

INSTRUCTION MANUAL

Keep this manual in a safe place for future reference

TLV DISC TYPE CHECK VALVES CK3 SERIES

CK3M / CK3T / CK3R



CK3MG



CKF3M / CKF3R



CKF3MG / CKF3RG



Manufacturer

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Introduction

Before beginning installation or maintenance, please read this manual to ensure correct use of the product. Keep the manual in a safe place for future reference.

Disc type check valves can be used on fluid lines for steam, air, hot and cold water, with minimum opening differential pressure from 0.001 MPa (0.15 psi) and maximum operating pressure to 3.0 MPaG (425 psig), and temperatures up to 350 °C (662 °F). (Do not use for toxic, flammable or otherwise hazardous fluids.) Due to their compact design, the check valves can easily be installed in places where space is limited, and may be installed either horizontally or vertically. They can be used even with an extremely low pressure differential.



1 MPa = 10.197 kg/cm², 1 bar = 0.1 MPa



For products with special specifications or with options not included in this manual, contact TLV for instructions.

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


1. Safety Considerations

- Read this section carefully before use and be sure to follow the instructions.
- Installation, inspection, maintenance, repairs, disassembly, adjustment and valve opening/closing should be carried out only by trained maintenance personnel.
- The precautions listed in this manual are designed to ensure safety and prevent equipment damage and personal injury. For situations that may occur as a result of erroneous handling, three different types of cautionary items are used to indicate the degree of urgency and the scale of potential damage and danger: DANGER, WARNING and CAUTION.
- The three types of cautionary items above are very important for safety; be sure to observe all of them, as they relate to installation, use, maintenance, and repair. Furthermore, TLV accepts no responsibility for any accidents or damage occurring as a result of failure to observe these precautions.

|  DANGER |  WARNING |  CAUTION |
|---|--|--|
| Indicates an urgent situation which poses a threat of death or serious injury. | Indicates that there is a potential threat of death or serious injury. | Indicates that there is a possibility of injury or equipment/product damage. |

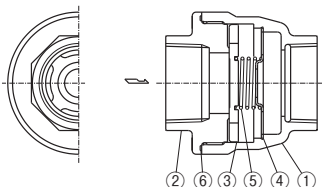
| | |
|---|--|
|  WARNING | DO NOT use for toxic, flammable or otherwise hazardous fluids. Use only for fluids listed in the specification table. This product is for intended use only. Improper use may result in such hazards as damage to the product or malfunctions that may lead to serious accidents. |
|  CAUTION | 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 that may lead to serious accidents. Local regulations may restrict the use of this product to below the conditions quoted. 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. |

Continued on next page

| | |
|---|---|
|  CAUTION | <p>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.</p> |
| | <p>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.</p> |
| | <p>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.</p> |
| | <p>Use 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.</p> |

2. Configuration

CK3M / CK3T / CK3R



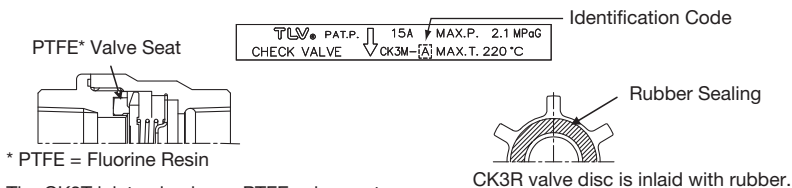
| No. | Name | M | R |
|-----|---------------|---|---|
| 1 | Body | | |
| 2 | Inlet Union | | |
| 3 | Valve Disc | | ✓ |
| 4 | Spring Holder | | |
| 5 | Coil Spring | | ✓ |
| 6 | Union Gasket | ✓ | ✓ |

Replacement kits available: M = Maintenance parts
R = Repair parts

NOTE:

- When requesting a Repair Kit, please specify the minimum opening differential pressure.
- For nominal sizes 15 - 25 mm (1/2" - 1"), confirm that an identification code of "A" or later is present on the nameplate as shown in the figure below when requesting replacement parts. Both Maintenance Kit and Repair Kit will be available for products with such a code. If no such code is shown on the nameplate, please contact TLV.
- For nominal sizes 32-50 mm (1 1/4" - 2"), both Maintenance Kit and Repair Kit are available regardless of identification code.

Location of identification code on nameplate

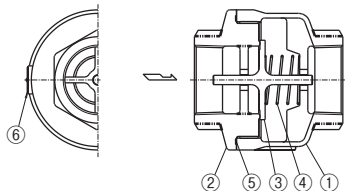


* PTFE = Fluorine Resin

The CK3T inlet union has a PTFE valve seat insert.

CK3R valve disc is inlaid with rubber.

CK3MG

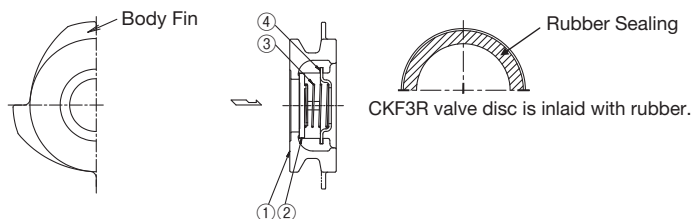


| No. | Name | M | R |
|-----|--------------|---|---|
| 1 | Body | | |
| 2 | Inlet Union | | |
| 3 | Valve Disc | | ✓ |
| 4 | Coil Spring | | ✓ |
| 5 | Union Gasket | ✓ | ✓ |
| 6 | Nameplate | | |

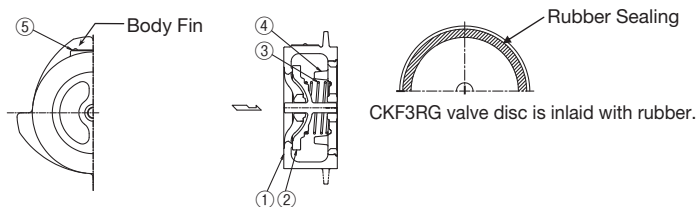
Replacement kits available: M = Maintenance parts
R = Repair parts

NOTE: When requesting a Repair Kit, please specify the minimum opening differential pressure.

CKF3M / CKF3R

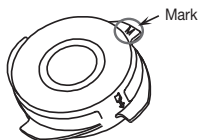


CKF3MG / CKF3RG



| No. | Name |
|-----|-----------------------|
| 1 | Body |
| 2 | Valve Disc |
| 3 | Coil Spring |
| 4 | Spring Holder |
| 5 | Nameplate (CKF3M(R)G) |

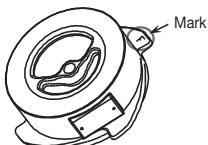
Replacement parts are not available for CKF3 series (flangeless) check valves, as special equipment is required for assembly/disassembly.



CKF3M / CKF3R

| Mark | Model | Sealing Material |
|------|-----------------|-----------------------------------|
| M | CKF3M | Metal |
| – | CKF3MG | Metal (without "M" mark) |
| F | CKF3R CKF3RG | Fluorine Rubber (FPM) (Standard) |
| N | | Nitrile Rubber (NBR)* |
| E | | Ethylene Propylene Rubber (EPDM)* |

*Available only by special order.



CKF3MG / CKF3RG

Sealing material only indicated on CKF3RG.

| Flange | Flange Face Finish |
|--------------------|---|
| JIS ASME JPI | Surface roughness: 3.2 - 6.3µmRa (125 - 250 AARH) Serration ASME B16.5 Serration |
| PN | DIN Serration |

3. Specifications

Connectable Flange Standards

This applies to the flangeless connections; CKF3M, CKF3R, CKF3MG and CKF3RG

| Size mm (in) | JIS | ASME/JPI | PN (DIN/EN) | BS TABLE | |
|-----------------|--------------------|--------------------------|----------------------|-------------------|------------------|
| 15 (1/2) | 5, 10, 16, 20, 30K | Class 150, 300 | PN 6, 10, 16, 25, 40 | A, D, E, F, H, J | |
| 20 (3/4) | | | | | |
| 25 (1) | | Class 125, 150, 250, 300 | | | F, H, J |
| 32 (1 1/4) | | | | | |
| 40 (1 1/2) | | 10, 16, 20, 30K | | PN 10, 16, 25, 40 | A, D, E, F, H, J |
| 50 (2) | | | | | |
| 65 (2 1/2) | | | | | |
| 80 (3) | | | | | |
| 100 (4) | | | | | |

| | Model | Size mm (in) | Body Mat. | Sealing Material | ΔP^* MPa [psi] | PMO* MPaG [psig] | TMO ²⁾ °C (°F) | Appl. Fluids |
|------------|--------|------------------------------------|-----------|------------------|------------------------------|------------------------|------------------------------|--------------|
| Screwed | CK3M | 15 - 25 (1/2 - 1) | Brass | Metal** | 0.002 (0.02) [0.3] | 1.0 (10) [150] | 220 (428) | Steam |
| | | 32 - 50 (1 1/4 - 2) | Bronze | | | | | |
| | | 15 - 50 (1/2 - 2) | St.Steel | | | | | |
| | CK3T | 15 - 25 (1/2 - 1) | Brass | PTFE** | | 1.0 (10) [150] | 185 (365) | Air, Water |
| | | 32 - 50 (1 1/4 - 2) | Bronze | | | | | |
| | | 15 - 50 (1/2 - 2) | St.Steel | | | | | |
| | CK3R | 15 - 25 (1/2 - 1) | Brass | NBR*** | | 1.0 (10) [150] | 90 (194) | Air, Water |
| | | 32 - 50 (1 1/4 - 2) | Bronze | | | | | |
| | | 15 - 50 (1/2 - 2) | St.Steel | | | | | |
| | CK3MG | 25, 40, 50, 80 (1, 1 1/2, 2, 3) | St.Steel | Metal** | | 0.001 (0.01) [0.15] | 2.1 (21) [300] | 220 (428) |
| Flangeless | CKF3M | 15 - 40 (1/2 - 1 1/2) | St.Steel | Metal** | 0.002 (0.02) [0.3] | 3.0 (30) [425] | 350 (662) | Steam, Water |
| | CKF3R | 15 - 40 (1/2 - 1 1/2) | St.Steel | FPM*** | | | | |
| | CKF3MG | 50 - 100 (2 - 4) | St.Steel | Metal** | | | | |
| | CKF3RG | 50 (2) | St.Steel | FPM*** | | | | |

1 MPa = 10.197 kg/cm²

* ΔP = Min. Opening Diff. Press.; PMO = Max. Oper. Press.; TMO = Max. Oper. Temp.;

** PTFE = Fluorine Resin, Perfect sealing cannot be guaranteed for metal or PTFE sealing surfaces.

*** NBR = Nitrile Rubber; FPM = Fluorine Rubber

For rubber sealing surfaces, a closing differential pressure of more than 0.05 MPa (0.5 bar, 7 psi) will be required for perfect sealing when the valve is closed. (However, degradation of, or debris on, the rubber sealing surface may prevent perfect sealing.)

PRESSURE SHELL DESIGN CONDITIONS (NOT OPERATING CONDITIONS):

Max. Allowable Pressure, **PMA**, MPaG (psig):

CK3M, CK3T, CK3R: 1.0 (150) (Brass, Bronze), 2.1 (300) (Stainless Steel);

CKF3M & CKF3R, CKF3MG & CKF3RG: 3.0 (425); CK3MG: 3.2 (450)

Max. Allowable Temperature **TMA**, °C (°F):

CK3M, CK3T, CK3R, CK3MG: 220 (428); CKF3M & CKF3R, CKF3MG & CKF3RG: 350 (662)

NOTE:

- PMO, TMO may vary according to the options selected. Check nameplate, drawing, etc.
- When the valve has remained closed for a long period of time, the valve and the valve seat may stick, increasing the necessary minimum opening differential pressure. Make sure to open the valve properly before the installation.
- In addition, the minimum opening differential pressure varies depending on the direction of flow due to the influence of the weight of the valve disc. See the table below.

Minimum Opening Differential Pressure by Direction of Fluid Flow

| Model | Flow Direction | | |
|--------------------|------------------|---------------------|---------------------|
| | Horizontal | Vertical : Upward | Vertical : Downward |
| | MPa [kPa] (psi) | MPa [kPa] (psi) | MPa [kPa] (psi) |
| CK3M / CK3T / CK3R | 0.002 [2] (0.3) | 0.0015 [1.5] (0.22) | 0.0025 [2.5] (0.40) |
| CK3MG | 0.001 [1] (0.15) | 0.0005 [0.5] (0.07) | 0.0015 [1.5] (0.22) |
| CKF3M / CKF3R | 0.002 [2] (0.3) | 0.0016 [1.6] (0.23) | 0.0024 [2.4] (0.35) |
| CKF3MG / CKF3RG | 0.001 [1] (0.15) | 0.0005 [0.5] (0.07) | 0.0015 [1.5] (0.22) |

1 MPa = 10.197 kg/cm²



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

Cv Values

| Model | | Size mm (in) | | | | | | | | | |
|--------|-----------|--------------|-------------|-----------|---------------|---------------|-----------|---------------|-----------|------------|--|
| | | 15 (1/2) | 20 (3/4) | 25 (1) | 32 (1 1/4) | 40 (1 1/2) | 50 (2) | 65 (2 1/2) | 80 (3) | 100 (4) | |
| CK3M | Cv (US) | 3.7 | 6.6 | 10 | 15 | 21 | 29 | — | | | |
| CK3T | Cv (UK) | 3.1 | 5.5 | 8.3 | 13 | 17 | 24 | | | | |
| CK3R | Kvs (DIN) | 3.2 | 5.7 | 8.6 | 13 | 18 | 25 | | | | |
| CK3MG | Cv (US) | — | | | 25 | 55 91 | | — | 180 | — | |
| | Cv (UK) | | | | 21 | 46 76 | | | 150 | | |
| | Kvs (DIN) | | | | 21 | 47 78 | | | 154 | | |
| CKF3M | Cv (US) | 4.6 | 8.8 | 16 | 20 | 29 | — | | | | |
| CKF3R | Cv (UK) | 3.8 | 7.3 | 13 | 17 | 24 | | | | | |
| | Kvs (DIN) | 3.9 | 7.5 | 14 | 17 | 25 | | | | | |
| CKF3MG | Cv (US) | — | | | | 54 | 100 | 140 | 240 | | |
| | Cv (UK) | | | | | 45 | 83 | 117 | 200 | | |
| | Kvs (DIN) | | | | | 46 | 85 | 120 | 206 | | |
| CKF3RG | Cv (US) | — | | | | 54 | — | | | | |
| | Cv (UK) | | | | | 45 | | | | | |
| | Kvs (DIN) | | | | | 46 | | | | | |

Options

| Model | | Δ P Minimum Opening Differential Pressure | CK3R | Fluorine Rubber (FPM) TMO 150°C (302°F) |
|-------|------------|---|-------------|--|
| CK3M | MPa psi | 0.001, 0.01, 0.02 0.15, 1.5, 3 | | |
| CK3T | | | | |
| CK3R | | | | |
| CKF3M | MPa psi | 0.001, 0.01* 0.15, 1.5* | Special use | As a vacuum breaker** |
| CKF3R | | | | |

* Except nominal size of 40 mm (1 1/2") for Δ P 0.01 MPa (0.1 bar, 1.5 psi).

**CK3R, CKF3R and CKF3RG (with the rubber sealing) should not be used. Due to the nature of the rubber, there is a possibility that it may stick to the metal valve seat. So the CK3R, CKF3R and CKF3RG should not be used as vacuum breakers if they will often be used with extremely low differential pressures.

4. Proper Installation

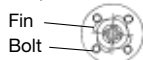


CAUTION

- Installation, inspection, maintenance, repairs, disassembly, adjustment and valve opening/closing should be carried out only by trained maintenance personnel.
 - Do not use excessive force when connecting threaded pipes to the product. Over-tightening may cause br^akage leading to fluid discharge, which may cause burns or other injury.
 - Install for use under conditions in which no freeze-up will occur.
1. Avoid installing check valves within a short distance after ON-OFF or extremely quick opening valves as they may create shock or hammer conditions which could shorten check valve life. Rapid pulsation or strong shocks to internal parts may result in spring damage or premature wear on the valve disc and seating surfaces. To improve operation, install the check valve further away from any quick opening valves to provide additional piping volume. Extra distance and volume can allow the system pressure to adjust gradually, thereby reducing surges and potential shock on the check valves.
 2. Be sure to choose the model that meets operating temperature requirements as shown below:

| Max. Flow Temp. °C (°F) | 350 (662) | 220 (428) | 185 (365) | 150 (302) | 90 (194) |
|-------------------------|-----------------|---------------|-----------|-----------------|----------|
| Model | CKF3M CKF3MG | CK3M CK3MG | CK3T | CKF3R CKF3RG | CK3R* |

* Model CK3R with optional disc inlay ring of FPM rubber can be used to 150 °C (302 °F).
 3. Before installation, be sure to remove all protective seals.
 4. Before installing the product, blow out the inlet piping to remove all dirt and oil.
 5. The product can be installed horizontally or vertically, but vertical installation is recommended.
 6. Install the product so the arrow on the body is pointing in the direction of flow.
 7. Make sure the weight of the outlet piping does not place an excessive load on the product.
 8. CKF3M, CKF3R, CKF3MG and CKF3RG are flangeless models, with an easy-to-center design. To center, install with the fins touching the bolts.



5. Operational Check

A visual inspection can be carried out to aid in determining the necessity for immediate maintenance or repair. Periodically (at least biannually) the operation should be checked using diagnostic equipment such as a stethoscope.

| | |
|----------|---|
| Normal: | Where inlet pressure is higher than outlet pressure (equal to or greater than the minimum opening differential pressure), flow, in the proper direction, can be verified. If outlet pressure becomes higher than inlet pressure, flow ceases. |
| Leakage: | There is flow even when outlet pressure becomes higher than inlet pressure. |

6. Inspection and Maintenance

Operational inspections should be performed at least twice per year, or as called for by the check valve operating conditions.



CAUTION

- Installation, inspection, maintenance, repairs, disassembly, adjustment and valve opening/closing should be carried out only by trained maintenance personnel.
- 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.
- Be sure to use the proper components and NEVER attempt to modify the product.

Parts Inspection Procedure

| | |
|---|-----------------------------|
| Gaskets | Check for warping or damage |
| Valve Disc, Inlet Union Sealing Surfaces | Check for scratches |
| Coil Spring, Spring Holder (after cleaning inside the body) | Check for scratches or wear |

Tightening Torque and Distance Across Flats

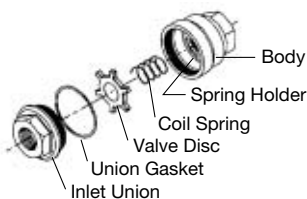
| Model | CK3M / CK3T / CK3R | | | CK3MG | | |
|-------|--------------------|--------------|-----------------------|--------------|-----------------------|-----------|
| | Size | Torque | Distance Across Flats | Torque | Distance Across Flats | |
| mm | (in) | N·m (lbf·ft) | mm (in) | N·m (lbf·ft) | mm | (in) |
| 15 | (1/2) | 100 (73) | 27 (1 1/16) | — | — | — |
| 20 | (3/4) | 150 (110) | 32 (1 1/4) | — | — | — |
| 25 | (1) | 180 (130) | 41 (1 5/8) | 180 (130) | 41 | (1 5/8) |
| 32 | (1 1/4) | 250 (185) | 50 (1 31/32) | — | — | — |
| 40 | (1 1/2) | 300 (220) | 55 (2 5/32) | 600 (440) | 60 | (2 3/8) |
| 50 | (2) | 400 (290) | 70 (2 3/4) | 800 (590) | 75 | (2 15/16) |
| 80 | (3) | — | — | 800 (590) | 100 | (3 15/16) |

1 N·m ≈ 10 kg·cm

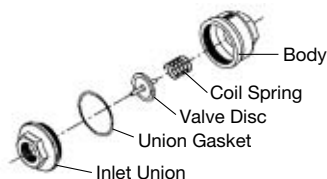
Disassembly/Reassembly (to reassemble, follow procedure in reverse)

| CK3M / CK3T / CK3R / CK3MG | | |
|---|---|---|
| Part | During Disassembly | During Reassembly |
| Inlet Union | Remove with a wrench | Coat threads with anti-seize and tighten to the proper torque (see torque table on page 11) |
| Union Gasket | Remove the union gasket | Replace with a new gasket if warped or damaged; make sure the gasket does not get pinched when tightening the inlet union |
| Valve Disc | Remove the valve disc | Insert, making sure the polished surface is facing the inlet union |
| Coil Spring | Remove the coil spring | CK3M / CK3T / CK3R: Insert into housing CK3MG: Place the coil spring on the disc stem |
| Spring Holder (except CK3MG) | Tightly inserted in body, DO NOT remove | — |
| CKF3M / CKF3R / CKF3MG / CKF3RG | | |
| Assembly / disassembly are not possible for these models as special equipment is required. Accordingly, replacement parts are not available for these models. | | |

CK3M / CK3T / CK3R



CK3MG



7. Troubleshooting

If the expected performance is unachievable after installation of the check valve read chapter 4 again and check the following points for appropriate corrective measures.

| Problem | Cause | Remedy | |
|---|--|--|--------------------------------|
| | | Screwed | Flangeless |
| The sound of flow can be heard when the outlet pressure is higher than inlet pressure | Dirt or damage on sealing surfaces or build-up inside the body | Clean parts | |
| | The valve disc is catching due to wear, dirt, rust, etc. | Replace with a new check valve | |
| | The coil spring is dislodged or broken | Replace with a new coil spring | Replace with a new check valve |
| | The spring holder is dislodged or broken | Replace with a new check valve | |
| Leakage to the outside of the check valve | The union gasket is warped or damaged | Replace with a new gasket | — |
| | Incorrect inlet union tightening torque | Tighten to the proper torque | — |
| | The check valve is subject to stress from the piping (weight, torsion, etc.) | Correct the piping | — |
| Flow is poor | The valve disc is catching due to wear, dirt, rust, etc. | Clean parts | |
| | Incorrect operating pressure | Adjust by increasing the pressure or replace with a check valve that has a larger Cv value | |
| The valve does not open at the specified differential pressure | Sticking valve and valve seat due to rust, pipe sealing agent, etc. | Clean parts | |
| | | If the valve disc is inlaid with rubber, it may be the case that the rubber is sticking to the metal. Contact TLV for details. | |

8. 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 or TLV International, Inc., a Japanese corporation (“**TII**”), which products (the “**Products**”) are designed and manufactured by TLV Co., Ltd., a Japanese corporation (“**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).

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
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. 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 TRANSPORTATION COSTS ASSOCIATED WITH THE RETURN OR REPLACEMENT OF THE CLAIMED DEFECTIVE PRODUCT ARE SOLELY THE RESPONSIBILITY OF BUYER OR THE FIRST END USER. TLV RESERVES THE RIGHT TO INSPECT ON THE FIRST END USER'S SITE ANY PRODUCTS

CLAIMED TO BE DEFECTIVE BEFORE ISSUING A RETURN MATERIAL AUTHORIZATION. SHOULD SUCH INSPECTION REVEAL, IN TLV'S REASONABLE DISCRETION, THAT THE CLAIMED DEFECT IS NOT COVERED BY THIS WARRANTY, THE PARTY ASSERTING THIS WARRANTY SHALL PAY TLV FOR THE TIME AND EXPENSES RELATED TO SUCH ON-SITE INSPECTION.

Exclusion Of Consequential And Incidental Damages

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THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, AND ALL OTHER WARRANTIES, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE EXPRESSLY DISCLAIMED.

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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