








Float & Thermostatic

64-83

Model	Body Material	PMO (PSIG)	Sizes	Connections	Page No.
WFT	Cast Iron	250	3/4" - 2"	NPT	66
FTT	Ductile Iron	300	1/2" - 2"	NPT	70
FTE/FTES	Ductile Iron/Cast Steel	200/300	1 1/2", 2", 2 1/2"	NPT, SW, FLG	74
FT600/FT601	Carbon Steel/Stainless Steel	450	3/4" - 4"	NPT, SW, FLG	76
FT	Cast Iron	75	3/4" - 2"	NPT	82

PMO = Maximum Operating Pressure

	Characteristics	Material	Application
WFT 	Parallel Pipe Connection	Cast Iron	Primary Selection for Low to Medium Capacity General Purpose Process Applications Smaller sizes can also be used for Drip Applications
FTT 	In-Line Pipe Connection	Ductile Iron	
FTE & FTES 	Extremely High-Capacity	FTE: Ductile Iron FTES: Cast Steel	High Capacity Process Applications
FT600 & FT601 	Cast Steel Body	FT600: Carbon Steel FT601: Stainless Steel	Where Carbon Steel or Stainless Steel bodies are required
FT 	Parallel Pipe Connection (H-pattern)	Cast Iron	General Purpose, Low to Medium Capacity Process Applications up to 75 psig Smaller sizes can also be used for Drip Applications

Introduction

FLOAT & THERMOSTATIC TRAPS

F&T steam traps are the most common trap type used for process applications. They use a float-operated valve mechanism to discharge condensate as it is formed, and an air vent for discharging air at start-up; both very important requirements for process applications. The WFT and FTT-Series with Iron bodies, are suitable for most general purpose process applications up to 250 PSIG. The 3/4" WFT and FTT are often used for drip applications. The FTE-Series has extremely high capacity. The FT600 Series available with Cast Steel or Stainless Steel bodies; often required in Chemical and Petrochemical refineries and other industries.

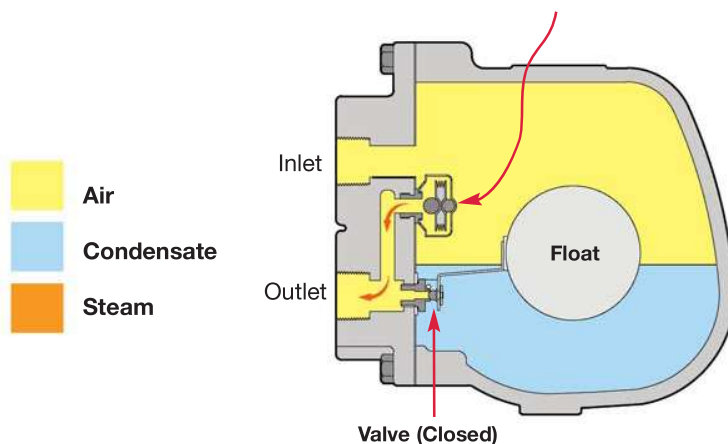
F&T Traps are classified as mechanical style traps and require the buoyancy of the float, and a lever mechanism to lift the valve disc off the seat orifice. Larger seat orifices and higher steam pressures require additional buoyancy and mechanical force for the trap to open. Select a trap model with an equal or higher PMO rating than the steam pressure, or the trap will not open. F&T traps are not self-draining and are therefore subject to freezing in cold climates. Freeze protection valves are available to fully drain most model F&T traps during shut down periods.

Operation:

At start-up, air and condensate enter the steam trap. The air will be discharged through the open thermostatic air vent (**Figure A**). As the condensate level in the trap rises, it lifts the float which opens the valve to allow the discharge of condensate. When steam enters the trap, the thermostatic element expands and closes the air vent, preventing the steam from escaping (**Figure B**). As the condensate discharges through the seat orifice, the float lowers, and shuts the valve (**Figure C**). The float closes the valve with a level of condensate above the seating orifice to prevent loss of any steam. The float level rises and falls to modulate the seat opening in order to maintain a constant equilibrium between the incoming and discharging condensate. Due to the balance of forces required between the incoming pressure and internal trap components, several orifice sizes are offered to accommodate various differential pressure ranges. These traps can be fitted with a steam lock release (SLR) to be used when the steam trap is physically positioned above the condensate collection point. For superheated steam applications, the thermostatic air vent is replaced with a live orifice air vent.

A) Venting Air

Thermostatic Air Vent (Open) when Air is present



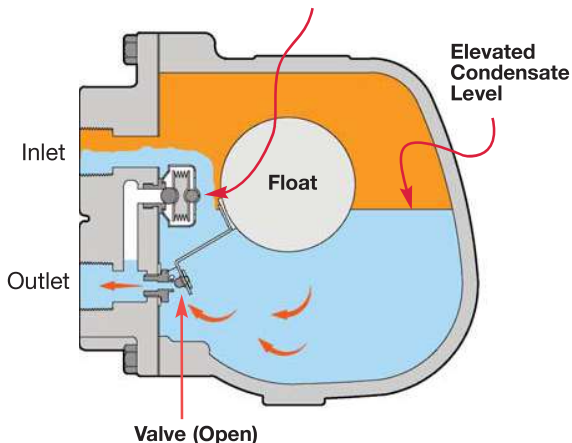
A) When cold air enters the trap during start-up, the thermostatic air vent is open, allowing the discharge of large quantities of air from the system.

B) When condensate enters the trap, the float lifts which opens the valve, allowing condensate to discharge.

C) When steam is present, and no condensate is entering the trap, the valve and thermostatic air vent remain closed, trapping steam in the system.

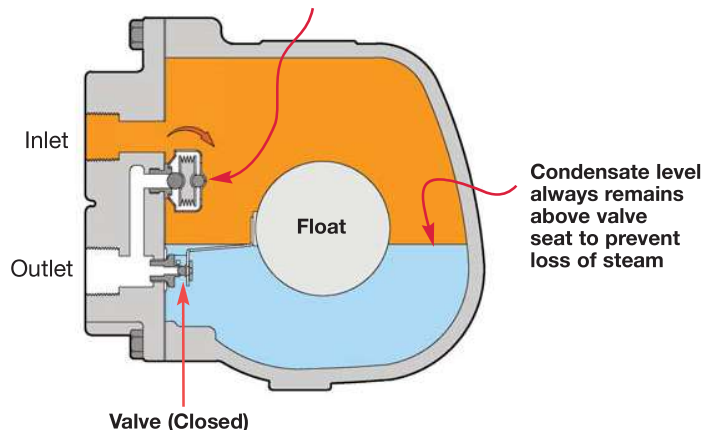
B) Discharging Condensate

Thermostatic Air Vent (Closed) when Steam is present



C) Closed (Trapping Steam)

Thermostatic Air Vent (Closed) when Steam is present



Steam Traps

Float & Thermostatic Steam Trap

WFT Series

Float & Thermostatic

Model	WFT
Sizes	3/4", 1", 1 1/4", 1 1/2", 2"
Connections	NPT
Body Material	Cast Iron
PMO Max. Operating Pressure	250 PSIG
TMO Max. Operating Temperature	Saturated Steam Temperature
PMA Max. Allowable Pressure	250 PSIG up to 450°F
TMA Max. Allowable Temperature	450°F @ 250 PSIG



Typical Applications

PROCESS, DRIP: WFT Series with parallel port connections were specifically designed for removing condensate and air from HVAC and industrial process applications such as unit heaters, pressing machines, heat exchangers and coils. They contain a high-quality welded stainless steel thermostatic air vent and stainless steel mechanism. The WFT Series are fully repairable while the trap remains in-line and are available in 3/4" thru 2" NPT connections. For drip applications, such as draining steam mains and steam supply lines, use model 3/4" WFT-125 (WFT-125-13-N).

How It Works

Float and thermostatic traps contain a float-operated valve and seat mechanism with a separate thermostatic element which work together to remove both condensate and air from the steam system. The float, which is attached to a valve, rises and opens the valve when condensate enters the trap, allowing the condensate to discharge. Air is discharged through the thermostatic air vent to the outlet side of the trap. Steam entering the trap causes the thermostatic element to expand, closing the air vent and trapping the steam.

Features

- All stainless steel internals with hardened seat and wear parts
- In-line repairability is simplified by having all internals attached to the cover
- Welded stainless steel thermostatic air vent resists shock from waterhammer. Live orifice air vent is available for superheated applications
- Excellent air handling capability allows air to be discharged rapidly so steam can enter the system quickly during start-up
- F&T traps discharge condensate immediately as it is formed (no condensate will back up into the system)

Sample Specification

The trap shall be of float and thermostatic design with cast iron body and parallel piping configuration. Thermostatic air vent to be welded stainless steel. All internals must be stainless steel with hardened seat area. Trap must be in-line repairable.

Installation and Maintenance

The trap must be installed upright and level for the float mechanism to operate properly. All internal components can be replaced with the trap connected in-line. Repair kits include thermostatic air vent, float, valve seat and disc, and gaskets. The standard thermostatic air vent can be damaged by superheat; therefore, in applications with superheated steam, the thermostatic air vent should be replaced with a special "live orifice" air vent.

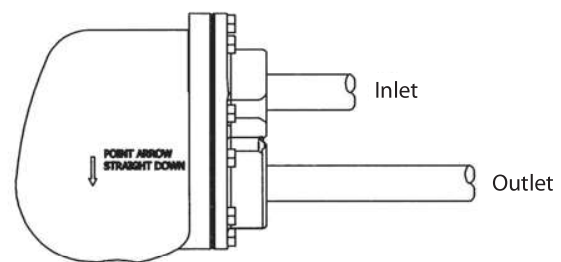
Options

- Live orifice air vent for superheated steam applications.
- NPT Connection for freeze protection

MATERIALS

Body & Cover	Cast Iron
Gasket	Grafoil
Cover Screws	Steel, GR5
Float	Stainless Steel, AISI 304
Internals	Stainless Steel, 300 Series
Thermostat	Stainless Steel
Valve Seat	Stainless Steel, 17-4 PH
Valve Disc	Stainless Steel, AISI 420F

Demonstration of Parallel piping connections:



How to Size / Order

The PMO (maximum operating pressure) rating of model selected must meet or exceed the maximum steam pressure or the trap may not open. For example; the WFT-125 has a PMO of 125 psi. Condensate capacity (lbs/hr) of the trap is based on the differential pressure across the trap. For drip applications, a 3/4" WFT size is generally sufficient to exceed warm-up loads with a 2X safety factor. The condensate loads (lbs/hr) for process applications are normally calculated at the maximum steam pressure; then an appropriate safety margin is applied in order to select a trap with sufficient capacity when operating at lower steam pressures. Reference full explanation of Safety Load Factors in Steam Trap Introduction section.

When a temperature control valve regulates the flow of steam to the process equipment (Heat Exchanger) being drained of condensate, it is recommended to select a trap with a PMO that exceeds the inlet steam pressure to the temperature control valve. This assures that under all operating conditions, the steam pressure will not exceed the PMO of the trap.

For Example: Process application has a maximum steam inlet pressure of 100 psi, a maximum condensate load of 2,500 lbs/hr and is discharging to a condensate return line with a possible back pressure of 25 PSIG. $\Delta P = 100 - 25 = 75$ PSI

To select trap: If the Safety Load Factor is chosen to be 2X max capacity at max differential pressure, then Trap should be selected based on 5,000 lbs/hr ($2,500 \times 2 = 5,000$) at 75 PSI differential pressure with a PMO in excess of 100 PSIG

Selection: WFT-125-17-N, PMO=125 PSIG, 2" NPT with a condensate capacity of 7,460 lbs/hr at 75 PSI differential pressure.

CAPACITIES — Condensate (lbs/hr)

Model Code	PMO (PSIG)	Pipe Orifice Size	$\Delta P =$ Differential Pressure (PSI)																						
			1/4	1/2	1	2	5	10	15	20	30	40	50	75	100	125	150	175	200	225	250				
WFT-015-13-N	15	3/4"	0.250	390	490	620	780	1050	1320	1500															
WFT-015-14-N	15	1"	0.250	390	490	620	780	1050	1320	1500															
WFT-015-15-N	15	1 1/4"	0.312	610	770	960	1210	1630	2040	2330															
WFT-015-16-N	15	1 1/2"	0.500	1420	1910	2570	3460	5120	6890	8190															
WFT-015-17-N	15	2"	0.625	2260	2950	3860	5040	7170	9360	10930															
WFT-030-13-N	30	3/4"	0.228	330	420	530	670	930	1180	1350	1500	1720													
WFT-030-14-N	30	1"	0.228	330	420	530	670	930	1180	1350	1500	1720													
WFT-030-15-N	30	1 1/4"	0.228	330	420	530	670	930	1180	1350	1500	1720													
WFT-030-16-N	30	1 1/2"	0.390	930	1240	1650	2190	3210	4280	5060	5700	6750													
WFT-030-17-N	30	2"	0.500	1420	1910	2570	3460	5120	6890	8190	9260	11020													
WFT-075-13-N	75	3/4"	0.166	175	225	295	385	545	705	825	920	1075	1200	1305	1525										
WFT-075-14-N	75	1"	0.166	175	225	295	385	545	705	825	920	1075	1200	1305	1525										
WFT-075-15-N	75	1 1/4"	0.312	640	850	1130	1500	2180	2900	3420	3850	4540	5110	5600	6610										
WFT-075-16-N	75	1 1/2"	0.312	640	850	1130	1500	2180	2900	3420	3850	4540	5110	5600	6610										
WFT-075-17-N	75	2"	0.422	1020	1340	1760	2310	3330	4380	5140	5760	6770	7590	8290	9730										
WFT-125-13-N	125	3/4"	0.128	105	135	180	235	340	445	525	585	690	770	845	990	1110	1210								
WFT-125-14-N	125	1"	0.128	105	135	180	235	340	445	525	585	690	770	845	990	1110	1210								
WFT-125-15-N	125	1 1/4"	0.250	410	540	710	930	1340	1770	2070	2320	2730	3050	3340	3920	4390	4790								
WFT-125-16-N	125	1 1/2"	0.250	410	540	710	930	1340	1770	2070	2320	2730	3050	3340	3920	4390	4790								
WFT-125-17-N	125	2"	0.332	720	960	1270	1690	2460	3270	3860	4340	5130	5770	6320	7460	8390	9190								
WFT-175-13-N	175	3/4"	0.166	190	250	320	420	590	770	900	1010	1180	1310	1430	1670	1870	2030	2180	2310						
WFT-175-14-N	175	1"	0.166	190	250	320	420	590	770	900	1010	1180	1310	1430	1670	1870	2030	2180	2310						
WFT-175-15-N	175	1 1/4"	0.250	410	540	710	930	1340	1770	2070	2320	2730	3050	3340	3920	4390	4790	5150	5470						
WFT-175-16-N	175	1 1/2"	0.250	410	540	710	930	1340	1770	2070	2320	2730	3050	3340	3920	4390	4790	5150	5470						
WFT-175-17-N	175	2"	0.281	520	680	900	1180	1700	2230	2620	2930	3440	3860	4210	4950	5540	6050	6510	6920						
WFT-250-13-N	250	3/4"	0.128	115	145	190	245	345	450	520	580	675	755	820	955	1060	1155	1235	1310	1375	1440	1495			
WFT-250-14-N	250	1"	0.128	115	145	190	245	345	450	520	580	675	755	820	955	1060	1155	1235	1310	1375	1440	1495			
WFT-250-15-N	250	1 1/4"	0.203	270	350	450	590	820	1070	1240	1380	1600	1780	1940	2250	2500	2720	2910	3080	3240	3380	3520			
WFT-250-16-N	250	1 1/2"	0.203	270	350	450	590	820	1070	1240	1380	1600	1780	1940	2250	2500	2720	2910	3080	3240	3380	3520			
WFT-250-17-N	250	2"	0.250	410	540	710	930	1340	1760	2060	2310	2710	3040	3320	3890	4360	4760	5110	5430	5730	6000	6250			

Steam Traps

Float & Thermostatic Steam Trap

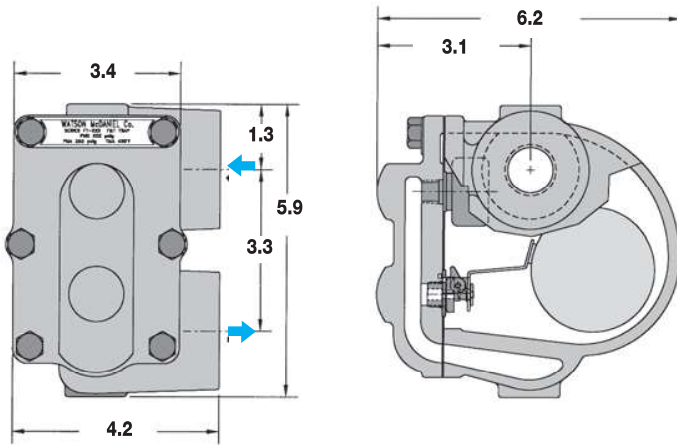
WFT Series

Float & Thermostatic

Dimensions: inches



WFT
3/4" • 1" • 1 1/4"

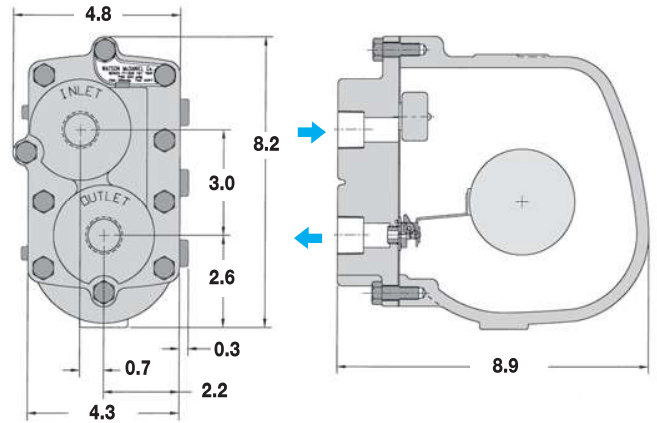


SPECIFICATIONS

Model	Sizes	Connection	PMO (PSIG)	PMA (PSIG)	Weight (lbs)
WFT-15	3/4", 1", 1 1/4"	NPT	15	125	9
WFT-30	3/4", 1", 1 1/4"	NPT	30	125	9
WFT-75	3/4", 1"	NPT	75	125	9
WFT-125	3/4", 1"	NPT	125	125	9

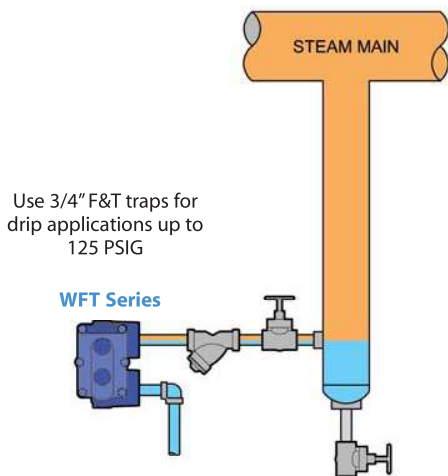


WFT
3/4" & 1"

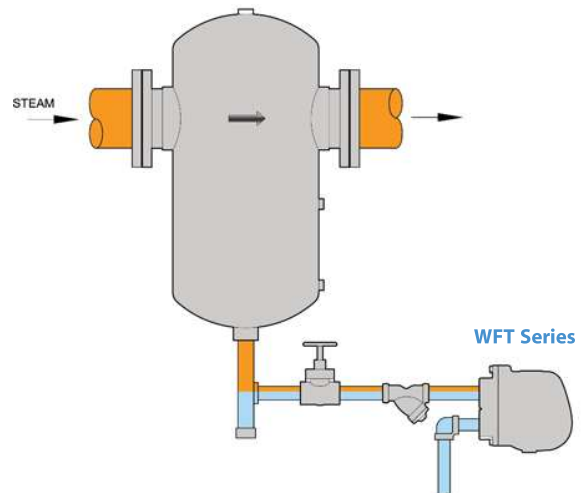


SPECIFICATIONS

Model	Sizes	Connection	PMO (PSIG)	PMA (PSIG)	Weight (lbs)
WFT-175	3/4", 1"	NPT	175	250	20
WFT-250	3/4", 1"	NPT	250	250	20



Steam Main Drip Application



Separator Application

Steam Traps

Float & Thermostatic Steam Trap

WFT Series

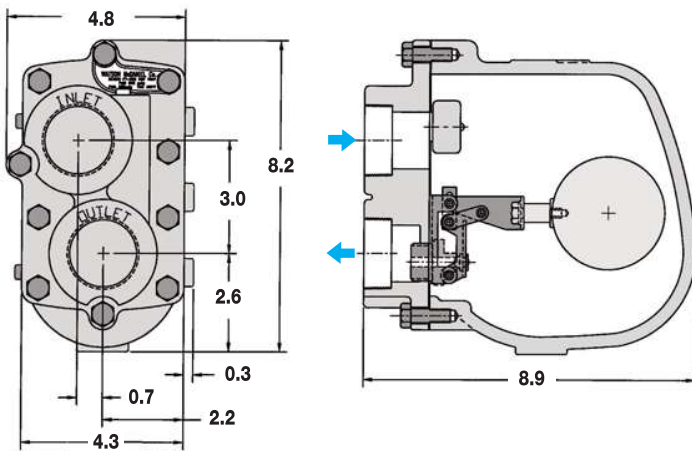
Float & Thermostatic

STEAM TRAPS

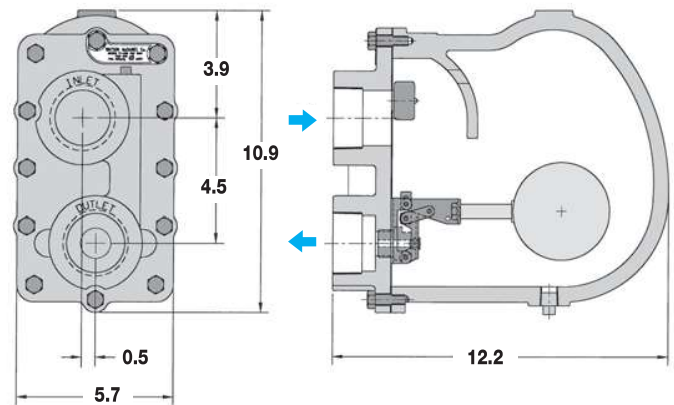
Dimensions: inches



WFT
1 1/4" & 1 1/2"



WFT
2"



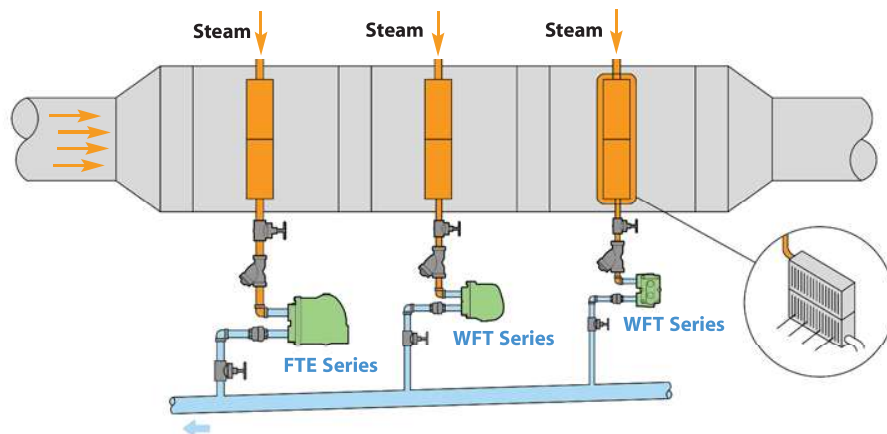
SPECIFICATIONS

Model	Sizes	Connection	PMO (PSIG)	PMA (PSIG)	Weight (lbs)
WFT-15	1 1/2"	NPT	15	250	21
WFT-30	1 1/2"	NPT	30	250	21
WFT-75	1 1/4", 1 1/2"	NPT	75	250	21
WFT-125	1 1/4", 1 1/2"	NPT	125	250	21
WFT-175	1 1/4", 1 1/2"	NPT	175	250	21
WFT-250	1 1/4", 1 1/2"	NPT	250	250	21

SPECIFICATIONS

Model	Sizes	Connection	PMO (PSIG)	PMA (PSIG)	Weight (lbs)
WFT-15	2"	NPT	15	250	53
WFT-30	2"	NPT	30	250	53
WFT-75	2"	NPT	75	250	53
WFT-125	2"	NPT	125	250	53
WFT-175	2"	NPT	175	250	53
WFT-250	2"	NPT	250	250	53

Multi-bank Air Heating Coils / Air Handler Unit



Steam Traps

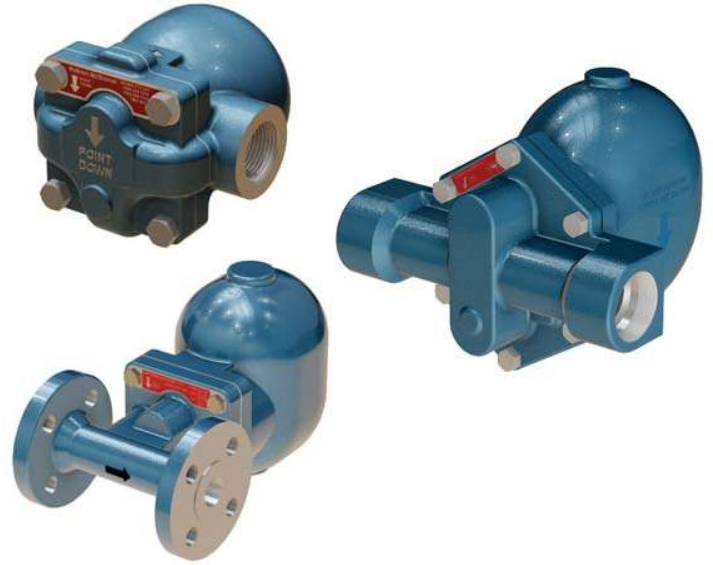
Float & Thermostatic Steam Trap

FTT Series

Float & Thermostatic

Model	FTT
Sizes	1/2", 3/4", 1", 1 1/2", 2"
Connections	NPT, 150# FLG (1" - 2")
Body Material	Ductile Iron
PMO Max. Operating Pressure	300 PSIG
TMO Max. Operating Temperature	Saturated Steam Temperature
PMA Max. Allowable Pressure	300 PSIG up to 450°F
TMA Max. Allowable Temperature	450°F @ 300 PSIG

1/2" & 3/4" available in NPT only.



Typical Applications

DRIP, PROCESS: FTT Series steam traps with in-line pipe connections are used for the removal of condensate and air in HVAC and industrial process applications such as unit heaters, water heaters, pressing machines, heat exchangers and coils. They contain a high-quality welded stainless steel thermostatic air vent and stainless seat and mechanism. F&T traps have excellent air handling capability, making them a better choice than Inverted Bucket traps for most process applications. For drip applications, such as draining steam mains and steam supply lines, use 1/2" or 3/4" sizes.

How It Works

Float and thermostatic traps contain a float and seat mechanism with a separate thermostatic element which work together to remove both condensate and air from the steam system. The float, which is attached to a valve, rises and opens the valve when condensate enters the trap. This allows the condensate to discharge. Air is discharged through the thermostatic air vent to the outlet side of the trap. Steam entering the trap causes the thermostatic element to expand, closing the air vent and trapping the steam.

Sample Specification

The trap shall be of float and thermostatic design with ductile iron body and in-line piping configuration. Thermostatic air vent to be welded stainless steel. All internals must be stainless steel with hardened seat area. Trap must be in-line repairable.

Options

- Live orifice air vent for superheated steam applications.
- NPT Connection for freeze protection

How to Size / Order

The PMO (maximum operating pressure) rating of model selected must meet or exceed the maximum steam pressure or the trap may not open. For example; the FTT-145 has a PMO of 145 psi. Condensate capacity (lbs/hr) of the trap is based on the differential pressure across the trap. For drip applications, a 1/2" FTT size is generally sufficient to exceed warm-up loads with a 2X safety factor. The condensate loads (lbs/hr) for process applications are normally calculated at the maximum steam pressure; then an appropriate safety margin is applied in order to select the trap with sufficient capacity when operating at lower steam pressures. Reference full explanation of Safety Load Factors in Steam Traps Introduction section.

When a temperature control valve is regulating flow to the process equipment, it is recommended to select a trap with a PMO that will exceed the inlet steam pressure to the control valve.

For Example: Process application has a maximum steam inlet pressure of 100 psi, a maximum condensate load of 2,500 lbs/hr and is discharging to a condensate return line with a possible back pressure of 25 psig. $\Delta P = 100 - 25 = 75$ PSI

To select trap: If the Safety Load Factor is chosen to be 2X max capacity at max differential pressure, then Trap should be selected based on 5,000 lbs/hr (2,500 x 2 = 5,000) at 75 PSI differential pressure with a PMO in excess of 100 PSIG

Selection: FTT-145-16-N, PMO=145 PSIG, 1 1/2" NPT with a condensate capacity of 9,600 lbs/hr at 75 PSI differential pressure.

Installation and Maintenance

The trap must be installed upright and level for the float mechanism to operate properly. All internal components can be replaced with the trap body remaining in-line. Repair kits include thermostatic air vent, float, valve seat and disc, and gaskets. The standard thermostatic air vent can be damaged by superheat; therefore, in applications with superheated steam, the thermostatic air vent should be replaced with a special "live orifice" air vent.

Features

- Ductile Iron has a higher pressure and temperature rating and is more resistant to shock loads than cast Iron
- All stainless steel internals with hardened seat and wear parts
- In-line repairability is simplified by having all internals attached to the cover
- Welded stainless steel thermostatic air vent resists shock from waterhammer. Live orifice air vent is available for superheated applications
- Excellent air handling capability allows air to be discharged rapidly so steam can enter the system quickly during start-up
- F&T traps discharge condensate immediately as it is formed (no condensate will back up into the system)

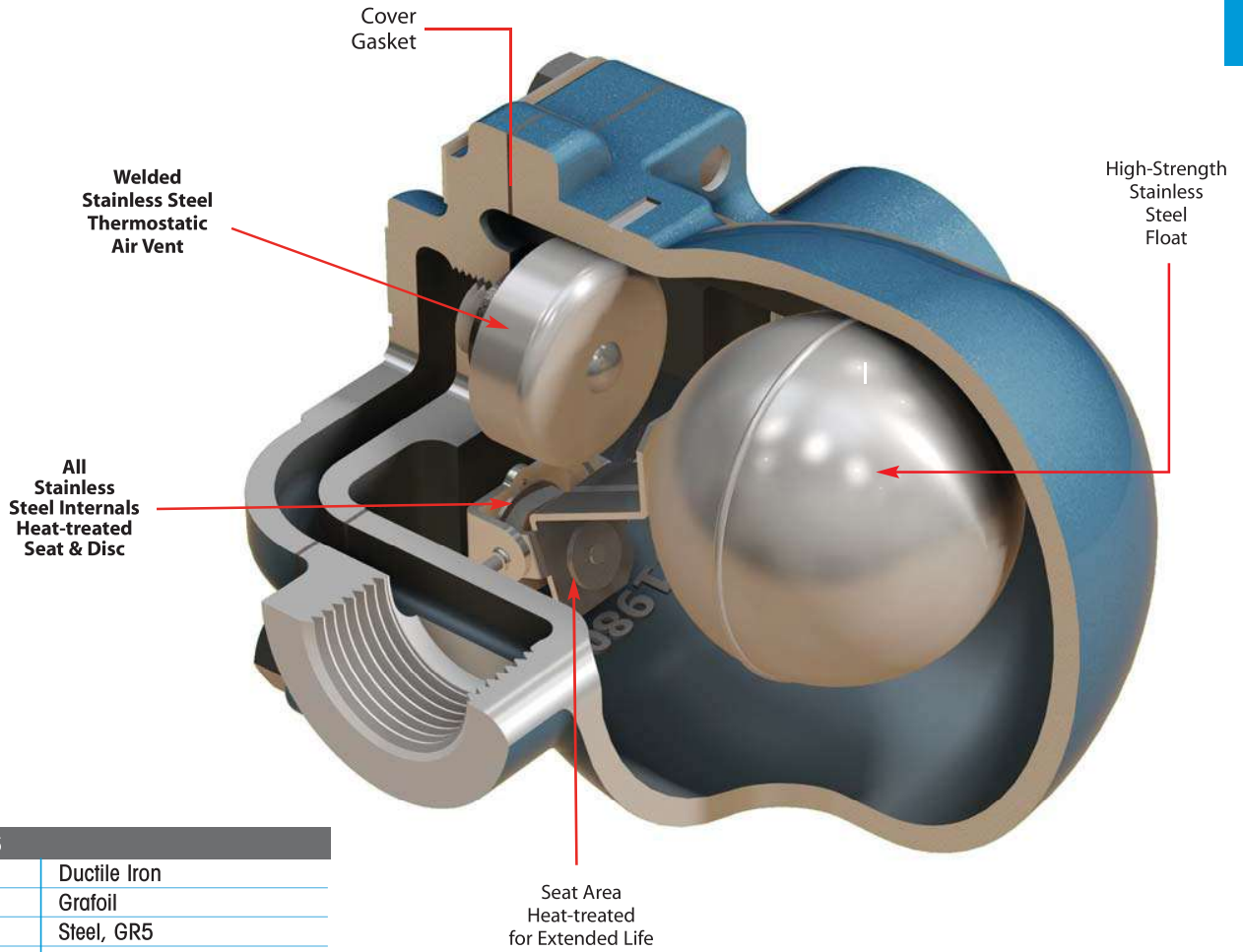
Steam Traps

Float & Thermostatic Steam Trap

FTT Series

Float & Thermostatic

STEAM TRAPS



MATERIALS

Body & Cover	Ductile Iron
Gasket	Grafoil
Cover Screws	Steel, GR5
Float	Stainless Steel, AISI 304
Internals	Stainless Steel
Thermostat	Stainless Steel
Valve Seat	Stainless Steel, 17-4 PH
Valve Disc	Stainless Steel, AISI 420F

Connection Code: N=NPT F150 = 150# FLG
 1/2" & 3/4" available in NPT only.
PMO = Max Operating Pressure

CAPACITIES – Condensate (lbs/hr)

Model Code	PMO (PSIG)	Pipe Size	$\Delta P =$ Differential Pressure (PSI)																				
			1/4	1/2	1	2	5	10	15	20	30	40	50	65	75	100	125	145	200	225	250	300	
FTT-065-12-N	65	1/2"	115	155	205	270	390	520	610	685	810	910	995	1110									
FTT-065-13-N	65	3/4"	115	155	205	270	390	520	610	685	810	910	995	1110									
FTT-065-14-N	65	1"	340	500	775	1100	1700	2400	2800	3250	3925	4200	5000	5825									
FTT-065-16-N	65	1 1/2"	1150	1650	2500	3450	5300	7500	8180	10600	13100	15000	16800	18900									
FTT-065-17-N	65	2"	3470	4820	8500	11950	18700	25200	26900	36000	43000	49600	55500	61300									
FTT-145-12-N	145	1/2"	55	75	100	135	200	270	320	365	435	490	540	600	640	725	795	850					
FTT-145-13-N	145	3/4"	55	75	100	135	200	270	320	365	435	490	540	600	640	725	795	850					
FTT-145-14-N	145	1"	190	275	405	550	840	1200	1380	1600	1850	2200	2450	2750	2920	3400	3700	3900					
FTT-145-16-N	145	1 1/2"	685	970	1275	1750	2740	3750	4490	5100	6250	7200	8000	8900	9600	11250	12000	13300					
FTT-145-17-N	145	2"	1860	2680	3125	4400	6900	9250	13790	14600	16900	19400	21900	25000	26800	31000	34000	37000					
FTT-225-12-N	225	1/2"	40	50	70	95	135	185	220	245	290	330	360	405	430	485	530	565	645	680			
FTT-225-13-N	225	3/4"	40	50	70	95	135	185	220	245	290	330	360	405	430	485	530	565	645	680			
FTT-225-14-N	225	1"	150	200	300	405	600	820	975	1130	1375	1510	1620	1875	2000	2350	2600	2750	3100	3250			
FTT-250-16-N	250	1 1/2"	530	710	825	1130	1760	2500	2950	3375	4125	4740	5250	6000	6400	7300	8000	8650	10200	10800	11300		
FTT-250-17-N	250	2"	695	985	1560	2185	3490	4800	5800	6750	8250	9500	10650	12400	13300	15000	16600	18120	21200	22300	23200		
FTT-300-14-N	300	1"	100	155	220	300	460	630	750	860	1060	1240	1360	1450	1600	1820	2000	2130	2500	2650	2800	3000	

Steam Traps

Float & Thermostatic Steam Trap

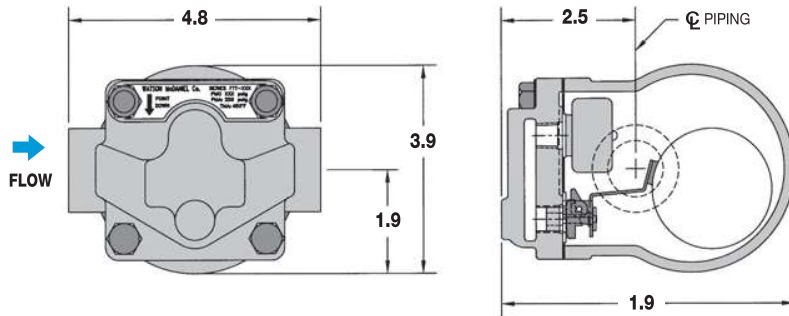
FTT Series

Float & Thermostatic

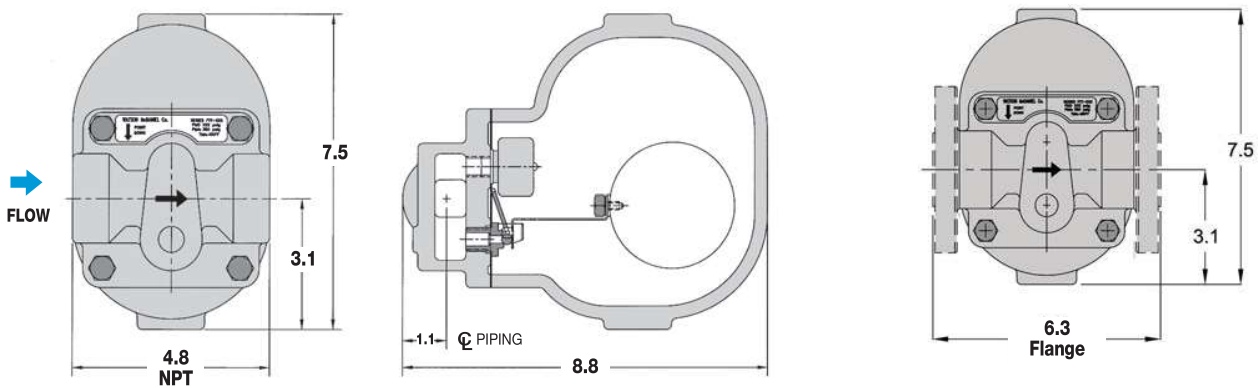
Dimensions: inches

FTT • 1/2" & 3/4"

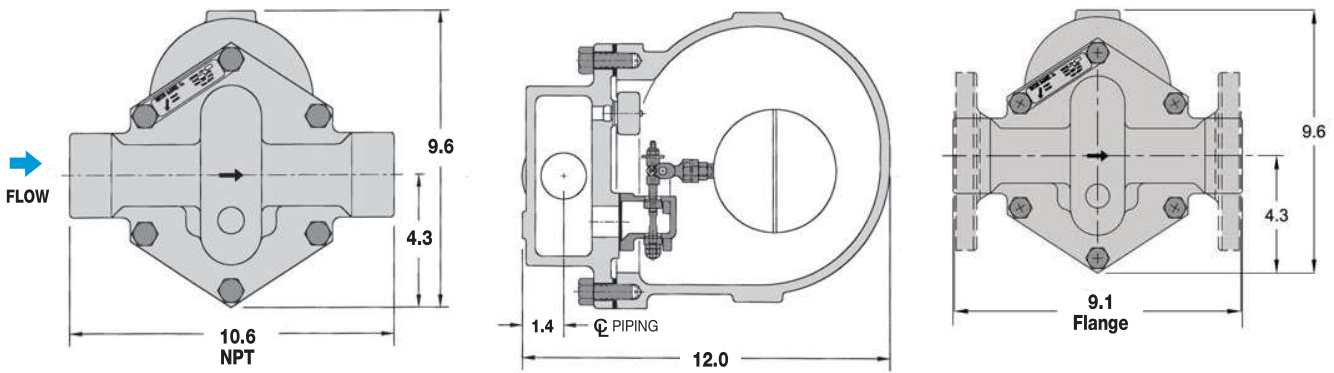
Weight: 6 lbs.



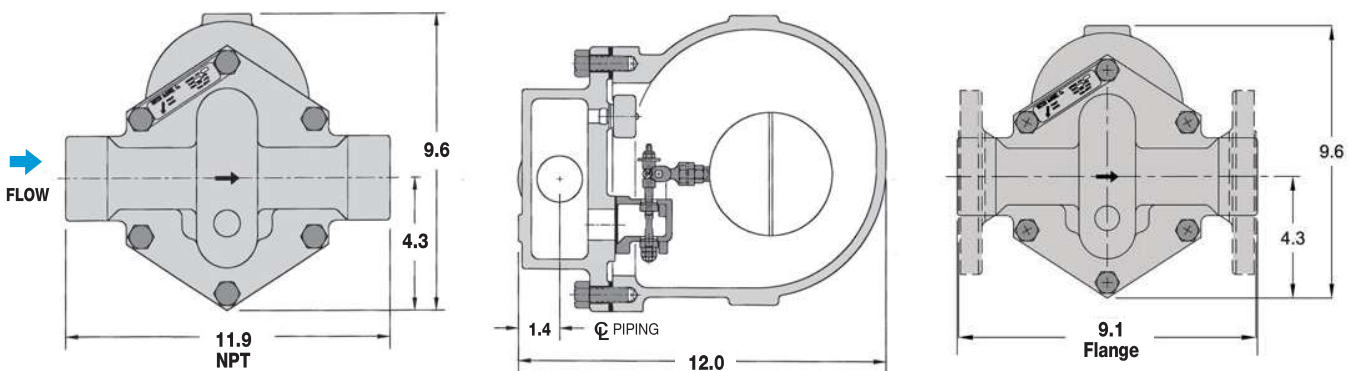
FTT 1" Weight threaded NPT: 16 lbs.



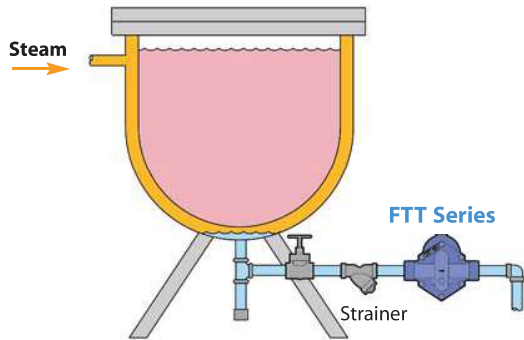
FTT • 1 1/2" • Weight threaded NPT 38 lbs.



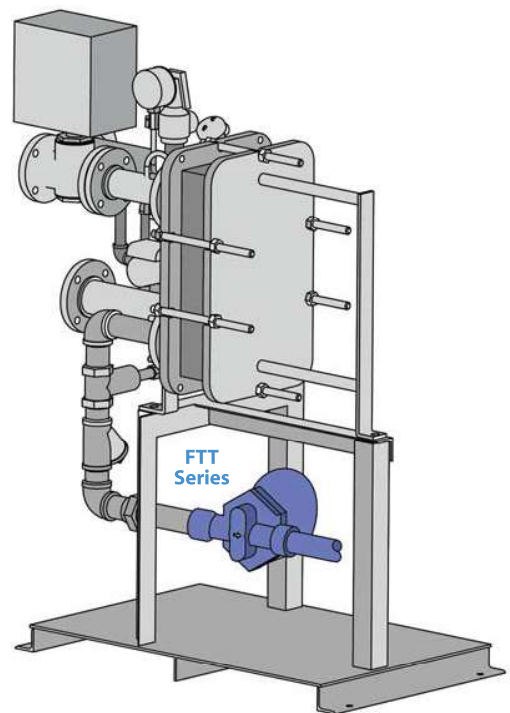
FTT • 2" • Weight threaded NPT 42 lbs.



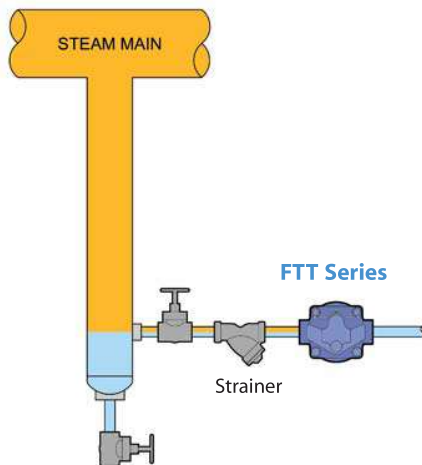
Typical Applications for Float & Thermostatic Steam Traps



Jacketed Kettle Application



Instantaneous Steam to Hot Water Heater
(Heat Miser)



Steam Main Drip Application

Steam Traps

Float & Thermostatic Steam Trap

FTE & FTES

Float & Thermostatic

Model	FTE	FTES
Sizes	1½", 2", 2½"	2½"
Connections	NPT	NPT, SW, FLG
Body Material	Ductile Iron	Cast Steel
PMO Max. Operating Pressure	200 PSIG	300 PSIG
TMO Max. Operating Temperature	450°F	450°F
PMA Max. Allowable Pressure	300 PSIG up to 450°F	300 PSIG up to 750°F
TMA Max. Allowable Temperature	450°F @ 300 PSIG	750°F @ 300 PSIG

The FTE & FTES are used for extremely high capacity condensate drainage applications.



Typical Applications

PROCESS: FTE & FTES Series are high capacity steam traps specifically designed to remove condensate and air from HVAC and industrial process applications with extremely high condensate load requirements. Examples include reboilers, absorption chillers, large air-handling coils, large heat exchangers and other large process equipment. They are available with a ductile iron (FTE) or steel body (FTES) and contain a high quality welded stainless steel thermostatic air vent and stainless mechanism. F&T traps have excellent air-handling capability, making them a better choice than Inverted Bucket traps for most process applications.

Features

- Ductile Iron has a higher pressure and temperature rating and is more resistant to shock loads than Cast Iron
- Cast Steel Body will allow operating pressures and temperatures up to 300 PSIG and 450°F
- High capacity steam trap for draining large process equipment (over 100,000 lbs/hr)
- All stainless steel internals with hardened seat and wear parts
- In-line reparability is simplified by having all internals attached to the cover
- Welded stainless steel thermostatic air vent resists shock from waterhammer. Live orifice air vent is available for superheated applications
- Excellent air handling capability allows air to be discharged rapidly so steam can enter the system quickly during start-up
- F&T traps discharge condensate immediately as it is formed (no condensate will back up into the system)

How It Works

Float and thermostatic traps contain a float and seat mechanism with a separate thermostatic element which work together to remove both condensate and air from the steam system. The float, which is attached to a valve, rises and opens the valve when condensate enters the trap. This allows the condensate to discharge. Air is discharged through the thermostatic air vent to the outlet side of the trap. Steam entering the trap causes the thermostatic element to expand, closing the air vent and trapping the steam.

Sample Specification

The trap shall be of float and thermostatic design with ductile iron or cast steel body. The trap must incorporate all stainless steel internals with hardened seat and welded stainless steel thermostatic air vent. Trap must be in-line repairable.

Installation and Maintenance

The trap must be installed upright and level for the float mechanism to operate properly. All internal components can be replaced with the trap body remaining in-line. Repair kits include thermostatic air vent, float, valve seat and disc, and gaskets. The FTES Series have cast steel bodies and are available in 2½" NPT, socket weld and flange connections. The standard thermostatic air vent can be damaged by superheat; therefore, in applications with superheated steam, the thermostatic air vent should be replaced with a special "live orifice" air vent.

Options

Live orifice air vent for superheated steam applications.

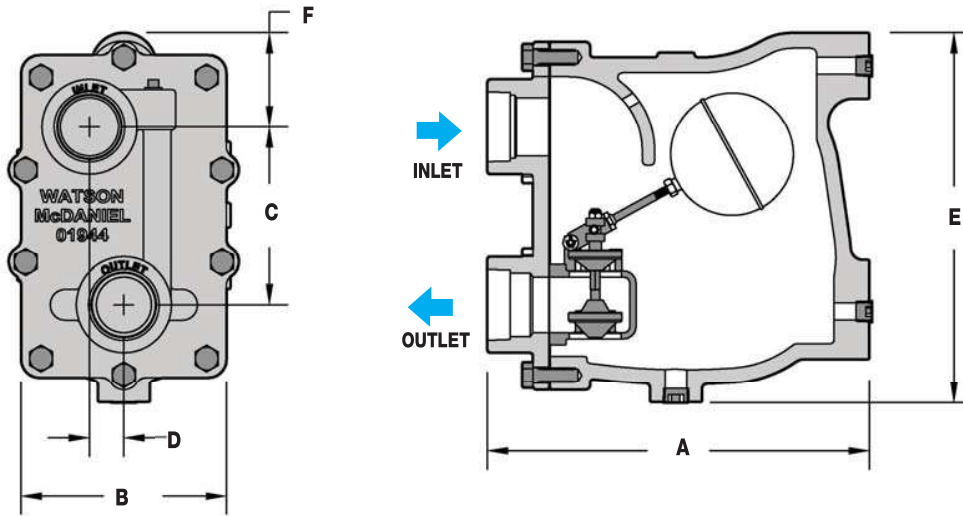
Parallel-pipe inlet/outlet connections are standard as shown. An optional In-line inlet/outlet connection is available; contact factory.

Steam Traps

Float & Thermostatic Steam Trap

FTE & FTES

Float & Thermostatic



DIMENSIONS & WEIGHTS – inches							
Size/Model	A	B	C	D	E	F	Weight
2" FTE-20	12.6	5.7	4.5	0.5	11.1	3.9	54
2" FTE-50	16.0	8.4	7.3	1.4	15.6	3.6	150
2 1/2" FTE-50	15.5	8.4	7.3	1.4	15.6	3.6	150
2 1/2" FTE-125	15.5	8.4	7.3	1.4	15.6	3.6	150
1 1/2" FTE-200	9.6	4.3	3.0	0.7	8.8	2.6	35
2" FTE-200	12.6	5.7	4.5	0.5	11.1	3.9	65
2 1/2" FTE-200	15.5	8.4	7.3	1.4	15.6	3.6	150
2 1/2" FTES-300	15.5	8.4	7.3	1.4	15.6	3.6	150

MATERIALS	
Body & Cover (FTE)	Ductile Iron
Body & Cover (FTES)	Cast Steel, ASTM A-216
Cover Screw	Grade 5 Carbon Steel
Cover Gasket	Grafoil
Valve Discs	Stainless Steel, AISI 17-4PH
Main Valve Assembly Housing	Stainless Steel, AISI 17-4PH
Valve Assembly Gasket	Garlock
Ball Float	Stainless Steel, AISI 304
Thermostatic Vent	Stainless Steel, AISI 300 Optional: Live orifice air vent

Note: 2 1/2" FTES-50, 125 & 300 have same dimensions and weights.

How to Size / Order

The PMO (maximum operating pressure) rating of model selected must meet or exceed the maximum steam pressure or the trap may not open. For example; the FTE-125 has a PMO of 125 psi. Condensate capacity (lbs/hr) of the trap is based on the differential pressure across the trap. The condensate loads (lbs/hr) for process applications are normally calculated at the maximum steam pressure; then an appropriate safety margin is applied in order to select a trap with sufficient capacity when operating at lower steam pressures. Reference full explanation of Safety Load Factors in Steam Traps Introduction section.

When a temperature control valve is regulating flow to the process equipment, it is recommended to select a trap with a PMO that will exceed the inlet steam pressure to the control valve.

For Example: Process application has a maximum steam inlet pressure of 100 psi, a maximum condensate load of 10,000 lbs/hr and is discharging to a condensate return line with a possible back pressure of 25 psig. $\Delta P = 100 - 25 = 75$ PSI

To select trap: If the Safety Load Factor is chosen to be 2X max capacity at max differential pressure, then Trap should be selected based on 20,000 lbs/hr (10,000 x 2 = 20,000) at 75 PSI differential pressure with a PMO in excess of 100 PSIG

Selection: FTE-200-17-N, PMO=200 PSIG, 2" NPT with a condensate capacity of 21,500 lbs/hr at 75 PSI differential pressure.

CAPACITIES – Condensate (lbs/hr)

Model Code	PMO (PSIG)	Pipe Size	Orifice Size	$\Delta P =$ Differential Pressure (PSI)																
				1/4	1/2	1	2	5	10	15	20	30	50	75	100	125	200	250	300	
FTE-20-17-N*	20	2"	.937"	6100	7800	9300	11800	15900	19500	22500	26000									
FTE-50-17-N	50	2"	2.125"	12800	16900	20100	25300	33000	40200	43500	46000	47800	52500							
FTE-50-18-N	50	2 1/2"	2.125"	20400	25700	31000	37000	46300	55100	60300	65100	72000	82100							
FTE-125-18-N	125	2 1/2"	2.125"	20400	25700	31000	37000	46300	55100	60300	65100	72000	82100	90400	97700	105000				
FTE-200-16-N	200	1 1/2"	.375"	950	1350	1900	2200	2700	3300	3900	4400	5300	6400	7600	8500	9400	11900			
FTE-200-17-N	200	2"	.75"	2700	4100	5700	7400	9900	11800	13400	14400	16400	19000	21500	23000	24500	29200			
FTE-200-18-N	200	2 1/2"	1.5"	7200	12300	17400	21500	27600	32600	36000	39300	43100	49200	54700	58800	61900	74000			
FTES-50-18-N	50	2 1/2"	2.125"	20400	25700	31000	37000	46300	55100	60300	65100	72000	82100							
FTES-125-18-N	125	2 1/2"	2.125"	20400	25700	31000	37000	46300	55100	60300	65100	72000	82100	90400	97700	105000				
FTES-300-18-N	300	2 1/2"	1.5"	7200	12300	17400	21500	27600	32600	36000	39300	43100	49200	54700	58800	61900	74000	86000	100550	

* Single seat orifice. All others are double seated.

Steam Traps

Float & Thermostatic Steam Trap

FT600 & FT601

Float & Thermostatic

Model	FT600 & FT601*
Sizes	3/4", 1", 1 1/2", 2", 3", 4"
Connections	NPT, SW, FLG
Body Material	Carbon Steel or 316SS
Options	Live Orifice Air Vent
PMO Max. Operating Pressure	450 PSIG
TMO Max. Operating Temperature	750°F
PMA Max. Allowable Pressure	990 PSIG @ 100°F
TMA Max. Allowable Temperature	750°F @ 670 PSIG

* **FT601 Body Material is 316 SS**
FT600 Body Material is Carbon Steel



Typical Applications

PROCESS: FT600 Series steam traps with Cast Steel Body were specifically designed for removing condensate and air from higher pressure steam applications or where steel bodies are specified. They are typically used in chemical plants and petrochemical refineries on re-boilers, heat exchangers, and other critical process applications. The excellent air-handling capability of float and thermostatic traps make them a better choice than bucket traps for applications requiring quick system start-up. Maximum steam pressure is 450 PSIG. Note: Model FT601 is identical to FT600 except body material is 316 SS.

How It Works

Float and thermostatic traps contain a float and seat mechanism with a separate thermostatic element which work together to remove both condensate and air from the steam system. The float, which is attached to a valve, rises and opens the valve when condensate enters the trap. This allows the condensate to discharge. Air is discharged through the thermostatic air vent to the outlet side of the trap. Steam entering the trap causes the thermostatic element to expand, closing the air vent and trapping the steam.

Features

- Investment cast steel body and cover with class 400 shell rating (670 PSIG @ 750°F)
- Hardened stainless steel seat and disc for extended service life even at extreme temperatures and pressures
- Excellent air handling capability allows air to be discharged rapidly so steam can enter the system quickly during start-up
- In-line reparability is simplified by having all internals attached to the cover. Studded cover allows for easier removal of body.
- Welded stainless steel air vent resists shock from waterhammer. Live orifice air vent is available for superheated applications
- F&T traps discharge condensate immediately as it is formed (no condensate will back up into the system)

Options

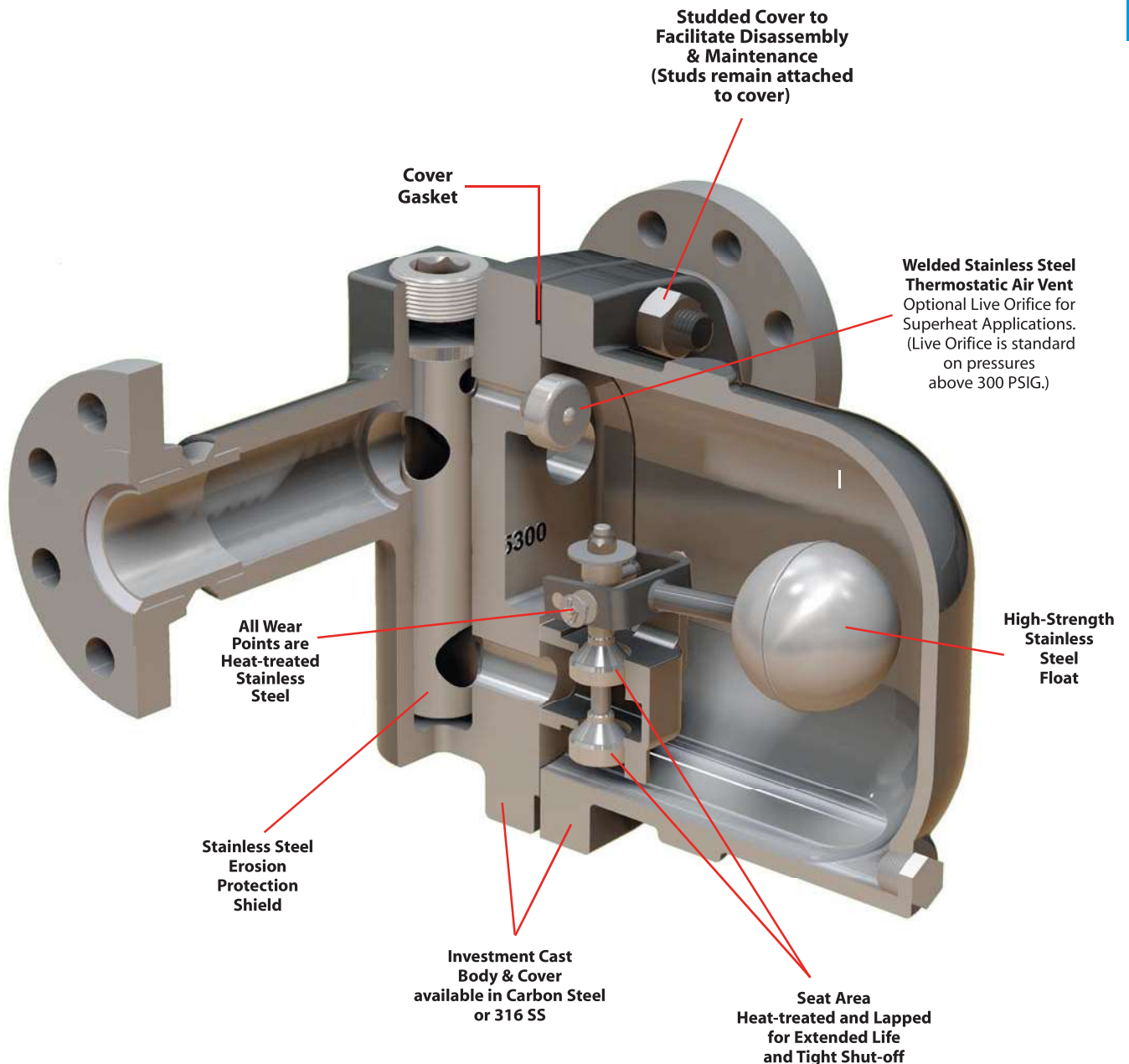
Live orifice air vent for superheated applications.

Sample Specification

The steam trap shall be of the mechanical float type having cast steel bodies, horizontal in-line connections in NPT, SW, or flanged, and all stainless steel internals. Incorporated into the trap body shall be an all stainless steel welded thermal element air vent which is water hammer resistant. The air vent is to be located at the high point of trap body to assure proper venting of non-condensables. The trap body will be in-line renewable. All bodies and covers shall be class 400 shell design, suitable for 670 PSIG @ 750°F.

Installation and Maintenance

The trap must be installed upright and level for the float mechanism to operate properly. All internal components can be replaced while the steam trap remains connected to the piping (in-line repairable). Threaded studs are permanently installed into the cover assembly which greatly simplifies the removal and replacement of the body when servicing. Internal components include a high quality welded stainless steel thermostatic air vent and stainless steel seat and mechanism. The standard thermostatic air vent can be damaged by superheat; therefore, in applications with superheated steam, the thermostatic air vent should be replaced with a special "live orifice" air vent.



MATERIALS

FT 600: Body & Cover	Cast Steel, ASTM A-216
FT 601: Body & Cover	316 SS
Cover Studs	Steel, AS 193, GR B7
Cover Nuts	Steel, SA 194, GR 2H
Cover Gasket	Stainless Steel Reinforced Grafoil
Valve Assembly	Stainless Steel, AISI 431
Gasket, Valve Assembly	Stainless Steel Reinforced Grafoil
Pivot Assembly	Stainless Steel, 17-4 PH
Mounting Screws	Stainless Steel Hex Head, 18-8
Float	Stainless Steel, ASTM -240, 304
Air Vent Assembly	Thermostatic element 304 SS Optional: Live orifice

How to Size / Order

The maximum operating pressure (PMO) rating of model selected must meet or exceed the maximum steam pressure or the trap may not open. For example; the FT600-145 has a PMO of 145 psi. Condensate capacity (lbs/hr) of the trap is based on the differential pressure across the trap.

For drip applications, a (3/4)" FT600 size is sufficient to exceed warm-up loads with a 2X safety factor. The condensate loads (lbs/hr) for process applications are normally calculated at the maximum steam pressure; then an appropriate safety margin is applied in order to select a trap with sufficient capacity when operating at lower steam pressures. Reference full explanation of Safety Load Factors in Steam Traps Introduction section.

When a temperature control valve regulates the flow of steam to the process equipment (Heat Exchanger) being drained of condensate, it is recommended to select a trap with a PMO that exceeds the inlet steam pressure to the temperature control valve. This assures that under all operating conditions, the steam pressure will not exceed the PMO of the trap.

For Example: Process application has a maximum steam inlet pressure of 100 psi, a maximum condensate load of 2,500 lbs/hr and is discharging to a condensate return line with a possible back pressure of 20 psig. $\Delta P = 100 - 20 = 80$ PSI

To select trap: If the Safety Load Factor is chosen to be 2X max capacity at max differential pressure, then Trap should be selected based on 5,000 lbs/hr (2,500 x 2 = 5,000) at 80 PSI differential pressure with a PMO in excess of 100 PSIG

Selection: FT600-145-16-N, PMO=145 PSIG, 1 1/2" NPT with a condensate capacity of 9,900 lbs/hr at 80 PSI differential pressure.

Connection Codes:

(N=NPT, SW=Socket Weld, F150=150# FLG, F300=300# FLG, F600=600# FLG)

CAPACITIES – Condensate (lbs/hr)

Model Code*	PMO (PSIG)	Sizes	$\Delta P =$ Differential Pressure (PSI)																		
			1	2	3	4	5	10	20	30	40	50	65	80	100	145	200	300	400	450	
FT600-65-13-N	65	3/4"	225	300	363	413	463	635	960	1060	1180	1320	1460								
FT600-65-14-N	65	1"	775	1094	1340	1520	1690	2370	3260	3990	4500	5000	5500								
FT600-65-16-N	65	1 1/2"	2500	3450	4130	4750	5300	7500	10625	13125	15000	16800	18850								
FT600-65-17-N	65	2"	8500	11950	14670	16800	18700	25250	35900	43000	49600	55500	61250								
FT600-145-13-N	145	3/4"	137	180	218	250	275	380	520	625	725	863	895	995	1120	1315					
FT600-145-14-N	145	1"	400	555	660	755	850	1237	1593	1925	2240	2490	2750	3000	3430	3935					
FT600-145-16-N	145	1 1/2"	1275	1750	2125	2430	2740	3750	5100	6250	7200	7995	8875	9900	11250	13300					
FT600-145-17-N	145	2"	3125	4400	5375	6250	6900	9250	14625	16875	19375	21875	25000	27500	31000	37000					
FT600-200-13-N	200	3/4"	93	137	160	187	205	287	400	487	560	610	710	775	875	1060	1250				
FT600-200-14-N	200	1"	300	410	487	560	610	925	1140	1375	1520	1687	1875	2060	2312	2750	3100				
FT600-200-16-N	200	1 1/2"	825	1130	1400	1570	1760	25000	375	4125	4740	5250	6000	6600	7300	8650	10200				
FT600-200-17-N	200	2"	1560	2187	2800	3100	3490	4800	6750	8250	9500	10625	12400	13700	15000	18120	21200				
FT600-300-13-N	300	3/4"	50	68	83	95	106	155	197	240	275	300	340	375	413	490	570	710			
FT600-300-14-N	300	1"	225	300	363	413	463	635	960	1060	1180	1320	1468	1640	1815	2130	2550	3000			
FT600-300-16-N	300	1 1/2"	825	1130	1400	1570	1760	25000	375	4125	4740	5250	6000	6600	7300	8650	10200	12600			
FT600-300-17-N	300	2"	1560	2187	2800	3100	3490	4800	6750	8250	9500	10625	12400	13700	15000	18120	21200	26250			
FT600-450-13-N	450	3/4"	32	42	49	56	62	84	119	145	163	175	192	210	186	275	312	375	425	450	
FT600-450-14-N	450	1"	137	180	218	250	275	380	520	625	725	863	895	995	1120	1315	1500	1870	2125	2250	
FT600-450-16-N	450	1 1/2"	825	1130	1400	1570	1760	2500	3375	4125	4740	5250	6000	6600	7300	8650	10200	12600	14375	15200	
FT600-450-17-N	450	2"	1560	2187	2800	3100	3490	4800	6750	8250	9500	10625	12400	13700	15000	18120	21200	26250	28700	31250	

Note: For 450 Model, the Thermostatic Air Vent is replaced with a live Orifice.

* Chart is applicable for both Models FT600 & FT601

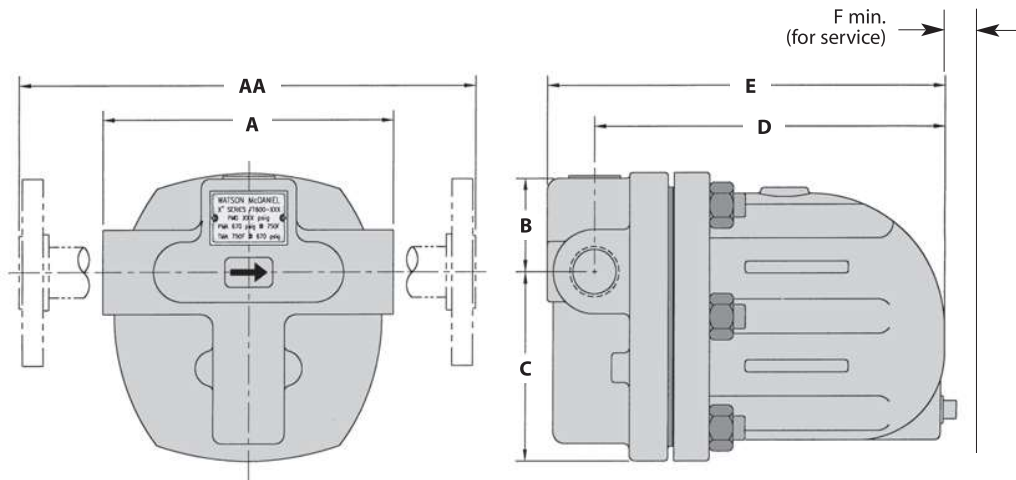
Steam Traps

Float & Thermostatic Steam Trap

FT600 & FT601

Float & Thermostatic

FT600 & FT601:
3/4", 1", 1 1/2", 2"

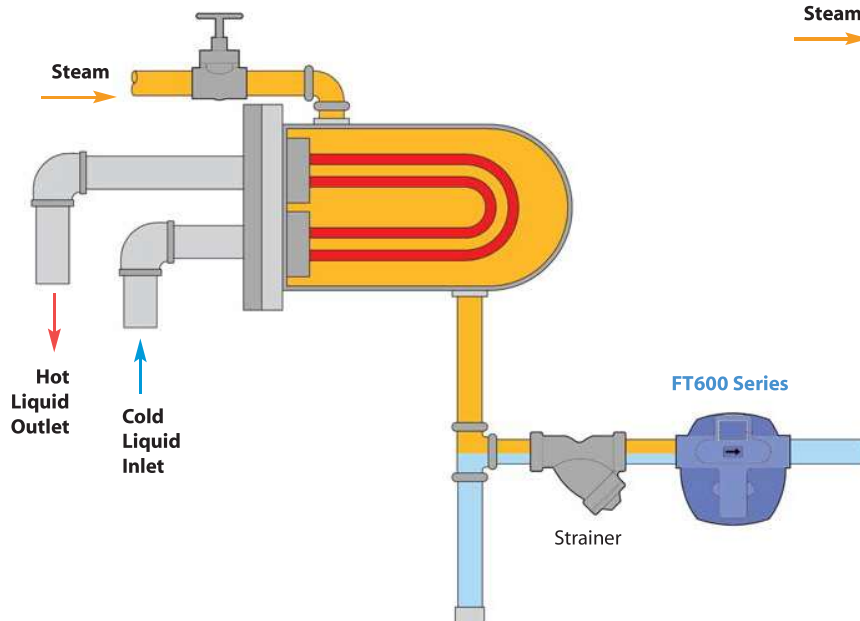


DIMENSIONS & WEIGHTS – inches											
Model*	Size	A	AA	B	C	D	E	F	Weight (lbs)		
									NPT/SW	FLG	
FT600	3/4"	6.10	10.10	2.07	3.93	7.38	8.41	5.75	25	31	
FT600	1"	6.50	10.40	2.50	5.50	8.44	9.50	6.25	31	36	
FT600	1 1/2"	9.80	14.00	3.26	6.85	10.40	11.94	7.75	82	91	
FT600	2"	11.80	16.00	3.60	7.40	11.59	13.27	8.00	93	107	

* Chart is applicable for FT600 & FT601

Typical Applications for Float & Thermostatic Steam Traps

Shell & Tube Heat Exchanger Application:



Steam Main Drip Application

