

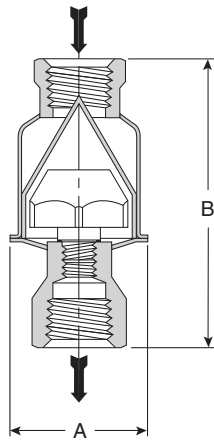


# WT Series Thermostatic Wafer Steam Traps

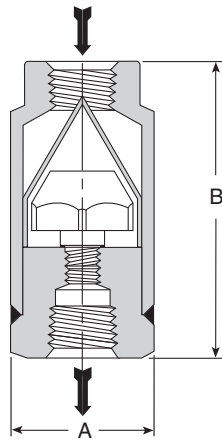
Stainless Steel or Carbon Steel

For Pressures to 41 bar...Cold Water Start-Up Capacities to 730 kg/h

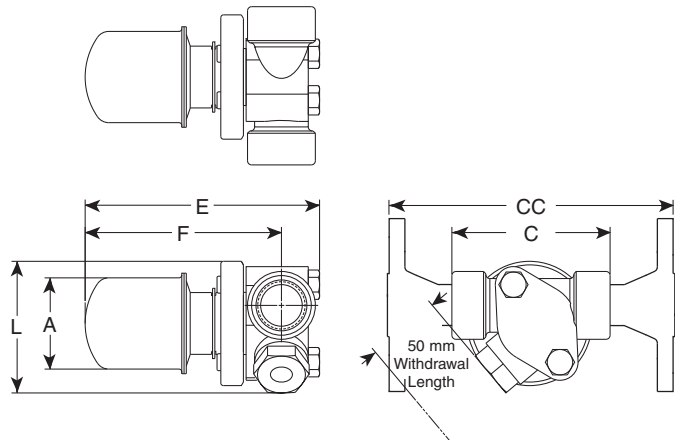
Steam Traps



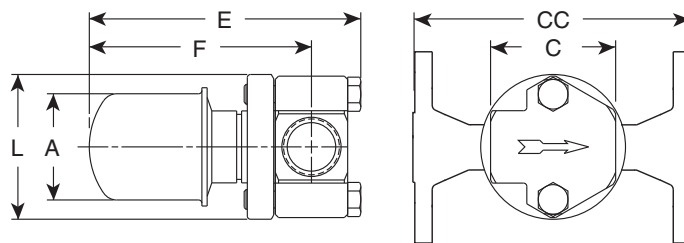
Model WT-1 Trap



Model WT-3 Trap



Model WT-2000 with IS-2 Connector with Integral Strainer



Model WT-2000 with Standard Connector

## Description

Armstrong offers three thermostatic wafer steam traps. The WT-1 is ideal for low-capacity steam tracers and features an exclusive non-welded wafer design and internal strainer screen two to three times larger than that of other thermostatic traps in a sealed stainless steel body. Choice of NPT or BSPT screwed connections.

The WT-2000 does not have an internal strainer, but is equipped with a special 360° connector to expand piping options and simplify installation. Choice of NPT or BSPT screwed connections, or socketweld connections. Also available with optional IS-2 stainless steel connector with integral strainer.

Armstrong's WT-3 is a carbon steel thermostatic wafer trap for superheated drip service. It features an exclusive non-welded wafer design, which eliminates problems associated with weld stress. The WT-3 has no thin-walled enclosures such as bellows or welded diaphragms. It is also resistant to water hammer. Choice of NPT or BSPT screwed connections, or socketweld connections.

**Note:** Since the normal operation of all suppressed temperature-discharge (subcooling) steam traps is to back up condensate, they should not be used on drip legs for saturated steam service, heating or process equipment. Exercise care in the maintenance of any thermostatic wafer trap with a small discharge area susceptible to clogging.

## Specification

Thermostatic wafer steam trap, type ... in stainless steel or carbon steel. Maximum allowable back pressure 99% of inlet pressure.



## How to Order

Specify:

- Model number
- Size and type of pipe connection, or connector style
- Any options required

Table ST-160-1. WT Series Trap (dimensions in mm)

Model No.	WT-1		WT-3
Pipe Connections	1/2"	3/4"	1/2" - 3/4"
"A" Diameter	57	57	57
"B" Face-to-Face (screwed & SW)	114	119	118
Weight in kg (screwed & SW)	0,5	0,6	1,4

Table ST-160-2. WT Series Trap (dimensions in mm)

Model No.	WT-2000		
	Standard Connector	IS-2 Connector with Integral Strainer	
Pipe Connections	15 - 20 - 25	15 - 20	25
"A" Diameter	57	57	57
"C" Face-to-Face (screwed & SW)	60 - 60 - N/A	89	102
"CC" Face-to-Face (flanged PN40*)	150 - 150 - 160	150	160
"F" $\varnothing$ to Bottom End	108	111	111
"E" Overall Length	133	130	133
"L" Overall Height	72	72	72
Blowdown Connection	—	1/4"	1/4"
Weight in kg (screwed & SW)	1,4	1,5	1,5
Weight in kg (flanged PN40*)	3,8 - 4,0 - 4,2	3,2 - 3,8	4,3

\* Standard flanges are in carbon steel, stainless steel flanges are optional. Other flange sizes, ratings and face-to-face dimensions are available on request.

All models comply with the article 3.3 of the PED (97/23/EC).

All dimensions and weights are approximate. Use certified print for exact dimensions. Design and materials are subject to change without notice.

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# WT Series Thermostatic Wafer Steam Traps

Stainless Steel or Carbon Steel

For Pressures to 41 bar...Cold Water Start-Up Capacities to 730 kg/h



**Table ST-161-1. WT Series Capacity**

Differential Pressure*	Cold Water Start-Up 21°C	Hot Water Start-Up 100°C	Operating Condensate 10°C Below Saturation
bar	kg/h	kg/h	kg/h**
0,35	54	45	4,5
0,7	68	77	5,9
1,4	145	113	8,2
2,0	177	136	9,1
3,0	191	159	10,9
3,5	222	181	11,8
5,0	259	218	13,6
7,0	295	263	15,9
10,5	318	318	18,1
14,0	408	363	20,9
17,0	454	431	22,7
21,0	476	465	25,4
24,0	522	544	28,6
28,0	590	567	31,8

\* Capacities based on differential pressure with no back pressure.

\*\* Capacities will vary with the degree of subcooling. When greater capacities are required, the trap will automatically adjust to the load, up to the maximum (cold water) capacity shown, by increasing the amount of subcooling.

## Connectors

Besides the inverted bucket traps, the standard connectors or IS-2 connector with integral strainer can also be used on thermostatic, thermostatic wafer and controlled disc traps.



Steam Traps

Table ST-161-2.			
Model	WT-1 All Stainless Steel	WT-2000 Stainless Steel w/360° Connector	WT-3 Carbon Steel
Design	Welded		
Connections	Screwed BSPT and NPT – Socketweld – Flanged (WT-2000 only)		
<b>Material</b>			
Body	ASTM A240 – 304L		Carbon Steel C-1018
Cap			
Capsule wafer	Hastelloy		
Capsule body	Stainless Steel – 303		
Capsule cap			
<b>Connector</b>			
Standard	—	Stainless Steel – 304	—
IS-2 w/integral strainer	—	ASTM A351 Gr.CF8 w/20x20 mesh 304 SS screen	—
<b>Maximum operating conditions</b>			
Maximum allowable pressure (vessel design)†	28 bar @ 343°C		41 bar @ 399°C
Maximum operating pressure	28 bar		41 bar
<b>Options WT-2000</b>			
Blowdown Valve IS-2 Connector Only			

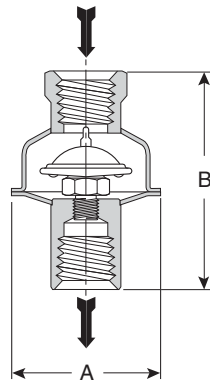
Maximum back pressure: 99% of inlet pressure

† May be derated depending on flange rating and type.

**All dimensions and weights are approximate. Use certified print for exact dimensions. Design and materials are subject to change without notice.**

# WMT Series Thermostatic Wafer Steam Traps

Stainless Steel or Carbon Steel  
For Pressures to 17 bar...Cold Water Start-up Capacities to 450 kg/h



Model WMT-1 Trap

## Description

The thermostatic wafer steam trap is sized precisely to handle the extremely low condensate load found in most instrument steam tracer lines. The WMT thermostatic wafer traps are designed to last longer than other oversized, all-purpose thermostatic and thermodynamic steam traps.

A water seal prevents loss of steam through the orifice of the WMT Series.

Adjusts automatically to flow rates, including large start-up loads, at all pressures within its range.

## Specification

Thermostatic wafer steam trap, type WMT-1 in stainless steel. Maximum allowable back pressure 99% of inlet pressure.

## How to Order

- Specify model number
- Specify size and type of pipe connection. When flanges are required, specify type of flange in detail

Table ST-162-2. WMT-1 Trap (dimensions in mm)

Model No.	WMT-1	
Pipe Connections	1/4" - 3/8"	1/2"
"A" Diameter	57	57
"B" Face-to-Face (screwed & SW)	84	84
Weight in kg (screwed & SW)	0,1	0,1

Table ST-162-3. WMT-1 Traps

Model	WMT-1
Connections	Screwed BSPT and NPT
<b>Material</b>	
Cap and Body	ASTM A240 to 304L
Capsule	All stainless steel – 304
<b>Maximum Operating Conditions</b>	
Maximum allowable pressure (vessel design)†	17 bar @ 204°C
Maximum operating pressure	17 bar

Maximum back pressure: 99% of inlet pressure

Table ST-162-1. WMT Series Capacity

Differential Pressure*	Cold Water Start-Up 21°C	Hot Water Start-Up 100°C	Operating Condensate 10°C Below Saturation
bar	kg/h	kg/h	kg/h**
0,35	54	45	4,5
0,7	68	77	5,9
1,4	145	113	8,2
2,0	177	136	9,1
3,0	191	159	10,9
3,5	222	181	11,8
5,0	259	218	13,6
7,0	295	263	15,9
10,5	318	318	18,1
14,0	408	363	20,9
17,0	454	431	22,7

\* Capacities based on differential pressure with no back pressure.

\*\* Capacities will vary with the degree of subcooling. When greater capacities are required, the trap will automatically adjust to the load, up to the maximum (cold water) capacity shown, by increasing the amount of subcooling.

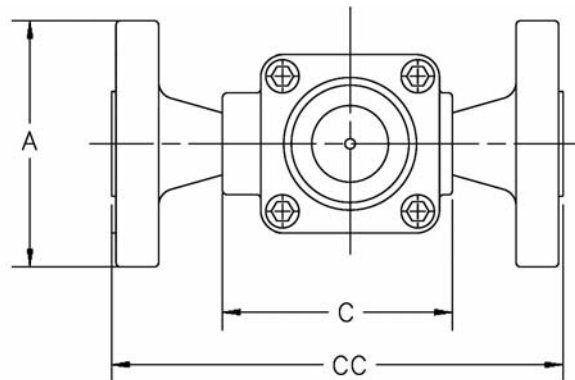
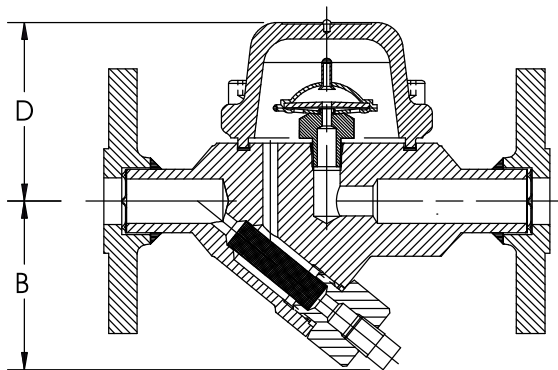
† May be derated depending on flange rating and type.

**All dimensions and weights are approximate. Use certified print for exact dimensions. Design and materials are subject to change without notice.**

# TC-300 Series Thermostatic Capsule Steam Trap

Carbon Steel

For Pressures to 17 bar ... Cold Water Start-up Capacities to 454 Kg/h



## Description

The TC-300 is sized precisely to handle the extremely low condensate load found in most instrument steam tracer lines. The TC-300 traps are designed to last longer than other oversized, all-purpose thermostatic and thermodynamic steam traps.

This steam trap adjusts automatically to flow rates, including large start-up loads, at all pressures within its range.

## How to Order

Specify: Model Number, Size and type of pipe connection. When flanges are required, specify type of flange in detail.

Table ST-163-1. TC-300 Series Capacity

Differential Pressure*	Cold Water Start-Up 21°C	Hot Water Start-Up 100°C	Operating Condensate 10°C Below Saturation
bar	kg/h	kg/h	kg/h**
0,35	54	45	4,5
0,7	68	77	5,9
1,4	145	113	8,2
2,0	177	136	9,1
3,0	191	159	10,9
3,5	222	181	11,8
5,0	259	218	13,6
7,0	295	263	15,9
10,5	318	318	18,1
14,0	408	363	20,9
17,0	454	431	22,7

\* Capacities based on differential pressure with no back pressure.

\*\* Capacities will vary with the degree of subcooling. When greater capacities are required, the trap will automatically adjust to the load, up to the maximum (cold water) capacity shown, by increasing the amount of subcooling.

Table ST-163-2. TC-300 Trap (dimensions in mm)

Pipe Connections	15 – 20 – 25
"B" Height (Screwed & SW)	117
"A" Height (flanged PN40*)	117
"C" Face-to-Face (Screwed & SW)	90 – 90 – N/A
"CC" Face-to-Face (Flanged PN40*)	150 – 150 – 160
"D" CL to Top	60
Weight in kg (Screwed & SW)	1,9
Weight in kg (Flanged PN40)	4,3 – 4,5 – 4,7

Table ST-163-3. TC-300 Traps

Model	WMT-1
Connections	Screwed BSPT and NPT Socketwelded Flanged DIN and ANSI
<b>Material</b>	
Cap and Body	ASTM-A-105
Capsule	All Stainless Steel – 304
<b>Maximum Operating Conditions</b>	
Maximum allowable pressure (vessel design)†	32 bar @ 350 °C
Maximum operating pressure	17 bar @ 207 °C

† May be derated depending on flange rating and type.

**All dimensions and weights are approximate. Use certified print for exact dimensions. Design and materials are subject to change without notice.**

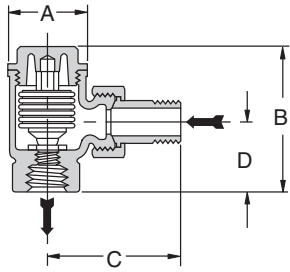


# TS Series Radiator Traps

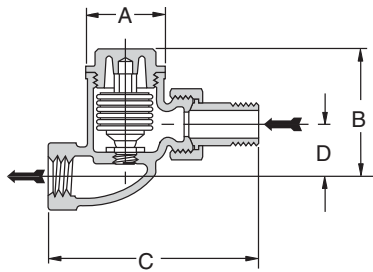
Bronze

For Pressures to 4,5 bar...Capacities to 730 kg

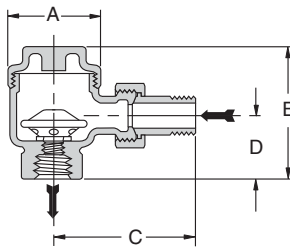
Steam Traps



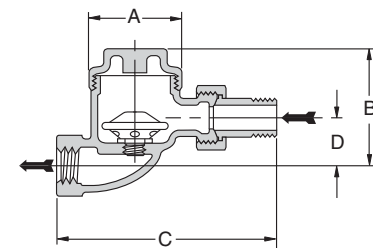
TS-2 Trap Angle Type



TS-2 Trap Straight Type



TS-3 Trap Angle Type



TS-3 Trap Straight Type



Armstrong Series TS radiator traps are offered in both angle and straight patterns. The TS-2 has a balanced pressure thermostatic element with a high quality multiple-convolution bellows. It's ideal for draining equipment such as steam radiators and convectors, small heat exchangers, unit heaters and steam air vents. The TS-2 comes with a strong, cast bronze body and a stainless seat. The valve and seat are renewable in-line.

The TS-3 is a heavy duty, wafer type trap for the drainage of all types of steam radiators and convectors. Its wafer design is well suited to systems prone to water hammer, which may damage conventional bellows type units. The TS-3 is repairable in-line and has an all-stainless steel wafer element.

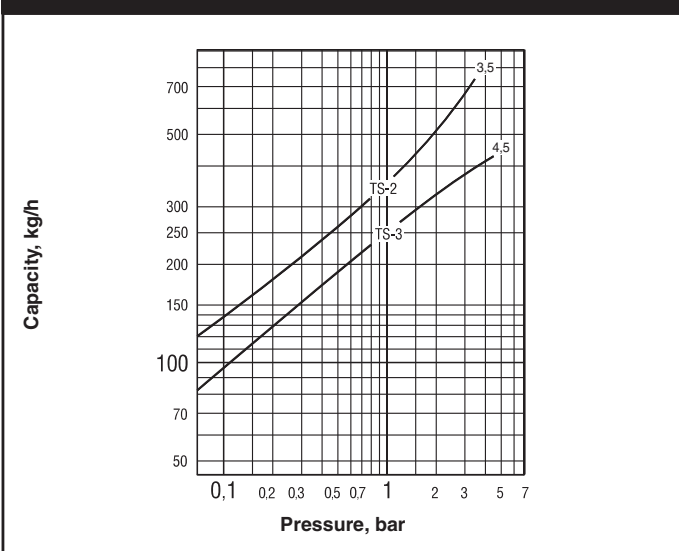
### Materials

Cap:	Bronze, ASTM B 62
Body:	Bronze, ASTM B 62
Union Nipple:	Brass, ASTM B 584
Valve:	
Model TS-2:	Brass
Model TS-3:	Stainless steel
Valve Seat:	Stainless steel
Element:	
Model TS-2:	Phosphor-bronze bellows
Model TS-3:	T-316 SS Wafer w/T-304 SS Housing

### Connections

Screwed BSPT and NPT

Table ST-164-2. TS Series Capacity



### Maximum Operating Conditions

Maximum allowable pressure (vessel design):	
Model TS-2:	3,5 bar @ 149°C
Model TS-3:	4,5 bar @ 157°C
Maximum operating pressure:	
Model TS-2:	3,5 bar
Model TS-3:	4,5 bar
Maximum back pressure:	99% of inlet pressure

Table ST-164-1. TS Series Radiator Trap (dimensions in mm)

Model	TS-2				TS-3					
	Angle		Straight		Angle			Straight		
Pipe Connections	15	20	15	20	15	20	25	15	20	25
"A" Diameter	41,3	41,3	41,3	41,3	50,8	50,8	60,3	50,8	50,8	60,3
"B" Height	74,6	76,2	68,3	73,0	73,0	92,1	98,4	66,7	85,7	88,9
"C"	65,1	73,0	101,6	114,3	79,4	88,9	105,0	124,0	133,0	165,0
"D"	34,9	41,3	28,6	33,3	34,9	41,3	50,8	28,6	34,9	41,3
Weight in kg (screwed)	0,7	0,8	0,7	0,9	0,7	0,9	1,1	0,7	1	1,4

All models comply with the article 3.3 of the PED (97/23/EC).

All dimensions and weights are approximate. Use certified print for exact dimensions. Design and materials are subject to change without notice.

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# Notes



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Steam Traps





# TT Series Thermostatic Bellows Steam Traps

All Stainless Steel

For Pressures to 20 bar...Capacities to 1 570 kg/h

## Description

The balanced pressure bellows thermostatic steam trap has a sealed, stainless-steel body that is lightweight, compact and highly resistant to corrosion. The cage, bellows, valve and seat are all assembled into a precisely calibrated operating unit that ensures positive opening and closing action at slightly below steam temperature. The unique, stainless-steel construction is smaller and much lighter than comparable cast iron, brass or steel traps. TTF-1 is available with straight-thru or right angle connections. TT-2000 with the 360° universal stainless steel connector comes with either a standard connector or the IS-2 connector with integral strainer.

**Note:** Can also be used as a thermostatic air vent (Reference TTF Series Thermostatic Air Vents page AV-420).

## Specification

Thermostatic steam trap, type ... in stainless steel. Maximum allowable back pressure 99% of inlet pressure.

## How to Order

Specify:

- Model number
- Size and type of pipe connection
- Connector type (TT-2000)

## Connections

Screwed BSPT and NPT

TT-2000: Socketweld

TT-2000: Flanged DIN or ANSI (welded)

## Materials

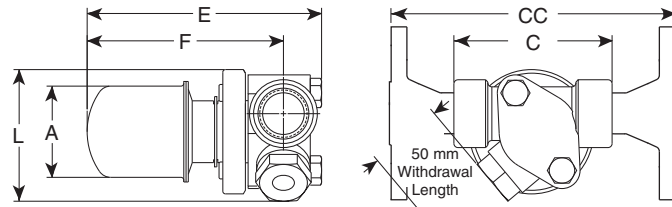
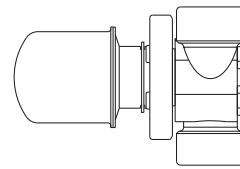
Body: 304L Stainless steel

Connector: 304 Stainless steel (TT-2000)

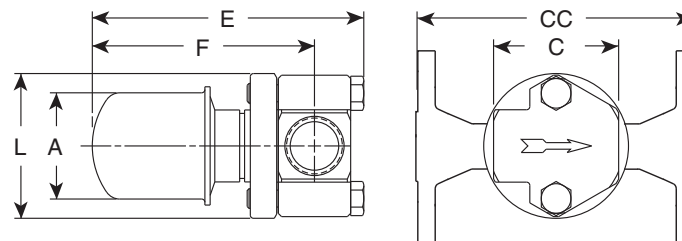
Bellows: Stainless steel and bronze with phosphor-bronze bellows, caged in stainless steel



Model TT-2000 with Standard Connector



Model TT-2000 with Standard Connector



Model TT-2000 with IS-2 Connector with Integral Strainer

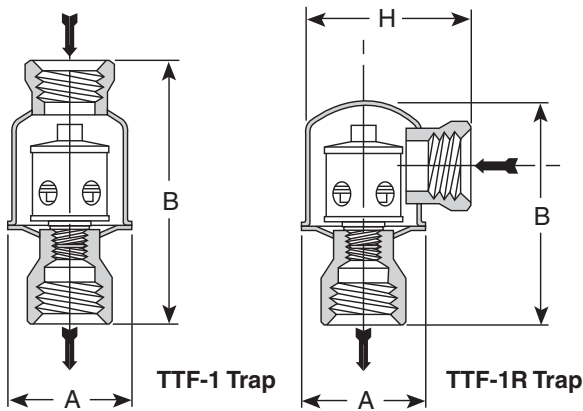


Table ST-166-1. TTF Series Trap (dimensions in mm)

Model No.	TTF-1		TTF-1R		TT-2000		
	Straight-Thru Connections		Right-Angle Connections		Standard Connector	IS-2 Connector with Integral Strainer	
Pipe Connections	15	20	15	20	15 – 20 – 25	15 – 20	25
"A" Diameter	57	57	57	57	57	57	57
"B" Height	114	119	95	100	—	—	—
"C" Face-to-Face (screwed & SW)	—	—	—	—	60 – 60 – N/A	89	102
"CC" Face-to-Face (flanged PN40*)	—	—	—	—	150 – 150 – 160	150	160
"E" Overall Length	—	—	—	—	133	130	133
"F" $\varnothing$ to to Body End	—	—	—	—	108	111	111
"L" Overall Height	—	—	—	—	72	72	72
"H" Width for angle connection	—	—	78	76	—	—	—
Weight in kg (screwed & SW)	0,4	0,5	0,4	0,5	1,4	1,5	1,5
Weight in kg (flanged PN40*)	—	—	—	—	3,8 – 4,0 – 4,2	3,2 – 3,8	4,3

\* Standard flanges are in carbon steel, stainless steel flanges are optional. Other flange sizes, ratings and face-to-face dimensions are available on request. All models comply with the article 3.3 of the PED (97/23/EC).

**All dimensions and weights are approximate. Use certified print for exact dimensions. Design and materials are subject to change without notice.**

# TT Series Thermostatic Bellows Steam Traps

All Stainless Steel

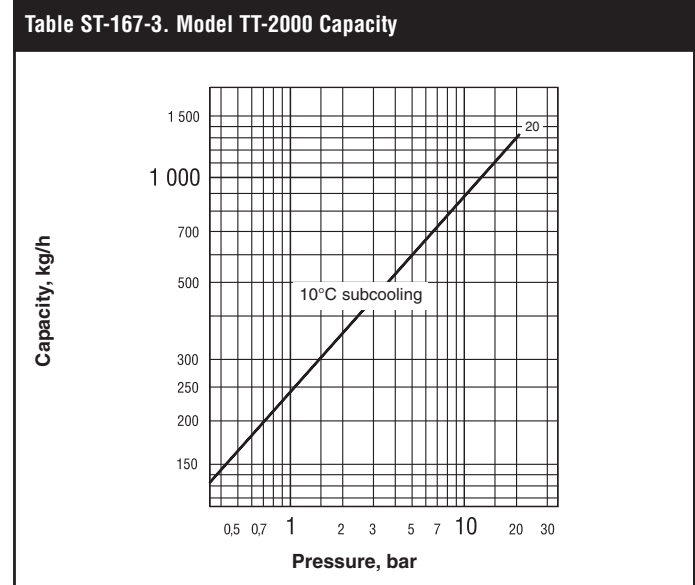
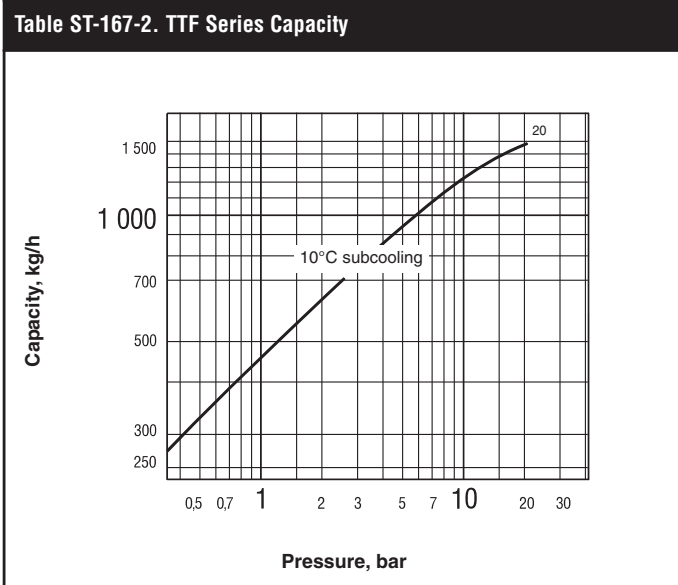
For Pressures to 20 bar...Capacities to 1 570 kg/h



Steam Traps

Table ST-167-1.			
Model	TTF-1	TTF-1R	TT-2000
Design	Welded		
Connections	Screwed BSPT and NPT – Socketweld – Flanged (TT-2000 only)		
<b>Material</b>			
Body	ASTM A240 – 304L		
Valve	Bronze		
Seat	Stainless Steel		
Thermostatic air vent	Standard Stainless steel & bronze w/phosphor bronze bellows caged in stainless steel		
<b>Optional:</b> All stainless steel thermostatic air vent			
<b>Connector</b>			
Standard	—	—	Stainless steel – 304
IS-2 w/integral strainer	—	—	ASTM A351 Gr.CF8 w/20x20 mesh 304 SS screen
<b>Maximum Operating Conditions</b>			
Maximum allowable pressure (vessel design)†	20 bar @ 232°C		
Maximum operating pressure	20 bar		
Maximum operating temperature bellows	190°C		

Maximum back pressure: 99% of inlet pressure



† May be derated depending on flange rating and type.

**All dimensions and weights are approximate. Use certified print for exact dimensions. Design and materials are subject to change without notice.**





# TC Series Clean Steam Thermostatic Traps

**Stainless Steel 316L**

For Pressures to 8,3 bar...Capacities to 1 700 kg/h

Armstrong offers a complete range of T-316L stainless steel clean steam thermostatic traps to handle the special requirements of clean steam systems. Different body configurations allow for choice of piping and ease of cleaning.

The thermostatic design is free-draining and can operate close to steam temperature at any given pressure.

## Features:

- Constructed of 316L stainless steel for corrosion resistance
- Highly polished for cleanability
- Self-draining to minimize contamination
- Compact and lightweight
- Easy to install
- Provide easy disassembly for cleaning

## Typical Applications:

- Fermentors
- Sterilizers/autoclaves
- Process piping
- Block and bleed
- Bioreactors
- CIP/SIP systems
- Equipment sterilization
- Sterile barriers

## How to Order:

Specify:

- Model number
- Pipe connection size
- End connection type

Example:

TC-C, 1/2" sanitary end connections.



Model	TC-C Clamp	TC-R Repairable	TC-S Sealed
Cap and body	ASTM A479 316L		
Bellows	316L stainless steel		
Body gasket	Viton		—
Retainer	Stainless steel		
Clamp	Stainless steel	—	—
Screws	—	Stainless steel	—
Finish	180 grit electro polish to 20 ra or below inside, and 150 grit electro polish to 30 ra or below on outside	—	—

All models comply with the article 3.3 of the PED (97/23/EC).

Model	TC-C Clamp	TC-R Repairable	TC-S Sealed
Maximum Allowable Pressure (Vessel Design)	8,3 bar		10 bar
Maximum Allowable Temperature	177°C		186°C
Maximum Operating Pressure	7 bar		8,3 bar
Weight in kg	0,57	0,68	0,34

Maximum back pressure: 99% of inlet pressure

Differential Pressure* bar	5°C Subcool kg/h	11°C Subcool kg/h**
0,35	82	145
0,7	163	293
1,4	307	503
2,1	458	709
2,8	561	830
3,5	699	915
4,1	837	1 136
4,8	924	1 210
5,5	1 071	1 356
6,2	1 116	1 468
6,9	1 155	1 565
7,6	1 184	1 651
8,3	1 206	1 712

\* Capacities based on differential pressure with no back pressure.

\*\* Capacities will vary with the degree of subcooling. When greater capacities are required, the trap will automatically adjust to the load, up to the maximum (cold water) capacity shown, by increasing the amount of subcooling.

**All dimensions and weights are approximate. Use certified print for exact dimensions. Design and materials are subject to change without notice.**

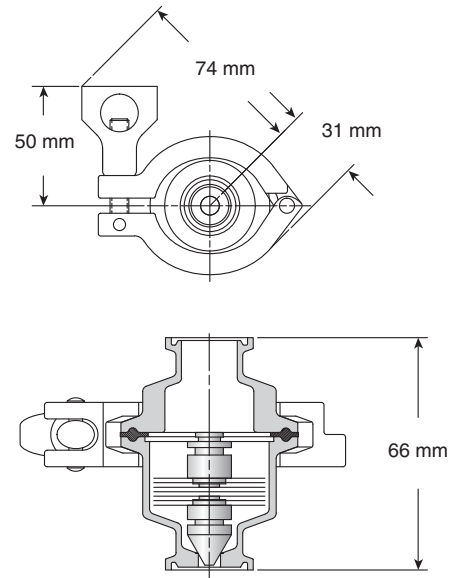
# TC Series Clean Steam Thermostatic Traps

Stainless Steel 316L

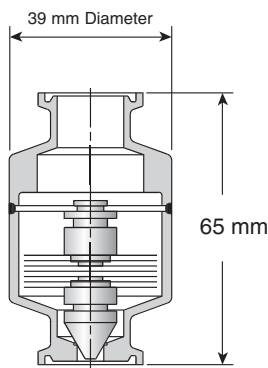
For Pressures to 8,3 bar...Capacities to 1 700 kg/h



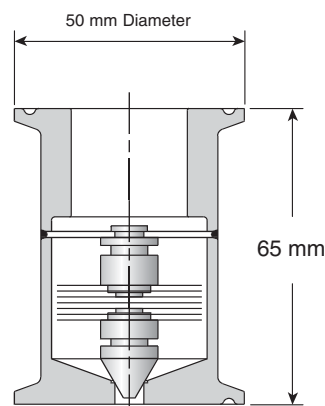
Steam Traps



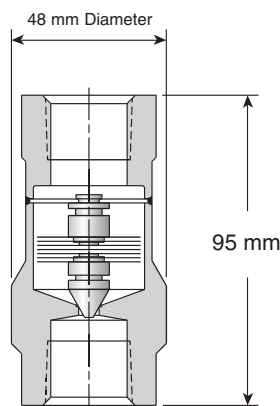
**Model TC-C Clamp  
With Sanitary Body Clamp**  
1/2", 3/4 and 1" Sanitary End Connections



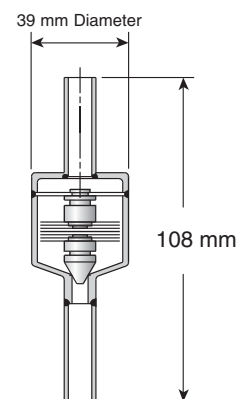
**Model TC-S Sealed**  
1/2" and 3/4"  
Sanitary End Connections



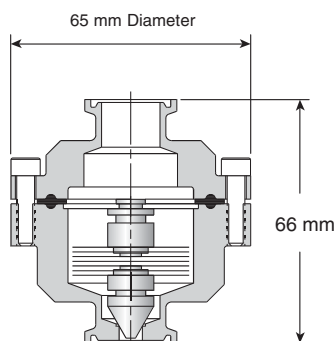
**Model TC-S Sealed**  
1"  
Sanitary End Connections



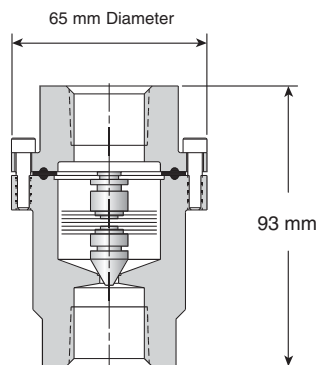
**Model TC-S Sealed**  
1/2" and 3/4"  
Threaded End Connections



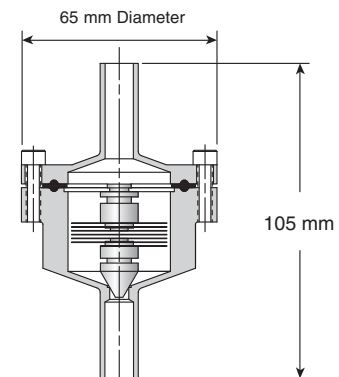
**Model TC-S Sealed**  
1/2" and 3/4"  
Tube End Connections



**Model TC-R Repairable  
With Bolted Body and Cap**  
1/2", 3/4 and 1"  
Sanitary End Connections



**Model TC-R Repairable  
With Bolted Body and Cap**  
1/2" and 3/4"  
Threaded End Connections



**Model TC-R Repairable  
With Bolted Body and Cap**  
1/2" and 3/4"  
Tube End Connections

*All dimensions and weights are approximate. Use certified print for exact dimensions. Design and materials are subject to change without notice.*

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