

# HUS Pneumatic double-piston rotary actuators



Technical description

DKSM

TB-0.500-01-08.03

09/09/2020

## Design principle Functional drawings TB-0.500-C2 and TB-0.500-C3

Two pistons (3.503) located in a housing made of special cast iron (4.501) and arranged in opposite directions with screwed-on gear racks (3.506) engage with the toothed centric switching shaft (4.504), converting the linear movement into a limited rotary movement.

The piston pair moves in a floating motion. The transverse forces generated by the gear teeth are absorbed by piston rods (3.505), which are firmly connected to the pistons.

High-quality double lip seals (5.520) are used as piston seals. The advantage of this sealing combination is that the function of sealing and guiding is performed simultaneously. The piston itself does not come into contact with the cylinder wall. To solve problems in difficult applications, it is also important that there is only one sealing point for the lifting movement.

Sealing of the operating shaft, which is mounted centrally in slide bearings (4.509), and of all static sealing points is effected by means of O-rings (5.521).

## Function *\*double-acting\** Functional drawing TB-0.500-C2

The pressure medium enters through the upper pressure port "A" in the centre of the housing and flows through channels against the outer piston sides. The pistons move in opposite directions and turn the switching shaft into the closed position. (centre section)

The lower pressure port "B" leads the pressure medium to the inner piston sides. When port "A" is vented, the pistons move to the open position. (lower section)

The torque that can be achieved depends on the area of the piston and the dimensions of the pinion, and on the available operating pressure for the application. The torque curve is linear over the entire switching path.

## Function *\*single acting\* with spring return* Functional drawing TB-0.500-C3

If automatic closing or opening of the valve in case of power failure is desired, the pressure medium is only admitted through the lower port "B" to the inner piston sides. (lower section)

The reset forces are generated by means of spiral springs. When port "B" is vented, the springs relax and move the pistons inwards. (centre section)

The design allows the use of generously dimensioned compression springs with a low spring rate. A long outer guide of the springs in sleeves made of stainless steel and inner support on the piston by spring plates, also made of stainless steel, guarantee exact spring guidance and prevent abrasion on aluminium parts while the springs are "working". The springs are designed to match the available operating pressure. With this design, the usable torque is lower and in line with the forces of the springs.

"FRc = spring closing"  
"FRo = spring opening"

The pair of pistons is mounted so that the direction of rotation the direction of rotation corresponds to the standard direction.