

INSTRUCTION MANUAL

Keep this manual in a safe place for future reference

TLV® Radiator Trap RT3A

Thank you for purchasing the TLV radiator trap. This product has been thoroughly inspected before being shipped from the factory. When the product is delivered, before doing anything else, check the specifications and external appearance to make sure nothing is out of the ordinary. Before beginning installation or maintenance, please read this manual to ensure correct usage of the product.

This instruction manual is needed not only for installation, but for subsequent troubleshooting.

Please keep it in a safe place for future reference.

The contents of this manual are subject to change without notice.



1. Safety Considerations

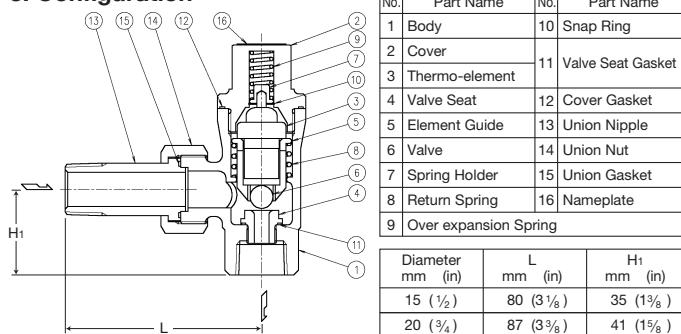
CAUTION	Use only under conditions in which no water hammer will occur. The impact of water hammer may damage the product, leading to fluid discharge, which may cause burns or other injury.
	Install properly and DO NOT use this product outside the recommended operating pressure, temperature and other specification ranges. Improper use may result in such hazards as damage to the product or malfunctions which may lead to serious accidents. Local regulations may restrict the use of this product to below the conditions quoted.
	Use only under conditions in which no freeze-up will occur. Freezing may damage the product, leading to fluid discharge, which may cause burns or other injury.
	Take measures to prevent people from coming into direct contact with product outlets. Failure to do so may result in burns or other injury from the discharge of fluids.
	Do not use excessive force when connecting threaded pipes to the product. Over-tightening may cause breakage leading to fluid discharge, which may cause burns or other injury.
	Be sure to use only the recommended components when repairing the product, and NEVER attempt to modify the product in any way. Failure to observe these precautions may result in damage to the product or burns or other injury due to malfunction or the discharge of fluids.
	When disassembling or removing the product, wait until the internal pressure equals atmospheric pressure and the surface of the product has cooled to room temperature. Disassembling or removing the product when it is hot or under pressure may lead to discharge of fluids, causing burns, other injuries or damage.
	Installation, inspection, maintenance, repairs, disassembly, adjustment and valve opening/closing should be carried out only by trained maintenance personnel.

2. Specifications

Model	RT3A	
Maximum Operating Pressure	PMO	0.3 MPaG / 3.0 barg / 45 psig
Maximum Operating Temperature	TMO	144 °C / 292 °F
Maximum Allowable Pressure	PMA*	0.3 MPaG / 3.0 barg / 45 psig
Maximum Allowable Temperature	TMA*	144 °C / 292 °F
Set Condensate Discharge Temperature		approx. 95 to 100 °C / 203 to 212 °F

* Maximum allowable pressure (PMA) and maximum allowable temperature (TMA) are PRESSURE SHELL DESIGN CONDITIONS (**NOT OPERATING CONDITIONS**)

3. Configuration



4. Proper Installation

- Before installation, be sure to remove all protective seals.
- Before installing the product, open the inlet valve and blow out the piping to remove any piping scraps, dirt and oil. Close the inlet valve after blowdown.
- Install the product so the arrow on the body is pointing in the direction of condensate flow.
- Install in the piping with the inlet horizontal and the outlet vertical.
- Install a condensate outlet valve and piping.
- Open the inlet and outlet valves gradually and check to make sure that the product functions properly.

If there is a problem, determine the cause using the "Troubleshooting" section in this manual.

5. Inspection and Maintenance

Operational Check: A visual inspection of the following items should be done on a daily basis to determine whether the product is operating properly or has failed. Periodically (at least biannually) the operation should also be checked by using diagnostic equipment such as a stethoscope.

If the trap should fail, it may cause damage to piping and equipment, resulting in faulty or low quality products or losses due to leakage.

Normal:

Condensate is discharged together with a small amount of flash steam. The trap usually operates intermittently or with continuous dripping.

Blocked: (No Discharge)

No condensate is discharged. The surface temperature of the trap is low.

Blowing:

Live steam continually flows from the outlet and there is a continuous hissing sound of flow.

Steam Leakage: Live steam is discharged through the trap outlet together with condensate, accompanied by a high-pitched sound.

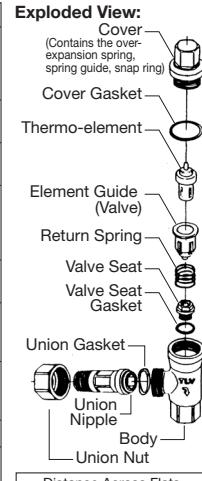
(When conducting a visual inspection, flash steam is sometimes mistaken for steam leakage. For this reason, the use of a steam trap diagnostic instrument [such as TLV Pocket TrapMan if appropriate] in conjunction with the visual inspection is highly recommended.)

Procedure	
Gaskets	Check for warping and damage
Valve	Check for scratches, warping and wear
Coil Springs	Check for abnormalities
Thermo-element	Check for signs of wax leakage
Valve Seat	Check for scratches, warping and wear

6. Disassembly / Reassembly

Use the following procedures to remove components. Use the same procedures in reverse to reassemble.

Part Name	During Disassembly	During Reassembly
Union Nut	If removing the trap from the piping, first remove the union nut with a wrench (see size right)	—
Union Nipple	Remove from piping only if necessary (see size right)	—
Union Gasket	—	Replace with new if warped or damaged
Cover	Remove the cover from the body using a 24 mm (1 5/16") wrench (do not disassemble the cover itself)	Tighten to a torque of 40 N·m (29 lbf·ft)
Cover Gasket	—	Replace with new if warped or damaged
Thermo-element	Remove from the body being careful not to bend the push-pin	Replace with a new thermo-element if damaged or leaking wax
Element Guide (Valve)	Remove from the body being careful not to scratch the valve seating surface	Insert into body being careful not to scratch the valve surface
Return Spring	Remove from the body	Place inside body
Valve Seat	Remove from the body using a 12 mm (1 5/16") box wrench, being careful not to scratch seat surface; tighten to a torque of 15 N·m (11 lbf·ft)	Insert being careful not to scratch seat surface; tighten to a torque of 15 N·m (11 lbf·ft)
Valve Seat Gasket	—	Replace with new if warped or damaged



7. Troubleshooting

When the product fails to operate properly, use the following table to locate the cause.

Problem	Cause	Remedy
No condensate is discharged or discharge is poor	There is a build-up of sticky scale between the element guide and the body	Clean the element guide and the inside of the body
	The thermo-element is misshapen	Replace with a new thermo-element
	The trap operating pressure exceeds the maximum specified pressure or there is insufficient pressure differential between the trap inlet and outlet	Compare specifications and actual operating conditions
	The capacity of the trap is insufficient	Compare specifications and actual operating conditions
	Steam locking has occurred	Study and correct the piping
	The thermo-element is leaking wax	Replace with a new thermo-element
Steam is discharged or leaks from the outlet (blowing) (steam leakage)	There is a build-up of sticky scale between the element guide and the body	Clean the element guide and the inside of the body
	The valve and/or valve seat is worn	Replace with a new valve and/or valve seat
	The valve is catching due to sticky build-up	Clean the valve and valve seat surfaces
	The valve seat gasket is damaged	Replace with a new gasket
	The cover gasket is damaged	Replace with a new gasket
Steam or condensate is leaking from a place other than the outlet	Improper cover tightening torque was used	Tighten to the proper torque
	Stress from the piping is exerted on the union	Correct the piping

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TLV EXPRESS LIMITED WARRANTY

Subject to the limitations set forth below, TLV Corporation, a North Carolina corporation ("TLV") warrants that products which are sold by it, TLV CO., LTD., a Japanese corporation ("TLVJ") or TLV International, Inc., a Japanese corporation ("TII"), (hereinafter the "Products") are designed and manufactured by TLVJ, conform to the specifications published by TLV for the corresponding part numbers (the "Specifications") and are free from defective workmanship and materials. With regard to products or components manufactured by unrelated third parties (the "Components"), TLV provides no warranty other than the warranty from the third party manufacturer(s), if any.

Exceptions to Warranty

This warranty does not cover defects or failures caused by:

1. improper shipping, installation, use, handling, etc., by other than TLV or service representatives authorized by TLV; or
2. dirt, scale or rust, etc.; or
3. improper disassembly and reassembly, or inadequate inspection and maintenance by other than TLV or service representatives authorized by TLV; or
4. disasters or forces of nature or Acts of God; or
5. abuse, abnormal use, accidents or any other cause beyond the control of TLV; or
6. improper storage, maintenance or repair; or
7. operation of the Products not in accordance with instructions issued with the Products or with accepted industry practices; or
8. use for a purpose or in a manner for which the Products were not intended; or
9. use of the Products in a manner inconsistent with the Specifications; or
10. use of the Products with Hazardous Fluids (fluids other than steam, air, water, nitrogen, carbon dioxide and inert gases (helium, neon, argon, krypton, xenon and radon)); or
11. failure to follow the instructions contained in the TLV Instruction Manual for the Product.

Duration of Warranty

This warranty is effective for a period of the earlier of: (i) three (3) years after delivery of Products to the first end user in the case of sealed SST-Series Products for use in steam pressure service up to 650 psig; (ii) two (2) years after delivery of Products to the first end user in the case of PowerTrap® units; or (iii) one (1) year after delivery of Products to the first end user in the case of all other Products. Notwithstanding the foregoing, asserting a claim under this warranty must be brought by the earlier of one of the foregoing periods, as applicable, or within five (5) years after the date of delivery to the initial buyer if not sold initially to the first end user.

ANY IMPLIED WARRANTIES NOT NEGATED HEREBY WHICH MAY ARISE BY OPERATION OF LAW, INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE AND ANY EXPRESS WARRANTIES NOT NEGATED HEREBY, ARE GIVEN SOLELY TO THE INITIAL BUYER AND ARE LIMITED IN DURATION TO ONE (1) YEAR FROM THE DATE OF SHIPMENT BY TLV.

Exclusive Remedy

THE EXCLUSIVE REMEDY UNDER THIS WARRANTY, UNDER ANY EXPRESS WARRANTY OR UNDER ANY IMPLIED WARRANTIES NOT NEGATED HEREBY (INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE), IS **REPLACEMENT**; PROVIDED: (a) THE CLAIMED DEFECT IS REPORTED TO TLV IN WRITING WITHIN THE APPLICABLE WARRANTY PERIOD, INCLUDING A DETAILED WRITTEN DESCRIPTION OF THE CLAIMED DEFECT AND HOW AND WHEN THE CLAIMED DEFECTIVE PRODUCT WAS USED; AND (b) THE CLAIMED DEFECTIVE PRODUCT AND A COPY OF THE PURCHASE INVOICE IS RETURNED TO TLV, FREIGHT AND TRANSPORTATION COSTS PREPAID, UNDER A RETURN MATERIAL AUTHORIZATION AND TRACKING NUMBER ISSUED BY TLV. ALL LABOR COSTS, SHIPPING COSTS, AND

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Severability

Any provision of this warranty which is invalid, prohibited or unenforceable in any jurisdiction shall, as to such jurisdiction, be ineffective to the extent of such invalidity, prohibition or unenforceability without invalidating the remaining provisions hereof, and any such invalidity, prohibition or unenforceability in any such jurisdiction shall not invalidate or render unenforceable such provision in any other jurisdiction.

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