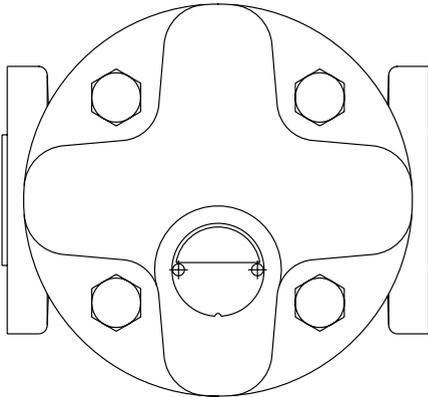


**FTC32**

**Ball Float Steam Trap 1/2" and 3/4" (DN15 and DN20)**  
Installation and Maintenance Instructions

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



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# 1. Safety information

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Safe operation of this product can only be guaranteed if it is properly installed, commissioned, used and maintained by qualified personnel (see Section 1.11) 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. This product complies with the requirements of the European Pressure Equipment Directive 97/23/EC and falls within Category 'SEP'. It should be noted that products within this category are required by the Directive not to carry the  $\text{CE}$  mark.

- i) This product has been specifically designed for use on steam, air or water/condensate which are in Group 2 of the above mentioned Pressure Equipment Directive. The products' use on other fluids may be possible but, if this is contemplated, Spirax Sarco should be contacted to confirm the suitability of the product for the 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.

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## 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 in excess of 250°C (482°F).

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

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## **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.

## **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

The FTC32 is a carbon steel ball float steam trap with integral automatic thermostatic air vent. It is ideal for all process drainage applications as condensate is always removed efficiently and quickly over a wide range of fluctuating pressure and load conditions. Standard connections are horizontal from right to left (R-L) when viewed from the base. Repositioning of the cover will allow the orientation to be changed on site from horizontal to vertical or vice versa.

### Capsule

The BP99/32 capsule which is used in the FTC32 ball float steam trap is suitable for use on 150°C superheat @ 0 bar g and 50°C superheat @ 32 bar g.

### Optional extras

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The FTC32 is also available with horizontal connections having flow from left to right - **FTC32 (L-R)**, and vertical flow both downwards and upwards - **FTC32V**.

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The trap is available with either ASTM or DIN body material.

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An optional manually adjustable needle valve can be fitted to all versions which provides a steam lock release feature in addition to the air vent - **FTC32-C**.

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An optional internal strainer screen is available - **FTC32X**.

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An internal non-return valve is available - **FTC32CV**.

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### Standards

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

### Certification

This product is available with a material 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-P602-01.

## 2.2 Sizes and pipe connections

½" and ¾" screwed BSP and NPT.

½" and ¾" socket weld to BS 3799 Class 3000 and ASME B16.11 Class 3000.

DN15 and DN20 flanged to DIN / EN 1092 PN40,

ASME B16.5 Class 150 and 300, JIS / KS 20K and 30K.

Fig. 1 FTC32CV shown

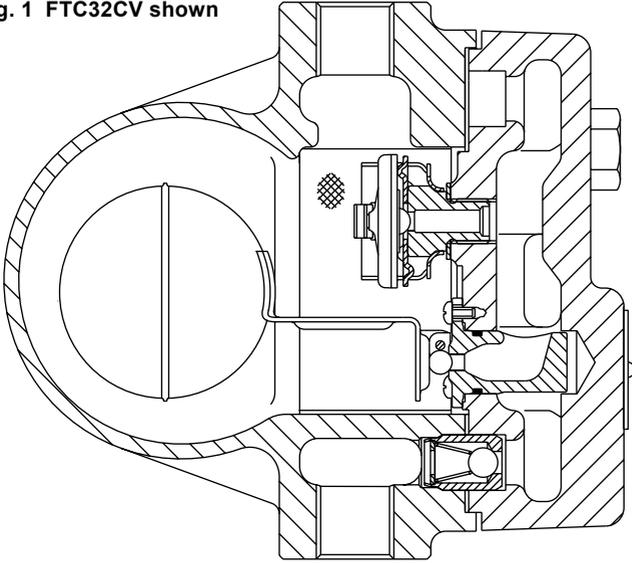
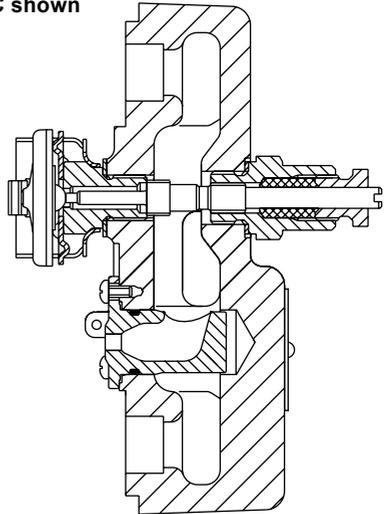
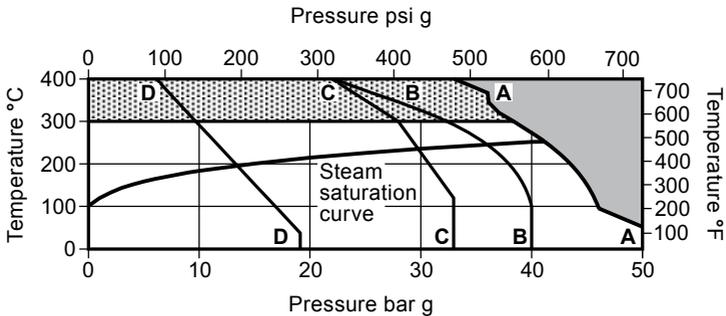


Fig. 2 FTC32-C shown



## 2.3 Pressure/temperature limits (ISO 6552)



 This product must not be used in this region.

 This product should not be used in this region as damage to the internals will occur.

- A - A** Flanged ASME 300, JIS/KS 30K, screwed and socket weld.
- B - B** Flanged PN40.
- C - C** Flanged JIS/KS 20K.
- D - D** Flanged ASME 150.

Body design conditions		PN40 / ASME 300	
PMA	Maximum allowable pressure	PN	40 bar g (580 psi g)
		ASME	50 bar g (725 psi g)
TMA	Maximum allowable temperature		400°C (752°F)
	Minimum allowable temperature		0°C (32°F)
PMO	Maximum operating pressure (recommended)		32 bar g (464 psi g)
TMO	Maximum operating temperature		300°C (572°F)
	Minimum operating temperature		0°C (32°F)
<b>Note:</b> For lower operating temperatures consult Spirax Sarco			
ΔPMX	Maximum differential pressure	<b>FTC32-4.5</b>	4.5 bar (65 psi)
		<b>FTC32-10</b>	10 bar (145 psi)
		<b>FTC32-14</b>	14 bar (203 psi)
		<b>FTC32-21</b>	21 bar (304.5 psi)
Designed for a maximum cold hydraulic test pressure of:		PN	60 bar g (870 psi g)
		ASME	75 bar g (1 087 psi g)

The trap in its complete operational form must not be subjected to pressures greater than 48 bar (696 psi) as damage to the internals may occur.

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# 3. Installation

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**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 protective covers from all connections and the protective film from all name-plates, where appropriate, before installation on steam or other high temperature applications.

## Installation notes:

- Suitable isolation valves must be installed to allow for safe maintenance / replacement.
- 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).
- The trap must be fitted with the float arm in a horizontal plane so that it rises and falls vertically.
- **Unless specified, traps will be supplied with horizontal connections and with right to left flow (R-L).** Traps can be supplied with vertical connections with flow from top to bottom or horizontal connections with flow from right to left (R-L) or left to right (L-R).
- The connection orientation can be changed on site by undoing the four cover bolts and moving the cover to the preferred orientation. **A new gasket must always be fitted.**
- Minimum withdrawal distance to remove cover is 120 mm (4.75").
- The FTC32 can be lagged in cold and exposed situations.

## Installation of the manually adjustable needle valve (SLR - steam lock release feature)

- 3.4** The manually adjustable needle valve is fitted to all float traps where a suffix 'C' is hard stamped on the name-plate e.g. FTC32-10C. 'C' = Combined steam lock release feature and thermostatic air vent.
- 3.5** Check if the application requires the manually adjustable needle valve for correct operation. The manually adjustable needle valve should only be used to prevent 'steam locking' and therefore is designed to pass only a small amount of steam.
- 3.6** The manually adjustable needle valve will be dispatched, pre-set to a partial bleed condition. The unit should be screwed clockwise to close and anticlockwise to open. When required the SLR should be used as a controlled continuous bleed, it is not recommended that the SLR be left in the fully open condition as this may lead to premature trap failure and more frequent maintenance schedules.

## Warning

The cover gasket contains a thin stainless steel support ring which may cause physical injury if not handled and disposed of carefully.

Please consult Spirax Sarco should further information be required.

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## 4. Commissioning

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After installation or maintenance ensure that the system is fully functioning. Carry out tests on any alarms or protective devices.

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## 5. Operation

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The float trap is a continuous discharge trap, removing condensate the instant it forms. On start-up, the thermostatic air vent allows air to bypass the main valve preventing the system air binding. Hot condensate will close the air vent tightly, but as soon as it enters the main chamber of the trap, the float rises and the lever mechanism attached to it opens the main valve - keeping the system drained of condensate at all times. When steam arrives, the float drops and closes the main valve. Float traps are renowned for their high start-up load handling capability, clean tight shut-off and resistance to waterhammer and vibration.

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## 6. Maintenance

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**Note: Before actioning any maintenance program observe the 'Safety information' in Section 1.**

### **Warning**

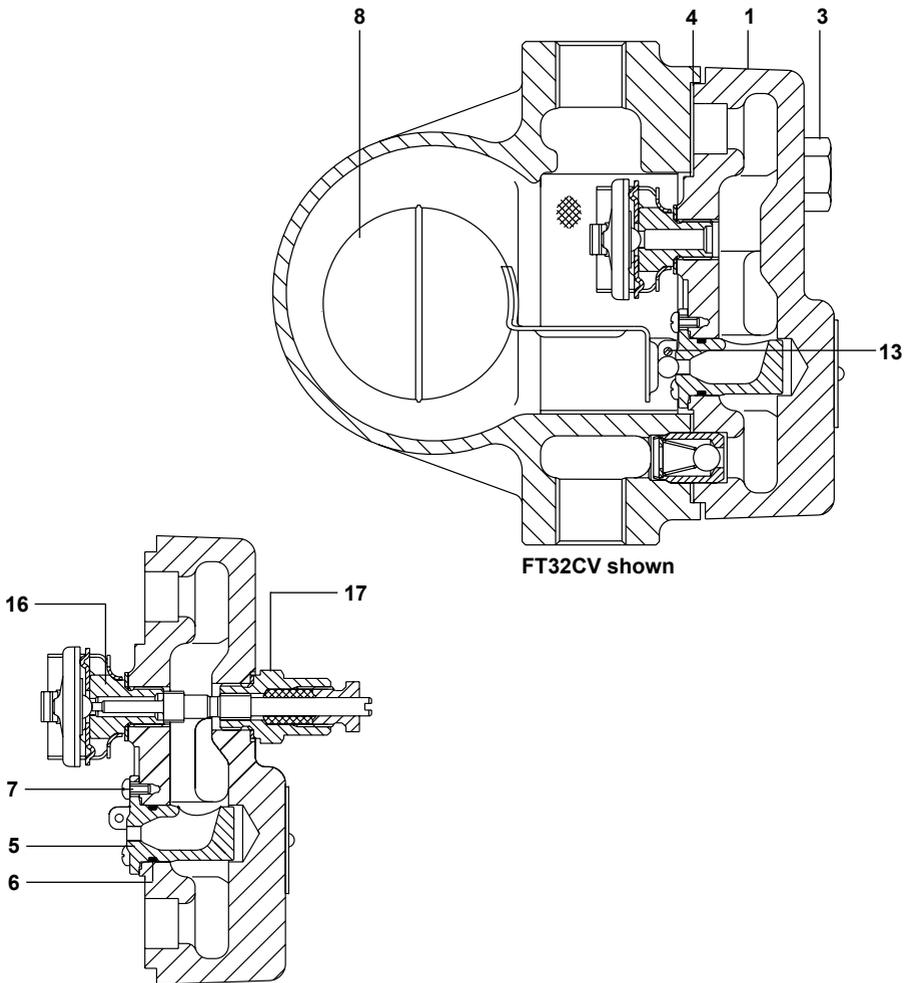
**The cover gasket contains a thin stainless steel support ring which may cause physical injury if not handled and disposed of carefully.**

### **6.1 General information:**

Before undertaking any maintenance on the trap it must be isolated from both the supply line and return line and any pressure allowed to safely normalise to atmosphere. The trap should then be allowed to cool. It is recommended that new gaskets and 'O' rings are used when ever maintenance is undertaken. When reassembling, ensure that all joint faces are clean. On standard traps (without a check valve) a simple ferrule is fitted in place of the check valve. This must always be replaced before assembly.

### **6.2 How to fit the main valve assembly:**

- Undo the body bolts (3) and remove the body (1) and gasket (4).
- With the body (1) securely held in a vice remove the pivot pin (13) and float assembly (8).
- Undo the three assembly screws (7) and remove the seat (5).
- Fit new 'O' ring (6) and seat (5).
- Tighten the screws (7) to the recommended torque - see Table 1.
- Refit the pivot pin (13) and float assembly (8).
- Replace the body (1) (using a new gasket 4) and tighten the body bolts (3) to the recommended torque (see Table 1), ensuring the gasket faces are clean and undamaged.



**Fig. 6 FT32-C**

**Table 1 Recommended tightening torques**

Item		or mm		N m	(lbf ft)
3	19 A/F		M12 x 35	65 - 70	(48 - 52)
7	Pozidrive		M3 x 6	1 - 1.5	(0.7 - 1.1)
16	17 A/F			50 - 55	(37 - 40)
17	19 A/F			40 - 45	(29 - 33)

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### 6.3 How to fit the air vent assembly:

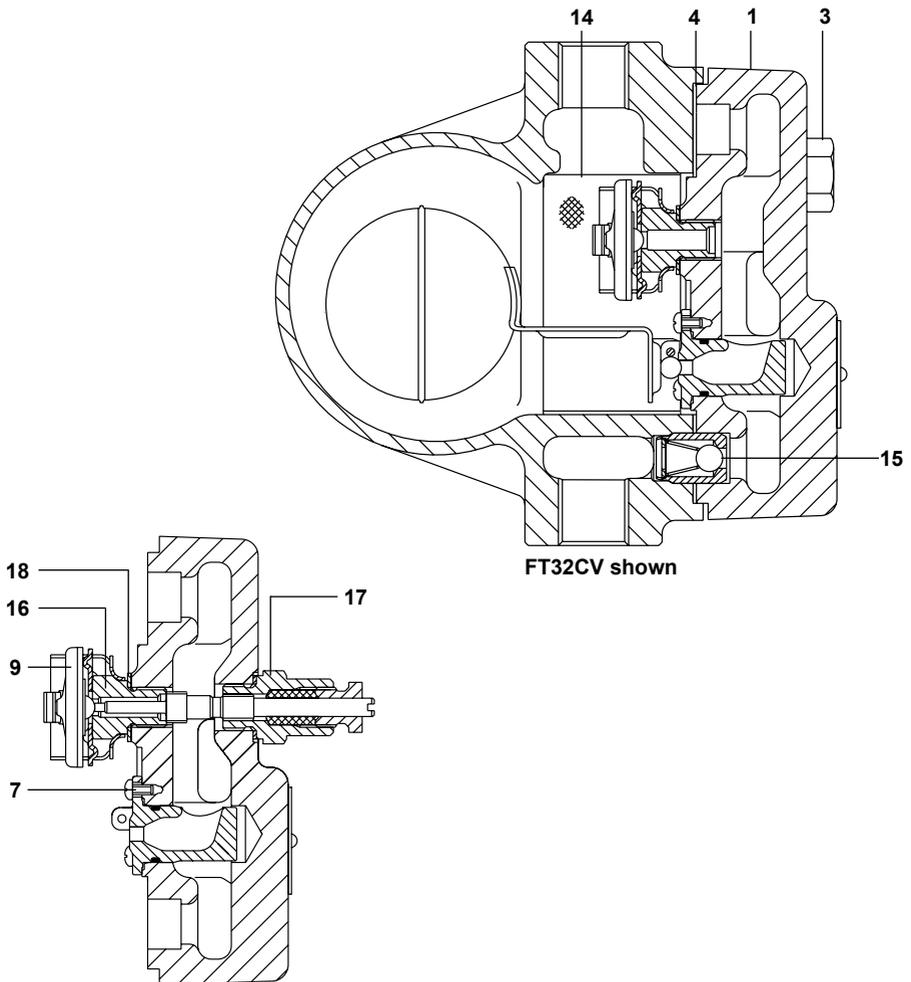
- Undo the body bolts (3) and remove the body (1) and gasket (4).
- Remove the spring clip, capsule and spacer plate from the air vent assembly (9).
- Unscrew the air vent assembly seat (16) from the body (1).
- Refit the air vent assembly seat (16) (part of the new air vent assembly 9) and gasket (18) and tighten to the recommended torque - see Table 1.
- Assemble the spacer plate, capsule and spring clip (parts that make-up the air vent assembly 9) and align horizontally making sure that there is no interference with the cover.
- Replace the body (1) (using a new gasket 4) and tighten the body bolts (3) to the recommended torque (see Table 1), ensuring the gasket faces are clean and undamaged.

### 6.4 How to fit the check valve assembly:

- Undo the body bolts (3) and remove the body (1) and gasket (4).
- Remove the check valve assembly (15) or ferrule from the recess in the cover using pliers.
- Ensure the recess is clean and insert new check valve assembly (15) or ferrule.
- Replace the body (1) (using a new gasket 4) and tighten the body bolts (3) to the recommended torque (see Table 1), ensuring the gasket faces are clean and undamaged.

### 6.5 How to replace / clean the strainer screen (FTC32X models only):

- Undo the body bolts (3) and remove the body (1) and gasket (4).
- Remove the screen (14) from the body (1) and clean or replace as required.
- Re-fit the screen (14) so that the ends locate against the lugs opposite the inlet port.
- Replace the body (1) (using a new gasket 4) and tighten the body bolts (3) to the recommended torque (see Table 1), ensuring the gasket faces are clean and undamaged.



**Fig. 6 FT32C-C**

**Table 2 Recommended tightening torques**

Item		or mm		N m	(lbf ft)
3	19 A/F		M12 x 35	65 - 70	(48 - 52)
7	Pozidrive		M3 x 6	1 - 1.5	(0.7 - 1.1)
16	17 A/F			50 - 55	(37 - 40)
17	19 A/F			40 - 45	(29 - 33)

# 7. Spare parts

The spare parts are available as indicated below. No other parts are supplied as spares.

## Available spares

Main valve assembly with float	5, 6, 7 (3 off), 8, 13
Air vent assembly	9, 18
Steam lock release and air vent assembly	10, 11
Cover gasket (packet of 3) includes 1 off ferrule	4, 11, 18
Check valve assembly	15
Strainer screen	14

## How to order spares

Always order spare parts by using the description given in the column headed 'Available spares' and state the size, model number and pressure rating of the trap.

**Example:** 1 off Main valve assembly with float for a Spirax Sarco DN15 FTC32X-10C-CV (R-L) ball float steam trap.

