

## FEATURES

- High flow due to angled seat design
- Anti-waterhammer design (fluid entry under the disc)
- Vacuum operation up to 10<sup>-2</sup> mbar
- Wide range of piston-type operators (32 - 50- 63 - 90 - 125 mm dia.) rotatable through 360°, for maximum performance at different minimum pilot pressures
- High performance, maintenance-free stuffing box
- The valves satisfy Pressure Equipment Directive 97/23/EC, category 1 (DN > 25) or article 3.3 (DN ≤ 25)

## GENERAL

|                            |                                        |
|----------------------------|----------------------------------------|
| Differential pressure      | See «SPECIFICATIONS» [1 bar = 100 kPa] |
| Maximum allowable pressure | 16 bar                                 |
| Ambient temperature range  | -10°C to +60°C                         |
| Maximum viscosity          | 600 cSt (mm <sup>2</sup> /s)           |
| Pilot fluid                | Filtered air or water <sup>(1)</sup>   |
| Max. pilot pressure        | 10 bar                                 |
| Min. pilot pressure        | See below and following page           |
| Pilot fluid temperature    | -10°C to +60°C                         |
| Response time              | See page V402-7                        |

| fluids (*)                                                                                                            | temperature range | disc seal (*) |
|-----------------------------------------------------------------------------------------------------------------------|-------------------|---------------|
| DN ≤ 50: air and gas groups 1 & 2<br>DN 65: air and gas group 2<br>all DN: water, oil, liquids groups 1 & 2 and steam | - 10°C to + 184°C | PTFE          |

## MATERIALS IN CONTACT WITH FLUID

(\*) Ensure that the compatibility of the fluids in contact with the materials is verified

|                      | Bronze body     | Stainless steel body |
|----------------------|-----------------|----------------------|
| Valve body           | Bronze          | AISI 316L            |
| Stuffing box housing | Brass           | AISI 316L            |
| Stem                 | Stainless steel | Stainless steel      |
| Disc                 | Brass           | Stainless steel      |
| Stuffing box packing | PTFE chevrons   | PTFE chevrons        |
| Wiper seal           | FPM             | FPM                  |
| Disc seal            | PTFE            | PTFE                 |
| Valve body seal      | PTFE            | PTFE                 |

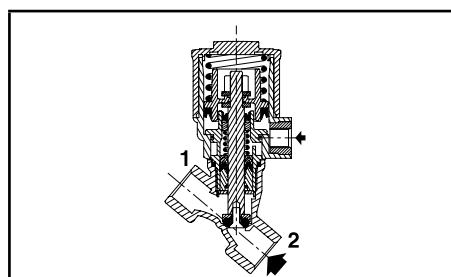
## OTHER MATERIALS

|                            |                                                                     |
|----------------------------|---------------------------------------------------------------------|
| Operator                   | Glass fibre filled PA                                               |
| Optical position indicator | PA 12, supplied standard on valves with 63, 90 and 125 mm operators |

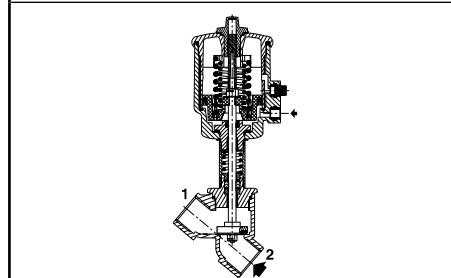
<sup>(1)</sup> For dia. 32, 50, 63, 90 and 125 mm operators: At service fluid temperatures inside the valve body above 100°C, it is prohibited to pilot the valve with water.

## SPECIFICATIONS

| piping<br>(ISO 6708)                                      |     | flow<br>coefficient<br>Kv |     | pilot<br>pressure<br>(bar) |     | operating pressure<br>differential (bar) |      |          |          | operator<br>diameter | catalogue<br>number |          |
|-----------------------------------------------------------|-----|---------------------------|-----|----------------------------|-----|------------------------------------------|------|----------|----------|----------------------|---------------------|----------|
| pipe<br>size                                              | DN  |                           |     |                            |     | min.                                     | max. |          |          |                      |                     |          |
|                                                           |     |                           |     |                            |     |                                          | (G*) | (m³/h)   | (l/min)  |                      | min.                | max.     |
| NC - Normally closed, entry under the disc <sup>(1)</sup> |     |                           |     |                            |     |                                          |      |          |          |                      |                     |          |
| 3/8                                                       | 10  | 2,8                       | 47  | 4                          | 10  | 0                                        | 16   | 16       | 10       | 32                   | -                   | E290A791 |
| 1/2                                                       | 15  | 4,1                       | 68  | 4                          | 10  | 0                                        | 12   | 12       | 10       | 32                   | -                   | E290A792 |
|                                                           |     | 4,9                       | 82  | 4                          | 10  | 0                                        | 16   | 16       | 10       | 50                   | E290A384            | E290A393 |
|                                                           |     |                           |     | 2,5                        | 10  | 0                                        | 16   | 16       | 10       | 63                   | E290B002            | E290B045 |
| 3/4                                                       | 20  | 6,5                       | 108 | 4                          | 10  | 0                                        | 6    | 6        | 6        | 32                   | -                   | E290A793 |
|                                                           |     | 9,4                       | 157 | 4                          | 10  | 0                                        | 10   | 10       | 10       | 50                   | E290A385            | E290A394 |
|                                                           |     |                           |     | 16                         | 16  | 10                                       | 63   | E290B005 | E290B048 |                      |                     |          |
|                                                           |     |                           |     | 2,5                        | 10  | 0                                        | 12   | 12       | 10       | 63                   | E290B004            | E290B047 |
| 1                                                         | 25  | 12,8                      | 213 | 4                          | 10  | 0                                        | 6    | 6        | 6        | 50                   | E290A386            | E290A395 |
|                                                           |     | 16,5                      | 275 | 4                          | 10  | 0                                        | 10   | 10       | 10       | 63                   | E290B010            | E290B053 |
|                                                           |     |                           |     | 16                         | 16  | 10                                       | 90   | E290B011 | E290B054 |                      |                     |          |
|                                                           |     |                           |     | 6                          | 6   | 6                                        | 63   | E290B008 | E290B051 |                      |                     |          |
|                                                           |     |                           |     | 2,5                        | 10  | 0                                        | 12   | 12       | 10       | 90                   | E290B009            | E290B052 |
|                                                           |     | 1 1/4                     | 32  | 27                         | 450 | 4                                        | 10   | 0        | 6        | 6                    | 6                   | 63       |
| 12                                                        | 12  |                           |     |                            |     | 10                                       | 90   | E290A017 | E290A060 |                      |                     |          |
| 3                                                         | 3   |                           |     |                            |     | 3                                        | 63   | E290A014 | E290A057 |                      |                     |          |
| 7                                                         | 7   |                           |     |                            |     | 7                                        | 90   | E290A015 | E290A058 |                      |                     |          |
| 29                                                        | 483 |                           |     | 4                          | 10  | 0                                        | 16   | 16       | 10       | 125                  | E290A642            | E290A646 |
|                                                           |     |                           |     | 2,5                        | 10  | 0                                        | 16   | 16       | 10       | 125                  | E290A641            | E290A645 |



NC function, entry under the disc, 32 and 50 mm operators



NC function, entry under the disc, 63, 90 and 125 mm operators

# SPECIFICATIONS

| piping<br>(ISO 6708)                                                                                  |    | flow<br>coefficient<br>Kv |        | pilot<br>pressure<br>(bar) |      | operating pressure<br>differential (bar) |      |                                             |                                                   | operator<br>diameter     | catalogue<br>number |                 |
|-------------------------------------------------------------------------------------------------------|----|---------------------------|--------|----------------------------|------|------------------------------------------|------|---------------------------------------------|---------------------------------------------------|--------------------------|---------------------|-----------------|
| pipe<br>size                                                                                          | DN |                           |        |                            |      | min.                                     | max. |                                             |                                                   |                          | bronze              | stainless steel |
|                                                                                                       |    | (G*)                      | (m³/h) | (l/min)                    | min. |                                          | max. | air, inert gas,<br>aggressive fluids<br>(*) | water, oil, liquids,<br>aggressive liquids<br>(*) | steam<br>(*)<br>(≤184°C) |                     |                 |
| NC - Normally closed, entry under the disc <sup>(1)</sup>                                             |    |                           |        |                            |      |                                          |      |                                             |                                                   |                          |                     |                 |
| 1 1/2                                                                                                 | 40 | 45                        | 750    | 4                          | 10   | 0                                        | 4    | 4                                           | 4                                                 | 63                       | E290A020            | E290A063        |
|                                                                                                       |    |                           |        | 2,5                        | 10   | 0                                        | 8    | 8                                           | 8                                                 | 90                       | E290A021            | E290A064        |
|                                                                                                       |    | 48                        | 800    | 4                          | 10   | 0                                        | 4    | 4                                           | 4                                                 | 90                       | E290A019            | E290A062        |
|                                                                                                       |    |                           |        | 2,5                        | 10   | 0                                        | 16   | 16                                          | 10                                                | 125                      | E290A482            | E290A495        |
| 2                                                                                                     | 50 | 59                        | 983    | 4                          | 10   | 0                                        | 2,5  | 2,5                                         | 2,5                                               | 63                       | E290A024            | E290A067        |
|                                                                                                       |    |                           |        | 2,5                        | 10   | 0                                        | 6    | 6                                           | 6                                                 | 90                       | E290A025            | E290A068        |
|                                                                                                       |    | 66                        | 1100   | 4                          | 10   | 0                                        | 2,5  | 2,5                                         | 2,5                                               | 90                       | E290A023            | E290A066        |
|                                                                                                       |    |                           |        | 2,5                        | 10   | 0                                        | 10   | 10                                          | 10                                                | 125                      | E290A485            | E290A498        |
|                                                                                                       |    |                           |        | 2,5                        | 10   | 0                                        | 5    | 5                                           | 5                                                 | 125                      | E290A484            | -               |
|                                                                                                       |    |                           |        | 94                         | 1567 | 4                                        | 10   | 0                                           | 2                                                 | 2                        | 2                   | 90              |
| 2 1/2                                                                                                 | 65 | 111                       | 1850   | 4                          | 10   | 0                                        | 6    | 6                                           | 6                                                 | 125                      | E290A488            | E290A501        |
| NO - Normally open, entry under the disc                                                              |    |                           |        |                            |      |                                          |      |                                             |                                                   |                          |                     |                 |
| 3/8                                                                                                   | 10 | 2,8                       | 47     | IX (*)                     | 10   | 0                                        | 16   | 16                                          | 10                                                | 32                       | -                   | E290A794        |
| 1/2                                                                                                   | 15 | 4,1                       | 68     | IX (*)                     | 10   | 0                                        | 16   | 16                                          | 10                                                | 32                       | -                   | E290A795        |
|                                                                                                       |    | 4,9                       | 82     | I (*)                      | 10   | 0                                        | 16   | 16                                          | 10                                                | 50                       | E290A387            | E290A396        |
| 3/4                                                                                                   | 20 | 6,5                       | 108    | II (*)                     | 10   | 0                                        | 16   | 16                                          | 10                                                | 63                       | E290B026            | E290B069        |
|                                                                                                       |    |                           |        | IX (*)                     | 10   | 0                                        | 16   | 16                                          | 10                                                | 32                       | -                   | E290A796        |
|                                                                                                       |    | 9,4                       | 157    | I (*)                      | 10   | 0                                        | 16   | 16                                          | 10                                                | 50                       | E290A388            | E290A397        |
|                                                                                                       |    |                           |        | II (*)                     | 10   | 0                                        | 16   | 16                                          | 10                                                | 63                       | E290B027            | E290B070        |
| 1                                                                                                     | 25 | 12,8                      | 213    | I (*)                      | 10   | 0                                        | 16   | 16                                          | 10                                                | 50                       | E290A389            | -               |
|                                                                                                       |    | 16,5                      | 275    | II (*)                     | 10   | 0                                        | 16   | 16                                          | 10                                                | 63                       | E290B028            | E290B071        |
|                                                                                                       |    |                           |        | III (*)                    | 10   | 0                                        | 16   | 16                                          | 10                                                | 90                       | E290B029            | E290B072        |
| 1 1/4                                                                                                 | 32 | 27                        | 450    | II (*)                     | 10   | 0                                        | 16   | 16                                          | 10                                                | 63                       | E290A030            | E290A073        |
|                                                                                                       |    | 29                        | 483    | III (*)                    | 10   | 0                                        | 16   | 16                                          | 10                                                | 90                       | E290A031            | E290A074        |
|                                                                                                       |    |                           |        | IV (*)                     | 10   | 0                                        | 16   | 16                                          | 10                                                | 125                      | E290A643            | E290A647        |
| 1 1/2                                                                                                 | 40 | 45                        | 750    | II (*)                     | 10   | 0                                        | 11   | 11                                          | 10                                                | 63                       | E290A032            | E290A075        |
|                                                                                                       |    | 48                        | 800    | III (*)                    | 10   | 0                                        | 16   | 16                                          | 10                                                | 90                       | E290A033            | E290A076        |
|                                                                                                       |    |                           |        | IV (*)                     | 10   | 0                                        | 16   | 16                                          | 10                                                | 125                      | E290A489            | E290A502        |
| 2                                                                                                     | 50 | 59                        | 983    | II (*)                     | 10   | 0                                        | 7    | 7                                           | 7                                                 | 63                       | E290A034            | E290A077        |
|                                                                                                       |    | 66                        | 1100   | III (*)                    | 10   | 0                                        | 13   | 13                                          | 10                                                | 90                       | E290A035            | E290A078        |
|                                                                                                       |    |                           |        | IV (*)                     | 10   | 0                                        | 16   | 16                                          | 10                                                | 125                      | E290A490            | E290A503        |
| 2 1/2                                                                                                 | 65 | 94                        | 1567   | III (*)                    | 10   | 0                                        | 7    | 7                                           | 7                                                 | 90                       | E290A491            | E290A504        |
|                                                                                                       |    | 111                       | 1850   | IV (*)                     | 10   | 0                                        | 16   | 16                                          | 10                                                | 125                      | E290A492            | E290A505        |
| NC - Normally closed, entry above the disc (version recommended for rapid-cycling steam applications) |    |                           |        |                            |      |                                          |      |                                             |                                                   |                          |                     |                 |
| 3/8                                                                                                   | 10 | 2,8                       | 47     | X (*)                      | 10   | 0                                        | 10   | -                                           | 10                                                | 32                       | -                   | E290A797        |
| 1/2                                                                                                   | 15 | 4,1                       | 68     | X (*)                      | 10   | 0                                        | 10   | -                                           | 10                                                | 32                       | -                   | E290A798        |
|                                                                                                       |    | 4,9                       | 82     | V (*)                      | 10   | 0                                        | 10   | -                                           | 10                                                | 50                       | E290A390            | E290A399        |
| 3/4                                                                                                   | 20 | 6,5                       | 108    | VI (*)                     | 10   | 0                                        | 10   | -                                           | 10                                                | 63                       | E290B036            | E290B079        |
|                                                                                                       |    |                           |        | X (*)                      | 10   | 0                                        | 10   | -                                           | 10                                                | 32                       | -                   | E290A799        |
|                                                                                                       |    | 9,4                       | 157    | V (*)                      | 10   | 0                                        | 10   | -                                           | 10                                                | 50                       | E290A391            | E290A400        |
|                                                                                                       |    |                           |        | VI (*)                     | 10   | 0                                        | 10   | -                                           | 10                                                | 63                       | E290B037            | E290B080        |
| 1                                                                                                     | 25 | 12,8                      | 213    | V (*)                      | 10   | 0                                        | 10   | -                                           | 10                                                | 50                       | E290A392            | E290A401        |
|                                                                                                       |    | 16,5                      | 275    | VI (*)                     | 10   | 0                                        | 10   | -                                           | 10                                                | 63                       | E290B038            | E290B081        |
| 1 1/4                                                                                                 | 32 | 27                        | 450    | VI (*)                     | 10   | 0                                        | 10   | -                                           | 10                                                | 63                       | E290A039            | E290A082        |
|                                                                                                       |    |                           |        | VII (*)                    | 10   | 0                                        | 10   | -                                           | 10                                                | 90                       | E290A136            | E290A137        |
| 1 1/2                                                                                                 | 40 | 45                        | 750    | VI (*)                     | 10   | 0                                        | 10   | -                                           | 10                                                | 63                       | E290A040            | E290A083        |
|                                                                                                       |    |                           |        | VII (*)                    | 10   | 0                                        | 10   | -                                           | 10                                                | 90                       | E290A041            | E290A084        |
| 2                                                                                                     | 50 | 59                        | 983    | VI (*)                     | 10   | 0                                        | 9    | -                                           | 9                                                 | 63                       | E290A042            | E290A085        |
|                                                                                                       |    |                           |        | VII (*)                    | 10   | 0                                        | 10   | -                                           | 10                                                | 90                       | E290A043            | E290A086        |
| 2 1/2                                                                                                 | 65 | 94                        | 1567   | VII (*)                    | 10   | 0                                        | 10   | -                                           | 10                                                | 90                       | E290A623            | E290A625        |
|                                                                                                       |    | 111                       | 1850   | VIII (*)                   | 10   | 0                                        | 10   | -                                           | 10                                                | 125                      | E290A624            | -               |

(\*) Minimum pilot pressure varies with differential pressure, see page V402-7.

<sup>(1)</sup> Calculation of the minimum pilot pressure at a ΔP of max. 10 bar with allowable backpressure (backpressure not recommended with liquids as waterhammer may occur).

- 32 and 50 mm operators, 4 bar minimum pilot pressure version: add 2 bar to the minimum pilot pressure of chart V or X, page V402-7.

- 63, 90 and 125 mm operators, 4 bar minimum pilot pressure version: add 1,5 bar to the minimum pilot pressure of chart VI, VII or VIII, page V402-7.

### OPTIONS AND ACCESSORIES (see page V435/V436)

- Signaling box or compact signaling unit
- Stroke limiter for opening
- Manual safety device
- Optical position indicator on 32-50 mm operators, NC function
- Adapter plate for NAMUR pad mounting pilot (63-90-125 mm operators only)
- Oxygen service (except DN 65), pressure limited to 15 bar, temperature limited to + 60°C
- Vacuum applications up to 1,33 10<sup>-3</sup> mbar
- NET-INOX passivation treatment on stainless steel body valve
- ATEX 94/9/EC versions for potentially explosive atmospheres
- Pilot operated drain valve assembly with electronic timer (see Solenoids, Coils & Accessories section)
- Other pipe connections are available on request

### INSTALLATION

- The valves can be mounted in any position without affecting operation
- Compatible with ASTM 1, 2 and 3 oils
- Pipe connections (G\*) have standard combination thread according to ISO 228/1 and ISO 7/1
- Installation/maintenance instructions are included with each valve

### SPARE PARTS KITS

| DN | spare parts kit no. |                               |
|----|---------------------|-------------------------------|
|    | Ø 32 mm             | Ø 50-63-90-125 mm             |
| 10 | <b>C140100</b>      | -                             |
| 15 | <b>C140101</b>      | <b>C131204</b> <sup>(1)</sup> |
| 20 | <b>C140102</b>      | <b>C131205</b> <sup>(1)</sup> |
| 25 | -                   | <b>C131206</b> <sup>(1)</sup> |
| 32 | -                   | <b>C131207</b> <sup>(1)</sup> |
| 40 | -                   | <b>C131208</b> <sup>(1)</sup> |
| 50 | -                   | <b>C131209</b> <sup>(1)</sup> |
| 65 | -                   | <b>C131622</b> <sup>(1)</sup> |

<sup>(1)</sup> Standard suffix VM also applies to kits (see V435).

- Not available

### ORDERING EXAMPLES:

|   |     |   |     |     |
|---|-----|---|-----|-----|
| E | 290 | A | 792 |     |
| E | 290 | B | 002 | SM2 |
| E | 290 | A | 791 | SU  |
| E | 290 | A | 082 |     |

pipe thread — basic number — suffix

### ORDERING EXAMPLES KITS:

|         |    |
|---------|----|
| C140100 |    |
| C140205 |    |
| C140205 | VM |

basic number — suffix

| 32 mm operator                      | 50 mm operator | 63, 90 and 125 mm operators |
|-------------------------------------|----------------|-----------------------------|
|                                     |                |                             |
| NO function                         |                |                             |
|                                     |                |                             |
| NC function, fluid entry above disc |                |                             |

### DIMENSIONS (mm), WEIGHT (kg)



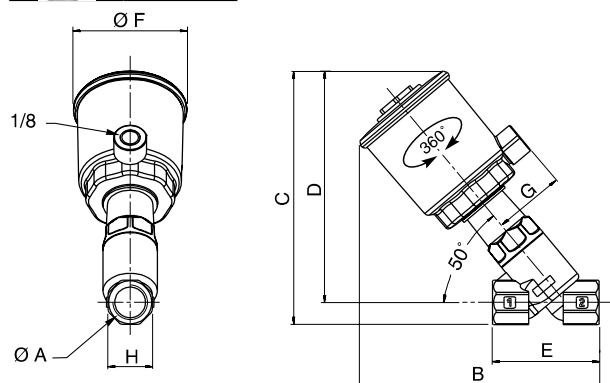
#### TYPE 01-02

32 and 50 mm operators

Fluid entry:

under the disc at 2

above the disc at 1



| type | operator diameter | ØA  | B     | C     | D    | E  | ØF   | G  | ØH   | weight <sup>(1)</sup> |
|------|-------------------|-----|-------|-------|------|----|------|----|------|-----------------------|
| 01   | 32 mm             | 3/8 | 92    | 93    | 81,5 | 55 | 43,5 | 27 | 23,5 | 0,35                  |
|      |                   | 1/2 | 99    | 97    | 83,5 | 65 | 43,5 | 27 | 28   | 0,4                   |
|      |                   | 3/4 | 107   | 104,5 | 88   | 75 | 43,5 | 27 | 30   | 0,45                  |
| 02   | 50 mm             | 1/2 | 142   | 154,5 | 141  | 65 | 69   | 43 | 27   | 0,9                   |
|      |                   | 3/4 | 150,5 | 159   | 143  | 75 | 69   | 43 | 32   | 1                     |
|      |                   | 1   | 155   | 165   | 145  | 90 | 69   | 43 | 41   | 1,4                   |

<sup>(1)</sup> Weight of valve without pilot.

Solenoid pilot valves: see V440 (32 and 50 mm operators).



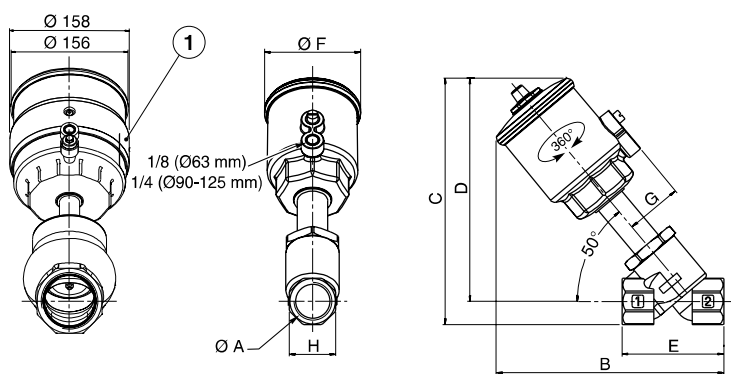
#### TYPE 03-04-05

63, 90 and 125 mm operators

Fluid entry:

under the disc at 2

above the disc at 1



① Operator dia. 125 mm, NO function

| type | operator diameter | ØA    | B   | C     | D     | E   | ØF  | G    | ØH | weight <sup>(1)</sup> |
|------|-------------------|-------|-----|-------|-------|-----|-----|------|----|-----------------------|
| 03   | 63 mm             | 1/2   | 170 | 182   | 169   | 65  | 85  | 50,5 | 27 | 1,2                   |
|      |                   | 3/4   | 175 | 185   | 170   | 75  | 85  | 50,5 | 32 | 1,3                   |
|      |                   | 1     | 179 | 192   | 172   | 90  | 85  | 50,5 | 41 | 1,7                   |
|      |                   | 1 1/4 | 217 | 229   | 204   | 110 | 85  | 50,5 | 50 | 2,1                   |
|      |                   | 1 1/2 | 224 | 245   | 215   | 120 | 85  | 50,5 | 60 | 2,9                   |
|      |                   | 2     | 249 | 259   | 224   | 150 | 85  | 50,5 | 70 | 3,7                   |
| 04   | 90 mm             | 1     | 197 | 209   | 189   | 90  | 118 | 67   | 41 | 2,3                   |
|      |                   | 1 1/4 | 236 | 246   | 221   | 110 | 118 | 67   | 50 | 2,7                   |
|      |                   | 1 1/2 | 243 | 262   | 232   | 120 | 118 | 67   | 60 | 3,5                   |
|      |                   | 2     | 267 | 276   | 241   | 150 | 118 | 67   | 70 | 4,3                   |
|      |                   | 2 1/2 | 299 | 300   | 257   | 190 | 118 | 67   | 86 | 6,3                   |
|      |                   | 1 1/4 | 284 | 298   | 273   | 110 | 156 | 86   | 50 | 5,2                   |
| 05   | 125 mm            | 1 1/2 | 291 | 313,5 | 283,5 | 120 | 156 | 86   | 60 | 6                     |
|      |                   | 2     | 315 | 328   | 293   | 150 | 156 | 86   | 70 | 6,8                   |
|      |                   | 2 1/2 | 347 | 352   | 308   | 190 | 156 | 86   | 86 | 8,9                   |

<sup>(1)</sup> Weight of valve without pilot. Add 0,2 for dia. 125 mm operator NO.

Solenoid pilot valves: see V439 (63 mm operator) / V444 (90 and 125 mm operators).