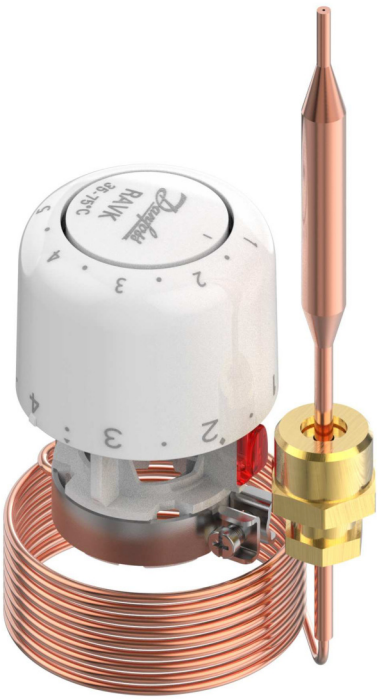
Data sheet



Actuators - Temperature

RAVK

Description

RAVK is self-acting thermostatic actuator primarily for use for temperature control of small hot water cylinders (e.g. storage tanks) or heat exchangers in radiator heating systems.

RAVK can be combined with:
- 2-way valves RAV-/8, VMT-/8, VMA, or
- 3-way valves VMV and KOVM

Controller closes on rising temperature.

RAVK 25-45 °C can be combined with VMV DN 15 and DN 20 valves. This combination is used for temperature control in a mixing loop for hot water service.

Main data:
- DN 10-25
- k_v 0.25-4.0 m^3/h
- PN 10 with RAV-/8, VMT-/8 and KOVM valves
- PN 16 with VMA and VMV valves
- Setting ranges:
  - 10 … 30 °C with RAV-/8, VMT-/8, VMA, KOVM valves
  - 25 … 45 °C with VMV DN 15 - 20 valves
  - 25 … 65 °C with RAV-/8, VMT-/8, VMA, KOVM valves
  - 35 … 75 °C with RAV-/8, VMT-/8, VMA, KOVM valves
- Temperature:
  - Circ. water / glycolic water up to 30 %:
    2 … 90 °C with KOVM valves
    2 … 120 °C with RAV-/8, VMT-/8 and VMV valves
    2 … 130 °C with VMA valves
- Flow and return mounting

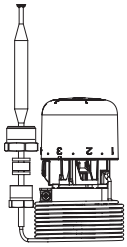
Features & benefits

- Self-acting temperature control for small hot water cylinders and heat exchangers – no external power needed
- Adjustable setting range 25–65 °C (other ranges available), closes on rising temperature

Ordering

Product code numbers

RAVK thermostatic actuator

Picture	Setting range (°C)		Capillary length (m)	Max. sensor temp. (°C)	Code No.[1]
	RAV / VMT / VMA / KOVM	VMV			
	10 ... 30	-	2.0	120	**003L3680**
	25 ... 65				**003L3681**
	35 ... 75				**003L3682**
	-	25 ... 45			**003L3683**

[1] *Incl. Sensor stuffing box Rp ½ × M14 × 1mm*

Example:
Temperature controller, DN 15, k_v 1.6 ; PN 16; setting range 25 … 65 °C; T_{max} 130 °C; 2-way valve with ext. thread;

- *1×* *RAVK thermostatic actuator, 25 … 65 °C*
  *Code No: **003L3681***
- *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_{vs} (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	1.5		R_p ½	R ½	**013U0017**
RAV 20/8		20	2.3		R_p ¾	R ¾	**013U0022**
RAV 25/8		25	3.1		R_p 1	R 1	**013U0027**
VMT 15/8 [1]		15	1.5		R_p ¾		**003L3523**
VMT 20/8 [1]		20	2.3		G 1 A		**065F0120**
VMT 25/8 [1]		25	3.1		G 1 ¾ A		**065F0125**
VMA 15 [2]		15	0.25	16	G ¾ A		**065F2030**
			0.4				**065F2031**
			0.63				**065F2032**
			1.0				**065F2033**
			1.6				**065F2034**
			2.5				**065F2035**
VMV 15	3-way	15	2.5		R_p ½		**065F0015**
VMV 20		20	4.0		R_p ¾		**065F0020**
KOVM 15		15	0.63	10	R_p ½		**013U3014**
			1.5		R_p ½		**013U3015**
			2.0		R_p ½		**013U3020**

[1] For ordering of Cu fittings, see Accessories,

[2] For ordering ext., thread tailpieces, see Accessories,

Accessories code numbers

065-4414

Immersion pockets, PN 25, For product type: AVT, 170 mm, R 1/2, BRASS

Imm.pocket,AVT,9.5mm,Brass(Sens.170)PN25

065-4415

Immersion pockets, PN 25, For product type: AVT, 170 mm, R 1/2, Stainless steel

Imm.pocket,AVT,9.5mm,SS(Sensor 170),PN25

013U8102

AVTB RAVI/K Adapt. R1/2 M14x1 Gasket fi12.6/4 x 6

AVTB RAVI/K Adapt. R1/2 M14x1 Gasket fi12.6/4 x 6

* code **013U8102** includes housing and gasket of sensor stuffing box

Accessories for valves

Type designations	For valve	Dimensions		Code No.
Compression fittings[1), 2)]	VMT 15	Ø 15 x 1		**013G4125**
		Ø 16 x 1		**013G4126**
		Ø 18 x 1		**013G4128**
	VMT 20	Ø 18 x 1		**013U0134**
		Ø 22 x 1		**013U0135**
	VMT 25	Ø 28 x 1		**013U0140**
Weld-on tailpieces	VMA 15	-		**003H6908**
External thread tailpieces		Con. ext. thread acc. to EN 10226-1	R ½"	**003H6902**
Compression fittings[1), 3), 4)]	KOVM 15 (G ½ A)	Ø 12 x 1		**013G4112**
		Ø 14 x 1		**013G4114**
		Ø 15 x 1		**013G4115**
		Ø 16 x 1		**013G4116**
Valve stuffing box[4)]	RAV/VMT/VMA/VMV/KOVM			**065F0006**

[1)] Compression fitting consist of compression ring and union

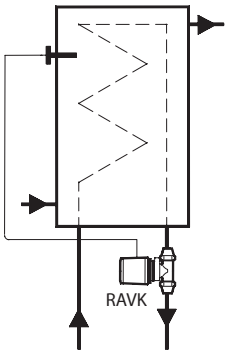
[2)] For copper pipe

[3)] For steel and copper pipe

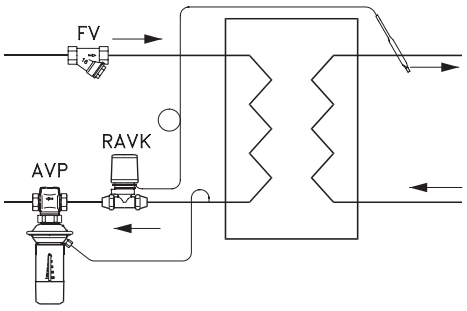
[4)] The products can only be ordered in multiple packing containing 10 pieces each

Overview

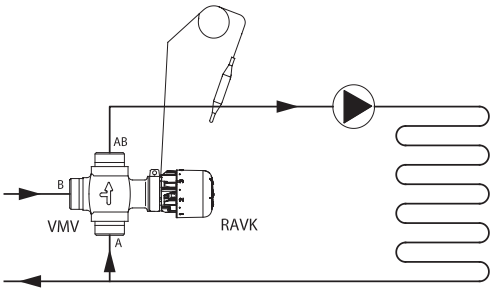
Application examples



Hot water cylinder



Heat exchanger in radiator heating system



Combination of VMV and RAVK

Functions

Settings

Temperature setting
Relation between scale numbers 1-5 and closing temperature.

The values given are approximate.

RAVK 10 … 30 °C with RAV, VMT, VMA and KOVM valves

min.	1	2	3	4	5	max.
(10...30 °C)	12	16	22	27	32	°C

RAVK 25 … 45 °C with VMV valve

min.	1	2	3	4	5	max.
(25...45 °C)	25	30	35	40	45	°C

RAVK 25 … 65 °C with RAV, VMT, VMA and KOVM valves

min.	1	2	3	4	5	max.
(25...65 °C)	25	35	45	55	65	°C

RAVK 35 … 75 °C with RAV, VMT, VMA and KOVM valves

min.	1	2	3	4	5	max.
(35...75 °C)	30	40	52	64	76	°C

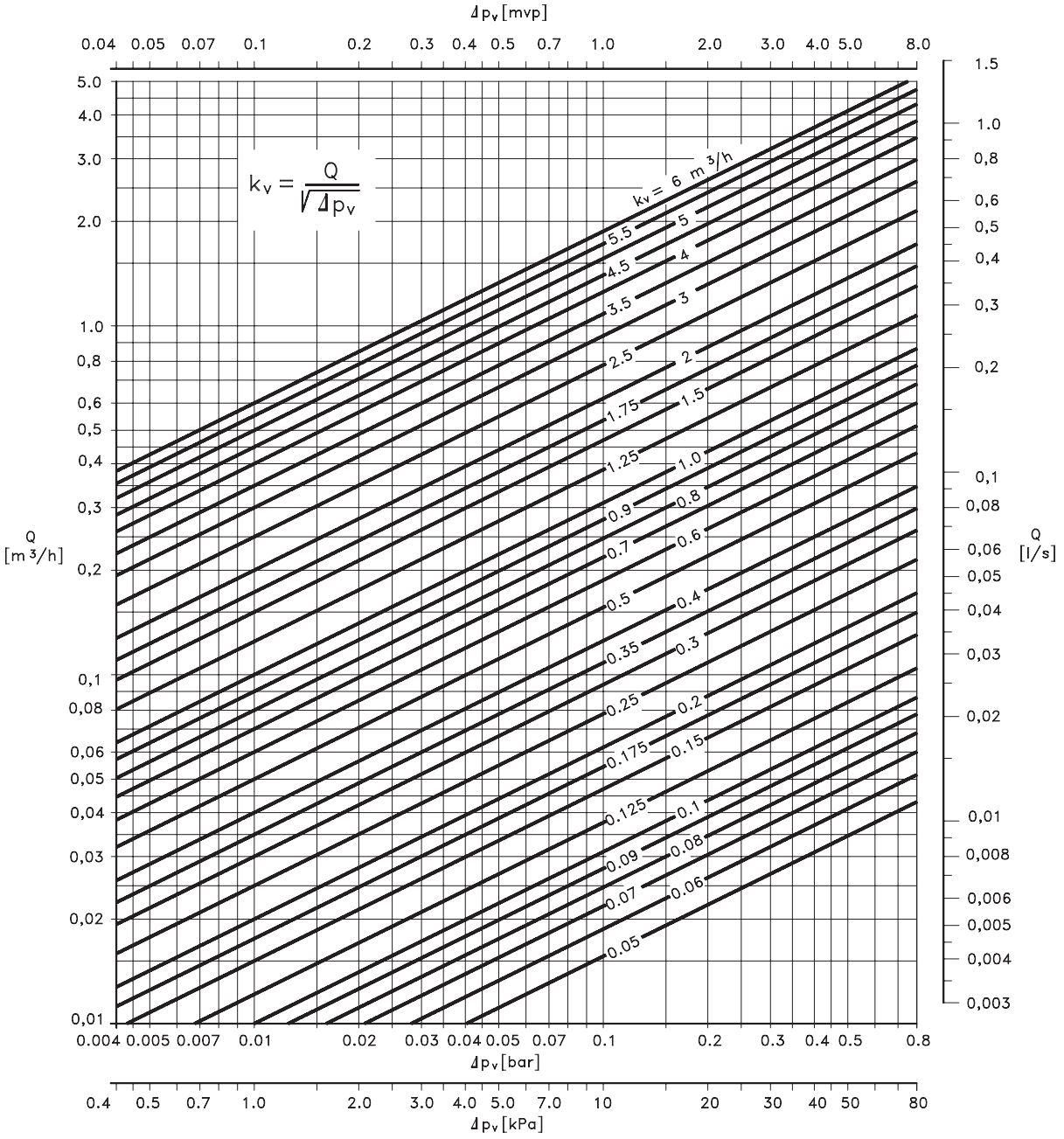
Product details

General data

Type RAVK	k_v (m^3/h) at a P-band °C of					Max. pressure		Test pressure (bar)	Max. flow temp. (°C)	Max. sensor temp. (°C)
						PN	Δp			
	2	4	6	8	10	(bar)	(bar)			
RAV/VMT 10/8	0.35	0.65	0.85	1	1.1	10	0.8	16	120	120
RAV/VMT 15/8	0.5	0.75	0.95	1.1	1.2					
RAV/VMT 20/8	0.55	1.1	1.6	2	2.2					
RAV/VMT 25/8	0.6	1.2	1.8	2.2	2.3					
VMA 15 (k_{vs} = 0.25)	0.1	0.2	0.2	0.2	0.2	16	3.0	25	130	
VMA 15 (k_{vs} = 0.4)	0.1	0.3	0.3	0.3	0.3		3.0			
VMA 15 (k_{vs} = 0.63)	0.2	0.5	0.6	0.6	0.6		1.5			
VMA 15 (k_{vs} = 1.0)	0.2	0.5	0.7	0.7	0.7		1.5			
VMA 15 (k_{vs} = 1.6)	0.2	0.6	0.8	0.8	0.8		1.5			
VMA 15 (k_{vs} = 2.5)	0.4	0.9	1.3	1.3	1.3		0.5			
VMV 15 (k_{vs} = 2.5)	0.45	0.9	1.3	1.75	2.2	16	0.2	25	120	
VMV 20 (k_{vs} = 4.0)	0.7	1.4	2.1	2.8	3.6					
KOVM 15 (k_{vs} = 0.63)	0.3	0.4	0.5	0.6	0.6	10	0.8	16	90	
KOVM 15 (k_{vs} = 1.5)	0.7	0.9	1.2	1.3	1.5					
KOVM 15 (k_{vs} = 2.0)	0.9	1.3	1.6	1.8	2					

Materials	RAV/VMT	VMA	VMV	KOVM
Valve body	Brass	DZR	Rg 5	Brass
Valve cone	NBR rubber	EPDM	EPDM	EPDM
Spindle	-	DZR	St. steel	St. steel 18/8
Temp. sensor	Cu			
Immersion pocket	Brass or stainless steel			
Capillary tube	Cu			

Sizing



Example:
Temperature control of service hot water

Given data:
Tank output: 14 kW (12.000 kcal/h)
Cooling (flow – return): 20 °C

Flow:
$\frac{12}{20} = 0.6\,\mathrm{m^3/h}$

Differential pressure Δp across valve: 0.12 bar

Required:
Correct valve size

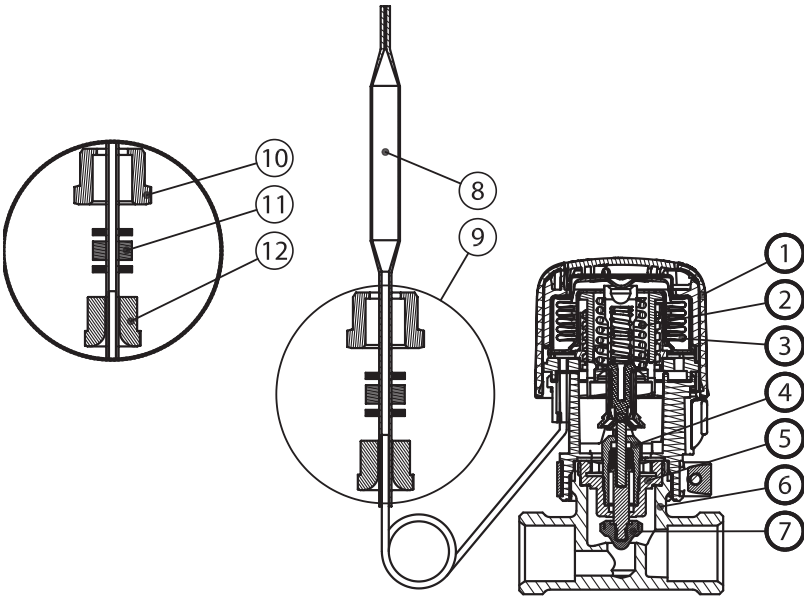
Solution:

From water volume (0.6 m^3/h) and differential pressure (0.12 bar), read off the necessary k_v value in diagram = 1.75 .

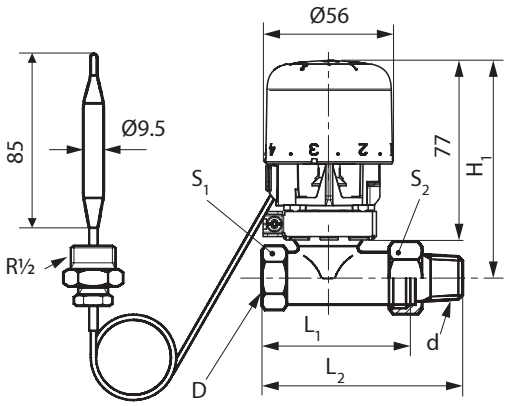
In this example, a P-band of 6 °C is required. From the kv columns in the table, under 6 °C, find the appropriate valve body. Here, the most suitable valve body is RAV 25/8 or VMT 25/8 with a k_v value of 1.8 .

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

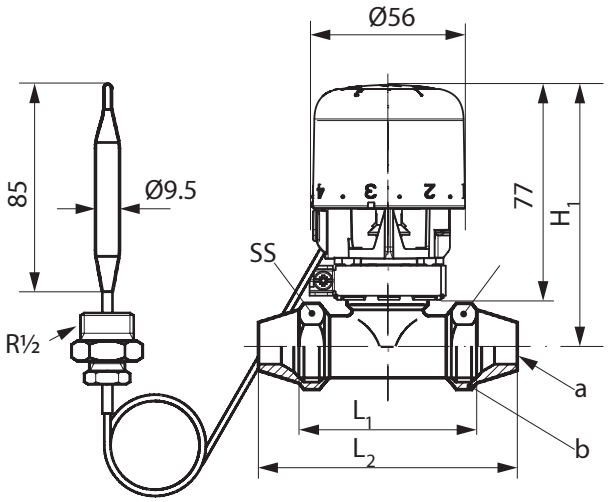


Dimensions



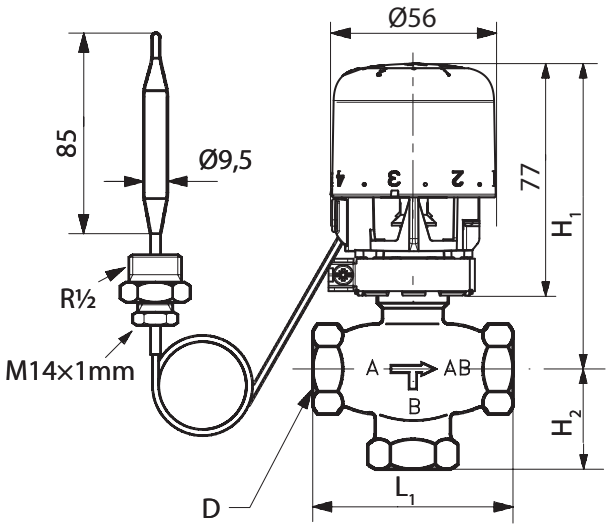
RAVK-RAV-/8

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



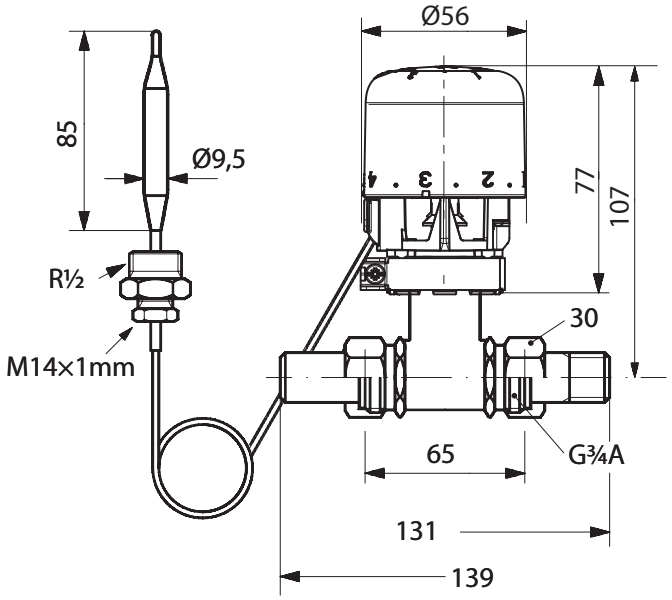
RAVK-VMT-/8

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

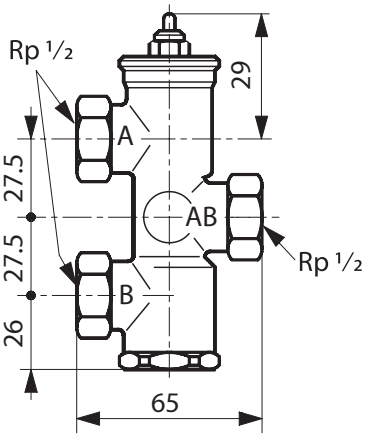


RAVK-VMV

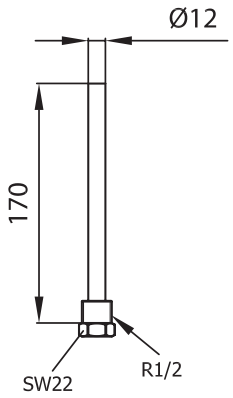
Type	L_1	H_1	H_2	D
	mm			
VMV 15	70	87	35	R_p ½
VMV 20	80	87	40	R_p ¾



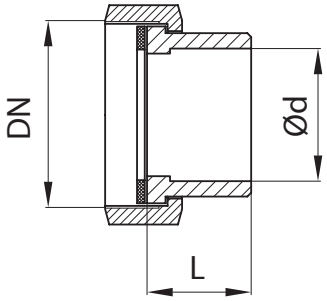
RAVK-VMA



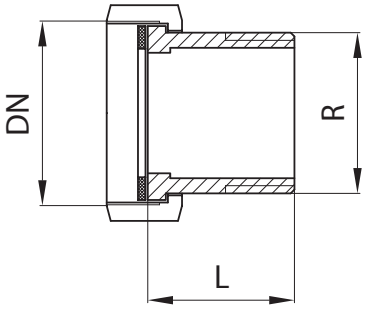
KOVM



Immersion pockets



Weld-on tailpieces



External thread tailpieces

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

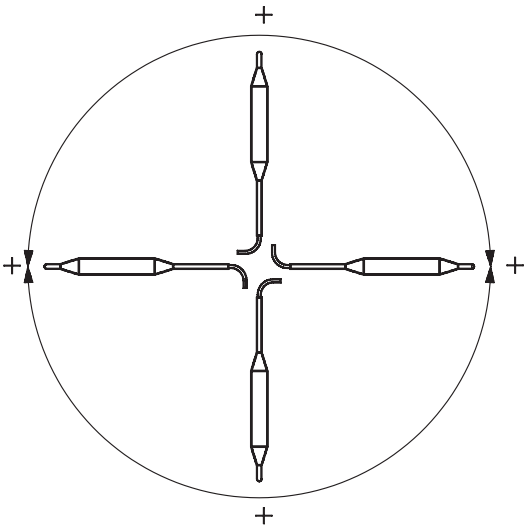
G	R	L (mm)	Weight (kg)
"			
¾	½	25.5	0.17

Installation

Installation positions

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

Temperature sensor
The sensor could be installed in any position.



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Approval type	Title	Certification body	Approval topic
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