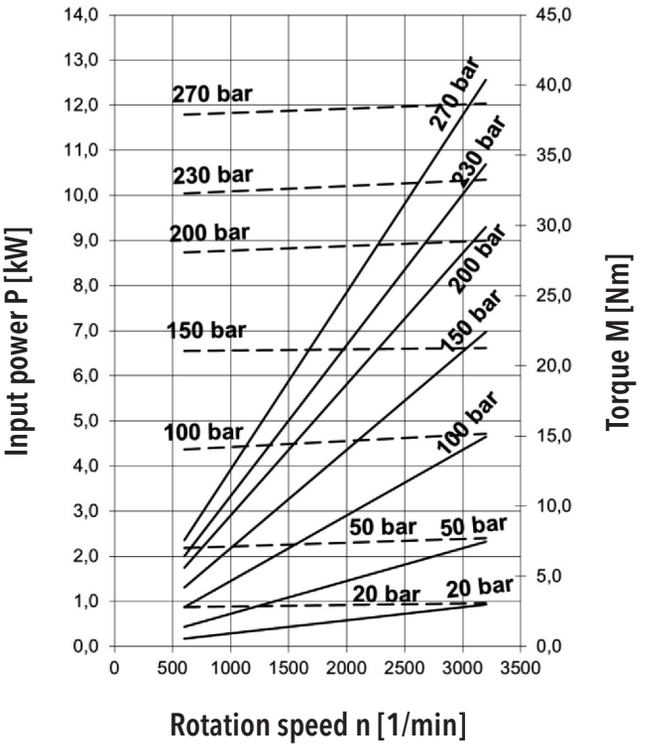
A driven device must not generate an axial or a radial load of the motor shaft, unless this is exclusively permitted for the motor with a front-end bearing.

QM2 FLOW RATE AND POWER CURVES

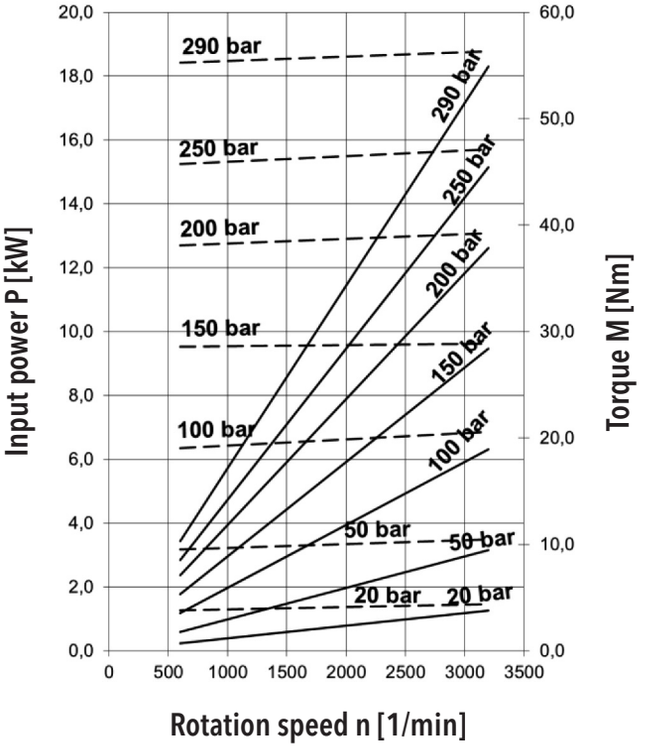


Above curves apply to ISO V_g 46 oil at temperature t = 45°C.

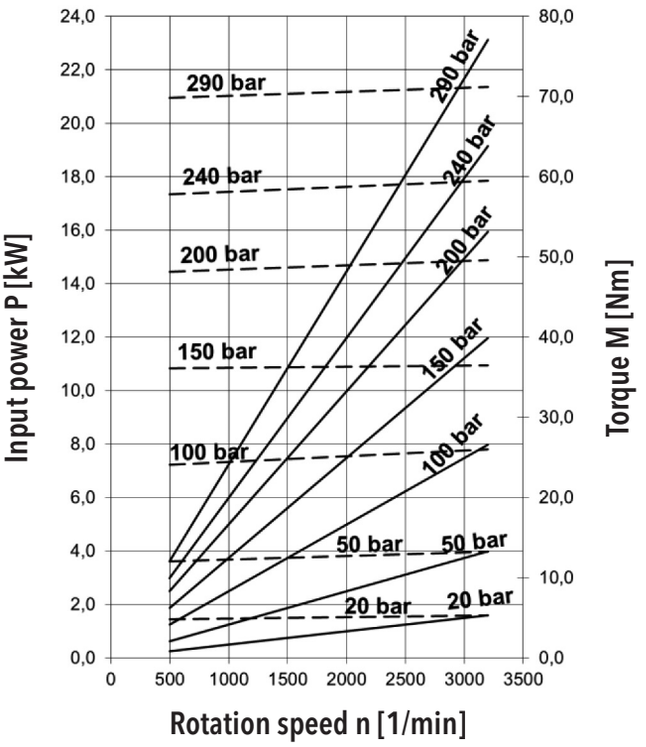
10,00 cm³



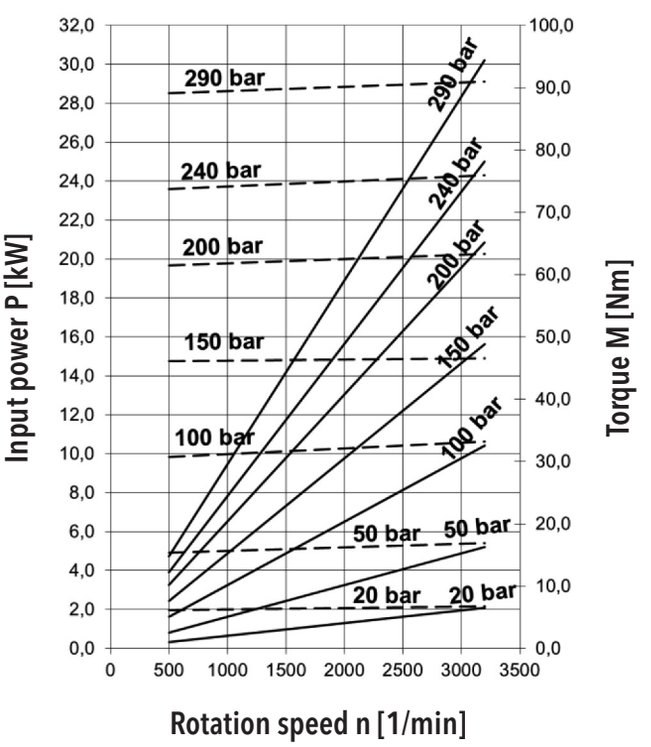
13,50 cm³



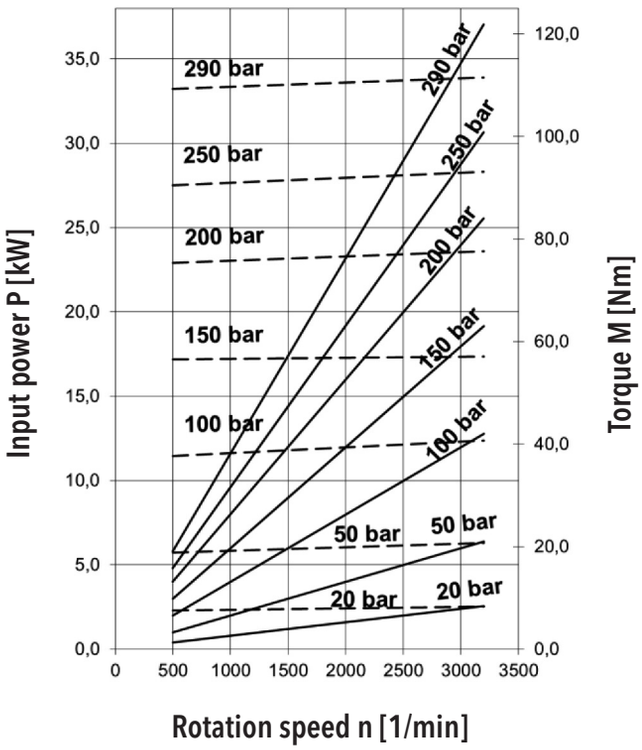
17,00 cm³



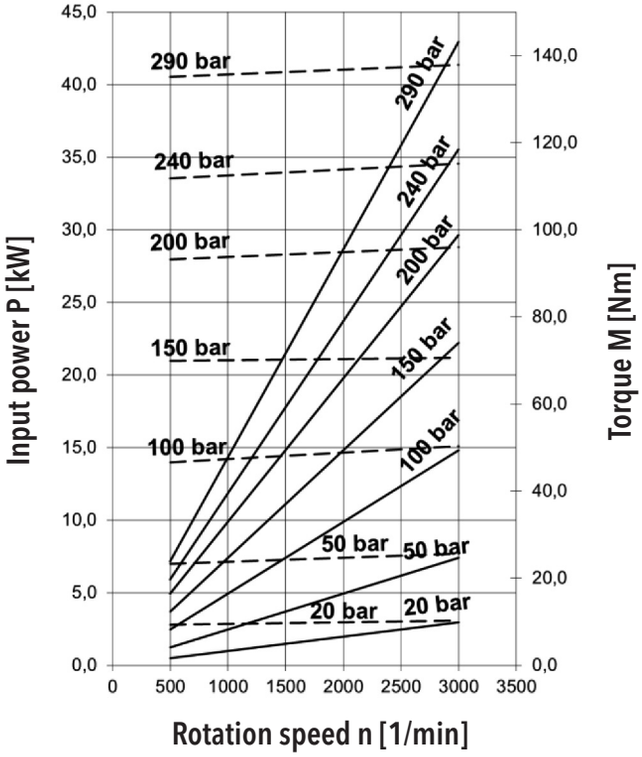
22,50 cm³



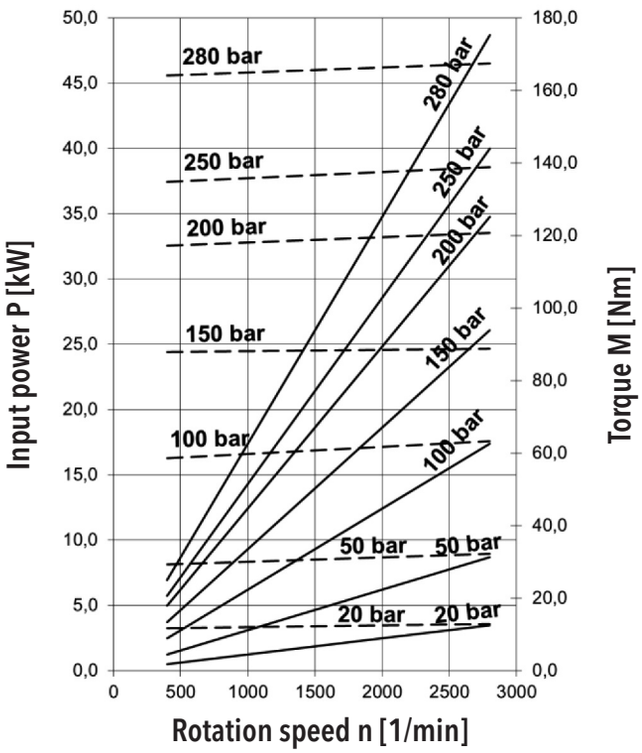
27,00 cm³



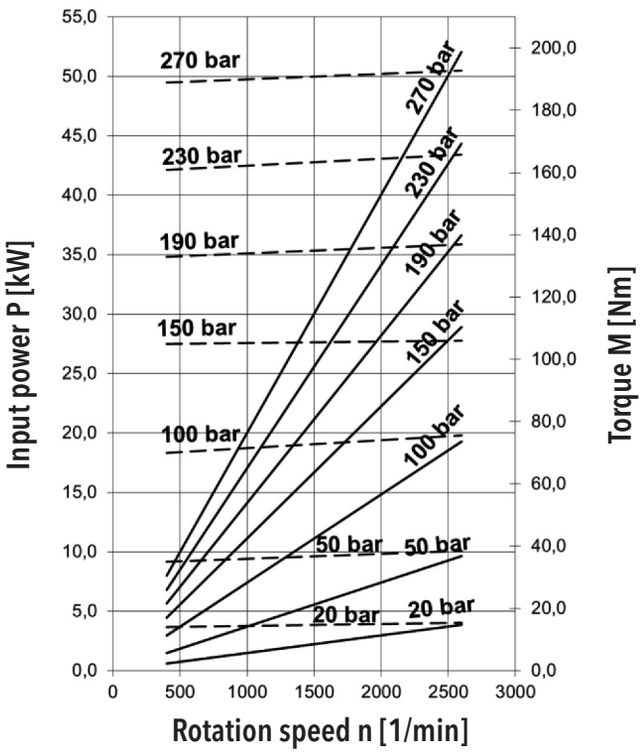
34,00 cm³



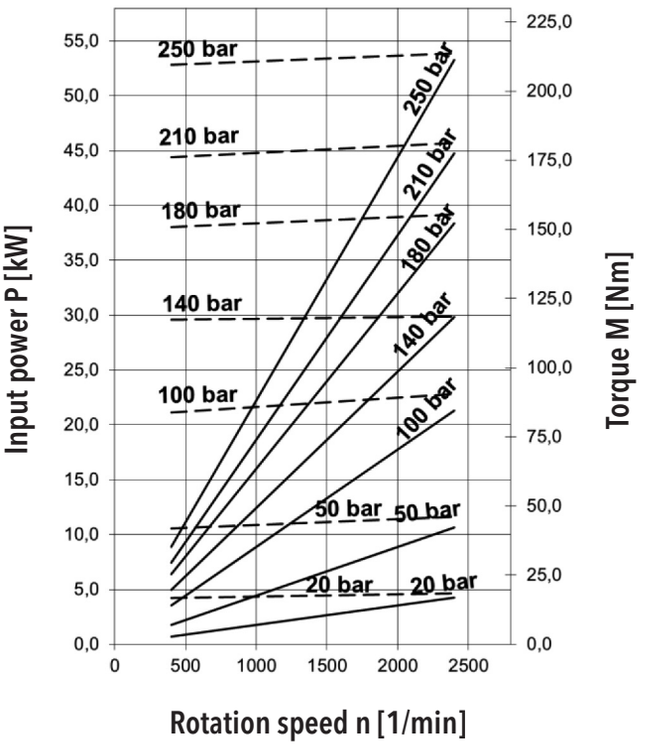
43,00 cm³



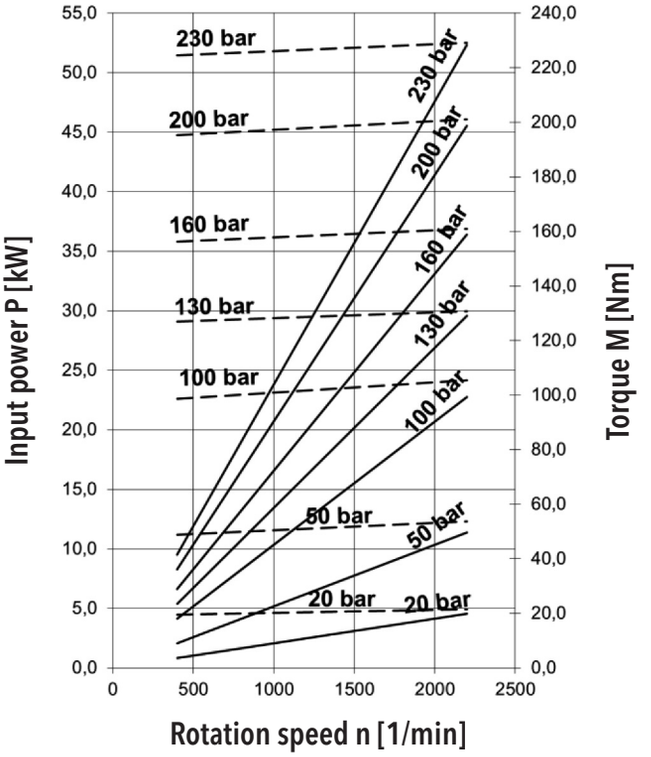
51,00 cm³



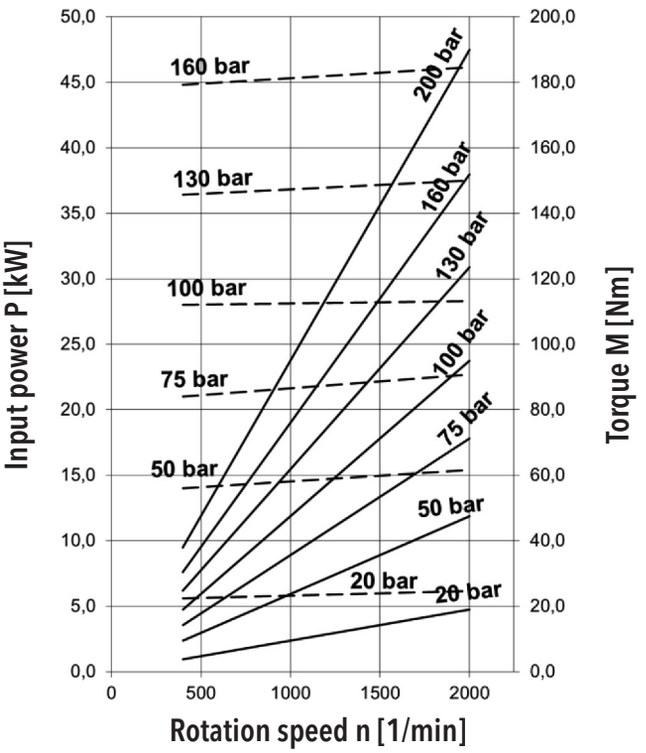
61,00 cm³



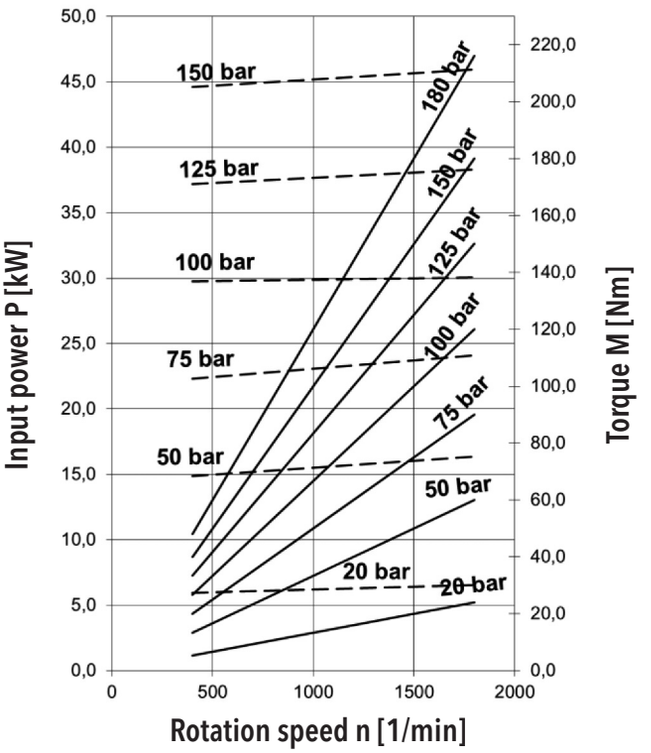
71,00 cm³



82,00 cm³



100,00 cm³



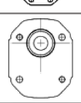
ORDER KEY

QM2 – 51 R – R11 C11 – S G05 G04 – N . 001

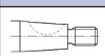
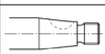
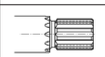
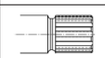
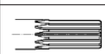
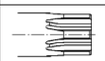
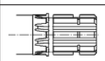
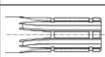
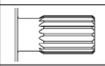
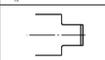
Code	Type
QM2	QM2 Series Gear Motor

Code	Displacement [cm³]
10	10,14
13,5	13,76
17	17,39
22,5	22,46
27	27,53
34	34,05
43	43,47
51	51,44
61	61,59
71	71,01
82	81,87
100	99,98
XX	Other displacements on request

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

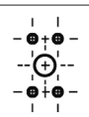
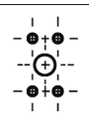
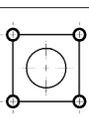
Code	Flange design	
R11		Rectangular flange, centre ring ∅50,8 Spacing screw 98,5 x 128
R12		Rectangular flange, UN II
R13		Rectangular flange, centre ring ∅105 Spacing screw 102,5 x 145
S03		SAE B – 2 apertures
S05		SAE B – 4 apertures
I01		ISO, centre ring ∅80, front end bearing
I02		ISO, centre ring ∅80
U01		UNI
A11		trough – bolts
A12		trough – bolts
B01		Flange 4 apertures centre ring ∅90 spacing 110 x 86
K02		Circular flange, centre ring ∅85 6 bolts, ∅105
Z		Special desing

Code	Location of inlets and outlets	
S		Side (in the body)
R		Axial (in the cover)
C		Combination

Code	Drive shaft desing	
C11		Cone 1:8
C12		Cone 1:5
D13		Spline SEA 13T
D15		Spline SEA 15T
D16		Spline 25x1,5 ČSN 014950
D17		Spline UNI 221
D18		Equilateral spline A8x32x36x6 DIN 5462
D19		Equilateral spline 6 grooves, ∅ 20
D22		Involute spline ZV 25x1,5x16
K09		Cross coupling
V14		Cylindric SEA ∅22,225
V15		Cylindric ∅20h7
V16		Cylindric ∅25
Z		Special desing

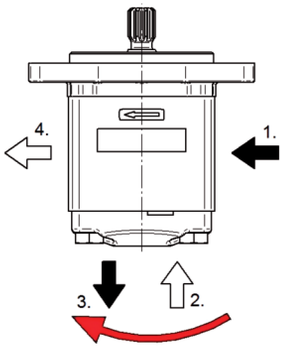
Code	zvláštní úpravy
–	No special arrangements
001	Double lip shaft seal
004	Without shaft seal
006	Axial inlet, radial outlet
007	Rotated out of flange throad
008	With front-end bearing light design
013	Internal drain
014	Axial drain M18x1,5
015	Axial drain M16x1,5
050	Built-in relief valve
061	Radial inlet, radial+axial outlet

Code	Seal material	
N		NBR
V		FKM (VITON)
H		HNBR

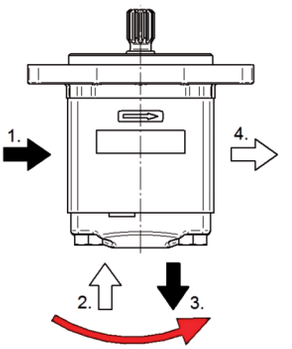
Code	Liquid inlet and outlet connection shape	
M08		Thread M 27x1,5
M09		Thread M 27x2
M11		Thread M 33x1,5
M12		Thread M 33x2
M15		Thread M 48x2
G03		Thread BSP G1/2
G04		Thread BSP G3/4
G05		Thread BSP G1"
G06		Thread BSP G1 1/4
U04		Thread 7/8-14 UNF
U05		Thread 1-1/16-12 UN
U07		Thread 1-5/16-12 UN
U08		Thread 1-5/8-12 UN
H08		Flanged fitting 4xM8 / ∅40
H09		Flanged fitting 4xM8/∅55;∅18
H10		Flanged fitting 4xM8/∅55;∅25
H11		Flanged fitting 4xM10 / ∅51
A02		Flanged fitting SAE 3/4
A03		Flanged fitting SAE 1"
A04		Flanged fitting SAE 1 1/4
A05		Flanged fitting SAE 1 1/2
E02		Flanged fitting 3/4
E03		Flanged fitting 1"
E04		Flanged fitting 1 1/4
E05		Flanged fitting 1 1/2
K03		Flanged fitting 4xM8 / ∅40;∅18
K04		Flanged fitting 4xM10/∅51;∅26
K05		Flanged fitting 4xM8 / ∅55;∅18
K06		Flanged fitting 4xM8 / ∅55;∅25
S08		Flanged fitting 4xM10/22x54
S09		Flanged fitting 4xM10/22x54
S10		Flanged fitting 4xM8/22x46
S11		Flanged fitting 4xM8/22x46
Z		Special desing

An example of designation for the QM2 clockwise motor with displacement of 51 cm³. Rectangular flange centre ring ∅ 50.8mm, Shaft with traper 1:8, BSP side inlets in the body and standard NBR sealing, and with two-edges shaft seal: **QM2-51R-R11C11-SG04G05-N.001**

Note: In case of combination inlets, with the code „C" is respected following sequence of inlets and outlets:



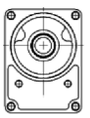
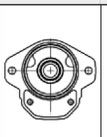
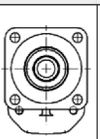
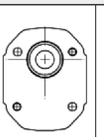
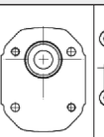
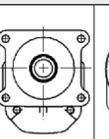
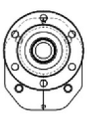
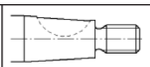
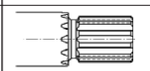
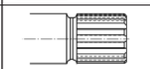
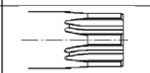
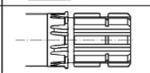
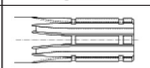
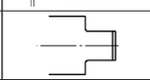
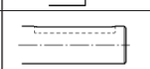
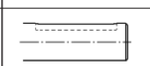
For clockwise and reverse gear motor,
in direction clockwise



For anti-clockwise gear motor,
in direction anti-clockwise

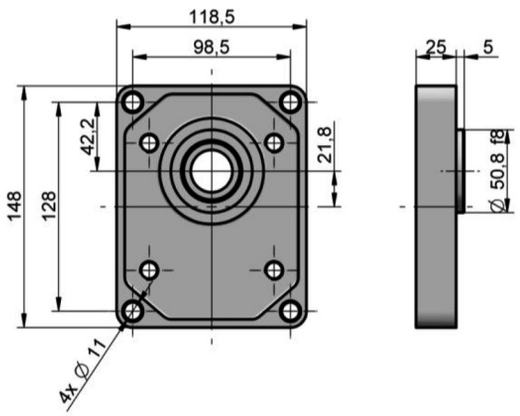
For. ex...: QM2-43B-R11C11-C<u>G04</u> <u>G04</u> <u>G05</u> <u>G05</u> -N
1. 2. 3. 4.

COMBINATIONS OF FLANGES AND SHAFTS

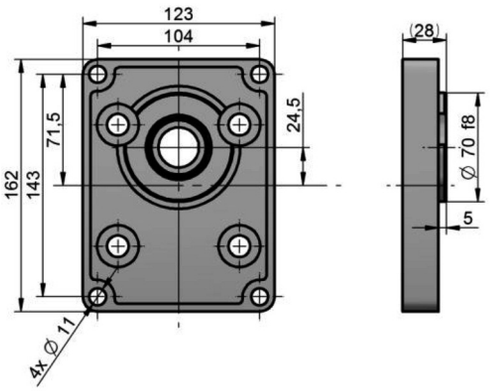
			FLANGE DESIGN										
			R11	R12	R13	S03	S05	I01 / I02	U01	A11	A12	B01	K02
													
DRIVE SHAFT	C11		●					●					
	C12				●								
	D13					●	●						
	D15					●	●						
	D17								●			●	
	D18							●					
	D19			●									●
	D22											●	
	K09									●	●		
	V14					●	●						
	V15		●										
	V16		●	●									

FLANGES DESIGN

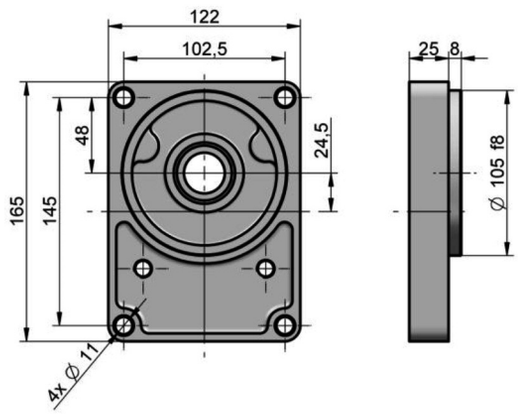
R11:



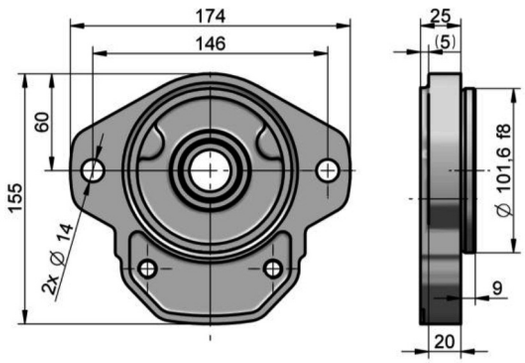
R12:



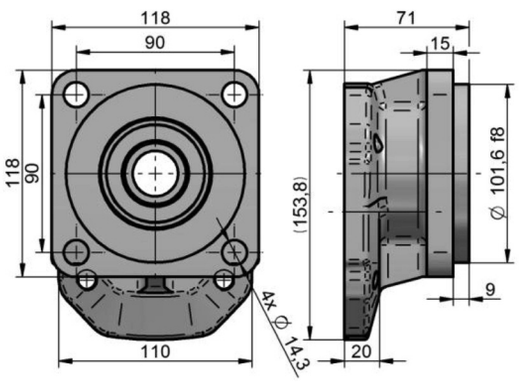
R13:



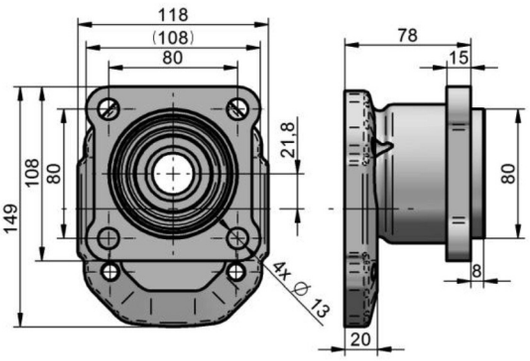
S03:



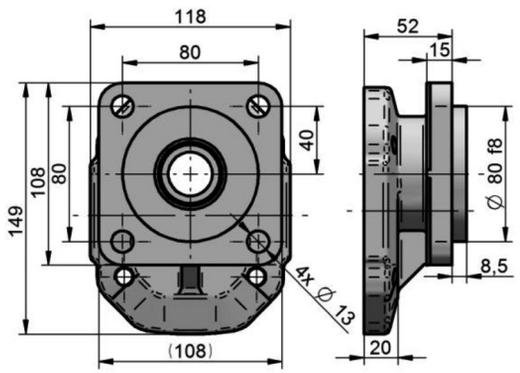
S05:



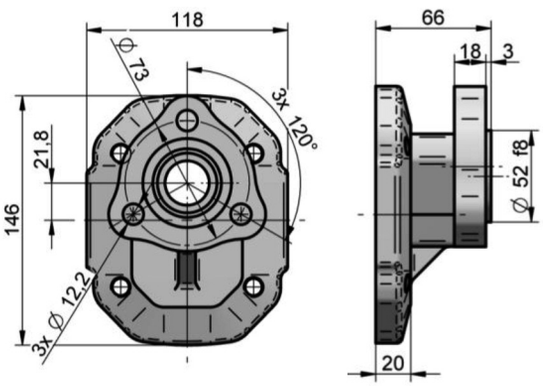
I01:



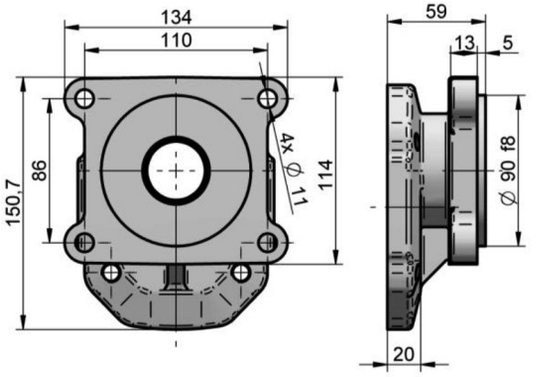
I02:



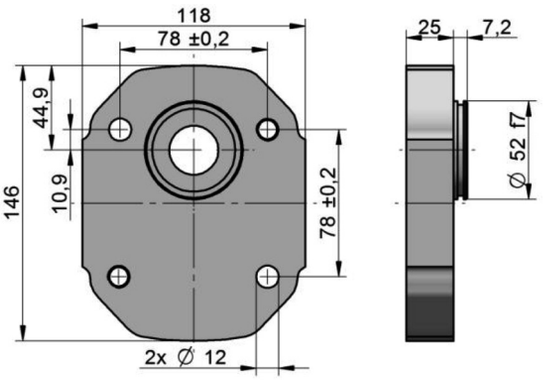
U01:



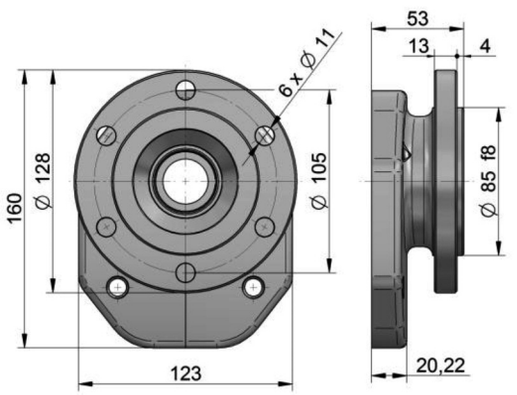
B01:



A11:

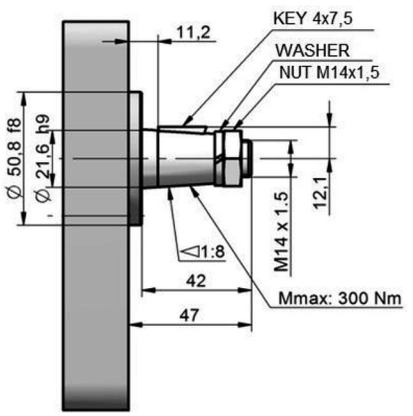


K02:

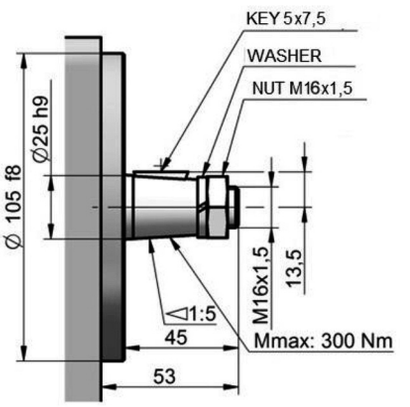


DRIVE SHAFTS

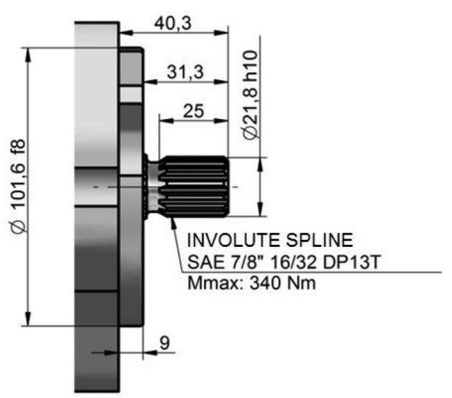
C11:



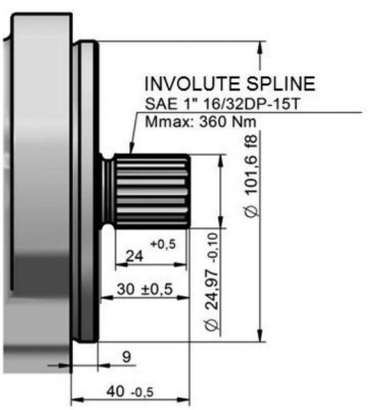
C12:



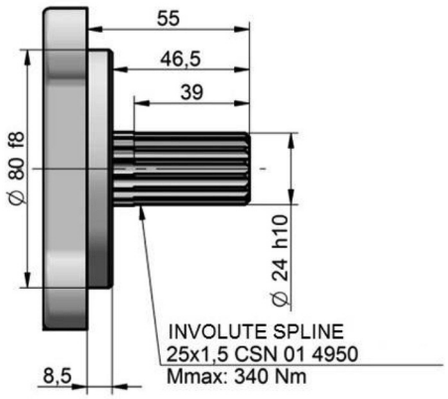
D13:



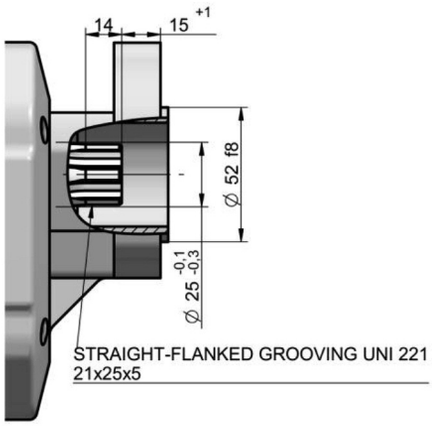
D15:



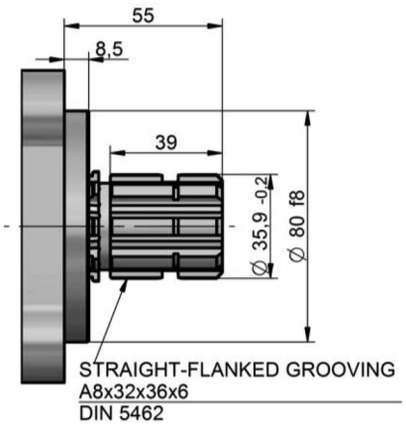
D16:



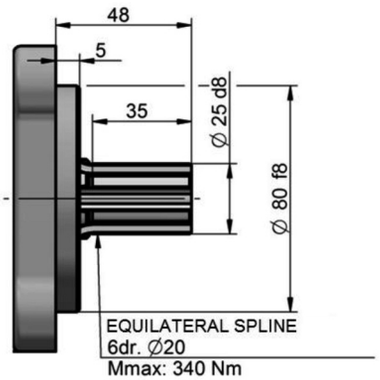
D17:



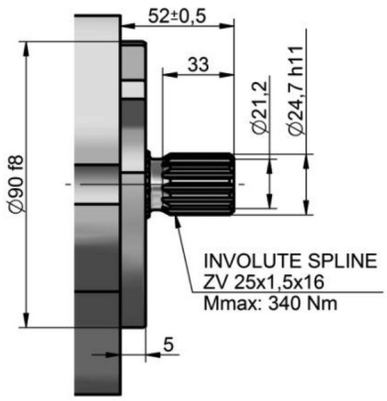
D18:



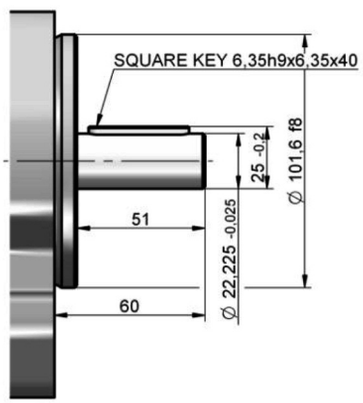
D19:



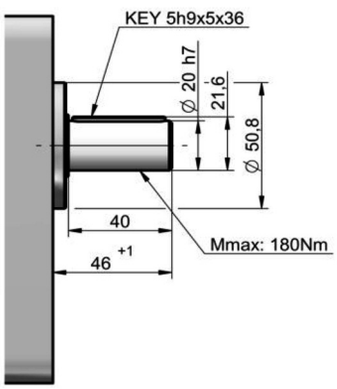
D22:



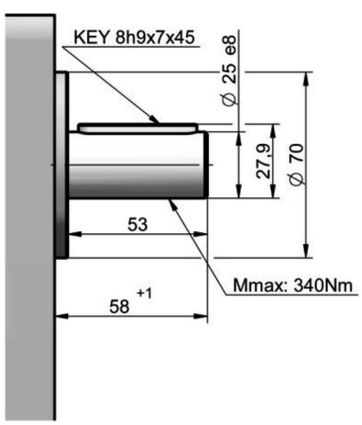
V14:



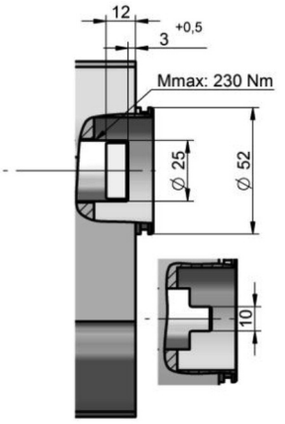
V15:



V16:

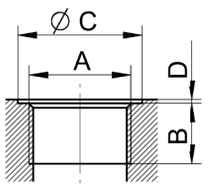


K09:



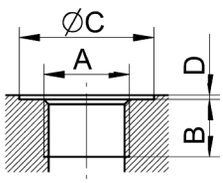
COMBINATIONS OF LIQUID INLETS AND OUTLETS

Metric thread according to ISO 6149



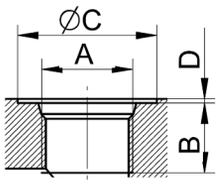
Displacement [cm³]	Code	Inlet				Code	Outlet			
		A	B	C	D		A	B	C	D
to 51 including	M12	M 33x2	18,0	40,0	1,0	M09	M 27x2	16,0	33,0	1,0
above 51	M15	M 48x2	18,0	56,0	1,0	M12	M 33x2	18,0	40,0	1,0
drain	M04	M 16x1,5	14,0	22,0	1,0					
drain	M05	M 18x1,5	14,0	24,0	1,0					

BSPP pipe thread according to ISO 228-1



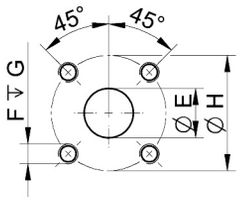
Displacement [cm³]	Code	Inlet				Code	Outlet			
		A	B	C	D		A	B	C	D
to 17 including	G03	G 1/2	14,0	33,0	1,0	G03	G 1/2	14,0	33,0	1,0
17-34 including	G04	G 3/4	16,0	39,0	1,0	G04	G 3/4	16,0	39,0	1,0
34-51 including	G05	G 1	18,0	45,0	1,0	G04	G 3/4	16,0	39,0	1,0
above 51	G06	G 1 1/4	18,0	57,0	1,0	G05	G 1	18,0	45,0	1,0

UNF thread according to SAE



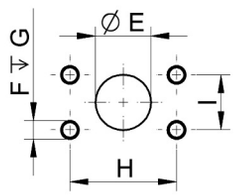
Displacement [cm³]	Code	Inlet				Code	Outlet			
		A	B	C	D		A	B	C	D
to 17 including	U05	1-1/16-12UNF	19,0	41,0	1,0	U04	7/8-14UNF	17,0	34,0	1,0
17-27 including	U07	1-5/16-12UNF	23,0	49,0	1,0	U05	1-1/16-12UNF	19,0	41,0	1,0
27-39 including	U07	1-5/16-12UNF	23,0	49,0	1,0	U07	1-5/16-12UNF	23,0	49,0	1,0
above 39	U08	1-5/8-12UN 2B	23,0	58,0	1,0	U07	1-5/16-12UNF	23,0	49,0	1,0

Flanged fittings according to DIN 8901/8902



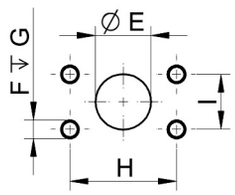
Displacement [cm³]	Code	Inlet				Code	Outlet			
		E	F	G	H		E	F	G	H
all	H11	26,0	M 10	16,0	51,0	H08	18,0	M 8	16,0	40,0
	H10	25,0	M 8	16,0	55,0	H09	18,0	M 8	16,0	55,0

Flanged fittings according to SAE, metric thread



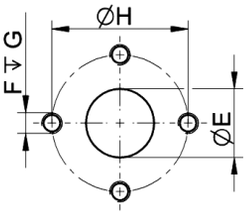
Displacement [cm³]	Code	Inlet					Code	Outlet				
		E	F	G	H	I		E	F	G	H	I
to 61 including	E03	25,4	M 10	22,0	52,4	26,2	E02	19,0	M 10	22,0	47,6	22,2
above 61	E04	30,5	M 10	22,0	58,7	30,2	E03	25,4	M 10	22,0	52,4	26,2
above 61	E05	39,3	M 12	27,0	69,8	35,7	E04	30,5	M 10	22,0	58,7	30,2

Flanged fittings according to SAE, UNC thread



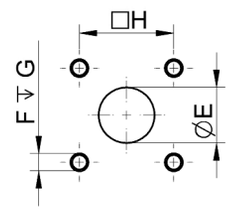
Displacement [cm³]	Code	Inlet					Code	Outlet				
		E	F	G	H	I		E	F	G	H	I
to 61 including	A03	25,4	3/8-16-UMC	22,0	52,4	26,2	A02	19,0	3/8-16-UMC	22,0	47,6	22,2
above 61	A04	30,5	7/16-14-UMC	29,0	58,7	30,2	A03	25,4	3/8-16-UMC	22,0	52,4	26,2
above 61	A05	39,3	1/2-13-UMC	27,0	69,8	35,7	A04	30,5	7/16-14-UMC	29,0	58,7	30,2

Flanged fittings – „cross"



Displacement [cm³]	Code	Inlet				Code	Outlet			
		E	F	G	H		E	F	G	H
all	K04	26,0	M 10	16,0	51,0	K03	18,0	M 8	16,0	40,0
	K06	25,0	M 8	16,0	55,0	K05	18,0	M 8	16,0	55,0

Flanged fittings – „square"

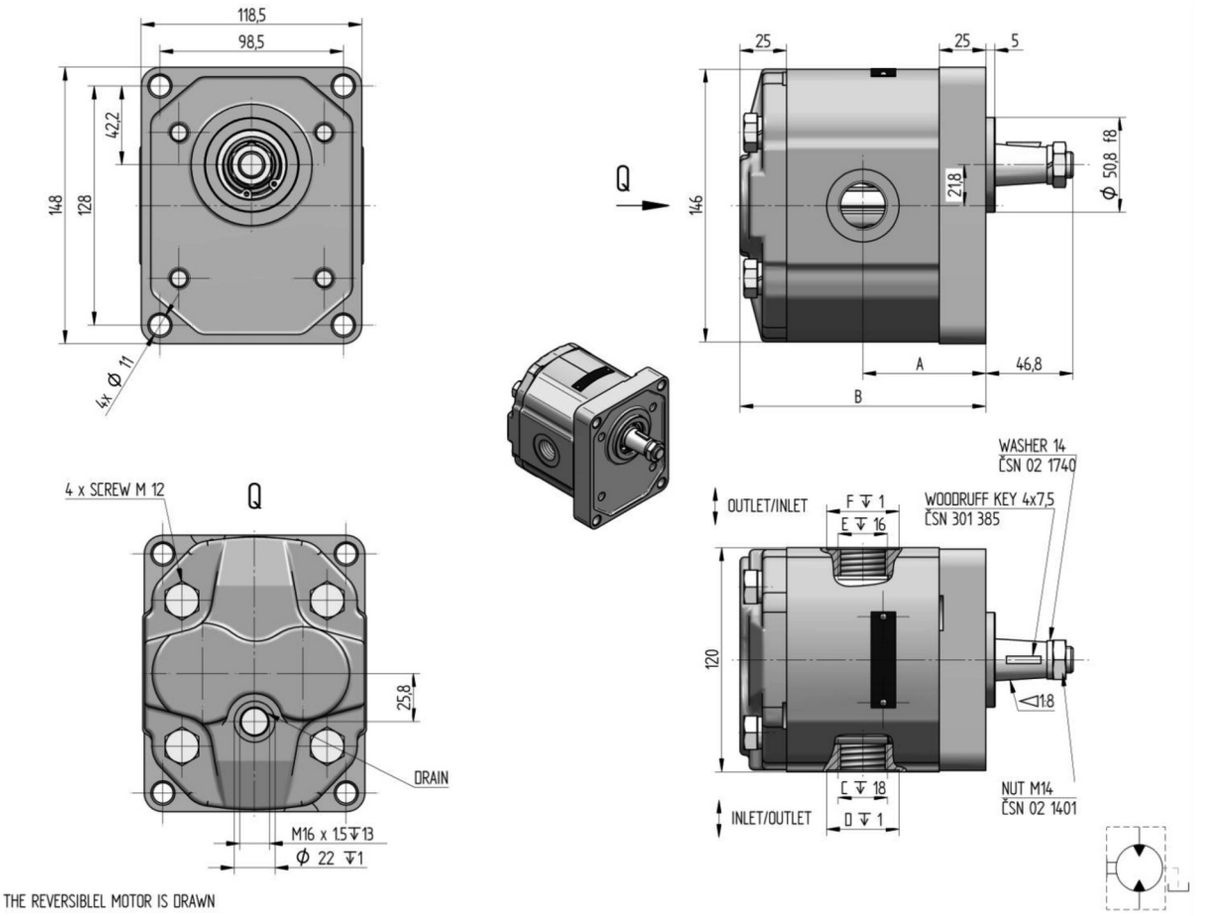


Displacement [cm³]	Code	Inlet				Code	Outlet			
		E	F	G	H		E	F	G	H
to 43 including	S11	23,0	M 8	22,0	46,0	S10	16,0	M 8	22,0	46,0
above 43	S09	27,0	M 10	22,0	54,0	S08	19,0	M 10	22,0	54,0

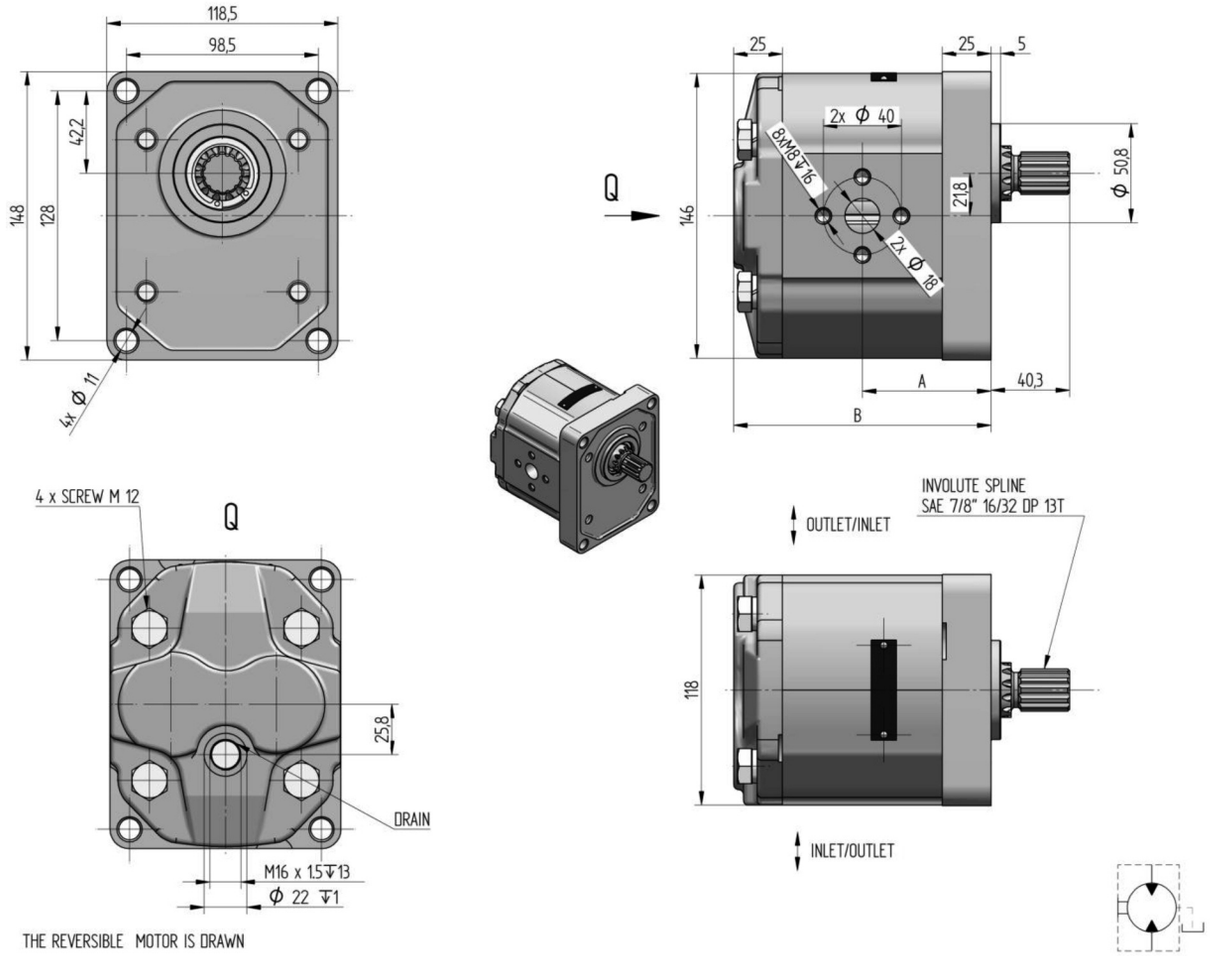
Drain

Displacement [cm³]	Code	Outlet			
		A	B	C	D
all	M04	M 16x1,5	14,0	22,0	1,0
	M05	M 18x1,5	14,0	24,0	1,0

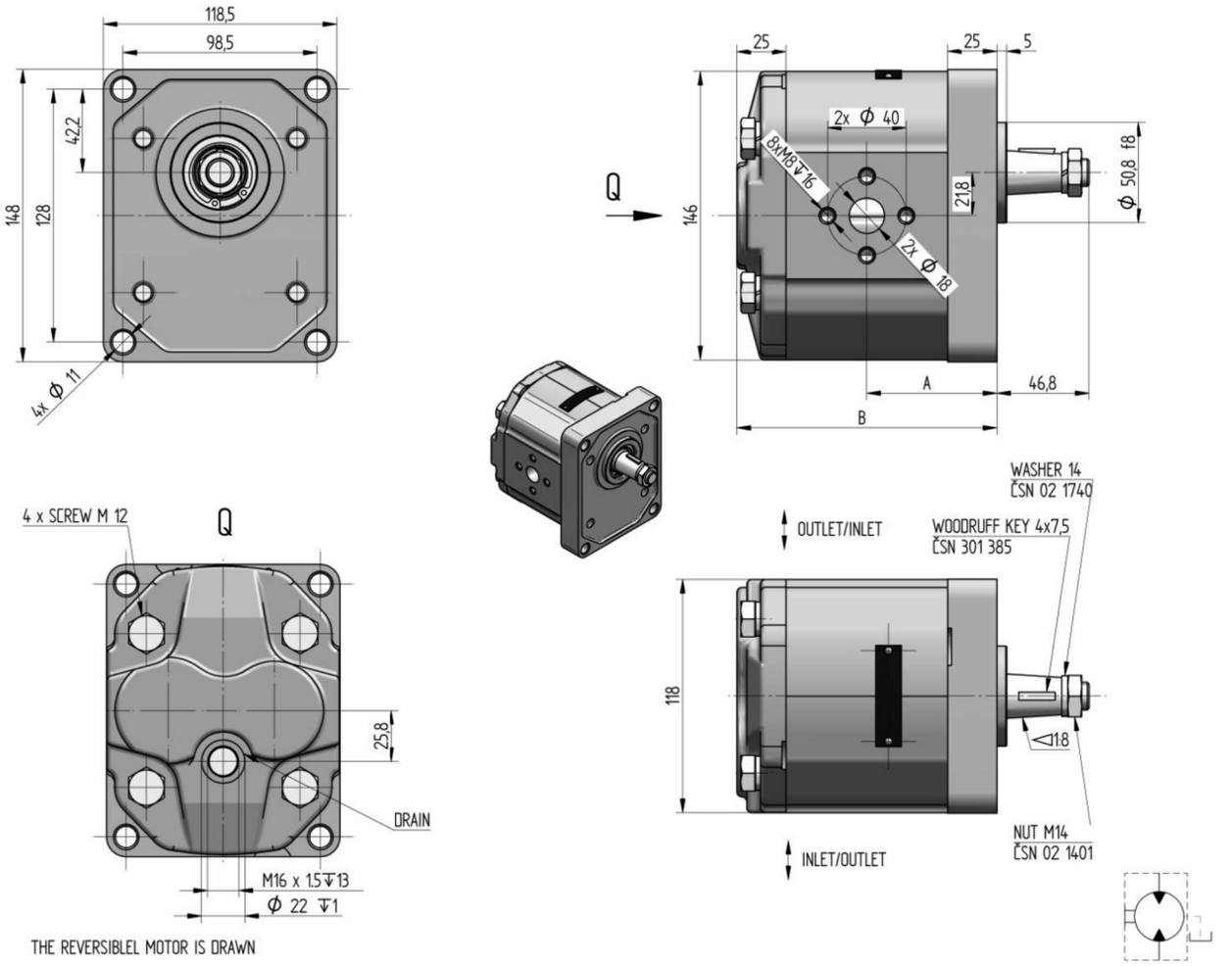
CATALOGUE SHETS OF QM2 SERIES BASIC DESIGNS



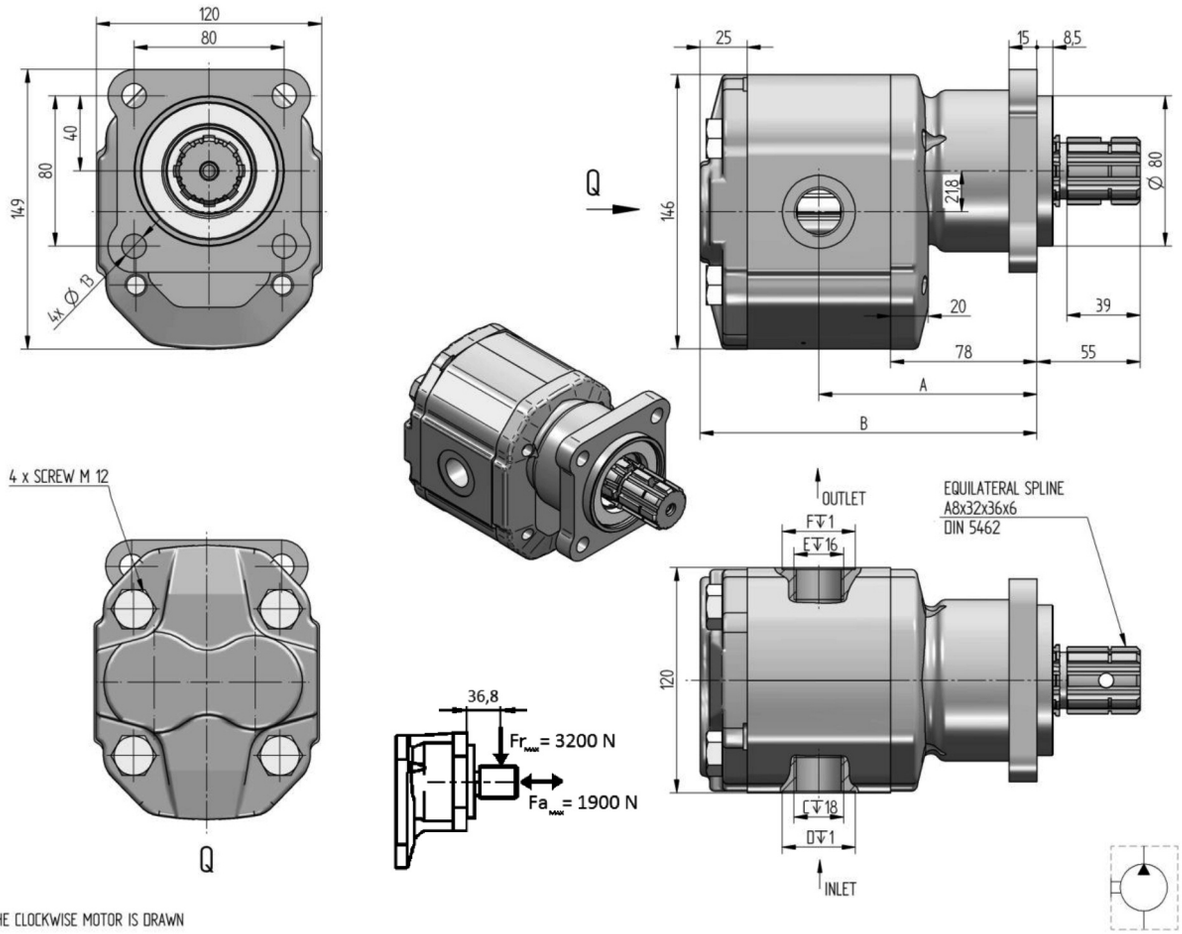
Order key	purch. code	direct. of rot.	displa-cement [cm³/1]	nom. press. [bar]	speed MIN. [min⁻¹]	speed MAX. [min⁻¹]	dimension A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]
QM2-82B-R11C11-SG05G05-N		B	82	200	400	2000	80.00	160.0	G 1"	∅ 45	G 1"	∅ 45
QM2-71B-R11C11-SG05G05-N		B	71	230	400	2200	76.25	152.5	G 1"	∅ 45	G 1"	∅ 45
QM2-61B-R11C11-SG05G05-N		B	61	250	400	2400	73.00	146.0	G 1"	∅ 45	G 1"	∅ 45
QM2-51B-R11C11-SG04G04-N		B	51	270	400	2600	69.50	139.0	G 3/4"	∅ 39	G 3/4"	∅ 39
QM2-43B-R11C11-SG04G04-N		B	43	280	400	2800	66.75	133.5	G 3/4"	∅ 39	G 3/4"	∅ 39
QM2-34B-R11C11-SG04G04-N		B	34	290	500	3000	63.50	127.0	G 3/4"	∅ 39	G 3/4"	∅ 39
QM2-27B-R11C11-SG04G04-N		B	27	290	500	3200	61.25	122.5	G 3/4"	∅ 39	G 3/4"	∅ 39
QM2-22.5B-R11C11-SG04G04-N		B	22.5	290	500	3200	59.50	119.0	G 3/4"	∅ 39	G 3/4"	∅ 39
QM2-17B-R11C11-SG03G03-N		B	17	290	500	3200	57.75	115.5	G 1/2"	∅ 33	G 1/2"	∅ 33
QM2-13.5B-R11C11-SG03G03-N		B	13.5	290	600	3200	56.50	113.0	G 1/2"	∅ 33	G 1/2"	∅ 33
QM2-10B-R11C11-SG03G03-N		B	10	270	600	3200	55.25	110.5	G 1/2"	∅ 33	G 1/2"	∅ 33



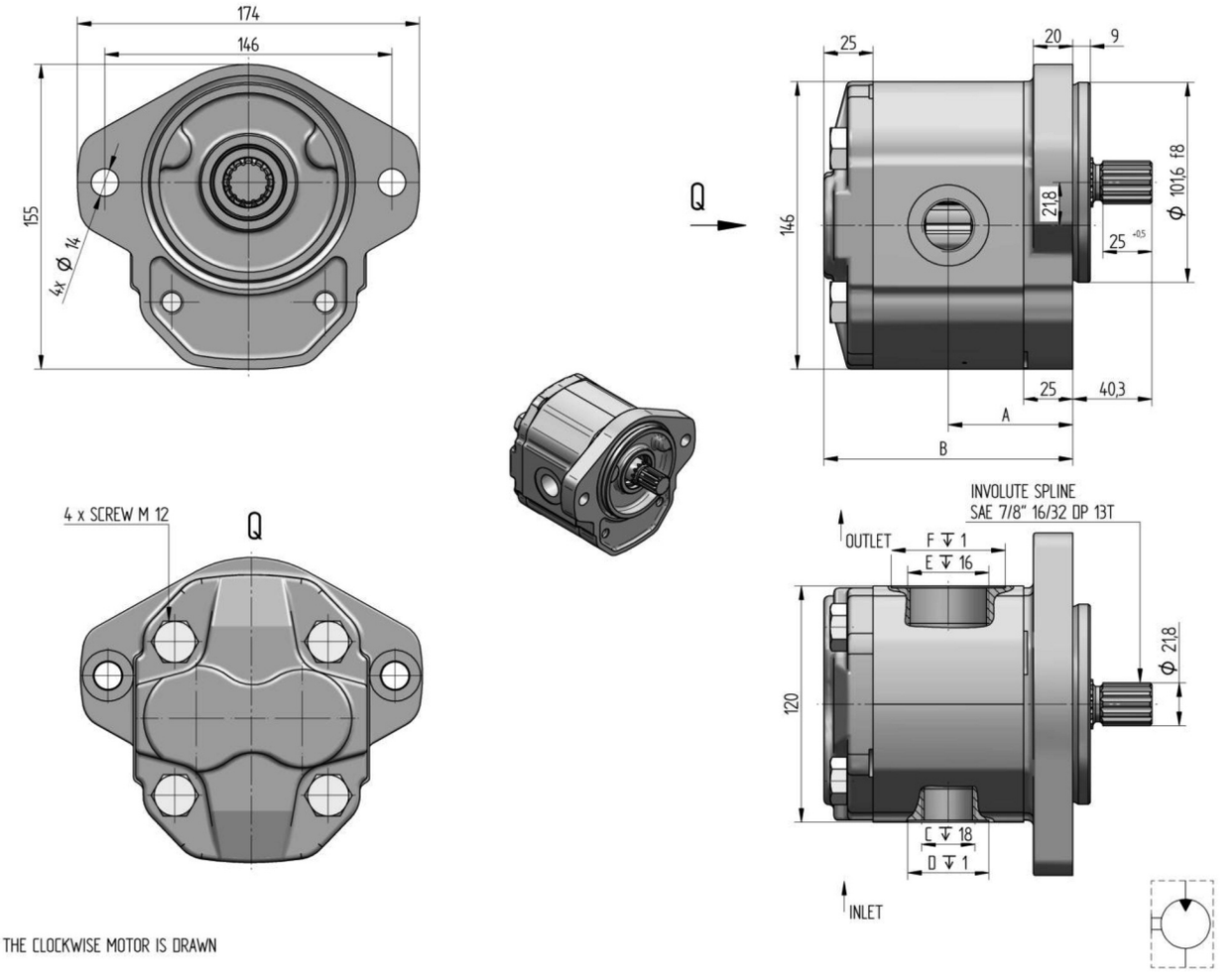
Order key	purch. code	direct. of rot.	displa-cement [cm³/1]	nom. press. [bar]	speed MIN. [min⁻¹]	speed MAX. [min⁻¹]	dimension A [mm]	dimension B [mm]
QM2-82B-R11D13-SK03K03-N		B	82	200	400	2000	80.00	160.0
QM2-71B-R11D13-SK03K03-N		B	71	230	400	2200	76.25	152.5
QM2-61B-R11D13-SK03K03-N		B	61	250	400	2400	73.00	146.0
QM2-51B-R11D13-SK03K03-N		B	51	270	400	2600	69.50	139.0
QM2-43B-R11D13-SK03K03-N		B	43	280	400	2800	66.75	133.5
QM2-34B-R11D13-SK03K03-N		B	34	290	500	3000	63.50	127.0
QM2-27B-R11D13-SK03K03-N		B	27	290	500	3200	61.25	122.5
QM2-22.5B-R11D13-SK03K03-N		B	22.5	290	500	3200	59.50	119.0



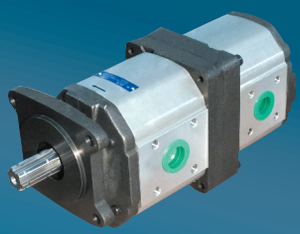
Order key	purch. code	direct. of rot.	displa-cement [$cm^3/1$]	nom. press. [bar]	speed MIN. [min^{-1}]	speed MAX. [min^{-1}]	dimension A [mm]	dimension B [mm]
QM2-82B-R11C11-SK03K03-N		B	82	200	400	2000	80.00	160.0
QM2-71B- R11C11-SK03K03-N		B	71	230	400	2200	76.25	152.5
QM2-61B- R11C11-SK03K03-N		B	61	250	400	2400	73.00	146.0
QM2-51B- R11C11-SK03K03-N		B	51	270	400	2600	69.50	139.0
QM2-43B- R11C11-SK03K03-N		B	43	280	400	2800	66.75	133.5
QM2-34B- R11C11-SK03K03-N		B	34	290	500	3000	63.50	127.0
QM2-27B- R11C11-SK03K03-N		B	27	290	500	3200	61.25	122.5
QM2-17B- R11C11-SK03K03-N		B	17	290	500	3200	57.75	115.5



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]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]	H [mm]
QM2-82R-I01D18-SG05G06-N		R	82	200	400	2000	133.00	213.0	G 1	∅ 18	∅ 45	G 1-1/4	∅ 18	∅ 57
QM2-82L-I01D18-SG05G06-N		L												
QM2-71R-I01D18-SG05G06-N		R	71	230	400	2200	129.25	205.5	G 1	∅ 18	∅ 45	G 1-1/4	∅ 18	∅ 57
QM2-71L-I01D18-SG05G06-N		L												
QM2-61R-I01D18-SG05G06-N		R	61	250	400	2400	126.00	199.0	G 1	∅ 18	∅ 45	G 1-1/4	∅ 18	∅ 57
QM2-61L-I01D18-SG05G06-N		L												
QM2-51R-I01D18-SG04G05-N		R	51	270	400	2600	122.50	192.0	G 3/4	∅ 16	∅ 39	G 1	∅ 18	∅ 45
QM2-51L-I01D18-SG04G05-N		L												
QM2-43R-I01D18-SG04G05-N		R	43	280	400	2800	119.75	1186.5	G 3/4	∅ 16	∅ 39	G 1	∅ 18	∅ 45
QM2-43L-I01D18-SG04G05-N		L												
QM2-34R-I01D18-SG04G04-N		R	34	290	500	3000	116.50	180.0	G 3/4	∅ 16	∅ 39	G 1/2	∅ 14	∅ 33
QM2-34L-I01D18-SG04G04-N		L												
QM2-27R-I01D18-SG04G04-N		R	27	290	500	3200	114.25	175.5	G 3/4	∅ 16	∅ 39	G 1/2	∅ 14	∅ 33
QM2-27L-I01D18-SG04G04-N		L												
QM2-22.5R-I01D18-SG04G04-N		R	22.5	290	500	3200	112.50	172.0	G 3/4	∅ 16	∅ 39	G 1/2	∅ 14	∅ 33
QM2-22.5L-I01D18-SG04G04-N		L												
QM2-17R-I01D18-SG03G03-N		R	17	290	500	3200	110.75	168.5	G 1/2	∅ 14	∅ 33	G 1/2	∅ 14	∅ 33
QM2-17L-I01D18-SG03G03-N		L												
QM2-10R-I01D18-SG03G03-N		R	10	270	600	3200	108.25	163.5	G 1/2	∅ 14	∅ 33	G 1/2	∅ 14	∅ 33
QM2-10L-I01D18-SG03G03-N		L												



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]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]
QM2-82R-S03D13-SU07U08-N		R	82	200	400	2000	80.00	160.0	1-5/16-12 UN	∅ 49	1-5/8-12 UN	∅ 58
QM2-82L-S03D13-SU07U08-N		L										
QM2-71R-S03D13-SU07U08-N		R	71	230	400	2200	76.25	152.5	1-5/16-12 UN	∅ 49	1-5/8-12 UN	∅ 58
QM2-71L-S03D13-SU07U08-N		L										
QM2-61R-S03D13-SU07U08-N		R	61	250	400	2400	73.00	146.0	1-5/16-12 UN	∅ 49	1-5/8-12 UN	∅ 58
QM2-61L-S03D13-SU07U08-N		L										
QM2-51R-S03D13-SU07U08-N		R	51	270	400	2600	69.50	139.0	1-5/16-12 UN	∅ 49	1-5/8-12 UN	∅ 58
QM2-51L-S03D13-SU07U08-N		L										
QM2-43R-S03D13-SU07U08-N		R	43	280	400	2800	66.75	133.5	1-5/16-12 UN	∅ 49	1-5/8-12 UN	∅ 58
QM2-43L-S03D13-SU07U08-N		L										
QM2-34R-S03D13-SU07U07-N		R	34	290	500	3000	63.50	127.0	1-5/16-12 UN	∅ 49	1-5/16-12 UN	∅ 49
QM2-34L-S03D13-SU07U07-N		L										
QM2-27R-S03D13-SU05U07-N		R	27	290	500	3200	61.25	122.5	1-1/16-12 UN	∅ 41	1-5/16-12 UN	∅ 49
QM2-27L-S03D13-SU05U07-N		L										
QM2-22.5R-S03D13-SU05U07-N		R	22.5	290	500	3200	59.50	119.0	1-1/16-12 UN	∅ 41	1-5/16-12 UN	∅ 49
QM2-22.5L-S03D13-SU05U07-N		L										
QM2-17R-S03D13-SU04U05-N		R	17	290	500	3200	57.75	115.5	7/8-14 UNF	∅ 34	1-1/16-12 UN	∅ 41
QM2-17L-S03D13-SU04U05-N		L										
QM2-13.5R-S03D13-SU04U05-N		R	13.5	290	600	3200	56.50	113.0	7/8-14 UNF	∅ 34	1-1/16-12 UN	∅ 41
QM2-13.5L-S03D13-SU04U05-N		L										
QM2-10R-S03D13-SU04U05-N		R	10	270	600	3200	55.25	110.5	7/8-14 UNF	∅ 34	1-1/16-12 UN	∅ 41
QM2-10L-S03D13-SU04U05-N		L										



jihostroj
AERO TECHNOLOGY & HYDRAULICS

JIHOSTROJ a.s.
Budějovická 148
CZ 382 32 Velešín
Czech Republic
tel.: +420 380 340 511
fax: +420 380 340 612
e-mail: mailbox@jihostroj.cz
http: //**www.jihostroj.com**
GPS 48°49'51.748" N 14°27'40.770" E