

November 2021

Spence™ FXT250 Series Variable Orifice Steam Traps



Figure 1. FXT250 Series Variable Orifice Steam Trap

Features

- All Stainless Steel Internal Components - Hardened valves and seats. Extra long life and dependable service. Resists water hammer. Protects against erosion and corrosion.
- Erosion Proof - Discharge passage is protected with a stainless steel liner.
- Integral Strainer - Stainless Steel screen prevents dirt problems. Blow-down connection provided.
- Thermostatic Air Vent - Full balanced pressure element for immediate and complete air venting.
- Variable Orifice - Condensate is discharged continuously through the seat ring which is modulated by the float. This provides a smooth, even flow without high velocity or steam entrainment.
- SLR Orifice - Optional continuous bleed prevents flash steam lockup when it is impossible to install trap at low point in system.

Introduction

A steam trap is an automatic valve which discharges condensate, undesirable air and non-condensibles from a system while trapping, or holding in, steam.

FXT250 Series are float and thermostatic steam traps. Float is free of levers, linkages or other mechanical connections. This float is weighted to maintain orientation and acts as the valve being free to modulate condensate through the seat ring. Air vent is balanced-pressure design with stainless steel welded encapsulated bellows capable of discharging air and non-condensable gases continuously within 15°F / -9.4°C of saturated temperature.

FXT250 Series

Specifications

The Specifications section gives some general specifications for the FXT250 Series variable orifice steam traps. The nameplates give detailed information for a specific steam trap as built in the factory.

Available Configurations

- Type FXT250: Low capacity
- Type FXT251: Medium capacity
- Type FXT252: High capacity
- Type FXT253: Super high capacity

Body Sizes

- NPS 1/2, 3/4, 1, 1-1/2 and 2 /
- DN 15, 20, 25, 40 and 50

End Connection Styles

- BSPT
- NPT
- CL 250 RF

Maximum Operating Pressure⁽¹⁾

See Table 1

Maximum Allowable Temperature⁽¹⁾

450°F / 232°C

Maximum Allowable Pressure⁽¹⁾

250 psig / 17.2 bar

Capacity Information

See Tables 2 and 3

Construction Materials

- Body and Cover: Cast Iron
- All Internal Parts: Stainless steel
- Air Vent: Balanced Pressure, Stainless steel
- Cover Gasket: Graphite Fiber

Option

- SLR Orifice
- Blowdown Valve
- Orifice Continuous Bleed Air Vent
- CL 250 Flanged Connection⁽²⁾

Applications

- Steam Lines
- Process Equipment
- Steam Cookers
- Steam Heated Vats
- Pressing Machinery
- Unit Heaters
- Oil Pre-heaters
- Converters
- Coils
- Rotating Drum

Approximate Weights

6 to 130 lbs / 2.7 to 59.1 kg

1. The pressure/temperature limits in this Bulletin and any applicable standard or code limitation should not be exceeded.
 2. Available on Type FXT253 only.

Table 1. Maximum Operating Pressure

ORIFICE	MAXIMUM OPERATING PRESSURE	
	psig	bar
20	20	1.4
50	50	3.5
100	100	6.9
150	150	10.3
250	250	17.2

Principle of Operation

On startup, the thermostatic air vent, caged stainless welded bellows, is open, allowing air to flow freely through the vent valve orifice. When condensate flows into the trap, the float rises, allowing condensate to be discharged. Once air and non-condensables have been evacuated, hot condensate will cause the thermostatic vent to close. Condensate will continue to be discharged as long as condensation occurs. During normal operation, an increase in the load causes the liquid level in the trap to rise. The float then rises and rolls off the seat ring, allowing more condensate to flow out. The float sinks as the condensate load

decreases, moving nearer to the seat ring, decreasing the effective size of the orifice and allowing less condensate to discharge. This provides smooth, continuous operation that reacts instantly to load variation while maintaining a water seal over the seat ring to prevent live steam loss.

Installation

Install the FXT250 Series steam trap upright and in a horizontal line with the arrow on the body pointing in the direction of flow. Allowable inclination is 5° or less horizontally and 5° or less at right angles to the plane of the pipe line.

Table 2. Maximum Capacity - lbs/hr 10°F Below Saturation

TYPE	ORIFICE, IN.	Max. ΔP, psig	DIFFERENTIAL, psig														
			1	5	10	15	20	30	50	75	100	125	150	175	200	225	250
FXT250	0.193	20	264	810	1050	1100	1200										
	0.141	50	190	430	610	750	870	1070	1400								
	0.102	100	88	160	250	300	350	425	530	670	710						
	0.091	150	70	140	219	260	295	345	410	470	520	555	590				
	0.067	250	37	90	140	170	200	240	300	340	390	405	415	440	460	480	500
FXT251	0.277	20	590	1600	2100	2400	2450										
	0.209	50	340	760	1080	1330	1540	1900	2460								
	0.157	100	200	500	650	740	830	950	1100	1300	1400						
	0.141	150	170	385	527	627	705	825	990	1130	1240	1330	1415				
	0.120	250	110	255	360	425	500	575	700	800	900	940	1000	1050	1100	1150	1200
FXT252	0.593	20	2720	6280	8600	10500	11700										
	0.469	50	1750	3920	5560	6830	7900	9700	12600								
	0.339	100	930	2170	3130	3840	4460	4990	6020	7030	7960						
	0.316	150	850	1935	2650	3150	3540	4140	4970	5685	6230	6690	7100				
	0.261	250	670	1400	1900	2400	2540	3000	3500	4100	4200	4900	5100	5300	5500	5750	6000
FXT253	1.102	20	8000	15000	18000	19900	22800										
	0.875	50	5460	12600	15600	16900	18400	21000	25400								
	0.593	100	2800	6350	8700	10900	12800	13700	16600	18700	21000						
	0.578	150	2690	6120	8385	9970	11200	13100	15700	17980	19700	21150	22450				
	0.484	250	1600	3770	5300	6470	7560	8610	10400	12100	13600	14600	15500	16300	17100	17800	18400

Table 3. Maximum Capacity - Kg/hr 5°C Below Saturation

TYPE	ORIFICE, mm	Max. ΔP, bar	DIFFERENTIAL, barg														
			0.07	0.35	0.69	1.03	1.38	2.07	3.45	5.17	6.90	8.62	10.3	12.1	13.8	15.5	17.2
FXT250	4.90	1.38	120	367	476	499	544										
	3.58	3.45	86	195	277	340	395	485	635								
	2.59	6.90	40	73	113	136	159	193	240	304	322						
	2.31	10.3	32	64	99	118	134	156	186	213	236	252	268				
	1.70	17.2	17	41	64	77	91	109	136	154	177	184	188	200	209	218	227
FXT251	7.04	1.38	268	726	953	1089	1111										
	5.31	3.45	154	345	490	603	699	862	1116								
	3.99	6.90	91	227	295	336	376	431	499	590	635						
	3.58	10.3	77	175	239	284	320	374	449	513	562	603	642				
	3.05	17.2	50	116	163	193	227	261	318	363	408	426	454	476	499	522	544
FXT252	15.1	1.38	1234	2849	3901	4763	5307										
	11.9	3.45	794	1778	2522	3098	3583	4400	5715								
	8.61	6.90	422	984	1420	1742	2023	2263	2731	3189	3611						
	8.03	10.3	386	878	1202	1429	1606	1878	2254	2579	2826	3035	3221				
	6.63	17.2	304	635	862	1089	1152	1361	1588	1860	1905	2223	2313	2404	2495	2608	2722
FXT253	28.0	1.38	3629	6804	8165	9027	10342										
	22.2	3.45	2477	5715	7076	7666	8346	9526	11521								
	15.1	6.90	1270	2880	3946	4944	5806	6214	7530	8482	9526						
	14.7	10.3	1220	2776	3803	4522	5080	5942	7122	8156	8936	9594	10183				
	12.3	17.2	726	1710	2404	2935	3429	3905	4717	5489	6169	6623	7031	7394	7757	8074	8346

Ordering Information

When ordering, complete the ordering guide on this page. Refer to the Specifications section. Review the description to the right of each specification and the information in each referenced table or figure. Specify your choice whenever a selection is offered.

Ordering Guide

Available Configurations (Select One)

- Type FXT250
- Type FXT251
- Type FXT252
- Type FXT253

Body Sizes (Select One)

- NPS 1/2 / DN 15
- NPS 3/4 / DN 20
- NPS 1 / DN 25
- NPS 1-1/2 / DN 40
- NPS 2 / DN 50

End Connection (Select One)

- BSPT
- NPT
- CL 250 (For Type FXT253 only)

Options

- SLR Orifice
- Blowdown Valve
- Orifice Continuous Bleed Air Vent

FXT250 Series

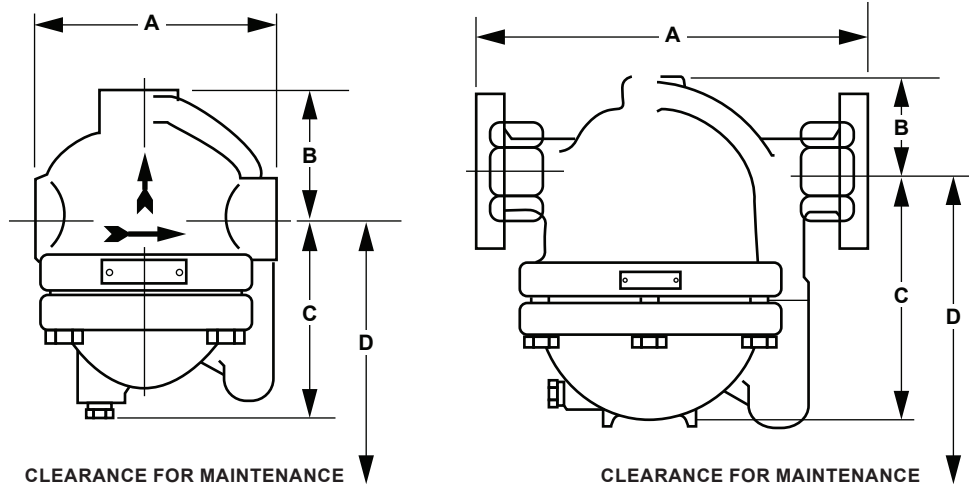


Figure 2. FXT250 Series Variable Orifice Steam Trap Dimension

Table 4. FXT250 Series Dimension

TYPE	SIZE		CONNECTION	A		B		C		D		WEIGHT	
	NPS	DN		In.	mm	In.	mm	In.	mm	In.	mm	Lb	kg
FXT250	1/2 and 3/4	15 and 20	NPT	4-1/4	108	2-3/4	69	3-5/8	92	5-1/2	140	6	2.7
FXT251	3/4 and 1	20 and 25	NPT	5-1/2	140	2-15/16	74	4-9/16	116	6-3/4	171	13	5.9
FXT252	1 and 1-1/2	25 and 40	NPT	11	279	2-15/16	74	7-3/4	197	10	254	41	18.6
FXT253	1-1/2 and 2	40 and 50	NPT	13-3/4	349	2-15/16	74	11-5/8	295	15-3/8	391	120	54.5
			CL 250	15-3/4	400	2-15/16	74	11-5/8	295	15-3/8	391	130	59.1

SpenceValve.com

Emerson

Americas

McKinney, Texas 75069 USA
T +1 800 558 5853
+1 972 548 3574

Europe

Bologna 40013, Italy
T +39 051 419 0611

Asia Pacific

Singapore 128461, Singapore
T +65 6777 8211

Middle East and Africa

Dubai, United Arab Emirates
T +971 4 811 8100

VCBUL-16291-EN © 2021, 2026 Emerson Electric Co. All rights reserved. 03/26
Spence is a mark owned by a subsidiary of Emerson Electric Co. The Emerson logo is a trademark and service mark of Emerson Electric Co. All other marks are property of their respective owners.

Neither Emerson nor any of its affiliated entities assume responsibility for the selection, use or maintenance of any product. Responsibility for proper selection, use, and maintenance of any product remains solely with the purchaser and end user.

The contents of this publication are presented for informational purposes only, and while every effort has been made to ensure their accuracy, they are not to be construed as warranties or guarantees, express or implied, regarding the products or services described herein or their use or applicability. All sales are governed by our terms and conditions, which are available upon request. We reserve the right to modify or improve the designs or specifications of such products at any time without notice.

