

# CDS SANITARY THERMOSTATIC STEAM TRAPS

Pressures to 100 PSIG (6.9 barg)  
Temperatures to 338°F (170°C)



## APPLICATIONS

- CIP/SIP System Condensate Drainage
- Sterilization of Process Vessels
- Culinary Steam
- Humidifiers
- WFI System Sterilization
- Fermenter Sterilization

## OPTIONS

- -B Bellows for low subcool
- MP - Mechanical Polish to 10  $\mu$  in. (0.25  $\mu$ m) Ra
- EP - Electropolish
- SLR - SLR Orifice
- Tef-Steel, PTFE, Teflon®, E.P.D.M., USP Class VI & other gasket materials available
- 6" Condensate Leg (CME-W25, CME-A)

## APPLICABLE CODES

- ASME BPE

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 to discharge air, non-condensibles and condensate. When steam enters trap, thermal actuator fill vaporizes to a pressure higher than line pressure. This forces valve

**Steepest Interior Surfaces**—Designed to completely drain without puddling.

**Stainless Steel Body**—Body Material is 316L Stainless Steel with 20  $\mu$  in. (0.5  $\mu$ m) Ra internal finish and 32  $\mu$  in. (0.75  $\mu$ m) Ra external finish. Available with mechanical polishing to 10  $\mu$  in. (0.25  $\mu$ m) Ra and/or electropolish.

**Self centering Valve**—Leak tight shut off. Assembly of actuator and valve to impingement plate allows the valve to self align with center of the orifice.

**Temperature Sensitive Actuator**—One moving part. 316L Stainless Steel, fail open, welded actuator for maximum corrosion, thermal and hydraulic shock resistance.

**Directional Discharge**—Erosion prevented by directing discharge to center of piping.

**Maintenance**—Can be easily removed and disassembled for sterilization and/or repair.

**Three Year Guarantee**—Guaranteed for three years against defects in material or workmanship.

**Industry Standard Food Grade Gasket**—White Viton food grade gasket offers superior performance for higher pressure steam applications.

**Large Orifice Selection**—Broad selection of orifice sizes provide greatest sizing and selection flexibility.

**Superior Air Handling**—Best air handling capability provides for fast startup.

**Unique SLR Orifice Option**—Specify when immediate elimination of condensate and improved sensitivity is desired. An orifice on the valve allows for continuous discharge of condensate. Trap will nominally pass 50 lb/hr (22.7 kg/hr) of condensate at 50 psi (3.4 barg) within 0.5°C (1°F) of saturated temperature.

**Bar Stock**—Connection fittings are not welded onto inlet and outlet pieces.

## MODELS

- CDS202—Low capacity
- CDS203—Medium capacity
- CDS204—High capacity

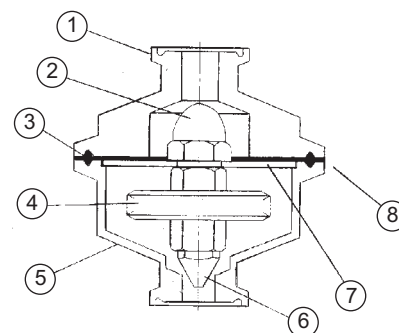
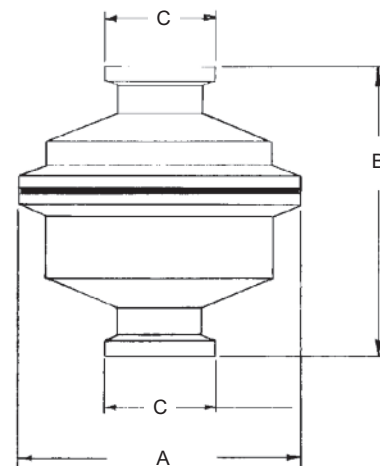
NOTE: Please specify if Material Test Reports (MTR) or Certificates of Conformance (COC) are required.

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.

# CDS SANITARY THERMOSTATIC STEAM TRAPS

## SPECIFICATION

Steam trap shall be of balanced pressure design with 316L welded bellows capable of releasing condensate within 1°C (2-3°F) or 5°C (10°F) of saturated pressure. All other interior wetted components shall be of 316L stainless. It shall have interior body finish of at least 20 µ in. (0.5 µm) Ra and exterior body finish of at least 32 µ in. (0.75 µm) Ra. Trap shall utilize hygienic body clamp allowing disassembly for inspection or cleaning and be entirely self draining when installed in vertical configuration. Trap end connections shall be standard hygienic clamp. Thermostatic actuator shall employ a conical valve lapped to the seat. A minimum of three orifices shall be available. Traps shall have SLR orifice where drainage at saturated temperatures is required. Traps shall be guaranteed against defects for 3 years.



Connections:  
1/2" – 1½" Hygienic Clamp

DIMENSIONS inches (mm) and WEIGHTS pounds (kg)

Service	A	B	C	Weight
½ and ¾	2½ (63)	2½ (67)	¾ (25)	1.8 (.8)
1 and 1½	2½ (63)	2½ (67)	1 ¾ (50)	2.3 (1.0)

MATERIALS OF CONSTRUCTION		
Item	Part Name	Material
1	Body – Inlet	316L A276
2	Actuator Nut	316L
3	Gasket	Viton 3227
4	Actuator	316L
5	Body – Outlet	316L A276
6	Valve	316L
7	Clamp (not shown)	304
8	Impingement Plate	316L

NOTE: Please specify if Material Test Reports (MTR) or Certificates of Conformance (COC) are required.

### MAXIMUM OPERATING CONDITIONS

PMO: Max. Operating Pressure	100 psig (6.9 barg)
TMO: Max. Operating Temperature	338°F (170°C)
PMA: Max. Allowable Pressure	150 psig (10.3 barg)
TMA: Max. Allowable Temperature	366°F (186°C)

### BODY SURFACE FINISH

Internal <20 µ in. (0.51 µm) Ra (SFC1). External <32 µ in. (0.75 µm) Ra. Optional mechanical polishing to 10 µ in. (0.25 µm) Ra and/or electropolish (SFC4)

### GASKET APPROVALS

FDA CFR Title 21 Part 177, USDA, USP Class VI, 3A Sanitary Standard, NSF

### SERVICE NOTES

Trap is designed to be self draining for vertical installation (discharge down)  
½" - ¾" service trap should be installed with ¾" inlet gasket.  
1" - 1½" service trap should be installed with 1½" inlet gasket.

### SLR ORIFICE OPTION

Specify when immediate elimination of condensate and improved sensitivity is desired. An orifice on the valve allows for continuous discharge of condensate. Trap will nominally pass 50 lb/hr (22.7 kg/hr) of condensate at 50 psi (3.4 barg) within 0.5°C (1°F) of saturated temperature.

### POLISHING PROCEDURE

All surface finishes are achieved without the use of additional buffing, compounds or grit.

### -B BELLOWS

1°C (2-3°F) subcool for sensitive applications under 40 psi (2.7 barg)

Maximum Capacity—lbs/hr 10°F Below Saturation (Kg/hr 5°C Below Saturation)												
Trap	Orifice Inches	Differential PSIG (bar)										
		5 (0.34)	10 (0.7)	20 (1.4)	30 (2.1)	40 (2.8)	50 (3.4)	60 (4.2)	70 (4.9)	80 (5.6)	90 (6.2)	100 (6.9)
CDS 202	5/32	291 (132)	411 (186)	581 (264)	719 (326)	831 (377)	919 (417)	1000 (454)	1075 (488)	1130 (513)	1174 (533)	1207 (547)
CDS 203	1/4	550 (249)	825 (374)	1210 (549)	1495 (678)	1750 (794)	1975 (896)	2175 (987)	2350 (1066)	2525 (1145)	2650 (1202)	2825 (1281)
CDS 204	5/16	1520 (689)	1671 (758)	1869 (848)	2128 (965)	2301 (1044)	2509 (1138)	2713 (1230)	2819 (1278)	2946 (1336)	3091 (1402)	3159 (1433)

For Kg/Hr Multiply by .454



# CDH SANITARY THERMOSTATIC STEAM TRAPS

Pressures To 100 PSIG (6.9 barg)  
Temperatures to 338°F (170°C)

## APPLICATIONS

- CIP/SIP System Condensate Drainage
- Sterilization of Process Vessels
- Culinary Steam
- Humidifiers
- WFI System Sterilization
- Fermenter Sterilization

## OPTIONS

- -B Bellows for low subcool
- MP - Mechanical Polish to 10  $\mu$  in. (0.25  $\mu$ m) Ra
- EP - Electropolish
- SLR - SLR Orifice
- Tef-Steel, PTFE, Teflon®, E.P.D.M., and other gasket materials available
- CoMBo inlet available
- Specify 1/4" or 5/16" orifice

## APPLICABLE CODES

- ASME BPE

Canadian Registration # 0E0591.9C

## 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 to discharge air, non-condensibles and condensate. When steam enters trap, thermal actuator fill vaporizes to a pressure higher than line pressure. This forces valve

**Universally Configurable**—Horizontal connections from any direction on standard model; AI and AO models feature one multi-directional horizontal and one vertical connection. The CoMBo condensate measuring elbow can be installed as the inlet to this trap (-B bellows required).

**Steepest Interior Surfaces**—Designed to completely drain without puddling, even in significantly sloped lines.

**Stainless Steel Body**—Body Material is 316L Stainless Steel with 20  $\mu$  in. (0.5  $\mu$ m) Ra internal finish and 32  $\mu$  in. (0.75  $\mu$ m) Ra external finish. Available with mechanical polishing to 10  $\mu$  in. (0.25  $\mu$ m) Ra and/or electropolish.

**Self centering Valve**—Leak tight shut off. Assembly of actuator and valve to impingement plate allows the valve to self align with center of the orifice.

**Temperature Sensitive Actuator**—One moving part. 316L Stainless Steel, fail open, welded actuator for maximum corrosion, thermal and hydraulic shock resistance.

**One Size Suits Most Services**—Universal hygienic clamp fits both 1/2" and 3/4" piping.

**Maintenance**—Can be easily removed and disassembled for sterilization and/or repair.

**Four Year Guarantee**—Guaranteed for four years against defects in material or workmanship.

**Inventory Standard Food Grade Gasket**—White Viton food grade gasket offers superior performance for higher pressure steam applications.

**Superior Air Handling**—Best air handling capability provides for fast startup.

**Unique SLR Orifice Option**—Specify when immediate elimination of condensate and improved sensitivity is desired. An orifice on the valve allows for continuous discharge of condensate. Trap will nominally pass 50 lb/hr (22.7 kg/hr) of condensate at 50 psi (3.4 barg) within 0.5°C (1°F) of saturated temperature.

**Bar Stock**—Connection fittings are not welded onto inlet and outlet pieces.

## MODELS

- CDH-AI-AO—Horizontal inlet and outlet
- CDH-AI—Horizontal inlet, vertical outlet
- CDH-AO—Vertical inlet, horizontal outlet

NOTE: Please specify if Material Test Reports (MTR) or Certificates of Conformance (COC) are required.

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.

# CDH SANITARY THERMOSTATIC STEAM TRAPS

## SPECIFICATION

Steam trap shall be of balanced pressure design with 316L welded bellows capable of releasing condensate within 5°C (10°F) of saturated pressure. All other interior wetted components shall be of 316L stainless. It shall have interior body finish of at least 20 µ in. (0.5 µm) Ra and exterior body finish of at least 32 µ in. (0.75 µm) Ra. Trap shall utilize hygienic body clamp allowing disassembly for inspection or cleaning and be entirely self draining in horizontal or angle piping configuration. Trap end connections shall be standard hygienic clamp. Thermostatic actuator shall employ a conical valve lapped to the seat. Traps shall have SLR orifice where drainage at saturated temperatures is required. Traps shall be guaranteed against defects for four years.

### MAXIMUM OPERATING CONDITIONS

PMO: Max. Operating Pressure	100 psig (6.9 barg)
TMO: Max. Operating Temperature	338°F (170°C)
PMA: Max. Allowable Pressure	150 psig (10.3 barg)
TMA: Max. Allowable Temperature	366°F (186°C)

### MATERIALS OF CONSTRUCTION

Part #	Part Name	Material
1	Body – Inlet	A276 316L
2	Clamp	304
3	Gasket	Viton 3227
4	Body – Outlet	A276 316L
5	Actuator Nut	316L
6	Impingement Plate	316L
7	Actuator	316L SS
8	Valve	316L

### BODY SURFACE FINISH:

Internal <20 µ in. (0.5 µm) Ra SFCI. External <32 µ in. (0.75 µm) Ra. Optional mechanical polishing to 10 µ in. (0.25 µm) Ra and/or electropolish SFC4

### GASKET APPROVALS:

FDA, USDA, USP Class VI, 3A Sanitary Standard, NSF

### SLR ORIFICE OPTION

Specify when immediate elimination of condensate and improved sensitivity is desired. An orifice on the valve allows for continuous discharge of condensate. Trap will nominally pass 50 lb/hr (22.7 kg/hr) of condensate at 50 psi (3.4 barg) within 0.5°C (1°F) of saturated temperature.

### POLISHING PROCEDURE

All surface finishes are achieved without the use of additional buffing, compounds or grit.

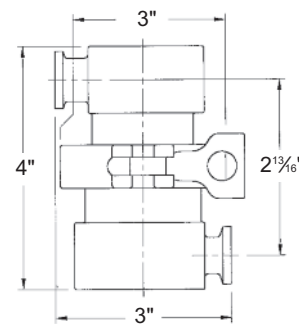
### -B BELLOWS

Maximum Capacity—lbs/hr 10°F Below Saturation (Kg/hr 5°C Below Saturation)		Differential PSIG (bar)										
Trap	Orifice Inches	5	10	20	30	40	50	60	70	80	90	100
		(0.34)	(0.7)	(1.4)	(2.1)	(2.8)	(3.4)	(4.2)	(4.9)	(5.6)	(6.2)	(6.9)
CDH	1/4	550 (249)	825 (374)	1210 (549)	1495 (678)	1750 (794)	1975 (896)	2175 (987)	2350 (1066)	2525 (1145)	2650 (1202)	2825 (1281)
	5/16	1520 (689)	1671 (758)	1869 (848)	2128 (965)	2301 (1044)	2509 (1138)	2713 (1230)	2819 (1278)	2946 (1336)	3091 (1402)	3159 (1433)

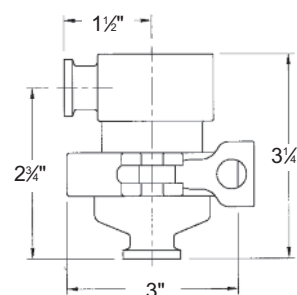
For Kg/Hr Multiply by .454

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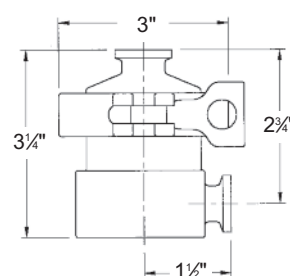
**NICHOLSON**



CDH-AI-AO – 3.9 LB. (1.8 kg)

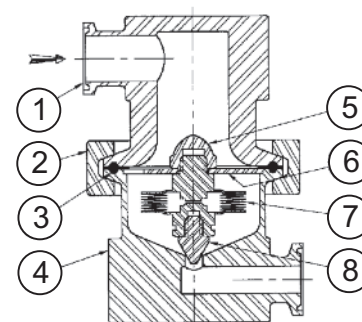


CDH-AI – 2.6 LB. (1.2 kg)



CDH-AO – 3.1 LB. (1.4 kg)

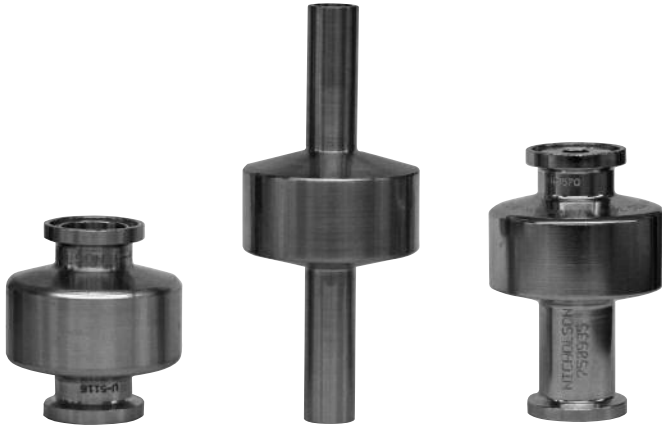
Connections:  
1/2/3/4" Hygienic Clamp



U.S. PATENT NO. 6,220,519

# DS100/DS110 THERMOSTATIC STEAM TRAPS

Pressures To 150 PSIG (10.3 barg)  
Temperatures to 366°F (186°C)



## APPLICATIONS

- CIP/SIP System Condensate Drainage
- Sterilization of Process Vessels
- Culinary Steam
- Humidifiers
- WFI System Sterilization
- Main Drips

## APPLICABLE CODES

- ASME BPE

Canadian Registration # 0E0591.9C

**Stainless Steel Body**—Body materials of all models are Type 316L Stainless Steel.

**Self Centering Valve**—Leak tight shut off. 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 Actuator**—316L Stainless welded actuator for maximum corrosion, thermal and hydraulic shock resistance. One moving part.

**Thermal and Hydraulic Shock Resistant**—Impingement plate plus welded construction prevents damage to actuator.

**Long Life Valve and Seat**—Stainless steel valve and seat matched together for water tight seal.

**Maintenance**—All models are sealed and maintenance free.

**Directional Discharge**—Erosion prevented by directing discharge into the center of pipe or tubing.

**Best Air Handling Capacity**—Fast start up and operation.

**Fast Response**—Quickly adjusts to condensate load or temperature changes.

**One Size Suits Most Services**—Universal hygienic clamp fits both 1/2" and 3/4" piping.

**Two Year Guarantee**—Trap guaranteed for two years against defects in material or workmanship.

## MODELS

- DS100—Hygienic Clamp end 1 $\frac{1}{8}$ " OAL
- DS100TE—Tube end
- DS110—Hygienic Clamp end 2 $\frac{5}{8}$ " OAL

NOTE: Please specify if Material Test Reports (MTR) or Certificates of Conformance (COC) are required.

## 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 to discharge air, non-condensibles and condensate. 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.

# DS100/DS110 THERMOSTATIC STEAM TRAPS

## SPECIFICATION

Steam trap shall be thermostatically actuated and maintenance free. Actuator shall be of single piece, fail open design consisting of 1.2" diameter, welded 316L stainless plates capable of releasing condensate within 5°C (10°F) of saturated pressure. Trap shall be constructed entirely of 316L stainless steel components with wetted body surfaces finished to 20 μ inch (0.5 μm) Ra or better. Trap shall be self draining when installed vertically in piping systems. Trap shall have tube or universal hygienic clamps. Ferruled connections shall be Tri-clamp compatible and designed to fit both 1/2" and 3/4" service. Trap shall be guaranteed against defects for 2 years.

### MAXIMUM OPERATING CONDITIONS

PMO: Max. Operating Pressure	150 psig	(10.3 barg)
TMO: Max. Operating Temperature	366°F	(170°C)
PMA: Max. Allowable Pressure	300 psig*	(20.7 barg)
TMA: Max. Allowable Temperature	500°F*	(260°C)

\*May be limited by rating of utilized end connection.

### MATERIALS OF CONSTRUCTION

Body– Inlet.....	A276 316L
Actuator.....	316L
Body – Outlet.....	IA276 316L
Valve.....	316L

### BODY SURFACE FINISH

Internal <20 μ in. (0.5 μm) Ra SFC1. External <32 μ in. (0.75 μm) Ra. Optional mechanical polishing to 10 μ in. (0.25 μm) Ra and/or electropolish SFC4

### SERVICE NOTES

Trap is designed to be self draining for vertical installation (discharge down). 1/2" - 3/4" ferrule service trap should be installed with 3/4" inlet gasket.

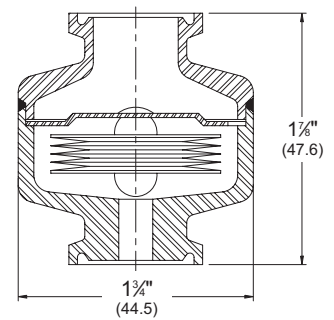
### SLR ORIFICE OPTION

Specify when immediate elimination of condensate and improved sensitivity is desired. An orifice on the valve allows for continuous discharge of condensate. Trap will nominally pass 50 lb/hr (22.7 kg/hr) of condensate at 50 psi (3.4 barg) within 0.5°C (1°F) of saturated temperature.

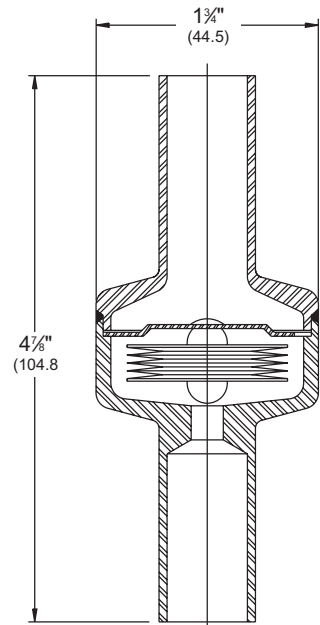
### CHECK VALVE OPTION

The DS110 can be provided with an in-line check valve, which replaces the standard tri-clamp gasket on the outlet of the trap. The body material is PTFE, the o-ring is FDA VITON and the spring is 316 SS. The cracking pressure is 0.125 PSI (+/- 15%). Contact factory for other check valve options.

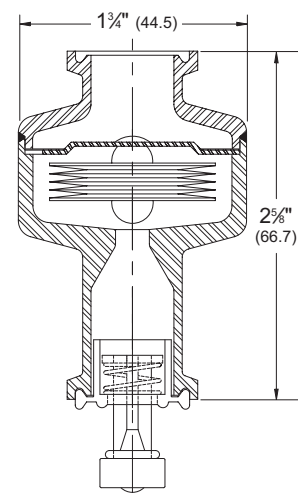
Maximum Capacity—lbs/hr 10°F Below Saturation (Kg/hr 5°C Below Saturation)		Differential PSIG (bar)												
Trap	Orifice Inches	5	10	20	30	40	50	60	70	80	90	100	125	150
		(0.34)	(0.7)	(1.4)	(2.1)	(2.8)	(3.4)	(4.2)	(4.9)	(5.6)	(6.2)	(6.9)	(8.62)	(10.3)
DS100	1/4	550 (249)	825 (374)	1210 (549)	1495 (678)	1750 (794)	1975 (896)	2175 (987)	2350 (1066)	2525 (1145)	2650 (1202)	2825 (1281)	3140 (1424)	3425 (1554)



DS100 HYGIENIC CLAMP CONNECTION  
1/2" & 3/4"  
w eight .4 lbs (0.18)



DS100TE TUBE CONNECTION  
(1/2" & 3/4")  
w eight .4 lbs (0.18)



DS110 HYGIENIC CLAMP CONNECTION (3/4")  
w eight .4 lbs (0.18)  
Shown with optional Check Valve

Connections: 1/2" – 3/4" Tube