

The Proven Mixproof Range

SMP-BC Sanitary Mixproof Valve

Application

SMP-BC is a sanitary pneumatic seat valve, designed for safety and leak detection when two different products flow through only one valve.

The valve is for use in stainless steel pipe systems.

Working principle

SMP-BC is remote-controlled by means of compressed air. The valve is a normally closed (NC) valve.

The valve is fitted with two small pneumatic normally open (NO) valves, a detecting valve and a CIP-valve.

The valve plug (the upper plug in a change-over valve) has two seals, forming a leakage chamber under atmospheric pressure between them. Leaking product flows into the leakage chamber and is discharged through the detecting valve.

SMP-BC can be cleaned by CIP by supplying compressed air to the actuator (see fig. 2).

During cleaning the valve, flow pattern against the closing direction of the valve plug makes SMP-BC insensitive to water hammer.

Standard design

SMP-BC is available in two versions, as a stop valve with one valve body or as a change-over valve with three valve bodies (sizes DN125-150 only as stop valve).

The valve bodies and the external actuator are clamped together. SMP-BC is fitted with one detecting valve and one CIP-valve. The seals and the lip seal can be serviced after removing the actuator.

SMP-BC, sizes DN125 and DN150 are very heavy. Therefore it is recommended to manufacture and use auxiliary handling equipment. Guidelines are given in IM 70771.

The recommended auxiliary equipment cannot be supplied by Alfa Laval.



Fig. 1. SMP-BC valve with body combination 30.

Valve Body Combinations

Stop valve:

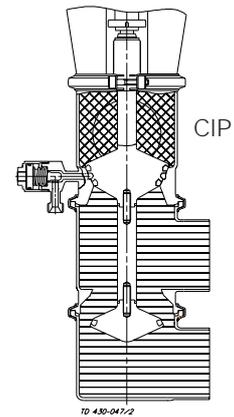
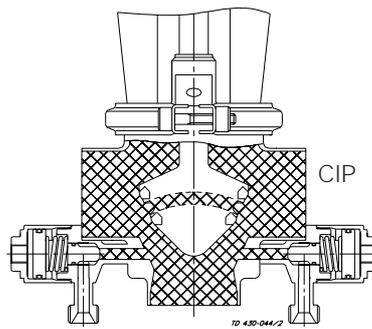
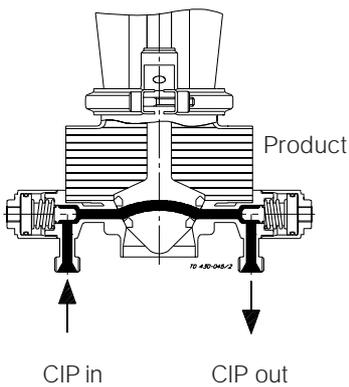
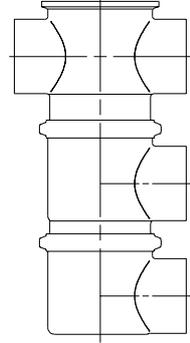
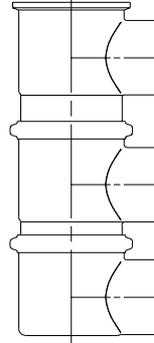
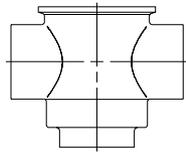
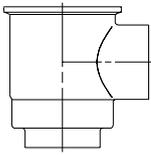
Change-over valve:

Type 20

Type 30

Type 111

Type 112



a. Closed stop valve:
Cleaning of the leakage chamber.

b. Open stop valve:
Cleaning of the valve body and the leakage chamber.

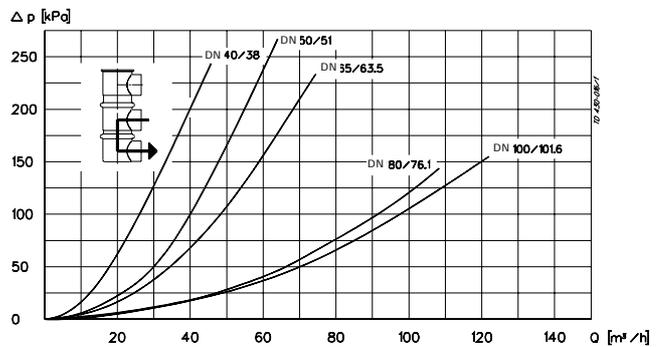
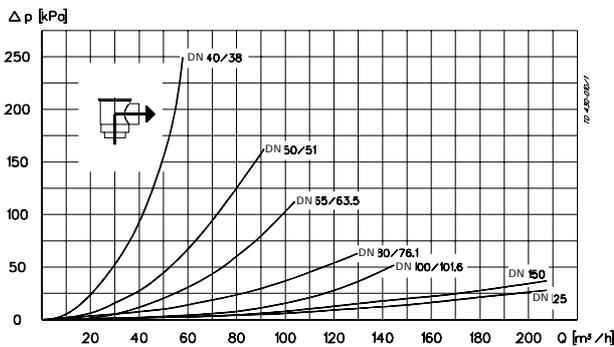
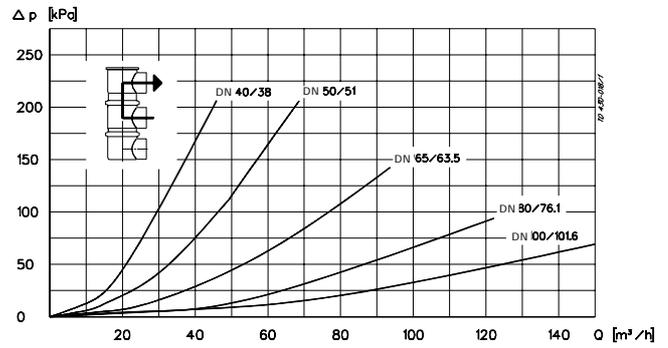
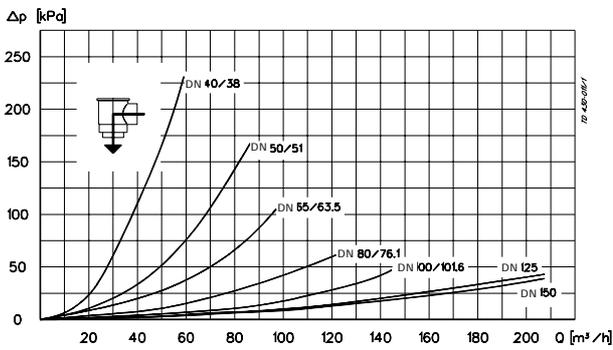
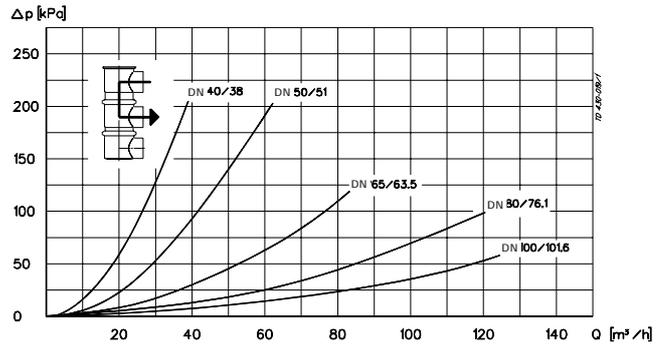
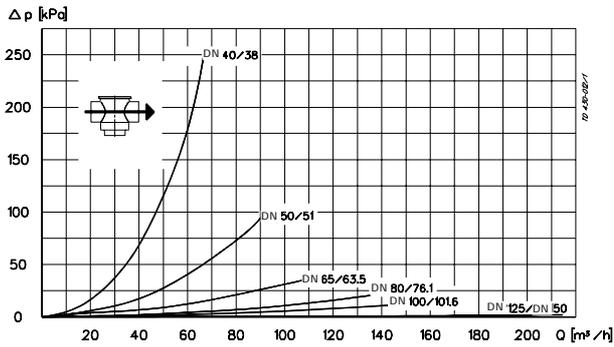
c. Closed change-over valve:
Cleaning of the upper valve body.

Fig. 2. Operation/cleaning.

Pressure drop/capacity diagrams

Stop valve:

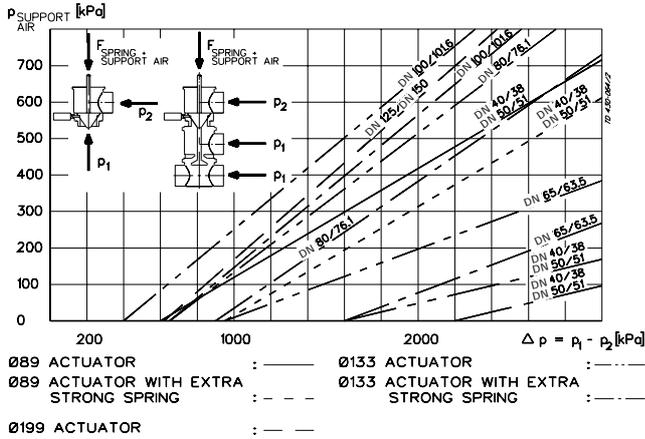
Change-over valve:



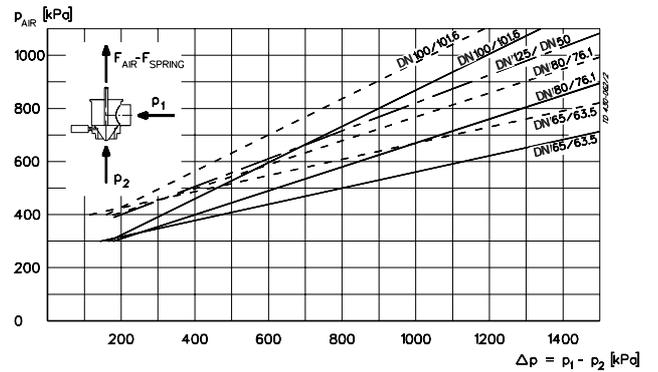
NOTE! For the diagrams the following applies:
 Medium: Water (20°C).
 Measurement: In accordance with VDI 2173.

Max-pressure difference/support air pressure diagrams

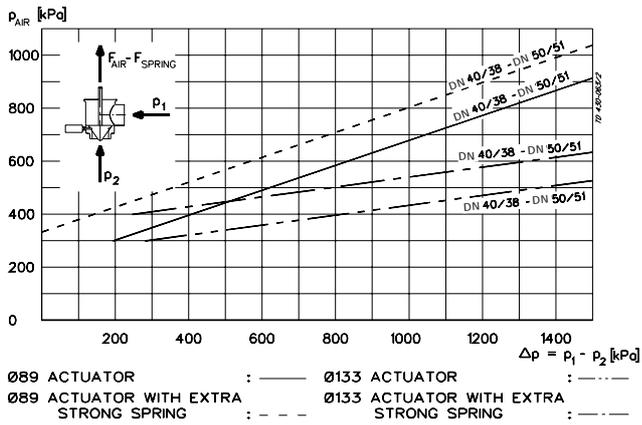
UPPER PLUG. MAX. PRODUCT PRESSURE WITHOUT LEAKAGE, AS A FUNCTION OF SUPPORT AIR



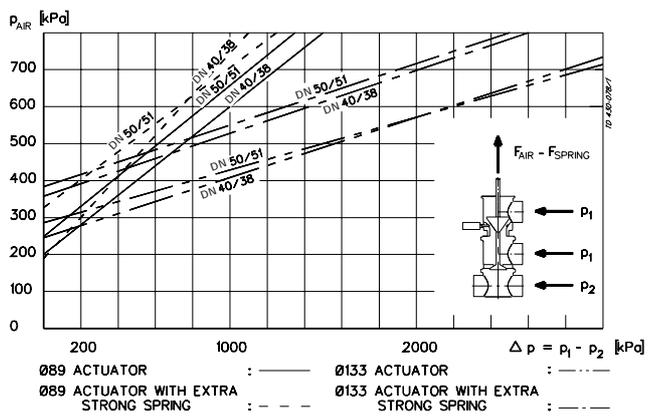
UPPER PLUG. MAX. PRODUCT PRESSURE AGAINST WHICH THE VALVE CAN OPEN, AS A FUNCTION OF AIR PRESSURE



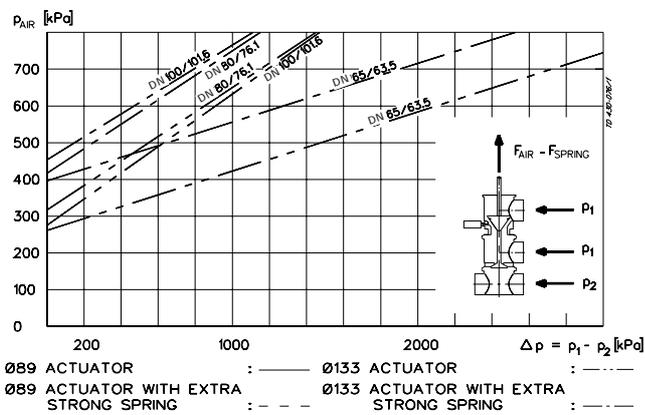
UPPER PLUG (CHANGE OVER). MAX. PRODUCT PRESSURE AGAINST WHICH THE VALVE CAN OPEN, AS A FUNCTION OF AIR PRESSURE.



LOWER PLUG (CHANGE OVER). MAX. PRODUCT PRESSURE WITHOUT LEAKAGE, AS A FUNCTION OF AIR PRESSURE.

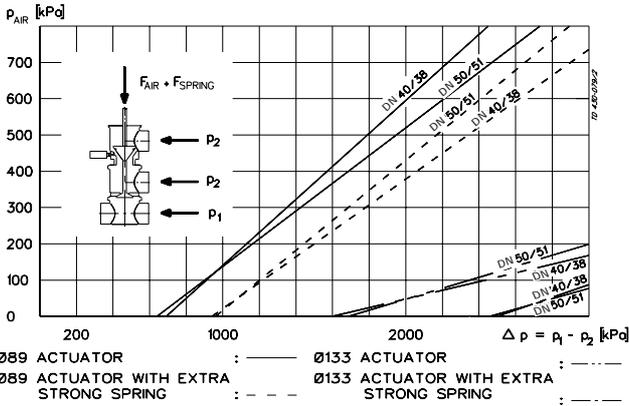


LOWER PLUG (CHANGE OVER). MAX. PRODUCT PRESSURE WITHOUT LEAKAGE, AS A FUNCTION OF AIR PRESSURE.

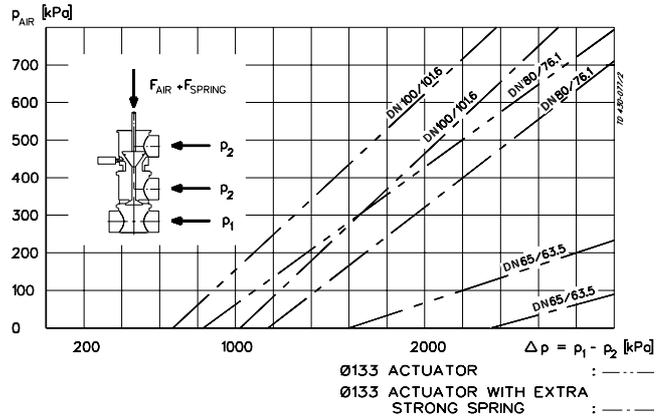


Max-pressure difference/support air pressure diagrams

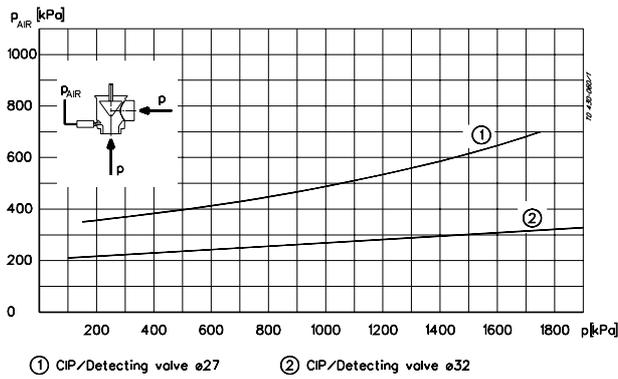
LOWER PLUG (CHANGE OVER). MAX. PRODUCT PRESSURE AGAINST WHICH THE VALVE CAN OPEN BY SUPPORT AIR AND SPRING.



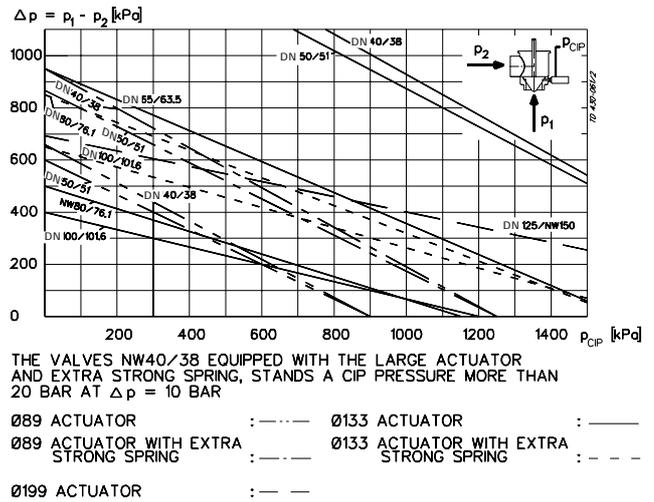
LOWER PLUG (CHANGE OVER). MAX. PRODUCT PRESSURE AGAINST WHICH THE VALVE CAN OPEN BY SUPPORT AIR AND SPRING.



CIP/DETECTING VALVES. MAX. PRODUCT PRESSURE WITHOUT LEAKAGE, AS A FUNCTION OF AIR PRESSURE.

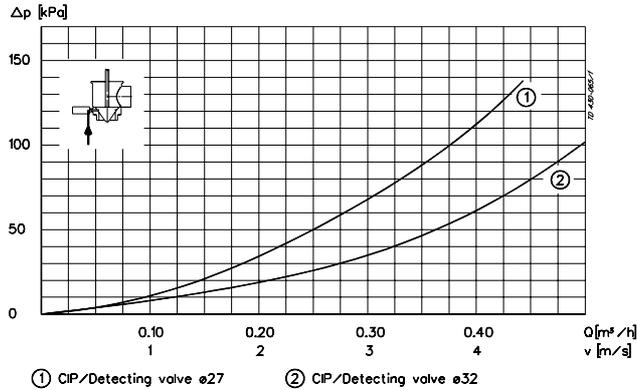


MAX. CIP PRESSURE IN LEAKAGE CHAMBER WITHOUT LEAKAGE TO PRODUCT AREA, AS A FUNCTION OF PRODUCT PRESSURE.



THE VALVES NW40/38 EQUIPPED WITH THE LARGE ACTUATOR AND EXTRA STRONG SPRING, STANDS A CIP PRESSURE MORE THAN 20 BAR AT $\Delta p = 10$ BAR

LEAKAGE CHAMBER. PRESSURE DROP AND FLOW VELOCITY.



Dimensions (mm)

Size	38 mm	51 mm	63.5 mm	76.1 mm	101.6 mm	40 DN	50 DN	65 DN	80 DN	100 DN	125 DN	150 DN
A ₁	345	355	433	455	527	343	354	430	456	526	535	584
A ₂	370	380	458	487	559	368	379	455	488	558	580	629
A ₃	485.8	505.8	616.2	651.1	751.8	485	506	616	667	752		
A ₄	510.8	530.8	648.2	683.1	783.8	510	531	641	699	784		
C	90	102	124	129	157	90	102	124	134	157		
C ₁	80	84	108	115	150	80	84	108	120.5	150		
OD	38.1	50.8	63.5	76.1	101.6	41	53	70	85	104	129	154
ID	34.9	47.6	60.3	72.1	97.6	38	50	66	81	100	125	150
t	1.6	1.6	1.6	2.0	2.0	1.5	1.5	2.0	2.0	2.0	2.0	2.0
E	49.5	61.5	82.3	87.3	133.5	49.5	61.5	82.3	87.3	133.5	150	150
E ₁	20.5	26.8	33.2	39.1	51.8	22	28	36	43.5	53		
F	25	25	32	32	32	25	25	32	32	32	49	49
G	27	33.3	39.7	45.6	58.3	28.5	34.5	42.5	50	59.5	72	84.5
H	89	89	133	133	133	89	89	133	133	133	199	199
J	46.7	46.7	57	66.6	84.3	46.7	46.7	57	66.6	84.3	99.5	99.5
K	63	63	63	63	63	63	63	63	63	63	58.5	58.5
M/ISO clamp	21	21	21	21	21							
M/ISO male	21	21	21	21	21							
M/DIN male						22	23	25	25	30	46	50
M/SMS male	20	20	24	24	35							
M/BS male	22	22	22	22	27							
Weight (kg)												
Stop valve	6.0	6.3	12.8	13.3	16.6	6.0	6.3	12.8	14.0	16.6	43.4	44.5
Weight (kg)												
Change-over valve	7.7	8.1	15.0	17.0	23.0	7.7	8.1	15.0	18.0	23.0		

Air Connections

Compressed air:

R 1/8" (BSP), internal thread.

CIP connection:

R 3/8" (BSP), external thread.

Leakage connection:

R 3/8" (BSP), external thread.

Caution, opening/closing time:

Opening/closing time will be effected by the following:

- The air supply (air pressure).
- The length and dimensions of the air hoses.
- Number of valves connected to the same air hose.
- Use of single solenoid valve for serial connected air actuator functions.
- Product pressure.

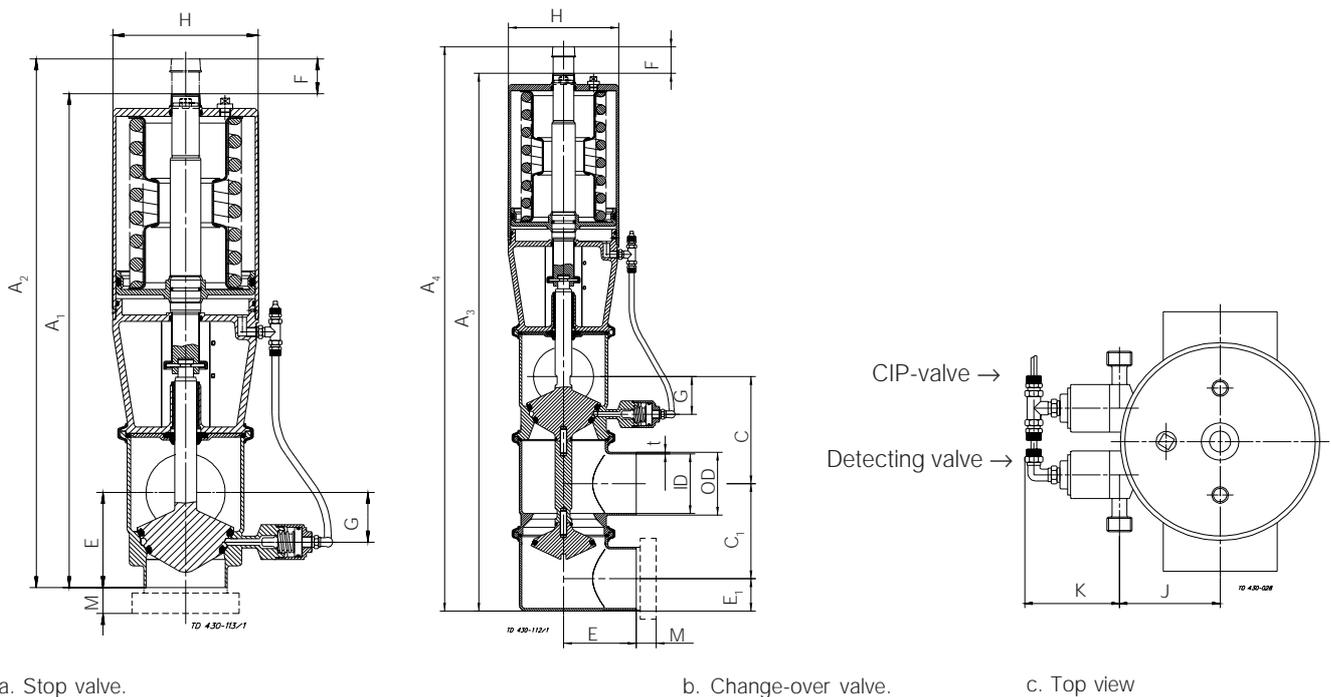


Fig. 2. Dimensions.

Technical data

Max. product pressure (depending on valve specifications): 1000 kPa (10 bar).
 Min. product pressure: Full vacuum.
 Temperature range: -10°C to +140°C (EPDM).
 Air pressure: 500 to 800 kPa (5 to 8 bar).

Air consumption (litres free air) for one stroke				
Size	38-51 mm DN 40-50	63.5-101.6 mm DN 65-100	DN 125-150	DN 125-150
Stop valve	0.2 x air pressure (bar)	0.7 x air pressure (bar)	1.5 x air pressure (bar)	2.2 x air pressure (bar)
Actuator function	NO and NC	NO and NC	NC	NO
Stop valve			3.6 x air pressure (bar)	2.9 x air pressure (bar)
Actuator function			NC (Support air for closing)	NO (Support air for opening)
Change-over valve	0.2 x air pressure (bar)	0.7 x air pressure (bar)		
Actuator function	NO and NC	NO and NC		

Materials

Product wetted steel parts: Acid-resistant steel 1.4401 (316L).
 Finish: Semi bright.
 Other steel parts: Stainless steel 1.4301 (304).
 Product wetted seals: EPDM rubber.
 Other seals: Nitrile (NBR).

Options

- A) Male parts or clamp liners in accordance with required standard.
- B) **ThinkTop®**
- C) Actuator with stronger spring.
- D) Larger actuator for valve sizes 38-51 mm/DN40-50.
- E) NOT-element for extra air pressure supply (spring- closed position).
- F) CIP installation kits.
- G) Other valve body combinations.
- H) Surface roughness, product wetted parts: $Ra \leq 0.8 \mu\text{m}$.
- I) Product wetted seals of Nitrile (NBR) or Fluorinated rubber (FPM).
- J) Service tools for actuator.
- K) Tool for plug seals (Necessary for changing the seals).

Ordering

Please state the following when ordering:

- Valve type.
- Valve port combination: Type nos.
- Valve port size combination, (lower and upper ports).
- Connections if not welding ends.
- Other options.

Note! For further details, see also PD 65036 and instruction IM 70771.