

# TKD DN 15÷50

DUAL BLOCK® 3-way ball valve



# TKD DN 15÷50

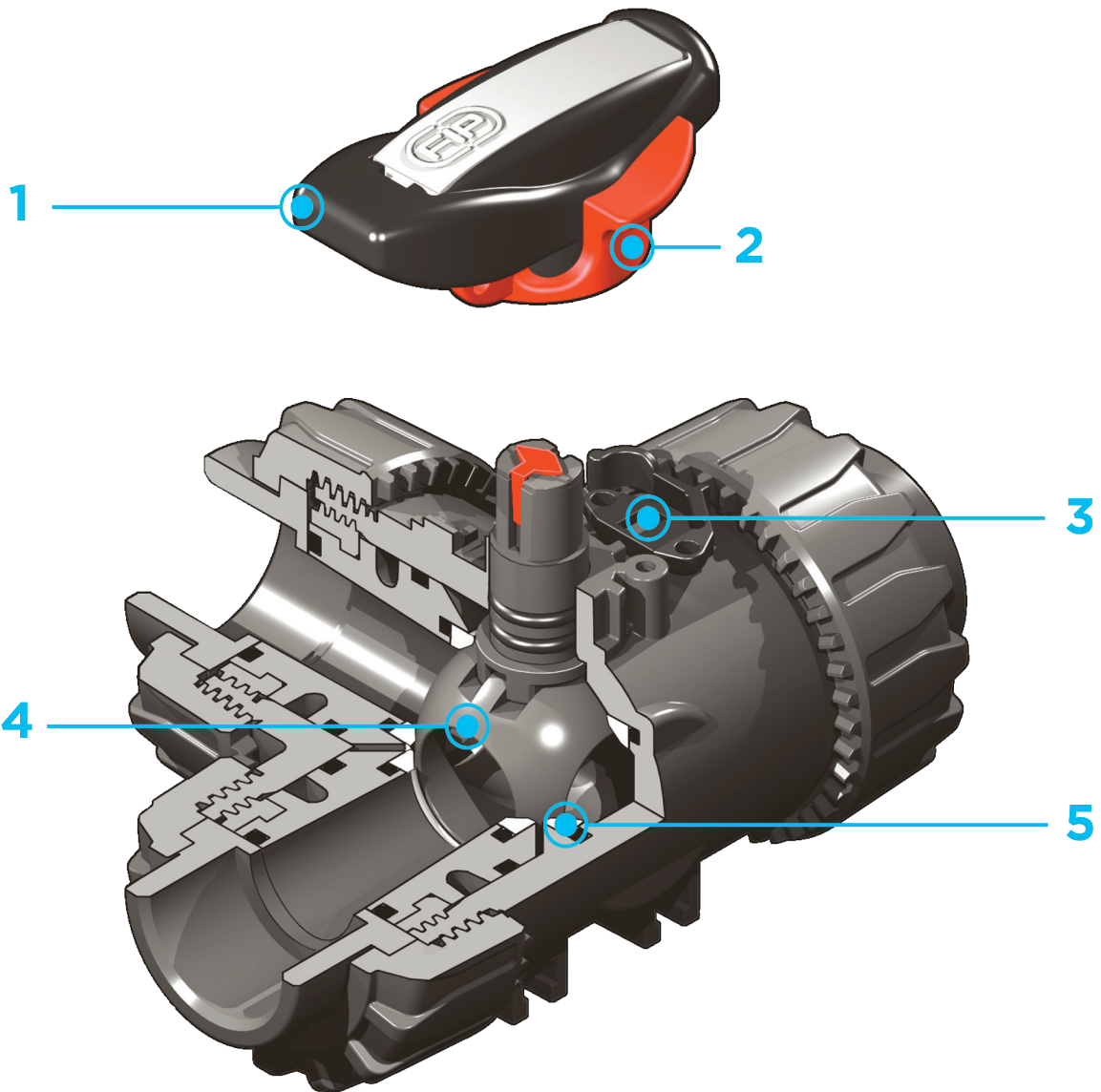
FIP has developed a TKD DUAL BLOCK® ball valve to introduce a high reference standard in thermoplastic valve design. TKD is a True Union diverting and mixing ball valve that meets the most stringent needs required in industrial applications.



## DUAL BLOCK® 3-WAY BALL VALVE

- Connection system for weld and threaded joints
- Patented **SEAT STOP®** ball seat carrier system that lets you micro-adjust ball seats and minimise axial force effects
- Easy radial disassembly allowing quick replacement of O-rings and ball seats without any need for tools
- PN10 **True Union valve body** made for PP-H injection moulding equipped with built-in bores for actuation. ISO 9393 compliant test requisites
- Option of disassembling downstream pipes with the valve in the closed position
- High surface finish stem with double O-Ring and double groove ball connection, equipped with **optical position indicator** for correct handle installation
- **Integrated bracket** for valve anchoring
- Possibility of installing pneumatic and/or electric actuators thanks to the robust integrated bracket for valve anchoring for easy and quick automation using the Power Quick module (optional)
- Possibility to have handle with integrated LSQT limit micro switch, even as a retrofit in existing installations

| Technical specifications   |   |
|----------------------------|---|
| <b>Construction</b>        | 3-way True Union ball valve with locked carrier and lockable union nuts   |
| <b>Size range</b>          | DN 15 ÷ 50  |
| <b>Nominal pressure</b>    | PN 10 with water at 20° C   |
| <b>Temperature range</b>   | 0 °C ÷ 100 °C   |
| <b>Coupling standards</b>  | <b>Welding:</b> EN ISO 15494 Can be coupled to pipes according to EN ISO 15494<br><b>Thread:</b> ISO 228-1, EN 10226-1/2  |
| <b>Reference standards</b> | <b>Construction criteria:</b> EN ISO 16135, EN ISO 15494<br><b>Test methods and requirements:</b> ISO 9393<br><b>Installation criteria:</b> DVS 2202-1, DVS 2207-11, DVS 2208-1, UNI 11318<br><b>Actuator couplings:</b> ISO 5211 |
| <b>Valve material</b>      | PP-H  |
| <b>Seal material</b>       | EPDM, FKM (standard size O-Rings);<br>PTFE (ball seats)   |
| <b>Control options</b>     | Manual control; electric actuator; pneumatic actuator   |



**1** Ergonomic HIPVC handle equipped with removable tool to adjust the ball seat carrier. Possibility of installing the **LTKD stroke limiter** (available as an accessory) that permits ball and handle rotation only for set opening and closing angles at 90° or 180°

**2** Handle lock 0°- 90° SHKD

(available as an accessory) ergonomically operable during service and padlockable

**3** **DUAL BLOCK®** patented lock system that ensures union nut tightening hold even in severe conditions such as vibrations or heat dilation

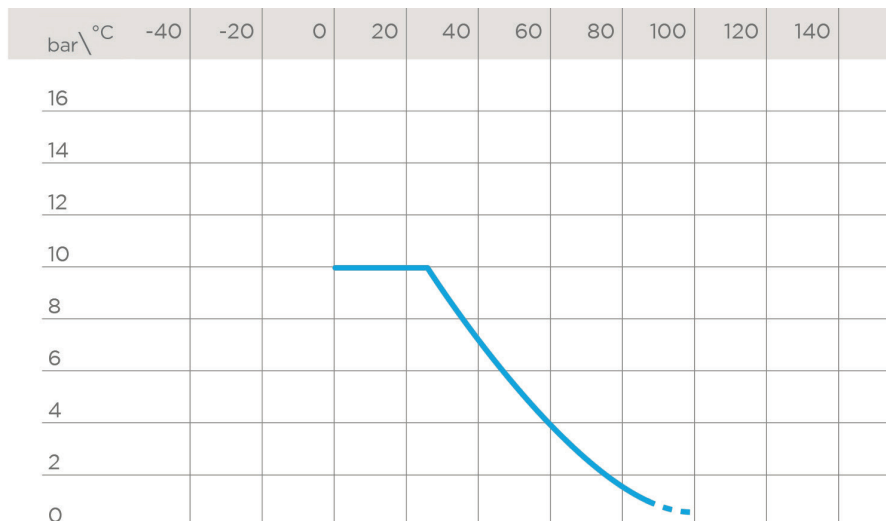
**4** **Ball shutter** high surface finish with floating type full passage with **T or L port**

**5** **4 PTFE ball seat system** that compensates axial force guaranteeing optimal manageability and long working life

# TECHNICAL DATA

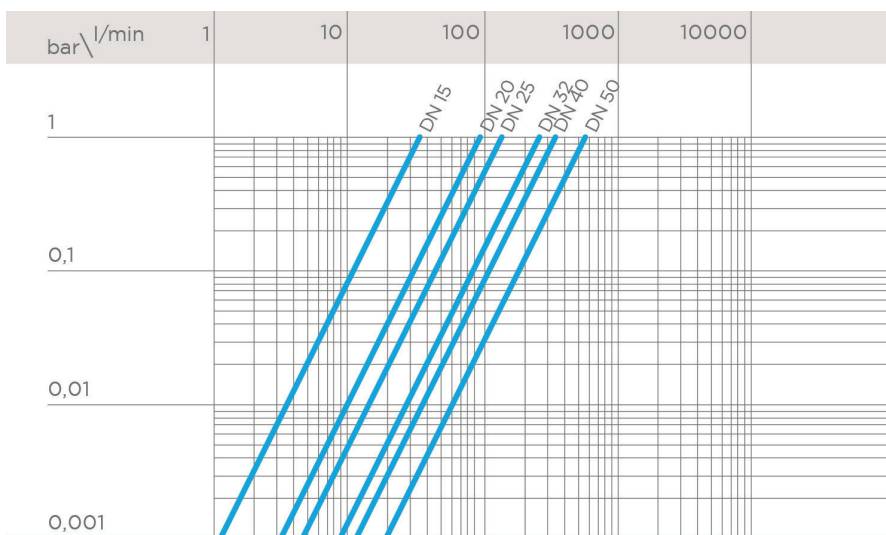
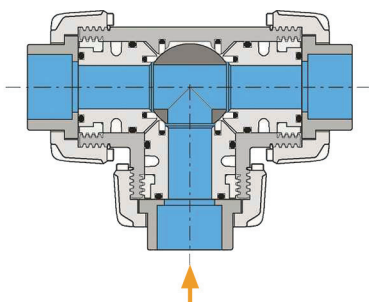
## PRESSURE VARIATION ACCORDING TO TEMPERATURE

For water and harmless fluids to which the material is classified as CHEMICALLY RESISTANT. In other cases, a reduction of the nominal PN pressure is required (25 years with safety factor).

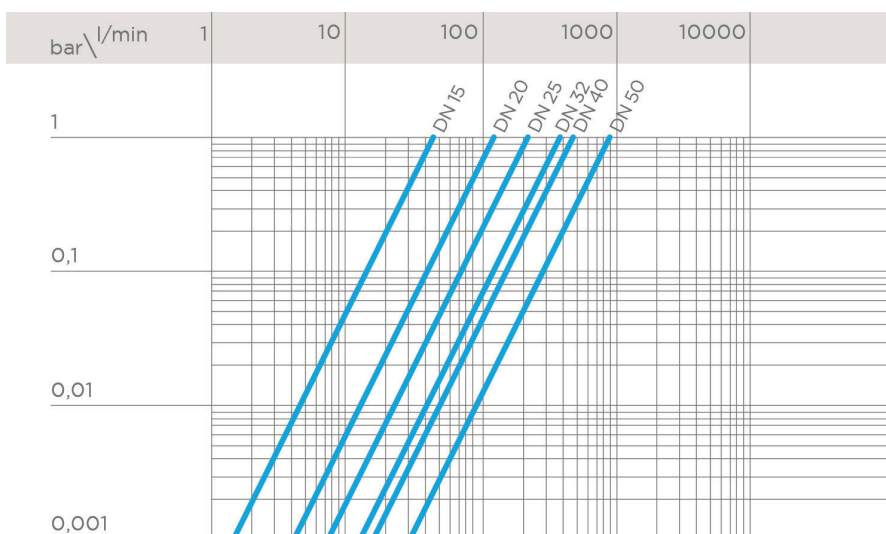
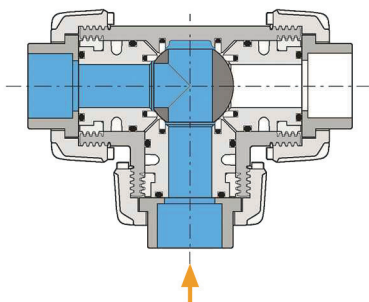


## PRESSURE DROP GRAPH AND WORK POSITIONS

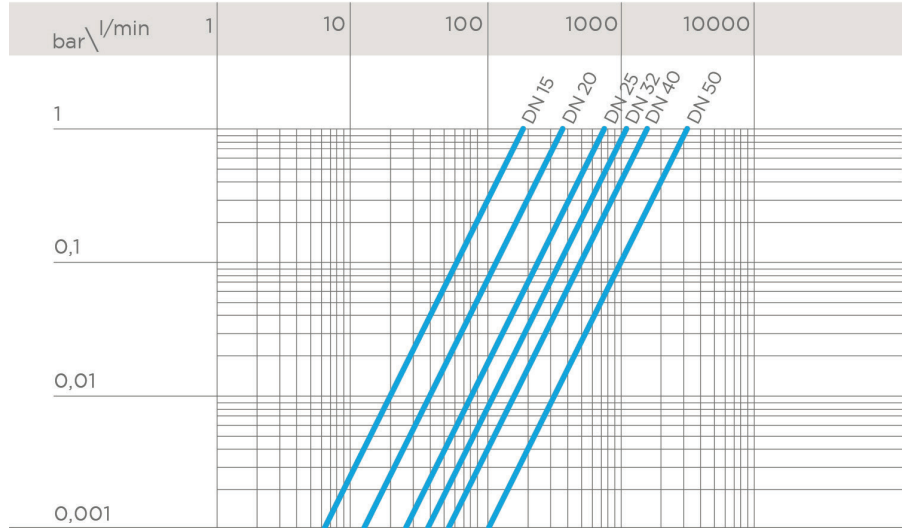
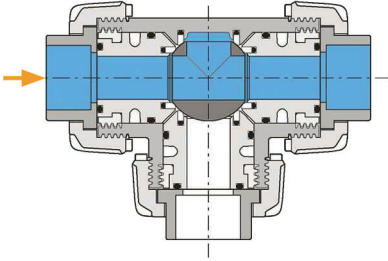
A - T-port ball valve:  
0° - Mixing



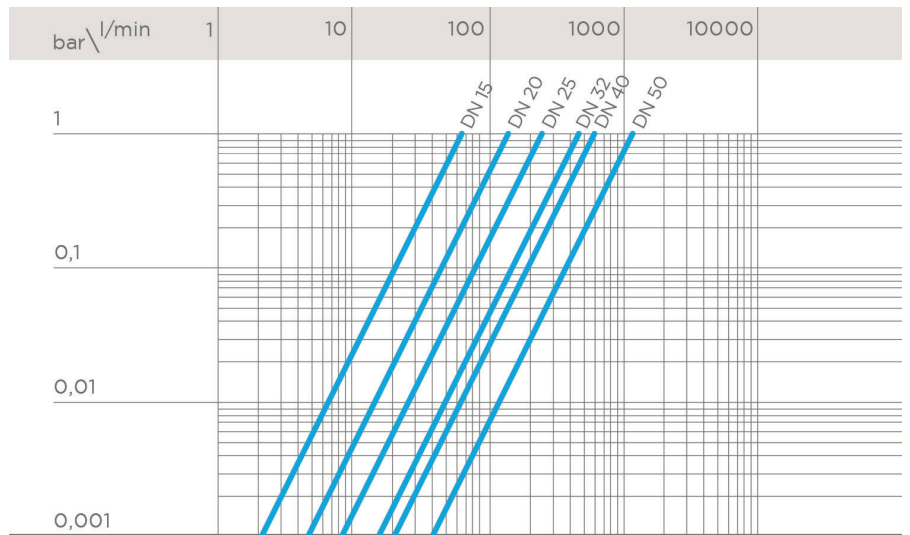
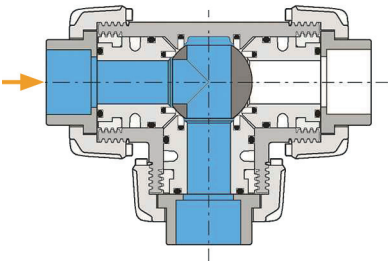
B - T-port ball valve:  
90° - Diverting



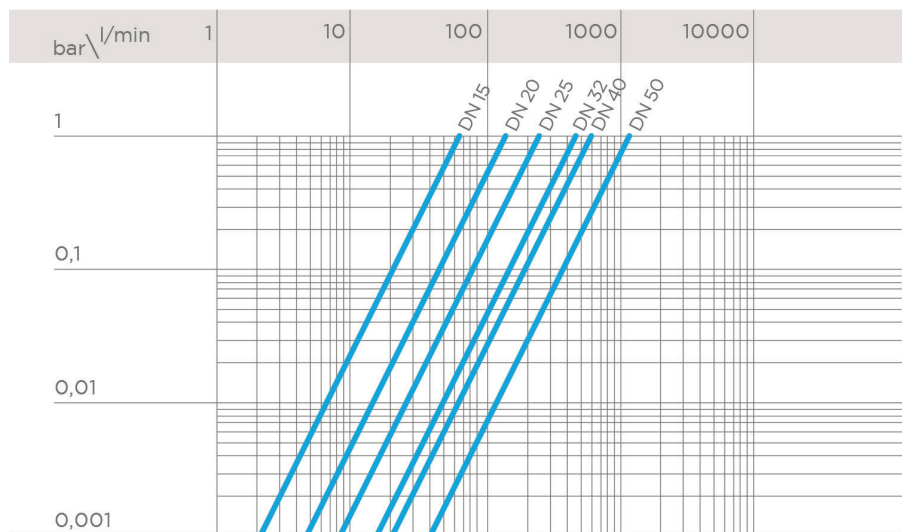
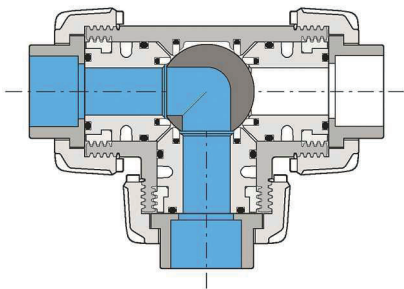
C - T-port ball valve:  
180° - Branch closed/direct flow



D - T-port ball valve:  
270° - Diverting



E - L-port ball valve:  
0°/270° - Diverting

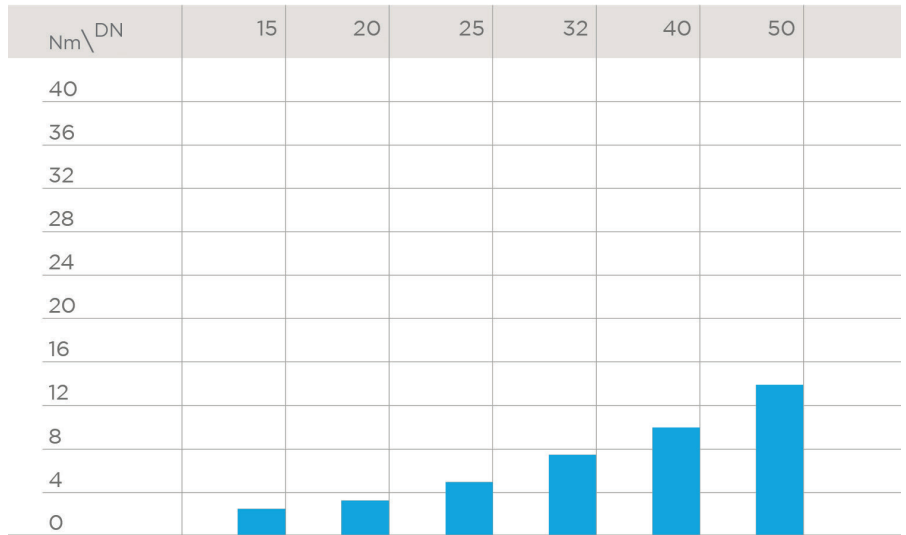


## K<sub>v</sub>100 FLOW COEFFICIENT

The K<sub>v</sub>100 flow coefficient is the Q flow rate of litres per minute of water at a temperature of 20°C that will generate Δp= 1 bar pressure drop at a certain valve position. The Kv100 values shown in the table are calculated with the valve completely open.

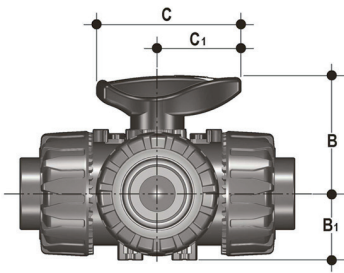
| DN | 10 | 15  | 20  | 25  | 32   | 40   | 50   |
|----|----|-----|-----|-----|------|------|------|
| A  | 25 | 35  | 95  | 140 | 270  | 330  | 620  |
| B  | 37 | 55  | 135 | 205 | 390  | 475  | 900  |
| C  | 78 | 195 | 380 | 760 | 1050 | 1700 | 3200 |
| D  | 40 | 65  | 145 | 245 | 460  | 600  | 1200 |
| E  | 48 | 73  | 150 | 265 | 475  | 620  | 1220 |

## OPERATING TORQUE AT MAXIMUM WORKING PRESSURE



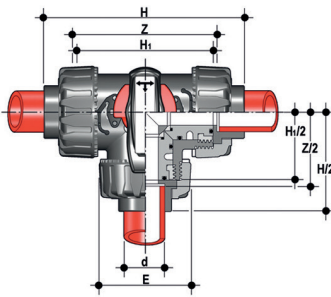
The information in this leaflet is provided in good faith. No liability will be accepted concerning technical data that is not directly covered by recognised international standards. FIP reserves the right to carry out any modification. Products must be installed and maintained by qualified personnel.

# DIMENSIONS



Dimensions shared by all versions

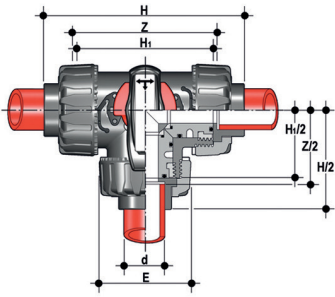
| d  | DN | B   | B <sub>1</sub> | C   | C <sub>1</sub> |
|----|----|-----|----------------|-----|----------------|
| 20 | 15 | 54  | 29             | 67  | 40             |
| 25 | 20 | 65  | 35             | 85  | 49             |
| 32 | 25 | 70  | 39             | 85  | 49             |
| 40 | 32 | 83  | 46             | 108 | 64             |
| 50 | 40 | 89  | 52             | 108 | 64             |
| 63 | 50 | 108 | 62             | 134 | 76             |



## TKDIM

DUAL BLOCK® 3-way ball valve with metric plain socket ends for socket welding, - T bore.

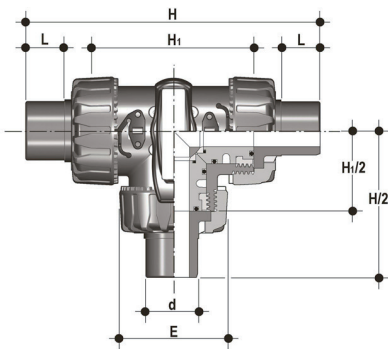
| d  | DN | PN | E   | H   | H <sub>1</sub> | Z   | g    | EPDM code | FKM code  |
|----|----|----|-----|-----|----------------|-----|------|-----------|-----------|
| 20 | 15 | 10 | 54  | 117 | 80             | 88  | 195  | TKDIM020E | TKDIM020F |
| 25 | 20 | 10 | 65  | 144 | 100            | 112 | 350  | TKDIM025E | TKDIM025F |
| 32 | 25 | 10 | 73  | 158 | 110            | 122 | 505  | TKDIM032E | TKDIM032F |
| 40 | 32 | 10 | 86  | 184 | 131            | 143 | 820  | TKDIM040E | TKDIM040F |
| 50 | 40 | 10 | 98  | 219 | 148            | 172 | 1070 | TKDIM050E | TKDIM050F |
| 63 | 50 | 10 | 122 | 267 | 179            | 212 | 1795 | TKDIM063E | TKDIM063F |



### LKDIM

DUAL BLOCK® 3-way ball valve with metric plain socket ends for socket welding, - L bore.

| d  | DN | PN | E   | H   | H <sub>1</sub> | Z   | g    | EPDM code | FKM code  |
|----|----|----|-----|-----|----------------|-----|------|-----------|-----------|
| 20 | 15 | 10 | 54  | 117 | 80             | 88  | 195  | LKDIM020E | LKDIM020F |
| 25 | 20 | 10 | 65  | 144 | 100            | 112 | 350  | LKDIM025E | LKDIM025F |
| 32 | 25 | 10 | 73  | 158 | 110            | 122 | 505  | LKDIM032E | LKDIM032F |
| 40 | 32 | 10 | 86  | 184 | 131            | 143 | 820  | LKDIM040E | LKDIM040F |
| 50 | 40 | 10 | 98  | 219 | 148            | 172 | 1070 | LKDIM050E | LKDIM050F |
| 63 | 50 | 10 | 122 | 267 | 179            | 212 | 1795 | LKDIM063E | LKDIM063F |

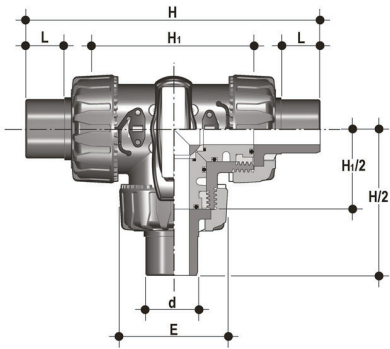


### TKDDM

DUAL BLOCK® 3-way ball valve with male ends for socket welding, metric series, T-port ball.

| d  | DN | PN | E   | H   | H <sub>1</sub> | L  | g    | EPDM code | FKM code  |
|----|----|----|-----|-----|----------------|----|------|-----------|-----------|
| 20 | 15 | 10 | 54  | 140 | 80             | 16 | 205  | TKDDM020E | TKDDM020F |
| 25 | 20 | 10 | 65  | 175 | 100            | 18 | 360  | TKDDM025E | TKDDM025F |
| 32 | 25 | 10 | 73  | 188 | 110            | 20 | 515  | TKDDM032E | TKDDM032F |
| 40 | 32 | 10 | 86  | 220 | 131            | 22 | 835  | TKDDM040E | TKDDM040F |
| 50 | 40 | 10 | 98  | 251 | 148            | 23 | 1100 | TKDDM050E | TKDDM050F |
| 63 | 50 | 10 | 122 | 294 | 179            | 29 | 1830 | TKDDM063E | TKDDM063F |

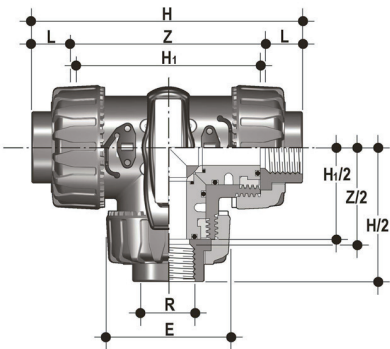




### LKDDM

DUAL BLOCK® 3-way ball valve with male ends for socket welding, metric series, L-port ball.

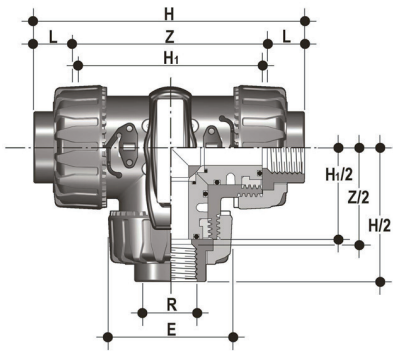
| d  | DN | PN | E   | H   | H <sub>1</sub> | L  | g    | EPDM code | FKM code  |
|----|----|----|-----|-----|----------------|----|------|-----------|-----------|
| 20 | 15 | 10 | 54  | 140 | 80             | 16 | 205  | LKDDM020E | LKDDM020F |
| 25 | 20 | 10 | 65  | 175 | 100            | 18 | 360  | LKDDM025E | LKDDM025F |
| 32 | 25 | 10 | 73  | 188 | 110            | 20 | 515  | LKDDM032E | LKDDM032F |
| 40 | 32 | 10 | 86  | 220 | 131            | 22 | 835  | LKDDM040E | LKDDM040F |
| 50 | 40 | 10 | 98  | 251 | 148            | 23 | 1100 | LKDDM050E | LKDDM050F |
| 63 | 50 | 10 | 122 | 294 | 179            | 29 | 1830 | LKDDM063E | LKDDM063F |



### TKDFM

DUAL BLOCK® 3-way ball valve with BS parallel socket threaded ends, T bore.

| R      | DN | PN | E   | H   | H <sub>1</sub> | L  | Z   | g    | EPDM code | FKM code  |
|--------|----|----|-----|-----|----------------|----|-----|------|-----------|-----------|
| 1/2"   | 15 | 10 | 54  | 117 | 80             | 15 | 87  | 195  | TKDFM012E | TKDFM012F |
| 3/4"   | 20 | 10 | 65  | 143 | 100            | 16 | 114 | 350  | TKDFM034E | TKDFM034F |
| 1"     | 25 | 10 | 73  | 157 | 110            | 19 | 120 | 505  | TKDFM100E | TKDFM100F |
| 1" 1/4 | 32 | 10 | 86  | 185 | 131            | 21 | 140 | 820  | TKDFM114E | TKDFM114F |
| 1" 1/2 | 40 | 10 | 98  | 217 | 148            | 21 | 172 | 1070 | TKDFM112E | TKDFM112F |
| 2"     | 50 | 10 | 122 | 266 | 179            | 26 | 211 | 1795 | TKDFM200E | TKDFM200F |

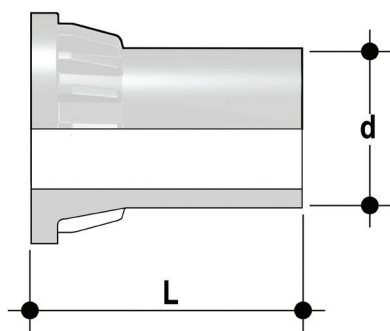


**LKDFM**

DUAL BLOCK® 3-way ball valve with BS parallel socket threaded ends, L bore.

| R      | DN | PN | E   | H   | H <sub>1</sub> | L  | Z   | g    | EPDM code | FKM code  |
|--------|----|----|-----|-----|----------------|----|-----|------|-----------|-----------|
| 1/2"   | 15 | 10 | 54  | 117 | 80             | 15 | 87  | 195  | LKDFM012E | LKDFM012F |
| 3/4"   | 20 | 10 | 65  | 143 | 100            | 16 | 114 | 350  | LKDFM034E | LKDFM034F |
| 1"     | 25 | 10 | 73  | 157 | 110            | 19 | 120 | 505  | LKDFM100E | LKDFM100F |
| 1" 1/4 | 32 | 10 | 86  | 185 | 131            | 21 | 140 | 820  | LKDFM114E | LKDFM114F |
| 1" 1/2 | 40 | 10 | 98  | 217 | 148            | 21 | 172 | 1070 | LKDFM112E | LKDFM112F |
| 2"     | 50 | 10 | 122 | 266 | 179            | 26 | 211 | 1795 | LKDFM200E | LKDFM200F |

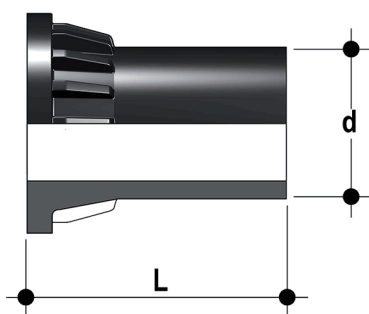
# ACCESSORI



## CVDM

End connectors in PP-H SDR 11 PN 10, long spigot, for butt welding

| d  | DN | PN | L  | SDR | Code      |
|----|----|----|----|-----|-----------|
| 20 | 15 | 10 | 55 | 11  | CVDM11020 |
| 25 | 20 | 10 | 70 | 11  | CVDM11025 |
| 32 | 25 | 10 | 74 | 11  | CVDM11032 |
| 40 | 32 | 10 | 78 | 11  | CVDM11040 |
| 50 | 40 | 10 | 84 | 11  | CVDM11050 |
| 63 | 50 | 10 | 91 | 11  | CVDM11063 |



## CVDE

Long spigot PE100 end connectors for joints with electrofusion fittings or for butt welding

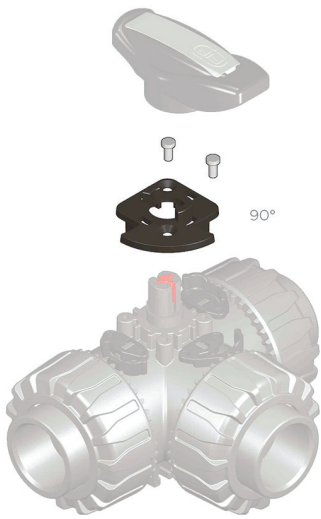
| d  | DN | PN | L  | SDR | Code      |
|----|----|----|----|-----|-----------|
| 20 | 15 | 16 | 55 | 11  | CVDE11020 |
| 25 | 20 | 16 | 70 | 11  | CVDE11025 |
| 32 | 25 | 16 | 74 | 11  | CVDE11032 |
| 40 | 32 | 16 | 78 | 11  | CVDE11040 |
| 50 | 40 | 16 | 84 | 11  | CVDE11050 |
| 63 | 50 | 16 | 91 | 11  | CVDE11063 |



## SHKD

Handle block kit 0° - 90° lockable

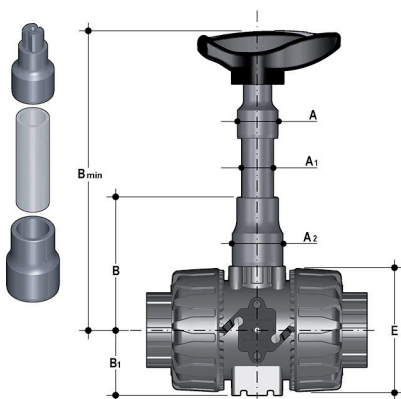
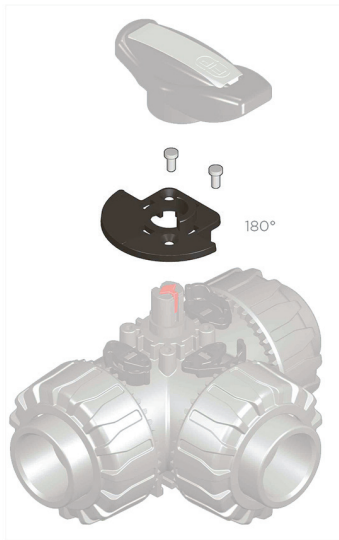
| d       | DN      | Code    |
|---------|---------|---------|
| 16 - 20 | 10 - 15 | SHKD020 |
| 25 - 32 | 20 - 25 | SHKD032 |
| 40 - 50 | 32 - 40 | SHKD050 |
| 63      | 50      | SHKD063 |



## LTKD

The LTKD stroke limiter specifically permits handle and ball rotation only at set opening and closing angles. The LTKD090 version permits operations for 90° angles while the LTKD180 version for 180° angles. The LTKD stroke limiter is made up of a single removable plate made of technopolymer. Designed for ISO 5211 bore and specifically designed to be directly housed on the valve body mounting flange. It is secured to the valve body by self-tapping screws or plastic rivets.

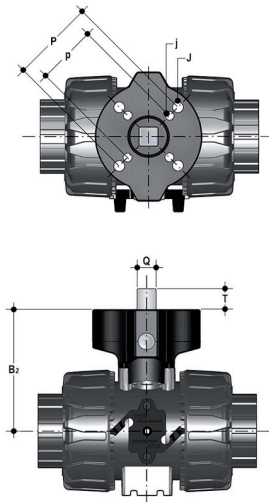
| d       | DN      | 90° code   | 180° code  |
|---------|---------|------------|------------|
| 16 - 20 | 10 - 15 | LTKD090020 | LTKD180020 |
| 25 - 32 | 20 - 25 | LTKD090032 | LTKD180032 |
| 40 - 50 | 32 - 40 | LTKD090050 | LTKD180050 |
| 63      | 50      | LTKD090063 | LTKD180063 |



## PSKD

Stem extension

| d  | DN | A  | A <sub>1</sub> | A <sub>2</sub> | E   | B    | B <sub>1</sub> | B <sub>min</sub> | Code    |
|----|----|----|----------------|----------------|-----|------|----------------|------------------|---------|
| 20 | 15 | 32 | 25             | 32             | 54  | 70   | 29             | 139,5            | PSKD020 |
| 25 | 20 | 32 | 25             | 40             | 65  | 89   | 34,5           | 164,5            | PSKD025 |
| 32 | 25 | 32 | 25             | 40             | 73  | 93,5 | 39             | 169              | PSKD032 |
| 40 | 32 | 40 | 32             | 50             | 86  | 110  | 46             | 200              | PSKD040 |
| 50 | 40 | 40 | 32             | 50             | 98  | 116  | 52             | 206              | PSKD050 |
| 63 | 50 | 40 | 32             | 59             | 122 | 122  | 62             | 225              | PSKD063 |

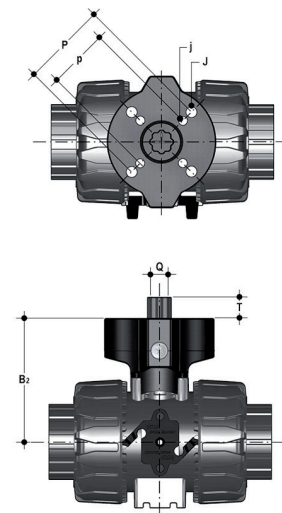


## Power Quick/CP

The valve can be equipped with pneumatic actuators, using the PP-GR module reproducing the drilling pattern foreseen by ISO 5211

| d  | DN | B <sub>2</sub> | Q  | T  | p x j      | P x J     | Code    |
|----|----|----------------|----|----|------------|-----------|---------|
| 16 | 10 | 58             | 11 | 12 | F03 x 5,5  | F04 x 5,5 | PQCP020 |
| 20 | 15 | 58             | 11 | 12 | F03 x 5,5  | F04 x 5,5 | PQCP020 |
| 25 | 20 | 69             | 11 | 12 | *F03 x 5,5 | F05 x 6,5 | PQCP025 |
| 32 | 25 | 74             | 11 | 12 | *F03 x 5,5 | F05 x 6,5 | PQCP032 |
| 40 | 32 | 91             | 14 | 16 | F05-07*    | F07 x 8,5 | PQCP040 |
| 50 | 40 | 97             | 14 | 16 | F05-07*    | F07 x 8,5 | PQCP050 |
| 63 | 50 | 114            | 14 | 16 | F05-07*    | F07 x 8,5 | PQCP063 |

\*F04 x 5.5 on request

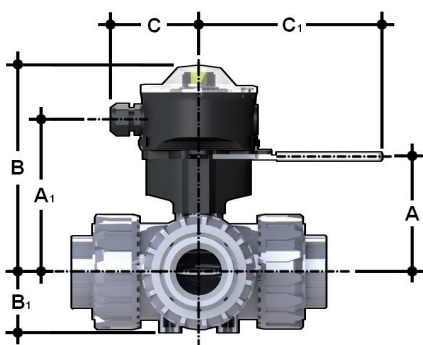


## Power Quick/CE

The valve can be equipped with electric actuators, using the PP-GR module reproducing the drilling pattern foreseen by ISO 5211

| d  | DN | B <sub>2</sub> | Q  | T  | p x j      | P x J     | Code    |
|----|----|----------------|----|----|------------|-----------|---------|
| 16 | 10 | 58             | 14 | 16 | F03 x 5,5  | F04 x 5,5 | PQCE020 |
| 20 | 15 | 58             | 14 | 16 | F03 x 5,5  | F04 x 5,5 | PQCE020 |
| 25 | 20 | 69             | 14 | 16 | *F03 x 5,5 | F05 x 6,5 | PQCE025 |
| 32 | 25 | 74             | 14 | 16 | *F03 x 5,5 | F05 x 6,5 | PQCE032 |
| 40 | 32 | 91             | 14 | 16 | F05 x 6,5  | F07 x 8,5 | PQCE040 |
| 50 | 40 | 97             | 14 | 16 | F05 x 6,5  | F07 x 8,5 | PQCE050 |
| 63 | 50 | 114            | 14 | 16 | F05 x 6,5  | F07 x 8,5 | PQCE063 |

\*F04 x 5.5 on request



## LS Quick Kit

The Limit Switch Quick Kit allows the fast and secure installation of the FIP LSQT to the VKD valves. The body is in PP-GR and the handle is in stainless steel AISI 316. The handle block at 0° and 90° is also available by default (hole diameter 6.5 mm). The kit can be assembled on the valve even if already installed on the system. For technical data of the LSQT box see FIP actuated valves catalogue.

| d  | DN | A   | A <sub>1</sub> | B   | B <sub>1</sub> | C    | C <sub>1</sub> | Code     |
|----|----|-----|----------------|-----|----------------|------|----------------|----------|
| 16 | 10 | 60  | 91,5           | 137 | 29             | 76,5 | 157,5          | LSQKIT20 |
| 20 | 15 | 60  | 91,5           | 137 | 29             | 76,5 | 157,5          | LSQKIT20 |
| 25 | 20 | 71  | 102,5          | 148 | 34,5           | 76,5 | 157,5          | LSQKIT25 |
| 32 | 25 | 76  | 107,5          | 153 | 39             | 76,5 | 157,5          | LSQKIT32 |
| 40 | 32 | 93  | 124,5          | 170 | 46             | 76,5 | 157,5          | LSQKIT40 |
| 50 | 40 | 99  | 130,5          | 176 | 52             | 76,5 | 157,5          | LSQKIT50 |
| 63 | 50 | 116 | 147,5          | 193 | 62             | 76,5 | 157,5          | LSQKIT63 |

# FASTENING AND SUPPORTING



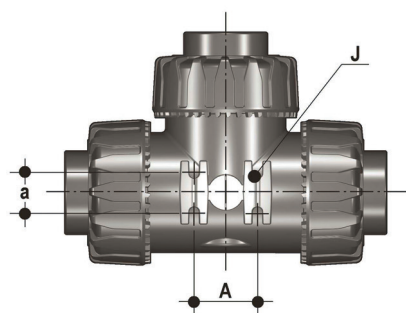
All valves, whether manual or actuated, must be adequately supported in many applications.

The TKD valve series is therefore ready to be equipped with threaded supporting brackets (optional) that permits direct anchoring of the valve body without the need of other components.

Using standard threaded nuts (not included) made of STAINLESS steel, you can anchor the valve on 4 fastening points.

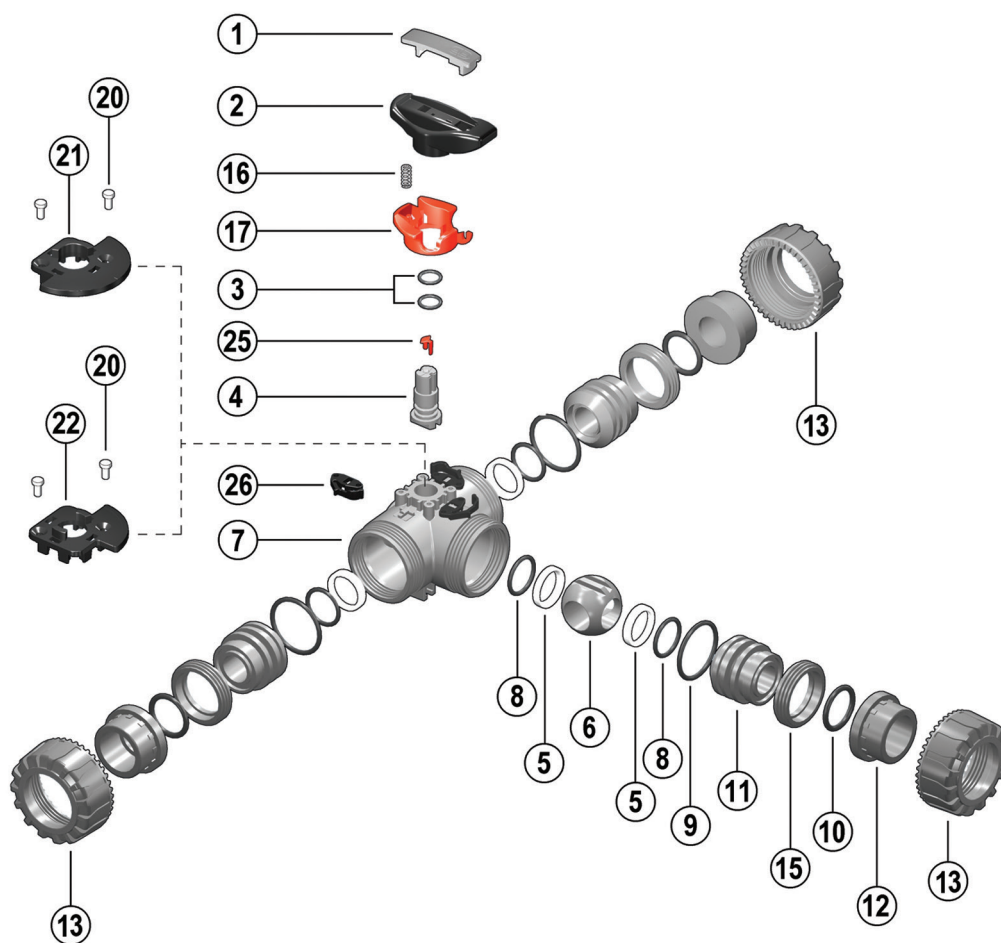
| d  | DN | A  | a  | J       |
|----|----|----|----|---------|
| 16 | 10 | 31 | 20 | M5 x 8  |
| 20 | 15 | 31 | 20 | M5 x 8  |
| 25 | 20 | 31 | 20 | M5 x 8  |
| 32 | 25 | 31 | 20 | M5 x 8  |
| 40 | 32 | 50 | 30 | M6 x 10 |
| 50 | 40 | 50 | 30 | M6 x 10 |

\* With threaded inserts



# COMPONENTS

## EXPLODED VIEW



- |   |   |  |
|---|---|--|
| <b>1</b> Handle insert (PVC-U - 1)            | <b>9</b> Radial seal O-Ring (EPDM or FKM - 3)   | <b>16</b> Spring - SHKD accessory (STAINLESS steel - 1)**    |
| <b>2</b> Handle (HIPVC - 1)                   | <b>10</b> Socket seal O-Ring (EPDM or FKM - 3)* | <b>17</b> Safety handle block - SHKD accessory (PP-GR - 1)** |
| <b>3</b> Stem O-ring (EPDM or FKM - 2)*       | <b>11</b> Ball seat carrier (PP-H - 3)          | <b>20</b> Rivet for LTKD (POM - 2)**                         |
| <b>4</b> Stem (PP-H - 1)                      | <b>12</b> End connector (PP-H - 3)*             | <b>21</b> LTKD 180° (POM - 1)**                              |
| <b>5</b> Ball seat (PTFE - 4)*                | <b>13</b> Union nut (PP-H - 3)                  | <b>22</b> LTKD 90° (POM - 1)**                               |
| <b>6</b> Ball (PP-H - 1)                      | <b>15</b> Threaded ring (PP-H - 3)              | <b>25</b> Position indicator (POM - 1)                       |
| <b>7</b> Body (PP-H - 1)                      |   | <b>26</b> DUAL BLOCK® (POM - 3)                              |
| <b>8</b> Ball seat O-Rings (EPDM or FKM - 4)* |   |  |

\* Spare parts

\*\* Accessories

The component material and quantity supplied are indicated in the parentheses.

## DISASSEMBLY

- 1) Isolate the valve from the line (release the pressure and empty the pipeline).
- 2) Unlock the union nuts by pressing the lever on the DUAL BLOCK® (26) along the axis and separate it from the union nut (fig. 1). It is also possible to completely remove the block device from the body of the valve.
- 3) Unscrew the union nuts (13) and extract the body (7).
- 4) After turning the handle (2) to the position with the three arrows pointing at the three ports (for L-port ball with two arrows facing the ports a and b), extract the insert (1) from the handle (2) and insert the two protrusions in the corresponding apertures in the threaded rings (15), extracting the carriers (11) by turning counterclockwise.
- 5) Extract the ball (6) from the central port being careful not to damage the seat surface.
- 6) Remove the PTFE ball seats (5) and O-Rings (8, 9, 10) from the carriers (11).
- 7) Pull the handle (2) upwards to remove it from the stem (4).
- 8) Press the stem (4) into the body and extract it.
- 9) Remove the PTFE ball seat (5) with relevant O-ring (8) from inside the valve body.
- 10) Remove the stem (4) O-rings (3) from their seats.

## ASSEMBLY

- 1) Insert the O-rings (3) on the stem (4).
- 2) Insert the O-ring (8) in the seat in the valve body and, next, the PTFE ball seat (5).
- 3) Insert the stem (4), from the interior, in the body, being sure the three marks on the socket correspond to the three outlets.
- 4) Insert the ball (6) from the central port b, being careful that the three bores match the three outlets (for L-port ball, the two bores must match the a and b outlets).
- 5) Insert the O-rings (8), PTFE ball seats (5), socket seal O-rings (10) and radial seal O-rings (9) in their seats on the carriers (11).
- 6) Insert the three carriers (11) with the relevant threaded rings (15), screwing in clockwise with the handle insert (1) and starting from the one on the central outlet b.
- 7) Press the handle (2) on the stem (4), being careful to match the printed arrows with the lines on the stem (fig. 2-3).
- 8) Return the insert (1) in the handle (2)
- 9) Insert the valve between the end connectors (12) and tighten the union nuts (13), making sure that the socket seal O-rings (10) do not exit their seats.



**Note:** during assembly operations, it is advisable to lubricate the rubber seals. Mineral oils are not recommended for this task as they react aggressively with EPDM rubber.

Fig. 1



Fig. 2

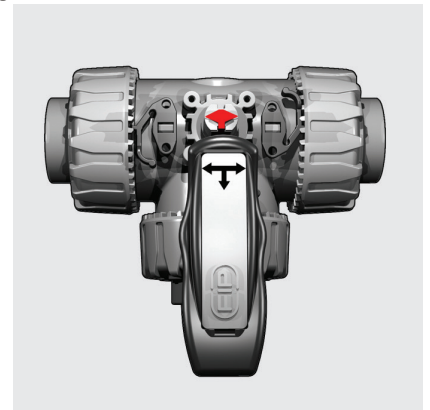


Fig. 3

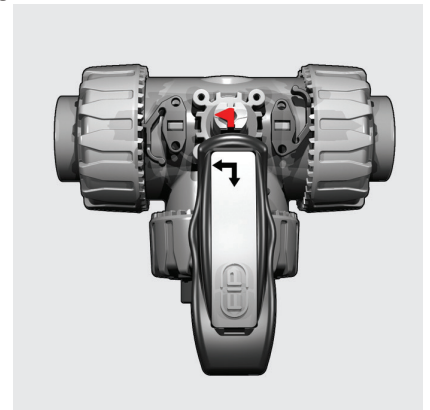


Fig. 4





# INSTALLATION

Before proceeding with installation, please follow these instructions carefully:

- 1) Check that the pipes to be connected to the valve are aligned in order to avoid mechanical stress on the threaded joints.
- 2) Check that the DUAL BLOCK® union nut locking device (26) is fitted to the valve body.
- 3) To release the union nuts (13), axially press the release lever to separate the lock and then unscrew it in the counter-clockwise direction.
- 4) Unscrew the three union nuts (13) and insert them on the pipe segments.
- 5) Solvent weld or screw the end connectors (12) onto the pipe ends.
- 6) Position the valve body between the end connectors (12) and fully tighten the union nuts (13) manually by rotating clockwise, without using wrenches or other tools that could damage the union nut surface.
- 7) Lock the union nuts by returning the DUAL BLOCK® to its housing, pressing on it until the hinges lock on the union nuts.
- 8) If necessary, support the pipework with FIP pipe clips or by means of the carrier built-into the valve itself (see paragraph "fastening and supporting").

The TKD valve can be equipped with a handle lock to prevent ball rotation (available as an accessory). When the block (16, 17) is installed, lift the lever (17) and rotate the handle.

A padlock can also be installed on the handle to protect the system against tampering (fig. 4).

Seals can be adjusted using the extractable insert on the handle (fig. 5-6). After positioning the ball as in figure 7-8, using this insert as a tool you can adjust the seals by screwing in the carriers following the indicated sequence (fig. 7-8).

A further fine-tuning of the seals can be done with the valve installed on the pipe by simply tightening the union nuts.

This "micro adjustment", only possible with FIP valves thanks to the patented "Seat stop system", allows the seal to be recovered where PTFE ball seats are worn due to a high number of operations.

## WARNINGS

Always avoid sudden closing manoeuvres and protect the valve from accidental operations.

Fig.5



Fig.6



Fig.7

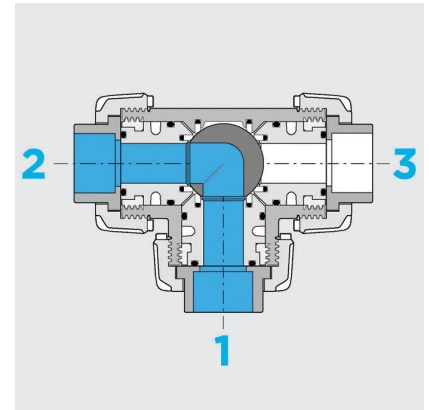


Fig.8

