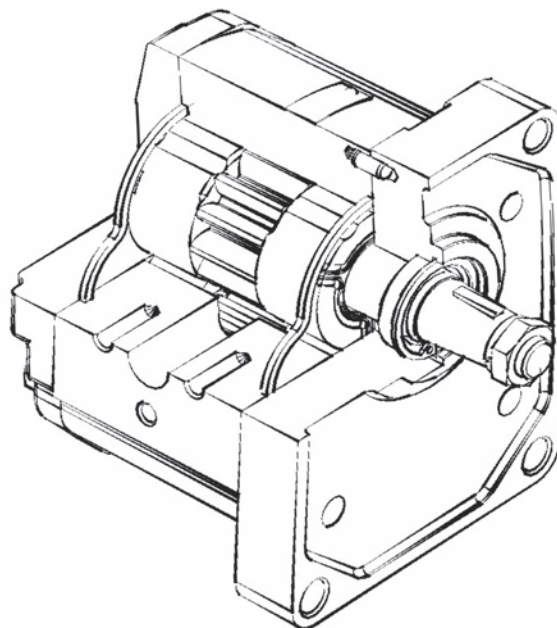


Displacement from 10 to 100 ccm
Pressure up to 290 bar
Speed from 400 to 3200 RPM

GEAR MOTORS
QM2

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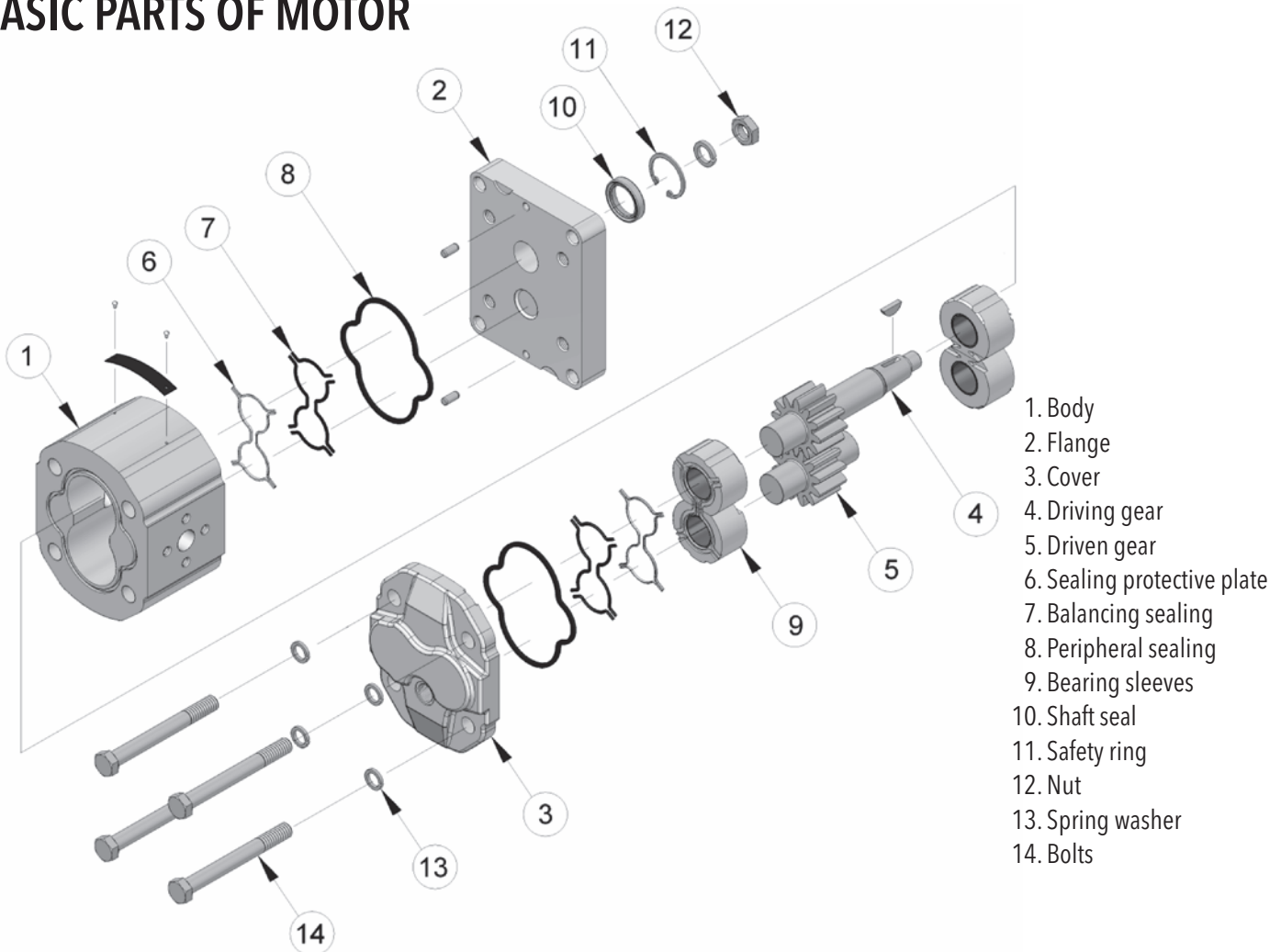
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DESCRIPTION

- 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 cm³/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



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} and 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} and 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} and 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} and 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

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

V_g [cm³] pump displacement
 n [min⁻¹] rotation speed
 η_v [-] volumetric efficiency

Displacement
 V_g

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

Torque
 M_k

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

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

Input power
 P

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

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:

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

$Q_{act.}$ [dm³ · min⁻¹] actual flow rate
 Q_{theor} [dm³ · 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

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

Filtration coefficient β_α

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

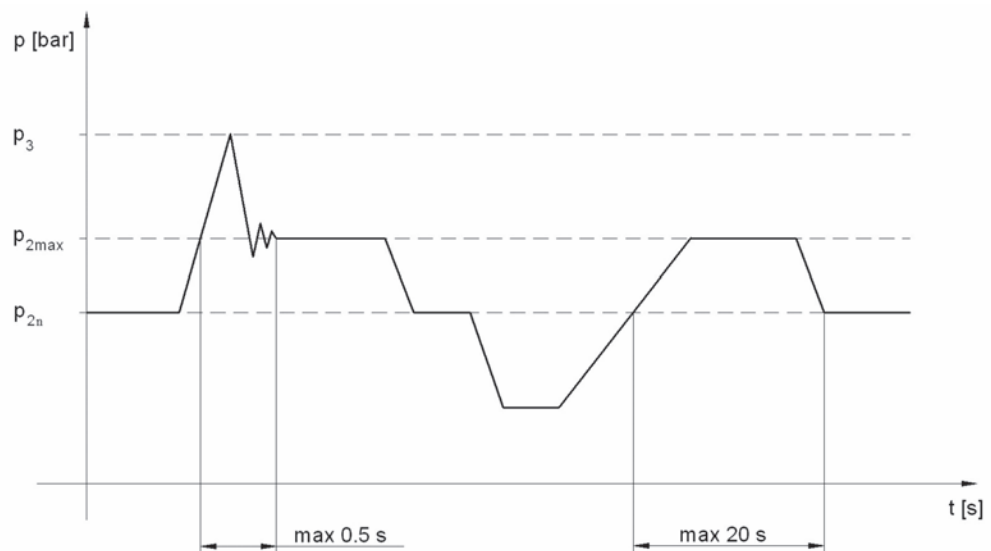
Liquid contamination class according to ISO 4406

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



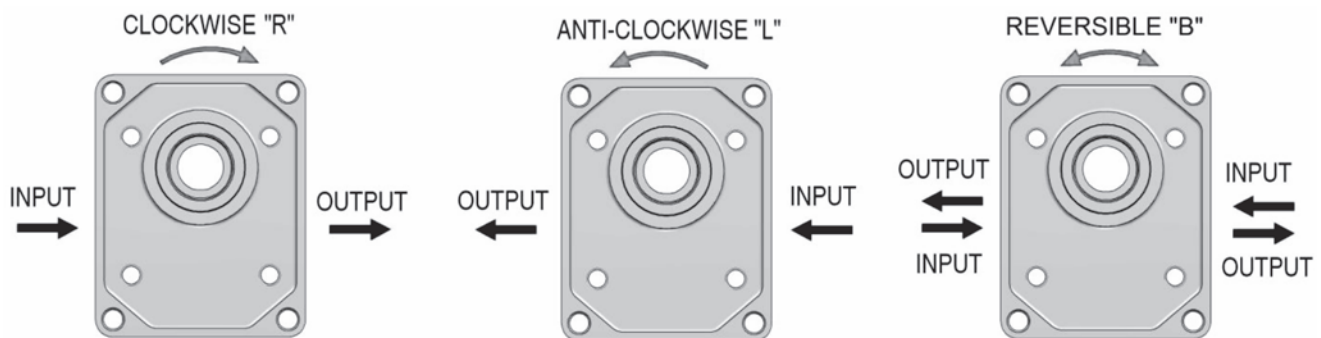
- p_{2n} **max. contin. pressure** Max. working pressure, at which the pump can be operated without time limitation.
- p_{2max} **max. pressure** Maximum pressure permissible for a short time, max. 20s.
- p_3 **peak pressure** Short-time pressure (fractions of a second) arising in case of a sudden change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

OTHER REQUIREMENTS

- 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.

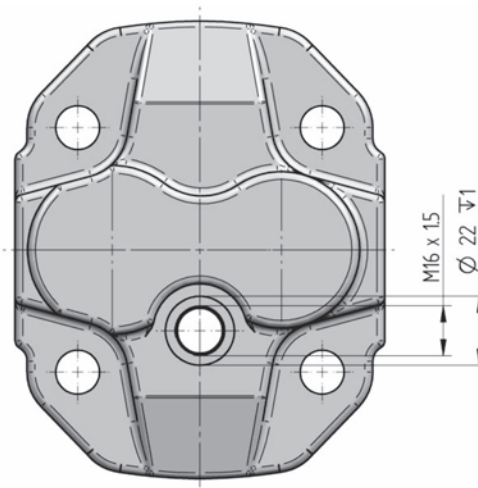
DIRECTION OF ROTATION

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

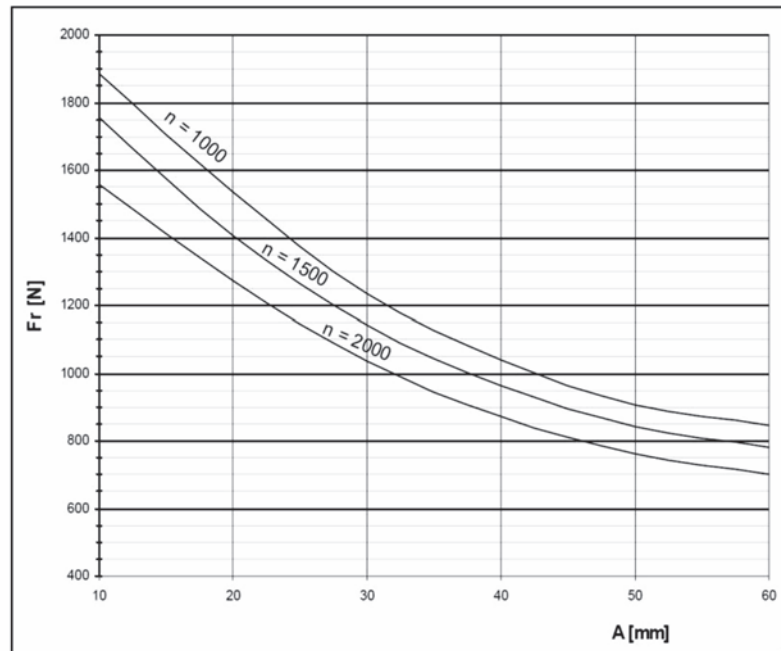
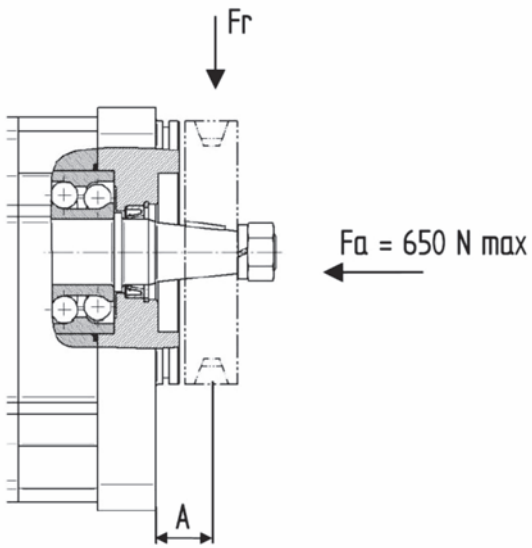


REVERSIBLE DESIGN

- 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.

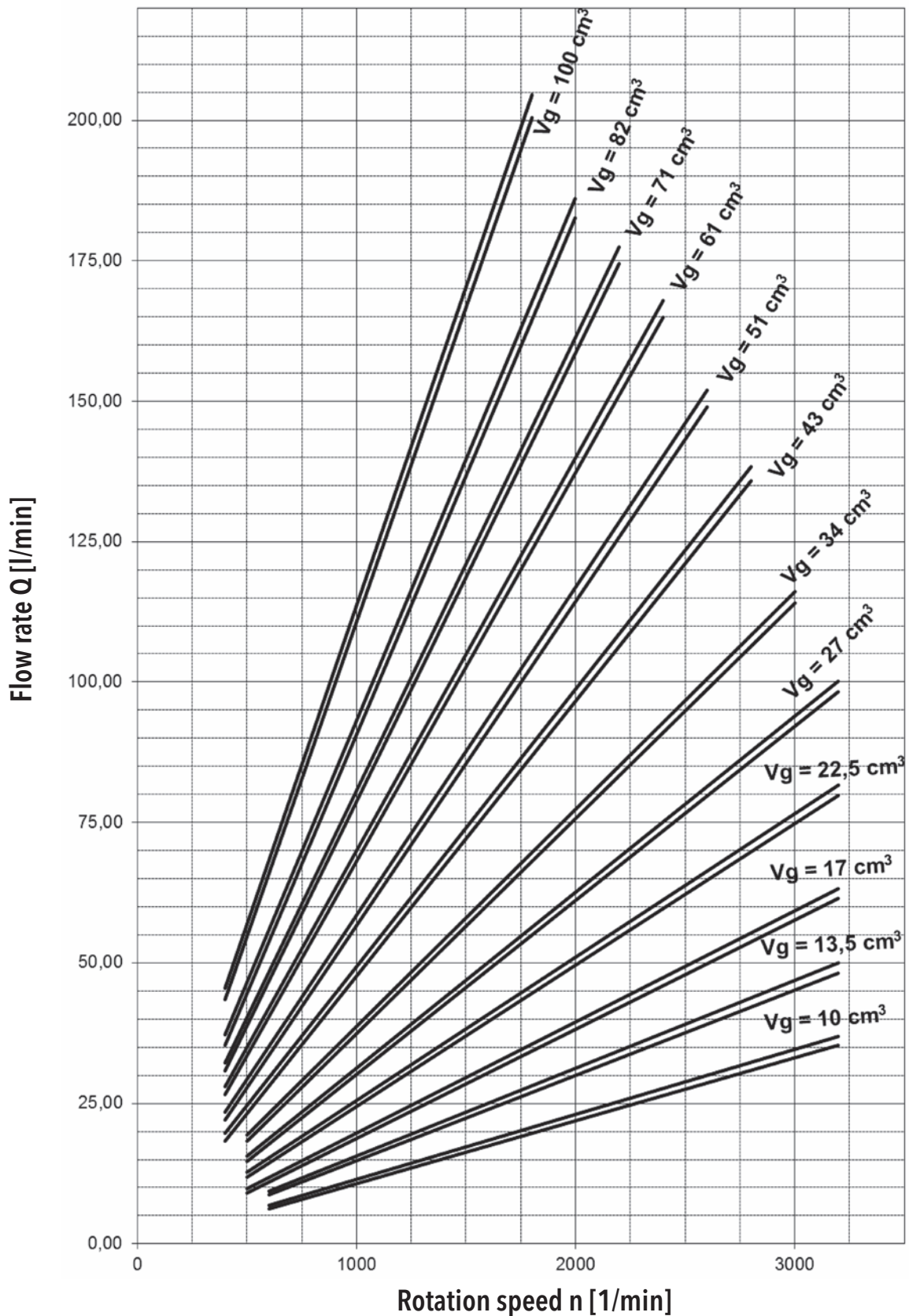


MOTOR WITH FRONT-END BEARING

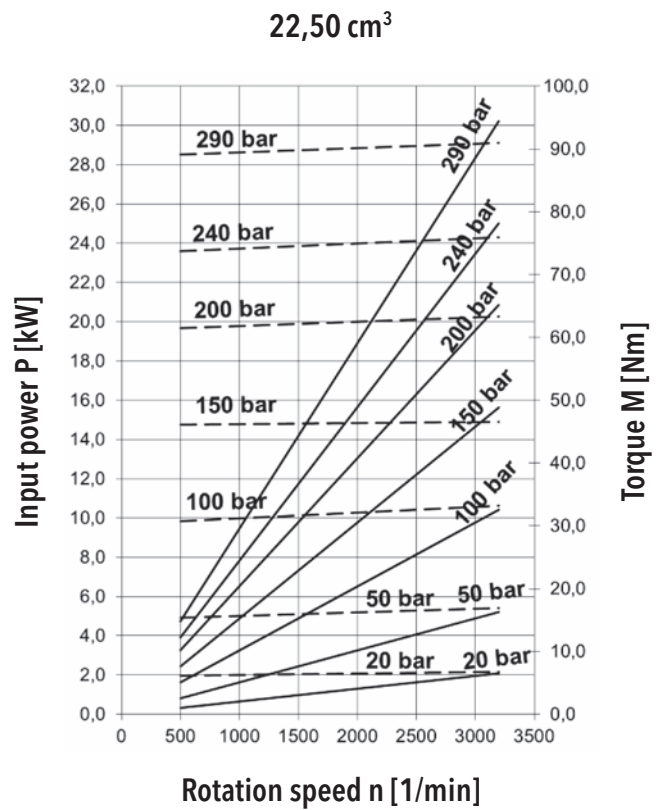
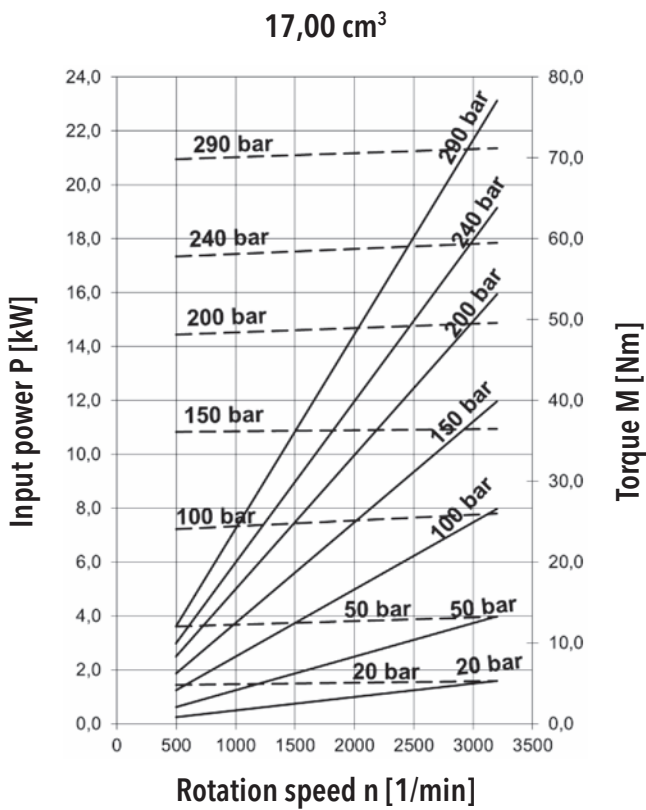
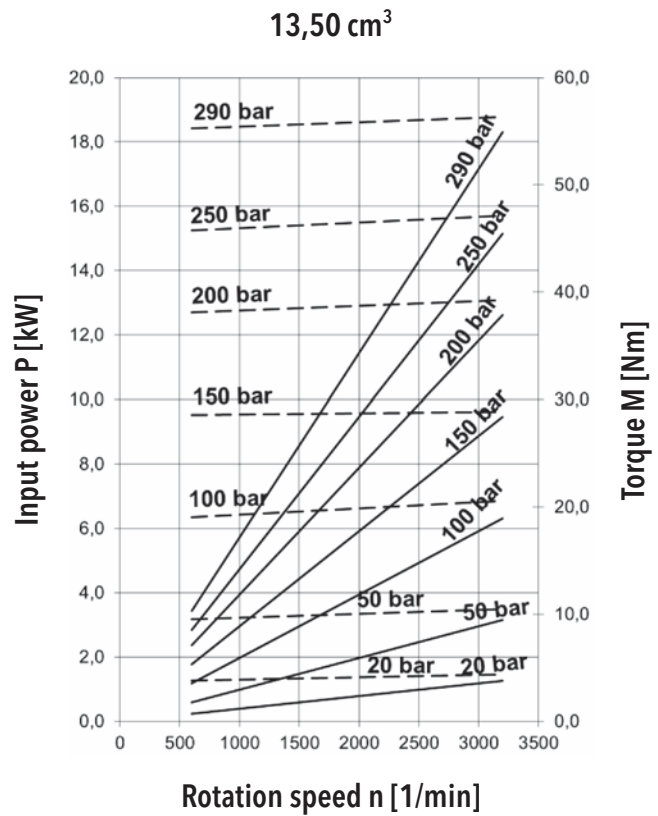
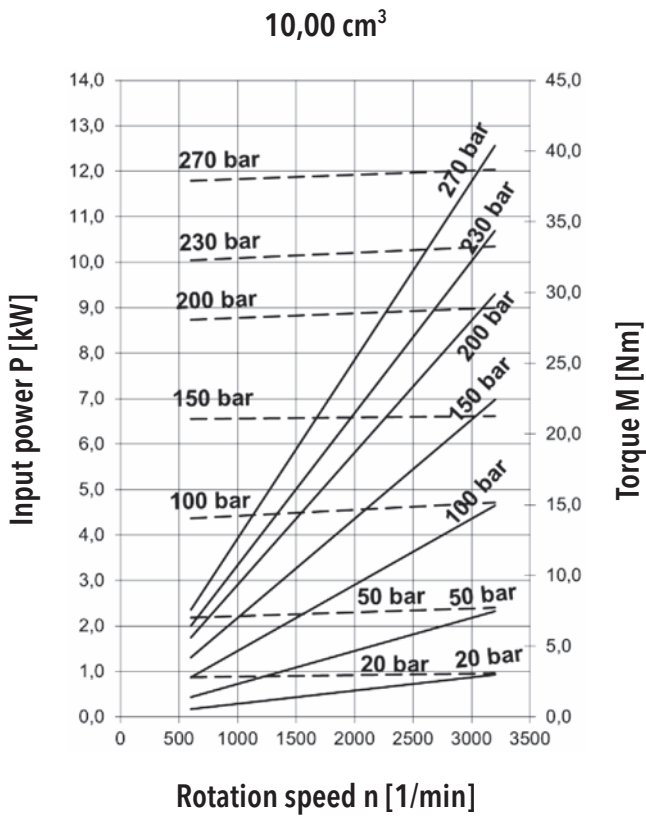


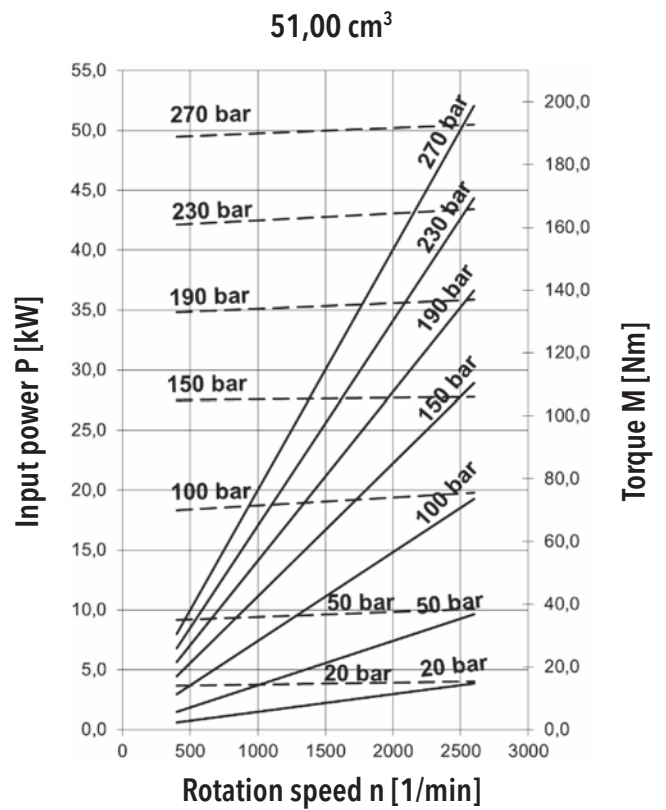
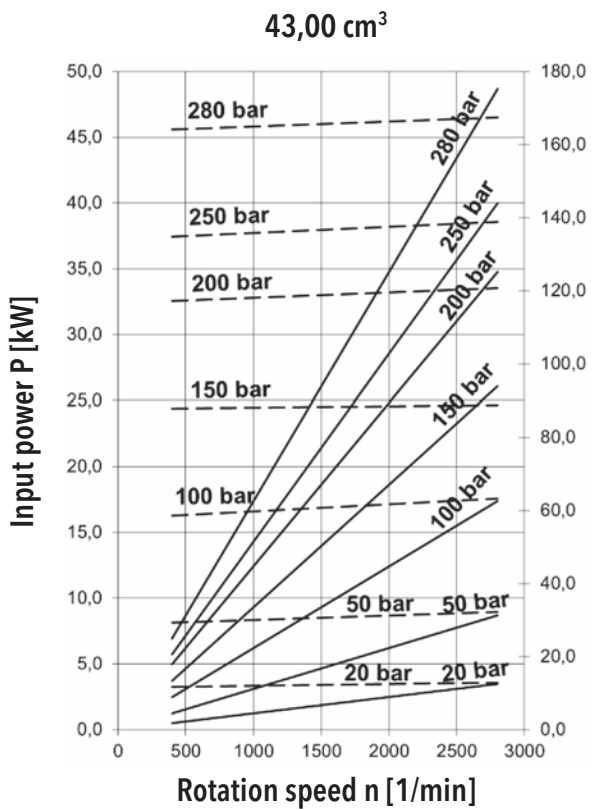
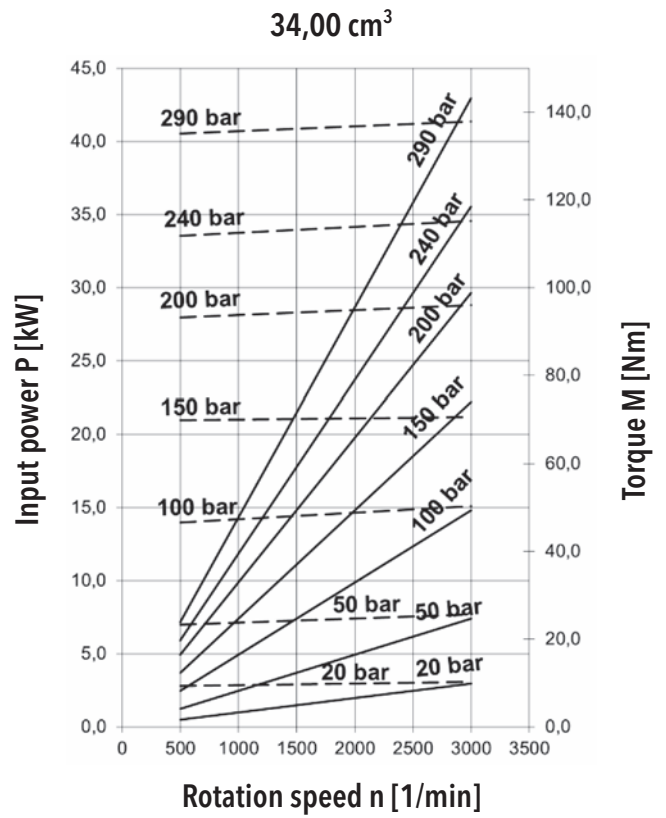
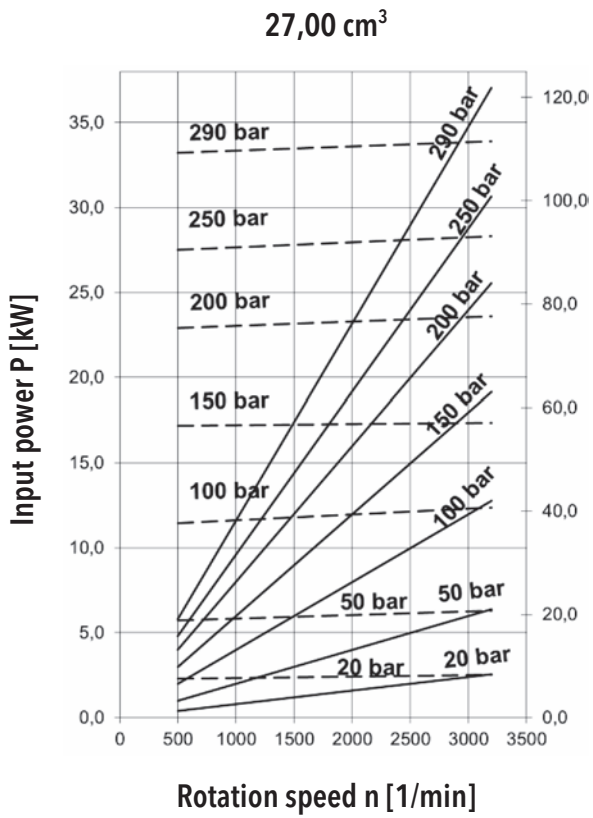
A driven device must not generate an axial or a radial load of the motor shaft, unless this is exclusively permitted for the motor with a front-end bearing.

QM2 FLOW RATE AND POWER CURVES

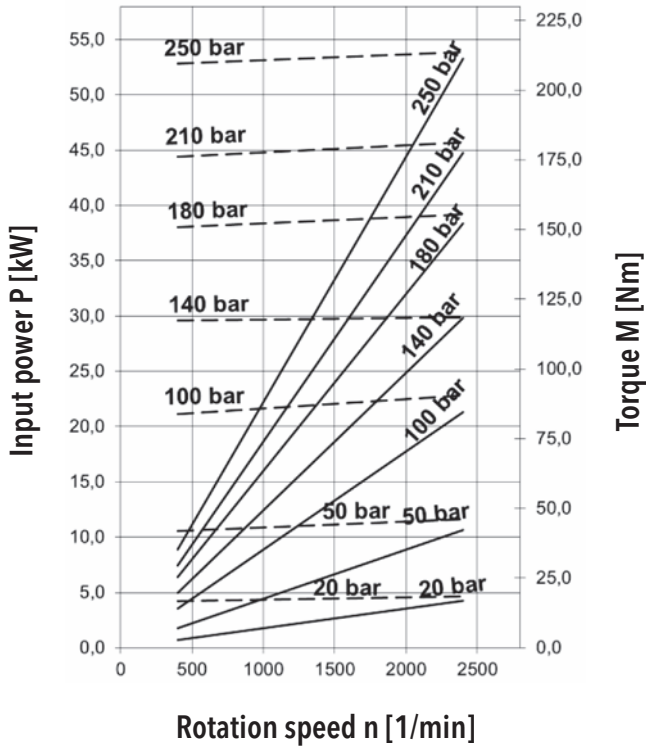


Above curves apply to ISO Vg 46 oil at temperature $t = 45^{\circ}\text{C}$.

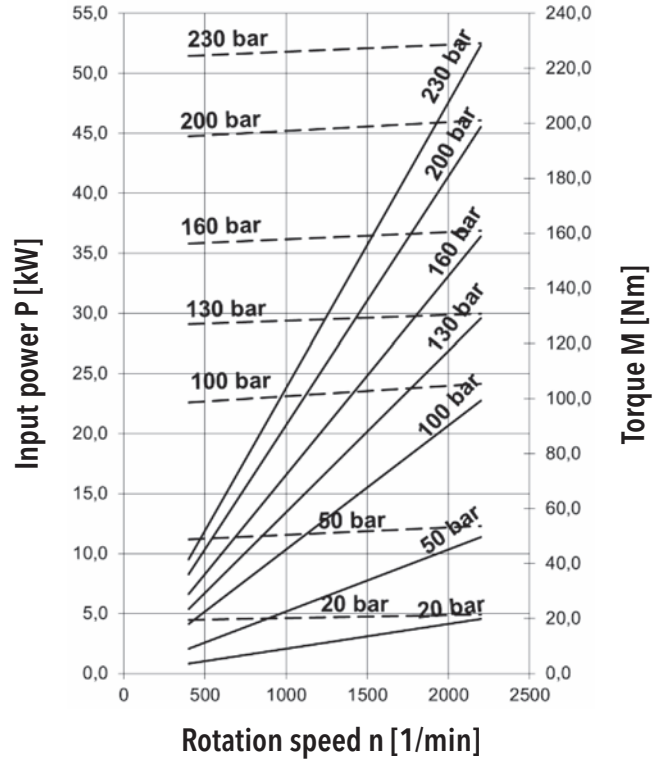




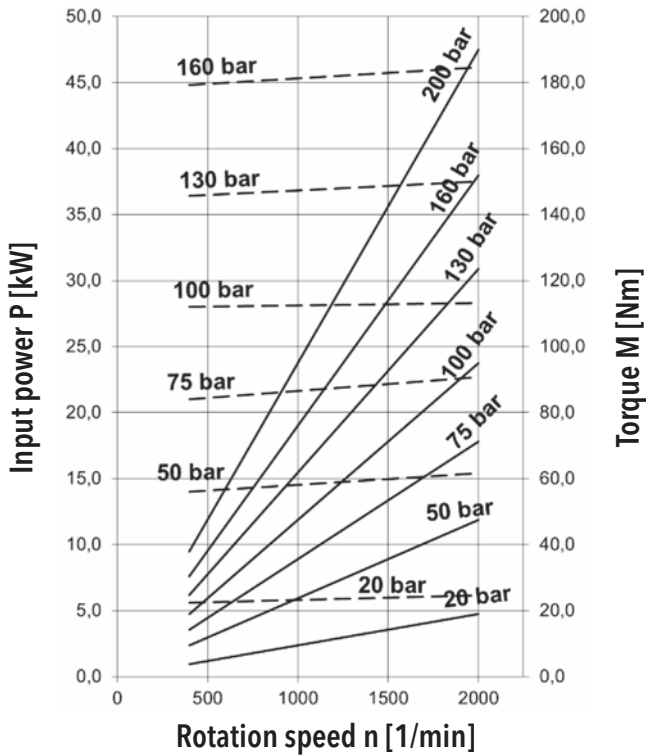
61,00 cm³



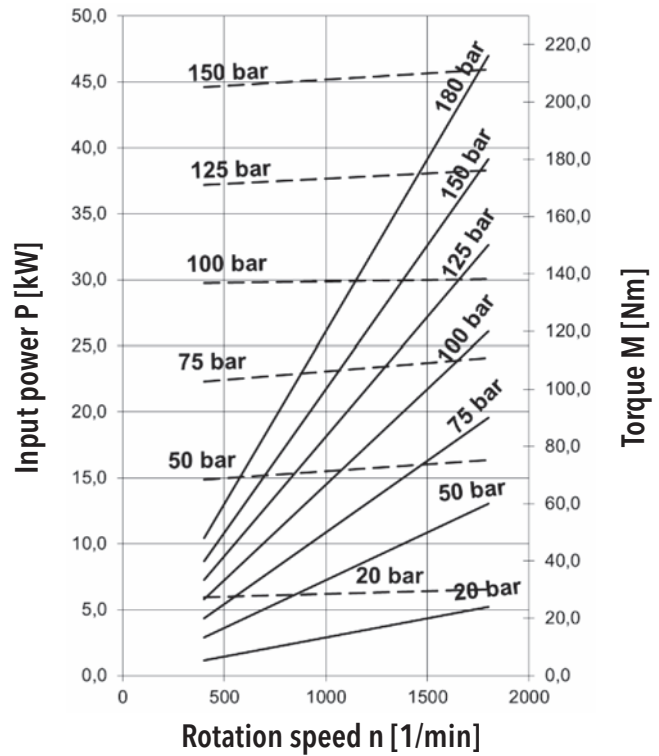
71,00 cm³



82,00 cm³



100,00 cm³



ORDER KEY




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

| Code | Displacement [cm ³] |
|------|---------------------------------|
| 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 | Rotation |
|------|-------------------------|
| R | Clockwise rotation |
| L | Anti-clockwise rotation |
| B | Bi-directional rotation |

| Code | Special arrangements |
|------|-------------------------------------|
| - | No special arrangements |
| 001 | Double lip shaft seal |
| 004 | Without shaft seal |
| 006 | Axial inlet, radial outlet |
| 007 | Rotated out of flange throat |
| 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 | Location of inlets and outlets |
|------|---|
| S |  Side (in the body) |
| R |  Rear (in the cover) |
| C |  Combination |

| 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/Ø40 |
| H09 | Flanged fitting 4xM8/Ø55 ; Ø18 |
| H10 | Flanged fitting 4xM8/Ø55 ; Ø25 |
| H11 | Flanged fitting 4xM10/Ø51 |
| 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/Ø40; Ø18 |
| K04 | Flanged fitting 4xM10/Ø51; Ø26 |
| K05 | Flanged fitting 4xM8/Ø55; Ø18 |
| K06 | Flanged fitting 4xM8/Ø55; Ø25 |
| S08 | Flanged fitting 4xM10/22x54 |
| S09 | Flanged fitting 4xM10/22x54 |
| S10 | Flanged fitting 4xM8/22x46 |
| S11 | Flanged fitting 4xM8/22x46 |
| Z | Special design |

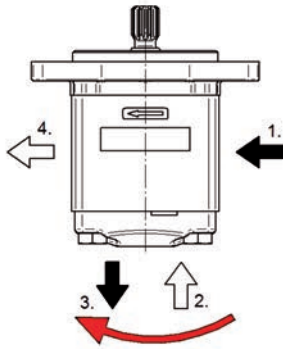
| Code | Drive shaft design |
|------|--|
| C11 |  Cone 1:8 |
| C12 |  Cone 1:5 |
| D13 |  Spline SAE 13T |
| D15 |  Spline SAE 15T |
| D16 |  Spline 25x1,5 ČSN 014950 |
| D17 |  Spline UNI 221 |
| D18 |  Equilateral spline DIN 5462 A8x32x36x6 |
| D19 |  Equilateral spline 6 grooves, Ø 20 |
| D22 |  Involute spline ZV 25x1,5x16 |
| K09 |  Cross coupling |
| V14 |  Cylindric SAE Ø22,225 |
| V15 |  Cylindric Ø20h7 |
| V16 |  Cylindric Ø25 |
| Z | Special design |

| Code | Type |
|------|-----------------------|
| QM2 | QM2 Series Gear Motor |

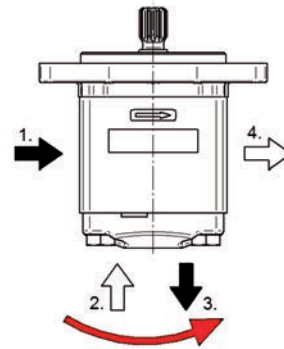
| Code | Flange design |
|------|---|
| R11 | Rectangular flange, centre ring Ø 50,8 spacing 98,5 x 128 |
| R22 | Rectangular flange UN II |
| R13 | Rectangular flange, centre ring Ø105 spacing 102,5 x 145 |
| S03 | SAE B - 2 aperture |
| S05 | SAE B - 4 aperture |
| I01 | ISO, centre ring Ø 80 front end bearing |
| I02 | ISO, centre ring Ø 80 |
| U01 | UNI |
| A11 | trough - bolts |
| A12 | trough - bolts |
| B01 | Flange 4 aperture centre ring Ø 90 spacing 110 x 86 |
| K02 | Circular flange, centre ring Ø85, 6 bolts, Ø105 |
| Z | Special design |

An example of designation for the QM2 clockwise motor with displacement of 51 cm³. Rectangular flange centre ring Ø 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

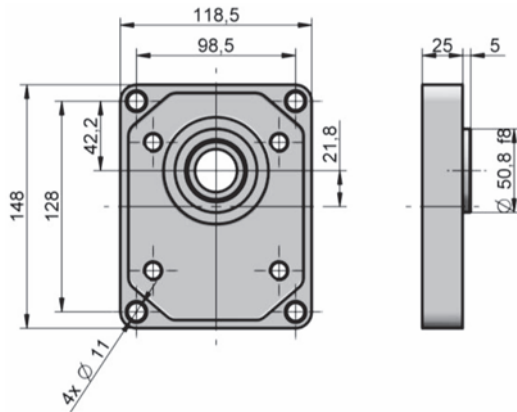
For. ex....: QM2-43B-R11C11-CG04 G04 G05 G05 -N
1. 2. 3. 4.

COMBINATIONS OF FLANGES AND SHAFTS

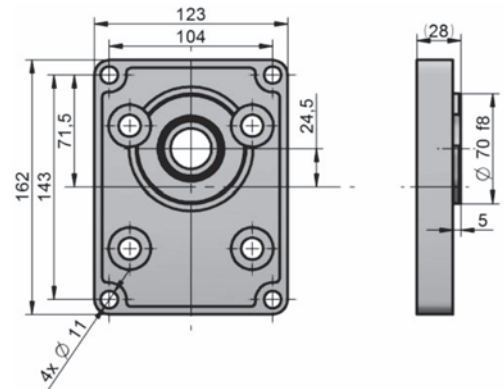
| | | FLANGE DESIGN | | | | | | | | | | |
|-------------|-----|---------------|-----|-----|-----|-----|-----------|-----|-----|-----|-----|-----|
| | | R11 | R12 | R13 | S03 | S05 | I01 / I02 | U01 | A11 | A12 | B01 | K02 |
| DRIVE SHAFT | C11 | ● | | | | | ● | | | | | |
| | C12 | | | ● | | | | | | |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

FLANGES DESIGN

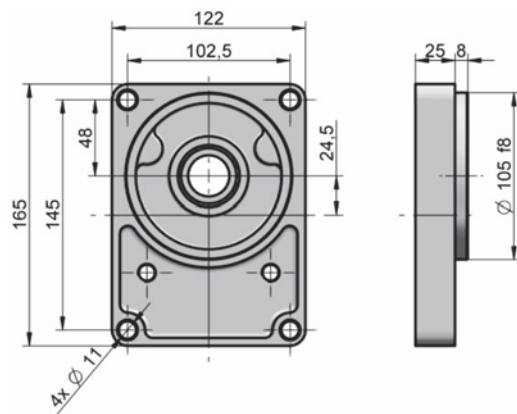
R11:



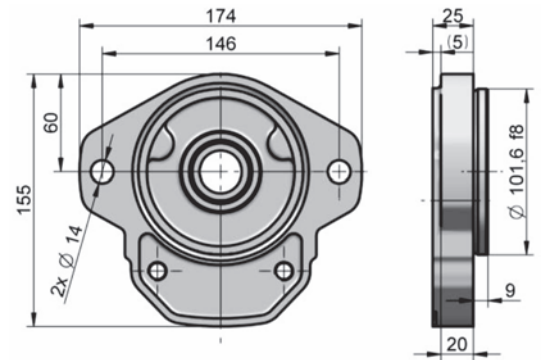
R12:



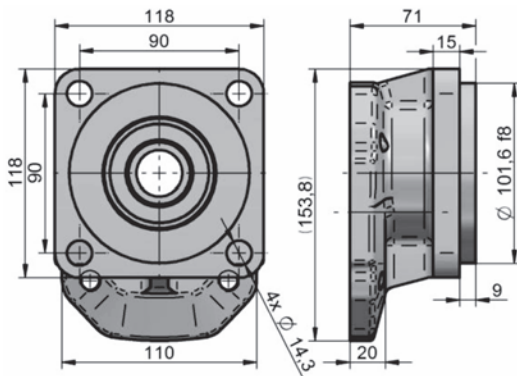
R13:



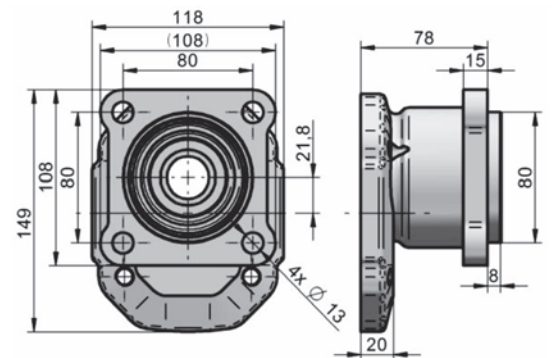
S03:



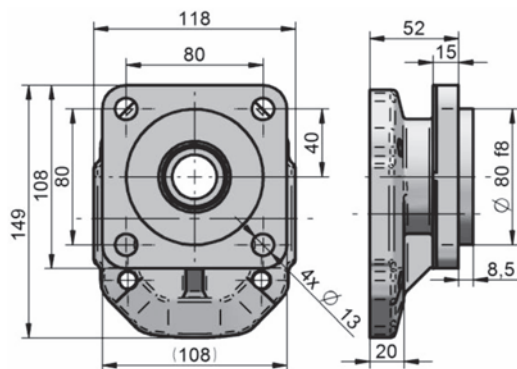
S05:



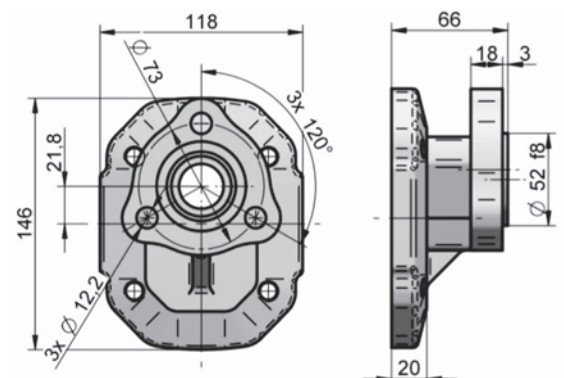
I01:



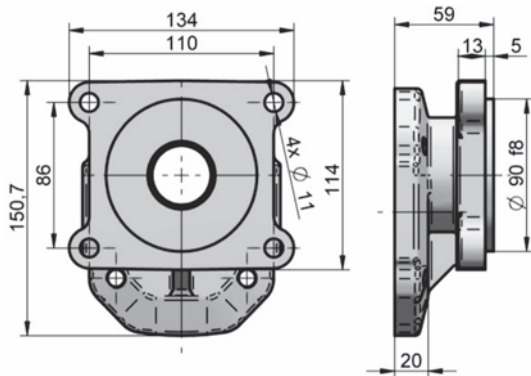
I02:



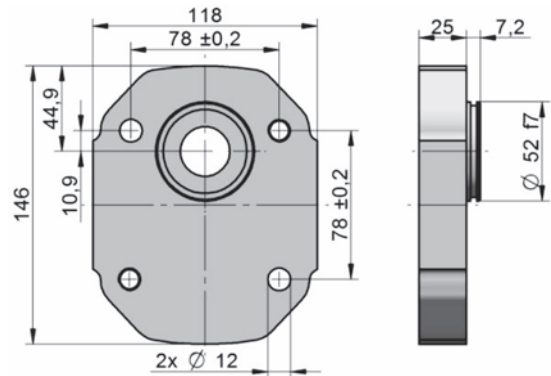
U01:



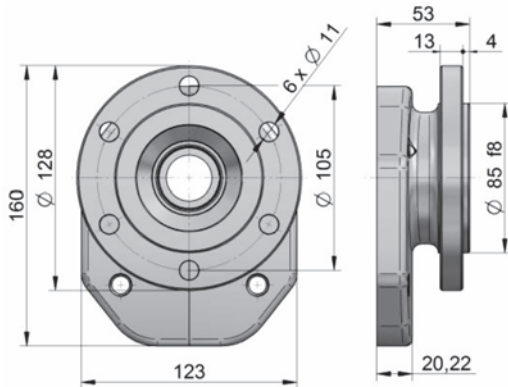
B01:



A11:

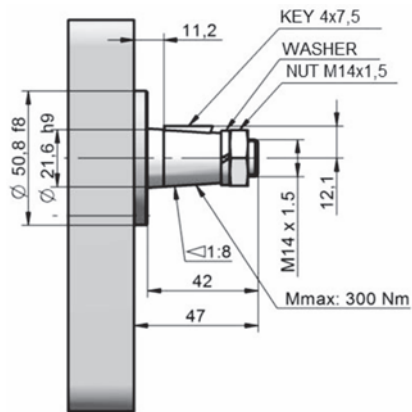


K02:

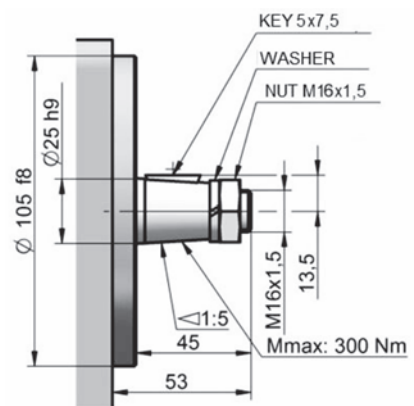


DRIVE SHAFTS

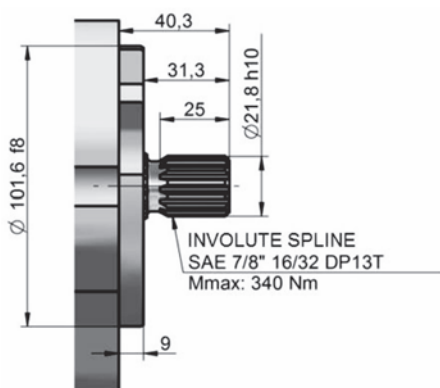
C11:



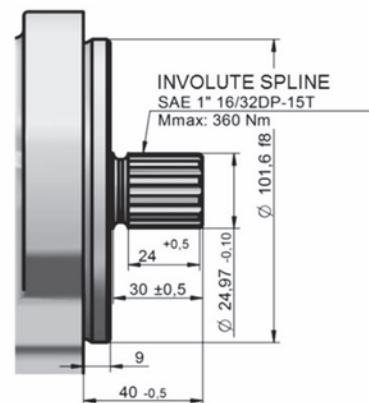
C12:



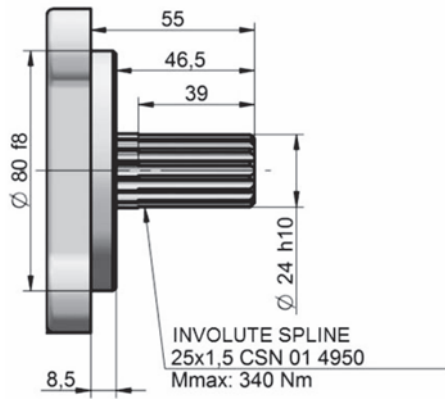
D13:



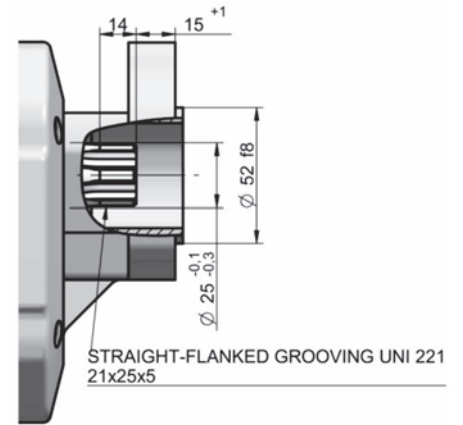
D15:



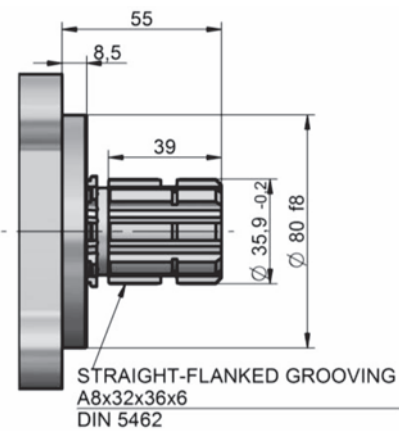
D16:



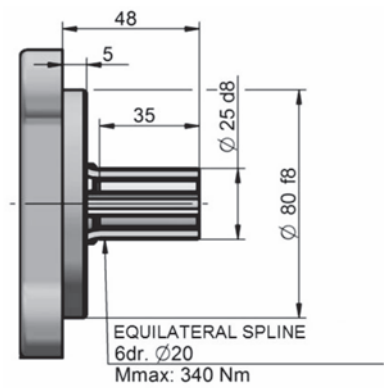
D17:



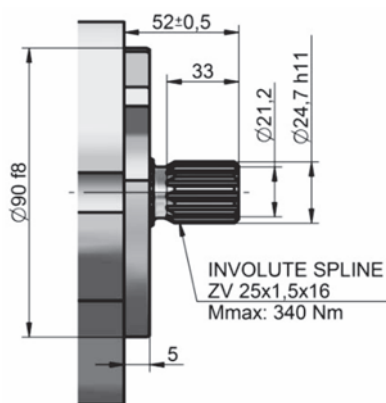
D18:



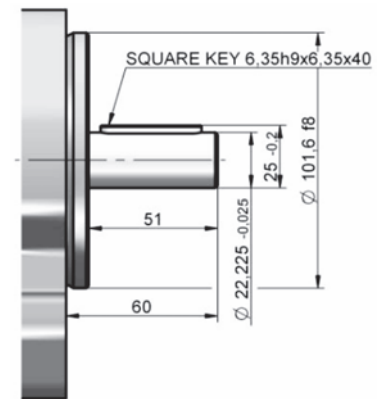
D19:



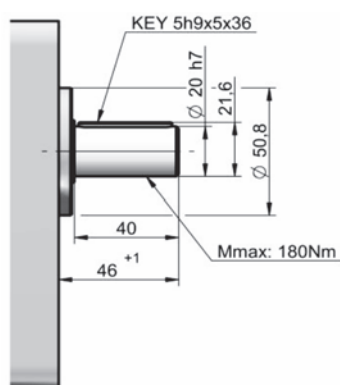
D22:



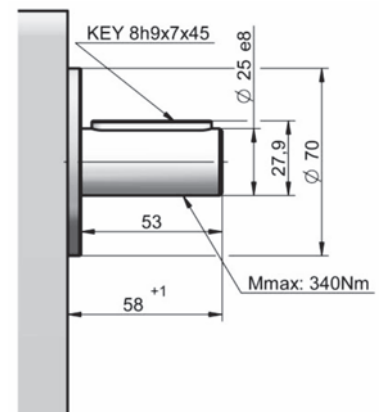
V14:



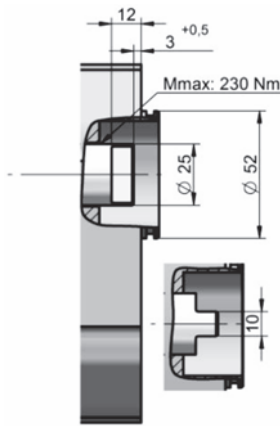
V15:



V16:

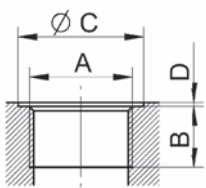


K09:



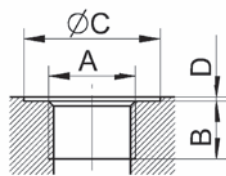
COMBINATIONS OF LIQUID INLETS AND OUTLETS

Metric thread according to ISO 6149



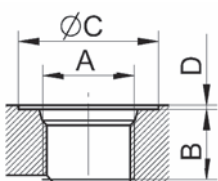
| Displacement [cm ³] | Code | Inlet | | | | Code | Outlet | | | |
|---------------------------------|------|----------|------|------|-----|------|--------|------|------|-----|
| | | A | B | C | D | | A | B | C | D |
| to 51 including | M12 | M 33x2 | 18,0 | 40,0 | 1,0 | M09 | M 27x2 | 16,0 | 33,0 | 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



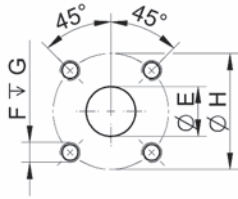
| Displacement [cm ³] | Code | Inlet | | | | Code | Outlet | | | |
|---------------------------------|------|---------|------|------|-----|------|--------|------|------|-----|
| | | A | B | C | D | | A | B | C | D |
| to 17 including | G03 | G 1/2 | 14,0 | 33,0 | 1,0 | G03 | G 1/2 | 14,0 | 33,0 | 1,0 |
| 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



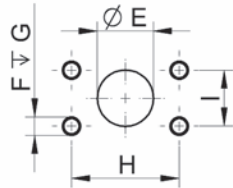
| Displacement [cm ³] | Code | Inlet | | | | Code | Outlet | | | |
|---------------------------------|------|---------------|------|------|-----|------|--------------|------|------|-----|
| | | A | B | C | D | | A | B | C | D |
| to 17 including | U05 | 1-1/16-12UNF | 19,0 | 41,0 | 1,0 | U04 | 7/8-14UNF | 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



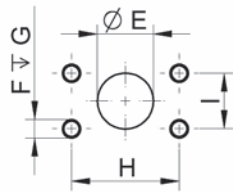
| Displacement [cm ³] | Code | Inlet | | | | Code | Outlet | | | |
|---------------------------------|------|-------|------|------|------|------|--------|-----|------|------|
| | | E | F | G | H | | E | F | G | H |
| all | H11 | 26,0 | M 10 | 16,0 | 51,0 | H08 | 18,0 | M 8 | 16,0 | 40,0 |
| | H10 | 25,0 | M 8 | 16,0 | 55,0 | H09 | 18,0 | M 8 | 16,0 | 55,0 |

Flanged fittings according to SAE, metric thread



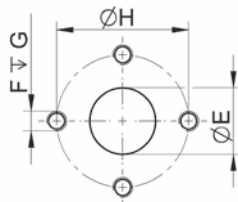
| Displacement [cm ³] | Code | Inlet | | | | | Code | Outlet | | | | |
|---------------------------------|------|-------|------|------|------|------|------|--------|------|------|------|------|
| | | E | F | G | H | I | | E | F | G | H | I |
| to 61 including | E03 | 25,4 | M 10 | 22,0 | 52,4 | 26,2 | 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



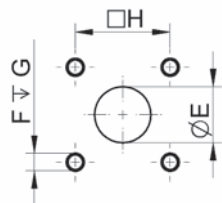
| Displacement [cm ³] | Code | Inlet | | | | | Code | Outlet | | | | |
|---------------------------------|------|-------|-------------|------|------|------|------|--------|-------------|------|------|------|
| | | E | F | G | H | I | | E | F | G | H | I |
| to 61 including | A03 | 25,4 | 3/8-16-UMC | 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 [cm ³] | 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“

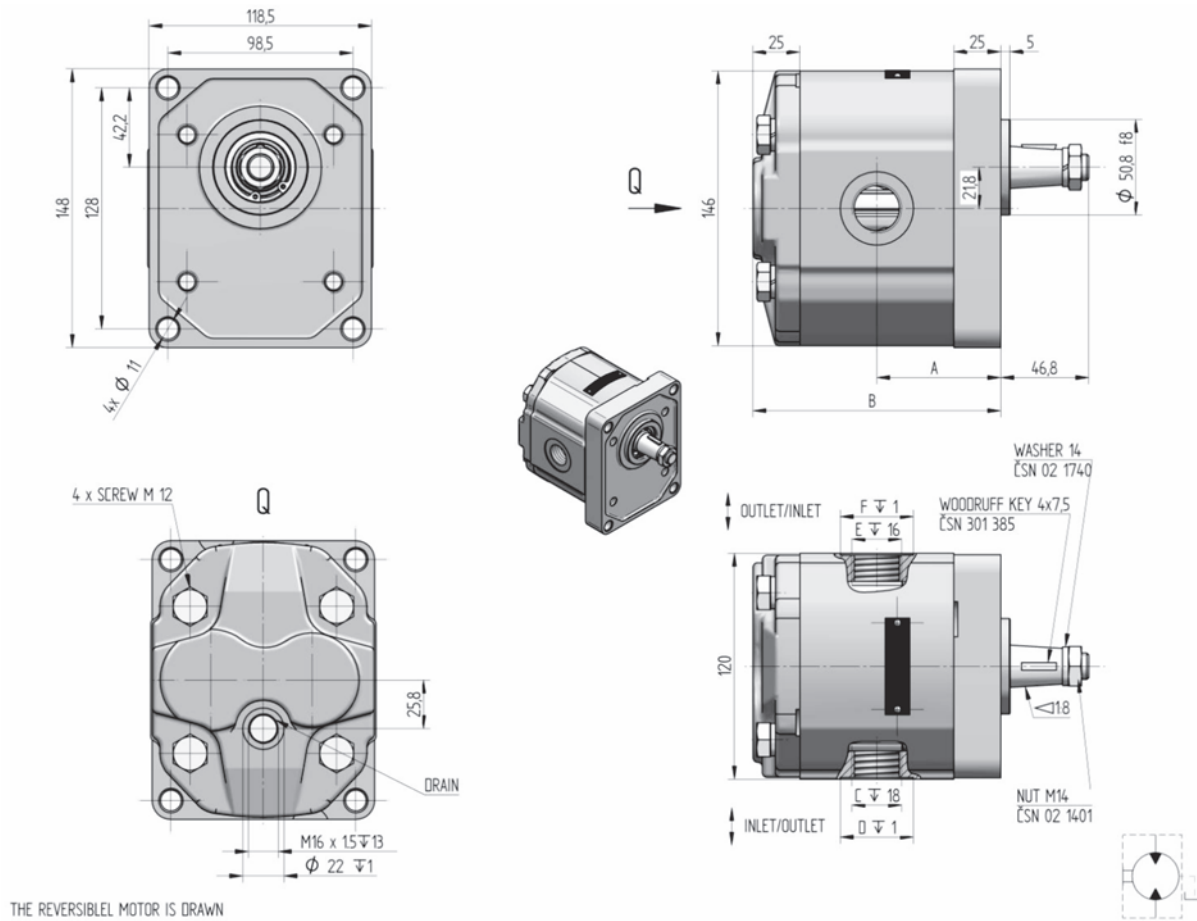


| Displacement [cm ³] | Code | Inlet | | | | Code | Outlet | | | |
|---------------------------------|------|-------|------|------|------|------|--------|------|------|------|
| | | E | F | G | H | | E | F | G | H |
| to 43 including | S11 | 23,0 | M 8 | 22,0 | 46,0 | S10 | 16,0 | M 8 | 22,0 | 46,0 |
| above 43 | S09 | 27,0 | M 10 | 22,0 | 54,0 | S08 | 19,0 | M 10 | 22,0 | 54,0 |

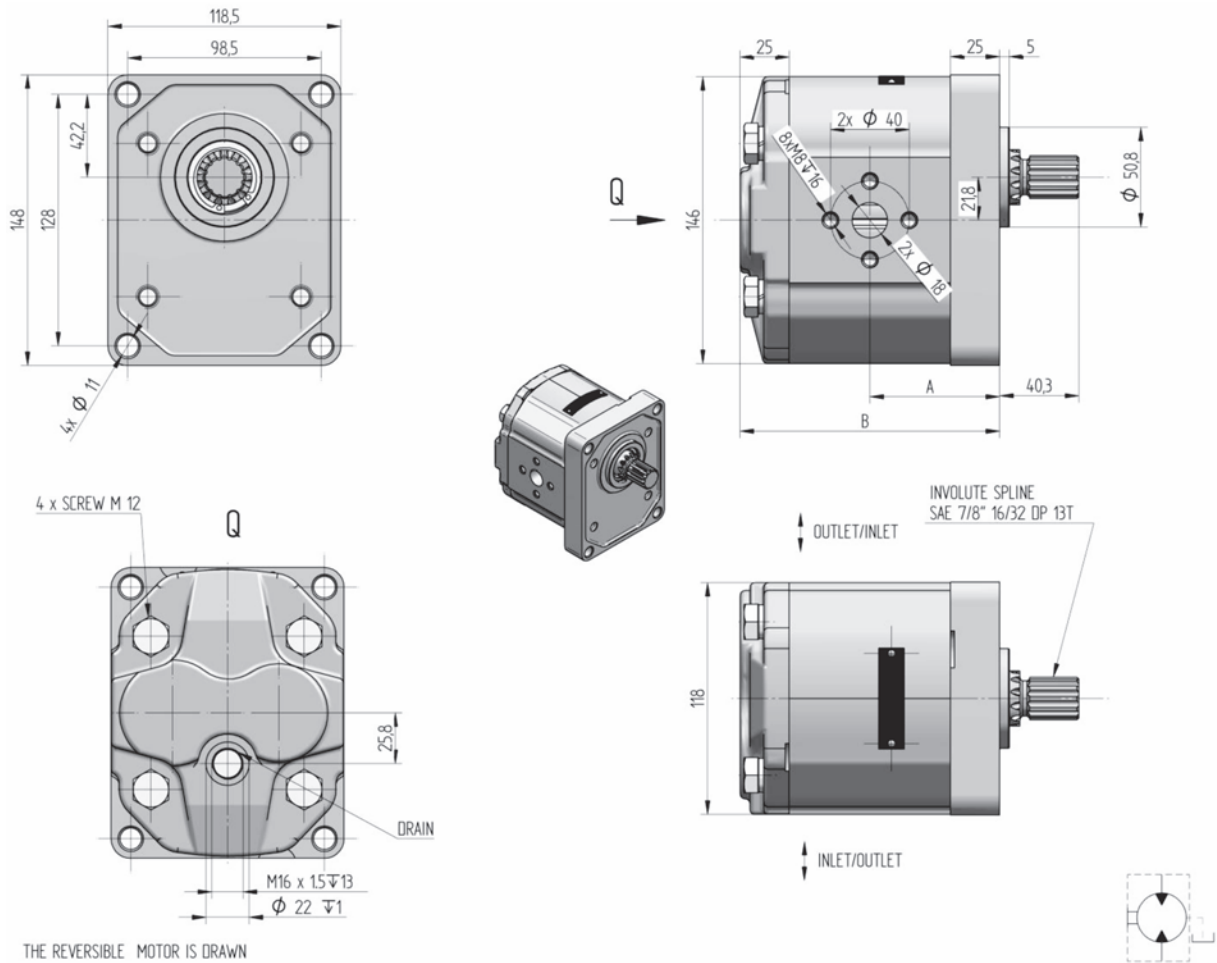
Drain

| Displacement [cm ³] | 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

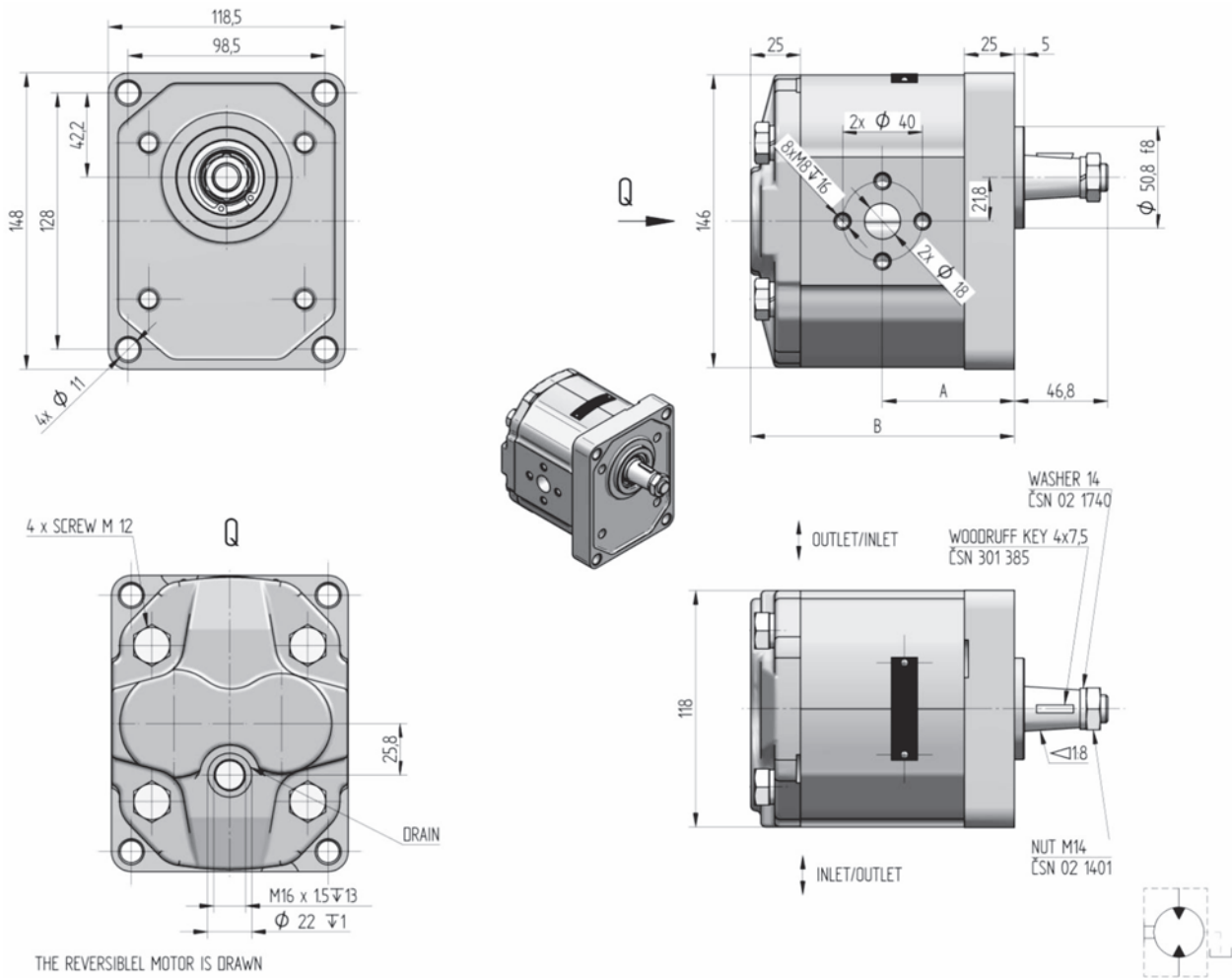


| Order key | purch. code | direct. of rot. | displacement [cm ³ /1] | nom. press. [bar] | speed MIN. [min ⁻¹] | speed MAX. [min ⁻¹] | dimension | | | | | |
|----------------------------|-------------|-----------------|-----------------------------------|-------------------|---------------------------------|---------------------------------|-----------|--------|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

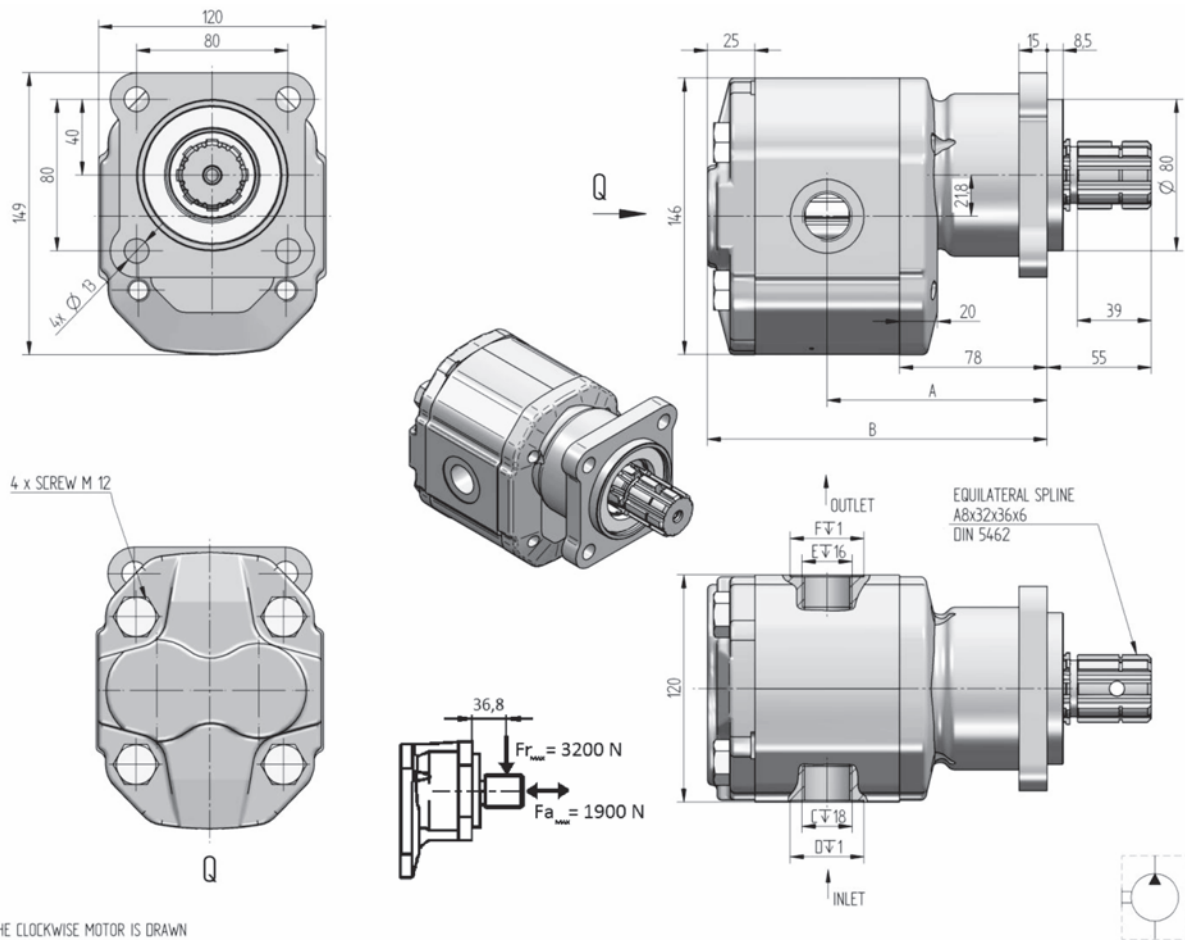


THE REVERSIBLE MOTOR IS DRAWN

| Order key | purch. code | direct. of rot. | displacement [cm ³ /1] | nom. press. [bar] | speed MIN. [min ⁻¹] | speed MAX. [min ⁻¹] | dimension | |
|----------------------------|-------------|-----------------|-----------------------------------|-------------------|---------------------------------|---------------------------------|-----------|--------|
| | | | | | | | A [mm] | 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 |

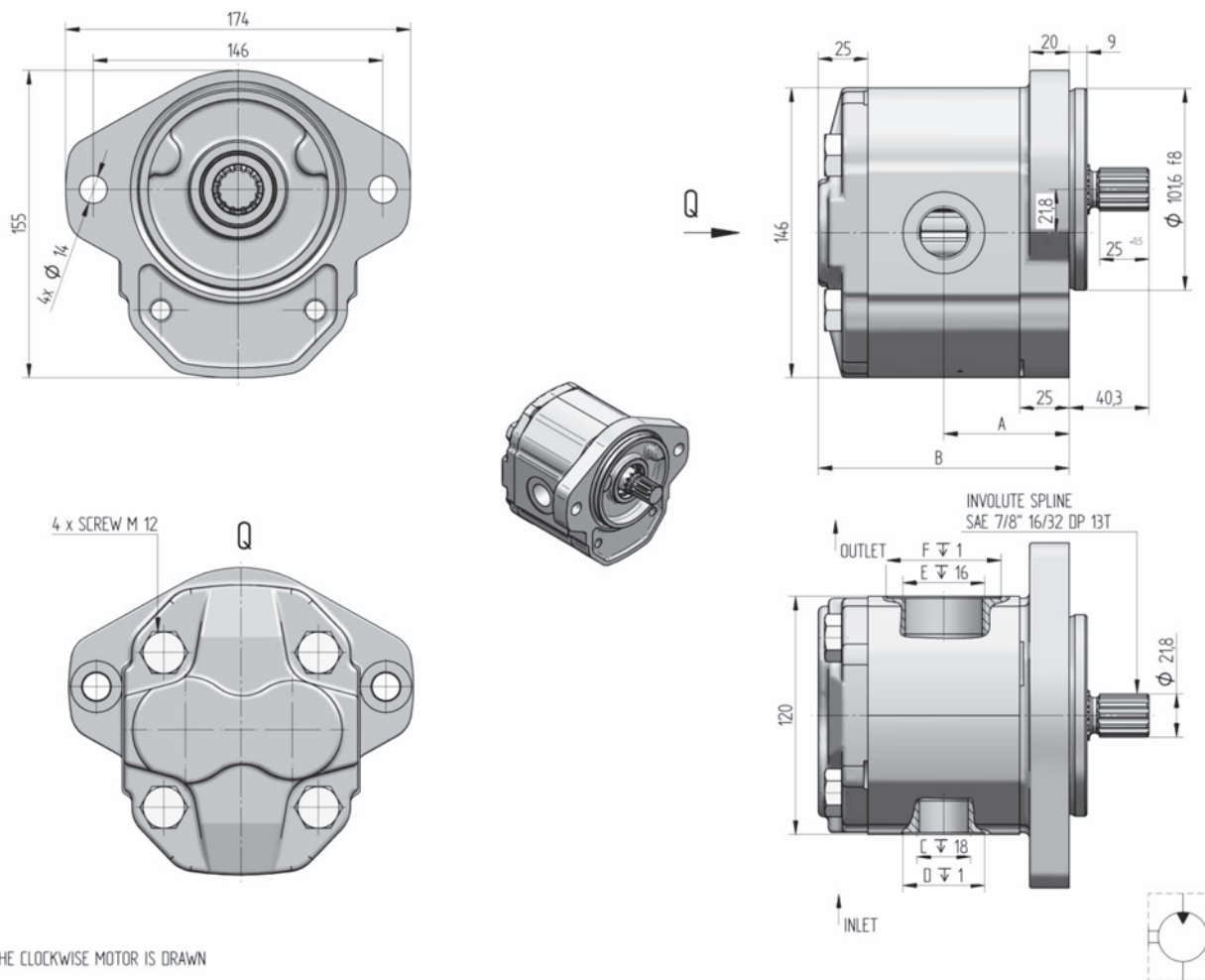


| Order key | purch. code | direct. of rot. | displacement [cm ³ /1] | nom. press. [bar] | speed MIN. [min ⁻¹] | speed MAX. [min ⁻¹] | dimension | |
|---------------------------|-------------|-----------------|-----------------------------------|-------------------|---------------------------------|---------------------------------|-----------|--------|
| | | | | | | | A [mm] | 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 |



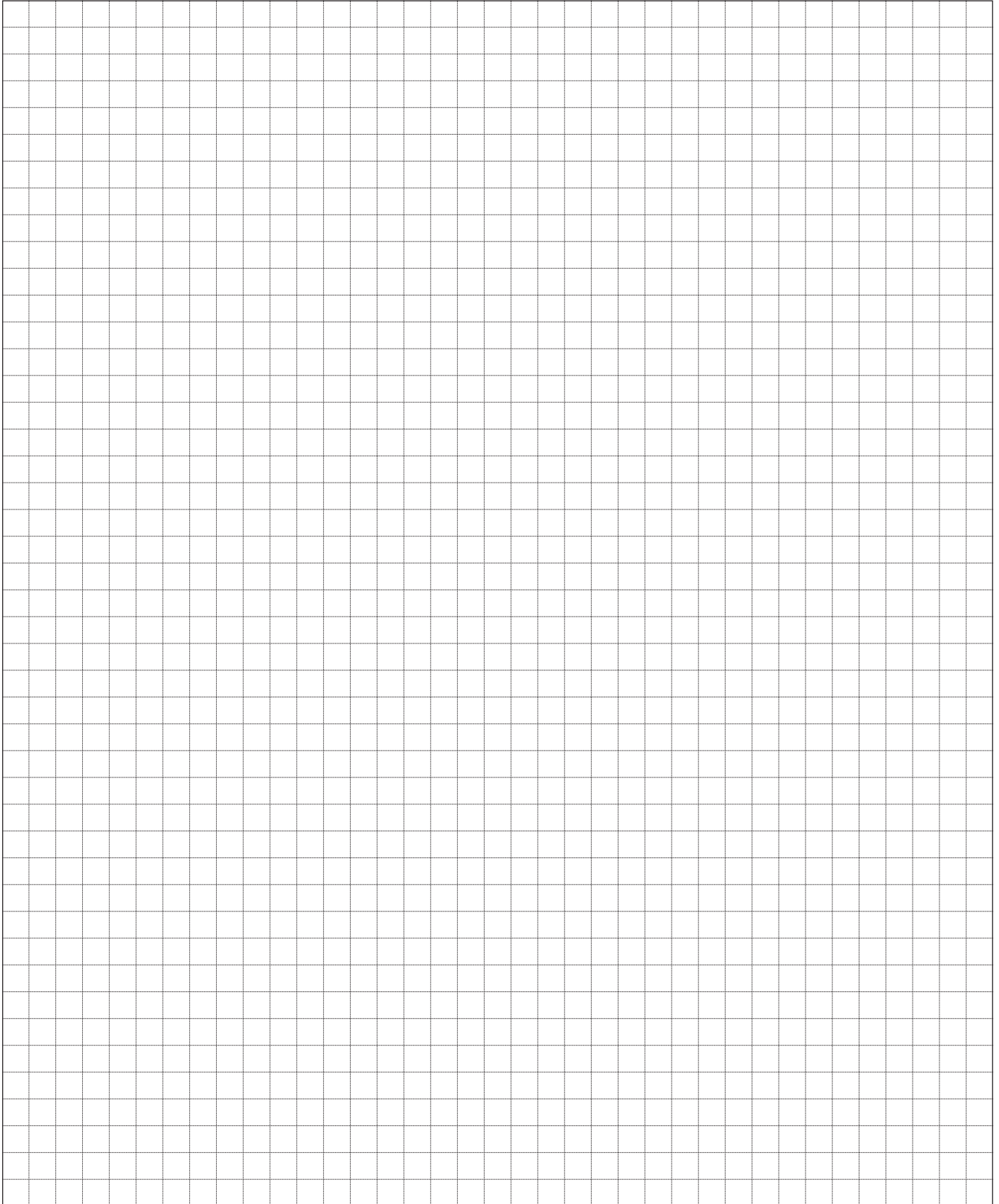
THE CLOCKWISE MOTOR IS DRAWN

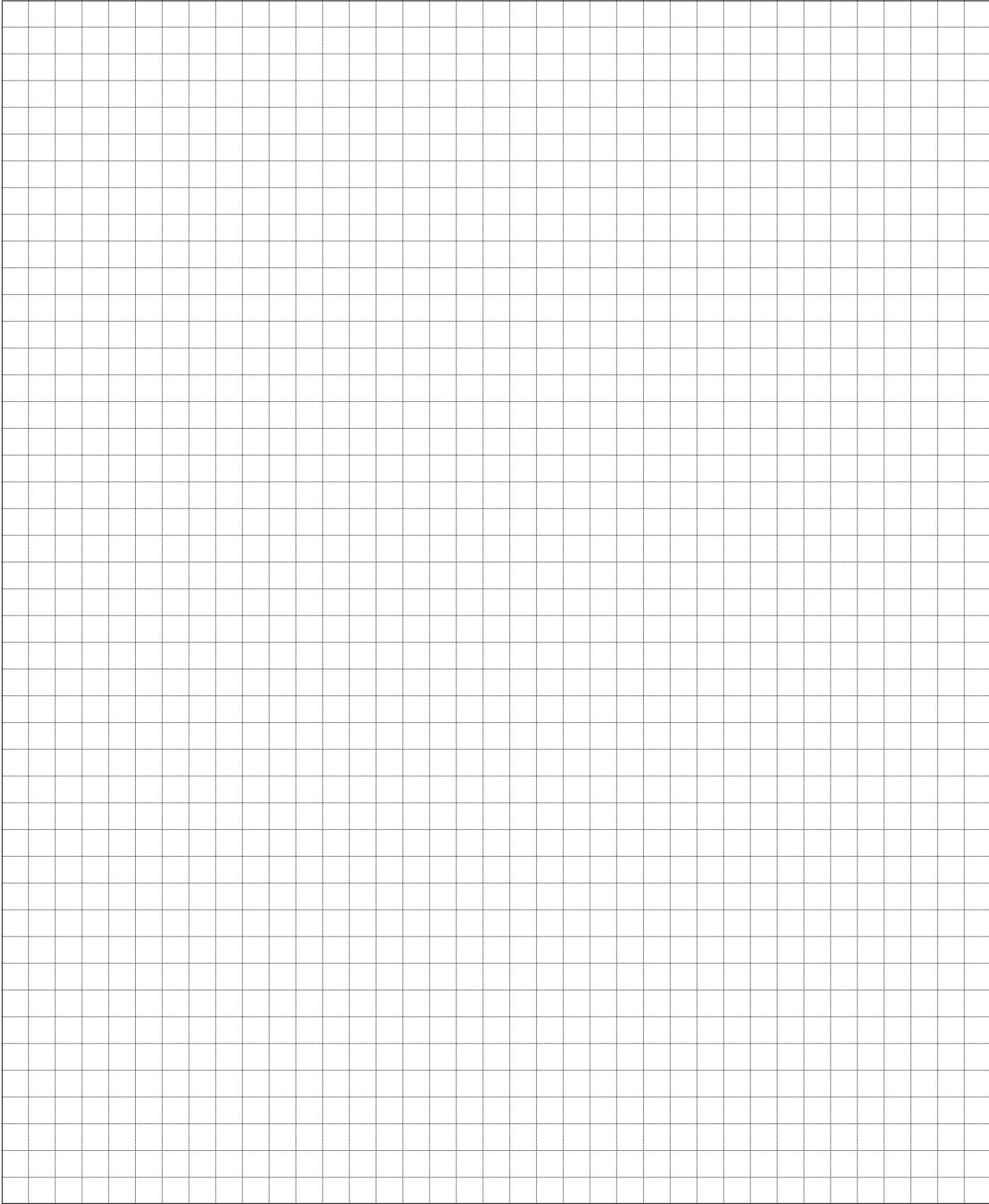
| Order key | purch. code | direct. of rot. | displacement [cm ³ /1] | nom. press. [bar] | speed MIN. [min ⁻¹] | speed MAX. [min ⁻¹] | dimension | | | | | | | |
|----------------------------|-------------|-----------------|-----------------------------------|-------------------|---------------------------------|---------------------------------|-----------|--------|--------|--------|--------|---------|--------|--------|
| | | | | | | | 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 | | | | | | | | | | | | |

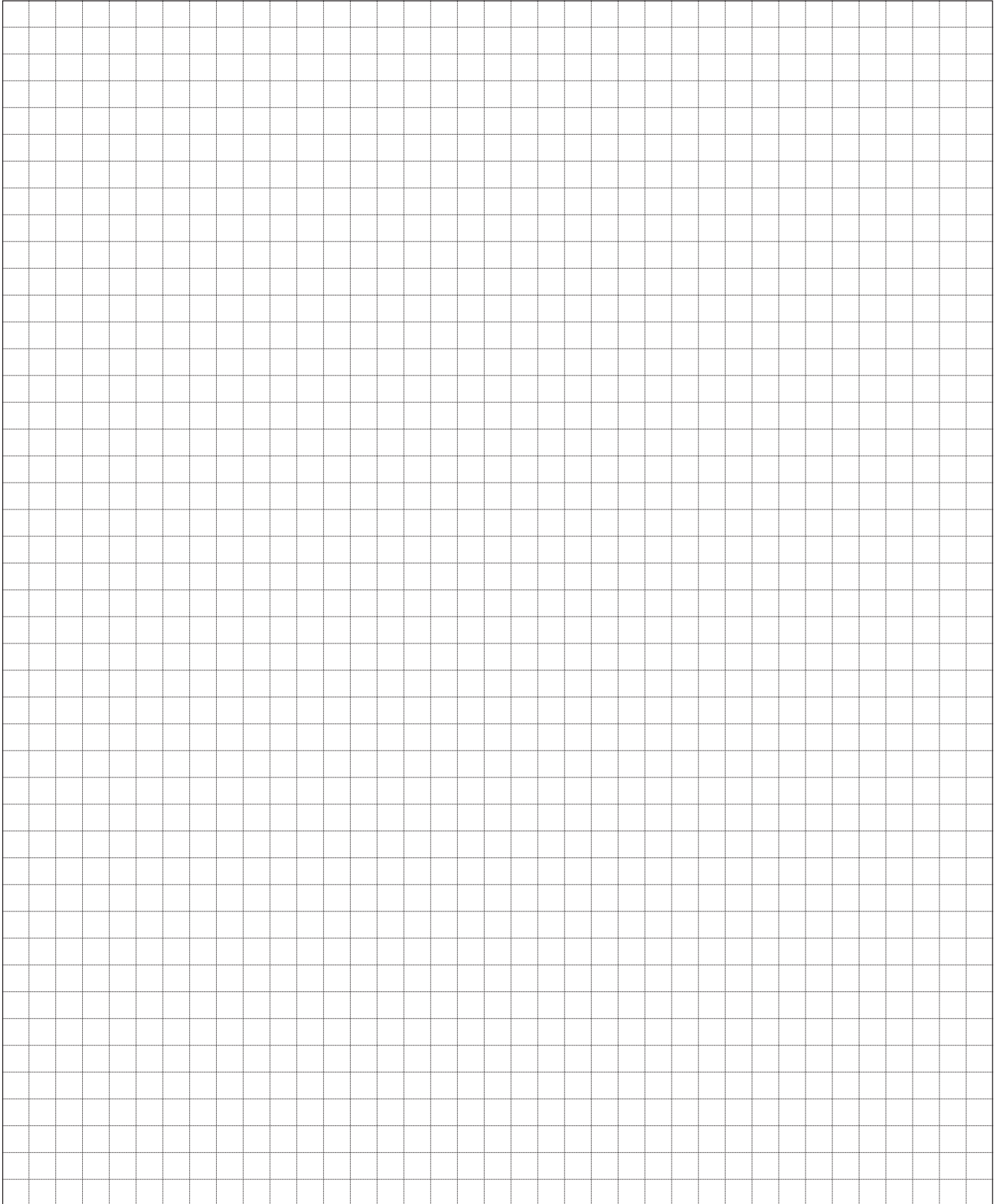


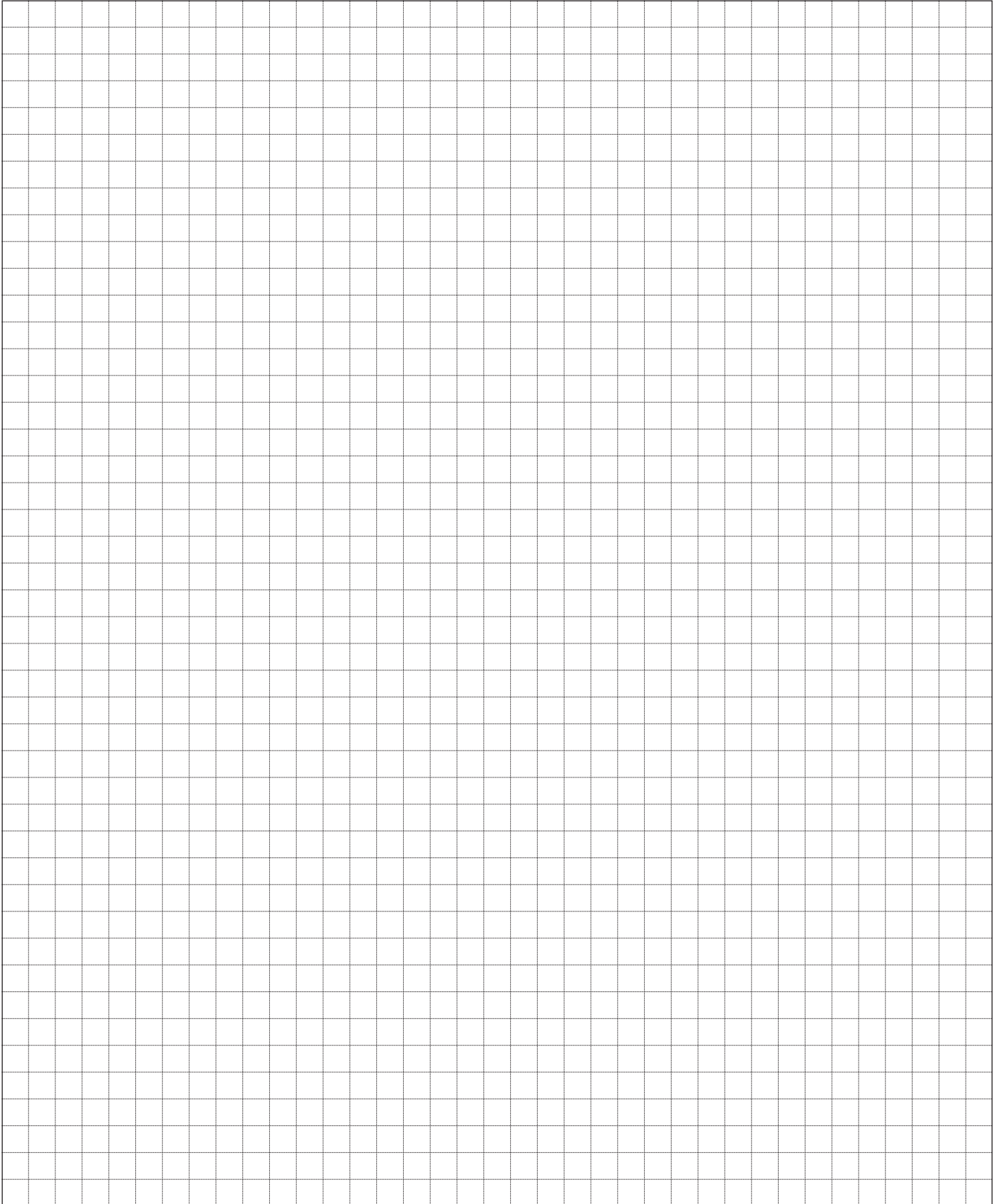
THE CLOCKWISE MOTOR IS DRAWN

| Order key | purch. code | direct. of rot. | displacement [cm ³ /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 | Ø 49 | 1-5/8-12 UN | Ø 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 | Ø 49 | 1-5/8-12 UN | Ø 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 | Ø 49 | 1-5/8-12 UN | Ø 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 | Ø 49 | 1-5/8-12 UN | Ø 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 | Ø 49 | 1-5/8-12 UN | Ø 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 | Ø 49 | 1-5/16-12 UN | Ø 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 | Ø 41 | 1-5/16-12 UN | Ø 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 | Ø 41 | 1-5/16-12 UN | Ø 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 | Ø 34 | 1-1/16-12 UN | Ø 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 | Ø 34 | 1-1/16-12 UN | Ø 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 | Ø 34 | 1-1/16-12 UN | Ø 41 |
| QM2-10L-S03D13-SU04U05-N | | L | | | | | | | | | | |











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GPS 48°49'51.748" N 14°27'40.770" E

