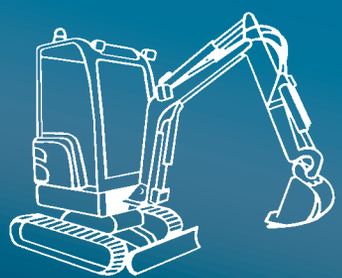
jihostroj
AERO TECHNOLOGY & HYDRA



| | |
|---|---|
| **Displacement** | from 10 to 100 ccm |
| **Pressure** | up to 300 bar |
| **Speed** | from 300 to 3200 RPM |

# GEAR PUMPS
# QHD1

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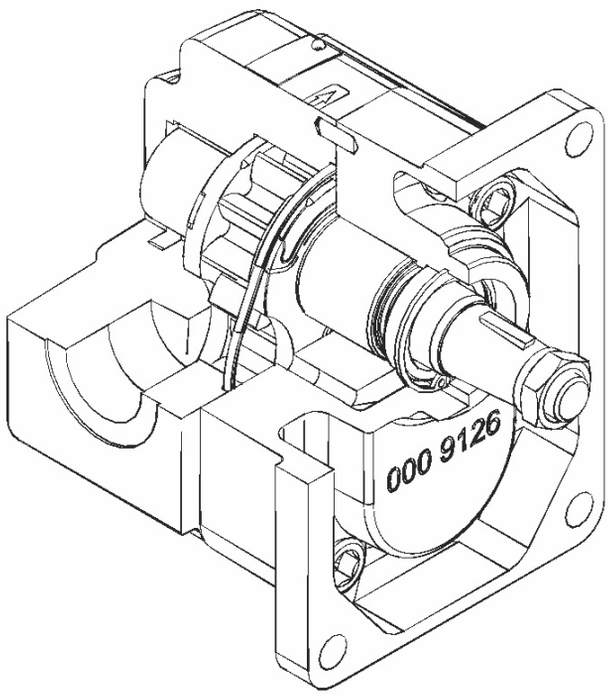
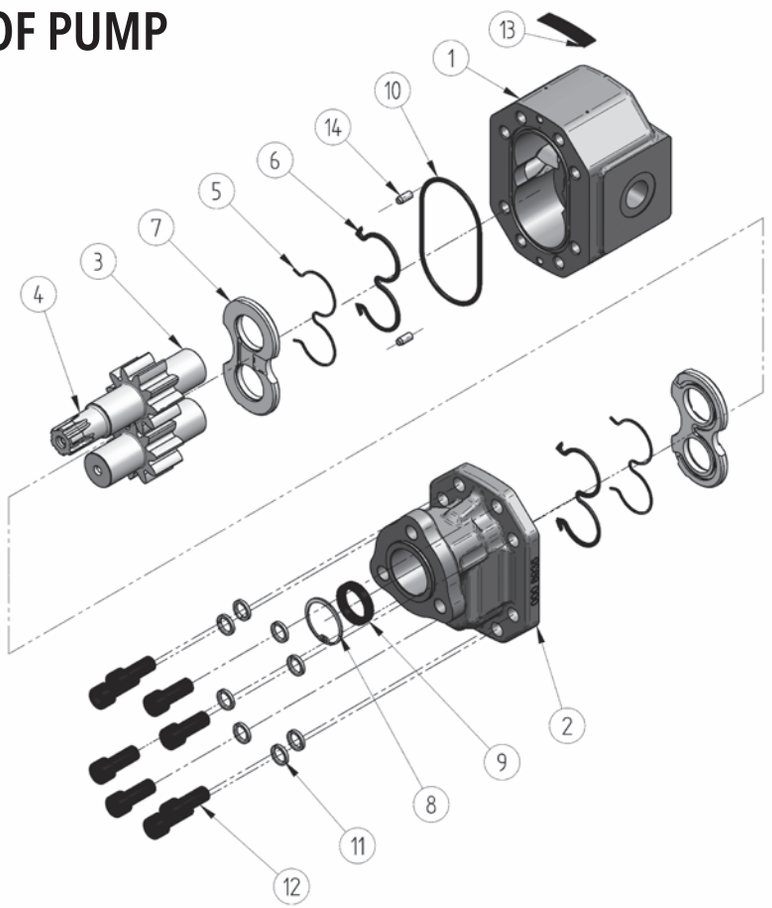


# DESCRIPTION

- QHD1 series are particularly designed to be used in mobile hydraulic systems of agricultural, heavy construction and road building machines as well as in advanced hydraulic systems of material handling devices. The QHD1 series covers the range of displacements from 10 to 100 $cm^3$/rev.
- The pumps are characterized by simple construction with hydraulic pressure balance, compact dimensions and a wide range of connection types. QHD1 pumps have a two-piece all-cast-iron construction. The basis consists of a supporting body with a blind chamber for gear wheels and a fastening flange. The body as well as the flange are made of a high-quality grey cast iron. In the body and the flange, sliding sleeves for gear wheels are molded. Gear wheels with 12 teeth made of ultra high-strength steel, which are optimised to achieve a low noise level. The axial pump balancing is performed using sliding aluminium alloy pressure plates in which a shape sealing of balancing surface is located in grooves. For heavy duty with a weight-bearing drive shaft, the pumps can be equipped with front-end roller bearings. QHD1 construction enables the pumps to be used already at low revolutions at high pressure.
- QHD1 pumps are produced in various designs of divers clamping flanges as well as liquid inlets and outlets. These pumps comply with the standards ISO, SAE, UNI and other world-recognised standards and can be delivered in simple or multiple designs. They can also be delivered in a reversible design, with external or internal drainage.

# BASIC PARTS OF PUMP




1. Body
2. Flange
3. Driving gear
4. Driven gear
5. Sealing protective plate
6. Balancing sealing
7. Pressure plates
8. Safety ring
9. Shaft seal
10. Peripheral sealing
11. Spring washers
12. Bolts
13. Tag
14. Centering pins

# PARAMETER TABLE

| Nominal Size Parameters | | Sym. | Unit | QHD1 10 | QHD1 17 | QHD1 27 | QHD1 34 | QHD1 43 |
|---|---|---|---|---|---|---|---|---|
| Actual displacement | | $V_g$ | [$cm^3$] | 10.11 | 17.24 | 27.35 | 34.05 | 43.47 |
| Rotation speed | nominal | $n_n$ | [$min^{-1}$] | 1500 | 1500 | 1500 | 1500 | 1500 |
| | minimum | $n_{min}$ | [$min^{-1}$] | 350 | 350 | 350 | 350 | 350 |
| | maximum | $n_{max}$ | [$min^{-1}$] | 3200 | 3200 | 3200 | 3000 | 2800 |
| Pressure at inlet* | minimum | $p_{1min}$ | [bar] | -0.3 | -0.3 | -0.3 | -0.3 | -0.3 |
| | maximum | $p_{1max}$ | [bar] | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 |
| Pressure at outlet** | max. continuous | $p_{2n}$ | [bar] | 290 | 290 | 290 | 300 | 280 |
| | maximum | $p_{2max}$ | [bar] | 310 | 310 | 310 | 320 | 300 |
| | peak | $p_3$ | [bar] | 320 | 320 | 320 | 330 | 310 |
| Nominal flow rate (min.) at $n_n$ and $p_{2n}$ | | $Q_n$ | [$dm^3.min^{-1}$] | 13.7 | 23.2 | 37.0 | 47.5 | 60.6 |
| Maximum flow rate at $n_{max}$ a $p_{2max}$ | | $Q_{max}$ | [$dm^3.min^{-1}$] | 31.80 | 54.30 | 86.20 | 100.60 | 119.93 |
| Nominal input power (max.) at $n_n$ and $p_{2n}$ | | $P_n$ | [kW] | 8.7 | 14.8 | 23.4 | 30.0 | 35.8 |
| Maximum input power at $n_{max}$ a $p_{2max}$ | | $P_{max}$ | [kW] | 19.7 | 33.6 | 53.2 | 64.1 | 71.6 |
| Weight | | m | [kg] | 10.4 | 10.9 | 11.7 | 12.1 | 13.0 |

| Nominal Size Parameters | | Sym. | Unit | QHD1 51 | QHD1 61 | QHD1 71 | QHD1 82 | QHD1 100 |
|---|---|---|---|---|---|---|---|---|
| Actual displacement | | $V_g$ | [$cm^3$] | 51.44 | 61.59 | 71.01 | 81.87 | 99.98 |
| Rotation speed | nominal | $n_n$ | [$min^{-1}$] | 1500 | 1500 | 1500 | 1500 | 1500 |
| | minimum | $n_{min}$ | [$min^{-1}$] | 350 | 350 | 300 | 300 | 300 |
| | maximum | $n_{max}$ | [$min^{-1}$] | 2600 | 2400 | 2200 | 2000 | 1800 |
| Pressure at inlet* | minimum | $p_{1min}$ | [bar] | -0.3 | -0.3 | -0.3 | -0.3 | -0.3 |
| | maximum | $p_{1max}$ | [bar] | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 |
| Pressure at outlet** | max. continuous | $p_{2n}$ | [bar] | 260 | 260 | 230 | 200 | 180 |
| | maximum | $p_{2max}$ | [bar] | 280 | 280 | 250 | 220 | 200 |
| | peak | $p_3$ | [bar] | 290 | 290 | 260 | 230 | 210 |
| Nominal flow rate (min.) at $n_n$ and $p_{2n}$ | | $Q_n$ | [$dm^3.min^{-1}$] | 71.8 | 85.9 | 99.0 | 114.2 | 139.5 |
| Maximum flow rate at $n_{max}$ a $p_{2max}$ | | $Q_{max}$ | [$dm^3.min^{-1}$] | 131.7 | 145.6 | 153.9 | 161.3 | 177.3 |
| Nominal input power (max.) at $n_n$ and $p_{2n}$ | | $P_n$ | [kW] | 40.8 | 45.3 | 48.0 | 48.2 | 52.9 |
| Maximum input power at $n_{max}$ a $p_{2max}$ | | $P_{max}$ | [kW] | 76.0 | 78.2 | 76.6 | 70.6 | 70.6 |
| Weight | | m | [kg] | 13.5 | 14.0 | 14.8 | 15.7 | 17.8 |

* Inlet pressure in the reversible design can be up to **$p_1 = p_{2n}$-70 bar max.** External drainage must be used in case of the reversible design.

** Outlet pressure in the reversible design is **10% lower** than shown in the table (depending on operating conditions – it is necessary to consult with the manufacturer).

# 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
$\eta_v$ [–] 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
$\eta_m$ [–] mechanical efficiency

**Input power**
**P**

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

$\eta_t$ [–] total efficiency

# PUMP EFFICIENCIES

**Volumetric efficiency**
**$\eta_v$**

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**
**$\eta_m$**

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**
**$\eta_t$**

t is defined as product of $\eta_n$ and $\eta_m$
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** $\beta_\alpha$

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

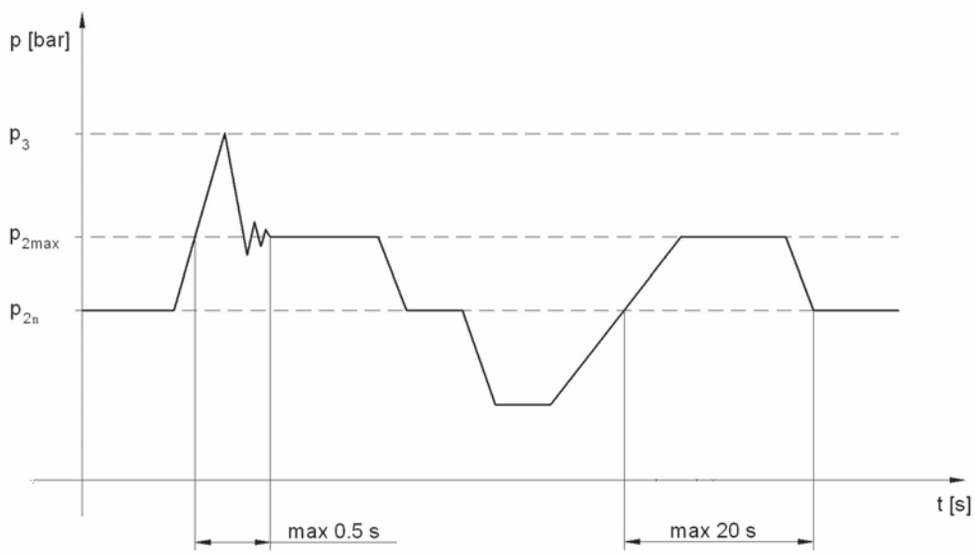
**Liquid contamination class according to ISO 4406**

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



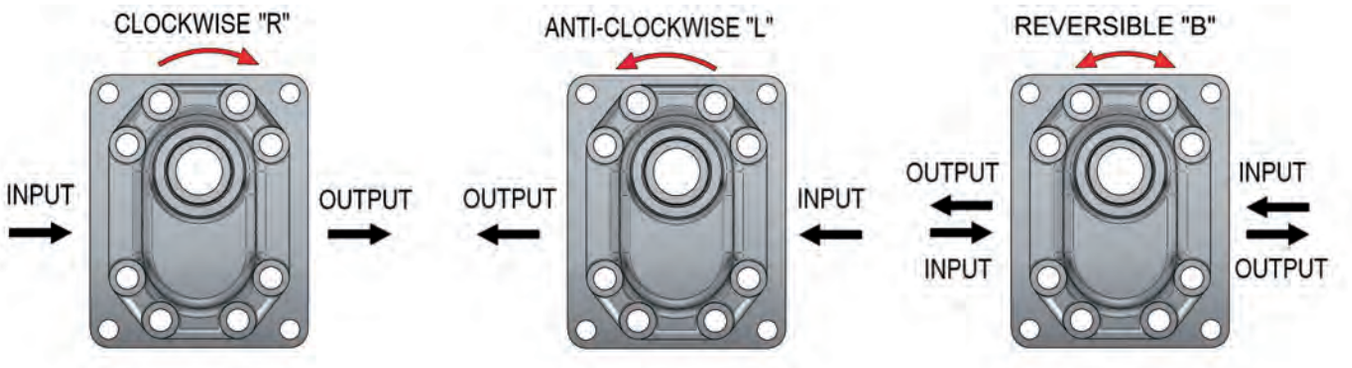

| | | |
|---|---|---|
| $p_{2n}$ | **max. contin. pressure** | Max. working pressure, at which the pump can be operated without time limitation. |
| $p_{2max}$ | **max. pressure** | Maximum pressure permissible for a short time, max. 20s. |
| $p_3$ | **peak pressure** | Short-time pressure (fractions 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 driving device must not generate an axial or a radial load of the pump shaft, unless this is exclusively permitted for the pump with a front-end bearing.
- All the matters affecting technical parameters and properties of the pump are given in respective operating manuals, technical specifications and test specifications of the manufacturer.

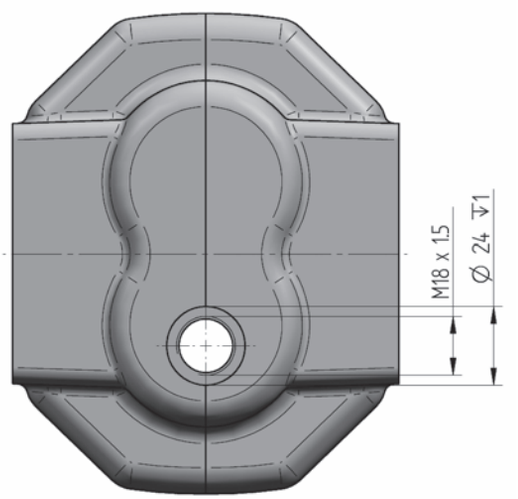
## DIRECTION OF ROTATION

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

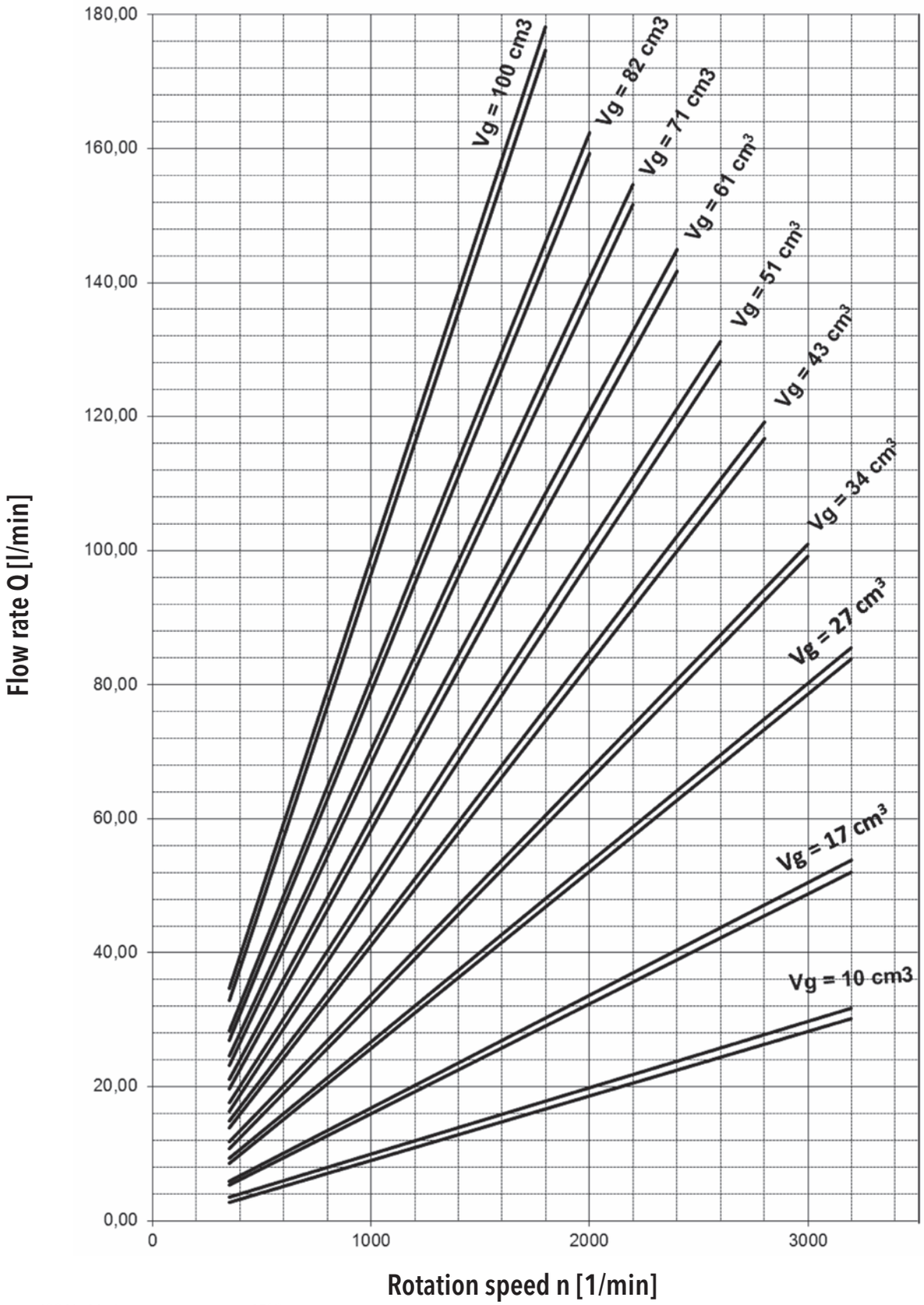



## REVERSIBLE DESIGN

- The pumps 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 body opposite the driven gear.

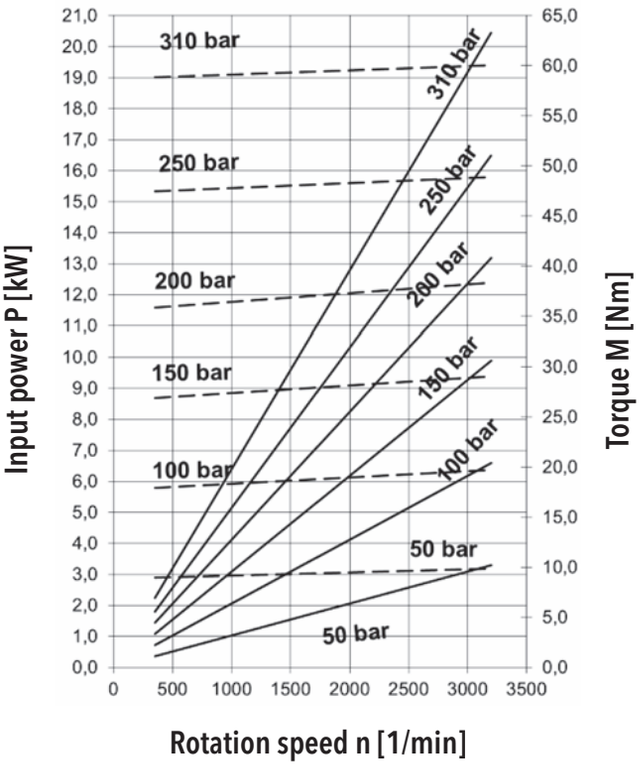


# QHD1 FLOW RATE AND POWER CURVES

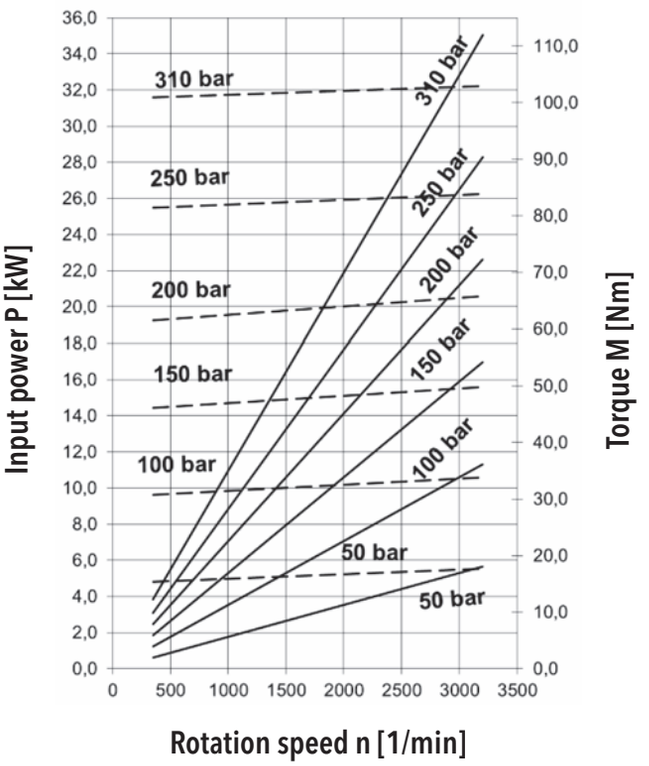



Above curves apply to ISO $V_g$ 46 oil at temperature t = 45°C.

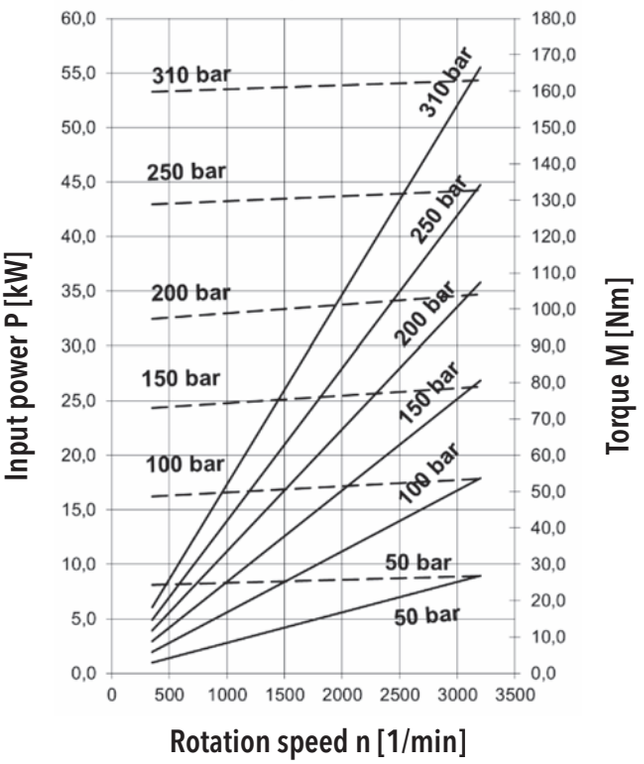
### 10,00 cm³



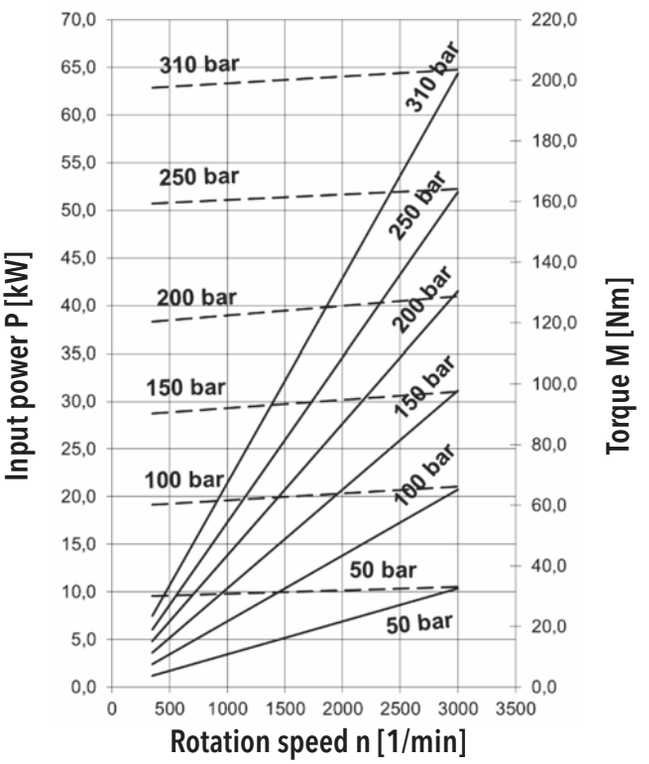

### 17,00 cm³



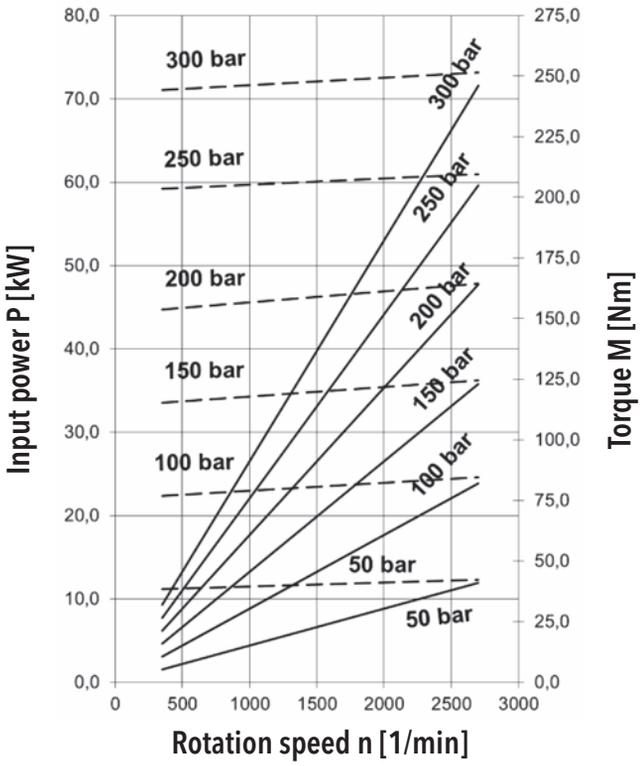

### 27,00 cm³



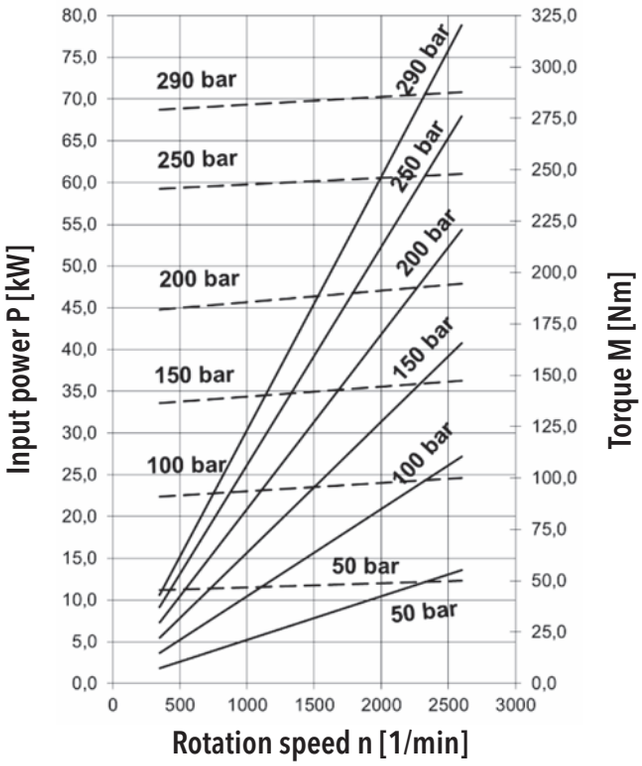

### 34,00 cm³



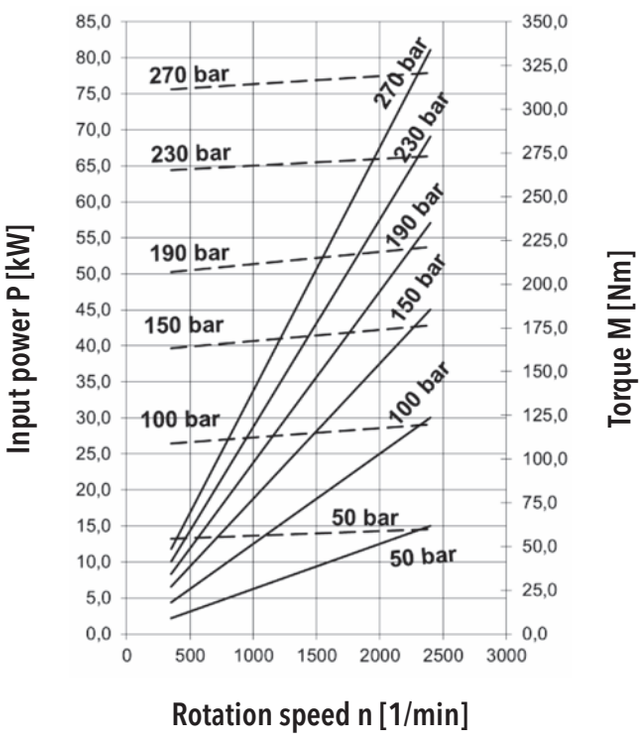
## 43,00 cm³



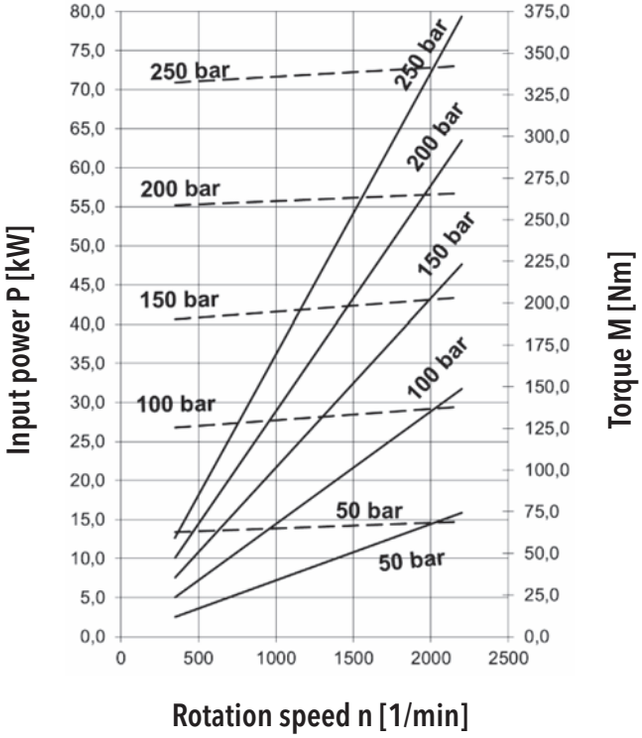

## 51,00 cm³



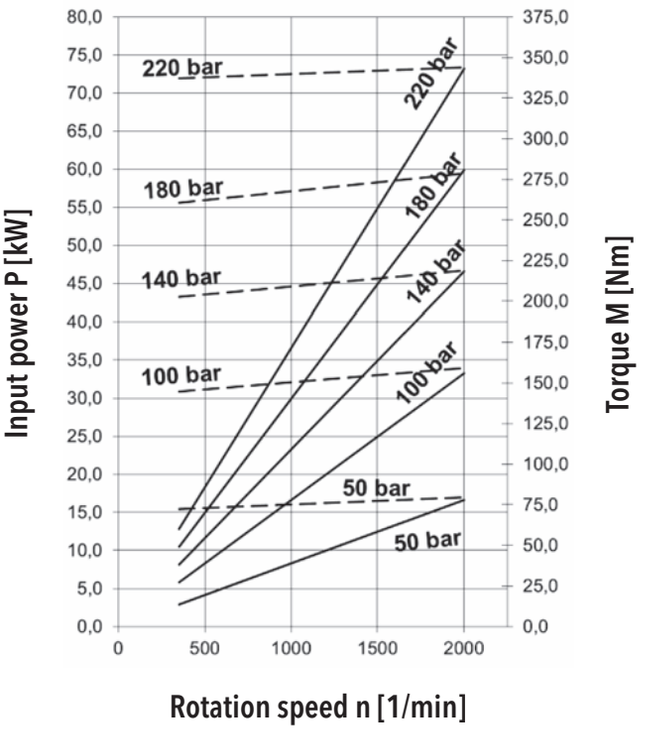

## 61,00 cm³



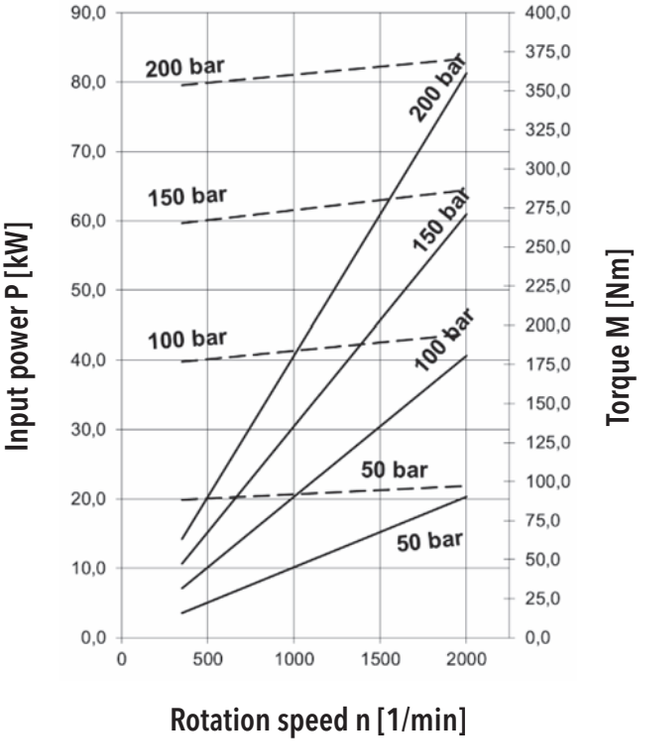

## 71,00 cm³



## 82,00 cm³




## 100,00 cm³



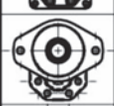
# ORDER KEY

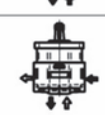
QHD1 - 51 R - R11 C11 - S G05 G04 - N . 001

| Code | Type |
|---|---|
| QHD1 | QHD1 series pump |

| Code | Displacement [cm³] |
|---|---|
| 10 | 10,11 |
| 17 | 17,24 |
| 27 | 27,35 |
| 31 | 30,92 |
| 34 | 33,89 |
| 43 | 42,81 |
| 51 | 51,13 |
| 61 | 61,24 |
| 71 | 71,35 |
| 82 | 82,05 |
| XX | Other displacement on request |

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

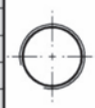
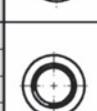
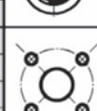
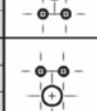
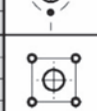
| Code | Flange design | |
|---|---|---|
| R11 | | Rectangular flange, centre ring ∅ 50,8 Spacing screw 98,5 x 128 |
| S03 |  | SAE B – 2 apertures |
| S05 | | SAE B – 4 apertures |
| I01 | | ISO, centre ring ∅ 80 front end bearing |
| I02 | | ISO, centre ring ∅ 80 |
| U01 | | UNI |
| Z | | Special design |

| Code | Location of inlets and outlets | |
|---|---|---|
| S | | Side |
| R | | Axial |
| C |  | Combination |

| Code | Drive shaft design | |
|---|---|---|
| C11 | | Taper 1:8 |
| C12 | | Taper 1:5 |
| D13 | | Grooving SAE 13T |
| D15 | | Grooving SAE 15T |
| D16 | | Grooving 25x1,5 ČSN 014950 |
| D17 | | Grooving UNI 221 |
| D18 | | Equilateral spline A8x32x36x6 DIN 5462 |
| D19 | | Equilateral spline 6 grooves, ∅ 20 |
| D28 | | Equilateral spline DIN 9611 |
| V14 | | Cylindric SAE ∅22,225 |
| V15 | | Cylindric ∅20h7 |
| V16 | | Cylindric ∅25 |
| V20 | | Cylindric ∅25,4 |
| Z | | Special design |

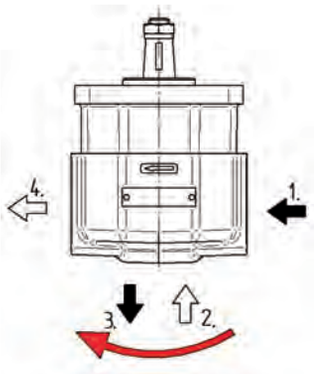
| Code | Special arrangements |
|---|---|
| - | No special arrangements |
| 001 | Two-edged shaft seal |
| 004 | Without shaft seal |
| 007 | Rotated fitting |
| 008 | With front end bearing light design |
| 009 | Sealed section |
| 012 | Axial and radial inlet and outlet |
| 013 | Inside drain |
| 014 | Axial drain M18x1,5 |
| 015 | Axial drain M16x1,5 |
| 050 | Bulit-in bleeder |

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

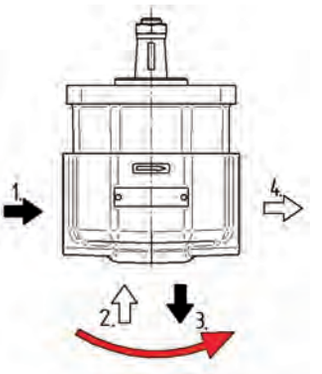
| Code | Liquid inlet and outlet connection shape | |
|---|---|---|
| M08 |  | Thread M 27x1,5 |
| M09 | | Thread M 27x2 |
| M11 | | Thread M 33x1,5 |
| M12 | | Thread M 33x2 |
| M15 | | Thread M 48x2 |
| G03 | | Thread BSP G1/2 |
| G04 | | Thread BSP G3/4 |
| G05 | | Thread BSP G1" |
| G06 | | Thread 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 design |

An example of designation for the QHD1 clockwise pump with displacement of 51 cm³, Rectangular flange with centre ring ∅ 50.8, Taper 1:8, BSP side inlets, standard NBR seal and with two-edges shaft seal.: **QHD1 - 51 R - R11C11 - SG05G04 - N.001**

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



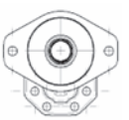
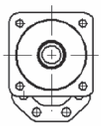
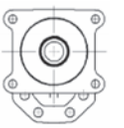
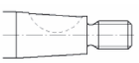
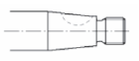
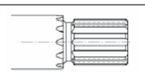
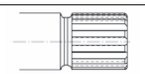
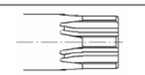
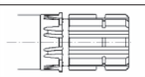
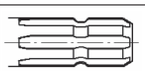

For clockwise and reverse gear pump,
in direction clockwise




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

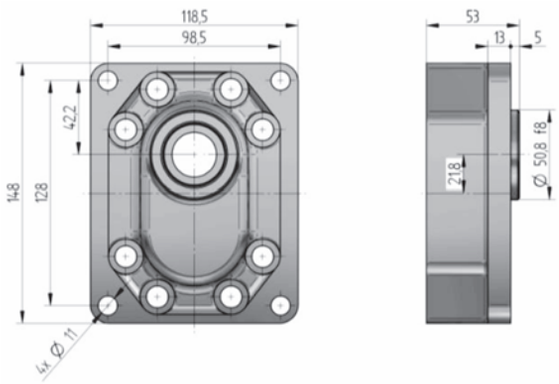
For. ex...: QHD1-43B-R11C11-C<u>G05</u> <u>G05</u> <u>G04</u> <u>G04</u> -N
1. 2. 3. 4.

# COMBINATIONS OF FLANGES AND SHAFTS

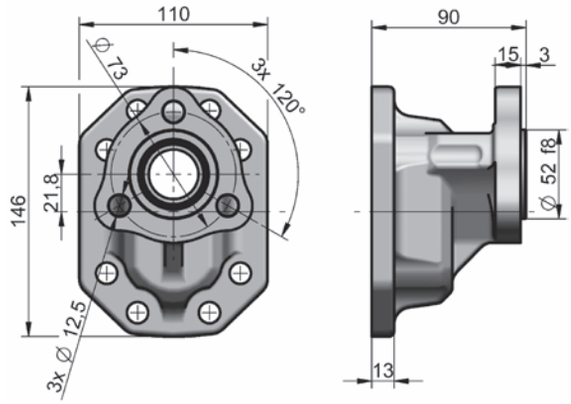
| | | | FLANGE DESIGN | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | R11 | R13 | S03 | S05 | I01 / I02 | U01 | B01 |
| | | | | |  |  | | |  |
| DRIVE SHAFT | C11 |  | ● | | | | ● | | |
| | C12 |  | | ● | | | | | |
| | D13 |  | | | ● | ● | | | |
| | D15 |  | | | ● | ● | | | |
| | D17 |  | | | | | | ● | ● |
| | D18 |  | | | | | ● | | |
| | D28 |  | | | | | | | |
| | V14 | | | | ● | ● | | | |
| | V15 | | ● | | | | | | |
| | V16 | | ● | | | | | | |
| | V20 | | | | ● | ● | | | |

# FLANGES DESIGN

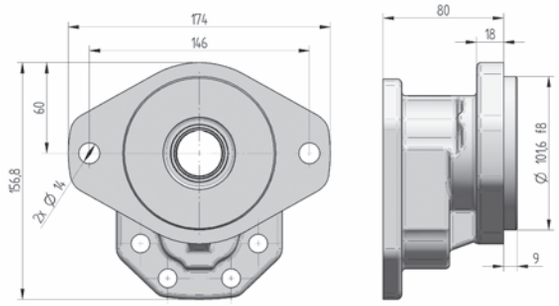
**R11:**



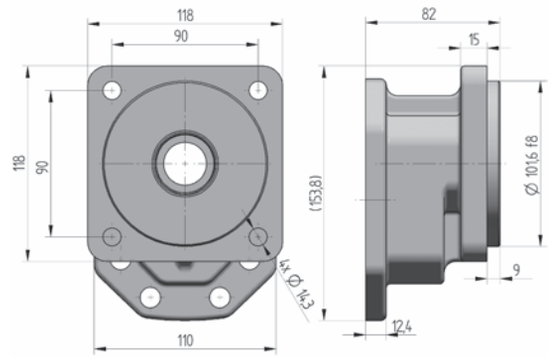

**U01:**



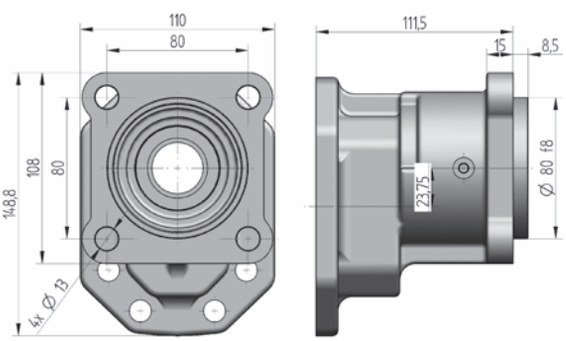

**S03:**



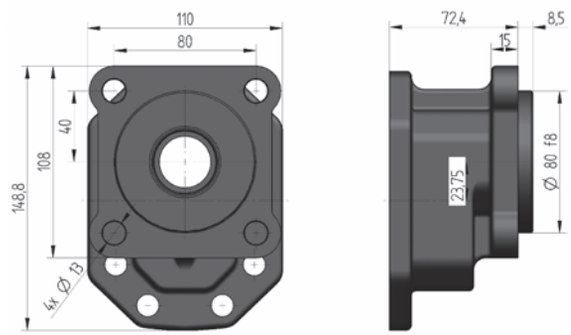

**S05:**




**I01:**

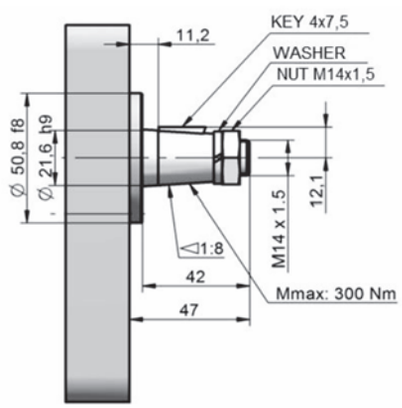



**I02:**

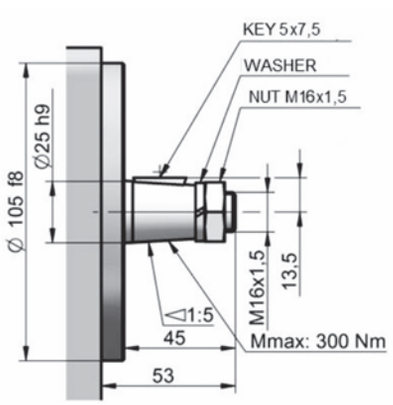



# DRIVE SHAFTS

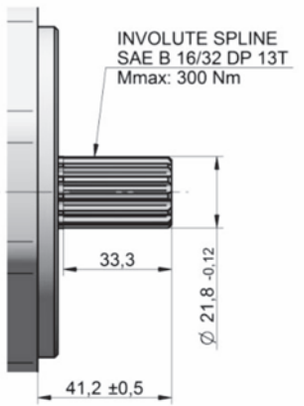
**C11:**



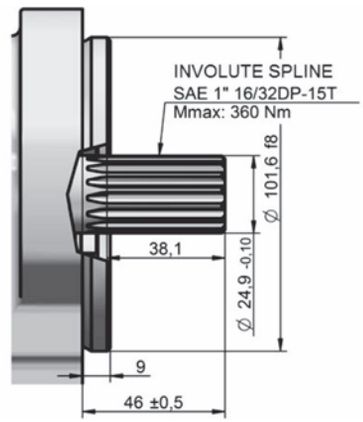

**C12:**



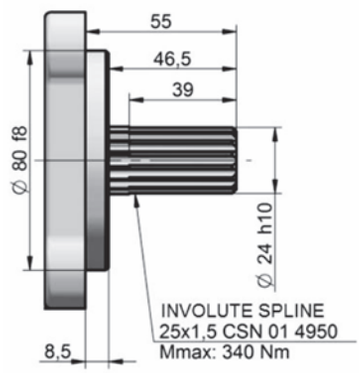
**D13:**



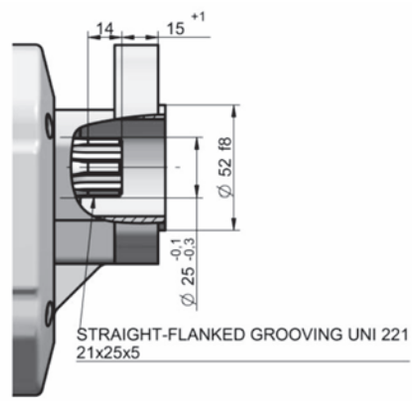

**D15:**



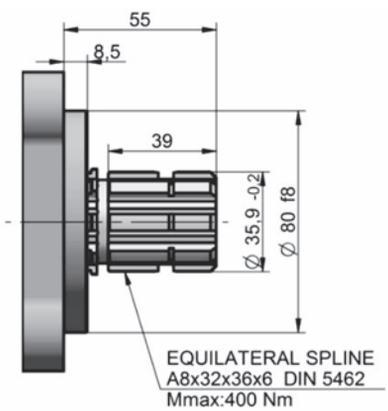

**D16:**



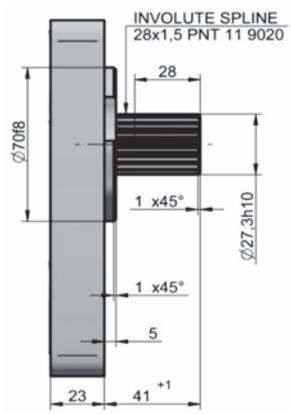

**D17:**



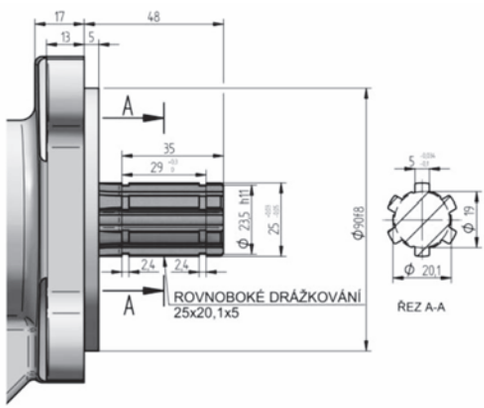

**D18:**



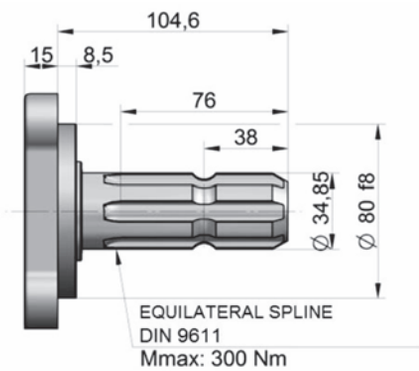

**D19:**



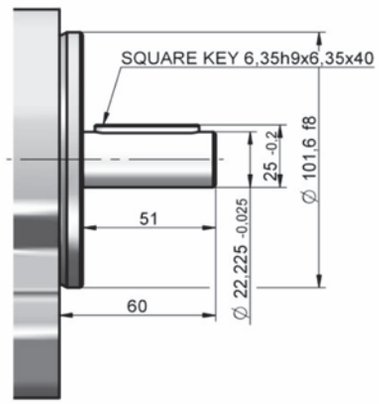

**D20:**



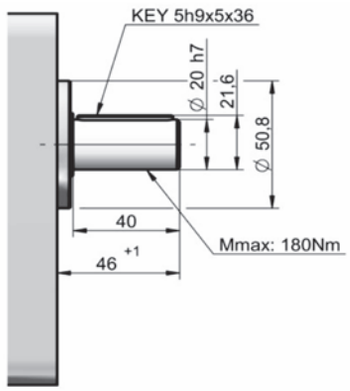

**D28:**



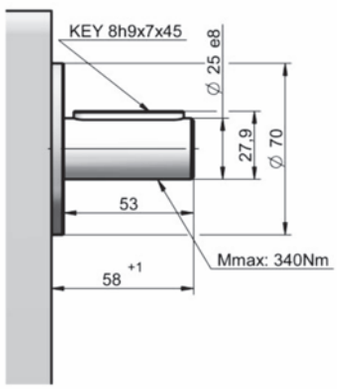
**V14:**



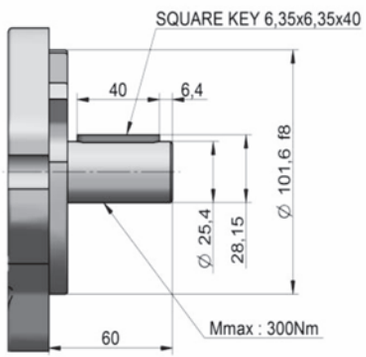

**V15:**




**V16:**

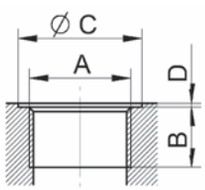



**V20:**



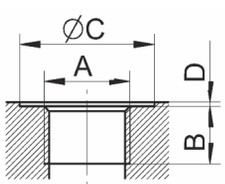

# LIQUID INLET AND OUTLET CONNECTION

## Metric thread according to ISO 6149



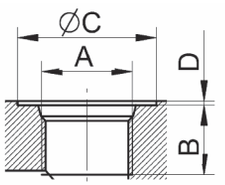

| Displacement [cm³] | Code | Inlet | | | | Code | výstup | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | A | B | C | D | | A | B | C | D |
| to 51 including | M12 | M 33x2 | 18 | 40 | 1 | M09 | M 27x2 | 16 | 33 | 1 |
| above 51 | M15 | M 48x2 | 18 | 56 | 1 | M12 | M 33x2 | 18 | 40 | 1 |

## BSPP pipe thread according to ISO 228-1



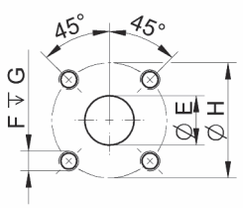

| Displacement [cm³] | Code | Inlet | | | | Code | Outlet | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | A | B | C | D | | A | B | C | D |
| to 17 including | G03 | G 1/2" | 14 | 33 | 1 | G03 | G 1/2" | 14 | 33 | 1 |
| 17-34 including | G04 | G 3/4" | 16 | 39 | 1 | G04 | G 3/4" | 16 | 39 | 1 |
| 34-51 including | G05 | G 1" | 18 | 45 | 1 | G04 | G 3/4" | 16 | 39 | 1 |
| above 51 | G06 | G 1 1/4" | 20 | 57 | 1 | G05 | G 1" | 18 | 45 | 1 |

## UNF thread according to SAE



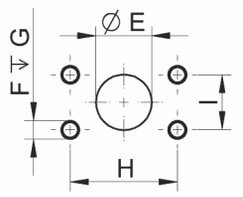

| Displacement [cm³] | Code | Inlet | | | | Code | Outlet | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | A | B | C | D | | A | B | C | D |
| to 17 including | U05 | 1-1/16-12UNF | 19 | 41 | 1 | U04 | 7/8-14UNF | 17 | 34 | 1 |
| 17-27 including | U07 | 1-5/16-12UNF | 23 | 49 | 1 | U05 | 1-1/16-12UNF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

## Flanged fittings according to DIN 8901/8902



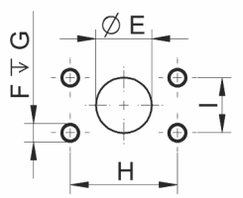

| Displacement [cm³] | Code | Inlet | | | | Code | Outlet | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | E | F | G | H | | E | F | G | H |
| all | H11 | 26 | M10 | 16 | 51 | H08 | 18 | M8 | 16 | 40 |
| all | H10 | 25 | M8 | 16 | 55 | H09 | 18 | M8 | 16 | 55 |

## Flanged fittings according to SAE, metric thread



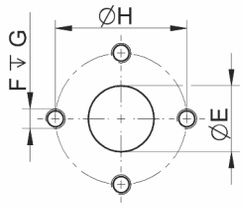

| Displacement [cm³] | Code | Inlet | | | | | Code | Outlet | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | E | F | G | H | I | | E | F | G | H | I |
| to 61 including | E03 | 25.4 | M10 | 22 | 52.4 | 26.2 | E02 | 19.0 | M10 | 22 | 47.6 | 22.2 |
| above 61 | E04 | 30.5 | M10 | 22 | 58.7 | 30.2 | E03 | 25.4 | M10 | 22 | 52.4 | 26.2 |
| above 61 | E05 | 39.3 | M12 | 27 | 69.8 | 35.7 | E04 | 30.5 | M10 | 22 | 58.7 | 30.2 |

## Flanged fittings according to SAE, UNC thread



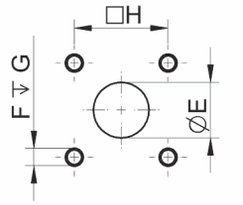

| Displacement [cm³] | Code | Inlet | | | | | Code | Outlet | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | E | F | G | H | I | | E | F | G | H | I |
| to 61 including | A03 | 25.4 | 3/8-16 UNC | 22 | 52.4 | 26.2 | A02 | 19.0 | 3/8-16 UNC | 22 | 47.6 | 22.2 |
| above 61 | A04 | 30.5 | 7/16-14 UNC | 29 | 58.7 | 30.2 | A03 | 25.4 | 3/8-16 UNC | 22 | 52.4 | 26.2 |
| above 61 | A05 | 39.3 | 1/2-13 UNC | 27 | 69.8 | 35.7 | A04 | 30.5 | 7/16-14 UNC | 29 | 58.7 | 30.2 |

## Flanged fittings – „cross"




| Displacement [cm³] | Code | Inlet | | | | Code | Outlet | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | E | F | G | H | | E | F | G | H |
| all | K04 | 26 | M10 | 16 | 51 | K03 | 18 | M8 | 16 | 40 |
| all | K06 | 25 | M8 | 16 | 55 | K05 | 18 | M8 | 16 | 55 |

## Flanged fittings – „square"

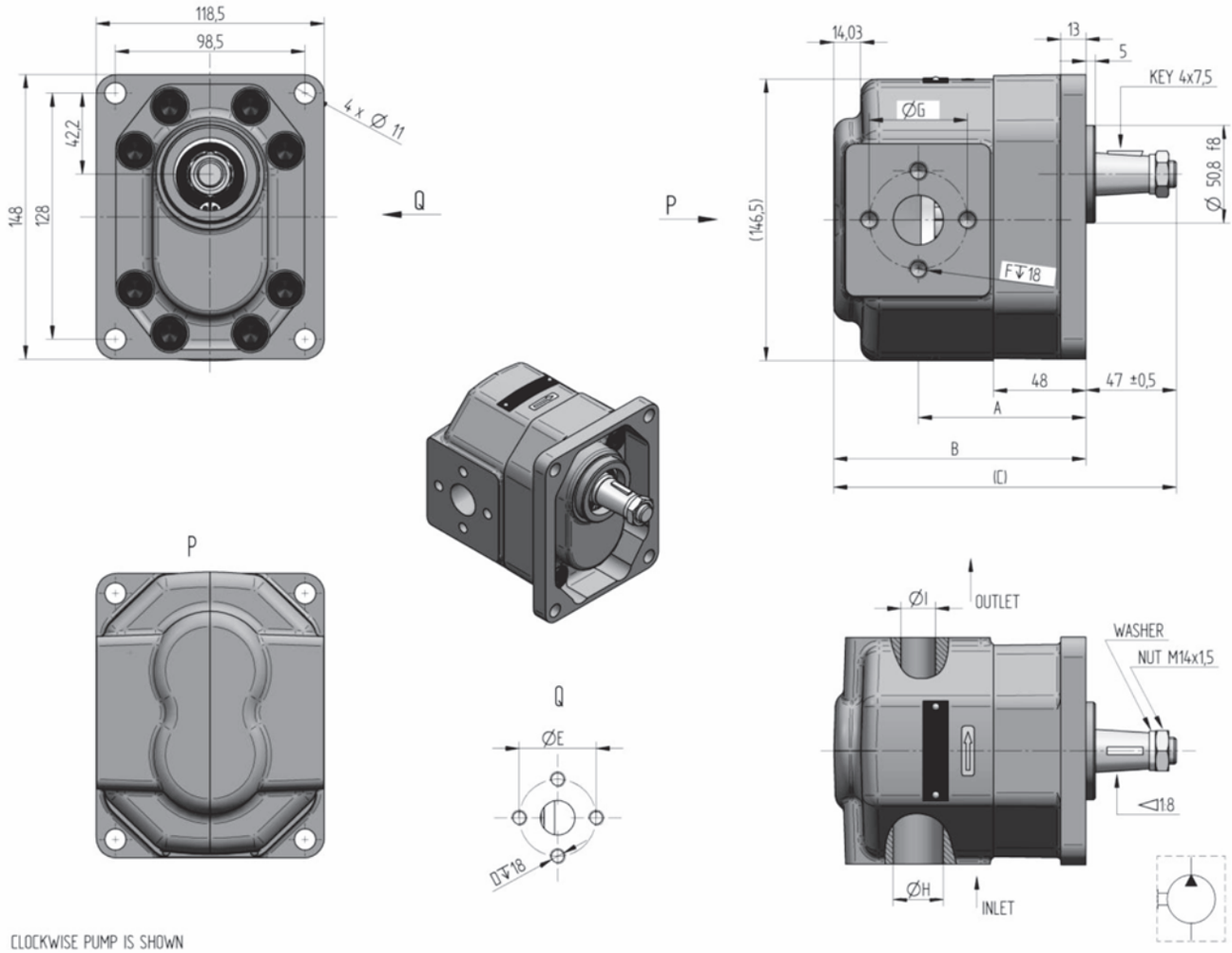



| Displacement [cm³] | Code | Inlet | | | | Code | Outlet | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | E | F | G | H | | E | F | G | H |
| to 43 including | S11 | 23 | M8 | 22 | 46 | S10 | 16 | M8 | 22 | 46 |
| above 43 | S09 | 27 | M10 | 22 | 54 | S08 | 19 | M10 | 22 | 54 |

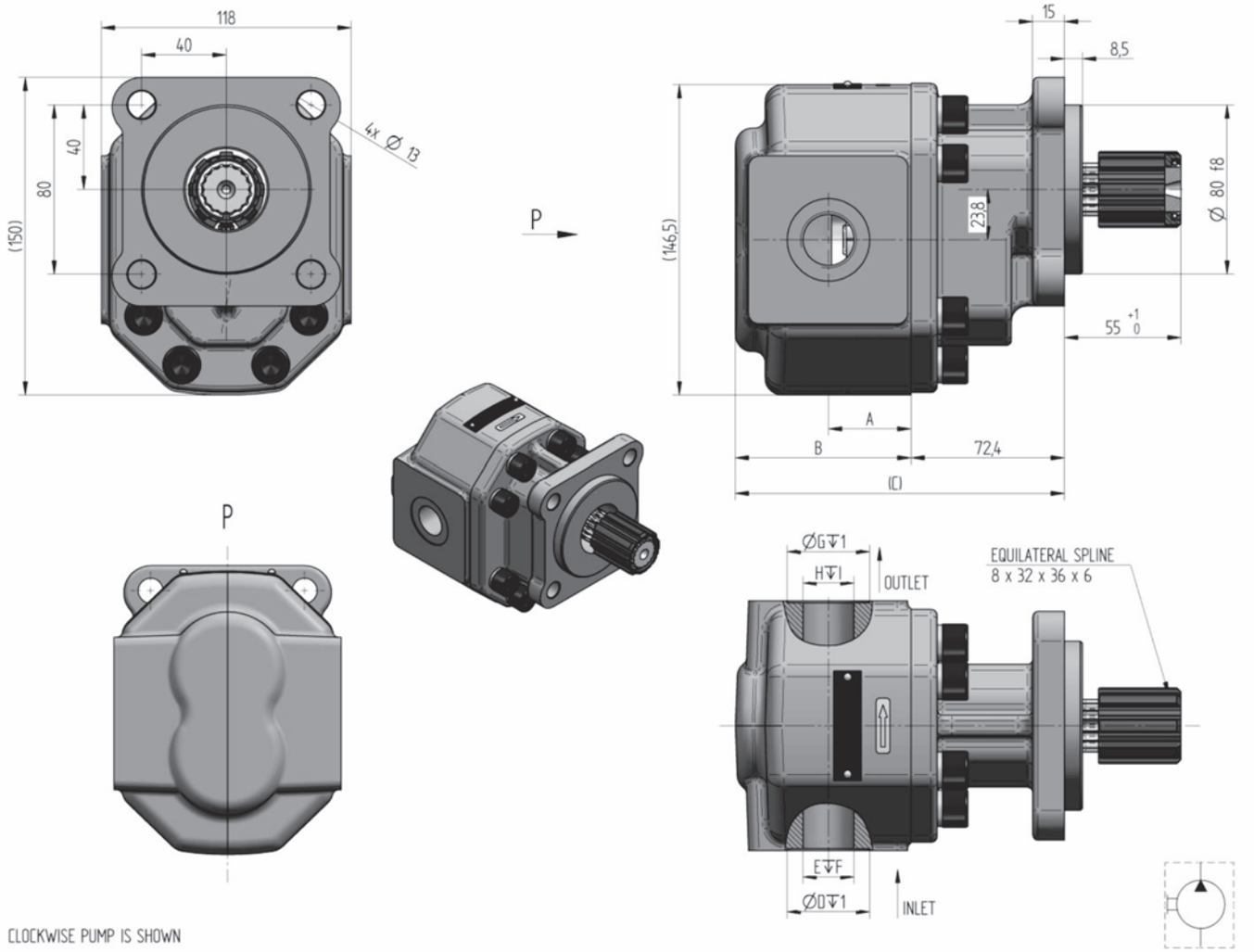
## Drains:

| Displacement [cm³] | Code | Outlet | | | |
|---|---|---|---|---|---|
| | | A | B | C | D |
| all | M04 | M 16 x 1.5 | 14 | 22 | 1 |
| | M05 | M 18 x 1.5 | 14 | 24 | 1 |
| | G01 | G 1/4" | 13 | 18 | 1 |
| | G02 | G 3/8" | 13 | 24 | 1 |
| | G03 | G 1/2" | 14 | 33 | 1 |
| | U02 | 9/16-18UNF | 14 | 25 | 1 |

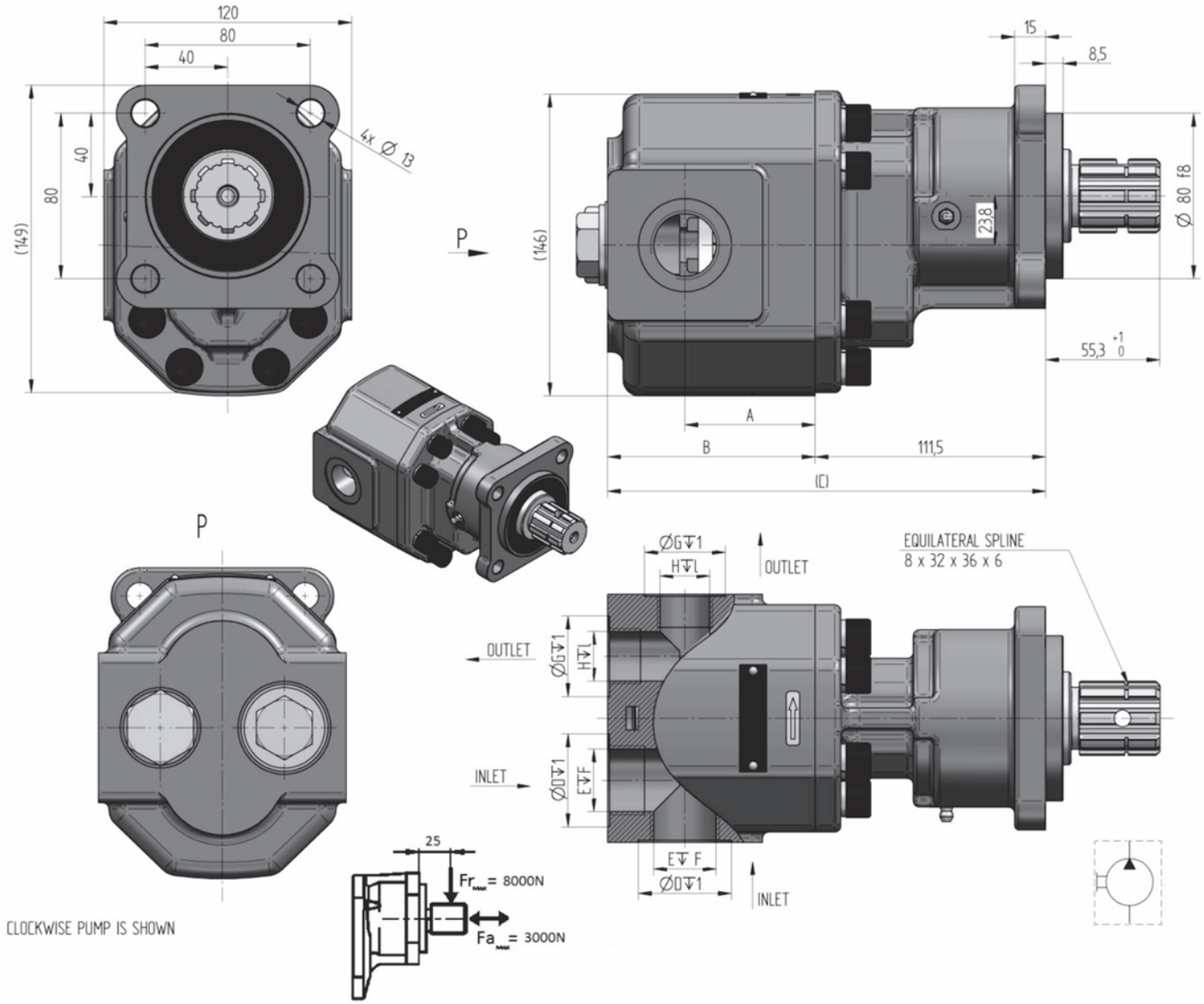
# CATALOGUE SHETS OF QHD1 SERIES BASIC DESIGNS



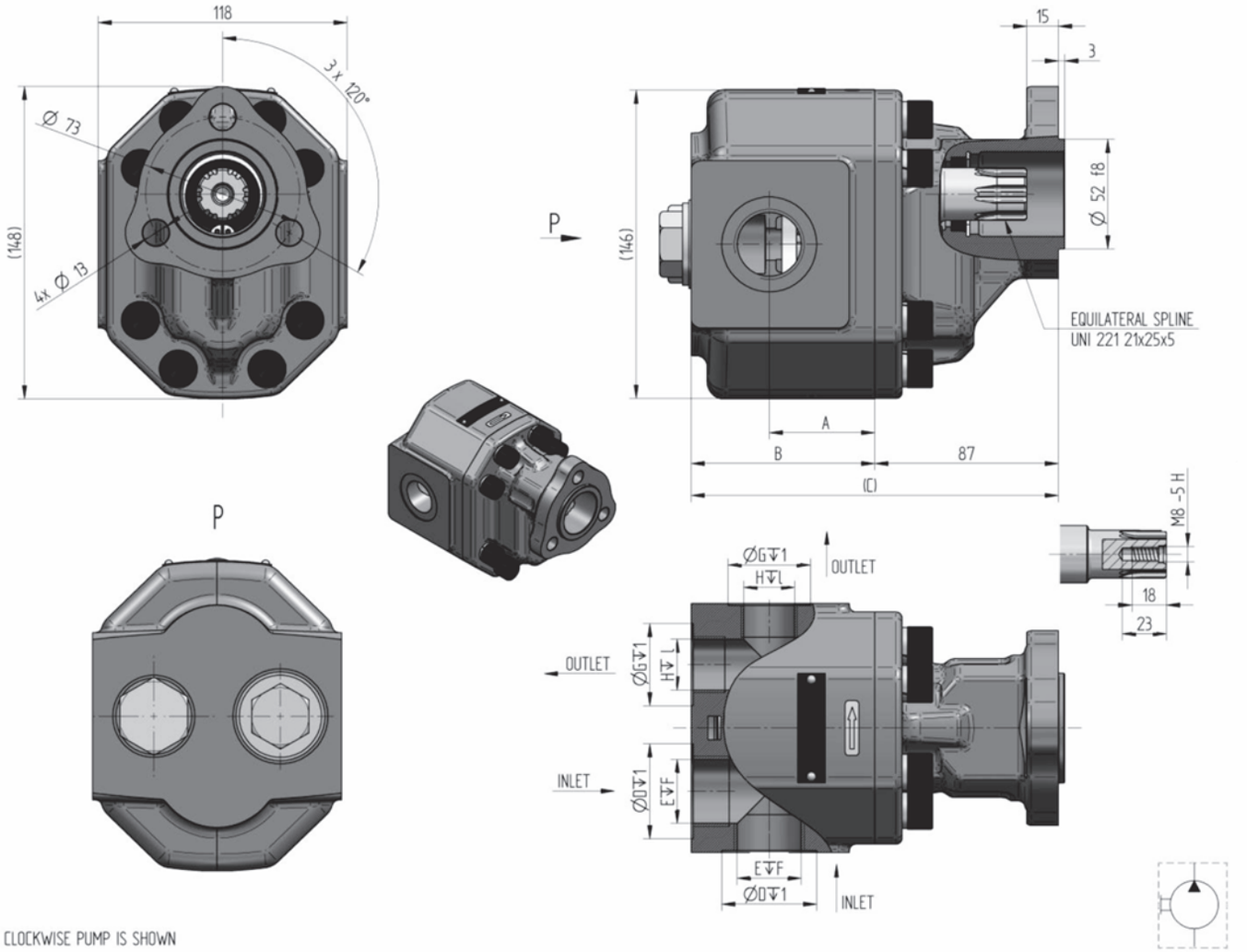

| Order key | purch. code | direct. of rot. | displa-cement [cm³/1] | nom. press. [bar] | speed MIN. [min⁻¹] | speed MAX. [min⁻¹] | dimension A [mm] | B [mm] | C [mm] | D [mm] | ØE [mm] | F [mm] | ØG [mm] | ØH [mm] | ØH [mm] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| QHD1-51R- R11C11-SK06K05-N | | R | 51 | 240 | 350 | 2600 | 110,5 | 150,5 | 197,5 | M8 | 55 | M8 | 55 | 25 | 18 |
| QHD1-51L- R11C11-SK06K05-N | | L | | | | | | | | | | | | | |
| QHD1-43R- R11C11-SK06K05-N | | R | 43 | 270 | 350 | 2700 | 105,0 | 145,0 | 192,0 | M8 | 55 | M8 | 55 | 25 | 18 |
| QHD1-43L- R11C11-SK06K05-N | | L | | | | | | | | | | | | | |
| QHD1-34R- R11C11-SK06K05-N | | R | 34 | 280 | 350 | 3000 | 98,5 | 138,5 | 185,5 | M8 | 55 | M8 | 55 | 25 | 18 |
| QHD1-34L- R11C11-SK06K05-N | | L | | | | | | | | | | | | | |
| QHD1-27R- R11C11-SK06K05-N | | R | 27 | 300 | 350 | 3200 | 94,0 | 134,0 | 181,0 | M8 | 55 | M8 | 55 | 25 | 18 |
| QHD1-27L- R11C11-SK06K05-N | | L | | | | | | | | | | | | | |
| QHD1-17R- R11C11-SK06K05-N | | R | 17 | 290 | 350 | 3200 | 87,0 | 127,0 | 174,0 | M8 | 55 | M8 | 55 | 25 | 18 |
| QHD1-17L- R11C11-SK06K05-N | | L | | | | | | | | | | | | | |
| QHD1-10R- R11C11-SK06K05-N | | R | 10 | 290 | 350 | 3200 | 82,0 | 122,0 | 169,0 | M8 | 55 | M8 | 55 | 25 | 18 |
| QHD1-10L- R11C11-SK06K05-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] | ∅G [mm] | H [mm] | I [mm] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| QHD1-71R- I02D18-SG05G04-N | | R | 71 | 230 | 350 | 2200 | 65 | 104,0 | 176,4 | 45 | G1″ | 18 | 39 | G3/4″ | 16 |
| QHD1-71L- I02D18-SG05G04-N | | L | | | | | | | | | | | | | |
| QHD1-61R- I02D18-SG05G04-N | 1889111 | R | 61 | 260 | 350 | 2400 | 63 | 100,5 | 172,9 | 45 | G1″ | 18 | 39 | G3/4″ | 16 |
| QHD1-61L- I02D18-SG05G04-N | 1889114 | L | | | | | | | | | | | | | |
| QHD1-51R- I02D18-SG05G04-N | 1889110 | R | 51 | 260 | 350 | 2600 | 55 | 92,5 | 164,9 | 45 | G1″ | 18 | 39 | G3/4″ | 14 |
| QHD1-51L- I02D18-SG05G04-N | 1889113 | L | | | | | | | | | | | | | |
| QHD1-43R- I02D18-SG05G04-N | | R | 43 | 280 | 350 | 2800 | 50 | 87,0 | 159,4 | 45 | G1″ | 18 | 39 | G3/4″ | 14 |
| QHD1-43L- I02D18-SG05G04-N | | L | | | | | | | | | | | | | |
| QHD1-34R- I02D18-SG04G04-N | 1889109 | R | 34 | 300 | 350 | 3000 | 42 | 80,5 | 152,9 | 39 | G3/4″ | 16 | 39 | G3/4″ | 16 |
| QHD1-34L- I02D18-SG04G04-N | 1889112 | L | | | | | | | | | | | | | |
| QHD1-27R- I02D18-SG04G03-N | | R | 27 | 300 | 350 | 3200 | 39 | 76,5 | 148,9 | 39 | G3/4″ | 16 | 33 | G1/2″ | 14 |
| QHD1-27L- I02D18-SG04G03-N | | L | | | | | | | | | | | | | |
| QHD1-17R- I02D18-SG03G03-N | | R | 17 | 300 | 350 | 3200 | 32 | 68,5 | 140,9 | 33 | G1/2″ | 14 | 33 | G1/2″ | 14 |
| QHD1-17L- I02D18-SG03G03-N | | L | | | | | | | | | | | | | |
| QHD1-10R- I02D18-SG03G03-N | | R | 10 | 290 | 350 | 3200 | 30 | 64,0 | 136,4 | 33 | G1/2″ | 14 | 33 | G1/2″ | 14 |
| QHD1-10L- I02D18-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] | ∅G [mm] | H [mm] | I [mm] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| QHD1-71R- I01D18-CG05G05G04G04-N | | R | 71 | 230 | 350 | 2200 | 65 | 104,0 | 215,5 | 45 | G 1" | 18 | 39 | G 3/4" | 16 |
| QHD1-71L-I01D18-CG05G05G04G04-N | | L | | | | | | | | | | | | | |
| QHD1-61R-I01D18-CG05G05G04G04-N | 1889119 | R | 61 | 260 | 350 | 2400 | 63 | 100,5 | 212,0 | 45 | G 1" | 18 | 39 | G 3/4" | 16 |
| QHD1-61L-I01D18-CG05G05G04G04-N | 1889118 | L | | | | | | | | | | | | | |
| QHD1-51R-I01D18-CG05G05G04G04-N | | R | 51 | 260 | 350 | 2600 | 55 | 92,5 | 204,0 | 45 | G 1" | 18 | 39 | G 3/4" | 16 |
| QHD1-51L-I01D18-CG05G05G04G04-N | | L | | | | | | | | | | | | | |
| QHD1-43R-I01D18-CG05G05G04G04-N | | R | 43 | 280 | 350 | 2800 | 50 | 87,0 | 198,5 | 45 | G 1" | 18 | 39 | G 3/4" | 16 |
| QHD1-43L-I01D18-CG05G05G04G04-N | 1889117 | L | | | | | | | | | | | | | |
| QHD1-34R-I01D18-CG04G04G04G04-N | | R | 34 | 300 | 350 | 3000 | 42 | 80,5 | 192,0 | 39 | G 3/4" | 16 | 39 | G 3/4" | 16 |
| QHD1-34L-I01D18-CG04G04G04G04-N | | L | | | | | | | | | | | | | |
| QHD1-27R-I01D18-CG04G04G04G04-N | | R | 27 | 300 | 350 | 3200 | 39 | 76,5 | 188,0 | 39 | G 3/4" | 16 | 33 | G1/2" | 14 |
| QHD1-27L-I01D18-CG04G04G04G04-N | | L | | | | | | | | | | | | | |
| QHD1-17R-I01D18-CG03G03G03G0-N | | R | 17 | 300 | 350 | 3200 | 32 | 68,5 | 180,0 | 33 | G 1/2" | 14 | 33 | G1/2" | 14 |
| QHD1-17L-I01D18-CG03G03G03G03-N | | L | | | | | | | | | | | | | |
| QHD1-10R-I01D18-CG03G03G03G0-N | | R | 10 | 290 | 350 | 3200 | 30 | 64,0 | 175,5 | 33 | G 1/2" | 14 | 33 | G1/2" | 14 |
| QHD1-10L-I01D18-CG03G03G03G03-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] | ∅G [mm] | H [mm] | I [mm] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| QHD1-71R-U01D17-CG05G05G04G04-N | | R | 71 | 230 | 350 | 2200 | 65 | 104,0 | 194,0 | 45 | G 1" | 18 | 39 | G3/4" | 16 |
| QHD1-71L-U01D17-CG05G05G04G04-N | | L | | | | | | | | | | | | | |
| QHD1-61R-U01D17-CG05G05G04G04-N | 1889104 | R | 61 | 260 | 350 | 2400 | 63 | 100,5 | 190,5 | 45 | G 1" | 18 | 39 | G3/4" | 16 |
| QHD1-61L-U01D17-CG05G05G04G04-N | 1889108 | L | | | | | | | | | | | | | |
| QHD1-51R-U01D17-CG05G05G04G04-N | 1889103 | R | 51 | 260 | 350 | 2600 | 55 | 92,5 | 182,5 | 45 | G 1" | 18 | 39 | G3/4" | 16 |
| QHD1-51L-U01D17-CG05G05G04G04-N | 1889107 | L | | | | | | | | | | | | | |
| QHD1-43R-U01D17-CG05G05G04G04-N | | R | 43 | 280 | 350 | 2800 | 50 | 87,0 | 177,0 | 45 | G 1" | 18 | 39 | G3/4" | 16 |
| QHD1-43L-U01D17-CG05G05G04G04-N | | L | | | | | | | | | | | | | |
| QHD1-34R-U01D17-CG04G04G04G04-N | 1889102 | R | 34 | 300 | 350 | 3000 | 42 | 80,5 | 170,5 | 39 | G3/4" | 16 | 39 | G3/4" | 16 |
| QHD1-34L-U01D17-CG04G04G04G04-N | 1889106 | L | | | | | | | | | | | | | |
| QHD1-27R-U01D17-CG04G04G04G04-N | 1889101 | R | 27 | 300 | 350 | 3200 | 39 | 76,5 | 166,5 | 39 | G3/4" | 16 | 33 | G1/2" | 14 |
| QHD1-27L-U01D17-CG04G04G04G04-N | | L | | | | | | | | | | | | | |
| QHD1-17R-U01D17-CG03G03G03G0-N | 1889100 | R | 17 | 300 | 350 | 3200 | 32 | 68,5 | 158,5 | 33 | G1/2" | 14 | 33 | G1/2" | 14 |
| QHD1-17L-U01D17-CG03G03G03G03-N | 1889105 | L | | | | | | | | | | | | | |
| QHD1-10R-U01D17-CG03G03G03G0-N | | R | 10 | 290 | 350 | 3200 | 30 | 64,0 | 154,0 | 33 | G1/2" | 14 | 33 | G1/2" | 14 |
| QHD1-10L-U01D17-CG03G03G03G03-N | | L | | | | | | | | | | | | | |

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