



TI-P133-59  
CMGT Issue 7

## M10Si ISO Automation Ball Valve DN1¼" to DN2½"

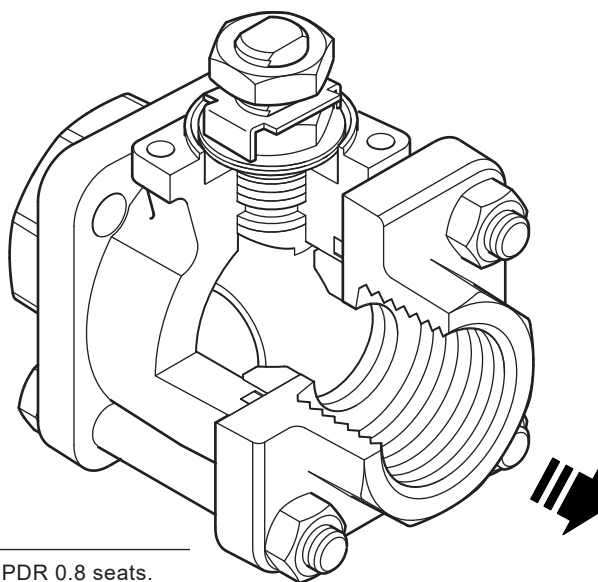
### Description

The M10Si ISO Automation three-piece body ball valve has ISO mounting as standard. It is designed for use as an automated isolating valve, not a control valve, on applications that use steam and other industrial fluids for services ranging from vacuum to the higher temperatures and pressures.

The M10Si ISO Automation ball valve is specifically designed for pneumatic or electric actuation and not manual operation and can be serviced without removing the valve from the pipeline (screwed and welded versions only).

### 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

<b>M10Si2_ _ ISO Automation</b>	Zinc plated carbon steel body, PDR 0.8 seats.
<b>M10Si3_ _ ISO Automation</b>	Stainless steel body, PDR 0.8 seats.
<b>M10Si4_ _ ISO Automation</b>	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 Pressure Equipment Directive (PED) and carries the  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

¼", ⅜", ½", ¾", 1", 1¼", 1½", 2", (2½" only available with reduced bore) screwed BSP, BSPT, NPT, BW, SW full bore and reduced bore. DN15 to DN50 (DN65 only available with reduced bore) flanged EN 1092 PN40, ASME 150 and ASME 300 full bore and reduced bore.

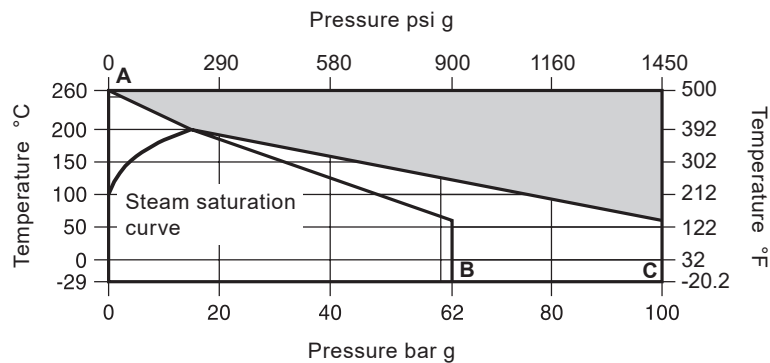
### Options

- Self-venting ball.
- Extended stems 50 mm (2") and 100 mm (4") to allow full insulation.
- Oval handle for confined spaces. Ideal for trap modules.

## 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	Complies with ISO 7121 and BS 5351

## Pressure/temperature limits



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

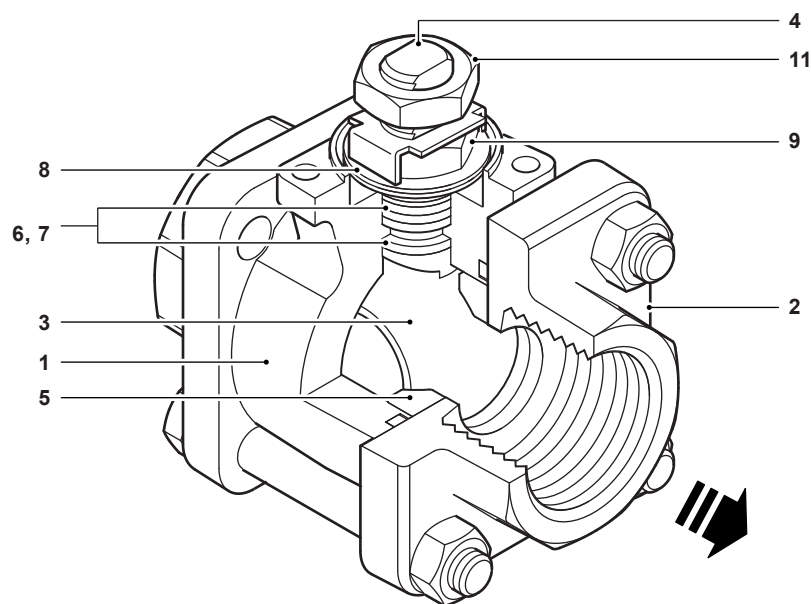
**A - B** 2" FB and 2½" RB only

**A - C** ¼" - 1½" FB, RB and 2" RB

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

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	-20.2 °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	-20.2 °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	2176 psi g

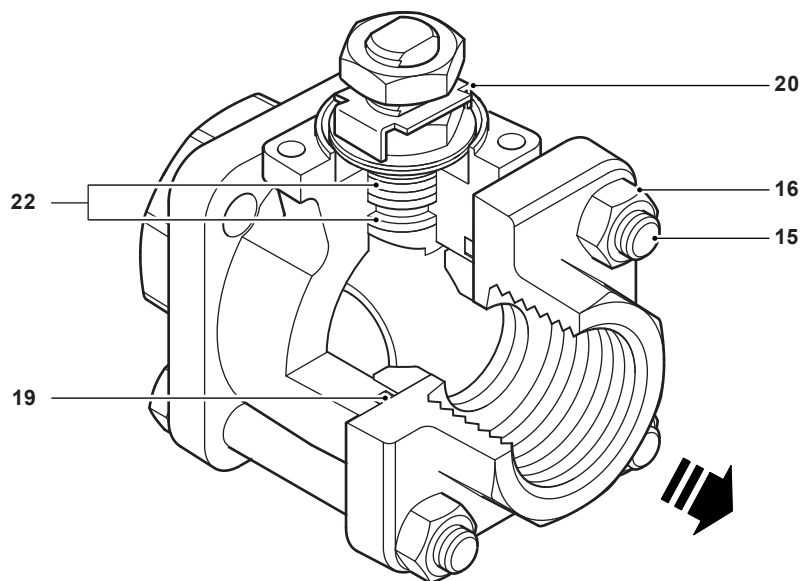
## Materials



No.	Part	Material
1	Body	<b>M10Si2 ISO Automation</b> Zinc plated carbon steel ASTM A105
		<b>M10Si3 ISO Automation</b> Stainless steel ASTM A 182 F 316L
		<b>M10Si4 ISO Automation</b>
2	Cap	<b>M10Si2 ISO Automation</b> Zinc plated carbon steel ASTM A105
		<b>M10Si3 ISO Automation</b> Stainless steel ASTM A 182 F 316L
		<b>M10Si4 ISO Automation</b>
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	<b>M10Si2 ISO Automation</b> Zinc plated carbon steel SAE 1010
		<b>M10Si3 ISO Automation</b>
		<b>M10Si4 ISO Automation</b> Stainless steel AISI 316
8	Belleville washer	Stainless steel AISI 301
9	Nut	<b>M10Si2 ISO Automation</b> Zinc plated carbon steel SAE 1010
		<b>M10Si3 ISO Automation</b>
		<b>M10Si4 ISO Automation</b> Stainless steel AISI 304
10	Name-plate - DN (Not shown)	Stainless steel AISI 430
11	Stem nut	<b>M10Si2 ISO Automation</b> Zinc plated carbon steel SAE 1010
		<b>M10Si3 ISO Automation</b>
		<b>M10Si4 ISO Automation</b> Stainless steel AISI 304

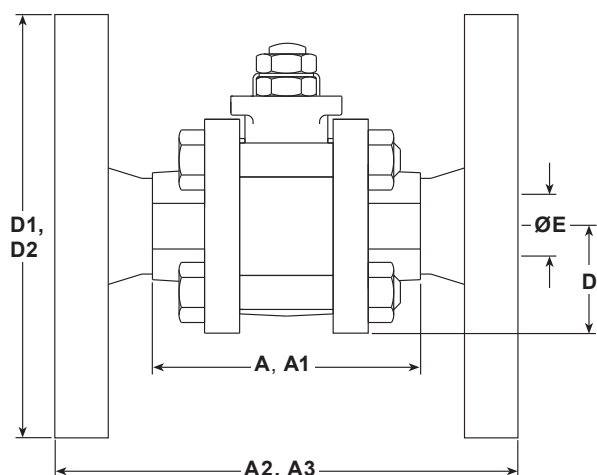
Materials continued on next page

## Materials (continued)



No.	Part	Material	
13	Name-plate (Not shown)	Stainless steel	AISI 430
15	Bolts	<b>M10Si2 ISO Automation</b> <b>M10Si3 ISO Automation</b>	Zinc plated carbon steel Grade 5
		<b>M10Si4 ISO Automation</b>	Stainless steel AISI 304
16	Nuts	<b>M10Si2 ISO Automation</b> <b>M10Si3 ISO Automation</b>	Zinc plated carbon steel SAE 1010
		<b>M10Si4 ISO Automation</b>	Stainless steel AISI 304
17	Studs	<b>M10Si4 ISO Automation</b>	Stainless steel AISI 316
<b>Note:</b> Item 17 can not be shown as it is only applicable to welded versions			
19	Body/cap gasket - 'O' ring	EPDM geothermal	
20	Nut locker	Stainless steel	AIS 316
22	Stem seal	PEEK	

## Dimensions (approximate) in mm (inches)



**A:** Scrd and BW

**A1:** SW

**A2:** Flanged ASME 150

**A3:** Flanged PN40

**D:** Scrd, BW, SW

**D1:** Flanged ASME 150

**D2:** Flanged PN40

**E:** All versions

### Reduced bore

Size	A	A1	A2	A3	D	D1	D2	E
1/4"	56 (2.20)	52 (2.05)			22 (0.87)			8 (0.31)
3/8"								
1/2"	63 (2.48)	52 (2.05)	108 (4.25)	130 (5.12)	24 (0.94)	89 (3.50)	95 (3.74)	11 (0.43)
3/4"	68 (2.68)	60 (2.36)	117 (4.61)	150 (5.91)	26 (1.02)	98 (3.86)	105 (4.13)	14 (0.55)
1"	86 (3.39)	84 (3.31)	127 (5)	160 (6.30)	31 (1.22)	108 (4.25)	115 (4.53)	21 (0.83)
1 1/4"	99 (3.90)	94 (3.70)	140 (5.51)	180 (7.09)	37 (1.46)	118 (4.65)	140 (5.51)	25 (0.98)
1 1/2"	108 (4.25)	102 (4.02)	165 (6.50)	200 (7.87)	41 (1.61)	127 (5)	150 (5.91)	31 (1.22)
2"	124 (4.88)	118 (4.65)	178 (7.01)	230 (9.06)	48 (1.89)	152 (5.98)	165 (6.50)	38 (1.50)
2 1/2"	152 (5.98)	152 (5.98)			57 (2.24)			51 (2.01)

### Full bore

Size	A	A1	A2	A3	D	D1	D2	E
1/4"	56 (2.20)	58 (2.28)			22 (0.87)			8 (0.31)
3/8"	63 (2.48)	60 (2.36)			24 (0.94)			11 (0.43)
1/2"	68 (2.68)	64 (2.52)		130 (5.12)	26 (1.02)		95 (3.74)	14 (0.55)
3/4"	86 (3.39)	84 (3.31)		150 (5.91)	31 (1.22)		105 (4.13)	21 (0.83)
1"	99 (3.90)	98 (3.86)		160 (6.30)	37 (1.46)		115 (4.53)	25 (0.98)
1 1/4"	108 (4.25)	106 (4.17)		180 (7.09)	41 (1.61)		140 (5.51)	31 (1.22)
1 1/2"	124 (4.88)	124 (4.88)		200 (7.87)	48 (1.89)		150 (5.91)	38 (1.50)
2"	152 (5.98)	152 (5.98)		230 (9.06)	57 (2.24)		165 (6.50)	51 (2.01)

## Weights (approximate) in kg (lbs)

Size	Reduced bore			Full bore	
	Scrd/BW/SW	PN40	ASME 150	Scrd/BW/SW	PN40
1/4"	0.65 (1.43)			0.65 (1.43)	
3/8"				0.72 (1.59)	
1/2"	0.72 (1.59)	2.30 (5.07)	1.77 (3.90)	0.95 (2.09)	2.60 (5.73)
3/4"	0.95 (2.09)	3.20 (7.05)	2.35 (5.18)	1.60 (3.53)	3.80 (8.38)
1"	1.60 (3.53)	4.20 (9.26)	3.47 (7.65)	2.05 (4.52)	4.70 (10.4)
1 1/4"	2.05 (4.52)	5.70 (12.6)	4.47 (9.85)	2.75 (6.06)	6.40 (14.1)
1 1/2"	2.75 (6.06)	6.80 (15.0)	5.96 (13.1)	4.25 (9.37)	8.30 (18.3)
2"	4.25 (9.37)	9.50 (20.9)	9.16 (20.2)	7.50 (16.5)	12.80 (28.2)
2 1/2"	7.50 (16.5)				

## 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

Size		1/4"	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"
Reduced bore	Nm	3.25	3.25	3.25	5.50	13.25	20	50	60	75
	(lbf ft)	(2)	(2)	(2)	(4)	(10)	(15)	(37)	(44)	(55)
Full bore	Nm	3.25	3.25	5.50	13.25	20	50	60	75	
	(lbf ft)	(2)	(2)	(4)	(10)	(15)	(37)	(44)	(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 1/2" screwed BSP M10Si2FB ISO Automation 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, 19, 22

### 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 1/2" M10Si2FB ISO Automation ball valve.

