172-65192MA-02 (JA3D) 27 January 2009

ISO 9001/ ISO 14001

Manufacturer

TLV CO., LTD.

Kakogawa, Japan

is approved by LRQA LTD. to ISO 9001/14001

Instruction Manual

Free Float Air Trap

JA3D

Contents

Introduction

Thank you for purchasing the TLV free float air 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.

TLV free float air trap model JA3D is used to automatically discharge oil and water that accumulates in compressed air receiver tanks or in piping.

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.

Symbols

	**Indicates a DANGER, WARNING or CAUTION item.**
	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

	**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.
	**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).
	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.

Safety considerations continued on next page.

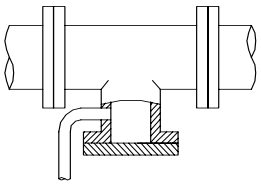
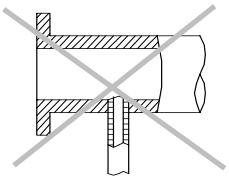
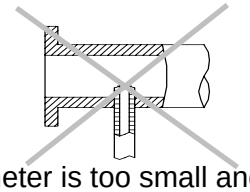
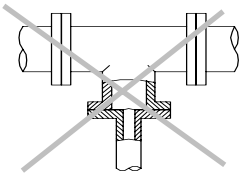
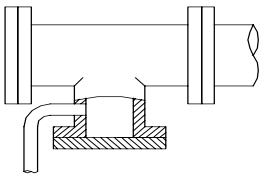
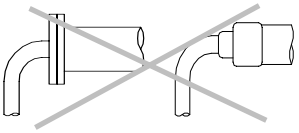
⚠CAUTION	**When disassembling or removing the product, wait until the internal pressure equals atmospheric pressure and the surface of the product has cooled to room temperature**. Disassembling or removing the product when it is hot or under pressure may lead to discharge of fluids, causing burns, other injuries or damage.
	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 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.
	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.
	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 trap have been installed properly.

1. Is the pipe diameter suitable?
2. Is the piping where the trap 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 (TLV-CK) 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 trap?
6. Has the piping work been done correctly, as shown in the figures below?

Requirement	Correct	Incorrect
Install catchpot with the proper diameter.		 Diameter is too small.
Make sure the flow of condensate is not obstructed.		 Diameter is too small and inlet protrudes into pipe interior.
To prevent rust and scale from flowing into the trap, the inlet pipe should be connected 25 – 50 mm (1” – 2”) above the base of the T-pipe.		 Rust and scale flow into the trap with the condensate.
When installing on the blind end, make sure the flow of condensate is not obstructed.		 Condensate collects in the pipe.

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 which 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).**

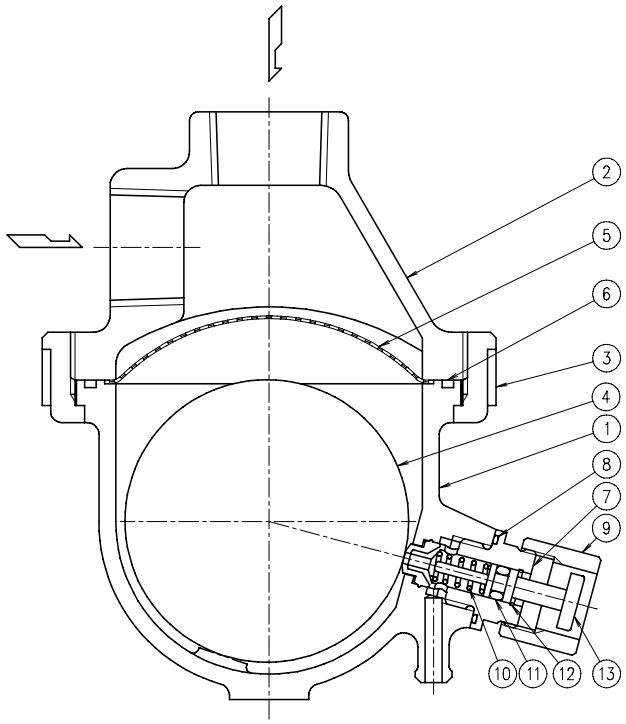
⚠CAUTION **Use only under conditions in which no freeze-up will occur. Freezing may damage the product, leading to fluid discharge, which may cause burns or other injury.**

Model	Size	Maximum Operating Pressure **PMO**	Maximum Operating Temperature **TMO**	Weight	Maximum Allowable Pressure **PMA***	Maximum Allowable Temperature **TMA***
	mm (in)	MPaG (psig)	℃ (℉)	kg (lb)	MPaG (psig)	℃ (℉)
JA3D	15 ($^1/_2$)	1.6 (230)	100 (212)	0.56 (1.3)	1.6 (230)	100 (212)

(1MPa = 10.197 kg / cm^2)

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

Configuration



No.	Name
1	Body
2	Cover
3	Union Nut
4	Float
5	Screen
6	Cover Gasket
7	Valve Seat Holder
8	Holder Gasket
9	Guard Bushing
10	Coil Spring
11	Plunger O-Ring
12	Snap Ring
13	Plunger

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 which may lead to serious accidents. Local regulations may restrict the use of this product to below the conditions quoted.**

⚠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 **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.**

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

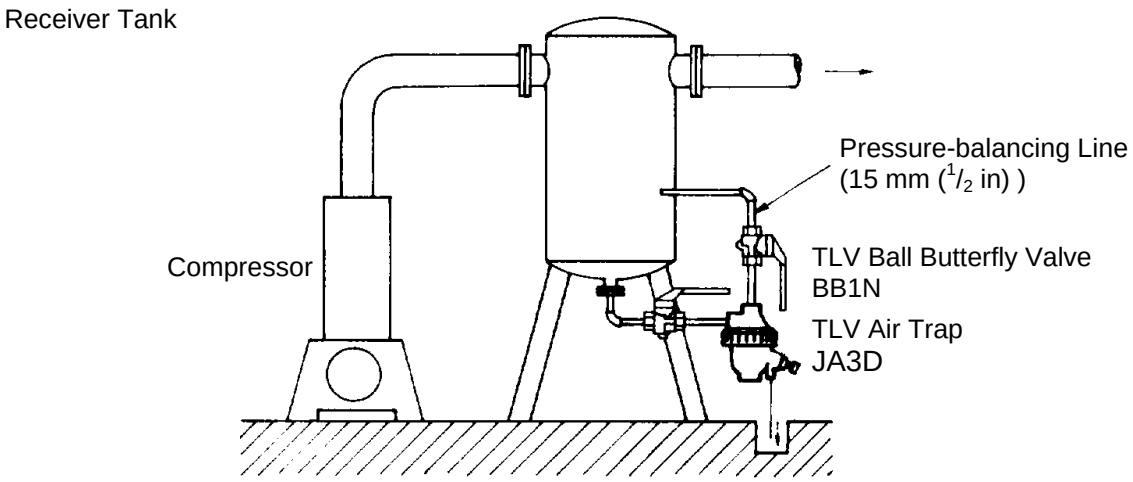
1. Before installation, be sure to remove all protective seals.
2. Before installing the product, blow out the inlet piping to remove any piping scraps, dirt and oil. Close the inlet valve after blowdown.
3. Install the product so that the arrow on the body is pointing in the direction of flow.
4. The trap should be inclined no more than 5° horizontally and front-to-back.
5. Install a condensate outlet valve and outlet piping.
6. To insure proper condensate flow into the trap, install a pressure-balancing line. Connect the end of the pressure-balancing line to the air main or an air space above any possible condensate accumulation in the system. For more details, see the section “The Need for a Pressure-balancing Line”.
7. Open the inlet and outlet valves and check to make sure that the product functions properly.
8. If the installation location is expected to have a very small condensate load, prime before installation (fill the inside of the body with water). Air may leak if condensate is not accumulated in the body at a start-up.

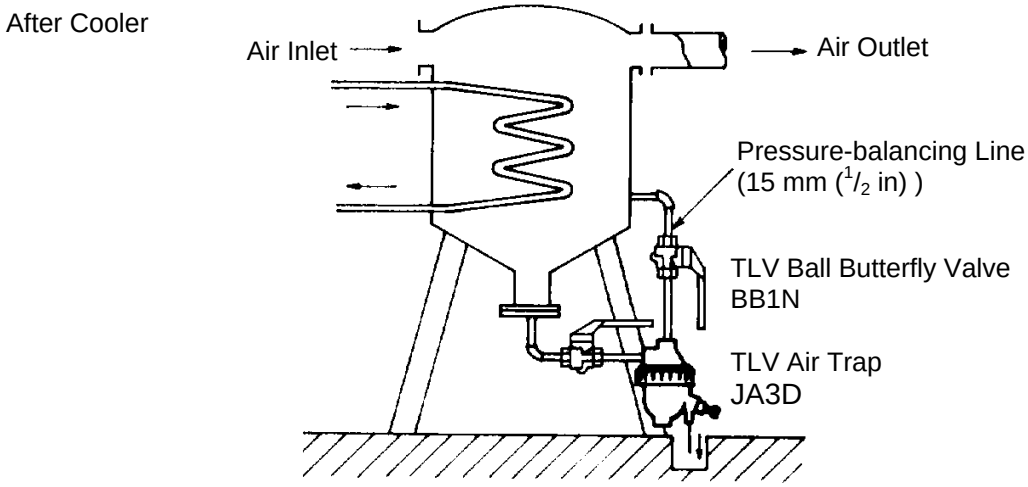
If there is a problem, determine the cause using the “Troubleshooting” section in this manual.

The Need for a Pressure-balancing Line

This air trap is designed to automatically discharge inflowing condensate. However, if the condensate completely fills the inlet path of the trap, air in the trap body will not be able to escape, preventing displacement by condensate, and thus preventing condensate from entering the trap. This phenomena is called air binding. Air binding occurs more often in piping with long horizontal length, smaller diameters or multiple bends. To prevent air binding and ensure air can be displaced by incoming condensate, a pressure-balancing line should be installed between the trap cover and the dry portion of the receiver tank or piping.

Connect the pressure-balancing line in the follow manner:





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.**

⚠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.**

Operational Inspection

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

Normal:	Condensate is discharged continuously and the sound of flow can be heard. If there is very little condensate, there is almost no sound of flow.
Blocked: (Discharge Impossible)	No condensate is discharged.
Blowing:	Air continually flows from the outlet and there is a continuous high-pitched sound of flow.
Air Leakage:	Air is discharged through the trap outlet together with condensate, accompanied by a high-pitched sound.

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.

	Procedure
Gaskets:	check for warping or damage
Screen:	check for clogging or corrosion
Valve Seat:	check for warping or damage
Float:	check for scratches or dents
Plunger O-Ring:	check for warping or damage
Valve Seat Opening:	check for dirt, oil film, wear or scratches

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 **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.)

Detaching / Reassembling

Part	During Disassembly	During Reassembly
Union Nut	Hold the trap body with one hand and unscrew the union nut with a pipe wrench; remove the body downward	Hold the trap body against the cover from below with one hand and hand tighten the union nut with the other hand: then tighten it to the proper torque (see torque table below)
Cover	The cover can be left connected to the piping if enough space is available to inspect it from below	
Screen	Remove the screen from the body	Insert the screen into its groove in the rim on the body
Cover Gasket	Remove the gasket	Replace only if found to be deformed or damaged
Float	Remove carefully; do not scratch its surface	Carefully insert the float; do not scratch its surface
Valve Seat Holder	Using a hex wrench, remove the valve seat holder and the valve seat together	Tighten to the proper torque (see torque table below)
Holder Gasket	Remove the holder gasket	Replace only if found to be worn or damaged
Valve Seat	Remove from valve seat holder	Replace only if found to be worn or damaged
Guard Bushing	Unscrew by hand	Hand tighten guard bushing
Snap Ring	Remove with snap ring pliers	Reinstall with snap ring pliers
Plunger	Pull out from valve seat holder	Insert into valve seat holder
Plunger O-Ring	Carefully remove plunger O-ring	Replace only if found to be deformed or damaged; coat with heat-resistant grease
Coil Spring	Remove from plunger	Reinstall onto plunger

Part Name	Tightening Torque		Dustance Across Flats	
	N·m	(lbf·ft)	mm	(in)
Union Nut	20	(15)	80	($3\frac{3}{16}$)
Valve Seat Holder	5	(3.7)	14	($\frac{9}{16}$)
Guard Bushing	Hand tighten		--	

1N·m ≈ 10 kg·cm

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.**

If the trap fails to operate properly, use the following table to locate the cause and remedy.

Problem	Cause	Remedy
No condensate is discharged or discharge is poor (blocked)	The float is damaged or filled with condensate	Replace with new float
	The float is stuck to the body with oil.	Clean parts
	The valve seat opening, screen or piping are clogged with rust and scale	Clean parts; where available, use the plunger to clean the valve seat opening*
	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
	Air binging has occurred	Make sure a pressure-balancing line is installed; if already installed, make sure it has not become dislodged or is not incorrectly installed
Air is discharged or leaks from the outlet (blowing) (air leakage)	Build-up on the seating surface of the valve seat or rust and scale build-up beneath the float	Clean parts; where available, use the plunger to clean the valve seat opening*
	The float is stuck to the body with oil.	Clean parts
	Damage to the valve seat	Replace with new valve seat
	The float is misshapen or has surface build-up	Clean float or replace with new float
	Improper installation orientation	Correct the installation
	Trap vibration	Lengthen inlet piping and fasten securely
Air 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 frequently becomes damaged	Water hammer has occurred	Study and correct the piping

* These models are equipped with a device that allows the valve to be forcibly opened from the outside of the trap.
If an oil clog occurs, activate the plunger by pushing it in several times with a fingertip.
The needle forces the float off of the valve seat. This results in the valve opening, which allows the discharge of any foreign matter or oil, thus remedying the problem.
When the finger is removed from the plunger, the force of the coil spring causes the plunger to return to its original position.

Product Warranty

1. Warranty Period
   One year following product delivery.

2. Warranty Coverage
   TLV CO., LTD. warrants this product to the original purchaser to be free from defective materials and workmanship. Under this warranty, the product will be repaired or replaced at our option, without charge for parts or labor.

3. This product warranty will not apply to cosmetic defects, nor to any product whose exterior has been damaged or defaced; nor does it apply in the following cases:

   1) Malfunctions due to improper installation, use, handling, etc., by other than TLV CO., LTD. authorized service representatives.

   2) Malfunctions due to dirt, scale, rust, etc.

   3) Malfunctions due to improper disassembly and reassembly, or inadequate inspection and maintenance by other than TLV CO., LTD. authorized service representatives.

   4) Malfunctions due to disasters or forces of nature.

   5) Accidents or malfunctions due to any other cause beyond the control of TLV CO., LTD.

4. Under no circumstances will TLV CO., LTD. be liable for consequential economic loss damage or consequential damage to property.

* * * * * * *

For Service or Technical Assistance:

Contact your TLV representative or your regional TLV office.

Manufacturer

TLV CO., LTD.
881 Nagasuna, Noguchi
Kakogawa, Hyogo 675-8511 JAPAN
Tel: 81-(0)79 - 427 - 1800