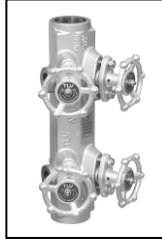


INSTRUCTION MANUAL

TLV Steam & Condensate Manifold M4P/M8P/M12P

Thank you for purchasing the TLV Forged Steel Manifold.

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. Also be sure to read this manual carefully before use and follow the instructions to be sure of using the product properly.



The TLV Forged Steel Manifold incorporates piston valves at each station connection. When used as a condensate collection manifold, this product consolidates steam trap locations at lower installation heights, making traps more accessible, easier to install, isolate, test and troubleshoot.

If detailed instructions for special order specifications or options not contained in this manual are required, please contact TLV for full details.

This instruction manual is intended for use with the model(s) listed above. It is necessary not only for installation, but for subsequent maintenance, disassembly/reassembly and troubleshooting. Please keep it in a safe place for future reference.

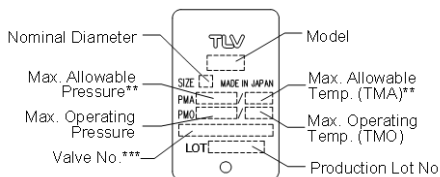
If steam traps and valves were supplied with this manifold as part of a package unit, please refer to the separate product manuals for the proper instructions for each product.

1. Safety Considerations

- 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 which may lead to serious accidents. Local regulations may restrict the use of this product to below the conditions quoted.
- CAUTION** Use hoisting equipment for heavy objects (weighing approximately 20 kg (44 lb) or more). Failure to do so may result in back strain or other injury if the object should fall.
- CAUTION** 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.
- CAUTION** 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.
- CAUTION** 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.
- CAUTION** 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.
- CAUTION** 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.
- 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.
- CAUTION** Do not stand on or apply body weight to the handwheel. The handwheel may break, resulting in injury or other accidents.
- CAUTION** Do not carry the product by its handwheel. The handwheel may turn causing the balance to shift and the product to be dropped, resulting in injury or other accidents.
- CAUTION** Installation, inspection, maintenance, repairs, disassembly, and adjustment should be carried out only by trained maintenance personnel.

2. Specifications

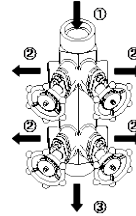
Refer to the product nameplate for detailed specifications.



NOTE: Specifications given on the nameplate are for the forged steel manifold only; refer to the nameplates on any attached steam traps or valves for each unit's specifications.

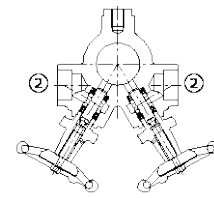
* The size is for the station connections
 ** PRESSURE SHELL DESIGN CONDITIONS (NOT OPERATING CONDITIONS)
 *** Displayed for products with options; omitted when there are no options.

<For Steam Manifolds>



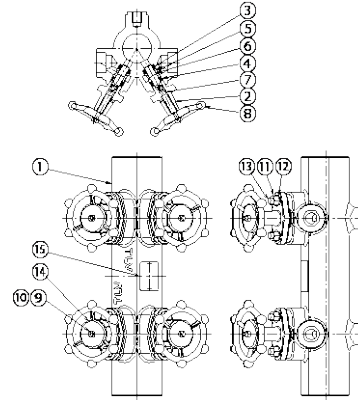
①: Steam Inlet
 ②: Station Connection – Steam Outlet
 ③: Drain Connection

<For Condensate Manifolds>



①: Condensate Outlet
 ②: Station Connection – Condensate Inlet
 ③: Blowdown Connection

3. Configuration

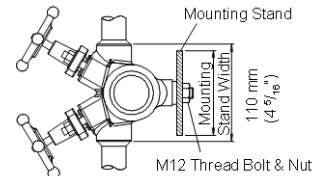


No.	Name
1	Body
2	Valve Bonnet
3	Lower Valve Ring
4	Upper Valve Ring
5	Lantern Bushing
6	Piston
7	Spindle
8	Handwheel
9	Handwheel Nut
10	Washer
11	Bonnet Nut
12	Washer
13	Bonnet Bolt
14	Design Plate
15	Nameplate

Repair parts are not provided. If repairs are required for any reason, consult TLV.

4. Proper Installation

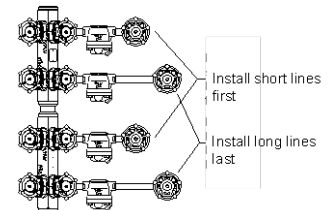
- Before installing the product, blow out the inlet piping to remove any piping scraps, dirt and oil. Close the inlet valve after blowdown.
- Before installation, be sure to remove all protective seals.
- Prepare a mounting stand. The mounting stand should be less than 110mm (4 5/16") wide (the face to face distance between station connections). If a wider mounting stand is used, it may interfere with any steam trap station connected to the manifold.
- Using M12 threaded bolts, attach the manifold to the mounting stand. Install the manifold vertically with the "TLV" lettering on the nameplate horizontal.



NOTE: If the manifold is to be mounted in some way other than as described here, be sure to consider and secure sufficient space for the installation, operation and maintenance of required steam traps and valves.

- Complete the installation by installing the required steam traps and valves. For steam applications, install a stop valve at the steam inlet, and a steam trap and stop valve at the drain connection. For condensate applications, install stop valves at the condensate outlet and blowdown connections, and a steam trap station (steam trap and stop valve) at each station connection.

Note for Screwed Connections: There may be clearance problems when installing traps and valves with threaded connections. To prevent any obstructions, such as valve handles contacting products installed on lines above or below, offset each line slightly. Install all short lines first, then longer lines. Offsetting lines is not necessary when installing products with socket welded connections.



- Open the inlet and the outlet valves and verify proper operation.

5. Maintenance

If any leaks are observed through the valve ring or the valve bonnet, tighten the nuts for the valve bonnet using the torque shown in the following table.

Nut (for Valve Bonnet)	
Torque N-m (lbf-ft)	Distance Across Flats mm (in)
5 (4)	13 (1/2)

NOTE: If drawings or other special documentation were supplied for the product, any torque given there takes precedence over values shown here. (1 N-m ≈ 10 kg-cm)

Manufacturer

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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 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

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Exclusion Of Consequential And Incidental Damages

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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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