# Gear Pumps KF 0

## Function

**KF 0 – A pump for process engineering.**

In numerous technical processes dosing liquids is the focus of the task. PUR components, softeners, resins, lacquers, paints are just some of the most important liquids with a broad application range.

The accuracy, evenness and reproducibility with which these products can be processed are also decisive for the quality of the final product.

The KRACHT gear pump size KF 0 is especially suitable for these applications.

The KF 0 is an external gear pump with flow rates of 0.5 $cm^3/r$ to 4 $cm^3/r$.
The grading of the total of 8 nominal sizes makes it easier to set the desired dosing ratios. The fine gearing with a high number of teeth guarantees a low-pulsation volume flow.

All gear parts and the bearing bushes are protected even in the standard design by a special coating against wear and corrosion, so that even filled media up to a specific grain size and hardness of the filled material can be conveyed. Because of the backlash dimensioning

in combination with precise production the KF 0 has very good volumetric efficiency over a wide pressure range.

Various types of seals, such as rotary shaft seals and double rotary shaft seals can be selected depending on the task, whereby the latter version enables operations with a water seal (quench) to prevent the pumping medium from hardening or crystallising.

In combination with a KRACHT gear volume meter and the KRACHT evaluation electronics the KF 0 can be extended to a highly precise dosing unit.

## General characteristics

| | |
|---|---|
| Fixing type | Flange fixing |
| Pipe connection | Threaded connection |
| Direction of rotation | Clockwise **or** anticlockwise |
| Installation location | Any, see dimensional drawings |
| Weight | 2.2 kg |

## Operating characteristics

| | | | |
|---|---|---|---|
| Capacity | $V_g$ | = | 0.5 / 0.8 / 1 / 1.6 / 2 / 2.5 / 3 / 4 $cm^3/r$ |
| Operating pressure | **Suction side** | | |
| | $p_{e\,min}$ | = | – 0.4 bar (– 0.6 bar briefly for starting status) |
| | $p_{e\,max}$ | = | 2 bar |
| | **Pressure side** | | |
| | $p_{n\,max}$ | = | 120 bar (depending on the pumping medium, viscosity and pumping volume) |
| Speed | n | = | ... 3000 $min^{-1}$ (depending on viscosity) |
| Viscosity | $\nu_{min}$ | = | 10 $mm^2/s$ |
| | $\nu_{max}$ | = | 20 000 $mm^2/s$ |
| Media temperature | $\vartheta_{m\,max}$ | = | 90 °C NBR<br>150 °C FKM<br>200 °C PTFE (rotary shaft seal) |
| Ambient temperature | $\vartheta_{u\,min}$ | = | – 20 °C |
| | $\vartheta_{u\,max}$ | = | + 60 °C |

## Materials

| | |
|---|---|
| Pump housing | GG 30, DIN 1691 |
| Gearing | Steel 1.7139 chemically nickel plated with SiC inclusions |
| Bearing bushes | Steel ETG 100 chemically nickel plated with SiC inclusions |
| Seals | NBR, FKM, PTFE |

# Gear Pumps KF 0

## Characteristics max. permissible operating pressure in dependence on viscosity

| Nominal size | Permissible operating pressure in bar for viscosity | | | |
|---|---|---|---|---|
| | 10 mm²/s | 30 mm²/s | 100 mm²/s | > 500 mm²/s |
| **0.5** | 10 | 30 | 50 | 60 |
| **0.8** | 15 | 40 | 60 | 70 |
| **1** | 15 | 40 | 60 | 70 |
| **1.6** | 20 | 60 | 80 | 100 |
| **2** | 20 | 60 | 80 | 100 |
| **2.5** | 30 | 60 | 100 | 120 |
| **3** | 30 | 60 | 100 | 120 |
| **4** | 40 | 80 | 120 | 120 |

The values are valid for the speed range n = 1000 ... 3000 min$^{-1}$.
Then max. operating pressures must be reduced for speeds < 1000 min$^{-1}$

## Drive capacity and rate of flow

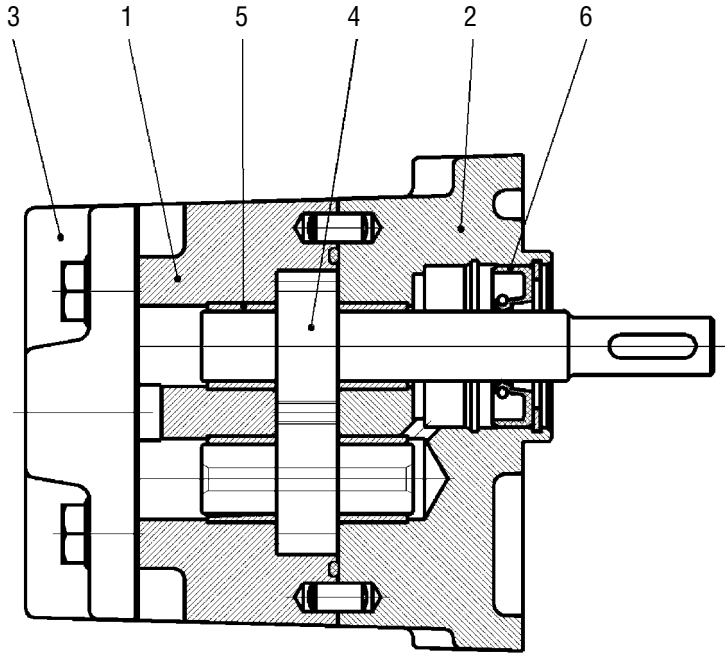
**With speed n = 1450 min$^{-1}$ and viscosity 34 mm²/s**

| Rate of flow Q in l/min | Pressure in bar | | | | | | | | Nominal size | Pressure in bar | | | | | | | | Drive capacity P in kW |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 5 | 10 | 20 | 40 | 60 | 80 | 100 | 120 | | 5 | 10 | 20 | 40 | 60 | 80 | 100 | 120 | |
| | 0.7 | 0.6 | 0.5 | – | – | – | – | – | **0.5** | 0.06 | 0.07 | 0.09 | – | – | – | – | – | |
| | 1.1 | 1.1 | 1.0 | 0.8 | – | – | – | – | **0.8** | 0.06 | 0.08 | 0.11 | 0.17 | – | – | – | – | |
| | 1.4 | 1.3 | 1.3 | 1.1 | – | – | – | – | **1** | 0.07 | 0.08 | 0.12 | 0.19 | – | – | – | – | |
| | 2.2 | 2.2 | 2.0 | 1.8 | 1.5 | – | – | – | **1.6** | 0.08 | 0.12 | 0.18 | 0.31 | 0.45 | – | – | – | |
| | 2.8 | 2.7 | 2.6 | 2.3 | 2.0 | – | – | – | **2** | 0.09 | 0.13 | 0.20 | 0.35 | 0.50 | – | – | – | |
| | 3.5 | 3.4 | 3.3 | 3.0 | 2.7 | – | – | – | **2.5** | 0.09 | 0.14 | 0.22 | 0.39 | 0.55 | – | – | – | |
| | 4.2 | 4.2 | 4.0 | 3.7 | 3.5 | – | – | – | **3** | 0.10 | 0.15 | 0.24 | 0.42 | 0.60 | – | – | – | |
| | 5.6 | 5.5 | 5.4 | 5.0 | 4.7 | 4.3 | – | – | **4** | 0.12 | 0.17 | 0.29 | 0.53 | 0.76 | 0.99 | – | – | |

**With speed n = 1450 min$^{-1}$ and viscosity 120 mm²/s**

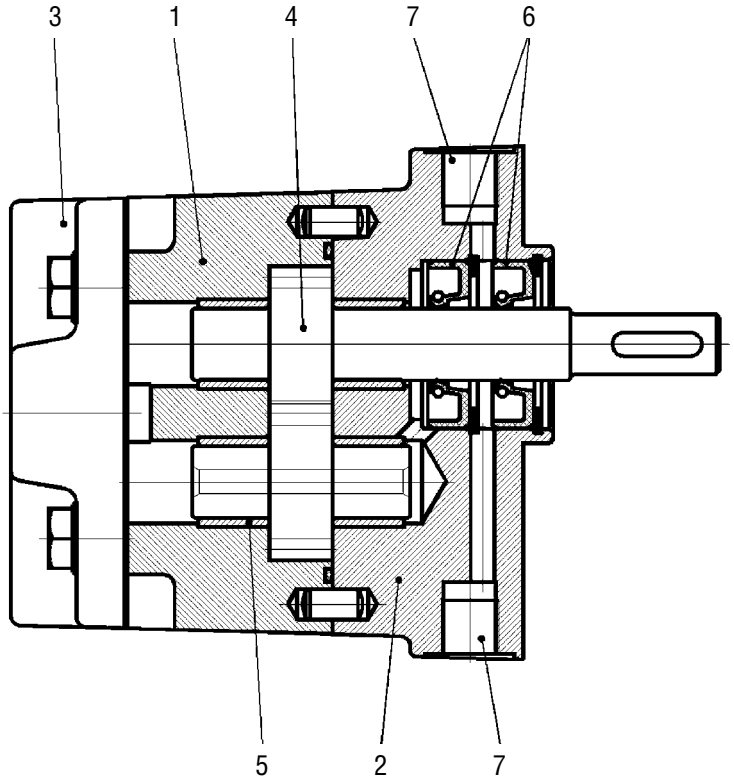
| Rate of flow Q in l/min | Pressure in bar | | | | | | | | Nominal size | Pressure in bar | | | | | | | | Drive capacity P in kW |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 5 | 10 | 20 | 40 | 60 | 80 | 100 | 120 | | 5 | 10 | 20 | 40 | 60 | 80 | 100 | 120 | |
| | 0.7 | 0.7 | 0.6 | 0.5 | – | – | – | – | **0.5** | 0.06 | 0.07 | 0.09 | 0.12 | – | – | – | – | |
| | 1.1 | 1.1 | 1.1 | 1.0 | 0.9 | – | – | – | **0.8** | 0.06 | 0.08 | 0.10 | 0.16 | 0.21 | – | – | – | |
| | 1.4 | 1.4 | 1.4 | 1.3 | 1.2 | – | – | – | **1** | 0.08 | 0.09 | 0.12 | 0.17 | 0.23 | – | – | – | |
| | 2.3 | 2.2 | 2.2 | 2.1 | 2.0 | 1.8 | – | – | **1.6** | 0.08 | 0.11 | 0.16 | 0.27 | 0.38 | 0.50 | – | – | |
| | 2.8 | 2.8 | 2.8 | 2.7 | 2.6 | 2.5 | – | – | **2** | 0.09 | 0.12 | 0.20 | 0.34 | 0.49 | 0.64 | – | – | |
| | 3.5 | 3.5 | 3.4 | 3.3 | 3.2 | 3.0 | 2.9 | – | **2.5** | 0.09 | 0.14 | 0.22 | 0.38 | 0.55 | 0.71 | 0.88 | – | |
| | 4.2 | 4.2 | 4.2 | 4.1 | 3.9 | 3.8 | 3.7 | – | **3** | 0.10 | 0.15 | 0.24 | 0.43 | 0.61 | 0.80 | 0.98 | – | |
| | 5.7 | 5.6 | 5.6 | 5.5 | 5.3 | 5.2 | 5.0 | 4.9 | **4** | 0.12 | 0.17 | 0.29 | 0.53 | 0.76 | 0.99 | 1.23 | 1.46 | |

## Flange pump with rotary shaft seal




1 Housing
2 Flange cover
3 Cover plate
4 Gearing
5 Bearing bush
6 Rotary shaft seal

## Flange pump with double rotary shaft seal and threaded connection for water seal




1 Housing
2 Flange cover
3 Cover plate
4 Gearing
5 Bearing bush
6 Rotary shaft seal
7 Connection for sealing liquid

# Gear Pumps KF 0

## Type code

**Product name**

**Nominal size** — **0.5 / 0.8 / 1 / 1.6 / 2 / 2.5 / 3 / 4**

**Mounting type** — **S** Flange type

**Rotation direction** — **1** clockwise, **2** anticlockwise

**Outboard flange** — **F** Angle foot, **0** without angle foot

| KF 0/ | 0,5 | S | 1 | 0 | K | POA | ODL | 1/ | 100 |
|---|---|---|---|---|---|---|---|---|---|

**Ordering code:**

**Type of connection**
**K** Pipe thread

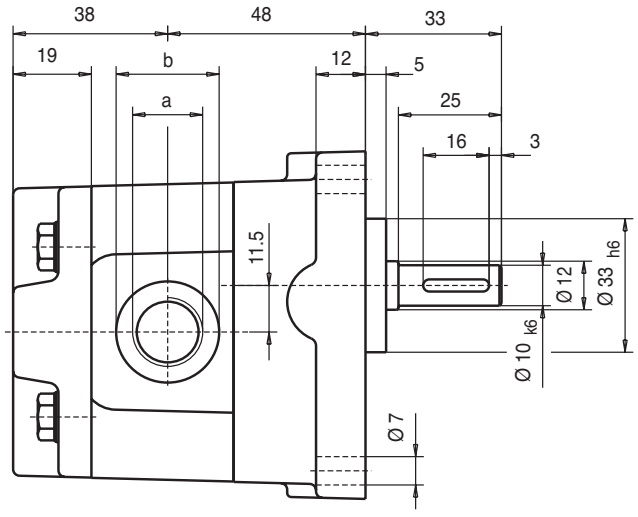
**P** Cylindrical shaft end
**0** without 2nd shaft end
**A** Cover plate

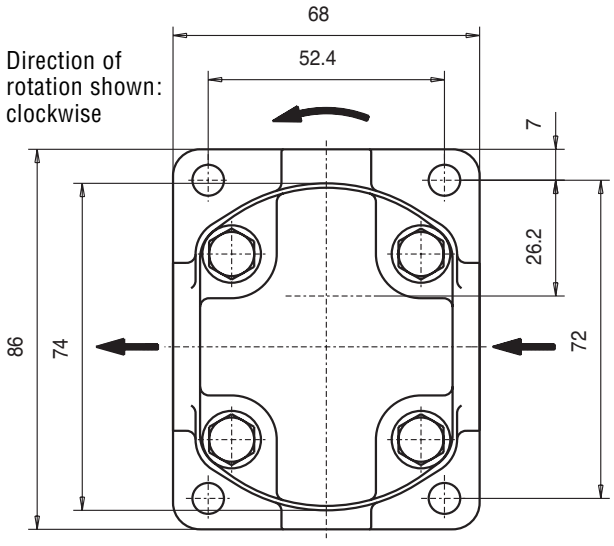
**0** Design code number
**D** Housing material GG
**L** Gearing design: spur toothed

**Seal**
**1** NBR
**2** FKM
**32** PTFE

**Special number**
**100** Standard
**107** With double rotary shaft seal Quench connection top and bottom
**133** With double rotary shaft seal Quench connection at side

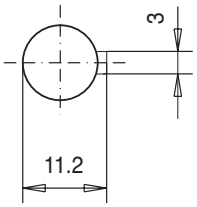
## KF 0/ . S . OK POA ODL . /100




Suction and pressure connection are the same size

Feather key
A 3 x 3 x 16
DIN 6885

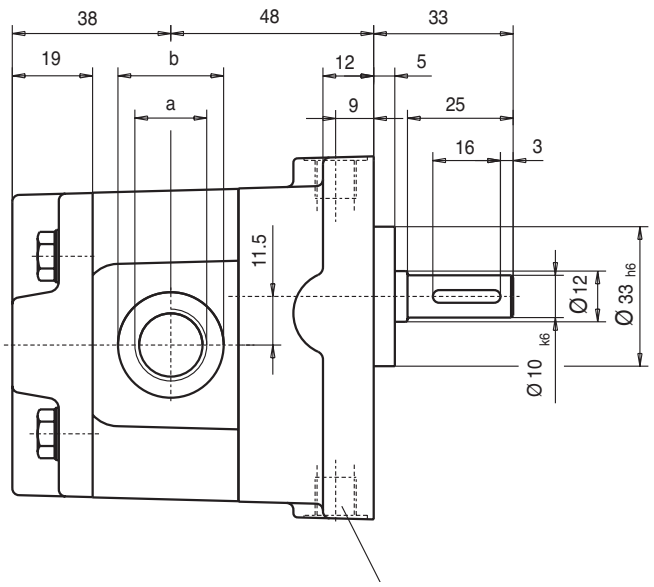



| Vg cm³/r | Flow volume / nominal size | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 0.5 | 0,8 | 1 | 1.6 | 2 | 2.5 | 3 | 4 |
| a | G 3/8 - 13 deep | | | G 1/2 - 15 deep | | | | |
| b | 25 | | | 29 | | | | |

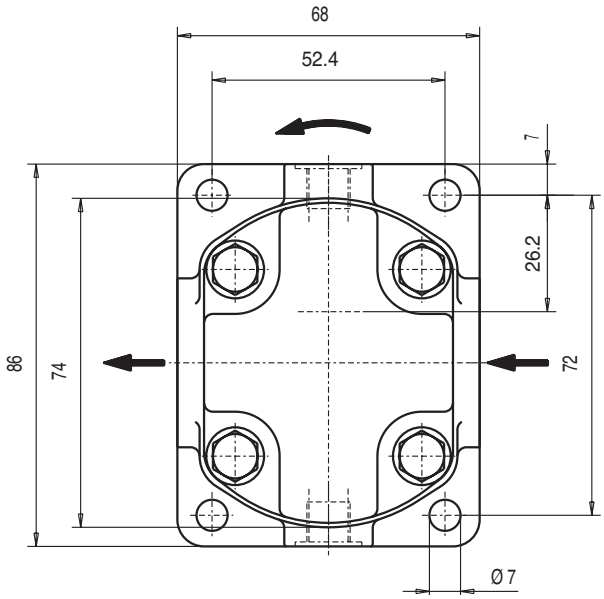
*info@hidrafluid.es*
*976 24 32 10*

# KF0/.S.OK POA ODL./107

Direction of rotation shown: clockwise



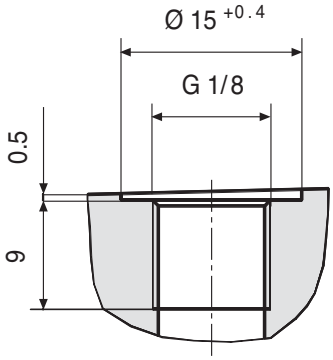

Quench connection



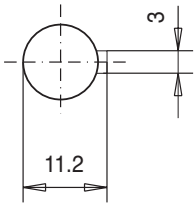

Installation location: quench connection

Suction and pressure connection are the same size

Quench connection




Feather key
A 3 x 3 x 16
DIN 6885

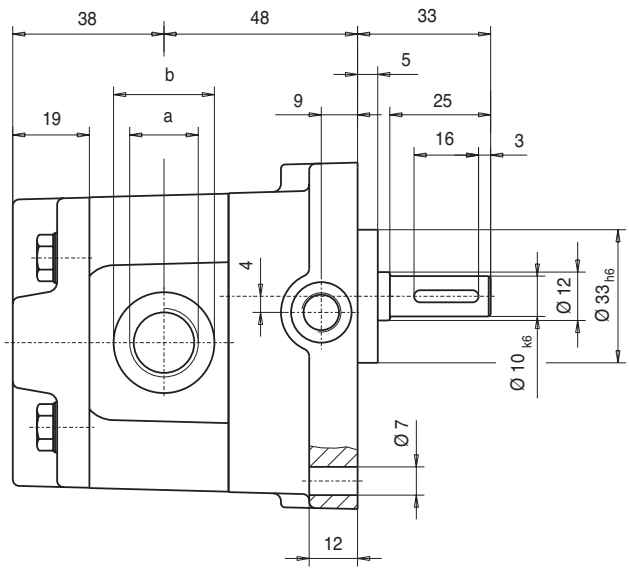


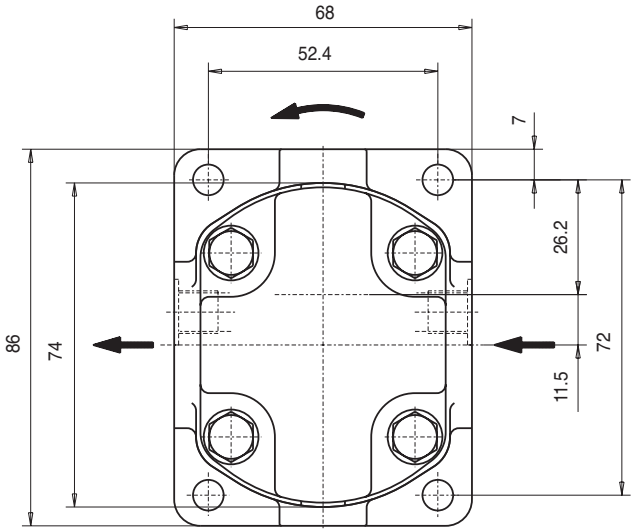

| Vg cm³/r | Flow volume / nominal size | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 0.5 | 0.8 | 1 | 1.6 | 2 | 2.5 | 3 | 4 |
| a | G ⅜ - 13 deep | | | G ½ - 15 deep | | | | |
| b | 25 | | | 29 | | | | |

*info@hidrafluid.es*
*976 24 32 10*

# KF0/.S.OK POA ODL./133

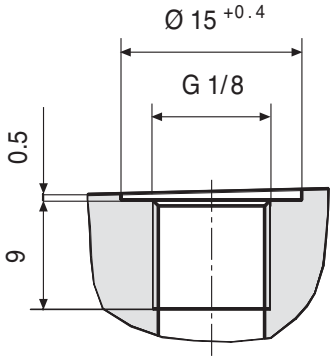
Direction of rotation shown: clockwise



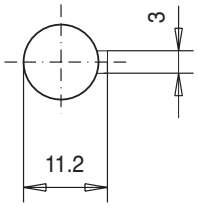




Suction and pressure connection are the same size

Quench connection




Feather key
A 3 x 3 x 16
DIN 6885




| Vg cm³/r | Flow volume / nominal size | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 0.5 | 0.8 | 1 | 1.6 | 2 | 2.5 | 3 | 4 |
| a | G ⅜ - 13 deep | | | G ½ - 15 deep | | | | |
| b | 25 | | | 29 | | | | |

*info@hidrafluid.es*
*976 24 32 10*

# Gear Pumps KF 0 with magnetic coupling

## Function

With various applications conventional seals come up against their limits. Typical applications can be found in PUR plants, refrigerating installations and vacuum plant. It is possible to fit the KF 0 with a magnetic coupling for these applications.

The magnetic coupling serves as a shaft seal and to transmit the torque. The outer rotor of the magnetic coupling is placed on the motor shaft and the inner rotor directly on the pump shaft. The torque is transmitted between the outer and inner rotors through the magnetic forces. The split case, which seals the pump hermetically, is located between the two rotors.

The magnetic coupling is used if an absolutely tight seal is required between the pump chamber and the atmosphere, e.g. for dosing isocyanate, where contact with the air would lead to an undesired hardening of the medium. It can be used in vacuum operations, e.g. filling brake liquid, and reliably prevents air penetrating into the system. Non-leak operations are also guaranteed when used in sealed systems with a high admission pressure on the pump suction side.
The magnetic coupling is predestined for dosing hazardous and harmful media.

## General characteristics

| | |
|---|---|
| Fixing type | Flange fixing |
| Pipe connection | Threaded connection |
| Direction of rotation | Clockwise **or** anticlockwise |
| Installation location | Any, see dimensional drawings |

## Operating characteristics

| | | |
|---|---|---|
| Capacity | $V_g$ | = 0.5 / 0.8 / 1 / 1.6 / 2 / 2.5 / 3 / 4 $cm^3/r$ |
| Operating pressure | **Suction side** | |
| | Operating | |
| | $p_{e\,min}$ | = – 0.4 bar, Vacuum plant – 0.92 |
| | $p_{e\,max}$ | = 16 bar (SS1) |
| | Standstill | |
| | $p_{e\,min}$ | = – 1 bar |
| | $p_{e\,max}$ | = 16 bar (SS1) |
| | **Pressure side** | |
| | $p_{n\,max}$ | = 25 bar (SS1) |
| Speed | n | = ... 3000 $min^{-1}$ (depending on viscosity) |
| Viscosity | $\nu_{min}$ | = 10 $mm^2/s$ |
| | $\nu_{max}$ | = 20 000 $mm^2/s$ |
| Media temperature | $\vartheta_{min}$ | = – 10 °C |
| | $\vartheta_{max}$ | 150 °C (FKM), Magnetic material SmCo |
| Ambient temperature | $\vartheta_{u\,min}$ | = – 20 °C |
| | $\vartheta_{u\,max}$ | = 60 °C |

## Pump materials

| | |
|---|---|
| Pump housing | GG 30, DIN 1691 |
| Gearing | Steel 1.7139 chemically nickel plated with SiC inclusions |
| Lagerbuchsen | Stahl ETG 100 chemically nickel plated with SiC inclusions |
| Dichtungen | FKM |

## Magnetic coupling materials

| | |
|---|---|
| Inner rotor | Stainless steel 1.4571 |
| Split case | Stainless steel 1.4571 |
| Outer rotor | 355J2G3 (St 52) |
| Magnets | Sm2Co17 |

## Magnetic coupling torques

| | |
|---|---|
| MSA 46/6 | 3 Nm |
| MSA 60/8 | 7 Nm |
| MSB 60/8 | 14 Nm |

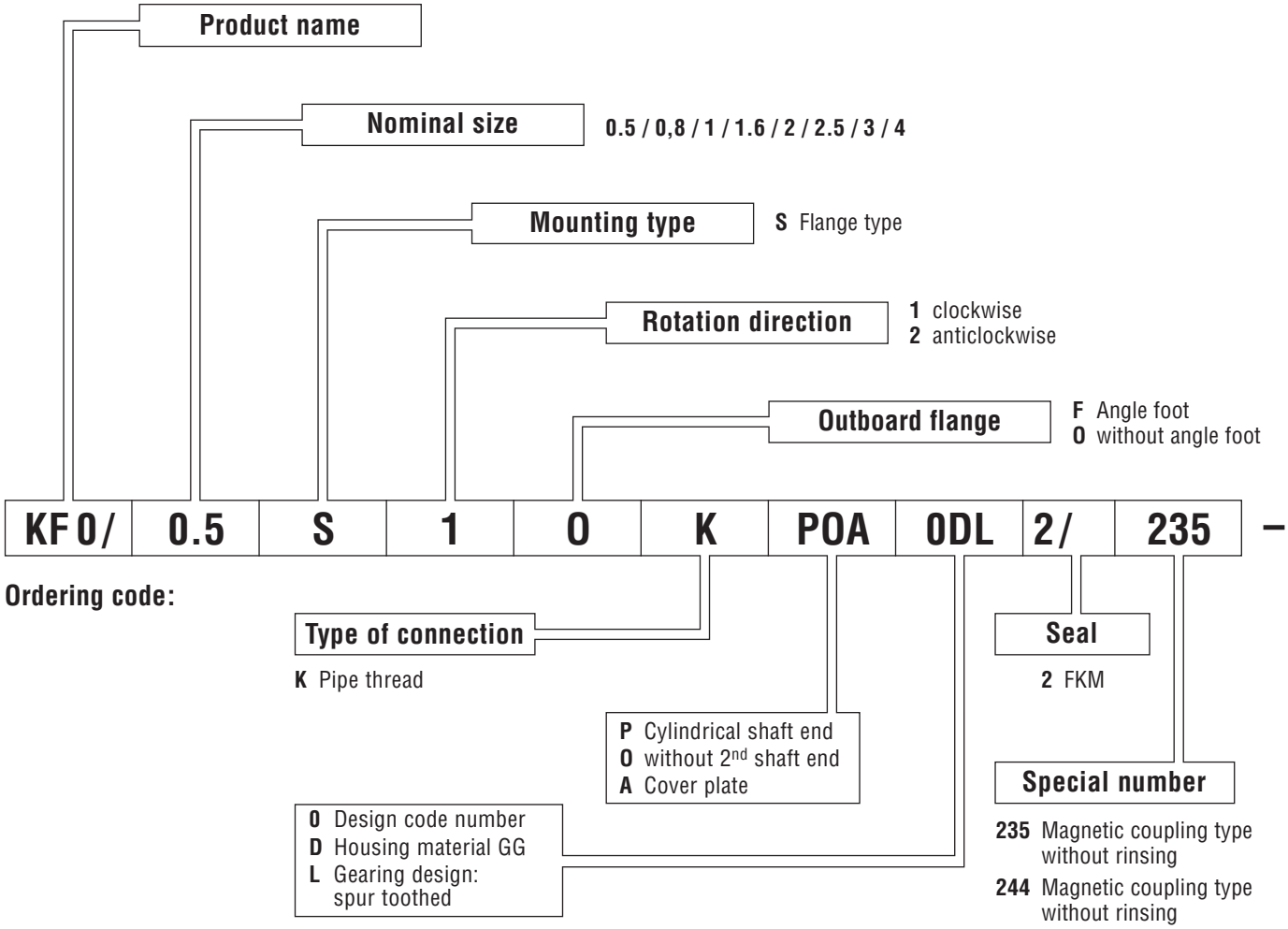
# Gear Pumps KF 0 with magnetic coupling

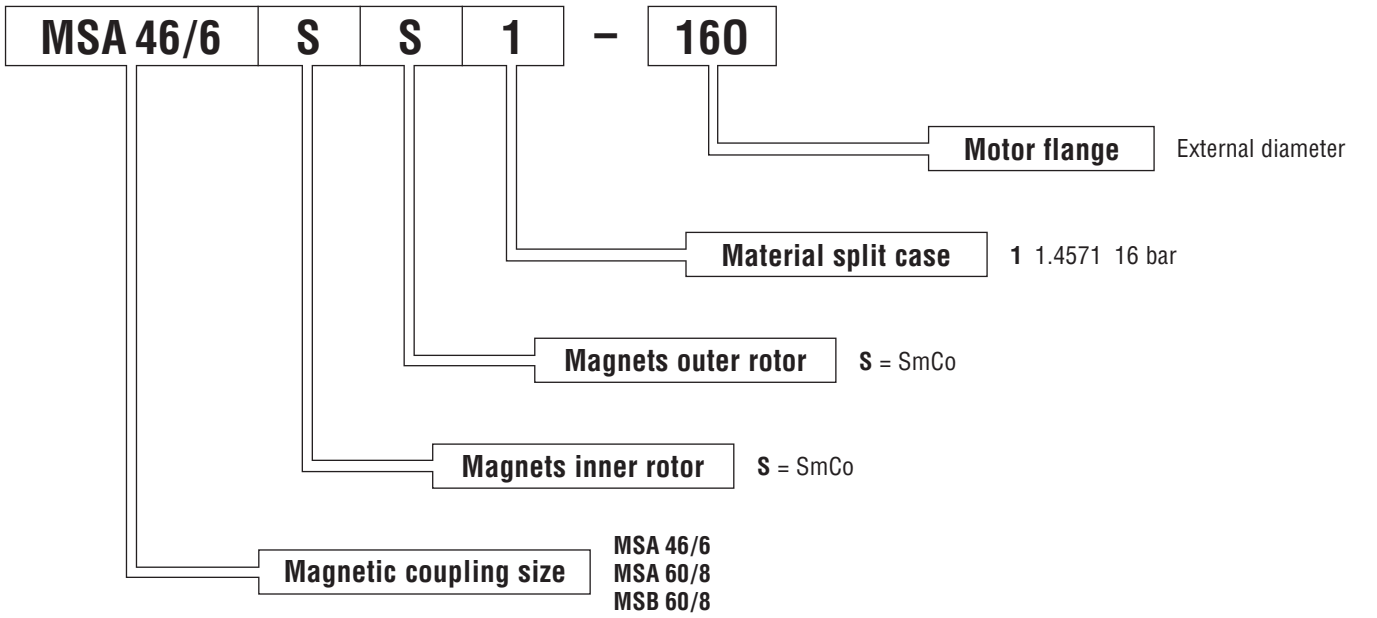
## Selection help

| Pump | Coupling size | Perm. torque [Nm] | Perm. output [kW] at n = 750 1/min | Motor size | Perm. output [kW] at n = 950 1/min | Motor size | Perm. output [kW] at n = 1450 1/min | Motor size |
|---|---|---|---|---|---|---|---|---|
| KF 0 | MSA 46 | 3 | 0.18 | 80 | 0.25 | 71 | 0.37 | 71 |
| | MSA 60 | 7 | 0.25 | 80 | 0.37 | 80 | 0.55 | 80 |
| | | | 0.37 | 90 | 0.55 | | 0.75 | |
| | MSB 60 | 14 | 0.55 | 90 | 0.75 | 90 | 1.1 | 90 |
| | | | 0.75 | 100 | 1.1 | | 1.5 | |

# Gear Pumps KF 0 with magnetic coupling

## Type code




*info@hidrafluid.es*
*976 24 32 10*