



## YARWAY THERMOSTATIC STEAM TRAPS 151

### PROCESS THERMOSTATIC STEAM TRAPS

A wide range of process thermostatic steam traps is available to match almost any application need.



#### FEATURES

- Simple construction
- Easy to maintain as installed
- Excellent air handling capability
- Pressure assisted fail-open design
- Hardened stainless steel valve and seat
- Withstands superheat
- Efficient air and noncondensable removal
- Shuts tight on steam
- Compact and lightweight

#### GENERAL APPLICATION

Ideally suited for use on tubes, coils or heat exchangers, tanks or vats for heating liquids in either batch or continuous operation.

#### TECHNICAL DATA

Set range:	NPS $\frac{3}{4}$ ", 1" DN 20, 25
End connection:	NPT, socket weld, flanged
Temperature:	Up to 750°F (400°C)
Pressure:	Up to 300 psi (20.7 bar)
Maximum Design Temp.:	750°F (400°C)
Maximum Operating Temp.:	500°F (260°C)
Operating Pressure:	1-300 psi (0.07-21 bar)
Rating:	ASME Class 300
Capacity:	Up to 11,023 lb/h (5000 kg/h) hot condensate
Materials:	Chrome Moly steel, 416 SST

#### NOTE

All pressures are gauge.

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### WHY CHOOSE A THERMOSTATIC STEAM TRAP?

Thermostatic traps react to changes in temperature and therefore discriminate very well between steam and cooler noncondensable gases. They can rapidly purge air from a system, especially on cold startups. These traps can be installed in various positions to match piping. Most commonly, actuation is by means of a bellows-like capsule filled with a vaporizing liquid. Thermostatic traps respond more slowly to changing conditions due to the heat energy of the condensate inside the trap which is slow to dissipate, thus causing some time delay. Insulating thermostatic traps aggravate this situation. To improve responsiveness, these traps should be mounted at the end of a cooling leg in an area where air can circulate freely and a distance from the collection pocket to match condensate load.

### PILOT OPERATED TRAPS

As the name implies, these traps are actuated by a thermostatic pilot valve which drives the main valve. The pilot, which is bellows actuated, is in essence a working mechanism similar to that used in bellows traps. Therefore the operating characteristics of pilot operated traps are basically the same as those of the pilot. Pilot operated traps are process traps that offer a dual capacity range. Small condensate loads are handled by the pilot and when the load exceeds its capacity, the main valve opens.

An additional advantage of these traps is that they are relatively small in size and light-weight, yet can handle large quantities of condensate. They are a practical alternative to large heavy mechanical traps.

Yarway pilot operated traps offer the following advantages:

- Simple construction
- Small size and weight
- Easy to maintain as installed
- Excellent air handling capability
- Energy efficient

### BELLOWS TECHNOLOGY

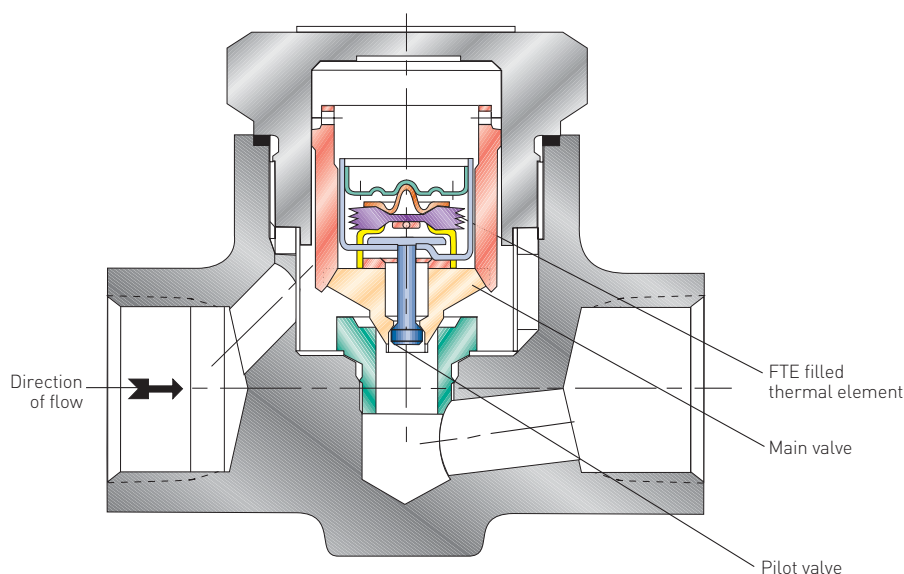
Yarway offers bellows technology products for process applications utilizing the FTE (Filled Thermal Element). With the Series 151 trap, the FTE acts as the pilot. This means that by opening or closing its internal valve - as the condensate temperature changes - the pilot determines whether the main valve is open or closed. If the condensate load is very low, then the total flow is passed through the pilot only.

All Yarway bellows traps deliver consistent features such as:

- Three-year warranty
- Pressure assisted fail-open design
- Hardened stainless steel valve and seat
- Withstands superheat
- Efficient air and noncondensable removal
- Shuts tight on steam
- Compact and lightweight

### HOW IT WORKS

When condensate reaches a Series 151 trap, the FTE opens a pilot valve to allow limited flow. The main valve stays closed until the condensate load exceeds the capacity of the pilot valve; then the pilot valve opens the main valve, and both discharge at full capacity. At startup, both the pilot valve and the main valve are open for high-capacity discharge of air and condensate. And in normal operation, the pilot valve may drain condensate continuously, closing only in the absence of condensate.



# YARWAY THERMOSTATIC STEAM TRAPS 151

## PROCESS THERMOSTATIC STEAM TRAPS

### SERIES 151 DUAL RANGE PROCESS TRAPS (OR HIGH CAPACITY AIR VENT)

The Series 151 Dual Range Steam Trap is designed for use on both batch and continuous applications such as batch stills, autoclaves, reboilers, storage tanks, shell and tube heat exchangers and tank coils. The Dual Range Steam Traps are capable of handling high startup and running loads, and provide maximum air venting capability. There are two body styles and two internals available, the 151 angle and 151 in-line. There is a standard capacity internal and an "H" high capacity internal available. Both internals are interchangeable in both bodies.

### APPLICABLE CODES AND STANDARDS

Pressure ratings per ASME/FCI-69-1.  
Performance testing per ASME PTC-39-1.  
End connections per ASME B1.20.1 for threaded ends, per ASME B16.11 for socketwelding ends.

### HOW TO SIZE

Required trap flow rate = Maximum expected condensate load (lb/h) x Safety load factor. A safety load factor of 2-4 is usually recommended. Then select a trap from the flow rate chart. Do not size trap based on end connections.

### HOW TO ORDER

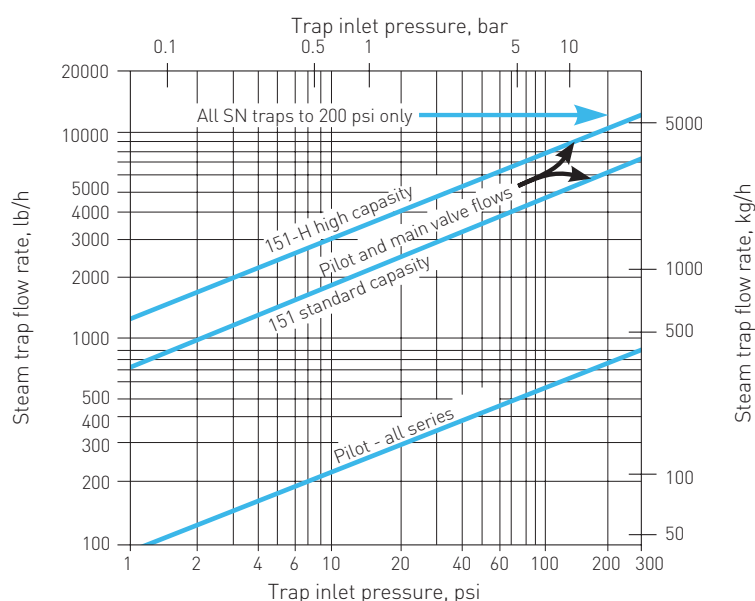
#### Typical specification

Traps shall be Dual Range type with a combination of welded stainless steel FTE thermostatic pilot valve and fluid-dynamic main valve. Construction shall be forged steel body and stainless steel bonnet with factory calibrated, stainless steel internals, self-adjusting for all pressures to 300 psi (21 bar). Specify angle or in-line body.

#### Ordering

Specify trap size and series. Threaded end connections (socketwelded optional). Repair kits are interchangeable and are supplied as sets of matched parts (seat, seat gasket, screen and preassembled cage assembly).

### Condensate Capacity Near Steam Temperature (for steam trap sizing)



**Note:** 151-H High Capacity Trap - use 1" pipe, valves and fittings.

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## PROCESS THERMOSTATIC STEAM TRAPS

### PARTS AND MATERIALS

Item	Part	Material
1A	Body 151 angle	ASME SA-105, Carbon steel
	Body 151S/SN angle	ASME SA182 316L Stainless steel
1B	Body 151 In-line	ASME SA 182 F11, Cr. Mo. 0.15% Maximum Carbon
1B	Body 151S/SN In-line	ASME SA182 316L Stainless steel
2	Bonnet	ASTM A-582 416 Stainless steel
3 <sup>[1]</sup>	Cage assembly	Stainless steel
4 <sup>[1]</sup>	Seat	Stainless steel
5 <sup>[1]</sup>	Gasket, seat	Monel®
6 <sup>[1]</sup>	Screen	18-8 Stainless steel
7	Nameplate	302 Stainless steel
8 <sup>[1]</sup>	Gasket, bonnet	Monel® Teflon® coated

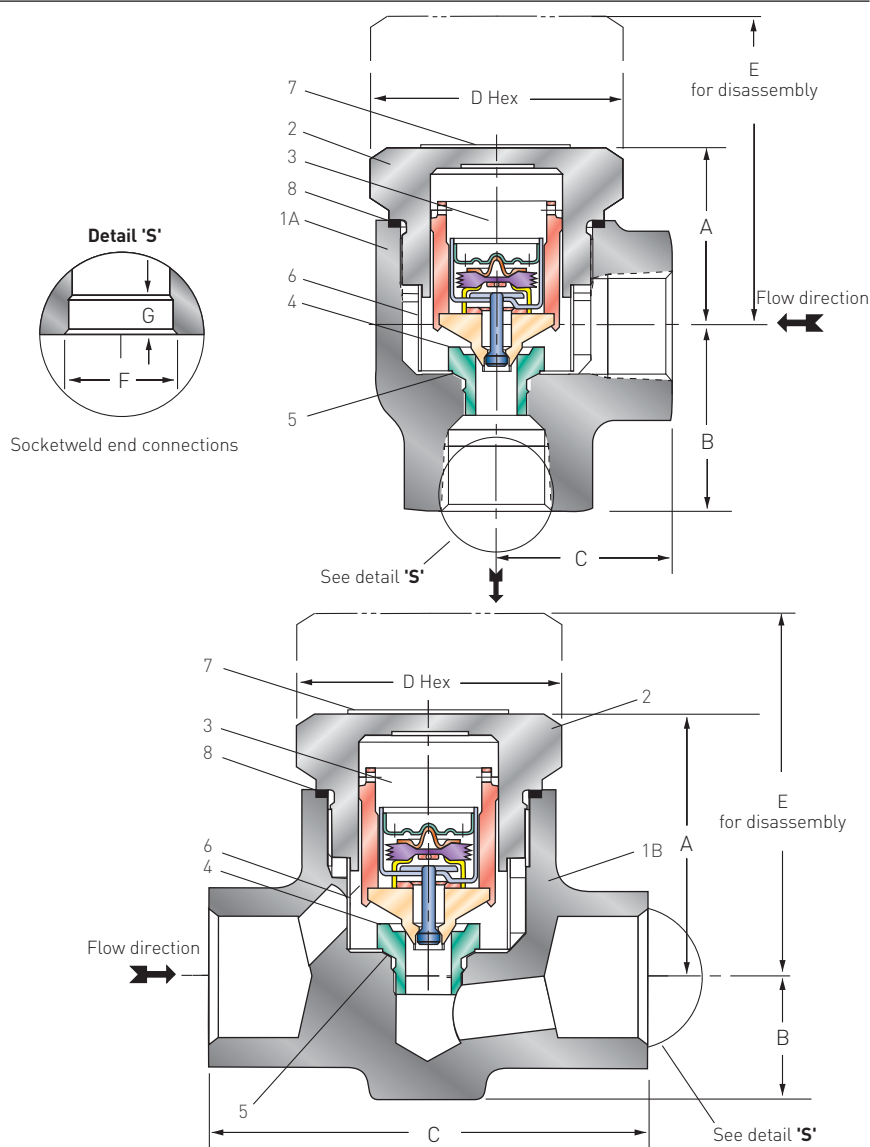
### NOTES

1. Denotes available repair kit.

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### SERIES 151 DUAL RANGE PROCESS TRAPS (OR HIGH CAPACITY AIR VENT)



### DIMENSIONS, in. (mm)

Fig. No.	Size NPS (DN)	A	B	C	D	E	F	G	Weight, lb. (kg)
151*	¾ (20)	1 ⅞ (48)	1 ⅞ (48)	1 ¾ (44)	2 ¼ (57)	3 (76)	1.070 (28)	½ (13)	4 ½ (2.0)
151**	¾ (20)	2 ⅞ (67)	1 ¾ (30)	4 ⅝ (110)	2 ¼ (57)	4 (102)	1.070 (28)	½ (13)	4 ½ (2.0)
151**	1 (25)	2 ⅞ (67)	1 ⅝ (33)	4 ⅞ (118)	2 ¼ (57)	4 (102)	1.335 (34)	½ (13)	5 (2.3)

\* Angle

\*\* In-Line

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