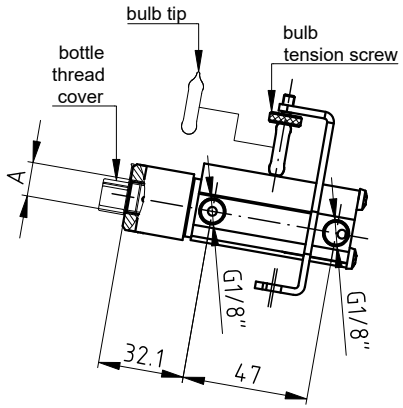
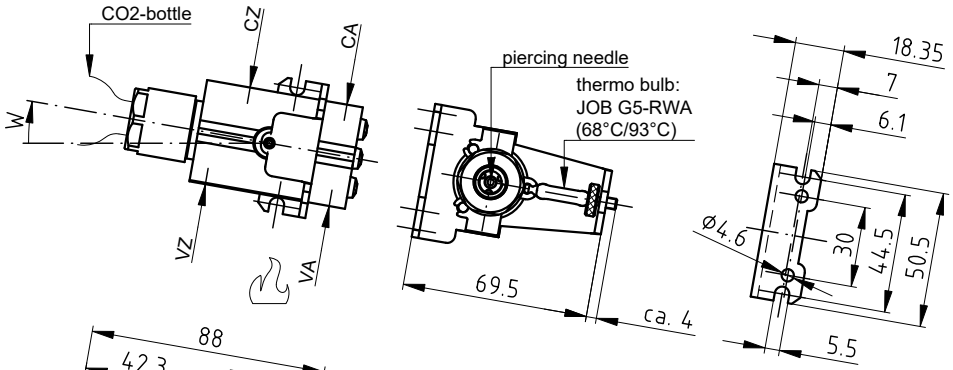
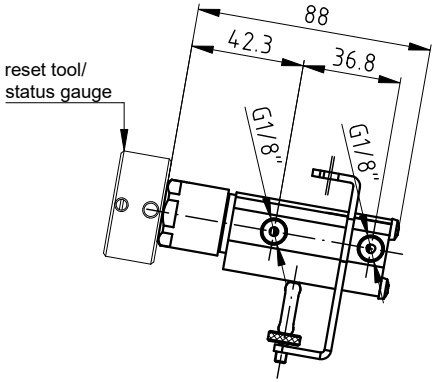



## Description of function:

The thermal valve TAVZ 4 is a release valve that taps a CO2 bottle when the thermal bulb bursts and releases the contained energy to operate a SHEV system.
The thermo bulb bursts at the specified rated temperature with a tolerance of -3°C/+8°C.
In the non-release position there is a connection between the in- and outputs **VA/CA** and the in- and outputs **VZ/CZ.**
When releasing (when the thermal bulb bursts):
- a CO2 bottle is tapped and the contained energy in it is passed on to the **CA** output.
- the **CZ** output is vented and the **VZ** input is blocked. This status can only be changed on site using a reset tool.
- the **VA** input is blocked by a shuttle valve. If the CO2 bottle energy source fails (e.g. too little CO2 quantity), this state can be reversed by applying a significantly larger energy source to the **VA** input. The failure of one energy source therefore does not lead to the failure or interruption of another energy source.

## Releasing:

Thermal releasing via bursting of the thermo bulb

## Versions:

| type | bottle thread A | VdS-number |
|---|---|---|
| TAVZ 4 | 1/2" UNF | G523002 |
| TAVZ 4.F | W21,8x1/14" | - |

## Mounting:

1) Join connections as follows:
   CA ... cylinder OPEN
   CZ ... cylinder CLOSE
   VA ... vent line or CO2 line OPEN
   VZ ... vent line or CO2 line CLOSE
2) When using CO2 one-way bottle the TAVZ 4 must be installed as drawn adhering to the inflow direction -> W=10°-30° (resp. 150°-170°).

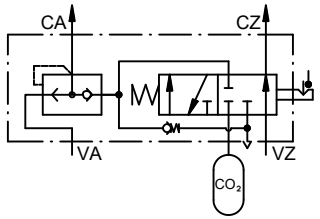
## Commissioning:

1) Remove the bottle thread cover
2) Screw the reset tool / single-use reset tool completely into the bottle screw-in thread.
3) Free the space for the thermo bulb of any contamination.
4) Insert thermo bulb so that the tip points in the direction of the tension screw and then hand tight fix.
5) Remove reset tool / single-use reset tool.
6) Check with the status gauge that it is ready for operation (back of reset tool, see figure 1).
7) Screw in CO2-bottle.

## Technical data:

| | |
|---|---|
| max. housing pressure | 80bar |
| max. operating pressure | 80bar |
| nominal width of valve | 2,0mm |
| nominal width of piercing needle | 1,5mm |
| environment class | 5 (nach prEN 12101-9) |
| ambient temperature range | -25°C - +110°C |
| weight | 0,26kg |

## Circuit diagramm:

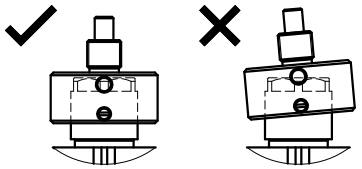



## Scope of supply:

Thermo bulb, connections, tools and CO2-bottle are NOT included in the scope of supply.

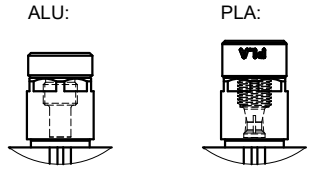
## Figure 1:

(status gauge/reset tool)



## Figure 2:

(optional single-use reset tool)




Tolerance | Scale 1:2 | Material

| | | | | |
|---|---|---|---|---|
| Created: Simetzberger | Sheet: 1/2 | Format: A3 | Title: Thermal release valve TAVZ 4 | Document Style: Data sheet |
| Approved: HA | Issue Date: 20.12.2023 | | | Document State: Valid |
| Grasl Pneumatic Mechanik Gmbh QM FO 05.24.0 | | | | Document Number: 04.038.DAT.00.02-E |

# Technical Instructions

## Thermal release valve TA

*Please read through these „technical instructions“ carefully and fully. Work on these devices must only be carried out by qualified personnel.*

## Meaning of the symbols

**Safety instructions**, must be observed!
The disregarding of these instructions can lead to personal injury and / or material damage.

**Advice**, the non-compliance with these instructions or the technical data shall lead to the loss of rights under guarantee.

**Correct**,
This is how it should be done.

**Incorrect,**,
This is how it should not be done.

## Correct and proper use

The thermal valve TA is used as control SHEV systems. By input command by bursting a thermo bulb or by electrical/pneumatic signal, the energy of a $CO_2$ bottle suited for SHEV systems is released.

When installing SHEV systems below an installation height of 2,5m from the floor, or from the next access level, suitable devices must be provided to prevent danger to people (crushing and pinching hazard). Follow the corresponding guidelines, rules and norms, e.g. EN 14351 and ASR A1.6. Do not allow children to play with the device or its regulation and/or control devices, including window controls.

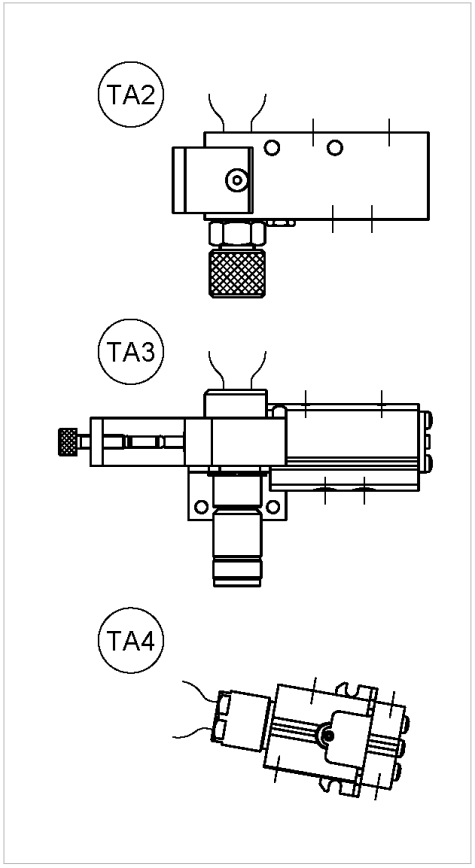



Figure 1: Thermal valves (symbolically)

## General notes

The thermal valve is not suited for use in highly corrosive environments (e.g.: thermal spas, waste management industry, etc.).

Always close the connections and protect against dirt and humidity.

We recommend the use of cutting ring fittings (DIN 3861). Our connection threads are designed for screw-in stud threads R1/8” according to EN 10226. A suitable sealant is recommended.

According to the prEN 12101-9 standard, the TA must be installed inside the SHEV system (e.g. on the mounting, on the curbe of skydome, etc.).

The installation height of the TA can be limited in some national standards (e.g. TRVB 125).

The TA must not be used to fasten decoration, cables, or other construction products.

Do not mount the TA directly over a heat source (stoves, etc.).

The volume of the pipeline/device connected to the ”SHEV OPEN” output must be at least 6 times greater than the volume of the $CO_2$-bottle.

When handling this product, always use suitable PPE – personal protective equipment (e.g. protective gloves, safety boots) as protection against sharp and pointed edges, pointed piercing needle, falling objects, and as protection against cold burns.

When working on the TA, the work area under the valve must be secured against hazards from falling parts. A suitable PPE must be provided for unavoidable activities below the work area.

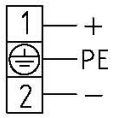



Figure 2: connecting electromagnet

## Installation

Observe the following before the installation:

- Check the transport box for damage and unauthorized opening.
- The completeness of the delivery.
- Check the valve for transport damages.

If incomplete or defective, a complaint must be lodged immediately. The transport box must not be exposed to the elements (e.g.: rain).

When installing the thermal valve, observe the national standards. The thermal valve may not be exposed to extreme temperatures and weather and it is not suited for outdoor storage and assembly. The TA must be mounted to all provided mounting holes, with suitable fastening material, mounted on a firm and stable surface. It is important to ensure that the heat flow, in compliance with the specified angles, can arrive unhindered to the thermo bulb.
Connect the respective connections, according to the connection diagram, with suitable screw connections and pipes.
Attach pipelines tension-free.

## Commisioning

See commissioning of the respective TA data sheet.

If the $CO_2$ bottles are not securely fastened, there is a risk that they might catapult during piercing.

The thermal valve is not equipped with devices that provide protection against crushing at the SHEV system.

### Commisioning of the release lever

Before inserting the $CO_2$-bottle, check the position of the piercing needle. There is a risk that the $CO_2$ bottle might be triggered unintentionally and, as a result, the SHEV system might move by accident.

## Normal operation

When the thermo bulb bursts, glass fragments are created. The position of the TA should be chosen so that, the broken glass poses no danger to the environment (e.g.: vegetable department in the supermarket).

### SHEVS release

- **Thermal release**: When the burst temperature is reached the glass bulb, the valve is released.
- **Optional Electrical release**: Possible by applying the nominal voltage (see technical data).
- **Optional Pneumatic release**: Possible by applying the min. control pressure (see technical data).

When released, the screwed-in $CO_2$ bottle get pierced and the $CO_2$ will be connected to the output.

### Restarting operation/reset

Always wear suitable PPE (e.g.: protective gloves, safety boots) when handling this product.

Once released, the thermal valve must be restarted by authorised personnel.

Piercing the $CO_2$ bottles will significantly cool down the $CO_2$ bottles and all pipes and components in the nearness through which the $CO_2$ flows. Touching these components for extended periods might cause cold burns.

### $CO_2$-bottle

Only verified $CO_2$ bottles authorised by us and meeting the requirements of the standards „EN 12205“ or „ADR 2003“ may be used.

The $CO_2$-bottle must be adjusted for the thermo bulb release temperature and shouldn't be damage, especially in area of the bursting disc.

### Thermo bulb

Only thermo bulbs that are authorized by us and approved by national standards may be used.

1. Slowly unscrew the bottle, until you hear a venting noise.
2. Wait until all pressure has been released from the bottle.
3. Fully turn out the bottle.
4. For additional points, refer to commisioning of respective TA data sheet.

## Maintenance

Maintenance must be performed
- at least yearly
- and according to the national, legal regulations,
- or if the TA valve has released.

If the TA is no longer functional, it must be replaced completely. It is not permitted to modify or remove any components of the TA. This would impair the safe operation of the TA in which case it may no longer be used.
Possible consequences may include failure to function, release of $CO_2$, risk of explosion of the $CO_2$-bottles.
If necessary, the O-ring, fixings, screw connections, $CO_2$ bottles and thermo bulbs can be obtained.

Disconnect all power supplies when carrying out maintenance work/troubleshooting on the SHEV system to prevent unintended operation. This can be achieved by turning out the $CO_2$ bottle. In addition, each additional $CO_2$-bottle in the system or the SHEV system Power supply, be interrupted.

Check the following as part of the maintenance:

### Check functionality

- piercing needle for damage/wear (Re50)
- check possible O-ring for damage and regrease it
- connection cable for damage
- function of the cable relief in the connecting plug
- secure attachment of TA
- valve, connections, pipes and $CO_2$ bottles for corrosion or damage
- $CO_2$-bottles for falling below the engraved total weight
- thermo bulbs for damage
- whether the heat flow of the TA is prevented (decoration, shelves, air conditioning, etc.)
- whether there are foreign objects on the TA or its pipeline (decoration, cables, etc.)
- prepare for operation -> see commissioning of the respective data sheet

## Malfunction

A malfunction is present if:
- the $CO_2$ bottles have not been inserted
- the thermo bulb have not been inserted

In the event of a malfunction, arrange for a service by a qualified company immediately.

### Functional test TA

In accordance with random sampling procedure, in the event of doubt or if functionality is not given.

- prepare for operation –> see commissioning of the respective data sheet
- optional ventilation: apply pressure to the ventilation line OPEN/CLOSE, check whether the SHEV system opens and closes
- destroy thermo bulb

> Disassembling the bulb by loosening the bulb screw will damage the valve!

- $CO_2$ bottle is pierced, SHEV system must open and check valve for leaks (note venting)
- remove the $CO_2$ bottle and check whether the SHEV system remains open
- optionally, pressure at CLOSE, check whether the SHEV system remains open
- prepare for operation -> see commissioning of the respective data sheet
- optionally, pressure at CLOSE, check whether SHEV system closes

## Decommissioning/disassembly

Decommissioning/disassembly sequence:

1. remove $CO_2$-bottle and separate it from other energy sources
2. remove pipelines from the valve
3. remove valve

### Decommissioning/disassembly of TA4

1. remove $CO_2$-bottle
2. check the reset tool for wear and insert it
3. remove the thermo bulb by loosening the bulb tension screw

> Removing the thermo bulb without the reset tool inserted will damage the TA4!

4. unscrew the reset tool
5. closing the bottle screw-in thread
6. remove pipelines from the valve
7. remove valve

## Disposal

This product is made of steel, aluminium, non-ferrous metals, plastic and electronic components.

> Dispose of this product in observance of the national regulations.