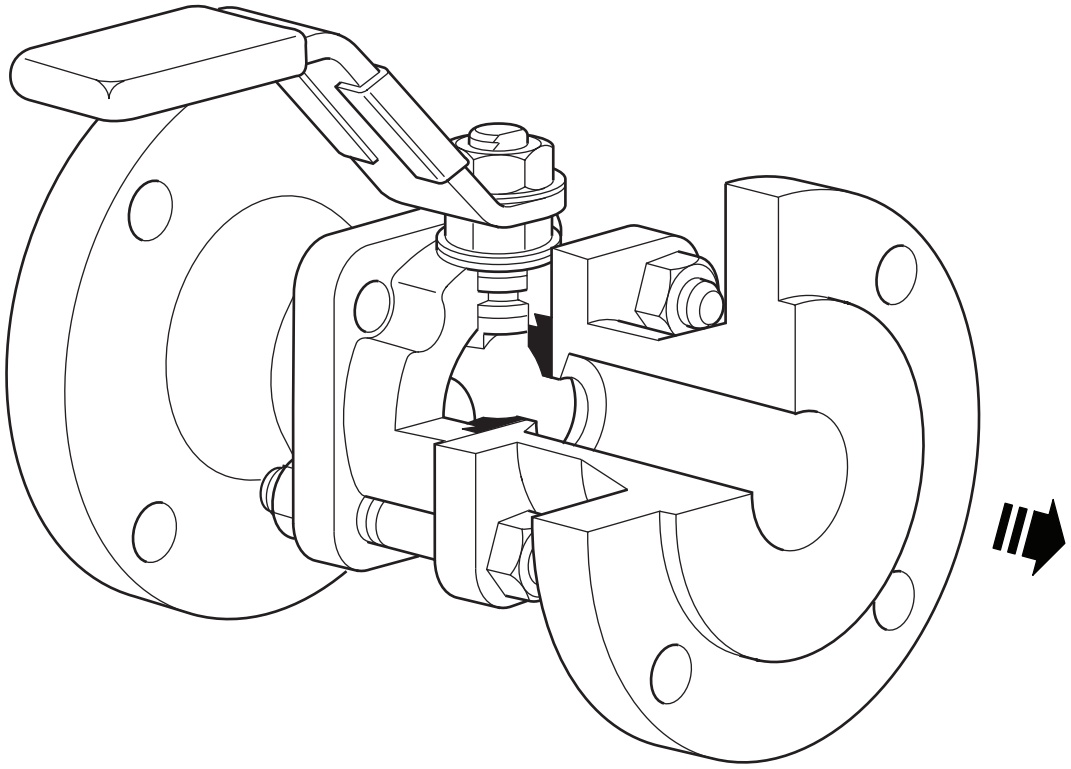
# M10V
# Ball Valve
# DN¼" to 2½"



## Description
The M10V three-piece body ball valve has been designed for use as an isolating valve, not a control valve, and can be serviced without removal from the pipeline (screwed and welded versions only). It can be used with the majority of industrial fluids.

## Available types

| | |
|---|---|
| M10V2_ _ | Zinc plated carbon steel body, PTFE seats. |
| M10V3_ _ | Stainless steel body, PTFE seats. |
| M10V4_ _ | Complete stainless steel, PTFE seats. |

**Note:** The nomenclature will be followed with either FB (full bore) or RB (reduced bore).

## Standards
This product fully complies with the requirements of the Pressure Equipment Directive (PED) and carries the CE mark when so required.

## Certification
This product is available with certification to EN 10204 3.1.
**Note:** All certification/inspection requirements must be stated at the time of order placement.

## Sizes and pipe connections

### Full bore
¼", ⅜", ½", ¾", 1", 1¼", 1½" and 2"
**Screwed and welded**
BSP, BSPT, API/NPT, BW, SW

**Flanged**
DN15 to DN50
ASME Class 150, ASME Class 300, and EN 1092 PN40.

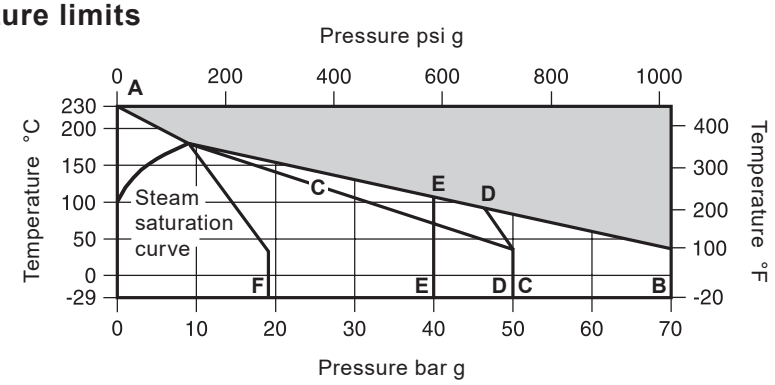
### Reduced bore
¼", ⅜", ½", ¾", 1", 1¼", 1½", 2" and 2½"
**Screwed and welded**
BSP, BSPT, API/NPT, BW, SW

**Flanged**
DN15 to DN65
ASME Class 150, ASME Class 300, and EN 1092 PN40.

## Technical data

| | |
|---|---|
| Flow characteristic | Modified linear |
| Port | Full and reduced port versions |
| Leakage test procedure to ISO 5208 (Rate A)/EN 12266-1 (Rate A) | |
| Antistatic device | Complies with ISO 7121 and BS 5351 |

## Pressure/temperature limits




The product **must not** be used in this region.

**A - B** Screwed, BW and SW ¼" - 1½" FB, RB and 2" RB

**A - C** Screwed, SW and BW 2" FB and 2½" RB only

**A - D** Flanged ASME (ANSI) 300

**A - E** Flanged EN 1092 PN40

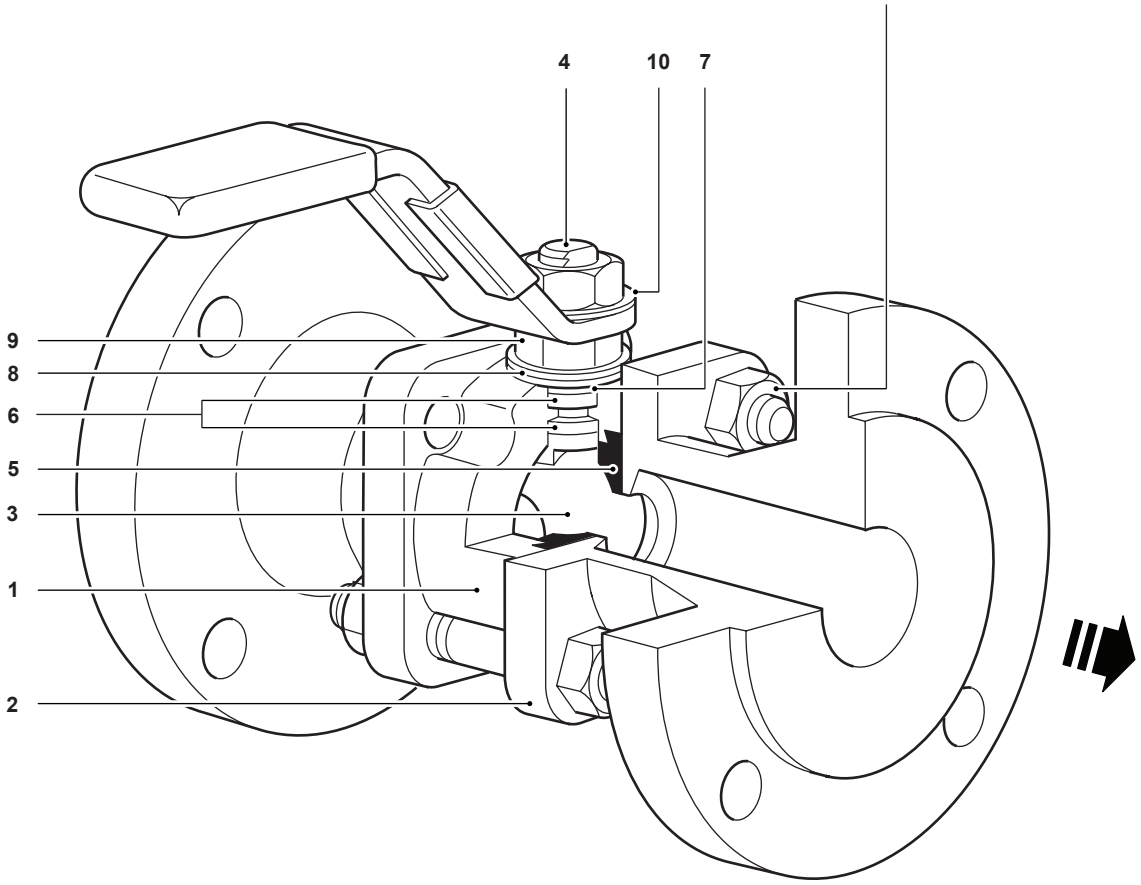
**A - F** Flanged ASME (ANSI) 150

**Note 1:** On the 2" FB and 2½" RB a PTFE gasket is fitted between the body and cap.
**Note 2:** The flange standard may restrict the maximum operating pressure. Please check with Spirax Sarco.
**Note 3:** In gases applications, the maximum operating pressure is restricted to 40 bar g.

| | | | |
|---|---|---|---|
| Body design conditions | | | PN100 |
| PMA | Maximum allowable pressure | 70 bar g @ 40 °C | (1 015 psi g @ 104 °F) |
| TMA | Maximum allowable temperature | 230 °C @ 0 bar g | (446 °F @ 0 psi g) |
| Minimum allowable temperature | | -29 °C | (-20 °F) |
| PMO | Maximum operating pressure for saturated steam service | 10 bar g | (145 psi g) |
| TMO | Maximum operating temperature | 230 °C @ 0 bar g | (446 °F @ 0 psi g) |
| Minimum operating temperature<br>**Note:** For lower operating temperatures consult Spirax Sarco | | -29 °C | (-20 °F) |
| ΔPMX | Maximum differential pressure is limited to the PMO | | |
| Designed for a maximum cold hydraulic test pressure of: | | 105 bar g | (1 523 psi g) |

## Materials

**Please note:**
Screwed, butt weld and socket weld M10V ball valves have bolts and nuts.
Flanged M10V ball valves have studs and nuts.

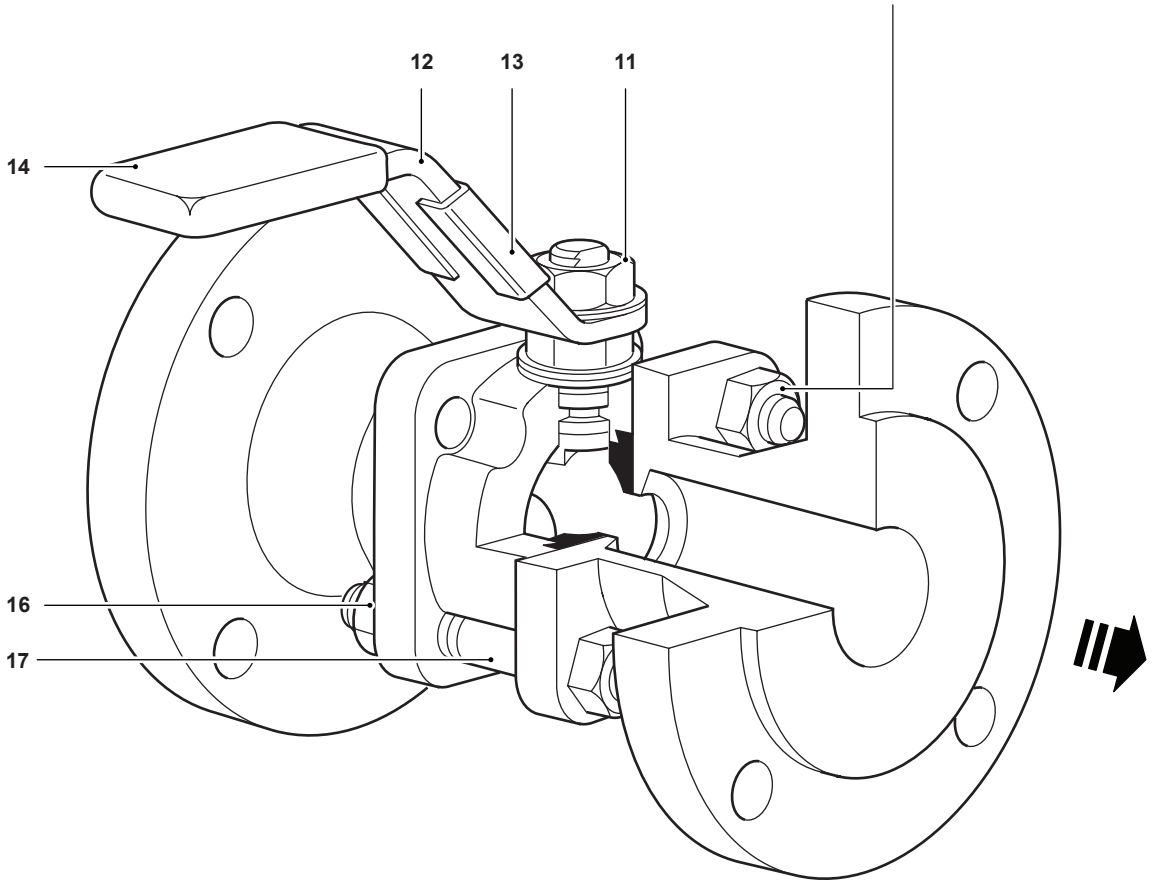



| No. | Part | | | | Material | |
|---|---|---|---|---|---|---|
| 1 | Body | M10V2 | | | Zinc plated carbon steel | ASTM A105 |
| | | | M10V3 | M10V4 | Stainless steel | ASTM A 182 F 316L |
| 2 | Cap | M10V2 | | | Zinc plated carbon steel | ASTM A105 |
| | | | M10V3 | M10V4 | Stainless steel | ASTM A 182 F 316L |
| 3 | Ball | | | | Stainless steel | AISI 316 |
| 4 | Stem | | | | Stainless steel | AISI 316 |
| 5 | Seat | | | | Virgin PTFE | |
| 6 | Stem seal | | | | Reinforced PTFE antistatic | |
| 7 | Separator | M10V2 | M10V3 | | Zinc plated carbon steel | ASTM A105 |
| | | | | M10V4 | Stainless steel | AISI 316 |
| 8 | Spring washers | | | | Stainless steel | AISI 301 |
| 9 | Nut | M10V2 | M10V3 | | Zinc plated carbon steel | SAE 12L14 |
| | | | | M10V4 | Stainless steel | AISI 304 |
| 10 | Name-plate (DN) | | | | Stainless steel | AISI 430 |

**Materials are continued on the next page**

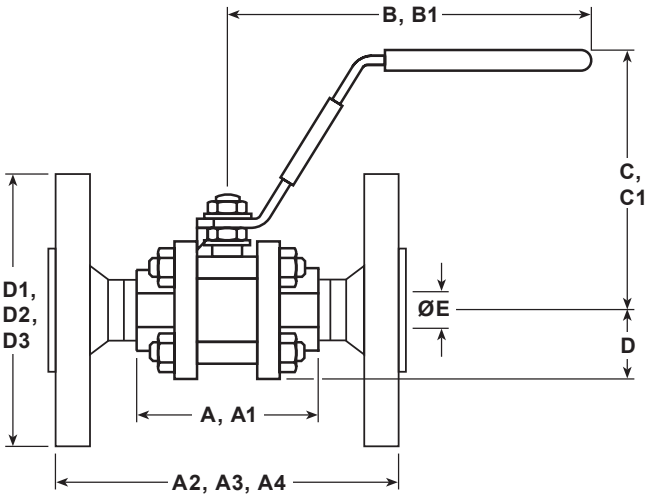
## Materials (continued)

**Please note:**
Screwed, butt weld and socket weld M10V ball valves have bolts and nuts.
Flanged M10V ball valves have studs and nuts.




| No. | Part | | | | Material | |
|---|---|---|---|---|---|---|
| **11** | Stem nut | **M10V2** | **M10V3** | | Zinc plated carbon steel | SAE 12L14 |
| | | | | **M10V4** | Stainless steel | AISI 304 |
| **12** | Lever | **M10V2** | **M10V3** | | Zinc plated carbon steel | SAE 1010 |
| | | | | **M10V4** | Stainless steel | AISI 316 |
| **13** | Name-plate | | | | Stainless steel | AISI 430 |
| **14** | Grip | | | | Vinyl | |
| **15*** | Bolts (Item 15 not shown - Screwed, butt weld and socket weld versions only) | **M10V2** | **M10V3** | | Zinc plated carbon steel | A 193 B7 |
| | | | | **M10V4** | Stainless steel | AISI 304 |
| **16** | Nuts | **M10V2** | **M10V3** | | Zinc plated carbon steel | SAE 1010 |
| | | | | **M10V4** | Stainless steel | AISI 304 |
| **17** | Studs | **M10V2** | **M10V3** | | Zinc plated carbon steel | Grade 5 |
| | | | | **M10V4** | Stainless steel | AISI 316 |

## Dimensions (approximate) in mm (inches)




**A**: Screwed and Butt weld

**A1**: Socket weld

**A2**: Flanged ASME 150

**A3**: Flanged PN40

**A4**: Flanged ASME 300

**B**: Screwed, Butt weld and Socket weld

**B1**: Flanged ASME 150, PN40

**C**: Screwed, Butt weld and Socket weld

**C1**: Flanged ASME 150, Flanged PN40

**D**: Screwed, Butt weld and Socket weld

**D1**: Flanged ASME 150

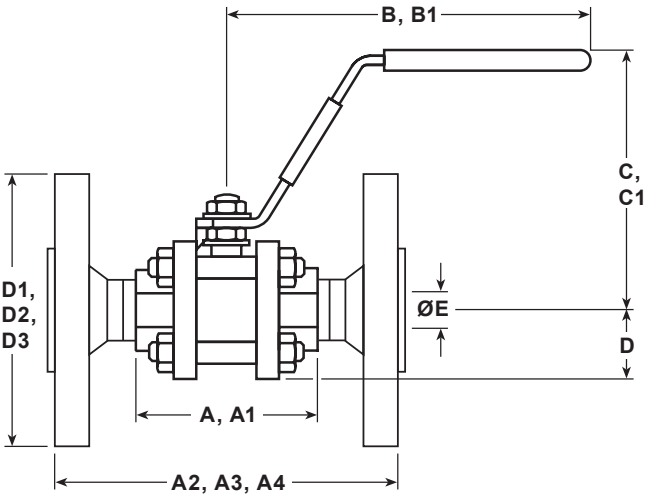
**D2**: Flanged PN40

**D3**: Flanged ASME 300

## Reduced bore

| Size | A | A1 | A2 | A3 | A4 | B | B1 | C | C1 | D | D1 | D2 | D3 | E |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ¼" | 63 (2.5) | 60 (2.4) | | | | 120 (4.7) | | 61 (2.4) | | 22 (0.9) | | | | 11 (0.4) |
| ⅜" | | 63 (2.5) | | | | | | | | | | | | |
| ½" | | 51 (2.0) | 108 (4.3) | 130 (5.11) | 140 (5.5) | | 120 (4.7) | | 87 (3.4) | 24 (0.9) | 89 (3.5) | 95 (3.7) | 95 (3.7) | |
| ¾" | 68 (2.7) | 59 (2.3) | 117 (4.6) | 150 (5.9) | 152 (5.9) | | | 63 (2.5) | 89 (3.5) | 26 (1.0) | 98 (3.8) | 105 (4.13) | 117 (4.6) | 14 (0.6) |
| 1" | 86 (3.4) | 84 (3.3) | 127 (5.0) | 160 (6.29) | 165 (6.5) | 157 (6.2) | 157 (6.2) | 91 (3.6) | 91 (3.6) | 31 (1.2) | 108 (4.3) | 115 (4.52) | 124 (4.9) | 21 (0.8) |
| 1¼" | 97 (3.8) | 93 (3.6) | 140 (5.5) | 180 (7.08) | 178 (7.0) | | | 95 (3.7) | 95 (3.7) | 37 (1.4) | 118 (4.6) | 140 (5.51) | 133 (5.2) | 25 (0.9) |
| 1½" | 106 (4.2) | 102 (4.0) | 165 (6.5) | 200 (7.87) | 190 (7.5) | 180 (7.1) | 180 (7.1) | 109 (4.3) | 109 (4.3) | 41 (1.6) | 127 (5.0) | 150 (5.9) | 156 (6.1) | 31 (1.2) |
| 2" | 124 (4.9) | 118 (4.6) | 178 (7.0) | 230 (9) | 216 (8.5) | | | 115 (4.5) | 115 (4.5) | 48 (1.8) | 152 (5.9) | 165 (6.49) | 165 (6.5) | 38 (1.5) |
| 2½" | 152 (6.0) | 152 (6.0) | 191 (7.5) | | 241 (9.5) | 245 (9.6) | | 132 (5.2) | 132 (5.2) | 57 (2.2) | | | 190 (7.5) | 51 (2.0) |

## Dimensions (approximate) in mm (inches)




**A**: Screwed and Butt weld

**A1**: Socket weld

**A2**: Flanged ASME 150

**A3**: Flanged PN40

**A4**: Flanged ASME 300

**B**: Screwed, Butt weld and Socket weld

**B1**: Flanged ASME 150, PN40

**C**: Screwed, Butt weld and Socket weld

**C1**: Flanged ASME 150, Flanged PN40

**D**: Screwed, Butt weld and Socket weld

**D1**: Flanged ASME 150

**D2**: Flanged PN40

**D3**: Flanged ASME 300

## Full bore

| Size | A | A1 | A2 | A3 | A4 | B | B1 | C | C1 | D | D1 | D2 | D3 | E |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ¼" | 63 (2.5) | 60 (2.4) | | | | 120 (4.7) | | 61 (2.4) | | 24 (0.9) | | | | 11 (0.4) |
| ⅜" | | 63 (2.5) | | | | | | | | | | | | |
| ½" | 68 (2.7) | 68 (2.7) | | 130 (5.11) | 140 (5.5) | 120 (4.7) | 120 (4.7) | 63 (2.5) | 89 (3.5) | 26 (1.0) | | 95 (3.7) | 95 (3.7) | 14 (0.6) |
| ¾" | 86 (3.4) | 86 (3.4) | | 150 (5.9) | 152 (6.0) | 157 (6.2) | 157 (6.2) | 91 (3.6) | 91 (3.6) | 31 (1.2) | | 105 (4.13) | 117 (4.6) | 21 (0.8) |
| 1" | 97 (3.8) | 97 (3.8) | | 160 (6.29) | 165 (6.5) | 157 (6.2) | 157 (6.2) | 95 (3.7) | 95 (3.7) | 37 (1.5) | | 115 (4.52) | 124 (4.9) | 25 (0.9) |
| 1¼" | 106 (4.2) | 106 (4.2) | | 180 (7.08) | 178 (7.0) | 180 (7.1) | 180 (7.1) | 109 (4.3) | 109 (4.3) | 41 (1.6) | | 140 (5.51) | 133 (5.2) | 31 (1.2) |
| 1½" | 124 (4.9) | 124 (4.9) | | 200 (7.87) | 190 (7.5) | 180 (7.1) | 180 (7.1) | 115 (4.5) | 115 (4.5) | 48 (1.9) | | 150 (5.9) | 156 (6.1) | 38 (1.5) |
| 2" | 152 (6.0) | 152 (6.0) | | 230 (9) | 216 (8.5) | 245 (9.6) | 245 (9.6) | 132 (5.2) | 132 (5.2) | 57 (2.2) | | 165 (6.5) | 165 (6.5) | 51 (2.0) |

## Weights (approximate) in kg (lbs)

| Size | Reduced bore | | | | Full bore | | |
|---|---|---|---|---|---|---|---|
| | Scrd/BW/SW | PN40 | ASME 150 | ASME 300 | Scrd/BW/SW | PN40 | ASME 300 |
| ¼" | 0.61 (1.3) | | | | 0.61 (1.3) | | |
| ⅜" | | | | | | | |
| ½" | | 2.2 (4.85) | 1.65 (3.6) | 2.2 (4.8) | 0.70 (1.5) | 2.3 (5.07) | 2.5 (5.5) |
| ¾" | 0.70 (1.5) | 2.9 (6.39) | 2.20 (4.8) | 2.9 (6.3) | 1.27 (2.8) | 3.5 (7.71) | 4.2 (9.2) |
| 1" | 1.27 (2.8) | 3.9 (8.59) | 3.38 (7.5) | 4.5 (9.9) | 1.77 (3.9) | 4.4 (9.7) | 5.1 (11.2) |
| 1¼" | 1.77 (3.9) | 5.4 (11.9) | 4.44 (9.8) | 7.0 (15.4) | 2.50 (5.5) | 6.2 (13.6) | 7.5 (16.5) |
| 1½" | 2.50 (5.5) | 6.5 (14.3) | 5.84 (12.8) | 8.36 (18.4) | 3.50 (7.7) | 7.5 (16.5) | 10.0 (22.0) |
| 2" | 3.50 (7.7) | 8.8 (19.4) | 8.99 (19.8) | 11.2 (24.7) | 6.90 (15.2) | 12.2 (26.8) | 13.4 (29.5) |
| 2½" | 6.90 (15.2) | | | 17.5 (38.6) | | | |

## Kv values

| Size | ¼" | ⅜" | ½" | ¾" | 1" | 1¼" | 1½" | 2" | 2½" |
|---|---|---|---|---|---|---|---|---|---|
| Reduced bore | 2.5 | 6.8 | 6 | 10 | 27 | 49 | 70 | 103 | 168 |
| Full bore | 2.5 | 6.8 | 17 | 36 | 58 | 89 | 153 | 205 | |

For conversion:
C**v** (UK) = K**v** x 0.963
C**v** (US) = K**v** x 1.156

## Operating torque

| Size | | ¼" | ⅜" | ½" | ¾" | 1" | 1¼" | 1½" | 2" | 2½" |
|---|---|---|---|---|---|---|---|---|---|---|
| Reduced bore | Nm (lbf ft) | 2 (1.5) | 2 (1.5) | 2 (1.5) | 3.5 (2.6) | 13 (9.6) | 21 (15.5) | 30 (21.2) | 40 (29.5) | 45 (33.1) |
| Full bore | Nm (lbf ft) | 2 (1.5) | 2 (1.5) | 3.5 (2.6) | 13 (9.6) | 21 (15.5) | 30 (21.2) | 40 (29.5) | 45 (33.1) | |

The indicated torque values are for valves frequently operated, that are submitted to a maximum differential pressure of 62 bar. Valves that are subject to long static periods, may require greater break-out torque.

## Safety information, installation and maintenance
For full details see the Installation and Maintenance Instructions supplied with the product.

### Welding
Only the models that have connections designed for welding (SW, BW, Imperial Tube connections) should be welded. Valves with SW or BW welding connections must be disassembled before welding onto the pipeline, the ends should be welded separately and the valve should be reassembled when the ends are cool. Carbon steel valves with threaded (BSPT, BSP, NPT) or flanged connections must not be welded to avoid damages to the valve and/or injury to personnel.

## How to order example:
1 off Spirax Sarco ½" screwed BSP M10V2FB ball valve.

### Optional extras:
- Self-venting ball.
- Extended stems 50 mm (2") and 100 mm (4") to allow full insulation.
- Lockable handle.
- Fully degreased under request (ie: oxygen application).

## Spare parts
The spare parts available are shown in solid outline. Parts drawn in a grey line are not supplied as spares.

### Available spares

| | |
|---|---|
| Seat and stem seal set | **5, 6** |

### How to order spares
Always order spares by using the description given in the column headed 'Available spares' and state the size and type of ball valve.
Example: 1 - Seat and stem seal set for a ½" M10V2FB ball valve.