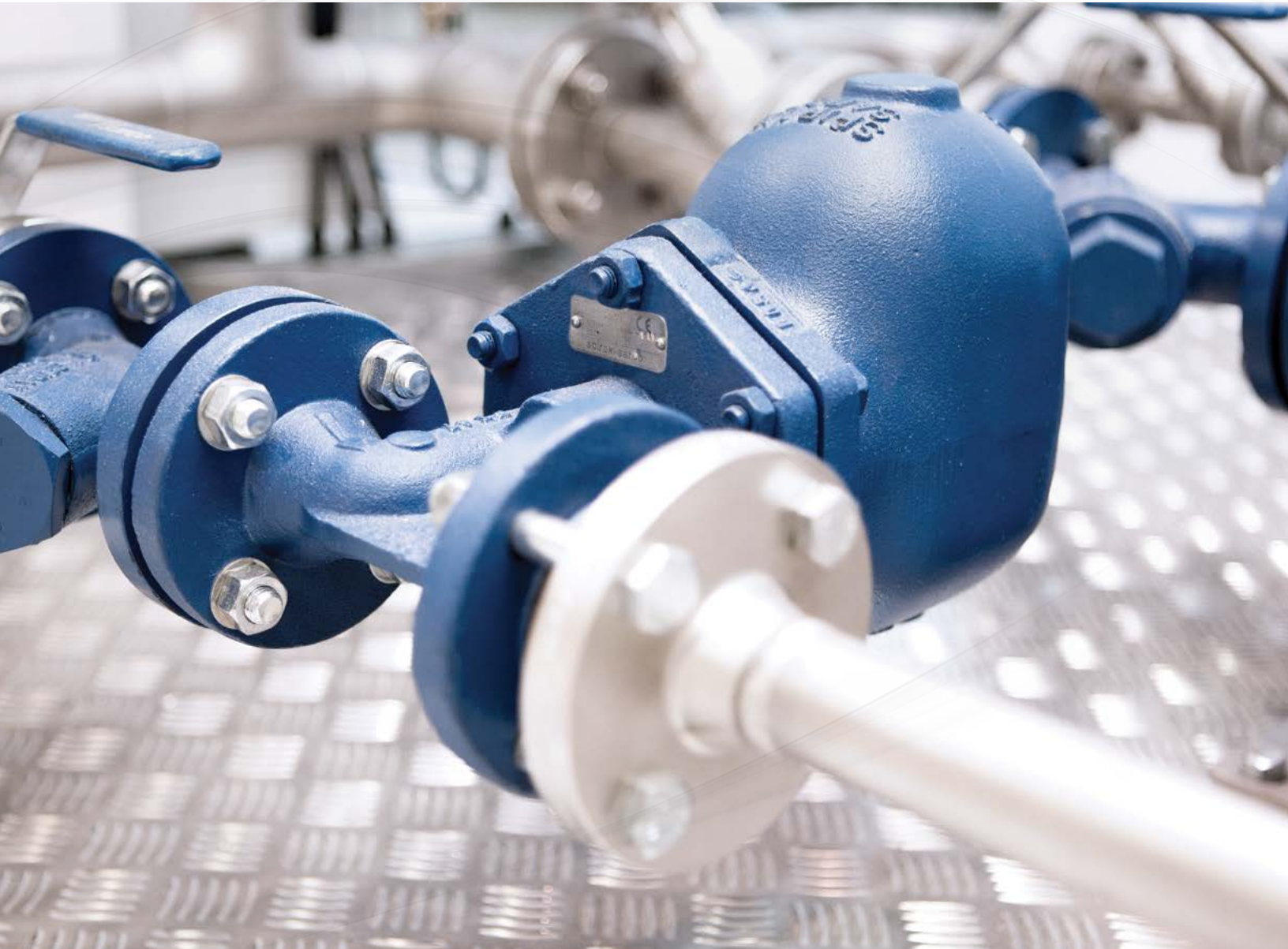


# Steam trapping overview

**STEAM & CONDENSATE  
MANAGEMENT SOLUTIONS**



*First for Steam Solutions*

EXPERTISE | SOLUTIONS | SUSTAINABILITY

**spirax**  
**/sarco**

## Make your steam system safe, efficient and sustainable

The duty of a steam trap is to discharge condensate while retaining live steam in the system. This ensures your steam system is able to operate efficiently, without the detrimental effects of unwanted condensate - essential in temperature critical applications.

Condensate in the system can lead to a number of issues such as:

- Poor heat transfer
- Damage to system and process equipment
- Poor quality or wasted product

Selecting the right steam trapping solution helps to avoid these problems, while at the same time allowing the condensate to be recovered. Information on the significant benefits of recovering condensate can be found at the back of this brochure.

### How can Spirax Sarco help you?

We've been in the business of steam solutions for over 100 years and with our exceptional team of specialists, we take the time to understand your needs and work with you to find the most effective steam trapping solutions for your applications.

Our aim is to help you meet your sustainability and efficiency goals by ensuring your steam system operates at its optimum level at all times. Effective steam trapping is a key factor in achieving this objective.







## An introduction to steam traps

Each steam application has its own steam trap requirements. Selecting the right steam trap for your application could have a significant, positive impact on your process, potentially improving efficiency, reducing energy costs and giving you a safer working environment.

For example: condensate must be removed promptly from a plant where maximum heat transfer is sought at all times. The presence of excess condensate in an item of heat transfer equipment will reduce its efficiency, preventing it from achieving its maximum rated output and may also reduce its service life.

However, in other applications, it may be required to hold back the condensate to extract some of its heat and thus save on steam. Furthermore, by discharging condensate well below steam temperature, flash steam losses can be reduced or avoided altogether.

### Thermodynamic steam traps

#### Maintaining optimum performance

Thermodynamic steam traps are the best choice for steam mains drainage due to their simplicity, long life and robust construction. With a large condensate capacity for their size, the all stainless steel construction of our thermodynamic traps offer a high degree of resistance to corrosive condensate.



### Mechanical steam traps

#### Maintaining optimum process performance

Mechanical steam traps are ideal for use on process applications where condensate must be removed as soon as it forms, to safeguard against temperature fluctuation which would lead to issues such as product spoilage and inadequate heating. Our mechanical steam trap range is adaptable to all applications where instantaneous removal of condensate is required.



### Thermostatic steam traps







#### Utilizing heat energy in condensate

For applications where it would be desirable to make use of the heat in the condensate such as sterilization, a thermostatic steam trap is an ideal solution, as it will not open until the condensate temperature drops below saturated steam temperature. This allows the heat in the condensate to be utilized before it is drained off; which, in turn, reduces flash steam losses and can help to reduce energy costs.



Spirax Sarco offers a complete range of steam traps to ensure you can select the perfect trap for your application.

## Spirax Sarco's steam trap range

Steam trap operation	Thermodynamic		Mechanical		Thermostatic	
Steam trap types	<b>Thermodynamic</b> 	<b>Ball float</b> 	<b>Inverted bucket</b> 	<b>Balanced pressure</b> 	<b>Bimetallic</b> 	<b>Liquid expansion</b> 
Main features	<ul style="list-style-type: none"> <li>Robust design giving excellent resistance to waterhammer and vibration</li> <li>Inexpensive</li> <li>Positive discharge with tight shut-off</li> <li>Discharge condensate close to steam saturation temperature</li> </ul>	<ul style="list-style-type: none"> <li>High capacity</li> <li>Excellent air venting capabilities</li> <li>Continuous discharge of condensate for maximum heat transfer</li> <li>Will not back-up with condensate</li> </ul>	<ul style="list-style-type: none"> <li>High capacity</li> <li>Robust design</li> <li>Near continuous discharge of condensate</li> <li>Minimal back-up of condensate</li> </ul>	<ul style="list-style-type: none"> <li>Utilizes sensible heat in the condensate, reducing flash steam losses, which saves energy</li> <li>Excellent air venting properties for quick start-up</li> </ul>	<ul style="list-style-type: none"> <li>Utilizes sensible heat in the condensate, reducing flash steam losses, which saves energy.</li> <li>Discharge &lt;212°F adjustable</li> </ul>	
Typical applications	Mains drainage and all tracing applications. Some process applications with light loads such as small presses and cylinders	Temperature / pressure controlled applications with fluctuating loads	Temperature / pressure controlled applications with fluctuating loads	Where condensate back-up can be tolerated or is required in order to remove excess enthalpy, e.g. non-critical tracing	Non critical temperature control freeze protection	
Size	1/4" – 1"	1/2" – 4"	1/2" – 3"	1/4" – 1"	1/4" – 4"	1/2" – 3/4"
Maximum body pressure rating	3625 psig	1450 psig	2,249 psig	580 psig	6090 psig	300 psig
Maximum operating pressure	3625 psig	1160 psig	1,635 psig	464 psig	2175 psig	300 psig



## Reducing production running costs

Spirax Sarco can supply fabricated steam trap stations and a range of 'quick-fit' solutions that will allow rapid steam trap replacement and significantly reduce labor costs.



### User Benefits

- The swivel connector can be positioned to give maximum service life regardless of the piping configuration.
- The swivel connector, once installed, becomes part of the pipeline. Service is made quickly and easily by the two-bolt connection.
- An integral strainer or complete trap station can be utilized to reduce size and space requirements.
- Integral blow down valves are available to clean the strainer screen and to depressurize the trap for maintenance.
- Ability to change steam trap styles using the same universal connector.

## Universal steam traps for use with pipeline

UTD52SL and UTD52SH  
up to 450 psig

Thermodynamic steam trap



UTD52L & UTD52H  
up to 450 psig

UTD52L-HP  
300 - 600 psig

Thermodynamic steam trap



## Pipeline connectors

IPC20 and IPC21  
up to 464 psig

Pipeline connector with integral Spiratec sensor



USTS II  
up to 650 psig



Universal Strainer Connector  
up to 600 psig



PC 3000 / 4000  
up to 899 psig



connectors for a 'quick fit'

UTDS46M  
up to 667 psig

Thermodynamic  
steam trap



UFT32  
up to 465 psig

Ball float steam trap



UIB30/UIB30H  
up to 435 psig

Inverted bucket  
steam trap



UBP32  
up to 464 psig

Balanced pressure  
steam trap



USM21  
up to 300 psig

Bimetallic steam trap



Steam trapping station

USTS II with  
Isolation Valve Handles  
up to 650 psig



Straight Universal  
Connector  
up to 600 psig



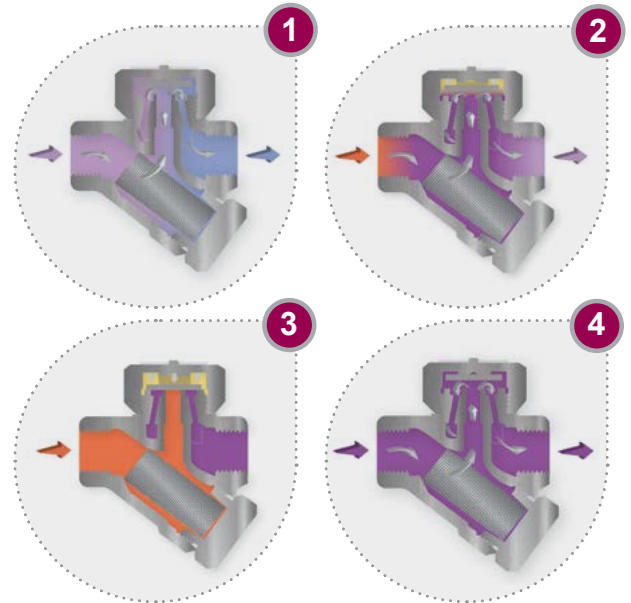
STS17.2  
up to 247 psig



## Thermodynamic steam traps

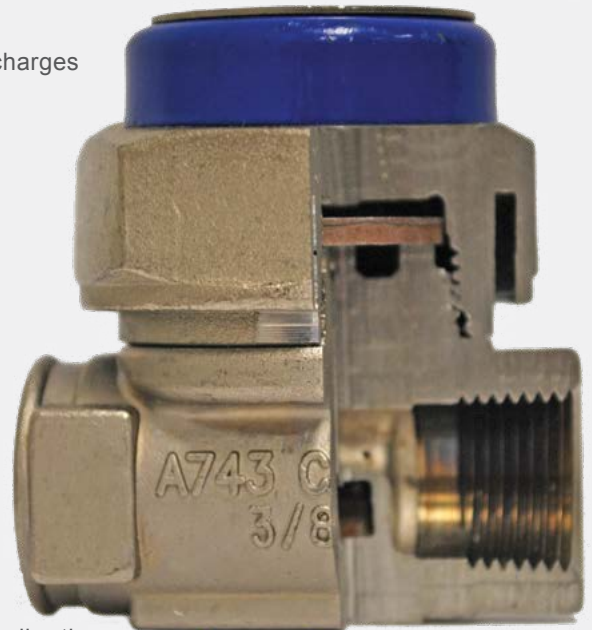
### How a thermodynamic steam trap works

1. On start-up, incoming pressure raises the disc and cooled condensate, and air is immediately discharged.
2. Hot condensate flowing through the trap releases flash steam. High velocity creates a low pressure area under the disc and draws it towards the seat.
3. The pressure build-up of flash steam in the chamber above the disc which forces it down against the pressure of the incoming condensate until it seats on the inner ring and closes the inlet. The disc also seats on the outer ring and traps pressure in the chamber.
4. Pressure in the chamber is decreased by condensation of the flash steam and the disc is raised. The cycle is then repeated.










### Features and benefits:

- Positive condensate discharge with clean tight shut-off. Discharges condensate at very close to steam temperature that ensures maximum plant efficiency
- Just one moving part, a disc, ensures reliable operation and minimal maintenance without having to remove from the line
- Compact and light weight, reducing installation costs
- Hardened disc and seat for long life
- One trap covers a wide range of operating pressures making selection and replacement simple
- Insulating cover for low ambient temperature or wet environments
- Thermodynamic traps can be used on high pressure and superheated steam and are not affected by waterhammer or vibration.
- Cool Blue Series steam traps with pressures of 300 psig or less have a standard 5 year warranty





## Thermodynamic steam traps - product range

Model		Connection	Flow Pattern	Body Material	Pressure (PSIG)	1/4"	3/8"	1/2"	3/4"	1"	Integral Strainer	Blowdown Valve	
	TD52*	NPT	Inline Horizontal	Stainless Steel	600		•	•	•	•	No	No	
	TDT				150			•	•	•			
	TDC				600		•	•	•	•			
	TD42				600			•	•	•			Standard
	TDC46M			Screwed NPT or BSP Socket weld Flanged: ASME Class 150	Carbon Steel	667						Standard	Optional
	TDS46M			ASME Class 300 ASME Class 600 (PN40, PN100)			Stainless Steel			•	•		•
	TD62LM			SW, NPT ANSI 300 ANSI 600	Alloy Steel	900			•	•	•	Standard	Optional NPT and SW Only
	TD62M					900			•	•	•		
	TD120			SW, BW ANSI 1500	Forged Alloy Steel	3,625			•	•	•	Standard	No
	BTD52L			NPT, Tube, or Sanitary Clamp	Stainless Steel 316L	150	•	•	•				

\* "L" version low capacity available 1/2" and 3/4" sizes

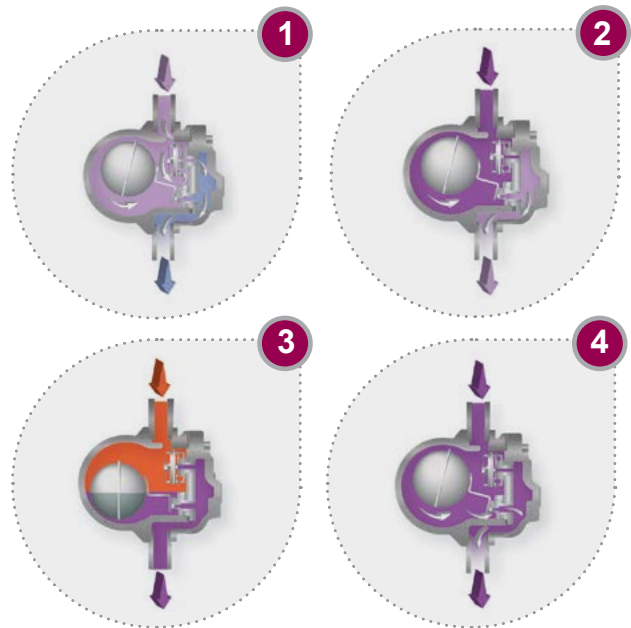
## Mechanical steam traps

### Ball float mechanical steam traps

Ball float (FT) mechanical steam traps have an integral air vent as standard and the options of a manually adjustable needle valve (SLR - steam lock release mechanism) and drain cock tapping, the FT range is adaptable to all applications where ball float traps are recommended and instantaneous removal of condensate is required.

#### How a ball float steam trap works

1. On start-up a thermostatic air vent allows air to bypass the main valve which would otherwise be unable to escape (a condition known as 'air-binding').
2. As soon as condensate reaches the trap, the float is raised and the lever mechanism opens the main valve. Hot condensate closes the air vent but continues to flow through the main valve.
3. When steam arrives the float drops and closes off the main valve, which remains at all times below the water level, ensuring that live steam cannot be passed.
4. As the steam condenses, the float rises allowing condensate to be released.





#### Features and benefits:

- Immediate condensate discharge with clean, tight shut-off. No backup of condensate ensures maximum plant efficiency
- Works efficiently on both heavy and light loads with no passage of live steam
- Not affected by wide and sudden fluctuations of pressure or flowrate
- Stainless steel internals that can tolerate corrosive condensate
- Integral air vent to ensure rapid warm-up of plant
- Robust construction to guarantee long life against waterhammer and vibration.



**First for Steam Solutions**

## Ball float steam traps - product range

Model		Connection	Flow Pattern	Body Material	Pressure (PSIG)	Connection Sizes								
						1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"
	FT-15		Parallel		15		•	•	•	•	•			
	FT-30				30		•	•	•	•	•			
	FT-75				75		•	•	•	•	•			
	FT-125				125		•	•	•	•	•			
	FT-150				150		•	•	•	•	•			
	FT-200				200		•	•	•	•	•			
	FTI-15	NPT	Inline Horizontal	Cast Iron	15	•	•	•		•				
	FTI-30				30	•	•	•		•				
	FTI-75				75	•	•	•		•				
	FTI-125				125	•	•	•		•				
	FTI-200				200	•	•	•		•				
	FTB-20		Parallel	Cast Iron	20						•			
	FTB-30				30						•			
	FTB-50				50					•				
	FTB-125				125								•	
	FTB-125	NPT or SW		Cast Steel	125							•		
	FTB-175	NPT			Cast Iron	175						•		
	FTB-200					200					•			
	FTB-200	NPT or SW			Cast Steel	200								•
	IFT-4.5		Inline Horizontal	Ductile Iron	65	•	•							
	IFT-10				145	•	•							
	IFT-14				200	•	•							
	FT14HC-4.5	NPT	Inline Horizontal	Ductile Iron	65			•						
	FT14HC-10				145			•						
	FT14HC-14				200			•						
	FT14-4.5			Cast Iron	65					•				
	FT14-10				145					•				
	FT14-14				200					•				
	FTS14-4.5	NPT, SW, Tri-Clamp	Inline Vertical Down	Stainless Steel	125	•	•	•						
	FTS14-10				175	•	•	•						
	FTS14-14				200	•	•	•						
	FTS-150H	NPT, SW	Inline Vertical Down	Stainless Steel	150	•								
	FTS-300H				300	•								
	FTS-150V				150	•								
FTS-300V	300	•												
	FT450-4.5	NPT, SW, ANSI 150, ANSI 300	Inline Horizontal	Cast Steel	65		•	•		•	•			
	FT450-10				145		•	•		•	•			
	FT450-14				200		•	•						
	FT450-21				300		•	•						
	FT450-32				450						•	•		
	FT450	NPT, SW, and Flanged			450							•	•	
	FT46-4.5	ANSI 150, ANSI 300	Inline Horizontal	Cast Stainless Steel	65			•		•	•			
	FT46-10				145			•		•	•			
	FT46-14				200			•		•	•			
	FT46-21				300			•		•	•			
	FTC62	Flanged ASME 600, SW/Screw		Carbon Steel	900	•	•	•						
	FTS62			Stainless Steel										
	FTC80-45	SW, ANSI 600		Cast Carbon Steel	652					•	•			
	FTC80-62				900					•	•			
	FTC80-80				1160					•	•			



## Mechanical steam traps

### Inverted bucket mechanical steam traps

Our inverted bucket steam traps employ a well-proven principle which relies on the difference in density between steam (a vapor) and condensate (a liquid). They have a robust design and incorporate a simple density sensitive bucket and lever mechanism.

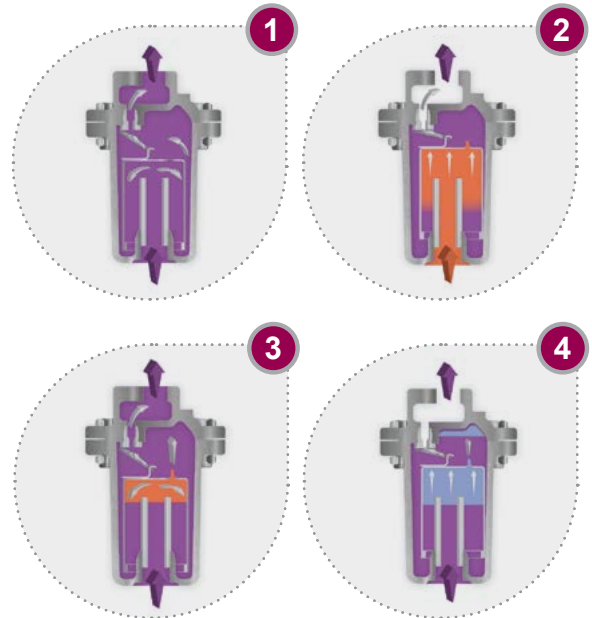
#### How an inverted bucket steam trap works

1. As condensate reaches the trap it forms a waterseal inside the body. The weight of the bucket keeps the valve off its seat. Condensate can then flow around the bottom of the bucket and out of the trap.

2. When steam enters the underside of the bucket it gives it buoyancy and the bucket rises. This positions the lever mechanism such that the main valve 'snaps' shut due to flow forces.

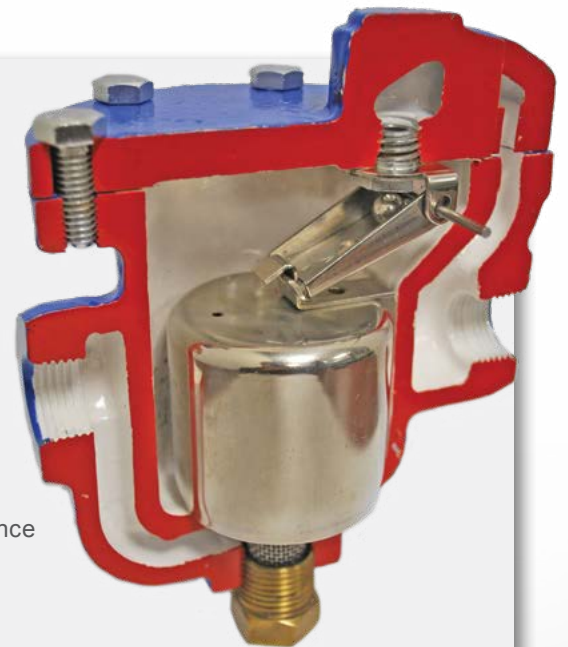
3. The bucket will lose its buoyancy as the enclosed steam condenses due to radiation losses and steam escapes through the vent hole. Once this happens the weight of the bucket will pull the valve off its seat and the cycle is then repeated.

4. Any air reaching the trap will also give the bucket buoyancy and close the valve preventing condensate flow. The small vent hole positioned at the top of the bucket will lead air into the top of the trap. Because the vent hole at the top of the bucket is small in diameter it will vent air very slowly. Where the venting of air may be a particular problem, this can be overcome simply by fitting an external air vent in parallel.








#### Features and benefits:

- Near continuous condensate discharge with tight shut-off. Minimal back-up of condensate ensures maximum plant efficiency
- Deep water-seal to protect against the possibility of steam loss
- Suitable for superheat conditions when fitted with internal inlet check valve
- Simple and robust construction to guarantee long life against waterhammer and vibration
- Stainless steel internals are attached to the cover for ease of maintenance
- Integral strainer (some models only)
- Optional blowdown valve (only for HM34).



## Inverted Bucket steam traps - product range

Model		Connections	Flow Pattern	Body Material	Pressure (PSIG)	Pipe Sizes							Strainer Option Available	Integral Air Vent
						1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	3"		
	B Series	NPT	Inline Horizontal	Cast Iron	Multiple operating pressure ranges up to 250 psig	•	•	•	•		•		Yes	Optional
	Series 200		Inline Vertical Up											
	HM34	NPT, SW	Inline Horizontal	Carbon Steel	Multiple operating pressure ranges up to 464 psig	•	•	•					Standard	
	IBV Series	NPT, SW, Flanged	Inline Vertical Up	Carbon Steel, Alloy Steel, LF2 Carbon Steel	Multiple operating pressure ranges up to 1,635 psig	•	•	•		•	•	•		No
	SIB30 and SIB30H	NPT, SW	Inline Horizontal	Stainless Steel	Multiple operating pressure ranges up to 435 psig	•	•						No	
	SIB45				Multiple operating pressure ranges up to 652 psig		•	•						

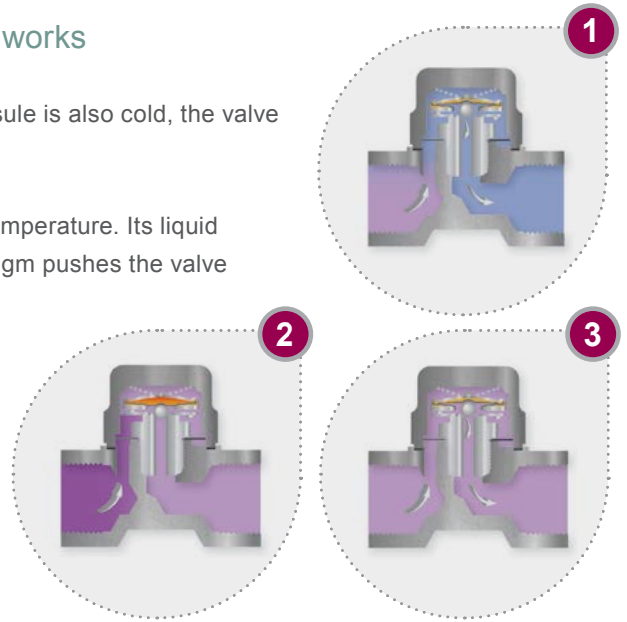
## Thermostatic steam traps

### How a balanced pressure thermostatic steam trap works

1. On start-up, cold air and condensate enter the trap. As the capsule is also cold, the valve is open and the air and condensate are discharged.

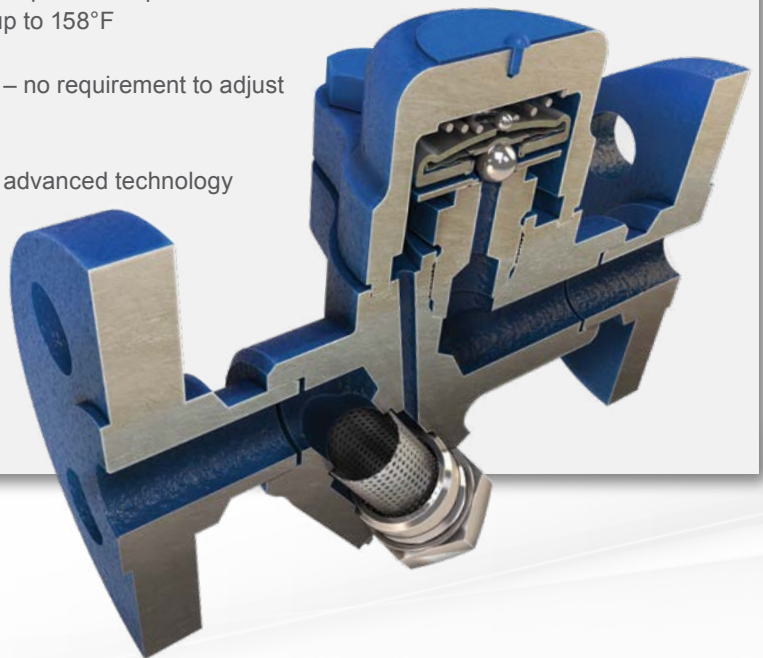
2. The capsule warms up as the condensate approaches steam temperature. Its liquid filling boils, and the resultant vapor pressure acting on the diaphragm pushes the valve head towards the seat, fully closing at the selected discharge temperature before any steam is lost.

3. As the condensate within the trap cools, the vapor filling condenses and the internal capsule pressure falls. The valve reopens, discharges condensate and the cycle repeats.



### Features and benefits:

- Condensate is discharged at below steam saturation temperature, utilizing sensible heat in the condensate and reducing flash steam losses
- Automatically discharges air and other incondensable gases to aid rapid warm-up of plant
- It automatically adjusts itself to variations of steam pressure up to its maximum operating pressure and can tolerate superheat up to 158°F
- Discharge temperature set by capsule selection – no requirement to adjust on site
- Patented design of capsule manufactured using advanced technology to exacting quality standards
- All stainless steel internals extend working life and reduce plant maintenance
- The BPC32 series has a two bolt cover design for ease of maintenance.



**First for Steam Solutions**



## Balanced pressure thermostatic steam traps - product range

Model		Connections	Flow Pattern	Body Material	Pressure (PSIG)	¼"	⅜"	½"	¾"	1"	1½"	Strainer
	RTA	NPT Union Inlet	Angle	Forged Brass	125			•	•	•		
	RTH		Straightway							•	•	
	RTV	NPT Union	Vertical	Cast Bronze				•	•			No
	T-250	NPT	Angle	Cast Iron	250			•	•	•		
	T-250									•	•	
	BPC32	NPT, SW, ANSI 150 ANSI 300	Inline Horizontal	Carbon Steel	465			•	•	•		Standard
	BPC32Y										•	
	TM600, TM600L	NPT	Angle	Ductile Iron	600			•	•			No
	TM600N	NPT, SW	Inline Horizontal	Cast Steel				•	•			Standard
	TSS300	NPT	Vertical or Horizontal	Stainless Steel	300		•	•				Optional
	DTS300										•	
	MST21 & MST21H				435	•		•	•	•		Standard
	SBC30LC							•	•			
	BT6-BL	Sanitary Clamp	Vertical	Stainless Steel 316L	87			•	•	•	•	
	BT6-BH									•	•	
	Horizontal BT6		Parallel Horizontal		100			•				No
	BTM7	Sanitary Clamp, Tube, or NPT					•		•	•	•	
	BTS7.1	Sanitary Clamp	Vertical					•	•			
	BTS7	NPT or Tube				•		•	•	•		

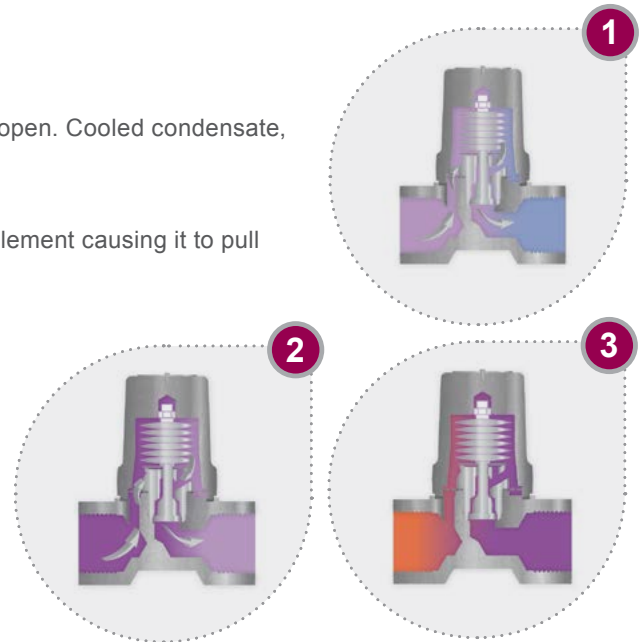
## Thermostatic steam traps

### How a bimetallic thermostatic steam trap works

1. On start-up, the bimetallic element is relaxed and the valve is open. Cooled condensate, plus air, is immediately discharged.

2. Hot condensate flowing through the trap heats the bimetallic element causing it to pull the valve towards the seat.

3. As the hot condensate is discharged and approaches steam saturation temperature the bimetallic element closes the valve. When there is no flow through the trap the condensate surrounding the element cools causing it to relax and the upstream pressure opens the valve. Condensate is discharged and the cycle repeats.





### Features and benefits:




- Condensate is discharged at below steam saturation temperature, utilizing sensible heat in the condensate and reducing flash steam losses
- Automatically discharges air and other incondensable gases to aid rapid warm-up of plant
- The bimetal elements can work over a wide range of steam pressures without any need for on-site adjustment
- Patented design of bimetallic element
- Resistant to waterhammer and freezing
- The SMC32 series has a two bolt cover design for ease.



## Bimetallic thermostatic steam traps - product range

Model		Connections	Flow Pattern	Body Material	Pressure (PSIG)	1/2"	3/4"	1"	Strainer
	SMC32	NPT, SW, ANSI 150 ANSI 300	Horizontal or Vertical	Carbon Steel	465	•	•	•	Standard
	SMC32Y								
	HP45	NPT, SW ANSI 600	Horizontal	Alloy Steel	652	•	•	•	
	HP80	SW, BW			1160	•	•	•	

## Liquid expansion traps - product range

Model		Connections	Flow Pattern	Body Material	Pressure (PSIG)	1/2"	3/4"	1"	Adjustable Temperature	Temperature Setting Ranges °F
	CL-6	NPT	Horizontal	Cast Iron	125		•		Yes	170-212 145-195 110-160 75-125
	CH-6				300		•			
	No 8			Bronze	250	•			Yes	140-212
	Bydrain		Vertical	Stainless Steel	200	•			No	32-40



## Steam trap diffusers

Designed to be fitted to the outlet of a steam trap, air trap or valve discharging to atmosphere, the Spirax Sarco trap diffuser series reduces the problem of noise (a reduction of 80% of sound pressure level at 3 feet) and erosion by cushioning high velocity discharge - all important with today's health, safety and factory noise level requirement.


Model		Connections	Sizes	Pressure (PSIG)
	DF1	NPT, SW	1/2", 3/4"	915
	DF3	NPT		300

### User Benefits:

- Protects people and plant
- Enhances the environment
- Reduces noise levels by more than 80%
- Reduces the effect of flash steam emission
- Compact design
- Knitted and compacted wire mesh diffusing element for efficient energy dissipation
- Suitable for use with traps and valves rated up to PN63.

## Three way steam trap test valve

The three way test valve is designed to have a combination inlet or outlet isolation/blowdown valve capability. The valve can be used on both the inlet and outlet side of a steam trap in drip or tracer service.

Model		Connections	Sizes	Pressure (PSIG)
	TWT	NPT, SW	1/2", 3/4"	300

### User Benefits:

- Combination valve reduces pipe fittings and possible leak points
- Simple operation
- Stainless steel construction
- 1/4 turn to test
- 1/2 turn open to closed
- Simple repair.

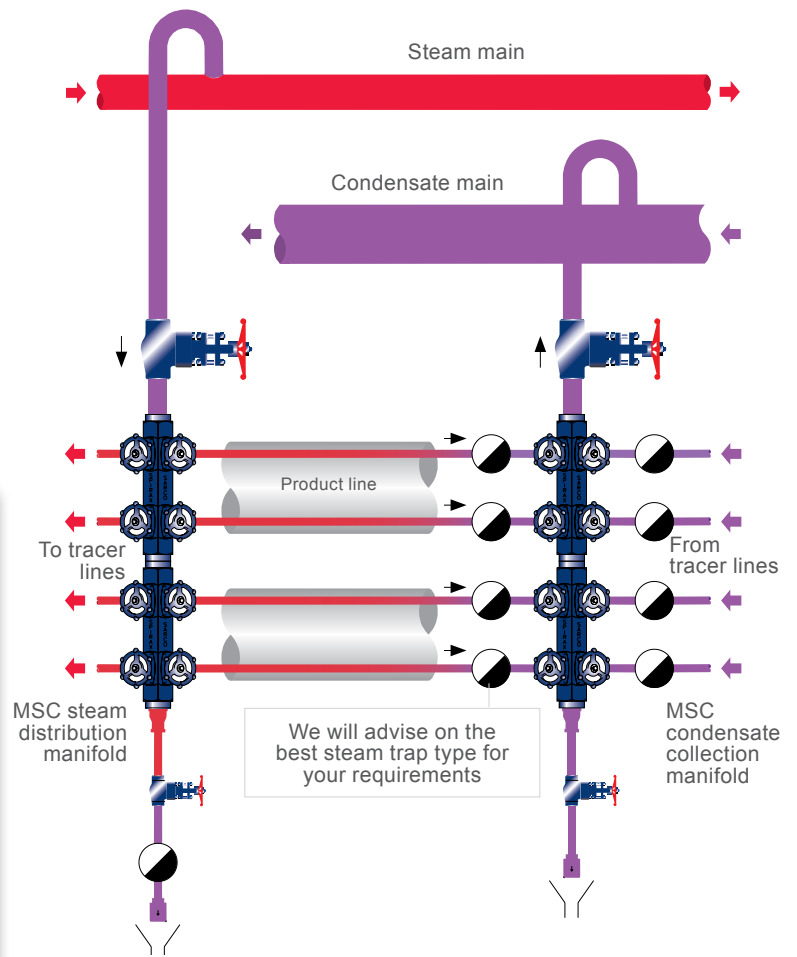
## Steam tracing using our compact dual duty manifold



Steam tracing is used principally to maintain a reasonable product temperature and viscosity in order to simplify pumping, avoid freezing, solidification and stagnation. Although the rates of condensate are relatively small, trap populations will be large since all tracer lines should be individually trapped. For ease of design and layout, the condensate from the traps is collected in a manifold. The steam to the tracers can be distributed utilizing a similar manifold arrangement.

Our forged MSC series manifold minimizes on-site fabrication and testing.

### Key features:

- Minimizes on-site fabrication and testing
- Lower cost than conventional welded design
- Shortens project lead times
- Space saving with standardized design
- Lightweight to support and easy to install with optional mounting kit
- Easy to maintain
- Optional insulation jacket for energy conservation.

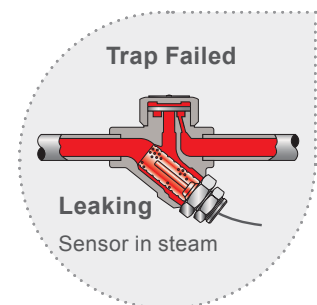
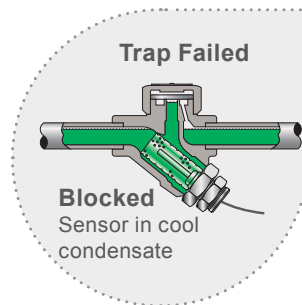
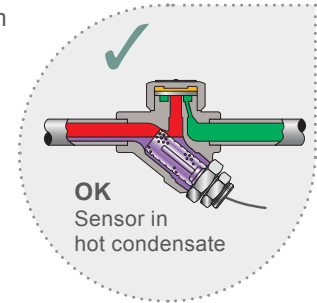


Model	Type	Connection	Body Material	Connection Sizes To Trap Or Feed	Number Of Connections	
	MSC	NPT, SW	Forged Steel	1/2", 3/4"	4,8,12	
	MSC					Condensate Collection
	CMAV		Vertical Condensate Collection			Fabricated Steel
	SMAV		Vertical Steam Distribution			

## SPIRA-tec® steam trap monitoring system

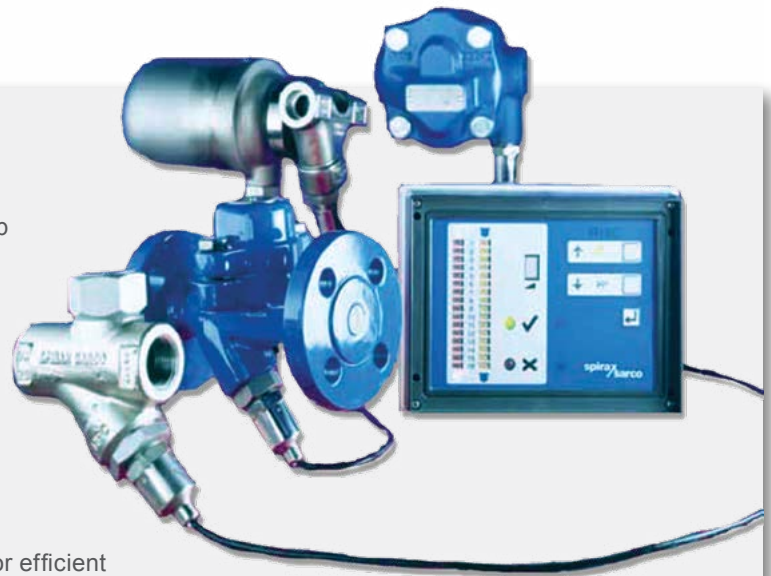
### How does the SPIRA-tec® system work?

The core of the SPIRA-tec® system is a sensor capable of distinguishing between steam and condensate. It can be part of a trap or a separate chamber. If the steam trap is operating correctly, the sensor will be immersed in hot condensate. If the steam trap is leaking, it will be immersed in steam. If the steam trap is blocked, it will be immersed in cool condensate. As the sensor is permanently fitted in the heart of the trap, it is continually alert to any trap malfunction. Faults can be identified manually or automatically, and locally or remotely. Whatever method suits your system, nothing could be simpler, more foolproof or cost effective.






### User Benefits:


- Immediate indication of 'correct operation', 'trap waterlogged' or trap 'leaking steam'
- Trap status indicated by colored lights - no skilled labor needed
- Separate chambers or integral sensor options to suit all steam trap system applications
- Compatible with BEMS/EMS/SCADA system for efficient system monitoring
- Reduced energy losses and improved system efficiency leading to increased profits
- Remote test points allow inaccessible traps to be monitored during trap surveys.




## SPIRA-tec® system monitors - product range

Model	Sensor Type Compatibility	Power Requirement	Monitor Capability	External Connection For Building Management Systems
 Type 30 Hand Held	SSL1	9 Volt Battery	Steam loss only	None
 R1C	SSL1, WLS1	24 Volt DC	Steam loss or steam loss and water logging combined	EMS/BMS SCADA
 R16C	SSL1, WLS1 with diode pack	96-240 volt AC or 24 volt AC	Steam loss or steam loss and water logging combined	Master switch open or closed circuit.


## Stainless steel universal connectors with SPIRA-tec®

Model	Connection	Monitor Type Compatibility	Pressure (PSIG)	1/2"	3/4"	1"	Sensor Capability	Connection Wire
	NPT, SW	Type 30, R16C, R1C	464	•	•	•	Steam loss only	Requires connection cable PT1, PT2, PT3 with WLS1 and R16C
		Type 30, R16C, R1C		•	•	•		
		R1C		•	•	•	Steam loss and water logging	
				•	•	•		
		R16C		•	•	•		
				•	•	•		

## Sensor chamber for placement ahead of any type steam trap

Model	Connection	Body Material	Sensor Options	Pressure (PSIG)	1/2"	3/4"	1"	1 1/2"	2"	
	ST17	NPT	Ductile Iron	SSL1, WLS1, WLS1 with diode pack	464	•	•	•		
	ST14	NPT, SW	Cast Steel			•	•	•	•	•
	ST16	NPT, SW ANSI 150 ANSI 300	Stainless Steel			•	•	•		

## Steam trap with integral SPIRA-tec® compatibility

Model	Connection	Flow Pattern	Body Material	Sensor Options	Pressure (PSIG)	1/2"	3/4"
 IFT	NPT	Horizontal	Ductile Iron	SSL1, WLS1, WLS1 with diode pack	200	•	•



# STAPS

## Wireless steam trap monitoring

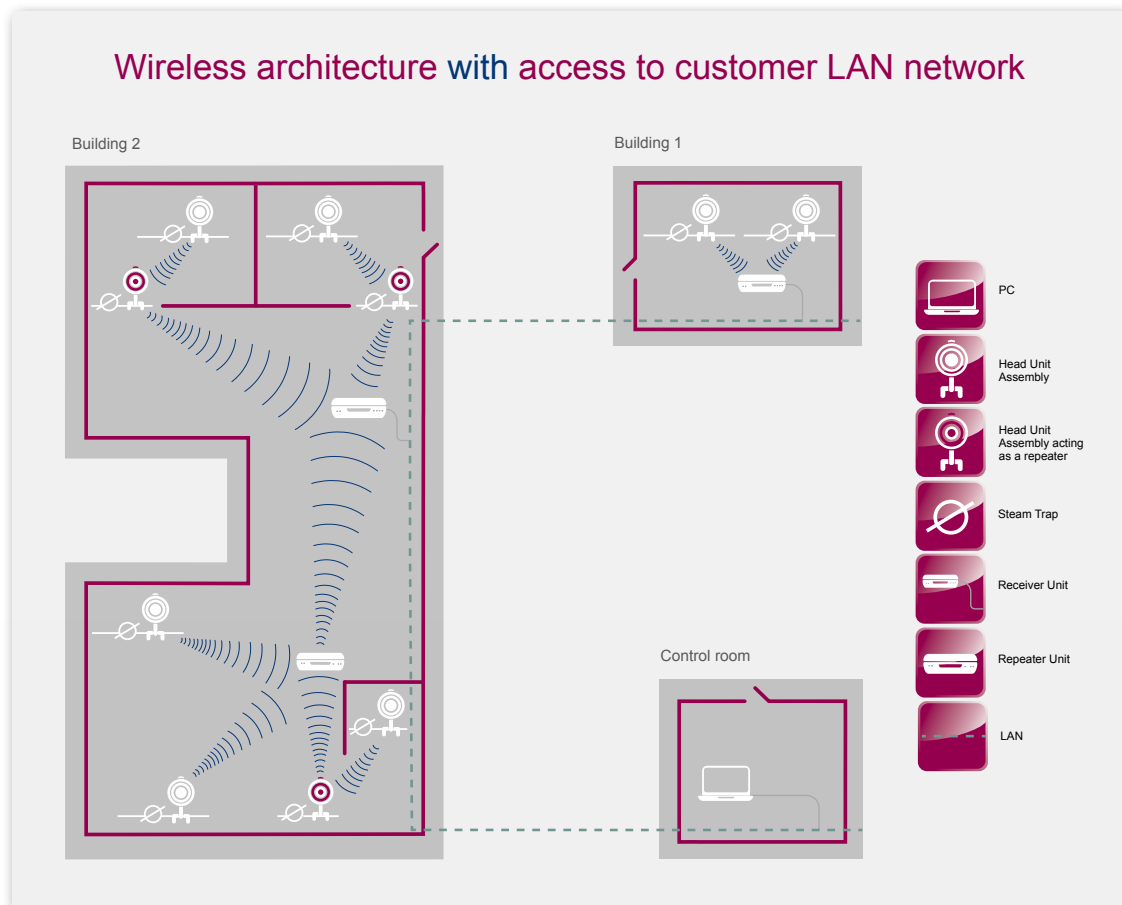
The STAPS Wireless steam trap monitor from Spirax Sarco has been designed for easy, non-intrusive installation with accurate wireless monitoring and reporting to help improve your steam system performance.

### How STAPS Wireless works

A head unit assembly mounted on the pipe upstream of the trap to be monitored 'listens' to the sound signature of the trap in operation. This sound signature is categorised and transmitted via 2.4 Ghz wireless network to a central PC. The PC determines the trap condition and calculates any steam loss.

Each STAPS head unit assembly is powered by a long life Lithium battery. It can communicate directly to

a receiver that is connected to the PC software via a LAN connection or via another intelligent head or a head unit acting as a repeater. The PC software can be installed onto the site internal network, or onto a stand-alone local PC. The STAPS head, repeater and receiver create a network and can communicate with each other, passing on the steam trap data to the coordinating PC. The illustrations below and opposite show typical networks.





### Features and benefits:

- Reduces the need for on-going manual inspection, saving you time and money
- Significantly faster commissioning than a wired alternative for lower installation costs
- Clamp on design therefore no need to cut into the pipework
- Rapid leak detection
- Non-intrusive so it's easy to deploy almost anywhere
- Extends monitoring to remote and hard-to-access areas of the plant such as high level pipe racks
- Low maintenance solution, powered by long-life battery
- Low transmission signal strength ensures minimal risk of interference with other systems
- Suitable for use across a wide range of applications, can be used with pressures of up to 667 psig and temperatures of up to 797°F\*
- Uses universally accepted frequency of 2.4 GHz
- High accuracy algorithm created by Spirax Sarco that detects traps that are leaking or cold.

\*for non-explosive environments only

## Steam trap surveys

Irrespective of the type or brand, steam traps are recognized as a potential source for significant energy loss. A Spirax Sarco steam trap survey will identify, tag, test and report on every steam trap in the facility. Using Spirax Sarco's Steam Trap Monitoring Software (STMS), the survey team generates comprehensive and detailed reports on the full inventory of existing steam traps. Report information includes:

- Tag Number, Location, Duty, Size, Type, Brand/manufacturer
- Status (is the trap working correctly, failed open, failed closed or cycling too quickly/too slowly)
- Suitability for application (correct type, size, pressure rating for the duty)

Failed traps are highlighted, steam losses are calculated, and investment payback time for failed trap replacement is reported. A trap that is cycling too rapidly or has failed open will result in:

- Increased fuel bills
- Higher emissions
- Increased water, chemical treatment and effluent charges

A trap that is cycling too slowly or failed closed will result in:

- Poor quality/wet steam
- Waterhammer (and the resultant danger to plant and personnel)
- Increased maintenance
- Longer start-up times
- Increased production time and unit costs
- Reduction in process performance and plant efficiency

The steam trap survey can also identify steam leaks with the goal of targeting and prioritizing areas of the plant, which with further investigation, could lead to greater savings and improvements.

You can be confident that we have the expertise needed to meet the challenges you face in managing energy costs and making a more competitive and sustainable business.



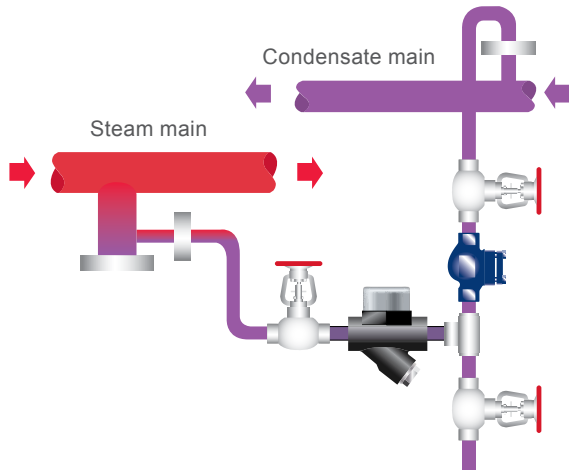




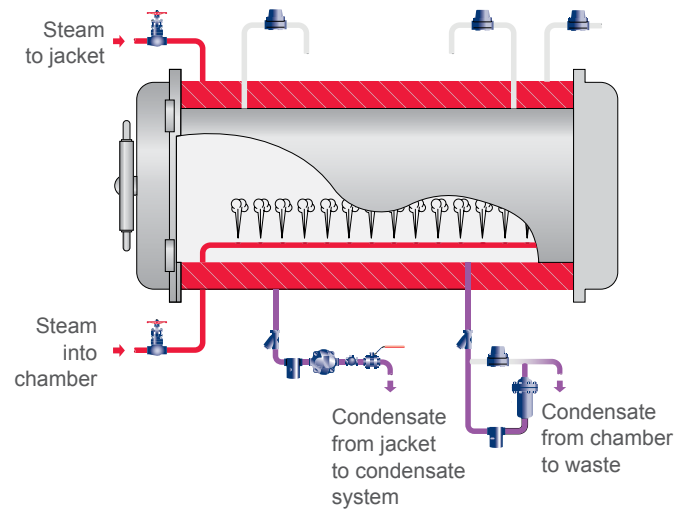


## Typical applications for steam traps

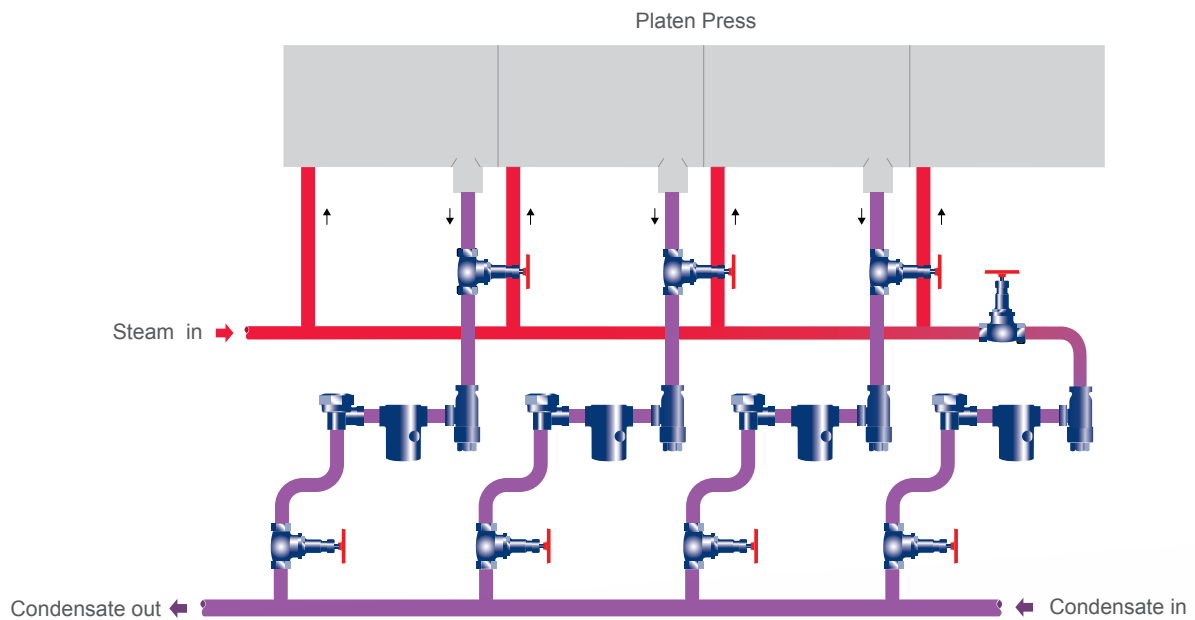
### Mains drainage



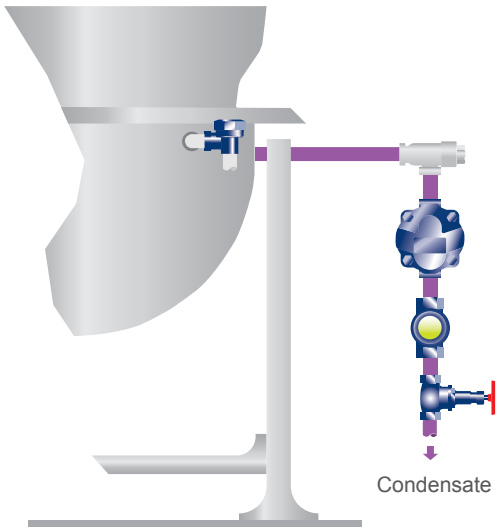
### Vulcanizer application



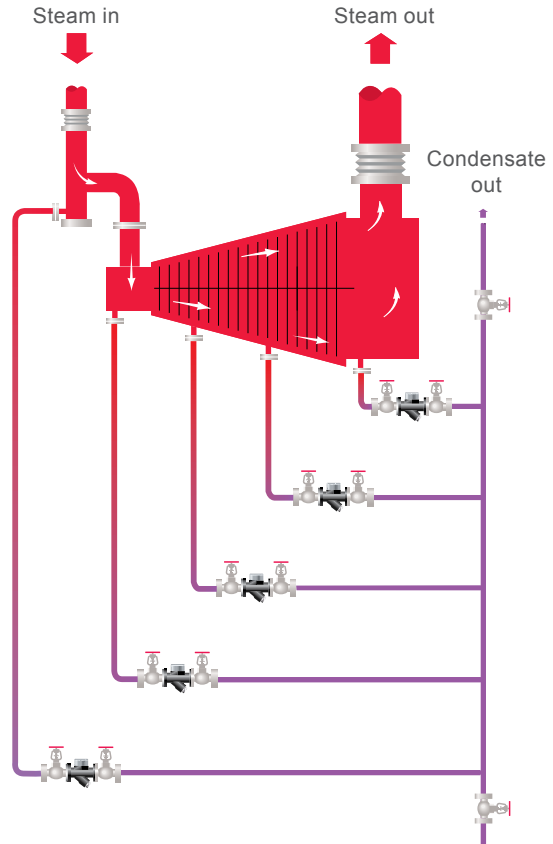
### Hot platen process



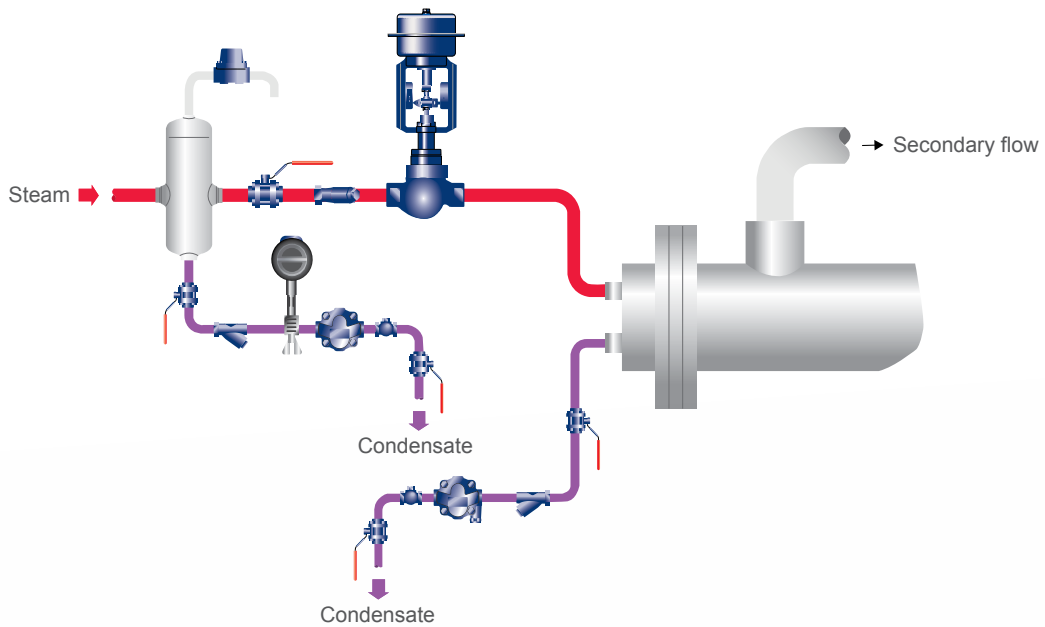
### Process equipment



### Turbine drainage



### Drainage of a separator and heat exchanger





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