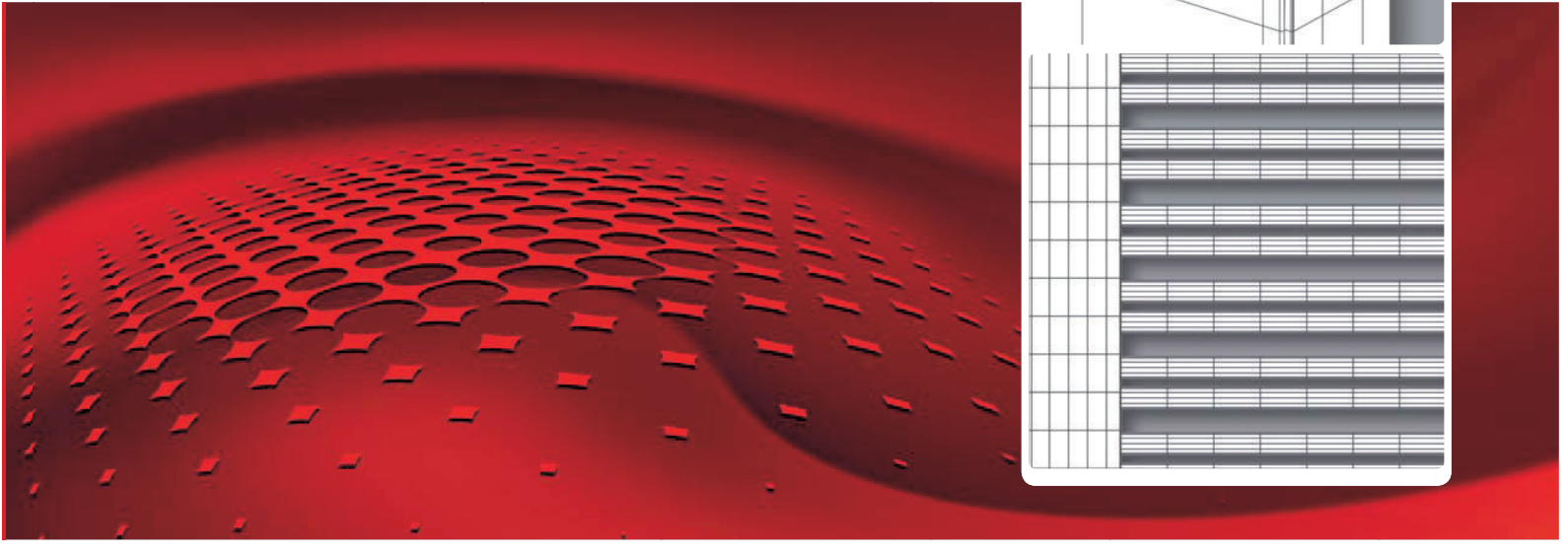
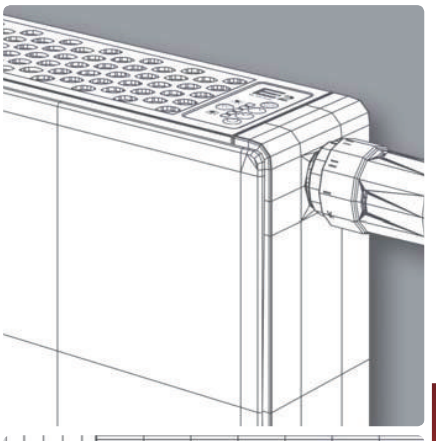
KE KELIT®
CLIMATE CONTROL SYSTEMS

VOGEL&NOOT

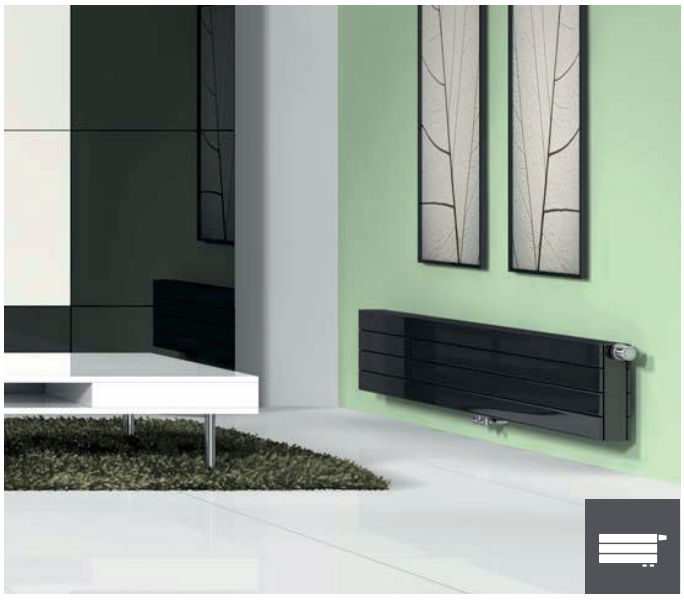
HEAT EMISSION SYSTEMS.

TECHNICAL DATA 2014





heatingthrough**innovation.**



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FULL-RANGE SUPPLIER.

Efficient, comfortable and aesthetic heat distribution

VOGEL & NOOT is the full-range supplier in innovative radiator and underfl oor heating systems for any temperature range – especially for low temperature operation with renewable energy sources.

Panel, bathroom and design radiators, convectors

Multifunctional panel radiators with the T6 technology, comfortable bathroom and individually configured design radiators as well as shapely convectors from VOGEL & NOOT , have a broad flow temperature range and an ideal range of applications to match.

E2-technology

The intelligent E2 technology provides quick control convenience even at low temperatures and always with the highest level of effi ciency – also in combination with underfloor heating systems.

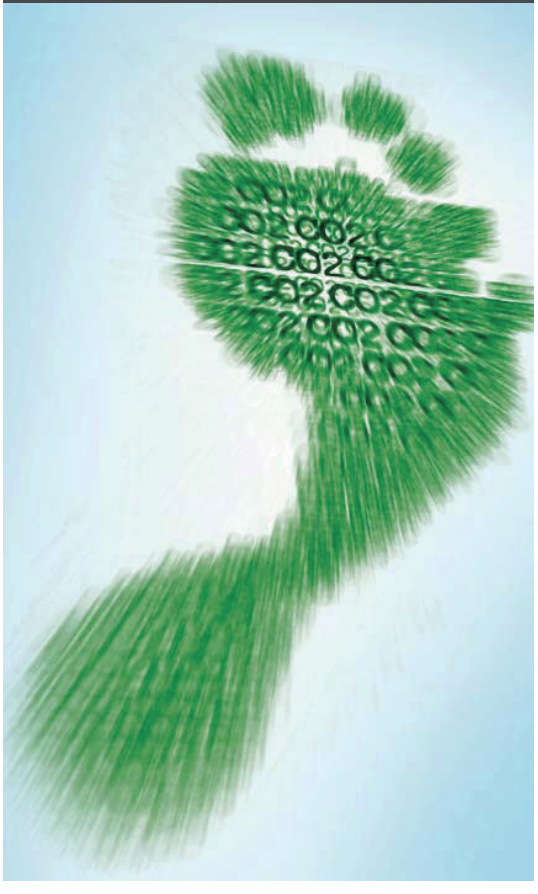
The sign of highest energy efficiency

The ECO seal of quality on all radiators from VOGEL & NOOT stands for compatibility with all (renewable) energy sources and thus for economically as well as ecologically effi cient heat distribution.

Efficient heat distribution for the planet

VOGEL&NOOT has set itself the objective of providing the world with resource-conserving heat distribution solutions, because climate protection will only work when the heat generated is released efficiently into rooms.

ENVIRONMENT AND CLIMATE PROTECTION.



Contribution to the climate by improving the ecological balance

As a leader in progressive thinking on "green" heat distribution using renewable energies, **VOGEL&NOOT** demonstrates a high level of responsibility about the efficient use of our planet and its resources, for example with a strict ECO training course, the focus on low temperature heat distribution and the compatibility with renewable energies as well as a permanent production optimisation and product development. **VOGEL&NOOT** has been a member of Klimabündnis Österreich since 2011.

Innovation as the driving force for climate protection

VOGEL&NOOT conducts intensive research & development and maintains a strong innovation network with internal and external energy and trend experts, universities and renowned research institutions.

Renewable energies, the future of heat distribution

Compatibility is an essential quality for heat distribution systems using renewable, low temperature energy sources such as heat pumps, solar technology, etc. **VOGEL&NOOT** radiators with the ECO quality seal ensure low CO_2 emissions and thermal comfort for all system temperatures in modern insulated buildings up to a flow temperature below 40°C.

VOGEL&NOOT is a member of Klimabündnis Österreich. This network is active in 18 European countries and has set itself the objective of effectively reducing environmentally harmful emissions and protecting our planet's resources.

„we are“ a member of the Klimabündnis

QUALITY
AS A SIGN OF
MAXIMUM SAFETY

Quality as a sign of maximum safety

The radiators manufactured by **VOGEL&NOOT** meet numerous internationally recognised quality standards and the manufacturing processes at all of the production sites have been ISO certified. Furthermore, the quality and performance data of **VOGEL&NOOT** panel radiators are constantly reviewed and confirmed by accredited European institutions. **VOGEL&NOOT** panel radiators have also been awarded the seal of approval of the German Committee for Terms and Conditions of Sale (RAL), which documents the special quality of the product compared with many other radiator manufacturers.

Bests with RAL Quality Seal

For architects, designers and builders, the RAL seal of approval for **VOGEL&NOOT** radiators symbolises the high quality of the product in the areas of processing and handling. These quality assessments, which are controlled by independent institutions, vouch for the enduring safety and long life of service of the product.

Highest customer confidence

Our customers know that with each product, they can expect excellent properties in terms of the material, surface condition and durability. **VOGEL&NOOT** radiators thus exceed many requirements and outperform numerous standards (such as, for instance, the European Standard EN 442 or the CE marking). A perfected manufacturing process guarantees the best performances with precise welding, reliable leak-testing and glossy surface treatment - safety combined with a fantastic visual appearance!

HEIZKÖRPER RAL GÜTEZEICHEN AUS STAHL · EN 442 GEPRÜFT · EN ISO 9001 · CE · EN EURONORM 442 · 55 45 DIE neue WÄRME

Panel radiators

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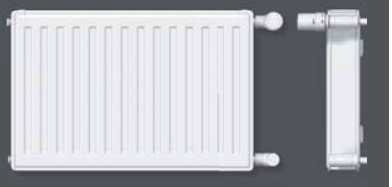

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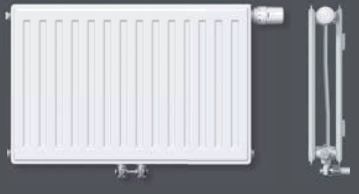

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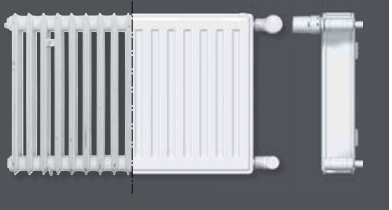

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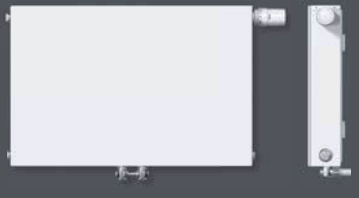

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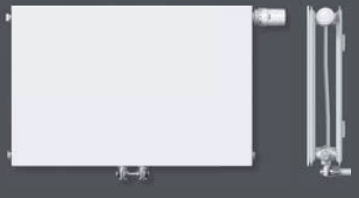

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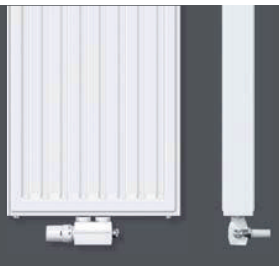

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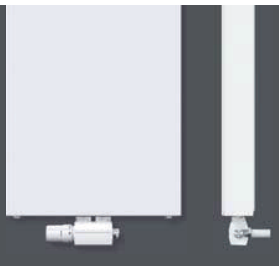

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ULOW-E2 LOW-TEMPERATURE RADIATOR

E2 Technology

An unmatched concept
The ULOW-E2 low-temperature radiator, with its E2 technology is the realisation of a unique product concept, that offers efficient, economic and aesthetic heat emission.

reddot design award
winner 2013

Beauty and economy in one
An avant-garde design meets all the demands of a modern interior and stylishly enhances any living space. Because of the small additional investment costs needed for the ULOW-E2's higher efficiency, it quickly pays for itself. Manual temperature control in each room makes for maximum comfort in every one of them.

Powerful and intelligent
On the one hand, the ULOW-E2 gives a high proportion of radiant heat thanks to its water-filled panels, whilst on the other, it provides optimised, on-demand convection. Intelligent control, switches between static and dynamic operation and ensures quick heat emission and short reaction times, with high efficiency and a maximum of thermal comfort at supply temperatures of 40° C and less.

The advantages of the ULOW-E2 low-temperature radiator at a glance.

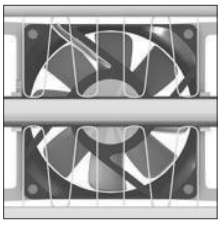
Low-temperature compatible
The ULOW-E2 low-temperature radiator gives problem-free use at supply temperatures of 40° C and less, with all modern, conventional energy sources (oil or gas burning heating systems, &c), as well as all renewable energy sources (heat pumps, solar heating, &c).

Intelligent control
What makes the ULOW-E2 so special is that it is fitted with fans that enhance natural convection, combined with an intelligent control system that can switch between static and dynamic operation either fully automatically, or according to the user's operating requirements. The fans serve as a supplement and are only switched on when needed, as this equipment provides high basic performance even in static operation.

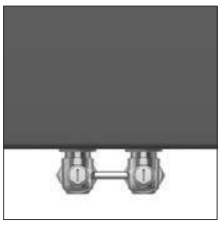
High savings potential
Choosing it in preference to other products currently available on the market can give you huge energy savings, because of the significantly lower ambient operational temperatures. With the ULOW-E2, operating the entire heating system is much more energy-efficient.

State-of-the-art design
The ULOW-E2's extremely elegant plane optics and its futuristically reduced artistic style appeal to persons with a sophisticated awareness of their furnishings, whilst the rounded soft-line edges exude stylish harmony. VOGEL&NOOT are trend-setting trail blazers with their completely new round-aperture optics – another prominent feature is the classy looking, intuitive touchpad control panel.

Heat emission in next to no time and a short reaction time
Because of its high proportion of radiant heat and its on-demand fan-optimised convection, the ULOW-E2 ensures fast heat emission and short reaction times. In winter any night-time drop in temperature or heat loss from ventilating room can be compensated for, no problem, in next to no time.



Tried and tested central-connection technology
In today's flexible building industry pre-piping has become indispensible. In this respect central-connection technology contributes significantly to reductions both in installation time and costs and in susceptibility to faults. It also ensures maximum freedom in planning and installation.



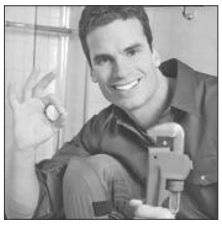
Technology

A higher proportion of radiant heat
In contrast to simple convectors the ULOW-E2 gives a much higher proportion of radiant heat, thanks to its water-filled panels to front and rear.

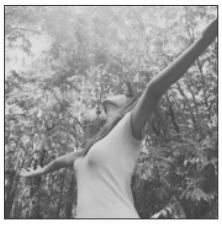
Ideal for renovations and new buildings
After thermal renovation and the fitting of a modern heating source, the conditions for installing the ULOW-E2 are ideal. We recommend using ULOW-E2 low-temperature radiators on their own in renovations, but in combination with other heat emission systems in new buildings.

Versatile electrical connection
To connect the ULOW-E2 to the power supply, there is a choice of two options – a plug connection or a direct cable connection. The power cable length is fully adjustable.

Extremely easy installation
The ULOW-E2 is delivered as a ready to connect product, and can be installed just like any standard radiator - it's easy, efficient, flexible and inexpensive. Particularly with renovations this is very important.



System compatibility
Operating in combinations in new buildings, the ULOW-E2 is perfectly compatible with other low-temperature heat emission systems, such as under-floor heating, under-floor convectors, wall heating, &c. As the ambient operational temperatures are mutually consistent, it is possible to install both on a single heating circuit.



Living in comfort all year round
In winter the ULOW-E2 works as an efficient low-temperature radiator, with high-level control quality, to give perfect heating comfort. And then the summer breeze-effect ensures that on hot days the atmosphere in your living area is pleasantly cool thanks to gentle movement of the air.

RENOVATION, A NEW BUILDING OR SIMPLY GREATER THERMAL COMFORT.

Renovations: monovalent operation
Provided thermal renovation ensures a good standard of insulation, or a modern heating source has been fitted, the conditions for installing the ULOW-E2 are ideal. Operation with all energy sources (oil, gas, firewood, pellets, district heating or a heat pump) at a supply temperature of 40 °C and less is perfectly possible.

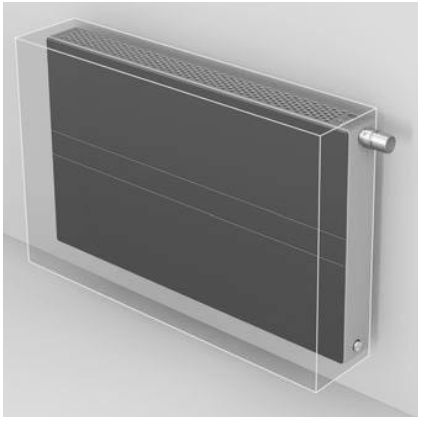
In new buildings: combined operation
In modern style new buildings good standards of thermal insulation already apply and modern reduced-temperature heating systems (oil- or gas-fired) are installed, or renewable low-temperature energy sources are used (firewood, pellets, and/or district heating or heat pumps). The ULOW-E2 with supply temperature as low as 40 °C and less is compatible with these heat sources.

For sure, the ULOW-E2 can in principle also be used for monovalent operation in new buildings. However, combined operation with other low-temperature heat-emission systems, such as underfloor heating, under-floor convectors, wall heating, &c is particularly recommended. Combined operation is recommended for spaces that require fast room heating and short reaction times (bedroom, fitness room, work space, etc.).

THE UNIQUE ULOW-E2 CONCEPT.

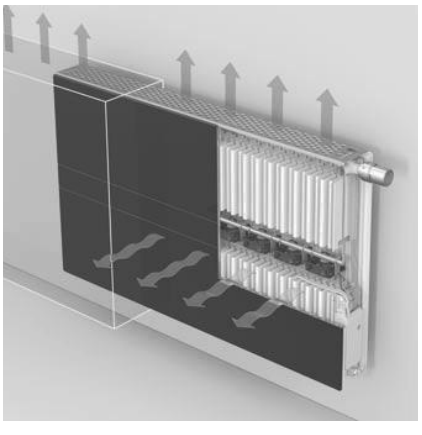
The ULOW-E2 as compared with commercially available fan convectors:

- Fan convectors generally provide either no radiant warmth or only very little. The ULOW-E2 combines convection and radiant heat, thanks to its water-charged panels.
- In static operation the ULOW-E2 is superior to commercially available fan convectors on account of its high level of basic performance. This is because aluminium heat exchangers without fan support are less efficient.
- With most fan convectors, the fans are switched on whenever the heater is in service. The ULOW-E2 has an intelligent control mechanism, which switches automatically between static and dynamic operation. It only starts the fans when it is turned full-on, or when additional output is required.
- Fan convectors are strictly limited in their designer- and architectural pretensions, because of their clumsy construction. With its distinctive 'round-hole-look', the ULOW–E2 sets new standards in radiator design. Its slim profile and elegant plane surfaces are the perfect complement to any modern living environment.
- Maintenance and cleaning of fan convectors is usually an unpleasant, time-consuming chore. The ULOW-E2, by contrast, can be cleaned just like a standard flat radiator. The rows of fans just pull out to the side, with no tools required.
- With its high performance specifications, the ULOW-E2 offers top of the range price-for-quality value.
- Fan convectors are made up of very many individual parts, some of which are complex and can only be fitted on-site. By comparison, the ULOW-E2 is delivered as a ready-to-plug-in product.
- Fan convectors do not have central connections. With the ULOW-E2 these come as standard across the range, guaranteeing maximum flexibility for planning and installation.
- Installation of fan convectors is expensive and time consuming. The ULOW-E2 can for the most part be installed with no tools needed.



ULOW-E2: slim profile and modern design

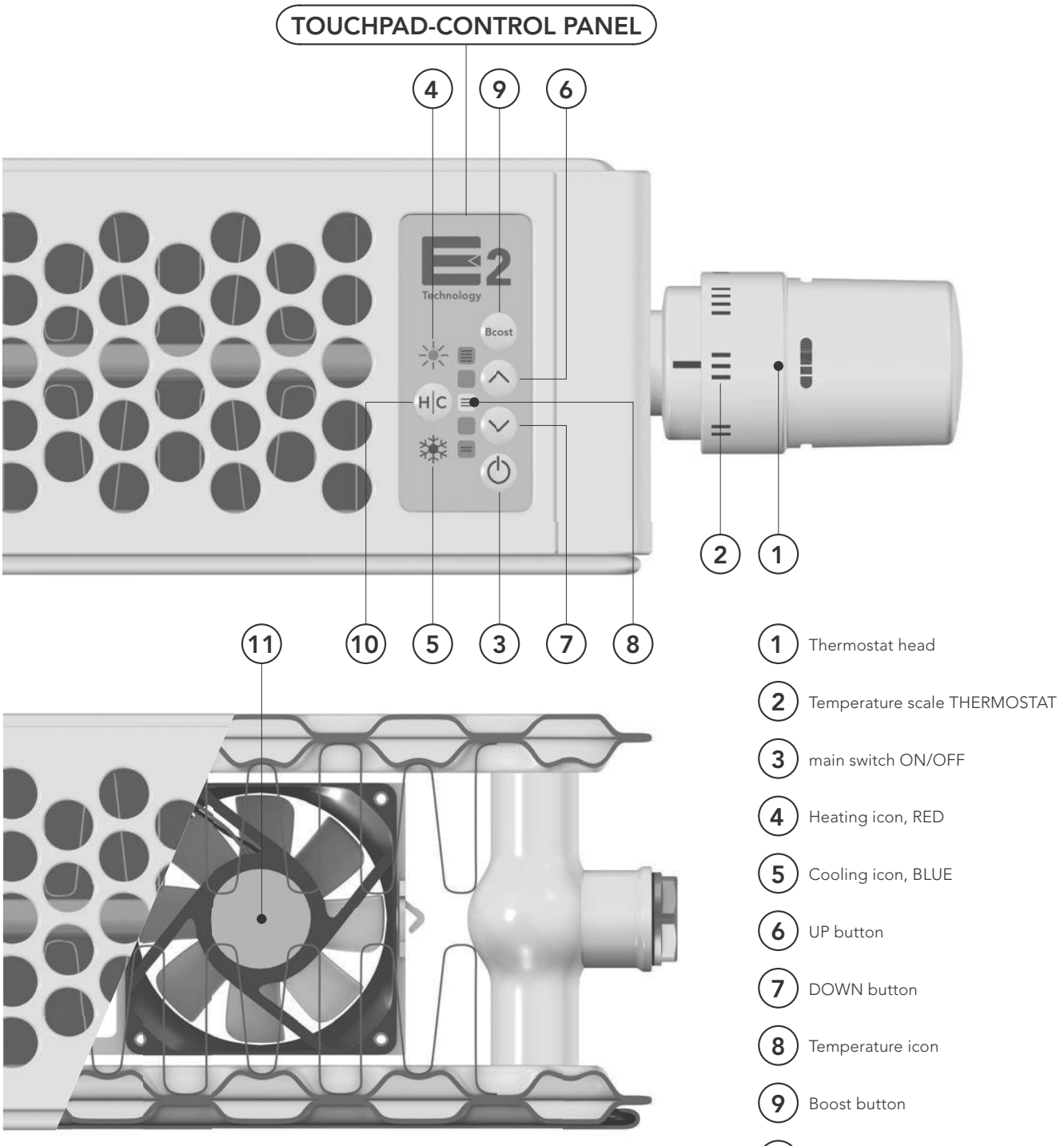
FAN CONVECTORS:
Clumsy appearance and broad bulky structure



ULOW-E2: radiant heat and convection

FAN CONVECTORS:
little radiant heat

Functional and control elements



1. Thermostat head
2. Temperature scale THERMOSTAT
3. main switch ON/OFF
4. Heating icon, RED
5. Cooling icon, BLUE
6. UP button
7. DOWN button
8. Temperature icon
9. Boost button
10. Heating/Cooling button
11. Fans

Functional and control elements

ULOW-E2

Settings instructions

The thermostat head (**1**) is always the radiator's **MAIN CONTROL FUNCTION**, with the temperature scale (**2**) showing the setting selected. The ULOW-E2 is equipped with a clearly arranged **TOUCHPAD CONTROL PANEL**, with which the settings for the radiator's I**NDIVIDUAL FUNCTIONS** can be entered.

The main switch ON/OFF (**3**) switches the electronics on or off. When the heating icon's (**4**) red light shows, the heating mode is on. The factory setting for desired room temperature on first operation is 22° C. With the UP button (**6**) or the DOWN button (**7**) you can reset the temperature in 1° C increments, between 18 and 26° C. The new setting is displayed by the LED temperature icon (**8**).
The Boost button (**9**) activates 'Boost Mode', in which the power to the fans (**11**) is increased to its maximum value.
The maximum duration of 'Boost Mode' is preset by the factory at 120 mins. As soon as the selected room temperature is reached, the system automatically switches to 'Comfort Mode'.
With the Heating/Cooling button (**10**) you can switch from heating operation to cooling operation, and the cooling icon (**5**) lights up in blue.
For "Dry Comfort Cooling" operation some adaptations in the boiler house will be needed, particularly to ensure that temperatures do not fall below the dew-point. In addition the thermostat head needs to be fully opened anti-clockwise, and with extremely high room temperatures it may also occasionally be necessary to remove the thermostat head.

Pressing the Heating/Cooling button (**10**) again activates the "Air Circulation Mode" and the blue cooling icon (**5**) starts to blink. In this case the fans (**11**) operate independently of the temperature sensors. The factory-setting of 12 volts can be reduced to 8 or 5 volts, and vice versa, by pressing the UP (**6**) and DOWN (**7**) buttons. If you press the Heating/Cooling button (**10**) once more, you return to the heating mode.
For more detailed information see the operating instructions, enclosed with every ULOW-E2 low-temperature radiator delivery.

Temperature settings

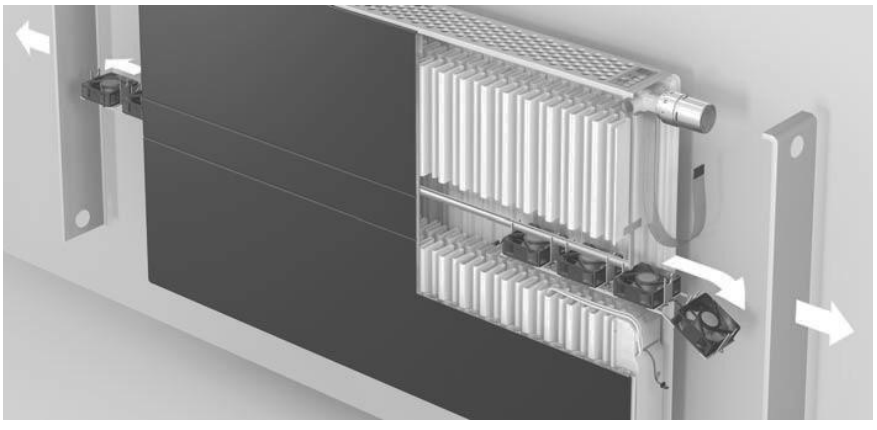
								
18 °C 1st LED dimly lights	**18,5 °C** 1st LED strong lights	**19 °C** 1st and 2nd LED dimly lights	**19,5 °C** 1st and 2nd LED strong lights	**20 °C** 2nd LED dimly lights	**20,5 °C** 2nd LED strong lights	**21 °C** 2nd and 3rd LED dimly lights	**21,5 °C** 2nd and 3rd LED strong lights	**22 °C** 3rd LED dimly lights
								
22,5 °C 3rd LED strong lights	**23 °C** 3rd and 4th LED dimly lights	**23,5 °C** 3rd and 4th LED strong lights	**24 °C** 4th LED dimly lights	**24,5 °C** 4th LED strong lights	**25 °C** 4th and 5th LED dimly lights	**25,5 °C** 4th and 5th LED strong lights	**26 °C** 5th LED dimly lights	

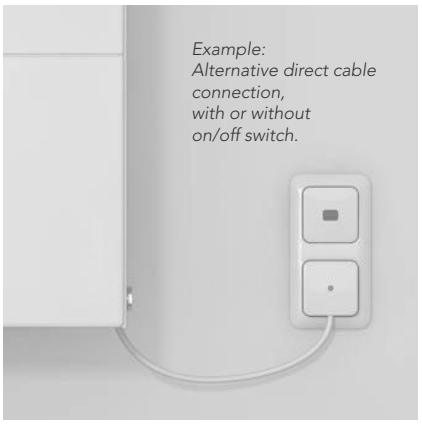
Service access, electrical connection und secure wall mounting

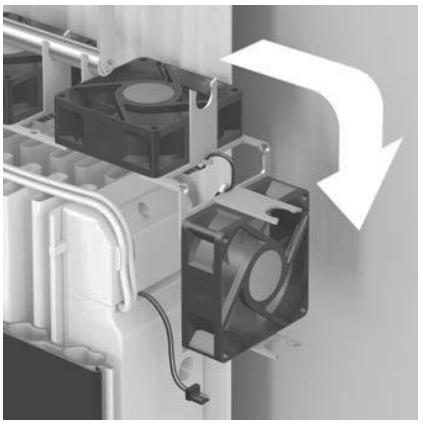
Versatile electrical connection
Connecting the ULOW-E2 to the power supply, can be done in a variety of ways and can fit in with every structural and architectural condition. The position of the cable is fully adjustable within an overall length of 1.20 m.

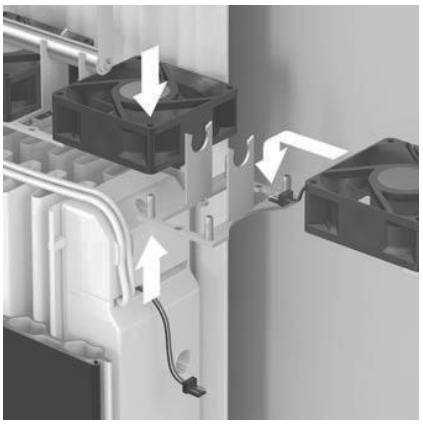
Tool-free service access
What is so special about service access for the ULOW-E2 is that not a single tool is required for removing and replacing the component parts. All functional units and electrical components are freely accessible and can be fitted by means of plug connections and clamp joints. This saves money and time for maintenance and cleaning. A ULOW-E2 is cleaned just the same way as a standard flat radiator. The fans sit on gliding cradles and can easily be slid out or in from the side of the radiator.


Example: Standard plug connection.




Example: Alternative direct cable connection, with or without on/off switch.





The sliding cradles for the fans are made of extremely flexible and resistant plastic. They can be bent to an angle of 90°. This is particularly useful for narrow niches and narrow side clearance with walls. Should the fan need to be replaced, press down the sliding cradle by hand and remove it from the plug connection/clamp-joint.

Secure wall installation
For wall-mounting the ULOW-E2, use only mounting brackets or wall-mounting systems with integrated connection locking.

ULOW-E2 LOW-TEMPERATURE RADIATOR

Technical specification

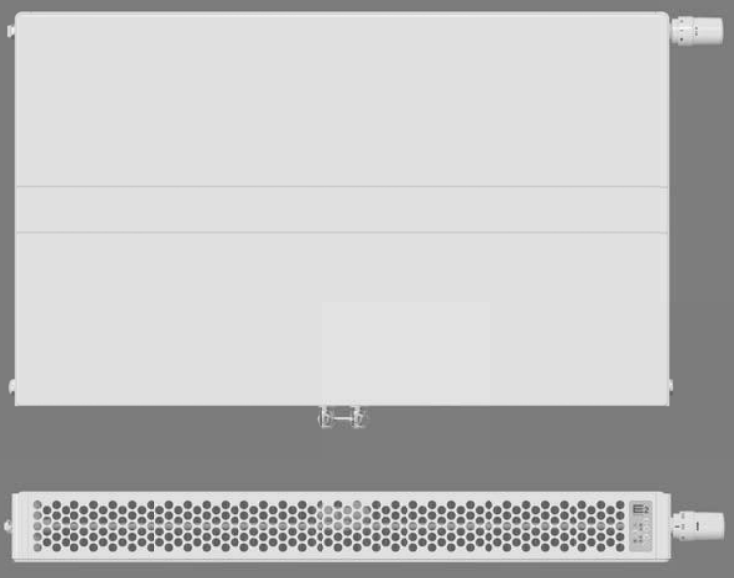
ULOW-E2

Connections:
4 x G ½ internal thread and
2 x G ¾ external thread, underside centre.

Maximum positive operating pressure:
Standard design: 10 bar

Maximum operating temperature: 60 °C

Safety class: IP14
Supply voltage: 230 V



Material: cold-rolled sheet steel conforming to EN 442-1, 1 mm thick zinc-plated front panel.

Connecting dimensions: central distance between supply and return 50 mm.

Casing: consists of a perforated metal top-cover and two closed removable side panels.

Coating: 1. Primer coating conforming to DIN 55900 part 1, stoved at 190° C;
2. Especially robust electrostatic powder coating conforming to DIN 55900 part 2, in RAL 9016, stoved at 210° C.

Standard design: powder coating in RAL 9016 (Traffic White).

Packaging: 1. Cardboard packaging; 2. Edge protection; 3. Shrink wrapped.
The device can be installed in packaging.

Connection modes: all models are factory-fitted with mounting brackets and can optionally be connected as valve radiators with central connection or as compact radiators. With single-pipe systems, a one-pipe manifold is absolutely essential. The side panels and top-cover are allowed for in the performance specifications.

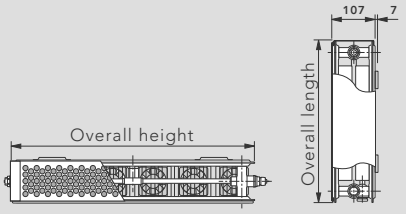
Noise levels: comfort operation: between 20 and 25 dB; boost operation: 34 dB.
These values apply at a distance of 2m, in conformity with VDI 2081.
(Overall dimensions: 600 x 1000 mm).

Scope of delivery: thermostat valve with factory-adjusted k_v configurations including mounting cap; drain plug, dummy plug and special vent plug, all factory sealed; as well as completely pre-installed fan sets with microprocessor and thermistor control unit; an integrated low-voltage transformer with ready to plug in mains cable; and a visually attractive operating panel (in the top cover), all included in the purchase price.

Not designed for use with free-standing console-feet!

Heat outputs

Heat outputs - ULOW-E2, model 22 PTM



Mode of operation		Static operation			Comfort operation			Boost operation		
Overall height (mm)		500	600	900	500	600	900	500	600	900
Radiator exponent n (for 45/35/20, 40/35/20 und 35/30/20)		1,305	1,317	1,339	1,139	1,129	1,164	1,112	1,112	1,106
Overall length (mm)										
400	45/35/20	163	184	233	252	272	324	294	317	375
	40/35/20	140	157	198	220	238	282	257	277	328
	35/30/20	89	100	126	149	162	189	176	189	225
600	45/35/20	245	276	349	379	409	486	440	475	562
	40/35/20	210	236	298	331	357	423	385	416	492
	35/30/20	134	150	188	224	242	284	263	284	337
800	45/35/20	327	368	466	505	545	648	587	634	750
	40/35/20	280	314	397	441	476	564	514	554	656
	35/30/20	179	200	251	298	323	378	351	378	450
1000	45/35/20	409	460	582	631	681	810	734	792	937
	40/35/20	349	393	496	551	595	705	642	693	820
	35/30/20	224	250	314	373	404	473	439	473	562
1200	45/35/20	490	552	698	757	817	972	881	950	1124
	40/35/20	419	472	595	661	714	846	770	832	984
	35/30/20	268	300	377	448	485	568	527	568	674
1400	45/35/20	572	644	815	883	953	1134	1028	1109	1312
	40/35/20	489	550	694	771	833	987	899	970	1148
	35/30/20	313	350	440	522	566	662	615	662	787
1600	45/35/20	654	736	931	1010	1090	1296	1174	1267	1499
	40/35/20	559	629	794	882	952	1128	1027	1109	1312
	35/30/20	358	400	502	597	646	757	702	757	899
1800	45/35/20	735	828	1048	1136	1226	1458	1321	1426	1687
	40/35/20	629	707	893	992	1071	1269	1156	1247	1476
	35/30/20	402	450	565	671	727	851	790	851	1012
2000	45/35/20	817	920	1164	1262	1362	1620	1468	1584	1874
	40/35/20	699	786	992	1102	1190	1410	1284	1386	1640
	35/30/20	447	500	628	746	808	946	878	946	1124

ULOW-E2 weight

Overall height (mm)		500	600	900
Overall length (mm)	Model	22 PTM	22 PTM	22 PTM
400	kg	15,70	17,59	25,19
600	kg	22,43	25,20	36,57
800	kg	29,18	32,82	47,95
1000	kg	36,11	40,62	59,51
1200	kg	42,85	48,24	70,90
1400	kg	49,69	55,94	82,37
1600	kg	56,53	63,65	93,84
1800	kg	63,46	71,45	105,41
2000	kg	70,20	79,07	116,79

T6-CENTRALLY CONNECTED RADIATOR.

Heat emission
The specification was verified in accordance with DIN EN 442 at The Technical University, Stuttgart (Registration at WSP-Cert Product Certification Centre, Stuttgart), under the numbers:

Type 11 VM	0445
Type 21 VM-S	0447
Type 22 VM	0448
Type 33VM	0449

and in accordance with OENORM (Austrian standard) EN 442 at the Technological Commercial Museum, Vienna.

Material
T6-CENTRALLY CONNECTED RADIATORS are made of cold-rolled sheet steel, and in accordance with EN 442-1, with a stylish and robust fluting with ribs at 40 mm intervals.

Equipment
Each T6-CENTRAL CONNECTION RADIATOR is equipped with an integrated T-valve set, and suitable for double-pipe and single-pipe systems with a single-pipe manifold; it comes with a fitted valve top with a pre-set k_v-value, a protective cap and welded suspension brackets on the back. The drain plug and the pivoting special vent plug, as well as the dummy plug are fitted with seals. All types of radiator are equipped with a detachable top cover and two closed side panels.

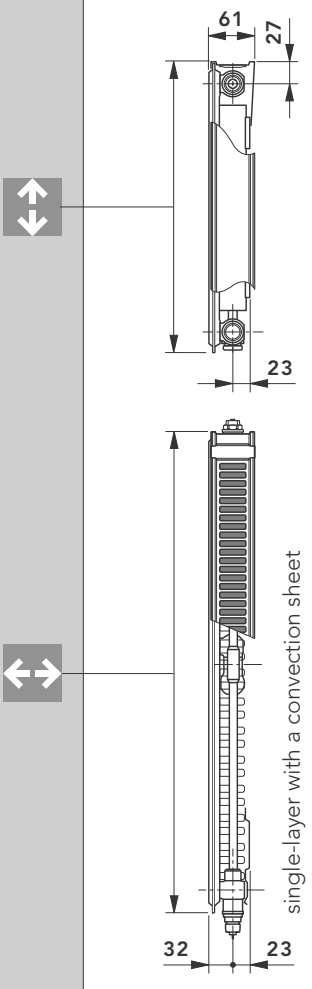
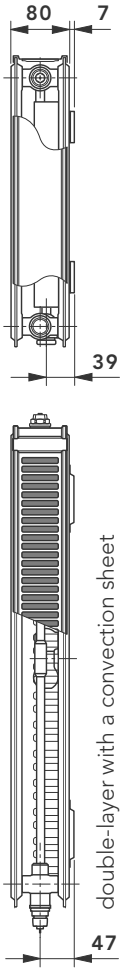
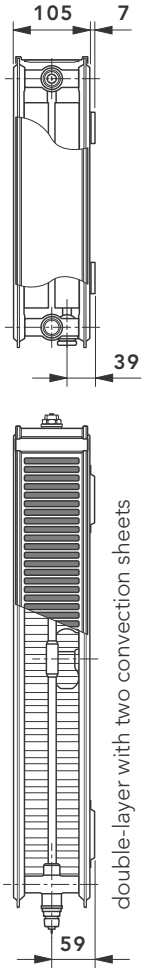
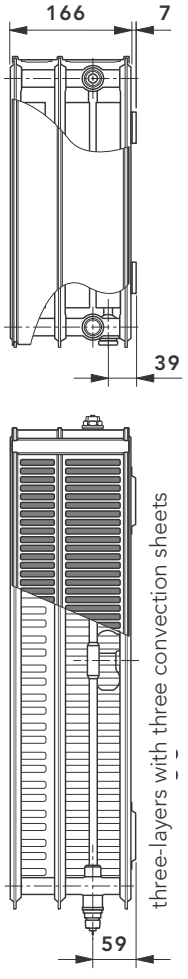
Paint coating
1. Undercoating in accordance with DIN 55900 part 1, stoved at 190° C.
2. Finish in accordance with DIN 55900 part 2, in standard colour 9016 (on request available in many standard colours and sanitary-ware colours at an extra charge), applied electrostatically in a modern powder coating facility. This especially resistant coating is stoved at an object temperature of 210° C.

Packaging
1. Cardboard packaging
2. Edge protection
3. Shrink foil

T6-CENTRALLY CONNECTED RADIATOR

Overview of models

Overview of models

Type	11 VM	21 VM-S	22 VM	33 VM
				

Type	11 VM					21 VM-S					22 VM					33 VM				
Height [mm]	300	400	500	600	900	300	400	500	600	900	300	400	500	600	900	300	400	500	600	900
Length [mm]	up to 2400		up to 2600		up to 2000	up to 2400		up to 3000		up to 2000	up to 3000				up to 2000	up to 3000	up to 2200			up to 1800
Steps	all overall length starting with 400 mm available in steps of 200 mm, additionally 520, 720, 920, 1120 and 1320 mm																			

Guarantee statements are available to download at **www.vogelundnoot.com/download**

Description and delivery equipment

The T6-CENTRALLY CONNECTED RADIATOR, with its welded-in set of T-shaped valves, sets new standards in the field of centre-connection technology. Besides its elegant appearance, the T6-CENTRALLY CONNECTED RADIATOR grabs the attention because of its unique patented features. It is suitable for all purposes and easy for the heating engineer to install. It also has many other striking advantages, as listed below:

T6-CENTRALLY CONNECTED COMPLETE RADIATORS -
wall bracket fastenings make this a flexible solution

VARIABLE CONNECTIONS -
the built-in valve and its thermostat head can be switched from the right to the left-hand side – with no need to turn the radiator and without crossing over the supply and return.

VARIABLE TYPES -
with all multi-layered radiators the distance between the connection and the wall is standardised (this also applies to all single-layered radiators, if a special angle fish-plate is used).

VARIABLE SIZES -
you are free to choose the overall radiator length and height at any time, and even subsequently change your mind.

PERFECT PRE-ASSEMBLY -
fitting pre-installation piping and system testing are possible even without having the radiators there.

Consequently T6-CENTRALLY CONNECTED RADIATOR truly serves to solve your problems. To round off all the advantages mentioned before, the versatility of the T6-CENTRALLY CONNECTED RADIATOR regarding style and colouring offers a wide scope for design. By using the removable, unique and colourful decor-clips you can give individuality, also subsequently.

The T6-CENTRALLY CONNECTED RADIATOR is - with its welded in set of T-shaped valves - suitable for double-pipe installations as well as single-pipe installations, using a single-pipe manifold.

Additionally to the central connection from the bottom, the sophisticated design makes possible other connections used at compact radiators, such as the single-sided and two-sided connection. **Radiators are delivered ready for double-pipe installation and with a factory-adjusted k_v-setting, appropriate to the radiator output.**

For district heating installations with a big difference between water supply and return temperature, a valve unit that allows a precise and stepless adjustment is available on request.

By using universal supply and return connections, commercially available pipes (external thread 3/4") made of copper, steel, plastic or alloy, can be connected; the corresponding accessories and the commercially obtainable shut-off valve have to be used.

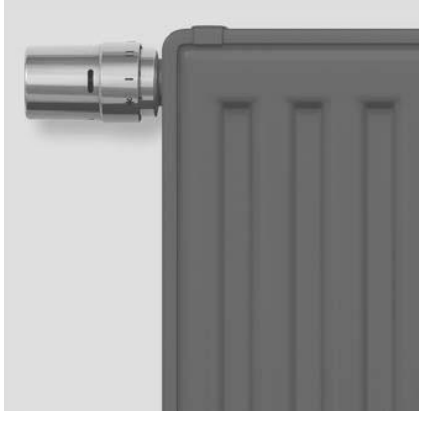
The following thermostat heads can be directly fitted at the radiator: „RA 2000" and „RAW" by Danfoss, „VK" by Heimeier, „D" by Herz, „thera DA" by MNG, as well as „UNI XD" by Oventrop. The radiator will be delivered with a protective cap.

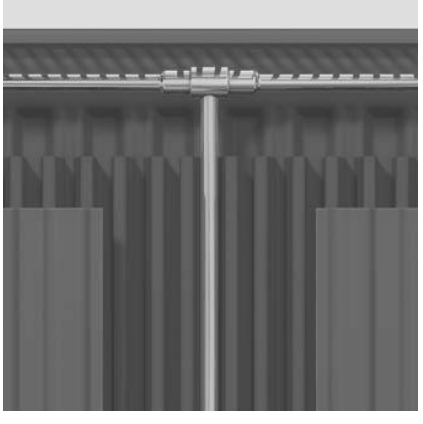
The operation parameters are specified with a positive operating pressure of 10 bar and an operating temperature of 110° C. With single-pipe installations, a cycle's maximum radiator power of about 10 kW at $\Delta T=T_1-T_2=20$ K (at T_1 = 90° C) has to be taken into account.

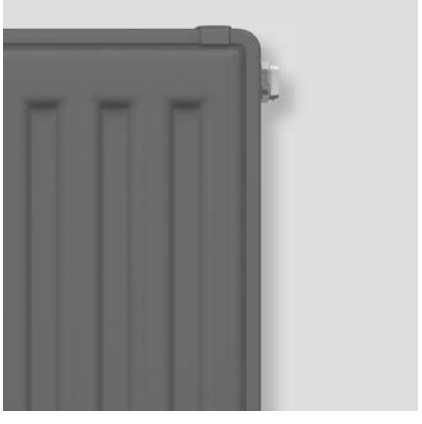
Thus the T6-CENTRALLY CONNECTED RADIATOR has to be regarded as revolutionary for the new generation of centrally-connected radiators. With this type of radiator - with its ideal functioning of the whole radiator-valve unit, its superb heating output, compared with the motivation to install thermostat heads, saving heating energy becomes evident.

Our valve radiators' connections (external thread G 3/4") comply in construction and tolerance with the specifications, in accordance with DIN V 3838. If conically sealed drain cocks are used (single-pipe and double-pipe operation), where an adjustment of tolerance of distance to the centre is not possible, we must repudiate liability for any damage connected to this.

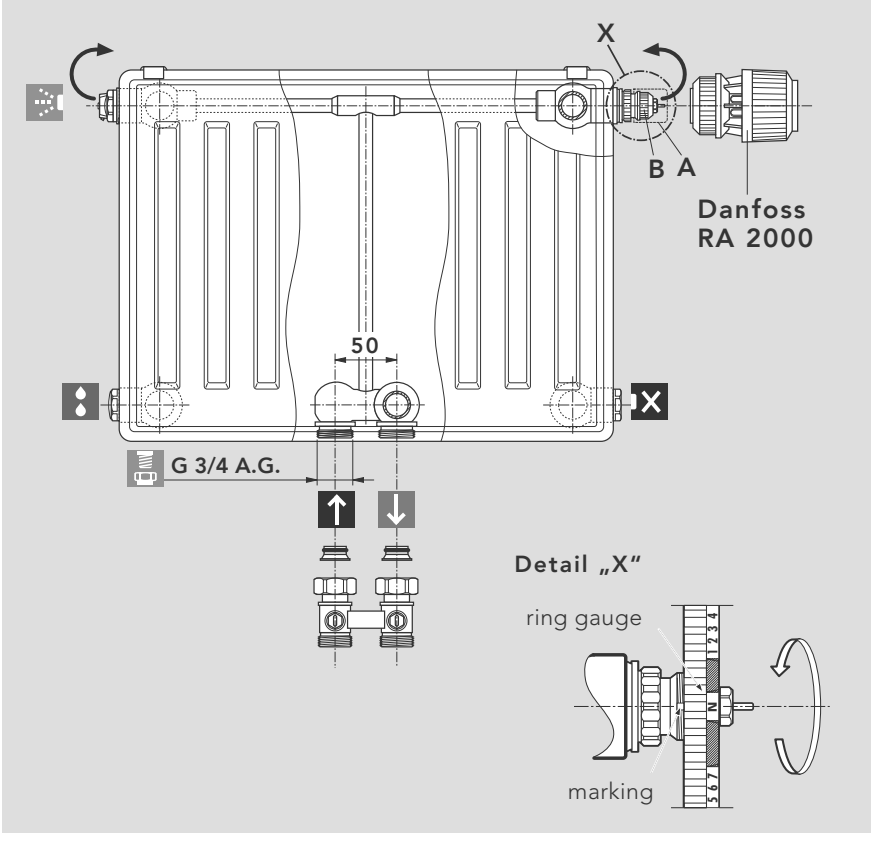
Therefore we recommend to use only flat sealed drain cocks, or drain cocks where an adjustment of tolerance of the distance to the centre is possible.







Double-pipe operation - Adjustment tips for built-in valve



Setting instructions:
VOGEL&NOOT valve radiators are factory-fitted for double-pipe installations. Each individual radiator is fitted with a pre-adjusted valve insert, appropriate to the radiator output. The pre-set k_v-value is also marked in colour on the front surface.

Please note:
Should customised adjustments be required, the pre-set kv-values can be altered as needed.
Swapping the right-hand side built-in valve to the left-hand side is no problem at all at any time.
Radiator are delivered with protective caps. After removing the protective cap (pos. A) the following thermostat heads can be fitted directly to the built-in valve (pos. B): **"RA 2000", "RAW" by Danfoss, "VK" by Heimeier, "D" by Herz, "thera DA" by MNG and "UNI XD" by Oventrop.**

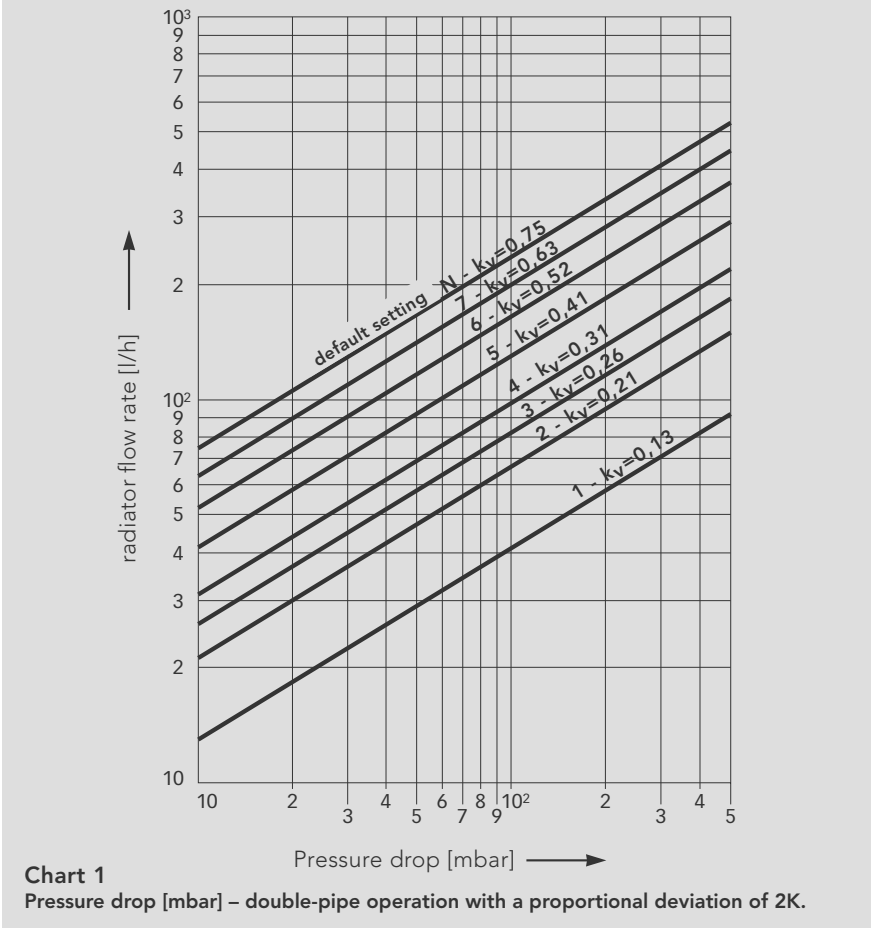
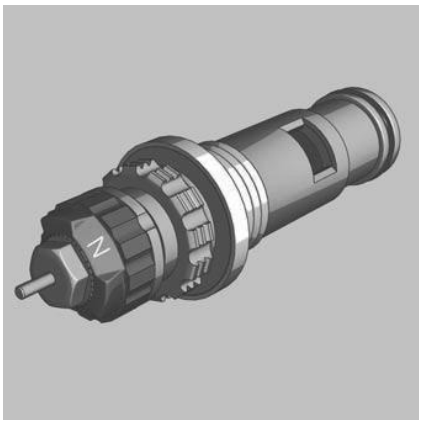


Chart 1
Pressure drop [mbar] – double-pipe operation with a proportional deviation of 2K.



k_v-value chart					
Pre-setting	1,1	3,9	5,2	6,5	N
kv-value up to	0,13	0,30	0,42	0,56	0,72
Colour of the adjustment ring	white	black	green	blue	red

Of course it is also possible to change the pre-adjusted valve setting when the equipment is operating at pressure.

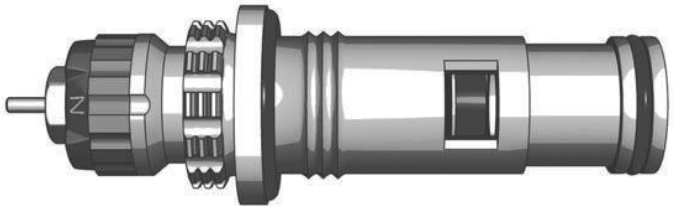
Hydraulic calibration

The hydraulic calibration of the heat emission system has two essential effects: saving on energy costs and CO_2 reduction. It ensures that all radiators receive the required flow rate of heating water. This is the only way that optimal heat output performance be achieved, guaranteeing thermal comfort, with economical and ecologically responsible operation.

Any radiator requires a specific flow rate of heating water, according to its position in the distribution system. The circulation pump serves to distribute heat in all rooms equally and in accordance with the required ambient temperature. Yet, in most systems the warm heating water flows back along the line of least resistance, which is usually through the radiator located next to the circulation pump.

This means that the radiators furthest from the circulation pump are inadequately supplied with heating water, whereas the nearest are oversupplied! Very often the reason why rooms are inadequately heated or overheated is attributed to either an under-size pump or heating sources that are too weak. However, larger pumps, high supply temperatures and heating controls make the negative effects worse: lack of comfort and high energy costs, as well as higher CO_2 emissions and more noise.

The only effective remedy for this is hydraulic calibration, with the appropriate k_v-value, pre-adjusted by the factory. This makes the resistance of all the radiators in the distribution system similar, and they get an optimal rate of heating water flow.



Factory pre-adjustment

VOGEL&NOOT valve radiators are already factory-fitted with pre-set and adjustable valve inserts, appropriate to the heat output. The valve inserts fitted as standard allow for 8 main k_v-value settings and 7 intermediate settings.
The factory-adjusted k_v-value settings include 5 of 15 possible settings, and are calculated for standard heating systems with a pressure difference of 100 mbar.

Advantages of the valve inserts in VOGEL&NOOT valve radiators

Continuously opening and infinitely variable control apron

- Finer adjustment
- Reliable operation
- More easily cleaned valve inserts

Colour-coded valves

- Set k_v-value immediately visible

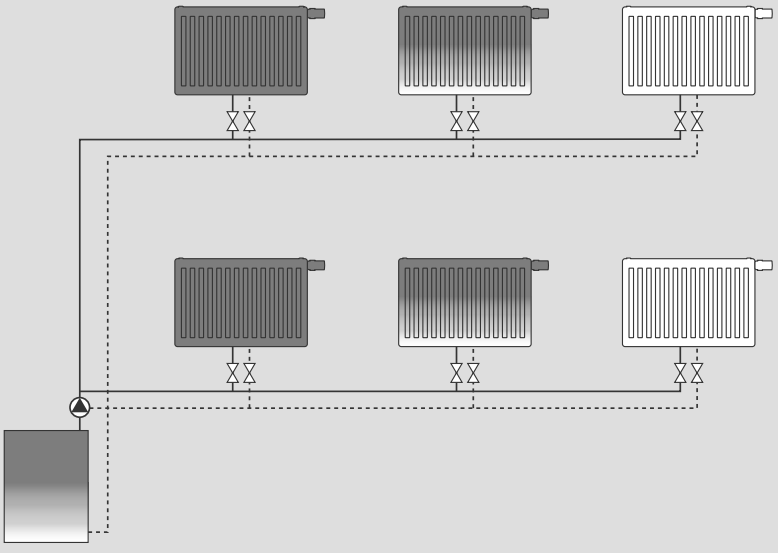
The advantages of factory-adjusted valve settings

- Optimal hydraulic calibration for buildings with operational areas up to 1,000m2
- Better energy evaluation of buildings (DIN EN 18599)
- Credits for the Energy Passport
- Saves time and costs for heating planners, installers and plumbers
- Up to 6% energy saving, after hydraulic calibration
- Up to 20% less energy needed for circulation pump

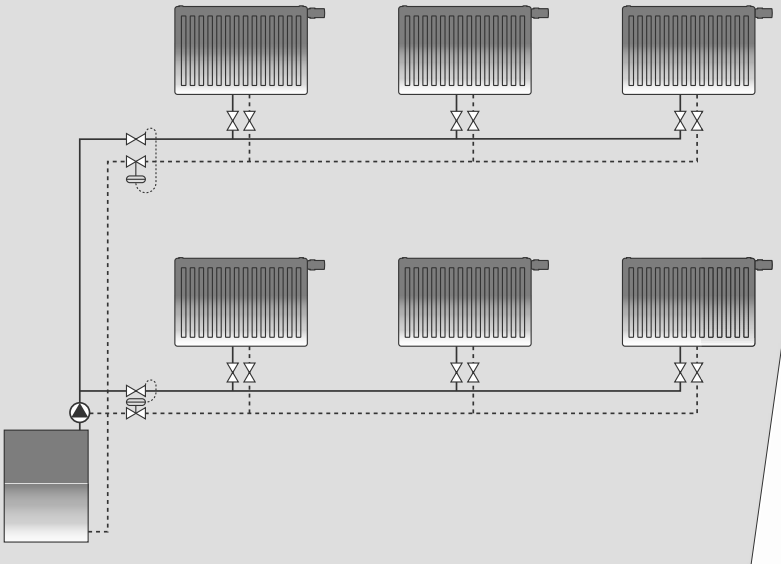
The advantages of hydraulic calibration

- Up to 6% energy saving
- CO_2 reduction
- Increased comfort
- Complies with Energy-Efficiency regulations

A system without hydraulic calibration



A system with hydraulic calibration



TECHNISCHE UNIVERSITÄT DRESDEN

Fakultät Maschinenwesen Institut für Energietechnik
Professur für Energiesystemtechnik und Wärmewirtschaft

Prof. Dr.-Ing.
Clemens Felsmann

Rettig Austria GmbH
Vogel und Noot Straße 4
8661 Wartberg, Austria

Gutachten

Dezember 2009

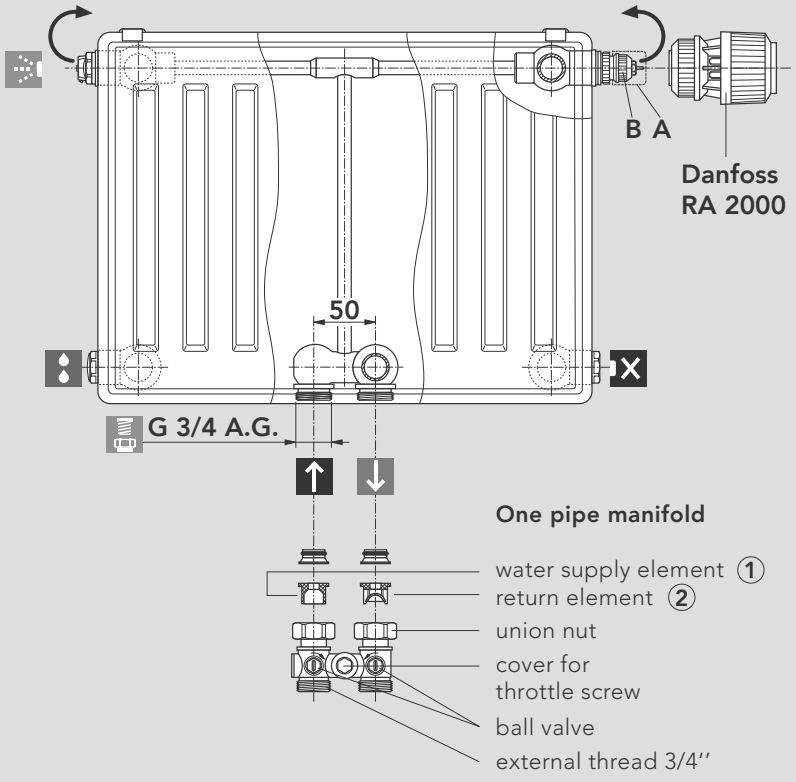
„Zur Wirksamkeit abgestufter Ventileinsätze für den hydraulischen Abgleich in Heizungsanlagen"

Das Unternehmen Rettig ICC stattet Vogel & Noot Heizkörper mit auf die Heizkörperleistung abgestimmten voreingestellten Ventileinsätzen aus. Im Ergebnis detaillierter Berechnungen zur Wirksamkeit der fünf Voreinstellungen für den hydraulischen Abgleich in Zweirohrheizungsanlagen wurde festgestellt:

1. Die Ventileinsätze bewirken im Vergleich zu einem nicht abgeglichenen Netz eine deutliche Begrenzung sowohl der Durchflussmengen der einzelnen Heizkörper als auch des Gesamt-Massestromes. Bestehende Abweichungen der Massestromverteilung gegenüber einem rechnerisch ermittelten Auslegungszustand sind aufgrund der Betriebscharakteristik von Heizflächen für die Wärmeversorgung im Gebäude unkritisch.
2. Die voreingestellten Ventileinsätze sind gleichermaßen für Bestandsgebäude und Neubauten mit den entsprechenden unterschiedlichen Auslegungs-Systemtemperaturen geeignet.
3. Der Einsatz der gestuften Ventileinsätze ist einem hydraulisch abgeglichenen Heizungsnetz energetisch gleichwertig.
4. Die Ventileinsätze entsprechen einem statisch abgeglichenem System nach EN 15316-2-1 (2007) mit f_{hyd}=1,01, einem abgeglichenen System nach EN 15316-2-3 (2007) mit f_{hyd}=1 sowie einem hydraulisch abgeglichenen Heiznetz nach DIN V 18599-5 (2007) mit f_{hyd}=1.

Prof. Dr.-Ing. C. Felsmann

Single-pipe operation - Factory-adjusted built-in valve



In single-pipe operation, setting the built-in valve on N.

The radiator will be delivered with a protective cap. After removing the protective cap (item A) the following thermostat heads can be installed directly onto the built-in valve (item B): **„RA 2000" and „RAW" by Danfoss, „VK" by Heimeier, „theraDA" by MNG, as well as „UNI XD" by Oventrop.**

Caution:
During the installation take care that the return element ② has been installed at the water return, and the supply element ① at the water supply.

Changing the built-in valve from the right- to the left-hand side can easily be done at any time.

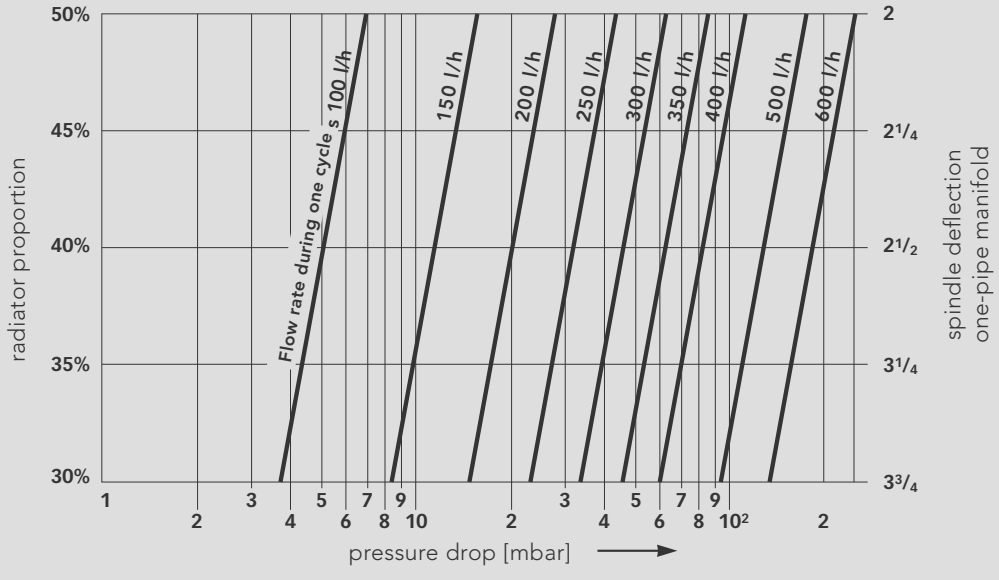


Chart 2
pressure drop [mbar] - single-pipe operation with a proportional deviation of 2K.

Default setting:

radiator proportion 30%: 3,75 revolutions *
radiator proportion 35%: 3,25 revolutions *
radiator proportion 40%: 2,50 revolutions *
radiator proportion 45%: 2,25 revolutions *
radiator proportion 50%: 2,00 revolutions *

*...when starting, turn the bypass spindle of the one-pipe manifold **to the right** as far as it will go.

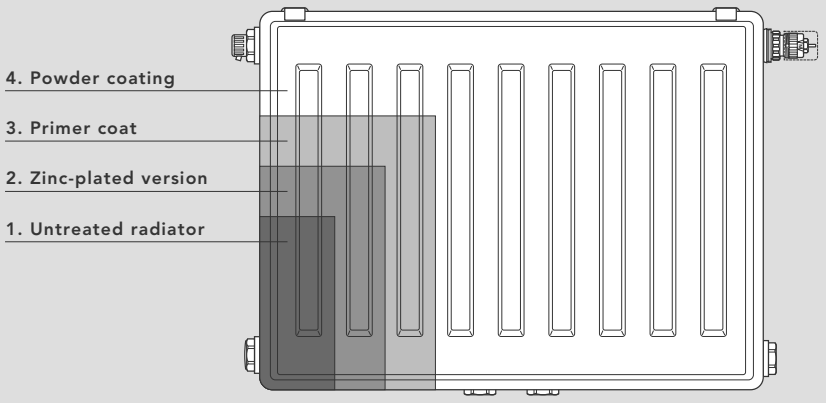
Of course it is also possible to change the pre-adjusted valve setting when the equipment is operating at pressure.

Please take into account the maximum power per cycle (regarding single-pipe installations) of about 10 kW
$\Delta T = T_1 - T_2 = 20$ K (at $T_1 = 90$ °C).

T6-CENTRALLY CONNECTED RADIATOR

Zinc-plated version /Connection modes - double-pipe system

Zinc-plated version - COMPACT RADIATORS and T6 CENTRAL CONNECTION RADIATORS



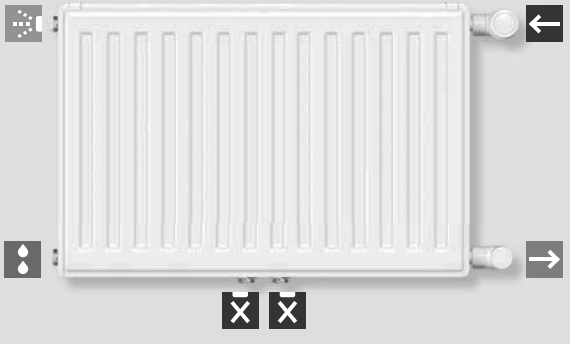
In areas of use that require higher corrosion protection, in rooms with aggressive surroundings and/or humid atmosphere (such as in indoor-swimming pools, saunas, public toilets, &c) we recommend using a zinc-plated version of our COMPACT RADIATORS and T6 CENTRAL CONNECTION RADIATORS. These radiators are galvanised, before the primer coat and powder coating is applied.
Prior to ordering radiators for these areas of use you should get information about the planned location for installing the radiator and in accordance to this, define its limits of use.

With zinc-plated radiators attention should be paid to special ordering and delivery instructions:

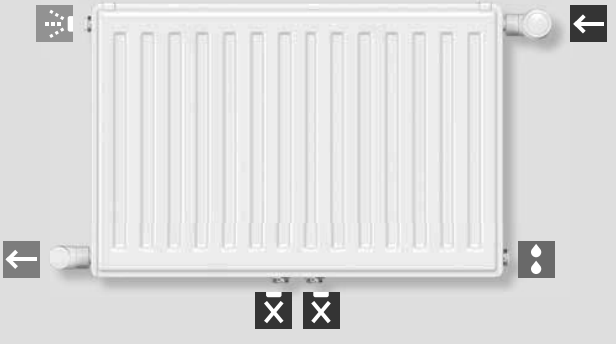
- All models of the series COMPACT RADIATORS and T6 CENTRAL CONNECTION RADIATORS are available
- Production is available only by special request.
- Radiators that have already been manufactured and delivered cannot be returned.
- The delivery period for this radiator is 4 - 6 weeks.
- The production is carried out for an additional charge to the currently recommended retail price.
- Our general warranty conditions apply.

Connection modes - double-pipe system

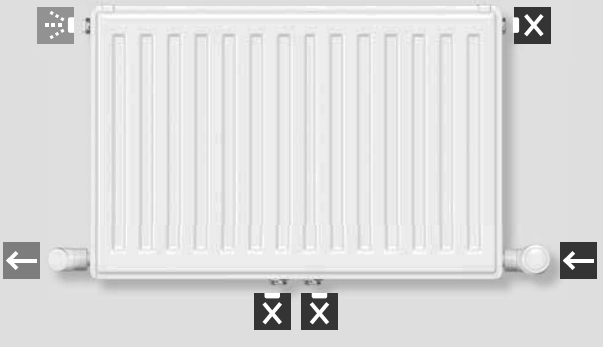
A:Single-sided connection



B: Connection both sides

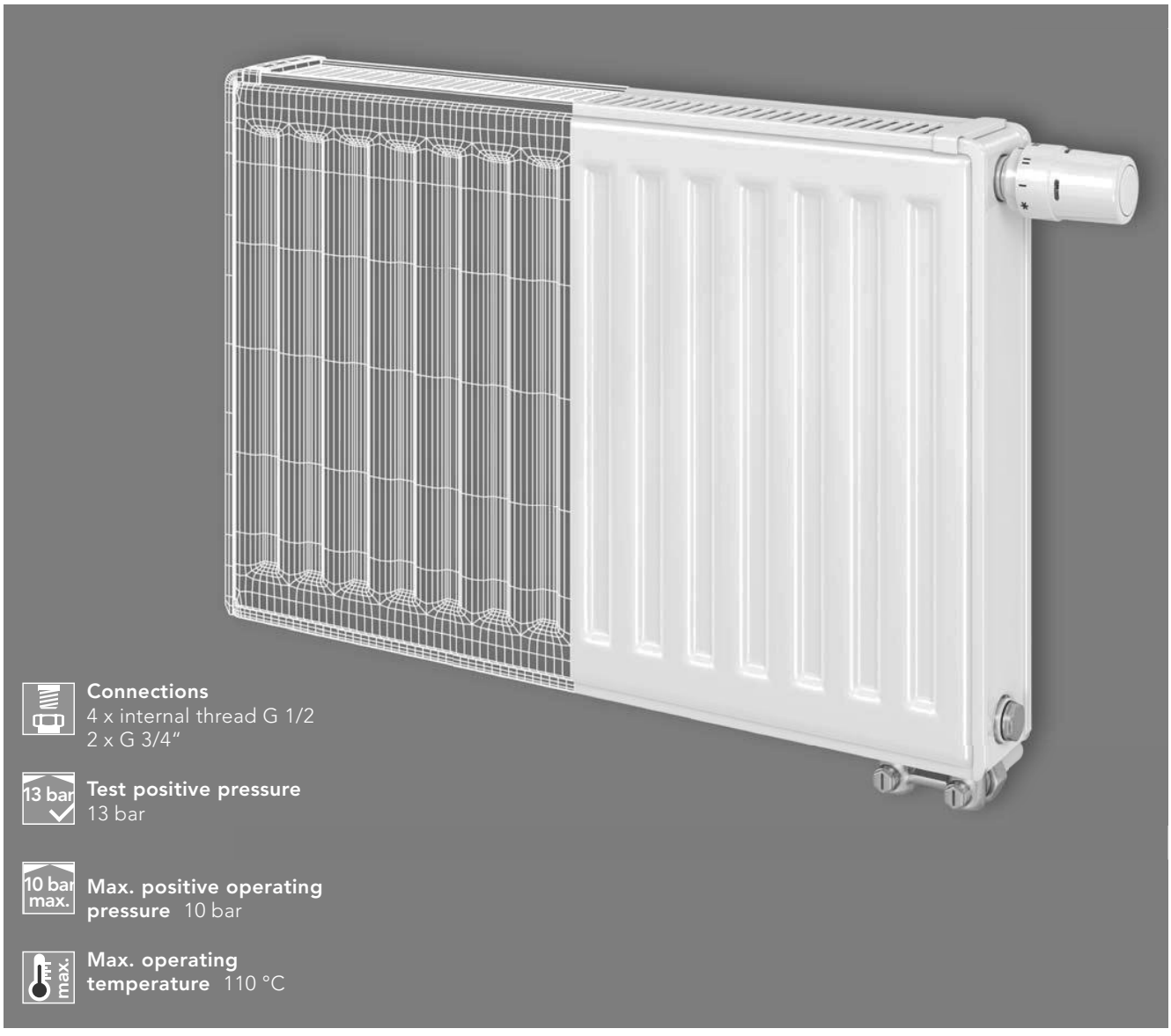


C: Connection on top **Warning: Lower performance**



Caution:
When using the T6-CENTRALLY CONNECTED RADIATOR as a **compact radiator**, the 3/4" screwing caps made of plastic have to be replaced by nickel-plated brass caps (accessory). Available under the item number: AZ0PL000C0002000. Additionally the plastic part of the special vent plug has to be removed.

MULTI-FUNCTIONAL VALVE RADIATOR.



Heat emission
The specification was verified in accordance with DIN EN 442 at The Technical University, Stuttgart (Registration at WSP-Cert Product Certification Centre, Stuttgart), under the numbers:

Type 11 KV	0445
Type 21 KV-S	0447
Type 22 KV	0448
Type 33 KV	0449

and in accordance with OENORM (Austrian standard) EN 442 at the Technological Commercial Museum, Vienna.

Material
MULTI-FUNCTIONAL VALVE RADIATORS are made of cold-rolled sheet steel, in accordance with EN 442-1, with a stylish and robust fluting, with ribs at 40 mm intervals.

Equipment
Each MULTI-FUNCTIONAL VALVE RADIATOR is equipped with an integrated valve set, and suitable for double-pipe and single-pipe systems with a single-pipe manifold; it comes with a fitted valve top with a pre-set k_v-value, a protective cap and welded suspension brackets on the back, (brackets only when defined as such); type 11 only available with brackets. The drain plug and the pivotable vent plug, as well as the dummy plug are fitted with seals. All radiators are equipped with a detachable top cover and two closed side panels.

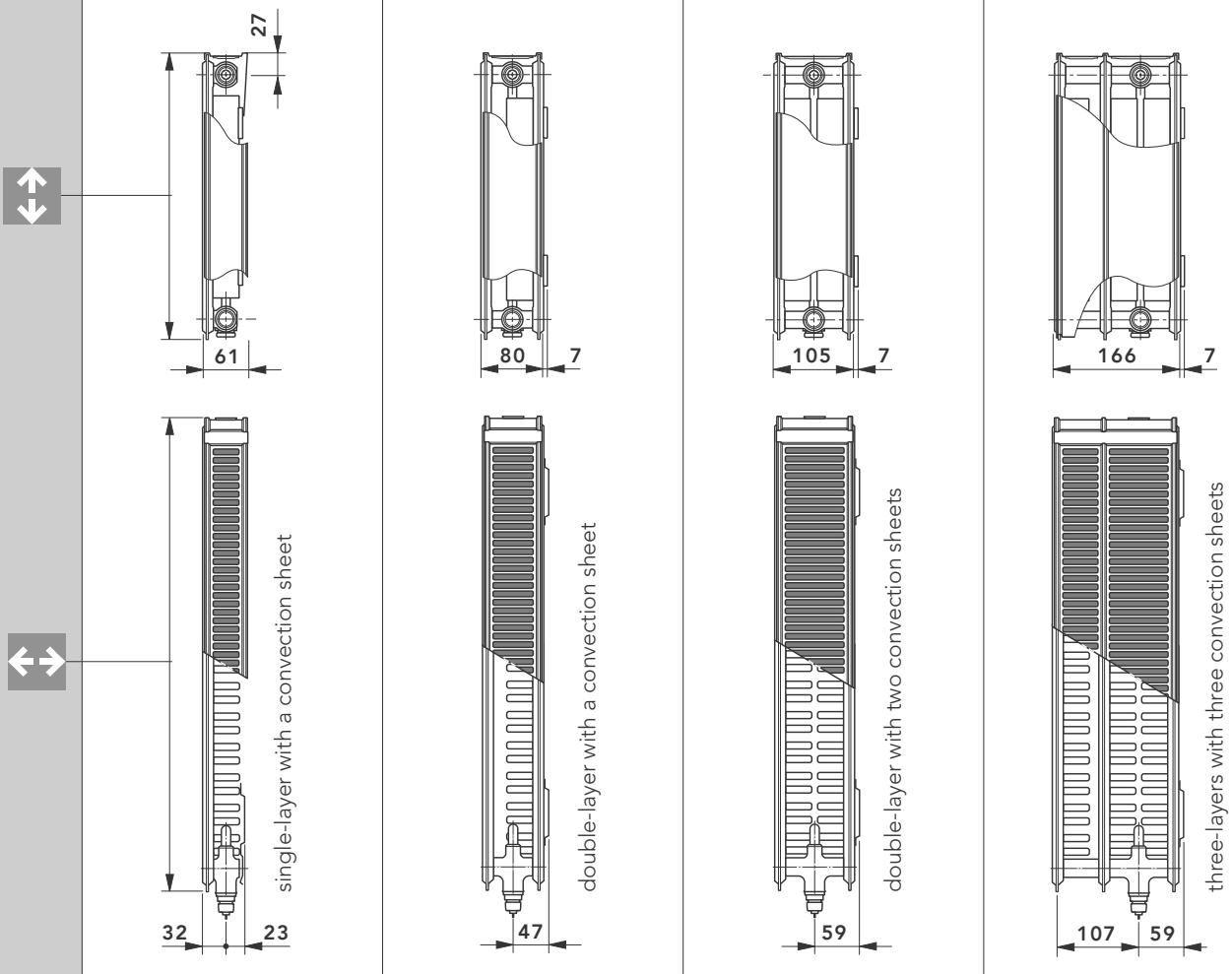
Paint coating
1. Undercoating in accordance with DIN 55900 part 1, stoved at 190° C.
2. Finish in accordance with DIN 55900 part 2, in standard colour 9016 (on request available in many standard colours and sanitary-ware colours at an extra charge), applied electrostatically in a modern powder coating facility. This especially resistant coating is stoved at an object temperature of 210° C.

Packaging
1. Cardboard packaging
2. Edge protection
3. Shrink foil

MULTI-FUNCTIONAL VALVE RADIATOR

Overview of models

Overview of models



Type	11 KV					21 KV-S					22 KV					33 KV				
Height [mm]	300	400	500	600	900	300	400	500	600	900	300	400	500	600	900	300	400	500	600	900
Length [mm]	up to 2400		up to 2600		up to 2000	up to 2400		up to 3000		up to 2000	up to 3000				up to 2000	up to 3000	up to 2200			up to 2000
Steps	any overall length starting with 400 mm available in steps of 200 mm, additionally 520, 720, 920, 1120 and 1320 mm																			

Description and delivery equipment

The MULTIFUNCTIONAL VALVE RADIATOR with its welded valve unit has been designed in a most trend-setting way: it can meet all requirements regarding connections.

This radiator will convince you not only because of its simple and fast installation but also because of its versatility and elegant appearance, as the valve unit is covered up by the heating panel.

What's more, through the optimal function of the whole radiator-valve unit, through the maximum heat output and, last but not least, through the motivation to install thermostat heads, saving heating energy becomes evident.

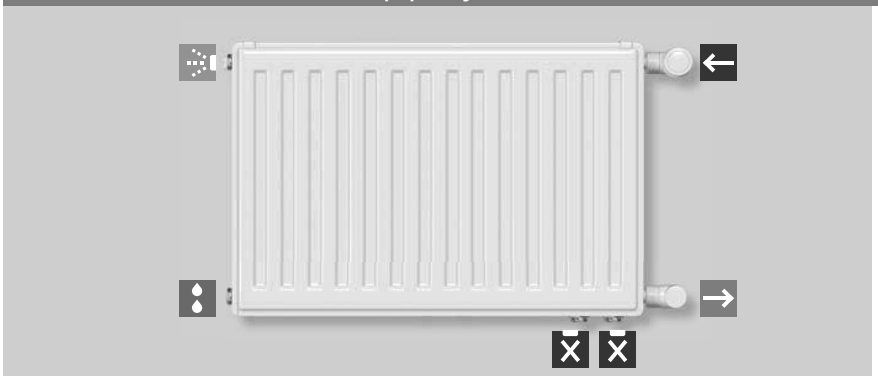
The MULTIFUNCTIONAL VALVE RADIATOR with its welded valve unit is suitable for double-pipe as well as for single-pipe installations, using a one-pipe manifold. Additionally to the connection possibility at the bottom, the sophisticated design also offers connection possibilities, known from compact radiators, such as single-sided or two-sided connections. **The radiator is delivered ready for double-pipe installation, with a factory-adjusted k_v-setting, appropriate to the radiator output.**

For district heating installations with a big difference between water supply and return temperature, a steplessly adjustable valve element is available on request.
By using universal supply and return connections with external thread 3/4", commercially available pipes made of copper, precision steel or plastic, can be connected, using the corresponding accessories and the commercially obtainable shut-off valve.
The decor-clips (standard make in standard colour 9016) offer many possibilities for design. They are available in many standard and sanitary-ware colours, as well as with metallic surfaces, i.e. gilded.

The following thermostat heads can be installed directly onto the radiator: „RA 2000" and „RAW" by Danfoss, „VK" by Heimeier, „theraDA" by MNG, as well as „UNI XD" by Oventrop. At delivery the radiator is equipped with a protective cap.

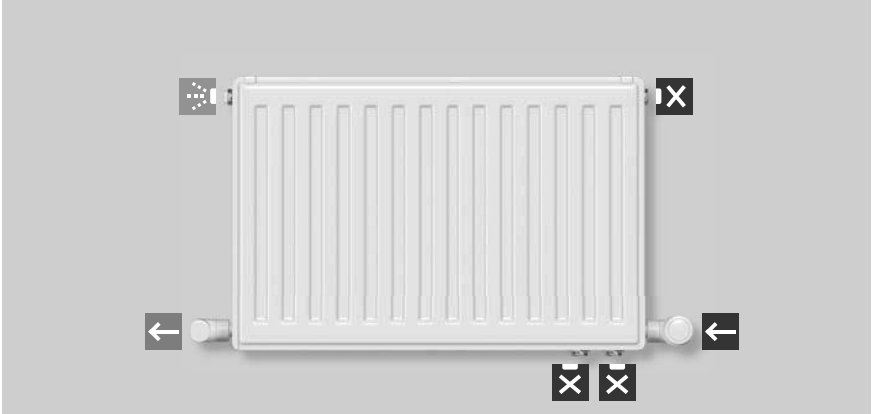
The operation parameters are specified as follows: positive operating pressure 10 bar, operating temperature 110° C. With single-pipe installations a maximum heat output of about 10 kW at $\Delta T=T_1-T_2=20$ K (at T_1 = 90 °C) per ring has to be taken into accout.

Connection modes - double-pipe system



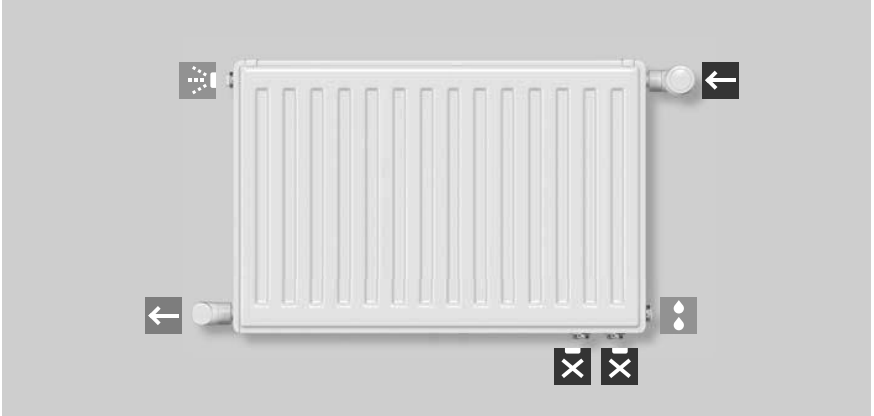
A:
Single-sided connection

B:
Connection both sides



C:
Connection on top

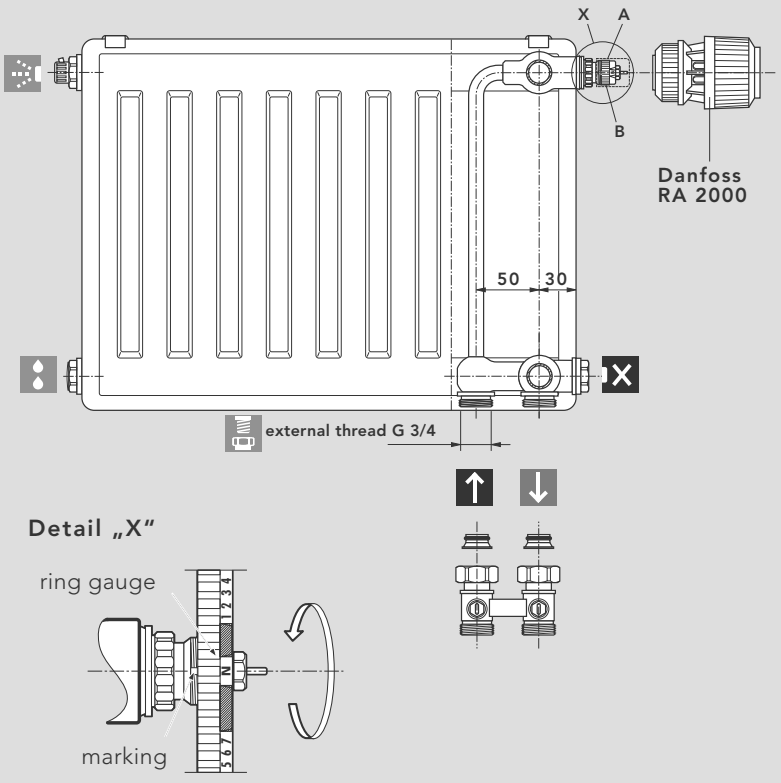
(Warning: Lower performance)



D:
Single-sided connection

Attention:
If the multifunctional valve radiator is used as compact radiator, the crew caps made of plastic have to be replaced by nickel-plated brass caps (accessory).
Order number: AZ0PL000C0002000

Adjustment tips for built-in valve



Setting instructions:
VOGEL&NOOT valve radiators are factory-fitted for double-pipe installations. Each individual radiator is fitted with a pre-adjusted valve insert, appropriate to the radiator output. The pre-set k_v-value is also marked in colour on the front surface.

Please note:
Should customised adjustments be required, the pre-set k_v-values can be altered as needed.

Radiator are delivered with protective caps. After removing the protective cap (pos. A) the following thermostat heads can be fitted directly to the built-in valve (pos. B): **"RA 2000", "RAW" by Danfoss, "VK" by Heimeier, "D" by Herz, "thera DA" by MNG and "UNI XD" by Oventrop.**

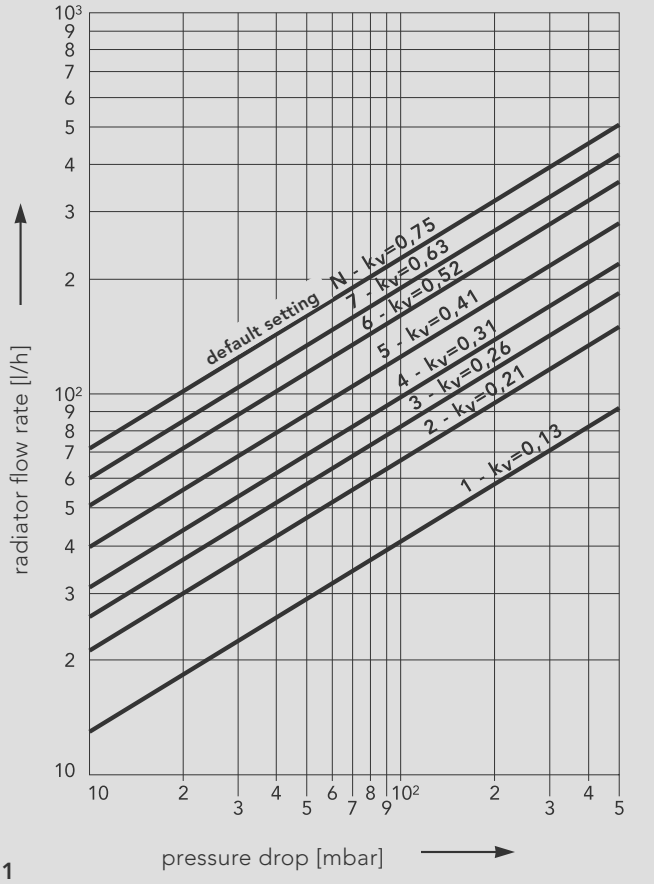
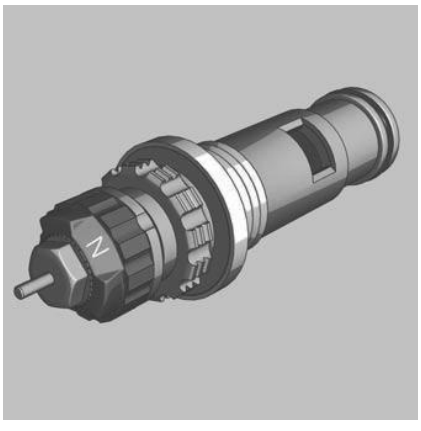


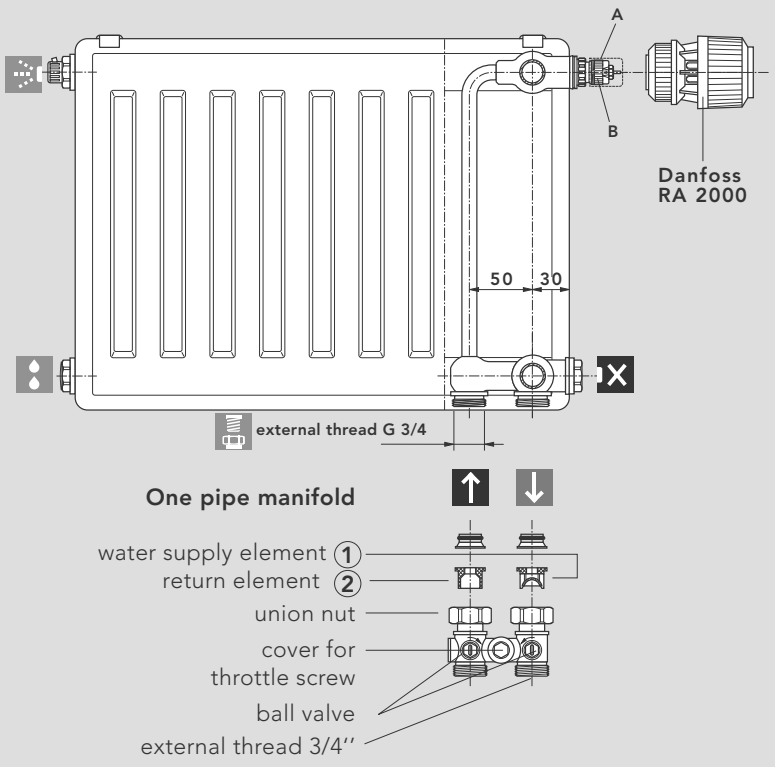
Chart 1
Pressure drop [mbar] – double-pipe operation with a proportional deviation of 2K.



k_v-value chart					
Pre-setting	1,1	3,9	5,2	6,5	N
kv-value up to	0,13	0,30	0,42	0,56	0,72
Colour of the adjustment ring	white	black	green	blue	red

Of course it is also possible to change the pre-adjusted valve setting when the equipment is operating at pressure.

Single-pipe operation - factory-adjusted built-in valve



In single-pipe operation, setting the built-in valve on N.

The radiator will be delivered with a protective cap. After removing the protective cap (item A) the following thermostat heads can be installed directly onto the built-in valve (item B): **„RA 2000" and „RAW" by Danfoss, „VK" by Heimeier, „theraDA" by MNG, as well as „UNI XD" by Oventrop.**

Caution:
During the installation take care that the return element (2) has been installed at the water return, and the supply element (1) at the water supply.

Changing the built-in valve from the right- to the left-hand side can easily be done at any time.

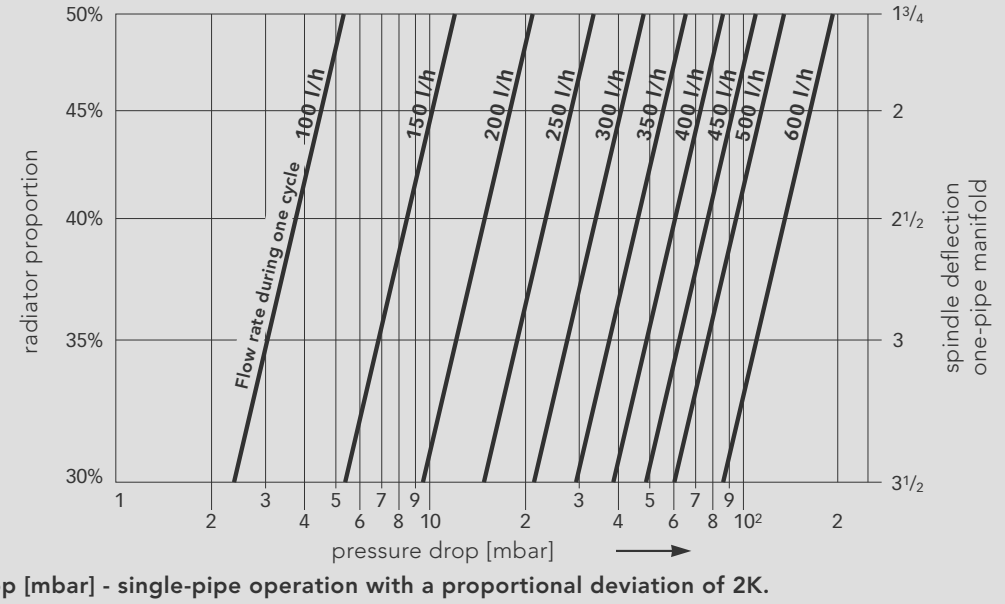


Chart 2
pressure drop [mbar] - single-pipe operation with a proportional deviation of 2K.

Default setting:

radiator proportion 30%: 3,50 revolutions *

radiator proportion 35%: 3,00 revolutions *

radiator proportion 40%: 2,50 revolutions *

radiator proportion 45%: 2,00 revolutions *

radiator proportion 50%: 1,75 revolutions *

*...when starting, turn the bypass spindle of the one-pipe manifold **to the right** as far as it will go..

Of course it is also possible to change the pre-adjusted valve setting when the equipment is operating at pressure.

Please take into account the maximum power per cycle (regarding single-pipe installations) of about 10 kW
$\Delta T = T_1 - T_2 = 20$ K (at $T_1 = 90$ °C).

COMPACT RADIATOR

Heat emission
The specification was verified in accordance with DIN EN 442 at The Technical University, Stuttgart (Registration at WSP-Cert Product Certification Centre, Stuttgart), under the numbers:

Type 10	0443
Type 11 K	0445
Type 21 K-S	0447
Type 22 K	0448
Type 33 K	0449

and in accordance with OENORM (Austrian standard) EN 442 at the Technological Commercial Museum, Vienna.

Material
COMPACT RADIATORS are made of cold-rolled sheet steel, and in accordance with EN 442-1, with a stylish and robust fluting, with ribs at 40 mm intervals.

Equipment
Each COMPACT RADIATOR is equipped with wall brackets that are welded onto the back. The radiator types 11 K, 21 K-S, 22 K and 33 K are equipped with a detachable top cover and two closed side panels.

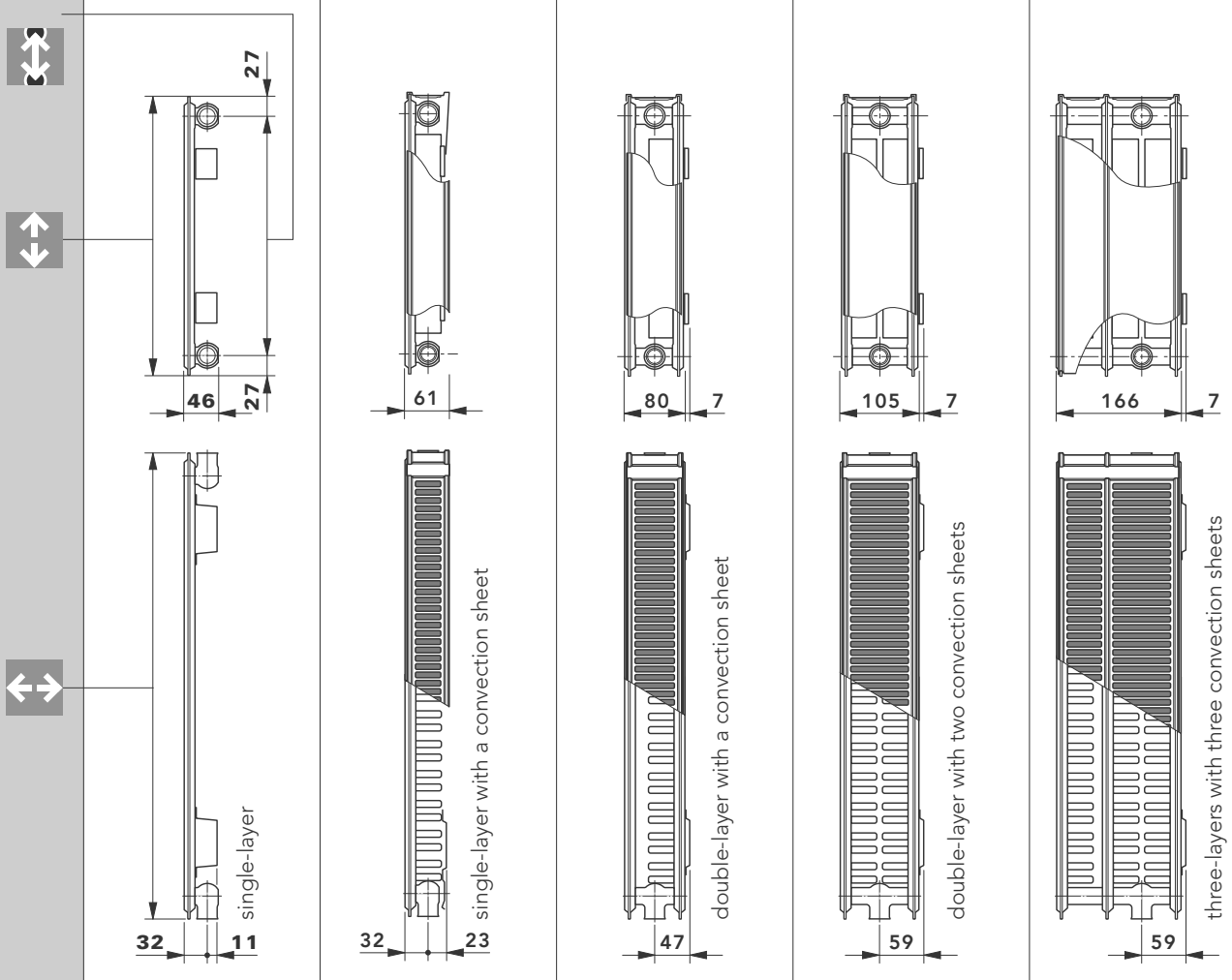
Paint coating
1. Undercoating in accordance with DIN 55900 part 1, stoved at 190° C.
2. Finish in accordance with DIN 55900 part 2, in standard colour 9016 (on request available in many standard colours and sanitary-ware colours at an extra charge), applied electro-statically in a modern powder coating facility. This especially resistant coating is stoved at an object temperature of 210° C.

Packaging
1. Cardboard packaging
2. Edge protection
3. Shrink foil

COMPACT RADIATOR

Overview of models

OVERVIEW OF MODELS



Type	10					11 K					21 K-S					22 K					33 K				
Height [mm]	300	400	500	600	900	300	400	500	600	900	300	400	500	600	900	300	400	500	600	900	300	400	500	600	900
Length [mm]	up to 1200		up to 2400	up to 2600	up to 1400	up to 2400		up to 2600		up to 2000	up to 2400		up to 3000		up to 2000	up to 3000				up to 2000	up to 3000		up to 2200		up to 2000
Steps	all overall length starting with 400 mm available in steps of 200 mm, additionally 520, 720, 920, 1120 and 1320 mm																								

Guarantee statements are available to download at **www.vogelundnoot.com/download**

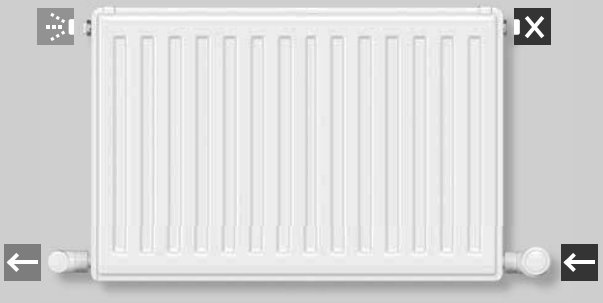
We reserve the right to amend typing errors and make technical changes. Valid from 1 February 2014.

Connection modes - double-pipe and single-pipe system

Connection modes - double-pipe system

A: Single-sided connection

B: Connection both sides



C: Connection on top
Warning: Lower performance

Connection modes - single-pipe system

COMPACT RADIATORS can easily be converted for a single-pipe connection, provided that four-way valves with a by-pass pipe are used.

T6-RADIATOR / MULTI-FUNCTIONAL RADIATOR / COMPACT RADIATOR

Outputs - temperature group 90/70/20° C

90/70/20° C		Side panels and top cover of COMPACT-, T6- and MULTI-FUNCTIONAL VALVE RADIATORS are taken into consideration in the heat outputs Radiator power data in watts, in accordance with **DIN EN 442** supply temperature **90** - return temperature **70** - room temperature **20° C**																								
Height [mm]		300					400					500					600					900				
Length [mm]	Type / Power	10	11 K 11 KV 11 VM	21 K-S 21 KV-S 21 VM-S	22 K 22 KV 22 VM	33 K 33 KV 33 VM	10	11 K 11 KV 11 VM	21 K-S 21 KV-S 21 VM-S	22 K 22 KV 22 VM	33 K 33 KV 33 VM	10	11 K 11 KV 11 VM	21 K-S 21 KV-S 21 VM-S	22 K 22 KV 22 VM	33 K 33 KV 33 VM	10	11 K 11 KV 11 VM	21 K-S 21 KV-S 21 VM-S	22 K 22 KV 22 VM	33 K 33 KV 33 VM	10	11 K 11 KV 11 VM	21 K-S 21 KV-S 21 VM-S	22 K 22 KV 22 VM	33 K 33 KV 33 VM
400	Watt	176	288	427	558	796	224	362	534	695	992	271	430	625	787	1140	317	478	689	875	1251	446	659	949	1173	1649
520	Watt	228	374	555	725	1035	292	470	694	903	1289	353	559	812	1023	1482	412	621	896	1138	1626	579	856	1233	1524	2144
600	Watt	263	432	640	837	1194	337	543	801	1042	1488	407	645	937	1181	1710	475	717	1034	1313	1877	668	988	1423	1759	2474
720	Watt	316	518	769	1005	1433	404	651	961	1250	1785	488	774	1124	1417	2052	570	860	1241	1576	2252	802	1186	1707	2111	2969
800	Watt	351	576	854	1116	1592	449	723	1068	1389	1984	543	859	1249	1574	2280	634	955	1379	1751	2502	891	1318	1897	2345	3299
920	Watt	404	662	982	1284	1830	516	832	1229	1598	2281	624	988	1437	1810	2622	729	1099	1585	2013	2878	1025	1515	2182	2697	3793
1000	Watt	439	720	1067	1395	1990	561	904	1335	1737	2479	678	1074	1562	1968	2850	792	1194	1723	2188	3128	1114	1647	2371	2931	4123
1120	Watt	492	806	1195	1563	2228	628	1013	1496	1945	2777	760	1203	1749	2204	3192	887	1338	1930	2451	3503	1247	1845	2656	3283	4618
1200	Watt	527	864	1281	1674	2388	673	1085	1602	2084	2975	814	1289	1874	2361	3420	951	1433	2068	2626	3753	1337	1977	2846	3518	4948
1320	Watt		950	1409	1842	2626		1194	1763	2292	3273	895	1418	2061	2598	3762	1046	1577	2275	2889	4129	1470	2174	3130	3869	5443
1400	Watt		1008	1494	1953	2786		1266	1870	2431	3471	950	1504	2186	2755	3990	1109	1672	2412	3064	4379	1559	2306	3320	4104	5772
1600	Watt		1152	1708	2232	3183		1447	2137	2778	3967	1085	1719	2499	3149	4560	1268	1911	2757	3501	5004		2635	3794	4690	6597
1800	Watt		1296	1921	2511	3581		1628	2404	3126	4463	1221	1934	2811	3542	5130	1426	2150	3102	3939	5630		2965	4269	5276	7422
2000	Watt		1440	2135	2790	3979		1809	2671	3473	4959	1357	2149	3123	3936	5700	1585	2389	3446	4377	6255		3294	4743	5863	8246
2200	Watt		1584	2348	3069	4377		1989	2938	3820	5455	1492	2363	3435	4329	6271	1743	2628	3791	4814	6881					
2400	Watt		1728	2562	3348	4775		2170	3205	4168		1628	2578	3748	4723		1901	2866	4136	5252						
2600	Watt				3627	5173				4515			2793	4060	5116		2060	3105	4480	5690						
2800	Watt				3907	5571				4862				4372	5510				4825	6127						
3000	Watt				4186	5969				5210				4685	5904				5169	6565						
Radiatorexponent n		1,274	1,330	1,327	1,329	1,331	1,283	1,342	1,334	1,353	1,357	1,292	1,330	1,323	1,334	1,351	1,301	1,319	1,310	1,343	1,333	1,305	1,332	1,321	1,340	1,354
Type programme			COMPACT Radiator										T6-Centrally connected radiator and MULTI-FUNCTIONAL VALVE Radiator													

The availability of any type of radiator, as well as range of sizes, is in accordance with the production programme, as stated in the price list.

We reserve the right to amend typing errors and make technical changes. Valid from 1 February 2014.

Outputs - temperature group 75/65/20° C and 70/55/20° C

75/65/20° C

Side panels and top cover of COMPACT-, T6- and MULTI-FUNCTIONAL VALVE RADIATORS are taken into consideration in the heat outputs

Radiator power data in watts, in accordance with **DIN EN 442** supply temperature **75** - return temperature **65** - room temperature **20° C**

Height [mm]		300					400					500					600					900				
Length [mm]	Type / Power	10	11 K 11 KV 11 VM	21 K-S 21 KV-S 21 VM-S	22 K 22 KV 22 VM	33 K 33 KV 33 VM	10	11 K 11 KV 11 VM	21 K-S 21 KV-S 21 VM-S	22 K 22 KV 22 VM	33 K 33 KV 33 VM	10	11 K 11 KV 11 VM	21 K-S 21 KV-S 21 VM-S	22 K 22 KV 22 VM	33 K 33 KV 33 VM	10	11 K 11 KV 11 VM	21 K-S 21 KV-S 21 VM-S	22 K 22 KV 22 VM	33 K 33 KV 33 VM	10	11 K 11 KV 11 VM	21 K-S 21 KV-S 21 VM-S	22 K 22 KV 22 VM	33 K 33 KV 33 VM
400	**Watt**	139	226	335	438	624	178	283	419	543	774	214	337	491	617	891	250	376	543	685	981	351	517	746	918	1288
520	**Watt**	181	294	436	569	812	231	368	544	706	1007	279	438	638	802	1159	325	488	706	891	1276	457	672	969	1194	1675
600	**Watt**	209	339	503	657	937	266	425	628	814	1162	322	506	736	926	1337	375	563	814	1028	1472	527	775	1118	1378	1933
720	**Watt**	251	407	603	788	1124	320	510	754	977	1394	386	607	883	1111	1604	450	676	977	1233	1766	632	930	1342	1653	2319
800	**Watt**	278	452	670	876	1249	355	566	838	1086	1549	429	674	982	1234	1782	500	751	1086	1370	1962	702	1034	1491	1837	2577
920	**Watt**	320	520	771	1007	1436	408	651	963	1248	1781	493	776	1129	1420	2050	575	864	1248	1576	2257	808	1189	1715	2112	2963
1000	**Watt**	348	565	838	1095	1561	444	708	1047	1357	1936	536	843	1227	1543	2228	625	939	1357	1713	2453	878	1292	1864	2296	3221
1120	**Watt**	390	633	939	1226	1748	497	793	1173	1520	2168	600	944	1374	1728	2495	700	1052	1520	1919	2747	983	1447	2088	2572	3608
1200	**Watt**	418	678	1006	1314	1873	533	850	1256	1628	2323	643	1012	1472	1852	2674	750	1127	1628	2056	2944	1054	1550	2237	2755	3865
1320	**Watt**		746	1106	1445	2061		935	1382	1791	2556	708	1113	1620	2037	2941	825	1239	1791	2261	3238	1159	1705	2460	3031	4252
1400	**Watt**		791	1173	1533	2185		991	1466	1900	2710	750	1180	1718	2160	3119	875	1315	1900	2398	3434	1229	1809	2610	3214	4509
1600	**Watt**		904	1341	1752	2498		1133	1675	2171	3098	858	1349	1963	2469	3565	1000	1502	2171	2741	3925		2067	2982	3674	5154
1800	**Watt**		1017	1508	1971	2810		1274	1885	2443	3485	965	1517	2209	2777	4010	1125	1690	2443	3083	4415		2326	3355	4133	5798
2000	**Watt**		1130	1676	2190	3122		1416	2094	2714	3872	1072	1686	2454	3086	4456	1250	1878	2714	3426	4906		2584	3728	4592	6442
2200	**Watt**		1243	1844	2409	3434		1558	2303	2985	4259	1179	1855	2699	3395	4902	1375	2066	2985	3769	5397					
2400	**Watt**		1356	2011	2628	3746		1699	2513	3257		1286	2023	2945	3703		1500	2254	3257	4111						
2600	**Watt**				2847	4059				3528			2192	3190	4012		1625	2441	3528	4454						
2800	**Watt**				3066	4371				3800				3436	4320				3800	4796						
3000	**Watt**				3285	4683				4071				3681	4629				4071	5139						
Radiatorexponent n		1,274	1,330	1,327	1,329	1,331	1,283	1,342	1,334	1,353	1,357	1,292	1,330	1,323	1,334	1,351	1,301	1,319	1,310	1,343	1,333	1,305	1,332	1,321	1,340	1,354
Type programme		COMPACT Radiator										T6-Centrally connected radiator and MULTI-FUNCTIONAL VALVE Radiator														

The availability of any type of radiator, as well as range of sizes, is in accordance with the production programme, as stated in the price list.

70/55/20° C

Side panels and top cover of COMPACT-, T6- and MULTI-FUNCTIONAL VALVE RADIATORS are taken into consideration in the heat outputs

Radiator power data in watts, in accordance with **DIN EN 442** supply temperature **70** - return temperature **55** - room temperature **20° C**

Height [mm]		300					400					500					600					900				
Length [mm]	Type / Power	10	11 K 11 KV 11 VM	21 K-S 21 KV-S 21 VM-S	22 K 22 KV 22 VM	33 K 33 KV 33 VM	10	11 K 11 KV 11 VM	21 K-S 21 KV-S 21 VM-S	22 K 22 KV 22 VM	33 K 33 KV 33 VM	10	11 K 11 KV 11 VM	21 K-S 21 KV-S 21 VM-S	22 K 22 KV 22 VM	33 K 33 KV 33 VM	10	11 K 11 KV 11 VM	21 K-S 21 KV-S 21 VM-S	22 K 22 KV 22 VM	33 K 33 KV 33 VM	10	11 K 11 KV 11 VM	21 K-S 21 KV-S 21 VM-S	22 K 22 KV 22 VM	33 K 33 KV 33 VM
400	**Watt**	113	182	270	353	503	144	228	337	436	621	174	272	396	497	716	202	303	439	551	790	284	416	602	739	1034
520	**Watt**	147	237	351	459	654	187	296	438	566	807	226	353	515	646	930	263	394	570	716	1027	369	541	782	960	1344
600	**Watt**	170	273	405	529	754	216	342	506	654	932	261	407	594	745	1073	304	455	658	826	1185	426	624	902	1108	1551
720	**Watt**	204	328	486	635	905	260	410	607	784	1118	313	489	713	894	1288	364	546	790	991	1422	511	749	1083	1330	1861
800	**Watt**	226	364	540	706	1006	288	455	674	871	1242	348	543	792	994	1431	405	606	877	1102	1580	568	832	1203	1477	2068
920	**Watt**	260	419	621	812	1157	332	524	775	1002	1429	400	625	911	1143	1646	465	697	1009	1267	1817	653	957	1384	1699	2378
1000	**Watt**	283	455	675	882	1257	360	569	843	1089	1553	434	679	990	1242	1789	506	758	1097	1377	1975	710	1041	1504	1847	2585
1120	**Watt**	317	510	756	988	1408	404	638	944	1220	1739	487	761	1108	1391	2003	567	849	1228	1542	2212	795	1165	1684	2068	2895
1200	**Watt**	340	546	811	1059	1509	433	683	1011	1307	1863	521	815	1188	1491	2147	607	909	1316	1652	2370	852	1249	1805	2216	3102
1320	**Watt**		601	892	1165	1660		751	1113	1438	2050	574	896	1306	1640	2361	668	1000	1448	1818	2607	938	1374	1985	2438	3412
1400	**Watt**		637	946	1235	1760		797	1180	1525	2174	608	951	1386	1739	2504	708	1061	1535	1928	2765	994	1457	2106	2585	3618
1600	**Watt**		728	1081	1412	2012		911	1349	1743	2485	695	1087	1584	1988	2862	809	1212	1755	2203	3160		1665	2406	2955	4135
1800	**Watt**		819	1216	1588	2263		1025	1517	1961	2795	782	1222	1781	2236	3220	911	1364	1974	2479	3555		1873	2707	3324	4652
2000	**Watt**		910	1351	1765	2515		1139	1686	2178	3106	869	1358	1979	2485	3578	1012	1516	2193	2754	3951		2081	3008	3693	5169
2200	**Watt**		1001	1486	1941	2766		1252	1854	2396	3416	956	1494	2177	2733	3935	1113	1667	2413	3030	4346					
2400	**Watt**		1092	1621	2118	3018		1366	2023	2614		1043	1630	2375	2981		1214	1819	2632	3305						
2600	**Watt**				2294	3269				2832			1766	2573	3230		1315	1970	2852	3580						
2800	**Watt**				2470	3521				3050				2771	3478				3071	3856						
3000	**Watt**				2647	3772				3268				2969	3727				3290	4131						
Radiatorexponent n		1,274	1,330	1,327	1,329	1,331	1,283	1,342	1,334	1,353	1,357	1,292	1,330	1,323	1,334	1,351	1,301	1,319	1,310	1,343	1,333	1,305	1,332	1,321	1,340	1,354
Type programme		COMPACT Radiator										T6-Centrally connected radiator and MULTI-FUNCTIONAL VALVE Radiator														

The availability of any type of radiator, as well as range of sizes, is in accordance with the production programme, as stated in the price list.

T6-RADIATOR / MULTI-FUNCTIONAL RADIATOR / COMPACT RADIATOR

Outputs - temperature group 55/45/20° C and 45/40/20° C

55/45/20° C

Side panels and top cover of COMPACT-, T6- and MULTI-FUNCTIONAL VALVE RADIATORS are taken into consideration in the heat outputs

Radiator power data in watts, in accordance with **DIN EN 442** supply temperature **55** - return temperature **45** - room temperature **20° C**

Height [mm]		300					400					500					600					900				
Length [mm]	Type / Power	10	11 K 11 KV 11 VM	21 K-S 21 KV-S 21 VM-S	22 K 22 KV 22 VM	33 K 33 KV 33 VM	10	11 K 11 KV 11 VM	21 K-S 21 KV-S 21 VM-S	22 K 22 KV 22 VM	33 K 33 KV 33 VM	10	11 K 11 KV 11 VM	21 K-S 21 KV-S 21 VM-S	22 K 22 KV 22 VM	33 K 33 KV 33 VM	10	11 K 11 KV 11 VM	21 K-S 21 KV-S 21 VM-S	22 K 22 KV 22 VM	33 K 33 KV 33 VM	10	11 K 11 KV 11 VM	21 K-S 21 KV-S 21 VM-S	22 K 22 KV 22 VM	33 K 33 KV 33 VM
400	Watt	73	115	170	222	316	92	143	212	272	387	111	171	250	312	447	129	191	278	345	497	180	262	380	463	645
520	Watt	95	149	221	289	411	120	185	275	354	503	144	222	325	406	581	167	249	361	449	646	234	340	494	602	839
600	Watt	109	172	255	333	475	138	214	318	408	581	166	256	375	468	670	193	287	417	518	745	271	393	570	695	968
720	Watt	131	206	306	400	570	166	257	381	490	697	199	308	450	562	805	232	345	500	621	894	325	471	684	834	1161
800	Watt	146	229	340	444	633	184	285	424	544	774	222	342	500	624	894	257	383	556	690	993	361	523	760	926	1290
920	Watt	167	264	391	511	728	212	328	487	626	890	255	393	574	718	1028	296	440	639	794	1142	415	602	873	1065	1484
1000	Watt	182	286	425	555	791	231	357	530	680	968	277	427	624	781	1117	322	479	695	863	1242	451	654	949	1158	1613
1120	Watt	204	321	477	622	886	258	400	593	762	1084	310	479	699	874	1252	360	536	778	966	1391	505	733	1063	1297	1806
1200	Watt	218	344	511	667	949	277	428	635	816	1161	332	513	749	937	1341	386	574	834	1035	1490	541	785	1139	1390	1935
1320	Watt		378	562	733	1044		471	699	898	1278	366	564	824	1030	1475	425	632	917	1139	1639	595	864	1253	1529	2129
1400	Watt		401	596	778	1107		499	741	952	1355	388	598	874	1093	1564	450	670	973	1208	1738	631	916	1329	1621	2258
1600	Watt		458	681	889	1266		571	847	1088	1549	443	684	999	1249	1788	515	766	1112	1380	1987		1047	1519	1853	2580
1800	Watt		516	766	1000	1424		642	953	1224	1742	499	769	1124	1405	2011	579	861	1251	1553	2235		1178	1709	2085	2903
2000	Watt		573	851	1111	1582		713	1059	1360	1936	554	855	1249	1561	2235	643	957	1390	1725	2483		1309	1899	2316	3225
2200	Watt		630	936	1222	1740		785	1165	1496	2129	610	940	1374	1717	2458	708	1053	1529	1898	2732					
2400	Watt		687	1021	1333	1898		856	1271	1632		665	1026	1499	1873		772	1149	1668	2070						
2600	Watt				1444	2057				1768			1111	1623	2030		836	1244	1807	2243						
2800	Watt				1555	2215				1904				1748	2186				1946	2415						
3000	Watt				1666	2373				2040				1873	2342				2085	2588						
Radiatorexponent n		1,274	1,330	1,327	1,329	1,331	1,283	1,342	1,334	1,353	1,357	1,292	1,330	1,323	1,334	1,351	1,301	1,319	1,310	1,343	1,333	1,305	1,332	1,321	1,340	1,354

Type programme: COMPACT Radiator | T6-Centrally connected radiator and MULTI-FUNCTIONAL VALVE Radiator

The availability of any type of radiator, as well as range of sizes, is in accordance with the production programme, as stated in the price list.

45/40/20° C

Side panels and top cover of COMPACT-, T6- and MULTI-FUNCTIONAL VALVE RADIATORS are taken into consideration in the heat outputs

Radiator power data in watts, in accordance with **DIN EN 442** supply temperature **45** - return temperature **40** - room temperature **20° C**

Height [mm]		300					400					500					600					900				
Length [mm]	Type / Power	10	11 K 11 KV 11 VM	21 K-S 21 KV-S 21 VM-S	22 K 22 KV 22 VM	33 K 33 KV 33 VM	10	11 K 11 KV 11 VM	21 K-S 21 KV-S 21 VM-S	22 K 22 KV 22 VM	33 K 33 KV 33 VM	10	11 K 11 KV 11 VM	21 K-S 21 KV-S 21 VM-S	22 K 22 KV 22 VM	33 K 33 KV 33 VM	10	11 K 11 KV 11 VM	21 K-S 21 KV-S 21 VM-S	22 K 22 KV 22 VM	33 K 33 KV 33 VM	10	11 K 11 KV 11 VM	21 K-S 21 KV-S 21 VM-S	22 K 22 KV 22 VM	33 K 33 KV 33 VM
400	Watt	50	78	116	152	216	64	97	144	184	262	76	117	171	213	303	88	131	191	234	339	124	178	260	315	437
520	Watt	66	102	151	197	280	83	126	188	240	341	99	152	222	277	394	115	170	248	305	440	161	232	338	410	568
600	Watt	76	117	174	227	324	96	145	216	276	393	115	175	256	319	455	133	196	286	352	508	186	268	390	473	655
720	Watt	91	141	209	273	388	115	175	260	332	472	138	210	307	383	545	159	236	343	422	609	223	321	467	567	786
800	Watt	101	156	232	303	432	128	194	289	369	524	153	233	341	425	606	177	262	381	469	677	248	357	519	630	874
920	Watt	116	180	267	349	496	147	223	332	424	603	176	268	393	489	697	204	301	439	539	779	285	410	597	725	1005
1000	Watt	126	195	290	379	539	159	242	361	461	655	191	291	427	532	758	221	327	477	586	846	310	446	649	788	1092
1120	Watt	141	219	325	424	604	179	272	404	516	734	214	326	478	596	849	248	367	534	656	948	347	500	727	882	1223
1200	Watt	151	234	349	455	647	191	291	433	553	786	229	350	512	638	909	265	393	572	703	1016	372	535	779	945	1311
1320	Watt		258	383	500	712		320	476	608	865	252	385	563	702	1000	292	432	629	774	1117	409	589	857	1040	1442
1400	Watt		274	407	531	755		339	505	645	917	267	408	598	745	1061	310	458	667	821	1185	434	625	909	1103	1529
1600	Watt		313	465	606	863		388	577	737	1048	306	466	683	851	1212	354	524	763	938	1354		714	1039	1260	1748
1800	Watt		352	523	682	971		436	649	829	1179	344	525	768	957	1364	398	589	858	1055	1523		803	1169	1418	1966
2000	Watt		391	581	758	1079		485	722	922	1310	382	583	854	1064	1515	442	655	953	1172	1693		892	1299	1575	2184
2200	Watt		430	639	834	1187		533	794	1014	1441	420	641	939	1170	1667	487	720	1049	1289	1862					
2400	Watt		469	697	910	1295		582	866	1106		459	700	1024	1276		531	786	1144	1407						
2600	Watt				985	1402				1198			758	1110	1383		575	851	1239	1524						
2800	Watt				1061	1510				1290				1195	1489				1335	1641						
3000	Watt				1137	1618				1382				1280	1595				1430	1758						
Radiatorexponent n		1,274	1,330	1,327	1,329	1,331	1,283	1,342	1,334	1,353	1,357	1,292	1,330	1,323	1,334	1,351	1,301	1,319	1,310	1,343	1,333	1,305	1,332	1,321	1,340	1,354

Type programme: COMPACT Radiator | T6-Centrally connected radiator and MULTI-FUNCTIONAL VALVE Radiator

The availability of any type of radiator, as well as range of sizes, is in accordance with the production programme, as stated in the price list.

T6-RADIATOR / MULTI-FUNCTIONAL RADIATOR / COMPACT RADIATOR

Weights

T6 / MULTI-FUNCTIONAL

Weight in kg of T6-CENTRALLY connected and MULTI-FUNCTIONAL VALVE RADIATORS

Height [mm]		300				400				500				600				900			
Length [mm]	Type / weight	11 KV 11 VM	21KV-S 21VM-S	22 KV 22 VM	33 KV 33 VM	11 KV 11 VM	21KV-S 21VM-S	22 KV 22 VM	33 KV 33 VM	11 KV 11 VM	21KV-S 21VM-S	22 KV 22 VM	33 KV 33 VM	11 KV 11 VM	21KV-S 21VM-S	22 KV 22 VM	33 KV 33 VM	11 KV 11 VM	21KV-S 21VM-S	22 KV 22 VM	33 KV 33 VM
400	kg	5,67	7,75	8,94	12,93	7,08	9,78	11,50	16,74	7,91	11,34	13,10	19,10	8,69	12,83	14,63	21,35	12,03	18,48	21,13	31,01
520	kg	6,80	9,53	11,08	16,13	8,62	12,18	14,44	21,14	9,66	14,18	16,48	24,16	10,64	16,08	18,42	27,03	14,96	23,37	26,85	39,58
600	kg	7,56	10,72	12,51	18,27	9,64	13,78	16,41	24,08	10,83	16,07	18,73	27,53	11,95	18,25	20,95	30,81	16,92	26,63	30,67	45,29
720	kg	8,69	12,50	14,65	21,48	11,17	16,18	19,35	28,48	12,58	18,90	22,11	32,59	13,90	21,49	24,74	36,49	19,85	31,52	36,39	53,86
800	kg	9,45	13,69	16,08	23,61	12,20	17,78	21,31	31,42	13,75	20,79	24,37	35,96	15,21	23,66	27,27	40,27	21,80	34,78	40,20	59,57
920	kg	10,58	15,54	18,31	26,95	13,73	20,24	24,34	35,96	15,50	23,70	27,83	41,16	17,16	26,98	31,15	46,08	24,73	39,74	46,01	68,27
1000	kg	11,34	16,72	19,74	29,09	14,75	21,84	26,30	38,90	16,66	25,59	30,09	44,53	18,47	29,14	33,68	49,87	26,68	43,00	49,83	73,98
1120	kg	12,48	18,51	21,88	32,30	16,28	24,24	29,24	43,30	18,42	28,42	33,47	49,59	20,43	32,39	37,47	55,54	29,61	47,89	55,55	82,55
1200	kg	13,23	19,69	23,31	34,44	17,31	25,84	31,21	46,24	19,58	30,32	35,72	52,96	21,73	34,56	40,00	59,33	31,56	51,15	59,37	88,26
1320	kg	14,62	21,48	25,45	37,64	19,14	28,24	34,15	50,64	21,64	33,15	39,10	58,02	23,99	37,81	43,80	65,01	34,80	56,03	65,09	96,82
1400	kg	15,37	22,73	26,97	39,91	20,17	29,90	36,20	53,72	22,81	35,11	41,44	61,53	25,30	40,04	46,41	68,93	36,75	59,36	68,99	102,67
1600	kg	17,26	25,70	30,54	45,26	22,72	33,90	41,10	61,06	25,72	39,83	47,07	69,96	28,56	45,46	52,74	78,39	41,63	67,51	78,53	116,94
1800	kg	19,16	28,84	34,30	50,84	25,28	38,07	46,20	68,64	28,64	44,73	52,90	78,63	31,82	51,04	59,25	88,09	46,51	75,83	88,26	131,46
2000	kg	21,05	31,81	37,87	56,18	27,84	42,07	51,10	75,98	31,56	49,46	58,53	87,06	35,08	56,46	65,57	97,55	51,40	83,98	97,80	
2200	kg	22,94	34,78	41,44	61,52	30,39	46,07	56,01	83,32	34,48	54,19	64,17	95,49	38,34	61,87	71,89	107,01				
2400	kg	25,33	37,75	45,02	66,87	33,56	50,06	60,91		38,01	58,91	69,80		42,21	67,29	78,22					
2600	kg			48,59	72,21			65,82		40,93	63,64	75,43		45,47	72,70	84,54					
2800	kg			52,16	77,55			70,72			68,37	81,07			78,12	90,86					
3000	kg			55,73	82,89			75,63			73,09	86,70			83,54	97,18					
Type programme		T6-CENTRALLY CONNECTED RADIATOR and MULTI-FUNCTIONAL VALVE RADIATOR																			

The availability of any type of radiator, as well as range of sizes, is in accordance with the production programme, as stated in the price list.

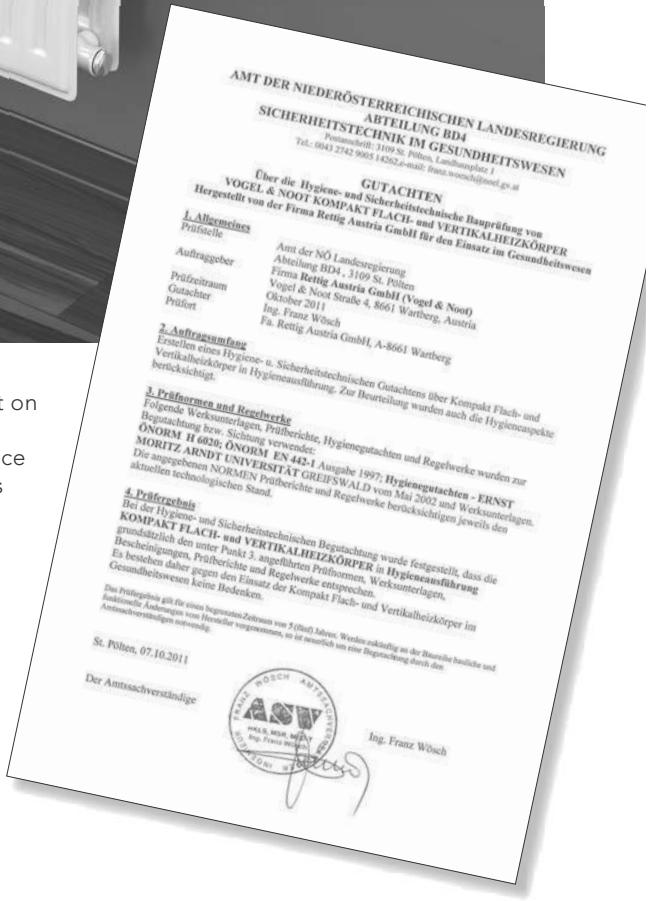
COMPACT

Weight in kg of COMPACT RADIATORS

Height [mm]		300					400					500					600					900				
Length [mm]	Type / weight	10	11 K	21 K-S	22 K	33 K	10	11 K	21 K-S	22 K	33 K	10	11 K	21 K-S	22 K	33 K	10	11 K	21 K-S	22 K	33 K	10	11 K	21 K-S	22 K	33 K
400	kg	3,29	4,91	6,99	8,18	12,17	4,01	6,31	9,01	10,73	15,97	4,73	7,12	10,55	12,31	18,31	5,42	7,86	12,01	13,80	20,53	7,71	11,14	17,59	20,23	30,12
520	kg	4,00	6,05	8,78	10,33	15,38	4,93	7,84	11,41	13,67	20,37	5,88	8,87	13,38	15,69	23,37	6,77	9,82	15,26	17,60	26,20	9,74	14,07	22,48	25,96	38,69
600	kg	4,47	6,81	9,96	11,76	17,52	5,55	8,87	13,01	15,63	23,31	6,64	10,03	15,28	17,94	26,74	7,67	11,12	17,42	20,13	29,99	11,09	16,02	25,74	29,77	44,40
720	kg	5,18	7,94	11,75	13,90	20,72	6,47	10,40	15,40	18,58	27,71	7,78	11,79	18,11	21,32	31,80	9,02	13,08	20,67	23,92	35,66	13,12	18,95	30,63	35,50	52,96
800	kg	5,66	8,70	12,93	15,33	22,86	7,09	11,42	17,00	20,54	30,65	8,54	12,95	20,00	23,57	35,17	9,91	14,39	22,84	26,45	39,45	14,48	20,91	33,89	39,31	58,67
920	kg	6,37	9,83	14,78	17,56	26,20	8,02	12,96	19,47	23,57	35,19	9,68	14,70	22,90	27,04	40,36	11,26	16,34	26,15	30,33	45,26	16,51	23,83	38,84	45,12	67,37
1000	kg	6,84	10,59	15,97	18,99	28,34	8,63	13,98	21,07	25,53	38,13	10,45	15,87	24,79	29,29	43,74	12,16	17,65	28,32	32,86	49,05	17,86	25,79	42,10	48,94	73,09
1120	kg	7,55	11,72	17,75	21,13	31,54	9,56	15,51	23,47	28,47	42,53	11,59	17,62	27,63	32,67	48,79	13,51	19,60	31,57	36,65	54,72	19,89	28,72	46,99	54,66	81,65
1200	kg	8,02	12,48	18,94	22,56	33,68	10,18	16,53	25,07	30,43	45,47	12,35	18,79	29,52	34,93	52,17	14,41	20,91	33,74	39,18	58,51	21,25	30,67	50,25	58,48	87,36
1320	kg		13,86	20,72	24,70	36,89		18,37	27,47	33,38	49,87	13,67	20,85	32,36	38,31	57,22	15,94	23,17	36,98	42,97	64,18	23,46	33,90	55,14	64,20	95,93
1400	kg		14,62	21,98	26,21	39,16		19,39	29,13	35,42	52,94	14,43	22,01	34,31	40,65	60,73	16,83	24,47	39,22	45,59	68,11	24,81	35,86	58,47	68,10	101,77
1600	kg		16,51	24,95	29,79	44,50		21,95	33,13	40,33	60,29	16,60	24,93	39,04	46,28	69,16	19,35	27,73	44,63	51,91	77,57		40,74	66,62	77,64	116,05
1800	kg		18,40	28,09	33,55	50,08		24,51	37,30	45,43	67,87	18,60	27,85	43,94	52,11	77,84	21,69	30,99	50,22	58,43	87,27		45,62	74,94	87,37	130,57
2000	kg		20,30	31,06	37,12	55,43		27,06	41,30	50,33	75,21	20,51	30,77	48,67	57,74	86,27	23,93	34,26	55,63	64,75	96,73		50,50	83,09	96,91	144,84
2200	kg		22,19	34,03	40,69	60,77		29,62	45,29	55,24	82,55	22,41	33,68	53,39	63,37	94,70	26,18	37,52	61,05	71,07	106,19					
2400	kg		24,58	37,00	44,26	66,11		32,78	49,29	60,14		24,31	37,21	58,12	69,01		28,43	41,39	66,47	77,39						
2600	kg				47,83	71,45				65,05			40,13	62,85	74,64		30,68	44,65	71,88	83,71						
2800	kg				51,41	76,80				69,95				67,57	80,28				77,30	90,04						
3000	kg				54,98	82,14				74,86				72,30	85,91				82,71	96,36						
Type programme		COMPACT RADIATOR																								

The availability of any type of radiator, as well as range of sizes, is in accordance with the production programme, as stated in the price list.

HYGIENE RADIATOR



AMT DER NIEDERÖSTERREICHISCHEN LANDESREGIERUNG
ABTEILUNG BD4
SICHERHEITSTECHNIK IM GESUNDHEITSWESEN

GUTACHTEN
Über die Hygiene- und Sicherheitstechnische Bauprüfung von
VOGEL & NOOT KOMPAKT FLACH- und VERTIKALHEIZKÖRPER
Hergestellt von der Firma Rettig Austria GmbH für den Einsatz im Gesundheitswesen

1. Allgemeines
Prüfstelle: Amt der NÖ Landesregierung, Abteilung BD4 , 3109 St. Pölten
Auftraggeber: Firma Rettig Austria GmbH (Vogel & Noot)
Prüfzeitraum: Vogel & Noot Straße 4, 8661 Wartberg, Austria
Gutachter: Oktober 2011
Prüfort: Ing. Franz Wösch
Fa. Rettig Austria GmbH, A-8661 Wartberg

2. Auftragsumfang
Erstellen eines Hygiene- u. Sicherheitstechnischen Gutachtens über Kompakt Flach- und Vertikalheizkörper in Hygieneausführung. Zur Beurteilung wurden auch die Hygieneaspekte berücksichtigt.

3. Prüfnormen und Regelwerke
Folgende Werksunterlagen, Prüfberichte, Hygienegutachten und Regelwerke wurden zur Begutachtung bzw. Sichtung verwendet:
ÖNORM H 6020; ÖNORM EN 442-1 Ausgabe 1997; Hygienegutachten - ERNST MORITZ ARNDT UNIVERSITÄT GREIFSWALD vom Mai 2002 und Werksunterlagen.
Die angegebenen NORMEN Prüfberichte und Regelwerke berücksichtigen jeweils den aktuellen technologischen Stand.

4. Prüfergebnis
Bei der Hygiene- und Sicherheitstechnischen Begutachtung wurde festgestellt, dass die KOMPAKT FLACH- und VERTIKALHEIZKÖRPER in Hygieneausführung grundsätzlich den unter Punkt 3. angeführten Prüfnormen, Werksunterlagen, Bescheinigungen, Prüfberichte und Regelwerke entsprechen.
Es bestehen daher gegen den Einsatz der Kompakt Flach- und Vertikalheizkörper im Gesundheitswesen keine Bedenken.

Das Prüfergebnis gilt für einen begrenzten Zeitraum von 5 (fünf) Jahren. Werden zukünftig an der Bauweise bauliche und funktionelle Änderungen vom Hersteller vorgenommen, so ist erneut um eine Begutachtung durch den Amtssachverständigen notwendig.

St. Pölten, 07.10.2011

Der Amtssachverständige

Ing. Franz Wösch

The proof of suitability for the installation of **HYGIENE COMPACT RADIATORS** and **T6 HYGIENE CENTRALLY CONNECTED RADIATORS** in rooms with particular hygienic requirements is highlighted by the hygiene certificate issued by Ernst Moritz Arndt University of Greifswald.

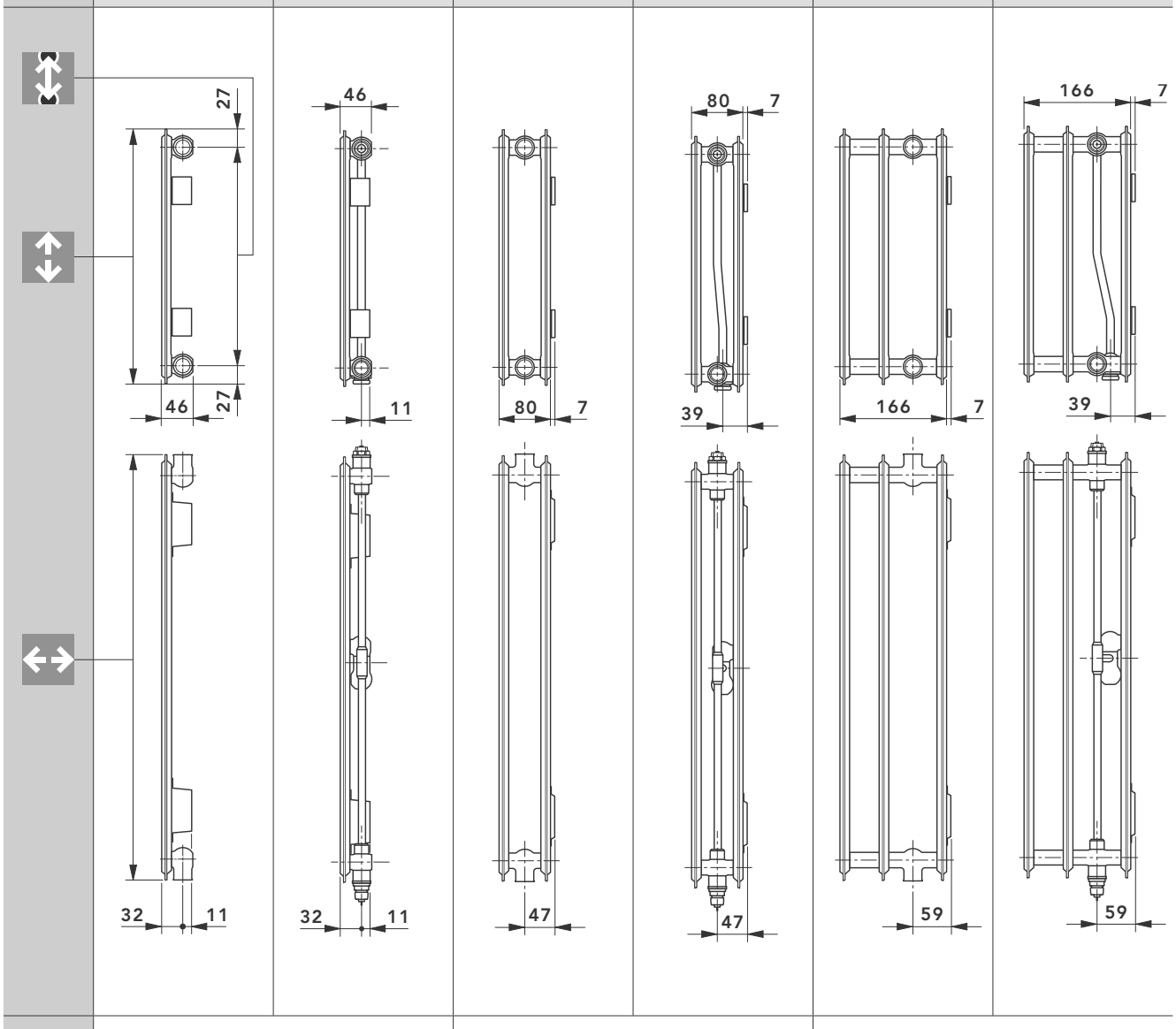
The HYGIENE RADIATORS have been specially designed for use in hospitals and for installation in rooms subject to particular hygiene requirements.

Advantages:
- No collection of dust and dirt on covers or sides
- Large inner separation distance without small-scale structures
- Easy to clean
- Rounded corners and edges, finished to a high level

In order to offer the necessary alternatives for installation as well as complying with the hygiene requirements and guidelines, the hygiene radiators are available in T6 and compact designs.

Overview of models

Overview of models



	single-layer					double-layer					triple-layer				
Type	**10 / 10 VM**					**20 / 20 VM**					**30 / 30 VM**				
Height [mm]	300	400	500	600	900	300	400	500	600	900	300	400	500	600	900
Length [mm]	up to 1200		up to 2400	up to 2600	up to 1400	up to 2400		up to 3000		up to 2000	up to 3000	up to 2200			up to 1800
Gradation	All overall lengths from 400 m in gradations of 200 mm; also 520, 720, 920, 1120 and 1320 mm														

Twin-pipe operation, single-pipe operation, types of connection

N.B.: Please refer to the appropriate sections concerning the **T6 CENTRALLY CONNECTED RADIATOR** on pages 22 - 26 for technical information on the connection settings.

Guarantee statements are available to download at **www.vogelundnoot.com/download**

HYGIENE COMPACT RADIATOR / T6-HYGIENE CENTRALLY CONNECTED RADIATOR

Outputs - temperature group 90/70/20° C

90/70/20° C		Output data in watts in accordance with **DIN EN 442** and/or **ÖNORM EN 442** Feed temperature **90** - return temperature **70** - room temperature **20 °C**														
Height [mm]		300			400			500			600			900		
Length [mm]	Type / Output	10 10 VM	20 20 VM	30 30 VM	10 10 VM	20 20 VM	30 30 VM	10 10 VM	20 20 VM	30 30 VM	10 10 VM	20 20 VM	30 30 VM	10 10 VM	20 20 VM	30 30 VM
400	**Watt**	176	298	432	224	376	541	271	452	645	317	524	747	446	729	1047
520	**Watt**	228	387	561	292	489	703	353	587	839	412	681	971	579	948	1361
600	**Watt**	263	447	647	337	565	811	407	677	968	475	786	1121	668	1094	1570
720	**Watt**	316	536	777	404	678	973	488	813	1162	570	943	1345	802	1313	1884
800	**Watt**	351	596	863	449	753	1082	543	903	1291	634	1048	1494	891	1459	2093
920	**Watt**	404	685	993	516	866	1244	624	1039	1485	729	1205	1718	1025	1677	2407
1000	**Watt**	439	745	1079	561	941	1352	678	1129	1614	792	1310	1868	1114	1823	2617
1120	**Watt**	492	834	1208	628	1054	1514	760	1265	1807	887	1467	2092	1247	2042	2931
1200	**Watt**	527	894	1295	673	1129	1622	814	1355	1936	951	1572	2241	1337	2188	3140
1320	**Watt**		983	1424		1242	1785	895	1490	2130	1046	1729	2466	1470	2407	3454
1400	**Watt**		1043	1510		1318	1893	950	1581	2259	1109	1834	2615	1559	2553	3663
1600	**Watt**		1192	1726		1506	2163	1085	1807	2582	1268	2096	2989		2917	4187
1800	**Watt**		1341	1942		1694	2434	1221	2032	2905	1426	2358	3362		3282	4710
2000	**Watt**		1489	2158		1882	2704	1357	2258	3227	1585	2620	3736		3647	5233
2200	**Watt**		1638	2373		2071	2974	1492	2484	3550	1743	2881	4109			
2400	**Watt**		1787	2589		2259		1628	2710		1901	3143				
2600	**Watt**			2805					2936		2060	3405				
2800	**Watt**			3021					3162			3667				
3000	**Watt**			3237					3387			3929				
Radiator exponent n		**1,274**	**1,278**	**1,288**	**1,283**	**1,282**	**1,288**	**1,292**	**1,287**	**1,288**	**1,301**	**1,291**	**1,288**	**1,305**	**1,294**	**1,317**
Model range			HYGIENE COMPACT RADIATORS and T6-HYGIENE CENTRE-CONNECTION RADIATORS													

The availability of any type of radiator, as well as range of sizes, is in accordance with the production programme, as stated in the price list.

Outputs - temperature group 75/65/20° C and 70/55/20° C

75/65/20° C

Output data in watts in accordance with **DIN EN 442** and/or **ÖNORM EN 442** Feed temperature **75** - return temperature **65** - room temperature **20 °C**

Height [mm]		300			400			500			600			900		
Length [mm]	Type / Output	10 10 VM	20 20 VM	30 30 VM	10 10 VM	20 20 VM	30 30 VM	10 10 VM	20 20 VM	30 30 VM	10 10 VM	20 20 VM	30 30 VM	10 10 VM	20 20 VM	30 30 VM
400	Watt	139	236	341	178	298	428	214	357	510	250	414	591	351	576	823
520	Watt	181	307	444	231	387	556	279	464	664	325	538	768	457	749	1070
600	Watt	209	354	512	266	447	641	322	536	766	375	621	886	527	864	1235
720	Watt	251	425	614	320	536	770	386	643	919	450	745	1063	632	1037	1482
800	Watt	278	472	682	355	596	855	429	714	1021	500	828	1182	702	1152	1646
920	Watt	320	543	785	408	685	983	493	822	1174	575	952	1359	808	1325	1893
1000	Watt	348	590	853	444	745	1069	536	893	1276	625	1035	1477	878	1440	2058
1120	Watt	390	661	955	497	834	1197	600	1000	1429	700	1159	1654	983	1613	2305
1200	Watt	418	708	1024	533	894	1283	643	1072	1531	750	1242	1772	1054	1728	2470
1320	Watt		779	1126		983	1411	708	1179	1684	825	1366	1950	1159	1901	2717
1400	Watt		826	1194		1043	1497	750	1250	1786	875	1449	2068	1229	2016	2881
1600	Watt		944	1365		1192	1710	858	1429	2042	1000	1656	2363		2304	3293
1800	Watt		1062	1535		1341	1924	965	1607	2297	1125	1863	2659		2592	3704
2000	Watt		1180	1706		1490	2138	1072	1786	2552	1250	2070	2954		2880	4116
2200	Watt		1298	1877		1639	2352	1179	1965	2807	1375	2277	3249			
2400	Watt		1416	2047		1788		1286	2143		1500	2484				
2600	Watt			2218					2322		1625	2691				
2800	Watt			2388					2500			2898				
3000	Watt			2559					2679			3105				
Radiator exponent n		1,274	1,278	1,288	1,283	1,282	1,288	1,292	1,287	1,288	1,301	1,291	1,288	1,305	1,294	1,317
Model range			HYGIENE COMPACT RADIATORS and T6-HYGIENE CENTRE-CONNECTION RADIATORS													

The availability of any type of radiator, as well as range of sizes, is in accordance with the production programme, as stated in the price list.

70/55/20° C

Output data in watts in accordance with **DIN EN 442** and/or **ÖNORM EN 442** Feed temperature **70** - return temperature **55** - room temperature **20 °C**

Height [mm]		300			400			500			600			900		
Length [mm]	Type / Output	10 10 VM	20 20 VM	30 30 VM	10 10 VM	20 20 VM	30 30 VM	10 10 VM	20 20 VM	30 30 VM	10 10 VM	20 20 VM	30 30 VM	10 10 VM	20 20 VM	30 30 VM
400	Watt	113	192	277	144	242	347	174	290	414	202	336	479	284	467	665
520	Watt	147	249	360	187	315	451	226	377	538	263	436	623	369	607	864
600	Watt	170	288	415	216	363	520	261	435	621	304	503	719	426	700	997
720	Watt	204	345	498	260	436	624	313	522	745	364	604	863	511	840	1196
800	Watt	226	384	553	288	484	694	348	580	828	405	671	958	568	933	1329
920	Watt	260	441	637	332	556	798	400	667	952	465	772	1102	653	1073	1529
1000	Watt	283	479	692	360	605	867	434	724	1035	506	839	1198	710	1167	1661
1120	Watt	317	537	775	404	677	971	487	811	1159	567	940	1342	795	1307	1861
1200	Watt	339	575	830	433	726	1041	521	869	1242	607	1007	1438	852	1400	1994
1320	Watt		633	913		798	1145	574	956	1366	668	1108	1581	938	1540	2193
1400	Watt		671	969		847	1214	608	1014	1449	708	1175	1677	994	1634	2326
1600	Watt		767	1107		968	1387	695	1159	1656	809	1342	1917		1867	2658
1800	Watt		863	1245		1089	1561	782	1304	1863	911	1510	2157		2100	2991
2000	Watt		959	1384		1210	1734	869	1449	2070	1012	1678	2396		2334	3323
2200	Watt		1055	1522		1331	1908	956	1594	2277	1113	1846	2636			
2400	Watt		1151	1660		1452		1043	1739		1214	2014				
2600	Watt			1799					1884		1315	2182				
2800	Watt			1937					2029			2349				
3000	Watt			2076					2173			2517				
Radiator exponent n		1,274	1,278	1,288	1,283	1,282	1,288	1,292	1,287	1,288	1,301	1,291	1,288	1,305	1,294	1,317
Model range			HYGIENE COMPACT RADIATORS and T6-HYGIENE CENTRE-CONNECTION RADIATORS													

The availability of any type of radiator, as well as range of sizes, is in accordance with the production programme, as stated in the price list.

HYGIENE COMPACT RADIATORS / T6-HYGIENE CENTRALLY CONNECTED RADIATOR

Outputs - temperature group 55/45/20° C and 45/40/20° C

55/45/20° C

Output data in watts in accordance with **DIN EN 442** and/or **ÖNORM EN 442** Feed temperature **55** - return temperature **45** - room temperature **20 °C**

Height [mm]		300			400			500			600			900		
Length [mm]	Type / Output	10 10 VM	20 20 VM	30 30 VM	10 10 VM	20 20 VM	30 30 VM	10 10 VM	20 20 VM	30 30 VM	10 10 VM	20 20 VM	30 30 VM	10 10 VM	20 20 VM	30 30 VM
400	Watt	73	123	177	92	155	221	111	185	264	129	214	306	180	297	420
520	Watt	94	160	230	120	201	288	144	241	344	167	278	398	234	387	546
600	Watt	109	184	265	138	232	332	166	278	397	193	321	459	271	446	630
720	Watt	131	221	318	166	279	399	199	333	476	232	385	551	325	535	756
800	Watt	145	246	353	184	310	443	222	370	529	257	428	612	361	595	840
920	Watt	167	283	406	212	356	509	255	426	608	296	492	704	415	684	966
1000	Watt	182	307	442	231	387	554	277	463	661	322	535	765	451	743	1050
1120	Watt	203	344	495	258	433	620	310	518	740	360	599	857	505	833	1176
1200	Watt	218	369	530	277	464	664	332	555	793	386	642	918	541	892	1260
1320	Watt		406	583		511	731	366	611	872	425	706	1010	595	981	1386
1400	Watt		430	618		542	775	388	648	925	450	749	1071	631	1041	1470
1600	Watt		492	707		619	886	443	740	1057	515	856	1224		1189	1680
1800	Watt		553	795		697	997	499	833	1190	579	963	1377		1338	1890
2000	Watt		614	883		774	1107	554	926	1322	643	1070	1530		1487	2100
2200	Watt		676	972		851	1218	610	1018	1454	708	1177	1683			
2400	Watt		737	1060		929		665	1111		772	1284				
2600	Watt			1148					1203		836	1391				
2800	Watt			1237					1296			1498				
3000	Watt			1325					1388			1605				
Radiator exponent n		1,274	1,278	1,288	1,283	1,282	1,288	1,292	1,287	1,288	1,301	1,291	1,288	1,305	1,294	1,317
Model range			HYGIENE COMPACT RADIATORS and T6-HYGIENE CENTRE-CONNECTION RADIATORS													

The availability of any type of radiator, as well as range of sizes, is in accordance with the production programme, as stated in the price list.

45/40/20° C

Output data in watts in accordance with **DIN EN 442** and/or **ÖNORM EN 442** Feed temperature **45** - return temperature **40** - room temperature **20 °C**

Height [mm]		300			400			500			600			900		
Length [mm]	Type / Output	10 10 VM	20 20 VM	30 30 VM	10 10 VM	20 20 VM	30 30 VM	10 10 VM	20 20 VM	30 30 VM	10 10 VM	20 20 VM	30 30 VM	10 10 VM	20 20 VM	30 30 VM
400	Watt	50	85	122	64	107	153	76	128	183	88	148	211	124	205	288
520	Watt	65	111	159	83	139	199	99	166	237	115	192	275	161	266	374
600	Watt	75	128	183	96	161	229	115	192	274	133	221	317	186	307	431
720	Watt	91	153	220	115	193	275	138	230	329	159	266	380	223	369	518
800	Watt	101	170	244	128	214	306	153	256	365	177	295	423	248	410	575
920	Watt	116	196	281	147	246	352	176	294	420	204	340	486	285	471	661
1000	Watt	126	213	305	159	268	382	191	320	456	221	369	528	310	512	719
1120	Watt	141	238	342	179	300	428	214	358	511	248	413	592	347	574	805
1200	Watt	151	255	366	191	321	459	229	384	548	265	443	634	372	615	863
1320	Watt		281	402		353	504	252	422	602	292	487	697	409	676	949
1400	Watt		298	427		375	535	267	447	639	310	517	740	434	717	1007
1600	Watt		340	488		428	612	306	511	730	354	590	845		820	1150
1800	Watt		383	549		482	688	344	575	821	398	664	951		922	1294
2000	Watt		425	610		535	764	382	639	913	442	738	1056		1025	1438
2200	Watt		468	671		589	841	420	703	1004	487	812	1162			
2400	Watt		511	732		642		459	767		531	886				
2600	Watt			793					831		575	960				
2800	Watt			854					895			1033				
3000	Watt			915					959			1107				
Radiator exponent n		1,274	1,278	1,288	1,283	1,282	1,288	1,292	1,287	1,288	1,301	1,291	1,288	1,305	1,294	1,317
Model range			HYGIENE COMPACT RADIATORS and T6-HYGIENE CENTRE-CONNECTION RADIATORS													

The availability of any type of radiator, as well as range of sizes, is in accordance with the production programme, as stated in the price list.

HYGIENE COMPACT RADIATORS / T6-HYGIENE CENTRALLY CONNECTED RADIATOR

Weights

T6-HYGIENE

Weight in kg for T6-HYGIENE centre-connection radiators

Height [mm]		300			400			500			600			900		
Length [mm]	Type	10 VM	20 VM	30 VM	10 VM	20 VM	30 VM	10 VM	20 VM	30 VM	10 VM	20 VM	30 VM	10 VM	20 VM	30 VM
	Weight															
400	kg	4,05	6,30	9,16	4,78	7,76	11,35	5,53	9,24	13,54	6,25	10,66	15,64	8,60	15,24	22,45
520	kg	4,76	7,69	11,23	5,71	9,59	14,07	6,67	11,51	16,93	7,59	13,33	19,64	10,63	19,26	28,46
600	kg	5,23	8,62	12,62	6,33	10,80	15,88	7,43	13,02	19,17	8,49	15,12	22,30	11,99	21,95	32,48
720	kg	5,94	10,01	14,69	7,25	12,63	18,61	8,57	15,27	22,56	9,84	17,79	26,29	14,01	25,97	38,49
800	kg	6,41	10,94	16,07	7,87	13,85	20,43	9,33	16,79	24,80	10,74	19,57	28,95	15,38	28,65	42,50
920	kg	7,12	12,39	18,29	8,79	15,73	23,29	10,47	19,11	28,32	12,08	22,31	33,09	17,40	32,75	48,65
1000	kg	7,59	13,32	19,67	9,41	16,96	25,10	11,23	20,62	30,58	12,99	24,10	35,75	18,75	35,43	52,67
1120	kg	8,30	14,72	21,75	10,33	18,78	27,83	12,39	22,88	33,95	14,34	26,77	39,75	20,79	39,46	58,68
1200	kg	8,78	15,64	23,12	10,95	19,99	29,65	13,15	24,39	36,20	15,23	28,55	42,41	22,14	42,13	62,69
1320	kg		17,03	25,20		21,82	32,36	14,46	26,66	39,58	16,76	31,23	46,41	24,35	46,16	68,71
1400	kg		18,02	26,72		23,10	34,32	15,23	28,22	41,97	17,66	33,08	49,21	25,70	48,92	72,86
1600	kg		20,34	30,18		26,14	38,85	17,40	32,00	47,60	20,18	37,54	55,87		55,63	82,88
1800	kg		22,83	33,88		29,36	43,64	19,39	35,93	53,47	22,51	42,16	62,77		62,50	93,15
2000	kg		25,15	37,33		32,40	48,17	21,30	39,71	59,09	24,76	46,62	69,42		69,21	103,17
2200	kg		27,47	40,79		35,43	52,72	23,20	43,48	64,72	27,00	51,08	76,09			
2400	kg		29,79	44,25		38,48		25,11	47,24		29,25	55,55				
2600	kg			47,70					51,02		31,50	60,00				
2800	kg			51,16					54,78			64,46				
3000	kg			54,62					58,56			68,92				
Typenprogramm			T6-HYGIENE centre-connection radiators													

The availability of any type of radiator, as well as range of sizes, is in accordance with the production programme, as stated in the price list.

HYGIENE COMPACT

Weights in kg for HYGIENE compact radiators

Height [mm]		300			400			500			600			900		
Length [mm]	Type	10	20	30	10	20	30	10	20	30	10	20	30	10	20	30
	Weight															
400	kg	3,29	5,55	8,41	4,01	6,99	10,57	4,73	8,45	12,75	5,42	9,83	14,82	7,70	14,34	21,56
520	kg	4,00	6,94	10,48	4,94	8,82	13,30	5,87	10,71	16,14	6,77	12,51	18,81	9,74	18,36	27,57
600	kg	4,48	7,87	11,87	5,55	10,03	15,11	6,64	12,23	18,38	7,67	14,29	21,48	11,09	21,05	31,58
720	kg	5,19	9,26	13,94	6,48	11,86	17,84	7,78	14,48	21,77	9,01	16,96	25,47	13,12	25,07	37,60
800	kg	5,66	10,18	15,32	7,09	13,07	19,66	8,54	15,99	24,01	9,91	18,75	28,13	14,48	27,76	41,61
920	kg	6,37	11,64	17,53	8,02	14,96	22,52	9,68	18,32	27,53	11,26	21,49	32,26	16,51	31,86	47,76
1000	kg	6,84	12,56	18,91	8,64	16,18	24,33	10,44	19,82	29,78	12,17	23,27	34,93	17,86	34,53	51,77
1120	kg	7,55	13,96	20,99	9,56	18,00	27,05	11,59	22,09	33,16	13,51	25,95	38,93	19,90	38,56	57,79
1200	kg	8,02	14,89	22,37	10,18	19,22	28,87	12,35	23,60	35,41	14,41	27,73	41,59	21,25	41,24	61,80
1320	kg		16,28	24,45		21,05	31,59	13,67	25,86	38,79	15,94	30,40	45,59	23,46	45,27	67,81
1400	kg		17,27	25,97		22,33	33,55	14,44	27,43	41,18	16,84	32,26	48,39	24,81	48,03	71,96
1600	kg		19,59	29,43		25,37	38,08	16,60	31,21	46,81	19,35	36,71	55,05		54,73	81,99
1800	kg		22,08	33,12		28,58	42,87	18,60	35,14	52,67	21,69	41,34	61,95		61,61	92,25
2000	kg		24,40	36,58		31,63	47,40	20,50	38,92	58,30	23,93	45,80	68,60		68,32	102,28
2200	kg		26,71	40,04		34,66	51,95	22,41	42,68	63,93	26,18	50,25	75,26			
2400	kg		29,04	43,50		37,70		24,32	46,45		28,43	54,72				
2600	kg			46,95					50,22		30,67	59,18				
2800	kg			50,41					53,99			63,64				
3000	kg			53,87					57,77			68,10				
Model range			HYGIENE COMPACT RADIATORS													

The availability of any type of radiator, as well as range of sizes, is in accordance with the production programme, as stated in the price list.

REPLACEMENT PANEL RADIATOR.

Heat emission
The specification was verified in accordance with DIN EN 442 at The Technical University, Stuttgart (Registration at WSP-Cert Product Certification Centre, Stuttgart), under the numbers:

Type 21 K-S	0447
Type 22 K	0448
Type 33 K	0449

and in accordance with OENORM (Austrian standard) EN 442 at the Technological Commercial Museum, Vienna.

Material
REPLACEMENT PANEL RADIATORS are made of cold-rolled sheet steel, in accordance with EN 442-1, with a stylish and robust fluting with ribs at 40 mm intervals.

Equipment
Each REPLACEMENT PANEL RADIATORS is equipped with wall brackets that are welded onto the back. The radiator types 21 K-S, 22 K and 33 K are equipped with a detachable top cover and two closed side panels. With every REPLACEMENT PANEL RADIATOR you get a fit-up aid, made of cardboard.

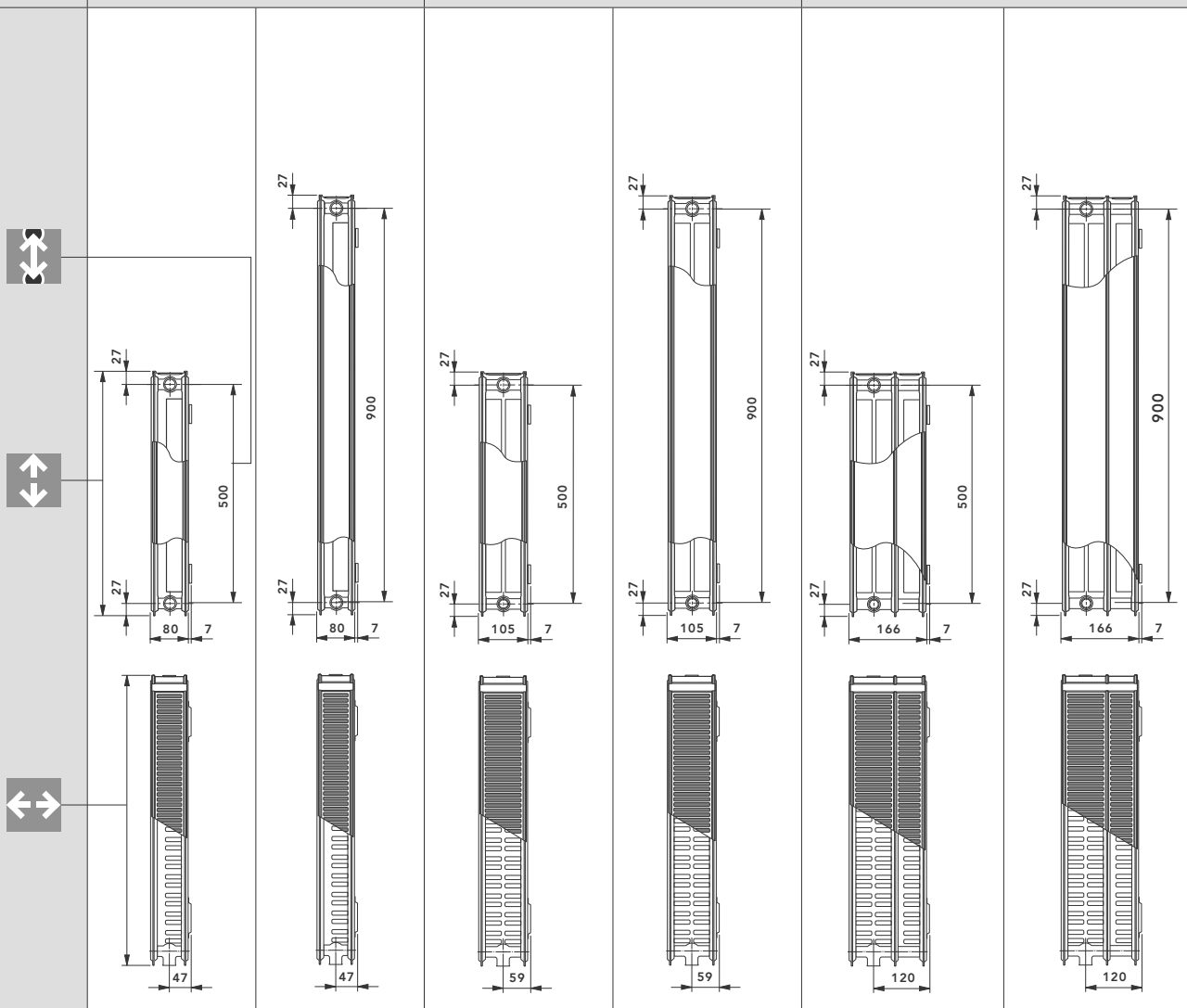
Paint coating
1. Undercoating in accordance with DIN 55900 part 1, stoved at 190° C.
2. Finish in accordance with DIN 55900 part 2, in standard colour 9016 (on request available in many standard colours and sanitary-ware colours at an extra charge), applied electrostatically in a modern powder coating facility. This especially resistant coating is stoved at an object temperature of 210° C.

Packaging
1. Cardboard packaging
2. Edge protection
3. Shrink foil

REPLACEMENT PANEL RADIATOR

Overview of models

Overview of models



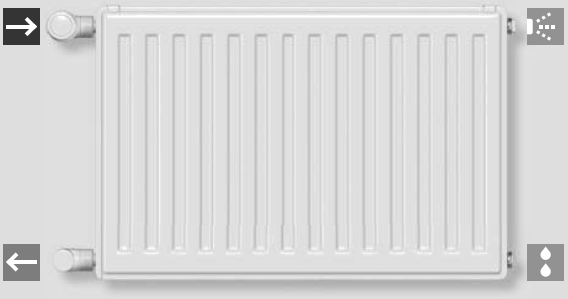
Type	21 K-S		22 K		33 K	
Height [mm]	554	954	554	954	554	954
Length [mm]	400 bis 3000	400 bis 3000	400 bis 3000	400 bis 3000	400 bis 3000	400 bis 3000
Bossspacing [mm]	500	900	500	900	500	900
Steps	any overall length starting with 400 and 600 mm available in steps of 200 mm					

Guarantee statements are available to download at **www.vogelundnoot.com/download**

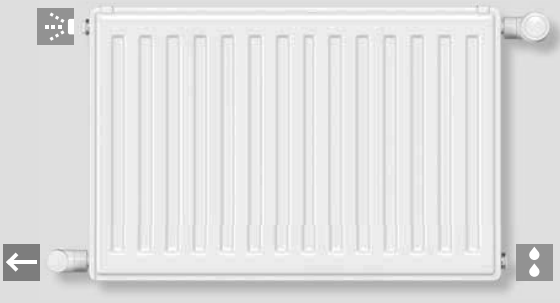
Connection modes - Double-pipe system

A: connection single-sided, on the right

B: connection single-sided, on the left

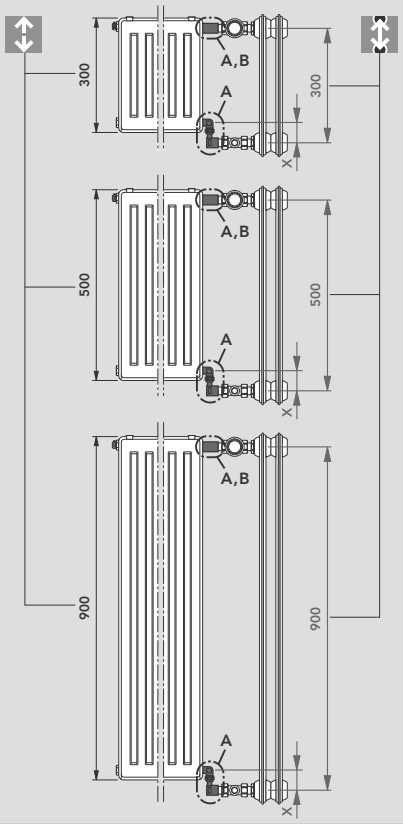


C: connection both-sides, on the right

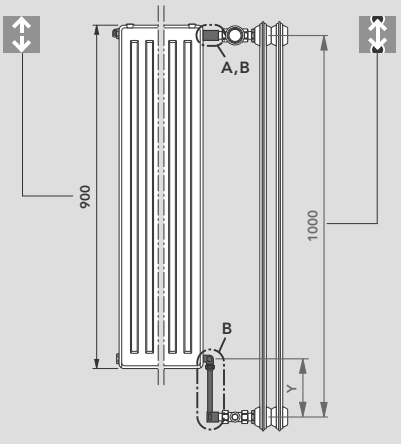


D: connection both-sides, on the left

Replacement adapter - Examples of using Replacement adapters



Boss spacing 200, 300, 500, 600 and 900



Non-standard distances are not at all a problem!

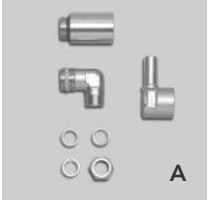
The Replacement adapter has been developed for non-standard boss spacing. Any distance problems are solved very easily by the use of this adapter.

Note:
The Replacement adapter comes with a fit-up aid, made of cardboard.

Boss spacing 1000

Replacement adapter
to replace radiators with a boss spacing of 200, 300, 500, 600 or 900 mm.

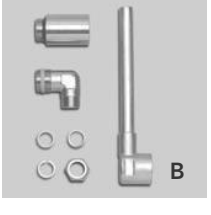
Measure **X**:
From 45 mm up to 58 mm continuously adjustable.



Artikel Nr.: AZ0MM090A0001000

Replacement adapter
to replace radiators with a boss spacing of 1000 mm.

Measure **Y**:
from 145 up to 158 mm continuously adjustable.



Artikel Nr.: AZ0MM100A0001000

By trimming the pipe by a maximum of 85 mm, the measure **Y** can be reduced (from 60 up to 73 mm).

REPLACEMENT PANEL RADIATOR

Outputs - temperature groups and weights

Weight in kg

Height [mm]		554			954		
Length [mm]	Type / Weight	21 K-S	22 K	33 K	21 K-S	22 K	33 K
400	kg	11,38	13,16	19,57	18,27	20,91	31,17
520	kg	14,46	16,78	24,98	23,36	26,83	40,02
600	kg	16,51	19,19	28,59	26,75	30,78	45,92
720	kg	19,58	22,81	34,01	31,84	36,70	54,78
800	kg	21,63	25,22	37,61	35,23	40,65	60,68
920	kg	24,77	28,92	43,16	40,38	46,65	69,67
1000	kg	26,82	31,34	46,77	43,77	50,60	75,57
1120	kg	29,89	34,95	52,18	48,86	56,52	84,43
1200	kg	31,94	37,36	55,79	52,25	60,47	90,33
1320	kg	35,01	40,98	61,21	57,33	66,39	99,18
1400	kg	37,13	43,48	64,95	60,79	70,42	105,22
1600	kg	42,25	49,51	73,98	69,27	80,29	119,98
1800	kg	47,54	55,73	83,24	77,91	90,34	134,98
2000	kg	52,67	61,76	92,26	86,39	100,21	149,73
2200	kg	57,79	67,79	101,28	94,87	110,08	164,49
2400	kg	62,91	73,82	110,30	103,35	119,94	179,25
2600	kg	68,04	79,85	119,33	111,82	129,81	194,01
2800	kg	73,16	85,88	128,35	120,30	139,68	208,76
3000	kg	78,28	91,91	137,37	128,78	149,55	223,52
Type programme		REPLACEMENT RADIATOR					

The availability of any type of radiator, as well as range of sizes, is in accordance with the production programme, as stated in the price list.

Side panels and top cover of REPLACEMENT PANEL RADIATORS are taken into consideration in the heat outputs

Radiator power data in watts, in accordance with **DIN EN 442**

Temperature pairings		90/70/20° C*						75/65/20° C*						70/55/20° C*						55/45/20° C*						45/40/20° C*					
Height [mm]		554			954			554			954			554			954			554			954			554			954		
Length [mm]	Type / Power	21 K-S	22 K	33 K	21 K-S	22 K	33 K	21 K-S	22 K	33 K	21 K-S	22 K	33 K	21 K-S	22 K	33 K	21 K-S	22 K	33 K	21 K-S	22 K	33 K	21 K-S	22 K	33 K	21 K-S	22 K	33 K	21 K-S	22 K	33 K
400	Watt	659	830	1161	996	1207	1683	518	650	911	781	945	1321	418	523	734	628	759	1064	264	329	461	395	475	670	181	224	315	269	323	457
520	Watt	856	1079	1509	1295	1570	2188	673	846	1184	1015	1228	1717	544	680	954	817	987	1383	343	427	600	513	618	870	235	291	409	349	420	594
600	Watt	988	1245	1741	1494	1811	2525	777	976	1366	1171	1417	1981	627	785	1100	943	1139	1596	396	493	692	592	713	1004	271	336	472	403	484	685
720	Watt	1186	1494	2090	1793	2173	3030	932	1171	1639	1405	1701	2377	753	942	1321	1131	1367	1915	476	592	831	711	856	1205	325	403	566	484	581	822
800	Watt	1317	1660	2322	1992	2415	3366	1036	1301	1822	1562	1890	2642	836	1047	1467	1257	1519	2128	528	657	923	789	951	1339	362	448	629	538	646	913
920	Watt	1515	1909	2670	2291	2777	3871	1191	1496	2095	1796	2173	3038	962	1204	1687	1446	1746	2447	608	756	1061	908	1093	1540	416	515	724	618	742	1050
1000	Watt	1647	2075	2902	2490	3018	4208	1295	1626	2277	1952	2362	3302	1045	1309	1834	1571	1898	2660	660	822	1154	987	1188	1674	452	559	787	672	807	1142
1120	Watt	1844	2324	3251	2789	3381	4713	1450	1821	2550	2186	2645	3698	1171	1466	2054	1760	2126	2979	740	920	1292	1105	1331	1875	506	627	881	753	904	1279
1200	Watt	1976	2489	3483	2988	3622	5050	1554	1951	2732	2342	2834	3962	1254	1570	2201	1885	2278	3129	793	986	1384	1184	1426	2009	542	671	944	806	968	1370
1320	Watt	2174	2738	3831	3287	3984	5555	1709	2146	3006	2577	3118	4359	1380	1727	2421	2074	2506	3511	872	1085	1523	1303	1568	2209	597	738	1038	887	1065	1507
1400	Watt	2306	2904	4063	3486	4226	5891	1813	2276	3188	2733	3307	4623	1463	1832	2568	2200	2658	3724	925	1150	1615	1382	1663	2343	633	783	1101	941	1130	1598
1600	Watt	2635	3319	4644	3984	4829	6733	2072	2602	3643	3123	3779	5283	1672	2094	2935	2514	3037	4256	1057	1315	1846	1579	1901	2678	723	895	1259	1075	1291	1827
1800	Watt	2964	3734	5224	4482	5433	7575	2331	2927	4099	3514	4252	5944	1881	2355	3301	2828	3417	4788	1189	1479	2077	1776	2139	3013	814	1007	1416	1210	1453	2055
2000	Watt	3294	4149	5805	4980	6037	8416	2590	3252	4554	3904	4724	6604	2091	2617	3668	3142	3796	5320	1321	1643	2307	1974	2376	3348	904	1119	1573	1344	1614	2283
2200	Watt	3623	4564	6385	5478	6641	9258	2849	3577	5009	4294	5196	7264	2300	2879	4035	3457	4176	5852	1453	1808	2538	2171	2614	3682	994	1231	1731	1479	1775	2512
2400	Watt	3952	4979	6966	5976	7244	10099	3108	3902	5465	4685	5669	7925	2509	3141	4402	3771	4556	6384	1585	1972	2769	2368	2852	4017	1085	1343	1888	1613	1937	2740
2600	Watt	4282	5394	7546	6474	7848	10941	3367	4228	5920	5075	6141	8585	2718	3402	4769	4085	4935	6916	1717	2136	3000	2566	3089	4352	1175	1454	2045	1747	2098	2968
2800	Watt	4611	5809	8127	6972	8452	11783	3626	4553	6376	5466	6614	9246	2927	3664	5135	4399	5315	7448	1849	2300	3230	2763	3327	4687	1266	1566	2203	1882	2259	3197
3000	Watt	4940	6224	8707	7470	9055	12624	3885	4878	6831	5856	7086	9906	3136	3926	5502	4714	5695	7980	1981	2465	3461	2961	3565	5022	1356	1678	2360	2016	2421	3425
Radiator-exponent n		1,318	1,336	1,331	1,335	1,345	1,330	1,318	1,336	1,331	1,335	1,345	1,330	1,318	1,336	1,331	1,335	1,345	1,330	1,318	1,336	1,331	1,335	1,345	1,330	1,318	1,336	1,331	1,335	1,345	1,330
Type programme		REPLACEMENT RADIATORS												* SUPPLY TEMPERATURE/RETURN TEMPERATURE/ROOM TEMPERATURE																	

The availability of any type of radiator, as well as range of sizes, is in accordance with the production programme, as stated in the price list.

T6-PLAN CENTRALLY CONNECTED RADIATOR.

Heat emission
The specification was verified in accordance with DIN EN 442 at The Technical University, Stuttgart (Registration at WSP-Cert Product Certification Centre, Stuttgart), under the numbers:

Type 11 PM	0680
Type 21 PM-S	0682
Type 22 PM	0683
Type 33 PM	0684

and in accordance with OENORM (Austrian standard) EN 442 at the Technological Commercial Museum, Vienna.

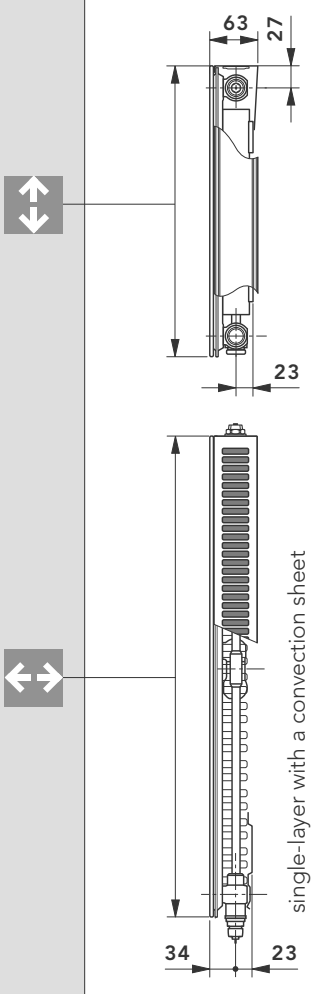
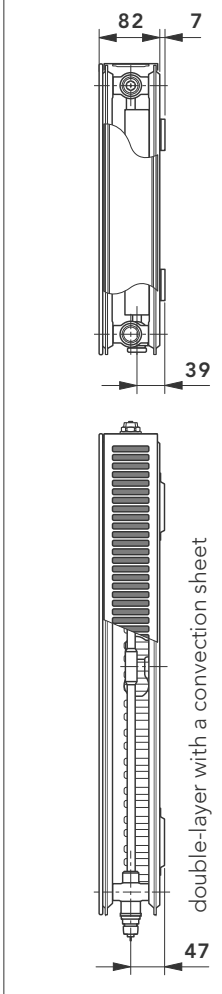
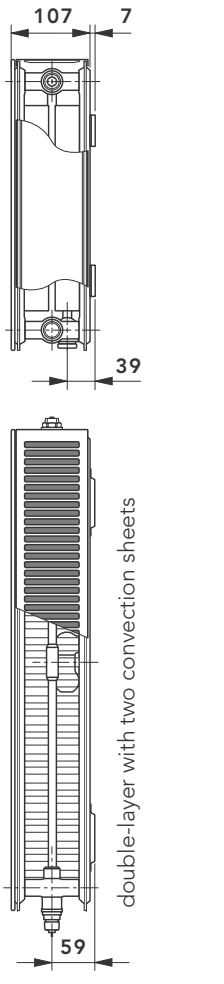
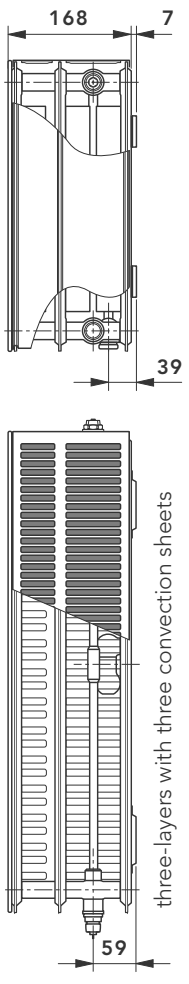
Material
T6-PLAN CENTRALLY CONNECTED RADIATORS are made of cold-rolled sheet steel, in accordance with EN 442-1, and a galvanised front panel (1mm thick).

Equipment
Each T6-PLAN CENTRAL CONNECTION RADIATOR is equipped with an integrated T-valve set, and suitable for double-pipe and single-pipe systems with a single-pipe manifold; it comes with a fitted valve top with a pre-set k_v-value, a protective cap and welded suspension brackets on the back. The drain plug and the pivoting special vent plug, as well as the dummy plug are fitted with seals. All types of radiator are equipped with a detachable top cover and two closed side panels.

Paint coating
1. Undercoating in accordance with DIN 55900 part 1, stoved at 190° C.
2. Finish in accordance with DIN 55900 part 2, in standard colour 9016 (on request available in many standard colours and sanitary-ware colours at an extra charge), applied electrostatically in a modern powder coating facility. This especially resistant coating is stoved at an object temperature of 210° C.

Packaging
1. Cardboard packaging
2. Edge protection
3. Shrink foil

Overview of models

Type	11 PM	21 PM-S	22 PM	33 PM
				

Type	11 PM					21 PM-S					22 PM					33 PM				
Height [mm]	300	400	500	600	900	300	400	500	600	900	300	400	500	600	900	300	400	500	600	900
Length [mm]	bis 2400		bis 2600		bis 2000	bis 2400		bis 3000		bis 2000	bis 3000				bis 2000	bis 3000		bis 2200		bis 1800
Steps	all overall length starting with 400 mm available in steps of 200 mm, additionally 520, 720, 920, 1120 and 1320 mm																			

Guarantee statements are available to download at **www.vogelundnoot.com/download**

Description and delivery equipment

The T6-PLAN Centrally connected radiator, with its welded-in set of T-shaped valves, sets new standards in the field of centre-connection technology. Beside its elegant appearance, the T6-PLAN Centrally connected radiator attracts attention because of its unique patented features, its all-purpose suitability and easy installation for the heating-installer, leaving aside a multitude of other striking advantages. Consequently the T6-PLAN Centrally connected radiator truly serves to solve your problems.

To round off all the advantages mentioned above, the versatility of the T6-PLAN Centrally connected radiator regarding style and colouring offers a wide scope for design.

The T6-PLAN Centrally connected radiator radiator is - with its welded in set of T-shaped valves - suitable for double-pipe installations as well as single-pipe installations, using a one-pipe manifold.

Additionally to the central connection from the bottom, the sophisticated design makes possible other connections known from compact radiators, such as the single-sided and two-sided connection. **The radiator is delivered ready for double-pipe installation, with a factory-adjusted k_v-setting, appropriate to the radiator output.**

For district heating installations with a big difference between water supply and return temperature, a valve unit with a stepless - and therefore precise - adjustment is available on request.

By using universal supply and return connections, commercially available pipes (external thread 3/4") made of copper, steel, plastic or alloy, can be connected; the corresponding accessories and the commercially obtainable shut-off valve have to be used.

The following thermostat heads can be directly fitted at the radiator: „RA 2000" and „RAW" by Danfoss, „VK" by Heimeier, „D" by Herz, „thera DA" by MNG, as well as „UNI XD" by Oventrop. The radiator will be delivered with a protective cap.

The operation parameters are specified with a positive operating pressure of 10 bar and an operating temperature of 110° C. With single-pipe installations, a cycle´s maximum radiator power of about 10 kW at DT=T1-T2=20 K (at T1 = 90 °C) has to be taken into account.

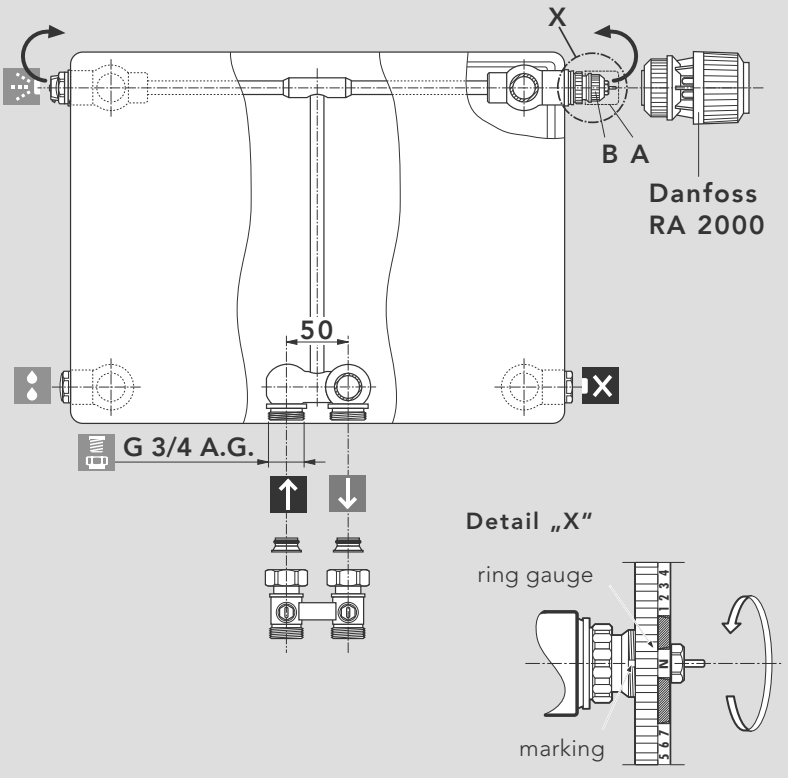
Consequently the T6-PLAN Centrally connected radiator is revolutionary in the field of the new generation of centrally-connected radiator technology.

Thus the T6-PLAN Centrally connected radiator has to be regarded as groundbreaking for the new generation of centrally-connected radiators. With this type of radiator - with its ideal functioning of the whole radiator-valve unit, its superb heating output, combined with the motivation to install thermostat heads, saving heating energy becomes evident.

Our valve radiators´ connections (external thread G 3⁄4) comply in construction and tolerance with the specifications, in accordance with DIN V 3838. If conically sealed drain cocks are used (single-pipe and double-pipe operation), where an adjustment of tolerance of distance to the centre is not possible, we must repudiate liability for any damage connected to this.

Therefore we recommend to use only flat sealed drain cocks, or drain cocks where an adjustment of tolerance of the distance to the centre is possible.

Double-pipe operation - Adjustment tips for built-in valve



Setting instructions:
VOGEL&NOOT valve radiators are factory-fitted for double-pipe installations. Each individual radiator is fitted with a pre-adjusted valve insert, appropriate to the radiator output. The pre-set k_v-value is also marked in colour on the front surface.

Please note:
Should customised adjustments be required, the pre-set kv-values can be altered as needed.
Swapping the right-hand side built-in valve to the left-hand side is no problem at all at any time.
Radiator are delivered with protective caps. After removing the protective cap (pos. A) the following thermostat heads can be fitted directly to the built-in valve (pos. B): **"RA 2000", "RAW" by Danfoss, "VK" by Heimeier, "D" by Herz, "thera DA" by MNG and "UNI XD" by Oventrop.**

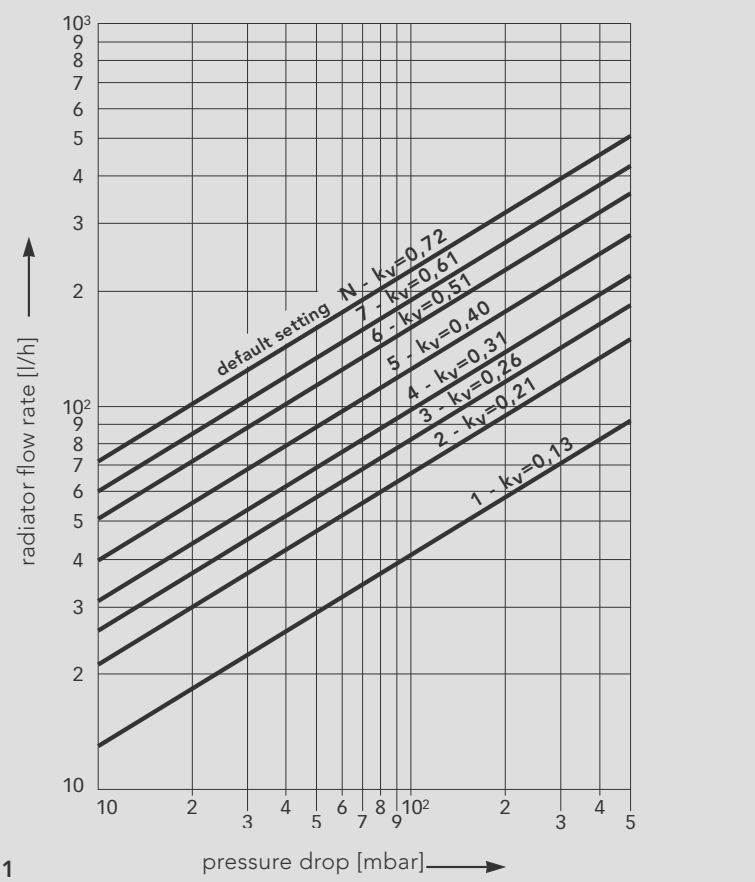
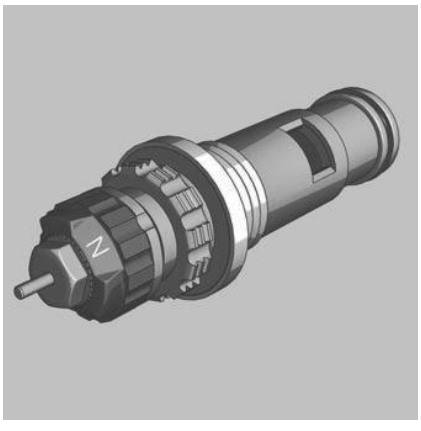


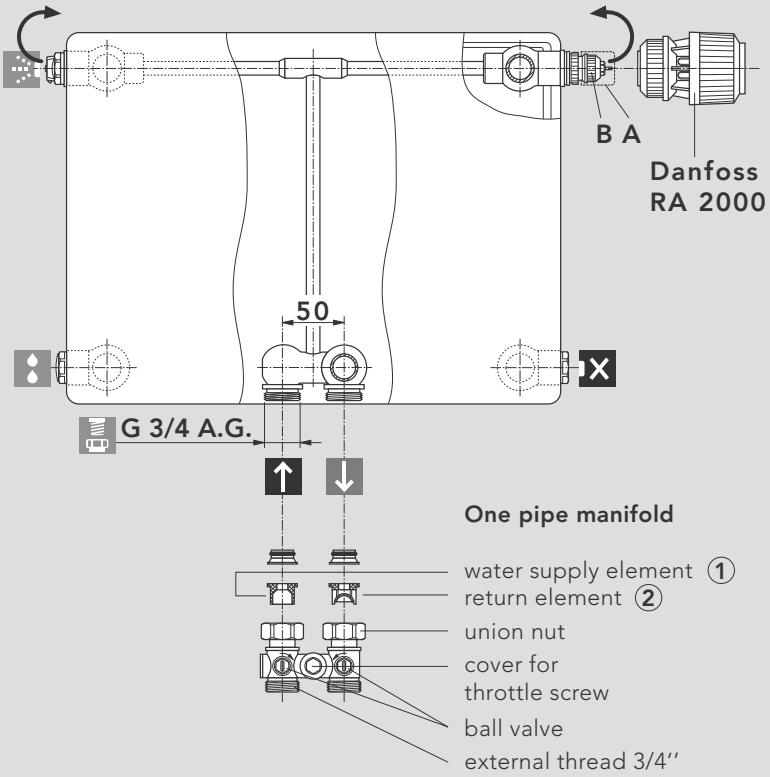
Chart 1
Pressure drop [mbar] – double-pipe operation with a proportional deviation of 2K.



k_v-value chart					
Pre-setting	1,1	3,9	5,2	6,5	N
kv-value up to	0,13	0,30	0,42	0,56	0,72
Colour of the adjustment ring	weiß	schwarz	grün	blau	rot

Of course it is also possible to change the pre-adjusted valve setting when the equipment is operating at pressure.

Single-pipe operation - Factory-adjusted built-in valve



In single-pipe operation, setting the built-in valve on N.

The radiator will be delivered with a protective cap. After removing the protective cap (item A) the following thermostat heads can be installed directly onto the built-in valve (item B): **„RA 2000" and „RAW" by Danfoss, „VK" by Heimeier, „theraDA" by MNG, as well as „UNI XD" by Oventrop.**

Caution:
During the installation take care that the return element ② has been installed at the water return, and the supply element ① at the water supply.

Changing the built-in valve from the right- to the left-hand side can easily be done at any time.

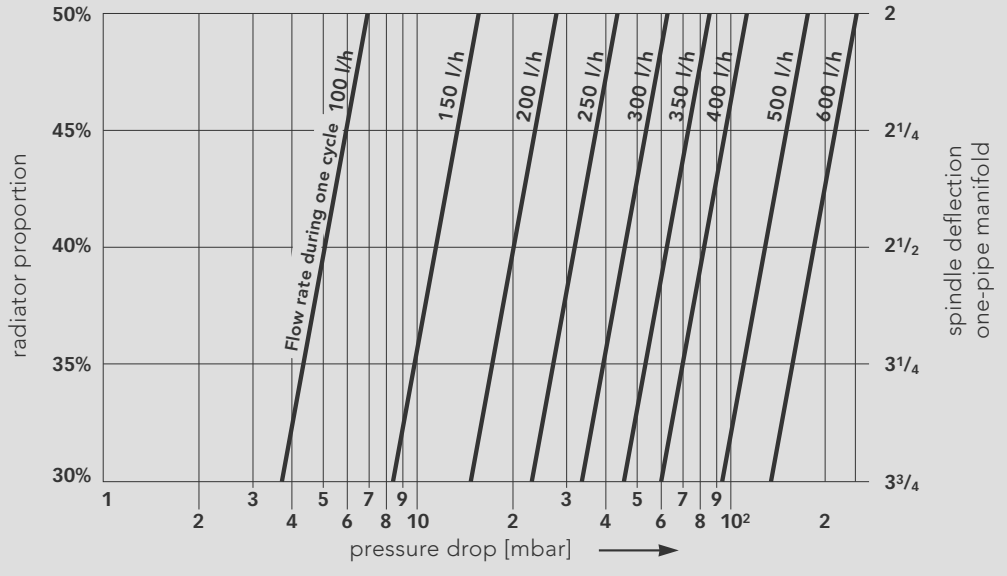


Chart 2
pressure drop [mbar] - single-pipe operation with a proportional deviation of 2K.

Default setting:

radiator proportion 30%: 3,75 revolutions *
radiator proportion 35%: 3,25 revolutions *
radiator proportion 40%: 2,50 revolutions *
radiator proportion 45%: 2,25 revolutions *
radiator proportion 50%: 2,00 revolutions *

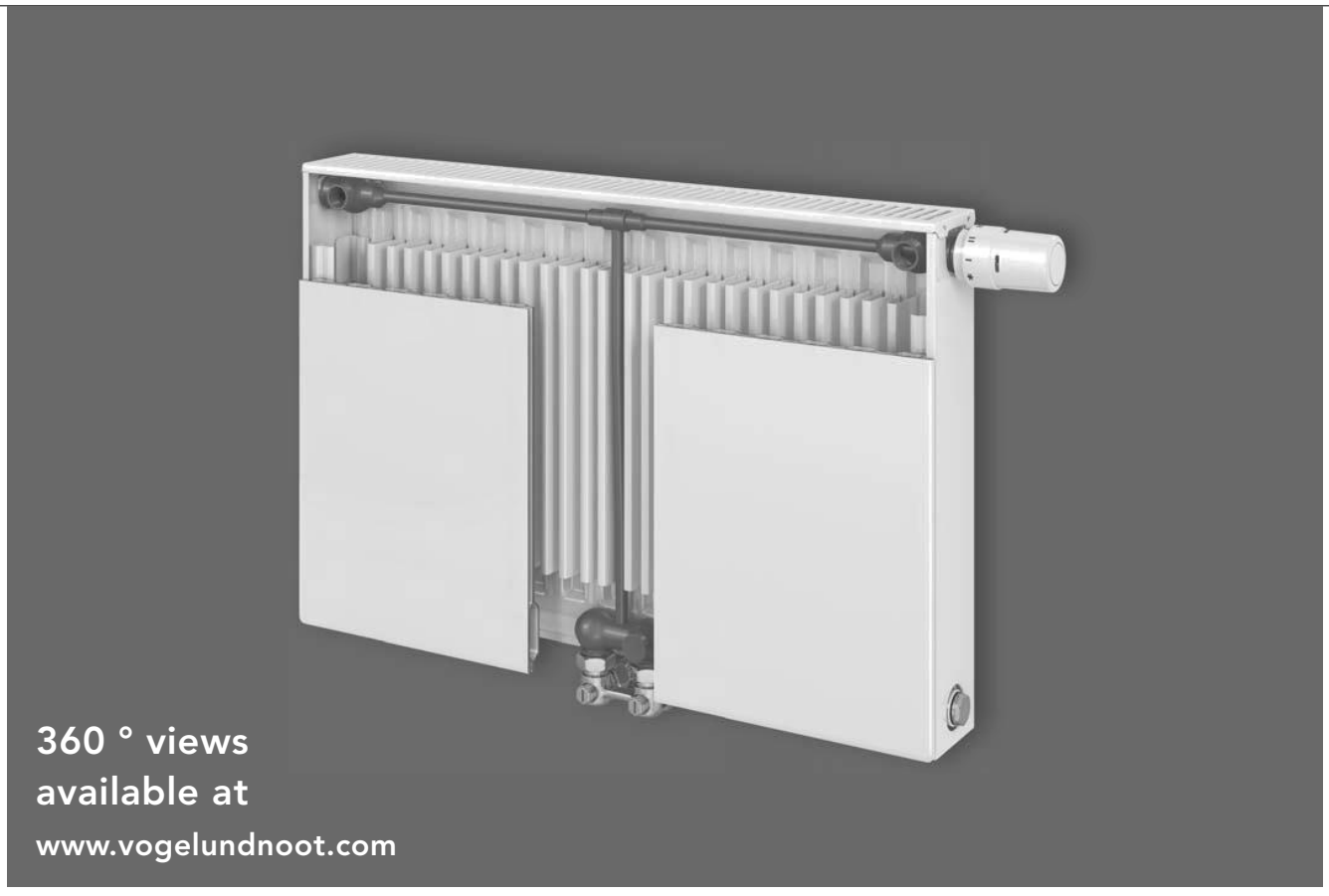
*...when starting, turn the bypass spindle of the one-pipe manifold **to the right** as far as it will go.

Of course it is also possible to change the pre-adjusted valve setting when the equipment is operating at pressure.

Please take into account the maximum power per cycle (regarding single-pipe installations) of about 10 kW
$\Delta T = T_1 - T_2 = 20$ K (at $T_1 = 90$ °C).

T6-PLAN CENTRALLY CONNECTED RADIATOR

Outputs - temperature group 90/70/20° C



90/70/20° C		Side panels and top cover of T6-PLAN Centrally connected radiators are taken into consideration in the heat outputs Radiator power data in watts, in accordance with **DIN EN 442** supply temperature **90** - return temperature **70** - room temperature **20° C**																			
Height [mm]		300				400				500				600				900			
Length [mm]	Type / Power	11 PM	21PM-S	22 PM	33 PM	11 PM	21PM-S	22 PM	33 PM	11 PM	21PM-S	22 PM	33 PM	11 PM	21PM-S	22 PM	33 PM	11 PM	21PM-S	22 PM	33 PM
400	Watt	270	399	544	796	336	503	681	994	398	595	774	1091	428	660	852	1233	611	901	1150	1612
520	Watt	352	518	707	1035	437	654	885	1293	518	773	1006	1419	556	858	1108	1603	794	1172	1495	2096
600	Watt	406	598	815	1194	504	755	1021	1492	598	892	1160	1637	642	990	1278	1850	916	1352	1725	2418
720	Watt	487	718	978	1433	605	906	1225	1790	717	1071	1392	1964	770	1188	1534	2220	1099	1622	2070	2902
800	Watt	541	798	1087	1592	672	1006	1362	1989	797	1190	1547	2182	856	1320	1704	2466	1222	1802	2300	3224
920	Watt	622	917	1250	1831	773	1157	1566	2287	916	1368	1779	2510	984	1518	1960	2836	1405	2073	2645	3708
1000	Watt	676	997	1359	1990	840	1258	1702	2486	996	1487	1934	2728	1070	1650	2130	3083	1527	2253	2875	4030
1120	Watt	757	1117	1522	2229	941	1409	1906	2784	1116	1665	2166	3055	1198	1848	2386	3453	1710	2523	3220	4514
1200	Watt	811	1196	1631	2388	1008	1510	2042	2983	1195	1784	2321	3274	1284	1980	2556	3700	1832	2704	3450	4836
1320	Watt	892	1316	1794	2627	1109	1661	2247	3282	1315	1963	2553	3601	1412	2178	2812	4070	2016	2974	3795	5320
1400	Watt	946	1396	1903	2786	1176	1761	2383	3480	1394	2082	2708	3819	1498	2310	2982	4316	2138	3154	4025	5642
1600	Watt	1082	1595	2174	3184	1344	2013	2723	3978	1594	2379	3094	4365	1712	2640	3408	4933	2443	3605	4600	6448
1800	Watt	1217	1795	2446	3582	1512	2264	3064	4475	1793	2677	3481	4910	1926	2970	3834	5549	2749	4055	5175	7254
2000	Watt	1352	1994	2718	3980	1680	2516	3404	4972	1992	2974	3868	5456	2140	3300	4260	6166	3054	4506	5750	
2200	Watt	1487	2193	2990	4378	1848	2768	3744	5469	2191	3271	4255	6002	2354	3630	4686	6783				
2400	Watt	1622	2393	3262	4776	2016	3019	4085		2390	3569	4642		2568	3960	5112					
2600	Watt			3533	5174			4425		2590	3866	5028		2782	4290	5538					
2800	Watt			3805	5572			4766			4164	5415			4620	5964					
3000	Watt			4077	5970			5106			4461	5802			4950	6390					
Radiatorexponent n		1,311	1,328	1,308	1,314	1,321	1,327	1,328	1,342	1,313	1,299	1,322	1,327	1,303	1,302	1,337	1,333	1,328	1,326	1,349	1,336
Type programme			T6-PLAN CENTRALLY CONNECTED RADIATOR																		

The availability of any type of radiator, as well as range of sizes, is in accordance with the production programme, as stated in the price list.

T6-PLAN CENTRALLY CONNECTED RADIATOR

Outputs - temperature groups 75/65/20° C and 70/55/20° C

75/65/20° C

Side panels and top cover of T6-PLAN Centrally connected radiators are taken into consideration in the heat outputs

Radiator power data in watts, in accordance with **DIN EN 442** supply temperature **75** - return temperature **65** - room temperature **20° C**

Height [mm]		300				400				500				600				900			
Length [mm]	Type / Power	11 PM	21PM-S	22 PM	33 PM	11 PM	21PM-S	22 PM	33 PM	11 PM	21PM-S	22 PM	33 PM	11 PM	21PM-S	22 PM	33 PM	11 PM	21PM-S	22 PM	33 PM
400	Watt	213	313	428	626	264	395	534	778	314	469	608	857	338	520	668	967	480	708	899	1264
520	Watt	277	407	557	814	343	514	695	1012	408	610	790	1114	439	677	868	1257	623	920	1169	1643
600	Watt	319	470	643	940	396	593	802	1168	470	704	912	1285	506	781	1001	1451	719	1061	1349	1895
720	Watt	383	564	771	1128	475	711	962	1401	564	845	1094	1542	608	937	1202	1741	863	1274	1619	2274
800	Watt	426	626	857	1253	528	790	1069	1557	627	938	1216	1714	675	1041	1335	1934	959	1415	1798	2527
920	Watt	489	720	985	1441	607	909	1229	1790	721	1079	1398	1971	776	1197	1535	2225	1103	1627	2068	2906
1000	Watt	532	783	1071	1566	660	988	1336	1946	784	1173	1520	2142	844	1301	1669	2418	1199	1769	2248	3159
1120	Watt	596	877	1200	1754	739	1107	1496	2180	878	1314	1702	2399	945	1457	1869	2708	1343	1981	2518	3538
1200	Watt	638	940	1285	1879	792	1186	1603	2335	941	1408	1824	2570	1013	1561	2003	2902	1439	2123	2698	3791
1320	Watt	702	1034	1414	2067	871	1304	1764	2569	1035	1548	2006	2827	1114	1717	2203	3192	1583	2335	2967	4170
1400	Watt	745	1096	1499	2192	924	1383	1870	2724	1098	1642	2128	2999	1182	1821	2337	3385	1679	2477	3147	4423
1600	Watt	851	1253	1714	2506	1056	1581	2138	3114	1254	1877	2432	3427	1350	2082	2670	3869	1918	2830	3597	5054
1800	Watt	958	1409	1928	2819	1188	1778	2405	3503	1411	2111	2736	3856	1519	2342	3004	4352	2158	3184	4046	5686
2000	Watt	1064	1566	2142	3132	1320	1976	2672	3892	1568	2346	3040	4284	1688	2602	3338	4836	2398	3538	4496	
2200	Watt	1170	1723	2356	3445	1452	2174	2939	4281	1725	2581	3344	4712	1857	2862	3672	5320				
2400	Watt	1277	1879	2570	3758	1584	2371	3206		1882	2815	3648		2026	3122	4006					
2600	Watt			2785	4072			3474		2038	3050	3952		2194	3383	4339					
2800	Watt			2999	4385			3741			3284	4256			3643	4673					
3000	Watt			3213	4698			4008			3519	4560			3903	5007					
Radiatorexponent n		1,311	1,328	1,308	1,314	1,321	1,327	1,328	1,342	1,313	1,299	1,322	1,327	1,303	1,302	1,337	1,333	1,328	1,326	1,349	1,336
Type programme			T6-PLAN CENTRALLY CONNECTED RADIATOR																		

The availability of any type of radiator, as well as range of sizes, is in accordance with the production programme, as stated in the price list.

70/55/20° C

Side panels and top cover of T6-PLAN Centrally connected radiators are taken into consideration in the heat outputs

Radiator power data in watts, in accordance with **DIN EN 442** supply temperature **70** - return temperature **55** - room temperature **20° C**

Height [mm]		300				400				500				600				900			
Length [mm]	Type / Power	11 PM	21PM-S	22 PM	33 PM	11 PM	21PM-S	22 PM	33 PM	11 PM	21PM-S	22 PM	33 PM	11 PM	21PM-S	22 PM	33 PM	11 PM	21PM-S	22 PM	33 PM
400	Watt	172	252	346	506	213	318	431	626	253	380	490	690	273	421	537	779	386	570	722	1017
520	Watt	224	328	450	658	277	414	560	814	329	494	638	898	355	548	698	1012	502	742	939	1322
600	Watt	258	379	520	759	319	478	646	939	380	570	736	1036	410	632	806	1168	580	856	1084	1525
720	Watt	310	454	624	911	383	573	775	1127	456	684	883	1243	492	758	967	1402	696	1027	1300	1830
800	Watt	344	505	693	1012	426	637	862	1252	506	760	981	1381	546	842	1074	1558	773	1141	1445	2034
920	Watt	396	581	797	1164	489	732	991	1440	582	874	1128	1588	628	969	1236	1791	889	1312	1662	2339
1000	Watt	430	631	866	1265	532	796	1077	1565	633	950	1226	1726	683	1053	1343	1947	966	1426	1806	2542
1120	Watt	482	707	970	1417	596	892	1206	1753	709	1064	1373	1933	765	1179	1504	2181	1082	1597	2023	2847
1200	Watt	516	757	1039	1518	638	955	1292	1878	760	1140	1471	2071	820	1264	1612	2336	1159	1711	2167	3050
1320	Watt	568	833	1143	1670	702	1051	1422	2066	836	1254	1618	2278	902	1390	1773	2570	1275	1882	2384	3355
1400	Watt	602	883	1212	1771	745	1114	1508	2191	886	1330	1716	2416	956	1474	1880	2726	1352	1996	2528	3559
1600	Watt	688	1010	1386	2024	851	1274	1723	2504	1013	1520	1962	2762	1093	1685	2149	3115	1546	2282	2890	4067
1800	Watt	774	1136	1559	2277	958	1433	1939	2817	1139	1710	2207	3107	1229	1895	2417	3505	1739	2567	3251	4576
2000	Watt	860	1262	1732	2530	1064	1592	2154	3130	1266	1900	2452	3452	1366	2106	2686	3894	1932	2852	3612	
2200	Watt	946	1388	1905	2783	1170	1751	2369	3443	1393	2090	2697	3797	1503	2317	2955	4283				
2400	Watt	1032	1514	2078	3036	1277	1910	2585		1519	2280	2942		1639	2527	3223					
2600	Watt			2252	3289			2800		1646	2470	3188		1776	2738	3492					
2800	Watt			2425	3542			3016			2660	3433			2948	3760					
3000	Watt			2598	3795			3231			2850	3678			3159	4029					
Radiatorexponent n		1,311	1,328	1,308	1,314	1,321	1,327	1,328	1,342	1,313	1,299	1,322	1,327	1,303	1,302	1,337	1,333	1,328	1,326	1,349	1,336
Type programme			T6-PLAN CENTRALLY CONNECTED RADIATOR																		

The availability of any type of radiator, as well as range of sizes, is in accordance with the production programme, as stated in the price list.

T6-PLAN CENTRALLY CONNECTED RADIATOR

Outputs - temperature groups 55/45/20° C and 45/40/20° C

55/45/20° C

Side panels and top cover of T6-PLAN Centrally connected radiators are taken into consideration in the heat outputs

Radiator power data in watts, in accordance with **DIN EN 442** supply temperature **55** - return temperature **45** - room temperature **20° C**

Height [mm]		300				400				500				600				900			
Length [mm]	Type / Power	11 PM	21PM-S	22 PM	33 PM	11 PM	21PM-S	22 PM	33 PM	11 PM	21PM-S	22 PM	33 PM	11 PM	21PM-S	22 PM	33 PM	11 PM	21PM-S	22 PM	33 PM
400	Watt	109	159	220	320	134	201	271	392	160	242	310	435	174	268	337	490	244	359	452	638
520	Watt	141	206	285	417	175	261	353	510	209	314	402	565	226	348	438	636	317	467	587	830
600	Watt	163	238	329	481	202	301	407	588	241	362	464	652	260	401	506	734	365	539	677	958
720	Watt	196	286	395	577	242	361	488	706	289	435	557	783	312	482	607	881	438	647	813	1149
800	Watt	218	318	439	641	269	402	542	784	321	483	619	870	347	535	674	979	487	718	903	1277
920	Watt	250	365	505	737	309	462	624	902	369	556	712	1000	399	615	776	1126	560	826	1039	1468
1000	Watt	272	397	549	801	336	502	678	980	401	604	774	1087	434	669	843	1224	609	898	1129	1596
1120	Watt	305	445	615	897	376	562	759	1098	449	676	867	1217	486	749	944	1371	682	1006	1264	1788
1200	Watt	326	476	659	961	403	602	814	1176	481	725	929	1304	521	803	1012	1469	731	1078	1355	1915
1320	Watt	359	524	725	1057	444	663	895	1294	529	797	1022	1435	573	883	1113	1616	804	1185	1490	2107
1400	Watt	381	556	769	1121	470	703	949	1372	561	846	1084	1522	608	937	1180	1714	853	1257	1581	2234
1600	Watt	435	635	878	1282	538	803	1085	1568	642	966	1238	1739	694	1070	1349	1958	974	1437	1806	2554
1800	Watt	490	715	988	1442	605	904	1220	1764	722	1087	1393	1957	781	1204	1517	2203	1096	1616	2032	2873
2000	Watt	544	794	1098	1602	672	1004	1356	1960	802	1208	1548	2174	868	1338	1686	2448	1218	1796	2258	
2200	Watt	598	873	1208	1762	739	1104	1492	2156	882	1329	1703	2391	955	1472	1855	2693				
2400	Watt	653	953	1318	1922	806	1205	1627		962	1450	1858		1042	1606	2023					
2600	Watt			1427	2083			1763		1043	1570	2012		1128	1739	2192					
2800	Watt			1537	2243			1898			1691	2167			1873	2360					
3000	Watt			1647	2403			2034			1812	2322			2007	2529					
Radiatorexponent n		1,311	1,328	1,308	1,314	1,321	1,327	1,328	1,342	1,313	1,299	1,322	1,327	1,303	1,302	1,337	1,333	1,328	1,326	1,349	1,336
Type programme			T6-PLAN CENTRALLY CONNECTED RADIATOR																		

The availability of any type of radiator, as well as range of sizes, is in accordance with the production programme, as stated in the price list.

45/40/20° C

Side panels and top cover of T6-PLAN Centrally connected radiators are taken into consideration in the heat outputs

Radiator power data in watts, in accordance with **DIN EN 442** supply temperature **45** - return temperature **40** - room temperature **20° C**

Height [mm]		300				400				500				600				900			
Length [mm]	Type / Power	11 PM	21PM-S	22 PM	33 PM	11 PM	21PM-S	22 PM	33 PM	11 PM	21PM-S	22 PM	33 PM	11 PM	21PM-S	22 PM	33 PM	11 PM	21PM-S	22 PM	33 PM
400	Watt	75	108	151	220	92	137	185	266	110	166	212	297	119	184	230	334	166	246	306	435
520	Watt	97	141	196	285	120	178	241	346	143	216	275	386	155	239	298	434	216	319	398	565
600	Watt	112	163	226	329	138	206	278	400	165	250	317	445	179	276	344	500	249	368	460	652
720	Watt	135	195	271	395	166	247	333	480	198	300	381	534	215	331	413	600	299	442	552	783
800	Watt	150	217	302	439	184	274	370	533	220	333	423	594	238	368	459	667	332	491	613	870
920	Watt	172	249	347	505	212	316	426	613	253	383	487	683	274	423	528	767	382	565	705	1000
1000	Watt	187	271	377	549	230	343	463	666	275	416	529	742	298	460	574	834	415	614	766	1087
1120	Watt	209	304	422	615	258	384	519	746	308	466	592	831	334	515	643	934	465	688	858	1217
1200	Watt	224	325	452	659	276	412	556	799	330	499	635	890	358	552	689	1001	498	737	919	1304
1320	Watt	247	358	498	725	304	453	611	879	363	549	698	979	393	607	758	1101	548	810	1011	1435
1400	Watt	262	379	528	769	322	480	648	932	385	582	741	1039	417	644	804	1168	581	860	1072	1522
1600	Watt	299	434	603	878	368	549	741	1066	440	666	846	1187	477	736	918	1334	664	982	1226	1739
1800	Watt	337	488	679	988	414	617	833	1199	495	749	952	1336	536	828	1033	1501	747	1105	1379	1957
2000	Watt	374	542	754	1098	460	686	926	1332	550	832	1058	1484	596	920	1148	1668	830	1228	1532	
2200	Watt	411	596	829	1208	506	755	1019	1465	605	915	1164	1632	656	1012	1263	1835				
2400	Watt	449	650	905	1318	552	823	1111		660	998	1270		715	1104	1378					
2600	Watt			980	1427			1204		715	1082	1375		775	1196	1492					
2800	Watt			1056	1537			1296			1165	1481			1288	1607					
3000	Watt			1131	1647			1389			1248	1587			1380	1722					
Radiatorexponent n		1,311	1,328	1,308	1,314	1,321	1,327	1,328	1,342	1,313	1,299	1,322	1,327	1,303	1,302	1,337	1,333	1,328	1,326	1,349	1,336
Type programme			T6-PLAN CENTRALLY CONNECTED RADIATOR																		

The availability of any type of radiator, as well as range of sizes, is in accordance with the production programme, as stated in the price list.

T6-PLAN CENTRALLY CONNECTED RADIATOR

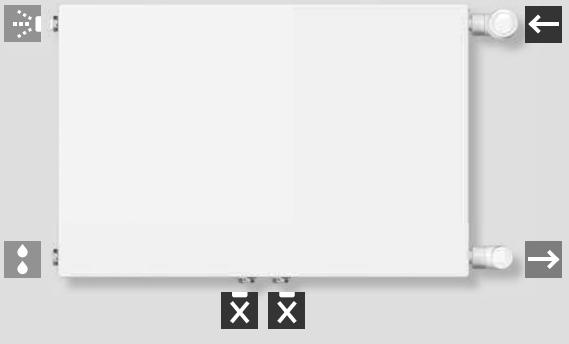
Weights / Connection modes - Double-pipe system

T6-PLAN		Weight in kg of T6-PLAN CENTRALLY CONNECTED RADIATORs																			
Height [mm]		300				400				500				600				900			
Length [mm]	Type	11 PM	21PM-S	22 PM	33 PM	11 PM	21PM-S	22 PM	33 PM	11 PM	21PM-S	22 PM	33 PM	11 PM	21PM-S	22 PM	33 PM	11 PM	21PM-S	22 PM	33 PM
	Weight																				
400	kg	6,81	8,89	10,08	14,07	8,59	11,29	13,01	18,25	9,79	13,22	14,98	20,98	10,93	15,07	16,87	23,59	15,38	21,83	24,47	34,36
520	kg	8,28	11,01	12,56	17,62	10,58	14,14	16,40	23,10	12,10	16,61	18,92	26,60	13,56	18,99	21,33	29,94	19,31	27,72	31,20	43,93
600	kg	9,27	12,43	14,22	19,98	11,90	16,04	18,67	26,34	13,64	18,88	21,54	30,34	15,31	21,61	24,31	34,17	21,93	31,64	35,68	50,30
720	kg	10,75	14,55	16,71	23,53	13,88	18,89	22,06	31,20	15,95	22,28	25,49	35,96	17,93	25,53	28,77	40,52	25,86	37,53	42,40	59,87
800	kg	11,73	15,97	18,36	25,89	15,21	20,79	24,32	34,43	17,49	24,54	28,11	39,71	19,69	28,14	31,75	44,75	28,48	41,46	46,88	66,24
920	kg	13,20	18,16	20,93	29,57	17,19	23,70	27,80	39,42	19,80	28,00	32,14	45,46	22,31	32,12	36,30	51,23	32,40	47,41	53,69	75,94
1000	kg	14,19	19,57	22,59	31,94	18,51	25,60	30,06	42,66	21,34	30,27	34,77	49,21	24,06	34,74	39,28	55,47	35,03	51,34	58,17	82,32
1120	kg	15,66	21,69	25,07	35,49	20,50	28,45	33,46	47,52	23,66	33,66	38,71	54,83	26,69	38,66	43,74	61,81	38,95	57,23	64,90	91,89
1200	kg	16,65	23,11	26,73	37,85	21,82	30,35	35,72	50,75	25,20	35,93	41,33	58,57	28,44	41,27	46,72	66,04	41,57	61,16	69,38	98,27
1320	kg	18,37	25,23	29,21	41,40	24,11	33,20	39,11	55,61	27,81	39,32	45,27	64,19	31,37	45,19	51,18	72,39	45,81	67,04	76,10	107,83
1400	kg	19,36	26,71	30,95	43,90	25,43	35,17	41,46	58,98	29,35	41,65	47,99	68,07	33,12	47,87	54,24	76,76	48,43	71,04	80,67	114,34
1600	kg	21,82	30,25	35,09	49,81	28,74	39,92	47,12	67,08	33,20	47,32	54,56	77,44	37,50	54,40	61,68	87,34	54,97	80,85	91,87	130,29
1800	kg	24,28	33,96	39,42	55,96	32,05	44,84	52,97	75,41	37,06	53,15	61,32	87,04	41,88	61,10	69,31	98,15	61,52	90,84	103,27	146,47
2000	kg	26,74	37,50	43,56	61,87	35,35	49,59	58,62	83,50	40,91	58,81	67,88	96,41	46,26	67,64	76,75	108,73	68,07	100,65	114,47	
2200	kg	29,20	41,04	47,70	67,78	38,66	54,34	64,28	91,59	44,76	64,47	74,45	105,77	50,64	74,17	84,19	119,31				
2400	kg	32,16	44,58	51,84	73,69	42,58	59,09	69,93		49,22	70,13	81,02		55,62	80,70	91,63					
2600	kg			55,98	79,60			75,59		53,08	75,79	87,59		60,00	87,24	99,07					
2800	kg			60,12	85,51			81,25			81,45	94,16			93,77	106,51					
3000	kg			64,26	91,42			86,90			87,11	100,72			100,30	113,95					
Type programme		T6-PLAN CENTRALLY CONNECTED RADIATOR																			

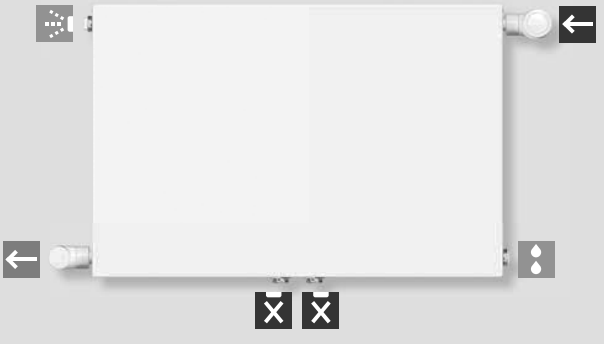
The availability of any type of radiator, as well as range of sizes, is in accordance with the production programme, as stated in the price list.

Connection modes - Double-pipe system

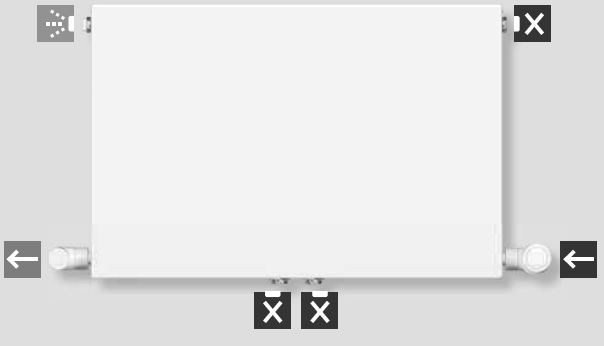
A: Single-sided connection



B: Connection both sides



C: Connection on top **Warning:** Lower performance



Caution: When using the T6-PLAN CENTRALLY CONNECTED RADIATOR as a **compact radiator**, the 3/4" screwing caps made of plastic have to be replaced by nickel-plated brass caps (accessory). Available under the item number: AZ0PL000C0002000. Additionally the plastic part of the special vent plug has to be removed.

T6-PLAN HYGIENE CENTRALLY CONNECTED RADIATOR.

T6 PLAN HYGIENE

Materials
T6 PLANE HYGIENE CENTRAL CONNECTION RADIATORS
are made of cold-rolled sheet steel, in acc. with EN 442-1
and equipped with a zinc-plated front panel 1mm thick.

Equipment
Each T6 PLANE HYGIENE CENTRAL CONNECTION RADIATOR
is equipped with a built-in T-shaped valve set suitable for two-pipe systems and single-pipe systems using a one-pipe manifold; equipped with a fitted valve bonnet with kv pre-setting including protection cap, and suspension brackets welded onto the back, including drain plug and pivotable special vent plug as well as a dummy plug, all of them sealed.

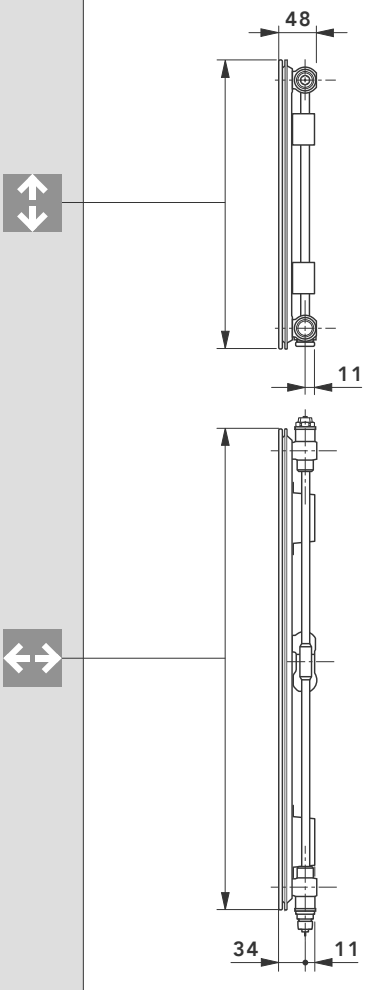
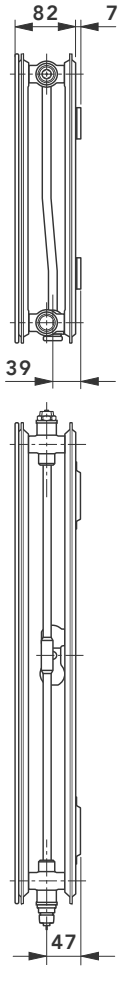
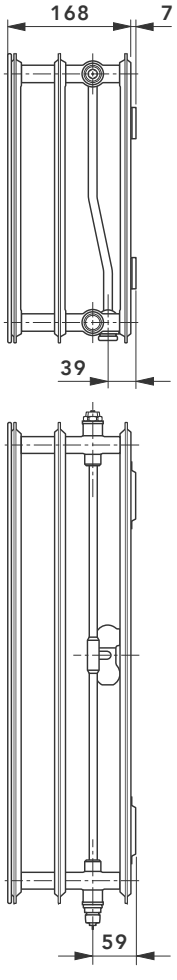
Painting
1. Primer coat, in acc. with DIN 55900, part 1, stoved at 190°C.
2. Electrostatic finish, in acc. with DIN 55900, part 2, in RAL 9016 (on request and against a surcharge available in many RAL and Sanitary Ware colours) in a state-of-the-art powder coating plant. The especial y robust coating is stoved at an object temperature of 210 °C.

Packaging
1. Cardboard
2. Edge protection
3. Shrink foil

T6-PLAN HYGIENE CENTRALLY CONNECTED RADIATOR

Overview

Overview of models

Type	10 PM	20 PM	30 PM
			
	single-layer	double-layer	triple-layer

Type	10 PM					20 PM					30 PM				
Height [mm]	300	400	500	600	900	300	400	500	600	900	300	400	500	600	900
Length [mm]	bis 1200		bis 2400	bis 2600	bis 1400	bis 2400		bis 3000		bis 2000	bis 3000		bis 2200		bis 1800
Steps	any overall length starting with 400 mm available in steps of 200 mm; additional 520, 720, 920, 1120 and 1320 mm														

Two-pipe system, One-pipe system, connection types

Attention: for technical information about the connection settings, please see the relevant chapters in PLANE T6 CENTRAL CONNECTION RADIATOR (pages 53 – 54).

EN ISO 9001

55 45 DIE *neue* WÄRME

Guarantee statements are available to download at **www.vogelundnoot.com/download**

T6-PLAN HYGIENE CENTRALLY CONNECTED RADIATOR

Outputs - temperature group 90/70/20° C

90/70/20° C		Output data in watts Feed temperature **90** - return temperature **70** - room temperature **20** °C														
Height [mm]		300			400			500			600			900		
Length [mm]	Type	10 PM	20 PM	30 PM	10 PM	20 PM	30 PM	10 PM	20 PM	30 PM	10 PM	20 PM	30 PM	10 PM	20 PM	30 PM
	Power															
400	Watt	156	282	420	199	352	519	239	419	612	276	483	703	375	664	967
520	Watt	203	367	546	259	458	674	311	545	796	358	627	914	488	863	1257
600	Watt	234	423	630	299	528	778	359	629	918	413	724	1055	563	996	1451
720	Watt	281	507	756	359	634	933	430	754	1102	496	869	1266	676	1195	1741
800	Watt	313	564	840	398	704	1037	478	838	1225	551	965	1406	751	1328	1934
920	Watt	359	648	966	458	810	1193	550	964	1408	634	1110	1617	864	1527	2225
1000	Watt	391	705	1050	498	880	1296	598	1048	1531	689	1206	1758	939	1659	2418
1120	Watt	438	789	1176	558	986	1452	669	1173	1714	772	1351	1969	1051	1859	2708
1200	Watt	469	846	1260	598	1056	1556	717	1257	1837	827	1448	2109	1126	1991	2902
1320	Watt	516	930	1386	657	1162	1711	789	1383	2021	910	1592	2320	1239	2190	3192
1400	Watt	547	987	1470	697	1232	1815	837	1467	2143	965	1689	2461	1314	2323	3385
1600	Watt	625	1128	1680	797	1408	2074	956	1676	2449	1103	1930	2813	1502	2655	3869
1800	Watt	703	1269	1890	897	1584	2334	1076	1886	2755	1240	2171	3164	1690	2987	4352
2000	Watt	781	1410	2100	996	1760	2593	1195	2095	3062	1378	2413	3516	1877	3319	4836
2200	Watt	859	1551	2310	1096	1936	2852	1315	2305	3368	1516	2654	3867	2065	3651	5320
2400	Watt	938	1692	2520	1195	2112	3111	1434	2514	3674	1654	2895	4219	2253	3983	5803
2600	Watt	1016	1833	2730	1295	2288	3371	1554	2724	3980	1792	3136	4570	2441	4314	6287
2800	Watt	1094	1974	2940	1395	2464	3630	1673	2933	4286	1929	3378	4922	2628	4646	6770
3000	Watt	1172	2115	3150	1494	2640	3889	1793	3143	4592	2067	3619	5274	2816	4978	7254
Radiator exponent n		1,2685	1,2715	1,2628	1,2579	1,2709	1,2672	1,2473	1,2702	1,2716	1,2367	1,2696	1,2760	1,2603	1,2759	1,2964
Type programme			T6-PLAN HYGIENE CENTRALLY CONNECTED RADIATOR													

The availability of any type of radiator, as well as range of sizes, is in accordance with the production programme, as stated in the price list.

T6-PLAN HYGIENE CENTRALLY CONNECTED RADIATOR

Outputs - temperature groups 75/65/20° C and 70/55/20° C

75/65/20° C

Output data in watts Feed temperature **75** - return temperature **65** - room temperature **20** °C

Height [mm]		300			400			500			600			900		
Length [mm]	Type / Power	10 PM	20 PM	30 PM	10 PM	20 PM	30 PM	10 PM	20 PM	30 PM	10 PM	20 PM	30 PM	10 PM	20 PM	30 PM
400	Watt	124	224	334	158	279	412	190	332	486	220	383	557	298	526	764
520	Watt	161	291	434	206	363	535	248	432	631	286	498	724	388	684	993
600	Watt	186	335	500	238	419	617	286	499	728	330	574	836	448	789	1145
720	Watt	223	402	600	285	503	741	343	598	874	396	689	1003	537	947	1374
800	Watt	248	447	667	317	558	823	381	665	971	440	766	1114	597	1052	1527
920	Watt	285	514	767	364	642	947	438	765	1117	506	880	1282	686	1210	1756
1000	Watt	310	559	834	396	698	1029	476	831	1214	550	957	1393	746	1315	1909
1120	Watt	347	626	934	444	782	1152	533	931	1360	616	1072	1560	836	1473	2138
1200	Watt	372	671	1001	475	838	1235	571	997	1457	660	1148	1672	895	1578	2291
1320	Watt	409	738	1101	523	921	1358	628	1097	1602	726	1263	1839	985	1736	2520
1400	Watt	434	783	1168	554	977	1441	666	1163	1700	770	1340	1950	1044	1841	2673
1600	Watt	496	894	1334	634	1117	1646	762	1330	1942	880	1531	2229	1194	2104	3054
1800	Watt	558	1006	1501	713	1256	1852	857	1496	2185	990	1723	2507	1343	2367	3436
2000	Watt	620	1118	1668	792	1396	2058	952	1662	2428	1100	1914	2786	1492	2630	3818
2200	Watt	682	1230	1835	871	1536	2264	1047	1828	2671	1210	2105	3065	1641	2893	4200
2400	Watt	744	1342	2002	950	1675	2470	1142	1994	2914	1320	2297	3343	1790	3156	4582
2600	Watt	806	1453	2168	1030	1815	2675	1238	2161	3156	1430	2488	3622	1940	3419	4963
2800	Watt	868	1565	2335	1109	1954	2881	1333	2327	3399	1540	2680	3900	2089	3682	5345
3000	Watt	930	1677	2502	1188	2094	3087	1428	2493	3642	1650	2871	4179	2238	3945	5727
Radiator exponent n		1,2685	1,2715	1,2628	1,2579	1,2709	1,2672	1,2473	1,2702	1,2716	1,2367	1,2696	1,2760	1,2603	1,2759	1,2964
Type programme			T6-PLAN HYGIENE CENTRALLY CONNECTED RADIATOR													

The availability of any type of radiator, as well as range of sizes, is in accordance with the production programme, as stated in the price list.

70/55/20° C

Output data in watts Feed temperature **70** - return temperature **55** - room temperature **20** °C

Height [mm]		300			400			500			600			900		
Length [mm]	Type / Power	10 PM	20 PM	30 PM	10 PM	20 PM	30 PM	10 PM	20 PM	30 PM	10 PM	20 PM	30 PM	10 PM	20 PM	30 PM
400	Watt	101	182	272	129	227	335	155	270	395	180	311	453	243	427	619
520	Watt	131	236	353	168	295	435	202	352	513	234	405	589	316	556	804
600	Watt	151	273	408	194	341	502	233	406	592	270	467	679	365	641	928
720	Watt	182	327	489	232	409	603	280	487	711	324	561	815	438	769	1113
800	Watt	202	364	543	258	454	670	311	541	790	360	623	906	486	855	1237
920	Watt	232	418	625	297	522	770	358	622	908	414	716	1042	559	983	1423
1000	Watt	252	455	679	323	568	837	389	676	987	450	779	1132	608	1069	1546
1120	Watt	283	509	761	362	636	938	435	757	1106	504	872	1268	681	1197	1732
1200	Watt	303	546	815	387	681	1005	466	811	1185	540	934	1359	729	1282	1856
1320	Watt	333	600	897	426	749	1105	513	892	1303	594	1028	1494	802	1411	2041
1400	Watt	353	636	951	452	795	1172	544	946	1382	630	1090	1585	851	1496	2165
1600	Watt	404	727	1087	516	908	1340	622	1082	1580	720	1246	1811	973	1710	2474
1800	Watt	454	818	1223	581	1022	1507	700	1217	1777	810	1401	2038	1094	1924	2783
2000	Watt	504	909	1359	646	1135	1675	777	1352	1975	900	1557	2264	1216	2137	3093
2200	Watt	555	1000	1494	710	1249	1842	855	1487	2172	990	1713	2491	1337	2351	3402
2400	Watt	605	1091	1630	775	1363	2010	933	1622	2370	1080	1869	2717	1459	2565	3711
2600	Watt	656	1182	1766	839	1476	2177	1011	1758	2567	1170	2024	2943	1580	2779	4020
2800	Watt	706	1273	1902	904	1590	2345	1088	1893	2765	1260	2180	3170	1702	2992	4330
3000	Watt	757	1364	2038	968	1703	2512	1166	2028	2962	1350	2336	3396	1824	3206	4639
Radiator exponent n		1,2685	1,2715	1,2628	1,2579	1,2709	1,2672	1,2473	1,2702	1,2716	1,2367	1,2696	1,2760	1,2603	1,2759	1,2964
Type programme			T6-PLAN HYGIENE CENTRALLY CONNECTED RADIATOR													

The availability of any type of radiator, as well as range of sizes, is in accordance with the production programme, as stated in the price list.

T6-PLAN HYGIENE CENTRALLY CONNECTED RADIATOR

Outputs - temperature groups 55/45/20° C and 45/40/20° C

55/45/20° C

Output data in watts Feed temperature **55** - return temperature **45** - room temperature **20** °C

Height [mm]		300			400			500			600			900		
Length [mm]	Type / Power	10 PM	20 PM	30 PM	10 PM	20 PM	30 PM	10 PM	20 PM	30 PM	10 PM	20 PM	30 PM	10 PM	20 PM	30 PM
400	Watt	65	117	175	83	146	215	101	174	254	117	200	290	157	274	394
520	Watt	84	152	228	108	190	280	131	226	330	152	260	377	204	356	512
600	Watt	97	175	263	125	219	323	151	261	380	175	300	436	235	411	591
720	Watt	117	210	315	150	263	388	181	313	457	211	360	523	282	493	709
800	Watt	130	234	350	167	292	431	201	347	507	234	400	581	313	548	788
920	Watt	149	269	403	192	336	496	232	400	583	269	460	668	361	630	906
1000	Watt	162	292	438	208	365	539	252	434	634	292	500	726	392	685	984
1120	Watt	182	327	490	233	408	603	282	486	710	328	560	813	439	768	1103
1200	Watt	195	350	525	250	438	646	302	521	761	351	600	871	470	822	1181
1320	Watt	214	385	578	275	481	711	332	573	837	386	660	958	517	905	1299
1400	Watt	227	409	613	292	511	754	352	608	888	409	700	1016	549	959	1378
1600	Watt	259	467	700	333	583	862	403	695	1014	468	801	1161	627	1096	1575
1800	Watt	292	526	788	375	656	970	453	782	1141	526	901	1307	705	1234	1772
2000	Watt	324	584	875	417	729	1077	503	869	1268	585	1001	1452	784	1371	1969
2200	Watt	357	642	963	458	802	1185	554	956	1395	643	1101	1597	862	1508	2166
2400	Watt	389	701	1050	500	875	1293	604	1042	1522	702	1201	1742	940	1645	2363
2600	Watt	422	759	1138	542	948	1400	654	1129	1649	760	1301	1887	1019	1782	2560
2800	Watt	454	818	1225	583	1021	1508	705	1216	1775	819	1401	2032	1097	1919	2757
3000	Watt	486	876	1313	625	1094	1616	755	1303	1902	877	1501	2178	1176	2056	2953
Radiator exponent n		1,2685	1,2715	1,2628	1,2579	1,2709	1,2672	1,2473	1,2702	1,2716	1,2367	1,2696	1,2760	1,2603	1,2759	1,2964
Type programme			T6-PLAN HYGIENE CENTRALLY CONNECTED RADIATOR													

The availability of any type of radiator, as well as range of sizes, is in accordance with the production programme, as stated in the price list.

45/40/20° C

Output data in watts Feed temperature **45** - return temperature **40** - room temperature **20** °C

Height [mm]		300			400			500			600			900		
Length [mm]	Type / Power	10 PM	20 PM	30 PM	10 PM	20 PM	30 PM	10 PM	20 PM	30 PM	10 PM	20 PM	30 PM	10 PM	20 PM	30 PM
400	Watt	45	81	122	58	101	150	70	121	176	82	139	201	109	190	271
520	Watt	59	105	158	75	132	195	91	157	229	107	181	261	142	247	353
600	Watt	68	122	183	87	152	224	105	181	264	123	208	302	164	285	407
720	Watt	81	146	219	104	182	269	127	217	317	148	250	362	196	342	488
800	Watt	90	162	243	116	202	299	141	241	352	164	278	402	218	380	542
920	Watt	104	186	280	133	233	344	162	277	405	188	319	463	251	437	624
1000	Watt	113	203	304	145	253	374	176	301	440	205	347	503	273	475	678
1120	Watt	126	227	341	162	283	419	197	338	493	229	389	563	305	532	759
1200	Watt	135	243	365	174	304	449	211	362	528	246	417	603	327	570	814
1320	Watt	149	267	402	191	334	494	232	398	581	270	458	664	360	627	895
1400	Watt	158	284	426	203	354	524	246	422	616	287	486	704	382	665	949
1600	Watt	180	324	487	232	405	599	281	482	704	328	556	805	436	760	1085
1800	Watt	203	365	548	261	455	673	316	542	792	369	625	905	491	855	1220
2000	Watt	225	405	609	290	506	748	352	603	880	410	694	1006	545	949	1356
2200	Watt	248	446	669	319	557	823	387	663	968	451	764	1106	600	1044	1492
2400	Watt	270	486	730	348	607	898	422	723	1055	492	833	1207	654	1139	1627
2600	Watt	293	527	791	377	658	973	457	784	1143	533	903	1307	709	1234	1763
2800	Watt	315	567	852	406	708	1047	492	844	1231	574	972	1408	764	1329	1898
3000	Watt	338	608	913	435	759	1122	527	904	1319	615	1042	1509	818	1424	2034
Radiator exponent n		1,2685	1,2715	1,2628	1,2579	1,2709	1,2672	1,2473	1,2702	1,2716	1,2367	1,2696	1,2760	1,2603	1,2759	1,2964
Type programme			T6-PLAN HYGIENE CENTRALLY CONNECTED RADIATOR													

The availability of any type of radiator, as well as range of sizes, is in accordance with the production programme, as stated in the price list.

T6-PLAN HYGIENE CENTRALLY CONNECTED RADIATOR

Weights

T6-PLAN HYGIENE

Weights in kg for T6-PLAN HYGIENE centrally connected radiator

Height [mm]		300			400			500			600			900		
Length [mm]	Type / Weight	10 PM	20 PM	30 PM	10 PM	20 PM	30 PM	10 PM	20 PM	30 PM	10 PM	20 PM	30 PM	10 PM	20 PM	30 PM
400	kg	5,19	7,44	10,30	6,28	9,27	12,85	7,41	11,12	15,42	8,49	12,90	17,88	11,95	18,59	25,80
520	kg	6,24	9,17	12,71	7,67	11,55	16,03	9,10	13,94	19,36	10,50	16,24	22,55	14,97	23,60	32,80
600	kg	6,93	10,32	14,32	8,59	13,07	18,15	10,24	15,83	21,98	11,85	18,47	25,65	17,00	26,96	37,49
720	kg	7,99	12,06	16,75	9,96	15,33	21,32	11,95	18,65	25,93	13,87	21,82	30,32	20,02	31,98	44,50
800	kg	8,69	13,22	18,36	10,88	16,86	23,44	13,08	20,53	28,55	15,22	24,05	33,43	22,05	35,33	49,17
920	kg	9,74	15,01	20,91	12,25	19,20	26,75	14,78	23,41	32,62	17,23	27,46	38,24	25,08	40,43	56,33
1000	kg	10,43	16,17	22,52	13,17	20,72	28,86	15,92	25,30	35,26	18,58	29,69	41,35	27,10	43,78	61,01
1120	kg	11,48	17,90	24,93	14,54	23,00	32,04	17,63	28,12	39,19	20,60	33,03	46,01	30,13	48,80	68,02
1200	kg	12,19	19,05	26,54	15,46	24,51	34,16	18,76	30,00	41,81	21,94	35,26	49,13	32,15	52,14	72,70
1320	kg		20,79	28,96		26,78	37,32	20,64	32,83	45,75	24,14	38,62	53,79	35,36	57,17	79,72
1400	kg		22,01	30,71		28,37	39,58	21,78	34,77	48,52	25,49	40,91	57,04	37,38	60,59	84,53
1600	kg		24,90	34,73		32,15	44,87	24,88	39,48	55,08	29,13	46,49	64,82		68,96	96,21
1800	kg		27,95	39,00		36,13	50,41	27,80	44,34	61,88	32,57	52,23	72,83		77,51	108,16
2000	kg		30,83	43,01		39,91	55,69	30,66	49,06	68,44	35,94	57,80	80,60		85,89	119,85
2200	kg		33,73	47,05		43,70	60,98	33,49	53,76	75,00	39,30	63,38	88,39			
2400	kg		36,61	51,07		47,50		36,33	58,47		42,66	68,96				
2600	kg			55,10					63,17		46,03	74,53				
2800	kg			59,13					67,87			80,10				
3000	kg			63,15					72,58			85,69				
Type programme			T6-PLAN HYGIENE CENTRALLY CONNECTED RADIATOR													

The availability of any type of radiator, as well as range of sizes, is in accordance with the production programme, as stated in the price list.

VERTICAL CENTRALLY CONNECTED RADIATOR.

Heat emission
The specification was verified in accordance with DIN EN 442 at The Technical University, Stuttgart (Registration at WSP-Cert Product Certification Centre, Stuttgart), under the numbers:

Type 10	0358
Type 20	0359
Type 21	0324
Type 22	0325

Material
VERTICAL RADIATORS are manufactured from cold-rolled sheet steel in line with EN 442-1 and have an elegant, stable profile with 40 mm beading.

Configuration
Each VERTICAL RADIATOR is equipped with suspension brackets welded onto the rear side. The 20 K radiator model is also supplied with two side grills.

Coating
1. Primer in accordance with DIN 55900 part 1, fired at 190° C.
2. The top coat, in accordance with DIN 55900 part 2, in RAL 9016 (available in many RAL and sanitary colours on request, for a supplement), is applied electrostatically in a modern powder coating plant. The resistant coating, which is particularly important, is fired with the radiator at a temperature of 210° C.

Packaging
1. Cardboard containers
2. Edge protection
3. Shrink wrap

Connections
4 x G 1/2 I.G

Test positive pressure
13 bar

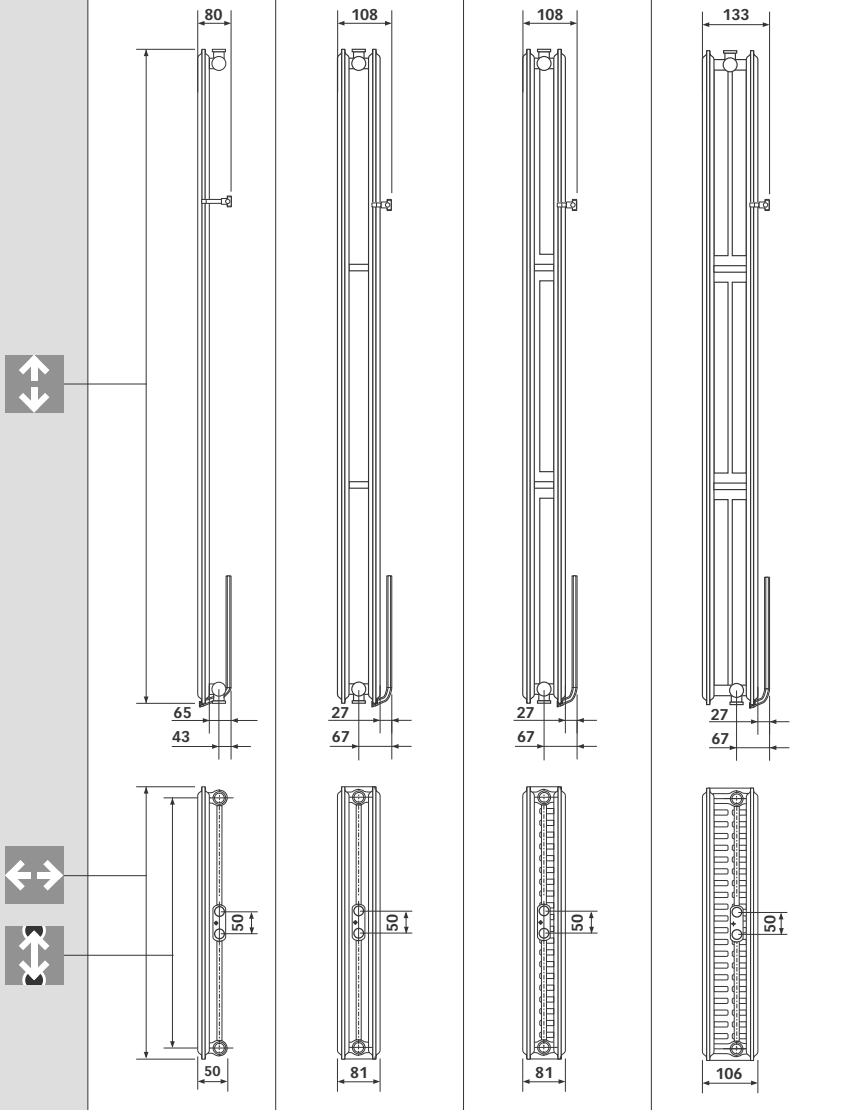
Max. positive operating pressure 10 bar

Max. operating temperature 110 °C

VERTICAL CENTRALLY CONNECTED RADIATOR

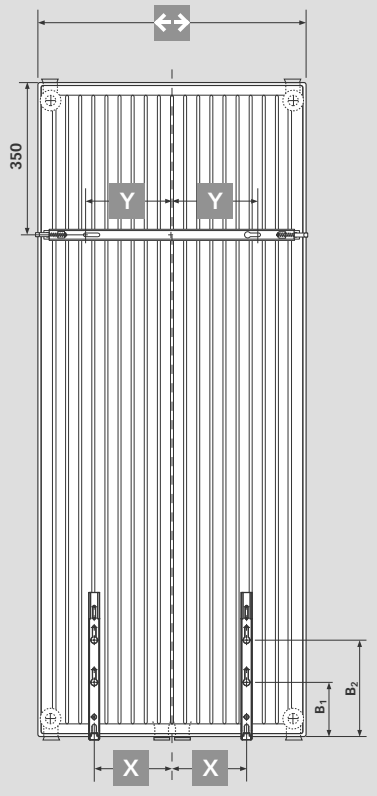
Overview of models / illustration showing location for welding of suspended straps

Overview of models



Type	10				20			21			22			
Height [mm]	1500	1800	1950	2100	1800	1950	2100	1800	1950	2100	1800	1950	2100	2300
Length [mm]	- 450 600 -	- 450 600 750			300 450 600 750			300 450 600 750			300 450 600 -	300 450 600 750		- - - 750
Hub spacing [mm]	Length - 56 mm													

Location of suspended straps



Type	10	20, 21, 22
B_1	170	150
B_2	270	250

[mm]				
	300	450	600	750
X	75	100	175	250
Y	25	95	170	245

HEIZKÖRPER RAL GÜTEZEICHEN AUS STAHL

CE

DIN EN EURONORM 442

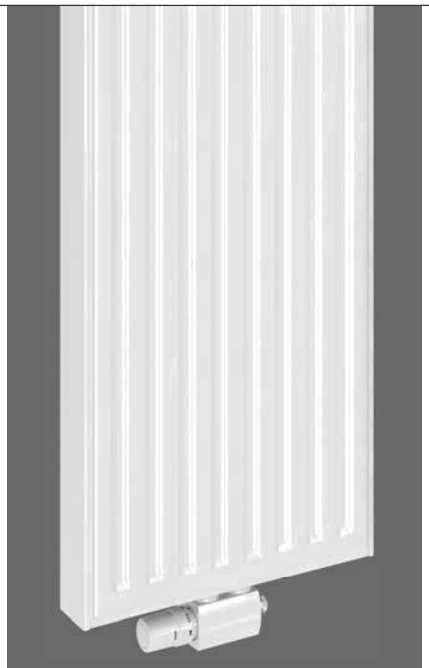
55 45 DIE neue WÄRME

EN ISO 9001

Guarantee statements are available to download at **www.vogelundnoot.com/download**

VERTICAL CENTRALLY CONNECTED RADIATOR

Outputs / weights / water volume



360 ° views available at www.vogelundnoot.com

Weight in kg and water content in litre, for the CENTRAL-CONNECTION VERTICAL RADIATOR

Height [mm]		1500	1800				1950				2100				2300
Length [mm]	Type	10	10	20	21	22	10	20	21	22	10	20	21	22	22
	Weight														
300	kg	-	-	21,4	24,92	28,16	-	23,12	27,4	30,7	-	24,52	29,08	33,24	-
450	kg	14,1	16,86	32,1	37,38	42,24	17,4	34,68	41,1	46,05	18,06	36,78	43,62	49,86	-
600	kg	18,8	22,48	42,8	49,84	56,32	23,2	46,24	54,8	61,4	24,08	49,04	58,16	66,48	-
750	kg	-	28,1	53,5	62,3	-	29	57,8	68,5	76,75	30,1	61,3	72,7	83,1	88,7
Length [mm]	Type	10	10	20	21	22	10	20	21	22	10	20	21	22	22
	Water volume														
300	l	-	-	6,48	6,48	6,48	-	6,94	6,94	6,94	-	7,40	7,40	7,40	-
450	l	4,42	4,56	9,72	9,72	9,72	4,98	10,41	10,41	10,41	5,4	11,10	11,10	11,10	-
600	l	5,90	6,08	12,96	12,96	12,96	6,64	13,88	13,88	13,88	7,2	14,80	14,80	14,80	-
750	l	-	7,60	16,20	16,20	-	8,30	17,35	17,35	17,35	9,00	18,50	18,50	18,50	20,00
Type programme			VERTICAL CENTRALLY CONNECTED RADIATOR												

The availability of any type of radiator, as well as range of sizes, is in accordance with the production programme, as stated in the price list.

Radiator power data in watts, in accordance with **DIN EN 442**

Temperature pairings		75/65/20° C*														55/45/20° C*												
Height [mm]		1500	1800				1950				2100				2300	1500	1800				1950				2100				2300
Length [mm]	Type	10	10	20	21	22	10	20	21	22	10	20	21	22	22	10	10	20	21	22	10	20	21	22	10	20	21	22	22
	Power																												
300	Watt	-	-	819	963	1132	-	877	1020	1192	-	935	1081	1252	-	-	-	420	486	566	-	448	514	594	-	477	546	623	-
450	Watt	650	765	1229	1445	1698	819	1315	1530	1788	876	1403	1621	1877	-	335	389	629	729	849	413	672	771	892	439	716	819	934	-
600	Watt	867	1020	1638	1926	2264	1092	1753	2040	2384	1168	1870	2162	2503	-	447	518	839	972	1132	551	896	1028	1189	585	954	1092	1245	-
750	Watt	-	1275	2048	2408	-	1365	2192	2550	2980	1460	2338	2702	3129	3329	-	648	1049	1215	-	689	1120	1285	1486	732	1193	1365	1556	1656
Radiator exponent n		1,2976	1,3246	1,3094	1,3384	1,3566	1,3381	1,3135	1,3422	1,3619	1,3516	1,3176	1,3371	1,3672	1,3671	1,2976	1,3246	1,3094	1,3384	1,3566	1,3381	1,3135	1,3422	1,3619	1,3516	1,3176	1,3371	1,3672	1,3671
Type programme			VERTICAL CENTRALLY CONNECTED RADIATOR													* Feed temperature / return temperature / room temperature													

The availability of any type of radiator, as well as range of sizes, is in accordance with the production programme, as stated in the price list.

PLAN VERTICAL CENTRALLY CONNECTED RADIATOR.

Heat emission
The specification was verified in accordance with DIN EN 442 at The Technical University, Stuttgart (Registration at WSP-Cert Product Certification Centre, Stuttgart), under the numbers:

Type 21	0323
Type 22	0900

Material
PLAN VERTICAL RADIATORS are manufactured from cold-rolled sheet steel in line with EN 442-1 and have an elegant, stable profile with 40 mm beading.

Configuration
Each PLAN VERTICAL RADIATOR is equipped with suspension brackets welded onto the rear side. The 20 K radiator model is also supplied with two side grills.

Coating
1. Primer in accordance with DIN 55900 part 1, fired at 190° C.
2. The top coat, in accordance with DIN 55900 part 2, in RAL 9016 (available in many RAL and sanitary colours on request, for a supplement), is applied electrostatically in a modern powder coating plant. The resistant coating, which is particularly important, is fired with the radiator at a temperature of 210° C.

Packaging
1. Cardboard containers
2. Edge protection
3. Shrink wrap

Connections: 2 x G 1/2 internal thread, at the bottom centre, centric distance: 50 mm and 4 x G ½ internal thread, at the side, downward and upward.

Test positive pressure: 8 bar

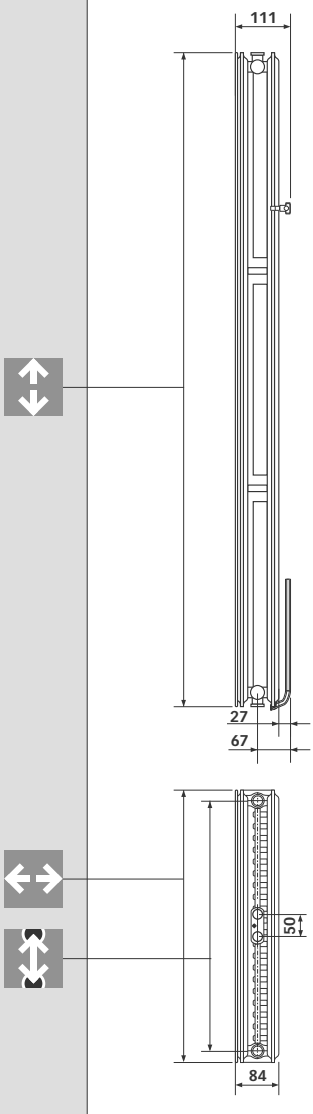
Max. positive operating pressure:
6 bar

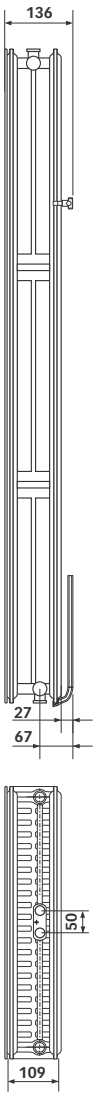
Max. operating temperature:
110 °C

PLAN VERTICAL CENTRALLY CONNECTED RADIATOR

Overview of models / illustration showing location for welding of suspended straps

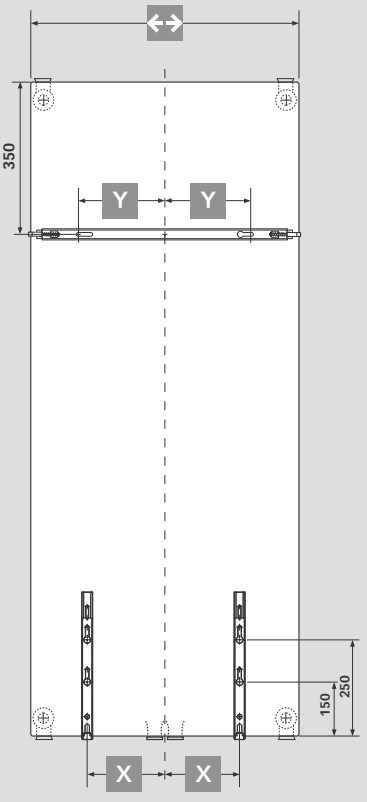
Overview of models





Type	21			22		
Height [mm]	1800	1950	2100	1800	1950	2100
Length [mm]	300 450 600 750			300 450 600 -	300 450 600 750	
Hub spacing [mm]	Length - 56 mm					

Location of suspended straps



[mm]				
↔	300	450	600	750
X	75	100	175	250
Y	25	95	170	245

HEIZKÖRPER RAL GÜTEZEICHEN AUS STAHL

DIN EN EURONORM 442

EN ISO 9001

55 45 DIE neue WÄRME

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PLAN VERTICAL CENTRALLY CONNECTED RADIATOR

Outputs / weights / water volume

Weight in kg and water content in litre, for the PLAN VERTICAL CENTRALLY CONNECTED RADIATOR

Height [mm]		1800		1950		2100	
Length [mm]	Type	21	22	21	22	21	22
	Weight						
300	kg	30,08	33,48	32,8	37,12	35,12	39,28
450	kg	45,12	50,22	49,2	55,68	52,68	58,92
600	kg	60,16	66,96	65,6	74,24	70,24	78,56
750	kg	75,2	-	82	92,8	87,8	98,2
Length [mm]	Type	21	22	21	22	21	22
	Water volume						
300	l	6,48	6,48	6,94	6,94	7,4	7,4
450	l	9,72	9,72	10,41	10,41	11,1	11,1
600	l	12,96	12,96	13,88	13,88	14,8	14,8
750	l	16,2	-	17,35	17,35	18,5	18,5
Type programme			PLAN VERTICAL CENTRALLY CONNECTED RADIATOR				

The availability of any type of radiator, as well as range of sizes, is in accordance with the production programme, as stated in the price list.

Radiator power data in watts, in accordance with **DIN EN 442**

Temperature pairings		75/65/20° C*						55/45/20° C*					
Height [mm]		1800		1950		2100		1800		1950		2100	
Length [mm]	Type	21	22	21	22	21	22	21	22	21	22	21	22
	Power												
300	Watt	886	1046	936	1103	978	1161	452	528	476	532	495	587
450	Watt	1329	1569	1404	1654	1467	1742	678	792	714	798	743	881
600	Watt	1772	2092	1873	2205	1957	2323	903	1056	953	1065	990	1175
750	Watt	2216	-	2341	2756	2446	2903	1129	-	1191	1331	1238	1468
Radiator exponent n		1,3192	1,3387	1,3231	1,4255	1,3327	1,3343	1,3192	1,3387	1,3231	1,4255	1,3327	1,3343
Type programme			PLAN VERTICAL CENTRALLY CONNECTED RADIATOR					* Feed temperature / return temperature / room temperature					

The availability of any type of radiator, as well as range of sizes, is in accordance with the production programme, as stated in the price list.

GENERAL TECHNICAL INFORMATION

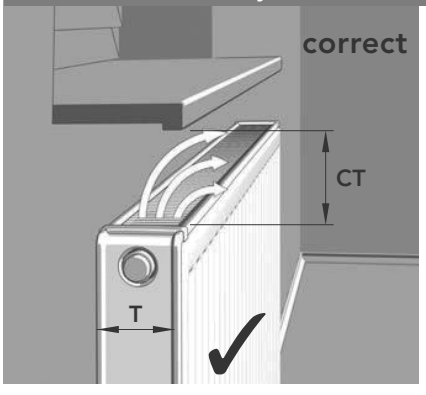
Flat radiators are triple-packed

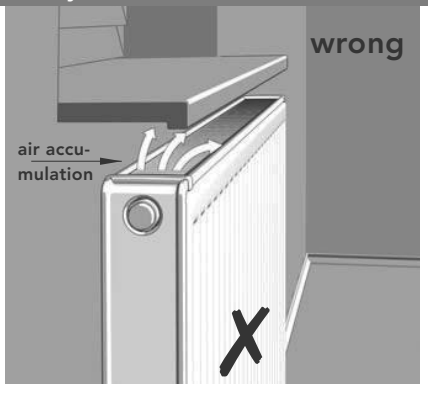
The packaging is done such that it does not need to be removed during the installation and the connection. The packaging will not be removed until the flat´s occupation. That will keep the product pristine, right through to the hand over.

Installation of wrapped radiators, and run of a test heating up to t_1 40°C possible.

1. **Cardboard packaging**
2. **Edge protection**
3. **Shrink foil**

Installation under your window and in your alcove





Optimum performance can only be guaranteed, if the air circulation is not restricted. This means that above and below the radiator there must be enough clearance. The clearance above the radiator is usually calculated according to the formula: **radiator width + 10 %.**

Clearance top CT = W x 1,1

In case this value cannot be maintained, because of constructional constraints, performance will be lower.

Water volume in litre/m of flat radiator

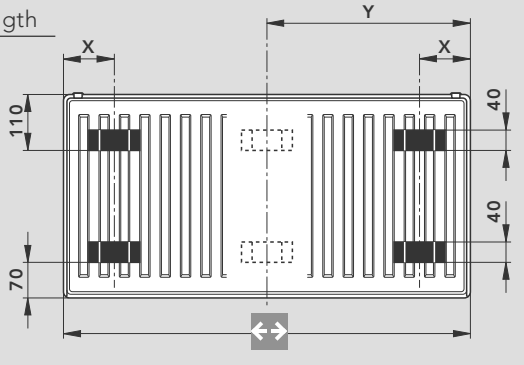
Overall height [mm] / Radiator type	300	400	500	554	600	900	954
10, 10 VM,10 PM, 11 K, 11 KV, 11 VM, 11 PM	2,0	2,6	3,3	-	3,7	5,1	-
20, 20 K, 20 VM, 20 PM	3,9	5,0	6,1	-	7,1	10,2	-
21 K-S, 21 KV-S, 21 VM-S, 21 PM-S	3,9	5,0	6,1	6,7	7,1	10,2	11,3
22 K, 22 KV, 22 VM, 22 PM	3,9	5,0	6,1	6,7	7,1	10,2	11,3
30, 30 PM	6,0	7,6	9,4	-	10,8	15,6	-
33 K, 33 KV, 33 VM, 33 PM	6,0	7,6	9,4	10,2	10,8	15,6	16,5

Image of how the brackets are welded on flat radiator*

Radiator type	Measure **X** [mm]
10, 10 VM, 10 PM	100
11 K, 11 KV, 11 VM, 11 PM	93
20, 20 VM, 20 PM	100
21 K-S, 21 KV-S, 21 VM-S, 21 PM-S	100
22 K, 22 KV, 22 VM, 22 PM	100
30, 30 VM, 30 PM, 33 K, 33 KV, 33 VM, 33 PM	100

Measure Y = $\frac{\text{Overall length}}{2}$

for all radiators from an overall length of 1800 mm onwards.



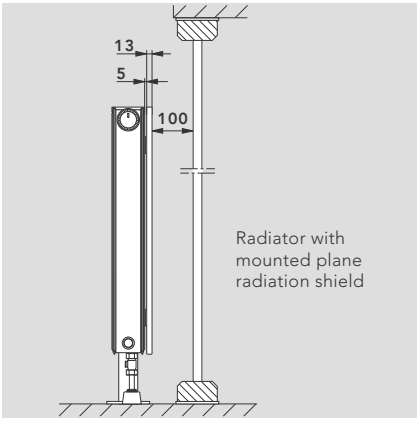
* VERTICAL RADIATORS excluded

PLAN RADIATED HEAT-REFLECTOR

Installing the radiator (with brackets) in front of windows increases heat loss, due to the radiation across the glass surface. Thanks to the plane radiation shield it is possible to minimise heat loss.

The new plane radiation shield

- represents a successful solution also in terms of appearance because of the radiation shield's consistent cover and short distance to the radiator;
- it is also a perfect match with the plane heating surfaces;
- due to convection between radiator and plane radiation shield it feeds back into the room the majority of thermal heat, which would otherwise be lost;
- installation is dead easy, without the need of any additional special tools.



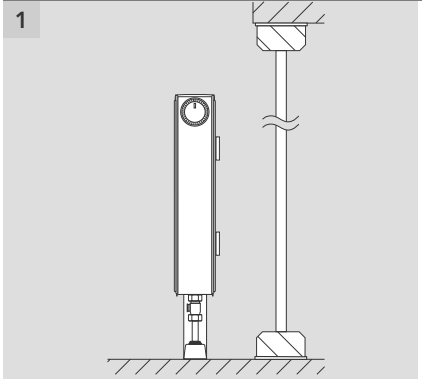
Depth of plane radiation shield: 13 mm

clear width: 5 mm
between cover grid and
plane radiation shield.
Minimum clearance of 100 mm between window surface and plane radiation shield.

The minimum clearance between window surface and plane radiation shield (100mm) complies with the recommendations of leading window surface manufacturers.

Installation details for inlying consoles, for flat radiators with brackets

1



2

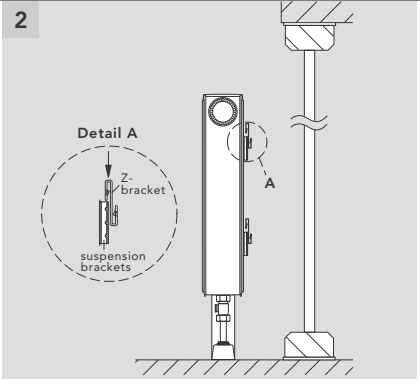
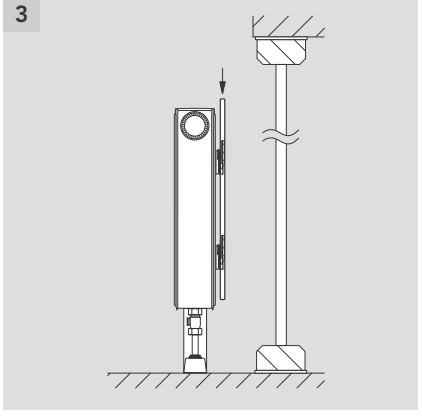


Image 1: Radiator with inlying stand consoles, in front of a transparent outside surface.

Image 2: Install the Z-bracket (included in the delivery equipment) on the **four suspension brackets.**

Note: If the length of the radiator is 2000, 2400 or 2800 mm, the Z-brackets must be installed as much as possible in the middle.

3



4

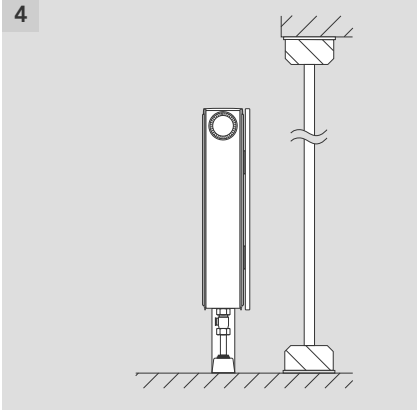


Image 3: Align PLAN RADIATED HEAT-REFLECTOR according to the radiator length; put it into position right over the Z-brackets and push it down.

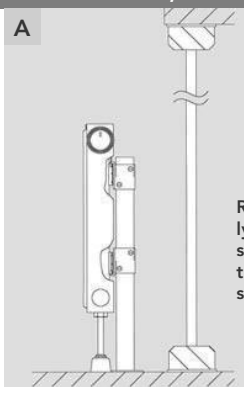
Image 4: Radiator with installed PLAN RADIATED HEAT-REFLECTOR.

Note:
Due to production reasons there are drill holes at the flat that must face the ground during the installation.

Installation details for outlying stand consoles, for radiators with brackets

For installing the outlying stand consoles only use - independently from the type of heating surface - mounting brackets with the order number **AZ0MS000F0001000** for fixation, including the necessary accessories for installing the PLAN RADIATED-HEAT REFLECTOR **(image B, detail A).**

A



Radiator with outlying stand console, in front of a transparent outside surface.

Symbol representations on radiators on 400 mm and more in length

B

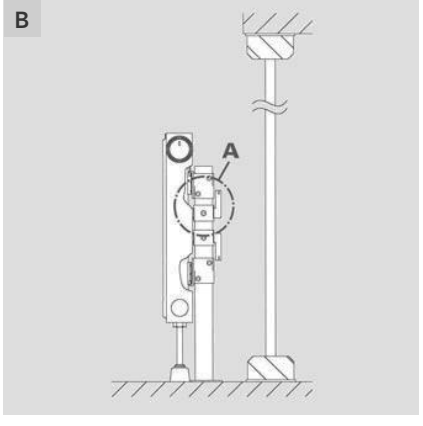
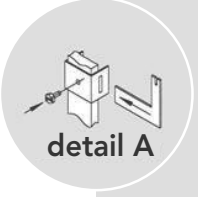


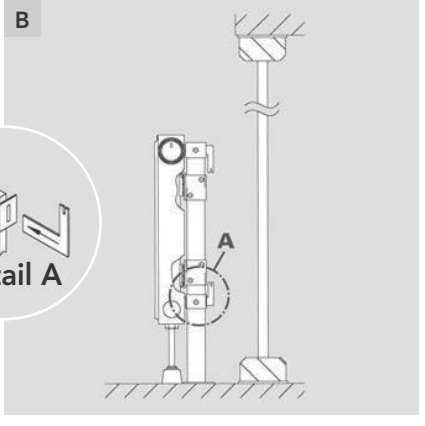
Image B:
Install U-shaped clamp (available as accessory) on the stand console, using the brackets.

Note:
From a radiator length of 1800 mm onwards, also the fixing devices on top have to be installed centrally on the stand console brackets.



Symbol representations on all radiator heights

B



C

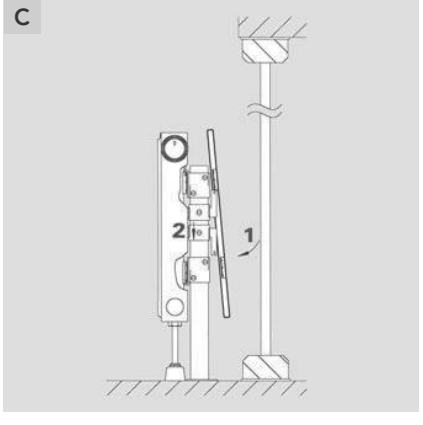
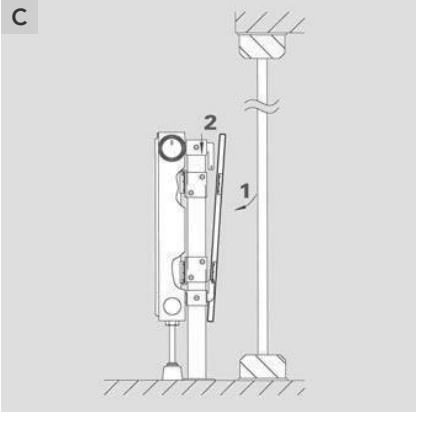


Image C:
Put the PLAN RADIATED HEAT-REFLECTOR into the fixing devices on top, aligning it up according to the radiator length. (Attention: The drill holes at the flat must face the ground). Make sure that the PLAN RADIATED HEAT-REFLECTOR is aligned in the height according to the top edge of the radiator. Then install the PLAN RADIATED HEAT-REFLECTOR above the suspension brackets using the fixing devices at the bottom.

C



D

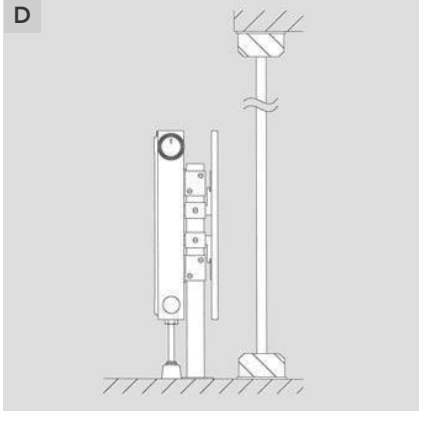
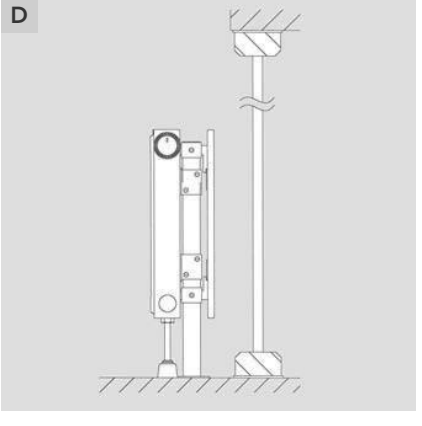


Image D:
Radiator with installed PLAN RADIATED HEAT REFLECTOR.

D



Radiator installation

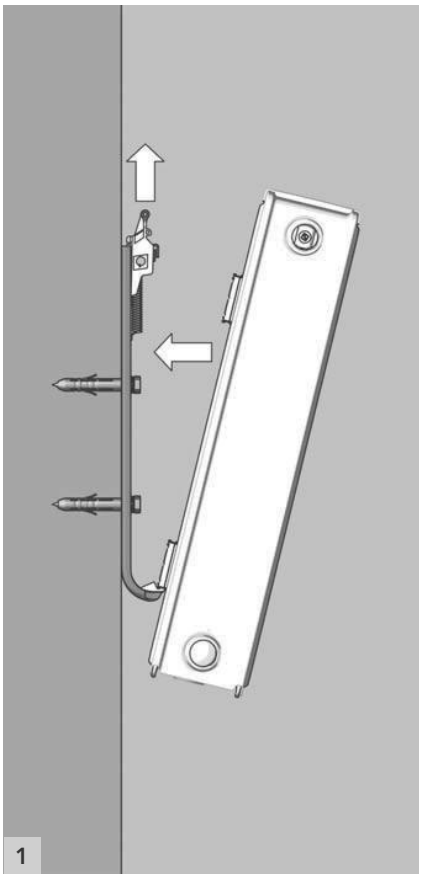
Monclac console

... the flexible Monclac console

The MONCLAC CONSOLE (suitable for all heating surfaces with welded-on brackets, except Replacement and vertical radiators) allows an easy, rapid and robust installation of the radiator still in the packaging. It can generally be used for radiator models with the respective overall height.

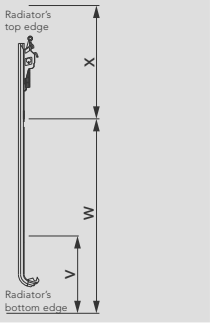
The fact that the Monclac console is equipped with an integrated lifting and shift protection represents a cutting-edge advantage in terms of safety.

The Monclac console consists of: 2 Monclac consoles (zinc-plated), with sound insulation inserts and integrated lifting and shift protection, screws and dowels, installation instructions in PE shrink foil. Wall clearance: between finished wall surface and radiator bracket: 27mm.



Drilling dimensions for panel radiators

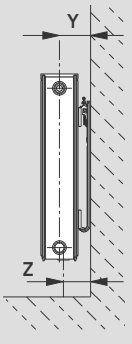
Height [mm]	Value **V** [mm]	Value **W** [mm]	Value **X** [mm]	wall rail for **Height 300 - 900**
300	-	135	165	
400	139	235		
500		335		
600		435		
900		735		

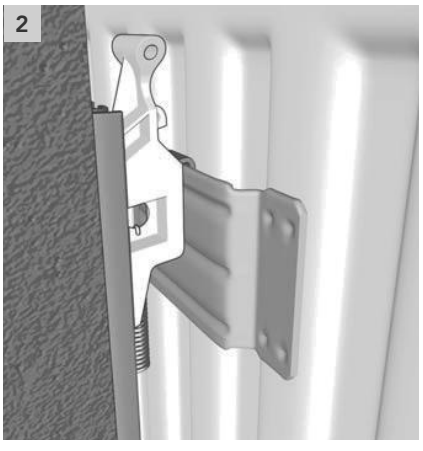


The Monclac bracket is consistent with TÜV-Rheinland's requirements (in terms of force loads).

Connection to wall clearances

Radiator models	Height [mm]	Value **Y** [mm]	Value **Z** [mm] *
10, 10 VM, 10 PM	300 - 900	38	-
11 K, 11 KV, 11 VM, 11 PM	300 - 900	50	50 **
20, 20 K, 20 VM, 20 PM	300 - 900	74	66
21 K-S, 21 KV-S, 21 VM-S, 21 PM-S	300 - 900	74	66
22 K, 22 KV, 22 VM, 22 PM	300 - 900	86	66
30, 30 VM, 33 K, 33 KV, 33 VM, 33 PM, 30PM	300 - 900	86	66



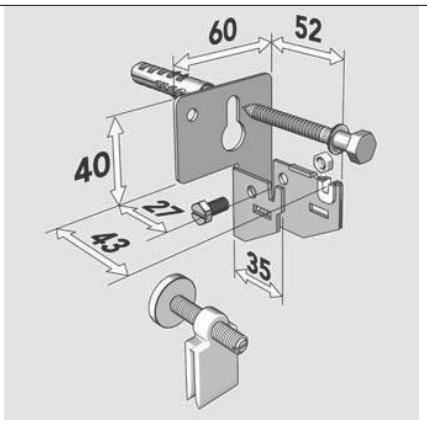


* This only applies to the T6 CENTRAL CONNECTION RADIATOR

** when using a special angle bracket, a consistent clearance of 66mm between connection and wall is also possible for the 11VM model.

FASTENING SET SPECIAL ANGLE-FISHPLATE

For surface mounting,
consisting of:
2 angle-fishplates with
sound-absorbing filter
2 spacers
2 hexagon head wood screws and
2 dowels.



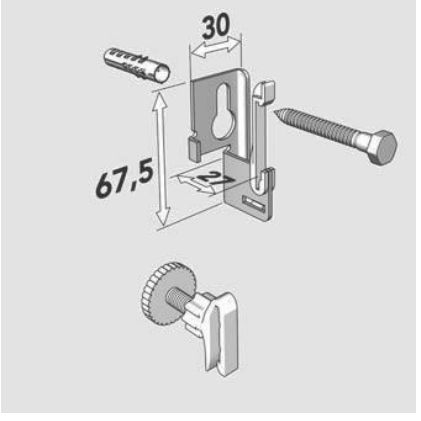
Specially designed for pinpoint pre-assembly, in conjunction with profiles (item no: AZ0FT200R0H01000, AZ0FT060R1V01000, AZ0FT090R1V01000).

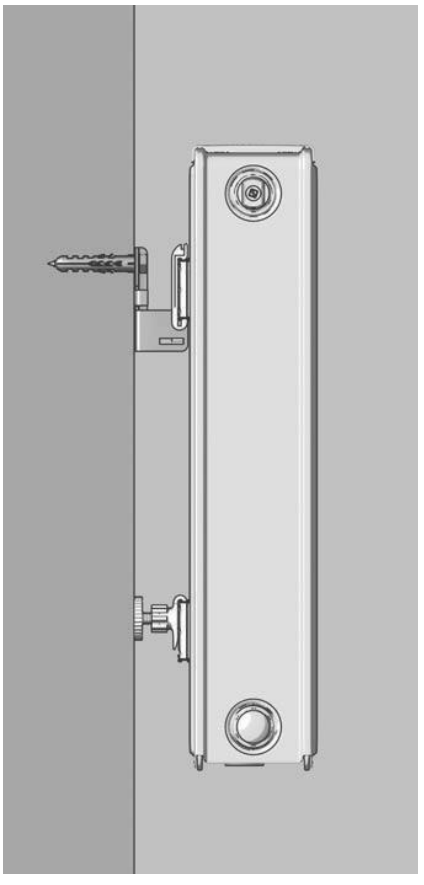
With 11 VM and 11 PM models, wall clearance can be adjusted for multi-layered T6 radiators, in cases where pre-assembly on the assembly bracket was multi-layered at the position.

Wall clearance:
Between finished wall and T6 radiator mounting link = 27 mm to 43 mm

ANGLE BRACKET WITH SHIFT PROTECTION FASTENING SET

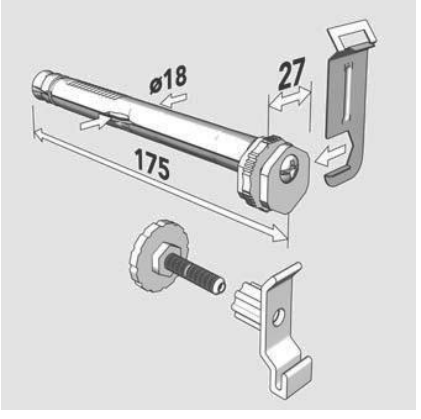
Suitable for surface mounting, each consisting of:
two angle brackets, noise insulation inserts
with integrated lifting protection,
hexagonal wood screws and dowels.
Wall clearance: between the finished wall surface and
radiator's bracket: 27mm





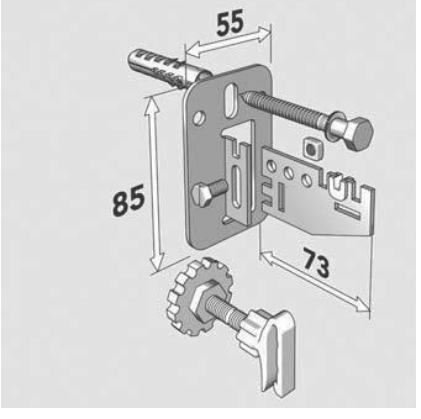
DRILLED CONSOLE SET WITH LIFTING PROTECTION FASTENING SET FOR ALL-PURPOSE ANGLE-FISHPLATE

Length: 160mm, consisting of:
2 drilled consoles,
2 distance holders and
2 lifting protections



FASTENING SET FOR ALL-PURPOSE ANGLE-FISHPLATE

For finished as well as unfinished wall surfaces, consisting of:
2 adjustable angle-fishplates with
sound-absorbing filter
2 hexagon head wood screws
with dowels and
2 spacers.



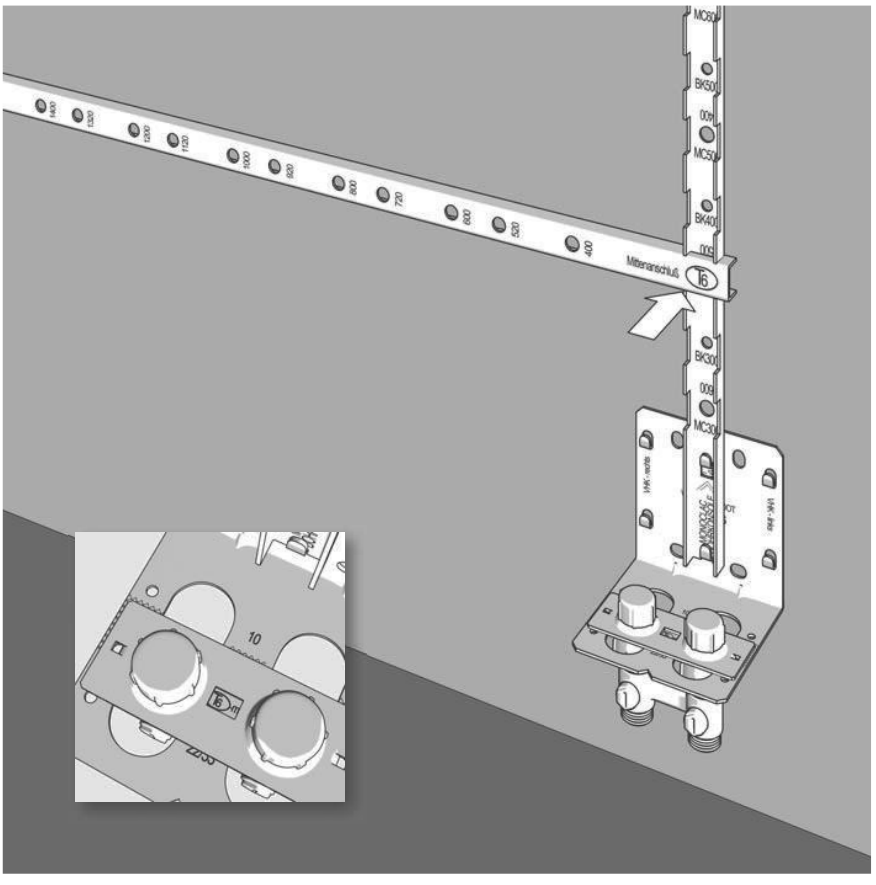
Wall clearance:
Between finished wall and radiator mounting link = 11, 20, 30, 46, 56 and 66 mm

T6 MOUNTING ON FINISHED WALL SURFACES

T6 MOUNTING ON FINISHED WALL SURFACES
By using the 3/4“external thread mounting template
it is possible to install all the heating pipes without the radiator,
and the whole pipe system can be pressure-tested as well.
The radiators will be delivered only after completion of the building work.

Fitting of the horizontal mounting rail for positioning the first
Monclac consoles / drilled consoles / special angle brackets fastening. Side-inverted fitting
of the horizontal mounting rail
for positioning the
second Monclac consoles /
drilled consoles / special angle brackets fastening

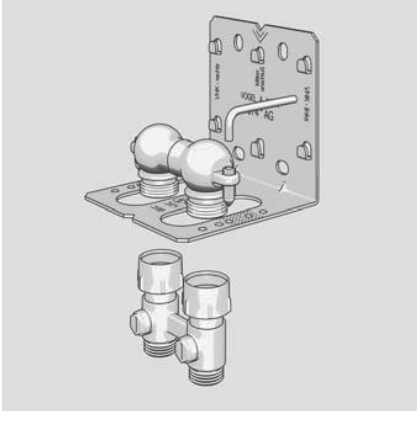
It makes possible very precise premounting of the Monclac
console / drilled console / special angle bracket
when using a moulding set.



The 3/4“external thread mounting template consists of a mounting bracket set and a moulding set.
The 3/4“external thread mounting template consists of:

1 mounting bracket
incl. connection bracket
2 dowels
2 screws
2 washers
2 caps - 1/2“internal thread
2 1/2“- 3/4“adapters

When using the flush elbow together with the 3/4“external thread mounting template the system can be flushed and tested without the radiators.



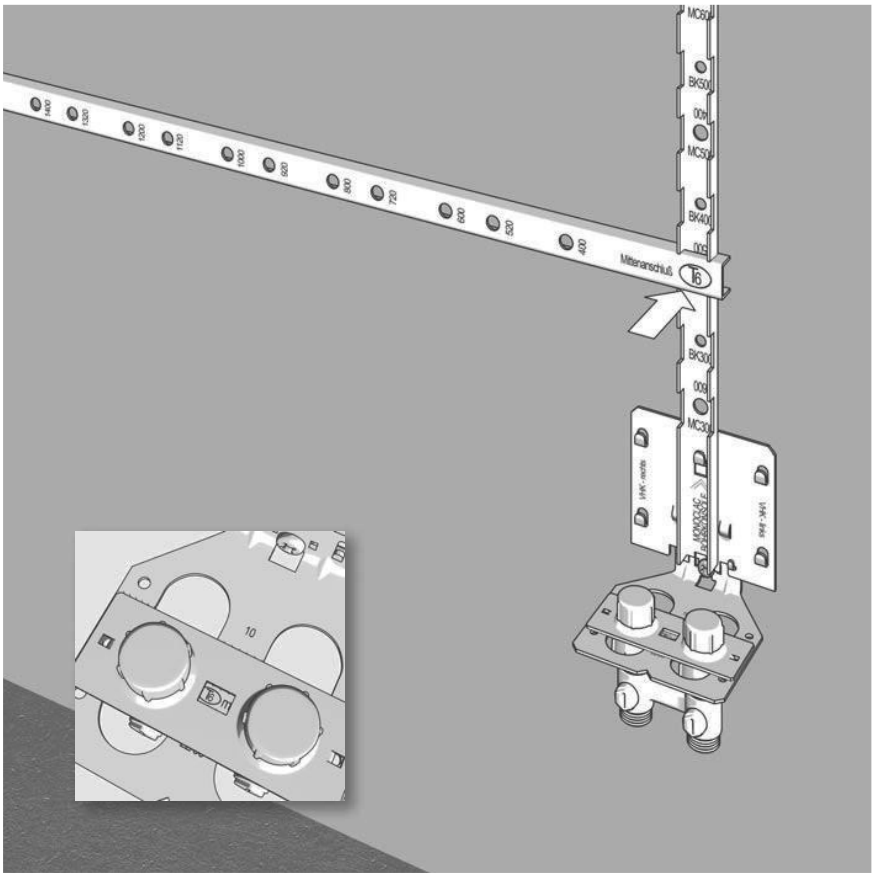
Attaching the vertical mounting rail.With radiators, with an overall length of 1800 mm and more, central mounting drill hole is marked. With the special angle bracket AZ0BU00012002000 the vertical mounting rails AZ0FT060R1V01000 are to be used for overall heights of 300 - 600mm, as well as AZ0FT090R1V01000 for overall height of 900mm.
The window in the connection bracket serves to check if the correct overall depth has been selected.

T6 INSTALLATION ON AN UNFINISHED WALL SURFACES

Apart from the advantages of a complete installation. Of the heating pipes without the radiators, and the possibility to pressure-test the piping system, the 3/4“external thread mounting template has been designed for mounting on unfinished wall surfaces, especially for unplastered brick walls. The compact design and unique fastening system using a special drilled console ensure that also the wall behind the mounting bracket can be plastered.

After the plastering attach the horizontal mounting rail for positioning the first Monclac consoles / drilled consoles / special angle brackets fastening. Side-inverted fitting of the horizontal mounting rail for positioning the second Monclac consoles / drilled consoles / special angle brackets.

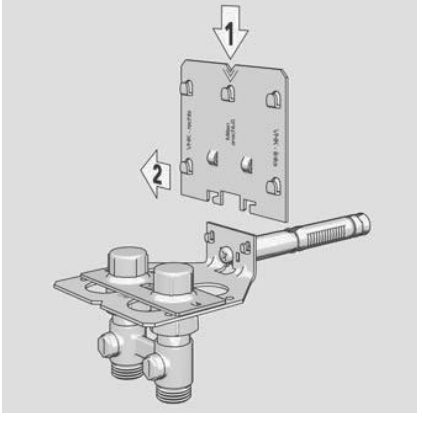
It makes possible very precise premounting of the Monclac console / drilled console / special angle bracket when using a moulding set.



The 3/4“external thread mounting template for mounting on unfinished wall surfaces consists of a mounting bracket for mounting on unfinished wall surfaces and a moulding set. The 3/4“external thread mounting template for mounting on unfinished wall surfaces consists of:

1 mounting bracket
Incl. connection bracket
1 special drilled console
2 caps - G 1/2“ DIN ISO 228
2 1/2“- 3/4“adapters
DIN ISO 228
2 1/2“- 3/4“ Adapter

By using the adapter plate you can also enjoy all advantages of the moulding set. Attaching the adapter plate to the mounting bracket for the mounting on unfinished wall surfaces only requires a few simple hand movements. For flushing and testing the system without radiators, you can of course use the flush elbow in connection with the 3/4“external thread mounting template for the mounting on unfinished wall surfaces.



Attaching the vertical mounting rail. With radiators, with an overall length of 1800 mm and more, the central mounting drill hole is marked. With the special angle bracket AZ0BU00012002000 the vertical mounting rails AZ0FT060R1V01000 are to be used for overall heights of 300 - 600mm, as well as AZ0FT090R1V01000 for overall height of 900mm. The window in the connection bracket serves to check if the correct overall depth has been selected.

Transfer Table - Simplified procedure for the domain of standard and low-temperature (ST/LT)

The conversion factors in the table state to which extent the heat emission has to be altered under other operating conditions, compared to the following standard-design data:

supply temperature t_1 **75 °C**
return temperature t_2 **65 °C**
room temperature t_r **20 °C**

Because an average exponent of 1.3 has been used for both the calculation of the heat outputs and the specification of the conversion factor, a slight performance variation from the calculated value is possible.

The standard heat emission Φ_S of a radiator covering the required heat $\Phi_{HL,i}$ at the chosen operating conditions, is calculated according to the formula:

$$\Phi_S = \Phi_{HL,i} \times f$$

Φ_S = standard heat emission, in accordance with EN 442
$\Phi_{HL,i}$ = required heat, in accordance with EN 12831
f = conversion factor from the table

Example:
The required heat of a room is 1000 W, in accordance with EN 12831.
Design data: t_1 50 °C
t_2 40 °C
t_r 20 °C

Factor **f** according to the table = **2,50**

supply temperatur °C	return temperatur °C	room temperature °C						
		12	15	18	20	22	24	26
90	80	0,61	0,64	0,68	0,71	0,74	0,77	0,81
	70	0,67	0,72	0,76	0,80	0,83	0,87	0,91
80	70	0,74	0,79	0,84	0,88	0,93	0,97	1,03
	60	0,83	0,89	0,96	1,01	1,07	1,13	1,20
	50	0,96	1,04	1,13	1,20	1,28	1,37	1,47
75	**65**	0,82	0,88	0,95	**1,00**	1,05	1,12	1,18
	60	0,88	0,94	1,02	1,08	1,14	1,21	1,29
	55	0,94	1,01	1,10	1,17	1,24	1,32	1,42
70	65	0,87	0,94	1,01	1,07	1,13	1,19	1,27
	60	0,93	1,00	1,08	1,15	1,22	1,30	1,39
	55	0,99	1,08	1,17	1,25	1,33	1,42	1,53
	50	1,07	1,17	1,28	1,37	1,47	1,58	1,71
65	60	0,98	1,07	1,16	1,23	1,31	1,40	1,50
	55	1,05	1,15	1,26	1,34	1,43	1,54	1,66
	50	1,14	1,25	1,37	1,47	1,59	1,71	1,86
	45	1,24	1,37	1,52	1,64	1,78	1,94	2,13
60	55	1,13	1,23	1,36	1,45	1,56	1,68	1,82
	50	1,22	1,34	1,48	1,60	1,73	1,87	2,05
	45	1,33	1,47	1,65	1,78	1,94	2,13	2,36
	40	1,47	1,64	1,86	2,03	2,24	2,50	2,80
55	50	1,31	1,45	1,62	1,75	1,90	2,07	2,28
	45	1,43	1,60	1,80	1,96	2,15	2,37	2,64
	40	1,59	1,78	2,03	2,24	2,48	2,78	3,15
	35	1,78	2,03	2,36	2,64	2,99	3,43	4,02
50	45	1,56	1,75	1,98	2,17	2,40	2,67	3,00
	40	1,73	1,96	2,25	2,50	2,79	3,15	3,61
	35	1,94	2,24	2,63	2,96	3,38	3,92	4,64
	30	2,24	2,64	3,20	3,70	4,39	5,39	6,99
45	40	1,90	2,17	2,53	2,83	3,19	3,66	4,25
	35	2,15	2,50	2,96	3,37	3,89	4,58	5,52

$\Phi_S = \Phi_{HL,i} \times f$ = 1000 Watt x 2,50 = 2500 Watt

A radiator has to be installed that emits 2500 W under the standard- design (75/65/20).

Exact method for the performance calculation

Using the formula $\Phi = \Phi_S \left[\frac{\Delta T}{\Delta T_S}\right]^n$ any performance differing from the standard can be calculated.

Φ = Radiator power [W]
Φ_S = Standard radiator power in accordance with EN 442 [W]
ΔT = Arithmetic radiator excess temperature [K]
ΔT_S = Arithmetic radiator excess temperature 50 K, at a standard state of 75 °C / 65 °C / 20 °C
n = Radiator exponent

Use our radiator power calculator on www.vogelundnoot.com

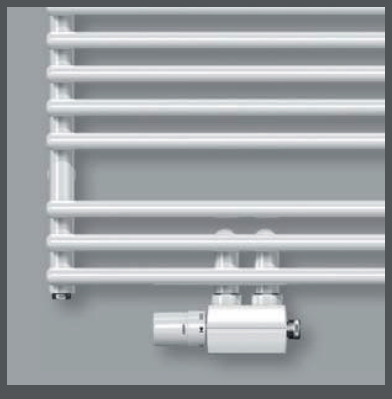
Please note: if the condition

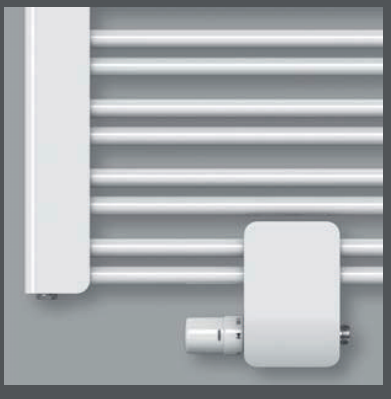
$$c = \frac{t_2 - t_r}{t_1 - t_r} < 0{,}7$$

is met, the excess temperatures will be specified logarithmically.

$$\Delta T_{arithmetic} = \frac{t_1 + t_2}{2} - tr$$

$$\Delta T_{logarithmic} = \frac{t_1 - t_2}{\ln \frac{t_1 - t_r}{t_2 - t_r}}$$





Trend-setters with stylish features

With cutting-edge towel warmers and design radiators, VOGEL &NOOT is the obvious choice for high quality, individual heating system design: the combination of the very latest concepts with innovative heat emission technology means that products from VOGEL &NOOT provide high-calibre solutions to satisfy even the most discerning aesthetic requirements. Intuitive operation and practical functions have always been a feature of the all-encompassing design you have come to expect from VOGEL & NOOT. A hint of luxury adds an exciting touch in your home, while concentrated heat emission from functional radiators in the bathroom form an essential component that provides a multitude of benefits. Why not let yourself be inspired?

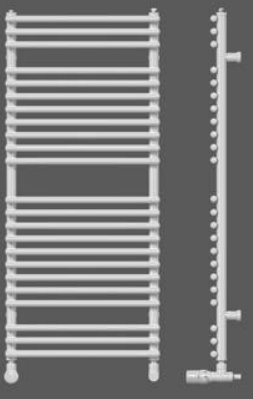
TOWEL WARMERS AND DESIGN RADIATORS

Towel warmers

Contents


DION in RAL 9016


DION in Chrome

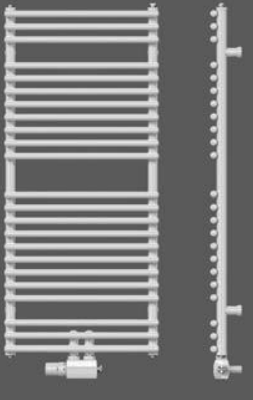


DION
Towel Warmer

DION RAL 9016 / Chrome 81


DION-VM in RAL 9016


DION-VM in Chrome

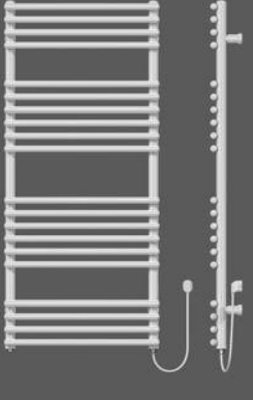


DION-VM
Towel Warmer

DION-VM RAL 9016 /
Chrome 82


DELLA Electric in RAL 9016


DELLA Electric in Chrome



DELLA Electric
Towel Warmer

DELLA Electric
RAL 9016 / Chrome 83

Basics

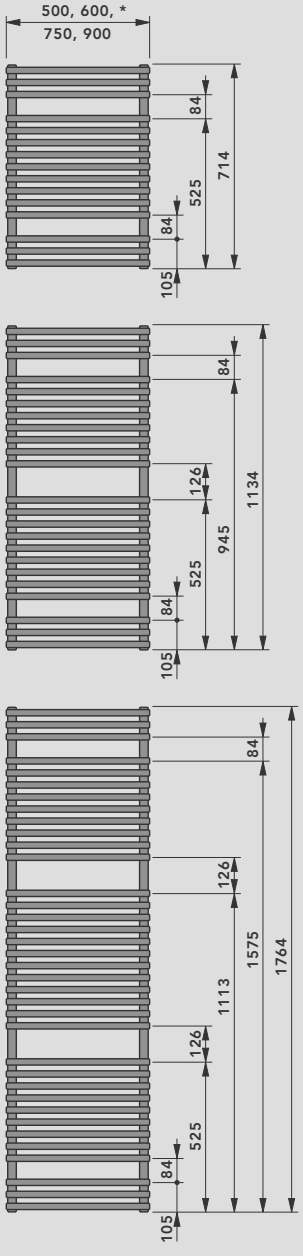
Accessories 84

Tender offer documents are available to download at www.vogelundnoot.com/download

DION Towel Warmer RAL 9016 and Chrome

Technical information

Dimensions [mm]



* in chrome finish: overall length 500 and 600 mm

DION RAL 9016

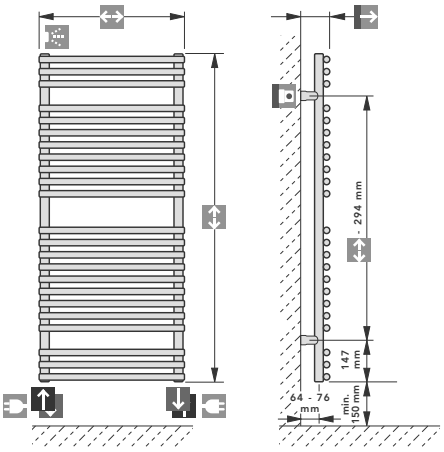
Nominal height (Overall height) [mm]	Overall length [mm]	Nominal power (1) Watts 75/65/20 °C	70/55/20 °C	70/55/24 °C	55/45/20 °C	55/45/24 °C	Radiator exponent n	E-heat element Output (2) Watts	Weight kg	Water content l
700 (714)	500	374	304	265	196	161	1,270	300	2,8	6,8
	600	437	353	306	223	183	1,314	300	3,2	7,8
	750	529	428	372	272	223	1,302	300	3,9	9,2
	900	617	500	435	319	262	1,291	300	4,6	10,6
1100 (1134)	500	568	458	397	289	236	1,322	300	4,5	10,4
	600	663	536	464	339	277	1,314	300	5,3	11,8
	750	802	649	564	412	338	1,302	600	6,4	13,9
	900	937	760	661	485	398	1,291	600	7,5	16,0
1800 (1764)	500	886	712	616	447	364	1,341	600	7,5	15,8
	600	1035	833	721	523	427	1,336	600	8,5	18,2
	750	1252	1009	874	635	519	1,328	900	9,9	21,7
	900	1462	1180	1022	745	609	1,321	900	11,3	25,2

(1) Tested in accordance with ÖNORM EN 442 (2) at 60° C

DION chrome

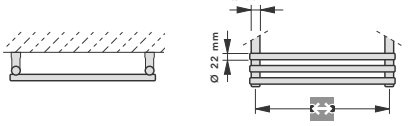
Nominal height (Overall height) [mm]	Overall length [mm]	Nominal power (1) Watts 75/65/20 °C	70/55/20 °C	70/55/24 °C	55/45/20 °C	55/45/24 °C	Radiator exponent n	E-heat element Output (2) Watts	Weight kg	Water content l
1100 (1134)	500	388	315	274	202	166	1,279	300	4,5	10,4
	600	452	368	321	237	195	1,264	300	5,3	11,8
1800 (1764)	500	603	489	425	311	255	1,295	300	7,5	15,8
	600	701	570	497	366	302	1,271	600	8,5	18,2

(1) Tested in accordance with ÖNORM EN 442 (2) at 60° C



Overall depth (incl. wall clearance)
97 - 109 mm

Boss spacing
overall length - 40 mm



Connections
4 x internal thread G 1/2 and Connection options
In line with drawing

Test overpressure
13 bar

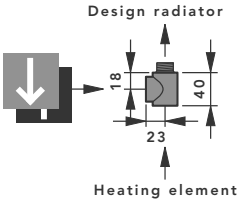
Max. operating overpressure
10 bar

Maximum operating temperature
110 °C

Accessories: PTC electric heating element
All DION towel warmers fitted with an electric heating element can also be used when the regular heating system is switched off. It is **essential** to take into account the power ratings assigned to the electric heating elements.

Free accessories
- A pivotable vent plug, G 1/2, nickel-plated brass, self-sealing
- A dummy plug, G 1/2 nickel-plated brass
- A wall mounting set
- A fitting aid
- An instruction sheet

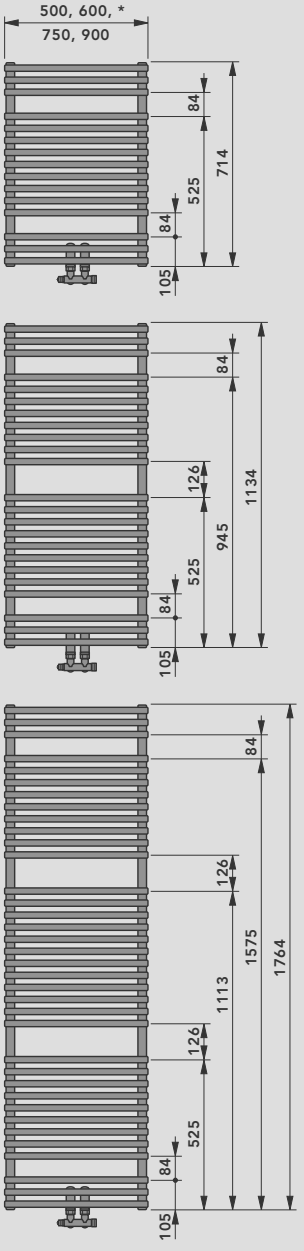
Special connector
(chrome-plated) is to be used when using the DION towel warmer in electric heating mode!



DION-VM Towel Warmer RAL 9016 and Chrome

Technical information

Dimensions [mm]



* in chrome finish: overall length 500 and 600 mm

DION-VM RAL 9016

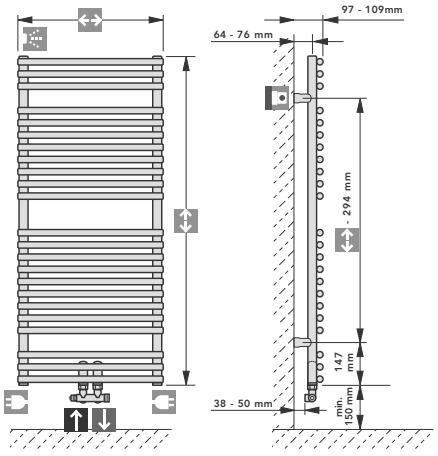
Nominal height (Overall height) [mm]	Overall length [mm]	Nominal power (1) Watts 75/65/20 °C	70/55/20 °C	70/55/24 °C	55/45/20 °C	55/45/24 °C	Radiator exponent n	E-heat element Output (2) Watts	Weight kg	Water content l
700 (714)	500	374	304	265	196	161	1,270	300	2,8	6,8
	600	437	353	306	223	183	1,314	300	3,2	7,8
	750	529	428	372	272	223	1,302	300	3,9	9,2
	900	617	500	435	319	262	1,291	300	4,6	10,6
1100 (1134)	500	568	458	397	289	236	1,322	300	4,5	10,4
	600	663	536	464	339	277	1,314	300	5,3	11,8
	750	802	649	564	412	338	1,302	600	6,4	13,9
	900	937	760	661	485	398	1,291	600	7,5	16,0
1800 (1764)	500	886	712	616	447	364	1,341	600	7,5	15,8
	600	1035	833	721	523	427	1,336	600	8,5	18,2
	750	1252	1009	874	635	519	1,328	900	9,9	21,7
	900	1462	1180	1022	745	609	1,321	900	11,3	25,2

(1) Tested in accordance with ÖNORM EN 442 (2) at 60° C

DION-VM chrome

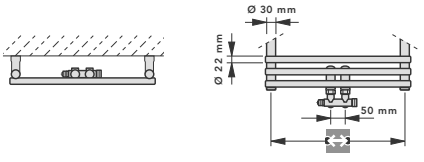
Nominal height (Overall height) [mm]	Overall length [mm]	Nominal power (1) Watts 75/65/20 °C	70/55/20 °C	70/55/24 °C	55/45/20 °C	55/45/24 °C	Radiator exponent n	E-heat element Output (2) Watts	Weight kg	Water content l
1100 (1134)	500	388	315	274	202	166	1,279	300	4,5	10,4
	600	452	368	321	237	195	1,264	300	5,3	11,8
1800 (1764)	500	603	489	425	311	255	1,295	300	7,5	15,8
	600	701	570	497	366	302	1,271	600	8,5	18,2

(1) Tested in accordance with ÖNORM EN 442 (2) at 60° C



Overall depth (incl. wall clearance)
97 - 109 mm

Boss spacing
overall length - 40 mm



Connections
2 x external thread G 3/4 (valve connection set) and 4 x internal thread 1/2
Connection options
In line with drawing

Test overpressure
13 bar

Max. operating overpressure
10 bar

Maximum operating temperature
110 °C

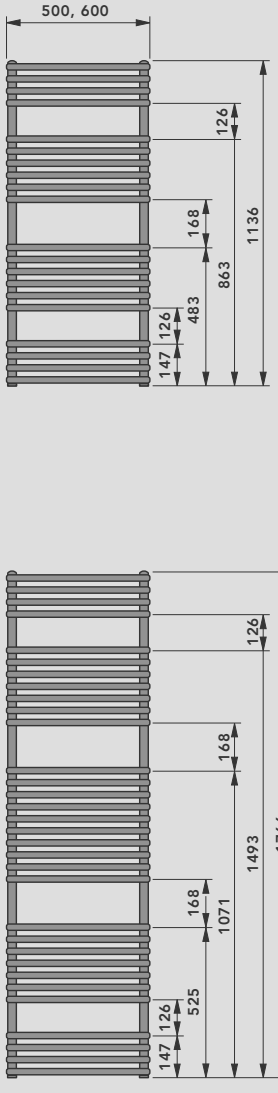
Accessories: PTC electric heating element
All DION-VM towel warmers fitted with an electric heating element can also be used when the regular heating system is switched off. It is **essential** to take into account the power ratings assigned to the electric heating elements.

Free accessories
- A pivotable vent plug, G 1/2, nickel-plated brass, self-sealing
- Three dummy plugs in the design with valves
- A wall mounting set
- A fitting aid
- An instruction sheet

DELLA Elektro Towel Warmer RAL 9016 and Chrome

Technical information

Dimensions [mm]

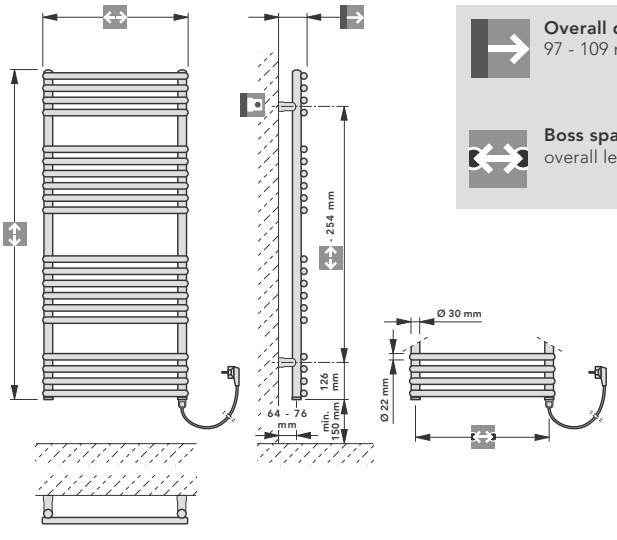


DELLA electric RAL 9016

Nominal height (Overall height) [mm]	Overall length [mm]	Nominal power Watts at 60°C	Nominal voltage [V]	Protection mode	Weight kg
1100	**500**	400	AC 230	IP 24	13,3
(1136)	**600**	400	AC 230	IP 24	15,3
1800	**500**	600	AC 230	IP 24	21,0
(1766)	**600**	600	AC 230	IP 24	24,0

DELLA electric chrome

Nominal height (Overall height) [mm]	Overall length [mm]	Nominal power Watts at 60°C	Nominal voltage [V]	Protection mode	Weight kg
1100	**500**	300	AC 230	IP 24	13,3
(1136)	**600**	400	AC 230	IP 24	15,3
1800	**500**	400	AC 230	IP 24	21,0
(1766)	**600**	600	AC 230	IP 24	24,0



Overall depth (incl. wall clearance)
97 - 109 mm

Boss spacing
overall length - 40 mm

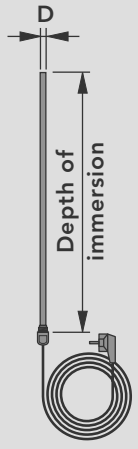
Description
With their built-in electric heating, the electric radiators of the DELLA Elektro family provide an elegant addition to any bathroom.

Self-regulation effect - The temperature-dependent PTC heating element controls the temperature of the heat-transfer liquid independently by modifying its electrical resistance. This cannot be adjusted manually.

Free accessories:
- A wall mounting set matching the radiator colour
- A fitting aid
- An instruction sheet

ÖVE tested

PTC electric heating elements



Electric heating element	EH 300 * EHS 300 **	EH 600 * EHS 600 **	EH 900 * EHS 900 **
Nominal voltage Nominal input EH Depth of immersion EH Diameter **D** EH Cable length EH	AC 230 Volt 300 Watts at 60 °C 245 mm 11 mm 1500 mm	AC 230 Volt 600 Watts at 60°C 450 mm 11 mm 1500 mm	AC 230 Volt 900 Watts at 60 °C 620 mm 11 mm 1500 mm
Item no. with safety plug *	**AZ1EH030A0001000**	**AZ1EH062A0001000**	**AZ1EH092A0001000**
with safety plug and switch **	**AZ1EH030B0001000**	**AZ1EH062B0001000**	**AZ1EH092B0001000**
Designs: * with safety plug ** with safety plug and switch	Protection mode IP 64 IP 40		

All DION and DION-VM towel warmers fitted with an electric heating element can also be used when the regular heating system is switched off. It is essential to take into account the power ratings assigned to the electric heating elements.

Digital room thermostat

Digital room thermostat with infrared transfer incl. PTC electric heating element, for the purpose of regulating the temperature of the towel warmer. The infrared transmitter features an easy-to-understand LCD display that shows the room temperature, target temperature, operating mode and BOOST symbol at the same time.

The BOOST function allows you to activate operation for a continuous period of time (without thermostat function) from 5 minutes up to 5 hours. Three pre-defined modifiable programmes enable you to select one or two BOOST cycles per day.

The infrared control set is especially suitable for installation at a subsequent date, as a safety plug can be exchanged for a receiver at a later date.

	Infrared control set		
	EH 300 Set	**EH 600 Set**	**EH 900 Set**
	PTC-electric heating element		
Nominal voltage Nominal input EH Depth of immersion EH Diameter D EH Cable length EH	AC 230 Volt 300 Watts at 60 °C 245 mm 11 mm 1500 mm	AC 230 Volt 600 Watts at 60°C 450 mm 11 mm 1500 mm	AC 230 Volt 900 Watts at 60 °C 620 mm 11 mm 1500 mm
	Digital room thermostat transmitter		
Setting range for room temperatures	Between + 5 °C and + 30 °C		
Setting range for BOOST cycle duration	Between 5 minutes and 5 hours		
Display area for room temperatures	from + 0 °C to + 40 °C		
Static deviation	< 0,3 K		
Power supply	2 alkaline cells, LR03 model		
Range	Approx. 10 metres (all directions) Approx. 15 metres (in an unobstructed straight line)		
Interval of Infrared transmissions	Every 10 minutes		
Operational temperature	Between –10 °C and +50 °C		
Storage temperature	Between –20 °C and +60 °C		
Air humidity	Maxium of 90 %, at +25 °C		
Protection mode	IP 31		
Dimensions	120 x 80 x 35 mm (height x length x depth)		
	Digital room thermostat receiver		
Supply voltage	230 VAC +/- 10%		
Mains frequency	50 Hz		
Input power	< 5 VA		
Output	1 N/O contact (not potential free)		
Switching capacity	Ohm resistive load: max. 10A/2000W		
Operational temperature	Between –10 °C and +40 °C		
Storage temperature	Between –20 °C and +60 °C		
Air humidity	Maxium of 90 %, at +20 °C		
Protection mode	IP 24		
Dimensions	117 x 81 x 30 mm (height x length x depth)		
Digital room thermostat, transmitter and receiver **AND** electrical heating element			
Item no.	AZ1CT030I0001000	AZ1CT060I0001000	AZ1CT090I0001000
Digital room thermostat, transmitter and receiver WITHOUT electrical heating element			
Item no.	AZ1CT000I0001000		

Accessoires

	Accessoir Overall length [mm]	Item no.	DION / DION-VM Overall length [mm]				DELLA Elektro Overall length [mm]	
			500	600	750	900	500	600
 Clothes rail	**CLOTHES RAIL** chromee-plated (incl. two fastening kits)							
 Bath towel rail	**492**	AZ1CR049C200100SCHRO	•	•	•	•	•	•
	596	AZ1CR060C200100SCHRO		•	•	•		•
	804	AZ1CR080C200100SCHRO				•		
	BATH TOWEL RAIL chromee-plated (incl. two fastening kits)							
 Glass shelf	**500**	AZ1BT050C200100SCHRO	•	•	•	•	•	•
	600	AZ1BT065C200100SCHRO		•	•	•		•
	GLASS SHELF (incl. two fastening kits)							
 Hand towel ring	**300**	AZ1GS030C200100SCHRO	•	•	•	•	•	•
	500	AZ1GS050C200100SCHRO	•	•	•	•	•	•
	650	AZ1GS065C200100SCHRO			•	•		
	HAND TOWEL RING chromee-plated (incl. fastening kit)							
 Hand towel rail		AZ1HT000C200100SCHRO	•	•	•	•	•	•
	HAND TOWEL RAIL chromee-plated (incl. fastening kit)							
		AZ1TR000C200100SCHRO	•	•	•	•	•	•

Guarantee statements are available to download at **www.vogelundnoot.com/download**

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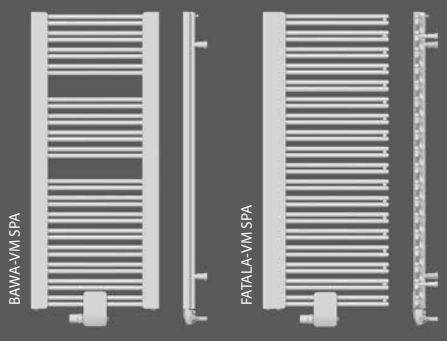

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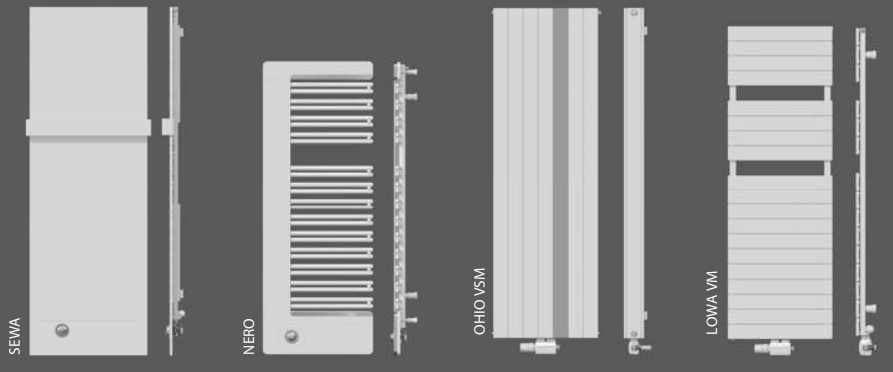

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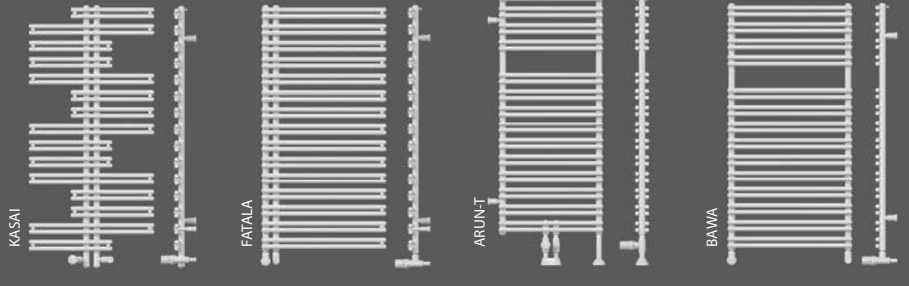

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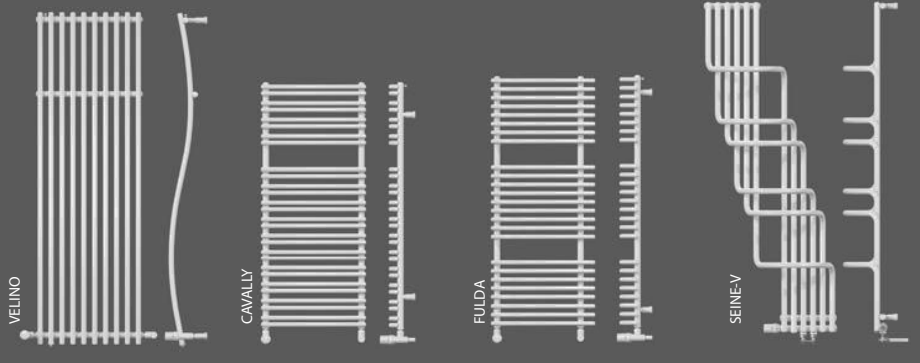

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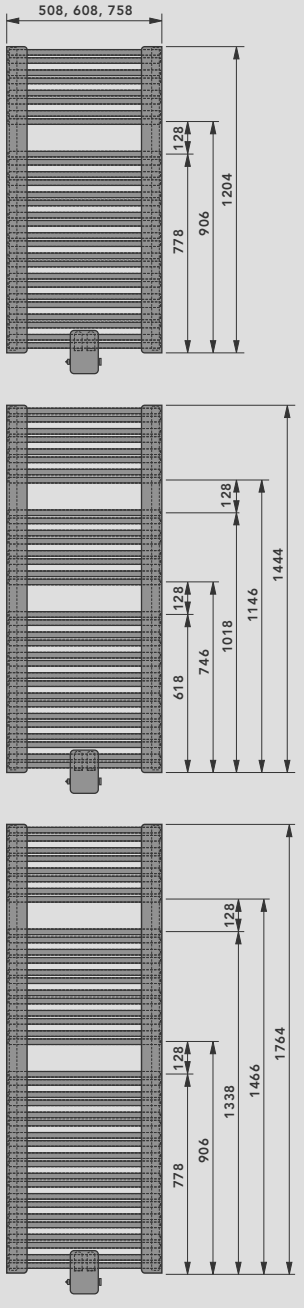
Basics

BAWA-VM SPA Design radiator

Technical data

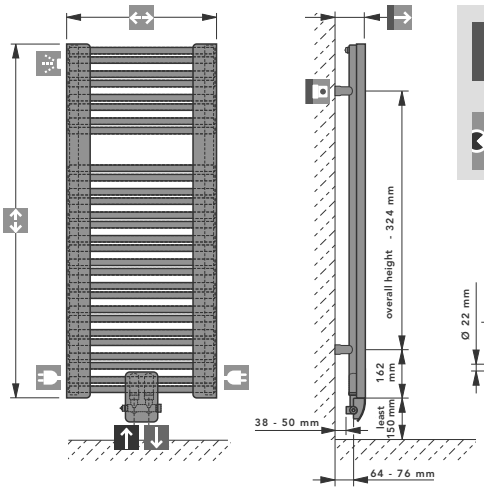
Dimensions [mm]



BAWA-VM SPA

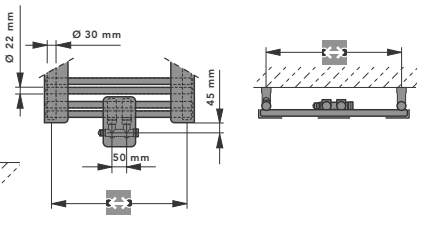
Nominal height (Overall height) [mm]	Overall length [mm]	Heat output [1] in Watts 75/65/20 °C	Radiator exponent n	E-heat element Output [2] Watt	Weight kg	Water content l
1200 (1204)	**508**	629	1,2010	300	14,64	5,40
	608	738	1,2012	300	16,34	6,30
	758	898	1,2014	600	18,89	7,65
1500 (1444)	**508**	747	1,2270	300	17,25	6,58
	608	876	1,2246	600	19,28	7,59
	758	1066	1,2209	600	22,32	9,10
1800 (1764)	**508**	885	1,2605	600	20,63	8,10
	608	1038	1,2546	600	23,08	9,25
	758	1263	1,2458	600	26,76	10,98

[1] Tested in accordance with ÖNORM EN 442 [2] at 60° C

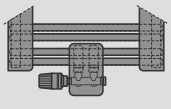


Depth (incl. wall projection)
for an overall length of 508 .... 102 - 114 mm
for an overall length of 608 .... 102 - 114 mm
for an overall length of 758 .... 102 - 114 mm

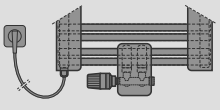
Overall length - 50 mm

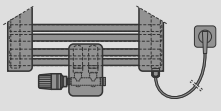


Connection example without electric heating element



Connection examples with electric heating element





Connections
2 x external thread G 3/4 (for valve connection set)
2 x internal thread G 1/2 and
1 x internal thread G 1/4 (for vent plugs)
Connection options
In line with drawing

Test overpressure
13 bar

Maximum positive operating pvressure
10 bar

Maximum operating temperature
110 °C

Standard basic configuration, as supplied

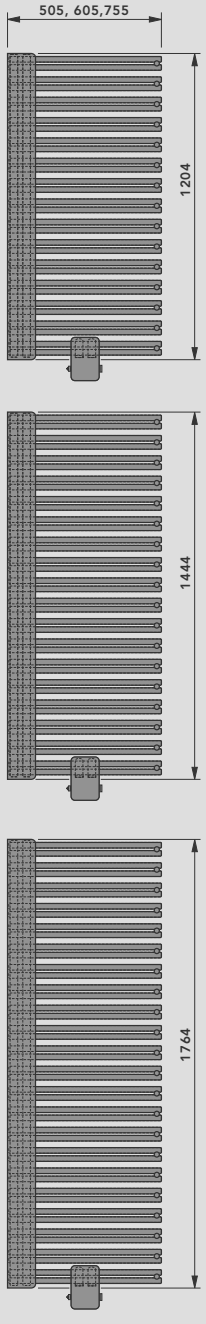
- A pivotable vent plug, G 1/4, and two dummy plugs, G 1/2, nickel-plated brass self-sealing, factory-sealed
- A valve connection set in an angled two-pipe design
- A covering rosette matching the radiator colour
- A wall mounting set matching the radiator colour
- A fitting aid
- An instruction sheet

Accessory: PTC electric heating element
All BAWA-VM SPA radiators fitted with an electric heating element can also be used when the regular heating system is switched off. It is essential to take into account the power ratings assigned to the electric heating elements.

FATALA-VM SPA Design radiator

Technical data

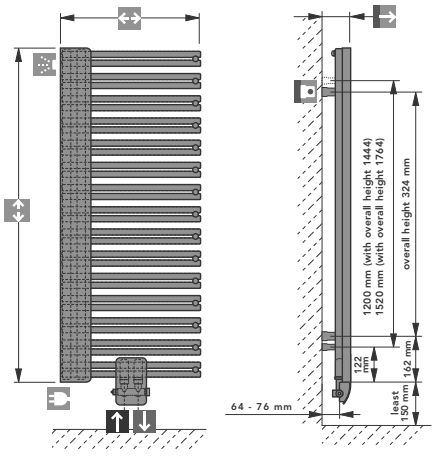
Dimensions [mm]



FATALA-VM SPA

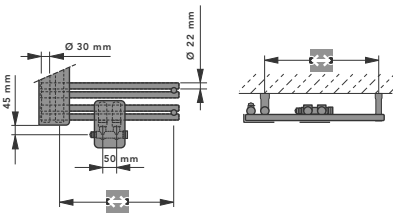
Nominal height (Overall height) [mm]	Overall length [mm]	Heat output [1] in Watts 75/65/20 °C	Radiator exponent n	E-heat element Output [2] Watt	Weight kg	Water content l
1200 (1204)	**505**	583	1,2305	300	15,67	5,55
	605	704	1,2085	300	17,61	6,63
	755	887	1,1754	600	20,52	8,25
1500 (1444)	**505**	699	1,2438	300	18,27	6,45
	605	844	1,2072	600	19,81	7,19
	755	1064	1,1523	600	22,12	8,30
1800 (1764)	**505**	855	1,2436	600	22,12	8,30
	605	1032	1,2213	600	24,96	9,98
	755	1300	1,1878	600	29,22	12,50

[1] Tested in accordance with ÖNORM EN 442 [2] at 60° C

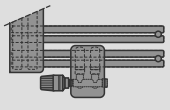


Depth (incl. wall projection)
for an overall length of 505 .... 102 - 114 mm
for an overall length of 605 .... 102 - 114 mm
for an overall length of 755 .... 102 - 114 mm

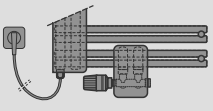
Overall length - 95 mm



Connection example without electric heating element



Connection examples with electric heating element



Connections
2 x external thread G 3/4 (for valve connection set)
2 x internal thread G 1/2 and
1 x internal thread G 1/4 (for vent plugs)
Connection options
In line with drawing

Test overpressure
13 bar

Maximum positive operating pvressure
10 bar

Maximum operating temperature
110 °C

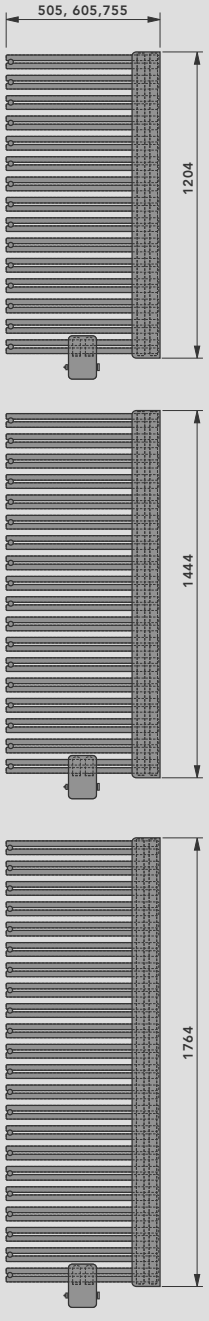
Standard basic configuration, as supplied
- A pivotable vent plug, G 1/4, and two dummy plugs, G 1/2, nickel-plated brass self-sealing, factory-sealed
- A valve connection set in an angled two-pipe design
- A covering rosette matching the radiator colour
- A wall mounting set matching the radiator colour
- A fitting aid
- An instruction sheet

Accessory: PTC electric heating element
All FATALA-VM SPA radiators fitted with an electric heating element can also be used when the regular heating system is switched off. It is essential to take into account the power ratings assigned to the electric heating elements.

FATALA-VM SPA Design radiator, left hand design

Technical data

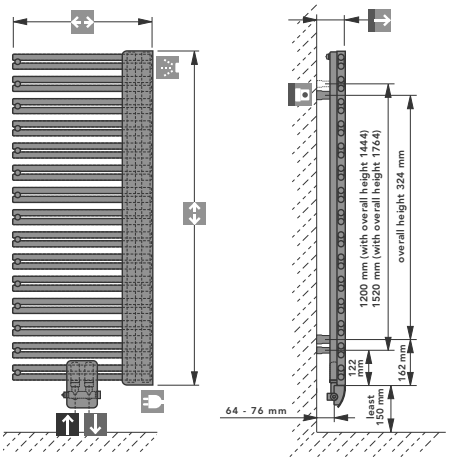
Dimensions [mm]



FATALA-VM SPA Design radiator, left hand design

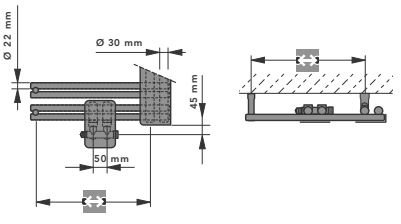
Nominal height (Overall height) [mm]	Overall length [mm]	Heat output (1) in Watts 75/65/20 °C	Radiator exponent n	E-heat element Output (2) Watt	Weight kg	Water content l
1200 (1204)	**505**	583	1,2305	300	15,67	5,55
	605	704	1,2085	300	17,61	6,63
	755	887	1,1754	600	20,52	8,25
1500 (1444)	**505**	699	1,2438	300	18,27	6,45
	605	844	1,2072	600	19,81	7,19
	755	1064	1,1523	600	22,12	8,30
1800 (1764)	**505**	855	1,2436	600	22,12	8,30
	605	1032	1,2213	600	24,96	9,98
	755	1300	1,1878	600	29,22	12,50

(1) Tested in accordance with ÖNORM EN 442 (2) at 60° C

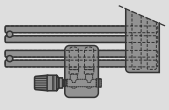


Depth (incl. wall projection)
for an overall length of 505 .... 102 - 114 mm
for an overall length of 605 .... 102 - 114 mm
for an overall length of 755 .... 102 - 114 mm

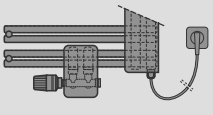
Overall length - 95 mm



Connection example without electric heating element



Connection example with electric heating element



Connections
2 x external thread G 3/4 (for valve connection set)
2 x internal thread G 1/2 and
1 x internal thread G 1/4 (for vent plugs)
Connection options
In line with drawing

Test overpressure
13 bar

Maximum positive operating pvressure
10 bar

Maximum operating temperature
110 °C

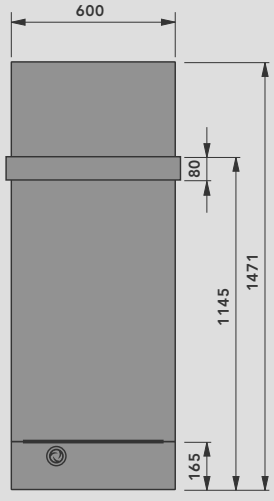
Standard basic configuration
- A pivotable vent plug, G 1/4, and two dummy plugs, G 1/2, nickel-plated brass self-sealing, factory-sealed
- A valve connection set in an angled two-pipe design
- A covering rosette matching the radiator colour
- A wall mounting set matching the radiator colour
- A fitting aid
- An instruction sheet

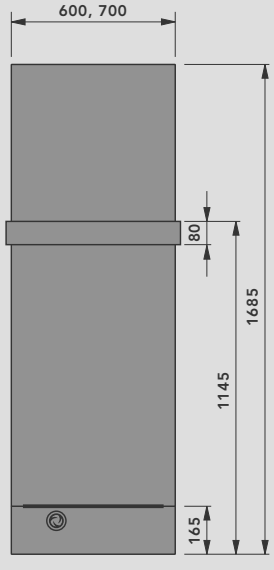
Accessory: PTC electric heating element
All FATALA-VM SPA, left hand design radiators fitted with an electric heating element can also be used when the regular heating system is switched off. It is essential to take into account the power ratings assigned to the electric heating elements.

SEWA Design radiator

Technical data

Dimensions [mm]

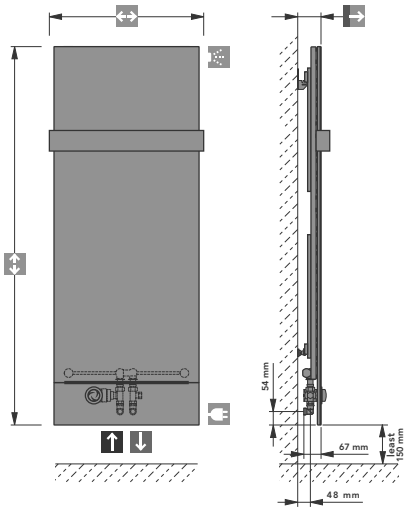




SEWA

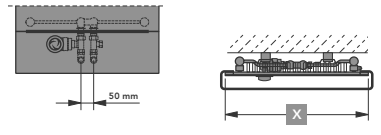
Nominal height (Overall height) [mm]	Overall length [mm]	Heat output (1) in Watts 75/65/20 °C	70/55/20 °C	55/45/20 °C	Radiator exponent n	E-heat element Output (2) Watt	Weight kg	Water content l
1500 (1471)	**600**	779	637	414	1,239	600	40,0	5,6
1700 (1685)	**600**	914	749	490	1,221	600	46,0	6,5
	700	1045	857	560	1,220	600	52,8	7,5

(1) Tested in accordance with ÖNORM EN 442 (2) at 60° C



Overall depth (incl. wall clearance)
for an overall length of 600 .... 90 mm
for an overall length of 700 .... 90 mm

X
for an overall length of 600 .... 564 mm
for an overall length of 700 .... 664 mm

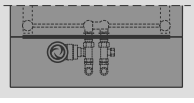


MADE IN AUSTRIA

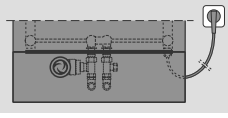
FATALA-VM SPA
left hand design

SEWA

Connection example without electric heating element



Connection example with electric heating element



Connections
2 x G 3/4 External thread
(Valve connection set)
Connection modes
see diagram

Maximum permissible operating pressure
5 bar

Maximum operating temperature
110 °C

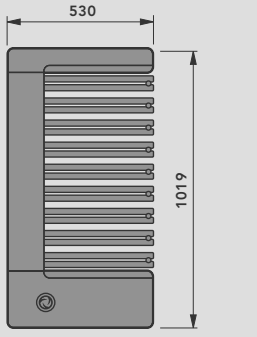
Standard basic configuration
- 1 towel rail
- An integrated valve connection set incl. thermostat head
- A pivotable vent plug, G ¼, and
- A dummy plug, G 3/8, nickel-plated brass, self-sealing, factory-sealed
- A wall mounting set with spacers
- 2 mounting brackets, alternatively: 2 extensions
- Instruction sheet

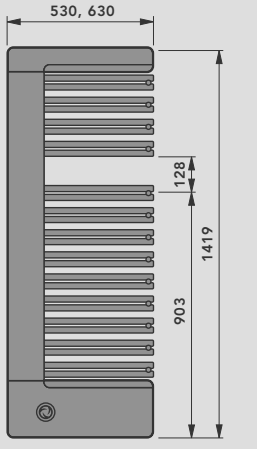
Accessory: PTC electric heating element
All SEWA design radiators fitted with an electric heating element can also be used when the regular heating system is switched off. It is essential to take into account the power ratings assigned to the electric heating elements.

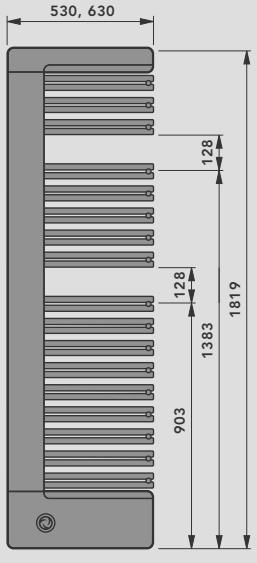
NERO Design radiator

Technical data

Dimensions [mm]



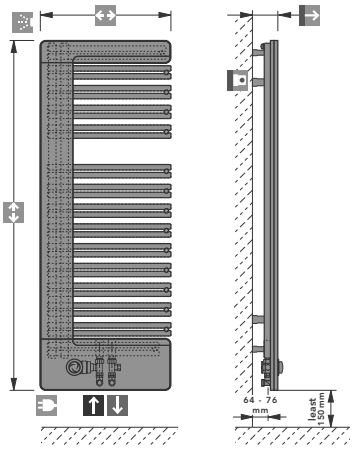




NERO

Nominal height (Overall height) [mm]	Overall length [mm]	Heat output (1) in Watts 75/65/20 °C	70/55/20 °C	55/45/20 °C	Radiator exponent n	E-heat element Output (2) Watt	Weight kg	Water content l
1000 (1019)	**530**	451	361	225	1,366	300	17,6	4,1
1400 (1419)	**530** **630**	614 721	503 590	327 384	1,232 1,218	300 600	22,1 25,0	5,5 6,6
1800 (1819)	**530** **630**	794 968	649 792	422 515	1,407 1,246	600 600	27,0 30,0	7,2 8,3

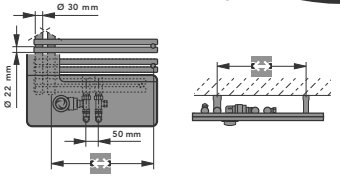
(1) Tested in accordance with ÖNORM EN 442 (2) at 60° C



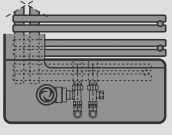
Overall depth (incl. wall clearance)
for an overall length of 530 .... 106 - 118 mm
for an overall length of 630 .... 106 - 118 mm

Overall length - 170 mm

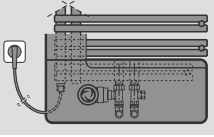
MADE IN AUSTRIA



Connection example without electric heating element



Connection example with electric heating element



Connections
2 x G 1/2 Internal thread
1 x G 1/4 Internal thread (for vent plug)
2 x G 3/4 External thread (mounting brackets or extensions)
Connection modes
see diagram

Test overpressure
13 bar

Maximum positive operating pressure
10 bar

Maximum operating temperature
110 °C

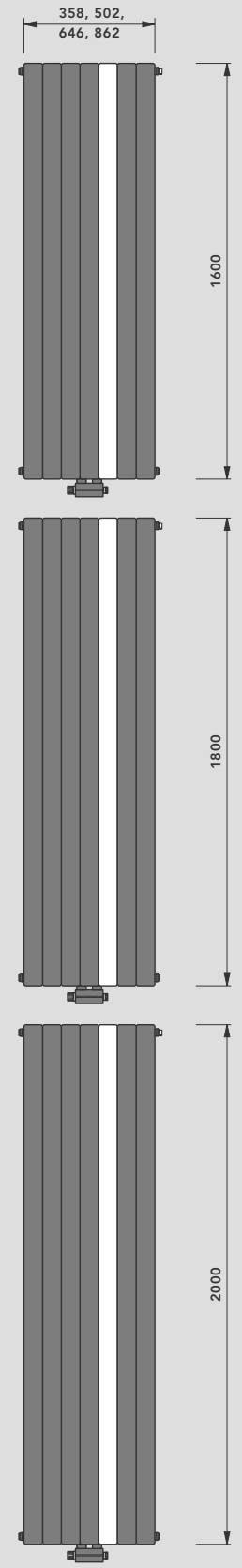
Standard basic configuration
- An integrated valve connection set incl. thermostat head
- A pivotable vent plug, G ¼, nickel-plated, self-sealing, factory-sealed
- A wall mounting set matching the radiator colour
- 2 mounting brackets, alternatively: 2 extensions
- Fitting aid
- Instruction sheet

Accessory: PTC electric heating element
All NERO design radiators fitted with an electric heating element can also be used when the regular heating system is switched off. It is essential to take into account the power ratings assigned to the electric heating elements.

OHIO VSM Design radiator

Technical data

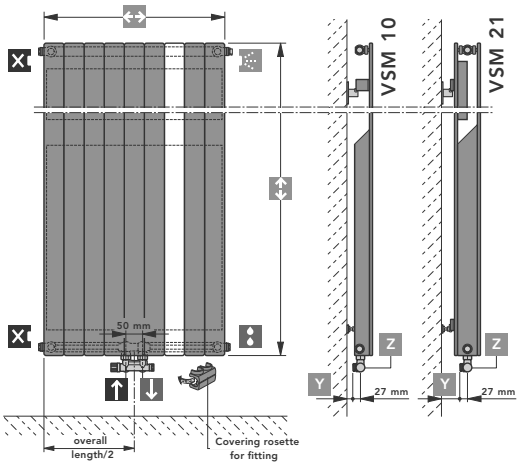
Dimensions [mm]



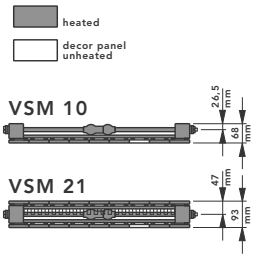
OHIO VSM

Nominal height (Overall height) [mm]	Overall length [mm]	Heat output (1) in Watts 75/65/20 °C		70/55/20 °C		70/55/24 °C		55/45/20 °C		55/45/24 °C		Radiator exponent n		Weight kg		Water content l	
[mm]	[mm]	VSM 10	VSM 21	VSM 10	VSM 21	VSM 10	VSM 21	VSM 10	VSM 21	VSM 10	VSM 21	VSM 10	VSM 21	VSM 10	VSM 21	VSM 10	VSM 21
1600 (1600)	358	622	1140	495	907	426	779	304	556	246	449	1,399	1,404	15,9	37,4	4,1	8,1
	502	872	1598	695	1272	597	1092	427	780	345	630	1,399	1,404	22,3	52,4	5,7	11,4
	646	1123	2057	895	1637	769	1406	549	1004	444	811	1,399	1,404	28,7	67,4	7,3	14,7
	862	1498	2745	1193	2185	1025	1877	733	1340	592	1082	1,399	1,404	38,3	90,0	9,8	19,6
1800 (1800)	358	708	1285	564	1024	484	880	346	630	280	509	1,401	1,397	17,8	41,0	4,5	8,7
	502	993	1801	791	1435	679	1234	486	882	392	713	1,401	1,397	24,9	57,4	6,3	12,2
	646	1278	2318	1018	1847	875	1588	625	1136	505	918	1,401	1,397	32,0	73,9	8,1	15,7
	862	1706	3093	1359	2465	1167	2119	834	1515	674	1225	1,401	1,397	42,8	98,6	10,8	21,0
2000 (2000)	358	799	1436	637	1147	548	988	393	709	318	575	1,390	1,381	19,6	44,5	5,0	9,9
	502	1120	2014	894	1609	769	1386	551	995	446	806	1,390	1,381	27,5	62,5	7,0	13,9
	646	1442	2592	1150	2071	990	1783	709	1280	574	1038	1,390	1,381	35,4	80,4	9,0	17,9
	862	1924	3458	1535	2763	1320	2379	946	1708	766	1384	1,390	1,381	47,2	107,3	11,9	23,9

(1) Tested in accordance with ÖNORM EN 442



Z Connection fitting
Two-pipe operation – angled design



Connections
2 x G 3/4 External thread (bottom centre)
Connection modes
see diagram

Maximum operating temperature
110 °C

Maximum positive operating pressure
Standard design:
5 bar

Maximum positive operating pressure
High-pressure design
(supplement of 10 %): 8 bar

Standard basic configuration
- A drain plug, G ½, and
- A pivotable vent plug, G ½, nickel-plated brass, self-sealing, factory-sealed
- A valve connection set with angled two-pipe design
- Covering rosette in matching radiator colour
- Instruction sheet

Angled connection fitting Z		
Mounting	Model	Dimension Y
*	VSM 10	*
WA 11	VSM 21	63 mm

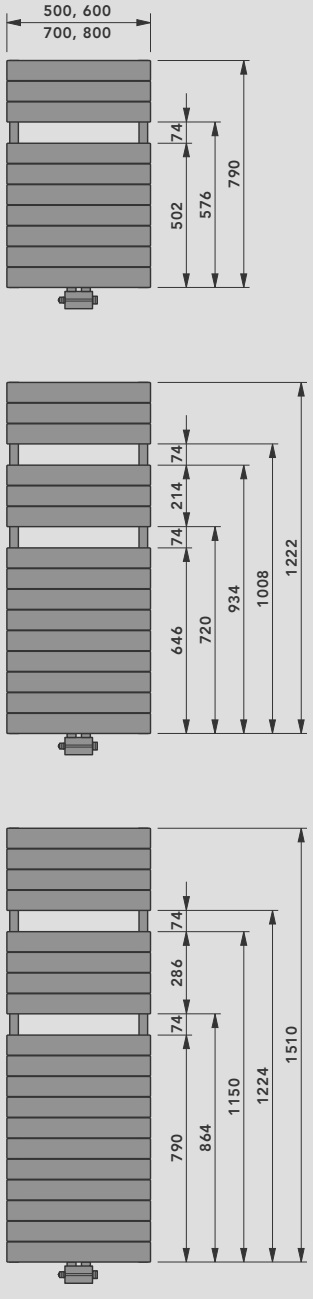
Note:
VSM models are only available with welded-on brackets.

- For the installation of the VSM 21 model use the WA 11 wall fastening set.
- *For the installation of the VSM 10 model with the angled connection fitting Z, please use the appropriate drill consoles or angled fastening set in order to obtain the necessary wall clearance.

LOWA VM Design radiator

Technical data

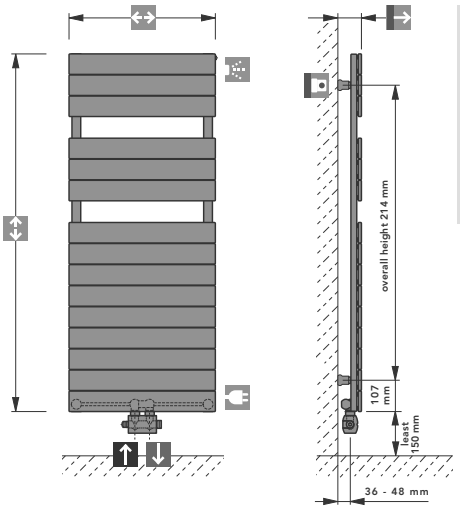
Dimensions [mm]



LOWA VM

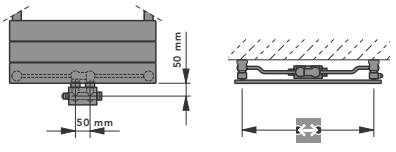
Nominal height (Overall height) [mm]	Overall length [mm]	Heat output (1) in Watts 75/65/20 °C	70/55/20 °C	70/55/24 °C	55/45/20 °C	55/45/24 °C	Radiator exponent n	E-heat element Output (2) Watt	Weight kg	Water content l
800 (790)	500	416	341	299	223	185	1,223	300	12,6	3,0
	600	487	400	350	262	217	1,217	300	14,5	3,5
	700	557	457	401	300	250	1,211	300	16,4	4,0
	800	626	515	452	338	282	1,205	300	18,3	4,5
1250 (1222)	500	608	498	435	324	268	1,233	300	18,8	4,5
	600	713	585	512	382	317	1,221	300	21,6	5,2
	700	815	670	587	439	365	1,210	600	24,4	5,9
	800	915	753	661	496	413	1,198	600	27,2	6,6
1500 (1510)	500	727	595	520	387	321	1,234	600	23,5	5,7
	600	852	696	609	452	374	1,242	600	27,1	6,6
	700	974	795	694	514	425	1,250	600	30,7	7,5
	800	1094	892	778	575	475	1,258	600	34,3	8,4

(1) Tested in accordance with ÖNORM EN 442 (2) at 60° C

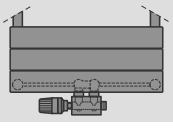


Overall depth (incl. wall clearance)
for an overall length of 500 .... 75 - 87 mm
for an overall length of 600 .... 75 - 87 mm
for an overall length of 700 .... 75 - 87 mm
for an overall length of 800 .... 75 - 87 mm

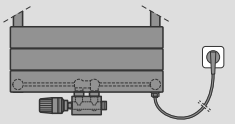
Overall length - 40 mm



Connection example without electric heating element



Connection example with electric heating element



Connections
2 x G 3/4 External thread (Valve connection set)
1 x G 3/8 Internal thread and
1 x G 1/4 Internal thread (for vent plug)
Connection modes
see diagram

Maximum positive operating pressure
5 bar

Maximum operating temperature
110 °C

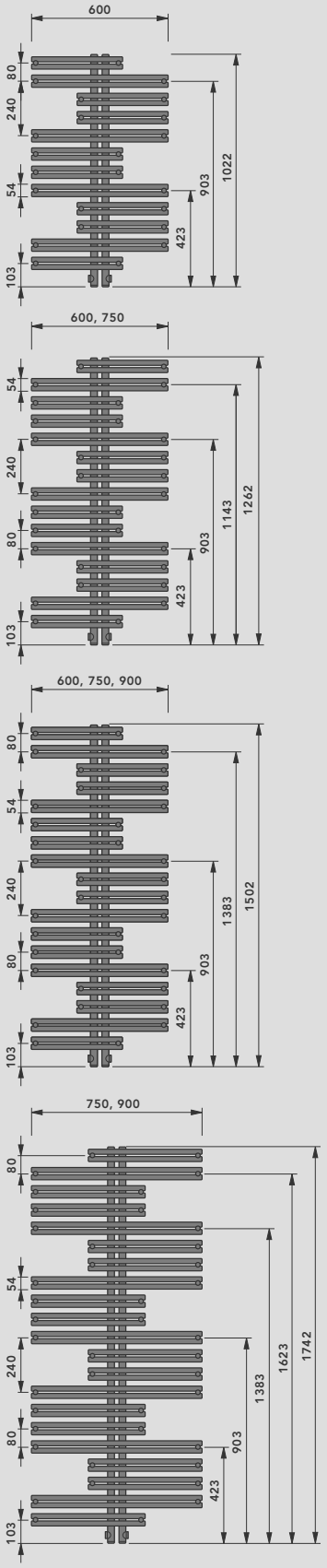
Standard basic configuration
- A pivotable vent plug, G 1/4, and
- A dummy plug, G 3/8, nickel-plated brass, self-sealing, factory-sealed
- Valve connection set in an angled two-pipe design
- Covering rosette in matching radiator colour
- A wall mounting set matching the radiator colour
- Fitting aid
- Instruction sheet

Accessory: PTC electric heating element G 3/8
All Design radiators with flat tubes which are fitted with an electric heating element can also be used when the regular heating system is switched off. It is essential to take into account the power ratings assigned to the electric heating elements.

KASAI Design radiator

Technical data

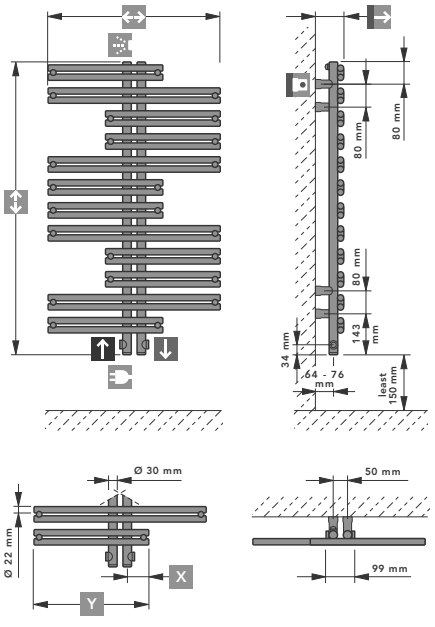
Dimensions [mm]



KASAI

Nominal height (Overall height) [mm]	Overall length [mm]	Heat output (1) in Watts 75/65/20 °C	70/55/20 °C	70/55/24 °C	55/45/20 °C	55/45/24 °C	Radiator exponent n	E-heat element Output (2) Watt	Weight kg	Water content l
1000 (1022)	600	499	407	355	262	217	1,259	300	10,6	4,4
1300 (1262)	600	613	500	437	323	267	1,253	300	13,3	5,3
	750	739	606	530	395	328	1,225	600	15,7	5,7
1500 (1502)	600	724	591	516	383	317	1,247	600	16,0	6,1
	750	870	711	622	462	383	1,238	600	18,7	6,7
	900	1030	843	738	549	455	1,232	600	21,6	7,6
1800 (1742)	750	1008	822	718	532	440	1,252	600	21,7	7,7
	900	1194	976	854	634	525	1,239	600	24,9	9,2

(1) Tested in accordance with ÖNORM EN 442 (2) at 60° C



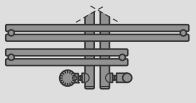
Overall depth (incl. wall clearance)
for an overall length of 600 .... 97 - 109 mm
for an overall length of 750 .... 97 - 109 mm
for an overall length of 900 .... 97 - 109 mm

Mounting nozzle
With overall heights of 1000 and 1500 mm, the 2 mounting nozzles on top are rotated 90°!

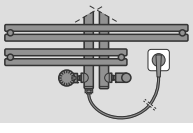
X
for an overall length of 600 .... 75 mm
for an overall length of 750 .... 100 mm
for an overall length of 900 .... 125 mm

Y
for an overall length of 600 .... 400 mm
for an overall length of 750 .... 500 mm
for an overall length of 900 .... 600 mm

Connection example without electric heating element



Connection example with electric heating element



Connections
4 x G 1/2 Internal thread and
1 x G 1/4 Internal thread (for vent plug)
Connection modes
see diagram

13 bar
Test overpressure
13 bar

10 bar max.
Maximum positive operating pressure
10 bar

max.
Maximum operating temperature
110 °C

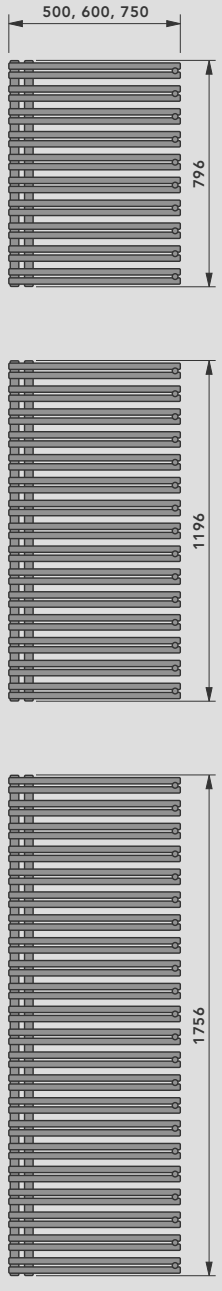
Accessory: PTC electric heating element
KASAI design radiators equipped with an electric heating element can also be used at times when the regular heating system is switched off. It is absolutely necessary to take account of the power-ratings assigned to the electric heating elements.

Standard basic configuration
- A pivotable vent plug, G 1/4, and two dummy plugs, G 1/2, nickel-plated brass, self-sealing
- A wall mounting set matching the radiator colour
- Fitting aid
- Instruction sheet

FATALA Design radiator

Technical data

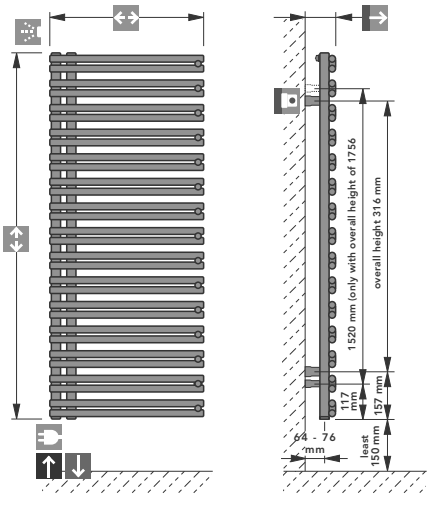
Dimensions [mm]



FATALA

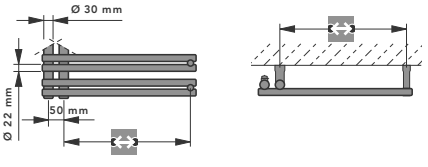
Nominal height (Overall height) [mm]	Overall length [mm]	Heat output (1) in Watts 75/65/20 °C	70/55/20 °C	70/55/24 °C	55/45/20 °C	55/45/24 °C	Radiator exponent n	E-heat element Output (2) Watt	Weight kg	Water content l
800 (796)	500	446	368	323	243	203	1,189	300	8,8	3,8
	600	530	437	384	289	241	1,189	300	10,0	4,3
	750	653	538	473	356	297	1,189	300	11,9	5,0
1200 (1196)	500	650	535	469	352	293	1,202	300	12,9	5,9
	600	773	636	558	418	348	1,202	600	14,8	6,7
	750	955	786	690	517	430	1,202	600	17,6	8,0
1800 (1756)	500	897	733	641	476	394	1,241	600	19,2	8,0
	600	1081	883	772	573	475	1,241	600	21,8	9,5
	750	1357	1109	969	720	596	1,241	900	25,7	11,7

(1) Tested in accordance with ÖNORM EN 442 (2) at 60° C

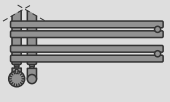


Overall depth (incl. wall clearance)
for an overall length of 500 .... 97 - 109 mm
for an overall length of 600 .... 97 - 109 mm
for an overall length of 750 .... 97 - 109 mm

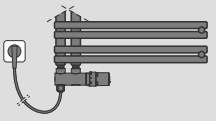
Overall length - 90 mm



Connection example without electric heating element



Connection example with electric heating element



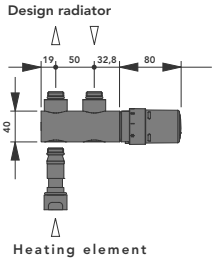
Connections
2 x G 1/2 Internal thread (bottom left) and 1 x G 1/4 Internal thread (for vent plug)
Connection modes
see diagram

Test overpressure
13 bar

Maximum positive operating pressure
10 bar

Maximum operating temperature
110 °C

A special adapter (chrome-plated) should be used for the electric heating insert with the FATALA Design radiator!



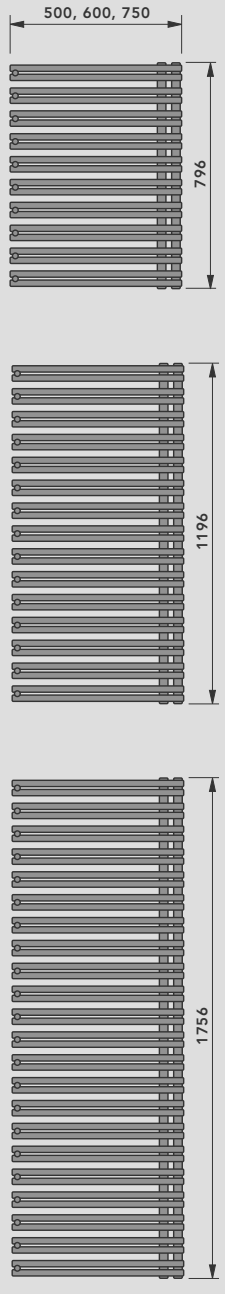
Accessory: PTC electric heating element
All FATALA design radiators fitted with an electric heating element can also be used when the regular heating system is switched off. It is essential to take into account the power ratings assigned to the electric heating elements.

Standard basic configuration
- A pivotable vent plug, G 1/4, nickel-plated, self-sealing
- A wall mounting set matching the radiator colour
- Fitting aid
- Instruction sheet

FATALA Design radiator left hand design

Technical data

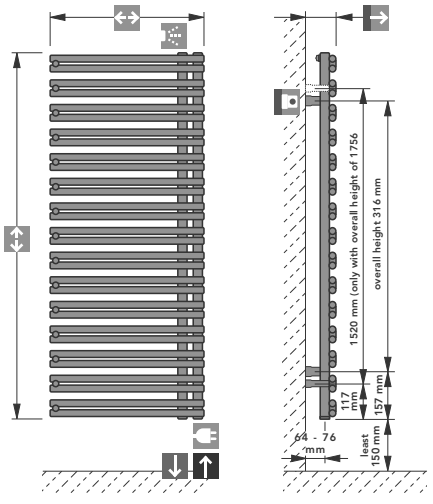
Dimensions [mm]



FATALA left hand design

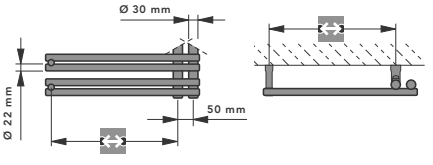
Nominal height (Overall height) [mm]	Overall length [mm]	Heat output (1) in Watts 75/65/20 °C	70/55/20 °C	70/55/24 °C	55/45/20 °C	55/45/24 °C	Radiator exponent n	E-heat element Output (2) Watt	Weight kg	Water content l
800 (796)	**500**	446	368	323	243	203	1,189	300	8,8	3,8
	600	530	437	384	289	241	1,189	300	10,0	4,3
	750	653	538	473	356	297	1,189	300	11,9	5,0
1200 (1196)	**500**	650	535	469	352	293	1,202	300	12,9	5,9
	600	773	636	558	418	348	1,202	600	14,8	6,7
	750	955	786	690	517	430	1,202	600	17,6	8,0
1800 (1756)	**500**	897	733	641	476	394	1,241	600	19,2	8,0
	600	1081	883	772	573	475	1,241	600	21,8	9,5
	750	1357	1109	969	720	596	1,241	900	25,7	11,7

(1) Tested in accordance with ÖNORM EN 442 (2) at 60° C

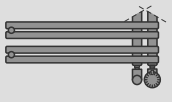


Overall depth (incl. wall clearance)
for an overall length of 500 .... 97 - 109 mm
for an overall length of 600 .... 97 - 109 mm
for an overall length of 750 .... 97 - 109 mm

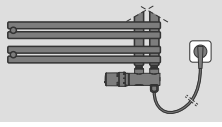
Overall length - 90 mm



Connection example without electric heating element



Connection example with electric heating element



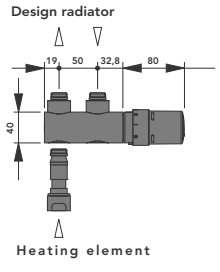
Connections
2 x G 1/2 Internal thread (bottom left) and 1 x G 1/4 Internal thread (for vent plug)
Connection modes
see diagram

Test overpressure
13 bar

Maximum positive operating pressure
10 bar

Maximum operating temperature
110 °C

A special adapter (chrome-plated) should be used for the electric heating insert with the FATALA Design radiator!



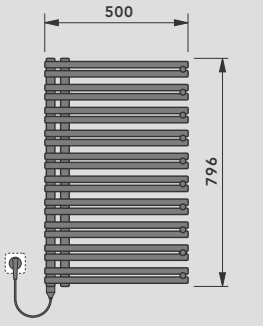
Accessory: PTC electric heating element
All FATALA left hand design radiators fitted with an electric heating element can also be used when the regular heating system is switched off. It is essential to take into account the power ratings assigned to the electric heating elements.

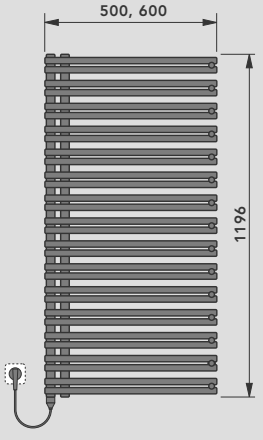
Standard basic configuration
- A pivotable vent plug, G 1/4, nickel-plated, self-sealing
- A wall mounting set matching the radiator colour
- Fitting aid
- Instruction sheet

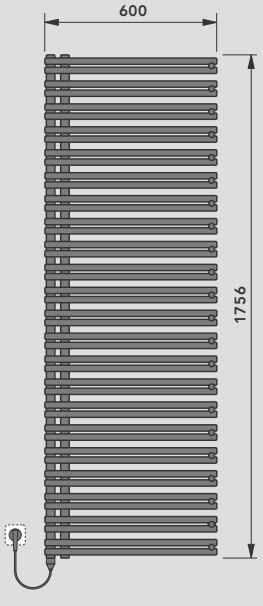
FATALA Design radiator - electric only operation

Technical data

Dimensions [mm]



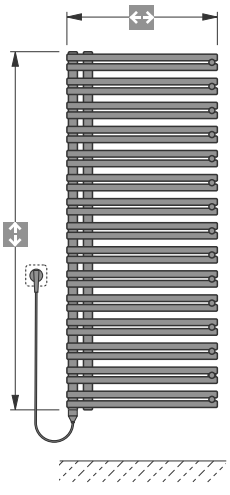


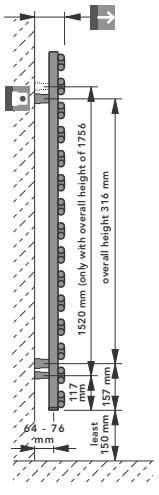


FATALA electric only operation

Nominal height (Overall height) [mm]	Overall length [mm]	Nominal power [2] Watt	Nominal voltage [V]	Protection mode	Weight kg
800 (796)	**500**	300	AC 230	IP 24	12,6
1200 (1196)	**500** **600**	400 600	AC 230 AC 230	IP 24 IP 24	18,7 21,4
1800 (1756)	**600**	900	AC 230	IP 24	31,1

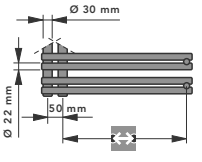
[2] at 60° C

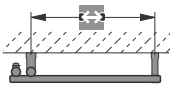




Overall depth (incl. wall clearance)
for an overall length of 500 .... 97 - 109 mm
for an overall length of 600 .... 97 - 109 mm

Overall length - 90 mm





Description
With their built-in electric heating, the electric radiators of the FATALA-E family are elegant Design and bathroom radiators.

Self-regulation effect – the temperature-dependent PTC heating element automatically controls the temperature of the heat-transfer liquid by modifying its electrical resistance.

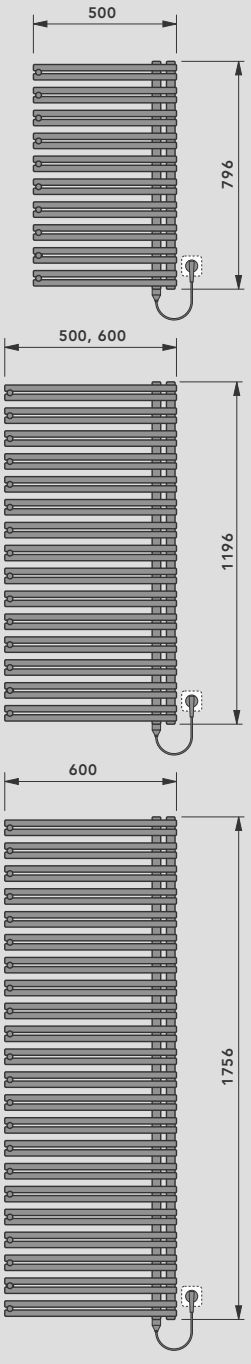
Standard basic configuration:
- A wall mounting set matching the radiator colour
- Fitting aid
- Instruction sheet

ÖVE tested

FATALA Design radiator left hand design - electric only operation

Technical data

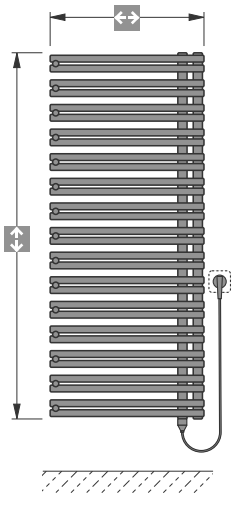
Dimensions [mm]

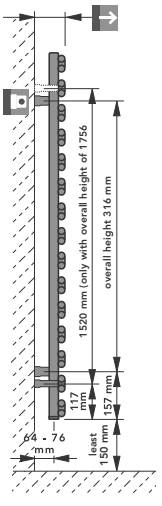


FATALA left hand design - electric only operation

Nominal height (Overall height) [mm]	Overall length [mm]	Nominal power [2] Watt	Nominal voltage [V]	Protection mode	Weight kg
800 (796)	**500**	300	AC 230	IP 24	12,6
1200 (1196)	**500** **600**	400 600	AC 230 AC 230	IP 24 IP 24	18,7 21,4
1800 (1756)	**600**	900	AC 230	IP 24	31,1

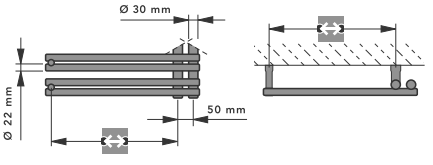
[2] at 60° C





Overall depth (incl. wall clearance)
for an overall length of 500 .... 97 - 109 mm
for an overall length of 600 .... 97 - 109 mm

Overall length - 90 mm



FATALA electric only operation

FATALA left hand design, electric only operation

Description
With their built-in electric heating, the electric radiators of the FATALA-E, left-hand design family are elegant Design and bathroom radiators.

Self-regulation effect – the temperature-dependent PTC heating element automatically controls the temperature of the heat-transfer liquid by modifying its electrical resistance.

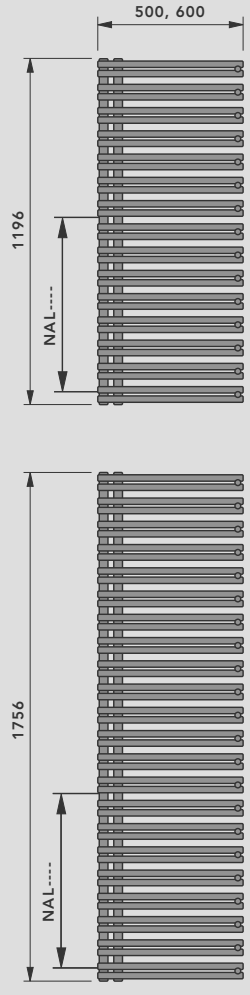
Standard basic configuration:
- A wall mounting set matching the radiator colour
- Fitting aid
- Instruction sheet

ÖVE tested

FATALA Replacement radiators

Technical data

Connection modes [mm]



Connection on the left-hand side
NAL

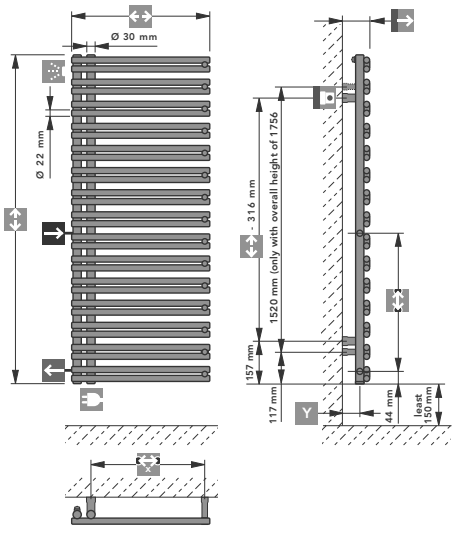
NAL0500, NAL0446
NAL0900, NAL0546
NAL1000, NAL0846
NAL0946

NAL0560
NAL0960

FATALA Replacement radiators

Nominal height (Overall height) [mm]	Overall length [mm]	Heat output (1) in Watts 75/65/20 °C	70/55/20 °C	70/55/24 °C	55/45/20 °C	55/45/24 °C	Radiator exponent n	E-heat element Output (2) Watt	Weight kg	Water content l
1200 (1196)	**500**	650	535	469	352	293	1,202	300	12,9	5,9
	600	773	636	558	418	348	1,202	600	14,8	6,7
1800 (1756)	**500**	897	733	641	476	394	1,241	600	19,2	8,0
	600	1081	883	772	573	475	1,241	600	21,8	9,5

(1) Tested in accordance with ÖNORM EN 442 (2) at 60° C



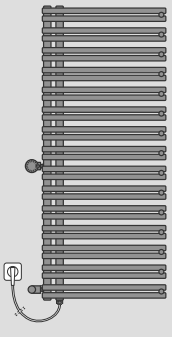
Overall length -90 mm

Connection dimensions
without distance holders... 64 - 76
with 1 distance holder set... 76 - 88
with 2 distance holder sets... 88 - 100
with 3 distance holder sets... 100 - 112

Overall depth (incl. wall clearance)
without distance holders... 97 - 109
with 1 distance holder set... 109 - 121
with 2 distance holder sets... 121 - 133
with 3 distance holder sets... 133 - 145

Boss spacing
500, 900, 1000,
446, 546, 846, 946, 560 and 960 mm
Other centre distances upon request.

Connection examples using an electronic heating element

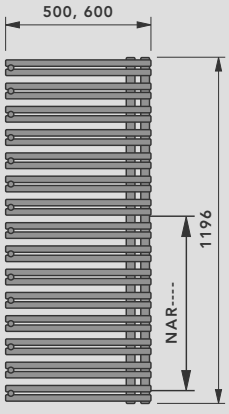


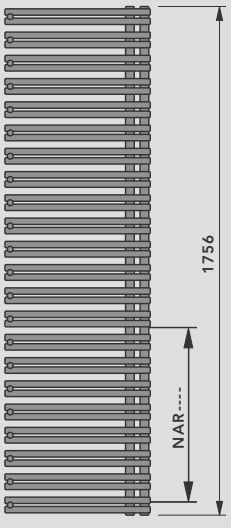
Standard basic configuration:
- Pivotable vent plug, nickel plated brass G 1/4, self-sealing, and 2 dummy plugs G 1/2
- A wall mounting set matching the radiator colour
- Fitting aid
- Instruction sheet

FATALA Replacement radiators left hand design

Technical data

Connection modes [mm]





Connection on the right-hand side NAR

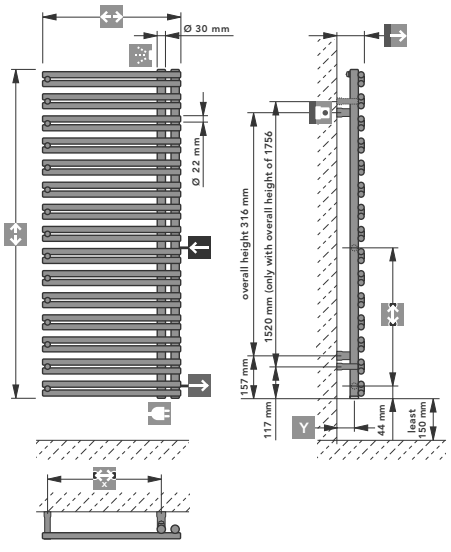
NAR0500, NAR0446
NAR0900, NAR0546
NAR1000, NAR0846
NAR0946

NAR0560
NAR0960

FATALA Replacement radiators left hand design

Nominal height (Overall height) [mm]	Overall length [mm]	Heat output (1) in Watts 75/65/20 °C	70/55/20 °C	70/55/24 °C	55/45/20 °C	55/45/24 °C	Radiator exponent n	E-heat element Output (2) Watt	Weight kg	Water content l
1200 (1196)	500	650	535	469	352	293	1,202	300	12,9	5,9
	600	773	636	558	418	348	1,202	600	14,8	6,7
1800 (1756)	500	897	733	641	476	394	1,241	600	19,2	8,0
	600	1081	883	772	573	475	1,241	600	21,8	9,5

(1) Tested in accordance with ÖNORM EN 442 (2) at 60° C



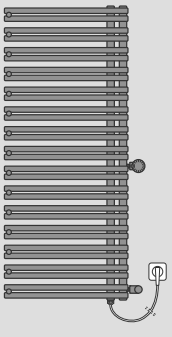
Overall length -90 mm

Connection dimensions
without distance holders... 64 - 76
with 1 distance holder set... 76 - 88
with 2 distance holder sets... 88 - 100
with 3 distance holder sets... 100 - 112

Overall depth (incl. wall clearance)
without distance holders... 97 - 109
with 1 distance holder set... 109 - 121
with 2 distance holder sets... 121 - 133
with 3 distance holder sets... 133 - 145

Boss spacing
500, 900, 1000,
446, 546, 846, 946, 560 and 960 mm
Other centre distances upon request.

Connection examples using an electronic heating element

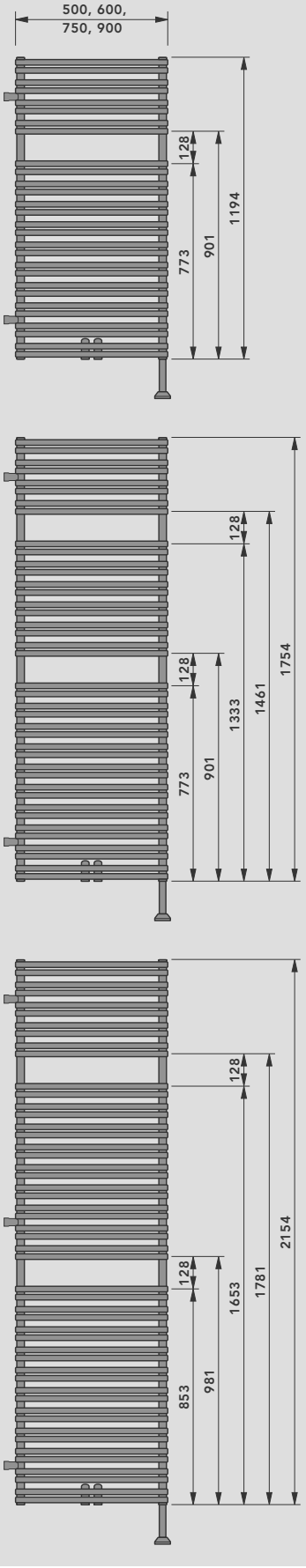


Standard basic configuration:
- Pivotable vent plug, nickel plated brass G 1/4, self-sealing, and 2 dummy plugs G 1/2
- A wall mounting set matching the radiator colour
- Fitting aid
- Instruction sheet

ARUN-T Design radiator

Technical data

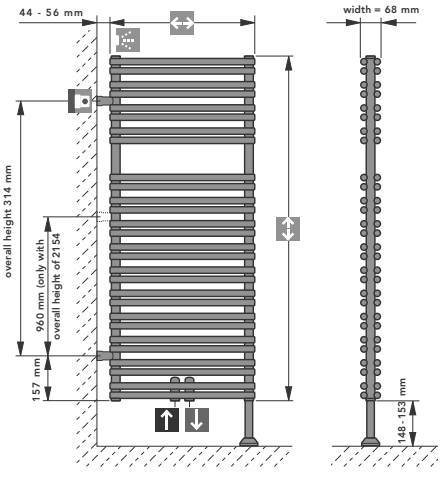
Dimensions [mm]



ARUN-T

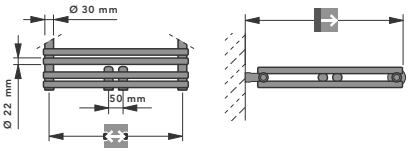
Nominal height (Overall height) [mm]	Overall length [mm]	Heat output (1) in Watts 75/65/20 °C	70/55/20 °C	70/55/24 °C	55/45/20 °C	55/45/24 °C	Radiator exponent n	Weight kg	Water content l
1200 (1194)	500	885	721	628	464	382	1,265	20,8	9,4
	600	1061	866	756	560	463	1,251	24,2	11,2
	750	1326	1086	950	708	587	1,229	29,4	14,0
	900	1590	1307	1146	858	714	1,208	34,4	16,6
1800 (1754)	500	1222	994	865	638	525	1,274	28,8	14,2
	600	1466	1195	1043	771	637	1,258	34,9	16,6
	750	1831	1498	1311	975	808	1,233	42,1	20,0
	900	2196	1804	1583	1184	985	1,209	49,5	23,4
2200 (2154)	500	1445	1164	1008	733	598	1,330	37,1	17,3
	600	1724	1389	1202	874	714	1,330	43,3	20,4
	750	2145	1728	1496	1087	888	1,330	52,5	25,1
	900	2560	2062	1786	1298	1060	1,330	61,6	29,5

(1) Tested in accordance with ÖNORM EN 442

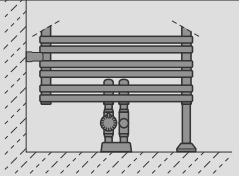


Overall depth (incl. wall clearance)
for an overall length of 500 .... 544 - 556 mm
for an overall length of 600 .... 644 - 656 mm
for an overall length of 750 .... 794 - 806 mm
for an overall length of 900 .... 944 - 956 mm

Overall length - 40 mm



Connection example



Connections
5 x G 1/2 Internal thread and
1 x G 1/2 Internal thread blind sleeve for floor fastening
Connection modes see diagram

Test overpressure
13 bar

Maximum positive operating pressure
10 bar

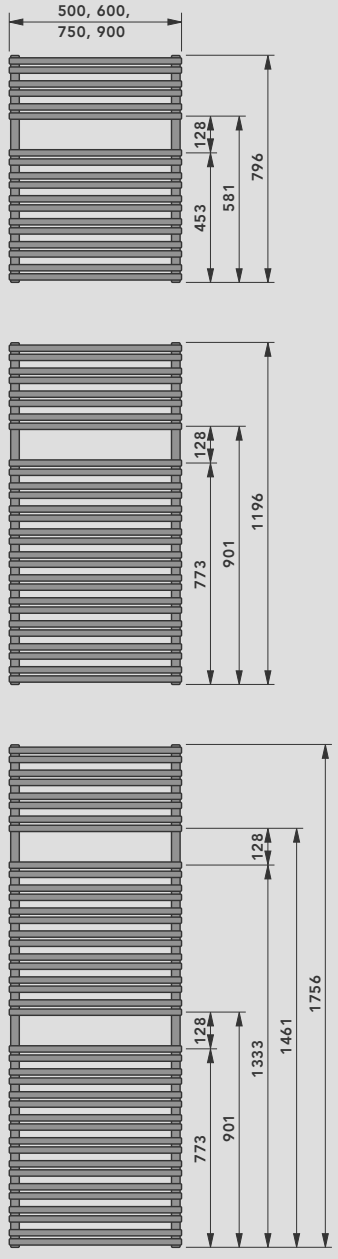
Maximum operating temperature
110 °C

Standard basic configuration
- A pivotable vent plug, G 1/2, and two dummy plugs, G 1/2, nickel-plated brass, self-sealing
- A wall and floor fastening set matching the radiator colour
- Fitting aid
- Instruction sheet

BAWA Design radiator

Technical data

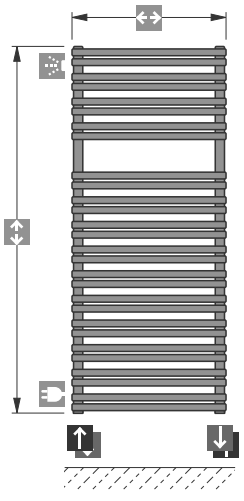
Dimensions [mm]

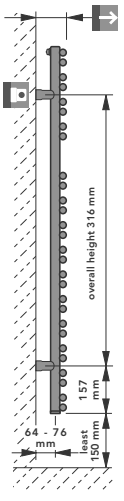


BAWA

Nominal height (Overall height) [mm]	Overall length [mm]	Heat output (1) in Watts 75/65/20 °C	70/55/20 °C	70/55/24 °C	55/45/20 °C	55/45/24 °C	Radiator exponent n	E-heat element Output (2) Watt	Weight kg	Water content l
800 (796)	500	420	340	299	225	187	1,1888	300	7,7	3,6
	600	493	401	353	265	221	1,1897	300	8,8	4,1
	750	600	491	432	324	271	1,1911	300	10,5	4,9
	900	704	580	510	383	320	1,1924	300	12,1	5,7
1200 (1196)	500	629	531	466	348	290	1,2010	300	11,8	5,4
	600	738	617	541	404	336	1,2012	600	13,5	6,3
	750	898	740	649	485	403	1,2014	600	16,1	7,7
	900	1053	859	753	563	468	1,2017	600	18,6	9,0
1800 (1756)	500	885	717	626	464	384	1,2605	600	16,9	8,1
	600	1038	846	739	548	453	1,2546	600	19,4	9,3
	750	1263	1036	905	671	555	1,2458	900	23,0	11,0
	900	1482	1222	1068	791	654	1,2370	900	26,7	12,7

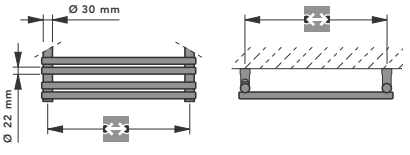
(1) Tested in accordance with ÖNORM EN 442 (2) at 60° C



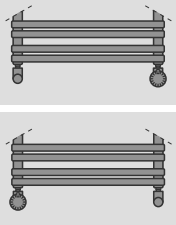


Overall depth (incl. wall clearance)
for an overall length of 500 .... 97 - 109 mm
for an overall length of 600 .... 97 - 109 mm
for an overall length of 750 .... 97 - 109 mm
for an overall length of 900 .... 97 - 109 mm

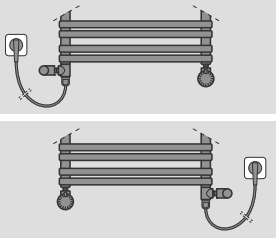
Boss spacing
Overall length - 40 mm



Connection example without electric heating element



Connection example with electric heating element



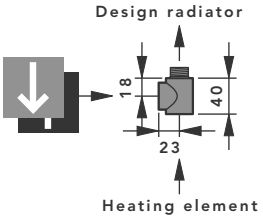
Connections
2 x G 1/2 Internal thread and
1 x G 1/4 Internal thread (for vent plug)
Connection modes
see diagram

Test overpressure
13 bar

Maximum positive operating pressure
10 bar

Maximum operating temperature
110 °C

A special adapter (chrome-plated) should be used for the electric heating insert with the BAWA Design radiator!



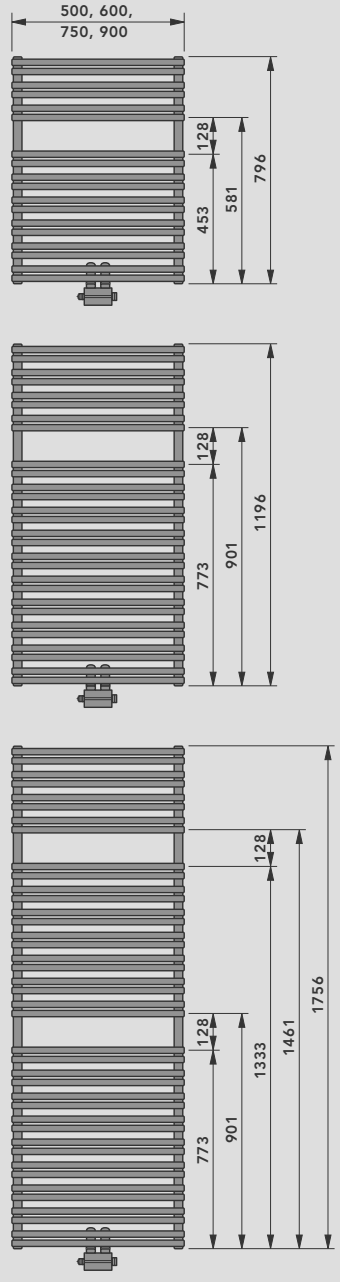
Accessory: PTC electric heating element
All BAWA design radiators fitted with an electric heating element can also be used when the regular heating system is switched off. It is essential to take into account the power ratings assigned to the electric heating elements.

Standard basic configuration
- A pivotable vent plug, G 1/4, nickel-plated brass, self-sealing
- A wall mounting set matching the radiator colour
- Fitting aid
- Instruction sheet

BAWA-VM Design radiator

Technical data

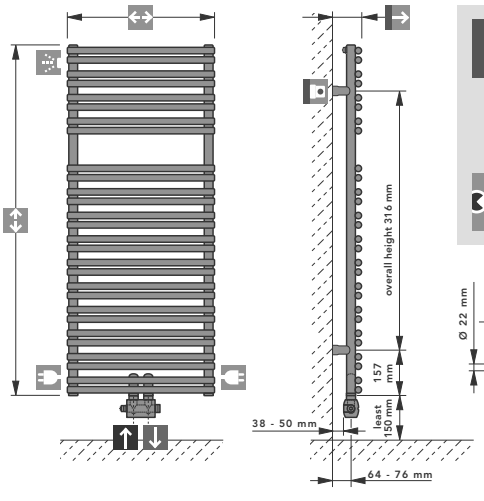
Dimensions [mm]



BAWA-VM

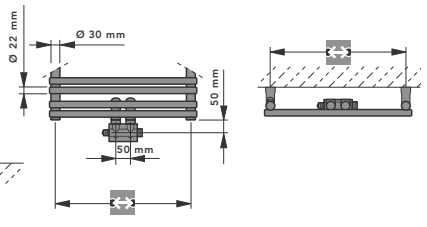
Nominal height (Overall height) [mm]	Overall length [mm]	Heat output (1) in Watts 75/65/20 °C	70/55/20 °C	70/55/24 °C	55/45/20 °C	55/45/24 °C	Radiator exponent n	E-heat element Output (2) Watt	Weight kg	Water content l
800 (796)	500	420	340	299	225	187	1,1888	300	7,7	3,6
	600	493	401	353	265	221	1,1897	300	8,8	4,1
	750	600	491	432	324	271	1,1911	300	10,5	4,9
	900	704	580	510	383	320	1,1924	300	12,1	5,7
1200 (1196)	500	629	531	466	348	290	1,2010	300	11,8	5,4
	600	738	617	541	404	336	1,2012	600	13,5	6,3
	750	898	740	649	485	403	1,2014	600	16,1	7,7
	900	1053	859	753	563	468	1,2017	600	18,6	9,0
1800 (1756)	500	885	717	626	464	384	1,2605	600	16,9	8,1
	600	1038	846	739	548	453	1,2546	600	19,4	9,3
	750	1263	1036	905	671	555	1,2458	900	23,0	11,0
	900	1482	1222	1068	791	654	1,2370	900	26,7	12,7

(1) Tested in accordance with ÖNORM EN 442 (2) at 60° C

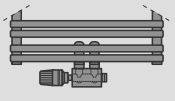


Overall depth (incl. wall clearance)
for an overall length of 500 .... 97 - 109 mm
for an overall length of 600 .... 97 - 109 mm
for an overall length of 750 .... 97 - 109 mm
for an overall length of 900 .... 97 - 109 mm

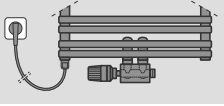
Overall length - 40 mm

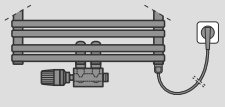


Connection example without electric heating element



Connection example with electric heating element





Connections
2 x G 3/4 External thread (valve connection set),
2 x G 1/2 Internal thread and
1 x G 1/4 Internal thread (for vent plug)
Connection modes
see diagram

Test overpressure
13 bar

Maximum positive operating pressure
10 bar

Maximum operating temperature
110 °C

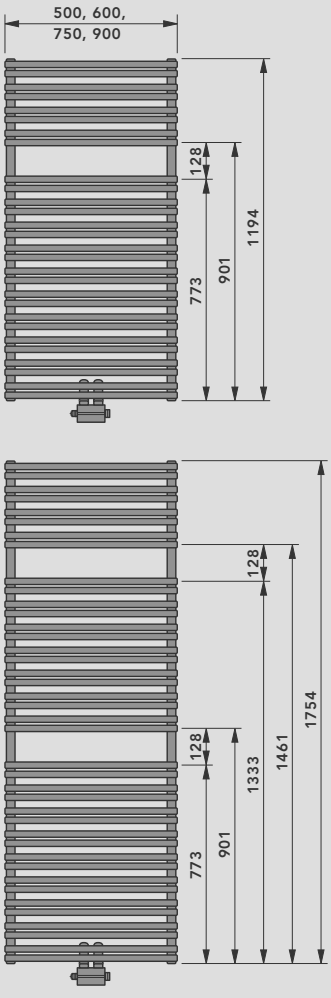
Standard basic configuration
- A pivotable vent plug, G 1/4, and two dummy plugs, G 1/2, nickel-plated brass self-sealing, factory-sealed
- Valve connection set in an angled two-pipe design
- Covering rosette in matching radiator colour
- A wall mounting set matching the radiator colour
- Fitting aid
- Instruction sheet

Accessory: PTC electric heating element
All BAWA-VM design radiators fitted with an electric heating element can also be used when the regular heating system is switched off. It is essential to take into account the power ratings assigned to the electric heating elements.

BAWA-T VM Design radiator

Technical data

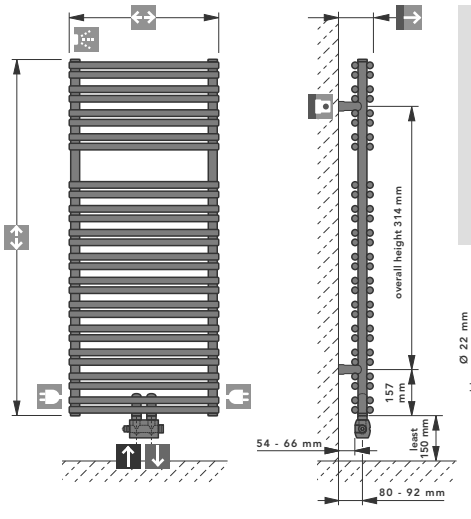
Dimensions [mm]



BAWA-T VM

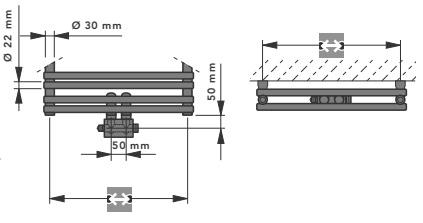
Nominal height (Overall height) [mm]	Overall length [mm]	Heat output (1) in Watts 75/65/20 °C	70/55/20 °C	70/55/24 °C	55/45/20 °C	55/45/24 °C	Radiator exponent n	E-heat element Output (2) Watt	Weight kg	Water content l
1200 (1196)	500	885	721	628	464	382	1,265	600	21,6	9,2
	600	1061	866	756	560	463	1,251	600	25,0	10,9
	750	1326	1086	950	708	587	1,229	600	30,1	13,3
	900	1590	1307	1146	858	714	1,208	900	35,2	15,8
1800 (1756)	500	1222	994	865	638	525	1,274	600	30,8	13,1
	600	1466	1195	1043	771	637	1,258	900	35,7	15,6
	750	1831	1498	1311	975	808	1,233	900	43,1	19,3
	900	2196	1804	1583	1184	985	1,209	900	50,5	23,0

(1) Tested in accordance with ÖNORM EN 442 (2) at 60° C



Overall depth (incl. wall clearance)
for an overall length of 500 .... 113 - 125 mm
for an overall length of 600 .... 113 - 125 mm
for an overall length of 750 .... 113 - 125 mm
for an overall length of 900 .... 113 - 125 mm

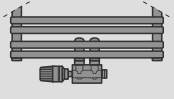
Overall length - 40 mm



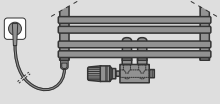
BAWA-VM

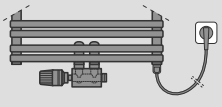
BAWA-T VM

Connection example without electric heating element



Connection example with electric heating element





Connections
2 x G 3/4 External thread (valve connection set) and 4 x G 1/2 Internal thread
Connection modes
see diagram

Test overpressure
13 bar

Maximum positive operating pressure
10 bar

Maximum operating temperature
110 °C

Standard basic configuration
- A pivotable vent plug, G 1/2, and three dummy plugs, G 1/2, nickel-plated brass self-sealing, factory-sealed
- Valve connection set in an angled two-pipe design
- Covering rosette in matching radiator colour
- A wall mounting set matching the radiator colour
- Fitting aid
- Instruction sheet

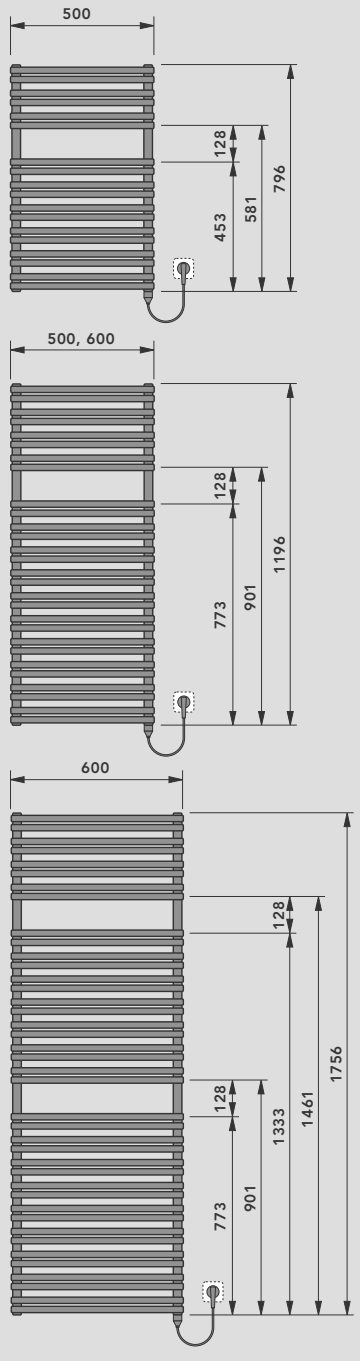
Accessory: PTC electric heating element
All BAWA-T VM radiators fitted with an electric heating element can also be used at times when the regular heating system is switched off.

It is absolutely necessary to take account of the power-ratings assigned to the electric heating elements.

BAWA Design radiator - electric only operation

Technical data

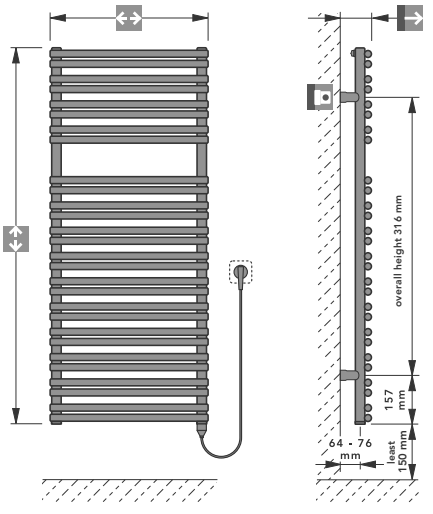
Dimensions [mm]



BAWA electric only operation

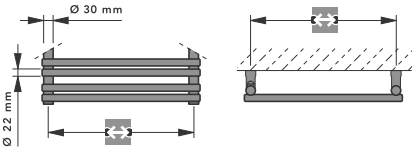
Nominal height (Overall height) [mm]	Overall length [mm]	Nominal power [2] Watt	Nominal voltage [V]	Protection mode	Weight kg
800 (796)	**500**	300	AC 230	IP 24	11,3
1200 (1196)	**500** **600**	400 600	AC 230 AC 230	IP 24 IP 24	17,1 19,7
1800 (1756)	**600**	900	AC 230	IP 24	28,5

[2] at 60° C



Overall depth (incl. wall clearance)
for an overall length of 500 .... 97 - 109 mm
for an overall length of 600 .... 97 - 109 mm

Overall length - 40 mm



Description
With their built-in electric heating, the electric radiators of the BAWA-E family are elegant Design and bathroom radiators.

Self-regulation effect – the temperature-dependent PTC heating element automatically controls the temperature of the heat-transfer liquid by modifying its electrical resistance.

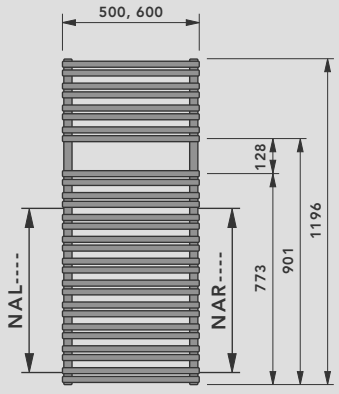
Standard basic configuration:
- A wall mounting set matching the radiator colour
- Fitting aid
- Instruction sheet

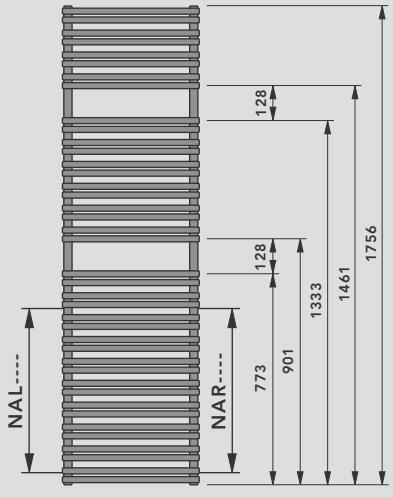
ÖVE tested

BAWA Replacement radiators

Technical data

Connection modes [mm]





Connection on the left-hand side NAL

NAL0500, NAL0446
NAL0900, NAL0546
NAL1000, NAL0846
NAL0946
NAL0560
NAL0960

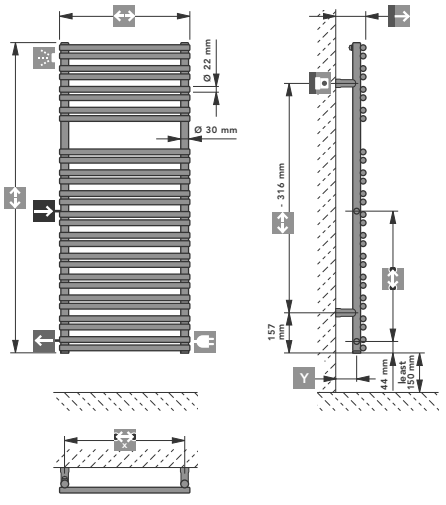
Connection on the right-hand side NAR

NAR0500, NAR0446
NAR0900, NAR0546
NAR1000, NAR0846
NAR0946
NAR0560
NAR0960

BAWA Replacement radiators

Nominal height (Overall height) [mm]	Overall length [mm]	Heat output (1) in Watts 75/65/20 °C	70/55/20 °C	70/55/24 °C	55/45/20 °C	55/45/24 °C	Radiator exponent n	E-heat element Output (2) Watt	Weight kg	Water content l
1200 (1196)	**500**	629	531	466	348	290	1,2010	300	11,8	5,4
	600	738	617	541	404	336	1,2012	600	13,5	6,3
1800 (1756)	**500**	885	717	626	464	384	1,2605	600	16,9	8,1
	600	1038	846	739	548	453	1,2546	600	19,4	9,3

(1) (1) Tested in accordance with ÖNORM EN 442
(2) at 60 °C



Overall length -90 mm

Connection dimensions
without distance holders... 64 - 76
with 1 distance holder set... 76 - 88
with 2 distance holder sets... 88 - 100
with 3 distance holder sets... 100 - 112

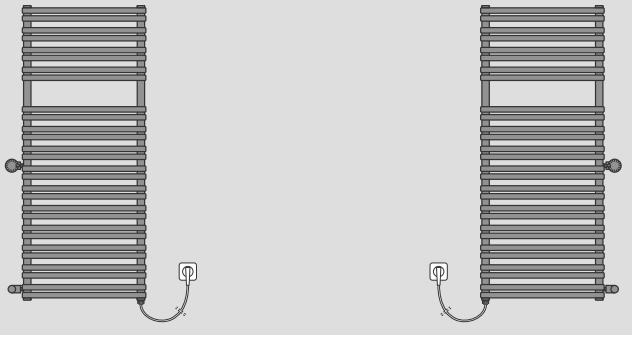
Overall depth (incl. wall clearance)
without distance holders... 97 - 109
with 1 distance holder set... 109 - 121
with 2 distance holder sets... 121 - 133
with 3 distance holder sets... 133 - 145

Boss spacing
500, 900, 1000,
446, 546, 846, 946, 560 and 960 mm
Other centre distances upon request.

BAWA electric only operation

BAWA replacement

Connection examples using an electronic heating element



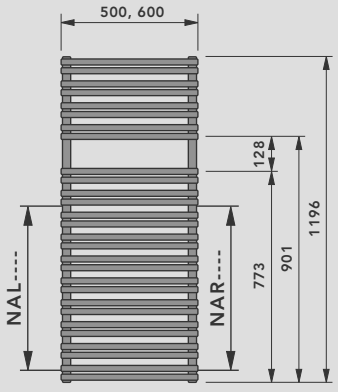
Standard basic configuration:

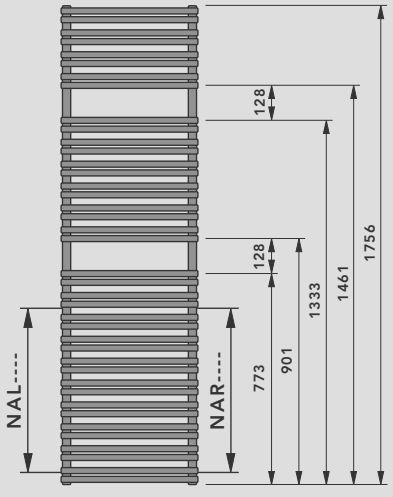
- A pivotable vent plug, G 1/4, nickel-plated brass, self-sealing and 2 dummy plugs, G 1/2
- A wall mounting set matching the radiator colour
- Fitting aid
- Instruction sheet

BAWA-T Replacement radiators

Technical data

Connection modes [mm]





Connection on the left-hand side NAL
NAL0500, NAL0446
NAL0900, NAL0546
NAL1000, NAL0846
NAL0946

NAL0560
NAL0960

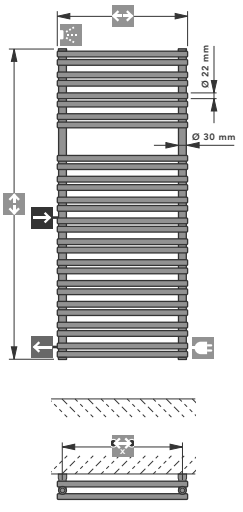
Connection on the right-hand side NAR
NAR0500, NAR0446
NAR0900, NAR0546
NAR1000, NAR0846
NAR0946

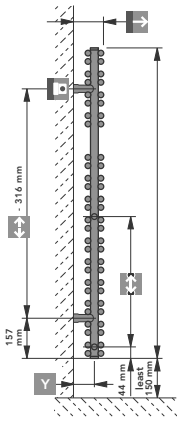
NAR0560
NAR0960

BAWA Replacement radiators

Nominal height (Overall height) [mm]	Overall length [mm]	Heat output (1) in Watts 75/65/20 °C	70/55/20 °C	70/55/24 °C	55/45/20 °C	55/45/24 °C	Radiator exponent n	E-heat element Output (2) Watt	Weight kg	Water content l
1200 (1196)	500	885	721	628	464	382	1,265	600	21,6	9,2
	600	1061	866	756	560	463	1,251	600	25,0	10,9
1800 (1756)	500	1222	994	865	638	525	1,274	600	30,8	13,1
	600	1466	1195	1043	771	637	1,258	900	35,7	15,6

(1) (1) Tested in accordance with ÖNORM EN 442
(2) at 60 °C





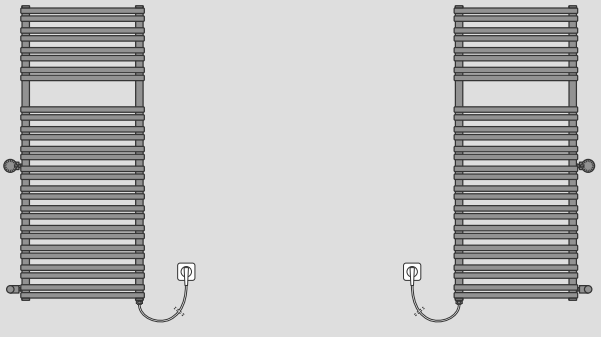
Overall length -40 mm

Connection dimensions
without distance holders... 80 - 92
with 1 distance holder set... 92 - 104
with 2 distance holder sets... 104 - 116
with 3 distance holder sets... 116 - 128

Overall depth (incl. wall clearance)
without distance holders... 113 - 125
with 1 distance holder set... 125 - 137
with 2 distance holder sets... 137 - 149
with 3 distance holder sets... 149 - 161

Boss spacing
500, 900, 1000,
446, 546, 846, 946, 560 and 960 mm
Other centre distances upon request.

Connection example PTC-heat element

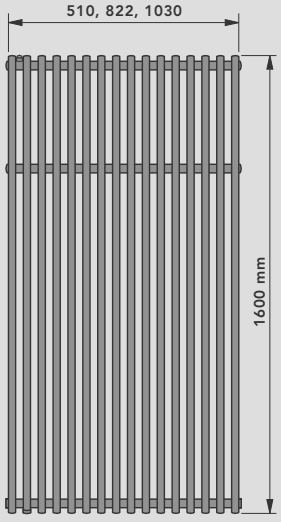


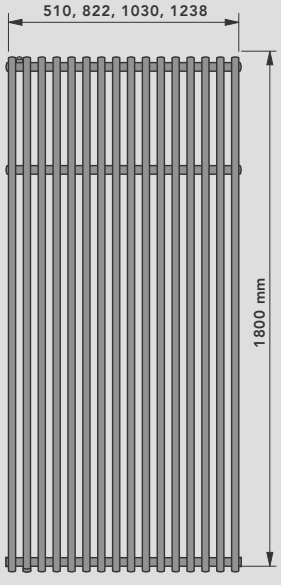
Standard basic configuration:
- Pivotable vent plug, nickel plated brass G 1/2, self-sealing, and 2 dummy plugs G 1/2
- A wall mounting set matching the radiator colour
- Fitting aid
- Instruction sheet

VELINO Design radiator

Technical data

Dimensions [mm]

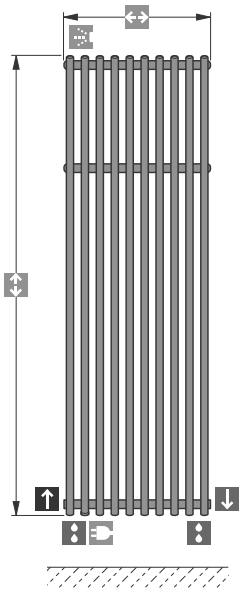


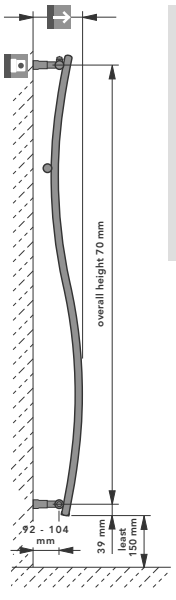


VELINO

Nominal height (Overall height) [mm]	Overall length [mm]	Heat output (1) in Watts 75/65/20 °C	70/55/20 °C	70/55/24 °C	55/45/20 °C	55/45/24 °C	Radiator exponent n	E-heat element Output (2) Watt	Weight kg	Water content l
1600 (1600)	**510**	850	691	602	444	365	1,273	615	13,5	6,5
	822	1359	1105	963	709	584	1,273	615	21,6	10,4
	1030	1699	1382	1204	887	731	1,273	615	27,0	13,0
1800 (1800)	**510**	948	771	671	494	407	1,274	615	15,0	7,7
	822	1516	1232	1074	791	651	1,274	615	24,0	12,3
	1030	1895	1541	1342	988	814	1,274	615	30,0	15,4
	1238	2274	1849	1610	1186	977	1,274	615	35,8	18,5

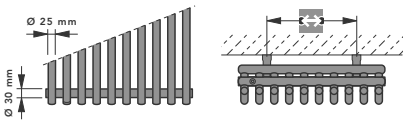
(1) Tested in accordance with ÖNORM EN 442 (2) at 60° C C





Overall depth (incl. wall clearance)
bei Overall height 1600 .... 169 - 181 mm
bei Overall height 1800 .... 177 - 189 mm

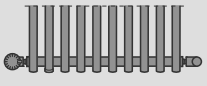
for an overall length of 510 .... 312 mm
for an overall length of 822 .... 624 mm
for an overall length of 1030 .... 832 mm
for an overall length of 1238 .... 1040 mm



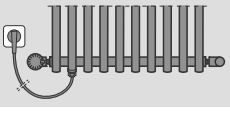
BAWA-T replacement

VELINO

Connection example without electric heating element



Connection example with electric heating element



Connections
3 x G 1/2 Internal thread and
3 x G 1/4 Internal thread (for vent and drain plugs)
Connection modes
see diagram

Test overpressure
13 bar

Maximum positive operating pressure
10 bar

Maximum operating temperature
110 °C

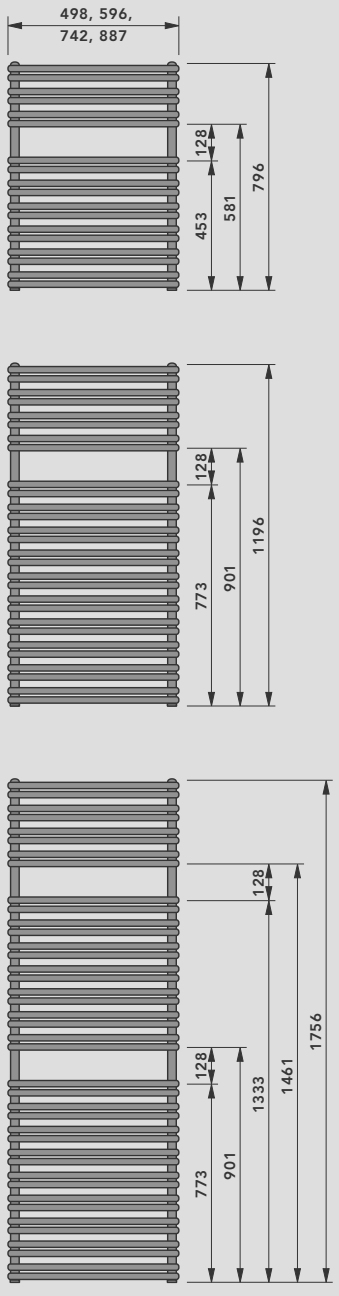
Standard basic configuration
- A pivotable vent plug, G 1/4, and two dummy plugs, G 1/4, as well as a dummy plug, G 1/2, nickel-plated brass, self-sealing
- A wall mounting set matching the radiator colour
- Fitting aid
- Instruction sheet

Accessory: PTC electric heating element
All VELINO design radiators fitted with an electric heating element can also be used when the regular heating system is switched off. It is essential to take into account the power ratings assigned to the electric heating elements.

CAVALLY Design radiator

Technical data

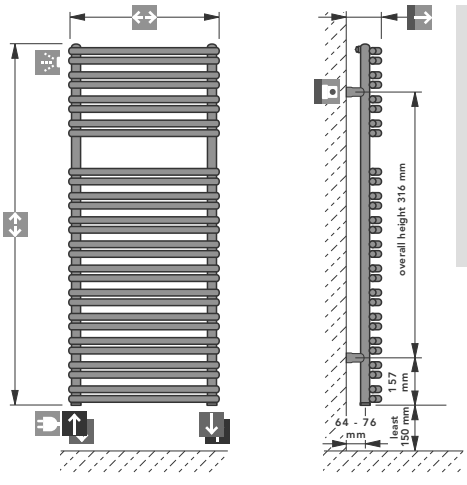
Dimensions [mm]



CAVALLY

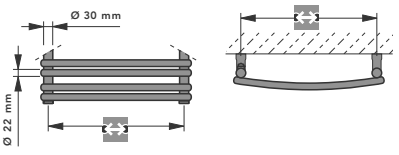
Nominal height (Overall height) [mm]	Overall length [mm]	Heat output (1) in Watts 75/65/20 °C	70/55/20 °C	70/55/24 °C	55/45/20 °C	55/45/24 °C	Radiator exponent n	E-heat element Output (2) Watts	Weight kg	Water content l
800 (796)	498	440	364	321	242	203	1,169	300	7,7	3,6
	596	528	437	385	291	243	1,167	300	8,8	4,1
	742	659	545	481	363	304	1,165	300	10,5	4,9
	887	790	654	577	436	366	1,162	600	12,1	5,7
1200 (1196)	498	649	533	467	350	291	1,211	300	11,8	5,4
	596	778	641	563	423	353	1,191	600	13,5	6,3
	742	972	805	710	537	450	1,162	600	16,1	7,7
	887	1165	969	857	653	550	1,133	600	18,6	9,0
1800 (1756)	498	920	754	661	493	409	1,221	600	16,9	8,1
	596	1103	908	798	598	499	1,197	600	19,4	9,3
	742	1378	1141	1006	762	638	1,161	900	23,0	11,0
	887	1651	1375	1218	930	783	1,124	900	26,7	12,7

(1) Tested in accordance with ÖNORM EN 442 (2) at 60° C

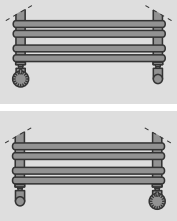


Overall depth (incl. wall clearance)
for an overall length of 498 ....119 - 131 mm
for an overall length of 596 ....128 - 140 mm
for an overall length of 742 ....146 - 158 mm
for an overall length of 887 ....164 - 176 mm

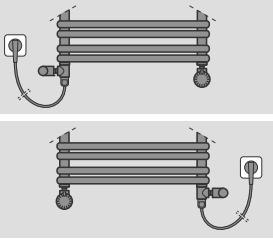
Boss spacing
for an overall length of 498 .... 451 mm
for an overall length of 596 .... 548 mm
for an overall length of 742 .... 691 mm
for an overall length of 887 .... 835 mm



Connection example without electric heating element



Connection example with electric heating element



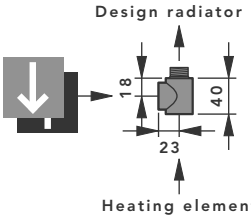
Connections
2 x G 1/2 Internal thread and
1 x G 1/4 Internal thread (for vent plug)
Connection modes
see diagram

Test overpressure
13 bar

Maximum positive operating pressure
10 bar

Maximum operating temperature
110 °C

A special adapter (chrome-plated) should be used for the electric heating insert with the CAVALLY Design radiator!



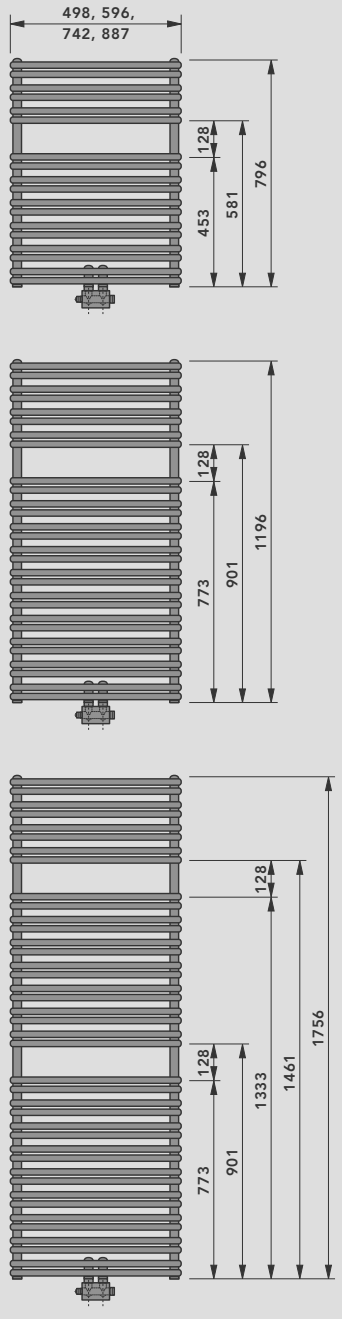
Accessory: PTC electric heat element
All CAVALLY design radiators fitted with an electric heating element can also be used when the regular heating system is switched off. It is essential to take into account the power ratings assigned to the electric heating elements.

Standard basic configuration
- A pivotable vent plug, G 1/4, nickel-plated brass, self-sealing
- Wall fastening set matching the radiator colour
- Fitting aid
- Instruction sheet

CAVALLY-VM Design radiator

Technical data

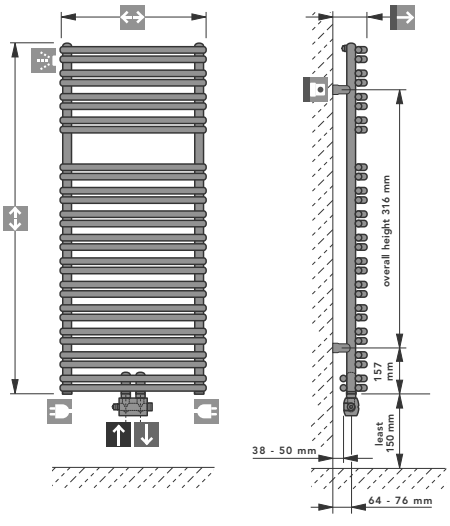
Dimensions [mm]



CAVALLY-VM

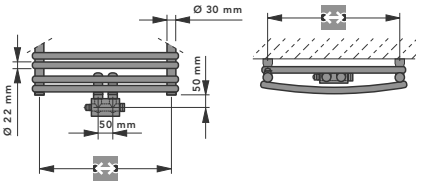
Nominal height (Overall height) [mm]	Overall length [mm]	Heat output (1) in Watts 75/65/20 °C	70/55/20 °C	70/55/24 °C	55/45/20 °C	55/45/24 °C	Radiator exponent n	E-heat element Output (2) Watt	Weight kg	Water content l
800 (796)	**498**	440	364	321	242	203	1,169	300	7,7	3,6
	596	528	437	385	291	243	1,167	300	8,8	4,1
	742	659	545	481	363	304	1,165	300	10,5	4,9
	887	790	654	577	436	366	1,162	600	12,1	5,7
1200 (1196)	**498**	649	533	467	350	291	1,211	300	11,8	5,4
	596	778	641	563	423	353	1,191	600	13,5	6,3
	742	972	805	710	537	450	1,162	600	16,1	7,7
	887	1165	969	857	653	550	1,133	600	18,6	9,0
1800 (1756)	**498**	920	754	661	493	409	1,221	600	16,9	8,1
	596	1103	908	798	598	499	1,197	600	19,4	9,3
	742	1378	1141	1006	762	638	1,161	900	23,0	11,0
	887	1651	1375	1218	930	783	1,124	900	26,7	12,7

(1) Tested in accordance with ÖNORM EN 442 (2) at 60° C

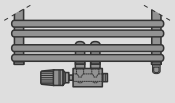


Overall depth (incl. wall clearance)
for an overall length of 498 .... 119 - 131 mm
for an overall length of 596 .... 128 - 140 mm
for an overall length of 742 .... 146 - 158 mm
for an overall length of 887 .... 164 - 176 mm

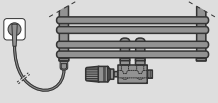
for an overall length of 498 .... 451 mm
for an overall length of 596 .... 548 mm
for an overall length of 742 .... 691 mm
for an overall length of 887 .... 835 mm

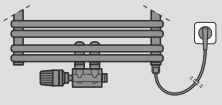


Connection example without electric heating element



Connection example with electric heating element





Connections
2 x G 3/4 External thread (valve connection set),
2 x G 1/2 Internal thread and
1 x G 1/4 Internal thread (for vent plug)
Connection modes see diagram

Test overpressure
13 bar

Maximum positive operating pressure
10 bar

Maximum operating temperature
110 °C

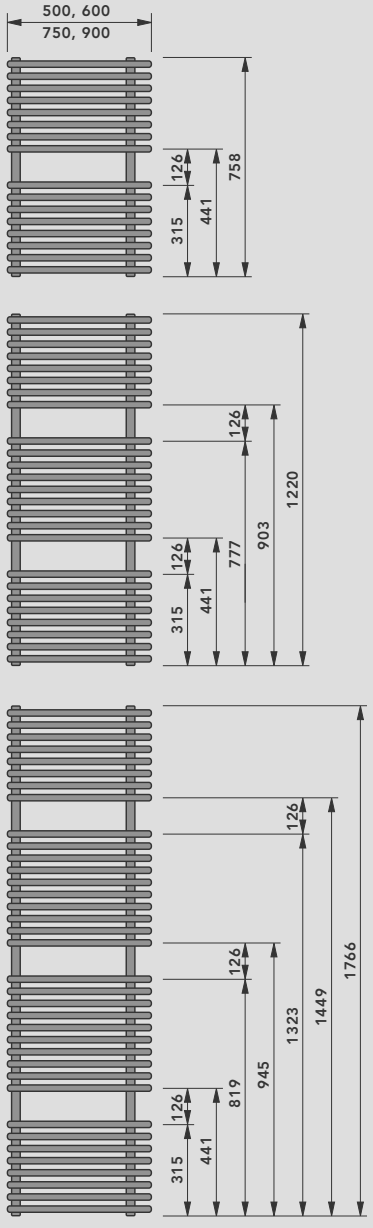
Standard basic configuration
- A pivotable vent plug, G 1/4, and two dummy plugs, G 1/2, nickel-plated brass, self-sealing, factory-sealed
- A valve connection set with angled two-pipe design
- Covering rosette in matching radiator colour
- Wall fastening set matching the radiator colour
- Fitting aid
- Instruction sheet

Accessory: PTC electric heat element
All CAVALLY-VM design radiators fitted with an electric heating element can also be used when the regular heating system is switched off. It is essential to take into account the power ratings assigned to the electric heating elements.

FULDA Design radiator

Technical data

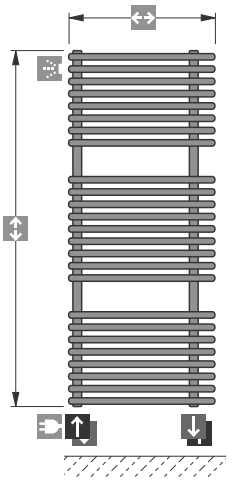
Dimensions [mm]

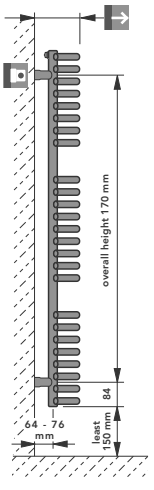


FULDA

Nominal height (Overall height) [mm]	Overall length [mm]	Heat output (1) in Watts 75/65/20 °C	70/55/20 °C	70/55/24 °C	55/45/20 °C	55/45/24 °C	Radiator exponent n	E-heat element Output (2) Watt Colour paint	chrome-plated / gold plated	Weight kg	Water content l
800 (758)	500	405	343	307	240	205	1,024	300	-	7,2	3,2
	600	474	401	359	281	240	1,024	300	300	8,2	3,7
	750	574	486	435	340	291	1,024	300	300	9,7	4,5
	900	671	568	508	398	340	1,024	300	300	11,2	5,3
1200 (1220)	500	620	509	446	333	276	1,219	300	300	11,1	5,2
	600	724	594	520	389	323	1,219	600	300	12,7	6,0
	750	877	719	630	471	391	1,219	600	300	15,0	7,1
	900	1025	841	737	550	457	1,219	600	600	17,4	8,3
1800 (1766)	500	870	712	623	463	384	1,235	600	300	15,9	7,4
	600	1021	835	731	543	450	1,235	600	600	18,2	8,5
	750	1241	1015	888	660	547	1,235	900	600	21,7	10,1
	900	1456	1191	1042	775	642	1,235	900	900	25,2	11,7

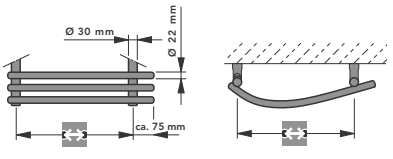
(1) Tested in accordance with ÖNORM EN 442 (2) at 60° C



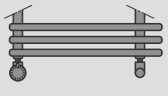


Overall depth (incl. wall clearance)
for an overall length of 500 .... 146 - 158 mm
for an overall length of 600 .... 155 - 167 mm
for an overall length of 750 .... 171 - 183 mm
for an overall length of 900 .... 180 - 192 mm

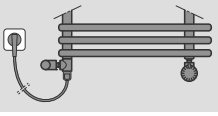
Boss spacing
for an overall length of 500 .... 400 mm
for an overall length of 600 .... 495 mm
for an overall length of 750 .... 645 mm
for an overall length of 900 .... 795 mm

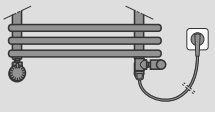


Connection example without electric heating element



Connection example with electric heating element





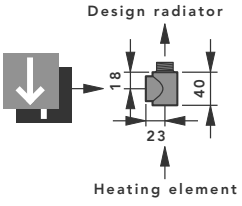
Connections
2 x G 1/2 Internal thread and
1 x G 1/4 Internal thread (for vent plug)
Connection modes
see diagram

Test overpressure
13 bar

Maximum positive operating pressure
10 bar

Maximum operating temperature
110 °C

A special adapter (chrome-plated) should be used for the electric heating insert with the FULDA Design radiator!



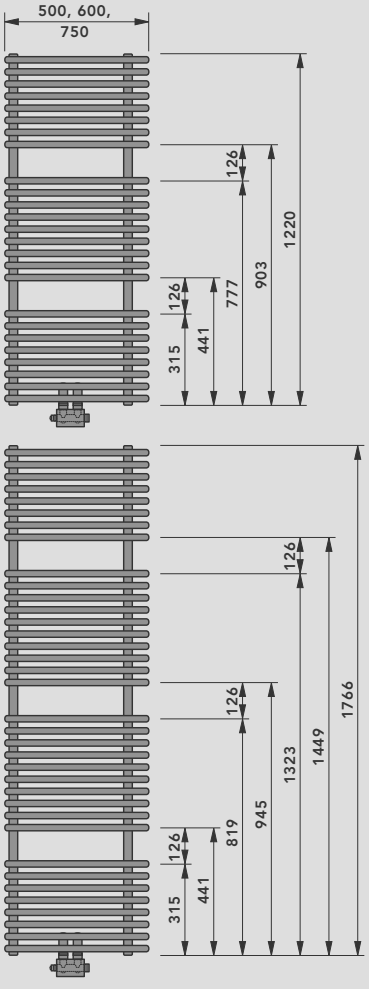
Accessory: PTC electric heating element
All FULDA design radiators fitted with an electric heating element can also be used when the regular heating system is switched off. It is essential to take into account the power ratings assigned to the electric heating elements.

Standard basic configuration
- A pivotable vent plug, G 1/4, nickel-plated brass, self-sealing
- Wall fastening set matching the radiator colour
- Fitting aid
- Instruction sheet

FULDA-VM Design radiator

Technical data

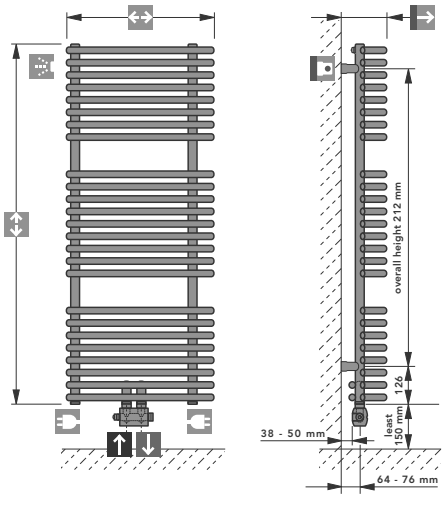
Dimensions [mm]



FULDA-VM

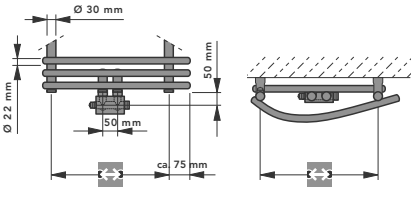
Nominal height (Overall height) [mm]	Overall length [mm]	Heat output (1) in Watts 75/65/20 °C	70/55/20 °C	70/55/24 °C	55/45/20 °C	55/45/24 °C	Radiator exponent n	E-heat element Output (2) Watt Colour paint	chrome-plated / gold plated	Weight kg	Water content l
1200 (1220)	500	620	509	446	333	276	1,219	300	300	11,1	5,2
	600	724	594	520	389	323	1,219	600	300	12,7	6,0
	750	877	719	630	471	391	1,219	600	300	15,0	7,1
1800 (1766)	500	870	712	623	463	384	1,235	600	300	15,9	7,4
	600	1021	835	731	543	450	1,235	600	600	18,2	8,5
	750	1241	1015	888	660	547	1,235	900	600	21,7	10,1

(1) Tested in accordance with ÖNORM EN 442 (2) at 60° C

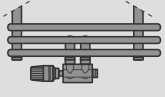


Overall depth (incl. wall clearance)
for an overall length of 500 .... 146 - 158 mm
for an overall length of 600 .... 155 - 167 mm
for an overall length of 750 .... 171 - 183 mm

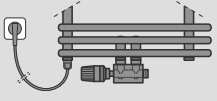
for an overall length of 500 .... 400 mm
for an overall length of 600 .... 495 mm
for an overall length of 750 .... 645 mm

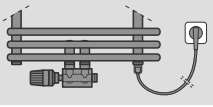


Connection example without electric heating element



Connection example with electric heating element





Connections
2 x G 3/4 External thread (Valve connection set)
2 x G 1/2 Internal thread and
1 x G 1/4 Internal thread (for vent plug)
Connection modes
see diagram

Test overpressure
13 bar

Maximum positive operating pressure
10 bar

Maximum operating temperature
110 °C

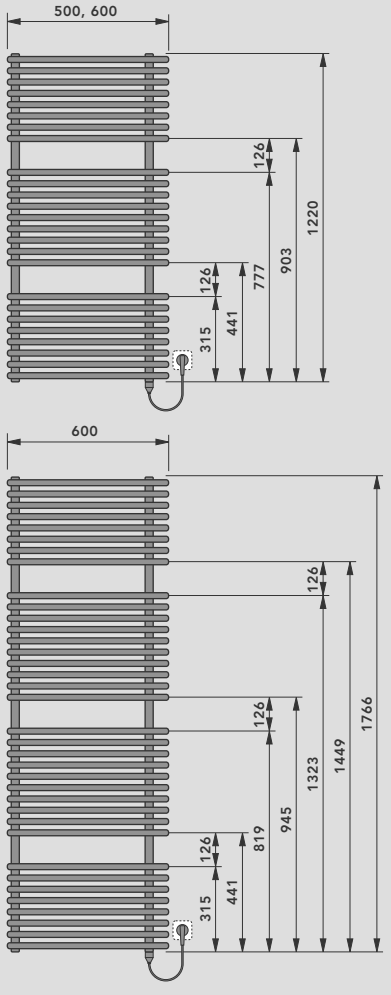
Standard basic configuration
- A pivotable vent plug, G 1/4, and two dummy plugs, G 1/2, nickel-plated brass, self-sealing, factory-sealed
- A valve connection set with angled two-pipe design
- Covering rosette in matching radiator colour
- Wall fastening set matching the radiator colour
- Fitting aid
- Instruction sheet

Accessory: PTC electric heating element
All FULDA-VM design radiators fitted with an electric heating element can also be used when the regular heating system is switched off. It is essential to take into account the power ratings assigned to the electric heating elements.

FULDA Design radiator - electric only operation

Technical data

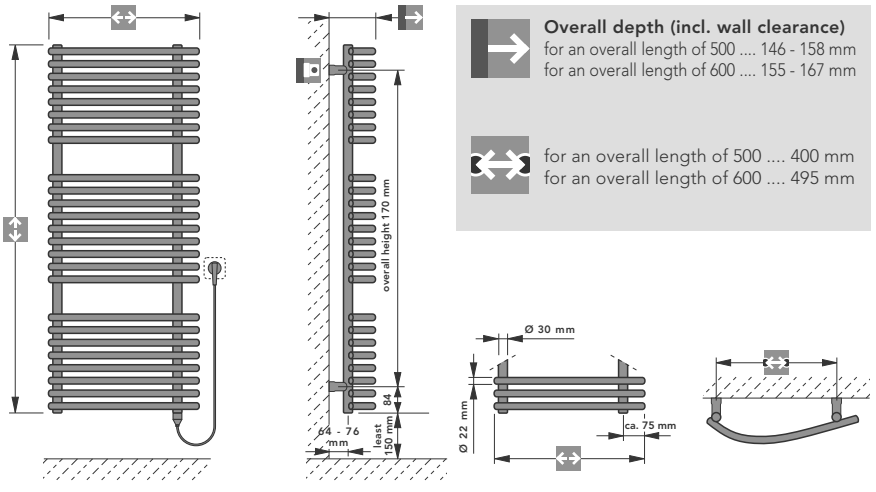
Dimensions [mm]



FULDA electric only operation

Nominal height (Overall height) [mm]	Overall length [mm]	Nominal power (2) Watts	Nominal power (2) Watts (chrome-plated / gold plated)	Nominal voltage [V]	Protection mode	Weight kg
1200 (1196)	**500** **600**	400 600	300 400	AC 230 AC 230	IP 24 IP 24	16,3 18,6
1800 (1766)	**600**	900	600	AC 230	IP 24	26,6

(2) at 60° C



Overall depth (incl. wall clearance)
for an overall length of 500 .... 146 - 158 mm
for an overall length of 600 .... 155 - 167 mm

for an overall length of 500 .... 400 mm
for an overall length of 600 .... 495 mm

Description:
With their built-in electric heating, the electric radiators of the FULDA-E family are elegant Design and bathroom radiators.

Self-regulation effect – the temperature-dependent PTC heating element automatically controls the temperature of the heat-transfer liquid by modifying its electrical resistance.

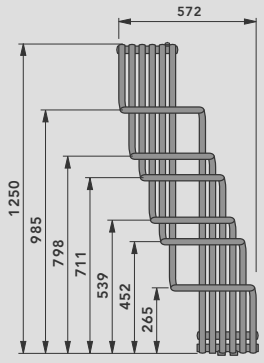
Standard basic configuration:
- A wall mounting set matching the radiator colour
- Fitting aid
- Instruction sheet

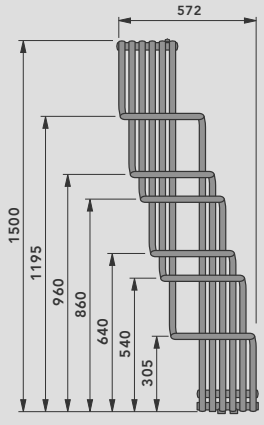
ÖVE tested

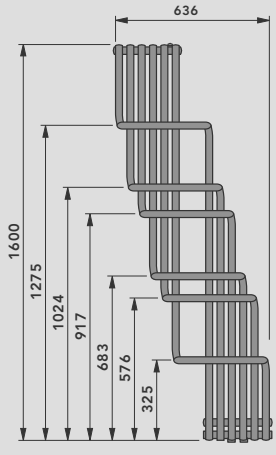
SEINE-V Design radiator

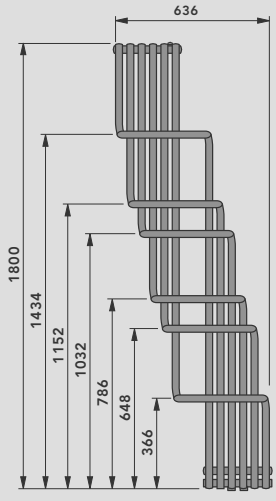
Technical data

Dimensions [mm]





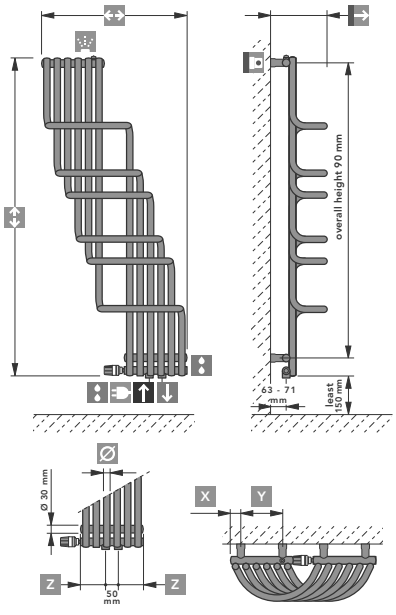




SEINE-V

Nominal height (Overall height) [mm]	Overall length [mm]	Heat output (1) in Watts 75/65/20 °C	70/55/20 °C	70/55/24 °C	55/45/20 °C	55/45/24 °C	Radiator exponent n	E-heat element Output (2) Watt Colour paint	chrome-plated / gold plated	Weight kg	Water content l
1200 (1250)	**572**	486	396	345	254	210	1,267	300	-	8,0	4,2
1500 (1500)	**572**	550	447	390	287	237	1,270	300	300	9,0	4,7
1600 (1600)	**636**	675	550	480	355	293	1,260	300	300	10,8	6,6
1800 (1800)	**636**	735	598	521	385	317	1,267	300	300	11,8	7,2

(1) Tested in accordance with ÖNORM EN 442 (2) at 60° C



Overall depth (incl. wall clearance)
for an overall length of 572 .... 225 - 237 mm
for an overall length of 636 .... 251 - 263 mm

Pipe diameter
for an overall length of 572 .... 25 mm
for an overall length of 636 .... 28 mm

Measurement X
for an overall length of 572 .... 41,5 mm
for an overall length of 636 .... 44 mm

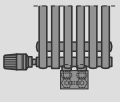
Measurement Y
for an overall length of 572 .... 164 mm
for an overall length of 636 .... 184 mm

Measurement Z
for an overall length of 572 .... 98,5 mm
for an overall length of 636 .... 111 mm

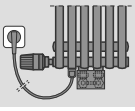
FULDA electric only operation

SEINE-V

Connection example without electric heating element



Connection example with electric heating element



Connections
4 x G 1/2 Internal thread and
2 x G 1/4 Internal thread (for vent and drain plugs)
Connection modes
see diagram

Test overpressure
13 bar

Maximum positive operating pressure
10 bar

Maximum operating temperature
110 °C

Accessory: PTC electric heating element
All SEINE-V design radiators equipped with an electric heating element can also be used at times when the regular heating system is switched off. It is absolutely necessary to take account of the power-ratings assigned to the electric heating elements.

Standard basic configuration
- A pivotable vent plug, G 1/4, and a dummy plug, G 1/4, as well as a dummy plug, G 1/2, nickel-plated brass, self-sealing, factory-sealed
- A wall mounting set matching the radiator colour
- Fitting aid
- Instruction sheet
- Valve including construction cover

Conversion table

Design radiator

Simplified procedures for standard and low-temperature (ST/LT)

The conversion factors in the table show the extent to which heat output varies under other operating conditions than those specified in the following standard-design data:

Supply temperature t_1 **75 °C**
Return temperature t_2 **65 °C**
Room temperature t_r **20 °C**

Because an average exponent of 1.3 has been used both for the calculation of performance data and for specifying the conversion factor, a slight variation in performance from the calculated values is possible.

The standard heating power Φ_S of a radiator to give the required heat output $\Phi_{HL,i}$ with the chosen operating conditions, is calculated according to the formula:

$$\Phi_S = \Phi_{HL,i} \times f$$

Φ_S = standard heating power, in accordance with EN 442
$\Phi_{HL,i}$ = required heat output, in accordance with EN 12831
f = conversion factor from the table

Example:
The required heat output for a room, from a 600 Watts base in accordance with EN 12831:

Variable data: t_1 65 °C
t_2 55 °C
t_r 22 °C

Factor **f** according to the table = **1,43**

supply temperature °C	return temperature °C	room air temperature °C						
		12	15	18	20	22	24	26
90	80	0,61	0,64	0,68	0,71	0,74	0,77	0,81
	70	0,67	0,72	0,76	0,80	0,83	0,87	0,91
80	70	0,74	0,79	0,84	0,88	0,93	0,97	1,03
	60	0,83	0,89	0,96	1,01	1,07	1,13	1,20
	50	0,96	1,04	1,13	1,20	1,28	1,37	1,47
75	**65**	0,82	0,88	0,95	**1,00**	1,05	1,12	1,18
	60	0,88	0,94	1,02	1,08	1,14	1,21	1,29
	55	0,94	1,01	1,10	1,17	1,24	1,32	1,42
70	65	0,87	0,94	1,01	1,07	1,13	1,19	1,27
	60	0,93	1,00	1,08	1,15	1,22	1,30	1,39
	55	0,99	1,08	1,17	1,25	1,33	1,42	1,53
	50	1,07	1,17	1,28	1,37	1,47	1,58	1,71
65	60	0,98	1,07	1,16	1,23	1,31	1,40	1,50
	55	1,05	1,15	1,26	1,34	1,43	1,54	1,66
	50	1,14	1,25	1,37	1,47	1,59	1,71	1,86
	45	1,24	1,37	1,52	1,64	1,78	1,94	2,13
60	55	1,13	1,23	1,36	1,45	1,56	1,68	1,82
	50	1,22	1,34	1,48	1,60	1,73	1,87	2,05
	45	1,33	1,47	1,65	1,78	1,94	2,13	2,36
	40	1,47	1,64	1,86	2,03	2,24	2,50	2,80
55	50	1,31	1,45	1,62	1,75	1,90	2,07	2,28
	45	1,43	1,60	1,80	1,96	2,15	2,37	2,64
	40	1,59	1,78	2,03	2,24	2,48	2,78	3,15
	35	1,78	2,03	2,36	2,64	2,99	3,43	4,02
50	45	1,56	1,75	1,98	2,17	2,40	2,67	3,00
	40	1,73	1,96	2,25	2,50	2,79	3,15	3,61
	35	1,94	2,24	2,63	2,96	3,38	3,92	4,64
	30	2,24	2,64	3,20	3,70	4,39	5,39	6,99
45	40	1,90	2,17	2,53	2,83	3,19	3,66	4,25
	35	2,15	2,50	2,96	3,37	3,89	4,58	5,52

$\Phi_S = \Phi_{HL,i} \times f = 600$ Watts $\times$ 1,43 = 858 Watts

A radiator has to be installed that emits 858 Watts under normal (75/65/20) conditions.

Exact method for the performance calculation for standard and low-temperature (ST/LT)

Using the formula $\Phi = \Phi_S \left[\frac{\Delta T}{\Delta T_S}\right]^n$ any performance differing from the standard can be calculated.

Φ = Heating power [W]
Φ_S = Standard heating power in accordance with EN 442 [W]
ΔT = Arithmetic radiator excess temperature [K]
ΔT_S = Arithmetic radiator excess temperature 50 K, from a standard base of 75°C / 65°C / 20°C
n = Radiator exponent

Please note: if the condition $c = \frac{t_2 - t_r}{t_1 - t_r} < 0{,}7$ is met, the excess temperatures will be specified logarithmically.

$$\Delta T_{arithmetic} = \frac{t_1 + t_2}{2} - tr \qquad \Delta T_{logarithmic} = \frac{t_1 - t_2}{\ln \frac{t_1 - t_r}{t_2 - t_r}}$$

To use our radiator performance calculator, go to www.vogelundnoot.com

Connection modes

Two pipe operation / single pipe operation

Two pipe operation

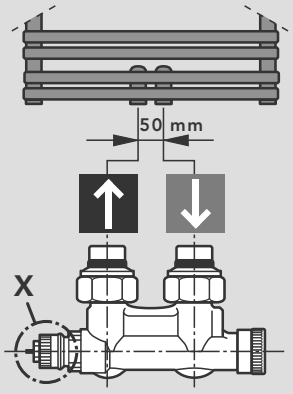


Fig. 1

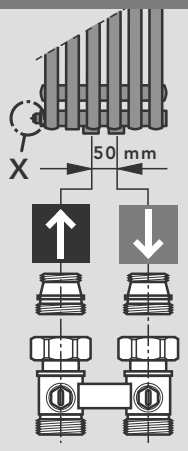
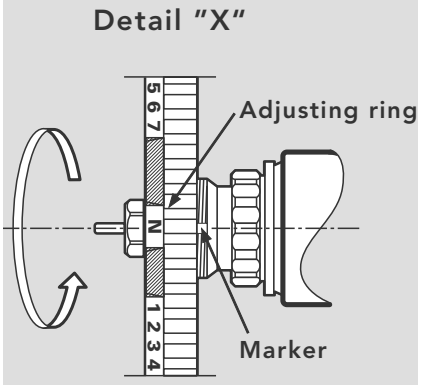


Fig. 2



Guideline values for presetting – basis: Supply temperature **70 °C** Return temperature **55 °C** Room temperature **20 °C**

Guide values for the Kv-value setting, at a proportional deviation of 2K for FULDA-VM, LOWA-VM, CAVALLY-VM, BAWA-VM, BAWA-T VM and OHIO VSM (Fig. 1):

K_V = 0,12 up to 450 W presetting **4**
K_V = 0,19 up to 700 W presetting **5**
K_V = 0,27 bis 1000 W presetting **6**
K_V = 0,33 up to 1200 W presetting **7**
K_V = 0,48 over 1200 W presetting **N**

Guide values for the K_V-value setting, at a proportional deviation of 2K for SEINE-V (Fig. 2):

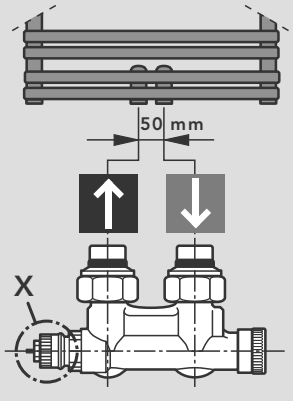
K_V = 0,13 up to 500 W presetting **1**
K_V = 0,21 over 500 W presetting **2**

Setting instructions

- Remove the protective cap and the sensor element.
- Lift the adjusting ring and turn it anticlockwise, as far as to the presetting required – the set value (1, 2, ...7, N) must be positioned in line with the marker.
- Presetting is possible in steps of 0.5 between 1 and 7. The „N"setting, cancels all presetting.

Note:
Settings in the hatched areas are to be avoided.
It is easy to set the precise value required without using any special tools.
The following thermostat heads can be directly fitted: **„RA 2000"**, or **„RAW"** from **Danfoss, „VK"** from **Heimeier**, **„D"** from **Herz**, **„thera DA"** from **MNG**, and **„UNI XD"** from **Oventrop**.

Single pipe operation



with FULDA-VM, LOWA-VM, CAVALLY-VM, BAWA-VM, BAWA-T VM and OHIO VSM

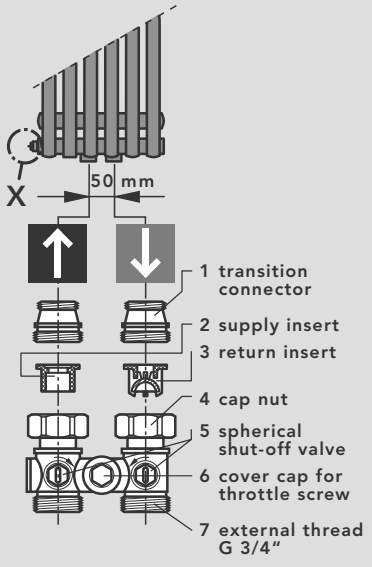
Accessories: connection set for single-pipe operation

Set value at a proportional deviation of 2K (guideline value): **radiator proportion 40% is the fixed setting**

The following thermostat heads can be directly fitted: **„RA 2000"**, or „**RAW"** from **Danfoss**, **„VK"** from **Heimeier**, **„D"** from **Herz**, **„thera DA"** from **MNG**, and **„UNI XD"** from **Oventrop**.

It is not necessary to preset the valve.

Single pipe operation for SEINE-V



Set value at a proportional deviation of 2K (guideline value):

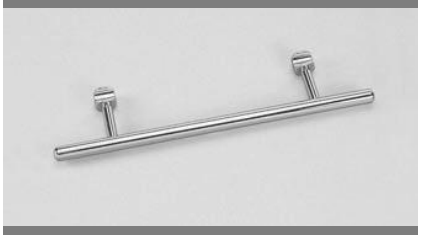
radiator proportion 30 % - 3,50 rotations = RECOMMENDED SETTING
radiator proportion 35 % ..... 3,00 rotations
radiator proportion 40 % ..... 2,50 rotations
radiator proportion 45 % ..... 2,00 rotations
radiator proportion 50 % ..... 1,75 rotations

Note:
When installing the single-pipe manifold take care that the return insert 3 is fitted into the return, and the supply insert 2 into the supply. Before setting the radiator proportion remove the covering cap 6 from the single-pipe manifold; the bypass shaft located below it needs to be turned to the right as far as it will go.

The following thermostat heads can be directly fitted: **„RA 2000"**, or „**RAW"** from **Danfoss**, **„VK"** from **Heimeier**, **„D"** from **Herz**, **„thera DA"** from **MNG**, and **„UNI XD"** from **Oventrop**.

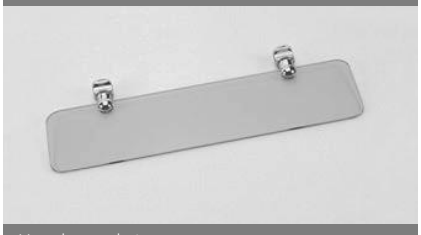
It is not necessary to preset the valve because it has been factory-adjusted to presetting N.

Clothes rail



Bath towel rail

Glass shelf



Hand towel ring

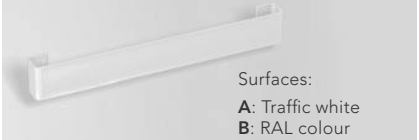
Hand towel rail

Surfaces:
A Available only in chrome-plate

Surfaces:
1B Chrome-plated
2B RAL colour
3B Sanitary ware colour

Bathrobe hook

Hand towel rail „SEWA"



Surfaces:
A: Traffic white
B: RAL colour
C: Sanitary ware colour

Accessoires

Accessoir Overall length [mm]	Item no.	BAWA Overall length [mm]				ARUN-T Overall length [mm]				FULDA Overall length [mm]				
		500	600	750	900	500	600	750	900	500	600	750	900	
CLOTHES RAIL chrome-plated (incl. two fastening kits)														
492	AZ1CR049C100100SCHRO	•	•	•	•	•	•	•	•					
492	AZ1CR049C300100SCHRO													
596	AZ1CR060C100100SCHRO		•	•	•		•	•	•					
596	AZ1CR060C300100SCHRO													
804	AZ1CR080C100100SCHRO				•				•					
804	AZ1CR080C300100SCHRO													
1012	AZ1CR101C300100SCHRO													
BATH TOWEL RAIL chrome-plated (incl. two fastening kits)														
500	AZ1BT050C100100SCHRO	•	•	•	•	•	•	•	•					
650	AZ1BT065C100100SCHRO			•	•			•	•					
GLASS SHELF (incl. two fastening kits)														
300	AZ1G-S030C100100SCHRO	•	•	•	•	•	•	•	•					
500	AZ1G-S050C100100SCHRO	•	•	•	•	•	•	•	•					
650	AZ1G-S065C100100SCHRO			•	•			•	•					
HAND TOWEL RING chrome-plated (incl. fastening kit)														
	AZ1HT000C100100SCHRO	•	•	•	•	•	•	•	•					
	AZ1HT000C200100SCHRO									•	•	•	•	
HAND TOWEL RAIL chrome-plated, RAL or Sanitary Ware colours, see colour chart (incl. fastening kit)														
A	AZ1TR000C100100SCHRO	•	•	•	•	•	•	•	•					
A	AZ1TR000C200100SCHRO									•	•	•	•	
A	AZ1TR000C300100SCHRO													
1B	AZ1TR000C400100SCHRO													
2B	AZ1TR000C400100R													
3B	AZ1TR000C400100S													
BATHROBE HOOK chrome-plated (incl. fastening kit)														
	AZ1BH000C000100SCHRO													
HAND TOWEL RAIL „SEWA", RAL or Sanitary Ware colours, see colour chart (incl. fastening kit)														
A	AZ1TR060C0001000													
B	AZ1TR060C000100R													
C	AZ1TR060C000100S													
A	AZ1TR070C0001000													
B	AZ1TR070C000100R													
C	AZ1TR070C000100S													

Accessoires

Design radiator

	CAVALLY Overall length [mm]				KASAI Overall length [mm]			VELINO Overall length [mm]				FATALA Overall length [mm]			OHIO VSM Overall length [mm]				SEWA Overall length [mm]	
	498	596	742	887	600	750	900	510	822	1030	1238	500	600	750	358	502	646	862	600	700
					•	•	•					•	•	•						
								•	•	•	•									
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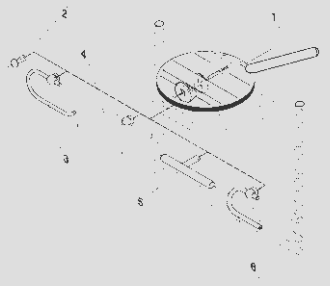
Design radiator families BAWA, CAVALLY, FULDA, FATALA, KASAI and ARUN-T



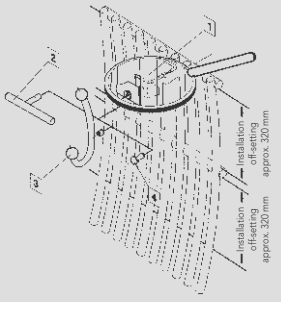
1 **Fastening kit Ø 32**
or use with Design radiators of the BAWA, CAVALLY, FATALA, KASAI and ARUN-T product families; consisting of:
2 clips (half shells)
1 flat-headed screw, with a hexagonal socket, DIN 7991 M6 x 35
1 hexagon socket screw key, SW 4 **or**

1 **Fastening kit Ø 40**
for use with Design radiators of the FULDA product family; consisting of:
2 clips (half shells)
1 flat-headed screw, with a hexagon socket, DIN 7991 M6 x 40
1 hexagonal socket screw key, SW 4

2 **Hand towel rail** and
3 **Hand towel ring**
for use with Design radiators of the BAWA, CAVALLY, FULDA, FATALA, KASAI and ARUN-T product families;

4 **Glass shelf** (not for use with the CAVALLY) as well as
5 **Clothes rail** and
6 **Bath towel rail**
for use with Design radiators of the BAWA, CAVALLY, FATALA, KASAI and ARUN-T product families.

Design radiator family VELINO



1 **Clip set**
consisting of:
2 clips (half shells)
1 flat-headed screw, with a hexagonal socket, DIN 7991 M6 x 40
1 hexagonal socket screw key, SW 4

2 **Clothes rail**

3 **Bathrobe hook**

4 **Hand towel rail**

Digital room thermostat

Digital room thermostat with infrared transmission, (incl. PTC-electric heating element)for room temperature control using the Design radiators. The infrared transmitter has a clear LCD display, simultaneously showing the room temperature, target temperature, operationmode and the BOOST symbol.

Using the BOOST function you can activate continuous operation (without thermostatic control) for between 5 minutes and 5 hours.

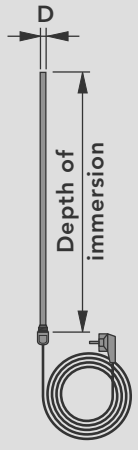
1 or 2 BOOST cycles may be set for each day, using 3 preset and adjustable programmes.

The infrared control unit is especially suitable for subsequent installation, because it simply involves plugging the receiver into a safety socket.

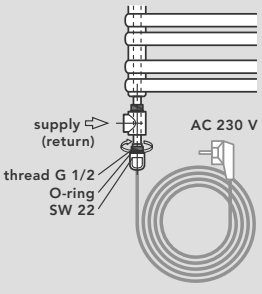
The infrared control set is available for all Design radiator models (exceptions: VELINO, SEWA, LOWA-VM and OHIO VSM!).

	Infrared control set		
	EH 300 Set	**EH 600 Set**	**EH 900 Set**
	PTC-electric heating element		
Nominal voltage Nominal input EH Depth of immersion EH Diameter **D** EH Cable length EH	AC 230 Volt 300 Watts at 60 °C 245 mm 11 mm 1500 mm	AC 230 Volt 600 Watts at 60° CC 450 mm 11 mm 1500 mm	AC 230 Volt 900 Watts at 60 °C 620 mm 11 mm 1500 mm
	Digital room thermostat transmitter		
Setting range for room temperatures	Between + 5 °C and + 30 °C		
Setting range for BOOST cycle duration	Between 5 minutes and 5 hours		
Display area for room temperatures	from + 0 °C to + 40 °C		
Static deviation	< 0,3 K		
Power supply	2 alkaline cells, LR03 model		
Range	Approx. 10 metres (all directions) Approx. 15 metres (in an unobstructed straight line)		
Interval of Infrared transmissions	Every 10 minutes		
Operational temperature	Between –10 °C and +50 °C		
Storage temperature	Between –20 °C and +60 °C		
Air humidity	Maxium of 90 %, at +25 °C		
Protection mode	IP 31		
Dimensions	120 x 80 x 35 mm (height x length x depth)		
	Digital room thermostat receiver		
Supply voltage	230 VAC +/- 10%		
Mains frequency	50 Hz		
Input power	< 5 VA		
Output	1 N/O contact (not potential free)		
Switching capacity	Ohm resistive load: max. 10A/2000W		
Operational temperature	Between –10 °C and +40 °C		
Storage temperature	Between –20 °C and +60 °C		
Air humidity	Maxium of 90 %, at +20 °C		
Protection mode	IP 24		
Dimensions	117 x 81 x 30 mm (height x length x depth)		
Digital room thermostat, transmitter and receiver **AND** electrical heating element			
Item no.	**AZ1CT030I0001000**	**AZ1CT060I0001000**	**AZ1CT090I0001000**
Digital room thermostat, transmitter and receiver **WITHOUT** electrical heating element			
Item no.	**AZ1CT000I0001000**		

PTC-electrical heating element, for use with all models, with the exception of: LOWA-VM, SEWA, OHIO VSM and VELINO



Electrical heating element	EH 300 * EHS 300 **	EH 600 * EHS 600 **	EH 900 * EHS 900 **
Nominal voltage	AC 230 Volt	AC 230 Volt	AC 230 Volt
Nominal input EH	300 Watts at 60 °C	600 Watts at 60° CC	900 Watts at 60 °C
Depth of immersion EH	245 mm	450 mm	620 mm
Diameter **D** EH	11 mm	11 mm	11 mm
Cable length EH	1500 mm	1500 mm	1500 mm
Item no. with safety plug *	**AZ1EH030A0001000**	**AZ1EH062A0001000**	**AZ1EH092A0001000**
with safety plug and switch **	**AZ1EH030B0001000**	**AZ1EH062B0001000**	**AZ1EH092B0001000**
Ausführungen: * with safety plug ** with safety plug and switch	protection mode IP 64 IP 40		



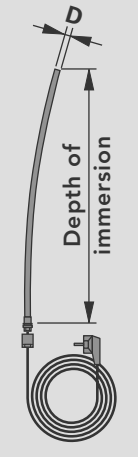
Design radiators fitted with an electric heating element can also be used at times when the regular heating system is switched off (exceptions: the LOWA-VM, SEWA, OHIO VSM and VELINO models).

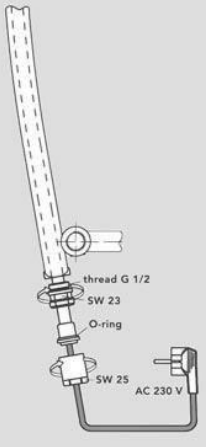
Self-adjusting effect – the temperature-dependent PTC-heating element automatically controls the water temperature in the radiator by adjusting its electrical resistance.

After the installation of the PTC-electrical heating element proceed as follows:
Fill the heating system with water and vent it. Before start-up, the radiator must be completely filled and vented. Always ensure that the water inside can expand so as to reach the expansion receptacle. For operation with the electrical heating insert we recommend closing the radiator's thermostat valve, to prevent heat being diverted into the rest of the distribution system.

Which electrical heating element to use:
Appropriate electrical heating elements and their insertion, positioning and fastening modes are specified in the tables given in the technical brochures, as well as in the installation sheets for the respective Design radiator families. It is absolutely essential to adhere to these instructions.

The VELINO electrical heating element





Electrical heating element	EHR 615 * EHRS 615 **
Nominal voltage	AC 230 Volt
Nominal input EH	615 Watts
Depth of immersion EH	610 mm
Diameter **D** EH	12,5 mm
Cable length EH	1500 mm
Item no. with safety plug *	**AZ1EH062A1001000**
with safety plug and switch **	**AZ1EH062B1001000**
Design: * with safety plug ** with safety plug and switch	protection mode IP 54 IP 40

Appropriate electrical heating elements and their insertion, positioning and fastening modes are specified in in the tables in the technical brochures and the installation sheets for the VELINO Design radiator family. It is absolutely essential to adhere to these instructions.

Accessories

Electrical heating elements

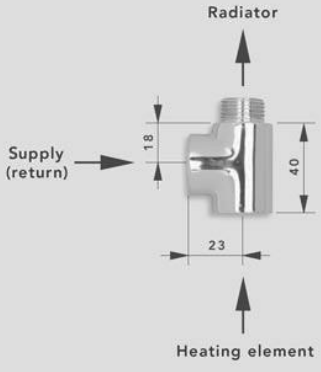
The LOWA-VM and SEWA electrical heating element, G 3/8

Electrical heating element	E 300 * ES 300 **	E 600 * ES 600 **
Nominal voltage	AC 230 Volt	AC 230 Volt
Nominal input EH	300 Watts	600 Watts
Depth of immersion EH	515 mm	750 mm
Diameter **D** EH	12,5 mm	12,5 mm
Cable length EH	1500 mm	1500 mm
Item no. with safety plug *	**AZ1EH030A2001000**	**AZ1EH060A2001000**
with safety plug and switch **	**AZ1EH030B2001000**	**AZ1EH060B2001000**

Design:
* with safety plug
** with safety plug and switch

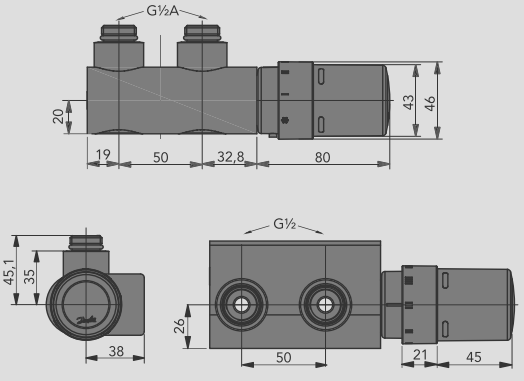
protection mode
IP 54
IP 40

Special adapter



Special adapter (chrome-plated)
A special adapter needs to be used for Design radiators without a 1/2" socket for the electrical heating element, as shown in the adjacent diagram. (Applies to the following models: BAWA, CAVALLY, FULDA, and FATALA/standard design.)

Design valve set



With the FATALA and FATALA left, the Design valve set for the electric heater in connection with the transition piece for the G 1/2" electric heating element is to be used open!

Product description and scope of delivery

VOGEL&NOOT Design radiators are top quality brand-name products, suitable for use in all areas because of the wide range of models and designs on offer. Depending on the models in question, the following basic designs are available.

Standard connection design
Delivered with dummy and vent plugs, as well as a wall mounting set matching the radiator colour

Central valve connection design
Delivered ready to install, with factory-sealed dummy and vent plugs, as well as a wall mounting set matching the radiator colour (exception: the OHIO model will be delivered with mounting brackets). For the SEINE-V a built-in valve set. For the BAWA-VM, BAWA-T-VM, LOWA-VM, FULDA-VM, CAVALLY-VM and the OHIO VSM models a valve connection set and a covering rosette in matching radiator colour are included as well. For the NERO and SEWA models an integrated connection set with a thermostat head comes included.

Room partition design
The ARUN-T model is used as a room partition. With the ARUN-T model a room can be divided in a highly distinctive way, making it a very attractive design element for any living area. Delivered with dummy and vent plugs as well as a wall and floor mounting set matching the radiator colour.

Purely electrical operation design
The electrical radiators of the BAWA-E, FULDA-E and FATALA-E family are designed to give purely electrical heating, without being connected to the central heating system. Self-adjusting effect – the temperature-dependent PTC heating element automatically controls the temperature of the heat-transfer liquid by modifying its electrical resistance. Delivered with wall mountings matching the radiator colour.

Operating conditions
For all models a maximum operating temperature of 110° C applies.

Mounting set
Each Design radiator is equipped with wall mounting on the rear side, suitable for both horizontal and vertical radiator alignment. (Exception: OHIO models are delivered with mounting brackets.)

Paint coatings
An eco-friendly double coat of top-quality covering, in accordance with DIN 55900; anodic dip painting with electro dip paint, using water-soluble paint; electro-statically powder coated, with processed surfaces electrolytically coated. For the SEINE and FULDA models with chrome-plated or gold-plated surfaces, the reduced output is about 25%.

Packaging
Support protection, protection of the visible surfaces, two layers of corrugated cardboard, and PE foil.

Quality certificates

Strong brands of the highest quality
Besides its high level of expertise in design and its enthusiasm for innovation **VOGEL&NOOT** offers its customers strong brands that meet the highest quality standards. All the production sites' processes are certified in accordance with ISO. The quality and performance specifications of the Design radiators are constantly being verified by recognised European institutions.

The standards that the quality certificates require us to maintain are there to give you security, the best heating performance and premium product quality. For the **VOGEL&NOOT** warranty conditions, please see the installation sheet, which is enclosed with each Design radiator.

Guarantee statements are available to download at **www.vogelundnoot.com/download**

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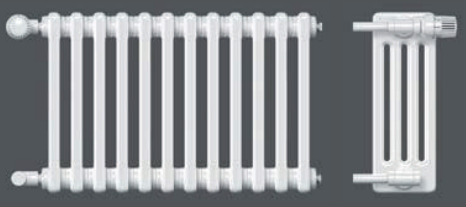

LASERLINE
Standard

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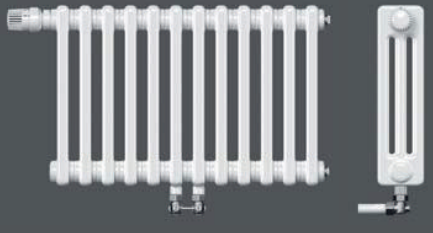

LASERLINE
Centrally connected valve

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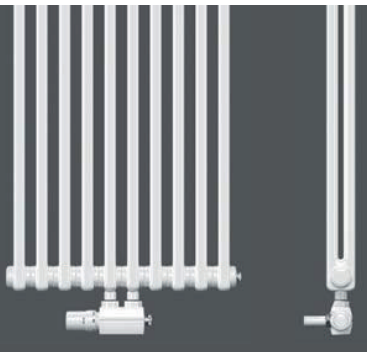

LASERLINE
Twin

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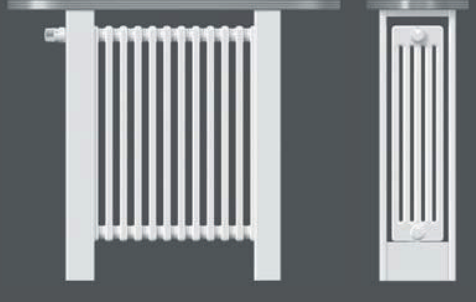

LASERLINE Architecture
Heated bar tables

Technical specification 144
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LASERLINE Architecture
Heated benches

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LASERLINE STANDARD

Overall heights 155 - 3000 mm
Any height between 300 and 3000 mm is available to the nearest millimetre at the customer's request.

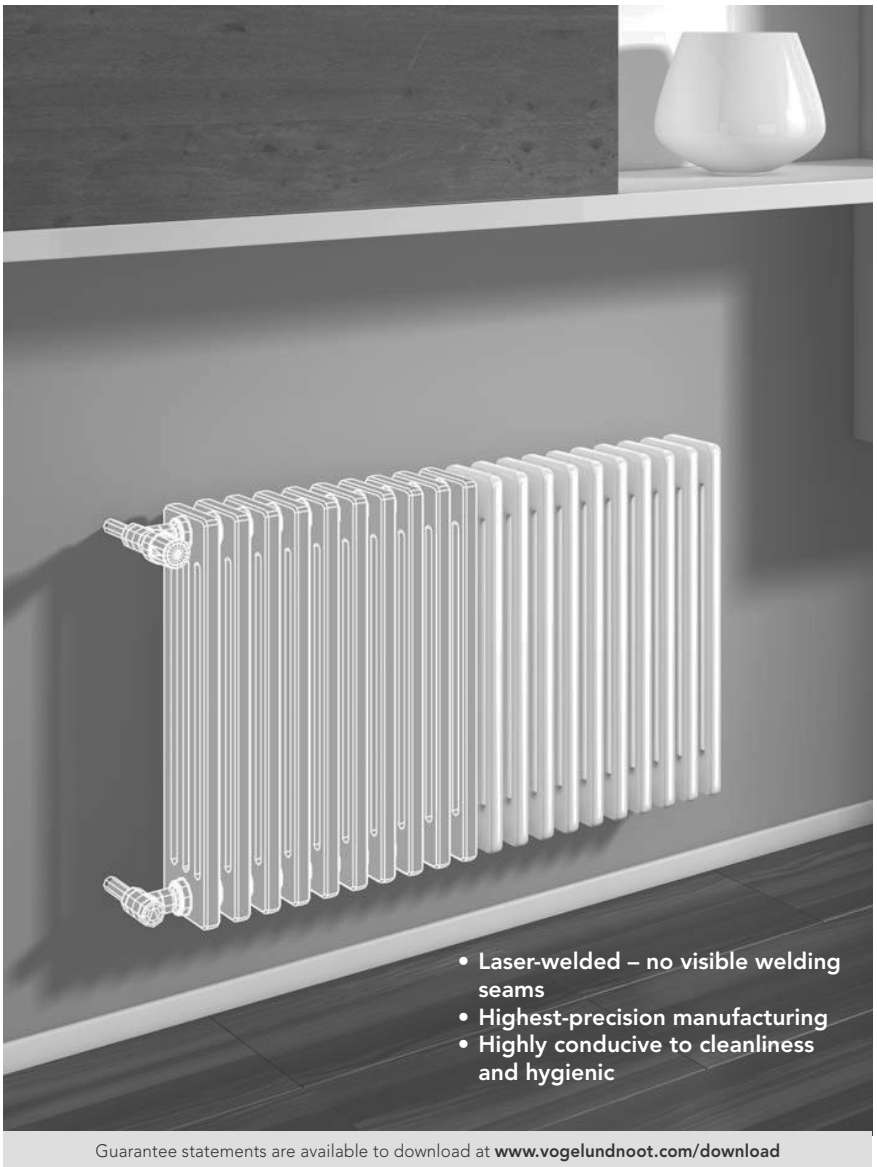
Overall length 200 - 2500 mm
Scope of delivery in a single block by model up to a max. overall length of 2100 mm is possible, otherwise supplied in block parts including plugs, nipples and gaskets.

Overall depth
2-column: 63 mm
3-column: 101 mm
4-column: 139 mm
5-column: 177 mm
6-column: 215 mm

Connections
4 x 1/2" internal thread (front)
also suitable for the boss spacings of older DIN-compliant steel or cast iron radiators
Further possible connections: 3/8", 3/4" and 1"

Max. operating pressure
10 Heated bar tables

Max. operating temperature 110 °C



Guarantee statements are available to download at **www.vogelundnoot.com/download**

Design Column radiators made from precision-engineered steel pipes and fully laser-welded head pieces connected to completed radiators or blocks.
Pipes and head pieces flattened on the external sides to increase the heat output. No protruding welding burrs either inside or outside. The boss spacing is the overall height minus 65 mm. Connections for the supply, return, vent plug and drain are located on the front. The surfaces have been pre-treated and subject to electrophoretic immersion coating and cured powder coating.

Packaging
Environmentally friendly transport packaging with side protection (enclosing cardboard packaging), and shrink-wrapped.

Safety
Construction in line with work safety requirements in accordance with the guidelines of the statutory accident insurer (GUV). Tested and registered in accordance with European standard EN 442 Reg. No. 6R0900. Complies with the old BAGUV guidelines. Awarded a hygiene certificate.

Technical data
Boss size: 1", element length: 50 mm

Attention!
The manufacturer's length tolerance is 0 to + 1%. Please take this into account during pre-assembly!

Note:
In the case of LaserLine Column radiators that are composed of blocks and are to be connected by means of nipples, the overall length increases by 30 mm (15 mm for each of the screw plugs!)

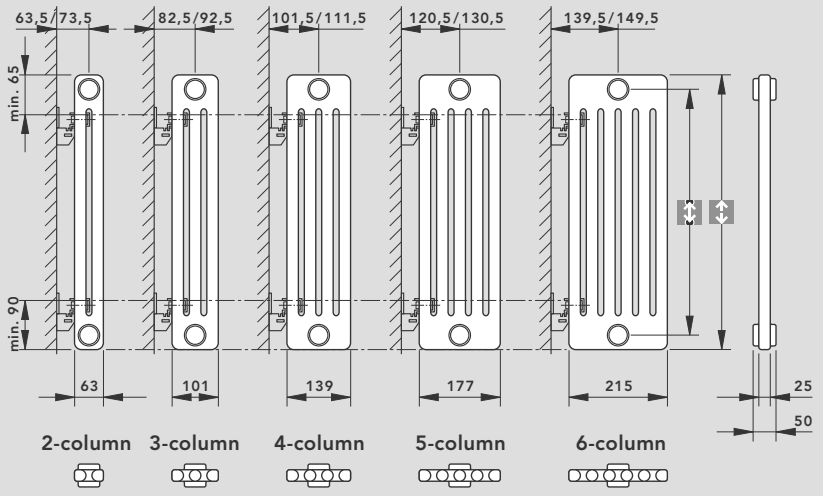
Fixing and scope of delivery
Delivery without fixings and connection materials (see Accessories)

Coating
In accordance with DIN 55 900, with electrophoretic immersion coating and cured powder coating in RAL 9016 Traffic White, other RAL colours and bathroom suite colours are available upon request.

LASERLINE STANDARD

Models overview, dimensions and block lengths

Models overview



Note:
The entire Laserline series is manufactured without clip brackets as standard. The delivery does not include fixings, or vent plugs or dummy plugs.

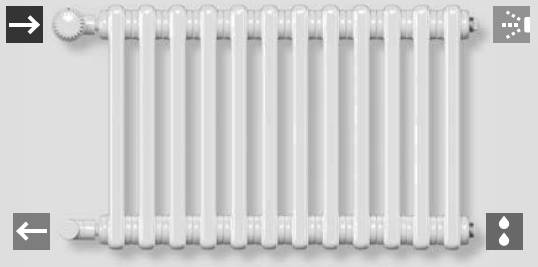
Boss spacing:
Overall height – 65 mm

Model	Overall height [mm]	Max. elements per block	Nipples supplied by manufacturer max. elements
2-column	155 - 800	42	60
	801 - 1000	42	48
	1001 - 2400	19	-
	2401 - 3000	16	-
3-column	155 - 800	42	60
	801 - 1000	42	48
	1001 - 2400	19	-
	2401 - 3000	16	-
4-column	155 - 800	42	60
	801 - 1000	32	48
	1001 - 1850	19	-
	1851 - 2000	18	19
	2001 - 2200	16	19
	2201 - 2500	14	16
	2501 - 2800	12	16
	2801 - 3000	11	16
5-column	155 - 665	42	60
	666 - 750	37	53
	751 - 800	32	48
	801 - 1000	26	40
	1001 - 1400	19	-
	1401 - 1500	18	19
	1501 - 1600	17	19
	1601 - 1800	16	19
	1801 - 2000	14	19

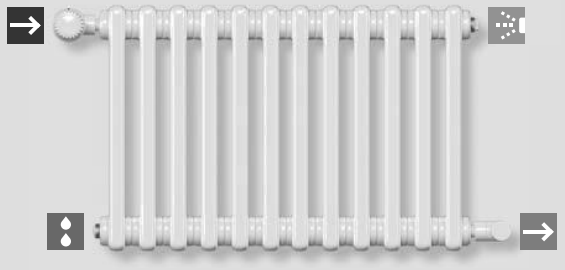
Model	Overall height [mm]	Max. elements per block	Nipples supplied by manufacturer max. elements
5-column	2001 - 2200	12	18
	2201 - 2500	11	16
	2501 - 2800	10	14
	2801 - 3000	9	13
6-column	155 - 500	42	60
	501 - 600	35	52
	601 - 665	32	48
	666 - 750	28	42
	751 - 800	26	42
	801 - 900	24	36
	901 - 1000	22	33
	1001 - 1200	19	-
	1201 - 1400	16	19
	1401 - 1500	15	19
	1501 - 1600	14	19
	1601 - 1800	13	19
	1801 - 1900	12	18
	1901 - 2000	11	17
	2001 - 2100	11	16
	2101 - 2300	10	15
	2301 - 2500	9	14
	2501 - 2600	9	13
	2601 - 2800	8	12
	2801 - 3000	8	11

Standard heights [mm]	Boss spacing [mm]
155	90
300	235
350	285
365	300
400	335
415	350
450	385
500	435
550	485
565	500
600	535
665	600
750	685
900	835
965	900
1000	935
1065	1000
1100	1035
1200	1135
1500	1435
1800	1735
2000	1935
2200	2135
2500	2435
2800	2735
3000	2935

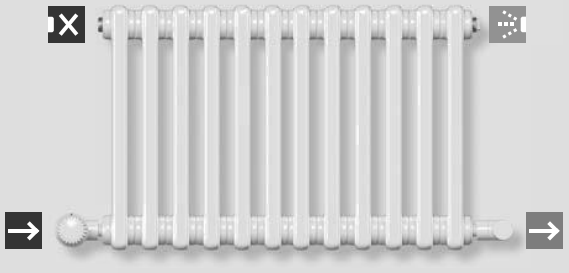
Connection types – double pipe system



A: Single-sided connection

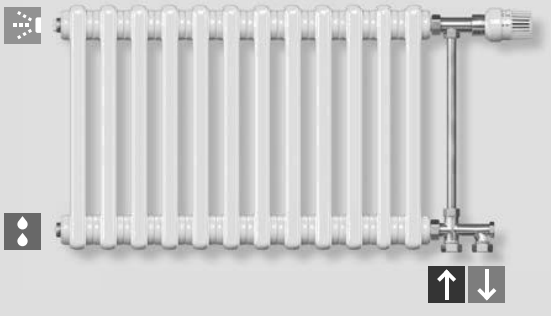


B: Connection **on both sides**



C: Connection **on top**

Connection type – single pipe system



Excess temperatures ΔT

The table values have been calculated by arithmetic or logarithms and have been rounded up or down in line with practical considerations. It is therefore usually not necessary to make calculations yourself.

Supply temperature t_1 °C	Room air temperature t_r °C	Return temperature t_2 °C						
		70	65	60	55	50	45	40
		ΔT						
90	15	65	62	59	56	53	50	46
	18	62	59	56	53	50	46	43
	20	60	57	54	51	48	44	40
	22	58	55	52	49	46	42	38
	24	56	53	50	47	43	40	36
85	15	63	60	57	54	51	48	44
	18	60	57	54	51	48	44	41
	20	58	55	52	49	46	42	39
	22	56	53	50	47	44	40	36
	24	54	51	48	45	41	38	34
80	15	60	58	55	52	49	46	42
	18	57	55	52	49	46	42	39
	20	55	53	50	47	44	40	37
	22	53	51	48	45	42	38	35
	24	51	49	46	43	39	36	32
75	15	58	55	53	50	47	44	40
	18	55	52	50	47	44	41	37
	20	53	50	48	45	42	38	35
	22	51	48	46	43	40	36	33
	24	49	46	44	41	37	34	30
70	15	-	53	50	48	45	42	38
	18	-	50	47	45	42	39	35
	20	-	48	45	43	40	36	33
	22	-	46	43	40	37	34	31
	24	-	44	41	38	35	32	29
65	15	-	-	48	45	43	40	36
	18	-	-	45	42	39	36	33
	20	-	-	43	40	37	34	31
	22	-	-	41	38	35	32	29
	24	-	-	39	36	33	30	27
60	15	-	-	-	43	40	37	34
	18	-	-	-	40	37	34	31
	20	-	-	-	38	35	32	29
	22	-	-	-	36	33	30	27
	24	-	-	-	34	31	28	25
55	15	-	-	-	-	38	35	32
	18	-	-	-	-	35	32	29
	20	-	-	-	-	33	30	27
	22	-	-	-	-	31	28	25
	24	-	-	-	-	29	26	23
50	15	-	-	-	-	-	33	30
	18	-	-	-	-	-	30	27
	20	-	-	-	-	-	28	25
	22	-	-	-	-	-	26	23
	24	-	-	-	-	-	24	21

Conversion factor U_f

Conversion factor U_f to determine the heat output for ΔT other than 50 K

ΔT K	U_f	ΔT K	U_f
65	1,408	43	0,821
64	1,380	42	0,796
63	1,352	41	0,771
62	1,324	40	0,747
61	1,296	39	0,723
60	1,268	38	0,699
59	1,241	37	0,675
58	1,213	36	0,651
57	1,186	35	0,627
56	1,159	34	0,604
55	1,132	33	0,581
54	1,105	32	0,558
53	1,079	31	0,535
52	1,052	30	0,513
51	1,026	29	0,491
50	1,000	28	0,469
49	0,974	27	0,447
48	0,948	26	0,426
47	0,922	25	0,404
46	0,897	24	0,383
45	0,871	23	0,363
44	0,846	22	0,342
43	0,821	21	0,322
44	0,796		

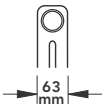
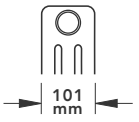
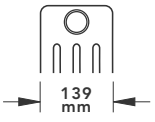
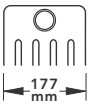
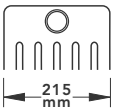
The standard heat output
In accordance with DIN EN 442, this relates to t_1 = 75 °C, t2 = 65 °C, tr = 20 °C
Excess temperature ΔT = 50 K.
In order to determine other ΔT, a conversion factor is used as shown above.

Example
VOGEL&NOOT Laserline tube radiator, model 6050, 10 elements

Standard heat output at ΔT = 50 K: 103.76 Watts/element x 10 elements = 1037.6 Watts.
Supply of 70 °C, return of 55 °C, room temperature 18 °C gives ΔT = 45 K (see table on the left).

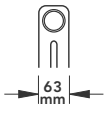
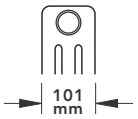
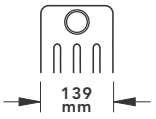
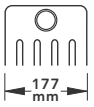
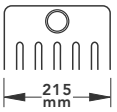
Conversion factor U_f = 0.871 (see table above).
Actual heat output: 1037.6 x 0.871 = 903.75 Watts

Output tables

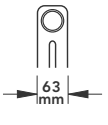
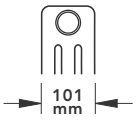
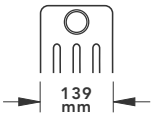
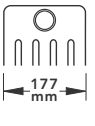
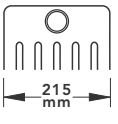
Standard heat output (Watts) at 75/65/20 °C in accordance with EN 442, DIN registration number 6R0900						
Attention: the 155 mm-height radiator cannot be mounted using the radiator mounts!		**2-columns** 	**3-columns** 	**4-columns** 	**5-columns** 	**6-columns** 
Increments	All lengths from 200 to 2500 mm in increments of 50 mm, the element width is 50 mm.					
Overall height 155 mm	**Model**	**2016**	**3016**	**4016**	**5016**	**6016**
	Output/element in Watts	12,66	17,51	22,83	28,71	34,80
Boss spacing 90 mm	Water capacity/element in litres	0,27	0,39	0,51	0,63	0,75
	Weight when empty/ element in kg	0,30	0,45	0,61	0,76	0,93
Overall height 300 mm	**Model**	**2030**	**3030**	**4030**	**5030**	**6030**
	Output/element in Watts	25,24	35,40	45,56	55,98	66,39
Boss spacing 235 mm	Water capacity/element in litres	0,40	0,57	0,75	0,93	1,11
	Weight when empty/ element in kg	0,52	0,78	1,05	1,30	1,57
Overall height 350 mm	**Model**	**2035**	**3035**	**4035**	**5035**	**6035**
	Output/element in Watts	28,96	40,50	52,04	63,99	75,93
Boss spacing 285 mm	Water capacity/element in litres	0,44	0,64	0,84	1,03	1,23
	Weight when empty/ element in kg	0,60	0,89	1,20	1,49	1,86
Overall height 365 mm	**Model**		**3037**	**4037**	**5037**	**6037**
	Output/element in Watts		42,01	53,96	66,36	78,76
Boss spacing 300 mm	Water capacity/element in litres		0,66	0,86	1,06	1,27
	Weight when empty/ element in kg		0,91	1,22	1,54	1,86
Overall height 400 mm	**Model**	**2040**	**3040**	**4040**	**5040**	**6040**
	Output/element in Watts	32,63	45,52	58,40	71,87	85,33
Boss spacing 335 mm	Water capacity/element in litres	0,49	0,70	0,92	1,14	1,35
	Weight when empty/ element in kg	0,68	1,00	1,35	1,67	2,02
Overall height 415 mm	**Model**		**3042**	**4042**		**6042**
	Output/element in Watts		47,01	60,29		88,12
Boss spacing 350 mm	Water capacity/element in litres		0,72	0,95		1,39
	Weight when empty/ element in kg		1,03	1,37		2,08
Overall height 450 mm	**Model**	**2045**	**3045**	**4045**	**5045**	**6045**
	Output/element in Watts	36,26	50,47	64,68	79,64	94,60
Boss spacing 385 mm	Water capacity/element in litres	0,53	0,76	1,01	1,24	1,48
	Weight when empty/ element in kg	0,75	1,12	1,49	1,86	2,24
Overall height 500 mm	**Model**	**2050**	**3050**	**4050**	**5050**	**6050**
	Output/element in Watts	39,87	55,38	70,88	87,32	103,76
Boss spacing 435 mm	Water capacity/element in litres	0,57	0,83	1,09	1,34	1,60
	Weight when empty/ element in kg	0,83	1,23	1,64	2,04	2,46
Overall height 550 mm	**Model**	**2055**	**3055**	**4055**	**5055**	**6055**
	Output/element in Watts	43,46	60,25	77,03	94,93	112,83
Boss spacing 485 mm	Water capacity/element in litres	0,62	0,89	1,17	1,45	1,73
	Weight when empty/ element in kg	0,91	1,34	1,79	2,23	2,68

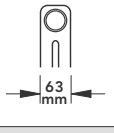
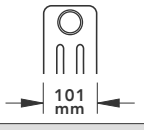
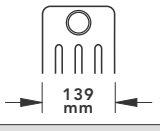
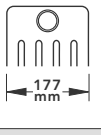
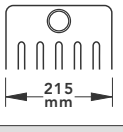
Output tables

Standard heat output (Watts) at 75/65/20 °C in accordance with EN 442, DIN registration number 6R0900

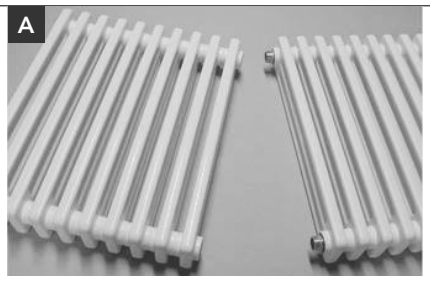
		2-columns 	3-columns 	4-columns 	5-columns 	6-columns 
Increments		All lengths from 200 to 2500 mm in increments of 50 mm, the element width is 50 mm.				
Overall height 565 mm	**Model**	**2057**	**3057**	**4057**	**5057**	**6057**
	Output/element in Watts	44,53	61,70	78,86	97,20	115,54
Boss spacing 500 mm	Water capacity/element in litres	0,63	0,91	1,20	1,48	1,76
	Weight when empty/ element in kg	0,93	1,38	1,84	2,29	2,75
Overall height 600 mm	**Model**	**2060**	**3060**	**4060**	**5060**	**6060**
	Output/element in Watts	47,02	65,07	83,12	102,48	121,83
Boss spacing 535 mm	Water capacity/element in litres	0,66	0,96	1,26	1,55	1,85
	Weight when empty/ element in kg	0,98	1,46	1,94	2,42	2,91
Overall height 665 mm	**Model**	**2067**	**3067**	**4067**	**5067**	**6067**
	Output/element in Watts	51,64	71,31	90,97	112,20	133,42
Boss spacing 600 mm	Water capacity/element in litres	0,72	1,04	1,37	1,69	2,01
	Weight when empty/ element in kg	1,08	1,60	2,14	2,66	3,20
Overall height 750 mm	**Model**	**2075**	**3075**	**4075**	**5075**	**6075**
	Output/element in Watts	57,65	79,40	101,15	124,80	148,45
Boss spacing 685 mm	Water capacity/element in litres	0,80	1,15	1,51	1,86	2,22
	Weight when empty/ element in kg	1,21	1,79	2,39	2,97	3,58
Overall height 900 mm	**Model**	**2090**	**3090**	**4090**	**5090**	**6090**
	Output/element in Watts	68,22	93,57	118,92	146,79	174,65
Boss spacing 835 mm	Water capacity/element in litres	0,93	1,34	1,76	2,17	2,59
	Weight when empty/ element in kg	1,44	2,13	2,84	3,53	4,24
Overall height 965 mm	**Model**	**2097**	**3097**	**4097**		**6097**
	Output/element in Watts	72,80	99,69	126,57		185,91
Boss spacing 900 mm	Water capacity/element in litres	0,99	1,42	1,87		2,75
	Weight when empty/ element in kg	1,54	2,28	3,04		4,53
Overall height 1000 mm	**Model**	**2100**	**3100**	**4100**	**5100**	**6100**
	Output/element in Watts	75,26	102,97	130,67	161,31	191,95
Boss spacing 935 mm	Water capacity/element in litres	1,02	1,47	1,93	2,38	2,84
	Weight when empty/ element in kg	1,59	2,36	3,14	3,91	4,69
Overall height 1065 mm	**Model**	**2107**	**3107**	**4107**	**5107**	**6107**
	Output/element in Watts	72,71	109,07	138,29	170,72	203,15
Boss spacing 1000 mm	Water capacity/element in litres	1,04	1,55	2,04	2,52	3,00
	Weight when empty/ element in kg	1,76	2,46	3,24	4,15	4,98
Overall height 1100 mm	**Model**	**2110**	**3110**	**4110**	**5110**	**6110**
	Output/element in Watts	82,30	112,34	142,38	175,77	209,16
Boss spacing 1035 mm	Water capacity/element in litres	1,11	1,60	2,10	2,59	3,10
	Weight when empty/ element in kg	1,75	2,59	3,44	4,28	5,14

Output tables

Standard heat output (Watts) at 75/65/20 °C in accordance with EN 442, DIN registration number 6R0900						
		2-columns 	3-columns 	4-columns 	5-columns 	6-columns 
Increments	All lengths from 200 to 2500 mm in increments of 50 mm, the element width is 50 mm.					
Overall height **1200** mm	**Model**	**2120**	**3120**	**4120**	**5120**	**6120**
	Output/element in Watts	89,35	121,70	154,04	190,17	226,29
Boss spacing 1135 mm	Water capacity/element in litres	1,19	1,73	2,27	2,80	3,33
	Weight when empty/ element in kg	1,90	2,81	3,74	4,65	5,58
Overall height **1500** mm	**Model**	**2150**	**3150**	**4150**	**5150**	**6150**
	Output/element in Watts	110,64	149,80	188,95	233,18	277,41
Boss spacing 1435 mm	Water capacity/element in litres	1,46	2,11	2,77	3,42	4,08
	Weight when empty/ element in kg	2,36	3,49	4,64	5,77	6,92
Overall height **1800** mm	**Model**	**2180**	**3180**	**4180**	**5180**	**6180**
	Output/element in Watts	132,23	178,08	223,92	276,14	328,35
Boss spacing 1735 mm	Water capacity/element in litres	1,72	2,49	3,27	4,04	4,82
	Weight when empty/ element in kg	2,82	4,17	5,53	6,88	8,25
Overall height **2000** mm	**Model**	**2200**	**3200**	**4200**	**5200**	**6200**
	Output/element in Watts	146,83	197,10	247,36	304,85	362,34
Boss spacing 1935 mm	Water capacity/element in litres	1,90	2,75	3,61	4,46	5,31
	Weight when empty/ element in kg	3,12	4,62	6,13	7,63	9,15

Standard heat output (Watts) at 75/65/20 °C in accordance with EN 442, DIN registration number 6R0900						
		2-columns 	3-columns 	4-columns 	5-columns 	6-columns 
Increments	All lengths from 200 to 1250 mm in increments of 50 mm, the element width is 50 mm.					
Overall height **2200** mm	**Model**	**2220**	**3220**	**4220**	**5220**	**6220**
	Output/element in Watts	161,63	216,28	270,93	333,68	396,42
Boss spacing 2135 mm	Water capacity/element in litres	2,08	3,01	3,94	4,87	5,81
	Weight when empty/ element in kg	3,43	5,07	6,73	8,38	10,04
Overall height **2500** mm	**Model**	**2250**	**3250**	**4250**	**5250**	**6250**
	Output/element in Watts	184,23	245,44	306,30	377,21	447,78
Boss spacing 2435 mm	Water capacity/element in litres	2,34	3,39	4,45	5,50	6,55
	Weight when empty/ element in kg	3,89	5,75	7,63	9,49	11,37
Overall height **2800** mm	**Model**	**2280**	**3280**	**4280**	**5280**	**6280**
	Output/element in Watts	207,36	275,09	342,82	421,18	499,53
Boss spacing 2735 mm	Water capacity/element in litres	2,61	3,78	4,95	6,12	7,29
	Weight when empty/ element in kg	4,34	6,43	8,53	10,61	12,71
Overall height **3000** mm	**Model**	**2300**	**3300**	**4300**	**5300**	**6300**
	Output/element in Watts	223,10	295,18	367,25	450,78	534,30
Boss spacing 2935 mm	Water capacity/element in litres	2,79	4,03	5,29	6,53	7,79
	Weight when empty/ element in kg	4,65	6,88	9,12	11,35	13,60

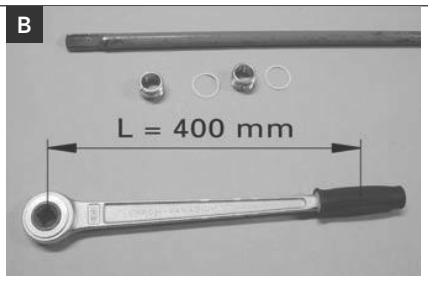
A



Lay both block parts on an even surface.

Carefully remove any colour residue and dirt from the ports. Only use original **VOGEL&NOOT** ***LaserLine*** nipples and gaskets.
Turn both nipples (approx. one pitch of a screw thread) into the ports of a block; ensure the corresponding nipple is used for the left-handed/right-handed thread. The left thread is marked! (The thread surround is knurled).
Push one gasket onto each nipple.

B



Nipple turning keys are available in lengths of 0.75 m, 1 m, 1.50 m and 2.20 m. Ratchet with 400 mm lever arm.

C

Fit the second block onto the nipples.

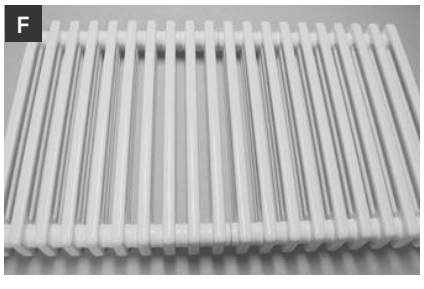
D

Guide the nipple turning key through a port of the last block that was fixed up to the nipple. The square drive of the nipple turning key is provided for the purpose of using the ratchet.

E

Use the nipple turning key to tighten both nipples alternately. The torque should be 90 +/- 10 Nm. Nipples only tightened on one side will cause leaks!

F

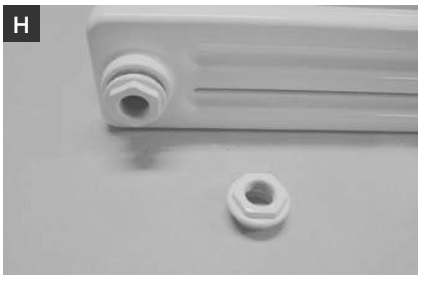


Using the 400 mm-long ratchet with a weight force (on the handle) of 22.5 kg, this will bring about a fastening torque of 90 Nm.

G

Remember that the dummy plug will add 15 mm to the length of the radiator.

H



Remember that the screw plugs with plug gaskets will also add 15 mm to the length of the radiator.

I

Use the plastic key in order to prevent damage to the plugs.

J

Tube radiator ready for connection.

Attention!
The manufacturer's length tolerance is 0 to +1%. Please take this into account in the pre-assembly!

Note:
In the case of **VOGEL&NOOT** ***LaserLine*** Column radiators that are composed of blocks and are to be connected by means of nipples, the overall length increases by 30 mm (15 mm for each of the screw plugs!).

Block lengths

In order to facilitate the dispatch and transport of **VOGEL&NOOT Laserline** steel Column radiators to and around the construction site, **VOGEL&NOOT Laserline** radiators in larger lengths are supplied in individual element blocks according to model and overall height.

Nipple instructions

VOGEL&NOOT Laserline steel Column radiators supplied in block parts are fixed together on the construction site and connected to one another by nipples. Only the original **VOGEL&NOOT** gaskets supplied with the items are to be used to seal off the nipple ports and the screw plugs at the construction site. Thread paste or similar sealant is not permitted.

The bosses of the individual element blocks and the nipples feature a 1" right-handed thread and a 1" left-handed thread. Two studs are arranged opposite one another on the inside of the nipple, against which the flanges of the nipple turning key will catch during assembly.
In order to ensure the sound sealing of the nipple ports and screw plugs, it is necessary to adhere to the following instructions carefully:

- Lay the block parts horizontally on an even, level surface. In order to protect the coating from damage, cardboard or similar material should be laid underneath.
- Carefully remove any colour residue and dirt from the sites to be sealed and the surfaces of the bosses.
- Only use original **VOGEL&NOOT** Laserline nipples and **VOGEL&NOOT** 1.5 mm gaskets (EPDM, white). Thread paste or similar sealant is not permitted.
- Turn both nipples approximately one pitch of a screw thread into the ports/bosses of a block, ensuring the corresponding one is used for the right-handed/left-handed thread (the surrounds of the left threads are knurled).
- Place a gasket onto each nipple along the central axis so that it is radially aligned.
- Fit the next block part onto the nipple.
- Guide the nipple turning key through a port of the block that was fitted last up to the nipple. The square drive of the nipple turning key is provided for the purpose of using the ratchet. The depth of insertion can already be measured beforehand and marked on the nipple turning key. Only fault-free nipple tools may be used.
- Use the nipple turning key and the ratchet to tighten both nipples alternately and tighten the block parts equally together in this way. Unequal degrees of tightening will result in leaks.

The torque should be 90 +/- 10 Nm 1). The nipples and screw plugs must never be tightened with excessive force! Nipples only tightened on one side will cause leaks!

Installation of the screw plugs

The **VOGEL&NOOT Laserline** steel radiators are sealed after the nipples to the end elements by screw plugs and connected, for the purpose of the supply and return connection, by means of the pipelines. Screw plugs with right-handed and left-handed threads and gaskets are supplied with the radiator blocks.

Attention:
The screw plug length (approx. 15 mm per plug) is to be added to the radiator length.

- Only the original **VOGEL&NOOT** screw plugs and **VOGEL&NOOT** 2.6 mm gaskets (EPDM, white) supplied with the radiator blocks are to be used. Thread paste or similar sealant is not permitted.
- Mating surfaces and threads are to be checked to ensure they appear undamaged and clean.
- Fit the gaskets onto the screw plugs.
- Screw on the plugs by hand, ensuring the correct one is used for the right-handed and left-handed threads. Before fitting the plug collar, the gasket must once more be aligned radially, so that the entire profile seals effectively and the gasket does not become misshapen.
- Screw plugs should only be tightened using a suitable tool (ring spanner or open-jawed spanner). The torque should be 90 +/- 10 Nm 1). The use of a pipe wrench or similar is not permitted.
- The 1" pipe thread of the element blocks is not suitable for direct fitting onto pipes; in order to ensure proper sealing, the screw plugs (with a 1" adapter if necessary– see Accessories) and the supplied gaskets must always be used.

Mounting a long radiator

VOGEL&NOOT Laserline steel radiators of larger overall lengths must be lifted upright and positioned onto the wall brackets by at least two people. In order to prevent bowing of the radiators, suitable auxiliary fittings (Heated bar tabless, shelves, tubing etc.) should be used if necessary. The required number of brackets (load-bearing points) must be taken into consideration.

Exchange of element blocks

When changing element blocks, the original **VOGEL&NOOT** nipples, screw plugs and gaskets must be used. The aforementioned directions must be followed.

[1] Example

The fastening torque should be 90 Nm. If using the 400 mm ratchet and weight force (on the handle) of 22.5 kg, this will bring about a fastening torque of 90 Nm.

Radiator exponents “n”

2-column (per radiator element)

Model	Overall height [mm]	Radiator exponent n
2016	155	**1,21**
2030	300	**1,22**
2035	350	**1,23**
-	-	**-**
2040	400	**1,23**
-	-	**-**
2045	450	**1,23**
2050	500	**1,24**
2055	550	**1,24**
2057	565	**1,24**
2060	600	**1,24**
2067	665	**1,25**
2075	750	**1,25**
2090	900	**1,26**
2097	965	**1,27**
2100	1000	**1,27**
-	-	**-**
2110	1100	**1,28**
2120	1200	**1,28**
2150	1500	**1,30**
2180	1800	**1,32**
2200	2000	**1,33**
2220	2200	**1,34**
2250	2500	**1,34**
2280	2800	**1,34**
2300	3000	**1,30**

3-column (per radiator element)

Model	Overall height [mm]	Radiator exponent n
3016	155	**1,22**
3030	300	**1,23**
3035	350	**1,23**
3037	365	**1,23**
3040	400	**1,24**
3042	415	**1,24**
3045	450	**1,24**
3050	500	**1,25**
3055	550	**1,26**
3057	565	**1,26**
3060	600	**1,26**
3067	665	**1,27**
3075	750	**1,28**
3090	900	**1,29**
3097	965	**1,29**
3100	1000	**1,30**
3107	1065	**1,30**
3110	1100	**1,30**
3120	1200	**1,31**
3150	1500	**1,33**
3180	1800	**1,34**
3200	2000	**1,34**
3220	2200	**1,34**
3250	2500	**1,34**
3280	2800	**1,33**
3300	3000	**1,32**

4-column (per radiator element)

Model	Overall height [mm]	Radiator exponent n
4016	155	**1,22**
4030	300	**1,23**
4035	350	**1,24**
4037	365	**1,24**
4040	400	**1,25**
4042	415	**1,25**
4045	450	**1,26**
4050	500	**1,26**
4055	550	**1,27**
4057	565	**1,27**
4060	600	**1,28**
4067	665	**1,29**
4075	750	**1,30**
4090	900	**1,31**
4097	965	**1,32**
4100	1000	**1,32**
4107	1065	**1,33**
4110	1100	**1,33**
4120	1200	**1,34**
4150	1500	**1,35**
4180	1800	**1,35**
4200	2000	**1,35**
4220	2200	**1,35**
4250	2500	**1,34**
4280	2800	**1,30**
4300	3000	**1,32**

5-column (per radiator element)

Model	Overall height [mm]	Radiator exponent n
5016	155	**1,24**
5030	300	**1,24**
5035	350	**1,25**
5037	365	**1,25**
5040	400	**1,26**
-	-	**-**
5045	450	**1,26**
5050	500	**1,27**
5055	550	**1,28**
5057	565	**1,28**
5060	600	**1,28**
5067	665	**1,29**
5075	750	**1,30**
5090	900	**1,31**
-	-	**-**
5100	1000	**1,32**
5107	1065	**1,33**
5110	1100	**1,33**
5120	1200	**1,34**
5150	1500	**1,35**
5180	1800	**1,35**
5200	2000	**1,35**
5220	2200	**1,34**
5250	2500	**1,33**
5280	2800	**1,31**
5300	3000	**1,30**

6-column (per radiator element)

Model	Overall height [mm]	Radiator exponent n
6016	155	**1,24**
6030	300	**1,25**
6035	350	**1,26**
6037	365	**1,26**
6040	400	**1,26**
6042	415	**1,27**
6045	450	**1,27**
6050	500	**1,28**
6055	550	**1,28**
6057	565	**1,28**
6060	600	**1,29**
6067	665	**1,29**
6075	750	**1,30**
6090	900	**1,31**
6097	965	**1,32**
6100	1000	**1,32**
6107	1065	**1,32**
6110	1100	**1,33**
6120	1200	**1,33**
6150	1500	**1,34**
6180	1800	**1,35**
6200	2000	**1,34**
6220	2200	**1,34**
6250	2500	**1,32**
6280	2800	**1,30**
6300	3000	**1,28**

LASERLINE CENTRALLY CONNECTED VALVE

Overall heights 155 - 3000 mm
Any height between 300 and 3000 mm is available to the nearest millimetre at the customer's request.

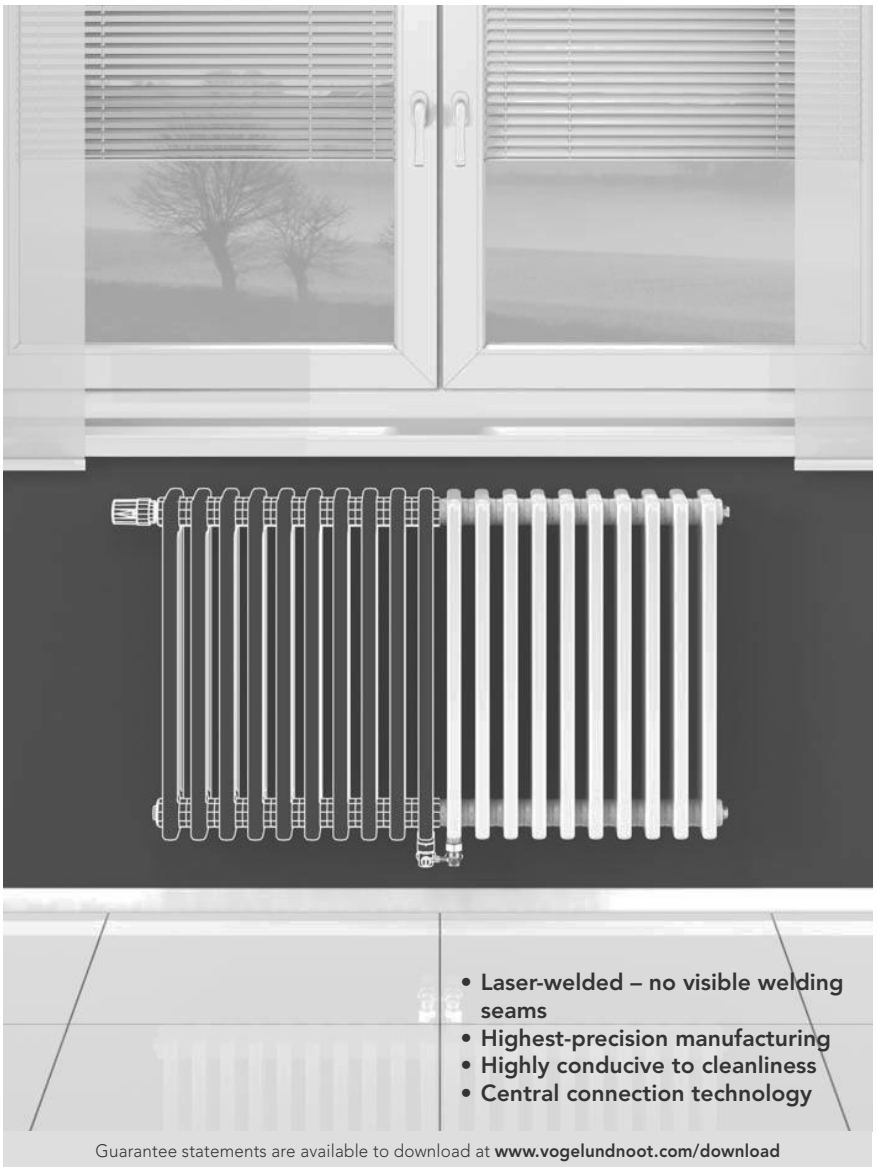
Overall lengths
200 - max. 1500 mm

Overall depth
2-column: 63 mm
3-column: 101 mm
4-column: 139 mm
5-column: 177 mm
6-column: 215 mm

Connections
4 x 1/2" internal thread front right and left, 2 x 1/2" internal thread at the bottom centrall, distance of 50 mm with integrated thermostatic valve at the top

Max. operating pressure
10 Heated bar tables

Max. operating temperature 110 °C



- **Laser-welded – no visible welding seams**
- **Highest-precision manufacturing**
- **Highly conducive to cleanliness**
- **Central connection technology**

Guarantee statements are available to download at **www.vogelundnoot.com/download**

Design Column radiators made from precision-engineered steel pipes and fully laser-welded head pieces connected to completed radiators. Only an even number of elements is possible
Pipes and head pieces flattened on the exterior to increase the heat output. No protruding welding burrs either inside or outside. With built-in presettable control valve.

Packaging
Environmentally friendly transport packaging with side protection (enclosing cardboard packaging), and shrink-wrapped.

Safety
Construction in line with work safety requirements in accordance with the guidelines of the statutory accident insurer (GUV). Tested and registered in accordance with European standard EN 442 Reg. No. 6R0900. Complies with the old BAGUV guidelines. Awarded a hygiene certificate.

Technical data
Boss size: 1", element length: 50 mm

Attention!
The manufacturer's length tolerance is 0 to + 1%. Please take this into account during pre-assembly!

Note:
The Laserline centrally connected valve radiator consists of one block (according to supply range) and cannot be joined by nipples.

Fixing
See Accessories (not included in scope of delivery)

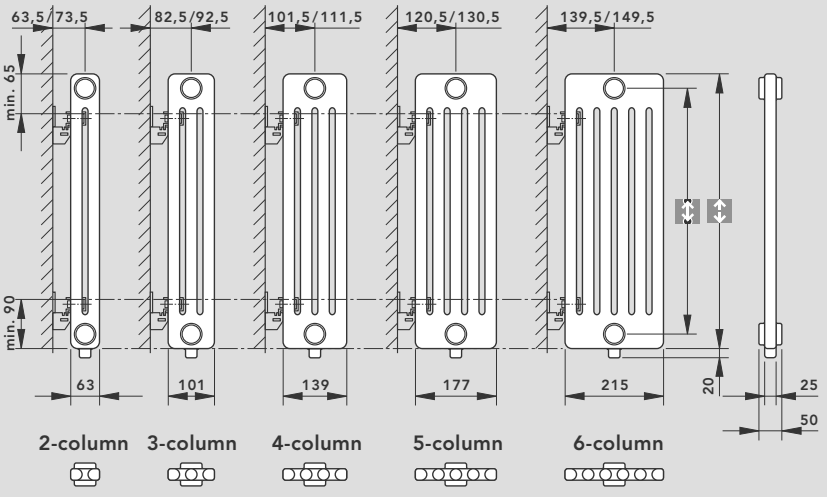
Scope of delivery
Includes thermostatic valve suitable for thermostatic heads with port thread M 30 x 1.5 mm; air vent and 2 x drain plugs G 1/2".

Coating
In accordance with DIN 55900, with electrophoretic immersion coating and cured powder coating in RAL 9016 Traffic White, other RAL colours and bathroom suite colours are available upon request.

LASERLINE CENTRALLY CONNECTED VALVE

Models overview, radiator dimensions

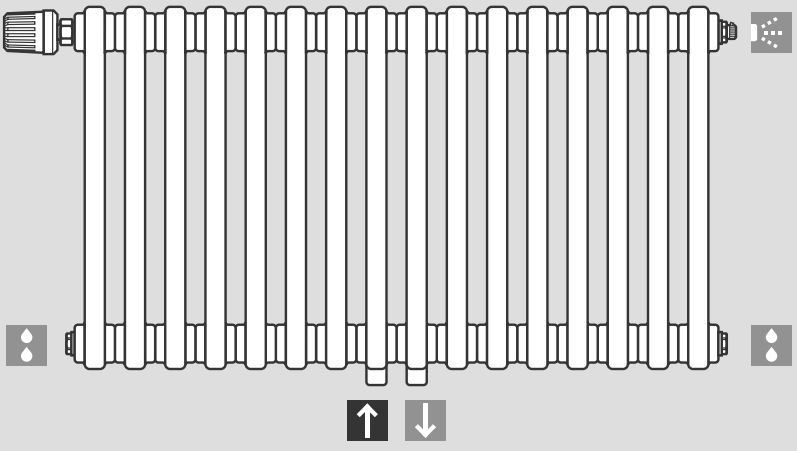
Models overview



Note:
The entire Laserline centrally connected valve series is manufactured without clip brackets. The delivery does not include fixings, but does include the necessary plugs and thermostatic valve!

Overall height – 65 mm

Connection



Attention: The supply must always be connected on the side with the valve.

Max. number of elements per block

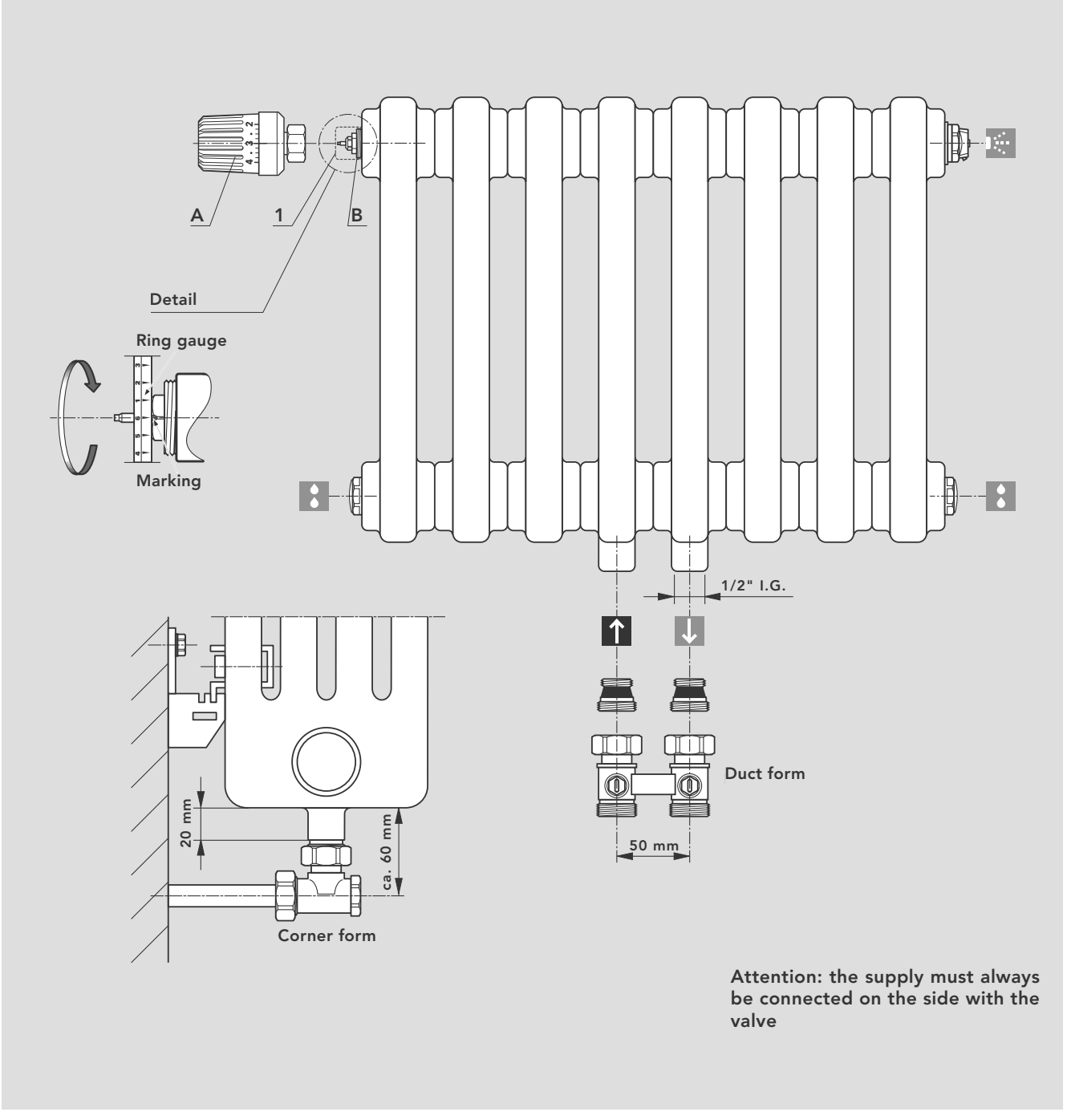
Model	Overall height [mm]	Max. no. of elements per block
2-column	155 - 1000	30
	1001 - 2400	18
	2401 - 3000	16
3-column	155 - 1000	30
	1001 - 2400	18
	2401 - 3000	16
4-column	155 - 1000	30
	1001 - 2000	18
	2001 - 2200	16
	2201 - 2500	14
	2501 - 2800	12
	2801 - 3000	10
5-column	155 - 800	30
	801 - 1000	26
	1001 - 1500	18
	1501 - 1800	16
	1801 - 2000	14
	2001 - 2200	12
	2201 - 2800	10
	2801 - 3000	8
6-column	155 - 665	30
	666 - 750	28
	751 - 800	26
	801 - 900	24
	901 - 1000	22
	1001 - 1200	18
	1201 - 1400	16
	1401 - 1600	14
	1601 - 1900	12
	1901 - 2300	10
	2301 - 3000	8

Central connection of valve is only possible with an even number of elements! No specially-produced lengths are possible (maximum number of elements!)

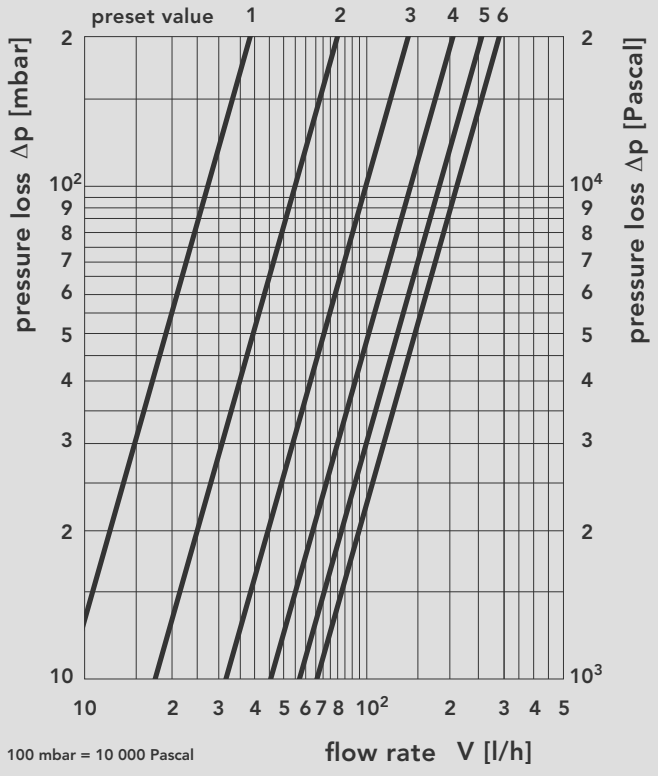
Double pipe operation

The desired setting values can be set easily and accurately without the need for special tools (see diagram below).
The radiator is supplied with the protective cap already fitted. After removing the protective cap (item 1) the thermostatic heads (item A not in the scope of delivery) with M 30 x 1.5 mm port threads of the brands Heimeier, Honeywell-MNG and Oventrop, or special thermostatic heads "RAW-K" made by Danfoss and the Herz "H" thermostatic head can be fitted directly onto the built in valve (item B) .

Setting notes:
- Remove the protective cap or thermostatic head
- Turn the ring gauge anti-clockwise to the desired setting – the desired setting value (1 6) must be positioned above the marking
- The pre-set value can be selected in increments of 1 and 6
- The valve is set to the pre-set value 6 by the manufacturer



Flow rate at 2 K P-deviation



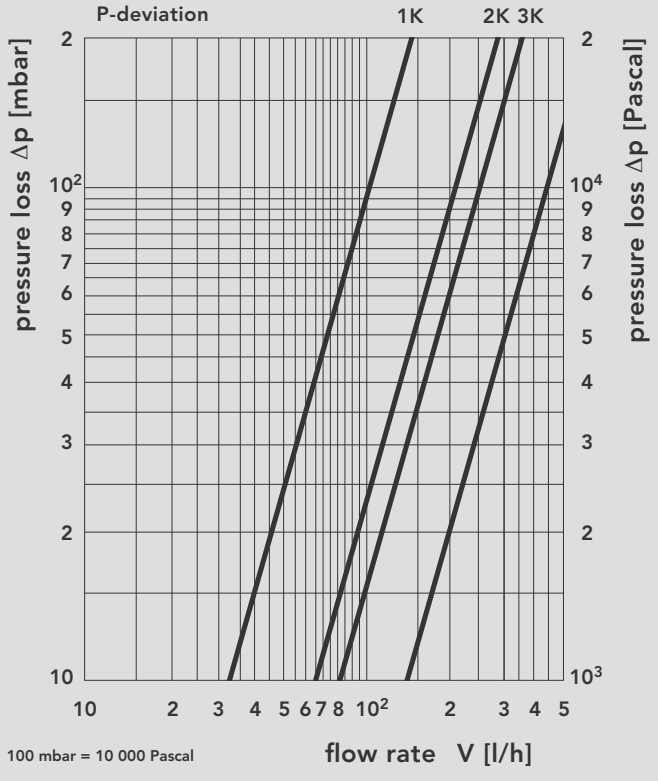
VE*	1	2	3	4	5	6
k_v	0,047	0,126	0,269	0,417	0,6	0,7

* VE = preset value

The presettable control valve is built in by the manufacturer and is delivered with the thermostatic valve.
Port thread M 30 x 1.5 mm.

The available models and heat outputs are in line with the tables on the next pages. The thermostatic valve is located in the upper boss of the radiator on the front left.

Flow rate at preset value 6

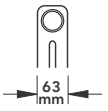
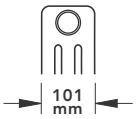
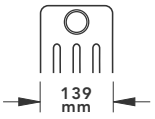
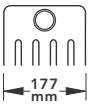
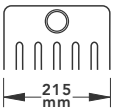


LASERLINE-VM

LASERLINE CENTRALLY CONNECTED VALVE

Output tables

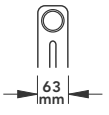
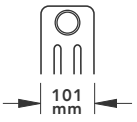
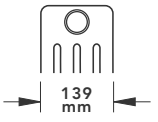
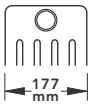
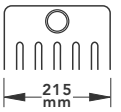
Standard heat output (Watts) at 75/65/20 °C in accordance with EN 442, DIN registration number 6R0900

Attention: the height 155 mm cannot be mounted using the radiator mounts!		2-columns 	3-columns 	4-columns 	5-columns 	6-columns 
Increments	All lengths from 200 to 1500 mm in increments of 100 mm, the element width is 50 mm.					
Overall height **155** mm	**Model**	**2016**	**3016**	**4016**	**5016**	**6016**
	Output/element in Watts	12,66	17,51	22,83	28,71	34,80
Boss spacing **90 mm**	Water capacity/element in litres	0,27	0,39	0,51	0,63	0,75
	Weight when empty/ element in kg	0,30	0,45	0,61	0,76	0,93
Overall height **300** mm	**Model**	**2030**	**3030**	**4030**	**5030**	**6030**
	Output/element in Watts	25,24	35,40	45,56	55,98	66,39
Boss spacing **235 mm**	Water capacity/element in litres	0,40	0,57	0,75	0,93	1,11
	Weight when empty/ element in kg	0,52	0,78	1,05	1,30	1,57
Overall height **350** mm	**Model**	**2035**	**3035**	**4035**	**5035**	**6035**
	Output/element in Watts	28,96	40,50	52,04	63,99	75,93
Boss spacing **285 mm**	Water capacity/element in litres	0,44	0,64	0,84	1,03	1,23
	Weight when empty/ element in kg	0,60	0,89	1,20	1,49	1,86
Overall height **365** mm	**Model**		**3037**	**4037**	**5037**	**6037**
	Output/element in Watts		42,01	53,96	66,36	78,76
Boss spacing **300 mm**	Water capacity/element in litres		0,66	0,86	1,06	1,27
	Weight when empty/ element in kg		0,91	1,22	1,54	1,86
Overall height **400** mm	**Model**	**2040**	**3040**	**4040**	**5040**	**6040**
	Output/element in Watts	32,63	45,52	58,40	71,87	85,33
Boss spacing **335 mm**	Water capacity/element in litres	0,49	0,70	0,92	1,14	1,35
	Weight when empty/ element in kg	0,68	1,00	1,35	1,67	2,02
Overall height **450** mm	**Model**	**2045**	**3045**	**4045**	**5045**	**6045**
	Output/element in Watts	36,26	50,47	64,68	79,64	94,60
Boss spacing **385 mm**	Water capacity/element in litres	0,53	0,76	1,01	1,24	1,48
	Weight when empty/ element in kg	0,75	1,12	1,49	1,86	2,24
Overall height **500** mm	**Model**	**2050**	**3050**	**4050**	**5050**	**6050**
	Output/element in Watts	39,87	55,38	70,88	87,32	103,76
Boss spacing **435 mm**	Water capacity/element in litres	0,57	0,83	1,09	1,34	1,60
	Weight when empty/ element in kg	0,83	1,23	1,64	2,04	2,46
Overall height **550** mm	**Model**	**2055**	**3055**	**4055**	**5055**	**6055**
	Output/element in Watts	43,46	60,25	77,03	94,93	112,83
Boss spacing **485 mm**	Water capacity/element in litres	0,62	0,89	1,17	1,45	1,73
	Weight when empty/ element in kg	0,91	1,34	1,79	2,23	2,68
Overall height **600** mm	**Model**	**2060**	**3060**	**4060**	**5060**	**6060**
	Output/element in Watts	47,02	65,07	83,12	102,48	121,83
Boss spacing **535 mm**	Water capacity/element in litres	0,66	0,96	1,26	1,55	1,85
	Weight when empty/ element in kg	0,98	1,46	1,94	2,42	2,91

LASERLINE CENTRALLY CONNECTED VALVE

Output tables

Standard heat output (Watts) at 75/65/20 °C in accordance with EN 442, DIN registration number 6R0900

		2-columns	3-columns	4-columns	5-columns	6-columns
						
Increments		All lengths from 200 to 1500 mm in increments of 100 mm, the element width is 50 mm.				
Overall height 665 mm	**Model**	**2067**	**3067**	**4067**	**5067**	**6067**
	Output/element in Watts	51,64	71,31	90,97	112,20	133,42
Boss spacing 600 mm	Water capacity/element in litres	0,72	1,04	1,37	1,69	2,01
	Weight when empty/ element in kg	1,08	1,60	2,14	2,66	3,20
Overall height 750 mm	**Model**	**2075**	**3075**	**4075**	**5075**	**6075**
	Output/element in Watts	57,65	79,40	101,15	124,80	148,45
Boss spacing 685 mm	Water capacity/element in litres	0,80	1,15	1,51	1,86	2,22
	Weight when empty/ element in kg	1,21	1,79	2,39	2,97	3,58
Overall height 900 mm	**Model**	**2090**	**3090**	**4090**	**5090**	**6090**
	Output/element in Watts	68,22	93,57	118,92	146,79	174,65
Boss spacing 835 mm	Water capacity/element in litres	0,93	1,34	1,76	2,17	2,59
	Weight when empty/ element in kg	1,44	2,13	2,84	3,53	4,24
Overall height 1000 mm	**Model**	**2100**	**3100**	**4100**	**5100**	**6100**
	Output/element in Watts	75,26	102,97	130,67	161,31	191,95
Boss spacing 935 mm	Water capacity/element in litres	1,02	1,47	1,93	2,38	2,84
	Weight when empty/ element in kg	1,59	2,36	3,14	3,91	4,69

Standard heat output (Watts) at 75/65/20 °C in accordance with EN 442, DIN registration number 6R0900

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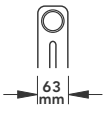
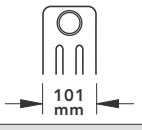
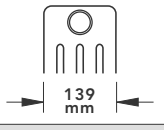
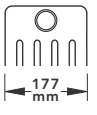
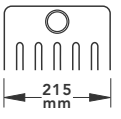
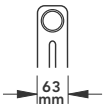
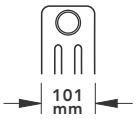
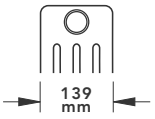
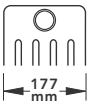
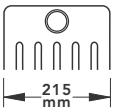
						
Increments		All lengths from 200 to 1000 mm in increments of 100 mm, the element width is 50 mm.				
Overall height 1065 mm	**Model**		**3107**	**4107**	**5107**	**6107**
	Output/element in Watts		109,07	138,29	170,72	203,15
Boss spacing 1000 mm	Water capacity/element in litres		1,55	2,04	2,52	3,00
	Weight when empty/ element in kg		2,46	3,24	4,15	4,98
Overall height 1100 mm	**Model**	**2110**	**3110**	**4110**	**5110**	**6110**
	Output/element in Watts	82,30	112,34	142,38	175,77	209,16
Boss spacing 1035 mm	Water capacity/element in litres	1,11	1,60	2,10	2,59	3,10
	Weight when empty/ element in kg	1,75	2,59	3,44	4,28	5,14
Overall height 1200 mm	**Model**	**2120**	**3120**	**4120**	**5120**	**6120**
	Output/element in Watts	89,35	121,70	154,04	190,17	226,29
Boss spacing 1135 mm	Water capacity/element in litres	1,19	1,73	2,27	2,80	3,33
	Weight when empty/ element in kg	1,90	2,81	3,74	4,65	5,58

Output tables

Standard heat output (Watts) at 75/65/20 °C in accordance with EN 442, DIN registration number 6R0900						
		2-columns 	3-columns 	4-columns 	5-columns 	6-columns 
Increments	All lengths from 200 to 1000 mm in increments of 100 mm, the element width is 50 mm.					
Overall height 1500 mm	**Model**	**2150**	**3150**	**4150**	**5150**	**6150**
	Output/element in Watts	110,64	149,80	188,95	233,18	277,41
Boss spacing 1435 mm	Water capacity/element in litres	1,46	2,11	2,77	3,42	4,08
	Weight when empty/ element in kg	2,36	3,49	4,64	5,77	6,92
Overall height 1800 mm	**Model**	**2180**	**3180**	**4180**	**5180**	**6180**
	Output/element in Watts	132,23	178,08	223,92	276,14	328,35
Boss spacing 1735 mm	Water capacity/element in litres	1,72	2,49	3,27	4,04	4,82
	Weight when empty/ element in kg	2,82	4,17	5,53	6,88	8,25
Overall height 2000 mm	**Model**	**2200**	**3200**	**4200**	**5200**	**6200**
	Output/element in Watts	146,83	197,10	247,36	304,85	362,34
Boss spacing 1935 mm	Water capacity/element in litres	1,90	2,75	3,61	4,46	5,31
	Weight when empty/ element in kg	3,12	4,62	6,13	7,63	9,15
Overall height 2200 mm	**Model**	**2220**	**3220**	**4220**	**5220**	**6220**
	Output/element in Watts	161,63	216,28	270,93	333,68	396,42
Boss spacing 2135 mm	Water capacity/element in litres	2,08	3,01	3,94	4,87	5,81
	Weight when empty/ element in kg	3,43	5,07	6,73	8,38	10,04
Overall height 2500 mm	**Model**	**2250**	**3250**	**4250**	**5250**	**6250**
	Output/element in Watts	184,23	245,44	306,30	377,21	447,78
Boss spacing 2435 mm	Water capacity/element in litres	2,34	3,39	4,45	5,50	6,55
	Weight when empty/ element in kg	3,89	5,75	7,63	9,49	11,37
Overall height 2800 mm	**Model**	**2280**	**3280**	**4280**	**5280**	**6280**
	Output/element in Watts	207,36	275,09	342,82	421,18	499,53
Boss spacing 2735 mm	Water capacity/element in litres	2,61	3,78	4,95	6,12	7,29
	Weight when empty/ element in kg	4,34	6,43	8,53	10,61	12,71
Overall height 3000 mm	**Model**	**2300**	**3300**	**4300**	**5300**	**6300**
	Output/element in Watts	223,10	295,18	367,25	450,78	534,30
Boss spacing 2935 mm	Water capacity/element in litres	2,79	4,03	5,29	6,53	7,79
	Weight when empty/ element in kg	4,65	6,88	9,12	11,35	13,60

LASERLINE TWIN

Overall heights
1000, 1200, 1500 and 1800 mm

Overall length
500 mm (10 elements)
600 mm (12 elements)

Overall depth
2-column: 63 mm

Connections
2x 1/2" internal thread at the bottom in the centre, spacing of 50 mm, Air vent on the top right at the side G 1/2"
Possible connections
1 x 1/2" internal thread bottom right for electric heating elements

Max. operating pressure
10 Heated bar tables

Max. operating temperature
110 °C

Guarantee statements are available to download at **www.vogelundnoot.com/download**

- **Laser-welded – no visible welding seams**
- **Highest-precision manufacturing**
- **Highly conducive to cleanliness**
- **With fixings and towel rail**

Design Column radiators are fully laser-welded. Pipes and head pieces are flattened on the exterior to increase the heat output.

Fixing
Clip brackets welded on at the back

Scope of delivery
Delivery complete with mounting brackets, wall brackets, fixing screws and anchor bolts; includes height-adjustable towel rail in matching radiator colour with chrome-plated holders.

Coating
In accordance with DIN 55 900, with electrophoretic immersion coating and cured powder coating in RAL 9016 Traffic White, other RAL colours and bathroom suite colours are available upon request.

Safety
Construction in line with work safety requirements in accordance with the guidelines of the statutory accident insurer (GUV).

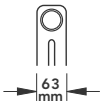
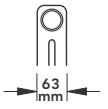
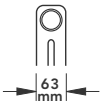
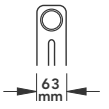
Packaging
Environmentally friendly transport packaging with side protection (enclosing cardboard packaging), and shrink-wrapped.

Connections
The VOGEL&NOOT Laserline Twin tube radiator is centrally connected via 2 G 1/2" ports on the bottom. The supply port on the radiator is always located on the left, while the return port is on the right. The distance between the ports is 50 mm. If requested, an additional 1/2" port can be added in production to the last element for the purpose of connecting an electric heating element, which is available in the accessories range. This enables the Laserline Twin to also be used when the heating system is switched off.

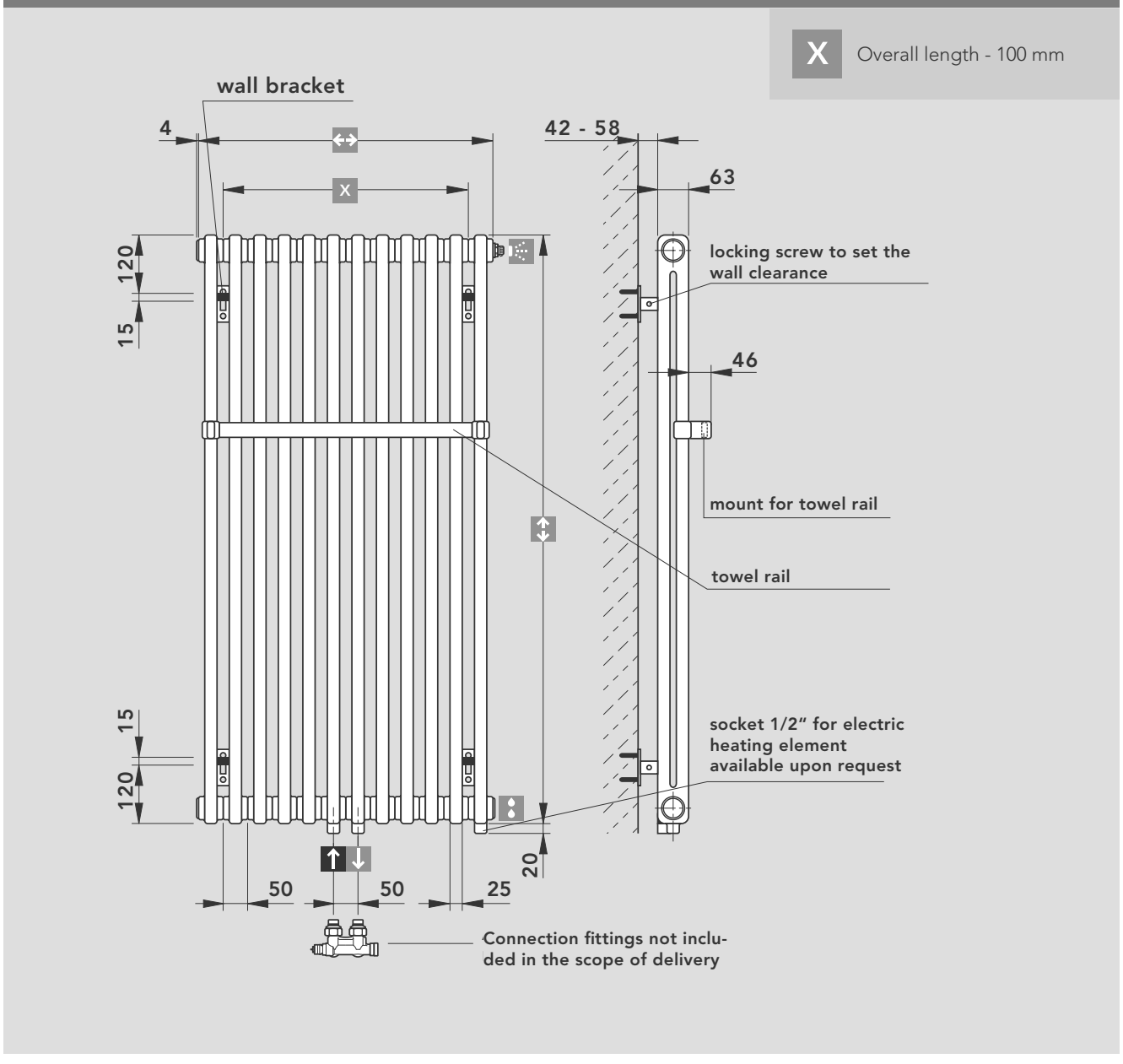
Attention! The manufacturer's length tolerance is 0 to + 1%. Please take this into account during pre-assembly!

LASERLINE TWIN

Overview of models, outputs and special designs

* Standard heat output in accordance with EN 442 in Watts, DIN registration number 6R0900						
Overall height [mm]			1000	1200	1500	1800
			2-columns 	2-columns 	2-columns 	2-columns 
Model			2100	2120	2150	2180
Elements	Overall length [mm]					
10	500	Watt 75/65/20° *	753	893	1106	1322
		Water capacity in litres	10,20	11,90	14,60	17,20
		Weight when empty in kg	15,90	19,00	23,60	28,20
		Radiator exponent n	1,27	1,28	1,30	1,32
12	600	Watt 75/65/20° *	904	1072	1328	1587
		Water capacity in litres	12,20	14,30	17,50	20,60
		Weight when empty in kg	19,10	22,80	28,30	33,80
		Radiator exponent n	1,27	1,28	1,30	1,32

Technical data



The accessories (valve closure fitting and cover cap) can be found in the price list.

LASERLINE Architecture Heated bar tables

Overall heights
940 (750) mm or
1090 (900) mm
(radiator heights shown in brackets)

Overall length
720 (700) mm, 920 (900) mm oder 1120 (1100) mm
(radiator lengths shown in brackets)

Overall depth
Version with 4 columns 224 mm
Version with 5 columns 262 mm

Connections
Supply 1/2" internal thread bottom left, return 1/2" internal thread bottom right;
With built-in presettable thermostatic valve, thermostatic head port thread M 30 x 1.5 mm top left, vent plug top right G 1/2"

Max. Operating pressure
10 Heated bar tables

Max. Operating temperature
110 °C

Guarantee statements are available to download at **www.vogelundnoot.com/download**

- **Laser-welded – no visible welding seams**
- **Highest-precision manufacturing**
- **Highly conducive to cleanliness**
- **Unique design options**

Design Column radiators in Heated bar tables counter-style, fully laser-welded. Pipes and head pieces are flattened on the exterior to increase the heat output, boss spacing 1". Element length is 50 mm, with design set.

Fixing
Design set for easy, durable installation and to conceal the ports, with option for the overlay to be affixed at the time of installation.

Scope of delivery
Delivery complete with bracket, design set, with thermostatic head (Oventrop Uni LH) without overlay.

Coating
In accordance with DIN 55 900, with electrophoretic immersion coating and cured powder coating in RAL 9016 Traffic White, other RAL colours and bathroom suite colours are available upon request.

Safety
Construction in line with work safety requirements in accordance with the guidelines of the statutory accident insurer (GUV).

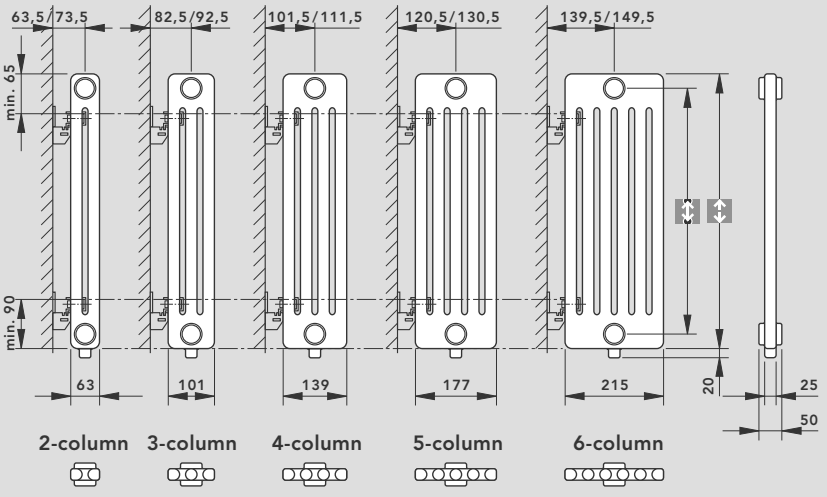
Packaging
Environmentally friendly transport packaging with side protection (enclosing cardboard packaging), and shrink-wrapped.

Attention!
The manufacturer's length tolerance is 0 to + 1%. Please take this into account during pre-assembly!

LASERLINE CENTRALLY CONNECTED VALVE

Models overview, radiator dimensions

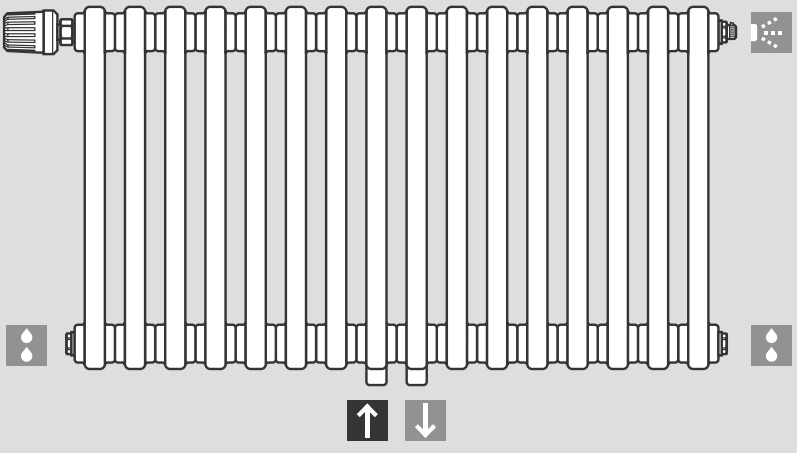
Models overview



Note:
The entire Laserline centrally connected valve series is manufactured without clip brackets. The delivery does not include fixings, but does include the necessary plugs and thermostatic valve!

Overall height – 65 mm

Connection



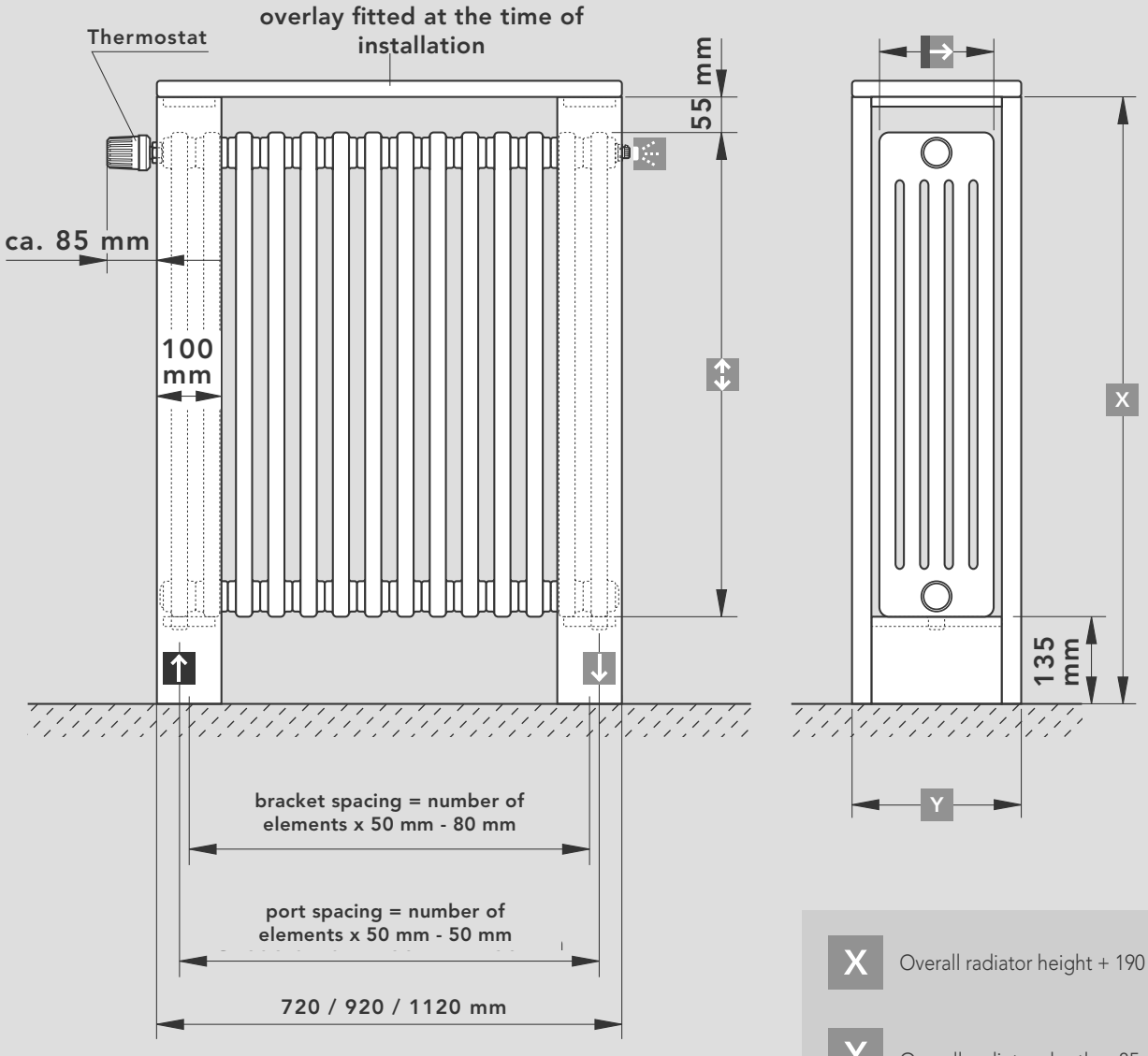
Attention: The supply must always be connected on the side with the valve.

Max. number of elements per block

Model	Overall height [mm]	Max. no. of elements per block
2-column	155 - 1000	30
	1001 - 2400	18
	2401 - 3000	16
3-column	155 - 1000	30
	1001 - 2400	18
	2401 - 3000	16
4-column	155 - 1000	30
	1001 - 2000	18
	2001 - 2200	16
	2201 - 2500	14
	2501 - 2800	12
	2801 - 3000	10
5-column	155 - 800	30
	801 - 1000	26
	1001 - 1500	18
	1501 - 1800	16
	1801 - 2000	14
	2001 - 2200	12
	2201 - 2800	10
	2801 - 3000	8
6-column	155 - 665	30
	666 - 750	28
	751 - 800	26
	801 - 900	24
	901 - 1000	22
	1001 - 1200	18
	1201 - 1400	16
	1401 - 1600	14
	1601 - 1900	12
	1901 - 2300	10
	2301 - 3000	8

Central connection of valve is only possible with an even number of elements! No specially-produced lengths are possible (maximum number of elements!)

Technical data



X	Overall radiator height + 190 mm
Y	Overall radiator depth + 85 mm

LASERLINE Architecture HEATED BENCHES

Overall heights
422 mm (4 Elements),
472 mm (5 Elements),
522 mm (6 Elements),
572 mm (7 Elements)

Overall length
1850 to 3150 mm

Overall depth
370 mm

Connections
Supply 1/2" internal thread bottom left, return 1/2" internal thread bottom right; With built-in presettable thermostatic valve, thermostatic head port thread M 30 x 1.5 mm bottom left, vent plug top right G 1/2"

Max. Operating pressure
10 Heated bar tables

Max. Operating temperature
110 °C

Guarantee statements are available to download at **www.vogelundnoot.com/download**

- **Laser-welded – no visible welding seams**
- **Highest-precision manufacturing**
- **Highly conducive to cleanliness**
- **Unique design options**

Design Column radiators in Heated benches style, fully laser-welded. Pipes and head pieces are flattened on the exterior to increase the heat output, boss spacing 1".
Element length is 50 mm, with 4 to 7 stacked elements.

Fixing
Design set for easy, durable installation and to conceal the ports, with option for the overlay to be affixed at the time of installation.

Scope of delivery
Delivery complete with bracket and design set, with thermostatic head (Oventrop Uni LH) without overlay.

Coating
In accordance with DIN 55 900, with electrophoretic immersion coating and cured powder coating in RAL 9016 Traffic White, other RAL colours and bathroom suite colours are available upon request.

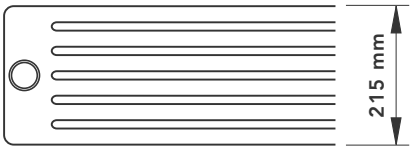
Safety
Construction in line with work safety requirements in accordance with the guidelines of the statutory accident insurer (GUV).

Packaging
Environmentally friendly transport packaging with side protection (enclosing cardboard packaging), and shrink-wrapped.

Attention!
The manufacturer's length tolerance is 0 to + 1%. Please take this into account during pre-assembly!

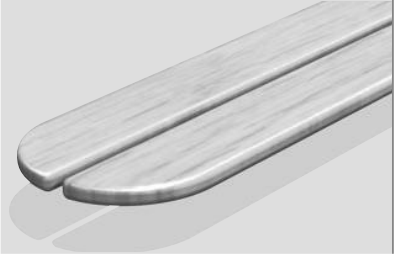
LASERLINE Architecture HEATED BENCHES

Overview of models, outputs and overlay

Technical data							
Overall length of Heated benches structure [mm]			1850	2150	2350	2850	3150
Radiator length [mm]			1500	1800	2000	2500	2800
Overall depth of Heated benches structure [mm]			370				
Radiator depth			6-columns 				
Model			6150	6180	6200	6250	6280
Elements	Overall height [mm]						
4	422 (200)*	Watt 75/65/20° **	1411	1696	1886	2362	2648
		Water capacity in litres	16,4	19,3	21,3	26,2	29,2
		Weight when empty in kg	37,5	42,8	46,4	55,3	64,2
		Radiator exponent n	1,32	1,31	1,31	1,30	1,29
5	472 (250)*	Watt 75/65/20° **	1742	2097	2334	2929	3287
		Water capacity in litres	20,4	24,1	26,6	32,8	36,5
		Weight when empty in kg	45,2	51,9	56,4	67,5	78,6
		Radiator exponent n	1,28	1,28	1,28	1,29	1,29
6	522 (300)*	Watt 75/65/20° **	1934	2337	2606	3285	3695
		Water capacity in litres	24,5	29,0	31,9	39,3	43,8
		Weight when empty in kg	52,9	60,9	66,3	79,6	93
		Radiator exponent n	1,29	1,28	1,28	1,28	1,28
7	572 (350)*	Watt 75/65/20° **	2204	2670	2982	3770	4247
		Water capacity in litres	28,6	33,8	37,2	45,9	51,1
		Weight when empty in kg	60,6	70,0	76,3	91,8	107,4
		Radiator exponent n	1,29	1,29	1,30	1,31	1,32

* Overall radiator height
** Standard heat output in accordance with EN 442 in Watts DIN registration number 6R0900

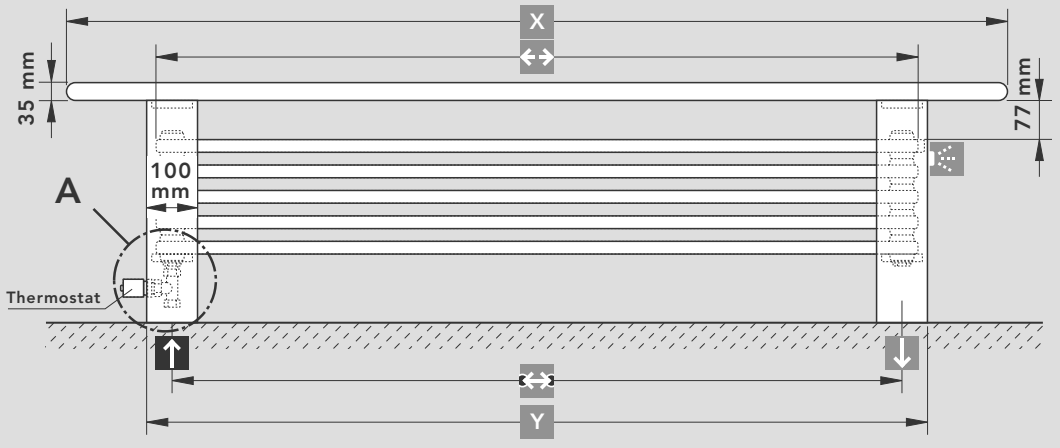
Heated benches overlay					
Item no.	AZ13DZ8361500000	AZ13DZ8361800000	AZ13DZ8362000000	AZ13DZ8362500000	AZ13DZ8362800000
Weight in kg	~23	~26	~29	~34	~38

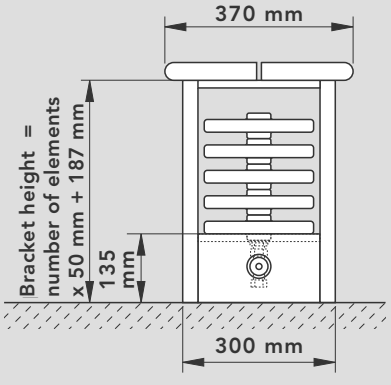


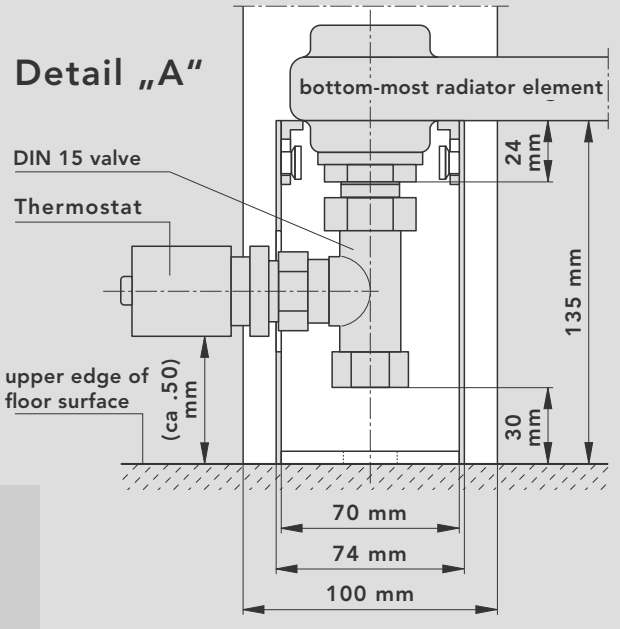
Heated benches overlay (beech plywood)

- Made from bonded beechwood (plywood) approx. 35 mm thick
- Rounded on all sides, in two parts, in four parts for lengths exceeding 2850 m
- Surface of the beech veneered with colour-less Desmophen/Desmodur coating, semi-gloss, twice-coated, splash-proof
- Prepared for easy mounting onto the Architecture mounting bracket, required fixing materials are supplied

Technical data







Boss spacing:
Overall radiator length - 65 mm

X Overall radiator length + 350 mm

Y **Bracket length:**
Overall radiator length + 35 mm

Attention: A third bracket must be used in the middle for radiators exceeding 2000 mm in length!

Accessories

Fixing
The standard delivery of Laserline Column radiators does not include any fixings. These are to be selected depending on use from the range of accessories and are to be ordered separately. However, connection sets with angle brackets and connection sets with drilled brackets are available as standard fixtures. These sets each include the appropriate number of brackets, radiator mounts, the necessary screws and anchor bolt (suitability to be checked by the customer!) and an instruction sheet*. When installing, it is recommended that the upper radiator brackets are mounted immediately below the upper boss.

In addition, the accessories range includes drilled tension brackets, floor brackets and wall brackets in various designs and sizes for fixing in conjunction with radiator mounts. A special adjustable wall bracket makes it possible to set a very wide range of wall clearances.
The Laserline tube radiator is also available in a special design with welded-on clip brackets.
It is essential to note in each case the number of fixing points that are required (see next pages). A fixing point is understood to be any load-bearing fixture (spacing brackets and clamping holders are not fixing points). A fixing point above (recommended position directly underneath the boss) and a fixing point underneath (Fig. 1) in each case form a vertical fixture axis.

The load-bearing capacity and stability of the walls must be checked as to whether they can support the intended load in each case. Clip brackets are not supplied with the standard design of the Laserline tube radiator.
Both floor brackets and circular floor brackets are available for free-standing installation of the Laserline Column radiators. The floor brackets also offer the option to fit a height-adjustable window Heated benches support. Both brackets can be used for radiator lengths of up to 1000 mm. A SINGLE floor bracket/circular floor bracket is recommended per fixture axis. In the case of extraordinary loads, it is recommended that the wall bracket for use in public areas should be used (e.g. in schools).

**Attention: the radiator with the overall height of 155 mm can only be mounted with circular floor brackets or with wall brackets WK 155.*

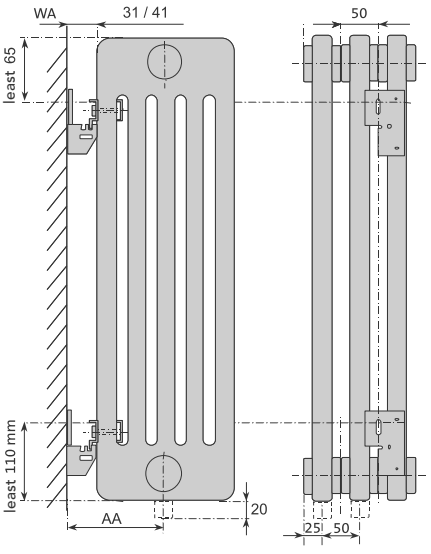
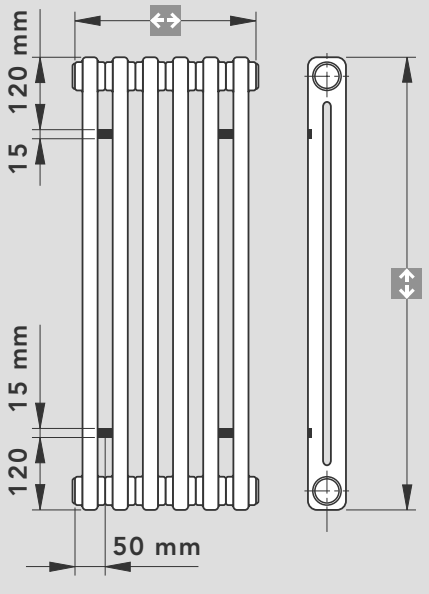


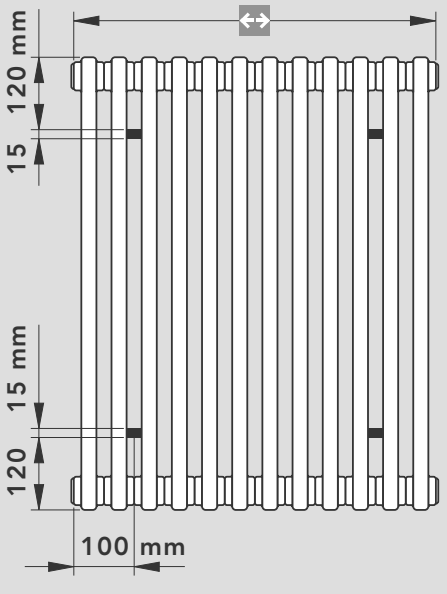
Fig. 1 *Fixing and connection dimensions for connection set with angled bracket. The 4-part set includes 4 x the items shown below right, while the 6-part set includes 6 x these items.*

		Angled bracket set	
Model	Overall depth	wall clearance WA	connection clearance AA
2-column	63	31 / 41	63,5 / 73,5
3-column	101	31 / 41	82,5 / 92,5
4-column	139	31 / 41	101,5 / 111,5
5-column	177	31 / 41	120,5 / 130,5
6-column	215	31 / 41	139,5 / 149,5

Overall length:
n x 50 mm



Arrangement of mounting clip brackets from outside for 4-6 elements

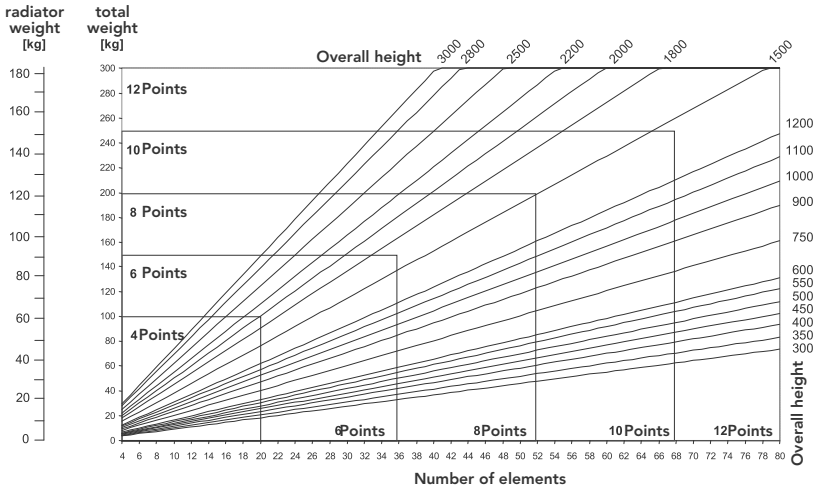


Arrangement of mounting clip brackets from outside for 7-20 elements

Accessories

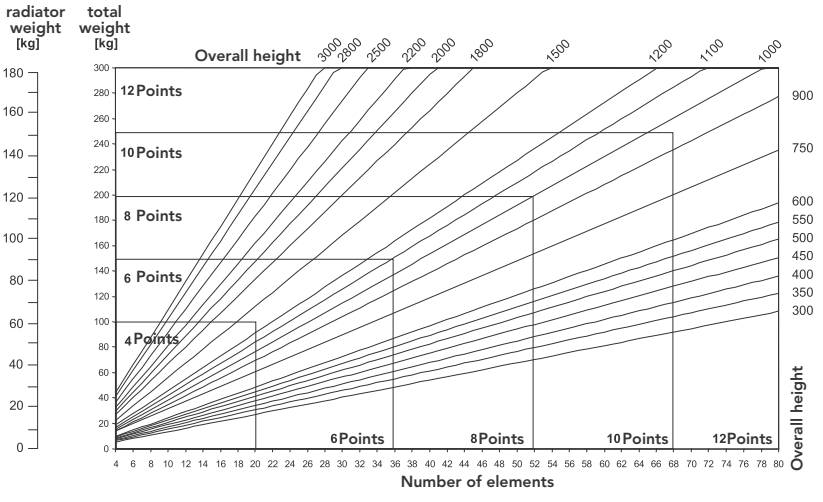
2-column:
Maximum block lengths and required fixing points

Overall height [mm]	Max. elements per block
up to 1000	40
up to 3000	19



3-column:
Maximum block lengths and required fixing points

Overall height [mm]	Max. elements per block
up to 1000	40
up to 2200	19
up to 3000	14



4-column:
Maximum block lengths and required fixing points

Overall height [mm]	Max. elements per block
up to 750	40
up to 1000	30
up to 1500	19
up to 2200	14
up to 3000	10

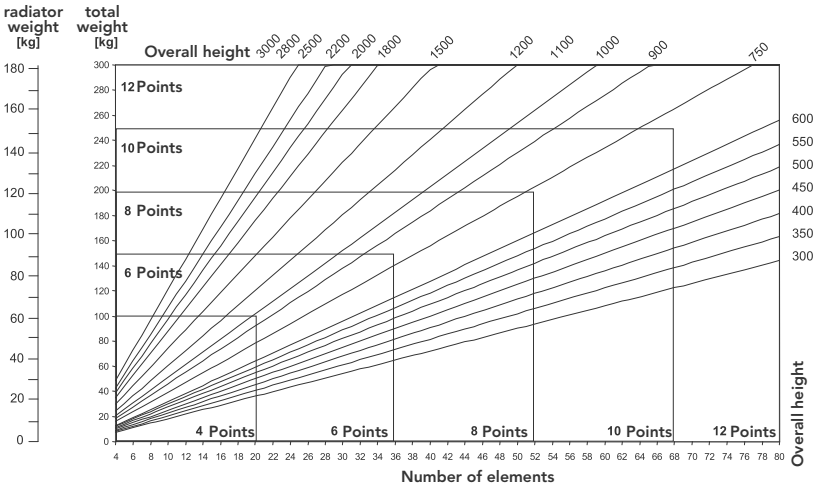


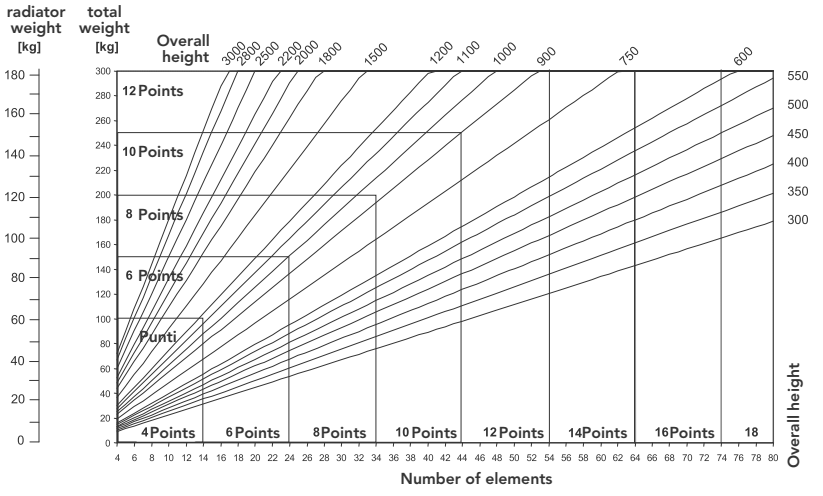
Fig. 2 *Determining the necessary fixing points for the 2-, 3- and 4-Column radiators. A fixing point above (recommended position directly underneath the boss) and a fixing point at the bottom in each case (Fig. 1) form a vertical fixture axis.*

Accessories

5-column:

Maximum block lengths and required fixing points

Overall height [mm]	Max. elements per block
up to 600	40
up to 665	35
up to 750	30
up to 1000	25
up to 1200	19
up to 1500	15
up to 2500	10
up to 3000	8



6-column:

Maximum block lengths and required fixing points

Overall height [mm]	Max. elements per block
up to 500	40
up to 600	35
up to 665	30
up to 750	25
up to 1000	20
up to 1200	15
up to 1500	13
up to 2000	10
up to 2500	8
up to 3000	7

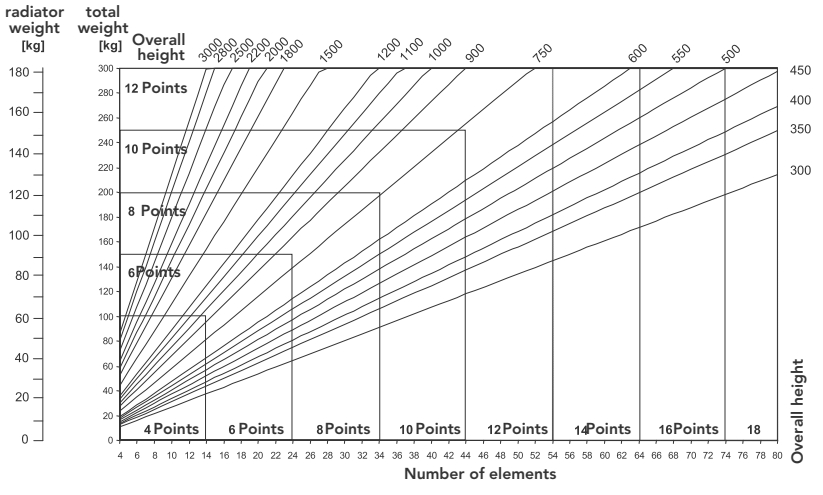
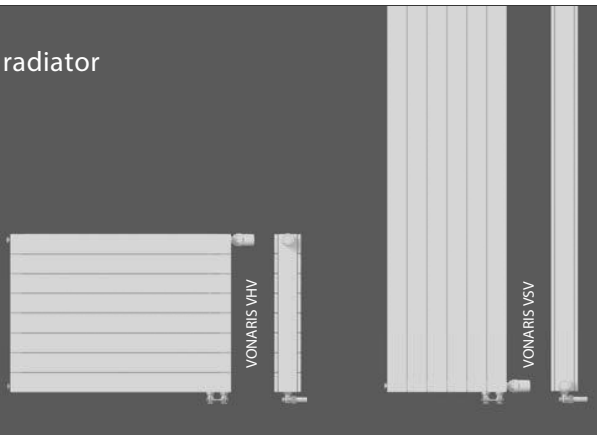


Abb. 3 *Determining the necessary fixing points for the 5- and 6-Column radiators. A fixing point above (recommended position directly underneath the boss) and a fixing point at the bottom in each case (Fig. 1) form a vertical fixture axis.*

Note:
A SINGLE floor bracket/circular floor bracket is recommended per fixture axis.
The radiator with the overall height of 155 mm can only be mounted with circular floor brackets or with wall brackets WK 155.

Content

VONARIS solitary finished radiator



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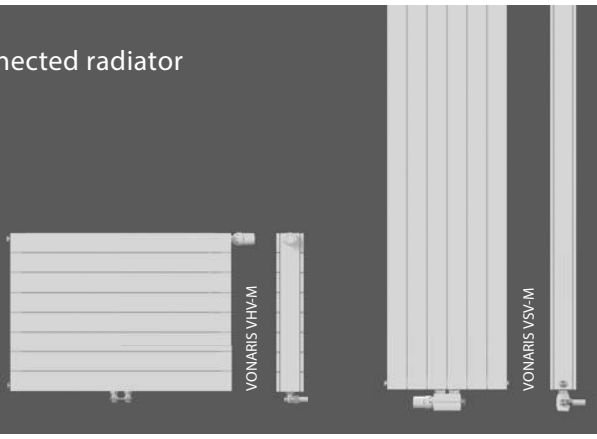
VONARIS-M Centrally connected radiator



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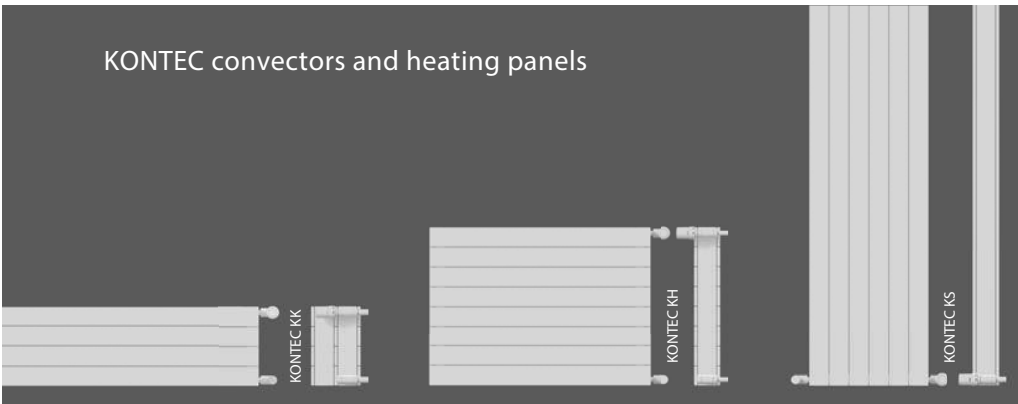
KONTEC convectors and heating panels



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Basics

INTRATHERM Trench convectors

from page 221

FMK

F1T

F1P

VONARIS SOLITARY FINISHED RADIATORS.

Connections:
horizontal design:
2 x external thread G 3/4“,
bottom right (by special order, bottom left).
vertical design:
2 x external thread G 3/4“,
bottom right (by special order, bottom left).

Maximum positive operating pressure
Standard design: 5 bar

Maximum positive operating pressure:
High-pressure design 8 bar

Maximum operating temperature: 110 °C

Guarantee statements are available to download at **www.vogelundnoot.com/download**

VONARIS: the solitary finished radiator in a fully welded horizontal design, with 1 to 4 layers of steel rectangular water-flow pipes arranged one-behind-the-other, each layer consisting of from 2 to 11 pipes arranged one-above-the-other.

Vertical design: with 1 or 2 layers of steel rectangular water-flow pipes, arranged one-behind-the-other, each layer consisting of from 3 to 12 steel pipes, arranged side-by-side.
A 2 mm space between the heating pipes guarantees additional resistance to corrosion. VONARIS solitary finished radiators are equipped with a built-in valve set, suitable for either double-pipe or single-pipe operation, using a one-pipe manifold, with a factory-fitted valve (already installed) and protective cap.

VONARIS solitary finished radiators will normally be delivered with side panels. The horizontal design is also equipped with a top cover. VONARIS solitary finished radiators, are not delivered with brackets as standard (exception: VHV 11, overall height 358 to 790 mm, does include brackets). For the vertical design, brackets are included. The VONARIS solitary finished radiator comes with a drain plug and a pivoting vent plug (with the vertical design, a dummy plug too), all of them factory-sealed.
VONARIS solitary finished radiators are Design radiators that are just waiting to be connected.

Standard design: rectangular steel pipes, 70 x 11 x 1.5 mm
High-pressure design: rectangular steel pipes, 70 x 11 x 2.0 mm

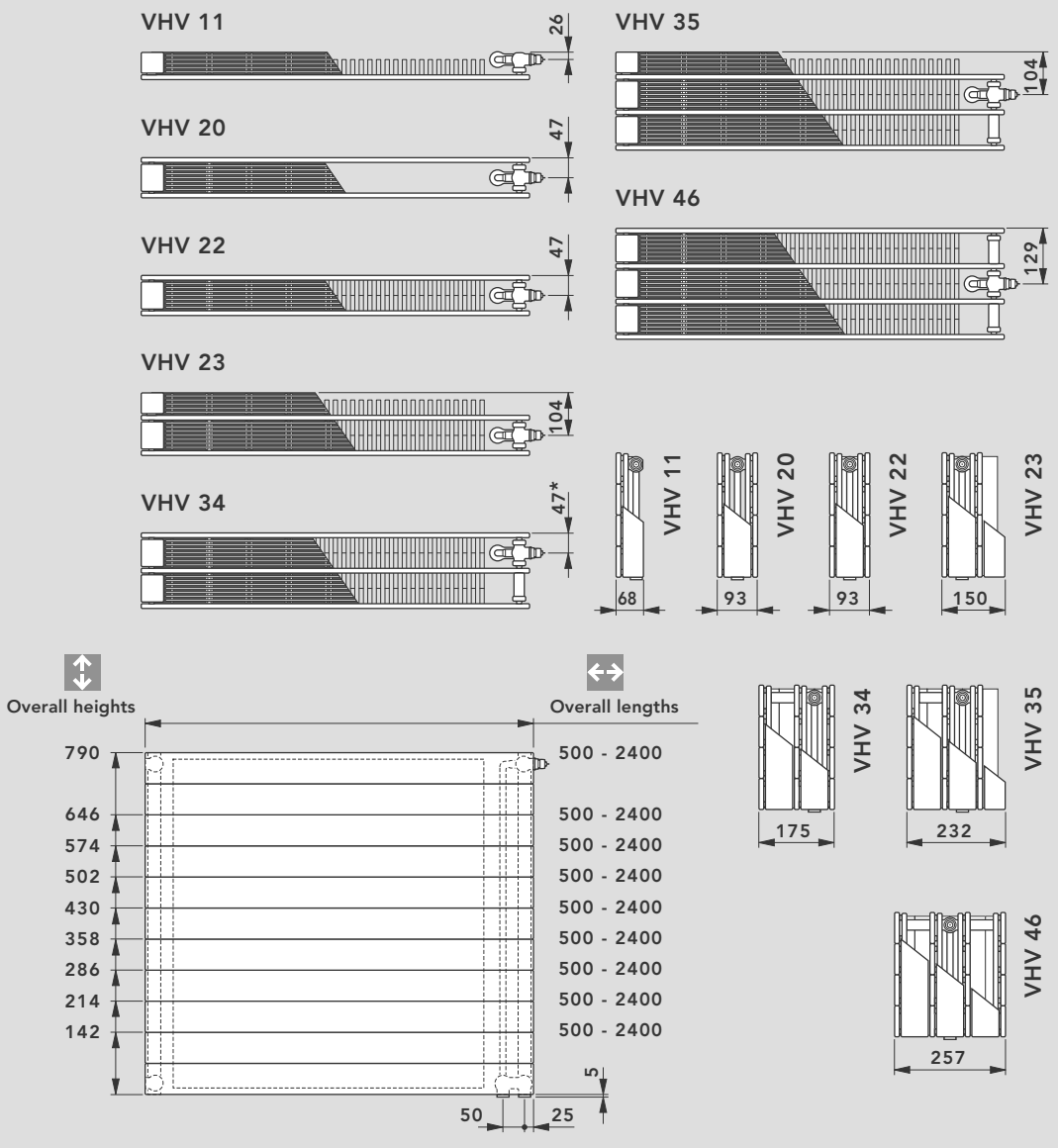
WVO design: models 22, 34 and 47 (in the horizontal design and up to an overall height of 286 mm) are also available with a rear-welded heat reflector (no water-flow). The VHV 20 model (at overall heights of 358 to 574 mm), and the VHV 22 model (overall heights 358 to 646 mm) may have a heat reflector fitted subsequently.

Dimensions:
Horizontal design: overall lengths between 500 mm and 1400 mm are available (at increments of 100 mm), and between 1600 and 4000 mm (at increments of 200 mm).
Horizontal design: the available overall heights are 142, 214, 286, 358, 430, 502, 574, 646, and 790 mm.
Vertical design: overall lengths between 214 and 862 mm are available (at increments of 72 mm)
Vertical design: overall heights of 1600, 1800, and 2000 mm are available.

Coatings:
1. Undercoat: electrophoretic, using water-soluble paints, conforming to DIN 55900 part 1, stoved at 165° C;
2. Finish: electrostatic powder coating, conforming to DIN 55900 part 2, in a state-of-the-art facility. (On request, and at a supplementary charge, a range of RAL and sanitary ware colours can be offered.) This particularly robust coating is stoved at an object temperature of 180° C.

Packaging:
1. Cardboard packaging
2. Edge protection
3. Shrink foil

Horizontal design, VHV models



Schematic diagram

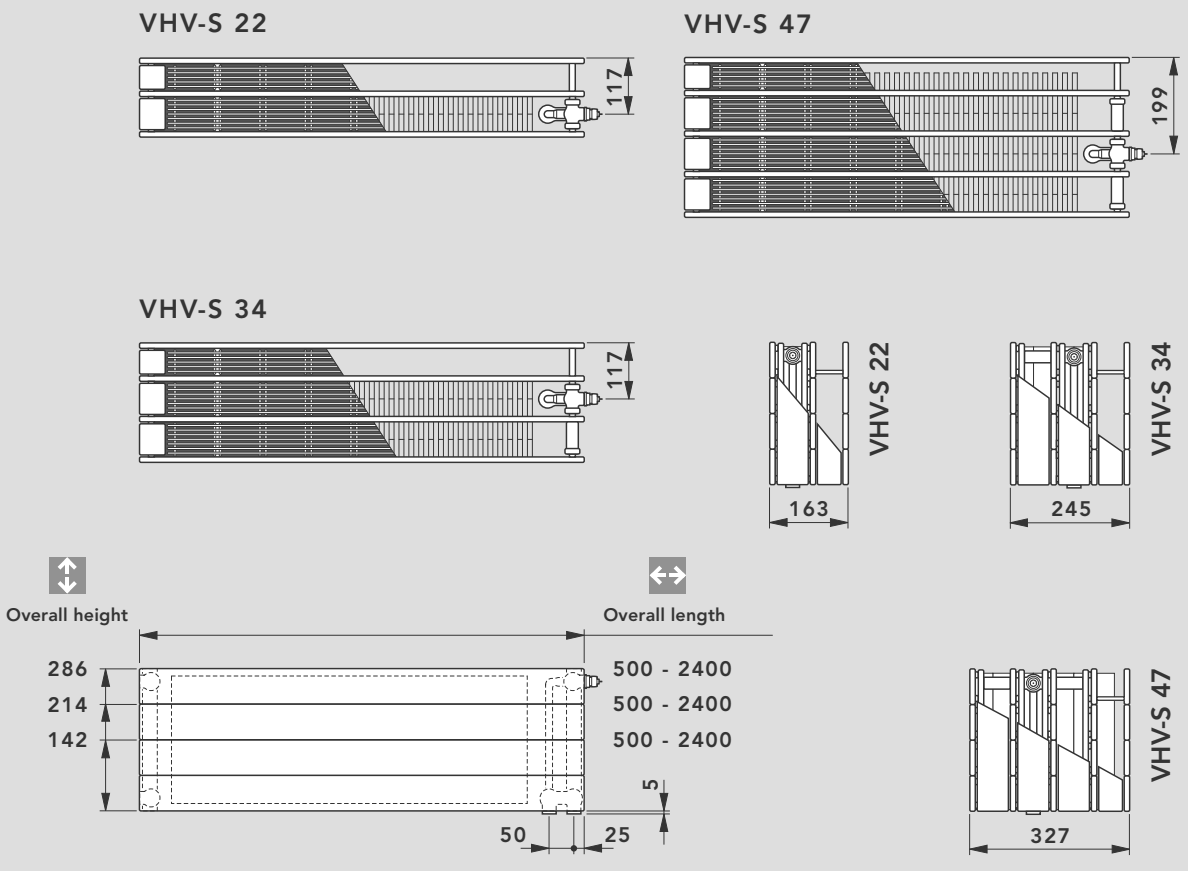
* **Please note:** If the VHV 34 model is turned and used as a left-hand design, the distance between the **VONARIS** rear panel and the connection point is 129 mm.

Model	VHV 11				VHV 20					VHV 22					VHV 23		VHV 34		VHV 35		VHV 46	
Overall height	214	286	358	430	142	214	286	358	430	142	214	286	358	430	142	214	142	214	142	214	142	214
[mm]	502	574	646	790	502	574	646	790		502	574	646	790		286		286		286		286	
Overall length [mm]	500 - 2400 mm (for special overall lengths see output tables)																					
Increments	100 mm (for overall lengths of 1400 mm and above: 200 mm)																					

The VHV-S models

With their factory-welded heat reflector (no water-flow), the WVO designs return a major part of the otherwise lost heat to the room. They do so by means of convection between radiator and heat reflector.

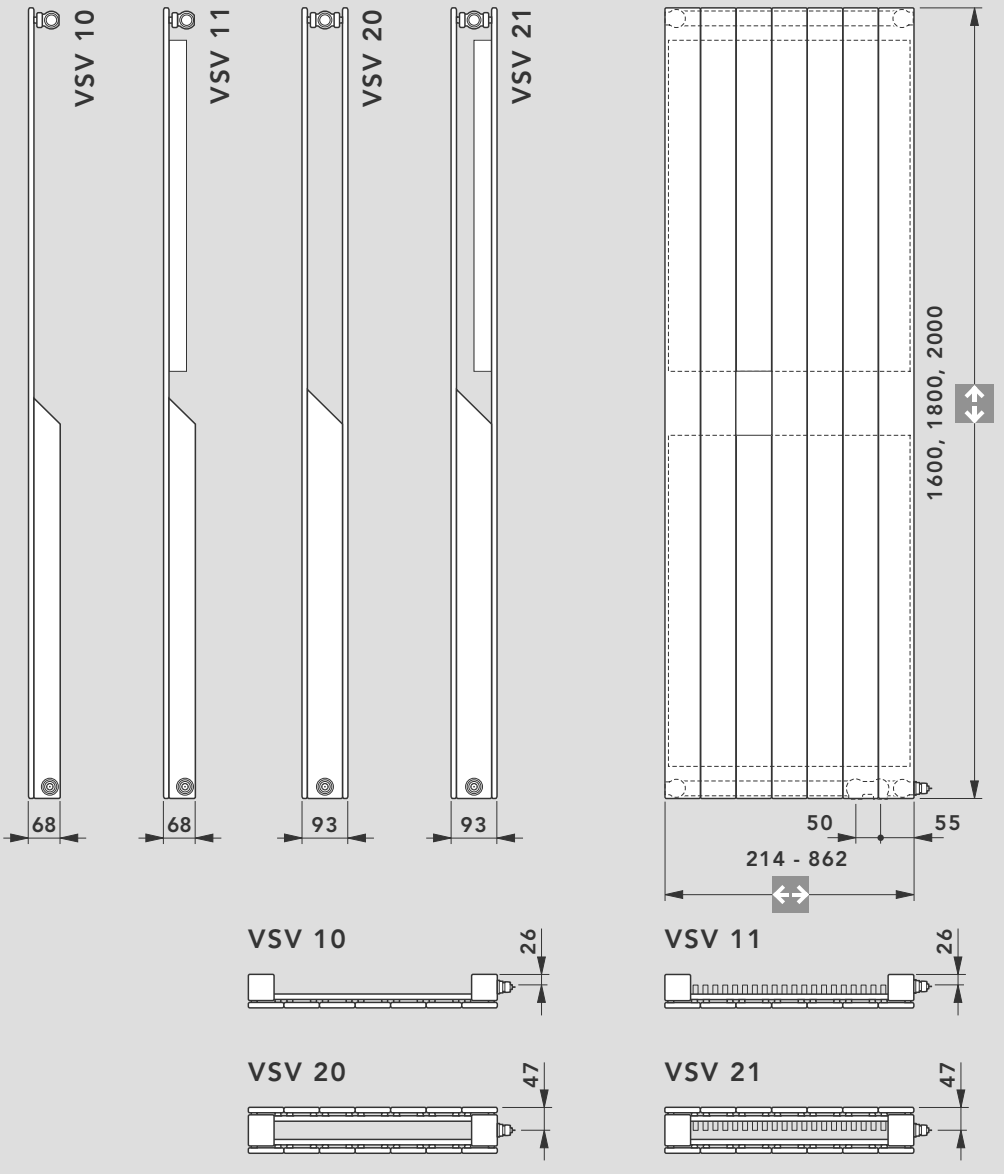
Model overview / connection dimensions: horizontal design, VHV-S models



Schematic diagram

Model	VHV-S 22			VHV-S 34			VHV-S 47		
Overall height [mm]	142	214	286	142	214	286	142	214	286
Overall length [mm]	500 - 2400 mm (for special overall lengths see output tables)								
Increments	100 mm (for overall lengths of 1400 mm and above: 200 mm)								

Vertical design, VSV models

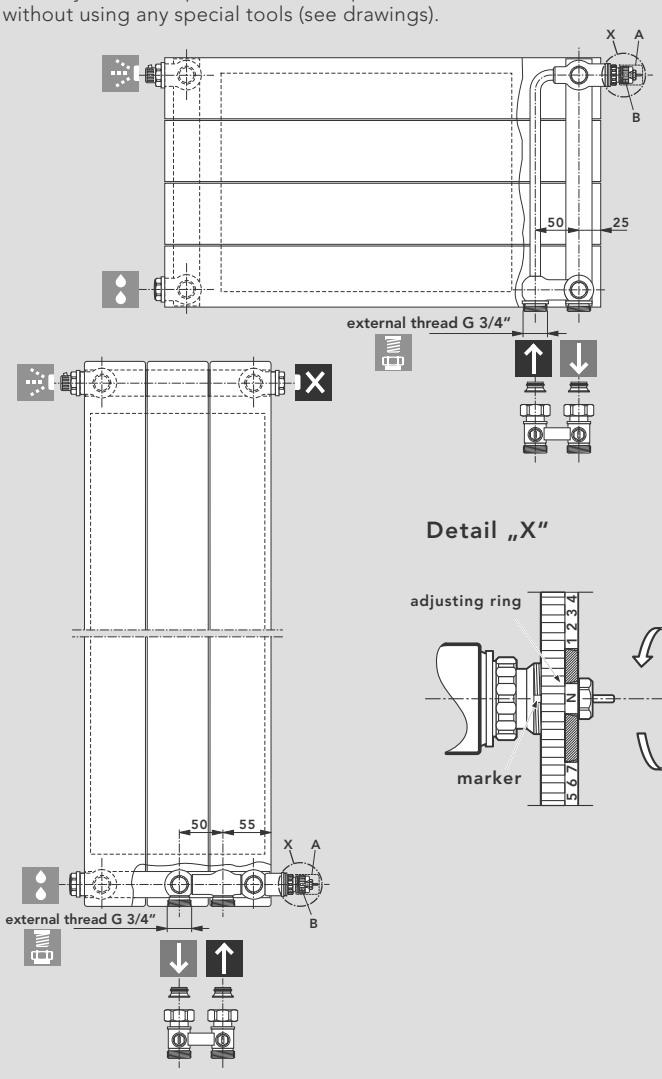


Schematic diagram

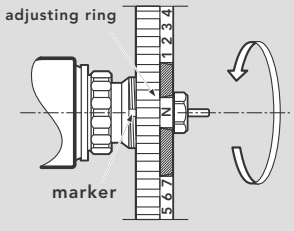
Model	VSV 10			VSV 11			VSV 20			VSV 21		
Overall height [mm]	1600	1800	2000	1600	1800	2000	1600	1800	2000	1600	1800	2000
Overall length [mm]	214 – 862 mm											
Increments	72 mm											

Horizontal and vertical designs

It is easy to set the precise values required without using any special tools (see drawings).



Detail „X"



Schematic diagram

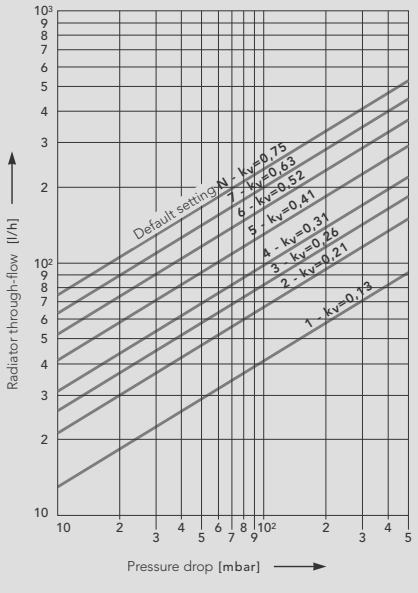


Chart 1:

Pressure drop [mbar] – double-pipe operation at 2K proportional offset.

It is of course possible to adjust the valve default setting, whilst there is pressure in the heating system.

The radiator will be delivered with a fitted protective cap. After removing the protective cap (item A), the following thermostat heads can be installed directly onto the built-in valve (item B): **„RA 2000", or „RAW" from Danfoss, „VK" from Heimeier, „D" from Herz, „thera DA" from MNG, and „UNI XD" from Oventrop.**

Adjustment tips:

- Remove protective cap and sensor
- Lift the adjusting ring and turn it anti-clockwise, to the setting required – the set value (1, 2, ...7, N) needs to be directly in line with the marker.
- Presetting is possible in steps of 0.5 between 1 and 7. The „N"setting, cancels all presetting.

Note: Settings in the hatched areas must be avoided.

Guideline values for default settings

Basis:

Supply temperature	**70 °C**
Return temperature	**55 °C**
Room temperature	**20 °C**

Default setting **1** k_v = 0.13
For radiators up to about 500 W

Default setting **2** k_v = 0.21
For radiators up to about 800 W

Default setting **3** k_v = 0.26
For radiators up to about 1000 W

Default setting **4** k_v = 0.31
For radiators up to about 1200 W

Default setting **5** k_v = 0.41
For radiators up to about 1600 W

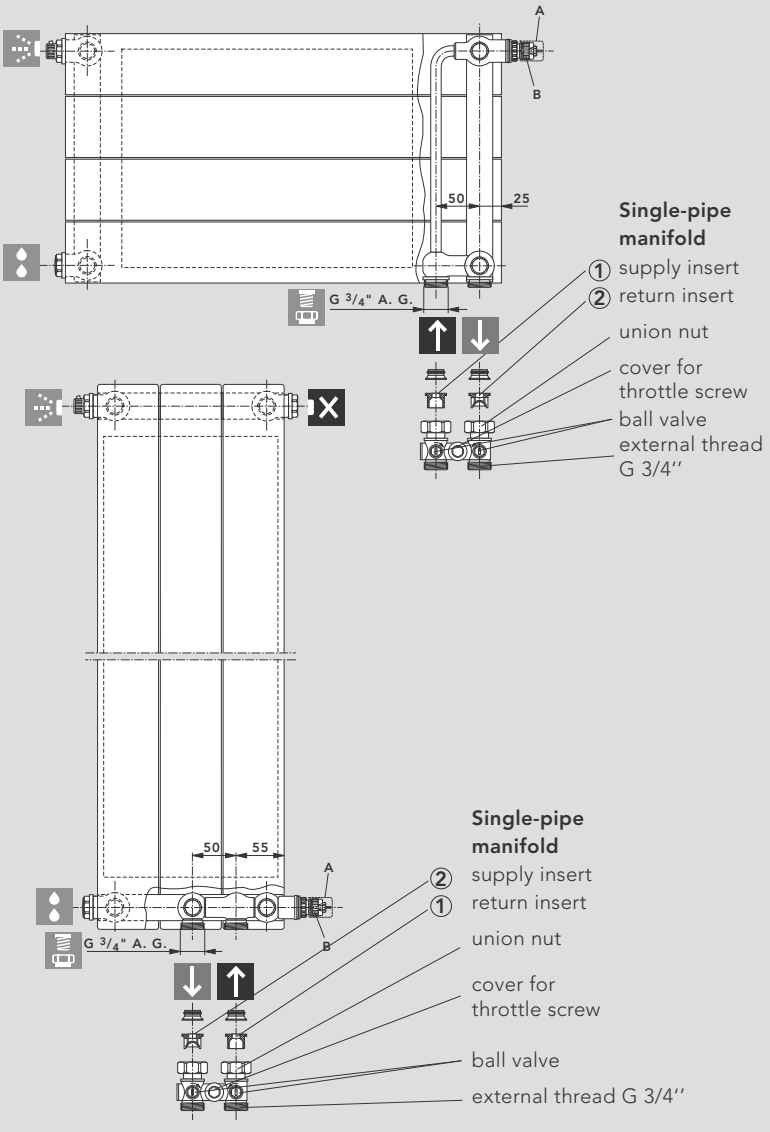
Default setting **6** k_v = 0.52
For radiators up to about. 2000 W

Default setting **7** k_v = 0.63
For radiators up to about 2400 W

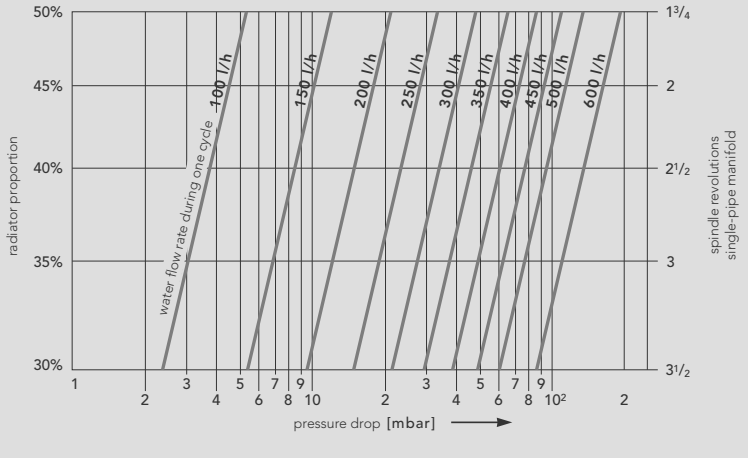
Default setting **N** k_v = 0.75
For radiators of more than 2400 W

Horizontal and vertical designs

A valve default setting is not necessary as the valve will be delivered factory-adjusted (default setting N).



Schematic diagram



The radiator will be delivered with a fitted protective cap. After removing the protective cap (item A), the following thermostat heads can be installed directly onto the built-in valve (item B): **„RA 2000", or „RAW" from Danfoss, „VK" from Heimeier, „D" from Herz, „thera DA" from MNG, and „UNI XD" from Oventrop.**

Please note!

Horizontal design:
During the installation of the single-pipe manifold ensure that the return insert **2** is installed in the water return, and the supply insert **1** in the water supply.

Vertical design:
Prior to the installation of the one-pipe manifold it is essential to swap over the supply insert and the return insert so that the supply insert **1** is installed in the water supply, and the return insert **2** in the water return.

Default setting when using a single-pipe manifold:

radiator proportion 30% --- 3.50 revolutions *

radiator proportion 35% --- 3.00 revolutions *

radiator proportion 40% --- 2.50 revolutions *

radiator proportion 45% --- 2.00 revolutions *

radiator proportion 50% --- 1.75 revolutions *

*… before starting, turn the bypass spindle of the single-pipe manifold to the right as far as it will go.

Chart 2:

Pressure drop [mbar] – single-pipe operation with a proportional deviation of 2K.
It is of course possible to change the radiator proportion, whilst there is pressure in the heating system.

Please take account of the maximum power per cycle (for single-pipe installations) of about 10 kW:

$\Delta T = T_1 - T_2 = 20$ K (at $T_1 = 90$ °C).

VHV 20 and VHV 22 models, in horizontal design

The new heat reflector

- is available for the VHV 20 model (OH 358 - 573 mm) and the VHV 22 model (OH 358 – 646 mm), in horizontal design
- returns a major part of the otherwise lost heat to the room, by means of convection between the VONARIS solitary finished radiator and the heat reflector.

Design:
Electrophoretically coated and finish in RAL 9016 (on request and at an extra charge, available in a range of RAL and Sanitary Ware colours); delivered with 8 push-in brackets, 8 stabilising brackets, 4 Z-brackets, an installation sheet, and packaging

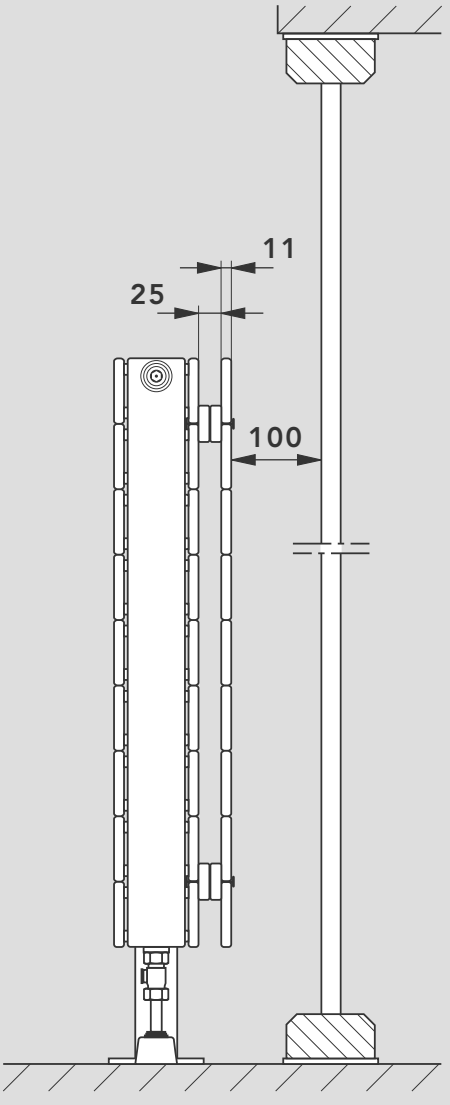
Note:
When ordering a horizontal design with heat reflector, it is essential to use the SK 22(VHV 20) or SK 23 (VHV 22) stand consoles.

VONARIS solitary finished radiators with a fitted heat reflector (see diagram right)

Depth: 11 mmheat reflector

Internal depth: 25 mm between heating pipe and heat reflector

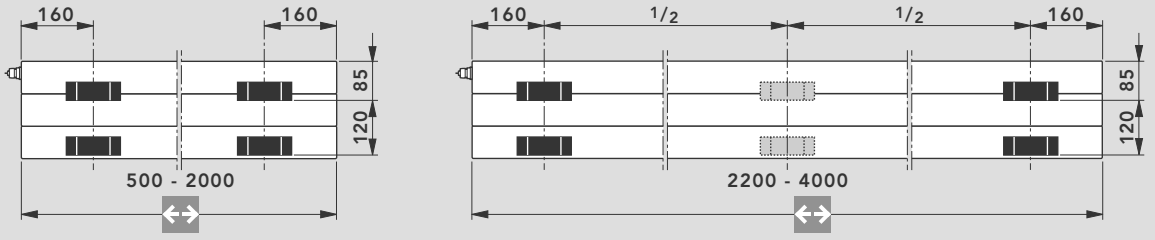
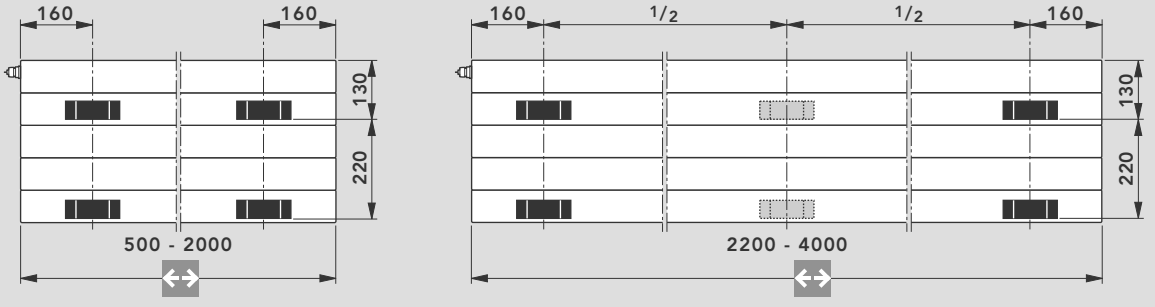
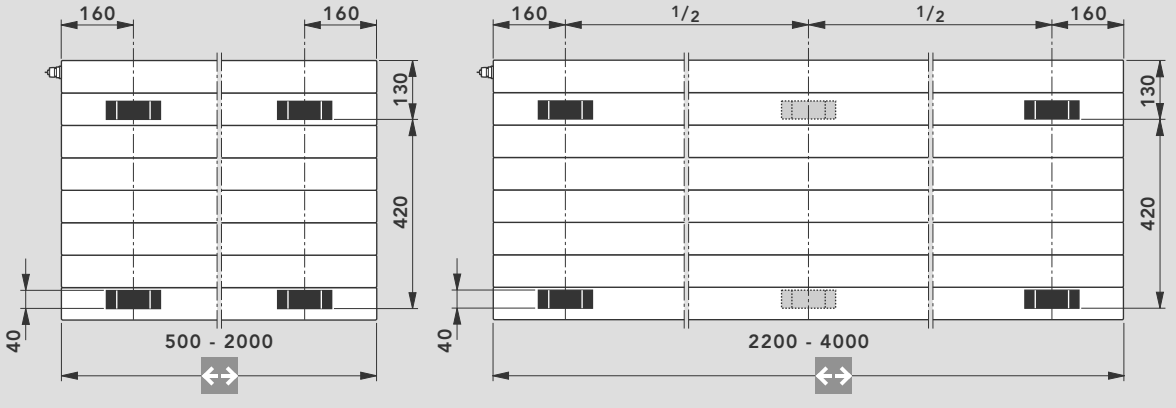
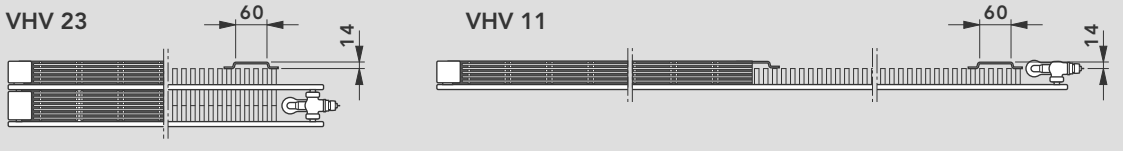
Minimum clearance*: 100 mm between window surface and heat reflector



Schematic diagram

welded bracket positions

Wall mounting WA 11 for models VHV 11 and VHV 23

Model	Wall mounting WA 11 for VHV 11 or VHV 23
Overall height from 214 mm to 286 mm	 Note: special order
	VHV 11 for Wall mounting WA 11
Overall height from 214 mm to 286 mm	
	VHV 11 for Wall mounting WA 11
Overall height from 214 mm to 286 mm	
	
	Schematic diagram

Attention! With the horizontal design only the models VHV-M 10/11 (OH 358 - 790 mm) are by default supplied with brackets. If the models VHV-M 20 (OH 358 - 790 mm), VHV-M 22 (OH 214 - 790) and VHV-M 34 (142 – 286 mm) are wall-mounted using wall mounting WA 11, you are required to order these models as a special version, equipped with brackets.

VONARIS Wall mounting WA 11

drilling measurements and wall clearance

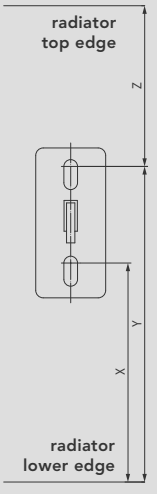
Wall mounting WA 11 for models VHV 11 and VHV 23

Wall mounting WA 11 is suitable for the horizontal versions of the following models: VHV-M 11 (OH 214 - 790 mm) and VHV 23 (OH 214 und 286 mm) equipped with brackets. It ensures easy, rapid and robust mounting of the **VONARIS** central-connection radiators still in the packaging.

Wall mounting WA 11 for BH 214 – 790 mm

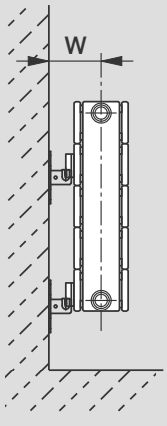
Drilling dimensions for wall mounting

Ab einer Overall length von 2200 mm 3 Konsolen

Overall radiator height [mm]	Value **X** [mm]	Value **Y** [mm]	Value **Z** [mm]	Wall mounting WA 11 for **BH 214 – 790 mm**
214	**104**	**162**	**52**	
286	**176**	**234**	**52**	
358	**203**	**261**	**97**	
430	**275**	**333**	**97**	
502	**347**	**405**	**97**	
574	**419**	**477**	**97**	
646	**491**	**549**	**97**	
790	**635**	**693**	**97**	

Schematic diagram

Connection – wall clearance



Horizontal design model	Overall height [mm]	Measurement **W** [mm]
VHV 11	214 - 790	**45**
VHV 23	214 - 286	**123,5**

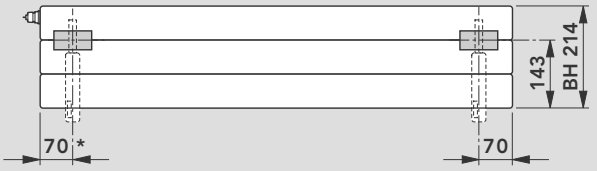
Schematic diagram

positions of the insertion (push-in) brackets

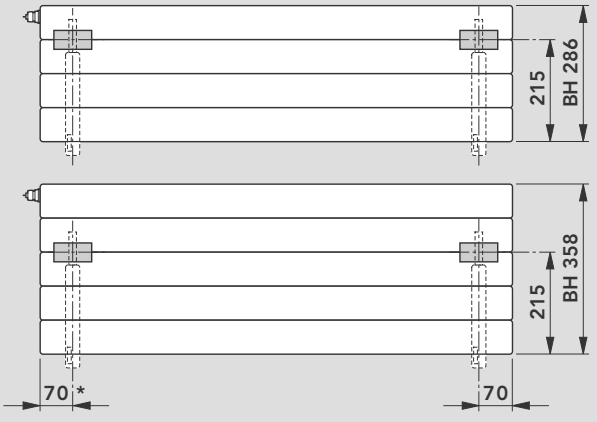
VONOFIX rapid-installation console for the VHV models

VHV 20 and 22 models: OH 214 – 790 mm, VHV 34 model: OH 214 and 286 mm

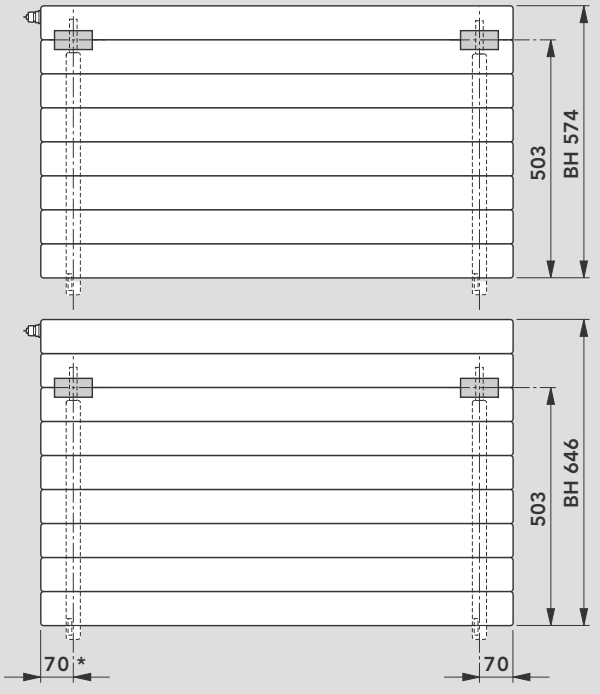
OH 214: for the **VONOFIX 1**



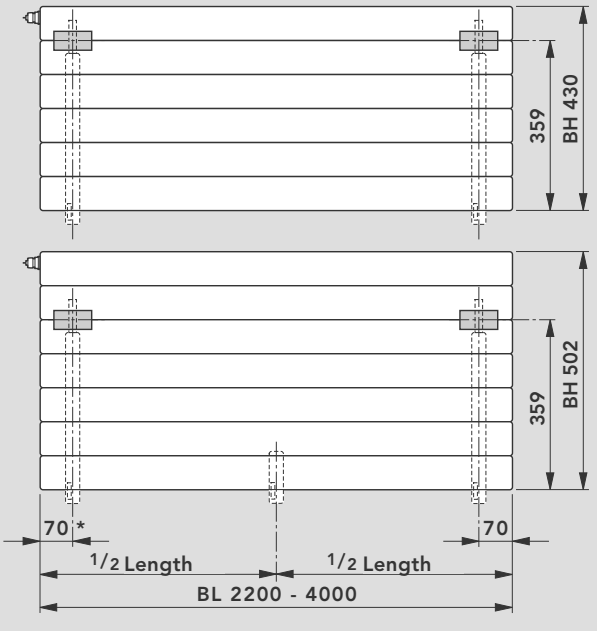
OH 286 and 358: for the **VONOFIX 2**



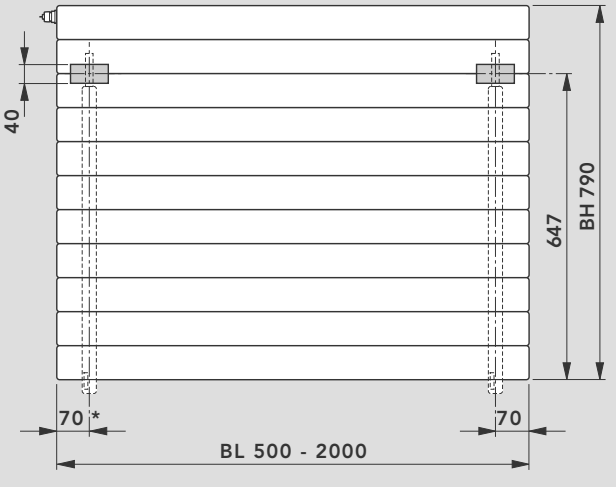
OH 574 and 646: for the **VONOFIX 4**



OH 430 and 502: for the **VONOFIX 3**



OH 790: for the **VONOFIX 5**



Note: for an overall length of 2200 mm and greater an additional piece of foot console must be used!

Schematic diagram

VONARIS

Important: the installation of VHV models with insertion (push-in) brackets is only feasible when using the **VONOFIX** rapid-installation console!

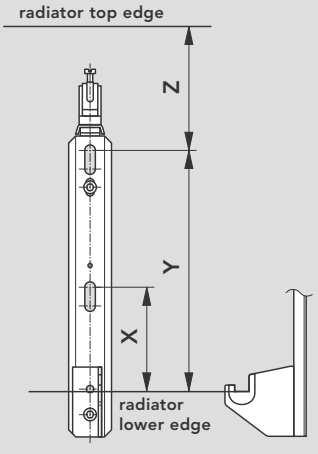
*If you are using a right-angled valve block to connect your VHV models, please leave clearance of **110 mm**, instead of **70 mm**, from the radiator's outside edge for the installation of **VONOFIX**.

VONOFIX rapid-installation console for the VHV models

The **VONARIS** solitary finished radiator can be installed easily, quickly and securely. This is made possible by the **VONOFIX** rapid-installation console for the horizontal designs of the VHV 20, VHV 22 (OH 214 – 790 mm) and VHV 34 (OH 214 and 286 mm) models.

Wall rails for OH 214 – 790 mm

Drilling measurements for the VONOFIX 1 - 5



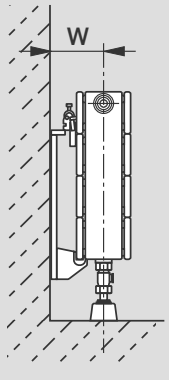
Overall radiator height [mm]	Value **X** [mm]	Value **Y** [mm]	Value **Z** [mm]
214	–	**125**	**89**
286	**100**	**197**	**89**
358	**100**	**197**	**161**
430	**100**	**341**	**161**
502	**100**	**341**	**161**
574	**100**	**485**	**89**
646	**100**	**485**	**89**
790	**100**	**629**	**161**

Schematic diagram

The **VONOFIX** rapid-installation console consists of:

2 wall consoles (zinc-plated), with sound-proofing filters, screws and dowels
2 stabilising brackets
2 insertion (push-in) brackets
(For an overall length of 2200 mm and greater, 1 additional piece of foot console)

Connection – wall clearance



Horizontal design model	Overall height [mm]	Measurement **W** [mm]
VHV 20	358 – 790	**91**
VHV 22	214 – 790	**91**
VHV 34	214 – 286	**91***

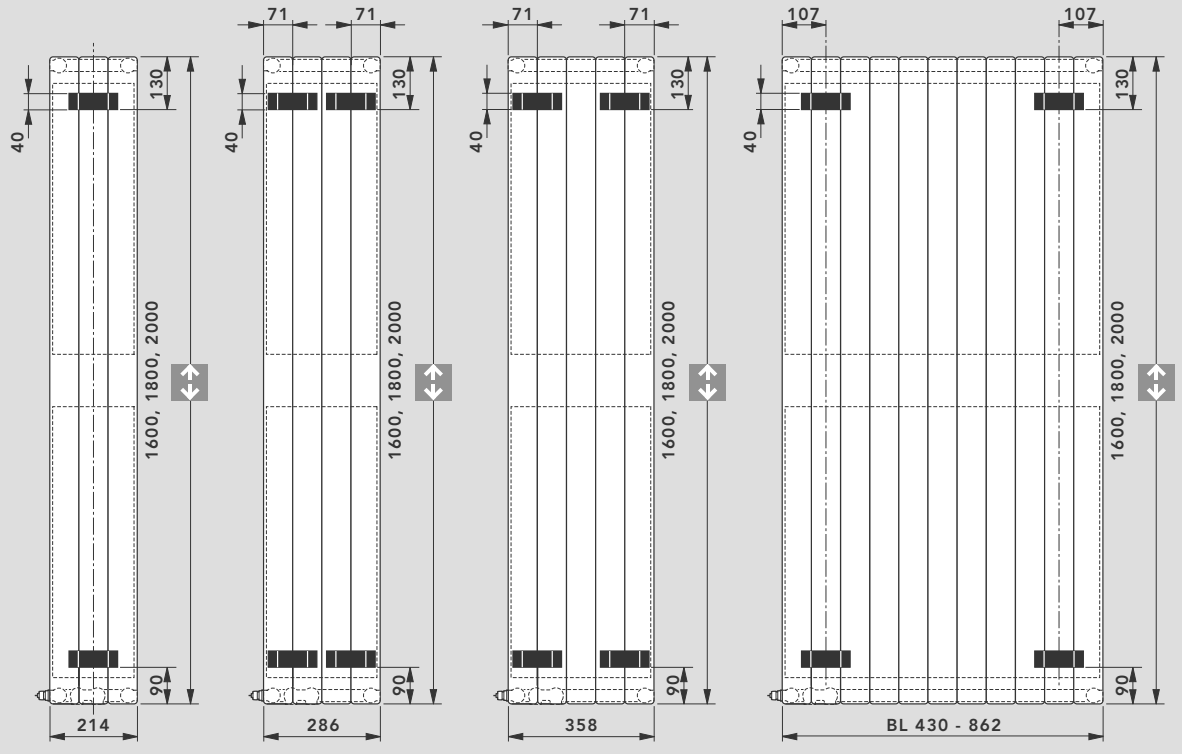
*__Note:__ if the **VHV 34** is turned round and used as a left-hand design model, the measurement **W** is **172 mm**.

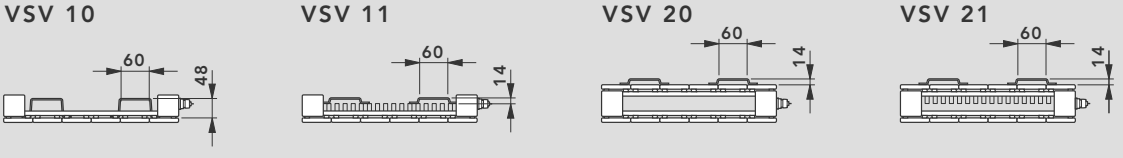
Schematic diagram

VSV models

Overall length [mm]

214	286	358	430 - 862

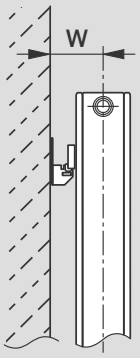




Schematic diagram

Wall clearance measurements: WA 10 and WA 11 wall mounting brackets for the VSV models

Connection – wall clearance

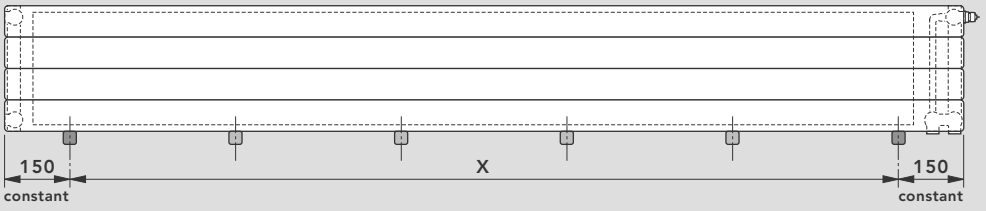


Wall mounting brackets model	Vertical design model	Measurement W [mm]
WA 10	VSV 10/11*	**35**
WA 10	VSV 20/21	**79,5**
WA 11	VSV 10/11*	**45**
WA 11	VSV 20/21	**89,5**

*__Note__: if you are installing the VSV 10 or VSV 11 models with a right-angled-design connection, please use the appropriate drilling consoles or angle-fishplate mounting brackets, to achieve the required wall clearance.

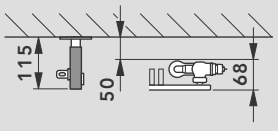
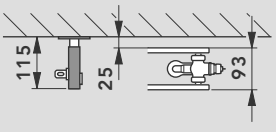
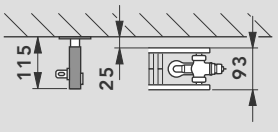
Schematic diagram

Wall consoles WK 10 – 12: positioning for VHV models (up to an overall height of 286 mm)



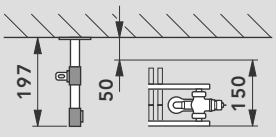
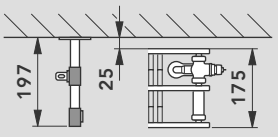
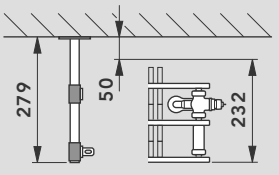
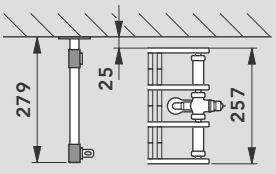
Note: when using more than 2 wall consoles the additional wall consoles must be placed at regular intervals along the line X.

WK 10 wall console

VHV 11	VHV 20	VHV 22	
			

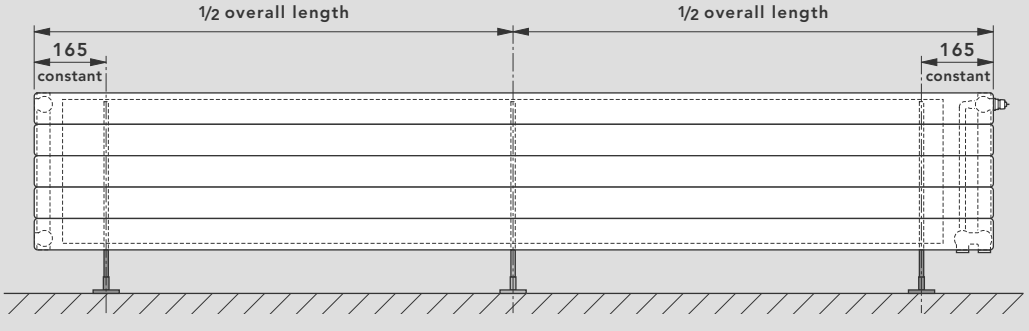
WK 11 wall console

WK 12 wall console

VHV 23	VHV 34	VHV 35	VHV 46
			

Schematic diagram

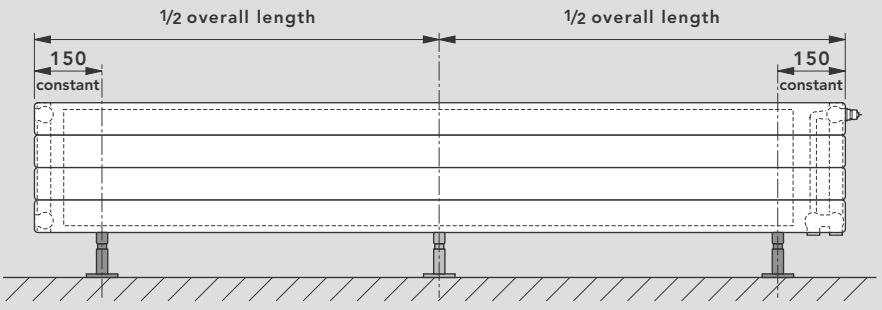
Stand consoles SK 22 and SK 23: positioning for VHV models (for an overall height of 358 mm and greater)



Note: for an overall length of **2200 mm** and greater, a **3rd** stand console must be used!

Schematic diagram

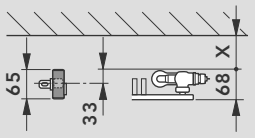
Stand consoles SK 10 – 19: positioning for the VHV/VHV-S models (up to an overall height of 286 mm)



Note: for an overall length of **2200 mm** and greater, a **3rd** stand console must be used!

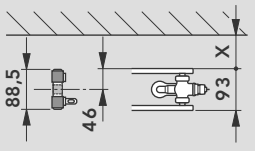
SK 10 / SK 11

VHV 11



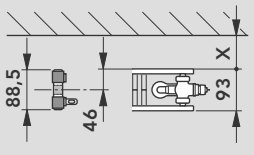
SK 12 / SK 13

VHV 20

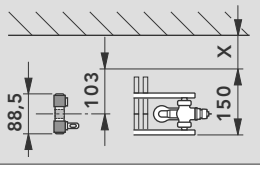


SK 12 / SK 13

VHV 22

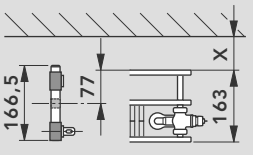


VHV 23

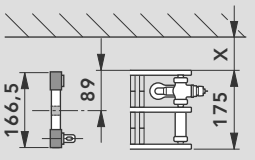


SK 14 / SK 15

VHV-S 22

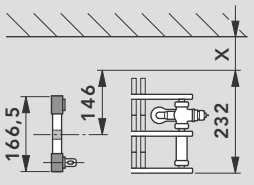


VHV 34

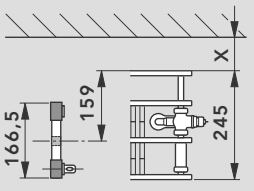


SK 14 / SK 15

VHV 35

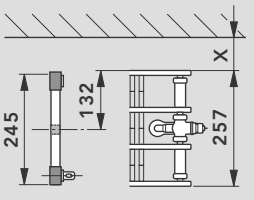


VHV-S 34



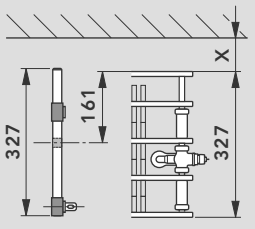
SK 16 / SK 17

VHV 46



SK 18 / SK 19

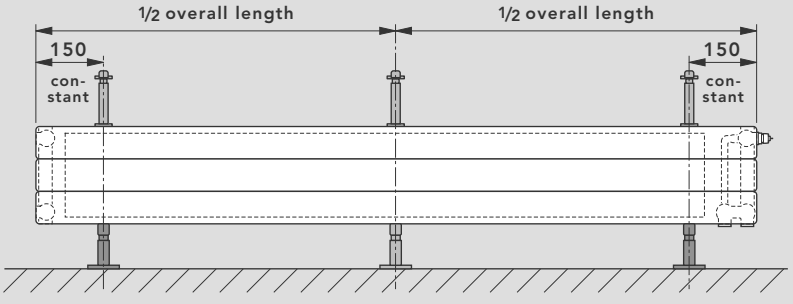
VHV-S 47

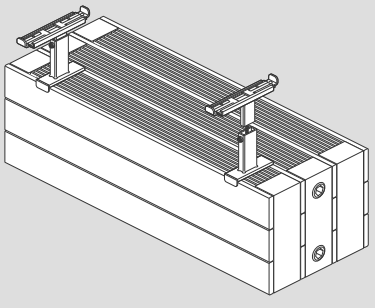


Schematic diagram

Window sill support FBT 20: positioning for the VHV/VHV-S models (up to an overall height of 286 mm)

Window sill support for subsequent installation with the **VHV/VHV-S 22–47** models of the **VONARIS** solitary finished radiator (**up to an overall height of 286 mm**)





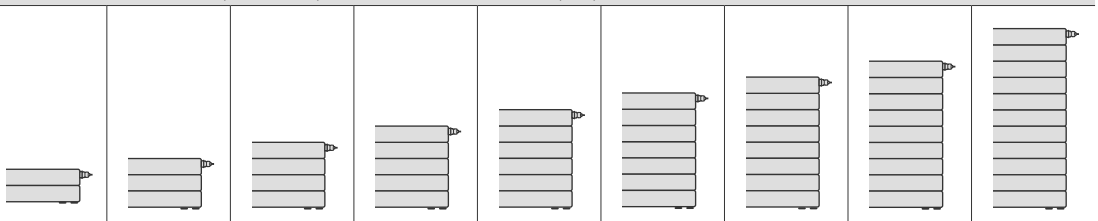
Note: for an overall length of **2200 mm** and greater, a **3rd** stand console must be used!

Schematic diagram

heating outputs

Heating output in compliance with **DIN EN 442**, and **ÖNORM EN 442**, at **75/65/20° C**

Side panels and top cover are included in the heat output specifications



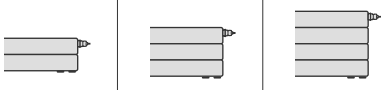
Overall height [mm]	**142**	**214**	**286**	**358**	**430**	**502**	**574**	**646**	**790**
Increments	all overall lengths from 500 to 1400 mm in increments of 100 mm, all overall lengths from 1600 to 4000 mm in increments of 200 mm								
Model		**VHV 11***	**VHV 11***	**VHV 11***	**VHV 11***	**VHV 11***	**VHV 11***	**VHV 11***	**VHV 11***
Overall depth [mm]		**68**	**68**	**68**	**68**	**68**	**68**	**68**	**68**
Watts / m 75/65/20		464	577	667	760	845	921	989	1105
Watts / m 70/55/20		374	464	540	615	683	743	797	889
Watts / m 55/45/20		236	291	344	391	433	470	503	558
Water content l / m		1,67	2,22	2,78	3,33	3,87	4,44	4,99	6,12
Weight kg / m		11,14	14,51	16,71	19,85	22,99	26,15	29,29	33,55
Radiator exponent **n**		1,32	1,34	1,30	1,30	1,31	1,32	1,32	1,34
Model	**VHV 20**	**VHV 20**	**VHV 20**	**VHV 20**	**VHV 20**	**VHV 20**	**VHV 20**	**VHV 20**	**VHV 20**
Overall depth [mm]	**93**	**93**	**93**	**93**	**93**	**93**	**93**	**93**	**93**
Watts / m 75/65/20	304	440	561	654	757	859	960	1063	1271
Watts / m 70/55/20	249	359	458	533	617	699	781	863	1032
Watts / m 55/45/20	161	232	296	344	398	449	502	553	661
Water content l / m	2,18	3,34	4,44	5,55	6,66	7,77	8,88	9,99	12,22
Weight kg / m	9,26	13,27	17,28	21,29	25,30	29,31	33,31	37,32	45,33
Radiator exponent **n**	1,24	1,25	1,25	1,26	1,26	1,27	1,27	1,28	1,28
Model	**VHV 22**	**VHV 22**	**VHV 22**	**VHV 22**	**VHV 22**	**VHV 22**	**VHV 22**	**VHV 22**	**VHV 22**
Overall depth [mm]	**93**	**93**	**93**	**93**	**93**	**93**	**93**	**93**	**93**
Watts / m 75/65/20	641	838	1032	1197	1343	1474	1592	1699	1886
Watts / m 70/55/20	519	674	825	963	1079	1182	1274	1357	1500
Watts / m 55/45/20	330	423	510	605	675	736	790	838	919
Water content l / m	2,18	3,34	4,44	5,55	6,66	7,77	8,88	9,99	12,22
Weight kg / m	13,97	20,59	27,23	30,89	36,93	42,96	49,01	55,05	63,06
Radiator exponent **n**	1,30	1,34	1,38	1,34	1,35	1,36	1,37	1,38	1,41

* For aesthetic reasons these models should not be fitted in front of a window.

heating outputs

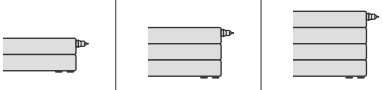
Heating output in compliance with **DIN EN 442**, and **ÖNORM EN 442**, at **75/65/20° C**

Side panels and top cover are included in the heat output specifications



Overall height [mm]	142	214	286
Increments	all overall lengths from 500 to 1400 mm in increments of 100 mm, all overall lengths from 1600 to 4000 mm in increments of 200 mm		
Model	VHV-S 22	VHV-S 22	VHV-S 22
Overall depth [mm]	163	163	163
Watts / m 75/65/20	641	838	1032
Watts / m 70/55/20	519	674	825
Watts / m 55/45/20	330	423	510
Water content l / m	2,18	3,34	4,44
Weight kg / m	19,43	28,34	37,24
Radiator exponent **n**	1,30	1,34	1,38
Model	VHV 23*	VHV 23*	VHV 23*
Overall depth [mm]	150	150	150
Watts / m 75/65/20	797	1035	1261
Watts / m 70/55/20	645	832	1008
Watts / m 55/45/20	410	522	623
Water content l / m	2,18	3,34	4,44
Weight kg / m	17,02	24,84	32,66
Radiator exponent **n**	1,30	1,34	1,38
Model	VHV 34	VHV 34	VHV 34
Overall depth [mm]	175	175	175
Watts / m 75/65/20	1050	1394	1723
Watts / m 70/55/20	856	1123	1377
Watts / m 55/45/20	552	707	851
Water content l / m	3,33	4,99	6,66
Weight kg / m	23,93	35,18	46,42
Radiator exponent **n**	1,26	1,33	1,38
Model	VHV-S 34	VHV-S 34	VHV-S 34
Overall depth [mm]	245	245	245
Watts / m 75/65/20	1050	1394	1723
Watts / m 70/55/20	856	1123	1377
Watts / m 55/45/20	552	707	851
Water content l / m	3,33	4,99	6,66
Weight kg / m	29,39	42,92	56,44
Radiator exponent **n**	1,26	1,33	1,38

* For aesthetic reasons these models should not be fitted in front of a window.

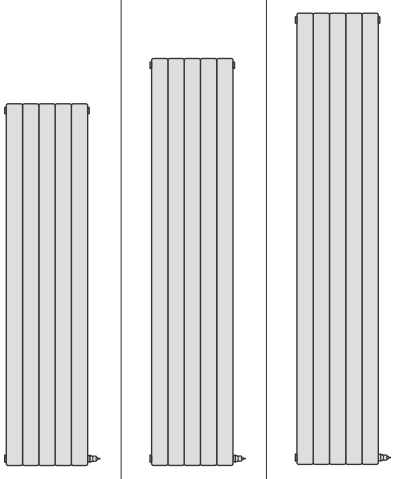


Overall height [mm]	142	214	286
Increments	all overall lengths from 500 to 1400 mm in increments of 100 mm, all overall lengths from 1600 to 4000 mm in increments of 200 mm		
Model	VHV 35*	VHV 35*	VHV 35*
Overall depth [mm]	232	232	232
Watts / m 75/65/20	1197	1651	1971
Watts / m 70/55/20	971	1326	1570
Watts / m 55/45/20	619	828	964
Water content l / m	3,33	4,99	6,66
Weight kg / m	26,98	39,42	51,86
Radiator exponent **n**	1,29	1,35	1,40
Model	VHV 46	VHV 46	VHV 46
Overall depth [mm]	257	257	257
Watts / m 75/65/20	1454	2072	2447
Watts / m 70/55/20	1179	1664	1949
Watts / m 55/45/20	752	1040	1197
Water content l / m	4,53	6,79	9,06
Weight kg / m	33,89	49,76	65,62
Radiator exponent **n**	1,29	1,35	1,40
Model	VHV-S 47	VHV-S 47	VHV-S 47
Overall depth [mm]	327	327	327
Watts / m 75/65/20	1522	2302	2667
Watts / m 70/55/20	1240	1846	2128
Watts / m 55/45/20	800	1149	1311
Water content l / m	4,53	6,79	9,06
Weight kg / m	41,27	60,50	79,74
Radiator exponent **n**	1,26	1,36	1,39

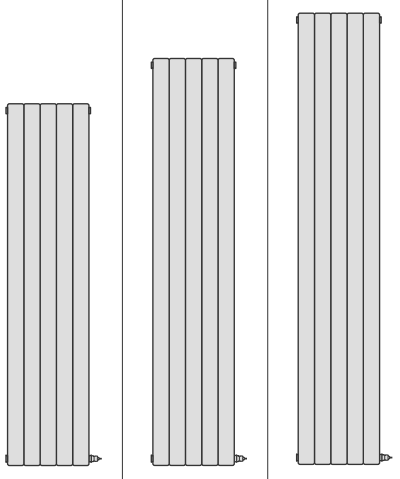
* For aesthetic reasons these models should not be fitted in front of a window.

Heating output in compliance with **DIN EN 442**, and **ÖNORM EN 442**, at **75/65/20° C**

Side panels and top cover are included in the heat output specifications



Overall height [mm]	1600	1800	2000
Overall length [mm]	214, 286, 358, 430, 502, 574, 646, 718, 790, 862		
Model	**VSV 10**	**VSV 10**	**VSV 10**
Overall depth	68 mm	68 mm	68 mm
Watts / m 75/65/20	1738	1979	2232
Watts / m 70/55/20	1384	1577	1781
Watts / m 55/45/20	850	968	1097
Water content l / m	11,37	12,47	13,85
Weight kg / m	44,45	49,60	54,75
Radiator exponent **n**	1,40	1,40	1,39
Model	**VSV 11**	**VSV 11**	**VSV 11**
Overall depth	68 mm	68 mm	68 mm
Watts / m 75/65/20	1979	2209	2450
Watts / m 70/55/20	1584	1768	1964
Watts / m 55/45/20	983	1097	1223
Water content l / m	11,37	12,47	13,85
Weight kg / m	63,39	68,53	73,69
Radiator exponent **n**	1,37	1,37	1,36



Overall height [mm]	1600	1800	2000
Overall length [mm]	214, 286, 358, 430, 502, 574, 646, 718, 790, 862		
Model	**VSV 20**	**VSV 20**	**VSV 20**
Overall depth	93 mm	93 mm	93 mm
Watts / m 75/65/20	2932	3301	3672
Watts / m 70/55/20	2332	2629	2929
Watts / m 55/45/20	1427	1615	1805
Water content l / m	22,74	24,34	27,71
Weight kg / m	85,44	95,46	105,48
Radiator exponent **n**	1,41	1,40	1,39
Model	**VSV 21**	**VSV 21**	**VSV 21**
Overall depth	68 mm	68 mm	68 mm
Watts / m 75/65/20	3184	3588	4012
Watts / m 70/55/20	2536	2857	3206
Watts / m 55/45/20	1557	1755	1983
Water content l / m	22,74	24,34	27,71
Weight kg / m	104,37	114,39	124,42
Radiator exponent **n**	1,40	1,40	1,38

VONARIS-M CENTRAL-CONNECTION RADIATOR

Connections:
Horizontal design: 2 x external thread G 3/4", bottom centre

Vertical design: 2 x external thread G 3/4", bottom centre

Maximum positive operating pressure
Standard design: **5 bar**

Maximum positive operating pressure:
High-pressure design: **8 bar**

Maximum operating temperature: 110° C

Guarantee statements are available to download at **www.vogelundnoot.com/download**

VONARIS: the central-connection radiator in a fully welded horizontal design, with from 1 to 4 layers of steel rectangular water-flow pipes, arranged one-behind-the-other, each layer consisting of from 2 to 11 pipes arranged one-above-the-other. Vertical design with 1 or 2 layers of steel rectangular water-flow pipes, arranged one-behind-the-other, each layer consisting of from 3 to 12 steel pipes, arranged side-by-side.

A 2 mm space between the heating pipes guarantees additional resistance to corrosion. **VONARIS** central-connection radiators are equipped with a built-in valve set, suitable for either double-pipe or single-pipe operation, using a one-pipe manifold, with a factory-fitted valve (already installed) and protective cap.

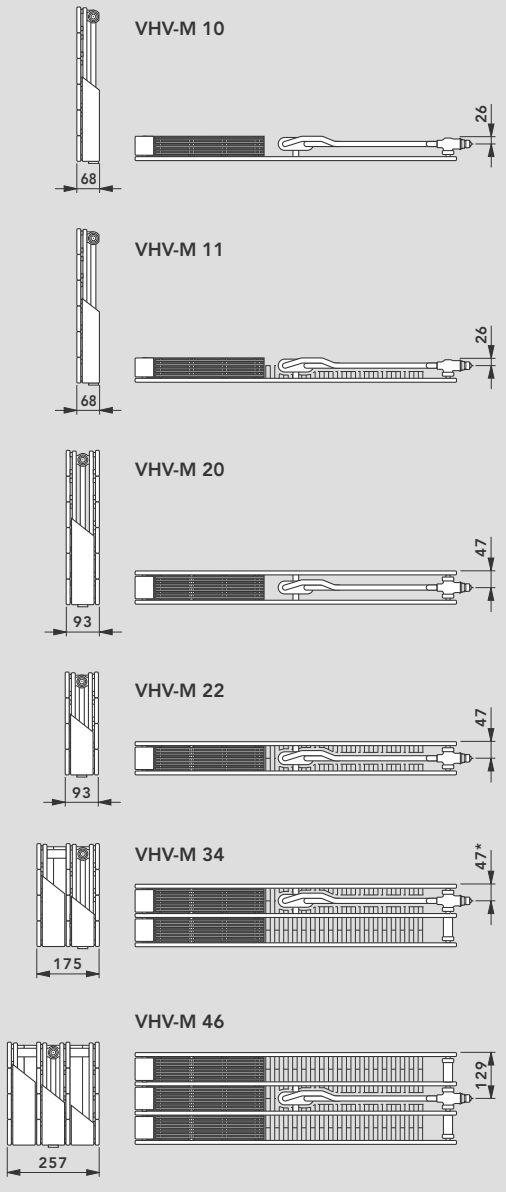
Vertical central-connection radiators are delivered with a connection set, including a factory-fitted valve, a protective cap and a cover. Depending on the customer's preferences they will also be ready for double-pipe or single-pipe operation and for angled or through-flow connection. **VONARIS** central-connection radiators are usually delivered with side panels. The horizontal design also comes equipped with a top cover. With the **VONARIS** central-connection radiators, brackets are not included as a matter of course (exception: VHV-M 11, where brackets are included).
The **VONARIS** central-connection radiator comes with a drain plug and a pivoting vent plug (with the vertical design, also two dummy plugs), all of them factory-sealed. **VONARIS** central-connection radiators are Design radiators that are ready to connect.
Standard design: rectangular steel pipes, 70 x 11 x 1.5 mm
High-pressure design: rectangular steel pipes, 70 x 11 x 2.0 mm

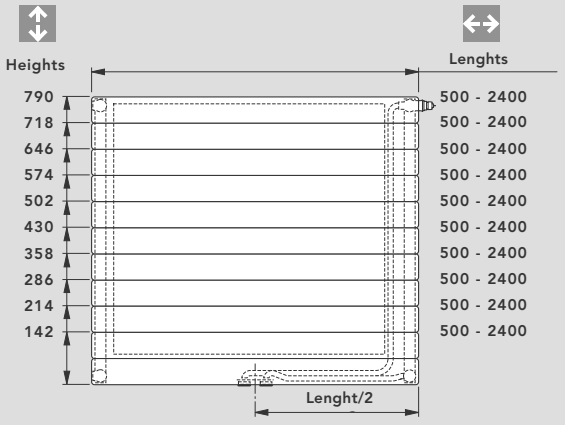
Dimensions:
Horizontal design: overall lengths between 500 mm and 1400 mm are available (at increments of 100 mm), and between 1600 mm and 2400 mm (at increments of 200 mm)
Horizontal design: the available overall heights are 142, 214, 286, 358, 430, 502, 574, 646 and 790 mm
Vertical design: overall lengths between 214 mm and 862 mm are available
(at increments of 72 mm)
Vertical design: overall heights of 1600, 1800 and 2000 mm are available.

Coatings:
1. Undercoat: electrophoretic, using water-soluble paints, conforming to DIN 55900 part 1, stoved at 165° C;
2. Finish: electrostatic powder coating, conforming to DIN 55900 part 2, in a state-of-the-art facility. (On request, and at a supplementary charge, a range of RAL and sanitary ware colours can be offered.) This particularly robust coating is stoved at an object temperature of 180° C.

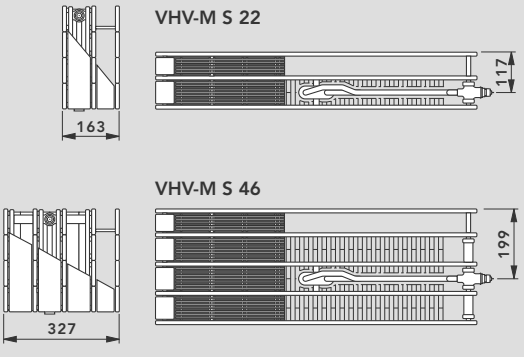
Packaging:
1. Cardboard packaging
2. Edge protection
3. Shrink foil

Horizontal design, VHV-M models





Horizontal design, VHV-M S models



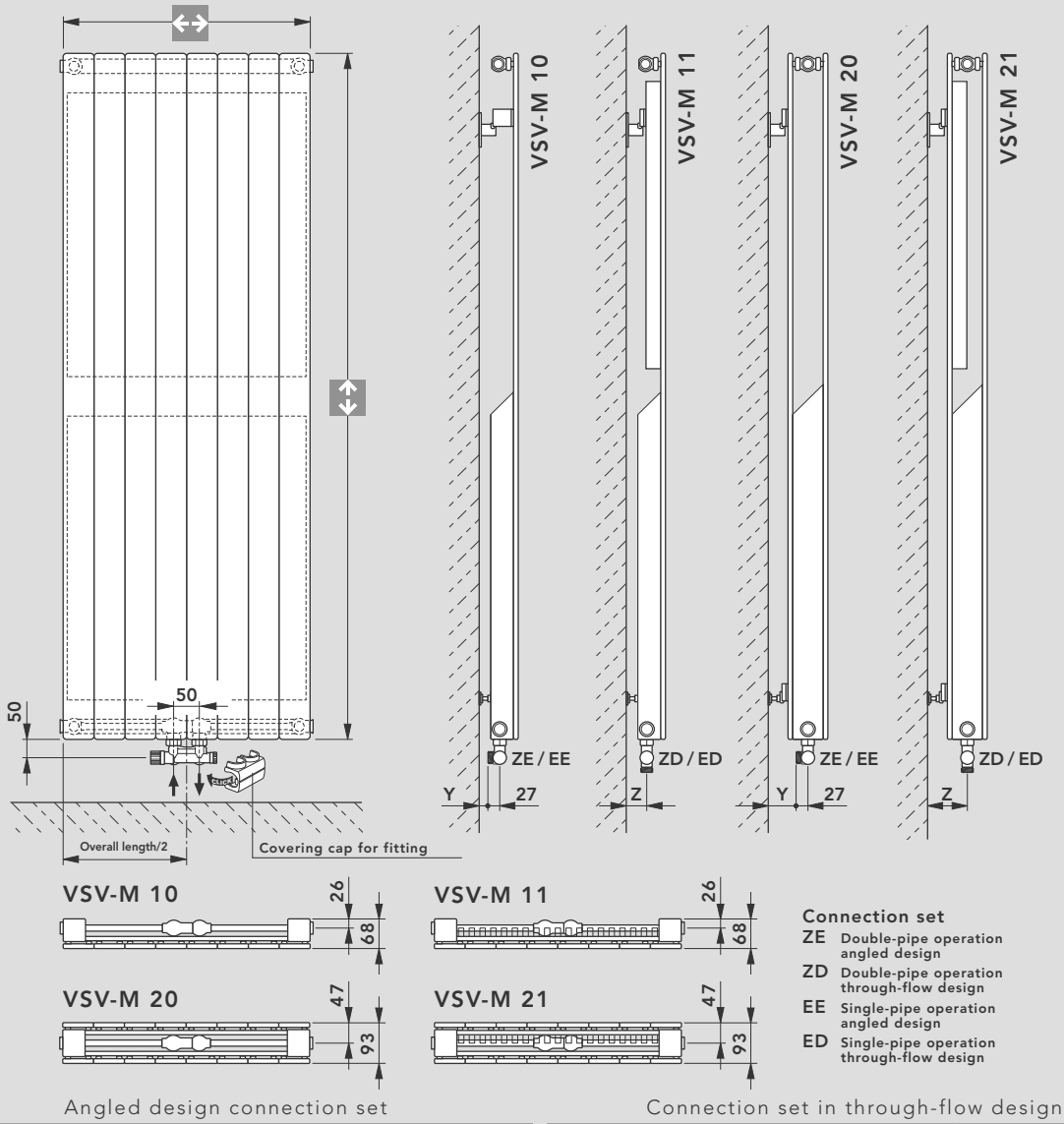
The WVO version with factory-welded, not water-bearing radiation shield through convection between radiator and radiation shield back the majority of the otherwise lost heat in the room.

Schematic diagram

* Note: if the VHV-M 34 model is turned around so that the valve is located to the left, the distance between the **VONARIS** rear panel and the connection point is **129 mm**.

Model	VHV-M 10			VHV-M 11			VHV-M 20			VHV-M 22			VHV-M S 22		VHV-M 34		VHV-M 46		VHV-M S 46	
Overall height	358	430	502	358	430	502	358	430	502	214	286	358	214	286	142	214	142	214	142	214
	574	646	718	574	646	718	574	646	718	430	502	574			286		286		286	
[mm]	790			790			790			646	718	790								
Overall length [mm]	500 - 2400 mm																			
Increments	100 mm (for an overall length of 1400 mm and greater: 200 mm)																			

Model overview / connection dimensions: vertical design, VSV-M models



Angled design connection set

Fastening set	Model	Measurement Y [mm]
*	VSV-M 10	*
WA 10	VSV-M 20/21	**53**
*	VSV-M 11	*
WA 11	VSV-M 20/21	**63**

Connection set in through-flow design

Fastening set	Model	Measurement Z [mm]
WA 10	VSV-M 10/11	35
WA 10	VSV-M 20/21	79,5
WA 11	VSV-M 10/11	45
WA 11	VSV-M 20/21	89,5

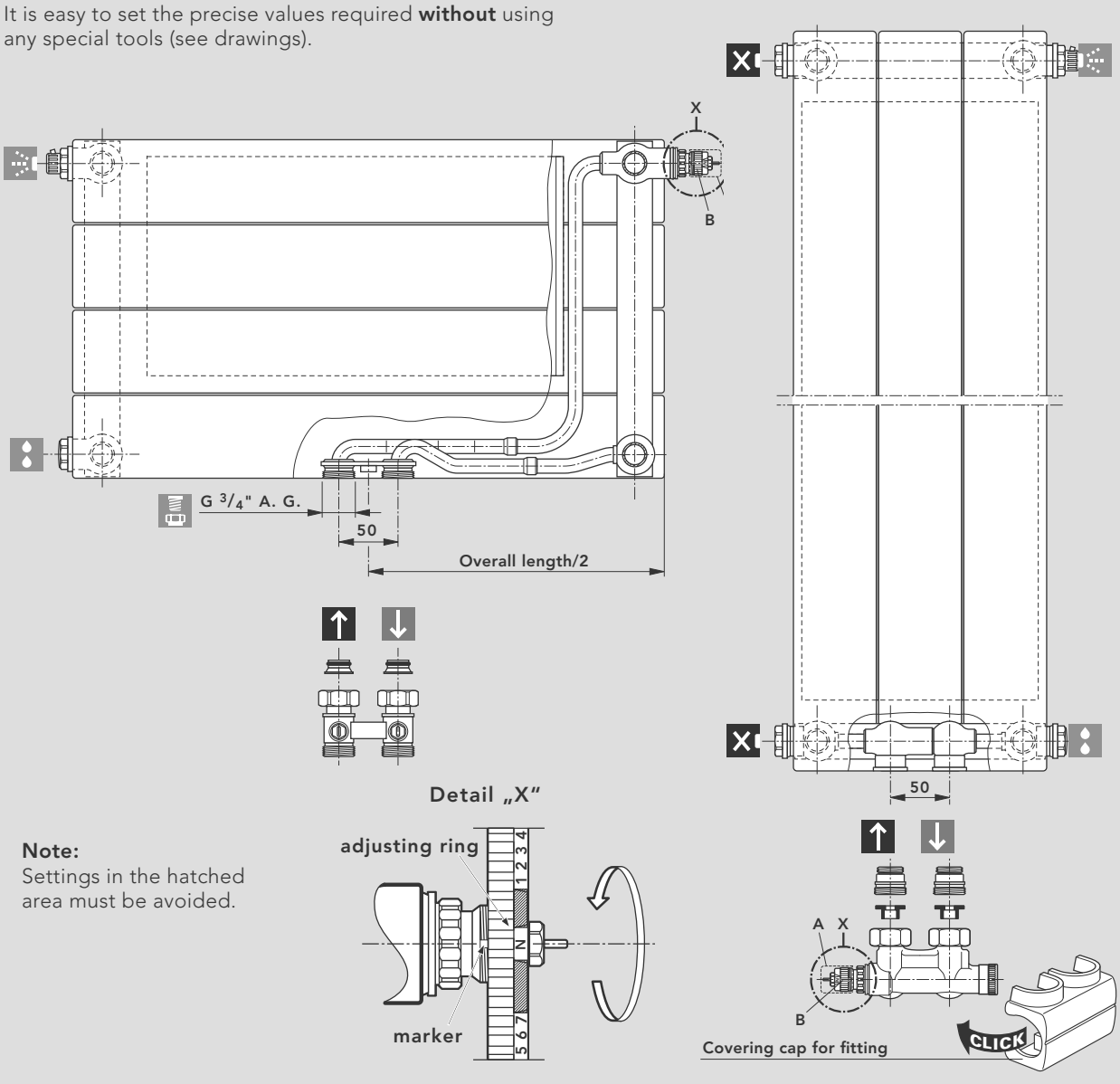
Schematic diagram

*** Note:** when installing the VSV-M 10 and VSV-M 11 models with an angled connection set (ZE, EE), please use the appropriate drill consoles and angled fishplates to ensure that the required distance from the wall is maintained.

Model	VSV-M 10			VSV-M 11			VSV-M 20			VSV-M 21		
Overall height	600	800	1000	800	1000	1200	600	800	1000	800	1000	1200
	1200	1400	1600	1400	1600	1800	1200	1400	1600	1400	1600	1800
	1800	2000	2200	2000	2200		1800	2000	2200	2000	2200	
[mm]	2400	2600					2400	2600				
Overall length [mm]	214 - 862 mm											
Increments	72 mm											

Horizontal and vertical designs

It is easy to set the precise values required **without** using any special tools (see drawings).



Note:
Settings in the hatched area must be avoided.

Schematic diagram

The radiator will be delivered with a fitted protective cap. After removing the protective cap (item A), the following thermostat heads can be installed directly onto the built-in valve (item B): **„RA 2000", or „RAW" from Danfoss, „VK" from Heimeier, „D" from Herz, „thera DA" from MNG, and „UNI XD" from Oventrop**.

Adjustment tips:

- Remove protective cap and sensor
- Lift the adjusting ring and turn it anti-clockwise, to the setting required – the set value (1, 2, ...7, N) needs to be directly in line with the marker.
- Presetting is possible in steps of 0.5 between 1 and 7. The „N"setting, cancels all presetting.

Horizontal design

Guideline values for default settings

Basis:

Supply temperature	**70 °C**
Return temperature	**55 °C**
Room temperature	**20 °C**

Default setting 1 k_v = 0.13
For radiators up to about 500 W

Default setting 2 k_v = 0.21
For radiators up to about 800 W

Default setting 3 k_v = 0.26
For radiators up to about 1000 W

Default setting 4 k_v = 0.31
For radiators up to about 1200 W

Default setting 5 k_v = 0.41
For radiators up to about 1600 W

Default setting 6 k_v = 0.52
For radiators up to about 2000 W

Default setting 7 k_v = 0.63
For radiators up to about 2400 W

Default setting N k_v = 0.75
For radiators of more than 2400 W

Chart A

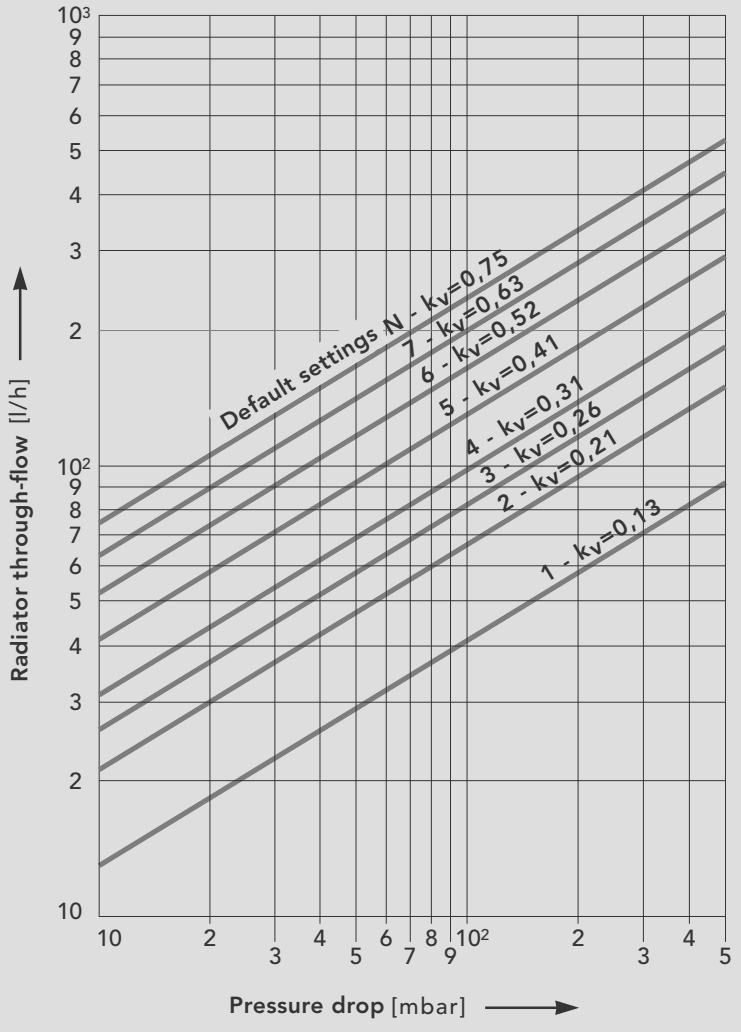


Chart A:

Pressure drop [mbar] – double-pipe operation at 2K proportional offset.

It is of course possible to adjust the valve default setting, whilst there is pressure in the heating system.

Vertical design

Guideline values for default settings

Basis:
Supply temperature **70 °C**

Return temperature **55 °C**

Room temperature **20 °C**

Default setting **4** k_v = 0.12
For radiators up to about 450 W

Default setting **5** k_v = 0.19
For radiators up to about 700 W

Default setting **6** k_v = 0.27
fFor radiators up to about 1000 W

Default setting **7** k_v = 0.33
For radiators up to about 1200 W

Default setting **N** k_v = 0.48
For radiators of more than 1200 W

Chart B

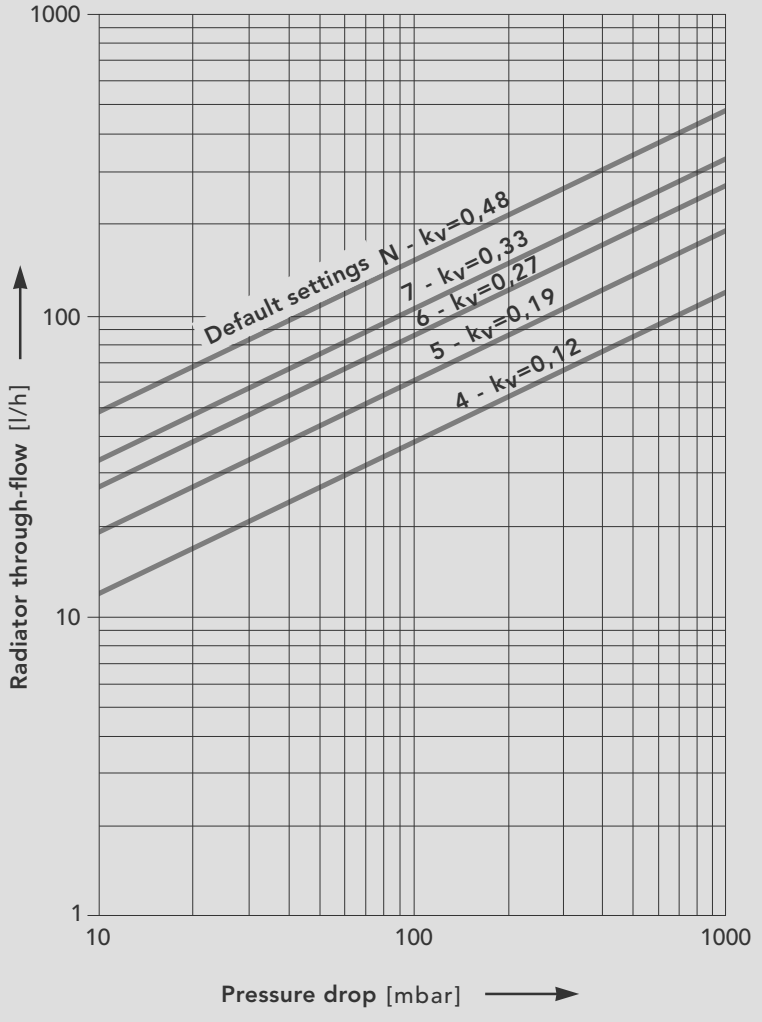


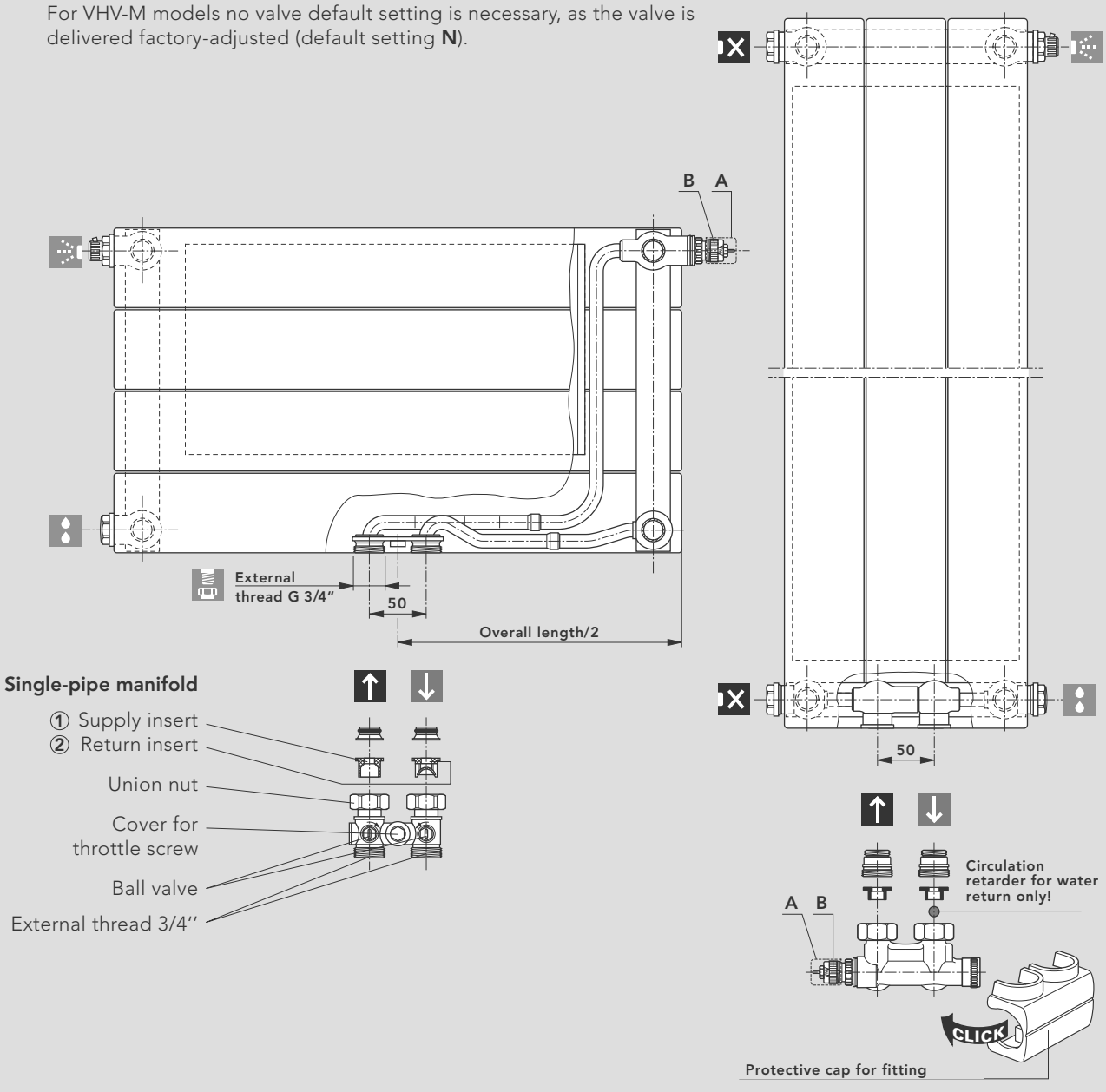
Chart B:

Pressure drop [mbar] – double-pipe operation at 2K proportional offset.

It is of course possible to adjust the valve default setting, whilst there is pressure in the heating system.

Horizontal and vertical design

For VHV-M models no valve default setting is necessary, as the valve is delivered factory-adjusted (default setting **N**).



Schematic diagram

The radiator valve (VHV-M models) and the connection set (VSV-M models) will both be delivered with a fitted protective cap. After removing the protective cap (item A), the following thermostat heads can be installed directly onto the built-in valve (item B): **„RA 2000“, or „RAW“ from Danfoss, „VK“ from Heimeier, „D“ from Herz, „thera DA“ from MNG, and „UNI XD“ from Oventrop**.

Please note!

Horizontal design:
During the installation of the single-pipe manifold ensure that the return insert ② is installed in the water return, and the supply insert ① in the water supply.

Vertical design:
When fitting the single-pipe operation connection set, ensure that the **circulation retarder** is installed in the water return.

Horizontal design

Default setting when using a single-pipe manifold:

radiator proportion 30 % --- 3.50 revolutions*

radiator proportion 35 % --- 3 revolutions*

radiator proportion 40 % --- 2.50 revolutions*

radiator proportion 45 % --- 2 revolutions*

radiator proportion 50 % --- 1.75 revolutions*

*… before starting, turn the bypass spindle of the single-pipe manifold to the **right as far as it will go**.

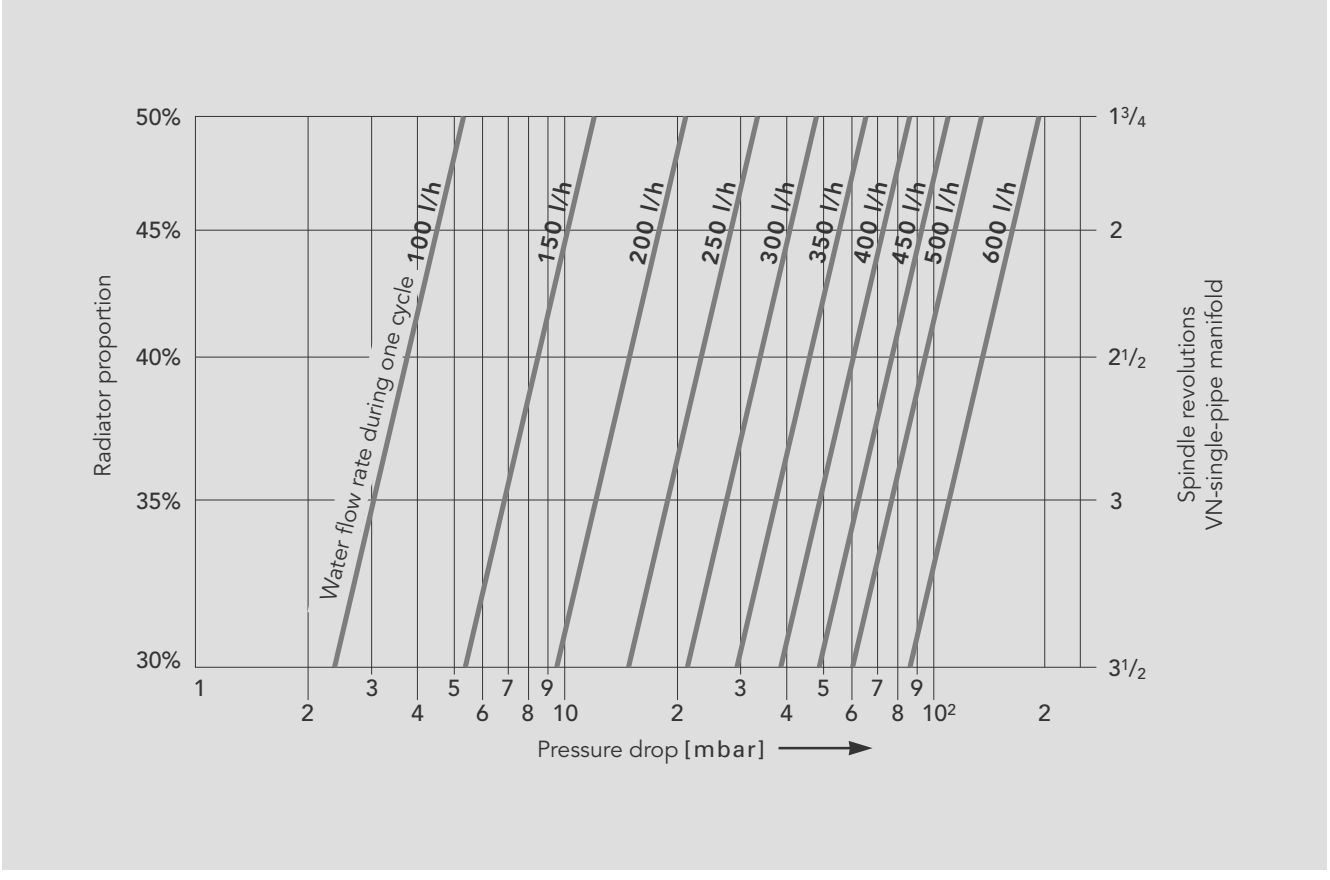


Diagram:

Pressure drop [mbar] – single-pipe operation with a proportional deviation of 2K.

It is of course possible to change the radiator proportion, whilst there is pressure in the heating system.

Please take account of the maximum power per cycle (for single-pipe installations) of about 10 kW:
$\Delta T = T_1\text{-}T_2 = 20$ K (at $T_1 = 90$ °C).

Vertical design

The connection set radiator proportion comes preset at 40 %.

Please take account of the maximum power per cycle (for single-pipe installations) of about 10 kW:
$\Delta T = T_1\text{-}T_2 = 20$ K (at $T_1 = 90$ °C).

VONARIS-M Wall mounting WA 11

welded bracket postions

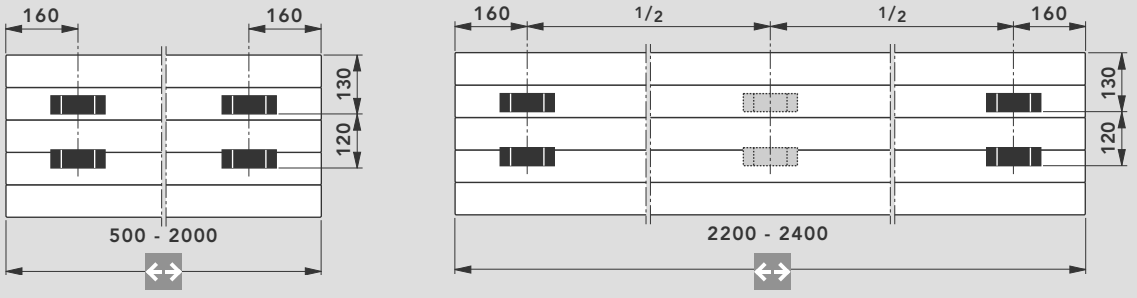
Wall mounting WA 11 for models VHV-M 10, VHV-M 11, VHV-M 20, VHV-M 22 and VHV-M 34

Model

VHV-M 10 / 11 for wall mounting WA 11

Overall height

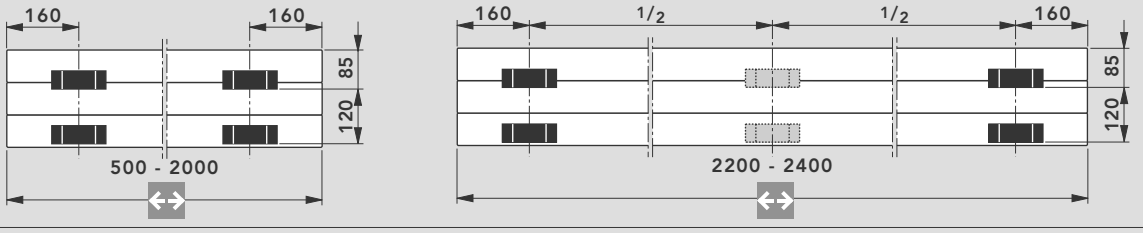
358 mm



VHV-M 22 or rather VHV-M 34 for wall mounting WA 11

Overall height

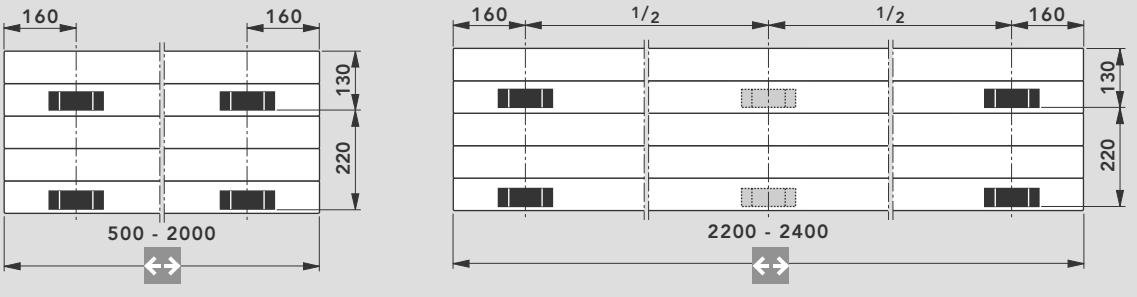
214 mm and 286 mm



VHV-M 10 / 11, VHV-M 20/22 for wall mounting WA 11

Overall height

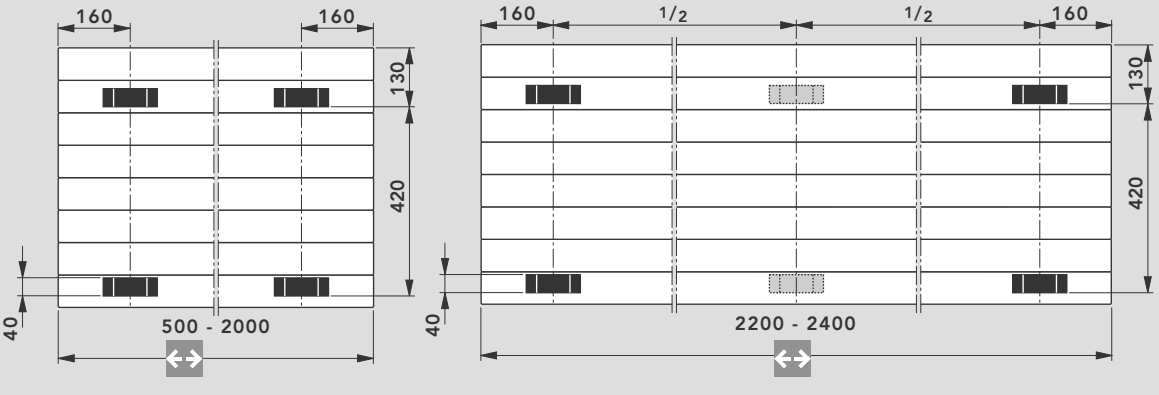
430 mm to 574 mm VHV-M 10/11, 358 mm to 502 mm VHV-M 20/22

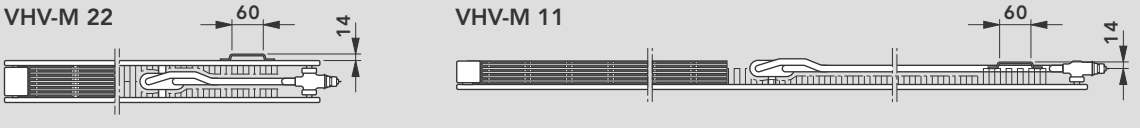


VHV-M 10 / 11, VHV-M 20/22 for wall mounting WA 11

Overall height

646 mm to 790 mm VHV-M 10/11, 574 mm to 790 mm VHV-M 20/22





Schematic diagram

Attention! With the horizontal design only the models VHV-M 10/11 (OH 358 - 790 mm) are by default supplied with brackets. If the models VHV-M 20 (OH 358 - 790 mm), VHV-M 22 (OH 214 - 790) and VHV-M 34 (142 – 286 mm) are wall-mounted using wall mounting WA 11, you are required to order these models as a special version, equipped with brackets.

VONARIS-M Wall mounting WA 11

drilling measurements and wall-clearance

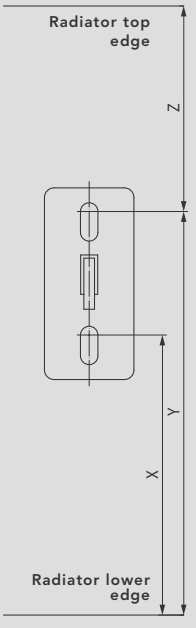
Wall mounting WA 11 for models VHV-M 10, VHV-M 11, VHV-M 20, VHV-M 22 und VHV-M 34

Wall mounting WA 11 is suitable for the horizontal versions of the following models: VHV-M 10 (OH 358 - 790 mm), VHV-M 11 (OH 358 - 790 mm), VHV-M 20 (BH 358 - 790 mm), VHV-M 22 (OH 214 - 790 mm) and VHV-M 34 (OH 214 and 286 mm) equipped with brackets. It ensures easy, rapid and robust mounting of the VONARIS central-connection radiators still in the packaging.

Wall mounting WA 11 for OH 214 - 790

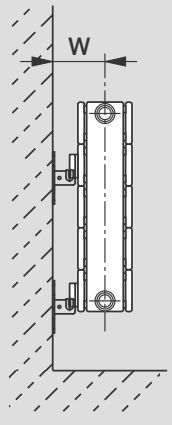
Drilling measurements for the Wandaufhängung WA 11

From an overall length of 2200 mm: 3 consoles

Model	VHV-M Overall height [mm]	Value **X** [mm]	Value **Y** [mm]	Value **Z** [mm]	Wall mounting WA 11
VHV-M 22, 34	214	**104**	**162**	**52**	
VHV-M 22, 34	286	**176**	**234**	**52**	
VHV-M 10, 11	358	**203**	**261**	**97**	
VHV-M 20, 22	358	**203**	**261**	**97**	
VHV-M 10, 11, 20, 22	430	**275**	**333**	**97**	
VHV-M 10, 11, 20, 22	502	**347**	**405**	**97**	
VHV-M 10, 11	574	**419**	**477**	**97**	
VHV-M 20, 22	574	**419**	**477**	**97**	
VHV-M 10, 11, 20, 22	646	**491**	**549**	**97**	
VHV-M 10, 11, 20, 22	718	**563**	**621**	**97**	
VHV-M 10, 11, 20, 22	790	**635**	**693**	**97**	

Schematic diagram

Connection – wall clearance



Horizontal design model	Overall height [mm]	Value **W** [mm]
VHV-M 10	358 - 790	**45**
VHV-M 11	358 - 790	**45**
VHV-M 20	358 - 790	**89**
VHV-M 22	214 - 790	**89**
VHV-M 34	214 / 286	**89**

Schematic diagram

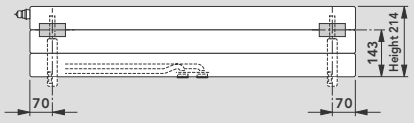
VONARIS-M VONOFIX

bracket positioning for insertion (push-in) brackets

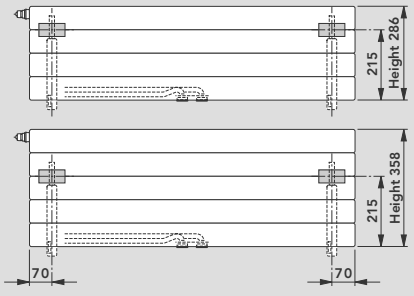
VONOFIX rapid-installation console for the VHV-M models

VHV-M 10 models: OH 358 - 790 mm, VHV-M 20 models: OH 358 - 790 mm,
VHV-M 22 models: OH 214 - 790 mm and VHV-M 34 models: OH 214 and 286 mm

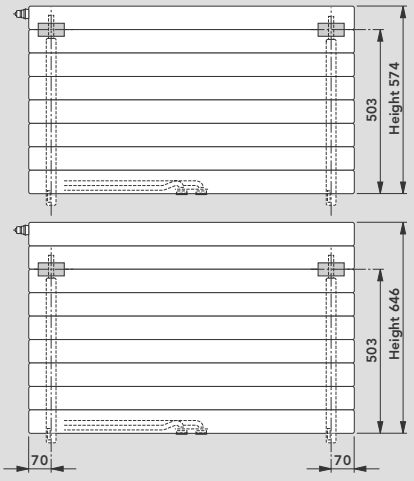
OH 214: for **VONOFIX 1**



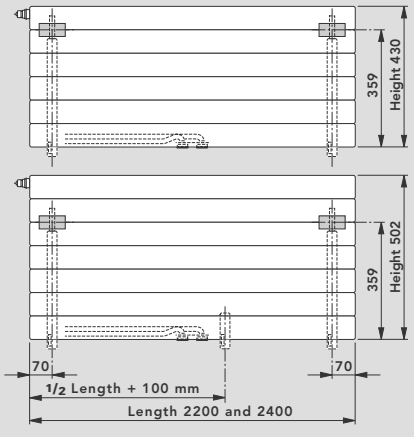
OH 286 and 358: for **VONOFIX 2**



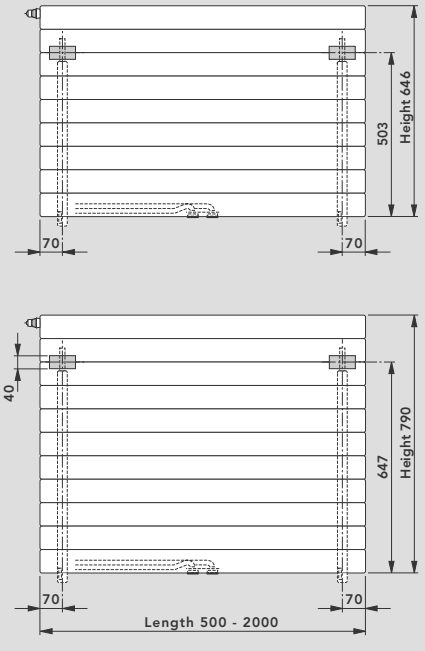
OH 574 and 646: for **VONOFIX 4**



OH 430 and 502: for **VONOFIX 3**



OH 718 and OH 790: for **VONOFIX 5**



Note! for an overall length of 2200 mm and greater an additional piece of foot console must be used!

Schematic diagram

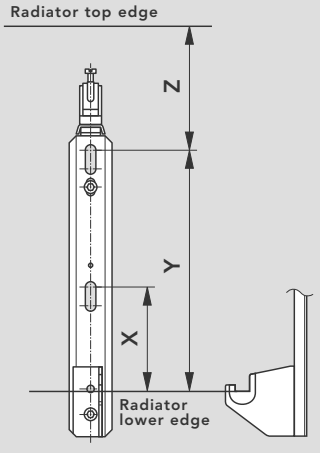
Important: the installation of VHV-M models with insertion (push-in) brackets is only feasible when using the **VONOFIX** rapid-installation console!

VONOFIX rapid-installation console for the VHV-M models

The **VONARIS** central connection radiator can be installed easily, quickly and securely. This is made possible by the **VONOFIX** rapid-installation console for the horizontal designs of the VHV-M 20 (OH 358 - 790 mm), VHV-M 22 (OH 214 - 790 mm) and the VHV-M 34 (OH 214 and 286 mm) models.

Wall rails for OH 214 – 790 mm

Drilling measurements for the VONOFIX 1 - 5



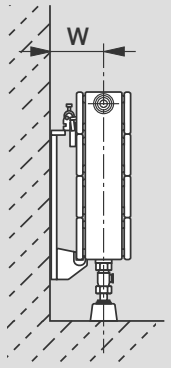
Overall radiator height [mm]	Value **X** [mm]	Value **Y** [mm]	Value **Z** [mm]
214	–	**125**	**89**
286	**100**	**197**	**89**
358	**100**	**197**	**161**
430	**100**	**341**	**89**
502	**100**	**341**	**161**
574	**100**	**485**	**89**
646	**100**	**485**	**161**
718	**100**	**629**	**89**
790	**100**	**629**	**161**

Schematic diagram

The **VONOFIX** rapid-installation console consists of:

2 wall consoles (zinc-plated), with sound-proofing filters, screws and dowels
2 stabilising brackets
2 insertion (push-in) brackets
(For an overall length of 2200 mm and greater, 1 additional piece of foot console)

Connection – wall clearance



Horizontal design model	Overall height [mm]	Value **W** [mm]
VHV-M 20	358 – 790	**91**
VHV-M 22	214 – 790	**91**
VHV-M 34	214 – 286	**91***

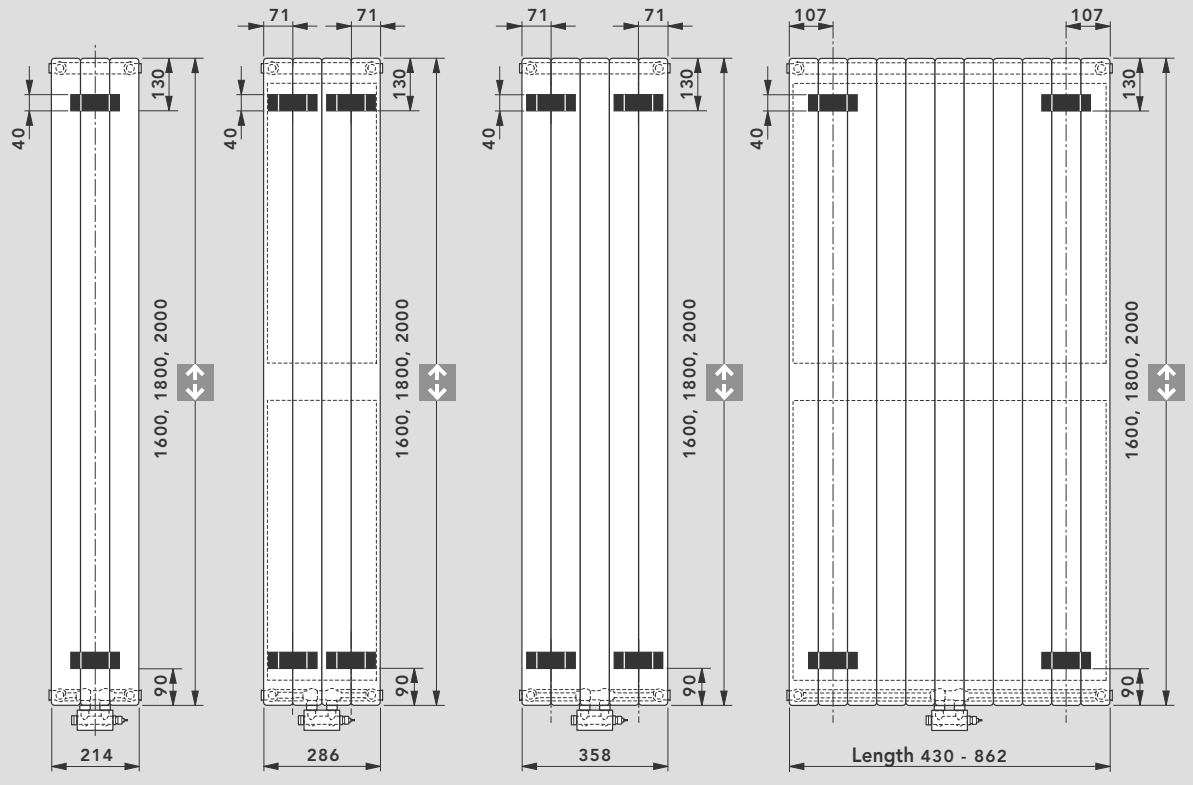
* **Note:** if the **VHV-M 34** is turned round and used as a left-hand design model, the measurement **W is 172 mm.**

Schematic diagram

VSV-M models

Overal length [mm]

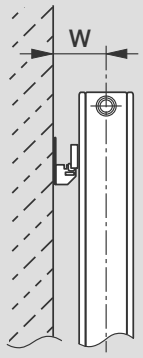
214	286	358	430 - 862



Schematic diagram

Wall clearance measurements: WA 10 and WA 11 wall mounting brackets for the VSV-M models

Connection – wall clearance

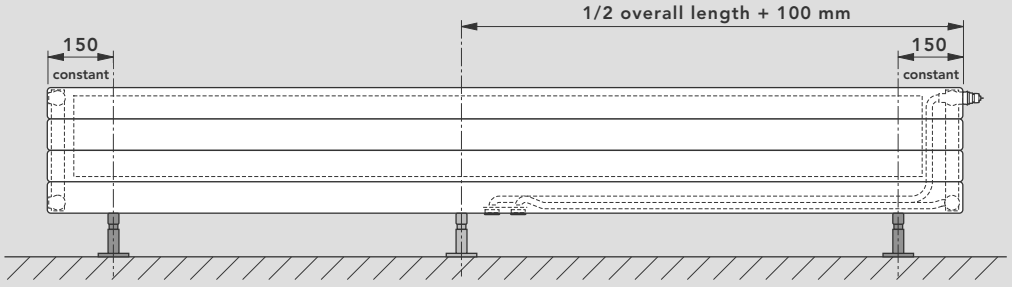


Wall mounting brackets model	Vertical design model	Value W [mm]
WA 10	VSV-M 10/11*	35
WA 10	VSV-M 20/21	79,5
WA 11	VSV-M 10/11*	45
WA 11	VSV-M 20/21	89,5

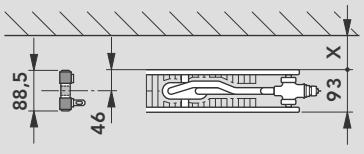
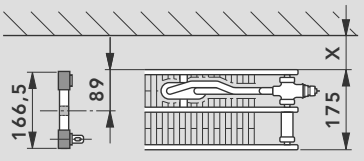
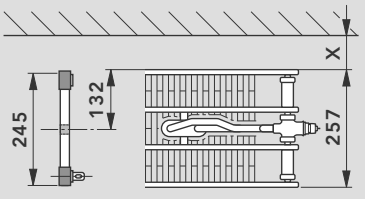
*Note! if you are using WA 10 or WA 11 wall mounting brackets for the installation of the VSV-M 10 or VSV-M 11 model with a right-angled-design connection, please follow the instructions in the diagram on page 173.

Schematic diagram

SK 12 – 17 stand consoles: positioning with the VHV-M models (up to an overall height of 286 mm)



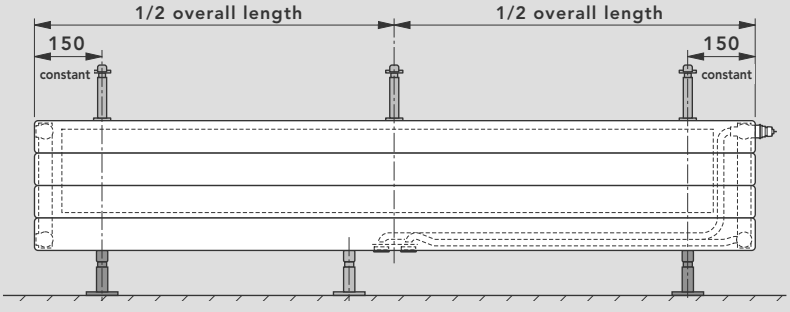
Note: for an overall length of **2200 mm** and greater, a 3rd stand console must be used!

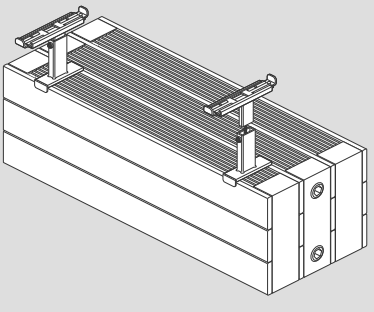
SK 12 / SK 13 VHV-M 22	SK 14 / SK 15 VHV-M 34	SK 16 / SK 17 VHV-M 46
		

Schematic diagram

FBT 20 window sill support: positioning for the VHV-M models (up to an overall height of 286 mm)

Window sill support for subsequent installation with the **VHV-M 22 – 46 models** of the **VONARIS-M** central connection radiator (up to an overall height of 286 mm)

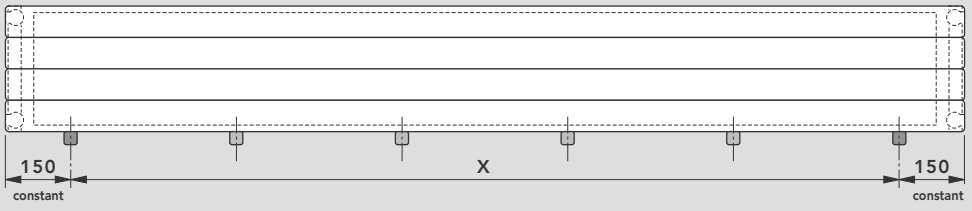




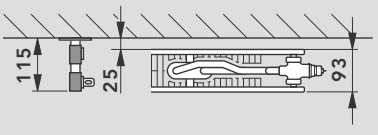
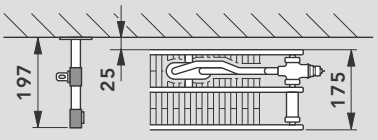
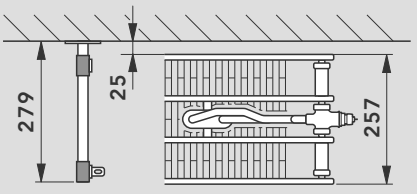
Note: for an overall length of more than **2200 mm**, a 3rd window sill support must be used!

Schematic diagram

Wall mounting positions VONARIS-M



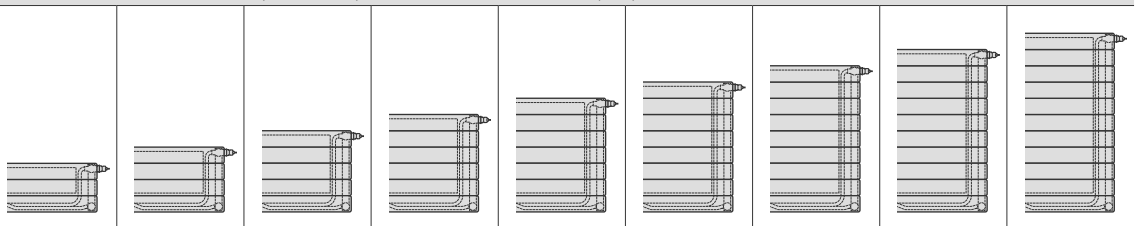
Attention: if more than 2 wall consoles are used, any additional wall consoles are to be used at regular distances from each other along a length of X.

WK 10-M VHV-M 22	WK 11-M VHV-M 34	WK 12 VHV-M 46
		

Schematic diagram

Heating output in compliance with **DIN EN 442**, and **ÖNORM EN 442**, at **75/65/20° C**

Side panels and top cover are included in the heat output specifications

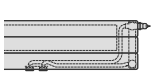
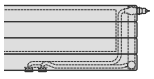


Overall height [mm]	**214**	**286**	**358**	**430**	**502**	**574**	**646**	**718**	**790**
Increments	As regards all overall lengths between 500 and 1400 mm, use increments of 100 mm, and overall lengths between 1600 and 2400 mm, use increments of 200 mm.								
Model			**VHV-M 10***	**VHV-M 10***	**VHV-M 10***	**VHV-M 10***	**VHV-M 10***	**VHV-M 10***	**VHV-M 10***
Overall depth [mm]			**68**	**68**	**68**	**68**	**68**	**68**	**68**
Watts / m 75/65/20			394	458	523	588	655	720	795
Watts / m 70/55/20			322	374	427	480	534	590	647
Watts / m 55/45/20			209	243	276	311	344	380	416
Water content l / m			2,76	3,33	3,87	4,44	4,99	5,55	6,12
Weight kg / m			11,91	14,04	16,17	18,29	20,43	22,60	24,68
Radiator exponent **n**			1,24	1,24	1,25	1,25	1,26	1,26	1,27
Model			**VHV-M 11***	**VHV-M 11***	**VHV-M 11***	**VHV-M 11***	**VHV-M 11***	**VHV-M 11***	**VHV-M 11***
Overall depth [mm]			**68**	**68**	**68**	**68**	**68**	**68**	**68**
Watts / m 75/65/20			625	718	804	886	965	1043	1105
Watts / m 70/55/20			505	583	652	717	781	844	889
Watts / m 55/45/20			320	372	415	456	497	537	558
Water content l / m			2,78	3,33	3,87	4,44	4,99	5,55	6,12
Weight kg / m			16,71	19,85	22,99	26,15	29,29	31,42	33,55
Radiator exponent **n**			1,31	1,29	1,29	1,30	1,30	1,30	1,34
Model			**VHV-M 20**	**VHV-M 20**	**VHV-M 20**	**VHV-M 20**	**VHV-M 20**	**VHV-M 20**	**VHV-M 20**
Overall depth [mm]			**93**	**93**	**93**	**93**	**93**	**93**	**93**
Watts / m 75/65/20			654	757	859	960	1063	1166	1271
Watts / m 70/55/20			533	617	699	781	864	947	1032
Watts / m 55/45/20			344	397	450	501	554	607	660
Water content l / m			5,55	6,66	7,77	8,88	9,99	11,10	12,22
Weight kg / m			21,29	25,30	29,31	33,31	37,32	41,32	45,33
Radiator exponent **n**			1,26	1,26	1,27	1,27	1,28	1,28	1,28
Model	**VHV-M 22**	**VHV-M 22**	**VHV-M 22**	**VHV-M 22**	**VHV-M 22**	**VHV-M 22**	**VHV-M 22**	**VHV-M 22**	**VHV-M 22**
Overall depth [mm]	**93**	**93**	**93**	**93**	**93**	**93**	**93**	**93**	**93**
Watts / m 75/65/20	769	938	1100	1268	1405	1534	1654	1767	1886
Watts / m 70/55/20	621	756	885	1021	1130	1232	1326	1414	1500
Watts / m 55/45/20	393	477	555	642	708	769	825	877	919
Water content l / m	3,34	4,44	5,55	6,66	7,77	8,88	9,99	11,11	12,22
Weight kg / m	20,59	27,23	30,89	36,93	42,96	49,01	55,05	59,05	63,06
Radiator exponent **n**	1,31	1,32	1,34	1,33	1,34	1,35	1,36	1,37	1,41

* For aesthetic reasons these models should not be fitted in front of a window.

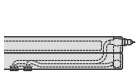
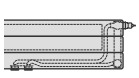
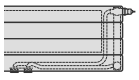
Heating output in compliance with **DIN EN 442**, and **ÖNORM EN 442**, at **75/65/20° C**

Side panels and top cover are included in the heat output specifications

Overall height [mm]	214	286
Increments	As regards all overall lengths between 500 and 1400 mm, use increments of 100 mm, and overall lengths between 1600 and 2400 mm, use increments of 200 mm.	
Model	**VHV-M S 22**	**VHV-M S 22**
Overall depth [mm]	163	163
Watts / m 75/65/20	769	938
Watts / m 70/55/20	621	756
Watts / m 55/45/20	393	477
Water content l / m	3,34	4,44
Weight kg / m	28,34	37,24
Radiator exponent **n**	1,31	1,32

* For aesthetic reasons these models should not be fitted in front of a window.

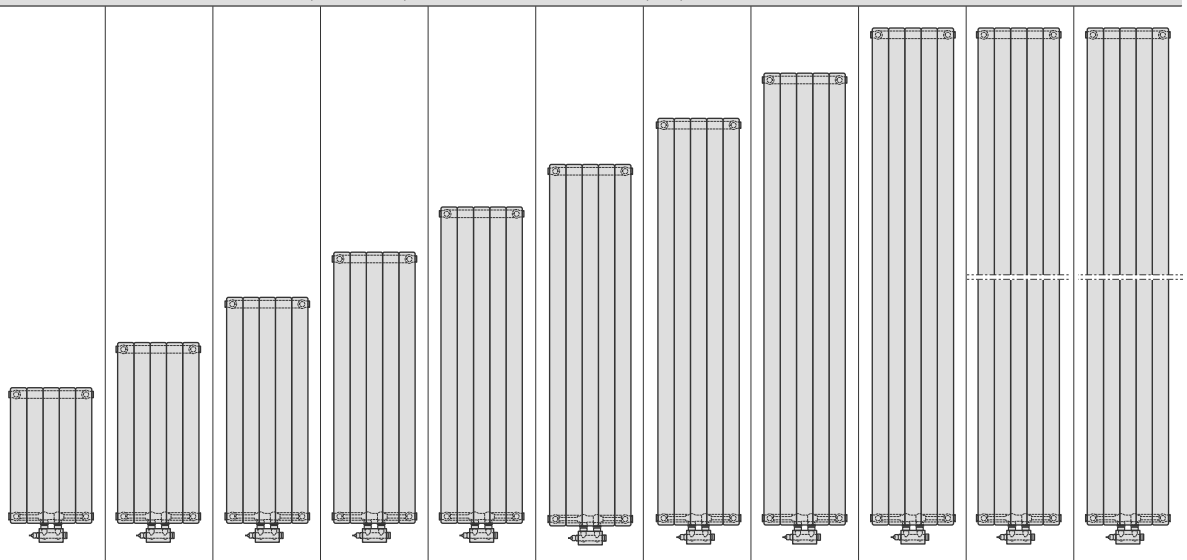




Overall height [mm]	142	214	286
Increments	As regards all overall lengths between 500 and 1400 mm, use increments of 100 mm, and overall lengths between 1600 and 2400 mm, use increments of 200 mm.		
Model	**VHV-M 34**	**VHV-M 34**	**VHV-M 34**
Overall depth [mm]	175	175	175
Watts / m 75/65/20	953	1357	1616
Watts / m 70/55/20	773	1094	1296
Watts / m 55/45/20	493	690	808
Water content l / m	3,33	4,99	6,66
Weight kg / m	23,93	35,18	46,42
Radiator exponent **n**	1,29	1,32	1,36
Model	**VHV-M 46**	**VHV-M 46**	**VHV-M 46**
Overall depth [mm]	257	257	257
Watts / m 75/65/20	1433	1895	2357
Watts / m 70/55/20	1160	1525	1885
Watts / m 55/45/20	738	957	1168
Water content l / m	4,53	6,79	9,06
Weight kg / m	33,89	49,76	65,62
Radiator exponent **n**	1,30	1,34	1,37
Model	**VHV-M S 46**	**VHV-M S 46**	**VHV-M S 46**
Overall depth [mm]	327	327	327
Watts / m 75/65/20	1433	1895	2357
Watts / m 70/55/20	1160	1525	1885
Watts / m 55/45/20	738	957	1168
Water content l / m	4,53	6,79	9,06
Weight kg / m	39,35	57,50	75,64
Radiator exponent **n**	1,30	1,34	1,37

* For aesthetic reasons these models should not be fitted in front of a window.

Heating output in compliance with **DIN EN 442**, and **ÖNORM EN 442**, at **75/65/20° C**

Side panels and top cover are included in the heat output specifications

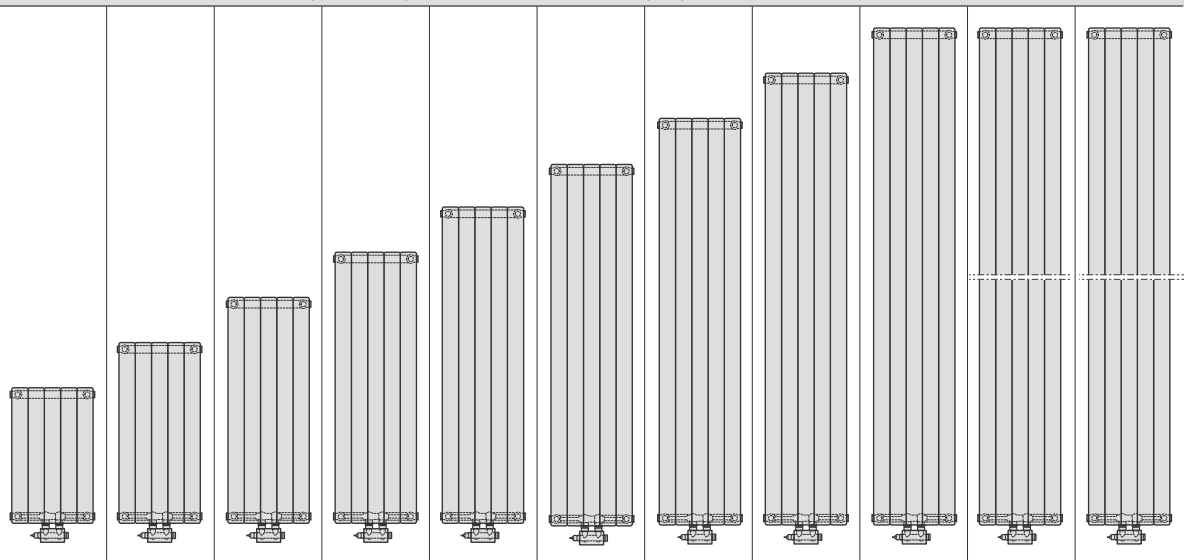


Overal height [mm]	**600**	**800**	**1000**	**1200**	**1400**	**1600**	**1800**	**2000**	**2200**	**2400**	**2600**
Overall lengh [mm]	**214, 286, 358, 430, 502, 574, 646, 718, 790, 862**										
Model	**VSV-M 10**	**VSV-M 10**	**VSV-M 10**	**VSV-M 10**	**VSV-M 10**	**VSV-M 10**	**VSV-M 10**	**VSV-M 10**	**VSV-M 10**	**VSV-M 10**	**VSV-M 10**
Overall depth [mm]	**68**	**68**	**68**	**68**	**68**	**68**	**68**	**68**	**68**	**68**	**68**
Watts/m 75/65/20	657	861	1069	1284	1506	1738	1979	2232	2495	2771	3060
Watts/m 70/55/20	533	694	857	1023	1200	1384	1577	1781	1994	2219	2455
Watts/m 55/45/20	340	438	534	629	737	850	968	1097	1234	1378	1530
Water content l / m	5,17	6,41	7,65	8,89	10,13	11,37	12,47	13,85	15,24	16,48	17,72
Weight kg / m	18,70	23,85	29,--	34,15	39,30	44,45	49,60	54,75	59,70	64,85	70,--
Radiator exponent **n**	1,29	1,32	1,36	1,40	1,40	1,40	1,40	1,39	1,38	1,37	1,36
Model		**VSV-M 11**	**VSV-M 11**	**VSV-M 11**	**VSV-M 11**	**VSV-M 11**	**VSV-M 11**	**VSV-M 11**	**VSV-M 11**		
Overall depth [mm]		**68**	**68**	**68**	**68**	**68**	**68**	**68**	**68**		
Watts/m 75/65/20		1123	1331	1541	1757	1979	2209	2450	2701		
Watts/m 70/55/20		897	1065	1234	1407	1584	1768	1964	2172		
Watts/m 55/45/20		554	660	768	874	983	1097	1223	1361		
Water content l / m		6,41	7,65	8,89	10,13	11,37	12,47	13,85	15,24		
Weight kg / m		42,79	47,94	53,09	58,24	63,39	68,53	73,69	78,84		
Radiator exponent **n**		1,38	1,37	1,36	1,37	1,37	1,37	1,36	1,34		

heating outputs

Heating output in compliance with **DIN EN 442**, and **ÖNORM EN 442**, at **75/65/20° C**

Side panels and top cover are included in the heat output specifications



Overall height [mm]	**600**	**800**	**1000**	**1200**	**1400**	**1600**	**1800**	**2000**	**2200**	**2400**	**2600**
Overall lengh [mm]	**214, 286, 358, 430, 502, 574, 646, 718, 790, 862**										
Model	**VSV-M 20**	**VSV-M 20**	**VSV-M 20**	**VSV-M 20**	**VSV-M 20**	**VSV-M 20**	**VSV-M 20**	**VSV-M 20**	**VSV-M 20**	**VSV-M 20**	**VSV-M 20**
Overall depth [mm]	**93**	**93**	**93**	**93**	**93**	**93**	**93**	**93**	**93**	**93**	**93**
Watts/m 75/65/20	1118	1479	1840	2202	2566	2932	3301	3672	4046	4423	4803
Watts/m 70/55/20	899	1185	1468	1750	2041	2332	2629	2929	3232	3539	3849
Watts/m 55/45/20	564	737	905	1070	1249	1427	1615	1805	1997	2194	2395
Water content l / m	10,34	12,82	15,30	17,78	20,26	22,74	24,34	27,71	30,48	32,96	35,44
Weight kg / m	35,34	45,36	55,38	65,40	75,42	85,44	95,46	105,48	115,50	125,52	135,54
Radiator exponent **n**	1,34	1,36	1,36	1,41	1,41	1,41	1,40	1,39	1,38	1,37	1,36
Model		**VSV-M 21**	**VSV-M 21**	**VSV-M 21**	**VSV-M 21**	**VSV-M 21**	**VSV-M 21**	**VSV-M 21**	**VSV-M 21**		
Overall depth [mm]		**93**	**93**	**93**	**93**	**93**	**93**	**93**	**93**		
Watts/m 75/65/20		1704	2059	2421	2795	3184	3588	4012	4455		
Watts/m 70/55/20		1355	1636	1922	2222	2536	2857	3206	3569		
Watts/m 55/45/20		829	999	1173	1359	1557	1755	1983	2219		
Water content l / m		12,82	15,30	17,78	20,26	22,74	24,34	27,71	30,48		
Weight kg / m		64,29	74,31	84,33	94,35	104,37	114,39	124,42	134,64		
Radiator exponent **n**		1,41	1,42	1,42	1,41	1,40	1,40	1,38	1,36		

CONVECTORS & HEATING PANELS

Connections:
2 x internal thread G 1/2", welded-in for supply and return. Vent and drain plugs (or dummy plug) are factory sealed and are fitted according to the customer's specifications.

Maximum positive operating pressure
Standard design: **5 bar**

Maximum positive operating pressure:
High-pressure design **8 bar**

Maximum operating temperature: 110 °C

Guarantee statements are available to download at **www.vogelundnoot.com/download**

KONTEC convectors and horizontal heating panels are radiators in fully welded designs, with either 1 to 5 layers of steel rectangular water-flow pipes arranged one-behind-the-other (for convectors), or 1 or 2 such layers (for horizontal heating panels). In each layer, the convectors have between one and four pipes arranged one-above-the-other; the horizontal heating panels have from 5 to 11 pipes.
KONTEC vertical heating panels consist of 1 or 2 layers of steel rectangular water-flow pipes, arranged one-behind-the-other, with 2 to 12 steel pipes, arranged side-by-side.

A 2 mm space between the heating pipes guarantees additional resistance to corrosion. **KONTEC** convectors and horizontal heating panels come with side panels and top covers; **KONTEC** vertical heating panels come with side panels. **KONTEC** heating panels are delivered with welded mounting brackets.

All **KONTEC** convectors and heating panels are also delivered with factory-sealed drain plugs and pivotable vent plugs. (Exception: bottom-opposite-end connection models come with a dummy plug instead of the drain plug.)
Standard design: rectangular steel pipes, 70 x 11 x 1.5 mm

High-pressure design: rectangular steel pipes, 70 x 11 x 2.0 mm

WVO-design: KONTEC convectors are also available with a welded heat reflector (no water-flow).

Convector dimensions:
Overall lengths: between 500 mm and 1400 mm (at increments of 100 mm), and between 1600 mm and 4000 mm (at increments of 200 mm)
Overall heights: 70 mm, 142 mm, 214 mm and 286 mm

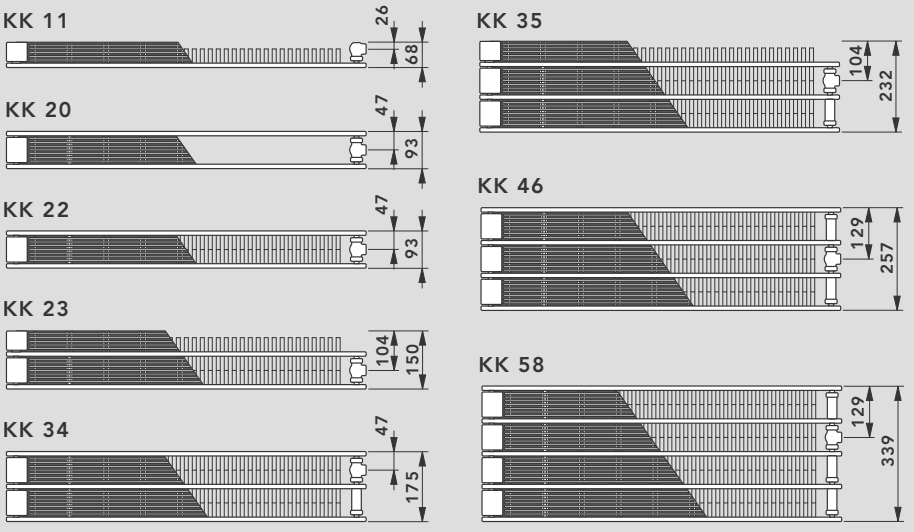
Horizontal heating panel dimensions:
Overall lengths: between 500 mm and 1400 mm (at increments of 100 mm), and between 1600 mm and 4000 mm (at increments of 200 mm)
Overall heights: 358 mm, 430 mm, 502 mm, 574 mm, 646 mm and 790 mm

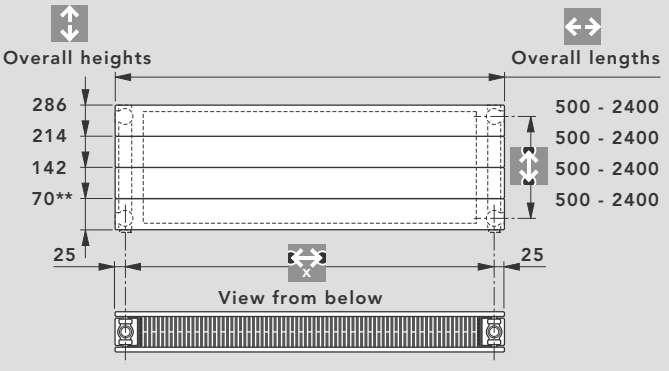
Vertical heating panel dimensions:
Overall lengths: between 142 mm and 862 mm (at increments of 72 mm)
Overall heights: between 1600 mm and 2200 mm (at increments of 200 mm)

Coatings:
1. Undercoat: electrophoretic, using water-soluble paints, conforming to DIN 55900 part 1, stoved at 165° C;
2. Finish: electrostatic powder coating, conforming to DIN 55900 part 2, in a state-of-the-art facility. (On request, and at a supplementary charge, a range of RAL and sanitary ware colours can be offered.) This particularly robust coating is stoved at an object temperature of 180° C.

Packaging:
1. Cardboard packaging
2. Edge protection
3. Shrink foil

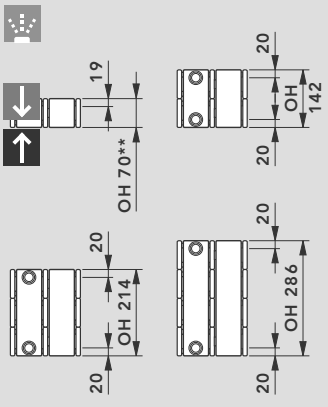
Horizontal design, KK models





Overall height [mm]		70**	142	214	286
Boss spacing NA [mm]		32	102	174	246
Boss spacing NAS* [mm]		Overall length - 50 mm			

Side connections:

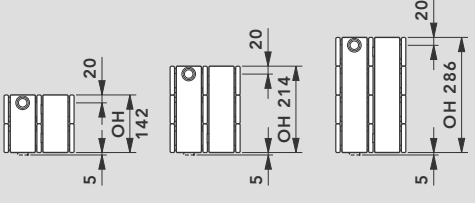


Note: with an OH of 70 mm, vertical connection from below is not available!

* Models with an overall height of 142, 214 or 286 mm can also be delivered with supply and return connections vertically from below (as special designs and with a supplementary charge).

** Only available with top-bottom, opposite-ends, side-connection.

*Connection vertically from below



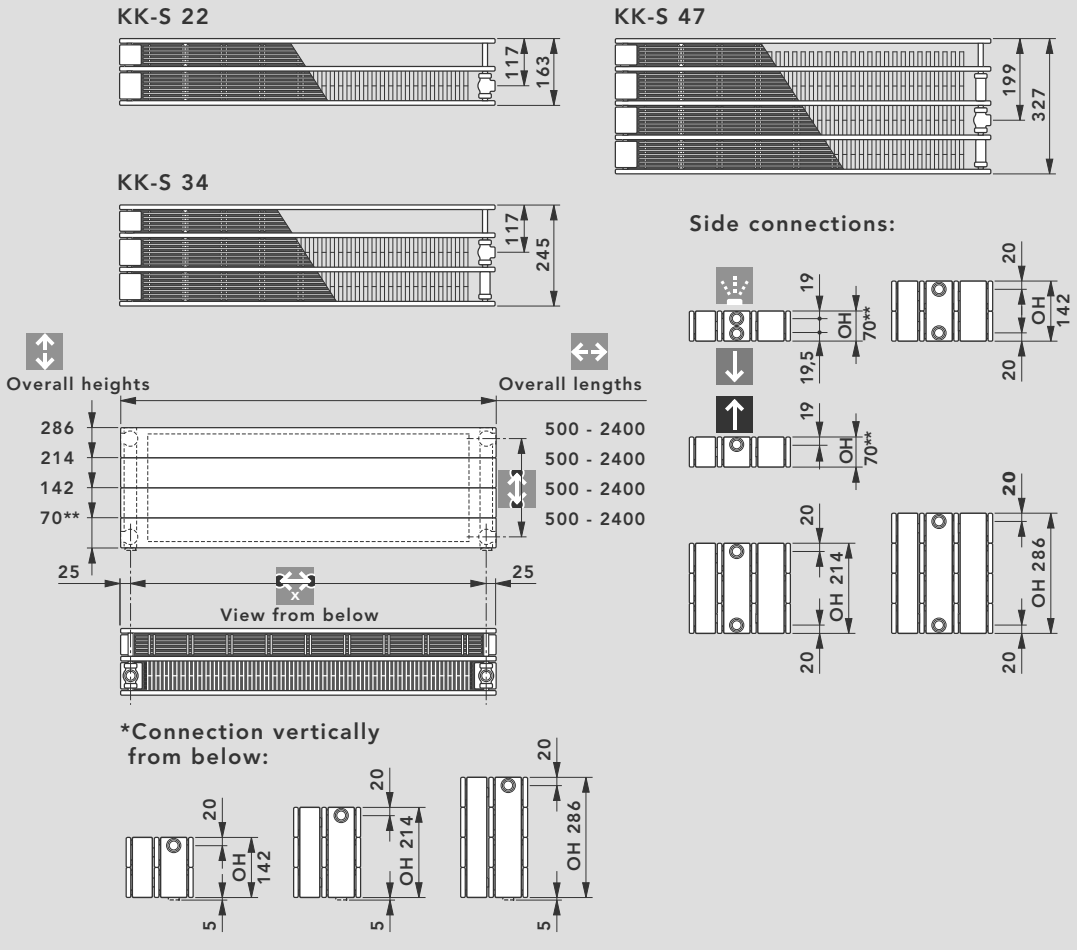
Schematic diagram

Model	KK 11		KK 20		KK 22		KK 23		KK 34		KK 35		KK 46		KK 58	
Overall height [mm]	-	-	-	142	70	142	70	142	70	142	70	142	70	142	70	142
	214	286	214	286	214	286	214	286	214	286	214	286	214	286	214	286
Overall lenght [mm]	500 – 2400 mm (for special overall lengths see output charts), model 58 up to 2200 mm															
Increments	100 mm (for an overall length of 1400 mm and greater: 200 mm)															

The KK-S models

With their factory-welded heat reflector (no water-flow), the WVO designs return a major part of the otherwise lost heat to the room. They do so by means of convection between radiator and heat reflector.

Model overview / connection dimensions: KK-S models, horizontal design



Overall height [mm]		70**	142	214	286
Boss spacing NA [mm]		32	102	174	246
Boss spacing NAS* [mm]		Overall length - 50 mm			

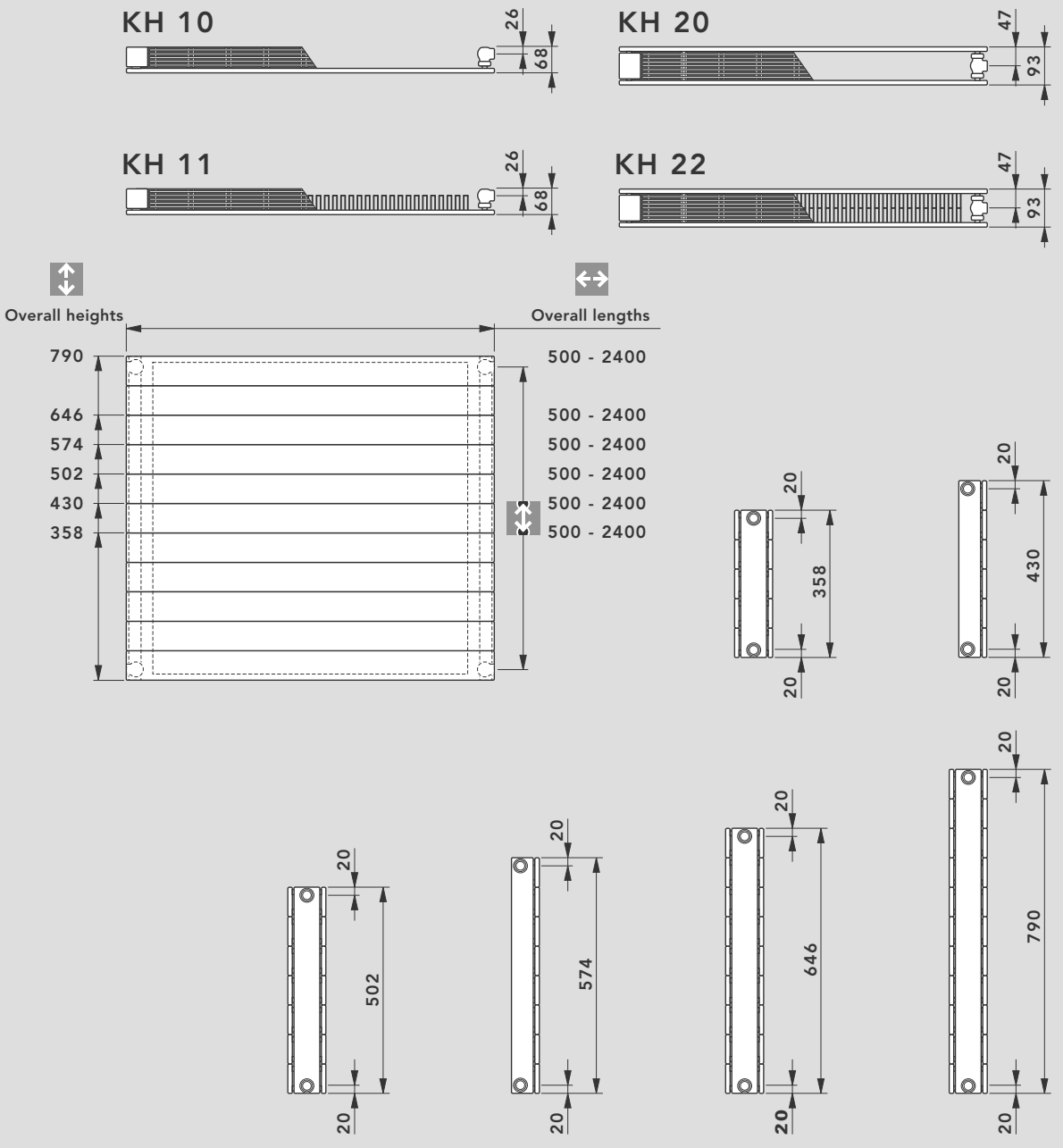
Note: with an OH of 70 mm, vertical connection from below is not available!

* Models with an overall height of 142, 214 or 286 mm can also be delivered with supply and return connections vertically from below (as special designs and with a supplementary charge).
** Only available with top-bottom, opposite-ends, side-connection.

Schematic diagram

Model	KK-S 22				KK-S 34				KK-S 47			
Overall height [mm]	70	142	214	286	70	142	214	286	70	142	214	286
Overall length [mm]	500 – 2400 mm (for special overall lengths see output charts)											
Increments	100 mm (for an overall length of 1400 mm and greater: 200 mm)											

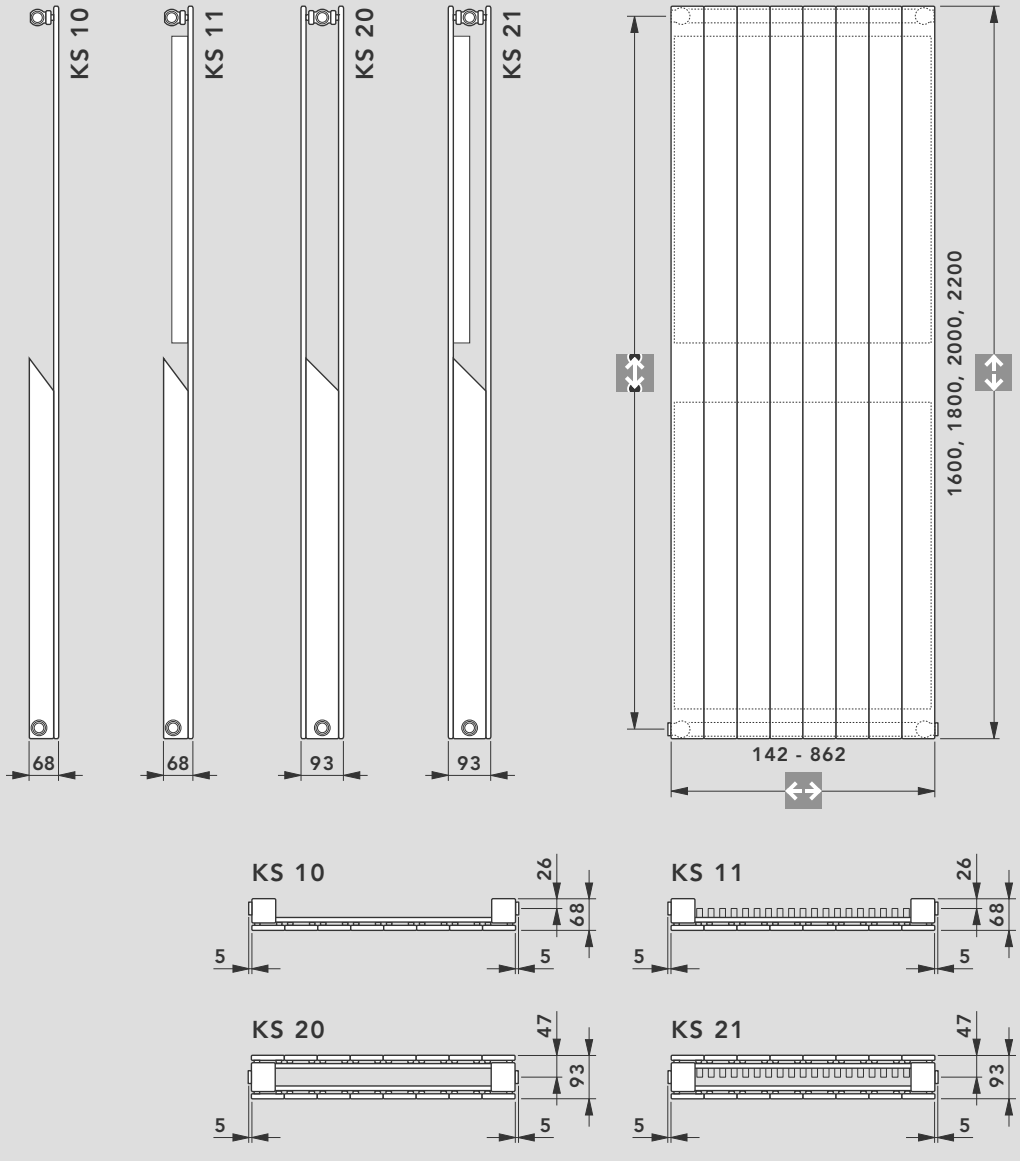
KH models horizontal design



Overall height [mm]	358	430	502	574	646	790	Schematic diagram
Boss spacing NA [mm]	318	390	462	534	606	750	

Model	KH 10			KH 11			KH 20			KH 22		
Overall height [mm]	358	430	502	358	430	502	358	430	502	358	430	502
	574	646	790	574	646	790	574	646	790	574	646	790
Overall length [mm]	500 – 2400 mm (for special overall lengths see output charts)											
Increments	100 mm (for an overall length of 1400 mm and greater: 200 mm)											

KS models vertical design



Overall height [mm]	1600	1800	2000	2200	Schematic diagram
Boss spacing NA [mm]	**1550**	**1750**	**1950**	**2150**	

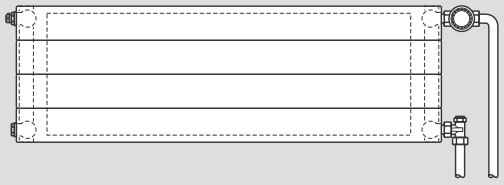
Model	KS 10		KS 11		KS 20		KS 21	
Overall height [mm]	1600	1800	1600	1800	1600	1800	1600	1800
	2000	2200	2000	2200	2000	2200	2000	2200
Overall length [mm]	**142 - 862 mm**							
Increments	**72 mm**							

connection modes for KONTEC convectors

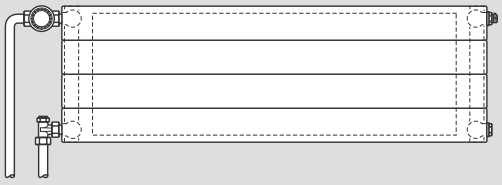
KK and KK-S models

Double-pipe system

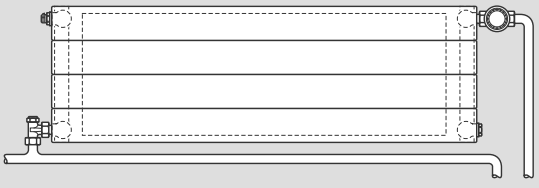
Single-sided connection, right



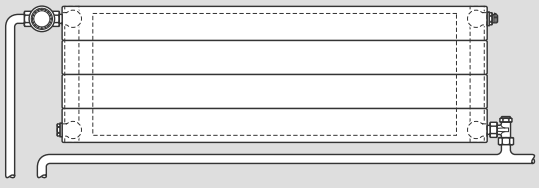
Single-sided connection, left



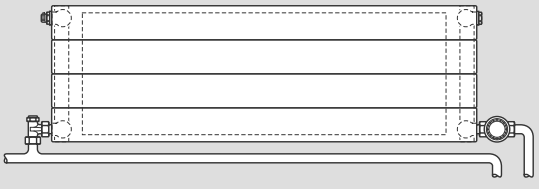
Top-bottom, opposite-end, side-connection, right-side supply



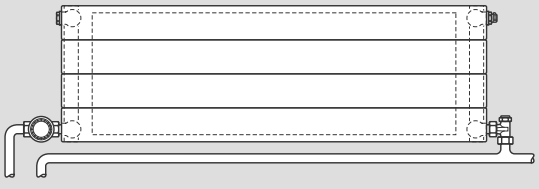
Top-bottom, opposite-end, side-connection, left-side supply



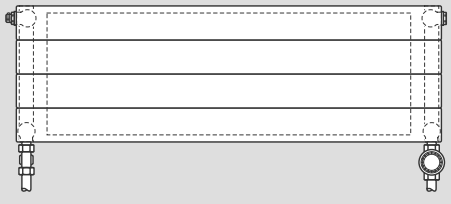
Bottom-only, opposite-end, side-connection, right-side supply
Note: reduced heat output



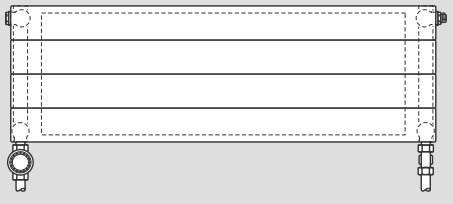
Bottom-only, opposite-end, side-connection, left-side supply
Note: reduced heat output



Vertical connection from below, bottom-only, opposite-end, right-side supply
Note: reduced heat output



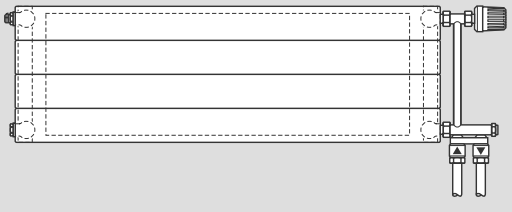
Vertical connection from below, bottom-only, opposite-end, left-side supply
Note: reduced heat output



Single-pipe system

KONTEC convectors can easily be converted for use with a single-pipe system. In this case, however, 4-way valves with a by-pass pipe need to be used.

Recommendation:
For reasons of appearance the **VONARIS** valve design is the preferred option for this connection mode.



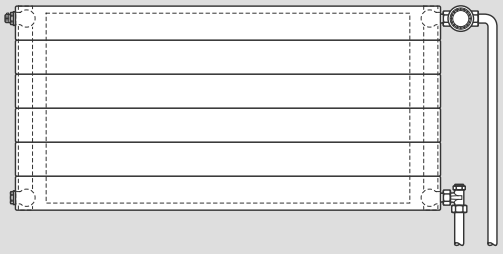
Schematic diagram

Note: when ordering your **KONTEC** convector (see price list "Description of the Ordering Process") the 4 connections must be accurately specified and assigned. This is for technical production reasons. No subsequent changes to the connections on your **KONTEC** convector are possible!

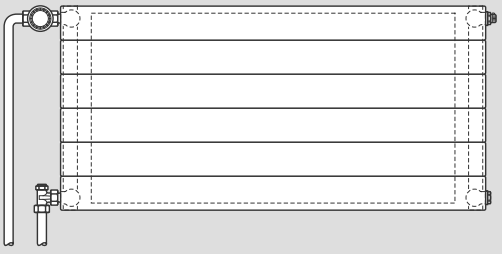
Typen KH

Double-pipe system

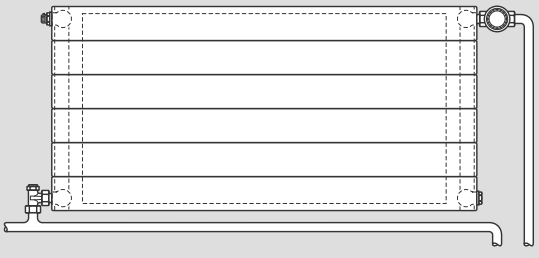
Single-sided connection, right



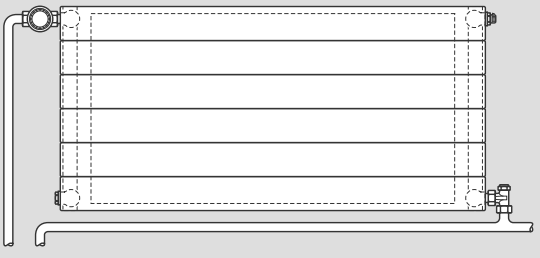
Single-sided connection, left



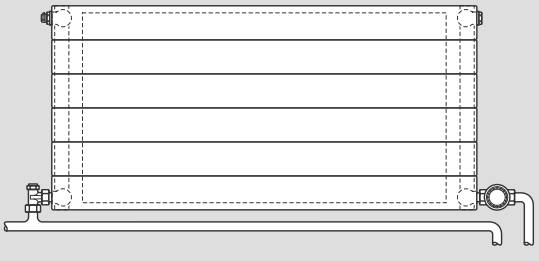
Top-bottom, opposite-end, side-connection, right-side supply



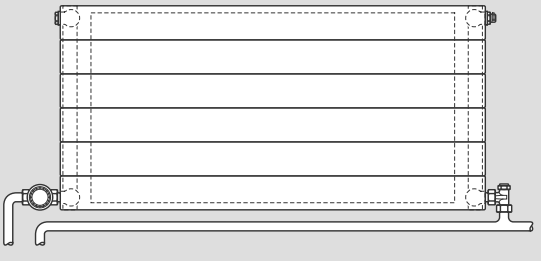
Top-bottom, opposite-end, side-connection, left-side supply



Bottom-only, opposite-end, side-connection, right-side supply
Note: reduced heat output



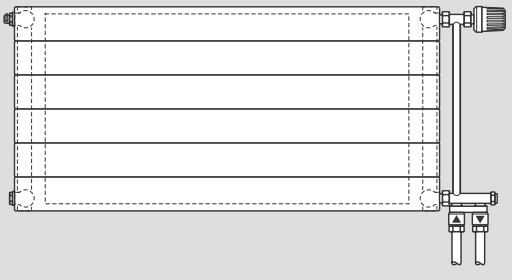
Bottom-only, opposite-end, side-connection, left-side supply
Note: reduced heat output



Single-pipe system

KONTEC convectors can easily be converted for use with a single-pipe system. In this case, however, 4-way valves with a by-pass pipe need to be used.

Recommendation:
For reasons of appearance the **VONARIS** valve design is the preferred option for this connection mode.



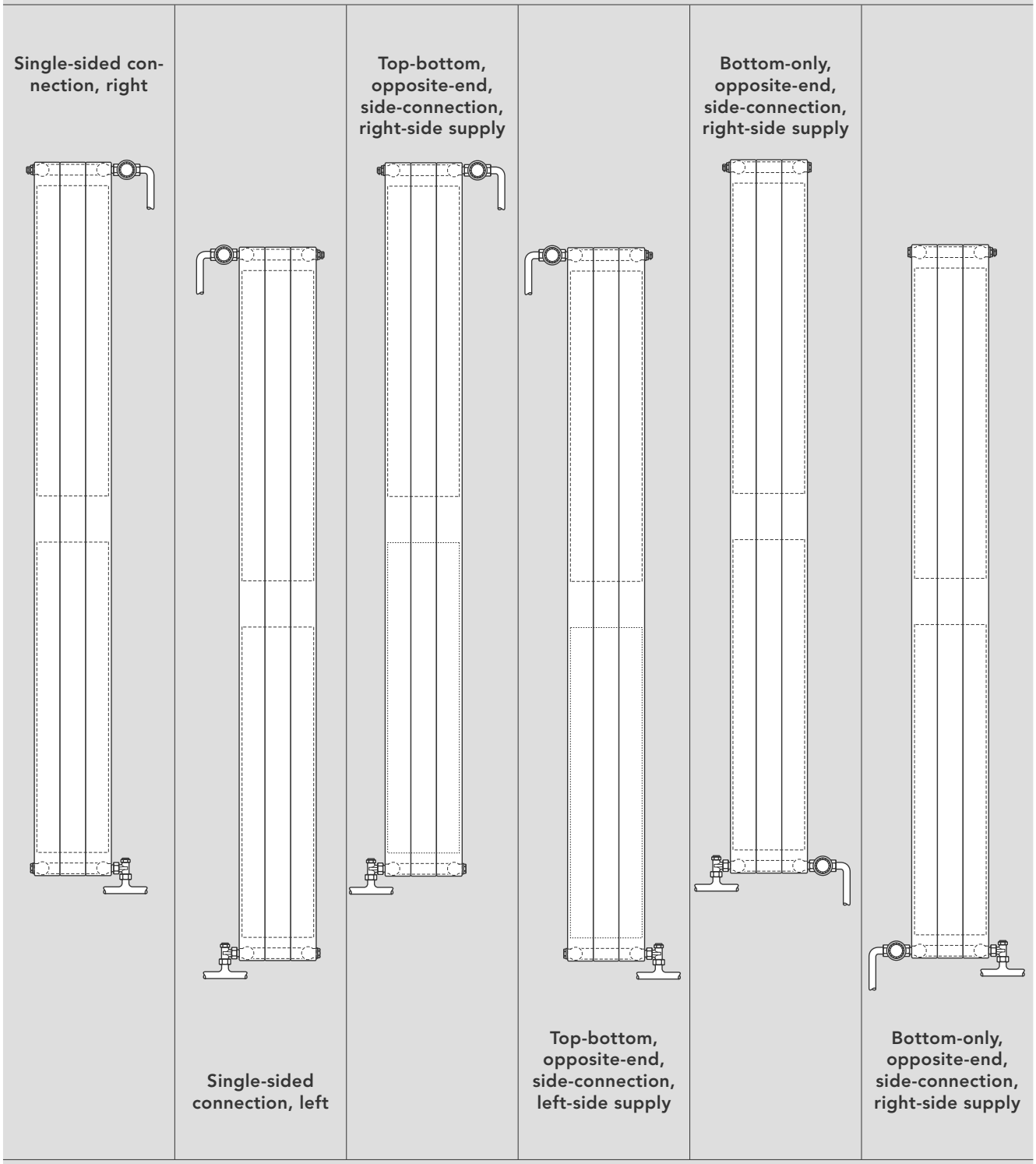
Schematic diagram

Note: when ordering your KONTEC KH model heating panels, (see price list “Description of the Ordering Process”) the 4 connections must be accurately specified and assigned. This is for technical production reasons. No subsequent changes to the connections on your KONTEC KH model heating panels are possible!

Typen KS

Double-pipe system

Note: with **KONTEC** KS model heating panels, single-pipe connection is not possible!



Schematic diagram

Note: when ordering your **KONTEC** KS model heating panel (see price list "Description of the Ordering Process") the 4 connections must be accurately specified and assigned. This is for technical production reasons. No subsequent changes to the connections on your **KONTEC** KS model heating panel are possible!

KH 20 and KH 22 models, horizontal designs

The new heat reflector

• is available for the KH 20 (OH 358 – 574 mm) and the KH 22 (OH 358 - 646 mm) models in horizontal design

• returns a major part of the otherwise lost heat to the room, by means of convection between the KONTEC heating panel and the heat reflector.

Design:
Electrophoretic coating and finish in RAL 9016 (on request and at an extra charge, in a range of RAL and Sanitary Ware colours); delivered with 8 push-in brackets, 8 stabilising brackets, 4 Z-brackets, an installation sheet, and packaging

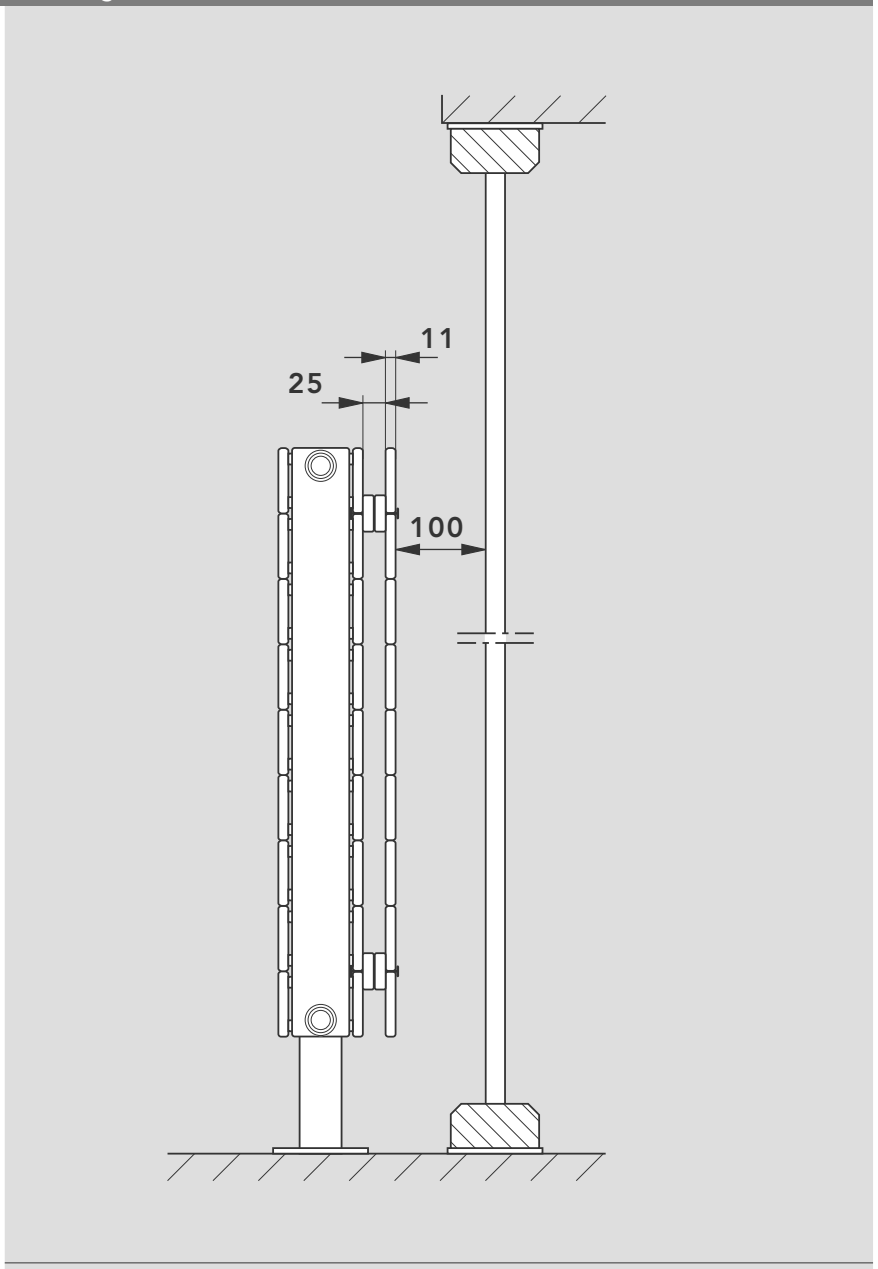
Note: when ordering one of the horizontal designs with a heat reflector, it is also essential to use either an **SK 22 (KH 20)** or an **SK 23 (KH 22) stand console**.

KONTEC heating panel with fitted heat reflector
(see image to the right)

Width: 11 mm heat reflector

Internal depth:25 mm between heating pipe and heat reflector

Minimum clearance*: 100 mm
between window surface and heat reflector



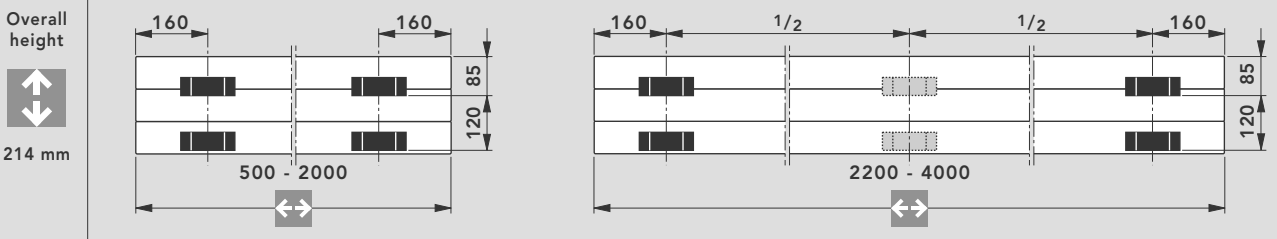
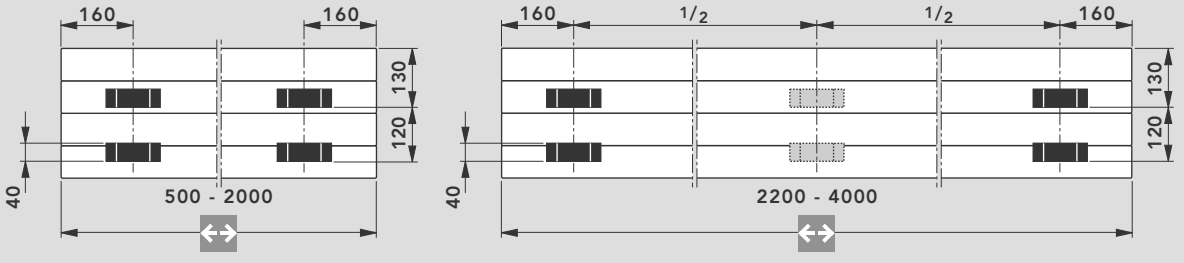
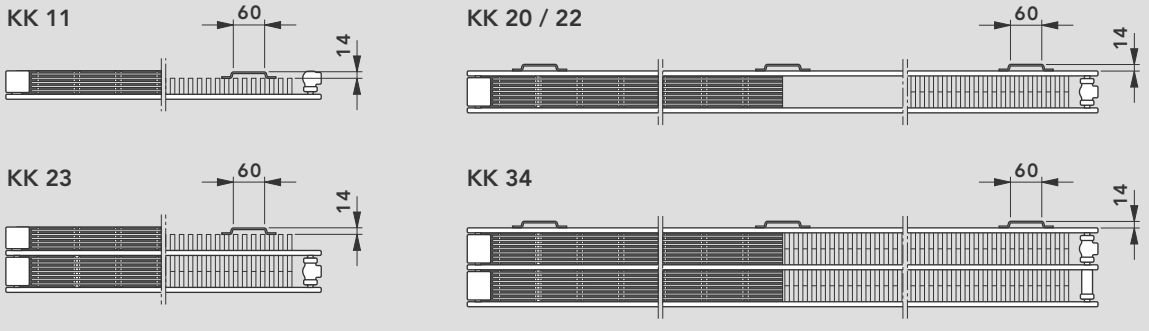
Schematic diagram

* The minimum clearance between window surface and heat reflector (100 mm) complies with the recommendations of leading window surface manufacturers.

KONTEC Wall mounting WA 11

welded bracket position

Wall mounting WA 11 for all KK (Convectors) models

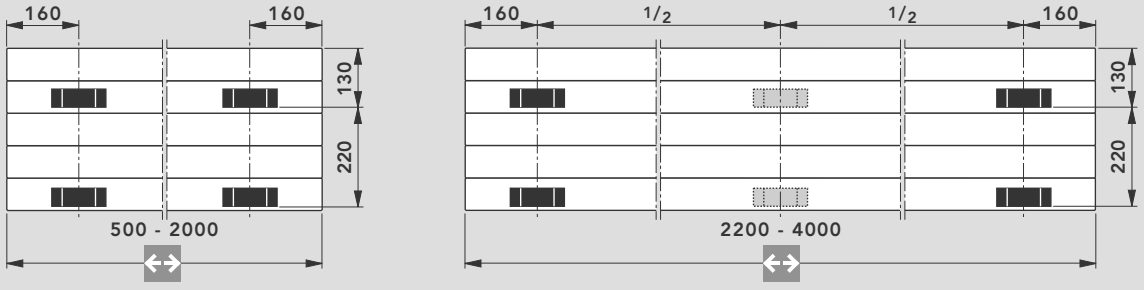
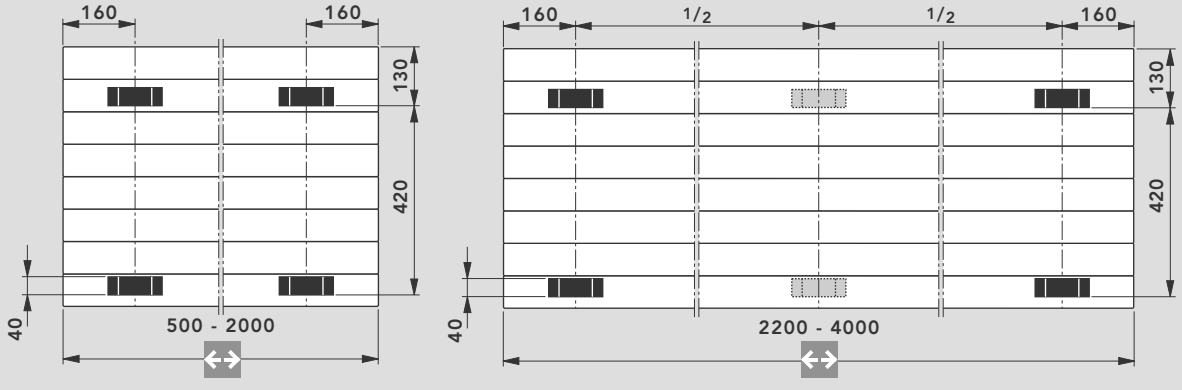
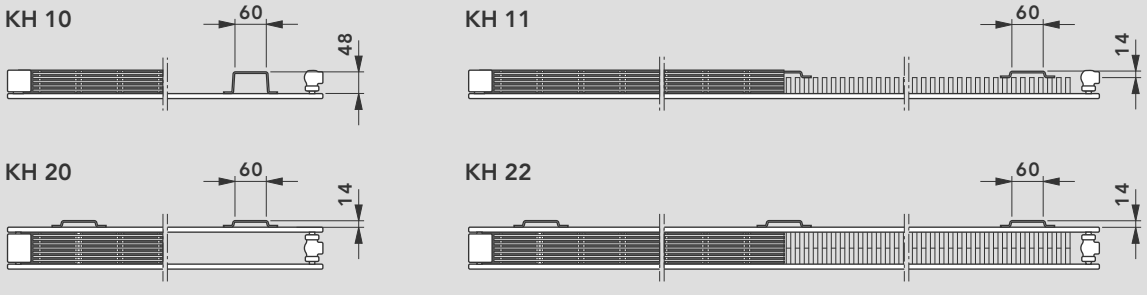
Type	Wall mounting WA 11 for KK 11 to KK 34
Overall height 214 mm	
	Wall mounting WA 11 for KK 11 to KK 34
Overall height 286 mm	
	
	Schematic diagram

Attention! Convectors are by default supplied without brackets. If wall mounting WA 11 is used, you are required to order the convector as a special version, equipped with brackets. Convectors with an OH of 70 or 142 mm cannot be supplied with mounting brackets.

KONTEC Wall mounting WA 11

welded bracket positions

Wall mounting WA 11 for all KH (heating wall models horizontal design) models

Type	Wall mounting WA 11 for KH 10 to KH 24
Overall height from 358 mm to 502 mm	
	Wall mounting WA 11 for KH 10 to KH 24
Overall height from 574 mm to 790 mm	
	
	Schematic diagram

KONTEC Wall mounting WA 11

Drilling and wall clearance dimensions

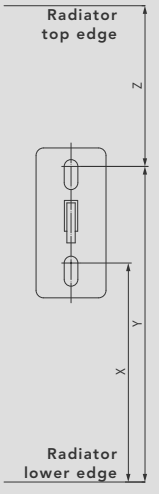
Wall mounting WA 11 for types KK (convectors) and KH (Vertical heating panels)

Wall mounting WA 11 is suitable for convector models **KK** (OH 214 and 286 mm, with brackets) and heating wall models **KH** (OH 358 - 790 mm). It ensures easy, rapid and robust mounting of **KONTEC** convectors or **KONTEC** heating panels still in the packaging.

Wall mounting WA 11 for OH 214 - 790

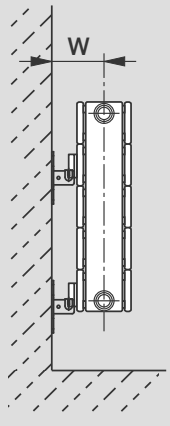
Wall mounting WA 11 drilling dimensions

From an overall length of 2200 mm: 3 consoles

Overall height [mm]	Value **X** [mm]	Value **Y** [mm]	Value **Z** [mm]	Wall mounting WA 11 for **OH 214 – 790 mm**
214	**104**	**162**	**52**	
286	**131**	**189**	**97**	
358	**203**	**261**	**97**	
430	**275**	**333**	**97**	
502	**347**	**405**	**97**	
574	**419**	**477**	**97**	
646	**491**	**549**	**97**	
790	**635**	**693**	**97**	

Schematic diagram

Connection – wall clearance

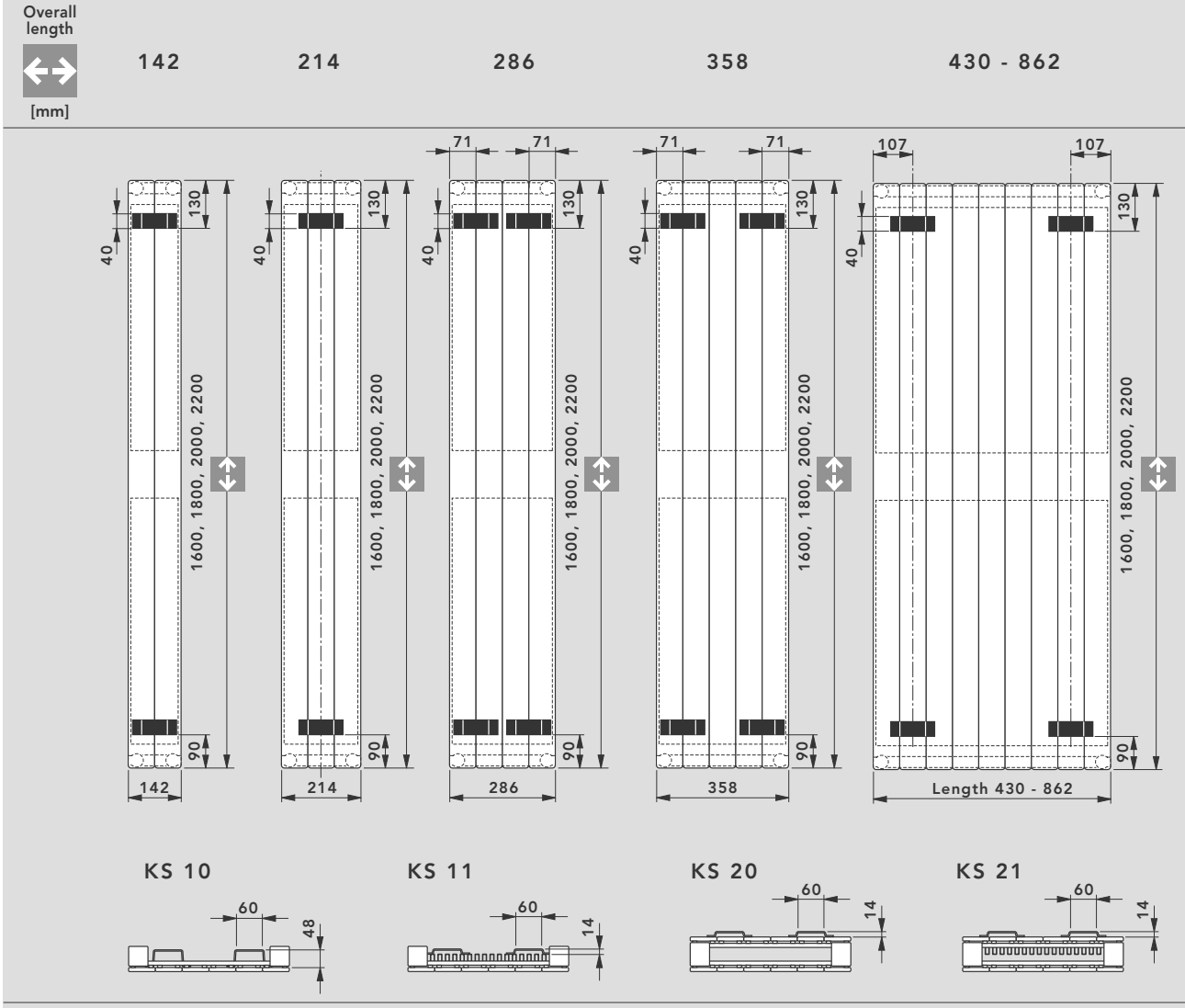


Convector and heating panel models	Overall height [mm]	Measurement **W** [mm]
KK 11	214, 286	**45**
KK 20, KK 22, KK 34	214, 286	**89**
KK 23	214, 286	**123,5**
KH 10, KH 11	358 - 790	**45**
KH 20, KH 22	358 - 790	**89**

Schematic diagram

positions of the insertion (push-in) brackets

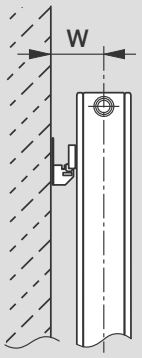
KS models



Schematic diagram

Wall clearance: WA 10 and WA 11 wall mounting brackets for the KS models

Connection – wall clearance

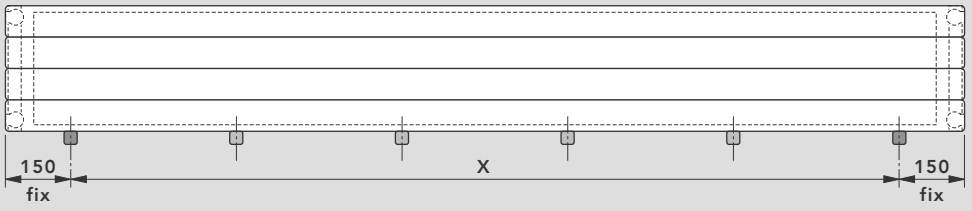


Wall mounting type	vertical design	Measure **W** [mm]
WA 10	KS 10/11*	**35**
WA 10	KS 20/21	**79,5**
WA 11	KS 10/11*	**45**
WA 11	KS 20/21	**89,5**

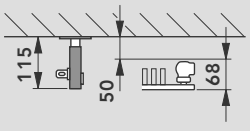
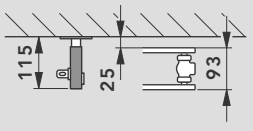
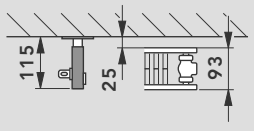
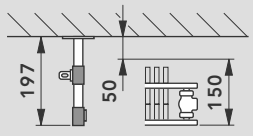
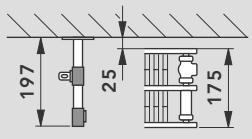
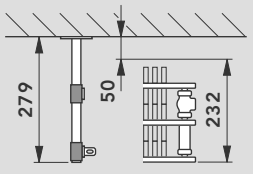
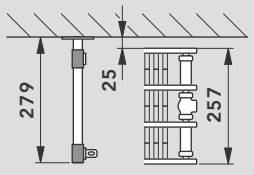
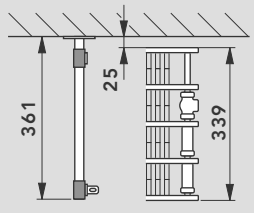
***Note:** if you are installing the KS 10 and KS 11 models with a right-angleddesign connection, please use the appropriate drilling consoles or angle-fishplate mounting brackets, to achieve the required wall clearance.

Schematic diagram

Wall consoles WK 10 – 13: positioning for KK models (convectors)

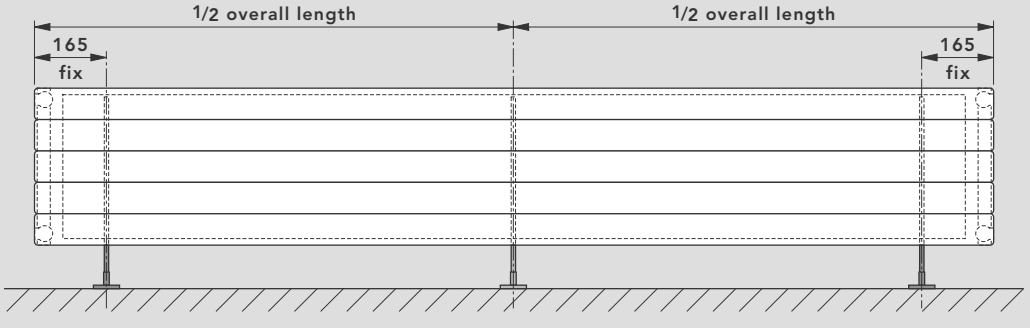


Note: when using more than 2 wall consoles the additional wall consoles must be placed at regular intervals along the line X.

WK 10 wall console			WK 11 wall console
KK 11	KK 20	KK 22	KK 23
			
WK 11 wall console	**WK 12 wall console**		**WK 13 wall console**
KK 34	KK 35	KK 46	KK 58
			

Schematic diagram

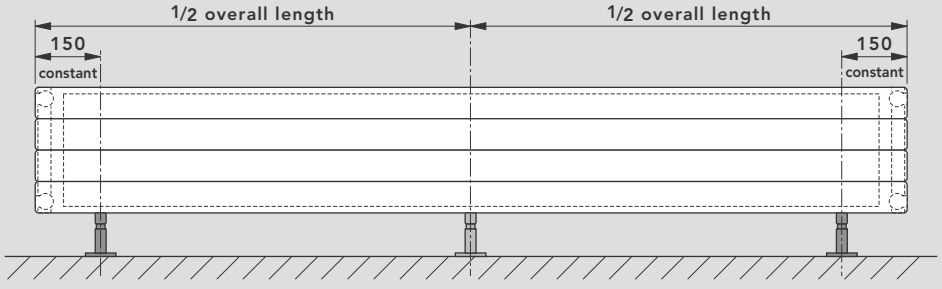
Stand consoles SK 22 and SK 23: positioning for KH models (horizontal design heating panels)



Note: for an overall length of **2200 mm** and greater, a 3rd stand console must be used!

Schematic diagram

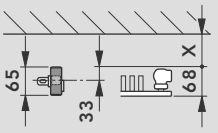
Stand consoles SK 10 - 19: positioning for KK / KK-S models



Note: for an overall length of 2200 mm and greater, a 3rd stand console must be used!

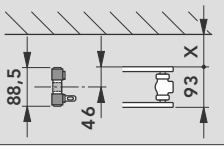
SK 10 / SK 11

KK 11



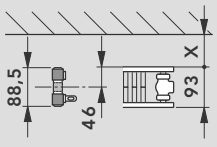
SK 12 / SK 13

KK 20

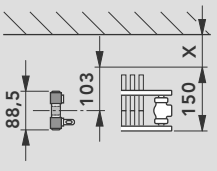


SK 12 / SK 13

KK 22

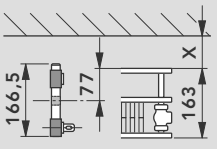


KK 23

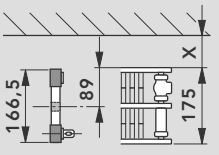


SK 14 / SK 15

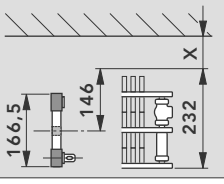
KK-S 22



KK 34

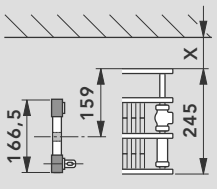


KK 35



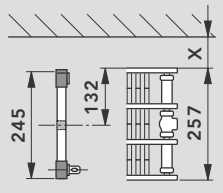
SK 14 / SK 15

KK-S 34



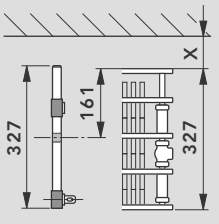
SK 16 / SK 17

KK 46

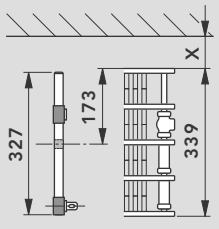


SK 18 / SK 19

KK-S 47



KK 58

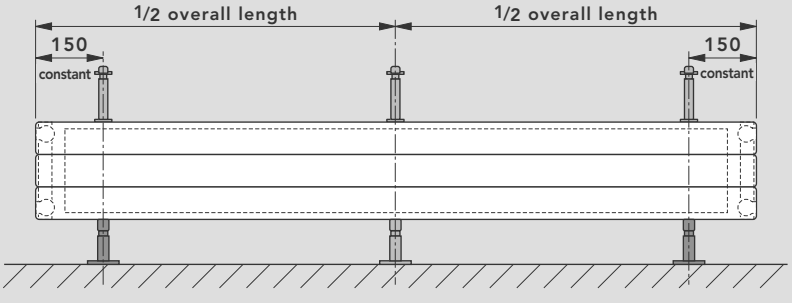


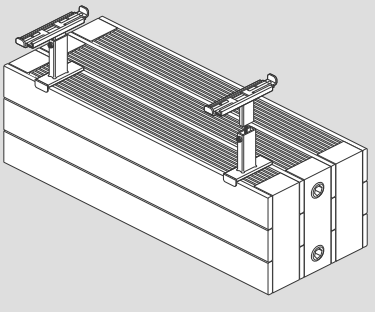
Measurement X:
chosen distance between the wall or window surface and the back of the convector.

Schematic diagram

Window sill support FBT 20: positioning for KK / KK-S models

Window sill support for subsequent installation with the **KK / KK-S 22 – 58** models of **KONTEC** convectors



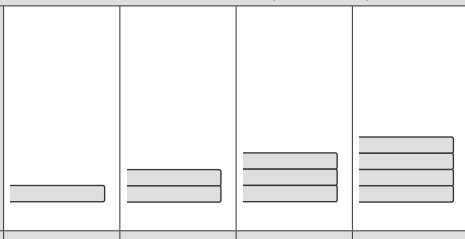


Note: for an overall length of more than **2200 mm**, a 3rd window sill support must be used!

Schematic diagram

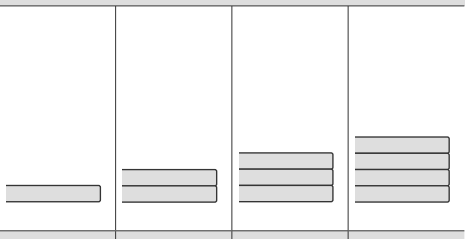
Heating output in compliance with **DIN EN 442**, and **ÖNORM EN 442,** at **75/65/20° C**

Side panels and top cover are included in the heat output specifications



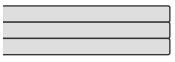
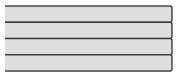
Overall height [mm]	70	142	214	286
Increments	As regards all overall lengths between 500 and 1400 mm, use increments of 100 mm, and overall lengths between 1600 and 2400 mm, use increments of 200 mm.			
Model			KK 11*	KK 11*
Overall depth [mm]			68	68
Watts / m 75/65/20			464	577
Watts / m 70/55/20			374	464
Watts / m 55/45/20			236	291
Water content l / m			1,67	2,22
Weight kg / m			11,14	14,51
Radiator exponent **n**			1,32	1,34
Model		KK 20	KK 20	KK 20
Overall depth [mm]		93	93	93
Watts / m 75/65/20		304	440	561
Watts / m 70/55/20		249	359	458
Watts / m 55/45/20		161	232	296
Water content l / m		2,18	3,34	4,44
Weight kg / m		9,26	13,27	17,28
Radiator exponent **n**		1,24	1,25	1,25
Model	KK 22	KK 22	KK 22	KK 22
Overall depth [mm]	93	93	93	93
Watts / m 75/65/20	424	641	838	1032
Watts / m 70/55/20	345	519	674	825
Watts / m 55/45/20	222	330	423	510
Water content l / m	1,10	2,18	3,34	4,44
Weight kg / m	7,34	13,97	20,59	27,23
Radiator exponent **n**	1,27	1,30	1,34	1,38
Model	KK-S 22	KK-S 22	KK-S 22	KK-S 22
Overall depth [mm]	163	163	163	163
Watts / m 75/65/20	424	641	838	1032
Watts / m 70/55/20	345	519	674	825
Watts / m 55/45/20	222	330	423	510
Water content l / m	1,10	2,18	3,34	4,44
Weight kg / m	10,53	19,43	28,34	37,24
Radiator exponent **n**	1,27	1,30	1,34	1,38

* For aesthetic reasons these models should not be fitted in front of a window.

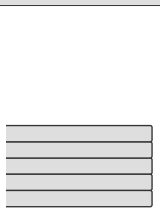
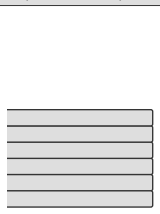
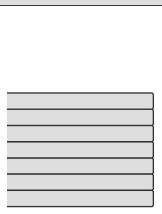
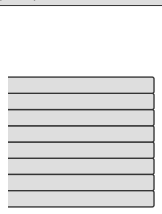
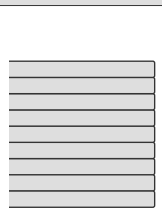
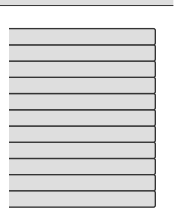


Overall height [mm]	70	142	214	286
Increments	As regards all overall lengths between 500 and 1400 mm, use increments of 100 mm, and overall lengths between 1600 and 2400 mm, use increments of 200 mm.			
Model	KK 23*	KK 23*	KK 23*	KK 23*
Overall depth [mm]	150	150	150	150
Watts / m 75/65/20	524	797	1035	1261
Watts / m 70/55/20	427	645	832	1008
Watts / m 55/45/20	275	410	522	623
Water content l / m	1,10	2,18	3,34	4,44
Weight kg / m	9,20	17,02	24,84	32,66
Radiator exponent **n**	1,26	1,30	1,34	1,38
Model	KK 34	KK 34	KK 34	KK 34
Overall depth [mm]	175	175	175	175
Watts / m 75/65/20	661	1050	1394	1723
Watts / m 70/55/20	545	856	1123	1377
Watts / m 55/45/20	360	552	707	851
Water content l / m	1,68	3,33	4,99	6,66
Weight kg / m	12,68	23,93	35,18	46,42
Radiator exponent **n**	1,19	1,26	1,33	1,38
Model	KK-S 34	KK-S 34	KK-S 34	KK-S 34
Overall depth [mm]	245	245	245	245
Watts / m 75/65/20	661	1050	1394	1723
Watts / m 70/55/20	545	856	1123	1377
Watts / m 55/45/20	360	552	707	851
Water content l / m	1,68	3,33	4,99	6,66
Weight kg / m	15,87	29,39	42,92	56,44
Radiator exponent **n**	1,19	1,26	1,33	1,38

* For aesthetic reasons these models should not be fitted in front of a window.

Heating output in compliance with **DIN EN 442**, and **ÖNORM EN 442,** at **75/65/20° C**				
Side panels and top cover are included in the heat output specifications				
				
Overall height [mm]	**70**	**142**	**214**	**286**
Increments	As regards all overall lengths between 500 and 1400 mm, use increments of 100 mm, and overall lengths between 1600 and 2400 mm, use increments of 200 mm.			
Model	**KK 35***	**KK 35***	**KK 35***	**KK 35***
Overall depth [mm]	**232**	**232**	**232**	**232**
Watts / m 75/65/20	809	1197	1651	1971
Watts / m 70/55/20	661	971	1326	1570
Watts / m 55/45/20	429	619	828	964
Water content l / m	1,69	3,33	4,99	6,66
Weight kg / m	14,54	26,98	39,42	51,86
Radiator exponent **n**	1,24	1,29	1,35	1,40
Model	**KK 46**	**KK 46**	**KK 46**	**KK 46**
Overall depth [mm]	**257**	**257**	**257**	**257**
Watts / m 75/65/20	950	1454	2072	2447
Watts / m 70/55/20	778	1117	1661	1949
Watts / m 55/45/20	507	748	1034	1197
Water content l / m	2,26	4,53	6,79	9,06
Weight kg / m	18,02	33,89	49,76	65,62
Radiator exponent **n**	1,23	1,30	1,36	1,40
Model	**KK-S 47**	**KK-S 47**	**KK-S 47**	**KK-S 47**
Overall depth [mm]	**327**	**327**	**327**	**327**
Watts / m 75/65/20	986	1522	2302	2667
Watts / m 70/55/20	817	1240	1846	2128
Watts / m 55/45/20	545	800	1149	1311
Water content l / m	2,26	4,53	6,79	9,06
Weight kg / m	22,04	41,27	60,50	79,74
Radiator exponent **n**	1,16	1,26	1,36	1,39
Model	**KK 58**	**KK 58**	**KK 58**	**KK 58**
Overall depth [mm]	**339**	**339**	**339**	**339**
Watts / m 75/65/20	1023	1659	2592	3022
Watts / m 70/55/20	849	1354	2081	2411
Watts / m 55/45/20	569	876	1301	1486
Water content l / m	2,83	5,68	8,52	11,36
Weight kg / m	23,36	43,85	64,34	85,82
Radiator exponent **n**	1,15	1,25	1,35	1,39

* For aesthetic reasons these models should not be fitted in front of a window.

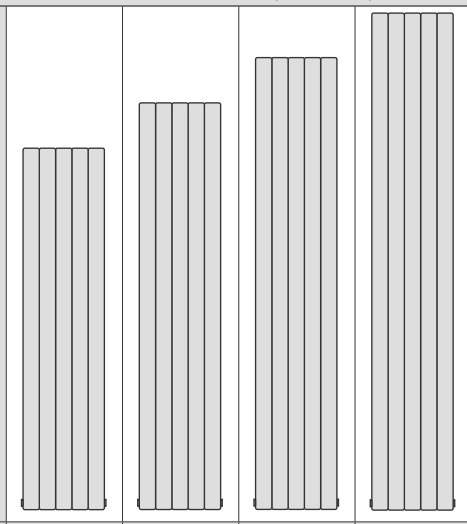
Heating output in compliance with **DIN EN 442**, and **ÖNORM EN 442,** at **75/65/20° C**						
Side panels and top cover are included in the heat output specifications						
						
Overall height [mm]	**358**	**430**	**502**	**574**	**646**	**790**
Increments	As regards all overall lengths between 500 and 1400 mm, use increments of 100 mm, and overall lengths between 1600 and 2400 mm, use increments of 200 mm.					
Model	**KH 10**	**KH 10**	**KH 10**	**KH 10**	**KH 10**	**KH 10**
Overall depth [mm]	**68**	**68**	**68**	**68**	**68**	**68**
Watts / m 75/65/20	394	458	523	588	655	795
Watts / m 70/55/20	322	374	427	480	534	647
Watts / m 55/45/20	209	243	276	311	344	416
Water content l / m	2,76	3,33	3,87	4,44	4,99	6,12
Weight kg / m	11,91	14,04	16,17	18,29	20,43	24,68
Radiator exponent **n**	1,24	1,24	1,25	1,25	1,26	1,27
Model	**KH 11***	**KH 11***	**KH 11***	**KH 11***	**KH 11***	**KH 11***
Overall depth [mm]	**68**	**68**	**68**	**68**	**68**	**68**
Watts / m 75/65/20	667	760	845	921	989	1105
Watts / m 70/55/20	540	615	683	743	797	889
Watts / m 55/45/20	344	391	433	470	503	558
Water content l / m	2,78	3,33	3,87	4,44	4,99	6,12
Weight kg / m	16,71	19,85	22,99	26,15	29,29	33,55
Radiator exponent **n**	1,30	1,30	1,31	1,32	1,32	1,34
Model	**KH 20**	**KH 20**	**KH 20**	**KH 20**	**KH 20**	**KH 20**
Overall depth [mm]	**93**	**93**	**93**	**93**	**93**	**93**
Watts / m 75/65/20	654	757	859	960	1063	1271
Watts / m 70/55/20	533	617	699	781	863	1032
Watts / m 55/45/20	344	398	449	502	553	661
Water content l / m	5,55	6,66	7,77	8,88	9,99	12,22
Weight kg / m	21,29	25,30	29,31	33,31	37,32	45,33
Radiator exponent **n**	1,26	1,26	1,27	1,27	1,28	1,28
Model	**KH 22**	**KH 22**	**KH 22**	**KH 22**	**KH 22**	**KH 22**
Overall depth [mm]	**93**	**93**	**93**	**93**	**93**	**93**
Watts / m 75/65/20	1197	1343	1474	1592	1699	1886
Watts / m 70/55/20	963	1079	1182	1274	1357	1500
Watts / m 55/45/20	605	675	736	790	838	919
Water content l / m	5,55	6,66	7,77	8,88	9,99	12,22
Weight kg / m	30,89	36,93	42,96	49,01	55,05	63,06
Radiator exponent **n**	1,34	1,35	1,36	1,37	1,38	1,41

* For aesthetic reasons these models should not be fitted in front of a window.

heating outputs

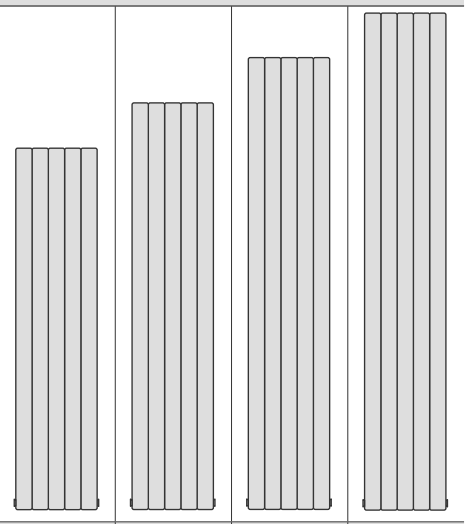
Heating output in compliance with **DIN EN 442**, and **ÖNORM EN 442,** at **75/65/20° C**

Side panels and top cover are included in the heat output specifications



Overall height [mm]	1600	1800	2000	2200
Overall length [mm]	142, 214, 286, 358, 430, 502, 574, 646, 718, 790, 862			
Type	**KS 10**	**KS 10**	**KS 10**	**KS 10**
Overall depth	68	68	68	68
Watts / m 75/65/20	1738	1979	2232	2495
Watts / m 70/55/20	1384	1577	1781	1994
Watts / m 55/45/20	850	968	1097	1233
Water content l / m	11,37	12,47	13,85	15,24
Weight kg / m	44,45	49,60	54,75	59,70
Radiator exponent **n**	1,40	1,40	1,39	1,38
Type	**KS 11**	**KS 11**	**KS 11**	**KS 11**
Overall depth	68	68	68	68
Watts / m 75/65/20	1979	2209	2450	2701
Watts / m 70/55/20	1584	1768	1964	2173
Watts / m 55/45/20	983	1097	1223	1362
Water content l / m	11,37	12,47	13,85	15,24
Weight kg / m	63,39	68,53	73,69	78,83
Radiator exponent **n**	1,37	1,37	1,36	1,34

* For aesthetic reasons these models should not be fitted in front of a window.



Overall height [mm]	1600	1800	2000	2200
Overall length [mm]	142, 214, 286, 358, 430, 502, 574, 646, 718, 790, 862			
Type	**KS 20**	**KS 20**	**KS 20**	**KS 20**
Overall depth	93	93	93	93
Watts / m 75/65/20	2932	3301	3672	4046
Watts / m 70/55/20	2332	2629	2929	3233
Watts / m 55/45/20	1427	1615	1805	1999
Water content l / m	22,74	24,34	27,71	30,48
Weight kg / m	85,44	95,46	105,48	115,50
Radiator exponent **n**	1,41	1,40	1,39	1,38
Type	**KS 21**	**KS 21**	**KS 21**	**KS 21**
Overall depth	93	93	93	93
Watts / m 75/65/20	3184	3588	4012	4455
Watts / m 70/55/20	2536	2857	3206	3572
Watts / m 55/45/20	1557	1755	1983	2224
Water content l / m	22,74	24,34	27,71	30,48
Weight kg / m	104,37	114,39	124,42	134,44
Radiator exponent **n**	1,40	1,40	1,38	1,36

* For aesthetic reasons these models should not be fitted in front of a window.

REPLACEMENT
USING CONVECTORS & HEATING PANELS

Connections:
2 x 1/2“internal thread, welded on, for flow and return, venting and drainage, according to the customer’s specifications.

Maximum positive operating pressure:
Standard design: 5 bar

Maximum positive operating pressure:
High-pressure design: 8 bar

Maximum operating temperature:110 °C

Guarantee statements are available to download at **www.vogelundnoot.com/download**

Convectors & heating panels are radiators in a completely welded design, with 2 or 3 water-bearing rectangular steel pipes arranged behind each other and 4 or 8 on top of each other. Between the heating pipes there is a gap of 2 mm in order to ensure high resistance to corrosion. Each convector or heating wall is equipped with side panels and a top cover. They are also supplied with a drain plug and a pivotable vent plug, all of the factory sealed.

Painting:
1. Primer coat with electro-dip coating using water-soluble paint, in acc. with DIN 55900, part 1, stoved at 165 °C.
2. Electrostatic finish in acc. with DIN 55900, part 2, in RAL 9016 (on request in many RAL and Sanitary Ware colours), in a state-of-the-art powder coating plant.The especially robust coating is stoved at an object temperature of 180 °C.

Standard design:
Rectangular steel pipes: 70 x 11 x 1.5 mm
High-pressure version:
Rectangular steel pipes: 70 x 11 x 2 mm
Please note: surcharge of 10%

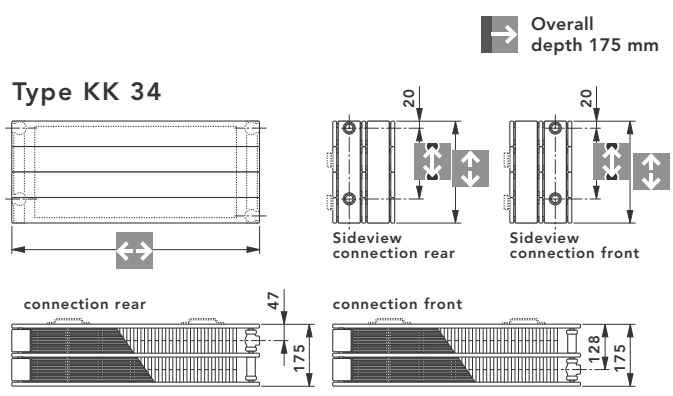
Packaging:
1. Cardboard
2. Edge protection
3. Shrink foil

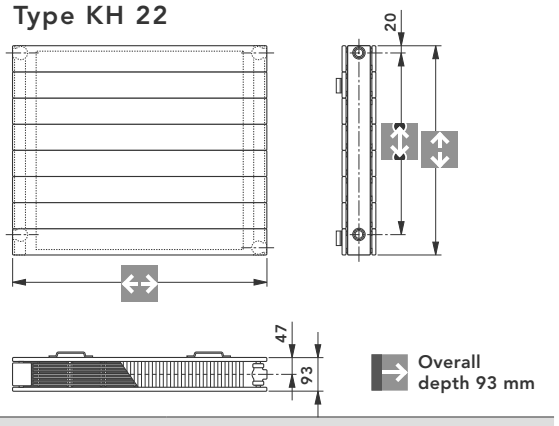
KONTEC Replacement radiator

heating outputs

Heating output in compliance with DIN EN 442, and ÖNORM EN 442, at 75/65/20° C

Side panels and top cover are included in the heat output specifications





Overall height [mm]	286			574		
Boss spacing NA [mm]	200			500		
Model	**KK 34**			**KH 22**		
Overall length [mm]	heating outputs [Watts]	Water content [Liter]	Weight [Kg]	heating outputs [Watts]	Water content [Liter]	Weight [Kg]
500	862	3,33	23,21	796	4,44	24,51
600	1034	4,00	27,85	955	5,33	29,41
700	1206	4,66	32,49	1114	6,22	34,31
800	1378	5,33	37,14	1274	7,10	39,21
900	1551	5,99	41,78	1433	7,99	44,11
1000	1723	6,66	46,42	1592	8,88	49,01
1100	1895	7,33	51,06	1751	9,77	53,91
1200	2068	7,99	55,70	1910	10,66	58,81
1300	2240	8,66	60,35	2070	11,54	63,71
1400	2412	9,32	64,99	2229	12,43	68,61
1600	2757	10,66	74,27	2547	14,21	78,42
1800	3101	11,99	83,56	2866	15,98	88,22
2000	3446	13,32	92,84	3184	17,76	98,02
2200	3791	14,65	102,12	3502	19,54	107,82
2400	4135	15,98	111,41	3821	21,31	117,62
Radiator exponent **n**	**1,38**			**1,37**		

Simplified procedure for the domain of standard and low-temperature (ST/LT)

The conversion factors in the table state to which extent the heat emission has to be altered under other operating conditions, compared to the following standard-design data:

supply temperature t_1 **75 °C**
return temperature t_2 **65 °C**
room temperature t_r **20 °C**

Because an average exponent of 1.3 has been used for both the calculation of the performance data and the specification of the conversion factor, a slight performance variation from the calculated value is possible.

The standard heat emission Φ_S of a radiator covering the required heat $\Phi_{HL,i}$ at the chosen operating conditions, is calculated according to the formula:

$$\Phi_S = \Phi_{HL,i} \times f$$

Φ_S = standard heat emission, in accordance with EN 442
$\Phi_{HL,i}$ = required heat, in accordance with EN 12831
f = conversion factor from the table

Example:
The required heat of a room is 1000 W, in accordance with EN 12831.

Design data: t_1 50 °C, t_2 40 °C, t_r 20 °C

Factor **f** according to the table = **2.50**

Supply temperature °C	Return temperature °C	Room temperature °C 12	15	18	20	22	24	26
90	80	0,61	0,64	0,68	0,71	0,74	0,77	0,81
	70	0,67	0,72	0,76	0,80	0,83	0,87	0,91
80	70	0,74	0,79	0,84	0,88	0,93	0,97	1,03
	60	0,83	0,89	0,96	1,01	1,07	1,13	1,20
	50	0,96	1,04	1,13	1,20	1,28	1,37	1,47
75	**65**	0,82	0,88	0,95	**1,00**	1,05	1,12	1,18
	60	0,88	0,94	1,02	1,08	1,14	1,21	1,29
	55	0,94	1,01	1,10	1,17	1,24	1,32	1,42
70	65	0,87	0,94	1,01	1,07	1,13	1,19	1,27
	60	0,93	1,00	1,08	1,15	1,22	1,30	1,39
	55	0,99	1,08	1,17	1,25	1,33	1,42	1,53
	50	1,07	1,17	1,28	1,37	1,47	1,58	1,71
65	60	0,98	1,07	1,16	1,23	1,31	1,40	1,50
	55	1,05	1,15	1,26	1,34	1,43	1,54	1,66
	50	1,14	1,25	1,37	1,47	1,59	1,71	1,86
	45	1,24	1,37	1,52	1,64	1,78	1,94	2,13
60	55	1,13	1,23	1,36	1,45	1,56	1,68	1,82
	50	1,22	1,34	1,48	1,60	1,73	1,87	2,05
	45	1,33	1,47	1,65	1,78	1,94	2,13	2,36
	40	1,47	1,64	1,86	2,03	2,24	2,50	2,80
55	50	1,31	1,45	1,62	1,75	1,90	2,07	2,28
	45	1,43	1,60	1,80	1,96	2,15	2,37	2,64
	40	1,59	1,78	2,03	2,24	2,48	2,78	3,15
	35	1,78	2,03	2,36	2,64	2,99	3,43	4,02
50	45	1,56	1,75	1,98	2,17	2,40	2,67	3,00
	40	1,73	1,96	2,25	2,50	2,79	3,15	3,61
	35	1,94	2,24	2,63	2,96	3,38	3,92	4,64
	30	2,24	2,64	3,20	3,70	4,39	5,39	6,99
45	40	1,90	2,17	2,53	2,83	3,19	3,66	4,25
	35	2,15	2,50	2,96	3,37	3,89	4,58	5,52

$\Phi_S = \Phi_{HL,i} \times f$ = 1000 Watts x 2,50 = 2500 Watts

A radiator has to be installed that emits 2500 W under the standard design (75/65/20).

Exact method for the performance calculation for the domain of standard and low-temperature (ST/LT)

Using the formula $\Phi = \Phi_S \left[\frac{\Delta T}{\Delta T_S}\right]^n$ any performance differing from the standard can be calculated.

Φ = Radiator power [W]
Φ_S = Standard radiator power in accordance with EN 442 [W]
ΔT = Arithmetic radiator excess temperature [K]
ΔT_S = Arithmetic radiator excess temperature 50 K, at a standard state of 75 °C / 65 °C / 20 °C
n = Radiator exponent

Please note: if the condition $c = \frac{t_2 - t_r}{t_1 - t_r} < 0.7$ is met, the excess temperatures will be specified logarithmically.

$$\Delta T_{arithmetic} = \frac{t_1 + t_2}{2} - tr \qquad \Delta T_{logarithmic} = \frac{t_1 - t_2}{\ln \frac{t_1 - t_r}{t_2 - t_r}}$$

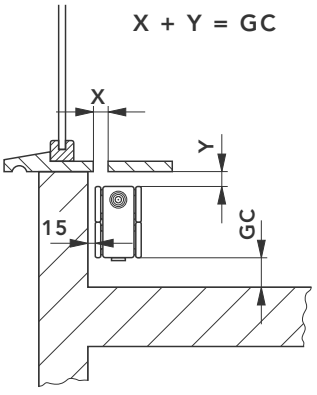
Use our radiator performance calculator under www.vogelundnoot.com

Technical information subject to change.

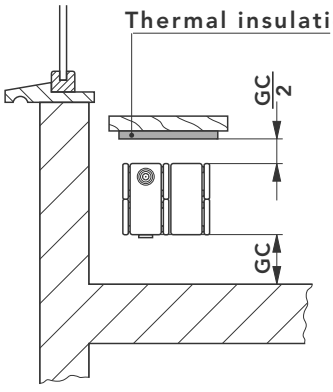
Horizontal design of VONARIS, VONARIS-M and KONTEC

Radiator placement

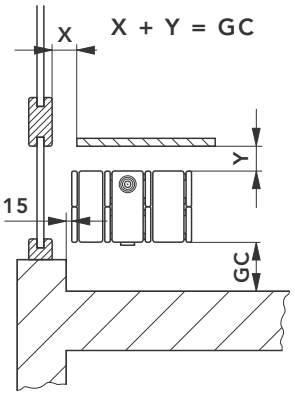
Placement below a window parapet



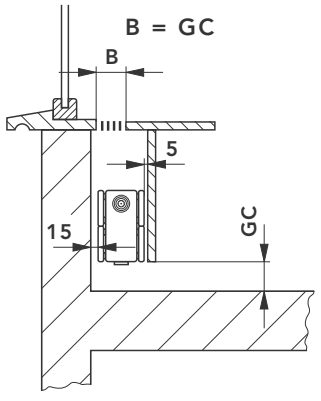
Placement under a bench



Placement behind a glass surface



Placement below a shop window



Schematic diagram

Recommended minimum clearance for convectors

		VONARIS		VONARIS-M		KONTEC	
	GC [mm]	Model	OH [mm]	Model	OH [mm]	Model	OH [mm]
GC = ground clearance in mm The minimum ground clearance recommended here apply for all images on the pages 212 and 213!	60	VHV 11	214, 286	VHV-M 11	214, 286	KK 11	214, 286
	60	VHV 20	142	VHV-M 20	142	KK 20	142
	60	VHV 22	142	VHV-M 22	142	KK 22	70, 142
	70	VHV 23	142	VHV-M 23	142	KK 23	70, 142
	80	VHV 20	214, 286	VHV-M 20	214, 286	KK 20	214, 286
	80	VHV 22	214, 286	VHV-M 22	214, 286	KK 22	214, 286
	90	VHV 23	214, 286	VHV-M 23	214, 286	KK 23	214, 286
	100	VHV 34	142	VHV-M 34	142	KK 34	70, 142
	110	VHV 34	214, 286	VHV-M 34	214, 286	KK 34	214, 286
	120	VHV 35	142	VHV-M 35	142	KK 35	70, 142
	130	VHV 35	214, 286	VHV-M 35	214, 286	KK 35	214, 286
	130	VHV 46	142	VHV-M 46	142	KK 46	70, 142
	130	-	-	-	-	KK 58	70
	140	-	-	-	-	KK 46	214, 286
	140	-	-	-	-	KK 58	142
	150	-	-	-	-	KK 58	214, 286

Horizontal design of VONARIS, VONARIS-M and KONTEC

Radiator placement

Placement behind a screen

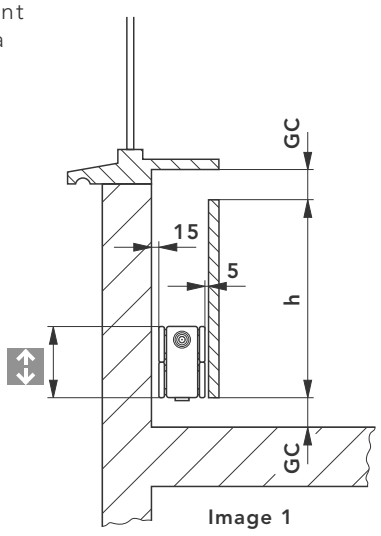


Image 1

Placement behind a desk

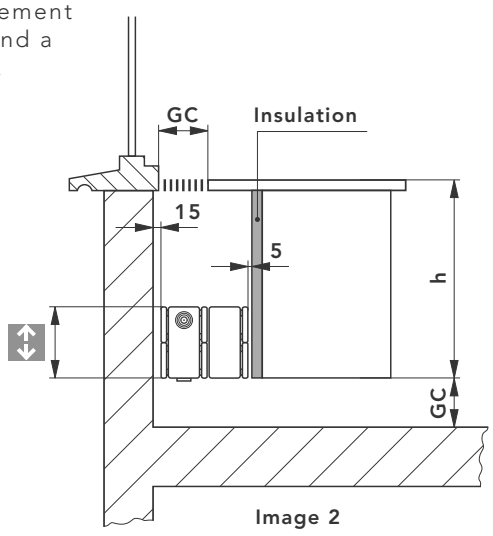


Image 2

Schematische Darstellung

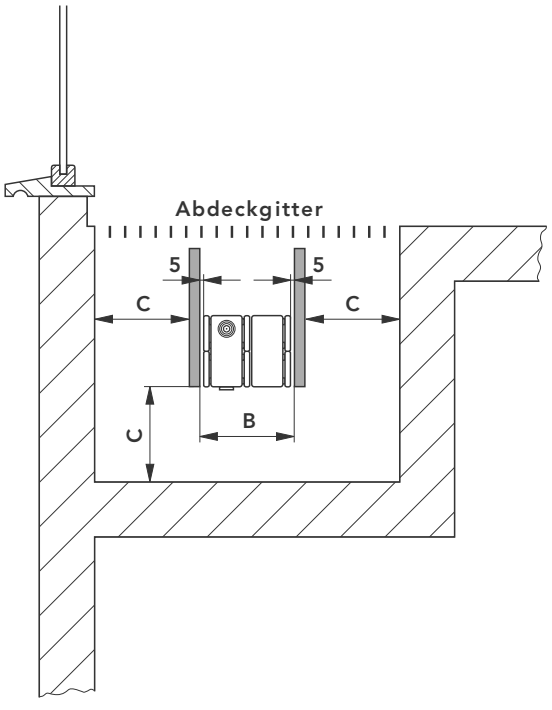
Note:
Screens and desks should be movable so that the radiators and conduits can be cleaned.

Percentage increase of the radiator's heat emission due to the chimney effect, as Illustrated with the placement in picture 1 and picture 2.

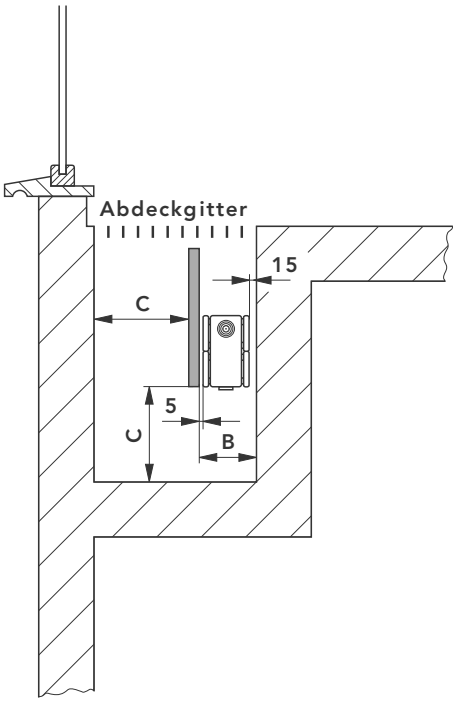
h [mm]	Percentage increase of the heat emission			
	OH 70 mm	OH 142 mm	OH 214 mm	OH 286 mm
150	14	-	-	-
200	20	8	-	-
250	26	12	2	-
300	30	15	6	-
350	33	19	9	3
400	36	22	12	6
450	39	25	15	9
500	41	28	17	11
600	46	32	21	14
700	50	35	24	18
800	-	38	27	21

Horizontal design of VONARIS, VONARIS-M and KONTEC

Placement of the radiators in regard to floor conduits



B = Overall radiator depth + 10 mm
C ≥ B



B = Overall radiator depth + 20 mm
C ≥ B

Schematic diagram

The screening between the radiator surfaces and conduit walls must be made of heat-insulating materials (e. g.: timber, plastics etc.).

Take care that the lower edge of the screening corresponds to the lower edge of the radiator. The top edge of the screening should be fitted as near to the floor conduit cover as possible.

The cover grids of the floor conduit should be designed in a way that the open cross-sectional area amounts to at least 60 %.

We recommend to use cover grids that can easily be taken off in order to facilitate the cleaning of the floor conduit.

The heat emission of radiators installed in floor conduits (subsurface heating) is reduced at about 20 %, compared with the values given in the heat output index.

Guide table for the selection and number of required fastening systems for VONARIS solitary finished radiators

Guide for the selection and number of required stand consoles
for types VHV and VHV-S (WVO design), up to an overall height of 286 mm

Stand consoles for the horizontal design, up to OH 286 mm

Radiator model	VHV 11		VHV 20		VHV 22		VHV-S 22		VHV 23	
↔ Overall lenght [mm]	up to 2000	from 2200	up to 2000	from 2200	up to 2000	from 2200	up to 2000	from 2200	up to 2000	from 2200
SK 10 for finished floors	2	3								
SK 11 for unfinished floors	2	3								
SK 12 for finished floors			2	3	2	3			2	3
SK 13 for unfinished floors			2	3	2	3			2	3
SK 14 for finished floors							2	3		
SK 15 for unfinished floors							2	3		

Radiator model	VHV 34		VHV-S 34		VHV 35		VHV 46		VHV-S 47	
↔ Overall lenght [mm]	up to 2000	from 2200	up to 2000	from 2200	up to 2000	from 2200	up to 2000	from 2200	up to 2000	from 2200
SK 14 for finished floors	2	3	2	3	2	3				
SK 15 for unfinished floors	2	3	2	3	2	3				
SK 16 for finished floors							2	3		
SK 17 for unfinished floors							2	3		
SK 18 for finished floors									2	3
SK 19 for unfinished floors									2	3

Guide for the selection and number of required **stand consoles**
for types VHV 11, VHV 20 and VHV 22

Stand consoles suitable for the horizontal design with or without a heat reflector, for types VHV 11, VHV 20 and VHV 22, with an overall height of 358, 430, 502, 574 and 646 mm

Radiator model	VHV 11		VHV 20		VHV 22	
↔ Overall lenght [mm]	up to 2000	from 2200	up to 2000	from 2200	up to 2000	from 2200
SK 22			2			
SK 22				3		
SK 23	2				2	
SK 23		3				3

Guide table for the selection and number of required fastening systems for VONARIS solitary finished radiators

Guide for the selection and number of required **wall consoles** for types VHV, up to an overall height of 286 mm

Wall consoles for the horizontal design, up to OH 286 mm

Radiator model		VHV 11		VHV 20		VHV 22		VHV 23	
Wall console model		WK 10		WK 10 - M		WK 10 - M		WK 11-M	
Overall length [mm]		between 500 and 2000	between 2200 and 4000	between 500 and 2000	between 2200 and 4000	between 500 and 2000	between 2200 and 4000	between 500 and 2000	between 2200 and 4000
Overall height [mm]	142			2	3	2	3	2	3
	214	2	3	2	3	2	3	2	3
	286	2	3	2	3	2	3	2	3

Radiator model		VHV 34		VHV 35		VHV 35		VHV 35	
Wall console model		WK 11-M		WK 12		WK 12		WK 12	
Overall length [mm]		between 500 and 2000	between 2200 and 4000	between 500 and 2000	between 2200 and 4000	between 500 and 1800	between 2000 and 2600	between 2800 and 3600	between 3800 and 4000
Overall height [mm]	142	2	3	2	3				
	214	2	3	2	3				
	286	2	3			2	3	4	5

Radiator model		VHV 46		VHV 46		VHV 46		VHV 46	
Wall console model		WK 12		WK 12		WK 12		WK 12	
Overall length [mm]		between 500 and 2000	between 2200 and 3000	between 500 and 1800	between 2000 and 2800	3000	between 500 and 1400	between 1600 and 2200	between 2400 and 2800
Overall height [mm]	142	2	3						
	214			2	3	4			
	286					5	2	3	4

Guide table for the selection and number of required fastening systems for VONARIS solitary finished radiators

Guide for the selection and number of required **VONOFIX rapid installation consoles** for types VHV 20, VHV 22 and VHV 34

VONOFIX rapid installation consoles for overall heights of 214, 286, 358, 430, 502, 574, 646 and 790 mm

Radiator model		VHV 20		VHV 22		VHV 34	
Overall length [mm]		up to 2000	from 2200 with foot console	up to 2000	from 2200 with foot console	up to 2000	from 2200 with foot console
Overall height [mm]	VONOFIX 1 (set for 214)	1	1	1	1	1	1
	VONOFIX 2 (set for 286)	1	1	1	1	1	1
	VONOFIX 2 (set for 358)	1	1	1	1		
	VONOFIX 3 (set for 430)	1	1	1	1		
	VONOFIX 3 (set for 502)	1	1	1	1		
	VONOFIX 4 (set for 574)	1	1	1	1		
	VONOFIX 4 (set for 646)	1	1	1	1		
	VONOFIX 5 (set for 790)	1	1	1	1		

Guide table for the selection and number of required fastening systems for VONARIS solitary finished radiators

Guide for the selection and number of required **VONOFIX rapid installation consoles** for types VSV 10, VSV 11, VSV 20 and VSV 21

Wall mounting brackets for the vertical design

Radiator model	VSV 10		VSV 11		VSV 20		VSV 21	
Overall length [mm]	214	ab 286	214	ab 286	214	ab 286	214	ab 286
WA 10, set	1		1		1		1	
WA 11, set of 2		1		1		1		1

Guide table for the selection and number of required fastening systems for VONARIS central connection radiators

Guide for the selection and number of required **stand consoles** for types VHV-M up to an overall height of 286 mm.

Stand consoles for the horizontal design, up to OH 286 mm

Radiator model	VHV-M 22		VHV-M S 22		VHV-M 34		VHV-M 46		VHV-M S 46	
Overall length [mm]	up to 2000	from 2200	up to 2000	from 2200	up to 2000	from 2200	up to 2000	from 2200	up to 2000	from 2200
SK 12 for finished floors	2	3								
SK 13 for unfinished floors	2	3								
SK 14 for finished floors			2	3	2	3				
SK 15 for unfinished floors			2	3	2	3				
SK 16 for finished floors							2	3		
SK 17 for unfinished floors							2	3		
SK 18 for finished floors									2	3
SK 19 for unfinished floors									2	3

Guide table for the selection and number of required fastening systems for VONARIS central connection radiators

Guide for the selection and number of required **wall fastening brackets** for types VSV-M 10, VSV-M 11, VSV-M 20 and VSV-M 21

Wall fastening brackets for the vertical design

Radiator model		VHV-M 22		VHV-M 34		VHV-M 46	
Wall console model		WK 10 - M		WK 11 - M		WK 12	
Overall length [mm]		between 500 and 2000	between 2200 and 2400	between 500 and 2000	between 2000 and 2400	between 500 and 2000	between 2200 and 2400
Overall height [mm]	142	2	3				
	214			2	3	4	
	286					5	2

Guide table for the selection and number of required fastening systems for VONARIS central connection radiators

Guide for the selection and number of required **VONOFIX rapid installation consoles** for types VHV-M 20, VHV-M 22 and VHV-M 34

VONOFIX rapid installation consoles for overall heights of 214, 286, 358, 430, 502, 574, 646 and 790 mm

Radiator model		VHV-M 20		VHV-M 22		VHV-M 34	
↔ Overall length [mm]		up to 2000	from 2200 with foot console	up to 2000	from 2200 with foot console	up to 2000	from 2200 with foot console
Overall height ↕ [mm]	VONOFIX 1 (set for 214)			1	1	1	1
	VONOFIX 2 (set for 286)			1	1	1	1
	VONOFIX 2 (set for 358)	1	1	1	1		
	VONOFIX 3 (set for 430)	1	1	1	1		
	VONOFIX 3 (set for 502)	1	1	1	1		
	VONOFIX 4 (set for 574)	1	1	1	1		
	VONOFIX 4 (set for 646)	1	1	1	1		
	VONOFIX 5 (set for 718)	1	1	1	1		
	VONOFIX 5 (set for 790)	1	1	1	1		

Guide for the selection and number of required **wall fastening brackets** for types VSV-M 10, VSV-M 11, VSV-M 20 and VSV-M 21

Wall fastening brackets for the vertical design

Radiator model	VSV-M 10*		VSV-M 11*		VSV-M 20		VSV-M 21	
↔ Overall length [mm]	214	ab 286	214	ab 286	214	ab 286	214	ab 286
WA 10, set	1		1		1		1	
WA 11, set of 2		1		1		1		1

***Note:** when installing the VSV-M 10 and VSV-M 11 models with an angled connection set (**ZE**, **EE**), please use the appropriate drill consoles and angled fishplates to ensure that the required distance from the wall is maintained.

Guide table for the selection and number of required fastening systems for KONTEC convectors

Guide for the selection and number of required **stand consoles** for **KONTEC convectors**, types KK and KK-S (WVO design)

Stand consoles for convectors **without brackets**

Radiator model	KK 11		KK 20		KK 22		KK-S 22	
↔ Overall length [mm]	up to 2000	from 2200	up to 2000	from 2200	up to 2000	from 2200	up to 2000	from 2200
SK 10 for finisched floors	2	3						
SK 11 for unfinished floors	2	3						
SK 12 for finisched floors			2	3	2	3		
SK 13 for unfinished floors			2	3	2	3		
SK 14 for finisched floors							2	3
SK 15 for unfinished floors							2	3

Guide table for the selection and number of required fastening systems for KONTEC convectors

Guide for the selection and number of required **stand consoles** for **KONTEC convectors**, types KK and KK-S (WVO design)

Stand consoles for convectors **without brackets**

Radiator model	KK 23		KK 34		KK-S 34		KK 35	
Overall length [mm]	up to 2000	from 2200	up to 2000	from 2200	up to 2000	from 2200	up to 2000	from 2200
SK 12 for finished floors	**2**	**3**						
SK 13 for unfinished floors	**2**	**3**						
SK 14 for finished floors			**2**	**3**	**2**	**3**	**2**	**3**
SK 15 for unfinished floors			**2**	**3**	**2**	**3**	**2**	**3**

Radiator model	KK 46		KK-S 47		KK 58	
Overall length [mm]	up to 2000	from 2200	up to 2000	from 2200	up to 2000	from 2200
SK 16 for finished floors	**2**	**3**				
SK 17 for unfinished floors	**2**	**3**				
SK 18 for finished floors			**2**	**3**	**2**	**3**
SK 19 for unfinished floors			**2**	**3**	**2**	**3**

Guide table for the selection and number of required fastening systems for KONTEC convectors

Guide for the selection and number of required wall consoles for KONTEC convectors, type KK

Wall consoles for convectors **without brackets**

Radiator model		KK 11		KK 20		KK 22		KK 23		KK 34	
Wall console model		**WK 10**		**WK 10 - M**		**WK 10 - M**		**WK 11-M**		**WK 11-M**	
Overall length [mm]		between 500 and 2000	between 2200 and 4000	between 500 and 2000	between 2200 and 4000	between 500 and 2000	between 2200 and 4000	between 500 and 2000	between 2200 and 4000	between 500 and 2000	between 2200 and 4000
Overall height [mm]	**70**			**2**	**3**	**2**	**3**	**2**	**3**	**2**	**3**
	142			**2**	**3**	**2**	**3**	**2**	**3**	**2**	**3**
	214	**2**	**3**	**2**	**3**	**2**	**3**	**2**	**3**	**2**	**3**
	286	**2**	**3**	**2**	**3**	**2**	**3**	**2**	**3**	**2**	**3**

Radiator model		KK 35		KK 35		KK 35		KK 46		KK 46	
Wall console model		**WK 12**		**WK 12**		**WK 12**		**WK 12**		**WK 12**	
Overall length [mm]		between 500 and 2000	between 2200 and 4000	between 500 and 1800	between 2000 and 2600	between 2800 and 3600	between 3800 and 4000	between 500 and 2000	between 2200 and 3000	between 500 and 1900	between 2000 and 2800
Overall height [mm]	**70**	**2**	**3**					**2**	**3**		
	142	**2**	**3**					**2**	**3**		
	214	**2**	**3**							**2**	**3**
	286			**2**	**3**	**4**	**5**				

Guide table for the selection and number of required fastening systems for KONTEC convectors

Guide for the selection and number of required **wall consoles** for **KONTEC convectors**, type KK

Wall consoles for convectors **without brackets**

Radiator model		KK 46		KK 46		KK 58		KK 58		KK 58	
Wall console model		WK 12		WK 12		WK 13		WK 13		WK 13	
↔ Overall length [mm]		3000	between 500 and 1400	between 1500 and 2200	between 2400 and 2800	between 500 and 2000	2200	between 500 and 1700	between 1800 and 2200	between 500 and 1100	between 1200 and 1700
Overall height ↕ [mm]	70					2	3				
	142							2	3		
	214	4								2	3
	286	5	2	3	4		6				

Radiator model		KK 58		KK 58		KK 58	
Wall console model		WK 13		WK 13		WK 13	
↔ Overall length [mm]		between 1800 and 2200	between 500 and 800	between 900 and 1300	between 1400 and 1700	between 1800 and 2000	
Overall height ↕ [mm]	70						
	142						
	214	4					
	286		2	3	4	5	

Guide table for the selection and number of required fastening systems for KONTEC convectors

Guide for the selection and number of required fastening systems for KONTEC heating panels

Stand consoles, suitable for horizontal heating panels with or without heat reflector, for types KH 11, KH 20 and KH 22

Radiator model	KH 11		KH 20		KH 22	
↔ Overall length [mm]	up to 2000	from 2200	up to 2000	from 2200	up to 2000	from 2200
SK 22			2			
SK 22				3		
SK 23	2				2	
SK 23		3				3

Guide for the selection and number of required **wall fastening brackets** for vertical **KONTEC** heating panels, type KS

Wall fastening brackets for vertical heating panels

Radiator model	KS 10		KS 11		KS 20		KS 21	
↔ Overall length [mm]	up to 214	from 286	up to 214	from 286	up to 214	from 286	up to 214	from 286
WA 10, set	1		1		1		1	
WA 11, set of 2		1		1		1		1

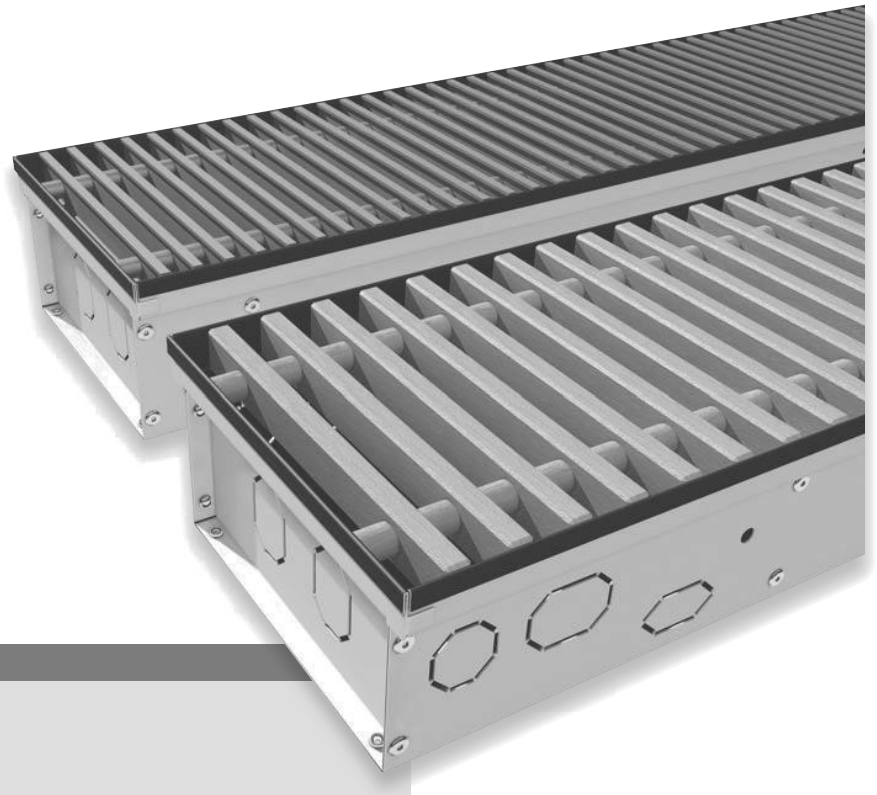
INTRATHERM Trench convectors

Introduction

Benefits

- 3 basic types FMK, F1T and F1P
- Standard design with or without a fan, for two-pipe system
- An unlimited number of non-standard designs (non-standard lengths)
- Trench design without frame; trench design with a U-frame, which obscures the convector trench from view; trench design with an L-frame or Z-frame, which covers the gap between the trench and the floor
- Removable, accessible roll-up grille or rigid linear grille made from anodised aluminium, stainless steel, beech or oak. The wood grilles are treated with oil as standard. The aluminium grille is available in various shades: natural, black, or light or dark bronze
- Black-coated components such as the trench, cover and convection plates ensure that they integrate harmoniously with the look of the room
- The cover plate, which protects the trench during transport and installation, is included in the delivery
- A universal option for installation in living areas, hotels, administrative buildings, shopping centres, airport concourses, motor showrooms, conservatories or swimming pools, to name but a few
- **VOGEL&NOOT** provides its customers with reputable brands that offer the highest standards of quality. The production processes at all of our production sites are ISO-certified. The quality and performance specifications of our underfloor convectors are tested by recognised European institutes. The requirements that these quality hallmarks require us to achieve are there to ensure that the products we supply offer are safe, provide the best heating performance and are of the highest quality
- Easy installation and uninstallation of the heat exchangers and fans
- Safe, low voltage of fan power units (12V)
- Increased performance, extended service life, minimal noise level, reduced electricity consumption and therefore reduced operating costs thanks to the new EC motors

VOGEL&NOOT



Key

- Heating function
- Natural convection
- Forced convection
- Connection to the two-pipe distribution

Contents

FMK 225

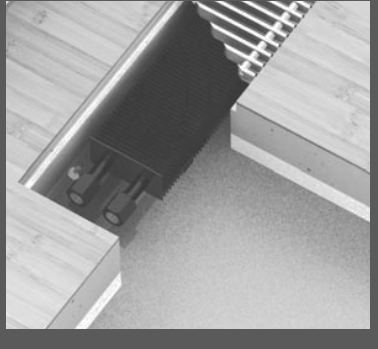
Trench convector with natural convection (without a fan), noiseless operation. The convection plates increase heat output and increase safety when cleaning the convectors. This model is intended for heating.

F1T 229

Trench convector with forced convection (12 V EC cross-flow fan). This variant provides the solution where the FMK is no longer sufficient. This model is also intended for heating.

F1P 234

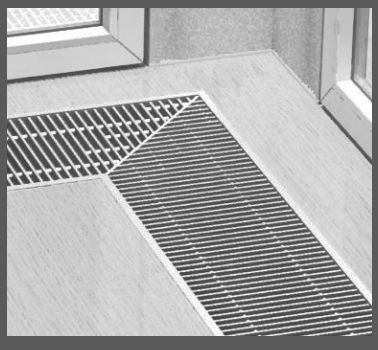
Trench convector with even more powerful forced convection (12 V EC tangential fan), which guarantees even faster delivery of heat. This variant is available for situations requiring a level of performance that exceeds that of the F1T.



Individual heat exchanger – the simplest solution 238

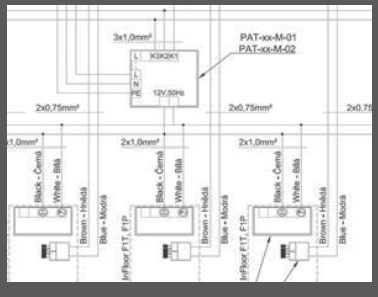
In view of various individual requirements expressed by our customers, we have expanded our product range to include individual heat exchangers that are installed in the Intratherm Trench convectors as standard. The individually installed heat exchangers are suitable for use in reconstructions of cellars, loft spaces or attics, as well as for installation in window sills or for installation in channels or gutters. Brackets for the installation of heat exchangers in floors or in the wall are also supplied as accessories with the heat exchangers.

Contents



Grilles 242

The cover grilles are practically the only visible part of the floor convectors and for this reason a great deal of attention is paid to the material and the finish of the grilles. Apart from this design aspect, the cover grille also performs technical functions – namely accessibility and distribution. The cover grille ensures even load-bearing, which is spread over the edges of the trench onto the base, while at the same time the shape of the bars determines the air flow.



Control, illustrated by circuit diagrams 246

The heat output of the convector can be controlled either by hot water or by air (only in the design with a fan). Quantitative control of the hot water takes place via the thermostatic valve lift (thermostatic head controlled by remote control setting or adjusting drive of the room thermostat).
Control by means of air (F1T and F1P) is effected by the fan revolution speed. The speed of revolutions can be controlled manually or automatically using a room thermostat.

Installation of the Trench convector (instruction sheet) 261

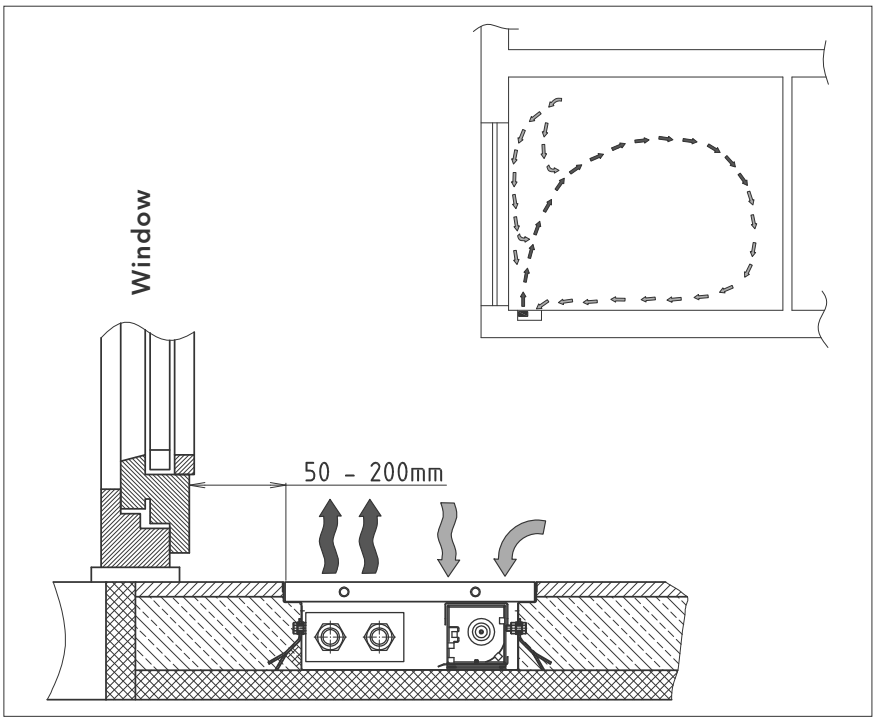
The optimum functioning of the convector depends, of course, on its installation. In order to ensure problem-free operation, it is essential that the system is set correctly and fixed properly to the base. The convectors can be embedded fully in concrete or fixed mechanically in the raised floor.

Conversion Table 258
Pressure loss diagram 259

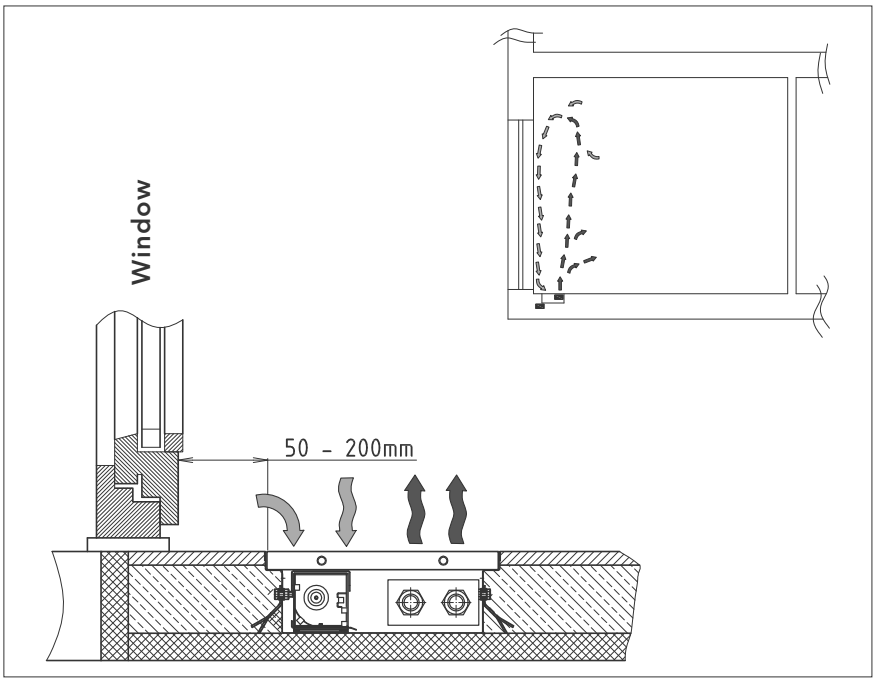
Introduction

The Trench convectors from **VOGEL&NOOT**offer the optimum system-based solution for areas in which the conventional radiator is undesirable for aesthetic reasons or due to space constraints. The Trench convectors are intended for use in hidden installations that are integrated into the floor. In many settings, such conservatories, entrances and office or administrative buildings, more stringent requirements are set with regard to appearance. Thanks to the efficient, low-noise fans, the convectors are able to provide high performance at minimum depths (at least 90 mm) and are therefore ideally suitable for inclusion in renovation works and new-build projects alike. Removable, walkable grilles in a variety of shapes, materials and shades provide a cover for an efficient copper/aluminium heat exchanger (with or without a fan) located in the convector trench.

With a variety of heights, lengths, depths and a number of power variants, the Intratherm series offers the most effective solution, whatever the layout. The fully rust-proof copper-aluminium heat exchanger responds rapidly to the different temperature requirements in the room. The Trench convector counteracts the uncomfortable influx of cold air next to glazed walls, therefore effectively preventing the intrusion of cold air into the room and promoting air circulation even in large rooms.



The positioning of the heat exchanger on the window side is a common variant that ensures even circulation of air within the entire room.



The positioning of the heat exchanger of the convector towards the centre of the room ensures the function of a 'heat barrier' so that cold air close to the window is screened off.

INTRATHERM FMK.

Fan-less convectors that provide natural convection

Imagine a simple, economical and entirely low-noise variant with minimal operating costs. The FMK convectors contain no fan and are intended for heating, based on the principle of free convection by natural air circulation. The heat output of the convector is controlled by a thermostatic valve, which in turn is operated by an adjusting drive (possibly in the form of thermostatic heads that can be set remotely).

- 3 standard heights (90, 110 and 140 mm)
- 5 standard widths (180, 260, 290, 340 and 420 mm)
- Lengths: from 800 mm

Technical specification:
- Heat output, measured in accordance with EN 442
- Test overpressure 13 bar
- Max. operating overpressure 10 bar
- Maximum operating temperature 110 °C

DIN EN EURONORM 442 · EN ISO 9001 · CE · EN 442 GEPRÜFT · 55 45 DIE neue WÄRME

Guarantee statements are available to download at **www.vogelundnoot.com/download**

Intratherm FMK – Fan-less convectors that provide natural convection

Intratherm FMK standard delivery includes:

- A convector trench that is galvanized on both sides and is coated in RAL 9005 Black paint.
- A trench with universally insertable heat exchanger supports, which enable the convector to be connected from the right and the left
- Front and side components of the trench with perforations for the water connection and feeding the cable, enabling the heat exchanger to be connected from the right and the left
- Fully corrosion-proof copper/aluminium heat exchanger with minimal water content, with air vent, coated in RAL 9005 Black
- A pair of convective plates to increase heat output and safety during maintenance
- Cover plate for the water connection
- All trench components coated in RAL 9005 Black as standard
- Wooden cover plate, which protects the convector trench and the heat exchanger during transport and installation
- Accessories supplied as standard: setting screws M8 x 30 for setting the position of the trench, floor screed anchors for the fixing of the trench into concrete, rubber bushings for the perforations, flexible stainless steel connecting hoses with seal, anchor brackets for setting the trench height
- Impact-noise insulation between the grille and the trench

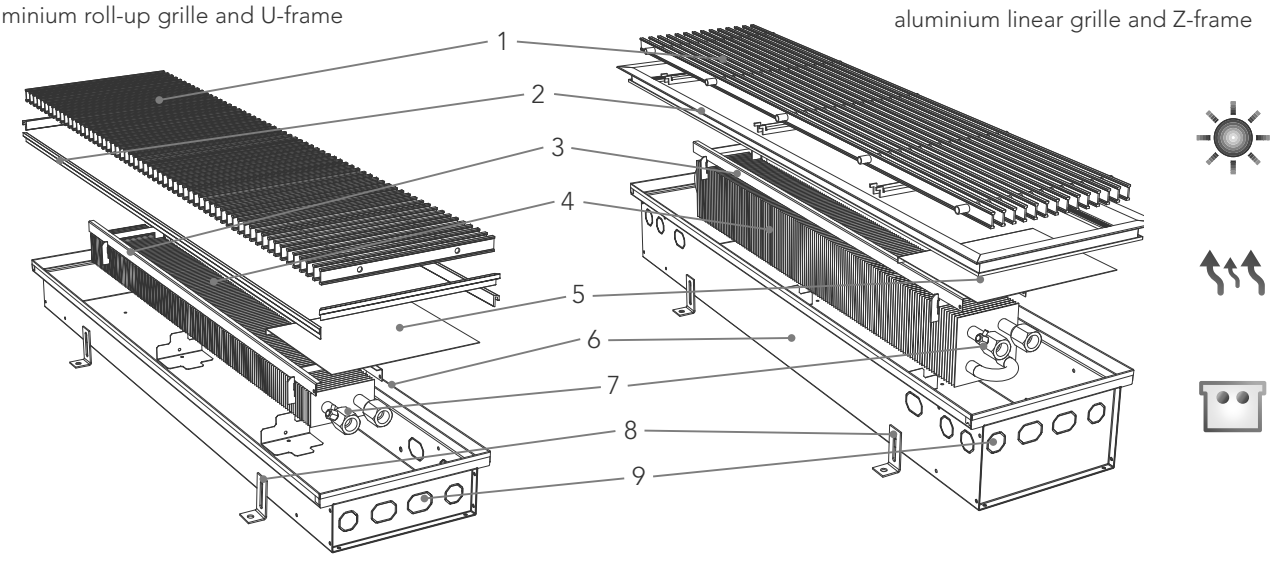
Extras:

- Trench made from brushed stainless steel plate
- Accessories: thermostatic valve, lockshield valve, thermostatic head with remote controller, adjusting drive, room thermostat
- Insulation of the trench floor, three-sided insulation of the trench
- Coatings for the trench, heat exchanger and other components in a different RAL colour

Construction of the Intratherm FMK Trench convector

FMK 260 x 1250 x 90 mm with an aluminium roll-up grille and U-frame

FMK 260 x 1250 x 140 mm with an aluminium linear grille and Z-frame



Key

1 Roll-up grille or linear grille
2 Frame (O, U, L, Z)
3 Convection plate
4 Fins of heat exchanger
5 Cover plate
6 Convector trench
7 Air vent
8 Adjustable anchor brackets
9 Perforations

Due to the nature of their construction, linear grilles are only suitable for the heights 110 mm and 140 mm.

Outputs

Intratherm FMK galvanized – outputs

- Convector lengths are available accurate to within 1 cm
- Lengths over 5 m available upon request

Width (mm)	180			260			290			340			420		
Height (mm)	90	110	140	90	110	140	90	110	140	90	110	140	90	110	140
Length (mm)	Heat output [W] at 75/65/20 °C														
750	116	134	147	152	179	220	156	199	242	201	237	306	253	290	360
900	150	173	190	196	231	285	201	257	313	260	306	397	327	376	466
1000	173	199	219	226	266	328	232	296	361	299	353	457	376	432	537
1100	196	225	248	256	301	371	263	335	408	338	399	517	426	489	607
1200	219	251	277	285	336	414	293	374	456	378	446	577	476	546	678
1250	230	264	291	300	354	436	308	393	480	397	469	607	500	575	713
1300	242	278	305	315	371	458	324	413	503	417	492	637	525	603	749
1400	264	304	334	345	406	501	354	452	551	456	539	697	575	660	819
1500	287	330	363	374	441	544	385	491	598	496	585	757	624	717	890
1700	333	382	421	434	512	630	446	569	693	574	678	877	723	831	1031
1750	344	395	435	449	529	652	461	588	717	594	701	907	748	859	1066
1900	378	435	478	493	582	717	507	647	788	653	771	997	822	945	1172
2000	401	461	507	523	617	760	537	685	836	692	817	1058	872	1002	1243
2100	424	487	536	553	652	803	568	724	883	732	864	1118	921	1058	1313
2250	458	526	579	597	704	868	614	783	955	791	933	1208	996	1144	1419
2300	470	539	594	612	722	889	629	802	978	810	957	1238	1020	1172	1455
2500	515	592	651	672	792	976	690	880	1073	889	1049	1358	1120	1286	1596
2700	561	644	709	731	862	1062	751	958	1168	968	1142	1478	1219	1400	1737
2750	572	657	723	746	879	1084	766	978	1192	987	1166	1508	1243	1428	1772
2900	606	697	767	790	932	1148	812	1036	1263	1046	1235	1598	1318	1514	1878
3000	629	723	795	820	967	1192	843	1075	1311	1086	1282	1658	1367	1571	1949
3100	652	749	824	850	1002	1235	873	1114	1358	1125	1328	1719	1417	1628	2020
3250	686	788	867	894	1055	1300	919	1172	1429	1184	1398	1809	1491	1713	2125
3300	698	801	882	909	1072	1321	934	1192	1453	1204	1421	1839	1516	1741	2161
3500	743	854	939	969	1142	1407	995	1270	1548	1282	1514	1959	1615	1855	2302
3700	789	906	997	1028	1212	1494	1056	1348	1643	1361	1607	2079	1714	1969	2443
3750	812	932	1026	1058	1247	1537	1087	1387	1691	1400	1653	2139	1764	2026	2514
3900	834	958	1055	1088	1282	1580	1117	1425	1738	1440	1700	2199	1813	2083	2584
4000	857	985	1083	1117	1317	1623	1148	1464	1786	1479	1746	2259	1863	2140	2655
4100	880	1011	1112	1147	1352	1666	1178	1503	1833	1519	1792	2319	1912	2197	2726
4250	926	1063	1170	1207	1422	1753	1239	1581	1928	1597	1885	2440	2011	2310	2867
4300	926	1063	1170	1207	1422	1753	1239	1581	1928	1597	1885	2440	2011	2310	2867
4500	971	1115	1228	1266	1493	1839	1300	1659	2023	1676	1978	2560	2110	2424	3008
4700	1017	1168	1285	1325	1563	1926	1361	1737	2118	1755	2071	2680	2209	2538	3149
4750	1040	1194	1314	1355	1598	1969	1392	1776	2166	1794	2118	2740	2259	2595	3220
4900	1062	1220	1343	1385	1633	2012	1423	1815	2213	1833	2164	2800	2308	2652	3291
5000	1085	1246	1372	1415	1668	2055	1453	1854	2261	1873	2210	2860	2358	2709	3361

INTRATHERM FMK

Outputs for stainless steel and wooden grilles/weights and water capacity/dimensions/item numbers

Intratherm FMK – outputs for stainless steel and wooden grille

The maximum length of the convector is unlimited. Convectors over 3500 mm in length can be cr eated by fitting together multiple modules and feature at least two heat exchangers.
For heat output, measured in accordance with EN 442; coefficients for converting heat output – see page 258.

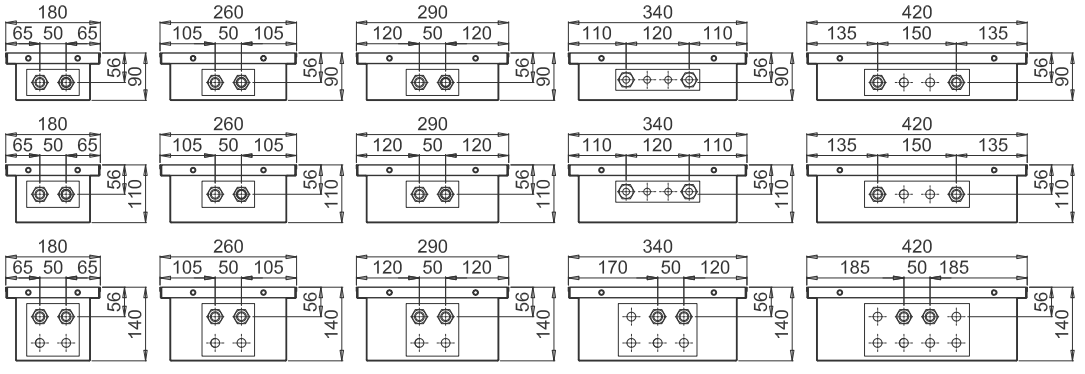
All heat outputs shown relate to the aluminium version. In the case of stainless steel and wooden grilles, the heat output value needs to be multiplied by a correction factor (see adjacent table).

Grille	Free cross-section (%)	Correction factor (-)
Aluminium	0,71	1,00
Wood	0,58	0,95
Stainless steel	0,58	0,95

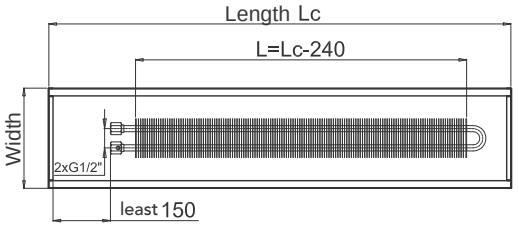
Intratherm FMK – Weight and water capacity

Width (mm)	180			260			290			340			420		
Height (mm)	90	110	140	90	110	140	90	110	140	90	110	140	90	110	140
Weight (kg/m)	5,9	6,1	7,8	6,4	6,7	8,4	6,9	7,1	8,8	8,0	8,3	10,8	9,9	10,2	14,1
Water capacity (l/m)	0,3	0,3	0,7	0,3	0,3	0,7	0,3	0,3	0,7	0,4	0,4	1,0	0,7	0,7	1,4

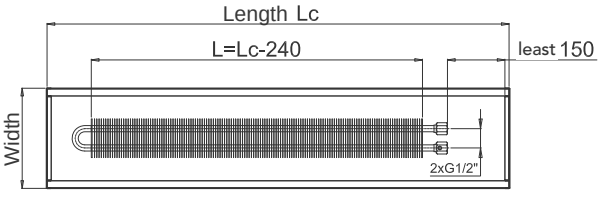
Intratherm FMK – Dimensions



Connection from the left



Connection from the right



The convector connection can be selected at the installation site itself by turning the heat exchanger.

For details regarding control and the recommended circuit diagrams, see page 246.

For a choice of accessories, see price list.

Correction factor for conversion of heat output
For a table with correction factors for converting the heat output, see page 258.

Pressure losses
For diagrams of pressure losses of the heat exchanger for convectors, see page 259.

INTRATHERM F1T.

Efficient basic version with 12 V cross-flow fan (EC motor) for heating

This new generation of Intratherm F1T Trench convectors succeeds the original series of FMT convectors with fans. It offers a cost-effective variant with increased heat output, reduced noise level and minimal operating costs. The length of the fan has been chosen in such a way that the largest possible area of the heat exchanger is supplied with air. The heat output of the convector can be controlled either by hot water or by the air from the fan. All fans are fitted with energy-saving 12 V EC motors.

- 2 standard heights (90 and 140 mm)
- 3 standard widths (260, 290 and 340 mm)
- Lengths from 800 mm

Technical specification:
- Heat output, measured in accordance with EN 442
- Test overpressure 13 bar
- Max. operating overpressure 10 bar
- Maximum operating pressure 110 °C

Benefits of the new technical solution
- Effective use of the space inside the trench
- Optimised length of fan relative to the heat exchanger
- Increase in heat output
- Reduction of the price of the convector, in relation to heat output
- Considerable reduction in electrical power used by the convector
- Considerable reduction in operating costs
- Reduction of the noise level

DIN EN EURONORM 442 · EN ISO 9001 · CE · EN 442 GEPRÜFT · 55 45 DIE neue WÄRME

Guarantee statements are available to download at **www.vogelundnoot.com/download**

Intratherm F1T – efficient basic variant with 12V cross-flow fan (EC motor) for heating

Intratherm F1T standard delivery includes:

- A trench consisting of a plate galvanized on both sides and coated in RAL 9005 Black
- Front and side components of the trench with perforations for the water connection and feeding the cable, which enable the heat exchanger and fan to be connected from the right and the left
- Fully corrosion-proof copper/aluminium heat exchanger with minimal water content, with air vent, coated in RAL 9005 Black
- Cross-flow fan with 12 V EC motor
- EC fan drive with minimal electrical consumption
- Cover plate for the water connection
- All trench components coated in RAL 9005 Black as standard
- Wooden cover plate, which protects the trench, the heat exchanger and the fan during transport and installation
- Accessories supplied as standard: setting screws M8 x 30 for setting the position of the trench, floor screed anchors for the fixing of the trench into the concrete, rubber bushings for the perforations, flexible stainless steel connecting hoses with seal, anchor brackets for setting the trench height
- Impact-noise insulation between the grille and the trench

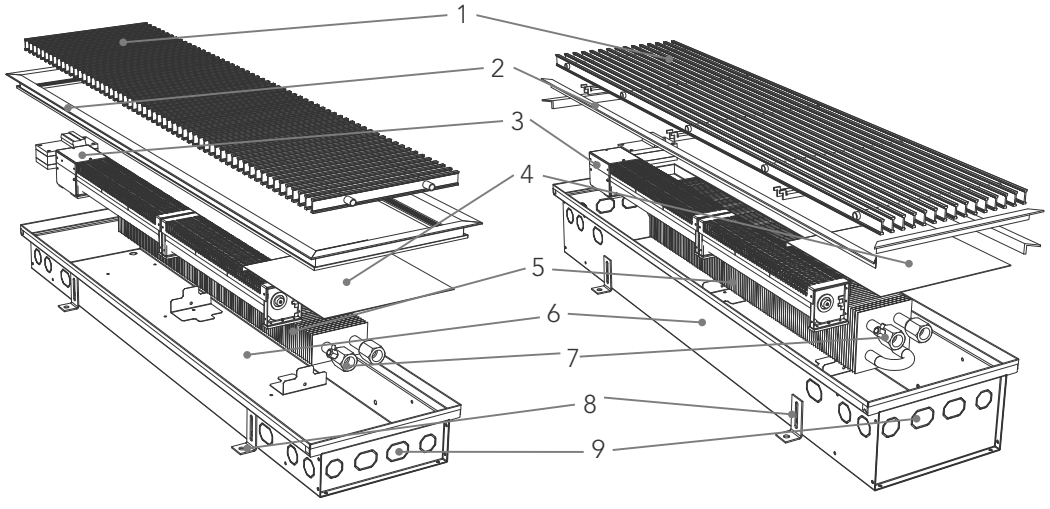
Extras:

- Trench made from brushed stainless steel plate
- Accessories: thermostatic valve, lockshield valve, thermostatic head with remote controller, adjusting drive, room thermostat with speed setting switch
- Insulation of the trench floor, three-sided insulation of the trench
- Coatings for the trench, heat exchanger and other components in a different RAL colour

Construction of the Intratherm F1T Trench convector

F1T 260 x 1250 x 90 mm with an aluminium roll-up grille and Z-frame

F1T 260 x 1250 x 140 mm with an aluminium linear grille and L-frame



Key

1 Roll-up grille or linear grille
2 Frame (O, U, L, Z)
3 Fan
4 Cover plate
5 Fins of heat exchanger
6 Convector trench
7 Air vent
8 Adjustable anchor brackets
9 Perforations

Due to the nature of their construction, linear grilles are only suitable for the 140 mm height.

Intratherm F1T – Outputs

- Convector lengths are available accurate to within 1 cm
- Lengths over 5 m available upon request

Width (mm)		260						290						340					
Height (mm)		90			140			90			140			90			140		
Revolution speed		1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Length (mm)		Heat output [W] at 75/65/20 °C																	
800		468	617	781	685	902	1142	610	803	1016	898	1182	1496	714	940	1190	1016	1338	1693
900		552	727	920	808	1063	1346	718	946	1197	1058	1393	1763	841	1108	1402	1197	1576	1996
1000		636	837	1060	930	1225	1550	827	1089	1379	1218	1604	2030	969	1275	1614	1379	1815	2298
1100		719	947	1199	1052	1386	1754	936	1233	1560	1379	1815	2298	1096	1443	1827	1560	2054	2600
1200		845	1112	1408	1236	1627	2060	1045	1376	1742	1619	2131	2698	1288	1695	2146	1832	2413	3054
1250		845	1112	1408	1236	1627	2060	1045	1376	1742	1619	2131	2698	1288	1695	2146	1832	2413	3054
1300		887	1167	1478	1297	1708	2162	1154	1519	1923	1699	2237	2832	1351	1779	2252	1923	2532	3205
1400		929	1223	1548	1358	1789	2264	1208	1591	2014	1779	2343	2966	1415	1863	2358	2014	2651	3356
1500		1054	1388	1757	1542	2030	2570	1372	1806	2286	2020	2659	3366	1606	2114	2677	2286	3010	3810
1600		1054	1388	1757	1542	2030	2570	1372	1806	2286	2020	2659	3366	1606	2114	2677	2286	3010	3810
1700		1221	1608	2035	1787	2352	2978	1589	2093	2649	2340	3082	3901	1861	2450	3101	2649	3487	4414
1750		1221	1608	2035	1787	2352	2978	1589	2093	2649	2340	3082	3901	1861	2450	3101	2649	3487	4414
1800		1305	1718	2175	1909	2514	3182	1698	2236	2830	2501	3293	4168	1988	2618	3314	2830	3726	4717
1900		1305	1718	2175	1909	2514	3182	1698	2236	2830	2501	3293	4168	1988	2618	3314	2830	3726	4717
2000		1472	1938	2454	2154	2836	3590	1916	2522	3193	2821	3715	4702	2243	2954	3739	3193	4204	5321
2100		1556	2049	2593	2276	2997	3794	2025	2666	3374	2982	3926	4969	2371	3121	3951	3374	4443	5624
2200		1640	2159	2733	2399	3158	3998	2134	2809	3556	3142	4137	5236	2498	3289	4164	3556	4682	5926
2250		1640	2159	2733	2399	3158	3998	2134	2809	3556	3142	4137	5236	2498	3289	4164	3556	4682	5926
2300		1640	2159	2733	2399	3158	3998	2134	2809	3556	3142	4137	5236	2498	3289	4164	3556	4682	5926
2400		1723	2269	2872	2521	3319	4202	2242	2952	3737	3302	4348	5504	2626	3457	4376	3737	4921	6229
2500		1890	2489	3151	2766	3642	4610	2460	3239	4100	3623	4770	6038	2880	3793	4801	4100	5398	6833
2600		1974	2599	3290	2888	3803	4813	2569	3382	4282	3783	4981	6305	3008	3960	5013	4281	5637	7136
2700		2058	2709	3430	3010	3964	5017	2678	3526	4463	3943	5192	6572	3135	4128	5226	4463	5876	7438
2750		2058	2709	3430	3010	3964	5017	2678	3526	4463	3943	5192	6572	3135	4128	5226	4463	5876	7438
2800		2058	2709	3430	3010	3964	5017	2678	3526	4463	3943	5192	6572	3135	4128	5226	4463	5876	7438
2900	Galvanized*	2141	2820	3569	3133	4125	5221	2787	3669	4644	4104	5403	6840	3263	4296	5438	4644	6115	7740
3000		2309	3040	3848	3378	4447	5629	3004	3956	5007	4424	5825	7374	3518	4632	5863	5007	6593	8345
3100		2309	3040	3848	3378	4447	5629	3004	3956	5007	4424	5825	7374	3518	4632	5863	5007	6593	8345
3200		2392	3150	3987	3500	4608	5833	3113	4099	5189	4585	6036	7641	3645	4800	6075	5188	6831	8647
3250		2476	3260	4127	3622	4769	6037	3222	4242	5370	4745	6247	7908	3773	4967	6288	5370	7070	8950
3300		2476	3260	4127	3622	4769	6037	3222	4242	5370	4745	6247	7908	3773	4967	6288	5370	7070	8950
3400		2643	3480	4406	3867	5092	6445	3440	4529	5733	5066	6670	8443	4028	5303	6713	5733	7548	9554
3500		2643	3480	4406	3867	5092	6445	3440	4529	5733	5066	6670	8443	4028	5303	6713	5733	7548	9554
3600		2811	3701	4684	4112	5414	6853	3657	4816	6096	5386	7092	8977	4283	5639	7138	6096	8026	10159
3700		2811	3701	4684	4112	5414	6853	3657	4816	6096	5386	7092	8977	4283	5639	7138	6096	8026	10159
3750		2811	3701	4684	4112	5414	6853	3657	4816	6096	5386	7092	8977	4283	5639	7138	6096	8026	10159
3800		2811	3701	4684	4112	5414	6853	3657	4816	6096	5386	7092	8977	4283	5639	7138	6096	8026	10159
3900		2811	3701	4684	4112	5414	6853	3657	4816	6096	5386	7092	8977	4283	5639	7138	6096	8026	10159
4000		2944	3877	4907	4308	5672	7179	3832	5045	6386	5643	7429	9404	4486	5907	7477	6386	8408	10643
4100		3028	3987	5047	4430	5833	7383	3940	5188	6567	5803	7640	9671	4614	6075	7690	6567	8647	10945
4200		3112	4097	5186	4552	5994	7587	4049	5332	6749	5963	7852	9939	4741	6243	7902	6749	8886	11248
4250		3112	4097	5186	4552	5994	7587	4049	5332	6749	5963	7852	9939	4741	6243	7902	6749	8886	11248
4300		3112	4097	5186	4552	5994	7587	4049	5332	6749	5963	7852	9939	4741	6243	7902	6749	8886	11248
4400		3279	4317	5465	4797	6316	7995	4267	5618	7112	6284	8274	10473	4996	6578	8327	7111	9363	11852
4500		3279	4317	5465	4797	6316	7995	4267	5618	7112	6284	8274	10473	4996	6578	8327	7111	9363	11852
4600		3279	4317	5465	4797	6316	7995	4267	5618	7112	6284	8274	10473	4996	6578	8327	7111	9363	11852
4700		3363	4428	5605	4920	6477	8199	4376	5762	7293	6444	8485	10740	5124	6746	8540	7293	9602	12155
4750		3530	4648	5883	5164	6800	8607	4594	6048	7656	6765	8907	11275	5379	7082	8964	7656	10080	12759
4800		3530	4648	5883	5164	6800	8607	4594	6048	7656	6765	8907	11275	5379	7082	8964	7656	10080	12759
4900		3614	4758	6023	5287	6961	8811	4702	6192	7837	6925	9118	11542	5506	7250	9177	7837	10319	13062
5000		3781	4978	6302	5531	7283	9219	4920	6478	8200	7246	9540	12076	5761	7585	9602	8200	10797	13667

* Floor trench coated in RAL 9005 Black (epoxy polyester coating), made from galvanized steel on both sides

Outputs for versions with stainless steel and wooden grilles/weights and water capacity/dimensions

Intratherm F1T – Outputs

The maximum length of the convector is unlimited. Convectors over 3500 mm in length can be cr eated by fitting together multiple modules and feature at least two heat exchangers.

Heat output, measured in accordance with EN 442; coefficients for converting heat output – see page 258.

All heat outputs shown relate to the aluminium version. In the case of stainless steel and wooden grilles, the heat output value needs to be multiplied by a correction factor (see adjacent table).

Grille	Free cross-section (%)	Correction factor (-)
Aluminium	0,71	1,00
Wood	0,58	0,95
Stainless steel	0,58	0,95

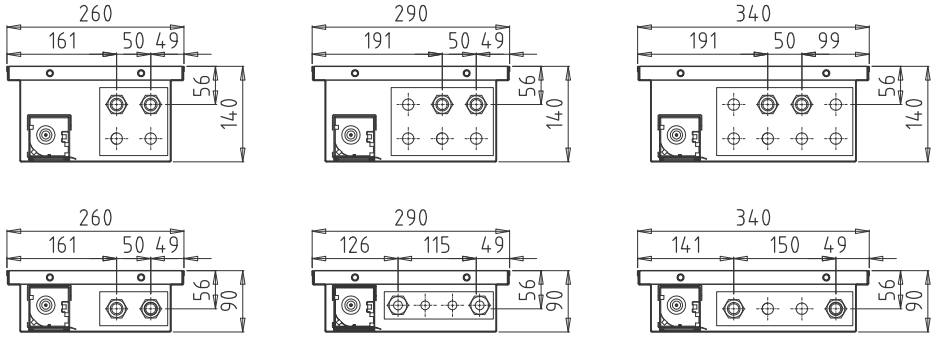
Intratherm F1T – electric output

Convector length (mm)	800 - 1900	2000 - 3500	3600 - 3900	4000 - 7000
Number of fans	1	2	3	4
Electric output (VA)	10	20	30	40

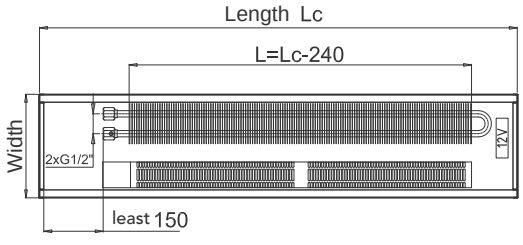
Intratherm F1T – Weight and water capacity

Width (mm)	260		290		340	
Height (mm)	90	140	90	140	90	140
Weight (kg/m)	7,8	9,7	8,7	11,2	10,1	13,9
Water capacity (l/m)	0,3	0,7	0,4	1,0	0,7	1,4

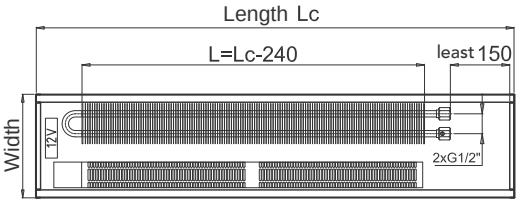
Intratherm F1T – Dimensions



Connection from the left



Connection from the right



The convector connection can be selected at the installation site itself by turning the heat exchanger.

Sound level/item numbers

Intratherm F1T – sound level L_{pA}													
Convector length	**(mm)**	800 - 900	1000 - 1400	1500 - 1900	2000 - 2250	2300 - 2700	2750 - 3500	3550 - 3900	3950 - 4700	4750 - 4900	4950 - 5150	5200 - 5350	5400 - 7000
Number of impellers	**(-)**	1	2	3	4	5	6	7	8	9	10	11	12
Revolution speed 3	**dB(A)**	27,1	28,2	29	29,7	30,3	30,9	31,3	31,8	32,2	32,5	32,8	33,1
Revolution speed 2	**dB(A)**	25,5	26,6	27,4	28,1	28,7	29,3	29,7	30,2	30,5	30,9	31,2	31,5
Revolution speed 1	**dB(A)**	17	18,1	18,9	19,6	20,2	20,8	21,2	21,7	22	22,4	22,7	23

Sound level L_{pA} in dB(A) at a distance of 1 m from the convector

The convector connection can be selected at the installation site itself by turning the heat exchanger.

For details regarding control and the recommended circuit diagrams, see page 246.

For a choice of accessories, see price list.

Correction factor for conversion of heat output
For a table with correction factors for converting the heat output, see page 258.

Pressure losses
For diagrams of pressure losses of the heat exchanger for convectors, see page 259.

INTRATHERM F1P.

An even more efficient variant with 12V tangential fan (EC motor) for heating

The Intratherm F1P Trench convectors succeed the original series of FPT convectors with fans. They offer a cost-effective variant with increased heat output, reduced noise level and minimal operating costs. The length of the fan has been chosen in such a way that the largest possible area of the heat exchanger is supplied with air. The heat output of the convector can be controlled either by hot water or by the air from the fan. All fans are fitted with energy-saving 12 V EC motors.

- Standard height 90 mm
- 2 standard widths (180, 260 mm)
- Lengths from 800 mm

Technical specification:
- Heat output, measured in accordance with EN 442
- Test overpressure 13 bar
- Max. operating overpressure 10 bar
- Maximum operating pressure 110 °C

Benefits of the new technical solution
- Effective use of the space inside the trench
- Optimised length of fan relative to the heat exchanger
- Increase in heat output
- Reduction of the price of the convector, in relation to heat output (see F1T)
- Considerable reduction in electrical power used by the convector
- Considerable reduction in operating costs
- Reduction of the noise level

DIN EN EURONORM 442 · EN ISO 9001 · CE · EN 442 GEPRÜFT · 55 45 DIE neue WÄRME

Guarantee statements are available to download at **www.vogelundnoot.com/download**

Intratherm F1P – even more efficient variant with 12V tangential fan (EC motor) for heating

Intratherm F1P standard delivery includes:

- A trench made of steel, galvanized on both sides and coated in RAL 9005 Black
- Front and side components of the trench with perforations for the water connection and feeding the cable, enabling the heat exchanger and fan to be connected from the right and the left
- Fully corrosion-proof copper/aluminium heat exchanger with minimal water content, with air vent, coated in RAL 9005 Black
- Tangential fan with 12 V EC motor
- EC fan drive with minimal electrical consumption
- Cover plate for the water connection
- All trench components coated in RAL 9005 Black as standard
- Wooden cover plate, which protects the trench, the heat exchanger and the fan during transport and installation
- Accessories supplied as standard: setting screws M8 x 30 for setting the position of the trench, floor screed anchor for fixing the trench into the concrete, rubber bushings for the perforations, flexible stainless steel connecting hoses with seal, anchor brackets for setting the trench height
- Impact-noise insulation between the grille and the trench

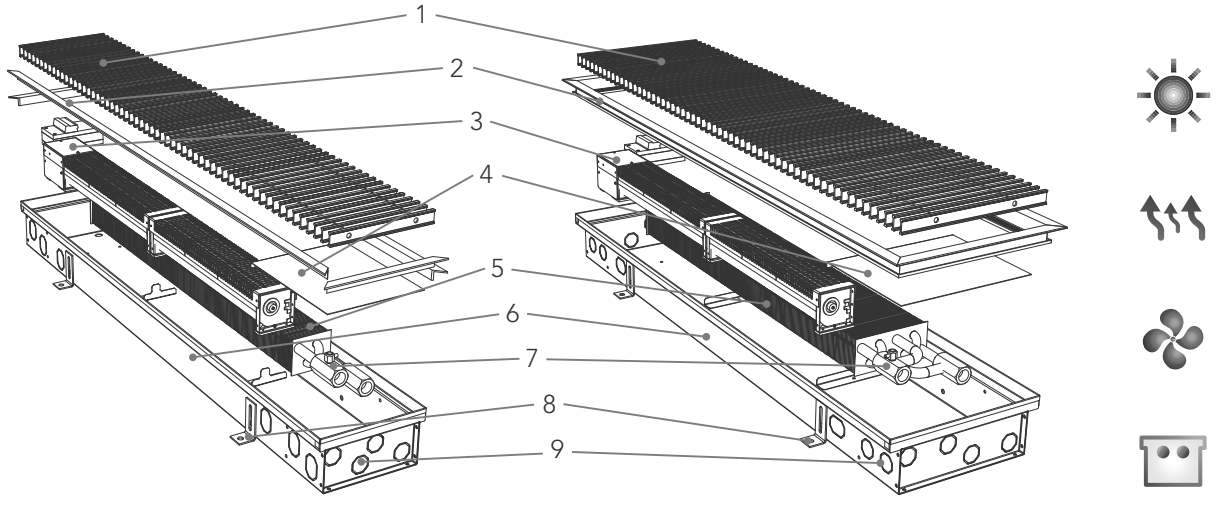
Extras:

- Trench made from brushed stainless steel sheeting
- Accessories: thermostatic valve, lockshield valve, thermostatic head with remote controller, adjusting drive, room thermostat with speed setting switch
- Insulation of the trench floor, three-sided insulation of the trench
- Coatings for the trench, heat exchanger and other components in a different RAL colour

Construction of the Intratherm F1P Trench convector

F1P 180 x 1250 x 90 mm with an aluminium roll-up grille with L-frame

F1P 260 x 1250 x 140 mm with an aluminium linear grille and Z-frame



Key

1 Roll-up grille
2 Frame (O, U, L, Z)
3 Fan
4 Cover plate
5 Fins of the heat exchanger
6 Convector trench
7 Air vent
8 Adjustable anchor brackets
9 Perforations

Due to the nature of the construction, the 90 mm height only allows for the use of roll-up grilles.

Intratherm F1P – Outputs

- Convector lengths are available accurate to within 1 cm
- Lengths over 5 m available upon request

Width (mm)		180			260		
Height (mm)		90			90		
Revolution speed		1	2	3	1	2	3
Length (mm)		Heat output [W] at 75/65/20 °C					
800	Galvanized*	395	520	659	579	762	965
900		395	520	659	579	762	965
1000		625	823	1041	915	1205	1525
1100		625	823	1041	915	1205	1525
1200		625	823	1041	915	1205	1525
1250		855	1125	1424	1252	1648	2086
1300		855	1125	1424	1252	1648	2086
1400		855	1125	1424	1252	1648	2086
1500		1084	1428	1807	1588	2091	2647
1600		1084	1428	1807	1588	2091	2647
1700		1084	1428	1807	1588	2091	2647
1750		1314	1730	2190	1925	2534	3208
1800		1314	1730	2190	1925	2534	3208
1900		1314	1730	2190	1925	2534	3208
2000		1544	2033	2573	2261	2977	3769
2100		1544	2033	2573	2261	2977	3769
2200		1544	2033	2573	2261	2977	3769
2250		1774	2335	2956	2598	3420	4329
2300		1774	2335	2956	2598	3420	4329
2400		1774	2335	2956	2598	3420	4329
2500		2003	2638	3339	2934	3863	4890
2600		2003	2638	3339	2934	3863	4890
2700		2003	2638	3339	2934	3863	4890
2750		2233	2940	3722	3271	4306	5451
2800		2233	2940	3722	3271	4306	5451
2900		2233	2940	3722	3271	4306	5451

Width (mm)		180			260		
Height (mm)		90			90		
Revolution speed		1	2	3	1	2	3
Length (mm)		Heat output [W] at 75/65/20 °C					
3000	Galvanized*	2463	3243	4105	3607	4749	6012
3100		2463	3243	4105	3607	4749	6012
3200		2463	3243	4105	3607	4749	6012
3250		2693	3545	4488	3944	5192	6573
3300		2693	3545	4488	3944	5192	6573
3400		2693	3545	4488	3944	5192	6573
3500		2693	3545	4488	3944	5192	6573
3600		2693	3545	4488	3944	5192	6573
3700		2858	3763	4763	4186	5511	6976
3750		2858	3763	4763	4186	5511	6976
3800		2858	3763	4763	4186	5511	6976
3900		2858	3763	4763	4186	5511	6976
4000		3088	4066	5146	4522	5954	7537
4100		3088	4066	5146	4522	5954	7537
4200		3088	4066	5146	4522	5954	7537
4250		3317	4368	5529	4859	6397	8098
4300		3317	4368	5529	4859	6397	8098
4400		3317	4368	5529	4859	6397	8098
4500		3547	4671	5912	5195	6840	8659
4600		3547	4671	5912	5195	6840	8659
4700		3547	4671	5912	5195	6840	8659
4750		3777	4973	6295	5532	7284	9220
4800		3777	4973	6295	5532	7284	9220
4900		3777	4973	6295	5532	7284	9220
5000		4007	5275	6678	5868	7727	9780

* Floor trench coated in RAL 9005 Black (epoxy polyester coating), made from steel, galvanized on both sides.

Intratherm F1P - Outputs

The maximum length of the convector is unlimited. Convectors over 3500 mm in length can be created by fitting together multiple modules and feature at least two heat exchangers.

Heat output, measured in accordance with EN 442; coefficients for converting heat output – see page 258.

All heat outputs shown relate to the aluminium version. In the case of stainless steel and wooden grilles, the heat output value needs to be multiplied by a correction factor (see adjacent table).

Grille	Free cross-section (%)	Correction factor (-)
Aluminium	0,71	1,00
Wood	0,58	0,95
Stainless steel	0,58	0,95

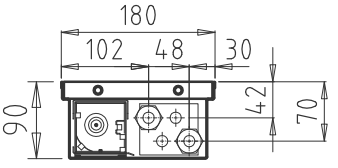
INTRATHERM F1P

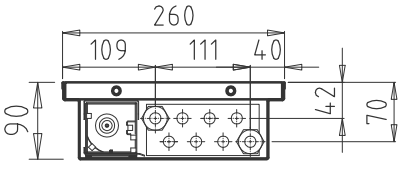
Outputs/electrical power/weights and water capacity/dimensions/sound level/item numbers

Intratherm F1P – electrical power				
Convector length (mm)	800 - 1900	2000 - 3500	3600 - 3900	4000 - 7000
Number of fans	1	2	3	4
Electrical power	10	20	30	40

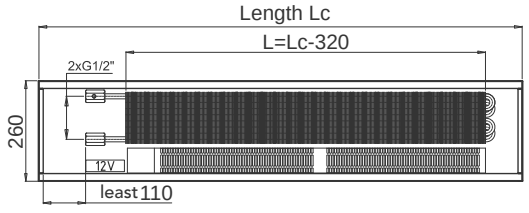
Intratherm F1P – Weight and water capacity		
Width (mm)	180	260
Height (mm)	90	90
Weight kg/m)	7,2	9,0
Water capacity (l/m)	0,4	0,7

Intratherm F1P – Dimensions

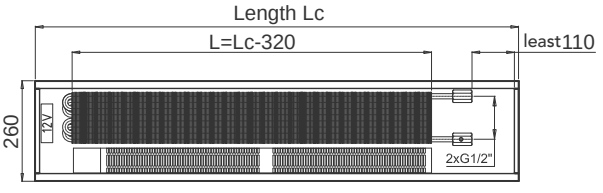




Connection from the left



Connection from the right



The convector connection can be selected at the installation site itself by turning the heat exchanger.

Intratherm F1T – sound level L_{pA}													
Convector length	**(mm)**	800 - 900	1000 - 1400	1500 - 1900	2000 - 2250	2300 - 2700	2750 - 3500	3550 - 3900	3950 - 4700	4750 - 4900	4950 - 5150	5200 - 5350	5400 - 7000
Number of impellers	**(-)**	1	2	3	4	5	6	7	8	9	10	11	12
Revolution speed 3	**dB(A)**	27,1	28,2	29	29,7	30,3	30,9	31,3	31,8	32,2	32,5	32,8	33,1
Revolution speed 2	**dB(A)**	25,5	26,6	27,4	28,1	28,7	29,3	29,7	30,2	30,5	30,9	31,2	31,5
Revolution speed 1	**dB(A)**	17	18,1	18,9	19,6	20,2	20,8	21,2	21,7	22	22,4	22,7	23

Sound level L_{pA} in dB(A) at a distance of 1 m from the convector

The convector connection can be selected at the installation site itself by turning the heat exchanger.

For details regarding control and recommended circuit diagrams, see page 246.

For a choice of accessories, see price list.

Correction factor for conversion of heat output
For a table with correction factors for converting the heat output, see page 258.

Pressure losses
For diagrams of pressure losses of the heat exchanger for convectors, see page 259.

INDIVIDUAL HEAT EXCHANGERS.

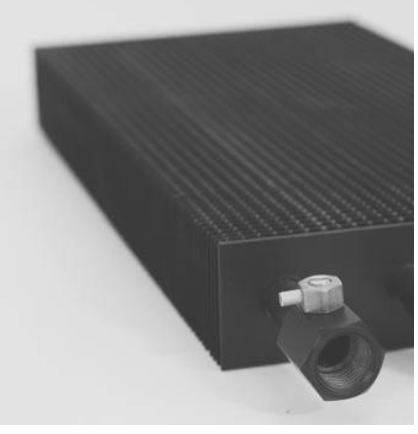
Heat exchangers

In view of a variety of individual requirements expressed by our customers, we have expanded our product range to include individual heat exchangers that are installed in the Intratherm Trench convectors as standard. The individually installed heat exchangers are suitable for use in reconstructions of cellars, loft spaces or attics, as well as for installation in window sills or for installation in channels or gutters. Consoles for the installation of heat exchangers in floors or in the wall are also supplied as accessories with the heat exchangers.

Models and designs of heat exchangers

The standard range of heat exchangers comprises 125 combinations of dimensions, which equates to 5 models of heat exchanger in 25 lengths ranging from 675 mm to 3375 mm. The LVF 09 and 19 and LVR 10, 15 and 20 heat exchangers are the basic models. The heat exchangers in the LVF series, with an overall height of 50 mm and a width of 100 or 200 mm are suitable for use wherever it is necessary to minimise the height of the construction. The LVR series of heat exchangers, with a uniform height of 100 mm and available in widths of 100, 150 and 200 mm, are suitable for use in cases where higher heat output is required. All heat exchangers come with copper pipes and aluminium plate-fins. They can be supplied with a coating in RAL 9005 Black upon request. Every heat exchanger features an air vent and two connections with a G 1/2" female screw thread.

Technical specification:
- Heat output, measured in accordance with EN 442
- Test overpressure 13 bar
- Max. operating overpressure 10 bar
- Maximum operating temperature 110 °C
- Installation of the heat exchanger to an enclosed hot water system



Outputs

Outputs

Length of heat exchanger L_1 (mm)	Finned length of heat exchanger (mm)	LVF-09	LVF-19	LVR-10	LVR-15	LVR-20
		50 x 100 mm	50 x 200 mm	100 x 100 mm	100 x 150 mm	100 x 200 mm
		Heat output [W] at 75/65/20 °C				
675	560	327	732	505	739	963
775	660	368	824	569	831	1083
875	760	408	915	632	923	1203
975	860	449	1007	695	1016	1324
1075	960	490	1098	758	1108	1444
1175	1060	531	1190	821	1200	1564
1275	1160	572	1281	884	1293	1685
1375	1260	613	1373	948	1385	1805
1475	1360	653	1464	1011	1477	1925
1575	1460	694	1556	1074	1570	2046
1675	1560	735	1647	1137	1662	2166
1775	1660	776	1739	1200	1754	2286
1875	1760	817	1830	1263	1847	2407
1975	1860	858	1922	1327	1939	2527
2075	1960	898	2013	1390	2031	2647
2175	2060	939	2105	1453	2124	2768
2275	2160	980	2196	1516	2216	2888
2375	2260	1021	2288	1579	2308	3008
2475	2360	1062	2379	1642	2401	3129
2575	2460	1103	2471	1706	2493	3249
2775	2660	1184	2654	1832	2678	3490
2875	2760	1225	2745	1895	2770	3610
2975	2860	1266	2837	1958	2862	3730
3175	3060	1348	3020	2085	3047	3971
3375	3260	1429	3203	2211	3232	4212

The height of the casing of LVF-09 and LVF-19 measures 90 mm and the height of the casing of LVR-10, LVR-15 and LVR-20 measures 140 mm. The underside of the heat exchanger sits 100 mm above the floor. The outputs shown relate to 100% free cross-section.

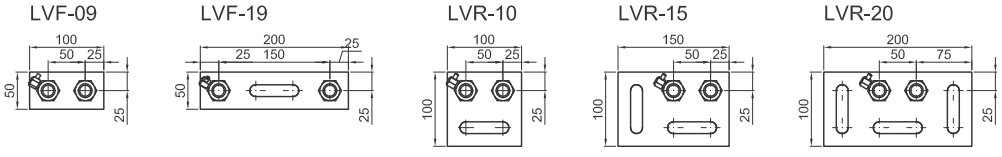
INTRATHERM Individual heat exchangers

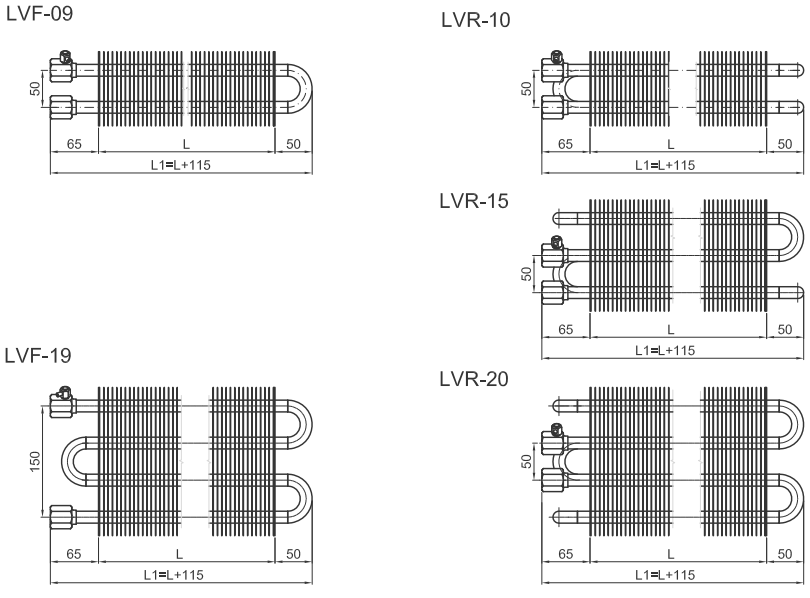
Weight and water capacity/dimensions/item numbers

Weight and water capacity

Heat exchanger type	LVF-09	LVF-19	LVR-10	LVR-15	LVR-20
Weight (kg/m)	1,4	2,6	2,4	3,5	4,6
Water capacity (l/m)	0,3	0,7	0,7	1,0	1,4

Heat exchanger dimensions





The convector connection can be selected at the installation site itself by turning the heat exchanger.

For details regarding control and recommended circuit diagrams, see page 246.

For a choice of accessories, see price list.

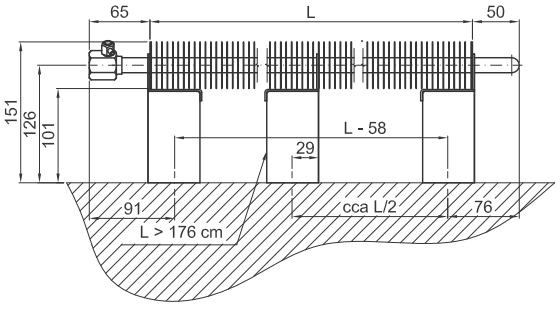
Correction factor for conversion of heat output
For a table with correction factors for converting the heat output, see page 258.

Pressure losses
For diagrams of pressure losses of the heat exchanger for convectors, see page 259.

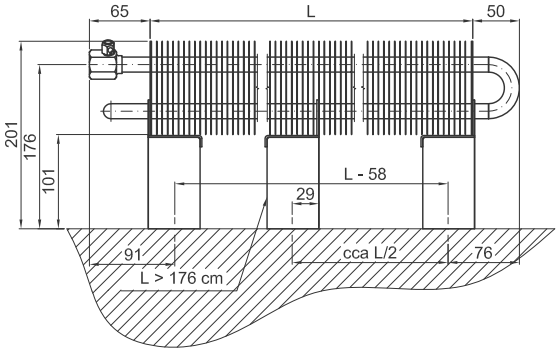
Installation of heat exchangers

Floor bracket

LVF-09 and LVF-19



LVR-10, LVR-15 and LVR-20



Finned lengths >1760 mm (3 fasteners)

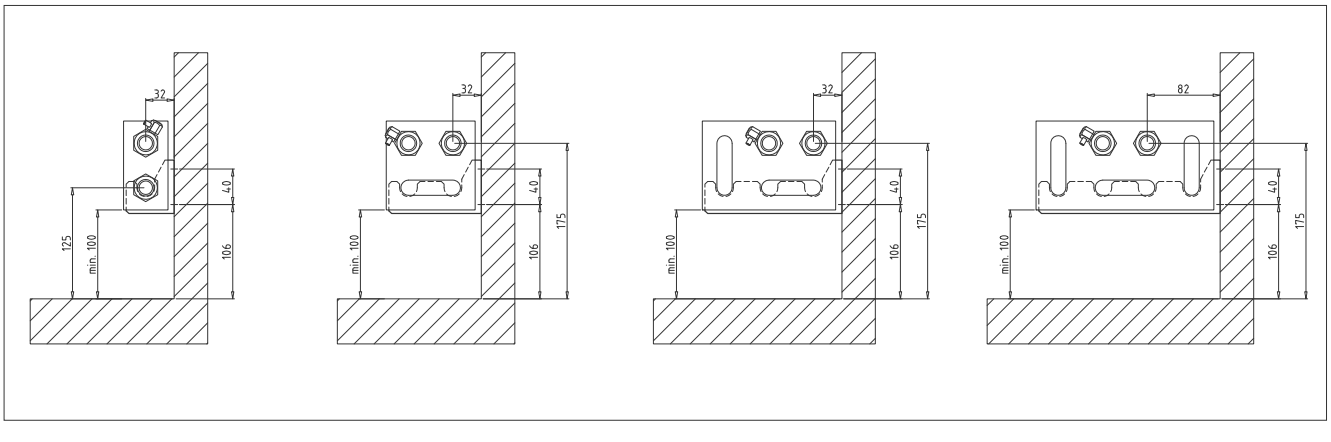
Installation of the individual heat exchangers

- The surrounding material must be able to withstand the local temperature
- The heat exchangers must be installed onto brackets on the floor or on the wall by the installer
- In order to ensure problem-free ventilation, the heat exchanger must be installed in a horizontal position
- In order to guarantee maximum heat output, the free flow of air into and out of the heat exchanger must be ensured; obstructions to the inlet and outlet reduce heat output

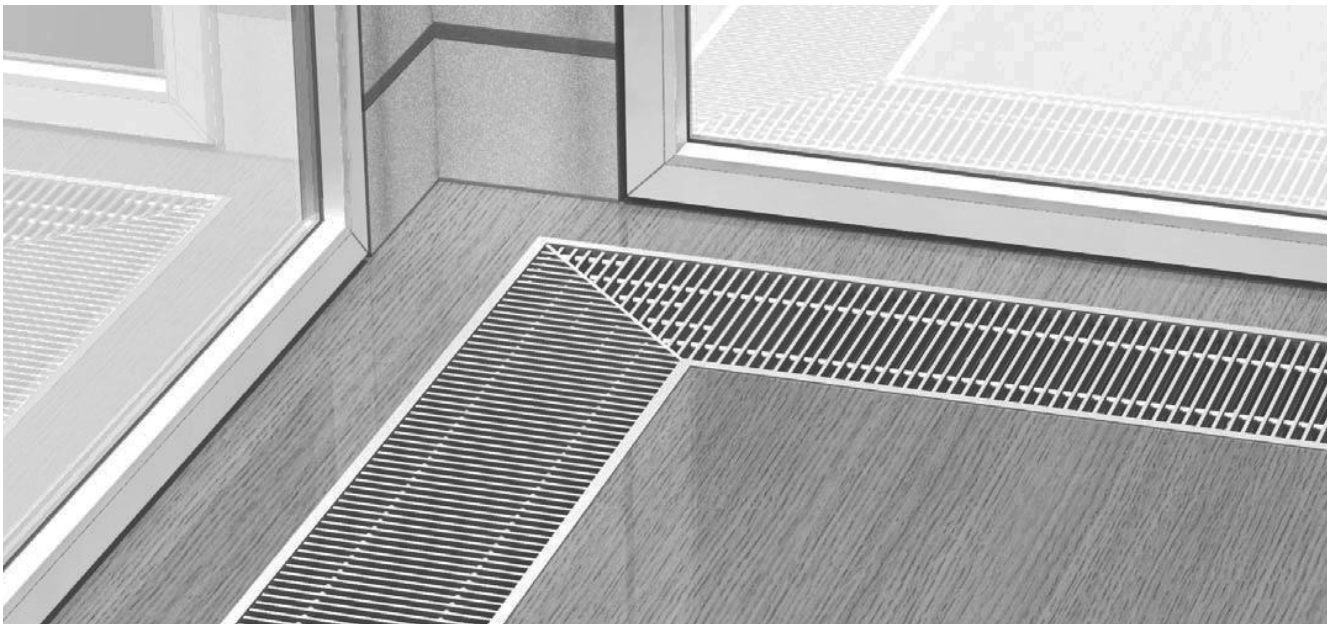
Note

The heat output of heat exchangers built into floor channels is reduced by around 30% compared against the values shown in the output table for a 60% free cross-section of the cover grille.

Wall bracket



COVER GRILLES FOR FLOOR CONVECTORS.



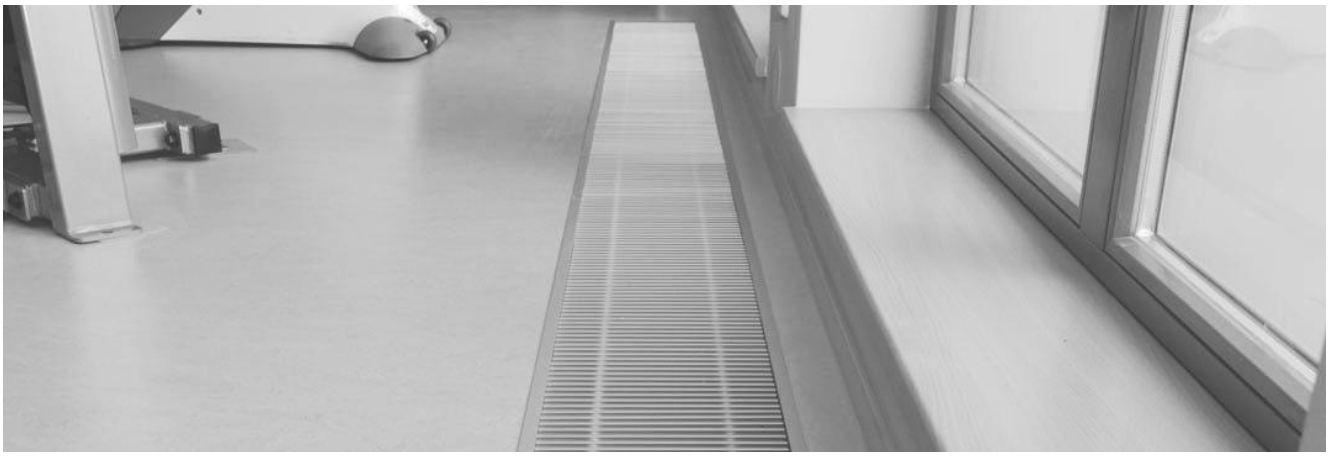
The cover grilles are practically the only visible part of the Trench convectors and for this reason a great deal of attention is paid to the material and the finish of the grilles. Apart from this design aspect, the cover grille also performs technical functions. It ensures even load-bearing, which is spread over the edges of the trench onto the base, while at the same time the shape of the bars determines the air flow. The air flow of the cover grille is characterised by the parameter of the free cross-section of the grille. The cover grilles are supplied separately or together with the convectors. The product range is not restricted to standard dimensions but also provides for special solutions according to customer requirements.

Technical designs

VOGEL&NOOT offers two basic technical variants – roll-up grille or linear grille. In the case of the roll-up grille, the bars and a series of spacer rings are all fixed onto a spring, which enables the grille to roll out. The linear grille cannot be used with trenches greater than 90 mm in height for reasons relating to construction.

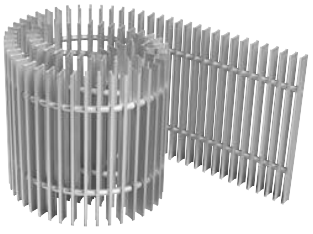
Materials

The cover grilles are manufactured from aluminium, stainless steel or wooden bars. All grilles come in the standard height of 20 mm. The grilles made from anodised aluminium are available in the colours natural, dark bronze, light bronze or black as standard. The grilles with wooden bars are available in beech and oak. Both designs can be supplied as untreated, polished or varnished. Dimensional stability cannot be guaranteed for untreated wooden grilles, as they may expand depending on moisture levels.

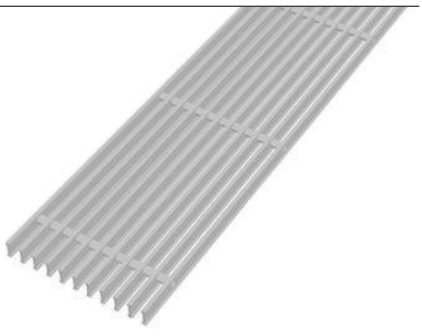


Overview of cover grilles

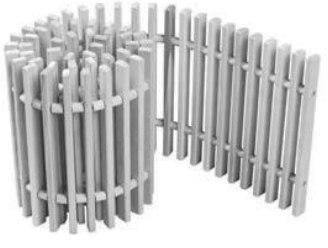
Aluminium roll-up grille
Coloured finish (anodised):
- natural
- light bronze
- dark bronze
- black
Free cross-section: 71%
PMO, PMU, PML, PMZ



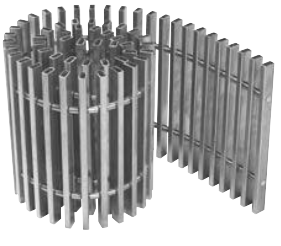
Aluminium linear grille
Coloured finish (anodised):
- natural
- light bronze
- dark bronze
- black
Free cross-section: 71%
Not suitable for use with convectors of 90 mm in height.
PMO, PMU, PML, PMZ



Wooden roll-up grille
Grille with oak or beech bars.
The grille is treated with a protective agent – colourless oil – as standard.
Free cross-section: 58%
PMO, PMU, PML, PMZ



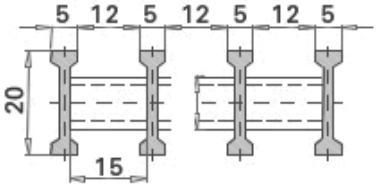
Stainless steel roll-up grille (polished or glass bead-blasted)
Material: 1.4301
Free cross-section: 58%
PMO, PMU, PML, PMZ



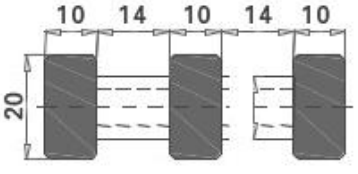
Stainless steel linear grille (polished or glass bead-blasted)
Material: 1.4301
Free cross section: 58%
Not suitable for use with convectors of 90 mm in height.
PMO, PMU, PML, PMZ

Roll-up grille dimensions

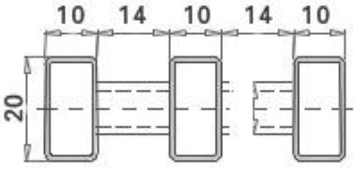
Aluminium roll-up grille and linear grille



Wooden grille (roll-up grille only)



Stainless steel roll-up and linear grille



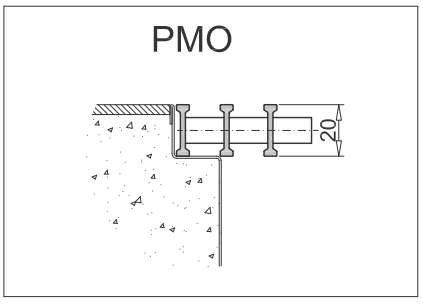
Bar dimensions and bar spacings are the same for roll-up and linear grilles.

For the overview of colours, see the price list.

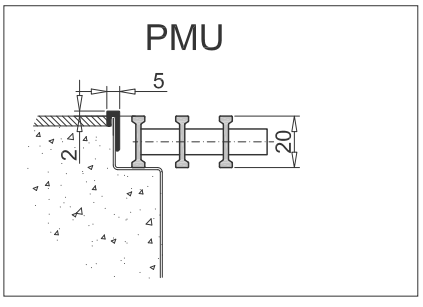
Anodised aluminium frames

The frames are used to cover the intersection between the convector trench and the completed floor. U frames and L-frames are available in the same colours as the aluminium grilles. Z-frames are only available as natural aluminium.

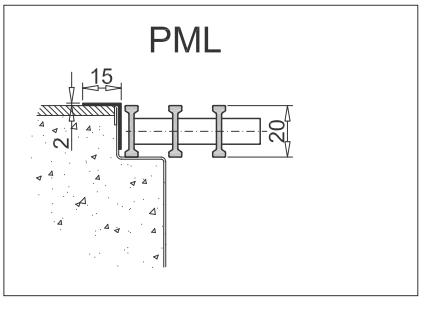
Frameless design



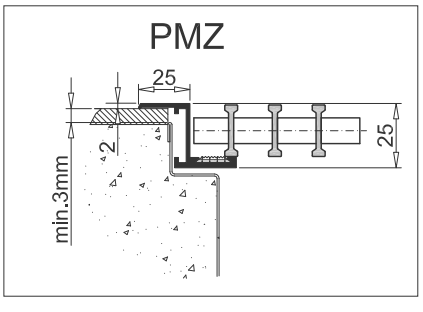
U-frame design



L-frame design



Z-frame design



The Z-frame, L-frame and U-frame must all be ordered together with the grille. It is not possible to place a subsequent order for the frame for a grille that has already been delivered. If using the Z-frame, the trench is to be laid 3-5 mm below the level of the completed floor (see diagram). The Z-frame is delivered as a whole unit that is ready to install. We recommended that the frame is affixed to the floor with silicone sealant.

The L-frame consists of individual profiles that are prepared for mounting on the completed floor. The L frame is affixed on the inside with double-sided adhesive tape.

In the event that the floor trench is damaged or deformed as a result of improper installation, the manufacturer shall not accept any responsibility in relation to the installation of the frame.

INTRATHERM Cover grilles

Material overview/weights

Grille materials

- Natural beech
- Varnished beech
- Natural oak
- Varnished oak

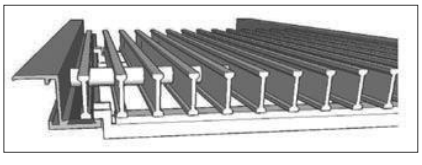
- Natural aluminium
- Black aluminium
- Dark bronze aluminium
- Light bronze aluminium

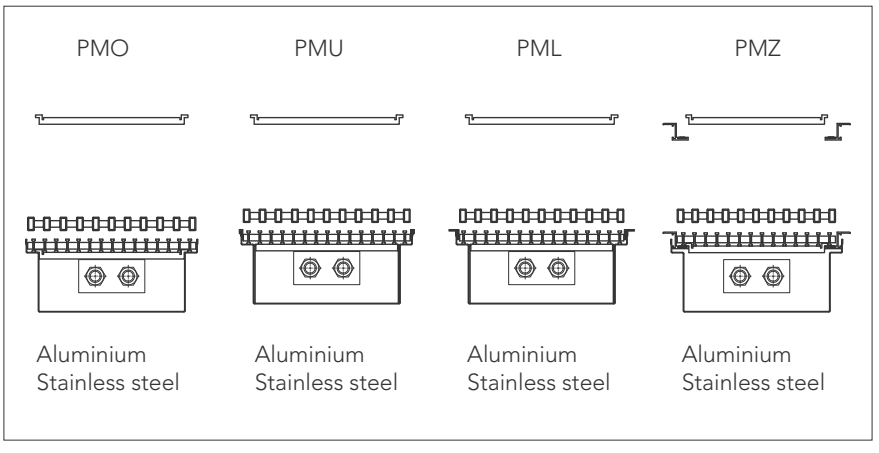
- Stainless steel

For the colour overview, see the price list

Supports for the linear grilles

To prevent warping of the linear grille, the accompanying load-bearing spacers must be used as supports. The load--bearing spacers are laid approximately 30 cm apart. For reasons relating to construction, rigid grilles cannot be used with convectors greater than 90 mm in height (FMK, F1T, F1P).





Grille – Weight

Width (mm)		180				240				260				290				340				420			
Type of grille		PMO	PMU	PML	PMZ	PMO	PMU	PML	PMZ	PMO	PMU	PML	PMZ	PMO	PMU	PML	PMZ	PMO	PMU	PML	PMZ	PMO	PMU	PML	PMZ
Weight (kg/m)	Aluminium	2,0	2,2	2,3	3,1	2,6	2,8	2,9	3,7	2,8	3,0	3,1	3,9	3,1	3,3	3,4	4,2	3,6	3,8	3,9	4,7	4,3	4,6	4,7	5,6
	Beech, oak	1,4	1,6	1,7	2,5	1,8	2,0	2,1	3,0	1,9	2,2	2,3	3,1	2,1	2,4	2,5	3,3	2,4	2,7	2,8	3,7	3,0	3,3	3,4	4,2
	Stainless steel	3,6	3,8	3,9	4,6	4,7	4,9	5,0	5,7	5,1	5,3	5,4	6,0	5,7	5,9	6,0	6,6	6,6	6,8	6,9	7,5	8,0	8,3	8,4	9,0

Controlling the heat output of the Intratherm convector

Note:
1) Installation and start-up is to be carried out by an authorised specialist company
2) During the installation, it must be ensured that the convector is in a voltage-free state
The heat output of the convector can be controlled either by means of hot water or by air (only in the version with a fan). The quantity of hot water is adjusted by the thermostatic valve lift (thermostatic head with remote control setting or adjusting drive controlled by the room thermostat).

Control by means of air (F1T, F1P) is effected by the revolution speed. The revolution speed can be controlled either manually or automatically via a room thermostat.

Type of heat output control – a list of accessories to choose from

	Item no.	Description
1. Heat output control by hot water (FMK)		
1.1	AZAPTH01	Thermostatic head with remote control
1.2	AZAPPT01	Room thermostat
1.3	AZAPTP01, AZAPTP02	Thermal adjusting drive (01 – opened currentless, 02 – closed currentless)
2. Heat output control by air (F1T, F1P)		
2.1	AZAPSP01	Manual fan speed switch
2.2	AZAPPT02	Room thermostat with manual speed switch
2.3	AZAPER05	Room thermostat with automatic speed switch
2.4	AZAPER06	Room thermostat with automatic speed switch and 7-day programmable function

A PAT-controller must always be ordered with a convector for the purpose of controlling the fan revolution speed. The model of controller (transformers) depends on the total number of connected fans and the type of controller (on the surface, flush-mounted or in the trench).

PAT revolution speed controller for F1T and F1P

The control of heat output using fans is always effected by PAT transformers (3-step speed control). The size of the PAT transformers (02, 04, 06 or 08) depends on the number of motors. The number of motors per PAT transformer and the output can be found in the table below. The PAT transformers are available as surface or flush-mounted versions and as a version for fitting in the convector trench.

AZAPATxxM controller
AZAPATxxM transformers can be ordered as either surface or flush-mounted versions, but not as a version for fitting in the convector trench. AZAPATxxM transformers can also be switched on/off in parallel. This offers the option to control multiple convectors simultaneously using a single speed switch. A single speed switch can control up to 200 AZAPATxxM transformers.

Version	Model	Electric output (VA)	Max. number of connectable motors		Cable recommended for connecting the convector	Thermostat	
			F1T (EC)	F1P (EC)	F1T (EC), F1P (EC)	mechanical	electronic
Surface-mounted	AZAPAT02M01	90	8	8	CYKY-O 2x1,5	AZAPSP01 AZAPTP02	AZAPER05 AZAPER06
	AZAPAT04M01	160	15	15	CYKY-O 2x1,5		
	AZAPAT06M01	300	24	24	CYKY-O 2x2,5		
	AZAPAT08M01	300	30	31	CYKY-O 2x2,5		
Unterputz	AZAPAT02M02	90	8	8	CYKY-O 2x1,5		
	AZAPAT04M02	160	15	15	CYKY-O 2x1,5		
	AZAPAT06M02	300	24	24	CYKY-O 2x2,5		

PAT speed controller for F1T and F1P

AZAPATxxT controller
AZAPATxxT transformers are available as a surface- or flush-mounted version. The number of motors per PAT transformer and the output can be found in the table below.

Version	Model	Electric output (VA)	Max. number of connectable motors		Cable recommended for connecting the convector	Thermostat	
			F1T (EC)	F1P (EC)	F1T (EC), F1P (EC) F1T (EC), F1P (EC)	mechanical	electronic
Surface-mounted	AZAPAT02T01	90	8	8	CYKY-O 2x1,5	PSP-01, PTP-02	not possible
	AZAPAT04T01	160	15	15	CYKY-O 2x1,5		not possible
	AZAPAT06T01	300	24	24	CYKY-O 2x2,5		not possible
	AZAPAT08T01	300	30	30	CYKY-O 2x2,5		not possible
Flush-mounted	AZAPAT02T02	90	8	8	CYKY-O 2x1,5		not possible
	AZAPAT04T02	160	15	15	CYKY-O 2x1,5		not possible
	AZAPAT06T02	300	24	24	CYKY-O 2x2,5		not possible
in the convector trench	AZAPAT02T041	90	8	8	CYKY-J 5x1,5 (1 Leiter für die Erdung der Wanne)		not possible
	AZAPAT04T041	160	15	15			not possible
	AZAPAT06T041	300	24	24			not possible

Note:
The AZAPATxxT speed controllers cannot be operated with the AZAPER05 and AZAPER06 thermostats.
The AZAPATxxT speed controllers cannot be switched on/off in parallel.

The AZAPATxxT041 controller
- Transformer in the convector trench
- Protection mode IP 68
- Only in combination with the mechanical thermostats (AZAPSP01, AZAPPT02)
- A control module must be used with other thermostats (AZAPER05 and AZAPER06)

The AZAPATxxT041 controller is suitable for installation directly in the convector trench.
The number of connectable motors is the same as in the case of the AZAPATxxT01 and AZAPATxxT02 controllers (see table above). A control component must always be used for operating the electric thermostats (AZAPER05 and AZAPER06).

Control components

Version	Number of controlled AZAPATxxT041 controllers	Dimensions (mm)
Surface-mounted		
AZAPATRM0101	1	165x120x63
AZAPATRM0201	2	230x185x90
AZAPATRM0301	3	325x255x120
AZAPATRMU4101	4	230x185x120
AZAPATRMU5101	5	
AZAPATRMU6101	6	
Flushmounted		
AZAPATRM0102	1	170x170x71
AZAPATRM0202	2	230x230x84
In the convector trench		
AZAPATRM0104	1	165x120x63

Dimensions of the AZAPATxxT041 controller

Cylindrical	Output	Max. power	Width	Height
	VA	A	mm	mm
AZAPAT02T041	90	7,5	Ø105	53
AZAPAT04T041	160	13,3	Ø125	53
AZAPAT06T041	300	24	Ø132	63

Intratherm – electrical circuits

Cable lines to the floor convectors F1T and F1P

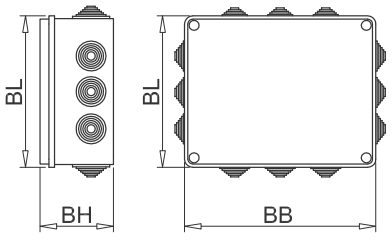
The length of the cable between the convector and the speed controller (PAT) should not exceed 10 m. If this length is exceeded, a cable with a cross-section greater than the recommended one must be used, so that the potential drop in the cable does not exceed 1 V (recommended potential drop 0.5 V).

PAT transformers in the surface-mounted version are connected to the fused line (D6A) using a two core cable 2 x 1.5 mm2. PAT transformers in the flush-mounted version are connected to the fused line using a three core cable 3 x 1.5 mm2 (e.g. CYKY 3A x 1.5). To protect the switching circuit, a safety fuse is contained inside the controller.

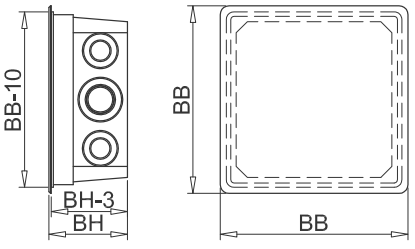
A cable measuring 5 x 0.75 mm2 is used to connect the PAT transformer with the speed controller or the speed controller with the room thermostat.

Dimensions of the PAT speed controller

Surface-mounted version



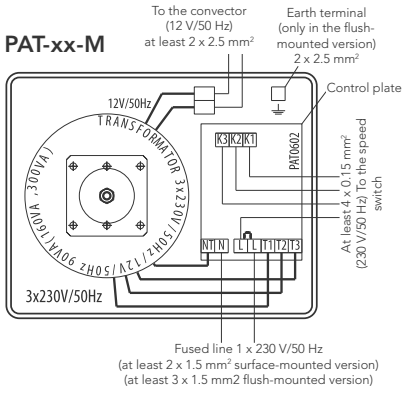
Flush-mounted version

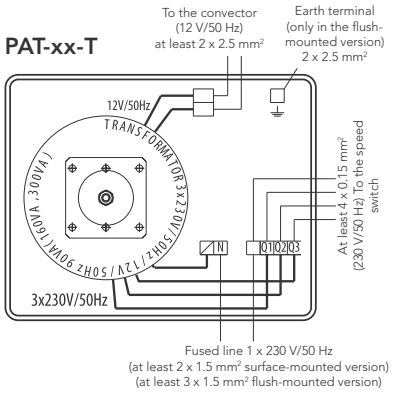


Model	Length BL (mm)	Width BB (mm)	Height BH (mm)	Weight (kg)
PAT-02-T, PAT-02-M-01	230	185	90	2,2
PAT-04-T, PAT-04-M-01	230	185	90	2,9
PAT-06-T, PAT-06-M-01	230	185	90	4,2
PAT-08-T, PAT-08-M-01	325	255	120	4,8

Model	Length BL (mm)	Width BB (mm)	Height BH (mm)	Weight (kg)
PAT-02-T, PAT-02-M-02	170	170	71	1,7
PAT-04-T, PAT-04-M-02	230	230	84	2,7
PAT-06-T, PAT-06-M-02	230	230	84	4,0
PAT-08-T, PAT-08-M-02	not possible			

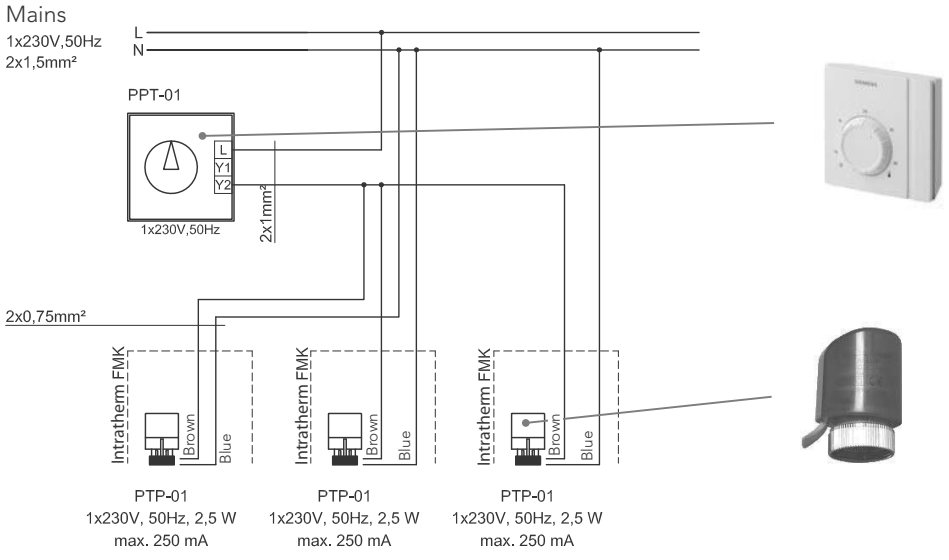
Internal diagram of the PAT speed controller



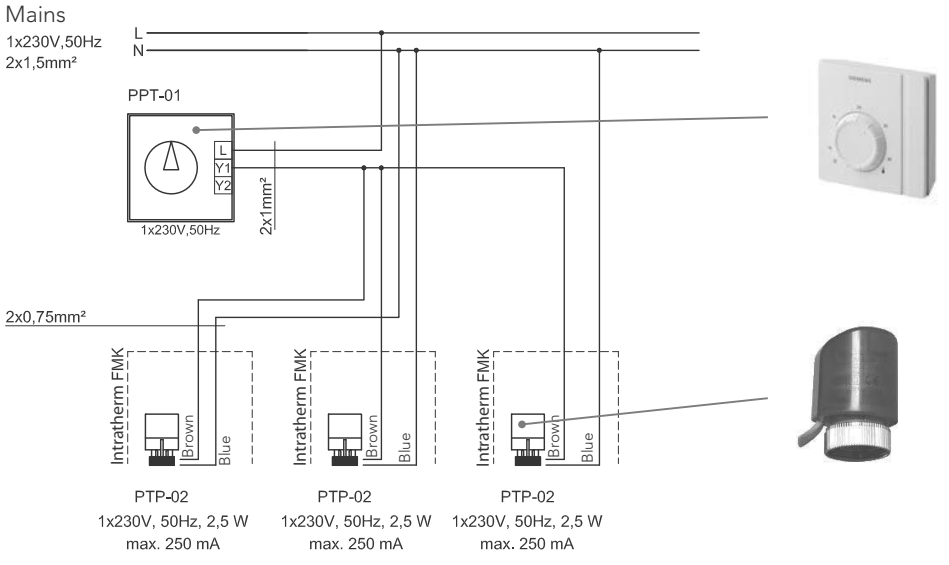


Intratherm – recommended circuit diagrams

Block diagram no. 1 – Intratherm FMK, controlled with adjusting drive – PTP-01 (currentless open)



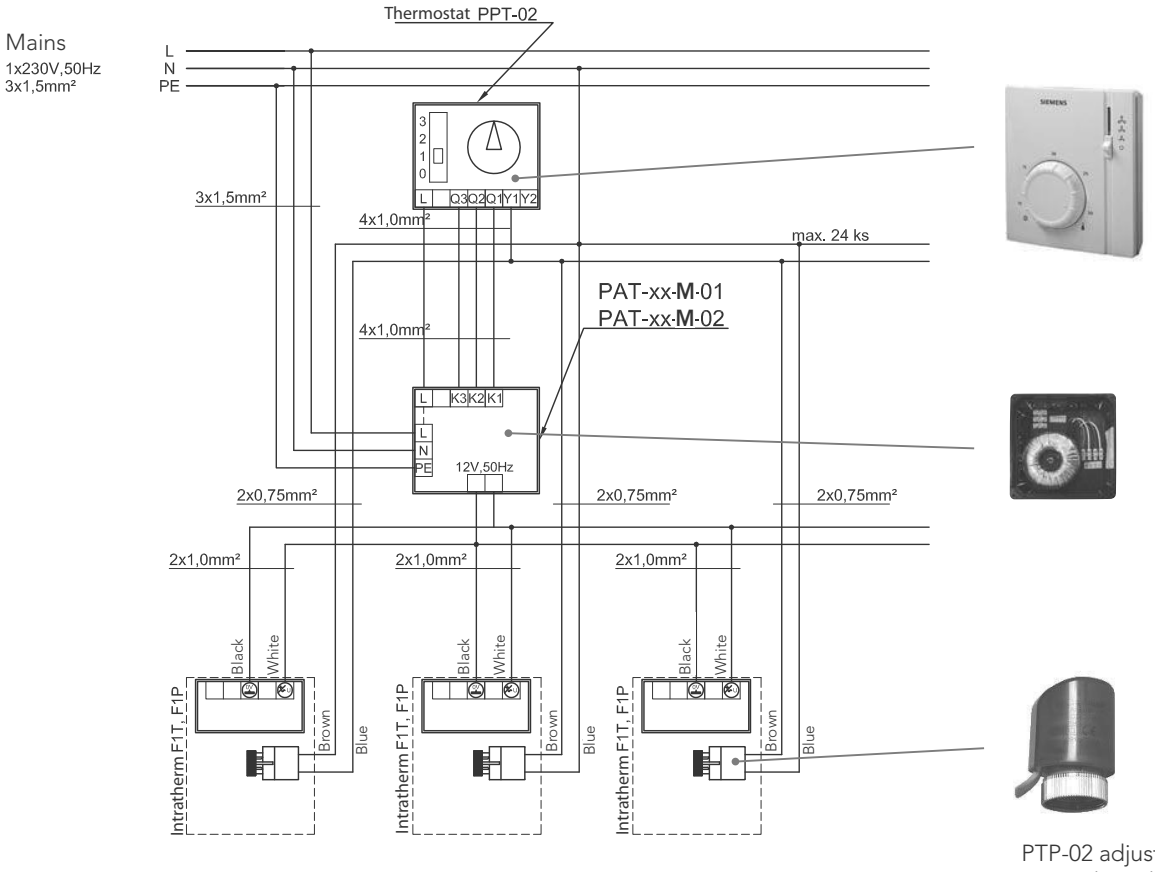
Block diagram no. 2 – Intratherm FMK, controlled with adjusting drive – PTP-02 (currentless closed)



Note:
1) Always use a residual current device when using an adjusting drive.
2) A maximum of 24 adjusting drives can be connected to a single thermostat.

Intratherm – recommended circuit diagrams

Block diagram no. 3 – Intratherm F1T with the PPT-02 thermostat and the PAT-xx-M external transformer

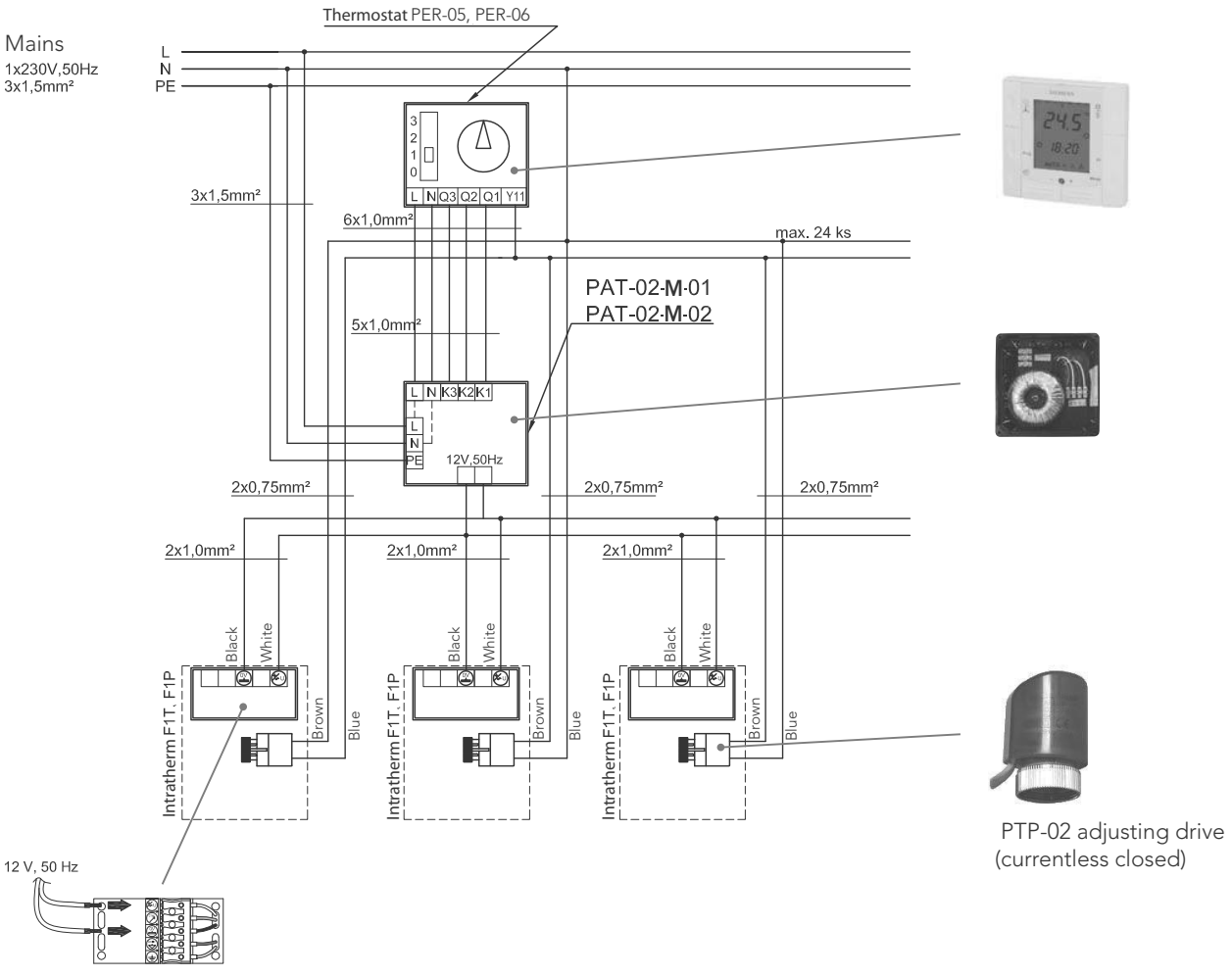


PTP-02 adjusting drive
(currentless closed)

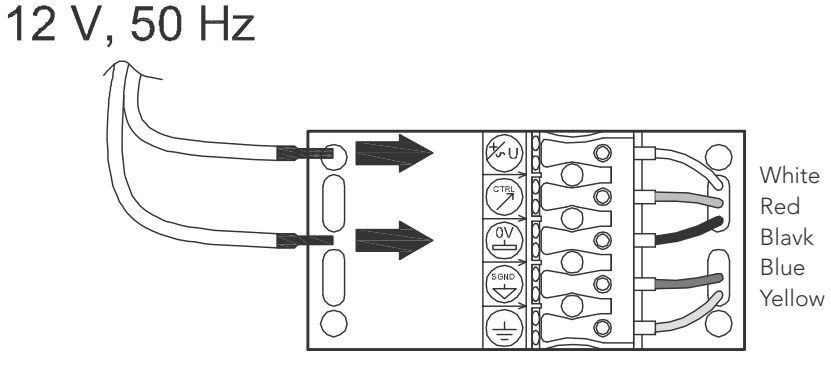
Note:
1) Always use a residual current device when using an adjusting drive
2) Observe the maximum number of connected fans per PAT controller
3) The circuit diagrams apply in the case of the flush-mounted version; in the case of the surface-mounted version, the PAT controllers are only connected with a two core cable.

Intratherm – recommended circuit diagrams

Block diagram no. 4 – Intratherm F1T with the PER-05 or PER-06 thermostat and the PAT-xx-M external transformer

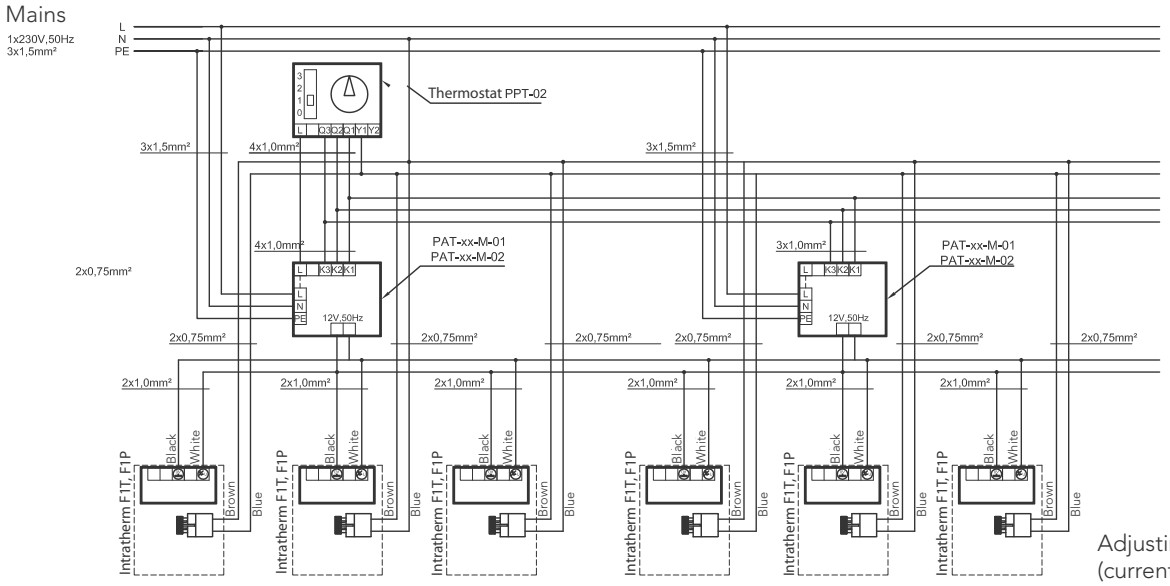


Block diagram no. 5 – Intratherm F1T, F1P – detailed diagram of the terminal block of the EC motors



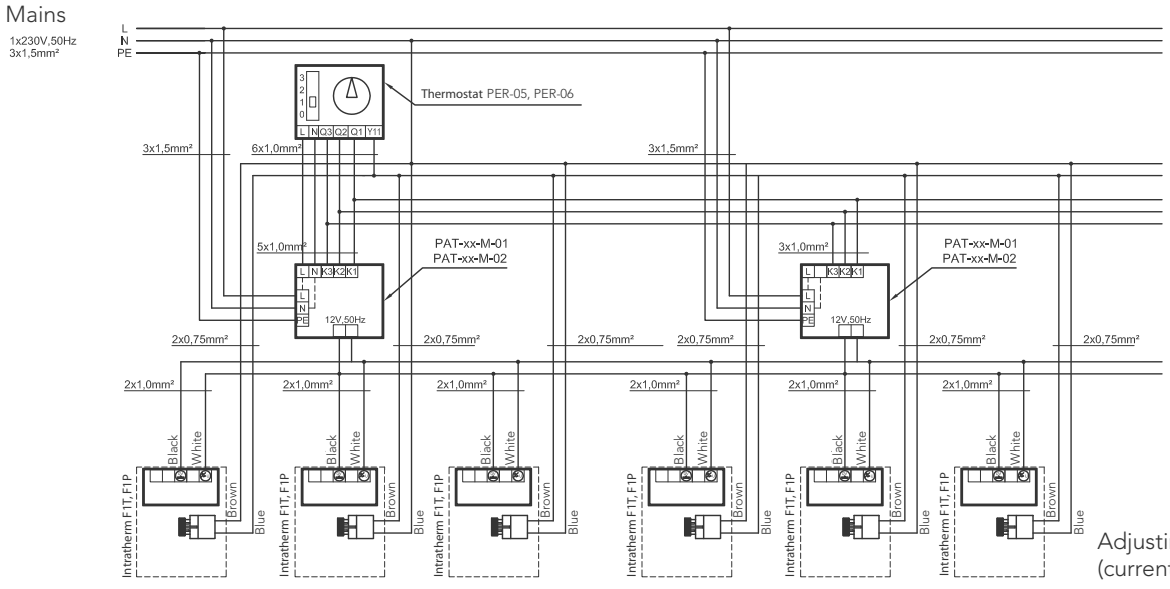
Intratherm – recommended circuit diagrams

Block diagram no. 6 – Intratherm F1T, F1P with PPT-02 thermostat and the PAT-xx-M external transformers (parallel operation of the transformers)



Adjusting drive PTP-02
(currentless closed)

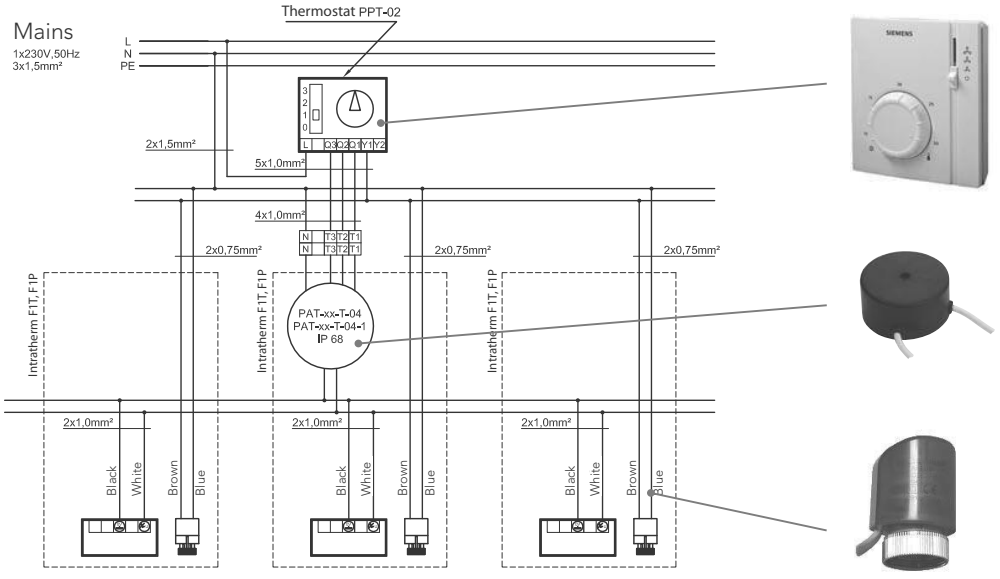
Block diagram no.7 – Intratherm F1T, F1P with PER-05 or PER-06 thermostats and the PAT-xx-M external transformers (parallel operation of the transformers)



Adjusting drive PTP-02
(currentless closed)

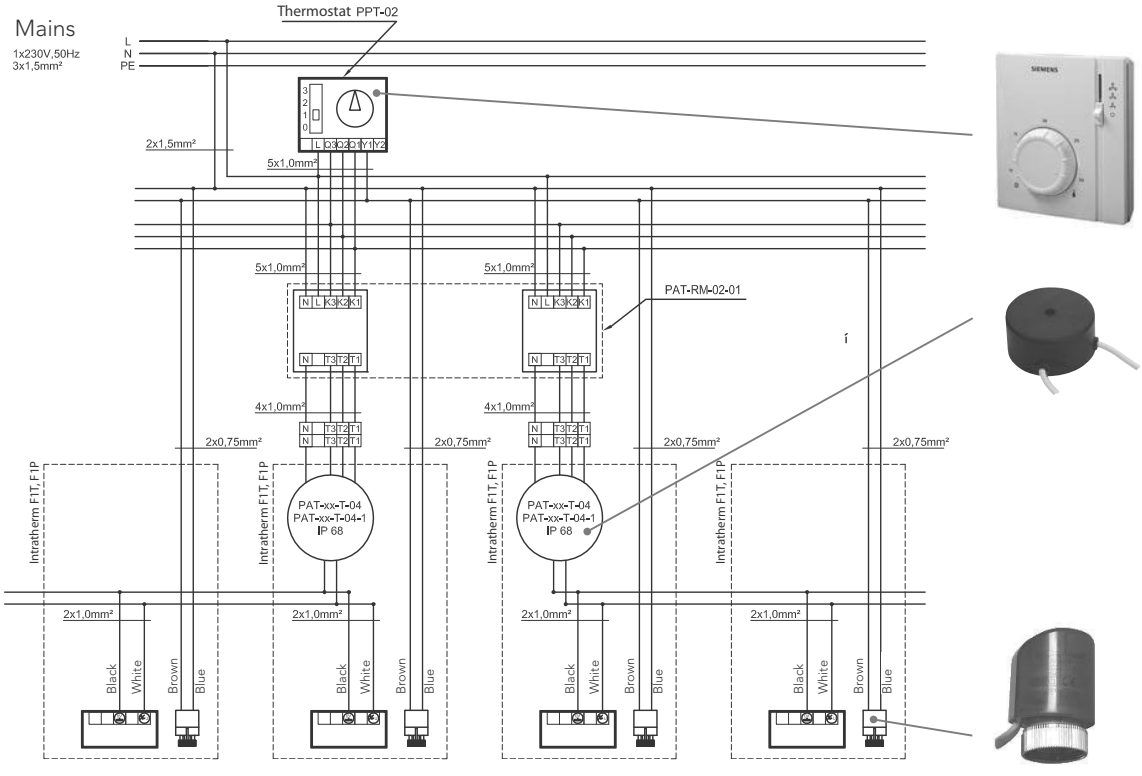
Intratherm – recommended circuit diagrams

Block diagram no. 8 – Intratherm F1T, F1P with the PPT-02 thermostat and the PAT-xx-T-04 controller, installed in the trench



Adjusting drive PTP-02
(currentless closed)

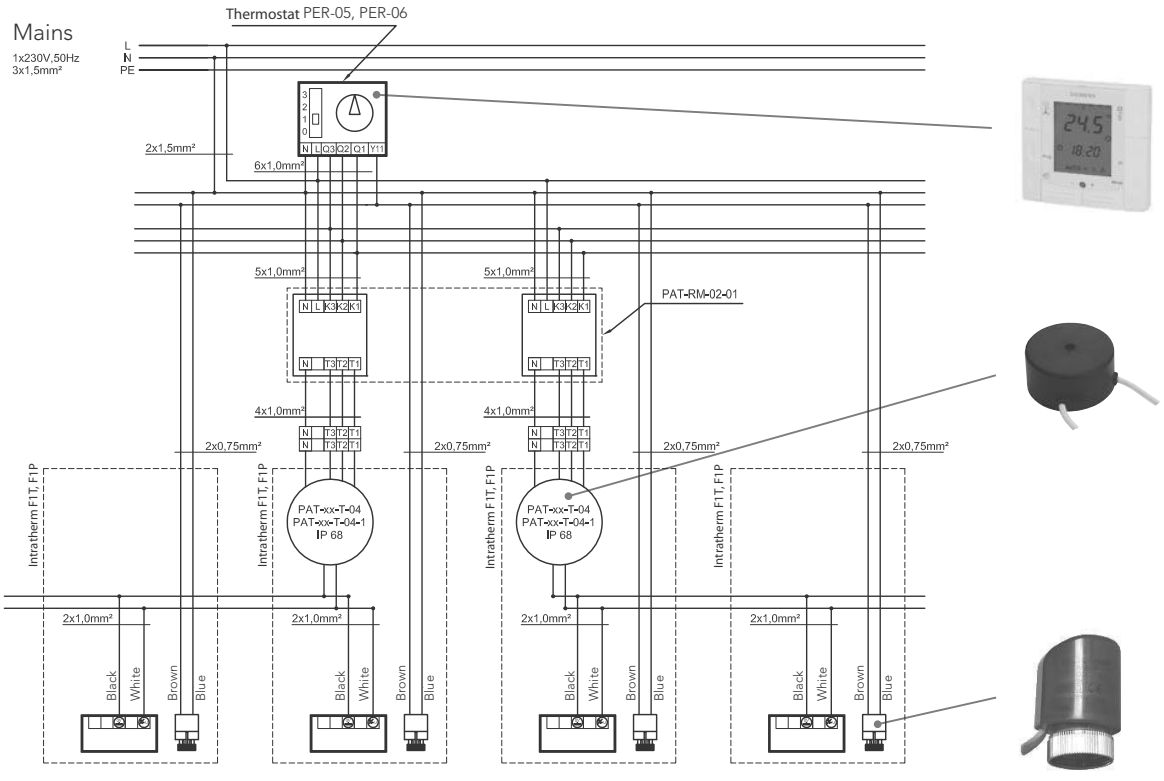
Block diagram no. 9 – Intratherm F1T, F1P with the PPT-02 thermostat, the PAT-RM control module and the PAT-xx-T-04 controller, installed in the trench



Adjusting drive PTP-02
(currentless closed)

Intratherm – recommended circuit diagrams

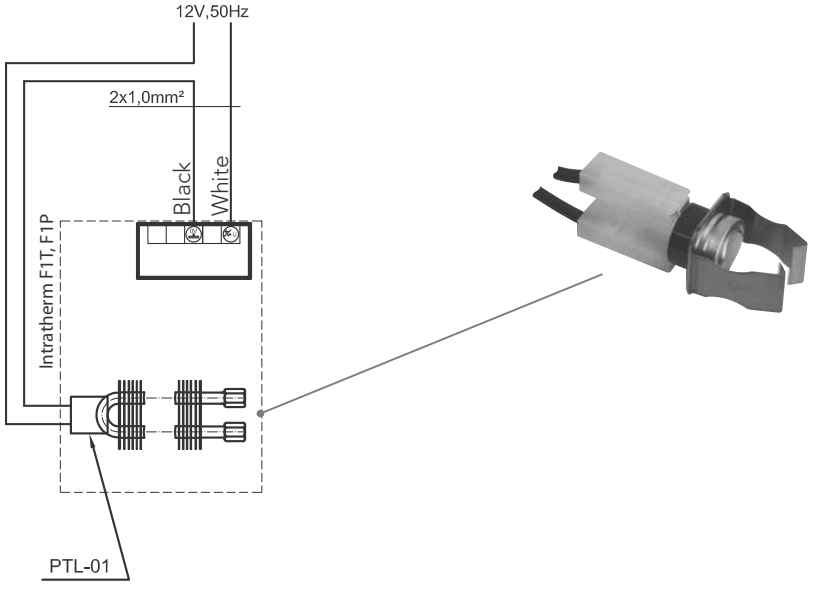
Block diagram no. 10 – Intratherm F1T, F1P with the PER-05 or PER-06 thermostat, the PAT-RM control module and the PAT-xx-T-04 controller, installed in the trench



Adjusting drive PTP-02
(currentless closed)

Note:
1) Observe the maximum number of connected fans per PAT controller
2) The PAT-xx-T controllers cannot be connected in parallel
3) The PAT-xx-T controllers cannot be operated using the PER-05 and PER-06 thermostats

Block diagram no. 11 – Intratherm F1T, F1P with an assembly allowing for limited use of a PTL-01 fan

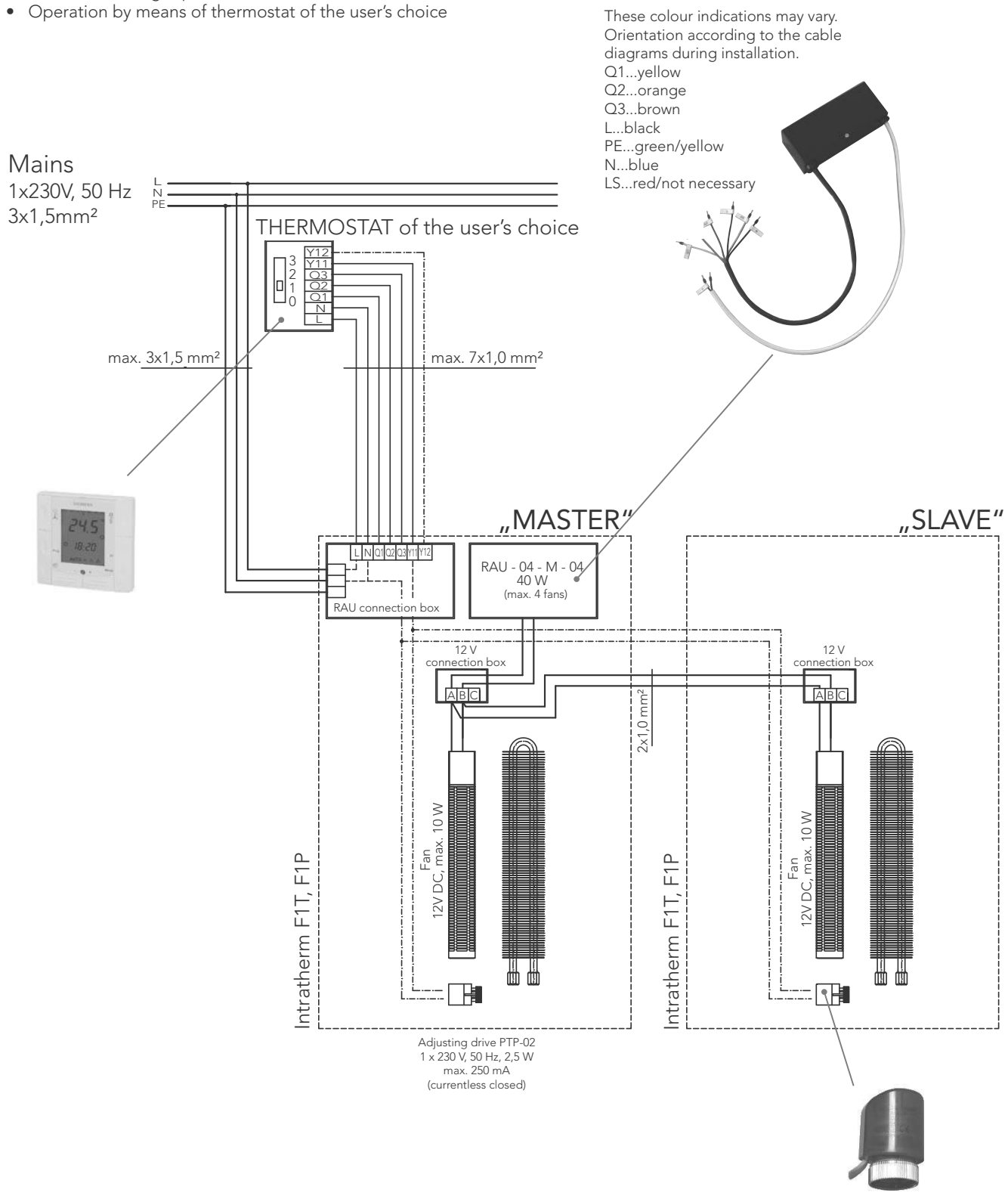


Fan cut-out when the hot water temperature falls below 35 °C. Installation directly at the heat exchanger.

Intratherm – recommended circuit diagrams

Block diagram no. 12

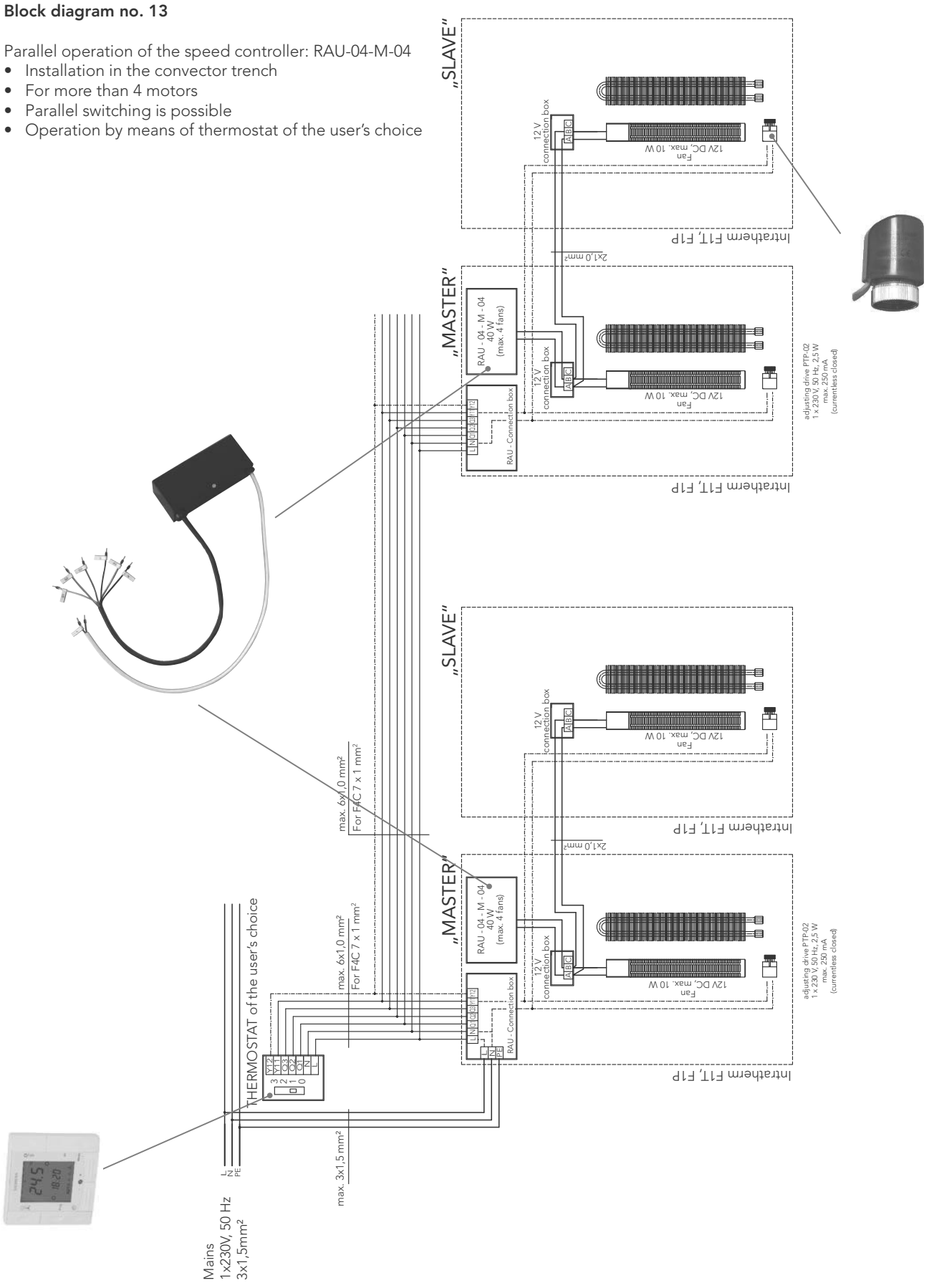
Speed controller: RAU-04-M-04 (max. 40 Watts)
- Installation in the convector trench
- Electric power max. 40 Watts (4 motors)
- Parallel switching is possible
- Operation by means of thermostat of the user's choice



Intratherm – recommended circuit diagrams

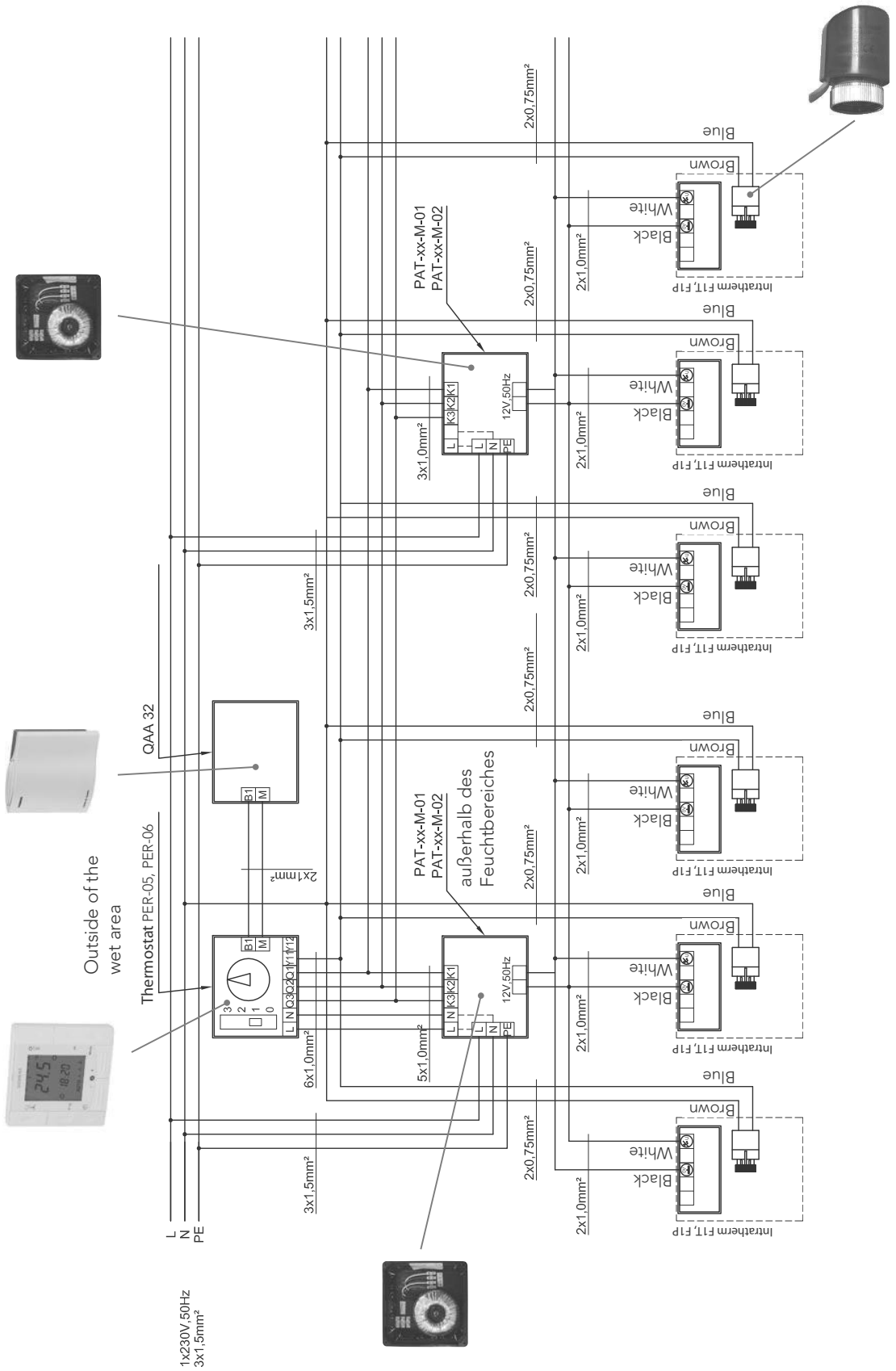
Block diagram no. 13

Parallel operation of the speed controller: RAU-04-M-04
- Installation in the convector trench
- For more than 4 motors
- Parallel switching is possible
- Operation by means of thermostat of the user's choice



Intratherm – recommended circuit diagrams

Block diagram no. 14 – Intratherm F1T, F1P – Moisture-proof version



Conversion table

Factor K1 for converting the heat output

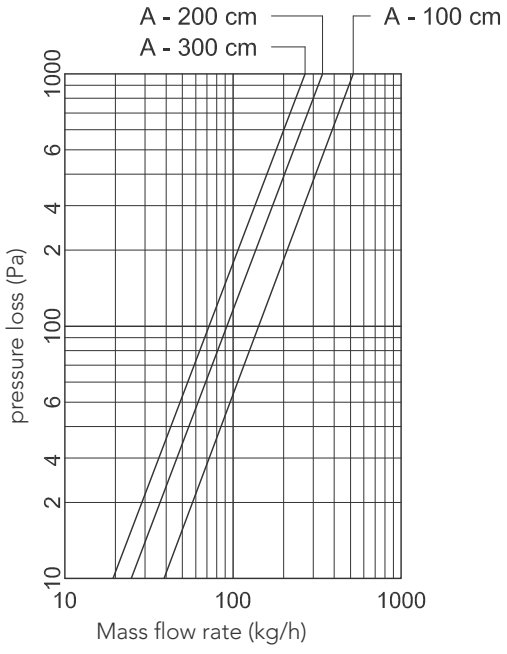
Coefficient K1 for converting the heat output

Supply temperature (°C)	Air temperature (°C)	FMK convector – without fan; exponent n = 1.4																
		35	40	45	50	55	60	65	70	75	80	85	Return temperature (°C)					
90	15	0,78	0,88	0,98	1,08	1,17	1,26	1,35	1,43	1,52	1,61	1,69		0,52	0,46	15	45	
	20	0,63	0,73	0,83	0,93	1,02	1,11	1,19	1,28	1,36	1,45	1,53		0,42	0,36	20		
	24	0,51	0,62	0,72	0,81	0,90	0,99	1,08	1,36	1,24	1,32	1,4		0,33	0,28	24		
85	15	0,73	0,83	0,93	1,02	1,11	1,19	1,28	1,36	1,45	1,53		0,62	0,57	0,51	15	50	
	20	0,59	0,69	0,78	0,82	0,96	1,05	1,13	1,21	1,29	1,37		0,52	0,46	0,40	20		
	24	0,47	0,58	0,67	0,76	0,85	0,93	1,01	1,09	1,17	1,25		0,44	0,38	0,32	24		
80	15	0,69	0,78	0,87	0,96	1,05	1,13	1,21	1,29	1,37		0,73	0,67	0,61	0,55	15	55	
	20	0,55	0,64	0,73	0,82	0,90	0,99	1,07	1,14	1,22		0,62	0,57	0,51	0,44	20		
	24	0,44	0,54	0,63	0,71	0,79	0,87	0,95	1,03	1,10		0,54	0,48	0,42	0,35	24		
75	15	0,64	0,73	0,82	0,90	0,99	1,07	1,14	1,22		0,84	0,78	0,72	0,66	0,59	15	60	
	20	0,51	0,60	0,69	0,77	0,85	0,92	1,00	1,07		0,73	0,67	0,61	0,55	0,48	20		
	24	0,40	0,50	0,58	0,66	0,74	0,82	0,89	0,96		0,64	0,59	0,53	0,46	0,39	24		
70	15	0,60	0,69	0,77	0,85	0,92	1,00	1,07		0,95	0,89	0,83	0,77	0,70	0,63	15	65	
	20	0,47	0,58	0,64	0,71	0,79	0,86	0,93		0,84	0,78	0,72	0,66	0,59	0,52	20		
	24	0,37	0,46	0,54	0,61	0,68	0,76	0,83		0,75	0,69	0,63	0,57	0,50	0,42	24		
65	15	0,56	0,64	0,71	0,79	0,86	0,93		1,06	1,00	0,94	0,88	0,81	0,74	0,67	15	70	
	20	0,43	0,51	0,59	0,66	0,73	0,80		0,95	0,89	0,83	0,77	0,70	0,63	0,55	20		
	24	0,33	0,41	0,49	0,56	0,63	0,70		0,86	0,80	0,74	0,68	0,61	0,54	0,46	24		
60	15	0,51	0,59	0,66	0,73	0,80		1,17	1,11	1,05	0,99	0,92	0,86	0,78	0,71	15	75	
	20	0,39	0,47	0,54	0,60	0,67		1,06	1,00	0,94	0,88	0,81	0,74	0,67	0,59	20		
	24	0,30	0,37	0,44	0,51	0,57		0,97	0,91	0,85	0,79	0,72	0,65	0,58	0,49	24		
55	15	0,47	0,54	0,60	0,67		1,28	1,22	1,16	1,10	1,04	0,97	0,90	0,83	0,75	15	80	
	20	0,35	0,42	0,49	0,55		1,17	1,11	1,05	0,99	0,92	0,86	0,78	0,71	0,62	20		
	24	0,27	0,33	0,40	0,46		1,08	1,02	0,96	0,90	0,83	0,77	0,89	0,61	0,52	24		
50	15	0,42	0,49	0,55		1,40	1,34	1,28	1,21	1,15	1,08	1,01	0,94	0,87	0,78	15	85	
	20	0,31	0,37	0,43		1,28	1,22	1,16	1,10	1,04	0,97	0,90	0,83	0,75	0,66	20		
	24	0,23	0,29	0,35		1,19	1,13	1,07	1,01	0,95	0,88	0,81	0,73	0,65	0,56	24		
45	15	0,37	0,43		1,51	1,45	1,39	1,33	1,26	1,20	1,13	1,06	0,98	0,91	0,82	15	90	
	20	0,27	0,33		1,40	1,34	1,28	1,21	1,15	1,08	1,01	0,94	0,87	0,78	0,69	20		
	24	0,19	0,25		1,30	1,25	1,19	1,12	1,06	0,99	0,92	0,85	0,77	0,68	0,59	24		
Return temperature (°C)					85	80	75	70	65	60	55	50	45	40	35	Air temperature (°C)	Supply temperature (°C)	
F1T and F1P convector with fan; exponent n = 1.1																		

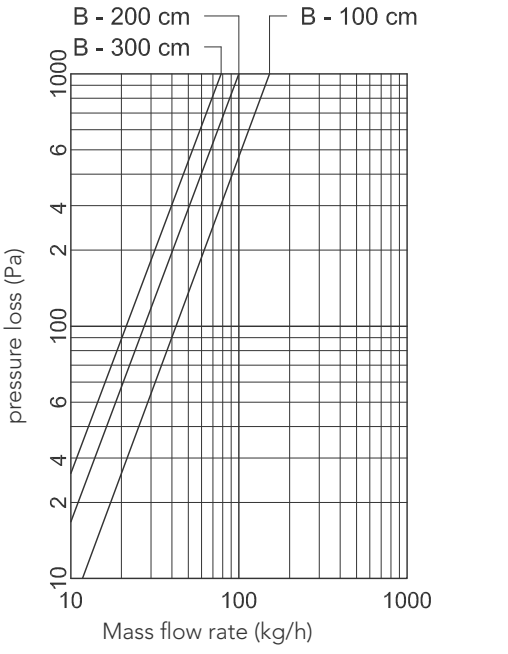
Example:
FMK-26-100-11, heat output for 75/65/20 °C: QN = 266 W, flow temperature: 50 °C,
return temperature: 45 °C, air temperature: 24 °C, correction factor K1 = 0.35
Corrected heat output for 50/45/24 °C: QS x K1 = 266 W x 0.35 = 93 W

Pressure loss diagrams

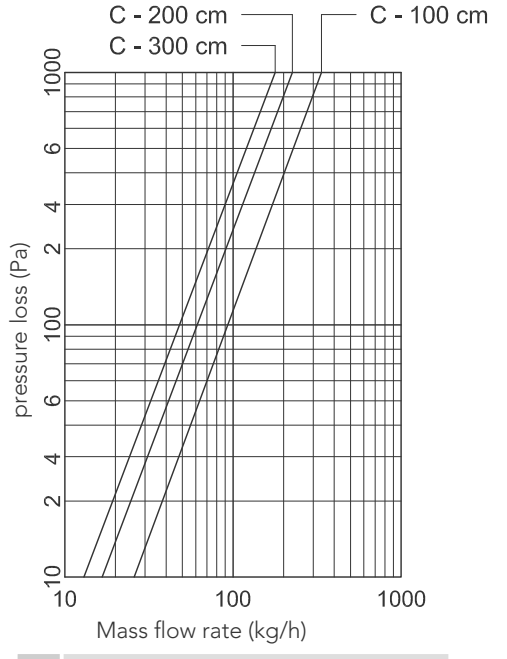
Intratherm pressure losses



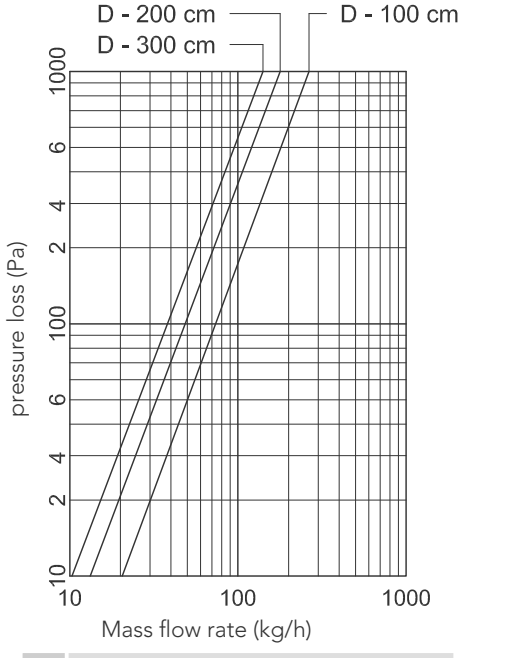
1	FMK-18-LLL-09, FMK-18-LLL-11
2	FMK-26-LLL-09, FMK-26-LLL-11
3	FMK-29-LLL-09, FMK-29-LLL-11
4	F1T-26-LLL-09
5	LVF-09-LLL-10, LVF-09-LLL-11



1	FMK-34-LLL-09, FMK-34-LLL-11
2	F1T-29-LLL-09
3	LVF-14-LLL-10, LVF-14-LLL-11



1	FMK-42-LLL-09, FMK-42-LLL-11
2	F1T-34-LLL-09
3	FMK-18-LLL-14
4	FMK-26-LLL-14, F1T-26-LLL-14
5	LVF-19-LLL-10, LVF-19-LLL-11
6	LVR-10-LLL-10, LVR-10-LLL-11

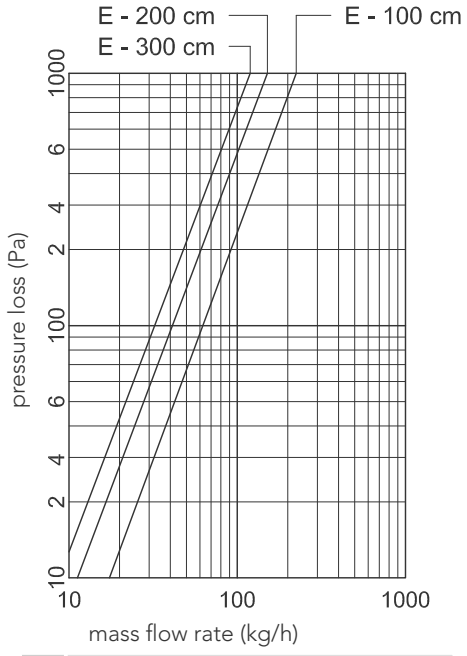


1	FMK-34-LLL-14
2	F1T-29-LLL-14
3	LVR-15-LLL-10, LVR-15-LLL-11

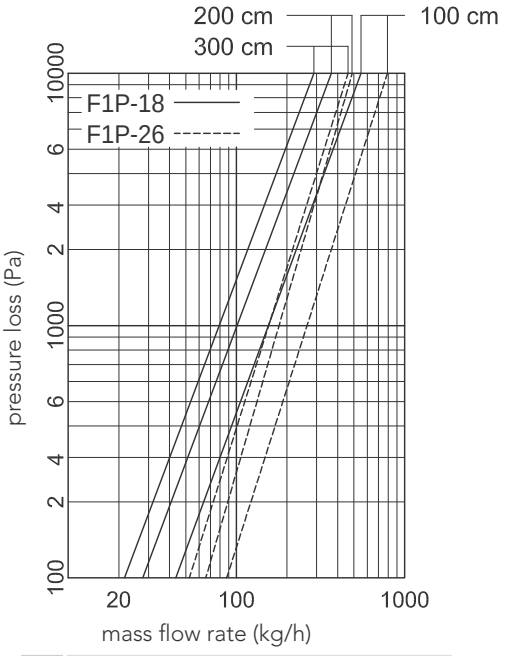
LLL = Total length of convector in cm

Pressure loss diagrams

Intratherm pressure losses



1	FMK-42-LLL-14
2	F1T-34-LLL-14
3	LVR-20-LLL-10, LVR-20-LLL-11

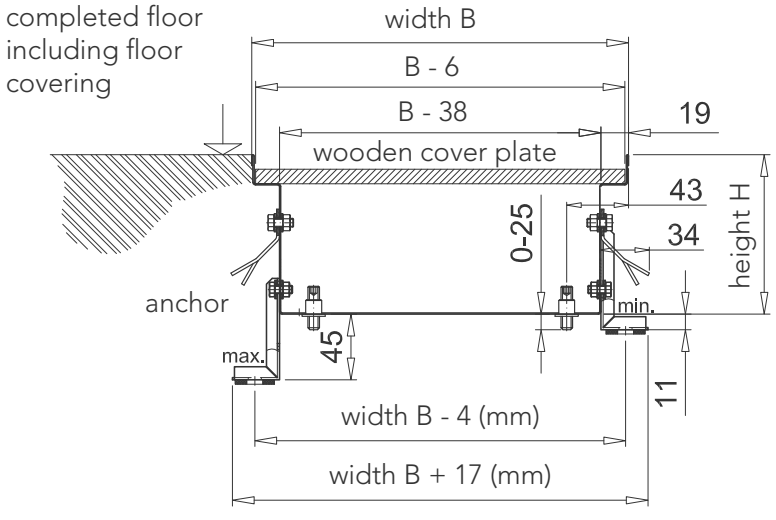


1	F1P-18-LLL-09
2	F1P-26-LLL-11

Installation of the trench convectors

Recommended installation of the convector with embedding of the trench in concrete

1) Prepare the convector for installation by placing the anchors with the screws in the drill holes provided and pushing out the openings for the pipework and cable feed. The rubber bushings are then fitted.
2) Place the trench onto the unfinished floor and position it using the adjustable screws (M8 x 30) or the anchor brackets in such a way that the top of the convector lies at the level of the floor including the screed (horizontal alignment of the trench). Attention: if using the Z-frame, the trench must be laid 3-5 mm below the level of the finished floor!
3) Use insulation (upon request) for the purpose of noise reduction and heat insulation
4) Connect the heat exchanger to the pipelines and carry out electrical installation.
5) For the moisture-proof version, connect the drainage facility in the trench floor to the drain.
6) Carry out another pressure test and test the functioning of the fans
7) Check the correct fit of the trench again
8) The wooden cover plate is refitted in the trench
9) Then embed the trench in concrete: the entire area underneath and around the convector trench up to approximately 1/3 of the height of the trench is filled evenly with light concrete; there must be no air bubbles remaining underneath the convector trench, as these are the cause of sound reverberation; the floor of the trench must lie on top of a concrete base layer. The remaining uncovered area is to be filled evenly with screed.
10) Only remove the wooden cover plate once all works have been completed
11) Fit the grille on top of the convector

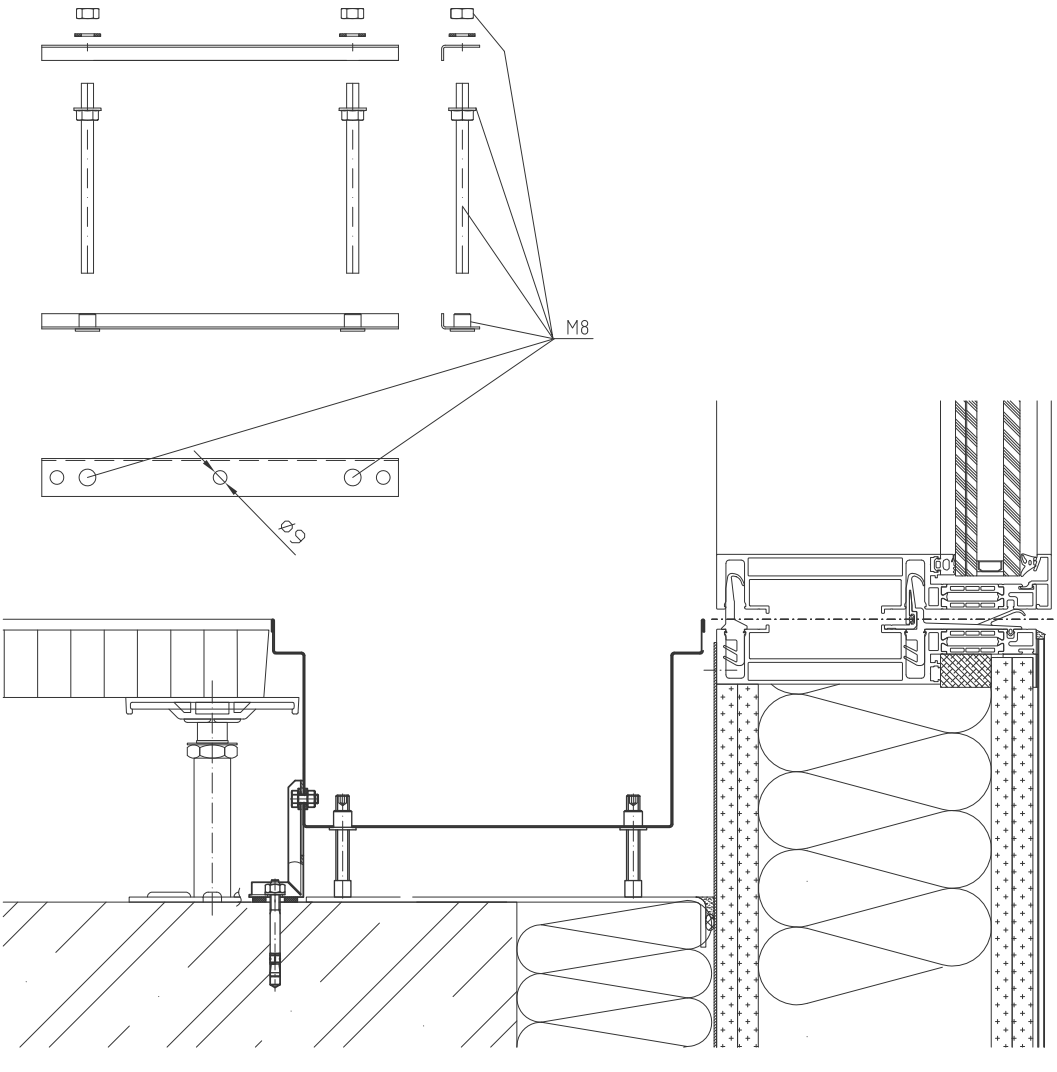


Installation of the trench convector

Recommended installation of the convector in the cavity floor using footfall impact-resistant height adjustment

1) The position of the drill hole (anchor bolt) is marked on the base
2) The footfall impact-resistant height adjustment is fitted onto the convector trench
3) The openings for the pipework and cable feed are pushed out and the rubber bushings are then fitted
4) Place the trench onto the unfinished floor and position it using the footfall impact-resistant height adjustment in such a way that the top of the convector lies at the level of the floor including the screed (horizontal alignment of the trench).
   Attention: If using the Z-frame, the trench is to be laid 3-5 mm below the level of the finished floor!
5) Use insulation (upon request) for the purpose of noise reduction and heat insulation
6) Connect the heat exchanger to the pipelines and carry out electrical installation.
7) For the moisture-proof version, connect the drainage facility in the trench floor to the drain.
8) Carry out a pressure test and test the functioning of the fans
9) Check the correct fit of the trench again
10) The wooden cover plate is refitted in the trench
11) Only remove the wooden cover plate once all works have been completed
12) Fit the grille on top of the convector

Height adjustment

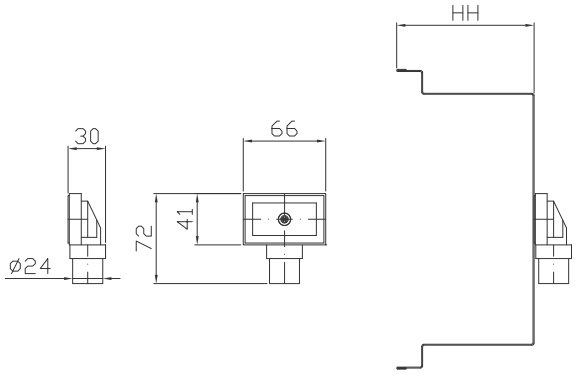


Installation of the trench convector

Recommended installation of the moisture-proof version

The installation of convectors in a moisture-proof version proceeds according to the previously-listed points (see pages 261 and 262)

1)The convector trench, the trench components and the grille are manufactured from corrosion-proof material
2) All joints on the trench are sealed with bathroom silicone sealant.
3) The floor of the convector trench is equipped with a drainage facility (see drawing below)
4) The waste water pipe must be fitted at an ensured gradient.
5) It is recommended that the installer should fit the water drain with an odour trap
6) The thermostat and the transformer must be fitted outside of the wet area
7) The electrical components must be connected via a residual current device



Definition of operating conditions

The operating conditions of Intratherm convectors have been defined as follows:

- Max. operating overpressure (10 bar)
- Maximum water operating temperature 110 °C
- Installation of the floor convectors in the enclosed hot water system
- Safe voltage of fan drives installed in the standard way is 12 V
- Defined non-corrosive and non-saline composition of swimming pool water

Maintenance and cleaning

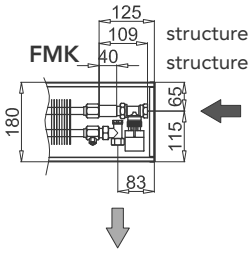
- Remove dirt from the convector trench (vacuum clean, wipe down) periodically (before and after the heating season as a minimum)
- Clean the heat exchanger with a soft brush
- Remove dust on the floor of the housing with a vacuum cleaner
- Remove any other dirt using a damp cloth
- Check the waste water drain on the floor of the trench in the moisture-proof version
- Check the functioning of the individual fan drives while not in use for extended periods (prior to the heating season)

Recommended measures in the event of reduced output

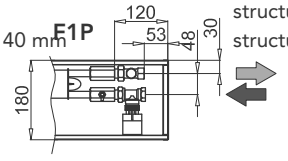
Check:

- The installation of the heat exchanger (horizontal position)
- The supply temperature in the heat exchanger
- The ventilation of the heat exchanger
- The circulation of hot water in the system (function of the system pump)
- The settings of the thermostatic valve, the thermostatic head, the lockshield valve
- The functioning of the fans

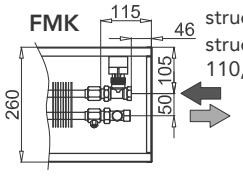
Recommended connection examples



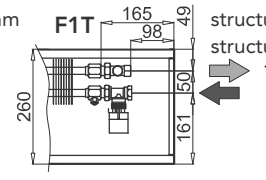
FMK
structure width 180 mm
structure height 90, 110, 140 mm



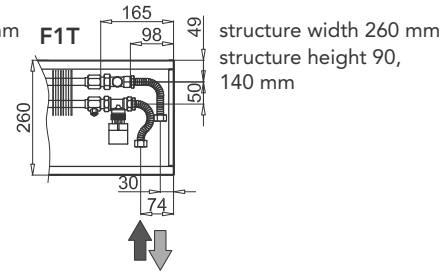
F1P
structure width 180 mm
structure height 90 mm



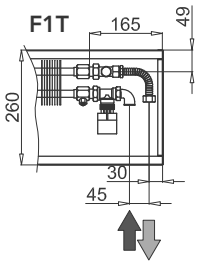
FMK
structure width 260 mm
structure height 90,
110, 140 mm



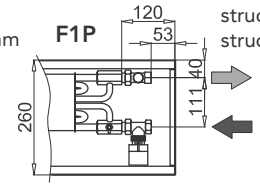
F1T
structure width 260 mm
structure height 90,
140 mm



F1T
structure width 260 mm
structure height 90,
140 mm



F1T
structure width 260 mm
structure height 90,
140 mm



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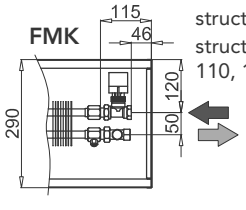
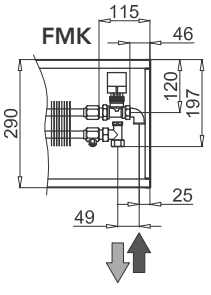
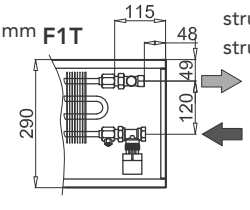
structure height 90 mm



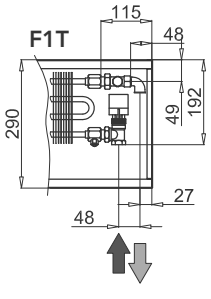
FMK
structure width 290 mm
structure height 90,
110, 140 mm



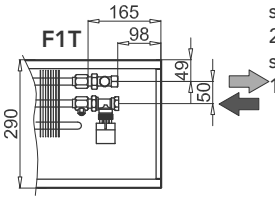
FMK
structure width 290 mm
structure height 90,
110, 140 mm



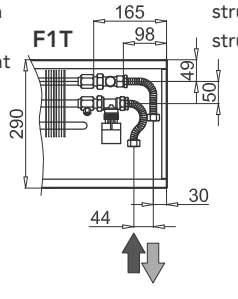
F1T
structure width 290 mm
structure height 90 mm



F1T
structure height
90 mm

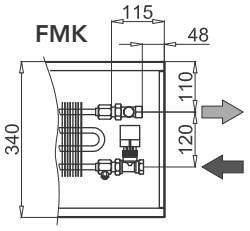


F1T
structure width
290 mm
structure height
140 mm

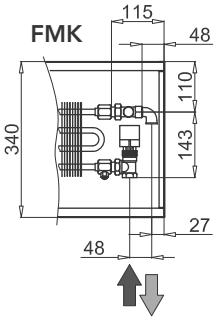


F1T
structure width 290 mm
structure height 140 mm

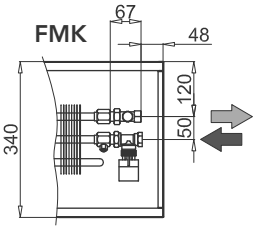
Recommended connection examples



structure width
340 mm
structure height
90,110 mm



structure width
340 mm
structure height
90,110 mm



structure width
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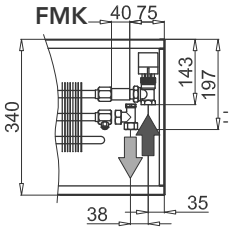
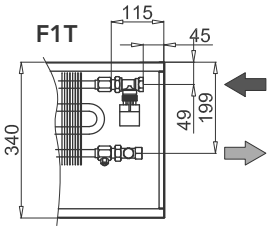
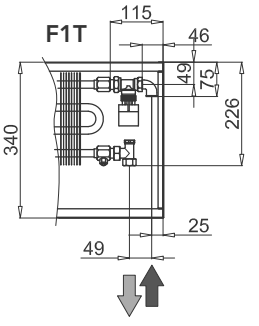
structure height
140 mm



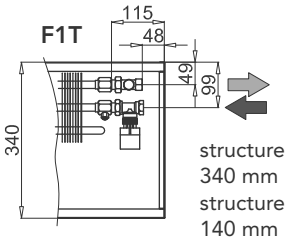
structure width
340 mm
structure height
140 mm



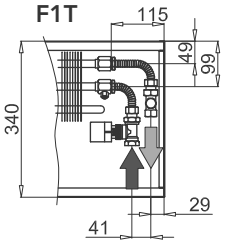
structure width
340 mm
structure height
90 mm



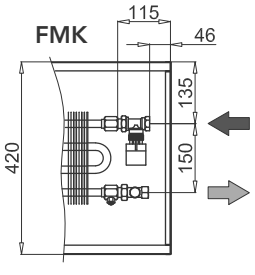
structure width
340 mm
structure height
90 mm



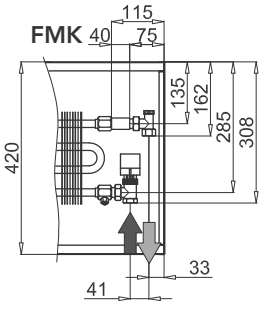
structure width
340 mm
structure height
140 mm



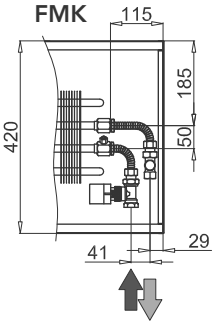
structure width
340 mm
structure height
140 mm



structure width
420 mm
structure height
90, 110mm



structure width
420 mm
structure height
90, 110mm



structure width
420 mm
structure height
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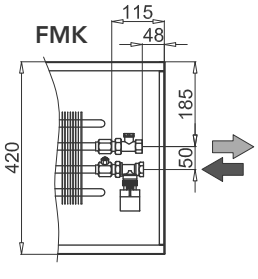
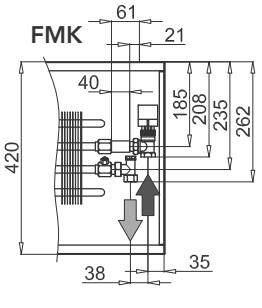


structure width
420 mm
structure height
140 mm



structure width
420 mm
structure height
140 mm

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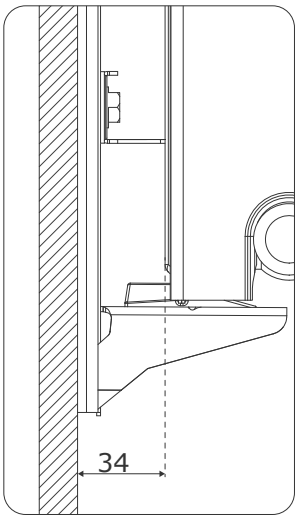
Important:
The standard VDI 6036 recommends minimum demands of radiator brackets in different environments.
To make these recommendations simple to understand for the user, there is a guideline in the withstanding tables. This is to give you the reliability and security in the planning and installation of the radiators.

Consider the wall material before the installation!

The minimum amount of brackets in the tables, is given under the circumstances
That they are used in wall material – lime stone or concrete – together with the screws and plugs that are delivered together with the brackets.
For other wall materials, like plaster, poroton or Ytong there has to be other types of screws and plugs and eventually more brackets per radiator.

From a general point of view, there has to be used the correct type of screws and plugs for the specific wall material in question. This can only be determined by the installer at the worksite.

More information regarding VDI 6036 guidelines, please contact Ke Kelit NZ.



Wall distance
The distance from the wall to the backside of the radiator is **34 mm**.

The measurement to the middle of the tube connection is given by the radiator producer.

Minimum amont of brackets for AWK 1-3 to reach VDI 6036 in different wall materials

Wall material	Limestone / Beton			Poroton			
Height	300-400		500-750	300-400		500-750	
	Classification						
Length	AWK 1-2	AWK 3	AWK 1-2-3	AWK 1-2	AWK 3	AWK 1-2	AWK 3
400	2	2	2	2	2	2	2
500	2	2	2	2	2	2	2
600	2	2	2	2	2	2	2
700	2	2	2	2	2	2	2
800	2	2	2	2	2	2	2
900	2	2	2	2	2	2	2
1000	2	2	2	2	2	2	2
1200	2	2	2	2	3	2	2
1400	2	3	2	3	3	2	3
1600	2	3	2	3	3	3	3
1800	3	3	3	3	3	3	3
2000	3	3	3	3	4	3	4
2200	3	4	3	4	4	3	4
2400	3	4	3	4	4	4	4
2600	3	4	3	4	5	4	5
2800	3	4	3	4	5	4	5
3000	3	4	3	4	5	4	5

Assembly instruction MCA-F 41
for mounting radiators without lugs

Panel radiator type: 20 - 21 - 22 - 30 - 33
Radiator heights: 300 - 750 mm

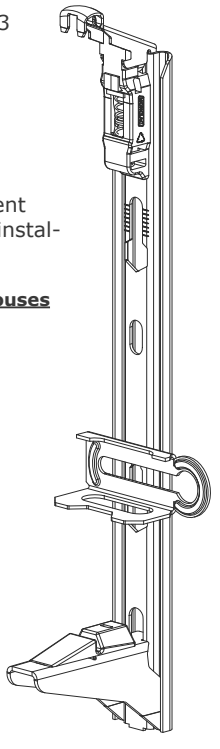
Radiator producer:
V&N Cosmo

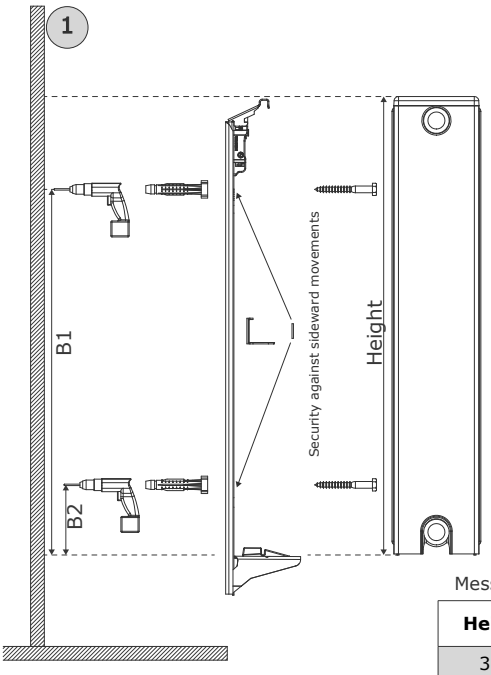
Extract from the VDI 6036 of the different elds of application (AWK):
To simplify the understandings of the different applications, there is a distinction between installation in private and public houses.

Private Application AWK 1-2
like
Own homes
Condominiums
Rented ats
Staff dining rooms
Etc.

Applications in public houses AWK 3
like
Railway stations
Hotels
Youth hostels
Restaurants
Hospitals
Shopping centres
Schools
Etc.

SIGARTH MONCLAC





51164402	**SIGARTH RADIATOR BRACKET SET, UP TO 1600mm x 400mm (2 Brackets)**
51164412	**SIGARTH RADIATOR BRACKET SET, UP TO 2200mm x 400mm (3 Brackets)**
51164405	**SIGARTH RADIATOR BRACKET SET, UP TO 1600mm x 600mm (2 Brackets)**
51164415	**SIGARTH RADIATOR BRACKET SET, UP TO 2200mm x 600mm (3 Brackets)**
51164407	**SIGARTH RADIATOR BRACKET SET, UP TO 1600mm x 900mm (2 Brackets)**

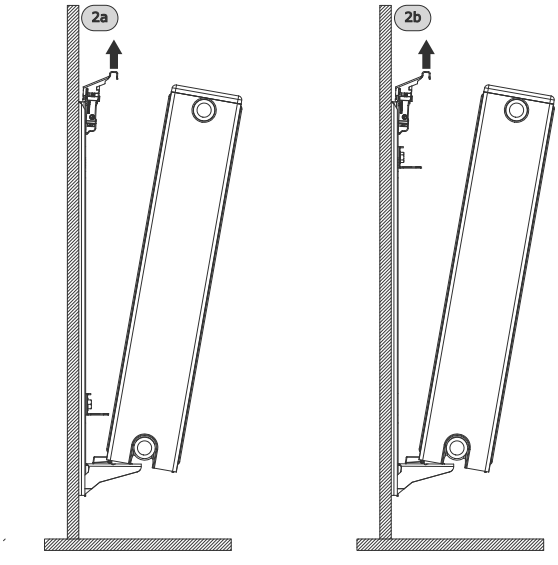
Drilling information:

- Plug 10 x 60
- Wood screw 8 x 80mm
- Drilling 10 mm Ø
- Depth of hole 80mm
- Clean the hole

Remark:
Don´t use hammer drills in lime stone material.

Messurements in mm

Height	B1	B2
300	200	76
400	300	76
500	400	76
550	450	76
600	500	76
900	800	76
950	850	76

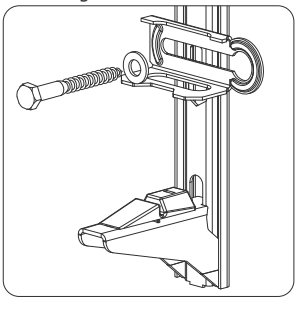


Mounting of the accessory (SFS) for preventing sideward sliding, according VDI 6036 AWK 1-3.

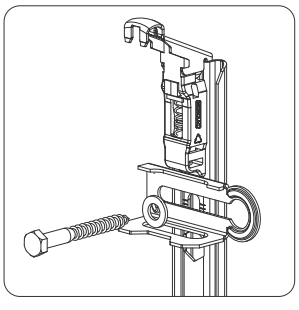
The mounting of the SFS is made with the upper or the lower bracket screw.

We recommend to use the right bracket for mounting the SFS

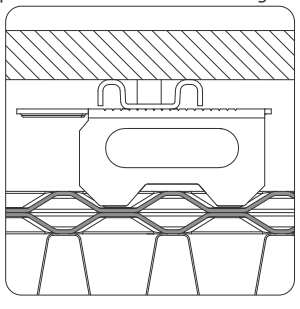
Mounting with the lower screw

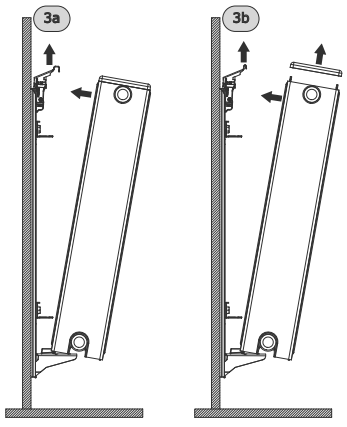


Mounting with the upper screw



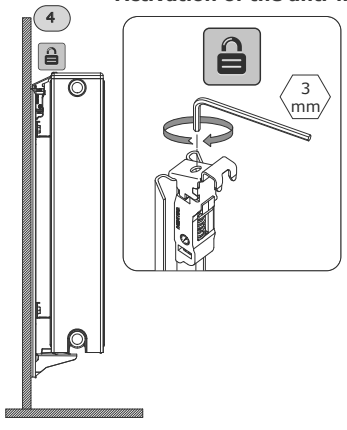
Correct position of the SFS for prevention of sideward sliding





Depending of the bracket upper part, the assembly can be made under or over the top grill.

Activation of the anti-lift-off device



Note
After the mounting, the upper part has to be secured by an Allen key 3 mm. This will make the radiator secured from lift-off.

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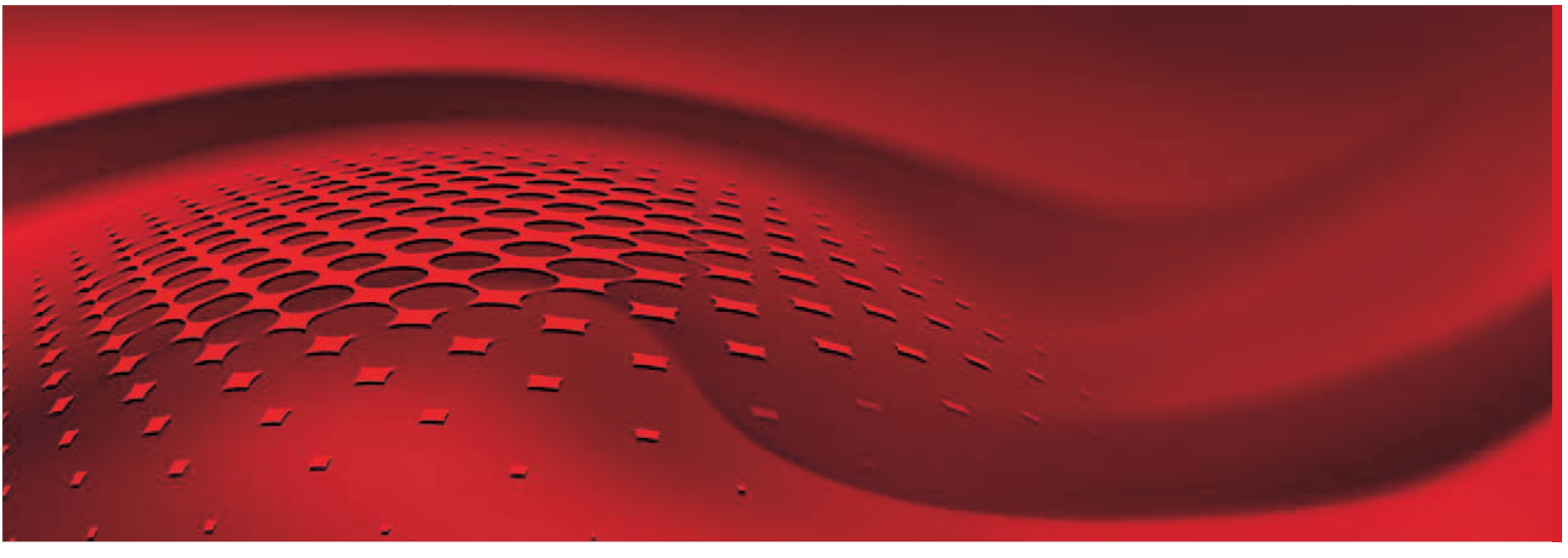
0800 4 5353548
climatecontrol@kekelit.co.nz
www.kekelit.co.nz



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