Gillain & Co
HYGIENIC EQUIPMENT FOR FOOD & LIFE SCIENCES

# The Proven Mixproof Range

## SMP-BC 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 often used as a part in CIP return lines or other systems not experiencing pressure spikes offering leakage detection for greater safety.

### 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. 1).
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 shut-off valve with one valve body or as a change-over valve with three valve bodies (sizes DN125-150 only as shut-off 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.

It is recommended, due to the valve size and weight, to use supporting equipment, handling and installing the valve. Guidelines are given in the instruction manual (IM70771). Alfa Laval is not able to supply the recommended supporting equipment.

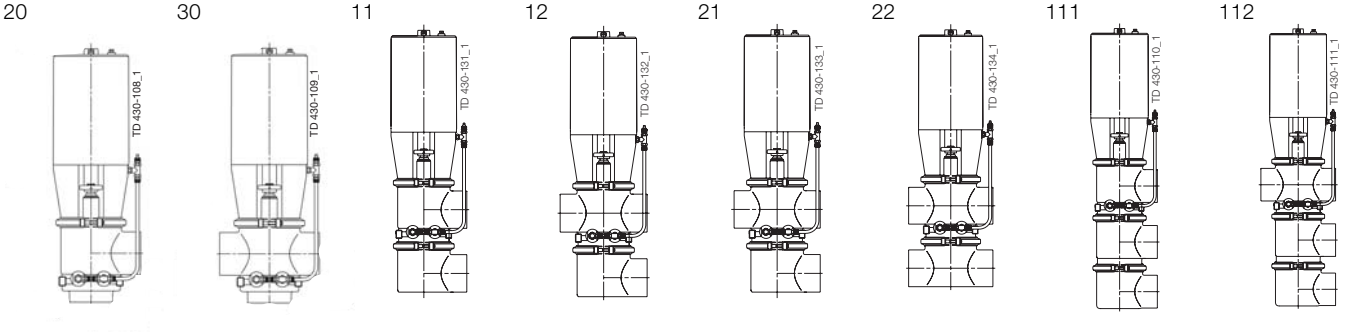


SMP-BC mixproof Valve

Gillain & Co NV | Boomsesteenweg 85, B-2630 Aartselaar | Tel. +32 3 870 60 80, Fax +32 3 870 60 89 | advice@gillain.com | www.gillain.com

## Valve Body Combinations

20 30 11 12 21 22 111 112



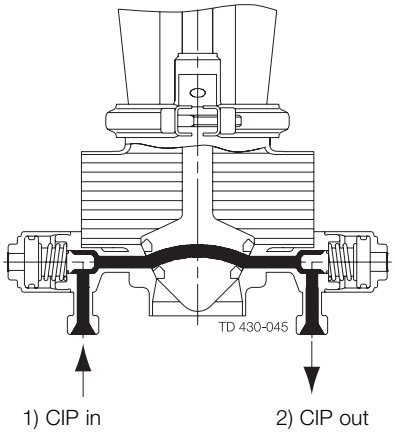

**Type 20 and 30 body versions is on request available in following configurations:**

- Tee welded on lower port in 0 or 90 deg. version
- Bend welded on lower port in 0, 90, 180 or 270 deg. version

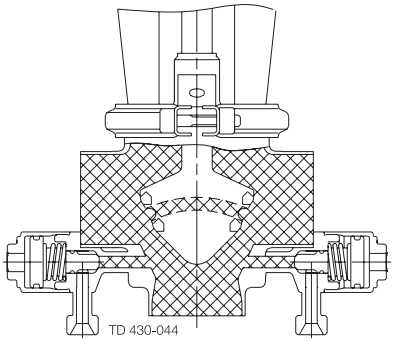
**The three body version is on request available in following configurations:**

- Type 121, 122, 211, 212, 221 & 222

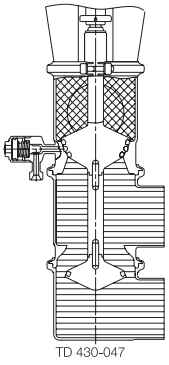
### Operation/cleaning




a. Closed shut-off valve:
Cleaning of the leakage chamber.



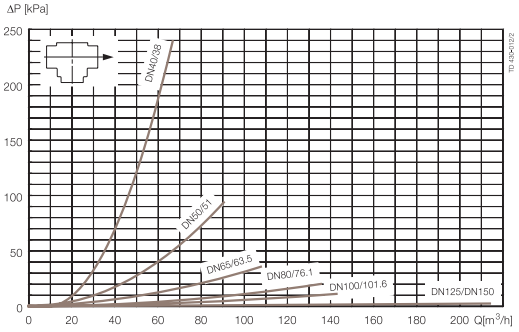

b. Open shut-off valve:
Cleaning of the valve body and the leakage chamber.

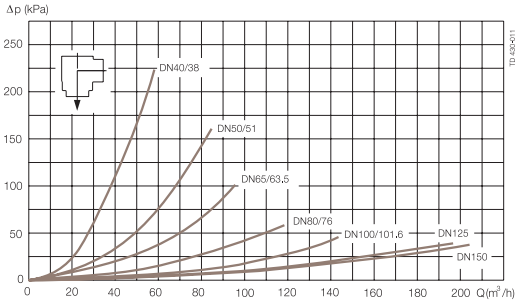


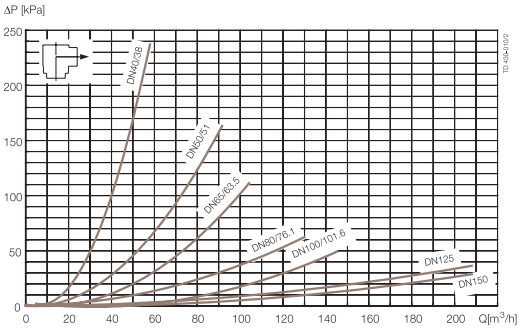

c. Closed change-over valve:
Cleaning of the upper valve body.

## Pressure drop/capacity diagrams

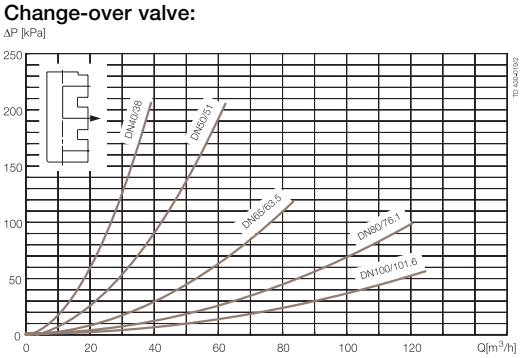
### Shut-off valve:

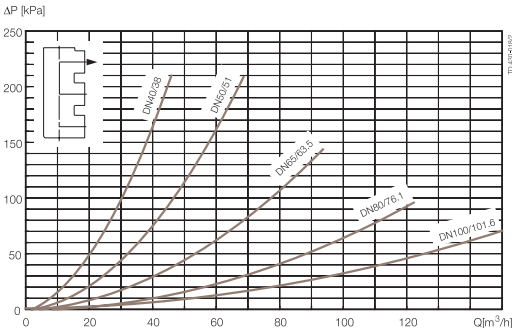


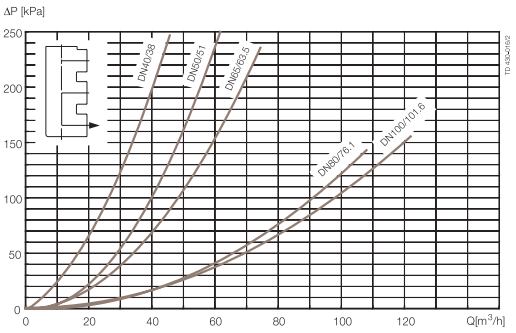



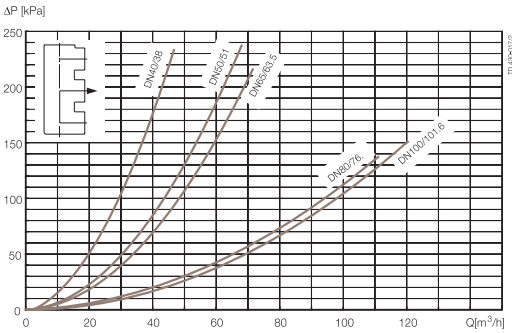




### Change-over valve:



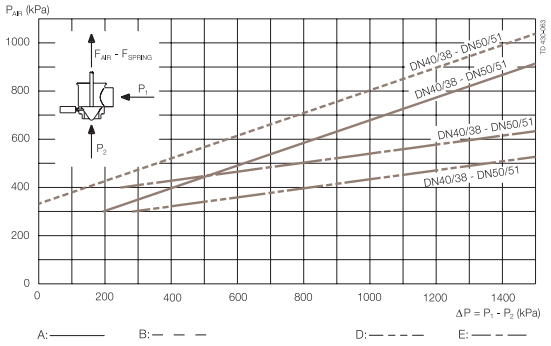

Note! For the diagrams the following applies:

Medium: Water (20°C).

Measurement: In accordance with VDI 2173.

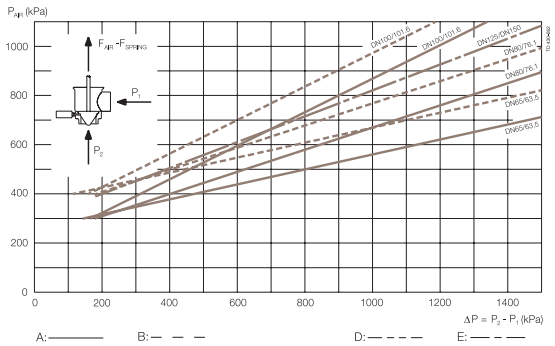
## Max-pressure difference/support air pressure diagrams

Upper plug max. product pressure against which the valve can open, as a function of air pressure.



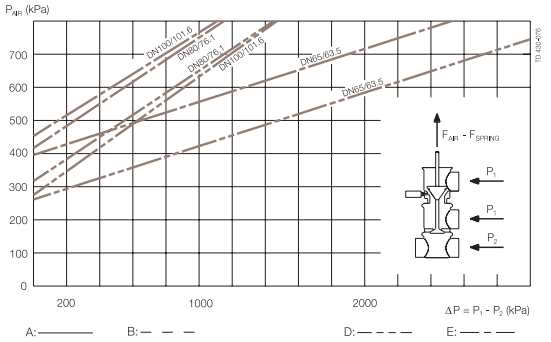

| | | | | | |
|---|---|---|---|---|---|
| Ø89 | Actuator: | A | Ø133 | Actuator: | D |
| Ø89 | Actuator with extra strong spring: | B | Ø133 | Actuator with extra strong spring: | E |

Upper plug max. product pressure against which the valve can open, as a function of air pressure.



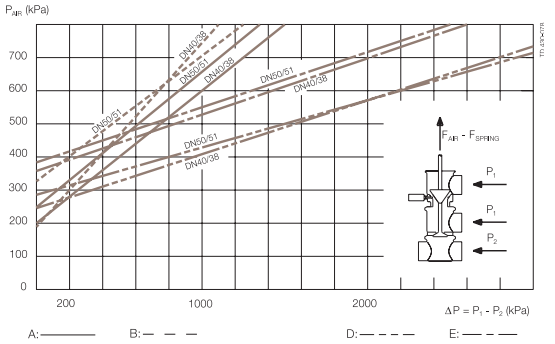

| | | | | | |
|---|---|---|---|---|---|
| Ø89 | Actuator: | A | Ø133 | Actuator: | D |
| Ø89 | Actuator with extra strong spring: | B | Ø133 | Actuator with extra strong spring: | E |

Lower plug (change over). Max. Product pressure without leakage, as a function of air pressure.




| | | | | | |
|---|---|---|---|---|---|
| Ø89 | Actuator: | A | Ø133 | Actuator: | D |
| Ø89 | Actuator with extra strong spring: | B | Ø133 | Actuator with extra strong spring: | E |

Lower plug (change over). Max. Product pressure without leakage, as a function of air pressure.

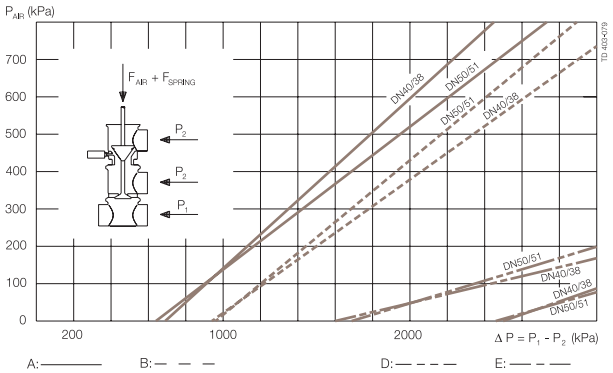



| | | | | | |
|---|---|---|---|---|---|
| Ø89 | Actuator: | A | Ø133 | Actuator: | D |
| Ø89 | Actuator with extra strong spring: | B | Ø133 | Actuator with extra strong spring: | E |

**Note!** If actuator is supported by air on spring side: max allowable pressure is 300 kPa (3 bar)

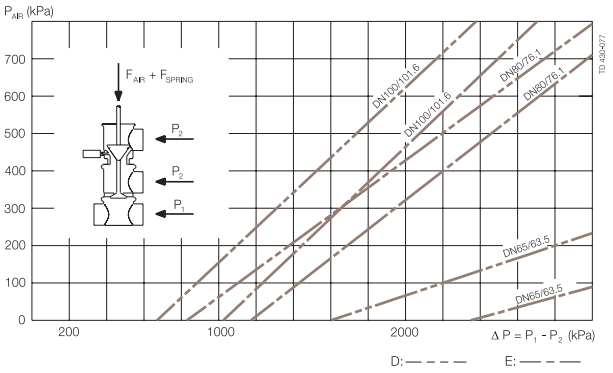
## Max-pressure difference/support air pressure diagrams

Lower plug (change over) max. product pressure against which the valve can open by support air and spring.



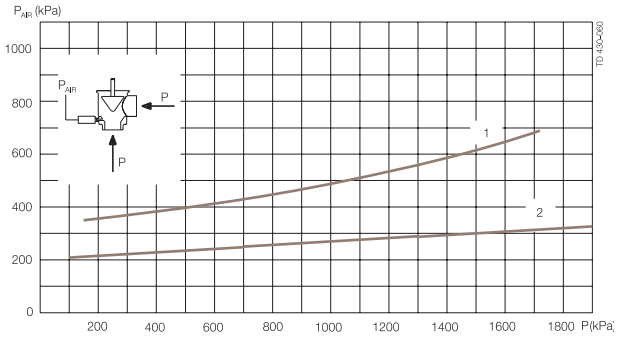

| | | | | | |
|---|---|---|---|---|---|
| Ø89 | Actuator: | A | Ø133 | Actuator: | D |
| Ø89 | Actuator with extra strong spring: | B | Ø133 | Actuator with extra strong spring: | E |

Lower plug (change over) max. product pressure against which the valve can open by support air and spring.



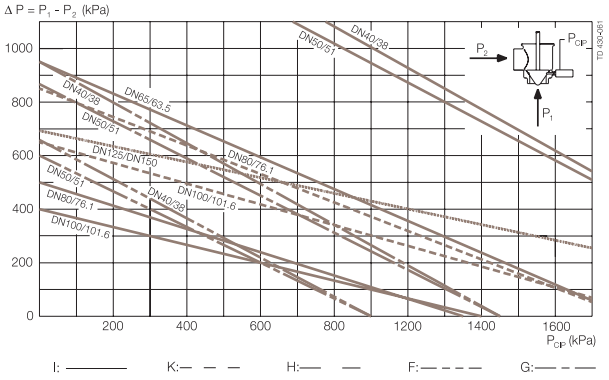

| | | | | | |
|---|---|---|---|---|---|
| Ø133 | Actuator: | D | | | |
| Ø133 | Actuator with extra strong spring: | E | | | |

CIP/detecting valves. Max. Product pressure without leakage, as a function of air pressure.



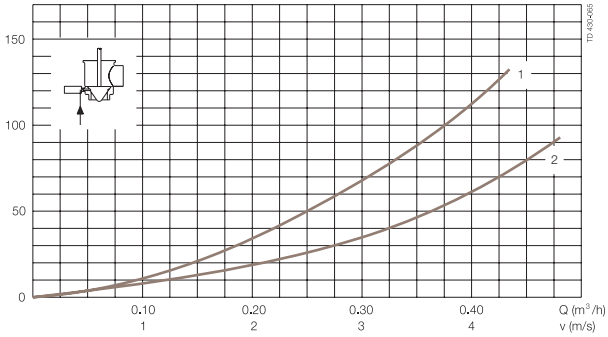

| | | | |
|---|---|---|---|
| 1 | CIP/detecting valve ø27 | 2 | CIP/detecting valve ø32 |

Max. CIP pressure in leakage chamber without leakage to product area, as a function of product pressure.




| | | | | | |
|---|---|---|---|---|---|
| Ø89 | Actuator: | I | Ø133 | Actuator: | F |
| Ø89 | Actuator with extra strong spring: | K | Ø133 | Actuator with extra strong spring: | G |
| Ø199 | Actuator: | H | | | |

Leakage chamber, pressure drop and flow velocity.




| | | | |
|---|---|---|---|
| 1 | CIP/detecting valve ø27 | 2 | CIP/detecting valve ø32 |

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Dimensions (mm)

| Size | 38 | 51 | 63.5 | 76.1 | 101.6 | 40 | 50 | 65 | 80 | 100 | 125 | 150 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | DN | DN | DN | DN | DN | DN | 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 | | |

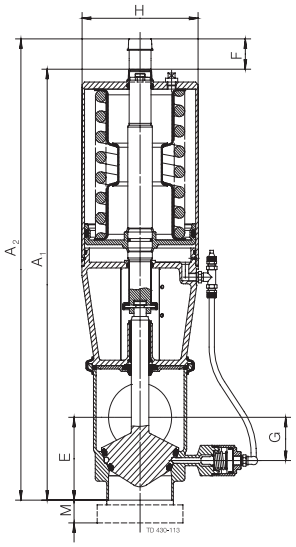
**Air Connections Compressed air:**
R 1/8" (BSP), internal thread.

**CIP connection:**
R 3/8" (BSP), external thread.

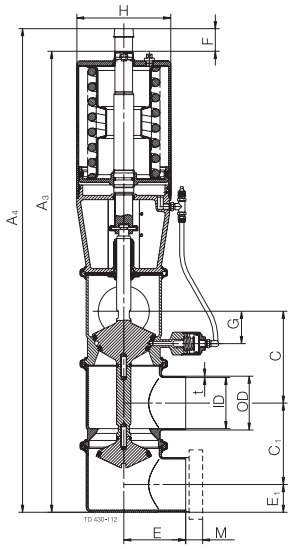
**Leakage connection:**
R 3/8" (BSP), external thread.

**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.

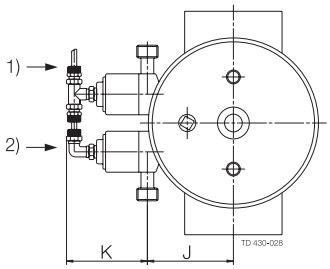
**Dimensions**




a. Shut-off valve.




b. Change-over valve.




1) CIP valve
2) Detecting valve

c. Top view

## 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<br>DN 40-50 | 63.5-101.6 mm<br>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.
Other seals: . . . . . .NBR

## Options

A. Male parts or clamp liners in accordance with required standard.
B. Control and Indication: IndiTop, ThinkTop or ThinkTop Basic.
C. Actuator with stronger spring.
D. Larger actuator for valve sizes 38-51 mm/DN40-50.
E. CIP installation kits.
F. Other valve body combinations.
G. Surface roughness, product wetted parts: Ra ≤0.8 µm.
H. Product wetted seals of NBR or FPM.
I. Service tools for actuator.
J. 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 instruction IM 70771.

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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 to
access the information direct.

Gillain & Co NV | Boomsesteenweg 85, B-2630 Aartselaar | Tel. +32 3 870 60 80, Fax +32 3 870 60 89 | advice@gillain.com | www.gillain.com