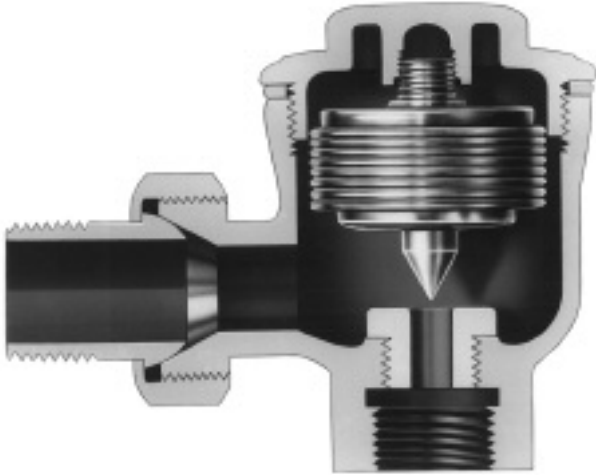


# THERMOSTATIC STEAM TRAPS

**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)



## APPLICATIONS

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

## OPTIONS *See page 9*

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

Canadian Registration # 0E0591.9

**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 closes 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

## OPERATION

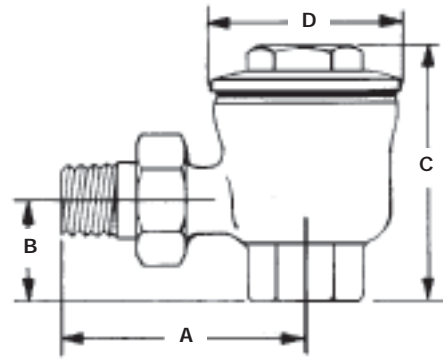
Thermal actuator is filled at its free length with a liquid having a lower boiling point than water. On start-up, valve is normally open. When steam enters trap, thermal actuator fill vaporizes to a pressure higher than line pressure. This forces valve into seat orifice to prevent any further flow. As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

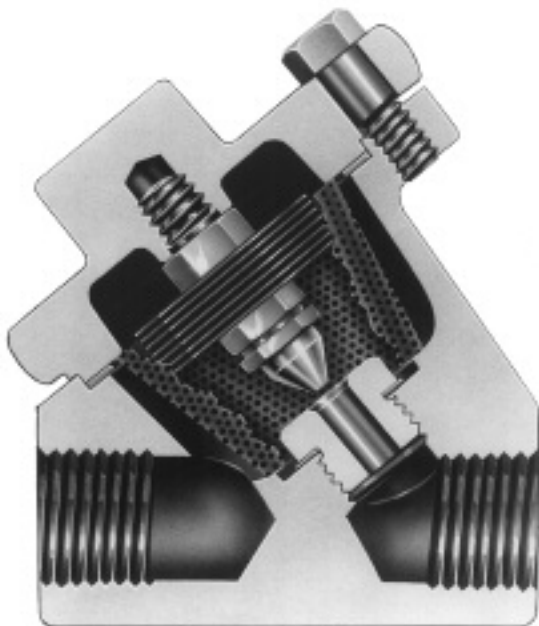
Dimensions					
Size	Inch (mm)				Weight lb (kg)
	A	B	C	D	
3/8, 1/2	2 3/4 (70)	1 1/8 (29)	2 7/8 (73)	2 5/32 (54)	1.5 (.68)
3/4	3 3/8 (81)	1 1/8 (40)	3 (76)	2 5/32 (54)	1.8 (.82)

### MATERIALS OF CONSTRUCTION

Body & Cover ..... ASTM B283 CA377  
 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)	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.

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

## APPLICATIONS

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

## OPTIONS *See page 9*

- SK - Skirted Seat\*
- SLR - SLR Orifice
- ISO - ISO Filled Actuator\*
- S - Internal SS Strainer (std. on N451)
- ST - Sterilizer Trim
- SW - Socketweld

\*Not available on N451

## 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

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

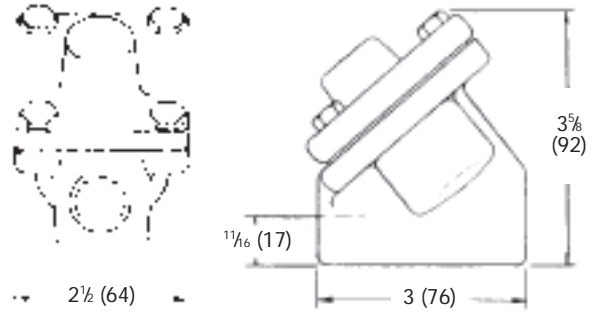
pressure.

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 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

## SPECIFICATIONS

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°C)

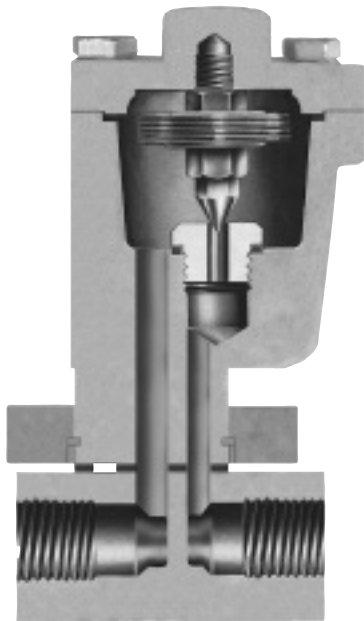
† Consult factory for pressures greater than 300 psi.

### 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  
Strainer .....033 Perf. 304 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.



UMT SERIES TRAP AND UMTC CONNECTOR

### APPLICATIONS

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

### OPTIONS

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

\*Not available on UMT451T

Canadian Registration # OE1388.6

For information on Big Block UMTVS-BB Connector  
SEE PAGE 118

### OPERATING PRINCIPLE

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,

# 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.

### MODELS

- UMT-451T—Low Capacity Trap
- UMT-452T—Standard Capacity Trap
- UMT-453T—High 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.

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

# LIQUIDATOR 450 SERIES UNIVERSAL MOUNT THERMOSTATIC STEAM TRAPS

## SPECIFICATIONS

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 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

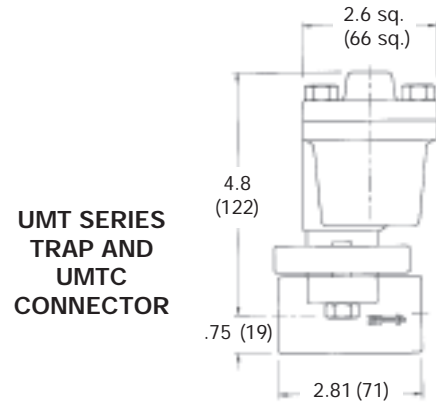
Traps with Welded Stainless Actuator  
 PMO: Max. Operating Pressure 450 psig (31 barg)  
 TMO: Max. Operating Temperature 600°F (316°C)

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)

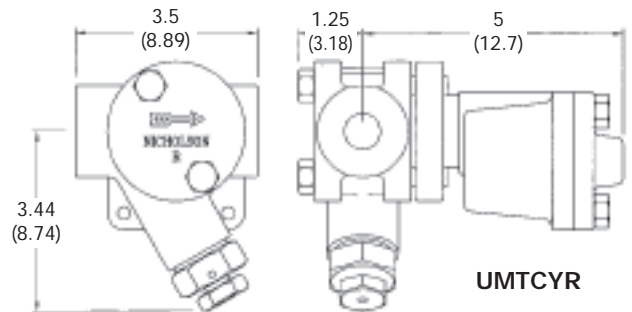
## MATERIALS OF CONSTRUCTION

Body & Cover .....ASTM A351 Grade CF8 (304)  
 Cover Gasket.....304 stainless spiral wound w/graphite fill  
 Actuator .....Welded SS  
 Strainer .....033 perf. 304 Stainless Steel  
 Valve & Seat .....Hardened 416 Stainless Steel  
 Mounting Block .....ASTM A351 Grade CF8 (304)

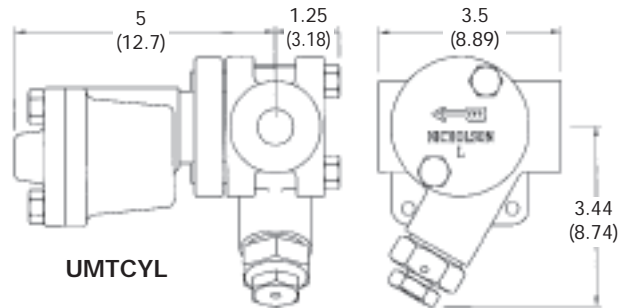


UMT SERIES  
TRAP AND  
UMTC  
CONNECTOR

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



UMTCYR



UMTCYL

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)	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 <sup>†</sup> (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.



# 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 *See page 9*

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

Canadian Registration # 0E0591.9

## OPERATION

Thermal actuator is filled at its 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

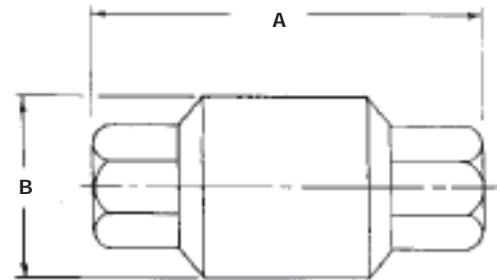
pressure. Line pressure will then compress thermal actuator to open valve and discharge condensate. Valve opening automatically adjusts to load conditions from minimum on very light loads to full lift at maximum load. Restricted orifice in TA502 (small opening at bottom of valve seat) prevents trap from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



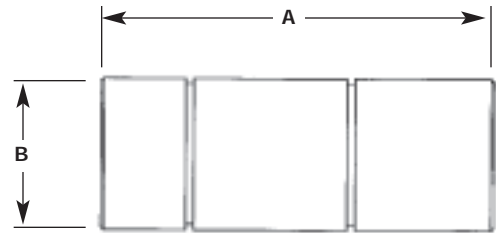
# TA SERIES THERMOSTATIC STEAM TRAPS

## 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.



3/8" - 3/4" BODY



1" BODY

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)  
Actuator .....Welded Stainless Steel  
Valve & Seat .....Hardened 416 Stainless Steel

NPT or Socket weld	inches (mm)		Weight Lbs. (kg)
	A	B	
3/8, 1/2"	3 <sup>3</sup> / <sub>4</sub> (95)	1 <sup>3</sup> / <sub>4</sub> (44)	1.1 (0.5)
3/4"	3 <sup>15</sup> / <sub>16</sub> (100)	1 <sup>3</sup> / <sub>4</sub> (44)	1.2 (0.54)
1"	4 <sup>3</sup> / <sub>8</sub> (111)	1 <sup>3</sup> / <sub>4</sub> (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 barg) 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 *See page 9*

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

\*Not available on N651

Canadian Registration # 0E0591.9

## OPERATION

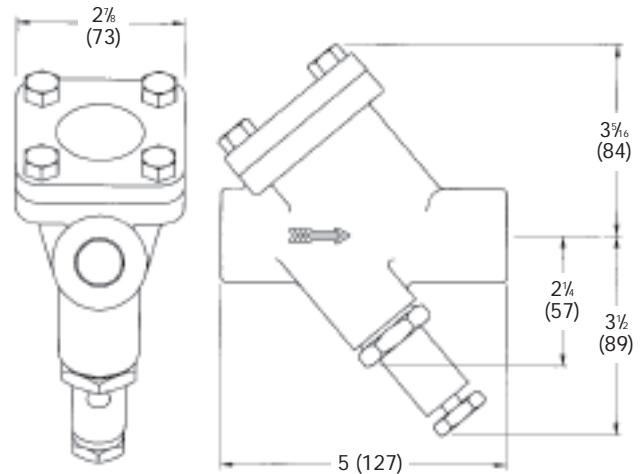
Thermal actuator is filled at its free length with a liquid having a lower boiling point than water. On start-up, valve is normally open. When steam enters trap, thermal actuator fill vaporizes to a pressure higher than line pressure. This forces valve into seat orifice to prevent any further flow. As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

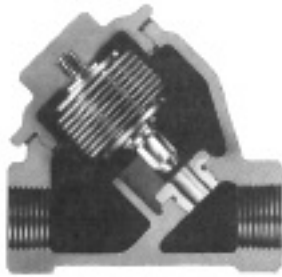
PMA: Max. Allowable Pressure 650 psig (44.8 barg)  
TMA: Max. Allowable Temperature 750°F (400°C)

### 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

<b>Maximum Capacity—lbs/hr 10°F Below Saturation (Kg/hr 5°C Below Saturation)</b>																		
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).



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 *See page 9*

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

Canadian Registration # 0E0591.9

# 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 closes 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.

### OPERATION

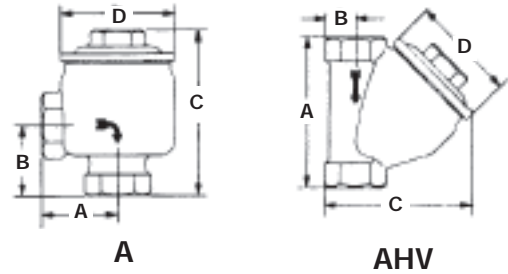
Thermal actuator is filled at its free length with a liquid having a lower boiling point than water. On start-up, valve is normally open. When steam enters trap, thermal actuator fill vaporizes to a pressure higher than line pressure. This forces valve into seat orifice to prevent any

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

### 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 CA377  
 Actuator .....Welded Stainless Steel  
 Cover Gasket .....Copper Jacketed  
 Valve & Seat .....Hardened 416 Stainless Steel

Dimensions						
Trap	Pipe Size inches	Inch (mm)				Weight lb (kg)
		A	B	C	D	
A33	1/2	2 (41)	1 1/8 (106)	4 3/16 (76)	3 (1.5)	3.3 (1.5)
A43	3/4	2 (47)	1 1/8 (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)	3/4 (98)	3 1/8 (76)	3 (1.4)	3.1 (1.4)
AHV43	3/4	4 1/4 (22)	7/8 (108)	4 1/4 (76)	3 (1.6)	3.6 (1.6)
AHV53	1	5 1/2 (25)	1 (116)	4 7/8 (76)	3 (2.4)	5.3 (2.4)

Maximum Capacity—lbs/hr 10°F Below Saturation (Kg/hr 5°C Below Saturation)																
Trap	Orifice inch (mm)	Differential PSIG (barg)														
		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	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)
3/4" A43, AHV43	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" A53, AHV53	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)

**Freeze Proof** — When installed on side with cover perpendicular to ground.

**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.

## 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.

## APPLICATIONS

- Unit Heaters
- Pipe Coils
- Blast Coils
- Steam Mains
- Dry Kilns
- Jacketed Kettles
- Hot Water Heaters
- Dryers (all types)
- Large Heat Exchangers

## OPTIONS *See page 9*

- SLR - SLR Orifice
- HC - High capacity orifice

Canadian Registration # 0E0591.9

## OPERATION

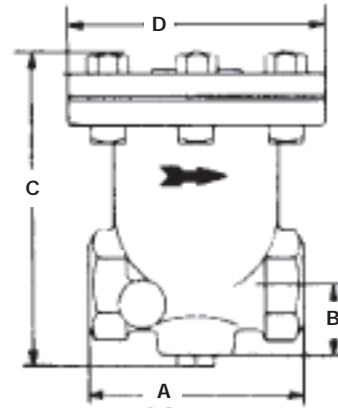
Thermal actuator is filled at its free length with a liquid having a lower boiling point than water. On start-up, valve is normally open. When steam enters trap, thermal actuator fill vaporizes to a pressure higher than line pressure. This forces valve into seat orifice to prevent any further flow.

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.

# 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

### MAXIMUM OPERATING CONDITIONS

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)

### MATERIALS OF CONSTRUCTION

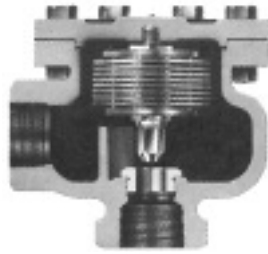
Body & Cover: .....Cast Iron ASTM A278 Class 30  
 Actuator: .....Welded Stainless Steel  
 Cover Gasket: .....Graphite  
 Valve & Seat: .....Hardened 416 Stainless Steel

Dimensions						
Trap	Pipe Size inches	Inches (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 1/8 (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 3/8 (230)	7 3/4 (197)	33.6 (15.3)
B83	2	7 1/4 (184)	1 3/4 (44)	9 3/8 (230)	7 3/4 (197)	32.4 (14.7)

Maximum Capacity—lbs/hr 10°F Below Saturation (Kg/hr 5°C Below Saturation)															
Trap	Pipe Size/Orifice		Differential PSIG (barg)												
	Inch	Inch (mm)	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 (4250)	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)



## APPLICATIONS

- Unit Heaters
- Pipe Coils
- Blast Coils
- Steam Mains
- Dry Kilns
- Jacketed Kettles
- Hot Water Heaters
- Dryers (all types)
- Large Heat Exchangers

## OPTIONS *See page 9*

- SLR - SLR Orifice
- SW - Socketweld
- HC - High capacity orifice

Canadian Registration # 0E0591.9

**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<sup>1</sup>-1-1/2" angle pattern trap
- C83<sup>1</sup>-2" angle pattern trap

CS models are the same as above in cast steel.

\*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.

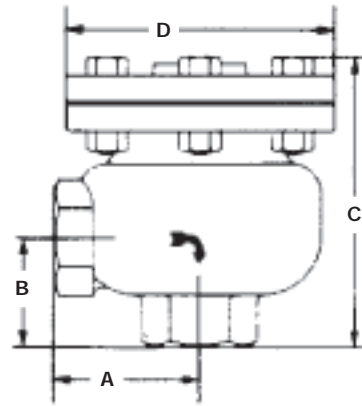
As condensate collects, it takes heat from thermal actuator, lowering internal pressure. Line pressure will then compress thermal actuator to open valve and discharge condensate. Valve opening automatically adjusts to load conditions from minimum on very light loads to full lift at maximum load.



# 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.



TYPE C & CS

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

### 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

Trap	Pipe Size inches	Inches (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 7/16 (52)	5 1/16 (138)	5 5/16 (129)	11.1 (5.0)	13 (5.9)
C53	1	3 1/2 (89)	2 3/16 (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 3/16 (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 1/4 (197)	39.1 (17.8)	39.2 (17.8)
C83	2	5 (127)	3 3/4 (95)	8 3/8 (213)	7 1/4 (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 Inches (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 (8482)	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.