Spence Believer B Series Thermostatic Steam Traps

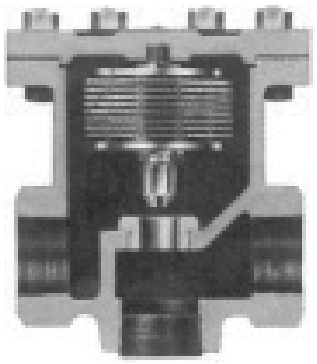

Figure 1. *B SeriesThermostatic Steam Traps*

Features

- **Renewable In-line ─** Renew trap in-line with factory packaged precision matched internal parts, replacement kits.
- **Compact ─** Requires minimum space while providing condensate capacities equal to larger mechanical traps.
- **Superior Performance ─** Maximum air handling capability. Immediate response to changing pressure and condensate loads. No adjustment necessary.
- **Sensitivity ─** Increased when installed on side with cover perpendicular to ground.
- **Temperature Sensitive Actuators ─** One moving part, stainless steel, fail open or closed, welded actuator provides maximum corrosion, thermal and hydraulic shock resistance and sensitivity.

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. Thermostatic steam traps operate in direct response to the temperature within the trap.

B Series is a straight thru trap and is a balanced pressure design with stainless steel welded actuator capable of discharging condensate within 10°F / -12°C of saturated temperature.

For greater sensitivity or protection from flash steam locking, SLR orifice is available to allow condensate and flash steam evacuation at or near saturated temperatures.

Thermostatic actuator has a conical valve lapped in matched sets with the seat ring assuring tight shut off. Trap is cast iron or cast steel-bodied suitable for pressures up to 250 psig / 17.2 bar and available in NPS 1/2 to 2 / DN 15 to 50 in NPT end connection.

Specifications

This section lists the specifications for the B Series. Factory specifications are stamped on the nameplate fastened on the steam trap at the factory.

Available Configuration[1]
- **Type B33:** NPS 1/2 / DN 15
- **Type B43:** NPS 3/4 / DN 20
- **Type B53:** NPS 1 / DN 25
- **Type B63:** NPS 1-1/4 / DN 32
- **Type B73:** NPS 1-1/2 / DN 40
- **Type B83:** NPS 2 / DN 50

Body Size
NPS 1/2, 3/4, 1, 1-1/4, 1-1/2 and 2 / DN 15, 20, 25, 32, 40 and 50

End Connection
NPT

Maximum Operating Pressure[2]
250 psig / 17.2 bar g

Maximum Allowable Pressure[2]
250 psig / 17.2 bar g

Maximum Operating Temperature[2]
400°F / 204°C

Maximum Allowable Temperature[2]
400°F / 204°C

Capacity Information
See Table 1

Materials of Construction
- **Body and Cover:** Cast Iron
- **Actuator:** Welded Stainless Steel
- **Cover Gasket:** Graphite
- **Valve and Seat:** Hardened 416 Stainless Steel

Applications
Unit Heaters
Pipe Coils
Blast Coils
Steam Mains
Dry Kilns
Jacketed Kettles
Hot Water Heaters
Dryers (all types)
Large Heat Exchangers

Options
- **SLR:** SLR Orifice
- **HC:** High capacity orifice

Approximate Weight
See Table 2

1. Add (-HC) to end of model number for high capacity.
2. The pressure/temperature limits in this Bulletin and any applicable standard or code limitation should not be exceeded.

Principle of Operation

Thermal actuator is filled at its free length with a liquid having a lower boiling point than water. On start-up, valve is normally open. When steam enters trap, thermal actuator fill vaporizes to a pressure higher than line pressure. This forces valve into seat orifice to prevent any further flow. As condensate collects, it takes heat from thermal actuator, lowering internal pressure. Line pressure will then compress thermal actuator to open valve and discharge condensate. Valve opening automatically adjusts to load conditions from minimum on very light loads to full lift at maximum load.

Installation

1. Before installing trap, blow all dirt and scale from apparatus and piping.
2. Install trap with arrow on body in flow line as close as possible to apparatus with strainer and valve upstream of trap.
3. Pitch all drain lines toward trap.

Note

Approved practice is to install separate traps on each piece of apparatus to be drained. Steam supplied to inlets of several units may be of uniform pressure, but invariably there is a differential at the outlets. Although this differential may be small, unit discharging highest pressure will control the action of trap, while other units become air-bound and water logged. Piping upstream and downstream of trap should be at least equal to or one size larger than trap connection.

4. Record the location of the trap for maintenance accessibility.

Capacity Information

Capacity information for every type of B Series is shown in Table 1.

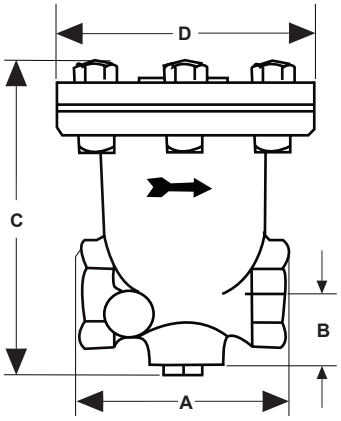

Figure 2. *B Series Dimension*

Table 1. *Maximum Capacity - lbs/hr 10°F Below Saturation (Kg/hr 5°C Below Saturation)*

TYPE	ORIFICE, IN. / mm	DIFFERENTIAL PRESSURE, psig / bar g												
		1 / 0.07	2 / 0.14	5 / 0.34	10 / 0.7	20 / 1.4	50 / 3.5	100 / 6.9	125 / 8.6	150 / 10.3	175 / 12.1	200 / 13.8	225 / 15.5	250 / 17.2
		lbs/hr / kg/hr												
B33	3/8 / 10	985 / 448	1390 / 632	2180 / 991	3070 / 1395	3735 / 1698	5040 / 2291	6645 / 3070	7315 / 3325	7560 / 3436	8045 / 3657	8200 / 3727	8615 / 3916	8915 / 4052
B43	7/16 / 11	1460 / 664	2055 / 934	3240 / 1473	4560 / 2073	5550 / 2523	7480 / 3400	9865 / 4484	10,850 / 4932	11,225 / 5102	11,935 / 5425	12,165 / 5530	12,770 / 5805	13,225 / 6011
B53, B63	1/2 / 12	1825 / 830	2575 / 1170	4050 / 1841	5700 / 2591	6925 / 3148	9350 / 4750	12,340 / 5609	13,565 / 6166	14,030 / 6377	14,920 / 6782	15,230 / 6923	15,960 / 7255	16,540 / 7518
B73, B83	3/4 / 19	2760 / 1255	3890 / 1768	6120 / 2782	8610 / 3914	10,470 / 4759	14,125 / 6420	18,660 / 8482	20,520 / 9327	21,235 / 9652	22,580 / 10,264	23,015 / 10,461	24,190 / 10,995	25,055 / 11,389
B73HC, B83HC	1-1/4 / 32	3555 / 1616	5030 / 2286	7950 / 3614	11,240 / 5109	15,900 / 7227	25,140 / 11,427	33,000 / 15,000	- - - - - - - -	- - - - - - - -	- - - - - - - -	- - - - - - - -	- - - - - - - -	- - - - - - - -

Table 2. *B Series Dimension and Weight*

TYPE	PIPE SIZE		A		B		C		D		WEIGHT	
	NPS	DN	In.	mm	In.	mm	In.	mm	In.	mm	lbs	kg
B33	1/2	15	3-7/8	98	1-1/8	29	5-7/8	149	4-1/2	114	7	3.2
B43	3/4	20	4-1/4	108	1-3/8	35	6-3/4	171	5-1/16	129	10.3	4.7
B53	1	25	5-1/2	140	1-7/8	48	7-11/16	195	5-13/16	148	15.6	7.1
B63	1-1/4	32	5-1/2	140	1-7/8	48	7-11/16	195	5-13/16	148	15.3	7.0
B73	1-1/2	40	7-1/4	184	1-3/4	44	9-1/16	230	7-3/4	197	33.6	15.3
B83	2	50	7-1/4	184	1-3/4	44	9-1/16	230	7-3/4	197	32.4	14.7

Ordering Information

When ordering, complete the ordering guide on this page. Refer to the Specifications section on page 2.

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

Type (Select One)
- ☐ Type B33
- ☐ Type B43
- ☐ Type B53
- ☐ Type B63
- ☐ Type B73
- ☐ Type B83

Options
- ☐ SLR: SLR Orifice
- ☐ HC: High capacity orifice

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