BIERI
HYDAC INTERNATIONAL

# MICRO-Axial piston pumps

## Type AKP20

up to **300 bar**

0,012 $cm^3$/rev


### Features

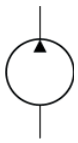
- High volumetric efficiency
- Low noise level
- Wide speed range
- Continuous self lubrication and cooling through the suction flow
- Usable also in adverse ambient conditions
- Can be operated at high temperatures

### Applications

- Oil and gas: directional drilling systems
- Hydraulic systems with small Volume flow rates

### Design

- Design with 3 pistons
- Valve controlled on pressure and suction side (not usable as motor)
- Swash shaft with amply dimensioned rolling bearings
- Rotating wobble plate
- Submerged pump, suction side open to tank, no shaft seal
- Small mounting dimensions
- Interface for the direct fitting of the WITTENSTEIN motor type MRSR019A-060H-5C...



### Technical data

| | |
|---|---|
| Hydraulic fluid | mineral oil according to DIN 51524<br>(other fluids on request) |
| Fluid temperature range | -20 to 175 °C |
| Ambient temperature range | -30 to 175 °C |
| Viscosity range | 3 to 220 $mm^2/s$ |
| Filtration (recommendation) | according to NAS 1638, class 6 resp. ISO/DIN 4406 17/15/12 |
| Max. operating pressure | 300 bar |
| Displacement volume | 0,012 $cm^3$/rev |
| Operation pressure at suction port | open to tank, no shaft seal, up to 2000 bar ambient pressure |
| Suction strainer | 120 µm |
| Axial force onto driving shaft | not allowed |
| Radial force onto driving shaft | not allowed |
| Rotation speed range | 100 to 5000 $min^{-1}$ |
| Direction of rotation | any |
| Weight | see overview “Product informations” |
| Materials | housing: corrosion resistant steel<br>pump head: high-strength steel |

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0,012 cm³/rev

## Type code

**Example** AKP | 20 | - | 0,012 | - | 300 | - | V | - | A | | 04

**MICRO-Axial piston pumps**

**Size** 20

**Displacement volume [cm³/rev]** 0,012

**Max. operating pressure [bar]** 300

**Seal material** V FKM
other seal materials on request

**Design**
00 ... 99
For internal purposes

**Index**
Please leave blank
For internal purposes

**Design revision**
For internal purposes

## Product informations

| Size | Displacement volume [cm³/U] | Max. operating pressure [bar] | Number of pumping elements | Weight [kg] | Max. torque [Nm] | Max. power [kW] | Part No. |
|---|---|---|---|---|---|---|---|
| 20 | 0,012 | 300 | 3 | 0,12 | 0,06 | 0,042 | 4129504 |

### Calculation of driving motor power

$$P = \frac{p \cdot V_g \cdot n \cdot k}{\eta_t \cdot 600 \cdot 10^3}$$

P = driving power [kW]
p = operating pressure [bar]
$V_g$ = displacement volume [cm³/rev]
n = speed [rpm]
$\eta_t$ = overall efficiency approx. 0,75

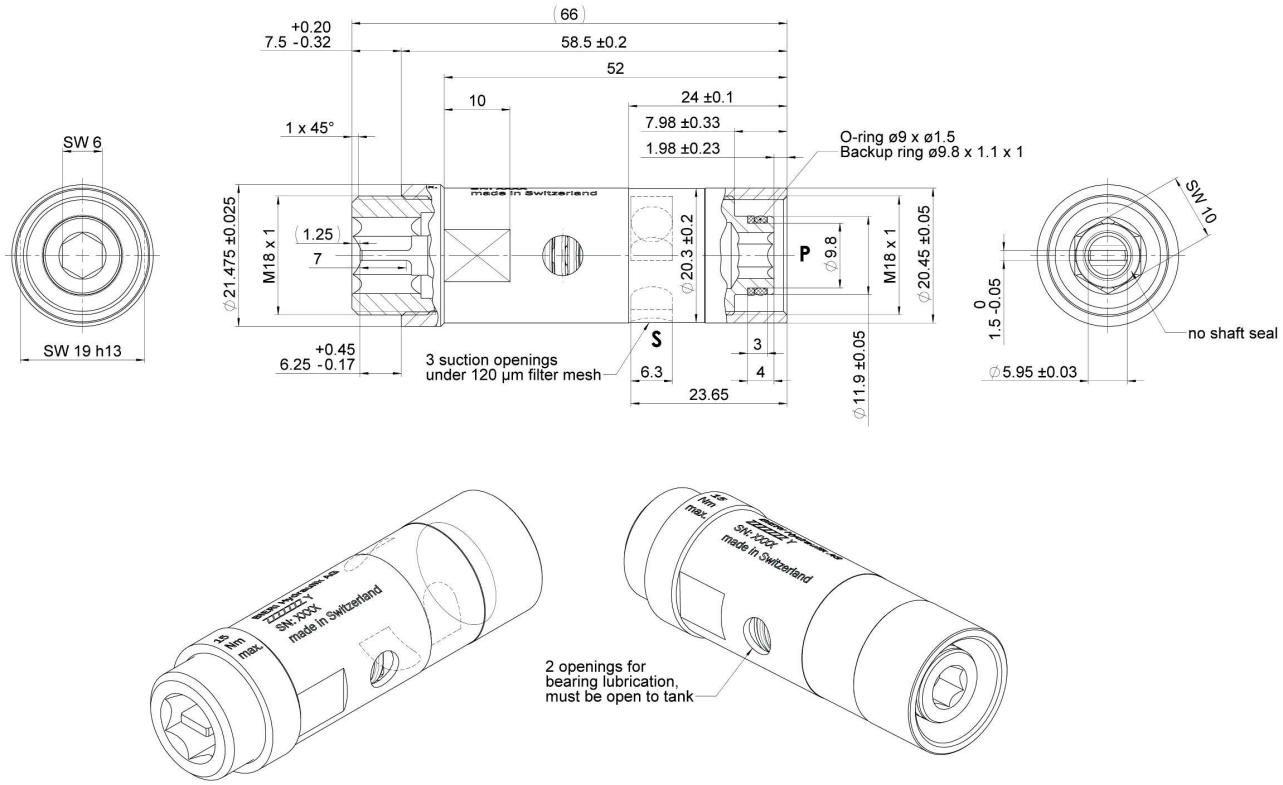
k = pulsation factor
- with 3 pistons: k approx. 1,05

### Calculation of driving motor torque

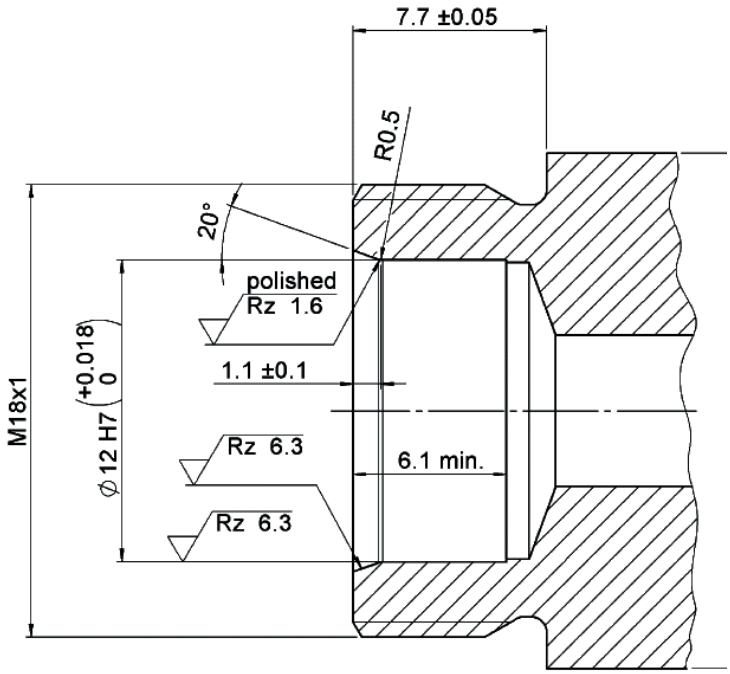
$$M = \frac{p \cdot Vg}{62{,}8 \cdot \eta}$$

M = torque [Nm]
$V_g$ = displacement volume [cm³/rev]
$\eta$ = overall efficiency approx. 0,75

## Dimensional drawings



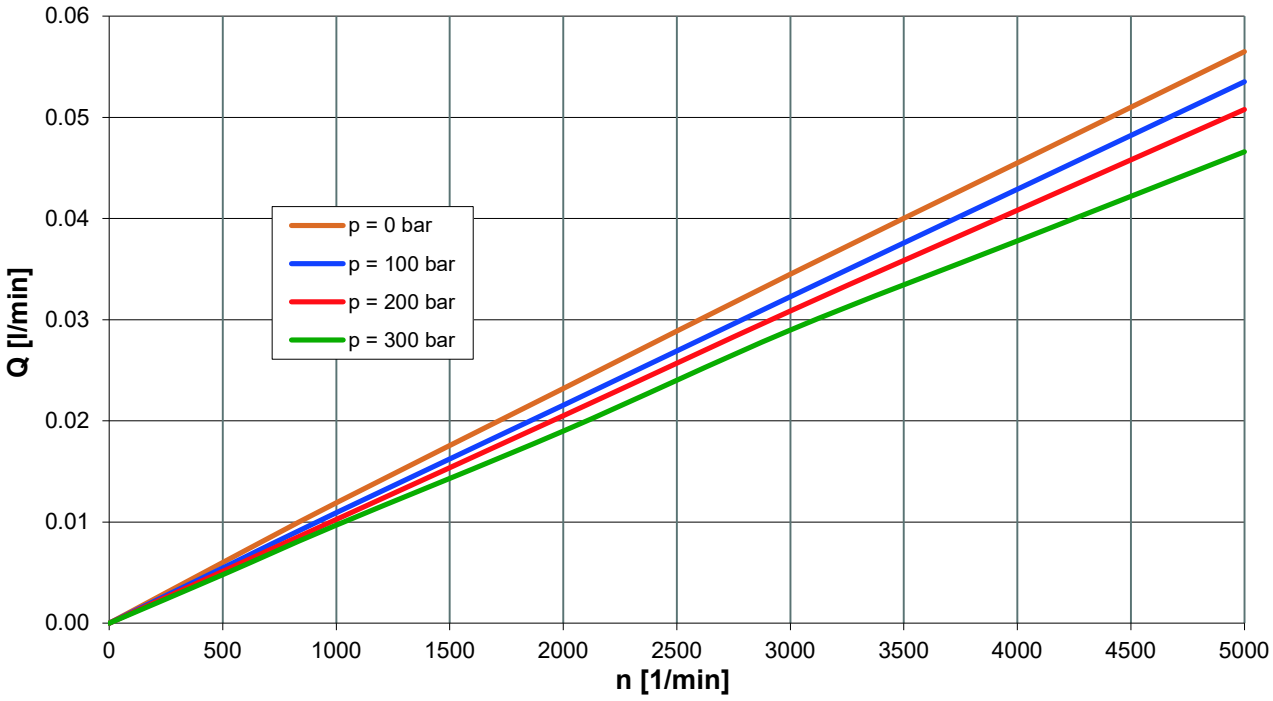

## Interface für pressure connection



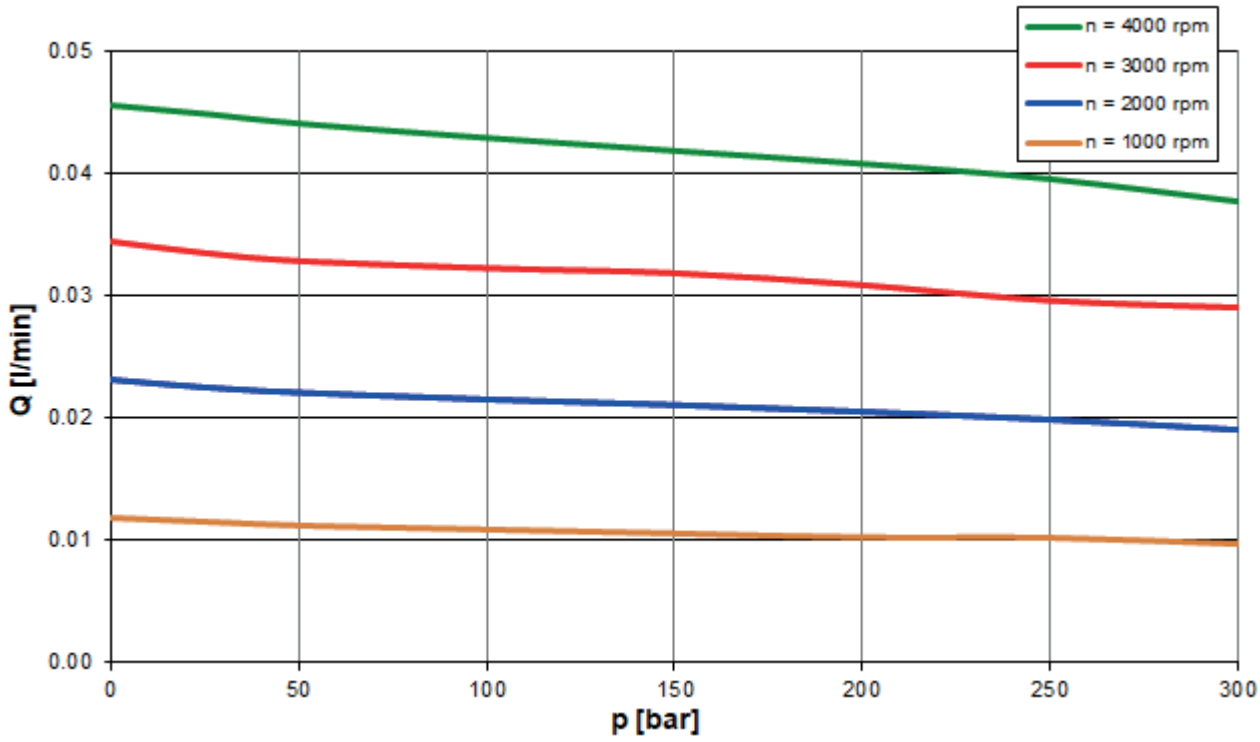
## Characteristics

(ν = 30 mm²/s, T = 40 °C)

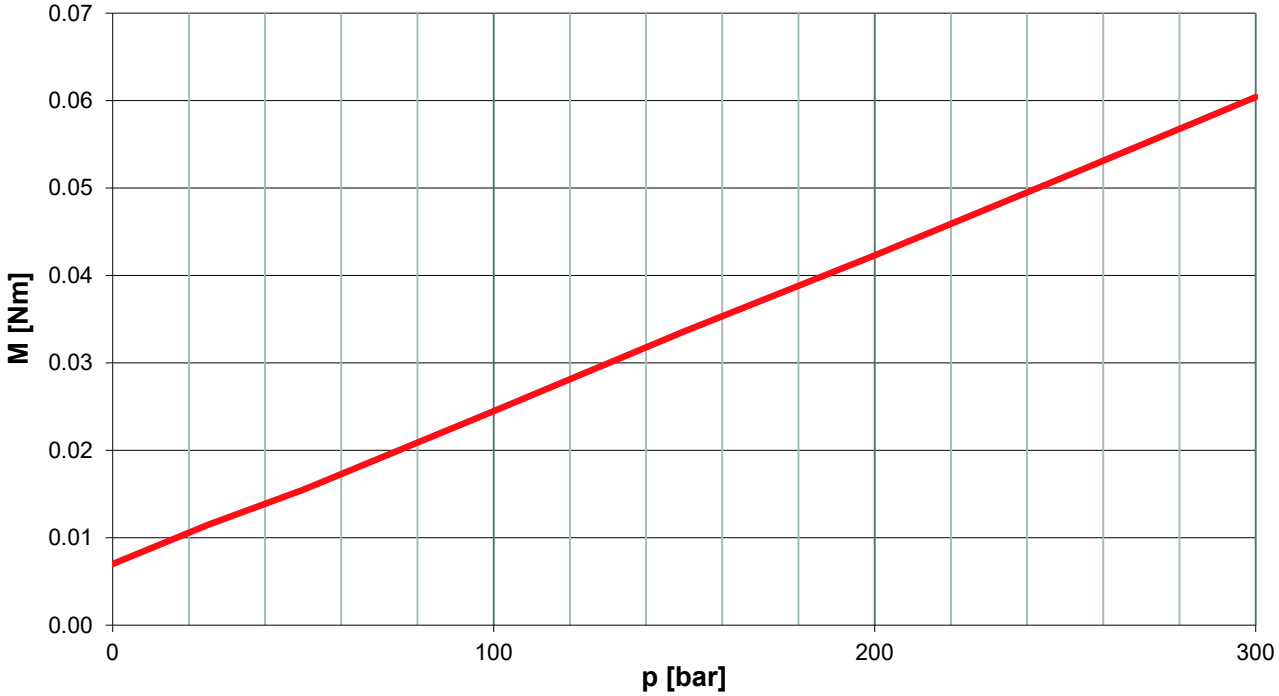
### Volume flow rate as a function of rotation speed



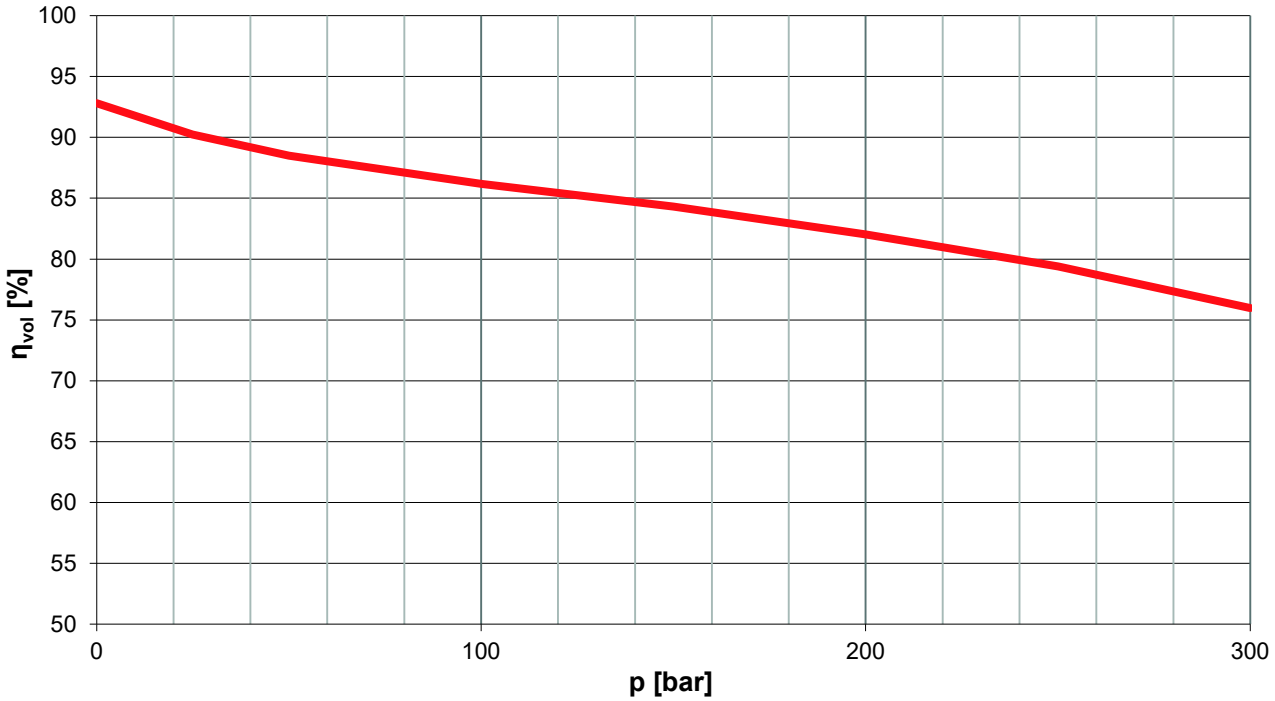

### Volume flow rate as a function of pressure



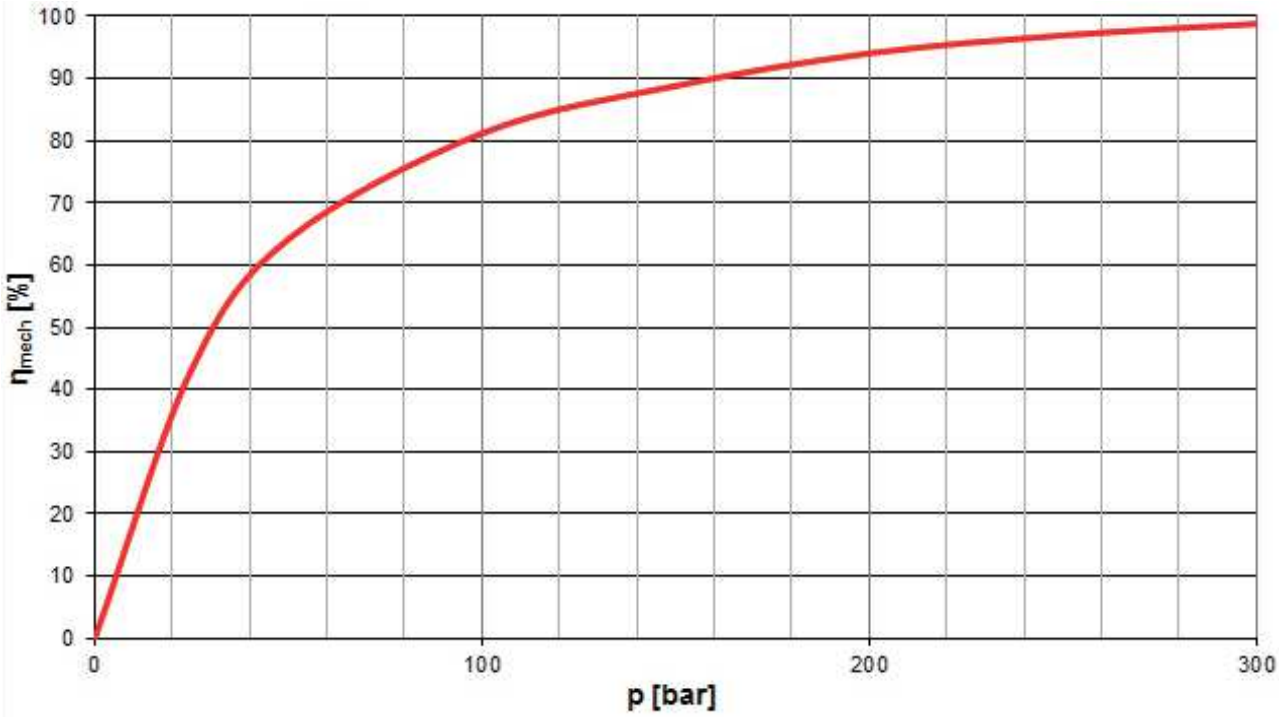
## Troque in function of pressure



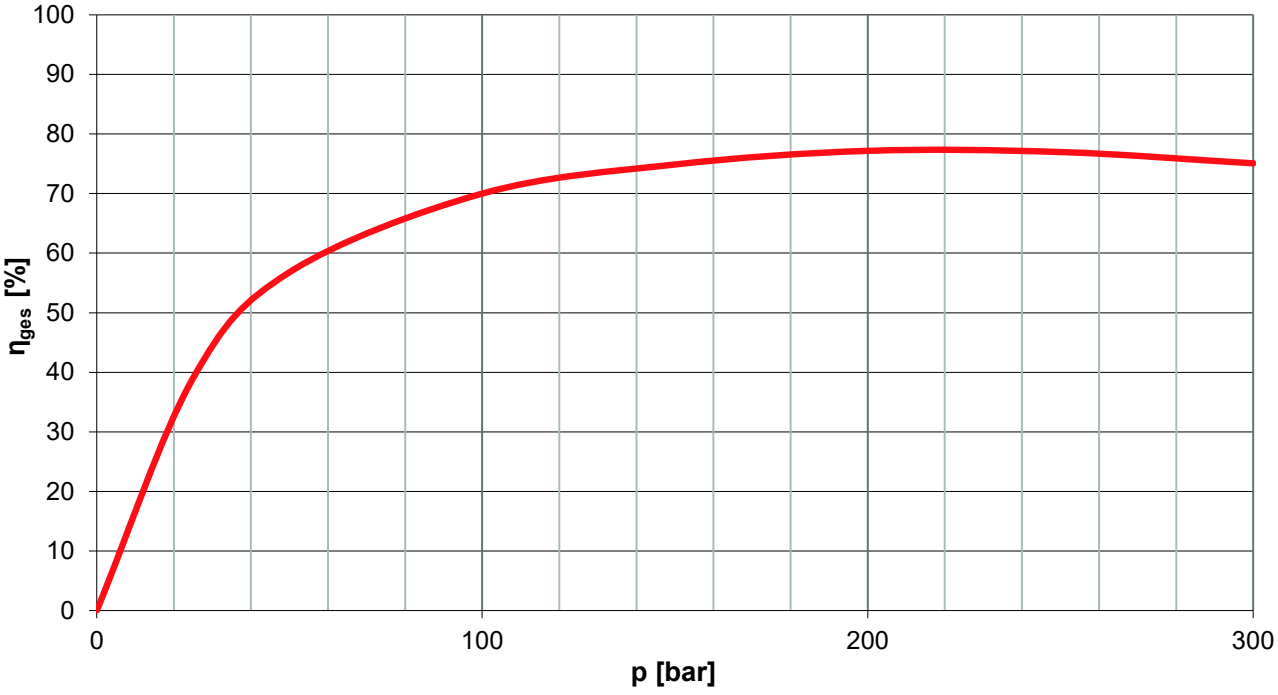

## Volumetric efficiency as a function of pressure



## Mechanical efficiency as a function of pressure




## Overall efficiency as a function of pressure

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The information in this brochure relates to the operating conditions and applications described.
For applications and operating conditions not described, please contact the relevant technical department.
Subject to technical modifications.