

THERMOSTATIC STEAM TRAPS

Nicholson is the originator of the bellows actuated Thermostatic Steam Trap. Nicholson's thermostatic product range spans applications from critical tracing to high capacity process. High sensitivity, immediate air venting and exceptional thermal efficiency are the hallmark of Nicholson Thermostatic Steam Traps.

N125 SERIES

THERMOSTATIC STEAM TRAPS

Pressures to 125 PSIG (8.75 barg)
Temperatures to 400°F (204°C)

Superior Performance - Hardened valve and seats are lapped in matched sets, providing tight shutoff and long service life.

Improved Energy Savings - Maximum elimination of air and non-condensibles - trap is closed at saturated steam temperature.

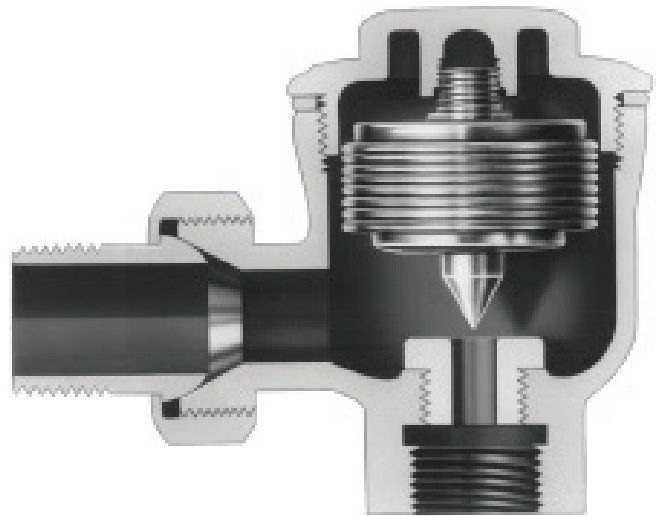
Temperature Sensitive Actuators - One moving part. Stainless Steel, fail open or fail closed, welded actuator for maximum corrosion, thermal and hydraulic shock resistance.

Freeze Proof - Threaded male union horizontal inlet and vertical outlet-self draining.

In-line Maintenance - Threaded cover for one step removal, inspection and service without breaking pipe connections.

Air Vent - Efficient steam service air vent when equipped with ISO Bellows and installed in air vent location.

Guaranteed - Guaranteed against defects in materials or workmanship for 3 years.



MODELS*

- **N125** - Standard capacity
- **N125L** - Low capacity
- **N125HC** - High capacity
- **N125ST-FC** - Standard capacity w/sterilizer seat
- **N125STHC-FC** - High capacity w/sterilizer seat

*Add (-FC) for fail closed or (-FO) for fail open to end of model number

Options

- **ST** - Sterilizer Trim (1/4 & 5/16 orifice sizes)
- **SLR** - SLR Orifice
- **S** - Internal Stainless Strainer
- **ISO** - ISO Filled Actuator
- **HC** - High Capacity

Applications

- Steam Tracing
- Drip Legs
- Automatic Air Vents
- Sterilizers
- Cooking Kettles
- Water Heaters
- Laundry Equipment
- Radiators
- Process Equipment
- Air Handlers

Canadian Registration # OE0591.9

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.

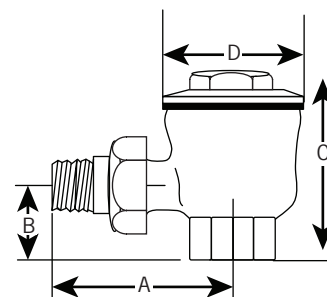
Line pressure will then compress thermal actuator to open valve and discharge condensate. Valve opening automatically adjusts to load conditions from minimum on very light loads to full lift at maximum load. Restricted orifice in N125L (small opening at bottom of valve seat) prevents trap from discharging continuously on light loads.

N125 SERIES

THERMOSTATIC STEAM TRAPS

SPECIFICATION

Steam trap shall be of balanced pressure design with stainless steel welded actuator capable of discharging condensate within 10°F of saturated temperature. Where greater sensitivity is required, SLR orifice and Sterilizer trim will be available to allow condensate evacuation at or near saturated temperatures. Where subcooling of condensate is desired alternate thermostatic actuator will be available to allow condensate evacuation at or near 40°F below saturated temperatures. Thermostatic actuator shall employ a conical valve lapped in matched sets with the seat ring assuring tight shut off. A minimum of three orifice sizes shall be available allowing for custom capacity sizing. Trap shall be bronze bodied suitable for pressures through 125 psig and available in 3/8" through 3/4" NPT connections.



Connections: 3/8"-3/4" NPT

Maximum operating conditions

PMO: Max. Operating Pressure	125 psig	(8.75 barg)
TMO: Max. Operating Temperature	400°F	(204°C)
PMA: Max. Allowable Pressure	125 psig	(8.75 barg)
TMA: Max. Allowable Temperature	400°F	(204°F)

Materials of construction

Body & Cover	ASTM B283 C37700
Actuator	Welded Stainless Steel
Cover Gasket	Copper Jacketed
Valve & Seat	Hardened 416 Stainless Steel

Size	Dimensions				Weight lb (kg)
	Inch (mm)				
	A	B	C	D	
3/8, 1/2	23/4 (70)	11/8 (29)	27/8 (73)	25/32 (54)	1.5 (.68)
3/4	33/16 (81)	19/16 (40)	3 (76)	25/32 (54)	1.8 (.82)

Maximum Capacity - lbs/hr 10°F Below Saturation (Kg/hr 5°C Below Saturation)							
Trap	Orifice Inch (mm)	Differential PSIG (barg)					
		5 (0.34)	10 (0.7)	20 (1.4)	50 (3.5)	100 (6.9)	125 (8.6)
N125L	1/8 (3)	216 (98)	265 (120)	375 (170)	592 (269)	778 (354)	838 (383)
N125 N125ST	1/4 (6)	550 (249)	825 (374)	1210 (549)	1975 (896)	2825 (1281)	3140 (1424)
N125HC N125STHC	5/16 (8)	860 (390)	1220 (554)	1725 (783)	2725 (1237)	3575 (1623)	3850 (1748)

Nicholson recommends ISO filled Actuator for superheated steam.

N450 SERIES

THERMOSTATIC STEAM TRAPS

Pressures to 450 PSIG (31 barg)
Temperatures to 600°F (316°C)

Compact - Easy to Install.

Inexpensive - Low initial cost.

Improved Energy Savings - High efficiency-maximum elimination of air and non-condensibles.

Temperature Sensitive Actuators - One moving part. Stainless Steel, fail open, welded actuator for maximum corrosion, thermal and hydraulic shock resistance.

Hardened Stainless Steel Valve and Seat - Long life. Lapped as a matched set for water tight seal.

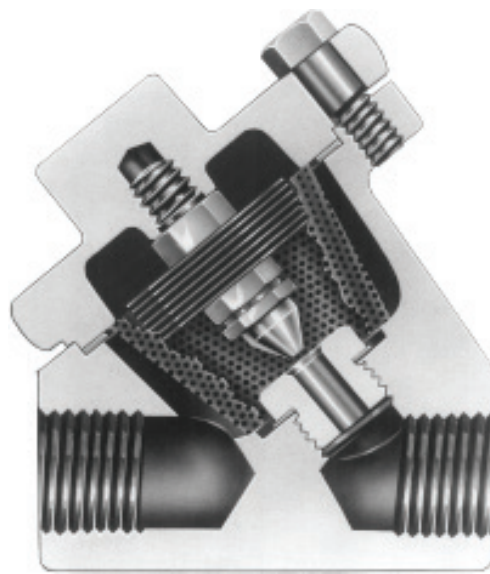
Easily Maintained - Can be inspected and serviced without breaking pipe connections.

Freeze Proof - Self draining when installed vertically.

For Superheated Steam Applications - Because the trap closes at saturated steam temperature, superheated steam cannot reach trap.

Air Vent - Efficient steam service air vent when equipped with ISO filled Actuator and installed in air vent location.

Guaranteed - Guaranteed against defects in materials or workmanship for 3 years.



MODELS*

- **N451-FO**—Low capacity, fail open only
- **N452**—Reduced capacity
- **N453**—Standard capacity
- **N454**—High capacity

*Add (-FC) for fail closed or (-FO) for fail open to end of model number

Options

- SK - Skirted Seat*
- SLR - SLR Orifice
- ISO - ISO Filled Actuator*
- ST - Sterilizer Trim
- SW - Socketweld

*Not available on N451

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 closed seat orifice to prevent any further flow. As condensate collects, it takes heat from thermal actuator, lowering internal pressure.

Applications

- Unit Heaters
- Air Vents
- Steam Tracing
- Drip Legs
- Platen Presses
- Plating Tanks
- Sterilizers
- Tire Presses
- Cooking Equipment
- Laundry Equipment
- Other Process Equipment

Canadian Registration # OE0591.9

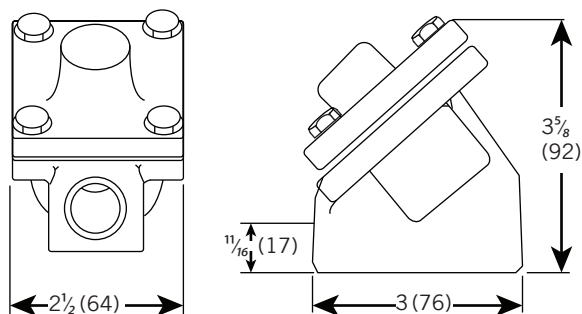
Line pressure will then compress thermal actuator to open valve and discharge condensate. Valve opening automatically adjusts to load conditions from minimum on very light loads to full lift at maximum load. Restricted orifice in the N451 seat (small opening at bottom of valve seat) prevents trap from discharging continuously on light loads such as are encountered on tracer lines

N450 SERIES

THERMOSTATIC STEAM TRAPS

SPECIFICATION

Steam trap shall be of balanced pressure design with stainless steel welded actuator capable of discharging condensate within 10°F of saturated temperature. Where greater sensitivity is required, SLR orifice and Sterilizer trim will be available to allow condensate evacuation at or near saturated temperatures. Where subcooling of condensate is desired alternate thermostatic actuator will be available to allow condensate evacuation at or near 40°F below saturated temperatures. Thermostatic actuator shall employ a conical valve lapped in matched sets with the seat ring assuring tight shut off. A minimum of three orifice sizes shall be available allowing for custom capacity sizing. Trap shall be forged carbon steel bodied suitable for pressures through 450 psig and available in 1/2" and 3/4" NPT or socket weld.



WEIGHT: 3 LBS. (1.4 KG)

Connections: 1/2" or 3/4" NPT or socketweld

Maximum operating conditions

PMO: Max. Operating Pressure	450 psig	(31 barg)
TMO: Max. Operating Temperature	600°F	(316°C)
PMA: Max. Allowable Pressure	450 psig	(31 barg)
TMA: Max. Allowable Temperature	750°F	(399°F)

† Consult factory for pressures greater than 300 psi.

Materials of construction

Body	ASTM A105 Forged Steel
Cover	ASTM A351 Grade CF8 (304)
Cover Gasket	304 SS Spiral Wound w/Graphite Fill
Actuator	Welded Stainless Steel
Valve & Seat	Hardened 416 Stainless Steel

Maximum Capacity - lbs/hr 10°F Below Saturation (Kg/hr 5°C Below Saturation)														
Trap	Orifice Inch (mm)	Differential PSIG (barg)												
		5 (0.34)	10 (0.7)	20 (1.4)	50 3.4)	100 (6.7)	125 (8.4)	150 (10.1)	200 (13.4)	250 (16.8)	300* (20.1)	350* (24.1)	400* (27.6)	450* (31.0)
N451	5/64 (2)	84 (38)	119 (54)	168 (76)	265 (120)	348 (158)	375 (170)	398 (181)	439 (199)	472 (214)	502 (228)	529 (240)	553 (251)	575 (261)
N452	1/8 (3)	216 (98)	265 (120)	375 (170)	592 (269)	778 (354)	838 (381)	890 (405)	980 (445)	1055 (480)	1121 (510)	1180 (536)	1235 (561)	1284 (584)
N453	1/4 (6)	550 (249)	825 (374)	1210 (549)	1975 (896)	2825 (1281)	3140 (1424)	3425 (1554)	3650 (1656)	3960 (1796)	4100 (1860)	4230 (1919)	4420 (2005)	4600 (2086)
N454	5/16 (8)	860 (390)	1220 (554)	1725 (783)	2725 (1237)	3575 (1623)	3850 (1748)	4090 (1857)	4505 (2045)	4850 (2202)	5155 (2340)	5425 (2463)	5675 (2576)	5900 (2679)

* Nicholson recommends skirted seat above 300 PSIG (20.7 bar). Nicholson recommends ISO filled Actuator for superheated steam.

LIQUIDATOR 450 SERIES THERMOSTATIC STEAM TRAP

Pressures To 450 PSIG
Temperatures to 600°F

Applications

- Unit Heaters
- Laundry Equipment
- Steam Tracing
- Plating Tanks
- Drip Legs
- Platen Presses
- Tire Presses
- Cooking Equipment
- Air Vents

Easily Maintained

Four bolt cover permits easy in-line rebuilding for less than the cost of replacement.

Excellent Energy Savings

Positive shutoff and thermostatic action assure no loss of steam during normal operation.

Fits all Universal Connectors

Liquidator body will replace any manufacturer's universal mount trap body.

Easily Replaced

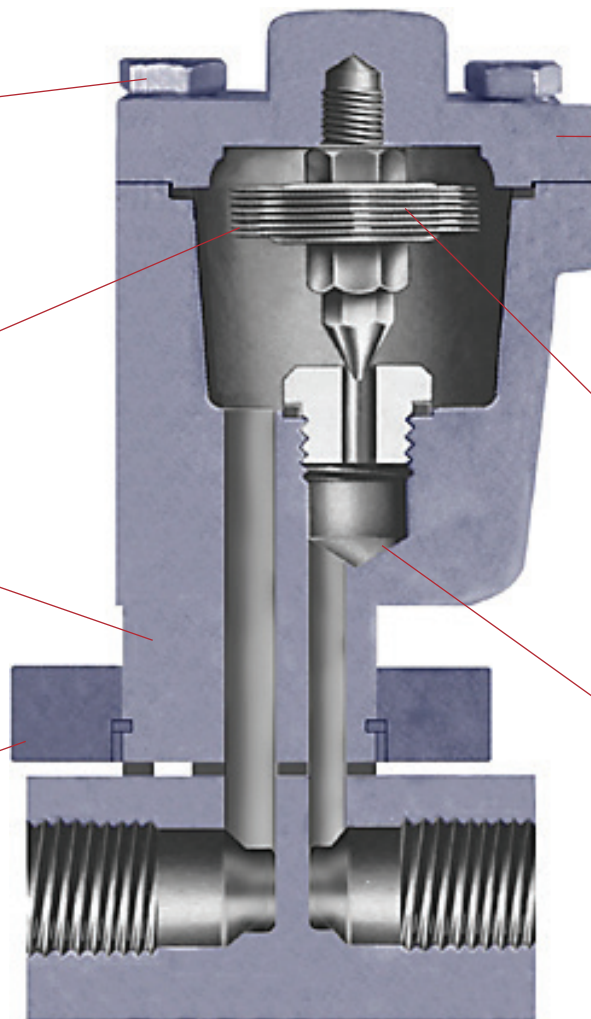
Two bolt design permits rapid removal without breaking pipe connections.

Freeze Proof

Self draining when installed vertically.

Optional Integral Strainer

Helps prevent dirt and scale build-up on valve seat.



Durability and Long Service Life

Stainless steel body and cover with stainless steel welded actuator for maximum corrosion, thermal and hydraulic shock resistance.

Rapid Startup with Outstanding Air Handling

Thermostatic action responds quickly to eliminate air and other non-condensibles. Large startup capacity.

Water Tight Seal

Hardened stainless steel valve and seat lapped as a matched set assure tight seal and long life.

3 Year Guarantee

Guaranteed against defects in material and workmanship.

LIQUIDATOR 450 SERIES

UNIVERSAL MOUNT

THERMOSTATIC STEAM TRAPS

SPECIFICATION

Steam trap shall be of balanced pressure design with stainless steel welded actuator capable of discharging condensate within 10°F of saturated temperature. Where greater sensitivity is required, SLR orifice and Sterilizer trim will be available to allow condensate evacuation at or near saturated temperatures. Where sub cooling of condensate is desired alternate thermostatic actuator will be available to allow condensate evacuation at or near 40°F below saturated temperatures. Thermostatic actuator shall employ a conical valve lapped in matched sets with the seat ring assuring tight shut off. A minimum of two orifice sizes shall be available allowing for custom capacity sizing. Trap shall be stainless steel bodied suitable for pressures through 450 psig. Trap connection shall be two bolt universal swivel mount. Mounting block shall be stainless steel and available in 1/2" through 1" NPT or socket weld.

Maximum operating conditions

Traps with Welded Stainless Actuator

PMO: Max. Operating Pressure 450 psig (31 barg)
 TMO: Max. Operating Temperature 600°F (316°C)

Traps with Welded Stainless Actuator, ISO

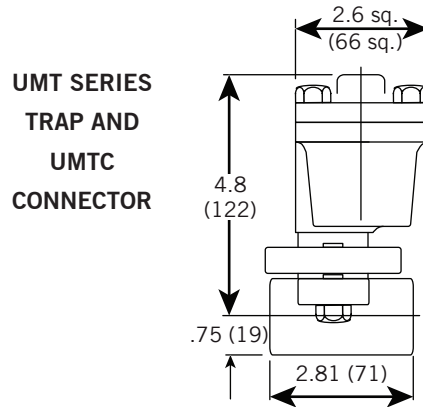
PMO: Max. Operating Pressure 450 psig (31 barg)
 TMO: Max. Operating Temperature 600°F (316°C)

All Traps

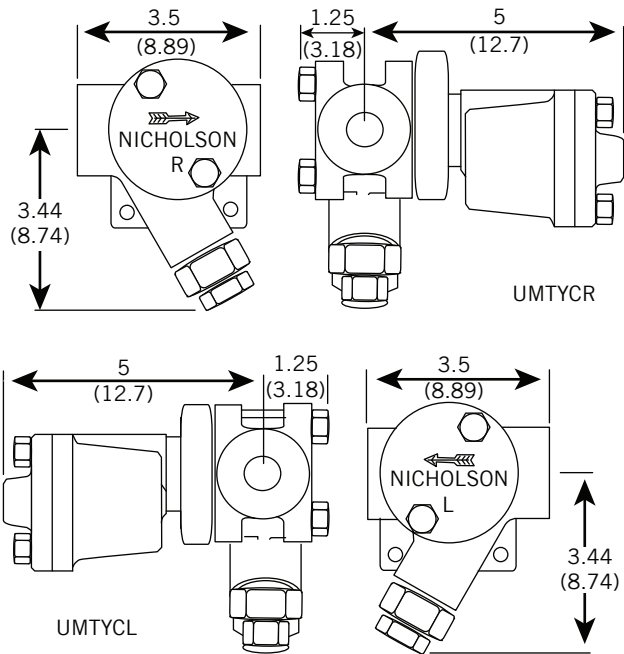
PMA: Max. Allowable Pressure 450 psig (31 barg)
 TMA: Max. Allowable Temperature 750°F (399°C)

Materials of construction

Body & CoverASTM A351 Grade CF8 (304)
 Cover Gasket304 stainless spiral wound w/graphite fill
 ActuatorWelded SS
 Strainer0.033 perf. 304 Stainless Steel
 Valve & SeatHardened 416 Stainless Steel
 Mounting BlockASTM A351 Grade CF8 (304)



Connections: 1/2", 3/4" or 1" NPT or socket weld



DIMENSIONS - INCHES (MM)

WEIGHT

TRAP - 3.2 LBS. (1.4 KG)

STD. MOUNTING BLOCK - 1.1 LBS. (0.5 KG)

Y STRAINER MOUNTING BLOCK - 2.3 LBS. (1.0 KG)

Maximum Capacity - lbs/hr 10°F Below Saturation (Kg/hr 5°C Below Saturation)														
Trap	Orifice Inch (mm)	5 (0.34)	10 (0.7)	20 (1.4)	50 (3.4)	100 (6.7)	125 (8.4)	150 (10.1)	200 (13.4)	250 (16.8)	300† (20.1)	350 (24.1)	400 (27.6)	450 (31.0)
UMT451T	5/64 (2)	84 (38)	119 (54)	168 (76)	265 (120)	348 (158)	375 (170)	398 (181)	439 (199)	472 (214)	502 (228)	529 (240)	553 (251)	575 (261)
UMT452T	1/8 (3)	216 (98)	265 (120)	375 (170)	592 (269)	778 (354)	838 (381)	890 (405)	980 (445)	1055 (480)	1121 (510)	1180 (536)	1235 (561)	1284 (584)
UMT453T	1/4 (6)	550 (249)	825 (374)	1210 (549)	1975 (896)	2825 (1281)	3140 (1424)	3425 (1554)	3650 (1656)	3960 (1796)	4100 (1860)	4230 (1919)	4420 (2005)	4600 (2086)

ISO filled Actuator recommended for superheated steam.

LIQUIDATOR 450 SERIES

UNIVERSAL MOUNT

THERMOSTATIC STEAM TRAPS

Pressures to 450 PSIG (31 barg)
Temperatures to 600°F (316°C)

Easily Maintained - Universal two bolt swivel mounting simplifies removal from system. Kits allow flexibility to replace or rebuild.

Simple Installation - Stainless mounting block mounts permanently into system. Trap installs via two bolt universal connection.

Improved Energy Savings - High efficiency-maximum elimination of air and non-condensibles.

Temperature Sensitive Actuators - One moving part. Stainless Steel, fail open, welded actuator for maximum corrosion, thermal and hydraulic shock resistance.

Hardened Stainless Steel Valve and Seat - Long life. Lapped as a matched set for water tight seal.

Easily Maintained - Can be inspected and serviced without breaking pipe connections.

Freeze Proof - Self draining when installed vertically.

For Superheated Steam Applications - Because the trap closes at saturated steam temperature, superheated steam cannot reach trap.

Air Vent - Efficient steam service air vent when equipped with ISO filled Actuator and installed in air vent location.

Guaranteed - Traps are guaranteed against defects in materials or workmanship for three years.

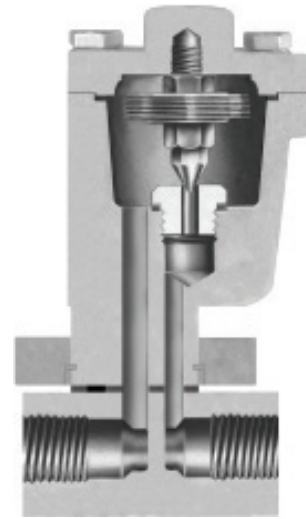
Positive Shutoff and Long Life - Integral Stainless Steel Strainer helps prevent debris depositing on valve and seat.

Applications

- Unit Heaters
- Steam Tracing
- Drip Legs
- Tire Presses
- Cooking Equipment
- Laundry Equipment
- Plating Tanks
- Platen Presses
- Air Vents

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.



Options

- SLR - SLR Orifice*
- ISO - ISO Filled Actuator*
- SW - Socketweld
- B - Blowdown Valve

*Not available on UMT451T

MODELS

- **UMT451**—Very Low Capacity Trap
- **UMT452**—Low Capacity Trap
- **UMT453**—Standard Capacity Trap
- **UMTC**—Standard connector (1/2" & 3/4" only)
- **UMTCY-RH**—Right Hand Connector w/Y strainer*
- **UMTCY-LH**—Left Hand Connector w/Y strainer*
- **UMTVS-BB**—Connector with Isolation Valves, Strainer, Blowdown Valve and Test Port

For complete unit, order trap and connector as separate items.

*Add (-B) for Blowdown Valve.

Canadian Registration # OE1388.6

For information on Big Block UMTVS-BB Connector

SEE PAGE 116

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. Restricted orifice in UMT451T (small opening at bottom of valve seat) prevents trap from discharging continuously on light loads such as are encountered on tracer lines.

TA SERIES

THERMOSTATIC STEAM TRAPS

Pressures To 650 PSIG (44.8 barg)
Temperatures to 750°F (400°C)

Sealed Stainless Steel Body - Lightweight, compact and corrosion resistant. No bolts or gaskets. Eliminates body leaks.

Self Centering Valve - Leak tight shutoff. Improved energy savings. Assembly of actuator and valve to impingement plate allows valve to self-align with center of valve seat orifice. Provides long lasting valve and seat.

Temperature Sensitive Actuators - One moving part. Stainless Steel, fail open or fail closed, welded actuator for maximum corrosion, thermal and hydraulic shock resistance.

For Superheated Steam Applications - Because the trap closes at saturated steam temperature, superheated steam cannot reach trap.

Thermal and Hydraulic Shock Resistant - Impingement plate plus welded construction prevent damage to actuator.

Hardened Stainless Steel Valve and Seat - Long life. Lapped as a matched set for water tight seal.

Inexpensive - Low initial cost.

Maintenance Free - Sealed unit. Replacement traps cost less than repair of more expensive in-line repairable traps.

Freeze Proof - Self draining when installed vertically.

Directional Discharge - Pipe thread erosion prevented by directing discharge to center of pipe.

Air Vent - Efficient steam service air vent when equipped with ISO Bellows and installed in air vent location.

Guaranteed - Guaranteed against defects in materials or workmanship for 3 years.

MODELS*

- **TA502**—Reduced capacity
- **TA503**—Standard capacity
- **TA504**—High capacity

*Add (-FC) for fail closed or (-FO) for fail open to end of model number



Applications

- Unit Heaters
- Air Vents
- Steam Tracing
- Drip Legs
- Platen Presses
- Plating Tanks
- Sterilizers
- Tire Presses
- Cooking Equipment
- Laundry Equipment
- Other Process Equipment

Options

- ISO - ISO Filled Actuator
- SLR - SLR Orifice
- SW - Socketweld

Canadian Registration # OE0591.9

Operation

Thermal actuator is filled at it's free length with a liquid having a lower boiling point than water. As assembled, valve is normally open. When very hot condensate 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 the actuator, lowering internal pressure.

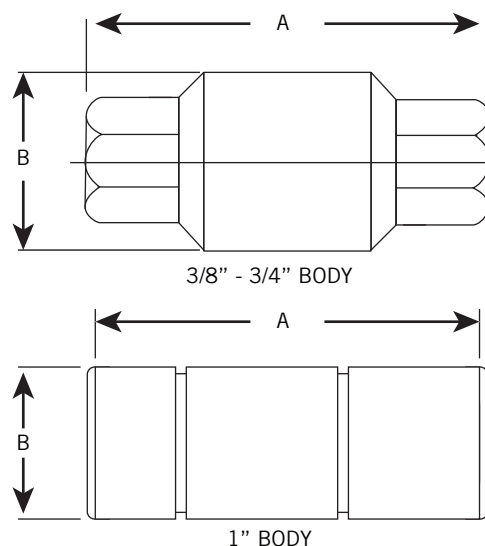
Line pressure will then compress thermal actuator to open valve and discharge condensate. Valve opening automatically adjusts to load conditions from minimum on very light loads to full lift at maximum load. Restricted orifice in TA502 (small opening at bottom of valve seat) prevents trap from discharging continuously on light loads such as are encountered on tracer lines.

TA SERIES

THERMOSTATIC STEAM TRAPS

SPECIFICATION

Steam trap shall be of balanced pressure design with stainless steel welded actuator capable of discharging condensate within 10°F of saturated temperature. Where greater sensitivity is required or protection from flash steam locking, a SLR orifice shall be available to allow condensate and flash steam evacuation at or near saturated temperatures. Where subcooling of condensate is desired alternate thermostatic actuator will be available to allow condensate evacuation at or near 40°F below saturated temperatures. Thermostatic actuator shall employ a conical valve lapped in matched sets with the seat ring assuring tight shut off. A minimum of three orifice sizes shall be available allowing for custom capacity sizing. Trap shall be stainless steel bodied suitable for pressures to 650 psig and available in 3/8" through 1" NPT or socketweld.



Connections: 3/8" - 1" NPT or socketweld

Maximum operating conditions

Standard Traps

PMO: Max. Operating Pressure	500 psig	(34.5 barg)
TMO: Max. Operating Temperature	600°F	(316°C)

ISO Option Traps

PMO: Max. Operating Pressure	650 psig	(44.8 barg)
TMO: Max. Operating Temperature	650°F	(343°C)

All Traps

PMA: Max. Allowable Pressure	650 psig	(44.8 barg)
TMA: Max. Allowable Temperature	750°F	(400°C)

Materials of construction

Body & Cover ASTM A351 Grade CF3M (316L)
 For 1" - 316SS, ASME SA479
 Actuator Welded Stainless Steel
 Valve & Seat Hardened 416 Stainless Steel

Dimensions			
NPT or Socket weld	inches (mm)		Weight Lbs. (kg)
	A	B	
3/8, 1/2"	3 3/4 (95)	1 3/4 (44)	1.1 (0.5)
3/4"	3 15/16 (100)	1 3/4 (44)	1.2 (0.54)
1"	4 3/8 (111)	1 3/4 (44)	1.6 (0.73)

Maximum Capacity - lbs/hr 10°F Below Saturation (Kg/hr 5°C Below Saturation)																		
Trap	Orifice Inch (mm)	Differential PSIG (barg)																
		5 (0.34)	10 (0.7)	20 (1.4)	50 (3.5)	100 (6.9)	125 (8.62)	150 (10.3)	200 (13.8)	250 (17.2)	300 (20.7)	350 (24.1)	400 (27.6)	450 (31.0)	500 (34.5)	550* (37.9)	600* (41.4)	650* (44.8)
TA502	1/8 (3)	216 (98)	265 (120)	375 (170)	592 (269)	778 (354)	838 (381)	890 (405)	980 (445)	1055 (480)	1121 (510)	1180 (536)	1235 (561)	1284 (584)	1331 (604)	1377 (625)	1425 (646)	1471 (667)
TA503	1/4 (6)	550 (249)	825 (374)	1210 (549)	1975 (896)	2825 (1281)	3140 (1424)	3425 (1554)	3650 (1656)	3960 (1796)	4100 (1860)	4230 (1919)	4420 (2005)	4600 (2086)	4760 (2161)	4910 (2232)	5060 (2297)	5190 (2359)
TA504	5/16 (8)	860 (390)	1220 (554)	1725 (783)	2725 (1237)	3575 (1623)	3850 (1748)	4090 (1857)	4505 (2045)	4850 (2202)	5155 (2340)	5425 (2463)	5675 (2576)	5900 (2679)	6110 (2774)	6310 (2868)	6480 (2945)	6625 (3011)

* Nicholson recommends ISO filled Actuator above 500 psi (34.5 bar) and for superheated steam.

N650 SERIES

THERMOSTATIC STEAM TRAPS

Pressures To 650 PSIG (44.8 barg)
Temperatures to 750°F (400°C)

Positive Shutoff - Valve and seats are lapped in matched sets, providing tight shutoff for light and no- load conditions which results in improved energy savings.

Freeze Proof - Self draining when installed vertically.

Compact-Easy to Install - Ample extension for pipe wrench provided.

Easily Maintained - Actuator element and valve are attached to cover to facilitate inspection and servicing. Optional stainless blowdown valve permits easy strainer cleaning while in service.

Directional Discharge - Pipe and thread erosion prevented by directing condensate to center of discharge pipe.

Hardened Stainless Steel Valve and Seat - Long life. Lapped as a matched set for water tight seal.

Temperature Sensitive Actuators - One moving part. Stainless Steel, fail open or fail closed, welded actuator for maximum corrosion, thermal and hydraulic shock resistance.

Positive Shutoff and Long Life - Integral Stainless Steel Strainer helps prevent debris from depositing onto valve and seat.

Strainer - Integral Stainless Steel Strainer standard on all models.

Guaranteed - Guaranteed against defects in materials or workmanship for 3 years.

MODELS

- **N651-FO-Y** pattern body w/strainer and blowdown port tapped & plugged; low capacity, fail open
- **N652***-Reduced capacity
- **N653***-Standard capacity
- **N654***-High capacity

*Add (-FC) for fail closed or (-FO) for fail open to end of model number



Applications

- Unit Heaters
- Air Vents
- Steam Tracing
- Drip Legs
- Platen Presses
- Plating Tanks
- Sterilizers
- Tire Presses
- Cooking Equipment
- Laundry Equipment
- Other Process Equipment

Options

- B - Blowdown Valve
- ISO - ISO Filled Actuator*
- SK - Skirted Seat*
- SLR - SLR Orifice
- SW - Socketweld

*Not available on N651

Canadian Registration # OE0591.9

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.

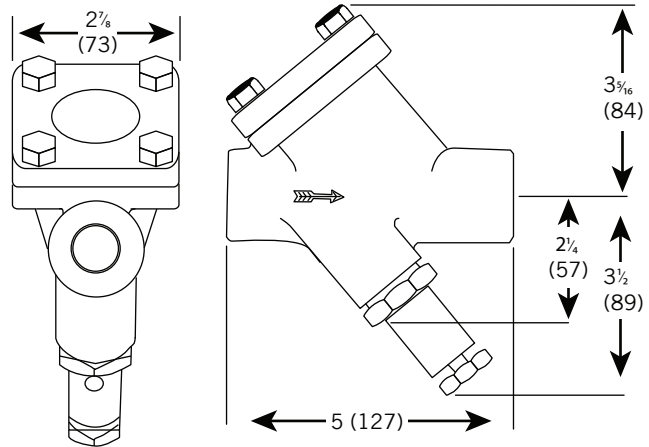
Line pressure will then compress thermal actuator to open valve and discharge condensate. Valve opening automatically adjusts to load conditions from minimum on very light loads to full lift at maximum load. Optional blowdown valve allows fast and easy cleaning of internal strainer without removing trap from operation.

N650 SERIES

THERMOSTATIC STEAM TRAPS

SPECIFICATION

Steam trap shall be of balanced pressure design with stainless steel welded actuator capable of discharging condensate within 10°F of saturated temperature. Where greater sensitivity is required or protection from flash steam locking, a SLR orifice will be available to allow condensate and flash steam evacuation at or near saturated temperatures. Where subcooling of condensate is desired alternate thermostatic actuator will be available to allow condensate evacuation at or near 40°F below saturated temperatures. Thermostatic actuator shall employ a conical valve lapped in matched sets with the seat ring assuring tight shut off. A minimum of four orifice sizes shall be available allowing for custom capacity sizing. Trap shall be forged carbon steel Y pattern body with strainer and available blow down valve suitable for pressures to 650 psig and available in 1/2" and 3/4" NPT or socketweld.



SHOWN WITH OPTIONAL BLOWDOWN VALVE

WEIGHT: 5 LBS. (2.3 KG)

Connections: 1/2" or 3/4" NPT or socketweld

Maximum operating conditions

Standard Traps

PMO: Max. Operating Pressure	500 psig	(34.5 barg)
TMO: Max. Operating Temperature	600°F	(316°C)

ISO Option Traps

PMO: Max. Operating Pressure	650 psig	(44.8 barg)
TMO: Max. Operating Temperature	650°F	(343°C)

All Traps

PMA: Max. Allowable Pressure	650 psig	(44.8 barg)
TMA: Max. Allowable Temperature	750°F	(400°C)

Materials of construction

Body & Cover	ASTM A105 Forged Steel
Actuator	Welded Stainless Steel
Cover Gasket	304 SS Spiral Wound w/Graphite Fill
Strainer	.033 Perf. 304 Stainless Steel
Blowdown Valve	416 Stainless Steel
Valve & Seat	Hardened 416 Stainless Steel

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

Trap	Orifice Inch (mm)	Differential PSIG (barg)																
		5 (0.34)	10 (0.7)	20 (1.4)	50 (3.5)	100 (6.9)	125 (8.62)	150 (10.3)	200 (13.8)	250 (17.2)	300 (20.7)	350 (24.1)	400 (27.6)	450 (31.0)	500 (34.5)	550 (37.9)	600 (41.4)	650 (44.8)
N651	5/64 (2)	84 (38)	119 (54)	168 (76)	265 (120)	348 (158)	375 (170)	398 (181)	439 (199)	472 (214)	502 (228)	529 (240)	553 (251)	575 (261)	595 (270)	615 (280)	635 (289)	650 (295)
N652	1/8 (3)	216 (98)	265 (120)	375 (170)	592 (269)	778 (354)	838 (381)	890 (405)	980 (445)	1055 (480)	1121 (510)	1180 (536)	1235 (561)	1284 (584)	1331 (604)	1377 (625)	1425 (646)	1471 (667)
N653	1/4 (6)	550 (249)	825 (374)	1210 (549)	1975 (896)	2825 (1281)	3140 (1424)	3425 (1554)	3650 (1656)	3960 (1796)	4100 (1860)	4230 (1919)	4420 (2005)	4600 (2086)	4760 (2161)	4910 (2232)	5060 (2297)	5190 (2359)
N654	5/16 (8)	860 (390)	1220 (554)	1725 (783)	2725 (1237)	3575 (1623)	3850 (1748)	4090 (1857)	4505 (2045)	4850 (2202)	5155 (2340)	5425 (2463)	5675 (2576)	5900 (2679)	6110 (2774)	6310 (2868)	6480 (2945)	6625 (3011)

* Nicholson recommends ISO filled Actuator above 500 psi (34.5 bar) and for superheated steam. Nicholson recommends skirted seat above 300 psi (20.7 bar).

ACHIEVER "A" SERIES THERMOSTATIC STEAM TRAPS

Pressures To 200 PSIG (13.8 barg)
Temperatures to 400°F (204°C)

Temperature Sensitive Actuator - One moving part stainless steel welded actuator for maximum corrosion, thermal and hydraulic shock resistance.

Improved Energy Savings - Maximum elimination of air and non-condensibles—trap is closed at saturated steam temperature.

Compact - Requires minimum space and provides condensate capacities equal to larger mechanical traps.

Freeze Proof - Type A with horizontal inlet and vertical outlet. Type AHV when installed vertically (outlet down) or horizontally on side (cover perpendicular to ground).

Renewable In-line - With factory packaged, precision matched internal parts kits.

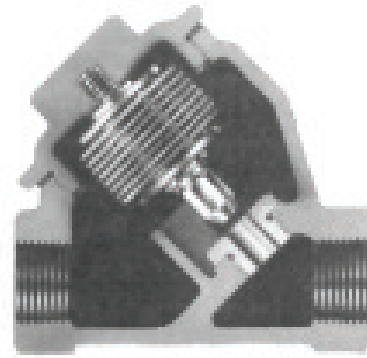
Superior Performance - Fast response to changing pressure and condensate loads. Maximum air handling capability.

Guaranteed - Guaranteed against defects in materials or workmanship for 3 years.

MODELS*

- A33—1/2" right angle trap
- A43—3/4" right angle trap
- A53—1" right angle trap
- AHV33—1/2" straight thru trap
- AHV43—3/4" straight thru trap
- AHV53—1" straight thru trap

*Add (-HC) to end of model number for high capacity.



Shown in AHV Configuration

Applications

- Unit Heaters
- Sterilizers
- Air Vents
- Autoclaves
- Dry Kilns
- Dryers
- Flash Tanks
- Small Heat Exchangers
- Plating Tanks
- Cookers
- Kettles
- Other Process Equipment

Options

- ST - Sterilizer Trim
- SLR - SLR Orifice
- HC - High capacity orifice

Canadian Registration # OE0591.9

Operation

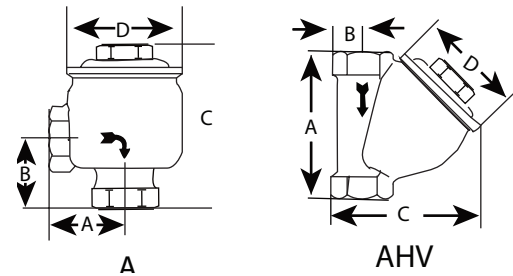
Thermal actuator is filled at its free length with a liquid having a lower boiling point than water. On start-up, valve is normally open. When steam enters trap, thermal actuator fill vaporizes to a pressure higher than line pressure. This forces valve into seat orifice to prevent any further flow. As 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.

ACHIEVER "A" SERIES THERMOSTATIC STEAM TRAPS

SPECIFICATION

Steam trap shall be of balanced pressure design with stainless steel welded actuator capable of discharging condensate within 10°F of saturated temperature. Where greater sensitivity is required, SLR orifice and Sterilizer trim shall be available to allow condensate evacuation at or near saturated temperatures. Thermostatic actuator shall employ a conical valve lapped in matched sets with the seat ring assuring tight shut off. A minimum of two orifice sizes shall be available allowing for custom capacity sizing. Trap shall be bronze bodied suitable for pressures through 200 psig and available in 1/2" through 1" NPT connections.



Connections: 1/2"-1" NPT

Dimensions						
Trap	Pipe Size inches	Inch (mm)				Weight lb (kg)
		A	B	C	D	
A33	1/2	2 (41)	1 ⁵ / ₈ (106)	4 ³ / ₁₆ (76)	3 (1.5)	3.3 (1.5)
A43	3/4	2 (47)	1 ⁷ / ₈ (113)	4 ⁷ / ₁₆ (76)	3 (1.5)	3.3 (1.5)
A53	1	2 ¹³ / ₁₆ (56)	2 ³ / ₁₆ (125)	4 ¹⁵ / ₁₆ (76)	3 (2.2)	4.8 (2.1)
AHV33	1/2	4 (19)	3 ³ / ₄ (41)	3 ⁷ / ₈ (76)	3 (1.4)	3.1 (1.4)
AHV43	3/4	4 ¹ / ₄ (22)	7 ⁷ / ₈ (108)	4 ¹ / ₄ (76)	3 (1.6)	3.6 (1.6)
AHV53	1	5 ⁵ / ₈ (25)	1 (116)	4 ⁹ / ₁₆ (76)	3 (2.4)	5.3 (2.4)

Maximum operating conditions

PMO: Max. Operating Pressure	200 psig	(13.8 barg)
TMO: Max. Operating Temperature	400°F	(204°C)
PMA: Max. Allowable Pressure	200 psig	(13.8 barg)
TMA: Max. Allowable Temperature	400°F	(204°C)

Materials of construction

Body & Cover	ASTM B283 C37700
Actuator	Welded Stainless Steel
Cover Gasket	Copper Jacketed
Valve & Seat	Hardened 416 Stainless Steel

Maximum Capacity - lbs/hr 10°F Below Saturation (Kg/hr 5°C Below Saturation)																
Trap	Orifice inch (mm)															
		1 (0.07)	2 (0.14)	5 (0.34)	10 (0.69)	15 (1.03)	20 (1.4)	40 (2.8)	50 (3.4)	60 (4.1)	80 (5.5)	100 (6.9)	125 (8.6)	150 (10.3)	175 (12.1)	200 (13.8)
1/2" A33, AHV33 3/4" A43, AHV43	5/16 (8)	785 (357)	1050 (477)	1650 (750)	2325 (1057)	2575 (1170)	2825 (1284)	3295 (1498)	3815 (1734)	4200 (1909)	4675 (2125)	5035 (2289)	5535 (2516)	5720 (2600)	6085 (2766)	6210 (2823)
1" A53, AHV53	3/8 (10)	985 (448)	1390 (632)	2180 (991)	3070 (1395)	3255 (1480)	3735 (1698)	4225 (1920)	5040 (2291)	5480 (2491)	5990 (2723)	6645 (3020)	7315 (3325)	7560 (3436)	8045 (3657)	8200 (3727)
1/2"- 1" All High Capacity "HC"	1/2 (13)	1140 (518)	1610 (732)	2545 (1157)	3600 (1636)	4405 (2002)	5090 (2314)	7195 (3270)	8045 (3657)	8810 (4005)	9800 (4455)	10560 (4800)	11375 (5170)	12090 (5495)	12725 (5784)	13305 (6048)

BELIEVER "B" SERIES THERMOSTATIC STEAM TRAPS

Pressures To 250 PSIG (17.2 barg)
Temperatures to 450°F (232°C)

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.

Guaranteed - Guaranteed against defects in materials or workmanship for 3 years.

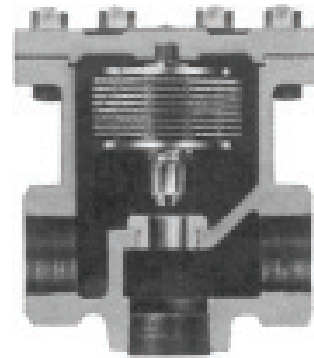
Applications

- 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

Canadian Registration # OE0591.9



MODELS*

- **B33**–1/2" straight thru trap
- **B43**–3/4" straight thru trap
- **B53**–1" straight thru trap
- **B63**–1-1/4" straight thru trap
- **B73***–1-1/2" straight thru trap
- **B83***–2" straight thru trap

*Add (-HC) to end of model number for high capacity.

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,

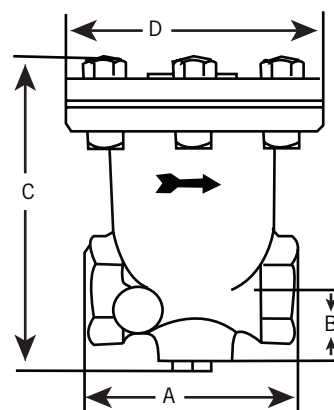
it takes heat from thermal actuator, lowering internal pressure. Line pressure will then compress thermal actuator to open valve and discharge condensate. Valve opening automatically adjusts to load conditions from minimum on very light loads to full lift at maximum load.

BELIEVER "B" SERIES

THERMOSTATIC STEAM TRAPS

SPECIFICATION

Steam trap shall be of balanced pressure design with stainless steel welded actuator capable of discharging condensate within 10°F of saturated temperature. Where greater sensitivity is required or protection from flash steam locking, a SLR orifice will be available to allow condensate and flash steam evacuation at or near saturated temperatures. Thermostatic actuator shall employ a conical valve lapped in matched sets with the seat ring assuring tight shut off. Trap shall be cast iron or cast steel bodied suitable for pressures to 250 psig and available in 1/2" through 2" NPT



TYPE B

Connections: 1/2"-2" NPT

Dimensions						
Trap	Pipe Size inches	Inch (mm)				Weight lb (kg)
		A	B	C	D	
B33	1/2	3 ⁷ / ₈ (98)	1 ¹ / ₈ (29)	5 ⁷ / ₈ (149)	4 ¹ / ₂ (114)	7 (3.2)
B43	3/4	4 ¹ / ₄ (108)	1 ³ / ₈ (35)	6 ³ / ₄ (171)	5 ¹ / ₁₆ (129)	10.3 (4.7)
B53	1	5 ¹ / ₂ (140)	1 ⁷ / ₈ (48)	7 ¹ / ₁₆ (195)	5 ¹³ / ₁₆ (148)	15.6 (7.1)
B63	1 1/4	5 ¹ / ₂ (140)	1 ⁷ / ₈ (48)	7 ¹ / ₁₆ (195)	5 ¹³ / ₁₆ (148)	15.3 (7.0)
B73	1 1/2	7 ¹ / ₄ (184)	1 ³ / ₄ (44)	9 ¹ / ₁₆ (230)	7 ³ / ₄ (197)	33.6 (15.3)
B83	2	7 ¹ / ₄ (184)	1 ³ / ₄ (44)	9 ¹ / ₁₆ (230)	7 ³ / ₄ (197)	32.4 (14.7)

Maximum operating conditions

PMO: Max. Operating Pressure	200 psig	(13.8 barg)
TMO: Max. Operating Temperature	400°F	(204°C)
PMA: Max. Allowable Pressure	200 psig	(13.8 barg)
TMA: Max. Allowable Temperature	400°F	(204°C)

Materials of construction

Body & CoverCast Iron ASTM A278 Class 30
ActuatorWelded Stainless Steel
Cover GasketGraphite
Valve & SeatHardened 416 Stainless Steel

Maximum Capacity - lbs/hr 10°F Below Saturation (Kg/hr 5°C Below Saturation)															
Trap	Pipe Size Inch	Orifice inch (mm)	Differential PSIG (barg)												
			1 (.07)	2 (.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)
B33	1/2	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	3/4	7/16 (11)	1460 (664)	2055 (934)	3240 (1473)	4560 (2073)	5550 (2523)	7480 (3400)	9865 (4484)	10850 (4932)	11225 (5102)	11935 (5425)	12165 (5530)	12770 (5805)	13225 (6011)
B53, B63	1, 1 1/4	1/2 (12)	1825 (830)	2575 (1170)	4050 (1841)	5700 (2591)	6925 (3148)	9350 (4275)	12340 (5609)	13565 (6166)	14030 (6377)	14920 (6782)	15230 (6923)	15960 (7255)	16540 (7518)
B73, B83	1 1/2, 2	3/4 (19)	2760 (1255)	3890 (1768)	6120 (2782)	8610 (3914)	10470 (4759)	14125 (6420)	18660 (8482)	20520 (9327)	21235 (9652)	22580 (10264)	23015 (10461)	24190 (10995)	25055 (11389)
B73HC, B83HC	1 1/2, 2	1-1/4 (32)	3555 (1616)	5030 (2286)	7950 (3614)	11240 (5109)	15900 (7227)	25140 (11427)	33000 (15000)	—	—	—	—	—	—

CONQUEROR "C" SERIES THERMOSTATIC STEAM TRAPS

Pressures To 300 PSIG (21 barg)
Temperatures to 500°F (260°C)

Freeze Proof - When installed with horizontal inlet and vertical outlet.

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.

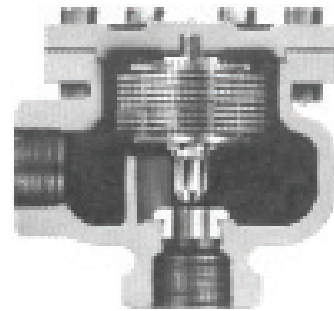
Temperature Sensitive Actuators - One moving part, stainless steel, fail open or closed, welded actuator provides maximum sensitivity, corrosion and thermal & hydraulic shock resistance.

Guaranteed - Guaranteed against defects in materials or workmanship for 3 years.

MODELS*

- C33-1/2" angle pattern trap
 - C43-3/4" angle pattern trap
 - C53-1" angle pattern trap
 - C63-1-1/4" angle pattern trap
 - C73-1-1/2" angle pattern trap
 - C83-2" angle pattern trap
- CS models are the same as above in cast steel.

*Add (-HC) to end of model number for high capacity.



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
- SW - Socketweld
- HC - High capacity orifice

Canadian Registration # OE0591.9

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.

CONQUEROR "C" SERIES THERMOSTATIC STEAM TRAPS

SPECIFICATION

Steam trap shall be of balanced pressure design with stainless steel, welded actuator capable of discharging condensate within 10°F of saturated temperature. Where greater sensitivity is required or protection from flash steam locking, a SLR orifice shall be available to allow condensate and flash steam evacuation at or near saturated temperatures. Thermostatic actuator shall employ a conical valve lapped in matched sets with the seat ring assuring tight shut off. Trap shall be cast iron or cast steel bodied suitable for pressures to 250 psig and available in 1/2" through 2" NPT.

Maximum operating conditions

Type C

PMO: Max. Operating Pressure 250 psig (17.2 barg)
TMO: Max. Operating Temperature 450°F (232°C)

PMA: Max. Allowable Pressure 250 psig (17.2 barg)
TMA: Max. Allowable Temperature 450°F (232°C)

Type CS

PMO: Max. Operating Pressure 300 psig (20.7 barg)
TMO: Max. Operating Temperature 500°F (260°C)

PMA: Max. Allowable Pressure 300 psig (20.7 barg)
TMA: Max. Allowable Temperature 500°F (260°C)

Materials of construction

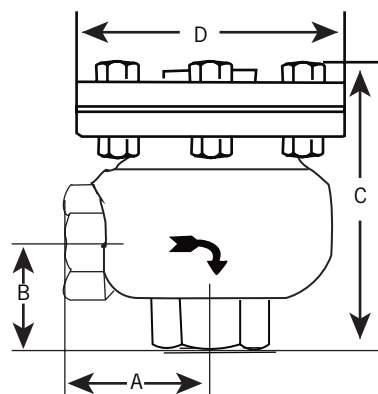
Body & Cover: Type C...Cast Iron ASTM A278 Class 30
Type CS...Cast Steel ASTM A216 Grade

WCB

Actuator.....Welded Stainless Steel

Cover Gasket.....Graphite

Valve & Seat.....Hardened 416 Stainless Steel



TYPE C & CS

Connections: 1/2"–2" NPT or Socketweld

Dimensions							
Trap	Pipe Size inches	Inch (mm)				Weight lb (kg)	
		A	B	C	D	Type C	Type CS
C33	1/2	2 ⁵ / ₈ (67)	1 ¹³ / ₁₆ (46)	4 ¹⁵ / ₁₆ (125)	4 ¹ / ₂ (114)	8.3 (3.8)	8.6 (3.9)
C43	3/4	2 ³ / ₄ (70)	2 ¹ / ₁₆ (52)	5 ⁷ / ₁₆ (138)	5 ¹ / ₁₆ (129)	11.1 (5.0)	13 (5.9)
C53	1	3 ¹ / ₂ (89)	2 ¹³ / ₁₆ (71)	6 ¹ / ₁₆ (154)	5 ¹³ / ₁₆ (148)	17.8 (8.1)	19.6 (8.9)
C63	1 1/4	3 ¹ / ₂ (89)	2 ¹³ / ₁₆ (71)	6 ¹ / ₁₆ (154)	5 ¹³ / ₁₆ (148)	17.5 (8.0)	19.3 (8.8)
C73	1 1/2	5 (127)	3 ³ / ₄ (95)	8 ³ / ₈ (213)	7 ³ / ₄ (197)	39.1 (17.8)	39.2 (17.8)
C83	2	5 (127)	3 ³ / ₄ (95)	8 ³ / ₈ (213)	7 ³ / ₄ (197)	39 (17.7)	31.1 (14.1)

Maximum Capacity - lbs/hr 10°F Below Saturation (Kg/hr 5°C Below Saturation)																
Trap	Pipe Size Inch	Orifice inch (mm)	Differential PSIG (barg)													
			1 (.07)	2 (.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)	300* (20.7)
C33, CS33	1/2	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)	9220 (4191)
C43, CS43	3/4	7/16 (11)	1460 (664)	2055 (934)	3240 (1473)	4560 (2073)	5550 (2523)	7480 (3400)	9865 (4484)	10850 (4932)	11225 (5102)	11935 (5425)	12165 (5530)	12770 (5805)	13225 (6011)	13685 (6220)
C53, CS53 C63, CS63	1, 1 1/4	1/2 (12)	1825 (830)	2575 (1170)	4050 (1841)	5700 (2591)	6925 (3148)	9350 (4750)	12340 (5609)	13565 (6166)	14030 (6377)	14920 (6782)	15230 (6923)	15960 (7255)	16540 (7518)	17120 (7782)
C73, CS73 C83, CS83	1 1/2, 2	3/4 (19)	2760 (1255)	3890 (1768)	6120 (2782)	8610 (3914)	10470 (4759)	14125 (6420)	18660 (8484)	20520 (9327)	21235 (9652)	22580 (10264)	23015 (10461)	24190 (10995)	25055 (11389)	25915 (11780)
C73HC, C83HC	1 1/2, 2	1-1/4 (32)	3555 (1616)	5030 (2286)	7950 (3614)	11240 (5109)	15900 (7227)	25140 (11427)	33000 (15000)	—	—	—	—	—	—	—

*CS Series Only. C available with screwed connections only. CS available with screwed or socketweld connections.