

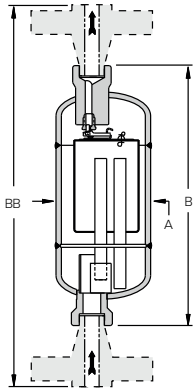


401-SH/501-SH Inverted Bucket Superheated Steam Traps

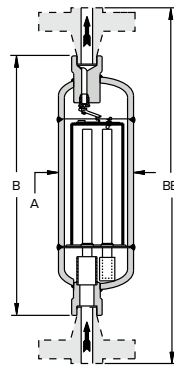
Carbon Steel or Stainless Steel for Vertical Installation

For Pressures to 106 bar...Capacities to 430 kg/h

Steam Trapping and Steam Tracing Equipment



Model 401-SH



Model 501-SH



Description

Armstrong's 401-SH/501-SH Series inverted bucket steam trap line is made for overcoming the difficult combination of superheat and high pressure/low load service.

To survive this most severe steam service, Armstrong created an inverted bucket trap with a unique accumulation chamber. The chamber collects sufficient condensate to ensure full discharge cycles. A cup in the chamber floats up and down on the steam inlet tube, sealing it off as the condensate level rises. At the same time as the chamber collects condensate, steam continues to flow under the bucket, making sure that the discharge valve closes tightly until the condensate rises into the trap body and the bucket falls down. The operation is on/off, no throttling or dribbling. Furthermore, it combines all the advantages of an inverted bucket steam trap:

- High resistance to wear, corrosion and water hammer with **no gaskets**.
- A unique leverage system multiplies the force provided by the bucket, to open the valve against system pressure.
- The mechanism is located at the top. No dirt can collect on the orifice. Small particles of dirt will be held in suspension until discharged by the full differential purging action.
- The discharge orifice is surrounded by a water seal, preventing live steam loss. Automatic air venting is provided by a small hole in the bucket.
- Inverted bucket traps require no adjustment. They do not allow condensate backup and are resistant to water hammer.

Connections

Screwed BSPT and NPT (401-SH only)

Socketweld

Flanged DIN or ANSI (welded)

Maximum Operating Conditions

Maximum allowable pressure (vessel design):

Model 401-SH: 69 bar @ 427°C

Model 501-SH: 106 bar @ 454°C

Maximum operating pressure:

Model 401-SH: 69 bar

Model 501-SH: 106 bar

Maximum back pressure: 99% of inlet pressure

Materials

Body:

Model 401-SH Carbon steel ASTM A106 Gr. B Sch. 80 pipe

Model 501-SH Stainless steel 316L ASTM A312 Sch. 80 pipe

Internals:

Stainless steel – 304

Valve and seat:

Titanium

Connections:

Model 401-SH Stainless steel – 304

Model 501-SH Stainless steel – 316L

Specification

Inverted bucket steam trap, type 401-SH in carbon steel or 501-SH in stainless steel, with accumulation chamber, continuous air venting at steam temperature, stainless steel leverage system, with the discharge orifice at the top of the trap. Maximum allowable back pressure 99% of inlet pressure.

How to Order

Specify:

- Model number
- Size and type of pipe connection. When flanges are required, specify type of flange in detail
- Maximum working pressure that will be encountered or orifice size

Table ST-102-1. Model 401-SH and Model 501-SH Bottom Inlet, Top Outlet Trap (dimensions in mm)

| Model No. | 401-SH | 501-SH |
|---|-----------|-----------|
| Pipe Connections | 15 – 20 | 15 – 20 |
| "A" Body Outside Diameter | 100 | 100 |
| "B" Face-to-Face (screwed & SW) | 279 | 350 |
| "BB" Height (flanged 401-SH PN100 & 501-SH PN250*) | 356 – 390 | 476 – 480 |
| Weight in kg (screwed & SW) | 5,5 | 7 |
| Weight in kg (flanged 401-SH PN100 & 501-SH PN250*) | 6,7 – 7,3 | 13 – 13,5 |

* Other flange sizes, ratings and face-to-face dimensions are available on request.

All models are CE Marked according to the PED (2014/68/UE).

+ May be derated depending on flange rating and type.

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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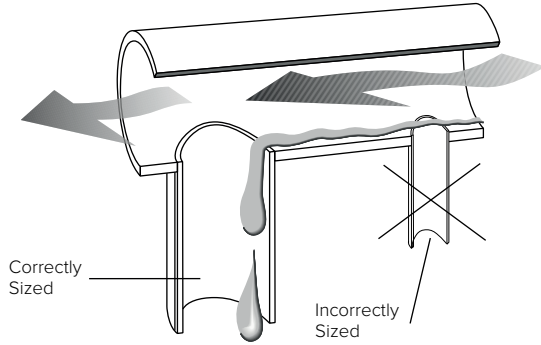
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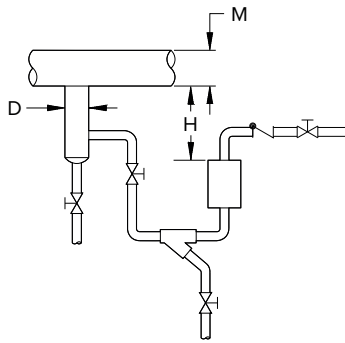
Installation Recommendations

What little condensate there is on superheat and high pressure/low load service usually forms in drip legs and in the traps themselves. Therefore proper piping and drip legs of adequate size and diameter are essential for the successful operation of the Armstrong superheat trap.

Drip Leg Sizing

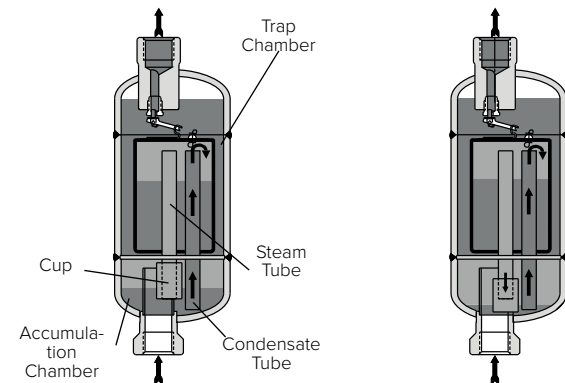


The properly sized drip leg will capture condensate. Too small a drip leg can actually cause a venturi "piccolo" effect where pressure drop pulls condensate out of the drip leg and trap.



Trap Draining Drip Leg on Steam Main

Air
 Steam
 Condensate



Cycling – Discharge Valve Wide Open

With the steam feed tube to the trap chamber sealed, condensate flows through the condensate feed tube (from accumulation chamber) into the trap chamber. This sinks the inverted bucket, which opens the discharge valve, cycling the trap.

Cycle Ending

As the level of condensate in the accumulation chamber falls, the cup sealing the steam feed tube moves downward, opening a passage for steam to flow into trap chamber.

Trap Closed

As steam begins to flow through the accumulation chamber and up the steam feed tube under the inverted bucket in the trap chamber, the discharge valve closes tightly.

Cycle About to Repeat

As the level of condensate rises in the accumulation chamber, the cup floats up until it again seals the steam feed tube, and the cycle repeats.

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Table ST-103-1. Model 401/501 Capacity

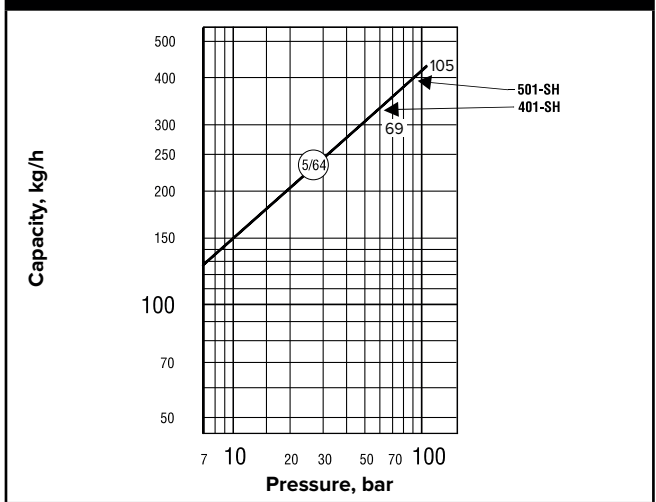


Table ST-103-2. Recommended Steam Main and Branch Line Drip Leg Tracing

| M Steam Main Size | | D Drip Leg Diameter | | H Drip Leg Length Minimum | | | |
|----------------------|------|------------------------|------|---------------------------|-----|-------------------|-----|
| | | | | Supervised Warm-Up | | Automatic Warm-Up | |
| mm | in. | mm | in. | mm | in. | mm | in. |
| 15 | 1/2" | 15 | 1/2" | 250 | 10" | 710 | 28" |
| 20 | 3/4" | 20 | 3/4" | 250 | 10" | 710 | 28" |
| 25 | 1" | 25 | 1" | 250 | 10" | 710 | 28" |
| 50 | 2" | 50 | 2" | 250 | 10" | 710 | 28" |
| 75 | 3" | 75 | 3" | 250 | 10" | 710 | 28" |
| 100 | 4" | 100 | 4" | 250 | 10" | 710 | 28" |
| 150 | 6" | 100 | 4" | 250 | 10" | 710 | 28" |
| 200 | 8" | 100 | 4" | 300 | 12" | 710 | 28" |
| 250 | 10" | 150 | 6" | 380 | 15" | 710 | 28" |
| 300 | 12" | 150 | 6" | 450 | 18" | 710 | 28" |
| 350 | 14" | 200 | 8" | 530 | 21" | 710 | 28" |
| 400 | 16" | 200 | 8" | 600 | 24" | 710 | 28" |
| 450 | 18" | 250 | 10" | 685 | 27" | 710 | 28" |
| 500 | 20" | 250 | 10" | 760 | 30" | 760 | 30" |
| 600 | 24" | 300 | 12" | 910 | 36" | 910 | 36" |

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