Data sheet

# Actuators - Temperature

## RAVI

# Description

RAVI is self-acting thermostatic actuator primarily for use for temperature control of small hot water cylinders - either storage type cylinders or instantaneous hot water heaters.

RAVI can be combined with 2-way valves:
- RAV-/8,
- VMT-/8 and
- VMA

Controller closes on rising temperature.

The temperature controller is type-tested according to EN 14597.

**Main data:**
- DN 10-25
- $k_v$ 0.25-4.0 $m^3/h$
- PN 10
- Setting range: 43 … 65 °C
- Temperature:
  - Circ. water / glycolic water up to 30 %:
    2 … 120 °C with RAV-/8, VMT-/8
    2 … 130 °C with VMA valves
- Return mounting

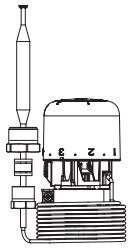
## Features & benefits

- Ensures reliable hot water temperature regulation without external power, improving comfort and safety.
- Easy installation and maintenance with return mounting, supporting long service life and energy-efficient operation.

# Ordering

## Product code numbers

### RAVI thermostatic actuator

| Picture | Setting range (°C) | Capillary tube length (m) | Max. sensor temp. (°C) | Code No. |
|---|---|---|---|---|
|  | 43 … 65 | 2.0 | 70 | **003L3688** [1), 2)] |

[1)] DIN-tested. Type approval number TR 838

[2)] Incl. Rp ½ sensor stuffing box

*Example:*
*Temperature controller, DN 15, $k_v$ 1.6 ; PN 10; setting range 43 … 65 °C; $T_{max}$ 130 °C; 2-way valve with ext. thread*
- *1× RAVI thermostatic actuator, 43 … 65 °C*
  *Code No: **003L3688***
- *1 VMA DN 15 valve*
  *Code No: **065F2034***

*Option:*
- *1× Immersion pocket, brass*
  *Code No: **065-4414***
- *1× Weld-on tailpieces*
  *Code No: **003H6908***

### Valves

| Type | Version | DN (mm) | $k_v$ [1)] ($m^3/h$) | PN | Connection | | Code No. |
|---|---|---|---|---|---|---|---|
| | | | | | inlet | outlet | |
| RAV 10/8 | 2-way | 10 | 1.2 | 10 | $R_p$ ⅜ | R ⅜ | **013U0012** |
| RAV 15/8 | | 15 | 1.3 | | $R_p$ ½ | R ½ | **013U0017** |
| RAV 20/8 | | 20 | 2.4 | | $R_p$ ¾ | R ¾ | **013U0022** |
| RAV 25/8 | | 25 | 2.6 | | $R_p$ 1 | R 1 | **013U0027** |
| VMT 15/8[2)] | | 15 | 1.3 | | $R_p$ ¾ | | **003L3523** |
| VMT 20/8[2)] | | 20 | 2.4 | | $R_p$ 1 | | **065F0120** |
| VMT 25/8[2)] | | 25 | 2.6 | | $R_p$ 1 ¼ | | **065F0125** |
| VMA 15[3)] | | 15 | 0.25 | 16 | G ¾ A | | **065F2030** |
| | | | 0.4 | | | | **065F2031** |
| | | | 0.63 | | | | **065F2032** |
| | | | 1.0 | | | | **065F2033** |
| | | | 1.4 | | | | **065F2034** |
| | | | 2.2 | | | | **065F2035** |

[1)] The capacity ($k_v$) applies with a P-band of 6 °C. For other P-bands, see Technical data.

[2)] For ordering of Cu fittings, see Accessories.

[3)] For ordering ext. thread tailpieces, see Accessories.

## Accessories code numbers

### Accessories for thermostat

| Type designations | Connection | Code No. |
|---|---|---|
| Immersion pocket | Brass, $R_p$ ½ × M14 × 1mm, Ø 12 × 170 mm | **065-4414** |
| Immersion pocket | Stainless steel, $R_p$ ½ × M14 × 1mm, Ø 12 × 170 mm | **065-4415** |
| Housing of sensor stuffing box | R ½ × M14 × 1mm, rubber EPDM Ø 12.6 × 4 × 6 mm | **013U8102** [1] |

[1] Code **013U8102** includes housing and gasket of sensor stuffing box

### Accessories for valves

| Type designations | For valve | Dimensions | | Code No. |
|---|---|---|---|---|
| Compression fittings [1), 2), 3)] | VMT 15 | Ø 15 × 1 | | **013G4125** |
| | | Ø 16 × 1 | | **013G4126** |
| | | Ø 18 × 1 | | **013G4128** |
| | VMT 20 | Ø 18 × 1 | | **013U0134** |
| | | Ø 22 × 1 | | **013U0135** |
| | VMT 25 | Ø 28 × 1 | | **013U0140** |
| Weld-on tailpieces | VMA 15 | - | | **003H6908** |
| External thread tailpieces | | Con. ext. thread acc. to EN 10226-1 | R ½ " | **003H6902** |
| Valve stuffing box [3)] | RAV/VMT/VMA | | | **065F0006** |

[1] Compression fitting consist of compression ring and union

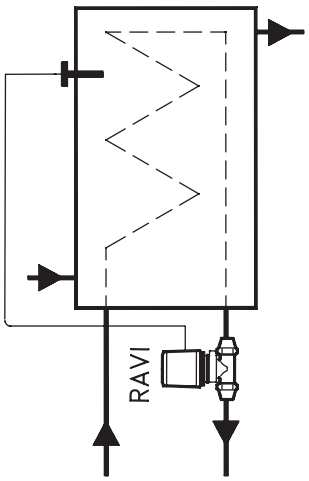
[2] For copper pipe

[3] The products can only be ordered in multiple packing containing 10 pieces each

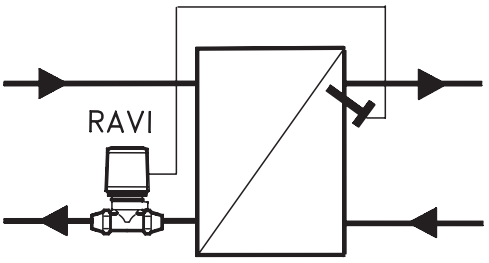
# Overview

## Application examples

The actuator RAVI must be installed in the return pipeline only.




*Storage cylinder*




*Instantaneous hot water heat exchanger. Immersion pocket not to be used.*

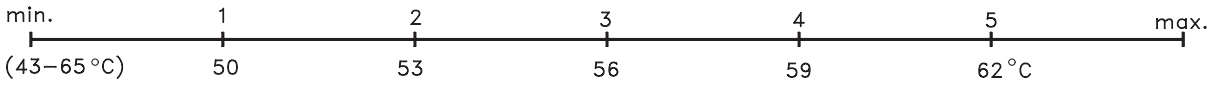
# Functions

## Settings

*Temperature setting*

Relation between scale numbers 1 - 5 and closing temperature.

The values given are approximate.



# Product details

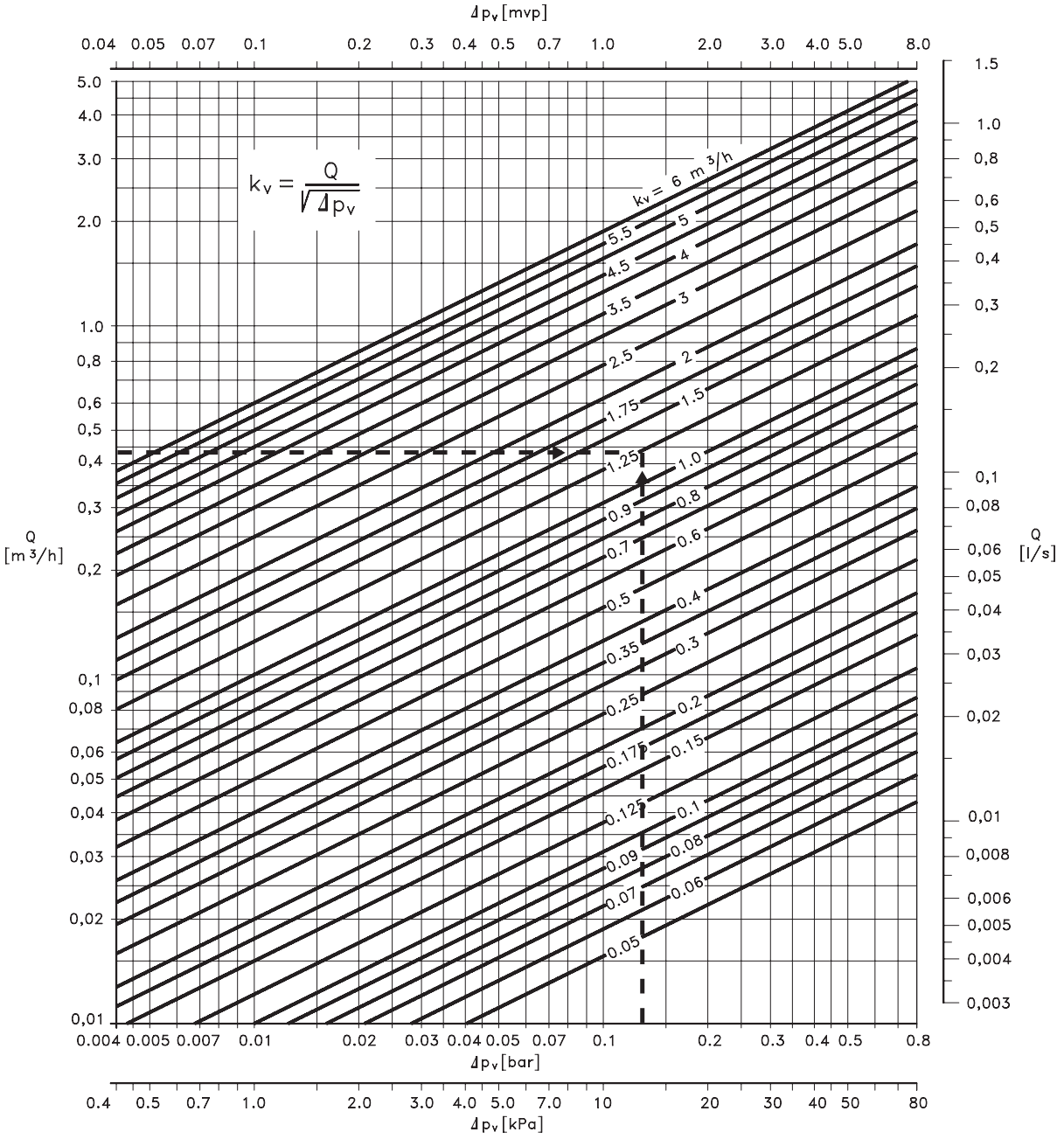
## General data

| Type RAVI | $k_v$ ($m^3/h$) with a P-band in °C of | | | Max. pressure | | Test pressure (bar) | Max. flow temp. (°C) | Max. adm. temp. at sensor (°C) |
|---|---|---|---|---|---|---|---|---|
| | 2 | 4 | 6 | PN (bar) | Δp[1] (bar) | | | |
| RAV 10/8 | 0.70 | 1.00 | 1.20 | 10 | 0.8 | 16 | 120 | 70 |
| RAV/VMT 15/8 | 0.70 | 1.10 | 1.30 | | | | | |
| RAV/VMT 20/8 | 1.00 | 1.80 | 2.40 | | | | | |
| RAV/VMT 25/8 | 1.20 | 2.00 | 2.60 | | | | | |
| VMA 15 ($k_{vs}$ = 0.25) | 0.23 | 0.24 | 0.25 | 16 | 5 | 25 | 130 | |
| VMA 15 ($k_{vs}$ = 0.4) | 0.35 | 0.38 | 0.40 | | 5 | | | |
| VMA 15 ($k_{vs}$ = 0.6) | 0.53 | 0.63 | 0.63 | | 2 | | | |
| VMA 15 ($k_{vs}$ = 1.0) | 0.60 | 0.85 | 1.00 | | 2 | | | |
| VMA 15 ($k_{vs}$ = 1.6) | 0.64 | 1.20 | 1.40 | | 2 | | | |
| VMA 15 ($k_{vs}$ = 2.5) | 1.00 | 1.55 | 2.20 | | 1 | | | |

[1] In installations where quiet function is required, the differential pressure across the valve should not exceed 1 bar.

| Materials | RAV/VMT | VMA | - |
|---|---|---|---|
| Valve body | Brass | DZR | |
| Valve cone | NBR rubber | EPDM | |
| Spindle | - | DZR | |
| Temperature sensor | Cu | | |
| Immersion pocket | Brass or stainless steel | | |
| Capillary tube | Cu | | |

## Sizing




**Example:**
Temperature control of service hot water.

*Given data:*
Tank output: 10 kW (8600 kcal/h)
Cooling (flow – return): 20 °C

Flow: $\frac{8.6}{20} = 0.43\,\mathrm{m^3/h}$

Differential pressure Δp across valve: 0.12 bar

*Required:*
Correct valve size

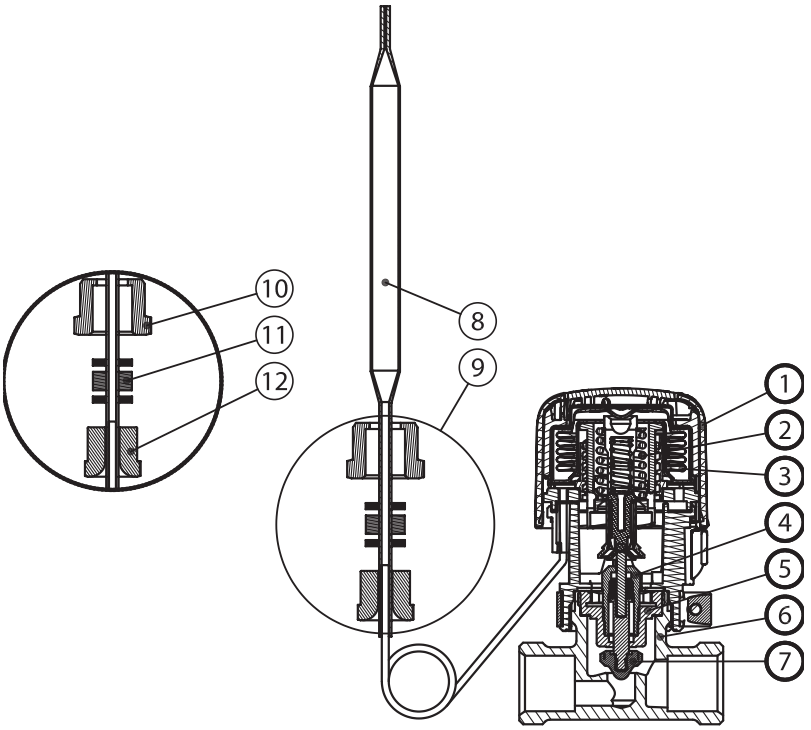
*Method:*

Use the water quantity (0.43 $m^3$/h) and differential pressure (0.12 bar) to read off the necessary $k_v$-value = 1.25

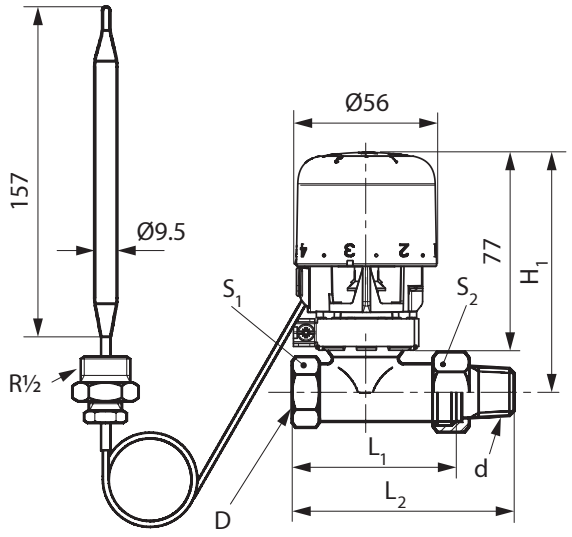
In this case, sizing is for a P-band of 6 °C. In the table of $k_v$-values, look under 6 °C and find the valve body having the necessary $k_v$-value. In this case the valve body most suitable is the RAV 15/8 or VMT 15/8 with a $k_v$-value of 1.3.

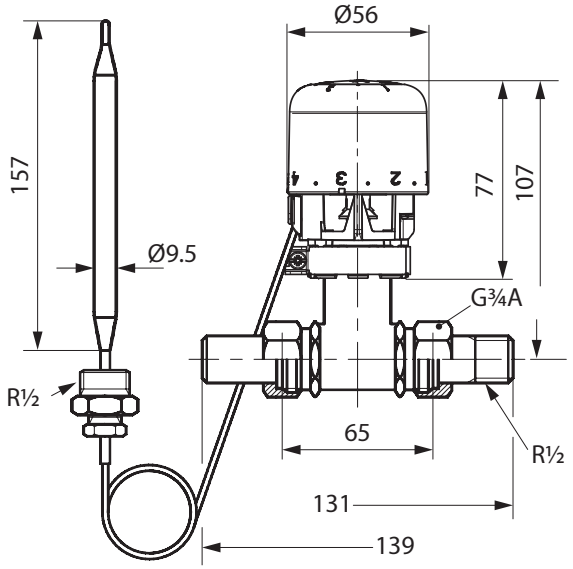
## Design

1. Handle for temperature setting
2. Setting spring
3. Bellows
4. Valve stuffing box
5. Bottom screw
6. Valve body
7. Valve cone
8. Temperature sensor
9. Sensor stuffing box
10. Housing of sensor stuffing box
11. Gasket of sensor stuffing box
12. Sealing bolt of sensor stuffing box



## Dimensions

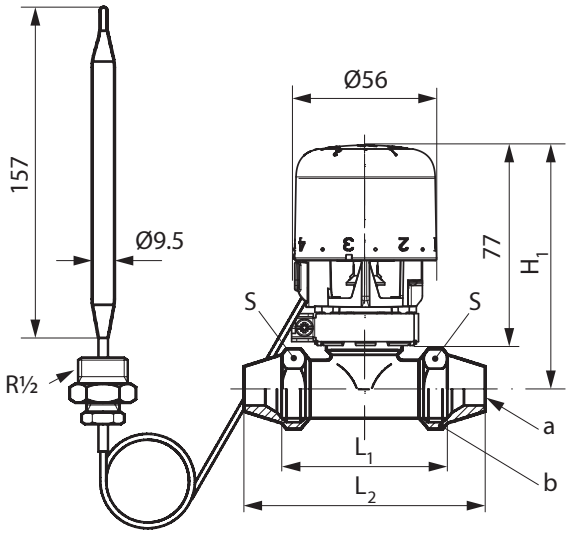



RAVI-VMA

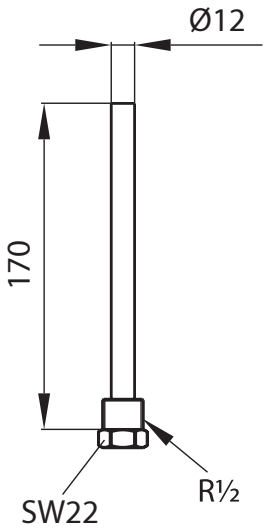
### RAVI-RAV-/8

| Type | D | d | $L_1$ | $L_2$ | $H_1$ | Width across flats | |
|---|---|---|---|---|---|---|---|
| | | | (mm) | | | $S_1$ (mm) | $S_2$ (mm) |
| RAVI-RAV 10/8 | $R_p$ ⅜ | R ⅜ | 59 | 85 | 103 | 22 | 27 |
| RAVI-RAV 15/8 | $R_p$ ½ | R ½ | 66 | 95 | 103 | 27 | 30 |
| RAVI-RAV 20/8 | $R_p$ ¾ | R ¾ | 74 | 106 | 103 | 32 | 37 |
| RAVI-RAV 25/8 | $R_p$ 1 | R 1 | 90 | 125 | 116 | 41 | 46 |

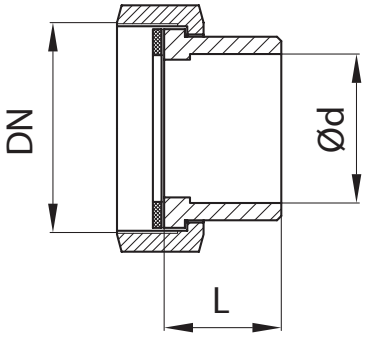



### RAVI-VMT-/8

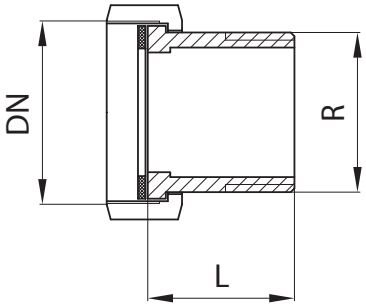
| Type | a | b | $L_1$ | $L_2$ | $H_1$ | S |
|---|---|---|---|---|---|---|
| | | | mm | | | |
| RAVI-VMT 15/8 | Ø 15/ Ø 16/ Ø 18 | R ¾ | 66 | 90 | 103 | 30 |
| RAVI-VMT 20/8 | Ø 18/ Ø 22 | R 1 | 74 | 101 | 103 | 37 |
| RAVI-VMT 25/8 | Ø 28 | R 1 ¼ | 90 | 120 | 116 | 45 |




*Immersion pockets*




*Weld-on tailpieces*




*External thread tailpieces*

| G | Ød | L | Weight |
|---|---|---|---|
| (mm) | | | (kg) |
| 15 | 15 | 35 | 0.18 |

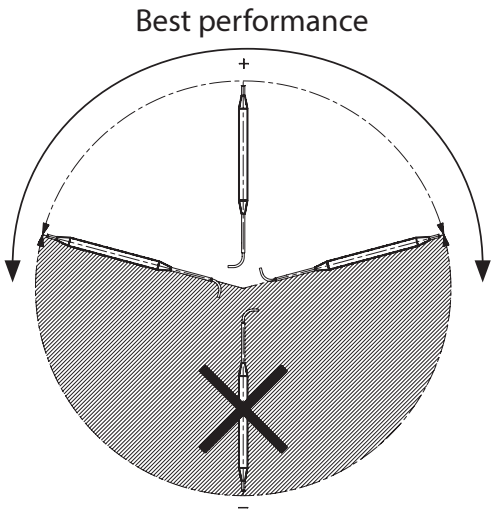
| G | R | L | Weight |
|---|---|---|---|
| (") | | (mm) | (kg) |
| ¾ | ½ | 25.5 | 0.17 |

## Installation

**Installation positions**

*Temperature controller*
The valve body must be installed in the return pipeline with flow in the direction indicated by the cast-in arrow.

*Temperature sensor*
The sensor must always be placed warmer than the bellows. For best performance it is recommended to install the sensor facing up.

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The list contains all certificates, declarations, and approvals for this product type. Individual code number may have some or all of these approvals, and certain local approvals may not appear on the list.

When you click on the link you will be directed to the latest version of the 'Declaration of Conformity'. Products developed and sold before this date of issue conform to the directives/standards in force at the time of their sale.

| Approval type | Title | Certification body | Approval topic |
|---|---|---|---|
| Electrical Safety Certificate | DIN CERTCO TR838 | DIN CERTCO | |
| Export Control Declaration | Actuators pressure flow and temperature | Danfoss | |

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