

## APPLICATION AND USE

2F.. series valves are used to control fluids belonging to the group showed in the table according to article 9 of 97/23/CE directive (PED) in air-conditioning, thermoventilation and heating plants and in industrial processes; therefore, they cannot be employed as safety valves.

## MANUFACTURING CHARACTERISTICS

They consist in a two-way simple seat valve body to be assembled on an electrical bidirectional actuator.



| Technical data \ Model       | 2FGB<br>DN25÷150           | 2FGA<br>DN15÷100    | 2FSA<br>DN25÷65      | 2FAA<br>DN15÷80    | 2FAA.P<br>DN15÷80  | 2FAA.T<br>DN15÷80  |
|------------------------------|----------------------------|---------------------|----------------------|--------------------|--------------------|--------------------|
| Construction                 | PN16                       | PN16                | PN25                 | PN40               | PN40               | PN40               |
| Body                         | flake cast iron            | hydraulic cast iron | spheroidal cast iron | steel              | steel              | steel              |
| Seat                         | flake cast iron            | stainless steel     | steel                | stainless steel    | stainless steel    | stainless steel    |
| Plug                         | brass                      | stainless steel     | steel                | stainless steel    | stainless steel    | stainless steel    |
| Stem (Ø 9mm)                 | stainless steel            | stainless steel     | stainless steel      | stainless steel    | stainless steel    | stainless steel    |
| Control characteristics      | equalpercentage            | equalpercentage     | equipercantage       | equipercantage     | equipercantage     | equipercantage     |
| Stem packing                 | EPDM O-ring <sup>(4)</sup> | Teflon V-ring       | Teflon V-ring        | Teflon V-ring      | (2)                | (2)                |
| Max. fluid temperature °C    | 150                        | 200                 | 230                  | 230                | 350                | 230                |
| Min. fluid temperature °C    | -10 <sup>(1)</sup>         | -10 <sup>(1)</sup>  | -10 <sup>(1)</sup>   | -10 <sup>(1)</sup> | -10 <sup>(1)</sup> | -20 <sup>(1)</sup> |
| Fluid <sup>(4)</sup>         | Group 2                    | Group 2             | Group 2              | Group 2            | Group 1            | Group 1            |
| Connections                  | Flanged PN16               | Flanged PN16        | Flanged PN25         | Flanged PN40       | Flanged PN40       | Flanged PN40       |
| Leakage % Kvs <sup>(5)</sup> | 0,03                       | 0,02                | 0,02                 | 0,02               | 0,02               | 0,02               |
| Lowered stem action          | normally open              | normally closed     | normally open        | normally closed    | normally closed    | normally closed    |

(1) For applications with possible ice formation on stem and gasket, see 248 accessory.

(2) Graphite packing for high temp.; forced lubrication on extended neck. Teflon gasket for low temperatures, see (3).

(4) Double O-ring and graphited teflon scraper ring.

(5) Group 1: just diathermic oil. For different fluids, please cotact our Sales Support.

Group 2: water, overheated water, glycol added water 50% max., steam. For different fluids, please contact our Sales Support.

(6) Leakage is measured according to the EN1349 standard.

## MOTORIZED VALVES OPTIONS

- A125-2** flanges with ANSI 125 bolt holes (for 2FGA DN25,32,50,65 and 2FGB DN25÷150 valves)
- A150-2** flanges with ANSI 150 bolt holes (for 2FAA DN32÷65 and 2FSA DN50÷65 valves)
- A300-2** flanges with ANSI 300 bolt holes (for 2FSA DN25÷65 and 2FAA DN15,32,40,50,65 valves)
- PS89** grooved valves to which it is possible to add the relating joint not supplied with the product. General dimensions remain the same. Joint and pipe dimensions are shown in the "Dimensions" paragraph.

## ACCESSORIES

- 248** stem heater for applications on -10°C low temperature fluid with MVH and MVE actuators
- GVB40** thermal insulation for DN40 for 2FGB40 valves;
- GVB50** thermal insulation for DN50 for 2FGB50 valves;
- GVB65** thermal insulation for DN65 for 2FGB65 valves;
- GVB80** thermal insulation for DN80 for 2FGB80 valves;
- GVB100** guscio protettivo per valvole DN100 per 2FGB100;
- GVB125** guscio protettivo per valvole DN125 per 2FGB125;
- GVB150** guscio protettivo per valvole DN150 per 2FGB150.

## ACTUATORS TECHNICAL CHARACTERISTICS, ELECTRICAL WIRING DIAGRAM AND INSTALLATION

See actuators data sheets and mounting instructions. Kvs is the flow rate in m<sup>3</sup>/h of water at a temperature between 5°C and 40°C passing through a valve open at nominal stroke with 100kPa (1bar) differential pressure.

### MAX DIFFERENTIAL AND CLOSE-OFF PRESSURE [kPa]

|                              |      |     | MVH  | MVHA/C* | MVH3K | MVE.06 | MVE.10 | MVE.15 |
|------------------------------|------|-----|------|---------|-------|--------|--------|--------|
| U-Bolt Connection            | DN   | Kvs | A-AB | A-AB    | A-AB  | A-AB   | A-AB   | A-AB   |
| 2FGA                         | 15R0 | 0,6 | 1600 | 1600    | 1600  | 1600   | 1600   | 1600   |
|                              | 15R1 | 1   |      |         |       |        |        |        |
|                              | 15R2 | 1,6 |      |         |       |        |        |        |
|                              | 15R3 | 2,5 |      |         |       |        |        |        |
|                              | 15   | 4   | 1600 | 1600    | 1600  | 1600   | 1600   | 1600   |
|                              | 20   | 6,3 | 1600 | 1510    | 1600  | 1250   | 1600   | 1600   |
|                              | 25   | 10  | 1600 | 920     | 1600  | 760    | 1410   | 1600   |
|                              | 32   | 16  | 1600 | 920     | 1600  | 760    | 1410   | 1600   |
|                              | 40   | 24  | 1340 | 620     | 1600  | 510    | 950    | 1500   |
|                              | 50   | 40  | 870  | 400     | 1600  | 330    | 620    | 980    |
|                              | 65   | 63  | 350  | 160     | 830   | 130    | 250    | 400    |
|                              | 80   | 110 | 230  | 100     | 550   | 80     | 160    | 260    |
|                              | 100  | 140 | 140  | 60      | 350   | 50     | 100    | 160    |
| 2FAA<br>2FAA...P<br>2FAA...T | 15R2 | 1,6 | 3000 | 3000    | 3000  | 3000   | 3000   | 4000   |
|                              | 15   | 4   | 3000 | 1870    | 3000  | 1450   | 3210   | 4000   |
|                              | 20   | 6,3 | 2840 | 1110    | 3000  | 850    | 1900   | 3220   |
|                              | 25   | 10  | 1740 | 670     | 3000  | 510    | 1160   | 1980   |
|                              | 32   | 16  | 1740 | 670     | 3000  | 510    | 1160   | 1980   |
|                              | 40   | 24  | 1170 | 450     | 2920  | 340    | 780    | 1330   |
|                              | 50   | 40  | 760  | 290     | 1910  | 220    | 510    | 870    |
|                              | 65   | 63  | 310  | 110     | 790   | 80     | 200    | 350    |
|                              | 80   | 110 | 200  | 70      | 520   | 50     | 130    | 230    |
| 2FGB                         | 25R4 | 4   | 1600 | 1100    | 1600  | 940    | 1590   | 1600   |
|                              | 25R7 | 6,3 | 1600 | 1100    | 1600  | 940    | 1590   | 1600   |
|                              | 25   | 10  | 1600 | 1100    | 1600  | 940    | 1590   | 1600   |
|                              | 40R  | 19  | 1170 | 590     | 1600  | 500    | 860    | 1300   |
|                              | 40   | 25  | 1170 | 590     | 1600  | 500    | 860    | 1300   |
|                              | 50   | 40  | 730  | 360     | 1600  | 310    | 530    | 810    |
|                              | 65   | 63  | 430  | 210     | 960   | 180    | 310    | 480    |
|                              | 80   | 100 | 280  | 130     | 620   | 110    | 200    | 310    |
|                              | 100  | 130 | 170  | 80      | 390   | 70     | 120    | 190    |
|                              | 125  | 200 | 100  | 50      | 240   | 40     | 70     | 120    |
|                              | 150  | 300 | 70   | 30      | 160   | 30     | 50     | 80     |
| 2FSA                         | 25R4 | 4   | 2500 | 2150    | 2500  | 1850   | 2500   | 2500   |
|                              | 25R7 | 6,3 | 2150 | 1080    | 2500  | 930    | 1580   | 2390   |
|                              | 25   | 10  | 2150 | 1080    | 2500  | 930    | 1580   | 2390   |
|                              | 32   | 16  | 1450 | 730     | 2500  | 620    | 1060   | 1610   |
|                              | 40   | 25  | 1040 | 520     | 2310  | 440    | 760    | 1160   |
|                              | 50   | 40  | 660  | 330     | 1470  | 280    | 480    | 740    |
|                              | 65   | 63  | 390  | 190     | 860   | 160    | 280    | 430    |
|                              | 80   | 110 | 250  | 120     | 570   | 100    | 180    | 280    |

100 kPa = 1 bar = 10 m<sub>H<sub>2</sub>O</sub>

\* 2FGB-2FSA valves: in emergency MVH.A valve closed; MVH.C valve open. 2FGA-2FAA valves: in emergency MVH.A valve open; MVH.C valve closed.

Kvs is the flow rate expressed in m<sup>3</sup>/h of water at a temperature between 5°C and 40°C passing through a valve open at the nominal stroke with 100kPa (1bar) differential pressure.

## MAX REGULATION DIFFERENTIAL PRESSURE [kPa]

The max regulation differential pressure, it means the pressure which can be used during the stroke, is conditioned by wear between seat and plug and by the performance guaranteed by the actuator for the evaluated valve. So we recommend not to overcome the differential pressure whose value corresponds to the minimum between the one here following (maximum admitted value not to cause wear) and the one shown in the previous table (max close-off differential pressure).

2FGB = 200kPa

2FGA = 600kPa

2FSA = 800kPa

2FAA/2FAAP/2FAAT = 1200kPa

**Note:** The max operating pressures at different temperatures for various PN classes must correspond to the following standards: UNI 1092-02 and UNI 12516-1.

## INSTALLATION

### Hydraulic connections:

Respect the fluid direction as indicated by the arrow on the valve body or, in case letters are used with inlet in A and outlet AB.

### Valve mounting:

Before mounting the valve, make sure pipes are clean, free from welding slags. The pipes must be perfectly aligned with the valve body and not subjected to vibrations. For installations on plants with high temperature fluids (steam, overheated water, diathermic oil) use expansion joints to avoid the dilatation of pipes to stress the valve body. Install the valves with the actuator in vertical position for fluid temperature up to 120°C; with higher temperatures they should be mounted horizontally.

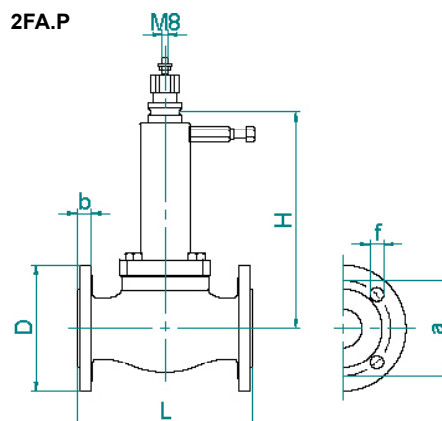
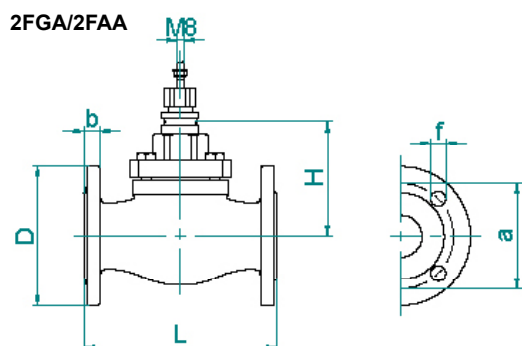
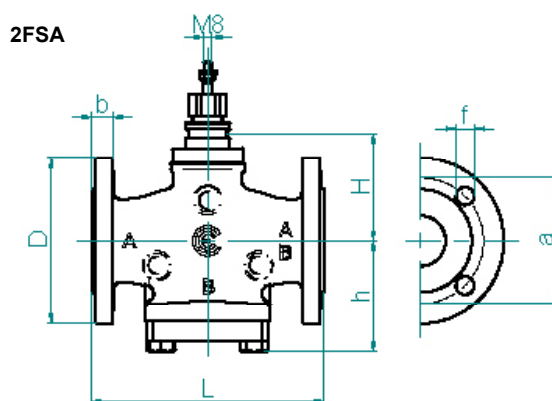
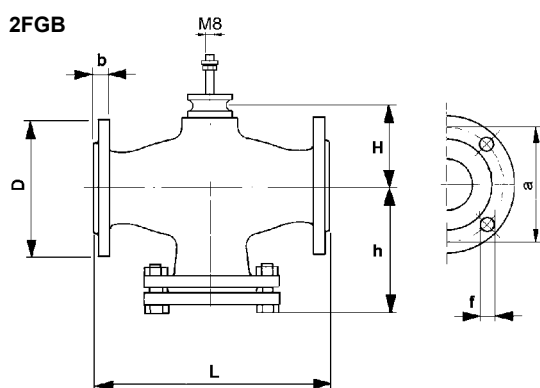
Avoid the valve installation in plants which are considered aggressive and/or corrosive for valve materials.

Please contact our Sales Support in order to define which potentially aggressive or polluting substances can be used.

We disclaim all responsibility in case of valve failure due to external fortuitous events (fire, earthquakes etc.).

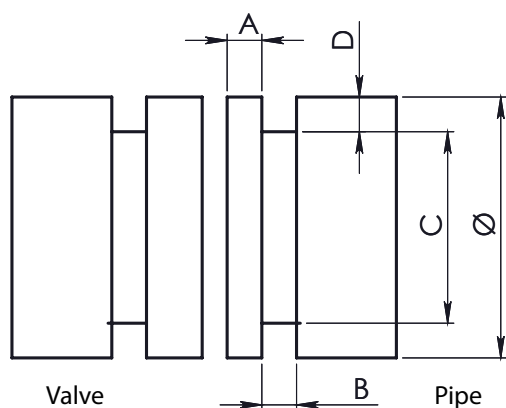
**Notes:** The actuator can be rotated with respect to the valve body by blocking the ring nut; after such operation re-tighten the ring nut.

## OVERALL DIMENSIONS [mm]



| Model                  | DN  | L   | H   | h   | D   | b  | a   | f  | Holes nr. | Weight [kg] | Stroke [mm] |
|------------------------|-----|-----|-----|-----|-----|----|-----|----|-----------|-------------|-------------|
| 2FGB<br>PN16           | 25  | 160 | 50  | 106 | 115 | 16 | 85  | 14 | 4         | 6,8         | 16,5        |
|                        | 40  | 200 | 64  | 128 | 150 | 18 | 110 | 18 | 4         | 12          | 25          |
|                        | 50  | 230 | 66  | 145 | 165 | 20 | 125 | 18 | 4         | 17          | 25          |
|                        | 65  | 290 | 84  | 175 | 185 | 20 | 145 | 18 | 4         | 23          | 25          |
|                        | 80  | 310 | 94  | 187 | 200 | 22 | 160 | 18 | 8         | 30          | 45          |
|                        | 100 | 350 | 105 | 207 | 220 | 22 | 180 | 18 | 8         | 45,6        | 45          |
|                        | 125 | 400 | 128 | 234 | 250 | 24 | 210 | 18 | 8         | 55          | 45          |
|                        | 150 | 480 | 146 | 277 | 285 | 24 | 240 | 22 | 8         | 71          | 45          |
| 2FGA<br>PN16           | 15  | 130 | 107 | --  | 95  | 16 | 65  | 14 | 4         | 3,5         | 16,5        |
|                        | 20  | 150 | 109 | --  | 105 | 16 | 75  | 14 | 4         | 4,5         | 16,5        |
|                        | 25  | 160 | 112 | --  | 115 | 16 | 85  | 14 | 4         | 5,5         | 16,5        |
|                        | 32  | 180 | 121 | --  | 140 | 18 | 100 | 18 | 4         | 8,7         | 25          |
|                        | 40  | 200 | 129 | --  | 150 | 18 | 110 | 18 | 4         | 10,3        | 25          |
|                        | 50  | 230 | 137 | --  | 165 | 20 | 125 | 18 | 4         | 13,7        | 25          |
|                        | 65  | 270 | 175 | --  | 185 | 20 | 145 | 18 | 4         | 19,6        | 25          |
|                        | 80  | 310 | 190 | --  | 200 | 22 | 160 | 18 | 8         | 31,7        | 45          |
|                        | 100 | 350 | 215 | --  | 220 | 24 | 180 | 18 | 8         | 43,5        | 45          |
| 2FAA<br>PN40           | 15  | 130 | 107 | --  | 95  | 16 | 65  | 14 | 4         | 4,1         | 16,5        |
|                        | 20  | 150 | 109 | --  | 105 | 16 | 75  | 14 | 4         | 5,1         | 16,5        |
|                        | 25  | 160 | 112 | --  | 115 | 16 | 85  | 14 | 4         | 6,1         | 16,5        |
|                        | 32  | 180 | 121 | --  | 140 | 18 | 100 | 18 | 4         | 10,1        | 25          |
|                        | 40  | 200 | 152 | --  | 150 | 18 | 110 | 18 | 4         | 12,3        | 25          |
|                        | 50  | 230 | 160 | --  | 165 | 20 | 125 | 18 | 4         | 17          | 25          |
|                        | 65  | 270 | 175 | --  | 185 | 20 | 145 | 18 | 8         | 23,8        | 25          |
|                        | 80  | 310 | 190 | --  | 200 | 22 | 160 | 18 | 8         | 32          | 45          |
| 2FSA<br>PN25           | 25  | 160 | 92  | 83  | 115 | 18 | 85  | 14 | 4         | 6           | 16,5        |
|                        | 32  | 180 | 97  | 102 | 140 | 18 | 100 | 18 | 4         | 10          | 25          |
|                        | 40  | 200 | 98  | 104 | 150 | 18 | 110 | 18 | 4         | 11          | 25          |
|                        | 50  | 230 | 107 | 110 | 165 | 20 | 125 | 18 | 4         | 16          | 25          |
|                        | 65  | 270 | 117 | 124 | 185 | 22 | 145 | 18 | 8         | 20          | 25          |
| 2FAAP<br>2FAAT<br>PN40 | 15  | 130 | 178 | --  | 95  | 16 | 65  | 14 | 4         | 6,2         | 16,5        |
|                        | 20  | 150 | 180 | --  | 105 | 18 | 75  | 14 | 4         | 8,3         | 16,5        |
|                        | 25  | 160 | 183 | --  | 115 | 18 | 85  | 14 | 4         | 8,6         | 16,5        |
|                        | 32  | 180 | 269 | --  | 140 | 18 | 100 | 18 | 4         | 14,7        | 25          |
|                        | 40  | 200 | 277 | --  | 150 | 18 | 110 | 18 | 4         | 15,4        | 25          |
|                        | 50  | 230 | 285 | --  | 165 | 20 | 125 | 18 | 4         | 25          | 25          |
|                        | 65  | 270 | 300 | --  | 185 | 22 | 145 | 18 | 8         | 29          | 25          |
|                        | 80  | 310 | 315 | --  | 200 | 24 | 160 | 18 | 8         | 38          | 45          |

#### PS89 models



| valve<br>DN | grooved<br>joint DN | Ø                         |        |        | A                                          | B                                           | C                  |        | D                         |
|-------------|---------------------|---------------------------|--------|--------|--------------------------------------------|---------------------------------------------|--------------------|--------|---------------------------|
|             |                     | external pipe<br>diameter |        |        | gasket<br>seat<br>$\pm 0.76$<br>$\pm 0.03$ | groove<br>width<br>$\pm 0.76$<br>$\pm 0.03$ | groove<br>diameter |        | groove<br>depth<br>(ref.) |
|             |                     | base                      | max.   | min.   |                                            |                                             | max.               | min.   |                           |
| 40          | 50                  | 60,30                     | 60,90  | 59,70  | 15,88                                      | 7,95                                        | 57,20              | 56,80  | 1,6                       |
| 50          | 76,1                | 76,10                     | 77     | 75,40  | 15,88                                      | 7,95                                        | 72,30              | 71,80  | 1,98                      |
| 65          | 80                  | 88,90                     | 89,80  | 88,10  | 15,88                                      | 7,95                                        | 84,90              | 84,50  | 1,98                      |
| 80          | 100                 | 114,30                    | 115,40 | 113,50 | 15,88                                      | 9,53                                        | 110,10             | 109,60 | 2,11                      |
| 100         | 139,7               | 139,70                    | 141,10 | 138,90 | 15,88                                      | 9,53                                        | 135,50             | 135    | 2,11                      |
| 125         | 150                 | 168,30                    | 169,90 | 167,50 | 15,88                                      | 9,53                                        | 164                | 163,40 | 2,16                      |

The performances stated in this sheet can be modified without any prior notice

**CONTROLLI**