

# MICRO-Axial piston pumps

## Type AKP30

up to 300 bar

0,012 to 0,016 cm<sup>3</sup>/rev

### Features

- 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

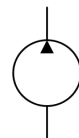


### Applications

- Oil and gas: directional drilling systems
- Hydraulic systems with small deliveries

### Design

- Design with 2 or 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 MSSIO32H-040D-D42S-HAOTHN



### Technical data

Hydraulic fluid	mineral oil according to DIN 51524 (other fluids on request)
Fluid temperature range	-20 to 175 °C
Ambient temperature range	-30 to 175 °C
Viscosity range	3 to 500 mm <sup>2</sup> /s
Max. operating pressure	300 bar
Displacement volume	0,012 to 0.016 cm <sup>3</sup> /rev
Operation pressure at suction port	open to tank, no shaft seal, up to 2000 bar ambient pressure
Suction strainer	104 µm
Filtration (recommendation)	according to NAS 1638, class 6 resp. ISO/DIN 4406 17/15/12
Axial force onto driving shaft	not allowed
Radial force onto driving shaft	not allowed
Rotation speed range	100 to 5000 min <sup>-1</sup>
Direction of rotation	any
Weight	see overview "Product information"
Materials	housing: steel pump head: high-strength steel

## Type AKP30

up to 300 bar  
0,012 to 0,016 cm<sup>3</sup>/rev

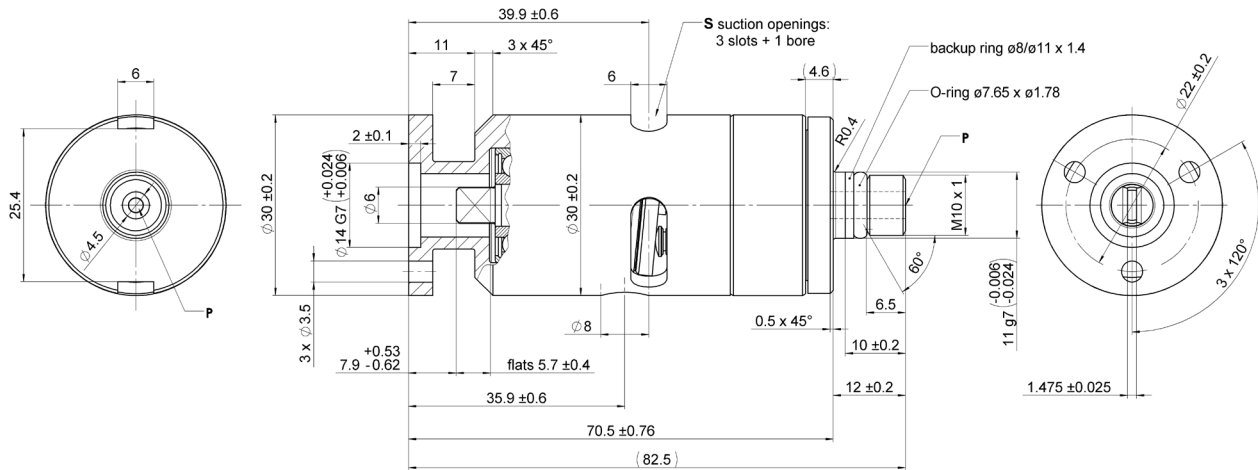
## Type code

Example	AKP	30	-	0,012	-	300	-	V	-	A		04
MICRO-Axial piston pumps												<b>Design</b> 00 ... 99 For internal purposes
Size		30										<b>Index</b> Please leave blank For internal purposes
Displacement volume [cm <sup>3</sup> /rev]				see overview „product information“								<b>Design revision</b> For internal purposes
Max. operating pressure [bar]				300								
Seal material				V		FKM						
						other seal materials on request						

## Product information

size	displacement volume [cm <sup>3</sup> /U]	max. operating pressure [bar]	number of pistons	weight [kg]	max. torque [Nm]	max. power [kW]	part No.
30	0,012	300	3	0,29	0,081	0,042	4502688
30	0,016	300	2	0,29	0,153	0,080	4520438

## Dimensional drawing



## 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 [cm<sup>3</sup>/rev]  
 n = speed [rpm]  
 $\eta_t$  = overall efficiency approx. 0,55

k = pulsation factor  
 - with 2 pistons: k approx. 1,60  
 - with 3 pistons: k approx. 1,05

## Calculation of driving motor torque

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

M = torque [Nm]  
 $V_g$  = displacement volume [cm<sup>3</sup>/rev]  
 $\eta$  = overall efficiency approx. 0,55

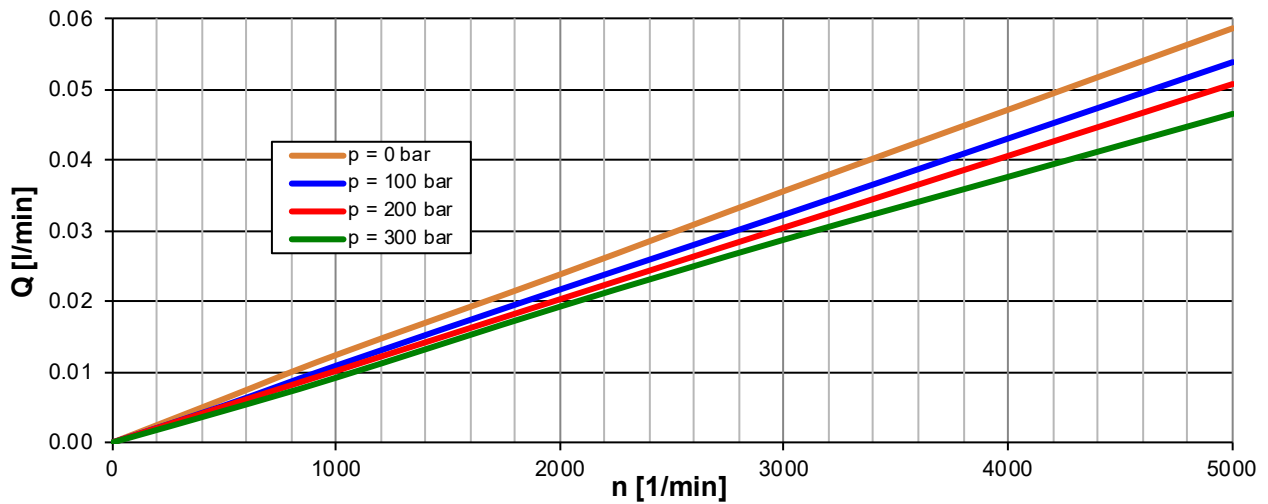
## Type AKP30

up to 300 bar  
0,012 to 0,016 cm<sup>3</sup>/rev

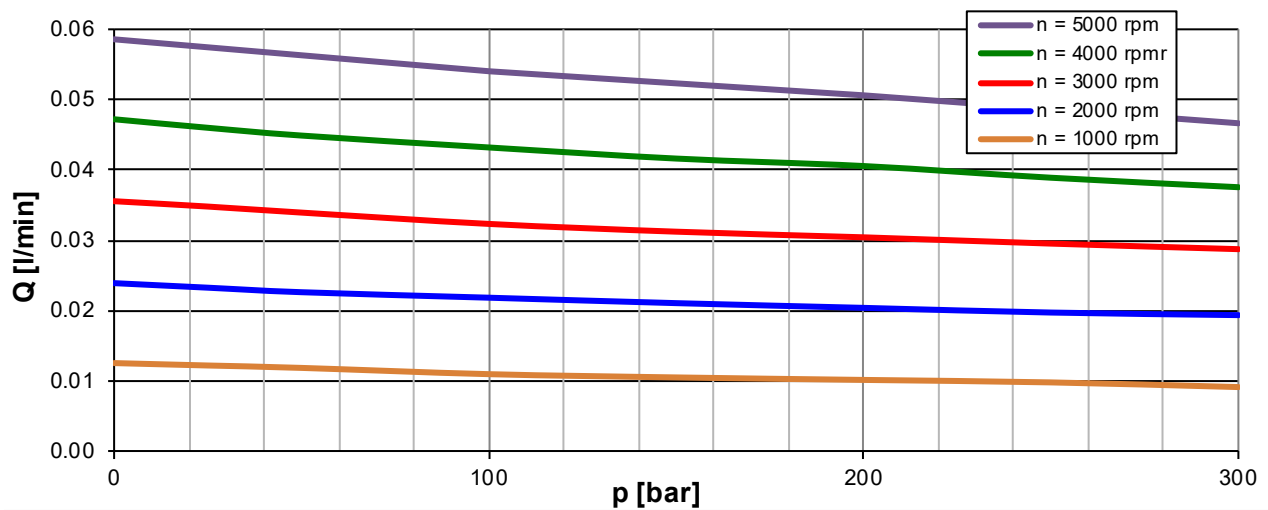
### Characteristics AKP30-0,012

( $\nu = 30 \text{ mm}^2/\text{s}$ ,  $T = 40^\circ\text{C}$ )

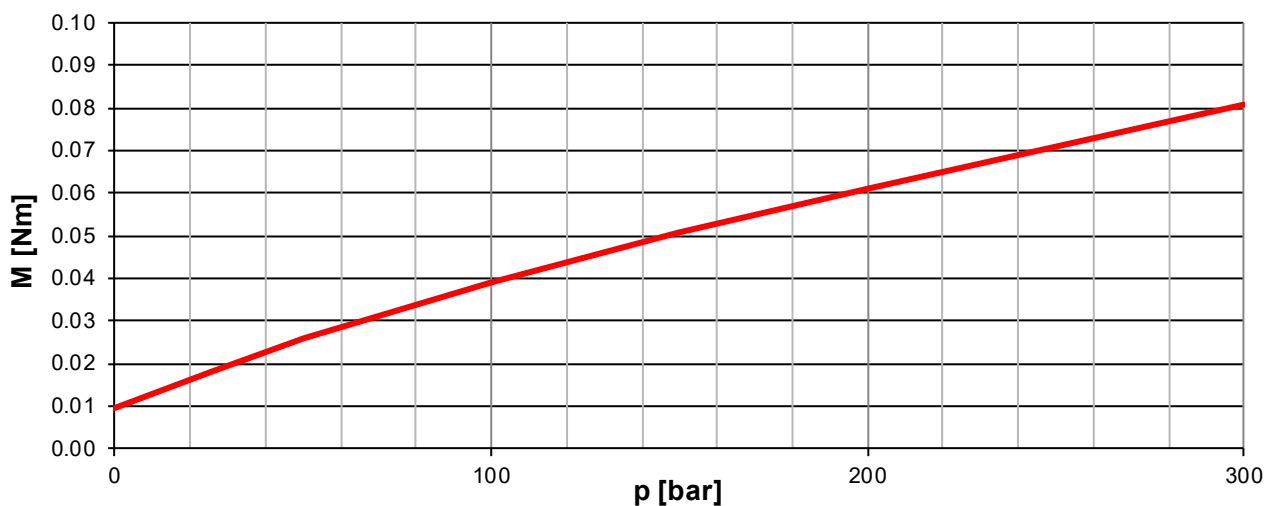
#### flow rate as a function of rotation speed



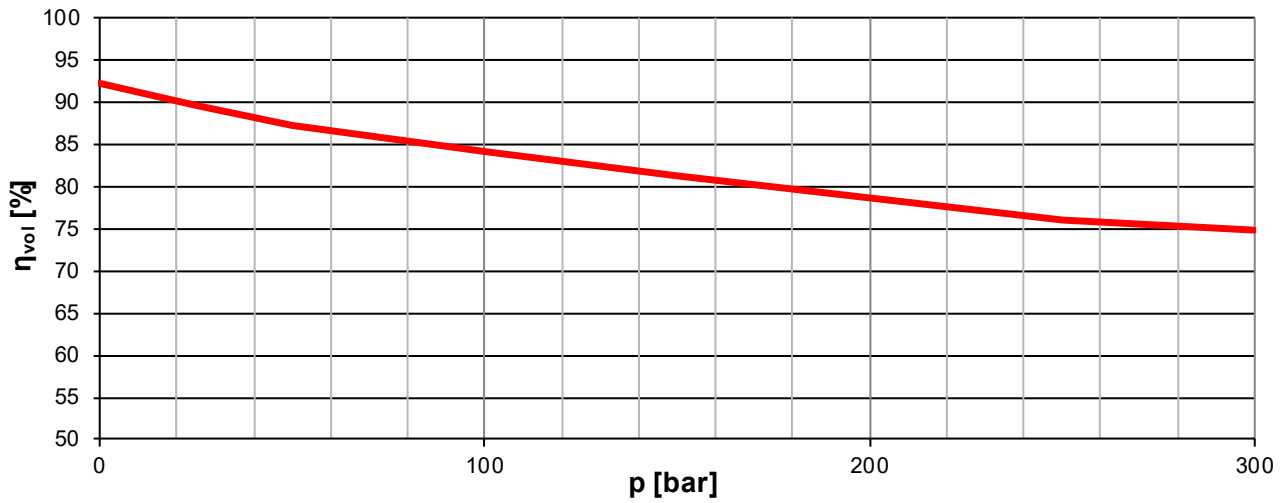
#### flow rate as a function of pressure



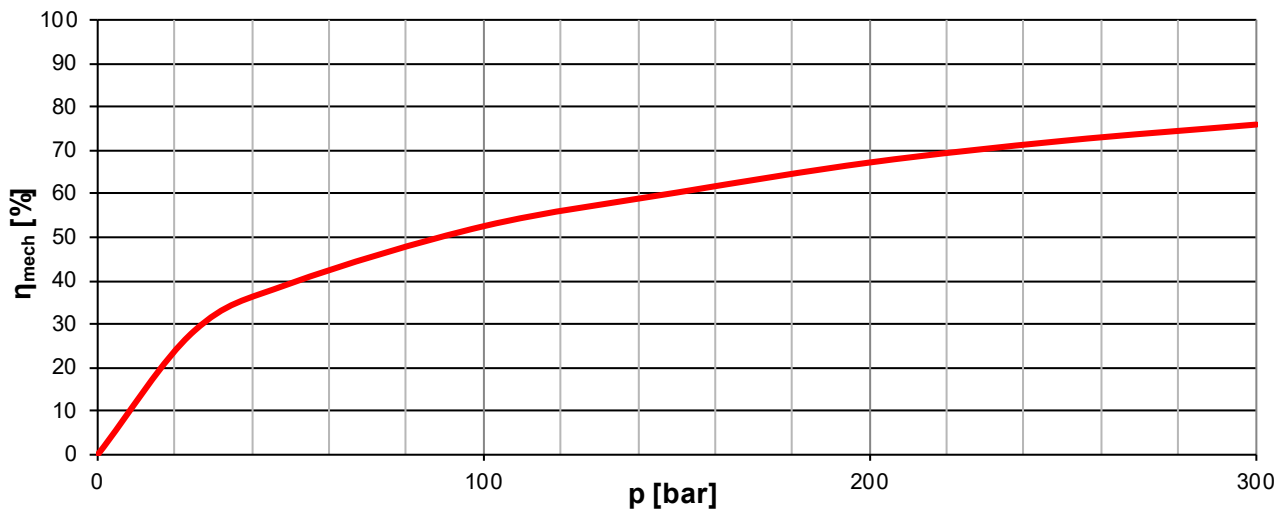
#### torque as a function of pressure



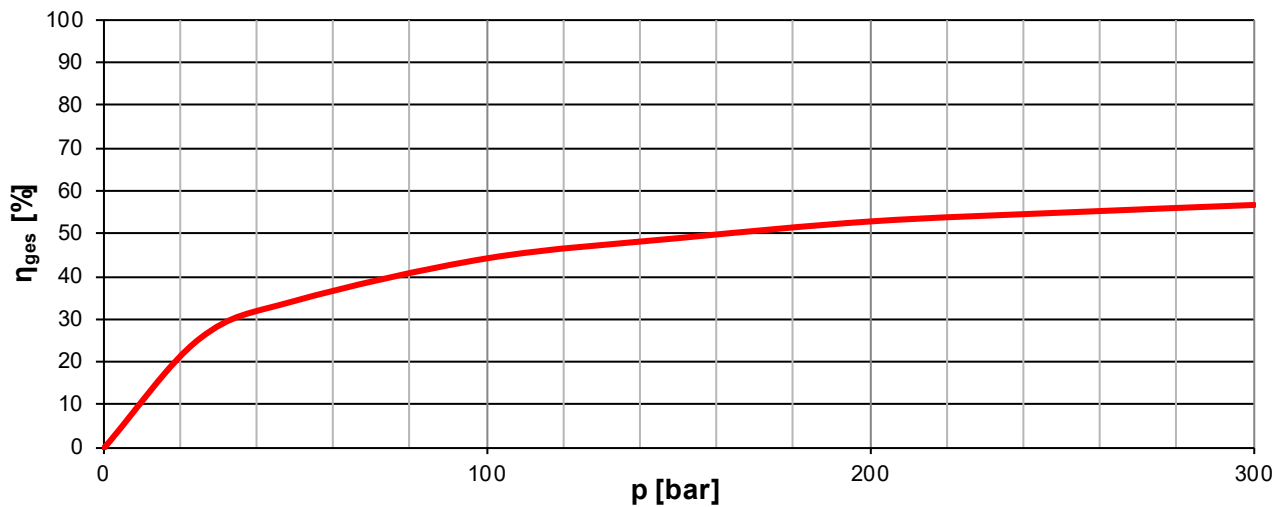
## volumetric efficiency as a function of pressure



## mechanical efficiency as a function of pressure



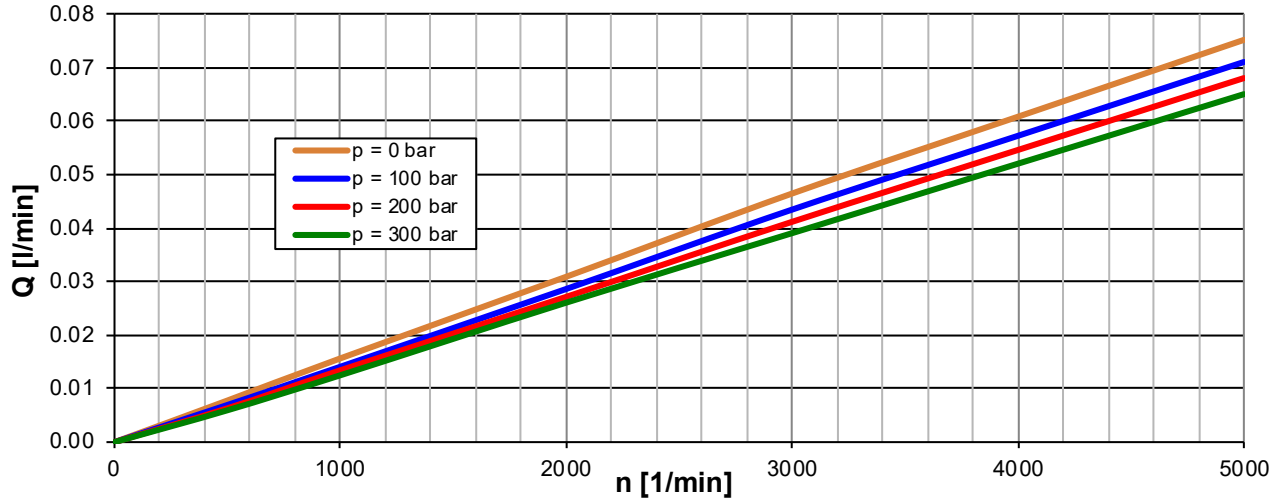
## overall efficiency as a function of pressure



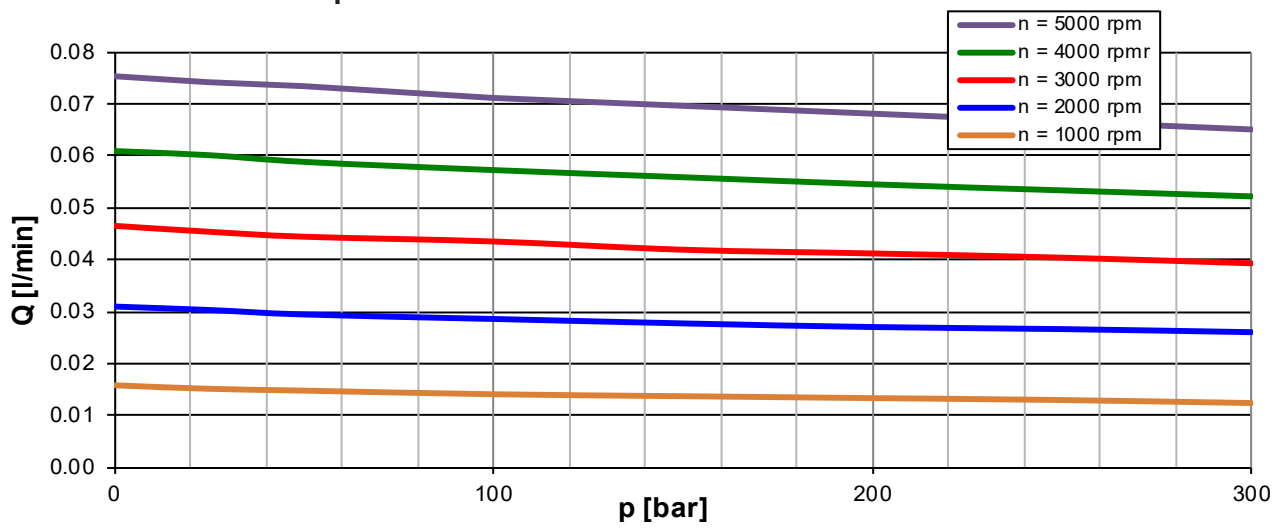
### Characteristics AKP30-0,016

( $v = 30 \text{ mm}^2/\text{s}$ ,  $T = 40^\circ\text{C}$ )

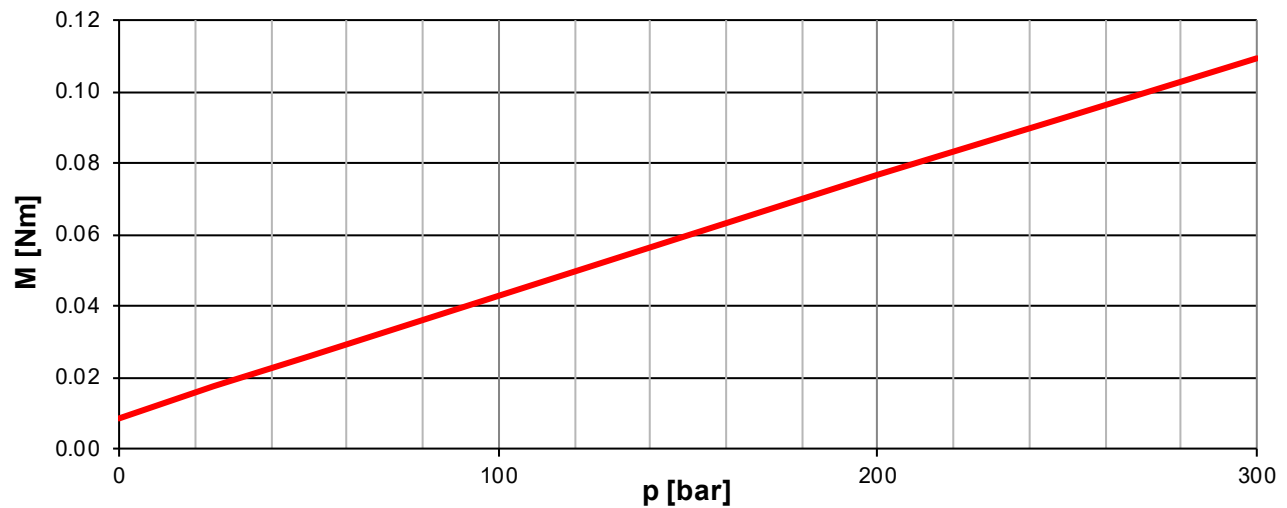
#### flow rate as a function of rotation speed

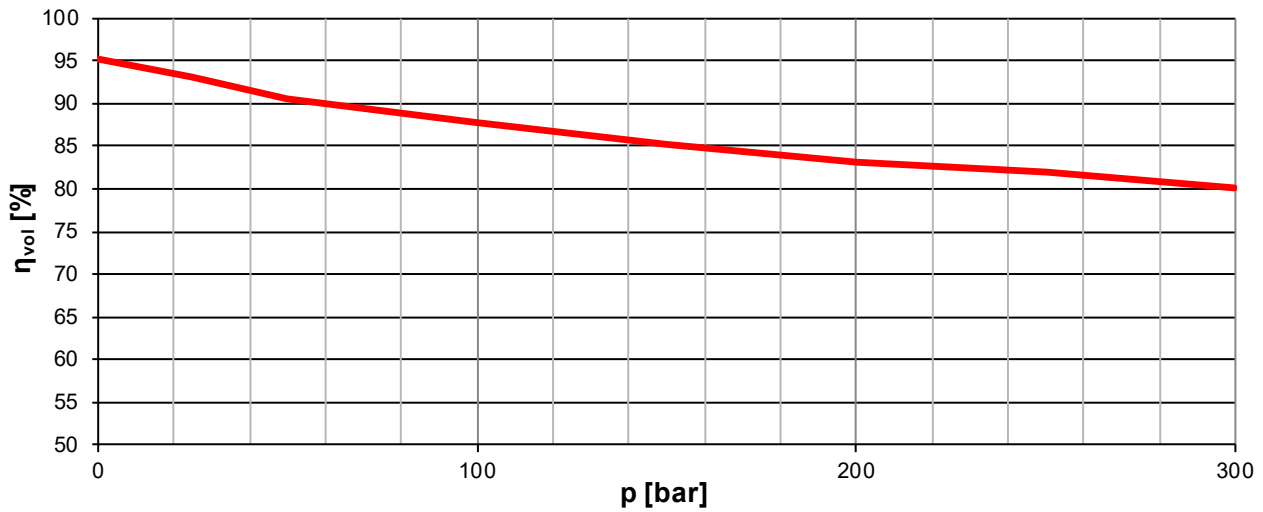
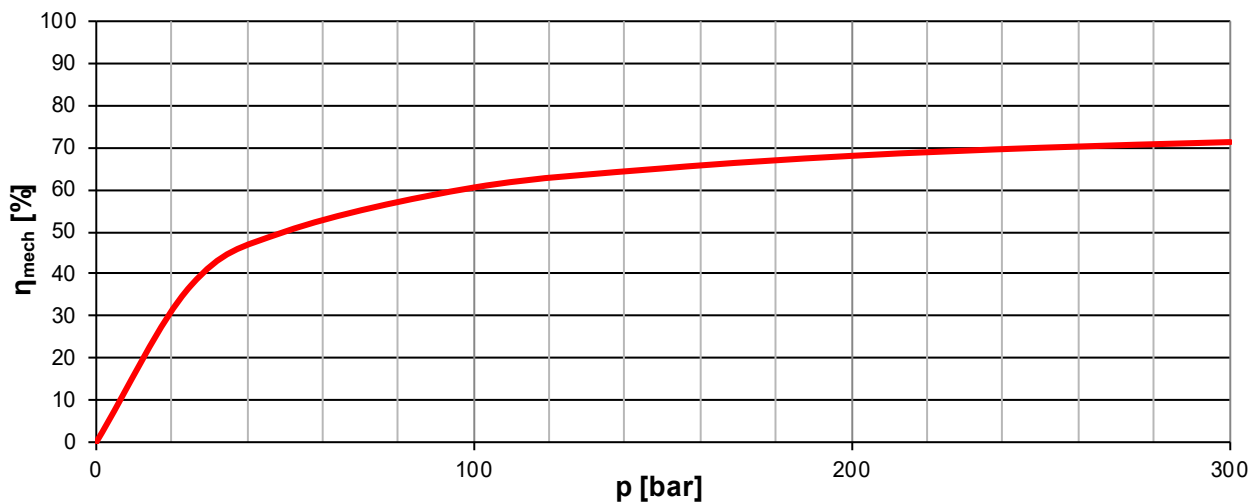
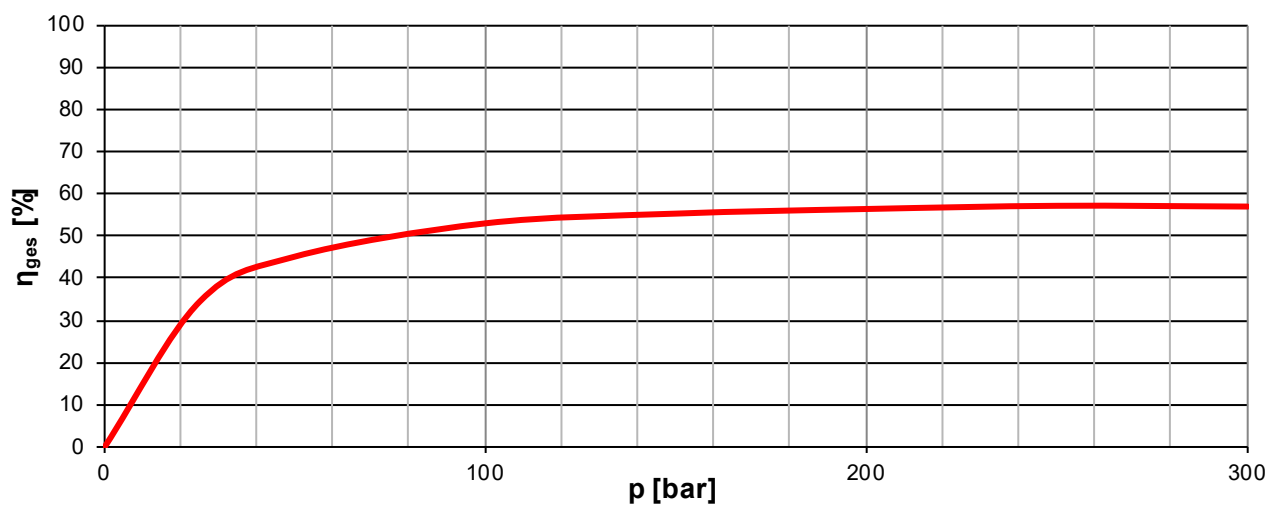


#### flow rate as a function of pressure



#### torque as a function of pressure



**volumetric efficiency as a function of pressure****mechanical efficiency as a function of pressure****overall efficiency as a function of pressure****Bieri Hydraulik AG**

Könizstrasse 274  
CH-3097 Liebefeld  
Tel. +41 31 970 09 09 | Fax +41 31 970 09 10  
info@bierihydraulics.com | www.bierihydraulics.com

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.