V2000LX

High-flow Thermostatic Valve

Pre-settable thermostatic valve body with for high flow rates

APPLICATION

The V2000LX is a range of thermostatic radiator valves with a stepless pre-settings over a wide range of flow rates for balancing of pumped two-pipe heating and cooling systems with high design flow requirements.

The valve design maximizes the flow rate possibilities of the standard AT-Concept valve bodies, providing an unmatched 2K p-band flows among pre-settable thermostatic valves.

The V2000LX are available in straight and angled DN15 and DN20 versions.

APPROVALS

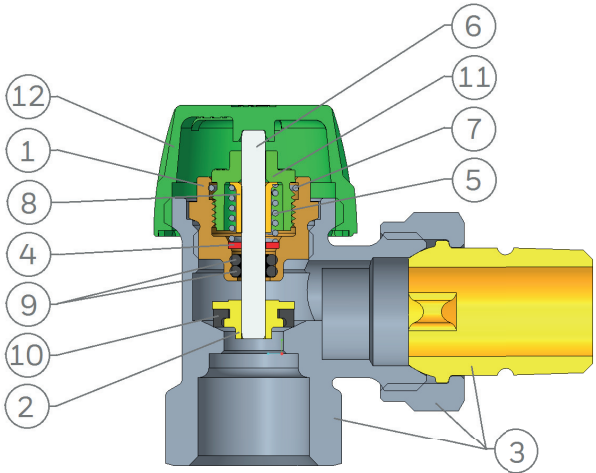• Keymark certified and tested to EN 215

SPECIAL FEATURES

• Easy, stepless adjustment of flow rates by standard 7mm wrench or by a setting key (see "Accessories")

• Nominal flow up to 320kg/h with 2K p-band of the high-stroke heads

• Quiet operation

• Strong restoring spring, which is not immersed in water, ensuring durability of the valve

• Double o-ring seal for maintenance-free operation

• Standard dimensions per EN215

• Standard M30 x 1.5 thermostat connection

• Valves can be shut-off with the protection cap

• V2000LX valves are compatible with the following Honeywell Home actuators:

 – All radiator thermostats with M30 x 1.5 connection

 – HR types of Evohome and Roomtronic actuators

 – MT4 actuators

 – M5410 2-point actuators

 – M4410E/K and M7410E5001 modulating actuators

• The valve insert can be replaced while the system is operating and without draining using the service tool (see 'Accessories')

• Valve housing and insert fits to Honeywell Home AT-Concept design, ensuring housing and insert cross compatibility with MNG, Honeywell and Honeywell Home thermostatic valves produced by Resideo and its predecessors since 1974

TECHNICAL DATA

Media	
Medium:	Water or water-glycol mixture, quality to VDI 2035
pH-value:	8 - 9.5
Connections/Sizes	
Body-head connection:	M30 x 1.5
Sizes:	DN10, DN15, DN20
Operating temperatures	
Max. operating temperature:	120 °C
Min. operating temperature medium:	–10 °C non-freezing
Pressure values	
Max. operating pressure:	PN10, 10 bar (1000kPa)
Max. differential pressure:	1.0 bar (100 kPa)
Differential pressure recommended for quiet operation:	≤0.2 bar (20 kPa)
Flow rates	
Nominal flow range:	20 - 235 l/h
Max. nominal flow at 10 kPa (EN 215) – standard head:	235 l/h ± 10 %
Max. nominal flow at 10 kPa (EN 215) – high-stroke head:	320 l/h ± 10 %
Specifications	
Closing dimension:	11.5 mm
Factory setting:	position 6
Identification	
- Green protection cap with embossed 'LX' on the top	
- Green colour plastic dial on the top of valve insert	

CONSTRUCTION

Overview		Components	Materials
	1	Insert cartridge	Brass
	2	Plunger	
	3	Valve body, tailpiece, nut	
	4	Washer	
	5	Return spring	Stainless steel
	6	Spindle	
	7	Retaining ring	
	8	End-stop rivet	Copper
	9	O-rings	EPDM 70
	10	Plunger seal	
	11	Setting dial	PBT GF30
	12	Protection cap	PP GF10

METHOD OF OPERATION

The V2000LX valve is controlled by the radiator thermostat. Air from the room passing over the sensor of the radiator thermostat causes the sensor to expand when the temperature rises. The sensor pushes the valve spindle, closing the valve.

When the temperature falls, the sensor contracts and the spring-loaded valve spindle is opened. The TRV opens in proportion to the temperature of the sensor. Only the amount of water required to maintain the room temperature set on the radiator thermostat can flow into the radiator.

The V2000LX valves have an end-stop rivet fixed to the valve spindle. The return spring keeps the rivet to a threaded setting dial with a scale. By turning the threaded setting dial, the height of it changes relatively to the valve seat. Thus, the stroke of the plunger can be limited. This can be used to steplessly limit he maximum flow through the valve in order to balance the heating system.

With the V2000LX valves, it is recommended to design the heating systems with a 2K p-band control range when using the standard heads, and with 1K to 2K p-band control range when using the T3019HF and T6001HF thermostatic heads with high specific stroke.

TRANSPORTATION AND STORAGE

Keep parts in their original packaging and unpack them shortly before use.

The following parameters apply during transportation and storage:

Parameter	Value
Environment:	clean, dry and dust free
Min. ambient temperature:	0 °C
Max. ambient temperature:	50 °C
Max. ambient relative humidity:	75 % *

*non condensing

INSTALLATION GUIDELINES

- The V2000LX valves are primarily designed for use in pumped 2-pipe heating systems with thermostatic flow control

- The V2000LX valves should be installed on the supply side of the radiator, so that the heating medium flows in the direction indicated by the arrow on the body

- It is also recommended to install the V2400 series "Verafix" return valves at the other end of the heat exchanger. The Verafix allows for shut-off and drain-down of the radiator. But it can also be throttled to dissipate excessive differential pressure across a radiator and hence reduce any noise that could otherwise occur

- It is recommended to effectuate valve presetting to achieve hydraulic balancing and improve comfort and energy efficiency, even in smaller systems. Static balancing has been shown to result in up to 5 % of energy savings

- In larger systems with static balancing, it is recommended to install V5032 pipeline balancing valves at the return of each branch or riser

- In large systems, hydraulic balancing with the V2000LX series valves works best in combination with the V5010 Kombi-3 or V5001P Kombi-Auto differential pressure control valves installed on each heating branch or riser. Dynamic balancing compensates for varying temperature setting and heat load conditions, and has been shown to result in up to 10 % of energy savings

- The V2000LX valve bodies can be used with all Honeywell Home thermostatic heads with M30x1.5 connection and with recommended Honeywell Home thermoelectric or motorized actuators (see section Recommended Actuators below). When using actuators from other manufacturers, make sure to select actuators with pressure force not exceeding 100N
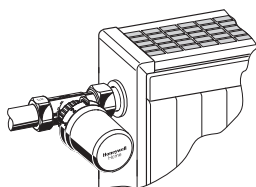
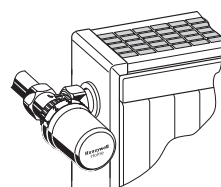**Installation Example**

Fig. 1. Straight
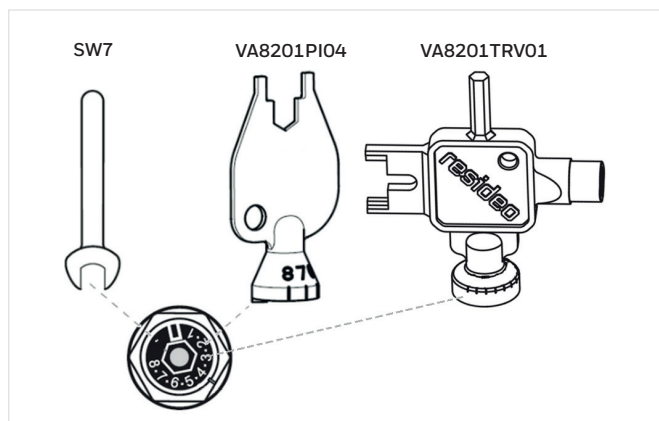

Fig. 2. Angled

Setup requirements

- To avoid stone deposit and corrosion the composition of the medium should conform with VDI-Guideline 2035
- All additives and lubricants used for heating medium treatment have to be suitable for EPDM seals to avoid their disintegration. Use of mineral oils should be avoided
- For industrial and long-distance energy systems please refer to applicable codes VdTÜV and 1466/AGFW FW 510
- Heavy polluted existing heating systems must be flushed thoroughly before replacing thermostatic valves
- The heating system must be fully deaerated
- Any complaints or costs resulting from non-compliance with above rules will not be accepted Resideo and its subsidiaries manufacturing the Honeywell Home products

TECHNICAL CHARACTERISTICS

Presetting

- The flow rates can be adjusted to one of the 8 settings (20 to 235 l/h for standard heads and 20 to 320 l/h for heads with high specific stroke)
- If the required maximum flow does not match exactly the setting value, use an intermediate setting or the closest higher setting

Flow tolerances

Recommended actuators

- V2000LX flow characteristics are designed for control by thermostatic heads, which provide for proportional regulation within the 2K p-band stroke (0.45 mm). The valves are therefore best controlled by a mechanical or electronic thermostatic head
- All Honeywell Home thermostatic radiator heads with M30x1.5 connection fit the V2000LX valves
- Honeywell Home HR90, HR91 and HR92 electronic TRV heads are suitable for the V2000LXvalves
- Honeywell Home MT4 thermoelectric actuators, and M5410 2-point actuators can be used for on/off control of the V2000LXvalves
- Modulating actuators used with the V2000LX valves need to be able to provide for precise proportional flow control over a very small stroke range, because at higher strokes, the flow is limited by the presetting
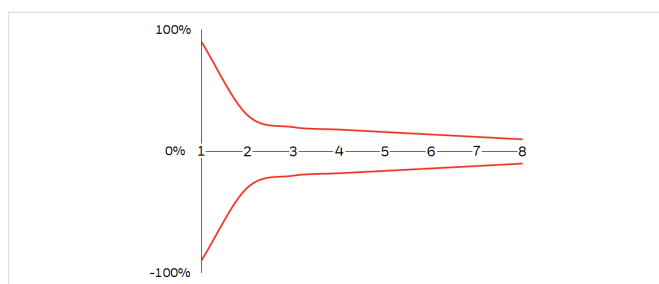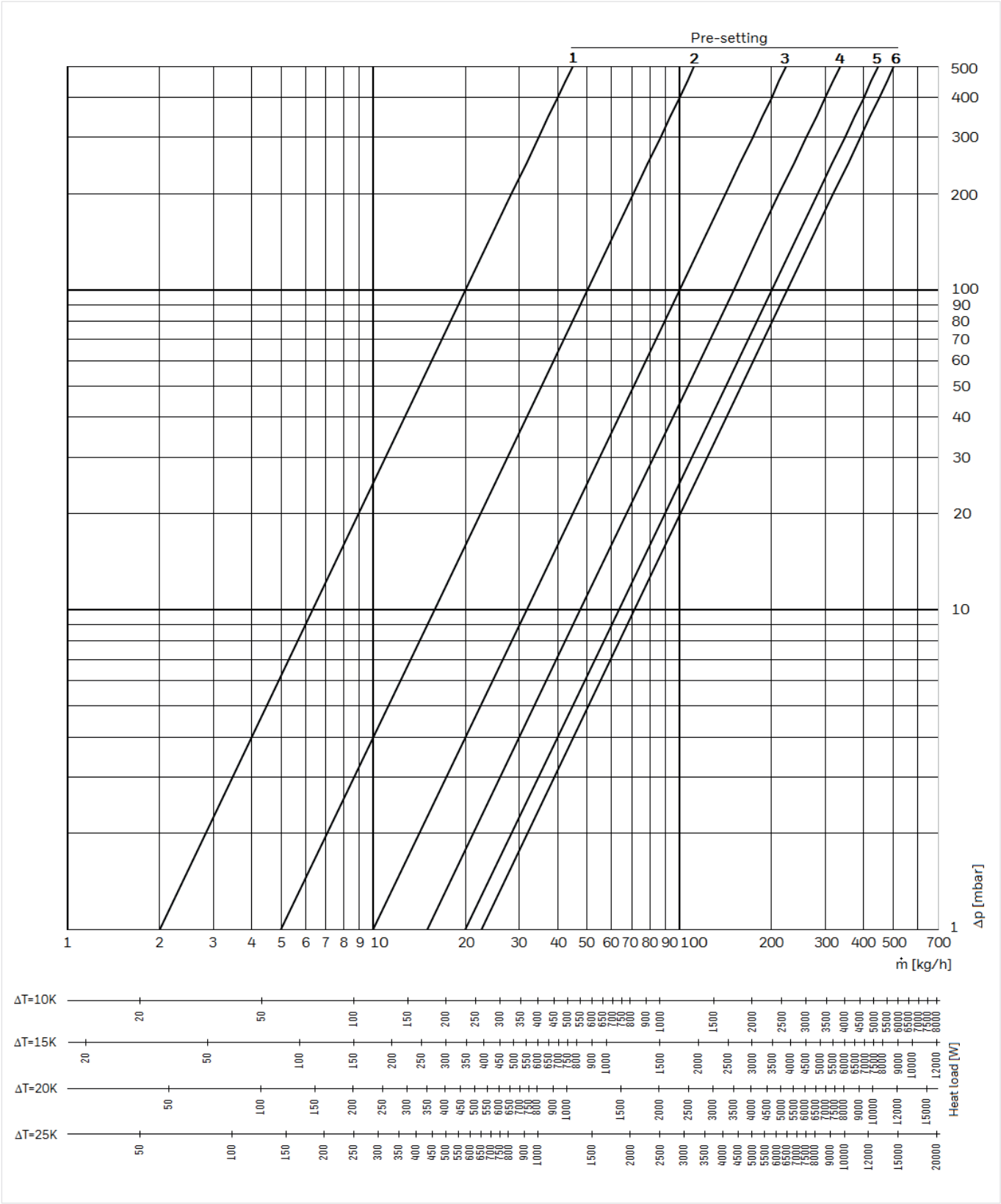- The M4410E/K and M7410E5001 modulating actuators are recommended

- The setting is changed using a standard 7 mm wrench or a special setting key
  - Slide the head of the setting key onto the hexagon of the green setting dial, ensuring that the little tongue on the bottom of the key engages in the grove on the setting dial
  - Turn the setting key until the desired setting value is against the reference mark on the brass cartridge of the insert
  - Do not try to set the valve to a setting higher than 8 (forcing the dial over the retaining ring) or to a setting lower than 1 (compressing the seal against the valve seat). If you accidentally set the valve to a setting lower than 1, open the setting dial by turning to the left up to the end stop above setting 8 (where the dial top hits the retaining ring), and then turn back to the right to the desired setting
- The default factory setting is position 6, to guide the installer to change the setting only within the 1-8 range
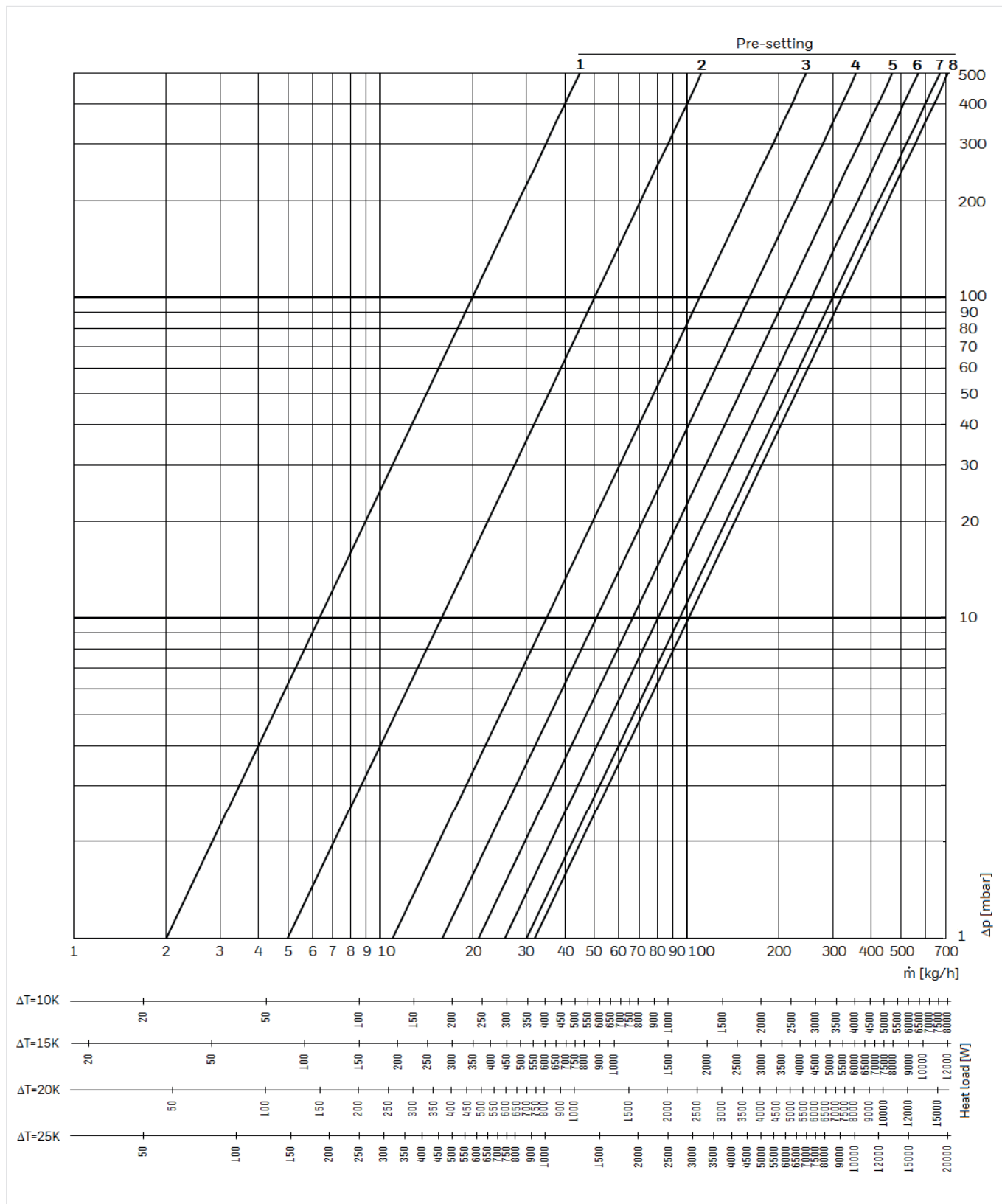
Design example

- Heat load: Q=3500 W
- Supply vs. return temperature difference: ΔT=15K
- Calculated mass flow: $\dot{m} = Q/(c \times \Delta T)$ = 3500/(1.163x15) = 201 l/h
- Control within: 2K p-band
- Available differential pressure: Δp = 100 mbar (10 kPa)
- Valve setting from charts on following pages: 5

**Flow Rate**

2K p–band with standard heads (0.22mm/K stroke)

Presetting	1	2	3	4	5	6	7	8
kv-value, 1K p-band	0.063	0.16	0.28	0.33	0.33	0.33	0.33	0.33
kv-value, 2K p-band	**0.063**	**0.16**	**0.32**	**0.47**	**0.63**	**0.71**	**0.73**	**0.74**
kv-value, 3K p-band	0.063	0.16	0.35	0.51	0.66	0.79	0.95	1.04
kvs	0.063	0.16	0.35	0.51	0.66	0.81	0.97	1.08

2K p-band with T3019HF or T6001HF head (0.35mm/K stroke)

Presetting	1	2	3	4	5	6	7	8
kv-value, 1K p-band	0.063	0.016	0.30	0.35	0.41	0.41	0.41	0.41
kv-value, 2K p-band	**0.063**	**0.016**	**0.35**	**0.51**	**0.66**	**0.81**	**0.95**	**1.01**
kvs	0.063	0.016	0.35	0.51	0.66	0.81	0.97	1.08

DIMENSIONS AND ORDERING INFORMATION

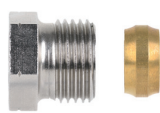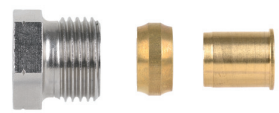| Fig. 7. D- Straight	Fig. 8. E - Angled
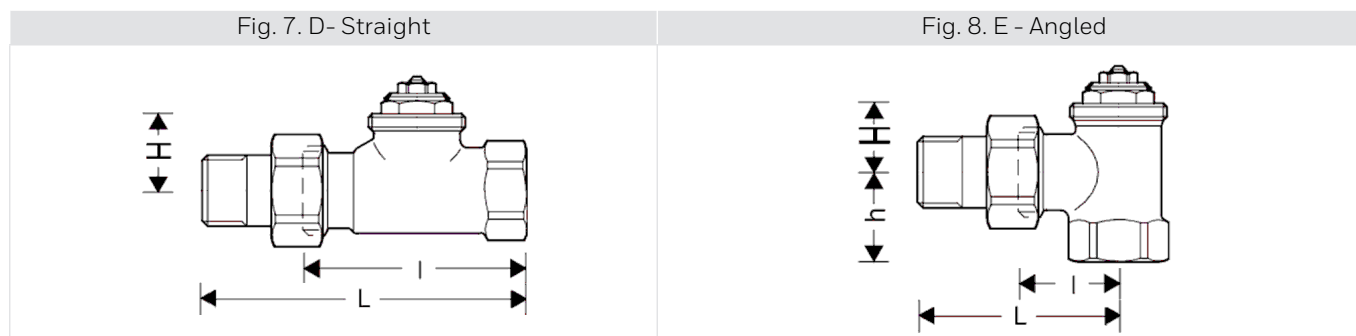
Tab. 1 V2000/V2020: Bodies with internal threads and metal–to–metal sealing radiator tailpieces

| Pattern	DN	EN 215 certified	Q_{nom} range with std. head	Pipe connection	l [mm]	L [mm]	h [mm]	H [mm]	DN20 F–series	Ordering Code
E – Angled per EN215 D-Series	15	•	20-235kg/h	Rp $1/2$"	29	58	26	20		V2000ELX15
	20	•	20-235kg/h	Rp $3/4$"	34	66	29	19	• (*)	V2020ELX20
D - Straight per EN215D-Series	15	•	20-235kg/h	Rp $1/2$"	66	95	-	25		V2000DLX15
	20	•	20-235kg/h	Rp $3/4$"	74	106	-	25	• (*)	V2020DLX20
E – Angled per EN215F-Series	15	•	20-235kg/h	Rp $1/2$"	26	53	23	22		V2020ELX15
D - Straight per EN215F-Series	15	•	20-235kg/h	Rp $1/2$"	55	82	-	26		V2020DLX15

(*) D-series length body with tailpiece threaded up to collar to allow for replacement of shorter F-series bodies

ACCESSORIES

	Description		Dimension	Part No.
	FIG1/2CS	**Compression fitting for COPPER and STEEL pipe** Consisting of compression nut and compression ring. For valves with internal thread. Note: Support inserts have to be used for copper or soft steel pipe with 1.0 mm wall thickness. Max. operating temperature 120 °C, max. operating pressure 10 bar.		
		$1/2$", DN15	10 mm	FIG1/2CS10
		$1/2$", DN15	12 mm	FIG1/2CS12
		$1/2$", DN15	14 mm	FIG1/2CS14
		$1/2$", DN15	15 mm	FIG1/2CS15
		$1/2$", DN15	16 mm	FIG1/2CS16
		$3/4$", DN20	18 mm	FIG3/4CS18
		$3/4$", DN20	22 mm	FIG3/4CS22
	FIG1/2CSS	**Compression fitting for COPPER and STEEL pipe** Consisting of compression nut and compression ring and support insert. For valves with internal thread. Note: Support inserts have to be used for copper or soft steel pipe with 1.0 mm wall thickness.		
		$1/2$", DN15	12 mm	FIG1/2CSS12
		$1/2$", DN15	14 mm	FIG1/2CSS14
		$1/2$", DN15	15 mm	FIG1/2CSS15
		$1/2$", DN15	16 mm	FIG1/2CSS16
		$1/2$", DN15	18 mm	FIG1/2CSS18
		$3/4$", DN20	18 mm	FIG3/4CSS18
	FIG1/2M	**Compression fitting for MULTILAYER pipe** Consisting of compression nut, compression ring and support insert. For valves with internal thread.		
		$1/2$", DN15	16 mm	FIG1/2M16X2

	VA6290	Reduction piece		
		1" pipe > $^1/_2$" valve		VA6290A260
		$1^1/_4$" pipe > $^1/_2$" valve		VA6290A280
		1" pipe > $^3/_4$" valve		VA6290A285
		$1^1/_4$" pipe > $^3/_4$" valve		VA6290A305
	VA5201A	Radiator tailpiece with thread up to collar		
		for valves DN15 ($^1/_2$")		VA5201A015
		for valves DN20 ($^3/_4$")		VA5201A020
	VA5204Bxxx	Extended radiator tailpiece, nickel-plated, to be shortened as required		
		$^1/_2$" x 76 mm (for DN15) thread approx. 65 mm		VA5204B015
		$^3/_4$" x 70 mm (for DN20) thread approx. 60 mm		VA5204B020
	VA2202A	Pressure cap – for shutting off valves on radiator outlet		
		G $^3/_4$" internal thread – for DN15 valves		VA2202A015
		G 1" internal thread – for DN20 valves		VA2202A020
	VA5090	Sealing ring for pressure cap		
		for valves DN15 ($^1/_2$")		VA5090A015
		for valves DN20 ($^3/_4$")		VA5090A020
	VA8200A	Service tool to replace valve insert		
		for all V2000 types: SX, FX, LX, BB, UB and for legacy types: Kx, SL, SLGB, Mira		VA8200A001
	VA8201	Metallic presetting key with chrome plating		
		for PI, SX, FX and LX type valves		VA8201PI04
	VA8201	Plastic presetting key		
		for PI, SX, FX and LX type valves and Verafix lockshields		VA8201TRV01

SPARE PARTS

Overview
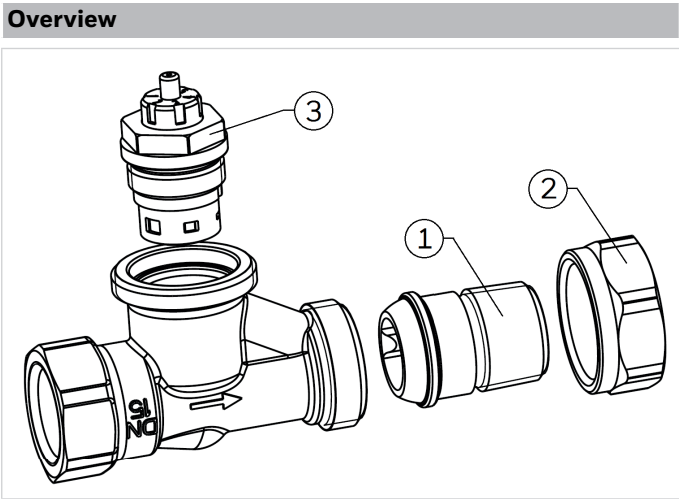
	Description	Dimension	Part No.
1	**Metal-to-metal sealing radiator tailpiece**		
		$^1/_2$", DN15	VA5200B015
		$^3/_4$", DN20	VA5200B020
2	**Coupling nut**		
		DN15, nut with G $^3/_4$" internal thread	VA5000B015
		DN20, nut with G 1" internal thread	VA5000B020
3	**Replacement valve insert**		
	LX type		VS1200LX01

For more information

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