Climate
Control

IMI Heimeier

TRV pack Calypso exact

Thermostatic valves with radiator connection systems

Bi-directional thermostatic radiator valve with stepless precision presetting, head and lockshield

Breakthrough
engineering for
a better world

TRV pack Calypso exact

The IMI Heimeier TRV pack, consists of a Calypso TRV body, D-U or Halo head and lockshield. Designed for application in a two-pipe pumped heating system. The Bi-directional thermostatic radiator valve can be fitted either vertically or horizontally in the flow or return and either end of a radiator giving the installer total flexibility.

Technical description

Applications:
Heating systems

Function:
Control
Stepless presetting
Shut-off

Dimensions:
DN 15

Pressure class:
PN 10

Temperature:
Max. working temperature: 120°C, with protection cap or actuator 100°C.
Min. working temperature: -10°C.

Materials:
Valve body: Brass
O-rings: EPDM rubber
Valve disc: EPDM rubber
Return spring: Stainless steel
Valve insert: Brass, PPS (polyphenylsalphide) and SPS (syndiotactic polystyrene).
Spindle: Niro-steel spindle with double O-ring sealing.
The complete thermostatic insert can be replaced using the HEIMEIER fitting tool without draining the system.

Material thermostatic head:
ABS, PA6.6GF30, brass, steel, Liquid-filled thermostat.

Surface treatment:
Valve body and fittings are nickel-plated.

Marking:
IMI, country code, flow direction arrow, KEYMARK-Designation. II+ Designation. Black protection cap.

Standards:
The thermostatic valve bodies meet the following requirements:
– KEYMARK certified and tested to DIN EN 215.

011

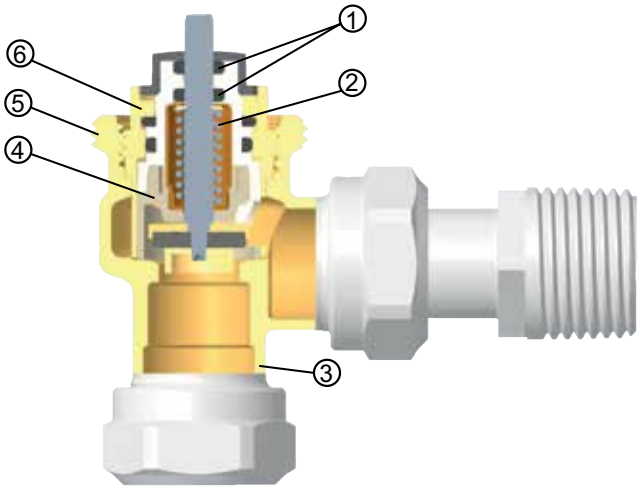
Pipe connection:
G1/2 external thread with 10 mm or 15 mm compression fitting for copper or precision steel pipe.

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

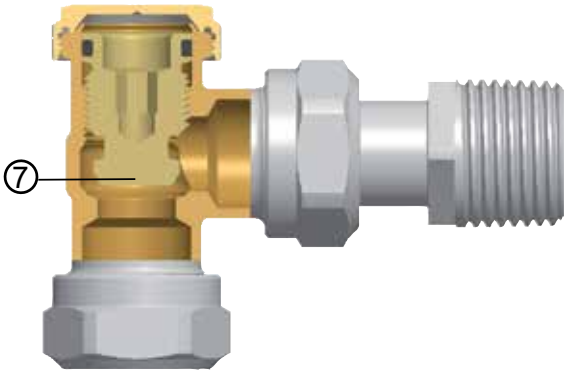
Thermostatic heads:
Closed graduation cap and liquid-filled thermostat. High actuating force, minimum hysteresis, optimum closing time.
Stable control response even with minor calculated p-band variations (<1 K). Frost protection.
Thermostatic head D-U: Setting numbers 0–IIIII. Temperature range 0 °C to 28 °C.
Thermostatic head Halo: Setting numbers I–IIIII. Temperature range 6 °C to 28 °C.

Construction

Thermostatic valve body



Lockshield



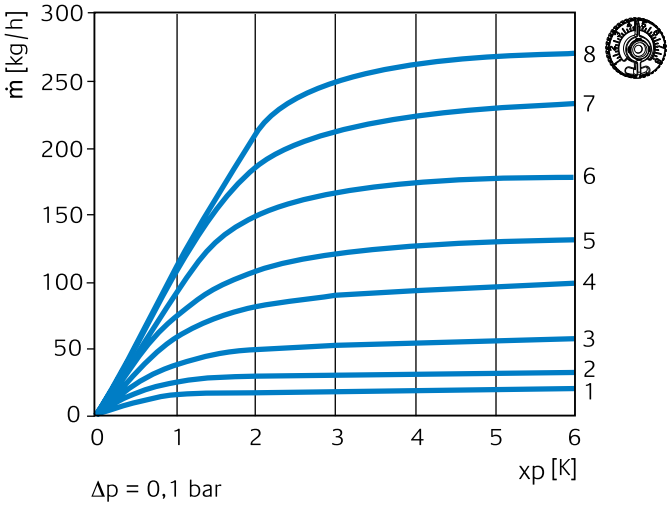
Replaceable insert
The complete thermostatic insert can be replaced using the fitting tool without draining the system.

1. Long-life double O-ring sealing.
2. Strong return spring in combination with high locating force ensures that the valve does not slacken off over time.
3. Valve body made of brass
4. Precise regulating part for accurate stepless presetting.
5. IMI Heimeier M30x1.5 connection technology for IMI thermostatic heads and actuators.
6. Upper section replaceable using the fitting tool without draining the system.
7. Shut-off cone

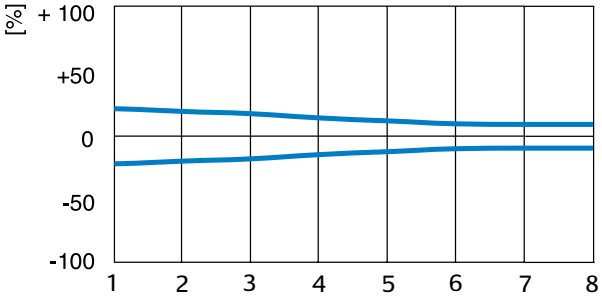
Application

The TRV pack Calypso exact is applied in two-pipe pumped hot-water heating system with normal to high temperature spread, as well as in cooling systems. The valve has a wide flow range as well as optimised noise behaviour and very tight flow tolerances.
In extensive systems, even water distribution should be maintained not only during specified normal operation, but also after a drop in room temperature or a break in operations, in order to avoid under or over-supply to parts of the system. To achieve this, the valve characteristic is designed so that the radiator mass-flow does not exceed about 1.3 times the nominal flow even at Preset 8 and with a fully-open valve.
Corresponding to the standards EnEV and DIN V 4701-10, the thermostatic valve bodies can be designed with a p-band of up to max. 1 K or max. 2 K.
The Bi-directional thermostatic radiator valve can be fitted either vertically or horizontally in the flow or return and either end of a radiator giving the installer total flexibility.
The angle kit can be installed as angle form or reversed form.
The thermostatic head with our incompressible liquid-filled sensor guarantees a reliable and precise room temperature control.

Optimized flow restriction



Lowest flow tolerances



Noise behaviour

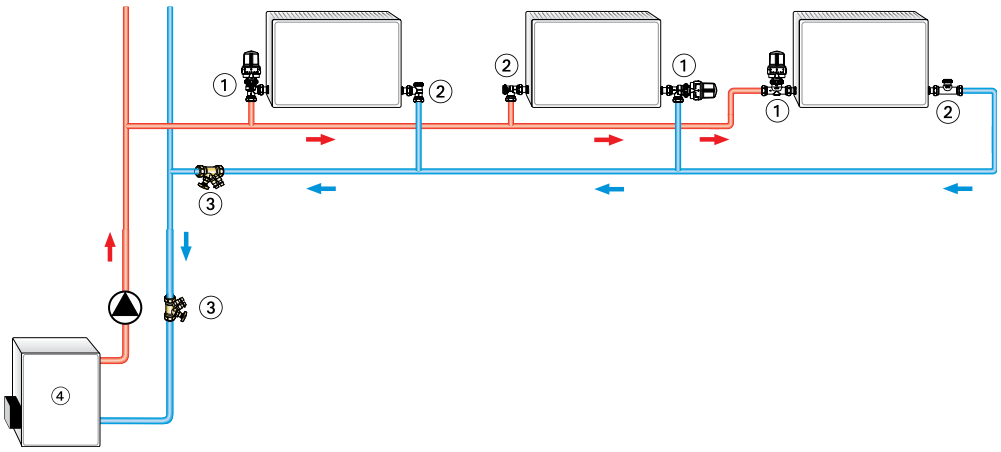
To ensure low-noise performance, the following conditions must be met:

• On the basis of experience, the differential pressure over the thermostatic valves should not exceed about 20 kPa = 200 mbar = 0.2 bar. If in designing the system, higher transient differentials might be experienced in the part-load flow range, differential pressure control equipment such as a STAP Differential Pressure Controller or bypass valves can be used.

• Mass-flow must be correctly adjusted.

• The system must be completely deaerated

Sample application



1. Calypso thermostatic radiator valve
2. Lockshield
3. STAD balancing valve for maintenance and diagnostics
4. Boiler

Notes

– To avoid damage and the formation of scale deposit in the hot-water heating system, the composition of the heat transfer medium should be in accordance with the VDI guideline 2035. For industrial and long-distance energy systems, see the applicable codes VdTÜV and 1466/AGFW FW 510. A heat transfer medium containing mineral oils, or any type of lubricant containing mineral oil can have extremely negative effects and usually lead to the disintegration of EPDM seals. When using nitrite-free frost and corrosion resistance solutions with an ethylene glycol base, pay close attention to the details outlined in the manufacturers' documentation, particularly concerning concentration and specific additives.

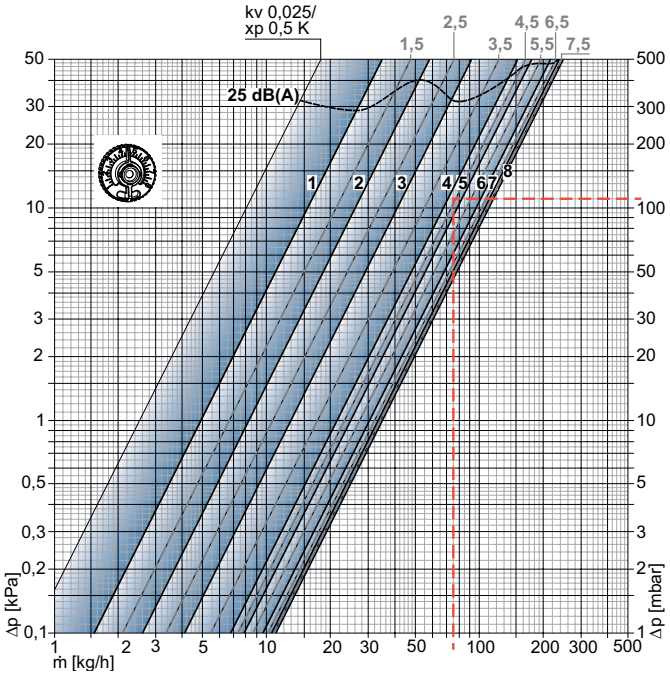
– Flush the system before changing thermostatic valves in heavy polluted existing systems.

– The thermostatic valve bodies can be used with all IMI Heimeier thermostatic heads and IMI Heimeier or ÍMI TA thermal actuators or motorized. The optimal tuning of the components guarantees maximum safety. When using actuators from other manufacturers, make sure that the pressure power is appropriate for thermostatic valve bodies with soft sealing valve discs.

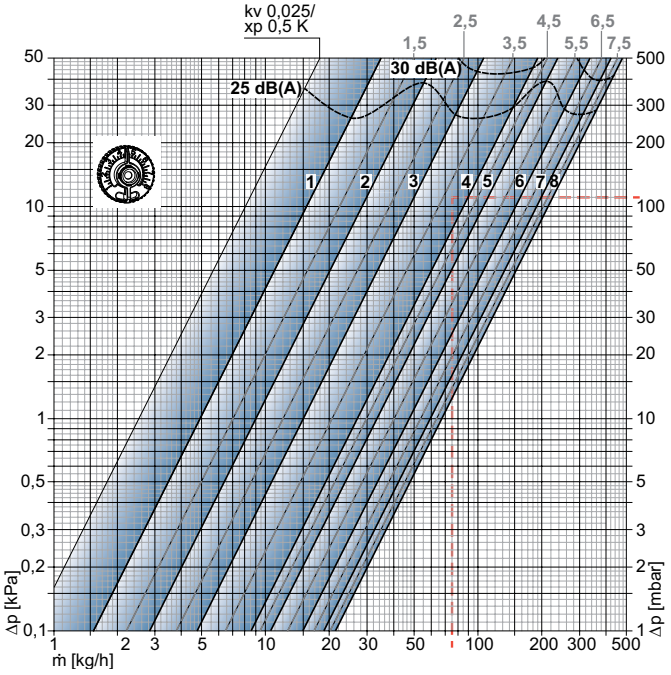
Technical data

Diagram, valve body with thermostatic head

P-band [xp] **1.0 K**



P-band [xp] **2.0 K**



Valve body (DN 10/15/20) with thermostatic head

		Presetting								Permitted differential pressure, during which the valve is kept closed Δp [bar]	
		1	2	3	4	5	6	7	8	Th.-head	EMO T/TM EMOtec TA-TRI TA-Slider 160
P-band [xp] **1.0K**	kv-value	0,049	0,082	0,130	0,215	0,246	0,303	0,335	0,343		
P-band [xp] **2.0K**	kv-value	0,049	0,090	0,150	0,265	0,330	0,470	0,590	0,670		
	Kvs	0,049	0,102	0,185	0,313	0,420	0,565	0,740	0,860	1,0	3,5
	Flow tolerance ± [%]	20	18	16	14	12	10	10	10		

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

Sample calculation

Target:
Setting range

Given:
Heat flow Q = 1308 W
Temperature spread ΔT = 15 K (65/50 °C)
Pressure loss, thermostatic valve ΔpV = 110 mbar

Solution:
Mass flow m = Q / (c · ΔT) = 1308 / (1,163 · 15) = 75 kg/h

Setting range from Diagram:
With P-band **max. 1.0 K**: 4,5
With P-band **max. 2.0 K**: 4

$$Cv = \frac{Kv}{0{,}86}$$

$$Kv = Cv \cdot 0{,}86$$

Presetting table

Presetting values for various radiator performances, pressure drops, and system spread

Q [W]		200 250 300 400 500	600 700 800 900 1000	1200 1400 1600 1800 2000	2200 2400 2600 2800 3000	3200 3400 3600 3800 4000	4800 5300 6500 6800 8400 9000 12000
Δt [K]	Δp [kPa]						
10	5	2 3 3 4 4	4 5 5 6 6	6 7 8			
	10	2 2 2 3 3	4 4 4 4 5	5 6 6 7 7	8 8		
	15	2 2 2 3 3	3 4 4 4 4	5 5 6 6 6	7 7 7 8 8		
15	5	2 2 2 3 3	4 4 4 4 4	5 6 6 6 7	7 7 8		
	10	1 1 2 2 3	3 3 3 4 4	4 4 5 5 6	6 6 7 7 7	7 8 8	
	15	1 1 1 2 2	3 3 3 3 3	4 4 4 5 5	5 6 6 6 6	7 7 7 7 8	
20	5	1 1 2 2 3	3 3 4 4 4	4 5 5 6 6	6 6 7 7 7	8 8	
	10	1 1 1 2 2	2 3 3 3 3	4 4 4 4 5	5 5 6 6 6	6 6 7 7 7	8
	15	1 1 1 2	2 2 3 3 3	3 4 4 4 4	4 5 5 5 6	6 6 6 6 6	7 8
40	5	1 1 1	2 2 2 2 3	3 3 4 4 4	4 4 4 5 5	5 5 6 6 6	6 7 8 8
	10	1 1	1 1 2 2 2	2 3 3 3 3	4 4 4 4 4	4 4 4 5 5	5 6 6 6 7 7
	15	1	1 1 1 2 2	2 2 2 3 3	3 3 3 4 4	4 4 4 4 4	5 5 6 6 6 7 8

10 kPa = 100 mbar = 1 mWS

Presetting value at max. 2 K P-band.

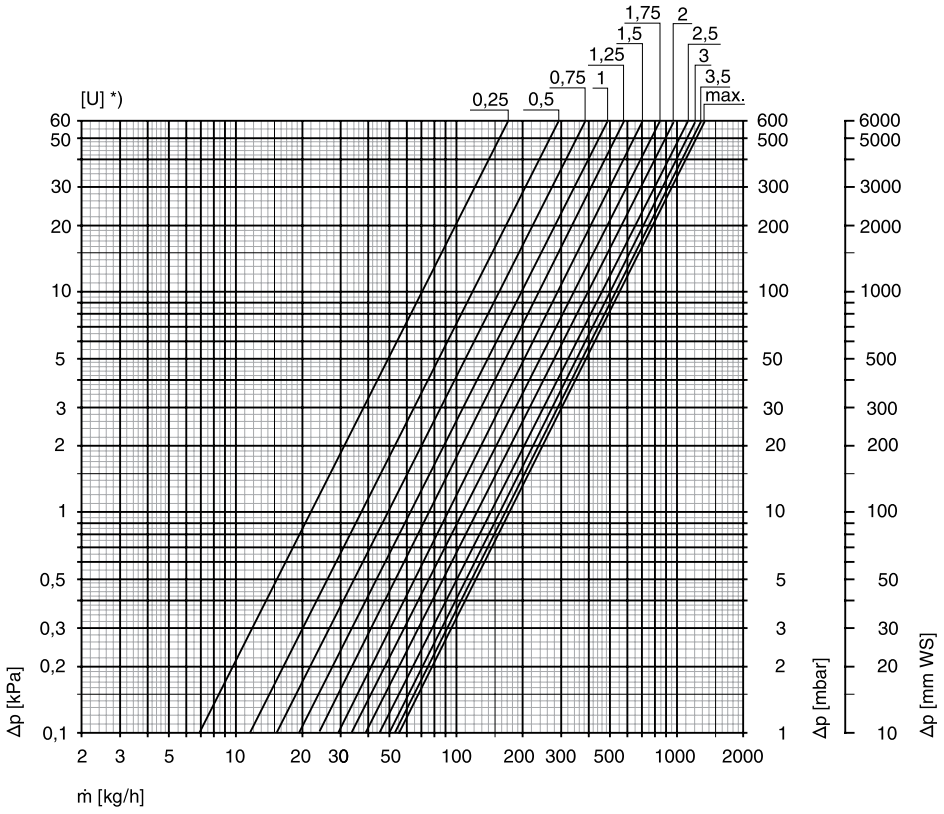
Q = radiator performance
ΔT = system spread
Δp = Differential pressure

Example:
Q = 1000 W, ΔT = 15 K, Δp = 10 kPa
Presetting value: **4**

Tips:
For an approximate determination of the preset for given radiator performance and system spread, an average differential pressure of 10 kPa is recommended.
For systems that are widely extended horizontally, a differential pressure drop is necessary:
eg, 15 kPa for valves near the central unit, 10 kPa for valves at a medium range, and 5 kPa for valves on remote radiators.
An exact determination can only be carried out by making a pipe network calculation using the diagram, or with a calculation program.

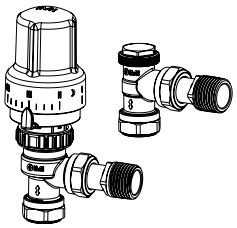
Diagram radiator lockshield

*) Revolution setting



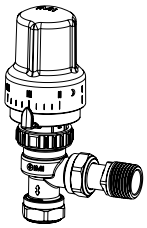
DN		Kv-value Revolution setting [U]								Kvs
		0,25	**0,5**	**1**	**1,5**	**2**	**2,5**	**3**	**3,5**	
15	(1/2")	0,22	0,37	0,62	0,92	1,22	1,43	1,57	1,68	1,74

Articles



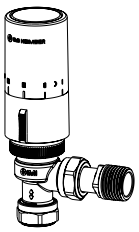
Set – Angle + D-U head
Connectivity as angle form **or** reversed form (see dimensions)

DN	Connection radiator	Connection pipe	Kv [xp] 1 K / 2 K / 3 K	Kvs CALYPSO TRV	Kvs Lockshield	Article No
15	Rp1/2	15 mm	0,38 / 0,79 / 1,25	2,00	1,74	9690-60.800



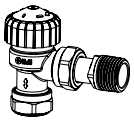
Angle + D-U head
Connectivity in angle **or** reversed position (see dimensions)

DN	Connection radiator	Connection pipe	Kv [xp] 1 K / 2 K / 3 K	Kvs CALYPSO TRV	Article No
15	Rp1/2	10 mm	0,38 / 0,79 / 1,25	2,00	9690-60-701
15	Rp1/2	15 mm	0,38 / 0,79 / 1,25	2,00	9690-60.700



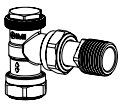
Angle + Halo head
Connectivity in angle **or** reversed position (see dimensions)

DN	Connection radiator	Connection pipe	Kv [xp] 1 K / 2 K / 3 K	Kvs CALYPSO TRV	Article No
15	Rp1/2	15 mm	0,38 / 0,79 / 1,25	2,00	9690-60.720



Angle
Connectivity in angle **or** reversed position (see dimensions)

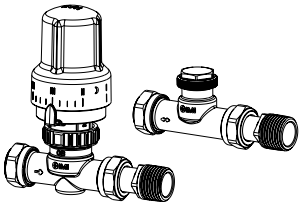
DN	Connection radiator	Connection pipe	Kv [xp] 1 K / 2 K / 3 K	Kvs CALYPSO TRV	Article No
15	Rp1/2	15 mm	0,38 / 0,79 / 1,25	2,00	9690-60.000



Regutec GB, angle

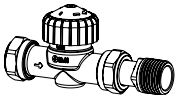
DN	Connection radiator	Connection pipe	Kvs Lockshield	Article No
15	Rp1/2	15 mm	1,74	0391-02.000

Kvs = m^3/h at a pressure drop of 1 bar and fully open valve.
Kv [xp] max. 1 K / 2 K = m^3/h at a pressure drop of 1 bar with thermostatic head.



Set – Straight + D-U head

DN	Connection radiator	Connection pipe	Kv [xp] 1 K / 2 K / 3 K	Kvs CALYPSO TRV	Kvs Lockshield	Article No
15	Rp1/2	15 mm	0,38 / 0,79 / 1,25	2,00	1,74	9690-62.800



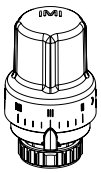
Straight

DN	Connection radiator	Connection pipe	Kv [xp] 1 K / 2 K / 3 K	Kvs CALYPSO TRV	Article No
15	Rp1/2	15 mm	0,38 / 0,79 / 1,25	2,00	9690-62.000

Regutec GB, straight

DN	Connection radiator	Connection pipe	Kvs Lockshield	Article No
15	Rp1/2	15 mm	1,74	0392-02.000

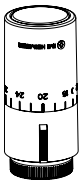
Kvs = m^3/h at a pressure drop of 1 bar and fully open valve.
Kv [xp] max. 1 K / 2 K = m^3/h at a pressure drop of 1 bar with thermostatic head.



Thermostatic head D-U

Setting numbers 0–IIIII. Temperature range 0 °C to 28 °C.

Model	Article No
Cap with graduation RAL 9016, **white**	6852-27.500

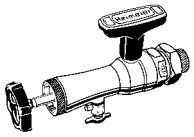


Thermostatic head Halo

Setting scale with temperature values. Temperature range 6 °C to 28 °C.

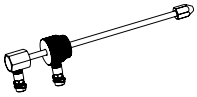
Model	Article No
Cap with graduation RAL 9016, **white**	7500-00.500
Cap with graduation **chrome**	7500-00.501

Accessories



Fitting tool
complete with case, box spanner and replacement seals, for replacing thermostatic inserts without draining off the heating system (for DN 10 to DN 20).

Article No
9721-00.000

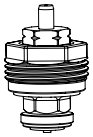


Measuring spindle for fitting tool
for differential pressure measurement at thermostatic valve bodies with TA-SCOPE balancing instrument.

Article No
9790-01.890

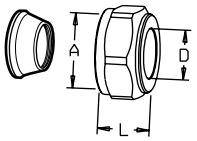
Thermostat insert
V-exact II with precision presetting.
For thermostatic valve bodies **with II marking**, **from 2012 and II+ marking, from 2015.**

Article No
3700-24.300



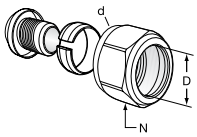
Thermostat insert
Replacement insert.

Article No
3850-02.300



Compression set TA 319 Half coupling
Chrome plated
Should not be used with PEX-pipes

DxA	L[1]	Article No
10xG1/2	17	53 319-210
12xG1/2	17	53 319-212
15xG1/2	20	53 319-215
16xG1/2	25	53 319-216



Compression set FPL-PX
Chrome plated

d	L[1]	For PEX-pipe D	N	Article No
G1/2	13	12x1,7	24	53 644-212
G1/2	13	12x2,0	24	53 644-312
G1/2	16	15x2,5	24	53 644-315

1) Over all length.

Theft protection
for thermostatic head D-U.

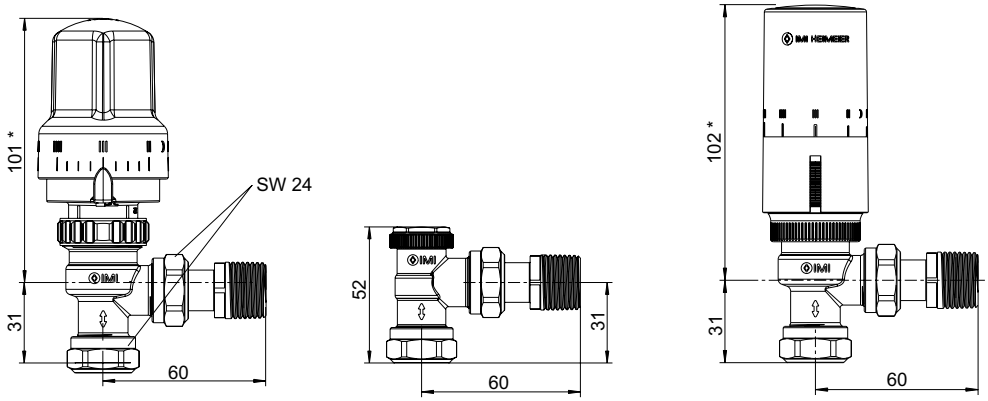
Article No
6020-01.347

Other accessories, see catalogue leaflet “Accessories and spare parts for thermostatic radiator valves”.

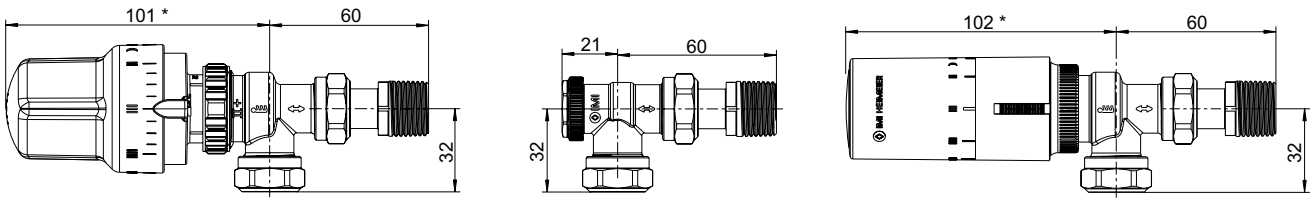
Other couplings, see catalogue leaflet “FPL”.

Dimensions

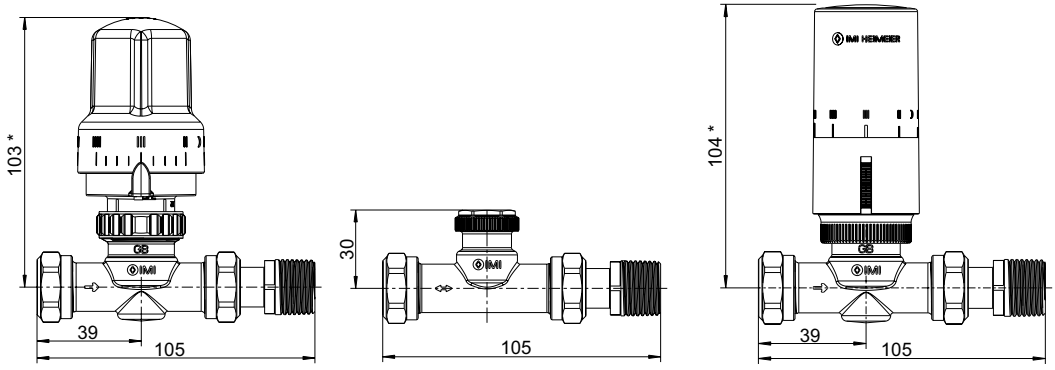
Angle connection



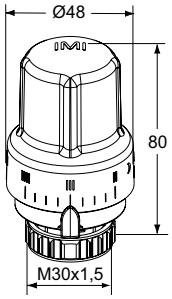
Reversed connection



Straight connection

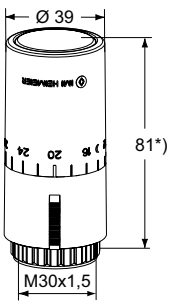


D-U head



*) at setting III

Halo head



*) at setting 20

IMI Calypso UK ed.8 10.2023