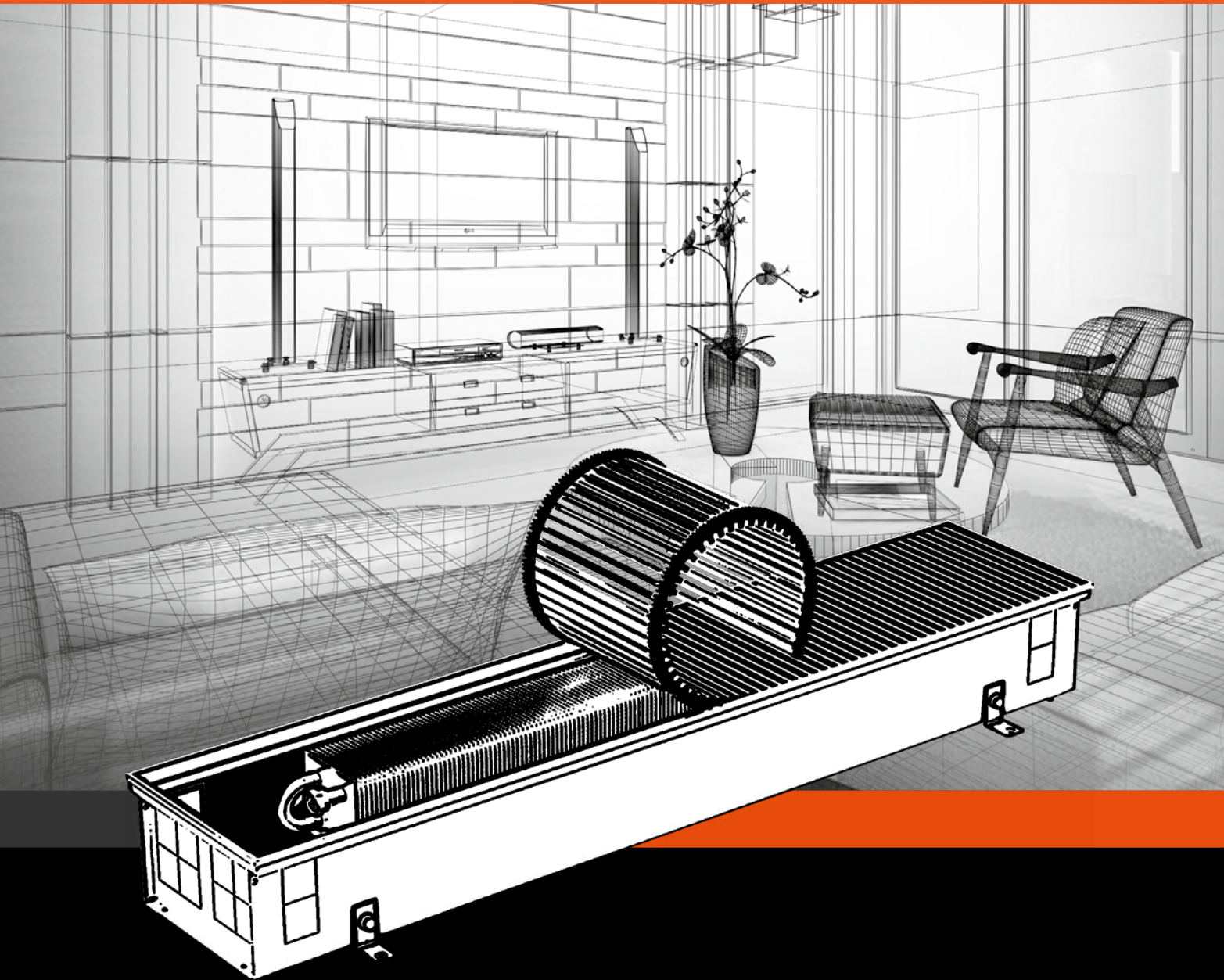


KORAFLEX

Trench heaters



THE KORADO GROUP

50 YEARS OF TRADITION

QUALITY – INTEGRITY – INNOVATION – DESIGN

As a reliable partner, the KORADO Group provides solutions for small- and large-scale heating, cooling and recuperation projects. Innovation is the guarantee of high-quality products and modern design, forming the basis of long-term cooperation.

SOLUTIONS FOR BUILDINGS OF ALL TYPES

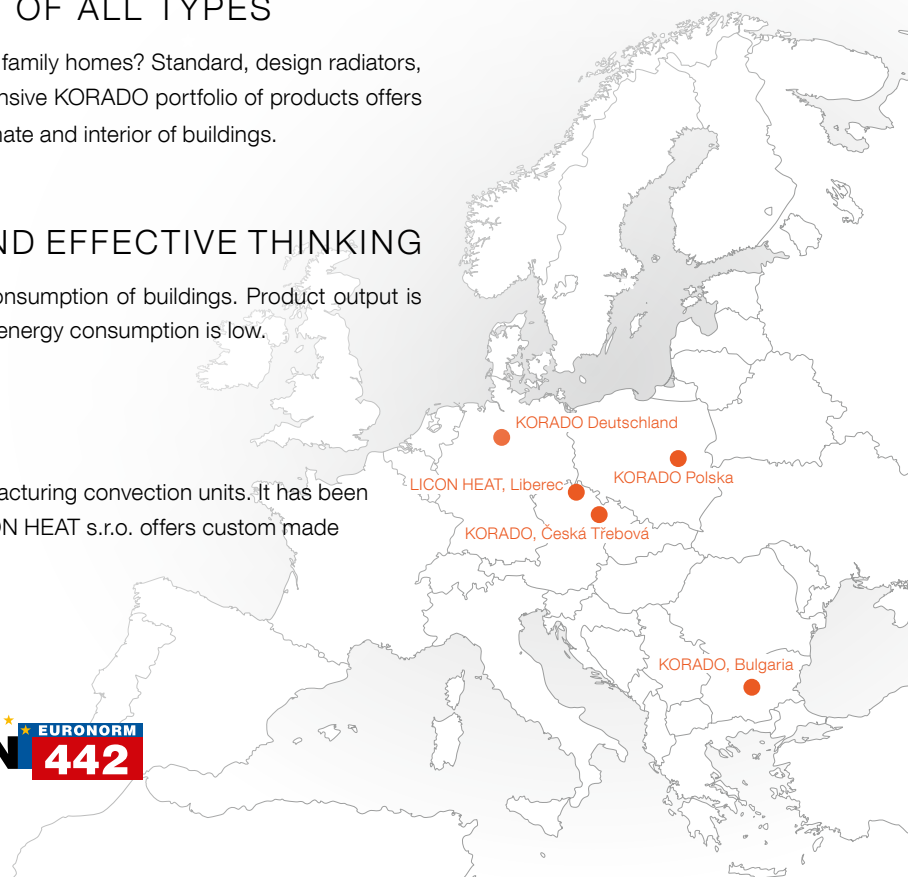
Large projects, such as shopping centres, or small family homes? Standard, design radiators, custom-built convectors or recuperation? The extensive KORADO portfolio of products offers a wide range of technical solutions for the ideal climate and interior of buildings.

ECONOMIC, ECOLOGICAL AND EFFECTIVE THINKING

All products are designed to reduce the energy consumption of buildings. Product output is optimal, air in the room is of a high quality, and the energy consumption is low.

LICON HEAT s.r.o.

LICON HEAT s.r.o. has a 50-year tradition of manufacturing convection units. It has been a member of the KORADO Group since 2013. LICON HEAT s.r.o. offers custom made solutions for buildings of all types.



LICON HEAT s.r.o. convectors are sold all over the world. They are manufactured using the most up-to-date technology at LICON HEAT plant in Liberec, Czech Republic.

The KORADO, a.s. Head Office and production site is a modern European plant manufacturing radiators and heating units. The technological equipment and the layout of the 30,000 m² site ensures KORADO, a.s. looks forward to further development and growth.

PRODUCT PORFOLIO trench heaters

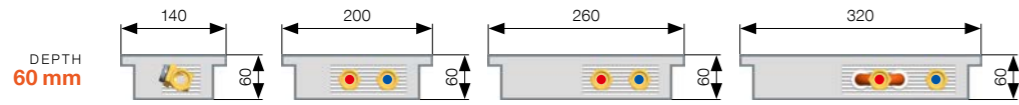
with natural convection KORAFLEX

KORAFLEX Thin FKT

Convactor with lowest unit height with optional aluminium frame and Thin or Cross grille.

Economic – basic model: black lacquered galvanized steel casing, non-lacquered heat exchanger

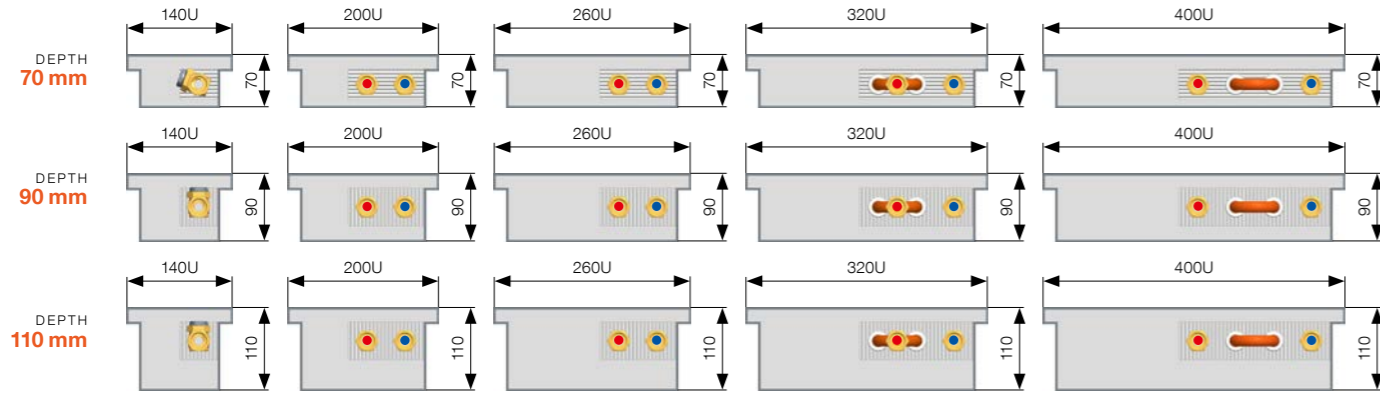
Exclusive – black lacquered galvanized steel casing, RAL 9005 black laquered heat exchanger



see p. 30–33

KORAFLEX Basic FKB

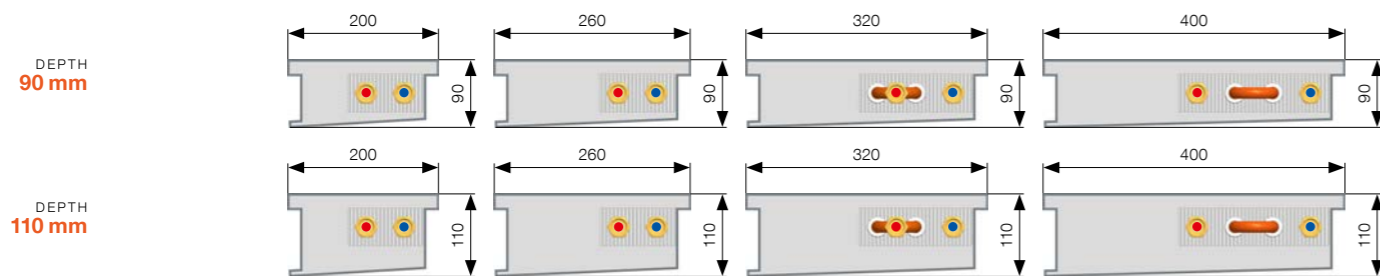
Economic version of top-selling dimensions. Galvanized steel non-lacquered casing fitted with aluminium U-frame, non-lacquered heat exchanger.



see p. 34–39

KORAFLEX Pool FKP

Trench heaters suitable for humid environments, AISI 316 stainless steel casing finished with hem, RAL 9006 grey lacquered heat exchanger.



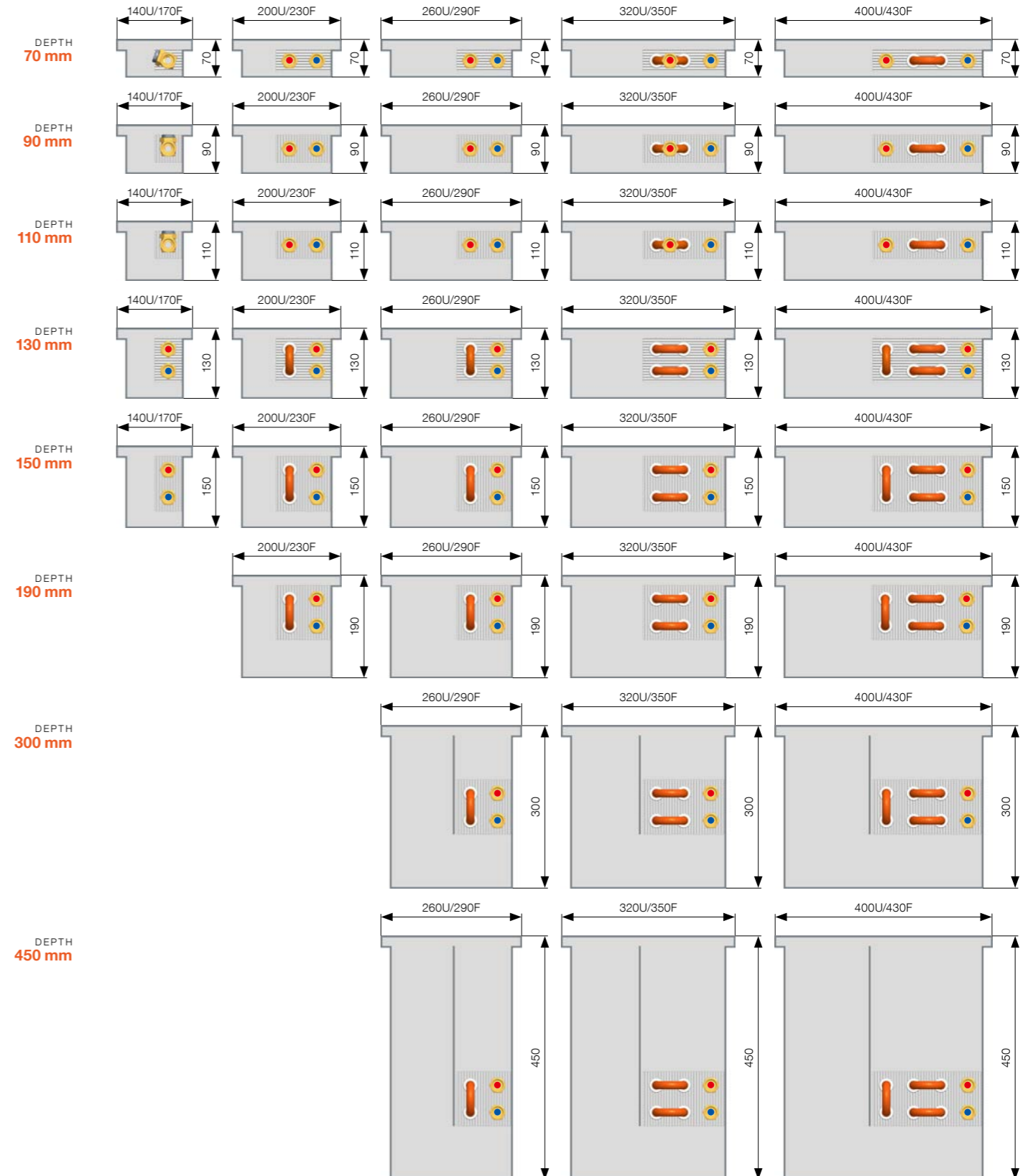
see p. 40–44

KORAFLEX Optimal FKO

A wide range of trench heaters complete with a broad range of aluminium frames and grilles:

Economic – basic model: black lacquered galvanized steel casing, non-lacquered heat exchanger

Exclusive – black lacquer galvanized steel casing, RAL 9005 black laquered heat exchanger



U = U-frame
F = F-frame

see p. 16–28

PRODUCT PORTFOLIO trench heaters

KORAFLEX with forced convection



Optimal
FKO

KORAFLEX Optimal-V FVO

Trench heaters with forced convection (fan assisted) and 24 V DC connection:

Economic – basic model: black lacquered galvanized steel casing, non-lacquered heat exchanger

Exclusive – black lacquered galvanized steel casing, RAL 9005 black lacquered heat exchanger

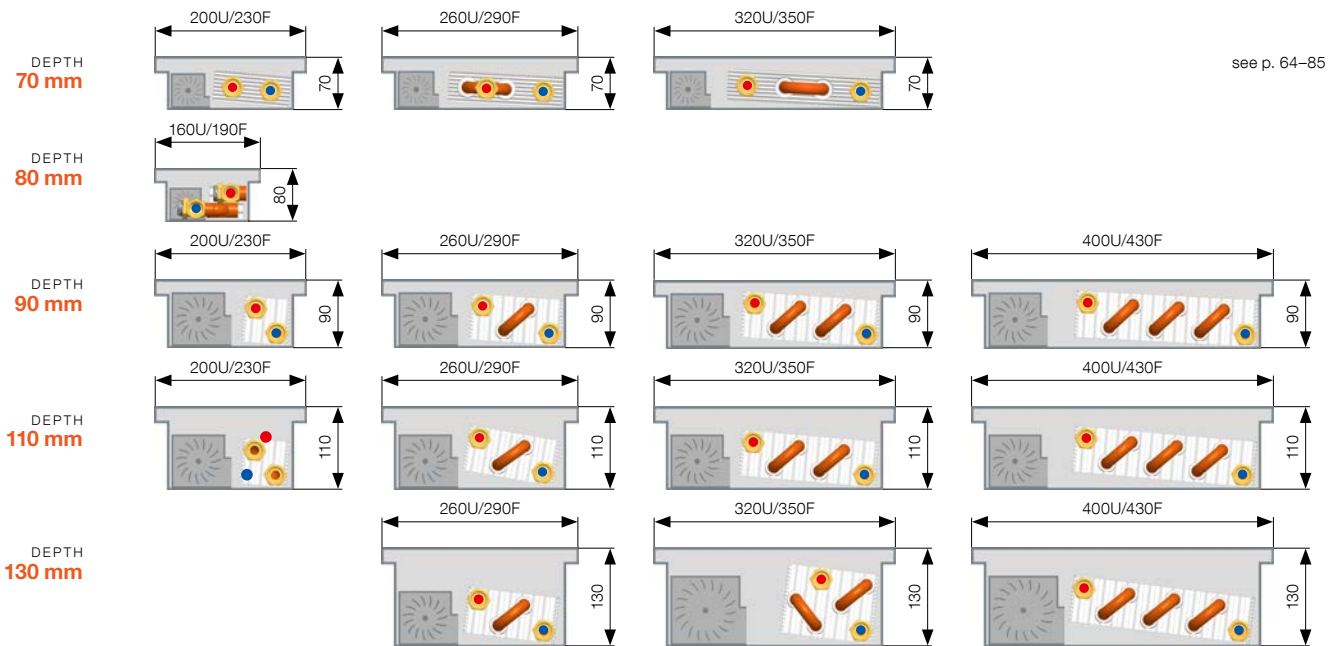
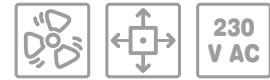


KORAFLEX Energy FVE

Trench heaters with forced convection (fan assisted) and in-casing 230 V AC power supply.

Economic – basic model: black lacquered galvanized steel casing, non-lacquered heat exchanger

Exclusive – black lacquered galvanized steel casing, RAL 9005 black lacquered heat exchanger



Thin
FKT

Basic
FKB

Pool
FKP

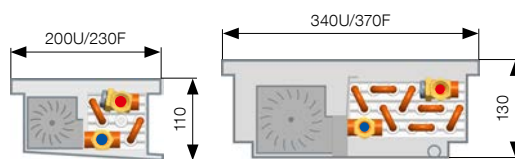
Optimal-V FVO
Energy FVE

KORAFLEX Variant F2V

2-pipe system (heats or cools)

Trench heaters with forced convection:

Economic, Exclusive



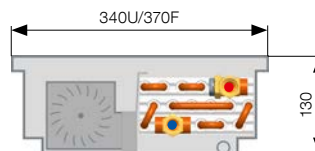
see p. 90–94

KORAFLEX Variant F4V

4-pipe system (heats and cools)

Trench heaters with forced convection:

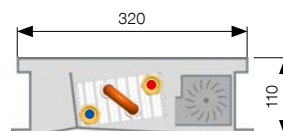
Economic, Exclusive



see p. 95–97

KORAFLEX Pool-V FVP

Trench heaters with forced convection suitable for humid environments, AISI 316 stainless steel casing finished with hem, RAL 9006 grey lacquered heat exchanger.



see p. 86–89

Pool-V
FVP

Variant F2V
Variant F4V

U = U-frame
F = F-frame

Grilles
and frames





Small illegible text in the top left corner, likely a product description or technical note.

KORAFLEX fitted with an aluminium grille and U-frame, light bronze elox.

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Key to graphic symbols

Convector/trench heater functions and properties

	Natural convection		Heating		Higher output
	Forced convection		230 V AC		Cooling
	Quiet operation		Minimum energy consumption		Environmentally-friendly
	Wide range of styles		Low-cost product		Suitable product
	Special product		RAL colour standard		Varnished wood
	Pencil proof		Lowest style Thin		Cross Frame
	U-frame		F-frame		Hem
	Information				

Suitable applications for convectors/trench heaters

	Family homes		Apartment blocks		Administrative buildings
	Multi-purpose buildings		Oil		Gas
	Solar thermal energy		Wood, biomass		Heat pump

Trench heater models

	Pool		Economic		Exclusive
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FREE-STANDING
CONVECTORS
KORALINE



TRENCH HEATERS
KORAFLEX



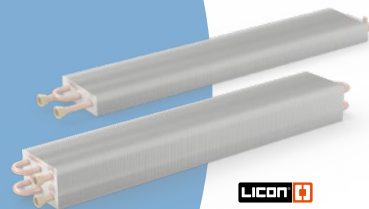
WALL-MOUNTED
CONVECTORS
KORAWALL



PANEL
RADIATORS
RADIK



HEAT
EXCHANGERS
KORABASE



DESIGN HEATING UNITS
KORATHERM



TOWEL RAILS
KORALUX



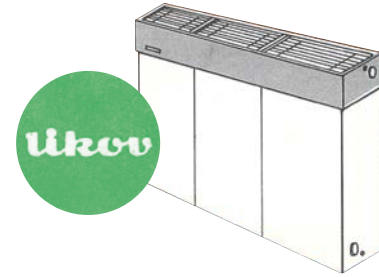
VENTILATION UNITS AND
CENTRAL RECUPERATION
KORASMART
KORAVENT
VENTBOX

PRODUCT PORTFOLIO

We offer a very wide range of products under one brand enabling comprehensive solutions for all types of building and space, all of which contribute to maximum compatibility, simplicity of design and service, individual solutions and financial savings.

A story of quality spanning over half a century

The **first LIKOV steel convectors** were manufactured in Liberec in 1968. They were marketed under the UNIKONTHERM brand.



1968



1995

1995 saw significant **modernisation of our product range**, including the production of our **first trench heaters**.

The company underwent a comprehensive transformation in 2004. **LICON HEAT s.r.o.** replaced the former LIKOV. The **product range was revolutionized** with the introduction of **new heat exchanger technology**.

2004



2013

In 2013, **LICON became a member of the KORADO group**. This resulted in expansion of the product range.

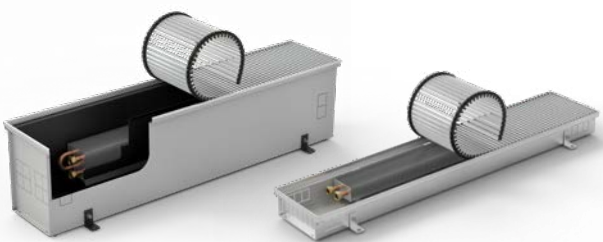
2018 saw the launch of a **new generation of modern convectors** and expansion of our product range, with significant emphasis on design.

2018



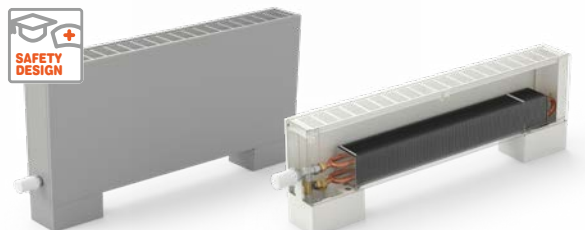
2020

An innovative range of free-standing convectors was introduced with natural and forced convection. This significantly expanded the range of trench heaters.



2022

In 2022, the KORALINE free-standing convectors portfolio was significantly expanded to include new types, focusing on safety, design and high performance.



What next?

We will continue improving our products using the most up-to-date technologies and all our experience and knowledge gathered during 54 years of convector production.

Why choose LICON convectors?



A solution for every interior...

We offer trench heaters, wall-mounted, free-standing and special convectors, all of which can be installed unobtrusively, including in stylish interiors.



An effective heating strategy...

Our convectors offer rapid heat availability, high efficiency, low energy consumption, and economic and environmentally-friendly operation.

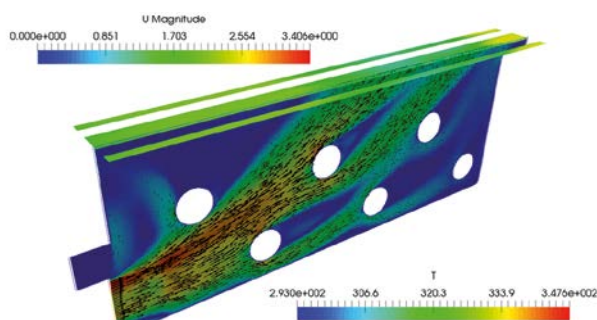
Straightforward assembly and maintenance.

Did you know?

- The KORADO Group has its own research and development centre, equipped with EN 442 thermal output and EN 16430 heat and cooling output test chambers.



- LICON HEAT s.r.o. insists on using the most modern research and development methods, and works closely with leading experts in the field, including higher education institutions (the Technical University of Liberec, the Czech Technical University in Prague, etc.).



A very wide range...

You can choose from a variety of styles suitable for any interior, including dry and humid environments, and pool-side models. We have convectors and trench heaters that both heat and cool, all available in a wide variety of designs.



The highest technical level...

Convectors and trench heaters are compatible with heating systems using all sources of heat (heat pumps, gas, electricity, solar energy, wood and biomass), including heating systems with low temperature gradient. They provide safe solutions, displaying low surface temperatures not exceeding 43 °C. Both the natural convection and forced convection convectors and trench heaters are fitted with quality grilles, including pencil proof options, guaranteeing enhanced user safety.



- We use the most up-to-date machines for the manufacture of our products, employing the principles of lean production. Products are manufactured in the shortest possible time while maintaining maximum material and design quality.
- We are a certified ISO 9001 Quality Management supplier. Our products are manufactured and tested according to ČSN EN 442 and ČSN EN 16430 standards. CE marking indicates that LICON convectors conform to the conditions set out in the Declaration of Performance in accordance with Regulation No. 305/2011 of the European Parliament and of the European Council, and further confirmed by notified authority No. 1015, the Engineering Test Institute, Brno.



Thermal imaging measuring



Slats stress test



*KORAFLEX fitted with linear aluminium grille
and U-frame, silver elox*

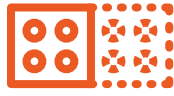
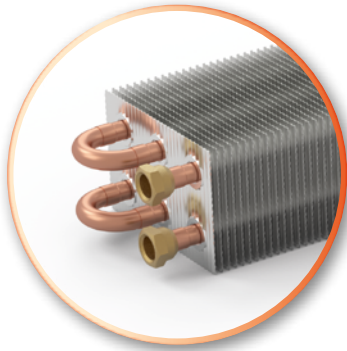
KORAFLEX trench heaters with natural convection

KORAFLEX TRENCH HEATERS WITH NATURAL CONVECTION



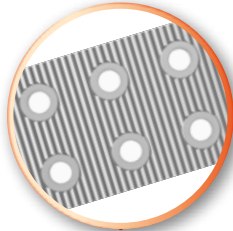
NEW HEAT EXCHANGER

Specially designed Al/Cu heat exchangers guarantee increased output and are the heart of every convector.



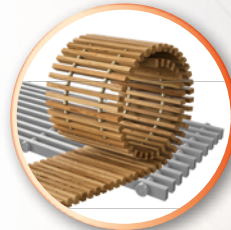
VARIABLE MATRIX

Serial matrix for up to 8 pipes, with optional individual heat exchanger design.



WIDE PORTFOLIO

6 new product ranges and dozens of models available with a wide range of elox aluminium, wood and stainless steel grilles.



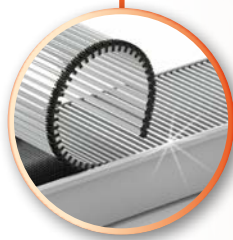
INCREASED THERMAL OUTPUT

More effective heating results in cost savings, and increased levels of thermal comfort.



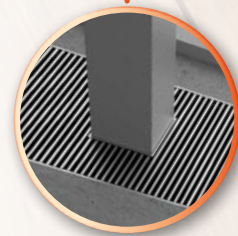
PRECISION-MADE

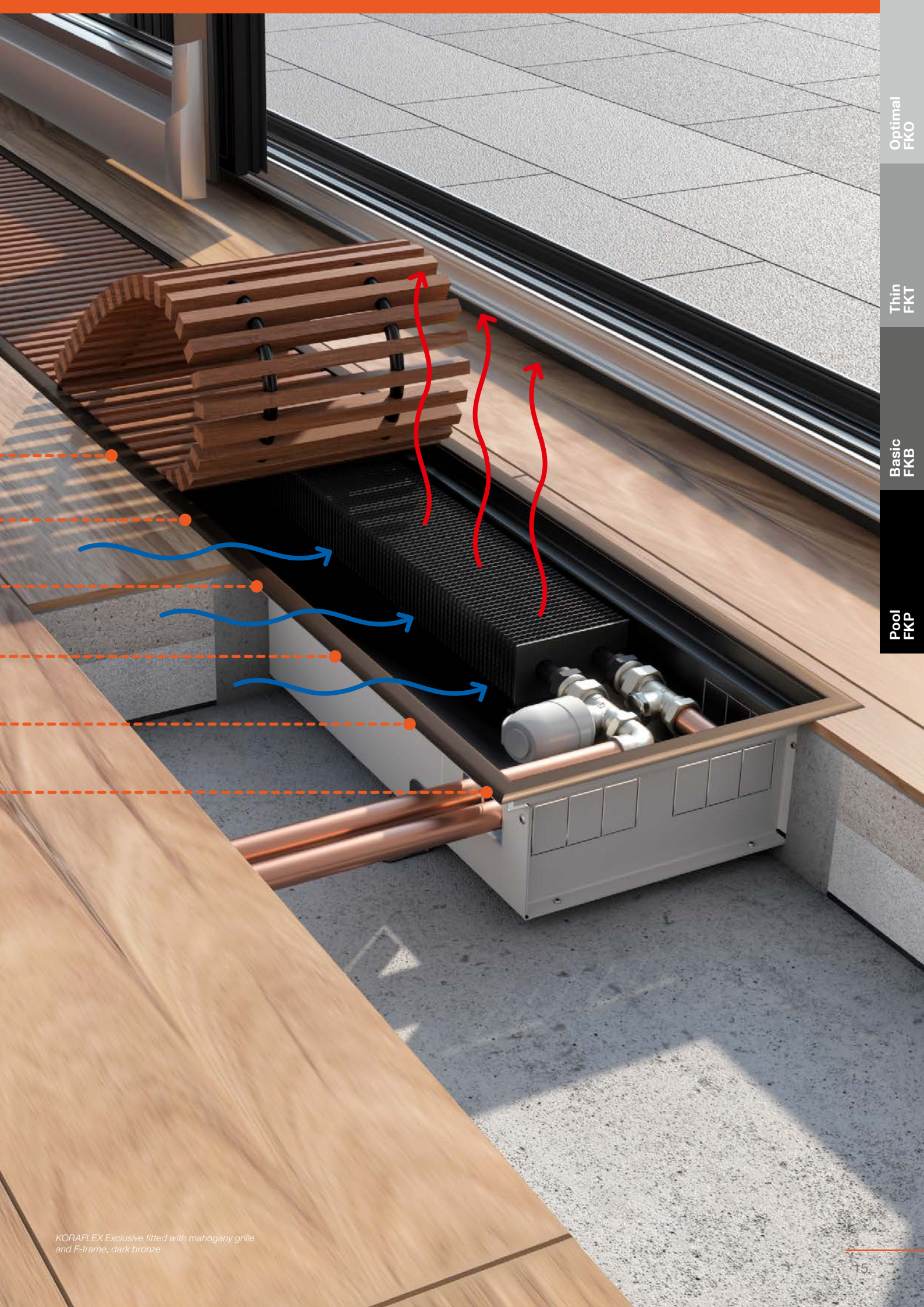
Guaranteed high quality technical processing of trench heaters.



TAILOR-MADE DESIGN SOLUTIONS

Our wide range of specially-designed modules allows the quick and simple creation of unconventional arrays of trench heaters.





Optimal
FKO

Thin
FKT

Basic
FKB

Pool
FKP

KORAFLEX Exclusive fitted with mahogany grille and F-frame, dark bronze

KORAFLEX Optimal FKO

Trench heaters with natural convection
in a broad range of dimensions and special designs



KORAFLEX Optimal FKO

Specifications

Depth	70, 90, 110, 130, 190, 300, 450 mm
Width	140, 200, 260, 320, 400 mm
Length	800 to 3 000 mm (by 100mm)
Heat output	from 41 to 3 480 W
Max. operating pressure	1.2 MPa
Max. operating temperature	110 °C
Connecting thread	inner G ½"

ECONOMIC version – basic version, black lacquered galvanized steel casing, non-lacquered heat exchanger

EXCLUSIVE version – black lacquered galvanized steel casing, RAL 9005 black lacquered heat exchanger

Standard contents

- RAL 9005 black lacquered galvanized steel casing
- Economic – non-lacquered Al/Cu heat exchanger with bleed valve
- Exclusive – RAL 9005 black lacquered Al/Cu heat exchanger with bleed valve
- aluminium U-frame silver elox
- metal cover plate
- levelling set screws and 4 anchors
- spacers for correct installation and concreting
- hardboard cover to protect trench heater from contamination
- durable packaging, installation instructions

KORAFLEX Optimal FKO represents the widest range of trench heater models. The black lacquered galvanized steel casing comes with optional decorative U-, F- or Cross frames, and a wide choice of grilles.

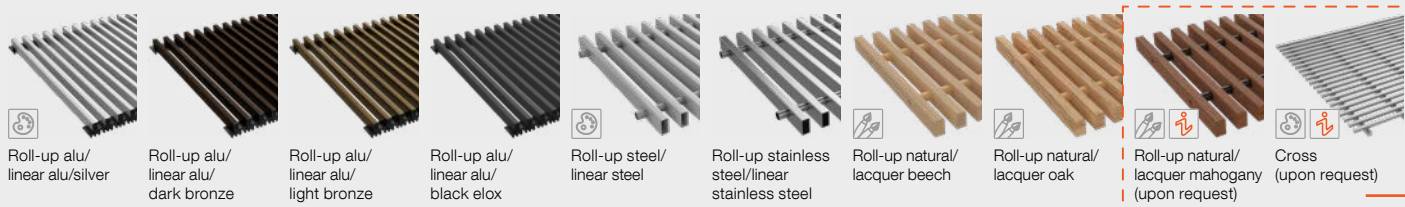


Optional accessories

- choice of grilles
- Cross grille – design solutions – necessary to order together with trench heater – for more information, see p. 125
- light/dark bronze and black elox or RAL colour chart lacquered aluminium U-frame
- silver, light/dark bronze and black elox or RAL colour chart lacquered aluminium F-frame
- thermostatic head with incorporated control and immersion remote sensor
- 24 V DC power supply
- 24 V DC or 230 V AC room thermostat for regulation
- 24 V DC or 230 V AC thermoelectric actuator, 2.5 m or 5 m cable length
- raised floor structural supports
- lockshield, thermostatic valve
- ½" x ½" 90° brass elbow for connection facilitation
- 10, 12 or 30 cm flexible stainless steel hose
- strengthened OSB cover for installation purposes

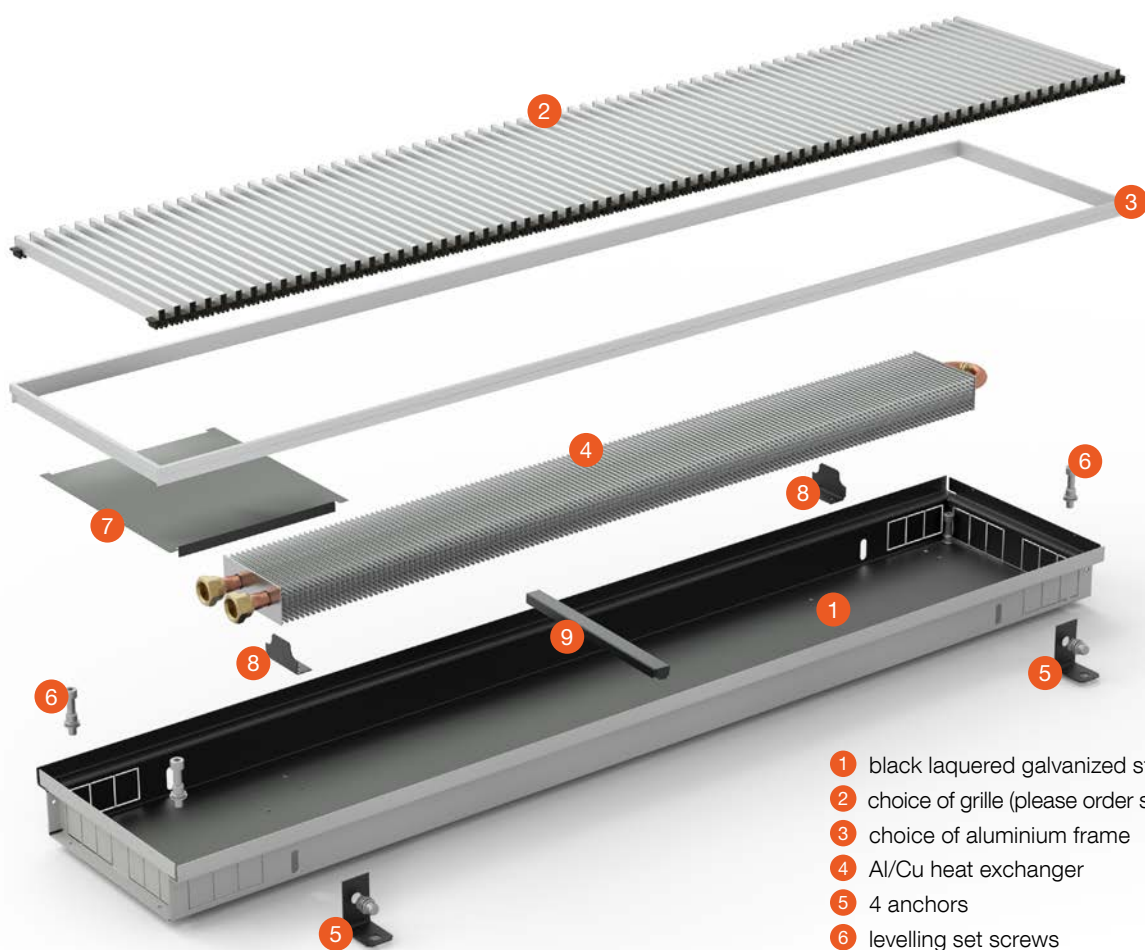
For more information about optional accessories and order codes, see p. 50

Suitable grilles



For a summary and description of grilles available, including order codes, see p. 119–127.

TRENCH HEATER COMPONENTS

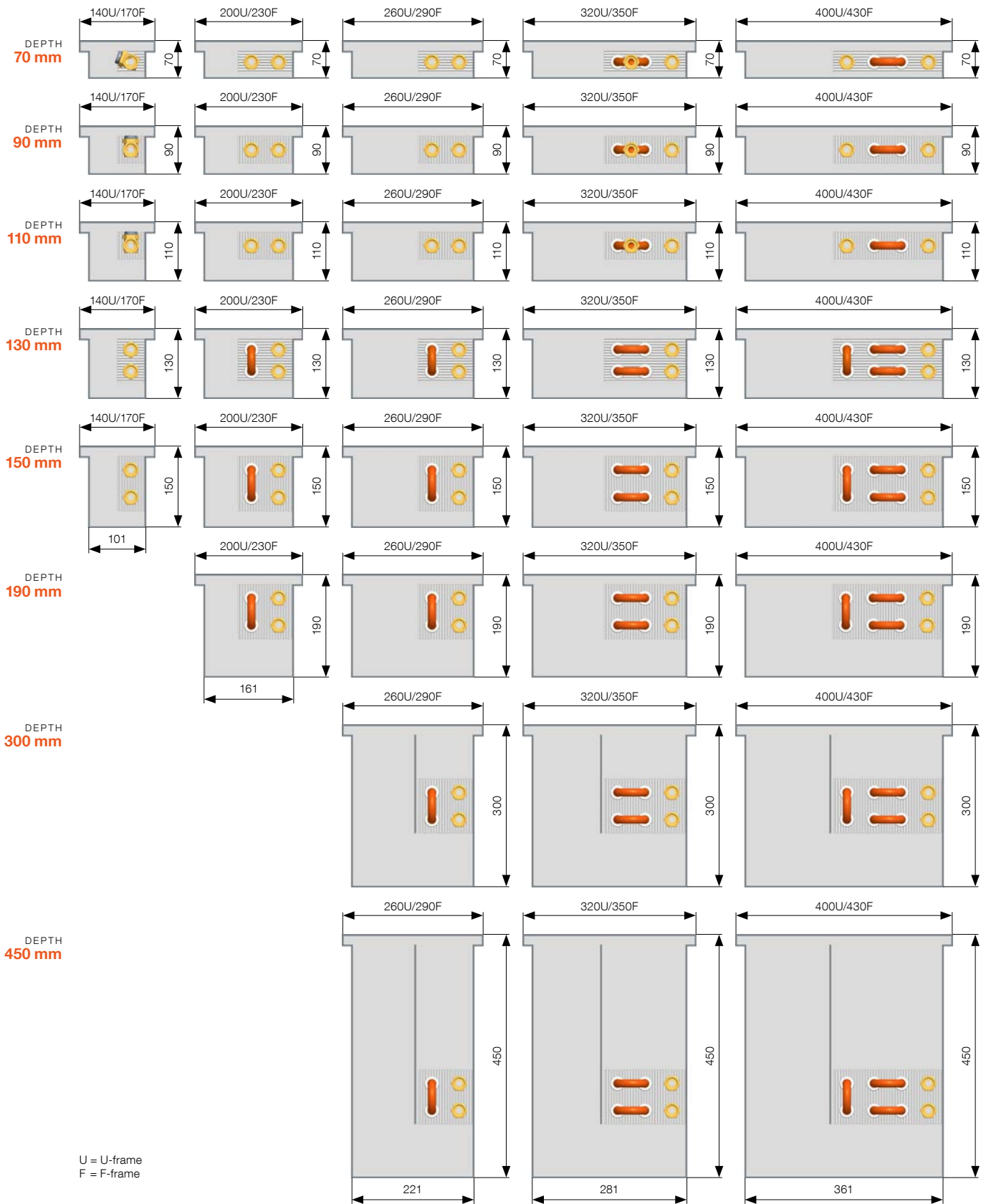


- 1 black laquered galvanized steel casing
- 2 choice of grille (please order separately)
- 3 choice of aluminium frame
- 4 Al/Cu heat exchanger
- 5 4 anchors
- 6 levelling set screws
- 7 metal cover plate
- 8 brackets
- 9 spacers for correct installation and concreting



KORAFLEX fitted with roll-up beech wood grille,
U-frame, silver élox

PRODUCT RANGE



Width of trench heaters fitted with a Cross frame are identical to trench heaters fitted with an U-frame.

Measurements shown in mm.
Alterations to technical specifications reserved.

KORAFLEX Optimal FKO

depth 70 mm



Heat output [W] where $t_1/t_2/t_3$ / EN 16430

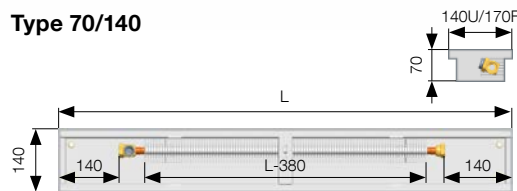
Measurements are shown in mm including U-frame.

Length	$t_1/t_2/t_3$ [°C]	Width	Width	Width	Width	Width
		140	200	260	320	400
800	75/65/20	41	76	90	103	131
	55/45/20	20	36	40	46	60
900	75/65/20	51	91	108	124	157
	55/45/20	24	43	47	56	72
1 000	75/65/20	61	105	126	146	183
	55/45/20	29	50	55	66	84
1 100	75/65/20	71	120	144	168	208
	55/45/20	34	57	63	76	96
1 200	75/65/20	81	135	161	190	234
	55/45/20	38	64	71	86	108
1 300	75/65/20	91	150	179	212	260
	55/45/20	43	71	78	95	119
1 400	75/65/20	101	165	197	233	286
	55/45/20	48	78	86	105	131
1 500	75/65/20	111	180	214	255	311
	55/45/20	52	85	94	115	143
1 600	75/65/20	120	195	232	277	337
	55/45/20	57	92	102	125	155
1 700	75/65/20	130	209	250	299	363
	55/45/20	62	99	109	135	167
1 800	75/65/20	140	224	268	320	389
	55/45/20	66	106	117	145	178
1 900	75/65/20	150	239	285	342	414
	55/45/20	71	113	125	154	190
2 000	75/65/20	160	254	303	364	440
	55/45/20	76	120	133	164	202
2 100	75/65/20	170	269	321	386	466
	55/45/20	81	127	140	174	214
2 200	75/65/20	180	284	338	408	491
	55/45/20	85	134	148	184	226
2 300	75/65/20	190	299	356	429	517
	55/45/20	90	141	156	194	238
2 400	75/65/20	200	313	374	451	543
	55/45/20	95	148	164	204	249
2 500	75/65/20	209	328	392	473	569
	55/45/20	99	156	171	213	261
2 600	75/65/20	219	343	409	495	594
	55/45/20	104	163	179	223	273
2 700	75/65/20	229	358	427	516	620
	55/45/20	109	170	187	233	285
2 800	75/65/20	239	373	445	538	646
	55/45/20	113	177	195	243	297
2 900	75/65/20	249	388	462	560	672
	55/45/20	118	184	202	253	309
3 000	75/65/20	259	403	480	582	697
	55/45/20	123	191	210	263	320

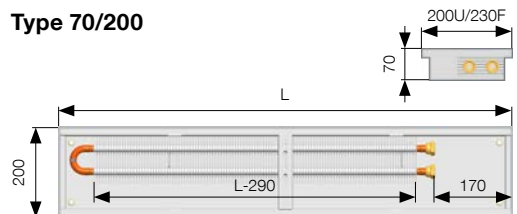
Temperature exponent [n] **1.4629 1.4587 1.6148 1.5550 1.5235**



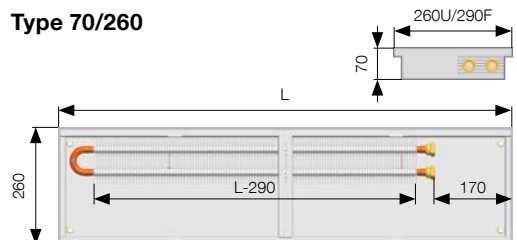
Type 70/140



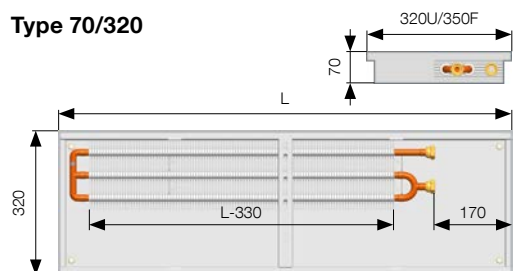
Type 70/200



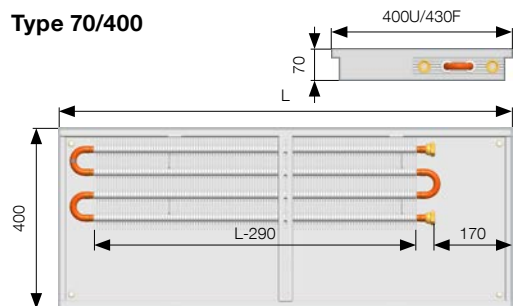
Type 70/260



Type 70/320



Type 70/400



Measurements in mm.

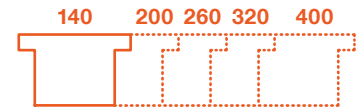
Measurements shown in mm. Where the F-frame is fitted, both the length and width increase by 30 mm.

Further information

FK Mounting p. 47, Accessories p. 50, Connections and connection measurements p. 52, Technical data p. 54, Thermal gradient conversion p. 55, Convector pressure losses p. 56, Grilles and frames p. 119–127

KORAFLEX Optimal FKO

depth 90 mm



Optimal FKO

Heat output [W] where $t_1/t_2/t_3$ / EN 16430

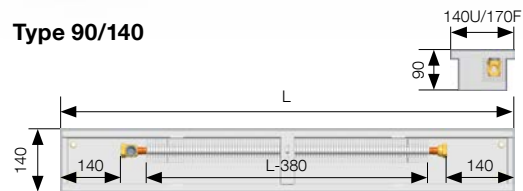
Measurements are shown in mm including U-frame.

Length	$t_1/t_2/t_3$ [°C]	Width	Width	Width	Width	Width
		140	200	260	320	400
800	75/65/20	50	120	153	195	275
	55/45/20	23	55	69	93	130
900	75/65/20	62	143	183	236	329
	55/45/20	29	65	82	112	156
1 000	75/65/20	74	167	213	278	383
	55/45/20	34	76	96	132	181
1 100	75/65/20	86	190	243	319	437
	55/45/20	40	87	109	151	207
1 200	75/65/20	98	214	273	361	490
	55/45/20	45	98	123	171	233
1 300	75/65/20	110	237	303	402	544
	55/45/20	51	108	136	191	258
1 400	75/65/20	122	261	333	444	598
	55/45/20	56	119	150	210	284
1 500	75/65/20	134	284	363	485	652
	55/45/20	62	130	163	230	309
1 600	75/65/20	146	308	393	526	706
	55/45/20	67	141	177	250	335
1 700	75/65/20	158	331	423	568	760
	55/45/20	73	151	190	269	360
1 800	75/65/20	170	355	453	609	814
	55/45/20	78	162	204	289	386
1 900	75/65/20	182	378	483	651	868
	55/45/20	84	173	217	309	411
2 000	75/65/20	194	402	513	692	922
	55/45/20	89	183	231	328	437
2 100	75/65/20	206	426	543	733	976
	55/45/20	95	194	244	348	463
2 200	75/65/20	218	449	573	775	1029
	55/45/20	100	205	258	368	488
2 300	75/65/20	230	473	603	816	1083
	55/45/20	106	216	271	387	514
2 400	75/65/20	242	496	633	858	1137
	55/45/20	111	226	285	407	539
2 500	75/65/20	254	520	663	899	1191
	55/45/20	117	237	298	426	565
2 600	75/65/20	266	543	693	940	1245
	55/45/20	122	248	311	446	590
2 700	75/65/20	278	567	723	982	1299
	55/45/20	128	258	325	466	616
2 800	75/65/20	290	590	753	1023	1353
	55/45/20	133	269	338	485	641
2 900	75/65/20	302	614	783	1065	1407
	55/45/20	139	280	352	505	667
3 000	75/65/20	314	637	813	1106	1461
	55/45/20	144	291	365	525	693

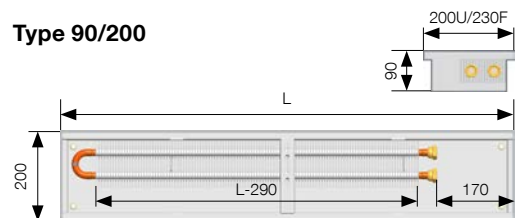
Temperature exponent [n] **1.5247 1.5373 1.5643 1.4599 1.4607**



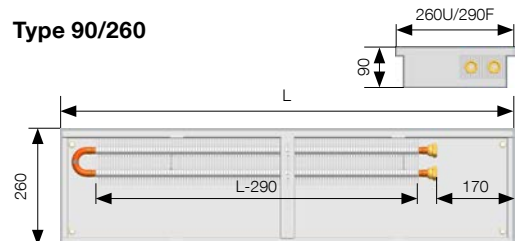
Type 90/140



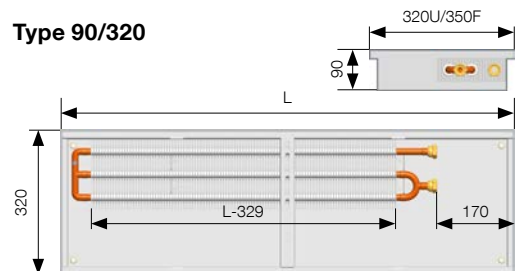
Type 90/200



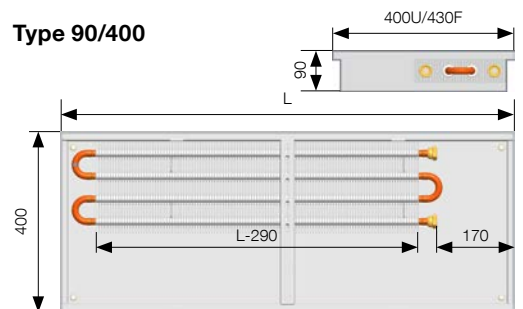
Type 90/260



Type 90/320



Type 90/400



Measurements in mm.

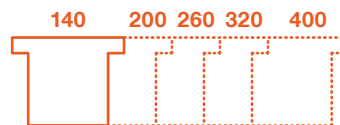
Measurements shown in mm. Where the F-frame is fitted, both the length and width increase by 30 mm.

Further information

FK Mounting p. 47, Accessories p. 50, Connections and connection measurements p. 52, Technical data p. 54, Thermal gradient conversion p. 55, Convector pressure losses p. 56, Grilles and frames p. 119–127

KORAFLEX Optimal FKO

depth 110 mm

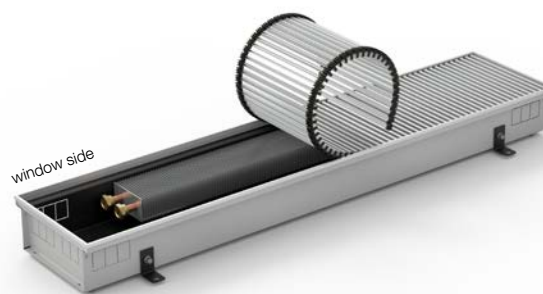


Heat output [W] where $t_1/t_2/t_3$ / EN 16430

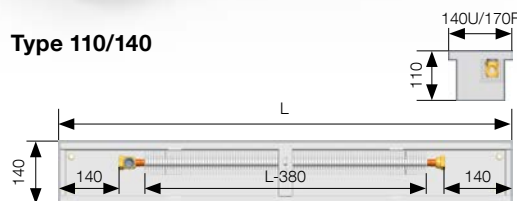
Measurements are shown in mm including U-frame.

Length	$t_1/t_2/t_3$ [°C]	Width	Width	Width	Width	Width
		140	200	260	320	400
800	75/65/20	56	142	184	237	327
	55/45/20	26	67	88	112	155
900	75/65/20	69	170	221	287	391
	55/45/20	32	80	106	136	186
1 000	75/65/20	82	198	257	338	456
	55/45/20	38	93	123	160	216
1 100	75/65/20	95	226	293	388	520
	55/45/20	44	106	140	184	247
1 200	75/65/20	108	254	329	438	584
	55/45/20	51	119	158	208	277
1 300	75/65/20	122	282	365	489	648
	55/45/20	57	133	175	232	308
1 400	75/65/20	135	309	401	539	712
	55/45/20	63	146	192	255	338
1 500	75/65/20	148	337	438	589	776
	55/45/20	69	159	210	279	369
1 600	75/65/20	161	365	474	640	841
	55/45/20	75	172	227	303	399
1 700	75/65/20	175	393	510	690	905
	55/45/20	82	185	244	327	430
1 800	75/65/20	188	421	546	740	969
	55/45/20	88	198	262	351	460
1 900	75/65/20	201	449	582	791	1033
	55/45/20	94	211	279	375	491
2 000	75/65/20	214	477	618	841	1097
	55/45/20	100	225	296	398	521
2 100	75/65/20	227	505	655	891	1161
	55/45/20	106	238	314	422	552
2 200	75/65/20	241	532	691	942	1226
	55/45/20	112	251	331	446	582
2 300	75/65/20	254	560	727	992	1290
	55/45/20	119	264	348	470	613
2 400	75/65/20	267	588	763	1042	1354
	55/45/20	125	277	366	494	643
2 500	75/65/20	280	616	799	1093	1418
	55/45/20	131	290	383	518	674
2 600	75/65/20	294	644	835	1143	1482
	55/45/20	137	303	400	542	704
2 700	75/65/20	307	672	872	1193	1546
	55/45/20	143	316	418	565	735
2 800	75/65/20	320	700	908	1244	1611
	55/45/20	149	330	435	589	765
2 900	75/65/20	333	728	944	1294	1675
	55/45/20	156	343	452	613	795
3 000	75/65/20	346	755	980	1344	1739
	55/45/20	162	356	470	637	826

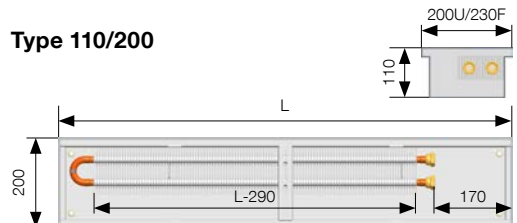
Temperature exponent [n] 1.4888 1.4739 1.4385 1.4622 1.4569



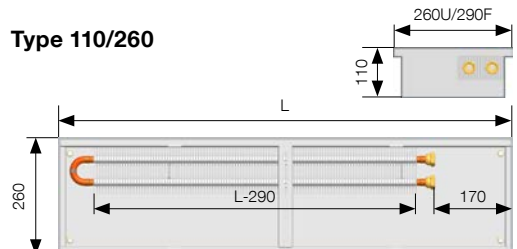
Type 110/140



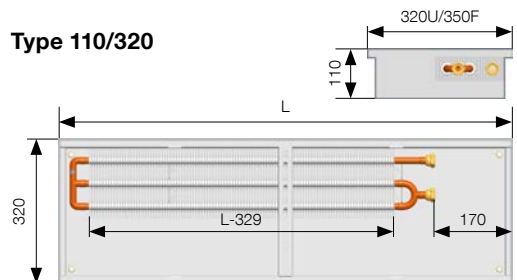
Type 110/200



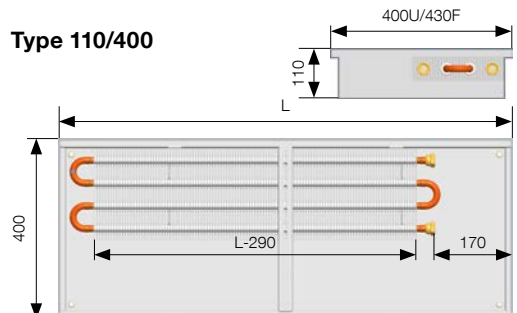
Type 110/260



Type 110/320



Type 110/400



Measurements in mm.

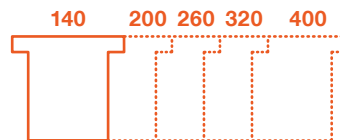
Measurements shown in mm. Where the F-frame is fitted, both the length and width increase by 30 mm.

Further information

FK Mounting p. 47, Accessories p. 50, Connections and connection measurements p. 52, Technical data p. 54, Thermal gradient conversion p. 55, Convector pressure losses p. 56, Grilles and frames p. 119–127

KORAFLEX Optimal FKO

depth 130 mm



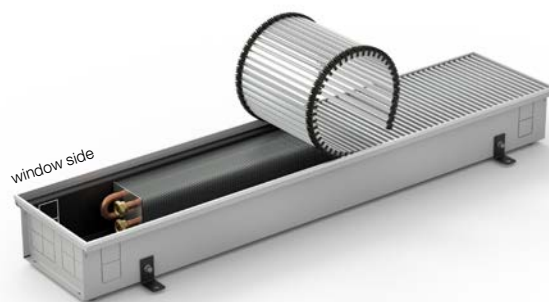
Optimal FKO

Heat output [W] where $t_1/t_2/t_3$ / EN 16430

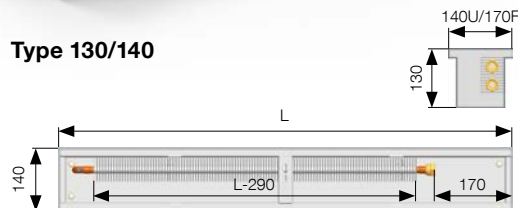
Measurements are shown in mm including U-frame.

Length	$t_1/t_2/t_3$ [°C]	Width	Width	Width	Width	Width
		140	200	260	320	400
800	75/65/20	79	143	203	284	364
	55/45/20	35	66	89	132	168
900	75/65/20	95	172	243	340	435
	55/45/20	42	79	107	158	201
1 000	75/65/20	110	200	283	395	506
	55/45/20	49	92	125	184	234
1 100	75/65/20	126	228	323	451	577
	55/45/20	56	105	142	209	267
1 200	75/65/20	141	256	363	507	649
	55/45/20	63	118	160	235	300
1 300	75/65/20	157	284	403	562	720
	55/45/20	70	131	177	261	333
1 400	75/65/20	172	312	443	618	791
	55/45/20	77	144	195	287	366
1 500	75/65/20	188	340	483	674	863
	55/45/20	83	157	212	313	399
1 600	75/65/20	203	368	522	729	934
	55/45/20	90	170	230	339	431
1 700	75/65/20	219	397	562	785	1005
	55/45/20	97	183	247	365	464
1 800	75/65/20	234	425	602	841	1076
	55/45/20	104	196	265	390	497
1 900	75/65/20	250	453	642	896	1148
	55/45/20	111	209	282	416	530
2 000	75/65/20	265	481	682	952	1219
	55/45/20	118	222	300	442	563
2 100	75/65/20	280	509	722	1008	1290
	55/45/20	125	235	317	468	596
2 200	75/65/20	296	537	762	1063	1362
	55/45/20	132	248	335	494	629
2 300	75/65/20	311	565	802	1119	1433
	55/45/20	139	261	353	520	662
2 400	75/65/20	327	594	842	1175	1504
	55/45/20	146	274	370	545	695
2 500	75/65/20	342	622	881	1230	1575
	55/45/20	152	287	388	571	728
2 600	75/65/20	358	650	921	1286	1647
	55/45/20	159	300	405	597	761
2 700	75/65/20	373	678	961	1342	1718
	55/45/20	166	313	423	623	794
2 800	75/65/20	389	706	1001	1397	1789
	55/45/20	173	326	440	649	827
2 900	75/65/20	404	734	1041	1453	1861
	55/45/20	180	339	458	675	860
3 000	75/65/20	420	762	1081	1509	1932
	55/45/20	187	352	475	701	893

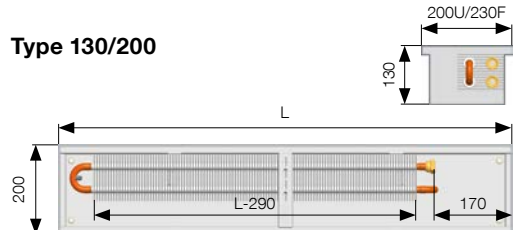
Temperature exponent [n] **1.5855 1.5143 1.6077 1.5011 1.5119**



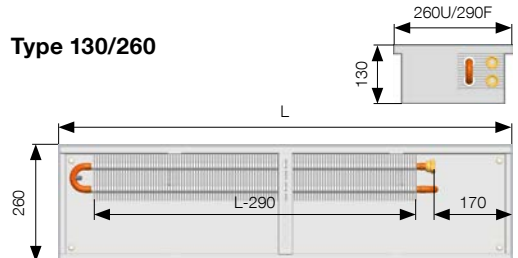
Type 130/140



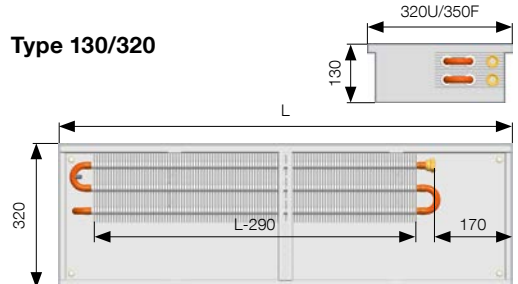
Type 130/200



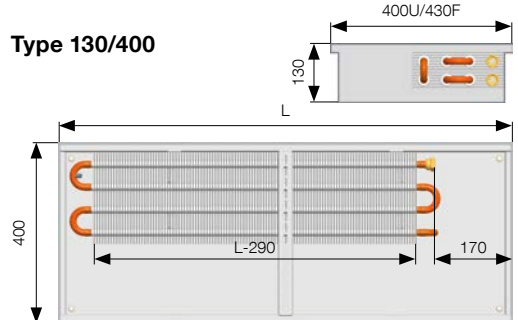
Type 130/260



Type 130/320



Type 130/400



Measurements in mm.

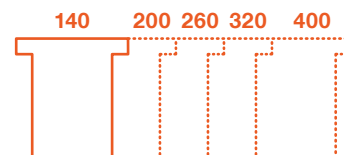
Measurements shown in mm. Where the F-frame is fitted, both the length and width increase by 30 mm.

Further information

FK Mounting p. 47, Accessories p. 50, Connections and connection measurements p. 52, Technical data p. 54, Thermal gradient conversion p. 55, Convector pressure losses p. 56, Grilles and frames p. 119–127

KORAFLEX Optimal FKO

depth 150 mm

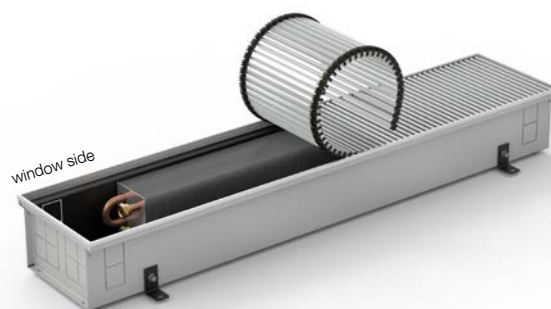


Heat output [W] where $t_1/t_2/t_3$ / EN 16430

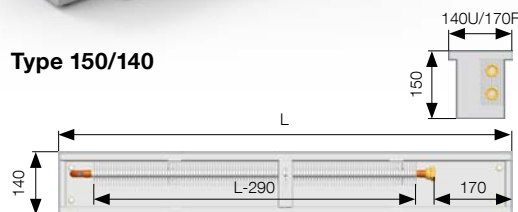
Measurements are shown in mm including U-frame.

Length	$t_1/t_2/t_3$ [°C]	Width	Width	Width	Width	Width
		140	200	260	320	400
800	75/65/20	92	154	238	314	389
	55/45/20	42	70	109	145	178
900	75/65/20	110	185	284	376	465
	55/45/20	50	84	131	173	213
1 000	75/65/20	127	215	331	438	541
	55/45/20	58	97	152	202	248
1 100	75/65/20	145	245	378	499	617
	55/45/20	66	111	173	230	283
1 200	75/65/20	163	276	424	561	693
	55/45/20	74	125	195	259	317
1 300	75/65/20	181	306	471	623	770
	55/45/20	82	138	216	287	352
1 400	75/65/20	199	336	517	684	846
	55/45/20	90	152	238	315	387
1 500	75/65/20	217	367	564	746	922
	55/45/20	99	166	259	344	422
1 600	75/65/20	235	397	611	807	998
	55/45/20	107	179	280	372	457
1 700	75/65/20	253	427	657	869	1074
	55/45/20	115	193	302	401	492
1 800	75/65/20	271	457	704	931	1151
	55/45/20	123	207	323	429	527
1 900	75/65/20	289	488	750	992	1227
	55/45/20	131	221	345	457	562
2 000	75/65/20	307	518	797	1054	1303
	55/45/20	139	234	366	486	596
2 100	75/65/20	325	548	844	1116	1379
	55/45/20	147	248	387	514	631
2 200	75/65/20	343	579	890	1177	1455
	55/45/20	156	262	409	543	666
2 300	75/65/20	361	609	937	1239	1532
	55/45/20	164	275	430	571	701
2 400	75/65/20	379	639	983	1301	1608
	55/45/20	172	289	452	599	736
2 500	75/65/20	397	669	1030	1362	1684
	55/45/20	180	303	473	628	771
2 600	75/65/20	415	700	1077	1424	1760
	55/45/20	188	316	494	656	806
2 700	75/65/20	433	730	1123	1485	1836
	55/45/20	196	330	516	685	841
2 800	75/65/20	451	760	1170	1547	1913
	55/45/20	204	344	537	713	875
2 900	75/65/20	469	791	1216	1609	1989
	55/45/20	212	358	559	741	910
3 000	75/65/20	487	821	1263	1670	2065
	55/45/20	221	371	580	770	945

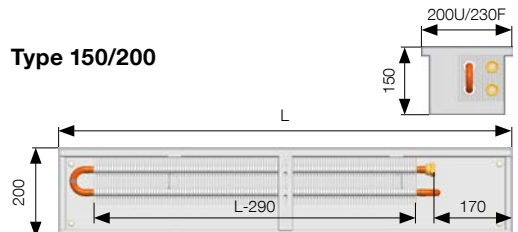
Temperature exponent [n] **1.5470 1.5528 1.5240 1.5165 1.5296**



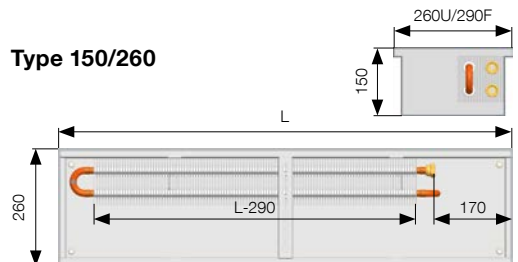
Type 150/140



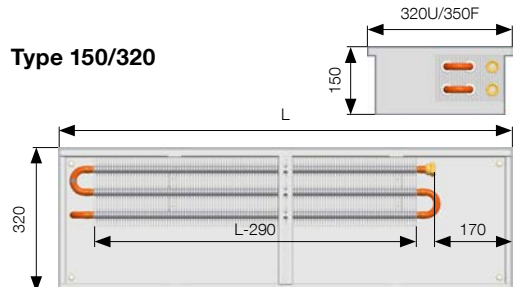
Type 150/200



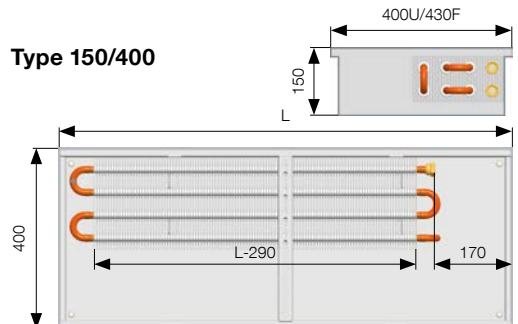
Type 150/260



Type 150/320



Type 150/400



Measurements in mm.

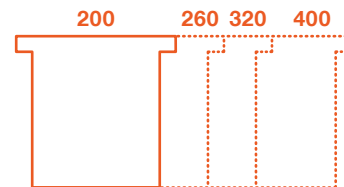
Measurements shown in mm. Where the F-frame is fitted, both the length and width increase by 30 mm.

Further information

FK Mounting p. 47, Accessories p. 50, Connections and connection measurements p. 52, Technical data p. 54, Thermal gradient conversion p. 55, Convector pressure losses p. 56, Grilles and frames p. 119–127

KORAFLEX Optimal FKO

depth 190 mm



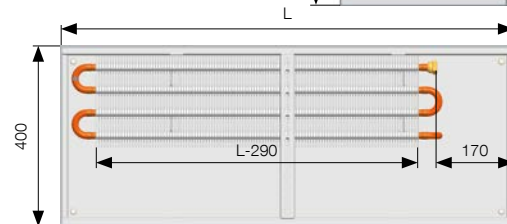
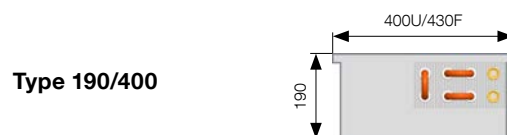
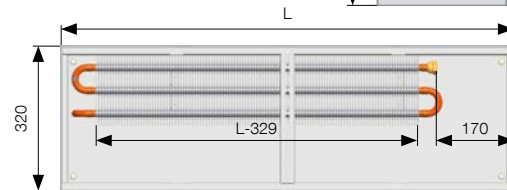
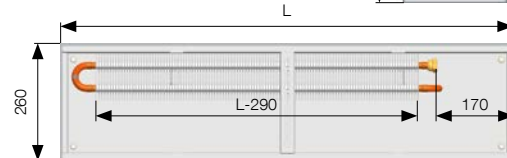
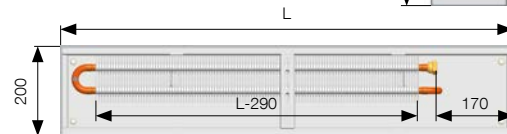
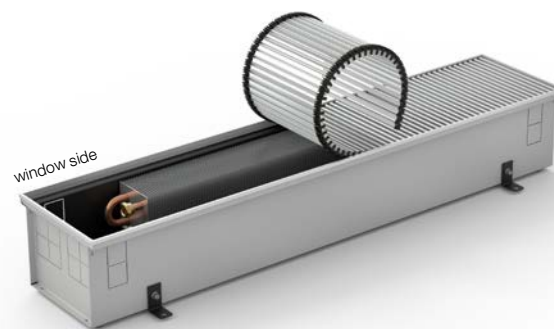
Optimal FKO

Heat output [W] where $t_1/t_2/t_3$ / EN 16430

Measurements are shown in mm including U-frame.

Length	$t_1/t_2/t_3$ [°C]	Width 200	Width 260	Width 320	Width 400
800	75/65/20	172	260	384	526
	55/45/20	79	121	176	240
900	75/65/20	205	311	459	629
	55/45/20	94	145	210	287
1 000	75/65/20	239	362	534	732
	55/45/20	110	168	245	335
1 100	75/65/20	273	413	610	835
	55/45/20	125	192	279	382
1 200	75/65/20	307	464	685	938
	55/45/20	141	216	314	429
1 300	75/65/20	340	515	760	1041
	55/45/20	156	240	348	476
1 400	75/65/20	374	566	835	1144
	55/45/20	171	263	383	523
1 500	75/65/20	408	617	911	1248
	55/45/20	187	287	417	570
1 600	75/65/20	441	668	986	1351
	55/45/20	202	311	451	617
1 700	75/65/20	475	719	1061	1454
	55/45/20	218	334	486	664
1 800	75/65/20	509	770	1136	1557
	55/45/20	233	358	520	711
1 900	75/65/20	542	821	1212	1660
	55/45/20	249	382	555	759
2 000	75/65/20	576	872	1287	1763
	55/45/20	264	406	589	806
2 100	75/65/20	610	923	1362	1866
	55/45/20	279	429	624	853
2 200	75/65/20	643	974	1438	1969
	55/45/20	295	453	658	900
2 300	75/65/20	677	1025	1513	2072
	55/45/20	310	477	693	947
2 400	75/65/20	711	1076	1588	2175
	55/45/20	326	500	727	994
2 500	75/65/20	744	1127	1663	2278
	55/45/20	341	524	762	1041
2 600	75/65/20	778	1178	1739	2382
	55/45/20	357	548	796	1088
2 700	75/65/20	812	1229	1814	2485
	55/45/20	372	572	831	1136
2 800	75/65/20	845	1280	1889	2588
	55/45/20	388	595	865	1183
2 900	75/65/20	879	1331	1964	2691
	55/45/20	403	619	900	1230
3 000	75/65/20	913	1382	2040	2794
	55/45/20	418	643	934	1277

Temperature exponent [n] **1.5264 1.4983 1.5283 1.5329**



Measurements in mm.

Measurements shown in mm. Where the F-frame is fitted, both the length and width increase by 30 mm.

Further information

FK Mounting p. 47, Accessories p. 50, Connections and connection measurements p. 52, Technical data p. 54, Thermal gradient conversion p. 55, Convector pressure losses p. 56, Grilles and frames p. 119–127

KORAFLEX Optimal FKO

depth 300 mm

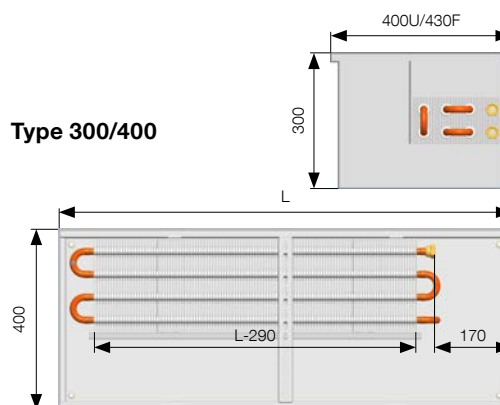
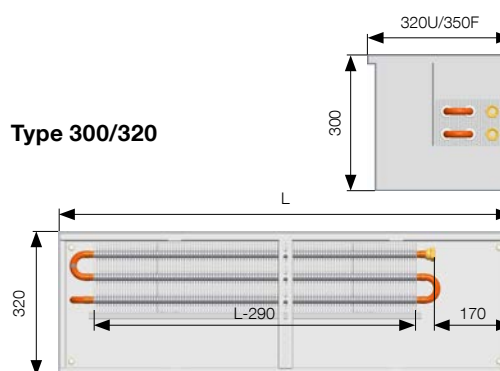
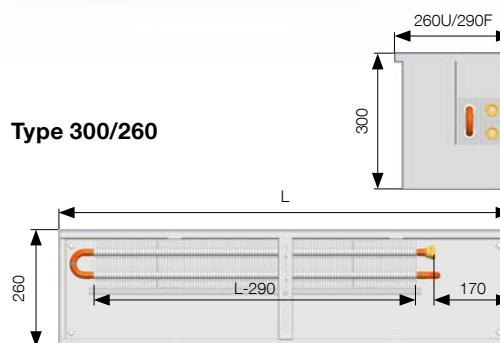
260 320 400



Heat output [W] where $t_1/t_2/t_3$ / EN 16430

Measurements are shown in mm including U-frame.

Length	$t_1/t_2/t_3$ [°C]	Width 260	Width 320	Width 400
800	75/65/20	308	457	559
	55/45/20	144	215	263
900	75/65/20	368	546	669
	55/45/20	173	257	315
1 000	75/65/20	428	636	779
	55/45/20	201	299	367
1 100	75/65/20	489	725	888
	55/45/20	229	341	418
1 200	75/65/20	549	815	998
	55/45/20	258	383	470
1 300	75/65/20	610	904	1107
	55/45/20	286	425	522
1 400	75/65/20	670	994	1217
	55/45/20	314	467	573
1 500	75/65/20	730	1083	1327
	55/45/20	343	509	625
1 600	75/65/20	791	1173	1436
	55/45/20	371	551	677
1 700	75/65/20	851	1262	1546
	55/45/20	399	594	728
1 800	75/65/20	911	1352	1656
	55/45/20	427	636	780
1 900	75/65/20	972	1441	1765
	55/45/20	456	678	832
2 000	75/65/20	1032	1531	1875
	55/45/20	484	720	883
2 100	75/65/20	1092	1621	1985
	55/45/20	512	762	935
2 200	75/65/20	1153	1710	2094
	55/45/20	541	804	987
2 300	75/65/20	1213	1800	2204
	55/45/20	569	846	1038
2 400	75/65/20	1273	1889	2314
	55/45/20	597	888	1090
2 500	75/65/20	1334	1979	2423
	55/45/20	626	930	1142
2 600	75/65/20	1394	2068	2533
	55/45/20	654	972	1193
2 700	75/65/20	1454	2158	2643
	55/45/20	682	1015	1245
2 800	75/65/20	1515	2247	2752
	55/45/20	710	1057	1297
2 900	75/65/20	1575	2337	2862
	55/45/20	739	1099	1348
3 000	75/65/20	1636	2426	2971
	55/45/20	767	1141	1400
Temperature exponent [n]		1.4820	1.4769	1.4734



Measurements in mm.

Measurements shown in mm. Where the F-frame is fitted, both the length and width increase by 30 mm.

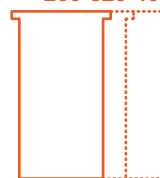
Further information

FK Mounting p. 47, Accessories p. 50, Connections and connection measurements p. 52, Technical data p. 54, Thermal gradient conversion p. 55, Convector pressure losses p. 56, Grilles and frames p. 119–127

KORAFLEX Optimal FKO

depth 450 mm

260 320 400

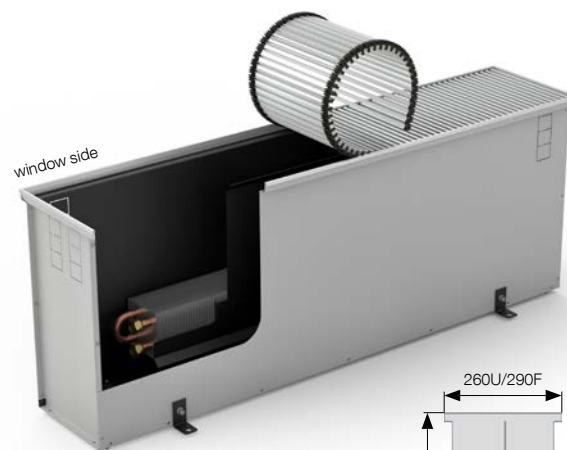


Optimal FKO

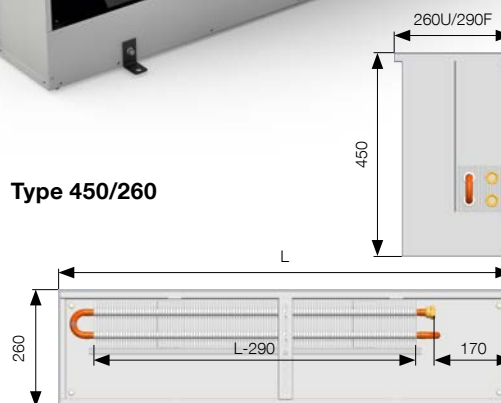
Heat output [W] where $t_1/t_2/t_3$ / EN 16430

Measurements are shown in mm including U-frame.

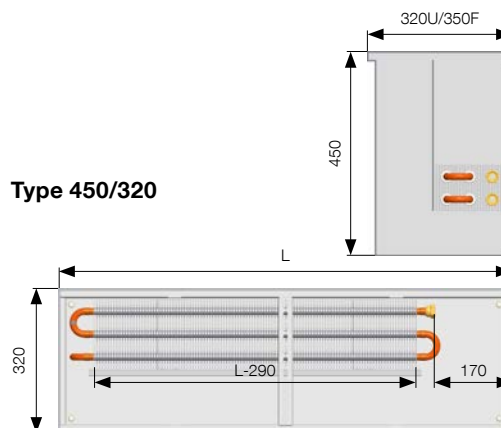
Length	$t_1/t_2/t_3$ [°C]	Width	Width	Width
		260	320	400
800	75/65/20	426	506	655
	55/45/20	202	237	309
900	75/65/20	510	605	783
	55/45/20	242	283	369
1 000	75/65/20	594	704	912
	55/45/20	282	330	430
1 100	75/65/20	677	803	1040
	55/45/20	322	376	490
1 200	75/65/20	761	902	1169
	55/45/20	361	423	551
1 300	75/65/20	845	1001	1297
	55/45/20	401	469	612
1 400	75/65/20	928	1100	1425
	55/45/20	441	515	672
1 500	75/65/20	1012	1199	1554
	55/45/20	480	562	733
1 600	75/65/20	1095	1299	1682
	55/45/20	520	608	793
1 700	75/65/20	1179	1398	1811
	55/45/20	560	655	854
1 800	75/65/20	1263	1497	1939
	55/45/20	599	701	914
1 900	75/65/20	1346	1596	2068
	55/45/20	639	748	975
2 000	75/65/20	1430	1695	2196
	55/45/20	679	794	1035
2 100	75/65/20	1514	1794	2324
	55/45/20	719	840	1096
2 200	75/65/20	1597	1893	2453
	55/45/20	758	887	1157
2 300	75/65/20	1681	1992	2581
	55/45/20	798	933	1217
2 400	75/65/20	1765	2091	2710
	55/45/20	838	980	1278
2 500	75/65/20	1848	2191	2838
	55/45/20	877	1026	1338
2 600	75/65/20	1932	2290	2967
	55/45/20	917	1073	1399
2 700	75/65/20	2015	2389	3095
	55/45/20	957	1119	1459
2 800	75/65/20	2099	2488	3223
	55/45/20	996	1165	1520
2 900	75/65/20	2183	2587	3352
	55/45/20	1036	1212	1580
3 000	75/65/20	2266	2686	3480
	55/45/20	1076	1258	1641
Temperature exponent [n]		1.4575	1.4849	1.4713



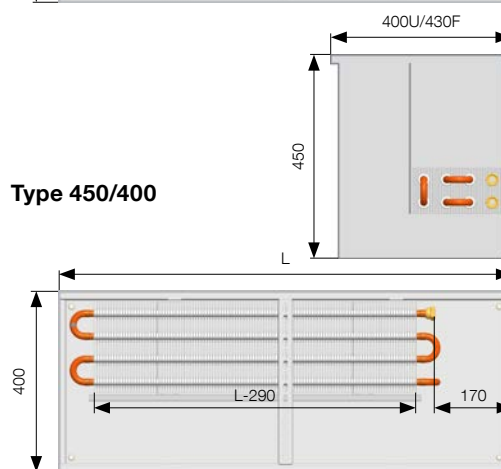
Type 450/260



Type 450/320



Type 450/400



Measurements in mm.

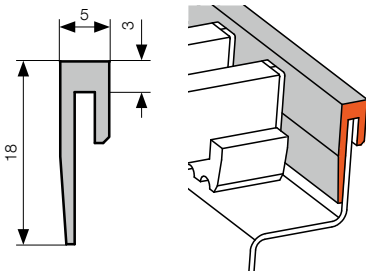
Measurements shown in mm. Where the F-frame is fitted, both the length and width increase by 30 mm.

Further information

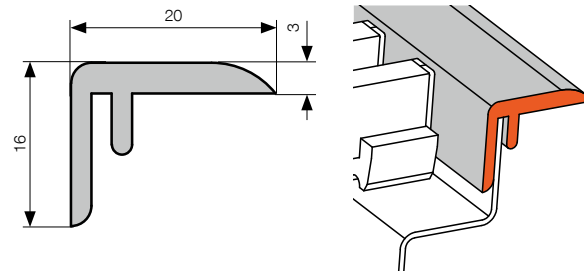
FK Mounting p. 47, Accessories p. 50, Connections and connection measurements p. 52, Technical data p. 54, Thermal gradient conversion p. 55, Convecter pressure losses p. 56, Grilles and frames p. 119–127

FRAMES

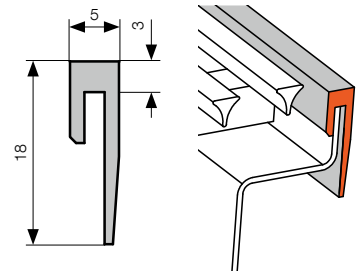
Standard U-frame



Optional F-frame



Optional Cross grille frame (on request)



Measurements in mm.

ORDER CODE



In the order code, always use the measurements in cm including U-frame, as listed in the output table for the respective model.

KORAFLEX	Convection	Optimal	Length (cm)	Depth (cm)	Width (cm)	Heat exchanger type	Heat exchanger colour	Frame	Frame colour	Connection side	Lowered face				
F	K	O	-.../.. / ...	V	counter-flow	1	non-lacquered	U	U-frame	1	silver elox	P	right	0	without lowered face
				P*	single-stream	5	RAL 9005	F	F-frame	2	dark bronze elox	1	lower face – input side		
				0	without heat exchanger	9	other colour RAL	C	for Cross grille	3	light bronze elox	2	lower face – opposite input side		
						0	without heat exchanger	0	without frame	5	black elox	3	both sides lower		
										9	other RAL colour				
										0	without frame				

P* – single-stream heat exchangers are fitted as standard in trench heaters 140 mm wide, depth of 70, 90 and 110 mm only.

Example order code: FKO-100/11/26-V1U1P0

KORAFLEX trench heater with natural convection, Optimal model, length 100 cm, depth 11 cm, width 26 cm, counter-flow non-lacquered heat exchanger, U-frame silver elox, right-hand connection to heating system, without lowered face.



Where a left-hand connection to the heating system is required, rotate the heat exchanger in the trench heater by 180°.



Cross grille – design solutions – Note, please, that Cross grilles must be ordered together with trench heaters, as the casing must undergo alternation. These trench heaters will be fitted with Cross frame suitable for Cross grille. For more information – see p. 128.



For a summary and description of grilles available, including order codes, see p. 119–127.



*KORAFLEX fitted with aluminium grille
and F-frame, silver elox*

KORAFLEX Thin FKT

Trench heater with lowest unit height

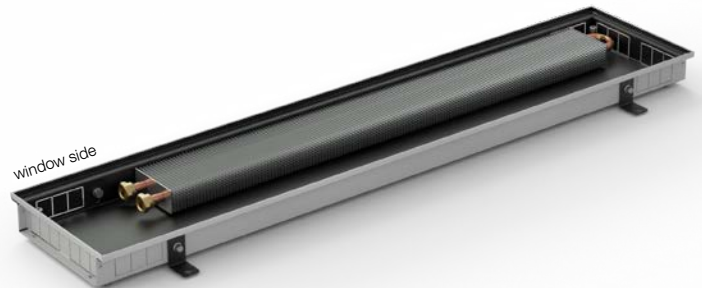


KORAFLEX Thin FKT

Specifications

Depth	60 mm
Width	140, 200, 260, 320 mm
Length	800 to 3 000 mm (by 100 mm)
Heat output	from 43 to 644 W
Max. operating pressure	1.2 MPa
Max. operating temperature	110 °C
Connecting thread	inner G 1/2"

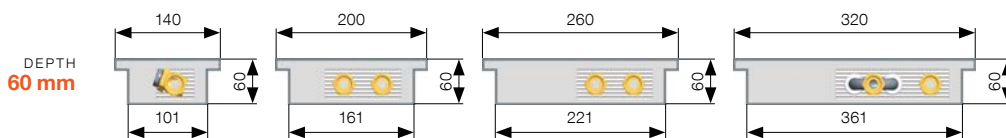
KORAFLEX Thin FKT is a trench heater **with lowest unit height**. It is particularly suited to interiors with low floor depth, and as a secondary heating unit for shielding cold from French windows.



Thin
FKT

ECONOMIC version – basic version, black lacquered galvanized steel casing, non-lacquered heat exchanger

EXCLUSIVE version – black lacquered galvanized steel casing, RAL 9005 black lacquered heat exchanger



The given widths of trench heaters are identical for both models fitted with frames for Thin or Cross grilles.

Standard contents

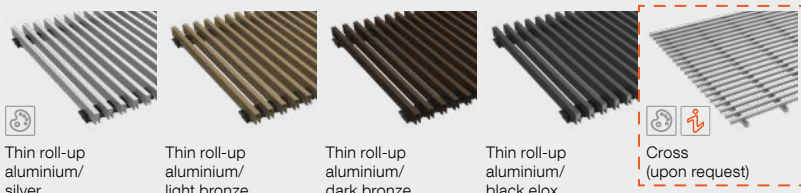
- RAL 9005 black lacquered galvanized steel casing
- Economic – non-lacquered Al/Cu heat exchanger with bleed valve
- Exclusive – RAL 9005 black lacquered Al/Cu heat exchanger with bleed valve
- aluminium frame for Thin grille, silver elox
- metal cover plate
- levelling set screws and 4 anchors
- spacers for correct installation and concreting
- hardboard cover to protect trench heater from contamination
- durable packaging, installation instructions

Optional accessories

- Thin or Cross grille
- Cross grille – design solutions – necessary to order together with trench heater – for more information, see p. 125
- silver, light/dark bronze and black elox or RAL colour chart lacquered aluminium frame for Thin grille
- thermostatic head with incorporated control and immersion remote sensor
- 24 V DC power supply
- 24 V DC or 230 V AC room thermostat for regulation
- 24 V DC or 230 V AC thermoelectric actuator, cable length 2.5 m or 5 m
- lockshield, thermostatic valve
- 1/2" x 1/2" 90° brass elbow for connection facilitation
- 10, 12 or 30 cm flexible stainless steel hose
- strengthened OSB cover for installation purposes

For more information about optional accessories and order codes, see p. 50

Suitable grilles



Thin roll-up aluminium/silver

Thin roll-up aluminium/light bronze

Thin roll-up aluminium/dark bronze

Thin roll-up aluminium/black elox

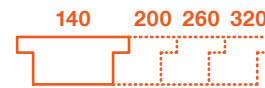
Cross (upon request)



Thin trench heaters may only be fitted with Thin grilles, and after casing modifications Cross grilles. No other grilles are available for this range.

Descriptions of individual Thin and Cross grille types and order codes can be found on p. 124–125.

Alterations to technical specifications reserved.

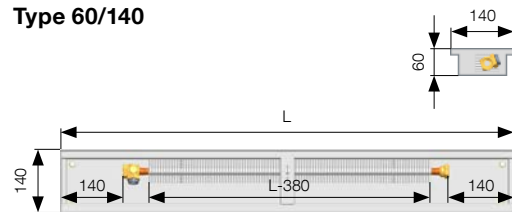


Heat output [W] where $t_1/t_2/t_3$ / EN 16430

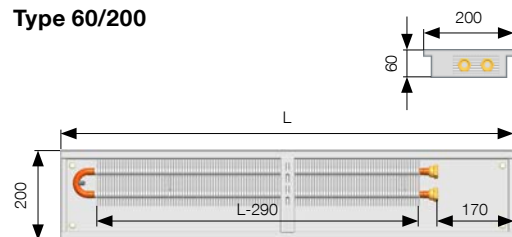
Measurements are shown in mm including Thin-frame.

Length	$t_1/t_2/t_3$ [°C]	Width 140	Width 200	Width 260	Width 320
800	75/65/20	43	87	100	114
	55/45/20	22	39	40	48
900	75/65/20	53	104	120	138
	55/45/20	27	47	48	58
1 000	75/65/20	63	121	140	162
	55/45/20	32	55	56	69
1 100	75/65/20	73	138	159	186
	55/45/20	38	62	64	79
1 200	75/65/20	83	155	179	210
	55/45/20	43	70	71	89
1 300	75/65/20	93	172	198	234
	55/45/20	48	78	79	99
1 400	75/65/20	103	189	218	258
	55/45/20	53	85	87	110
1 500	75/65/20	113	206	238	282
	55/45/20	58	93	95	120
1 600	75/65/20	124	223	257	307
	55/45/20	64	101	103	130
1 700	75/65/20	134	240	277	331
	55/45/20	69	108	111	140
1 800	75/65/20	144	257	297	355
	55/45/20	74	116	118	150
1 900	75/65/20	154	274	316	379
	55/45/20	79	124	126	161
2 000	75/65/20	164	291	336	403
	55/45/20	84	131	134	171
2 100	75/65/20	174	308	356	427
	55/45/20	90	139	142	181
2 200	75/65/20	184	325	375	451
	55/45/20	95	147	150	191
2 300	75/65/20	194	342	395	475
	55/45/20	100	155	158	202
2 400	75/65/20	204	359	415	499
	55/45/20	105	162	166	212
2 500	75/65/20	215	376	434	524
	55/45/20	111	170	173	222
2 600	75/65/20	225	393	454	548
	55/45/20	116	178	181	232
2 700	75/65/20	235	410	474	572
	55/45/20	121	185	189	243
2 800	75/65/20	245	427	493	596
	55/45/20	126	193	197	253
2 900	75/65/20	255	444	513	620
	55/45/20	131	201	205	263
3 000	75/65/20	265	461	532	644
	55/45/20	137	208	213	273
Temperature exponent [n]		1.3030	1.5552	1.7953	1.6785

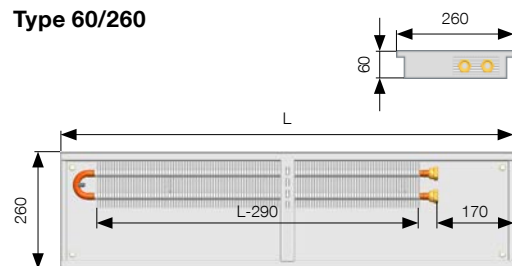
Type 60/140



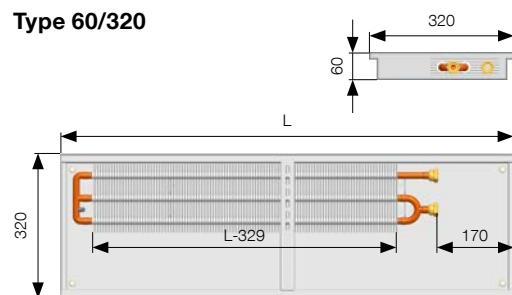
Type 60/200



Type 60/260



Type 60/320



Measurements in mm.

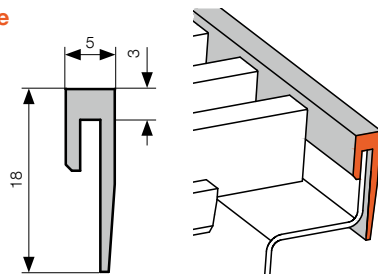
Measurements shown in mm. The given widths of trench heaters are identical for both models fitted with Thin or Cross grille frames.

Further information

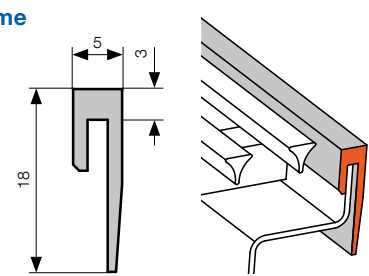
FK Mounting p. 47, Accessories p. 50, Connections and connection measurements p. 52, Technical data p. 54, Thermal gradient conversion p. 55, Convector pressure losses p. 56, Grilles and frames p. 119–127

FRAMES

Standard Thin grille frame



Optional Cross grille frame (upon request)



Measurements in mm.

Thin
FKT

ORDER CODE



In the order code, always use the measurements in cm including Thin-frame, as listed in the output table for the respective model.

KORAFLEX	Convection	Thin	Length (cm)	Depth (cm)	Width (cm)	Heat exchanger type	Heat exchanger colour	Frame	Frame colour	Connection side	Lowered face
F	K	T	-.../../..-			V counter-flow P* single-stream 0 without heat exchanger	1 non-lacquered 5 RAL 9005 9 other colour RAL 0 without heat exchanger	T for Thin grille C for Cross grille 0 without frame	1 silver elox 2 dark bronze elox 3 light bronze elox 5 black elox 9 other RAL colour 0 without frame	P right	0 without lowered face 1 lower face – input side 2 lower face – opposite input side 3 both sides lower

P* – single-stream heat exchangers are fitted as standard in trench heaters 140 mm wide.

Example order code: **FKT-100/06/20-V1T1P0**

KORAFLEX trench heater with natural convection, Thin model, length 100 cm, depth 6 cm, width 20 cm, non-lacquered heat exchanger, T-frame for Thin grille, silver elox, right-hand connection to heating system, without lowered face.



Where a left-hand connection to the heating system is required, rotate the heat exchanger in the trench heater by 180°.



The design of trench heater casing does not allow substituting Thin and Cross grilles after ordering. Note, please, that grilles must be ordered together with the trench heaters, as the casing must undergo alternation.



Thin grilles are not available in linear design.



Descriptions of individual Thin and Cross grille types and order codes can be found on p. 124–125.

KORAFLEX Basic FKB

Economic variant of best-selling dimensions of trench heaters

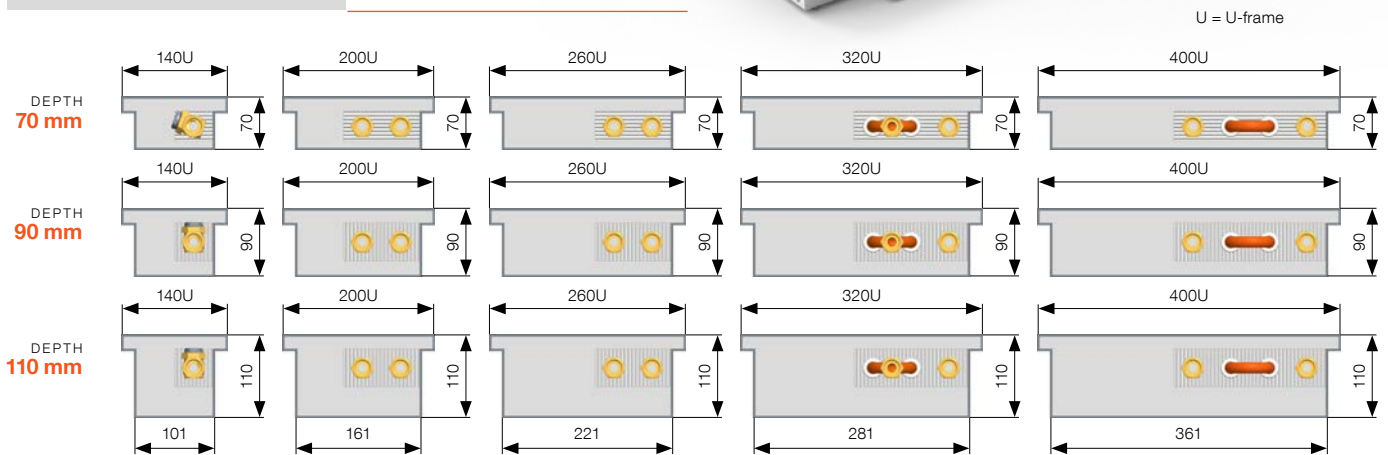
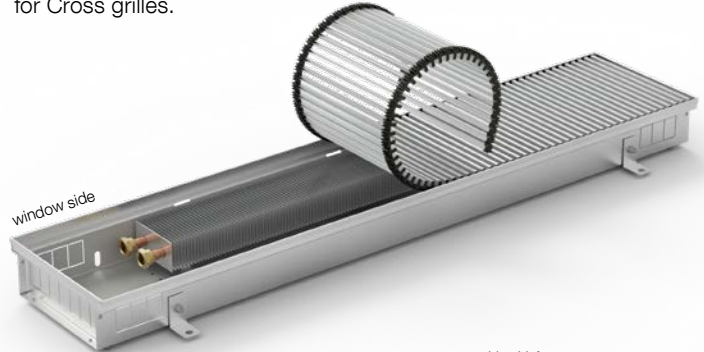


KORAFLEX Basic FKB

Specifications

Depth	70, 90, 110 mm
Width	140, 200, 260, 320, 400 mm
Length	800 to 3 000 mm (by 100 mm)
Heat output	from 41 to 1 739 W
Max. operating pressure	1.2 MPa
Max. operating temperature	110 °C
Connecting thread	inner G ½"

KORAFLEX Basic FKB is an economic variant of trench heater ideal for project solutions. Manufactured from non-lacquered hot-dip galvanized steel and fitted with silver elox U-frames or frames suitable for Cross grilles.



Standard contents

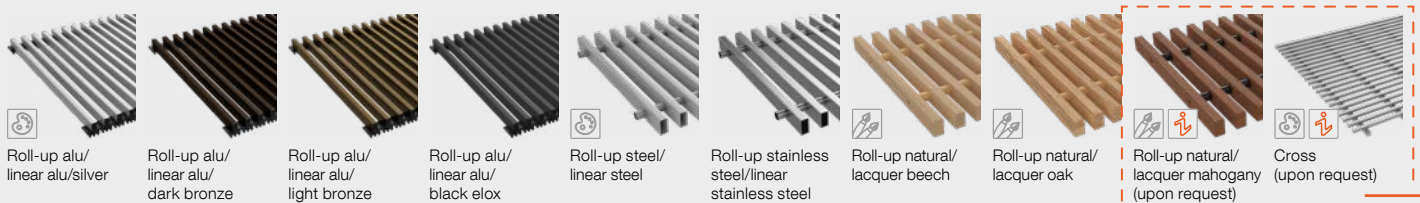
- hot-dip galvanized steel casing, non-lacquered
- non-lacquered Al/Cu heat exchanger with bleed valve
- aluminium U-frame, silver elox
- metal cover plate
- levelling set screws and 4 anchors
- spacers for correct installation and concreting
- hardboard cover to protect trench heater from contamination
- durable packaging, installation instructions

Optional accessories

- Choice of grilles – suitable types - see the bottom of the page
- Cross grille – design solutions – necessary to order together with trench heater – for more information, see p. 125
- light/dark bronze and black elox or RAL colour chart lacquered aluminium U-frame
- silver, light/dark bronze and black elox or RAL colour chart lacquered aluminium F-frame
- thermostatic head with incorporated control and immersion remote sensor
- 24 V DC power supply
- 24 V DC or 230 V AC room thermostat for regulation
- 24 V DC or 230 V AC thermoelectric actuator, cable length 2.5 m or 5 m
- raised floor structural supports
- lockshield, thermostatic valve
- ½" x ½" 90° brass elbow for connection facilitation
- 10, 12 or 30cm flexible stainless steel hose
- strengthened OSB cover for installation

For more information about optional accessories and order codes, see p. 50

Suitable grilles



For a summary and description of grilles available, including order codes, see p. 119–127.



Heat output [W] where $t_1/t_2/t_3$ / EN 16430

Measurements are shown in mm including U-frame.

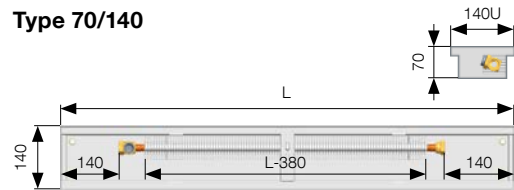
Length	$t_1/t_2/t_3$ [°C]	Width	Width	Width	Width	Width
		140	200	260	320	400
800	75/65/20	41	76	90	103	131
	55/45/20	20	36	40	46	60
900	75/65/20	51	91	108	124	157
	55/45/20	24	43	47	56	72
1 000	75/65/20	61	105	126	146	183
	55/45/20	29	50	55	66	84
1 100	75/65/20	71	120	144	168	208
	55/45/20	34	57	63	76	96
1 200	75/65/20	81	135	161	190	234
	55/45/20	38	64	71	86	108
1 300	75/65/20	91	150	179	212	260
	55/45/20	43	71	78	95	119
1 400	75/65/20	101	165	197	233	286
	55/45/20	48	78	86	105	131
1 500	75/65/20	111	180	214	255	311
	55/45/20	52	85	94	115	143
1 600	75/65/20	120	195	232	277	337
	55/45/20	57	92	102	125	155
1 700	75/65/20	130	209	250	299	363
	55/45/20	62	99	109	135	167
1 800	75/65/20	140	224	268	320	389
	55/45/20	66	106	117	145	178
1 900	75/65/20	150	239	285	342	414
	55/45/20	71	113	125	154	190
2 000	75/65/20	160	254	303	364	440
	55/45/20	76	120	133	164	202
2 100	75/65/20	170	269	321	386	466
	55/45/20	81	127	140	174	214
2 200	75/65/20	180	284	338	408	491
	55/45/20	85	134	148	184	226
2 300	75/65/20	190	299	356	429	517
	55/45/20	90	141	156	194	238
2 400	75/65/20	200	313	374	451	543
	55/45/20	95	148	164	204	249
2 500	75/65/20	209	328	392	473	569
	55/45/20	99	156	171	213	261
2 600	75/65/20	219	343	409	495	594
	55/45/20	104	163	179	223	273
2 700	75/65/20	229	358	427	516	620
	55/45/20	109	170	187	233	285
2 800	75/65/20	239	373	445	538	646
	55/45/20	113	177	195	243	297
2 900	75/65/20	249	388	462	560	672
	55/45/20	118	184	202	253	309
3 000	75/65/20	259	403	480	582	697
	55/45/20	123	191	210	263	320

Temperature exponent [n] **1.4629 1.4587 1.6148 1.5550 1.5235**

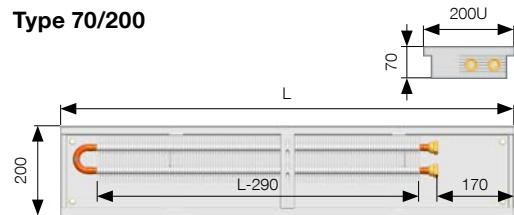
Further information

FK Mounting p. 47, Accessories p. 50, Connections and connection measurements p. 52, Technical data p. 54, Thermal gradient conversion p. 55, Convector pressure losses p. 56, Grilles and frames p. 119–127

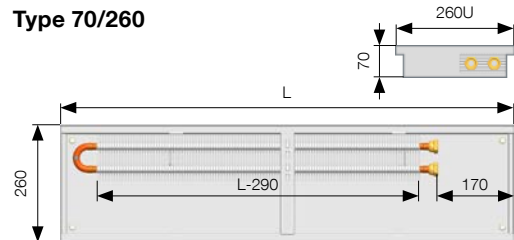
Type 70/140



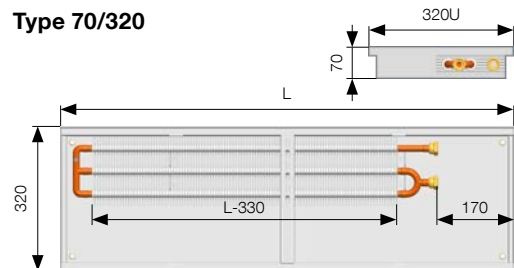
Type 70/200



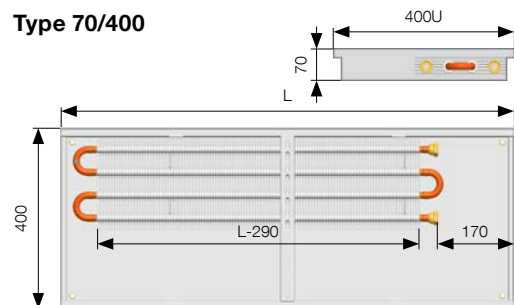
Type 70/260



Type 70/320

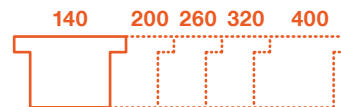


Type 70/400



Measurements in mm.

Measurements shown in mm. The given widths of trench heaters are identical for both models fitted with U- or Cross grille frames.



Heat output [W] where $t_1/t_2/t_3$ / EN 16430

Measurements are shown in mm including U-frame.

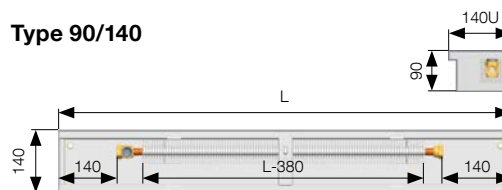
Length	$t_1/t_2/t_3$ [°C]	Width	Width	Width	Width	Width
		140	200	260	320	400
800	75/65/20	50	120	153	195	275
	55/45/20	23	55	69	93	130
900	75/65/20	62	143	183	236	329
	55/45/20	29	65	82	112	156
1 000	75/65/20	74	167	213	278	383
	55/45/20	34	76	96	132	181
1 100	75/65/20	86	190	243	319	437
	55/45/20	40	87	109	151	207
1 200	75/65/20	98	214	273	361	490
	55/45/20	45	98	123	171	233
1 300	75/65/20	110	237	303	402	544
	55/45/20	51	108	136	191	258
1 400	75/65/20	122	261	333	444	598
	55/45/20	56	119	150	210	284
1 500	75/65/20	134	284	363	485	652
	55/45/20	62	130	163	230	309
1 600	75/65/20	146	308	393	526	706
	55/45/20	67	141	177	250	335
1 700	75/65/20	158	331	423	568	760
	55/45/20	73	151	190	269	360
1 800	75/65/20	170	355	453	609	814
	55/45/20	78	162	204	289	386
1 900	75/65/20	182	378	483	651	868
	55/45/20	84	173	217	309	411
2 000	75/65/20	194	402	513	692	922
	55/45/20	89	183	231	328	437
2 100	75/65/20	206	426	543	733	976
	55/45/20	95	194	244	348	463
2 200	75/65/20	218	449	573	775	1029
	55/45/20	100	205	258	368	488
2 300	75/65/20	230	473	603	816	1083
	55/45/20	106	216	271	387	514
2 400	75/65/20	242	496	633	858	1137
	55/45/20	111	226	285	407	539
2 500	75/65/20	254	520	663	899	1191
	55/45/20	117	237	298	426	565
2 600	75/65/20	266	543	693	940	1245
	55/45/20	122	248	311	446	590
2 700	75/65/20	278	567	723	982	1299
	55/45/20	128	258	325	466	616
2 800	75/65/20	290	590	753	1023	1353
	55/45/20	133	269	338	485	641
2 900	75/65/20	302	614	783	1065	1407
	55/45/20	139	280	352	505	667
3 000	75/65/20	314	637	813	1106	1461
	55/45/20	144	291	365	525	693

Temperature exponent [n] **1.5247 1.5373 1.5643 1.4599 1.4607**

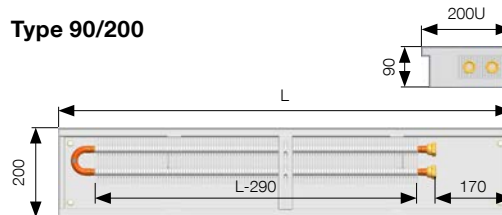
Further information

FK Mounting p. 47, Accessories p. 50, Connections and connection measurements p. 52, Technical data p. 54, Thermal gradient conversion p. 55, Convector pressure losses p. 56, Grilles and frames p. 119–127

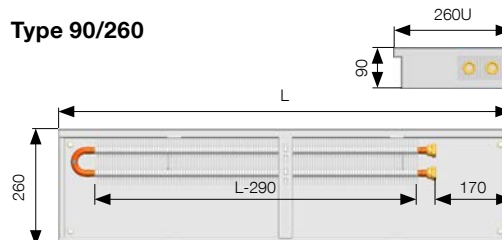
Type 90/140



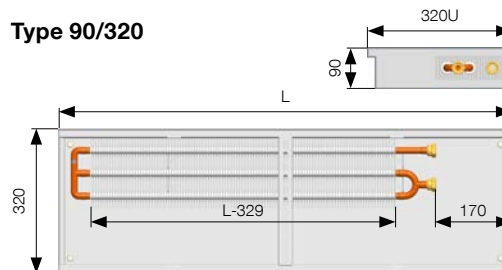
Type 90/200



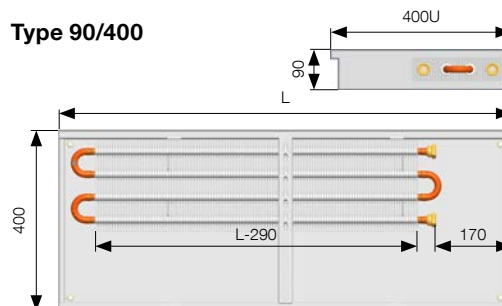
Type 90/260



Type 90/320



Type 90/400

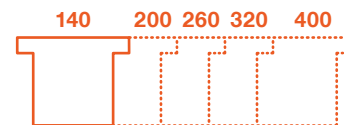


Measurements in mm.

Measurements shown in mm. The given widths of trench heaters are identical for both models fitted with U- or Cross grille frames.

KORAFLEX Basic FKB

depth 110 mm



Heat output [W] where $t_1/t_2/t_3$ / EN 16430

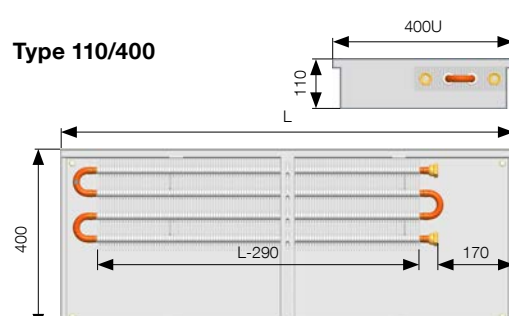
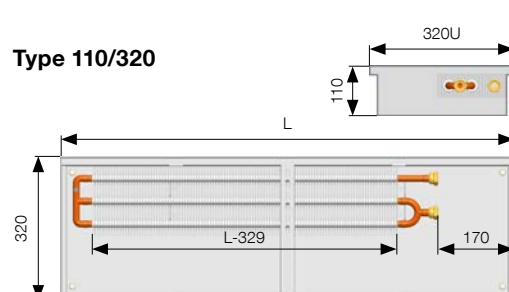
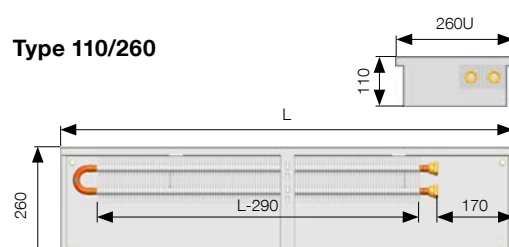
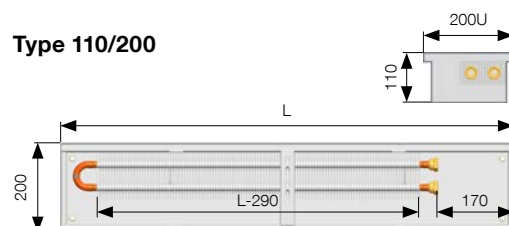
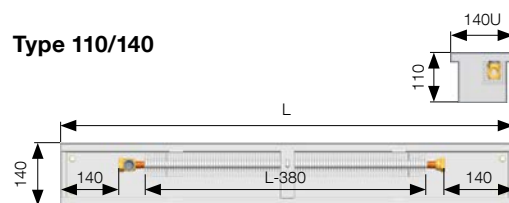
Measurements are shown in mm including U-frame.

Length	$t_1/t_2/t_3$ [°C]	Width	Width	Width	Width	Width
		140	200	260	320	400
800	75/65/20	56	142	184	237	327
	55/45/20	26	67	88	112	155
900	75/65/20	69	170	221	287	391
	55/45/20	32	80	106	136	186
1 000	75/65/20	82	198	257	338	456
	55/45/20	38	93	123	160	216
1 100	75/65/20	95	226	293	388	520
	55/45/20	44	106	140	184	247
1 200	75/65/20	108	254	329	438	584
	55/45/20	51	119	158	208	277
1 300	75/65/20	122	282	365	489	648
	55/45/20	57	133	175	232	308
1 400	75/65/20	135	309	401	539	712
	55/45/20	63	146	192	255	338
1 500	75/65/20	148	337	438	589	776
	55/45/20	69	159	210	279	369
1 600	75/65/20	161	365	474	640	841
	55/45/20	75	172	227	303	399
1 700	75/65/20	175	393	510	690	905
	55/45/20	82	185	244	327	430
1 800	75/65/20	188	421	546	740	969
	55/45/20	88	198	262	351	460
1 900	75/65/20	201	449	582	791	1033
	55/45/20	94	211	279	375	491
2 000	75/65/20	214	477	618	841	1097
	55/45/20	100	225	296	398	521
2 100	75/65/20	227	505	655	891	1161
	55/45/20	106	238	314	422	552
2 200	75/65/20	241	532	691	942	1226
	55/45/20	112	251	331	446	582
2 300	75/65/20	254	560	727	992	1290
	55/45/20	119	264	348	470	613
2 400	75/65/20	267	588	763	1042	1354
	55/45/20	125	277	366	494	643
2 500	75/65/20	280	616	799	1093	1418
	55/45/20	131	290	383	518	674
2 600	75/65/20	294	644	835	1143	1482
	55/45/20	137	303	400	542	704
2 700	75/65/20	307	672	872	1193	1546
	55/45/20	143	316	418	565	735
2 800	75/65/20	320	700	908	1244	1611
	55/45/20	149	330	435	589	765
2 900	75/65/20	333	728	944	1294	1675
	55/45/20	156	343	452	613	795
3 000	75/65/20	346	755	980	1344	1739
	55/45/20	162	356	470	637	826

Temperature exponent [n] 1.4888 1.4739 1.4385 1.4622 1.4569

Further information

FK Mounting p. 47, Accessories p. 50, Connections and connection measurements p. 52, Technical data p. 54, Thermal gradient conversion p. 55, Convecter pressure losses p. 56, Grilles and frames p. 119–127

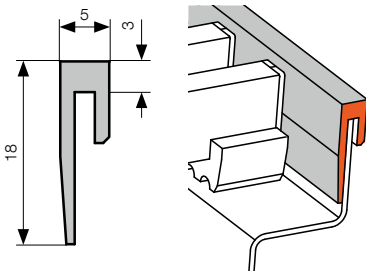


Measurements in mm.

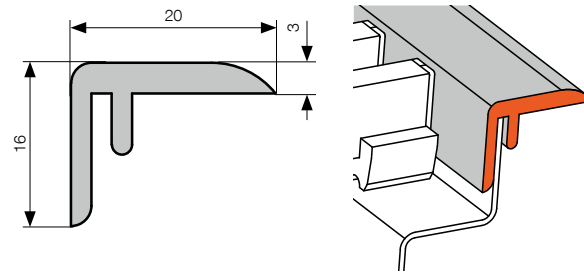
Measurements shown in mm. The given widths of trench heaters are identical for both models fitted with U- or Cross grille frames.

FRAMES

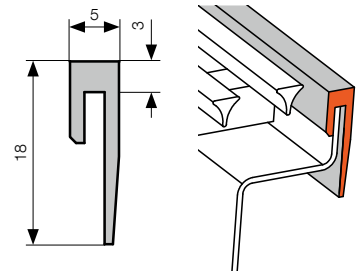
Standard U-frame



Optional F-frame



Optional Cross grille frame (on request)



Measurements in mm.

ORDER CODE



In the order code, always use the measurements in cm including U-frame, as listed in the output table for the respective model.

KORAFLEX	Convection	Basic	Length (cm)	Depth (cm)	Width (cm)	Heat exchanger type	Heat exchanger colour	Frame	Frame colour	Connection side	Lowered face
F	K	B	-.../.../...			V counter-flow P* single-stream 0 without heat exchanger	1 non-lacquered 0 without heat exchanger	U U-frame F F-frame C for Cross grille 0 without frame	1 silver elox 2 dark bronze elox 3 light bronze elox 5 black elox 9 other RAL colour 0 without frame	P right	0 without lowered face 1 lower face – input side 2 lower face – opposite input side 3 both sides lower

P* – single-stream heat exchangers are fitted as standard in trench heaters 140 mm wide, depth of 70, 90 and 110 mm only.

Example order code: FKB-100/11/26-V1U1P0

KORAFLEX trench heater with natural convection, Basic model, length 100 cm, depth 11 cm, width 26 cm, counter-flow non-lacquered heat exchanger, U-frame, silver elox, right-hand connection to heating system, without lowered face.



Where a left-hand connection to the heating system is required, rotate the heat exchanger in the trench heater by 180°.



For a summary and description of grilles available, including order codes, see p. 119–127.



Cross grille – design solutions – Note, please, that Cross grilles must be ordered together with trench heaters, as the casing must undergo alternation. These trench heaters will be fitted with Cross frame suitable for Cross grille. For more information – see p. 125.

KORAFLEX Pool FKP

Trench heaters suitable for humid environments



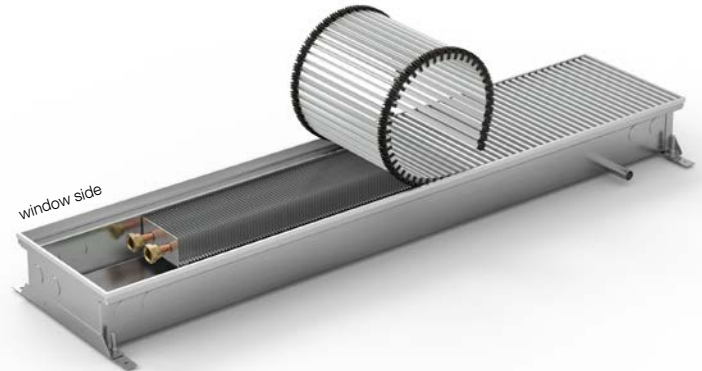
KORAFLEX Pool FKP

Specifications

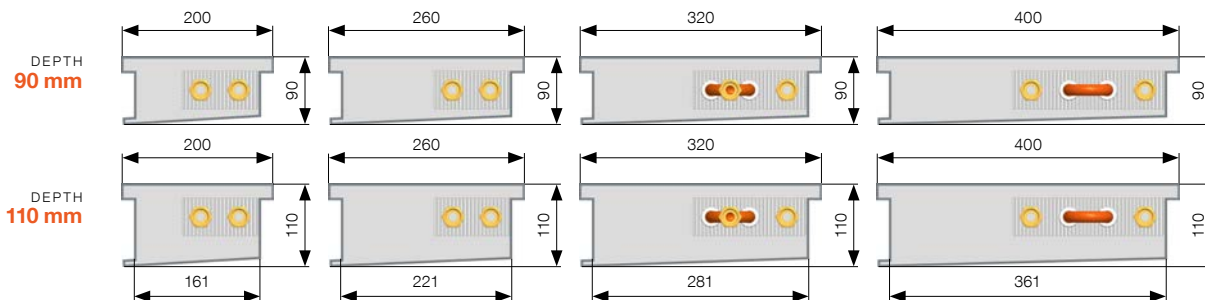
Depth	90, 110 mm
Width	200, 260, 320, 400 mm
Length	800 to 3 000 mm (by 100 mm)
Heat output	from 120 to 1 739 W
Max. operating pressure	1.2 MPa
Max. operating temperature	110 °C
Connecting thread	inner G ½"

KORAFLEX Pool FKP trench heaters are suitable for installation in humid environments. Fitted with built-in drainage and sloping base. However, these trench heaters are not watertight and must not be flooded for long periods. For ideal operating conditions we recommend using water with a pH of 7.2 – 7.6, with a maximum chlorine content of 1mg/l. Changes in these values – in particular lower pH values – will result in more aggressive water and corrosion of non-stainless steel components. Pool trench heaters installed in

KORAFLEX Pool FKP is manufactured from AISI 316 stainless is ideal for humid environments. **The Pool convector is finished with a hem, therefore no frames can be fitted.**



humid environments must be cleaned regularly with clean water and dried thoroughly. In case of visible calcareous deposits or oxidation, use a stainless steel cleaner followed by a suitable metal treatment product. **For long-term satisfaction it is essential that basic maintenance of the stainless steel components is carried out.** Further information can be found in the installation manual and Operating and warranty conditions, available to download at www.licon.cz.



Standard contents

- AISI 316 stainless steel casing, non-lacquered
- Al/Cu RAL 9006 grey lacquered heat exchanger with bleed valve
- frame substituted by casing edges finished with hem
- AISI 316 stainless steel cover plate
- levelling set screws and 4 anchors
- hardboard cover to protect trench heater from contamination
- durable packaging, installation instructions



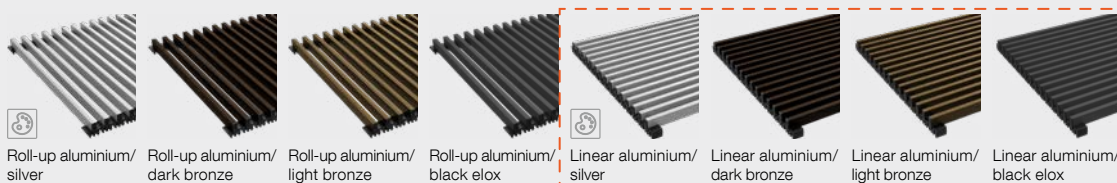
Unsuitable for salt water pools.

Optional accessories

- choice of grilles
- thermostatic head with incorporated control and immersion remote sensor
- 24 V DC power supply
- 24 V DC room thermostat for regulation
- 24 V DC thermoelectric actuator, cable length 2.5 m or 5 m
- lockshield, thermostatic valve
- ½" x ½" 90° brass elbow for connection facilitation
- 10, 12 or 30 cm flexible stainless steel hose
- strengthened OSB cover for installation purposes

For more information about optional accessories and order codes, see p. 50

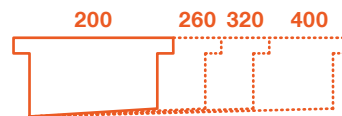
Suitable grilles



Where a linear grille is selected, technical consultation is necessary, as the casing may need to undergo alteration. Note, please, that linear grilles must be ordered together with trench heaters.

KORAFLEX Pool FKP

depth 90 mm

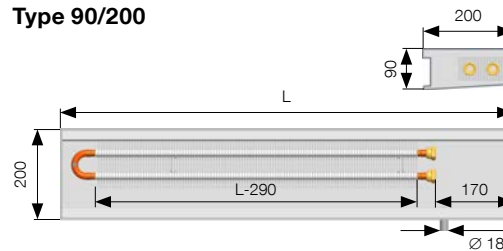


Heat output [W] where $t_1/t_2/t_3$ / EN 16430

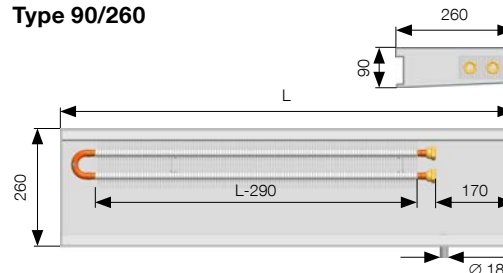
Measurements are shown in mm including hem.

Length	$t_1/t_2/t_3$ [°C]	Width 200	Width 260	Width 320	Width 400
800	75/65/20	120	153	195	275
	55/45/20	55	69	93	130
900	75/65/20	143	183	236	329
	55/45/20	65	82	112	156
1 000	75/65/20	167	213	278	383
	55/45/20	76	96	132	181
1 100	75/65/20	190	243	319	437
	55/45/20	87	109	151	207
1 200	75/65/20	214	273	361	490
	55/45/20	98	123	171	233
1 300	75/65/20	237	303	402	544
	55/45/20	108	136	191	258
1 400	75/65/20	261	333	444	598
	55/45/20	119	150	210	284
1 500	75/65/20	284	363	485	652
	55/45/20	130	163	230	309
1 600	75/65/20	308	393	526	706
	55/45/20	141	177	250	335
1 700	75/65/20	331	423	568	760
	55/45/20	151	190	269	360
1 800	75/65/20	355	453	609	814
	55/45/20	162	204	289	386
1 900	75/65/20	378	483	651	868
	55/45/20	173	217	309	411
2 000	75/65/20	402	513	692	922
	55/45/20	183	231	328	437
2 100	75/65/20	426	543	733	976
	55/45/20	194	244	348	463
2 200	75/65/20	449	573	775	1029
	55/45/20	205	258	368	488
2 300	75/65/20	473	603	816	1083
	55/45/20	216	271	387	514
2 400	75/65/20	496	633	858	1137
	55/45/20	226	285	407	539
2 500	75/65/20	520	663	899	1191
	55/45/20	237	298	426	565
2 600	75/65/20	543	693	940	1245
	55/45/20	248	311	446	590
2 700	75/65/20	567	723	982	1299
	55/45/20	258	325	466	616
2 800	75/65/20	590	753	1023	1353
	55/45/20	269	338	485	641
2 900	75/65/20	614	783	1065	1407
	55/45/20	280	352	505	667
3 000	75/65/20	637	813	1106	1461
	55/45/20	291	365	525	693
Temperature exponent [n]		1.5373	1.5643	1.4599	1.4607

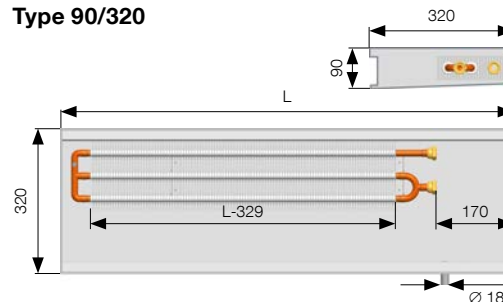
Type 90/200



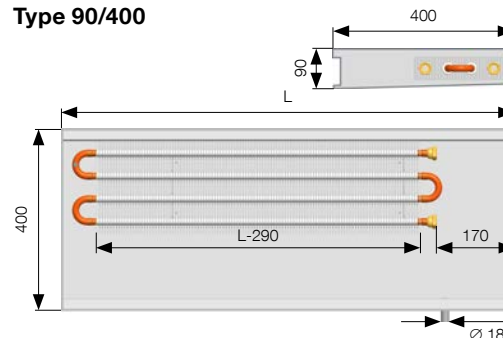
Type 90/260



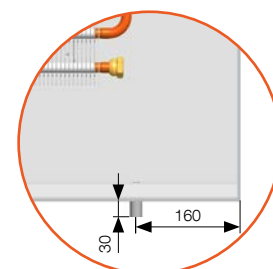
Type 90/320



Type 90/400

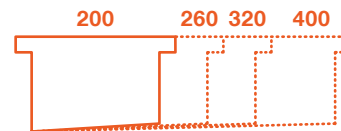


Trench heater widths are shown in mm, including hem.



KORAFLEX Pool FKP

depth 110 mm

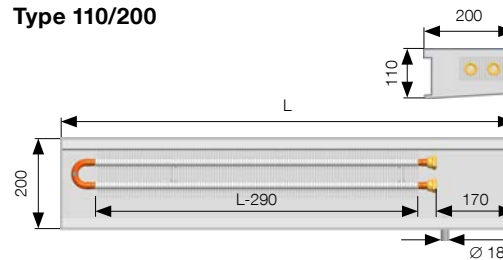


Heat output [W] where $t_1/t_2/t_3$ / EN 16430

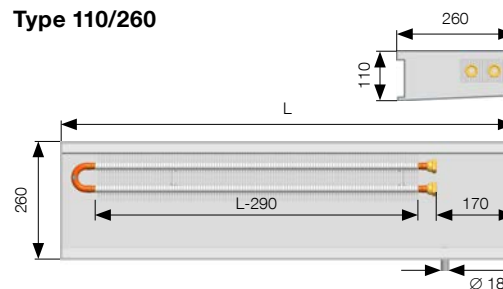
Measurements are shown in mm including hem.

Length	$t_1/t_2/t_3$ [°C]	Width 200	Width 260	Width 320	Width 400
800	75/65/20	142	184	237	327
	55/45/20	67	88	112	155
900	75/65/20	170	221	287	391
	55/45/20	80	106	136	186
1 000	75/65/20	198	257	338	456
	55/45/20	93	123	160	216
1 100	75/65/20	226	293	388	520
	55/45/20	106	140	184	247
1 200	75/65/20	254	329	438	584
	55/45/20	119	158	208	277
1 300	75/65/20	282	365	489	648
	55/45/20	133	175	232	308
1 400	75/65/20	309	401	539	712
	55/45/20	146	192	255	338
1 500	75/65/20	337	438	589	776
	55/45/20	159	210	279	369
1 600	75/65/20	365	474	640	841
	55/45/20	172	227	303	399
1 700	75/65/20	393	510	690	905
	55/45/20	185	244	327	430
1 800	75/65/20	421	546	740	969
	55/45/20	198	262	351	460
1 900	75/65/20	449	582	791	1033
	55/45/20	211	279	375	491
2 000	75/65/20	477	618	841	1097
	55/45/20	225	296	398	521
2 100	75/65/20	505	655	891	1161
	55/45/20	238	314	422	552
2 200	75/65/20	532	691	942	1226
	55/45/20	251	331	446	582
2 300	75/65/20	560	727	992	1290
	55/45/20	264	348	470	613
2 400	75/65/20	588	763	1042	1354
	55/45/20	277	366	494	643
2 500	75/65/20	616	799	1093	1418
	55/45/20	290	383	518	674
2 600	75/65/20	644	835	1143	1482
	55/45/20	303	400	542	704
2 700	75/65/20	672	872	1193	1546
	55/45/20	316	418	565	735
2 800	75/65/20	700	908	1244	1611
	55/45/20	330	435	589	765
2 900	75/65/20	728	944	1294	1675
	55/45/20	343	452	613	795
3 000	75/65/20	755	980	1344	1739
	55/45/20	356	470	637	826
Temperature exponent [n]		1.4739	1.4385	1.4622	1.4569

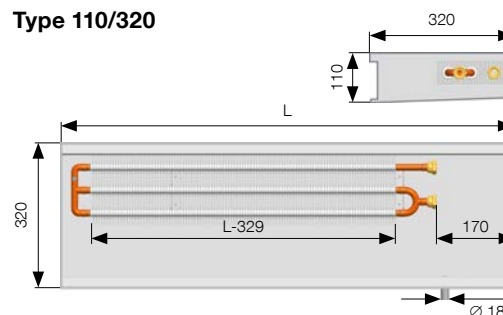
Type 110/200



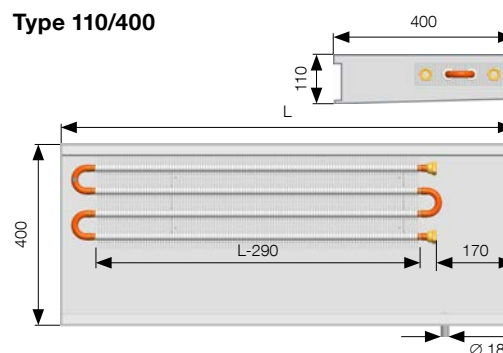
Type 110/260



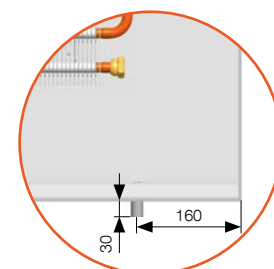
Type 110/320



Type 110/400



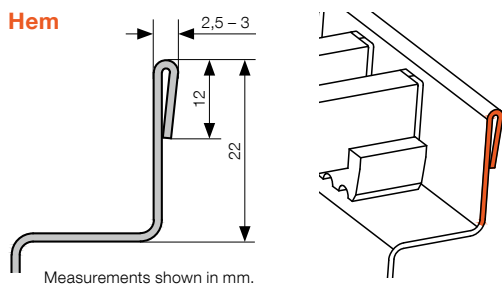
Trench heater widths are shown in mm, including hem.



Further information

FK Mounting p. 47, Accessories p. 50, Connections and connection measurements p. 52, Technical data p. 54, Thermal gradient conversion p. 55, Convector pressure losses p. 56, Grilles and frames p. 119–127

HEM FINISHING



ORDER CODE



In the order code, always use the measurements in cm including hem, as listed in the output table for the respective model.

KORAFLEX	Convection	Pool	Length (cm)	Depth (cm)	Width (cm)	Heat exchanger type	Heat exchanger colour	Frame	Frame colour	Connection side	Lowered face
F	K	P	-.../.../...-			V counter-flow 0 without heat exchanger	6 RAL 9006 lacquer 0 without heat exchanger	P hem	0 without frame	P right	0 without lowered face

Example order code: FKP-100/11/26-V6P0P0

KORAFLEX trench heater with natural convection, Pool model, length 100cm, depth 11cm, width 26cm, counter-flow RAL 9006 grey lacquered heat exchanger, finished with hem, right-hand connection to heating system, without lowered face.



Where a left-hand connection to the heating system is required, rotate the heat exchanger in the trench heater by 180°.



Individual KORAFLEX Pool trench heater casings can not be combined into multiple series, and are manufactured solely as PO models, frame substituted with hem, with counter-flow heat exchangers. See p. 49.



Where a linear grille is selected, technical consultation is necessary, as the casing may need to undergo alteration. Note, please, that linear grilles must be ordered together with trench heaters.



For a summary and description of grilles available, including order codes, see p. 120.



KORAFLEX fitted with lateral aluminium silver elox grille

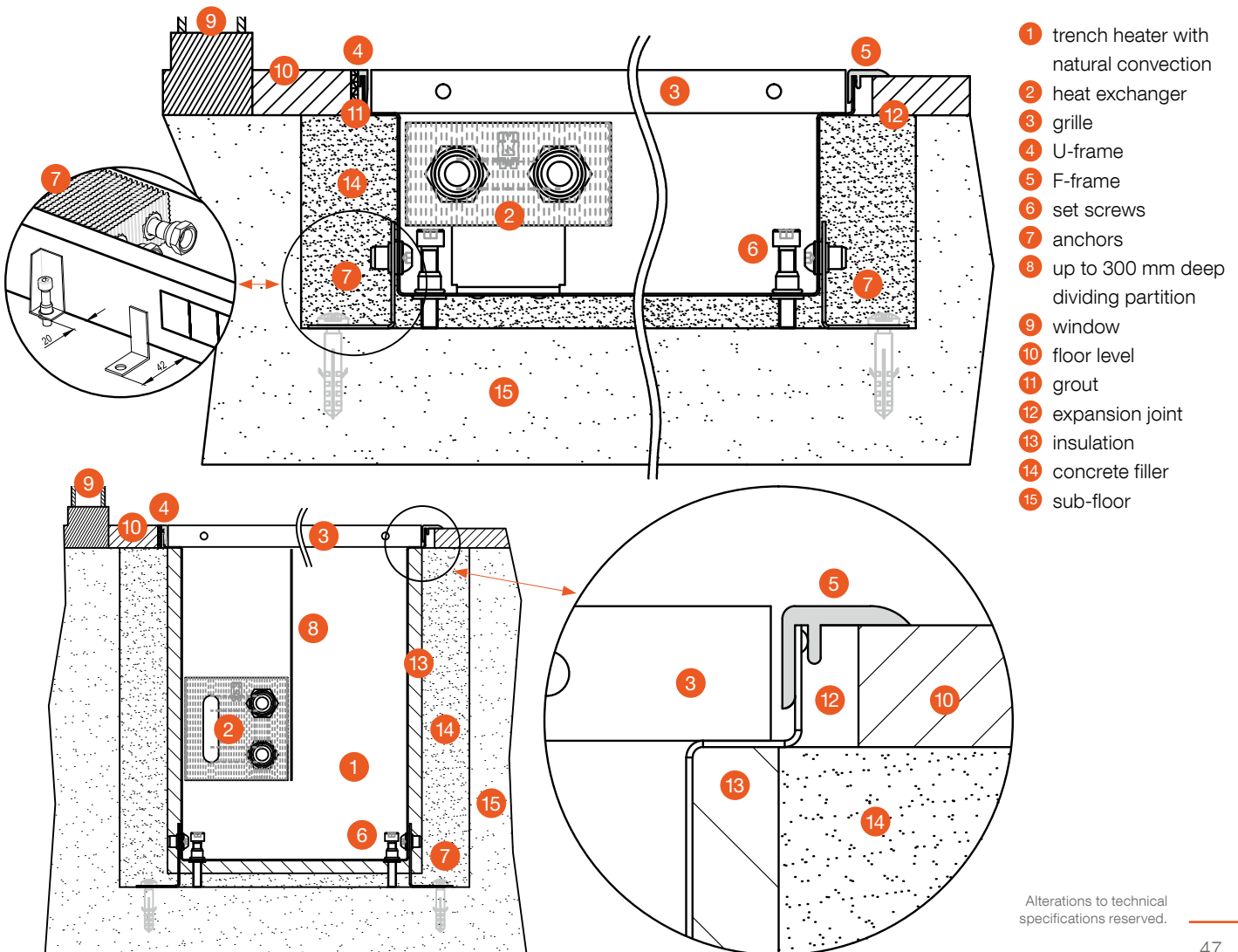
Assembly and accessories

FK TRENCH HEATER INSTALLATION

- **Trench heaters must be installed horizontally with the heat exchanger on the window side.** For the grille to function correctly, the upper edge of the casing must be straight and level (not buckled or bent).
- The maximum recommended distance of the trench heater from the wall/window is 100 mm.
- The size of the trough in the floor for trench heater installation should be at least 100 mm bigger (both in length and width) than the convector.
- Using anchors will extend the bottom width of the trench heater by 42 mm from each side.
- We recommend connecting the trench heater to the heating system using a lockshield and thermostatic valve. The heat exchanger connection is by an inner G½ thread. Following connection to the heating system, bleed and carry out a pressure test.
- When concreting, the trench heater must be levelled using the set screws provided and fastened to the floor using the anchors provided. The anchors keep the trench heater in place while pouring concrete.
- While pouring concrete, the trench heater may be weighed down.
- While pouring concrete it is particularly important to brace the trench heater to prevent longitudinal buckling. Trench heaters are fitted with spacers for this purpose. (Please note: FKP models

as standard are, however, not equipped with spacers.) Following concreting, these spacers are easily removed.

- While pouring concrete or anhydrite it is essential to seal all connection openings to prevent leakage.
- Where the trench heater is not concreted in, floor supports are recommended to use to incorporate the trench heater into a raised floor. Standard trench heaters models are not self-supporting.
- We recommend insulating the outer side of the trench heater casing along the length of the heat exchanger with polystyrene to prevent heat loss into the floor.
- To avoid contaminating the trench heater, we recommend maintaining the protective hardboard cover in place during construction work. The board, which is included in the standard contents, is not suitable for walking on and serves solely to protect the trench heater from contamination during installation. Strengthened OSB covers for installation purposes are available as optional extras.
- Trench heaters fitted with stainless steel casings installed in humid environments – marked KORAFLEX Pool FKP – are equipped as standard with overflow drains. During installation the pipe at the bottom of the trench heater must be connected to piping with sufficient gradient to drain overflow water. We recommend installing a U-bend to prevent odour.



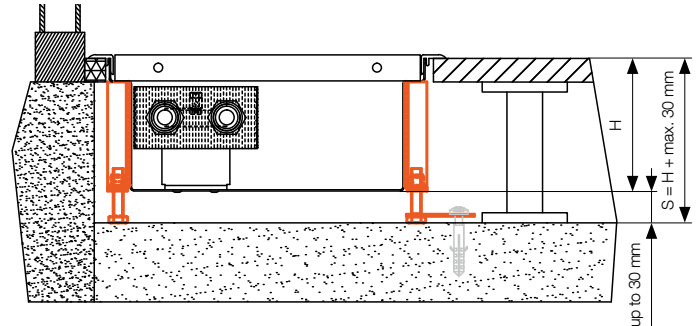
Alterations to technical specifications reserved.

RAISED FLOOR INSTALLATIONS

Structural supports for raised floor trench heater installations offer stable and effective solutions. Structural supports are manufactured from non-lacquered steel and are suitable for raised floors of a depth up to 500 mm. Structural supports are suitable for **Optimal FKO** and **Basic FKB** models.

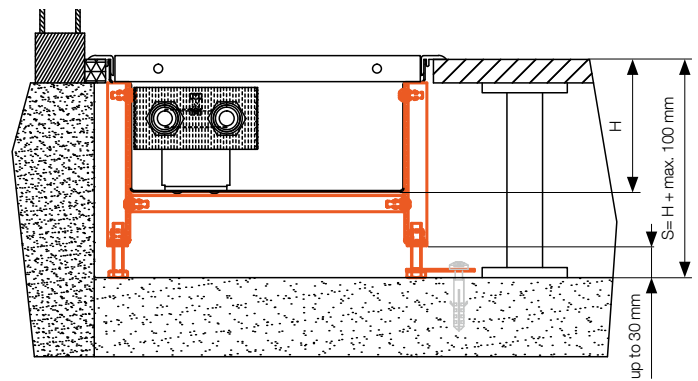
SZP-03 low raised floor support

Trench heaters are fitted with reinforcing bars and set screws, which enable the trench heater to be installed at the required height. Set screws must be anchored to the floor to prevent movement. Reinforcing bars are not included as standard and cannot be fitted subsequently. The screws allow setting a maximum height which is max. 30 mm higher than the trench heater itself. Recommended for raised floors with a **maximum depth 30 mm** greater than the unit height of the trench heater.



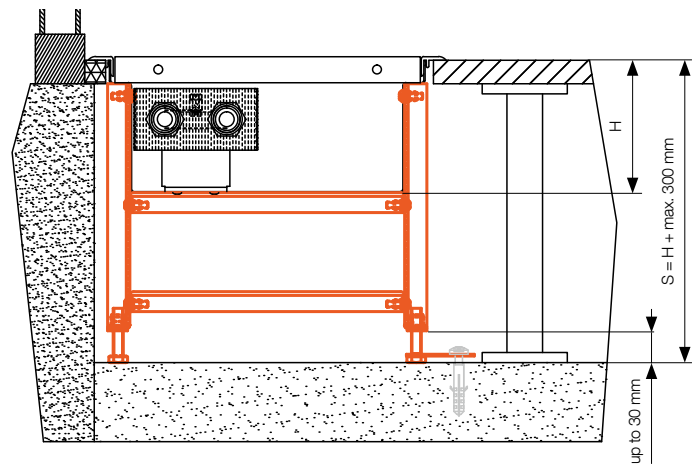
SZP-10 higher raised floor support

Customized solutions for all projects dealing with higher raised flooring. This is a more robust version of the low raised floor support, equipped with one support at the bottom of the trench heater. The precise technical design depends on customer's requirements. Recommended for raised floors with a **maximum depth 100 mm** greater than the unit height of the trench heater.



SZP-30 high raised floor support

Customized solutions for all projects dealing with high raised flooring. This is a reinforced version of the higher raised floor support, equipped with two supports at the bottom of the trench convector. The precise technical design depends on customer's requirements. Recommended for raised floors with a **maximum depth 300 mm** greater than the unit height of the trench heater.



ORDER CODE

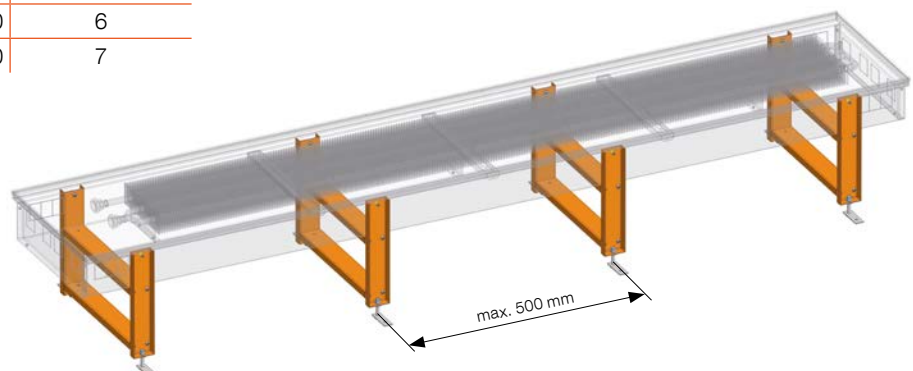
Support	Raised	Floor	Support version	Trench heater model	Depth (cm)	Width (cm)	Raised floor height S (cm)	Recommended number of supports (ks)	Convector length (mm)	Recommended number of supports
S	Z	P	-	FK-	-	-	-	-	800-1 000	3
									1 100-1 500	4
									1 600-2 000	5
									2 100-2 500	6
									2 600-3 000	7

Example order code:
SZP-03-FK-11/20-13-5

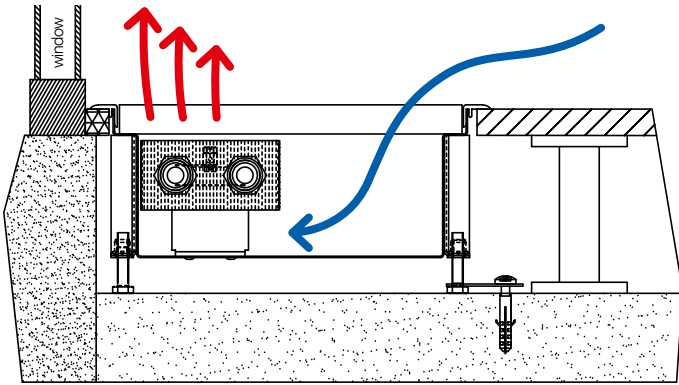
Raised floor supports for a FK trench heater with natural convection 11 cm deep and 20 cm wide and for raised floor 13 mm deep. The trench heater is 1 800 mm long, therefore the raised floor support set for this trench heater consist of 5 supports.



Supports must be ordered together with trench heaters due to structural alterations to convector casings! Components of several types of raised floor support are integral parts of the trench heater body.



HEAT EXCHANGER AND TRENCH HEATER CONNECTIONS



Natural convection

The coldest air in a room is always to be found at the lowest point, which is the base of the trench heater. Here the air is heated and drawn by natural convection into the heat exchanger. The warm air then rises towards the ceiling, subsequently cools and this cool air sinks back down towards the lowest point of the floor. In this way the air circulates naturally in the room, creating a pleasant microclimate. Al/Cu heat exchangers consist of copper tubes fitted with aluminium fins. The flow of hot water through the heat exchanger heats first the copper tubes. The heat is then transferred to the aluminium fins and subsequently into the surrounding air. This is the principle of natural convection.

Recommended positioning of heat exchangers in trench heaters

Trench heaters should be positioned a maximum of 100mm from windows. In order to achieve maximum performance, the recommended position for heat exchangers in the trench heater is always on the window side. This results in natural airflow, whereby warm air rises and cool air is drawn into the trench heater. In this way, cool air at the window is screened and the air in the room is heated. **Trench heaters are fitted as standard with right-hand connections to the heating system; a left-hand connection is achieved simply by rotating the heat exchanger 180°.**

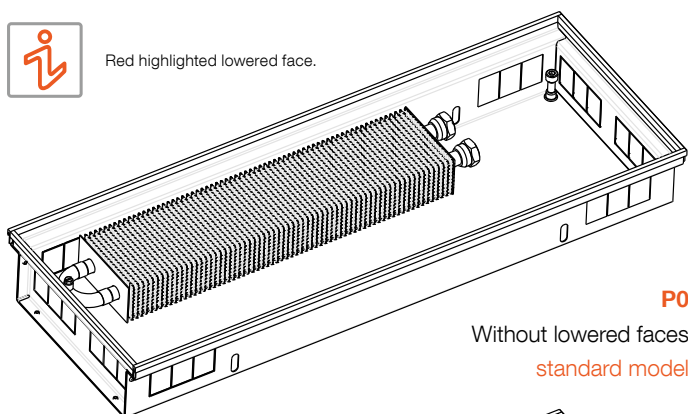
TRENCH HEATER CONNECTIONS

Casing types according to water connections and lowered sides for multiple installations

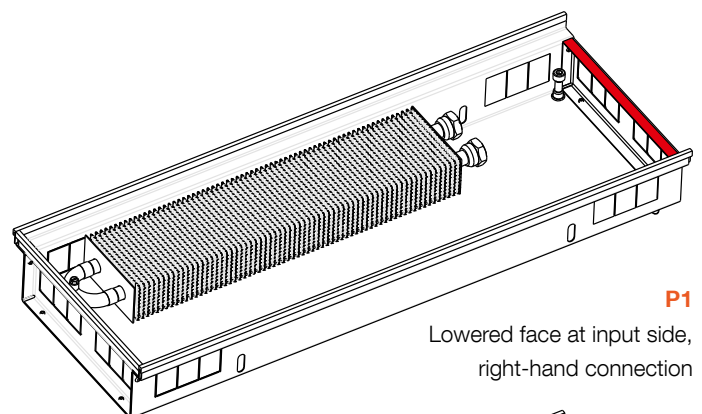
Lowered trench heater casing sides are used where invisible connections are desired between trench heaters (multiple trench heaters around a room, eg. in administrative buildings, restaurants, hotels, etc.). When ordering grilles, care must be taken to include information in the order code that the grilles required are to be used with trench heaters with lowered faces. **Individual KORAFLEX Pool FKP trench heater casings cannot be combined in this way, and are available in P0 models only.**



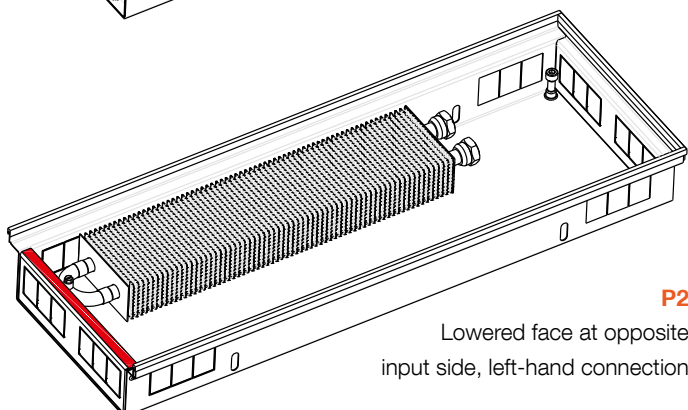
Red highlighted lowered face.



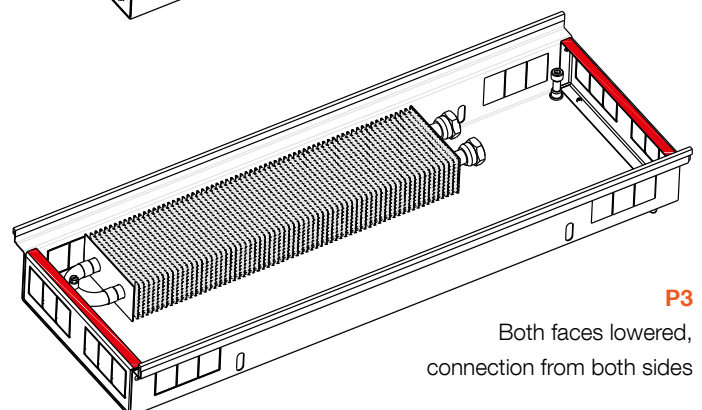
P0
Without lowered faces
standard model



P1
Lowered face at input side,
right-hand connection



P2
Lowered face at opposite
input side, left-hand connection



P3
Both faces lowered,
connection from both sides

ACCESSORIES

Lockshield

- optional accessory
- straight or angle
- size: 1/2" G
- nickel-plated brass
- max operating pressure: PN 10
- max operating temperature: 90 °C
- **order code:**
straight lockshield: REG-LS
angle lockshield: REG-LA



Preset	1	2	3	4	5	6	7	8	9
Turns	1 ¼	1 ½	1 ¾	2	2 ½	3	3 ½	4	FO
K_v	0.14	0.2	0.31	0.43	0.6	0.79	1	1.2	1.35

K_v flow coefficient (m³/h)
FO fully open

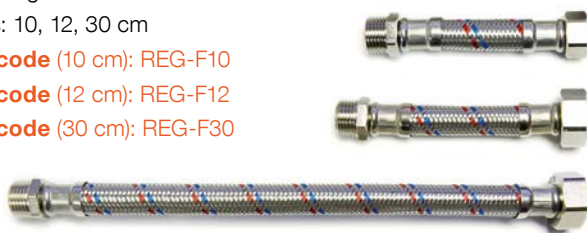
Brass elbow

- optional accessory
- 1/2" x 1/2" 90° without rim
- **order code:** REG-E90



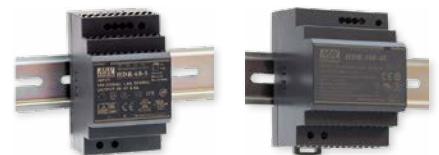
Flexible connecting hoses

- optional accessory
- stainless steel mesh
- connecting nuts: Z 1/2" x 1/2" M
- lengths: 10, 12, 30 cm
- **order code** (10 cm): REG-F10
- **order code** (12 cm): REG-F12
- **order code** (30 cm): REG-F30



DC power supply 60 W, 100 W

- optional accessory
- switch-mode DC power supply
- silent operation, high efficiency
- DIN rail assembly
- IP 20



Power supply size	60 W	100 W
Input supply voltage	85–264 V AC	85–264 V AC
Output voltage	24 V DC/2.5 A	24 V DC/3.9 A
dimensions W×H×D	53×90×55 mm	70×90×55 mm
order code	REG-PS60	REG-PS100



The size of the power supply is designed according to the sum of electrical consumption of the thermoelectric actuators for one voltage source. Count 2 W for one thermoelectric actuator. We recommend the output of the power supply is at least 20 % more than the resulting sum input of the actuators for this power supply.

Thermostatic valve

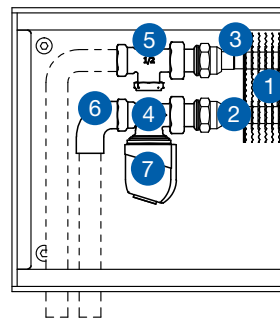
- optional accessory
- straight or angle
- preset K_v value
- size: 1/2" G
- thread: M 30x1.5
- nickel-plated brass
- max operating pressure: PN 10
- max operating temperature: 90 °C
- **order code:**
straight thermostatic valve: REG-TVS
angle thermostatic valve: REG-TVA



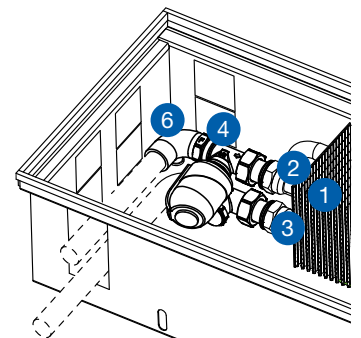
Preset values	1	2	3	4	5	6
K_v ($\Delta t = 2K$)	0.10	0.20	0.30	0.40	0.50	0.60
K_{vs}	0.10	0.20	0.30	0.40	0.57	0.80

K_v flow coefficient (m³/h)
 K_{vs} maximum flow (m³/h)
 $\Delta t = 2K$ valve proportional band (K)

Example use of accessories



- 1 Al/Cu heat exchanger
- 2 water inlet
- 3 water outlet
- 4 straight thermostatic valve



- 5 straight lockshield
- 6 brass elbow
- 7 thermoelectric actuator

Thermostatic head with incorporated control and immersion remote sensor

- optional accessory
- operating temperature: +6.5 to +28 °C
- wall-mounted control head
- capillary length: 5 m
- hysteresis: ≤0.6 °C
- **order code:** REG-TH5



Thermoelectric actuator

- optional accessory
- reset time: 4 min.
- assembly thread standard: M 30x1.5
- cable lengths: 2.5 or 5 m
- closed without voltage
- IP 44
- total height: 65 mm



In order to set and regulate required air temperature in heated rooms, trench heaters must be fitted with thermostatic heads with incorporated control and immersion sensors or thermoelectric actuators.

TEP 230

- supply voltage: 230 V AC
- electrical consumption <2 W
- **order code** (2.5 m cable): REG-TEP230-250
- **order code** (5m cable): REG-TEP230-500

TEP 24

- supply voltage: 24 V DC
- electrical consumption <2 W
- **order code** (2.5 m cable): REG-TEP24-250
- **order code** (5m cable): REG-TEP24-500

SIEMENS RAA21 room thermostat

- optional accessory
- for heating
- 2-position control with ON/OFF output
- switching voltage 24 V DC and 230 V AC
- required temperature setpoint is selected manually with the setting knob on the front of the thermostat
- the setpoint setting range can be mechanically limited by means of setpoint limiters under the unit cover
- IP 30
- dimensions (w×h×d) 97×96×35.3 mm
- **order code:** REG-RAA21

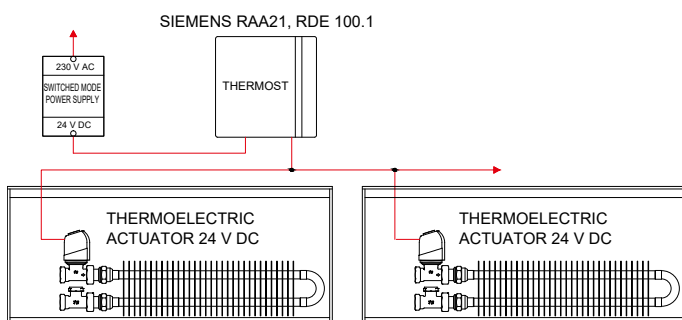


SIEMENS RDE 100.1 room thermostat

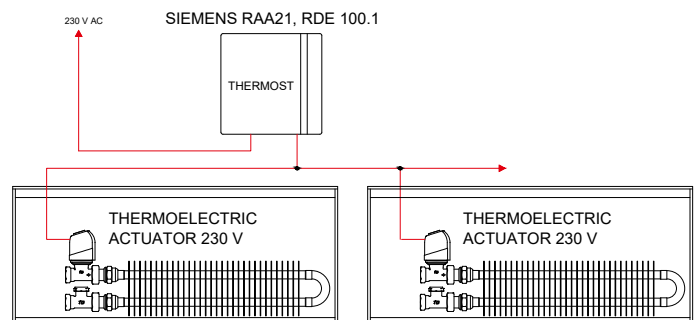
- optional accessory
- for heating
- 2-position control with ON/OFF output
- switching voltage: 24 V DC and 230 V AC
- Comfort, Economy, Auto timer and Protection mode
- adjustable commissioning and control parameters
- 7-day time program
- battery powered: 3V DC (2x1.5 V DC)
- IP 30
- dimensions (w×h×d) 127×85×21.5 mm
- **order code:** REG-RDE100.1



Electrical diagram - connection with 24 V DC power supply



Electrical diagram - connection to 230 V AC



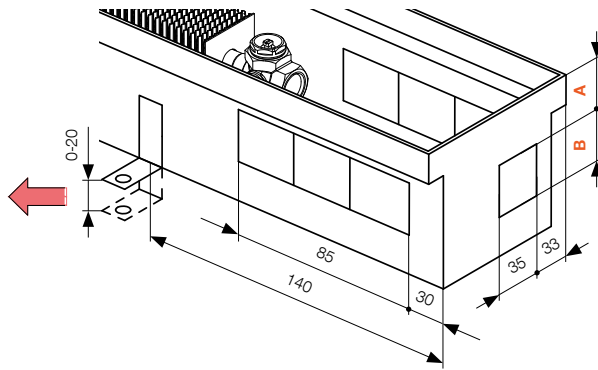
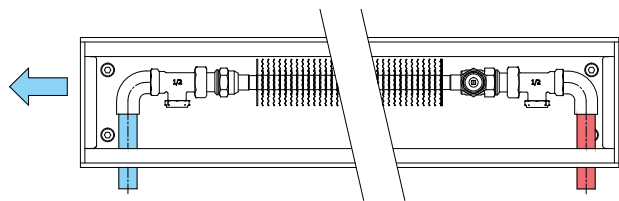
Alterations to technical specifications reserved.

CONNECTIONS AND CONNECTION MEASUREMENTS

Connection options

Heat exchangers in trench heaters may be connected to the heating system in several ways. Trench heater casings are fitted with cut outs for easy connection to the heating system. The standard connection for trench heaters is on the right. Left-hand connections are feasible using the cut outs on the opposite side. **Due to limitations of space, a number of trench heater models cannot be fitted with thermoelectric actuators.** Mounting heat exchangers in trench heaters can be achieved in a number of ways. Fixed connections to the heating system, or the use of flexible steel hoses – see optional accessories on p. 50.

Type 60/140, 70/140, 90/140, 110/140



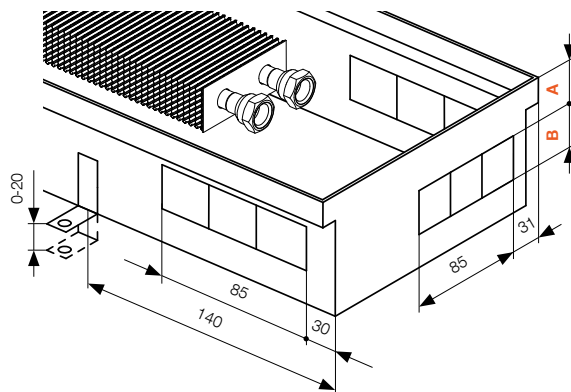
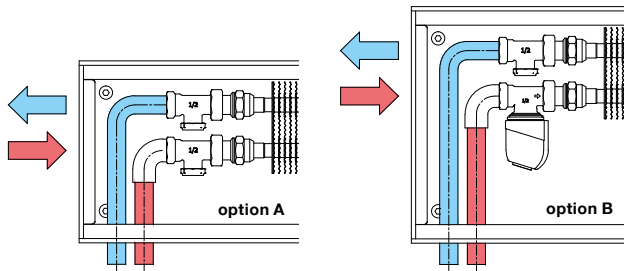
Type 60/140
A = 18 mm
B = 35 mm

Type 70/140
A = 30 mm
B = 35 mm

Type 90/140, 110/140
A = 32 mm
B = 40 mm

Type 60/200*, 60/260*, 70/200*, 70/260, 90/200*, 90/260, 110/200*, 110/260

* only suitable with option A



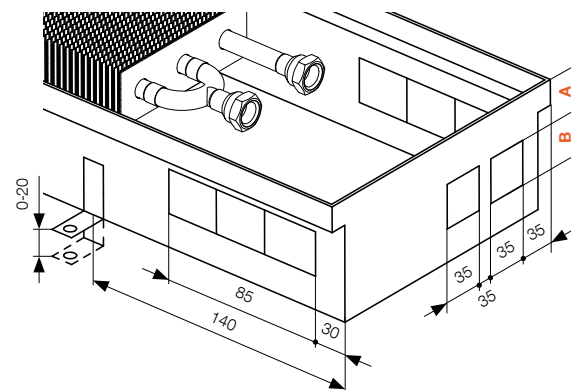
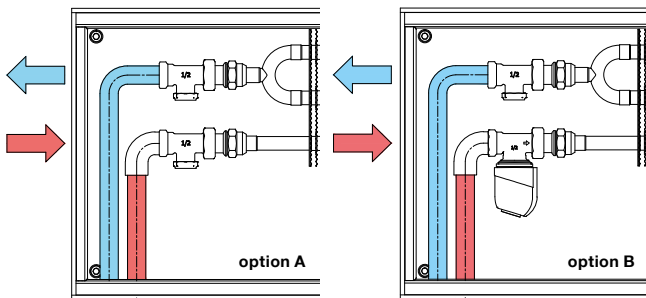
Type 60/140, 60/260
A = 18 mm
B = 35 mm

Type 70/200, 70/260
A = 30 mm
B = 35 mm

Type 90/200, 90/260, 110/200, 110/260
A = 32 mm
B = 40 mm

Type 60/320*, 70/320, 90/320, 110/320

* only suitable with option A

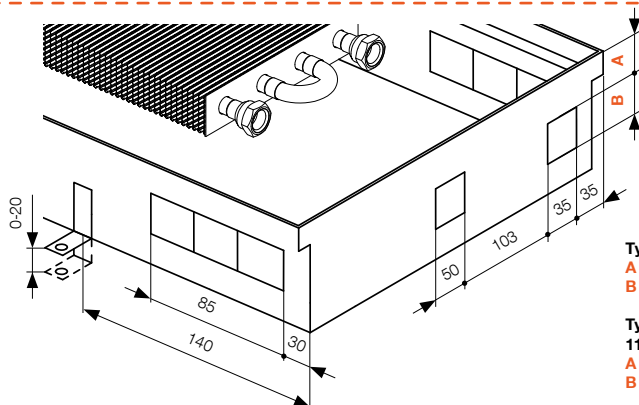
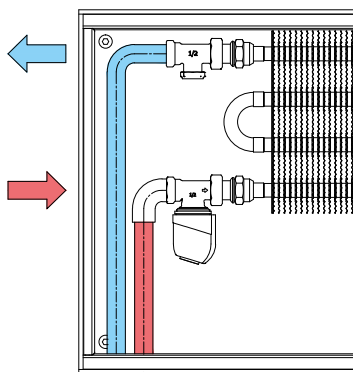


Type 60/320
A = 18 mm
B = 35 mm

Type 70/320
A = 30 mm
B = 35 mm

Type 90/320, 110/320
A = 32 mm
B = 40 mm

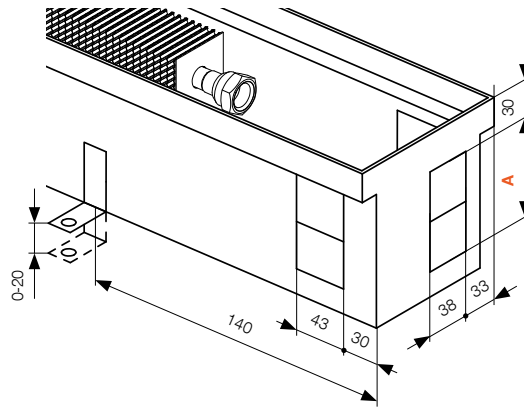
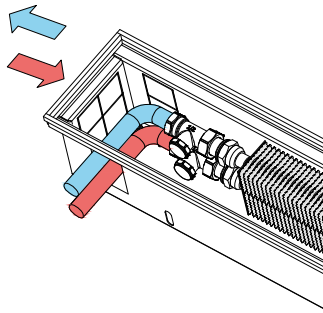
Type 70/400, 90/400, 110/400



Type 70/400
A = 30 mm
B = 35 mm

Type 90/400, 110/400
A = 32 mm
B = 40 mm

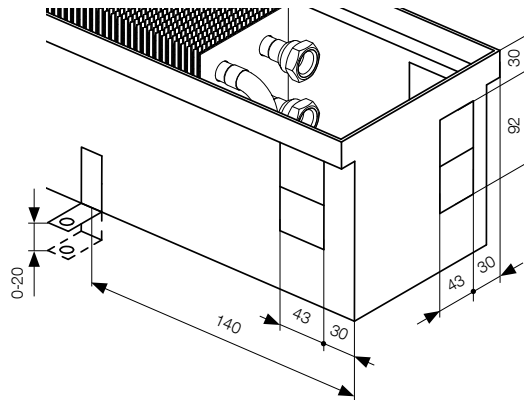
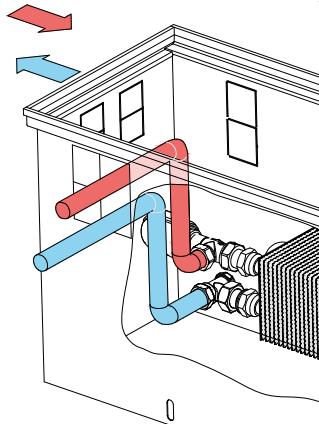
Type 130/140, 150/140



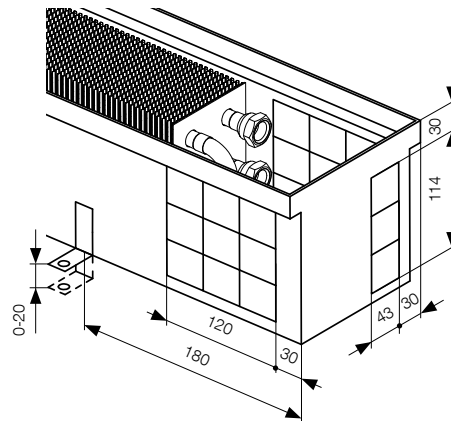
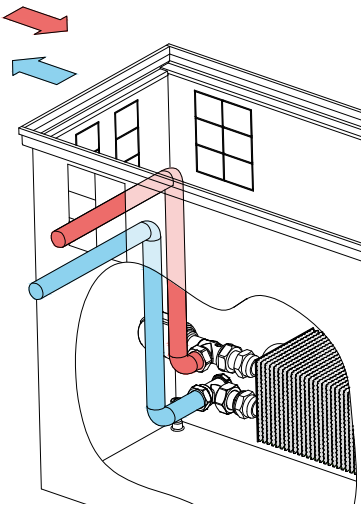
Type 130/140
A = 80 mm

Type 150/140
A = 92 mm

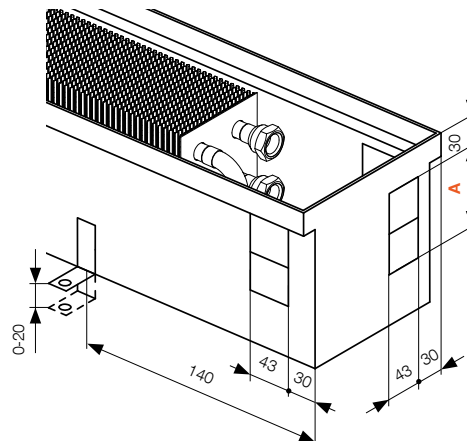
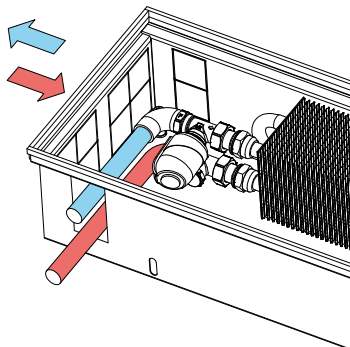
Type 300/260, 300/320, 300/400



Type 450/260, 450/320, 450/400



Type 130/200, 130/260, 130/320, 130/400, 150/200, 150/260, 150/320, 150/400, 190/200, 190/260, 190/320, 190/400



Type 130/200
A = 80 mm, B = 80 mm

Type 130/260
A = 80 mm, B = 140 mm

Type 130/200
A = 80 mm, B = 150 mm

Type 130/260
A = 80 mm, B = 180 mm

Type 150/200, 190/200
A = 92 mm, B = 80 mm

Type 150/260, 190/260
A = 92 mm, B = 140 mm

Type 150/320, 190/320
A = 92 mm, B = 150 mm

Type 150/400, 190/400
A = 92 mm, B = 180 mm

TECHNICAL DATA

KORAFLEX Optimal FKO															
Depth [mm]	70					90					110				
Width [mm]	140	200	260	320	400	140	200	260	320	400	140	200	260	320	400
Temperature exponent n [-]	1.4629	1.4587	1.6148	1.5550	1.5235	1.5247	1.5373	1.5643	1.4599	1.4607	1.4888	1.4739	1.4385	1.4622	1.4569
Unit weight [kg/m]	3.37	4.16	4.80	5.84	7.03	3.68	4.51	5.14	6.22	7.45	4.04	4.90	5.56	6.66	7.93
Water volume [l/m]	0.146	0.298	0.298	0.450	0.602	0.146	0.298	0.298	0.450	0.602	0.146	0.298	0.298	0.450	0.602
Effective exchange area [mm]	L-380	L-290	L-290	L-330	L-290	L-380	L-290	L-290	L-329	L-290	L-380	L-290	L-290	L-329	L-290

KORAFLEX Optimal FKO														
Depth [mm]	130					150					190			
Width [mm]	140	200	260	320	400	140	200	260	320	400	200	260	320	400
Temperature exponent n [-]	1.5855	1.5143	1.6077	1.5011	1.5119	1.547	1.5528	1.524	1.5165	1.5296	1.5264	1.4983	1.5283	1.5329
Unit weight [kg/m]	4.54	5.83	6.53	7.91	9.53	4.93	6.37	7.07	8.55	10.27	7.23	7.89	9.43	11.22
Water volume [l/m]	0.298	0.602	0.602	0.907	1.211	0.298	0.602	0.602	0.907	1.211	0.602	0.602	0.907	1.211
Effective exchange area [mm]	L-290	L-290	L-290	L-290	L-290	L-290	L-290	L-290	L-290	L-290	L-290	L-290	L-290	L-290

KORAFLEX Optimal FKO						
Depth [mm]	300			450		
Width [mm]	260	320	400	260	320	400
Temperature exponent n [-]	1.482	1.4769	1.4734	1.4575	1.4849	1.4713
Unit weight [kg/m]	11.37	13.09	15.07	15.38	17.25	19.31
Water volume [l/m]	0.602	0.907	1.211	0.602	0.907	1.211
Effective exchange area [mm]	L-290	L-290	L-290	L-290	L-290	L-290

KORAFLEX Thin FKT				
Depth [mm]	60			
Width [mm]	140	200	260	320
Temperature exponent n [-]	1.3030	1.5552	1.7953	1.6785
Unit weight [kg/m]	4.83	6.43	7.78	9.93
Water volume [l/m]	0.146	0.298	0.298	0.450
Effective exchange area [mm]	L-380	L-290	L-290	L-329

KORAFLEX Basic FKB															
Depth [mm]	70					90					110				
Width [mm]	140	200	260	320	400	140	200	260	320	400	140	200	260	320	400
Temperature exponent n [-]	1.4629	1.4587	1.6148	1.5550	1.5235	1.5247	1.5373	1.5643	1.4599	1.4607	1.4888	1.4739	1.4385	1.4622	1.4569
Unit weight [kg/m]	2.88	3.51	4.01	4.98	6.48	3.20	3.89	4.43	5.43	6.48	3.50	4.20	4.75	5.80	6.86
Water volume [l/m]	0.146	0.298	0.298	0.450	0.602	0.146	0.298	0.298	0.450	0.602	0.146	0.298	0.298	0.450	0.602
Effective exchange area [mm]	L-380	L-290	L-290	L-330	L-290	L-380	L-290	L-290	L-329	L-290	L-380	L-290	L-290	L-329	L-290

KORAFLEX Pool FKP								
Depth [mm]	90				110			
Width [mm]	200	260	320	400	200	260	320	400
Temperature exponent n [-]	1.5373	1.5643	1.4599	1.4607	1.4739	1.4385	1.4622	1.4569
Unit weight [kg/m]	4.60	5.28	6.42	7.74	5.00	5.69	6.87	8.23
Water volume [l/m]	0.298	0.298	0.450	0.602	0.298	0.298	0.450	0.602
Effective exchange area [mm]	L-290	L-290	L-329	L-290	L-290	L-290	L-329	L-290



TEMPERATURE GRADIENT CONVERSIONS

Conversions for trench heaters with natural convection FK

The heat output of individual trench heaters is determined by measuring nominal operating (temperature) conditions of 75/65/20 °C ($t_1/t_2/t_i$) in accordance with EN 16430. In accordance with these principle values for trench heaters, further temperature gradient 55/45/20 °C were achieved by converting corresponding heat outputs as listed in this catalogue. Where heating units are designed for other thermal conditions, the following conversions will be necessary:

$$1 \quad \Delta t = \frac{(t_1 + t_2)}{2} - t_i$$

$$3 \quad Q = f \cdot Q_n$$

$$2 \quad f = \left(\frac{\Delta t}{50}\right)^n$$

$$4 \quad m = 0.86 \cdot \frac{Q}{t_1 - t_2}$$

t_1	[°C]	input water temperature
t_2	[°C]	output water temperature
t_i	[°C]	ambient air temperature
Δt	[K]	temperature gradient
n	[-]	temperature exponent
f	[-]	conversion coefficient
Q_n	[W]	nominal heat output at 75/65/20 °C
Q	[W]	heat output at new temperature gradient
m	[kg/h]	mass flow rate

Example

Values given:

- trench heater FK 200/11/26
- input water temperature $t_1 = 60$ °C
- nominal output $Q_n = 618$ W
- output water temperature $t_2 = 50$ °C
- temperature exponent $n = 1.4385$
- ambient air temperature $t_i = 22$ °C

Solution

To achieve 60/50/22 °C operating conditions, calculate temperature gradient Δt according to formula 1 and conversion coefficient value f according to formula 2

$$1 \quad \Delta t = \frac{(t_1 + t_2)}{2} - t_i = \frac{(60 + 50)}{2} - 22 = 33 \text{ K}$$

Temperature exponent n for the required trench heater dimensions can be found in the heat output table. The table also shows coefficient f for selected temperature gradients.

$$2 \quad f = \left(\frac{\Delta t}{50}\right)^n = \left(\frac{33}{50}\right)^{1.4385} = 0.55$$

Heat output for required temperature gradient is calculated as follows:

$$3 \quad Q = f \cdot Q_n = 0.55 \cdot 618 = 340 \text{ W}$$

Automatic conversion tables can be found at www.licon.cz

Conversion coefficient f for selected temperature gradients for ambient air temperature of 20 °C

Depth [mm]	90/70 °C	85/75 °C	70/50 °C	50/40 °C	45/35 °C
KORAFLEX FKT, FKB, FKP, FKO – width 140 mm					
60	1.2682	1.2682	0.7477	0.4053	0.3030
70	1.3057	1.3057	0.7215	0.3628	0.2617
90	1.3205	1.3205	0.7116	0.3476	0.2473
110	1.3119	1.3119	0.7173	0.3563	0.2556
KORAFLEX FKB, FKP, FKO – width 140 mm					
130	1.3352	1.3352	0.7020	0.3332	0.2339
150	1.3258	1.3258	0.7081	0.3422	0.2423
KORAFLEX FKT, FKB, FKP, FKO – width 200 mm					
60	1.3278	1.3278	0.7068	0.3403	0.2405
70	1.3047	1.3047	0.7222	0.3638	0.2627
90	1.3235	1.3235	0.7096	0.3445	0.2445
110	1.3083	1.3083	0.7197	0.3600	0.2591
KORAFLEX FKB, FKP, FKO – width 200 mm					
130	1.3180	1.3180	0.7133	0.3501	0.2497
150	1.3272	1.3272	0.7072	0.3408	0.2410
190	1.3209	1.3209	0.7113	0.3471	0.2469
KORAFLEX FKT, FKB, FKP, FKO – width 260 mm					
60	1.3872	1.3872	0.6699	0.2881	0.1930
70	1.3423	1.3423	0.6974	0.3265	0.2277
90	1.3300	1.3300	0.7053	0.3381	0.2385
110	1.2999	1.2999	0.7254	0.3690	0.2676
KORAFLEX FKB, FKP, FKO – width 260 mm					
130	1.3406	1.3406	0.6986	0.3281	0.2292
150	1.3203	1.3203	0.7117	0.3477	0.2475
190	1.3141	1.3141	0.7158	0.3540	0.2534
300	1.3102	1.3102	0.7184	0.3580	0.2572
450	1.3044	1.3044	0.7224	0.3641	0.2630
KORAFLEX FKT, FKB, FKP, FKO – width 320 mm					
60	1.3580	1.3580	0.6876	0.3124	0.2148
70	1.3278	1.3278	0.7068	0.3403	0.2405
90	1.3050	1.3050	0.7220	0.3635	0.2625
110	1.3055	1.3055	0.7216	0.3629	0.2619
KORAFLEX FKB, FKP, FKO – width 320 mm					
130	1.3148	1.3148	0.7154	0.3533	0.2527
150	1.3185	1.3185	0.7129	0.3495	0.2492
190	1.3213	1.3213	0.7110	0.3467	0.2465
300	1.3090	1.3090	0.7192	0.3593	0.2584
450	1.3109	1.3109	0.7180	0.3573	0.2565
KORAFLEX FKB, FKP, FKO – width 400 mm					
70	1.3202	1.3202	0.7118	0.3478	0.2476
90	1.3051	1.3051	0.7218	0.3633	0.2623
110	1.3042	1.3042	0.7225	0.3643	0.2632
KORAFLEX FKB, FKP, FKO – width 400 mm					
130	1.3174	1.3174	0.7136	0.3506	0.2502
150	1.3216	1.3216	0.7108	0.3464	0.2462
190	1.3224	1.3224	0.7103	0.3456	0.2455
300	1.3082	1.3082	0.7198	0.3601	0.2592
450	1.3077	1.3077	0.7201	0.3607	0.2597

TRENCH HEATER PRESSURE LOSSES

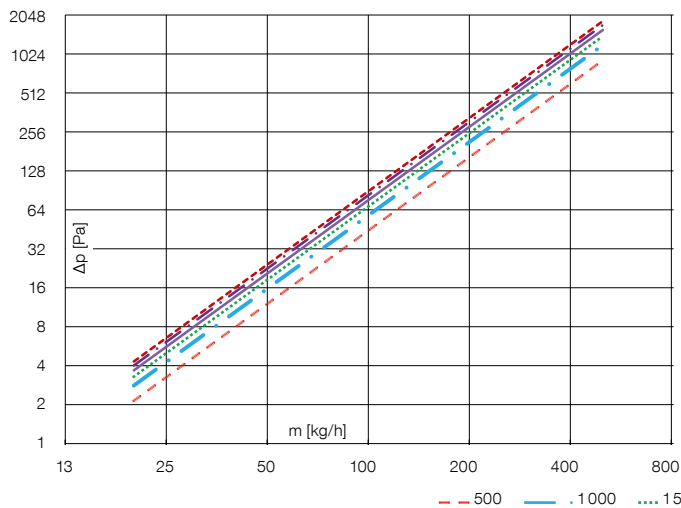
KORAFLEX Type 60/140, 70/140, 90/140, 11/140

Length L [mm]	Mass flow rate m [kg/h]											
	20	40	80	100	150	200	250	300	350	400	450	500
	Exchanger pressure losses Δp [Pa]											
800	3	9	35	53	114	196	298	420	561	722	901	1098
1000	3	10	38	58	124	214	325	458	612	787	983	1198
1200	3	11	41	62	134	229	349	492	657	845	1055	1286
1400	3	12	43	66	142	244	371	522	698	898	1120	1366
1600	3	12	46	70	149	257	390	550	735	945	1180	1439
1800	4	13	48	73	156	269	409	576	770	990	1235	1506
2000	4	14	50	76	163	280	426	600	802	1031	1287	1569
2200	4	14	52	79	169	290	442	623	832	1070	1336	1629
2400	4	15	54	82	175	300	457	644	861	1107	1382	1685
2600	4	15	55	84	180	310	472	665	888	1142	1426	1738
2800	4	15	57	87	186	319	486	684	914	1176	1467	1789
3000	4	16	58	89	191	328	499	703	939	1208	1507	1838

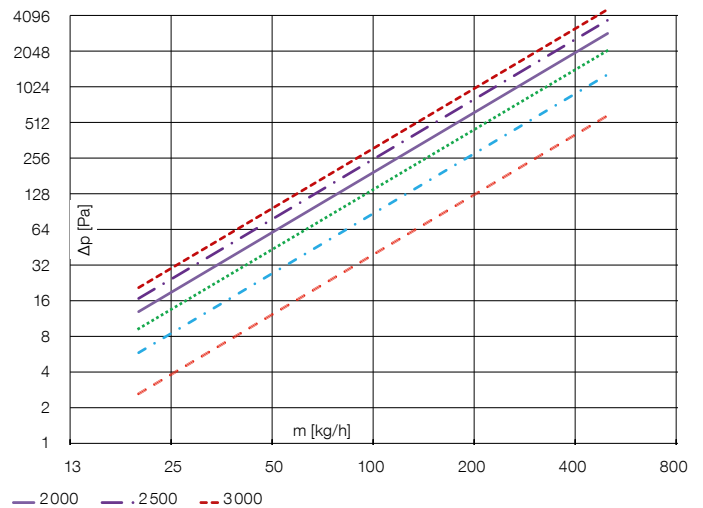
KORAFLEX Type 60/200, 60/260, 70/200, 70/260, 90/200, 90/260, 110/200, 110/260, 130/140, 150/140

Length L [mm]	Mass flow rate m [kg/h]											
	20	40	80	100	150	200	250	300	350	400	450	500
	Exchanger pressure losses Δp [Pa]											
800	5	14	46	67	133	216	314	426	552	691	842	1005
1000	6	19	60	87	172	279	406	551	714	893	1089	1300
1200	7	23	74	107	212	344	500	680	881	1102	1343	1604
1400	9	27	88	128	253	411	598	812	1052	1316	1604	1915
1600	10	32	103	149	295	479	697	947	1226	1535	1871	2233
1800	11	37	118	171	338	549	798	1084	1405	1758	2143	2558
2000	13	41	133	193	382	619	901	1224	1586	1985	2419	2887
2200	14	46	148	216	426	691	1005	1366	1770	2215	2700	3222
2400	16	51	164	238	471	764	1111	1510	1956	2448	2984	3562
2600	17	56	180	261	517	838	1219	1656	2145	2685	3272	3906
2800	19	61	196	285	563	912	1327	1803	2336	2924	3564	4254
3000	21	66	212	308	609	988	1437	1952	2529	3165	3858	4605

KORAFLEX Type 60/140, 70/140, 90/140, 11/140



KORAFLEX Type 60/200, 60/260, 70/200, 70/260, 90/200, 90/260, 110/200, 110/260, 130/140, 150/140



KORAFLEX Type 60/320, 70/320, 90/320, 110/320

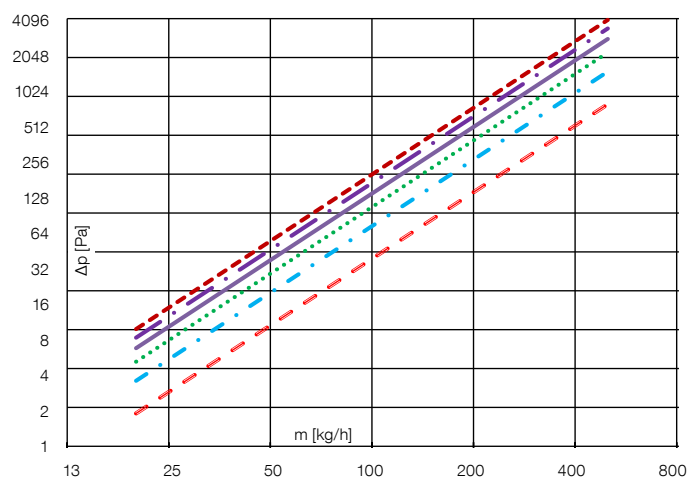
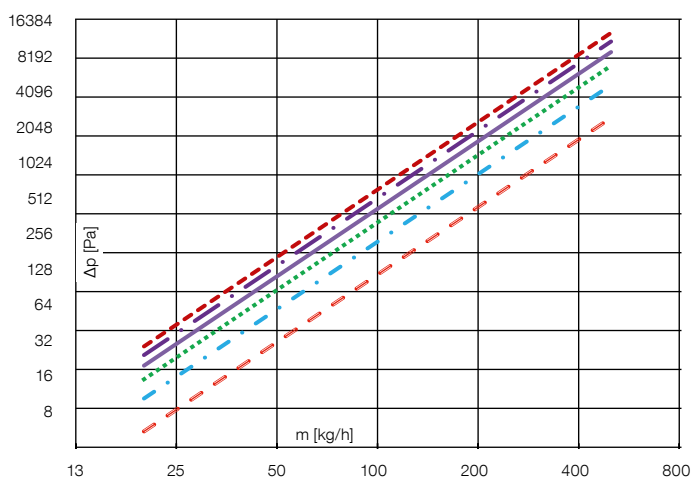
Length L [mm]	Mass flow rate m [kg/h]											
	20	40	80	100	150	200	250	300	350	400	450	500
	Exchanger pressure losses Δp [Pa]											
800	6	19	63	93	190	315	465	640	839	1060	1302	1566
1000	6	21	71	104	212	351	519	714	935	1181	1452	1746
1200	7	23	77	114	232	384	567	780	1022	1291	1587	1909
1400	7	25	83	123	250	414	611	841	1102	1392	1711	2058
1600	8	26	89	131	267	441	652	898	1176	1486	1826	2196
1800	8	28	94	139	282	467	691	951	1246	1574	1934	2326
2000	9	29	99	146	297	492	727	1001	1311	1657	2036	2449
2200	9	31	104	153	311	515	762	1049	1374	1736	2133	2566
2400	10	32	108	160	325	538	795	1094	1433	1811	2226	2677
2600	10	33	112	166	338	559	827	1138	1490	1883	2314	2783
2800	10	35	117	172	350	580	857	1180	1545	1952	2400	2886
3000	11	36	120	178	362	600	886	1220	1598	2019	2482	2985

KORAFLEX Type 70/400, 90/400, 110/400

Length L [mm]	Mass flow rate m [kg/h]											
	20	40	80	100	150	200	250	300	350	400	450	500
	Exchanger pressure losses Δp [Pa]											
800	11	35	115	168	336	550	806	1102	1435	1803	2206	2643
1000	13	42	138	202	405	663	972	1329	1730	2175	2661	3187
1200	15	49	161	236	472	773	1133	1548	2016	2534	3100	3713
1400	17	56	183	268	538	880	1289	1762	2294	2884	3528	4226
1600	19	63	205	300	601	984	1442	1971	2566	3226	3947	4727
1800	21	69	226	331	664	1086	1592	2175	2833	3561	4356	5218
2000	23	75	247	362	725	1187	1739	2376	3095	3890	4759	5700
2200	25	82	268	392	785	1286	1884	2574	3352	4213	5155	6175
2400	27	88	288	422	845	1383	2027	2769	3606	4532	5546	6642
2600	29	94	308	451	904	1479	2167	2962	3856	4847	5931	7103
2800	31	100	328	480	962	1574	2306	3152	4104	5158	6311	7559
3000	32	106	347	509	1019	1668	2444	3339	4348	5466	6687	8010

KORAFLEX Type 60/320, 70/320, 90/320, 110/320

KORAFLEX Type 70/400, 90/400, 110/400



--- 500 - - - 1000 1500 - - - 2000 - - - 2500 - - - 3000

TRENCH HEATER PRESSURE LOSSES

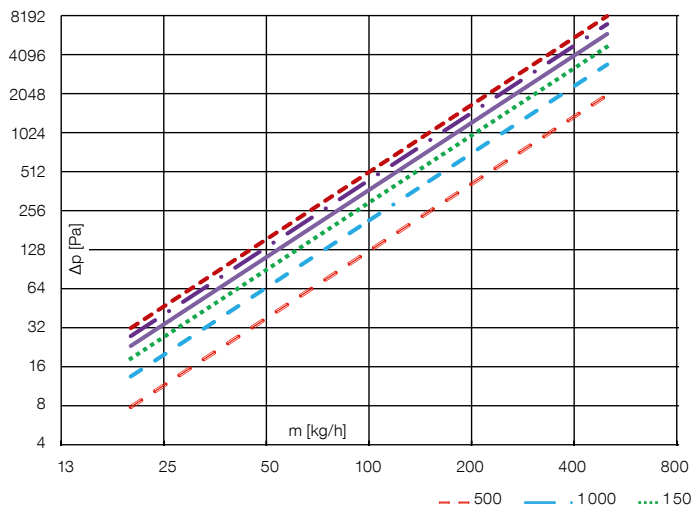
KORAFLEX Type 130/200, 130/260, 150/200, 150/260, 190/200, 190/260, 300/260, 450/260

Length L [mm]	Mass flow rate m [kg/h]											
	20	40	80	100	150	200	250	300	350	400	450	500
	Exchanger pressure losses Δp [Pa]											
800	11	37	123	180	363	595	874	1197	1561	1964	2406	2885
1000	13	44	146	215	432	709	1041	1425	1859	2339	2865	3436
1200	16	51	169	248	498	818	1201	1644	2144	2698	3305	3963
1400	18	58	190	280	562	923	1355	1855	2419	3044	3729	4471
1600	19	64	211	311	624	1024	1505	2059	2686	3380	4140	4964
1800	21	70	232	341	685	1123	1650	2258	2945	3707	4540	5443
2000	23	76	252	370	743	1220	1792	2453	3198	4025	4930	5911
2200	25	82	271	398	801	1315	1931	2643	3446	4337	5312	6369
2400	27	88	290	427	857	1407	2067	2829	3689	4643	5687	6818
2600	28	94	309	454	913	1498	2200	3012	3928	4943	6055	7259
2800	30	99	328	481	967	1588	2332	3192	4162	5238	6416	7693
3000	32	105	346	508	1021	1676	2461	3369	4393	5529	6773	8120

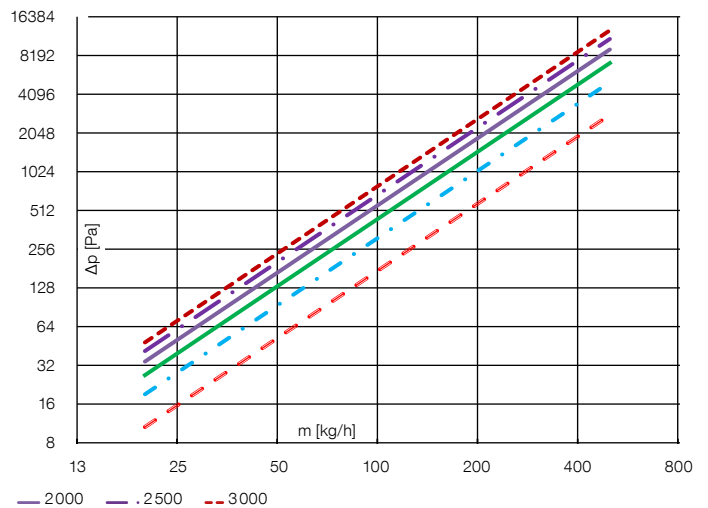
KORAFLEX Type 130/320, 150/320, 190/320, 320/300, 320/450

Length L [mm]	Mass flow rate m [kg/h]											
	20	40	80	100	150	200	250	300	350	400	450	500
	Exchanger pressure losses Δp [Pa]											
800	16	53	175	258	521	858	1264	1734	2266	2856	3504	4207
1000	19	63	211	311	629	1036	1526	2094	2736	3449	4231	5080
1200	22	74	246	363	734	1208	1780	2442	3191	4023	4936	5926
1400	25	84	281	413	836	1377	2027	2782	3635	4583	5622	6750
1600	28	94	314	463	935	1541	2270	3114	4069	5130	6293	7556
1800	31	104	347	511	1033	1702	2507	3440	4495	5667	6952	8346
2000	34	114	379	559	1129	1861	2740	3760	4913	6194	7599	9123
2200	37	124	411	606	1224	2017	2970	4075	5325	6714	8236	9888
2400	40	133	443	652	1317	2170	3197	4386	5731	7226	8864	10642
2600	43	142	474	697	1410	2322	3420	4693	6132	7731	9484	11387
2800	45	151	504	743	1501	2472	3641	4996	6528	8231	10097	12122
3000	48	161	534	787	1591	2621	3860	5296	6920	8725	10703	12850

KORAFLEX Type 130/200, 130/260, 150/200, 150/260, 190/200, 190/260, 300/260, 450/260



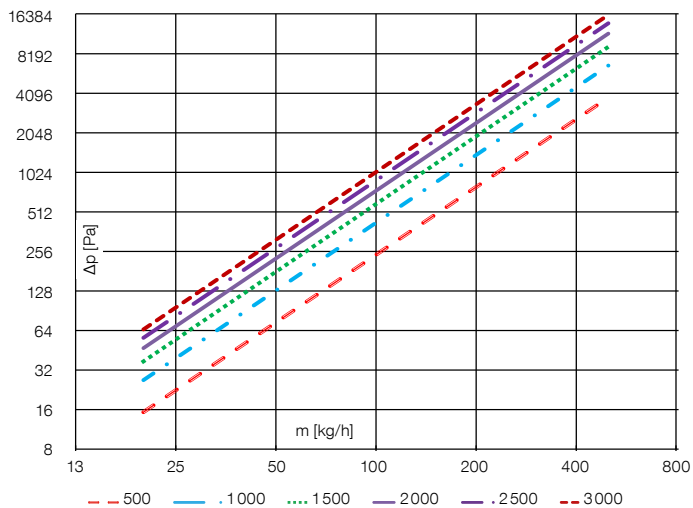
KORAFLEX Type 130/320, 150/320, 190/320, 320/300, 320/450



KORAFLEX Type 130/400, 150/400, 190/400, 300/400, 450/400

Length L [mm]	Mass flow rate m [kg/h]											
	20	40	80	100	150	200	250	300	350	400	450	500
	Exchanger pressure losses Δp [Pa]											
800	22	73	241	352	706	1155	1692	2311	3009	3782	4627	5541
1000	27	88	288	422	845	1383	2026	2768	3604	4530	5542	6637
1200	31	102	334	489	979	1603	2348	3208	4177	5249	6422	7692
1400	35	115	378	554	1109	1815	2660	3634	4731	5946	7275	8713
1600	39	129	421	617	1236	2022	2963	4048	5271	6624	8104	9706
1800	43	141	463	679	1359	2224	3259	4453	5797	7286	8914	10676
2000	47	154	505	739	1480	2422	3549	4849	6313	7934	9707	11625
2200	51	166	545	799	1599	2616	3833	5237	6819	8570	10484	12556
2400	54	179	585	857	1715	2807	4112	5619	7316	9194	11248	13472
2600	58	190	624	914	1830	2994	4387	5995	7805	9809	12000	14372
2800	62	202	662	971	1943	3179	4658	6365	8287	10415	12742	15260
3000	65	214	700	1026	2054	3362	4926	6730	8762	11012	13473	16135

KORAFLEX Type 130/400, 150/400, 190/400, 300/400, 450/400





*KORAFLEX fitted with aluminium roll-up silver elox grille,
finished with a hem.*

KORAFLEX trench heaters with forced convection

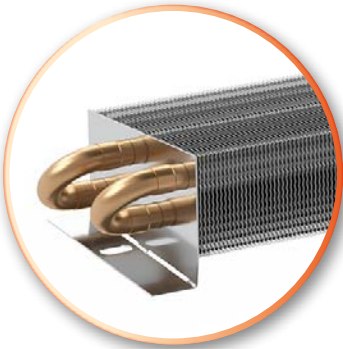


KORAFLEX TRENCH HEATERS WITH FORCED CONVECTION



MORE POWERFUL EXCHANGER

Specially designed Al/Cu heat exchangers guarantee increased output and are the heart of every convector.



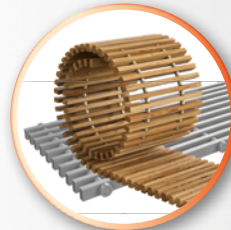
UNIQUE FAN

New fans with EC aluminium motors ensuring silent operation and low energy consumption.



WIDE PORTFOLIO

6 new product ranges and dozens of models available with a wide range of elox aluminium, wood and stainless steel grilles.

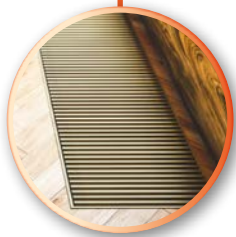


HC OPTIMIZED CONVECTION



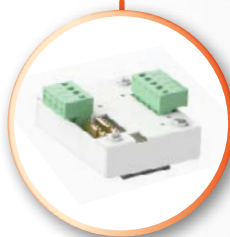
INCREASED HEATING AND COOLING OUTPUT

More effective heating and cooling results in cost savings, and increased levels of thermal comfort.



24V DC ACCURATE REGULATION

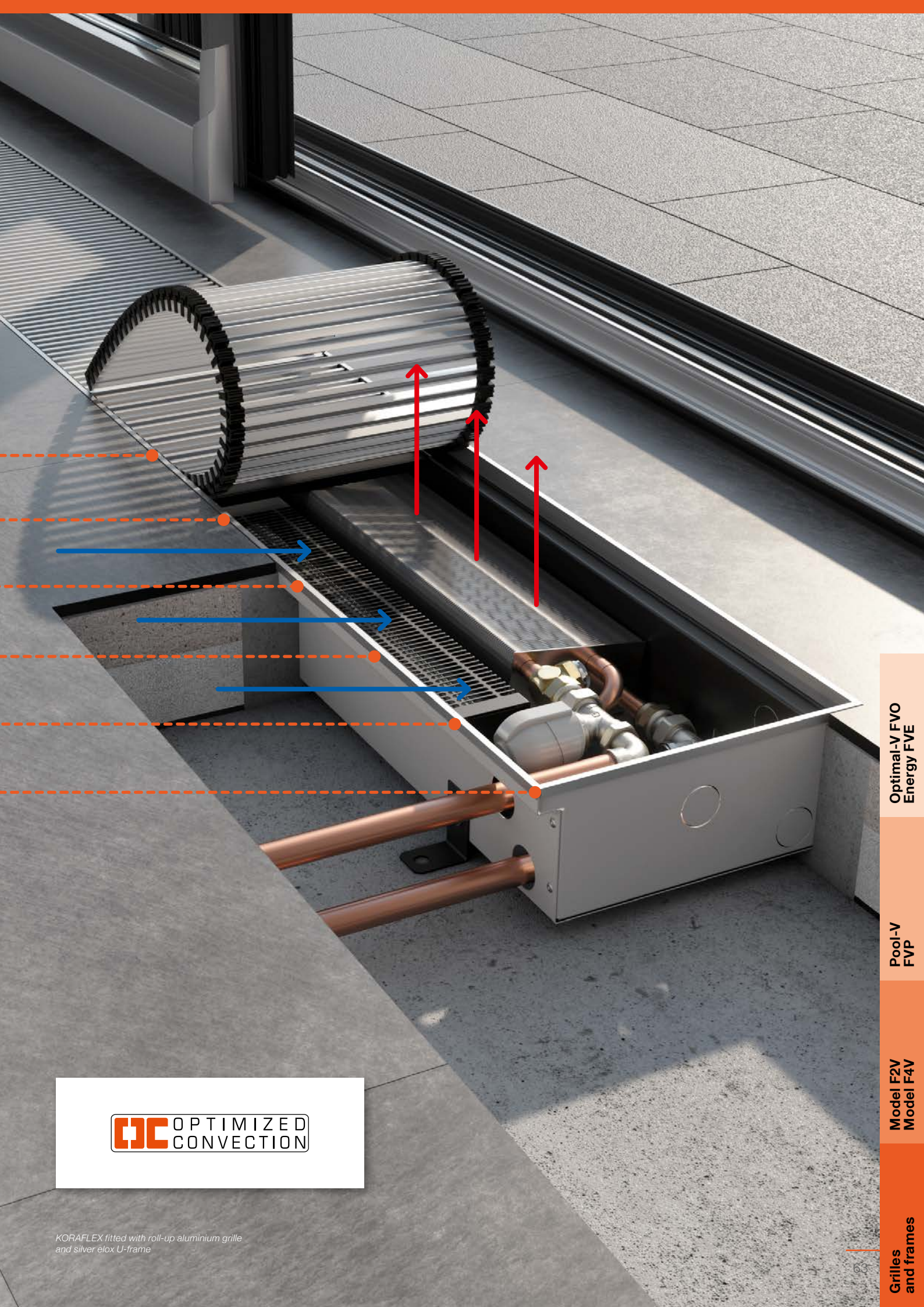
Safe regulation guarantees precise rotation of fans, and declared output.



TAILOR MADE DESIGN SOLUTIONS

Our wide range of specially-designed modules allows the quick and simple creation of unconventional arrays of trench heaters.





KORAFLEX fitted with roll-up aluminium grille and silver elox U-frame

Optimal-V FVO
Energy FVE

Pool-V
FVP

Model F2V
Model F4V

Grilles
and frames

KORAFLEX

Optimal-V FVO

Trench heaters with forced convection for heating in a wide range of models, with 24 V DC connection



KORAFLEX

Optimal Energy FVE

Trench heater with forced convection for heating, with 230 V AC connection





*KORAFLEX fitted with aluminium grille
and U-frame, light bronze elox*

Specifications

Depth	70, 80, 90, 110, 130 mm
Width	160, 200, 260, 320, 400 mm
Length	800 to 3 000 mm (by 200 mm)
Heat output	from 54 to 16 763 W
Max. operating pressure	1.2 MPa
Max. operating temperature	110 °C
Connecting thread	inner G 1/2"
IP rating	IP 20

ECONOMIC version – black lacquered galvanized steel casing, non-lacquered heat exchanger

EXCLUSIVE version – black lacquered galvanized steel casing, RAL 9005 black lacquered heat exchange

Standard contents

- RAL 9005 black lacquered galvanized steel casing
- Economic – non-lacquered Al/Cu heat exchanger with bleed valve
- Exclusive – RAL 9005 black lacquered Al/Cu heat exchanger with bleed valve
- aluminium U-frame silver elox
- metal cover plates
- set of low-energy EC fans 24 V DC
- 24 V DC terminal block and regulator (FCR BOX)
- levelling set screws and 4 anchors
- spacers for correct installation and concreting
- hardboard cover to protect trench heaters from contamination
- durable packaging, installation instructions

KORAFLEX Optimal-V FVO represents our widest range of trench heaters with forced convection. Optimal-V trench heaters are available with a wide range of grilles and frames. They are characterized by silent operation and can be connected to BMS (Building Management System).

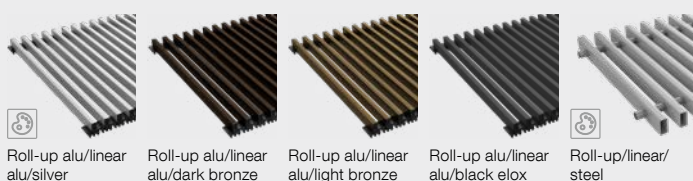


Optional accessories

- choice of grilles
- Cross grille – design solutions – necessary to order together with trench heater – for more info, see p. 125
- light/dark bronze and black elox or RAL colour chart lacquered aluminium U-frame
- silver, light/dark bronze and black elox or RAL colour chart lacquered aluminium F-frame
- 24 V DC power supply
- 24 V DC thermostat for regulation
- 24 V DC thermostatic actuator, 2.5 m or 5 m cable length
- NTC temperature sensor
- external room sensor
- infrared remote control
- R-BOX
- sound insulation sheet
- raised floor structural supports
- lockshield, thermostatic valve
- 1/2"x1/2" 90° brass elbow for connection facilitation
- 10, 12 or 30 cm flexible stainless steel hose
- strengthened OSB cover for installation purposes

For more information about optional accessories and order codes, see p. 103–105

Suitable grilles



Roll-up alu/linear alu/silver

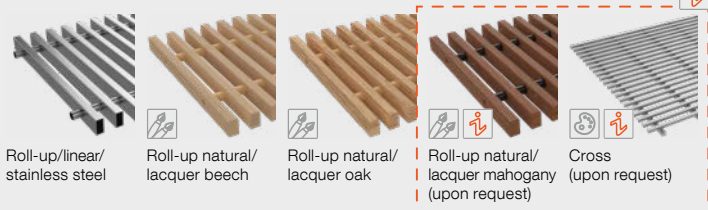
Roll-up alu/linear alu/dark bronze

Roll-up alu/linear alu/light bronze

Roll-up alu/linear alu/black elox

Roll-up/linear/steel

Linear grilles are available only after technical alterations to the casing. For more info see p. 126.



Roll-up/linear/stainless steel

Roll-up natural/lacquer beech

Roll-up natural/lacquer oak

Roll-up natural/lacquer mahogany (upon request)

Cross (upon request)

For descriptions of available grilles including order codes, see p. 119–127.

Specifications

Depth	70, 80, 90, 110, 130 mm
Width	160, 200, 260, 320, 400 mm
Length	1 000 to 3 000 mm (by 200 mm)
Heat output	from 54 to 15 517 W
Max. operating pressure	1.2 MPa
Max. operating temperature	110 °C
Connecting thread	inner G 1/2"
IP rating	IP 20

ECONOMIC version – black lacquered galvanized steel casing, non-lacquered heat exchanger

EXCLUSIVE version – black lacquered galvanized steel casing, RAL 9005 black lacquered heat exchanger

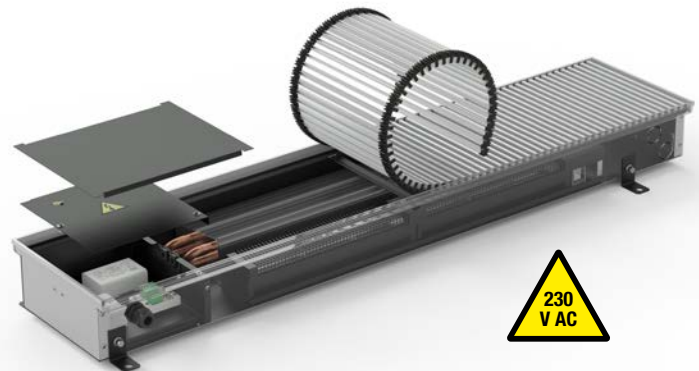
Standard contents

- RAL 9005 black lacquered galvanized steel casing
- Economic – non-lacquered Al/Cu heat exchanger with bleed valve
- Exclusive – RAL 9005 black lacquered Al/Cu heat exchanger with bleed valve
- aluminium U-frame, silver elox
- metal cover plates
- set of low-energy EC fans 24 V DC
- 230 V AC terminal block and 24 V DC regulator (FCR BOX)
- power supply 230 V AC/24 V DC
- levelling set screws and 4 anchors
- spacers for correct installation and concreting
- hardboard cover to protect trench heaters from contamination
- durable packaging, installation instructions



Assembly and connection must be carried out by suitably qualified persons. An inspection and testing of electrical installations in accordance with ČSN 33 1500 must be carried out.

KORAFLEX Energy FVE is based on the Optimal-V range, extended by 200 mm and fitted with regulation for 230 V AC connection. Energy 230 V AC trench heaters are suitable for dry environments and are solely for heating. They are characterized by silent operation and can be connected to BMS (Building Management System).

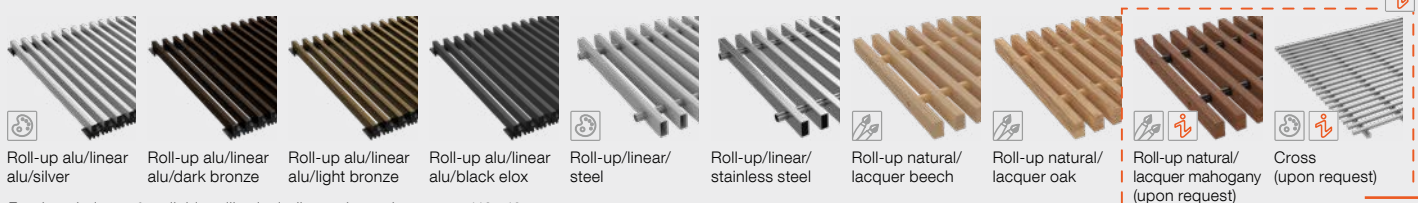


Optional accessories

- choice of grilles
- Cross grille – design solutions – necessary to order together with trench heater – for more info, see p. 125
- light/dark bronze and black elox or RAL colour chart lacquered aluminium U-frame
- silver, light/dark bronze and black elox or RAL colour chart lacquered aluminium F-frame
- 24 V DC thermostat for regulation
- 24 V DC thermostatic actuator, 2.5 m or 5 m cable length
- NTC temperature sensor
- external room sensor
- infrared remote control
- R BOX
- sound insulation sheet
- raised floor structural supports
- lockshield, thermostatic valve
- 1/2"x1/2" 90° brass elbow for connection facilitation
- 10, 12 or 30 cm flexible stainless steel hose
- strengthened OSB cover for installation purposes

For more information about optional accessories and order codes, see p. 103–105

Suitable grilles



For descriptions of available grilles including order codes, see p. 119–127.

Linear grilles are available only after technical alterations to the casing. For more info see p. 126.



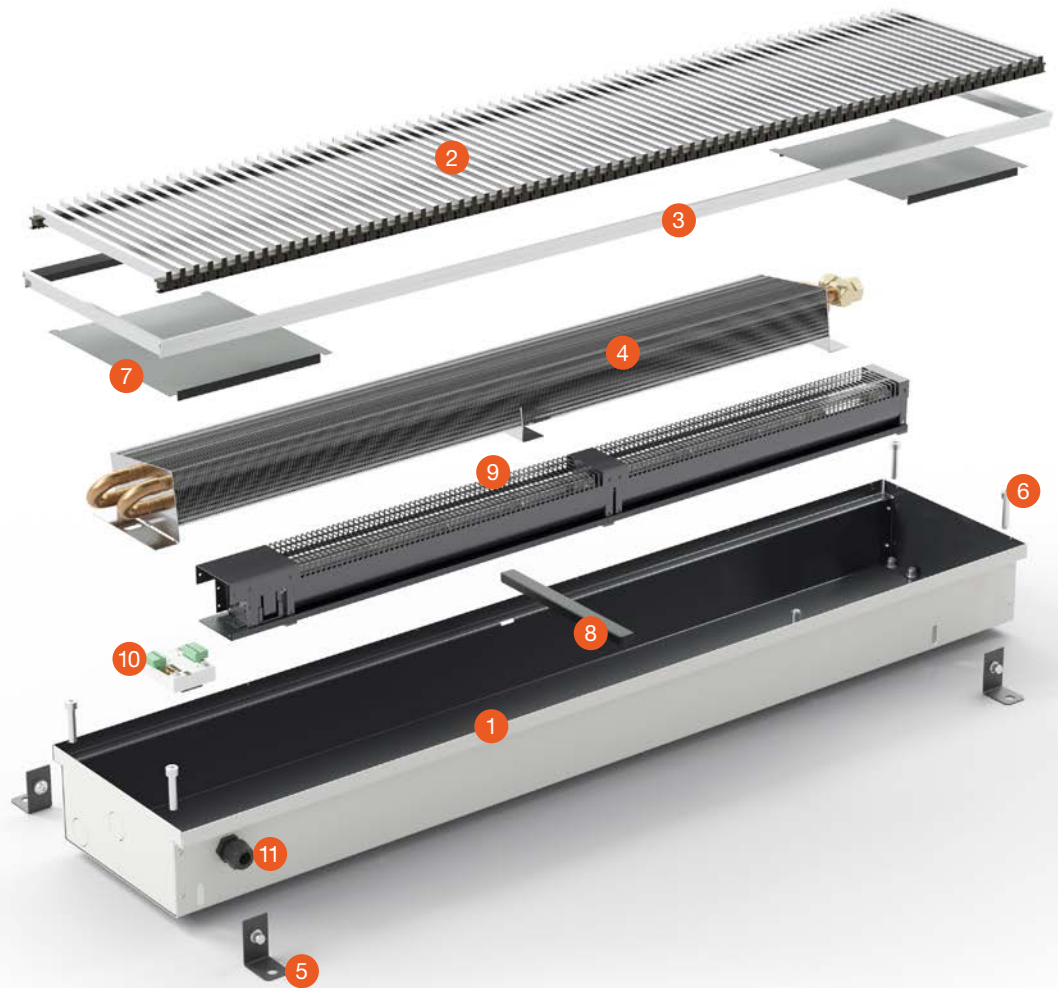
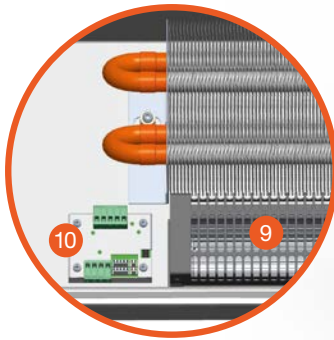
TRENCH HEATER COMPONENTS

- 1 RAL 9005 black lacquered galvanized steel casing
- 2 choice of grille
- 3 choice of frame
- 4 Al/Cu heat exchanger
- 5 anchors
- 6 levelling set screws
- 7 metal cover plates
- 8 spacer for correct installation and concreting

Regulation RT

- 9 EC 24 V DC fan
- 10 regulator (FCR BOX)
- 11 cable bushing

24
V DC



230
V AC

KORAFLEX Energy FVE

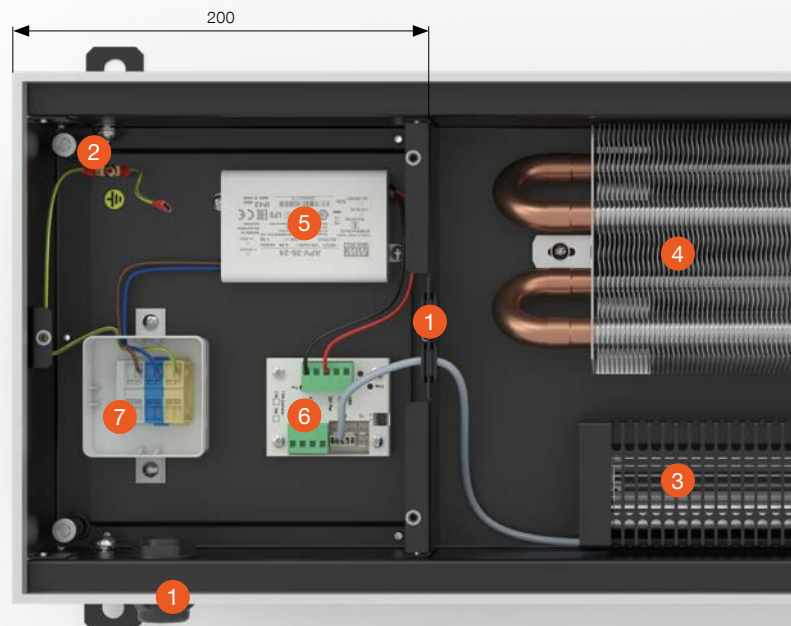
Specially adapted space in the trench heater casing. 200 mm longer than the Optimal-V model, fitted with 230 V DC regulation.

- | | |
|------------------------|---------------------------------|
| 1 cable bushing | RE Regulation |
| 2 earth | 5 230 V AC/24 V DC power supply |
| 3 EC fan | 6 FCR BOX regulator |
| 4 Al/Cu heat exchanger | 7 terminal block |

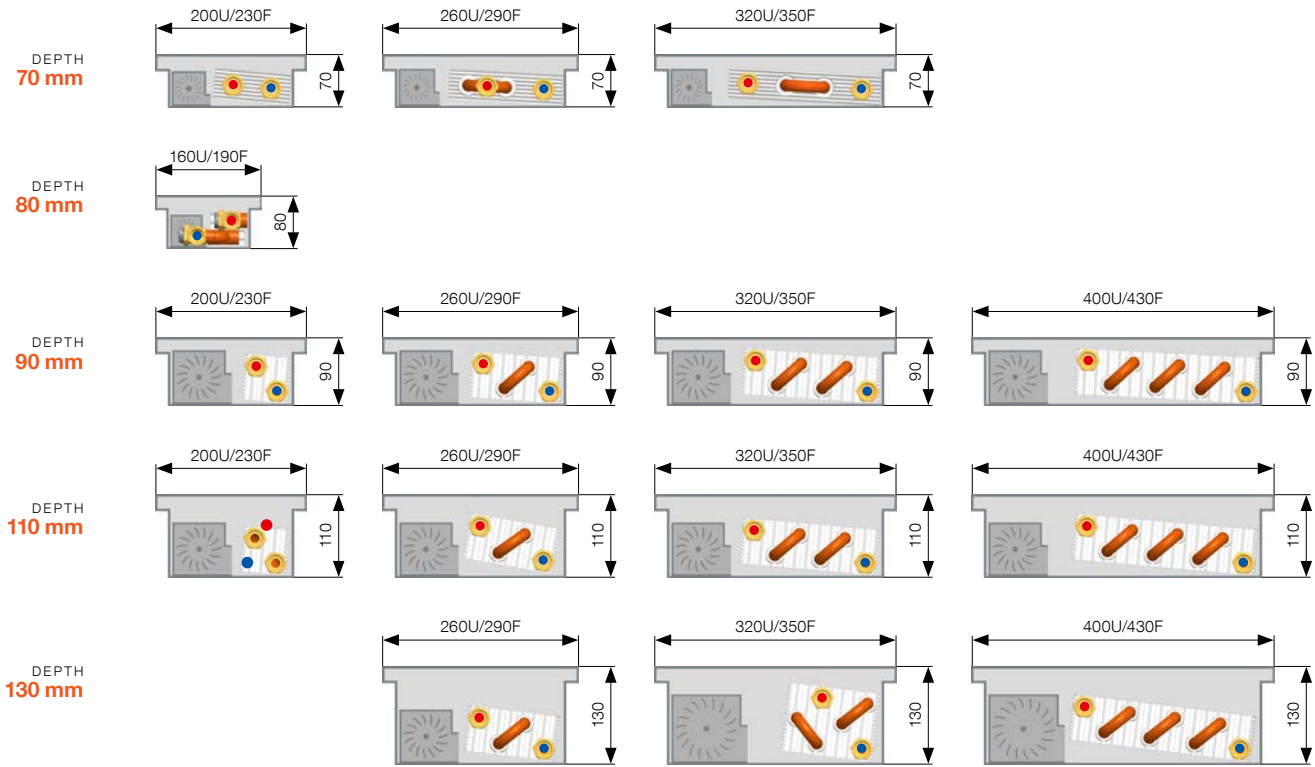
Further information about assembly and electrical installations, see p. 102.



Assembly and connection must be carried out by suitably qualified persons. An inspection and testing of electrical installations in accordance with appropriate local norm must be carried out.



PRODUCT RANGE



U = U-frame
F = F-frame

Width of trench heaters fitted with a Cross frame are identical to trench heaters fitted with an U-frame.

Measurements shown in mm.



KORAFLEX fitted with silver aluminium grille and U-frame, silver elox

Optimal-V FVO
Energy FVE

KORAFLEX

Optimal-V FVO, Energy FVE

depth 70 mm/width 200 mm

Heat output [W] where $t_1/t_2/t_3$ / EN 16430

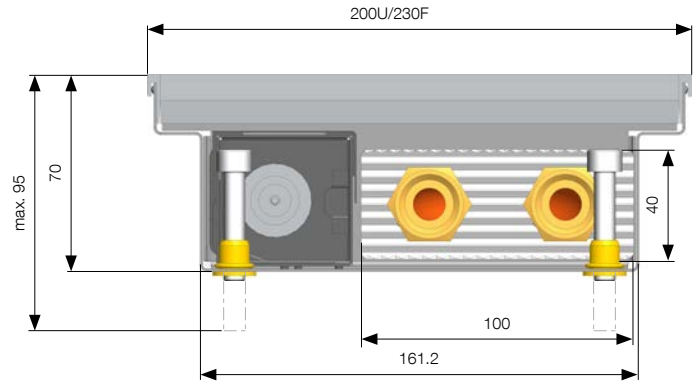
Measurements are shown in mm including U-frame.

Length	Optimal-V Energy	Fan speed setting	Heat output [W]		El. consumption [W]		Acoustics	
			75/65/20 °C	55/45/20 °C	Optimal-V 24 V DC	Energy 230 V AC	Sound pressure [dB(A)]	Sound power [dB(A)]
800	1000	0	54	27	0	0	-	-
		1	438	253	1	10	17.4	25.4
		2	627	365	1	11	23.7	31.7
1000	1200	3	777	458	2	12	32.5	40.5
		0	78	39	0	0	-	-
		1	629	362	1	10	17.7	25.7
1200	1400	2	899	524	2	11	24.7	32.7
		3	1 115	657	3	12	33.4	41.4
		0	101	51	0	0	-	-
1400	1600	1	819	472	1	10	18.5	26.5
		2	1 171	683	2	11	25.9	33.9
		3	1 453	856	3	12	34.3	42.3
1600	1800	0	125	63	0	0	-	-
		1	1 010	582	1	10	18.2	26.2
		2	1 444	841	2	11	26.1	34.1
1800	2000	3	1 791	1 055	3	13	34.8	42.8
		0	148	75	0	0	-	-
		1	1 200	692	1	10	18.4	26.4
2000	2200	2	1 716	1 000	2	11	26.7	34.7
		3	2 129	1 254	4	14	35.4	43.4
		0	172	87	0	0	-	-
2200	2400	1	1 391	802	1	10	18.6	26.6
		2	1 989	1 159	2	12	26.4	34.4
		3	2 467	1 453	5	14	35.6	43.6
2400	2600	0	195	99	0	0	-	-
		1	1 582	912	1	11	18.8	26.8
		2	2 261	1 318	2	12	27.7	35.7
2600	2800	3	2 805	1 652	5	15	36.3	44.3
		0	219	111	0	0	-	-
		1	1 772	1 021	2	11	18.9	26.9
2800	3000	2	2 534	1 476	3	13	28.1	36.1
		3	3 143	1 851	5	16	36.7	44.7
		0	242	123	0	0	-	-
3000		1	1 963	1 131	2	11	19.0	27
		2	2 806	1 635	4	13	28.5	36.5
		3	3 481	2 050	6	16	37.0	45
3000		0	266	134	0	0	-	-
		1	2 153	1 241	2	11	19.1	27.1
		2	3 078	1 794	4	13	28.9	36.9
3000		3	3 818	2 249	7	17	37.4	45.4
		0	290	146	0	0	-	-
		1	2 344	1 351	3	11	18.5	26.5
3000		2	3 351	1 952	4	13	29.6	37.6
		3	4 156	2 448	8	17	37.8	45.8
		0	313	158	0	0	-	-
3000		1	2 534	1 461	3	11	19.4	27.4
		2	3 623	2 111	4	13	29.5	37.5
		3	4 494	2 647	8	17	38.0	46

Temperature exponent [n] **1.0564**

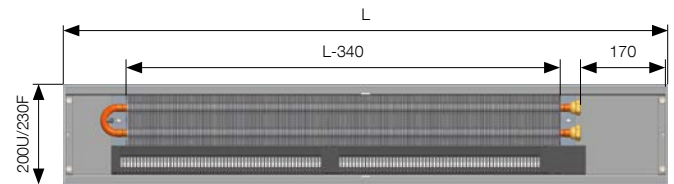
More information

FV mounting p. 98, Raised floor installation p. 100, Convectors connections p. 101, Linear grille supports p. 126, Regulation and accessories p. 102, Noise and acoustics p. 111, Basic tech. specifications p. 112, Pressure losses p. 113, Grilles p. 119–127

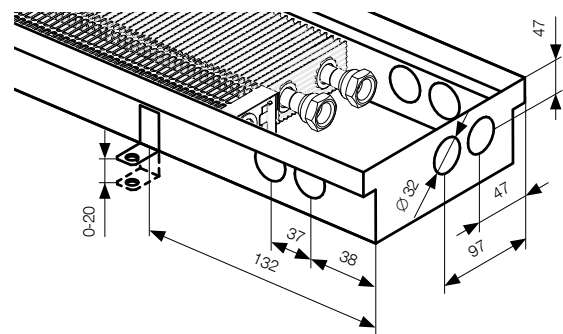
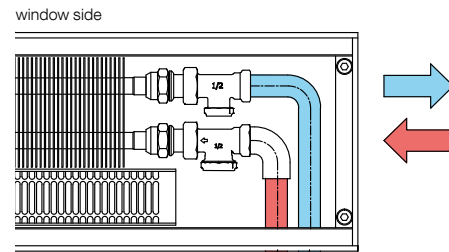


U = U-frame, F = F-frame

Where the F-frame is fitted, both the length and width increase by 30 mm. Measurements for U-frame and Cross frame are identical.



Connections and connection measurements



Measurements shown in mm.

KORAFLEX

Optimal-V FVO, Energy FVE

depth 70 mm/width 260 mm

Heat output [W] where $t_1/t_2/t_3$ / EN 16430

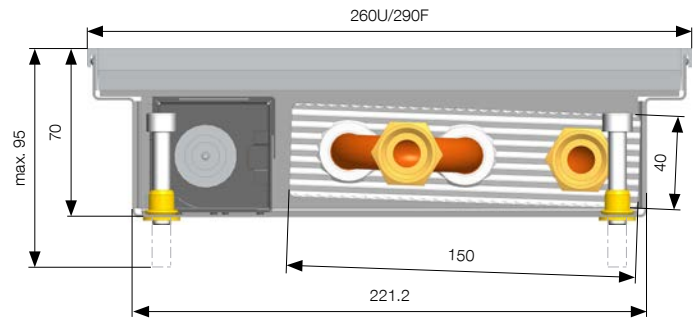
Measurements are shown in mm including U-frame.

Length	Optimal-V	Energy	Fan speed setting	Heat output [W]		El. consumption [W]		Acoustics	
				75/65/20 °C	55/45/20 °C	Optimal-V 24 V DC	Energy 230 V AC	Sound pressure [dB(A)]	Sound power [dB(A)]
800	1000	0		66	32	0	0	-	-
		1		480	277	1	9	17.4	25.4
		2		692	399	1	10	23.7	31.7
		3		881	510	2	12	32.5	40.5
1000	1200	0		97	47	0	0	-	-
		1		706	407	1	9	17.7	25.7
		2		1 017	587	2	10	24.7	32.7
		3		1 296	749	3	12	33.4	41.4
1200	1400	0		129	62	0	0	-	-
		1		932	537	1	9	18.5	26.5
		2		1 343	775	2	11	25.9	33.9
		3		1 710	989	3	12	34.3	42.3
1400	1600	0		160	77	0	0	-	-
		1		1 159	668	1	10	18.2	26.2
		2		1 668	963	2	11	26.1	34.1
		3		2 125	1 229	3	13	34.8	42.8
1600	1800	0		191	92	0	0	-	-
		1		1 385	798	1	10	18.4	26.4
		2		1 993	1 151	2	11	26.7	34.7
		3		2 539	1 469	4	13	35.4	43.4
1800	2000	0		222	107	0	0	-	-
		1		1 611	928	1	10	18.6	26.6
		2		2 319	1 339	2	11	26.4	34.4
		3		2 954	1 709	5	14	35.6	43.6
2000	2200	0		253	122	0	0	-	-
		1		1 837	1 058	1	10	18.8	26.8
		2		2 644	1 527	3	12	27.7	35.7
		3		3 368	1 949	5	15	36.3	44.3
2200	2400	0		284	137	0	0	-	-
		1		2 063	1 188	2	10	18.9	26.9
		2		2 970	1 715	3	13	28.1	36.1
		3		3 783	2 188	6	15	36.7	44.7
2400	2600	0		316	152	0	0	-	-
		1		2 289	1 319	2	11	19.0	27
		2		3 295	1 903	4	13	28.5	36.5
		3		4 198	2 428	6	16	37.0	45
2600	2800	0		347	167	0	0	-	-
		1		2 515	1 449	2	11	19.1	27.1
		2		3 621	2 090	4	13	28.9	36.9
		3		4 612	2 668	7	17	37.4	45.4
2800	3000	0		378	182	0	0	-	-
		1		2 741	1 579	2	11	18.5	26.5
		2		3 946	2 278	4	13	29.6	37.6
		3		5 027	2 908	7	17	37.8	45.8
3000		0		409	197	0		-	-
		1		2 967	1 709	2		19.4	27.4
		2		4 272	2 466	4		29.5	37.5
		3		5 441	3 148	8		38.0	46

Temperature exponent [n] **1.0674**

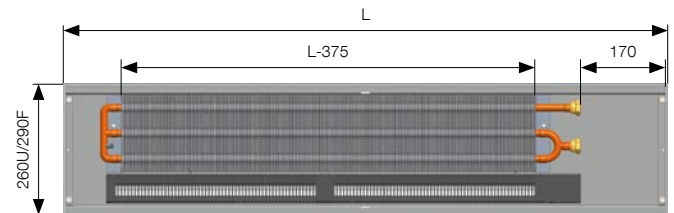
More information

FV mounting p. 98, Raised floor installation p. 100, Convactor connections p. 101, Linear grille supports p. 126, Regulation and accessories p. 102, Noise and acoustics p. 111, Basic tech. specifications p. 112, Pressure losses p. 113, Grilles p. 119–127

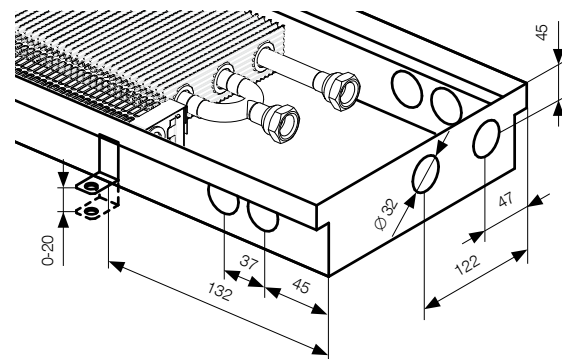
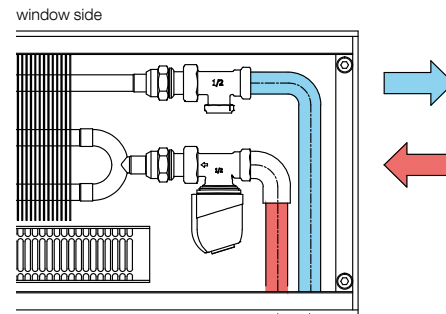


U = U-frame, F = F-frame

Where the F-frame is fitted, both the length and width increase by 30 mm. Measurements for U-frame and Cross frame are identical.



Connections and connection measurements



Optimal-V FVO
Energy FVE

Measurements shown in mm.

KORAFLEX

Optimal-V FVO, Energy FVE



depth 70 mm/width 320 mm

Heat output [W] where $t_1/t_2/t_3$ / EN 16430

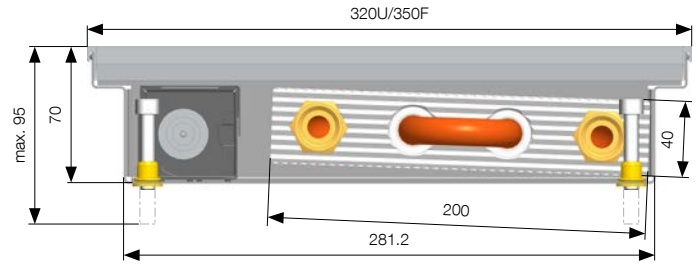
Measurements are shown in mm including U-frame.

Length	Optimal-V Energy	Fan speed setting	Heat output [W]		El. consumption [W]		Acoustics	
			75/65/20 °C	55/45/20 °C	Optimal-V 24 V DC	Energy 230 V AC	Sound pressure [dB(A)]	Sound power [dB(A)]
800	1000	0	88	42	0	0	-	-
		1	636	370	1	9	19.1	27.1
		2	977	574	1	11	26.6	34.6
		3	1 269	755	2	12	28.9	36.9
1000	1200	0	126	60	0	0	-	-
		1	912	530	1	10	19.8	27.8
		2	1 401	824	2	11	27.6	35.6
		3	1 821	1 083	3	12	30.0	38
1200	1400	0	164	79	0	0	-	-
		1	1 189	691	1	10	20.1	28.1
		2	1 826	1 073	2	11	28.3	36.3
		3	2 373	1 411	3	13	31.0	39
1400	1600	0	203	97	0	0	-	-
		1	1 465	851	1	10	20.8	28.8
		2	2 250	1 323	2	12	29.0	37
		3	2 925	1 739	4	13	31.7	39.7
1600	1800	0	241	115	0	0	-	-
		1	1 742	1 012	1	10	21.2	29.2
		2	2 675	1 572	2	12	29.5	37.5
		3	3 476	2 067	4	14	32.4	40.4
1800	2000	0	279	134	0	0	-	-
		1	2 018	1 173	1	10	22.0	30
		2	3 100	1 822	2	12	30.1	38.1
		3	4 028	2 396	4	14	32.9	40.9
2000	2200	0	317	152	0	0	-	-
		1	2 295	1 333	1	11	21.9	29.9
		2	3 524	2 072	3	13	30.5	38.5
		3	4 580	2 724	6	15	33.5	41.5
2200	2400	0	355	170	0	0	-	-
		1	2 571	1 494	2	11	22.2	30.2
		2	3 949	2 321	4	13	30.9	38.9
		3	5 132	3 052	6	16	34.0	42
2400	2600	0	394	189	0	0	-	-
		1	2 848	1 655	2	11	22.4	30.4
		2	4 373	2 571	4	14	31.3	39.3
		3	5 684	3 380	7	16	34.5	42.5
2600	2800	0	432	207	0	0	-	-
		1	3 124	1 815	2	11	22.7	30.7
		2	4 798	2 820	4	14	31.6	39.6
		3	6 235	3 708	8	17	34.9	42.9
2800	3000	0	470	225	0	0	-	-
		1	3 401	1 976	2	11	22.7	30.7
		2	5 223	3 070	5	14	31.9	39.9
		3	6 787	4 036	9	17	35.3	43.3
3000		0	508	243	0	0	-	-
		1	3 677	2 137	2	11	23.1	31.1
		2	5 647	3 320	5	14	32.2	40.2
		3	7 339	4 365	9	17	35.6	43.6

Temperature exponent [n] **1.0417**

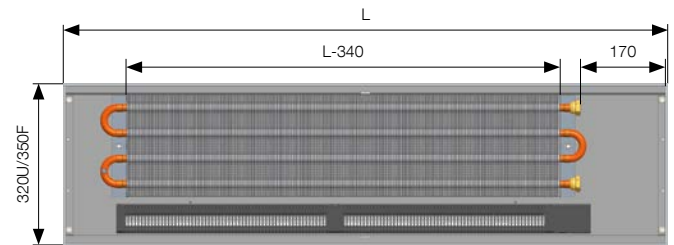
More information

FV mounting p. 98, Raised floor installation p. 100, Convectors connections p. 101, Linear grille supports p. 126, Regulation and accessories p. 102, Noise and acoustics p. 111, Basic tech. specifications p. 112, Pressure losses p. 113, Grilles p. 119–127

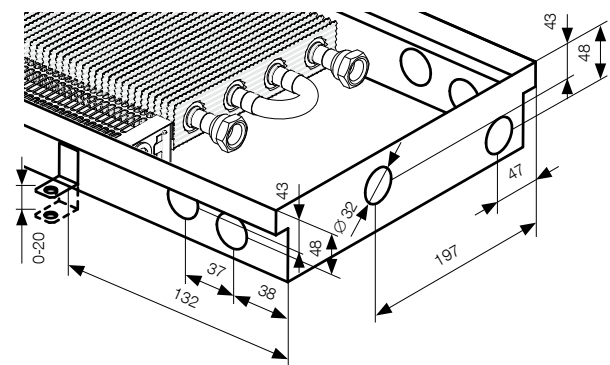
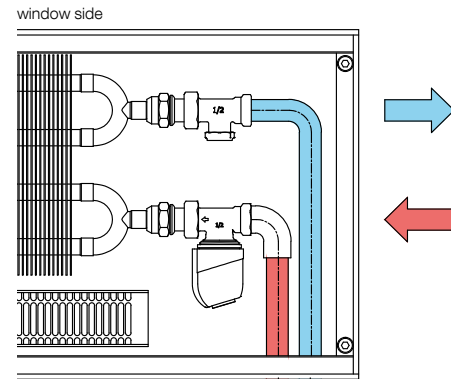


U = U-frame, F = F-frame

Where the F-frame is fitted, both the length and width increase by 30 mm. Measurements for U-frame and Cross frame are identical.



Connections and connection measurements



Measurements shown in mm.

KORAFLEX

Optimal-V FVO, Energy FVE



depth 80 mm/width 160 mm

Heat output [W] where $t_1/t_2/t_3$ / EN 16430

Measurements are shown in mm including U-frame.

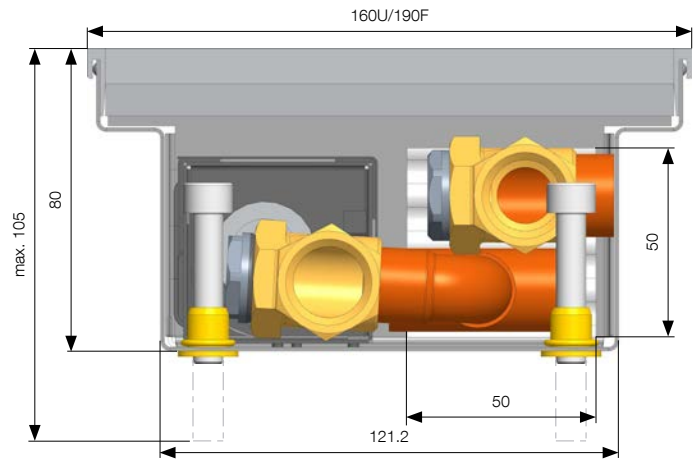
Length	Optimal-V Energy	Fan speed setting	Heat output [W]		El. consumption [W]		Acoustics	
			75/65/20 °C	55/45/20 °C	Optimal-V 24 V DC	Energy 230 V AC	Sound pressure [dB(A)]	Sound power [dB(A)]
800	1000	0	40	19	0	0	-	-
		1	219	116	1	9	17.4	25.4
		2	332	183	1	10	23.7	31.7
		3	403	231	2	11	32.5	40.5
1000	1200	0	61	29	0	0	-	-
		1	334	178	1	10	17.7	25.7
		2	507	280	2	10	24.7	32.7
		3	614	352	2	11	33.4	41.4
1200	1400	0	82	40	0	0	-	-
		1	449	239	1	10	18.5	26.5
		2	682	377	2	10	25.9	33.9
		3	826	474	2	12	34.3	42.3
1400	1600	0	103	50	0	0	-	-
		1	564	300	1	10	18.2	26.2
		2	856	473	2	10	26.1	34.1
		3	1 038	595	2	12	34.8	42.8
1600	1800	0	124	60	0	0	-	-
		1	679	362	1	10	18.4	26.4
		2	1 031	570	2	11	26.7	34.7
		3	1 250	717	3	12	35.4	43.4
1800	2000	0	145	70	0	0	-	-
		1	794	423	1	10	18.6	26.6
		2	1 206	666	2	11	26.4	34.4
		3	1 462	838	3	13	35.6	43.6
2000	2200	0	166	80	0	0	-	-
		1	909	484	1	10	18.8	26.8
		2	1 381	763	2	12	27.7	35.7
		3	1 674	959	3	14	36.3	44.3
2200	2400	0	187	91	0	0	-	-
		1	1 024	546	2	10	18.9	26.9
		2	1 555	860	3	12	28.1	36.1
		3	1 885	1 081	4	14	36.7	44.7
2400	2600	0	208	101	0	0	-	-
		1	1 139	607	2	10	19.0	27
		2	1 730	956	3	12	28.5	36.5
		3	2 097	1 202	5	14	37.0	45
2600	2800	0	229	111	0	0	-	-
		1	1 254	668	2	10	19.1	27.1
		2	1 905	1 053	3	12	28.9	36.9
		3	2 309	1 324	5	14	37.4	45.4
2800	3000	0	250	121	0	0	-	-
		1	1 369	729	2	10	18.5	26.5
		2	2 080	1 149	4	12	29.6	37.6
		3	2 521	1 445	6	14	37.8	45.8
3000		0	271	131	0	0	-	-
		1	1 485	791	2	10	19.4	27.4
		2	2 255	1 246	4	12	29.5	37.5
		3	2 733	1 567	6	14	38.0	46

Temperature exponent [n]

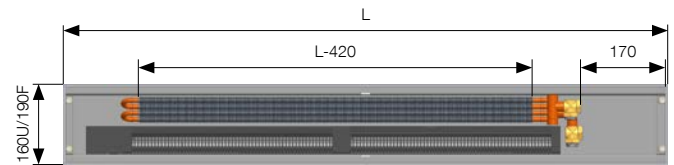
1.1904

More information

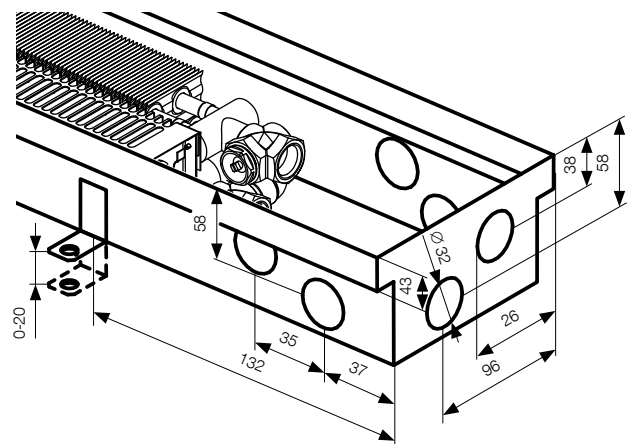
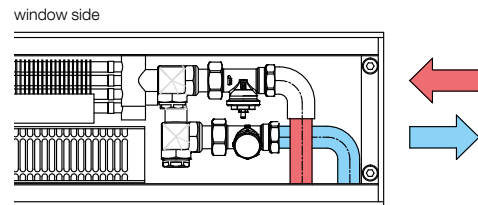
FV mounting p. 98, Raised floor installation p. 100, Convector connections p. 101, Linear grille supports p. 126, Regulation and accessories p. 102, Noise and acoustics p. 111, Basic tech. specifications p. 112, Pressure losses p. 113, Grilles p. 119–127



Where the F-frame is fitted, both the length and width increase by 30 mm. Measurements for U-frame and Cross frame are identical.



Connections and connection measurements



Measurements shown in mm.

Optimal-V FVO
Energy FVE

KORAFLEX

Optimal-V FVO, Energy FVE

depth 90 mm/width 200 mm

Heat output [W] where $t_1/t_2/t_3$ / EN 16430

Measurements are shown in mm including U-frame.

Length	Optimal-V Energy	Fan speed setting	Heat output [W]		El. consumption [W]		Acoustics	
			75/65/20 °C	55/45/20 °C	Optimal-V 24 V DC	Energy 230 V AC	Sound pressure [dB(A)]	Sound power [dB(A)]
800	1000	0	54	26	0	0	-	-
		1	455	272	1	10	19.1	27.1
		2	673	404	2	12	26.6	34.6
1000	1200	3	769	463	2	12	28.9	36.9
		0	76	36	0	0	-	-
		1	641	383	2	11	19.8	27.8
1200	1400	2	947	569	2	13	27.6	35.6
		3	1 083	652	3	13	30.0	38
		0	99	47	0	0	-	-
1400	1600	1	827	494	2	11	20.1	28.1
		2	1 222	734	3	13	28.3	36.3
		3	1 397	842	4	14	31.0	39
1600	1800	0	121	58	0	0	-	-
		1	1 012	605	2	11	20.8	28.8
		2	1 497	899	3	13	29.0	37
1800	2000	3	1 711	1 031	4	14	31.7	39.7
		0	143	68	0	0	-	-
		1	1 198	716	2	12	21.2	29.2
2000	2200	2	1 771	1 064	4	13	29.5	37.5
		3	2 025	1 220	5	15	32.4	40.4
		0	125	79	0	0	-	-
2200	2400	1	1 384	827	2	12	22.0	30
		2	2 046	1 229	5	15	30.1	38.1
		3	2 339	1 409	7	16	32.9	40.9
2400	2600	0	187	89	0	0	-	-
		1	1 570	938	3	13	21.9	29.9
		2	2 320	1 394	5	16	30.5	38.5
2600	2800	3	2 653	1 598	7	17	33.5	41.5
		0	209	100	0	0	-	-
		1	1 755	1 049	3	13	22.2	30.2
2800	3000	2	2 595	1 559	5	16	30.9	38.9
		3	2 967	1 787	7	17	34.0	42
		0	231	111	0	0	-	-
3000		1	1 941	1 160	3	13	22.4	30.4
		2	2 870	1 724	7	16	31.3	39.3
		3	3 281	1 976	9	18	34.5	42.5
2600	2800	0	254	121	0	0	-	-
		1	2 127	1 271	4	13	22.7	30.7
		2	3 144	1 889	8	17	31.6	39.6
2800	3000	3	3 595	2 165	11	19	34.9	42.9
		0	276	132	0	0	-	-
		1	2 313	1 382	4	14	22.7	30.7
3000		2	3 419	2 055	8	18	31.9	39.9
		3	3 909	2 355	11	21	35.3	43.3
		0	298	142	0	0	-	-
3000		1	2 498	1 493	4	14	23.1	31.1
		2	3 694	2 220	10		32.2	40.2
		3	4 223	2 544	14		35.6	43.6

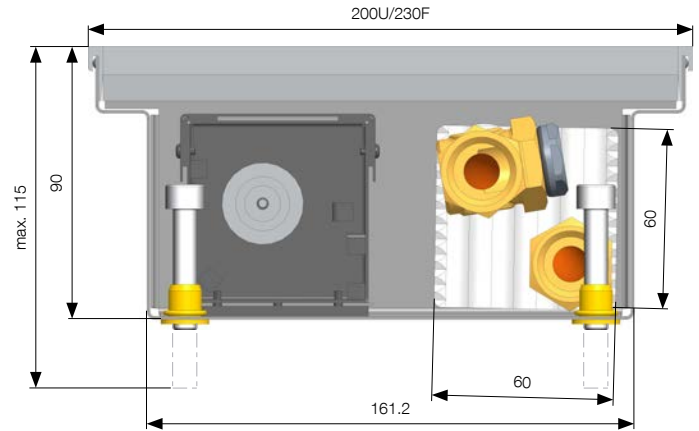
Temperature exponent [n]

1.0041

More information

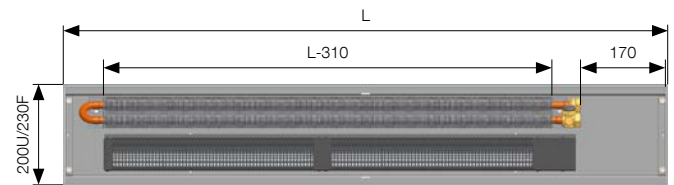
FV mounting p. 98, Raised floor installation p. 100, Convactor connections p. 101, Linear grille supports p. 126,

Regulation and accessories p. 102, Noise and acoustics p. 111, Basic tech. specifications p. 112, Pressure losses p. 113, Grilles p. 119–127

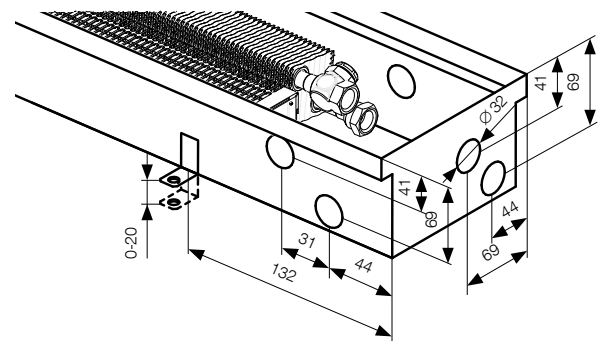
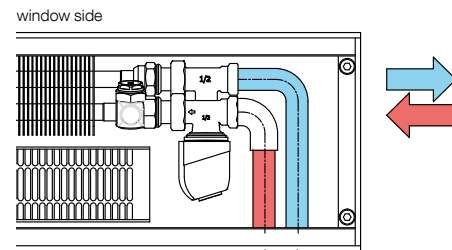


U = U-frame, F = F-frame

Where the F-frame is fitted, both the length and width increase by 30 mm. Measurements for U-frame and Cross frame are identical.



Connections and connection measurements



Measurements shown in mm.

KORAFLEX

Optimal-V FVO, Energy FVE



depth 90 mm/width 260 mm

Heat output [W] where $t_1/t_2/t_3$ / EN 16430

Measurements are shown in mm including U-frame.

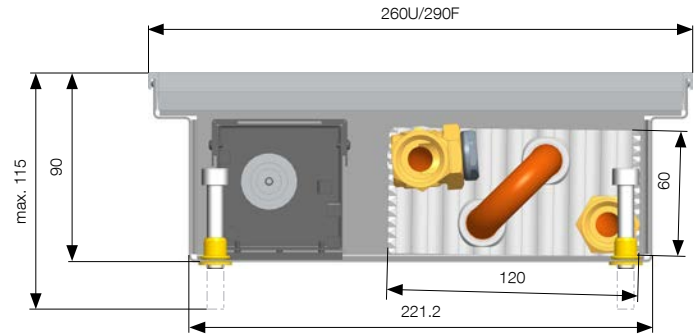
Length	Optimal-V	Energy	Fan speed setting	Heat output [W]		El. consumption [W]		Acoustics	
				75/65/20 °C	55/45/20 °C	Optimal-V 24 V DC	Energy 230 V AC	Sound pressure [dB(A)]	Sound power [dB(A)]
800	1000	0	0	74	37	0	0	-	-
		1	1	620	381	1	10	19.1	27.1
		2	2	904	555	2	12	26.6	34.6
		3	3	1 032	634	2	12	28.9	36.9
1000	1200	0	0	104	52	0	0	-	-
		1	1	873	536	2	11	19.8	27.8
		2	2	1 273	781	2	13	27.6	35.6
		3	3	1 453	892	3	13	30.0	38
1200	1400	0	0	135	67	0	0	-	-
		1	1	1 125	691	2	11	20.1	28.1
		2	2	1 642	1 008	3	13	28.3	36.3
		3	3	1 874	1 151	4	14	31.0	39
1400	1600	0	0	165	82	0	0	-	-
		1	1	1 378	847	2	11	20.8	28.8
		2	2	2 010	1 234	3	13	29.0	37
		3	3	2 296	1 409	4	14	31.7	39.7
1600	1800	0	0	195	97	0	0	-	-
		1	1	1 631	1 002	2	12	21.2	29.2
		2	2	2 379	1 461	4	13	29.5	37.5
		3	3	2 717	1 668	5	15	32.4	40.4
1800	2000	0	0	225	113	0	0	-	-
		1	1	1 884	1 157	2	12	22.0	30
		2	2	2 748	1 687	5	15	30.1	38.1
		3	3	3 138	1 927	7	16	32.9	40.9
2000	2200	0	0	256	128	0	0	-	-
		1	1	2 137	1 312	3	13	21.9	29.9
		2	2	3 117	1 914	5	16	30.5	38.5
		3	3	3 559	2 185	7	17	33.5	41.5
2200	2400	0	0	286	143	0	0	-	-
		1	1	2 390	1 468	3	13	22.2	30.2
		2	2	3 486	2 140	5	16	30.9	38.9
		3	3	3 980	2 444	7	17	34.0	42
2400	2600	0	0	316	158	0	0	-	-
		1	1	2 643	1 623	3	13	22.4	30.4
		2	2	3 855	2 367	7	16	31.3	39.3
		3	3	4 402	2 702	9	18	34.5	42.5
2600	2800	0	0	347	173	0	0	-	-
		1	1	2 896	1 778	4	13	22.7	30.7
		2	2	4 224	2 593	8	17	31.6	39.6
		3	3	4 823	2 961	11	19	34.9	42.9
2800	3000	0	0	377	188	0	0	-	-
		1	1	3 149	1 934	4	14	22.7	30.7
		2	2	4 593	2 820	8	18	31.9	39.9
		3	3	5 244	3 220	11	21	35.3	43.3
3000		0	0	407	203	0	0	-	-
		1	1	3 402	2 089	5	15	23.1	31.1
		2	2	4 961	3 046	10	20	32.2	40.2
		3	3	5 665	3 478	14	24	35.6	43.6

Temperature exponent [n]

0.9874

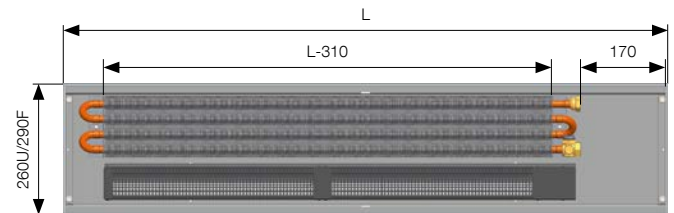
More information

FV mounting p. 98, Raised floor installation p. 100, Convector connections p. 101, Linear grille supports p. 126, Regulation and accessories p. 102, Noise and acoustics p. 111, Basic tech. specifications p. 112, Pressure losses p. 113, Grilles p. 119–127

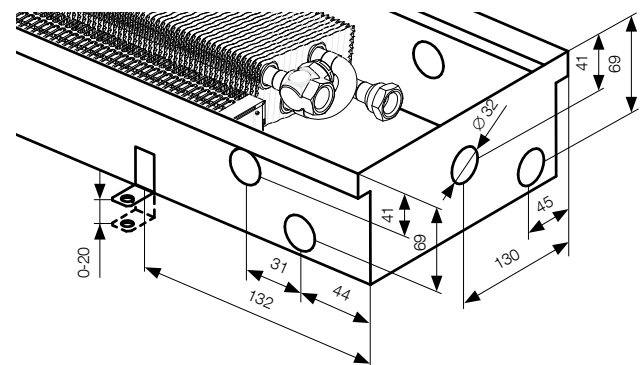
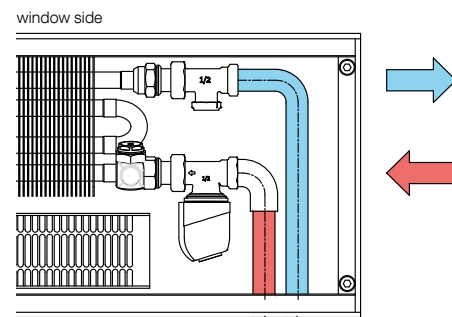


U = U-frame, F = F-frame

Where the F-frame is fitted, both the length and width increase by 30 mm. Measurements for U-frame and Cross frame are identical.



Connections and connection measurements



Optimal-V FVO
Energy FVE

Measurements shown in mm.

KORAFLEX

Optimal-V FVO, Energy FVE



depth 90 mm/width 320 mm

Heat output [W] where $t_1/t_2/t_3$ / EN 16430

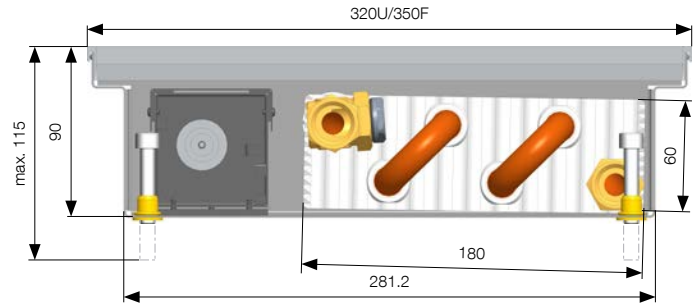
Measurements are shown in mm including U-frame.

Length	Optimal-V Energy	Fan speed setting	Heat output [W]		El. consumption [W]		Acoustics	
			75/65/20 °C	55/45/20 °C	Optimal-V 24 V DC	Energy 230 V AC	Sound pressure [dB(A)]	Sound power [dB(A)]
800	1000	0	104	54	0	0	-	-
		1	681	411	1	10	23.2	31.2
		2	1 038	630	2	12	29.3	37.3
		3	1 201	730	2	13	32.0	40
1000	1200	0	146	76	0	0	-	-
		1	959	579	2	11	23.6	31.6
		2	1 462	887	3	13	30.0	38
		3	1 691	1 027	3	13	32.6	40.6
1200	1400	0	189	98	0	0	-	-
		1	1 237	747	2	11	24.8	32.8
		2	1 886	1 144	3	13	30.8	38.8
		3	2 181	1 325	4	13	33.1	41.1
1400	1600	0	231	120	0	0	-	-
		1	1 515	914	2	11	24.3	32.3
		2	2 310	1 400	3	13	31.1	39.1
		3	2 671	1 623	4	14	33.6	41.6
1600	1800	0	273	142	0	0	-	-
		1	1 793	1 082	2	12	24.5	32.5
		2	2 734	1 657	4	14	31.5	39.5
		3	3 161	1 921	5	15	34.0	42
1800	2000	0	316	164	0	0	-	-
		1	2 071	1 250	2	12	24.6	32.6
		2	3 158	1 914	5	15	31.4	39.4
		3	3 652	2 218	7	16	34.5	42.5
2000	2200	0	358	186	0	0	-	-
		1	2 349	1 418	3	12	24.9	32.9
		2	3 581	2 171	5	15	32.2	40.2
		3	4 142	2 516	7	16	34.7	42.7
2200	2400	0	401	208	0	0	-	-
		1	2 627	1 586	3	13	25.1	33.1
		2	4 005	2 428	5	16	32.4	40.4
		3	4 632	2 814	8	17	35.0	43
2400	2600	0	443	230	0	0	-	-
		1	2 905	1 753	3	13	25.3	33.3
		2	4 429	2 685	7	17	32.7	40.7
		3	5 122	3 112	9	19	35.2	43.2
2600	2800	0	485	252	0	0	-	-
		1	3 183	1 921	3	13	25.4	33.4
		2	4 853	2 942	8	17	33.0	41
		3	5 612	3 409	11	19	35.4	43.4
2800	3000	0	528	274	0	0	-	-
		1	3 461	2 089	4	14	24.6	32.6
		2	5 277	3 199	8	19	33.4	41.4
		3	6 102	3 707	11	23	35.6	43.6
3000		0	570	296	0	0	-	-
		1	3 739	2 257	5	15	25.7	33.7
		2	5 701	3 456	11		33.4	41.4
		3	6 593	4 005	15		35.9	43.9

Temperature exponent [n] **0.9547**

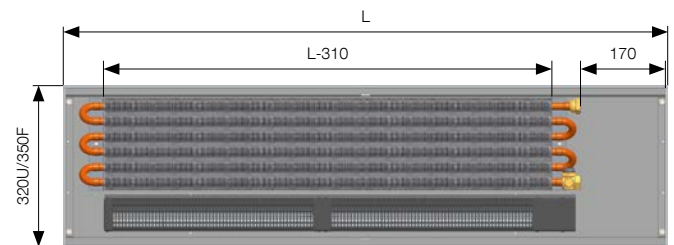
More information

FV mounting p. 98, Raised floor installation p. 100, Convectors connections p. 101, Linear grille supports p. 126, Regulation and accessories p. 102, Noise and acoustics p. 111, Basic tech. specifications p. 112, Pressure losses p. 113, Grilles p. 119–127

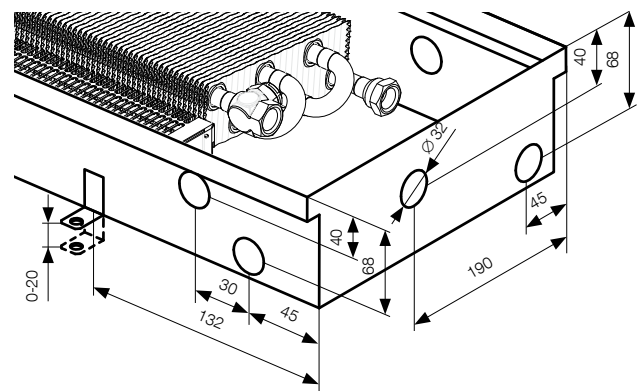
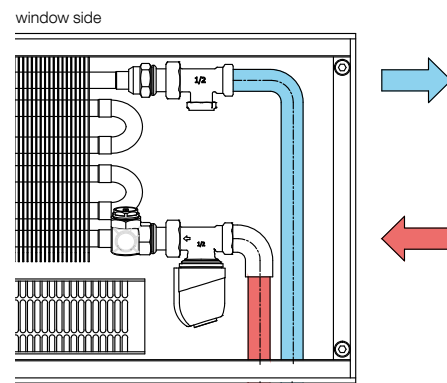


U = U-frame, F = F-frame

Where the F-frame is fitted, both the length and width increase by 30 mm. Measurements for U-frame and Cross frame are identical.



Connections and connection measurements



Measurements shown in mm.

KORAFLEX

Optimal-V FVO, Energy FVE



depth 90 mm/width 400 mm

Heat output [W] where $t_1/t_2/t_3$ / EN 16430

Measurements are shown in mm including U-frame.

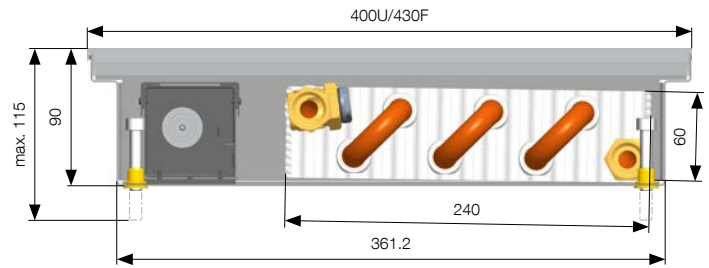
Length	Optimal-V	Energy	Fan speed setting	Heat output [W]		El. consumption [W]		Acoustics	
				75/65/20 °C	55/45/20 °C	Optimal-V 24 V DC	Energy 230 V AC	Sound pressure [dB(A)]	Sound power [dB(A)]
800	1000	0	0	130	63	0	0	-	-
		1	1	1 174	691	1	11	21.7	29.7
		2	2	1 581	952	2	12	27.5	35.5
		3	3	1 732	1 053	2	13	30.2	38.2
1000	1200	0	0	184	88	0	0	-	-
		1	1	1 654	974	2	11	22.0	30
		2	2	2 226	1 341	3	13	28.2	36.2
		3	3	2 438	1 483	3	14	30.8	38.8
1200	1400	0	0	237	114	0	0	-	-
		1	1	2 133	1 256	2	11	22.3	30.3
		2	2	2 872	1 730	3	14	28.8	36.8
		3	3	3 145	1 913	4	14	31.2	39.2
1400	1600	0	0	290	139	0	0	-	-
		1	1	2 612	1 538	2	12	22.5	30.5
		2	2	3 517	2 118	3	14	29.3	37.3
		3	3	3 852	2 343	4	15	31.8	39.8
1600	1800	0	0	343	165	0	0	-	-
		1	1	3 092	1 820	2	12	22.7	30.7
		2	2	4 163	2 507	3	14	29.7	37.7
		3	3	4 558	2 773	4	16	32.2	40.2
1800	2000	0	0	397	191	0	0	-	-
		1	1	3 571	2 102	2	13	22.9	30.9
		2	2	4 808	2 896	5	16	30.0	38
		3	3	5 265	3 202	7	18	32.9	40.9
2000	2200	0	0	450	216	0	0	-	-
		1	1	4 050	2 384	3	13	23.0	31
		2	2	5 453	3 284	5	16	30.4	38.4
		3	3	5 972	3 632	7	18	32.9	40.9
2200	2400	0	0	503	242	0	0	-	-
		1	1	4 530	2 667	3	13	23.1	31.1
		2	2	6 099	3 673	5	16	30.7	38.7
		3	3	6 679	4 062	7	18	33.2	41.2
2400	2600	0	0	556	267	0	0	-	-
		1	1	5 009	2 949	4	14	23.3	31.3
		2	2	6 744	4 062	6	17	30.9	38.9
		3	3	7 385	4 492	8	20	33.4	41.4
2600	2800	0	0	610	293	0	0	-	-
		1	1	5 488	3 231	4	14	23.4	31.4
		2	2	7 389	4 450	8	18	31.2	39.2
		3	3	8 092	4 922	11	21	33.6	41.6
2800	3000	0	0	663	319	0	0	-	-
		1	1	5 968	3 513	4	14	23.5	31.5
		2	2	8 035	4 839	9	19	31.4	39.4
		3	3	8 799	5 352	12	23	33.7	41.7
3000		0	0	716	344	0	0	-	-
		1	1	6 447	3 795	4	14	23.6	31.6
		2	2	8 680	5 228	10		31.6	39.6
		3	3	9 506	5 781	14		34.1	42.1

Temperature exponent [n]

0.9982

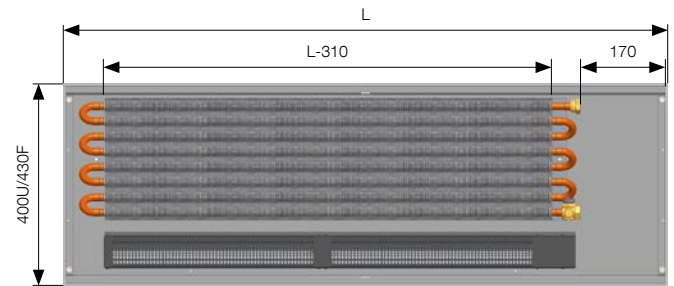
More information

FV mounting p. 98, Raised floor installation p. 100, Convactor connections p. 101, Linear grille supports p. 126, Regulation and accessories p. 102, Noise and acoustics p. 111, Basic tech. specifications p. 112, Pressure losses p. 113, Grilles p. 119–127

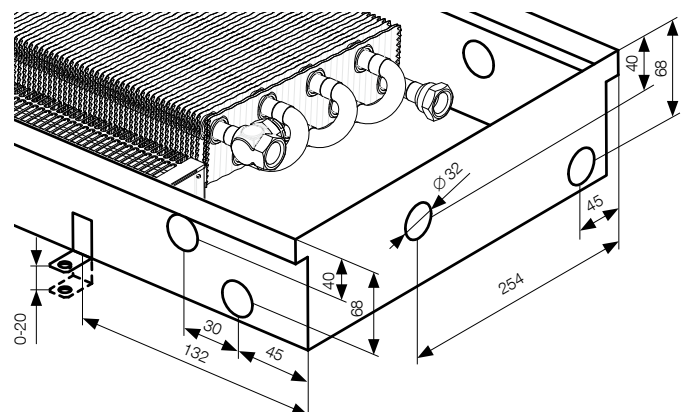
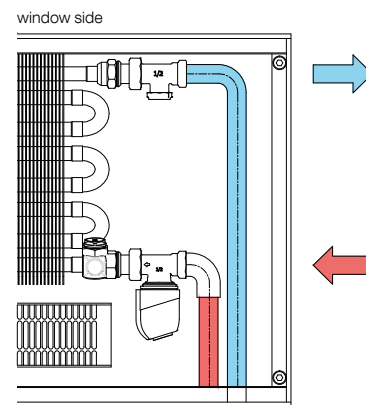


U = U-frame, F = F-frame

Where the F-frame is fitted, both the length and width increase by 30 mm. Measurements for U-frame and Cross frame are identical.



Connections and connection measurements



Measurements shown in mm.

Optimal-V FVO
Energy FVE

KORAFLEX

Optimal-V FVO, Energy FVE

depth 110 mm/width 200 mm

Heat output [W] where $t_1/t_2/t_3$ / EN 16430

Measurements are shown in mm including U-frame.

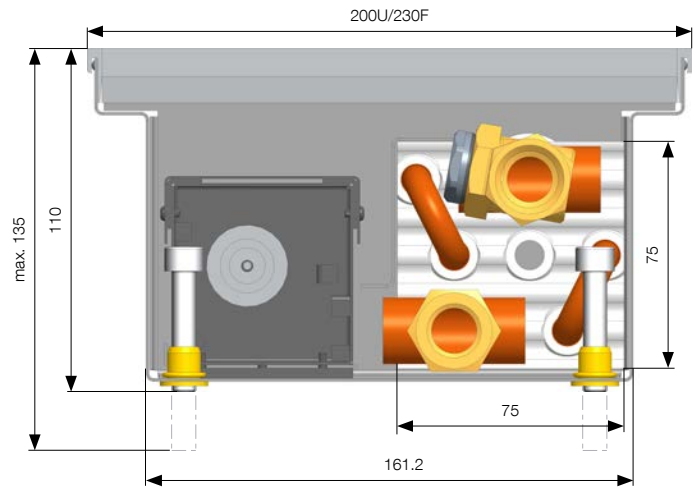
Length	Optimal-V	Energy	Fan speed setting	Heat output [W]		El. consumption [W]		Acoustics	
				75/65/20 °C	55/45/20 °C	Optimal-V 24 V DC	Energy 230 V AC	Sound pressure [dB(A)]	Sound power [dB(A)]
800	1000	0	0	67	33	0	0	-	-
		1	1	803	477	1	10	19.1	27.1
		2	2	1 043	618	2	11	26.6	34.6
		3	3	1 145	677	2	12	28.9	36.9
1000	1200	0	0	98	48	0	0	-	-
		1	1	1 181	701	1	11	19.8	27.8
		2	2	1 534	908	2	12	27.6	35.6
		3	3	1 684	996	3	13	30.0	38
1200	1400	0	0	129	64	0	0	-	-
		1	1	1 558	926	2	11	20.1	28.1
		2	2	2 025	1 199	3	13	28.3	36.3
		3	3	2 223	1 315	4	14	31.0	39
1400	1600	0	0	161	79	0	0	-	-
		1	1	1 936	1 150	2	11	20.8	28.8
		2	2	2 515	1 489	3	13	29.0	37
		3	3	2 762	1 634	4	14	31.7	39.7
1600	1800	0	0	192	94	0	0	-	-
		1	1	2 314	1 374	2	11	21.2	29.2
		2	2	3 006	1 780	4	13	29.5	37.5
		3	3	3 301	1 952	5	14	32.4	40.4
1800	2000	0	0	223	110	0	0	-	-
		1	1	2 692	1 599	2	13	22.0	30
		2	2	3 497	2 071	4	15	30.1	38.1
		3	3	3 840	2 271	5	18	32.9	40.9
2000	2200	0	0	255	125	0	0	-	-
		1	1	3 069	1 823	3	13	21.9	29.9
		2	2	3 988	2 361	5	15	30.5	38.5
		3	3	4 379	2 590	6	18	33.5	41.5
2200	2400	0	0	286	141	0	0	-	-
		1	1	3 447	2 047	3	13	22.2	30.2
		2	2	4 478	2 652	5	15	30.9	38.9
		3	3	4 918	2 909	6	18	34.0	42
2400	2600	0	0	318	156	0	0	-	-
		1	1	3 825	2 272	3	13	22.4	30.4
		2	2	4 969	2 943	6	16	31.3	39.3
		3	3	5 457	3 227	8	18	34.5	42.5
2600	2800	0	0	349	172	0	0	-	-
		1	1	4 203	2 496	4	13	22.7	30.7
		2	2	5 460	3 233	7	17	31.6	39.6
		3	3	5 996	3 546	9	18	34.9	42.9
2800	3000	0	0	380	187	0	0	-	-
		1	1	4 581	2 721	4	13	22.7	30.7
		2	2	5 951	3 524	7	17	31.9	39.9
		3	3	6 535	3 865	9	19	35.3	43.3
3000		0	0	412	202	0	0	-	-
		1	1	4 958	2 945	4	13	23.1	31.1
		2	2	6 442	3 815	8	17	32.2	40.2
		3	3	7 074	4 184	11	19	35.6	43.6

Temperature exponent [n]

1.0173

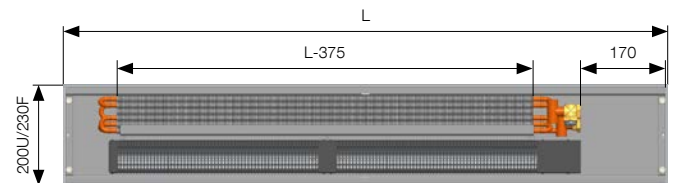
More information

FV mounting p. 98, Raised floor installation p. 100, Convactor connections p. 101, Linear grille supports p. 126, Regulation and accessories p. 102, Noise and acoustics p. 111, Basic tech. specifications p. 112, Pressure losses p. 113, Grilles p. 119–127

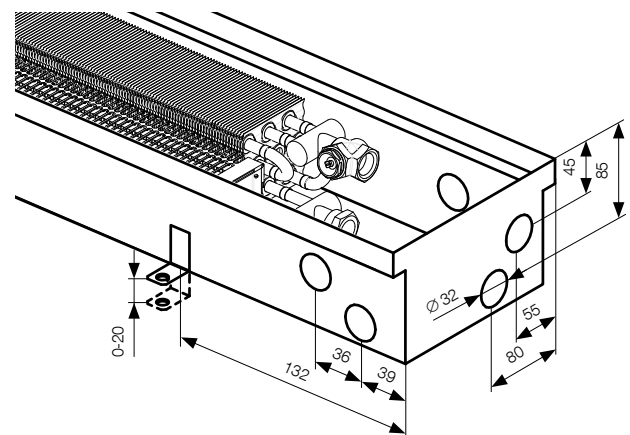
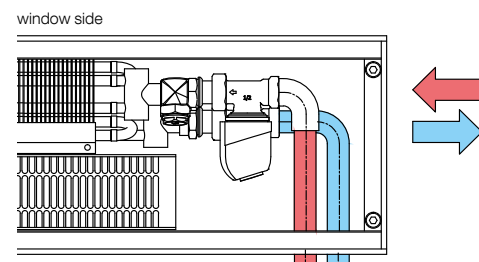


U = U-frame, F = F-frame

Where the F-frame is fitted, both the length and width increase by 30 mm. Measurements for U-frame and Cross frame are identical.



Connections and connection measurements



Measurements shown in mm.

KORAFLEX

Optimal-V FVO, Energy FVE



depth 110 mm/width 260 mm

Heat output [W] where $t_1/t_2/t_3$ / EN 16430

Measurements are shown in mm including U-frame.

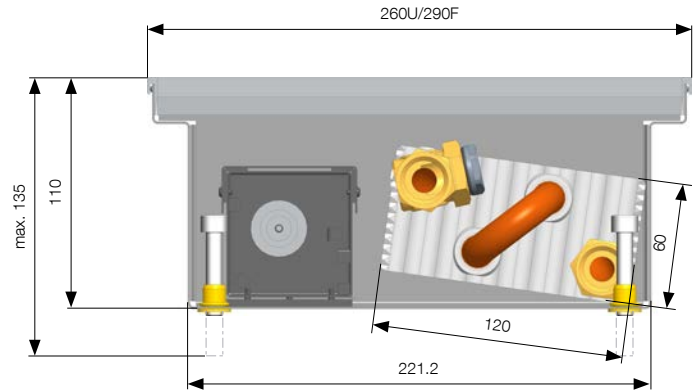
Length	Optimal-V	Energy	Fan speed setting	Heat output [W]		El. consumption [W]		Acoustics	
				75/65/20 °C	55/45/20 °C	Optimal-V 24 V DC	Energy 230 V AC	Sound pressure [dB(A)]	Sound power [dB(A)]
800	1000	0	0	90	41	0	0	-	-
		1	1	684	415	1	11	19.1	27.1
		2	2	1 090	666	2	12	26.6	34.6
1000	1200	3	3	1 277	784	2	13	28.9	36.9
		0	0	127	58	0	0	-	-
		1	1	963	584	2	11	19.8	27.8
1200	1400	2	2	1 535	938	3	13	27.6	35.6
		3	3	1 799	1 104	3	13	30.0	38
		0	0	164	75	0	0	-	-
1400	1600	1	1	1 243	753	2	12	20.1	28.1
		2	2	1 980	1 210	3	13	28.3	36.3
		3	3	2 320	1 424	4	14	31.0	39
1600	1800	0	0	201	92	0	0	-	-
		1	1	1 522	922	2	12	20.8	28.8
		2	2	2 425	1 482	3	13	29.0	37
1800	2000	3	3	2 842	1 743	4	14	31.7	39.7
		0	0	237	109	0	0	-	-
		1	1	1 801	1 091	2	12	21.2	29.2
2000	2200	2	2	2 870	1 754	4	15	29.5	37.5
		3	3	3 363	2 063	6	16	32.4	40.4
		0	0	274	125	0	0	-	-
2200	2400	1	1	2 080	1 261	3	12	22.0	30
		2	2	3 315	2 026	6	15	30.1	38.1
		3	3	3 884	2 383	8	16	32.9	40.9
2400	2600	0	0	311	142	0	0	-	-
		1	1	2 360	1 430	3	13	21.9	29.9
		2	2	3 760	2 298	6	16	30.5	38.5
2600	2800	3	3	4 406	2 703	8	18	33.5	41.5
		0	0	348	159	0	0	-	-
		1	1	2 639	1 599	4	13	22.2	30.2
2800	3000	2	2	4 205	2 570	6	16	30.9	38.9
		3	3	4 927	3 023	8	18	34.0	42
		0	0	385	176	0	0	-	-
3000	3000	1	1	2 918	1 768	4	14	22.4	30.4
		2	2	4 650	2 842	7	18	31.3	39.3
		3	3	5 449	3 343	9	21	34.5	42.5
2600	2800	0	0	421	193	0	0	-	-
		1	1	3 197	1 937	4	14	22.7	30.7
		2	2	5 095	3 114	9	19	31.6	39.6
2800	3000	3	3	5 970	3 663	13	22	34.9	42.9
		0	0	458	210	0	0	-	-
		1	1	3 476	2 107	4	15	22.7	30.7
3000	3000	2	2	5 540	3 386	10	20	31.9	39.9
		3	3	6 491	3 983	14	25	35.3	43.3
		0	0	495	227	0	0	-	-
3000	3000	1	1	3 756	2 276	5	15	23.1	31.1
		2	2	5 985	3 658	12	17	32.2	40.2
		3	3	7 013	4 303	17	25	35.6	43.6

Temperature exponent [n]

0.9745

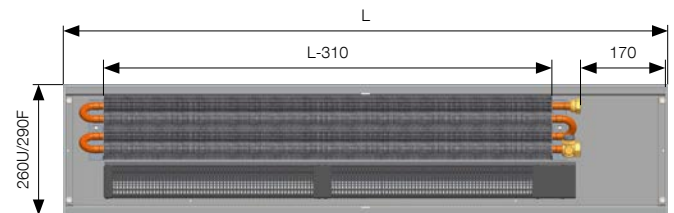
More information

FV mounting p. 98, Raised floor installation p. 100, Convactor connections p. 101, Linear grille supports p. 126, Regulation and accessories p. 102, Noise and acoustics p. 111, Basic tech. specifications p. 112, Pressure losses p. 113, Grilles p. 119–127

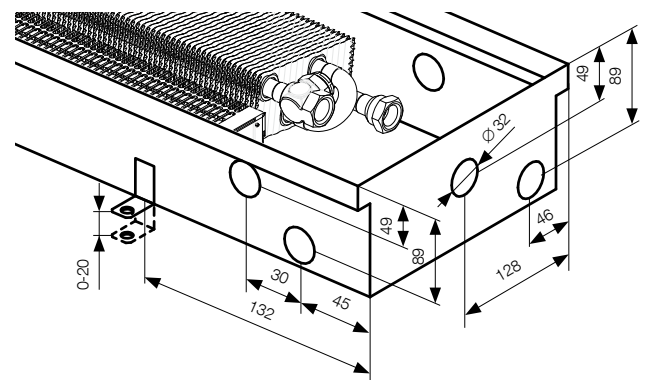
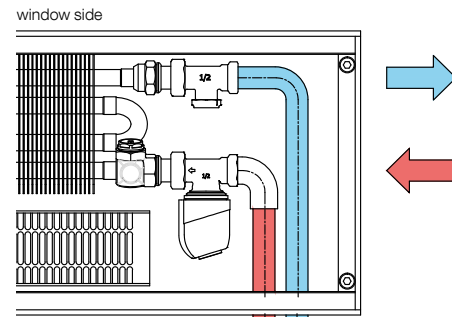


U = U-frame, F = F-frame

Where the F-frame is fitted, both the length and width increase by 30 mm. Measurements for U-frame and Cross frame are identical.



Connections and connection measurements



Measurements shown in mm.

Optimal-V FVO
Energy FVE

KORAFLEX

Optimal-V FVO, Energy FVE



depth 110 mm/width 320 mm

Heat output [W] where $t_1/t_2/t_3$ / EN 16430

Measurements are shown in mm including U-frame.

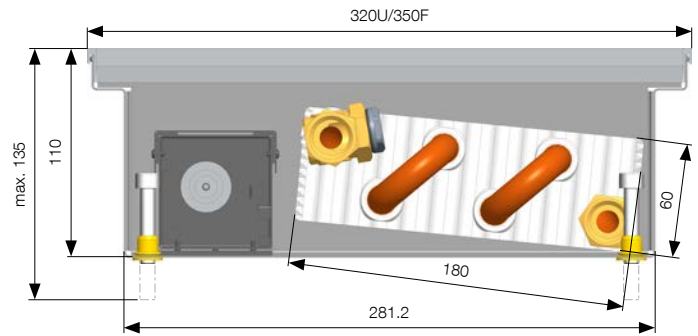
Length	Optimal-V Energy	Fan speed setting	Heat output [W]		El. consumption [W]		Acoustics	
			75/65/20 °C	55/45/20 °C	Optimal-V 24 V DC	Energy 230 V AC	Sound pressure [dB(A)]	Sound power [dB(A)]
800	1000	0	130	61	0	0	-	-
		1	1 264	746	1	11	23.2	31.2
		2	1 700	1 005	2	12	29.3	37.3
		3	1 885	1 115	2	13	32.0	40
1000	1200	0	183	85	0	0	-	-
		1	1 780	1 050	2	11	23.6	31.6
		2	2 394	1 415	3	13	30.0	38
		3	2 654	1 570	3	14	32.6	40.6
1200	1400	0	237	110	0	0	-	-
		1	2 296	1 355	2	12	24.8	32.8
		2	3 088	1 825	3	13	30.8	38.8
		3	3 423	2 025	4	14	33.1	41.1
1400	1600	0	290	135	0	0	-	-
		1	2 812	1 659	2	12	24.3	32.3
		2	3 782	2 236	3	13	31.1	39.1
		3	4 192	2 480	4	15	33.6	41.6
1600	1800	0	343	159	0	0	-	-
		1	3 328	1 963	2	12	24.5	32.5
		2	4 476	2 646	5	15	31.5	39.5
		3	4 961	2 935	7	17	34.0	42
1800	2000	0	396	184	0	0	-	-
		1	3 844	2 268	3	12	24.6	32.6
		2	5 170	3 056	6	15	31.4	39.4
		3	5 730	3 390	7	17	34.5	42.5
2000	2200	0	449	209	0	0	-	-
		1	4 360	2 572	3	13	24.9	32.9
		2	5 864	3 466	6	16	32.2	40.2
		3	6 500	3 845	7	17	34.7	42.7
2200	2400	0	502	233	0	0	-	-
		1	4 876	2 876	3	13	25.1	33.1
		2	6 558	3 876	6	16	32.4	40.4
		3	7 269	4 300	7	18	35.0	43
2400	2600	0	555	258	0	0	-	-
		1	5 392	3 181	4	14	25.3	33.3
		2	7 252	4 287	8	18	32.7	40.7
		3	8 038	4 755	10	21	35.2	43.2
2600	2800	0	609	283	0	0	-	-
		1	5 908	3 485	5	14	25.4	33.4
		2	7 946	4 697	10	19	33.0	41
		3	8 807	5 210	14	24	35.4	43.4
2800	3000	0	662	308	0	0	-	-
		1	6 424	3 790	5	15	24.6	32.6
		2	8 640	5 107	12	22	33.4	41.4
		3	9 576	5 665	16	27	35.6	43.6
3000		0	715	332	0	0	-	-
		1	6 940	4 094	6	16	25.7	33.7
		2	9 334	5 517	14	23	33.4	41.4
		3	10 346	6 120	19	28	35.9	43.9

Temperature exponent [n]

1.0285

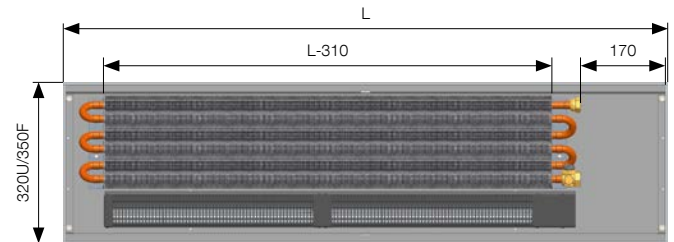
More information

FV mounting p. 98, Raised floor installation p. 100, Convactor connections p. 101, Linear grille supports p. 126, Regulation and accessories p. 102, Noise and acoustics p. 111, Basic tech. specifications p. 112, Pressure losses p. 113, Grilles p. 119–127

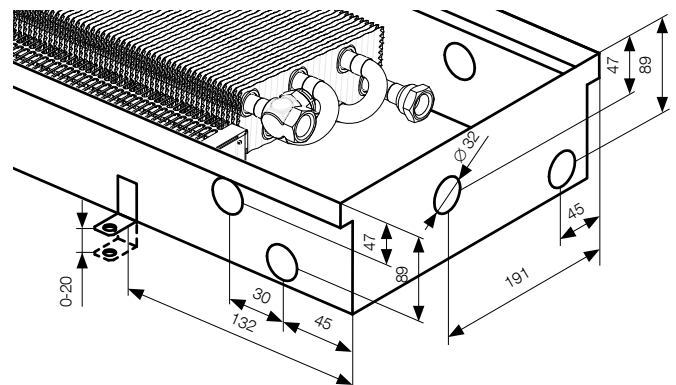
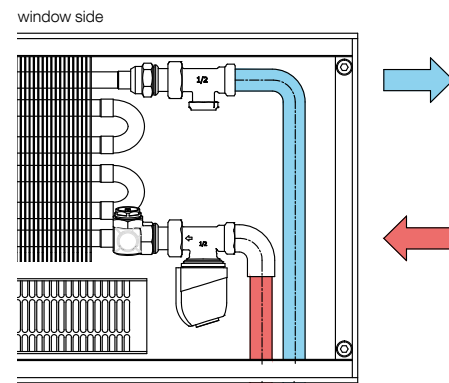


U = U-frame, F = F-frame

Where the F-frame is fitted, both the length and width increase by 30 mm. Measurements for U-frame and Cross frame are identical.



Connections and connection measurements



Measurements shown in mm.

KORAFLEX

Optimal-V FVO, Energy FVE



depth 110 mm/width 400 mm

Heat output [W] where $t_1/t_2/t_3$ / EN 16430

Measurements are shown in mm including U-frame.

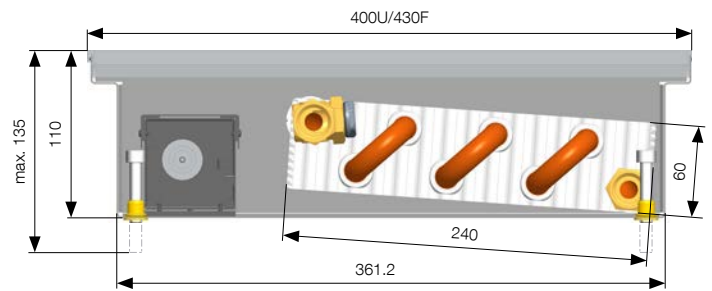
Length	Optimal-V	Energy	Fan speed setting	Heat output [W]		El. consumption [W]		Acoustics	
				75/65/20 °C	55/45/20 °C	Optimal-V 24 V DC	Energy 230 V AC	Sound pressure [dB(A)]	Sound power [dB(A)]
800	1000	0	0	205	97	0	0	-	-
		1	1	1 504	883	1	10	21.7	29.7
		2	2	1 956	1 160	2	12	27.5	35.5
		3	3	2 132	1 270	3	13	30.2	38.2
1000	1200	0	0	288	137	0	0	-	-
		1	1	2 117	1 244	2	11	22.0	30
		2	2	2 754	1 634	3	13	28.2	36.2
		3	3	3 003	1 789	4	13	30.8	38.8
1200	1400	0	0	372	177	0	0	-	-
		1	1	2 731	1 604	2	11	22.3	30.3
		2	2	3 552	2 108	4	13	28.8	36.8
		3	3	3 873	2 308	5	14	31.2	39.2
1400	1600	0	0	456	217	0	0	-	-
		1	1	3 345	1 965	2	12	22.5	30.5
		2	2	4 351	2 581	4	14	29.3	37.3
		3	3	4 743	2 826	5	15	31.8	39.8
1600	1800	0	0	539	256	0	0	-	-
		1	1	3 959	2 325	2	12	22.7	30.7
		2	2	5 149	3 055	5	15	29.7	37.7
		3	3	5 613	3 345	7	17	32.2	40.2
1800	2000	0	0	623	296	0	0	-	-
		1	1	4 572	2 685	3	12	22.9	30.9
		2	2	5 947	3 528	7	15	30.0	38
		3	3	6 484	3 863	10	17	32.9	40.9
2000	2200	0	0	706	336	0	0	-	-
		1	1	5 186	3 046	3	13	23.0	31
		2	2	6 746	4 002	7	16	30.4	38.4
		3	3	7 354	4 382	10	17	32.9	40.9
2200	2400	0	0	790	376	0	0	-	-
		1	1	5 800	3 406	3	13	23.1	31.1
		2	2	7 544	4 476	7	16	30.7	38.7
		3	3	8 224	4 900	10	18	33.2	41.2
2400	2600	0	0	874	415	0	0	-	-
		1	1	6 413	3 767	4	14	23.3	31.3
		2	2	8 342	4 949	7	18	30.9	38.9
		3	3	9 095	5 419	10	21	33.4	41.4
2600	2800	0	0	957	455	0	0	-	-
		1	1	7 027	4 127	5	14	23.4	31.4
		2	2	9 140	5 423	10	19	31.2	39.2
		3	3	9 965	5 937	14	23	33.6	41.6
2800	3000	0	0	1 041	495	0	0	-	-
		1	1	7 641	4 488	5	15	23.5	31.5
		2	2	9 939	5 896	11	21	31.4	39.4
		3	3	10 835	6 456	16	26	33.7	41.7
3000		0	0	1 124	535	0	0	-	-
		1	1	8 255	4 848	6	15	23.6	31.6
		2	2	10 737	6 370	13	21	31.6	39.6
		3	3	11 705	6 974	19	26	34.1	42.1

Temperature exponent [n]

1.0195

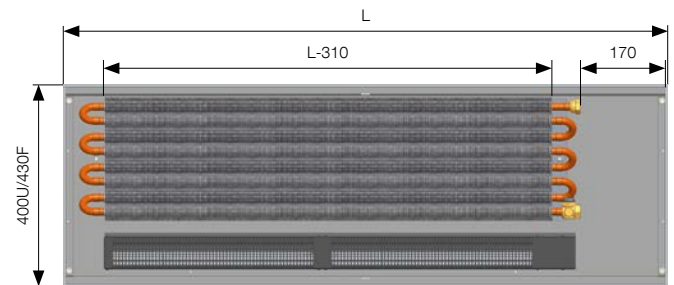
More information

FV mounting p. 98, Raised floor installation p. 100, Convectors connections p. 101, Linear grille supports p. 126, Regulation and accessories p. 102, Noise and acoustics p. 111, Basic tech. specifications p. 112, Pressure losses p. 113, Grilles p. 119–127

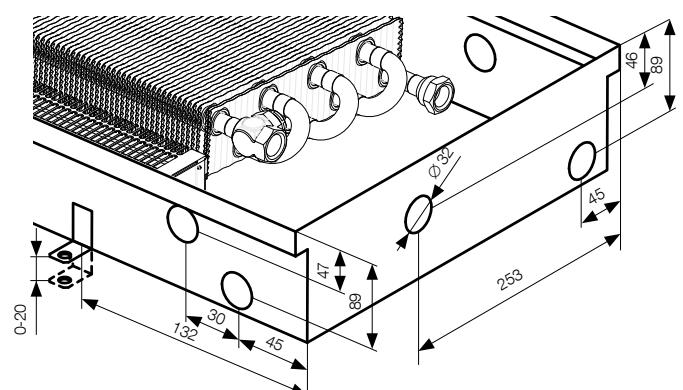
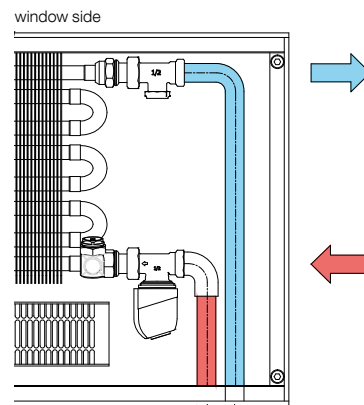


U = U-frame, F = F-frame

Where the F-frame is fitted, both the length and width increase by 30 mm. Measurements for U-frame and Cross frame are identical.



Connections and connection measurements



Measurements shown in mm.

Optimal-V FVO
Energy FVE

KORAFLEX

Optimal-V FVO, Energy FVE



depth 130 mm/width 260 mm

Heat output [W] where $t_1/t_2/t_3$ / EN 16430

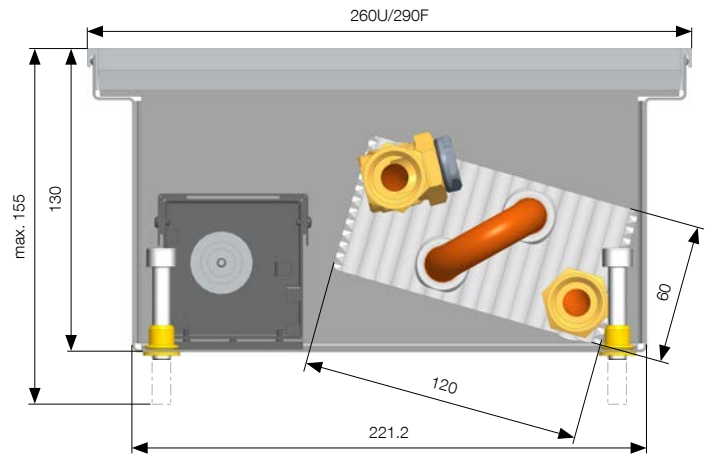
Measurements are shown in mm including U-frame.

Length	Optimal-V	Energy	Fan speed setting	Heat output [W]		El. consumption [W]		Acoustics	
				75/65/20 °C	55/45/20 °C	Optimal-V 24 V DC	Energy 230 V AC	Sound pressure [dB(A)]	Sound power [dB(A)]
800	1000	0	0	103	48	0	0	-	-
		1	1	897	508	1	10	19.1	27.1
		2	2	1 169	675	2	12	26.6	34.6
1000	1200	3	3	1 269	739	2	13	28.9	36.9
		0	0	145	68	0	0	-	-
		1	1	1 263	716	2	11	19.8	27.8
1200	1400	2	2	1 646	951	3	13	27.6	35.6
		3	3	1 786	1 041	3	13	30.0	38
		0	0	187	88	0	0	-	-
1400	1600	1	1	1 629	924	2	12	20.1	28.1
		2	2	2 123	1 227	3	14	28.3	36.3
		3	3	2 304	1 342	4	14	31.0	39
1600	1800	0	0	229	108	0	0	-	-
		1	1	1 995	1 131	2	12	20.8	28.8
		2	2	2 600	1 503	3	14	29.0	37
1800	2000	3	3	2 822	1 644	4	14	31.7	39.7
		0	0	271	128	0	0	-	-
		1	1	2 361	1 339	2	12	21.2	29.2
2000	2200	2	2	3 077	1 778	4	15	29.5	37.5
		3	3	3 340	1 946	6	17	32.4	40.4
		0	0	313	147	0	0	-	-
2200	2400	1	1	2 727	1 546	3	12	22.0	30
		2	2	3 554	2 054	6	15	30.1	38.1
		3	3	3 857	2 247	9	17	32.9	40.9
2400	2600	0	0	355	167	0	0	-	-
		1	1	3 093	1 754	3	14	21.9	29.9
		2	2	4 031	2 330	6	17	30.5	38.5
2600	2800	3	3	4 375	2 549	9	18	33.5	41.5
		0	0	397	187	0	0	-	-
		1	1	3 459	1 961	3	14	22.2	30.2
2800	3000	2	2	4 508	2 605	6	17	30.9	38.9
		3	3	4 893	2 850	9	18	34.0	42
		0	0	439	207	0	0	-	-
3000	3000	1	1	3 825	2 169	3	14	22.4	30.4
		2	2	4 986	2 881	7	18	31.3	39.3
		3	3	5 411	3 152	9	21	34.5	42.5
3000	3000	0	0	481	226	0	0	-	-
		1	1	4 191	2 376	5	14	22.7	30.7
		2	2	5 463	3 157	11	18	31.6	39.6
3000	3000	3	3	5 929	3 454	13	22	34.9	42.9
		0	0	523	246	0	0	-	-
		1	1	4 557	2 584	5	15	22.7	30.7
3000	3000	2	2	5 940	3 432	11	21	31.9	39.9
		3	3	6 446	3 755	14	25	35.3	43.3
		0	0	565	266	0	0	-	-
3000	3000	1	1	4 923	2 791	6	15	23.1	31.1
		2	2	6 417	3 708	13	21	32.2	40.2
		3	3	6 964	4 057	17	25	35.6	43.6

Temperature exponent [n] **1.0976**

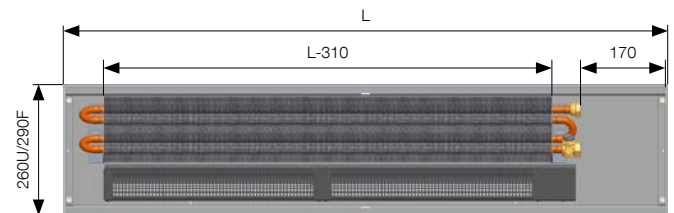
More information

FV mounting p. 98, Raised floor installation p. 100, Convector connections p. 101, Linear grille supports p. 126, Regulation and accessories p. 102, Noise and acoustics p. 111, Basic tech. specifications p. 112, Pressure losses p. 113, Grilles p. 119–127

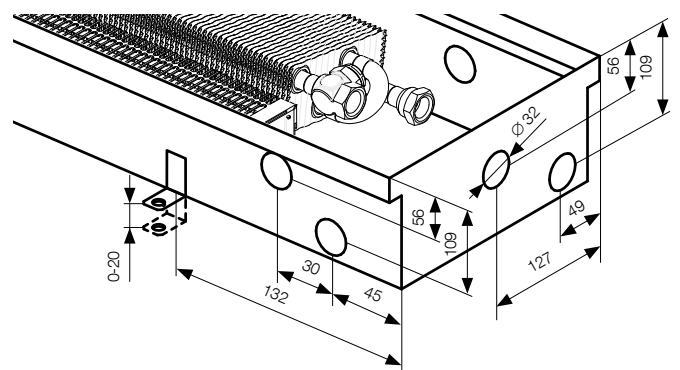
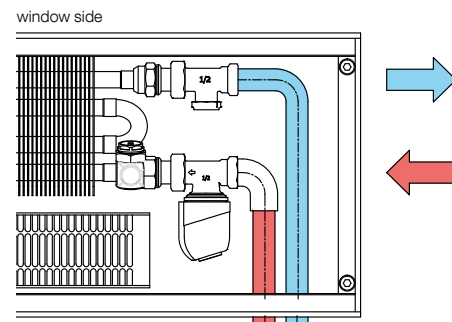


U = U-frame, F = F-frame

Where the F-frame is fitted, both the length and width increase by 30 mm. Measurements for U-frame and Cross frame are identical.



Connections and connection measurements



Measurements shown in mm.

KORAFLEX

Optimal-V FVO, Energy FVE



depth 130 mm/width 320 mm

Heat output [W] where $t_1/t_2/t_3$ / EN 16430

Measurements are shown in mm including U-frame.

Length	Optimal-V	Energy	Fan speed setting	Heat output [W]		El. consumption [W]		Acoustics	
				75/65/20 °C	55/45/20 °C	Optimal-V 24 V DC	Energy 230 V AC	Sound pressure [dB(A)]	Sound power [dB(A)]
800	1000	0	0	124	54	0	0	-	-
		1	1	1 161	698	2	11	23.6	31.6
		2	2	1 511	908	3	12	31.1	39.1
1000	1200	3	3	1 989	1 196	5	15	41.3	49.3
		0	0	175	76	0	0	-	-
		1	1	1 635	983	2	12	24.3	32.3
1200	1400	2	2	2 128	1 279	4	14	32.3	40.3
		3	3	2 801	1 684	7	18	42.5	50.5
		0	0	225	98	0	0	-	-
1400	1600	1	1	2 109	1 268	2	12	25.0	33
		2	2	2 744	1 650	4	14	33.4	41.4
		3	3	3 613	2 172	8	19	43.4	51.4
1600	1800	0	0	276	120	0	0	-	-
		1	1	2 583	1 553	3	12	25.5	33.5
		2	2	3 361	2 021	5	14	34.1	42.1
1800	2000	3	3	4 425	2 660	12	23	44.2	52.2
		0	0	326	141	0	0	-	-
		1	1	3 057	1 838	3	14	26.0	34
2000	2200	2	2	3 978	2 391	5	17	34.8	42.8
		3	3	5 237	3 148	14	26	44.9	52.9
		0	0	377	163	0	0	-	-
2200	2400	1	1	3 530	2 123	4	14	26.4	34.4
		2	2	4 594	2 762	8	17	35.1	43.1
		3	3	6 049	3 636	17	26	45.5	53.5
2400	2600	0	0	428	185	0	0	-	-
		1	1	4 004	2 408	4	14	26.8	34.8
		2	2	5 211	3 133	8	17	36.0	44
2600	2800	3	3	6 861	4 124	17	28	46.1	54.1
		0	0	478	207	0	0	-	-
		1	1	4 478	2 693	4	14	27.1	35.1
2800	3000	2	2	5 828	3 503	9	18	36.5	44.5
		3	3	7 673	4 612	20	31	46.5	54.5
		0	0	529	229	0	0	-	-
3000		1	1	4 952	2 978	5	14	27.4	35.4
		2	2	6 444	3 874	9	18	36.9	44.9
		3	3	8 485	5 100	22	31	47.0	55
2600	2800	0	0	579	251	0	0	-	-
		1	1	5 426	3 263	5	15	27.7	35.7
		2	2	7 061	4 245	10	19	37.4	45.4
2800	3000	3	3	9 297	5 588	23	37	47.4	55.4
		0	0	630	273	0	0	-	-
		1	1	5 900	3 548	5	15	28.0	36
3000		2	2	7 678	4 616	10	19	37.9	45.9
		3	3	10 109	6 076	28	37	47.8	55.8
		0	0	681	295	0	0	-	-
3000		1	1	6 374	3 832	5	15	28.2	36.2
		2	2	8 294	4 986	10	19	38.1	46.1
		3	3	10 921	6 564	28	37	48.2	56.2

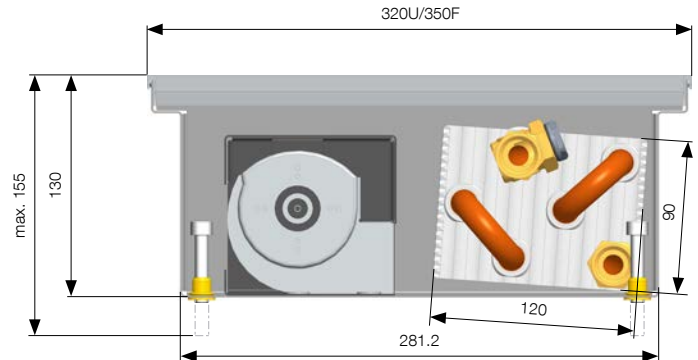
Temperature exponent [n]

0.9838

More information

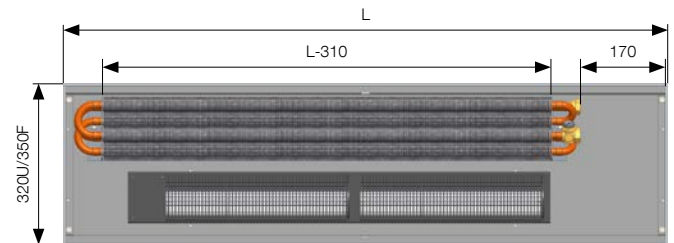
FV mounting p. 98, Raised floor installation p. 100, Convactor connections p. 101, Linear grille supports p. 126,

Regulation and accessories p. 102, Noise and acoustics p. 111, Basic tech. specifications p. 112, Pressure losses p. 113, Grilles p. 119–127

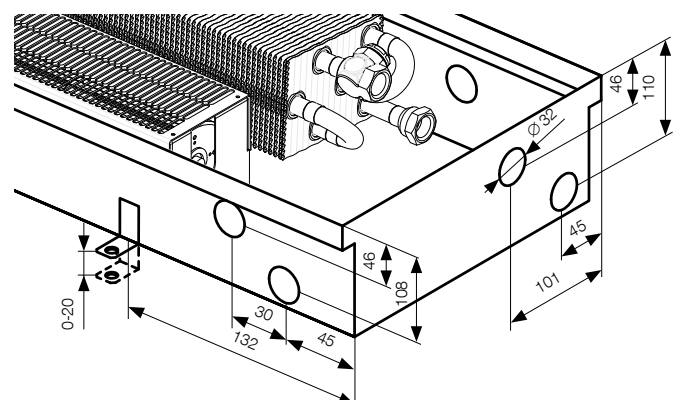
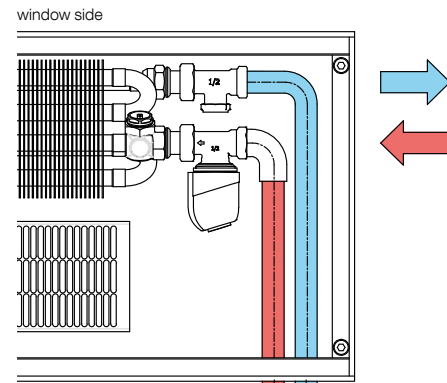


U = U-frame, F = F-frame

Where the F-frame is fitted, both the length and width increase by 30 mm. Measurements for U-frame and Cross frame are identical.



Connections and connection measurements



Measurements shown in mm.

Optimal-V FVO
Energy FVE

KORAFLEX

Optimal-V FVO, Energy FVE



depth 130 mm/width 400 mm

Heat output [W] where $t_1/t_2/t_3$ / EN 16430

Measurements are shown in mm including U-frame.

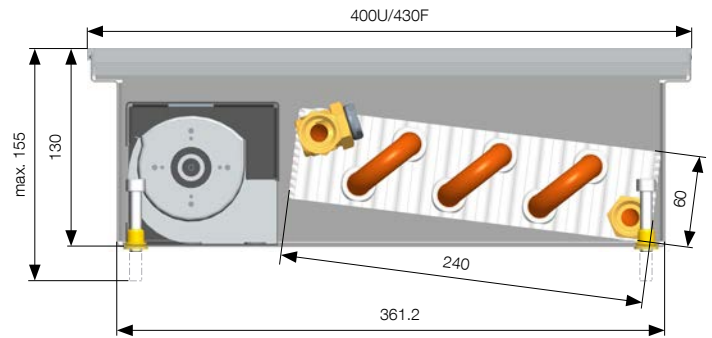
Length	Optimal-V	Energy	Fan speed setting	Heat output [W]		El. consumption [W]		Acoustics	
				75/65/20 °C	55/45/20 °C	Optimal-V 24 V DC	Energy 230 V AC	Sound pressure [dB(A)]	Sound power [dB(A)]
800	1000	0	0	211	99	0	0	-	-
		1	1	1 924	1 120	2	12	23.6	31.6
		2	2	2 447	1 440	3	13	31.1	39.1
3	3	3 054	1 824	7	18	41.3	49.3		
1000	1200	0	0	298	139	0	0	-	-
		1	1	2 710	1 577	3	12	24.3	32.3
		2	2	3 446	2 027	4	14	32.3	40.3
3	3	4 300	2 568	10	19	42.5	50.5		
1200	1400	0	0	384	179	0	0	-	-
		1	1	3 495	2 034	3	13	25.0	33
		2	2	4 445	2 615	5	15	33.4	41.4
3	3	5 546	3 313	11	25	43.4	51.4		
1400	1600	0	0	470	219	0	0	-	-
		1	1	4 280	2 491	4	13	25.5	33.5
		2	2	5 444	3 203	7	15	34.1	42.1
3	3	6 792	4 057	18	26	44.2	52.2		
1600	1800	0	0	557	259	0	0	-	-
		1	1	5 066	2 948	4	13	26.0	34
		2	2	6 443	3 790	8	15	34.8	42.8
3	3	8 039	4 801	19	27	44.9	52.9		
1800	2000	0	0	643	300	0	0	-	-
		1	1	5 851	3 405	5	15	26.4	34.4
		2	2	7 442	4 378	9	19	35.1	43.1
3	3	9 285	5 546	22	30	45.5	53.5		
2000	2200	0	0	729	340	0	0	-	-
		1	1	6 637	3 862	5	15	26.8	34.8
		2	2	8 441	4 966	10	20	36.0	44
3	3	10 531	6 290	23	35	46.1	54.1		
2200	2400	0	0	816	380	0	0	-	-
		1	1	7 422	4 319	6	16	27.1	35.1
		2	2	9 440	5 553	12	21	36.5	44.5
3	3	11 778	7 035	28	38	46.5	54.5		
2400	2600	0	0	902	420	0	0	-	-
		1	1	8 207	4 776	6	16	27.4	35.4
		2	2	10 439	6 141	12	22	36.9	44.9
3	3	13 024	7 779	30	42	47.0	55		
2600	2800	0	0	988	461	0	0	-	-
		1	1	8 993	5 233	7	17	27.7	35.7
		2	2	11 438	6 729	14	23	37.4	45.4
3	3	14 270	8 523	35	45	47.4	55.4		
2800	3000	0	0	1 074	501	0	0	-	-
		1	1	9 778	5 690	7	17	28.0	36
		2	2	12 437	7 316	15	23	37.9	45.9
3	3	15 517	9 268	37	45	47.8	55.8		
3000		0	0	1 161	541	0	0	-	-
		1	1	10 563	6 147	7	17	28.2	36.2
		2	2	13 435	7 904	15	23	38.1	46.1
3	3	16 763	10 012	37	45	48.2	56.2		

Temperature exponent [n]

1.0332

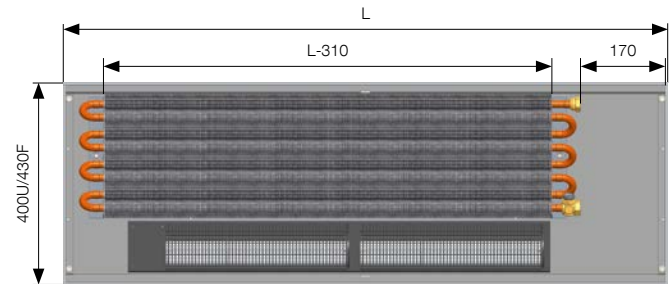
More information

FV mounting p. 98, Raised floor installation p. 100, Convactor connections p. 101, Linear grille supports p. 126, Regulation and accessories p. 102, Noise and acoustics p. 111, Basic tech. specifications p. 112, Pressure losses p. 113, Grilles p. 119–127

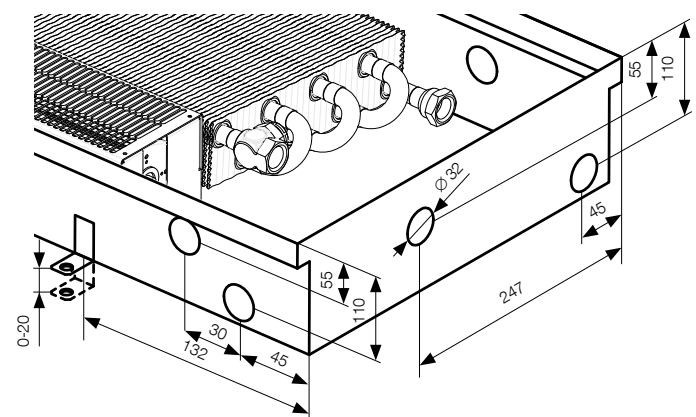
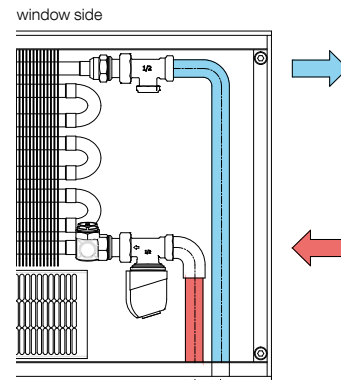


U = U-frame, F = F-frame

Where the F-frame is fitted, both the length and width increase by 30 mm. Measurements for U-frame and Cross frame are identical.



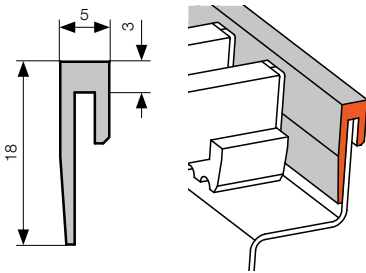
Connections and connection measurements



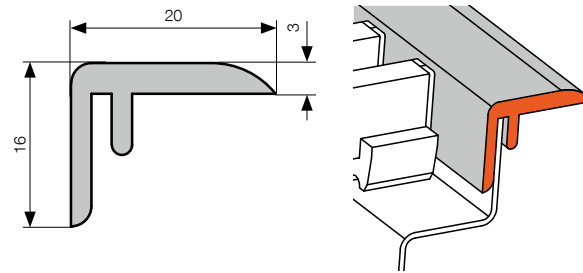
Measurements shown in mm.

FRAMES

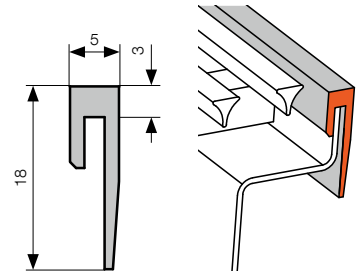
Standard U-frame



Optional F-frame



Optional Cross grille frame (on request)



Measurements are shown in mm.

ORDER CODE



In the order code, always use the measurements in cm including U-frame, as listed in the output table for the respective model.

Optimal-V

KORAFLEX Ventilator	Optimal-V	Length (cm)	Depth (cm)	Width (cm)	Heat exchanger type	Heat exchanger colour	Frame	Frame colour	Connection side	Lowered face	For grille	Regulation
F	V	0 -... / .. / ...	V	counter-flow	1 non-lacquered 5 RAL 9005 9 other RAL colour	U U-frame F F-frame C for Cross grille 0 without frame	1 silver elox 2 dark bronze elox 3 light bronz elox 5 black elox 9 other RAL colour 0 without frame	P right L left	0 without lowered face 1 lower face – input side 2 lower face – opposite input side 3 both sides lower	R roll-up L* linear	- RT 24 V DC regulation	

Example order code: FV0-120/11/26-V5U1P0R-RT

L* – technical alterations to convector casing see p. 126

KORAFLEX trench heater with fan (forced convection), Optimal-V 24 V DC model, length 120 cm, depth 11 cm, width 26 cm, counter-flow RAL 9005 black lacquered heat exchanger U-frame, silver elox, right-hand connection, without lowered face, for roll-up grille, 24 V DC regulation.

Energy

KORAFLEX Ventilator	Energy	Length (cm)	Depth (cm)	Width (cm)	Heat exchanger type	Heat exchanger colour	Frame	Frame colour	Connection side	Lowered face	For grille	Regulation
F	V	E -... / .. / ...	V	counter-flow	1 non-lacquered 5 RAL 9005 9 other RAL colour	U U-frame F F-frame C for Cross grille 0 without frame	1 silver elox 2 dark bronze elox 3 light bronz elox 5 black elox 9 other RAL colour 0 without frame	P right L left	0 without lowered face 1 lower face – input side 2 lower face – opposite input side 3 both sides lower	R roll-up L* linear	- RE 230 V AC regulation	

Example order code: FVE-120/11/26-V1U1P0R-RE

L* – technical alterations to convector casing see p. 126

KORAFLEX trench heater with fan (forced convection), 230 V AC Energy model, length 120 cm, depth 11 cm, width 26 cm, counter-flow non-lacquered heat exchanger U-frame, silver elox, right-hand connection, w/o lowered face, for roll-up grille, with 230 V AC regulation.



Cross grille – design solutions – Note, please, that Cross grilles must be ordered together with trench heaters, as the casing must undergo alteration. These trench heaters will be fitted with Cross frame suitable for Cross grille. For more information – see p. 127.



Where a linear grille is required, technical consultation is necessary, as the casing may need to undergo alteration. Note, please, that the linear grilles must be ordered together with trench heaters. For more info, see p. 126.



For a summary and description of grilles available, including order codes, see p. 119–127.

KORAFLEX Pool-V FVP

Trench heater with forced convection
for heating humid environments



Specification

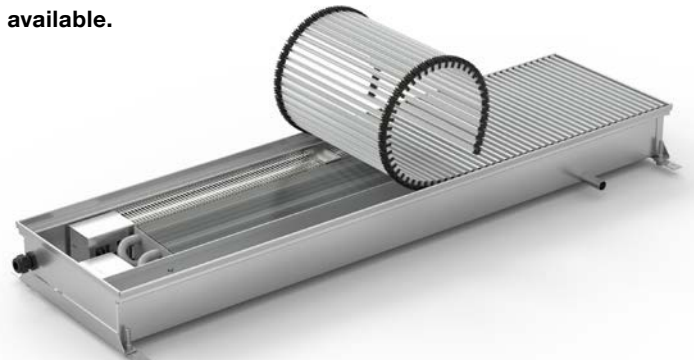
Depth	110 mm
Width	320 mm
Length	800 up to 3 000 mm (by 200 mm)
Heat output	from 90 to 7 013 W
Max. Operating pressure	1.2 MPa
Max. Operating temperature	110 °C
Conneting thread	inner G 1/2"
Casing material	AISI 316 stainless steel
IP rating	IP 20

KORAFLEX Pool-V FVP heaters are suitable for installation in humid environments. Fitted with built-in drainage and sloping base. However, these convectors are not watertight and must not be flooded for long periods. For ideal operating conditions we recommend using water with a pH of 7.2 – 7.6, with a maximum chlorine content of 1 mg/l. Changes in these values – in particular lower pH values – will result in more aggressive water and corrosion of non-stainless steel components. Pool-V heaters installed in humid environments

Standard contents

- AISI 316 stainless steel convector casing, non-lacquered
- RAL 9006 grey lacquered Al/Cu heat exchanger w/o Al frame
- frame substituted by casing edges finished with hem
- AISI 316 stainless steel cover plates
- set of low-energy 24 V DC EC fans with stainless steel cover grid
- 24 V DC terminal block and regulator (FCR BOX)
- drainage apertures, incl. separation partitions to catch spillages
- levelling set screws and 4 anchors
- hardboard cover to protect trench heater from contamination
- durable packaging, installation instructions

KORAFLEX Pool-V FVP heaters are suitable for heating humid environments (eg. swimming pools, conservatories, etc.). They are manufactured from AISI 316 stainless steel, and are fitted with built-in drainage and dividing partition to protect against flooding. They are characterized by silent operation and can be connected to BMS (Building Management System). We recommend fitting an aluminium grille, and strict adherence to installation and operating guidelines. **KORAFLEX Pool-V is finished with a hem, frames are not available.**



must be cleaned regularly with clean water and dried thoroughly. In case of visible calcareous deposits or oxidation, use a stainless steel cleaner followed by a suitable metal treatment product. **For long-term satisfaction it is essential that basic maintenance of the stainless steel components is carried out.** Further information can be found in the installation manual and Operating and warranty conditions, available to download at www.licon.cz.

Optional accessories

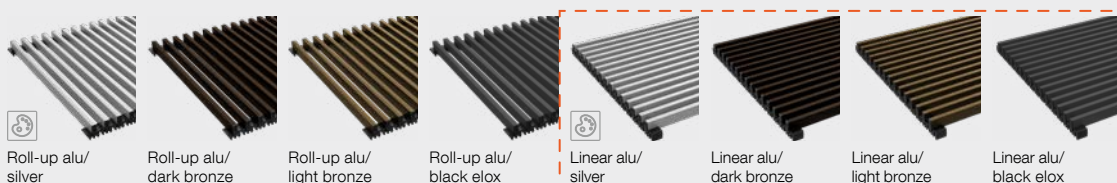
- choice of grilles
- 24 V DC power supply
- 24 V DC thermostat for regulation
- 24 V DC thermoelectric actuator, 2.5 m or 5 m cable length
- NTC temperature sensor
- external room sensor
- infrared remote control
- R-BOX
- sound insulation sheet
- lockshield, thermostatic valve
- ½"x½" 90° brass elbow for connection facilitation
- 10, 12 or 30 cm flexible stainless steel hose
- strengthened OSB cover for installation purposes

For more information about optional accessories and order codes, see p. 103–105



Not suitable for installation in salt-water pools.

Suitable grilles



Roll-up alu/
silver

Roll-up alu/
dark bronze

Roll-up alu/
light bronze

Roll-up alu/
black elox

Linear alu/
silver

Linear alu/
dark bronze

Linear alu/
light bronze

Linear alu/
black elox



Where a linear grille is selected, technical consultation is necessary, as the casing may need to undergo alteration. Note, please, that linear grilles must be ordered together with trench heaters.

For descriptions of available grilles including order codes, see p. 120.

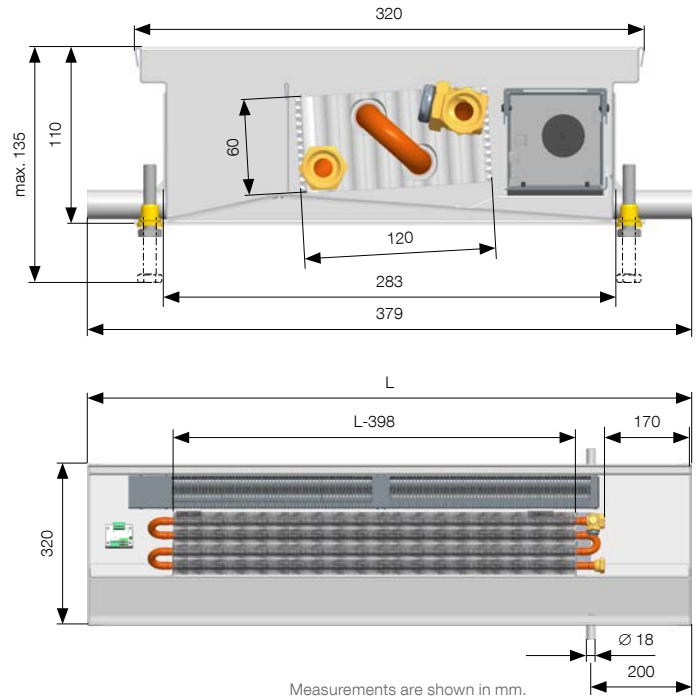
KORAFLEX Pool-V FVP

depth 110 mm/width 320 mm

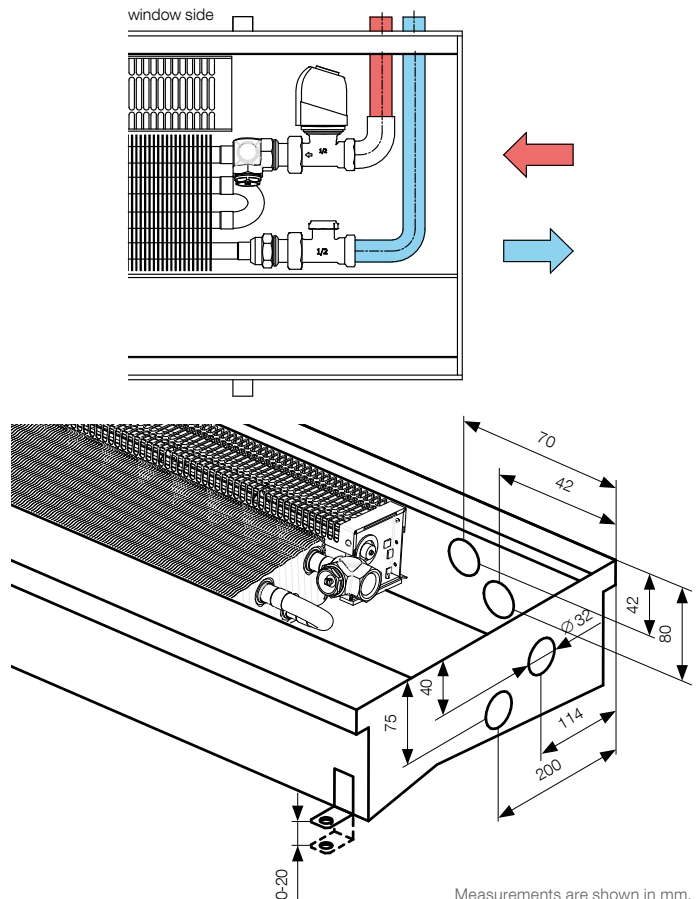
Heat output [W] where $t_1/t_2/t_3$ / EN 16430

Measurements are shown in mm including hem.

Length	Fan speed setting	Heat output [W]		El. consumption [W]	Acoustics	
		75/65/20 °C	55/45/20 °C		Sound pressure [dB(A)]	Sound power [dB(A)]
800	0	90	41	0	-	-
	1	684	415	1	20.4	28.4
	2	1 090	666	2	27.1	35.1
	3	1 277	784	2	29.5	37.5
1000	0	127	58	0	-	-
	1	963	584	2	20.9	28.9
	2	1 535	938	3	27.9	35.9
	3	1 799	1 104	3	30.4	38.4
1200	0	164	75	0	-	-
	1	1 243	753	2	21.2	29.2
	2	1 980	1 210	3	28.5	36.5
	3	2 320	1 424	4	31.1	39.1
1400	0	201	92	0	-	-
	1	1 522	922	2	21.6	29.6
	2	2 425	1 482	3	29.1	37.1
	3	2 842	1 743	4	31.8	39.8
1600	0	237	109	0	-	-
	1	1 801	1 091	2	21.9	29.9
	2	2 870	1 754	5	29.6	37.6
	3	3 363	2 063	6	32.3	40.3
1800	0	274	125	0	-	-
	1	2 080	1 261	3	22.4	30.4
	2	3 315	2 026	7	30.1	38.1
	3	3 884	2 383	10	32.9	40.9
2000	0	311	142	0	-	-
	1	2 360	1 430	3	22.4	30.4
	2	3 760	2 298	7	30.4	38.4
	3	4 406	2 703	10	33.2	41.2
2200	0	348	159	0	-	-
	1	2 639	1 599	3	22.7	30.7
	2	4 205	2 570	7	30.8	38.8
	3	4 927	3 023	10	33.6	41.6
2400	0	385	176	0	-	-
	1	2 918	1 768	4	22.9	30.9
	2	4 650	2 842	7	31.1	39.1
	3	5 449	3 343	10	33.9	41.9
2600	0	421	193	0	-	-
	1	3 197	1 937	5	23.0	31
	2	5 095	3 114	10	31.4	39.4
	3	5 970	3 663	14	34.3	42.3
2800	0	458	210	0	-	-
	1	3 476	2 107	5	23.1	31.1
	2	5 540	3 386	10	31.6	39.6
	3	6 491	3 983	14	34.5	42.5
3000	0	495	227	0	-	-
	1	3 756	2 276	6	23.4	31.4
	2	5 985	3 658	14	31.9	39.9
	3	7 013	4 303	19	34.8	42.8
Temperature exponent [n]				0.9745		



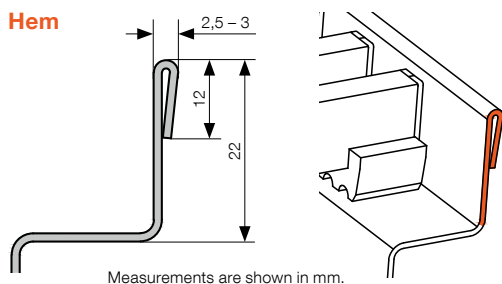
Connections and connection measurements



More information

FV mounting p. 98, Raised floor installation p. 100, Convector connections p. 101, Linear grille supports p. 126, Regulation and accessories p. 102, Noise and acoustics p. 111, Basic tech. specifications p. 112, Pressure losses p. 113, Grilles p. 119–127

HEM FINISHING



Measurements are shown in mm.

ORDER CODE



In the order code, always use the measurements in cm including hem, as listed in the output table for the respective model.

KORAFLEX	Ventilator	Pool	Length (cm)	Depth (cm)	Width (cm)	Heat exchanger type	Heat exchanger colour	Frame	Frame colour	Connection side	Lowered face	For grille	Regulation							
F	V	P / .. / ...	V	counter-flow	6	RAL 9006 grey 9 other RAL colour	P	hem	0	without frame	P	right L left	0	without lowered side	R	roll-up L* linear	-	RT	24 V DC regulation

L* – for technical alterations to convector casing, see p. 126

Standard order code: **FVP-100/11/32-V6P0P0R-RT**

KORAFLEX trench heater with fan (forced convection), Pool model, length 100 cm, depth 11 cm, width 32 cm, counter-flow RAL 9006 gray lacquered heat exchanger, finished with hem, right-hand connection, without lowered side, for roll-up grille, with 24 V DC regulation.



Individual KORAFLEX Pool heater casings cannot be combined, into multiple trench heaters and are manufactured solely as P0 and L0 models.



Where a linear grille is required, technical consultation is necessary, as the casing may need to undergo alteration. Note, please, that the linear grilles must be ordered together with trench heaters. For more info, see p. 126.



For a summary of grilles available including order codes, see p. 120.

KORAFLEX Model F2V

Trench heaters for 2-pipe systems
with forced convection for heating or cooling



KORAFLEX Model F4V

Trench heaters for 4-pipe systems
with forced convection for heating and cooling



Specifications

KORAFLEX Model F2V – 11/20

Depth	110 mm
Width	200 mm
Length	800 up to 3 000 mm (by 200 mm)

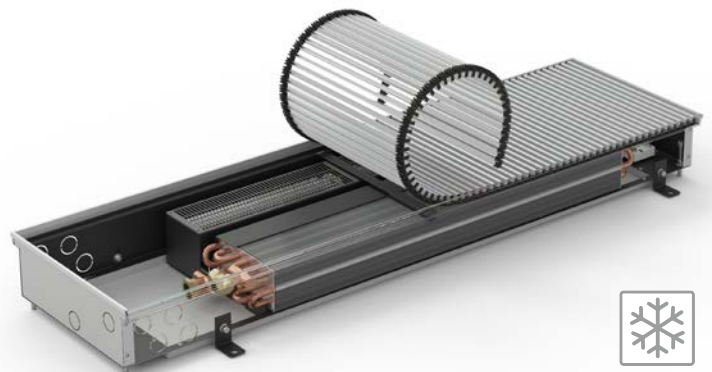
KORAFLEX Model F2V – 13/34

Depth	130 mm
Width	340 mm
Length	1 200, 1 500, 2 000, 2 500, 3 000 mm
Heat output	from 67 to 14 609 W
Cooling output	from 99 to 2 180 W
Max. operating pressure	1.2 MPa
Max. operating temperature	110 °C
Connecting thread	inner G 1/2"
IP rating	IP 20

Standard contents

- **F2V 11/20** – AISI 304 stainless steel casing, non-lacquered, non-lacquered Al/Cu heat exchanger
- **F2V 13/34** – galvanized steel outer casing, RAL 9005 black lacquered, Lower AISI 304 stainless steel condensation drainage canal, non-lacquered
 - Exclusive version – RAL 9005 lacquered Al/Cu heat exchanger
 - Economic version – non-lacquered Al/Cu heat exchanger
- aluminium U-frame, silver elox
- metal cover plate
- set of low-energy EC 24 V DC fans
- 24 V DC terminal block and regulator (FCR BOX)
- levelling set screws and 4 anchors
- spacers for correct installation and concreting
- hardboard cover to protect trench heater from contamination
- durable packaging, installation instructions

The **KORAFLEX Model F2V** is designed for heating or cooling rooms. It is capable of high heating and cooling performance. It is designed for counter-flow systems and is equipped with a stainless steel condensation drainage canal. F2V trench heaters can be controlled using a BMS (Building Management System), and are to be installed solely in dry environments.

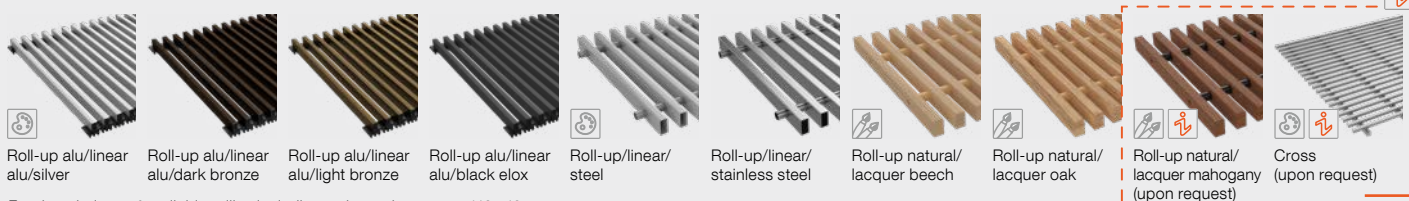


Optional accessories

- choice of grilles
- cross grille – design solutions – necessary to order together with trench heater – for more info, see p. 125
- light/dark bronze and black elox or RAL colour chart lacquered aluminium U-frame
- silver, light/dark bronze and black elox or RAL colour chart lacquered aluminium F-frame
- 24 V DC power supply
- 24 V DC thermostat for regulation
- 24 V DC thermoelectric actuator, 2.5 or 5 m cable length
- NTC temperature sensor
- external room sensor
- infrared remote control
- R-Box
- sound insulation sheet
- raised floor structural supports
- lockshield, thermostatic valve
- 1/2"x1/2" 90° brass elbow for connection facilitation
- 10, 12 or 30 cm flexible stainless steel hose
- strengthened OSB cover for installation purposes

For more information about optional accessories and order codes, see p. 103–105

Suitable grilles



For descriptions of available grilles including order codes, see p. 119–127.

KORAFLEX Model F2V

depth 110 mm/width 200 mm

Heat output [W] where $t_1/t_2/t_3$ / EN 16430

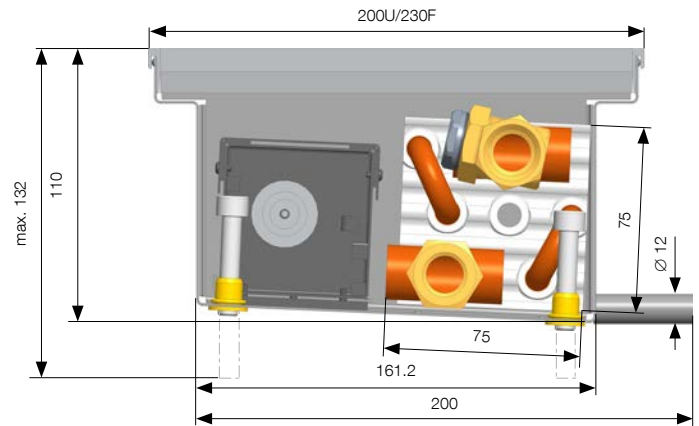
Measurements are shown in mm including U-frame.

Length	Fan speed setting	Heat output [W]		Cooling output 50% humidity. [W]		El. consumption [W]	Acoustics	
		75/65/20 °C	55/45/20 °C	17/19/28 °C	6/12/26 °C		Sound pressure [dB(A)]	Sound power [dB(A)]
800	0	67	33	-	-	0	-	-
	1	803	477	99	153	1	19.1	27.1
	2	1 043	618	148	231	2	26.6	34.6
1000	3	1 145	677	168	261	2	28.9	36.9
	0	98	48	-	-	0	-	-
	1	1 181	701	145	225	1	19.8	27.8
1200	2	1 534	908	218	340	2	27.6	35.6
	3	1 684	996	246	384	2	30.0	38
	0	129	64	-	-	0	-	-
1400	1	1 558	926	191	298	1	20.1	28.1
	2	2 025	1 199	288	449	3	28.3	36.3
	3	2 223	1 315	325	506	3	31.0	39
1600	0	161	79	-	-	0	-	-
	1	1 936	1 150	238	370	1	20.8	28.8
	2	2 515	1 489	358	557	3	29.0	37
1800	3	2 762	1 634	404	629	3	31.7	39.7
	0	192	94	-	-	0	-	-
	1	2 314	1 374	284	442	2	21.2	29.2
2000	2	3 006	1 780	428	666	3	29.5	37.5
	3	3 301	1 952	483	752	5	32.4	40.4
	0	223	110	-	-	0	-	-
2200	1	2 692	1 599	330	514	2	22.0	30
	2	3 497	2 071	498	775	4	30.1	38.1
	3	3 840	2 271	562	874	5	32.9	40.9
2400	0	255	125	-	-	0	-	-
	1	3 069	1 823	377	586	3	21.9	29.9
	2	3 988	2 361	568	884	5	30.5	38.5
2600	3	4 379	2 590	641	997	6	33.5	41.5
	0	286	141	-	-	0	-	-
	1	3 447	2 047	423	658	3	22.2	30.2
2800	2	4 478	2 652	638	992	5	30.9	38.9
	3	4 918	2 909	720	1 120	6	34.0	42
	0	318	156	-	-	0	-	-
3000	1	3 825	2 272	469	730	3	22.4	30.4
	2	4 969	2 943	708	1 101	6	31.3	39.3
	3	5 457	3 227	798	1 243	7	34.5	42.5
3200	0	349	172	-	-	0	-	-
	1	4 203	2 496	516	803	3	22.7	30.7
	2	5 460	3 233	777	1 210	7	31.6	39.6
3400	3	5 996	3 546	877	1 365	9	34.9	42.9
	0	380	187	-	-	0	-	-
	1	4 581	2 721	562	875	3	22.7	30.7
3600	2	5 951	3 524	847	1 319	7	31.9	39.9
	3	6 535	3 865	956	1 488	9	35.3	43.3
	0	412	202	-	-	0	-	-
3800	1	4 958	2 945	608	947	4	23.1	31.1
	2	6 442	3 815	917	1 427	8	32.2	40.2
	3	7 074	4 184	1 035	1 611	10	35.6	43.6
Temperature exponent [n]		1.0173		0.8335				

The table shows TOTAL cooling outputs
 *TOTAL cooling outputs = output including energy consumed for the production of condensate.

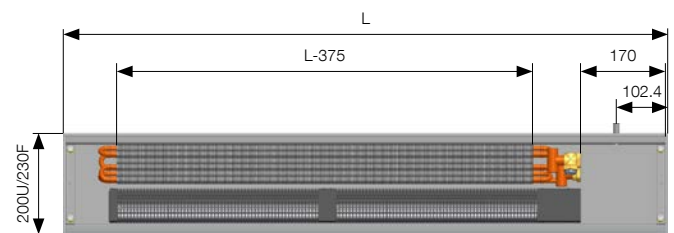
More information

FV mounting p. 98, Raised floor installation p. 100, Convector connections p. 101, Linear grille supports p. 126, Regulation and accessories p. 102, Noise and acoustics p. 111, Basic tech. specifications p. 112, Pressure losses p. 113, Grilles p. 119–127



U = U-frame, F = F-frame. Measurements are shown in mm.

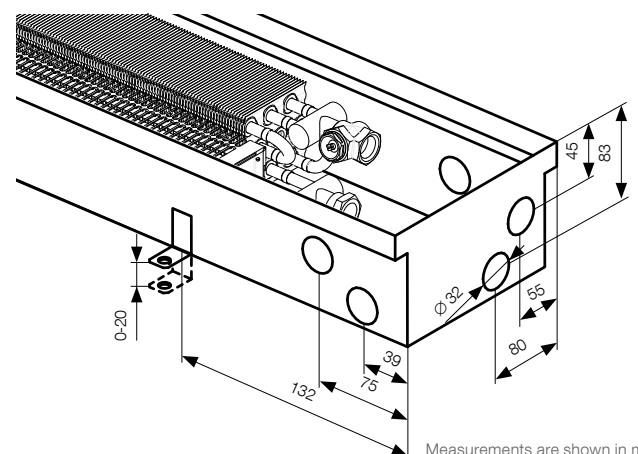
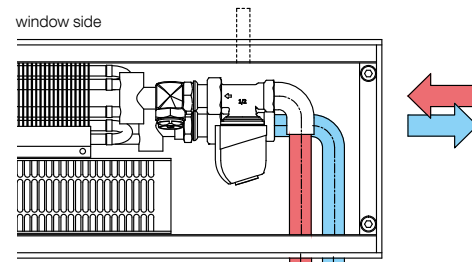
Where the F-frame is fitted, both the length and width increase by 30 mm. Measurements for U-frame and Cross frame are identical.



Connections and connection measurements



Condensation drainage canal is situated on the window side.



Measurements are shown in mm.

KORAFLEX Model F2V

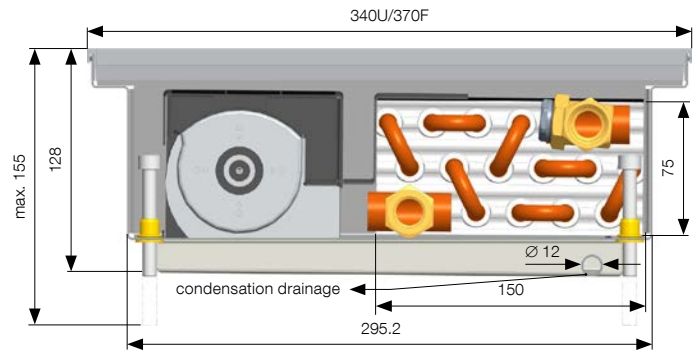
depth 130 mm/width 340 mm

Heat output [W] where $t_1/t_2/t_3$ / EN 16430

Measurements are shown in mm including U-frame.

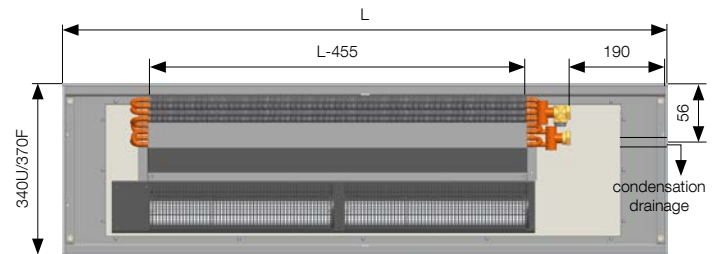
Length	Fan speed setting	Heat output [W]		Cooling output 50% humidity [W]		El. consumption [W]	Acoustics	
		75/65/20 °C	55/45/20 °C	17/19/28 °C	6/12/26 °C		Sound pressure [dB(A)]	Sound power [dB(A)]
		Temperature exponent [n]						
1200	0	187	92	-	-	0	-	-
	1	2 136	1 254	266	415	2	25.0	33
	2	3 145	1 913	443	692	4	33.4	41.4
	3	4 276	2 732	638	998	9	43.4	51.4
1500	0	263	129	-	-	0	-	-
	1	2 996	1 759	373	582	3	26.0	34
	2	4 412	2 683	621	971	5	34.8	42.8
	3	5 999	3 832	895	1 400	11	44.9	52.9
2000	0	388	191	-	-	0	-	-
	1	4 430	2 600	551	861	5	26.8	34.8
	2	6 523	3 966	919	1 436	8	36.0	44
	3	8 869	5 666	1 324	2 069	17	46.1	54.1
2500	0	514	252	-	-	0	-	-
	1	5 863	3 441	729	1 140	5	27.7	35.7
	2	8 634	5 250	1 216	1 901	10	37.4	45.4
	3	11 739	7 500	1 752	2 739	23	47.4	55.4
3000	0	640	314	-	-	0	-	-
	1	7 297	4 283	907	1 418	6	28.2	36.2
	2	10 745	6 533	1 513	2 365	12	38.1	46.1
	3	14 609	9 333	2 180	3 409	29	48.2	56.2
Temperature exponent [n]		0.9589		0.9325				

The table shows TOTAL cooling outputs
 *TOTAL cooling outputs = output including energy consumed for the production of condensate.

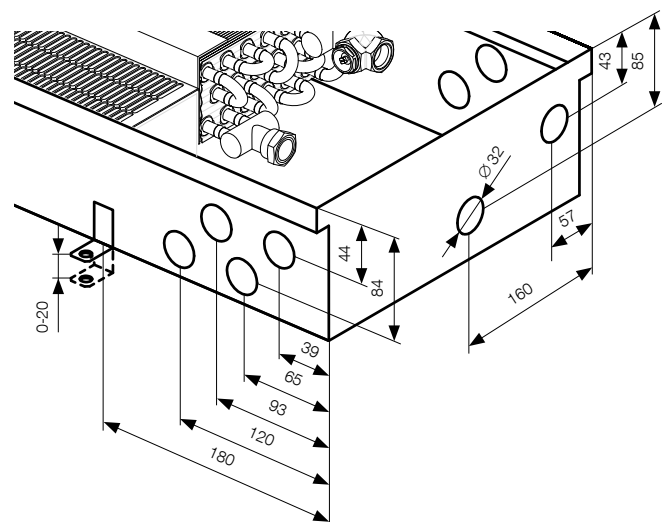
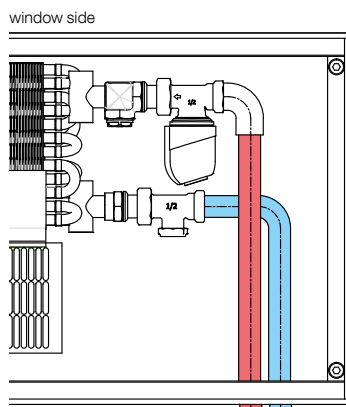


U = U-frame, F = F-frame. Measurements are shown in mm.

Where the F-frame is fitted, both the length and width increase by 30 mm. Measurements for U-frame and Cross frame are identical.



Connections and connection measurements



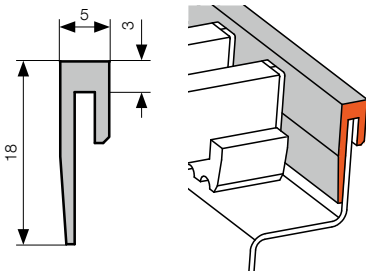
More information

FV mounting p. 98, Raised floor installation p. 100, Convactor connections p. 101, Linear grille supports p. 126, Regulation and accessories p. 102, Noise and acoustics p. 111, Basic tech. specifications p. 112, Pressure losses p. 113, Grilles p. 119-127

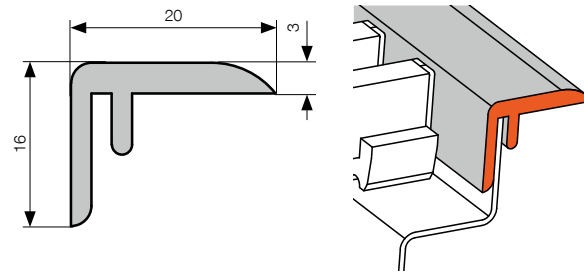
Measurements are shown in mm.

FRAMES

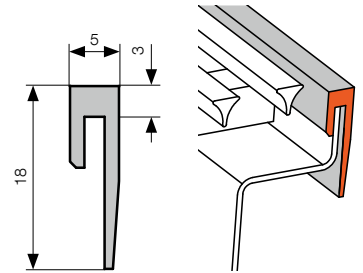
Standard U-frame



Optional F-frame



Optional Cross grille frame (on request)



Measurements are shown in mm.

ORDER CODE



In the order code, always use the measurements in cm including U-frame, as listed in the output table for the respective model.

KORAFLEX	2 pipe	Ventilator	Length (cm)	Depth (cm)	Width (cm)	Heat exchanger type	Heat exchanger colour	Frame	Frame colour	Connection side	Lowered face	For grille	Regulation
F	2	V / .. / ..	V	counter-flow	1 non-lacquered 5 RAL 9005 9 other RAL colour	U U-frame F F-frame C for Cross grille 0 without frame	1 silver elox 2 dark bronze elox 3 light bronze elox 5 black elox 9 other RAL colour 0 without frame	P right L left	0 without lowered face 1 lower face – input side 2 lower face – opposite input side 3 both sides lower	R roll-up L* linear	- RT 24 V DC regulation	

L* – for technical alterations to convector casing see p. 126

Example order code: F2V-120/13/34-V1U1P0R-RT

KORAFLEX trench heater with fan (forced convection), F2V 2-pipe model for heating or cooling, 24 V DC model, length 120 cm, depth 13 cm, width 34 cm, counter-flow non-lacquered heat exchanger U-frame silver elox, right-hand connection, without lowered face, for roll-up grille, 24V DC regulation.



Cross grille – design solutions – Note, please, that Cross grilles must be ordered together with trench heaters, as the casing must undergo alteration. These trench heaters will be fitted with Cross frame suitable for Cross grille. For more information – see p. 127.



Where a linear grille is selected, technical consultation is necessary, as the casing may need to undergo alteration. Note, please, that linear grilles must be ordered together with trench heaters. For more information see p. 126.



For a summary and description of grilles available, including order codes, see p. 119–127.

Specifications

Depth	130 mm
Width	340 mm
Length	1 200, 1 500, 2 000, 2 500, 3 000 mm
Heat output	from 173 to 7 883 W
Cooling output	from 242 to 1 983 W
Max. operating pressure	1.2 MPa
Max. operating temperature	110 °C
Connecting thread	inner G 1/2"
IP rating	IP 20

KORAFLEX Model F4V is designed for heating and cooling rooms. It is capable of high heating and cooling performance. It is designed for 4-pipe systems and is equipped with a stainless steel condensation drainage canal. The **KORAFLEX Model F4V** can be controlled using a BMS (Building Management System), and are to be installed solely in dry environments.



ECONOMIC version – black lacquered galvanized steel casing, non-lacquered heat exchanger

EXCLUSIVE version – black lacquer galvanized steel casing, RAL 9005 black lacquered heat exchanger

Standard contents

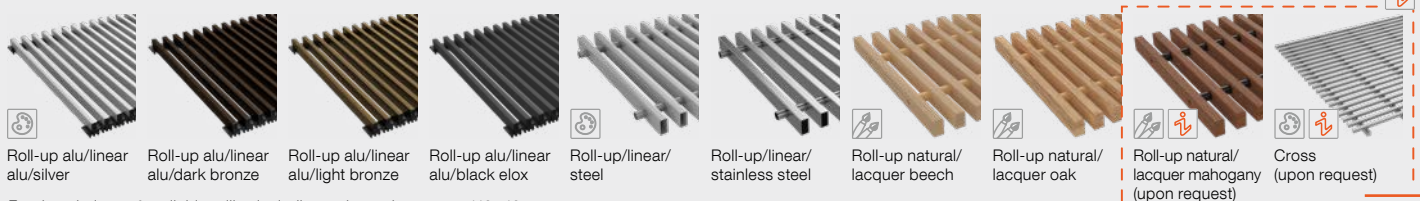
- galvanized steel casing RAL9005 black lacquered steel casing, lower AISI 304 stainless steel condensation drainage canal, non-lacquered
- Economic – non-lacquered Al/Cu heat exchange with bleed valve
- Exclusive – RAL 9005 black lacquered Al/Cu heat exchanger with bleed valve
- aluminium U-frame, silver elox
- metal cover plate
- set of low-energy EC fans 24 V DC
- 24 V DC terminal block and regulator (FCR BOX)
- levelling set screws and 4 anchors
- spacers for correct installation and concreting
- hardboard cover to protect trench heater from contamination
- durable packaging, installation instructions

Optional accessories

- choice of grilles
- cross grille – design solutions – necessary to order together with trench heater – for more info, see p. 125
- light/dark bronze and black elox or RAL colour chart lacquered aluminium U-frame
- silver, light/dark bronze and black elox or RAL colour chart lacquered aluminium F-frame
- 24 V DC power supply
- 24 V DC thermostat for regulation
- 24 V DC thermoelectric actuator, 2.5 or 5 m cable length
- NTC temperature sensor
- external room sensor
- infrared remote control
- R-Box
- sound insulation sheet
- raised floor structural supports
- lockshield, thermostatic valve
- ½"x½" 90° brass elbow for connection facilitation
- 10, 12 or 30 cm flexible stainless steel hose
- strengthened OSB cover for installation purposes

For more information about optional accessories and order codes, see p. 103–105

Suitable grilles



For descriptions of available grilles including order codes, see p. 119–127.

Linear grilles are available only after technical alterations to the casing. For more info see p. 126.

KORAFLEX Model F4V

depth 130 mm/width 340 mm

Heat output [W] where $t_1/t_2/t_3$ / EN 16430

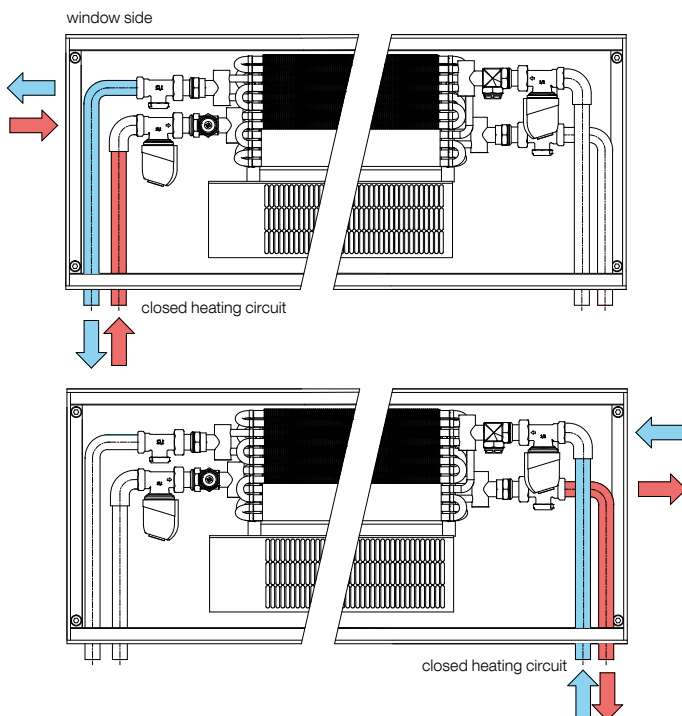
Measurements are shown in mm including U-frame.

Length	Fan speed setting	Heat output [W]		Cooling output 50% humidity. [W]		El. consumption [W]	Acoustics	
		75/65/20 °C	55/45/20 °C	17/19/28 °C	6/12/26 °C		Sound pressure [dB(A)]	Sound power [dB(A)]
1200	0	173	85	-	-	0	-	-
	1	1 412	809	242	369	2	25.0	33
	2	1 810	1 065	386	590	4	33.4	41.4
	3	2 173	1 330	547	834	9	43.4	51.4
1500	0	249	122	-	-	0	-	-
	1	2 031	1 163	348	531	3	26.0	34
	2	2 602	1 532	556	848	5	34.8	42.8
	3	3 125	1 912	786	1 199	11	44.9	52.9
2000	0	375	184	-	-	0	-	-
	1	3 061	1 753	524	800	5	26.8	34.8
	2	3 923	2 310	838	1 278	8	36.0	44
	3	4 711	2 883	1 185	1 808	17	46.1	54.1
2500	0	502	246	-	-	0	-	-
	1	4 092	2 344	701	1 069	5	27.7	35.7
	2	5 244	3 087	1 120	1 709	10	37.4	45.4
	3	6 297	3 854	1 584	2 417	23	47.4	55.4
3000	0	628	308	-	-	0	-	-
	1	5 123	2 934	877	1 339	6	28.2	36.2
	2	6 564	3 865	1 402	2 139	12	38.1	46.1
	3	7 883	4 824	1 983	3 025	29	48.2	56.2
Temperature exponent [n]		1.0376		0.7964				

The table shows TOTAL cooling outputs

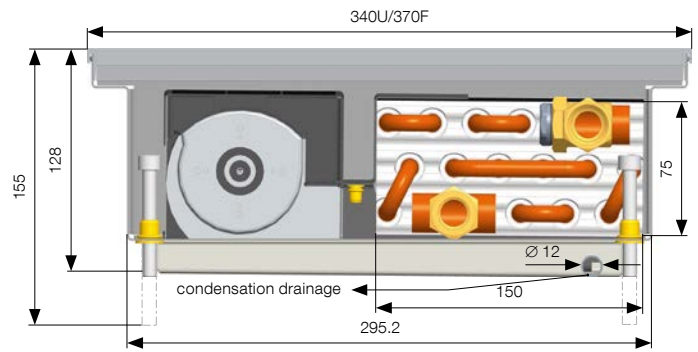
*TOTAL cooling outputs = output including energy consumed for the production of condensate.

Connections and connection measurements



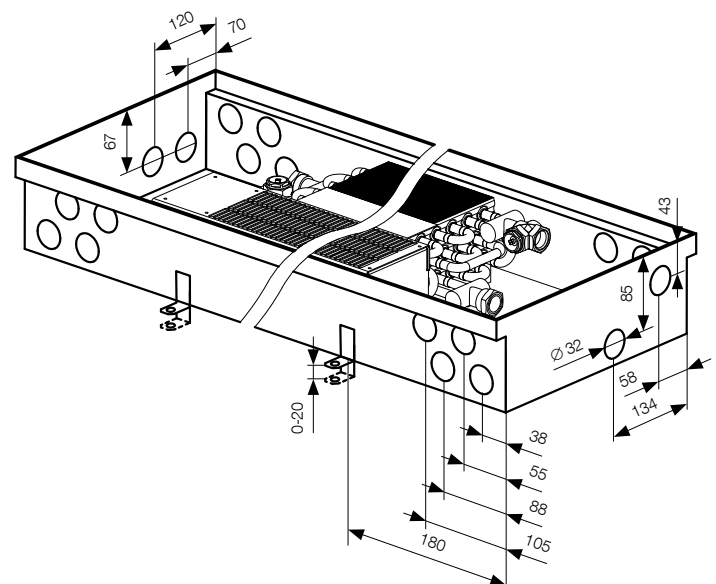
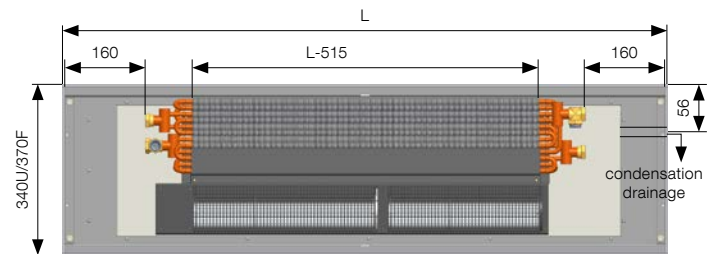
More information

FV mounting p. 98, Raised floor installation p. 100, Convectors connections p. 101, Linear grille supports p. 126, Regulation and accessories p. 102, Noise and acoustics p. 111, Basic tech. specifications p. 112, Pressure losses p. 113, Grilles p. 119–127



U = U-frame, F = F-frame. Measurements are shown in mm.

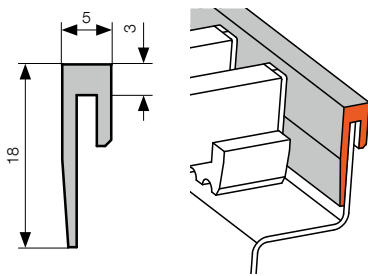
Where the F-frame is fitted, both the length and width increase by 30 mm. Measurements for U-frame and Cross frame are identical.



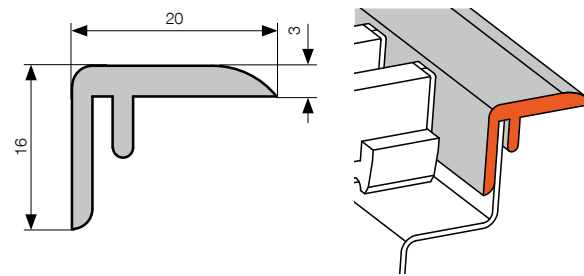
Measurements shown in mm.

FRAMES

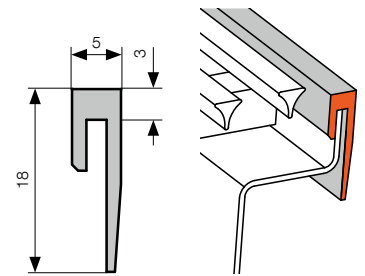
Standard U-frame



Optional F-frame



Optional Cross grille frame (on request)



Measurements are shown in mm.

ORDER CODE



In the order code, always use the measurements in cm including U-frame, as listed in the output table for the respective model.

KORAFLEX	4-pipe	Ventilator	Length (cm)	Depth (cm)	Width (cm)	Heat exchanger type	Heat exchanger colour	Frame	Frame colour	Connection side	Lowered face	For grille	Regulation
F	4	V / .. / ..	V	counter-flow	1 non-lacquered 5 RAL 9005 9 other RAL colour	U U-frame F F-frame C for Cross grille 0 without frame	1 silver elox 2 dark bronze elox 3 light bronze elox 5 black elox 9 other RAL colour 0 without frame	P right L left	0 without lowered face 1 lower face – input side 2 lower face – opposite input side 3 both sides lower	R roll-up L* linear	- RT 24 V DC regulation	

L* – technical alterations to convector casing see p. 126

Example order code: F4V-120/13/34-V1U1P0R-RT

KORAFLEX trench heater with fan (forced convection), 4-pipe model for heating and cooling, length 120 cm, depth 13 cm, width 34 cm, counter-flow non-lacquered heat exchanger, U-frame silver elox, right-hand connection, without lowered face, roll-up grille, 24 V DC regulation.



Cross grille – design solutions – Note, please, that Cross grilles must be ordered together with trench heaters, as the casing must undergo alteration. These trench heaters will be fitted with Cross frame suitable for Cross grille. For more information – see p. 127.



Where a linear grille is selected, technical consultation is necessary, as the casing may need to undergo alteration. Note, please, that linear grilles must be ordered together with trench heaters. For more information see p. 126.



For a summary and description of grilles available, including order codes, see p. 119–127.

Installation and accessories



FV TRENCH HEATER INSTALLATION

Construction recommendations

To ensure correct operation, it is essential that the following principles are respected.

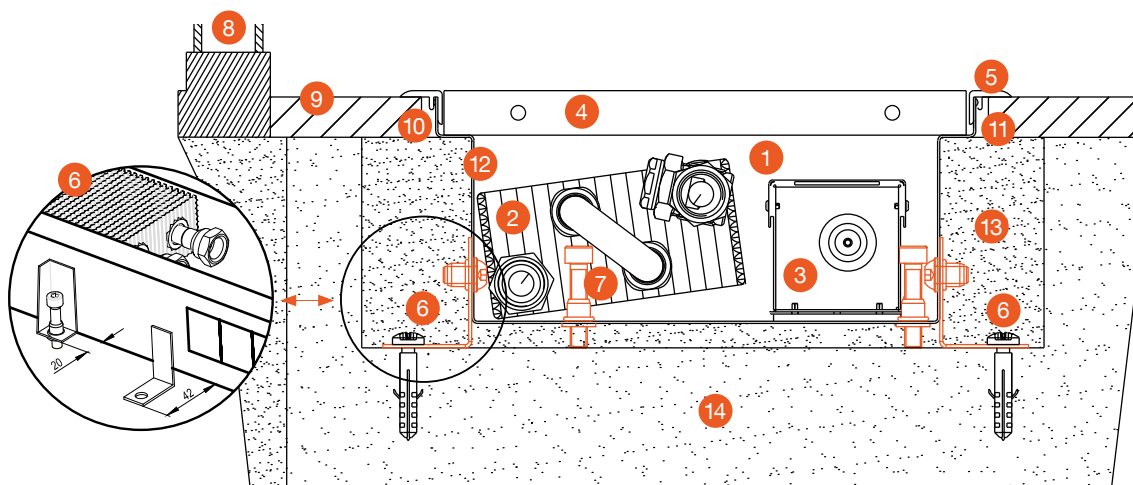
- **Trench heaters must be installed horizontally with the heat exchanger on the window side.** For the grille to function correctly, the upper edge of the casing must be straight and level (not buckled or bent).
- The maximum recommended distance of the trench heater from the wall/window is 100 mm.
- The size of the trough in the floor for trench heater installation should be at least 100 mm bigger (both in length and width) than the convector.
- Using anchors will extend the bottom width of the trench heater by 42 mm from each side.
- We recommend connecting the trench heater to the heating system using a lockshield and thermostatic valve. The heat exchanger connection is by an inner G $\frac{1}{2}$ thread. Following connection to the heating system, bleed and carry out a pressure test.
- When concreting, the trench heater must be levelled using the set screws provided and fastened to the floor using the anchors provided. The anchors keep the trench heater in place while pouring concrete.
- While pouring concrete, the trench heater may be weighed down.
- While pouring concrete it is important to brace the trench heater to prevent longitudinal buckling. Trench heaters are fitted with spacers for this purpose. Following concreting, these spacers are easily removed. Note: FVP models as standard are, however, not equipped with spacers.
- While pouring concrete or anhydrite it is essential to seal all connection openings to prevent leakage. We also recommend insulating trench heaters against damp.
- Where trench heaters are not concreted in, a raised floor supports are recommended to use. Standard trench models heaters are not self-supporting.
- We recommend insulating the outer side of the trench heater casing along the length of the heat exchanger with polystyrene to prevent heat loss into the floor.
- For trench heaters with forced convection we recommend undertaking fastening and acoustic insulation by pouring thin concrete along the sides and under the base of the heater.
- To avoid contaminating the trench heater, we recommend maintaining the protective hardboard cover in place during construc-

tion work. The cover, which is included in the standard contents, is not suitable for walking on and serves solely to protect the trench heater from contamination during installation. Strengthened OSB covers for installation purposes are available as optional extras.

- KORAFLEX F2V and F4V models with cooling and Pool-V FVP models installed in humid environments are equipped as standard with condensation drainage canals. The F2V 11/20 and Pool-V models are fitted with drainage pipes facing the wall. During installation of all models, the pipe at the bottom of the trench heaters must be connected to a pipe with sufficient gradient to drain overflow water and/or condensation. We recommend installing a U-bend to prevent odour.
- The KORAFLEX Pool-V FVP model is suitable for using at swimming pools. The dividing partition is designed to catch water from the pool; however, it does not function as a standard swimming pool overflow. The partition is always situated closest to the pool. The heating part, including the heat exchanger and fan must be situated away from the pool. The Pool-V FVP model is equipped with two drainage pipes. The installation, operation and maintenance of this equipment requires special attention. Details can be found on web pages or in the installation instructions.
- Fans are attached to the trench heater casing using magnets. For stainless steel models velcro is used. This system enables removal of the fans from the trench heater during installation to avoid damage or contamination, etc. Fans may also be removed this way for cleaning when the unit is switched off. With the exception of the Pool series, fans are installed to direct air towards the windows.
- Electrical installation design must be carried out by suitably qualified persons in accordance with the relevant regulations.
- Installation and servicing of the electrical installation must be carried out by persons with the relevant electro technical qualifications.
- Prior to commissioning, the electrical components must be thoroughly inspected in accordance with relevant regulations.



KORAFLEX Energy FVE trench heaters are powered with 230 V alternating current mains electricity. Therefore the electric branch must be equipped with a residual current device with a tripping current of 30 mA. These trench heaters are to be used solely in dry environments, and only for heating.



- 1 trench heater with forced convection
- 2 heat exchanger
- 3 fan
- 4 grille
- 5 F-frame
- 6 anchors
- 7 set screws
- 8 window
- 9 floor level
- 10 grout
- 11 expansion joint
- 12 insulation
- 13 concrete
- 14 sub-floor

RAISED FLOOR INSTALLATIONS

Structural supports for raised floor trench heater installations offer stable and effective solutions. Structural supports are manufactured from non-lacquered steel and are suitable for raised floors of a depth up to 500mm. Structural supports are suitable for **Optimal-V, Energy FVE, F2V and F4V models**. For structural reasons, the KORAFLEX Pool-V model is not recommended for installation into raised floors.

SZP-03 low raised floor support

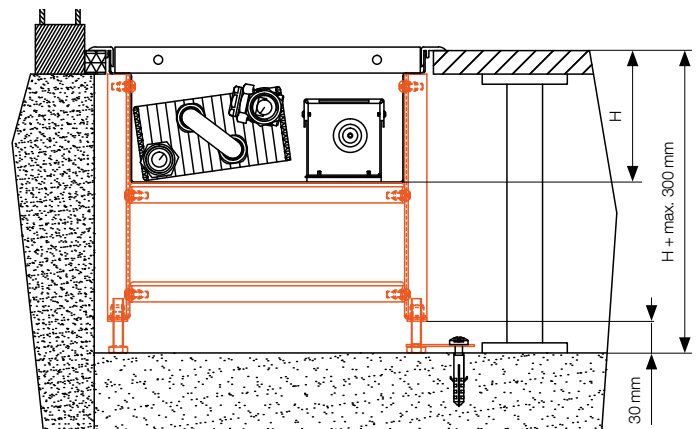
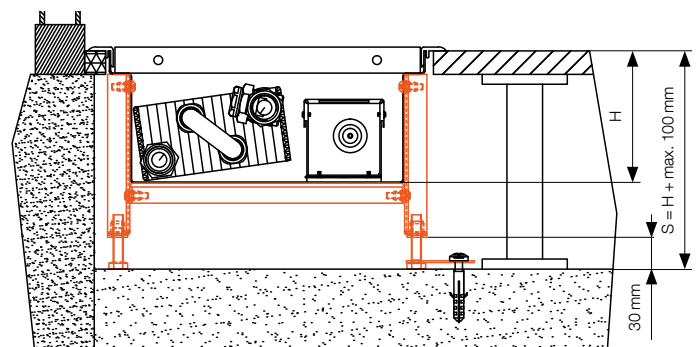
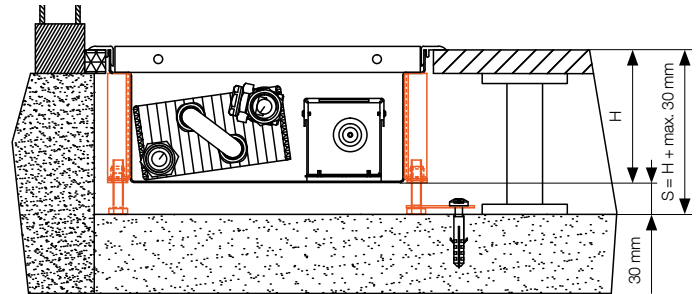
Trench heaters are fitted with reinforcing bars and set screws, which enable the trench heater to be installed at the required height. Set screws must be anchored to the floor to prevent movement. Reinforcing bars are not included as standard and cannot be fitted subsequently. The screws allow setting a maximum height which is max. 30 mm higher than the trench heater itself. Recommended for raised floors with a **maximum depth 30 mm** greater than the unit height of the trench heater.

SZP-10 higher raised floor support

Customized solutions for all projects dealing with raised flooring. This is a more robust model of the low raised floor support, equipped with one support at the base of the trench heater. The precise technical design depends on customer's requirements. Recommended for raised floors with a **maximum depth 100 mm** greater than the unit height of the trench heater.

SZP-30 high raised floor support

Customized solutions for projects dealing with high raised flooring. This is a more robust model of the higher raised floor support, equipped with two supports at the base of the trench heater. The precise technical design depends on customer's requirements. Recommended for raised floors with a **maximum depth 300 mm** greater than the unit height of the trench heater.




ORDER CODE

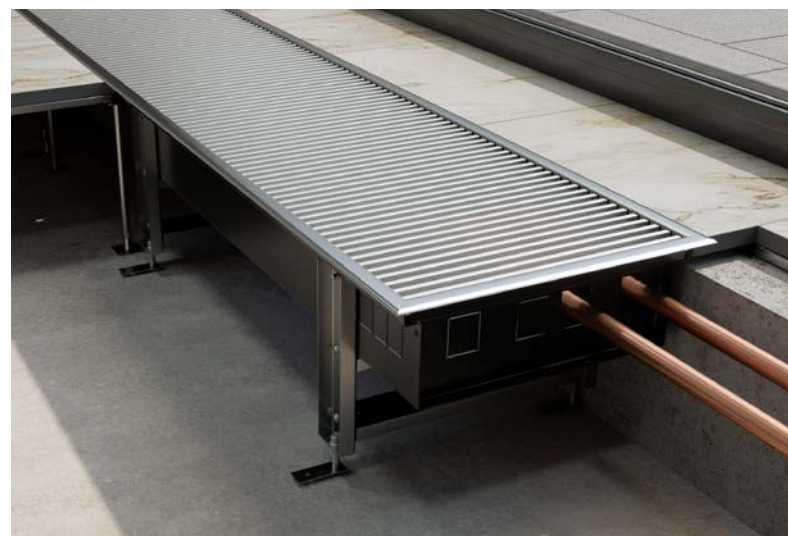
Support	Raised	Floor	Support version	Trench heater model (FK, FV, F2V, F4V)	Depth (FV, F2V, F4V) cm	Width (FV, F2V, F4V) cm	Raised floor height S (cm)	Recommended number of supports (ks)	Heater length (mm)	Recommended number of supports
S	Z	P	---	FV-	00	/	000		800-1000	3
				F2					1100-1500	4
				F4					1600-2000	5
									2100-2500	6
									2600-3000	7

Example order code:
SZP-03-FV-11/20-13-5

Raised floor supports for a FV trench heater with forced convection 11 cm deep and 20 cm wide and for raised floor 13 mm deep. The trench heater is 1 800 mm long, therefore the raised floor support set for this trench heater consist of 5 supports. For trench heaters that are not built in, or where there is a cavity beneath the convector, we recommend using sound insulation sheets (see p. 111).

 **Supports must be ordered together with trench heaters due to structural alterations to convector casings! Components of several types of raised floor support are integral parts of the trench heater body.**

For placing of supports, see p. 48.

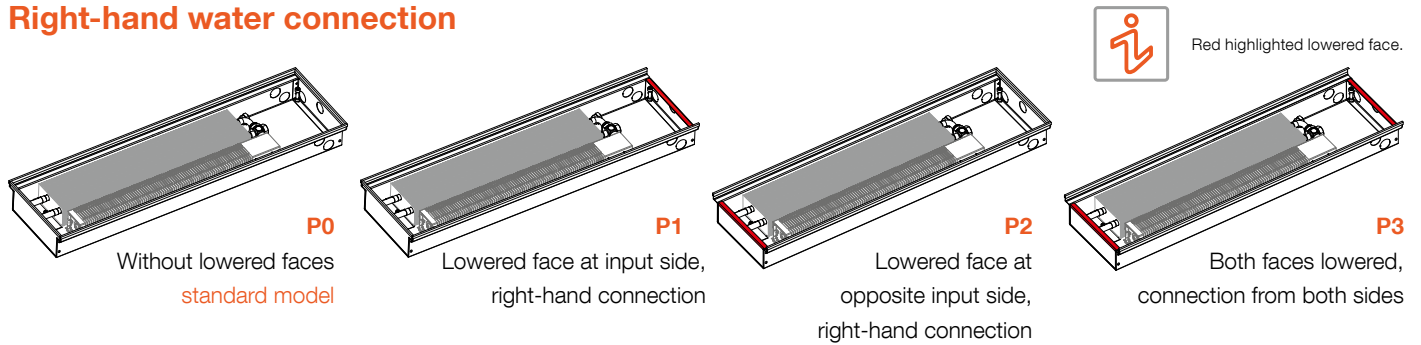


TRENCH HEATER CONNECTIONS

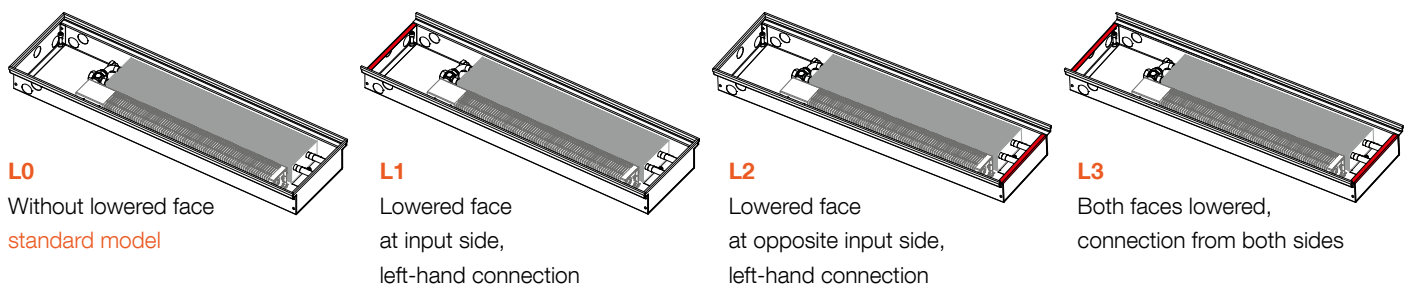
Casing types according to water connections and lowered faces for multiple installations

Lowered trench heater casing faces are used where invisible connections are desired between convectors (multiple convectors around a room, eg. in administrative buildings, restaurants, hotels, etc.). When ordering grilles, care must be taken to include information in the order code that the grilles required are to be used with trench heaters with lowered faces. **Individual KORAFLEX Pool FKP trench heater casings cannot be combined in this way, and are available in P0 models only.**

Right-hand water connection

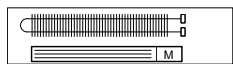


Left-hand water connection

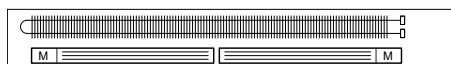


NUMBER OF FANS PER TRENCH HEATER

**FVO 7/20; FVO 7/26;
FVO 7/32; FVO 8/16**

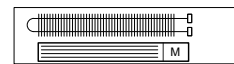


From 800 to 2 000 mm one fan



From 2 200 mm two fans

**FVO 9/20; FVO 9/26; FVO 9/32;
FVO 9/40; FVO 11/20; FVO 11/26;
FVO 11/32; FVO 11/40; FVO 13/26;
FVP 11/32; F2V 11/20**



From 800 to 1 800 mm one fan



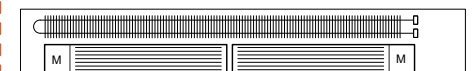
From 2 000 mm two fans

FVO 13/32; FVO 13/40

From 800 to 1 600 mm one fan,
from 1 800 mm two fans.

F2V 13/34; F4V 13/34

From 1 200 to 1 500 mm one fan,
from 2 000 mm two fans.



Also valid for KORAFLEX Energy FVE models.

REGULATION – GENERAL INFORMATION

Regulation forms a central role in the heating and cooling outputs of trench heaters with forced convection. Fans and thermoelectric actuators are supplied with 24 V DC, and fan rotations are as standard controlled by a voltage of 0–10 V DC.

Standard contents

- **A set of EC fans** with synchronous motor in an aluminium frame. Featuring very low electricity consumption and very quiet operation.
- **FCR-BOX electronic regulator** which functions as a terminal block for connecting the cable from the power supply, thermostat or BMS and the fan. Ensures smooth operation of the fan at required speed and independent control of thermoelectric actuators for heating and cooling.
- KORAFLEX Energy FVE models are fitted with switching **230 V AC / 24V DC** power supply and a terminal block for connecting 230 V AC from the grid.

Optional accessories

- 230 V AC / 24 V DC power supply according to the maximum electricity consumption of the trench heater. Five types of power supply units are available for 60 W, 150 W, 240 W and 480 W. Power supply units are supplied separately for mounting on the distribution board DIN rail assembly
- Junction box. For mounting HDR-60, HDR-100 and HDR-150 power supply units.
- SIEMENS 24 V DC: RDG 160T or 260KN thermostats
- 24 V DC Thermoelectric actuator, thermostatic valves, lockshield.
- The NTC temperature sensor is supplied in a separate package and serves to block the fan until the water in the heat exchanger has reached a sufficient level of heat or coolness, thereby optimizing both functionality and electricity consumption. It is delivered separately. For proper function it must be placed on the heat exchanger.

KORAFLEX Pool-V FVP

For KORAFLEX Pool-V humid environment trench heaters, the standard control system description applies. The difference lies in placing the FCR-BOX in a patrix box with a higher degree of protection. The fan is equipped with stainless steel casing and its electronics are protected against splashing water. For this model we recommend using a temperature sensor that monitors the temperature in the pool area (see Electro-regulation elements, p. 105). The sensor is designed for RDG 160T thermostats. The trench heater is not designed to be permanently flooded with pool water. Please familiarise yourself thoroughly with the warranty conditions and conditions of use, which can be found at www.licon.cz

KORAFLEX Energy FVE

It is powered by 230V AC mains voltage. The switched-mode power supply is situated inside the convector and converts mains voltage to 24 V DC. Fan speed is controlled by 0–10 V DC controlled voltage either from the BMS or the thermostat. Electrical installation design must be carried out by a suitably qualified person and must comply with relevant regulations. Installation and maintenance of the electrical installation must be carried out by a qualified electrical technician. Prior to commissioning, an inspection and testing of the electrical installation must be carried out in accordance with ČSN 33 1500. **KORAFLEX Energy FVE convectors are powered with 230V alternating current mains electricity. Therefore the electric branch must be equipped with a residual current device with a tripping current of 30 mA.** These trench heaters are to be used solely in dry environments, and only for heating.



RAB 21-DC or RDG 160T thermostat function description

Trench heater output is controlled by fan speed and the flow of heating / cooling medium through the exchanger. The control voltage is 24 V. The RAB 21 DC or RDG 160T Siemens thermostats control the heating medium valve with a thermoelectric actuator, and in addition control fan speed with a control voltage of 0–10 V DC. Fan speed may be controlled automatically by the thermostat, or manually in three speed settings. Speed rating is set at a control signal size of 7 V. Fans may be blocked by a temperature sensor (see regulation accessories). Fans start rotating when the temperature of the heating medium exceeds 37 °C. For cooling trench heaters it is recommended to use a second temperature sensor, actuated when the temperature drops below 15 °C. Temperature sensors are available as optional accessories.

Function description with BMS (Building Management System)

The BMS central control system may be used to control trench heaters. One BMS control output directly controls the opening / closing of valves and the other 0–10 V DC output controls fan speed. Rated heat output of trench heaters is achieved at 7 V DC. Valves and fans are supplied with 24 V DC.

Using the KNX system, trench heaters may be controlled with the 260KN thermostat. The thermostat communicates with the KNX system, which transmits and receives data for the trench heater.

Installation must be carried out in accordance with valid regulations and safety procedures! The manufacturer cannot be held liable for any defects, damages and injuries caused by improper installation.

REGULATION AND ACCESSORIES

SIEMENS RDG 160T electronic room thermostat with LCD display

- optional accessory
- for 2 and 4 pipe heating systems
- 7-day time program with 8 programmable timers
- automatic or manual heating/cooling changeover
- manual or automatic 3-speed fan control
- operating modes Comfort, Economy and Protection
- operating voltage 24 V DC, power consumption 1 W
- 0–10 V DC ECM fan
- setpoint setting range 5–40 °C
- adjustable switching differential 0.5 to 6 K
- IP rating IP 30
- dimensions w×h×d: 93×128×31 mm

Accessories

- can be combined with separate QAA32 room temperature sensor, eg. for thermostat installation out of publicly accessible space or for installation in humid environments
- IRA211 infrared remote control
- **order code:** REG-RDG160T



For correct operation, RDG 160T or RDG 260KN thermostats must be set according to the LICON instructions included in the thermostat package. The thermostat is supplied pre-set for heating in a 2-pipe system.



SIEMENS RDG 260KN electronic room thermostat with LCD display

- optional accessory
- regulation of ambient temperature and relative humidity
- for 2 and 4 pipe heating systems
- power indicator function for energy-optimised system operation
- built-in relative humidity and temperature sensor
- KNX (S-mode and LTE-mode) for integration into BMS
- 7-day programme with up to 3 temperature setting periods per day
- automatic (continuous) or manual (3-level) fan speed regulation
- Comfort, Economy and Protection operation modes
- 3 multifunctional inputs (window contact, motion detector, access card reader, heating/cooling switch...)
- operating voltage 24 V DC, power consumption 4 W
- EC fan control voltage 0–10 V DC
- setpoint setting range 5–40 °C
- adjustable hysteresis switching differential 0.5–6 K
- IP rating IP 30
- wall mounting with base mounting plate
- dimensions w×h×d: 92×134×25 mm

Accessories

- can be combined with separate QAA32 room temperature sensor, eg. for thermostat installation out of publicly accessible space or for installation in humid environments
- **order code:** REG-RDG260KN
- can be commissioned using the Siemens PCT Go mobile application



SIEMENS RAB 21-DC Manual room thermostat

- optional accessory
- for 2-pipe heating systems
- manual 3-speed fan switch
- heating or cooling model
- 24 V DC, electrical consumption: 1 W
- 0–10 V DC EC fan
- setpoint setting range 8–30 °C
- switching differential <1 K
- IP rating IP 30
- dimensions w×h×d: 96×110×36 mm
- **order code:** REG-RAB21DC



QAA32 external room temperature sensor

- optional accessory
- for measuring temperature in heating systems where a thermostat cannot be placed in the room
- suitable for installation at swimming pools
- can be combined with RDG 160T and RDG 260KN
- setpoint setting range: 0–40 °C, accuracy at 25 °C: ± 0.3 K
- NTC sensor, 3 kΩ at 25 °C
- IP 30
- dimensions (w×h×d): 96.4×99.6×36 mm
- **order code:** REG-S-QAA32



SIEMENS IRA 211 infrared remote control

- optional accessory
- infrared remote control for RDG 160T
- heating or cooling operation
- temperature setting
- fan speed selection
- power supply 2× 1.5 V AAA batteries
- IP rating IP 30
- dimensions w×h×d: 42×106×18 mm
- **order code:** REG-IRA211



REGULATION AND ACCESSORIES

R-Box

- optional accessory
- combined with the power supply it creates the control voltage for the fan
- for use with thermostat with supply voltage of 230 V AC (such thermostat is not offered by LICON)
- 3 programmable speed settings
- input voltage: 230 V/50 Hz
- output signal: 0 to 10 V/1 kΩ
- 4 kV AC galvanic isolation optocouplers
- IP 30
- mounted on DIN rail on distribution board
- ambient operating temperature: 0–40 °C
- dimensions (w×h×d): 70×58×90 mm
- electrical diagram at www.licon.cz
- **order code:** REG-RBOX17



Temperature sensor NTC

- optional accessory
- temperature sensor situated on the exchanger blocks the fan until the temperature of the exchanger medium is approx. 37 °C in heating mode, and 15 °C in cooling mode
- F4V 4-pipe convectors should be fitted with 2 temperature sensors – one for each circuit
- NTC sensor 10 kΩ at 25 °C
- Cable length: 0.3 m
- Connect to FCR-BOX in the convector
- includes installation clips
- **order code:** REG-S-NTC



Temperature sensor NTC is delivered separately to the trench heater. In case of a request to be mounted on the heat exchanger by Licon, please note in your order.



When using a thermostat not recommended by LICON, an R-Box must be used to achieve a signal of 0–10 V.

Junction box

- optional accessory
- embedded in wall
- for installation of AC power source (60 W, 100 W and 150 W)
- IP 40
- dimensions (w×h×d): 318×258×72 mm
- **order code:** REG-IB



Thermoelectric actuator TEP 24

- optional accessory
- reset time: 4 min
- M30×15 thread
- cable length: 2.5 and 5 m
- closed without voltage
- supply voltage: 24 V DC
- electricity consumption <2 W
- IP 44
- unit height: 65 mm
- **order code** (2.5 m cable): REG-TEP24-250
- **order code** (5 m cable): REG-TEP24-500



DC power supply 60 W, 100 W, 150 W, 240 W and 480 W

- optional accessory
- switch-mode DC power supply
- silent operation, high efficiency
- DIN rail assembly
- IP 20



power supply size	60 W	100 W	150 W	240 W	480 W
input supply voltage	85–264 V AC	85–264 V AC	85–264 V AC	88–264 V AC	90–264 V AC
output voltage	24 V DC/2.5 A	24 V DC/3.9 A	24 V DC/6.25 A	24 V DC/10 A	24 V DC/20 A
dimensions w×h×d	53×90×55 mm	70×90×55 mm	105×90×55 mm	60×126×114 mm	86×126×129 mm
order code	REG-PS60	REG-PS100	REG-PS150	REG-PS240	REG-PS480



For calculation of the proper power supply size – see the example at the bottom of p. 105.

Lockshield

- optional accessory
- straight or angle
- size 1/2" G
- nickel-plated brass
- max. operating pressure: PN 10
- max. operating temperature: 90 °C
- **order code:**
straight lockshield: REG-LS
angle lockshield: REG-LA



Preset	1	2	3	4	5	6	7	8	9
Turns	1 ¼	1 ½	1 ¾	2	2 ½	3	3 ½	4	FO
K_v	0.14	0.2	0.31	0.43	0.6	0.79	1	1.2	1.35

K_v flow coefficient (m³/h)
FO fully open

Thermostatic valve

- optional accessory
- straight or angle
- preset value: K_v
- size 1/2" G
- thread: M30x1.5
- nickel-plated brass
- max. operating pressure: PN 10
- max. operating temperature: 90 °C
- **order code:**
straight thermostatic valve: REG-TVS
angle thermostatic valve: REG-TVA

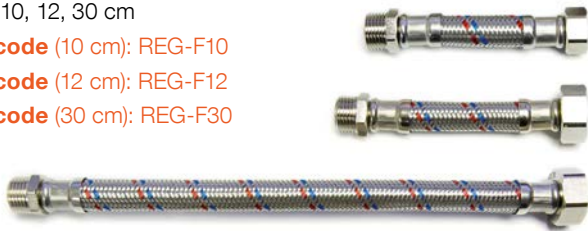


Preset values	1	2	3	4	5	6
$K_v (\Delta t = 2K)$	0.10	0.20	0.30	0.40	0.50	0.60
K_{vs}	0.10	0.20	0.30	0.40	0.57	0.80

K_v flow coefficient (m³/h)
 K_{vs} maximum flow (m³/h)
 $\Delta t = 2K$ valve proportional band (K)

Flexible connecting hose

- optional accessory
- stainless steel mesh
- Z 1/2"x1/2" M connecting nuts
- length: 10, 12, 30 cm
- **order code (10 cm):** REG-F10
- **order code (12 cm):** REG-F12
- **order code (30 cm):** REG-F30



Brass elbow

- optional accessory
- 1/2"x1/2" 90° without rim
- **order code:** REG-E90



Example power supply size calculation

For regulation, the electricity consumption must be correctly calculated in order to select the proper size of the DC source. The total wattage of units is calculated using the total electricity consumption of all thermostat-controlled trench heaters with fans. Fan electricity power consumption is shown in the output tables for each type and length of trench heater. **Here we have selected the values for the third fan speed.**

Example

There will be used these trench heaters in the project:

2x KORAFLEX FVO 160/11/26 – in the table

we see an electricity consumption of **6 W**

3x KORAFLEX FVO 240/11/26 – in the table

we see an electricity consumption of **9 W**

5x Thermoelectric actuators – electricity consumption is **2 W**

Total input power

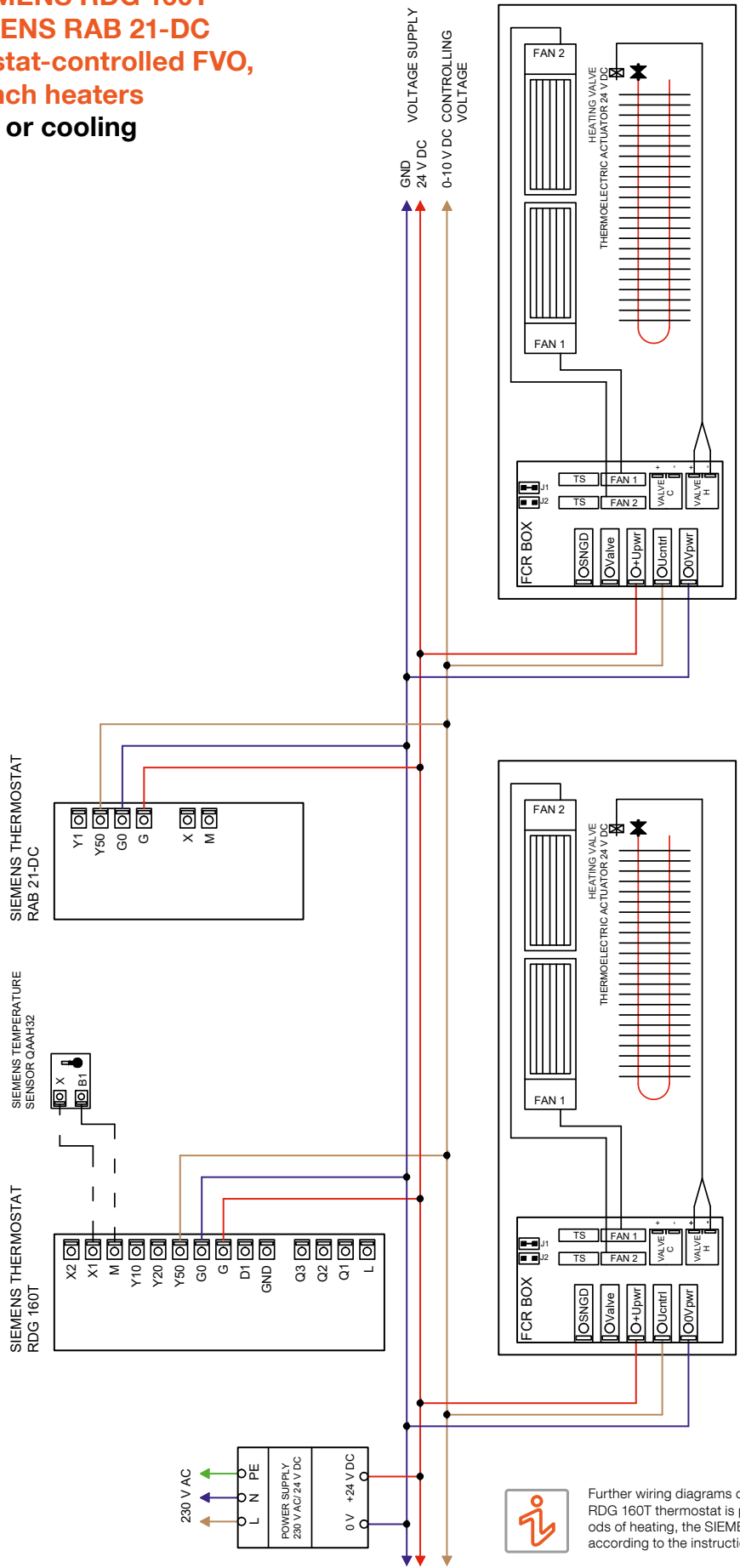
2x6 W+3x9 W+5x2 W=49 W. Increase by a reserve of 20 %.

Total input power is **58.8 W**. Required power supply size **60 W**.

Length	Fan speed setting	Output [W]		El. consumption [W]		Acoustics		
		75/65/20 °C	55/45/20 °C	Optimal-V 24 V DC	Energy 230 V AC	Sound pressure [dB(A)]	Acoustic output [dB(A)]	
1600	1800	0	237	109	0	0	-	-
		1	1 801	1 091	2	12	21.2	29.2
		2	2 870	1 754	4	15	29.5	37.5
		3	3 363	2 063	6	16	32.4	40.4
2400	2600	0	385	176	0	0	-	-
		1	2 918	1 768	4	14	22.4	30.4
		2	4 650	2 842	7	18	31,3	39,3
		3	5 449	3 343	9	21	34,5	42,5
2600	2800	0	421	193	0	0	-	-
		1	3 197	1 937	4	14	22,7	30,7
		2	5 095	3 114	9	19	31,6	39,6
		3	5 970	3 663	13	22	34,9	42,9

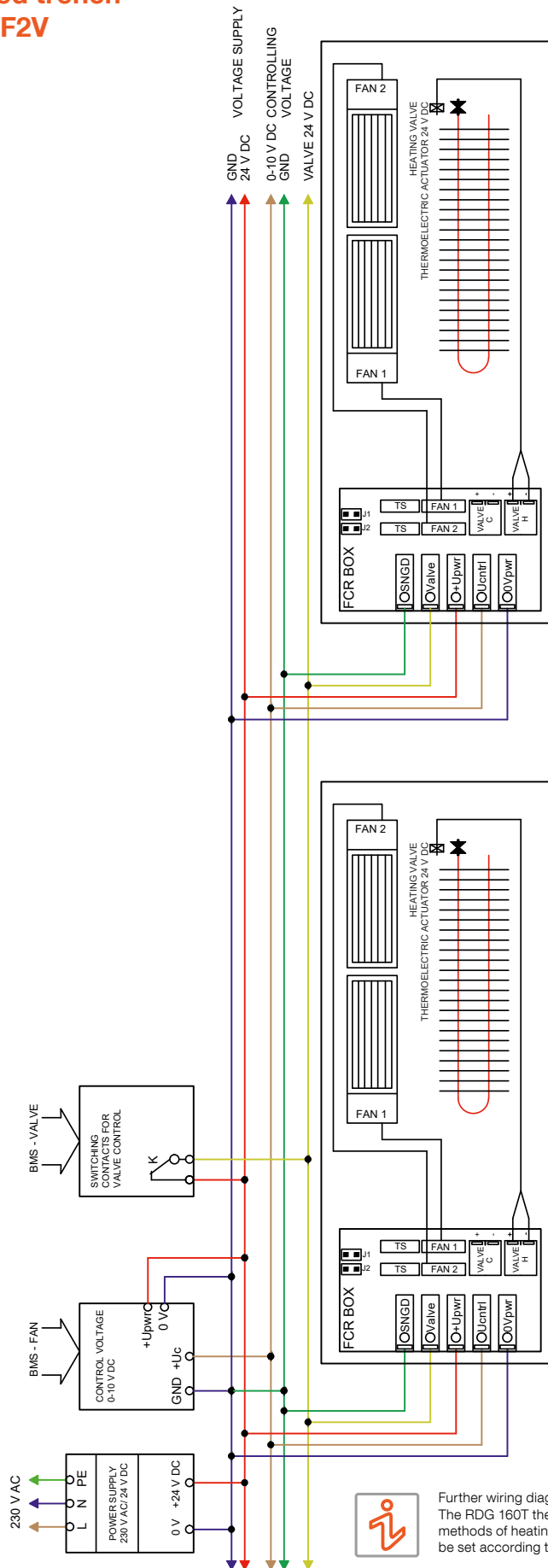
TRENCH HEATER CONNECTION DIAGRAM

For **SIEMENS RDG 160T**
or **SIEMENS RAB 21-DC**
thermostat-controlled **FVO,**
F2V trench heaters
Heating or cooling



Further wiring diagrams can be found at www.licon.cz, or upon request. The RDG 160T thermostat is pre-set for 2-pipe heating systems. For alternative methods of heating, the SIEMENS RDG 160T or RAB21-DC thermostats must be set according to the instructions enclosed, or see downloads at www.licon.cz.

For BMS controlled trench heaters FVO and F2V Heating

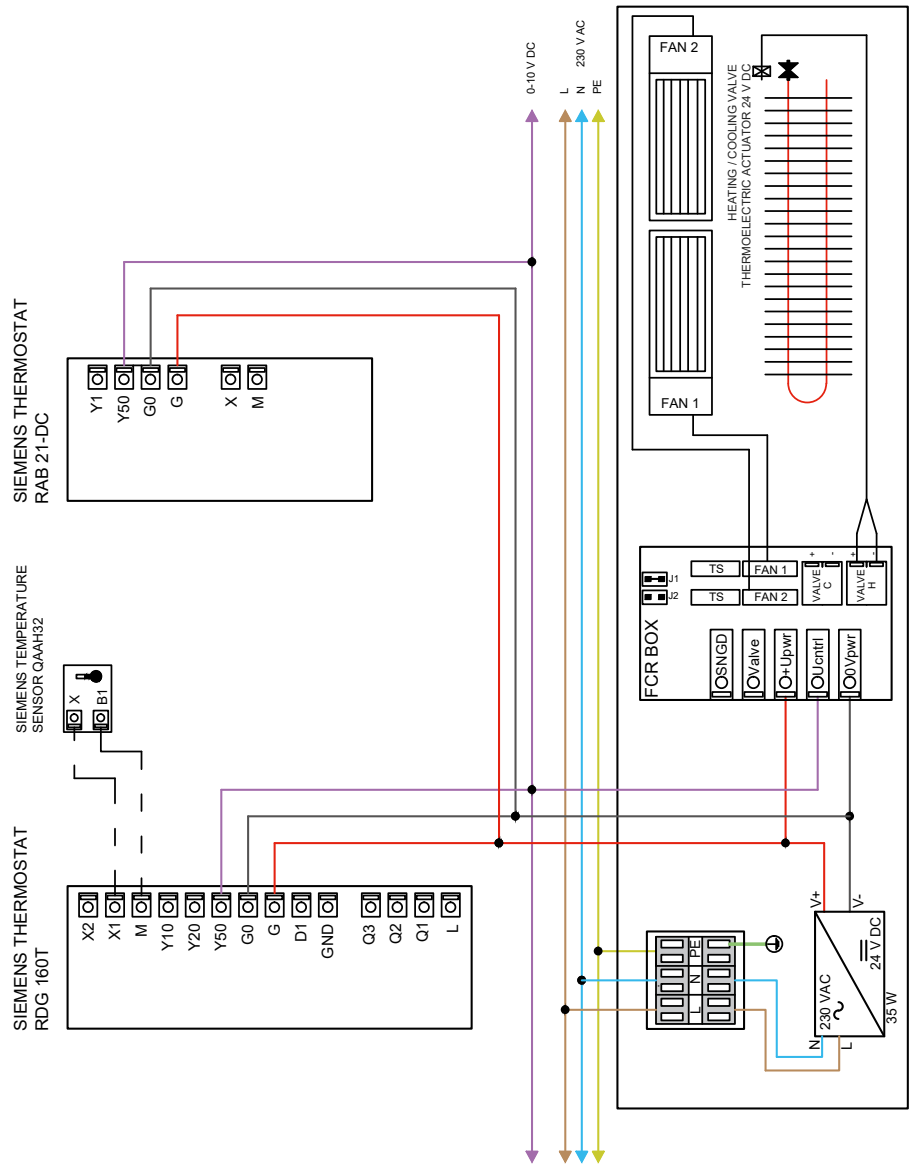
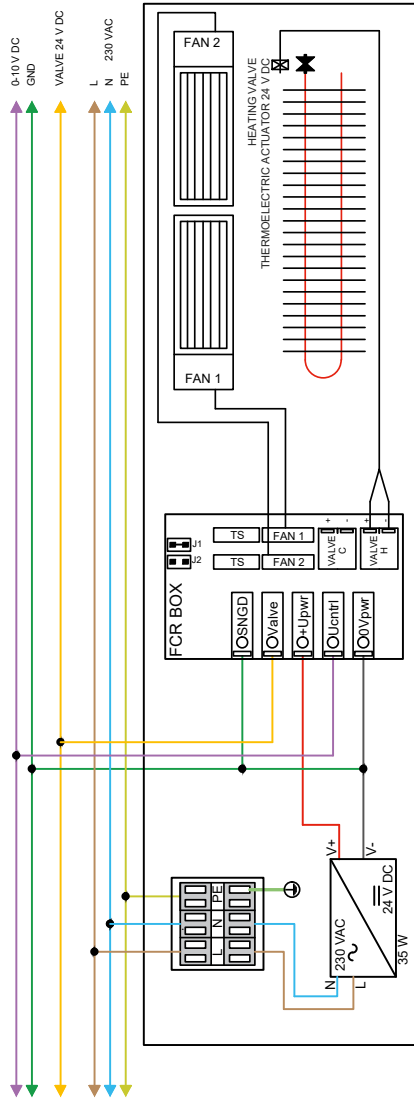


Further wiring diagrams can be found at www.licon.cz, or upon request. The RDG 160T thermostat is pre-set for 2-pipe heating systems. For alternative methods of heating, the SIEMENS RDG 160T or RAB21-DC thermostats must be set according to the instructions enclosed, or see downloads at www.licon.cz.

TRENCH HEATER CONNECTION DIAGRAM

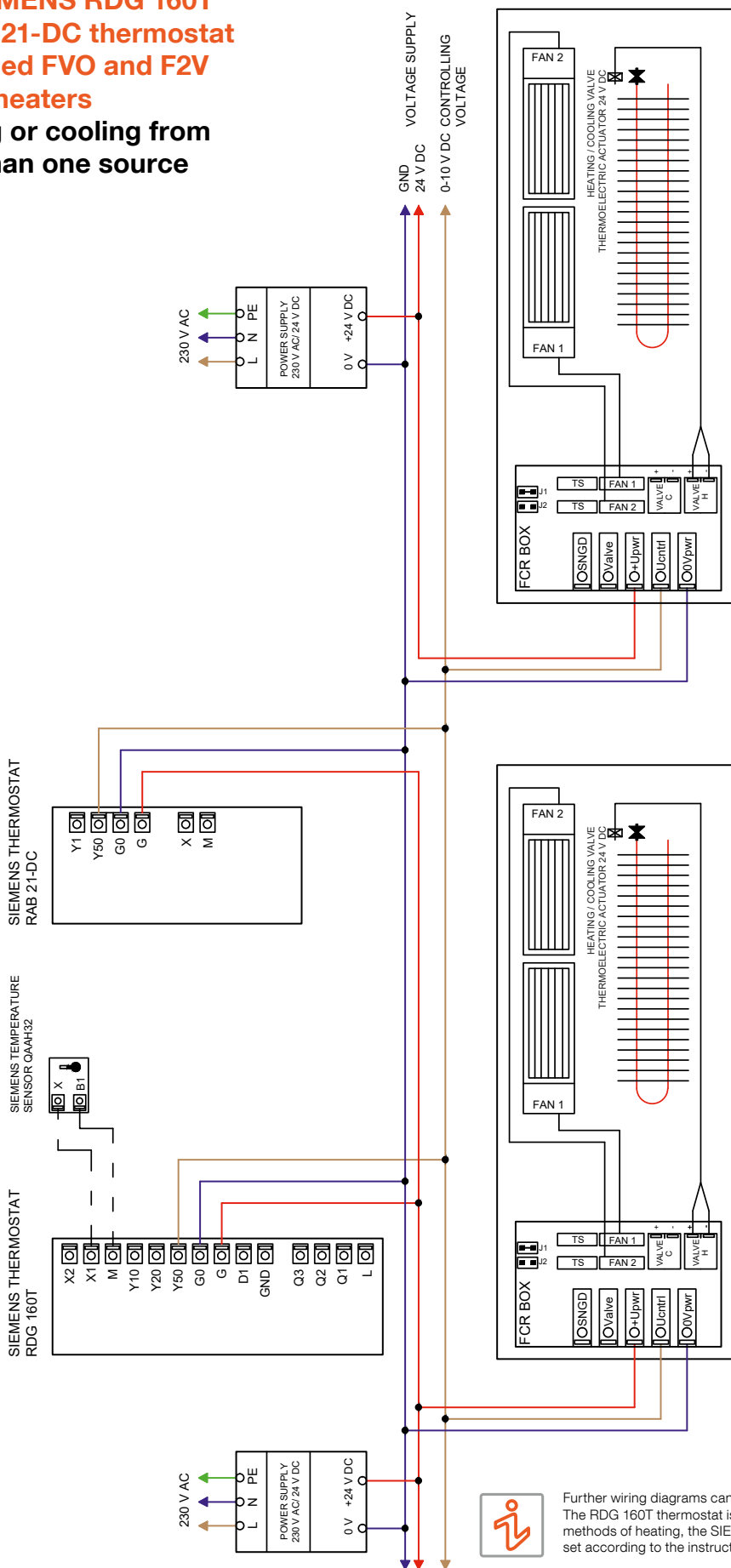
FVE trench heater basic wiring diagrams

FVE trench heater with SIEMENS RDG 160T or RAB 21-DC thermostat controlled trench heater basic wiring diagrams



Further wiring diagrams can be found at www.licon.cz, or upon request. The RDG 160T thermostat is pre-set for 2-pipe heating systems. For alternative methods of heating, the SIEMENS RDG 160T or RAB21-DC thermostats must be set according to the instructions enclosed, or see downloads at www.licon.cz.

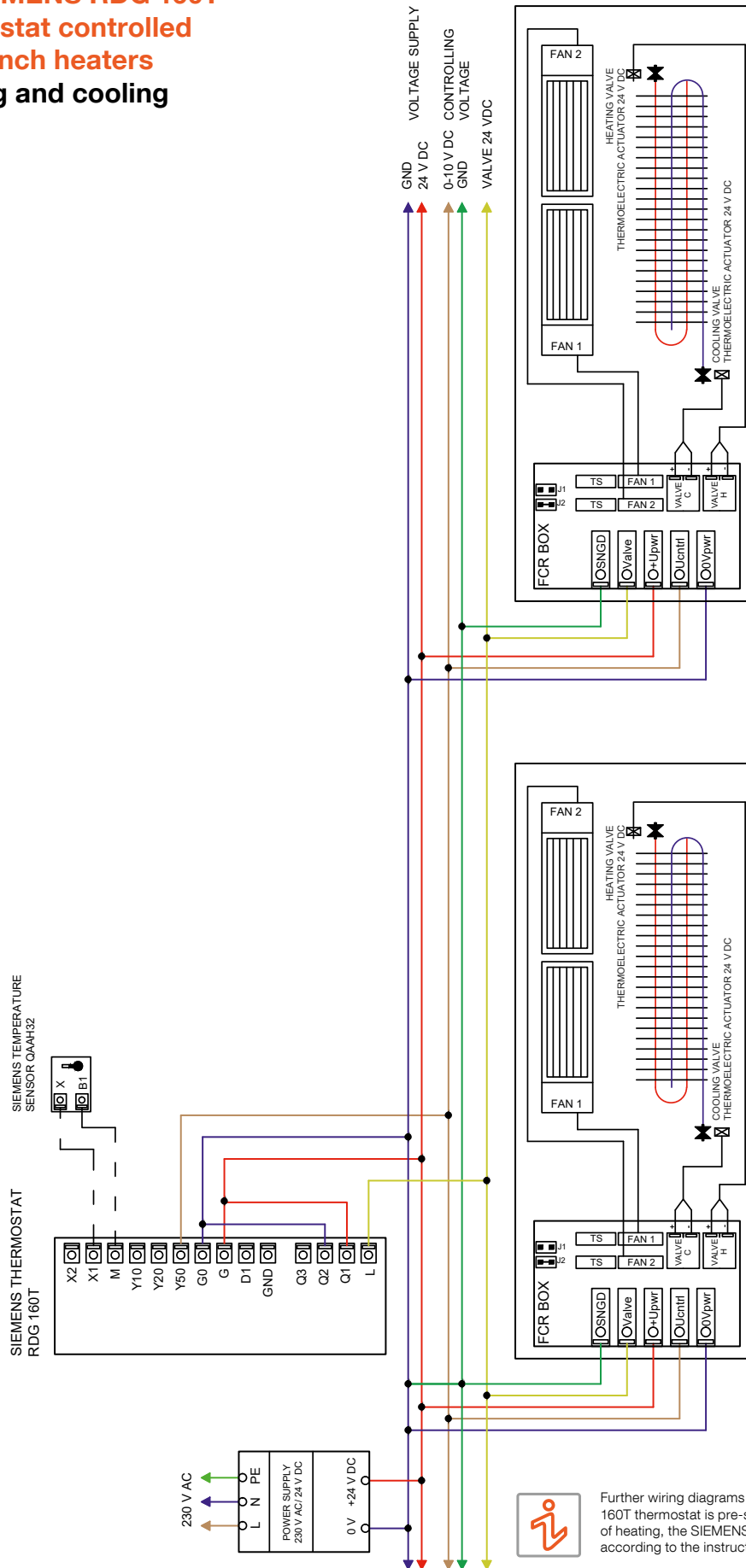
**For SIEMENS RDG 160T
or RAB 21-DC thermostat
controlled FVO and F2V
trench heaters**
**Heating or cooling from
more than one source**



Further wiring diagrams can be found at www.licon.cz, or upon request. The RDG 160T thermostat is pre-set for 2-pipe heating systems. For alternative methods of heating, the SIEMENS RDG 160T or RAB21-DC thermostats must be set according to the instructions enclosed, or see downloads at www.licon.cz.

TRENCH HEATER CONNECTION DIAGRAM

For **SIEMENS RDG 160T**
thermostat controlled
F4V trench heaters
Heating and cooling



Further wiring diagrams can be found at www.licon.cz, or upon request. The RDG 160T thermostat is pre-set for 2-pipe heating systems. For alternative methods of heating, the SIEMENS RDG 160T or RAB21-DC thermostats must be set according to the instructions enclosed, or see downloads at www.licon.cz.

NOISE LEVELS – ACOUSTICS

LICON HEAT and its suppliers make use of the most progressive technology in the manufacture of trench heaters and fans. Our fans use EC motors, which are silent, do not vibrate and display extraordinarily low power consumption.

In terms of noise levels, the design of trench heaters must take into account the acoustic load appropriate for their intended use. Requirements for silent operation will be diverse, whether installed in living rooms and offices, or in corridors, halls, etc. For this reason, in addition to design in terms of performance and dimensions, an assessment of the correct acoustic load should not be neglected. This can be achieved using the formula below, where it is understood that sound pressure levels vary in different environments. It is recommended the maximum acoustic load in living rooms as 30 dB L_{pA} .

Acoustic parameters were measured in an accredited testing room in accordance with ČSN EN 9614-2 Acoustics – Determination of sound power levels of noise sources using sound intensity – Part 2: Measurement by scanning.

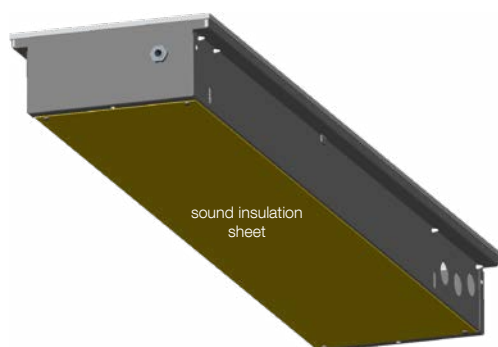
Listed sound parameters

The ČSN EN 16430 standard defines the base unit of sound power

$[L_{WA}/dB]$, which is listed for all products equipped with fans.

To facilitate orientation, sound pressure levels $[L_{pA}/dB]$ are listed in addition.

The sound pressure values listed were calculated using the following formula. They apply to a distance of 1m from the trench heater (noise source) situated in the centre of a wall beneath a window with one sound reflector surface and an otherwise sound absorbing environment (furnished room).



Definition and description of acoustic values

Sound power $[L_{WA}/dB]$

This is the base unit defining the noise level of a particular device. Sound power is the sound generated by the sound source (energy transmitted into a room). It is not dependent on space or distance. It is used for all further acoustic load calculations for rooms.

Sound pressure $[L_{pA}/dB]$

This is the measure of the level of sound registered at a certain distance from the sound source. Sound pressure is the change in air pressure generated by the sound source. It is the measure of volume heard by a person.

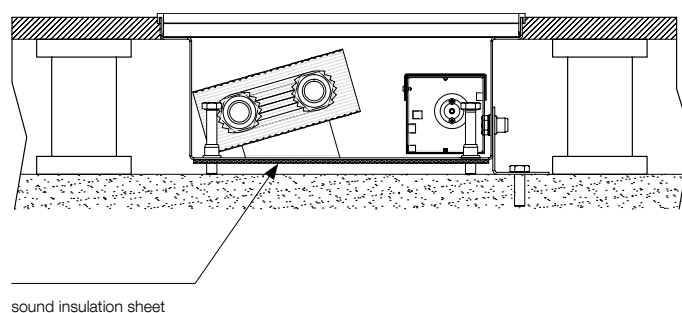
Example: Conversion of sound power to sound pressure

$$L_{pA} = L_{WA} + 10 \cdot \log \left(\frac{Q}{4 \cdot \pi \cdot r^2} \right)$$

L_{pA}	[dB(A)]	sound pressure level weighted by filter A
L_{WA}	[dB(A)]	sound power level weighted by filter A
Q	[-]	noise emission direction factor
r	[m]	distance from test sample

Casing with sound insulation sheet

In order to further reduce noise, trench heater casings equipped with sound insulation sheeting may be ordered. This sheeting reduces noise levels by approx. 1 to 1.5 dB $[L_{WA}]$ depending on the type, length and fan speed of the trench heater, and is in addition suitable where the trench heater is not built in and has a cavity beneath the casing (eg. for raised floor applications). Sound insulation sheeting is fitted to the underside of the trench heater casing.



TECHNICAL DATA

KORAFLEX Optimal-V FVO 24 V DC, Energy FVE 230 V AC								
Depth [mm]	70			80	90			
Width [mm]	200	260	320	160	200	260	320	400
Temperature exponent n [-]	1.0564	1.0674	1.0417	1.1904	1.0041	0.9547	0.9874	0.9982
Unit weight [kg/m]	6.047	6.922	8.058	5.750	6.623	8.153	10.033	14.353
Water volume [l/m]	0.289	0.486	0.652	0.254	0.318	0.585	0.974	1.303
Effective exchanger length Optimal-V [mm]	L-340	L-375	L-340	L-420	L-310	L-310	L-310	L-310
Effective exchanger length Energy [mm]	L-540	L-575	L-540	L-620	L-510	L-510	L-510	L-510

KORAFLEX Optimal-V FVO 24 V DC, Energy FVE 230 V AC							
Depth [mm]	110				130		
Width [mm]	200	260	320	400	260	320	400
Temperature exponent n [-]	1.0173	0.9745	1.0285	1.0195	1.0976	0.9838	1.0332
Unit weight [kg/m]	7.868	8.406	10.313	12.152	8.999	12.304	14.153
Water volume [l/m]	0.514	0.646	0.974	1.303	0.646	0.987	1.3
Effective exchanger length Optimal-V [mm]	L-375	L-310	L-310	L-310	L-310	L-310	L-310
Effective exchanger length Energy [mm]	L-575	L-510	L-510	L-510	L-510	L-510	L-510

KORAFLEX Variant F2V				
	heating	cooling	heating	cooling
Depth [mm]	110		130	
Width [mm]	200		340	
Temperature exponent n [-]	1.0173	0.8335	0.9743	0.8419
Unit weight [kg/m]	7.852		13.500	
Water volume [l/m]	0,514		0,880	
Effective exchanger length [mm]	L-375		L-455	

KORAFLEX Variant F4V		
	heating	cooling
Depth [mm]	130	
Width [mm]	340	
Temperature exponent n [-]	1.0376	0.7964
Unit weight [kg/m]	13.507	
Water volume [l/m]	0.254	0.794
Effective exchanger length [mm]	L-515	

KORAFLEX Pool-V FVP	
Depth [mm]	110
Width [mm]	320
Temperature exponent n [-]	0.9745
Unit weight [kg/m]	10.088
Water volume [l/m]	0.640
Effective exchanger length [mm]	L-398

TRENCH HEATER PRESSURE LOSSES

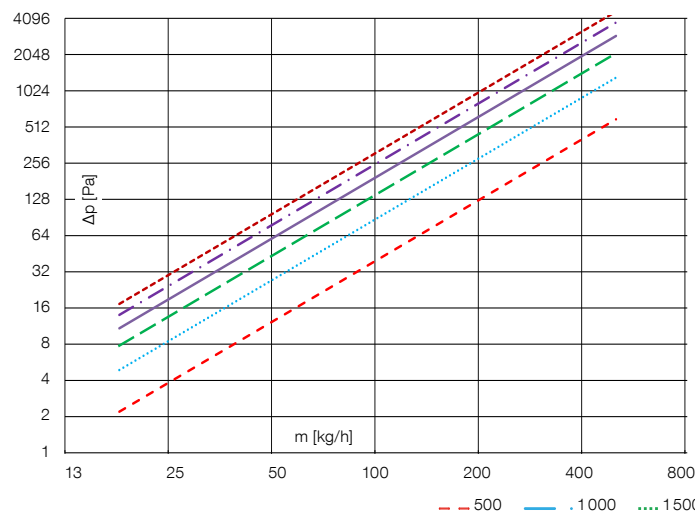
KORAFLEX FVO, FVE type 70/200

Length L [mm]	Mass flow rate m [kg/h]											
	20	40	80	100	150	200	250	300	350	400	450	500
	Exchanger pressure losses Δp [Pa]											
600	3.23	10.36	33.20	48.31	95.47	154.82	225.25	305.99	396.46	496.18	604.78	721.91
800	4.50	14.43	46.24	67.28	132.97	215.61	313.70	426.15	552.14	691.03	842.26	1005.39
1000	5.82	18.65	59.79	86.98	171.92	278.78	405.60	550.99	713.89	893.46	1089.00	1299.91
1200	7.18	23.01	73.75	107.30	212.07	343.89	500.34	679.69	880.65	1102.16	1343.37	1603.55
1400	8.57	27.48	88.07	128.14	253.26	410.68	597.51	811.69	1051.68	1316.21	1604.27	1914.98
1600	10.00	32.05	102.71	149.44	295.35	478.94	696.81	946.59	1226.46	1534.96	1870.89	2233.24
1800	11.45	36.70	117.63	171.14	338.25	548.50	798.01	1084.07	1404.59	1757.90	2142.62	2557.60
2000	12.93	41.44	132.80	193.21	381.88	619.24	900.94	1223.89	1585.75	1984.62	2418.97	2887.46
2200	14.43	46.24	148.20	215.62	426.17	691.06	1005.44	1365.85	1769.67	2214.81	2699.54	3222.37
2400	15.95	51.11	163.82	238.34	471.08	763.88	1111.38	1509.77	1956.15	2448.20	2984.00	3561.92
2600	17.49	56.05	179.64	261.35	516.55	837.63	1218.68	1655.53	2145.00	2684.55	3272.07	3905.79
2800	19.05	61.04	195.64	284.63	562.56	912.24	1327.23	1802.99	2336.06	2923.67	3563.52	4253.69
3000	20.62	66.09	211.81	308.17	609.08	987.66	1436.96	1952.06	2529.20	3165.39	3858.15	4605.38

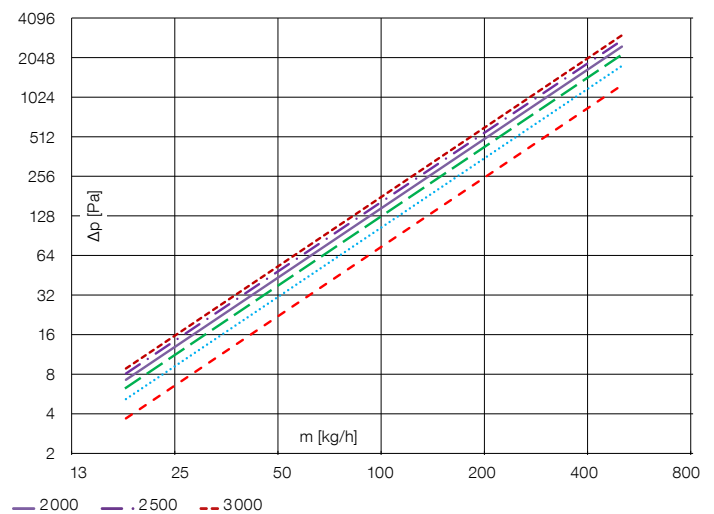
KORAFLEX FVO, FVE type 70/260

Length L [mm]	Mass flow rate m [kg/h]											
	20	40	80	100	150	200	250	300	350	400	450	500
	Exchanger pressure losses Δp [Pa]											
600	4.85	16.32	54.96	81.24	165.26	273.51	404.30	556.40	728.85	920.89	1131.87	1361.25
800	5.58	18.78	63.24	93.47	190.15	314.72	465.21	640.22	838.65	1059.62	1302.39	1566.32
1000	6.22	20.94	70.51	104.22	212.02	350.91	518.71	713.84	935.09	1181.47	1452.15	1746.43
1200	6.80	22.89	77.06	113.92	231.74	383.54	566.95	780.23	1022.06	1291.35	1587.21	1908.87
1400	7.33	24.68	83.08	122.81	249.83	413.50	611.23	841.16	1101.88	1392.20	1711.16	2057.93
1600	7.82	26.34	88.67	131.08	266.65	441.33	652.36	897.78	1176.03	1485.90	1826.32	2196.43
1800	8.28	27.89	93.92	138.83	282.42	467.42	690.94	950.87	1245.58	1573.76	1934.32	2326.32
2000	8.72	29.37	98.87	146.15	297.31	492.07	727.38	1001.01	1311.27	1656.76	2036.33	2449.00
2200	9.14	30.76	103.58	153.11	311.46	515.49	761.99	1048.65	1373.67	1735.60	2133.24	2565.55
2400	9.53	32.10	108.07	159.74	324.96	537.84	795.03	1094.11	1433.23	1810.85	2225.73	2676.78
2600	9.91	33.37	112.37	166.10	337.90	559.25	826.68	1137.68	1490.29	1882.95	2314.35	2783.36
2800	10.28	34.60	116.51	172.22	350.34	579.84	857.11	1179.55	1545.15	1952.26	2399.54	2885.81
3000	10.63	35.79	120.49	178.11	362.33	599.69	886.45	1219.93	1598.03	2019.08	2481.66	2984.58

KORAFLEX FVO, FVE type 70/200



KORAFLEX FVO, FVE type 70/260



TRENCH HEATER PRESSURE LOSSES

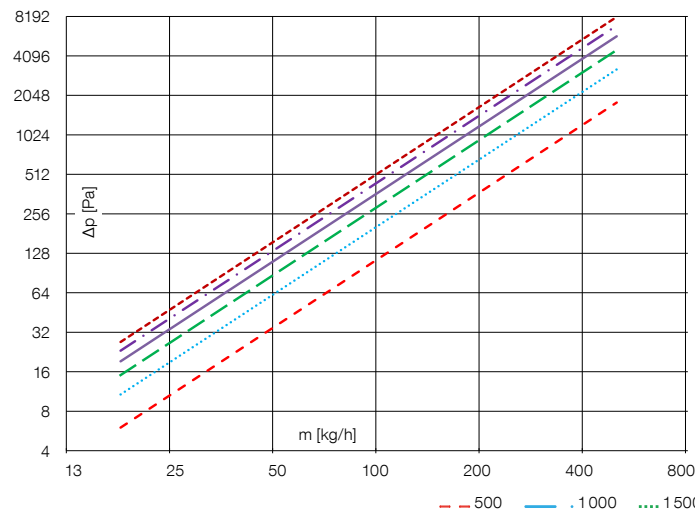
KORAFLEX FVO, FVE type 70/320

Length L [mm]	Mass flow rate m [kg/h]											
	20	40	80	100	150	200	250	300	350	400	450	500
	Exchanger pressure losses Δp [Pa]											
600	8.38	27.45	89.98	131.87	264.07	432.21	633.38	865.51	1127.00	1416.59	1733.20	2075.94
800	10.66	34.95	114.55	167.86	336.15	550.18	806.27	1101.76	1434.63	1803.27	2206.30	2642.60
1000	12.86	42.14	138.13	202.42	405.35	663.45	972.25	1328.58	1729.99	2174.51	2660.52	3186.64
1200	14.98	49.11	160.96	235.88	472.35	773.10	1132.94	1548.16	2015.91	2533.91	3100.24	3713.31
1400	17.05	55.89	183.18	268.44	537.56	879.84	1289.36	1761.90	2294.23	2883.73	3528.26	4225.96
1600	19.07	62.51	204.89	300.26	601.28	984.13	1442.20	1970.76	2566.19	3225.57	3946.50	4726.91
1800	21.05	69.01	226.17	331.45	663.73	1086.35	1591.98	2175.44	2832.71	3560.58	4356.38	5217.85
2000	23.00	75.38	247.08	362.08	725.07	1186.74	1739.11	2376.48	3094.50	3889.63	4758.98	5700.06
2200	24.91	81.66	267.64	392.22	785.43	1285.53	1883.88	2574.31	3352.09	4213.42	5155.14	6174.56
2400	26.80	87.84	287.91	421.92	844.91	1382.88	2026.54	2769.26	3605.94	4532.49	5545.52	6642.14
2600	28.66	93.94	307.91	451.23	903.60	1478.93	2167.30	2961.60	3856.40	4847.31	5930.70	7103.49
2800	30.50	99.97	327.66	480.17	961.56	1573.80	2306.32	3151.58	4103.77	5158.24	6311.13	7559.14
3000	32.32	105.93	347.19	508.78	1018.86	1667.58	2443.75	3339.38	4348.31	5465.62	6687.20	8009.59

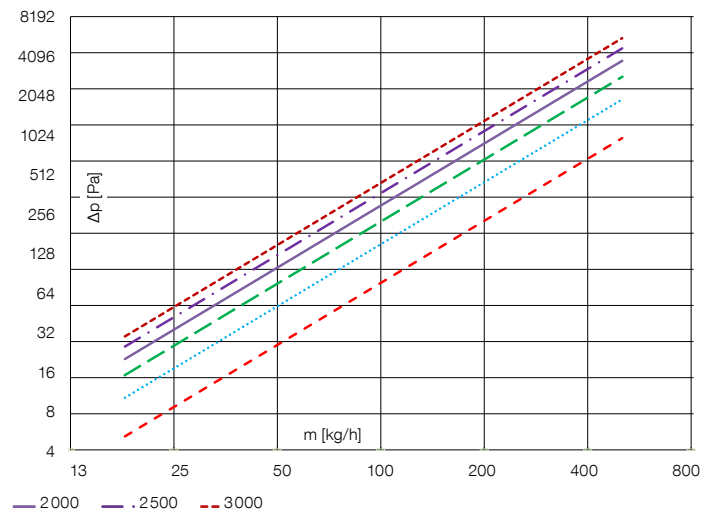
KORAFLEX FVO, FVE type 90/200

Length L [mm]	Mass flow rate m [kg/h]											
	20	40	80	100	150	200	250	300	350	400	450	500
	Exchanger pressure losses Δp [Pa]											
600	3.77	12.41	40.84	59.93	120.30	197.24	289.43	395.94	516.04	649.16	794.81	952.59
800	5.13	16.88	55.57	81.55	163.71	268.41	393.86	538.81	702.25	883.40	1081.61	1296.33
1000	6.52	21.44	70.58	103.56	207.90	340.86	500.19	684.26	891.82	1121.88	1373.60	1646.28
1200	7.92	26.07	85.79	125.90	252.73	414.36	608.05	831.81	1084.13	1363.79	1669.79	2001.26
1400	9.34	30.75	101.19	148.49	298.09	488.74	717.19	981.12	1278.73	1608.60	1969.52	2360.49
1600	10.78	35.47	116.75	171.32	343.92	563.88	827.45	1131.95	1475.32	1855.91	2272.32	2723.40
1800	12.23	40.24	132.45	194.36	390.16	639.69	938.70	1284.14	1673.67	2105.42	2577.82	3089.54
2000	13.69	45.05	148.27	217.57	436.77	716.10	1050.83	1437.53	1873.60	2356.92	2885.75	3458.59
2200	15.16	49.89	164.20	240.96	483.70	793.06	1163.76	1592.02	2074.95	2610.21	3195.87	3830.28
2400	16.64	54.76	180.24	264.49	530.95	870.52	1277.42	1747.51	2277.60	2865.14	3508.00	4204.37
2600	18.13	59.66	196.37	288.16	578.47	948.43	1391.75	1903.92	2481.46	3121.59	3821.99	4580.69
2800	19.63	64.59	212.60	311.97	626.25	1026.78	1506.72	2061.19	2686.43	3379.44	4137.69	4959.06
3000	21.13	69.55	228.90	335.89	674.28	1105.52	1622.26	2219.26	2892.45	3638.60	4455.01	5339.37

KORAFLEX FVO, FVE type 70/320



KORAFLEX FVO, FVE type 90/200



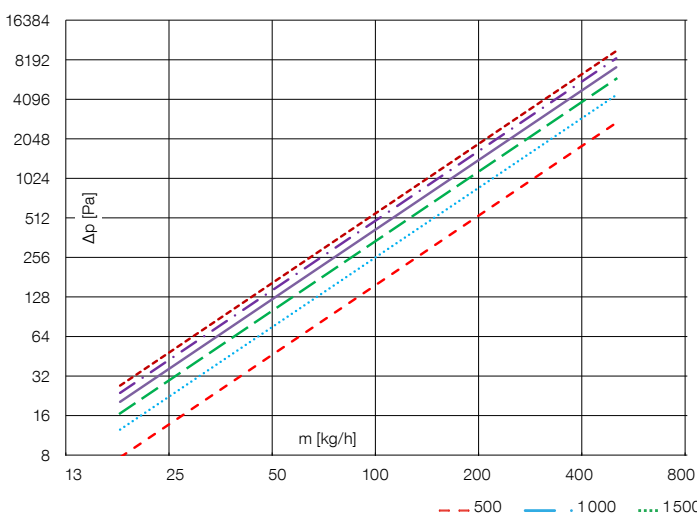
KORAFLEX FVO, FVE type 90/260, 110/260, 130/260 KORAFLEX FVP type 110/320

Length L [mm]	Mass flow rate m [kg/h]											
	20	40	80	100	150	200	250	300	350	400	450	500
	Exchanger pressure losses Δp [Pa]											
600	10.51	35.62	120.67	178.74	364.93	605.57	896.96	1236.43	1621.92	2051.74	2524.50	3039.00
800	12.87	43.59	147.70	218.77	446.67	741.21	1097.86	1513.36	1985.19	2511.28	3089.93	3719.66
1000	15.05	50.99	172.77	255.90	522.48	867.00	1284.19	1770.21	2322.11	2937.49	3614.35	4350.96
1200	17.11	57.96	196.37	290.86	593.88	985.48	1459.67	2012.11	2639.43	3338.90	4108.25	4945.51
1400	19.06	64.59	218.83	324.13	661.80	1098.19	1626.62	2242.25	2941.32	3720.79	4578.13	5511.16
1600	20.94	70.94	240.36	356.01	726.89	1206.20	1786.60	2462.77	3230.60	4086.73	5028.39	6053.19
1800	22.74	77.06	261.09	386.72	789.59	1310.25	1940.72	2675.22	3509.28	4439.27	5462.17	6575.37
2000	24.49	82.98	281.15	416.43	850.26	1410.92	2089.82	2880.75	3778.89	4780.33	5881.81	7080.53
2200	26.19	88.73	300.62	445.27	909.14	1508.62	2234.54	3080.25	4040.58	5111.37	6289.12	7570.86
2400	27.84	94.32	319.57	473.34	966.44	1603.72	2375.50	3274.41	4295.28	5433.56	6685.55	8048.08
2600	29.45	99.78	338.05	500.72	1022.34	1696.48	2512.80	3463.81	4543.73	5747.85	7072.27	8513.61
2800	31.02	105.11	356.12	527.48	1076.98	1787.15	2647.08	3648.92	4786.55	6055.03	7450.22	8968.59
3000	32.56	110.33	373.81	553.67	1130.47	1875.90	2778.55	3830.14	5024.27	6355.74	7820.22	9414.00

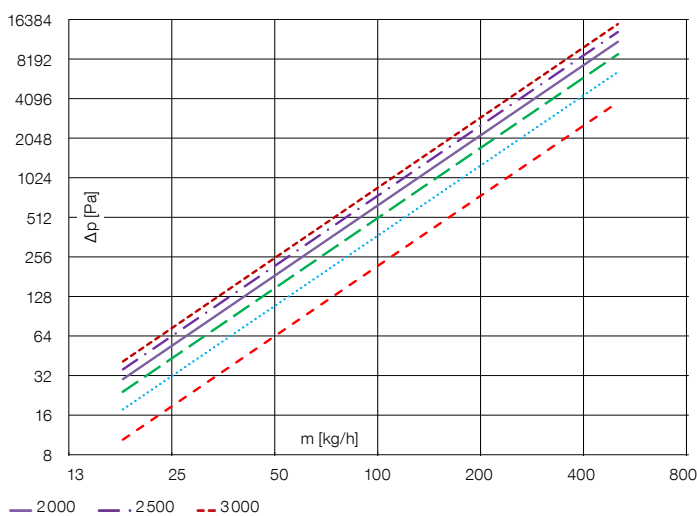
KORAFLEX FVO, FVE type 90/320, 110/320, 130/320

Length L [mm]	Mass flow rate m [kg/h]											
	20	40	80	100	150	200	250	300	350	400	450	500
	Exchanger pressure losses Δp [Pa]											
600	14.44	49.36	168.78	250.72	514.64	857.22	1273.42	1759.56	2312.81	2930.85	3611.74	4353.82
800	17.99	61.51	210.29	312.38	641.21	1068.05	1586.60	2192.31	2881.62	3651.66	4500.00	5424.59
1000	21.33	72.94	249.39	370.48	760.46	1266.67	1881.66	2600.01	3417.51	4330.75	5336.86	6433.40
1200	24.52	83.85	286.69	425.88	874.17	1456.08	2163.03	2988.80	3928.54	4978.34	6134.91	7395.41
1400	27.59	94.34	322.54	479.13	983.48	1638.16	2433.51	3362.54	4419.80	5600.87	6902.06	8320.18
1600	30.56	104.47	357.19	530.62	1089.16	1814.19	2695.00	3723.86	4894.73	6202.71	7643.72	9214.23
1800	33.44	114.31	390.84	580.60	1191.77	1985.09	2948.88	4074.66	5355.83	6787.03	8363.78	10082.25
2000	36.24	123.90	423.62	629.30	1291.71	2151.57	3196.19	4416.38	5804.99	7356.22	9065.20	10927.78
2200	38.98	133.26	455.63	676.85	1389.33	2314.16	3437.72	4750.12	6243.67	7912.12	9750.25	11753.58
2400	41.66	142.43	486.97	723.40	1484.87	2473.30	3674.13	5076.78	6673.03	8456.23	10420.76	12561.86
2600	44.29	151.42	517.69	769.04	1578.55	2629.34	3905.93	5397.07	7094.04	8989.74	11078.22	13354.40
2800	46.87	160.24	547.86	813.86	1670.55	2782.58	4133.56	5711.61	7507.48	9513.65	11723.85	14132.68
3000	49.41	168.92	577.53	857.93	1761.01	2933.25	4357.40	6020.89	7914.01	10028.81	12358.69	14897.96

KORAFLEX FVO, FVE type 90/260, 110/260, 130/260 KORAFLEX FVP type 110/320



KORAFLEX FVO, FVE type 90/320, 110/320, 130/320



TRENCH HEATER PRESSURE LOSSES

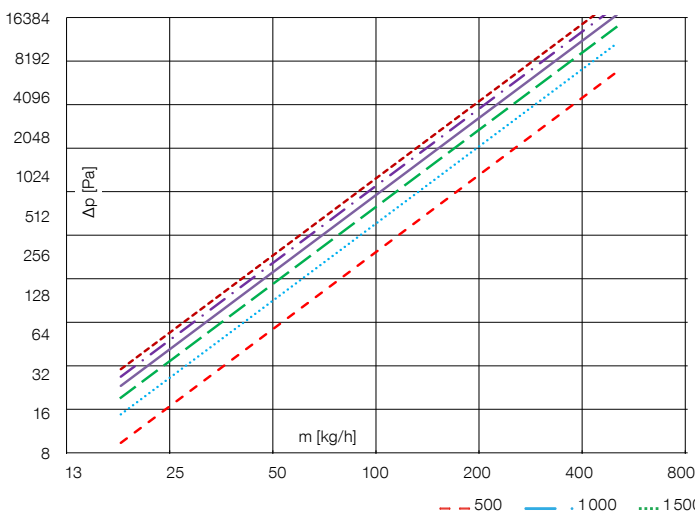
KORAFLEX FVO, FVE type 90/400, 110/400, 130/400

Length L [mm]	Mass flow rate m [kg/h]											
	20	40	80	100	150	200	250	300	350	400	450	500
	Exchanger pressure losses Δp [Pa]											
600	20.72	69.70	234.46	346.48	704.50	1165.60	1722.51	2369.99	3103.97	3921.17	4818.85	5794.67
800	25.55	85.94	289.10	427.23	868.68	1437.24	2123.93	2922.30	3827.33	4834.97	5941.84	7145.07
1000	30.05	101.10	340.11	502.61	1021.94	1690.81	2498.67	3437.89	4502.60	5688.02	6990.19	8405.71
1200	34.32	115.45	388.40	573.97	1167.04	1930.87	2853.43	3926.00	5141.87	6495.60	7982.65	9599.14
1400	38.40	129.17	434.53	642.15	1305.67	2160.24	3192.39	4392.38	5752.69	7267.23	8930.92	10739.44
1600	42.32	142.36	478.91	707.73	1439.01	2380.85	3518.39	4840.92	6340.14	8009.35	9842.94	11836.14
1800	46.11	155.11	521.80	771.11	1567.87	2594.06	3833.47	5274.44	6907.92	8726.61	10724.40	12896.10
2000	49.78	167.48	563.41	832.59	1692.90	2800.91	4139.16	5695.03	7458.77	9422.48	11579.58	13924.45
2200	53.36	179.51	603.90	892.43	1814.56	3002.21	4436.63	6104.32	7994.81	10099.65	12411.78	14925.17
2400	56.85	191.26	643.40	950.81	1933.25	3198.58	4726.83	6503.61	8517.75	10760.27	13223.64	15901.43
2600	60.26	202.73	682.01	1007.87	2049.28	3390.55	5010.53	6893.94	9028.97	11406.08	14017.29	16855.79
2800	63.61	213.97	719.83	1063.75	2162.91	3578.55	5288.34	7276.18	9529.59	12038.50	14794.49	17790.38
3000	66.88	225.00	756.91	1118.56	2274.34	3762.92	5560.81	7651.07	10020.58	12658.76	15556.74	18706.99

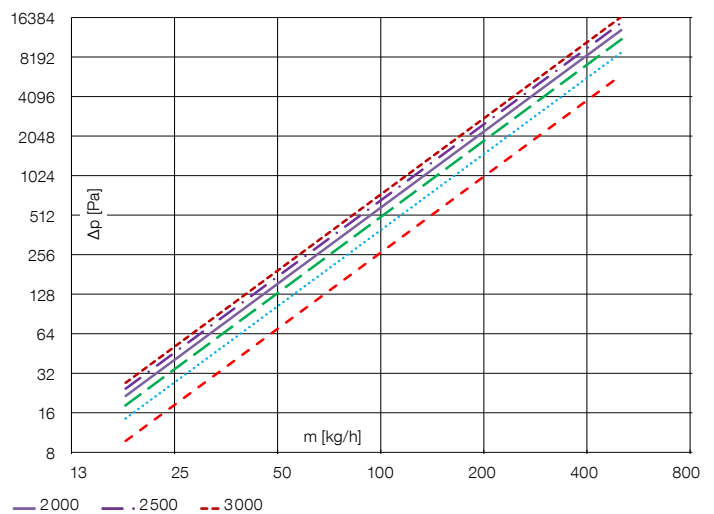
KORAFLEX FVO, FVE type 80/160 KORAFLEX F4V type 130/340 heating circuit

Length L [mm]	Mass flow rate m [kg/h]											
	20	40	80	100	150	200	250	300	350	400	450	500
	Exchanger pressure losses Δp [Pa]											
600	13.27	50.39	191.41	294.15	642.13	1117.34	1717.05	2439.18	3282.07	4244.33	5324.78	6522.38
800	15.63	59.36	225.47	346.48	756.37	1316.14	2022.55	2873.17	3866.03	4999.50	6272.19	7682.87
1000	17.74	67.39	256.00	393.41	858.82	1494.39	2296.48	3262.30	4389.63	5676.61	7121.67	8723.41
1200	19.68	74.76	284.00	436.43	952.73	1657.82	2547.62	3619.05	4869.66	6297.39	7900.47	9677.38
1400	21.49	81.62	310.04	476.45	1040.11	1809.86	2781.26	3950.95	5316.26	6874.92	8625.02	10564.89
1600	23.18	88.07	334.53	514.08	1122.25	1952.78	3000.90	4262.97	5736.09	7417.84	9306.15	11399.21
1800	24.79	94.17	357.73	549.73	1200.07	2088.19	3208.99	4558.57	6133.85	7932.22	9951.47	12189.66
2000	26.32	99.99	379.84	583.70	1274.24	2217.26	3407.33	4840.33	6512.97	8422.49	10566.54	12943.08
2200	27.79	105.57	401.01	616.25	1345.28	2340.87	3597.29	5110.18	6876.07	8892.05	11155.64	13664.66
2400	29.20	110.93	421.37	647.54	1413.59	2459.73	3779.94	5369.65	7225.20	9343.55	11722.07	14358.49
2600	30.56	116.10	441.02	677.72	1479.48	2574.39	3956.15	5619.96	7562.01	9779.10	12268.50	15027.82
2800	31.88	121.10	460.02	706.92	1543.23	2685.31	4126.60	5862.10	7887.82	10200.44	12797.10	15675.31
3000	33.16	125.95	478.44	735.24	1605.04	2792.87	4291.88	6096.90	8203.76	10609.00	13309.66	16303.15

KORAFLEX FVO, FVE type 90/400, 110/400, 130/400



KORAFLEX FVO, FVE type 80/160 KORAFLEX F4V type 130/340 heating circuit



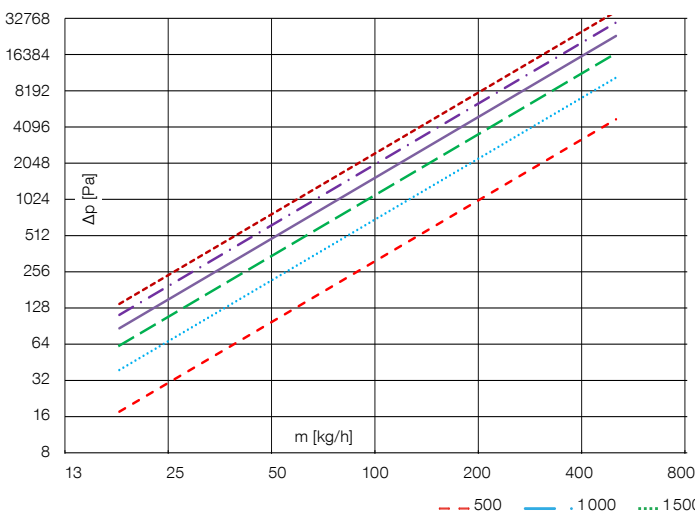
KORAFLEX FVO, FVE, F2V type 110/200

Length L [mm]	Mass flow rate m [kg/h]											
	20	40	80	100	150	200	250	300	350	400	450	500
	Exchanger pressure losses Δp [Pa]											
600	8.38	27.45	89.98	131.87	264.07	432.21	633.38	865.51	1127.00	1416.59	1733.20	2075.94
800	10.66	34.95	114.55	167.86	336.15	550.18	806.27	1101.76	1434.63	1803.27	2206.30	2642.60
1000	12.86	42.14	138.13	202.42	405.35	663.45	972.25	1328.58	1729.99	2174.51	2660.52	3186.64
1200	14.98	49.11	160.96	235.88	472.35	773.10	1132.94	1548.16	2015.91	2533.91	3100.24	3713.31
1400	17.05	55.89	183.18	268.44	537.56	879.84	1289.36	1761.90	2294.23	2883.73	3528.26	4225.96
1600	19.07	62.51	204.89	300.26	601.28	984.13	1442.20	1970.76	2566.19	3225.57	3946.50	4726.91
1800	21.05	69.01	226.17	331.45	663.73	1086.35	1591.98	2175.44	2832.71	3560.58	4356.38	5217.85
2000	23.00	75.38	247.08	362.08	725.07	1186.74	1739.11	2376.48	3094.50	3889.63	4758.98	5700.06
2200	24.91	81.66	267.64	392.22	785.43	1285.53	1883.88	2574.31	3352.09	4213.42	5155.14	6174.56
2400	26.80	87.84	287.91	421.92	844.91	1382.88	2026.54	2769.26	3605.94	4532.49	5545.52	6642.14
2600	28.66	93.94	307.91	451.23	903.60	1478.93	2167.30	2961.60	3856.40	4847.31	5930.70	7103.49
2800	30.50	99.97	327.66	480.17	961.56	1573.80	2306.32	3151.58	4103.77	5158.24	6311.13	7559.14
3000	32.32	105.93	347.19	508.78	1018.86	1667.58	2443.75	3339.38	4348.31	5465.62	6687.20	8009.59

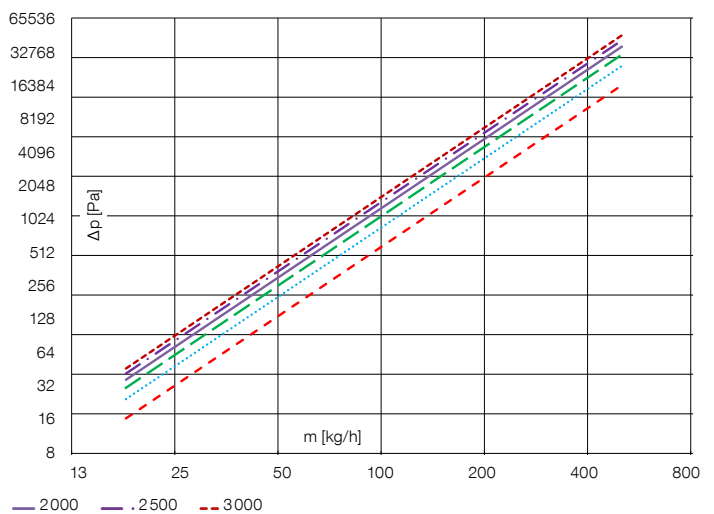
KORAFLEX F2V type 130/340

Length L [mm]	Mass flow rate m [kg/h]											
	20	40	80	100	150	200	250	300	350	400	450	500
	Exchanger pressure losses Δp [Pa]											
600	15.36	53.59	186.95	279.54	580.62	975.28	1458.26	2025.73	2674.68	3402.65	4207.60	5087.74
800	21.91	76.44	266.69	398.76	828.25	1391.23	2080.20	2889.69	3815.40	4853.85	6002.10	7257.61
1000	28.86	100.69	351.29	525.25	1090.99	1832.56	2740.09	3806.37	5025.75	6393.62	7906.12	9559.91
1200	36.15	126.11	439.98	657.87	1366.44	2295.24	3431.90	4767.39	6294.63	8007.86	9902.23	11973.56
1400	43.72	152.55	532.22	795.80	1652.93	2776.46	4151.43	5766.91	7614.36	9686.78	11978.32	14483.93
1600	51.56	179.89	627.63	938.44	1949.22	3274.14	4895.57	6800.63	8979.23	11423.14	14125.44	17080.17
1800	59.63	208.05	725.88	1085.35	2254.35	3786.67	5661.93	7865.21	10384.85	13211.33	16336.64	19753.92
2000	67.92	236.96	826.73	1236.14	2567.56	4312.78	6448.58	8957.97	11827.68	15046.86	18606.39	22498.45
2200	76.40	266.55	929.98	1390.52	2888.22	4851.40	7253.94	10076.73	13304.83	16926.05	20930.14	25308.27
2400	85.07	296.79	1035.45	1548.24	3215.81	5401.65	8076.69	11219.65	14813.89	18845.83	23304.07	28178.78
2600	93.90	327.62	1143.02	1709.07	3549.88	5962.79	8915.71	12385.17	16352.79	20803.58	25724.95	31106.05
2800	102.90	359.01	1252.55	1872.84	3890.03	6534.16	9770.04	13571.95	17919.75	22797.03	28189.98	34086.71
3000	112.05	390.93	1363.93	2039.38	4235.95	7115.20	10638.82	14778.81	19513.24	24824.22	30696.72	37117.81

KORAFLEX FVO, FVE, F2V type 110/200



KORAFLEX F2V type 130/340

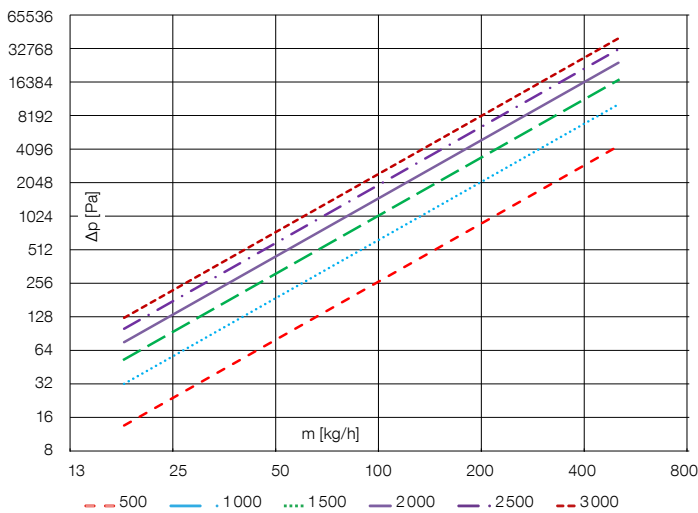


TRENCH HEATER PRESSURE LOSSES

KORAFLEX F4V type 130/340 cooling circuit

Length L [mm]	Mass flow rate m [kg/h]											
	20	40	80	100	150	200	250	300	350	400	450	500
	Exchanger pressure losses Δp [Pa]											
600	20.39	67.79	225.39	331.82	670.06	1103.23	1624.18	2227.81	2910.14	3668.00	4498.73	5400.07
800	29.14	96.90	322.17	474.30	957.77	1576.94	2321.59	3184.40	4159.71	5242.99	6430.43	7718.79
1000	38.45	127.84	425.03	625.74	1263.59	2080.45	3062.87	4201.17	5487.91	6917.07	8483.66	10183.40
1200	48.22	160.32	533.03	784.73	1584.65	2609.07	3841.11	5268.64	6882.32	8674.61	10639.25	12770.88
1400	58.39	194.14	645.48	950.29	1918.97	3159.52	4651.48	6380.19	8334.31	10504.73	12883.86	15465.20
1600	68.92	229.16	761.90	1121.69	2265.08	3729.37	5490.43	7530.92	9837.49	12399.38	15207.60	18254.52
1800	79.78	265.25	881.91	1298.35	2621.83	4316.75	6355.18	8717.05	11386.91	14352.29	17602.82	21129.63
2000	90.93	302.33	1005.18	1479.84	2988.32	4920.16	7243.52	9935.54	12978.60	16358.49	20063.38	24083.18
2200	102.36	340.32	1131.48	1665.77	3363.79	5538.35	8153.63	11183.90	14609.31	18413.87	22584.26	27109.13
2400	114.04	379.15	1260.58	1855.85	3747.61	6170.31	9084.00	12460.04	16276.30	20514.98	25161.23	30202.41
2600	125.95	418.77	1392.32	2049.79	4139.26	6815.14	10033.33	13762.17	17977.26	22658.90	27790.71	33358.73
2800	138.09	459.14	1526.53	2247.38	4538.27	7472.08	11000.50	15088.78	19710.18	24843.11	30469.60	36574.35
3000	150.45	500.21	1663.09	2448.42	4944.23	8140.48	11984.52	16438.52	21473.32	27065.40	33195.20	39846.04

KORAFLEX F4V type 130/340 cooling circuit

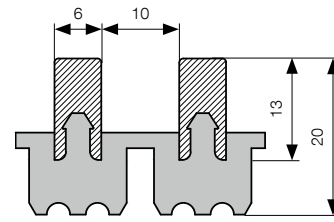


Grilles and frames

ALUMINIUM ELOX

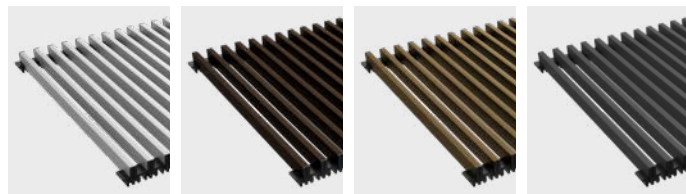
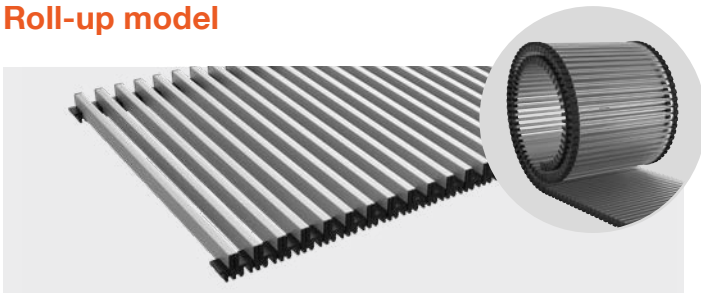


Aluminium elox grilles are suitable for dry and humid environments (where installed in humid environments, grilles must be cleaned regularly with clean water and thoroughly dried). They are available in roll-up and linear models. The standard finish for aluminium grilles is silver elox. Other models are available in dark and light bronze elox or black elox. Other RAL colour chart colours are available as powder coating. Both roll-up and linear grilles are supplied as a whole. Decorative frame covers may be chosen using the same colour scheme as grilles, and are supplied as a component of trench heaters.



Measurements shown in mm.

Roll-up model

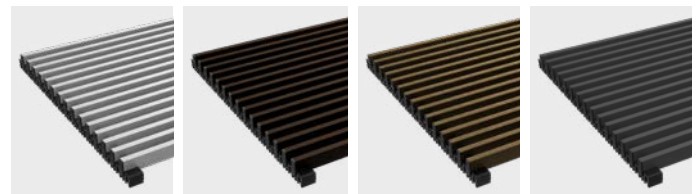
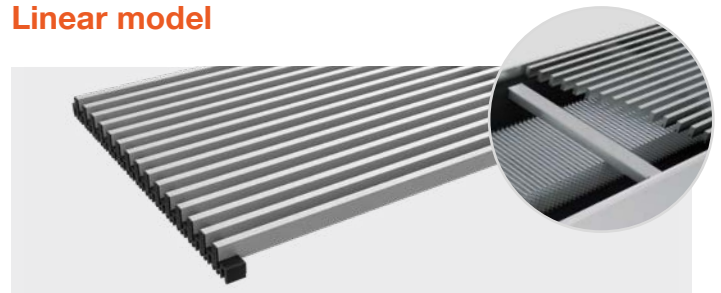


alu/silver alu/dark bronze alu/light bronze alu/black



The grille can be rolled up for easier handling.

Linear model



alu/silver alu/dark bronze alu/light bronze alu/black



Linear grilles are supplied with supports as standard.



Where a linear grille is required, technical consultation is necessary, as the casing may need to undergo alteration. Note, please, that the linear grilles must be ordered together with trench heaters. For more info, see p. 126.

ORDER CODE

Floor	Grille	Length (cm)	Width (cm)	Grille material	Grille colour	Grille type	Grille ending type
P	M	- ... /	..	- A aluminium Y alu T-profile solely for curved models and series with curve. See p. 135	1 silver elox 2 dark bronze elox 3 light bronze elox 5 black elox (A-profile only) 9 other RAL colour	R roll-up L linear	0 grille for single trench heater 1 trench heater – right face lowered 2 trench heater – left face lowered 3 trench heater – both faces lowered

Example order code: **PM-100/26-A1R0**

Floor grille, length 100 cm, width 26 cm, aluminium, silver elox, roll-up, for single trench heater without alteration. Grille measurement given in the order code corresponds with the measurement of the respective trench heater. Nett dimension of the grille is available upon request.

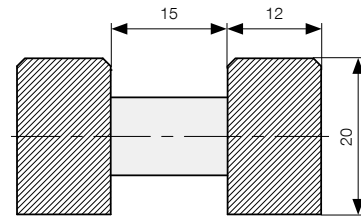


Grille with F-frame, aluminium, silver elox

WOOD



Wooden grilles are manufactured using natural wood – beech, oak and mahogany. For wooden roll-up models, each slat is connected by springs and spacers. Wooden grilles are suitable for rooms with laminate or solid wood flooring. Roll-up wooden grilles are supplied without surface treatment. Where lacquered wooden grilles are required, each slat is impregnated with semi-glass colourless alkyd urethane varnish, designed to give a durable gloss coating of wood and exterior wooden fittings.



Measurements shown in mm.

Roll-up model



Grilles are manufactured from natural materials and as such minor variations in colour are inevitable, inevitable as well as dimensional changes caused by ambient temperature and humidity fluctuation.

Mahogany grilles are available on special request. Prices and delivery times specified on request.



beech



oak



mahogany



The grille can be rolled up for easier handling.

ORDER CODE

Floor	Grille	Length (cm)	Width (cm)	Grille material	Grille colour	Spacer type	Grille ending type
P	M	-	...	/	..	-	B beech D oak M mahogany (dark spacers only)
					0 natural 1 lacquered	4 light 2 dark (only mahogany)	0 grille for single trench heater 1 trench heater – right face lowered 2 trench heater – left face lowered 3 trench heater – both faces lowered

Example order code: PM-100/26-B040

Floor grille, length 100 cm, width 26 cm, natural beech with light spacers, for single trench heater without alteration. Grille measurement given in the order code corresponds with the measurement of the respective trench heater. Nett dimension of the grille is available upon request.



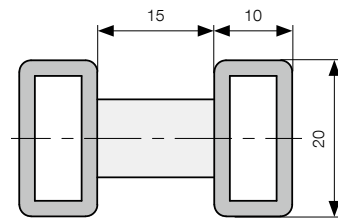
U-frame cover, silver elox

NEW

STEEL

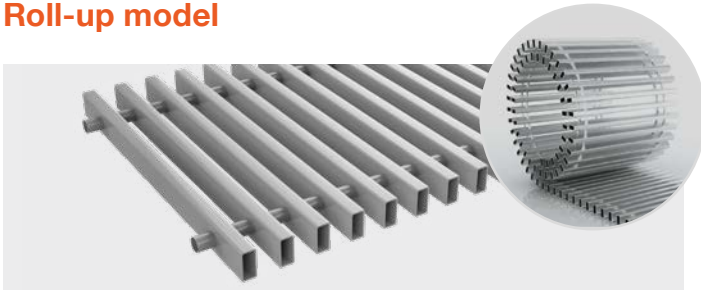


Steel profile grilles are available in roll-up and linear models, and feature high load bearing capacity. They are particularly suitable for public buildings, halls, car showrooms, corridors, etc. Each slat is separated by steel spacers and the entire product is lacquered in the same colour, as standard RAL 9006 (grey) powder coating. Other RAL colour chart colours are, however, available on request.



Measurements shown in mm.

Roll-up model

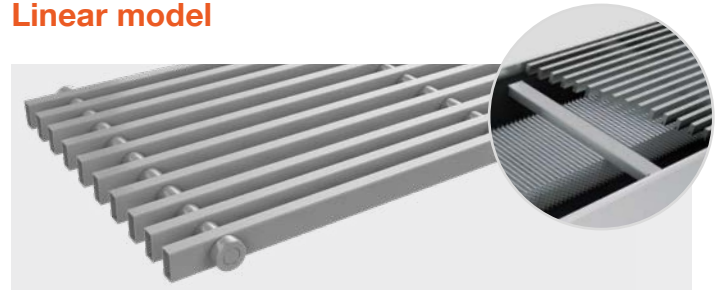


For steel **roll-up** grilles, each slat is connected by springs and spacers in the same colour as the grille.



The grille can be rolled up for easier handling.

Linear model



For **linear** grilles, each slat is connected by bolts and spacers in the same colour as the grille.



Linear steel grilles 400mm in width are supplied with supports as standard. Other widths are self-supporting.

ORDER CODE

Floor	Grille	Length (cm)	Width (cm)	Grille material	Grille colour	Grille type	Grille ending type
P	M	-	...	/	..	-	S steel
					6 RAL 9006 9 other RAL colour	R roll-up L linear	0 grille for single trench heater 1 trench heater – right face lowered 2 trench heater – left face lowered 3 trench heater – both faces lowered

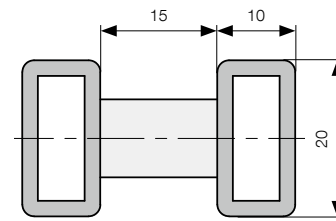
Example order code: **PM-100/26-S6R0**

Floor grille length 100 cm, width 26 cm, steel model, RAL 9006 colour (grey) lacquered, roll-up, for single trench heater without alteration. Grille measurement given in the order code corresponds with the measurement of the respective trench heater. Nett dimension of the grille is available upon request.

Stainless steel roll-up grille, silver elox F-frame

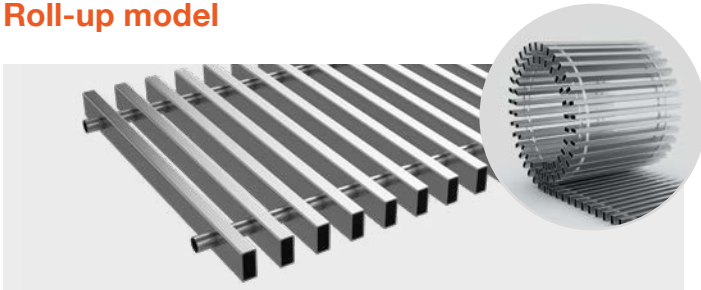
STAINLESS STEEL

Stainless steel floor grilles are manufactured from brushed AISI 304 stainless steel. Each slat is separated by brushed stainless steel spacers. Stainless steel grilles feature high load bearing capacity. They are particularly suited to luxury interiors, public buildings, art galleries, car showrooms, etc. Stainless steel grilles may only be used in dry environments, and are available in roll-up and linear models.



Measurements shown in mm.

Roll-up model

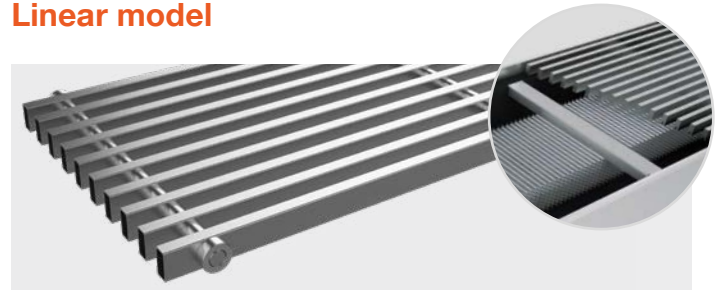


For stainless steel **roll-up** models, each slat is connected by stainless steel springs and spacers.



The grille can be rolled up for easier handling.

Linear model



For **linear** models, each slat is connected by bolts and stainless steel spacers.



Linear steel grilles 400mm in width are supplied with supports as standard. Other widths are self-supporting.

ORDER CODE

Floor	Grille	Length (cm)	Width (cm)	Grille material	Grille colour	Grille type	Grille ending type
P	M	-	•• / ••	-	R stainless steel	0 non-lacquered, brushed L linear	0 grille for single trench heater 1 trench heater – right face lowered 2 trench heater – left face lowered 3 trench heater – both faces lowered

Example order code: **PM-100/26-R0R0**

Floor grille length 100 cm, width 26 cm, AISI 304 stainless steel, non-lacquered, brushed, roll-up, for single trench heater without alteration. Grille measurement given in the order code corresponds with the measurement of the respective trench heater. Nett dimension of the grille is available upon request.



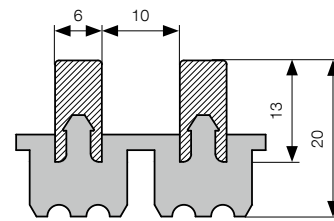
Linear RAL 9006 steel grille,
RAL 9006 lacquered U-frame

NEW

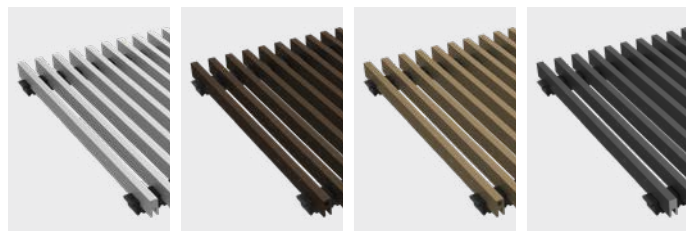
THIN



Thin grilles are manufactured from eloxed aluminium and are designed solely for Thin trench heaters. They are only available as a roll-up model. The standard finish for aluminium grilles is silver elox; in addition, dark and light bronze elox are available. Other RAL colour chart colours are available as powder coating. Decorative Thin frame covers may be chosen using the same colour scheme as grilles, and are supplied as a component of trench heaters. Due to space limitations, F-frames are not available for Thin grilles.

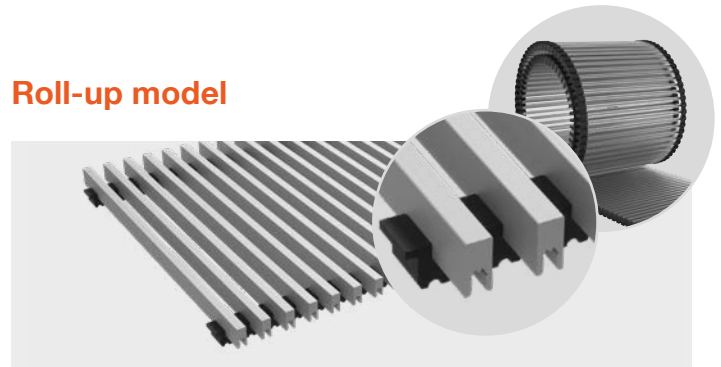


Measurements shown in mm.



alu/silver alu/dark bronze alu/light bronze alu/black

Roll-up model



The grille can be rolled for easier handling.



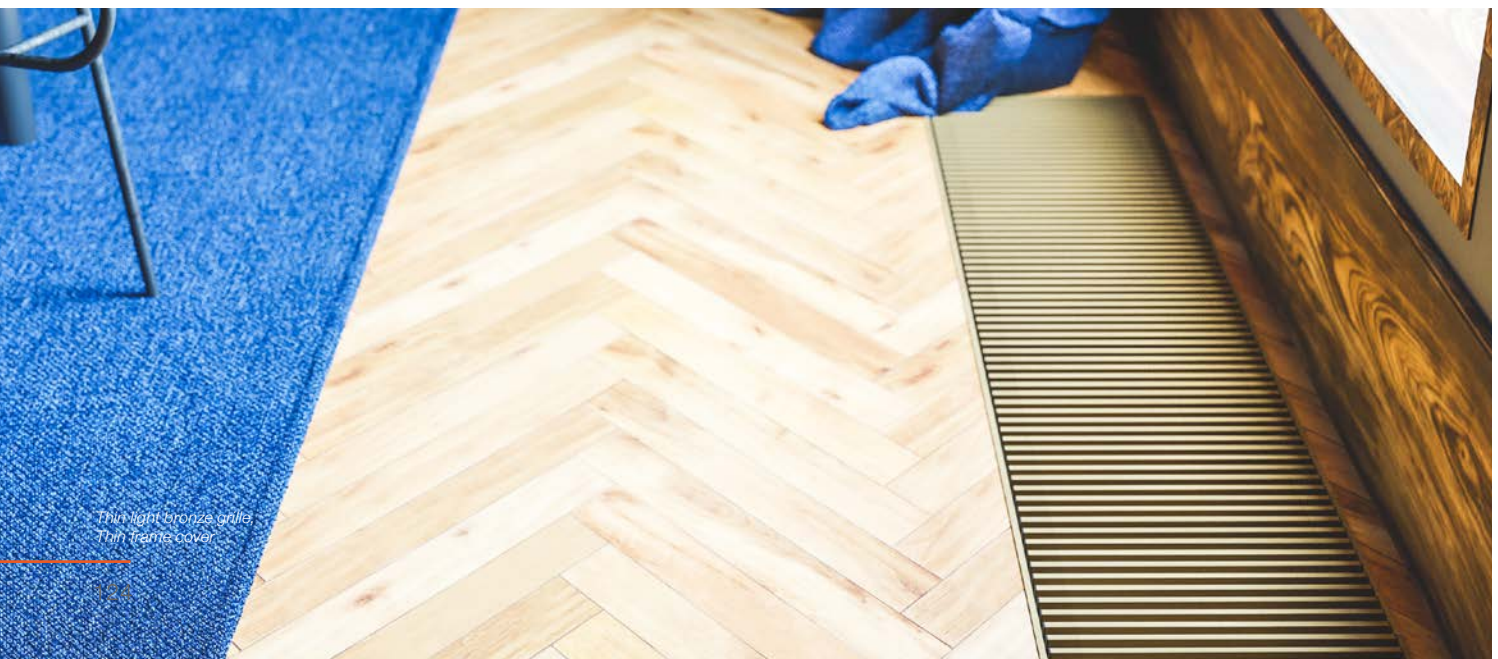
F-frame can never be fitted with Thin grilles.

ORDER CODE

Floor	Grille	Length (cm)	Width (cm)	Grille material	Grille colour	Grille type	Grille ending type
P	M	- ...	/ ..	- T aluminium Thin	1 silver elox 2 dark bronze elox 3 light bronze elox 5 black elox 9 other RAL colour	R roll-up	0 grille for single trench heater 1 trench heater – right face lowered 2 trench heater – left face lowered 3 trench heater – both faces lowered

Example order code: **PM-100/26-T1R0**

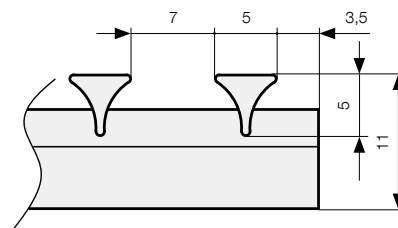
Floor grille length 100 cm, width 26 cm, aluminium Thin model, silver elox, roll-up, for single trench heater without alterations. Grille measurement given in the order code corresponds with the measurement of the respective trench heater. Nett dimension of the grille is available upon request.



Thin light bronze grille,
Thin frame cover

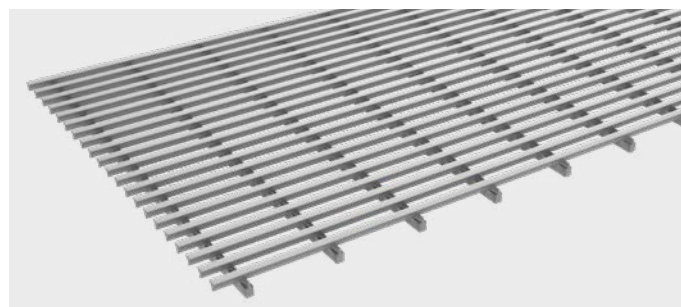


Cross grilles are manufactured from steel and are designed solely for dry environments. Due to their inherent strength and pencil proof design, they are suitable for trench heaters installed in restaurants, bars, lobbies and similar spaces, where a higher level of safety is required. Cross grilles are as standard lacquered with RAL 9006 (grey) powder coating; other RAL colour chart colours are available. **Cross grilles are rigid and supplied built-in to the trench heater. Due to their precise fit, Cross grilles must be ordered together with trench heaters.** Trench heaters casing must be adapted to fit the Cross grille and are finished with Cross frames (see picture on p. 127). Cross grilles are suitable for design solutions and cannot be combined with U, F or Thin frames.



Measurements shown in mm.

Linear model



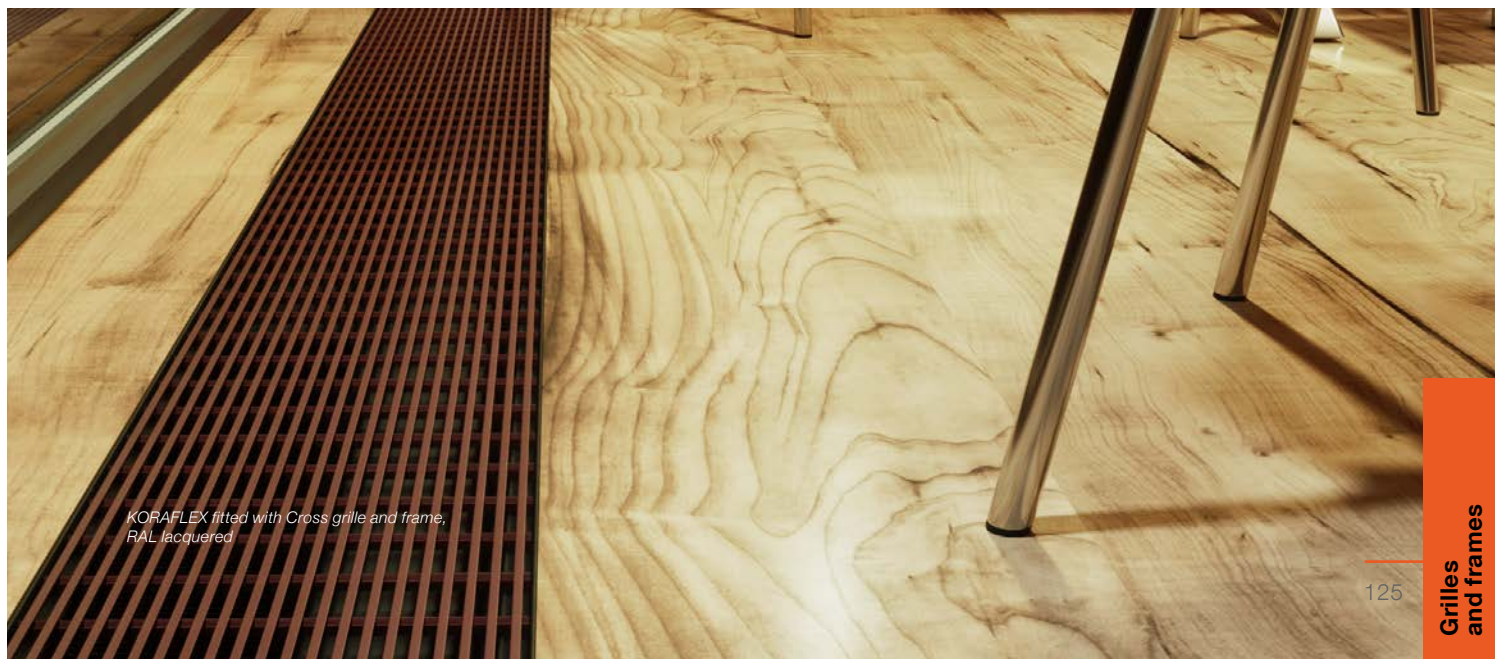
Cross grilles are ordered custom-made.
Prices and delivery times specified on request.

ORDER CODE

Floor	Grille	Length (cm)	Width (cm)	Grille material	Grille colour	Grille type	Grille ending type
P	M	- ... /	.. -	C Cross	6 RAL 9006 9 other RAL colour	L linear	0 grille for single trench heater 1 trench heater – right face lowered 2 trench heater – left face lowered 3 trench heater – both faces lowered

Example order code: **PM-100/26-C6L0**

Floor grille length 100 cm, width 26 cm, steel Cross model, RAL 9006 colour (grey) lacquered, linear, for single trench heater without alterations. Grille measurement given in the order code corresponds with the measurement of the respective trench heater. Nett dimension of the grille is available upon request.

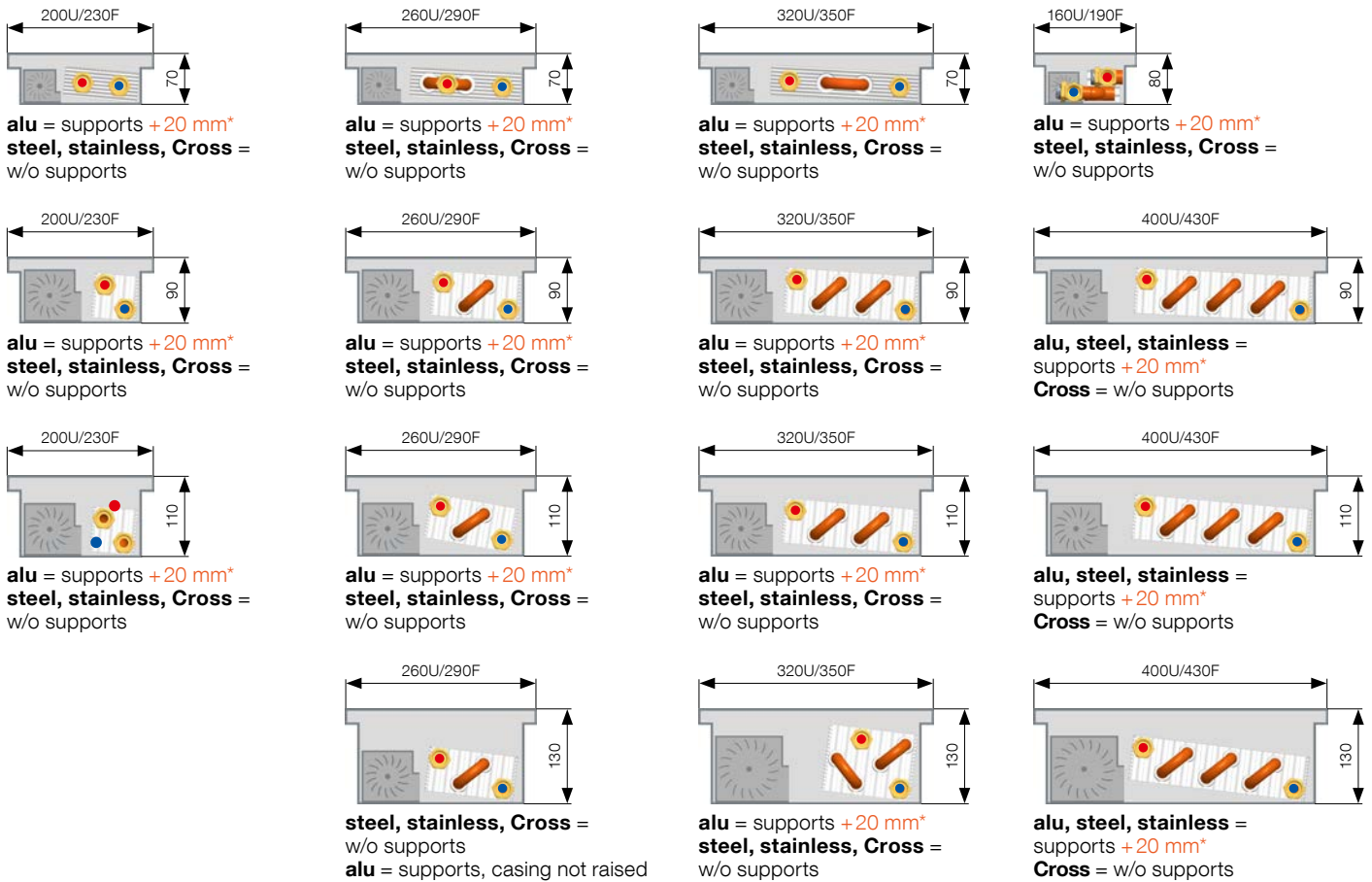


KORAFLEX fitted with Cross grille and frame,
 RAL lacquered

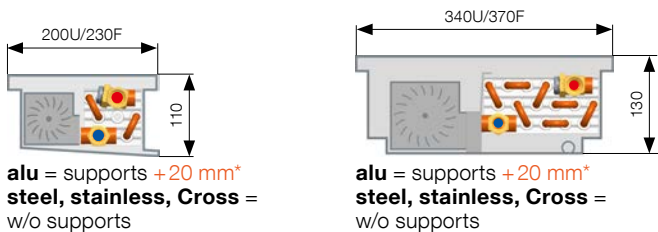
LINEAR GRILLE SUPPORTS

When using linear grilles, FV trench heater model casings must be raised by 20 mm to enable correct installation of supports for this type of grille. When ordering linear grilles for all types of trench heaters, the actual depth including the 20 mm increase must be entered as the 'depth' value in the order code. Supports are not necessary for steel and stainless steel grilles up to a width of 320 mm – these grilles are self-supporting. All other linear grilles require supports. Example trench heater measurements with linear grilles: FVO 200/70 with roll-up grille = FVO 200/90 with linear grille.

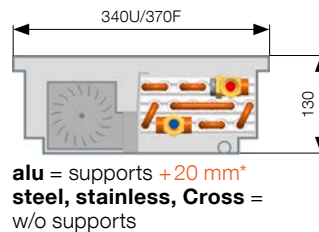
KORAFLEX Optimal-V FVO, Energy FVE



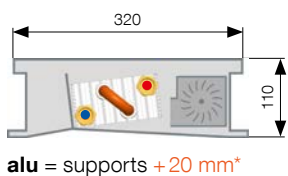
KORAFLEX Model F2V



KORAFLEX Model F4V



KORAFLEX Pool-V FVP



* given trench heater casing heights must be raised by 20 mm.

GRILLES

Measurements

Code	PM-xx/ 14	PM-xx/ 16	PM-xx/ 20	PM-xx/ 26	PM-xx/ 32	PM-xx/ 34	PM-xx/ 40
Width – netto (mm)	128	148	188	248	308	328	388

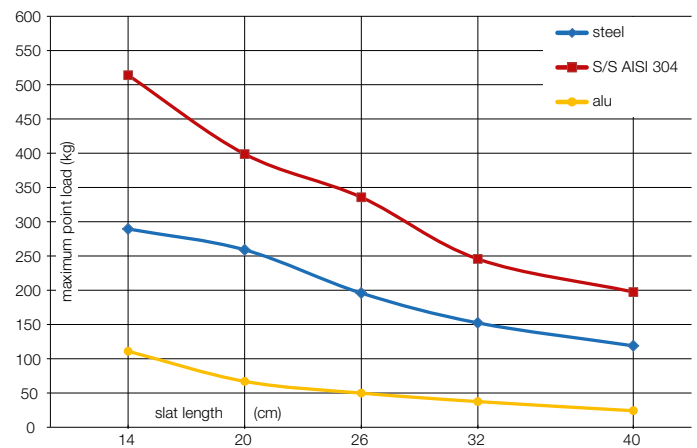
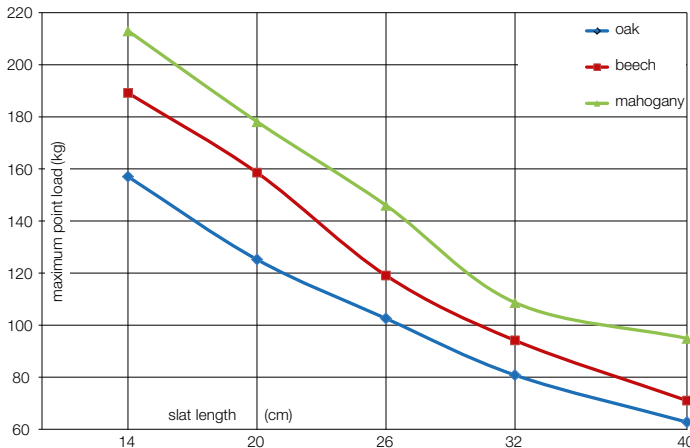
Tolerance +0–1.5 mm. Code width is derived from trench heater width.

Note: Please, that wooden grilles are made of natural material therefore possible dimensional changes caused by ambient temperature and humidity fluctuation cannot be excluded.

Grille airflow

alu	wood	steel	stain- less	Thin	Cross
63 %	55 %	60 %	60 %	63 %	58 %

Load bearing capacity



In load bearing capacity testing, grille slats are placed on two supports and weighed down in centre.

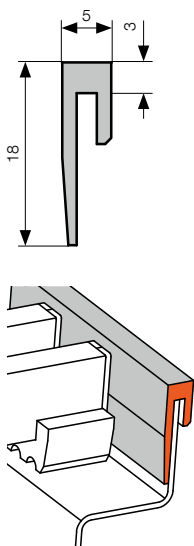
For wooden slats, values are given up to the fracture point of the first fibre. Metal slats are measured up to the point of irreversible deflection.

FRAMES

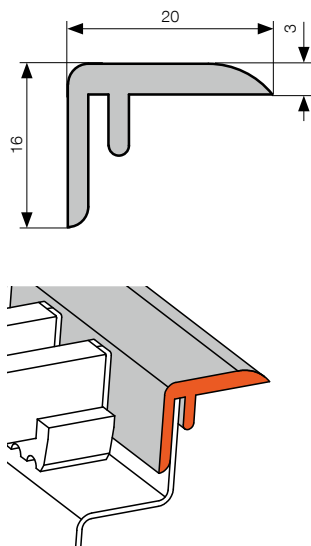


Decorative U-shaped and F-shaped frames are available as standard in aluminium with silver, black, dark bronze or light bronze elox finishes. U-frame, Thin and Cross frames are available also in black elox. Frames may also be lacquered (powder coated) using colours from the RAL colour chart. Frames are in every case supplied as a component of trench heaters, and the type required must be specified when ordering in the Order Code. Where trench heaters are finished with a hem, the hem is of the same material as the casing.

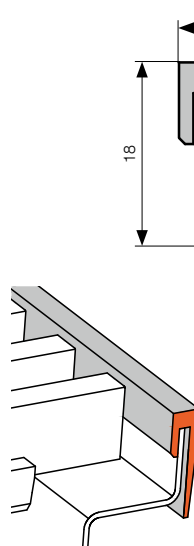
U-frame
Standard



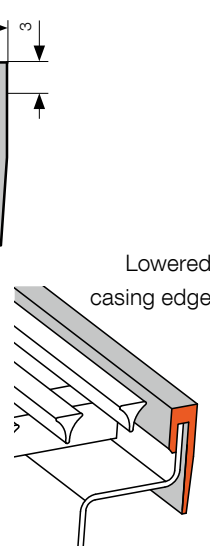
F-frame
Optional



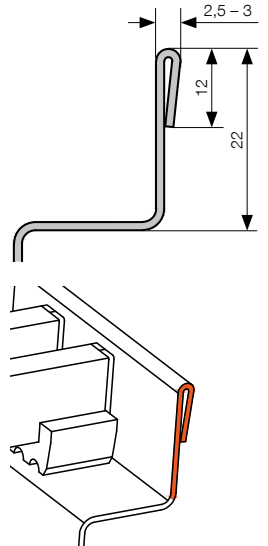
Thin frame



Cross frame



Hem



Measurements shown in mm.

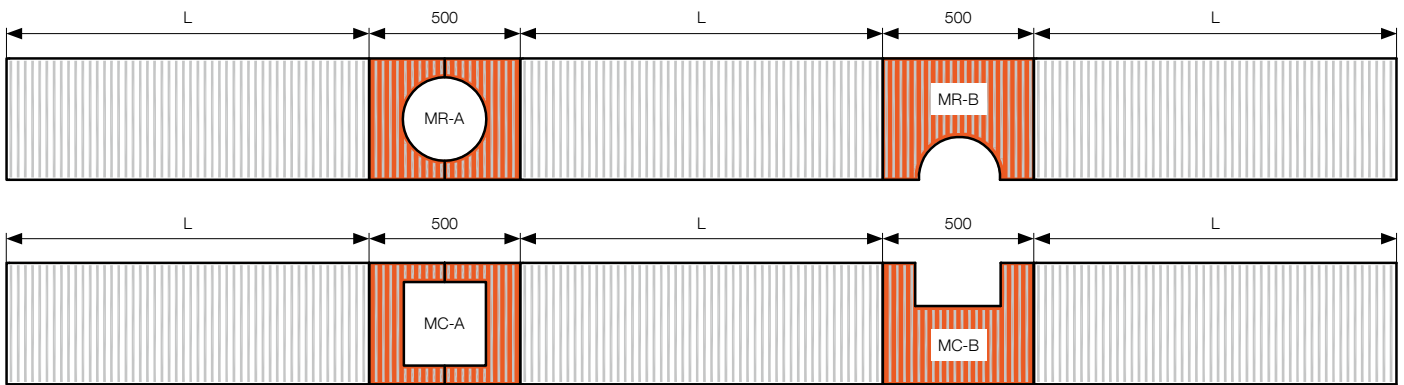
Design Solutions

DESIGN MODULES

Main advantages of design modules

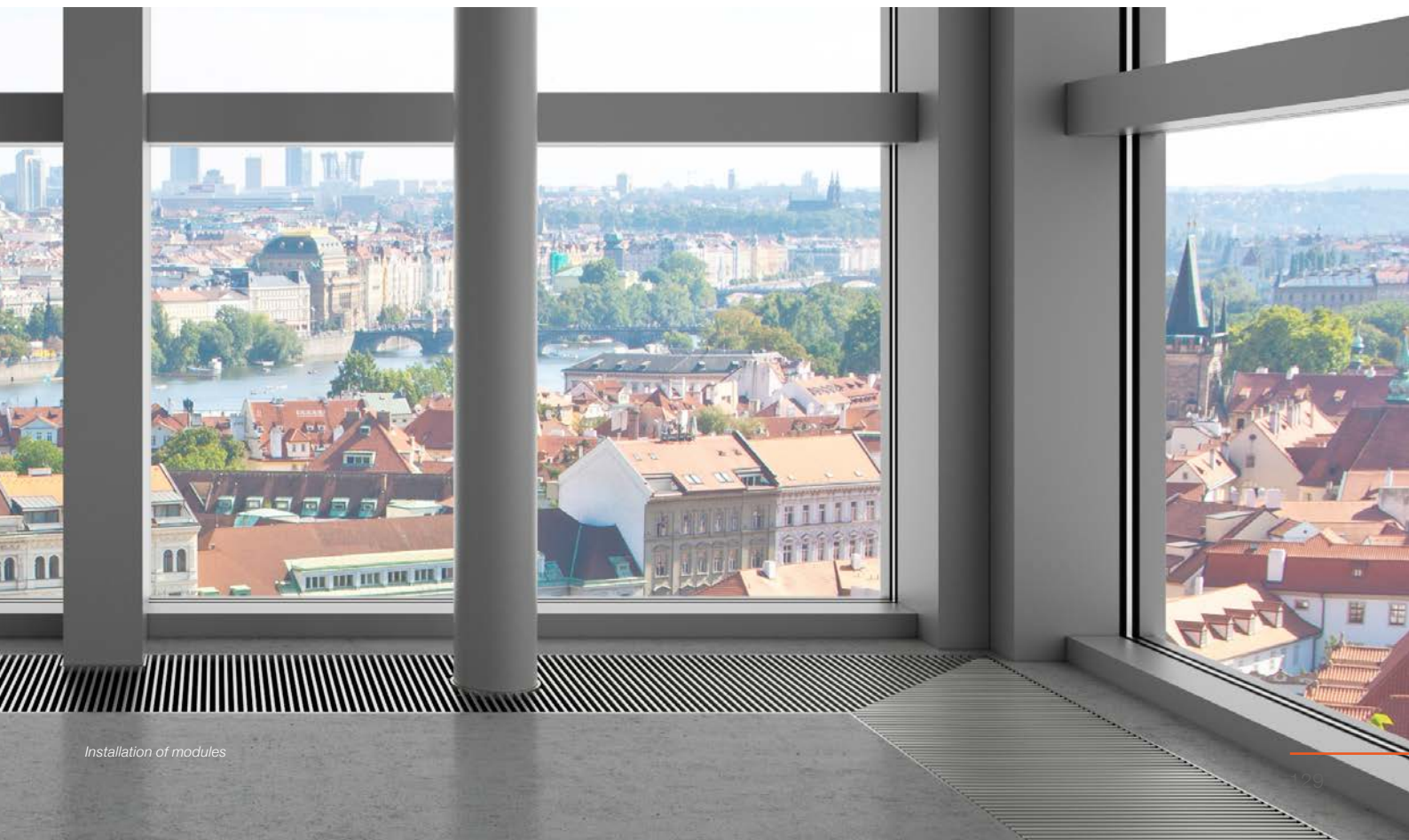
- **significant reduction in time** – from design to delivery
- **wide range** – specially designed shapes are available for the entire range of trench heaters
- **individual solutions** – design modules can be fitted with aluminium frames in the same colours as the grille
- **versatility** – for a diverse range of interior styles, easily adaptable to any kind of architectural space
- **design** – uniform styles and technical solutions for all kinds of interior. One elegant and continuous trench heater for the entire room
- **cost savings** – the price for the design and/or quotations can be calculated using the valid price list – no exact building surveys required

Our modular system was developed to simplify the installation of trench heaters in unusual interiors, and to enable rapid processing of orders and quotations for projects. **The wide range of design modules means quick and easy selection of trench heater systems made to suit your particular interior.** The extensive selection of models in each module simplifies the combination of technical requirements and interior design, even in challenging environments. The module range features high quality workmanship and an emphasis on detail.



L – the entire range of KORAFLEX trench heaters is available in unlimited lengths

Measurements shown in mm.



Installation of modules

DESIGN MODULES

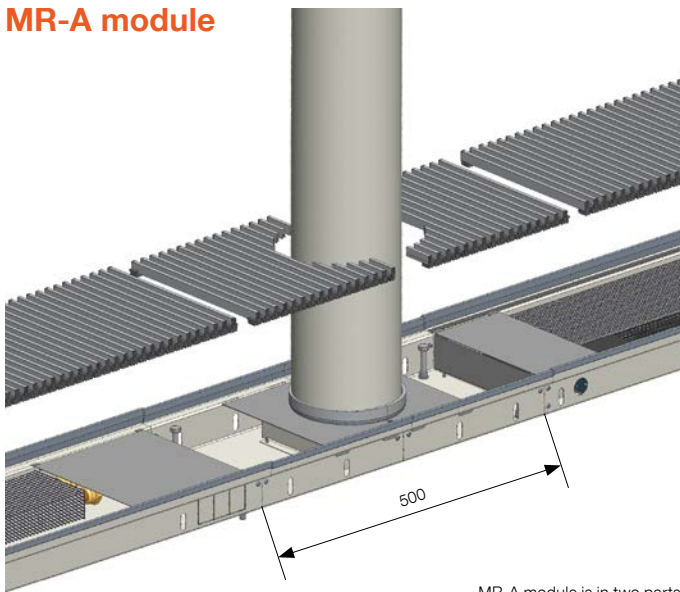
Specifications

Module length	500 mm
Module depth	70 mm
Casing material	Galvanized steel casing, RAL 9005 black lacquered

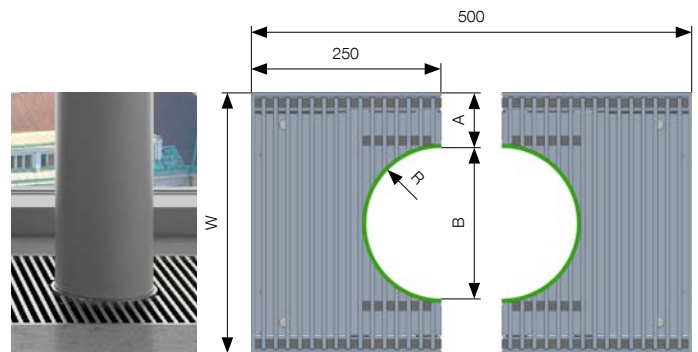
Frame	Aluminium U-frame (silver, black, light and dark bronze elox or RAL colour chart lacquer)
Grille	Roll-up, linear (silver, black, light and dark bronze elox or RAL colour chart lacquer)

Trench heaters installed between modules are manufactured according to the required lengths in the design. Modules may be used for trench heaters with natural and forced convection. Modules are fitted as standard with aluminium grilles. Where other grille models are required – steel, stainless steel, or wood – installation can be assessed on request. Heat exchangers cannot be fitted into module components.

MR-A module

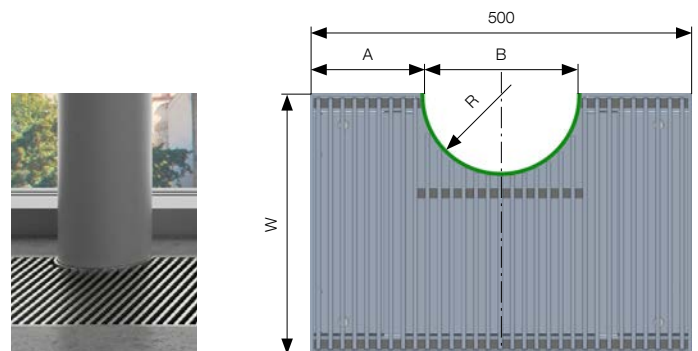
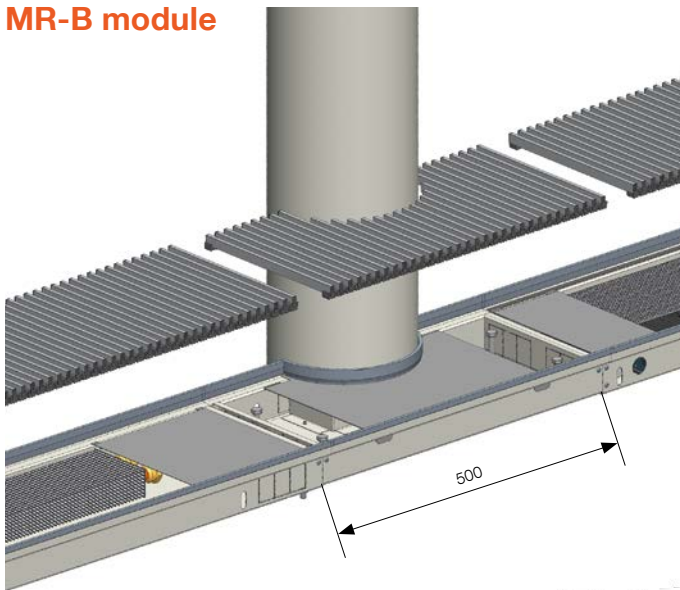


MR-A module is in two parts.



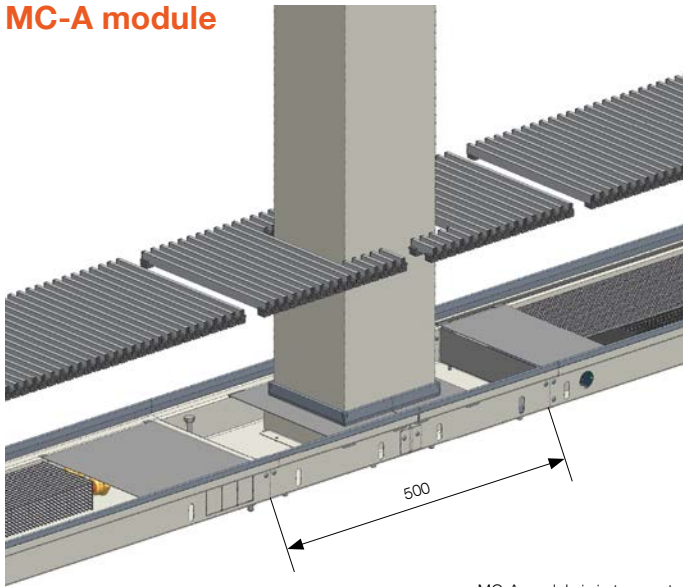
Size range	Width W [mm]				
	140 160	200	260	320 340	400
A min.–max.	–	60–65	60–95	60–125	60–165
B min.–max.	–	70–80	70–140	70–200	70–280
R min.	–	100	100	100	100

MR-B module

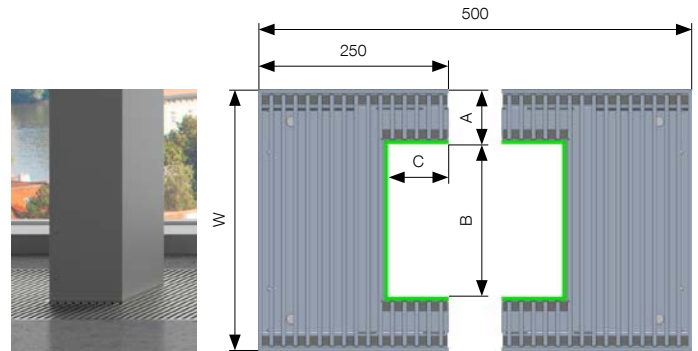


Size range	Width W [mm]				
	140 160	200	260	320 340	400
A min.–max.	80–370	80–370	80–370	80–370	80–370
B min.–max.	70–340	70–340	70–340	70–340	70–340
R min.	100	100	100	100	100

MC-A module

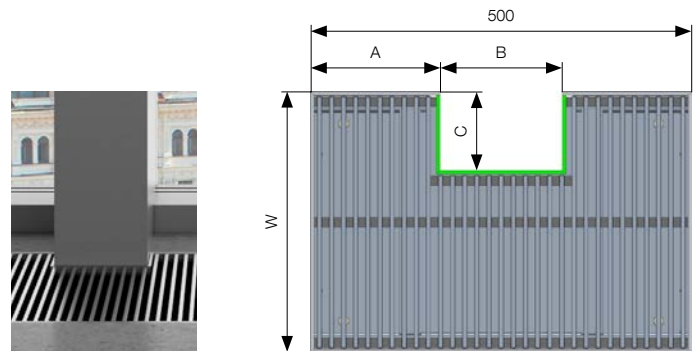
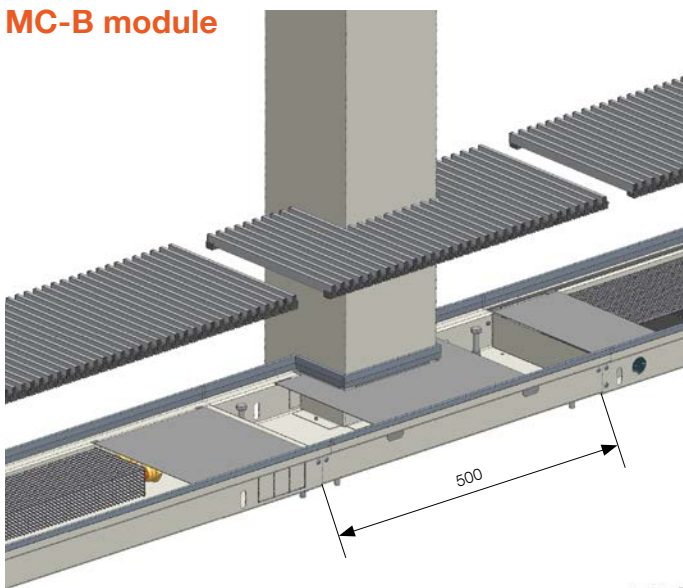


MC-A module is in two parts.



Size range	Width W [mm]				
	140 160	200	260	320 340	400
A min.-max.	–	60–90	60–150	60–210	60–290
B min.-max.	–	50–80	50–140	50–200	50–280
C min.-max.	–	20–250	20–250	20–250	20–250

MC-B module



Size range	Width W [mm]				
	140 160	200	260	320 340	400
A min.-max.	80–370	80–370	80–370	80–370	80–370
B min.-max.	50–340	50–340	50–340	50–340	50–340
C min.-max.	30–80	30–140	30–200	30–260	30–340

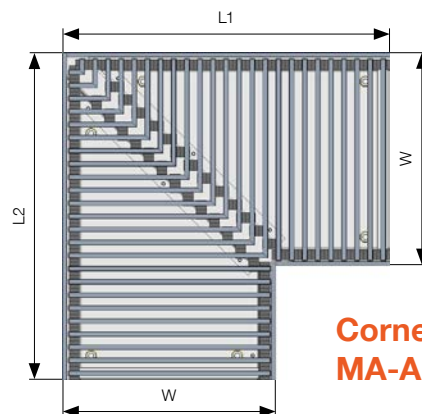
MODULE ORDER CODES

Module type	Length (cm)	Depth (cm)	Width (cm)	Frame type	Frame colour	Grille material	Grille colour	Grille type	Connection side	Lowered face
MRA MRB MCA MCB	-500/07 / ..	-	U-frame 0 without frame	1 silver elox 2 dark bronze elox 3 light bronze elox 5 black elox 9 other RAL colour	A aluminium	1 silver elox 2 dark bronze elox 3 light bronze elox 5 black elox 9 other RAL colour	R roll-up L linear	P right	1 lowered face: input side 2 lowered face: opposite input side 3 both faces lowered 0 without lowered face	

CORNER PARTS

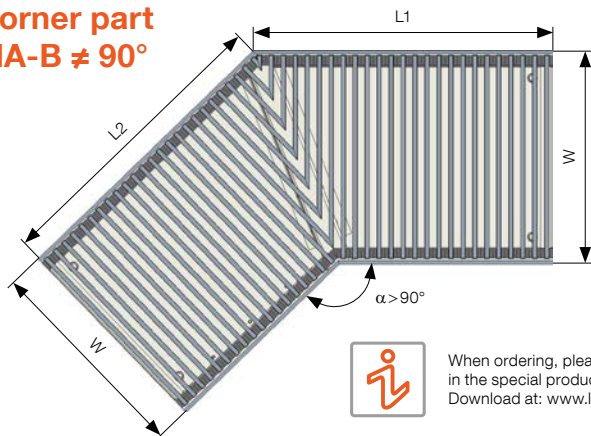
Specifications

Length by design width	200–500 mm
Module depth	70 mm
Design width	140, 160, 200, 260, 320, 340, 400 mm
Casing material	Galvanized steel casing, RAL 9005 black lacquered
Frame	Alu U-frame or F-frame (silver, black, light and dark bronze elox or RAL colour chart lacquer)
Grille	Roll-up, linear (silver, black, light and dark bronze elox or RAL colour chart lacquer) + wood or steel stainless steel and mahogany on request



Corner part MA-A = 90°

Corner part MA-B ≠ 90°



When ordering, please fill in the special product form. Download at: www.licon.cz

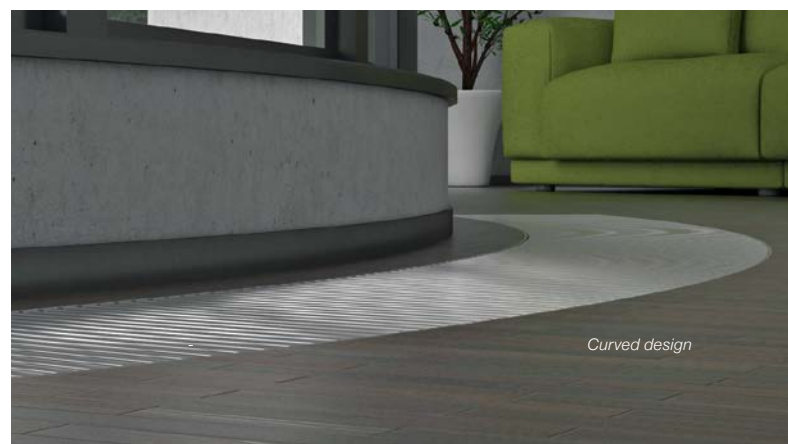
Size range

Length L1, L2 (mm)	200	300	400	500	500
Trench heater width W (mm)	140 160	200	260	320 340	400

Corner parts are the ideal solution to ensure seamless connections of KORAFLEX trench heaters in the corners of rooms. Corner parts are supplied complete and can be fitted with all types of grille. Heat exchangers cannot be placed in corner parts – corner parts are optional decorative accessories and as such have no effect on heat output. Corner parts must be ordered together with the relevant trench heaters and grilles.

CORNER PART ORDER CODE

Module type	Length (cm)	Depth (cm)	Width (cm)	Frame type	Frame colour	Grille material	Grille colour	Grille type	Connection side	Lowered face
MAA MAB	--●● / 07 / ●●			U U-frame F F-frame 0 without frame	1 silver elox 2 dark bronze elox 3 light bronze elox 5 black elox 9 other RAL colour 0 without frame	A alu B beech D oak M mahogany S steel R stainless steel	1 silver elox 2 dark bronze elox 3 light bronze elox 5 black elox 0 natural (wood, stainless steel) 1 lacquered wood 6 RAL 9006 (steel)	R roll-up L linear	P right	0 without lowered face 1 lowered face: input side 2 lowered face: opposite input side 3 both faces lowered



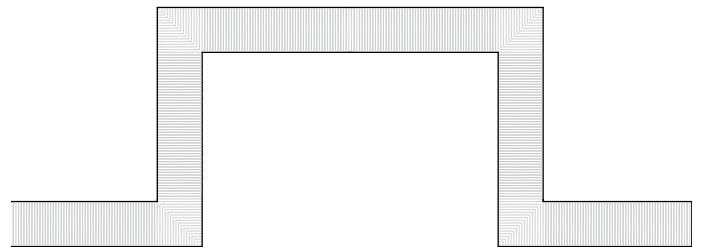
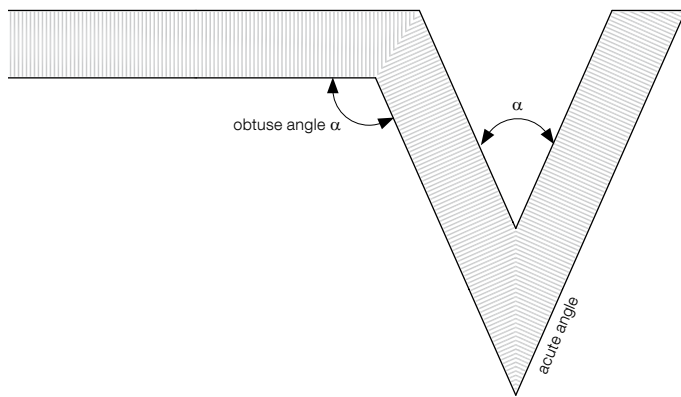
ANGLED AND CURVED DESIGNS

Specifications

Length	max. 3 000 mm
Module depth	70, 90, 110, 190, 130, 150 mm
Design width	140, 160, 200, 260, 320, 340, 400 mm
Casing material	Galvanized steel casing, RAL 9005 black lacquered
Frame	Alu U-frame (silver, black, light and dark bronze elox or RAL colour chart lacquer)
Grille	Roll-up, aluminium (silver, black, light and dark bronze elox), wood, steel and stainless steel or RAL colour chart lacquer

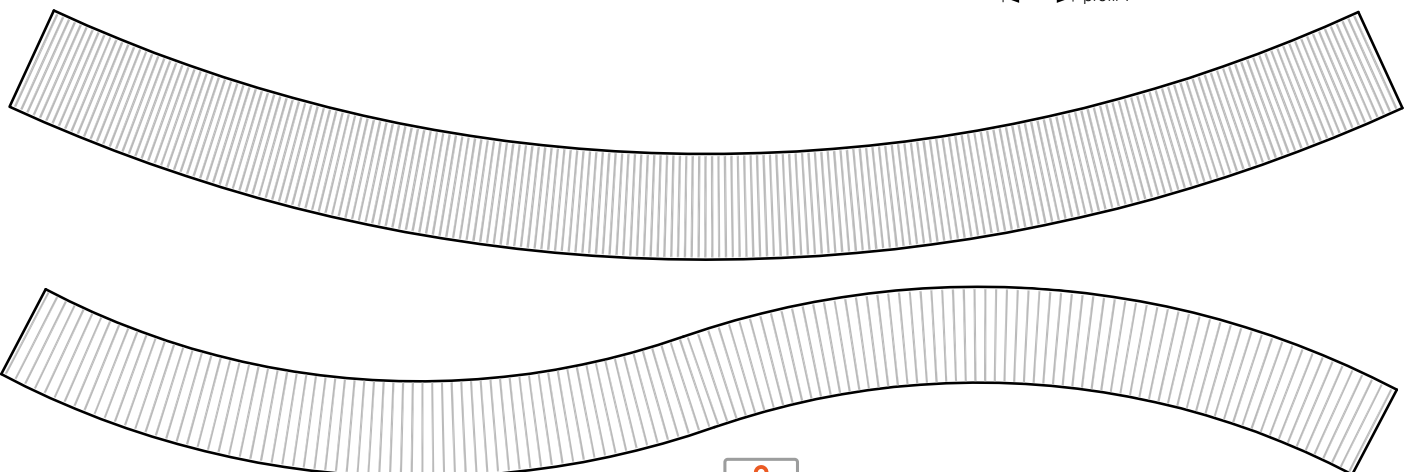
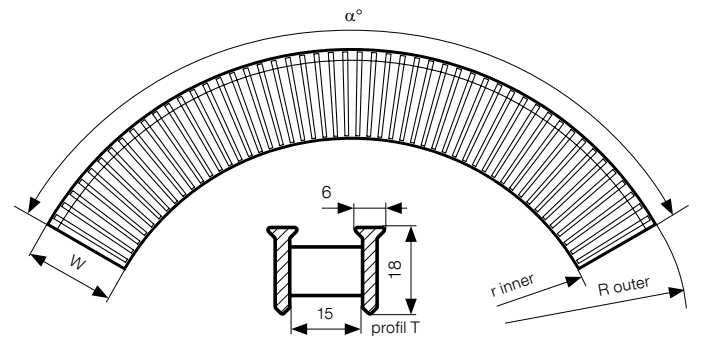
Angled design

Prior to accepting orders for design (atypical) trench heaters, the manufacturer must assess the feasibility of the project. Heat outputs cannot be guaranteed, but the manufacturer will carry out a professional heat output estimate on request. For all shapes, including curved designs, the following must be specified: angle (α), inner radius (r) or outer radius (R) and the total width (W) corresponding to trench heater widths manufactured. Grilles must be ordered together with design trench heaters.



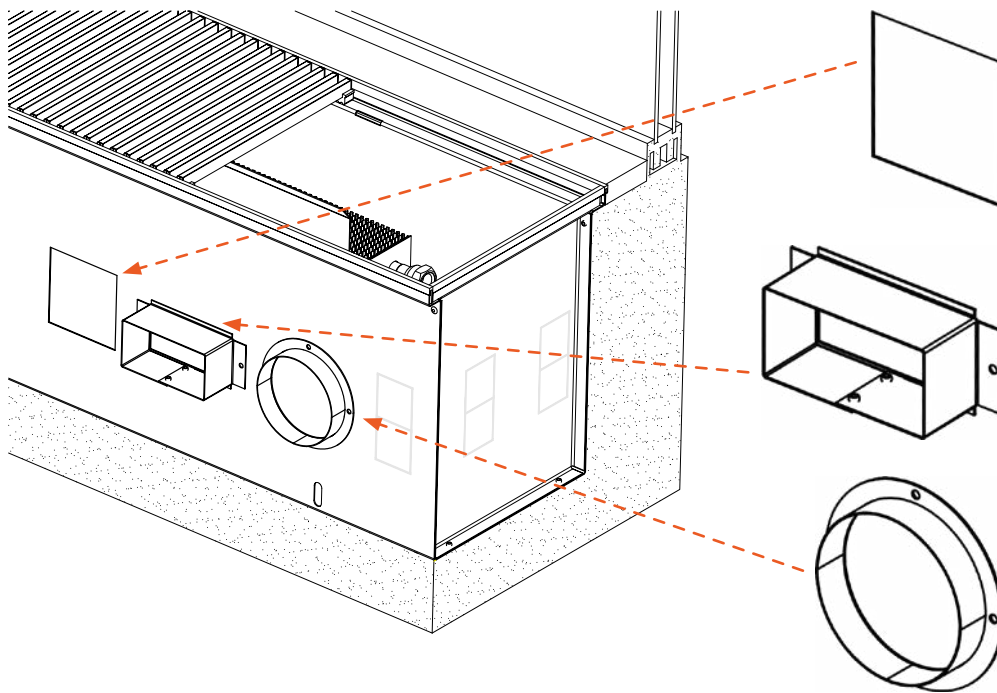
Curved parts

The minimum inner radius of curved parts must be greater than 2 000 mm. When fitting aluminium grilles to curved parts, the slats will be T-profiles set on springs (see picture) and using a U-frame. (Due to construction reasons, F-frames cannot be fitted to curved trench heaters).



When ordering, please fill in the special product form. Download at: www.licon.cz

AIR CONDITIONING CONNECTIONS



Opening for air conditioning connection

- optional alteration to construction
- measurements as per specifications
- quotation on request

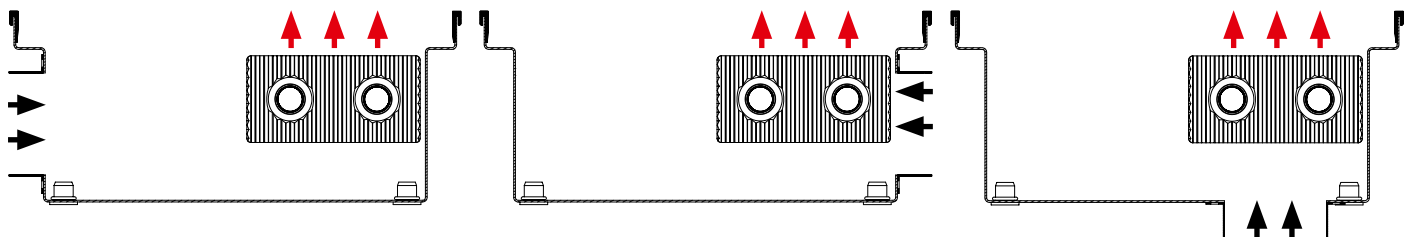
Rectangular flange

- optional accessory
- measurements as per specifications
- quotation on request

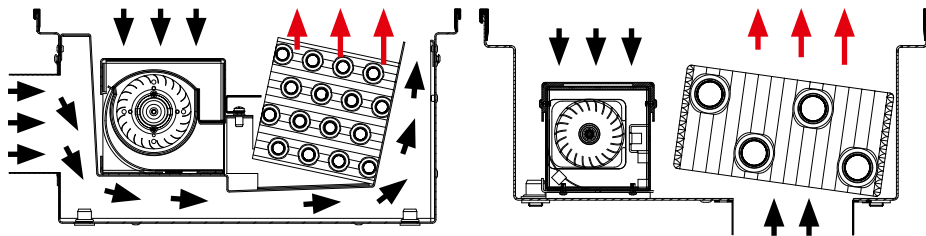
Circular flange

- optional accessory
- measurements as per specifications
- quotation on request

Natural convection (FK-models) – connection to airconditioning distribution system



Forced convection (FV-models) – connection to airconditioning distribution system



Details of proposals, prices and delivery times will be specified on request.



*KORAFLEX fitted with beech grille
and silver elox F-frame*

General product information and references

GENERAL PRODUCT INFORMATION

Quality

LICON HEAT s.r.o. is a certified ISO 9001 Quality Management supplier. Heat outputs are measured according to ČSN EN 16430 standards at the HLK Stuttgart (DE) and SZU Brno (CZ) testing facilities. Products comply with current legislation. The certification process was completed at the Engineering Test Institute, Brno (CZ).

Maintenance

Trench heaters must be kept clean. Before the start of the heating season it is especially important to remove all dirt and dust from the trench heater. Trench heaters with forced convection must be checked for mechanical blockages (items which have fallen in, layers of dust, etc.). For further details relating to the maintenance of individual types of trench heater, please refer to the installation instructions or the Operating and warranty Conditions.

All materials relating to trench heaters are available to download at www.licon.cz

Guarantee

The warranty period is two years. 10 year guarantee against exchanger leaks. For full details of operating and warranty conditions, please visit our web pages. LICON HEAT s.r.o. reserves the right to alter specifications without notice. The full text of our General Terms and Conditions can be found on our web pages.

Transport and storage instructions

Units must be handled with care during transport and must be well secured and anchored to prevent movement and damage. Transport and storage areas must be dry and not exposed to the weather. Goods must not be stacked.

LICON HEAT s.r.o. reserves the right to alter specifications without notice.



*KORAFLEX fitted with aluminium grille
and U-frame, light bronze*

SUMMARY OF ACCESSORIES FOR ALL TYPES OF LICON HEATING ELEMENTS



Accessories suitable for model ranges with natural convection

Accessories	Order code	Trench heaters KORAFLEX FK	Free-standing convectors KORALINE LK	Free-standing convectors KORALINE LD	Wall-mounted convectors KORAWALL OKN	Heat exchangers KORABASE	Facade convectors KORASPACE
Straight lockshield 1/2"	REG-LS						
Elbow lockshield 1/2"	REG-LA						
Straight thermostatic valve 1/2"	REG-TVS						
Elbow thermostatic valve 1/2"	REG-TVA						
THERA 6 thermostatic head	REG-TH6	-					
CLASSIC thermostatic head	REG-THC	-					
DESIGN thermostatic head	REG-THD	-					
Thermostatic head with incorporated control and immersion remote sensor	REG-TH5						
Siemens RAA 21 room thermostat	REG-RAA21						
Siemens RDE 100.1 room thermostat	REG-RDE100.1						
Siemens RDG 160T room thermostat	REG-RDG160T	-	-	-	-	-	-
Siemens RDG 260KN room thermostat	REG-RDG260KN	-	-	-	-	-	-
Siemens RAB 21 DC room thermostat	REG-RAB21DC	-	-	-	-	-	-
Siemens IRA 211	REG-IRA211	-	-	-	-	-	-
Siemens QAA32	REG-S-QAA32						
NTC temperature sensor	REG-S-NTC	-	-	-	-	-	-
TEP 24 thermoelectric actuator 2.5 m cable	REG-TEP24-250						
TEP 24 thermoelectric actuator, 5 m cable	REG-TEP24-500						
TEP 230 thermoelectric actuator, 2.5 m cable	REG-TEP230-250						
TEP 230 thermoelectric actuator, 5 m cable	REG-TEP230-500						
Pattress box	REG-IB						
R-BOX 2017	REG-RBOX17	-	-	-	-	-	-
60 W 53 x 90 x 55 mm DC power supply	REG-PS60						
100 W 70 x 90 x 55 mm DC power supply	REG-PS100						
150 W 105 x 90 x 55 mm DC power supply	REG-PS150						
240 W 60 x 126 x 114 mm DC power supply	REG-PS240						
480 W 86 x 126 x 129 mm DC power supply	REG-PS480						
10 cm Flexible hose	REG-F10		-	-	-		
12 cm Flexible hose	REG-F12		-	-	-		
30 cm Flexible hose	REG-F30		-	-	-		
Brass elbow	REG-E90		-	-	-		
OSB cover	OSB		-	-	-	-	-
Sound insulation sheeting	Sound insulation sheeting	-	-	-	-	-	-

recommended
 optional
 unsuitable





Accessories suitable for models with forced convection

Accessories	Order code	Trench heaters KORAFLEX FV	Free-standing convectors KORALINE OLOC	Wall-mounted convectors KORAWALL OKIOC
Straight lockshield ½"	REG-LS			
Elbow lockshield ½"	REG-LA			
Straight thermostatic valve ½"	REG-TVS			
Elbow thermostatic valve ½"	REG-TVA			
THERA 6 thermostatic head	REG-TH6	—	—	—
CLASSIC thermostatic head	REG-THC	—	—	—
DESIGN thermostatic head	REG-THD	—	—	—
Thermostatic head with incorporated control and immersion remote sensor	REG-TH5	—	—	—
Siemens RAA 21 room thermostat	REG-RAA21	—	—	—
Siemens RDE 100.1 room thermostat	REG-RDE100.1	—	—	—
Siemens RDG 160T room thermostat	REG-RDG160T			
Siemens RDG 260KN room thermostat	REG-RDG260KN			
Siemens RAB 21 DC room thermostat	REG-RAB21DC			
Siemens IRA 211	REG-IRA211			
Siemens QAA32	REG-S-QAA32			
NTC temperature sensor	REG-S-NTC			—
TEP 24 thermoelectric actuator 2.5 m cable	REG-TEP24-250			
TEP 24 thermoelectric actuator, 5 m cable	REG-TEP24-500			
TEP 230 thermoelectric actuator, 2.5 m cable	REG-TEP230-250	—	—	—
TEP 230 thermoelectric actuator, 5 m cable	REG-TEP230-500	—	—	—
Pattress box	REG-IB			
R-BOX 2017	REG-RBOX17			
60 W 53 × 90 × 55 mm DC power supply	REG-PS60			
100 W 70 × 90 × 55 mm DC power supply	REG-PS100			
150 W 105 × 90 × 55 mm DC power supply	REG-PS150			
240 W 60 × 126 × 114 mm DC power supply	REG-PS240			
480 W 86 × 126 × 129 mm DC power supply	REG-PS480			
10 cm Flexible hose	REG-F10			
12 cm Flexible hose	REG-F12			
30 cm Flexible hose	REG-F30			
Brass elbow	REG-E90			
OSB cover	OSB		—	—
Sound insulation sheeting	Akustická folie		—	—

 recommended  optional  unsuitable



REG-RAA21



REG-RDE100.1



REG-RDG160T



REG-RDG260KN



REG-RAB21DC



REG-IRA211



REG-PS60



REG-PS100



REG-PS150



REG-PS240



REG-PS480

REFERENCES



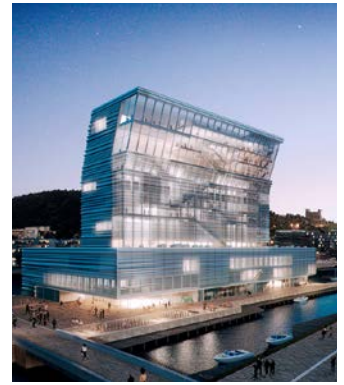
UBS Pleyad Business Centre
Saint-Denis, France



MCBA Museum,
Lausanne, Switzerland



Residence du Lac,
Morges, Switzerland



Museum Munch Oslo,
Norway



Lachta Centre,
Saint Petersburg, Russia



Neva Towers,
Moscow, Russia



Zolotoy Ostrov Moscow,
Russia



Fyrstikkalléen 1 AS Oslo,
Norway



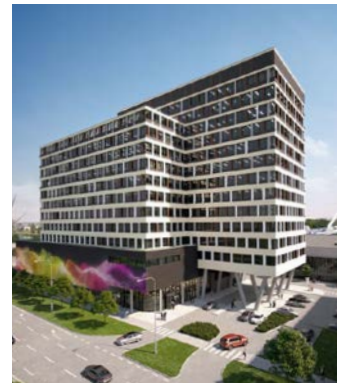
The Circle – airport,
Zurich, Switzerland



Panorama City,
Bratislava, Slovakia



NÚSCH Children's Cardiac
Centre, Bratislava, Slovakia



Panorama Business center,
Bratislava, Slovakia



Einsteinova Business Centre,
Bratislava, Slovakia



Harpa Concert Hall,
Reykjavik, Iceland



Nordea Headquarters,
Copenhagen, Denmark



Marina Lipno apartments,
Czech Republic



The Ještěd Hotel
Liberec, Czech Republic



LCD Leontief Cape,
Saint Petersburg, Russia



Residence Skolkovo,
Moscow region, Russia



EXPOFORUM
Saint Petersburg, Russia



LCD apartments,
Moscow, Russia



Technical University,
Liberec, Czech Republic



Airport,
Brno, Czech Republic



Celsis Headquarters,
Lithuania



Opera House,
Copenhagen, Denmark



Spartak Arena Moscow,
Russia



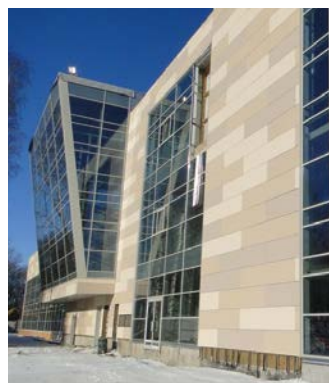
City Green Court,
Prague, Czech Republic



BC Trinity Place,
Saint Petersburg, Russia



Main Point Karlín,
Praha, Czech Republic



SBK Spartak,
Saint Petersburg, Russia



Triplex – Apartment block,
Karlovy Vary, Czech Republic



Trinity Office Centre,
Brno, Czech Republic

KORAFLEX KORAFLEX KORAFLEX
FLEX KORAFLEX KORAFLEX KOR
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