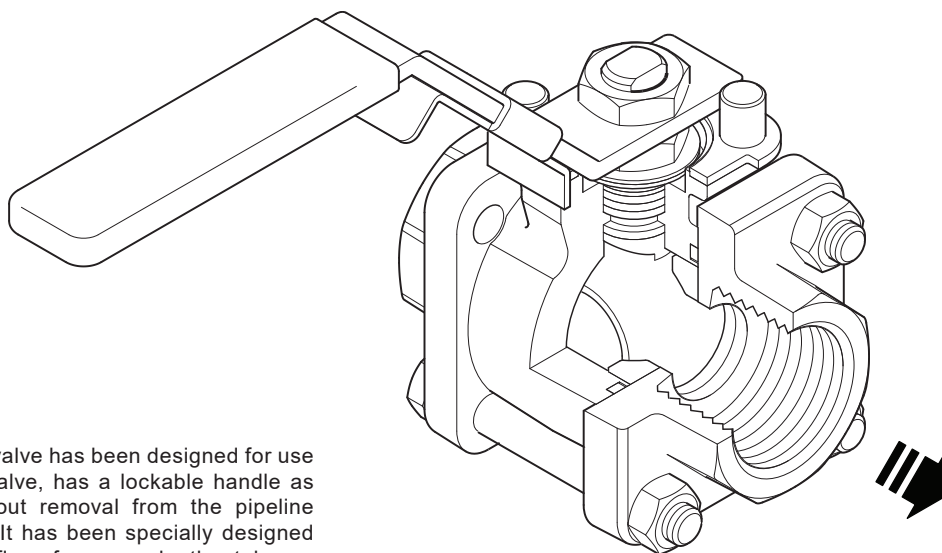




TI-P133-68
CMGT Issue 5

M10Ti ISO Ball Valve DN $\frac{1}{4}$ " to DN2 $\frac{1}{2}$ "



Description

The M10Ti ISO three-piece body ball valve has been designed for use as an isolating valve, not a control valve, has a lockable handle as standard and can be serviced without removal from the pipeline (screwed and welded versions only). It has been specially designed for applications that cannot use Teflon, for example the tobacco industry. The seat and seals are of UHMWPE (Ultra High Molecular Weight Polyethylene).

ISO mounting


The integral ISO body mounting allows the valve to be automated without losing seal integrity, as the body does not require disassembly. Manual to remote control may therefore be easily accomplished by the ISO range of Spirax Sarco ball valves.

Available types

| | |
|-------------------|-----------------------------------------|
| M10Ti2 ISO | Zinc plated carbon steel body and caps. |
| M10Ti3 ISO | Stainless steel body and caps. |
| M10Ti4 ISO | Complete stainless steel construction. |

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  mark when 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.

Options

- Self-venting ball.
- Extended stem 100 mm (4") to allow full insulation.
- Fully degreased under request (ie: Oxygen application)

Technical data

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

Sizes and pipe connections

Full bore

1/4", 3/8", 1/2", 3/4", 1", 1 1/4", 1 1/2" and 2"

Screwed

BSP, BSPT, NPT, BW, SW

Flanged

DN15 to DN50

ASME (ANSI) Class 150, ASME (ANSI) Class 300 and EN 1092 PN40

Reduced bore

1/4", 3/8", 1/2", 3/4", 1", 1 1/4", 1 1/2", 2" and 2 1/2"

Screwed

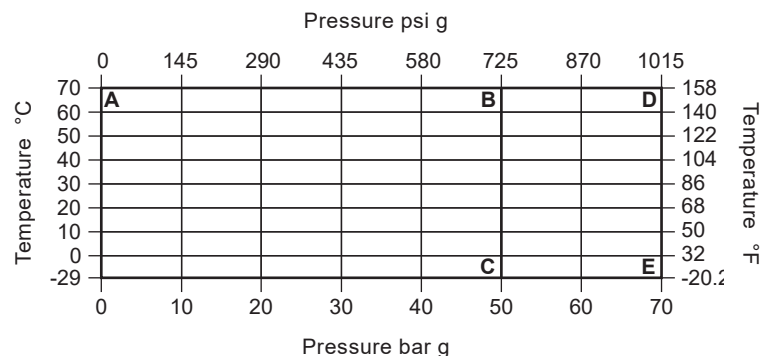
BSP, BSPT, NPT, BW, SW

Flanged

DN15 to DN65

ASME (ANSI) Class 150, ASME (ANSI) Class 300 and EN 1092 PN40

Pressure/temperature limits

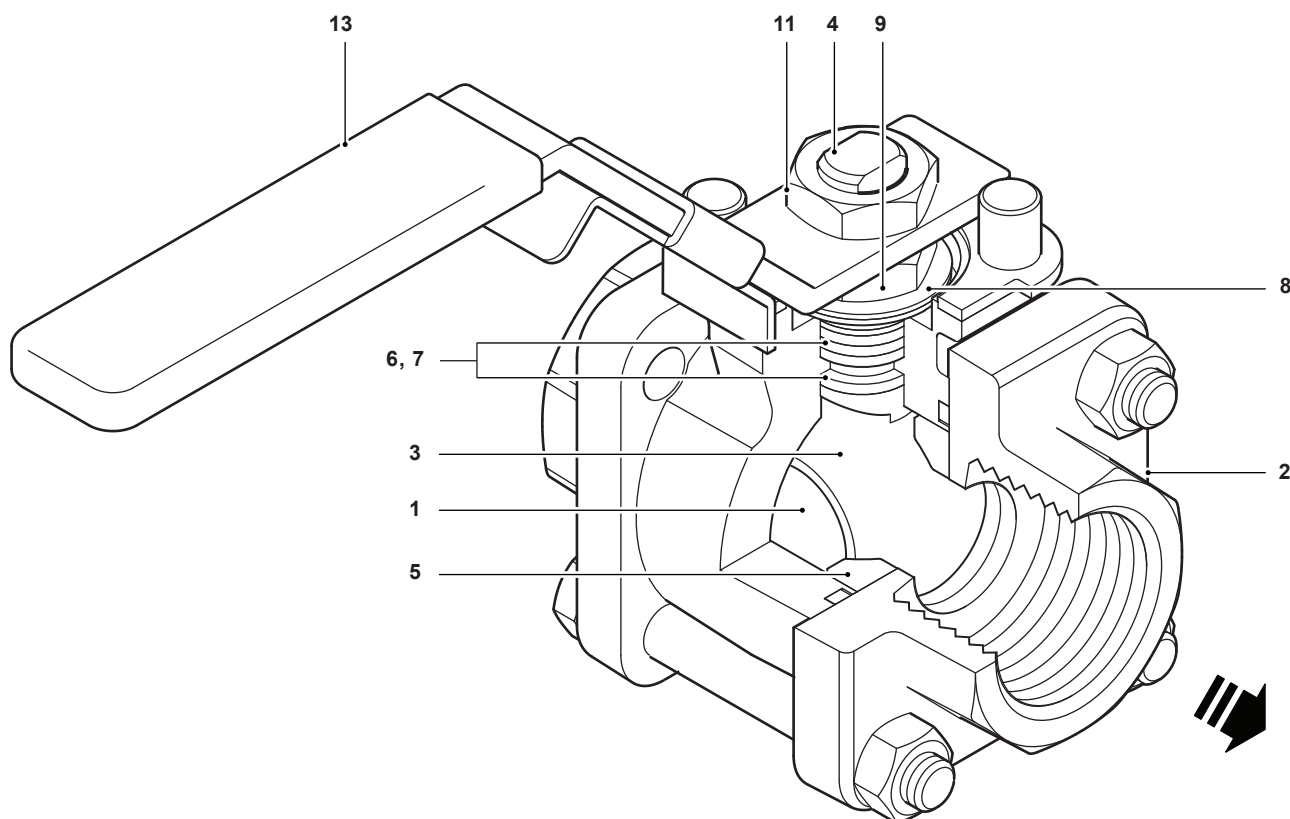


A-D-E 1/4" to 1 1/2" FB and RB, and 2" RB

A-B-C 2" FB and 2 1/2" RB

| | | | |
|---------------------------------------------------------------------|--------------------------------------------------------|------------------|---------------------|
| PMA | Maximum allowable pressure | 70 bar g @ 70 °C | 1015 psi g @ 158 °F |
| TMA | Maximum allowable temperature | 70 °C @ 70 bar g | 158 °F @ 1015 psi g |
| | Minimum allowable temperature | -29 °C | -20.2 °F |
| PMO | Maximum operating pressure for saturated steam service | 70 bar g | 1015 psi g |
| TMO | Maximum operating temperature | 70 °C @ 70 bar g | 158 °F @ 1015 psi g |
| | Minimum operating temperature | -29 °C | -20.2 °F |
| Note: For lower operating temperatures consult Spirax Sarco. | | | |
| ΔPMX | Maximum differential pressure | 70 bar | 1015 psi g |
| Designed for a maximum cold hydraulic test pressure of: | | 105 bar g | 1523 psi g |

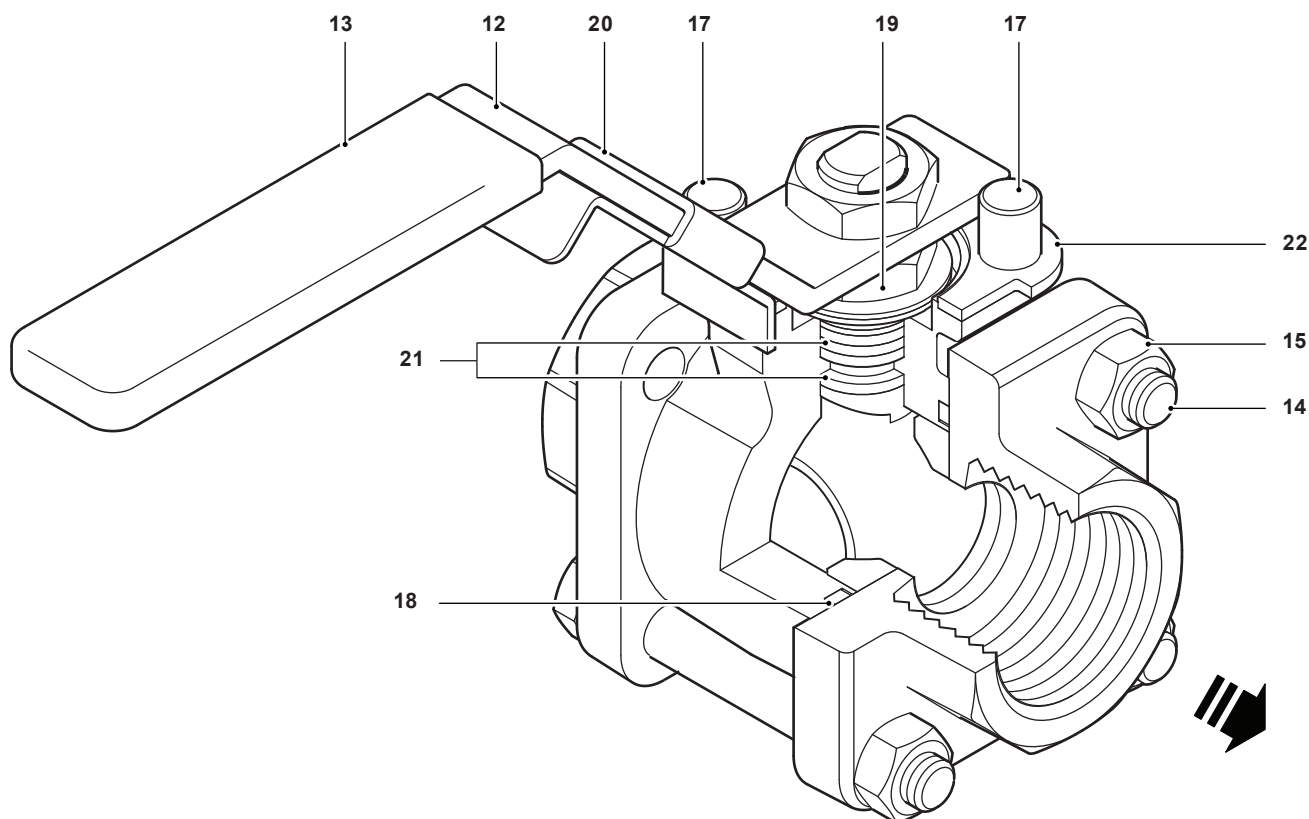
Materials



| No. | Part | Material | | |
|-----|-----------------------------|-----------------|--------------------------|-------------------|
| 1 | Body | M10Ti2 ISO | Zinc plated carbon steel | ASTM A105 |
| | | M10Ti3 ISO | Stainless steel | ASTM A 182 F 316L |
| | | M10Ti4 ISO | Stainless steel | ASTM A 182 F 316L |
| 2 | Cap | M10Ti2 ISO | Zinc plated carbon steel | ASTM A105 |
| | | M10Ti3 ISO | Stainless steel | ASTM A 182 F 316L |
| | | M10Ti4 ISO | Stainless steel | ASTM A 182 F 316L |
| 3 | Ball | Stainless steel | AISI 316 | |
| 4 | Stem | Stainless steel | AISI 316 | |
| 5 | Seat | UHMWPE | | |
| 6 | Stem seal | UHMWPE | | |
| 7 | Separator | M10Ti2 ISO | Zinc plated carbon steel | SAE 1010 |
| | | M10Ti3 ISO | Stainless steel | AISI 316 |
| | | M10Ti4 ISO | Stainless steel | AISI 316 |
| 8 | Belleville washer | Stainless steel | AISI 301 | |
| 9 | Lower stem nut | M10Ti2 ISO | Zinc plated carbon steel | SAE 1010 |
| | | M10Ti3 ISO | Stainless steel | AISI 304 |
| | | M10Ti4 ISO | Stainless steel | AISI 304 |
| 10 | Name-plate - DN (Not shown) | Stainless steel | AISI 430 | |
| 11 | Upper stem nut | M10Ti2 ISO | Zinc plated carbon steel | SAE 1010 |
| | | M10Ti3 ISO | Stainless steel | AISI 304 |
| | | M10Ti4 ISO | Stainless steel | AISI 304 |

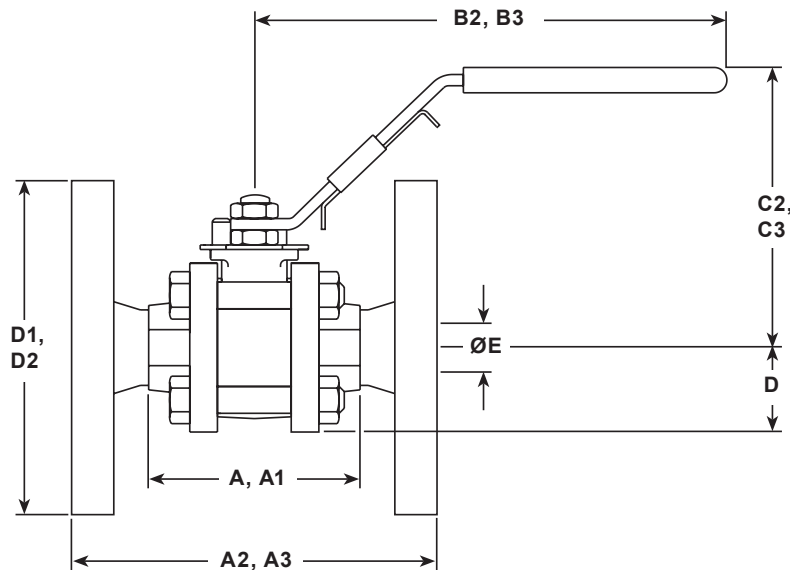
Materials continued on next page

Materials (continued)



| No. | Part | Material | | |
|-----------------------------------------------------------------------------------|-------------------|------------|--------------------------|------------|
| 12 | Lever | M10Ti2 ISO | Zinc plated carbon steel | SAE 1010 |
| | | M10Ti3 ISO | | |
| | | M10Ti4 ISO | Stainless steel | AISI 316 |
| 13 | Grip | | Vinyl light blue | |
| 14 | Bolts | M10Ti2 ISO | Zinc plated carbon steel | Grade 5 |
| | | M10Ti3 ISO | | |
| | | M10Ti4 ISO | Stainless steel | AISI 304 |
| 15 | Nuts | M10Ti2 ISO | Zinc plated carbon steel | SAE 1010 |
| | | M10Ti3 ISO | | |
| | | M10Ti4 ISO | Stainless steel | AISI 304 |
| 16 | Studs | M10Ti4 ISO | Stainless steel | AISI 316 |
| Note: Item 16 can not be shown as it is only applicable to welded versions | | | | |
| 17 | Stop screw | M10Ti2 ISO | Zinc plated carbon steel | SAE 12L 14 |
| | | M10Ti3 ISO | | |
| | | M10Ti4 ISO | Stainless steel | AISI 304 |
| 18 | Body/cap 'O' ring | | Geothermal | |
| 19 | Nut locker | | Stainless steel | AISI 316 |
| 20 | Lockable handle | | Stainless steel | AISI 316 |
| 21 | Stem seal | | Stainless steel | |
| 22 | Lock-plate | | Stainless steel | AISI 316 |

Dimensions (approximate) in mm



- A:** Scrd and BW
- A1:** SW
- A2:** Flanged ASME 150
- A3:** Flanged PN40
- B2:** Scrd, BW and SW
- B3:** Flanged PN40 and ASME 150
- C2:** Scrd, BW and SW
- C3:** Flanged PN40 and ASME 150
- D:** Scrd, BW and SW
- D1:** Flanged ASME 150
- D2:** Flanged PN40
- E:** All versions

Reduced bore

| Size | A | A1 | A2 | A3 | B2 | B3 | C2 | C3 | D | D1 | D2 | E |
|--------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|--------------|---------------|---------------|--------------|
| 1/4" | 66 (2.60) | 66 (2.60) | | | 162 (6.38) | 162 (6.38) | 93 (3.66) | 93 (3.66) | 24 (0.94) | 89 (3.50) | 95 (3.74) | 11 (0.43) |
| 3/8" | | | 108 (4.25) | 130 (5.12) | | | | | | | | |
| 1/2" | | | | | | | | | | | | |
| 3/4" | 72 (2.83) | 72 (2.83) | 117 (4.61) | 150 (5.91) | 186 (7.32) | 186 (7.32) | 95 (3.74) | 95 (3.74) | 26 (1.02) | 98 (3.86) | 105 (4.13) | 14 (0.55) |
| 1" | 87 (3.43) | 87 (3.43) | 127 (5.00) | 160 (6.30) | | | 101 (3.98) | 101 (3.98) | 31 (1.22) | 108 (4.25) | 115 (4.53) | 21 (0.83) |
| 1 1/4" | 104 (4.09) | 104 (4.09) | 140 (5.51) | 180 (7.09) | | | 106 (4.17) | 106 (4.17) | 37 (1.46) | 118 (4.65) | 140 (5.51) | 25 (0.98) |
| 1 1/2" | 111 (4.37) | 111 (4.37) | 165 (6.50) | 200 (7.87) | 251 (9.88) | 251 (9.88) | 118 (4.65) | 118 (4.65) | 41 (1.61) | 127 (5.00) | 150 (5.91) | 31 (1.22) |
| 2" | 125 (4.92) | 119 (4.69) | 178 (7.01) | 230 (9.06) | | | 123 (4.84) | 123 (4.84) | 48 (1.89) | 152 (5.98) | 165 (6.50) | 38 (1.50) |
| 2 1/2" | 153 (6.02) | 153 (6.02) | | | | | 140 (5.51) | 140 (5.51) | 57 (2.24) | | | 50 (1.97) |

Full bore

| Size | A | A1 | A2 | A3 | B2 | B3 | C2 | C3 | D | D1 | D2 | E |
|--------|---------------|---------------|----|---------------|---------------|---------------|---------------|---------------|--------------|----|----|--------------|
| 1/4" | 66 (2.60) | 66 (2.60) | | | 162 (6.38) | 162 (6.38) | 93 (3.66) | 93 (3.66) | 24 (0.94) | | | 11 (0.43) |
| 2" | | | | | | | | | | | | |
| 1/2" | | | | | | | | | | | | |
| 3/4" | 72 (2.83) | 72 (2.83) | | 130 (5.12) | 186 (7.32) | 186 (7.32) | 95 (3.74) | 95 (3.74) | 26 (1.02) | | | 14 (0.55) |
| 1" | 87 (3.43) | 87 (3.43) | | 150 (5.91) | | | 101 (3.98) | 101 (3.98) | 31 (1.22) | | | |
| 1 1/4" | 104 (4.09) | 104 (4.09) | | 160 (6.30) | | | 106 (4.17) | 106 (4.17) | 37 (1.46) | | | |
| 1 1/2" | 111 (4.37) | 111 (4.37) | | 180 (7.09) | 251 (9.88) | 251 (9.88) | 118 (4.65) | 118 (4.65) | 41 (1.61) | | | 31 (1.22) |
| 2" | 125 (4.92) | 119 (4.69) | | 200 (7.87) | | | 123 (4.84) | 123 (4.84) | 48 (1.89) | | | |
| 2 1/2" | 153 (6.02) | 153 (6.02) | | 230 (9.06) | | | 140 (5.51) | 140 (5.51) | 57 (2.24) | | | |

Weights (approximate) in kg

| Size | Reduced bore | | | Full bore | |
|--------|----------------|-----------------|----------------|----------------|-----------------|
| | Scrd /BW/SW | PN40 | ASME 150 | Scrd /BW/SW | PN40 |
| 1/4" | 0.86 (1.90) | | | 0.86 (1.90) | |
| 3/8" | 0.84 (1.85) | | | 0.84 (1.85) | |
| 1/2" | 0.81 (1.79) | 2.35 (5.18) | 1.70 (3.75) | 1.02 (2.25) | 2.59 (5.71) |
| 3/4" | 1.02 (2.25) | 3.20 (7.05) | 2.25 (4.96) | 1.56 (3.44) | 3.76 (8.29) |
| 1" | 1.56 (3.44) | 4.30 (9.48) | 2.92 (6.44) | 2.35 (5.18) | 5.02 (11.1) |
| 1 1/4" | 2.35 (5.18) | 6.40 (14.1) | 4.15 (9.15) | 3.08 (6.79) | 6.92 (15.3) |
| 1 1/2" | 3.08 (6.79) | 7.20 (15.9) | 6.40 (14.1) | 4.41 (9.72) | 9.09 (20.0) |
| 2" | 4.41 (9.72) | 10.72 (23.6) | 8.35 (18.4) | 9.05 (20.0) | 13.96 (30.8) |
| 2 1/2" | 8.17 (18.0) | | | | |

Kv values

| Size | 1/4" | 3/8" | 1/2" | 3/4" | 1" | 1 1/4" | 1 1/2" | 2" | 2 1/2" |
|--------------|------|------|------|------|----|--------|--------|-----|--------|
| Reduced bore | 5 | 6.8 | 6 | 10 | 27 | 49 | 70 | 103 | 168 |
| Full bore | 5 | 6.8 | 17 | 36 | 58 | 89 | 153 | 205 | |

For conversion

Cv (UK) = Kv x 0.963

Cv (US) = Kv x 1.156

Operating torque

| Size | | 1/4" | 2" | 1/2" | 3/4" | 1" | 1 1/4" | 1 1/2" | 2" | 2 1/2" |
|--------------|----------------|-------------|-------------|-------------|---------------|---------------|------------|------------|------------|------------|
| Reduced bore | Nm (lbf ft) | 3.25 (2) | 3.25 (2) | 3.25 (2) | 5.50 (4) | 13.25 (10) | 20 (15) | 50 (37) | 60 (44) | 75 (55) |
| Full bore | Nm (lbf ft) | 3.25 (2) | 3.25 (2) | 5.50 (4) | 13.25 (10) | 20 (15) | 50 (37) | 60 (44) | 75 (55) | |

The indicated torque values are for valves frequently operated, that are submitted to a maximum differential pressure of 40 bar (580 psi). 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.

How to order example:

1 off Spirax Sarco ½" screwed BSP M10Ti2FB ISO ball valve.

Spare parts

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

Available spare

| | |
|---------------------------------|--------------|
| Seat, seals and body gasket set | 5, 6, 18, 21 |
|---------------------------------|--------------|

How to order spares

Always order spares by using the description given in the column headed 'Available spare' and state the size and type of ball valve.

Example: 1 - Seat, seals and body gasket set for a Spirax Sarco ½" M10Ti2FB ISO ball valve.

