



Manufacturer

TLV. CO., LTD.

Kakogawa, Japan

is approved by LRQA LTD. to ISO 9001/14001



Instruction Manual

Rapid Initial Air Vent
VA1 • VA2
VA3 • VA4 • VA5

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Introduction

Thank you for purchasing the **TLV** Rapid Initial Air Vent.

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 rapid initial air vent features a precision-polished float and rubber valve seat combination that assures a tight seal. Simple, compact construction with no hinges or levers and only one moving part, the float, provides trouble-free operation and long service life. The rapid initial air vent is ideal for use where transport of hot or cold water must take place quickly, such as water supply piping, hot and cold water tanks and water pumps.





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

	<p>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.</p>
	<p>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.</p>
	<p>Use hoisting equipment for heavy objects (weighing approximately 20 kg or more). Failure to do so may result in back strain or other injury if the object should fall.</p>
	<p>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.</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>

Safety cautions continued on next page.

 CAUTION	<p>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.</p> <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 and 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>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.</p>
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Features of the VA Air Vent

1. The vents have no hinges or levers: the only moving part is the self-leveling free float, which eliminates concentrated wear and provides long service life.
2. The vents are made up of few parts and the construction has been kept simple, so maintenance checks are also simple.

Operation

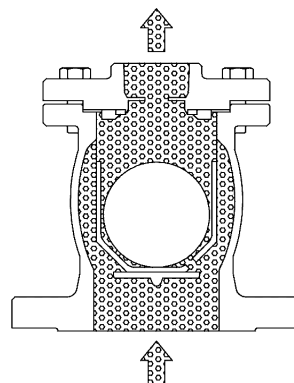


Take measures to prevent people from coming into direct contact with product outlets. Failure to do so may result in burns or other injury from the discharge of fluids.

Principles of air and condensate discharge:

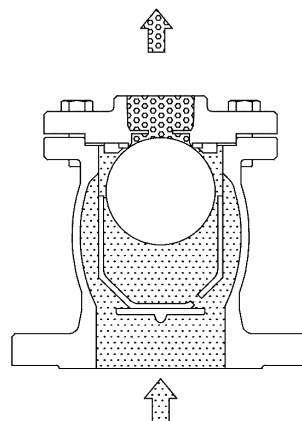
1. Rapid Venting of Initial Air at Startup

Gas from inside the piping is very quickly pushed out around the float guide by liquid pressure.



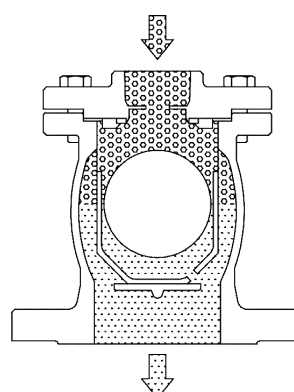
2. Air Vent Closes

After venting, the float rises with the rising liquid level, closing the valve. Once closed, the valve will not reopen, even if gas accumulates inside the product and the liquid level drops.



3. Closed Position

When the pressure inside the piping drops to near or less than atmospheric pressure, the float drops opening the vent. Air is allowed to enter to facilitate the drainage of liquid from the piping.



Specifications



DO NOT use this product outside the recommended operating pressure, temperature and other specification ranges. Improper use may result in such hazards as damage to the product or malfunctions which may lead to serious accidents. Local regulations may restrict the use of this product to below the conditions quoted.



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

Model	Size Inlet / Outlet mm	Max. Oper. Press. (PMO) MPaG	Max. Oper. Temp. (TMO) °C	Max. Allowable Press.* (PMA) MPaG	Max. Allowable Temp.* (TMA) °C	Weight kg
VA1	50 / 20	1.0	100	1.0	150	4.4 – 5.5
VA2	65 / 25					5.0 – 6.7
VA3	80 / 32					8.4 – 10
VA4	100 / 65					29 – 34
VA5	150 / 100					65 – 72

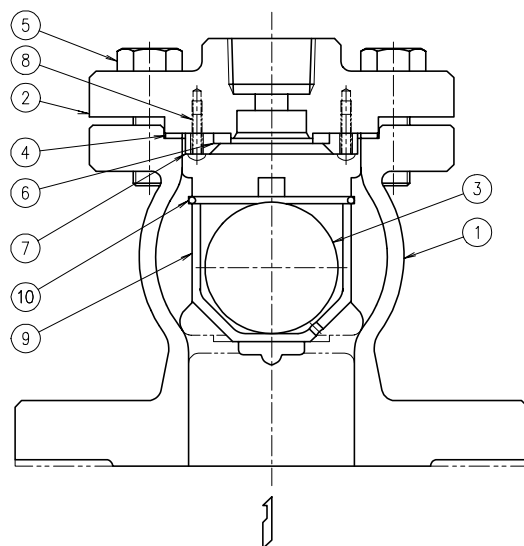
(1 MPa = 10.197 kg/cm²)

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

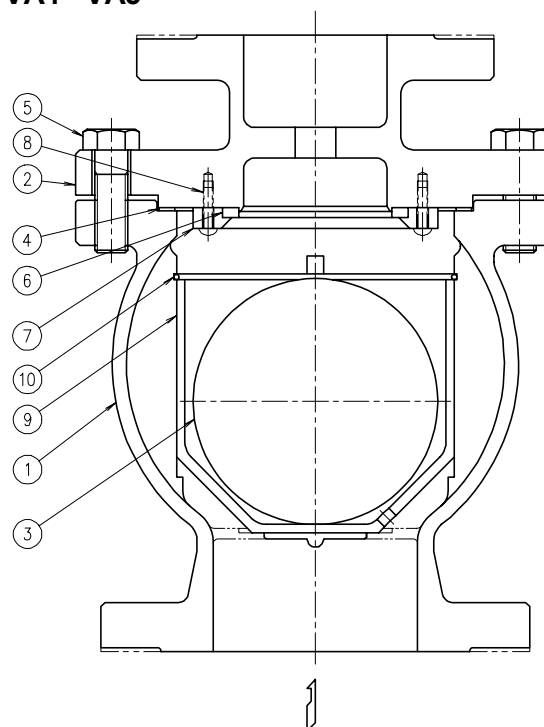
NOTE: Products with special order specifications may differ from the information in the table above. For full details, please refer to the product drawings.

Configuration

VA1 · VA2 · VA3



VA4 · VA5



No.	Name	No.	Name	No.	Name
1	Body	5	Cover Bolt	8	Set Screw
2	Cover	6	Valve Seat	9	Float Guide
3	Float	7	Valve Seat Holder	10	Snap Ring
4	Cover Gasket				

Installation



DO NOT use this product outside the recommended operating pressure, temperature and other specification ranges. Improper use may result in such hazards as damage to the product or malfunctions which may lead to serious accidents. Local regulations may restrict the use of this product to below the conditions quoted.



Use hoisting equipment for heavy objects (weighing approximately 20 kg 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.

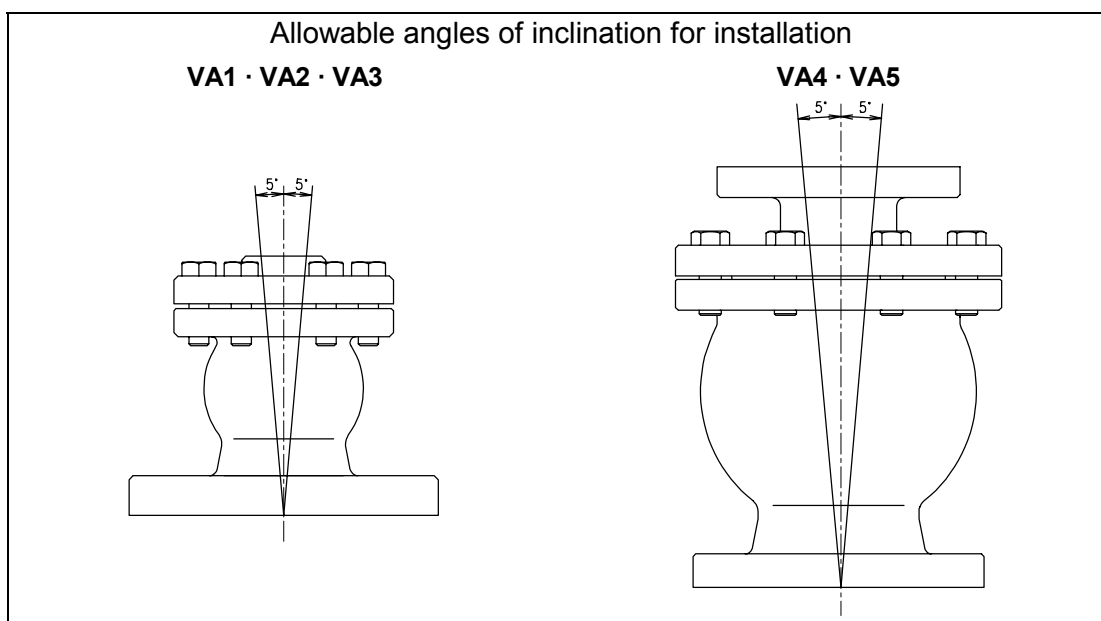


Do not use excessive force when connecting threaded pipes to the product. Over-tightening may cause breakage leading to fluid discharge, which may cause burns or other injury.

Installation, inspection, maintenance, repairs, disassembly, and adjustment should be done only by trained maintenance personnel.

Note: This product is designed for rapidly venting initial gasses. If gas is expected to accumulate in the piping during operation, use together with an automatic air vent.

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. This product must be installed vertically and with the inlet at the bottom and the outlet at the top.
4. The product should be inclined no more than 5° horizontally and front-to-back.
5. As this air vent is for the discharge of air and gas from liquid-carrying pipes, it must not be used for the discharge of air or gas from steam spaces.
6. Install the product at a point where air and gas are likely to collect such as a bend in the piping.
7. Install piping leading to a drainage vessel or ditch.
8. Be sure to install a valve and strainer (40 mesh or greater) at the product inlet.



Maintenance



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

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	
Gasket(s):	check for warping and damage
Valve Seat:	check for scratches or wear
Float:	check for scratches or dents
Float Guide:	check for damage

Disassembly / Reassembly



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.



Use hoisting equipment for heavy objects (weighing approximately 20 kg 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.



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.

Use the following procedures to remove components. Use the same procedures in reverse to reassemble. (Installation, inspection, maintenance, repairs, disassembly and adjustment should be done only by trained maintenance personnel.)

Disassembly / Reassembly Procedure

Part	During Disassembly	During Reassembly
Cover Bolt	Remove with a socket wrench	Consult the table of tightening torques and tighten to the proper torque
Cover	Lift off to remove	Make sure there are no pieces of the old gasket left on the sealing surfaces and reattach
Cover Gasket	Remove, clean sealing surfaces	Replace with a new gasket
Set Screw	Remove with a Philips screwdriver	Consult the table of tightening torques and tighten to the proper torque
Valve Seat Holder	Remove; take care as it may come with the valve seat	Attach making certain that the valve seat in the proper position

Dissassembly / Reassembly Procedure (Continued)

Part	During Disassembly	During Reassembly
Valve Seat	Remove being careful not to scratch the sealing surface	Clean or replace with new if sealing surface is warped or damaged
Float	Remove, being careful not to scratch the polished surface	Insert, being careful not to scratch or misshape
Snap Ring	Remove with appropriate pliers	Insert securely into groove
Float Guide	Remove without misshaping	Insert, being careful not to misshape

Torque Tightening Table

Model	Cover Bolt		Set Screw	
	Torque N·m	Distance Across Flats mm	Torque N·m	Screw Head
VA1	50	17	0.2	+
VA2	50	17	0.2	+
VA3	50	17	0.2	+
VA4	80	24	0.2	+
VA5	200	36	0.2	+

1 N·m ≈ 10 kg·cm

Troubleshooting

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.



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 air is discharged or discharge is poor*	The trapped air cannot displace the water in the piping	Correct the inlet piping
	The valve seat is clogged with dirt or foreign matter	Clean the valve seat
	The inlet or outlet piping is clogged	Clean the piping
Liquid leaks when the vent is closed	There is a build-up of rust or scale on the valve seat or the valve seat is damaged	Clean the valve seat or replace with a new valve seat
	The float is misshapen, dirty or has a film build-up	Clean the float or replace with a new float
	The installation angle of inclination is incorrect	Correct the installation
The vent does not close and liquid is blowing	The float is damaged or filled with liquid	Replace with a new float
	The specific gravity of the liquid is outside the specifications for this product	Select a product with suitable specifications for the operating conditions

* Note: Once the air vent closes, it will remain closed until internal pressure drops to near or below atmospheric pressure. This condition may be confused with a malfunction (blocked). If gas is expected to accumulate in the piping during operation, use together with an automatic air vent.

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:
 - Malfunctions due to improper installation, use, handling, etc., by other than TLV CO., LTD. authorized service representatives.
 - Malfunctions due to dirt, scale, rust, etc.
 - Malfunctions due to improper disassembly and reassembly, or inadequate inspection and maintenance by other than TLV CO., LTD. authorized service representatives.
 - Malfunctions due to disasters or forces of nature.
 - Accidents or malfunctions due to any other cause beyond the control of TLV CO., LTD.

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

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For Service or Technical Assistance:

Contact your **TLV** representative or your regional **TLV** office.

Manufacturer

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