ISO 9001
ISO14001

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

Instruction Manual

Float Dynamic Steam Trap
Featured Model: J10

172-65237M-04
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Introduction

Thank you for purchasing the TLV float dynamic steam 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. Also be sure to read this manual carefully before use and follow the instructions to be sure of using the product properly.

This steam trap is designed to automatically discharge condensate from the steam space. This product is ideal for use on heaters or dryers or other steam equipment on applications where large quantities of condensate are generated.

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 on the front cover. 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.

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.

Cautionary items and definitions

Danger
Indicates an urgent situation which poses a threat of death or serious injury

Warning
Indicates that there is a potential threat of death or serious injury

Caution
Indicates that there is a possibility of injury or equipment/product damage

Safety Considerations for the Product

Warning
NEVER apply direct heat to the float. The float may explode due to increased internal pressure, causing accidents leading to serious injury or damage to property and equipment.

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.

Caution
DO NOT use this product in excess of the maximum operating pressure differential. Such use could make discharge impossible (blocked).

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 and burns or other injury due to malfunction or the discharge of fluids.

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.

Checking the Piping

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.

Check to make sure that the pipes to be connected to the product have been installed properly.

1. Is the pipe diameter suitable?
2. Is the piping where the product is to be installed horizontal?
3. Has sufficient space been secured for maintenance?
4. Have isolation valves been installed at the inlet and outlet? If the outlet is subject to back pressure, has a check valve been installed?
5. Is the inlet pipe as short as possible, with as few bends as possible, and installed so the liquid will flow naturally down into the product?

Specifications

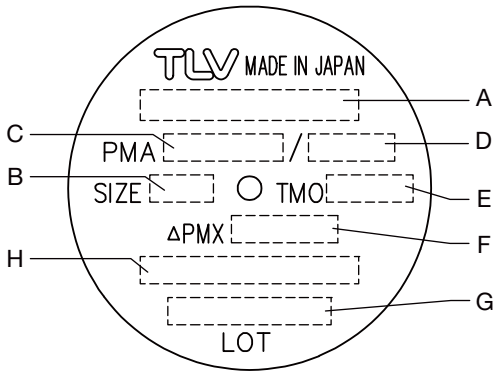
Caution

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.

DO NOT use this product in excess of the maximum operating pressure differential. Such use could make discharge impossible (blocked).

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.

Refer to the product nameplate for detailed specifications.



A	Model	E	Maximum Operating Temperature (TMO)
B	Nominal Diameter	F	Maximum Differential Pressure (PMX)
C	Maximum Allowable Pressure (PMA)[01]	G	Production Lot No.
D	Maximum Allowable Temperature (TMA)[01]	H	Valve No.[02]

[01]Maximum allowable pressure (PMA) and maximum allowable temperature (TMA) are PRESSURE SHELL DESIGN CONDITIONS, **NOT** OPERATING CONDITIONS.

[02]Valve No. is displayed for products with options. This item is omitted from the nameplate when there are no options.

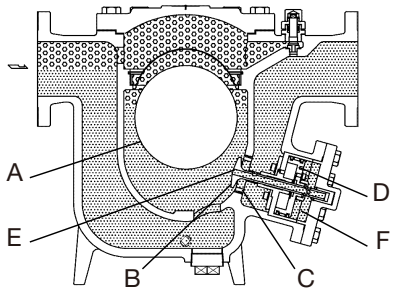
Note

The minimum differential pressure is 0.05 MPa. Do not use this product with a differential pressure less than this.

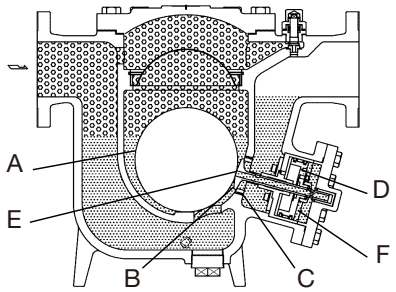
Operation

Principles of air and condensate discharge:

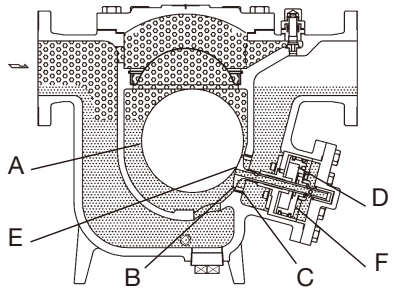
1. Valve opening & initial condensate discharge
   At start-up, when a large quantity of condensate flows into the trap, the float (A) rises by buoyancy, opening the pilot orifice (E). Condensate flows through the pilot orifice (E) into the control chamber (F), increasing the pressure there. The increased pressure causes the piston (D), and accordingly the main valve (B), to move up. The orifice on the main valve seat (C) is then opened to discharge condensate.



2. Valve closing & water seal
   When condensate has been discharged, the float (A) falls, closing the pilot orifice (E). Pressure in the control chamber (F) decreases due to leakage through small holes. The main valve (B) moves downward, closing the orifice of the main valve seat (C). The orifices are completely water-sealed during operation, permitting no steam leakage.

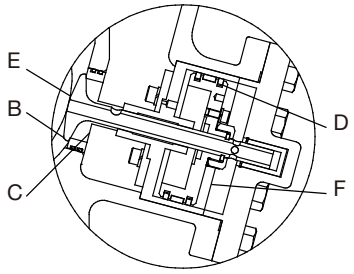


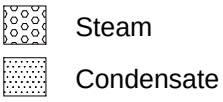
3. Regular operation
   After the large quantity of initial condensate formed at start-up has been discharged, the equipment reaches a thermally balanced state, forming condensate in accordance with the load. The trap then discharges condensate by a modulating float dynamic principle.



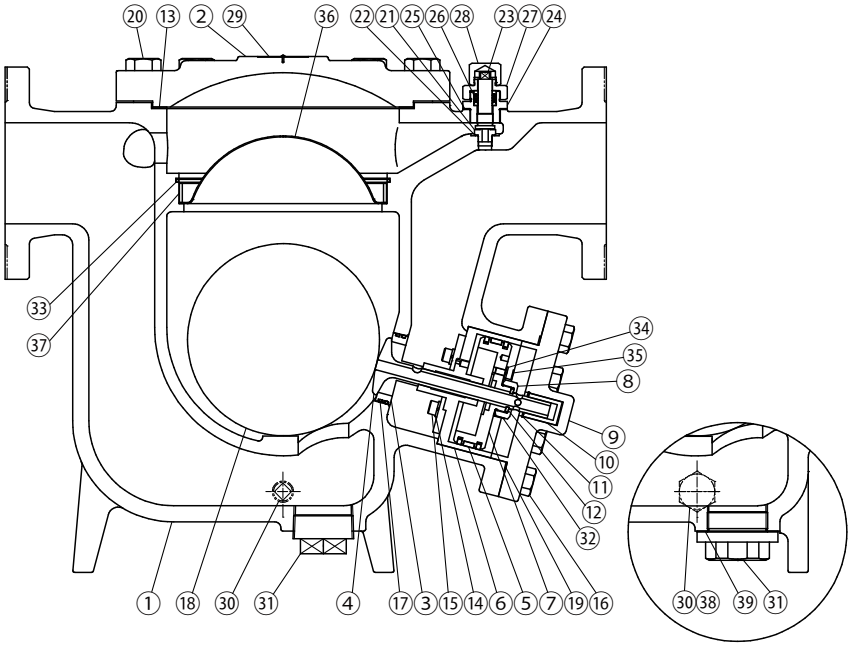
Float dynamic principle

When a large quantity of condensate flows into the trap, the float (A) rises immediately, opening the pilot orifice (E) wide. Condensate passes through the pilot orifice at a high velocity into the control chamber (F), where the pressure increases rapidly due to flashing condensate. The rapid expansion causes a force to be exerted on the main valve (B), opening the large orifice on the main valve seat (C) instantly. As condensate discharges through the main valve seat orifice at a high velocity, condensate in the equipment and trap inlet pipe is also discharged.





Configuration



No.	Part Name	No.	Part Name
1	Body	21	Lock Release Valve Seat
2	Cover	22	Lock Release Valve Seat Gasket
3	Main Valve Seat	23	Lock Release Valve Stem
4	Main Valve	24	Lock Release Valve Body
5	Piston Ring Set	25	Lock Release Valve Body Gasket
6	Cylinder	26	V-ring Packing
7	Piston	27	Packing Holder Nut
8	U-Nut	28	Lock Release Valve Cap
9	Valve Cover	29	Nameplate
10	Sleeve	30	Drain Plug
11	Snap Ring	31	Plug[01]
12	Stopper Ring	32	Turn Stopper
13	Cover Gasket	33	Snap Ring
14	Spring Washer	34	Spring Washer
15	Main Valve Seat Bolt	35	Turn Stopper Bolt
16	Valve Cover Bolt	36	Float Cover
17	O-ring	37	Float Cover Retainer
18	Float	38	Drain Plug Gasket
19	Valve Cover Gasket	39	Plug Gasket
20	Cover Bolt		

[01]For Steel Body J10

Installation

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.

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.

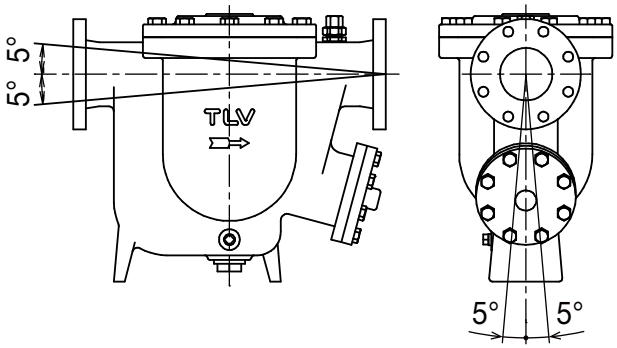
Take measures to prevent people from coming into direct contact with product outlets. Failure to do so may result in burns or other injury from the discharge of fluids.

Installation, inspection, maintenance, repairs, disassembly, adjustment and valve opening/closing should be carried out only by trained maintenance personnel.

1. Before installation, be sure to remove all protective seals.
2. Install inlet and outlet valves to isolate the product and a bypass valve to discharge condensate from equipment and piping in the event of product failure and when performing maintenance.
3. 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.
4. Make sure the inlet and outlet valves are closed before beginning installation.
5. Install a strainer (40 mesh or finer) at the inlet side of the product. The strainer should be installed horizontally with the basket horizontal to the piping.
6. Install the product into the piping in a manner that allows condensate flow naturally down into the product, with the arrow on the product body pointing in the direction of condensate flow.
7. The product should be inclined no more than 5° horizontally and front-to-back.
8. When the product is operating (when the main valve is opening and closing), the discharging condensate may cause shocks or recoil, so make sure that the piping before and after the trap is securely supported.
9. Secure sufficient space for inspection and maintenance.

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

Tolerance Angle for Installation: 5°



Make sure the product is installed with the raised TLV lettering on the body horizontal.

For Start-up Operation

1. Just after the product is installed or when it has been idle for a long period of time, be sure to blow out the rust and scale from the inside of the piping before opening the trap inlet valve.
2. After opening the outlet valve, slowly open the inlet valve, being very careful not to open it too suddenly. When this is done, the steam trap will begin operation automatically. It will shortly stabilize into normal operation.
   If air binding or steam-locking occurs, or to more rapidly vent large quantities of initial air in the piping, use the lock release valve (see “Lock Release Valve Operation” below).
3. Reconfirm the status of the product operation (see the “Operational Check” section). If status is normal and stable, continue use with the valve open as it is.
4. When the product will not be used for long periods of time, be sure to discharge any residual condensate to prevent the pipes from rusting.

Corrective Measures When a Malfunction Occurs

1. In the event of an abnormality, first carry out the following:
   - Close the inlet valve and outlet valves.
   - Open the bypass valve and discharge the condensate from the equipment and pipes using the bypass.
2. Let the trap body cool thoroughly and, being careful of residual pressure and hot condensate, take the appropriate corrective measures in line with the remedial procedures described in the “Troubleshooting” section.

Lock Release Valve Operation

Caution

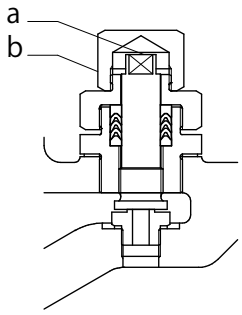
Be sure to use only the recommended components when repairing the product, and NEVER attempt to modify the product in any way. Failure to observe these precautions may result in damage to the product and burns or other injury due to malfunction or the discharge of fluids.

Do not leave the lock release valve open during regular operation. Always be sure to close the lock release valve after eliminating air binding or steam-locking.

Installation, inspection, maintenance, repairs, disassembly, adjustment and valve opening/closing should be carried out only by trained maintenance personnel.

To operate the lock release valve:

1. Remove the lock release valve cap (b) with a 27 mm wrench.
2. Using a 10 mm wrench, turn the lock release valve stem (a) counter-clockwise.
3. With an appropriate number of turns air binding or steam-locking will cease and the trap will function normally. If necessary, increase the degree of valve opening further.
4. After having checked that the trap continues working normally, close the lock release valve by turning the stem clockwise, and reinstall the cap (tighten to a torque of 15 N·m).



Maintenance

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.

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 and burns or other injury due to malfunction or the discharge of fluids.

Operational Check

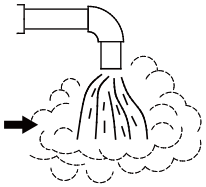
A visual inspection of the following items should be done on a daily basis to determine whether the product is operating properly or has failed. Periodically (at least biannually) the operation should also be checked by using diagnostic equipment, such as a stethoscope, thermometer, TLV Pocket TrapMan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

A complete disassembly and inspection should be performed at least once every 3 years.

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

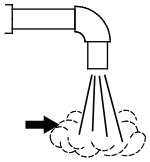
Normal:	Condensate is discharged intermittently and there is no leakage when the valve is closed. After the sound of the flow of condensate continues for some time, the sound of the valve closing on the valve seat can be heard. This is followed by an interval in which the product makes no sound, after which the cycle is again repeated.
Blocked (Discharge Impossible):	No condensate is discharged. The product is quiet and makes no noise, and the surface temperature of the product is low.
Blowing:	Live steam continually flows from the outlet and there is a continuous metallic sound.
Steam Leakage:	Live steam is discharged through the product outlet together with condensate, accompanied by a high-pitched sound.

Flash Steam



White jet containing water droplets

Live Steam Leakage



Clear, slightly bluish jet

Parts Inspection

When parts have been removed, or during periodic inspections, use the following table to inspect the parts and replace any that are found to be defective.

Gaskets, O-rings: Check for warping or damage

Sleeve: Check for wear

Main Valve Seat (shaft): Check for dirt, oil film, wear or damage

Main Valve, Main Valve Seat: Check for build-up or wear on seating surfaces

Piston Ring Set: Check for wear, warping or damage

Float: Check for deformation, scratches or dents

Body Interior: Check for the build-up of scale

V-ring Packing: Check for warping or damage

Lock Release Valve Stem: Check for build-up or wear on seating surfaces

Lock Release Valve Seat: Check for build-up, damage or wear

Piston Ring: Check for damage and wear

Disassembly/Reassembly

Warning
NEVER apply direct heat to the float. The float may explode due to increased internal pressure, causing accidents leading to serious injury or damage to property and equipment.

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.

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.

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

(Installation, inspection, maintenance, repairs, disassembly, adjustment and valve opening/closing should be carried out only by trained maintenance personnel.)

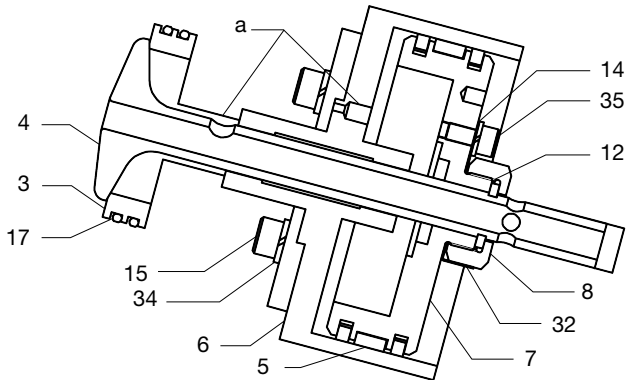
Disassembly/Reassembly of General Components

Part Name & No.	During Disassembly	During Reassembly
Drain Plug 30 (cast iron body)	Remove with a wrench and drain remaining condensate	Wrap 3 to 3.5 turns of sealing tape around the threads or coat with sealing compound and tighten to the proper torque
Drain Plug 30 (steel body)	Remove with a wrench and drain remaining condensate	Coat threads with anti-seize; consult the table of tightening torques and tighten to the proper to
Drain Plug Gasket 38 (steel body)	Remove the gasket and clean sealing surfaces	Replace with a new gasket; coat surfaces with anti-seize
Cover Bolt 20	Remove with a socket wrench	Coat threads with anti-seize; tighten evenly, being careful not to tighten one side more than the other; consult the table of tightening torques and tighten to the proper torque
Cover 2	Remove the cover	Align the arrows on cover and body, then reattach
Cover Gasket 13	Remove the gasket and clean sealing surfaces	Replace with a new gasket; make sure there are no pieces of the old gasket left on the sealing surfaces of the body or cover
Snap Ring 11	Remove with appropriate pliers	Insert securely into its groove
Float Cover Retainer 37	Lift up and out	Place the retainer in the body on top of the float cover
Float Cover 36	Lift up and out	Place on the ledge inside the body, making sure the rounded side is on top
Float 18	Remove, being careful not to scratch the polished surface	Insert, being careful not to scratch or misshape

Disassembly/Reassembly of the Main Valve Unit and its Components

Part Name & No.	During Disassembly	During Reassembly
Valve Cover Bolt 16	Remove with a socket wrench	Coat threads with anti-seize; tighten evenly, being careful not to tighten one side more than the other; tighten to the proper torque
Valve Cover 9	Remove the cover	Reattach
Valve Cover Gasket 19	Remove and clean sealing surfaces	Replace with a new gasket if warped or damaged
Main Valve Unit	Remove from the body (pull out)	Reinsert into body; make sure that the exhaust holes (a) in both the main valve stem and the cylinder face up
Turn Stopper Bolt 35 Spring Washer 34	Remove with an Allen wrench	Coat threads with anti-seize and tighten to the proper torque
Turn Stopper 32	Bend the tab over	Replace if the tab is warped or damaged; return the tab to locked position
U-Nut 8	Loosen and remove	Coat with anti-seize and tighten to the proper torque
Stopper Ring 12	Remove with appropriate pliers	Insert securely into the groove
Main Valve 4	Remove	Reinsert into the cylinder with exhaust hole facing up
Main Valve Seat Bolt 15/ Spring Washer 14	Remove with an Allen wrench	Coat threads with anti-seize and tighten to the proper torque
Cylinder 6 Main Valve Seat 3	Disconnect	Reconnect with proper exhaust hole orientation
O-ring 17	Remove from the main valve seat	Replace with a new if warped or damaged; coat with heat-resistant grease and reattach to main valve seat
Piston 7	Remove from the cylinder	Reinsert into the cylinder being careful not to scratch the piston rings
Piston Ring Set 5	Remove from the piston	Replace with a new set of piston rings

Main Valve Unit



Disassembly/Reassembly of the Lock Release Valve

Part Name & No.	During Disassembly	During Reassembly
Lock Release Valve Cap 28	Remove with a socket wrench	Coat threads with anti-seize; consult the table of tightening torques and tighten to the proper torque
Packing Holder Nut 27	Remove with a socket wrench	Coat threads with anti-seize; consult the table of tightening torques and tighten to the proper torque
Lock Release Valve Body 24	Remove with a socket wrench	Coat threads with anti-seize; consult the table of tightening torques and tighten to the proper torque
Lock Release Valve Body Gasket 25	Remove and clean all sealing surfaces	Replace with a new gasket if warped or damaged
Lock Release Valve Stem 23	Unscrew relief valve stem from the body; remove packing	Replace with a new gasket if warped or damaged Coat the lock release valve stem threads with anti-seize and screw into the lock release valve body; replace the packing with a new; do not apply anti-seize to the V-ring packing; insert into the relief valve body after screwing in the lock release valve stem
V-ring Packing 26		
Lock Release Valve Seat 21	Remove with a socket wrench	Coat threads with anti-seize; consult the table of tightening torques and tighten to the proper torque
Lock Release Valve Seat Gasket 22	Remove with a socket wrench	Replace with a new gasket if warped or damaged

Table of Tightening Torques

Part Name & No.	Torque N·m	Distance Across Flats mm
Valve Cover Bolt 16	140	24
Cover Bolt 20	250	30
Packing Holder Nut 27	250	41
Lock Release Valve Cap 28	15	27
Lock Release Valve Body 24	250	41
Lock Release Valve Seat 21	30	19
U-Nut 8	100	32
Main Valve Seat Bolt 15	60	6
Turn Stopper Bolt 35	20	5
Drain Plug 30 (Iron Body)	60[01]	14
Plug 31 (Iron Body)	450[01]	32
Drain Plug 30 (Steel Body)	150	35
Plug 31 (Steel Body)	1000	60

[01]Values represent tightening torque for threads that are wrapped with 3 to 3.5 turns of sealing tape.

Note

- Coat all threaded portions with anti-seize.
- If drawings or other special documentation were supplied for the product, any torque given there takes precedence over values shown here.

Troubleshooting

Warning
NEVER apply direct heat to the float. The float may explode due to increased internal pressure, causing accidents leading to serious injury or damage to property and equipment.

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.

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

Problem	Cause	Remedy
No condensate is discharged (blocked) or discharge is poor	The float is damaged or filled with condensate	Replace with a new float
	There is no inflow of condensate	Inspect and correct the piping
	The orifice opening or piping are clogged with rust and scale	Clean parts
	The product operating pressure exceeds the maximum specified pressure or there is insufficient pressure differential between the product inlet and outlet or there has been a drop in operating pressure	Compare specifications and actual operating conditions
	Air binding or steam-locking has occurred	Operate the lock release valve, perform a bypass blowdown or close the product inlet valve and allow the product to cool
	The piston or cylinder is damaged or the exhaust holes in the main valve stem have become enlarged	Replace with a new piston, cylinder or main valve
	The piston or cylinder has a build-up of sticky scale	Clean parts
Steam is discharged or leaks from the outlet (blowing) (steam leakage)	Build-up on the seating surface of the main valve or rust and scale build-up beneath the float	Clean parts
	The float is misshapen or has a build-up	Clean or replace with new float
	The exhaust holes in the main valve have become clogged	Clean or replace piston
	The main valve or main valve seat is worn	Replace with new parts as required
	Improper installation orientation	Correct the installation
	Product vibration	Lengthen inlet piping and fasten securely
Steam is leaking from a place other than the outlet	Gasket deterioration or damage	Replace with new gasket(s)
	Improper tightening torques were used	Tighten to the proper torque
Float is frequently damaged	Water hammer has occurred	Study and correct the piping

TLV EXPRESS LIMITED WARRANTY

Subject to the limitations set forth below, TLV CO., LTD., a Japanese corporation ("**TLV**"), warrants that products which are sold by it, TLV International Inc. ("**TII**") or one of its group companies excluding TLV Corporation (a corporation of the United States of America), (hereinafter the "**Products**") are designed and manufactured by TLV, conform to the specifications published by TLV for the corresponding part numbers (the "**Specifications**") and are free from defective workmanship and materials. The party from whom the Products were purchased shall be known hereinafter as the "**Seller**". 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 persons other than TLV, TII or TLV group company personnel, 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 persons other than TLV or TLV group company personnel, 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, TII or TLV group companies; 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 one (1) year after delivery of Products to the first end user. Notwithstanding the foregoing, asserting a claim under this warranty must be brought within three (3) 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 THE SELLER.

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 THE SELLER IN WRITING WITHIN THE 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 THE SELLER, FREIGHT AND TRANSPORTATION COSTS PREPAID, UNDER A RETURN MATERIAL AUTHORIZATION AND TRACKING NUMBER ISSUED BY THE SELLER. 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. THE SELLER 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 THE SELLER'S REASONABLE DISCRETION, THAT THE CLAIMED DEFECT IS NOT COVERED BY THIS WARRANTY, THE PARTY ASSERTING THIS WARRANTY SHALL PAY THE SELLER FOR THE TIME AND EXPENSES RELATED TO SUCH ON-SITE INSPECTION.

Exclusion of Consequential and Incidental Damages

IT IS SPECIFICALLY ACKNOWLEDGED THAT THIS WARRANTY, ANY OTHER EXPRESS WARRANTY NOT NEGATED HEREBY, AND ANY IMPLIED WARRANTY NOT NEGATED HEREBY, INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, DO NOT COVER, AND NEITHER TLV, TII NOR ITS TLV GROUP COMPANIES WILL IN ANY EVENT BE LIABLE FOR, INCIDENTAL OR CONSEQUENTIAL DAMAGES, INCLUDING, BUT NOT LIMITED TO LOST PROFITS, THE COST OF DISASSEMBLY AND SHIPMENT OF THE DEFECTIVE PRODUCT, INJURY TO OTHER PROPERTY, DAMAGE TO BUYER'S OR THE FIRST END USER'S PRODUCT, DAMAGE TO BUYER'S OR THE FIRST END USER'S PROCESSES, LOSS OF USE, OR OTHER COMMERCIAL LOSSES. WHERE, DUE TO OPERATION OF LAW, CONSEQUENTIAL AND INCIDENTAL DAMAGES UNDER THIS WARRANTY, UNDER ANY OTHER EXPRESS WARRANTY NOT NEGATED HEREBY OR UNDER ANY IMPLIED WARRANTY NOT NEGATED HEREBY (INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE) CANNOT BE EXCLUDED, SUCH DAMAGES ARE EXPRESSLY LIMITED IN AMOUNT TO THE PURCHASE PRICE OF THE DEFECTIVE PRODUCT. THIS EXCLUSION OF CONSEQUENTIAL AND INCIDENTAL DAMAGES, AND THE PROVISION OF THIS WARRANTY LIMITING REMEDIES HEREUNDER TO REPLACEMENT, ARE INDEPENDENT PROVISIONS, AND ANY DETERMINATION THAT THE LIMITATION OF REMEDIES FAILS OF ITS ESSENTIAL PURPOSE OR ANY OTHER DETERMINATION THAT EITHER OF THE ABOVE REMEDIES IS UNENFORCEABLE, SHALL NOT BE CONSTRUED TO MAKE THE OTHER PROVISIONS UNENFORCEABLE.

Exclusion of Other Warranties

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.

Service

For Service or Technical Assistance: Contact your TLV representative or your regional TLV office.

In Europe:

TLV EURO ENGINEERING GmbH
Daimler-Benz-Straße 16-18, 74915 Waibstadt, **Germany**
Tel: [49]-(0)7263-9150-0

TLV EURO ENGINEERING UK LTD.
Units 7 & 8, Furlong Business Park, Bishops Cleeve, Gloucestershire GL52 8TW, **U.K.**
Tel: [44]-(0)1242-227223

TLV EURO ENGINEERING FRANCE SARL
Parc d'Ariane 2, bât. C, 290 rue Ferdinand Perrier, 69800 Saint Priest, **France**
Tel: [33]-(0)4-72482222
Fax: [33]-(0)4-72482220

In North America:

TLV CORPORATION
13901 South Lakes Drive, Charlotte, NC 28273-6790, **U.S.A.**
Tel: [1]-704-597-9070
Fax: [1]-704-583-1610

TLV ENGINEERING S. A. DE C. V.
Av. Jesús del Monte 39-B-1001, Col. Hda. de las Palmas, Huixquilucan, Edo. de México, 52763, **Mexico**
Tel: [52]-55-5359-7949
Fax: [52]-55-5359-7585

In Oceania:

TLV PTY LIMITED
Unit 8, 137-145 Rooks Road, Nunawading, Victoria 3131, **Australia**
Tel: [61]-(0)3-9873 5610
Fax: [61]-(0)3-9873 5010

In East Asia:

TLV PTE LTD
36 Kaki Bukit Place, #02-01/02, **Singapore** 416214
Tel: [65]-6747 4600
Fax: [65]-6742 0345

TLV SHANGHAI CO., LTD.
5/F, Building 7, No.103 Caobao Road, Xuhui District, Shanghai, **China** 200233
Tel: [86]-(0)21-6482-8622
Fax: [86]-(0)21-6482-8623

TLV ENGINEERING SDN. BHD.
No.16, Jalan MJ14, Taman Industri Meranti Jaya, 47120 Puchong, Selangor, **Malaysia**
Tel: [60]-3-8052-2928
Fax: [60]-3-8051-0899

TLV PRIVATE LIMITED
252/94 (K-L) 17th Floor, Muang Thai-Phatra Complex Tower B, Rachadaphisek Road, Huaykwang, Bangkok 10310, **Thailand**
Tel: [66]-2-693-3799
Fax: [66]-2-693-3979

TLV INC.
#302-1 Bundang Technopark B, 723 Pangyo-ro, Bundang, Seongnam, Gyeonggi, 13511, **Korea**
Tel: [82]-(0)31-726-2105
Fax: [82]-(0)31-726-2195

In the Middle East:

TLV ENGINEERING FZCO
Building 9W, B163, PO Box 371684, Dubai Airport Free Zone, Dubai, **UAE**
Email: sales-me@tlv.co.jp

In Other Countries:

TLV INTERNATIONAL, INC.
881 Nagasuna, Noguchi, Kakogawa, Hyogo 675-8511, **Japan**
Tel: [81]-(0)79-427-1818
Fax: [81]-(0)79-425-1167

Manufacturer:

TLV CO., LTD.
881 Nagasuna, Noguchi, Kakogawa, Hyogo 675-8511, **Japan**
Tel: [81]-(0)79-427-1800
Fax: [81]-(0)79-422-2277