

# TA-Therm ZERO



## Circulation valves

Thermostatic circulation valve

# TA-Therm ZERO

This thermostatic valve for automatic balancing in domestic hot water systems features a step-less temperature setting, saving energy with reduced delay time for hot water. The shut-off function enables straightforward maintenance while the temperature control feature delivers safer operating procedures. The TA-Therm ZERO is a lead-free product (<0.1% lead content) especially designed to address local environmental demands.



## Key features

- > **ZERO lead**  
Product made of lead-free brass (<0.1% lead content).
- > **Thermometer**  
For easy maintenance.
- > **Measuring point**  
For easy maintenance and temperature measuring.

## Technical description

### Application:

Domestic hot water systems.

### Functions:

Stepless temperature setting  
Shut-off  
Temperature control  
Measuring

### Dimensions:

DN 15-20

### Pressure class:

PN 16

### Static pressure:

Max. static pressure during temperature control 10 bar.

### Temperature:

Max. working temperature: 90°C

### Temperature range:

35-80°C (WRAS approved up to 65°C)  
Pre-set at 55°C  
Kv at pre-set temperature: 0,3

### Material:

Valve body: Brass CC768S  
Valve plug: Corrosion-resistant acetal plastic  
Seat: Corrosion-resistant polysulphone plastic  
Other parts in contact with water: Brass CW724R (CuZn21Si3P)  
O-rings: EPDM rubber  
Handwheel: Glassfibre reinforced polyamide plastic

Measuring point: Brass CW724R (CuZn21Si3P)  
Sealing: EPDM  
Cap: Polyamide and TPE

### Marking:

Valve body: TA, ZERO, PN 16, DN, DR, flow direction arrow.  
Handwheel: IMI TA

### Approvals:

WRAS (approved up to 65°C).  
Certified by Kiwa UK.

## General

Today, most of the larger buildings have domestic hot water circulating systems in order to reduce the delay time for the water to run hot at the taps.

A TA-Therm thermostatic circulation valve can be fitted instead of a conventional balancing valve.

The valve opens when the temperature of the domestic hot water upstream of the valve is lower than the set temperature and when the supply temperature exceeds the set temperature, the valve closes. The flow of domestic hot water stops until the temperature of the water in the pipe has fallen below the set value, then the valve re-opens and again allows hot water to circulate.

TA-Therm is fitted with a manual shut-off valve in order to allow repair work to be carried out on the system. The measuring point is self-sealed. When measuring, remove the cap and insert the probe through the seal.

## Sizing

The flow requirement in a hot water circulation system is determined by the cooling of the water in the distribution pipes. It is desirable to keep this temperature drop under control, and normally it is recommended a temperature drop of 5-10°C from the hot water tank or boiler etc. to the TA-Therm.

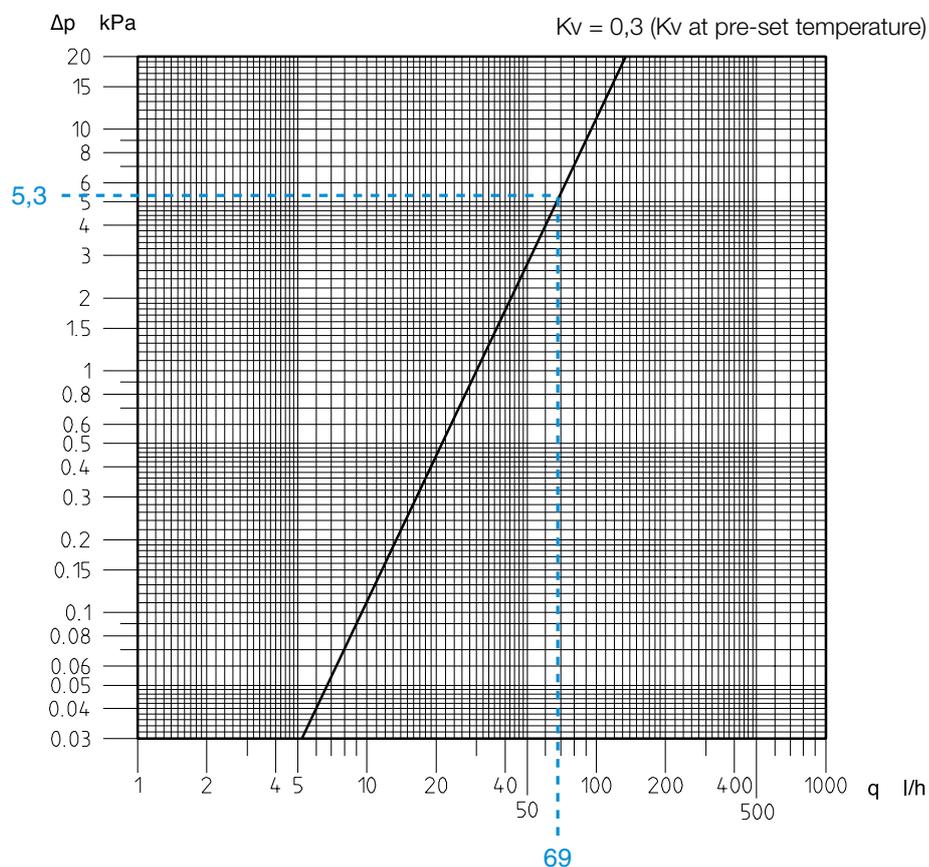
In modern buildings, the heat loss from insulated pipes that will carry the circulating hot water can be estimated to about 10 W/m. From this, the necessary flow rate of the circulation pump can be calculated:

$$q = 10 \times \sum L \times 0,86 / \Delta T \quad (q \text{ in l/h})$$

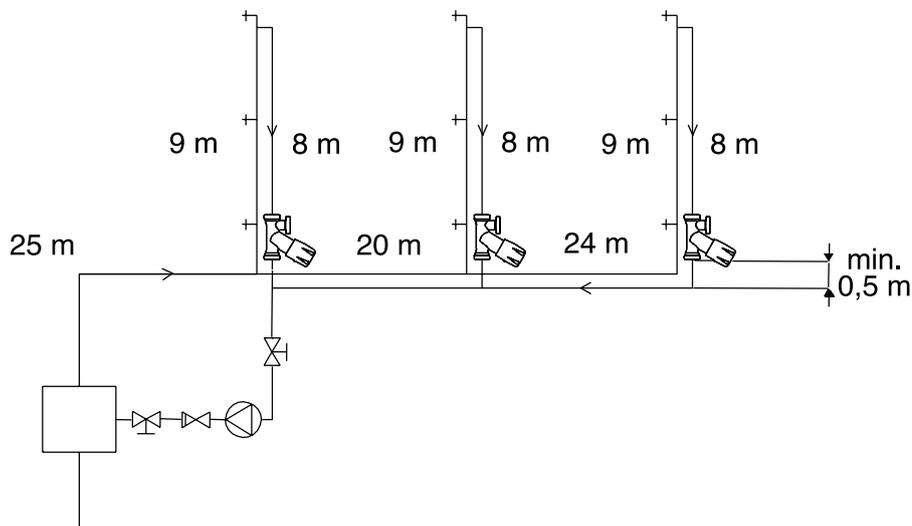
The pump head needs to be sufficient to overcome friction and pressure pulse losses in the pipes to the furthest hot water circulation valve and back, to which must be added the pressure drop across the TA-Therm valve itself, check valve, heat exchanger and other components.

### NB!

The output temperature from the hot water tank, boiler etc. must be at least 5°C above the temperature setting of the TA-Therm.



## Example



### Solution:

Necessary flow to overcome 5°C temperature drop to the last TA-Therm:

$$q = 10 \times (25+9+8+20+9+8+24+9+8) \times 0,86 / 5 = 206 \text{ l/h}$$

Assume that the total flow is divided equally for each TA-Therm.  $206/3 = 69 \text{ l/h}$ , which gives a pressure drop of 5,3 kPa for DN 15 (see diagram).

The required pump head is then given by:

1. TA-Therm = 5,3 kPa

2. The pressure drop in the hot water pipes to the last tap is estimated to 30 Pa/m (at low load).

$$30 \times (25+20+24+9) = 2300 \text{ Pa} = 2,3 \text{ kPa}$$

3. The pressure drop in the hot water circulation pipe (from the last tap and back) is estimated to 100 Pa/m.

$$100 \times (8+24+20+25) = 7700 \text{ Pa} = 7,7 \text{ kPa}$$

4. The pressure drop in the check valve, heat exchanger and other components is estimated to 12 kPa.

$$\sum \Delta p = 5,3+2,3+7,7+12 = 27,3 \text{ kPa}$$

Select a pump to give 206 l/h at a minimum of 28 kPa head.

## Installation

TA-Therm is calibrated and pre-set at 55°C.

TA-Therm can be set at any required temperature between 35-80°C.

### Installation

(see Diagram B)

Fit TA-Therm in each circulation riser, either at the top or bottom of the riser.

Make sure that the valve is fitted the right way round (an arrow on the valve body indicates the direction of flow) and not closer than 0,5 m from the return pipe.

### Temperature setting

(see Diagram A)

- Loosen the locking screw with the 2.5 mm Allen key, and unscrew it until it projects slightly above the handwheel.
- Turn the handwheel anticlockwise to stop.
- Set the required temperature against the casting line along the centre of the valve body (see the dotted line).
- Tighten the locking screw.

### Shut-off

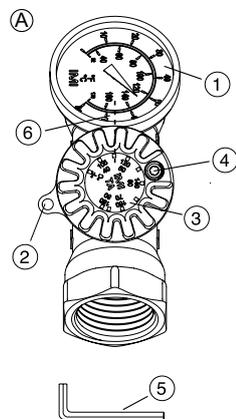
(see Diagram A)

- Loosen the locking screw with the 2.5 mm Allen key, and unscrew it until it projects slightly above the handwheel.
- Turn the handwheel clockwise to stop.

### Resetting the temperature

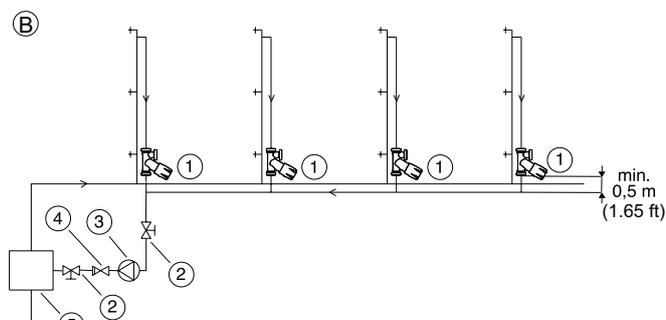
(see Diagram A)

- Turn the handwheel anticlockwise to stop.
- Set the required temperature against the casting line along the centre of the valve body (see the dotted line).
- Tighten the locking screw.



**Diagram A**

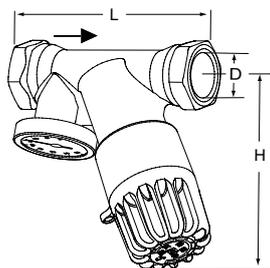
1. Temperature gauge
2. Lug for identification tab
3. Temperature scale
4. Locking screw
5. Allen key for locking screw (2.5 mm)
6. Casting line



**Diagram B**

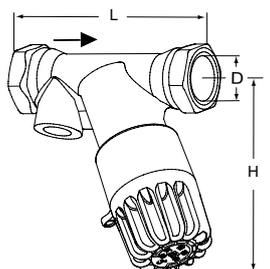
1. TA-Therm
2. Shut-off valve
3. Domestic hot water circulation pump
4. Check valve
5. Heat exchanger

## Articles

**With thermometer**

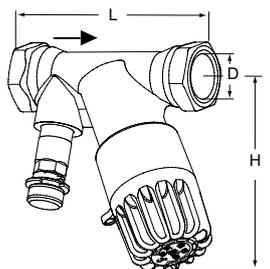
Pre-set at 55°C

DN	D	L	H*	Kv <sub>nom</sub>	Kvs	Kg	EAN	Article No
15	G1/2	86	90	0,30	1,1	0,45	5902276899874	52 820-015
20	G3/4	92	90	0,30	1,1	0,50	5902276899881	52 820-020

**Without thermometer**

Pre-set at 55°C

DN	D	L	H*	Kv <sub>nom</sub>	Kvs	Kg	EAN	Article No
15	G1/2	86	90	0,30	1,1	0,43	5902276899898	52 820-115
20	G3/4	92	90	0,30	1,1	0,48	5902276899904	52 820-120

**With measuring point**

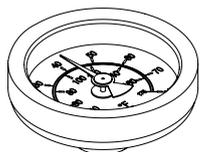
Pre-set at 55°C

DN	D	L	H*	Kv <sub>nom</sub>	Kvs	Kg	EAN	Article No
15	G1/2	86	90	0,30	1,1	0,47	5902276899911	52 820-815
20	G3/4	92	90	0,30	1,1	0,54	5902276899928	52 820-820

\*) Maximum height

**TA-Therm is prepared for the compression coupling KOMBI.** See catalogue leaflet KOMBI.

## Accessories

**Thermometer**  
0-100°C

ØD	EAN	Article No
41	5902276805028	50 205-003

The products, texts, photographs, graphics and diagrams in this document may be subject to alteration by IMI Hydronic Engineering without prior notice or reasons being given. For the most up to date information about our products and specifications, please visit [www.imi-hydronic.com](http://www.imi-hydronic.com).