Climate
Control

IMI Heimeier

Thermostatic inserts

Valves for radiators with integrated valve

Breakthrough
engineering for
a better world

Thermostatic inserts

Thermostatic inserts with integrated presetting/finest presetting options are suitable for all IMI 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.

Technical description

Applications area:
Heating systems.

Function:
Control
Stepless presetting
Shut-off

Pressure class:
PN 10

Temperature:
Max. working temperature: 120°C,
with protection cap or actuator 100°C.
Min. working temperature: 2°C.

Materials:
Valve insert: Brass, PPS and SPS (syndiotactic polystyrene) (VHV, VHV8S, VHF8S)
O-rings: EPDM rubber
Valve disc: EPDM rubber
Return spring: Stainless steel
Spindle: Niro-steel spindle with double O-ring sealing.

Connection to thermostatic head and actuator:
IMI Heimeier M30x1,5

Presetting:
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 thermostatic inserts VHV with the Article No. 4324, 4326, 4333 and 4340 feature 6 presetting ranges.

The thermostatic inserts VHV8S and VHF8S with the Article No. 4343, 4360, 4361, 4365 and 4366 feature 8 infinitely variable presetting/finest presetting values.

Construction

Thermostatic inserts with presetting
VHV8S with **8** infinitely variable presetting values

4360

4365

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

4361

4366

Article No	Radiators with integrated valves e.g.
4360, 4361*)	Korado, U.S. Steel
4365, 4366	Lyngson

Subject to technical modifications of the radiator manufacturer.
Status: 07.2016
*) KEYMARK certified and tested as per EN 215.
KEYMARK symbol approval number 011-6T 0006.

011

Application

The majority of radiators are delivered ex-factory with thermostatic inserts featuring presetting 4360 and 4365. 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 4361 and 4366 finest presetting.

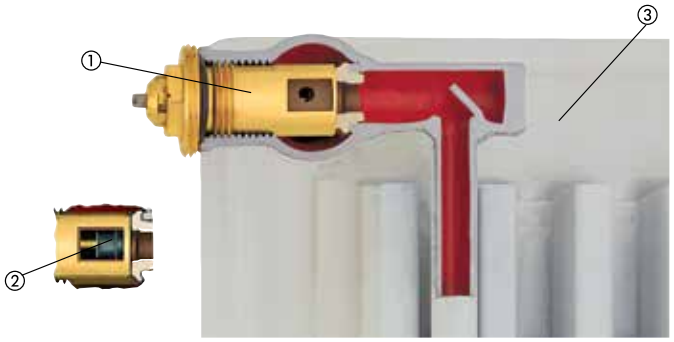
Thermostatic inserts can be identified by the corresponding 4-digit article number on the end face (see illustration).

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.

IMI Heimeier thermostatic inserts effectively meet this requirement.

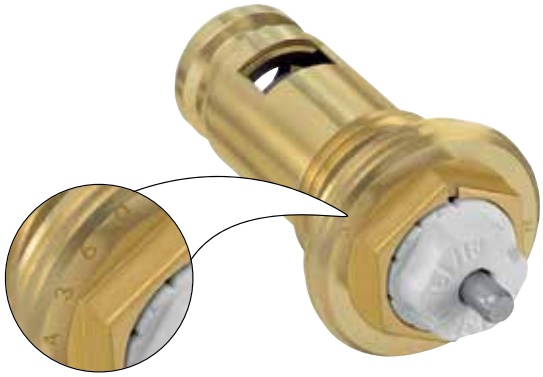
Experience has shown that the differential pressure across thermostatic inserts should not exceed the value of approx. 0.2 bar in order to ensure low-noise operation. If during the planning stages of a system it becomes evident that the system will experience higher differential pressures in the partial load range, devices for regulating differential pressure such as differential pressure controllers or overflow valves are to be installed.

Sample application



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

Identification by article number
The IMI Heimeier thermostatic inserts can be identified by the corresponding 4-digit article number on the end face.



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 IMI 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 of thermostatic inserts VHV with 6 presetting ranges, e.g. 4324/4326/4333/4340

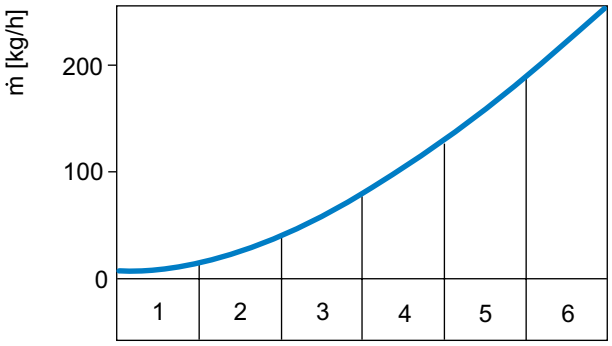
The thermostatic insert features 6 flow ranges bordering on each other with out interruption (see illustration). By varying the p-band, each range ensures con tinuously variable adjustment or limitation of the radiator mass flow corresponding to the actual heat requirements.
This means the thermostatic 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 can be selected between 1, 2, 3, 4, 5 and 6. The setting 6 corresponds to the standard setting (factory setting). The 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 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. 4343/4360/4361/4365/4366

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. 3670-01.142) 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.

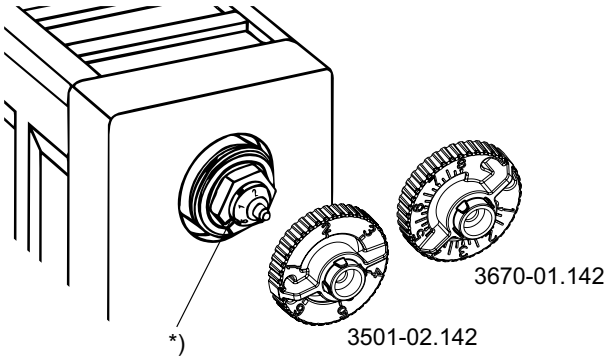
Uninterrupted flow ranges

e.g. thermostatic insert VHV with presetting 4324/4326/4333/4340



Δp = 0,1 bar

End face readoff

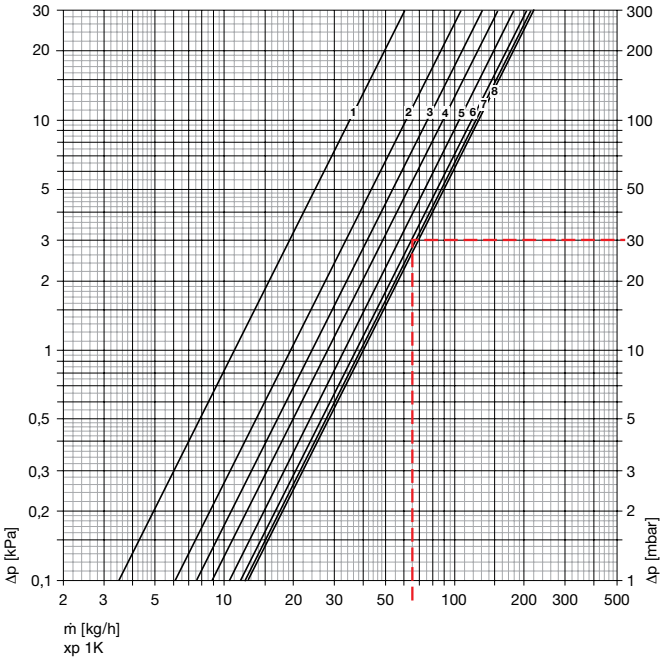


*) Reference

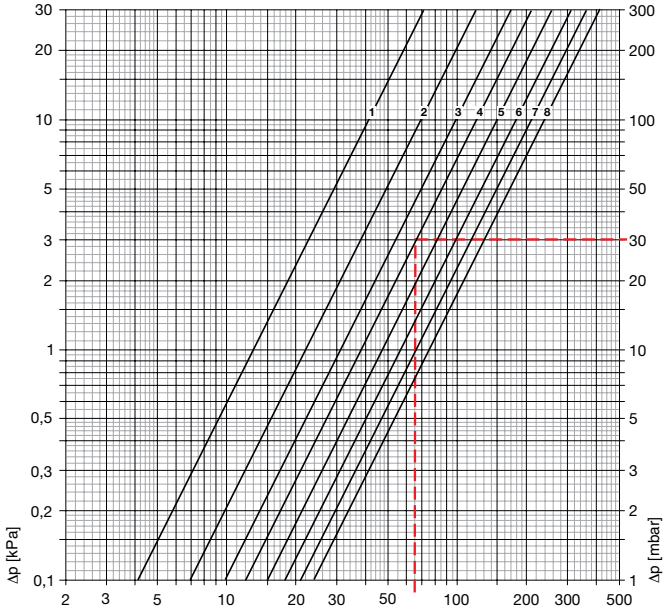
Technical data – Thermostatic insert VHV8S with 8 infinitely variable presetting values

Diagram for e.g. 4343, 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		Presetting – Thermostatic insert								Permitted differential pressure at which the valve still closes Δp [bar]		
		1	2	3	4	5	6	7	8	Therm.-head	EMO T/NC EMOtec/NC EMO 3	EMO T/NO EMOtec/NO TA-Slider 160
p-band xp **1,0 K**	Kv-value	0,12	0,19	0,24	0,28	0,33	0,37	0,39	0,40	4,0	2,7	3,5
p-band xp **2,0 K**	Kv-value	0,13	0,22	0,31	0,38	0,47	0,57	0,66	0,75			
	Kvs	0,16	0,27	0,38	0,43	0,65	0,98	1,23	1,43			
	Flow tolerance ± [%]	40	30	25	23	17	15	12	10			

Kv/Kvs = m^3/h at a pressure drop of 1 bar.

Calculation example

Target:
Setting range

Given:
Heat flow Q = 1135 W
Temperature spread Δt = 15 K (65/50 °C)
Pressure loss, radiator with integrated valves Δp_v = 30 mbar

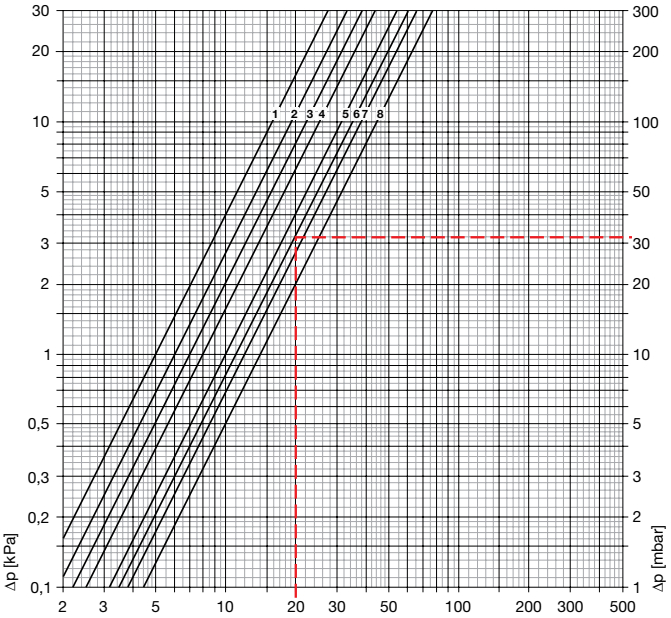
Solution:
Mass flow rate m = Q / (c · Δt) = 1135 / (1,163 · 15) = 65 kg/h

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

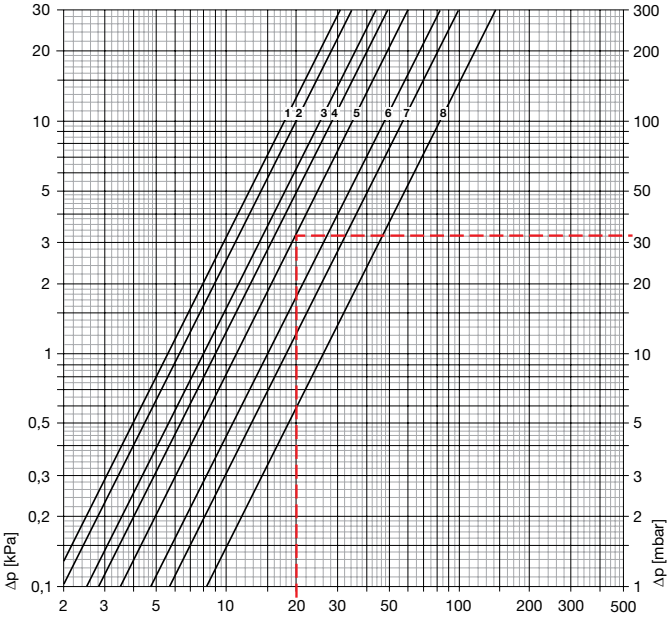
Technical data – Thermostatic insert VHF8S with 8 infinitely variable finest presetting values

Diagram for e.g. 4361, 4366

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



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



Radiator with integrated valves without connection fitting

Thermostat insert and thermostatic head		**Finest presetting** **Thermostatic insert**								**Permitted differential pressure at which the valve still closes Δp [bar]**		
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	Therm.-head	EMO T/NC EMOtec/NC EMO 3	EMO T/NO EMOtec/NO TA-Slider 160
p-band xp **1,0 K**	Kv-value	0,05	0,06	0,07	0,08	0,10	0,11	0,12	0,14	4,0	2,7	3,5
p-band xp **2,0 K**	Kv-value	0,06	0,06	0,08	0,09	0,11	0,15	0,18	0,26			
	Kvs	0,06	0,07	0,08	0,10	0,12	0,17	0,25	0,50			
	Flow tolerance ± [%]	42	42	37	36	35	32	30	10			

Kv/Kvs = m^3/h at a pressure drop of 1 bar.

Calculation example

Target:
Setting range

Given:
Heat flow Q = 350 W
Temperature spread Δt = 15 K (65/50 °C)
Pressure loss, radiator with integrated valves Δp_v = 32 mbar

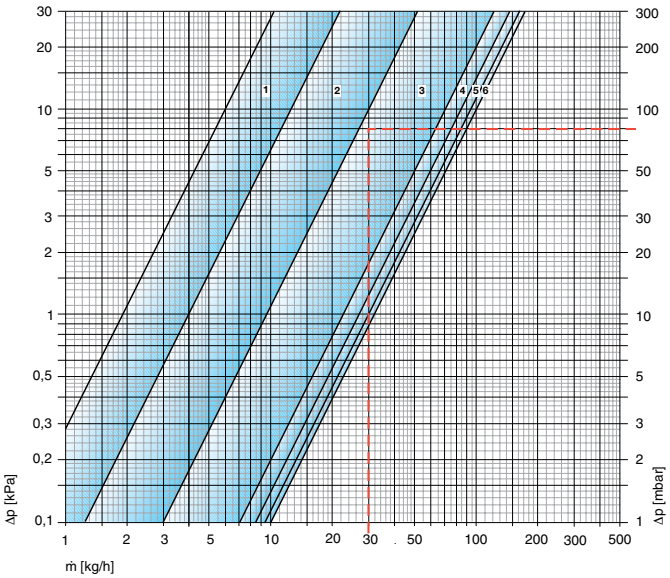
Solution:
Mass flow rate m = Q / (c · Δt) = 350 / (1,163 · 15) = 20 kg/h

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

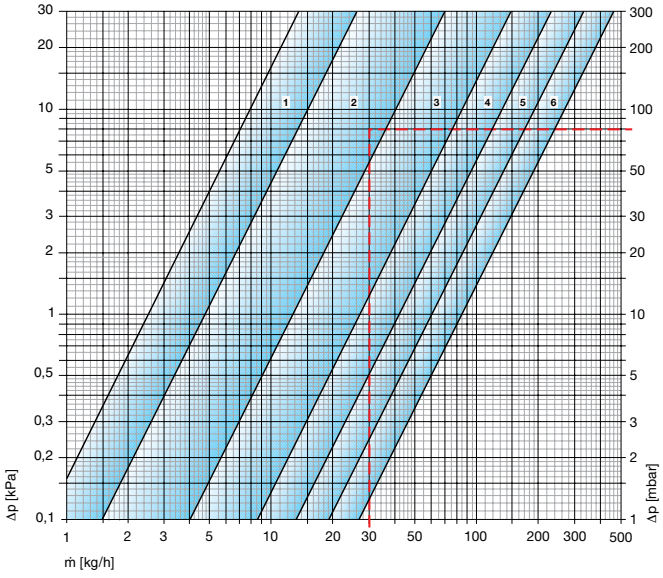
Technical data – Thermostatic insert VHV with 6 presetting ranges

Diagram for e.g. 4324, 4326, 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						Permitted differential pressure at which the valve still closes Δp [bar]		
		1	2	3	4	5	6	Therm.-head	EMO T/NC EMOtec/NC EMO 3	EMO T/NO EMOtec/NO TA-Slider 160
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	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			
	Kvs	0,051	0,133	0,294	0,430	0,630	0,980			
	Flow tolerance ± [%]	45	40	27	22	12	10			

Kv/Kvs = m^3/h at a pressure drop of 1 bar.
*) Setting 1-5

Calculation example

Target:
Setting range

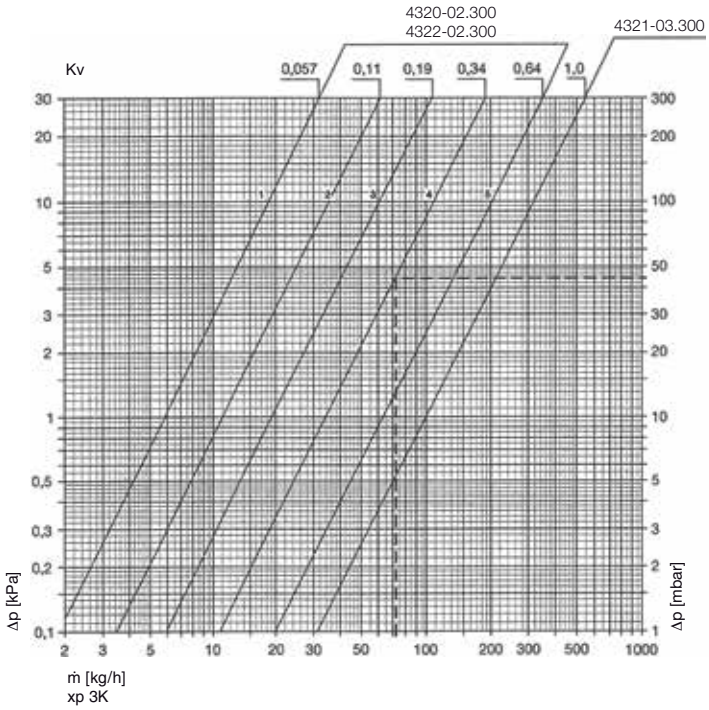
Given:
Heat flow Q = 525 W
Temperature spread Δt = 15 K (65/50 °C)
Pressure loss, radiator with integrated valves Δp_v = 80 mbar

Solution:
Mass flow rate m = Q / (c · Δt) = 525 / (1,163 · 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 with 5 infinitely variable presetting values

Diagram for e.g. 4320, 4321, 4322



Radiator with integrated vales without connection fitting

Thermostat insert and thermostatic head	p-band [K]						Permitted differential pressure at which the valve still closes Δp [bar]		
	1,0	1,5	2,0	2,5	3,0	Kvs	Therm.-head	EMO T/NC EMOtec/NC EMO 3	EMO T/NO EMOtec/NO TA-Slider 160
without presetting **4321-03.300**	0,43	0,60	0,78	0,91	1,00	1,28	4,0	2,7	3,5
with presetting **4320-02.301** **4322-02.300**	0,20	0,33	0,46	0,56	0,64	0,75			

Kv/Kvs = m^3/h at a pressure drop of 1 bar.

Calculation example

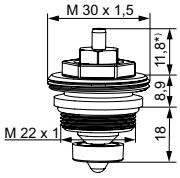
Target:
Setting range 4320, 4322

Given:
Heat flow Q = 1231 W
Temperature spread Δt = 15 K (70/55 °C)
Pressure loss, radiator with integrated valves Δp_v = 44 mbar

Solution:
Mass flow rate m = Q / (c · Δt) = 1231 / (1,163 · 15) = 71 kg/h

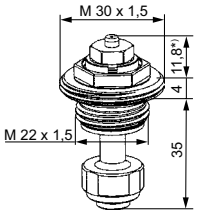
Setting range from diagram: **4**

Replacement thermostatic inserts



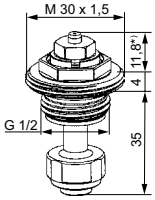
Thermostatic insert
For radiators with integrated valves.
For Diatherm LTV radiators with integrated Landis+Gyr-thermostatic inserts (valve coupling). Also suitable for Stetherm.
From January 1984 to February 1985.

Thread	EAN	Article No
M22x1	4024052221417	4148-02.301



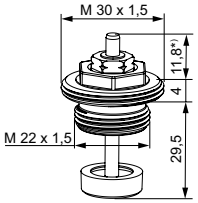
Thermostatic insert
For radiators with integrated valves.
With infinitely variable presetting.
Suitable for Biasi, Concept, Diatherm, Dianorm, Ferroli, Superia, Arbonia.
From 1989.

Thread	EAN	Article No
M22x1,5	4024052324996	4316-02.300



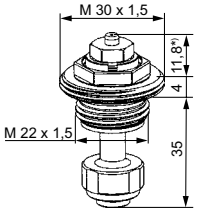
Thermostatic insert
For radiators with integrated valves.
With infinitely variable presetting.
White protective cap.
Suitable for Dia-therm "LX".
From March 1991.

Thread	EAN	Article No
G1/2	4024052229819	4320-02.301



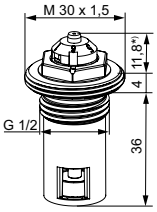
Thermostatic insert
For radiators with integrated valves.
No presetting.
Suitable for Biasi, Concept, Dianorm, Ferroli, Superia.
From 1992.

Thread	EAN	Article No
M22x1,5	4024052229918	4321-03.300



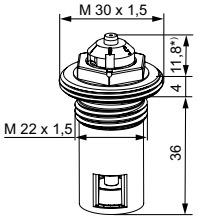
Thermostatic insert
For radiators with integrated valves.
With infinitely variable presetting.
White protective cap.
Suitable for Biasi, Concept, DEF, DiaNorm, Ferroli, Henrad, Purmo, Radson, Superia, Veha.
From July 1992.

Thread	EAN	Article No
M22x1,5	4024052230013	4322-02.300



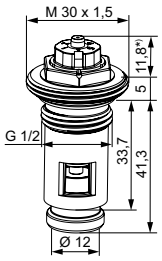
Thermostatic insert VHV
For radiators with integrated valves.
With 6 presetting ranges.
Suitable for Dia-therm "LX" radiator with integrated valve.
From August 1994.

Thread	EAN	Article No
G1/2	4024052323593	4324-03.301



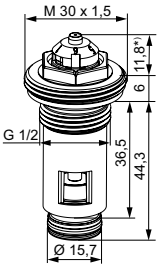
Thermostatic insert VHV
For radiators with integrated valves.
With 6 presetting ranges.
Suitable for Ferroli, Zenith.
From August 1994.

Thread	EAN	Article No
M22x1,5	4024052230518	4326-03.300



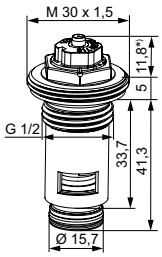
Thermostatic insert VHV
For radiators with integrated valves.
With 6 presetting ranges.
From 2006.
Suitable for Korado, Superia, Demrad, Henrad, Stelrad.

Thread	EAN	Article No
G 1/2	4024052459315	4333-00.301



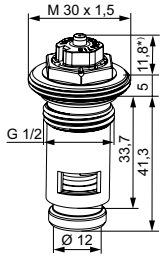
Thermostatic insert VHV
For radiators with integrated valves.
With 6 presetting ranges.
From Oktober 1999.
Suitable for e.g. Biasi, Concept, Korado, ECA.

Thread	EAN	Article No
G 1/2	4024052340712	4340-00.301



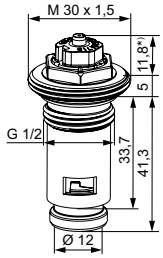
Thermostatic insert VHV8S
For radiators with integrated valves.
With 8 finest infinitely presetting values.
Suitable for Brugman.
From 2002.

Thread	EAN	Article No
G1/2	4024052598519	4343-01.300



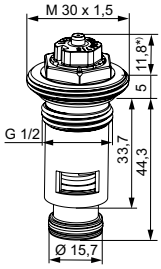
Thermostatic insert VHV8S
For radiators with integrated valves.
With 8 infinitely variable presetting values.
Suitable for e.g. Korado, U.S. Steel, Henrad, Caradon Stelrad.
From 2006. KEYMARK certified and tested as per EN 215.

Thread	EAN	Article No
G1/2	4024052522996	4360-00.300



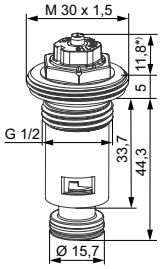
Thermostatic insert VHF8S
For radiators with integrated valves.
With 8 infinitely variable finest presetting values. Suitable for e.g. Korado, U.S. Steel, Henrad, Caradon Stelrad.
From 2006. KEYMARK certified and tested as per EN 215.

Thread	EAN	Article No
G1/2	4024052553211	4361-00.301



Thermostatic insert VHV8S
For radiators with integrated valves.
With 8 infinitely variable presetting values.
Suitable for Lyngson.
From 2008.

Thread	EAN	Article No
G1/2	4024052572519	4365-00.300



Thermostatic insert VHF8S
For radiators with integrated valves.
with 8 infinitely variable finest presetting values. Suitable for Lyngson.
From 2008.
(Also replacement insert for 4341)

Thread	EAN	Article No
G1/2	4024052575619	4366-00.300

*) Valve closed

Subject to technical modifications of the radiator manufacturer.

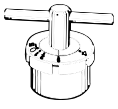
Accessories

Setting key
For operating IMI Heimeier thermostatic inserts in radiators with integrated valves VHV and VHF 4324, 4326, 4327, 4328, 4333, 4334, 4340 and 4341 (4344 up to 09.2017) with 6 presetting/finest presetting.
Also suitable for thermostatic valve body V-exakt to end of 2011 and F-exakt.

EAN	Article No
4024052207015	3501-02.142

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.

EAN	Article No
4024052035823	3670-01.142



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

EAN	Article No
4024052229413	4316-00.257

1500-18.483 EN Thermostatic inserts ed.7 01.2023