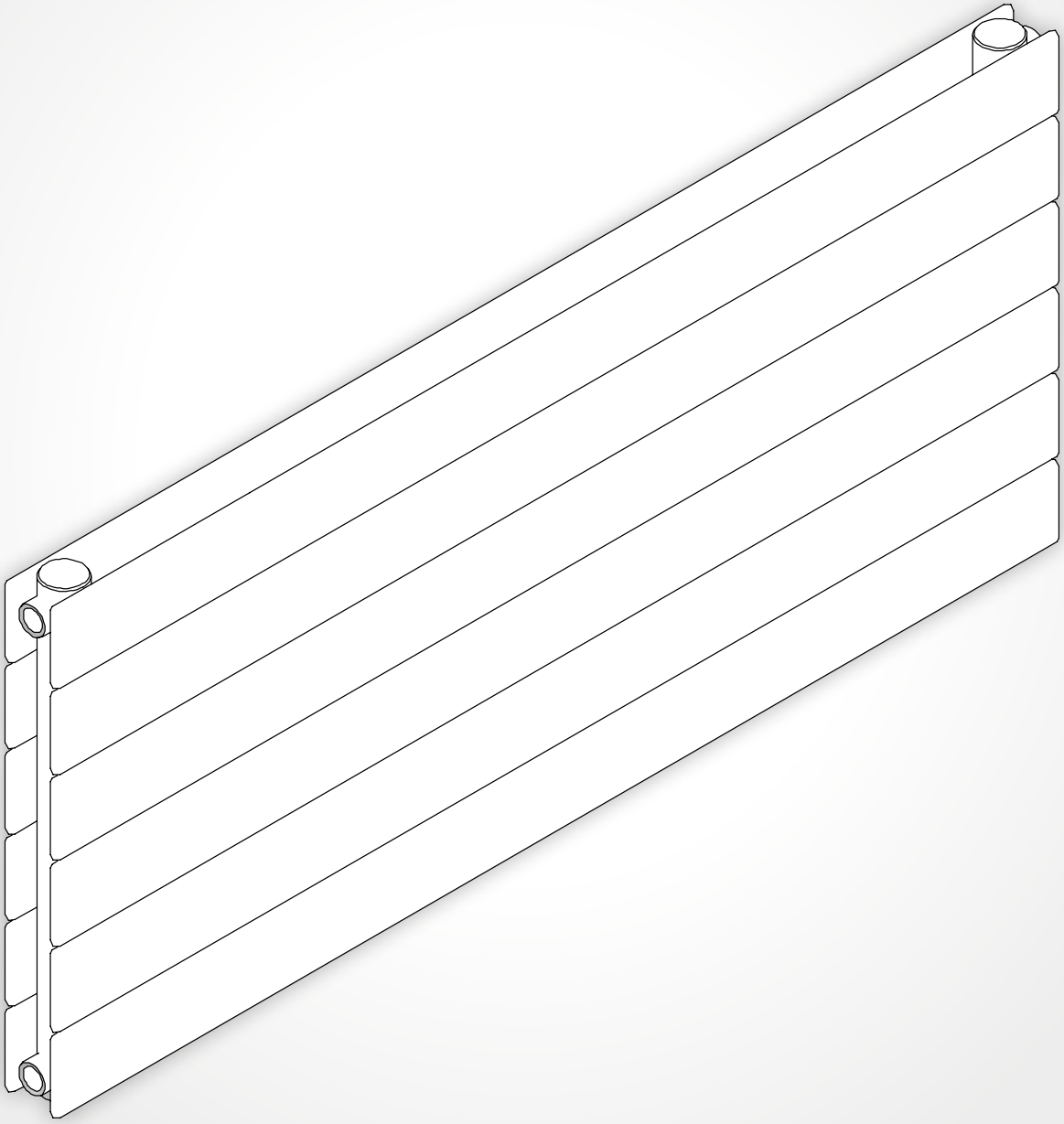
RuntalRad

Technical brochure



Versatile

Heating · Cooling · Ventilation

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About Versatile Group

Established in 1984 with its grass roots in engineering and specialised building products and services, Versatile have designed and supplied the most exclusive brands in heating, cooling and ventilation with an innovative offering of radiators, radiant panels, trench heating, heat recovery and ventilation, overdoor air curtains, fan coils and valves.

Versatile's revolutionary solutions offer the best in energy-efficient heating, cooling & ventilation, supplying to healthcare, schools, commercial & domestic projects across Ireland.

Versatile is built on 4 core values which impact everything we do.

People
We are a family-run business built on long lasting relationships. To create great experiences we ensure our customers, staff and partners are at the heart of every decision we make.

Specialist
We care about the work that we do and are proud to be the trusted provider of innovative solutions. To adapt to our customers bespoke design requirements, our specialist team only work with world class manufacturers and small ranges of exclusive products.

Inspiring
We give our time and knowledge to be at the forefront of innovation in design and technology. We understand that our products impact our customers daily, so we seek solutions to delight.

Sustainable
We care about the environment and continually pursue solutions for a better future. We invest in sustainable, energy saving products that lower C02 emissions and contribute to green building certifications. We ensure that everyone in the whole chain of our product's life cycle is accountable.

RuntalRad

Table of contents

Sizes, units of measurement, symbols (EN 442)

Symbol	Unit	Description
H	mm	Height
L	mm	Length
T	mm	Depth
H Lam.	mm	Height of fins
N	mm	Distance between connections
A	m^2	Surface area
V	dm^3	Water capacity
M	kg	Empty weight
E	–	Number of elements
t_1	°C	Flow temperature
t_2	°C	Return temperature
t_r	°C	Room temperature
t_m	°C	Mean water temperature
ØT	K	Temperature difference $t_m - t_r$
Φ	W=(J/s)	Heat capacity
Φ_S	W	Nominal heat emission
Φ_L	W	Nominal heat emission per module
c_p	J/kg K	Mean specific heat capacity
n	–	Radiator characteristic, exponent
s_k	%	Percentage of emission by radiation
c_K	–	Correction factor to Φ_S
q_m	kg/h/(kg/s)	Water flow
q_{ms}	kg/h/(kg/s)	Normal water flow
v	m/s	Speed
Øp	kPa	Pressure loss, pressure drop
ζ	–	Coefficient of resistance

General

Technical details such as dimensions, weights, heat surfaces always relate to the standard model of the specific product. This information is applicable only to radiators with an overall length of 1000 mm. For other lengths, the influence of the couplings and/or header tubes must be taken into consideration.

The heat emission figures are valid for connections on the same end. The influence of other connection types is described in the technical literature. We will be pleased to provide you with information regarding specific cases.

EURONORM EN 442

Heat capacity Φ

The heat emission of a radiator model is determined from the nominal characteristics:

$\Phi = K_M \cdot \Delta T^n$ where K_M is the constant for the model.

According to the standard SIA 384.502 (EN442-2), the temperature difference is calculated from the arithmetic mean between the flow and return temperatures and the reference air temperature.

$$\Delta T = \frac{t_1 + t_2}{2} - t_r$$

Temperature difference ØT

The heat emission for temperature differences ØT other than the nominal temperature difference ØT = 50 K can therefore be calculated from the equation.

$$\Phi = \Phi_S \left(\frac{\Delta TK}{50K}\right)^n$$

Example of the heat emission calculation for Φ

Φ = 459 W
Exponent n = 1.24
t_1 = 60°C
t_2 = 40°C
t_r = 15°C

$$\Delta T = \frac{60°C + 40°C}{2} - 15°C = 35K$$

$$\Phi = 459\ W \left(\frac{35K}{50K}\right)^{1.24} = 459\ W \cdot 0.6426 = 295\ W$$

Nominal water flow q_{ms}

(heating medium flow, flow-through quantity, mass flow)
The nominal water flow q_{ms} of a radiator results in a temperature spread of 10K with a flow temperature of 75°C (nominal heat emission conditions).

$$\text{Therefore } q_{ms} = \frac{\Phi}{c_p\,(t_1 - t_2)} \quad c_p \approx 4187\ \frac{J}{Kg \cdot K}$$

The actual water flow qm of a radiator can differ considerably from the nominal water flow qms with flow and return temperatures other than 75/65°C.

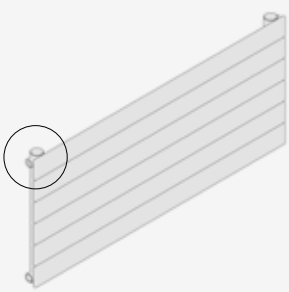
$$q_{ms} = \frac{459}{4187\ (75-65)} \quad q_{ms} = 0.011 kg/s \approx 39.5 kg/h$$

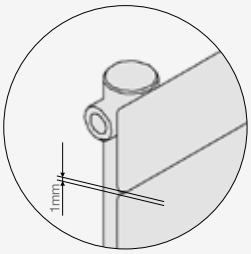
RuntalRad

Models overview

Horizontal

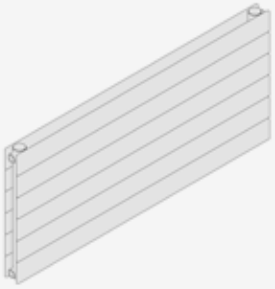
Type RRH





Type RRHL

Type RRHH



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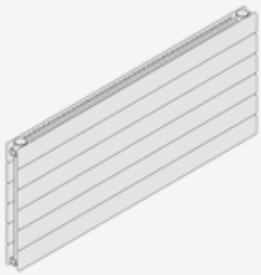

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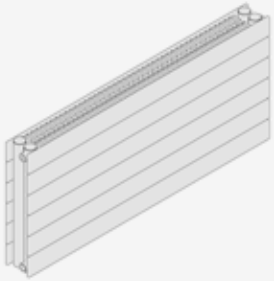

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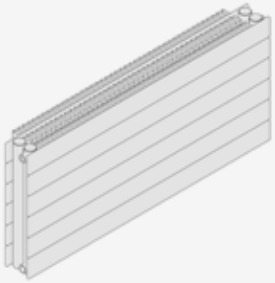
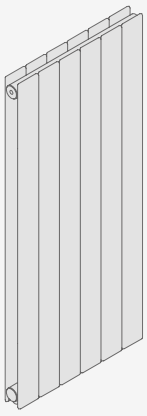


Vertical

Type RRV

Type RRVL

Type RRVV



Type RRVLV

RuntalRad

Product description

General

The Versatile RuntalRad panel radiator consists of flat oval precision tubes pressure-welded with a one-mm air gap to symmetric water channels. The shapes of the flat oval tubes and water channels preclude any risk of physical injury.

Materials used

Flat oval tubes collectors	70 x 11 x 1.5mm
Water-channel tubing (section)	38 ø mm
Fins	Sheet steel

Particularly advantageous features

- Small overall depth
- Modern, elegant design
- Wide range of models
- Horizontal and vertical configurations
- No sharp edges or corners
- Very low water content
- Very efficient
- Suitable for low temperature systems and minimum energy applications

Application

The extensive range of Versatile RuntalRad panel radiators enables their installation almost anywhere.

Dimensions

Horizontal panel radiators:

Overall lengths	500 to 6000 mm (in 100 mm increments)
Overall heights	70 to 2129 mm (max. 30 flat oval tubes)

Vertical panel radiators:

Overall lengths	70 to 1705 mm (max. 24 flat oval tubes)
Overall heights	600 to 4600 mm (in 200 mm increments)

An average length tolerance of ± 2 mm per metre run must be allowed for.

Important! Remember transport limitations!

Test pressures

Standard	6.0 bar
High pressure (price supplement)	11.7 bar

Operating pressures (EN 442)

Standard	max. 4.6 bar
High pressure (price supplement)	max. 9.0 bar
Operating temperature	max. 120°C

Basic delivery schedule for standard configuration

Supplied ready-to-install with 2, 3 or 4 connectors for flow, return, vent and drain welded in. Stove-enamelled in RAL 9016 standard pure white with transport packing.

Special versions

- Curved or angled configuration, on request and according to drawing
- Intermediate lengths, horizontal
- Intermediate heights, vertical
- Vertical overlengths up to 6000 mm
- High-pressure version
- Covering grille
- Standard accessories in the radiator's colour
- One-pipe connections

Stove enamelling

Standard version RAL 9016 pure white

Special enamelling with price supplement

- Zehnder colour range
- Other RAL, NCS-S and sanitary ware colours

Optional on request

Metallic enamelling, clear lacquer and RAL luminous colours on request.

Slight variations in comparison with the original RAL or NCS colours are possible, due to varying glazes and production techniques.

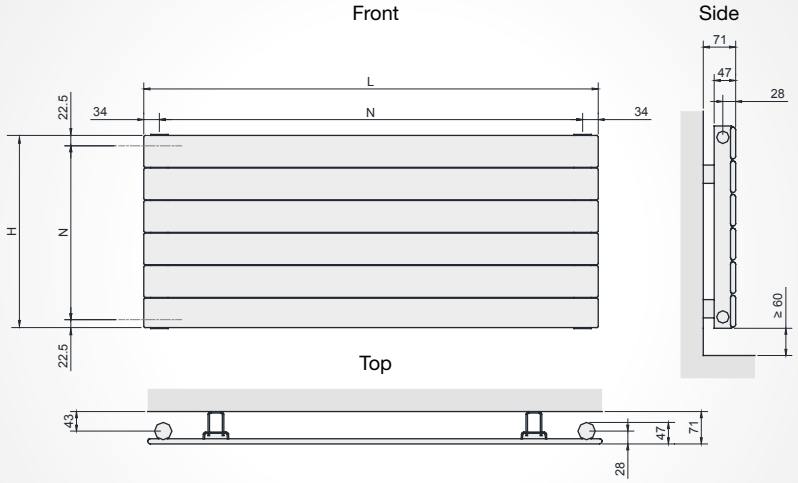
The British Standard Code of Practice BS7593: 2006 Treatment of Water in Hot Water Central Heating Systems, should be observed when installing a system.

All Versatile products are supplied with a 5 year warranty on materials and manufacture. However, this may be invalidated should adequate water treatment not be applied during installation and throughout the life of the system.

Subject to technical and price changes.

RuntalRad

Type RRH horizontal



H = overall height [mm]
L = overall length 500 to 6000 mm (in 100 mm increments)
N = connection spacing [mm]
V = water content [dm³]
M = dry weight [kg]
n = exponent

≤ 141 H = Welded-on floor supports recommended

Model description (ordering example)

RRH770-2000

- Overall length [mm]
- Overall height [cm]
- Model

Security bracket

A security bracket is available for this model. There is no impact on projection dimensions from the wall.

Technical data per 1000 mm

Model	H mm	V dm³	M kg	Exp. n	Φ_L = ΔT 50 K EN 442 Watt
RRH70	70	0.61	1.76	1.17	123
RRH140	142	1.22	3.39	1.18	215
RRH210	213	1.83	5.02	1.19	292
RRH280	285	2.44	6.63	1.20	362
RRH350	356	3.05	8.25	1.21	424
RRH420	428	3.66	9.88	1.21	491
RRH490	499	4.27	11.53	1.22	556
RRH560	571	4.88	13.12	1.22	622
RRH630	642	5.49	14.74	1.22	692
RRH700	714	6.1	16.36	1.23	762
RRH770	785	6.71	18.18	1.23	831
RRH840	857	7.32	19.7	1.23	901
RRH910	928	7.92	21.23	1.24	969
RRH980	1000	8.53	22.86	1.24	1039
RRH1050	1071	9.14	24.54	1.25	1108
RRH1120	1143	9.75	26.1	1.25	1177
RRH1190	1214	10.36	27.72	1.26	1246
RRH1260	1286	10.97	29.35	1.26	1315
RRH1330	1357	11.58	30.97	1.27	1384
RRH1400	1429	12.19	32.66	1.27	1454
RRH1470	1500	12.8	34.29	1.28	1523
RRH1540	1572	13.41	35.93	1.28	1593
RRH1610	1643	14.02	37.56	1.29	1663
RRH1680	1715	14.63	39.19	1.29	1733

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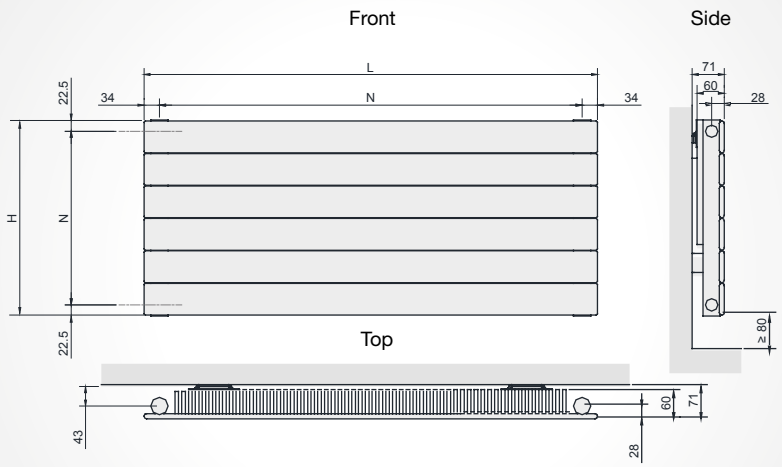
Type RRHL horizontal



H = overall height [mm]
L = overall length 500 to 6000 mm (in 100 mm increments)
N = connection spacing [mm]
V = water content [dm³]
M = dry weight [kg]
n = exponent

≤ 141 H = Welded-on floor supports recommended

Model description (ordering example)

RRHL490-2000

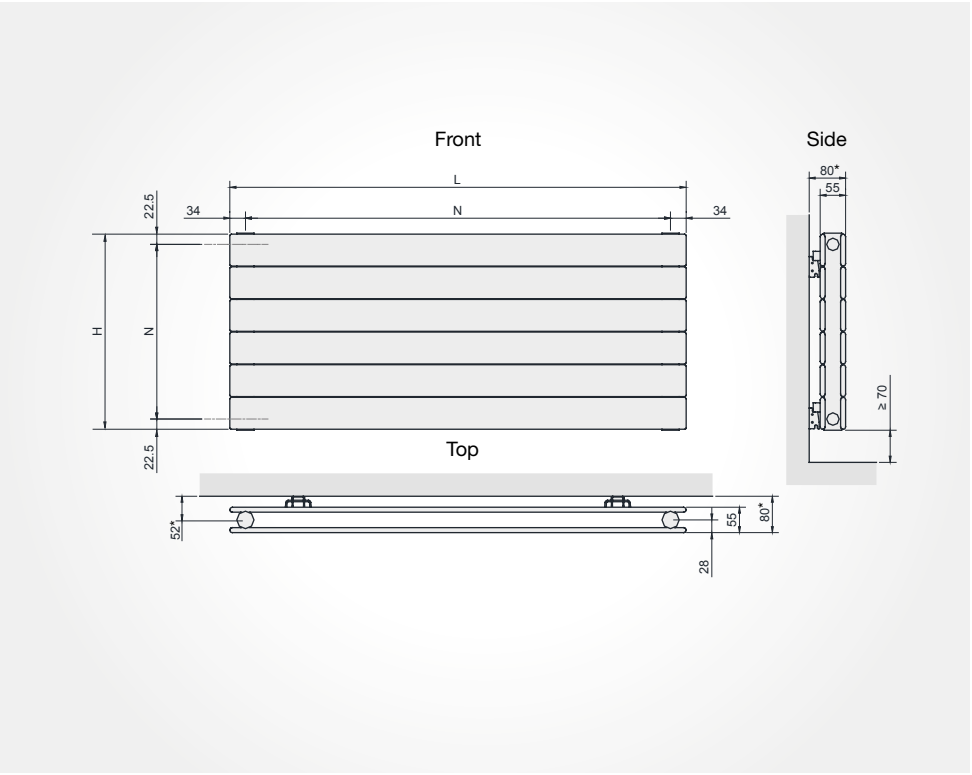
- Overall length [mm]
- Overall height [cm]
- Model

Technical data per 1000 mm

Model	H mm	V dm³	M kg	Exp. n	Φ_L = ΔT 50 K EN 442 Watt
RRHL70	70	0.61	3.23	1.22	243
RRHL140	142	1.22	6.46	1.24	389
RRHL210	213	1.83	10.04	1.25	512
RRHL280	285	2.44	13.39	1.26	625
RRHL350	356	3.05	16.74	1.28	730
RRHL420	428	3.66	16.41	1.26	831
RRHL490	499	4.27	19.14	1.25	928
RRHL560	571	4.88	21.94	1.24	1021
RRHL630	642	5.49	23.50	1.24	1096
RRHL700	714	6.10	25.15	1.24	1163
RRHL770	785	6.71	26.96	1.24	1221
RRHL840	857	7.32	28.48	1.24	1272

RuntalRad

Type RRHH horizontal



H = overall height [mm]
L = overall length 500 to 6000 mm (in 100 mm increments)
N = connection spacing [mm]
V = water content [dm³]
M = dry weight [kg]
n = exponent

≤ 141 H = Welded-on floor supports recommended

Model description (ordering example)

RRHH420-2000

- RRHH420-2000
  - Overall length [mm]
  - Overall height [cm]
  - Model

Security bracket

* A security bracket is available for this model. Do note an increase on projection dimensions of 20 mm on stated figures.

Technical data per 1000 mm

Model	H mm	V dm³	M kg	Exp. n	Φ_L = ΔT 50 K EN 442 Watt
RRHH70	70	0.68	3.39	1.18	197
RRHH140	142	1.36	6.54	1.19	360
RRHH210	213	2.04	9.69	1.2	444
RRHH280	285	2.72	12.84	1.21	551
RRHH350	356	3.39	16.00	1.22	651
RRHH420	428	4.07	19.15	1.23	762
RRHH490	499	4.75	22.30	1.23	870
RRHH560	571	5.43	25.45	1.24	977
RRHH630	642	6.11	28.61	1.24	1082
RRHH700	714	6.79	31.76	1.25	1188
RRHH770	785	7.47	34.91	1.25	1291
RRHH840	857	8.15	38.07	1.26	1396

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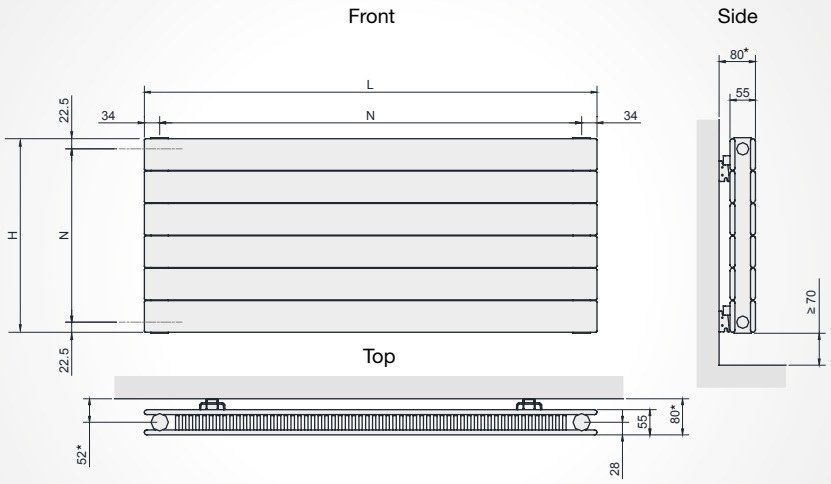
Type RRHLH horizontal



H = overall height [mm]
L = overall length 500 to 6000 mm (in 100 mm increments)
N = connection spacing [mm]
V = water content [dm³]
M = dry weight [kg]
n = exponent

≤ 141 H = Welded-on floor supports recommended

Model description (ordering example)

RRHLH560-2000

- Overall length [mm]
- Overall height [cm]
- Model

Security bracket

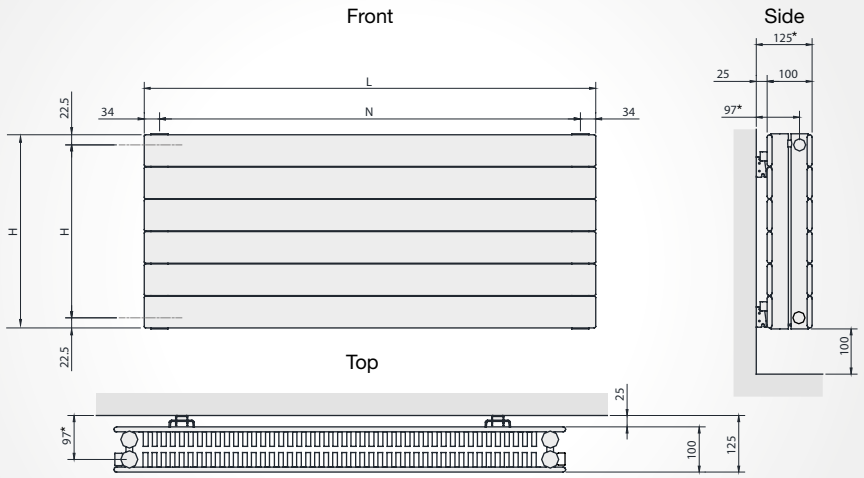
* A security bracket is available for this model. Do note an increase on projection dimensions of 20 mm on stated figures.

Technical data for overall 1000 mm lengths

Model	H mm	V dm³	M kg	Exp. n	Φ_L = ΔT 50 K EN 442 Watt
RRHLH70	70	0.61	3.23	1.23	287
RRHLH140	142	1.22	6.46	1.24	454
RRHLH210	213	1.83	10.04	1.26	591
RRHLH280	285	2.44	13.39	1.27	714
RRHLH350	356	3.05	16.74	1.29	825
RRHLH420	428	3.66	16.41	1.30	930
RRHLH490	499	4.75	29.96	1.30	1028
RRHLH560	571	5.43	34.27	1.31	1123
RRHLH630	642	6.11	37.36	1.30	1213
RRHLH700	714	6.79	40.54	1.29	1301

RuntalRad

Type RRHLLH horizontal



H = overall height [mm]
L = overall length 500 to 6000 mm (in 100 mm increments)
N = connection spacing [mm]
V = water content [dm³]
M = dry weight [kg]
n = exponent

≤ 141 H = Welded-on floor supports recommended

Model description (ordering example)

RRHLLH420-2000

- Overall length [mm]
- Overall height [cm]
- Model

Standard connections

Flow and return on front headers.

Security bracket

* A security bracket is available for this model. Do note an increase on projection dimensions of 20 mm on stated figures.

Technical data for overall 1000 mm lengths

Model	H mm	V dm³	M kg	Exp. n	Φ_L = ΔT 50 K EN 442 Watt
RRHLLH70	70	1.22	6.00	1.22	426
RRHLLH140	142	2.44	11.90	1.24	638
RRHLLH210	213	3.66	18.00	1.25	833
RRHLLH280	285	4.87	23.80	1.27	1033
RRHLLH350	356	6.09	29.38	1.28	1240
RRHLLH420	428	7.31	33.00	1.29	1421
RRHLLH490	499	8.53	38.50	1.3	1572
RRHLLH560	571	9.75	43.90	1.31	1708
RRHLLH630	642	10.97	49.55	1.31	1828
RRHLLH700	714	12.19	55.20	1.31	1936
RRHLLH770	785	13.41	58.83	1.31	2031
RRHLLH840	857	14.63	61.88	1.31	2115

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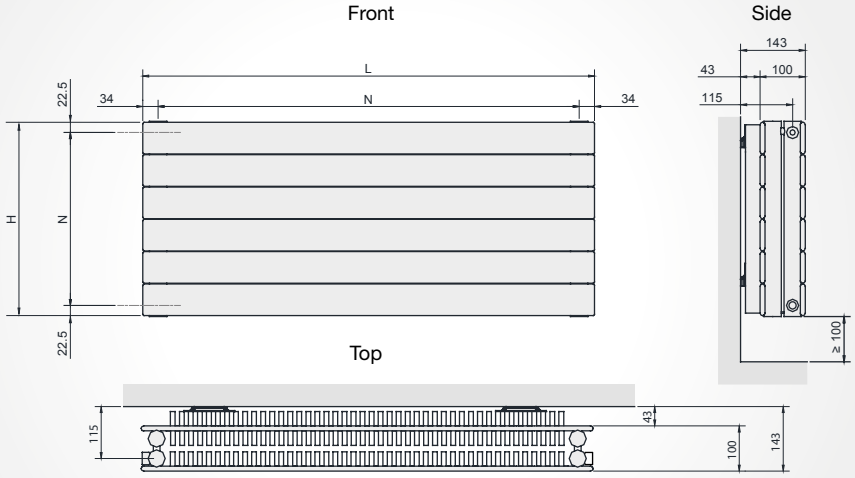
Type RRHLLHL horizontal



H = overall height [mm]
L = overall length 500 to 6000 mm (in 100 mm increments)
N = connection spacing [mm]
V = water content [dm³]
M = dry weight [kg]
n = exponent

≤ 141 H = Welded-on floor supports recommended

Model description (ordering example)

RRHLLHL420-2000

- Overall length [mm]
- Overall height [cm]
- Model

Standard connections

Flow and return on front headers.

Technical data for overall 1000 mm lengths

Model	H mm	V dm³	M kg	Exp. n	Φ_L = ΔT 50 K EN 442 Watt
RRHLLHL70	70	1.22	7.47	1.24	547
RRHLLHL140	142	2.44	14.97	1.25	855
RRHLLHL210	213	3.66	23.02	1.27	1102
RRHLLHL280	285	4.87	30.56	1.28	1321
RRHLLHL350	356	6.09	37.86	1.3	1515
RRHLLHL420	428	7.31	39.53	1.31	1696
RRHLLHL490	499	8.53	46.11	1.32	1861
RRHLLHL560	571	9.75	52.72	1.32	2018
RRHLLHL630	642	10.97	58.31	1.32	2120
RRHLLHL700	714	12.19	63.98	1.32	2215
RRHLLHL770	785	13.41	67.32	1.32	2301
RRHLLHL840	857	14.63	70.66	1.32	2382

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Overall lengths L in mm for vertical panel radiators

Number vertical elements	Model RRV	Model RRVL600 / RRVL800	Model RRVL1000 / RRVL1200	Model RRVL1400 / RRVL1600	Model RRVL1800 / RRVL2000 RRVL2200 / RRVL2400
	L= [mm]				
1	70				
2	142				
3	213				
4	285	285	285	285	285
5	356	356	356	356	356
6	428	428	428	428	428
7	499	499	499	499	499
8	571	571	571	571	571
9	642	642	642	642	642
10	714	714	714	714	714
11	785	785	785	785	785
12	857		857	857	857
13	928		928	928	928
14	1000		1000	1000	1000
15	1071		1071	1071	1071
16	1143		1143	1143	1143
17	1214		1214	1214	1214
18	1286		1286	1286	1286

Overlengths on request

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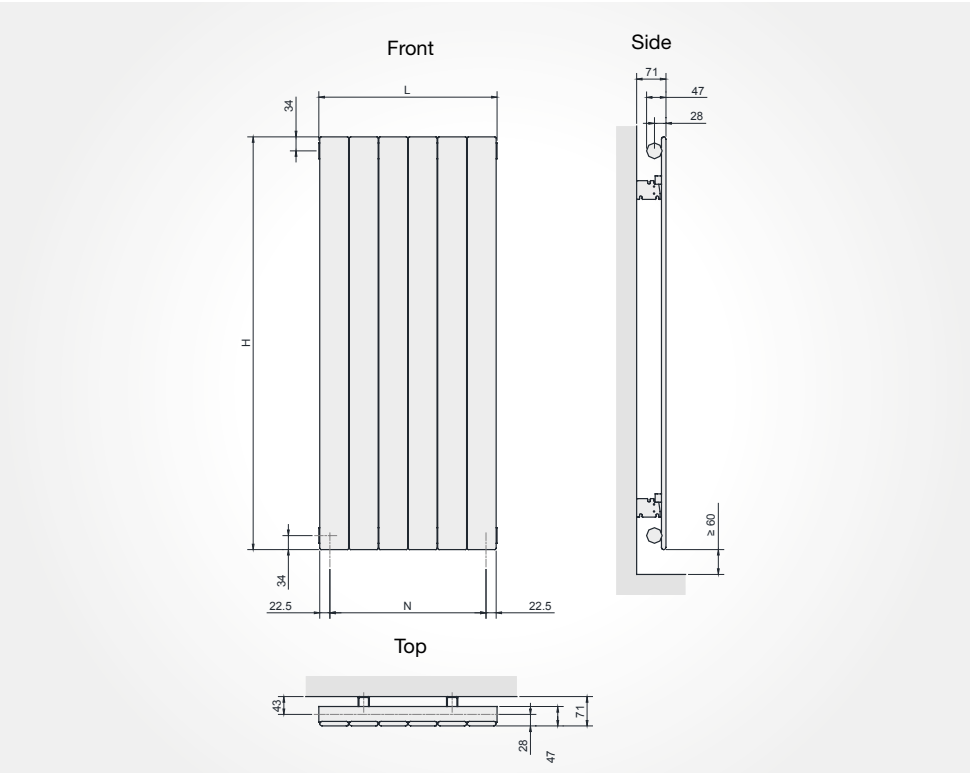
Type RRV vertical



H = overall height [mm]
L = overall length 70 to 1715 mm
N = connection spacing [mm]
N_1 = connection dimension [mm]
V = water content [dm^3]
M = dry weight [kg]
n = exponent

Model description (ordering example)

RRV2000-8

- Length [sections]
- Overall height [cm]
- Model

Location of connections

Standard connections $^3/_8$", $^1/_2$", $^3/_4$" = N_1 connection dimension 20 mm

Security bracket

A security bracket is available for this model. There is no impact on projection dimensions from the wall.

Technical data per flat oval tube

Model	H mm	V dm^3	M kg	Exp. n	Φ_L = ΔT 50 K EN 442 Watt
RRV600	600	0.39	1.17	1.25	47
RRV800	800	0.50	1.48	1.26	60
RRV1000	1000	0.61	1.78	1.27	73
RRV1200	1200	0.72	2.09	1.27	86
RRV1400	1400	0.83	2.39	1.28	99
RRV1600	1600	0.94	2.70	1.28	112
RRV1800	1800	1.05	3.01	1.28	125
RRV1900	1900	1.10	3.16	1.28	131
RRV2000	2000	1.16	3.32	1.28	138
RRV2200	2200	1.27	3.62	1.28	152
RRV2400	2400	1.37	3.93	1.29	165
RRV2600	2600	1.48	4.23	1.29	179
RRV2800	2800	1.59	4.54	1.30	194
RRV3000	3000	1.70	4.85	1.31	205
RRV3200	3200	1.81	5.15	1.31	219
RRV3400	3400	1.92	5.45	1.31	234
RRV3600	3600	2.03	5.76	1.31	248
RRV3800	3800	2.14	6.07	1.32	263
RRV4000	4000	2.25	6.38	1.32	278
RRV4200	4200	2.36	6.68	1.32	293
RRV4400	4400	2.47	6.99	1.33	308
RRV4600	4600	2.58	7.29	1.33	324

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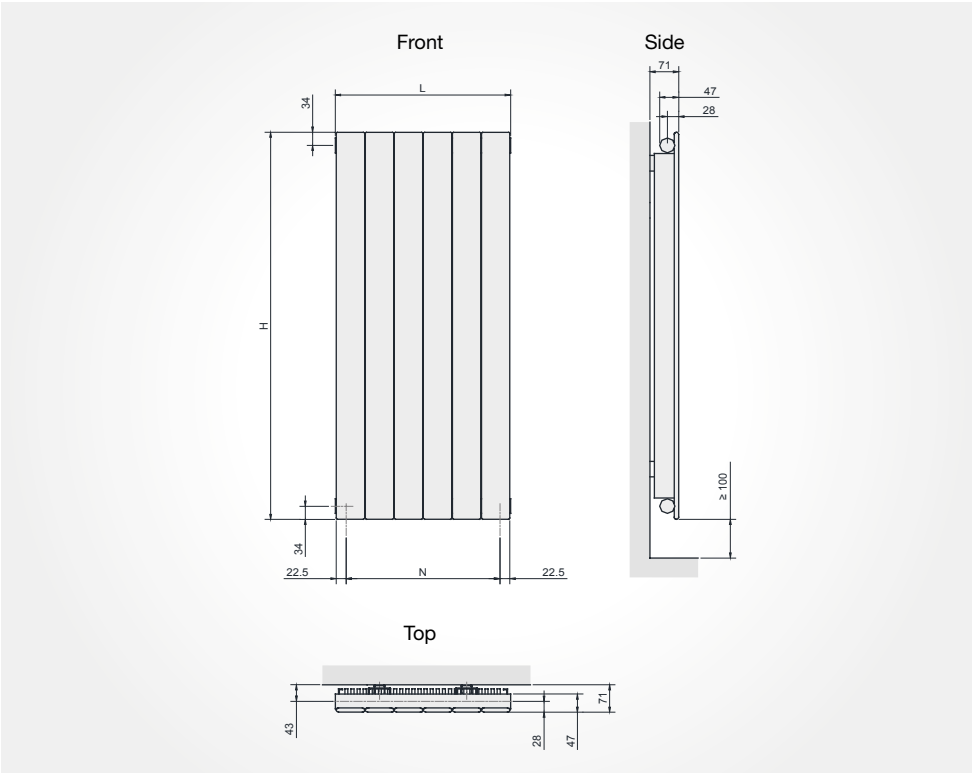
Type RRVL vertical



H = overall height [mm]
L = overall length 285 to 1286 mm
N = connection spacing [mm]
N_1 = connection dimension [mm]
V = water content [dm^3]
M = dry weight [kg]
n = exponent

Model description (ordering example)

RRVL2000-8

- Length [sections]
- Overall height [cm]
- Model

Location of connections

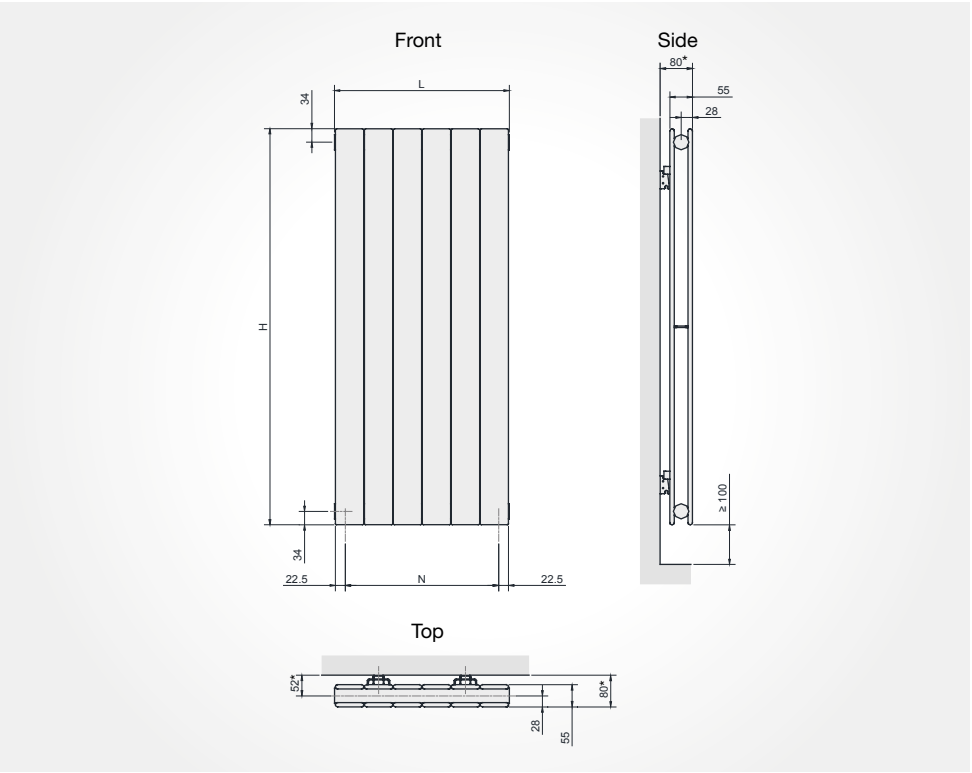
Standard connections $^3/_8$", $^1/_2$", $^3/_4$" = N_1 connection dimension 20 mm

Technical data per flat oval tube

Model	H mm	V dm^3	M kg	Exp. n	Φ_L = ΔT 50 K EN 442 Watt
RRVL600	600	0.39	1.27	1.29	70
RRVL800	800	0.50	1.58	1.31	88
RRVL1000	1000	0.61	1.98	1.33	105
RRVL1200	1200	0.72	2.29	1.34	122
RRVL1400	1400	0.83	2.69	1.35	137
RRVL1600	1600	0.94	3.00	1.35	152
RRVL1800	1800	1.05	3.41	1.35	167
RRVL2000	2000	1.16	3.72	1.34	180
RRVL2200	2200	1.27	4.02	1.33	194
RRVL2400	2400	1.37	4.33	1.32	207

RuntalRad

Type RRVV vertical



H = overall height [mm]
L = overall length 70 to 1715 mm
N = connection spacing [mm]
N_1 = connection dimension [mm]
V = water content [dm^3]
M = dry weight [kg]
n = exponent

Model description (ordering example)

RRVV2000-8

- Length [sections]
- Overall height [cm]
- Model

Location of connections

Standard connections $^3/_8$", $^1/_2$", $^3/_4$" = N_1 connection dimension 20 mm

Security bracket

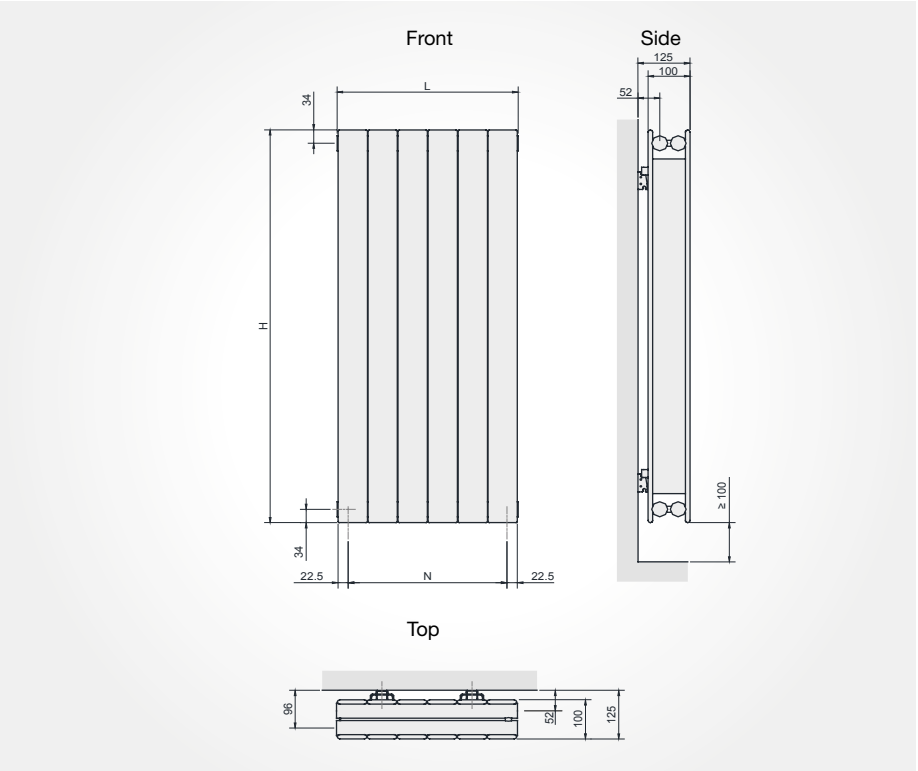
* A security bracket is available for this model. Do note an increase on projection dimensions of 20 mm on stated figures.

Technical data per flat oval tube

Model	H mm	V dm^3	M kg	Exp. n	Φ_L = ΔT 50 K EN 442 Watt
RRVV600	600	0.46	2.12	1.30	70
RRVV800	800	0.57	2.74	1.32	90
RRVV1000	1000	0.68	3.35	1.34	109
RRVV1200	1200	0.79	3.97	1.35	128
RRVV1400	1400	0.90	4.57	1.37	146
RRVV1600	1600	1.01	5.19	1.36	164
RRVV1800	1800	1.11	5.80	1.34	181
RRVV2000	2000	1.22	6.41	1.33	198
RRVV2200	2200	1.33	7.02	1.33	215
RRVV2400	2400	1.44	7.63	1.33	231
RRVV2600	2600	1.55	8.25	1.33	247
RRVV2800	2800	1.66	8.86	1.33	263
RRVV3000	3000	1.77	9.47	1.32	280
RRVV3200	3200	1.88	10.08	1.32	296
RRVV3400	3400	1.99	10.69	1.32	311
RRVV3500	3500	2.05	11.00	1.32	319
RRVV3600	3600	2.10	11.30	1.32	326
RRVV3800	3800	2.21	11.92	1.32	341
RRVV4000	4000	2.32	12.53	1.32	356
RRVV4200	4200	2.43	13.15	1.32	370
RRVV4400	4400	2.54	13.76	1.31	385
RRVV4600	4600	2.65	14.37	1.31	399

RuntalRad

Type RRVLV vertical



H = overall height [mm]
L = overall length 285 to 1286 mm
N = connection spacing [mm]
N_1 = connection dimension [mm]
V = water content [dm^3]
M = dry weight [kg]
n = exponent

Model description (ordering example)

RRVLV2000-8

- Length [sections]
- Overall height [cm]
- Model

Location of connections

Standard connections $^3/_8$", $^1/_2$", $^3/_4$" = N_1 connection dimension 20 mm

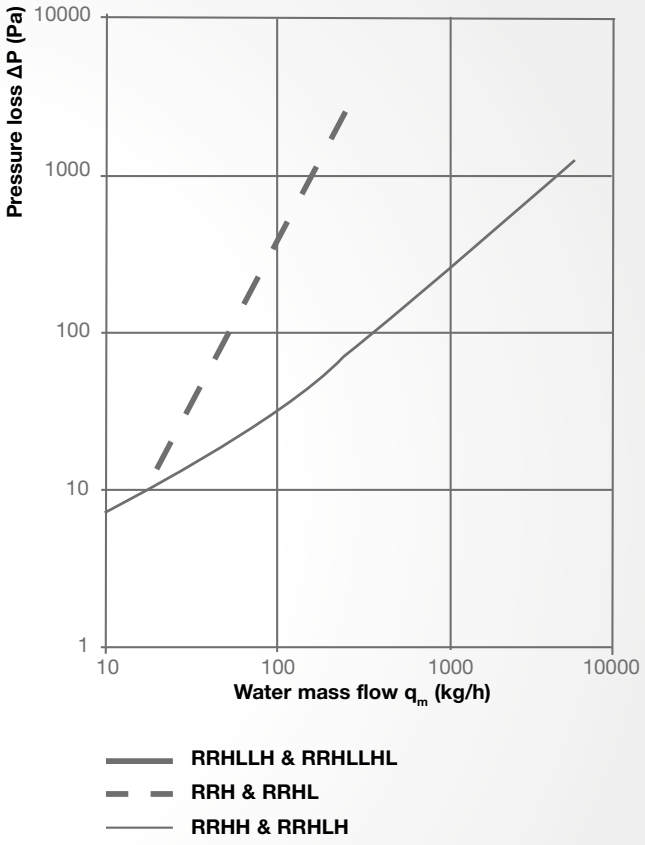
Technical data per flat oval tube

Model	H mm	V dm^3	M kg	Exp. n	Φ_L = ΔT 50 K EN 442 Watt
RRVLV600	600	0.78	2.56	1.34	98
RRVLV800	800	1.00	3.07	1.34	124
RRVLV1000	1000	1.22	3.66	1.34	150
RRVLV1200	1200	1.44	4.16	1.35	176
RRVLV1400	1400	1.65	4.75	1.35	202
RRVLV1600	1600	1.87	5.26	1.36	229
RRVLV1800	1800	2.09	5.86	1.36	256
RRVLV2000	2000	2.31	6.37	1.35	276
RRVLV2200	2200	2.53	6.85	1.34	295
RRVLV2400	2400	2.75	7.36	1.33	312

RuntalRad

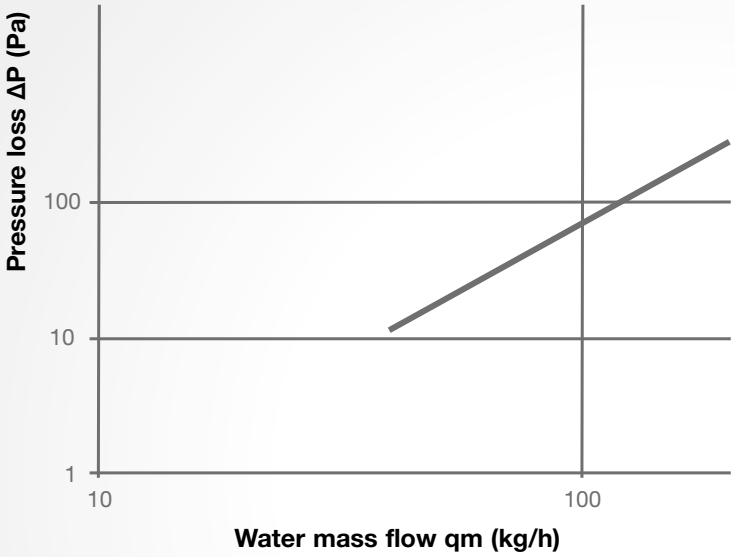
Pressure loss

Water Flow (Kg/h)	RRH & RRHL	RRHH & RRHLH	RRHLLH & RRHLLHL
	Pressure loss (Pa)		
10			9
20	14	7	38
30	31	16	84
40	54	28	150
50	85	43	235
60	122	62	338
70	166	85	460
80	217	111	601
90	275	140	760
100	340	173	938
110	411	210	1135
120	489	249	1351
130	574	293	1586
140	666	340	1839
150	764	390	2111
160	870	444	2402
170	982	501	2712
180	1100	561	3040
190	1226	625	3387
200	1359	693	3753
210	1498	764	4138
220	1644	839	4542
230	1797	917	4964
240	1956	998	5405
250	2123	1083	5865
260	2296	1171	
270	2476	1263	
280		1358	
290		1457	
300		1559	
310		1665	
320		1774	
330		1887	
340		2003	
350		2122	



RuntalRad

Pressure loss



Water flow (kg/h)	Model	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180	190	200
Pressure loss (Pa)	RRV & RRVL	12	18	26	35	46	58	72	87	104	122	141	162	184	208	233	260	288
	RRVV & RRVLV	8	13	18	25	33	41	51	62	73	86	100	115	131	147	165	184	204

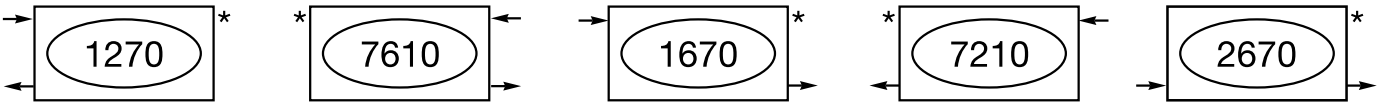
RuntalRad

Connection possibilities

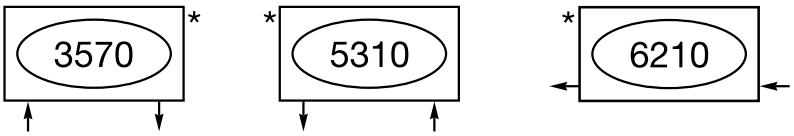
RuntalRad panel radiators operate in the forced flow mode and are fitted with the necessary baffles at the factory. They must therefore be connected as ordered in accordance with the following drawings.

Normal connections when used with single entry connections (price supplement)
Technical data concerning the operation of the panel radiators with various valve types will be supplied on request.

Connections when used with two-pipe systems
Types horizontal
Standard connections 1/4", 3/8", 1/2", 3/4"

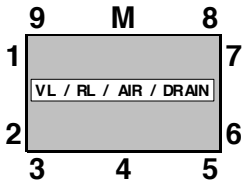


(Not possible with models RRH70, RRHH70, RRHL70, RRHLH70, RRHLLH70)



New Connection Coding:

The system of coding:



4 digits: __ __ __ __

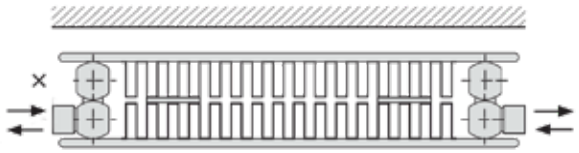
- Drain
- Air vent
- Return Line
- Flow Line

* vent mandatory

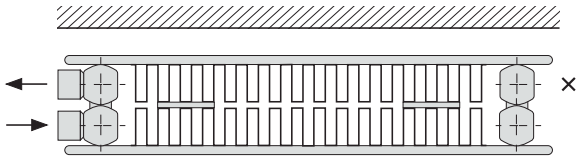
RuntalRad

Locations of connections on double panel radiators
Standard configuration (see drawings)
Flow and return on front headers

Types: RRHLLH and RRHLLHL
Connections on opposite ends:

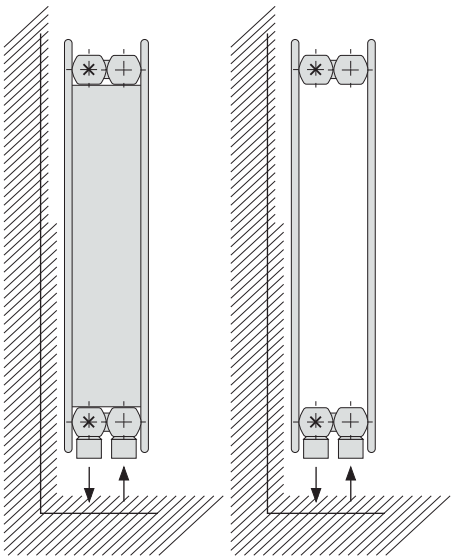


Connections on same end:
(Flow front panel; Return on rear):

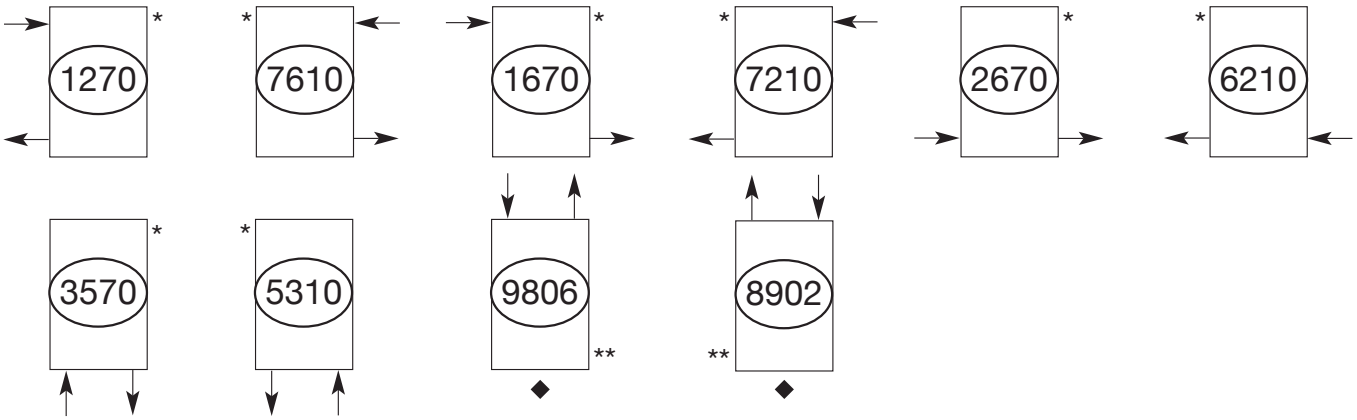


Standard connections double vertical radiators

Type: RRVLV
(Flow through front panel; Return on rear)



Types vertical
Standard connections ¼", ⅜", ½", ¾"



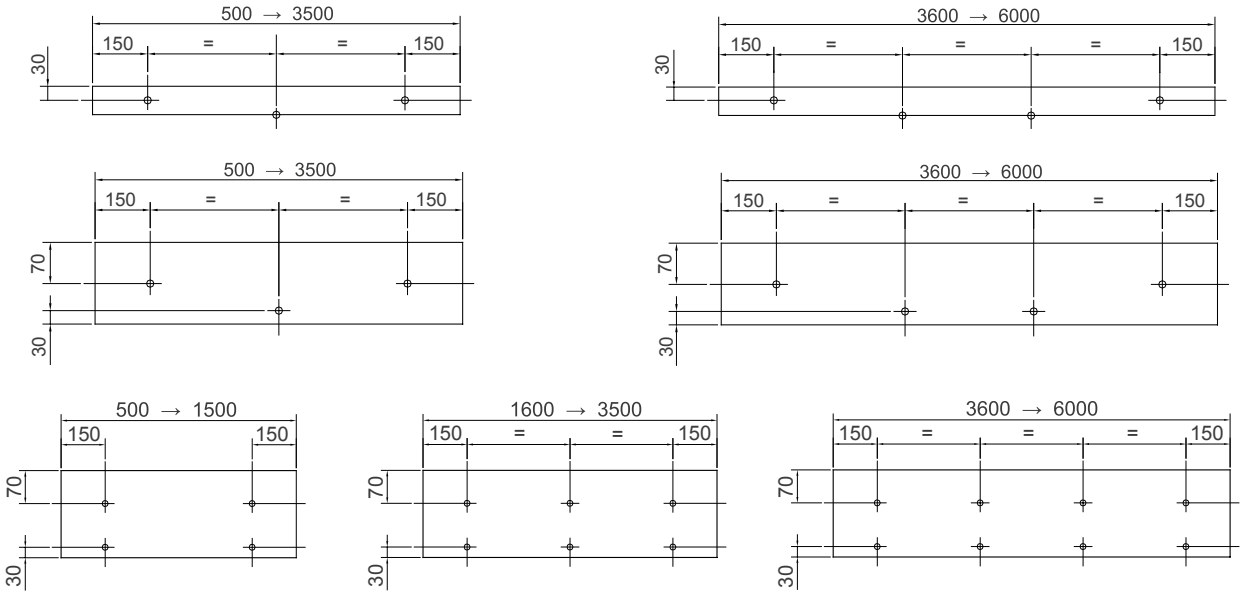
* Vent mandatory
** Drain mandatory
♦ Price supplement

RuntalRad

Types RRH, RRHH, RRHLH, RRHLLH

Horizontal configuration (standard)
Drawing: view from the rear (dimensions in mm, tolerances of fixing points ± 5 mm)

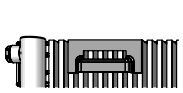
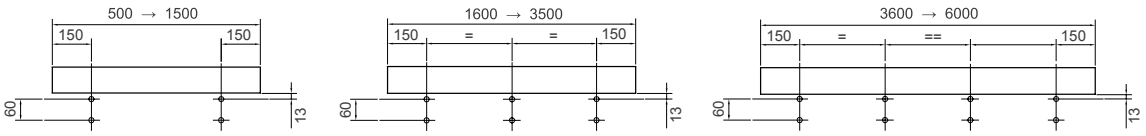
Types: RRH, RRHH, RRHLH, RRHLLH

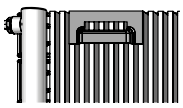
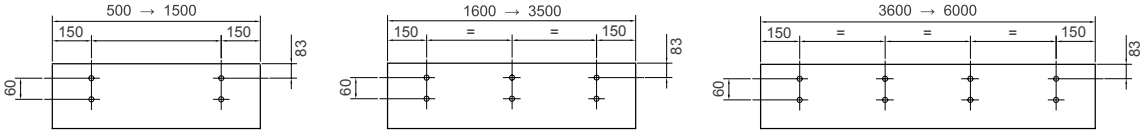


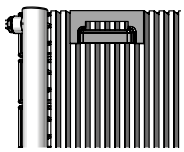
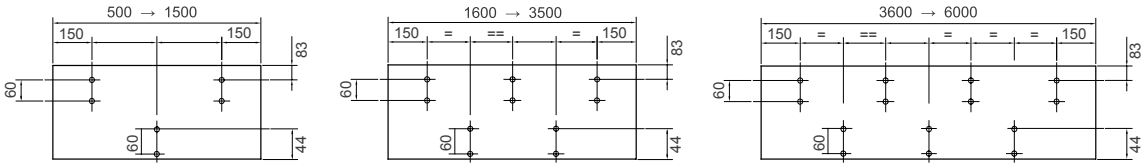
RuntalRad

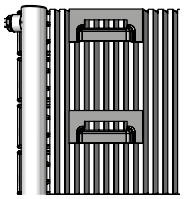
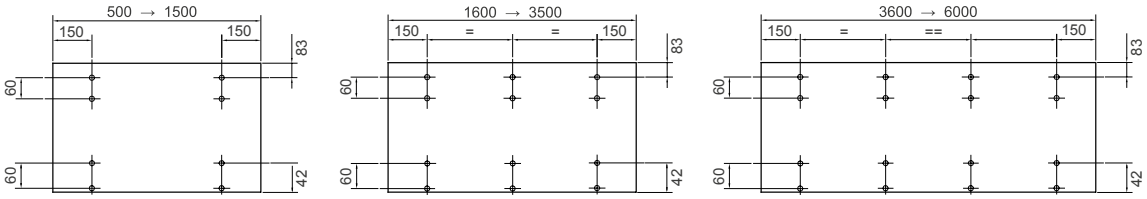
Types RRHL, RRHLLHL

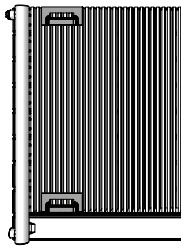
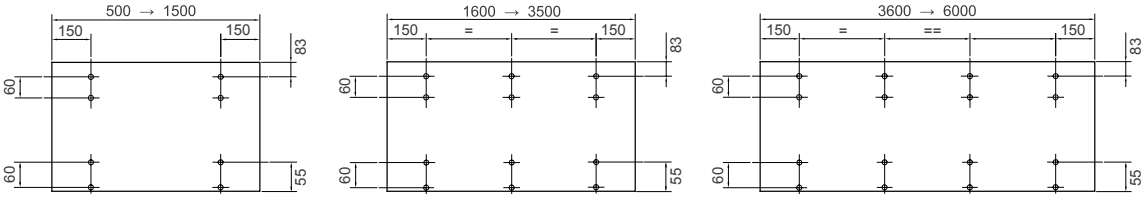
Types: RRHL, RRHLLHL

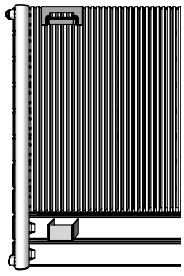
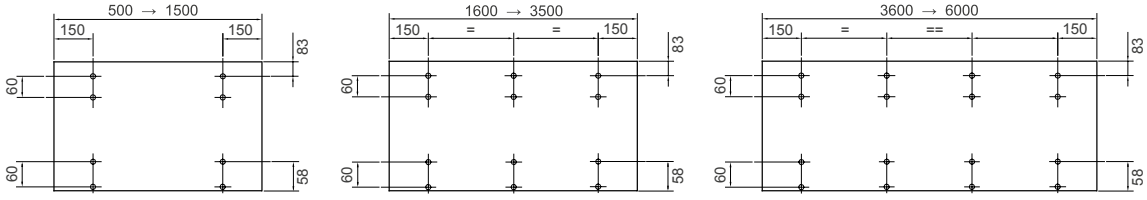



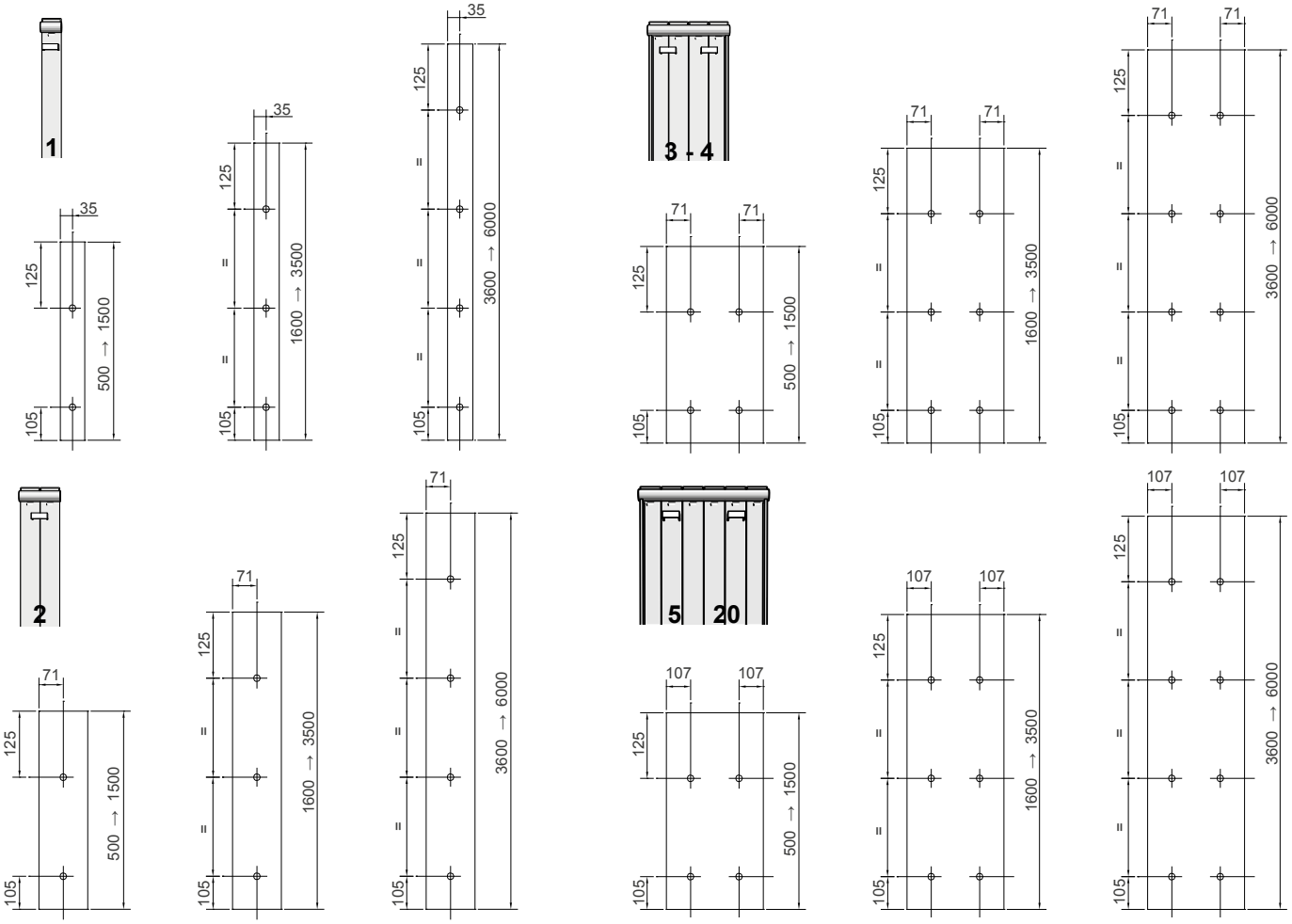



RuntalRad

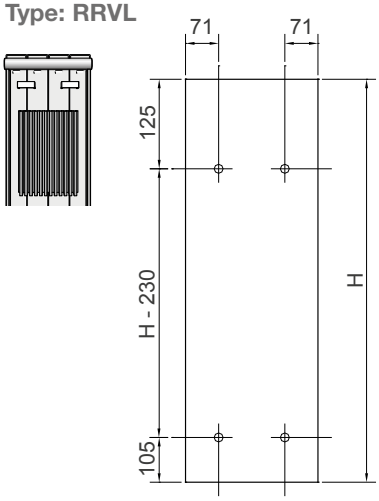
Vertical

Vertical configuration (standard)
Drawing: view from the rear (dimensions in mm)

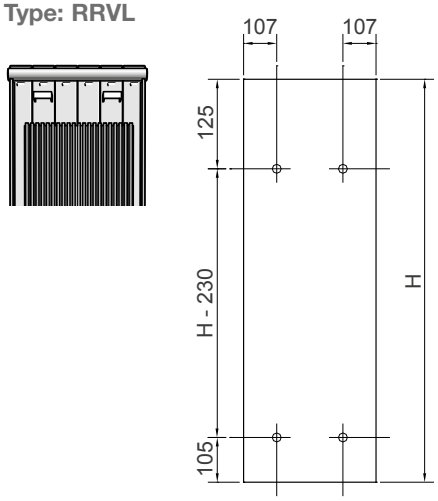
Types: RRV, RRVV, RRVLV



3-4
Type: RRVL



5 x 20
Type: RRVL

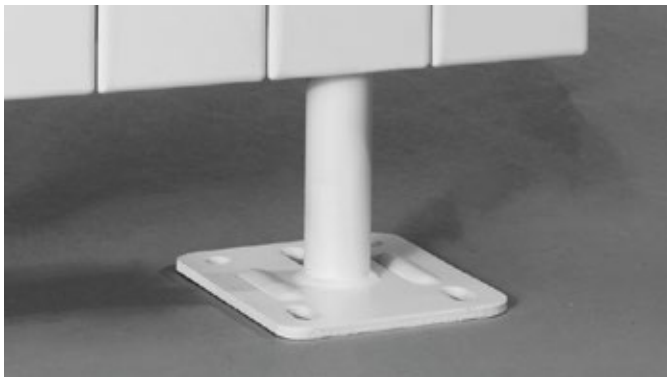


RuntalRad

Radiator feet

A special version is also available with welded on support legs. The leg assemblies must be ordered together with the radiators. The various ordering codes are listed below.

From a stability point of view, welded on feet are suitable for a free-standing RuntalRad assembly of up to around 600 mm. The floor characteristics and the radiator dimensions influence the stability of the construction. In case of more demanding requirements, an upper fixation must be fitted.



Fixed tubular foot		
Version:	34 mm ø tube welded onto base plate 120 x 70 x 5 mm, matching the radiator's colours	
Application:	For all **RuntalRad models**	
Description	Distance from floor mm	Order code
Fixed tubular foot	100	FR100
Fixed tubular foot	200	FR120
Fixed tubular foot	Special dimension	FRCUS

Fixed tubular foot		
Version:	38 mm ø sleeve, L = 105 mm, welded onto radiator, clamp screws to the rear, 34mm ø tube, welded onto base plate 120 x 70 x 5 mm, delivered loose. Matching radiator's colours.	
Application:	For all **RuntalRad models**	
Description	Distance from floor mm	Order code
Adjustable tubular foot	120-170	FR170
Adjustable tubular foot	150–200	FR200
Adjustable tubular foot	200-250	FR250

Base plate cover
As a cover for the base plate, dimensions 125 x 75 x 20 mm, made of painted steel. The foot opening is recessed to the rear, allowing the option of mounting later.

Foot cover for tubular foot with base plate 120 x 70 mm

Designation	Description	Art. N° RAL 9016	Art. N° Special colour
Cover	Single unit 123 x 73 x 20	976481	976489

RuntalRad

Bracket and connections

A zehnder nova assembly kit consisting of the required number of brackets is shipped together with the radiator

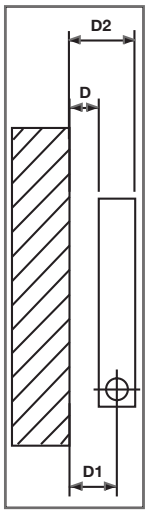
Type		Distance from front of radiator to bracket	From front of radiator to centre of connections	Radiator depth	From back of radiator to wall	From wall to centre of connections	From front of radiator to wall
	H mm	mm	mm	T mm	D mm	D1 mm	D2 mm
RRH	**70-1715**	25	28	47	24	43	71
RRHL	**70-857**	60	28	60	11	43	71
RRHH	**70-857**	55	28	55	25*	52*	80*
RRHLH	**70-714**	55	28	55	25*	52*	80*
RRHLLH	**70-857**	100	28 R	100	25*	97* R	125*
			28 F			97* F	
RRHLLHL	**70-857**	143	28 R	132	11	115 R	143
			28 F			115 F	
RRV	**600-4600**	24	28	28	24	43	71
RRVL	**600-2400**	24	28	47	11	43	71
RRVV	**600-4600**	28	28	55	25*	52*	80*
			28* F			52* F	
RRVLV	**600-2400**	29	73 R	100	25	52 R	125
			73 F			52 F	

Legend:

R = return
F = flow

Radiator and bracket projections

* Dimensions exclude projections
for security bracket, where relevant.
20 mm must be added in this instance.



RuntalRad

RAF panel radiators / RAF connections

RAF panel radiators
This type of radiator has been developed to blend with modern building methods. All fixing, pipe and valve connections can be concealed under the raised access floor. Only the functional panel radiator and the two headers are visible. These smooth lines make it easy to clean and very attractive, particularly if it is free standing in front of glazing.

This range of radiators has been developed with the designer in mind. There are a number of variations to the basic model that can be selected, enabling the radiator to fit into the design and function of the building.

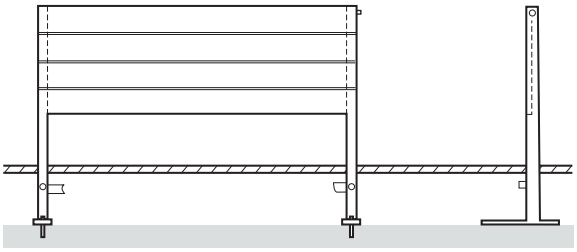
RAF panel radiators are also available for wall fixing with standard brackets, and without base plates on the extended headers.

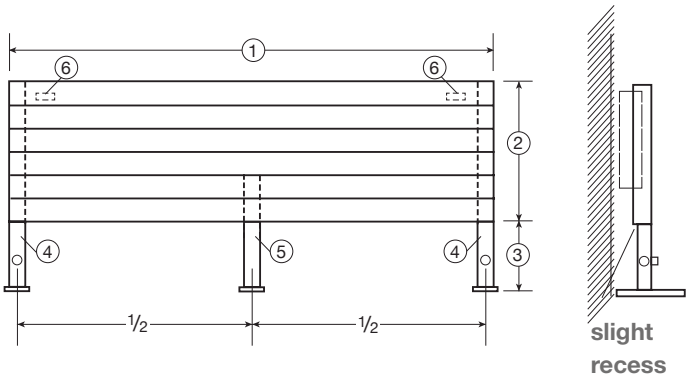
RAF (Raised Access Floor) connections
Extended header tube (38 mm diameter) with floor fixing base plate.

Recommended position of connections:
Inner or outer surface of extended header, with connections not higher than 35 mm from the base, to avoid deadwater area at base of feet. Connections higher than 35 mm above base plate available at extra cost. Connections on front or back face of extended header available at extra cost.

For radiator greater than 1500 mm long, additional (adjustable) feet will be required.

Please note: The alignment of the additional intermediate feet will differ from the extended header RAF feet.



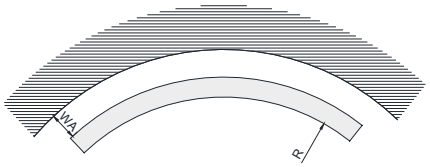


1. **Length: 500 mm to maximum of 3000 mm**
2. **Height: 70 mm to maximum of 714 mm**
3. **Height of RAF feet: Maximum of 500 mm**
4. **Extended headers: 38 mm diameter**
5. **Base Plate: 120 x 70 x 5 mm**
6. **Panels with heights of 420 mm to 700 mm need 2 additional wall brackets at the top (refer to catalogue)**

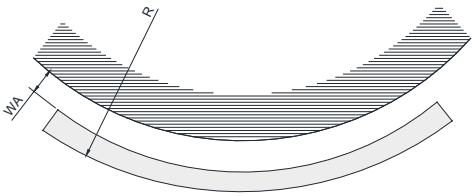
RuntalRad

Special Versions

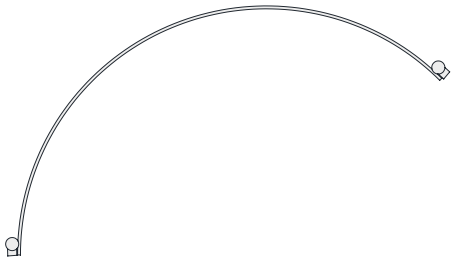
Curved configurations
Inside radius $R^{min.}$ = 3700 mm,
Outside radius $R^{min.}$ = 3700 mm
(available on RRH model only)
Please supply drawing with order.



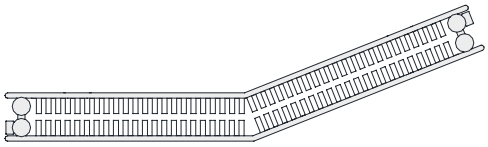
Inside radius

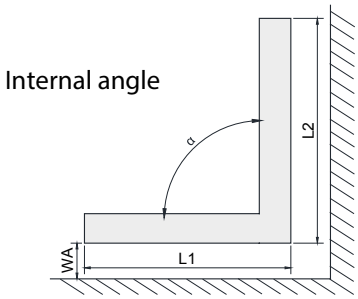


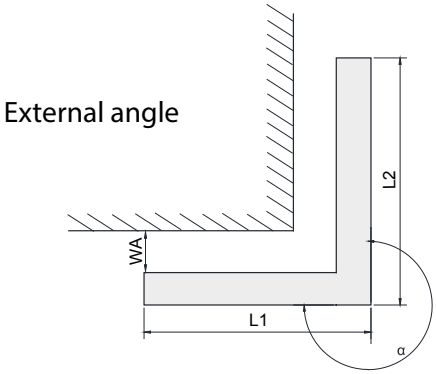
Outside radius

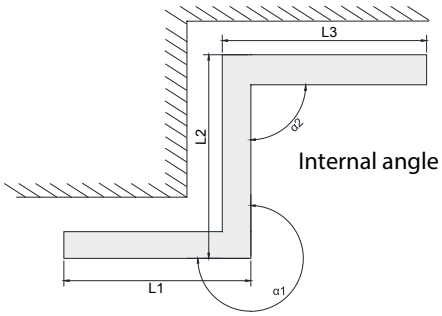


Angled configurations
Panel radiators with several angles can be supplied
(max. 3 or 4 angles, available for all models).
Please supply drawing with order.









External angle

Cover grilles and lateral cover plates
Cover grilles can be supplied for horizontal models RRHL, RRHL, RRHLLH. Lateral cover plates can be supplied for all vertical models.

Cover grilles

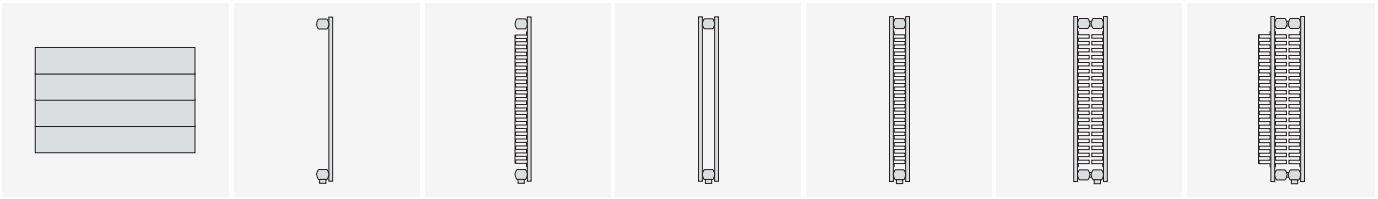
Lateral cover plates are either welded on or inserted with spring clips (dependant on model).

HK	=	Panel radiator
WA	=	Distance from wall [mm]
R	=	Wall radius [mm]

α, α1, α2 = Wall angles [°]
L1, L2, L3 = Length [mm]

RuntalRad

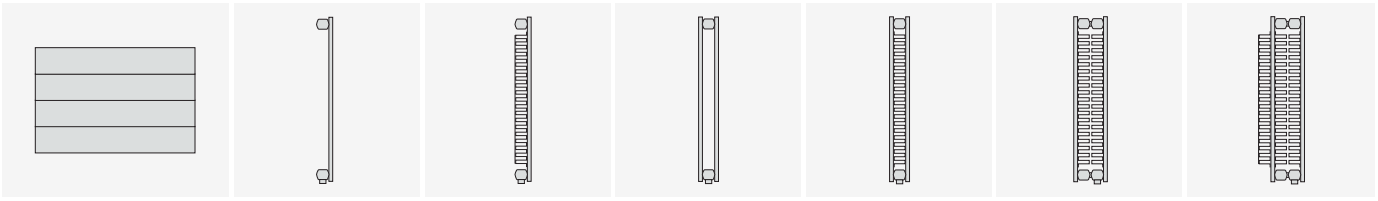
Overall height = 70 mm Φ_L = ΔT 50 K EN 442 (SN 384.501-503)



Model	RRH70			RRHL70			RRHH70			RRHLH70			RRHLLH70			RRHLLHL70		
T mm	47			60			55			55			100			132		
H mm	70			70			70			70			70			70		
H Lam mm	-			64			-			64			64			64		
Exp. N	1.17			1.22			1.18			1.23			1.22			1.24		
Length	ΔT 30	ΔT 50	ΔT 56	ΔT 30	ΔT 50	ΔT 56	ΔT 30	ΔT 50	ΔT 56	ΔT 30	ΔT 50	ΔT 56	ΔT 30	ΔT 50	ΔT 56	ΔT 30	ΔT 50	ΔT 56
500	34	62	70	65	122	140	54	99	113	77	144	165	114	213	245	145	274	315
600	41	74	84	78	146	167	65	118	135	92	172	198	137	256	294	175	328	378
700	47	86	98	91	170	195	75	138	158	107	201	231	160	298	343	204	383	440
800	54	98	112	104	194	223	86	158	180	122	230	264	182	341	392	233	438	503
900	61	111	126	117	219	251	97	177	203	138	258	297	205	383	440	262	492	566
1000	68	123	140	130	243	279	108	197	225	153	287	330	228	426	489	291	547	629
1100	75	135	154	143	267	307	118	217	248	168	316	363	251	469	538	320	602	692
1200	81	148	168	156	292	335	129	236	270	184	344	396	274	511	587	349	656	755
1300	88	160	182	169	316	363	140	256	293	199	373	429	296	554	636	378	711	818
1400	95	172	197	182	340	391	151	276	315	214	402	462	319	596	685	407	766	881
1500	102	185	211	195	365	419	161	296	338	230	431	495	342	639	734	436	821	944
1600	108	197	225	208	389	446	172	315	360	245	459	528	365	682	783	466	875	1,007
1700	115	209	239	221	413	474	183	335	383	260	488	561	387	724	832	495	930	1,070
1800	122	221	253	234	437	502	194	355	406	275	517	594	410	767	881	524	985	1,133
1900	129	234	267	247	462	530	204	374	428	291	545	627	433	809	930	553	1,039	1,196
2000	136	246	281	261	486	558	215	394	451	306	574	660	456	852	979	582	1,094	1,258
2200	149	271	309	287	535	614	237	433	496	337	631	726	501	937	1,077	640	1,203	1,384
2400	163	295	337	313	583	670	258	473	541	367	689	792	547	1,022	1,175	698	1,313	1,510
2600	176	320	365	339	632	726	280	512	586	398	746	858	593	1,108	1,272	756	1,422	1,636
2800	190	344	393	365	680	781	301	552	631	428	804	924	638	1,193	1,370	815	1,532	1,762
3000	203	369	421	391	729	837	323	591	676	459	861	990	684	1,278	1,468	873	1,641	1,888
3200	217	394	449	417	778	893	344	630	721	490	918	1,056	729	1,363	1,566	931	1,750	2,014
3400	231	418	477	443	826	949	366	670	766	520	976	1,122	775	1,448	1,664	989	1,860	2,139
3600	244	443	505	469	875	1,005	387	709	811	551	1,033	1,188	821	1,534	1,762	1,047	1,969	2,265
3800	258	467	533	495	923	1,060	409	749	856	582	1,091	1,254	866	1,619	1,860	1,106	2,079	2,391
4000	271	492	562	521	972	1,116	430	788	901	612	1,148	1,320	912	1,704	1,958	1,164	2,188	2,517
4200	285	517	590	547	1,021	1,172	452	827	946	643	1,205	1,386	957	1,789	2,055	1,222	2,297	2,643
4400	298	541	618	573	1,069	1,228	473	867	991	673	1,263	1,452	1,003	1,874	2,153	1,280	2,407	2,769
4600	312	566	646	599	1,118	1,284	495	906	1,036	704	1,320	1,518	1,049	1,960	2,251	1,338	2,516	2,894
4800	325	590	674	625	1,166	1,339	517	946	1,081	735	1,378	1,584	1,094	2,045	2,349	1,397	2,626	3,020
5000	339	615	702	651	1,215	1,395	538	985	1,126	765	1,435	1,650	1,140	2,130	2,447	1,455	2,735	3,146
5200	353	640	730	677	1,264	1,451	560	1,024	1,171	796	1,492	1,716	1,185	2,215	2,545	1,513	2,844	3,272
5400	366	664	758	703	1,312	1,507	581	1,064	1,217	826	1,550	1,782	1,231	2,300	2,643	1,571	2,954	3,398
5600	380	689	786	729	1,361	1,563	603	1,103	1,262	857	1,607	1,848	1,276	2,386	2,741	1,629	3,063	3,524
5800	393	713	814	756	1,409	1,618	624	1,143	1,307	888	1,665	1,914	1,322	2,471	2,839	1,688	3,173	3,650
6000	407	738	842	782	1,458	1,674	646	1,182	1,352	918	1,722	1,980	1,368	2,556	2,936	1,746	3,282	3,775

RuntalRad

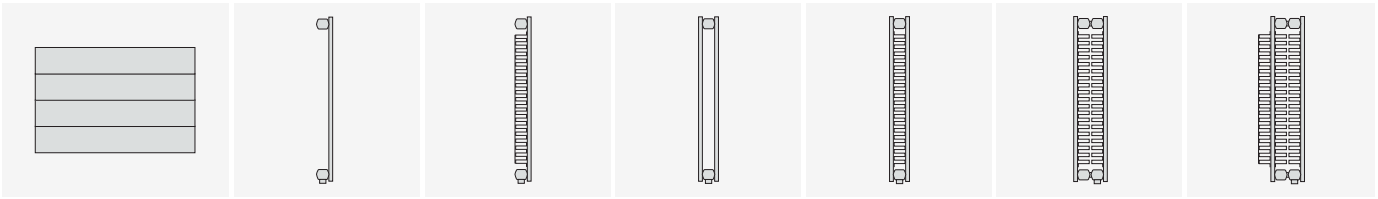
Overall height = 142 mm Φ_L = ΔT 50 K EN 442 (SN 384.501-503)



Model	RRH140			RRHL140			RRHH140			RRHLH140			RRHLLH140			RRHLLHL140		
T mm	47			60			55			55			100			132		
H mm	142			142			142			142			142			142		
H Lam mm	-			122			-			122			122			122		
Exp. N	1.18			1.24			1.19			1.24			1.24			1.25		
Length	ΔT 30	ΔT 50	ΔT 56	ΔT 30	ΔT 50	ΔT 56	ΔT 30	ΔT 50	ΔT 56	ΔT 30	ΔT 50	ΔT 56	ΔT 30	ΔT 50	ΔT 56	ΔT 30	ΔT 50	ΔT 56
500	59	108	123	103	195	224	98	180	206	120	227	261	169	319	367	226	428	493
600	71	129	147	124	233	268	117	216	247	144	272	314	203	383	440	271	513	591
700	82	151	172	145	272	313	137	252	288	168	318	366	237	447	514	316	599	690
800	94	172	197	166	311	358	157	288	330	192	363	418	271	510	587	361	684	788
900	106	194	221	186	350	403	176	324	371	216	409	470	305	574	661	406	770	887
1000	118	215	246	207	389	447	196	360	412	240	454	523	339	638	734	451	855	985
1100	130	237	270	228	428	492	215	396	453	265	499	575	373	702	808	496	941	1,084
1200	141	258	295	248	467	537	235	432	494	289	545	627	407	766	881	541	1,026	1,182
1300	153	280	319	269	506	582	255	468	536	313	590	680	440	829	954	586	1,112	1,281
1400	165	301	344	290	545	626	274	504	577	337	636	732	474	893	1,028	632	1,197	1,379
1500	177	323	369	310	584	671	294	540	618	361	681	784	508	957	1,101	677	1,283	1,478
1600	189	344	393	331	622	716	313	576	659	385	726	836	542	1,021	1,175	722	1,368	1,576
1700	200	366	418	352	661	761	333	612	701	409	772	889	576	1,085	1,248	767	1,454	1,675
1800	212	387	442	373	700	805	352	648	742	433	817	941	610	1,148	1,321	812	1,539	1,774
1900	224	409	467	393	739	850	372	684	783	457	863	993	644	1,212	1,395	857	1,625	1,872
2000	236	430	491	414	778	895	392	720	824	481	908	1,045	678	1,276	1,468	902	1,710	1,971
2200	259	473	540	455	856	984	431	792	907	529	999	1,150	745	1,404	1,615	992	1,881	2,168
2400	283	516	590	497	934	1,074	470	864	989	577	1,090	1,255	813	1,531	1,762	1,083	2,052	2,365
2600	306	559	639	538	1,011	1,163	509	936	1,071	625	1,180	1,359	881	1,659	1,909	1,173	2,223	2,562
2800	330	602	688	580	1,089	1,253	548	1,008	1,154	673	1,271	1,464	949	1,786	2,056	1,263	2,394	2,759
3000	354	645	737	621	1,167	1,342	587	1,080	1,236	721	1,362	1,568	1,017	1,914	2,202	1,353	2,565	2,956
3200	377	688	786	662	1,245	1,432	627	1,152	1,319	770	1,453	1,673	1,084	2,042	2,349	1,444	2,736	3,153
3400	401	731	835	704	1,323	1,521	666	1,224	1,401	818	1,544	1,777	1,152	2,169	2,496	1,534	2,907	3,350
3600	424	774	884	745	1,400	1,611	705	1,296	1,483	866	1,634	1,882	1,220	2,297	2,643	1,624	3,078	3,547
3800	448	817	934	787	1,478	1,700	744	1,368	1,566	914	1,725	1,986	1,288	2,424	2,790	1,714	3,249	3,744
4000	471	860	983	828	1,556	1,790	783	1,440	1,648	962	1,816	2,091	1,355	2,552	2,937	1,804	3,420	3,941
4200	495	903	1,032	869	1,634	1,879	822	1,512	1,731	1,010	1,907	2,195	1,423	2,680	3,083	1,895	3,591	4,138
4400	519	946	1,081	911	1,712	1,969	862	1,584	1,813	1,058	1,998	2,300	1,491	2,807	3,230	1,985	3,762	4,335
4600	542	989	1,130	952	1,789	2,058	901	1,656	1,896	1,106	2,088	2,405	1,559	2,935	3,377	2,075	3,933	4,532
4800	566	1,032	1,179	993	1,867	2,148	940	1,728	1,978	1,154	2,179	2,509	1,626	3,062	3,524	2,165	4,104	4,729
5000	589	1,075	1,228	1,035	1,945	2,237	979	1,800	2,060	1,202	2,270	2,614	1,694	3,190	3,671	2,256	4,275	4,927
5200	613	1,118	1,278	1,076	2,023	2,327	1,018	1,872	2,143	1,250	2,361	2,718	1,762	3,318	3,818	2,346	4,446	5,124
5400	636	1,161	1,327	1,118	2,101	2,416	1,057	1,944	2,225	1,299	2,452	2,823	1,830	3,445	3,964	2,436	4,617	5,321
5600	660	1,204	1,376	1,159	2,178	2,506	1,096	2,016	2,308	1,347	2,542	2,927	1,898	3,573	4,111	2,526	4,788	5,518
5800	684	1,247	1,425	1,200	2,256	2,595	1,136	2,088	2,390	1,395	2,633	3,032	1,965	3,700	4,258	2,616	4,959	5,715
6000	707	1,290	1,474	1,242	2,334	2,685	1,175	2,160	2,472	1,443	2,724	3,136	2,033	3,828	4,405	2,707	5,130	5,912

RuntalRad

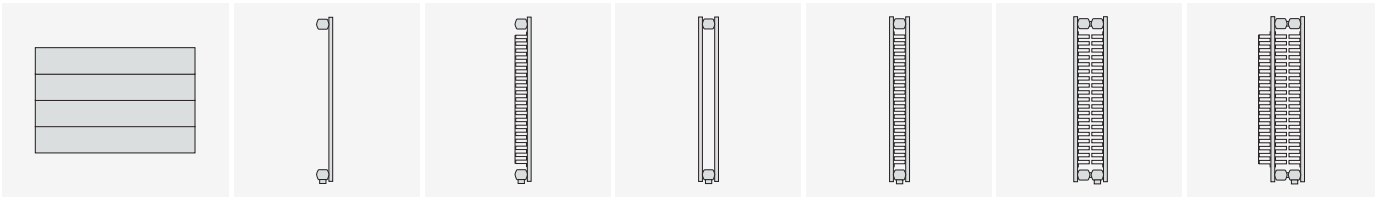
Overall height = 213 mm Φ_L = ΔT 50 K EN 442 (SN 384.501-503)



Model	RRH210			RRHL210			RRHH210			RRHLH210			RRHLLH210			RRHLLHL210		
T mm	47			60			55			55			100			132		
H mm	213			213			213			213			213			213		
H Lam mm	-			196			-			196			196			196		
Exp. N	1.19			1.25			1.20			1.26			1.25			1.27		
Length	ΔT 30	ΔT 50	ΔT 56	ΔT 30	ΔT 50	ΔT 56	ΔT 30	ΔT 50	ΔT 56	ΔT 30	ΔT 50	ΔT 56	ΔT 30	ΔT 50	ΔT 56	ΔT 30	ΔT 50	ΔT 56
500	80	146	167	135	256	295	120	222	254	155	296	341	220	417	480	288	551	636
600	96	175	200	162	307	354	144	266	305	186	355	409	264	500	576	346	661	763
700	111	204	234	189	358	413	168	311	356	218	414	477	307	583	672	404	771	891
800	127	234	267	216	410	472	192	355	407	249	473	545	351	666	768	461	882	1,018
900	143	263	301	243	461	531	216	400	458	280	532	613	395	750	864	519	992	1,145
1000	159	292	334	270	512	590	240	444	509	311	591	682	439	833	960	577	1,102	1,272
1100	175	321	367	297	563	649	264	488	560	342	650	750	483	916	1,056	634	1,212	1,399
1200	191	350	401	325	614	708	288	533	611	373	709	818	527	1,000	1,152	692	1,322	1,527
1300	207	380	434	352	666	767	312	577	662	404	768	886	571	1,083	1,248	750	1,433	1,654
1400	223	409	468	379	717	826	336	622	712	435	827	954	615	1,166	1,344	807	1,543	1,781
1500	239	438	501	406	768	885	360	666	763	466	887	1,022	659	1,250	1,440	865	1,653	1,908
1600	255	467	534	433	819	944	384	710	814	497	946	1,090	703	1,333	1,536	923	1,763	2,036
1700	271	496	568	460	870	1,003	408	755	865	528	1,005	1,159	747	1,416	1,632	980	1,873	2,163
1800	287	526	601	487	922	1,062	432	799	916	559	1,064	1,227	791	1,499	1,728	1,038	1,984	2,290
1900	303	555	635	514	973	1,121	456	844	967	591	1,123	1,295	834	1,583	1,824	1,096	2,094	2,417
2000	318	584	668	541	1,024	1,180	480	888	1,018	622	1,182	1,363	878	1,666	1,920	1,154	2,204	2,544
2200	350	642	735	595	1,126	1,298	528	977	1,120	684	1,300	1,499	966	1,833	2,112	1,269	2,424	2,799
2400	382	701	802	649	1,229	1,416	576	1,066	1,221	746	1,418	1,636	1,054	1,999	2,304	1,384	2,645	3,053
2600	414	759	869	703	1,331	1,534	624	1,154	1,323	808	1,537	1,772	1,142	2,166	2,496	1,500	2,865	3,308
2800	446	818	935	757	1,434	1,652	672	1,243	1,425	870	1,655	1,908	1,230	2,332	2,688	1,615	3,086	3,562
3000	478	876	1,002	811	1,536	1,770	720	1,332	1,527	932	1,773	2,045	1,318	2,499	2,880	1,730	3,306	3,817
3200	510	934	1,069	865	1,638	1,888	768	1,421	1,628	995	1,891	2,181	1,405	2,666	3,072	1,846	3,526	4,071
3400	541	993	1,136	919	1,741	2,006	816	1,510	1,730	1,057	2,009	2,317	1,493	2,832	3,264	1,961	3,747	4,326
3600	573	1,051	1,203	974	1,843	2,124	864	1,598	1,832	1,119	2,128	2,454	1,581	2,999	3,456	2,076	3,967	4,580
3800	605	1,110	1,269	1,028	1,946	2,242	912	1,687	1,934	1,181	2,246	2,590	1,669	3,165	3,648	2,192	4,188	4,834
4000	637	1,168	1,336	1,082	2,048	2,360	960	1,776	2,036	1,243	2,364	2,726	1,757	3,332	3,840	2,307	4,408	5,089
4200	669	1,226	1,403	1,136	2,150	2,478	1,008	1,865	2,137	1,305	2,482	2,863	1,845	3,499	4,032	2,422	4,628	5,343
4400	701	1,285	1,470	1,190	2,253	2,596	1,056	1,954	2,239	1,368	2,600	2,999	1,932	3,665	4,224	2,538	4,849	5,598
4600	732	1,343	1,537	1,244	2,355	2,714	1,104	2,042	2,341	1,430	2,719	3,135	2,020	3,832	4,416	2,653	5,069	5,852
4800	764	1,402	1,603	1,298	2,458	2,831	1,152	2,131	2,443	1,492	2,837	3,271	2,108	3,998	4,609	2,768	5,290	6,107
5000	796	1,460	1,670	1,352	2,560	2,949	1,200	2,220	2,544	1,554	2,955	3,408	2,196	4,165	4,801	2,884	5,510	6,361
5200	828	1,518	1,737	1,406	2,662	3,067	1,248	2,309	2,646	1,616	3,073	3,544	2,284	4,332	4,993	2,999	5,730	6,616
5400	860	1,577	1,804	1,460	2,765	3,185	1,296	2,398	2,748	1,678	3,191	3,680	2,372	4,498	5,185	3,114	5,951	6,870
5600	892	1,635	1,871	1,514	2,867	3,303	1,344	2,486	2,850	1,741	3,310	3,817	2,459	4,665	5,377	3,230	6,171	7,124
5800	924	1,694	1,937	1,568	2,970	3,421	1,392	2,575	2,952	1,803	3,428	3,953	2,547	4,831	5,569	3,345	6,392	7,379
6000	955	1,752	2,004	1,623	3,072	3,539	1,440	2,664	3,053	1,865	3,546	4,089	2,635	4,998	5,761	3,461	6,612	7,633

RuntalRad

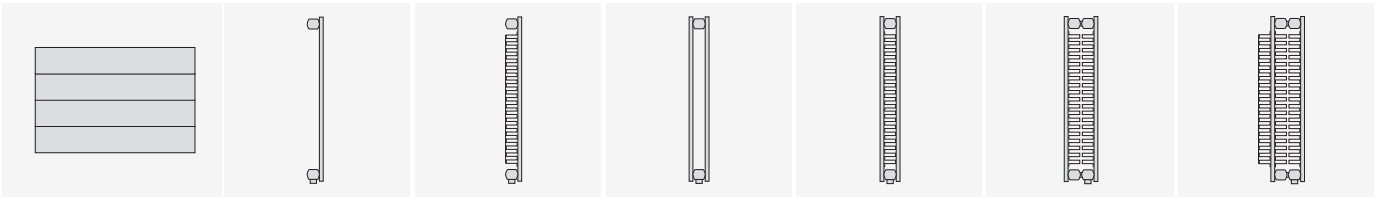
Overall height = 285 mm Φ_L = ΔT 50 K EN 442 (SN 384.501-503)



Model	RRH280			RRHL280			RRHH280			RRHLH280			RRHLLH280			RRHLLHL280		
T mm	47			60			55			55			100			132		
H mm	285			285			285			285			285			285		
H Lam mm	-			270			-			270			270			270		
Exp. N	1.20			1.26			1.21			1.27			1.27			1.28		
Length	ΔT 30	ΔT 50	ΔT 56	ΔT 30	ΔT 50	ΔT 56	ΔT 30	ΔT 50	ΔT 56	ΔT 30	ΔT 50	ΔT 56	ΔT 30	ΔT 50	ΔT 56	ΔT 30	ΔT 50	ΔT 56
500	98	181	207	164	313	361	148	276	316	187	357	412	270	517	596	343	661	764
600	118	217	249	197	375	433	178	331	379	224	428	495	324	620	716	411	793	917
700	137	253	290	229	438	505	207	386	443	261	500	577	378	723	835	480	925	1,069
800	157	290	332	262	500	577	237	441	506	298	571	660	432	826	954	549	1,057	1,222
900	177	326	373	295	563	649	267	496	569	336	643	742	487	930	1,073	617	1,189	1,375
1000	196	362	415	328	625	721	296	551	632	373	714	825	541	1,033	1,193	686	1,321	1,528
1100	216	398	456	360	688	793	326	606	695	410	785	907	595	1,136	1,312	754	1,453	1,681
1200	236	434	498	393	750	866	356	661	759	448	857	990	649	1,240	1,431	823	1,585	1,833
1300	255	471	539	426	813	938	385	716	822	485	928	1,072	703	1,343	1,550	891	1,717	1,986
1400	275	507	580	459	875	1,010	415	771	885	522	1,000	1,154	757	1,446	1,670	960	1,849	2,139
1500	295	543	622	492	938	1,082	445	827	948	560	1,071	1,237	811	1,550	1,789	1,029	1,982	2,292
1600	314	579	663	524	1,000	1,154	474	882	1,012	597	1,142	1,319	865	1,653	1,908	1,097	2,114	2,445
1700	334	615	705	557	1,063	1,226	504	937	1,075	634	1,214	1,402	919	1,756	2,027	1,166	2,246	2,597
1800	354	652	746	590	1,125	1,298	533	992	1,138	671	1,285	1,484	973	1,859	2,147	1,234	2,378	2,750
1900	373	688	788	623	1,188	1,370	563	1,047	1,201	709	1,357	1,567	1,027	1,963	2,266	1,303	2,510	2,903
2000	393	724	829	655	1,250	1,443	593	1,102	1,265	746	1,428	1,649	1,081	2,066	2,385	1,371	2,642	3,056
2200	432	796	912	721	1,375	1,587	652	1,212	1,391	821	1,571	1,814	1,189	2,273	2,624	1,509	2,906	3,361
2400	471	869	995	786	1,500	1,731	711	1,322	1,517	895	1,714	1,979	1,297	2,479	2,862	1,646	3,170	3,667
2600	511	941	1,078	852	1,625	1,875	771	1,433	1,644	970	1,856	2,144	1,406	2,686	3,101	1,783	3,435	3,972
2800	550	1,014	1,161	917	1,750	2,020	830	1,543	1,770	1,044	1,999	2,309	1,514	2,892	3,339	1,920	3,699	4,278
3000	589	1,086	1,244	983	1,875	2,164	889	1,653	1,897	1,119	2,142	2,474	1,622	3,099	3,578	2,057	3,963	4,583
3200	629	1,158	1,327	1,049	2,000	2,308	948	1,763	2,023	1,194	2,285	2,639	1,730	3,306	3,816	2,194	4,227	4,889
3400	668	1,231	1,410	1,114	2,125	2,452	1,008	1,873	2,150	1,268	2,428	2,804	1,838	3,512	4,055	2,332	4,491	5,195
3600	707	1,303	1,493	1,180	2,250	2,597	1,067	1,984	2,276	1,343	2,570	2,969	1,946	3,719	4,293	2,469	4,756	5,500
3800	746	1,376	1,575	1,245	2,375	2,741	1,126	2,094	2,403	1,417	2,713	3,134	2,054	3,925	4,532	2,606	5,020	5,806
4000	786	1,448	1,658	1,311	2,500	2,885	1,186	2,204	2,529	1,492	2,856	3,298	2,162	4,132	4,770	2,743	5,284	6,111
4200	825	1,520	1,741	1,376	2,625	3,029	1,245	2,314	2,656	1,567	2,999	3,463	2,271	4,339	5,009	2,880	5,548	6,417
4400	864	1,593	1,824	1,442	2,750	3,174	1,304	2,424	2,782	1,641	3,142	3,628	2,379	4,545	5,247	3,017	5,812	6,722
4600	903	1,665	1,907	1,507	2,875	3,318	1,363	2,535	2,908	1,716	3,284	3,793	2,487	4,752	5,486	3,154	6,077	7,028
4800	943	1,738	1,990	1,573	3,000	3,462	1,423	2,645	3,035	1,790	3,427	3,958	2,595	4,958	5,724	3,292	6,341	7,334
5000	982	1,810	2,073	1,638	3,125	3,606	1,482	2,755	3,161	1,865	3,570	4,123	2,703	5,165	5,963	3,429	6,605	7,639
5200	1,021	1,882	2,156	1,704	3,250	3,751	1,541	2,865	3,288	1,940	3,713	4,288	2,811	5,372	6,201	3,566	6,869	7,945
5400	1,061	1,955	2,239	1,769	3,375	3,895	1,600	2,975	3,414	2,014	3,856	4,453	2,919	5,578	6,440	3,703	7,133	8,250
5600	1,100	2,027	2,322	1,835	3,500	4,039	1,660	3,086	3,541	2,089	3,998	4,618	3,027	5,785	6,678	3,840	7,398	8,556
5800	1,139	2,100	2,405	1,901	3,625	4,183	1,719	3,196	3,667	2,163	4,141	4,783	3,136	5,991	6,917	3,977	7,662	8,861
6000	1,178	2,172	2,488	1,966	3,750	4,328	1,778	3,306	3,794	2,238	4,284	4,948	3,244	6,198	7,156	4,114	7,926	9,167

RuntalRad

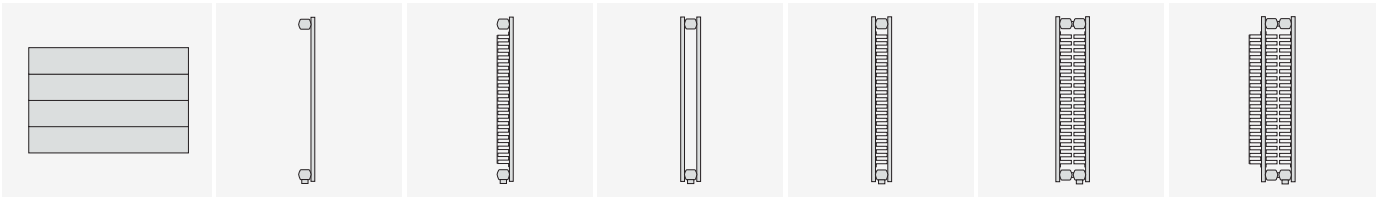
Overall height = 356 mm Φ_L = ΔT 50 K EN 442 (SN 384.501-503)



Model	RRH350			RRHL350			RRHH350			RRHLH350			RRHLLH350			RRHLLHL350		
T mm	47			60			55			55			100			132		
H mm	356			356			356			356			356			356		
H Lam mm	-			344			-			344			344			344		
Exp. N	1.21			1.28			1.22			1.29			1.28			1.30		
Length	Δ 30	Δ 50	Δ 56	Δ 30	Δ 50	Δ 56	Δ 30	Δ 50	Δ 56	Δ 30	Δ 50	Δ 56	Δ 30	Δ 50	Δ 56	Δ 30	Δ 50	Δ 56
500	114	212	243	190	365	422	174	326	374	214	413	477	322	620	717	390	758	878
600	137	254	292	228	438	506	209	391	449	257	495	573	387	744	860	468	909	1,053
700	160	297	340	266	511	591	244	456	524	300	578	668	451	868	1,004	546	1,061	1,229
800	183	339	389	304	584	675	279	521	598	342	660	763	515	992	1,147	624	1,212	1,404
900	206	382	438	342	657	759	314	586	673	385	743	859	580	1,116	1,290	702	1,364	1,580
1000	229	424	486	380	730	844	348	651	748	428	825	954	644	1,240	1,434	780	1,515	1,755
1100	252	466	535	418	803	928	383	716	823	471	908	1,050	709	1,364	1,577	858	1,667	1,931
1200	275	509	583	456	876	1,013	418	781	897	514	990	1,145	773	1,488	1,721	936	1,818	2,106
1300	298	551	632	494	949	1,097	453	846	972	556	1,073	1,241	837	1,612	1,864	1,014	1,970	2,282
1400	320	594	681	532	1,022	1,181	488	911	1,047	599	1,155	1,336	902	1,736	2,007	1,092	2,121	2,457
1500	343	636	729	570	1,095	1,266	523	977	1,122	642	1,238	1,431	966	1,860	2,151	1,170	2,273	2,633
1600	366	678	778	608	1,168	1,350	557	1,042	1,197	685	1,320	1,527	1,031	1,984	2,294	1,248	2,424	2,809
1700	389	721	826	646	1,241	1,434	592	1,107	1,271	727	1,403	1,622	1,095	2,108	2,438	1,326	2,576	2,984
1800	412	763	875	684	1,314	1,519	627	1,172	1,346	770	1,485	1,718	1,160	2,232	2,581	1,404	2,727	3,160
1900	435	806	924	722	1,387	1,603	662	1,237	1,421	813	1,568	1,813	1,224	2,356	2,724	1,482	2,879	3,335
2000	458	848	972	760	1,460	1,688	697	1,302	1,496	856	1,650	1,909	1,288	2,480	2,868	1,560	3,030	3,511
2200	504	933	1,070	836	1,606	1,856	766	1,432	1,645	941	1,815	2,100	1,417	2,728	3,155	1,716	3,333	3,862
2400	549	1,018	1,167	912	1,752	2,025	836	1,562	1,795	1,027	1,980	2,290	1,546	2,976	3,441	1,872	3,636	4,213
2600	595	1,102	1,264	988	1,898	2,194	906	1,693	1,944	1,113	2,145	2,481	1,675	3,224	3,728	2,028	3,939	4,564
2800	641	1,187	1,361	1,064	2,044	2,363	975	1,823	2,094	1,198	2,310	2,672	1,804	3,472	4,015	2,184	4,242	4,915
3000	687	1,272	1,458	1,140	2,190	2,531	1,045	1,953	2,244	1,284	2,475	2,863	1,933	3,720	4,302	2,340	4,545	5,266
3200	732	1,357	1,556	1,216	2,336	2,700	1,115	2,083	2,393	1,369	2,640	3,054	2,062	3,968	4,588	2,497	4,848	5,617
3400	778	1,442	1,653	1,292	2,482	2,869	1,185	2,213	2,543	1,455	2,805	3,245	2,190	4,216	4,875	2,653	5,151	5,968
3600	824	1,526	1,750	1,368	2,628	3,038	1,254	2,344	2,692	1,541	2,970	3,436	2,319	4,464	5,162	2,809	5,454	6,319
3800	870	1,611	1,847	1,444	2,774	3,207	1,324	2,474	2,842	1,626	3,135	3,626	2,448	4,712	5,449	2,965	5,757	6,670
4000	915	1,696	1,945	1,520	2,920	3,375	1,394	2,604	2,991	1,712	3,300	3,817	2,577	4,960	5,736	3,121	6,060	7,021
4200	961	1,781	2,042	1,596	3,066	3,544	1,463	2,734	3,141	1,797	3,465	4,008	2,706	5,208	6,022	3,277	6,363	7,372
4400	1,007	1,866	2,139	1,672	3,212	3,713	1,533	2,864	3,291	1,883	3,630	4,199	2,835	5,456	6,309	3,433	6,666	7,723
4600	1,053	1,950	2,236	1,748	3,358	3,882	1,603	2,995	3,440	1,969	3,795	4,390	2,963	5,704	6,596	3,589	6,969	8,074
4800	1,099	2,035	2,334	1,824	3,504	4,050	1,672	3,125	3,590	2,054	3,960	4,581	3,092	5,952	6,883	3,745	7,272	8,426
5000	1,144	2,120	2,431	1,900	3,650	4,219	1,742	3,255	3,739	2,140	4,125	4,772	3,221	6,200	7,169	3,901	7,575	8,777
5200	1,190	2,205	2,528	1,976	3,796	4,388	1,812	3,385	3,889	2,225	4,290	4,963	3,350	6,448	7,456	4,057	7,878	9,128
5400	1,236	2,290	2,625	2,052	3,942	4,557	1,881	3,515	4,038	2,311	4,455	5,153	3,479	6,696	7,743	4,213	8,181	9,479
5600	1,282	2,374	2,722	2,128	4,088	4,725	1,951	3,646	4,188	2,396	4,620	5,344	3,608	6,944	8,030	4,369	8,484	9,830
5800	1,327	2,459	2,820	2,204	4,234	4,894	2,021	3,776	4,338	2,482	4,785	5,535	3,736	7,192	8,317	4,525	8,787	10,181
6000	1,373	2,544	2,917	2,280	4,380	5,063	2,090	3,906	4,487	2,568	4,950	5,726	3,865	7,440	8,603	4,681	9,090	10,532

RuntalRad

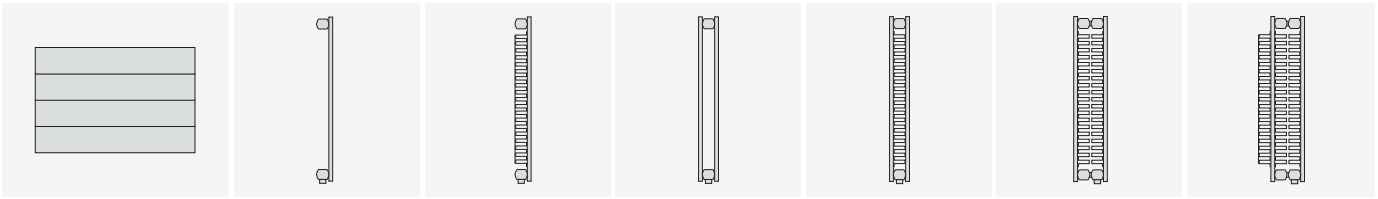
Overall height = 428 mm Φ_L = ΔT 50 K EN 442 (SN 384.501-503)



Model	RRH420			RRHL420			RRHH420			RRHLH420			RRHLLH420			RRHLLHL420		
T mm	47			60			55			55			100			132		
H mm	428			428			428			428			428			428		
H Lam mm	-			410			-			410			410			410		
Exp. N	1.21			1.26			1.23			1.30			1.29			1.31		
Length	ΔT 30	ΔT 50	ΔT 56	ΔT 30	ΔT 50	ΔT 56	ΔT 30	ΔT 50	ΔT 56	ΔT 30	ΔT 50	ΔT 56	ΔT 30	ΔT 50	ΔT 56	ΔT 30	ΔT 50	ΔT 56
500	132	246	282	218	416	480	203	381	438	240	465	539	367	711	822	435	848	983
600	159	295	338	261	499	575	244	457	526	288	558	646	441	853	987	522	1,018	1,180
700	185	344	394	305	582	671	285	533	613	336	651	754	514	995	1,151	609	1,187	1,377
800	212	393	451	348	665	767	325	610	701	384	744	862	588	1,137	1,316	696	1,357	1,574
900	238	442	507	392	748	863	366	686	788	432	837	969	661	1,279	1,480	783	1,526	1,770
1000	264	491	563	435	831	959	407	762	876	480	930	1,077	735	1,421	1,645	870	1,696	1,967
1100	291	540	620	479	914	1,055	447	838	963	528	1,023	1,185	808	1,563	1,809	957	1,866	2,164
1200	317	589	676	523	997	1,151	488	914	1,051	576	1,116	1,292	882	1,705	1,974	1,044	2,035	2,360
1300	344	638	732	566	1,080	1,247	529	991	1,139	624	1,209	1,400	955	1,847	2,138	1,131	2,205	2,557
1400	370	687	789	610	1,163	1,343	569	1,067	1,226	672	1,302	1,508	1,029	1,989	2,303	1,217	2,374	2,754
1500	397	737	845	653	1,247	1,439	610	1,143	1,314	720	1,395	1,616	1,102	2,132	2,467	1,304	2,544	2,950
1600	423	786	901	697	1,330	1,535	651	1,219	1,401	768	1,488	1,723	1,176	2,274	2,632	1,391	2,714	3,147
1700	450	835	957	740	1,413	1,630	691	1,295	1,489	816	1,581	1,831	1,249	2,416	2,796	1,478	2,883	3,344
1800	476	884	1,014	784	1,496	1,726	732	1,372	1,577	864	1,674	1,939	1,323	2,558	2,961	1,565	3,053	3,540
1900	503	933	1,070	827	1,579	1,822	773	1,448	1,664	912	1,767	2,046	1,396	2,700	3,125	1,652	3,222	3,737
2000	529	982	1,126	871	1,662	1,918	813	1,524	1,752	960	1,860	2,154	1,470	2,842	3,290	1,739	3,392	3,934
2200	582	1,080	1,239	958	1,828	2,110	895	1,676	1,927	1,056	2,046	2,369	1,617	3,126	3,619	1,913	3,731	4,327
2400	635	1,178	1,352	1,045	1,994	2,302	976	1,829	2,102	1,152	2,232	2,585	1,764	3,410	3,948	2,087	4,070	4,721
2600	688	1,277	1,464	1,132	2,161	2,494	1,057	1,981	2,277	1,248	2,418	2,800	1,911	3,695	4,277	2,261	4,410	5,114
2800	741	1,375	1,577	1,219	2,327	2,685	1,139	2,134	2,453	1,344	2,604	3,016	2,058	3,979	4,606	2,435	4,749	5,507
3000	793	1,473	1,690	1,306	2,493	2,877	1,220	2,286	2,628	1,440	2,790	3,231	2,205	4,263	4,935	2,609	5,088	5,901
3200	846	1,571	1,802	1,394	2,659	3,069	1,301	2,438	2,803	1,536	2,976	3,446	2,352	4,547	5,264	2,783	5,427	6,294
3400	899	1,669	1,915	1,481	2,825	3,261	1,383	2,591	2,978	1,632	3,162	3,662	2,499	4,831	5,592	2,957	5,766	6,687
3600	952	1,768	2,028	1,568	2,992	3,453	1,464	2,743	3,153	1,728	3,348	3,877	2,646	5,116	5,921	3,131	6,106	7,081
3800	1,005	1,866	2,140	1,655	3,158	3,645	1,545	2,896	3,328	1,824	3,534	4,093	2,793	5,400	6,250	3,305	6,445	7,474
4000	1,058	1,964	2,253	1,742	3,324	3,836	1,627	3,048	3,504	1,920	3,720	4,308	2,940	5,684	6,579	3,479	6,784	7,868
4200	1,111	2,062	2,366	1,829	3,490	4,028	1,708	3,200	3,679	2,016	3,906	4,523	3,087	5,968	6,908	3,652	7,123	8,261
4400	1,164	2,160	2,478	1,916	3,656	4,220	1,789	3,353	3,854	2,112	4,092	4,739	3,234	6,252	7,237	3,826	7,462	8,654
4600	1,217	2,259	2,591	2,003	3,823	4,412	1,871	3,505	4,029	2,208	4,278	4,954	3,381	6,537	7,566	4,000	7,802	9,048
4800	1,270	2,357	2,703	2,090	3,989	4,604	1,952	3,658	4,204	2,304	4,464	5,170	3,528	6,821	7,895	4,174	8,141	9,441
5000	1,322	2,455	2,816	2,177	4,155	4,795	2,033	3,810	4,380	2,400	4,650	5,385	3,675	7,105	8,224	4,348	8,480	9,835
5200	1,375	2,553	2,929	2,265	4,321	4,987	2,115	3,962	4,555	2,496	4,836	5,600	3,822	7,389	8,553	4,522	8,819	10,228
5400	1,428	2,651	3,041	2,352	4,487	5,179	2,196	4,115	4,730	2,592	5,022	5,816	3,968	7,673	8,882	4,696	9,158	10,621
5600	1,481	2,750	3,154	2,439	4,654	5,371	2,277	4,267	4,905	2,688	5,208	6,031	4,115	7,958	9,211	4,870	9,498	11,015
5800	1,534	2,848	3,267	2,526	4,820	5,563	2,359	4,420	5,080	2,784	5,394	6,247	4,262	8,242	9,540	5,044	9,837	11,408
6000	1,587	2,946	3,379	2,613	4,986	5,755	2,440	4,572	5,255	2,880	5,580	6,462	4,409	8,526	9,869	5,218	10,176	11,801

RuntalRad

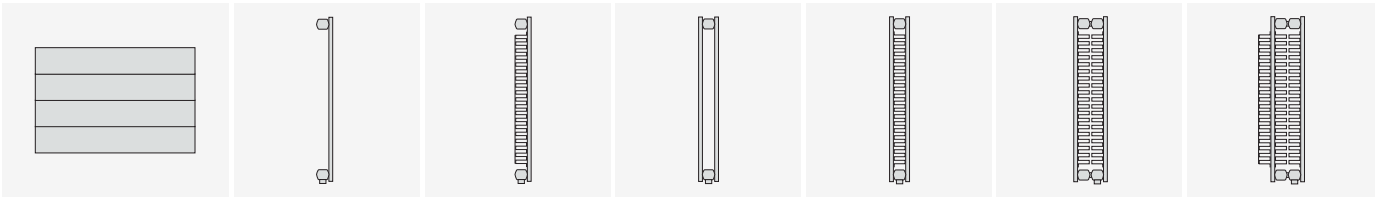
Overall height = 499 mm Φ_L = ΔT 50 K EN 442 (SN 384.501-503)



Model	RRH490			RRHL490			RRHH490			RRHLH490			RRHLLH490			RRHLLHL490		
T mm	47			60			55			55			100			132		
H mm	499			499			499			499			499			499		
H Lam mm	-			484			-			484			484			484		
Exp. N	1.22			1.25			1.23			1.30			1.30			1.32		
Length	ΔT 30	ΔT 50	ΔT 56	ΔT 30	ΔT 50	ΔT 56	ΔT 30	ΔT 50	ΔT 56	ΔT 30	ΔT 50	ΔT 56	ΔT 30	ΔT 50	ΔT 56	ΔT 30	ΔT 50	ΔT 56
500	149	278	319	245	464	535	232	435	500	264	514	596	405	786	911	475	931	1,080
600	179	334	383	294	557	642	278	522	600	317	617	715	486	943	1,093	570	1,117	1,296
700	209	389	447	343	650	749	324	609	700	370	720	834	567	1,100	1,275	665	1,303	1,512
800	239	445	510	392	742	856	370	696	801	422	822	953	647	1,258	1,457	760	1,489	1,728
900	269	500	574	441	835	962	417	783	901	475	925	1,073	728	1,415	1,639	855	1,675	1,944
1000	299	556	638	490	928	1,069	463	870	1,001	528	1,028	1,192	809	1,572	1,821	950	1,861	2,160
1100	329	612	702	539	1,021	1,176	509	957	1,101	581	1,131	1,311	890	1,729	2,004	1,045	2,047	2,376
1200	359	667	766	588	1,114	1,283	556	1,044	1,201	634	1,234	1,430	971	1,886	2,186	1,140	2,233	2,592
1300	389	723	830	637	1,206	1,390	602	1,131	1,301	687	1,336	1,549	1,052	2,044	2,368	1,235	2,419	2,808
1400	418	778	893	686	1,299	1,497	648	1,218	1,401	739	1,439	1,668	1,133	2,201	2,550	1,330	2,605	3,024
1500	448	834	957	735	1,392	1,604	695	1,305	1,501	792	1,542	1,788	1,214	2,358	2,732	1,425	2,792	3,240
1600	478	890	1,021	784	1,485	1,711	741	1,392	1,601	845	1,645	1,907	1,295	2,515	2,914	1,520	2,978	3,456
1700	508	945	1,085	832	1,578	1,818	787	1,479	1,701	898	1,748	2,026	1,376	2,672	3,096	1,615	3,164	3,672
1800	538	1,001	1,149	881	1,670	1,925	833	1,566	1,801	951	1,850	2,145	1,457	2,830	3,279	1,710	3,350	3,888
1900	568	1,056	1,212	930	1,763	2,032	880	1,653	1,901	1,003	1,953	2,264	1,538	2,987	3,461	1,805	3,536	4,105
2000	598	1,112	1,276	979	1,856	2,139	926	1,740	2,001	1,056	2,056	2,383	1,619	3,144	3,643	1,900	3,722	4,321
2200	658	1,223	1,404	1,077	2,042	2,353	1,019	1,914	2,201	1,162	2,262	2,622	1,781	3,458	4,007	2,091	4,094	4,753
2400	717	1,334	1,531	1,175	2,227	2,567	1,111	2,088	2,402	1,267	2,467	2,860	1,942	3,773	4,371	2,281	4,466	5,185
2600	777	1,446	1,659	1,273	2,413	2,780	1,204	2,262	2,602	1,373	2,673	3,098	2,104	4,087	4,736	2,471	4,839	5,617
2800	837	1,557	1,787	1,371	2,598	2,994	1,296	2,436	2,802	1,479	2,878	3,337	2,266	4,402	5,100	2,661	5,211	6,049
3000	897	1,668	1,914	1,469	2,784	3,208	1,389	2,610	3,002	1,584	3,084	3,575	2,428	4,716	5,464	2,851	5,583	6,481
3200	956	1,779	2,042	1,567	2,970	3,422	1,482	2,784	3,202	1,690	3,290	3,813	2,590	5,030	5,829	3,041	5,955	6,913
3400	1,016	1,890	2,169	1,665	3,155	3,636	1,574	2,958	3,402	1,795	3,495	4,052	2,752	5,345	6,193	3,231	6,327	7,345
3600	1,076	2,002	2,297	1,763	3,341	3,850	1,667	3,132	3,602	1,901	3,701	4,290	2,914	5,659	6,557	3,421	6,700	7,777
3800	1,136	2,113	2,425	1,861	3,526	4,064	1,759	3,306	3,803	2,007	3,906	4,529	3,076	5,974	6,921	3,611	7,072	8,209
4000	1,196	2,224	2,552	1,959	3,712	4,278	1,852	3,480	4,003	2,112	4,112	4,767	3,237	6,288	7,286	3,801	7,444	8,641
4200	1,255	2,335	2,680	2,057	3,898	4,491	1,945	3,654	4,203	2,218	4,318	5,005	3,399	6,602	7,650	3,991	7,816	9,073
4400	1,315	2,446	2,808	2,155	4,083	4,705	2,037	3,828	4,403	2,324	4,523	5,244	3,561	6,917	8,014	4,181	8,188	9,505
4600	1,375	2,558	2,935	2,253	4,269	4,919	2,130	4,002	4,603	2,429	4,729	5,482	3,723	7,231	8,379	4,371	8,561	9,937
4800	1,435	2,669	3,063	2,351	4,454	5,133	2,223	4,176	4,803	2,535	4,934	5,720	3,885	7,546	8,743	4,561	8,933	10,369
5000	1,495	2,780	3,190	2,448	4,640	5,347	2,315	4,350	5,003	2,640	5,140	5,959	4,047	7,860	9,107	4,751	9,305	10,801
5200	1,554	2,891	3,318	2,546	4,826	5,561	2,408	4,524	5,203	2,746	5,346	6,197	4,209	8,174	9,472	4,941	9,677	11,233
5400	1,614	3,002	3,446	2,644	5,011	5,775	2,500	4,698	5,404	2,852	5,551	6,435	4,371	8,489	9,836	5,131	10,049	11,665
5600	1,674	3,114	3,573	2,742	5,197	5,989	2,593	4,872	5,604	2,957	5,757	6,674	4,532	8,803	10,200	5,321	10,422	12,097
5800	1,734	3,225	3,701	2,840	5,382	6,203	2,686	5,046	5,804	3,063	5,962	6,912	4,694	9,118	10,564	5,511	10,794	12,530
6000	1,793	3,336	3,828	2,938	5,568	6,416	2,778	5,220	6,004	3,168	6,168	7,150	4,856	9,432	10,929	5,701	11,166	12,962

RuntalRad

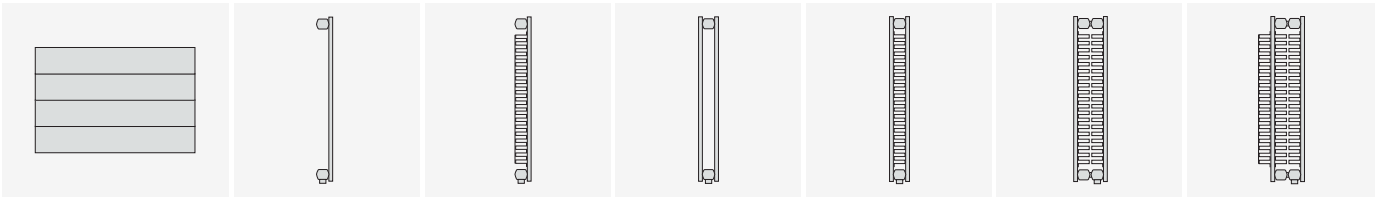
Overall height = 571 mm Φ_L = ΔT 50 K EN 442 (SN 384.501-503)



Model	RRH560			RRHL560			RRHH560			RRHLH560			RRHLLH560			RRHLLHL560		
T mm	47			60			55			55			100			132		
H mm	571			571			571			571			571			571		
H Lam mm	-			550			-			550			550			550		
Exp. N	1.22			1.24			1.24			1.31			1.31			1.32		
Length	ΔT 30	ΔT 50	ΔT 56	ΔT 30	ΔT 50	ΔT 56	ΔT 30	ΔT 50	ΔT 56	ΔT 30	ΔT 50	ΔT 56	ΔT 30	ΔT 50	ΔT 56	ΔT 30	ΔT 50	ΔT 56
500	167	311	357	271	511	587	259	489	562	287	562	652	438	854	991	513	1,009	1,172
600	200	373	429	326	613	705	311	586	675	344	674	782	525	1,025	1,189	616	1,211	1,407
700	233	435	500	380	715	822	363	684	787	402	786	912	613	1,196	1,387	718	1,413	1,641
800	267	498	571	434	817	940	415	782	900	459	898	1,043	700	1,366	1,585	821	1,614	1,876
900	300	560	643	488	919	1,057	467	879	1,012	517	1,011	1,173	788	1,537	1,783	923	1,816	2,110
1000	334	622	714	543	1,021	1,175	519	977	1,124	574	1,123	1,303	875	1,708	1,981	1,026	2,018	2,345
1100	367	684	786	597	1,123	1,292	570	1,075	1,237	631	1,235	1,434	963	1,879	2,179	1,129	2,220	2,579
1200	400	746	857	651	1,225	1,410	622	1,172	1,349	689	1,348	1,564	1,051	2,050	2,377	1,231	2,422	2,814
1300	434	809	928	705	1,327	1,527	674	1,270	1,462	746	1,460	1,694	1,138	2,220	2,575	1,334	2,623	3,048
1400	467	871	1,000	760	1,429	1,645	726	1,368	1,574	804	1,572	1,825	1,226	2,391	2,773	1,436	2,825	3,283
1500	500	933	1,071	814	1,532	1,762	778	1,466	1,687	861	1,685	1,955	1,313	2,562	2,972	1,539	3,027	3,517
1600	534	995	1,143	868	1,634	1,880	830	1,563	1,799	918	1,797	2,085	1,401	2,733	3,170	1,642	3,229	3,752
1700	567	1,057	1,214	922	1,736	1,997	882	1,661	1,912	976	1,909	2,216	1,488	2,904	3,368	1,744	3,431	3,986
1800	600	1,120	1,286	977	1,838	2,115	933	1,759	2,024	1,033	2,021	2,346	1,576	3,074	3,566	1,847	3,632	4,220
1900	634	1,182	1,357	1,031	1,940	2,232	985	1,856	2,136	1,090	2,134	2,476	1,663	3,245	3,764	1,950	3,834	4,455
2000	667	1,244	1,428	1,085	2,042	2,350	1,037	1,954	2,249	1,148	2,246	2,607	1,751	3,416	3,962	2,052	4,036	4,689
2200	734	1,368	1,571	1,194	2,246	2,584	1,141	2,149	2,474	1,263	2,471	2,867	1,926	3,758	4,358	2,257	4,440	5,158
2400	800	1,493	1,714	1,302	2,450	2,819	1,244	2,345	2,699	1,377	2,695	3,128	2,101	4,099	4,754	2,463	4,843	5,627
2600	867	1,617	1,857	1,411	2,655	3,054	1,348	2,540	2,924	1,492	2,920	3,389	2,276	4,441	5,151	2,668	5,247	6,096
2800	934	1,742	2,000	1,519	2,859	3,289	1,452	2,736	3,148	1,607	3,144	3,649	2,451	4,782	5,547	2,873	5,650	6,565
3000	1,001	1,866	2,143	1,628	3,063	3,524	1,556	2,931	3,373	1,722	3,369	3,910	2,626	5,124	5,943	3,078	6,054	7,034
3200	1,067	1,990	2,286	1,736	3,267	3,759	1,659	3,126	3,598	1,837	3,594	4,171	2,801	5,466	6,339	3,283	6,458	7,503
3400	1,134	2,115	2,428	1,845	3,471	3,994	1,763	3,322	3,823	1,951	3,818	4,431	2,976	5,807	6,735	3,489	6,861	7,972
3600	1,201	2,239	2,571	1,953	3,676	4,229	1,867	3,517	4,048	2,066	4,043	4,692	3,152	6,149	7,132	3,694	7,265	8,441
3800	1,267	2,364	2,714	2,062	3,880	4,464	1,970	3,713	4,273	2,181	4,267	4,953	3,327	6,490	7,528	3,899	7,668	8,910
4000	1,334	2,488	2,857	2,170	4,084	4,699	2,074	3,908	4,498	2,296	4,492	5,213	3,502	6,832	7,924	4,104	8,072	9,379
4200	1,401	2,612	3,000	2,279	4,288	4,934	2,178	4,103	4,723	2,411	4,717	5,474	3,677	7,174	8,320	4,309	8,476	9,848
4400	1,468	2,737	3,143	2,387	4,492	5,169	2,282	4,299	4,947	2,525	4,941	5,735	3,852	7,515	8,716	4,515	8,879	10,317
4600	1,534	2,861	3,285	2,496	4,697	5,404	2,385	4,494	5,172	2,640	5,166	5,995	4,027	7,857	9,113	4,720	9,283	10,786
4800	1,601	2,986	3,428	2,604	4,901	5,639	2,489	4,690	5,397	2,755	5,390	6,256	4,202	8,198	9,509	4,925	9,686	11,255
5000	1,668	3,110	3,571	2,713	5,105	5,874	2,593	4,885	5,622	2,870	5,615	6,517	4,377	8,540	9,905	5,130	10,090	11,724
5200	1,734	3,234	3,714	2,821	5,309	6,109	2,696	5,080	5,847	2,985	5,840	6,777	4,552	8,882	10,301	5,335	10,494	12,193
5400	1,801	3,359	3,857	2,930	5,513	6,344	2,800	5,276	6,072	3,099	6,064	7,038	4,727	9,223	10,697	5,541	10,897	12,661
5600	1,868	3,483	4,000	3,038	5,718	6,579	2,904	5,471	6,297	3,214	6,289	7,299	4,902	9,565	11,094	5,746	11,301	13,130
5800	1,934	3,608	4,143	3,147	5,922	6,814	3,008	5,667	6,522	3,329	6,513	7,559	5,077	9,906	11,490	5,951	11,704	13,599
6000	2,001	3,732	4,285	3,255	6,126	7,049	3,111	5,862	6,747	3,444	6,738	7,820	5,253	10,248	11,886	6,156	12,108	14,068

RuntalRad

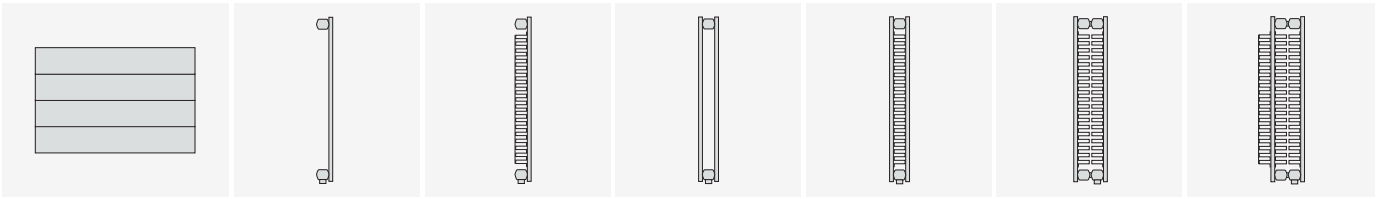
Overall height = 642 mm Φ_L = ΔT 50 K EN 442 (SN 384.501-503)



Model	RRH630			RRHL630			RRHH630			RRHLH630			RRHLLH630			RRHLLHL630		
T mm	47			60			55			55			100			132		
H mm	642			642			642			642			642			642		
H Lam mm	-			550			-			550			550			550		
Exp. N	1.22			1.24			1.24			1.30			1.31			1.32		
Length	ΔT 30	ΔT 50	ΔT 56	ΔT 30	ΔT 50	ΔT 56	ΔT 30	ΔT 50	ΔT 56	ΔT 30	ΔT 50	ΔT 56	ΔT 30	ΔT 50	ΔT 56	ΔT 30	ΔT 50	ΔT 56
500	185	346	397	291	548	631	287	541	623	312	607	703	468	914	1,060	540	1,060	1,231
600	222	415	477	349	658	757	344	649	748	374	728	844	562	1,097	1,272	647	1,272	1,478
700	259	484	556	407	767	883	401	757	872	436	849	984	656	1,280	1,484	755	1,484	1,724
800	296	554	636	466	877	1,009	458	866	997	498	970	1,125	749	1,462	1,696	863	1,696	1,970
900	333	623	715	524	986	1,135	516	974	1,121	561	1,092	1,266	843	1,645	1,908	971	1,908	2,216
1000	370	692	795	582	1,096	1,261	573	1,082	1,246	623	1,213	1,406	937	1,828	2,120	1,079	2,120	2,463
1100	407	761	874	640	1,206	1,387	630	1,190	1,370	685	1,334	1,547	1,031	2,011	2,332	1,187	2,332	2,709
1200	444	830	954	698	1,315	1,513	688	1,298	1,495	748	1,456	1,687	1,124	2,194	2,544	1,295	2,544	2,955
1300	481	900	1,033	757	1,425	1,640	745	1,407	1,620	810	1,577	1,828	1,218	2,376	2,756	1,403	2,756	3,201
1400	518	969	1,113	815	1,534	1,766	802	1,515	1,744	872	1,698	1,969	1,312	2,559	2,968	1,511	2,968	3,448
1500	555	1,038	1,192	873	1,644	1,892	860	1,623	1,869	935	1,820	2,109	1,405	2,742	3,180	1,619	3,180	3,694
1600	592	1,107	1,272	931	1,754	2,018	917	1,731	1,993	997	1,941	2,250	1,499	2,925	3,392	1,727	3,392	3,940
1700	630	1,176	1,351	989	1,863	2,144	974	1,839	2,118	1,059	2,062	2,391	1,593	3,108	3,604	1,835	3,604	4,186
1800	667	1,246	1,431	1,048	1,973	2,270	1,032	1,948	2,243	1,122	2,183	2,531	1,686	3,290	3,816	1,942	3,816	4,433
1900	704	1,315	1,510	1,106	2,082	2,396	1,089	2,056	2,367	1,184	2,305	2,672	1,780	3,473	4,028	2,050	4,028	4,679
2000	741	1,384	1,590	1,164	2,192	2,522	1,146	2,164	2,492	1,246	2,426	2,812	1,874	3,656	4,240	2,158	4,240	4,925
2200	815	1,522	1,749	1,280	2,411	2,775	1,261	2,380	2,741	1,371	2,669	3,094	2,061	4,022	4,665	2,374	4,664	5,418
2400	889	1,661	1,908	1,397	2,630	3,027	1,375	2,597	2,990	1,495	2,911	3,375	2,248	4,387	5,089	2,590	5,088	5,910
2600	963	1,799	2,067	1,513	2,850	3,279	1,490	2,813	3,239	1,620	3,154	3,656	2,436	4,753	5,513	2,806	5,512	6,403
2800	1,037	1,938	2,226	1,630	3,069	3,531	1,605	3,030	3,488	1,745	3,396	3,937	2,623	5,118	5,937	3,022	5,936	6,895
3000	1,111	2,076	2,385	1,746	3,288	3,784	1,719	3,246	3,738	1,869	3,639	4,219	2,811	5,484	6,361	3,237	6,360	7,388
3200	1,185	2,214	2,544	1,862	3,507	4,036	1,834	3,462	3,987	1,994	3,882	4,500	2,998	5,850	6,785	3,453	6,784	7,880
3400	1,259	2,353	2,703	1,979	3,726	4,288	1,948	3,679	4,236	2,119	4,124	4,781	3,185	6,215	7,209	3,669	7,208	8,373
3600	1,333	2,491	2,862	2,095	3,946	4,540	2,063	3,895	4,485	2,243	4,367	5,062	3,373	6,581	7,633	3,885	7,632	8,865
3800	1,407	2,630	3,021	2,212	4,165	4,793	2,178	4,112	4,734	2,368	4,609	5,343	3,560	6,946	8,057	4,101	8,056	9,358
4000	1,481	2,768	3,180	2,328	4,384	5,045	2,292	4,328	4,983	2,492	4,852	5,625	3,747	7,312	8,481	4,317	8,480	9,850
4200	1,555	2,906	3,339	2,444	4,603	5,297	2,407	4,544	5,233	2,617	5,095	5,906	3,935	7,678	8,905	4,532	8,904	10,343
4400	1,629	3,045	3,498	2,561	4,822	5,549	2,521	4,761	5,482	2,742	5,337	6,187	4,122	8,043	9,329	4,748	9,328	10,836
4600	1,703	3,183	3,657	2,677	5,042	5,802	2,636	4,977	5,731	2,866	5,580	6,468	4,309	8,409	9,753	4,964	9,752	11,328
4800	1,777	3,322	3,816	2,794	5,261	6,054	2,751	5,194	5,980	2,991	5,822	6,750	4,497	8,774	10,177	5,180	10,176	11,821
5000	1,852	3,460	3,975	2,910	5,480	6,306	2,865	5,410	6,229	3,116	6,065	7,031	4,684	9,140	10,601	5,396	10,600	12,313
5200	1,926	3,598	4,134	3,027	5,699	6,558	2,980	5,626	6,478	3,240	6,308	7,312	4,872	9,506	11,025	5,611	11,024	12,806
5400	2,000	3,737	4,293	3,143	5,918	6,811	3,095	5,843	6,728	3,365	6,550	7,593	5,059	9,871	11,449	5,827	11,448	13,298
5600	2,074	3,875	4,452	3,259	6,138	7,063	3,209	6,059	6,977	3,489	6,793	7,875	5,246	10,237	11,873	6,043	11,872	13,791
5800	2,148	4,014	4,611	3,376	6,357	7,315	3,324	6,276	7,226	3,614	7,035	8,156	5,434	10,602	12,297	6,259	12,296	14,283
6000	2,222	4,152	4,770	3,492	6,576	7,567	3,438	6,492	7,475	3,739	7,278	8,437	5,621	10,968	12,721	6,475	12,720	14,776

RuntalRad

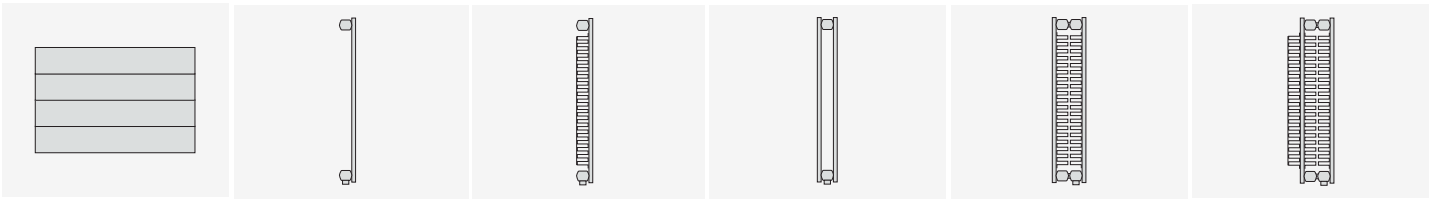
Overall height = 714 mm Φ_L = ΔT 50 K EN 442 (SN 384.501-503)



Model	RRH700			RRHL700			RRHH700			RRHLH700			RRHLLH700			RRHLLHL700		
T mm	47			60			55			55			100			132		
H mm	714			714			714			714			714			714		
H Lam mm	-			550			-			550			550			550		
Exp. N	1.23			1.24			1.25			1.29			1.31			1.32		
Length	ΔT 30	ΔT 50	ΔT 56	ΔT 30	ΔT 50	ΔT 56	ΔT 30	ΔT 50	ΔT 56	ΔT 30	ΔT 50	ΔT 56	ΔT 30	ΔT 50	ΔT 56	ΔT 30	ΔT 50	ΔT 56
500	204	381	438	309	582	669	314	594	684	336	651	753	496	968	1,123	564	1,108	1,286
600	244	457	525	370	698	803	377	713	821	403	781	904	595	1,162	1,347	677	1,329	1,543
700	285	533	613	432	814	937	440	832	958	470	911	1,055	694	1,355	1,572	790	1,551	1,801
800	326	610	701	494	930	1,071	502	950	1,095	537	1,041	1,205	794	1,549	1,796	903	1,772	2,058
900	366	686	788	555	1,047	1,205	565	1,069	1,232	605	1,171	1,356	893	1,742	2,021	1,016	1,994	2,315
1000	407	762	876	617	1,163	1,339	628	1,188	1,369	672	1,301	1,506	992	1,936	2,246	1,129	2,215	2,572
1100	448	838	963	679	1,279	1,472	691	1,307	1,505	739	1,431	1,657	1,091	2,130	2,470	1,242	2,437	2,830
1200	489	914	1,051	741	1,396	1,606	753	1,426	1,642	806	1,561	1,808	1,191	2,323	2,695	1,355	2,658	3,087
1300	529	991	1,138	802	1,512	1,740	816	1,544	1,779	873	1,691	1,958	1,290	2,517	2,919	1,467	2,880	3,344
1400	570	1,067	1,226	864	1,628	1,874	879	1,663	1,916	940	1,821	2,109	1,389	2,710	3,144	1,580	3,101	3,601
1500	611	1,143	1,314	926	1,745	2,008	942	1,782	2,053	1,008	1,952	2,260	1,488	2,904	3,368	1,693	3,323	3,858
1600	651	1,219	1,401	988	1,861	2,142	1,005	1,901	2,190	1,075	2,082	2,410	1,587	3,098	3,593	1,806	3,544	4,116
1700	692	1,295	1,489	1,049	1,977	2,275	1,067	2,020	2,327	1,142	2,212	2,561	1,687	3,291	3,817	1,919	3,766	4,373
1800	733	1,372	1,576	1,111	2,093	2,409	1,130	2,138	2,463	1,209	2,342	2,712	1,786	3,485	4,042	2,032	3,987	4,630
1900	774	1,448	1,664	1,173	2,210	2,543	1,193	2,257	2,600	1,276	2,472	2,862	1,885	3,678	4,266	2,145	4,209	4,887
2000	814	1,524	1,751	1,234	2,326	2,677	1,256	2,376	2,737	1,343	2,602	3,013	1,984	3,872	4,491	2,258	4,430	5,145
2200	896	1,676	1,926	1,358	2,559	2,945	1,381	2,614	3,011	1,478	2,862	3,314	2,183	4,259	4,940	2,483	4,873	5,659
2400	977	1,829	2,102	1,481	2,791	3,212	1,507	2,851	3,284	1,612	3,122	3,616	2,381	4,646	5,389	2,709	5,316	6,174
2600	1,059	1,981	2,277	1,605	3,024	3,480	1,633	3,089	3,558	1,747	3,383	3,917	2,580	5,034	5,838	2,935	5,759	6,688
2800	1,140	2,134	2,452	1,728	3,256	3,748	1,758	3,326	3,832	1,881	3,643	4,218	2,778	5,421	6,287	3,161	6,202	7,203
3000	1,221	2,286	2,627	1,852	3,489	4,016	1,884	3,564	4,106	2,015	3,903	4,519	2,976	5,808	6,737	3,386	6,645	7,717
3200	1,303	2,438	2,802	1,975	3,722	4,283	2,009	3,802	4,379	2,150	4,163	4,821	3,175	6,195	7,186	3,612	7,088	8,231
3400	1,384	2,591	2,977	2,098	3,954	4,551	2,135	4,039	4,653	2,284	4,423	5,122	3,373	6,582	7,635	3,838	7,531	8,746
3600	1,466	2,743	3,152	2,222	4,187	4,819	2,260	4,277	4,927	2,418	4,684	5,423	3,572	6,970	8,084	4,064	7,974	9,260
3800	1,547	2,896	3,328	2,345	4,419	5,086	2,386	4,514	5,200	2,553	4,944	5,725	3,770	7,357	8,533	4,289	8,417	9,775
4000	1,629	3,048	3,503	2,469	4,652	5,354	2,512	4,752	5,474	2,687	5,204	6,026	3,969	7,744	8,982	4,515	8,860	10,289
4200	1,710	3,200	3,678	2,592	4,885	5,622	2,637	4,990	5,748	2,821	5,464	6,327	4,167	8,131	9,431	4,741	9,303	10,804
4400	1,791	3,353	3,853	2,716	5,117	5,889	2,763	5,227	6,022	2,956	5,724	6,629	4,365	8,518	9,880	4,967	9,746	11,318
4600	1,873	3,505	4,028	2,839	5,350	6,157	2,888	5,465	6,295	3,090	5,985	6,930	4,564	8,906	10,329	5,192	10,189	11,833
4800	1,954	3,658	4,203	2,963	5,582	6,425	3,014	5,702	6,569	3,224	6,245	7,231	4,762	9,293	10,778	5,418	10,632	12,347
5000	2,036	3,810	4,378	3,086	5,815	6,693	3,139	5,940	6,843	3,359	6,505	7,532	4,961	9,680	11,228	5,644	11,075	12,862
5200	2,117	3,962	4,554	3,209	6,048	6,960	3,265	6,178	7,116	3,493	6,765	7,834	5,159	10,067	11,677	5,870	11,518	13,376
5400	2,199	4,115	4,729	3,333	6,280	7,228	3,391	6,415	7,390	3,627	7,025	8,135	5,358	10,454	12,126	6,095	11,961	13,891
5600	2,280	4,267	4,904	3,456	6,513	7,496	3,516	6,653	7,664	3,762	7,286	8,436	5,556	10,842	12,575	6,321	12,404	14,405
5800	2,361	4,420	5,079	3,580	6,745	7,763	3,642	6,890	7,937	3,896	7,546	8,738	5,754	11,229	13,024	6,547	12,847	14,920
6000	2,443	4,572	5,254	3,703	6,978	8,031	3,767	7,128	8,211	4,030	7,806	9,039	5,953	11,616	13,473	6,773	13,290	15,434

RuntalRad

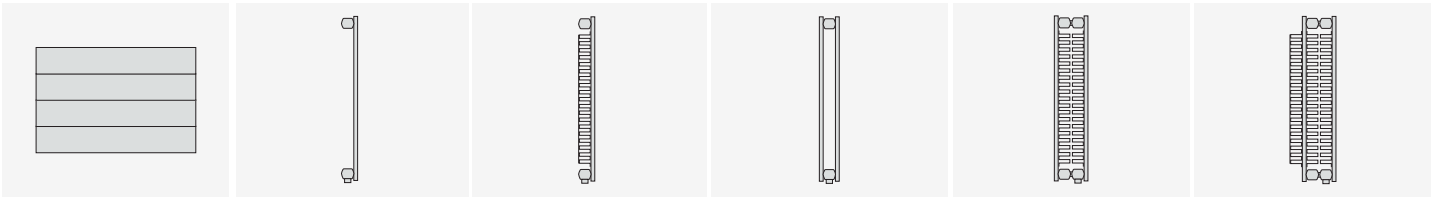
Overall height = 785 mm Φ_L = ΔT 50 K EN 442 (SN 384.501-503)



Model	RRH770			RRH770			RRHH770			RRHLLH770			RRHLLHL770		
T mm	47			60			55			100			132		
H mm	785			785			785			785			785		
H Lam mm	-			550			-			550			550		
Exp. N	1.23			1.23			1.25			1.31			1.32		
Length	ΔT 30	ΔT 50	ΔT 56	ΔT 30	ΔT 50	ΔT 56	ΔT 30	ΔT 50	ΔT 56	ΔT 30	ΔT 50	ΔT 56	ΔT 30	ΔT 50	ΔT 56
500	222	416	478	222	416	478	341	646	744	520	1,016	1,178	587	1,151	1,336
600	266	499	573	266	499	573	409	775	893	624	1,219	1,413	704	1,381	1,603
700	310	582	669	310	582	669	477	904	1,041	729	1,422	1,649	822	1,611	1,870
800	355	665	764	355	665	764	545	1,033	1,190	833	1,625	1,885	939	1,841	2,137
900	399	748	860	399	748	860	613	1,162	1,339	937	1,828	2,120	1,056	2,071	2,404
1000	443	831	955	443	831	955	681	1,291	1,488	1,041	2,031	2,356	1,174	2,301	2,672
1100	488	914	1,051	488	914	1,051	749	1,420	1,637	1,145	2,234	2,591	1,291	2,531	2,939
1200	532	997	1,146	532	997	1,146	817	1,549	1,785	1,249	2,437	2,827	1,409	2,761	3,206
1300	576	1,080	1,242	576	1,080	1,242	885	1,678	1,934	1,353	2,640	3,062	1,526	2,991	3,473
1400	621	1,163	1,337	621	1,163	1,337	954	1,807	2,083	1,457	2,843	3,298	1,643	3,221	3,740
1500	665	1,247	1,433	665	1,247	1,433	1,022	1,937	2,232	1,561	3,047	3,534	1,761	3,452	4,007
1600	709	1,330	1,528	709	1,330	1,528	1,090	2,066	2,380	1,665	3,250	3,769	1,878	3,682	4,275
1700	754	1,413	1,624	754	1,413	1,624	1,158	2,195	2,529	1,769	3,453	4,005	1,996	3,912	4,542
1800	798	1,496	1,720	798	1,496	1,720	1,226	2,324	2,678	1,873	3,656	4,240	2,113	4,142	4,809
1900	842	1,579	1,815	842	1,579	1,815	1,294	2,453	2,827	1,977	3,859	4,476	2,230	4,372	5,076
2000	887	1,662	1,911	887	1,662	1,911	1,362	2,582	2,976	2,082	4,062	4,711	2,348	4,602	5,343
2200	975	1,828	2,102	975	1,828	2,102	1,498	2,840	3,273	2,290	4,468	5,183	2,582	5,062	5,877
2400	1,064	1,994	2,293	1,064	1,994	2,293	1,635	3,098	3,571	2,498	4,874	5,654	2,817	5,522	6,412
2600	1,153	2,161	2,484	1,153	2,161	2,484	1,771	3,357	3,868	2,706	5,281	6,125	3,052	5,983	6,946
2800	1,241	2,327	2,675	1,241	2,327	2,675	1,907	3,615	4,166	2,914	5,687	6,596	3,287	6,443	7,480
3000	1,330	2,493	2,866	1,330	2,493	2,866	2,043	3,873	4,463	3,122	6,093	7,067	3,522	6,903	8,015
3200	1,419	2,659	3,057	1,419	2,659	3,057	2,179	4,131	4,761	3,330	6,499	7,538	3,756	7,363	8,549
3400	1,507	2,825	3,248	1,507	2,825	3,248	2,316	4,389	5,058	3,539	6,905	8,009	3,991	7,823	9,083
3600	1,596	2,992	3,439	1,596	2,992	3,439	2,452	4,648	5,356	3,747	7,312	8,481	4,226	8,284	9,618
3800	1,685	3,158	3,630	1,685	3,158	3,630	2,588	4,906	5,654	3,955	7,718	8,952	4,461	8,744	10,152
4000	1,773	3,324	3,821	1,773	3,324	3,821	2,724	5,164	5,951	4,163	8,124	9,423	4,695	9,204	10,686
4200	1,862	3,490	4,012	1,862	3,490	4,012	2,861	5,422	6,249	4,371	8,530	9,894	4,930	9,664	11,221
4400	1,951	3,656	4,203	1,951	3,656	4,203	2,997	5,680	6,546	4,579	8,936	10,365	5,165	10,124	11,755
4600	2,039	3,823	4,394	2,039	3,823	4,394	3,133	5,939	6,844	4,788	9,343	10,836	5,400	10,585	12,289
4800	2,128	3,989	4,585	2,128	3,989	4,585	3,269	6,197	7,141	4,996	9,749	11,308	5,634	11,045	12,824
5000	2,217	4,155	4,776	2,217	4,155	4,776	3,405	6,455	7,439	5,204	10,155	11,779	5,869	11,505	13,358
5200	2,305	4,321	4,968	2,305	4,321	4,968	3,542	6,713	7,737	5,412	10,561	12,250	6,104	11,965	13,892
5400	2,394	4,487	5,159	2,394	4,487	5,159	3,678	6,971	8,034	5,620	10,967	12,721	6,339	12,425	14,426
5600	2,483	4,654	5,350	2,483	4,654	5,350	3,814	7,230	8,332	5,828	11,374	13,192	6,574	12,886	14,961
5800	2,571	4,820	5,541	2,571	4,820	5,541	3,950	7,488	8,629	6,036	11,780	13,663	6,808	13,346	15,495
6000	2,660	4,986	5,732	2,660	4,986	5,732	4,086	7,746	8,927	6,245	12,186	14,134	7,043	13,806	16,029

RuntalRad

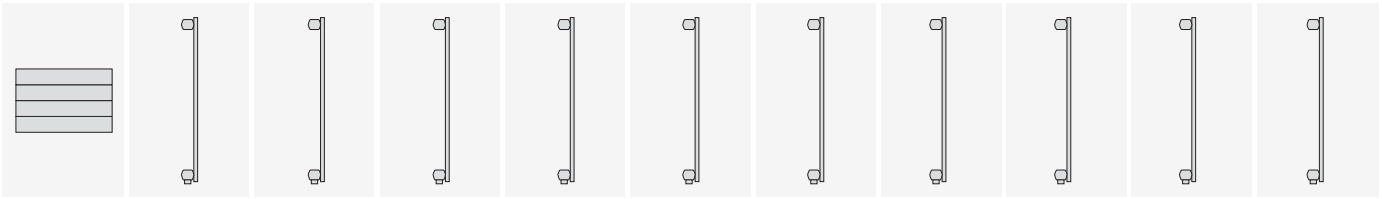
Overall height = 857 mm Φ_L = ΔT 50 K EN 442 (SN 384.501-503)



Model	RRH840			RRHL840			RRHH840			RRHLLH840			RRHLLHL840		
T mm	47			60			55			100			132		
H mm	857			857			857			857			857		
H Lam mm	-			550			-			550			550		
Exp. N	1.23			1.24			1.26			1.31			1.32		
Length	ΔT 30	ΔT 50	ΔT 56	ΔT 30	ΔT 50	ΔT 56	ΔT 30	ΔT 50	ΔT 56	ΔT 30	ΔT 50	ΔT 56	ΔT 30	ΔT 50	ΔT 56
500	240	451	518	337	636	732	367	698	805	542	1,058	1,227	608	1,191	1,382
600	288	541	622	405	763	879	441	838	966	650	1,269	1,472	730	1,429	1,659
700	336	631	725	472	890	1,025	514	977	1,127	759	1,481	1,717	852	1,667	1,935
800	384	721	829	539	1,018	1,172	588	1,117	1,288	867	1,692	1,963	973	1,906	2,212
900	432	811	933	607	1,145	1,318	661	1,256	1,449	975	1,904	2,208	1,095	2,144	2,488
1000	480	901	1,036	674	1,272	1,464	735	1,396	1,610	1,084	2,115	2,453	1,217	2,382	2,765
1100	528	991	1,140	742	1,399	1,611	808	1,536	1,771	1,192	2,327	2,699	1,338	2,620	3,041
1200	576	1,081	1,243	809	1,526	1,757	882	1,675	1,932	1,300	2,538	2,944	1,460	2,858	3,318
1300	624	1,171	1,347	876	1,654	1,904	955	1,815	2,093	1,409	2,750	3,189	1,582	3,097	3,594
1400	672	1,261	1,451	944	1,781	2,050	1,029	1,954	2,253	1,517	2,961	3,435	1,703	3,335	3,871
1500	720	1,352	1,554	1,011	1,908	2,197	1,102	2,094	2,414	1,626	3,173	3,680	1,825	3,573	4,147
1600	768	1,442	1,658	1,079	2,035	2,343	1,176	2,234	2,575	1,734	3,384	3,925	1,947	3,811	4,424
1700	815	1,532	1,762	1,146	2,162	2,489	1,249	2,373	2,736	1,842	3,596	4,170	2,068	4,049	4,700
1800	863	1,622	1,865	1,214	2,290	2,636	1,323	2,513	2,897	1,951	3,807	4,416	2,190	4,288	4,977
1900	911	1,712	1,969	1,281	2,417	2,782	1,396	2,652	3,058	2,059	4,019	4,661	2,312	4,526	5,253
2000	959	1,802	2,072	1,348	2,544	2,929	1,470	2,792	3,219	2,167	4,230	4,906	2,433	4,764	5,530
2200	1,055	1,982	2,280	1,483	2,798	3,222	1,617	3,071	3,541	2,384	4,653	5,397	2,676	5,240	6,083
2400	1,151	2,162	2,487	1,618	3,053	3,515	1,763	3,350	3,863	2,601	5,076	5,888	2,920	5,717	6,636
2600	1,247	2,343	2,694	1,753	3,307	3,807	1,910	3,630	4,185	2,818	5,499	6,378	3,163	6,193	7,189
2800	1,343	2,523	2,901	1,888	3,562	4,100	2,057	3,909	4,507	3,034	5,922	6,869	3,406	6,670	7,742
3000	1,439	2,703	3,109	2,023	3,816	4,393	2,204	4,188	4,829	3,251	6,345	7,360	3,650	7,146	8,295
3200	1,535	2,883	3,316	2,157	4,070	4,686	2,351	4,467	5,151	3,468	6,768	7,850	3,893	7,622	8,848
3400	1,631	3,063	3,523	2,292	4,325	4,979	2,498	4,746	5,473	3,685	7,191	8,341	4,136	8,099	9,401
3600	1,727	3,244	3,730	2,427	4,579	5,272	2,645	5,026	5,795	3,901	7,614	8,832	4,380	8,575	9,954
3800	1,823	3,424	3,938	2,562	4,834	5,565	2,792	5,305	6,117	4,118	8,037	9,322	4,623	9,052	10,507
4000	1,919	3,604	4,145	2,697	5,088	5,858	2,939	5,584	6,438	4,335	8,460	9,813	4,866	9,528	11,060
4200	2,015	3,784	4,352	2,832	5,342	6,150	3,086	5,863	6,760	4,552	8,883	10,304	5,110	10,004	11,613
4400	2,111	3,964	4,559	2,966	5,597	6,443	3,233	6,142	7,082	4,768	9,306	10,794	5,353	10,481	12,166
4600	2,207	4,145	4,767	3,101	5,851	6,736	3,380	6,422	7,404	4,985	9,729	11,285	5,596	10,957	12,719
4800	2,303	4,325	4,974	3,236	6,106	7,029	3,527	6,701	7,726	5,202	10,152	11,775	5,840	11,434	13,271
5000	2,398	4,505	5,181	3,371	6,360	7,322	3,674	6,980	8,048	5,419	10,575	12,266	6,083	11,910	13,824
5200	2,494	4,685	5,388	3,506	6,614	7,615	3,821	7,259	8,370	5,635	10,998	12,757	6,326	12,386	14,377
5400	2,590	4,865	5,596	3,641	6,869	7,908	3,968	7,538	8,692	5,852	11,421	13,247	6,570	12,863	14,930
5600	2,686	5,046	5,803	3,775	7,123	8,201	4,115	7,818	9,014	6,069	11,844	13,738	6,813	13,339	15,483
5800	2,782	5,226	6,010	3,910	7,378	8,493	4,262	8,097	9,336	6,285	12,267	14,229	7,056	13,816	16,036
6000	2,878	5,406	6,217	4,045	7,632	8,786	4,409	8,376	9,658	6,502	12,690	14,719	7,300	14,292	16,589

RuntalRad

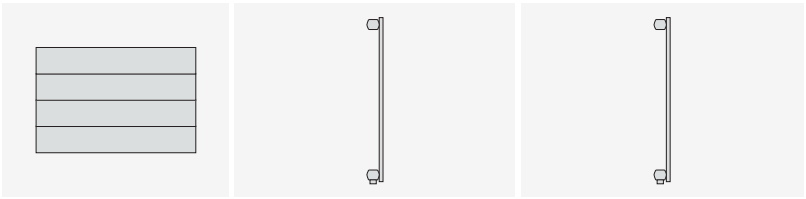
Overall height = 928-1572 mm Φ_L = ΔT 50 K EN 442 (SN 384.501-503)



Model	RRH910			RRH980			RRH1050			RRH1120			RRH1190			RRH1260			RRH1330			RRH1400			RRH1470			RRH1540		
T mm	47			47			47			47			47			47			47			47			47			47		
H mm	928			1000			1071			1143			1214			1286			1357			1429			1500			1572		
H Lam mm	-			-			-			-			-			-			-			-			-			-		
Exp. N	1.24			1.24			1.25			1.25			1.26			1.26			1.27			1.27			1.28			1.28		
Length	Δ 30	Δ 50	Δ 56	Δ 30	Δ 50	Δ 56	Δ 30	Δ 50	Δ 56	Δ 30	Δ 50	Δ 56	Δ 30	Δ 50	Δ 56	Δ 30	Δ 50	Δ 56	Δ 30	Δ 50	Δ 56	Δ 30	Δ 50	Δ 56	Δ 30	Δ 50	Δ 56	Δ 30	Δ 50	Δ 56
500	257	485	557	276	520	598	293	554	638	311	589	678	328	623	718	345	658	758	363	692	799	380	727	840	397	762	880	414	797	921
600	309	581	669	331	623	718	352	665	766	373	706	814	394	748	862	415	789	910	435	830	958	456	872	1,007	476	914	1,056	497	956	1,105
700	360	678	780	386	727	837	411	776	893	435	824	949	459	872	1,006	484	921	1,062	508	969	1,118	532	1,018	1,175	556	1,066	1,232	580	1,115	1,289
800	412	775	892	441	831	957	469	886	1,021	497	942	1,085	525	997	1,149	553	1,052	1,213	580	1,107	1,278	608	1,163	1,343	635	1,218	1,408	663	1,274	1,473
900	463	872	1,003	496	935	1,076	528	997	1,148	559	1,059	1,221	591	1,121	1,293	622	1,184	1,365	653	1,246	1,438	684	1,309	1,511	715	1,371	1,584	746	1,434	1,658
1000	515	969	1,115	551	1,039	1,196	587	1,108	1,276	622	1,177	1,356	656	1,246	1,436	691	1,315	1,517	725	1,384	1,597	760	1,454	1,679	794	1,523	1,760	828	1,593	1,842
1100	566	1,066	1,226	606	1,143	1,315	645	1,219	1,403	684	1,295	1,492	722	1,371	1,580	760	1,447	1,669	798	1,522	1,757	836	1,599	1,847	873	1,675	1,936	911	1,752	2,026
1200	618	1,163	1,338	661	1,247	1,435	704	1,330	1,531	746	1,412	1,627	788	1,495	1,724	829	1,578	1,820	870	1,661	1,917	912	1,745	2,015	953	1,828	2,112	994	1,912	2,210
1300	669	1,260	1,449	717	1,351	1,555	763	1,440	1,659	808	1,530	1,763	853	1,620	1,867	898	1,710	1,972	943	1,799	2,077	988	1,890	2,183	1,032	1,980	2,288	1,077	2,071	2,394
1400	721	1,357	1,561	772	1,455	1,674	821	1,551	1,786	870	1,648	1,899	919	1,744	2,011	967	1,841	2,124	1,015	1,938	2,236	1,064	2,036	2,351	1,112	2,132	2,464	1,160	2,230	2,578
1500	772	1,454	1,672	827	1,559	1,794	880	1,662	1,914	932	1,766	2,034	984	1,869	2,155	1,036	1,973	2,275	1,088	2,076	2,396	1,140	2,181	2,519	1,191	2,285	2,640	1,243	2,390	2,763
1600	824	1,550	1,784	882	1,662	1,913	939	1,773	2,041	994	1,883	2,170	1,050	1,994	2,298	1,105	2,104	2,427	1,160	2,214	2,556	1,216	2,326	2,687	1,270	2,437	2,816	1,325	2,549	2,947
1700	875	1,647	1,895	937	1,766	2,033	997	1,884	2,169	1,057	2,001	2,305	1,116	2,118	2,442	1,174	2,236	2,579	1,233	2,353	2,715	1,292	2,472	2,854	1,350	2,589	2,992	1,408	2,708	3,131
1800	927	1,744	2,007	992	1,870	2,153	1,056	1,994	2,297	1,119	2,119	2,441	1,181	2,243	2,586	1,244	2,367	2,730	1,305	2,491	2,875	1,368	2,617	3,022	1,429	2,741	3,168	1,491	2,867	3,315
1900	978	1,841	2,118	1,047	1,974	2,272	1,115	2,105	2,424	1,181	2,236	2,577	1,247	2,367	2,729	1,313	2,499	2,882	1,378	2,630	3,035	1,444	2,763	3,190	1,509	2,894	3,344	1,574	3,027	3,499
2000	1,030	1,938	2,230	1,102	2,078	2,392	1,173	2,216	2,552	1,243	2,354	2,712	1,313	2,492	2,873	1,382	2,630	3,034	1,451	2,768	3,195	1,520	2,908	3,358	1,588	3,046	3,520	1,657	3,186	3,683
2200	1,133	2,132	2,453	1,213	2,286	2,631	1,291	2,438	2,807	1,367	2,589	2,983	1,444	2,741	3,160	1,520	2,893	3,337	1,596	3,045	3,514	1,672	3,199	3,694	1,747	3,351	3,871	1,823	3,505	4,052
2400	1,236	2,326	2,676	1,323	2,494	2,870	1,408	2,659	3,062	1,492	2,825	3,255	1,575	2,990	3,447	1,658	3,156	3,640	1,741	3,322	3,834	1,824	3,490	4,030	1,906	3,655	4,223	1,988	3,823	4,420
2600	1,339	2,519	2,899	1,433	2,701	3,109	1,525	2,881	3,317	1,616	3,060	3,526	1,706	3,240	3,735	1,796	3,419	3,944	1,886	3,598	4,153	1,976	3,780	4,366	2,065	3,960	4,575	2,154	4,142	4,788
2800	1,442	2,713	3,122	1,543	2,909	3,349	1,642	3,102	3,573	1,740	3,296	3,797	1,838	3,489	4,022	1,934	3,682	4,247	2,031	3,875	4,473	2,128	4,071	4,701	2,223	4,264	4,927	2,320	4,460	5,157
3000	1,545	2,907	3,345	1,654	3,117	3,588	1,760	3,324	3,828	1,865	3,531	4,068	1,969	3,738	4,309	2,073	3,945	4,551	2,176	4,152	4,792	2,280	4,362	5,037	2,382	4,569	5,279	2,485	4,779	5,525
3200	1,647	3,101	3,568	1,764	3,325	3,827	1,877	3,546	4,083	1,989	3,766	4,340	2,100	3,987	4,597	2,211	4,208	4,854	2,321	4,429	5,111	2,432	4,653	5,373	2,541	4,874	5,631	2,651	5,098	5,893
3400	1,750	3,295	3,791	1,874	3,533	4,066	1,994	3,767	4,338	2,113	4,002	4,611	2,231	4,236	4,884	2,349	4,471	5,157	2,466	4,706	5,431	2,584	4,944	5,709	2,700	5,178	5,983	2,817	5,416	6,262
3600	1,853	3,488	4,014	1,984	3,740	4,305	2,112	3,989	4,593	2,238	4,237	4,882	2,363	4,486	5,171	2,487	4,734	5,461	2,611	4,982	5,750	2,736	5,234	6,045	2,859	5,483	6,335	2,982	5,735	6,630
3800	1,956	3,682	4,237	2,095	3,948	4,544	2,229	4,210	4,848	2,362	4,473	5,153	2,494	4,735	5,458	2,625	4,997	5,764	2,756	5,259	6,070	2,888	5,525	6,381	3,017	5,787	6,687	3,148	6,053	6,998
4000	2,059	3,876	4,460	2,205	4,156	4,784	2,346	4,432	5,104	2,486	4,708	5,424	2,625	4,984	5,746	2,763	5,260	6,067	2,901	5,536	6,389	3,040	5,816	6,716	3,176	6,092	7,039	3,314	6,372	7,367
4200	2,162	4,070	4,683	2,315	4,364	5,023	2,464	4,654	5,359	2,610	4,943	5,696	2,756	5,233	6,033	2,902	5,523	6,371	3,046	5,813	6,709	3,192	6,107	7,052	3,335	6,397	7,391	3,479	6,691	7,735
4400	2,265	4,264	4,906	2,425	4,572	5,262	2,581	4,875	5,614	2,735	5,179	5,967	2,888	5,482	6,320	3,040	5,786	6,674	3,191	6,090	7,028	3,344	6,398	7,388	3,494	6,701	7,743	3,645	7,009	8,103
4600	2,368	4,457	5,129	2,535	4,779	5,501	2,698	5,097	5,869	2,859	5,414	6,238	3,019	5,732	6,608	3,178	6,049	6,977	3,336	6,366	7,348	3,496	6,688	7,724	3,653	7,006	8,095	3,811	7,328	8,472
4800	2,471	4,651	5,352	2,646	4,987	5,740	2,816	5,318	6,124	2,983	5,650	6,509	3,150	5,981	6,895	3,316	6,312	7,281	3,481	6,643	7,667	3,648	6,979	8,060	3,811	7,310	8,447	3,976	7,646	8,840
5000	2,574	4,845	5,575	2,756	5,195	5,980	2,933	5,540	6,379	3,108	5,885	6,781	3,281	6,230	7,182	3,454	6,575	7,584	3,626	6,920	7,987	3,800	7,270	8,395	3,970	7,615	8,799	4,142	7,965	9,208
5200	2,677	5,039	5,798	2,866	5,403	6,219	3,050	5,762	6,635	3,232	6,120	7,052	3,413	6,479	7,469	3,593	6,838	7,888	3,771	7,197	8,306	3,952	7,561	8,731	4,129	7,920	9,151	4,308	8,284	9,577
5400	2,780	5,233	6,021	2,976	5,611	6,458	3,168	5,983	6,890	3,356	6,356	7,323	3,544	6,728	7,757	3,731	7,101	8,191	3,916	7,474	8,626	4,104	7,852	9,067	4,288	8,224	9,503	4,473	8,602	9,945
5600	2,883	5,426	6,244	3,087	5,818	6,697	3,285	6,205	7,145	3,481	6,591	7,594	3,675	6,978	8,044	3,869	7,364	8,494	4,061	7,750	8,945	4,256	8,142	9,403	4,447	8,529	9,855	4,639	8,921	10,313
5800	2,986	5,620	6,467	3,197	6,026	6,936	3,402	6,426	7,400	3,605	6,827	7,866	3,807	7,227	8,331	4,007	7,627	8,798	4,207	8,027	9,265	4,408	8,433	9,739	4,605	8,833	10,207	4,805	9,239	10,682
6000	3,089	5,814	6,690	3,307	6,234	7,175	3,520	6,648	7,655	3,729	7,062	8,137	3,938	7,476	8,619	4,145	7,890	9,101	4,352	8,304	9,584	4,560	8,724	10,074	4,764	9,138	10,559	4,971	9,558	11,050

RuntalRad

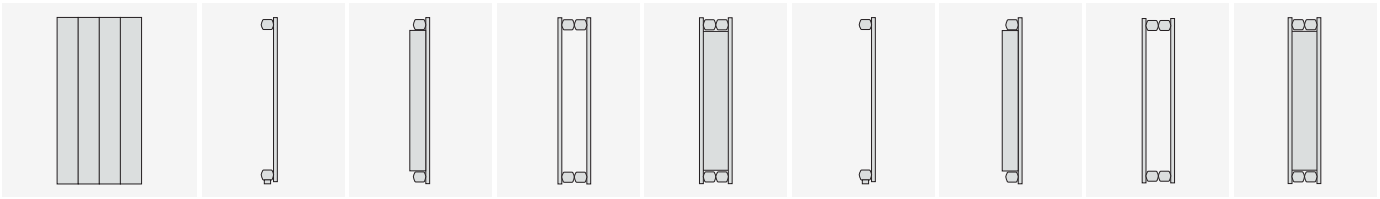
Overall height = 1643-1715 mm Φ_L = ΔT 50 K EN 442 (SN 384.501-503)



Model	RRH1610			RRH1680		
T mm	47			47		
H mm	1643			1715		
H Lam mm	-			-		
Exp. N	1.29			1.29		
Length	ΔT 30	ΔT 50	ΔT 56	ΔT 30	ΔT 50	ΔT 56
500	431	832	962	448	867	1,003
600	518	998	1,154	538	1,040	1,203
700	604	1,164	1,347	628	1,213	1,404
800	690	1,330	1,539	717	1,386	1,605
900	776	1,497	1,731	807	1,560	1,805
1000	863	1,663	1,924	897	1,733	2,006
1100	949	1,829	2,116	986	1,906	2,206
1200	1,035	1,996	2,308	1,076	2,080	2,407
1300	1,121	2,162	2,501	1,166	2,253	2,608
1400	1,208	2,328	2,693	1,255	2,426	2,808
1500	1,294	2,495	2,886	1,345	2,600	3,009
1600	1,380	2,661	3,078	1,435	2,773	3,209
1700	1,466	2,827	3,270	1,524	2,946	3,410
1800	1,553	2,993	3,463	1,614	3,119	3,610
1900	1,639	3,160	3,655	1,704	3,293	3,811
2000	1,725	3,326	3,847	1,793	3,466	4,012
2200	1,898	3,659	4,232	1,973	3,813	4,413
2400	2,070	3,991	4,617	2,152	4,159	4,814
2600	2,243	4,324	5,002	2,331	4,506	5,215
2800	2,415	4,656	5,386	2,511	4,852	5,616
3000	2,588	4,989	5,771	2,690	5,199	6,017
3200	2,760	5,322	6,156	2,869	5,546	6,419
3400	2,933	5,654	6,541	3,049	5,892	6,820
3600	3,105	5,987	6,925	3,228	6,239	7,221
3800	3,278	6,319	7,310	3,407	6,585	7,622
4000	3,450	6,652	7,695	3,587	6,932	8,023
4200	3,623	6,985	8,080	3,766	7,279	8,424
4400	3,796	7,317	8,464	3,945	7,625	8,826
4600	3,968	7,650	8,849	4,125	7,972	9,227
4800	4,141	7,982	9,234	4,304	8,318	9,628
5000	4,313	8,315	9,619	4,483	8,665	10,029
5200	4,486	8,648	10,003	4,662	9,012	10,430
5400	4,658	8,980	10,388	4,842	9,358	10,831
5600	4,831	9,313	10,773	5,021	9,705	11,233
5800	5,003	9,645	11,157	5,200	10,051	11,634
6000	5,176	9,978	11,542	5,380	10,398	12,035

RuntalRad

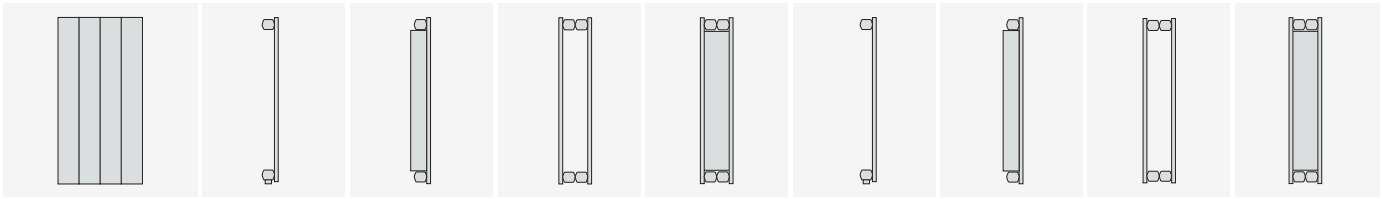
Overall height = 600-800 mm Φ_L = ΔT 50 K EN 442 (SN 384.501-503)



Model		RRV600			RRVL600			RRVV600			RRVLV600			RRV800			RRVL800			RRVV800			RRVLV800		
Depth	**mm**	47			60			55			100			47			60			55			100		
Height	**mm**	600			600			600			600			800			800			800			800		
Exp.		1.25			1.29			1.30			1.34			1.26			1.31			1.32			1.34		
EN 442*	**ΔT 50**	47			70			70			98			60			88			90			124		
Sections	**Length mm**	Δ 30	Δ 50	Δ 56	Δ 30	Δ 50	Δ 56	Δ 30	Δ 50	Δ 56	Δ 30	Δ 50	Δ 56	Δ 30	Δ 50	Δ 56	Δ 30	Δ 50	Δ 56	Δ 30	Δ 50	Δ 56	Δ 30	Δ 50	Δ 56
2	**142**	50	94	108	-	-	-	72	140	162	-	-	-	63	120	138	-	-	-	92	180	209	-	-	-
3	**213**	74	141	162	-	-	-	108	210	243	-	-	-	95	180	208	-	-	-	138	270	314	-	-	-
4	**285**	99	188	217	145	280	324	144	280	324	198	392	456	126	240	277	180	352	408	183	360	418	250	496	577
5	**356**	124	235	271	181	350	405	180	350	406	247	490	570	158	300	346	225	440	510	229	450	523	313	620	722
6	**428**	149	282	325	217	420	486	216	420	487	297	588	684	189	360	415	270	528	613	275	540	627	375	744	866
7	**499**	174	329	379	254	490	567	252	490	568	346	686	799	221	420	484	315	616	715	321	630	732	438	868	1,010
8	**571**	199	376	433	290	560	648	288	560	649	395	784	913	252	480	554	361	704	817	367	720	836	500	992	1,155
9	**642**	223	423	487	326	630	729	324	630	730	445	882	1,027	284	540	623	406	792	919	413	810	941	563	1,116	1,299
10	**714**	248	470	542	362	700	810	360	700	811	494	980	1,141	315	600	692	451	880	1,021	459	900	1,045	625	1,240	1,443
11	**785**	273	517	596	398	770	891	396	770	892	544	1,078	1,255	347	660	761	496	968	1,123	504	990	1,150	688	1,364	1,588
12	**857**	298	564	650	435	840	972	432	840	973	593	1,176	1,369	378	720	831	541	1,056	1,225	550	1,080	1,254	750	1,488	1,732
13	**928**	323	611	704	471	910	1,053	468	910	1,054	643	1,274	1,483	410	780	900	586	1,144	1,327	596	1,170	1,359	813	1,612	1,876
14	**1000**	347	658	758	507	980	1,134	504	980	1,136	692	1,372	1,597	441	840	969	631	1,232	1,429	642	1,260	1,463	876	1,736	2,021
15	**1071**	372	705	812	543	1,050	1,215	540	1,050	1,217	741	1,470	1,711	473	900	1,038	676	1,320	1,531	688	1,350	1,568	938	1,860	2,165
16	**1143**	397	752	866	579	1,120	1,296	577	1,120	1,298	791	1,568	1,825	504	960	1,107	721	1,408	1,633	734	1,440	1,672	1,001	1,984	2,309
17	**1214**	422	799	921	616	1,190	1,377	613	1,190	1,379	840	1,666	1,939	536	1,020	1,177	766	1,496	1,735	780	1,530	1,777	1,063	2,108	2,454
18	**1286**	447	846	975	652	1,260	1,458	649	1,260	1,460	890	1,764	2,053	567	1,080	1,246	811	1,584	1,838	825	1,620	1,881	1,126	2,232	2,598
19	**1357**	472	893	1,029	-	-	-	685	1,330	1,541	-	-	-	599	1,140	1,315	-	-	-	871	1,710	1,986	-	-	-
20	**1429**	496	940	1,083	-	-	-	721	1,400	1,622	-	-	-	630	1,200	1,384	-	-	-	917	1,800	2,090	-	-	-
21	**1500**	521	987	1,137	-	-	-	757	1,470	1,703	-	-	-	662	1,260	1,453	-	-	-	963	1,890	2,195	-	-	-
22	**1572**	546	1,034	1,191	-	-	-	793	1,540	1,784	-	-	-	693	1,320	1,523	-	-	-	1,009	1,980	2,299	-	-	-
23	**1643**	571	1,081	1,246	-	-	-	829	1,610	1,866	-	-	-	725	1,380	1,592	-	-	-	1,055	2,070	2,404	-	-	-
24	**1715**	596	1,128	1,300	-	-	-	865	1,680	1,947	-	-	-	757	1,440	1,661	-	-	-	1,101	2,160	2,509	-	-	-

RuntalRad

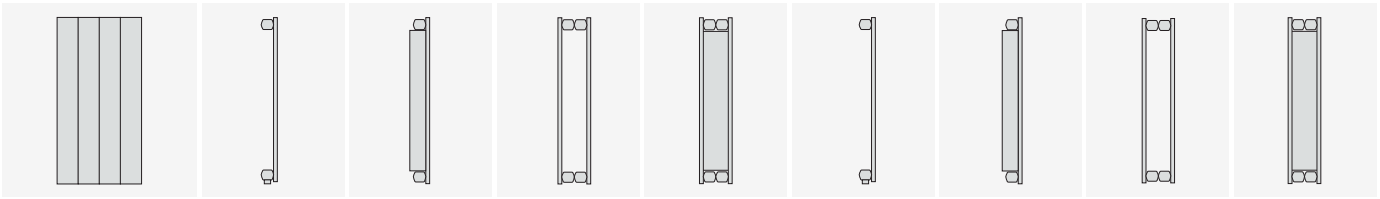
Overall height = 1000-1200 mm Φ_L = ΔT 50 K EN 442 (SN 384.501-503)



Model		RRV1000			RRVL1000			RRVV1000			RRVLV1000			RRV1200			RRVL1200			RRVV1200			RRVLV1200		
Depth	**mm**	47			60			55			100			47			60			55			100		
Height	**mm**	1000			1000			1000			1000			1200			1200			1200			1200		
Exp.		1.27			1.33			1.34			1.34			1.27			1.34			1.35			1.35		
EN 442*	**ΔT 50**	73			105			109			150			86			122			128			176		
Sections	**Length mm**	Δ 30	Δ 50	Δ 56	Δ 30	Δ 50	Δ 56	Δ 30	Δ 50	Δ 56	Δ 30	Δ 50	Δ 56	Δ 30	Δ 50	Δ 56	Δ 30	Δ 50	Δ 56	Δ 30	Δ 50	Δ 56	Δ 30	Δ 50	Δ 56
2	**142**	76	146	169	-	-	-	110	218	254	-	-	-	90	172	199	-	-	-	128	256	298	-	-	-
3	**213**	114	219	253	-	-	-	165	327	381	-	-	-	135	258	298	-	-	-	193	384	447	-	-	-
4	**285**	153	292	337	213	420	488	220	436	508	303	600	698	180	344	397	246	488	568	257	512	597	353	704	820
5	**356**	191	365	422	266	525	610	275	545	634	378	750	873	225	430	497	308	610	710	321	640	746	442	880	1,025
6	**428**	229	438	506	319	630	732	330	654	761	454	900	1,048	270	516	596	369	732	852	385	768	895	530	1,056	1,231
7	**499**	267	511	590	373	735	855	385	763	888	530	1,050	1,222	315	602	695	431	854	994	450	896	1,044	618	1,232	1,436
8	**571**	305	584	674	426	840	977	440	872	1,015	605	1,200	1,397	360	688	795	492	976	1,136	514	1,024	1,193	706	1,408	1,641
9	**642**	343	657	759	479	945	1,099	495	981	1,142	681	1,350	1,571	405	774	894	554	1,098	1,278	578	1,152	1,342	795	1,584	1,846
10	**714**	382	730	843	532	1,050	1,221	550	1,090	1,269	757	1,500	1,746	450	860	993	615	1,220	1,420	642	1,280	1,492	883	1,760	2,051
11	**785**	420	803	927	585	1,155	1,343	605	1,199	1,396	832	1,650	1,921	494	946	1,092	677	1,342	1,562	706	1,408	1,641	971	1,936	2,256
12	**857**	458	876	1,012	639	1,260	1,465	660	1,308	1,523	908	1,800	2,095	539	1,032	1,192	738	1,464	1,704	771	1,536	1,790	1,060	2,112	2,461
13	**928**	496	949	1,096	692	1,365	1,587	715	1,417	1,649	983	1,950	2,270	584	1,118	1,291	800	1,586	1,846	835	1,664	1,939	1,148	2,288	2,666
14	**1000**	534	1,022	1,180	745	1,470	1,709	770	1,526	1,776	1,059	2,100	2,444	629	1,204	1,390	861	1,708	1,988	899	1,792	2,088	1,236	2,464	2,871
15	**1071**	572	1,095	1,265	798	1,575	1,831	825	1,635	1,903	1,135	2,250	2,619	674	1,290	1,490	923	1,830	2,130	963	1,920	2,237	1,325	2,640	3,076
16	**1143**	611	1,168	1,349	852	1,680	1,953	880	1,744	2,030	1,210	2,400	2,794	719	1,376	1,589	984	1,952	2,272	1,028	2,048	2,387	1,413	2,816	3,282
17	**1214**	649	1,241	1,433	905	1,785	2,075	935	1,853	2,157	1,286	2,550	2,968	764	1,462	1,688	1,046	2,074	2,414	1,092	2,176	2,536	1,501	2,992	3,487
18	**1286**	687	1,314	1,517	958	1,890	2,197	990	1,962	2,284	1,362	2,700	3,143	809	1,548	1,788	1,108	2,196	2,556	1,156	2,304	2,685	1,590	3,168	3,692
19	**1357**	725	1,387	1,602	-	-	-	1,044	2,071	2,411	-	-	-	854	1,634	1,887	-	-	-	1,220	2,432	2,834	-	-	-
20	**1429**	763	1,460	1,686	-	-	-	1,099	2,180	2,538	-	-	-	899	1,720	1,986	-	-	-	1,285	2,560	2,983	-	-	-
21	**1500**	801	1,533	1,770	-	-	-	1,154	2,289	2,664	-	-	-	944	1,806	2,086	-	-	-	1,349	2,688	3,132	-	-	-
22	**1572**	839	1,606	1,855	-	-	-	1,209	2,398	2,791	-	-	-	989	1,892	2,185	-	-	-	1,413	2,816	3,282	-	-	-
23	**1643**	878	1,679	1,939	-	-	-	1,264	2,507	2,918	-	-	-	1,034	1,978	2,284	-	-	-	1,477	2,944	3,431	-	-	-
24	**1715**	916	1,752	2,023	-	-	-	1,319	2,616	3,045	-	-	-	1,079	2,064	2,384	-	-	-	1,541	3,072	3,580	-	-	-

RuntalRad

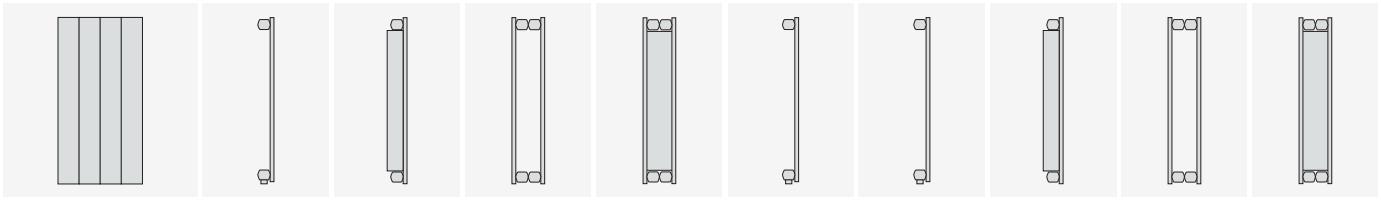
Overall height = 1400–1600 mm Φ_L = ΔT 50 K EN 442 (SN 384.501-503)



Model		RRV1400			RRVL1400			RRVV1400			RRVLV1400			RRV1600			RRVL1600			RRVV1600			RRVLV1600		
Depth	mm	47			60			55			100			47			60			55			100		
Height	mm	1400			1400			1400			1400			1600			1600			1600			1600		
Exp.		1.29			1.35			1.37			1.35			1.28			1.35			1.36			1.36		
EN 442*	**ΔT 50**	99			137			146			202			112			152			164			229		
Sections	**Length mm**	Δ 30	Δ 50	Δ 56	Δ 30	Δ 50	Δ 56	Δ 30	Δ 50	Δ 56	Δ 30	Δ 50	Δ 56	Δ 30	Δ 50	Δ 56	Δ 30	Δ 50	Δ 56	Δ 30	Δ 50	Δ 56	Δ 30	Δ 50	Δ 56
2	**142**	103	198	229	-	-	-	145	292	341	-	-	-	116	224	259	-	-	-	164	328	383	-	-	-
3	**213**	154	297	343	-	-	-	218	438	512	-	-	-	175	336	388	-	-	-	246	492	574	-	-	-
4	**285**	206	396	458	275	548	639	290	584	682	405	808	942	233	448	518	305	608	709	327	656	765	457	916	1,069
5	**356**	257	495	572	344	685	798	363	730	853	507	1,010	1,177	291	560	647	381	760	886	409	820	957	572	1,145	1,336
6	**428**	309	594	687	412	822	958	435	876	1,023	608	1,212	1,412	349	672	777	458	912	1,063	491	984	1,148	686	1,374	1,603
7	**499**	360	693	801	481	959	1,118	508	1,022	1,194	710	1,414	1,648	408	784	906	534	1,064	1,240	573	1,148	1,339	800	1,603	1,870
8	**571**	412	792	916	550	1,096	1,277	580	1,168	1,364	811	1,616	1,883	466	896	1,036	610	1,216	1,417	655	1,312	1,531	915	1,832	2,137
9	**642**	463	891	1,030	619	1,233	1,437	653	1,314	1,535	912	1,818	2,119	524	1,008	1,165	686	1,368	1,594	737	1,476	1,722	1,029	2,061	2,404
10	**714**	515	990	1,145	687	1,370	1,596	725	1,460	1,705	1,014	2,020	2,354	582	1,120	1,295	763	1,520	1,771	819	1,640	1,913	1,143	2,290	2,672
11	**785**	566	1,089	1,259	756	1,507	1,756	798	1,606	1,876	1,115	2,222	2,589	641	1,232	1,424	839	1,672	1,948	901	1,804	2,105	1,258	2,519	2,939
12	**857**	618	1,188	1,373	825	1,644	1,916	870	1,752	2,046	1,216	2,424	2,825	699	1,344	1,554	915	1,824	2,126	982	1,968	2,296	1,372	2,748	3,206
13	**928**	669	1,287	1,488	894	1,781	2,075	943	1,898	2,217	1,318	2,626	3,060	757	1,456	1,683	991	1,976	2,303	1,064	2,132	2,487	1,486	2,977	3,473
14	**1000**	721	1,386	1,602	962	1,918	2,235	1,015	2,044	2,387	1,419	2,828	3,296	815	1,568	1,813	1,068	2,128	2,480	1,146	2,296	2,679	1,600	3,206	3,740
15	**1071**	772	1,485	1,717	1,031	2,055	2,395	1,088	2,190	2,558	1,520	3,030	3,531	874	1,680	1,942	1,144	2,280	2,657	1,228	2,460	2,870	1,715	3,435	4,007
16	**1143**	824	1,584	1,831	1,100	2,192	2,554	1,160	2,336	2,728	1,622	3,232	3,766	932	1,792	2,072	1,220	2,432	2,834	1,310	2,624	3,061	1,829	3,664	4,275
17	**1214**	875	1,683	1,946	1,169	2,329	2,714	1,233	2,482	2,899	1,723	3,434	4,002	990	1,904	2,201	1,297	2,584	3,011	1,392	2,788	3,253	1,943	3,893	4,542
18	**1286**	927	1,782	2,060	1,237	2,466	2,874	1,305	2,628	3,069	1,824	3,636	4,237	1,048	2,016	2,331	1,373	2,736	3,188	1,474	2,952	3,444	2,058	4,122	4,809
19	**1357**	978	1,881	2,175	-	-	-	1,378	2,774	3,240	-	-	-	1,107	2,128	2,460	-	-	-	1,556	3,116	3,635	-	-	-
20	**1429**	1,030	1,980	2,289	-	-	-	1,450	2,920	3,410	-	-	-	1,165	2,240	2,590	-	-	-	1,637	3,280	3,827	-	-	-
21	**1500**	1,081	2,079	2,404	-	-	-	1,523	3,066	3,581	-	-	-	1,223	2,352	2,719	-	-	-	1,719	3,444	4,018	-	-	-
22	**1572**	1,133	2,178	2,518	-	-	-	1,595	3,212	3,751	-	-	-	1,281	2,464	2,849	-	-	-	1,801	3,608	4,209	-	-	-
23	**1643**	1,184	2,277	2,632	-	-	-	1,668	3,358	3,922	-	-	-	1,340	2,576	2,978	-	-	-	1,883	3,772	4,401	-	-	-
24	**1715**	1,236	2,376	2,747	-	-	-	1,740	3,504	4,093	-	-	-	1,398	2,688	3,108	-	-	-	1,965	3,936	4,592	-	-	-

RuntalRad

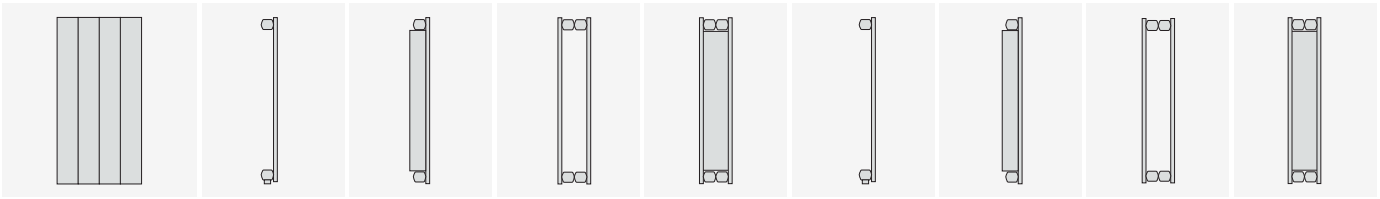
Overall height = 1800–2000 mm Φ_L = ΔT 50 K EN 442 (SN 384.501-503)



Model		RRV1800			RRVL1800			RRVV1800			RRVLV1800			RRV1900			RRV2000			RRVL2000			RRVV2000			RRVLV2000		
Depth	**mm**	47			60			55			100			47			47			60			55			100		
Height	**mm**	1800			1800			1800			1800			1900			2000			2000			2000			2000		
Exp.		1.28			1.35			1.34			1.36			1.28			1.28			1.34			1.33			1.35		
EN 442*	**ΔT 50**	125			167			181			256			131			138			180			198			276		
Sections	**Length mm**	ΔT 30	ΔT 50	ΔT 56	ΔT 30	ΔT 50	ΔT 56	ΔT 30	ΔT 50	ΔT 56	ΔT 30	ΔT 50	ΔT 56	ΔT 30	ΔT 50	ΔT 56	ΔT 30	ΔT 50	ΔT 56	ΔT 30	ΔT 50	ΔT 56	ΔT 30	ΔT 50	ΔT 56	Δ 30	Δ 50	Δ 56
2	**142**	130	250	289	-	-	-	183	362	421	-	-	-	136	262	303	144	276	319	-	-	-	201	396	460	-	-	-
3	**213**	195	375	434	-	-	-	274	543	632	-	-	-	204	393	454	215	414	479	-	-	-	301	594	691	-	-	-
4	**285**	260	500	578	335	668	778	365	724	843	511	1,024	1,195	272	524	606	287	552	638	363	720	838	401	792	921	554	1,104	1,287
5	**356**	325	625	723	419	835	973	456	905	1,053	639	1,280	1,493	341	655	757	359	690	798	454	900	1,048	502	990	1,151	692	1,380	1,608
6	**428**	390	750	867	503	1,002	1,168	548	1,086	1,264	767	1,536	1,792	409	786	909	431	828	957	545	1,080	1,257	602	1,188	1,381	831	1,656	1,930
7	**499**	455	875	1,012	587	1,169	1,362	639	1,267	1,475	895	1,792	2,091	477	917	1,060	502	966	1,117	635	1,260	1,467	703	1,386	1,611	969	1,932	2,251
8	**571**	520	1,000	1,156	670	1,336	1,557	730	1,448	1,685	1,022	2,048	2,389	545	1,048	1,212	574	1,104	1,276	726	1,440	1,676	803	1,584	1,842	1,108	2,208	2,573
9	**642**	585	1,125	1,301	754	1,503	1,751	822	1,629	1,896	1,150	2,304	2,688	613	1,179	1,363	646	1,242	1,436	817	1,620	1,886	903	1,782	2,072	1,246	2,484	2,895
10	**714**	650	1,250	1,445	838	1,670	1,946	913	1,810	2,107	1,278	2,560	2,987	681	1,310	1,515	718	1,380	1,595	908	1,800	2,095	1,004	1,980	2,302	1,385	2,760	3,216
11	**785**	715	1,375	1,590	922	1,837	2,141	1,004	1,991	2,318	1,406	2,816	3,285	749	1,441	1,666	789	1,518	1,755	999	1,980	2,305	1,104	2,178	2,532	1,523	3,036	3,538
12	**857**	780	1,500	1,734	1,006	2,004	2,335	1,095	2,172	2,528	1,534	3,072	3,584	817	1,572	1,817	861	1,656	1,915	1,089	2,160	2,514	1,204	2,376	2,763	1,662	3,312	3,860
13	**928**	845	1,625	1,879	1,089	2,171	2,530	1,187	2,353	2,739	1,661	3,328	3,883	886	1,703	1,969	933	1,794	2,074	1,180	2,340	2,724	1,305	2,574	2,993	1,800	3,588	4,181
14	**1000**	910	1,750	2,023	1,173	2,338	2,725	1,278	2,534	2,950	1,789	3,584	4,181	954	1,834	2,120	1,005	1,932	2,234	1,271	2,520	2,933	1,405	2,772	3,223	1,939	3,864	4,503
15	**1071**	975	1,875	2,168	1,257	2,505	2,919	1,369	2,715	3,160	1,917	3,840	4,480	1,022	1,965	2,272	1,076	2,070	2,393	1,362	2,700	3,143	1,506	2,970	3,453	2,077	4,140	4,824
16	**1143**	1,040	2,000	2,312	1,341	2,672	3,114	1,461	2,896	3,371	2,045	4,096	4,779	1,090	2,096	2,423	1,148	2,208	2,553	1,452	2,880	3,352	1,606	3,168	3,683	2,216	4,416	5,146
17	**1214**	1,105	2,125	2,457	1,425	2,839	3,308	1,552	3,077	3,582	2,173	4,352	5,077	1,158	2,227	2,575	1,220	2,346	2,712	1,543	3,060	3,562	1,706	3,366	3,914	2,354	4,692	5,468
18	**1286**	1,170	2,250	2,601	1,508	3,006	3,503	1,643	3,258	3,792	2,300	4,608	5,376	1,226	2,358	2,726	1,292	2,484	2,872	1,634	3,240	3,771	1,807	3,564	4,144	2,493	4,968	5,789
19	**1357**	1,235	2,375	2,746	-	-	-	1,734	3,439	4,003	-	-	-	1,294	2,489	2,878	1,364	2,622	3,031	-	-	-	1,907	3,762	4,374	-	-	-
20	**1429**	1,300	2,500	2,890	-	-	-	1,826	3,620	4,214	-	-	-	1,362	2,620	3,029	1,435	2,760	3,191	-	-	-	2,007	3,960	4,604	-	-	-
21	**1500**	1,365	2,625	3,035	-	-	-	1,917	3,801	4,424	-	-	-	1,431	2,751	3,180	1,507	2,898	3,350	-	-	-	2,108	4,158	4,834	-	-	-
22	**1572**	1,430	2,750	3,179	-	-	-	2,008	3,982	4,635	-	-	-	1,499	2,882	3,332	1,579	3,036	3,510	-	-	-	2,208	4,356	5,065	-	-	-
23	**1643**	1,495	2,875	3,324	-	-	-	2,100	4,163	4,846	-	-	-	1,567	3,013	3,483	1,651	3,174	3,669	-	-	-	2,309	4,554	5,295	-	-	-
24	**1715**	1,560	3,000	3,468	-	-	-	2,191	4,344	5,056	-	-	-	1,635	3,144	3,635	1,722	3,312	3,829	-	-	-	2,409	4,752	5,525	-	-	-

RuntalRad

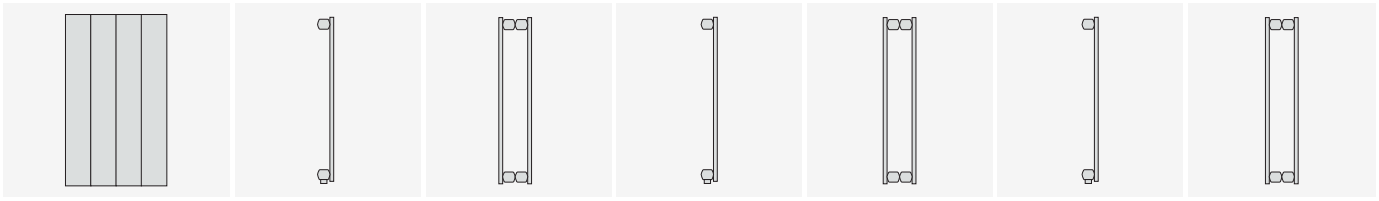
Overall height = 2200–2400 mm Φ_L = ΔT 50 K EN 442 (SN 384.501-503)



Model		RRV2200			RRVL2200			RRVV2200			RRVLV2200			RRV2400			RRVL2400			RRVV2400			RRVLV2400		
Depth	**mm**	47			60			55			100			47			60			55			100		
Height	**mm**	2200			2200			2200			2200			2400			2400			2400			2400		
Exp.		1.28			1.33			1.33			1.34			1.29			1.32			1.33			1.33		
EN 442*	**ΔT 50**	152			194			215			295			165			207			231			312		
Sections	**Length mm**	Δ 30	Δ 50	Δ 56	Δ 30	Δ 50	Δ 56	Δ 30	Δ 50	Δ 56	Δ 30	Δ 50	Δ 56	Δ 30	Δ 50	Δ 56	Δ 30	Δ 50	Δ 56	Δ 30	Δ 50	Δ 56	Δ 30	Δ 50	Δ 56
2	**142**	158	304	351	-	-	-	218	430	500	-	-	-	171	330	382	-	-	-	234	462	537	-	-	-
3	**213**	237	456	527	-	-	-	327	645	750	-	-	-	256	495	573	-	-	-	351	693	806	-	-	-
4	**285**	316	608	703	393	776	902	436	860	1,000	595	1,180	1,374	341	660	764	422	828	962	468	924	1,074	633	1,248	1,451
5	**356**	395	760	879	492	970	1,128	545	1,075	1,250	744	1,475	1,717	427	825	955	527	1,035	1,202	585	1,155	1,343	791	1,560	1,814
6	**428**	474	912	1,054	590	1,164	1,353	654	1,290	1,500	893	1,770	2,060	512	990	1,146	633	1,242	1,442	703	1,386	1,611	949	1,872	2,177
7	**499**	553	1,064	1,230	688	1,358	1,579	763	1,505	1,750	1,041	2,065	2,404	598	1,155	1,337	738	1,449	1,683	820	1,617	1,880	1,107	2,184	2,539
8	**571**	632	1,216	1,406	787	1,552	1,804	872	1,720	2,000	1,190	2,360	2,747	683	1,320	1,528	844	1,656	1,923	937	1,848	2,149	1,265	2,496	2,902
9	**642**	711	1,368	1,582	885	1,746	2,030	981	1,935	2,250	1,339	2,655	3,090	768	1,485	1,719	949	1,863	2,164	1,054	2,079	2,417	1,423	2,808	3,265
10	**714**	790	1,520	1,757	983	1,940	2,256	1,090	2,150	2,500	1,488	2,950	3,434	854	1,650	1,910	1,055	2,070	2,404	1,171	2,310	2,686	1,582	3,120	3,628
11	**785**	870	1,672	1,933	1,082	2,134	2,481	1,199	2,365	2,750	1,637	3,245	3,777	939	1,815	2,101	1,160	2,277	2,644	1,288	2,541	2,954	1,740	3,432	3,990
12	**857**	949	1,824	2,109	1,180	2,328	2,707	1,308	2,580	3,000	1,785	3,540	4,121	1,024	1,980	2,292	1,266	2,484	2,885	1,405	2,772	3,223	1,898	3,744	4,353
13	**928**	1,028	1,976	2,284	1,278	2,522	2,932	1,417	2,795	3,250	1,934	3,835	4,464	1,110	2,145	2,483	1,371	2,691	3,125	1,522	3,003	3,492	2,056	4,056	4,716
14	**1000**	1,107	2,128	2,460	1,377	2,716	3,158	1,526	3,010	3,500	2,083	4,130	4,807	1,195	2,310	2,674	1,477	2,898	3,366	1,639	3,234	3,760	2,214	4,368	5,079
15	**1071**	1,186	2,280	2,636	1,475	2,910	3,383	1,635	3,225	3,750	2,232	4,425	5,151	1,281	2,475	2,865	1,582	3,105	3,606	1,756	3,465	4,029	2,372	4,680	5,441
16	**1143**	1,265	2,432	2,812	1,573	3,104	3,609	1,744	3,440	4,000	2,380	4,720	5,494	1,366	2,640	3,056	1,688	3,312	3,846	1,874	3,696	4,297	2,531	4,992	5,804
17	**1214**	1,344	2,584	2,987	1,672	3,298	3,835	1,853	3,655	4,250	2,529	5,015	5,837	1,451	2,805	3,247	1,793	3,519	4,087	1,991	3,927	4,566	2,689	5,304	6,167
18	**1286**	1,423	2,736	3,163	1,770	3,492	4,060	1,962	3,870	4,500	2,678	5,310	6,181	1,537	2,970	3,438	1,898	3,726	4,327	2,108	4,158	4,834	2,847	5,616	6,530
19	**1357**	1,502	2,888	3,339	-	-	-	2,071	4,085	4,750	-	-	-	1,622	3,135	3,629	-	-	-	2,225	4,389	5,103	-	-	-
20	**1429**	1,581	3,040	3,515	-	-	-	2,180	4,300	5,000	-	-	-	1,707	3,300	3,819	-	-	-	2,342	4,620	5,372	-	-	-
21	**1500**	1,660	3,192	3,690	-	-	-	2,289	4,515	5,249	-	-	-	1,793	3,465	4,010	-	-	-	2,459	4,851	5,640	-	-	-
22	**1572**	1,739	3,344	3,866	-	-	-	2,398	4,730	5,499	-	-	-	1,878	3,630	4,201	-	-	-	2,576	5,082	5,909	-	-	-
23	**1643**	1,818	3,496	4,042	-	-	-	2,507	4,945	5,749	-	-	-	1,963	3,795	4,392	-	-	-	2,693	5,313	6,177	-	-	-
24	**1715**	1,897	3,648	4,217	-	-	-	2,616	5,160	5,999	-	-	-	2,049	3,960	4,583	-	-	-	2,810	5,544	6,446	-	-	-

RuntalRad

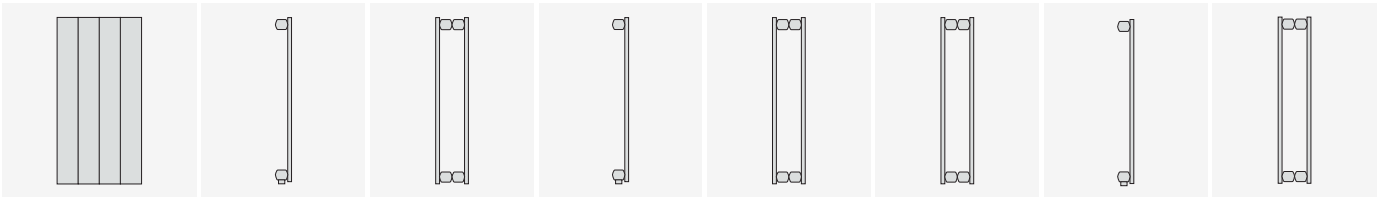
Overall height = 2600–3000 mm Φ_L = ΔT 50 K EN 442 (SN 384.501-503)



Model		RRV2600			RRVV2600			RRV2800			RRVV2800			RRV3000			RRVV3000		
Depth	**mm**	47			55			47			55			47			55		
Height	**mm**	2600			2600			2800			2800			3000			3000		
Exp.		1.29			1.33			1.30			1.33			1.31			1.32		
EN 442*	**Δ T 50**	179			247			194			263			205			280		
Sections	**Length mm**	Δ 30	Δ 50	Δ 56	Δ 30	Δ 50	Δ 56	Δ 30	Δ 50	Δ 56	Δ 30	Δ 50	Δ 56	Δ 30	Δ 50	Δ 56	Δ 30	Δ 50	Δ 56
2	**142**	185	358	414	250	494	574	200	388	450	267	526	612	210	410	476	285	560	650
3	**213**	278	537	622	376	741	862	300	582	674	400	789	917	315	615	713	428	840	976
4	**285**	370	716	829	501	988	1,149	399	776	899	533	1,052	1,223	420	820	951	571	1,120	1,301
5	**356**	463	895	1,036	626	1,235	1,436	499	970	1,124	667	1,315	1,529	525	1,025	1,189	713	1,400	1,626
6	**428**	556	1,074	1,243	751	1,482	1,723	599	1,164	1,349	800	1,578	1,835	630	1,230	1,427	856	1,680	1,951
7	**499**	648	1,253	1,450	876	1,729	2,010	699	1,358	1,574	933	1,841	2,140	735	1,435	1,665	999	1,960	2,276
8	**571**	741	1,432	1,657	1,002	1,976	2,297	799	1,552	1,798	1,067	2,104	2,446	840	1,640	1,902	1,141	2,240	2,601
9	**642**	834	1,611	1,865	1,127	2,223	2,585	899	1,746	2,023	1,200	2,367	2,752	945	1,845	2,140	1,284	2,520	2,927
10	**714**	926	1,790	2,072	1,252	2,470	2,872	999	1,940	2,248	1,333	2,630	3,058	1,050	2,050	2,378	1,427	2,800	3,252
11	**785**	1,019	1,969	2,279	1,377	2,717	3,159	1,098	2,134	2,473	1,467	2,893	3,364	1,155	2,255	2,616	1,569	3,080	3,577
12	**857**	1,111	2,148	2,486	1,503	2,964	3,446	1,198	2,328	2,698	1,600	3,156	3,669	1,260	2,460	2,854	1,712	3,360	3,902
13	**928**	1,204	2,327	2,693	1,628	3,211	3,733	1,298	2,522	2,922	1,733	3,419	3,975	1,365	2,665	3,092	1,855	3,640	4,227
14	**1000**	1,297	2,506	2,900	1,753	3,458	4,021	1,398	2,716	3,147	1,866	3,682	4,281	1,470	2,870	3,329	1,997	3,920	4,553
15	**1071**	1,389	2,685	3,108	1,878	3,705	4,308	1,498	2,910	3,372	2,000	3,945	4,587	1,575	3,075	3,567	2,140	4,200	4,878
16	**1143**	1,482	2,864	3,315	2,003	3,952	4,595	1,598	3,104	3,597	2,133	4,208	4,893	1,680	3,280	3,805	2,283	4,480	5,203
17	**1214**	1,574	3,043	3,522	2,129	4,199	4,882	1,698	3,298	3,822	2,266	4,471	5,198	1,785	3,485	4,043	2,425	4,760	5,528
18	**1286**	1,667	3,222	3,729	2,254	4,446	5,169	1,798	3,492	4,046	2,400	4,734	5,504	1,890	3,690	4,281	2,568	5,040	5,853
19	**1357**	1,760	3,401	3,936	2,379	4,693	5,456	1,897	3,686	4,271	2,533	4,997	5,810	1,995	3,895	4,518	2,711	5,320	6,178
20	**1429**	1,852	3,580	4,144	2,504	4,940	5,744	1,997	3,880	4,496	2,666	5,260	6,116	2,100	4,100	4,756	2,853	5,600	6,504
21	**1500**	1,945	3,759	4,351	2,629	5,187	6,031	2,097	4,074	4,721	2,800	5,523	6,421	2,205	4,305	4,994	2,996	5,880	6,829
22	**1572**	2,037	3,938	4,558	2,755	5,434	6,318	2,197	4,268	4,945	2,933	5,786	6,727	2,310	4,510	5,232	3,139	6,160	7,154
23	**1643**	2,130	4,117	4,765	2,880	5,681	6,605	2,297	4,462	5,170	3,066	6,049	7,033	2,415	4,715	5,470	3,281	6,440	7,479
24	**1715**	2,223	4,296	4,972	3,005	5,928	6,892	2,397	4,656	5,395	3,200	6,312	7,339	2,520	4,920	5,707	3,424	6,720	7,804

RuntalRad

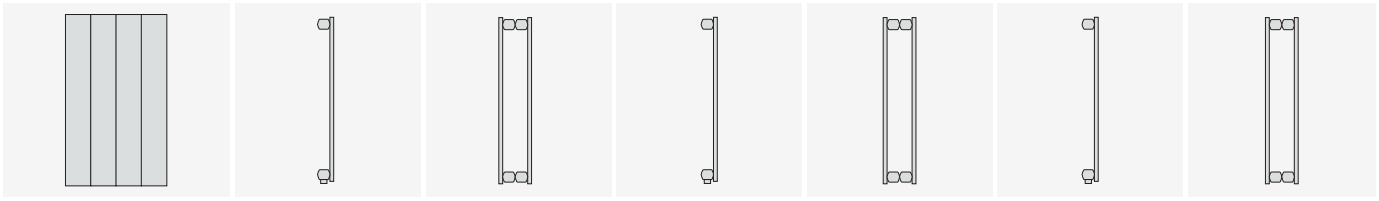
Overall height = 3200–3600 mm Φ_L = ΔT 50 K EN 442 (SN 384.501-503)



Model		RRV3200			RRVV3200			RRV3400			RRVV3400			RRVV3500			RRV3600			RRVV3600		
Depth	**mm**	47			55			47			55			55			47			55		
Height	**mm**	3200			3200			3400			3400			3500			3600			3600		
Exp.		1.31			1.32			1.31			1.32			1.32			1.31			1.32		
EN 442*	**ΔT 50**	219			296			234			311			319			248			326		
Sections	**Length mm**	ΔT 30	ΔT 50	ΔT 56	ΔT 30	ΔT 50	ΔT 56	ΔT 30	ΔT 50	ΔT 56	ΔT 30	ΔT 50	ΔT 56	ΔT 30	ΔT 50	ΔT 56	ΔT 30	ΔT 50	ΔT 56	ΔT 30	ΔT 50	ΔT 56
2	**142**	224	438	508	302	592	688	240	468	543	317	622	722	325	638	741	254	496	575	332	652	757
3	**213**	336	657	762	452	888	1,031	360	702	814	475	933	1,084	488	957	1,111	381	744	863	498	978	1,136
4	**285**	449	876	1,016	603	1,184	1,375	479	936	1,086	634	1,244	1,445	650	1,276	1,482	508	992	1,151	664	1,304	1,514
5	**356**	561	1,095	1,270	754	1,480	1,719	599	1,170	1,357	792	1,555	1,806	813	1,595	1,852	635	1,240	1,438	831	1,630	1,893
6	**428**	673	1,314	1,524	905	1,776	2,063	719	1,404	1,629	951	1,866	2,167	975	1,914	2,223	762	1,488	1,726	997	1,956	2,272
7	**499**	785	1,533	1,778	1,056	2,072	2,406	839	1,638	1,900	1,109	2,177	2,528	1,138	2,233	2,593	889	1,736	2,014	1,163	2,282	2,650
8	**571**	897	1,752	2,032	1,207	2,368	2,750	959	1,872	2,172	1,268	2,488	2,889	1,300	2,552	2,964	1,016	1,984	2,302	1,329	2,608	3,029
9	**642**	1,009	1,971	2,286	1,357	2,664	3,094	1,079	2,106	2,443	1,426	2,799	3,251	1,463	2,871	3,334	1,143	2,232	2,589	1,495	2,934	3,407
10	**714**	1,122	2,190	2,541	1,508	2,960	3,438	1,198	2,340	2,715	1,585	3,110	3,612	1,625	3,190	3,705	1,270	2,480	2,877	1,661	3,260	3,786
11	**785**	1,234	2,409	2,795	1,659	3,256	3,781	1,318	2,574	2,986	1,743	3,421	3,973	1,788	3,509	4,075	1,397	2,728	3,165	1,827	3,586	4,165
12	**857**	1,346	2,628	3,049	1,810	3,552	4,125	1,438	2,808	3,257	1,902	3,732	4,334	1,950	3,828	4,446	1,524	2,976	3,452	1,993	3,912	4,543
13	**928**	1,458	2,847	3,303	1,961	3,848	4,469	1,558	3,042	3,529	2,060	4,043	4,695	2,113	4,147	4,816	1,651	3,224	3,740	2,159	4,238	4,922
14	**1000**	1,570	3,066	3,557	2,111	4,144	4,813	1,678	3,276	3,800	2,218	4,354	5,057	2,276	4,466	5,187	1,778	3,472	4,028	2,325	4,564	5,300
15	**1071**	1,682	3,285	3,811	2,262	4,440	5,156	1,798	3,510	4,072	2,377	4,665	5,418	2,438	4,785	5,557	1,905	3,720	4,315	2,492	4,890	5,679
16	**1143**	1,794	3,504	4,065	2,413	4,736	5,500	1,917	3,744	4,343	2,535	4,976	5,779	2,601	5,104	5,928	2,032	3,968	4,603	2,658	5,216	6,058
17	**1214**	1,907	3,723	4,319	2,564	5,032	5,844	2,037	3,978	4,615	2,694	5,287	6,140	2,763	5,423	6,298	2,159	4,216	4,891	2,824	5,542	6,436
18	**1286**	2,019	3,942	4,573	2,715	5,328	6,188	2,157	4,212	4,886	2,852	5,598	6,501	2,926	5,742	6,669	2,286	4,464	5,178	2,990	5,868	6,815
19	**1357**	2,131	4,161	4,827	2,866	5,624	6,532	2,277	4,446	5,158	3,011	5,909	6,862	3,088	6,061	7,039	2,413	4,712	5,466	3,156	6,194	7,193
20	**1429**	2,243	4,380	5,081	3,016	5,920	6,875	2,397	4,680	5,429	3,169	6,220	7,224	3,251	6,380	7,409	2,540	4,960	5,754	3,322	6,520	7,572
21	**1500**	2,355	4,599	5,335	3,167	6,216	7,219	2,517	4,914	5,700	3,328	6,531	7,585	3,413	6,699	7,780	2,667	5,208	6,042	3,488	6,846	7,951
22	**1572**	2,467	4,818	5,589	3,318	6,512	7,563	2,636	5,148	5,972	3,486	6,842	7,946	3,576	7,018	8,150	2,794	5,456	6,329	3,654	7,172	8,329
23	**1643**	2,580	5,037	5,843	3,469	6,808	7,907	2,756	5,382	6,243	3,645	7,153	8,307	3,738	7,337	8,521	2,921	5,704	6,617	3,820	7,498	8,708
24	**1715**	2,692	5,256	6,097	3,620	7,104	8,250	2,876	5,616	6,515	3,803	7,464	8,668	3,901	7,656	8,891	3,048	5,952	6,905	3,986	7,824	9,087

RuntalRad

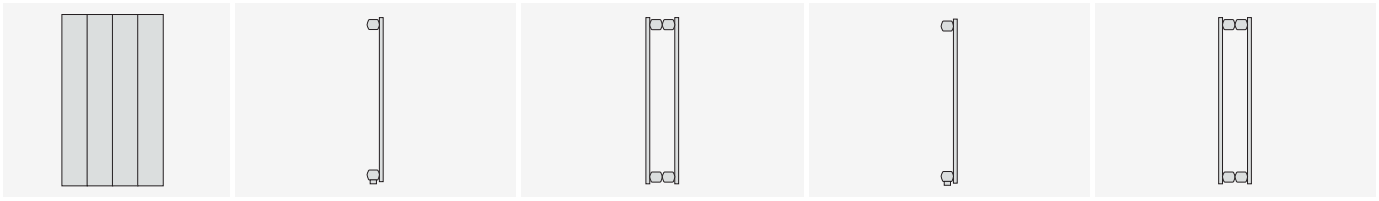
Overall height = 3800–4200 mm ΦL = ΔT 50 K EN 442 (SN 384.501-503)



Model		RRV3800			RRVV3800			RRV4000			RRVV4000			RRV4200			RRVV4200		
Depth	**mm**	47			55			47			55			47			55		
Height	**mm**	3800			3800			4000			4000			4200			4200		
Exp.		1.32			1.32			1.32			1.32			1.32			1.32		
EN 442*	**Δ T 50**	263			341			278			356			293			370		
Sections	**Length mm**	Δ 30	Δ 50	Δ 56	Δ 30	Δ 50	Δ 56	Δ 30	Δ 50	Δ 56	Δ 30	Δ 50	Δ 56	Δ 30	Δ 50	Δ 56	Δ 30	Δ 50	Δ 56
2	**142**	268	526	611	347	682	792	283	556	646	363	712	827	299	586	681	377	740	859
3	**213**	402	789	916	521	1,023	1,188	425	834	969	544	1,068	1,240	448	879	1,021	566	1,110	1,289
4	**285**	536	1,052	1,222	695	1,364	1,584	567	1,112	1,291	726	1,424	1,654	597	1,172	1,361	754	1,480	1,719
5	**356**	670	1,315	1,527	869	1,705	1,980	708	1,390	1,614	907	1,780	2,067	746	1,465	1,701	943	1,850	2,149
6	**428**	804	1,578	1,833	1,042	2,046	2,376	850	1,668	1,937	1,088	2,136	2,481	896	1,758	2,042	1,131	2,220	2,578
7	**499**	938	1,841	2,138	1,216	2,387	2,772	992	1,946	2,260	1,270	2,492	2,894	1,045	2,051	2,382	1,320	2,590	3,008
8	**571**	1,072	2,104	2,444	1,390	2,728	3,168	1,133	2,224	2,583	1,451	2,848	3,308	1,194	2,344	2,722	1,508	2,960	3,438
9	**642**	1,206	2,367	2,749	1,564	3,069	3,564	1,275	2,502	2,906	1,632	3,204	3,721	1,344	2,637	3,063	1,697	3,330	3,867
10	**714**	1,340	2,630	3,054	1,737	3,410	3,960	1,416	2,780	3,229	1,814	3,560	4,134	1,493	2,930	3,403	1,885	3,700	4,297
11	**785**	1,474	2,893	3,360	1,911	3,751	4,356	1,558	3,058	3,551	1,995	3,916	4,548	1,642	3,223	3,743	2,074	4,070	4,727
12	**857**	1,608	3,156	3,665	2,085	4,092	4,752	1,700	3,336	3,874	2,177	4,272	4,961	1,791	3,516	4,083	2,262	4,440	5,156
13	**928**	1,742	3,419	3,971	2,259	4,433	5,148	1,841	3,614	4,197	2,358	4,628	5,375	1,941	3,809	4,424	2,451	4,810	5,586
14	**1000**	1,876	3,682	4,276	2,432	4,774	5,544	1,983	3,892	4,520	2,539	4,984	5,788	2,090	4,102	4,764	2,639	5,180	6,016
15	**1071**	2,010	3,945	4,582	2,606	5,115	5,940	2,125	4,170	4,843	2,721	5,340	6,202	2,239	4,395	5,104	2,828	5,550	6,446
16	**1143**	2,144	4,208	4,887	2,780	5,456	6,336	2,266	4,448	5,166	2,902	5,696	6,615	2,389	4,688	5,444	3,016	5,920	6,875
17	**1214**	2,278	4,471	5,192	2,954	5,797	6,732	2,408	4,726	5,489	3,084	6,052	7,029	2,538	4,981	5,785	3,205	6,290	7,305
18	**1286**	2,412	4,734	5,498	3,127	6,138	7,128	2,550	5,004	5,811	3,265	6,408	7,442	2,687	5,274	6,125	3,393	6,660	7,735
19	**1357**	2,546	4,997	5,803	3,301	6,479	7,524	2,691	5,282	6,134	3,446	6,764	7,855	2,836	5,567	6,465	3,582	7,030	8,164
20	**1429**	2,680	5,260	6,109	3,475	6,820	7,920	2,833	5,560	6,457	3,628	7,120	8,269	2,986	5,860	6,806	3,770	7,400	8,594
21	**1500**	2,814	5,523	6,414	3,649	7,161	8,317	2,975	5,838	6,780	3,809	7,476	8,682	3,135	6,153	7,146	3,959	7,770	9,024
22	**1572**	2,948	5,786	6,720	3,822	7,502	8,713	3,116	6,116	7,103	3,991	7,832	9,096	3,284	6,446	7,486	4,147	8,140	9,453
23	**1643**	3,082	6,049	7,025	3,996	7,843	9,109	3,258	6,394	7,426	4,172	8,188	9,509	3,434	6,739	7,826	4,336	8,510	9,883
24	**1715**	3,216	6,312	7,331	4,170	8,184	9,505	3,400	6,672	7,749	4,353	8,544	9,923	3,583	7,032	8,167	4,525	8,880	10,313

RuntalRad

Overall height = 4400–4600 mm Φ_L = ΔT 50 K EN 442 (SN 384.501-503)



Model		RRV4400			RRVV4400			RRV4600			RRVV4600		
Depth	mm	47			55			47			55		
Height	mm	4400			4400			4600			4600		
Exp.		1.33			1.31			1.33			1.31		
EN 442*	Δ T 50	308			385			324			399		
Sections	Length mm	Δ 30	Δ 50	Δ 56	Δ 30	Δ 50	Δ 56	Δ 30	Δ 50	Δ 56	Δ 30	Δ 50	Δ 56
2	142	312	616	716	394	770	893	328	648	753	409	798	926
3	213	468	924	1,074	592	1,155	1,340	493	972	1,130	613	1,197	1,389
4	285	625	1,232	1,432	789	1,540	1,786	657	1,296	1,507	817	1,596	1,851
5	356	781	1,540	1,791	986	1,925	2,233	821	1,620	1,884	1,022	1,995	2,314
6	428	937	1,848	2,149	1,183	2,310	2,680	985	1,944	2,260	1,226	2,394	2,777
7	499	1,093	2,156	2,507	1,380	2,695	3,126	1,150	2,268	2,637	1,430	2,793	3,240
8	571	1,249	2,464	2,865	1,577	3,080	3,573	1,314	2,592	3,014	1,635	3,192	3,703
9	642	1,405	2,772	3,223	1,775	3,465	4,020	1,478	2,916	3,390	1,839	3,591	4,166
10	714	1,561	3,080	3,581	1,972	3,850	4,466	1,642	3,240	3,767	2,043	3,990	4,629
11	785	1,717	3,388	3,939	2,169	4,235	4,913	1,807	3,564	4,144	2,248	4,389	5,091
12	857	1,874	3,696	4,297	2,366	4,620	5,359	1,971	3,888	4,520	2,452	4,788	5,554
13	928	2,030	4,004	4,655	2,563	5,005	5,806	2,135	4,212	4,897	2,656	5,187	6,017
14	1000	2,186	4,312	5,013	2,760	5,390	6,253	2,299	4,536	5,274	2,861	5,586	6,480
15	1071	2,342	4,620	5,372	2,958	5,775	6,699	2,464	4,860	5,651	3,065	5,985	6,943
16	1143	2,498	4,928	5,730	3,155	6,160	7,146	2,628	5,184	6,027	3,269	6,384	7,406
17	1214	2,654	5,236	6,088	3,352	6,545	7,593	2,792	5,508	6,404	3,474	6,783	7,869
18	1286	2,810	5,544	6,446	3,549	6,930	8,039	2,956	5,832	6,781	3,678	7,182	8,331
19	1357	2,967	5,852	6,804	3,746	7,315	8,486	3,121	6,156	7,157	3,882	7,581	8,794
20	1429	3,123	6,160	7,162	3,943	7,700	8,932	3,285	6,480	7,534	4,087	7,980	9,257
21	1500	3,279	6,468	7,520	4,141	8,085	9,379	3,449	6,804	7,911	4,291	8,379	9,720
22	1572	3,435	6,776	7,878	4,338	8,470	9,826	3,613	7,128	8,288	4,495	8,778	10,183
23	1643	3,591	7,084	8,236	4,535	8,855	10,272	3,778	7,452	8,664	4,700	9,177	10,646
24	1715	3,747	7,392	8,595	4,732	9,240	10,719	3,942	7,776	9,041	4,904	9,576	11,109

RuntalRad

Notes

Conversion factors f_1 for ∅T temperature differences other than 50 K (EN 442)

$$f_1 = \left(\frac{\varnothing T}{50}\right)^n$$

∅T K \ n	1,16	1,17	1,18	1,19	1,20	1,21	1,22	1,23	1,24	1,25	1,26	1,27	1,28	1,29	1,30
10	0,1546	0,1521	0,1497	0,1473	0,1450	0,1426	0,1404	0,1381	0,1359	0,1337	0,1316	0,1295	0,1274	0,1254	0,1234
11	0,1727	0,1701	0,1675	0,1650	0,1625	0,1601	0,1577	0,1553	0,1530	0,1507	0,1484	0,1462	0,1440	0,1418	0,1397
12	0,1910	0,1883	0,1856	0,1830	0,1804	0,1779	0,1753	0,1728	0,1704	0,1680	0,1656	0,1633	0,1609	0,1587	0,1564
13	0,2096	0,2068	0,2040	0,2013	0,1986	0,1959	0,1933	0,1907	0,1882	0,1857	0,1832	0,1807	0,1783	0,1759	0,1736
14	0,2284	0,2255	0,2227	0,2198	0,2171	0,2143	0,2116	0,2089	0,2063	0,2037	0,2011	0,1986	0,1960	0,1936	0,1911
15	0,2474	0,2445	0,2415	0,2387	0,2358	0,2330	0,2302	0,2274	0,2247	0,2220	0,2194	0,2167	0,2141	0,2116	0,2091
16	0,2667	0,2636	0,2607	0,2577	0,2548	0,2519	0,2490	0,2462	0,2434	0,2407	0,2380	0,2353	0,2326	0,2300	0,2274
17	0,2861	0,2830	0,2800	0,2770	0,2740	0,2711	0,2682	0,2653	0,2624	0,2596	0,2568	0,2541	0,2514	0,2487	0,2460
18	0,3057	0,3026	0,2995	0,2965	0,2935	0,2905	0,2875	0,2846	0,2817	0,2789	0,2760	0,2732	0,2704	0,2677	0,2650
19	0,3255	0,3224	0,3193	0,3162	0,3131	0,3101	0,3071	0,3042	0,3013	0,2984	0,2955	0,2926	0,2898	0,2870	0,2843
20	0,3455	0,3423	0,3392	0,3361	0,3330	0,3300	0,3270	0,3240	0,3210	0,3181	0,3152	0,3123	0,3095	0,3067	0,3039
21	0,3656	0,3624	0,3593	0,3562	0,3531	0,3501	0,3470	0,3440	0,3411	0,3381	0,3352	0,3323	0,3294	0,3266	0,3238
22	0,3858	0,3827	0,3796	0,3765	0,3734	0,3703	0,3673	0,3643	0,3613	0,3584	0,3554	0,3525	0,3496	0,3468	0,3439
23	0,4063	0,4031	0,4000	0,3969	0,3938	0,3908	0,3878	0,3848	0,3818	0,3788	0,3759	0,3730	0,3701	0,3672	0,3644
24	0,4268	0,4237	0,4206	0,4175	0,4145	0,4114	0,4084	0,4054	0,4025	0,3995	0,3966	0,3937	0,3908	0,3880	0,3851
25	0,4475	0,4444	0,4414	0,4383	0,4353	0,4323	0,4293	0,4263	0,4234	0,4204	0,4175	0,4147	0,4118	0,4090	0,4061
26	0,4683	0,4653	0,4623	0,4592	0,4563	0,4533	0,4503	0,4474	0,4445	0,4416	0,4387	0,4358	0,4330	0,4302	0,4274
27	0,4893	0,4863	0,4833	0,4803	0,4774	0,4745	0,4715	0,4686	0,4658	0,4629	0,4601	0,4572	0,4544	0,4516	0,4489
28	0,5104	0,5074	0,5045	0,5016	0,4987	0,4958	0,4929	0,4901	0,4873	0,4844	0,4816	0,4788	0,4761	0,4733	0,4706
29	0,5316	0,5287	0,5258	0,5230	0,5201	0,5173	0,5145	0,5117	0,5089	0,5062	0,5034	0,5007	0,4980	0,4952	0,4926
30	0,5529	0,5501	0,5473	0,5445	0,5417	0,5390	0,5362	0,5335	0,5308	0,5281	0,5254	0,5227	0,5200	0,5174	0,5148
31	0,5743	0,5716	0,5689	0,5662	0,5635	0,5608	0,5581	0,5554	0,5528	0,5502	0,5475	0,5449	0,5423	0,5397	0,5372
32	0,5959	0,5932	0,5906	0,5880	0,5854	0,5827	0,5801	0,5776	0,5750	0,5724	0,5699	0,5673	0,5648	0,5623	0,5598
33	0,6175	0,6150	0,6124	0,6099	0,6074	0,6049	0,6023	0,5998	0,5974	0,5949	0,5924	0,5900	0,5875	0,5851	0,5826
34	0,6393	0,6368	0,6344	0,6320	0,6295	0,6271	0,6247	0,6223	0,6199	0,6175	0,6151	0,6128	0,6104	0,6080	0,6057
35	0,6612	0,6588	0,6565	0,6541	0,6518	0,6495	0,6472	0,6449	0,6426	0,6403	0,6380	0,6357	0,6335	0,6312	0,6290
36	0,6831	0,6809	0,6787	0,6764	0,6742	0,6720	0,6698	0,6676	0,6654	0,6632	0,6611	0,6589	0,6567	0,6546	0,6524
37	0,7052	0,7031	0,7010	0,6989	0,6968	0,6947	0,6926	0,6905	0,6884	0,6863	0,6843	0,6822	0,6802	0,6781	0,6761
38	0,7274	0,7254	0,7234	0,7214	0,7194	0,7174	0,7155	0,7135	0,7116	0,7096	0,7077	0,7057	0,7038	0,7019	0,6999
39	0,7496	0,7477	0,7459	0,7440	0,7422	0,7403	0,7385	0,7367	0,7348	0,7330	0,7312	0,7294	0,7276	0,7258	0,7240
40	0,7719	0,7702	0,7685	0,7668	0,7651	0,7634	0,7617	0,7600	0,7583	0,7566	0,7549	0,7532	0,7515	0,7499	0,7482
41	0,7944	0,7928	0,7912	0,7897	0,7881	0,7865	0,7850	0,7834	0,7819	0,7803	0,7788	0,7772	0,7757	0,7741	0,7726
42	0,8169	0,8155	0,8140	0,8126	0,8112	0,8098	0,8084	0,8070	0,8056	0,8042	0,8028	0,8014	0,8000	0,7986	0,7972
43	0,8395	0,8382	0,8370	0,8357	0,8344	0,8332	0,8319	0,8307	0,8294	0,8282	0,8269	0,8257	0,8244	0,8232	0,8220
44	0,8622	0,8611	0,8600	0,8589	0,8578	0,8567	0,8556	0,8545	0,8534	0,8523	0,8512	0,8501	0,8491	0,8480	0,8469
45	0,8850	0,8840	0,8831	0,8822	0,8812	0,8803	0,8794	0,8785	0,8775	0,8766	0,8757	0,8748	0,8738	0,8729	0,8720
46	0,9078	0,9071	0,9063	0,9055	0,9048	0,9040	0,9033	0,9025	0,9018	0,9010	0,9003	0,8995	0,8988	0,8980	0,8973
47	0,9307	0,9302	0,9296	0,9290	0,9284	0,9279	0,9273	0,9267	0,9261	0,9256	0,9250	0,9244	0,9239	0,9233	0,9227
48	0,9538	0,9534	0,9530	0,9526	0,9522	0,9518	0,9514	0,9510	0,9506	0,9503	0,9499	0,9495	0,9491	0,9487	0,9483
49	0,9768	0,9766	0,9764	0,9762	0,9760	0,9759	0,9757	0,9755	0,9753	0,9751	0,9749	0,9747	0,9745	0,9743	0,9741
50	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000
51	1,0232	1,0234	1,0236	1,0238	1,0240	1,0243	1,0245	1,0247	1,0249	1,0251	1,0253	1,0255	1,0257	1,0259	1,0261
52	1,0465	1,0470	1,0474	1,0478	1,0482	1,0486	1,0490	1,0494	1,0498	1,0502	1,0507	1,0511	1,0515	1,0519	1,0523
53	1,0699	1,0706	1,0712	1,0718	1,0724	1,0731	1,0737	1,0743	1,0749	1,0756	1,0762	1,0768	1,0774	1,0781	1,0787
54	1,0934	1,0942	1,0951	1,0959	1,0968	1,0976	1,0984	1,0993	1,1001	1,1010	1,1018	1,1027	1,1035	1,1044	1,1052
55	1,1169	1,1180	1,1190	1,1201	1,1212	1,1222	1,1233	1,1244	1,1255	1,1265	1,1276	1,1287	1,1298	1,1308	1,1319
56	1,1405	1,1418	1,1431	1,1444	1,1457	1,1470	1,1483	1,1496	1,1509	1,1522	1,1535	1,1548	1,1561	1,1574	1,1587
57	1,1642	1,1657	1,1672	1,1687	1,1703	1,1718	1,1733	1,1749	1,1764	1,1780	1,1795	1,1811	1,1826	1,1842	1,1857
58	1,1879	1,1896	1,1914	1,1932	1,1949	1,1967	1,1985	1,2003	1,2021	1,2039	1,2056	1,2074	1,2092	1,2110	1,2128
59	1,2117	1,2137	1,2157	1,2177	1,2197	1,2217	1,2238	1,2258	1,2278	1,2299	1,2319	1,2339	1,2360	1,2380	1,2401
60	1,2355	1,2378	1,2400	1,2423	1,2446	1,2468	1,2491	1,2514	1,2537	1,2560	1,2583	1,2606	1,2629	1,2652	1,2675
61	1,2594	1,2619	1,2645	1,2670	1,2695	1,2720	1,2746	1,2771	1,2796	1,2822	1,2847	1,2873	1,2899	1,2924	1,2950
62	1,2834	1,2862	1,2890	1,2917	1,2945	1,2973	1,3001	1,3029	1,3057	1,3085	1,3113	1,3142	1,3170	1,3198	1,3227
63	1,3075	1,3105	1,3135	1,3166	1,3196	1,3227	1,3257	1,3288	1,3319	1,3349	1,3380	1,3411	1,3442	1,3473	1,3505
64	1,3316	1,3349	1,3382	1,3415	1,3448	1,3481	1,3514	1,3548	1,3581	1,3615	1,3648	1,3682	1,3716	1,3750	1,3784
65	1,3557	1,3593	1,3629	1,3664	1,3700	1,3736	1,3772	1,3809	1,3845	1,3881	1,3918	1,3954	1,3991	1,4028	1,4065
66	1,3800	1,3838	1,3876	1,3915	1,3954	1,3992	1,4031	1,4070	1,4110	1,4149	1,4188	1,4228	1,4267	1,4307	1,4347
67	1,4042	1,4084	1,4125	1,4166	1,4208	1,4249	1,4291	1,4333	1,4375	1,4417	1,4459	1,4502	1,4544	1,4587	1,4630
68	1,4286	1,4330	1,4374	1,4418	1,4463	1,4507	1,4552	1,4597	1,4642	1,4687	1,4732	1,4777	1,4823	1,4868	1,4914
69	1,4530	1,4577	1,4624	1,4671	1,4718	1,4766	1,4813	1,4861	1,4909	1,4957	1,5005	1,5054	1,5102	1,5151	1,5200
70	1,4774	1,4824	1,4874	1,4924	1,4975	1,5025	1,5076	1,5126	1,5177	1,5229	1,5280	1,5331	1,5383	1,5435	1,5487
∅T K \ n	1,16	1,17	1,18	1,19	1,20	1,21	1,22	1,23	1,24	1,25	1,26	1,27	1,28	1,29	1,30

1,31	1,32	1,33	1,34	1,35	1,36	1,37	1,38	1,39	1,40	1,41	1,42	1,43	1,44	1,45	n / ∅T K
0,1214	0,1195	0,1176	0,1157	0,1139	0,1120	0,1103	0,1085	0,1068	0,1051	0,1034	0,1017	0,1001	0,0985	0,0969	**10**
0,1376	0,1355	0,1335	0,1315	0,1295	0,1276	0,1256	0,1237	0,1219	0,1201	0,1183	0,1165	0,1147	0,1130	0,1113	**11**
0,1542	0,1520	0,1499	0,1477	0,1456	0,1436	0,1415	0,1395	0,1376	0,1356	0,1337	0,1318	0,1299	0,1281	0,1263	**12**
0,1712	0,1690	0,1667	0,1645	0,1623	0,1601	0,1579	0,1558	0,1537	0,1517	0,1497	0,1477	0,1457	0,1437	0,1418	**13**
0,1887	0,1863	0,1840	0,1816	0,1793	0,1771	0,1748	0,1726	0,1704	0,1683	0,1661	0,1640	0,1620	0,1599	0,1579	**14**
0,2066	0,2041	0,2016	0,1992	0,1968	0,1945	0,1922	0,1899	0,1876	0,1853	0,1831	0,1809	0,1788	0,1766	0,1745	**15**
0,2248	0,2222	0,2197	0,2172	0,2148	0,2123	0,2099	0,2075	0,2052	0,2029	0,2006	0,1983	0,1960	0,1938	0,1916	**16**
0,2434	0,2407	0,2382	0,2356	0,2331	0,2306	0,2281	0,2257	0,2232	0,2208	0,2185	0,2161	0,2138	0,2115	0,2092	**17**
0,2623	0,2596	0,2570	0,2544	0,2518	0,2492	0,2467	0,2442	0,2417	0,2392	0,2368	0,2344	0,2320	0,2297	0,2273	**18**
0,2815	0,2788	0,2761	0,2735	0,2708	0,2682	0,2656	0,2631	0,2606	0,2580	0,2556	0,2531	0,2507	0,2482	0,2459	**19**
0,3011	0,2983	0,2956	0,2929	0,2903	0,2876	0,2850	0,2824	0,2798	0,2773	0,2747	0,2722	0,2697	0,2673	0,2648	**20**
0,3210	0,3182	0,3154	0,3127	0,3100	0,3073	0,3047	0,3021	0,2994	0,2969	0,2943	0,2918	0,2892	0,2867	0,2843	**21**
0,3411	0,3383	0,3356	0,3328	0,3301	0,3274	0,3247	0,3221	0,3194	0,3168	0,3142	0,3117	0,3091	0,3066	0,3041	**22**
0,3616	0,3588	0,3560	0,3533	0,3505	0,3478	0,3451	0,3425	0,3398	0,3372	0,3346	0,3320	0,3294	0,3269	0,3243	**23**
0,3823	0,3795	0,3767	0,3740	0,3713	0,3685	0,3658	0,3632	0,3605	0,3579	0,3553	0,3527	0,3501	0,3475	0,3450	**24**
0,4033	0,4005	0,3978	0,3950	0,3923	0,3896	0,3869	0,3842	0,3816	0,3789	0,3763	0,3737	0,3711	0,3686	0,3660	**25**
0,4246	0,4218	0,4191	0,4163	0,4136	0,4109	0,4082	0,4056	0,4029	0,4003	0,3977	0,3951	0,3925	0,3900	0,3874	**26**
0,4461	0,4434	0,4406	0,4379	0,4352	0,4326	0,4299	0,4273	0,4246	0,4220	0,4194	0,4169	0,4143	0,4118	0,4092	**27**
0,4679	0,4652	0,4625	0,4598	0,4571	0,4545	0,4519	0,4493	0,4467	0,4441	0,4415	0,4390	0,4364	0,4339	0,4314	**28**
0,4899	0,4872	0,4846	0,4819	0,4793	0,4767	0,4741	0,4716	0,4690	0,4664	0,4639	0,4614	0,4589	0,4564	0,4539	**29**
0,5121	0,5095	0,5069	0,5043	0,5018	0,4992	0,4967	0,4941	0,4916	0,4891	0,4866	0,4841	0,4817	0,4792	0,4768	**30**
0,5346	0,5321	0,5295	0,5270	0,5245	0,5220	0,5195	0,5170	0,5145	0,5121	0,5097	0,5072	0,5048	0,5024	0,5000	**31**
0,5573	0,5548	0,5524	0,5499	0,5474	0,5450	0,5426	0,5402	0,5378	0,5354	0,5330	0,5306	0,5282	0,5259	0,5236	**32**
0,5802	0,5778	0,5754	0,5730	0,5707	0,5683	0,5659	0,5636	0,5613	0,5589	0,5566	0,5543	0,5520	0,5497	0,5474	**33**
0,6034	0,6011	0,5987	0,5964	0,5941	0,5919	0,5896	0,5873	0,5850	0,5828	0,5805	0,5783	0,5761	0,5739	0,5717	**34**
0,6267	0,6245	0,6223	0,6201	0,6178	0,6156	0,6135	0,6113	0,6091	0,6069	0,6048	0,6026	0,6005	0,5983	0,5962	**35**
0,6503	0,6482	0,6460	0,6439	0,6418	0,6397	0,6376	0,6355	0,6334	0,6313	0,6293	0,6272	0,6252	0,6231	0,6211	**36**
0,6741	0,6720	0,6700	0,6680	0,6660	0,6640	0,6620	0,6600	0,6580	0,6560	0,6541	0,6521	0,6501	0,6482	0,6462	**37**
0,6980	0,6961	0,6942	0,6923	0,6904	0,6885	0,6866	0,6847	0,6829	0,6810	0,6791	0,6773	0,6754	0,6736	0,6717	**38**
0,7222	0,7204	0,7186	0,7168	0,7150	0,7133	0,7115	0,7097	0,7080	0,7062	0,7045	0,7027	0,7010	0,6992	0,6975	**39**
0,7465	0,7449	0,7432	0,7416	0,7399	0,7382	0,7366	0,7350	0,7333	0,7317	0,7301	0,7284	0,7268	0,7252	0,7236	**40**
0,7711	0,7695	0,7680	0,7665	0,7650	0,7635	0,7619	0,7604	0,7589	0,7574	0,7559	0,7544	0,7529	0,7514	0,7499	**41**
0,7958	0,7944	0,7930	0,7917	0,7903	0,7889	0,7875	0,7861	0,7848	0,7834	0,7820	0,7807	0,7793	0,7780	0,7766	**42**
0,8207	0,8195	0,8182	0,8170	0,8158	0,8146	0,8133	0,8121	0,8109	0,8097	0,8084	0,8072	0,8060	0,8048	0,8036	**43**
0,8458	0,8447	0,8436	0,8426	0,8415	0,8404	0,8393	0,8383	0,8372	0,8361	0,8351	0,8340	0,8329	0,8319	0,8308	**44**
0,8711	0,8702	0,8692	0,8683	0,8674	0,8665	0,8656	0,8647	0,8638	0,8629	0,8619	0,8610	0,8601	0,8592	0,8583	**45**
0,8965	0,8958	0,8950	0,8943	0,8935	0,8928	0,8921	0,8913	0,8906	0,8898	0,8891	0,8883	0,8876	0,8869	0,8861	**46**
0,9221	0,9216	0,9210	0,9204	0,9199	0,9193	0,9187	0,9182	0,9176	0,9170	0,9165	0,9159	0,9153	0,9148	0,9142	**47**
0,9479	0,9475	0,9472	0,9468	0,9464	0,9460	0,9456	0,9452	0,9448	0,9445	0,9441	0,9437	0,9433	0,9429	0,9425	**48**
0,9739	0,9737	0,9735	0,9733	0,9731	0,9729	0,9727	0,9725	0,9723	0,9721	0,9719	0,9717	0,9715	0,9713	0,9711	**49**
1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	**50**
1,0263	1,0265	1,0267	1,0269	1,0271	1,0273	1,0275	1,0277	1,0279	1,0281	1,0283	1,0285	1,0287	1,0289	1,0291	**51**
1,0527	1,0531	1,0535	1,0540	1,0544	1,0548	1,0552	1,0556	1,0560	1,0564	1,0569	1,0573	1,0577	1,0581	1,0585	**52**
1,0793	1,0800	1,0806	1,0812	1,0818	1,0825	1,0831	1,0837	1,0844	1,0850	1,0856	1,0863	1,0869	1,0875	1,0882	**53**
1,1061	1,1069	1,1078	1,1086	1,1095	1,1103	1,1112	1,1121	1,1129	1,1138	1,1146	1,1155	1,1163	1,1172	1,1181	**54**
1,1330	1,1341	1,1351	1,1362	1,1373	1,1384	1,1395	1,1406	1,1417	1,1427	1,1438	1,1449	1,1460	1,1471	1,1482	**55**
1,1600	1,1614	1,1627	1,1640	1,1653	1,1666	1,1680	1,1693	1,1706	1,1719	1,1733	1,1746	1,1759	1,1773	1,1786	**56**
1,1873	1,1888	1,1904	1,1919	1,1935	1,1951	1,1966	1,1982	1,1998	1,2013	1,2029	1,2045	1,2061	1,2077	1,2092	**57**
1,2146	1,2164	1,2182	1,2200	1,2219	1,2237	1,2255	1,2273	1,2291	1,2310	1,2328	1,2346	1,2364	1,2383	1,2401	**58**
1,2421	1,2442	1,2462	1,2483	1,2504	1,2524	1,2545	1,2566	1,2587	1,2608	1,2629	1,2649	1,2670	1,2691	1,2712	**59**
1,2698	1,2721	1,2744	1,2767	1,2791	1,2814	1,2837	1,2861	1,2884	1,2908	1,2931	1,2955	1,2979	1,3002	1,3026	**60**
1,2976	1,3002	1,3027	1,3053	1,3079	1,3105	1,3131	1,3158	1,3184	1,3210	1,3236	1,3263	1,3289	1,3316	1,3342	**61**
1,3255	1,3284	1,3312	1,3341	1,3370	1,3398	1,3427	1,3456	1,3485	1,3514	1,3543	1,3572	1,3602	1,3631	1,3660	**62**
1,3536	1,3567	1,3599	1,3630	1,3662	1,3693	1,3725	1,3757	1,3788	1,3820	1,3852	1,3884	1,3916	1,3949	1,3981	**63**
1,3818	1,3852	1,3886	1,3921	1,3955	1,3990	1,4024	1,4059	1,4094	1,4128	1,4163	1,4198	1,4233	1,4269	1,4304	**64**
1,4102	1,4139	1,4176	1,4213	1,4250	1,4288	1,4325	1,4363	1,4401	1,4438	1,4476	1,4514	1,4553	1,4591	1,4629	**65**
1,4386	1,4426	1,4466	1,4507	1,4547	1,4587	1,4628	1,4669	1,4709	1,4750	1,4791	1,4833	1,4874	1,4915	1,4957	**66**
1,4673	1,4716	1,4759	1,4802	1,4845	1,4889	1,4933	1,4976	1,5020	1,5064	1,5108	1,5153	1,5197	1,5242	1,5286	**67**
1,4960	1,5006	1,5052	1,5099	1,5145	1,5192	1,5239	1,5286	1,5333	1,5380	1,5427	1,5475	1,5522	1,5570	1,5618	**68**
1,5249	1,5298	1,5348	1,5397	1,5447	1,5497	1,5547	1,5597	1,5647	1,5698	1,5748	1,5799	1,5850	1,5901	1,5952	**69**
1,5539	1,5592	1,5644	1,5697	1,5750	1,5803	1,5856	1,5910	1,5963	1,6017	1,6071	1,6125	1,6179	1,6234	1,6289	**70**
1,31	**1,32**	**1,33**	**1,34**	**1,35**	**1,36**	**1,37**	**1,38**	**1,39**	**1,40**	**1,41**	**1,42**	**1,43**	**1,44**	**1,45**	**∅T K / n**

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