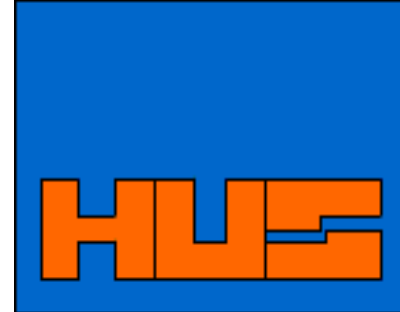


HUS Pneumatic double-piston rotary actuators

Operating and maintenance instructions DKSM



TB-0.500-03-08.03

09/09/2020

1.0 Putting into operation

1.1 General

HUS double piston rotary actuators are usually supplied ready for operation. A safety mechanism for transport is not fitted.

1.2 Direction of rotation and of actuation

DKSM double-acting

When looking at the top of the actuator, the direction of rotation is clockwise for closing. Any change in rotational direction made at the customer's special request will be specially marked on the actuator. By default, the operating shaft for effecting actuation is mounted "lengthwise to the pipe axis" and is indicated by the position of the flat-head connector on the upper end of the shaft. The operating shaft can be installed rotated through 90° for actuation "transverse to the pipeline axis".

DKSM single-acting spring closing

The actuators indicate the position "ZU" (CLOSED) in a vented state. When subjected to pressure from the control medium, the actuator opens in a counter-clockwise direction. The operating shaft can be installed rotated through 90° depending on the desired mounting position.

DKSM single-acting spring opening

The actuators indicate the position "AUF" (OPEN) in a vented state. When subjected to pressure from the control medium, the actuator closes in a clockwise direction. The operating shaft can be installed rotated through 90° depending on the desired mounting position.

1.3 Fitting the actuator to a valve

HUS double-piston rotary actuators have the standard connection interface for valves according to DIN/ISO 5211. The actuation movement onto the corresponding valves is generally effected with a lantern piece and coupling according to the NAMUR recommendation. Depending on the order, the connector form of the operating shaft can be designed to cater for customer requirements. Other inner square, other positions (0° / 45°), bores with feather key grooves according to DIN, inner flat head connector and coupling forms with inch dimensions are possible.

1.4 Fitting the actuator to control valves

The rotary actuators of the DKSM series have a NAMUR interface for direct mounting of control valves as standard. We recommend the use of 5/2-way control valves with a NAMUR interface for double-acting actuators and 3/2-way control valves with integrated air return for single-acting actuators. Installation material and sealing elements are included in the scope of delivery of the valve manufacturer. The M5 coding pin ensures the prescribed position of the control valve.

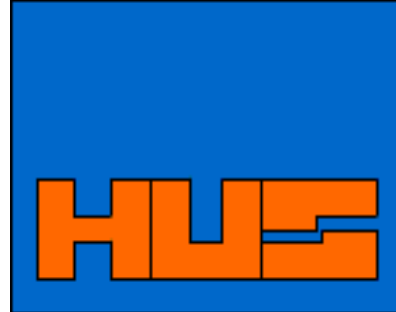
Sizes DKSM 250, DKSM 320 and DKSM 400 are equipped as standard with G ½ air connections and an additional hole pattern for a HUS intermediate plate with NAMUR interface.

1.5 Fitting the actuator to signal devices and positioners

HUS double piston rotary actuators are prepared as standard for the fitting of signal devices and positioners. The interface corresponds approximately to the design according to VDI/VDE 3845, with the only difference that the hole patterns on the top of the actuator are designed according to DIN/ISO 5211. Lanterns conforming to the standard are used as intermediate components, the upper hole pattern of which is always F05. The height of 60 mm up to size DKSM 160 and 80 mm up to size DKSM 400 then correspond to the mounting dimension according to VDI/VDE 3845. The mounting brackets for all sizes are available from stock.

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2.0 Maintenance and servicing

2.1 General

Complying with the limit values specified for pressures, temperatures and torques and following the instructions are prerequisites for the proper functioning of the rotary actuators and must therefore be ensured by the user. Proper fitting of the rotary actuators onto the valve, a perfectly prepared control medium and controllable ambient conditions are prerequisites for long-term operation without special maintenance. However, for more difficult operating conditions, we recommend using lightly lubricated and filtered compressed air as the control medium.

2.2 Technical data Standard version

Control pressure range:	up to 10 bar	up to 16 bar possible
Control medium:	compressed air inert gases	filtered, dry or oiled
Sealing elements:	NBR	standard version
Ambient temperature:	-30 to + 80 °C	standard version
Lubrication:	long-term lubrication	KLÜBER – special greases
Paint:	DD paint	RAL 5012 (light blue)

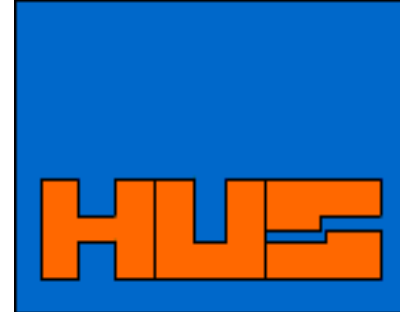
2.3 Tools for disassembly and assembly

DKSM size	1 x ring-/open-end spanner	1 x open-end spanner	2 x Allen keys	1 x pliers DIN 5254 for circlips	1 x plastic rod rd x length	for FR actuators 2 Sx stud bolts with nut washers
050	SW 8	SW 8	SW 4	A10 (ZGA1)	12 x 150	M 5 x 60
063	SW 10	SW 10	SW 5	A10	15 x 200	M 6 x 80
080	SW 10	SW 11	SW 5	A10	15 x 200	M 6 x 100
100	SW 10	SW 14	SW 6	A19 (ZGA2)	20 x 250	M 6 x 120
125	SW 13	SW 17	SW 8	A19	20 x 250	M 8 x 160
160	SW 13	SW 22	SW 10	A19	25 x 300	M 8 x 160
175	SW 17	SW 30	SW 10	A19	25 x 300	M 10 x 200
200	SW 17	SW 30	SW 14	A19	25 x 300	M 10 x 200
250	SW 19	SW 36	SW 17	A40 (ZGA3)	40 x 400	M 12 x 250
320	SW 24	SW 24	SW 19	A40	40 x 400	M 16 x 315
400	SW 24	SW 24	SW 22	A40	40 x 400	M 16 x 315

With the above tools, the rotary actuators up to size DKSM 250 can be disassembled and assembled by qualified personnel. For sizes 320 and 400, special documents are also prepared based on the commission.

HUS Pneumatic double-piston rotary actuators

Operating and maintenance instructions DKSM



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3.0 Disassembly and assembly of rotary actuators

3.1 General Important information !

Do not carry out any work on actuators that are under auxiliary power. Work may only be performed on unpressurised actuators, i.e. the pneumatic and electrical supply lines must be disconnected before disassembly. For single-acting rotary actuators with spring return, the covers are pre-tensioned and may only be removed according to the instructions under 3.4. Any necessary work may only be carried out by qualified personnel familiar with the product.

All applicable accident prevention regulations must be observed.

All attachments on the actuator must be removed before disassembly. Actuators must be cleaned with appropriate cleaning aids before disassembly. Mechanical damage to the outer parts and to the operating shaft must be repaired where necessary.

3.2 Disassembly DKSM double-acting

Remove cover screws.
Carefully turn the operating shaft on the outer flat-head connector in a counter-clockwise direction to push the covers out of the seal seat. The covers can be pulled out by hand when the sealing rings are visible.
Turn the operating shaft further to press the pistons outwards and, after disengagement, clamp them to the piston bolts using two hexagonal keys and pull them out.
Remove the circlip and thrust washer from the upper shaft end and press the operating shaft downwards out of the housing.

Do not mark any components. Part pairs are interchangeable.

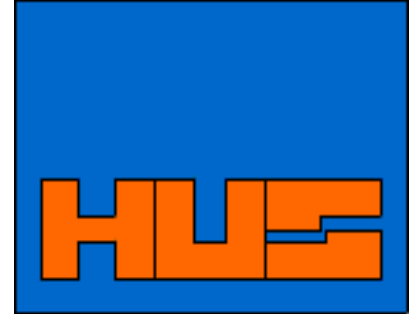
Clean all the parts and check for damage. Replace where necessary. The sealing elements of the operating shaft (O-rings) should always be replaced. The circlip on the operating shaft must always be replaced.

3.3 Fitting of DKSM double-acting

<p>Stand housing upright Grease piston running surface Insert 1st piston in correct position Adjust piston position. Put on 1st cover Connection flange to the front Push piston back piston running surface Insert 2nd piston in correct position Adjust piston position. Press piston down Put on 2nd cover Press piston into end position Grease shaft bore Insert shaft in correct position Press shaft into end position Secure operating shaft axially Check operating position Test activation</p>	<p>Connecting flange at front. Gear rack to bottom left Use Allen key Screw down Unit on cover Gear rack to bottom left Use Allen key Until inner air duct visible Screw down Use plastic rod gentle oscillating motion with ball of hand Using thrust washer and circlip Correct if necessary</p>	<p> Grease HUS logo upwards. Turn over housing Use plastic rod Grease Take care with gear rack guide HUS logo upwards Through large shaft bore Use open-end spanner Do not use force</p>
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HUS Pneumatic double-piston rotary actuators

Operating and maintenance instructions DKSM



TB-0.500-06-08.03

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3.0 Disassembly and assembly of rotary actuators

3.4 Demontage DKSM-FR mit Federrückstellung

Caution! *Covers are spring-tensioned*

Remove two opposite screws and replace them with long screws or stud bolts with nut and washers, making use of the maximum screw-in depth in the housing.
 Remove the remaining cover screws.
 The cover is pushed off through loosening the two nuts evenly until the spring has no more pre-tension. Make sure that the screws or stud bolts do not turn back during the release process.
 Remove the 2nd cover in the same way.
 Press the pistons outwards by carefully turning the operating shaft on the outer flat-head connector in a counter-clockwise direction and, after disengagement, clamp two hexagon keys to the piston bolts and pull out the pistons.
 Remove sealing rings on the air ducts. Pay attention to the spring plate in the piston.
 Remove the circlip and thrust washer from the upper shaft end and press the operating shaft downwards out of the housing.

Do not mark any components. Part pairs are interchangeable.

Clean all the parts and check for damage. Replace where necessary. The sealing elements of the operating shaft (O-rings) should always be replaced. The circlip on the operating shaft must always be replaced.

3.5 Assembly DKSM-FR with spring return

Stand housing upright	Connection flange to the front Connection flange to the rear	Applies to function "Close spring" Applies to function "Open spring"
Grease piston running surface		Grease
Insert 1st piston in correct position	Gear rack to the bottom left	
Adjust piston position	Use Allen key	
Put on 1st cover	Screw on	Only 2 x opposite
Turn over housing		
Push piston back	Unit on cover	Use plastic rod
Grease piston running surface		Grease
Insert 2nd piston in correct position	Gear rack to the bottom left	
Adjust piston position	Use Allen key	
Press piston down	until inner air duct visible	Take care with gear rack guide
Insert 2nd cover	Screw in place	Only 2 x opposite
Press piston into end position	with plastic rod	through large shaft bore
Grease shaft bore	Top and bottom	
Insert shaft in correct position	gentle oscillating motion	Use open-end spanner
Press operating shaft into end position	with ball of hand	Do not use force
Secure operating shaft axially	with thrust washer	and circlip
Check switch position	Correct if necessary	Piston at inner position
Loosen 1st cover again	Reposition with	spring and spring plate
Fit spring cover	in reverse order to disassembly	Screw evenly
Loosen 2nd cover again	Reposition with	spring and spring plate
Fit spring cover	in reverse order to disassembly	Screw evenly
Test activation		