

MICRO-Axial piston pumps

Type AKP30

up to 300 bar

0,012 to 0,016 cm³/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

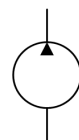


Applications

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

Design

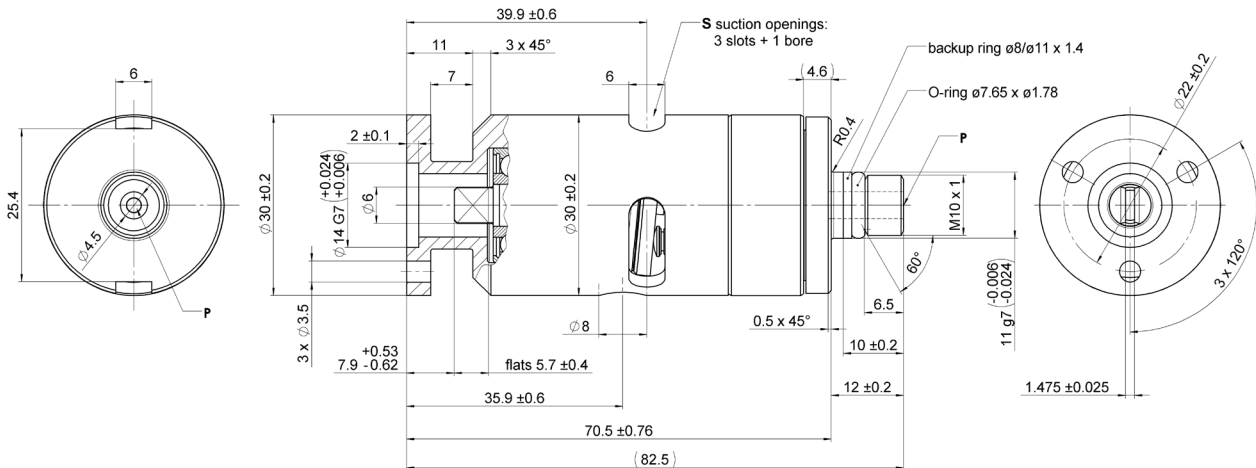
- Design with 2 or 3 pistons
- Valve controlled on pressure and suction side (not usable as motor)
- Swash shaft with amply dimensioned rolling bearings
- Rotating wobble plate
- Submerged pump, suction side open to tank, no shaft seal
- Small mounting dimensions
- Interface for the direct fitting of 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 ² /s
Max. operating pressure	300 bar
Displacement volume	0,012 to 0.016 cm ³ /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 ⁻¹
Direction of rotation	any
Weight	see overview "Product information"
Materials	housing: steel pump head: high-strength steel

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 [cm³/rev]
 n = speed [rpm]
 η_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

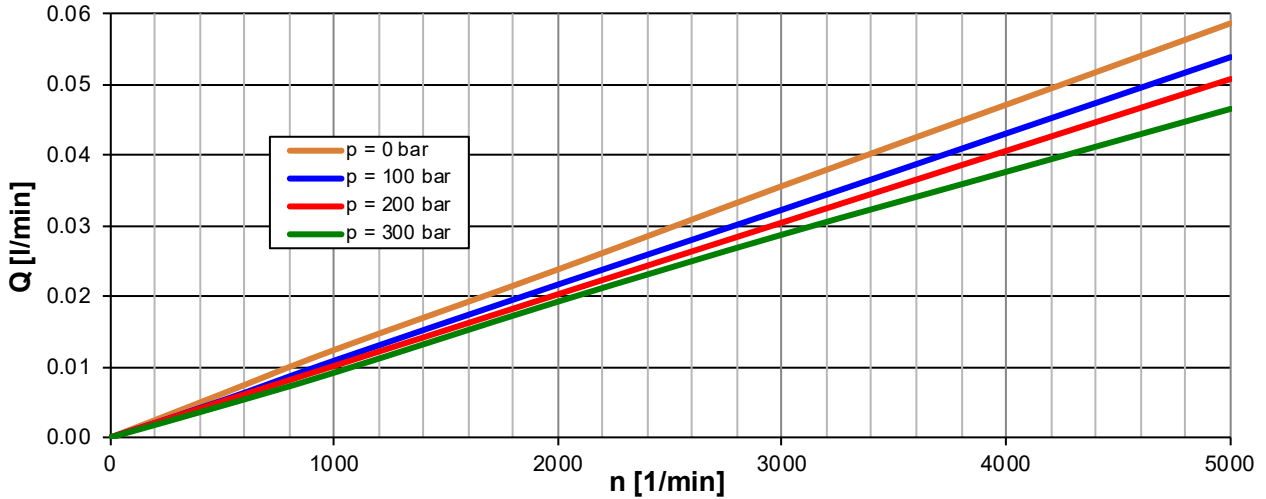
$$M = \frac{p \cdot V_g}{62,8 \cdot \eta}$$

M = torque [Nm]
 V_g = displacement volume [cm³/rev]
 η = overall efficiency approx. 0,55

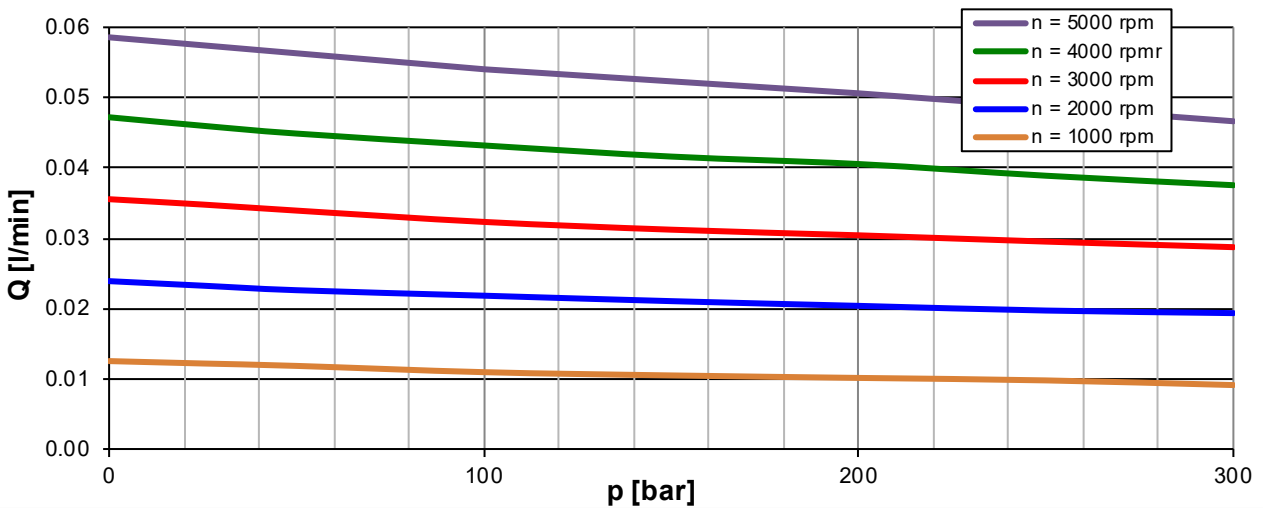
Characteristics AKP30-0,012

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

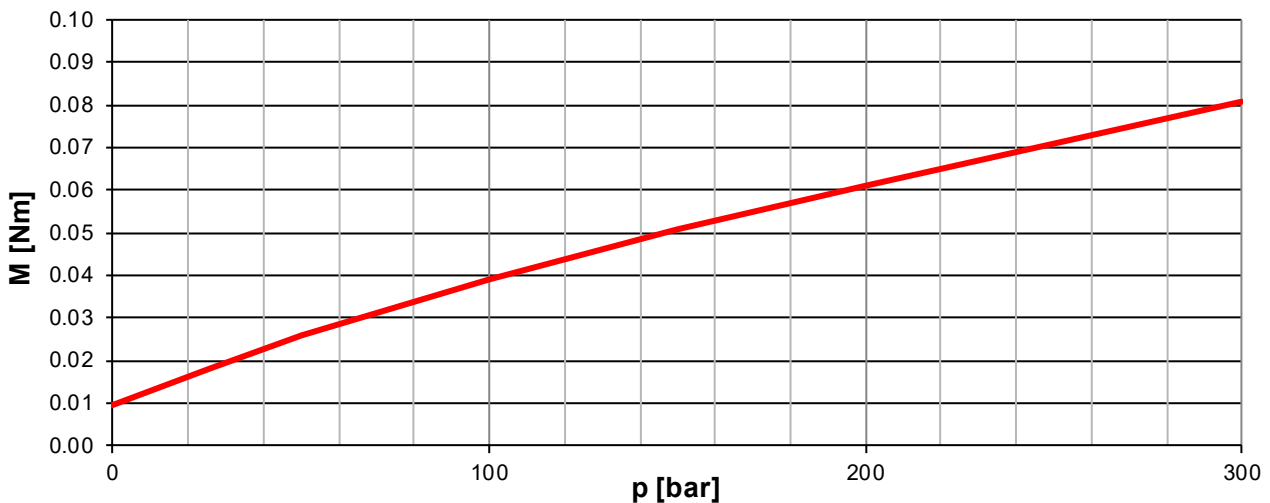
flow rate as a function of rotation speed

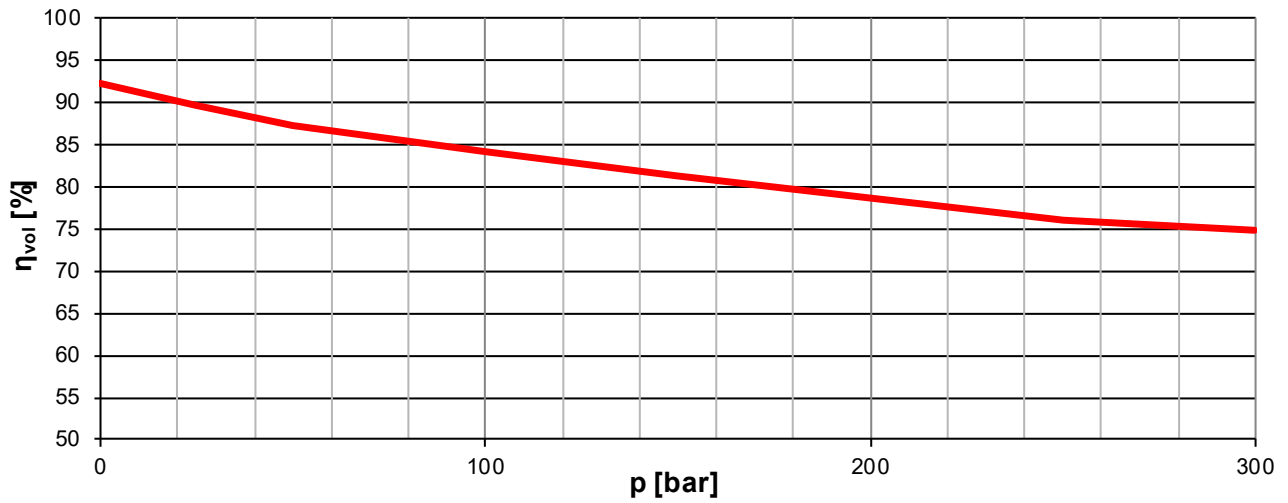
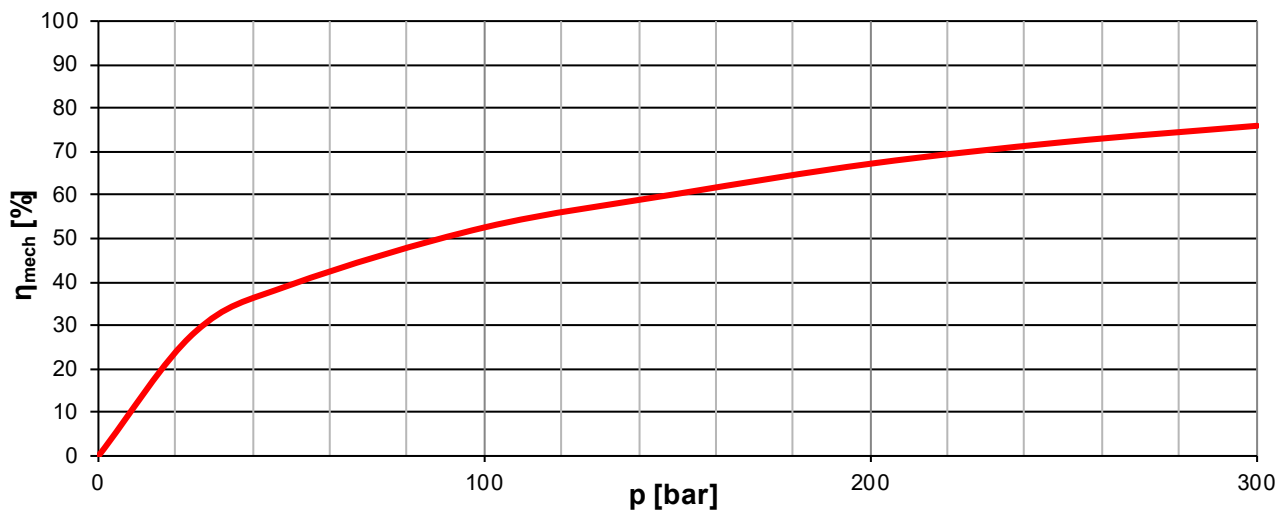
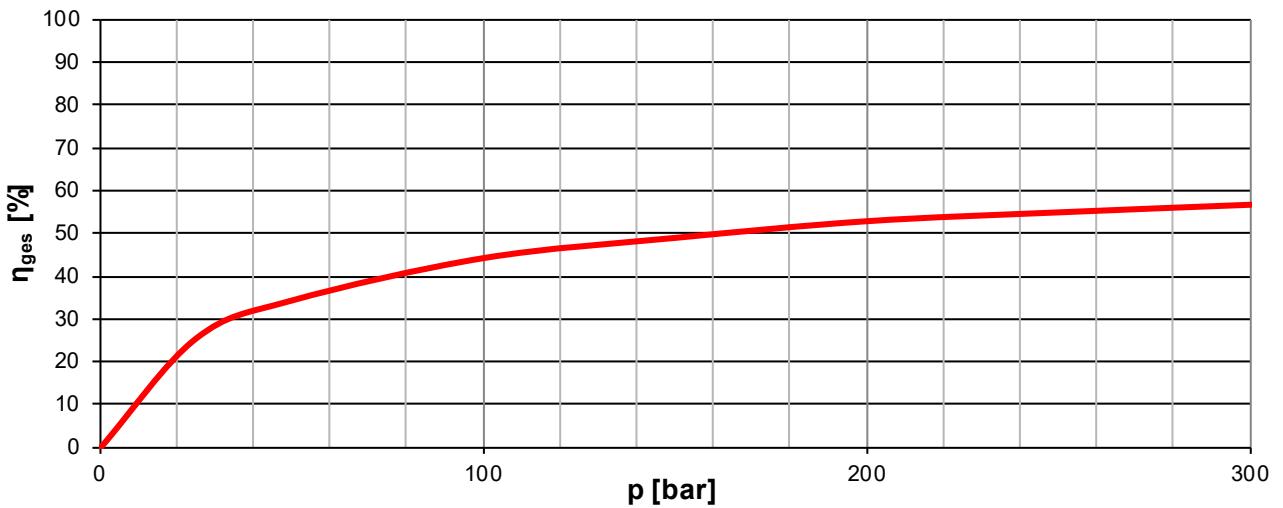


flow rate as a function of pressure



torque as a function of pressure

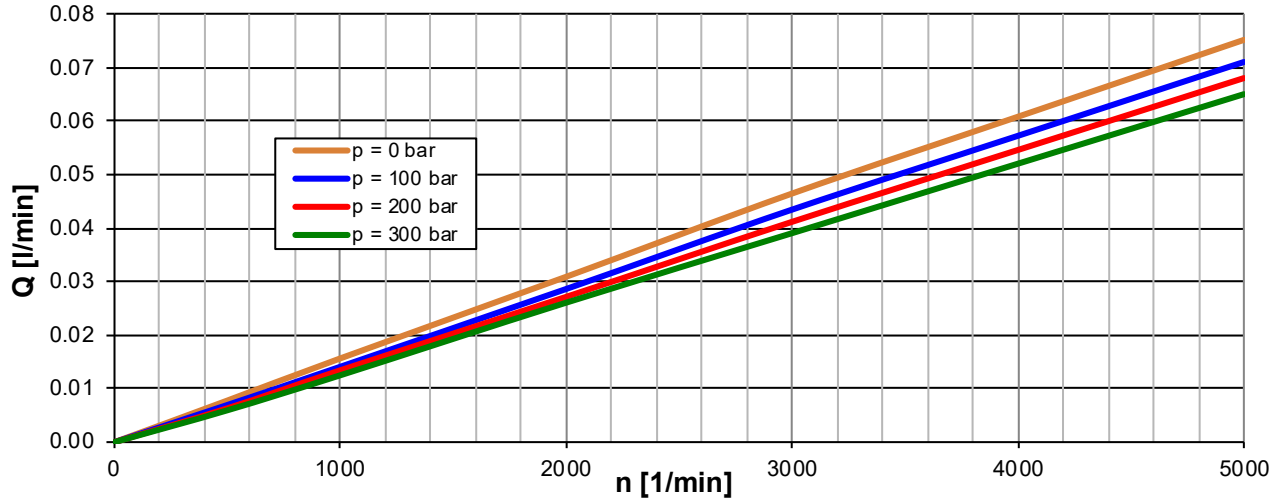


volumetric efficiency as a function of pressure**mechanical efficiency as a function of pressure****overall efficiency as a function of pressure**

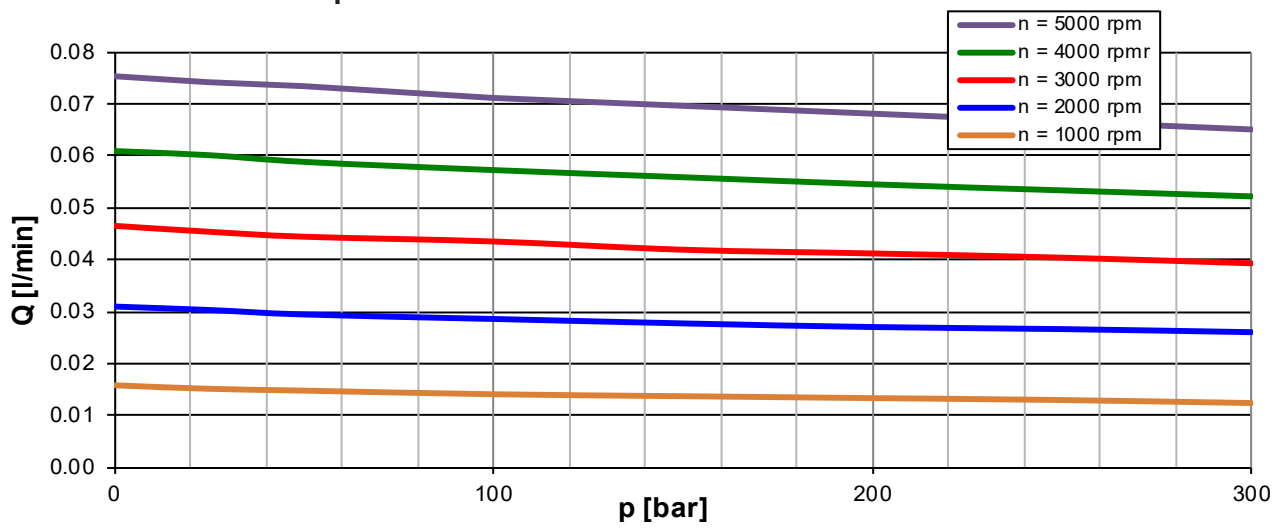
Characteristics AKP30-0,016

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

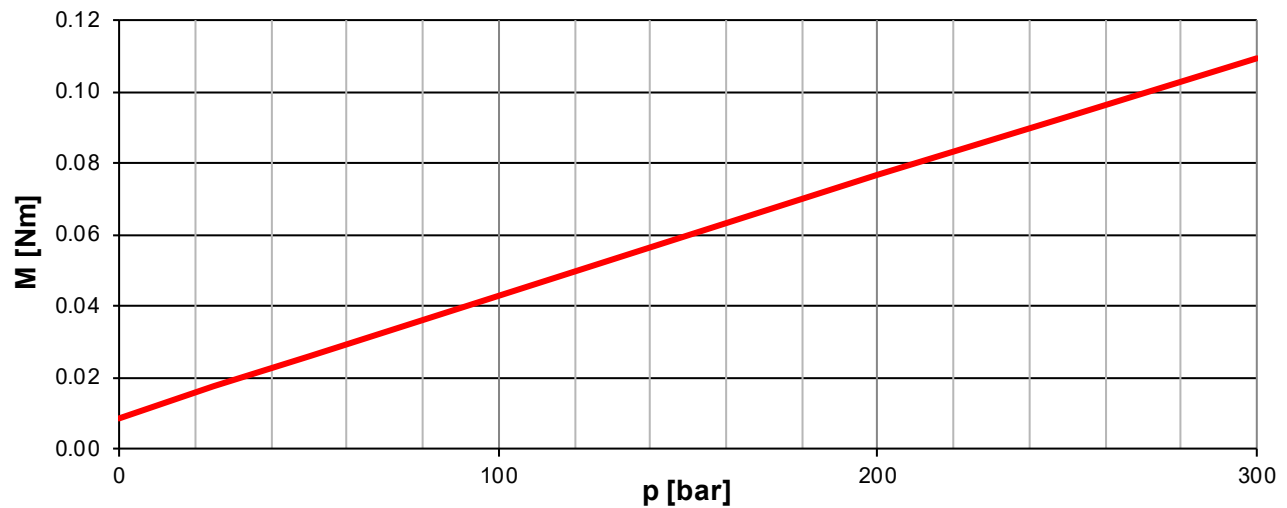
flow rate as a function of rotation speed



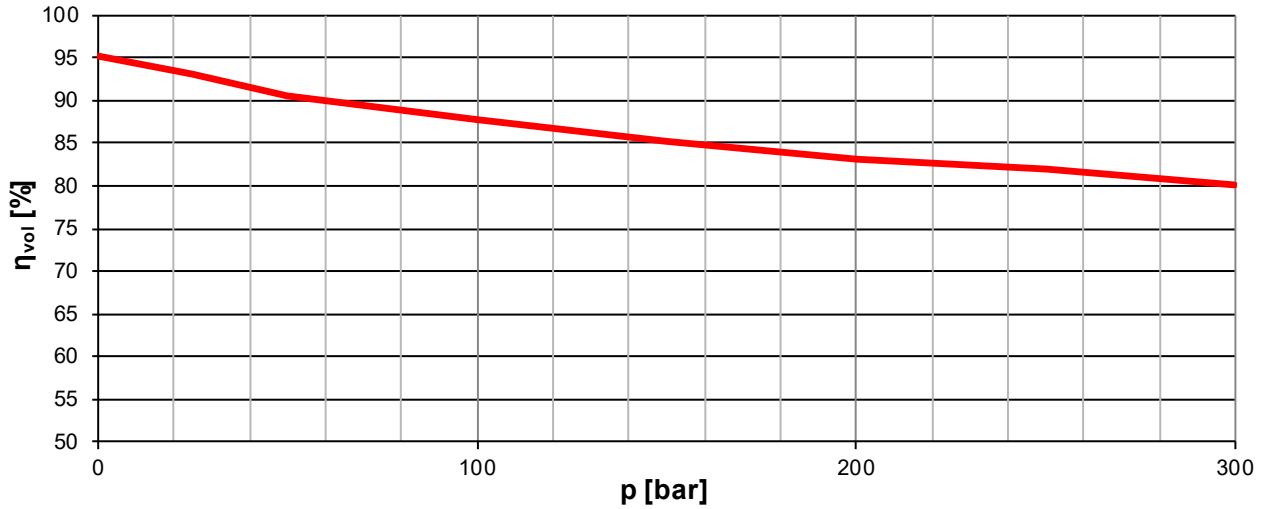
flow rate as a function of pressure



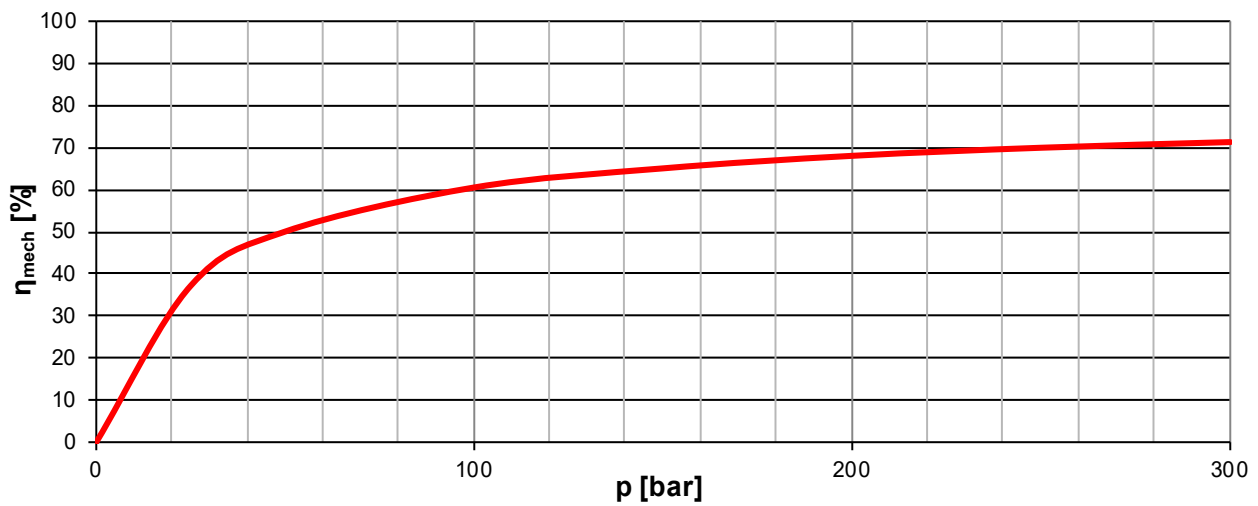
torque as a function of pressure



volumetric efficiency as a function of pressure



mechanical efficiency as a function of pressure



overall efficiency as a function of pressure

