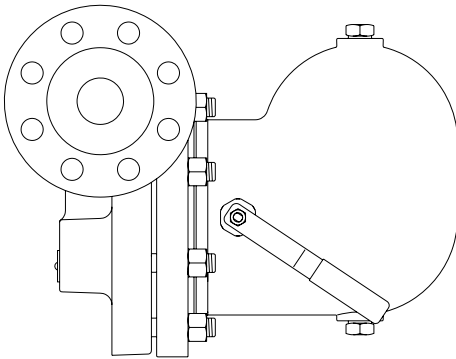

FTS23 Stainless Steel Body and Cover
FTC23 Carbon Steel Body with Stainless Steel Cover
Ball Float Steam Traps
Installation and Maintenance Instructions



1. Safety information
2. General product information
3. Installation
4. Commissioning
5. Operation
6. Maintenance
7. Spare parts

1. Safety information

Safe operation of these products can only be guaranteed if they are properly installed, commissioned, used and maintained by qualified personnel (see Section 1.11 on this document) in compliance with the operating instructions. General installation and safety instructions for pipeline and plant construction, as well as the proper use of tools and safety equipment must also be complied with.

1.1 Intended use

Referring to the Installation and Maintenance Instructions, name-plate and Technical Information Sheet, check that the product is suitable for the intended use/application. These products comply with the requirements of the European Pressure Equipment Directive 97/23/EC and carry the CE mark when so required. The products fall within the following Pressure Equipment Directive categories:

Product	Size	Group 1 Gases	Group 1 Liquids	Group 2 Gases	Group 2 Liquids
FTS23 and FTC23	DN25	SEP	SEP	SEP	SEP
	DN40	2	SEP	1	SEP
	DN50	2	2	1	SEP

- i) These products have been specifically designed for use on steam, air or condensate/water, which is in Group 2 of the above mentioned Pressure Equipment Directive.
These products can also be used for mediums which are in Group 1 of the above mentioned Directive, however please contact Spirax Sarco in order to confirm suitability of the product for the intended application being considered.
- ii) Check material suitability, pressure and temperature and their maximum and minimum values. If the maximum operating limits of the product are lower than those of the system in which it is being fitted, or if malfunction of the product could result in a dangerous overpressure or overtemperature occurrence, ensure a safety device is included in the system to prevent such over-limit situations.
- iii) Determine the correct installation situation and direction of fluid flow.
- iv) Spirax Sarco products are not intended to withstand external stresses that may be induced by any system to which they are fitted. It is the responsibility of the installer to consider these stresses and take adequate precautions to minimise them.
- v) Remove protection covers from all connections and protective film from all name-plates, where appropriate, before installation on steam or other high temperature applications.

1.2 Access

Ensure safe access and if necessary a safe working platform (suitably guarded) before attempting to work on the product. Arrange suitable lifting gear if required.

1.3 Lighting

Ensure adequate lighting, particularly where detailed or intricate work is required.

1.4 Hazardous liquids or gases in the pipeline

Consider what is in the pipeline or what may have been in the pipeline at some previous time. Consider: flammable materials, substances hazardous to health, extremes of temperature.

1.5 Hazardous environment around the product

Consider: explosion risk areas, lack of oxygen (e.g. tanks, pits), dangerous gases, extremes of temperature, hot surfaces, fire hazard (e.g. during welding), excessive noise, moving machinery.

1.6 The system

Consider the effect on the complete system of the work proposed. Will any proposed action (e.g. closing isolation valves, electrical isolation) put any other part of the system or any personnel at risk?

Dangers might include isolation of vents or protective devices or the rendering ineffective of controls or alarms. Ensure isolation valves are turned on and off in a gradual way to avoid system shocks.

1.7 Pressure systems

Ensure that any pressure is isolated and safely vented to atmospheric pressure. Consider double isolation (double block and bleed) and the locking or labelling of closed valves. Do not assume that the system has depressurised even when the pressure gauge indicates zero.

1.8 Temperature

Allow time for temperature to normalise after isolation to avoid danger of burns.

1.9 Tools and consumables

Before starting work ensure that you have suitable tools and/or consumables available. Use only genuine Spirax Sarco replacement parts.

1.10 Protective clothing

Consider whether you and/or others in the vicinity require any protective clothing to protect against the hazards of, for example, chemicals, high/low temperature, radiation, noise, falling objects, and dangers to eyes and face.

1.11 Permits to work

All work must be carried out or be supervised by a suitably competent person. Installation and operating personnel should be trained in the correct use of the product according to the Installation and Maintenance Instructions.

Where a formal 'permit to work' system is in force it must be complied with. Where there is no such system, it is recommended that a responsible person should know what work is going on and, where necessary, arrange to have an assistant whose primary responsibility is safety.

Post 'warning notices' if necessary.

1.12 Handling

Manual handling of large and/or heavy products may present a risk of injury. Lifting, pushing, pulling, carrying or supporting a load by bodily force can cause injury particularly to the back. You are advised to assess the risks taking into account the task, the individual, the load and the working environment and use the appropriate handling method depending on the circumstances of the work being done.

1.13 Residual hazards

In normal use the external surface of the product may be very hot. If used at the maximum permitted operating conditions the surface temperature of some products may reach temperatures of 350°C (662°F).

Many products are not self-draining. Take due care when dismantling or removing the product from an installation (refer to 'Maintenance instructions').

1.14 Freezing

Provision must be made to protect products which are not self-draining against frost damage in environments where they may be exposed to temperatures below freezing point.

1.15 Disposal

Unless otherwise stated in the Installation and Maintenance Instructions, this product is recyclable and no ecological hazard is anticipated with its disposal providing due care is taken.

In the event that, during the operation, the trap comes into contact with harmful substances, you will need to dispose of it in accordance with regulations under the current legislation.

1.16 Returning products

Customers and stockists are reminded that under EC Health, Safety and Environment Law, when returning products to Spirax Sarco they must provide information on any hazards and the precautions to be taken due to contamination residues or mechanical damage which may present a health, safety or environmental risk. This information must be provided in writing including Health and Safety data sheets relating to any substances identified as hazardous or potentially hazardous.

2. General product information

2.1 General description

FT_23 ball float steam traps are suitable for use with saturated and superheated steam, on process equipment, and the first choice for drainage of temperature controlled systems.

They are the perfect choice in solving problems caused by steam that is carrying solid and incondensable contaminants such as salts and gasses; These quickly lead to fouling and the accumulation of sediment and debris, resulting in failure of the internal mechanism. They are typically used on geothermal steam.

The main design feature is the innovative self-cleaning float closing mechanism, which allows automatic safe operation even in cases of severe steam contamination. Furthermore, the position and size of the main valve and seat makes it easier for the discharge of condensate and solid contaminant. The trap is able to modulate the condensate flow adapting immediately to sudden and large variations of flow and pressure.

Another key feature of the unit is the external manual lever that allows the valve ball to be fully opened regardless of the presence or absence of condensate in the unit - This facilitates the fast removal of any sediment/condensate that may be in the unit and easier inspection in maintaining optimum performance of the internal mechanism.

Standards

These products fully comply with the requirements of the European Pressure Equipment Directive 97/23/EC and carry the **CE** mark when so required.

Approvals

These products are available with a manufacture's Typical Test Report or Certification to EN 10204 3.1. **Note:** All certification/inspection requirements must be stated at the time of order placement.

Note: For additional product data see the following Technical Information Sheet: TI-P605-01.

2.2 Sizes and pipe connections

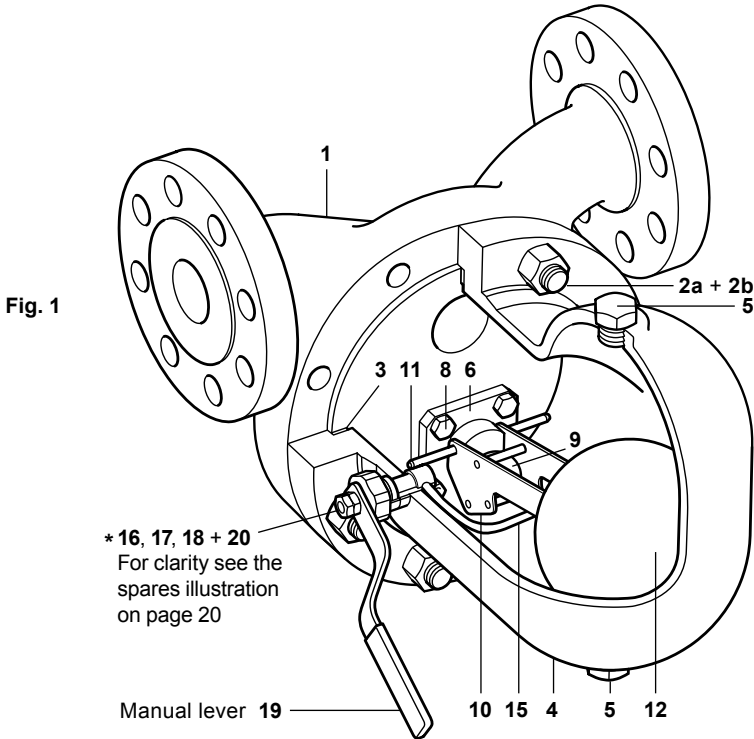
DN25, DN40 and DN50	Flanged EN 1092 PN40
1½" and 2"	Flanged ASME B16.5 Class 150 Flanged ASME B16.5 Class 300

2.3 Materials

No.	Part	Material	
1	Body	Carbon steel	ASTM A216 WCB
		Stainless steel	ASTM A351 CF8 (on request)
2a	Cover studs	Carbon steel	ASTM A193 B7
		Stainless steel	ASTM A193 B8 Cl.1
2b	Cover nuts	Carbon steel	ASTM A 194 Gr. 2H
		Stainless steel	ASTM A194 Gr.8
3	Cover gasket	Exfoliated graphite reinforced steel	
4	Cover	Stainless steel	ASTM A351 CF8
5	Cover plug (½")	Carbon steel	ASTM A105
6	Valve seat	Stainless steel	ASTM A479 316
* 7	Valve seat gasket	Exfoliated graphite reinforced steel	
8	Valve assembly screws	Stainless steel	AISI 304
9	Valve ball	Stainless steel	AISI 316

Available types

FTS23-07	Stainless steel body, cover and internals	PMO 7 bar g
FTS23-23		PMO 23 bar g
FTC23-07	Carbon steel body with Stainless steel cover and internals	PMO 7 bar g
FTC23-23		PMO 23 bar g

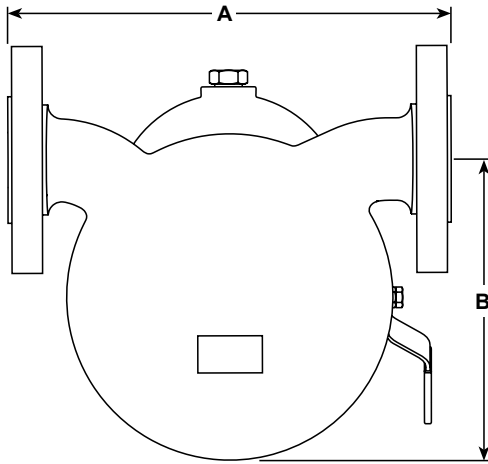


No.	Part	Material	
10	Float lever	Stainless steel	ASTM A240 316
11	Float lever pin	Stainless steel	ASTM A479 316
12	Float	Stainless steel	AISI 316
* 13	Washer	Stainless steel	AISI 304
* 14	Screw	Stainless steel	AISI 304
15	Internal lever	Stainless steel	AISI 316
* 16	Graphite packing seals	Graphite	Graphite
* 17	Spacer	Stainless steel	AISI 316
* 18	Gland nut	Stainless steel	AISI 316
19	Manual lever	Stainless steel	ASTM A240 304
* 20	Nut and lock-nut	Stainless steel	AISI 304

* **Please note:** For clarity see the spares illustration on page 20 for items 7, 13, 14, 16, 17, 18 + 20

2.4 Dimensions/weights (approximate) in mm and kg (inches and lbs)

Fig. 2 End elevation



Size	A	B	C	D	E*	Weight
DN25 DN40 and DN50 PN40 flanged	320 mm	220 mm	305 mm	310 mm	560 mm	40 kg
1½" and 2" ASME flanged	12.60"	8.66"	12.01"	12.21"	22.05"	88 lb

* Withdrawal distance for cover removal

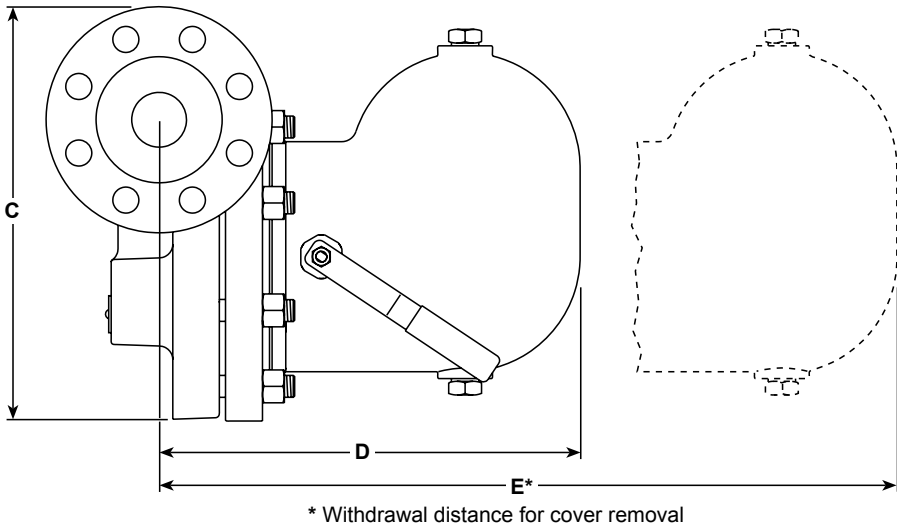
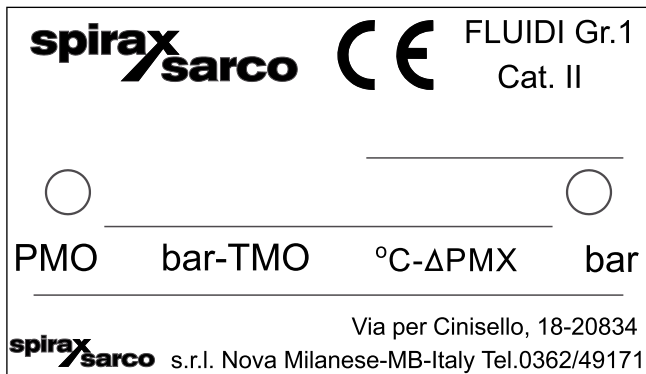


Fig. 3 Side elevation

2.5 Typical product name-plate

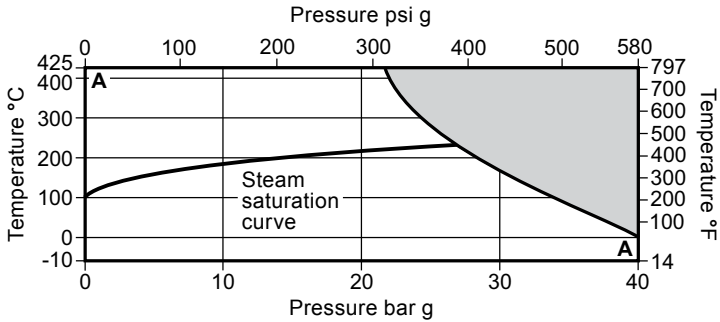


2.6 Pressure/temperature limits (ISO 6552)

FTS23

Stainless steel body and cover

Flanged PN40



A - A Flanged PN40

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

Body design conditions	PN40	
PMA Maximum allowable pressure	40 bar g @ 0°C	(580 psi g @ 32°F)
TMA Maximum allowable temperature	425°C @ 21.7 bar g	(797°F @ 315 psi g)
Minimum allowable temperature	-10°C	(14°F)
PMO Maximum operating pressure	FTS23-07 7 bar g @ 425°C	(101 psi g @ 797°F)
	FTS23-23 23 bar g @ 425°C	(333 psi g @ 797°F)
TMO Maximum operating temperature	425°C @ 21.7 bar g	(797°F @ 315 psi g)
Minimum operating temperature	0°C	(32°F)
Note: For lower operating temperatures consult Spirax Sarco		
ΔPMX Maximum differential pressure	FTS23-07 7 bar	(101.5 psi)
	FTS23-23 23 bar	(333.5 psi)
Designed for a maximum cold hydraulic test pressure of 60 bar g	(870 psi g)	

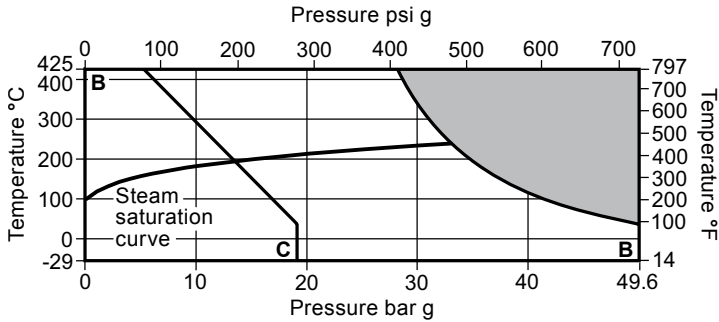
Please note that the trap in its complete operational form must not be subjected to pressures greater than 40 bar g (580 psi g) as damage to the internals may occur.

2.7 Pressure/temperature limits (ISO 6552)


FTS23

Stainless steel body and cover

Flanged ASME 150 and Flanged ASME 300



B - C Flanged ASME 150 **B - B** Flanged ASME 300

 The product **must not** be used in this region or beyond the parameter of the PMA or TMA of the relative end connection.

Body design conditions		ASME 150 or ASME 300	
PMA	Maximum allowable pressure	ASME 300	49.6 bar g @ 38°C (719 psi g @ 100°F)
		ASME 150	19 bar g @ 38°C (275 psi g @ 100°F)
TMA	Maximum allowable temperature	ASME 300	425°C @ 28 bar g (797°F @ 406 psi g)
		ASME 150	425°C @ 5.5 bar g (797°F @ 79 psi g)
Minimum allowable temperature		-10°C	(14°C)
PMO	Maximum operating pressure	ASME 300	FTS23-07 7 bar g @ 425°C (101 psi g @ 797°F)
			FTS23-23 23 bar g @ 425°C (333 psi g @ 797°F)
		ASME 150	FTS23-07 7 bar g @ 386°C (101 psi g @ 726°F)
			FTS23-23 13 bar g @ 194°C (188 psi g @ 381°F)
TMO	Maximum operating temperature	ASME 300	425°C @ 28 bar g (797°F @ 406 psi g)
		ASME 150	425°C @ 5.5 bar g (797°F @ 79 psi g)
Minimum operating temperature		0°C	(32°F)
Note: For lower operating temperatures consult Spirax Sarco			
ΔPMX	Maximum differential pressure	FTS23-07	7 bar (101.5 psi)
		FTS23-23	23 bar (333.5 psi)
Designed for a maximum cold hydraulic test pressure of:	ASME 300	75 bar g	(1087.5 psi g)
	ASME 150	28.5 bar g	(413 psi g)

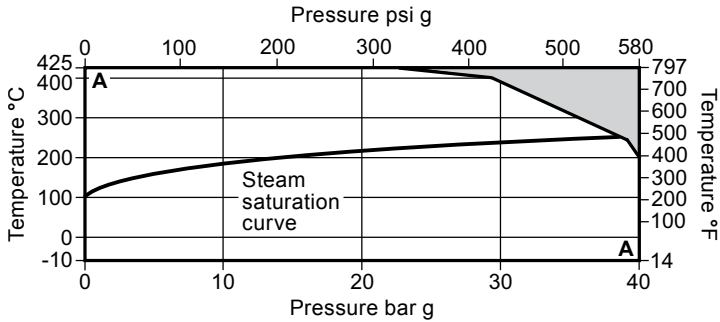
Please note that the trap in its complete operational form must not be subjected to pressures greater than 40 bar g (580 psi g) as damage to the internals may occur.

2.8 Pressure/temperature limits (ISO 6552)

FTC23

Carbon steel body with Stainless steel cover

Flanged PN40



A - A Flanged PN40

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

Body design conditions	PN40	
PMA Maximum allowable pressure	40 bar g @ 200°C	(580 psi g @ 392°F)
TMA Maximum allowable temperature	425°C @ 22.8 bar g	(797°F @ 330 psi g)
Minimum allowable temperature	-10°C	(14°F)
PMO Maximum operating pressure	FTC23-07 7 bar g @ 425°C	(101 psi g @ 797°F)
	FTC23-23 23 bar g @ 425°C	(333 psi g @ 797°F)
TMO Maximum operating temperature	425°C @ 22.8 bar g	(797°F @ 330 psi g)
Minimum operating temperature	0°C	(32°F)
Note: For lower operating temperatures consult Spirax Sarco		
ΔPMX Maximum differential pressure	FTC23-07 7 bar	(101.5 psi)
	FTC23-23 23 bar	(333.5 psi)
Designed for a maximum cold hydraulic test pressure of 60 bar g	(870 psi g)	

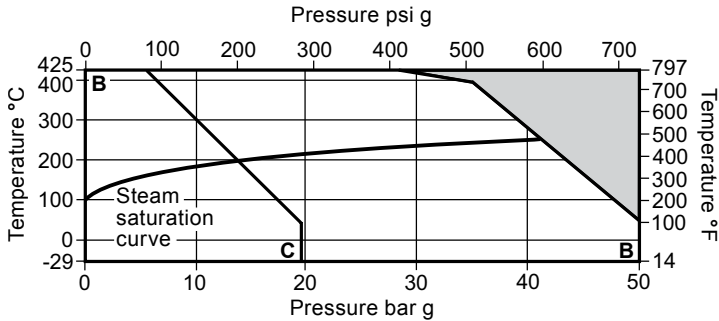
Please note that the trap in its complete operational form must not be subjected to pressures greater than 40 bar g (580 psi g) as damage to the internals may occur.

2.9 Pressure/temperature limits (ISO 6552)


FTC23

Carbon steel body with Stainless steel cover

Flanged ASME 150 and Flanged ASME 300



B - C Flanged ASME 150 **B - B** Flanged ASME 300

 The product **must not** be used in this region or beyond the parameter of the PMA or TMA of the relative end connection.

Body design conditions		ASME 150 or ASME 300	
PMA	Maximum allowable pressure	ASME 300	50 bar g @ 50°C (725 psi g @ 122°F)
		ASME 150	19.6 bar g @ 38°C (284 psi g @ 100°F)
TMA	Maximum allowable temperature	ASME 300	425°C @ 28.8 bar g (797°F @ 417 psi g)
		ASME 150	425°C @ 5.5 bar g (797°F @ 79 psi g)
Minimum allowable temperature		-10°C	(14°C)
PMO	Maximum operating pressure	ASME 300	FTC23-07 7 bar g @ 425°C (101 psi g @ 797°F)
			FTC23-23 23 bar g @ 425°C (333 psi g @ 797°F)
		ASME 150	FTC23-07 7 bar g @ 386°C (101 psi g @ 726°F)
			FTC23-23 13 bar g @ 194°C (188 psi g @ 381°F)
TMO	Maximum operating temperature	ASME 300	425°C @ 28.8 bar g (797°F @ 417 psi g)
		ASME 150	425°C @ 5.5 bar g (797°F @ 79 psi g)
Minimum operating temperature		0°C	(32°F)
Note: For lower operating temperatures consult Spirax Sarco			
ΔPMX	Maximum differential pressure	FTC23-07	7 bar (101.5 psi)
		FTC23-23	23 bar (333.5 psi)
Designed for a maximum cold hydraulic test pressure of:	ASME 300	75 bar g	(1087.5 psi g)
	ASME 150	30 bar g	(435 psi g)

Please note that the trap in its complete operational form must not be subjected to pressures greater than 40 bar g (580 psi g) as damage to the internals may occur.

3. Installation

Note: Before actioning any installation observe the 'Safety information' in Section 1.

Referring to the Installation and Maintenance Instructions, name-plate and Technical Information Sheet, check that the product is suitable for the intended installation.

- 3.1** Check materials, pressure and temperature and their maximum values. If the maximum operating limit of the product is lower than that of the system in which it is being fitted, ensure that a safety device is included in the system to prevent overpressurisation.
- 3.2** Determine the correct installation situation and the direction of fluid flow.
- 3.3** Remove protection covers from all connections and protective film from all name-plates, where appropriate, before installation on steam or other high temperature applications.
- 3.4** FT_23 ball float steam traps must be installed below the draining point with the direction of flow as indicated on the body and with the float lever positioned in a horizontal plane so that it rises and falls freely.
- 3.5** For optimum working conditions and protection of the unit it is recommended that a strainer (with an adequate capacity) be installed upstream of the trap to prevent possible damage to the internal mechanism and to ensure peak operation within your plant; in systems with steam recovery, it is recommended that a flow indicator be installed downstream of the FT_23 to check that it is working.
- 3.6** In order to allow simple and safe inspection for cleaning or maintenance purposes install suitable isolation valves.
- 3.7** Avoid long pipe lengths, especially in horizontal or rising applications.
- 3.8** With minimum operating pressures, leave a hydrostatic head of at least 1 m (3.3 ft) between the drainage outlet and the trap.
- 3.9** If the device to be drained is fitted with automatic temperature control, add a vacuum breaker.
- 3.10** If the condensate has to be raised to a height above the trap, install a check valve downstream of the trap.
- 3.11** In the case where condensate return is at a higher level and operating pressure is low < 1 bar g (< 14.5 psi g) or the system is temperature controlled, please consider the benefits of using a steam recovery pump.
- 3.12** In order to ensure an efficient discharge of incondensable medium, it is recommended that a balance line be connected to a drain system. For convenience of maintenance it is recommended that a union is fitted in the balance line near to the trap cover.

Note: If the trap is to discharge to atmosphere ensure it is to a safe place, the discharging fluid may be at a temperature of 100°C (212°F).

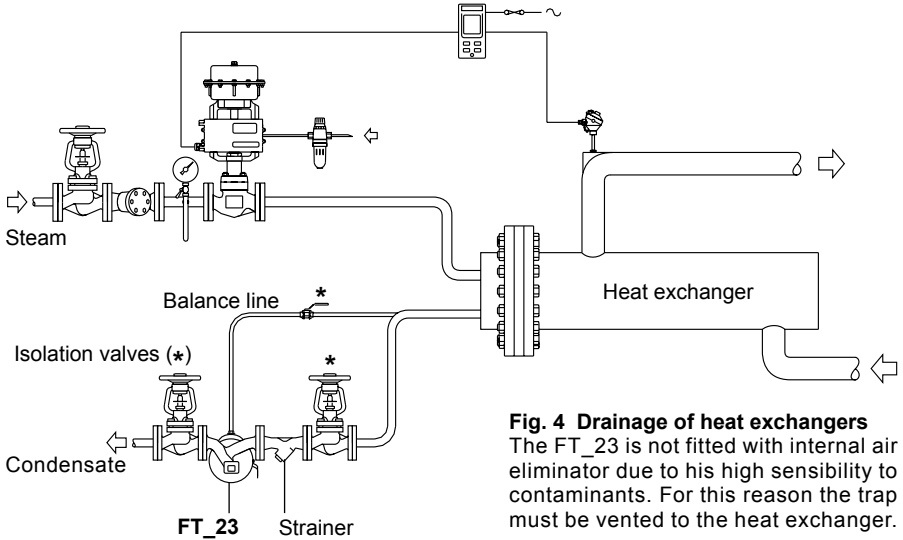


Fig. 4 Drainage of heat exchangers
 The FT_23 is not fitted with internal air eliminator due to his high sensibility to contaminants. For this reason the trap must be vented to the heat exchanger.

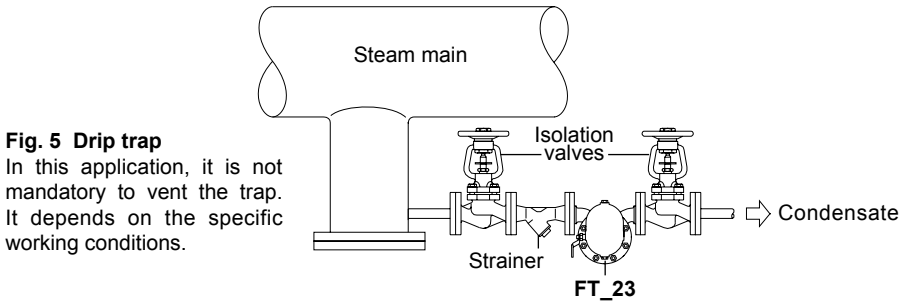


Fig. 5 Drip trap
 In this application, it is not mandatory to vent the trap. It depends on the specific working conditions.

4. Commissioning

After installation or maintenance ensure that the system is fully functioning. Carry out tests on any alarms or protective devices. Always open isolation valves slowly until normal operating condition are achieved. Check for leaks and correct operation.

5. Operation

Ball float steam traps quickly remove air, have continuous, modulating condensate discharge, and can adapt immediately even to large or sudden variations of flow and pressure. Given the absence of an air eliminator, the drainage of incondensable can be ensured by connecting a balance line to the drained system.

6. Maintenance

Note: Before performing any maintenance programme observe the 'Safety information' in Section 1.

Safety note:

These traps are installed in medium and high pressure steam lines. Personnel doing the maintenance should wear heavy gloves, long sleeve shirt and other equipment designed to protect the wearer (goggles, face shield, etc...) in the event of a leak.

6.1 General information

To ensure that the FT_23 maintains safe operation coupled with a long-life, an adequate maintenance programme should be prepared, involving regular inspection and cleaning, for which some important instructions are given below. All work must be carried out or be supervised by a suitable competent person.

Before actioning any maintenance on the trap it must be isolated from both the supply line and return line and any pressure allowed to safely vent to atmosphere. The trap should then be allowed to cool.

In the case of dangerous contaminants being within the condensate, ensure that the piping is completely drained before removing the trap.

When reassembling, ensure that all joint faces are clean.

6.2 Routine maintenance:

- Thoroughly clean by removing all sediment and deposits from the inside of the unit inclusive of the seals and mechanical components.
- Check that the ball float (12) is not damaged and does not contain water; if it does require replacement, do not force the float lever (10), but remove it by disassembling the split pin (11) and take care not to drop or lose any of the components when unscrewing the float nut (14 and 13).
- Check that the mechanism works properly and that the valve ball (9) moves freely to a completely closed position. To replace the valve seat assembly (6 + 8), unscrew the four valve assembly nuts (8). When mounting the new valve seat assembly, check that it is located correctly with the valve seat gasket (7), and then tighten the nuts (8) uniformly - See Table 1 for the recommended tightening torques.
- Assemble the body correctly (with down arrow) in accordance with the float movement, then slowly open the isolation valves until you reach the normal operating conditions.
- Check for leaks and correct operation. Check periodically that cover studs and nuts (2a + 2b) are properly tightened in order to avoid leakage - See Table 1 for the recommended tightening torques. This check must be performed after each cycle start and stop of the plant. In order to avoid the risk of leakage from flanges we recommend the installation of proper flange shields. In the case of dangerous contaminants within the condensate, check chemical compatibility of gaskets.
- **FTS-23 stainless steel version only:** When reassembling the trap, please use a proper lubricating paste in order to avoid gauling between the cover studs and nuts.

6.3 Use of the manual lever

The external manual lever (19) allows the valve ball (9) to be fully opened regardless of the presence or absence of condensate in the unit - This facilitates the fast removal of any sediment/condensate that may be in the unit and easier inspection in maintaining optimum performance of the internal mechanism.

Rotate the hand lever from the vertically upright position of normal operation to a **horizontally open position - exhaust**. For effective action always bring the lever from one limit position to the opposite (120°) without forcing the mechanism. If there is any leakage from the internal lever (15), tighten the packing nut (20) - If following this procedure is not enough to stop the leakage you will have to replace the graphite packing seals (16).

6.4 How to fit the valve seat assembly:

- Unscrew the 8 x cover nuts (2b), remove the cover (4) keeping the manual lever (19) in a vertically downwards position and remove the cover gasket (3).
- Remove the float lever pin (11) and remove the complete float assembly (9, 10, 12, 13 and 14).
- Unscrew the 4 valve assembly screws (8), remove the valve seat (6) and the valve seat gasket (7).
- Fit the new valve seat (6) and valve seat gasket (7), tighten the screw (8) to the recommended torque - See Table 1.
- Connect the float assembly lever (10 and the complete assembly), lock into position using the float lever pin (9).
- Fit a new cover gasket (3).
- Fit the cover (4) with the manual lever (19) in a vertically downwards position.
- Tighten the cover nuts (2b) to the recommended tightening torques - See Table 1.
- Check for proper operation of the manual lever (19) by turning it 90° anticlockwise.

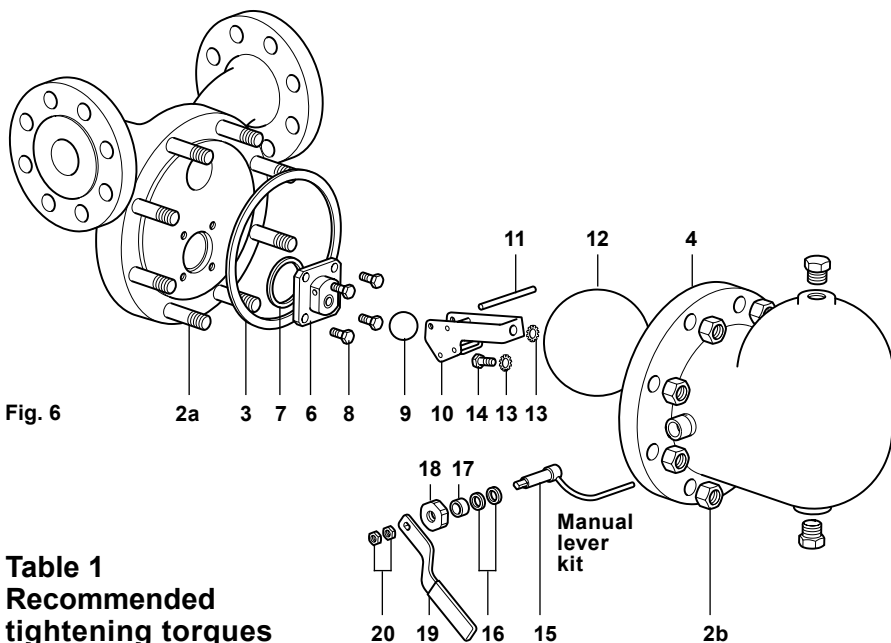




Fig. 6

Table 1
Recommended
tightening torques

Model	Item no.	Quantity	Part	 mm or 	N m	lbf ft
FTC23	2a	8	Cover studs	M16 x 70		
	2b	8	Cover nuts	24	80	59
	8	4	Valve assembly screws	13 M8 x 20	19	14
FTS23	2a	12	Cover studs	M16 x 70		
	2b	12	Cover nuts	24	40	59
	8	4	Valve assembly screws	13 M8 x 20	19	14

6.5 How to fit the valve ball:

- Unscrew the 8 x cover nuts (2b), remove the cover (4) keeping the manual lever (19) in a vertically downwards position and remove the cover gasket (3).
- Remove the float lever pin (11) and remove the complete float assembly (9, 10, 12, 13 and 14).
- Remove from the float lever (10) and the valve ball (9) and replace it with a new one.
- Connect the float assembly lever (10 and the complete assembly), lock into position using the float lever pin (9).
- Fit a new cover gasket (3).
- Fit the cover (4) with the manual lever (19) in a vertically downwards position.
- Tighten the cover nuts (2b) to the recommended tightening torques - See Table 1, page 17.
- Check for proper operation of the manual lever (19) by turning it 90° anticlockwise.

6.6 How to fit a float lever and pin assembly:

- Unscrew the 8 x cover nuts (2b), remove the cover (4) keeping the manual lever (19) in a vertically downwards position and remove the cover gasket (3).
- Remove the float lever pin (11) and remove the complete float assembly (9, 10, 12, 13 and 14).
- Remove from the float lever (10) and the valve ball (9).
- Disconnect the float (12) from the float lever (10) by unscrewing the screw (14) and remove the washers (13).
- Connect the new float lever (10) to the float (12) using the screw (14) and the washers (13).
- Place the valve ball into the float lever (10) and then connect the assembly lever + float to the valve seat with using the float lever pin (11).
- Fit a new cover gasket (3).
- Fit the cover (4) with the manual lever (19) in a vertically downwards position.
- Tighten the cover nuts (2b) to the recommended tightening torques - See Table 1, page 17.
- Check for proper operation of the manual lever (19) by turning it 90° anticlockwise.

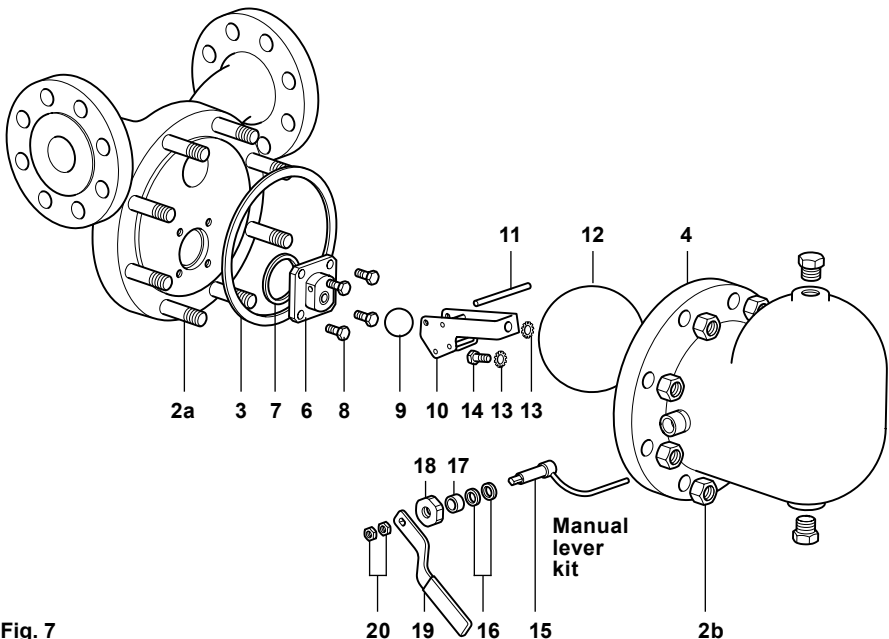


Fig. 7

6.7 How to fit the float assembly

- Unscrew the 8 x cover nuts (2b), remove the cover (4) keeping the manual lever (19) in a vertically downwards position and remove the cover gasket (3).
- Remove the float lever pin (11) and remove the complete float assembly (9, 10, 12, 13 and 14).
- Remove from the float lever (10) and the valve ball (9).
- Disconnect the float (12) from the float lever (10) by unscrewing the screw (14) and remove the washers (13).
- Connect the new float lever (10) to the float (12) using the screw (14) and the washers (13).
- Place the valve ball into the float lever (10) and then connect the assembly lever + float to the valve seat with using the float lever pin (11).
- Fit a new cover gasket (3).
- Fit the cover (4) with the manual lever (19) in a vertically downwards position.
- Tighten the cover nuts (2b) to the recommended tightening torques - See Table 1, page 17.
- Check for proper operation of the manual lever (19) by turning it 90° anticlockwise.

6.8 How to fit the manual lever

- Unscrew the 8 x cover nuts (2b), remove the cover (4) keeping the manual lever (19) in a vertically downwards position and remove the cover gasket (3).
- Unscrew the nut and lock-nut (20) and the manual lever (19).
- Unscrew the gland nut (18) and remove the spacer (17) and the graphite packing seals (16).
- Extract the internal lever (15) from the inside of the cover (4).
- Insert the internal lever (15) from the inside of the cover (4).
- Place the graphite packing seals (16), the spacer (17) on to the pin of the internal lever (15) and finally tighten the gland nut (18).
- Refit the manual lever (19) and then tighten the nut and lock-nut (20).
- Fit a new cover gasket (3).
- Fit the cover (4) with the manual lever (19) in a vertically downwards position.
- Tighten the cover nuts (2b) to the recommended tightening torques - See Table 1, page 17.
- Check for proper operation of the manual lever (19) by turning it 90° anticlockwise.

6.9 How to fit stuffing box and manual lever spacer assembly

- Unscrew the 8 x cover nuts (2b), remove the cover (4) keeping the manual lever (19) in a vertically downwards position and remove the cover gasket (3).
- Unscrew the nut and lock-nut (20) and the manual lever (19).
- Unscrew the gland nut (18) and remove the spacer (17) and the graphite packing seals (16).
- Place the graphite packing seals (16), the spacer (17) on to the pin of the internal lever (15) and finally tighten the gland nut (18).
- Refit the manual lever (19) and then tighten the nut and lock-nut (20).
- Fit a new cover gasket (3).
- Fit the cover (4) with the manual lever (19) in a vertically downwards position.
- Tighten the cover nuts (2b) to the recommended tightening torques - See Table 1, page 17.
- Check for proper operation of the manual lever (19) by turning it 90° anticlockwise.

7. Spare parts

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

Available spares

Valve seat assembly	6, 8
Valve ball	9
Ball float lever and pin assembly	10, 11
Float assembly	12, 13, 14
Manual lever kit	15, 16, 17, 18, 19, 20
Stuffing box and manual lever spacer assembly	16, 17
Gasket set (3 + 3 units)	3, 7

How to order spares

Always order spare parts by using the description given in the table above and state the size and type of ball float steam trap, including its pressure range and type of connections.

Example: 1 off Ball float lever and pin assembly for a DN50 Spirax Sarco FTC23-07 ball float steam trap having EN 1092 PN40 connections.

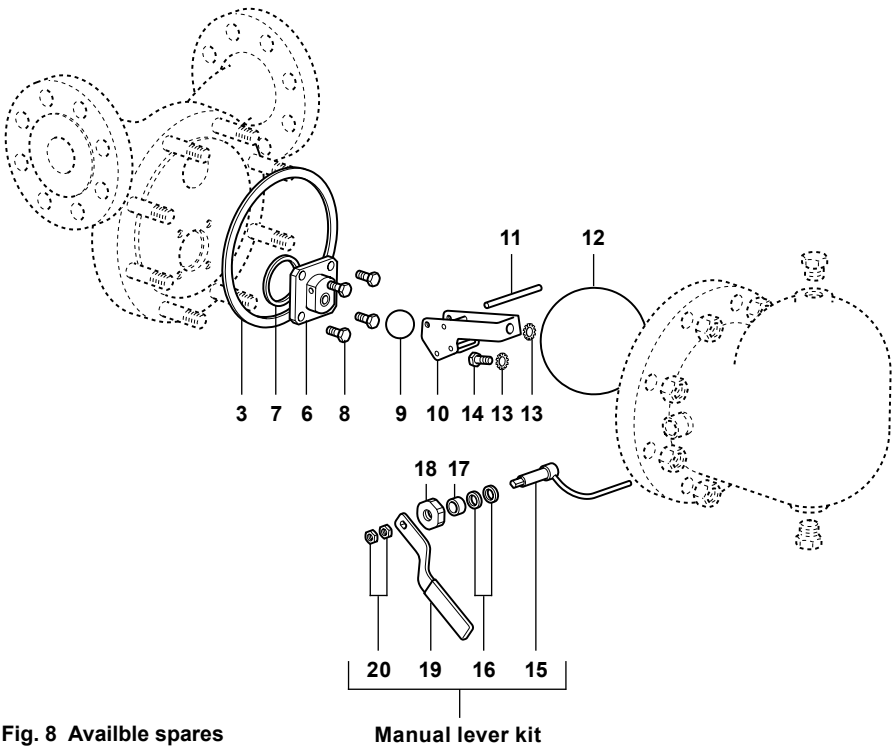


Fig. 8 Available spares

Manual lever kit