

Automatic and continuous elimination of condensate and air at steam temperature increases system efficiency.

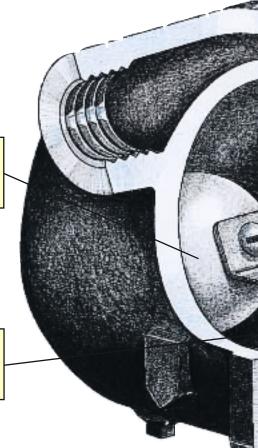
Most steam-using equipment is designed to utilize the heat given up by steam when it condenses. For efficient operation, the steam space must be kept free of condensate and air so that the entire heat transfer surface is exposed to steam.

Only a Float & Thermostatic steam trap can drain condensate as quickly as it forms while at the same time removing air and other non-condensible gases which may be present at start-up or collect during operation. Condensate never backs up into the steam space; gases collect in the top of the trap and are removed through a separate integral air vent.

Spirax Sarco offers the world's mostcomplete line of Float & Thermostatic steam traps with cast iron, ductile iron, carbon steel and stainless steel bodies for steam pressures up to 465 psi and condensate loads up to 300,000 lb/h.

Stainless Steel float automatically adjusts the valve opening to maintain a continuous condensate flow.

Unaffected by back pressure since operation is regulated soley by condensate level inside the trap.



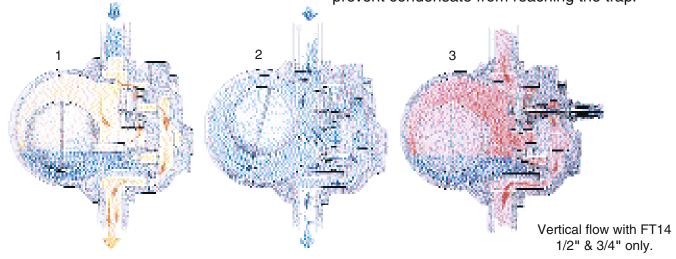
How it works

On start-up, air in the system is quickly discharged through the integral thermostatic air vent (1). When condensate reaches the trap it raises the float to open the main valve. Cool condensate is discharged through both the main valve and the air vent (2). When the trap reaches operating temperature the air vent closes and condensate at steam temperature is discharged continuously through the main valve. The opening of the main valve is regulated by

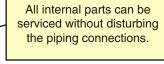
the condensate level in the trap so that condensate never backs up into the inlet piping.

Air which accumulates in the trap during operation is periodically discharged through the thermostatic air vent.

Certain models can be supplied with a steam lock release (SLR) which provides an adjustable steam bleed (3). An SLR should be specified whenever the piping arrangement may permit the formation of a steam pocket which can prevent condensate from reaching the trap.



User benefits



Stainless steel balanced pressure thermostatic air vent withstands waterhammer and at least 45°F of superheat

Stainless steel valve trim.

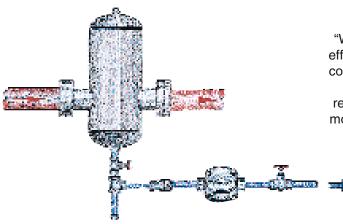
Condensate seals the valve at all times, preventing steam leakage.

- Instantly adjusts to load and pressure variations.
- Automatic air venting reduces warm-up time and improves heat transfer.
- Continuously modulated discharge eliminates steam space pressure variations for closer temperature control.
- Stainless steel valve trim, floats and air vents increase service life.
- In-line horizontal piping connections simplify installation and maintenance.
- All internal parts can easily be renewed without disturbing the pipe connections.
- Float & Thermostatic traps can never "lose prime" and blow steam. When condensate is not present, the main valve closes tight.
- Steam loss is eliminated because during operation, the main valve is always sealed by condensate.
- The optional SLR prevents steam locking when condensate must be lifted to the trap.
- Option Vacuum breaker built into trap to break vacuum on system shutdown.

Float & Thermostatic Steam Trap Overview

Model				Si	zes ((inch	es)			Con	nectio	ns	Pipe (Configu	ıration	Во	dy Ma	aterial	Optio	ns	TIS
	1/2	3/4	1	1¼	1½	2	2½	3	4	NPT	SW	FLG	In-li Horiz.	ne Vert.	Parallel	Cast Iron	Dctl. Iron	Cast Stn. Steel Steel	Stm Lock Release	SLR and Air Vent	#
FT-15		/	1	1	1	1				1					1	1			✓	✓	2.313
FT-30		✓	✓	✓	1	✓				1					✓	1			✓	✓	2.313
FT-75		✓	✓	✓	1	✓				1					✓	1			✓	✓	2.313
FT-125		✓	✓	✓	1	✓				✓					✓	/			✓	✓	2.313
FT-150		/	/	/	1					1					1	1					2.314
FT-200		✓	✓	✓	✓					1					✓	1					2.314
FTB-20						/				1					1	1			/		2.315
FTB-30						1				1					1	1			✓	✓	2.315
FTB-125							✓			1					1	1				✓	2.315
FTB-175					✓	✓	✓			1					1	1		✓	11/2" only	21/2" only	2.315
FTB-200							✓			1	✓							✓			2.315
FT-14	1	✓								1			✓	✓			1				2.320
FTI-15	1	✓	✓							1			1			1				✓	2.321
FTI-30	1	1	✓							1			1			1				✓	2.321
FTI-75	1	1	✓							1			1			1				✓	2.321
FTI-125	1	1	✓							1			1			1				✓	2.321
FTI-200	1	✓	✓							1			1			1				✓	2.321
FT14			✓		✓	1				1			✓			1				✓	2.301
FT450		✓	✓		✓	1				1	1	✓	1					✓			2.304
FT450								✓	1	1	✓	✓	✓					✓			2.3041
FT16	✓	✓								1			1					✓		✓	2.319
FT46	✓	✓	√		✓	✓						1	✓					✓		✓	2.318

Typical Applications for Float

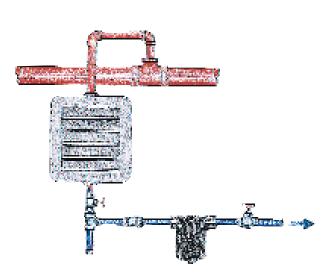


Steam Separator

"Wet" steam can damage equipment and reduce process efficiency. A Spirax Sarco separator efficiently "knocks out" condensate droplets in the steam flow. If condensate is not drained continuously from the separator, it could be re-entrained in the steam flow. Because of its continuous, modulated discharge, a Spirax Sarco Float & Thermostatic steam trap is ideal for this application.

Steam Unit Heater

If condensate backs up into the heater, the heat output will be reduced and corrosion could occur at the steamcondensate interface. The steam trap must react instantly to large variations in load. Steam unit heaters must be fitted with a Float & Thermostatic steam trap; no other type has all of the required performance characteristics.

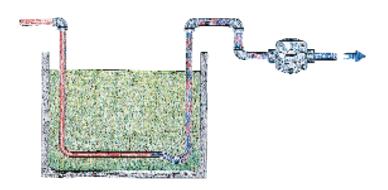


Steam Main Drip

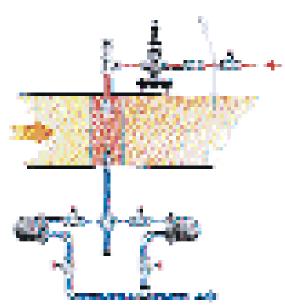
To remove the condensate which always forms in steam distribution mains, a drip point must be installed at every low point and every two or three hundred feet in horizontal runs. An equal tee ensures that condensate flowing along the bottom of the main will fall into the collecting leg. The Float & Thermostatic steam trap's air vent efficiently eliminates the air which is present at start-up.

Steam Lock Release

When condensate must be lifted to the trap or when the trap must be located some distance from the equipment, the inlet piping may become filled with steam which prevents condensate from reaching the trap. A steam lock release (optional on certain Float & Thermostatic models) allows the locked steam to be bled off to the return line. Please consult Spirax Sarco for details.



& Thermostatic Steam Traps



Air Handling Coil

For accurate temperature control and prevention of freezing, waterhammer and corrosion, the coil must be kept entirely free of condensate and air. Because of its air handling ability, its instantaneous response to variations in condensate load and pressure, and its continuous operation, a Float & Thermostatic steam trap is the only type acceptable for this application.

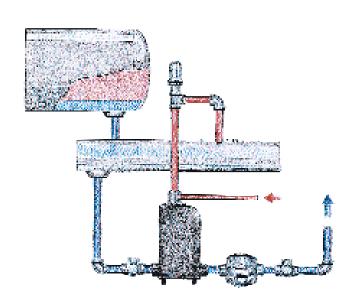
For critical installations, two traps, each of which can handle the full load, should be fitted in parallel. When the condensate return system is not pressurized, the traps should be mounted as far as possible directly below the coil to provide a hydrostatic head to assist in drainage.

"Stall" Conditions

Sufficient pressure must always be present at the steam trap inlet to overcome any back pressure caused by a pressurized return line or a lift after the trap. The system will "stall" whenever the control valve reduces the steam space pressure below the required amount.

If this condition is a possibility, a Spirax Sarco Pressure Powered Pump™ should be installed. The Pressure Powered Pump™ uses steam at full line pressure to force condensate through the steam trap against the back pressure.

Complete details will be found in the Spirax Sarco Pressure Powered Pump™ Product Bulletin.



Shell and Tube Heat Exchanger

Because the Float & Thermostatic steam trap discharges condensate continuously, it does not cause the heat exchanger pressure to fluctuate by cycling open and closed. The control valve can therefore maintain a more accurate temperature. The automatic elimination of air and other gases improves temperature control and reduces the possibility of corrosion.

A vacuum breaker permits condensate to drain by gravity when the control valve calls for sub-atmospheric shell pressures.

Steam Trap Selection and Sizing

Need to Know

- 1. The steam pressure at the trap after any pressure drop through the control valve or equipment.
- 2. The distance the condensate must be lifted after the trap. Rule of thumb: 2 feet of lift equals 1 psi back pressure (approximately).
- 3. Any other possible sources of back pressure in the condensate return system. For example:
 - Condensate taken to a pressurized deaerator tank or flash recovery vessel.
 - Local back pressure due to discharge of numerous traps close together into an undersized return.
- 4. Quantity of condensate handled. Obtained from:
 - Measurement
 - Calculation
 - Manufacturer's data
- Safety Factor that is dependent upon particular application, typical examples as follows:

Steam Mains 2:1 Tracers 2:1 Non-Modulating 2:1 Modulating over 30 psi 3:1

Modulating under 30 psi Size trap at full load and 1/2 psi

differential

Rule of thumb: Use a factor of 2 on everything except Temperature Controlled Air Heater Coils and Converters, and Siphon Applications

How to Size

The difference between the steam pressure at the trap inlet and the total back pressure, including that due to lift after the trap, is the differential pressure. The quantity of condensate should be multiplied by the appropriate safety factor to produce the sizing load. The trap may now be selected using the differential pressure and the sizing load.

Note: The inlet pressure to the steam trap should never exceed the Maximum Operating Pressure (PMO) of the selected trap, regardless of differential pressure.

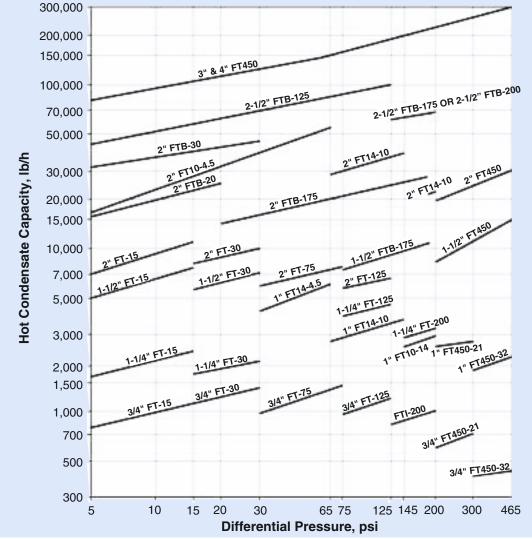
Example

A steam trap is required to drain 2,000 lb/h of condensate from a Unit Heater receiving steam at 100 psig. There is a lift after the trap of 10 ft.

Inlet Pressure	100 psig
Lift	10 ft. = 5 psi (approximately)
Therefore,	
Differential Pressure	100 psi - 5 psi = 95 psi
Quantity	2,000 lb/h
Safety Factor	2:1
Sizing Load	4,000 lb/h

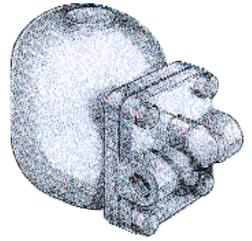
A 1-1/2" FT-125 will handle 4,120 lb/h at 95 psi differential pressure.

Float & Thermostatic Steam Trap Quick Selection Chart



This chart makes it possible to determine the most economical Spirax Sarco Float & Thermostatic Steam Trap with the required capacity at a given differential pressure. Note that the chart shows only the most economical choice. Other criteria such as body material, pressure rating, end connections or piping configuration may indicate another trap. In any case, the final selection should be based on the capacity and product data the appropriate Technical Information Sheet (TIS).

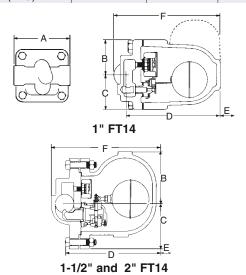




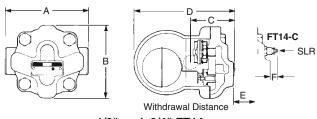
The FT14 features rugged cast iron (1") or ductile iron (1-1/2" and 2") construction for pressures up to 200 psig. The convenient in-line connections allow for servicing of all trap internals without removing the trap from the pipeline. The stainless steel air vent, float, and valve eliminate air binding, resist corrosion and allow for continuous drainage of condensate.

FT14

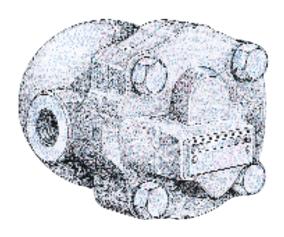
Sizes	1" HC, 11/2",	2"				
Body Material	Cast Iron (1"), Ductile Iron (1-1/2" & 2")					
Connections	NPT					
Piping Configuration	In-Line Horizontal					
Options	SLR with Air Vent					
TIS#	2.301					
Model	FT14-4.5	FT14-10	FT14-14			
Maximum Operating Pressure (PMO)	65 psig	145 psig	200 psig			



Dimensions (nominal) in inches Size Α В C D Ε Weight 15.0 lb 4.7 4.3 3.2 7.7 6.3 8.6 1-1/2" 10.6 5.1 4.3 9.4 7.9 10.6 38.5 lb 11.9 4.9 7.8 11.3 52.0 lb



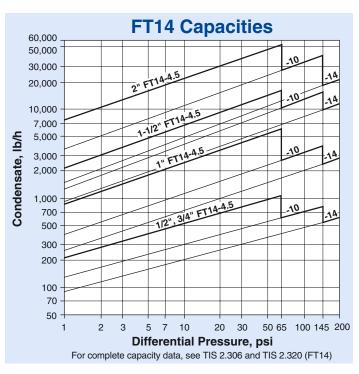
1/2" and 3/4" FT14



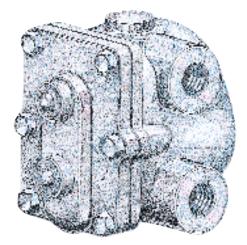
The FT14 1/2" & 3/4" sizes offers a compact Float & Thermostatic steam trap with in-line flow designed for horizontal or vertical piping. The rugged ductile iron construction is suitable for pressures up to 200 psig and capacities to 1,000 lb/hr. The stainless steel air vent, float, and valve eliminate air binding, resist corrosion and allow for continuous drainage of condensate.

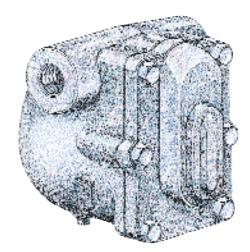
FT14

Sizes	1/2", 3/4"				
Body Material	Ductile I	ron			
Connections	NPT				
Piping Configuration	In-Line I	Horizontal, V	ertical		
Options	SLR with Air Vent				
TIS#	2.320				
Model	FT14-4.5	FT14-10	FT14-14		
Maximum Operating Pressure (PMO)	65 psig	145 psig	200 psig		



	Dimensions (nominal) in inches									
Size	Α	В	С	D	Е	F	Weight			
1/2", 3/4"	4.8	4.2	2.6	5.8	4.1	1.2	6.4 lb			





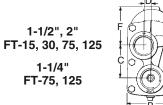
The FT and FTI Float & Thermostatic steam traps are traditional cast iron products available with either parallel (FT) or in-line (FTI) connections. These traps are offered for steam pressures up to 200 psig and condensate loads to 10,000 lb/hr. The stainless steel air vent, float, and valve eliminate air binding, resist corrosion and allow for continuous drainage of condensate.

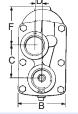
			FI				
	Sizes	3/2	ı", 1, 1¼	, 11/2", 2	II*		
	Body Material	С	ast Iron)			
	Connections	N	PT				
	Piping Configuration	Р	arallel				
	Options	Ir S	ntegral \ LR & A	/acuum ir Vent	Breake	er 150 & 200)	
TIS# 2.313 and 2.314							
	Model	FT-15	FT-30	FT-75	FT-125	FT-150	FT-200
	Maximum Operating Pressure (PMO)	15 psig	30 psig	75 psig	125 psig	150 psig	200 psig

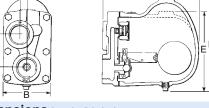
*2" not available for FT-150 and FT-200

3/4", 1" FT-15, 30, 75, 125 1-1/4"

FT-15, 30

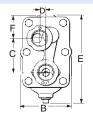


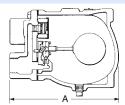




			Dim	ensid	ons (n	ominal)	in inch	es	
	Size	Α	В	С	D	Е	E1	F	G Weight
ĺ	3/4", 1"	6.2	4.6	3.3	3.0	5.75	_	1.3	0.3 9.0 lb
	11/4"*, 11/2"	8.5	4.25	3.0	0.7	_	8.4	3.5	— 18.0 lb
	2"	9.8	4.9	4.9	0.12	9.1	_	1.9	— 26.0 lb
	*1¼" FT-15, FT-30	6.2	4.7	3	2.8	5.75	_	1.5	0.3 9.3 lb

FT-150, 200



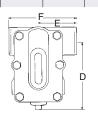


	Dimensions (nominal) in inches										
Size A B C D E F Weight											
3/4" 1"	8.5	3.9	2.6	0.4	6.9	1.8	15.0 lb				
11/4", 11/2"	10.75	5.75	3.0	0.6	9.1	2.5	30.0 lb				

Sizes	1/2	½", ¾, 1						
Body Material	С	Cast Iron						
Connections	N	NPT						
Piping Configuration	n Ir	In-Line Horizontal						
Options	S	LR, Inte	egral Va	acuum E	reaker			
TIS#	2	.321						
Model	FTI-15	FTI-30	FTI-75	FTI-125	FTI-200			
Maximum Operating	15 psia	30 psia	75 psia	125 psia	200 psig			

1/2", 3/4", 1" FTI

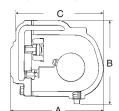
Pressure (PMO)



psig

psig

psig

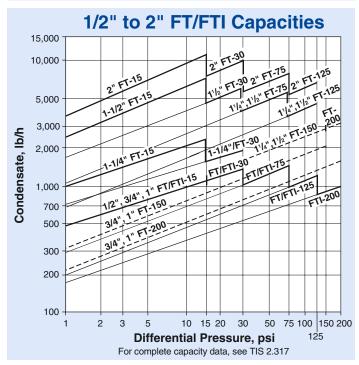


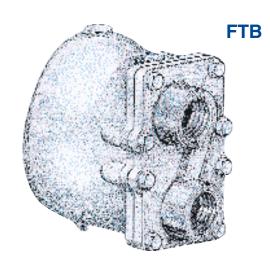
psig

psig

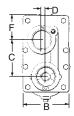
FTI

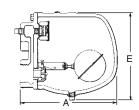
		Dimen	sions	(nomina	I) in inch	es	
Size	Α	В	С	D	Е	F	Weight
¹ /2", ³ /4", 1 "	6.5	5.8	3.3	4.8	2.7	4.8	11.3 lb



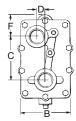


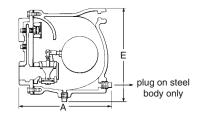
The FTB range of Super Capacity Float & Thermostatic steam traps are rugged cast iron products designed to handle large heat exchanger condensate loads to 100,000 lb/hr. The stainless steel air vent, float, and valve eliminate air binding, resist corrosion and allow for continuous drainage of condensate.



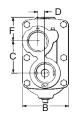


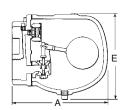
2" FTB-20





2" FTB-30 and 2-1/2" FTB-125, 175, 200, 2-1/2" FTB-200



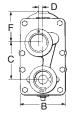


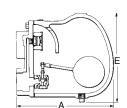
1-1/2" FTB-175

	Dimensions (nominal) in inches											
Type & Size	Α	В	С	D	Е	F	Weight					
2" FTB-20	12.2	5.9	4.5	0.5	10.7	3.0	43.0 lb					
2" FTB-30	15.25	9.25	7.25	1.4	15.6	3.75	89.0 lb					
2-1/2" FTB-125	15.6	9.25	7.25	1.4	15.6	3.75	90.0 lb					
1-1/2" FTB-175	8.8	4.25	3.0	0.68	8.3	2.5	22.0 lb					
2" FTB-175	12.1	5.9	4.5	0.5	11	4.0	48.0 lb					
2-1/2" FTB-175	15.4	9.25	7.25	1.4	15.6	3.75	90.0 lb					
2-1/2" FTB-200	15.4	9.35	6.9	1.4	14.4	4.0	112 lb					

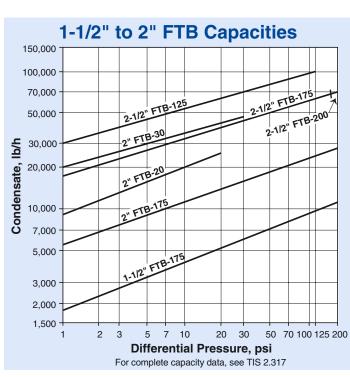
FTB

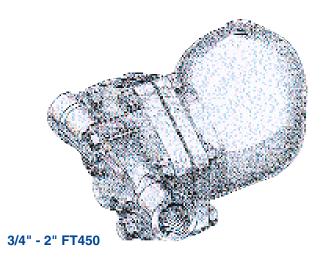
Sizes	FTR-20	ETR-30	FTR-125	FTB-175	FTR-200			
31263	1 10-20	1 10-30						
	2"	2"	21/2"	11/2",2",21/2"	21/2"			
Body Material		Cast Iron or Cast Steel 2/2" Size Only						
Connections		NPT SW 2/2" Size Only						
Piping Configurat	ion	Parallel						
Options				(vary with mod	el)			
		Integral \	Vacuum E	Breaker				
TIS#		2.315						
Model	FTB-20	FTB-30	FTB-125	FTB-175	FTB-200			
Maximum	20 peig	20 poig	125 peig	175 psig	175 psig			
Operating	20 DSI0	JU DSIU	120 0510	175 DSIU	II/O DSIU			



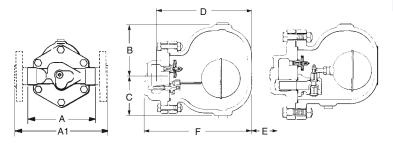


2" FTB-175



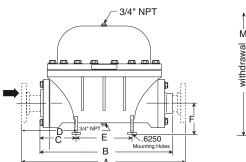


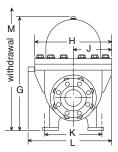
For processes that require pressures to 465 psig and/or steel construction, the FT450 offers the best solution. The FT450 is available in sizes ranging from 3/4" to 4" and with threaded, socket weld or flanged connections. The in-line design allows all internal parts to be serviced without removing the trap from the pipeline. The stainless steel air vent, float, and valve eliminate air binding, resist corrosion and allow for continuous drainage of condensate.



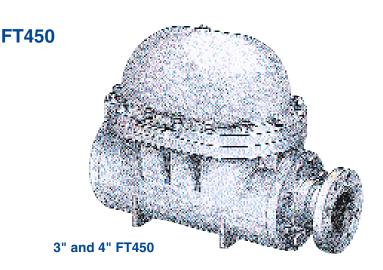
3/4", 1", 1-1/2", 2" FT450

Dimensions (nominal) in inches											
Size	Α	A 1	В	С	D	Е	F	NPT/SW	Flgd.		
3/4"	6.1	10.1	3.0	3.1	6.4	4.7	7.4	18.0 lb	23.8 lb		
1"	6.5	10.4	5.0	3.8	8.2	6.3	9.2	28.0 lb	33.0 lb		
1-1/2"	9.8	14.0	5.6	3.6	9.8	7.7	11.1	55.1 lb	64.0 lb		
2"	11.8	16.0	6.0	4.0	10.0	7.7	11.6	68.0 lb	82.0 lb		



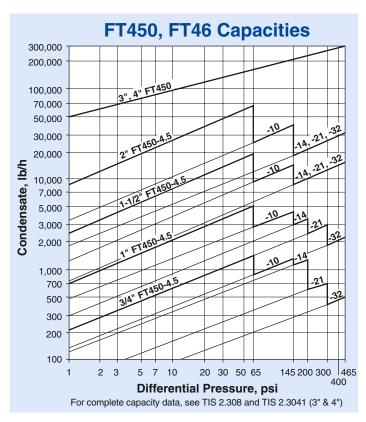


3" and 4" FT450

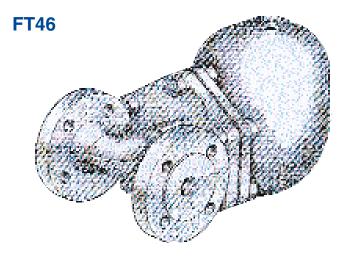


FT450

Sizes	3/4", 1 , 1	3" & 4"							
Body Material		Cast St	eel						
Connections		NPT, SW, Flanged							
Piping Configuration	l	In-Line Horizontal							
Options		Stainless Steel Special Order							
TIS#		2.304	2.3041						
Model: FT450	-4.5	-10	-14	-21	-32	FT450			
Maximum Operating Pressure (PMO)	65 psig	145 psig	200 psig	300 psig	465 psig	465 psig			



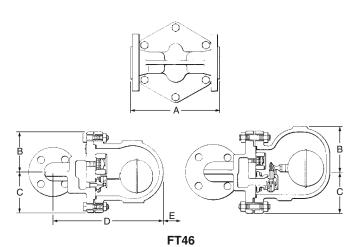
Dimensions (nominal) in inches													
Size	Α	В	С	D	E	F	G	Н	J	K	L	M	Weight
3"	39.0	27.75	7.56	15.5	12.0	6.75	23.7	16.0	8.0	11.5	17.5	32.0	485.0 lb
4"	39.0	_	7.56	15.5	12.0	6.75	23.7	16.0	8.0	11.5	17.5	32.0	485.0 lb



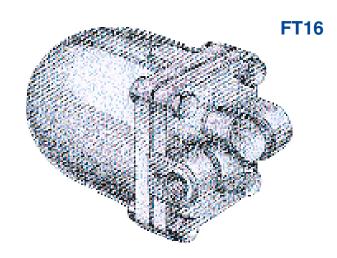
The FT16 and FT46 Float & Thermostatic steam traps are designed for clean steam and other systems requiring stainless steel construction. These traps are available with convenient in-line connections for ease of maintenance and either flanged (FT46) or threaded (FT16) connections. The stainless steel air vent, float, and valve eliminate air binding, resist corrosion and allow for continuous drainage of condensate.

FT46

Sizes	1/2",	1/2", 3/4", 1, 11/2", 2"							
Body Material	Stai	Stainless Steel							
Connections	Flar	Flanged							
Piping Configuration	n In-L	In-Line Horizontal							
Options	N/A	N/A							
TIS#	2.31	2.318							
Model	FT46-4.5	FT46-10	FT46-14	FT46-21					
Maximum Operating Pressure (PMO)	65 psig	145 psig	200 psig	300 psig					

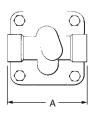


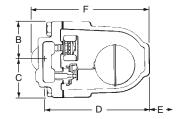
Dimensions (nominal) in inches											
Size/DN	Α	В	С	D	Е	Weight					
1/2"	5.8	3.2	3.2	8.4	4.7	23.8 lb					
3/4"	5.8	3.2	3.2	8.8	4.7	23.8 lb					
1"	6.2	4.5	3.4	10.8	6.7	33.0 lb					
1-1/2"	9.0	4.8	4.5	12.7	7.9	72.8 lb					
2"	9.0	5.5	4.8	12.9	7.9	94.8 lb					



FT16

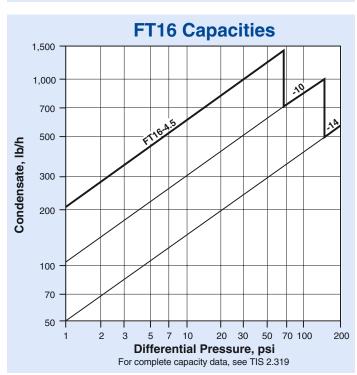
Sizes	1/2", 3/4"							
Body Material	Stainless S	Stainless Steel						
Connections	NPT	NPT						
Piping Configuration	In-Line Ho	In-Line Horizontal						
Options	N/A							
TIS#	2.319							
Model	FT16-4.5	FT16-10	FT16-14					
Maximum Operating Pressure (PMO)	65 psig	145 psig	200 psig					





1/2" and 3/4" FT16

Dimensions (nominal) in inches										
Size	Α	В	С	D	Е	F	Weight			
1/2", 3/4"	4.7	2.1	2.1	5.8	4.3	6.7	9.0 lb			



Steam Trap Selection Guide

As the USA's leading provider of steam system solutions, Spirax Sarco recognizes that no two steam trapping systems are identical. Because of the wide array of steam trap applications with inherently different characteristics, choosing the correct steam trap for optimum performance is difficult. Waterhammer, superheat, corrosive condensate, or other damaging operating characteristics dramatically affect performance of a steam trap. With over 80 years of experience in steam technology, Spirax Sarco is committed to helping it's customers design, operate and maintain an efficient steam system. You have our word on it!

		1st Choice							2nd Choice					
Application		oat & atil	ynanic Bal	anced Bir	etallic (Adansion Ing	ied in	oat & atil	Austric Bak	inced Birm	stallic Li	did in the tree		
Steam Mains to 30 psig 30-400 psig to 600 psig to 900 psig to 2000 psig with Superheat	√	\(\sqrt{1} \)								✓		<i>y y y y y</i>		
Separators	✓											✓		
Steam Tracers Critical Non-Critical		/	1					1	/					
Heating Equipment Shell & Tube Heat Exchangers Heating Coils Unit Heaters Plate & Frame Heat Exchangers Radiators	\ \ \ \ \ \ \ \ \		/									<i>y y y y</i>		
General Process Equipment to 30 psig to 200 psig to 465 psig to 600 psig to 900 psig to 2000 psig	<i>y y y</i>					<i>J J J</i>						<i>y y y</i>		
Hospital Equipment Autoclaves Sterilizers	1								1					
Fuel Oil Heating Bulk Storage Tanks Line Heaters	1		1				1							
Tanks & Vats Bulk Storage Tanks Process Vats	/		1				1	1						
Vulcanizers		1					1							
Evaporators	1											1		
Reboilers	1											1		
Rotating Cylinders	✓													
Freeze Protection					1									

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