The Float & Thermostatic Steam Trap

The More Your Steam Pressure Varies, the More You Need Armstrong F&T Traps

When steam pressure may vary from maximum steam supply pressure to vacuum, Armstrong F&Ts are your most energy-efficient choice. Our line of F&Ts brings Armstrong performance, dependability and long life to trapping services requiring continuous drainage with high air venting capacity. Thanks to separate orifices for condensate and air, they provide continuous condensate drainage and air venting – even under conditions of zero pressure.

All the benefits detailed below have been designed into Armstrong F&Ts through long experience in the manufacture of pressure float-type drain traps. They assure you of optimum operating efficiency for long periods with minimum trouble.

No water seal at inlet

Inlet high on body and condensate discharge valve in the bottom of the body prevent formation of a water seal that could block flow of air to vent under very low pressure conditions.

Optional integral vacuum breaker

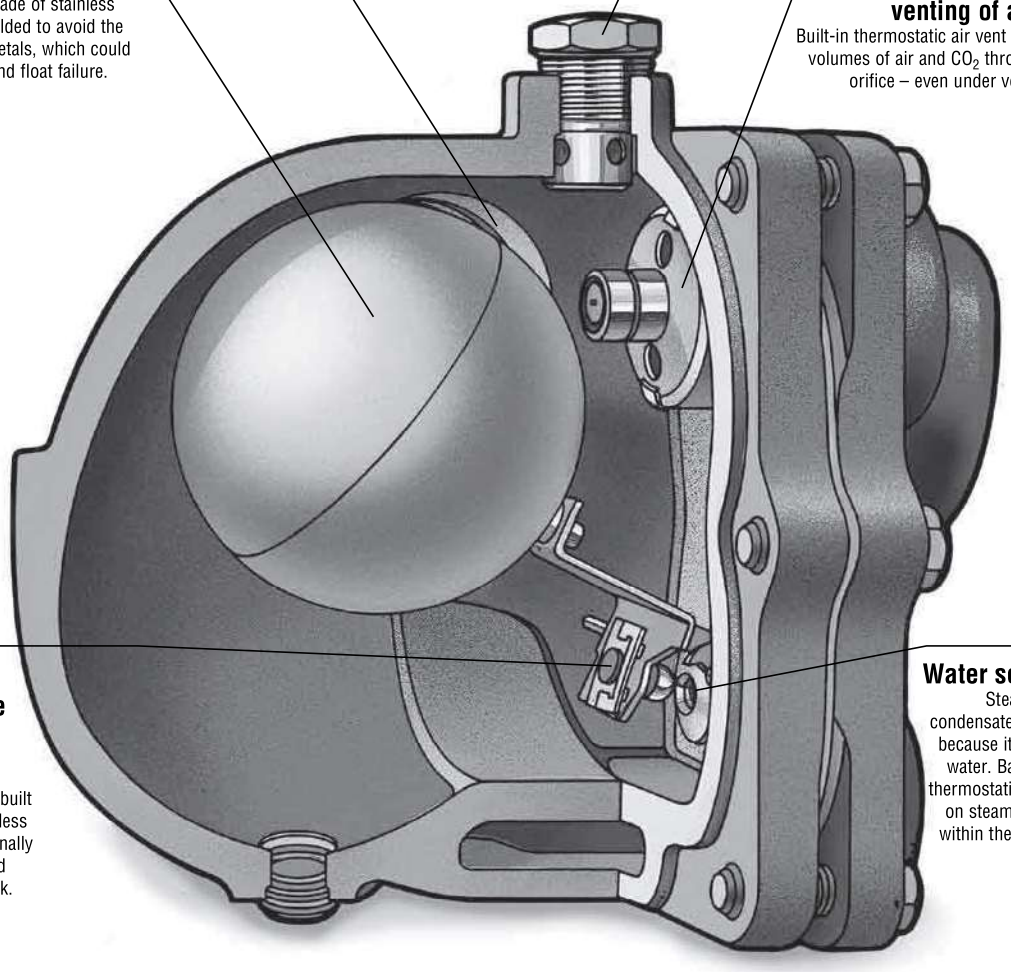
Provide maximum protection against freezing and water hammer in condensing equipment under modulated control. They also eliminate another fitting being installed in the line.

Corrosion resistance

Entire float mechanism is made of stainless steel. The float is Heliarc welded to avoid the introduction of dissimilar metals, which could lead to galvanic corrosion and float failure.

High-capacity venting of air and CO_2

Built-in thermostatic air vent discharges large volumes of air and CO_2 through its separate orifice – even under very low pressure conditions.



Long life and dependable service

Valve is stainless steel in all sizes. Seat is heat treated in 1 1/2" pipe size and larger. Rugged float mechanism is built to resist wear, and the stainless steel float provides exceptionally high collapsing pressure and resistance to hydraulic shock.

Water sealed valve

Steam cannot reach condensate discharge valve because it is always under water. Balanced pressure thermostatic air vent closes on steam at any pressure within the operating range of the trap.

Operation against back pressure

Trap operation is governed solely by the condensate level in the trap. Back pressure in the return line will not render the trap inoperative as long as there is any pressure differential to force condensate through the discharge valve.

Continuous drainage

No pressure fluctuations due to intermittent condensate drainage. Condensate is discharged at very close to steam temperature. No priming needed.

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Float & Thermostatic Steam Trap

Built as Tough as the Jobs They Do

Armstrong float and thermostatic traps are unique in their super heavy duty construction. Armstrong uses high quality ASTM A48 Class 30 cast iron or astm A216 WCB cast steel – normally found in pressure vessels rated to 17 bar or 32 bar. Internal mechanisms are made from stainless steel and are heavily reinforced. No brass cotter pins here. Valves and seats are stainless steel, hardened, ground and lapped to withstand the erosive forces of flashing condensate.

Why go to all this trouble on traps normally recommended for low-pressure, modulating service? The answer is in the word modulating. Modulating pressures mean widely varying loads, thermal cycling and high air and non-condensable gas loads.

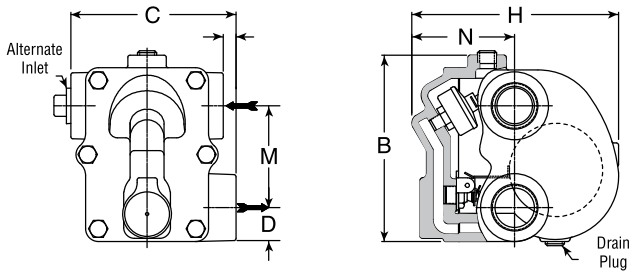
In other words, tough service. Inferior, lightweight construction is a mistake waiting to happen. Trap failures on modulating pressure may lead to water hammer, corrosion and even heat exchanger damage.

Armstrong's published capacities are based on actual measurements of traps handling hot, flashing condensate. Competitive F&Ts may utilize theoretical calculated capacities. Armstrong uses its own steam lab to give you actual capacity – especially important on high-capacity traps such as those in our ultra-capacity line. Not only does Armstrong offer super heavy duty construction for long life and reliability, but we also supply the data to back up performance. Here's a simple, easy-to-remember summary: The more your pressure varies, the more you need Armstrong F&Ts.

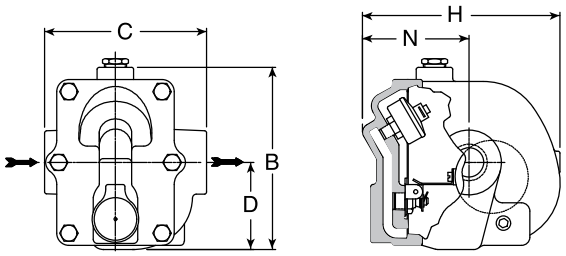
B and BI Series Float & Thermostatic Steam Traps

Cast Iron for Horizontal Installation, with Thermostatic Air Vent

For Pressures to 2 bar...Capacities to 4 040 kg/h



Model B Traps Standard Configuration



Model BI Traps

Description

Armstrong B and BI Series F&T traps combine high standards of performance and long life with economy for heating service where continuous drainage with high air-venting capacity is required.

Because of the wide use of vacuum returns in systems of this type, the thermostatic air vent element is charged to give it the capability of compensated response to the pressure-temperature curve of steam at any pressure from less than 500 mm Hg vacuum to 2 bar gauge. B and BI Series F&T traps will vent air at slightly below steam temperature throughout this entire range of operation.

All B Series traps, except the 1/2" and 3/4", have inlet connections on both sides of the body to provide flexibility in piping. **The BI Series F&T** traps in sizes 1/2", 3/4" and 1" feature the convenience of in-line connections with the same internals as the B Series.

Maximum Operating Conditions

Maximum allowable pressure (vessel design)†:
- Model B2-B3: 8,5 bar @ 178°C
- Model B4-B8: 12 bar @ 192°C

Maximum operating pressure:
- 15B, BI: 1 bar saturated steam
- 30B, BI: 2 bar saturated steam

Maximum back pressure: 99% of inlet pressure

Note: Cast iron traps should not be used in systems where freezing, excessive hydraulic or thermal shock are present.

Connections

Screwed BSPT and NPT
Flanged DIN or ANSI (screw on) on request

Materials

Body and cap:	ASTM A48 Class 30
Internals:	All stainless steel – 304
Valve:	Stainless steel – 303 or 440
Seat:	Stainless steel – 303 (ASTM A582) Stainless steel – 440F in 1-1/2" and 2"
Thermostatic air vent:	Stainless steel and bronze with phosphor bronze bellows, caged in stainless steel

Options

Integral vacuum breaker. Add suffix VB to model number.

CAUTION: Do not use a conventional vacuum breaker open to the atmosphere in any system that incorporates a mechanical return system that carries pressure less than atmospheric pressure. This includes all return systems designated as vacuum returns, variable vacuum returns or subatmospheric returns. If a vacuum breaker must be installed in such a system, it should be of the type that is loaded to open only when the vacuum reaches a calibrated level well in excess of the design characteristics of the system.

Specification

Float and thermostatic steam trap, type ... in cast iron, with thermostatic air vent. Maximum allowable back pressure 99% of inlet pressure.

How to Order

Pressure	Model	Connection Size	Option
15	B	2	VB
15 = 1 bar 30 = 2 bar	B = Standard Connection	2 = DN15 3 = DN20 4 = DN25 5 = DN32 6 = DN40 8 = DN50	VB = Vacuum Breaker
	BI = In-line Connection	2 = DN15 3 = DN20 4 = DN25	

Table ST-124-1. B Series Side Inlet, Side Outlet and BI Series In-Line Trap (dimensions in mm)

Model No.	B					BI
Pipe Connections	15 – 20	25	32	40	50	15 – 20 – 25
"B" Height	124	140	140	189	244	143
"C" Face-to-Face (screwed)	98	124	117	146	194	127
"D" Bottom to ℄	22,2	25,4	31,0	36,5	42,9	68,0
"H" Width	137	152	197	214	295	168
"K" Connection Offset	3,2	9,5	—	—	—	—
"M" ℄ to ℄	69,8	76,2	76,2	106,0	152,0	—
"N" Top to ℄	65,1	76,2	85,7	95,2	127,0	83,0
Weight in kg (screwed)	2,7	3,9	5,0	8,6	18,1	4,4

Shade indicates products that are CE Marked according to the PED (97/23/EC). All the other sizes comply with the Article 3.3 of the same directive.
† 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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B and BI Series Float & Thermostatic Steam Traps

Cast Iron for Horizontal Installation, with Thermostatic Air Vent

For Pressures to 2 bar...Capacities to 4 040 kg/h

Table ST-125-1. B & BI Series Capacity – 1 bar

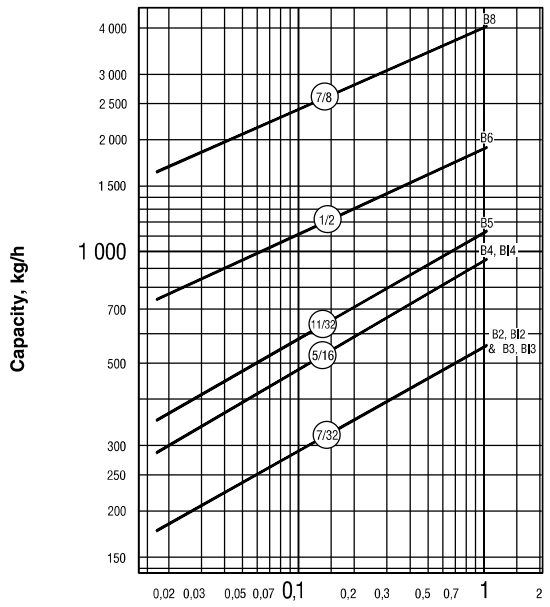
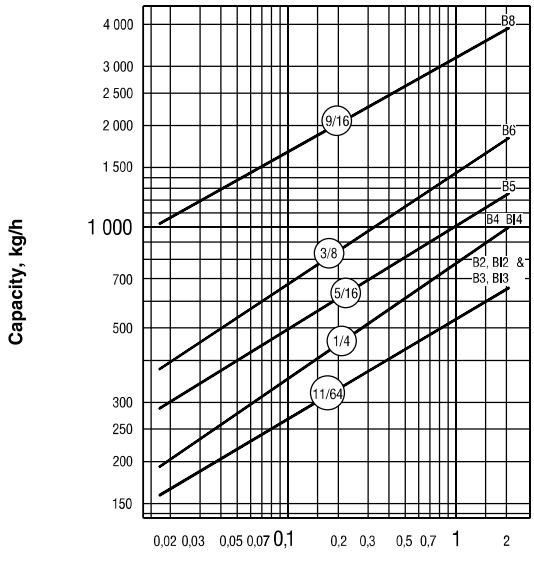


Table ST-125-2. B & BI Series Capacity – 2 bar



Options

Vacuum Breaker – 3/8" and 1/2" 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 condensing equipment under modulated control, vacuum breakers are recommended. Armstrong B and BI Series F&T traps are available with integral vacuum breakers. Maximum pressure is 10 bar.

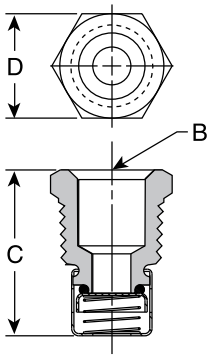


Table ST-125-3. Vacuum Breaker (dimensions in mm)

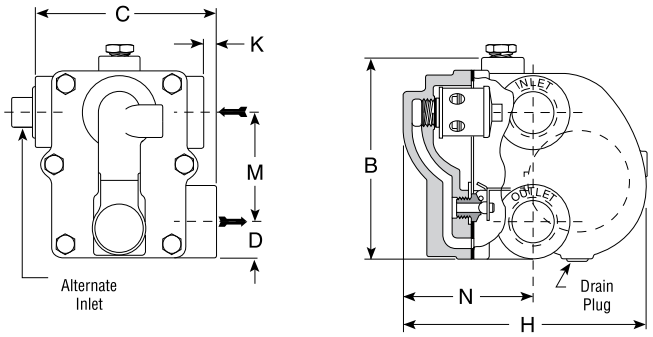
Size	1/2" NPT	3/8" NPT
"B" Pipe Connections	3/8"	1/4"
"C" Height	30	28
"D" Width	22 Hex	17 Hex

All dimensions and weights are approximate. Use certified print for exact dimensions. Design and materials are subject to change without notice.

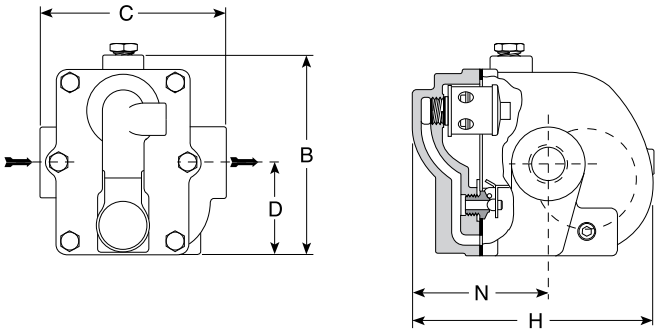
A & AI Series Float & Thermostatic Steam Traps

Cast Iron for Horizontal Installation, with Thermostatic Air Vent

For Pressures to 12 bar...Capacities to 3 900 kg/h



Model A Traps Standard Configuration



Model AI Traps

Description

Armstrong A & AI Series F&T traps are for industrial service from 0 to 12 bar and feature a balanced pressure phosphor-bronze type bellows caged in stainless steel. Armstrong A & AI Series F&T traps are designed for service on heat exchange equipment where there is a need to vent air and non-condensable gases quickly.

The AI Series F&T traps feature the convenience of in-line connections with the same rugged internals found in the A Series.

Maximum Operating Conditions

Maximum allowable pressure (vessel design)†: 12 bar @ 192°C

Maximum operating pressure:

Model 30-A, AI:	2 bar saturated steam
Model 75-A, AI:	5 bar saturated steam
Model 125-A, AI:	8,5 bar saturated steam
Model 175-A, AI:	12 bar saturated steam

Maximum back pressure: 99% of inlet pressure

Note: Cast iron traps should not be used in systems where freezing, excessive hydraulic or thermal shock are present.

Connections

Screwed BSPT and NPT
Flanged DIN or ANSI (screw on) on request

Materials

Body and cap:	ASTM A48 Class 30
Internals:	All stainless steel – 304
Valve:	Stainless steel – 440
Seat:	Stainless steel – 303 (ASTM A582) Stainless steel – 440F in 1 1/2" and 2"
Thermostatic air vent:	Stainless steel and bronze with phosphor bronze bellows, caged in stainless steel

Options

Integral vacuum breaker. Add suffix VB to model number.

CAUTION: Do not use a conventional vacuum breaker open to the atmosphere in any system that incorporates a mechanical return system that carries pressure less than atmospheric pressure. This includes all return systems designated as vacuum returns, variable vacuum returns or subatmospheric returns. If a vacuum breaker must be installed in such a system, it should be of the type that is loaded to open only when the vacuum reaches a calibrated level well in excess of the design characteristics of the system.

Specification

Float and thermostatic steam trap, type ... in cast iron, with thermostatic air vent. Maximum allowable back pressure 99% of inlet pressure.

How to Order

Pressure	Model	Connection Size	Option
75	AI	2	VB
30 = 2 bar 75 = 5 bar 125 = 8,5 bar 175 = 12 bar	A = Standard Connection AI = In-line Connection	3 = DN20 4 = DN25 5 = DN32 6 = DN40 8 = DN50 2 = DN15 3 = DN20 4 = DN25	VB = Vacuum Breaker

Table ST-126-1. A Series Side Inlet, Side Outlet and AI Series In-Line Trap (dimensions in mm)

Model No.	A					AI
Pipe Connections	20	25	32	40	50	15 – 20 – 25
"B" Height	130	130	148	189	248	140
"C" Face-to-Face (screwed)	124	124	117	146	194	127
"D" Bottom to ℄	25,4	25,4	31,0	35,7	42,9	65,1
"H" Width	164	164	206	214	295	165
"K" Connection Offset	95,2	95,2	—	—	—	—
"M" ℄ to ℄	76,2	76,2	76,2	106,0	152,0	—
"N" Top to ℄	85,7	85,7	95,2	95,2	127,0	93,7
Weight in kg (screwed)	4,3	3,7	5,0	8,5	18,1	4,4

Shade indicates products that are CE Marked according to the PED (97/23/EC). All the other sizes comply with the Article 3.3 of the same directive.
† 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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A & AI Series Float & Thermostatic Steam Traps

Cast Iron for Horizontal Installation, with Thermostatic Air Vent

For Pressures to 12 bar...Capacities to 3 900 kg/h

Table ST-127-1. A & AI Series Capacity – 2 bar

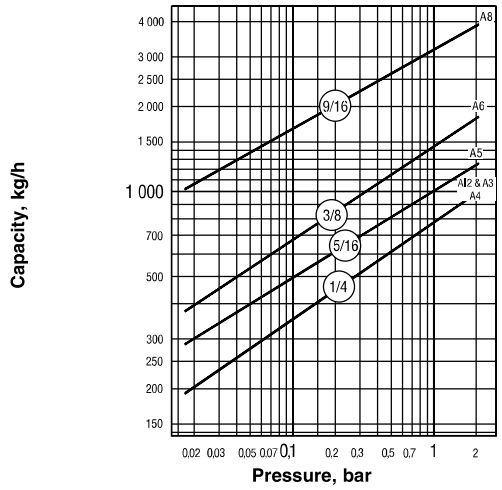


Table ST-127-2. A & AI Series Capacity – 5 bar

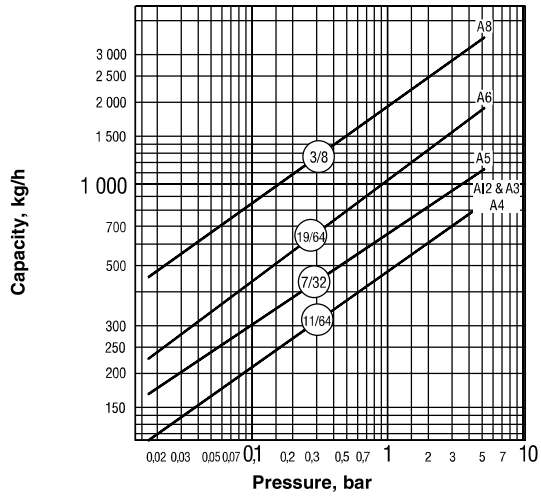


Table ST-127-3. A & AI Series Capacity – 8,5 bar

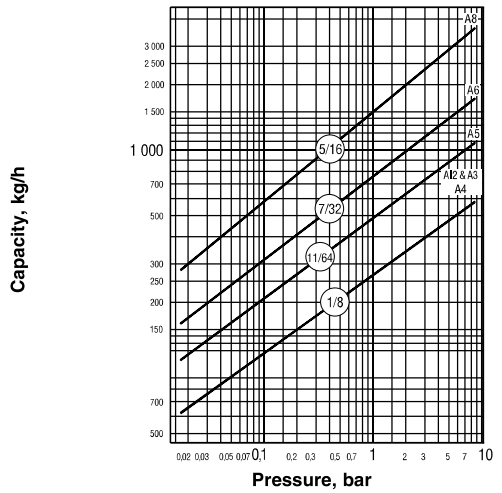
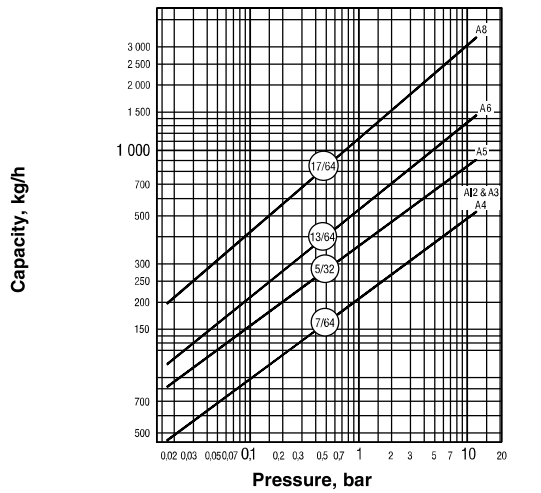


Table ST-127-4. A & AI Series Capacity – 12 bar



Options

Vacuum Breaker – 3/8" and 1/2" 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 condensing equipment under modulated control, vacuum breakers are recommended. Armstrong A and AI Series F&T Traps are available with integral vacuum breakers. Maximum service pressure is 10 bar.

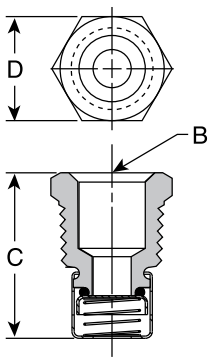


Table ST-127-5. Vacuum Breaker (dimensions in mm)

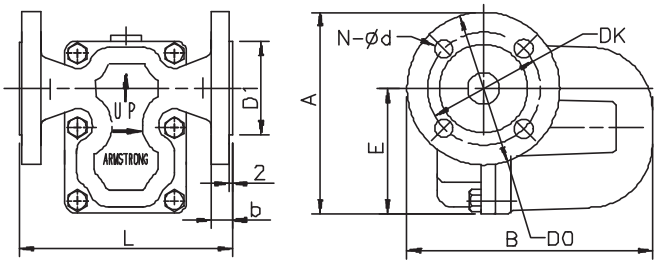
Size	1/2" NPT	3/8" NPT
"B" Pipe Connections	3/8"	1/4"
"C" Height	30	28
"D" Width	22 Hex	17 Hex

All dimensions and weights are approximate. Use certified print for exact dimensions. Design and materials are subject to change without notice.

AIC Series DN15-25 Float & Thermostatic Steam Trap

Ductile Iron for Horizontal Installation, with Thermostatic Air Vent

For Pressures to 14,2 bar...Capacities to 1 024 kg/h



Description

Armstrong AIC Series F&T traps are designed for industrial service to 14,2 bar. They feature all the benefits of Armstrong F&T traps, such as operation against back pressure, continuous drainage, high-capacity venting of air and CO_2, long life and dependable service and enjoys the convenience of in-line connections.

Armstrong AIC Series F&T traps are the perfect solution for applications where there is a need to vent air and non-condensable gases quickly at start-up.

Maximum Operating Conditions

Maximum allowable pressure (vessel design):	17 bar @ 232°C (screwed) 14,2 bar @ 232°C (EN1092-2 PN16)
Maximum Allowable Pressure:	17 barg (screwed) 14,2 barg (EN1092-2 PN16)
Maximum Allowable Temperature:	232°C
Maximum Operating Pressure:	14,2 barg

Note: Caution should be used when Float and Thermostatic steam traps are applied in systems where freezing or excessive hydraulic shock can occur.

Materials

Body & Cap	ASTM A395 Gr. 60-40-18 EN 1563 Gr. EN-GIS-400-18U
Gasket	Graphite
Seat	Stainless Steel 303
Internals	Stainless Steel 304
Valve	Stainless Steel 17-4-PH
Thermostatic Air Vent	Hastelloy Wafer
Hex Bolt	12.9

Connections

Screwed BSPT and NPT
Flanged EN1092-2 PN16

Options

Integral vacuum breaker.
Add suffix VB to model number.

CAUTION: Do not use a conventional vacuum breaker open to the atmosphere in any system that incorporates a mechanical return system that carries pressure less than atmospheric pressure. This includes all return systems designated as vacuum returns, variable vacuum returns or subatmospheric returns. If a vacuum breaker must be installed in such a system, it should be of the type that is loaded to open only when the vacuum reaches a calibrated level well in excess of the design characteristics of the system.

How to Order

Model	Flow Direction	Connection Size	Connection Type	Pressure	Option
AIC F+T	L/R	DN20	PN16	3/32	VB
AIC F+T	L/R = Left to Right	1/2" 3/4" 1"	Screwed	1/4 = 1 bar 7/32 = 2 bar 1/8 = 5 bar 3/32 = 8,5 bar 5/64 = 14,2 bar	VB = Vacuum Breaker (limited to 10 bar)
AIC F+T	L/R = Left to Right	DN15 DN20 DN25	Flanged	1/4 = 1 bar 7/32 = 2 bar 1/8 = 5 bar 3/32 = 8,5 bar 5/64 = 14,2 bar	VB = Vacuum Breaker (limited to 10 bar)
AIC-HC F+T	L/R = Left to Right	1"	Screwed	11/32 = 1 bar 5/16 = 2 bar 7/32 = 5 bar 11/64 = 9 bar 1/8 = 14 bar	VB = Vacuum Breaker (limited to 10 bar)
AIC-HC F+T	L/R = Left to Right	DN25	Flanged	11/32 = 1 bar 5/16 = 2 bar 7/32 = 5 bar 11/64 = 9 bar 1/8 = 14 bar	VB = Vacuum Breaker (limited to 10 bar)

Table 128-1. Table Available Connections and Face-To-Face Dimensions

Connection	1/2" DN15	3/4" DN20	1" DN25	AIC-HC 1" - DN25
«A» (Height Screwed) in mm	135	135	135	135
«A» (Height Flanged PN16) in mm	142	147	152	152
«B» (Length Screwed) in mm	175	175	175	220
«B» (Length Flanged PN16) in mm	175	180	185	238
«L» (Face-to-face Screwed) in mm	160	160	160	160
«L» (Face-to-face Flanged PN16) in mm	150	150	160	160
«b» (Flange width) in mm	16	16	18	18
«E» (Bottom to centerline of inlet) in mm	96	96	96	96
«D1» in mm	ø 48	ø 58	ø 68	ø 68
«Do» in mm	ø 95	ø 105	ø 115	ø 115
«Dk» in mm	ø 65	ø 75	ø 85	ø 85
«N - ød» in mm	4 - ø 14	4 - ø 14	4 - ø 14	4 - ø 14
Vacuum Breaker (optional) in inch	3/8"	3/8"	3/8"	3/8"
Weight in kg screwed	4,4 kg	4,4 kg	4,4 kg	4,6 kg
Weight in kg flanged	6,2 kg	6,5 kg	7,0 kg	7,25 kg

All the sizes comply with the Article 4.3 of the PED (2014/68/UE)

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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AIC Series DN15-25 Float & Thermostatic Steam Trap

Ductile Iron for Horizontal Installation, with Thermostatic Air Vent

For Pressures to 14,2 bar...Capacities to 1 024 kg/h

Table 129-1. Model AIC DN15-25 – Capacity Chart

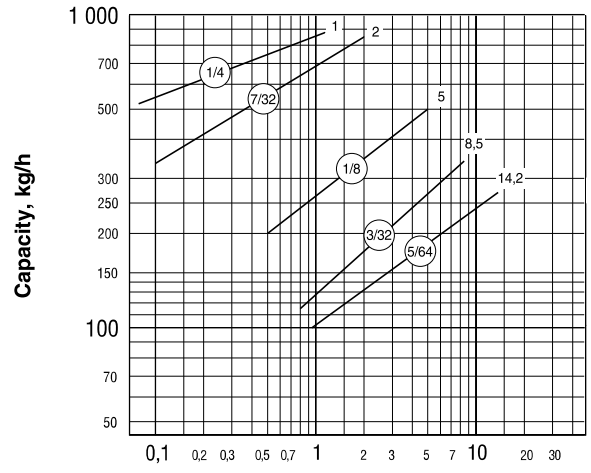
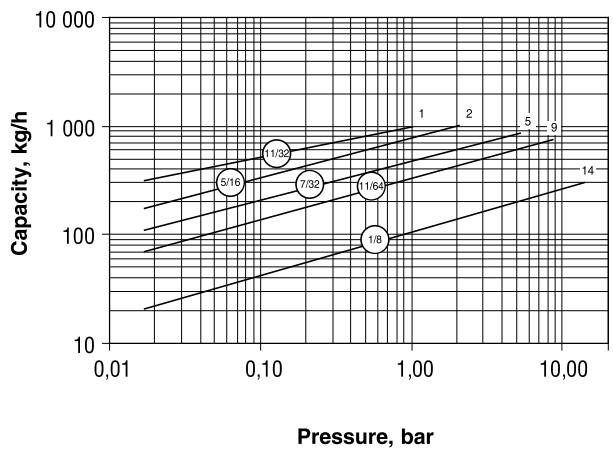


Table ST-129-2. 2 Model AIC-HC DN25 – Capacity Chart



Specification

The steam trap shall be an Armstrong model AIC (AICF) float & thermostatic type. Cap and body shall be ASTM A395 Gr. 60-40-18 (EN1563) or EN-GJS-400-18U Ductile Iron. Pipe connections shall be in the cap and the entire mechanism attached to the cap. Float and seat shall be stainless steel with heat-treated chrome steel valve. The float shall be Heliarc welded to avoid introduction of dissimilar metals. The thermostatic Air Vent shall be a balanced pressure Hastelloy wafer with chrome steel seat. Maximum allowable back pressure should be 99% of the inlet pressure.

Options

Vacuum Breaker

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.

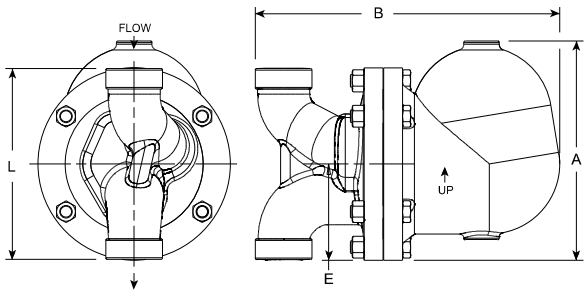
For maximum protection against freezing and water hammer in condensing equipment under modulated control, vacuum breakers are recommended. Armstrong AIC Series F&T Traps are available with integral vacuum breakers. Maximum service pressure is 10 bar.

All dimensions and weights are approximate. Use certified print for exact dimensions. Design and materials are subject to change without notice.

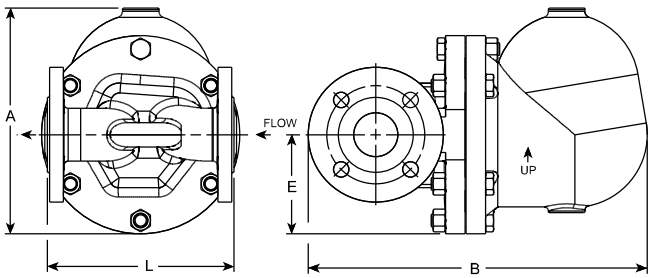
AIC Series DN40-50 Float & Thermostatic Steam Trap

Nodular Cast Iron (GS) for Horizontal & Vertical Installation, with Thermostatic Air Vent

For Pressures to 32 bar... Capacities to 27 250 kg/h



Model AIC Vertical



Model AICF Horizontal

Armstrong AIC Series F&T traps are designed for industrial service up to 32 bar. They feature all the benefits of Armstrong F&T traps, such as operation against back pressure, continuous drainage, high-capacity venting of air and CO_2, long life and dependable service and enjoys the convenience of in-line connections.

Armstrong AIC Series F&T traps are the perfect solution for applications where there is a need to vent air and non-condensable gases quickly at start-up.

Maximum Operating Conditions

Maximum allowable pressure (vessel design)†:	40 bar @ 300°C (screwed) 32 bar @ 300°C (EN1092-2 PN40)
Maximum Allowable Pressure:	40 barg (screwed) 32 barg (EN1092-2 PN40)
Maximum Allowable Temperature:	300°C
Maximum Operating Pressure:	32 barg

Note: Caution should be used when Float and Thermostatic steam traps are applied in systems where freezing or excessive hydraulic shock can occur.

Connections

Screwed BSPT and NPT
Flanged EN1092-2 PN40 or ANSI

Materials

Body & Cap	ASTM A395 Grade 60-40-18 EN1563 Grade EN-GJS-400-18U
Gasket	Graphite
Seat	Stainless Steel 17-4PH
Internals	Stainless Steel
Valve	Stainless Steel 17-4PH
Thermostatic Air Vent	Hastelloy Wafer
Hex Bolt	ASTM A193 Gr. B7 ASTM A194

Options

Integral vacuum breaker.
Add suffix VB to model number.

Flow Direction

Right to Left (Horizontal).
Top to Bottom (Vertical).

How to Order

Model	Flow Direction	Connection Size	Connection Type	Pressure	Option
AIC F+T	R/L	DN50	PN40	1-3/8"	VB
AIC F+T	VERT = Top to Bottom (Vertical)	1-1/2" 2"	Screwed Connection	1-3/8" = 7 bar 1" = 14 bar 3/4" = 32 bar	VB = Vacuum Breaker (limited to 10 bar)
	R/L = Right to Left	DN40 DN50	Flanged Connection		

Table 130-1. Table Available Connections and Face-To-Face Dimensions

Connection	1 1/2" DN40	2" DN50
«A» Height in mm	278	278
«B» (Length Screwed) in mm	326	333
«B» (Length Flanged EN1092-2 PN40) in mm	410	417
«L» (Face-to-face Screwed) in mm	270	300
«L» (Face-to-face Flanged EN1092-2 PN40) in mm	230	230
«E» (Bottom to centerline of inlet) in mm	122	122
Vacuum Breaker (optional) in inch	3/8"	3/8"
Weight in kg screwed	32	32
Weight in kg flanged	34	34

All are CE Marked according to the PED (97/23/EC).
† 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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AIC Series DN40-50 Float & Thermostatic Steam Trap

Nodular Cast Iron (GS) for Horizontal & Vertical Installation, with Thermostatic Air Vent

For Pressures to 32 bar... Capacities to 27 250 kg/h

Table 131-1. Model AIC DN40 – Capacity Chart

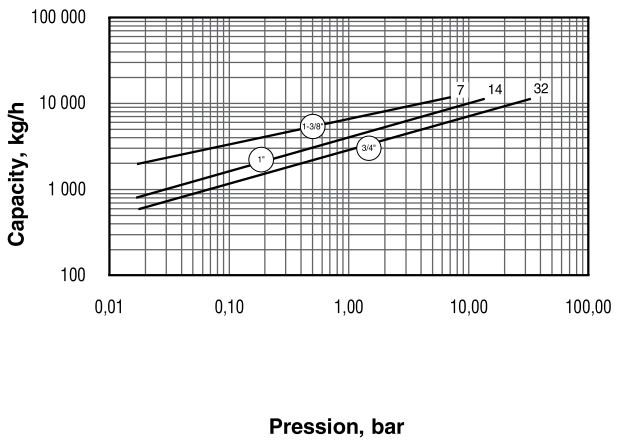
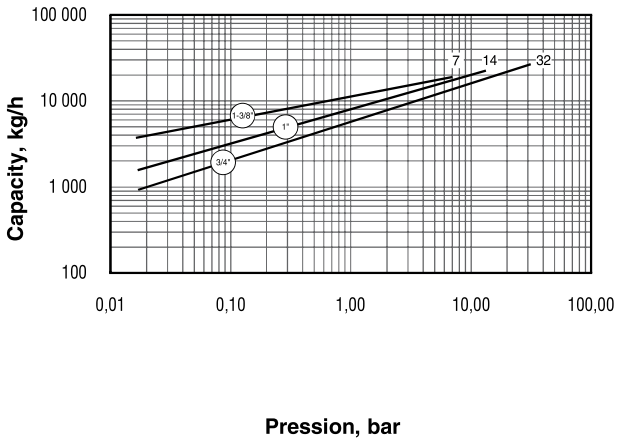


Table 131-2. Model AIC DN50 – Capacity Chart



Options

Vacuum Breaker

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 condensing equipment under modulated control, vacuum breakers are recommended. Armstrong AIC Series F&T Traps are available with integral vacuum breakers. Maximum service pressure is 10 bar.

CAUTION: Do not use a conventional vacuum breaker open to the atmosphere in any system that incorporates a mechanical return system that carries pressure less than atmospheric pressure. This includes all return systems designated as vacuum returns, variable vacuum returns or subatmospheric returns. If a vacuum breaker must be installed in such a system, it should be of the type that is loaded to open only when the vacuum reaches a calibrated level well in excess of the design characteristics of the system.

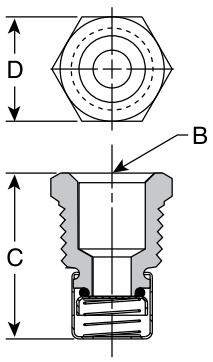


Table 131-3. Vacuum Breaker (dimensions in mm)

Size	1/2" NPT	3/8" NPT
«B» Pipe Connections	3/8"	1/4"
«C» Height	30	28
«D» Width	22 Hex	17 Hex

Specification

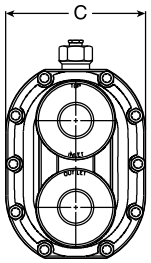
The steam trap shall be an Armstrong model AIC (AICF) float & thermostatic type. Cap and body shall be EN-GJS-400-15 (EN1563) Nodular Iron. Pipe connections shall be in the cap and the entire mechanism attached to the cap. Float and seat shall be stainless steel with heat-treated chrome steel valve. The float shall be Heliarc welded to avoid introduction of dissimilar metals. The thermostatic Air Vent shall be a balanced pressure Hastelloy wafer with chrome steel seat. Maximum allowable back pressure should be 99% of the inlet pressure.

All dimensions and weights are approximate. Use certified print for exact dimensions. Design and materials are subject to change without notice.

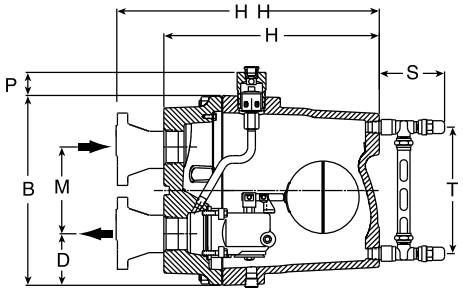
JD & KD Series Ultra-Capacity Float & Thermostatic Steam Traps

Ductile Iron for Horizontal Installation, with Thermostatic Air Vent

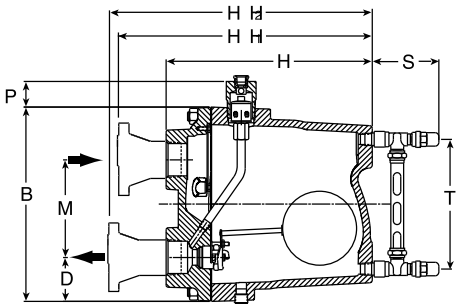
For Pressures to 21 bar...Capacities to 64 400 kg/h



Series JD & KD Cap



Series KD, F&T Shown



Series JD, F&T Shown

Description

The simple, yet rugged, ductile iron construction of the JD & KD 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-type air vent will respond to the pressure-temperature curve of steam at any pressure from zero to 21 bar. Thus – up to 21 bar – air is vented at slightly below steam temperature.

Maximum Operating Conditions

Maximum allowable pressure (vessel design)†:

Model JD & KD	21 bar @ 343°C

Maximum operating pressure:

Model 15-JD:	1 bar saturated steam
Model 20-JD:	1,4 bar saturated steam
Model 30-JD:	2 bar saturated steam
Model 75-JD:	5 bar saturated steam
Model 125-JD:	8,5 bar saturated steam
Model 175-JD:	12 bar saturated steam
Model 250-JD:	17 bar saturated steam
Model 300-JD:	21 bar saturated steam
Model 30-KD:	2 bar saturated steam
Model 50-KD:	3,5 bar saturated steam
Model 300-KD:	21 bar saturated steam

Maximum back pressure: 99% of inlet pressure

Maximum operating temperature bellows: 217°C

Connections

Screwed BSPT and NPT

Flanged DIN or ANSI (screw on)

Materials

Body and cap:	ASTM A395 ductile iron
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 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 17 bar @ 218°C

Specification

Float and thermostatic steam trap, type ... in ductile iron, with thermostatic air vent. Maximum allowable back pressure 99% of inlet pressure.

How to Order

Pressure	Model	Connection Size	Option
75	JD	8	VB
15 20 30 75 125 175 250 300	JD	8 = DN50	VB = Vacuum Breaker LD = Liquid Drainer CC = Condensate Controller GG = Gauge Glass
30	KD	8 = DN50	
50		10 = DN65	
300		12 = DN80	

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 the 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 JD & KD 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-381 and LD-404 or consult your Armstrong Representative.

Table ST-132-1. JD and KD Series Side Inlet, Side Outlet Trap

Model No.	JD	KD
Pipe Connections	50	50, 65, 80
"B" Height	332	332
"C" Width	246	246
"H" Face-to-Face (screwed)	348	373
"HH1" Inlet Face-to-Face (flanged PN40*)	420	448
"HH2" Outlet Face-to-Face (flanged PN40*)	420	548
"D" Bottom to ℄	74,6	90
"M" ℄ to ℄	168	152
"P" Trap top to VB top	46	46
"S" (Gauge Glass width)	114	114
"T" (Gauge Glass height)	222	222
Weight in kg (screwed)	36,3	39,5
Weight in kg (flanged PN40*)	45	49

Dimensions in mm

* Other flange sizes, ratings and face-to-face dimensions are available on request. All models are CE Marked according to PED (97/23/EC)

† May be derated depending on flange rating and type.

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JD & KD Series Ultra-Capacity Float & Thermostatic Steam Traps

Ductile Iron for Horizontal Installation, with Thermostatic Air Vent

For Pressures to 21 bar...Capacities to 64 400 kg/h

Table ST-133-1. JD Series Capacity

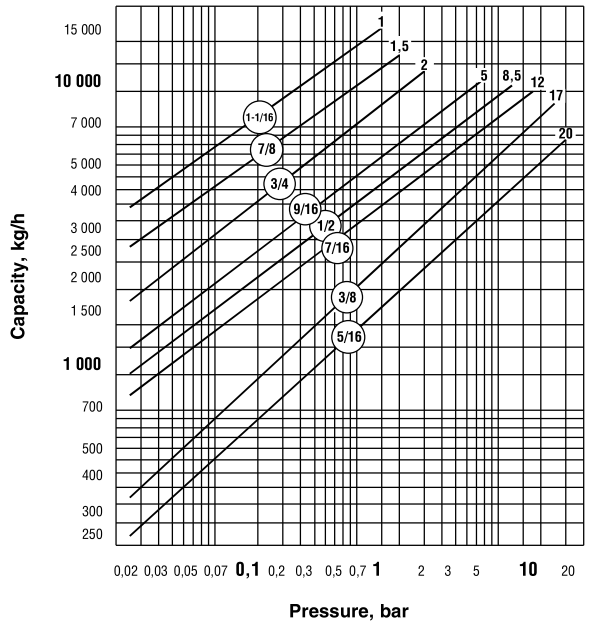


Table ST-133-2. Model 30-K8/50-KD10 Capacity

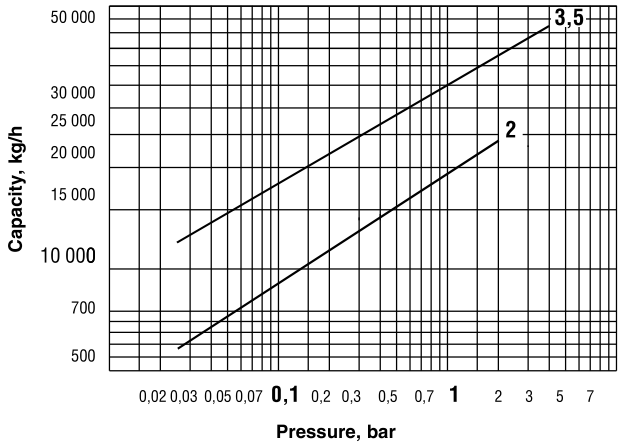


Table ST-133-3. Model 300-KD10 Capacity

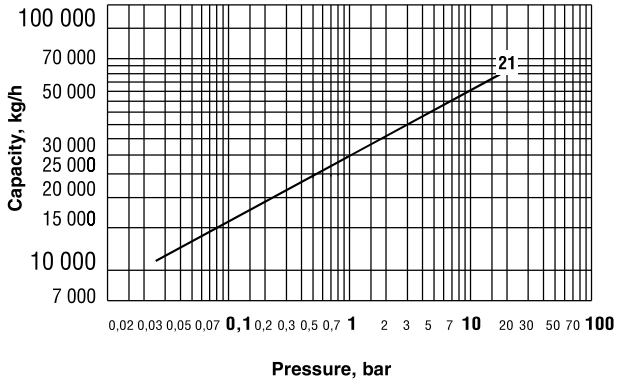
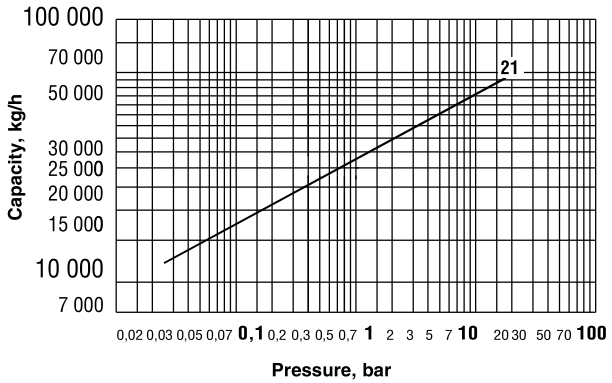


Table ST-133-5. Model 300-KD12 Capacity



Options

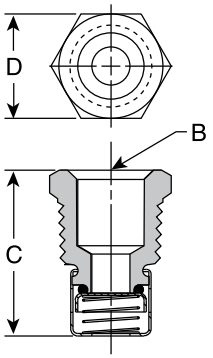
Vacuum Breaker – 1/2" NPT

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.

Table ST-133-4. Vacuum Breaker (dimensions in mm)

Size	1/2" NPT	Max. allow. pres.
"B" Pipe Connections	3/8"	10 bar
"C" Height	30	
"D" Width	22 Hex	

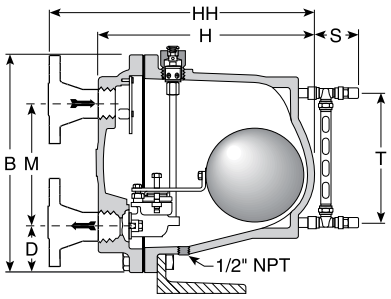


All dimensions and weights are approximate. Use certified print for exact dimensions. Design and materials are subject to change without notice.

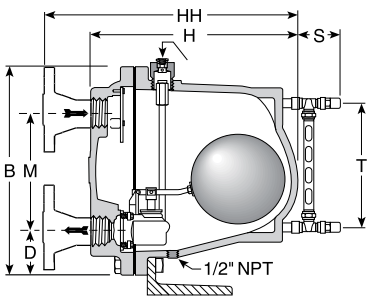
L & M Series Ultra-Capacity Float & Thermostatic Steam Traps

Cast Iron for Horizontal Installation, with Thermostatic Air Vent

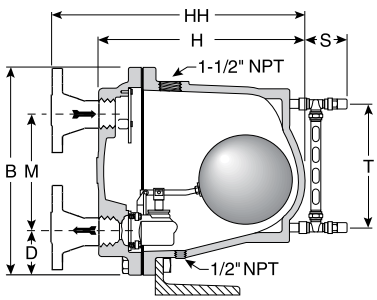
For Pressures to 17 bar...Capacities to 94 350 kg/h



Series L, F&T Shown



Series M, CC Shown



Series M, LD Shown

Description

The simple yet rugged cast iron construction of the L & M 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 type air vent will respond to the pressure-temperature curve of steam at any pressure from zero to 17 bar. Thus – up to 17 bar – air is vented at slightly below steam temperature.

Maximum Operating Conditions

Maximum allowable pressure (vessel design)†:

Model L: 17 bar @ 232°C
Model M: 17 bar @ 232°C

Maximum operating pressure:

Model 30-L: 2 bar saturated steam
Model 100-L: 7 bar saturated steam
Model 150-L: 10 bar saturated steam
Model 250-L: 17 bar saturated steam
Model 250-M: 17 bar saturated steam

Maximum back pressure: 99% of inlet pressure
Maximum operating temperature bellows: 217°C

Note: Cast iron traps should not be used in systems where freezing, excessive hydraulic or thermal shock are present.

Connections

Screwed BSPT and NPT
Flanged DIN or ANSI (screw on)

Materials

Body and cap:	ASTM A48 Class 30
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 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 17 bar @ 218°C
- L and M Series available with floor mounting bracket. Consult factory.

Specification

Float & thermostatic steam trap, type ... in cast iron, with thermostatic air vent. Maximum allowable back pressure 99% of inlet pressure.

How to Order

Pressure	Model	Connection Size	Option
250	M	12	GG
30 = 2 bar 100 = 7 bar 150 = 10,5 bar 250 = 17 bar	L	8 = DN50 10 = DN65	VB = Vacuum Breaker LD = Liquid Drainer CC = Condensate Controller G/G = Gage Glass
250 = 17 bar	M	12 = DN80	

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 L & M 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-453 and LD-476 or consult your Armstrong Representative.

Table ST-134-1. L and M Series Side Inlet, Side Outlet Trap

Model No.	L		M
Pipe Connections	50	65	80
"B" Height	514		514
"C" Width (not shown on drawing)	375		375
"D" Bottom to ℄	106		106
"H" Face-to-Face (screwed)	502		502
"HH" Face-to-Face (flanged PN40*)	574	580	583
"M" ℄ to ℄	287		287
"S" Gauge Glass Width	95,2		95,2
"T" Gauge Glass Height	305		305
Weight in kg (screwed)	88,9		88,9
Weight in kg (flanged PN40*)	97	99	101

Dimensions in mm
* Other flange sizes, ratings and face-to-face dimensions are available on request.
All models comply with article 3.3 of the PED (97/23/EC), but PMA is 11 bar.
† 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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L & M Series Ultra-Capacity Float & Thermostatic Steam Traps

Cast Iron for Horizontal Installation, with Thermostatic Air Vent

For Pressures to 17 bar...Capacities to 94 350 kg/h

Table ST-135-1. L Series Capacity

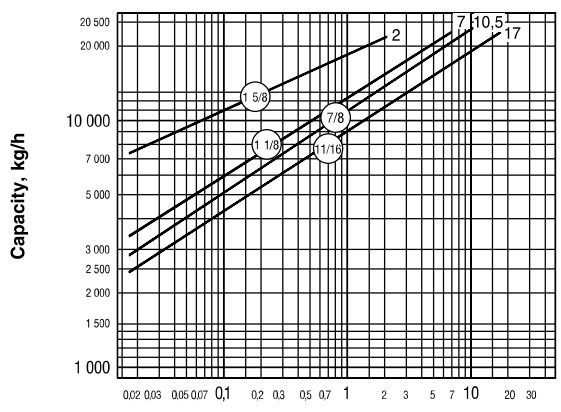
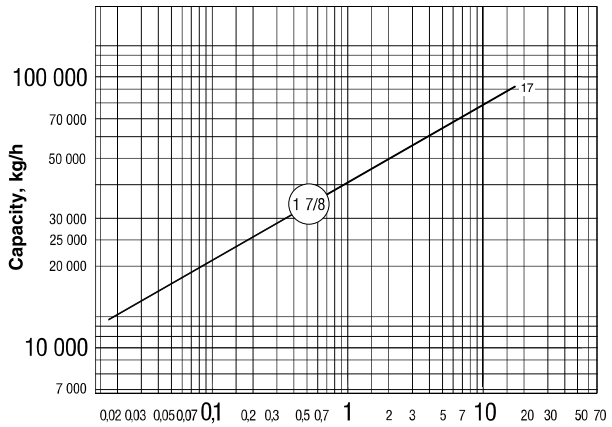


Table ST-135-2. M Series Capacity



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 L and M Series units are used in severe service conditions or at pressures exceeding 2 bar, use an anchoring bracket or other supportive measures to minimize stress on piping.

Ultra-Capacity L and M Series units MUST BE WARMED UP in the proper sequence and gradually. Recommended warm-up rate – not to exceed 55°C/8 minutes.

See your Armstrong Representative.

Vacuum Breaker – 3/8" and 1/2" 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.

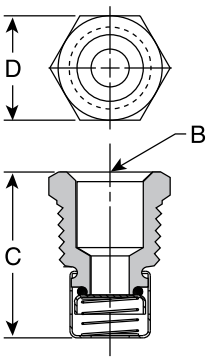


Table ST-135-3. Vacuum Breaker (dimensions in mm)

Size	1/2" NPT	3/8" NPT
"B" Pipe Connections	3/8"	1/4"
"C" Height	30	28
"D" Width	22 Hex	17 Hex

All dimensions and weights are approximate. Use certified print for exact dimensions. Design and materials are subject to change without notice.

FT-4000 Series Float and Thermostatic Steam Trap

All Stainless Steel

For Pressures to 32 bar… Capacities to 490 kg/hr

Description

With the FT-4000 Series, you can install a float and thermostatic trap in any piping configuration with little or no repiping. You get the reliability of the float and thermostatic operating principle, plus all the benefits of all-stainless steel construction.

- A sealed, tamperproof package
- A compact, lightweight trap
- Exceptional corrosion resistance
- A one-year guarantee against defective materials and workmanship

FT-4000 Series Float & Thermostatic steam traps combine savings in three important areas: energy, installation and replacement. Mounting the FT-4000 on universal connectors with integral strainers provides quick, easy in-line replacement with added protection from dirt and scale.

Maximum Operating Conditions

Maximum allowable pressure (vessel design)†:
33 bar @ 315°C

Maximum operating pressure:

Model FT-4075:	5 bar saturated steam
Model FT-4150:	10 bar saturated steam
Model FT-4225:	16 bar saturated steam
Model FT-4300:	21 bar saturated steam
Model FT-4465:	32 bar saturated steam

Materials

Body:	ASTM A240 Grade 304L
Loose Flange:	Zinc Plated Steel (stainless steel available on request)
Internals:	All stainless steel – 304
Valve and seat:	Stainless steel
Thermostatic air vent:	Wafer type-stainless steel with Hastelloy element

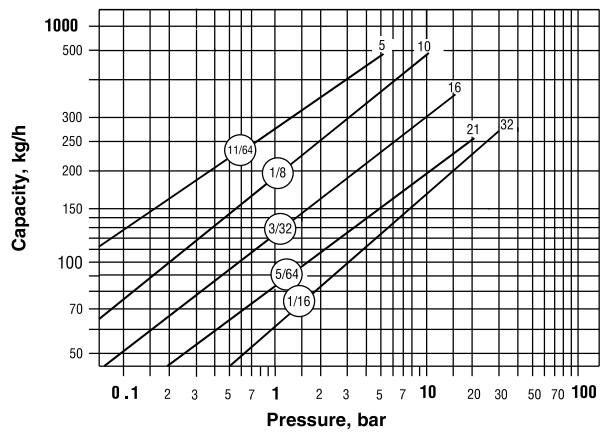
Specification

Steam trap shall be float and thermostatic type having stainless steel construction, stainless steel valve, seat and float, for use on an IS-2 connector with integral strainer or TVS-4000 trap valve station. Integral thermostatic element shall be wafer type constructed of Hastelloy and stainless steel. Thermostatic element shall be capable of withstanding 25°C of superheat and be resistant to water hammer damage.

How to order

- Specify model number
- Select 360° connector style (IS-2 or TVS 4000)
- Specify maximum working pressure that will be encountered or orifice size
- Specify any options required

Table ST-136-1. Model FT-4000 Series Capacity



† May be derated depending on flange rating and type.

TVS 4000 Trap Valve Station with FT-4000 Float and Thermostatic Trap

IS-2 Connector with FT-4000 Float and Thermostatic Trap

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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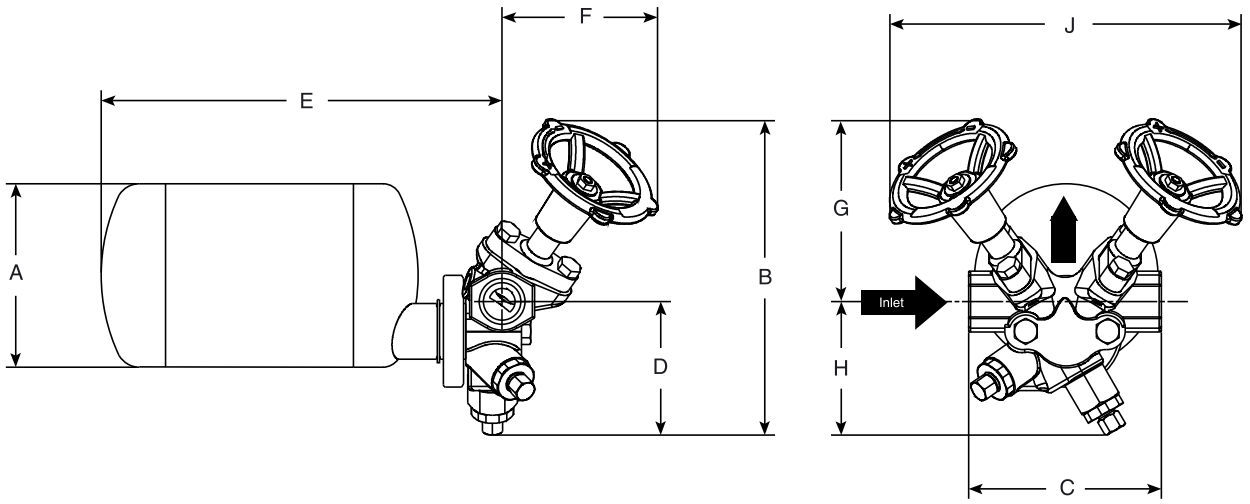
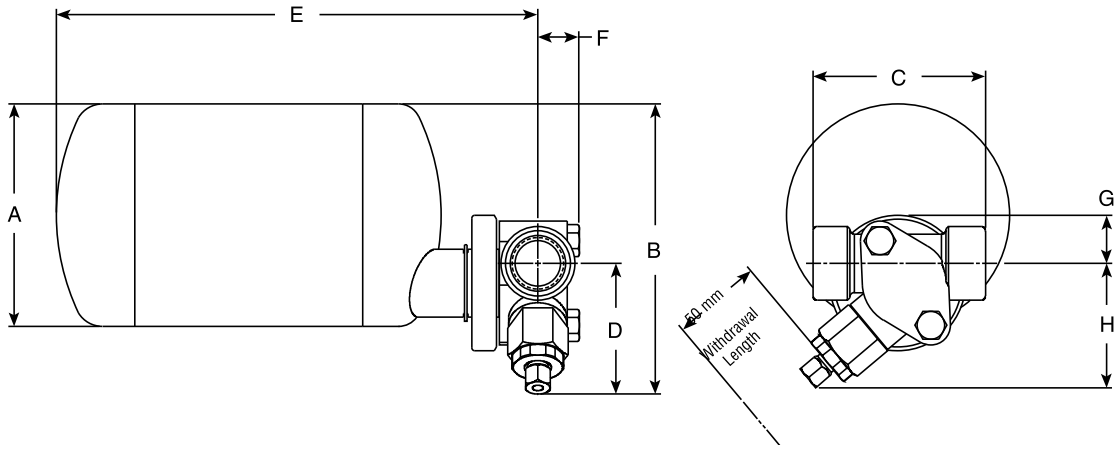
FT-4000 Series Float and Thermostatic Steam Trap

All Stainless Steel

For Pressures to 32 bar… Capacities to 490 kg/hr



Series FT-4000 with TVS 4000 Trap Valve Station



Series FT-4000 With IS-2 Connector with Integral Strainer and Optional Blowdown Valve

Table ST-137-1. FT-4000 Series Float and Thermostatic Steam Trap

Trap Series	FT-4000		
Model	IS-2 Connector With Integral Strainer		TVS 4000 Connector
	mm	mm	mm
Pipe Connections	**15 – 20**	**25**	**15 – 20**
"A" Trap Diameter	114	114	114
"B" Total Height	149	149	198
"C" Face-to-Face	89	101	120
"D" Connection ℄ to Bottom	67	67	83
"E" Connection ℄ to Outside of Trap	255	259	250
"F" Connection ℄ to Front of Connector	22	22	98
"G" Connection ℄ to Top	25	25	114
"H" Connection ℄ to Bottom of Connector	64	64	83
"J" Width across Handwheels (valve open)	N/A		221
Test Port Connection	N/A		1/4 NPT
Maximum Operating Pressure (saturated steam)	32 bar		
Maximum Allowable Pressure (vessel design)	33 bar @ 315°C		
Trap Only Weight, in kg	2,8		
Trap and Connector Weight, in kg	4		5,8

FF-4000 Series Free Float and Thermostatic Steam Trap

All Stainless Steel

For Pressures to 17 bar… Capacities to 1476 kg/hr

Description

With the FF-4000 Series' 360° universal connector, you can install a free float and thermostatic trap to fit any piping configuration. You get the reliability of the free float and thermostatic design plus all the benefits of all-stainless steel construction.

- A sealed, tamperproof package
- A compact, lightweight trap
- Exceptional corrosion resistance
- A three-year guarantee against defective materials and workmanship

FF-4000 Series Free Float and Thermostatic steam traps combine savings in three important areas: energy, installation and replacement. Mounting the FF-4000 on universal connectors provide quick and easy in-line replacement.

FF-4250 with TVS-4000

Maximum Operating Conditions

Maximum allowable pressure (vessel design):

Model FF-4250	20,7 bar @ 343°C
Model FF-4450	41,4 bar @ 427°C

Maximum operating pressure:

Model FF-4250	17 bar @ 343°C
Model FF-4450	31 bar @ 427°C

Materials

Body:	ASTM A240 Grade 304L
Internals:	All stainless steel-304
Ball seat:	Stainless Steel
Float:	Stainless Steel
Air Vent:	Bimetal

360° Universal Connector Styles

- Standard 2-bolt connector
- IS-2 connector with integral strainer and optional blowdown valve
- Trap Valve Station

How to order

- Specify model number
- Size and type of pipe connection, style of 360° universal connector.

Table ST-138-2. Model FF-4000 Series Capacities

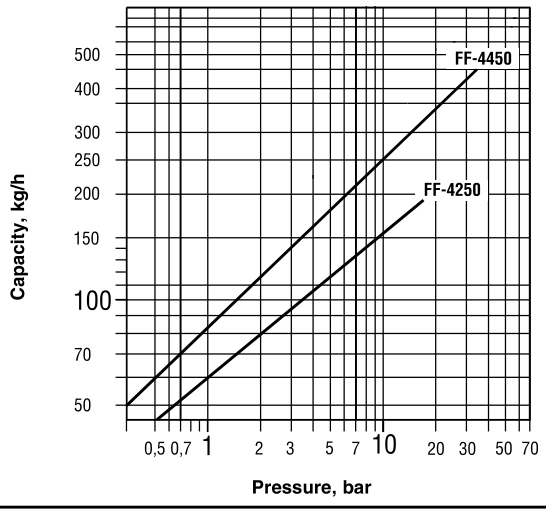
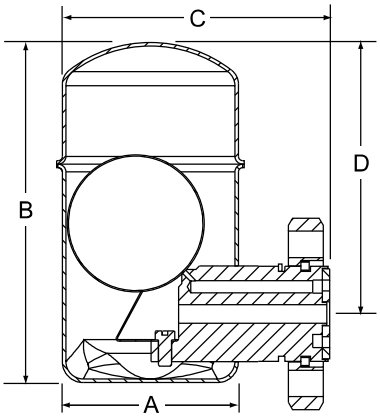


Table ST-138-1. FF-4000 Series

Model No.	FF-4250	FF-4450
Pipe Connection	15, 20 mm	15, 20 mm
"A" Diameter	68	98
"B" Height	124	157
"C" Outside to Flange"D"	98	125
"D" C Flange to Top	102	125
Trap Only Weight, lb (kg)	0,9	1,8



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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Notes

ICS Series Float and Thermostatic Steam Trap

Carbon Steel with Integral Flanges for Horizontal or Vertical Installation with Thermostatic Air Vent

For pressures to 32 bar ... Capacities to 27 215 kg/h

Description

Armstrong ICS Series F&T traps are for industrial service from 0 to 32 bar. The simple yet rugged construction of the ICS series carbon steel float and thermostatic trap is designed to assure long, trouble-free service. A full range in flanged connection sizes is offered:
1/2" through 2".

Materials

Body and Cap:	ASTM A352 Gr. LCB
Internals:	Stainless Steel
Valve and Seat:	Stainless Steel
Thermostatic Air Vent:	Wafer type stainless steel with hastelloy element

Connections

Flanged	ASME B16.5 Class 150 - 300 EN1092-1 PN40
Socketweld	
NPT / BSPT	

Options

Integral vacuum breaker. Add suffix VB to model number (PMA:10 barg@184 °C)
Condensate controller. Add suffix CC to model number.

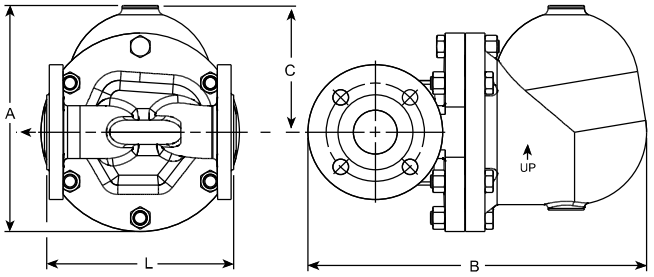

Table 140-1. Flow Direction

	mm	Flow Direction
Horizontal	15, 20, 25	Left-to-Right
Horizontal	40, 50	Right-to-Left
Vertical*	All	Down

* For vertical applications and dimensions, please consult factory.

Table 140-2. Face-to-Face Dimensions - NPT / BSPT / Socketweld

Connection Size	mm 15	mm 20	mm 25	mm 40	mm 50
A	196	196	211	288	288
B	278	279	314	374	380
C	126	126	131	166	166
L	184	178	188	266	273
Weight, kg	10	10	13	35	35
Maximum Allowable Pressure (Vessel Design)	40 barg @ 343 °C				
Maximum Operating Pressure	32 barg				

Table 140-3. Face-to-Face Dimensions - ASME B 16.5 Class 150#

Connection Size	mm 15	mm 20	mm 25	mm 40	mm 50
A	196	196	211	288	288
B	301	306	344	399	412
C	126	126	131	166	166
L	203	205	208	321	312
Weight, kg	11	11	15	38	38
Maximum Allowable Pressure (Vessel Design) †	13,6 barg @ 205 °C				
Maximum Operating Pressure	13,6 barg				

Table 140-4. Face-to-Face Dimensions - PN40

Connection Size	mm 15	mm 20	mm 25	mm 40	mm 50
A	196	196	211	288	288
B	304	309	347	413	420
C	126	126	131	166	166
L	150	150	160	230	230
Weight, kg	11	12	20	36	40
Maximum Allowable Pressure (Vessel Design) †	34,4 barg @ 250 °C				
Maximum Operating Pressure	32 barg				

Table 140-5. Face-to-Face Dimensions - ASME B 16.5 Class 300#

Connection Size	mm 15	mm 20	mm 25	mm 40	mm 50
A	196	196	211	288	288
B	304	314	352	414	419
C	126	126	131	166	166
L	209	209	212	327	321
Weight, kg	11	12	16	40	40
Maximum Allowable Pressure (Vessel Design) †	40,4 barg @ 260 °C				
Maximum Operating Pressure	32 barg				

Note: Shade indicates products that are CE Marked according to the PED (97/23/EC). All other models comply with the Article 3.3 of the same directive.

† May be derated depending on flange rating and type.

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ICS Series Float and Thermostatic Steam Trap

Carbon Steel with Integral Flanges for Horizontal or Vertical Installation with Thermostatic Air Vent

For pressures to 32 bar ... Capacities to 27 215 kg/h

Table 141-1. Model ICS Series Capacity 1/2" and 3/4" - DN15 and DN20

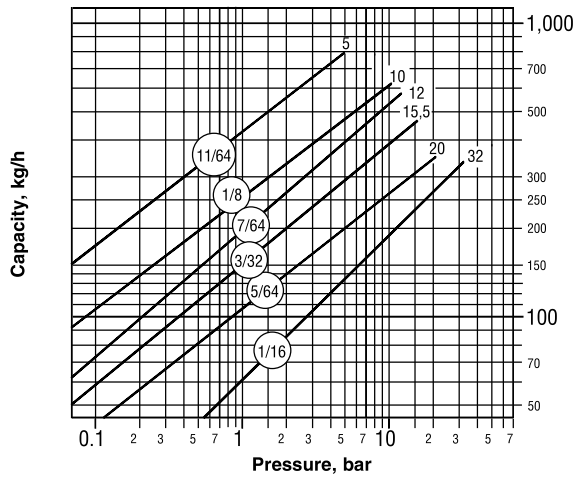


Table 141-2. Model ICS Series Capacity 1" - DN25

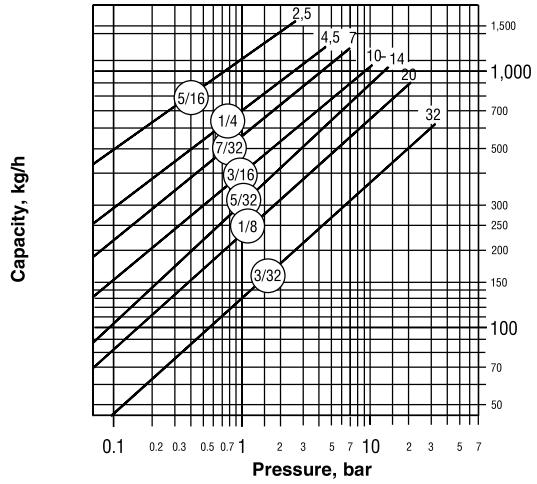


Table 141-3. Model ICS Series Capacity 1-1/2" - DN40

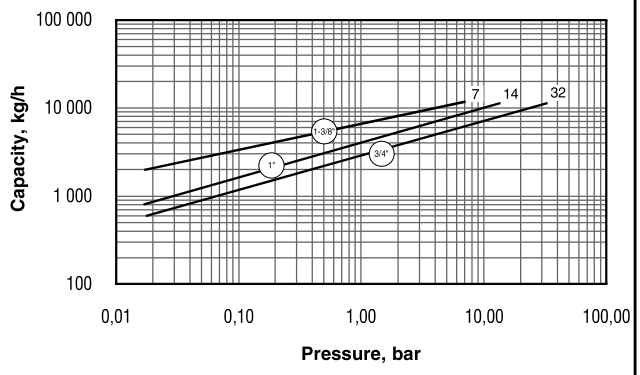
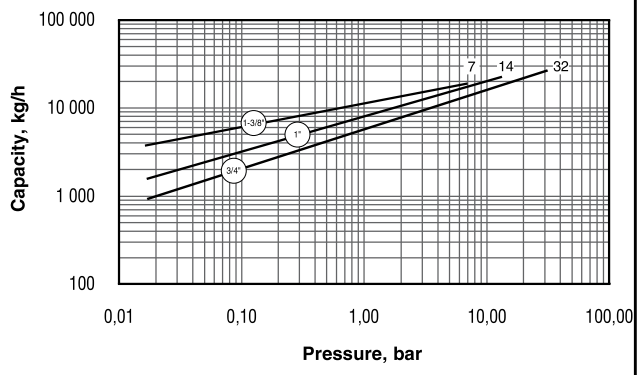


Table 141-4. Model ICS Series Capacity 2" - DN50



Note: PMA/TMA are limited according to the flange selected on the trap model.

Table 141-5. Models with flanges - Limitations

Flange Type	PMA/TMA	Orifice available (depending on connection size)	
		Connection	Available Orifice
ASME B16.5 Class 150	13,8 barg @ 200 °C	15 - 20	11/64 - 1/8 - 7/64
		25	5/16 - 1/4 - 7/32 - 3/16 - 5/32
		40 - 50	1-3/8 - 1
ASME B16.5 Class 300	40,8 barg @ 250 °C	15 - 20 - 25 - 40 - 50	all orifices available consult charts
PN40	35,1 barg @ 250 °C	15 - 20 - 25 - 40 - 50	all orifices available consult charts

How to Order

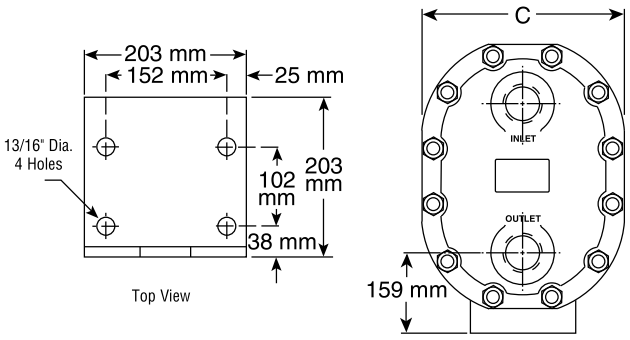
Model	Flow Direction	Connection Size	Connection Type	Pressure	Option
ICS F+T	R/L	DN50	PN40	1-3/8"	VB
ICS F+T	L/R = Left to Right or Vertical	1/2"/DN15 3/4"/DN20 1"/DN25	Flanged Connection or Socketwelded or NPT or BSPT	Consult Capacity Charts to specify orifice.	VB = Vacuum Breaker (limited to 10 bar)
	R/L = Right to Left or Vertical	1-1/2"/DN40 2"/DN50			

All dimensions and weights are approximate. Use certified print for exact dimensions. Design and materials are subject to change without notice.

LS & MS Series Ultra-Capacity Float & Thermostatic Steam Traps

Cast Steel for Horizontal Installation, with Thermostatic Air Vent

For Pressures to 31 bar...Capacities to 127 000 kg/h

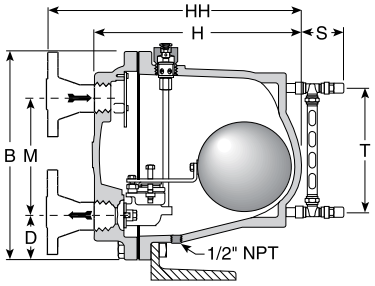


LS and MS Floor Mounting Bracket

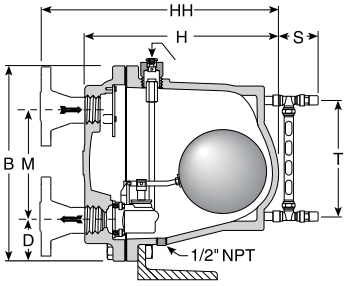
Table ST-142-1. LS and MS Series Side Inlet, Side Outlet Trap			
Model No.	**LS & MS**		
Pipe Connections	50	65	80
"B" Height	508		
"C" Width (not shown on drawing)	387		
"D" Bottom to ℄	106		
"H" Face-to-Face (screwed & SW)	508		
"HH" Face-to-Face (flanged PN40*)	553	557	563
"M" ℄ to ℄	287		
"S" Gauge Glass Width	95,2		
"T" Gauge Glass Height	305		
Weight in kg (screwed & SW)	131,5		
Weight in kg (flanged PN40*)	137,5	140,5	143,5

Dimensions in mm

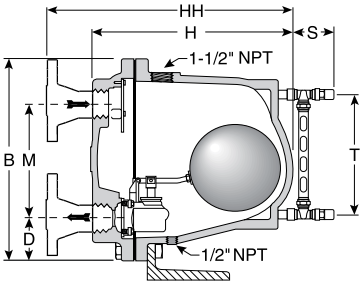
* Other flange sizes, ratings and face-to-face dimensions are available on request.
All models are CE Marked according to the PED (97/23/EC).



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 17 bar. Thus – up to 17 bar – air is vented at slightly below steam temperature.

Maximum Operating Conditions

Maximum allowable pressure (vessel design)†:

Model LS:	31 bar @ 338°C
Model MS:	31 bar @ 338°C

Maximum operating pressure:

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

Maximum back pressure: 99% of inlet pressure

Maximum operating temperature bellows: 217°C

Note: For pressures above 17 bar, the thermostatic vent should be removed and only a CC or LD version should be used.

Connections

- Screwed BSPT and NPT
- Socketweld
- Flanged DIN or ANSI (welded)

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 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 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. Maximum allowable back pressure 99% of inlet pressure.

† May be derated depending on flange rating and type.

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LS & MS Series Ultra-Capacity Float & Thermostatic Steam Traps

Cast Steel for Horizontal Installation, with Thermostatic Air Vent

For Pressures to 31 bar...Capacities to 127 000 kg/h

Table ST-143-1. LS Series Capacity

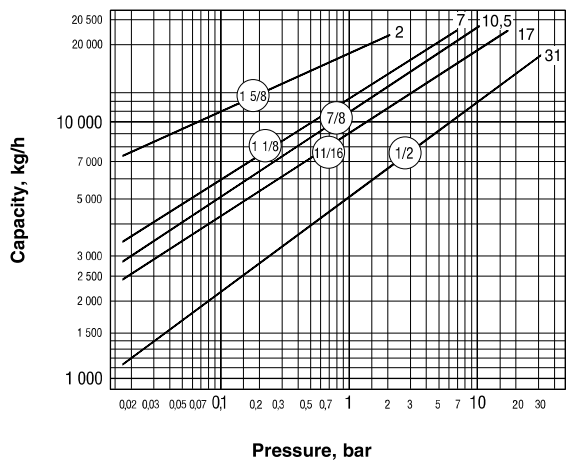
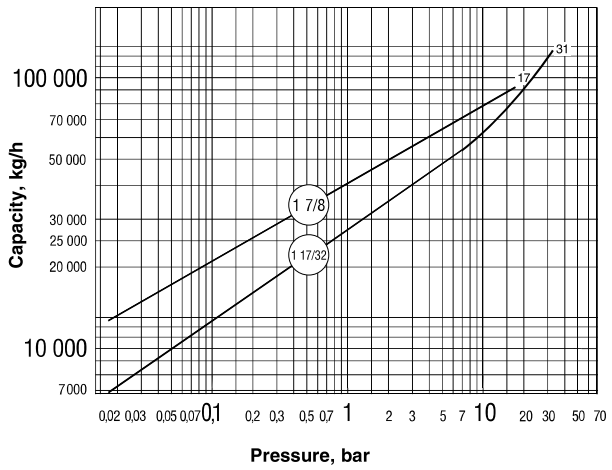


Table ST-143-2. MS Series Capacity



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-381 and LD-404 or consult your Armstrong Representative.

How to Order

Pressure	Model	Connection Size	Option
100	**LS**	**10**	**VB**
30 = 2 bar 100 = 7 bar 150 = 10,5 bar 250 = 17 bar 450 = 31 bar	LS	8 = DN50 10 = DN65	VB = Vacuum Breaker LD = Liquid Drainer CC = Condensate Controller G/G = Gage Glass
250 = 17 bar 450 = 31 bar	MS	12 = DN80	

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 2 bar, 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 55°C/8 minutes.

See your Armstrong Representative.

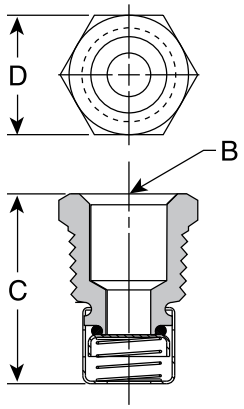
Vacuum Breaker – 3/8" and 1/2" NPT

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.

Table ST-143-3. Vacuum Breaker (dimensions in mm)

Size	1/2" NPT	3/8" NPT
"B" Pipe Connections	3/8"	1/4"
"H" Height	30	28
"D" Width	22 Hex	17 Hex



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