



## Summary

Double-piston actuator  
 Type SAD-HD/SAF-HD  
 simple-/double acting with hydraulic  
 Attenuation

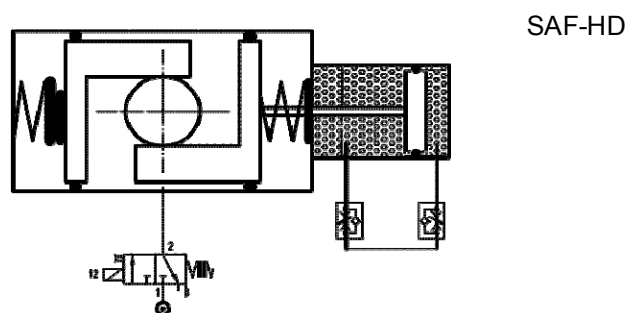
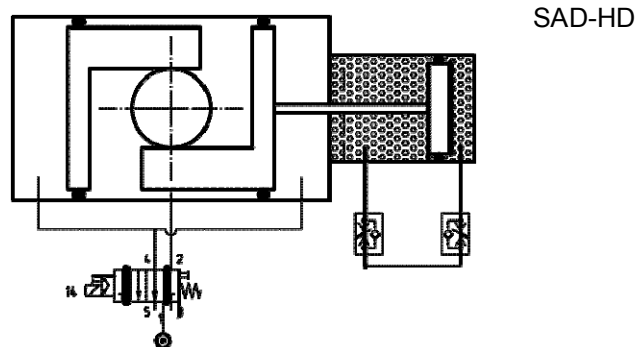
**These instructions apply only in conjunction with the assembly instructions SAD / SAF!**

## Function

The reciprocating motion of a piston rod is transferred to a hydraulic piston. This piston moves in a closed hydraulic system, which has an adjustable cross-section Change (slot throttle) influences the steaming time.

The variably adjustable speed of the OPEN and CLOSE movement is realized through two way flow control valves.

## Principle of representation



## Advantage

- Avoids pressure shock in the piping system.
- Fittings and lining are preserved
- Even with large variations in temperature almost constant steaming times
- By the infinitely adjustable speed is an adaptation to the environment influences possible on site
- OPEN and CLOSE movement independently adjustable.

## Setting of that streaming time



The steaming time of the OPEN and CLOSED movement is performed by two-way flow control valves. Throttle valves are in accordance with DIN ISO 1219 to the group of current valves.

Their functional role within the hydraulic circuit is to produce a variably adjustable, in accordance with the throttle characteristic flow dependent pressure drop, with the linear drive, wherein the speed is obtained.

The throttle valves are used slit coils with built-in check valve to achieve the throttling effect in both or in one flow.

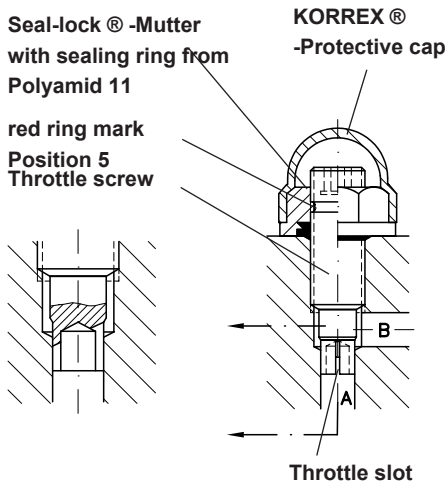
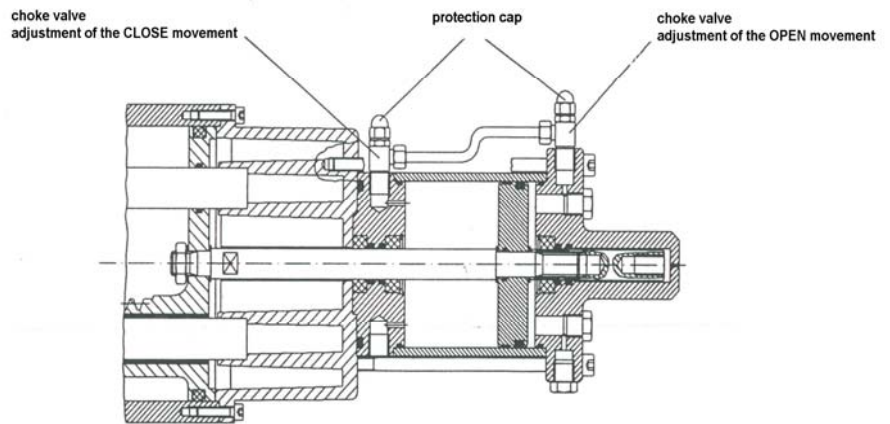
The gap width of each slot throttle stays over a certain Constant adjustment path, i.e. the throttle cross section varies linearly.

1 Remove protective caps

2 Loosen sealing nut (13)

3 Screw in choke longer steaming time  
Throttle screw out shorter steaming time

4 Tighten the packing nut (SW 13)



### ATTENTION!

**Throttle screws do not unscrew on red ring!**  
**Not set steaming time during the pivoting movement!**  
**Throttle screw is not to be fastened until stop!**  
**Take note of the maximum switching time!**  
**The throttle screws are not for a leak free oil Locking position.**  
**(Do not force into the closed position!)**Neuer Text

## Technical data

Angle of rotation:: 0° bis 90°  
 Torques see SAD/SAF 90°  
 Pressure Range: max. 6 bar  
 Temperature range: -20°C bis +80°C

Actuator	Operating time (sec.) unthrottled *			
	Open		Close	
	SAD	SAFs	SAD	SAFs
15	1	1	1	1
20	1	1	1	1
25	1	1	1	1
30	2	2	2	2
33	4	4	3	3
35	4	4	3	3
40	4	6	5	3
42	6	8	7	5
45	8	10	9	7

Between the above Switching time is a variable setting possible. All data were determined under the following preconditions:

\* With the two throttle check valves R1 / 4 ", the Switching times in both directions up to 60 seconds is possible.

Operating pressure  $p_e = 4,5$  bar

Springs number  $n = 9$  (bei SAF)

Ambient temperature = 20°C

Actuator without load

### Options

End position damping, e.g.:

0° to 70° low steaming time,  
 70° to 90° high steaming time  
 0° to 0° low steaming time

The way-/ Time ratio is freely selectable.

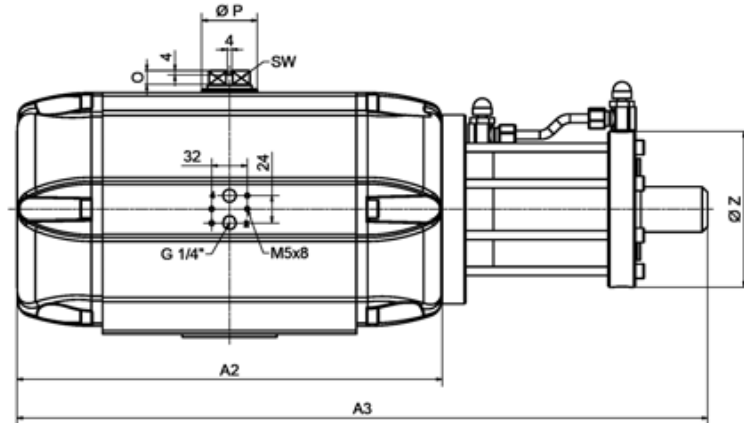
extended temperature range:

Low temperature: -40°C

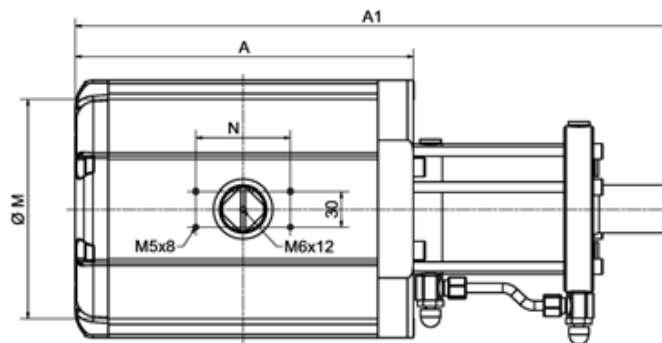
High temperature: 100°C



## Dimensions / Weight



SAF-HD 15-45



SAD-HD 15-45

Actuator	A1 / A3 (mm)		B (mm)		C (mm)		Weight (kg)	
	SAD	SAF	SAD	SAF	SAD	SAF	SAD	SAF
15	319	375	116	116	111	111	6,0	7,0
20	326	387	134	134	132,5	132,5	7,0	8,0
25	356	460	154,5	154,5	159	159	9,0	12,0
30	430	565	174	174	174	174	16,0	17,0
33	491	603	204	204	202	202	18,5	23
35	503	621	218	218	217	217	26,0	32,0
40	510	667	268	268	266	266	33,0	44,0
42	629	798	288	288	296	296	45,0	56,0
45	867	1023	330	330	337	337	97,0	120,0