



Cert. No. L RQ 0963008

ISO 9001

# spirax sarco

## M70i ISO

TI-P182-05  
ST Issue 5

## Forged Stainless Steel Ball Valve for Sanitary Applications

### Description

The M70i forged 316L stainless steel, three-piece body ball valve has ISO mounting as standard. It has been designed in accordance with ASME BPE for use as an isolating valve, not a control valve on clean steam and other high purity and aseptic processes where bacteria and media deposits can put product quality at risk. The low maintenance, clean design is suitable for steam, liquid and gas services ranging from vacuum to the higher temperatures and pressures. Applications include the pharmaceutical, biotech, food and beverage and cosmetics industries.

### Principal features:

- **True port design** - The internal diameter of the end connections and ball precisely match that of the connecting tubing to guarantee drainability.
- **Forged material** - The M70i is manufactured from high integrity ASTM A182 F316L.
- **Low ferrite** - Body and end connections have 3% to 5% ferrite content to help prevent rouge.
- **Designed with orbital welding in mind** - Extended tube weld end connections means that automatic orbital welding can be performed without valve disassembly.
- **Designed for automation** - ISO 5211 mounting pad as standard enabling simple actuator mounting.
- **Lockable handle** - A spring loaded lockable handle allows the valve to be locked in the chosen position – ensuring system integrity.

### Surface finish

Standard internal surface finish is 0.5 micron Ra (20 micro inch). Electropolishing to 0.375 micron Ra (15 micro inch) is available to special order. External surface finishes are as forged / machined.

### Available types

<b>M70iV ISO</b>	Virgin PTFE TFM 1600
<b>M70iVEP ISO</b>	Virgin PTFE TFM 1600 electropolished to 0.375 micron Ra
<b>M70iG ISO</b>	Mineral filled PTFE
<b>M70iGEP ISO</b>	Mineral filled PTFE electropolished to 0.375 micron Ra

### Optional extras:

- Extended stem 100 mm (4") to allow for insulation.
- Cavity fillers are provided as standard. If cavity fillers are not required please specify when placing an order.
- Low ferrite < 1% under special request.

### Standards

This product fully complies with the requirements of the European Pressure Equipment Directive 97/23/EC.

### Certification:

- Material Certification to EN 10204 3.1
- Elastomer FDA / USP compliance certificate.
- Surface finish certification.

**Note:** All certification / inspection requirements must be stated at the time of order placement.

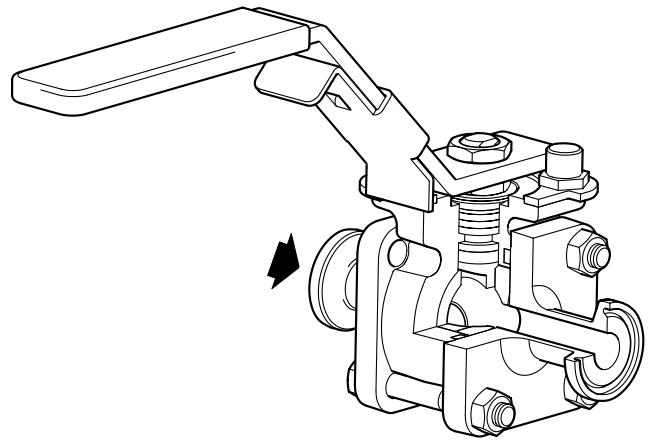
### Packaging

The M70i is finished and packaged in a segregated clean environment. Each valve is end capped and sealed in a plastic bag, in accordance with ASME BPE, to ensure the ingress of dirt is avoided.

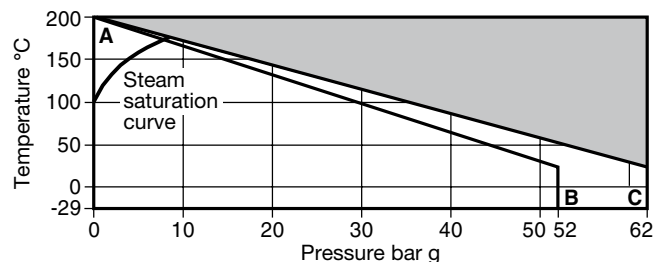
### Sizes and pipe connections

1/2", 3/4", 1", 1 1/2", 2" sanitary clamp (ASME BPE).  
1/2", 3/4", 1", 1 1/2", 2" extended O/D tube weld ends (ETO) (ASME BPE).  
Sanitary clamp / ETO combinations are also available.  
2 1/2", 3" and 4" forged valves are also available to special order.  
**Alternatively:** 2 1/2", 3" and 4" investment cast sanitary ball valves are available through our M80i range - see TI-P182-06.

**Note:** Other connection options are available on request. Please consult Spirax Sarco.



### Pressure / temperature limits

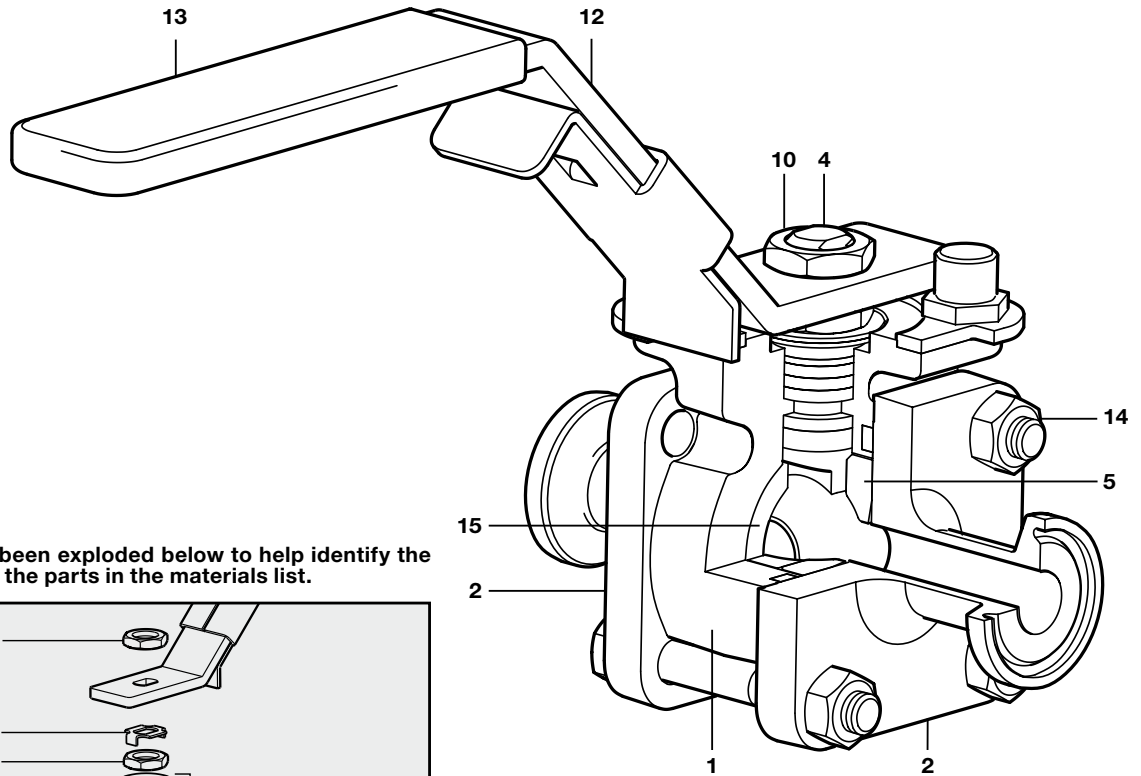


The product **must not** be used in this region.

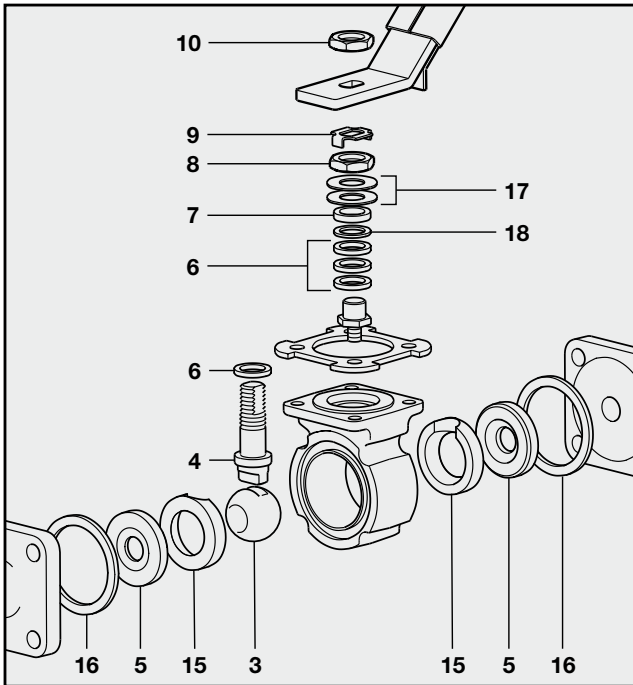
**A - B** Virgin PTFE TFM 1600.

**A - C** Mineral filled PTFE.

Body design conditions	PN63
PMA Maximum allowable pressure	62 bar g @ 20°C
TMA Maximum allowable temperature	200°C @ 0 bar g
Minimum allowable temperature	-29°C
PMO Maximum operating pressure Virgin PTFE	7.0 bar g
for saturated steam service Mineral filled PTFE	8.5 bar g
TMO Maximum operating temperature	200°C @ 0 bar g
Minimum operating temperature	-29°C
<b>Note:</b> 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 93 bar g	



The internals have been exploded below to help identify the position of some of the parts in the materials list.



### Materials

No.	Part	Material	
1	Body	Stainless steel	ASTM A 182 F 316L
2	End connections	Stainless steel	ASTM A 182 F 316L
3	Ball	Stainless steel	AISI 316L
4	Stem	Stainless steel	AISI 316L
5	Seat	M70iG Mineral filled PTFE M70iV Virgin PTFE TFM 1600	
6	Stem seals	Virgin PTFE TFM 1600	
7	Spacer	Stainless steel	AISI 316
8	Compression nut	Stainless steel	AISI 316
9	Lock washer	Stainless steel	AISI 316
10	Stem nut	Stainless steel	AISI 316
11	Name-plate (not shown)	Stainless steel	AISI 430
12	Handle	Stainless steel	AISI 316
13	Cover	Vinyl	
14	Bolts and nuts	Stainless steel	AISI 316
15	Cavity filler	Virgin PTFE TFM 1600	
16	Body cap gasket	Virgin PTFE TFM 1600	
17	Bellville washer	Stainless steel	AISI 316
18	Stem seal	INOX	

### Technical data

Leakage test procedure to ISO 5208 (Rate A) / EN 12266-1 (Rate A)

Stem seal and seat	Materials comply with; - FDA CFR title 21 part 177, section 1550. - USP23 Class VI
Flow characteristic	Modified linear
Port	True port design

### K<sub>v</sub> values

Size	1/2"	3/4"	1"	1 1/2"	2"
K <sub>v</sub>	7	25	56	164	360
For conversion:	C <sub>v</sub> (UK) = K <sub>v</sub> x 0.963		C <sub>v</sub> (US) = K <sub>v</sub> x 1.156		

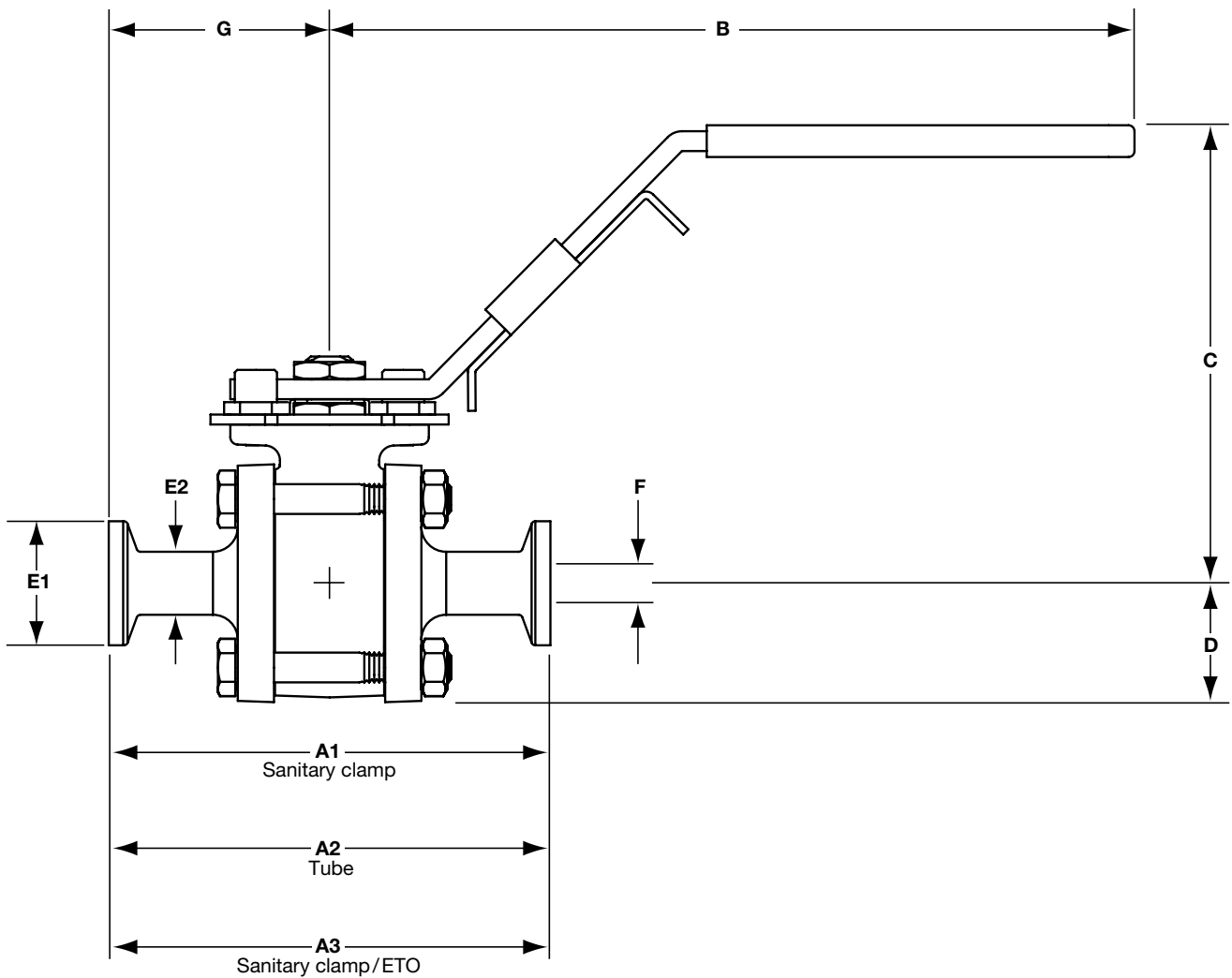
### Torque value

Size	1/2"	3/4"	1"	1 1/2"	2"
N m	13	15	19	70	100

The torque figures shown are for a valve at maximum operating pressure that is operated frequently. Valves that are subject to long static periods, may require greater break-out torque.

**Dimensions/weights (approximate) in mm and kg**

Size	A1	A2	A3	B	C	D	E1	E2	F	G (Clamp)	G (ETO)	Weight
½"	89.0	140.0	114.5	161	92	24	25.0	12.70	9.4	44.5	70.0	0.80
¾"	101.6	152.4	127.0	161	94	26	25.0	19.05	15.8	50.8	76.2	1.00
1"	114.2	165.0	139.6	161	101	31	50.5	25.40	22.2	57.1	82.5	1.55
1½"	139.6	190.4	165.0	185	126	48	50.5	38.10	34.8	69.8	95.2	4.50
2"	158.7	203.1	180.9	250	141	57	64.0	50.80	47.5	79.4	101.6	7.70

**Safety information, installation and maintenance**

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

**How to order**

The M70i has a number of features that must be specified at the time of order placement; they are size, end connection, seat material, internal surface finish, and any certification that is required.

**Note:** Cavity fillers are provided as standard. If cavity fillers are not required please specify so when placing an order.

**Example:** 1 off Spirax Sarco ½" M70iV ISO forged sanitary ball valve complete with sanitary clamp connections (ASME BPE) and an internal surface finish of 0.5 micron Ra (20 micro inch).

The unit is to be supplied complete with EN 10204 3.1 material certification.

### Spare parts

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

#### Available spares

Seat and seal set with cavity filler

5, 6, 15, 16, 18

#### 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 - Virgin PTFE TFM 1600 seat and seal set with cavity filler for a Spirax Sarco ½" M70iV ISO forged stainless steel ball valve.

