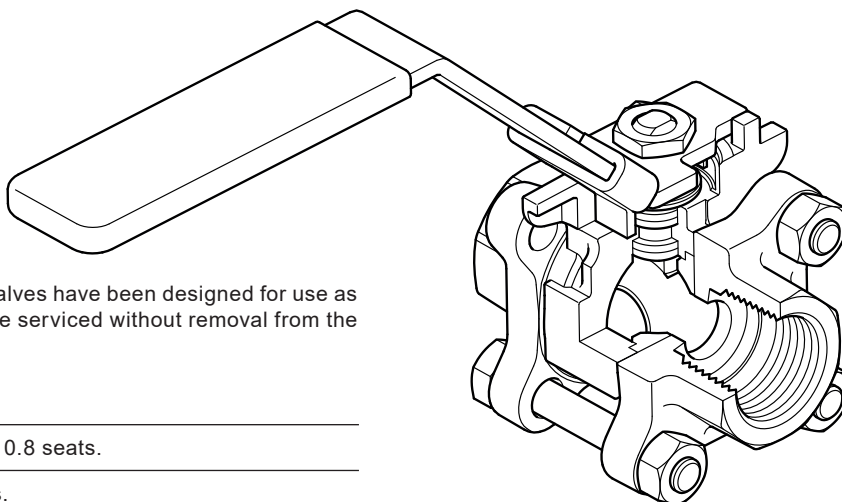




TI-P711-02
CMGT Issue 4

M10MS and M10MV FB and RB Ball Valves 1/4" to 2" - DN8 to DN50



Description

The M10MS and M10MV three-piece body ball valves have 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).

Available types

M10MS2__ Zinc plated carbon steel body, PDR 0.8 seats.

M10MS3__ Stainless steel body, PDR 0.8 seats.

M10MS4__ Complete stainless steel, PDR 0.8 seats.

M10MV2__ Zinc plated carbon steel body, PTFE seats.

M10MV3__ Stainless steel body, PTFE seats.

M10MV4__ Complete stainless steel, PTFE seats.

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

Standards

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

This product complies with the requirements of the EU Pressure Equipment Directive 2014/68/EU/UK Pressure Equipment (Safety) Regulations and carries the  /  mark when so required.

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

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

Screwed and welded

BSP T Rp (ISO 7-1), BSP (ISO 228 G), BSPT (BS21 Rc),
NPT (ASME B1.20.1), BW Sch40/40S (ASME B16.25), SW (ASME B16.11)

Flanged

DN15, DN20, DN25, DN32 and DN40
ASME Class 150, ASME Class 300 and EN 1092 PN40.

Reduced bore

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

Screwed and welded

BSP T Rp (ISO 7-1), BSP (ISO 228 G), BSPT (BS21 Rc),
NPT (ASME B1.20.1), BW Sch40/40S (ASME B16.25), SW (ASME B16.11)

Flanged

DN15, DN20, DN25, DN32, DN40 and DN50
ASME Class 150, ASME Class 300 and EN 1092 PN40.

Note: For special connections, please contact Spirax Sarco.

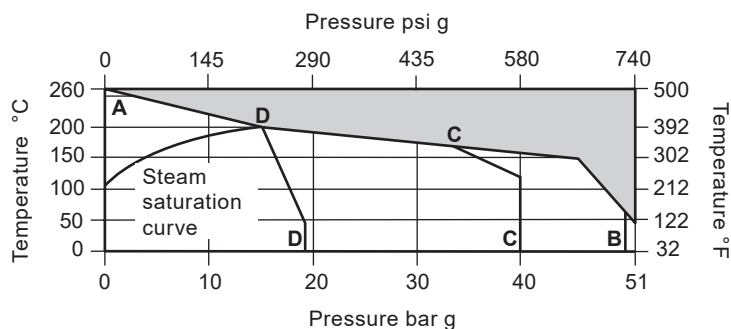
Technical data

Flow characteristic	Modified linear
Port	Full and reduced port versions

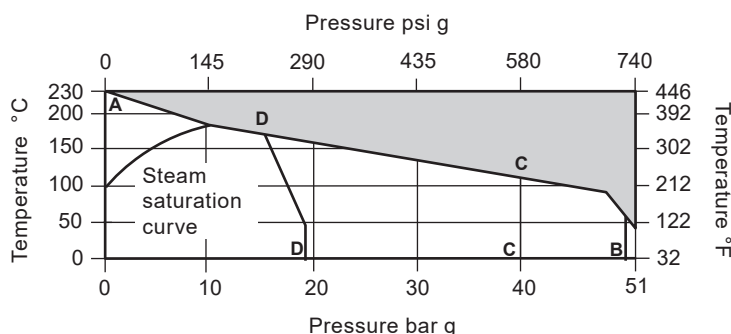
Leakage test procedure to ISO 5208 (Rate A)/EN 12266-1 (Rate A)	
Antistatic device	Complies with ISO 7121 and BS 5351

Pressure/temperature limits

M10MS2, M10MS3 and M10MS4 - PDR 0.8 seats



M10MV2, M10MV3 and M10MV4 - PTFE seats



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

A - B Screwed, SW, BW and Flanged ASME 300.

A - C Flanged EN 1092 PN40.

A - D Flanged ASME 150.

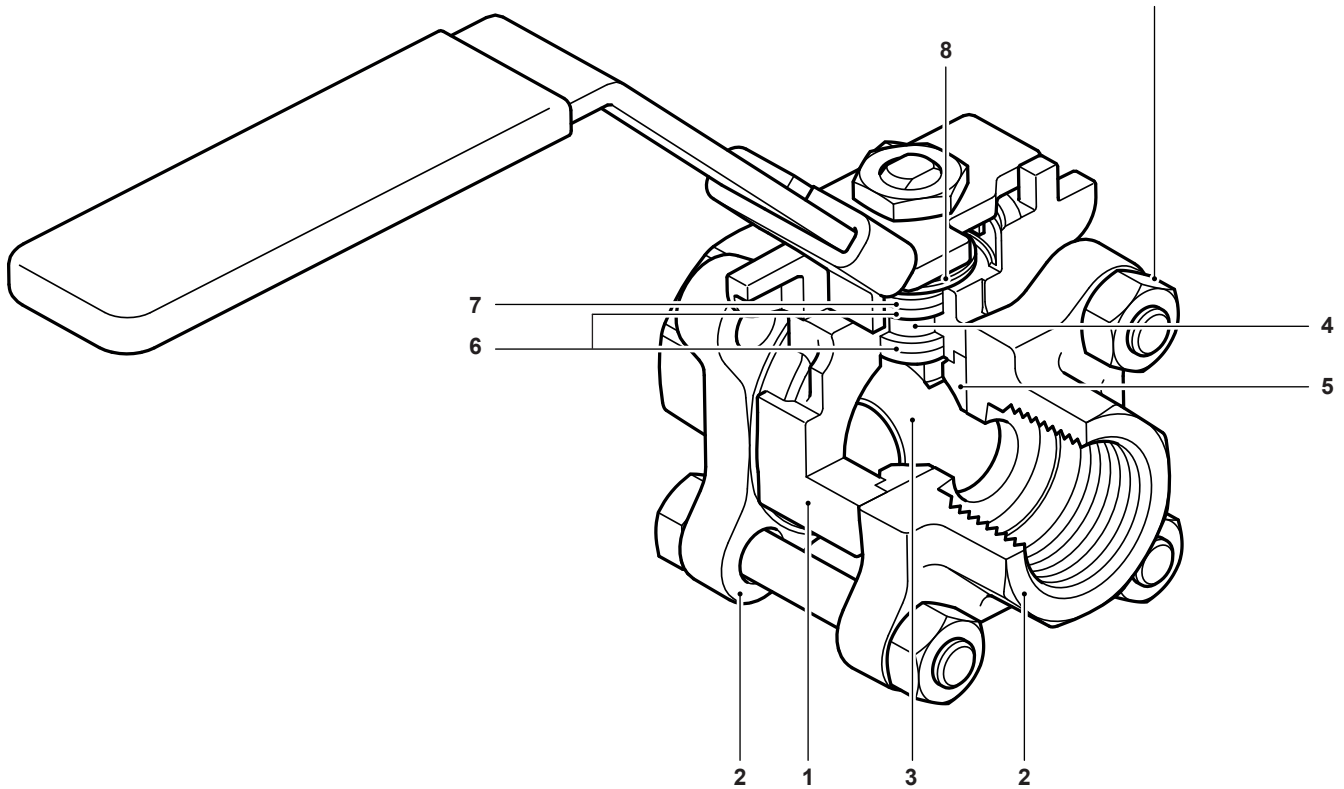
Note 1: The flange standard may restrict the maximum operating pressure. Please check with Spirax Sarco.

Note 2: In gases applications, the maximum operating pressure if restricted to 40 bar g (580 psi g).

Body design conditions			ASME 300	
PMA	Maximum allowable pressure	Zinc plated carbon steel	51 bar g @ 38 °C	740 psi g @ 100 °F
		Stainless steel	49.6 bar g @ 38 °C	719 psi g @ 100 °F
TMA	Maximum allowable temperature	M10MS	260 °C @ 0 bar g	500 °F @ 0 psi g
		M10MV	230 °C @ 0 bar g	446 °F @ 0 psi g
Minimum allowable temperature			0 °C	32 °F
Note: For lower temperatures consult Spirax Sarco				
PMO	Maximum operating pressure for saturated steam service	M10MS	17.5 bar g	254 psi g
		M10MV	10 bar g	145 psi g
TMO	Maximum operating temperature	M10MS	260 °C @ 0 bar g	500 °F @ 0 psi g
		M10MV	230 °C @ 0 bar g	446 °F @ 0 psi g
Minimum operating temperature			0 °C	32 °F
Note: For lower operating temperatures consult Spirax Sarco				
PMX	Maximum differential pressure is limited to the PMO			
Designed for a maximum cold hydrostatic test pressure of:			76.5 bar g	1110 psi g

Materials

Please note:
Screwed, butt weld and socket weld M10MS and M10MV ball valves have bolts and nuts.
Flanged M10MS and M10MV ball valves have studs and nuts.

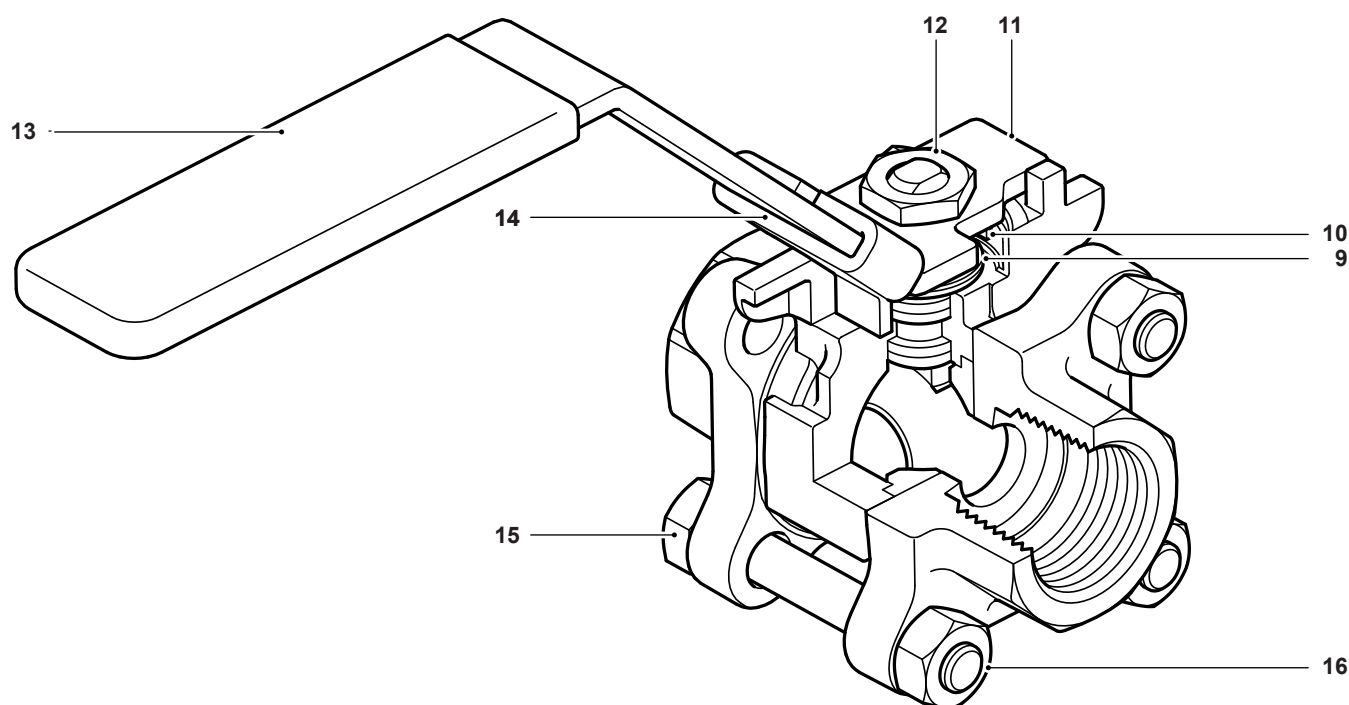


No.	Part		Material	
1	Body	M10MS2 M10MV2	Zinc plated carbon steel	ASTM A216 WCB
		M10MS3 M10MV3	Stainless steel	ASTM A351 CF8M
		M10MS4 M10MV4		
2	Cap	M10MS2 M10MV2	Zinc plated carbon steel *	ASTM A216 WCB
		M10MS3 M10MV3	Stainless steel	ASTM A351 CF8M
		M10MS4 M10MV4		
3	Ball		Stainless steel	AISI 316
4	Stem		Stainless steel	AISI 316
5	Seat	M10MS2 M10MS3 M10MS4	Carbon/graphite reinforced PTFE	PDR 0.8
		M10MV2 M10MV3 M10MV4	Virgin PTFE	
6	Stem seal		Reinforced PTFE antistatic	
7	Separator	M10MS2 M10MV2	Zinc plated carbon steel	SAE 1010
		M10MS3 M10MV3		
		M10MS4 M10MV4	Stainless steel	AISI 316
8	Spring washers		Stainless steel	AISI 301

(*) **Note:** When the connections are butt weld or socket weld, item 2 is phosphatized and aluminium painted instead of zinc plated.

Materials continues on next page

Materials (continued)



No.	Part		Material	
9	Nut	M10MS2 M10MV2	Zinc plated carbon steel	SAE 12L14
		M10MS3 M10MV3		
		M10MS4 M10MV4	Stainless steel	AISI 304
10	Lock nut		Stainless steel	AISI 304
11	Stem nut	M10MS2 M10MV2	Zinc plated carbon steel	SAE 12L14
		M10MS3 M10MV3		
		M10MS4 M10MV4	Stainless steel	AISI 304
12	Lever	M10MS2 M10MV2	Zinc plated carbon steel	SAE 1010
		M10MS3 M10MV3		
		M10MS4 M10MV4	Stainless steel	AISI 316
13	Grip	M10MS2 M10MS3 M10MS4	Blue vinyl	
		M10MV2 M10MV3 M10MV4	Orange vinyl	
14	Lever lock		Stainless steel	AISI 304
15	Bolts	M10MS2 M10MV2	Zinc plated carbon steel	Grade 8.8
		M10MS3 M10MV3		
		M10MS4 M10MV4	Stainless steel	A2 70
16	Nuts	M10MS2 M10MV2	Zinc plated carbon steel	SAE 1010
		M10MS3 M10MV3		
		M10MS4 M10MV4	Stainless steel	AISI 304

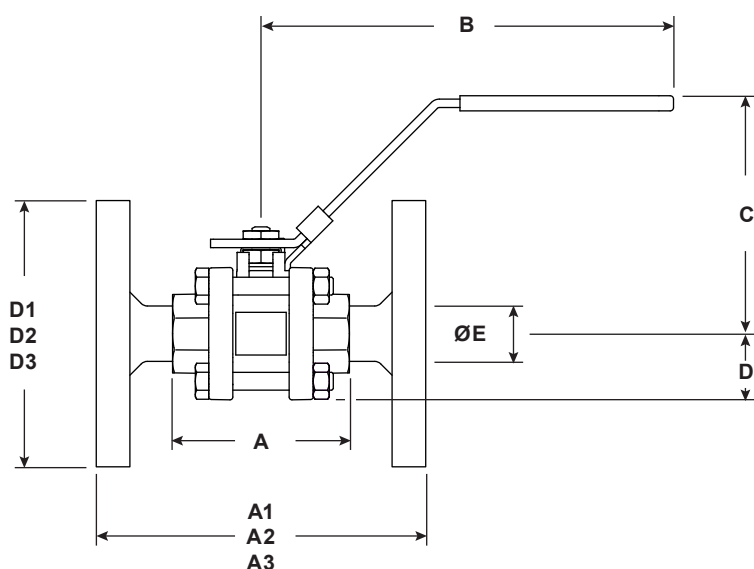
Dimensions (approximate) in mm

Reduced bore

Size	A	A1	A2	A3	B	C	D	D1	D2	D3	E
½"	63	108	130	140	145	85	24	89	95	95	11
¾"	68	117	150	152	145	87	26	98	105	117	14
1"	86	127	160	165	162	94	31	108	115	124	21
1¼"	97	140	180	178	185	103	37	118	140	133	25
1½"	106	165	200	190	185	106	41	127	150	156	31
2"	124	178	230	216	200	112	48	152	165	165	38

Full bore

Size	A	A1	A2	A3	B	C	D	D1	D2	D3	E
¼"	63				145	85	24				11
⅜"	63				145	85	24				11
½"	68	114	130	140	145	87	26	89	95	95	14
¾"	86	135	150	152	162	94	31	98	105	117	21
1"	97	148	160	165	185	103	37	108	115	124	25
1¼"	106	160	180	178	185	106	41	118	140	133	31
1½"	124	183	200	190	200	112	48	127	150	156	38



- A:** Screwed and welded
- A1:** Flanged ASME 150
- A2:** Flanged PN40
- A3:** Flanged ASME 300
- B:** All connections
- C:** All connections
- D:** Screwed and welded
- D1:** Flanged ASME 150
- D2:** Flanged PN40
- D3:** Flanged ASME 300
- E :** All connections

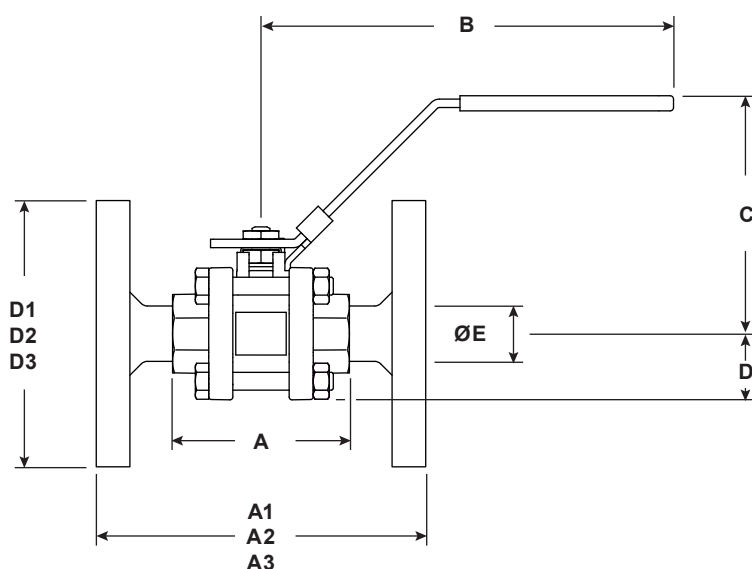
Dimensions (approximate) in inches

Reduced bore

Size	A	A1	A2	A3	B	C	D	D1	D2	D3	E
½"	2.48	4.25	5.12	5.51	5.71	3.35	0.94	3.50	3.74	3.74	0.43
¾"	2.68	4.61	5.91	5.98	5.71	3.43	1.02	3.86	4.13	4.61	0.55
1"	3.39	5.00	6.30	6.50	6.38	3.70	1.22	4.25	4.53	4.88	0.83
1¼"	3.82	5.51	7.09	7.01	7.28	4.06	1.46	4.65	5.51	5.24	0.98
1½"	4.17	6.50	7.87	7.48	7.28	4.17	1.61	5.00	5.91	6.14	1.22
2"	4.88	7.01	9.06	8.50	7.87	4.41	1.89	5.98	6.50	6.50	1.50

Full bore

Size	A	A1	A2	A3	B	C	D	D1	D2	D3	E
¼"	2.48				5.71	3.35	0.94				0.43
⅜"	2.48				5.71	3.35	0.94				0.43
½"	2.68	4.49	5.12	5.51	5.71	3.43	1.02	3.50	3.74	3.74	0.55
¾"	3.39	5.31	5.91	5.91	6.38	3.70	1.46	4.25	4.53	4.88	0.83
1"	3.82	5.83	6.30	6.30	7.28	4.06	1.61	4.65	5.51	5.24	0.98
1¼"	4.17	6.30	7.09	7.09	7.28	4.17	1.61	5.00	5.91	6.14	1.22
1½"	4.88	7.20	7.87	7.87	7.87	4.41	1.89	5.00	5.91	6.14	1.50



- A:** Screwed and welded
- A1:** Flanged ASME 150
- A2:** Flanged PN40
- A3:** Flanged ASME 300
- B:** All connections
- C:** All connections
- D:** Screwed and welded
- D1:** Flanged ASME 150
- D2:** Flanged PN40
- D3:** Flanged ASME 300
- E :** All connections

Weights (approximate) in kg and lbs

Size	Reduced bore								Full bore							
	Scrd/BW/SW		PN40		ASME 150		ASME 300		Scrd/BW/SW		PN40		ASME 150		ASME 300	
	kg	lbs	kg	lbs	kg	lbs	kg	lbs	kg	lbs	kg	lbs	kg	lbs	kg	lbs
1/4"									0.55	1.2						
3/8"									0.55	1.2						
1/2"	0.55	1.2	2.2	4.8	1.5	3.3	2.2	4.8	0.7	1.5	2.4	5.3	1.7	3.7	2.6	5.7
3/4"	0.7	1.5	3.1	6.8	2.0	4.4	3.2	7.0	1.1	2.4	3.5	7.7	2.6	5.7	4.2	9.3
1"	1.1	2.4	4.2	9.3	2.7	5.9	4.5	9.9	1.8	4.0	4.6	10.1	3.5	7.7	5.3	11.7
1 1/4"	1.8	4.0	6.1	13.4	3.8	8.4	7.2	15.9	2.3	5.1	6.1	13.4	4.2	9.3	7.4	16.3
1 1/2"	2.3	5.1	7.2	15.9	5.2	11.5	8.2	18.1	3.8	8.4	7.8	17.2	6.3	13.9	10.3	22.7
2"	3.8	8.4	10.7	23.6	7.5	16.5	11.5	25.3								

Kv values

Size	1/4"	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"
Reduced bore			6	10	27	49	70	103
Full bore	2.5	6.8	17	36	58	89	153	

For conversion:

Cv (UK) = Kv x 0.963

Cv (US) = Kv x 1.156

Operating torque in N m and lbf ft

Size	1/4"		3/8"		1/2"		3/4"		1"		1 1/4"		1 1/2"		2"	
	N m	lbf ft	N m	lbf ft	N m	lbf ft	N m	lbf ft	N m	lbf ft	N m	lbf ft	N m	lbf ft	N m	lbf ft
Reduced bore					2	1.5	3.5	2.6	13	9.6	21	15.5	30	22.1	40	29.5
Full bore	2	1.5	2	1.5	3.5	2.6	13	9.6	21	15.5	30	22.1	40	29.5		

The indicated torque values are for valves frequently operated, that are submitted to a maximum differential pressure of 51 bar (740 psi g). Valves that are subject to long static periods, may require greater break-out torque.

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 T Rp (ISO 7-1), NPT) or flanged connections must not be welded to avoid damages to the valve and/or injury to personnel.

Automation

To automate the M10M ball valves, BVL kits are used.

Spirax Sarco offers two height options. A low bracket (40mm high), for applications below 100° C (212° F) and a high temperature bracket (90 mm high), which is recommended for high temperature applications.

Offered in two different materials:

With Carbon steel (WCB) frame and Carbon steel (12L14) stem adapter or Stainless steel (CF8M) frame and Stainless steel (304) stem adapter. All other components are made of Stainless steel.

For selection and sizing data, see TI sheet TI-P372-23.

Fig. 1 Short bracket for applications below 100 °C

Frame available in Carbon steel (WCB) and Stainless steel (CF8M)

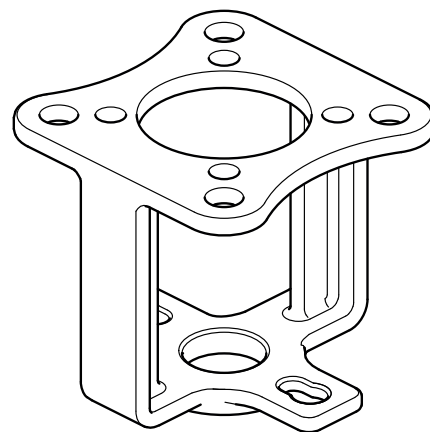
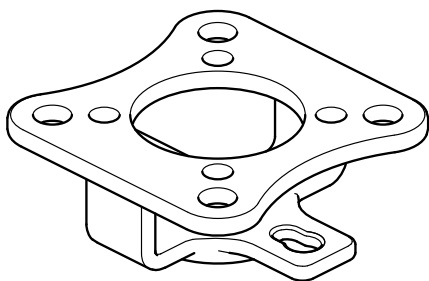


Fig. 2 High bracket for applications with insulated pipe

Frame available in Carbon steel (WCB) and Stainless steel (CF8M)

Safety information, installation and maintenance

For full details see the Installation and Maintenance Instructions supplied with the product.

How to order

Specify	Model	M10M	3 piece M10M ball valve
	Seat material	S:	Carbon/graphite reinforced PTFE
		V:	Virgin PTFE
	Body material	2:	Carbon steel body
		3:	Stainless steel body
		4:	Complete stainless steel
	Bore	FB:	Full bore
		RB:	Reduced bore
	Size NB		¼" to 2"
	End connections		Scrd/BW/SW/Flanged

How to order example:

1 off Spirax Sarco 1" screwed NPT M10M S2 RB ball valve.

Optional extras:

- Self-venting ball.

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" Spirax Sarco M10MS2 FB ball valve with NPT connections.

