

# TACMINA

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Back Pressure Valve

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## TBV Series

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### Operation Manual

**Before beginning operation, read this operation manual carefully.**

- Thank you for purchasing this TACMINA product. Please read this operation manual carefully in order to ensure that you use appliance safely and correctly.
- Be sure to keep this operation manual in a place where it will be easily available for reference.
- Additional information on this product and manuals in other languages may be found on our website.



#### CAUTION

- Do not modify this product.
- Be careful that slurry, debris, and other foreign matter do not enter the transferring liquids. The relief valve may stop operation.
- This back pressure valve cannot be used as a check valve.
- Structurally, a dead space exists in ball-type valves. Vaporizable liquids such as hydrogen peroxide water ( $H_2O_2$ ) and hypochlorous acid soda ( $NaClO$ ) may vaporize within this dead space, leading to an abnormal increase in pressure within the valve. This abnormal increase in pressure causes vaporization, resulting in pressurized gas that may explode if the valve is damaged, which can cause shards to go flying, resulting in an extremely hazardous situation. When handling vaporizable liquids, do not leave the valve closed for long periods of time. If leaving the valve closed for a long period of time, drain all the remaining liquid from the valve.

[www.tacmina.com](http://www.tacmina.com)

## Operating Conditions

Capacity: 2,000 mL/min or less

\* At a viscosity of 50 mPa•s

Viscosity: 50 mPa•s or less

Pressure: 1.0 MPa or less

Temperature: 0 to 50°C

## Outline

The phenomenon known as overfeed (excessive discharge amount) may occur depending on the piping conditions. This back pressure valve is used to prevent this phenomenon.

## Model Code

TBV — V E — 15 F  
(1) (2) (3) (4) (5)

(1) Series name

TBV: Back pressure valve

(2) Valve liquid-end material

V: PVC

(3) Diaphragm material

E: EPDM

F: Special fluoro-rubber

(4) Inlet connection size

4:  $\phi 4 \times \phi 9$

6:  $\phi 6 \times \phi 11$

12:  $\phi 12 \times \phi 18$

15: JIS10K15A

(5) Inlet joint

F: Flange

H: Hose (special order)

X: Other

## Specifications

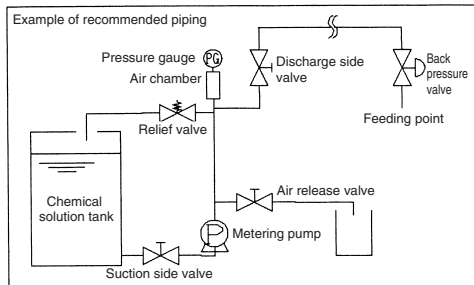
| Model          | Connection   | Pressure regulation range (MPa) | Standard setting pressure (MPa) | Material   |                       |                       | Weight (kg) |
|----------------|--------------|---------------------------------|---------------------------------|------------|-----------------------|-----------------------|-------------|
|                |              |                                 |                                 | Valve unit | Diaphragm             | O-ring                |             |
| TBV-VE-4H      | φ4×φ9        | 0.05 to 0.3                     | 0.1                             | PVC        | EPDM                  | EPDM                  | 0.3         |
| TBV-VE-6H      | φ6×φ11       |                                 |                                 |            |                       |                       | 0.4         |
| TBV-VE-6×11/Z  | φ6×φ11*      |                                 |                                 |            |                       |                       | 0.3         |
| TBV-VE-12H     | φ12×φ18      |                                 |                                 |            |                       |                       | 0.4         |
| TBV-VE-12×18/Z | φ12×φ18*     |                                 |                                 |            |                       |                       | 0.3         |
| TBV-VE-15F     | JIS 10K 15A  |                                 |                                 |            |                       |                       | 0.4         |
| TBV-VE-15F/Z   | JIS 10K 15A* |                                 |                                 |            | Special fluoro-rubber | Special fluoro-rubber | 0.3         |
| TBV-VE-19×26/Z | φ19×φ26*     |                                 |                                 |            |                       |                       | 0.4         |
| TBV-VF-4H      | φ4×φ9        |                                 |                                 |            |                       |                       | 0.3         |
| TBV-VF-6H      | φ6×φ11       |                                 |                                 |            |                       |                       | 0.4         |
| TBV-VF-6×11/Z  | φ6×φ11*      |                                 |                                 |            |                       |                       | 0.3         |
| TBV-VF-12H     | φ12×φ18      |                                 |                                 |            |                       |                       | 0.4         |
| TBV-VF-12×18/Z | φ12×φ18*     |                                 |                                 |            |                       |                       | 0.3         |
| TBV-VF-15F     | JIS 10K 15A  |                                 |                                 |            |                       |                       | 0.4         |
| TBV-VF-15F/Z   | JIS 10K 15A* |                                 |                                 |            |                       |                       | 0.3         |
| TBV-VF-19×26/Z | φ19×φ26*     |                                 |                                 |            |                       |                       | 0.4         |

\* The outlet side is R3/8 or R1/2.

TACMINA can adjust the valve to a specific setting pressure at the time of shipment if requested by the customer when ordering. (This adjustment can also be performed onsite.)

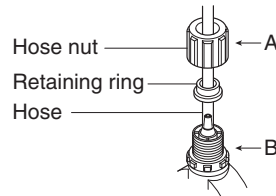
## Installation

- (1) Install the relief valve in the direction indicated by the feeding direction arrow label so that liquid flows in that direction.
- (2) Install the back pressure valve to the end of the discharge pipe.
- (3) Install a pressure gauge between the pump outlet and the back pressure valve.
- (4) When installing outdoors, be sure that the valve is not exposed to direct sunlight.

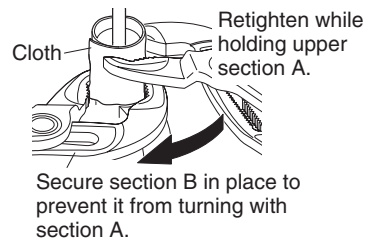


### Hose connection

- (1) Insert the hose fully to prevent it from falling out.



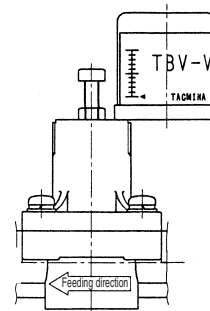
- (2) Fully tighten the hose nut by hand.
- (3) Wrap the nut with a cloth to prevent damage.
- (4) Use two water pump pliers to retighten one more rotation as shown in the figure below.



\* After starting operation, retighten the nut as needed.

## Pressure Regulation

- (1) The pressure setting of the back pressure valve that was set at the time of shipment is written on the nameplate. In some cases, however, the pressure setting may change due to the pumped fluid viscosity or pressure at the outlet side. Therefore, be sure to recheck the pressure setting during the trial run.
- (2) Remove the cap. Loosen the hexagonal nut, and regulate the pressure by turning the hexagonal bolt. Turning the hexagonal bolt clockwise increases the pressure setting; turning it counter-clockwise decreases the setting.
- (3) After setting the pressure, properly tighten the hexagonal nut so that the hexagonal bolt is not loose.
- (4) The nameplate is affixed to the cap. A scale is provided on the left end of the nameplate. Use this scale as a guide when regulating the pressure setting.





### CAUTION

- Do not assemble the valve with the hexagonal nut removed. Doing so can cause the pressure setting to shift, resulting in abnormal pressure or closed operation. This could lead to damage to the piping, pump, or the relief valve itself.

## Disassembly, Cleaning and Replacement of Parts

- (1) The diaphragm can be replaced by loosening the four cross-recessed head machine screws with washers. When cleaning the diaphragm, wash the diaphragm's sealing surface and the passage's sealing section.
- (2) Do not turn the hexagonal bolt for pressure regulation when disassembling, cleaning or replacing parts.

## Troubleshooting

| Problem                                                                              | Cause                                                                                       | Remedy                           |
|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|----------------------------------|
| Liquid emerges from the outlet side at a pressure below the target pressure setting. | Debris is clogging the valve.                                                               | Disassemble and clean the valve. |
|                                                                                      | Damage to or faulty diaphragm                                                               | Replace the diaphragm.           |
|                                                                                      | The pressure setting was mistakenly set below the target pressure setting.                  | Readjust the pressure setting.   |
| Pressure increases beyond the target pressure setting.                               | The pressure setting was mistakenly set higher than the target pressure setting.            | Readjust the pressure setting.   |
|                                                                                      | The valves after the back pressure valve discharge outlet are closed.                       | Open the valves.                 |
|                                                                                      | The piping after the back pressure valve discharge outlet is closed or clogged with debris. | Clean the piping.                |

Although the above table shows the possible causes and remedies for typical problems, it is also important to find the exact cause of a problem. For example, if the problem is caused by clogging of debris, and there is a large amount of debris and other foreign matter in the liquid, it may be advisable to install a strainer to solve this issue. Although the troubleshooting information above pertains to back pressure valve problems only, it is always important to thoroughly investigate the cause of all problems that occur.

## Consumables

| Part name | Quantity per unit | Recommended replacement interval |
|-----------|-------------------|----------------------------------|
| Diaphragm | 1                 | 4000 hours or 1 year             |
| O-ring    | 2                 |                                  |

Product designs and specifications are subject to change without notice for product improvement.

## TACMINA CORPORATION

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