

VERTICAL RADIATOR



Connections
4 x G 1/2 I.G



Test positive pressure
13 bar



Max. positive operating pressure 10 bar



Max. operating temperature 110 °C

Profile radiator

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

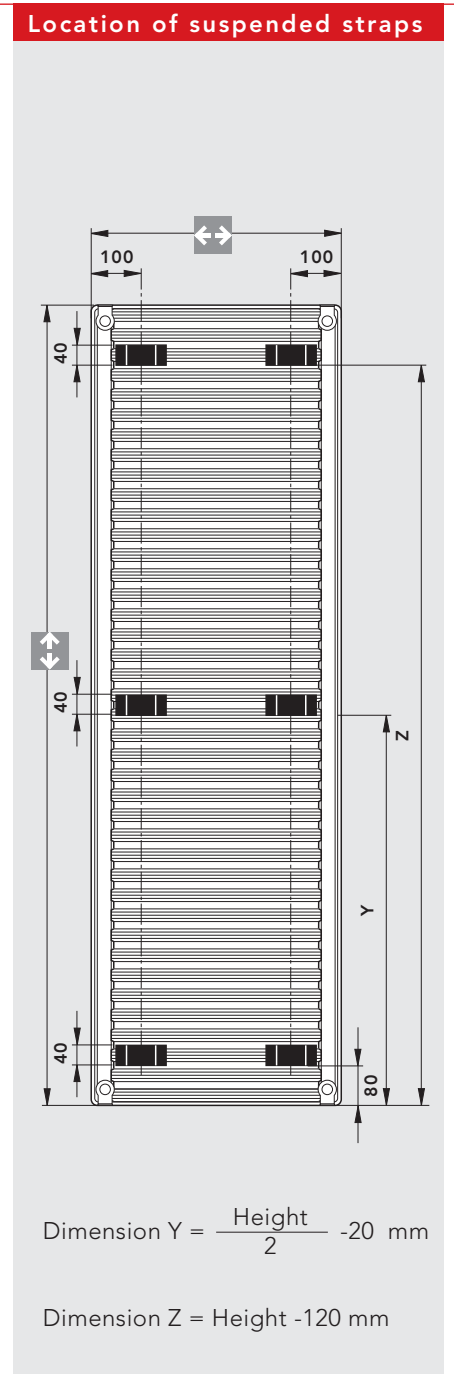
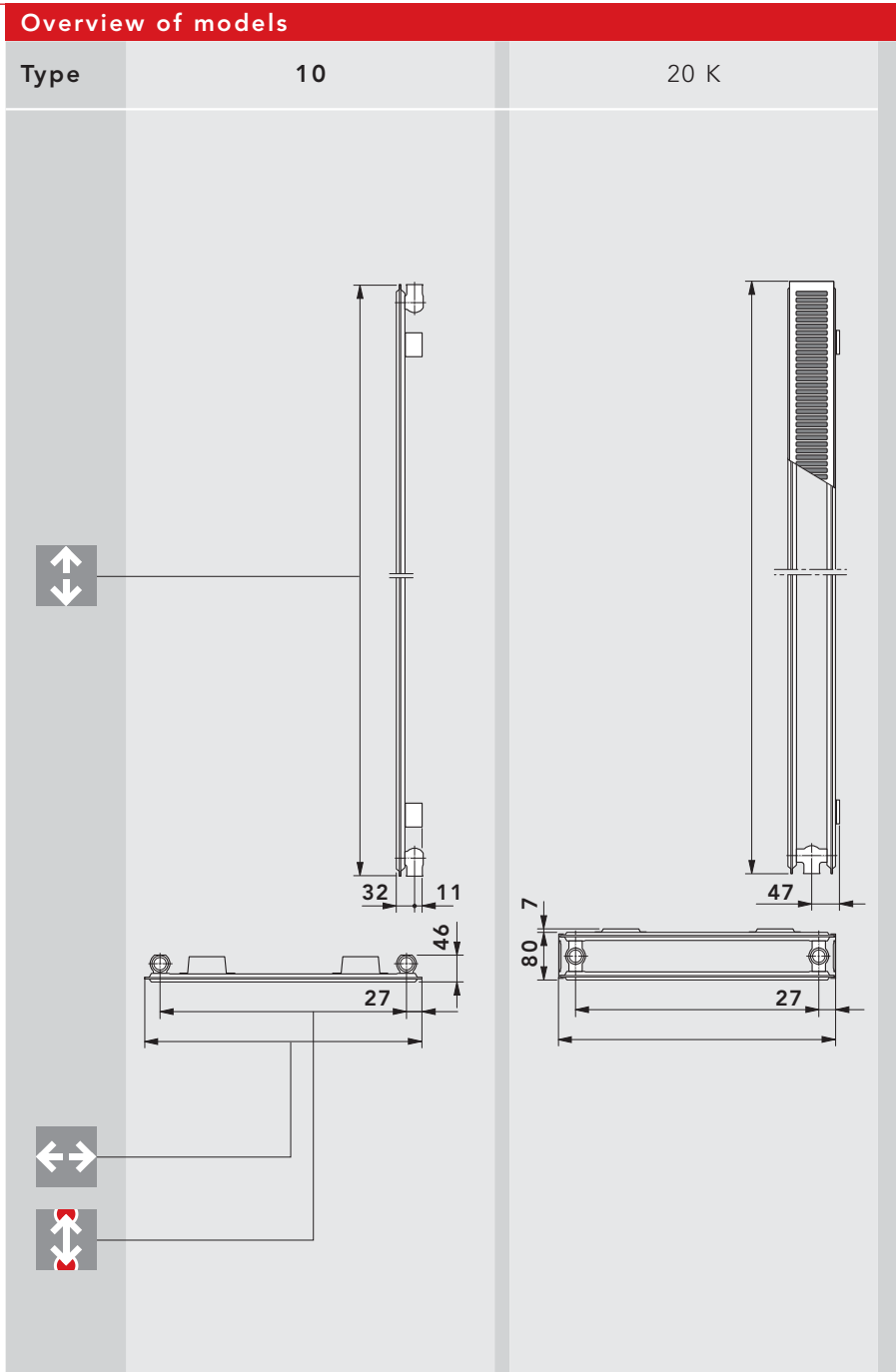
1. Primer in accordance with DIN 55900 part 1, fired at 190° C.
2. The top coat, in accordance with DIN 55900 part 2, in RAL 9016 (available in many RAL and sanitary colours on request, for a supplement), is applied electrostatically in a modern powder coating plant. The resistant coating, which is particularly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

Packaging

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

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



Type	10					20 K				
Height [mm]	1800	2000	2200	2400	2600	1800	2000	2200	2400	2600
Length [mm]	500 und 600					500 und 600				
Hub spacing [mm]	446 und 546					446 und 546				
Gradation	All overall heights from 1800 mm in 200 mm gradations									

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Outputs/weights



Weights in kg for VERTICAL RADIATORS					
↕ Height [mm]	↔ Type	500		600	
		10	20 K	10	20 K
↕ Length [mm]	↔ Weight				
1800	kg	18,60	36,31	21,69	42,77
2000	kg	20,50	40,22	23,93	47,39
2200	kg	22,41	44,11	26,18	52,01
2400	kg	24,32	48,01	28,43	56,64
2600	kg	26,22	51,91	30,67	61,26
Range of models		VERTICAL RADIATORS			

The radiator models and dimensions that may be ordered are based on the production range set out in the price list.

Profile radiator

The side grills (model 20 K) of the VERTICAL RADIATOR are taken into consideration in the output data

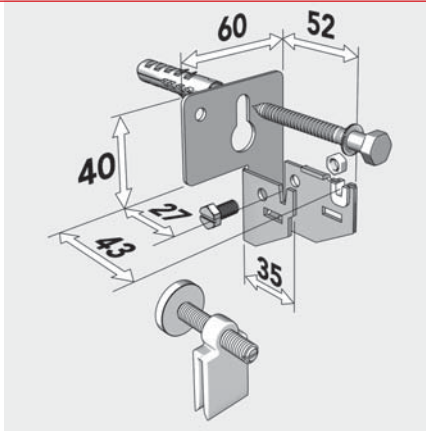
Output data in watts, in accordance with DIN EN 442 and/or ÖNORM EN 442

Temperature matches		90/70/20° C*				75/65/20° C*				70/55/20° C*				55/45/20° C*				45/40/20° C*				Radiator exponent n	
↕ Height [mm]	↔ Type	500		600		500		600		500		600		500		600		500		600		10	20 K
		10	20 K	10	20 K	10	20 K	10	20 K	10	20 K	10	20 K	10	20 K	10	20 K	10	20 K	10	20 K		
↕ Length [mm]	↔ Output																						
1800	Watt	966	1601	1159	1921	751	1255	901	1506	599	1010	719	1212	370	634	444	761	248	432	298	518	1,385	1,336
2000	Watt	1083	1755	1299	2106	836	1373	1003	1648	663	1103	796	1324	404	690	485	828	269	468	322	562	1,421	1,347
2200	Watt	1201	1913	1441	2296	931	1492	1117	1790	741	1195	889	1434	455	743	546	892	304	502	365	602	1,400	1,365
2400	Watt	1333	2075	1600	2490	1037	1613	1244	1935	829	1288	995	1546	513	796	615	955	345	535	414	642	1,378	1,383
2600	Watt	1481	2241	1778	2689	1157	1735	1388	2082	927	1381	1113	1658	578	848	694	1017	391	566	469	679	1,358	1,403
Range of models		VERTICAL RADIATORS										* Flow temperature/return temperature/room temperature											

The radiator models and dimensions that may be ordered are based on the production range set out in the price list.

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: AZOFT200R0H01000, AZOFT060R1V01000, AZOFT090R1V01000).

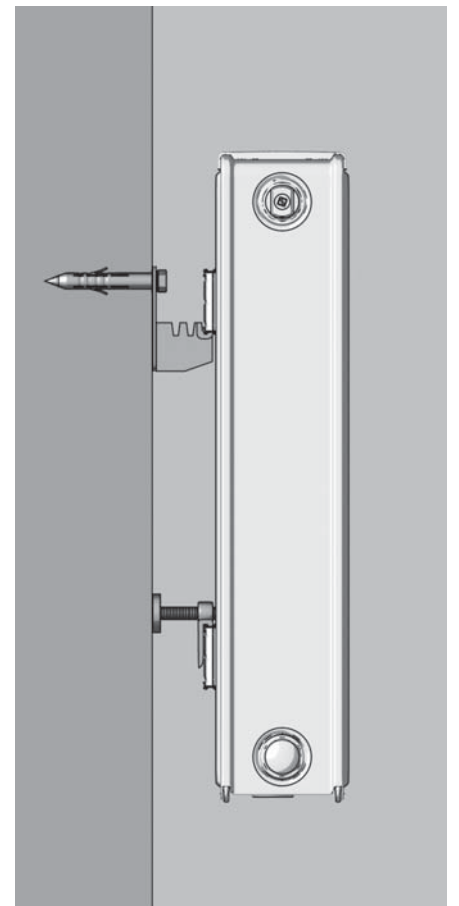
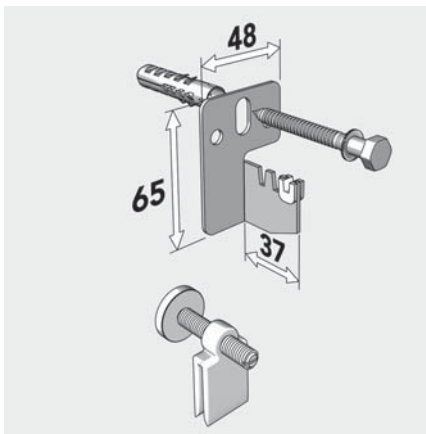
With 11 VM and 11 PM models, wall clearance can be adjusted for multi-layered T6 radiators, in cases where pre-assembly on the assembly bracket was multi-layered at the position.

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

FASTENING SET ANGLE-FISHPLATE

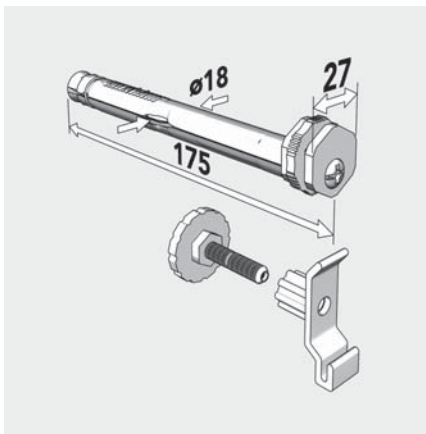
For surface mounting, consisting of:
 2 angle-fishplates with sound-absorbing filter
 2 spacers,
 2 hexagon head wood screws and
 2 dowels.

Wall clearance: between finished wall and radiator mounting link = 14, 24 to 34 mm



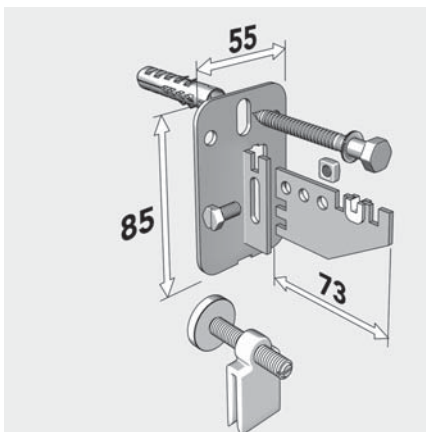
DRILL CONSOLE SET

length: 160 mm
 consisting of:
 2 drill consoles and
 2 spacers



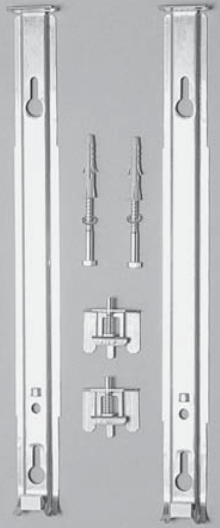
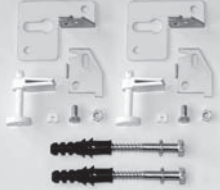



FASTENING SET FOR ALL-PURPOSE ANGLE-FISHPLATE

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
 2 spacers.



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

Wall fastening systems

Image	Order-number	Article description	COMPACT RADIATOR	T6-CENTRALLY CONNECTED RADIATOR	T6-PLAN CENTRALLY CONNECTED RADIATOR
	<p>AZ0BW030V0002000 AZ0BW040V0002000 AZ0BW050V0002000 AZ0BW060V0002000 AZ0BW090V0002000</p> <p>AZ0BW030V0003000 AZ0BW040V0003000 AZ0BW050V0003000 AZ0BW060V0003000 AZ0BW090V0003000</p>	<p>Wall console: consisting of 2 or 3* wall consoles (galvanised) with sound-absorbing filters and integrated connection and displacement locking device, 2 or 3* balancer holders, 2 or 3* serrated lock washers, screws and dowels, a shrink-wrapped assembly instruction.</p> <p>wall console set 300 (set of 2) wall console set 400 (set of 2) wall console set 500 (set of 2) wall console set 600 (set of 2)) wall console set 900 (set of 2) *set of 3: from OL 1800 mm onwards</p> <p>wall console set 300 (set of 3) wall console set 400 (set of 3) wall console set 500 (set of 3) wall console set 600 (set of 3) wall console set 900 (set of 3)</p>	<p>• • • • • •</p> <p>• • • • • •</p>	<p>• • • • • •</p> <p>• • • • • •</p>	<p>• • • • • •</p> <p>• • • • • •</p>
	AZ0BU00012002000	<p>Fastening set special angle-fishplate: applicable for type and 11 PM to achieve a consistent wall clearance of 66 mm, for surface mounting, consisting of 2 angle-fishplates with sound-absorbing filter, 2 spacers, 2 hexagon head wood screws, and 2 dowels.</p>		•	•
	AZ0BU00010002000	<p>Fastening set angle-fishplate: for surface mounting, consisting of 2 angle-fishplates with sound-absorbing filter, 2 spacers, 2 hexagon head wood screws, and 2 dowels.</p>	•	•	•
	AZ0BU00040002000	<p>Drill console set: length: 160 mm, consisting of 2 drill consoles and 2 spacers</p>	•	•	•
	AZ0BU00030002000	<p>Fastening set for all-purpose angle-fishplate: (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.</p>	•	•	•

For installation					
Image	Order-number	Article description	COMPACT RADIATOR	T6-CENTRALLY CONNECTED RADIATOR	T6-PLAN CENTRALLY CONNECTED RADIATOR
	AZ0PL000C0002000	Screw cap G 3/4 with O-ring seal, nickel plated brass		•	•
	AZ0PL000B0001000	Dummy plug G 1/2 with O-ring, nickel plated brass	•	•	•
	AZ0PL000V1001000	Special vent plug G 1/2 pivotable, with O-ring, nickel plated brass		•	•
	AZ0PL000V0001000	Vent plug G 1/2 pivotable, with O-ring, nickel plated brass	•		
	AZ0PL000R0001000	Reducer G1/2 - G3/8 with O-ring, nickel plated brass	•	•	•
	AZ0PL000D0001000	Drain plug G 1/2 (pressure tight), nickel plated brass with a cap made of plastic	•	•	•
	AZ0PL000D1001000	Drain tube suitable for drain plug Nr. FSW2020ZF	•	•	•
	AZ0MM000K0001000	Drain device made of plastic	•	•	•
	AZ0SC010C0002000 AZ0SC012C0002000 AZ0SC014C0002000 AZ0SC015C0002000 AZ0SC016C0002000 AZ0SC018C0002000	Clamping screw for Cu steel pipe - 10 mm for Cu steel pipe - 12 mm for Cu steel pipe - 14 mm for Cu steel pipe - 15 mm for Cu steel pipe - 16 mm for Cu steel pipe - 18 mm		• • • • • •	• • • • • •
	AZ0CB010C0002000 AZ0CB012C0002000 AZ0CB014C0002000 AZ0CB015C0002000 AZ0CB016C0002000 AZ0CB018C0002000	Supporting collar for Cu steel pipe - 10 mm for Cu steel pipe - 12 mm for Cu steel pipe - 14 mm for Cu steel pipe - 15 mm for Cu steel pipe - 16 mm for Cu steel pipe - 18 mm		• • • • • •	• • • • • •
	AZ0SC012P0002000 AZ0SC013P0002000 AZ0SC014P0002000 AZ0SC016P0002000 AZ0SC016P1002000 AZ0SC017P0002000 AZ0SC018P0002000 AZ0SC018P1002000 AZ0SC020P0002000 AZ0SC021P0002000 AZ0SC021P1002000	Clamping screw for plastic pipe 12x2 mm for plastic pipe 13x2,5 mm for plastic pipe 14x2 mm for plastic pipe 16x2 mm for plastic pipe 16x3 mm for plastic pipe 17x2 mm for plastic pipe 18x2 mm for plastic pipe 18x2,5 mm for plastic pipe 20x2 mm for plastic pipe 21x2 mm for plastic pipe 21x2,5 mm		• • • • • • • • • • •	• • • • • • • • • • •

Note: In double-pipe operation, valve radiators can also be connected by means of through shaped or angular shaped standard radiator bolting.

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 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
	40	1,33	1,47	1,65	1,78	1,94	2,13	2,36
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

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

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

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.

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

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

Technical information subject to change.

Use our radiator power calculator on www.vogelundnoot.com

Item	Number	Descriptions
		<p>UPGRADE RADIATOR</p> <p>Material & Surface Made of cold-rolled sheet steel, in accordance with EN 442-1, with a stylish and robust fluting with ribs at 40 mm intervals; undercoating in accordance with DIN 55900 part 1, stoved at 190° C; finished with an electrostatic powder coating, in accordance with DIN 55900 part 2, in standard colour 9016; stoved at an object temperature of 210° C.</p> <p>Equipment Equipped with wall brackets that are welded onto the back, and with a detachable top cover and two closed side panels (for types 21 K-S, 22 K and 33 K); the covering complies with the former BAGUV regulations.</p> <p>Assembly Disassembling and assembling of the top cover by means of decor-clips (in standard colour 9016); verification of heat emission in accordance with EN 442; permanent monitoring of production process in accordance with EN-ISO 9001; a fit-up aid, made of cardboard, is added; triple-packed (cardboard packaging, edge protection, shrink foil).</p> <p>Connection 4 x internal thread G 1/2"</p>
		<p>VERTICAL RADIATOR</p> <p>Material & Surface Made of cold-rolled sheet steel, in accordance with EN 442-1, with a stylish and robust fluting with ribs at 40 mm intervals; undercoating in accordance with DIN 55900 part 1, stoved at 190° C; finished with an electrostatic powder coating, in accordance with DIN 55900 part 2, in standard colour 9016; stoved at an object temperature of 210° C.</p> <p>Equipment Equipped with wall brackets that are welded onto the back and two side grilles (20 K), performance verification in accordance with EN 442; constant monitoring of production processes in accordance with EN-ISO 9001; triple-packed (cardboard packaging, edge protection, shrink foil).</p> <p>Connection 4 x internal thread G 1/2"</p>
		<p>T6-PLAN CENTRALLY CONNECTED RADIATOR</p> <p>Material & Surface Made of cold-rolled sheet steel, in accordance with EN 442-1; galvanised front panel (1mm thick); undercoating in accordance with DIN 55900 part 1, stoved at 190° C; fini-shed with electrostatic powder coating, in accordance with DIN 55900 part 2, in standard colour 9016; stoved at an object temperature of 210° C.</p> <p>Equipment Fitted with an integrated T-valve set; designed for double-pipe and single-pipe systems with a single-pipe manifold; factory-installed built-in valve with pre-set kv-value adjusted to heat output; if needed, adjustable in the range 0.13 to 0.72. With single-pipe systems, the radiator proportion can be set from 30% to 50%. All models are fitted with a protective cap for the built-in valve, welded suspension brackets on the back, a removable top cover and two closed side panels, a drain plug, a pivoting special vent plug and a dummy plug, all of them sealed; the cover system complies with the former BAGUV regulations.</p> <p>Assembly Complete pre-installation fitting is possible using the fitting templates (external thread 3/4"); flush and hydrostatic test using the flush device (accessory); also suitable for connection as a compact radiator (one-sided or two-sided); standardised wall clearance for all multi-layer radiators (with a special angle-fishplate also for single-layer radiators). Verification of heat emission in accordance with EN 442 ; constant monitoring of production process in accordance with EN-ISO 9001; triple-packed (cardboard packaging, edge protection, shrink foil); suitable for manual operation as well as thermostat operation. Connection possibilities for copper, steel, plastic or alloy pipes.</p> <p>Connection 4 x internal thread G 1/2" and 2 x external thread G 3/4", at bottom centre. Thermostatic valve (factory-sealed at top right) subsequently convertible to the left, without having to turn the radiator and without crossing of supply and return</p>
		<p>Type: Wattage:</p>
		<p>Overall height: Number of items:</p>
		<p>Overall length:</p>

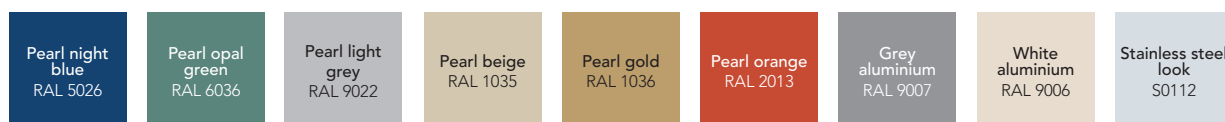
SANITARY COLOURS.



RAL COLOURS.



METALLIC COLOURS.



Additional charge for colours (except RAL 9016):
 Standard colours: + 30%
 Sanitary-ware colours: + 30%
 Metallic colours: + 30%

The colours shown here are not binding. Chromatic aberrations are possible due to typographic reasons. Additional colours are available on request!

Technical information subject to change.