# TBVS4

# USERMANUAL

**Read the complete manual before mounting and using the regulator.**

# CONTENTS

## WARNING

**INCORRECT OR IMPROPER USE OF THIS PRODUCT CAN CAUSE SERIOUS PERSONAL INJURY AND PROPERTY DAMAGE.**

Due to the variety of operating conditions and applications for this product, the user is solely responsible for making the final proper decisions concerning the correct assembly and functioning of the product and assuring that all the performance, safety and warning requirements are met.

- Users must be trained and equipped for the handling, use and servicing of pressure products and systems.
- Users must contact their gas or liquid supplier for specific safety precautions and instructions.
- Gaseous media should be free of excessive moisture to prevent icing at high flow.
- Always wear the appropriate protective clothing, including safety glasses, gloves etc. if required.
- Follow the applicable safety and maintenance procedures.
- Obey specific local regulations.
- Do not exceed the maximum inlet and outlet pressure of the product or its accessories.
- Operate within the temperature limits and other conditions specified for the product.
- Do not drop or damage the product in any other way. This may negatively effect the performance of the product which can cause the product to malfunction.
- Venting fluids and gases can be dangerous. Vent to a safe environment away from people. Ensure adequate ventilation.
- This product is not oxygen clean and therefore not suitable for oxygen service.

If there are questions or problems regarding the installation, operation and maintenance these should be directed to the proper authority on site before continuing.

# 1 Introduction

The TBVS4 is a diaphragm sensing springloaded backpressure regulator designed for millibar control.

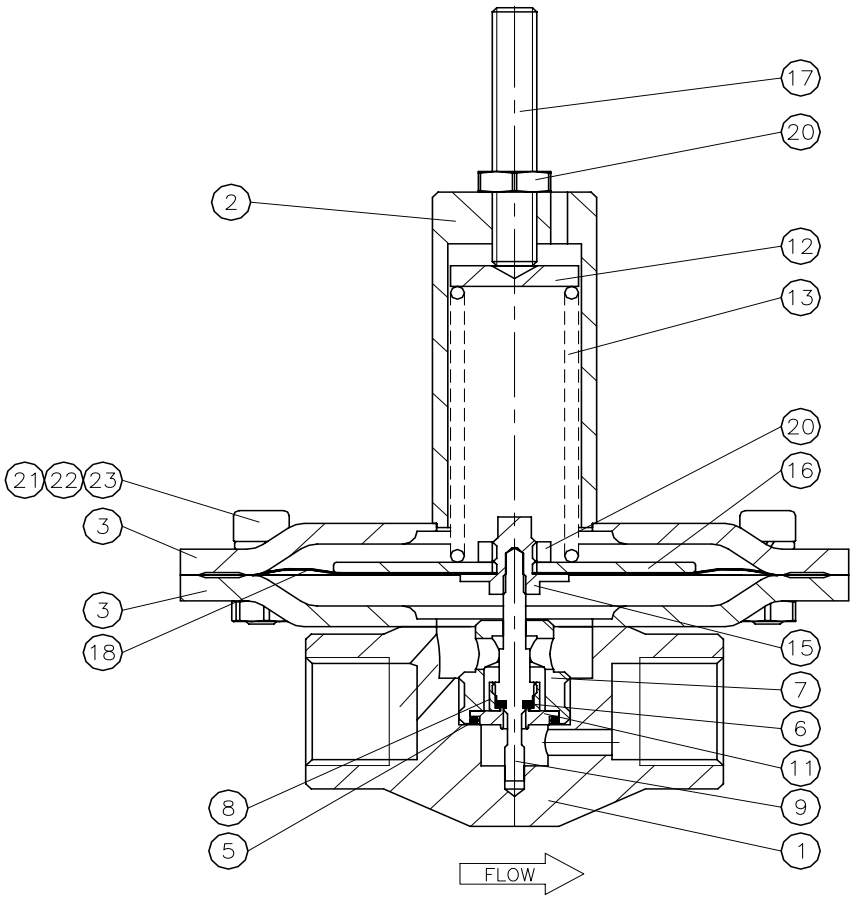
## 1.1 Main features

- kalrez seat
- ptfe diaphragm
- leak tight shut-off
- large diaphragm to seat ratio
- millibar control

The regulator is soft seated for leak tight shut-off in zero-flow conditions.

**A pressure regulator is not a shutt-off valve, SWAGELOK B.V. recommends to always use shut-off valves.**

## 1.2 Typical picture of the TBVS4 and his components




| | |
|---|---|
| 1 | = body |
| 2 | = spring housing |
| 3 | = cover |
| 5 | = O-ring |
| 6 | = O-ring |
| 7 | = seat retainer |
| 8 | = valve screw |
| 9 | = valve |
| 11 | = seat |
| 12 | = spring guide |
| 13 | = set spring |
| 15 | = clamp ring |
| 16 | = diaphragm plate |
| 17 | = setscrew |
| 18 | = diaphragm |
| 20 | = nut |
| 21 | = socket head cap screw |
| 22 | = nut |
| 23 | = ring |

# 2 Installation

2.1 Points of attention

- The TBVS4 is suitable for gases and liquids.
  Check the compatibility of the materials with the process fluid.
- Check if the connection is fitted far enough into the regulator and check for leakage across the fitting.
- Avoid sealing compounds which harden, be careful with anaerobic (loctite type) compounds. Particles of these compounds can run into the regulator and lock moving parts.
- Frequent assembly and disassembly of the in- and outlet fittings can damage the in- and outlet thread of the regulator. Damaged threads can lead to galling.

2.2 Installation instructions

- Check the flow direction of the system and mount the TBVS4 in the right direction.
- The standard connection of the TBVS4 is ½" bspp female to ISO R/228/1.
- To get a proper seal SWAGELOK B.V. recommends the use of bonded seals.
- The regulator is to be mounted in the correct position – horizontally (= spring housing vertical).
- Check that the system pressure does not exceed the maximum allowed pressure of the regulator.
- Make sure the system is free of dirt.
- Check the flow direction.
- Turn set screw/knob fully counter clockwise.

# 3 Operation

- Slowly open the inlet valve.
- Crack the outlet valve open.
- Slowly turn setscrew clockwise until the inlet gauge in the system tells you that the set pressure has been reached.
- Open outlet valve further.

# 4 Maintenance

All regulators require maintenance at scheduled intervals.
Annual maintenance is recommended under normal use.

4.1 Points of attention

- Vent the system pressure before removing the regulator from the line.
- Maintenance should be done in a clean workshop, not with the regulator still installed.

4.2 Disassembly

- Put the TBVS4 into a vice. Make sure it is secure.
- Turn the adjustment screw counter clockwise to remove the spring load.
- Remove spring housing nbr. 2 by loosening the bolts nbr. 21, 22 and 23.
- Remove the upper spring guide and spring housing.
- Loosen nut 20 and remove diaphragm plate 16.
- Loosen clamp ring nbr. 15.
- Screw the seat retainer nbr. 7 out, valve assembly and seat can now be removed.

Replace damaged parts and assemble in reversed manner.

4.3 Testing

It is recommended to test the repaired/maintained regulator in a test bench before re-installation in the system.

## *Warranty Information*

*Swagelok products are backed by The Swagelok Limited Lifetime Warranty.*
*For a copy, visit swagelok.com or contact your authorized Swagelok representative.*