



TEMPERATURE CONTROL STEAM TRAPS

**LEX3N-TZ
FX1**

With Built-in Scale Removal Function

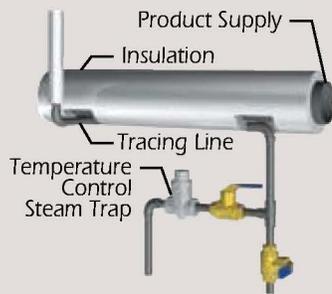


Maintain the proper temperature of oils and other fluids in supply piping and heating tanks.

What is a Temperature Control Steam Trap?

Temperature control steam traps can control the temperature of discharged condensate*. Condensate with temperatures above the adjustable set temperature is held back in the piping, allowing the sensible heat in the condensate to be used for various heating applications.

The temperature control trap is useful for maintaining the fluidity of heavy oils, facilitating fluid pumping and transportation, helping prevent chemical or physical changes in the product due to cooling and enabling pre-freeze drainage of water in transportation pipes in cold areas.



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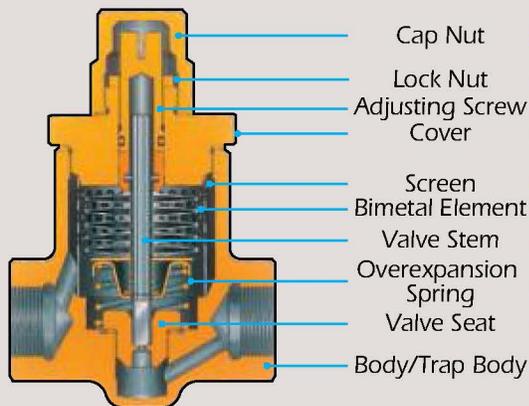
* Temperature of the condensate accumulating in the equipment or pipe and the product temperature cannot be set.

Benefits

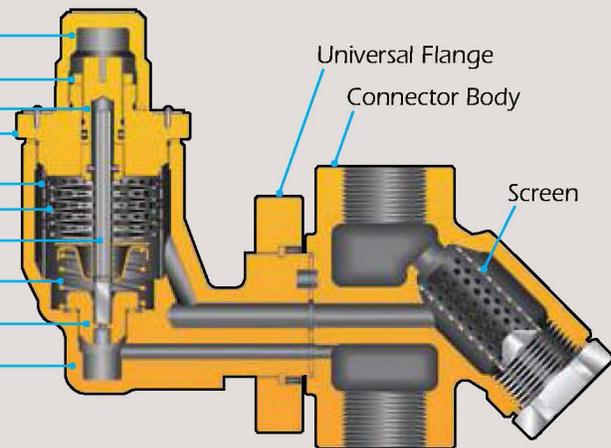
1. Maintains temperature at preset levels by adjusting the valve closing temperature.
2. Saves steam by heating the fluid to the optimum temperature utilizing the sensible heat of condensate.
3. No steam leakage.
4. Condensate discharge temperature can be adjusted without disconnecting the trap from the piping.
5. Initial air and cold condensate can be discharged quickly, with no air binding.
6. Scale removal function can eliminate obstructive buildup from the valve seat, even during operation.
7. All stainless construction.
8. The overexpansion mechanism prevents possible damage to the bimetal from superheated steam.
9. Built-in screen ensures trouble-free operation.
10. Easy, inline access to internal parts simplifies cleaning and maintenance.
11. Can be used for pre-freeze drainage.
12. Quiet operation.
13. **FX1 QuickTrap**, with two-bolt universal connector, enables quick trap replacement.

Construction

LEX3N-TZ

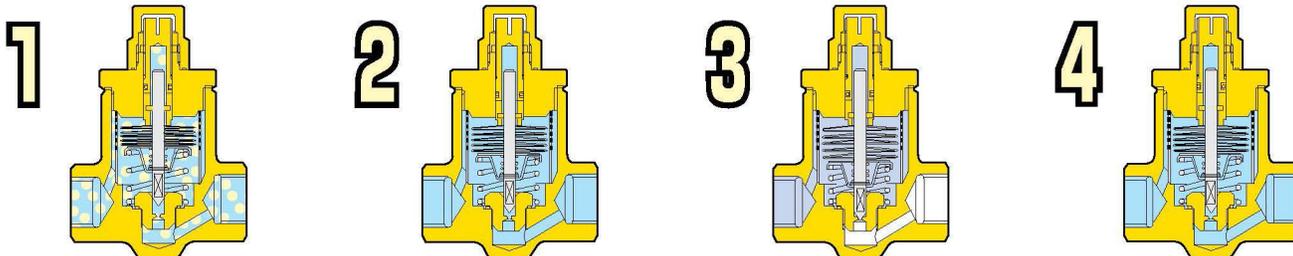


FX1 QuickTrap®



Wetted parts of **LEX3N-TZ / FX1** are Stainless Steel

Operation



1. At startup, the bimetal element is contracted. The coil spring holds the valve open, quickly discharging the cold air and initial condensate.

2. When the condensate temperature rises, the bimetal begins to expand. The valve begins to close, allowing less condensate to flow.

3. When the condensate reaches the preset temperature, the valve shuts tightly, stopping all condensate discharge.

4. When the condensate temperature drops below the preset level, the element contracts. The coil spring opens the valve, allowing condensate to be discharged. Steps 3 and 4 alternate as condensate temperature changes.

Scale Removal Function

Clogs in the valve seat can be eliminated by simply isolating the trap, no need to remove the trap from the line.

The temperature control steam trap used in tracing lines fulfills its functional requirement by having a small opening in the valve seat designed to reduce flow velocity. As a result, tracing traps have a greater tendency than other traps to become blocked due to scale and other buildup such as copper leaching. The scale removal device enables the elimination of obstructions from the valve seat.

Operating Scale Removal Device

1. Using a flat-head screwdriver, turn the adjusting screw. The sharp edge of the valve head shaves off scale and other buildup blocking the valve seat orifice.
2. By raising the adjusting screw, steam or condensate blows out the residue. This action also cleans the other surfaces on the valve seat.



Clogging due to Scale



After Cleaning

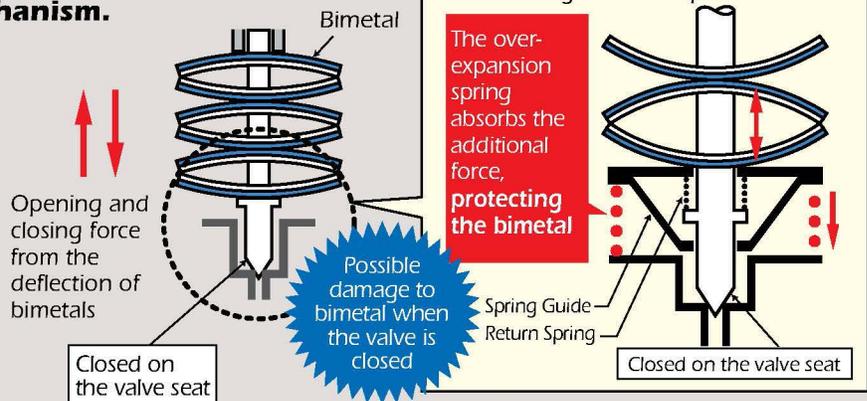


Not only is the obstruction removed from the orifice, but the surrounding valve seat surface is cleaned as well, a result of loosening the buildup followed by steam and condensate blowdown.

Overexpansion Mechanism

Damage to the bimetal is prevented by the overexpansion mechanism.

Temperature control steam traps function through the deflection of bimetals due to rising or falling temperature, allowing the valve to open and close. Conventional bimetals are vulnerable to damage following temperature rise when the valve is seated, or when debris prevents the valve from fully closing, but the overexpansion spring provides overheat protection of the bimetal up to 390°F above the set value.



Temperature Setting

The discharge temperature can be adjusted and set to the desired temperature by simply adjusting the screw on the top of the LEX3N-TZ / FX1 with a flat-head screwdriver.

Increasing the set temperature

▶ Turn the screw: **Counterclockwise**

Decreasing the set temperature

▶ Turn the screw: **Clockwise**

Standard Factory Setting (Zero "0" Position)

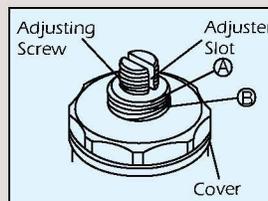
The standard "0" position is the position where the point (A), the bottom of the adjusting screw slot is even with point (B), the top surface of the cap threads.

LEX3N-TZ / FX1: 212°F at 130 psig

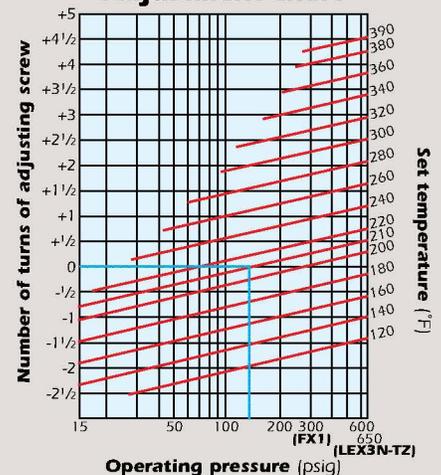
From "0" on the graph, adjust the screw to the desired temperature

■ : counterclockwise

■ : clockwise



Adjustment chart



DO NOT REMOVE CAP NUT OR COVER WHILE TRAP IS UNDER PRESSURE. Allow trap body temperature to cool to room temperature before removing cap nut or cover. Failure to do so may result in burns or other injury. READ INSTRUCTION MANUAL CAREFULLY.

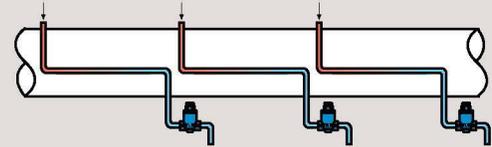
Correct Usage of Temperature Control Steam Traps

Examples of Correct Use:

✓ Applications designed to utilize sensible heat of condensate

- **SUITABLE** for steam tracing lines or storage tank coils **ONLY IF** the required product viscosity will be maintained when the condensate is sub-cooled at least 27 °F, even to the point of the condensate having a lower temperature than the product temperature.
- **SUITABLE** for use on instrument enclosures **ONLY IF** the steam or condensate temperature in the enclosures will **NOT** damage the instrument.
- **SUITABLE** for use as an external air vent for TLV steam traps, or for pre-freeze drainage to help prevent freezing of condensate lines.

Example: Steam tracing on an oil supply pipe



Examples of Incorrect Use:

✗ Applications requiring the rapid removal of condensate or applications designed to use latent heat of steam

- **DO NOT USE** on any application **except** steam tracing lines, storage tank coils, instrument enclosures, steam trap air venting, and pre-freeze drainage of condensate lines.
- **NOT SUITABLE FOR USE** on steam tracing lines or storage tank coils **IF** the required product viscosity will **NOT** be maintained when the condensate is sub-cooled at least 27 °F.
- **NOT SUITABLE FOR USE** on steam tracing lines or storage tank coils **IF** the heated product will solidify at temperatures of 176 °F or higher. (e.g., asphalt or sulfur).
- **NOT SUITABLE FOR USE** on steam tracing lines or storage tank coils designed to use only the latent heat of steam to maintain product fluidity at temperatures of 176 °F or less. (e.g., certain heavy oils).

Incorrect use of a temperature control steam trap could lead to significant system problems. Careful consideration is required, bearing the following in mind.

Heating with sensible heat

➔ Temperature control steam trap

Heating with latent heat

➔ General purpose steam trap

Specifications

Model	Connection	Size (in)	Maximum Operating Pressure (psig)	Minimum Operating Pressure (psig)	Maximum Operating Temperature (°F)	Condensate Temperature Setting Range (°F)	Maximum Discharge Capacity** (lb/h)
LEX3N-TZ	Screwed	3/8, 1/2, 3/4, 1	650	15	662	120 - 390*	970
	Socket Weld						
	Flanged						
FX1	Screwed	1/2, 3/4, 1	300	15	662	120 - 390*	650
	Socket Weld						
	Flanged						

* Set temperature should be more than 27 °F below the steam saturation temperature; see graph, right

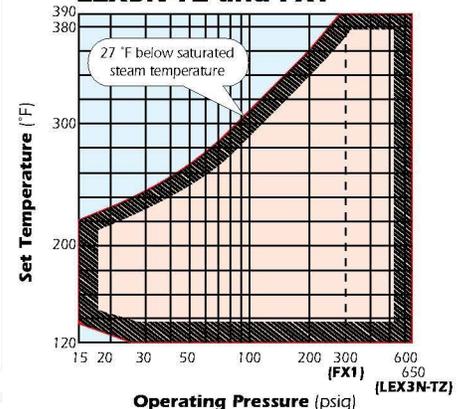
** Actual discharge capacity will vary depending on operating conditions; see specification data sheet (SDS) for details

PRESSURE SHELL CONDITIONS (**NOT** OPERATING CONDITIONS): Maximum Allowable Pressure (psig) PMA: 900
Maximum Allowable Temperature (°F) TMA: 800

The trap may be installed either horizontally or vertically. However, when installing horizontally, make sure that the trap is installed with the temperature adjusting screw positioned higher than the piping in which the trap is installed. (Upside-down installation is not permissible.)

Temperature Setting Range

LEX3N-TZ and FX1



To avoid abnormal operation, accidents or serious injury, **DO NOT** use this product outside the specification range. Local regulations may restrict the use of this product to below the conditions quoted.



DO NOT DISASSEMBLE OR REMOVE THIS PRODUCT OR USE THE SCALE REMOVAL FUNCTION WHILE IT IS UNDER PRESSURE. Allow internal pressure of this product to equal atmospheric pressure and its surface to cool to room temperature before disassembling, removing or using the scale removal feature. Failure to do so could cause burns or other injury. **READ INSTRUCTION MANUAL CAREFULLY.**

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Manufacturer
TLV CO., LTD.
Kakogawa, Japan
is approved by LRQA Ltd. to ISO 9001/14001

