

November 2021

Spence™ NTD600 Series Steam Trap



WARNING

Failure to follow these instructions or to properly install and maintain this equipment could result in an explosion, fire and/or chemical contamination causing property damage and personal injury or death.

Steam Trap must be installed, operated and maintained in accordance with federal, state and local codes, rules and regulations and Emerson Process Management Regulator Technologies, Inc. (Emerson) instructions.

If the steam trap vents gas or a leak develops in the system, service to the unit may be required. Failure to correct trouble could result in a hazardous condition.

Installation, operation and maintenance procedures performed by unqualified personnel may result in improper adjustment and unsafe operation. Either condition may result in equipment damage or personal injury. Only a qualified person shall install or service NTD600 Series steam traps.

Introduction

Scope of the Manual

This manual provides instructions for the installation, maintenance and parts ordering for NTD600 Series steam traps.

Product Description

NTD600 Series is a thermodynamic steam trap. Body is stainless steel construction and hardened throughout. Seat is integral to body. Cover seals to body without gaskets or seals.

NTD600 Series is used in steam tracing, drips and heating applications.

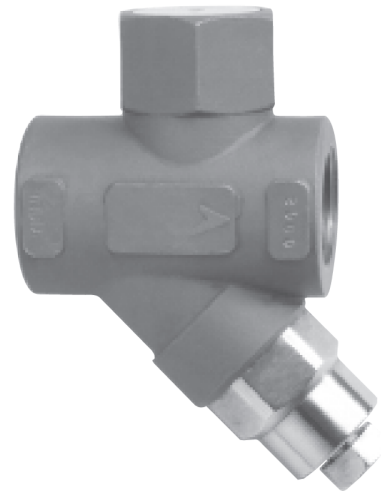
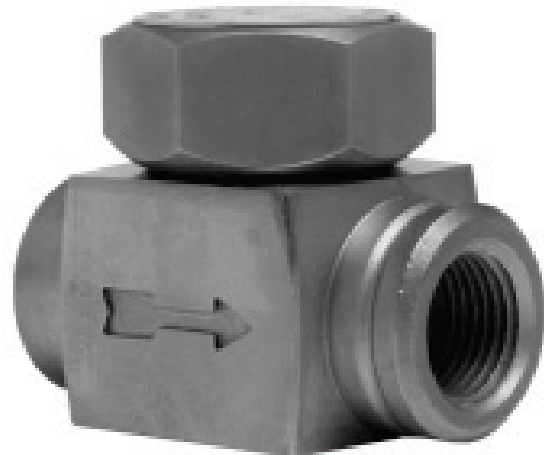


Figure 1. NTD600 Series Steam Traps

NTD600 Series

Specifications

This section lists the specifications for NTD600 Series Steam Trap. Factory specifications are stamped on the nameplate fastened on the control valve and actuator at the factory.

Available Configurations Type NTD600 : Thermodynamic Disk Trap Type NTD600S : With integral strainer Type NTD600B : With blowdown valve	Pressure Range⁽¹⁾ 2 to 600 psig / 0.14 to 41.3 bar
Body Size NPS 3/8, 1/2, 3/4 and 1 / DN 10, 15, 20 and 25	Maximum Back Pressure⁽¹⁾ 80% of Line Pressure
Maximum Temperature⁽¹⁾ 800°F / 426°C	Materials of Construction Body : Stainless steel Cap and Disk : Stainless steel Blow Down Valve : Stainless steel Screen : Stainless steel

1. The pressure/temperature limits in this Instruction Manual and any applicable standard or code limitation should not be exceeded.

Principle of Operation

Incoming air and condensate flow through the trap body and into the control chamber. Line pressure raises the disk off the seat allowing complete discharge. When flashing condensate enters the cartridge, flow velocity increases, creating low pressure underneath the disk. Flashing condensate at high velocity strikes the inside wall of the disk chamber and is deflected to the top of the disk causing pressure buildup. The disk is forced down onto the seat by this pressure imbalance. The trap remains closed as flashed vapor in the control chamber keeps the disk seated.

Pressure inside the cap is not lowered until the trapped flash vapor condenses due to body radiation. Condensing steam lowers the pressure above the disk. Disk is then lifted and the cycle repeated. See Figure 2.

Installation



WARNING

Personal injury, property damage, equipment damage or leakage due to escaping steam or bursting of pressure containing parts may result if this trap is over pressured or is installed where service conditions could exceed the limits given in the specifications or where conditions exceed any ratings of the adjacent piping or piping connections. To avoid such injury or damage, provide pressure-relieving or pressure-limiting devices (as required by the appropriate code, regulation, or standard) to prevent service conditions from exceeding those limits.

To avoid personal injury or property damage from sudden release of pressure, isolate the steam trap from the pressure system and release all pressure and steam before performing maintenance operations.

1. Before installing trap, blow all dirt and scale from apparatus and piping.
2. Install trap with arrow on body in flow line as close as possible to apparatus with strainer and valve upstream of trap as shown in Figure 3.
3. Pitch all drain lines toward trap.

Note

Approved practice is to install separate traps on each piece of apparatus to be drained. Steam supplied to inlets of several units may be of uniform pressure, but invariably there is a differential at the outlets. Although this differential may be small, unit discharging highest pressure will control the action of trap, while other units become air-bound and waterlogged.

Piping upstream and downstream of trap should be at least equal to or one size larger than trap connection. Trap installation as shown in Figure 3 is freeze-proof.

4. Retighten cap screws of all socket weld traps after field or shop welding. See recommended torque values on Table 1.
5. Record the location of the trap for maintenance accessibility.

Maintenance



WARNING

If a leak develops, service to the unit may be required. Failure to correct trouble could result in a hazardous condition. Only a qualified person must install or service the unit.

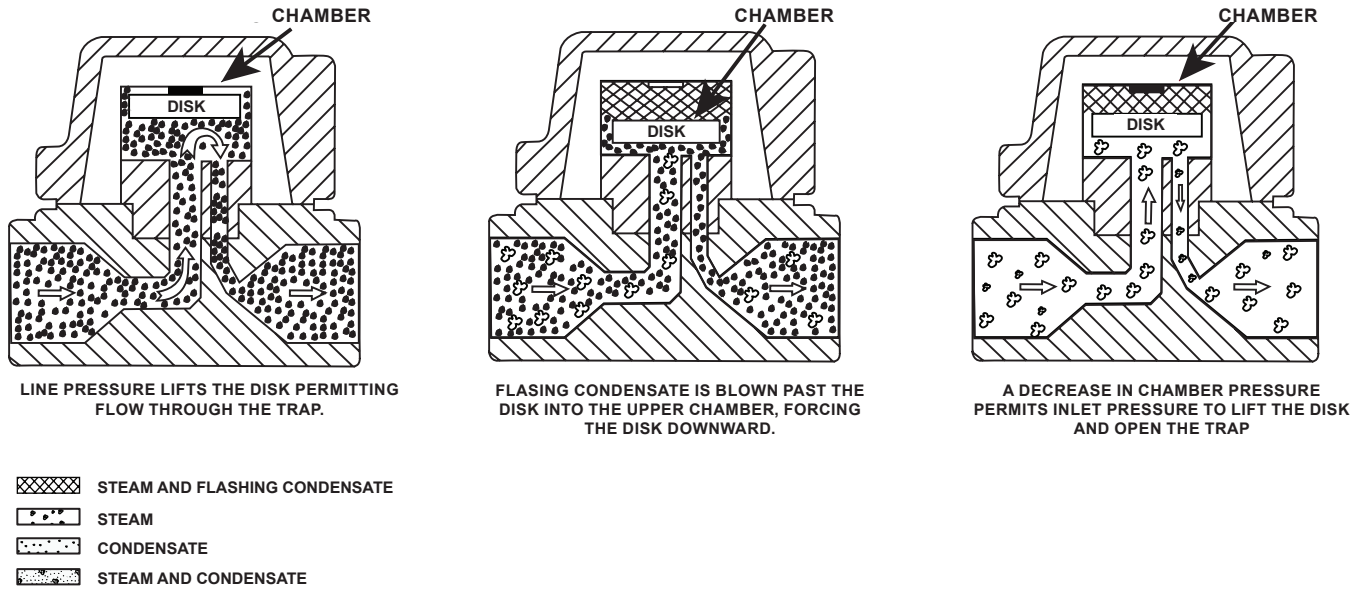


Figure 2. NTD600 Series Steam Traps Operational Schematics

To avoid personal injury or property damage from sudden release of pressure, isolate the steam trap from the pressure system and release all pressure and steam before performing maintenance operations.

Disk or Body Maintenance

1. Unscrew the cap using a suitable spanner.
2. Clean disk or body unit with soft cloth and solvent. Do not wire brush or use any rough implement. Dirt or sediment on these parts will cause abnormal operation.
3. Reassemble unit with groove in disk down. See Table 1 for proper torque values.
4. Apply anti-seize compound on all threads and gaskets. Avoid getting compound on disk or base seating surfaces.

Strainer Maintenance

1. Perform a periodic cleaning of strainer
2. Unscrew the strainer plug using a suitable spanner.
3. Withdraw the screen and clean it or replace if damaged.
4. For Type NTD600B - steam trap with blowdown valve: Open the valve to clean the screen.
5. To reassemble, reverse the procedure.

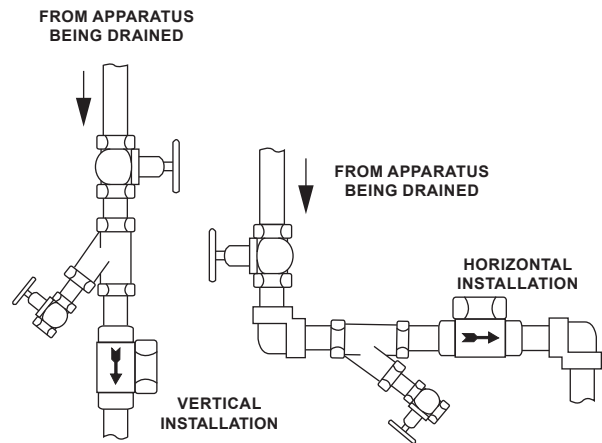


Figure 3. NTD600 Series Steam Traps Installation

NTD600 Series

Parts Ordering

When ordering parts, it is essential that the steam trap type, service and serial number be stated.

Select part by item number, but order by part number. Specify complete part number when ordering.

Parts List

Key	Description	Part Number
1	Body	
	NPS 3/8 / DN 10	WAL422922
	NPS 1/2 / DN 15	WAL422923
	NPS 3/4 / DN 20	WAL422924
	NPS 1 / DN 25	WAL422925
2	Cap	
	NPS 3/8 / DN 10	WAL422927
	NPS 1/2 / DN 15	WAL422928
	NPS 3/4 / DN 20	WAL422929
	NPS 1 / DN 25	WAL422930
3	Disk	
	NPS 3/8 / DN 10	WAL422931
	NPS 1/2 / DN 15	WAL422932
	NPS 3/4 / DN 20	WAL422933
	NPS 1 / DN 25	WAL422934

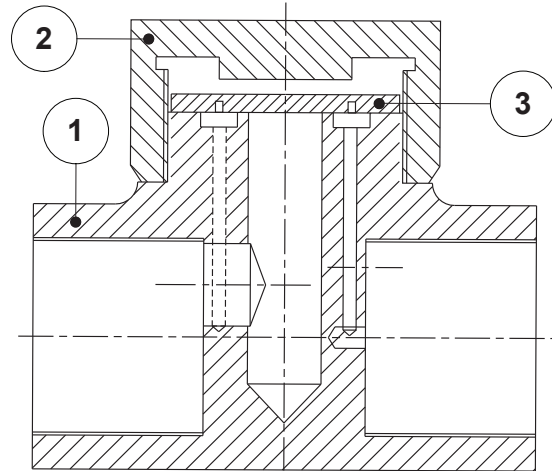


Figure 4. NTD600 Series Steam Traps Assembly Drawing

Table 1. NTD600 Series Steam Traps Torque Values

TRAP SIZE		COVER TORQUE	
NPS	DN	Ft-lbs	N·m
3/8	10	65 to 75	88.1 to 102
1/2	15	85 to 95	115 to 129
3/4	20	105 to 115	142 to 156
1	25	120 to 130	163 to 183

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