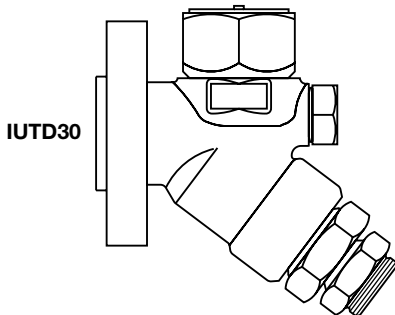
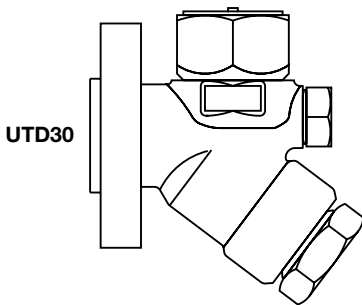


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**UTD30 and IUTD30 (Integral Spiratec Sensor)**  
**Series of Thermodynamic Steam Traps**  
**Installation and Maintenance Instructions**

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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 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, 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 all fall within category 'SEP'. It should be noted that products within this category are required by the Directive not to carry the CE 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 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 of 500°C (932°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

All bodies for both series of traps have an electroless nickel preparation finish (ENP) which is both energy efficient and corrosion resistant. All traps are fitted by two screws to a permanently installed stainless steel pipeline connector to ensure the maintenance is both quick and easily undertaken. Traps can be removed/replaced using a simple wrench with minimum system downtime.

### UTD30 series

The UTD30 is a stainless steel thermodynamic steam trap with integral strainer. It is attached to a suitable pipeline connector by two bolts for quick and easy replacement. An integral blowdown valve can be fitted to the UTD30's for screen blowdown (see Optional extras).

**UTD30L** - Low capacity for mains drainage and tracing applications.

**UTD30LA** - Low capacity for mains drainage and tracing applications plus anti-air-binding disc.

**UTD30H** - For higher capacity applications.

**UTD30HA** - For higher capacity applications plus anti-air-binding disc.

### IUTD30 series

The IUTD is a UTD30 which is fitted with an integral Spiratec sensor for quick detection of steam leakage or system cooling.

**IUTD30L** - Low capacity.

**IUTD30H** - For higher capacity.

IUTD30 traps can be supplied with sensors to detect waterlogging and steam leakage (WLS1) or for steam leakage only (SS1). All trap types can be simply intergrated into all existing Spiratec monitoring systems.

Please refer to the relevant Installation and Maintenance Instructions when connecting to:- R1C (IM-P087-33) or R16C (IM-P087-21 and IM-P087-22).

### Optional extras

**Insulating cover** - To protect the trap operation from the effects of wind and rain. Fitting this cover will increase the operational life of the trap under these conditions.

**Integral blowdown valve:** A BDV1 or BDV2 can be fitted to the strainer cap, alternatively the strainer cap can be drilled, tapped and plugged  $\frac{3}{8}$ " BSP or NPT. Having either a BDV1 or BDV2 fitted will aid the removal of debris from the inside of the strainer screen. This should be carried out periodically depending on the cleanliness of the system.

### Standards

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

### Certification

These products are available with certification to EN 10204 3.1. **Note:** All certification/inspection requirements must be stated at the time of order placement.

### Note:

For additional information see the following Technical Information Sheets:

for the **UTD30L** and **UTD30H** (TI-P154-01) and for the **IUTD30L** and **IUTD30H** (TI-P154-10).

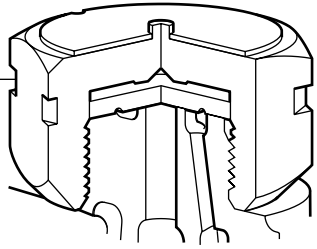
## 2.2 Sizes and pipe connections

The UTD30 and IUTD30 can be fitted to a variety of different pipeline connectors which include:-

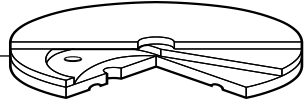
<b>PC10</b>	Straight connector	ANSI/ASME 300	(see TI-P128-10)
<b>PC10HP</b>	Straight connector	ANSI/ASME 600	(see TI-P128-10)
<b>PC20</b>	Connector with Y-type strainer	ANSI/ASME 300	(see TI-P128-15)
<b>PC3</b>	Connector with one piston isolation valve	ANSI/ASME 600	(see TI-P128-02)
<b>PC4</b>	Connector with two piston isolation valves	ANSI/ASME 600	(see TI-P128-03)

See the relevant Technical Information Sheet as listed above for details of the connections available on pipeline connectors.

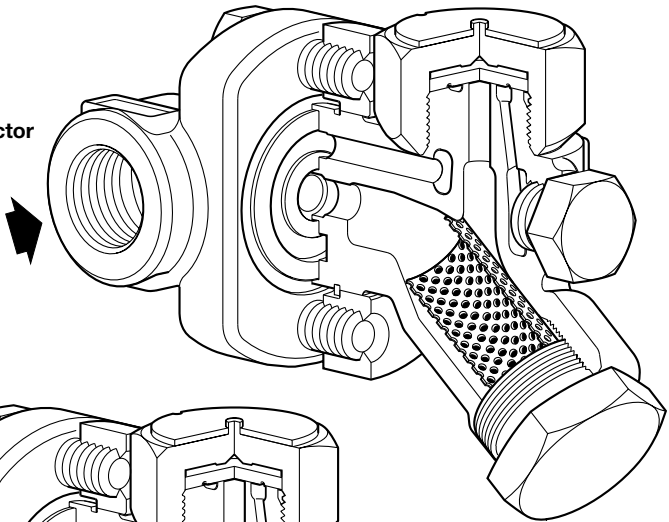
Groove identifies **UTD30LA** and **UTD30HA** versions



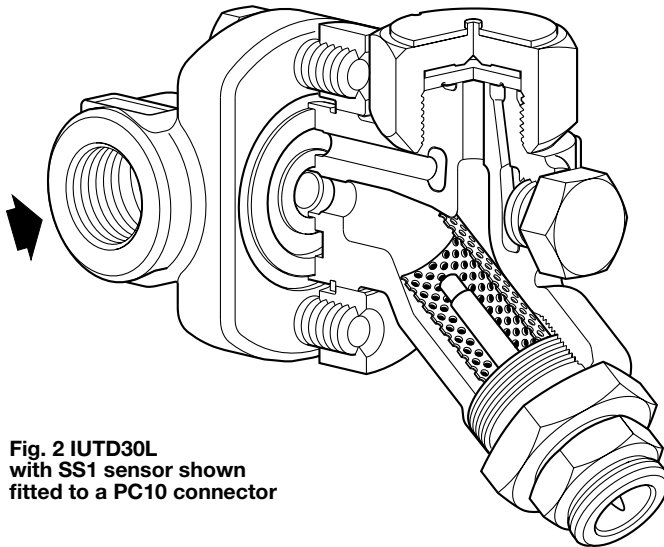
**UTD30LA** and **UTD30HA** anti-air-binding disc



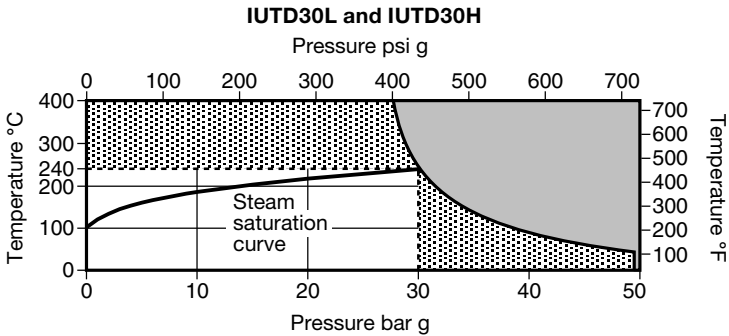
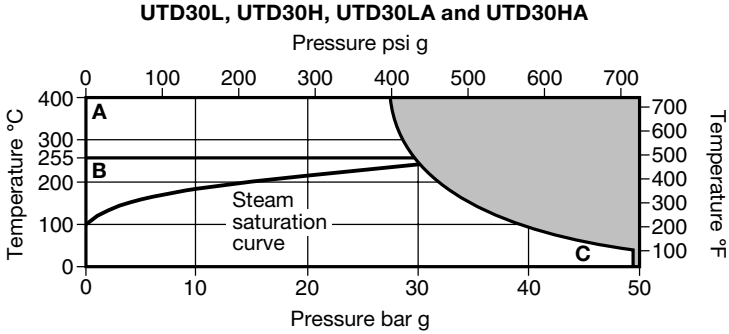
**Fig. 1** UTD30L shown fitted to a PC10 connector



**Fig. 2** IUTD30L with SS1 sensor shown fitted to a PC10 connector



## 2.3 Pressure/temperature limits (ISO 6552)



- The product **must not** be used in this region.  
 The product should not be used in this region as damage to the internals may occur.

- A - C** UTD30L and UTD30H  
**B - C** UTD30LA and UTD30HA

**Note:** The model of pipeline connector and connection selected will dictate the maximum operating limits of the complete assembly. Please consult the relevant Technical Information Sheet for the specific pipeline connector for this information.

Body design conditions			PN50
PMA	Maximum allowable pressure	50 bar g @ 38°C	(725 psi g @ 100°F)
TMA	Maximum allowable temperature	400°C @ 27.5 bar g	(752°F @ 399 psi g)
Minimum allowable temperature			0°C (32°F)
PMO	Maximum operating pressure for saturated steam service	30 bar g	(435 psi g)
TMO	Maximum operating temperature	UTD30L and UTD30H	400°C @ 27.5 bar g (752°F @ 399 psi g)
		UTD30LA and UTD30HA	255°C @ 30 bar g (491°F @ 435 psi g)
		IUTD30L and IUTD30H	240°C @ 30 bar g (464°F @ 435 psi g)
Minimum operating temperature			0°C (32°F)
<b>Note:</b> For lower operating temperatures consult Spirax Sarco.			
ΔPMX	Maximum differential pressure	30 bar	(435 psi g)
PMOB Maximum operating backpressure should not exceed 80% of the upstream pressure			
Minimum inlet pressure for satisfactory operation		0.25 bar g	(4 psi g)
Designed for a maximum cold hydraulic test pressure of		75 bar g	(1088 psi g)

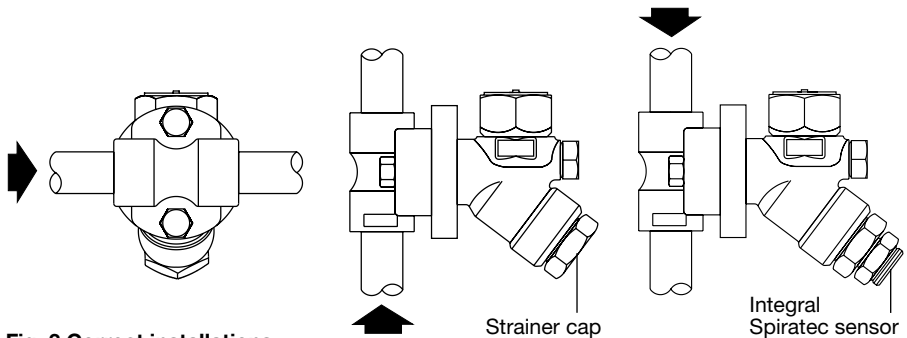


# 3. Installation

**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 and protective film from all name-plates, where appropriate, before installation on steam or other high temperature applications.
- 3.4** The UTD30 or IUTD30 can be installed on any pipeline connector, but must be installed in a horizontal plane with the strainer cap or integral Spiratec sensor pointing downwards. See separate Installation and Maintenance Instructions for Spirax Sarco pipeline connectors (IM-P128-06, IM-P128-11 and IM-P128-13).  
Ensure that both gaskets are clean and undamaged and that the transfer holes are clear. Place the trap body against the connector gasket face, ensuring that the top cap is uppermost and the trap itself is horizontal.  
Apply a small amount of anti-seize compound to the threads of the connector screws (3). Tighten the screws finger tight until the mating gasket faces are in parallel, intimate contact. Tighten the screws to the recommended torque value (see Table 1, page 13).  
Open isolation valves slowly until normal operating conditions are achieved.
- 3.5** Check for leaks.
- 3.6** 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).
- 3.7** The trap is supplied with a plug in the sensor adaptor. It is recommended that the trap be operated under normal conditions for 24 hours before the plug is removed. This will allow any pipeline debris to be removed from the strainer prior to the sensor being installed. Failure to complete this commissioning process may affect the operation of the sensor. Before fitting the sensor, the trap must be isolated from both supply line and return line, and any pressure allowed to safely normalise to atmosphere. The trap should then be allowed to cool. Remove the plug from the adaptor ensuring the trap is securely held and replace with the sensor. Screw into the adaptor ensuring the gasket is centralised. Tighten to the recommended tightening torque (see Table 1, page 13). If a waterlogging sensor is to be fitted it will be necessary to carry out the installation procedure in IM-P087-34 which accompanies the sensor.



**Fig. 3 Correct installations**

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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.

For IUTD30 traps see Section 3.7 after 24 hours of operation.

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## 5. Operation

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The UTD30 and IUTD30 are thermodynamic steam traps which use a disc to control the release of condensate and to trap steam. The trap cycles open and closed to discharge condensate close to steam temperature and closes tight between discharges. The disc, which is the only moving part, rises and falls in response to dynamic forces produced by the partial re-evaporation (flashing) of hot condensate. Cool condensate, air and other non-condensable gases enter the trap through the central orifice, lift the disc, and are discharged through the outlet orifice. When the condensate approaches steam temperature, a portion of it flashes as it enters the trap. The flash steam passes at high velocity over the underside of the disc and collects in the control chamber above. The resulting pressure imbalance forces the disc downward onto the seating surfaces, stopping the flow. The trap remains tightly closed until the loss of heat through the trap body lowers the control chamber pressure, allowing the inlet pressure to raise the disc and repeat the cycle. An insulating cover prevents the trap being unduly influenced by excessive heat loss when subjected to low ambient temperatures, wind, rain, etc.

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## 6. Maintenance

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

### **Warning**

**The inner and outer gaskets used when installing / maintaining the UTD30 and IUTD30 to a PC pipeline connector contain thin stainless steel support rings 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. When reassembling, ensure that all joint faces are clean.

### **6.2 Replacement of the trap unit:**

- Ensure that the correct tools and necessary protective equipment are used at all times.
- Replacement of the trap unit is achieved by removing the two connector screws (10) and removing the trap.
- The new trap unit should be positioned against the connector gasket face and apply a small amount of anti-seize compound to the threads of the connector screws.
- Tighten screws finger tight and ensure that the trap body is parallel to the connector.
- Tighten the screws to the recommended torque (see Table 1, page 13).
- Open isolation valves slowly until normal operating conditions are achieved.
- Check for leaks.

### 6.3 How to repair or replace the disc/seat:

- Remove the insulating cover (14) if fitted and unscrew the cap (2) using a suitable socket or spanner. Do not use Stillsons or a wrench of a similar type which may cause distortion of the cap.
- If the disc (3) and body seating faces are only slightly worn, they can be refaced by lapping individually on a flat surface such as a surface plate. A figure-of-eight motion and a little lapping compound give 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. The total amount of metal removed in this way should not exceed 0.25 mm (0.010"). The disc (3) should then be renewed.
- When reassembling, the disc (3) is normally placed with the grooved side in contact with the seating faces. The screw-on cap does not require a gasket, but a suitable high temperature anti-seize grease should be applied to the threads. Tighten to the recommended torque (see Table 1, page 13).
- Open isolation valves slowly until normal operating conditions are achieved.
- Check for leaks.

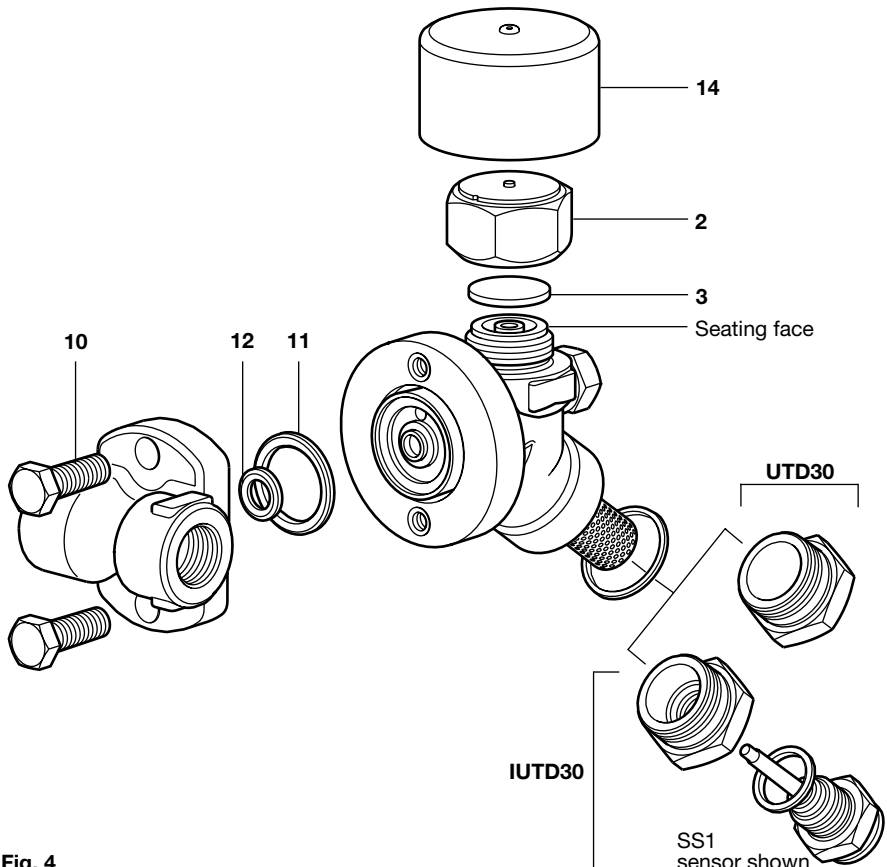


Fig. 4

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## 6.4 How to clean or replace the strainer screen

### UTD30:

- Unscrew the strainer cap (6) using a spanner.
- Withdraw the screen (5) and clean, or if damaged replace with a new one.
- To reassemble, insert the screen (5) into the cap (6), then screw the cap into place. **Note:** A fine smear of 'Molybdenum Disiphide' grease should be applied to the first few threads. Care should be taken to ensure that the gasket and gasket faces are clean. Tighten the cap (6) to the recommended torque (see Table 1).
- Open isolation valves slowly until normal operating conditions are achieved.
- Check for leaks.

### UTD30 + integral blowdown valve:

- If a BDV1 or BDV2 has been fitted as a blowdown valve, it should be periodically blowdown to remove debris collected in the screen. The blowdown valve screw must be tightened to the recommended torque 22 - 25 N m (16 - 17 lbf ft). Ensure that adequate safety precautions are taken when opening the blowdown valve to atmosphere. Hand protection is recommended.

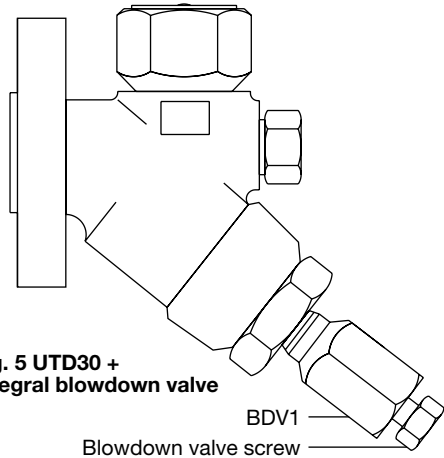


Fig. 5 UTD30 +  
Integral blowdown valve

### IUTD30:

**Note: If a waterlogging sensor is fitted, it will be necessary to disconnect the wiring at the terminal block.**

- Undo and remove the sensor adaptor (6). **Note:** the sensor does not have to be removed from the adaptor.
- Clean or replace the screen (5) as required. Replace the screen and sensor assembly, ensuring that the screen is located centrally. Fit a new gasket (7) and ensure that the joint faces are clean. A fine smear of Molybdenum Disulphide grease should be applied to the first few threads. Tighten to the recommended tightening torque (see Table 1).
- Reconnect the waterlogging sensor as described in IM-P087-34.

## 6.5 How to replace or clean the sensor - IUTD30 only:

**Note: If a waterlogging sensor is fitted, it will be necessary to disconnect the wiring at the terminal block.**

- Remove the sensor (8) from the adaptor (6). This can be done in line so long as the adaptor is securely held in place.
- Clean the sensor insulation. If pitting of the insulation occurs, a new sensor (8) should be fitted.
- Replace new sensor (8) and screw into the adaptor (6) ensuring the gasket (15) is centralised. Tighten to the recommended tightening torque (see Table 1).
- Reconnect the waterlogging sensor as described in IM-P087-34.

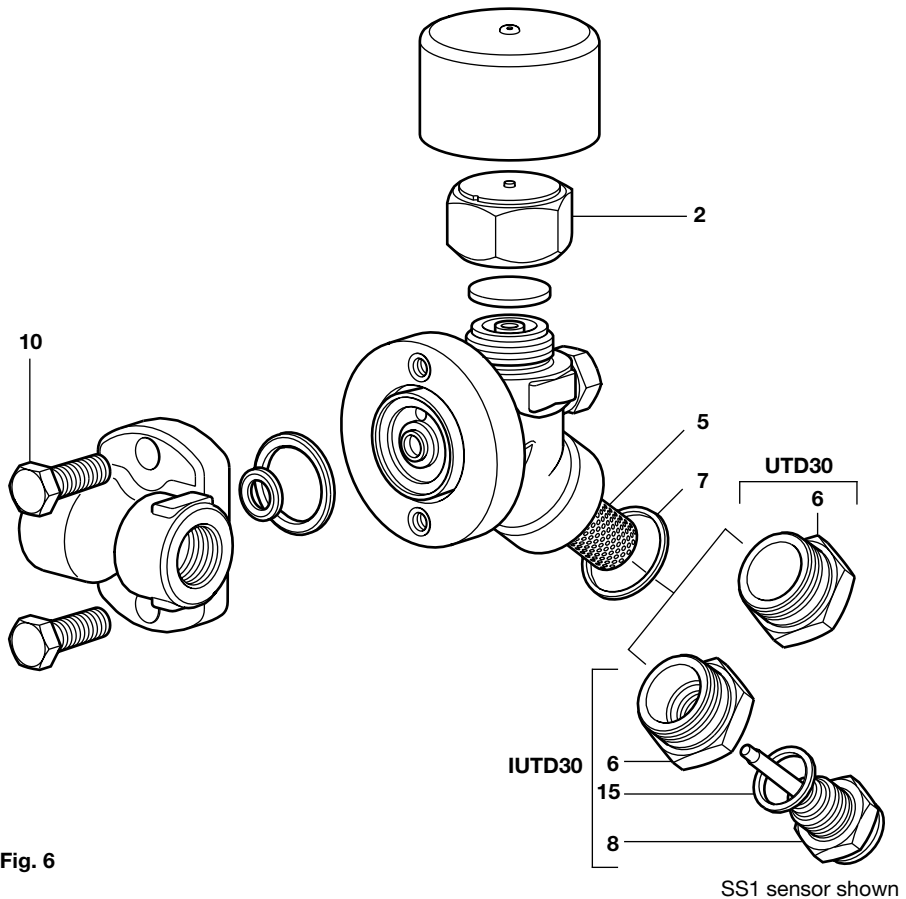




Fig. 6

Table 1 Recommended tightening torque

Item		or		Nm	(lbf ft)
		mm			
2	L and LA H and HA	36 A/F 41 A/F		135 - 150 135 - 150	(99 - 110) (99 - 110)
6		32 A/F	M28	170 - 190	(125 - 140)
8		24 A/F		50 - 55	(37 - 40)
10		3/16" A/F		30 - 35	(22 - 26)

**Note:** The blowdown valve screw on the integral blowdown valve (see Figure 5) should be tightened to 22 - 25 N m (16 - 17 lbf ft). See TI-P153-01 for further details regarding the integral blowdown valve.

# 7. Spare parts

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

### Available spares

Complete trap unit assembled (state unit nomenclature), excluding pipeline connector.

Connector screws and gasket		<b>10, 11, 12</b>
Disc (packet of 3)	UTD30L, UTD30H, IUTD30L and IUTD30H	<b>3</b>
Strainer screen	UTD30L, UTD30H, IUTD30L and IUTD30H	<b>5</b>
Disc and strainer screen	UTD30LA and UTD30HA	<b>3, 5</b>
Strainer screen gasket		<b>7</b>
Sensor assembly (state SS1 or WLS1)		<b>8, 15</b>
Insulating cover		<b>14</b>

Always order spare parts by using the description given in the column headed 'Available spares' and state the size and type of trap.

**Example 1:** Packet of 3 discs for a Spirax Sarco IUTD3L steam trap with integral spiratec sensor.

**Example 2:** Strainer screen for a Spirax Sarco IUTD3H steam trap with integral spiratec sensor.

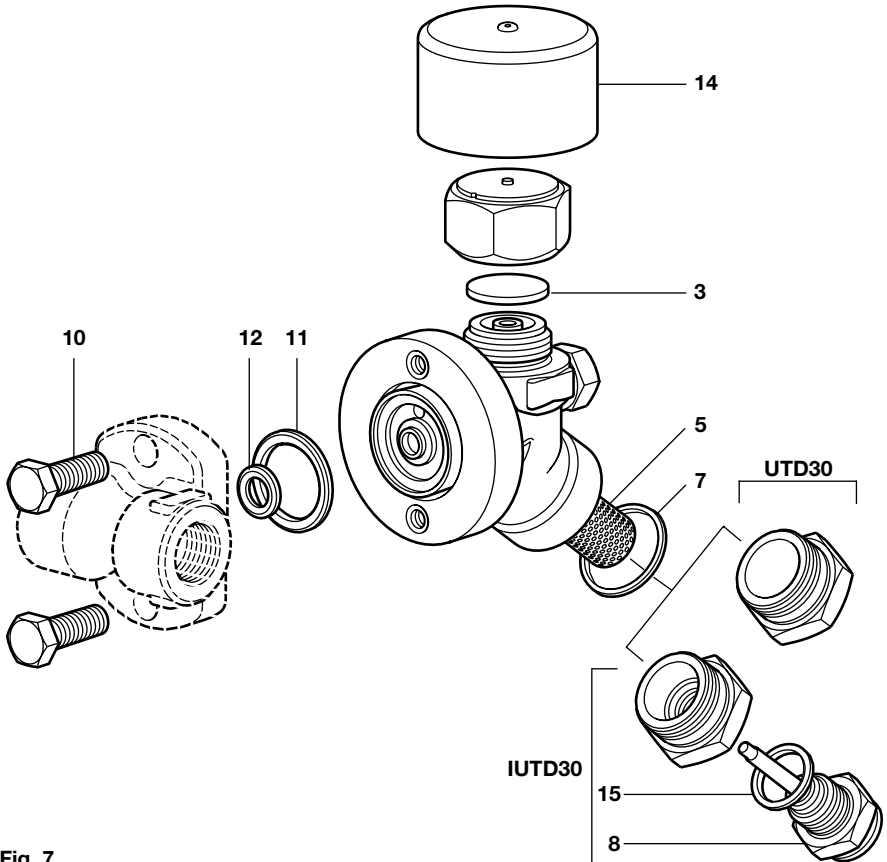


Fig. 7



