

# Micro-Axial piston pumps

## Type AKP103/105

up to 500 bar

0.1 to 0.3 cm<sup>3</sup>/rev

### Features

- High volumetric efficiency (also by very low speed rates)
- Low noise level
- Wide speed range
- Continuous self lubrication and cooling through the suction flow
- Small mounting dimensions
- Automatic venting by raising and lowering the pressure or by switching the motor on and off several times
- Venting time can be shortened essentially through a pre-filling

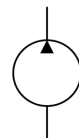


### Design

- Offshore
- Oil and gas
- Oceanographic research devices, ROVs
- Handling systems
- Hydraulics systems with small displacements
- Usable even in unfavourable ambient conditions
- Small power units

### Applications

- Design with 3 or 5 pistons
- Valve controlled on pressure and suction side (not usable as motor)
- Wobble shaft with amply dimensioned rolling bearings
- Rotating wobble plate



### Technical data

Hydraulic fluid	mineral oil according to DIN 51524 (other fluids on request)
Fluid temperature range	-20 to 80 °C
Ambient temperature range	-30 to 50 °C
Viscosity range	5 to 220 mm <sup>2</sup> /s
Max. operating pressure	500 bar
Operating pressure suction side	-0.2 bar to 0.5 bar gauge pressure
Filtration (recommendation)	according to NAS 1638 class 6 resp. ISO/DIN 4406 17/15/12
Axial force onto driving shaft	can't be taken up
Radial force onto driving shaft	on request
Max. rotation speed	5000 rpm
Direction of rotation	any
Installation position	according to mounting drawing
Weight	see overview "Product information"
Materials	housing: aluminium anodised pump head: steel browned

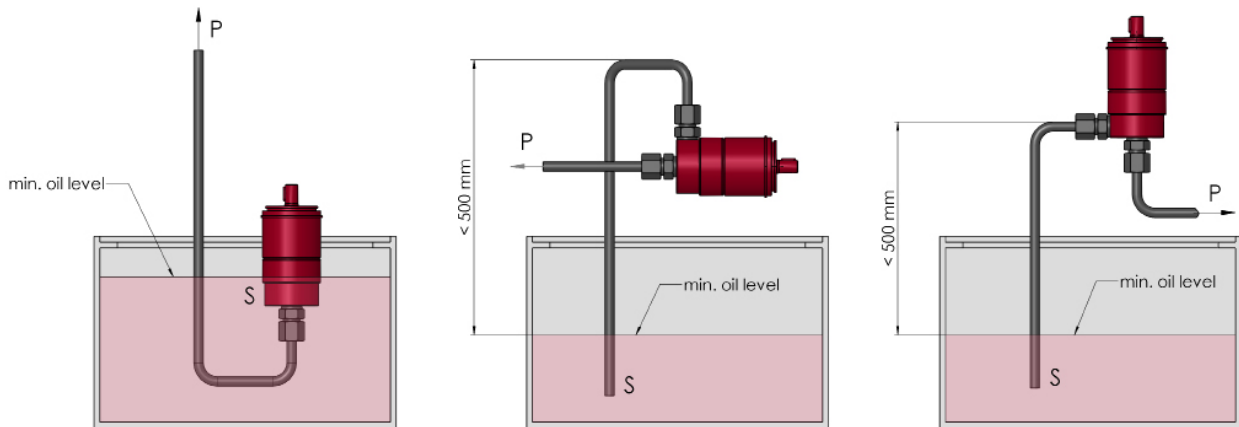
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up to 500 bar  
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## Type code

<b>Example</b>	<b>AKP 103 - 0,1 - 500 - V - A</b>	<b>00</b>
<b>MICRO-Axial piston pumps</b>		<b>Design</b> 00 ... 99 For internal purposes
<b>Size</b>	103 105	
<b>Displacement volume [cm<sup>3</sup>/rev]</b> See overview „product information“		<b>Index</b> Please leave blank For internal purposes
<b>Max. operating pressure [bar]</b> See overview „product information“		<b>Design revision</b> For internal purposes
<b>Seal material</b>	V FKM other seal materials on request	

## Mounting



Suction filter recommended

## Product information

size	displacement volume [cm <sup>3</sup> /rev]	max. operating pressure [bar]	max. rotation speed [rpm]	number of pumping elements	weight [kg]	max. torque [Nm]	max. power [kW]	part no.
103	0.1	500	5000	3	0.9	1.05	0.55	3678021
105	0.3	500	5000	5	0.9	2.99	1.57	3678024

**Note:** The flange (part no. 3683105) has to be ordered separately!

### 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. 0.75

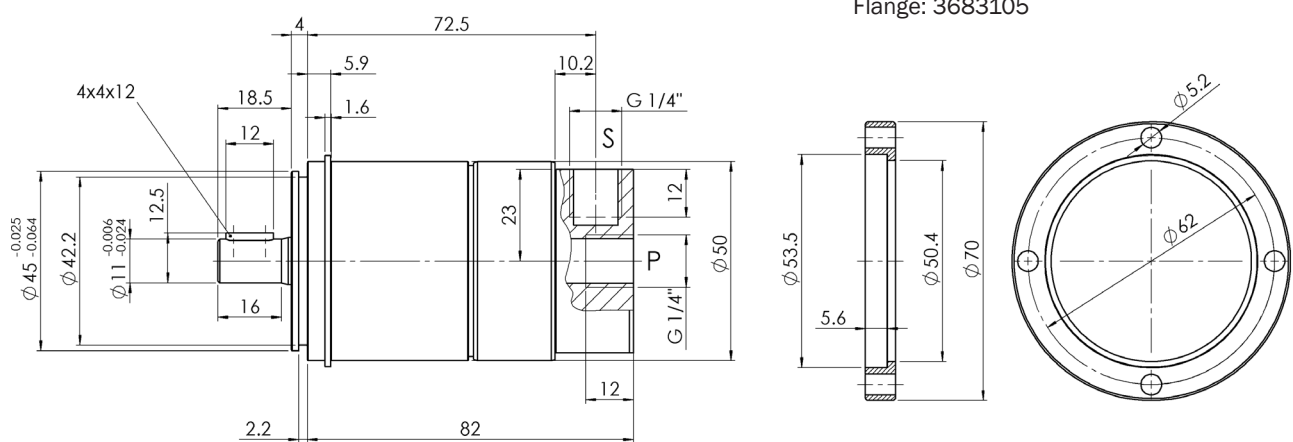
$k$  = pulsation factor  
 - with 3 pumping elements:  $k$  approx. 1.05  
 - with 5 pumping elements:  $k$  approx. 1.02

### Calculation of driving motor torque

$$M = \frac{p \cdot V_g}{62.8 \cdot \eta_t}$$

$M$  = torque [Nm]

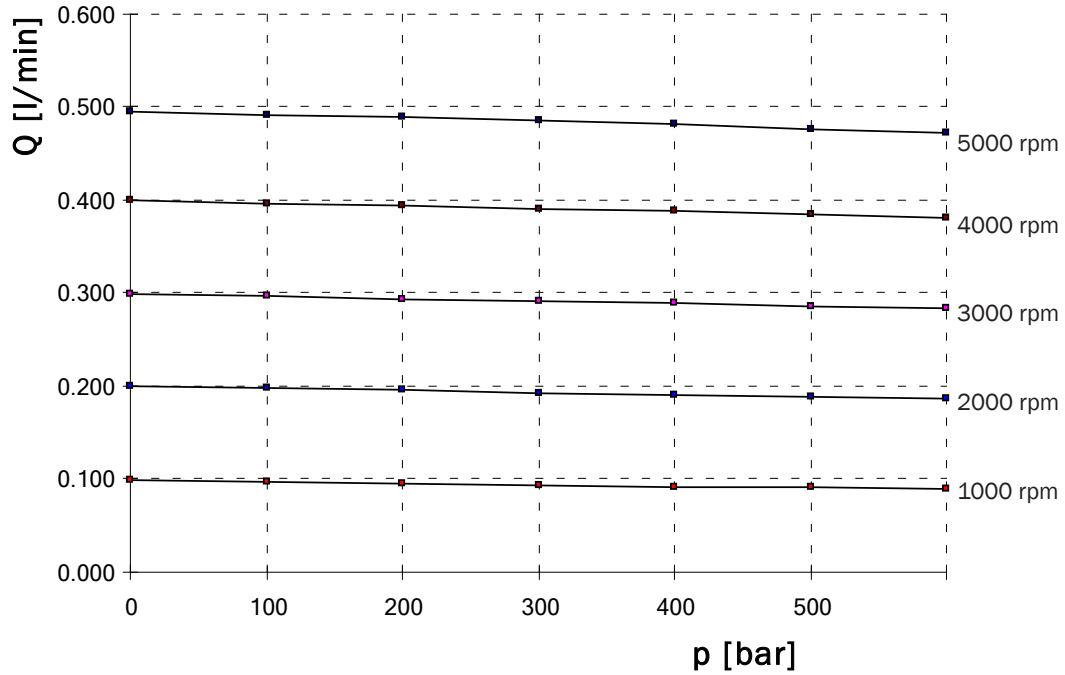
## Dimensional drawings



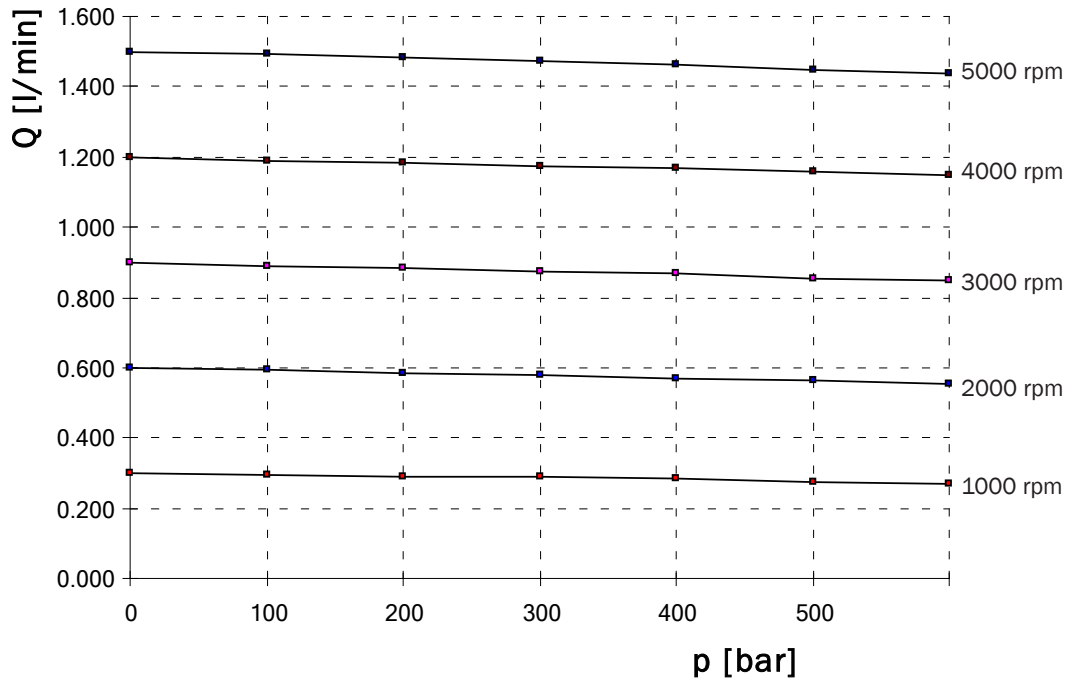
### Characteristics

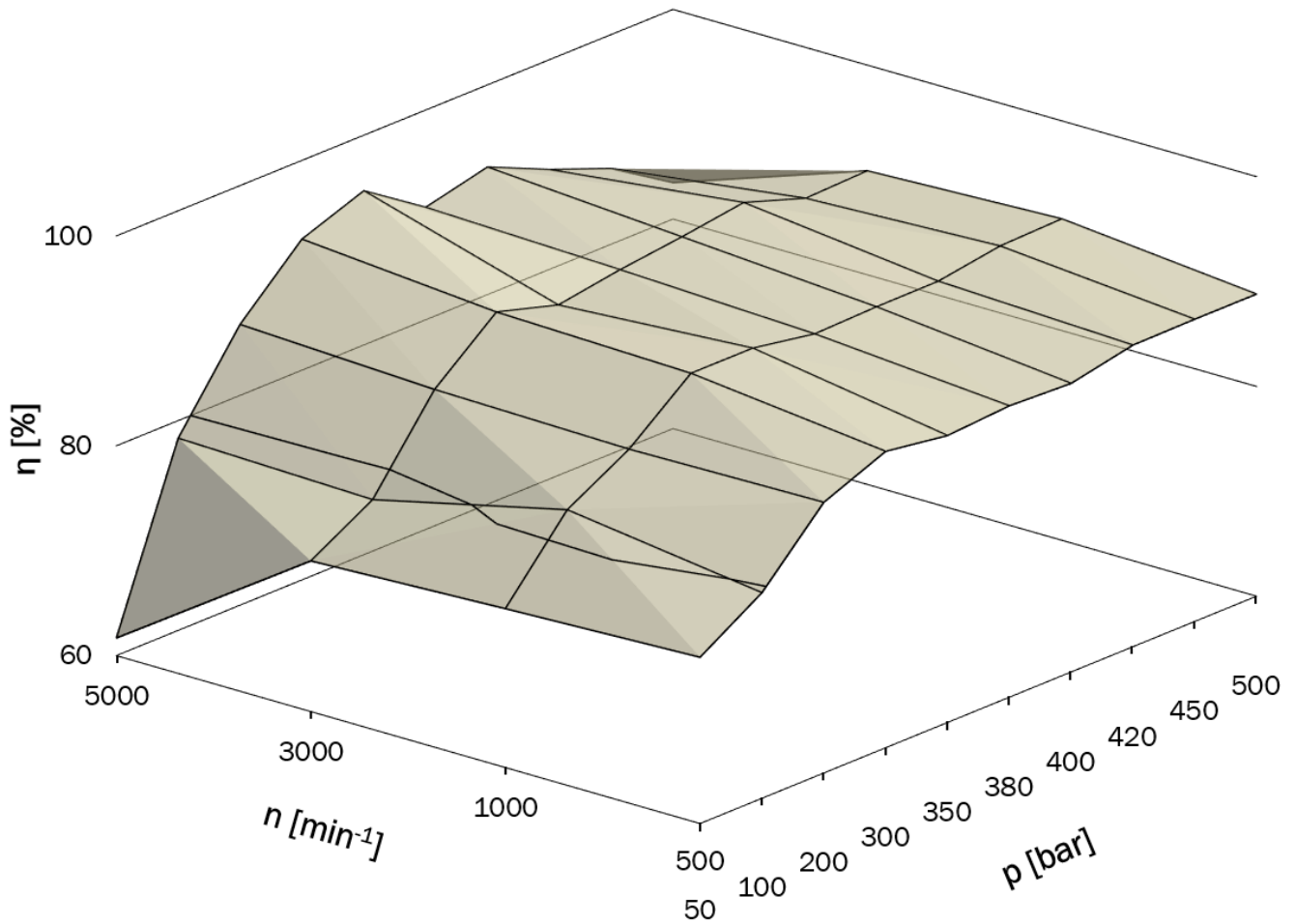
( $v = 30 \text{ mm}^2/\text{s}$ ,  $T = 40 \text{ }^\circ\text{C}$ )

#### AKP103



#### AKP105



**Overall efficiency AKP 103/105****Bieri Hydraulik AG**

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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.