



## The Proven Mixproof Range

SMP-BC Sanitary Mixproof Valve

PD 65373 US4 2002-09

### 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 piping systems.

### Working principle

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

It 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.

The SMP-BC valve can be cleaned in place 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 the SMP-BC valve insensitive to water hammer.

### Standard design

The SMP-BC valve is available in two versions, as a shut-off valve (available in sizes 5" and 6" only) with one valve body or as a divert valve with three valve bodies.

The valve bodies and the external actuator are clamped together.

The SMP-BC valve is fitted with one detecting valve and one CIP-valve.

The seals and the lip seal can be serviced after removing the actuator.

The SMP-BC valve, sizes 5" and 6" are very heavy. Therefore it is recommended to manufacture and use auxiliary handling equipment which cannot be supplied by Alfa Laval.

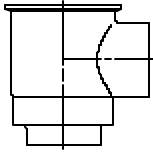


Fig. 1. SMP-BC valve with body combination 30.

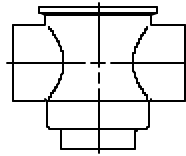
## Valve Body Combinations

Shut-off valve:

Type 20

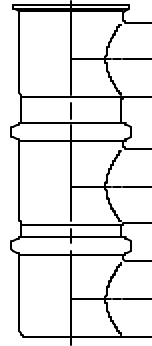


Type 30

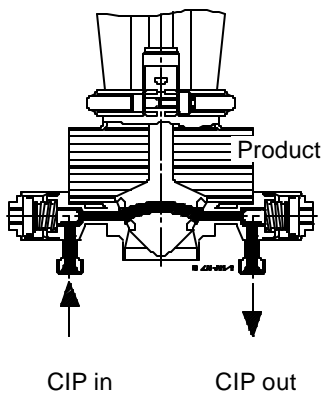
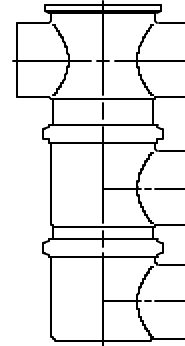


Divert valve:

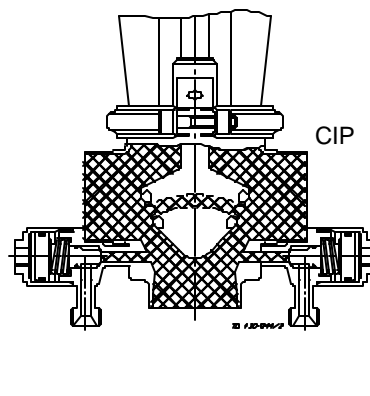
Type 111



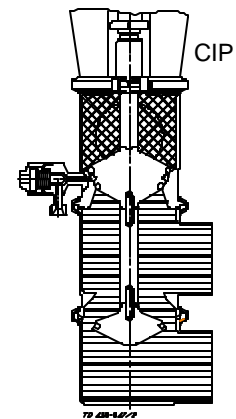
Type 112



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



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

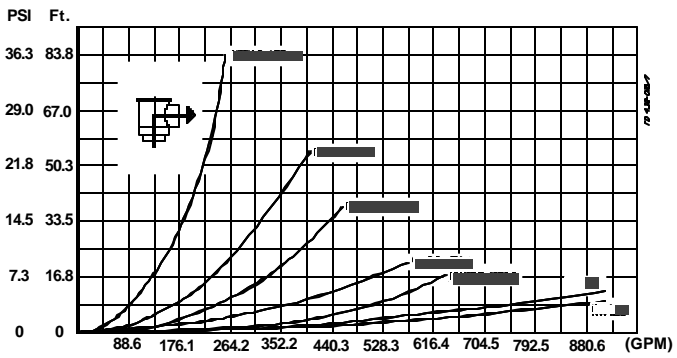
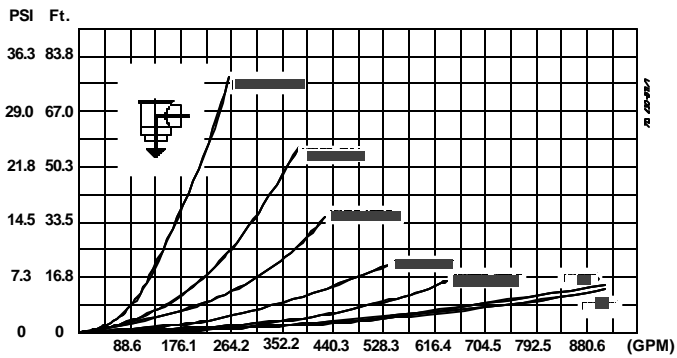
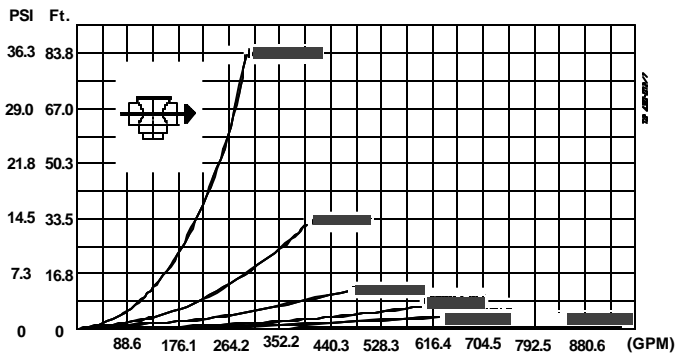


c. Closed change-over valve:  
Cleaning of the upper valve body.

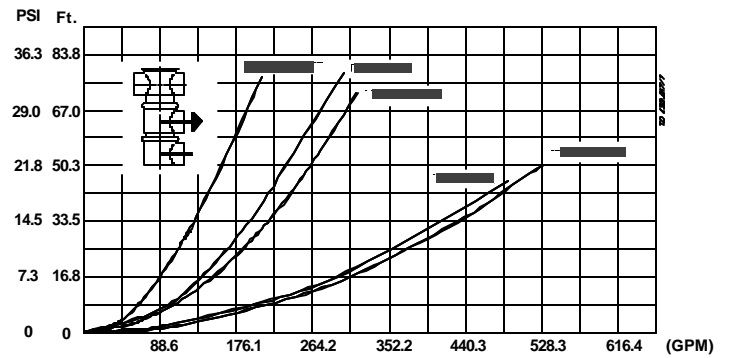
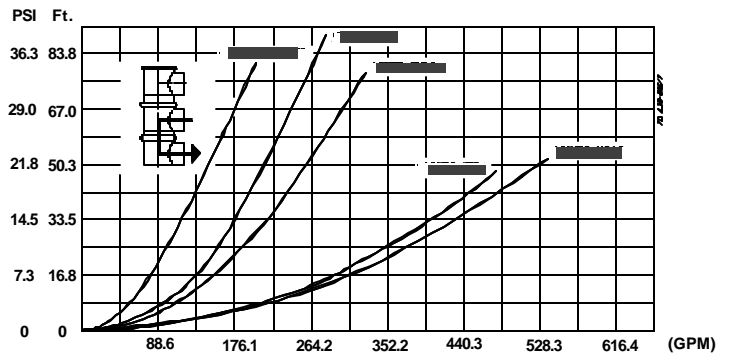
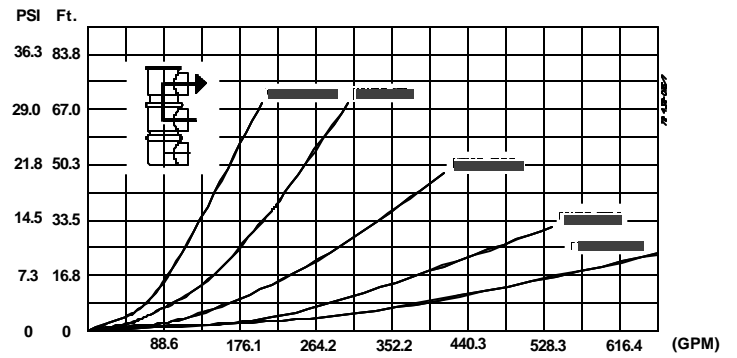
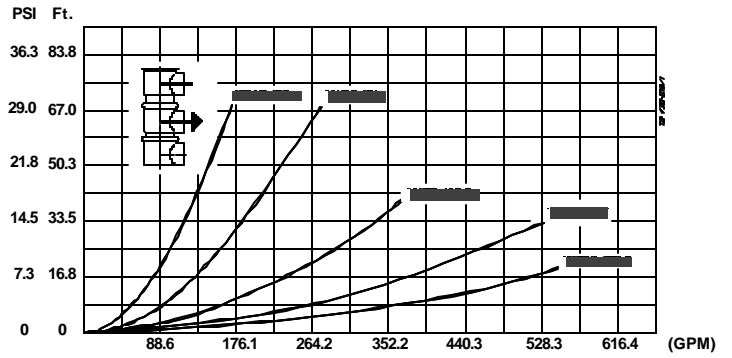
Fig. 2. Operation/cleaning.

# Pressure drop/capacity diagrams

Stop valve:



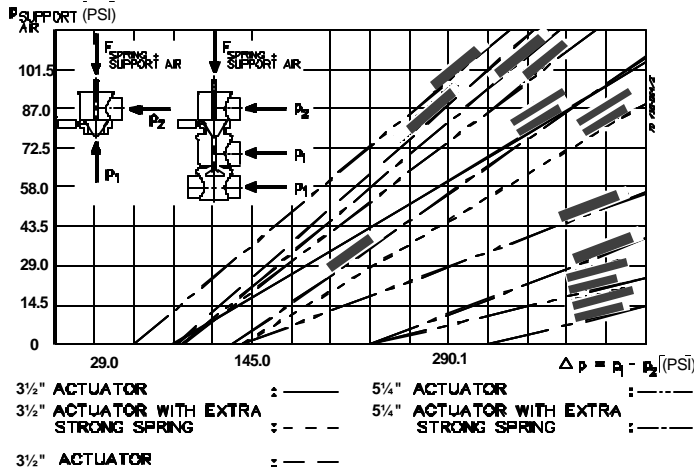
Divert valve:



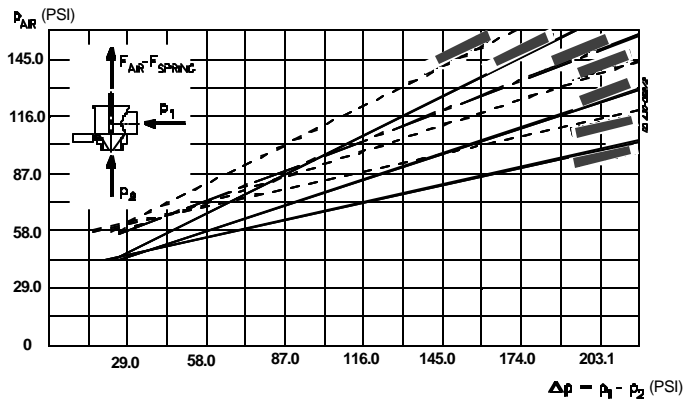
NOTE! For the diagrams the following applies:  
 Medium: Water (68°F).  
 Measurement: In accordance with VDI 2173.

# Max-pressure difference/support air pressure diagrams

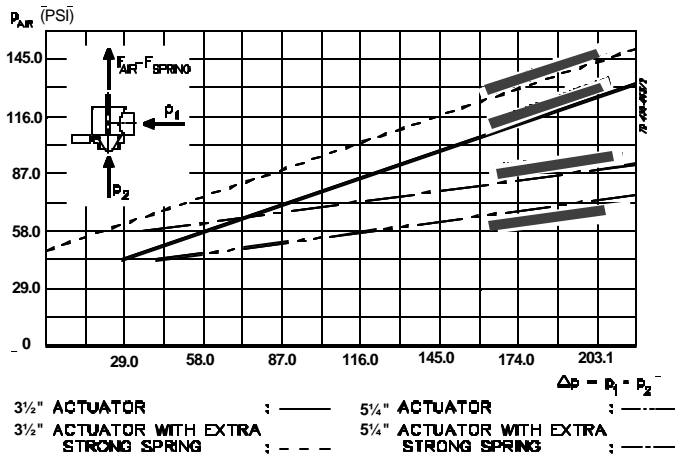
UPPER PLUG, MAX. PRODUCT PRESSURE WITHOUT LEAKAGE, AS A FUNCTION OF SUPPORT AIR



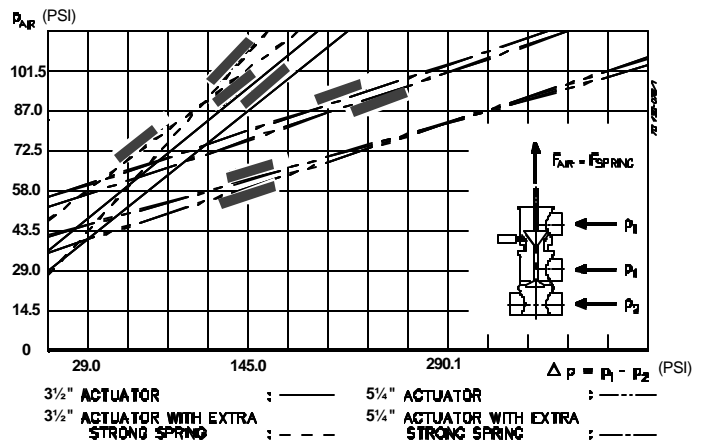
UPPER PLUG, MAX. PRODUCT PRESSURE AGAINST WHICH THE VALVE CAN OPEN, AS A FUNCTION OF AIR PRESSURE



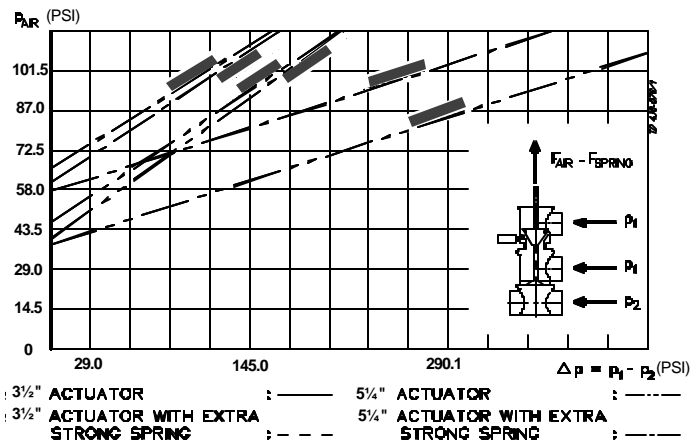
UPPER PLUG, MAX. PRODUCT PRESSURE AGAINST WHICH THE VALVE CAN OPEN, AS A FUNCTION OF AIR PRESSURE



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

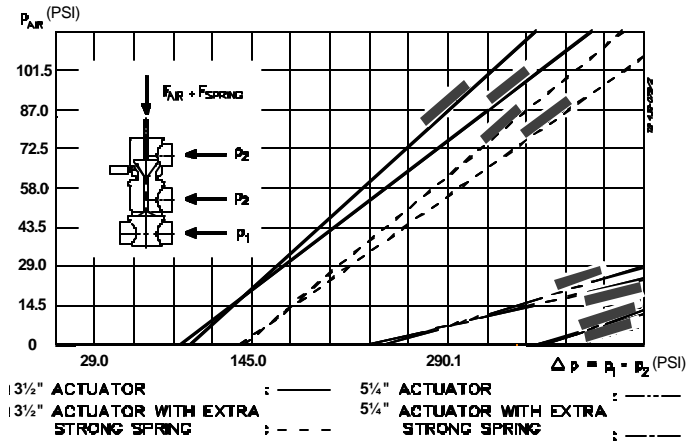


LOWER PLUG (CHANGE OVER), MAX. PRODUCT PRESSURE WITHOUT LEAKAGE, AS A FUNCTION OF AIR PRESSURE

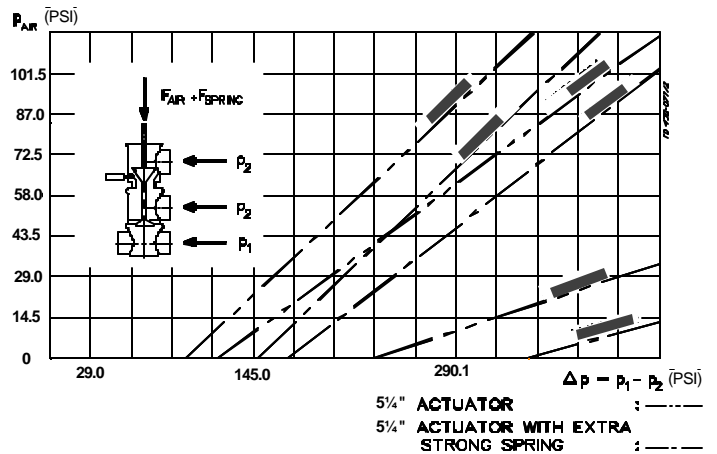


# Max-pressure difference/support air pressure diagrams

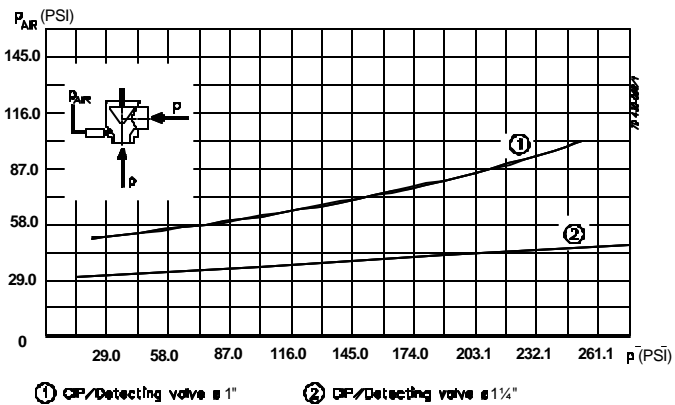
LOWER PLUG (CHANGE OVER). MAX. PRODUCT PRESSURE AGAINST WHICH THE VALVE CAN BE OPEN BY SUPPORT AIR AND SPRING.



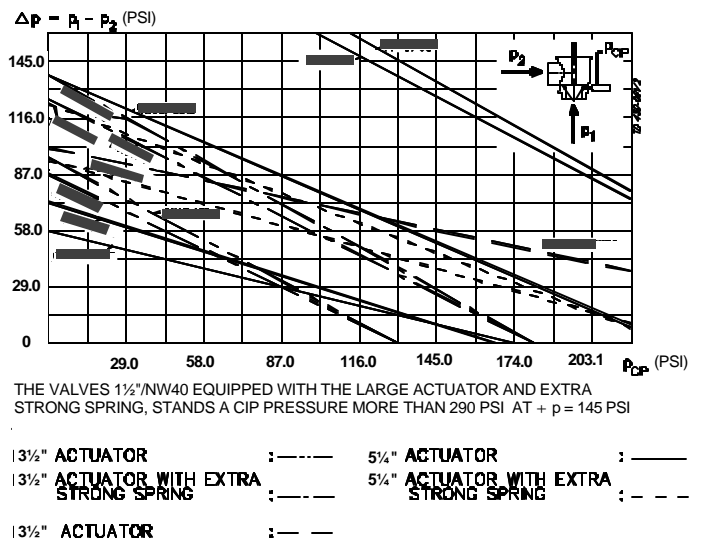
LOWER PLUG (CHANGE OVER). MAX. PRODUCT PRESSURE AGAINST WHICH THE VALVE CAN BE OPEN BY SUPPORT AIR AND SPRING.



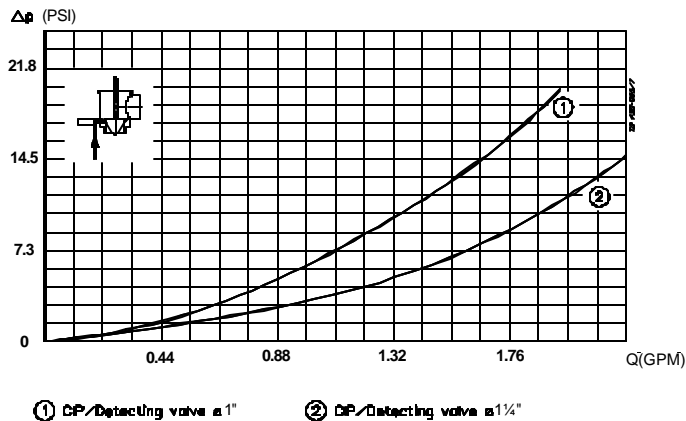
CIP/DETECTING VALVES. MAX. PRODUCT PRESSURE WITHOUT LEAKAGE, AS A FUNCTION OF AIR PRESSURE.



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



LEAKAGE CHAMBER. PRESSURE DROP AND FLOW VELOCITY.



Dimensions (in.)

Size	1½"	2"	2½"	3"	4"
A <sup>1</sup>	13.58	13.98	17.05	17.91	20.75
A <sub>2</sub>	14.57	14.96	18.03	19.17	22.01
A <sub>3</sub>	19.13	19.91	24.26	25.63	29.60
A <sub>4</sub>	20.11	20.90	25.52	26.89	30.86
C	3.54	4.02	4.88	5.08	6.18
C <sub>1</sub>	3.15	3.31	4.25	4.53	5.91
OD	1.50	2.00	2.50	3.00	4.00
ID	1.37	1.87	2.37	2.84	3.84
t	0.06	0.06	0.06	0.08	0.08
E	1.95	2.42	3.24	3.44	5.26
E <sub>1</sub>	0.81	1.06	1.31	1.54	2.04
F	0.98	0.98	1.26	1.26	1.26
G	1.06	1.31	1.56	1.80	2.30
H	3.50	3.50	5.24	5.24	5.24
J	1.84	1.84	2.24	2.62	3.32
K	2.48	2.48	2.48	2.48	2.48
Tri-Clamp®	0.83	0.83	0.83	0.83	0.83
Weight (lb.) Shut-off valve	13.23	13.89	28.22	29.32	36.60
Weight (lb.) Divert valve	16.98	17.86	33.07	37.48	50.71

**Air Connections**

Compressed air:

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

CIP connection:

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

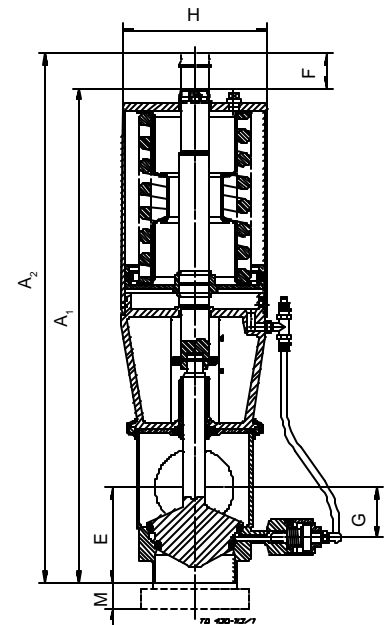
Leakage connection:

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

**Caution, opening/closing time:**

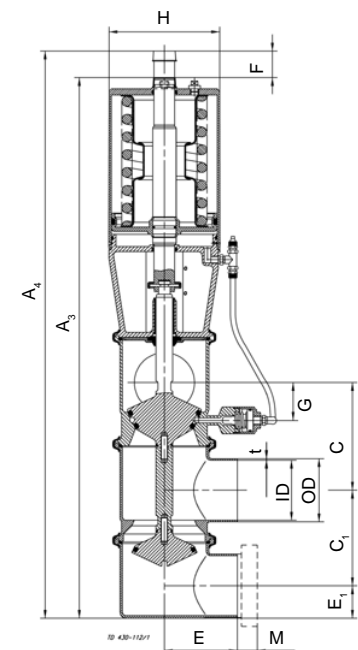
Opening/closing time will be effected by the following:

- 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.

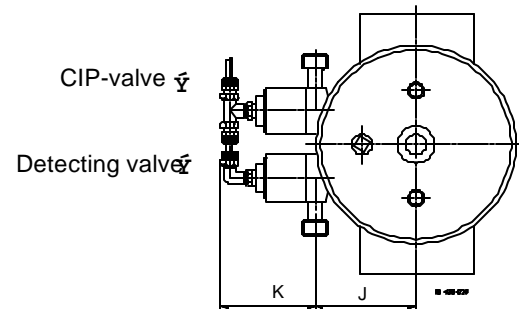


a. Shut-off valve.

Fig. 2. Dimensions.



b. Divert valve.



c. Top view

**Technical data**

Max. product pressure (depending on valve specifications) ..... 145 PSI (10 bar)  
 Min. product pressure ..... Full vacuum  
 Temperature range ..... 14°F to +284°F (EPDM)  
 Air pressure ..... 72.5 to 116 PSI (5 to 8 bar)

Air Consumption at 80 PSI				
Size	1.5-inch - 2-inch	2.5-inch - 3-inch	5-inch - 6-inch	5-inch - 6-inch
Shut-off Valve Actuator function	67.1 in <sup>3</sup>	235.0 in <sup>3</sup>	503.4 in <sup>3</sup>	738.4 in <sup>3</sup>
Shut-off Valve Actuator function			1208.2 in <sup>3</sup>	973.3 in <sup>3</sup>
Divert Valve Actuator function	67.1 in <sup>3</sup>	235.0 in <sup>3</sup>		

**Materials**

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

**Options****Equipment**

- Male parts or clamp liners in accordance with required standard.
- *Think Top*®
- Actuator with stronger spring
- Larger actuator for valve sizes 1½" - 2"
- CIP installation kits
- Other valve body combinations

**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

**Material grades**

- Surface roughness, product wetted parts: 32Ra μ-inches (Ra £ 0.8 mm)
- Product wetted seals of Nitrile (NBR) or Fluorinated rubber (FPM).

**Tools**

- Service tools for actuator.
- Tool for plug seals (Necessary for changing the seals).

PD 65373 US4 2002-09

The information contained herein is correct at the time of issue, but may be subject to change without prior notice.

---

How to contact Alfa Laval  
Contact details for all countries  
are continually updated on our website.  
Please visit [www.alfalaval.com](http://www.alfalaval.com) to  
access the information direct.