

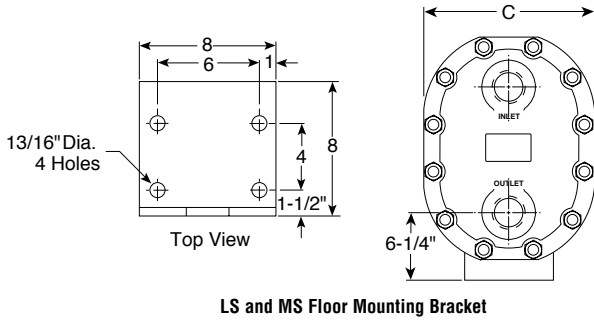


# LS & MS Series Ultra-Capacity Float & Thermostatic Steam Trap

Cast Steel for Horizontal Installation, With Thermostatic Air Vent

For Pressures to 450 psig (31 bar)...Capacities to 280,000 lb/hr (127,000 kg/hr)

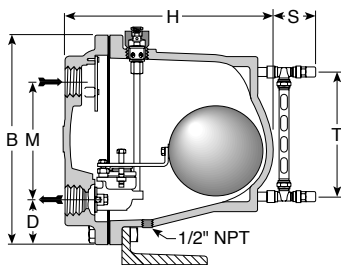
Steam Trapping and Steam Tracing Equipment



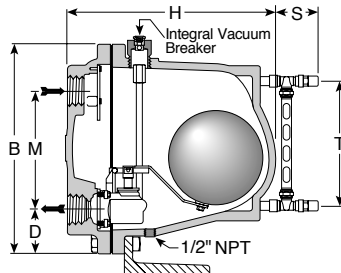
LS and MS Floor Mounting Bracket

LS & MS Series Traps		
Trap Series	LS & MS	
	in	mm
Pipe Connection	2, 2-1/2, 3*	50, 65, 80*
"B" (Height)	20	508
"C" (Width)	15-1/4	387
"D" (Bottom to $\phi$ )	4-3/16	106
"H" (Length)	20-1/4	508
"M" ( $\phi$ to $\phi$ )	11-5/16	287
"S" (Gauge Glass Width)	4-5/8	95.2
"T" (Gauge Glass Height)	12	305
Weight lb (kg)	290 (131.5)	

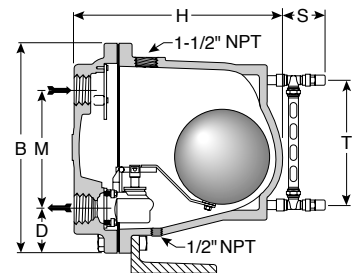
\*MS Series 3" (80 mm) only.



Series LS, F&T shown



Series MS, CC shown



Series MS, LD shown

## Description

The simple yet rugged cast steel construction of the LS & MS Series Ultra-Capacity F&T steam traps offers long, trouble-free service. All floats, valves and seats, and lever mechanisms are constructed of stainless steel.

The integral thermostatic air vent is a balanced-pressure phosphor bronze bellows caged in stainless steel. It is designed especially for heavy-duty industrial applications where highly efficient, uninterrupted service is essential. This balanced-pressure air vent will respond to the pressure-temperature curve of steam at any pressure from zero to 250 psig (17 bar). Thus—up to 250 psig (17 bar)—air is vented at slightly below steam temperature.

## Maximum Operating Conditions

Maximum allowable pressure (vessel design):

- Model LS: 450 psig @ 650°F (31 bar @ 338°C)
- Model MS: 450 psig @ 650°F (31 bar @ 338°C)

Maximum operating pressure:

- Model 30-LS: 30 psig (2 bar) saturated steam
- Model 100-LS: 100 psig (7 bar) saturated steam
- Model 150-LS: 150 psig (10 bar) saturated steam
- Model 250-LS: 250 psig (17 bar) saturated steam
- Model 250-MS: 250 psig (17 bar) saturated steam
- Model 450-LS: 450 psig (31 bar) saturated steam
- Model 450-MS: 450 psig (31 bar) saturated steam

Maximum operating temperature bellows: 422°F (217°C)

**NOTE:** For pressures above 250 psig (17 bar), the thermostatic vent should be removed and only a CC or LD version should be used.

## Connections

- Screwed NPT and BSPT
- Socketweld
- Flanged (weld neck)

## Materials

- Body and cap: ASTM A216 WCB
- Internals: All stainless steel—304
- Valve(s) and seat(s): Stainless steel
- Drain plug: Carbon steel
- Thermostatic air vent: Stainless steel and bronze with phosphor bronze bellows, caged in stainless steel

## Options

- Integral vacuum breaker 150 psig (10 bar) maximum. Add suffix VB to model number.
- No internal thermostatic air vent for liquid drainer service. Add suffix LD to model number.
- Integral flash release for syphon drainage service. Add suffix CC to model number.
- Armored gauge glass 250 psig @ 424°F (17 bar @ 218°C)
- LS and MS Series available with floor mounting bracket. Consult factory.

## Specification

Float and thermostatic steam trap, type ... in cast steel, with thermostatic air vent.

For a fully detailed certified drawing, refer to CD #1010.

## How to Order

Pressure	Model	Connection Size	Options
100	LS	10	VB
30	LS	8 = 2" 10 = 2-1/2"	VB = Vacuum Breaker LD = Liquid Drainer CC = Condensate Controller G/G = Gauge Glass FLG = Specify type and class of flange
100			
150			
250			
450			
250	MS	12 = 3"	
450			

## Special Configurations

**Condensate controller with flash release for syphon drainage and/or cascade service.** The condensate controller (CC) configuration was developed especially to meet very large capacity needs in applications where condensate must be lifted from the drain point to the trap. Under such conditions—often referred to as syphon drainage—the reduction in pressure that occurs when condensate is elevated causes a portion of the condensate to flash into steam. Ordinary traps, unable to differentiate between flash steam and live steam, close and impede drainage.

The LS & MS Series condensate controllers (CC) are equipped with a fixed, restricted orifice near the top of the body to bleed off the flash steam (and all air present). This permits the trap to function properly on condensate.

**Liquid drainer with back vent for exceptionally high capacity drainage of liquid from gas under pressure.** The liquid drainer (LD) configuration was developed to meet very large capacity needs in draining water and other liquids from air or other gases under pressure. To prevent air or gas binding, the access port in the top of the body serves as a back vent connection to the equipment being drained. For capacity data, see pages LD-30 and LD-49 or consult your Armstrong Representative.

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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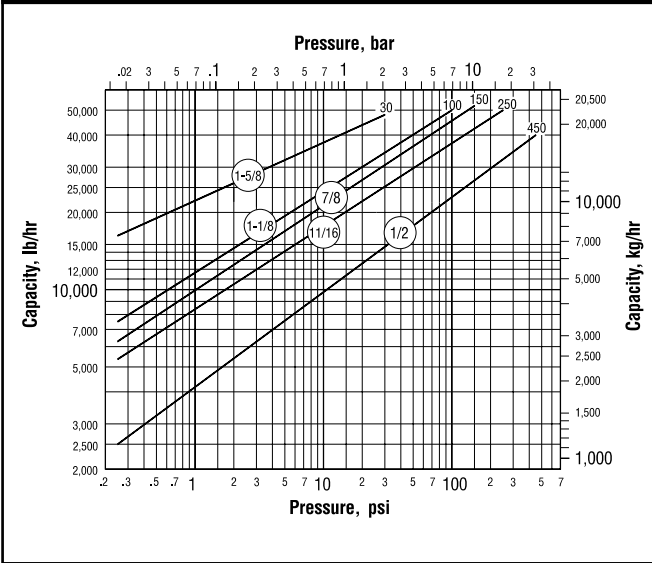
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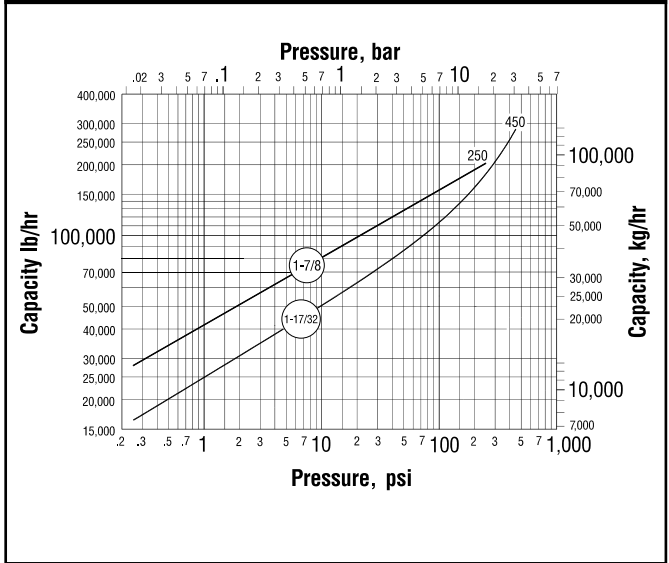


Steam Trapping and  
Steam Tracing Equipment

**Model LS Series Capacity**



**Model MS Series Capacity**



### Installation Notes

Under conditions where the load may approach the maximum capacity of the trap, it is recommended that the size of the discharge line be increased one size as close to the trap cap as is practical.

When LS and MS Series units are used in severe service conditions or at pressures exceeding 30 psig, use an anchoring bracket or other supportive measures to minimize stress on piping.

Ultra-Capacity LS and MS Series units **MUST BE WARMED UP** in the proper sequence and gradually. Recommended warm-up rate not to exceed 100°F/8 minutes.

See your Armstrong Representative.

### Vacuum Breaker—3/8" (10 mm) and 1/2" (15 mm) NPT

Many times, condensate will be retained ahead of steam traps because of the presence of a vacuum. To break a vacuum, air must be introduced into the system by means of a vacuum breaker.

For maximum protection against freezing and water hammer in heating coils under modulated control, for example, vacuum breakers are recommended in conjunction with freeze protection devices.

Vacuum Breaker				
Size	in	mm	in	mm
		1/2 NPT	15	3/8 NPT
"B" Pipe Connections	3/8 NPT	10	1/4 NPT	6
"C" Height	1-1/4	30	1-3/32	28
"D" Width	7/8 Hex	22 Hex	11/16 Hex	17 Hex

