

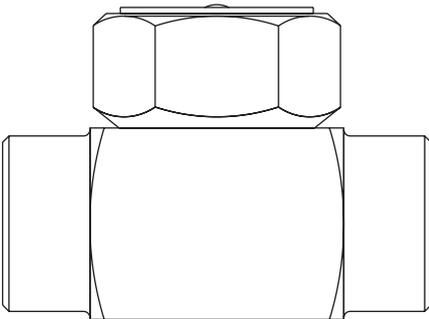
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**BTD52L and BTD52L Food+**  
**Thermodynamic Steam Trap**  
Installation and Maintenance Instructions

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- 1. Safety information
- 2. General product information
- 3. Installation
- 4. Commissioning
- 5. Operation
- 6. Maintenance
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# 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) 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, product markings 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 all fall within category 'SEP'.

It should be noted that products within this category are required by the Directive not to carry the  mark.

- 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. 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, where appropriate, before installation on steam or other high temperature applications.
- vi) The BTD52L Food+ is intended to be connected into a system that can operate an EC1935 compliant process. To minimize the risk of non-intentionally added substances in the system, it is essential that an appropriate CIP (cleaning in place) cycle is carried out by the end user prior to first use in a food contact application. A list of the materials that could come directly or indirectly into contact with foodstuffs can be found in the Declaration of Conformity available for this product.

## 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 opened and closed progressively 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 the 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 may reach temperatures in excess of 450 °C (842 °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.

### **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 Description

The BTD52L is manufactured from 316L stainless steel specifically for mains drainage applications in clean steam systems.

The BTD52L Food+ is designed, manufactured and approved for Steam and Condensate applications.

This product complies with EC1935:2004 Food Contact Materials.

It also complies with regulation EC2023:2006 on good manufacturing practice for materials and articles intended to come into contact with food.

### Optional extras

An insulating cover is available at extra cost to prevent the trap being unduly influenced by excessive heat loss when subjected to low ambient temperature, wind and rain etc.

### Standards

These products fully comply with the requirements of the European Pressure Equipment Directive 97/23/EC.

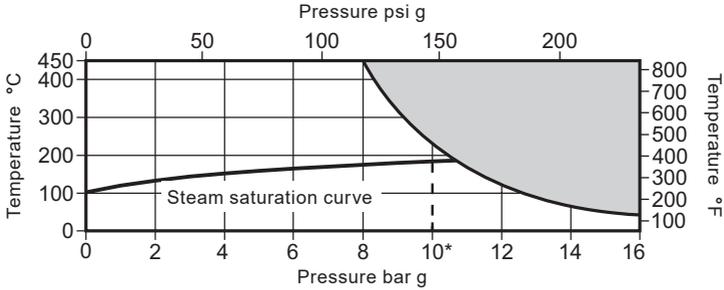
### Certification

- This product is available with certification to EN 10204 3.1.
- The BTD52L Food+ is available with an EC1935:2004 Declaration of Compliance.

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

**Note:** For additional product information see Technical Information Sheet TI-P181-01.

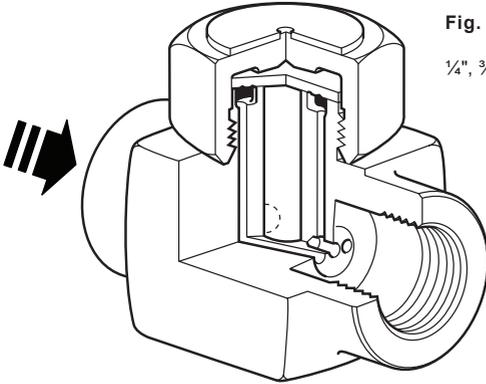
## 2.2 Pressure/temperature limits



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

Body design conditions		PN16	
PMA	Maximum allowable pressure	16 bar g @ 50 °C	(232 psi g @ 122 °F)
TMA	Maximum allowable temperature	450 °C @ 8 bar g	(842 °F @ 116 psi g)
	Minimum allowable temperature	0 °C	(32 °F)
PMO *	Maximum operating pressure recommended for steam service	10 bar g @ 220 °C	(145 psi g @ 428 °F)
TMO	Maximum operating temperature	450 °C @ 8 bar g	(842 °F @ 116 psi g)
	Minimum operating temperature	0 °C	(32 °F)
<b>Note:</b> For lower operating temperatures consult Spirax Sarco			
	Minimum pressure for satisfactory operation is	0.25 bar g	(3.6 psi g)
PMOB	Maximum operating backpressure should not exceed 80% of the upstream pressure		
	Minimum operating differential pressure for satisfactory operation	0.25 bar g	(3.6 psi g)
	Designed for a maximum cold hydraulic test pressure of	24 bar g	(348 psi g)

## 2.3 Sizes and pipe connections



**Fig. 1 Screwed**

1/4", 3/8", 1/2" screwed BSP or NPT.

**Fig. 2 1/2" Tube ends**

1/2" O/D x 16 swg (0.065") wall thickness tube end.

**DN 11850 (Series 1) tube ends**

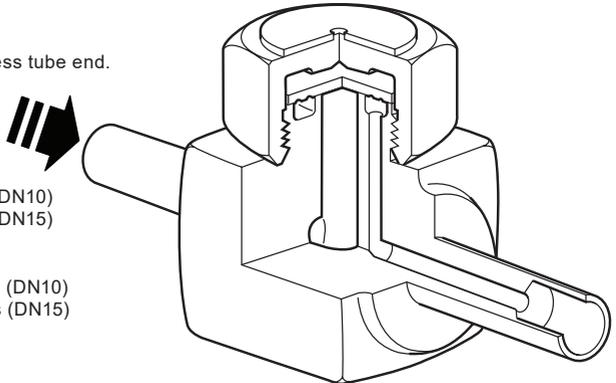
12 mm O/D x 1.0 mm wall thickness (DN10)

18 mm O/D x 1.0 mm wall thickness (DN15)

**ISO 1127 (Series 1) tube ends**

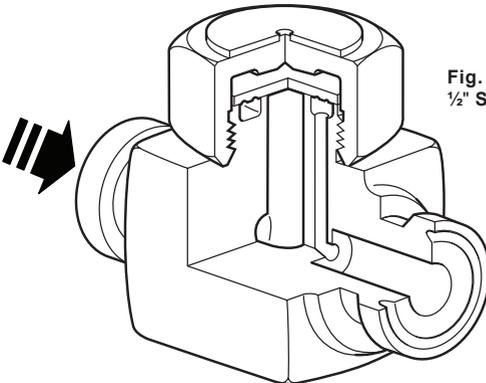
17.2 mm O/D x 1.6 mm wall thickness (DN10)

21.3 mm O/D x 1.6 mm wall thickness (DN15)



**Fig. 3**

1/2" Sanitary clamp compatible connections (DN15)



BTD52L Food+ is available with 1/2" Sanitary Clamps and 1/2" BSP

**Note:** The BTD52L Food+ version comes with a Laser Marked cap, not a nameplate.

## 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 protective covers from all connections.
- 3.4** Always ensure the correct tools, safety procedures and protective equipment are used at all times.
- 3.5** The trap should be installed in the horizontal plane, preferably preceded by a small drop leg. For freeze proof installation, or where horizontal fitting is not possible. The BTD52L may be installed vertically, but the service life may be affected.
- 3.6** Suitable isolation valves must be installed to allow for safe maintenance and trap replacement.
- 3.7** Where the trap discharges into a closed return system, a non-return valve should be fitted downstream to prevent return flow. Remove all packaging and protective covers and ensure all connections ports are clear from obstruction.
- 3.8** Always open isolation valves slowly until normal operating conditions are achieved - this will avoid system shocks. Check for leaks and correct installation.

**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).

## 4. Commissioning

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

## 5. Operation

The thermodynamic steam trap will discharge condensate with a blast type action at a few degrees below steam saturation temperature, due care must be given to the site of the discharge.

# 6. Maintenance

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

## 6.1 General maintenance

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 the atmosphere. The trap should then be allowed to cool. When reassembling, ensure that all joint faces are clean.

## 6.2 How to service:

- Remove the insulating cover (4 an optional extra) if fitted.
- Unscrew the cap (2) using a spanner. **Do not use** Stillsons or a wrench of similar type which may cause distortion of the cap.
- If the disc (3) and body seating surfaces (1) are only slightly worn they can be refaced by lapping individually on a flat surface such as the surface plate. A figure of eight motion and a little grinding compound such as Carborundum Co's Compound I.F. gives the best results. If the wear is too great to be rectified by simple lapping, the seating faces on the body must be ground flat and then lapped and the disc replaced with a new one. The total amount of metal removed in this way should not exceed 0.25 mm(0.01").
- When reassembling the disc (3) is normally placed in position with the grooved side in contact with the body seating face.
- Screw on the cap (2); no gasket is required but a fine smear of Molybdenum Disulphide grease should be applied to the threads. Tighten the cap (2) to the recommended tightening torque (see Table 1).  
**Warning:** When torquing or untorquing the cap (2), some support should be given to the body of the trap to prevent over stressing and/or distortion of the end connections and system pipework.

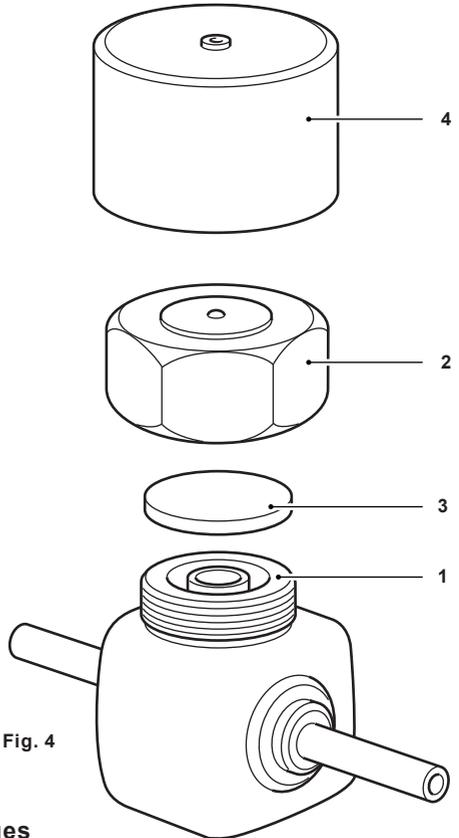


Fig. 4

### Table 1 Recommended tightening torques

**Warning:** When torquing or untorquing the cap (2), some support should be given to the body of the trap to prevent over stressing and/or distortion of the end connections and system pipework.

Item	Part	 or 	N m	(lbf ft)
2	Cap	36 A/F	115 - 130	(85 - 96)

BTD52L and BTD52L Food+ Thermodynamic Steam Trap

# 7. Spare parts

The spare parts available are shown in heavy outline. Parts drawn in a grey line are not supplied as spares.

## Available spares

Disc	3
Insulating cover	4

## 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 trap.

**Example:** 1 - Disc for the Spirax Sarco 1/2" BSP Spirax Sarco BTD52L thermodynamic steam trap.

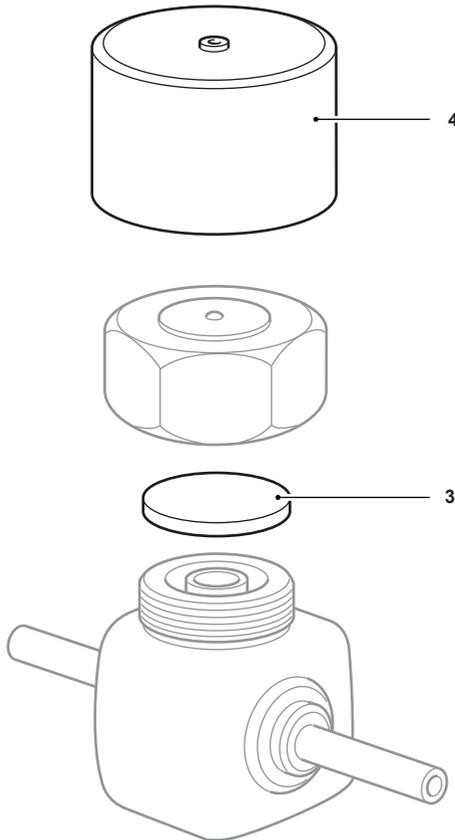


Fig. 5



