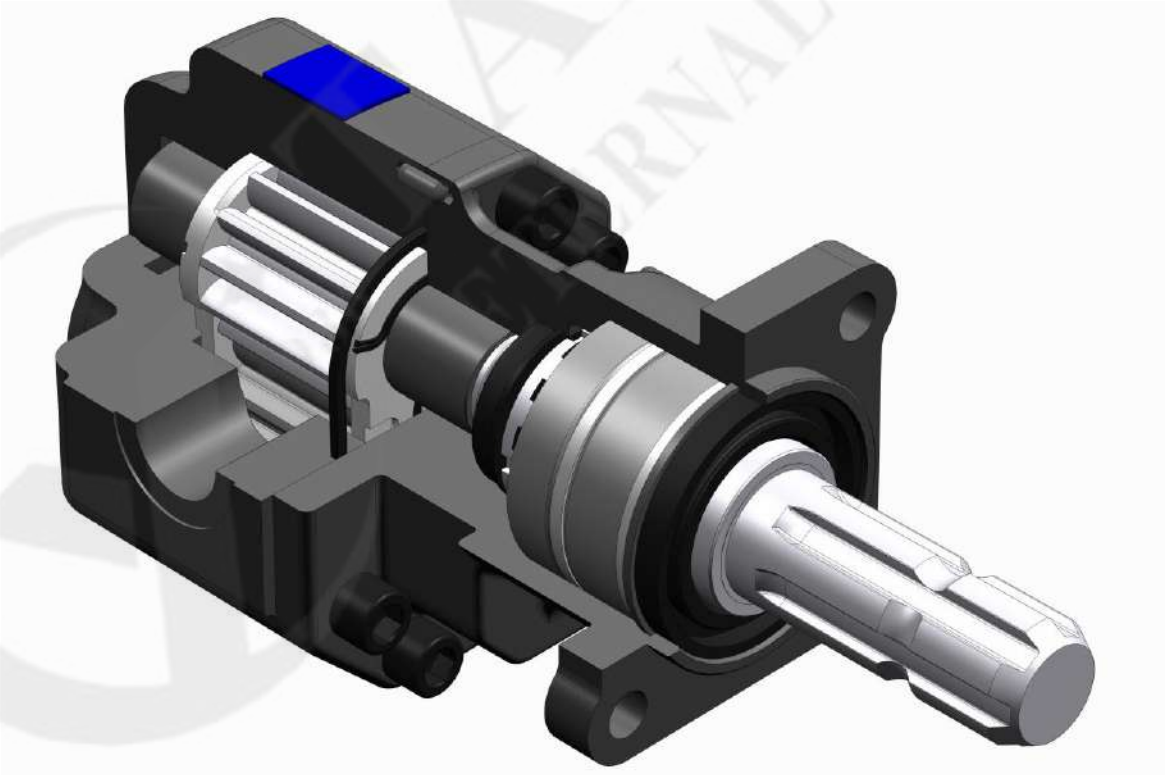
## BASIC DESCRIPTION

QHD line pumps 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 geometric volume size range of this line is $V_g$ = 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. QHD 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 heavy duty steel are optimized for low-noise applications. The axial balance of the pumps is accomplished by means of aluminum alloy thrust plates, in the grooves of which compensating surface shape sealing is positioned. For heavy duty with a weight-bearing drive shaft, the pumps can be equipped with front-end roller bearings. QHD construction enables the pumps to be used already at low revolutions at high pressure.

QHD pumps have been produced in various designs with diverse drives, connecting flanges, fluid inlets and outlets. They comply with the ISO, SAE, UNI as well as other worldwide standard and can be delivered in simple or multiple designs. Furthermore, the pumps are also available in reversible version with internal or external drainage.



## PARAMETER TABLE

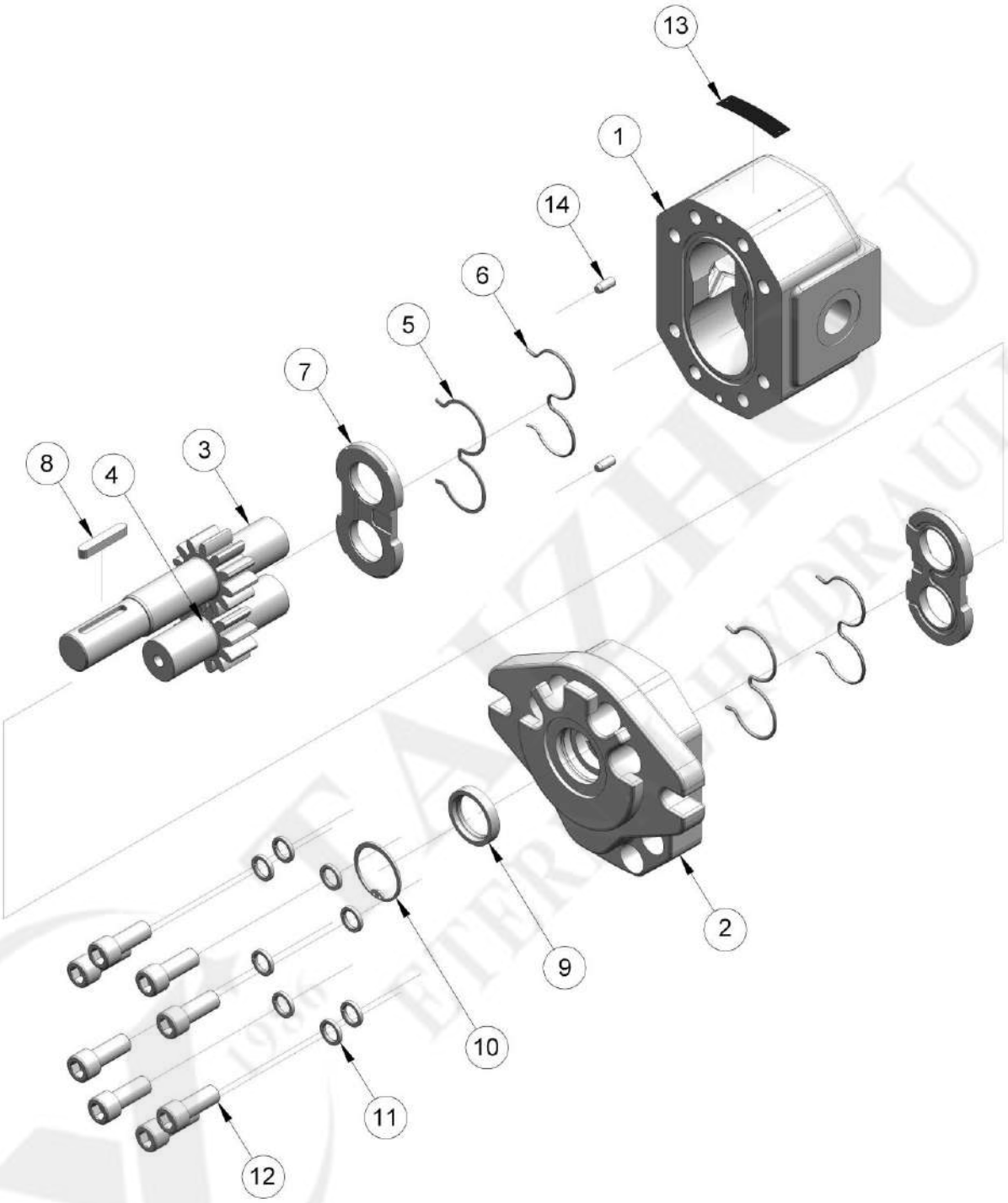
| Nominal Size Parameters | | Sym. | Unit | QHD 10 | QHD 17 | QHD 27 | QHD 31 | QHD 34 |
|---|---|---|---|---|---|---|---|---|
| Actual displacement | | $V_g$ | [$cm^3$] | 10,11 | 17,24 | 27,35 | 30,92 | 33,89 |
| Rotation speed | nominal | $n_n$ | [$min^{-1}$] | 1500 | | | | |
| | minimum | $n_{min}$ | [$min^{-1}$] | 350 | | | | |
| | maximum | $n_{max}$ | [$min^{-1}$] | 3200 | 3200 | 3200 | 3000 | 3000 |
| Pressure at inlet * | minimum | $p_{1min}$ | [bar] | -0,3 | | | | |
| | maximum | $p_{1max}$ | [bar] | 0,5 | | | | |
| Pressure at outlet ** | max. continuous | $p_{2n}$ | [bar] | 290 | 290 | 290 | 290 | 280 |
| | maximum | $p_{2max}$ | [bar] | 310 | 310 | 310 | 310 | 300 |
| | peak | $p_3$ | [bar] | 320 | 320 | 320 | 320 | 310 |
| Nominal flow rate (min.) at $n_n$ and $p_{2n}$ | | $Q_n$ | [$dm^3.min^{-1}$] | 13,7 | 23,2 | 37,0 | 42,5 | 46,8 |
| Maximum flow rate at $n_{max}$ and $p_{2max}$ | | $Q_{max}$ | [$dm^3.min^{-1}$] | 30,0 | 50,3 | 80,0 | 86,0 | 94,4 |
| Nominal input power (max.) at $n_n$ and $p_{2n}$ | | $P_n$ | [kW] | 9,2 | 15,72 | 24,94 | 28,19 | 30,00 |
| Maximum input power at $n_{max}$ and $p_{2max}$ | | $P_{max}$ | [kW] | 20,7 | 32,40 | 51,00 | 58,00 | 60,00 |
| Weight | | m | [Kg] | 10,4 | 10,7 | 11,1 | 11,3 | 11,4 |

| Nominal Size Parameters | | Sym. | Unit | QHD 43 | QHD 51 | QHD 61 | QHD 71 | QHD 82 |
|---|---|---|---|---|---|---|---|---|
| Actual displacement | | $V_g$ | [$cm^3$] | 42,81 | 51,13 | 61,24 | 71,35 | 82,05 |
| Rotation speed | nominal | $n_n$ | [$min^{-1}$] | 1500 | | | | |
| | minimum | $n_{min}$ | [$min^{-1}$] | 350 | | | | |
| | maximum | $n_{max}$ | [$min^{-1}$] | 2700 | 2600 | 2400 | 2200 | 2000 |
| Pressure at inlet * | minimum | $p_{1min}$ | [bar] | -0,3 | | | | |
| | maximum | $p_{1max}$ | [bar] | 0,5 | | | | |
| Pressure at outlet ** | max. continuous | $p_{2n}$ | [bar] | 270 | 240 | 220 | 200 | 190 |
| | maximum | $p_{2max}$ | [bar] | 290 | 260 | 240 | 220 | 210 |
| | peak | $p_3$ | [bar] | 300 | 270 | 250 | 230 | 220 |
| Nominal flow rate (min.) at $n_n$ and $p_{2n}$ | | $Q_n$ | [$dm^3.min^{-1}$] | 59,0 | 70,4 | 84,2 | 98,0 | 113,2 |
| Maximum flow rate at $n_{max}$ and $p_{2max}$ | | $Q_{max}$ | [$dm^3.min^{-1}$] | 107,4 | 122,7 | 135,4 | 144,5 | 151,7 |
| Nominal input power (max.) at $n_n$ and $p_{2n}$ | | $P_n$ | [kW] | 36,80 | 40,50 | 46,80 | 50,20 | 53,09 |
| Maximum input power at $n_{max}$ and $p_{2max}$ | | $P_{max}$ | [kW] | 66,20 | 70,20 | 74,90 | 73,60 | 70,90 |
| Weight | | m | [Kg] | 11,7 | 12,1 | 12,5 | 12,9 | 13,3 |

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

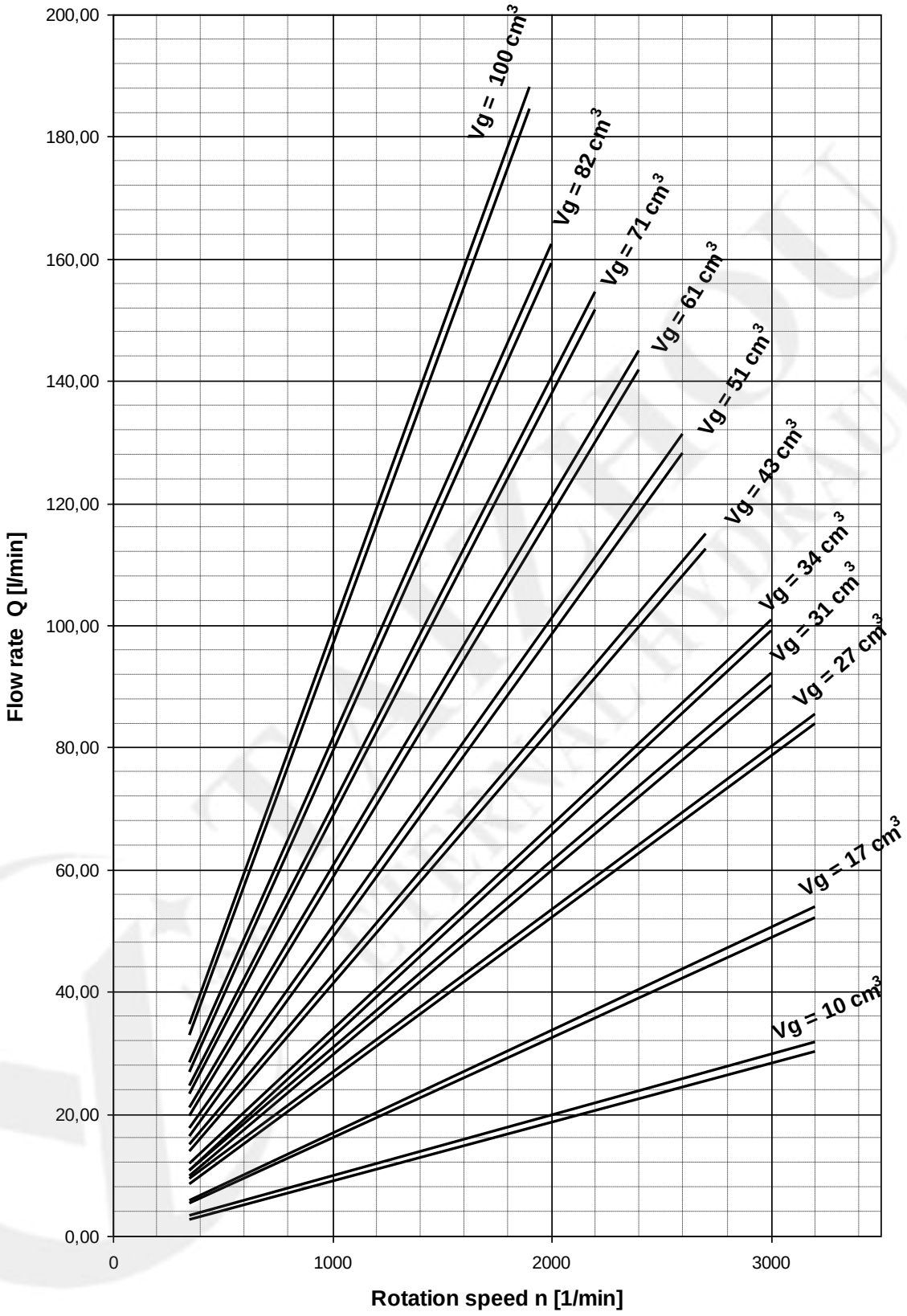
** Outlet pressure in the reversible design is **10% lower** than shown in the table (depending on operating conditions - it is necessary to consult with the manufacturer).

BASIC PARTS



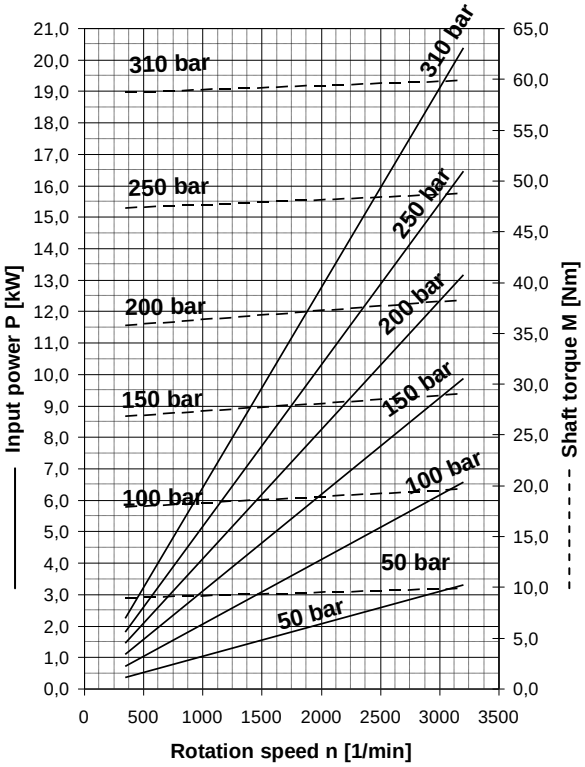

1. Body
2. Flange
3. Driving gear
4. Driven gear
5. Thrust pressure seal
6. Sealing protective plate
7. Pressure plate
8. Key
9. Shaft seal
10. Safety ring
11. Lock washer
12. Connection bolts
13. Tag
14. Pin

## FLOW RATE AND INPUT POWER CURVES

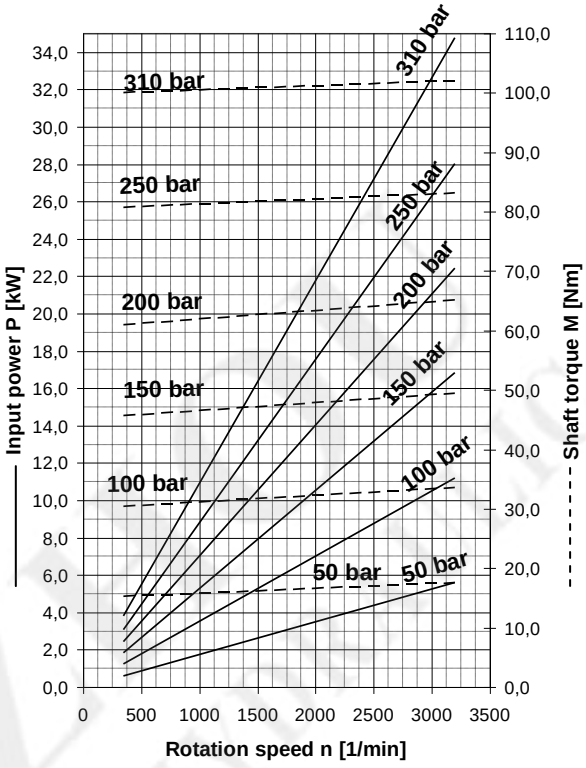



The curves above are valid for the ISO Vg 46 oil at temperature t = 45°C.

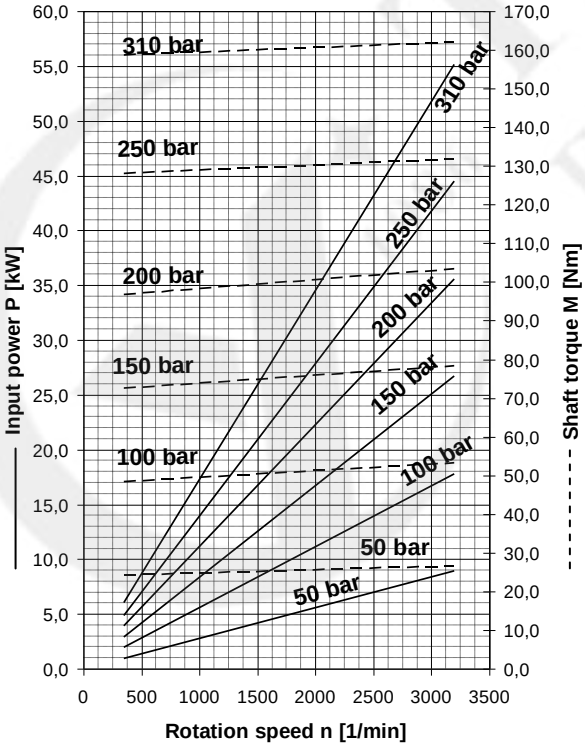
## 10 cm³



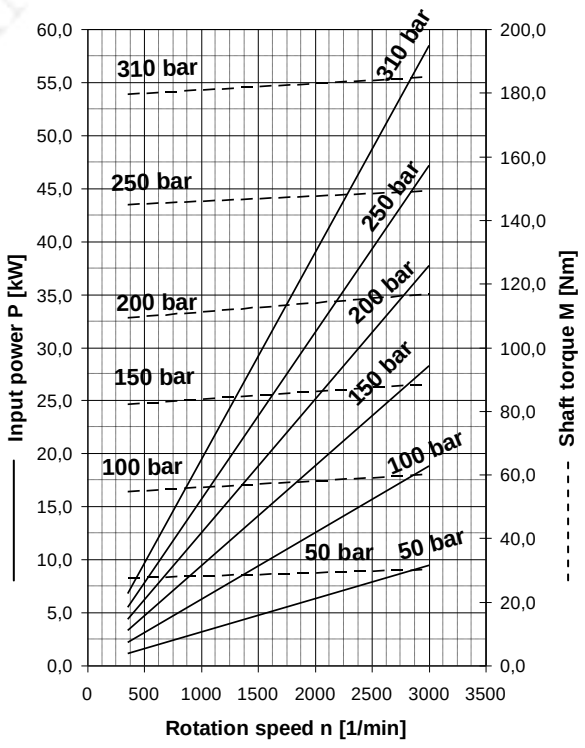

## 17 cm³



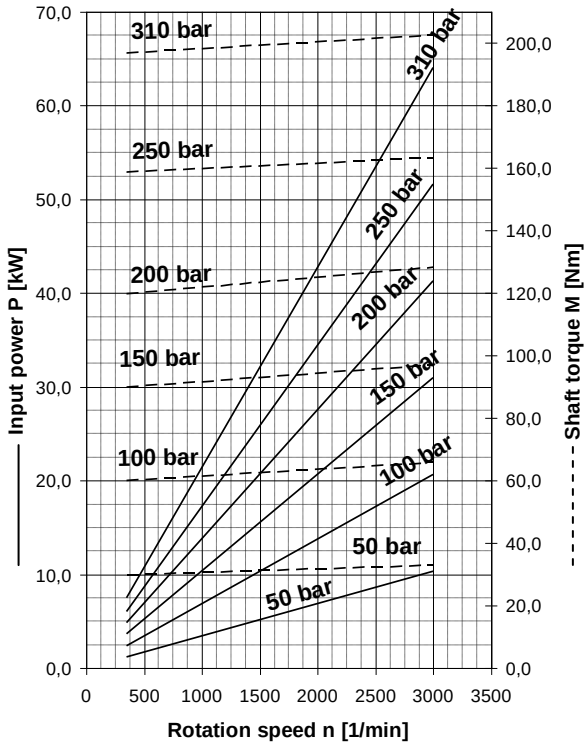

## 27 cm³



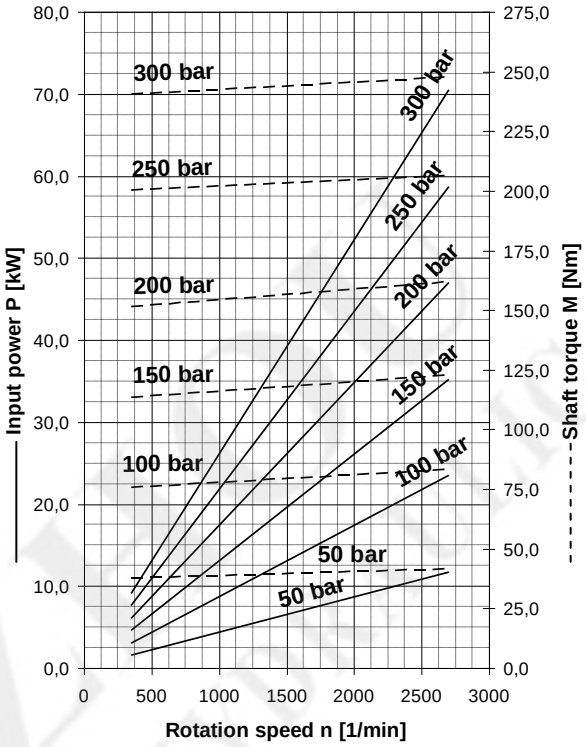

## 31 cm³



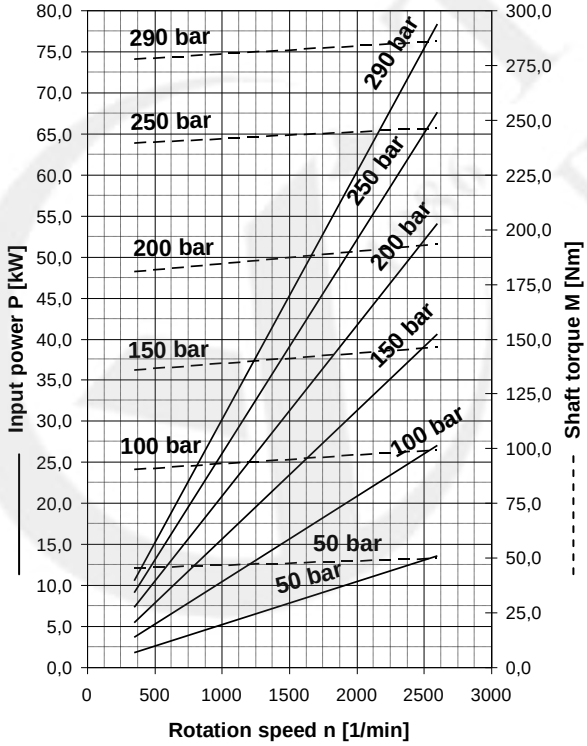
## 34 cm³



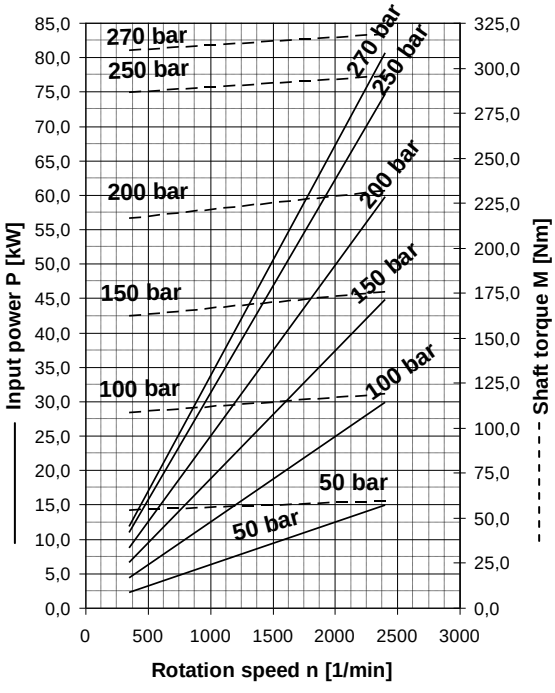

## 43 cm³



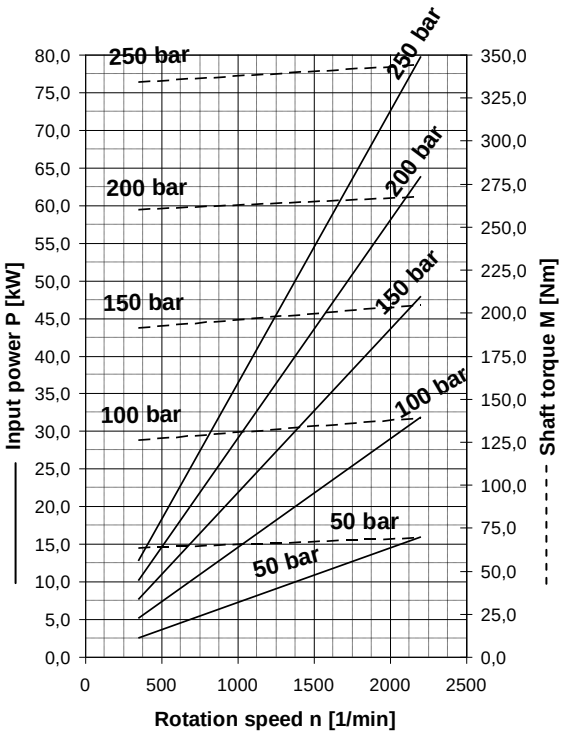

## 51 cm³



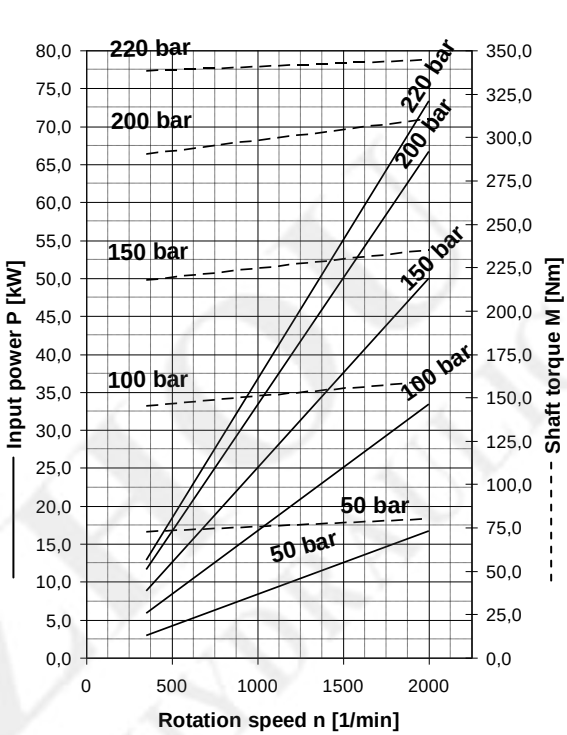

## 61 cm³



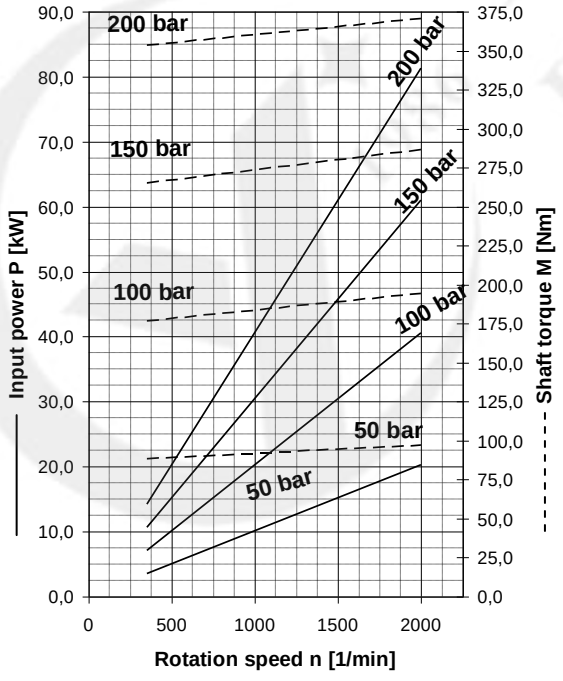
## 71 cm³




## 82 cm³




## 100 cm³



## CALCULATION FORMULAS

**Flow rate**

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

| | | |
|---|---|---|
| $V_g$ | $[cm^3]$ | geometric pump volume |
| n | $[min^{-1}]$ | rotation speed |
| $\eta_v$ | [-] | volumetric efficiency |

**Displacement**

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

**Shaft torque**

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

| | | |
|---|---|---|
| p | [bar] | required pressure at the outlet port |
| $\eta_v$ | [-] | mechanic efficiency |

**Input power**

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

| | | |
|---|---|---|
| $\eta_t$ | [-] | total efficiency |

## PUMP EFFICIENCY

### Volumetric efficiency $\eta_v$

Volumetric efficiency determines the amount of flow losses. Its value varies: $\eta_v$ = 0,92 ÷ 0,98 (depending on the speed and the pressure at the pressure port). Volumetric efficiency can be expressed as follows:

$$\eta_v = \frac{Q_{skut}}{Q_{teor}} \quad [-]$$

| | | |
|---|---|---|
| $Q_{skut}$ | $[dm^3.min^{-1}]$ | actual flow rate |
| $Q_{teor}$ | $[dm^3.min^{-1}]$ | theoretical flow rate |

### Mechanical efficiency $\eta_m$

Mechanical efficiency determines the hydraulic-mechanical losses. Its value varies at about $\eta_m$ = 0,85.
Mechanical efficiency can be expressed as follows:

$$\eta_m = \frac{M_{teor}}{M_{skut}} \quad [-]$$

| | | |
|---|---|---|
| $M_{skut}$ | [N.m] | actual shaft torque |
| $M_{teor}$ | [N.m] | theoretical shaft torque |

### Total efficiency $\eta_t$

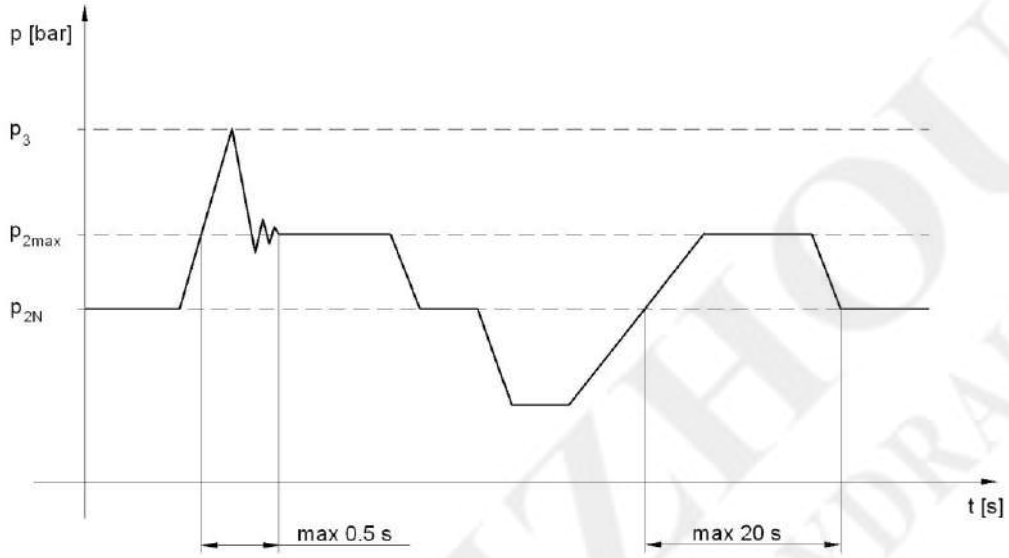
Total efficiency is defined as the arithmetic product of $\eta_v$ and $\eta_m$ and expresses the difference between the theoretical and the required actual input power:

$$\eta_t = \eta_V \cdot \pi_m = \frac{P_{teor}}{P_{skut}} \quad [-]$$

| | | |
|---|---|---|
| $P_{skut}$ | [kW] | actual input power |
| $P_{teor}$ | [kW] | theoretical input power |

## COMPRESSION LOAD

| | | |
|---|---|---|
| $p_{2N}$ | **max. continuous pressure** | maximum working pressure at which the pump can be operated without time-limitation |
| $p_{2max}$ | **maximum pressure** | maximum short-term (max. 20s) design pressure |
| $p_3$ | **peak pressure** | short-term pressure (split second) arising in case of a sudden change of the operating mode; any excess of this pressure during operation is inadmissible. |




## WORKING LIQUID

- Mineral oils for hydraulic drives
- Hydraulic liquids based on vegetable oils, suitable for hydrostatic drives

**Liquid temperature**

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

**Cinematic viscosity**

during continuous operation: $\nu = 20 \div 80$ [$mm^2 . s^{-1}$]
max.: $\nu = 1200$ [$mm^2 . s^{-1}$]
min.: $\nu = 10$ [$mm^2 . s^{-1}$]

**Filtration coefficient** $\beta_\alpha$

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

**Contamination class ISO 4406**

19/16 (for pressure $p_2 < 200$ bar)
17/14 (for pressure $p_2 > 200$ bar)

**Contamination class NAS 1638**

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

## DIRECTION OF ROTATION

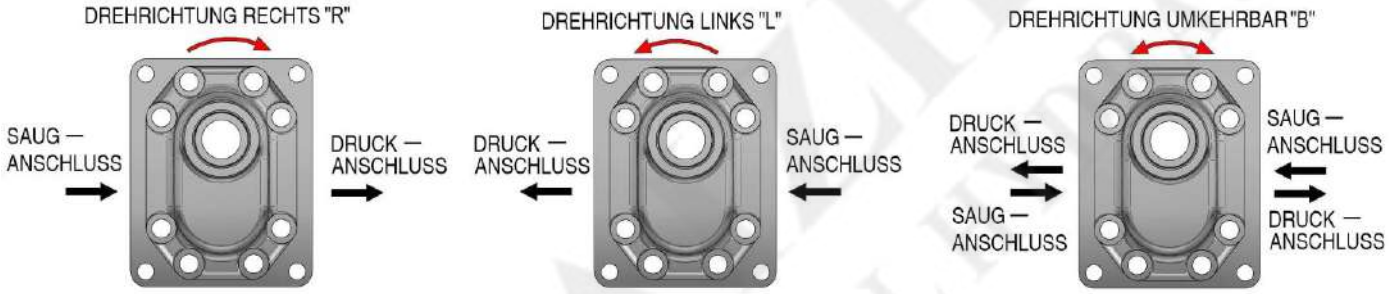
When determining the direction of rotation, always look at the drive shaft. The pump is allowed to be operated in the defined direction of rotation only.

## FURTHER REQUIREMENTS

The drive mechanism is not allowed to produce axial or radial load of the pump shaft, unless this is expressly allowed for pumps with a front end bearing.
All requirements influencing the pump's technical parameters and properties are referred to in the respective service instructions, technical conditions as well as the test specification of the manufacturer.

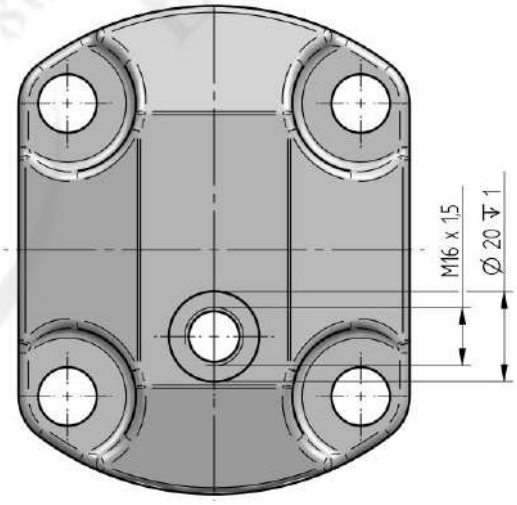
## DIRECTION OF ROTATION

When determining the direction of rotation, always look at the drive shaft. The pump is allowed to be operated in the defined direction of rotation only.




## BI-DIRECTIONAL VERSION

Pumps, which can optionally rotate clockwise or anti-clockwise, have a different internal arrangement requiring drainage. There are two types of drainage - internal drainage and external drainage. The internal drainage is always connected with the discharge port by means of valves. The external drainage is solved by means of an orifice located in the cover opposite the driven gear (see image below).



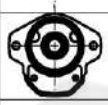
## ORDER KEY – SIMPLE VERSION

QHD - 51 R - R1 C1 - S G0 G4 - N . 001

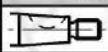
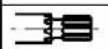
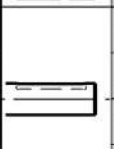
| Code | Type |
|---|---|
| QHD | QHD Series Gear Pump |

| 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 |
| 100 | 99,98 |
| XX | Other displacements on request |

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

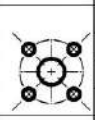
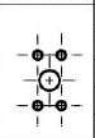
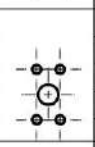
| Code | Flange design | |
|---|---|---|
| R1 |  | Rectangular flange, centre ring ∅ 50,8 spacing 98,5 x 128 |
| R4 | | Rectangular flange, centre ring ∅105 spacing 102,5 x 145 |
| S2 |  | SAE B – 2 aperture |
| S3 | | SAE C – 2 aperture |
| S4 | | SAE B – 4 aperture |
| I1 |  | ISO, centre ring ∅ 80 front end bearing |
| I2 | | ISO, centre ring ∅ 80 |
| U1 |  | UNI |
| B1 |  | Flange 4 aperture centre ring ∅ 90 spacing 110 x 86 |
| Z | | Special design |

| Code | Location of suction and pressure port | |
|---|---|---|
| S |  | Side (in the body) |
| R |  | Rear (in the cover) |
| C |  | Combination |

| Code | Drive shaft design | |
|---|---|---|
| C1 |  | Taper 1:8 |
| C2 |  | Taper 1:5 |
| D1 |  | Grooving 25x1,5 ČSN 014950 |
| D2 |  | Grooving SAE 13T |
| D3 | | Grooving SAE 15T |
| D4 |  | Grooving UNI 221 |
| D5 |  | Straight-flanked grooving DIN 5462 A8x32x36x6 |
| D6 | | Straight-flanked grooving 6 grooves, ∅ 20 |
| D7 | | Straight-flanked grooving 6 grooves, ∅ 19 |
| D8 |  | Grooving B 22x19 DIN 5482 |
| D9 |  | Straight-flanked grooving DIN 9611 |
| V1 |  | Cylindric SAE ∅22,225 |
| V2 | | Cylindric ∅20h7 |
| V3 | | Cylindric ∅25 |
| V4 | | Cylindric ∅25,4 |
| Z | | Special design |

| Code | Special arrangements |
|---|---|
| - | No special arrangements |
| 001 | Two-edged shaft seal |
| 004 | Without shaft seal |
| 007 | Slew flance ocket |
| 008 | With front end bearing light design |
| 050 | Bulit-in bleeder |

| Code | Sealing materiál |
|---|---|
| N | NBR |
| V | FKM (VITON) |
| H | HNBR |

| Code | Design of suction and pressure port | |
|---|---|---|
| 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 |
| G07 | | Thread BSP G1 1/2 |
| U03 |  | Thread 3/4 - 16 UNF |
| 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 |
| A06 | | Flanged fitting SAE 2 |
| E02 |  | Flanged fitting 3/4 |
| E03 | | Flanged fitting 1 |
| E04 | | Flanged fitting 1 1/4 |
| E05 | | Flanged fitting 1 1/2 |
| E06 | | Flanged fitting 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 |
| S01 | | Flanged fitting, sguare 4xM8/46x46 |
| Z | | Special design |

## ORDER KEY – MULTIPLE VERSION

QHD - 43 / 43 R - R1 D1 - S G03 G04 / G03 G04 - V . 001

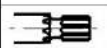
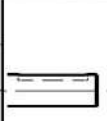
| Code | Type |
|---|---|
| QHD | QHD Series Gear Pump |

| 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 |
| 100 | 99,98 |
| XX | Other displacements on request |

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

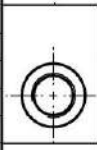
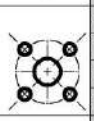
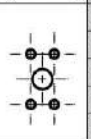
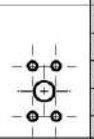
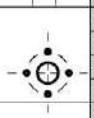
| Code | Flange design | |
|---|---|---|
| R1 |  | Rectangular flange, centre ring ∅ 50,8 spacing 98,5 x 128 |
| R4 | | Rectangular flange, centre ring ∅105 spacing 102,5 x 145 |
| S2 |  | SAE B – 2 aperture |
| S3 | | SAE C – 2 aperture |
| S4 | | SAE B – 4 aperture |
| I1 |  | ISO, centre ring ∅ 80 front end bearing |
| I2 | | ISO, centre ring ∅ 80 |
| U1 |  | UNI |
| B1 |  | Flange 4 aperture centre ring ∅ 90 spacing 110 x 86 |
| Z | | Special design |

| Code | Location of suction and pressure port | |
|---|---|---|
| S |  | Side (in the body) |
| C |  | Combination |

| Code | Drive shaft design | |
|---|---|---|
| C1 |  | Taper 1:8 |
| C2 |  | Taper 1:5 |
| D1 |  | Grooving 25x1,5 ČSN 014950 |
| D2 |  | Grooving SAE 13T |
| D3 | | Grooving SAE 15T |
| D4 |  | Grooving UNI 221 |
| D5 |  | Straight-flanked grooving DIN 5462 A8x32x36x6 |
| D6 | | Straight-flanked grooving 6 grooves, ∅ 20 |
| D7 | | Straight-flanked grooving 6 grooves, ∅ 19 |
| D8 |  | Grooving B 22x19 DIN 5482 |
| D9 |  | Straight-flanked grooving DIN 9611 |
| V1 |  | Cylindric SAE ∅22,225 |
| V2 | | Cylindric ∅20h7 |
| V3 | | Cylindric ∅25 |
| V4 | | Cylindric ∅25,4 |
| Z | | Special design |

| Code | Special arrangements |
|---|---|
| - | No special arrangements |
| 001 | Two-edged shaft seal |
| 004 | Without shaft seal |
| 007 | Slew flance ocket |
| 008 | With front end bearing light design |
| 050 | Bulit-in bleeder |

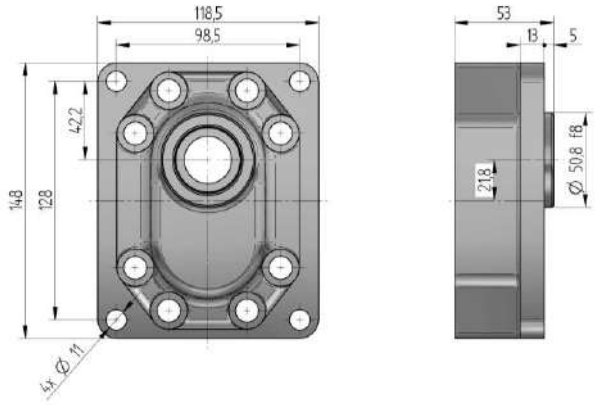
| Code | Sealing materiál |
|---|---|
| N | NBR |
| V | FKM (VITON) |
| H | HNBR |

| Code | Design of suction and pressure port | |
|---|---|---|
| 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 |
| G07 | | Thread BSP G1 1/2 |
| U03 |  | Thread 3/4 - 16 UNF |
| 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 |
| A06 | | Flanged fitting SAE 2 |
| E02 |  | Flanged fitting 3/4 |
| E03 | | Flanged fitting 1 |
| E04 | | Flanged fitting 1 1/4 |
| E05 | | Flanged fitting 1 1/2 |
| E06 | | Flanged fitting 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 |
| S01 | | Flanged fitting, sguare 4xM8/46x46 |
| Z | | Special design |

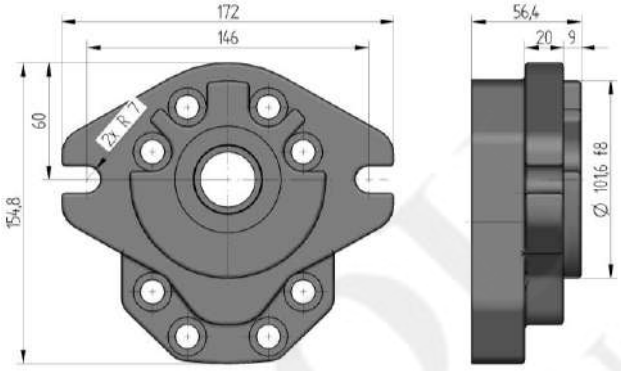
# DESIGN OF FLANGES, DRIVE SHAFTS AND INLET PORTS

**Flanges**

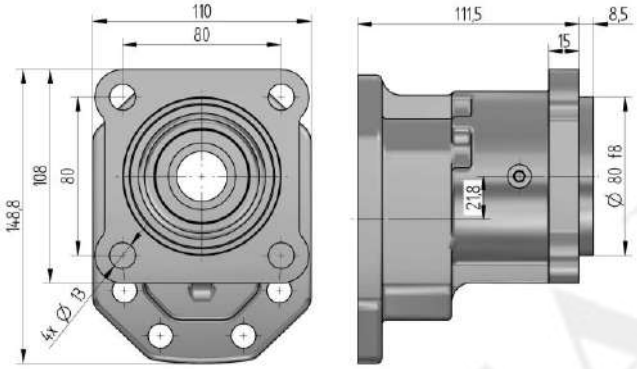
**R1:**



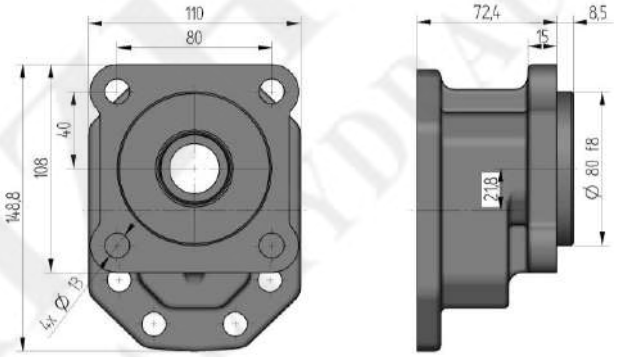

**S2:**



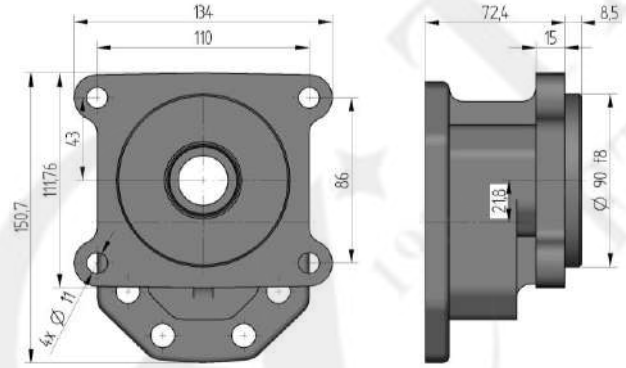

**I1:**




**I2:**

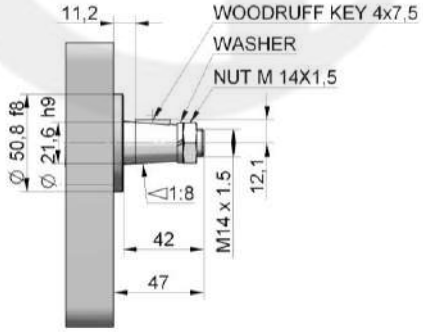



**B1:**

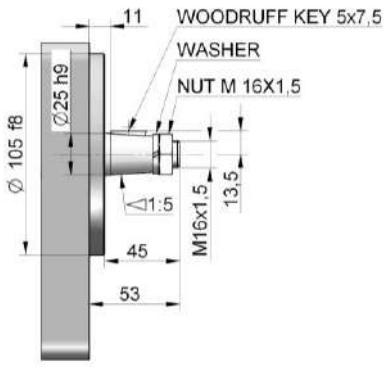



**Drive shafts:**

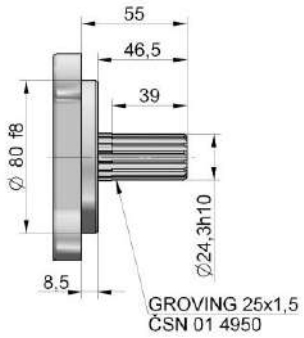
**C1:**



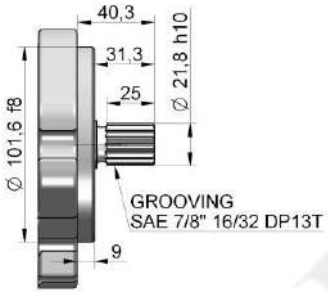

**C2:**



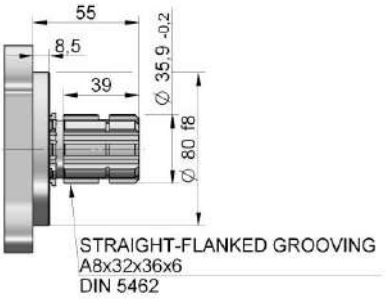
**D1:**



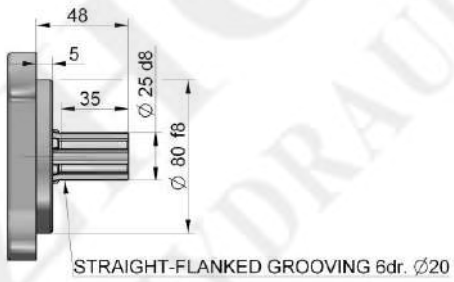

**D2:**



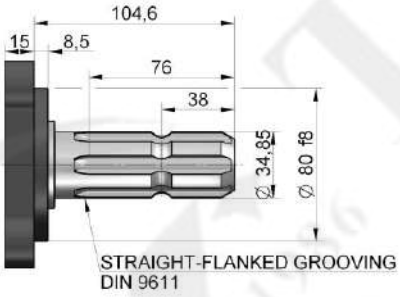

**D5:**



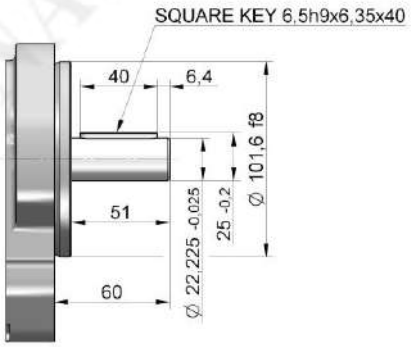

**D6:**



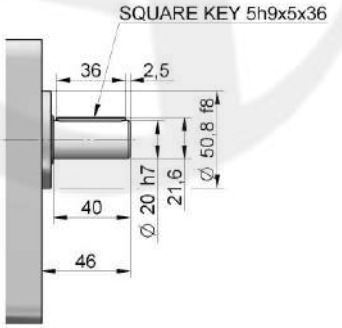

**D9:**



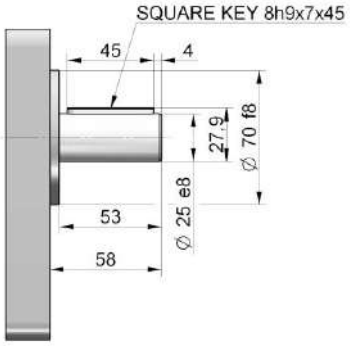

**V1:**



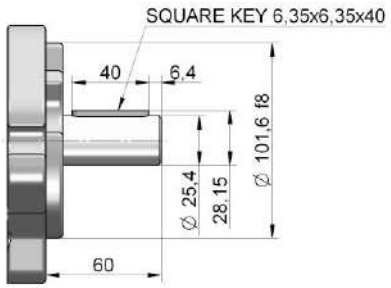

**V2:**




**V3:**

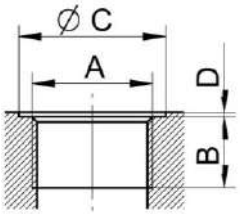


**V4:**



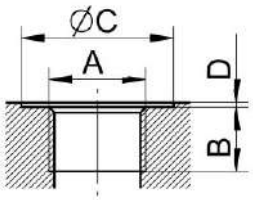

## INLET AND OUTLET PORTS

**Metric thread ISO 6149**



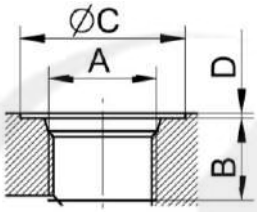

| Code | A | B | C | D |
|---|---|---|---|---|
| M08 | M 27x1,5 | 16 | 33 | 1 |
| M09 | M 27x2 | 16 | 33 | 1 |
| M11 | M 33x1,5 | 18 | 40 | 1 |
| M12 | M 33x2 | 18 | 40 | 1 |
| M15 | M 48x2 | 16 | 56 | 1 |

**BSP pipe thread ISO 228 - 1**



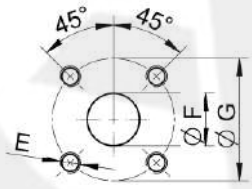

| Code | A | B | C | D |
|---|---|---|---|---|
| G03 | G1/2 | 18 | 33 | 1 |
| G04 | G3/4 | 16 | 39 | 1 |
| G05 | G1 | 18 | 45 | 1 |
| G06 | G1 1/4 | 18 | 57 | 1 |
| G07 | G1 1/2 | | | 1 |

**UNF thread SAE**



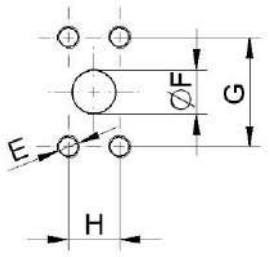

| Code | A | B | C | D |
|---|---|---|---|---|
| U03 | 3/4 – 16 UNF | 15 | 30 | 1 |
| U04 | 7/8 – 14 UNF | 17 | 34 | 1 |
| U05 | 1–1/16–12UNF | 19 | 41 | 1 |
| U07 | 1–5/16–12UNF | 23 | 49 | 1 |
| U08 | 1–5/8–12UNF | 23 | 58 | 1 |

**Flanged fittings DIN 8901/8902**



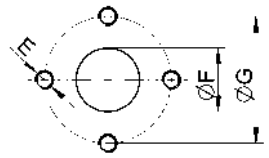

| Code | E | F | G |
|---|---|---|---|
| H08 | M8 | 20 | 40 |
| H09 | M8 | 18 | 55 |
| H10 | M8 | 25 | 55 |
| H11 | M10 | 26 | 51 |

**Flanged fittings „rectsngle“**



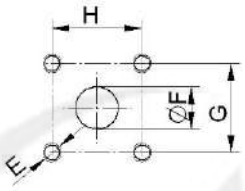

| Code | E | F | G | H |
|---|---|---|---|---|
| A02 | 3/8-16UNC-2B | 19 | 47,6 | 22,2 |
| A03 | 3/8-16UNC-2B | 25,4 | 52,4 | 26,2 |
| A04 | 7/16-14UNC-2B | 30,5 | 58,7 | 30,2 |
| A05 | 1/2-13UNC-2B | 39,3 | 69,8 | 35,7 |
| A06 | 1/2-13UNC-2B | 51 | 77,8 | 42,9 |
| E02 | M10 | 19 | 47,6 | 22,2 |
| E03 | M10 | 25,4 | 52,4 | 26,2 |
| E04 | M10 | 30,5 | 58,7 | 30,2 |
| E05 | M12 | 39,3 | 69,8 | 35,7 |
| E06 | M12 | 51 | 77,8 | 42,9 |

**Flanged fittings „cross“**

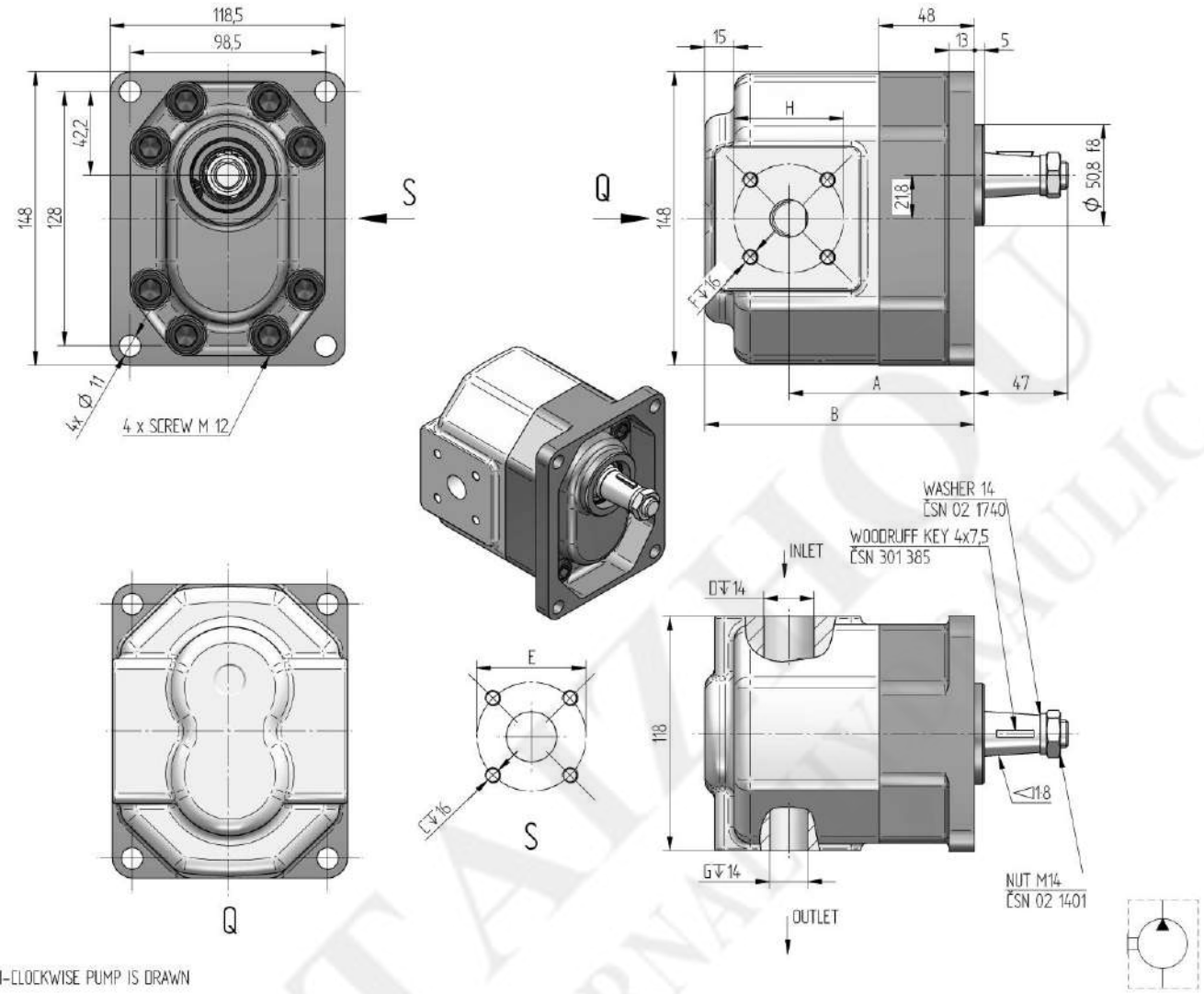



| Code | E | F | G |
|---|---|---|---|
| K03 | M8 | 18 | 40 |
| K04 | M10 | 26 | 51 |
| K05 | M8 | 18 | 55 |
| K06 | M8 | 25 | 55 |

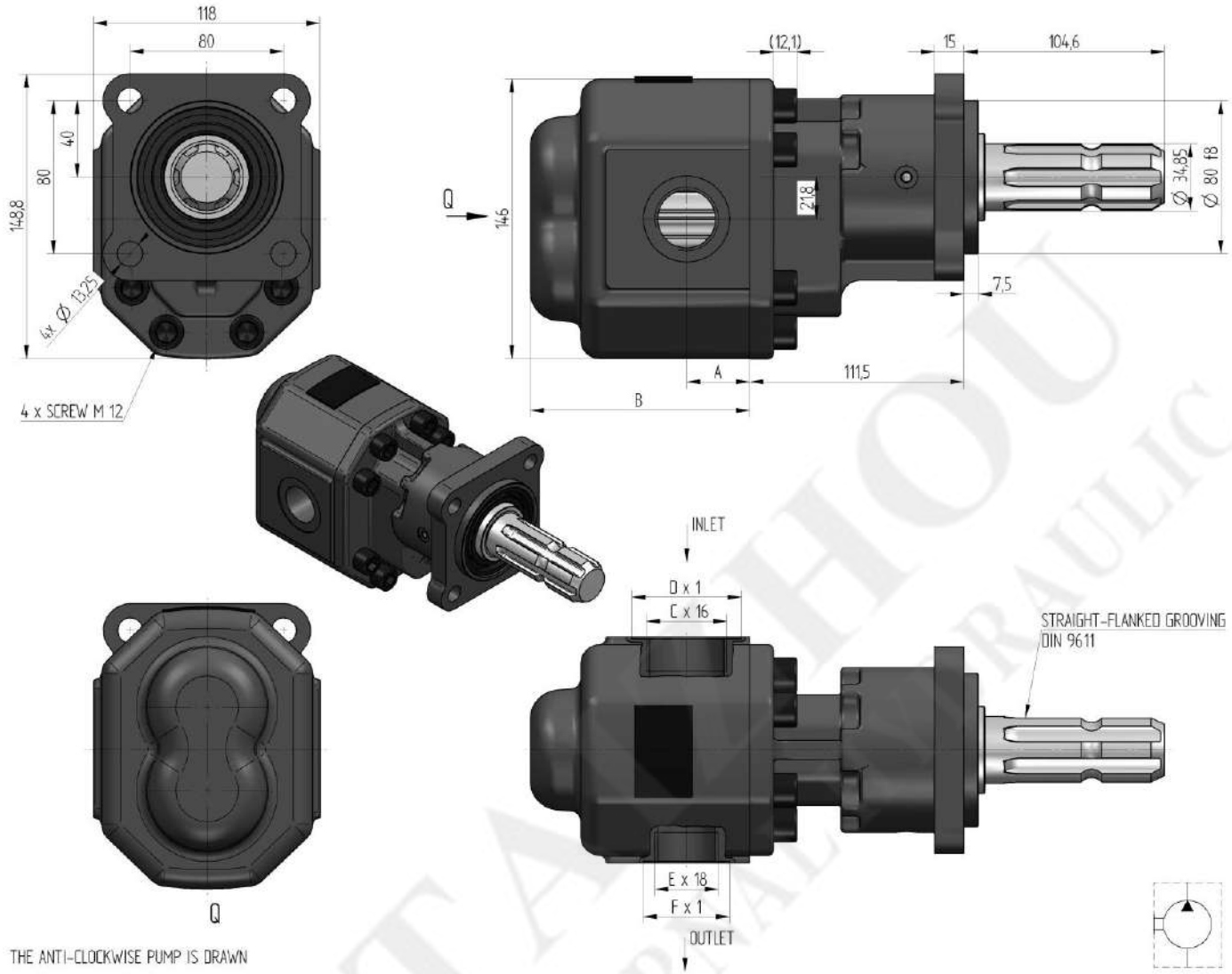
**Flanged fittings ISO**



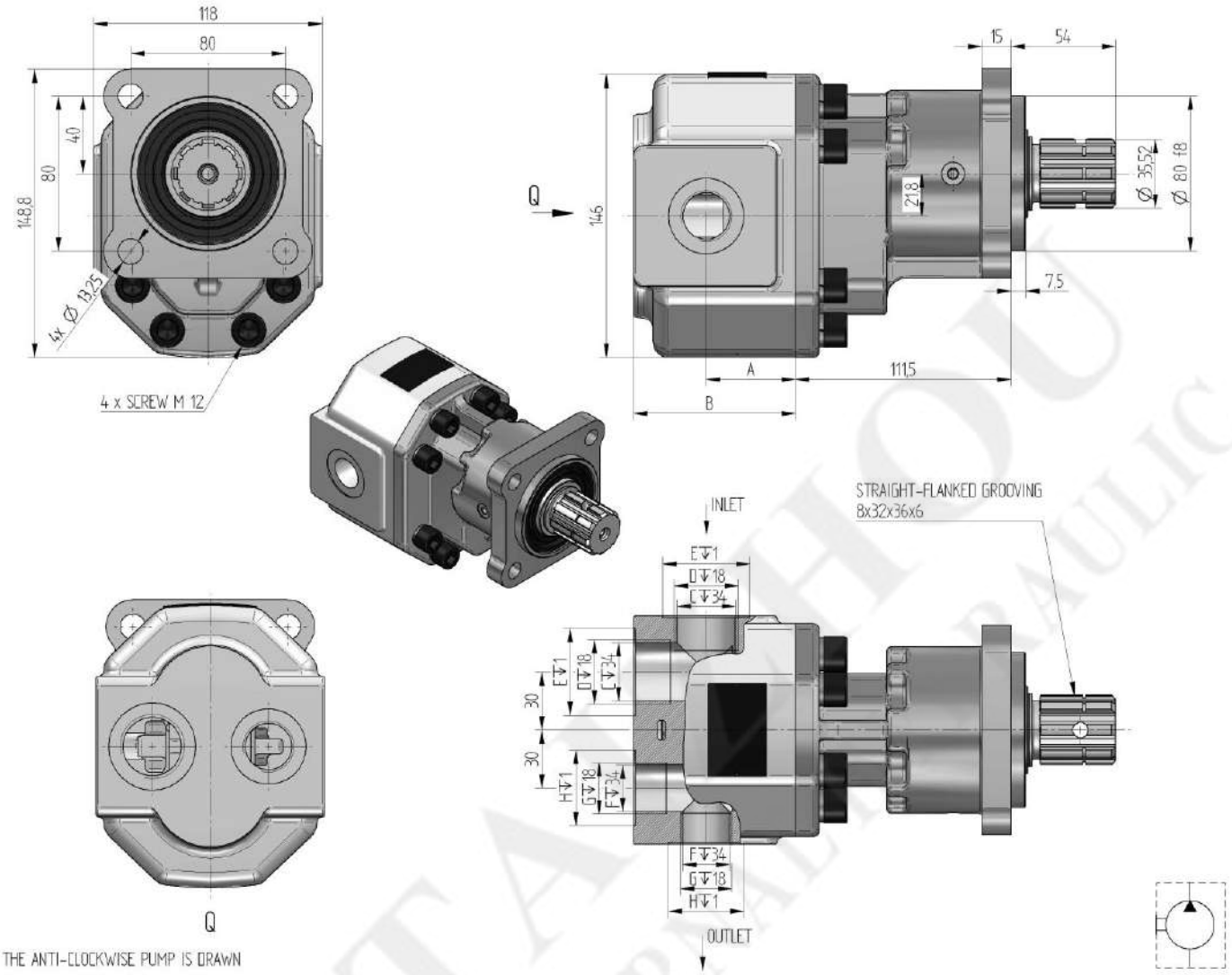

| Code | E | F | G | H |
|---|---|---|---|---|
| S01 | M8 | 28 | 46 | 46 |



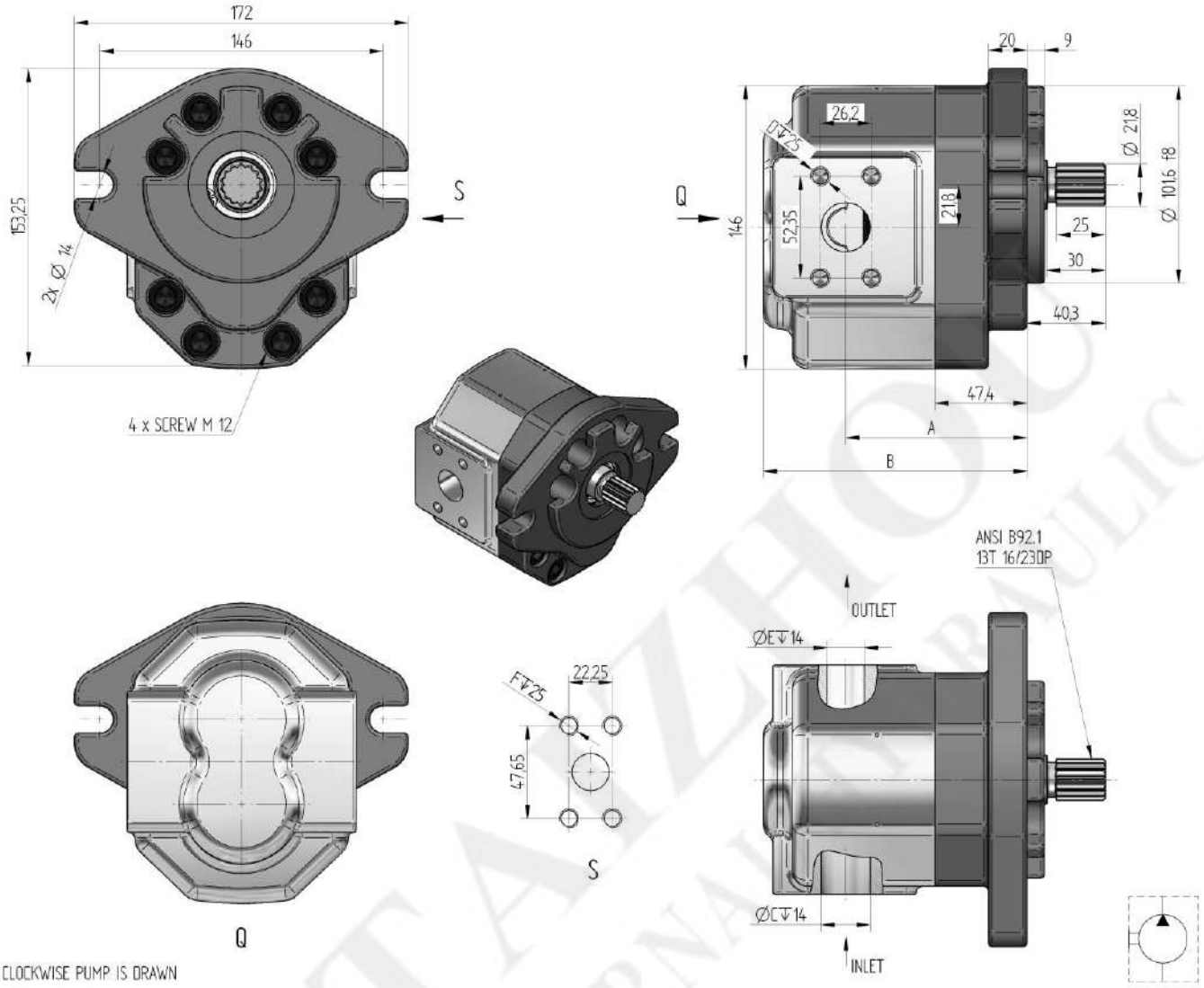

| ORDER KEY | PURCH. CODE | DIRECT. OF ROT. | DISPLA-CEMENT [cm³/1] | CONT. PRESS. [bar] | MIN. SPEED [min⁻¹] | MAX. SPEED [min⁻¹] | A | B | C | D | E | F | G | H |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| OHD-51R-R1C1-SH10H09-N | 188 9005 | R | 51 | 290 | 350 | 2600 | 114,0 | 156,5 | M8 | Ø25,4 | Ø55 | M8 | Ø19,1 | Ø55 |
| OHD-51L-R1C1-SH10H09-N | | L | | | | | | | | | | | | |
| OHD-43R-R1C1-SH10H09-N | 188 9004 | R | 43 | 300 | 350 | 2700 | 107,0 | 149,5 | M8 | Ø25,4 | Ø55 | M8 | Ø19,1 | Ø55 |
| OHD-43L-R1C1-SH10H09-N | | L | | | | | | | | | | | | |
| OHD-34R-R1C1-SH10H09-N | 188 9003 | R | 34 | 310 | 350 | 3000 | 99,5 | 142,0 | M8 | Ø25,4 | Ø55 | M8 | Ø19,1 | Ø55 |
| OHD-34L-R1C1-SH10H09-N | | L | | | | | | | | | | | | |
| OHD-27R-R1C1-SH10H09-N | 188 9002 | R | 27 | 310 | 350 | 3200 | 94,0 | 136,5 | M8 | Ø25,4 | Ø55 | M8 | Ø19,1 | Ø55 |
| OHD-27L-R1C1-SH10H09-N | | L | | | | | | | | | | | | |
| OHD-17R-R1C1-SH10H09-N | | R | 17 | 310 | 350 | 3200 | 85,8 | 128,0 | M8 | Ø25,4 | Ø55 | M8 | Ø19,1 | Ø55 |
| OHD-17L-R1C1-SH10H09-N | | L | | | | | | | | | | | | |
| OHD-10R-R1C1-SH10H09-N | | R | 10 | 310 | 350 | 3200 | 85,5 | 128,0 | M8 | Ø25,4 | Ø55 | M8 | Ø19,1 | Ø55 |
| OHD-10L-R1C1-SH10H09-N | | L | | | | | | | | | | | | |




| ORDER KEY | PURCH. CODE | DIRECT. OF ROT. | DISPLA-CEMENT [cm³/1] | CONT. PRESS. [bar] | MIN. SPEED [min⁻¹] | MAX. SPEED [min⁻¹] | A | B | C | D | E | F | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | DIMENSION [mm] | | | | | | | |
| OHD-100R-I1D9-SG05G06-N | 188 9001 | R | 100 | 200 | 350 | 1900 | 49,0 | 147,0 | ∅ 45 | G 1“ | ∅ 57 | G1 1/4" | | |
| OHD-100L-I1D9-SG05G06-N | | L | | | | | | | | | | | | |
| OHD-82R-I1D9-SG05G06-N | | R | 82 | 220 | 350 | 2000 | 41,5 | 132,0 | ∅ 45 | G 1“ | ∅ 57 | G1 1/4" | | |
| OHD-82L-I1D9-SG05G06-N | | L | | | | | | | | | | | | |
| OHD-71R-I1D9-SG05G06-N | | R | 71 | 250 | 350 | 2200 | 37,0 | 132,0 | ∅ 45 | G 1“ | ∅ 57 | G1 1/4" | | |
| OHD-71L-I1D9-SG05G06-N | | L | | | | | | | | | | | | |
| OHD-61R-I1D9-SG05G06-N | | R | 61 | 270 | 350 | 2400 | 33,0 | 114,5 | ∅ 45 | G 1“ | ∅ 57 | G1 1/4" | | |
| OHD-61L-I1D9-SG05G06-N | | L | | | | | | | | | | | | |




| ORDER KEY | PURCH. CODE | DIRECT. OF ROT. | DISPLA-CEMENT [cm³/1] | CONT. PRESS. [bar] | MIN. SPEED [min⁻¹] | MAX. SPEED [min⁻¹] | A | B | C | D | E | F | G | H |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| OHD-51R-I1D5-CG05G04-N | | R | 51 | 290 | 350 | 2600 | 66,0 | 101,4 | ∅30,50 | G1“ | ∅45 | ∅24,25 | G3/4“ | ∅39 |
| OHD-51L-I1D5-CG05G04-N | | L | | | | | | | | | | | | |
| OHD-43R-I1D5-CG05G04-N | | R | 43 | 300 | 350 | 2700 | 59,0 | 94,4 | ∅30,50 | G1“ | ∅45 | ∅24,25 | G3/4“ | ∅39 |
| OHD-43L-I1D5-CG05G04-N | | L | | | | | | | | | | | | |
| OHD-34R-I1D5-CG04G04-N | | R | 34 | 310 | 350 | 3000 | 51,5 | 86,9 | ∅24,25 | G3/4“ | ∅39 | ∅24,25 | G3/4“ | ∅39 |
| OHD-34L-I1D5-CG04G04-N | | L | | | | | | | | | | | | |
| OHD-27R-I1D5-CG04G04-N | | R | 27 | 310 | 350 | 3200 | 46,0 | 81,4 | ∅24,25 | G3/4“ | ∅39 | ∅24,25 | G3/4“ | ∅39 |
| OHD-27L-I1D5-CG04G04-N | | L | | | | | | | | | | | | |
| OHD-17R-I1D5-CG03G03-N | | R | 17 | 310 | 350 | 3200 | 37,2 | 72,9 | ∅18,80 | G1/2“ | ∅33 | ∅18,80 | G1/2“ | ∅33 |
| OHD-17L-I1D5-CG03G03-N | 188 9010 | L | | | | | | | | | | | | |
| OHD-10R-I1D5-CG03G03-N | | R | 10 | 310 | 350 | 3200 | 31,2 | 66,9 | ∅18,80 | G1/2“ | ∅33 | ∅18,80 | G1/2“ | ∅33 |
| OHD-10L-I1D5-CG03G03-N | | L | | | | | | | | | | | | |




| ORDER KEY | PURCH. CODE | DIRECT. OF ROT. | DISPLA-CEMENT [cm³/1] | CONT. PRESS. [bar] | MIN. SPEED [min⁻¹] | MAX. SPEED [min⁻¹] | A | B | C | D | E | F | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
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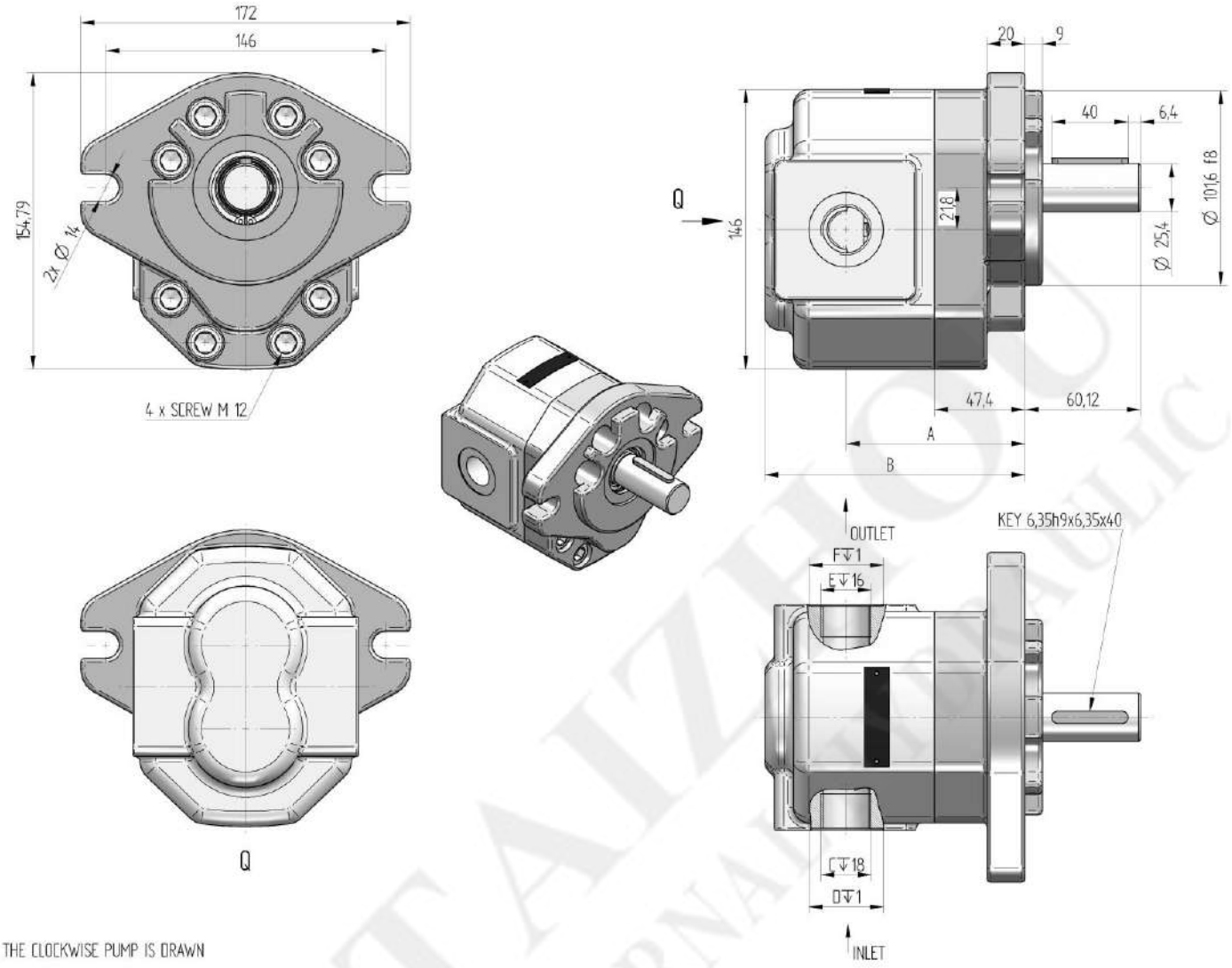
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| OHD-51R-S2D2-SE03E03-N | | R | 51 | 290 | 350 | 2600 | 113,4 | 155,9 | ∅25,4 | M10 | ∅19,1 | M10 | | |
| OHD-51L-S2D2-SE03E03-N | | L | | | | | | | | | | | | |
| OHD-43R-S2D2-SE03E03-N | | R | 43 | 300 | 350 | 2700 | 106,4 | 148,9 | ∅25,4 | M10 | ∅19,1 | M10 | | |
| OHD-43L-S2D2-SE03E03-N | | L | | | | | | | | | | | | |
| OHD-34R-S2D2-SE03E03-N | | R | 34 | 310 | 350 | 3000 | 98,9 | 141,4 | ∅25,4 | M10 | ∅19,1 | M10 | | |
| OHD-34L-S2D2-SE03E03-N | | L | | | | | | | | | | | | |
| OHD-27R-S2D2-SE03E03-N | 188 9000 | R | 27 | 310 | 350 | 3200 | 93,4 | 135,9 | ∅25,4 | M10 | ∅19,1 | M10 | | |
| OHD-27L-S2D2-SE03E03-N | | L | | | | | | | | | | | | |
| OHD-17R-S2D2-SE03E03-N | | R | 17 | 310 | 350 | 3200 | 84,9 | 127,4 | ∅25,4 | M10 | ∅19,1 | M10 | | |
| OHD-17L-S2D2-SE03E03-N | | L | | | | | | | | | | | | |
| OHD-10R-S2D2-SE03E03-N | | R | 10 | 310 | 350 | 3200 | 84,9 | 127,4 | ∅25,4 | M10 | ∅19,1 | M10 | | |
| OHD-10L-S2D2-SE03E03-N | | L | | | | | | | | | | | | |




| ORDER KEY | PURCH. CODE | DIRECT. OF ROT. | DISPLA-CEMENT [cm³/1] | CONT. PRESS. [bar] | MIN. SPEED [min⁻¹] | MAX. SPEED [min⁻¹] | A | B | C | D | E | F | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | DIMENSION [mm] | | | | | | | |
| OHD-51R-S2V4-SG05G04-N | 188 9009 | R | 51 | 290 | 350 | 2600 | 113,4 | 155,9 | G1“ | ∅45 | G3/4“ | ∅39 | | |
| OHD-51L-S2V4-SG05G04-N | | L | | | | | | | | | | | | |
| OHD-43R-S2V4-SG05G04-N | | R | 43 | 300 | 350 | 2700 | 106,4 | 148,9 | G1“ | ∅45 | G3/4“ | ∅39 | | |
| OHD-43L-S2V4-SG05G04-N | | L | | | | | | | | | | | | |
| OHD-34R-S2V4-SG04G04-N | | R | 34 | 310 | 350 | 3000 | 98,9 | 141,4 | G3/4“ | ∅39 | G3/4“ | ∅39 | | |
| OHD-34L-S2V4-SG04G04-N | | L | | | | | | | | | | | | |
| OHD-27R-S2V4-SG04G04-N | | R | 27 | 310 | 350 | 3200 | 93,4 | 135,9 | G3/4“ | ∅39 | G3/4“ | ∅39 | | |
| OHD-27L-S2V4-SG04G04-N | | L | | | | | | | | | | | | |
| OHD-17R-S2V4-SG03G03-N | | R | 17 | 310 | 350 | 3200 | 84,9 | 127,4 | G1/2“ | ∅33 | G1/2“ | ∅33 | | |
| OHD-17L-S2V4-SG03G03-N | | L | | | | | | | | | | | | |