



TI-P133-06
CMGT Issue 22

M10S Ball Valve DN1¼" to DN2½"

Description

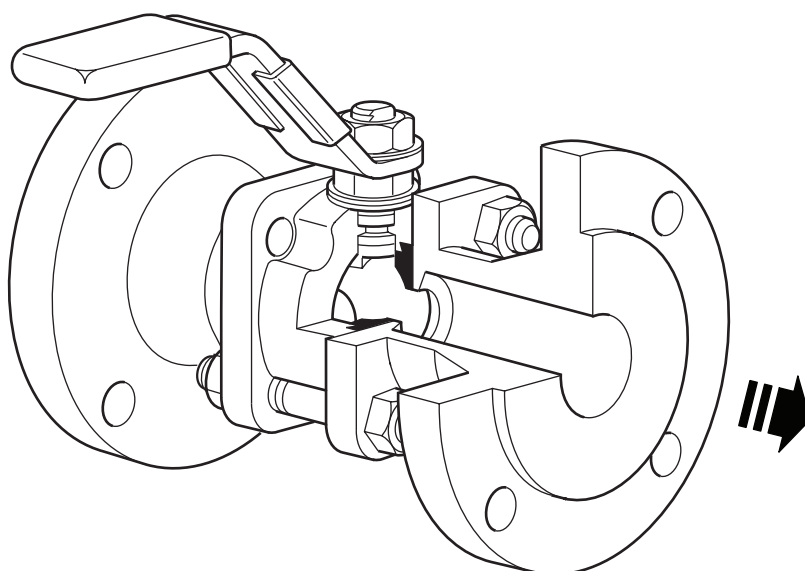
The M10S three-piece body ball valve has been designed for use as an isolating valve, not a control valve, and can be serviced without removal from the pipeline (screwed and welded versions only). It can be used with the majority of industrial fluids for services ranging from vacuum to the higher temperatures and pressures.

Available types

M10S2_ _ Zinc plated carbon steel body, PDR 0.8 seats.


M10S3_ _ Stainless steel body, PDR 0.8 seats.

M10S4_ _ Complete stainless steel, PDR 0.8 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 EU Pressure Equipment Directive/UK Pressure Equipment (Safety) Regulations and carries the  mark when so required.

This product has been designed according to ASME B16.34, ASME B16.10 (for all ASME flanged versions, with exception of ASME 150 DN65 RB and ASME 150 FB) and EN 558.

Certification

This product is available with certification to EN 10204 2.2 and 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 (BS21 Rp), BSP (ISO 228 G), BSPT (BS21 Rc), NPT (ASME B1.20.1), BW Sch40/40S (ASME B16.25), SW (ASME B16.11)

Flanged

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

Reduced bore

½", ¾", 1", 1¼", 1½", 2" and 2½"

Screwed and welded

BSP (BS21 Rp), BSP (ISO 228 G), BSPT (BS21 Rc), NPT (ASME B1.20.1), BW Sch40/40S (ASME B16.25), SW (ASME B16.11)

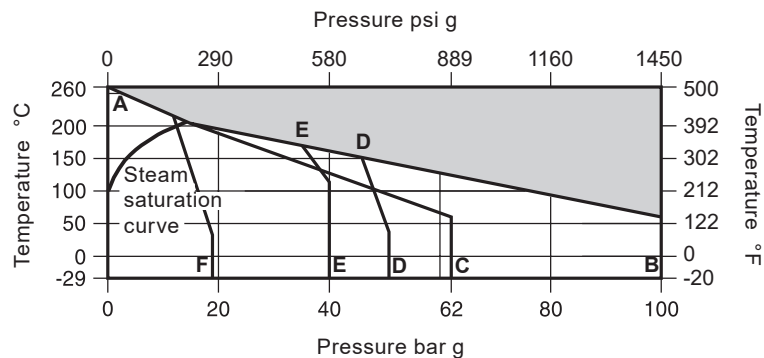
Flanged

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, BW and SW 2" FB and 2½" RB only.

A - D Flanged ASME (ANSI) 300.

A - E Flanged EN 1092 PN40.

A - E 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.

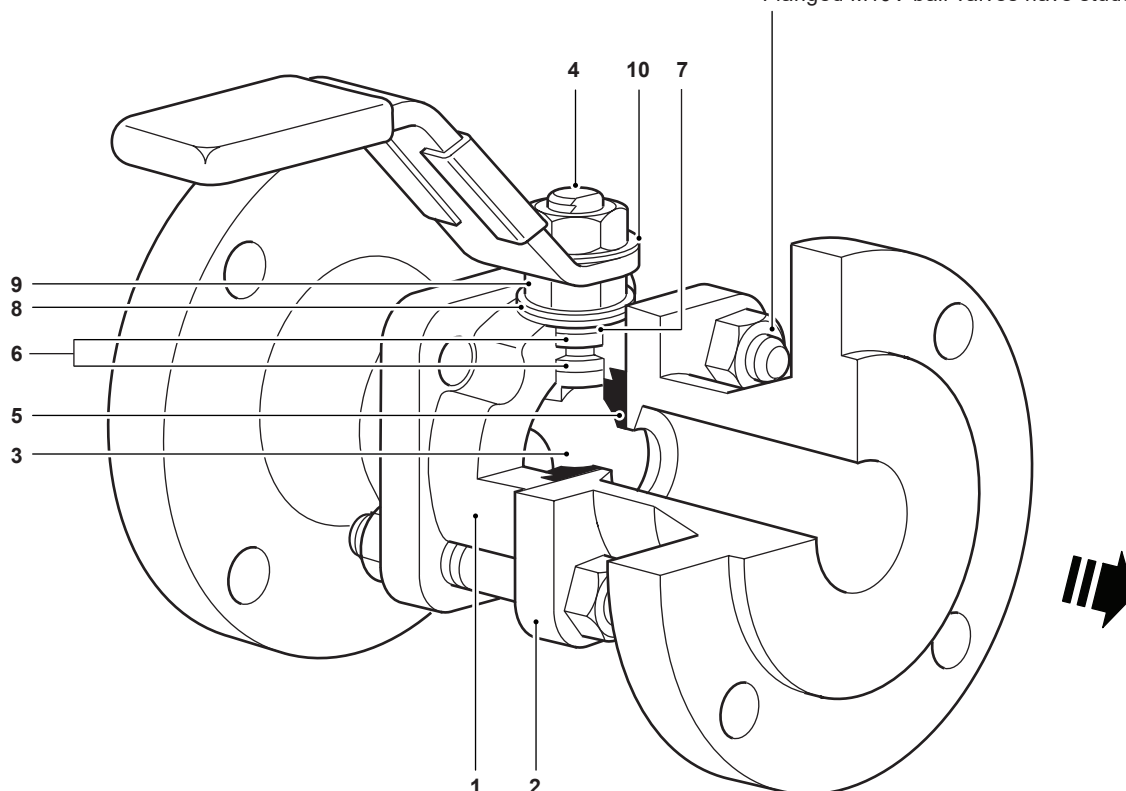
Note 3: In gases applications, the maximum operating pressure is restricted to 40 bar g (580 psi g).

Body design conditions		PN100	
PMA	Maximum allowable pressure	100 bar g @ 60 °C	1450 psi g @ 140 °F
TMA	Maximum allowable temperature	260 °C @ 0 bar g	500 °F @ 0 psi g
Minimum allowable temperature		-29 °C	-20 °F
PMO	Maximum operating pressure for saturated steam service	17.5 bar g	254 psi g
TMO	Maximum operating temperature	260 °C @ 0 bar g	500 °F @ 0 psi g
Minimum operating temperature		-29 °C	-20 °F
Note: For lower operating temperatures consult Spirax Sarco			
ΔPMX Maximum differential pressure is limited to the PMO			
Designed for a maximum cold hydraulic test pressure of:		150 bar g	2175 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.



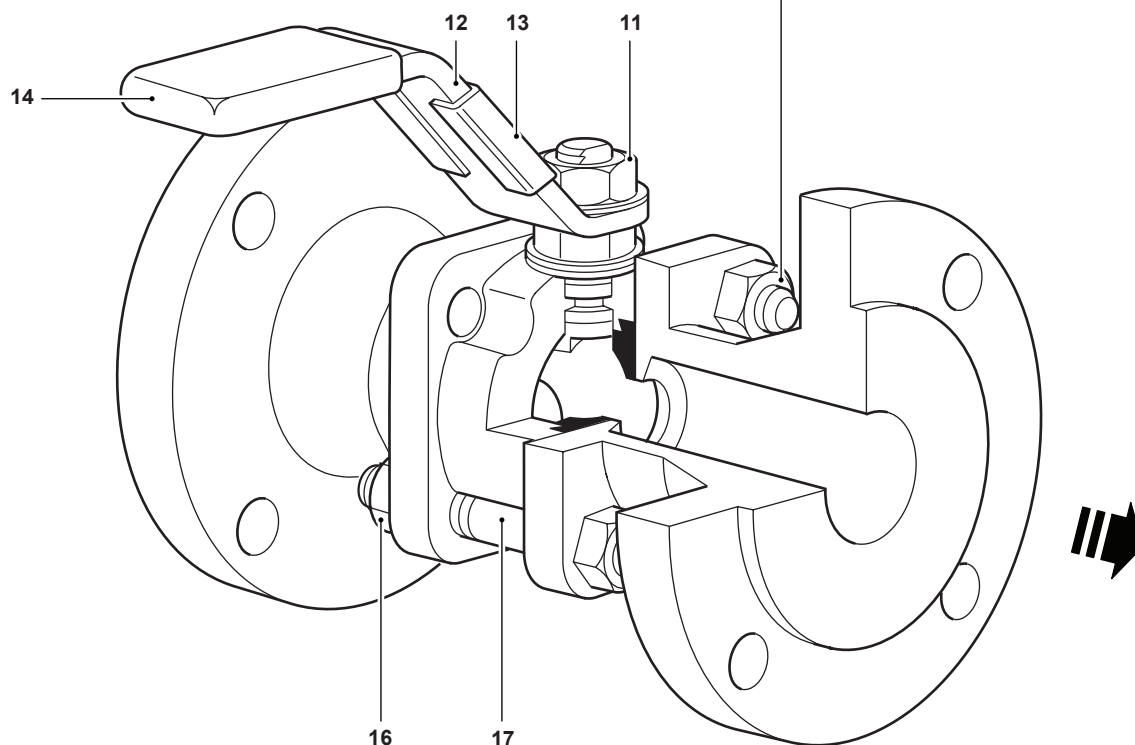
No.	Part	Material		
1	Body	M10S2	Zinc plated carbon steel	ASTM A105
		M10S3	Stainless steel	ASTM A 182 F 316L
		M10S4	Stainless steel	ASTM A 182 F 316L
2	Cap	M10S2	Zinc plated carbon steel	ASTM A105
		M10S3	Stainless steel	ASTM A 182 F 316L
		M10S4	Stainless steel	ASTM A 182 F 316L
3	Ball	Stainless steel	AISI 316	
4	Stem	Stainless steel	AISI 316	
5	Seat	Carbon/graphite reinforced PTFE	PDR 0.8	
6	Stem seal	Reinforced PTFE antistatic		
7	Separator	M10S2	Zinc plated carbon steel	SAE 1010
		M10S3	Stainless steel	AISI 316
		M10S4	Stainless steel	AISI 316
8	Spring washers	Stainless steel	AISI 301	
9	Nut	M10S2	Zinc plated carbon steel	SAE 12L14
		M10S3	Stainless steel	AISI 304
		M10S4	Stainless steel	AISI 304
10	Name-plate (DN)	Stainless steel	AISI 430	

Materials continued on the next page

Materials (continued)

Please note:

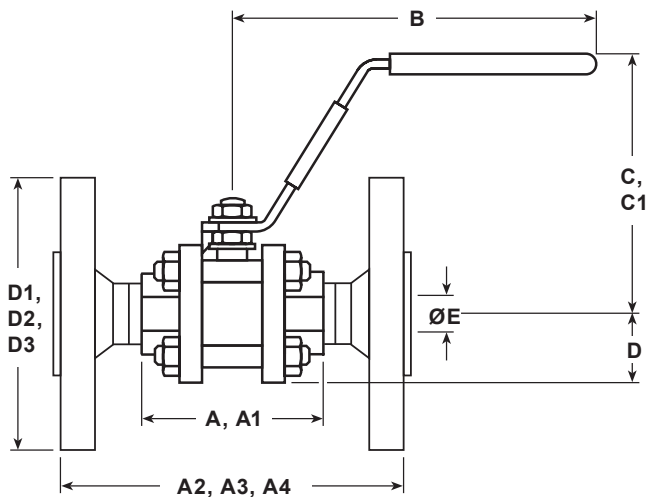
Screwed, butt weld and socket weld M10V ball valves have bolts and nuts.
Flanged M10V ball valves have studs and nuts.



No.	Part	Material		
11	Stem nut	M10S2	Zinc plated carbon steel	SAE 12L14
		M10S3		
		M10S4	Stainless steel	AISI 304
12	Lever	M10S2	Zinc plated carbon steel	SAE 1010
		M10S3		
		M10S4	Stainless steel	AISI 316
13	Name-plate		Stainless steel	AISI 430
14	Grip		Vinyl	
15 *	Bolts	M10S2	Zinc plated carbon steel	A 193 B7
		M10S3		
		M10S4	Stainless steel	AISI 304
16	Nuts	M10S2	Zinc plated carbon steel	SAE 1010
		M10S3		
		M10S4	Stainless steel	AISI 304
17	Studs	M10S2	Zinc plated carbon steel	Grade 5
		M10S3		
		M10S4	Stainless steel	AISI 304

* **Note:** Item 15 not shown - Screwed, butt weld and socket weld versions only.

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:** All connections
- 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	C	C1	D	D1	D2	D3	E
1/4"	63 (2.5)	60 (2.4)				120 (4.7)	61 (2.4)		24 (0.9)				11 (0.4)
3/8"													
1/2"	63 (2.5)	51 (2.0)	108 (4.3)	130 (5.1)	140 (5.5)		61 (2.4)	87 (3.4)	24 (0.9)	89 (3.5)	95 (3.7)	95 (3.7)	
3/4"	68 (2.7)	59 (2.3)	117 (4.6)	150 (5.9)	152 (6.0)	157 (6.2)	63 (2.5)	89 (3.5)	26 (1.0)	98 (3.9)	105 (4.1)	117 (4.6)	14 (0.6)
1"	86 (3.4)	84 (3.3)	127 (5.0)	160 (6.3)	165 (6.5)		91 (3.6)	91 (3.6)	31 (1.2)	108 (4.3)	115 (4.5)	124 (4.9)	21 (0.8)
1 1/4"	97 (3.9)	93 (3.7)	140 (5.5)	180 (7.1)	178 (7.0)		95 (3.7)	95 (3.7)	37 (1.5)	118 (4.6)	140 (5.5)	133 (5.2)	25 (0.9)
1 1/2"	106 (4.2)	102 (4.0)	165 (6.5)	200 (7.9)	190 (7.5)	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 (4.7)	178 (7.0)	230 (9.0)	216 (8.5)		115 (4.5)	115 (4.5)	48 (1.9)	152 (6.0)	165 (6.5)	165 (6.5)	38 (1.5)
2 1/2"	152 (6.0)	152 (6.0)	241 (9.5)	290 (11.4)	241 (9.5)	245 (9.6)	132 (5.2)	132 (5.2)	57 (2.2)	178 (7)	185 (7.3)	190 (7.5)	51 (2.0)

Full bore

Size	A	A1	A2	A3	A4	B	C	C1	D	D1	D2	D3	E
1/4"	63 (2.5)	60 (2.4)				120 (4.7)	61 (2.4)		24 (0.9)				11 (0.4)
3/8"													
1/2"	68 (2.7)	68 (2.7)	114 (4.5)	130 (5.1)	140 (5.5)		63 (2.5)	89 (3.5)	26 (1.0)	89 (3.5)	95 (3.7)	95 (3.7)	
3/4"	86 (3.4)	86 (3.4)	135 (5.3)	150 (5.9)	152 (6.0)	157 (6.2)	91 (3.6)	91 (3.6)	31 (1.2)	98 (3.9)	105 (4.1)	117 (4.6)	21 (0.8)
1"	97 (3.8)	97 (3.8)	148 (5.8)	160 (6.3)	165 (6.5)	157 (6.2)	95 (3.7)	95 (3.7)	37 (1.5)	108 (4.3)	115 (4.5)	124 (4.9)	25 (0.9)
1 1/4"	106 (4.2)	106 (4.2)	160 (6.3)	180 (7.1)	178 (7.0)	180 (7.1)	109 (4.3)	109 (4.3)	41 (1.6)	118 (4.6)	140 (5.5)	133 (5.2)	31 (1.2)
1 1/2"	124 (4.9)	124 (4.9)	183 (7.2)	200 (7.9)	190 (7.5)	180 (7.1)	115 (4.5)	115 (4.5)	48 (1.9)	127 (5)	150 (5.9)	156 (6.1)	38 (1.5)
2"	152 (6.0)	152 (6.0)	215 (8.5)	230 (9.1)	216 (8.5)	245 (9.6)	132 (5.2)	132 (5.2)	57 (2.2)	152 (6.0)	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
1/4"	0.61 (1.3)				0.61 (1.3)		
3/8"							
1/2"		2.2 (4.9)	1.65 (3.6)	2.2 (4.8)		2.3 (5.1)	2.5 (5.5)
3/4"	0.70 (1.5)	2.9 (6.4)	2.20 (4.9)	2.9 (6.4)	1.27 (2.8)	3.5 (7.7)	4.2 (9.3)
1"	1.27 (2.8)	3.9 (8.6)	3.38 (7.5)	4.5 (9.9)	1.77 (3.9)	4.4 (9.7)	5.1 (11.2)
1 1/4"	1.77 (3.9)	5.4 (11.9)	4.44 (9.8)	7.0 (15.4)	2.50 (5.5)	6.2 (13.7)	7.5 (16.5)
1 1/2"	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 (26.9)	13.4 (29.5)
2 1/2"	6.90 (15.2)			17.5 (38.6)			

Kv values

Size	1/4"	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"
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:

Cv (UK) = Kv x 0.963

Cv (US) = Kv x 1.156

Operating torque N m (ft/lbf)

Size	1/4"	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"
Reduced bore	2 (1.5)	2 (1.5)	2 (1.5)	3.5 (2.6)	13 (9.6)	21 (15.5)	30 (22.1)	40 (29.5)	45 (33.2)
Full bore			3.5 (2.6)	13 (9.6)	21 (15.5)	30 (22.1)	40 (29.5)	45 (33.2)	

The indicated torque values are for valves frequently operated, that are submitted to a maximum differential pressure of 62 bar (900 psi g).

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 (BS21 Rp), BSP (ISO 228 G), 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 M10S2FB 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
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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" M10S2FB ball valve.

