Thermostatic inserts

for radiators with integrated valves

HEIMEIER

Pressurisation & Water Quality › Balancing & Control › Thermostatic Control

ENGINEERING ADVANTAGE

PNEUMATEX › TA › HEIMEIER ›

TA HYDRONICS

Technical description

HEIMEIER thermostatic inserts with integrated presetting/finest presetting options are suitable for all HEIMEIER thermostatic heads and actuators.
The flow ranges for presetting/finest presetting can be set simply and precisely with a key. The selected value can be read off at the front of the thermostatic insert.
Only qualified specialists are permitted to carry out or adjust the setting with the key.
Unauthorised persons cannot tamper with the setting in the absence of proper tools.
The stainless steel spindle is equipped with a double O-ring seal. The thermostatic inserts VHV and VHF with the Article No. 4333, 4340, 4334 and 4341 feature 6 presetting/finest presetting ranges. The thermostatic inserts VHV8S and VHF8S with the Article No. 4360, 4361, 4365 and 4366 feature 8 infinitely variable presetting/finest presetting values.

Assembly

Thermostatic inserts with presetting

VHV with **6** presetting ranges

4333

4340

VHV8S with **8** infinitely variable presetting values

4360

4365

Thermostatic inserts with finest presetting

VHF with **6** finest presetting ranges

4334

4341

VHF8S with **8** infinitely variable finest presetting values

4361

4366

- **Presetting with „just one twist“**
- **Setting verification option**
- **Use of key prevents misuse**
- **Lowest possible flow tolerances**
- **Optimised flow limitation**

Application

The majority of radiators are delivered ex-factory with thermostatic inserts featuring presetting 4333, 4340, 4360 and 4365 (see table). These inserts are intended for two-pipe pump heating systems with normal to high temperature spread as well as for single-pipe heating systems. Should it be necessary to use the finest presetting series due to minimal hot water volumetric flow or large-scale temperature spread, the installed presetable insert should be replaced by an insert with 4334, 4341, 4361 and 4366 finest presetting. HEIMEIER thermostatic inserts can be identified by the corresponding 4-digit article number on the end face (see illustration).
The integrated presetting/finest presetting facility makes exact hydraulic balancing possible with the aim of providing hot water to all heat consumers corresponding to their heating needs. This function operates under the assumption that the set values are actually realised in practical applications. Adherence to the lowest possible flow tolerances is imperative for this purpose. HEIMEIER thermostatic inserts effectively meet this requirement.
Experience has shown that the differential pressure across thermostatic inserts should not exceed the value of approx. 0.2 bar in order to ensure low-noise operation. If during the planning stages of a system it becomes evident that the system will experience higher differential pressures in the partial load range, devices for regulating differential pressure such as differential pressure controllers or overflow valves are to be installed.

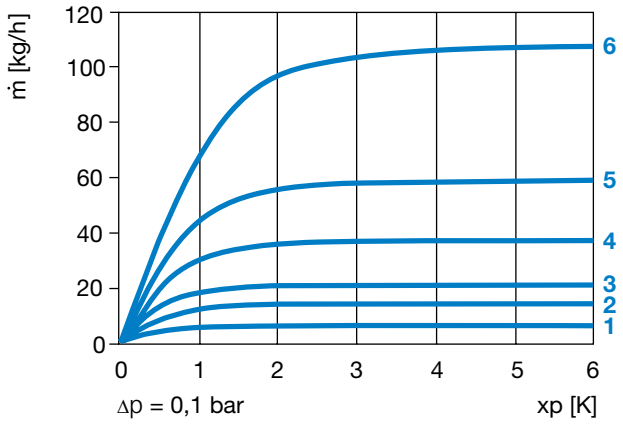
Article No	Radiators with integrated valves
4333	Superia, Demrad, Korado
4340, 4341	Biasi, Demrad, Celikpan
4360, 4361*)	Henrad, Caradon Stelrad, U.S. Steel
4365, 4366	Lyngson

Subject to technical modifications of the radiator manufacturer. Status: 03.2011

*) KEYMARK certified and tested as per EN 215.
KEYMARK symbol approval number 011-6T 0006.

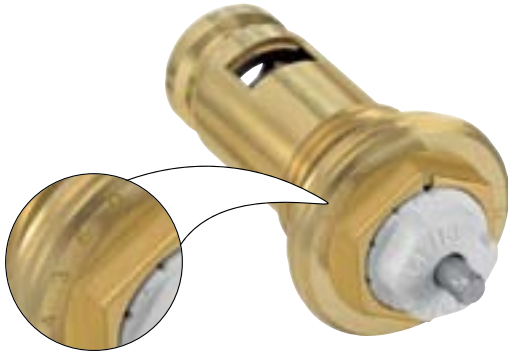
011

Optimised flow limitation



Thermostatic insert VHF with finest presetting, e.g. 4334/4341. Mass flow limitation as from approx. 3 K p-band.

Identification by article number



HEIMEIER thermostatic inserts can be identified by the corresponding 4-digit article number on the end face.

Sample application

1. Thermostatic insert with presetting
2. Factory setting/single-pipe operation
3. Radiators with integrated valves

Note

– The composition of the heat transfer medium should conform to VDI Guide - line 2035 so as to avoid damage and the formation of stone deposits in hot water heating systems. Please refer to the VdTÜV 1466/AGFW FW 510 codes of practice for industrial and long-distance heating systems. Mineral oils or all types of lubricants containing mineral oils in the heat transfer medium can have severe adverse effects on the equipment and usually lead to the failure of EPDM seals. When using nitrite-free antifreeze and anticorrosion agents with an ethylene glycol base, pay particular attention to the information provided by the manufacturer, particularly details concerning the concentration of the individual additives.
– The thermostatic inserts fit all HEIMEIER thermostatic heads and thermal or motor-driven actuators. Correctly matching the components will ensure maximum safety and reliability.
When using other-make actuators, make sure that the actuating force in the closing range is appropriate for thermostatic inserts with soft-sealing valve discs.

Operation

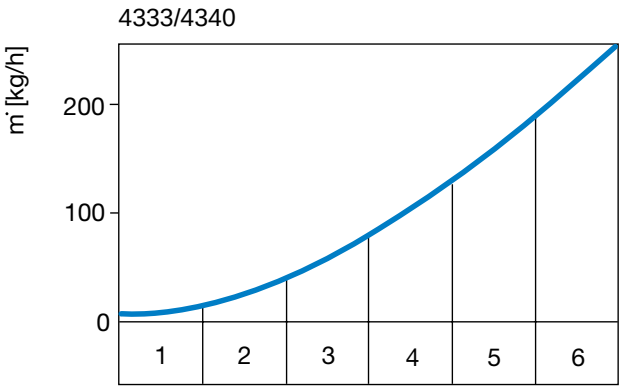
Presetting/finest presetting of thermostatic inserts VHV and VHF with 6 presetting/finest presetting ranges, e.g. 4333/4334/4340/4341

The thermostatic insert features 6 flow ranges bordering on each other with out interruption (see illustration). By varying the p-band, each range ensures con tinuously variable adjustment or limitation of the radiator mass flow corresponding to the actual heat requirements. This means the thermostatic insert can realise quasi-continuously all flow rates between the lowest and highest value without the need to set intermediate values (see illustration).
The presetting/finest presetting can be selected between 1, 2, 3, 4, 5 and 6. The setting 6 corresponds to the standard setting (factory setting). The presetting/finest presetting is made by placing the key (Article No. 3501-02.142) on the valve insert and turning it to the required value. The key is then removed.
The set value can be read off from the end face of the thermostatic insert, i.e. from operating direction (see illustration). Unauthorised persons cannot tamper with the presetting/finest presetting in the absence of proper tools.

Presetting/finest presetting of thermostatic inserts VHV8S and VHF8S with 8 infinitely variable presetting/finest presetting values, e.g. 4360/4361/4365/4366

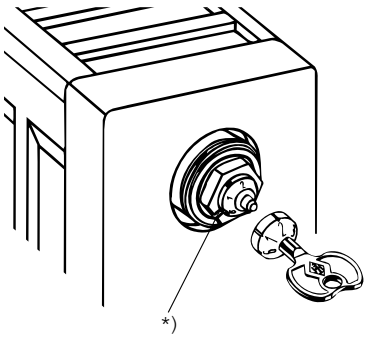
The thermostatic inserts feature an in finitely variable presetting and finest presetting facility.
The presetting/finest presetting can be selected between 1, 2, 3, 4, 5, 6, 7 and 8. 7 intermediate settings are also possible. The setting 8 corresponds to the standard setting (factory setting). The presetting/finest presetting is made by placing the key (Article No. 4360-02.142) on the valve insert and turning it to the required value. The key is then removed. The set value can be read off from the end face of the thermostatic insert, i.e. from operating direction (see illustration). Unauthorised persons cannot tamper with the presetting/finest presetting in the absence of proper tools.

Uninterrupted flow ranges, e.g. VHV 4333/4340



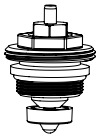
Δp = 0,1 bar

End face readoff



*) Reference mark

Replacement thermostatic inserts



Thermostatic insert
For radiators with integrated valves.
For Diatherm LTV radiators with integrated Landis+Gyr-thermostatic inserts (valve coupling). Also suitable for Stetherm.
From January 1984 to February 1985.

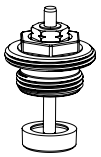
Thread	Article No
M22x1	4148-02.301

Thermostatic insert
For radiators with integrated valves.
With infinitely variable presetting.
Suitable for Biasi, Concept, Diatherm, Dianorm, Ferroli, Superia, Arbonia.
From 1989.

Thread	Article No
M22x1,5	4316-02.300

Thermostatic insert
For radiators with integrated valves.
With infinitely variable presetting.
White protective cap. Suitable for Diatherm «LX». From March 1991.

Thread	Article No
G1/2	4320-02.301

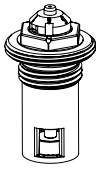


Thermostatic insert
For radiators with integrated valves.
No presetting. Suitable for Biasi, Concept, Dianorm, Ferroli, Superia.
From 1992.

Thread	Article No
M22x1,5	4321-03.300

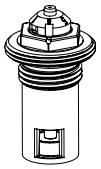
Thermostatic insert
For radiators with integrated valves.
With infinitely variable presetting.
White protective cap.
Suitable for Biasi, Concept, DEF, DiaNorm, Ferroli, Henrad, Purmo, Radson, Superia, Veha. From July 1992.

Thread	Article No
M22x1,5	4322-02.300



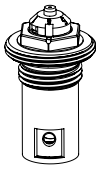
Thermostatic insert VHV
For radiators with integrated valves.
With 6 presetting ranges.
Suitable for Ferroli, Zenith.
From August 1994.

Thread	Article No
G1/2	4324-03.301



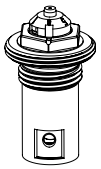
Thermostatic insert VHV
For radiators with integrated valves.
With 6 presetting ranges.
Suitable for Dia-therm «LX» radiator with integrated valve.
From August 1994.

Thread	Article No
M22x1,5	4326-03.300



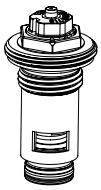
Thermostatic insert VHF
For radiators with integrated valves.
With 8 finest presetting ranges.
Suitable for Alarko, Arbonia, Biasi, Caradon-Stelrad, Cetra, Demrad, Dia-Norm, Dura, Dia-therm, Ferroli, Henrad, HM radiator, Kaimann, Korado, Manaut, Purmo, Radson, Rettig, Superia, Veha.
From August 1994.

Thread	Article No
G1/2	4327-00.300



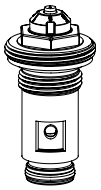
Thermostatic insert VHF
For radiators with integrated valves.
With 6 finest presetting ranges.
Suitable for Ferroli, Zenith.
From August 1994.

Thread	Article No
M22x1,5	4328-00.300



Thermostatic insert VHV
For radiators with integrated valves.
With 8 finest infinitely presetting values.
Suitable for Brugman.
From 2002.

Thread	Article No
G1/2	4343-01.300



Thermostatic insert VHF
For radiators with integrated valves.
With 6 finest presetting ranges.
Suitable for Brugman.
From 2002.

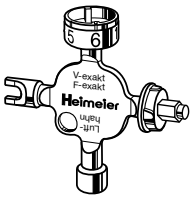
Thread	Article No
G1/2	4344-00.300

Subject to technical modifications of the radiator manufacturer.

Accessories

Setting key
For thermostatic inserts in radiators with integrated valves VHV and VHF 4324, 4326, 4327, 4328, 4333, 4334, 4340, 4341 and 4344 with 6 presetting/finest presetting ranges. Also suitable for thermostatic valve body V-exakt and F-exakt.

	Article No
	3501-02.142

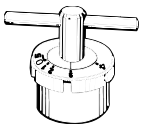


Universal key
An alternative to setting key, Art. No. 3501-02.142
For operating HEIMEIER thermostatic inserts in radiators with integrated valves VHV and VHF 4324, 4326, 4327, 4328, 4333, 4334, 4340, 4341 and 4344 with 6 presetting/finest presetting ranges.
Also for thermostatic valve bodies V-exakt/F-exakt, thermostatic head B (temperature setting), Regulux lockshield, Vekolux double connection fitting and radiator air vents.

	Article No
	0530-01.433

Setting key
For thermostatic inserts in radiators with integrated valves VHV8S and VHF8S 4343, 4360, 4361 and 4365 with 8 infinitely variable presetting/ finest presetting values.

	Article No
	4360-00.142



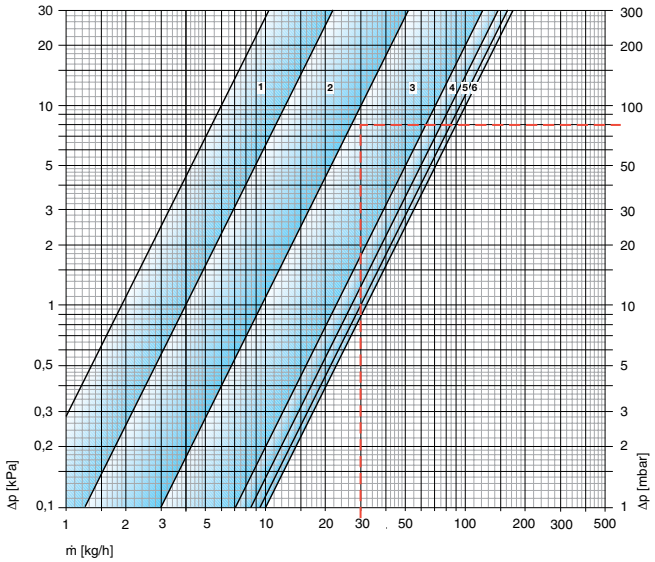
Scale key
For thermostatic inserts 4320-02.301, 4322-02.300
For presetting
(Brown cover with printed scale)

	Article No
	4316-00.257

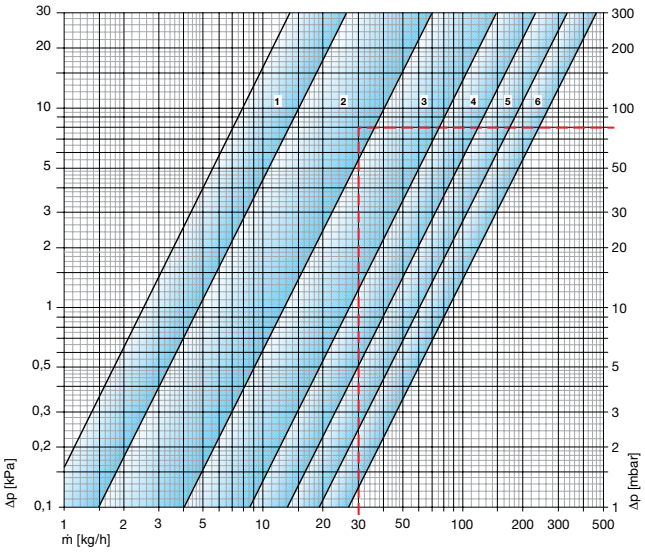
Technical data – Thermostatic insert VHV with 6 presetting ranges

Diagram for 4333, 4340

p-band [xp] min. 0,4 K to **max. 1,0 K**



p-band [xp] min. 0,5 K to **max. 2,0 K** *)



Radiator with integrated vales without connection fitting

Thermostat insert and thermostatic head		Presetting Thermostatic insert 1	2	3	4	5	6	Permitted operating temperature TB **) [°C]	Permitted operating pressure PB [bar]	Permitted differential pressure at which the valve still closes Δp [bar] Th.-head	EMO T/NC EMOtec/NC EMO 1/3 EMO EIB/LON	EMO T/ NO EMOtec/ NO
p-band xp min. 0,4 K to **max. 1,0 K**	min. kv-value max.	0,019 - 0,040	>0,040 - 0,096	>0,096 - 0,225	>0,225 - 0,269	>0,269 - 0,301	>0,301 - 0,319	120	10	4,0	2,7	3,5
p-band xp min. 0,5 K to **max. 2,0 K *)**	min. kv-value max.	0,025 - 0,047	>0,047 - 0,126	>0,126 - 0,269	>0,269 - 0,417	>0,417 - 0,600	>0,600 - 0,840	120	10	4,0	2,7	3,5
	Kvs [m³/h]	0,051	0,133	0,294	0,430	0,630	0,980	120	10	4,0	2,7	3,5
	Flow tolerance ± [%]	45	40	27	22	12	10	120	10	4,0	2,7	3,5

*) Setting 1-5 **) With protective cap or actuator 100 °C k_v value in [m³/h]

Calculation example

Target: Setting range

Given: Heat flow $\dot{Q}$ = 525 W

Temperature spread Δt = 15 K (65/50 °C)

Pressure loss, radiator with integrated valves Δp_v = 80 mbar

Solution: Mass flow rate $\dot{m} = \dot{Q} / (c \cdot \Delta t) = 525 / (1{,}163 \cdot 15) = 30$ kg/h

Setting range from diagram:

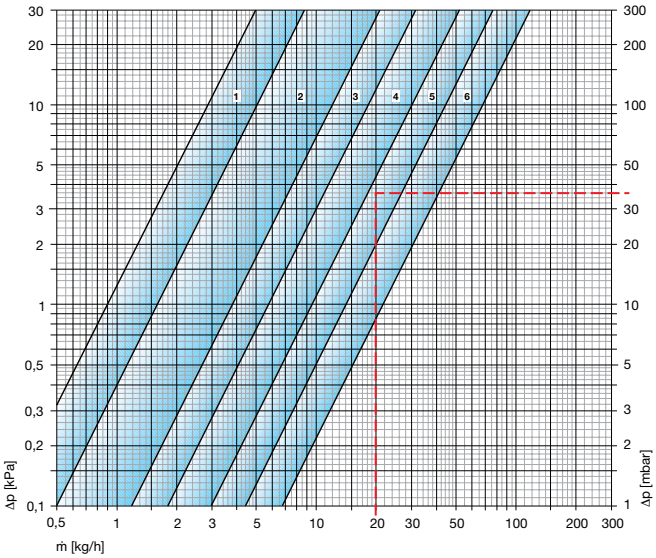
At p-band **max. 1,0 K**: 3

At p-band **max. 2,0 K**: 2

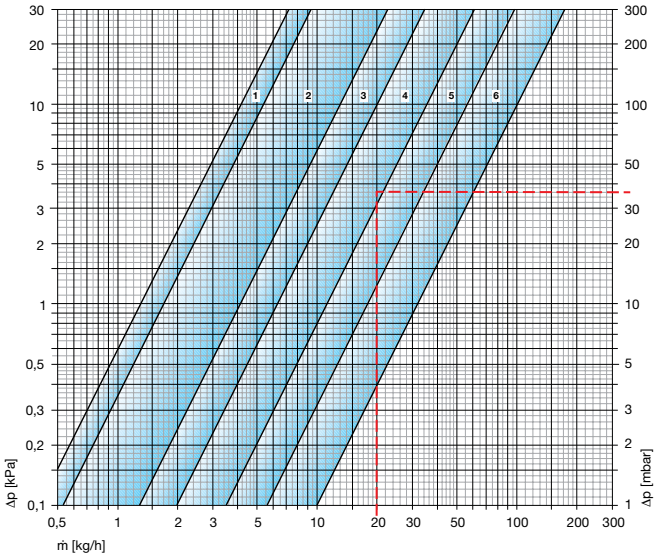
Technical data – Thermostatic insert VHF with 6 finest presetting ranges

Diagram for 4334, 4341

p-band [xp] min. 0,4 K to max. **1,0 K**



p-band [xp] min. 0,5 K to max. **2,0 K**



Ventilheizkörper ohne Anschlussverschraubung

Thermostat insert and thermostatic head		Finest presetting Thermostatic insert 1	2	3	4	5	6	Permitted operating temperature TB *) [°C]	Permitted operating pressure PB [bar]	Permitted differential pressure at which the valve still closes Δp [bar] Th.-head	EMO T/NC EMOtec/NC EMO 1/3 EMO EIB/LON	EMO T/ NO EMOtec/ NO
p-band xp min. 0,4 K to **max. 1,0 K**	min. Kv value max.	0,009 - 0,016	>0,016 - 0,038	>0,038 - 0,057	>0,057 - 0,095	>0,095 - 0,141	>0,141 - 0,215	120	10	4,0	2,7	3,5
p-band xp min. 0,5 K to **max. 2,0 K**	min. Kv value max.	0,013 - 0,017	>0,017 - 0,041	>0,041 - 0,063	>0,063 - 0,111	>0,111 - 0,177	>0,177 - 0,316	120	10	4,0	2,7	3,5
	Kvs [m³/h]	0,017	0,041	0,063	0,114	0,187	0,350	120	10	4,0	2,7	3,5
	Flow tolerance ± [%]	50	47	42	35	30	10	120	10	4,0	2,7	3,5

*) with protection cap or actuator 100 °C.

k_v value in [m³/h]

Calculation example

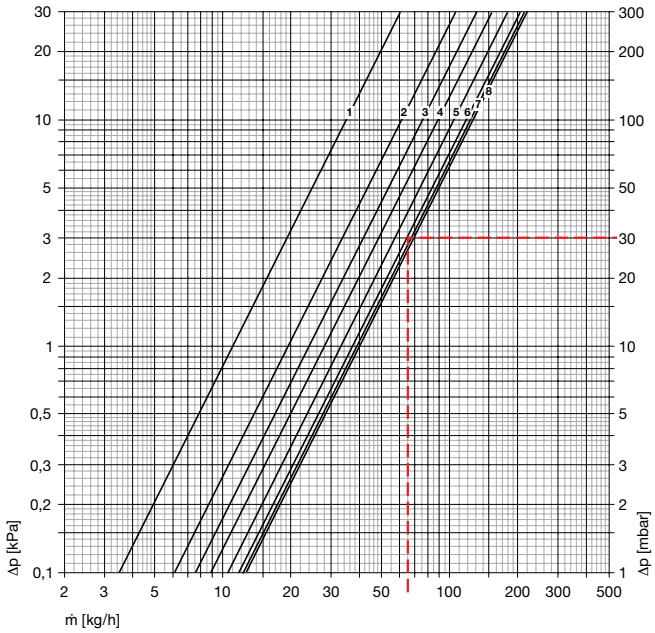
Target:	Setting range		
Given:	Heat flow	$\dot{Q}$	= 350 W
	Temperature spread	Δt	= 15 K (65/50 °C)
	Pressure loss, radiator with integrated valves	Δp_v	= 36 mbar
Solution:	Mass flow rate	$\dot{m}$	= $\dot{Q}$ / (c·Δt) = 350 / (1,163 · 15) = 20 kg/h

Setting range from diagram:
At p-band **max. 1,0** K: 5
At p-band **max. 2,0** K: 4

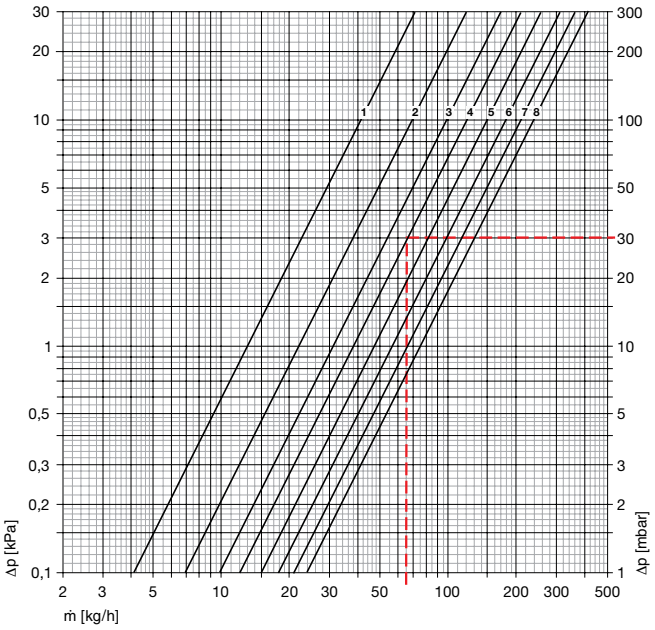
Technical data – Thermostatic insert VHV8S with 8 infinitely variable presetting values

Diagram for 4360, 4365

p-band [xp] **1,0 K**



p-band [xp] **2,0 K**



Radiator with integrated vales without connection fitting

Thermostat insert and thermostatic head		Finest presetting Thermostatic insert 1	2	3	4	5	6	7	8	Permitted operating temperature TB *) [°C]	Permitted operating pressure PB [bar]	Permitted differential pressure at which the valve still closes Δp [bar] Th.-head	EMO T/NC EMOtec/NC EMO 1/3 EMO EIB/LON	EMO T/ NO EMOtec/ NO
p-band xp **1,0 K**	Kv value [m³/h]	0,12	0,19	0,24	0,28	0,33	0,37	0,39	0,40	120	10	4,0	2,7	3,5
p-band xp **2,0 K**	Kv value [m³/h]	0,13	0,22	0,31	0,38	0,47	0,57	0,66	0,75	120	10	4,0	2,7	3,5
	Kvs [m³/h]	0,16	0,27	0,38	0,43	0,65	0,98	1,23	1,43	120	10	4,0	2,7	3,5
	Flow tolerance ± [%]	40	30	25	23	17	15	12	10	120	10	4,0	2,7	3,5

*) with protection cap or actuator 100 °C.

k_v value in [m³/h]

Calculation example

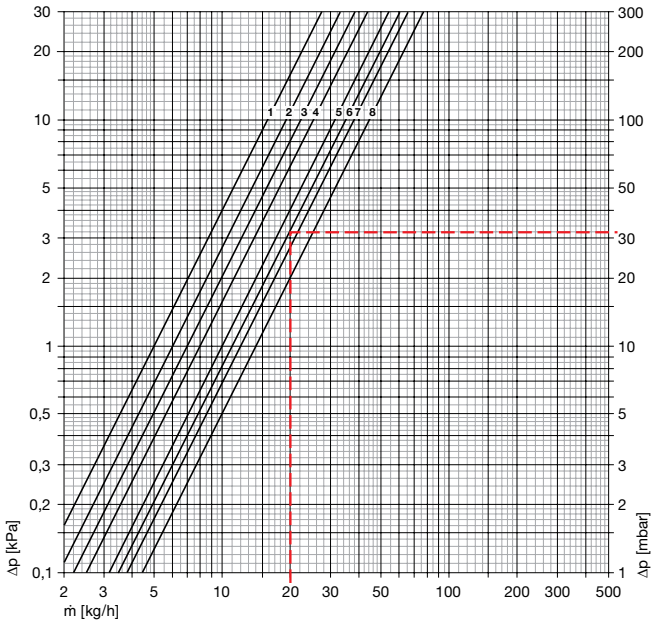
Target:	Setting range		
Given:	Heat flow	$\dot{Q}$	= 1135 W
	Temperature spread	Δt	= 15 K (65/50 °C)
	Pressure loss, radiator with integrated valves	Δp_v	= 30 mbar
Solution:	Mass flow rate	$\dot{m}$	= $\dot{Q}$ / (c · Δt) = 1135 / (1,163 · 15) = 65 kg/h

Setting range from diagram:
At p-band **1,0 K**: 6
At p-band At p-band **2,0 K**: 4

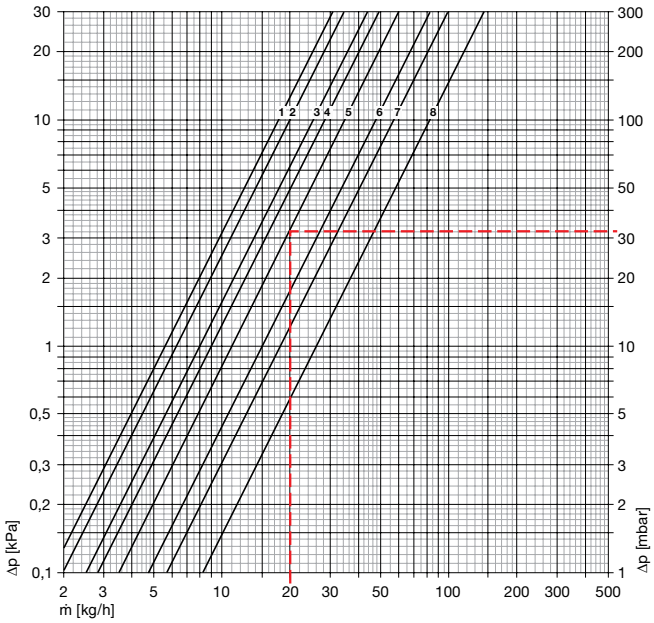
Technical data – Thermostatic insert VHF8S with 8 infinitely variable finest presetting values

Diagram for 4361, 4366

p-band [xp] **1,0 K**



p-band [xp] **2,0 K**



Radiator with integrated vales without connection fitting

Thermostat insert and thermostatic head		**Presetting Thermostatic insert** 1	2	3	4	5	6	7	8	**Permitted operating temperature** TB *) [°C]	**Permitted operating pressure** PB [bar]	**Permitted differential pressure at which the valve still closes Δp [bar]** Th.-head	EMO T/NC EMOtec/NC EMO 1/3 EMO EIB/LON	EMO T/ NO EMOtec/ NO
p-band xp **1,0 K**	Kv value [m³/h]	0,05	0,06	0,07	0,08	0,10	0,11	0,12	0,14	120	10	4,0	2,7	3,5
Regeldifferenz xp **2,0 K**	Kv value [m³/h]	0,06	0,06	0,08	0,09	0,11	0,15	0,18	0,26	120	10	4,0	2,7	3,5
	Kvs [m³/h]	0,06	0,07	0,08	0,10	0,12	0,17	0,25	0,50	120	10	4,0	2,7	3,5
	Flow tolerance ± [%]	42	42	37	36	35	32	30	10	120	10	4,0	2,7	3,5

*) with protection cap or actuator 100 °C.

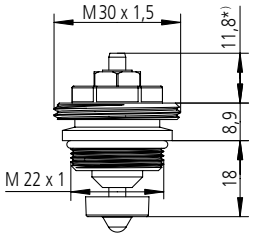
k_v value in [m³/h]

Calculation example

Target:	Setting range		
Given:	Heat flow	$\dot{Q}$	= 350 W
	Temperature spread	Δt	= 15 K (65/50 °C)
	Pressure loss, radiator with integrated valves	Δp_v	= 32 mbar
Solution:	Mass flow rate	$\dot{m}$	= $\dot{Q}$ / (c· Δt) = 350 / (1,163 · 15) = 20 kg/h

Setting range from diagram:
At p-band **1,0 K**: 6
At p-band **2,0 K**: 5

Dimensions



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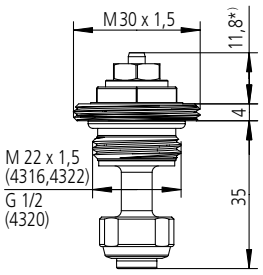

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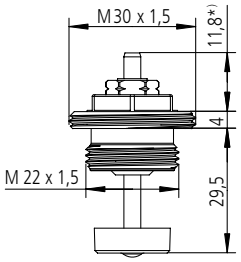

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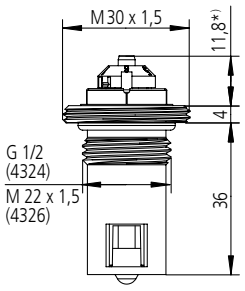

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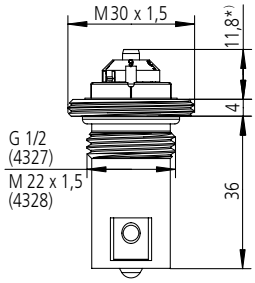

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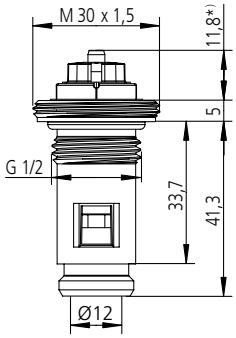

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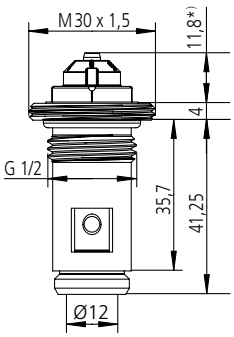

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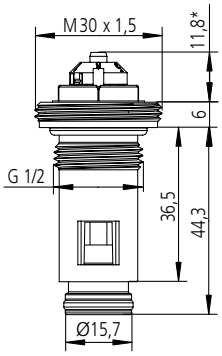

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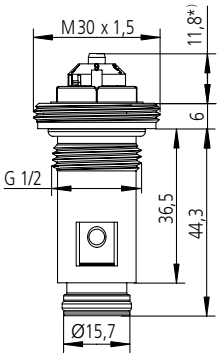

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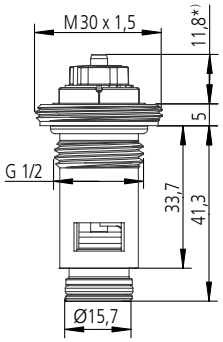

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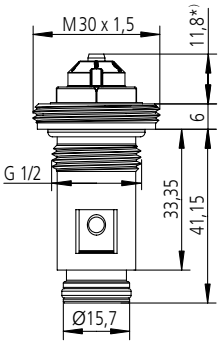

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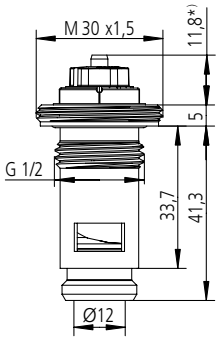

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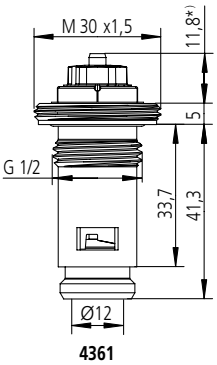

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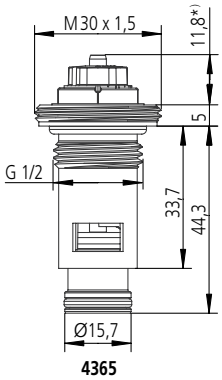

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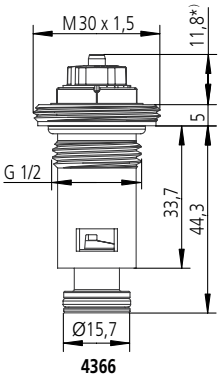

4366

*) Valve closed

1500-18.483 03.2011