



**VERANO**<sup>®</sup>  
by: MDL Solutions

MDL Solutions CVK **TECHNICAL** catalogue

2015\_01

CVK







CVK

## Climaconvector type CVK2, CVK4, CVKS



The most recent Verano products – floor and wall, two pipes and four pipes climaconvectors have been developed as a technical concept on the foundation of widely conducted R&D works, partially financed by EU grant programs, whereas many analyses and tests focusing on optimization of geothermal parameters of heat-floating convection coil heat exchanger.

Climaconvectors from Verano will provide appropriate temperature as well as optimal climate control both during summer and wintertime. Their output range and variety of lengths available would suit every single room application.

Climaconvector's main feature is a very efficient heating/cooling coil exchanger, that is made of aluminum fins and copper pipe. Such a coil element due to its low water capacity, can achieve very low thermal inertia, that allows heating of any room relatively quick. In order to improve the heating emitter effectiveness climaconvectors from Verano Convector are equipped with the most modern and very economical EC/DC fan motor. These units despite of their economic efficiency are also exceptionally quiet.

Thanks to such an efficient heating and cooling coil coupled with EC fan motor, climaconvector from Verano may be ideal for using in low temperature water installations e.g. being supplied by heat pumps.

Two-pipes Climaconvectors having depth 90 mm are available in floor mounted (CVK2) or wall-mounted (CVKS) versions, although two pipes Climaconvectors (CVK2) and four pipes units (CVK4) having depth 140 mm are available in floor-mounted versions only.

## CVK

### Types overview

Height H [mm]	Width W [mm]	Length L [mm]	System
90	170	700	2-pipe
		1100	
		1450	
		1900	
140	350	750	2-pipe
		1100	
		1500	
		1900	
		2300	
		2650	
		950	4-pipe
		1300	
		1700	
		2100	
		2500	
		2850	

### Assembly manual

**Climaconvector is being assembled in a way to keep fan motor of room side and to keep coil heat exchanger on a window side.**

In order to avoid causing any heat loss through the floor space, trench casing should be thermo insulated from outside of the trench casing. When assembling Climaconvector you should remember to provide proper acoustic insulation in a space created by a trench void and through all layers of a floor.

Connection holes are made in right side of trench in climaconvector as in standard. It is possible to manufacture nonstandard version having holes for connections in a left side of a trench casing.

In a trench casing there are four holes – two of them are put at the same height as mounting brackets of a heat exchanger, third hole is as a spare one (i.e. for any fitting in any connections or capillary etc.), fourth of them as a drainage you need to connect with sewerage system. Inside Climaconvector units there are leveling and mount brackets, that will also enable fitting trench casing into a floor.

**Wall-assembled Climaconvector CVKS you should mount in a way to keep heat exchanger coil downside and a fan motor upside.**

Climaconvector should be hanged inside specific wall niche by using wall plugs. The depth of a niche should have been similar to the size of Climaconvector. A width of a wall niche could have some mounting clearance, that should be filled in. Any grille should be adjusted to sit into the wall.

Connection slots are prepared from right hand side of a trench casing. It is possible to make them from left hand side (bespoke specification/on demand).

In a trench casing there are four holes – two of them are put at the same height as mounting brackets of a heat exchanger, third hole is as a spare one (i.e. for any fitting in any connections or capillary etc.), fourth of them as a drainage you need to connect with sewerage system. Inside Climaconvector units there are leveling and mount brackets, that will also enable fitting trench casing into a floor.

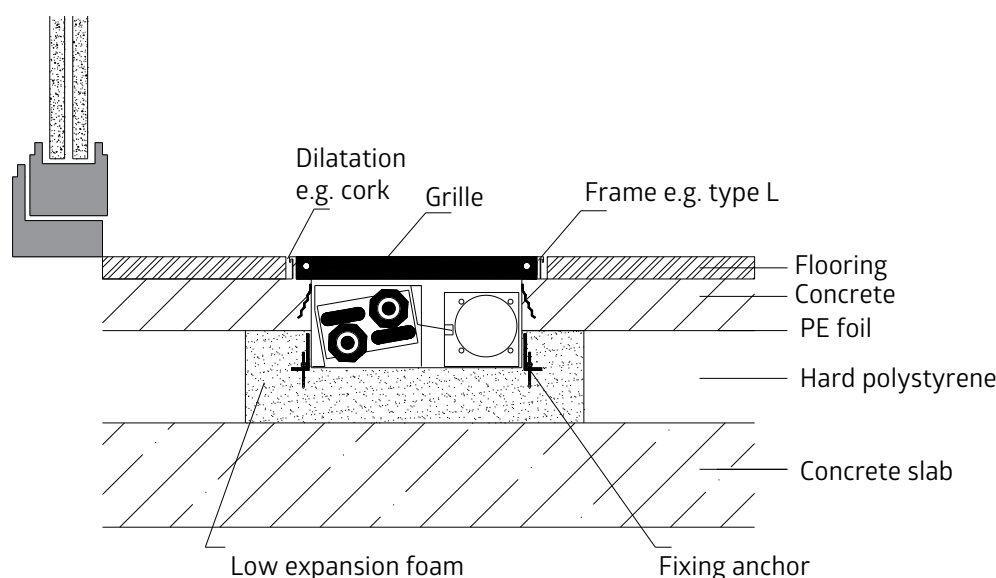
There are together with Climaconvector 4 mount brackets, that will enable fitting its casing on the wall niche.

During any assembly work you should carefully protect the inside of casing, in order to avoid any dirt and dust inside (affecting coil heat exchanger, fan motor)

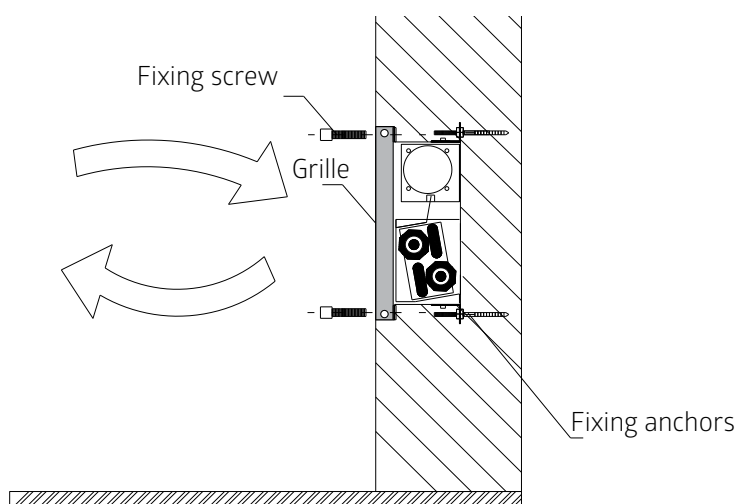
In order to avoid any longitudinal deflection (deflection of trench casing borders) during concrete coating you should use some elements that will expand a trench casing.

It is forbidden to lead any water connections along the coil inside the trench casing, as it may harm temperature float by limiting an air exchange inside a trench. Connections of coil have internal thread of  $\frac{3}{4}$ ". It could be connected by straight or angled thermostatic valves. It is not possible to turn around a coil heat exchanger for 180° in according to water installation connections.

Any detailed manuals in regards to assembly and installation are attached to every single purchased Clima-convector units and are coming with warrantee documents.



An example of assembly a trench climaconvector  
(side view)



An example of assembly an in-wall climaconvector  
(side view)

## CVK

















### Control devices

Control options for the trench heater fan assisted type CVK

Option 1:  
- Thermostatic valve  
- Return valve  
- Electro-Thermal servo-motor  
- Room temperature controller type RDG160T

Option 2:  
- Thermostatic valve  
- Return valve  
- Electro-Thermal servo-motor  
- Fan controller  
- Room temperature controller type RAB11 or RCC10 or RDG110

Option 3:  
- Thermostatic valve  
- Return valve  
- Electro-Thermal servo-motor  
- Fan controller  
- Room temperature controller type RDG100T  
- Remote control type IRA211

Straight thermostatic valve type Siemens VDN 215	Valve diameter 15 DN	
Angular thermostatic valve type Siemens VEN 215	Valve diameter 15 DN	
Straight return valve type Siemens ADN15	Valve diameter 15 DN	
Angular return valve type Siemens AEN15	Valve diameter 15 DN	
Straight thermostatic valve type Schlösser 601200004	Valve diameter 15 DN	
Angular thermostatic valve type Schlösser 601200005	Valve diameter 15 DN	
Straight return valve type Schlösser 601300004	Valve diameter 15 DN	
Angular return valve type Schlösser 601300002	Valve diameter 15 DN	
Thermal servo-motor type Siemens STP 63 or STP 73/00	Supply voltage 24 V AC/DC, 2-position control. STP63 with 1 m connection cable, STP73/00 – need a separate cable ASY6PL...	
Cabel – type Siemens ASY6PL...	Connection cable for STP73/00 function module 0...10 V, the length of 2 m, 5 m and 7 m	
Room temperature controller type Siemens RDG160T	Power supply 24 V AC control output 0...10 V DC, for fan with ECM (electronically commutated motor). Automatic or manual heating /cooling. Fan speed is activated automatically or manually.	
Room temperature controller type Siemens RAB11	Supply voltage 230 V AC, Room thermostat with manual switch for heating or cooling mode and fan function, 2-position control, Manual 3-speed fan switch.	
Room temperature controller type Siemens RCC10	Voltage 230 V AC, 8...30°C, 2-position output, output for 3-speed fan control, adjustment carried out depending on the room temperature	
Room temperature controller type Siemens RDG110	Supply voltage 230 VAC, 5...40°C, outputs for 1- or 3-speed fan, 3 modes, selectable installation and control parameters	
Room temperature controller type Siemens RDG100T	Supply voltage 230 VAC, 5...40°C outputs for 1- or 3-speed fan, 3 modes, selectable installation and control parameters (up to 8 program times), remote control (infrared remote control)	
Remote control type Siemens IRA211	Remote control for infra-red receptor RDG100T	
FR2 fan control	Device controlling the fan speed	
Rail Power Supply DRC/DRP	Output voltage 24V DC, Input voltage 100-240V AC, DRC 24V (30W,60W,100W) DRP 24V (120W, 240 W)	

## Electrical connection instruction

## Attention!

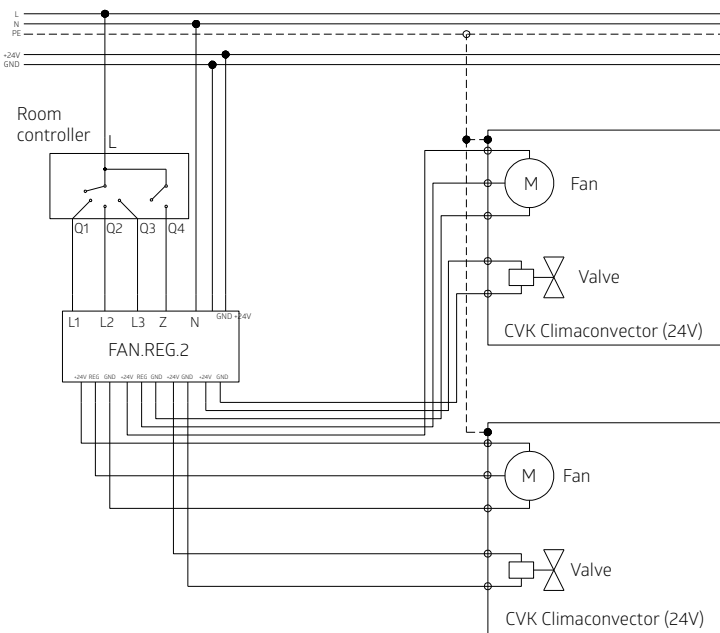
Electrical connections can be only done by appropriate licensed person and in compliance with electric standards.

Voltage can be turned on only after through checking of whole connection diagram.

It is prohibited to supply climaconvector directly from the main voltage of 230V.



### Wiring diagram for the RDG160T controller



### Wiring diagram for the other controllers







90 mm height

CVK 2

## 2-pipe Climaconvectotr type CVK2/CVKS-09/17/L-23

### The equipment of Verano climaconvector

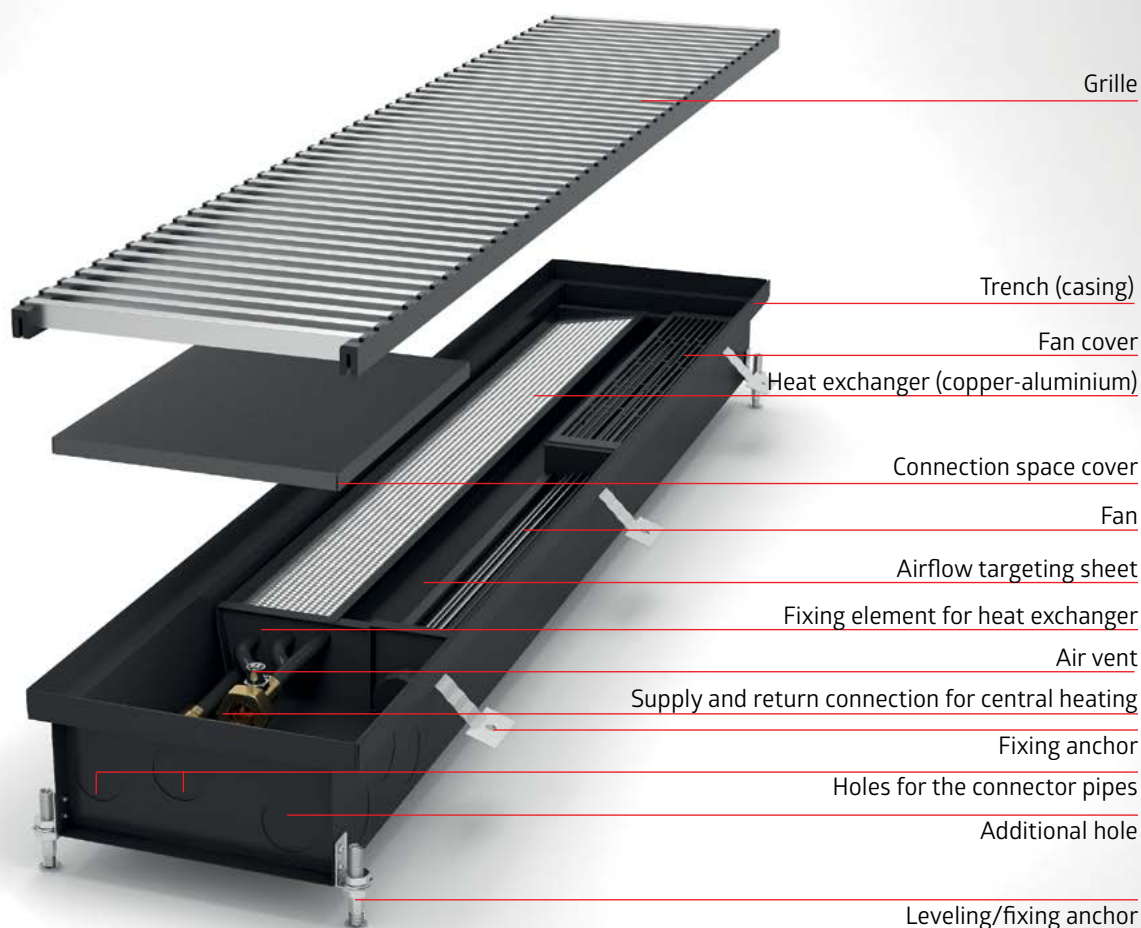
#### STANDARD equipment:

- trench (casing) made of hot-dip galvanized steel sheet with zinc magnesium coating, powder painted in black RAL 9005,
- copper and aluminium heat exchanger with air vent,
- 24 V DC fan with EC motor,
- fan cover,
- connection space cover,
- water connection 2xIT 3/4"
- fixing anchors, leveling/fixing anchors.

#### ADDITIONAL equipment:

- trench (casing) painted in any RAL colour,
- drain kit, must be connected to the sewage system,
- decorative frame around the heater casing, type L or F made of natural aluminum, powder coated in RAL, anodized or can be done as wood imitation,
- aesthetic grille made of aluminum (natural, anodized or powder painted in any RAL color) or stainless steel,
- Installation cover to protect against damage during transport and installation.

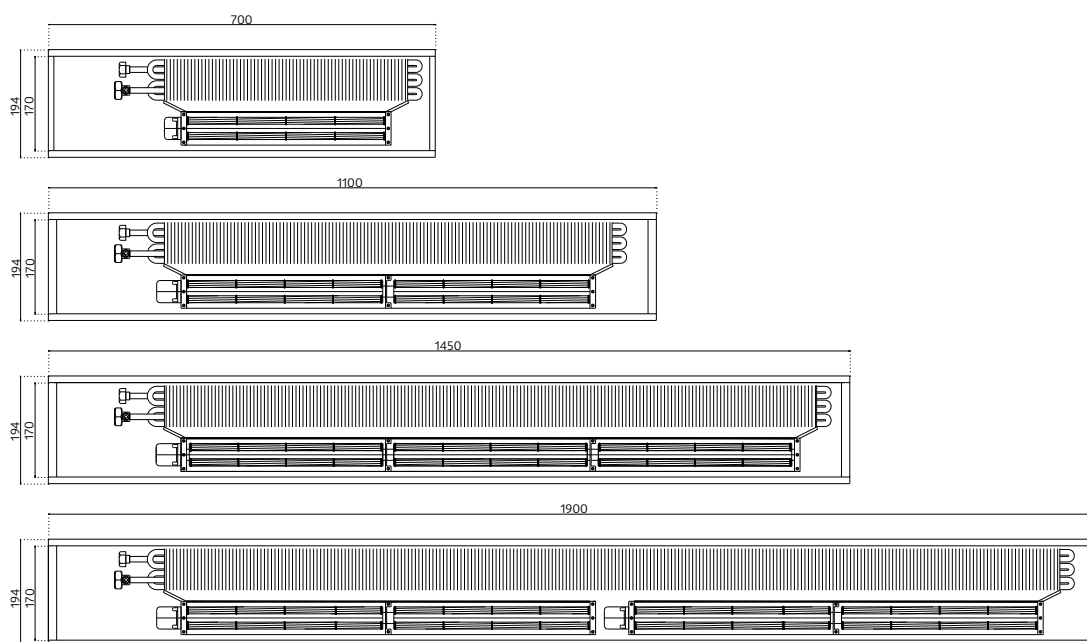
### Construction of Verano climaconvector



## CVK 2

90 mm height

### Dimensions



### Heating output [W]

Ts/Tr °C	L [mm]											
	700			1100			1450			1900		
	1°	2°	3°	1°	2°	3°	1°	2°	3°	1°	2°	3°
90/70	764	1303	1564	1406	2398	2879	2048	3494	4194	2812	4797	5758
<b>75/65</b>	<b>641</b>	<b>1093</b>	<b>1312</b>	<b>1179</b>	<b>2012</b>	<b>2415</b>	<b>1718</b>	<b>2931</b>	<b>3519</b>	<b>2359</b>	<b>4024</b>	<b>4831</b>
70/50	517	882	1059	952	1624	1949	1386	2365	2840	1903	3247	3898
55/45	392	669	803	722	1231	1478	1051	1794	2153	1444	2463	2956
50/40	329	561	673	605	1032	1239	881	1504	1805	1210	2064	2478

The standard heat outputs [WAT] according to DIN EN 442-2: 2013 for room air temperature  $T_i = 20^\circ\text{C}$   
 1° corresponds to the control voltage of 4.5V, 2° corresponds to the control volt 7V, 3° corresponds to the control voltage 10V.

90 mm height

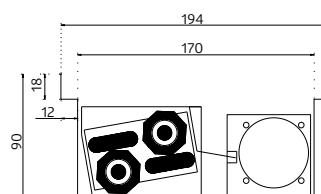
**CVK 2**

**CVK2/CVKS-09/17/L-23**

DIMENSIONS	UNIT [mm]
Trench height (H)	90
Trench width (W)	170
Grille width (Wg)	194
Trench length (L)	700 ÷ 1900
Fin type	23

END SPACE LENGHT (Les)	UNIT [mm]
CVK2-09/17/070-23	50
CVK2-09/17/110-23	80
CVK2-09/17/145-23	60
CVK2-09/17/190-23	70

CONNECTIONS	TYPE
Connection threads	IT 3/4" one-sided
Side connection to be choosen	Standard Right – P, optional Left – L
Fan from the room side	standard



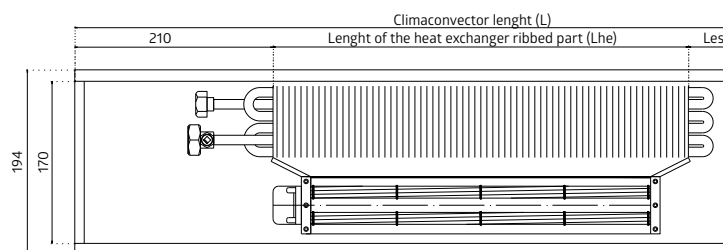
Cross-section of the climaconvector

**Please remember!**

Order Code for climaconvector CVK2 is:

**CVK2-09/17/L-23**

where:  
L - length of the trench [mm]



Technical top-view of climaconvector type CVK2-09/17/L-23

**Cooling output [W]**

Ts/Tr °C	L [mm]											
	700			1100			1450			1900		
	1°	2°	3°	1°	2°	3°	1°	2°	3°	1°	2°	3°
14/18/28	25	72	88	46	132	163	67	193	237	92	265	325
16/18/26	21	59	73	38	109	134	55	159	195	76	218	268
17/19/28	22	64	78	41	117	144	59	170	209	81	234	287
19/21/28	19	55	67	35	101	124	51	146	180	70	201	247

Cooling output [W] - 1° corresponds to the control voltage of 4,5V, 2° corresponds to the control volt 7V, 3° corresponds to the control voltage 10V.



## CVK 2

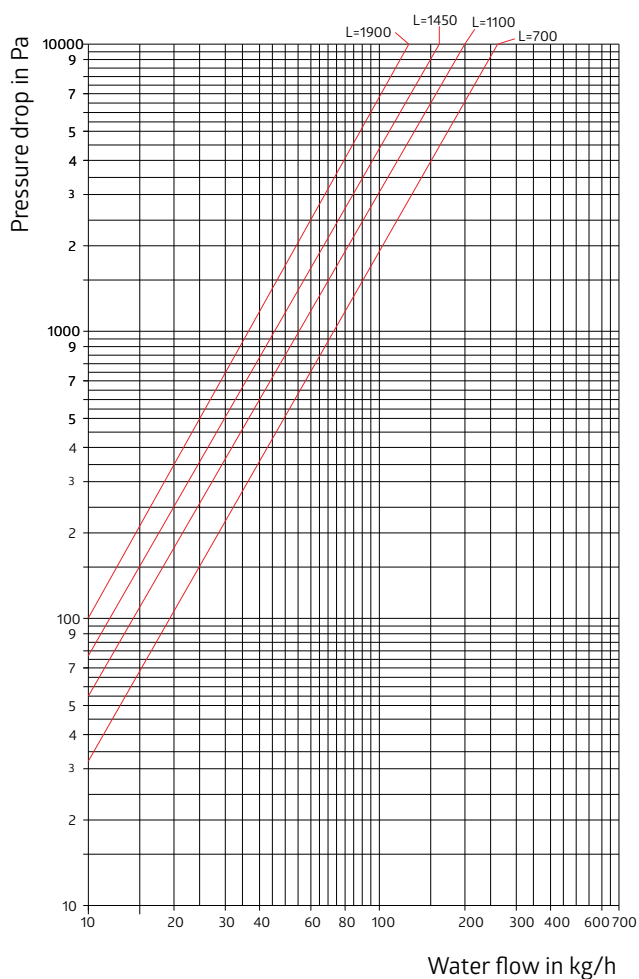
90 mm height

### Power and current

Climaconvector type		Climaconvector length [mm]			
		700	1100	1450	1900
CVK2-09/17/L-23	Number of fan	1	2	3	4
	Number of fan motors	1	1	1	2
	Fan voltage [VDC]	24	24	24	24
	Maximum current [A]	0,35	0,45	0,60	0,90
	Maximum power consumption of the EC fan [W]	8,4	10,8	14,4	21,6

### Pressure losses [Pa]

### Water capacity [dm<sup>3</sup>]



Climaconvector type	Climaconvector length [mm]			
	700	1100	1450	1900
CVK2-09/17/L-23	0,10	0,23	0,37	0,55

The maximum allowable working pressure of 1.0 MPa  
The test pressure of 1.3 MPa  
Maximum operating temperature: 110°C

90 mm height

CVK 2

## Correction factors of heating outputs

Correction factors of heating outputs for climaconvector type CVK2-09/17/L-23 for parameters other than 75/65/20°C

Heating medium temperature [°C]		Room air temperature Ti [°C]						
Ts	Tr	5	8	12	16	20	24	32
90	85	1,619	1,562	1,486	1,411	1,335	1,258	1,106
	80	1,572	1,515	1,439	1,363	1,287	1,211	1,058
	75	1,524	1,468	1,392	1,316	1,239	1,163	1,010
	70	1,477	1,420	1,344	1,268	1,192	1,115	0,961
85	80	1,524	1,468	1,392	1,316	1,239	1,163	1,010
	75	1,477	1,420	1,344	1,268	1,192	1,115	0,961
	70	1,430	1,373	1,297	1,220	1,144	1,067	0,913
	65	1,382	1,325	1,249	1,173	1,096	1,019	0,865
80	75	1,430	1,373	1,297	1,220	1,144	1,067	0,913
	70	1,382	1,325	1,249	1,173	1,096	1,019	0,865
	65	1,335	1,278	1,201	1,125	1,048	0,971	0,817
	60	1,287	1,230	1,153	1,077	1,000	0,923	0,768
75	70	1,335	1,278	1,201	1,125	1,048	0,971	0,817
	65	1,287	1,230	1,153	1,077	1,000	0,923	0,768
	60	1,239	1,182	1,106	1,029	0,952	0,875	0,719
	55	1,192	1,134	1,058	0,981	0,904	0,826	0,671
70	65	1,239	1,182	1,106	1,029	0,952	0,875	0,719
	60	1,192	1,134	1,058	0,981	0,904	0,826	0,671
	55	1,144	1,086	1,010	0,933	0,855	0,778	0,622
	50	1,096	1,038	0,961	0,884	0,807	0,729	0,573
65	60	1,144	1,086	1,010	0,933	0,855	0,778	0,622
	55	1,096	1,038	0,961	0,884	0,807	0,729	0,573
	50	1,048	0,990	0,913	0,836	0,758	0,680	0,523
	45	1,000	0,942	0,865	0,787	0,710	0,631	0,474
60	55	1,048	0,990	0,913	0,836	0,758	0,680	0,523
	50	1,000	0,942	0,865	0,787	0,710	0,631	0,474
	45	0,952	0,894	0,817	0,739	0,661	0,582	0,424
	40	0,904	0,846	0,768	0,690	0,612	0,533	0,374
55	50	0,952	0,894	0,817	0,739	0,661	0,582	0,424
	45	0,904	0,846	0,768	0,690	0,612	0,533	0,374
	40	0,855	0,797	0,719	0,641	0,563	0,484	0,324
	35	0,807	0,749	0,671	0,592	0,513	0,434	0,274
50	45	0,855	0,797	0,719	0,641	0,563	0,484	0,324
	40	0,807	0,749	0,671	0,592	0,513	0,434	0,274
	35	0,758	0,700	0,622	0,543	0,464	0,384	0,223
	30	0,710	0,651	0,573	0,494	0,414	0,334	0,172
45	35	0,710	0,651	0,573	0,494	0,414	0,334	0,172
35	30	0,563	0,504	0,424	0,344	0,264	0,182	0,012

## CVK 2

90 mm height

### Correction factors of cooling outputs

Correction factors of cooling outputs for climaconvector type CVK2-09/17/L-23 for parameters other than 19/21/28°C

Cooling medium temperature [°C]		Room air temperature Ti [°C]			
Ts	Tr	26	28	30	32
12	13	1,426	1,566	1,700	1,830
	14	1,390	1,531	1,667	1,798
	15	1,353	1,497	1,634	1,765
	16	1,316	1,461	1,600	1,733
	17	1,279	1,426	1,566	1,700
	18	1,241	1,390	1,531	1,667
13	14	1,353	1,497	1,634	1,765
	15	1,316	1,461	1,600	1,733
	16	1,279	1,426	1,566	1,700
	17	1,241	1,390	1,531	1,667
	18	1,202	1,353	1,497	1,634
14	15	1,279	1,426	1,566	1,700
	16	1,241	1,390	1,531	1,667
	17	1,202	1,353	1,497	1,634
	18	1,163	1,316	1,461	1,600
16	17	1,124	1,279	1,426	1,566
	18	1,083	1,241	1,390	1,531
	19	1,042	1,202	1,353	1,497
	20	1,000	1,163	1,316	1,461
	18	1,042	1,202	1,353	1,497
17	19	1,000	1,163	1,316	1,461
	20	0,957	1,124	1,279	1,426
	21	0,913	1,083	1,241	1,390
	19	0,957	1,124	1,279	1,426
18	20	0,913	1,083	1,241	1,390
	21	0,869	1,042	1,202	1,353
	22	0,823	1,000	1,163	1,316
	20	0,869	1,042	1,202	1,353
19	21	0,823	<b>1,000</b>	1,163	1,316
	22	0,776	0,957	1,124	1,279
	23	0,727	0,913	1,083	1,241

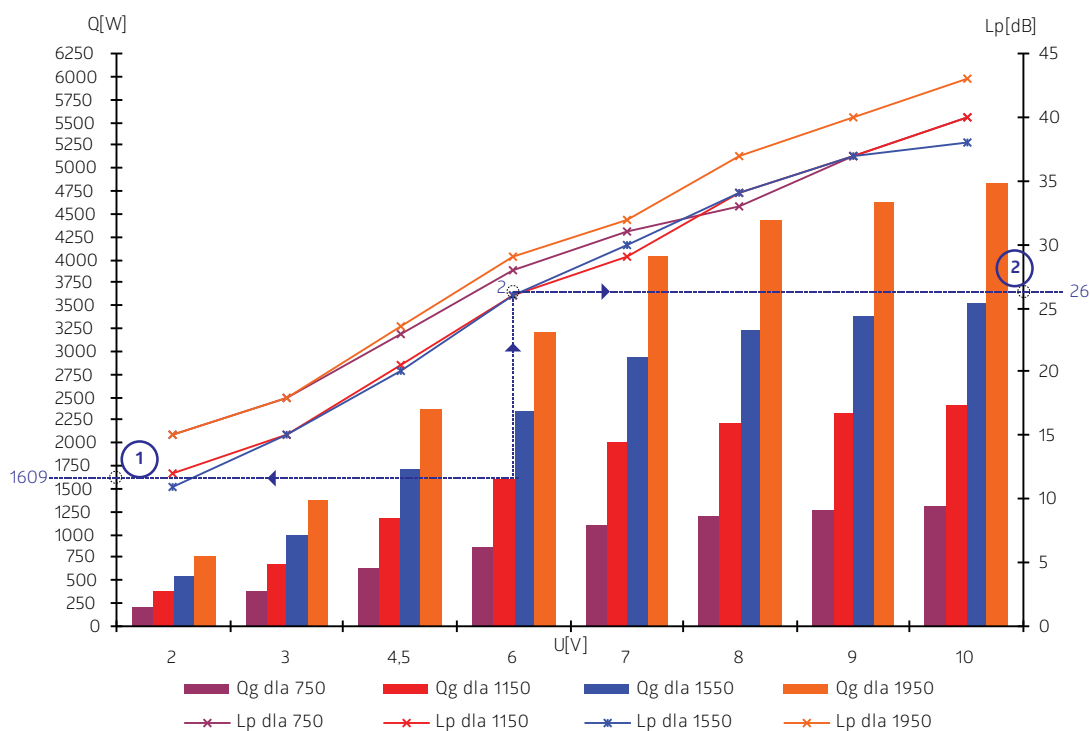


90 mm height

CVK 2

## Sound power and pressure level [dB]

	Control voltage U [V]	Climaconvector lenght [mm]			
		700	1100	1450	1900
Sound pressure level Lp (A) [dB]	4,5 V	23	20,5	20	23,5
	7 V	31	29	30	32
	10 V	40	40	38	43
Sound power level Lw (A) [dB]	4,5 V	31	28,5	28	31,5
	7 V	39	37	38	40
	10 V	48	48	46	51



Changes of the heater output Q [W] and the sound pressure level Lp [dB]  
as a function of control voltage U [V]  
for the climaconvector type CVK2-09/17/L-23 for Ts/Tr/Ti=75/65/20

Sample of the calculation for the heater output Q [W] and the sound pressure level Lp [dB] for the climaconvector type CVK2-09/17/115-23 for the voltage U=6V.

Step 1 (point 1 on the chart) For the control voltage of 6V and climaconvector length L = 1150 mm (red in the diagram) on the left axis of the graph reads power Q = 1609W

Step 2 (point 2 in the graph): On the right axis of the graph reads the sound pressure level L = 26 dB

CVK 2





140 mm height

CVK 2

## 2-pipe Climaconvector type CVK4-14/35/L-38

### The equipment of Verano climaconvector

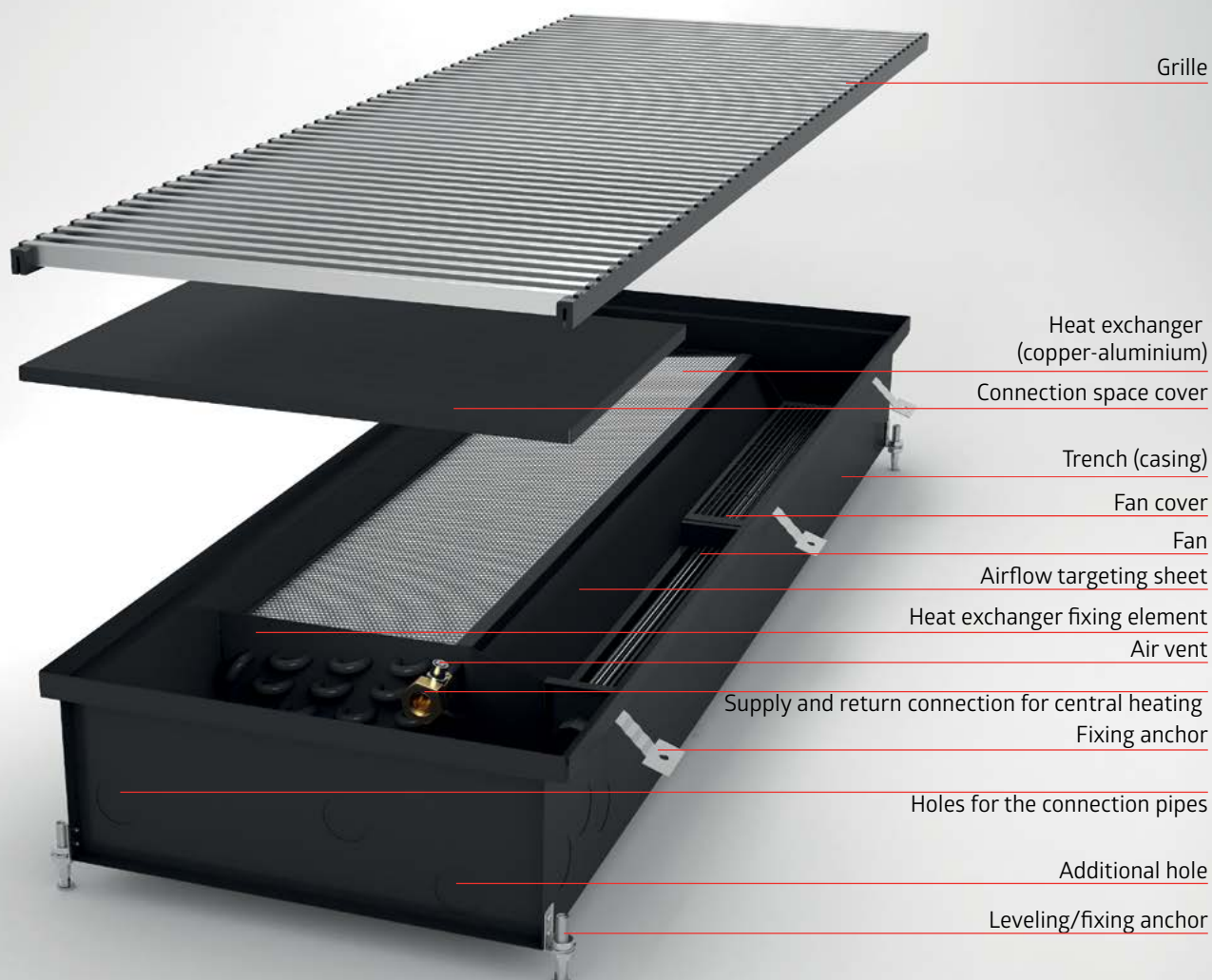
#### STANDARD equipment:

- trench (casing) made of hot-dip galvanized steel sheet with zinc magnesium coating, powder painted in black RAL 9005,
- high effective copper and aluminium heat exchanger with air vent,
- 24 V DC fan with EC motor,
- fixing anchors and leveling/fixing anchors,
- connection space cover,
- fan cover,
- water connection 2xIT 3/4"

#### ADDITIONAL equipment:

- trench (casing) painted in any RAL colour,
- drain kit, must be connected to the sewage system,
- decorative frame around the heater casing, type L or F made of natural aluminum, powder coated in RAL, anodized or can be done as wood imitation,
- aesthetic grille made of aluminum (natural, anodized or powder painted in any RAL color) or stainless steel,
- Installation cover to protect against damage during transport and installation.

### Construction of Verano climaconvector

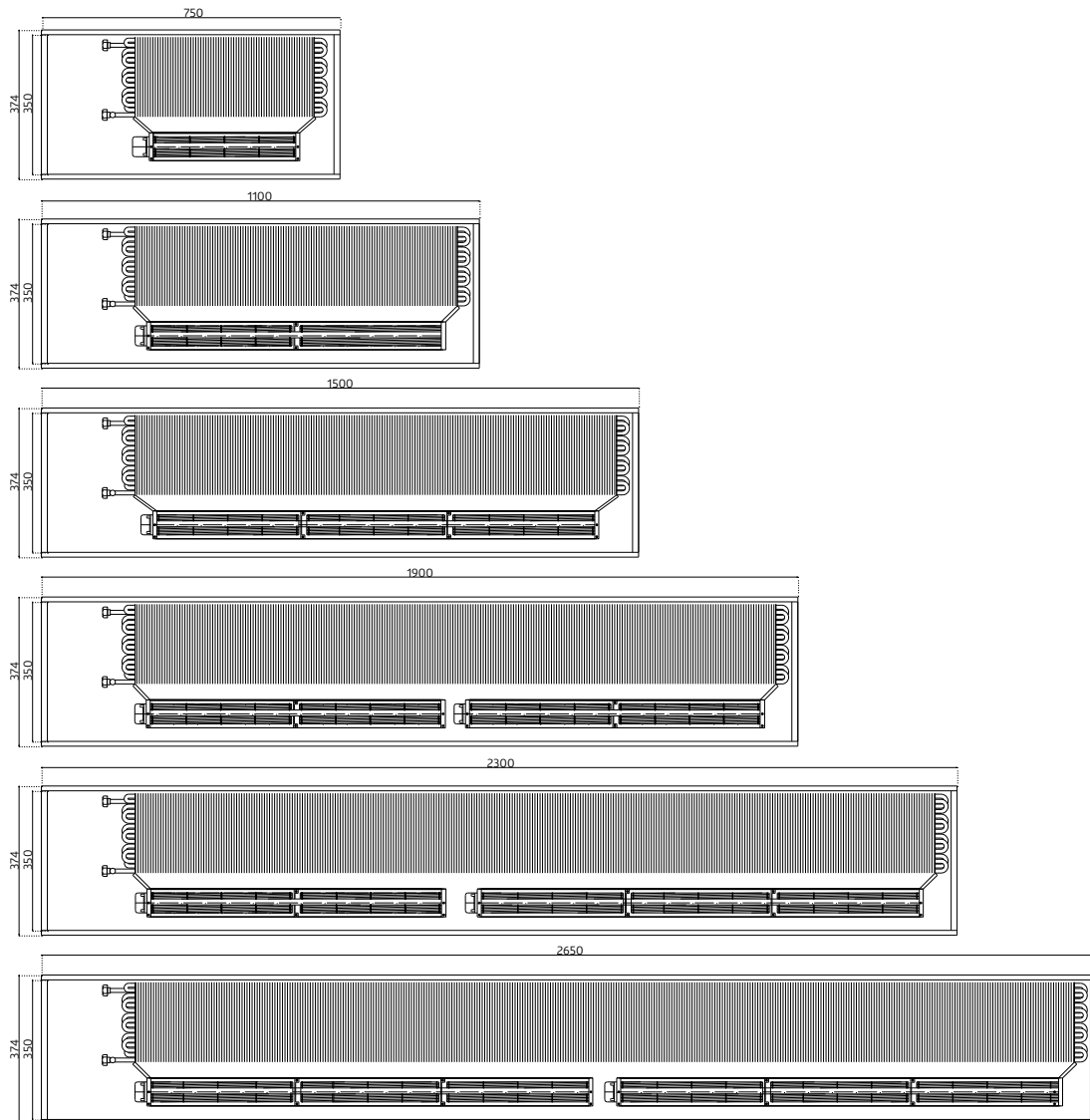




## CVK 2

140 mm height

### Dimensions



### Heating output [W]

Ts/Tr °C	L [mm]																	
	750			1100			1500			1900			2300			2650		
	1°	2°	3°	1°	2°	3°	1°	2°	3°	1°	2°	3°	1°	2°	3°	1°	2°	3°
90/70	1209	1662	2313	2176	2992	4163	3251	4470	6219	4326	5947	8275	5400	7425	10331	6341	8718	12130
<b>75/65</b>	<b>988</b>	<b>1358</b>	<b>1890</b>	<b>1778</b>	<b>2445</b>	<b>3401</b>	<b>2656</b>	<b>3652</b>	<b>5081</b>	<b>3534</b>	<b>4859</b>	<b>6761</b>	<b>4412</b>	<b>6066</b>	<b>8440</b>	<b>5180</b>	<b>7122</b>	<b>9910</b>
70/50	771	1061	1476	1389	1909	2656	2074	2852	3968	2760	3795	5280	3446	4738	6592	4046	5563	7740
55/45	560	770	1071	1008	1386	1929	1506	2071	2881	2004	2755	3833	2502	3440	4786	2937	4038	5619
50/40	457	629	875	823	1132	1575	1230	1691	2353	1636	2250	3130	2043	2809	3908	2398	3298	4588

The standard heat outputs [WAT] according to DIN EN 442-2: 2013 for room air temperature  $T_i = 20^\circ\text{C}$   
 1° corresponds to the control voltage of 4V, 2° corresponds to the control volt 6V, 3° corresponds to the control voltage 10V.

140 mm height

**CVK2-14/35/L-38**

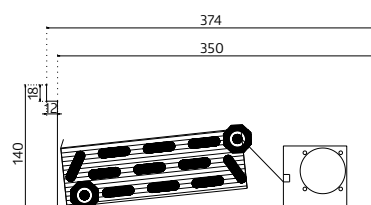
**CVK 2**

DIMENSIONS	UNIT [mm]
Trench height (H)	140
Trench width (W)	350
Grille width (Wg)	374
Trench length (L)	750 ÷ 2650
Fin type	38

END SPACE LENGHT (Les)	UNIT [mm]
CVK2-14/35/075-38	65
Other lenghts of CVK2 (L=110, 150, 190, 230, 265)	55

CONNECTIONS	TYPE
Connection threads	IT 3/4" one-sided
Side connection to be choosen	Standard Right – P, optional Left – L
Fan from the room side	standard

ACCESSORIES	TYPE
Grille H=18 mm	roll-up/linear/modular
Aluminium frame	type L or F
Assembly cover	on request



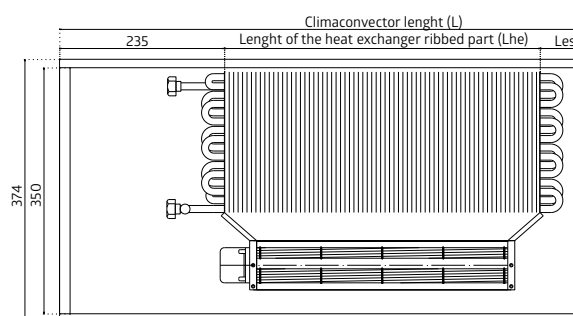
Cross-section of the climaconvector

**Please remember!**

Order Code for climaconvector CVK2 is:

**CVK2-14/35/L-38**

where:  
L - length of the trench [mm]



Technical top-view of climaconvector type CVK2-14/35/L-38

**Cooling output [W]**

Ts/Tr °C	L [mm]														
	750			1100			1500			1900			2300		
	1°	2°	3°	1°	2°	3°	1°	2°	3°	1°	2°	3°	1°	2°	3°
14/18/28	159	255	448	286	458	807	427	685	1205	568	911	1604	709	1137	2002
16/18/26	128	205	360	230	368	649	343	550	969	456	732	1289	570	914	1610
17/19/28	138	222	390	249	399	703	371	596	1050	494	793	1397	617	990	1744
19/21/28	117	187	329	210	337	593	313	503	886	417	669	1179	521	836	1471

Cooling output [W] - 1° corresponds to the control voltage of 4.5V, 2° corresponds to the control volt 7V, 3° corresponds to the control voltage 10V

## CVK 2

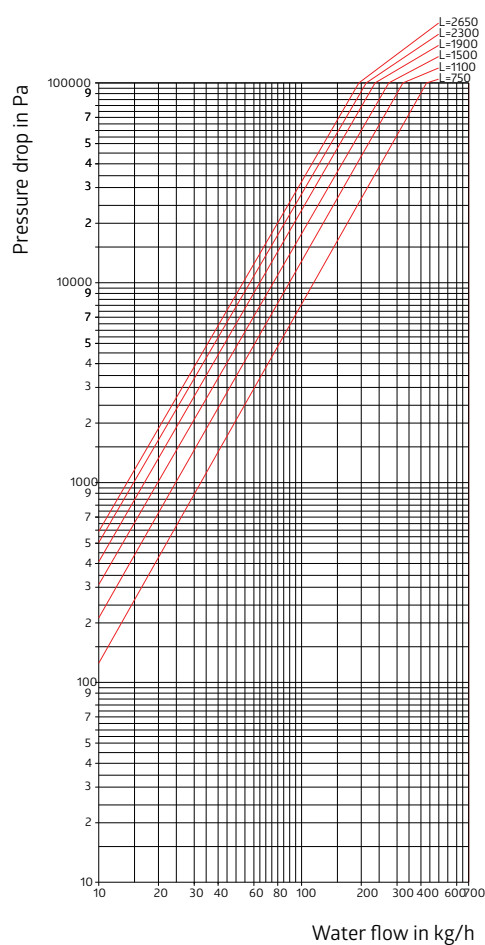
140 mm height

### Power and current

Climaconvector type	Climaconvector length [mm]					
	750	1100	1500	1900	2300	2650
Number of fan	1	2	3	4	5	6
Number of fan motors	1	1	1	2	2	2
Fan voltage [VDC]	24	24	24	24	24	24
Maximum current [A]	0,45	1,00	1,10	2,00	2,10	2,20
Maximum power consumption of the EC fan [W]	10,8	24,0	26,4	48,0	50,4	52,8

### Pressure losses [Pa]

### Water capacity [dm<sup>3</sup>]



Climaconvector	Climaconvector length [mm]					
	750	1100	1500	1900	2300	2650
CVK2-14/35/L-38	0,79	1,35	1,97	2,60	3,22	3,77

The maximum allowable working pressure of 1.0 MPa  
The test pressure of 1.3 MPa  
Maximum operating temperature: 110°C

140 mm height

CVK 2

## Correction factors of heating outputs

Correction factors of heating outputs for climaconvector type CVK2-14/35/L-38 for parameters other than 75/65/20°C

Heating medium temperature [°C]		Room air temperature Ti [°C]						
Ts	Tr	5	8	12	16	20	24	32
90	85	1,744	1,673	1,580	1,488	1,395	1,304	1,123
	80	1,685	1,615	1,522	1,430	1,338	1,247	1,067
	75	1,627	1,557	1,464	1,373	1,281	1,190	1,011
	70	1,569	1,499	1,407	1,315	1,224	1,134	0,956
85	80	1,627	1,557	1,464	1,373	1,281	1,190	1,011
	75	1,569	1,499	1,407	1,315	1,224	1,134	0,956
	70	1,511	1,441	1,350	1,258	1,168	1,078	0,901
	65	1,453	1,384	1,293	1,202	1,112	1,022	0,846
80	75	1,511	1,441	1,350	1,258	1,168	1,078	0,901
	70	1,453	1,384	1,293	1,202	1,112	1,022	0,846
	65	1,395	1,327	1,236	1,145	1,056	0,967	0,791
	60	1,338	1,270	1,179	1,089	1,000	0,912	0,737
75	70	1,395	1,327	1,236	1,145	1,056	0,967	0,791
	65	1,338	1,270	1,179	1,089	1,000	0,912	0,737
	60	1,281	1,213	1,123	1,033	0,945	0,857	0,684
	55	1,224	1,157	1,067	0,978	0,890	0,802	0,630
70	65	1,281	1,213	1,123	1,033	0,945	0,857	0,684
	60	1,224	1,157	1,067	0,978	0,890	0,802	0,630
	55	1,168	1,100	1,011	0,923	0,835	0,748	0,578
	50	1,112	1,045	0,956	0,868	0,781	0,694	0,525
65	60	1,168	1,100	1,011	0,923	0,835	0,748	0,578
	55	1,112	1,045	0,956	0,868	0,781	0,694	0,525
	50	1,056	0,989	0,901	0,813	0,727	0,641	0,473
	45	1,000	0,934	0,846	0,759	0,673	0,588	0,422
60	55	1,056	0,989	0,901	0,813	0,727	0,641	0,473
	50	1,000	0,934	0,846	0,759	0,673	0,588	0,422
	45	0,945	0,879	0,791	0,705	0,620	0,536	0,372
	40	0,890	0,824	0,737	0,652	0,567	0,484	0,322
55	50	0,945	0,879	0,791	0,705	0,620	0,536	0,372
	45	0,890	0,824	0,737	0,652	0,567	0,484	0,322
	40	0,835	0,770	0,684	0,599	0,515	0,432	0,272
	35	0,781	0,716	0,630	0,546	0,463	0,382	0,224
50	45	0,835	0,770	0,684	0,599	0,515	0,432	0,272
	40	0,781	0,716	0,630	0,546	0,463	0,382	0,224
	35	0,727	0,662	0,578	0,494	0,412	0,332	0,177
45	40	0,727	0,662	0,578	0,494	0,412	0,332	0,177
	35	0,673	0,609	0,525	0,443	0,362	0,282	0,131
35	30	0,515	0,453	0,372	0,292	0,215	0,140	0,006

## CVK 2

140 mm height

### Correction factors of cooling outputs

Correction factors of cooling outputs for climaconvector type CVK2-14/35/L-38 for parameters other than 19/21/28°C

Cooling medium temperature [°C]		Room air temperature Ti [°C]			
Ts	Tr	26	28	30	32
12	13	1,488	1,652	1,812	1,967
	14	1,446	1,612	1,773	1,929
	15	1,403	1,571	1,733	1,890
	16	1,361	1,530	1,693	1,851
	17	1,317	1,488	1,652	1,812
	18	1,274	1,446	1,612	1,773
13	14	1,403	1,571	1,733	1,890
	15	1,361	1,530	1,693	1,851
	16	1,317	1,488	1,652	1,812
	17	1,274	1,446	1,612	1,773
	18	1,229	1,403	1,571	1,733
14	15	1,317	1,488	1,652	1,812
	16	1,274	1,446	1,612	1,773
	17	1,229	1,403	1,571	1,733
	18	1,185	1,361	1,530	1,693
16	17	1,139	1,317	1,488	1,652
	18	1,094	1,274	1,446	1,612
	19	1,047	1,229	1,403	1,571
	20	1,000	1,185	1,361	1,530
17	18	1,047	1,229	1,403	1,571
	19	1,000	1,185	1,361	1,530
	20	0,952	1,139	1,317	1,488
	21	0,904	1,094	1,274	1,446
18	19	0,952	1,139	1,317	1,488
	20	0,904	1,094	1,274	1,446
	21	0,854	1,047	1,229	1,403
	22	0,804	1,000	1,185	1,361
19	20	0,854	1,047	1,229	1,403
	21	0,804	1,000	1,185	1,361
	22	0,752	0,952	1,139	1,317
	23	0,700	0,904	1,094	1,274

### Sound power and pressure level [dB]

Due to the low sound pressure levels compared to the background measurement - value <20 dB, which is out of the hearing values range, are not shown in the table.

Due to the low sound power levels compared to the background measurement - value <28dB, which is out of the hearing values range, are not shown in the table.

	Control voltage U[V]	Climaconvector length					
		750	1100	1500	1900	2300	2650
Sound pressure level Lp (A) [dB]	2	-	-	-	22	22	22
	4	25	25	25	28	28	28
	6	32	31	31	34	34	34
	8	38	38	38	41	41	41
	10	44	44	44	47	47	47
Sound power level Lw (A) [dB]	2	-	-	-	30	30	30
	4	33	33	33	36	36	36
	6	40	39	39	42	42	42
	8	46	46	46	49	49	49
	10	52	52	52	55	55	55

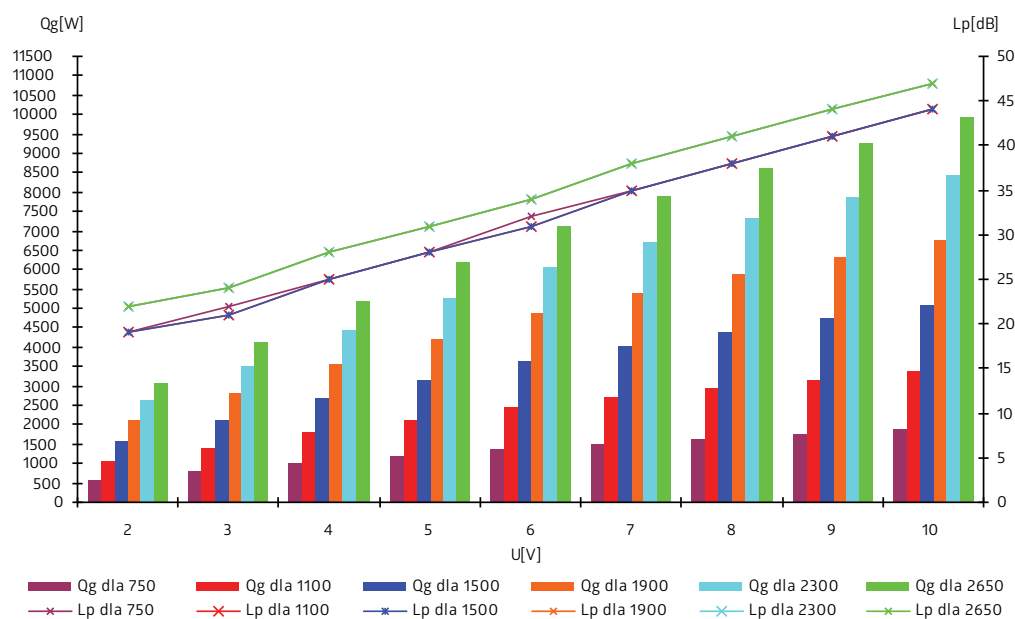


140 mm height

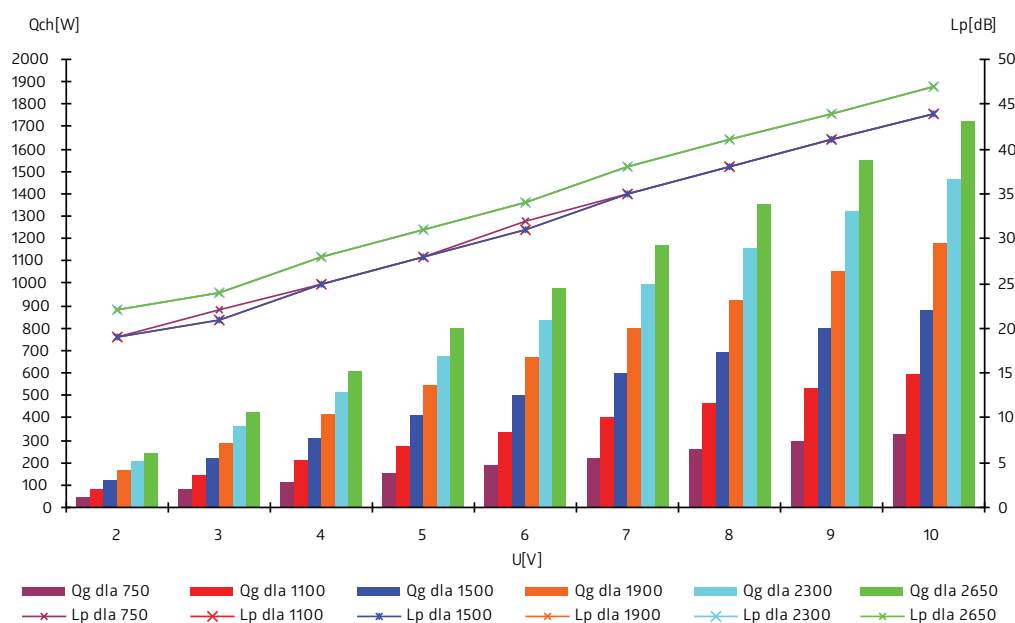
CVK 2

## Heating and cooling output and sound pressure.

Please note! Example of the calculation of the heater output and sound pressure (for TURBO VKN5 and CVK) for various values of the voltage is located on page 71



Changes of the heater output  $Q$  [W] and the sound pressure level  $L_p$  [dB] as a function of control voltage  $U$  [V] for the climaconvector type CVK2-14/35/L-38 for  $T_s/T_r/T_i=75/65/20$



Changes of the cooling output  $Q$  [W] and the sound pressure level  $L_p$  [dB] as a function of control voltage  $U$  [V] for the climaconvector type CVK2-14/35/L-38 for  $T_s/T_r/T_i=19/21/28$



140 mm height

CVK 4

## 4-pipe Climaconvector type CVK4-14/35/L-38

### The equipment of Verano climaconvector

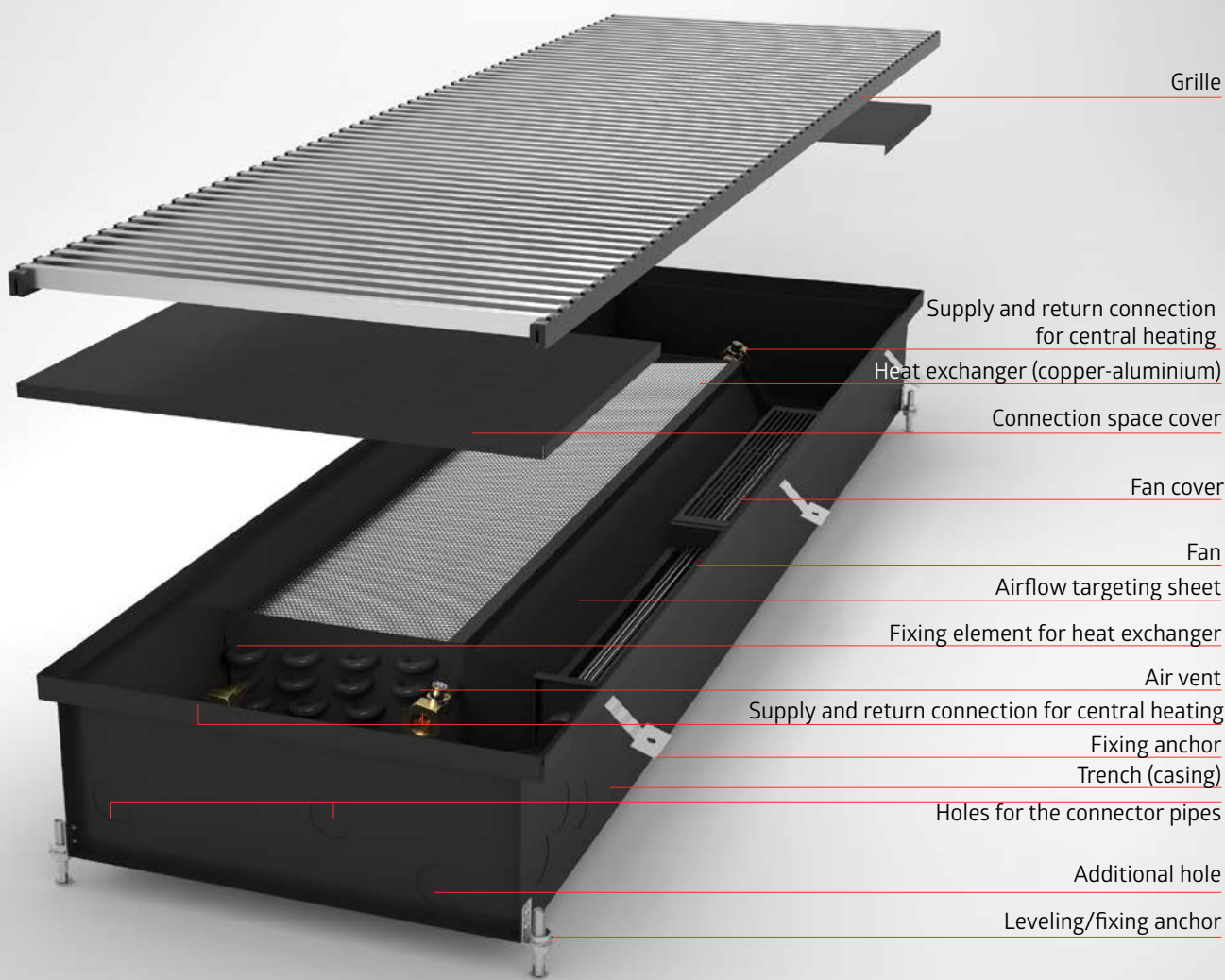
#### STANDARD equipment:

- trench (casing) made of hot-dip galvanized steel sheet with zinc magnesium coating, powder painted in black RAL 9005,
- high effective copper and aluminium heat exchanger with air vent,
- 24 V DC fan with EC motor,
- fixing anchors and leveling/fixing anchors,
- connection space cover,
- fan cover,
- water connection 4xIT 3/4".

#### Additional equipment:

- trench (casing) painted in any RAL colour,
- drain kit, must be connected to the sewage system,
- decorative frame around the heater casing, type L or F made of natural aluminum, powder coated in RAL, anodized or can be done as wood imitation,
- aesthetic grille made of aluminum (natural, anodized or powder painted in any RAL color) or stainless steel,
- Installation cover to protect against damage during transport and installation.

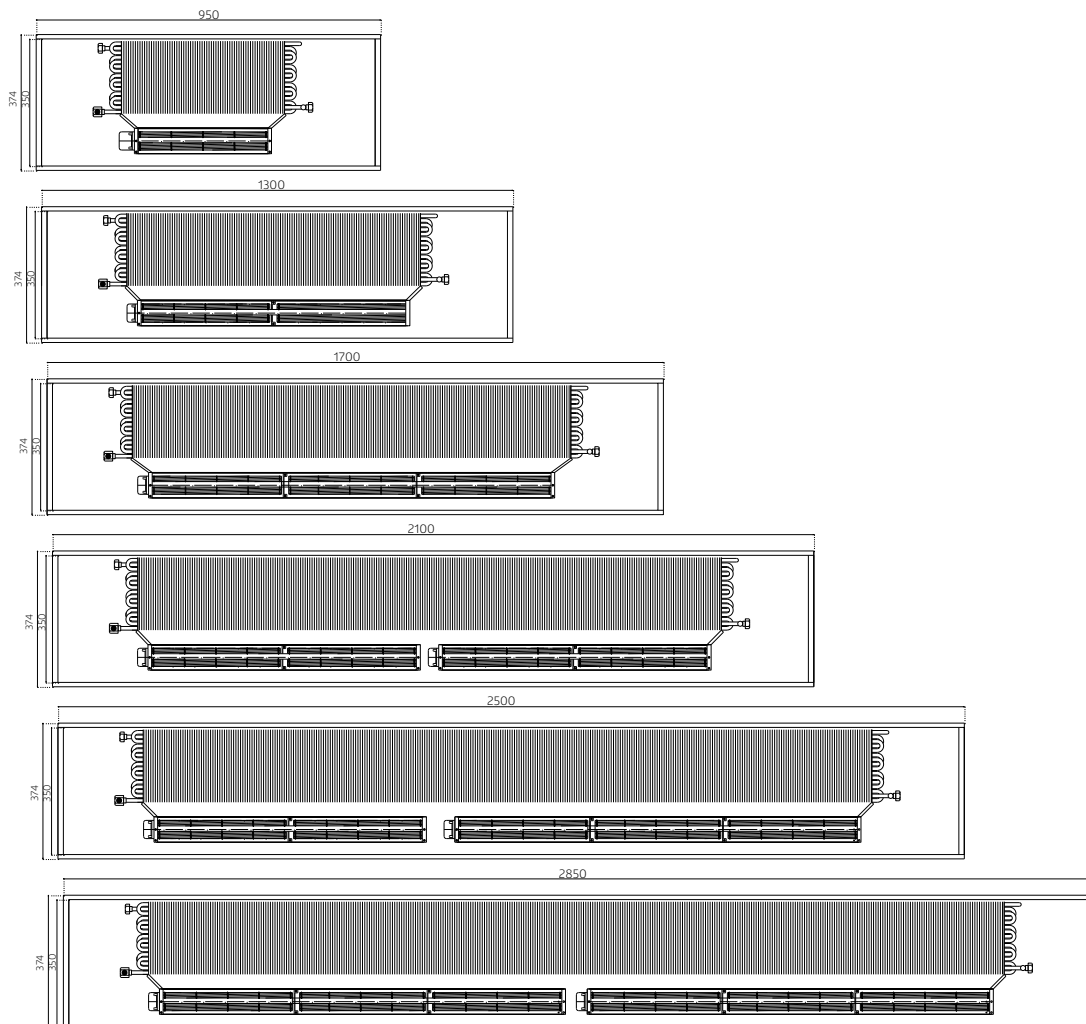
### Construction of Verano climaconvector



## CVK 4

140 mm height

### Dimensions



### Heating output [W]

Ts/Tr °C	L [mm]																	
	950			1300			1700			2100			2500			2850		
	1°	2°	3°	1°	2°	3°	1°	2°	3°	1°	2°	3°	1°	2°	3°	1°	2°	3°
90/70	1242	1906	2719	2235	3431	4895	3339	5126	7312	4443	6821	9730	5547	8515	12147	6512	9998	14262
<b>75/65</b>	<b>1007</b>	<b>1546</b>	<b>2206</b>	<b>1813</b>	<b>2783</b>	<b>3970</b>	<b>2708</b>	<b>4157</b>	<b>5930</b>	<b>3603</b>	<b>5532</b>	<b>7891</b>	<b>4498</b>	<b>6906</b>	<b>9851</b>	<b>5282</b>	<b>8108</b>	<b>11567</b>
70/50	836	1283	1831	1505	2310	3295	2248	3451	4922	2991	4591	6549	3734	5732	8177	4384	6730	9600
55/45	560	860	1226	1008	1547	2207	1506	2311	3297	2003	3076	4387	2501	3840	5477	2937	4508	6431
50/40	454	697	995	818	1255	1790	1221	1875	2675	1625	2495	3559	2029	3115	4443	2382	3657	5217

The standard heat outputs [WAT] according to DIN EN 442-2: 2013 for room air temperature  $T_i = 20^\circ\text{C}$   
 1° corresponds to the control voltage of 4V, 2° corresponds to the control volt 6V, 3° corresponds to the control voltage 10V.

140 mm heigh

**CVK4-14/35/L-38**

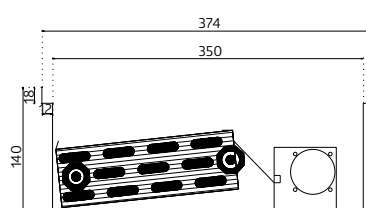
## CVK 4

DIMENSIONS	UNIT [mm]
Trench height (H)	140
Trench width (W)	350
Grille width (Wg)	374
Trench length (L)	950 ÷ 2850
Fin type	38

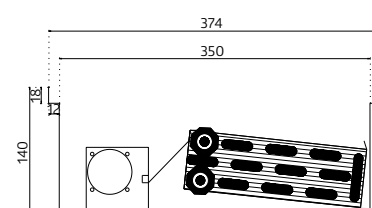
END SPACE LENGHT (Les)	UNIT [mm]
CVK4-14/35/095-38	265
Other lenghts (L=110, 150, 190, 230, 265)	255

CONNECTIONS	TYPE
Connection threads	IT 3/4" double-sided
Heating – left side Cooling – right side	standard
Fan from the room side	standard

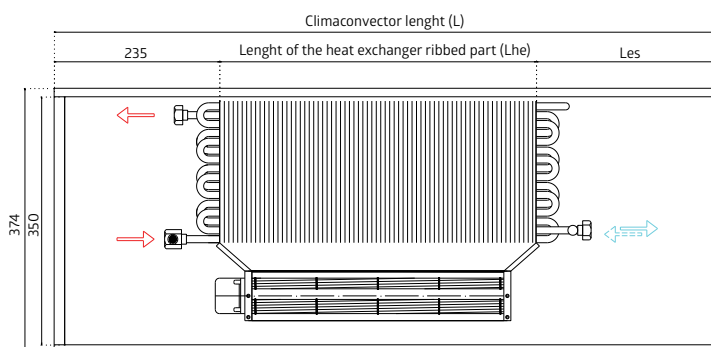
ACCESORIES	TYPE
Grille	Roll-up/linear/modular
Aluminium frame	L or F
Assembly cover	on request



Cross-section of the climaconvector  
HEATING



Cross-section of the climaconvector  
COOLING



Technical top-view of climaconvector type CVK4-14/35/L-38

Cooling output [W]

Ts/Tr °C	L [mm]																	
	950			1300			1700			2100			2500			2850		
	1°	2°	3°	1°	2°	3°	1°	2°	3°	1°	2°	3°	1°	2°	3°	1°	2°	3°
14/18/28	133	215	352	239	387	634	357	578	947	475	769	1260	593	960	1573	696	1127	1847
16/18/26	109	176	288	196	317	519	292	473	775	389	629	1031	485	786	1287	570	922	1511
17/19/28	117	189	310	211	341	558	314	509	834	418	677	1110	522	846	1385	613	993	1627
19/21/28	<b>100</b>	<b>162</b>	<b>266</b>	<b>180</b>	<b>292</b>	<b>478</b>	<b>269</b>	<b>436</b>	<b>714</b>	<b>358</b>	<b>580</b>	<b>950</b>	<b>447</b>	<b>724</b>	<b>1186</b>	<b>525</b>	<b>850</b>	<b>1393</b>

Cooling power [W] - 1° corresponds to the control voltage of 4, 2° corresponds to the control volt 6V, 3° corresponds to the control voltage 10V



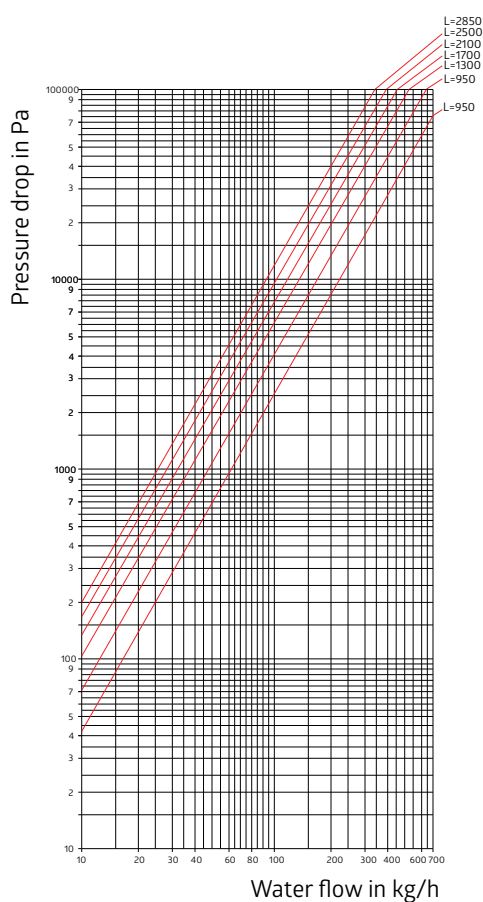
## CVK 4

140 mm height

### Power and current

Climaconvector type		Climaconvector lenght [mm]					
		950	1300	1700	2100	2500	2850
CVK4-14/35/L-38	Number of fan	1	2	3	4	5	6
	Number of fan motors	1	1	1	2	2	2
	Fan voltage [VDC]	24	24	24	24	24	24
	Maximum current [A]	0,45	1,00	1,10	2,00	2,10	2,20
	Maximum power consumption of the EC fan [W]	10,8	24,0	26,4	48,0	50,4	52,8

### Pressure losses [Pa]



### Water capacity [dm<sup>3</sup>]

Climaconvector	Climaconvector lenght [mm]					
	950	1300	1700	2100	2500	2850
Heating	0,26	0,45	0,66	0,87	1,07	1,26
Cooling	0,53	0,90	1,32	1,73	2,15	2,51

The maximum allowable working pressure of 1.0 MPa  
The test pressure of 1.3 MPa  
Maximum operating temperature: 110°C

140 mm height

CVK 4

## Correction factors of heating outputs

Correction factors of heating outputs for climaconvector type CVK4-14/35/L-38 for parameters other than 75/65/20°C

Heating medium temperature [°C]		Heating medium temperature [°C]						
Ts	Tr	5	8	12	16	20	24	32
90	85	1,778	1,704	1,606	1,508	1,412	1,316	1,127
	80	1,716	1,643	1,545	1,448	1,352	1,257	1,069
	75	1,655	1,581	1,484	1,388	1,292	1,198	1,012
	70	1,594	1,521	1,424	1,328	1,233	1,139	0,954
85	80	1,655	1,581	1,484	1,388	1,292	1,198	1,012
	75	1,594	1,521	1,424	1,328	1,233	1,139	0,954
	70	1,533	1,460	1,364	1,269	1,174	1,081	0,897
	65	1,472	1,400	1,304	1,210	1,116	1,023	0,841
80	75	1,533	1,460	1,364	1,269	1,174	1,081	0,897
	70	1,472	1,400	1,304	1,210	1,116	1,023	0,841
	65	1,412	1,340	1,245	1,151	1,058	0,966	0,785
	60	1,352	1,280	1,186	1,092	1,000	0,909	0,729
75	70	1,412	1,340	1,245	1,151	1,058	0,966	0,785
	65	1,352	1,280	1,186	1,092	1,000	0,909	0,729
	60	1,292	1,221	1,127	1,035	0,943	0,852	0,675
	55	1,233	1,163	1,069	0,977	0,886	0,796	0,620
70	65	1,292	1,221	1,127	1,035	0,943	0,852	0,675
	60	1,233	1,163	1,069	0,977	0,886	0,796	0,620
	55	1,174	1,104	1,012	0,920	0,830	0,741	0,567
	50	1,116	1,046	0,954	0,863	0,774	0,686	0,514
65	60	1,174	1,104	1,012	0,920	0,830	0,741	0,567
	55	1,116	1,046	0,954	0,863	0,774	0,686	0,514
	50	1,058	0,989	0,897	0,807	0,718	0,631	0,461
	45	1,000	0,931	0,841	0,752	0,664	0,577	0,410
60	55	1,058	0,989	0,897	0,807	0,718	0,631	0,461
	50	1,000	0,931	0,841	0,752	0,664	0,577	0,410
	45	0,943	0,875	0,785	0,696	0,609	0,524	0,359
	40	0,886	0,818	0,729	0,642	0,556	0,472	0,309
55	50	0,943	0,875	0,785	0,696	0,609	0,524	0,359
	45	0,886	0,818	0,729	0,642	0,556	0,472	0,309
	40	0,830	0,763	0,675	0,588	0,503	0,420	0,260
	35	0,774	0,707	0,620	0,535	0,451	0,369	0,213
50	45	0,830	0,763	0,675	0,588	0,503	0,420	0,260
	40	0,774	0,707	0,620	0,535	0,451	0,369	0,213
	35	0,718	0,653	0,567	0,482	0,399	0,319	0,166
45	40	0,718	0,653	0,567	0,482	0,399	0,319	0,166
	35	0,664	0,599	0,514	0,430	0,349	0,270	0,122
35	30	0,503	0,440	0,359	0,280	0,203	0,130	0,005

## CVK 4

140 mm height

### Correction factors of cooling outputs

Correction factors of cooling outputs for climaconvector type CVK4-14/35/L-38 for parameters other than 19/21/28°C

Heating medium temperature [°C]		Room air temperature Ti [°C]			
Ts [°C]	Tr [°C]	26	28	30	32
12	13	1,440	1,585	1,725	1,860
	14	1,402	1,549	1,690	1,826
	15	1,364	1,513	1,655	1,793
	16	1,326	1,476	1,620	1,759
	17	1,287	1,440	1,585	1,725
	18	1,248	1,402	1,549	1,690
13	14	1,364	1,513	1,655	1,793
	15	1,326	1,476	1,620	1,759
	16	1,287	1,440	1,585	1,725
	17	1,248	1,402	1,549	1,690
	18	1,208	1,364	1,513	1,655
14	15	1,287	1,440	1,585	1,725
	16	1,248	1,402	1,549	1,690
	17	1,208	1,364	1,513	1,655
	18	1,168	1,326	1,476	1,620
16	17	1,127	1,287	1,440	1,585
	18	1,085	1,248	1,402	1,549
	19	1,043	1,208	1,364	1,513
	20	1,000	1,168	1,326	1,476
17	18	1,043	1,208	1,364	1,513
	19	1,000	1,168	1,326	1,476
	20	0,956	1,127	1,287	1,440
	21	0,911	1,085	1,248	1,402
18	19	0,956	1,127	1,287	1,440
	20	0,911	1,085	1,248	1,402
	21	0,865	1,043	1,208	1,364
	22	0,818	<b>1,000</b>	1,168	1,326
19	20	0,865	1,043	1,208	1,364
	21	0,818	1,000	1,168	1,326
	22	0,770	0,956	1,127	1,287
	23	0,721	0,911	1,085	1,248

140 mm height

CVK 4

### Sound power and pressure level [dB]

	Control voltage U[V]	Climaconvector lenght [mm]					
		950	1300	1700	2100	2500	2850
Sound pressure level $L_p$ (A) [dB]	2	-	-	-	22	22	22
	4	25	25	25	28	28	28
	6	32	31	31	34	34	34
	8	38	38	38	41	41	41
	10	44	44	44	47	47	47
Sound power level $L_w$ (A) [dB]	2	-	-	-	30	30	30
	4	33	33	33	36	36	36
	6	40	39	39	42	42	42
	8	46	46	46	49	49	49
	10	52	52	52	55	55	55

Due to the low sound pressure levels compared to the background measurement - value <20 dB, which is out of the hearing values range, are not shown in the table.

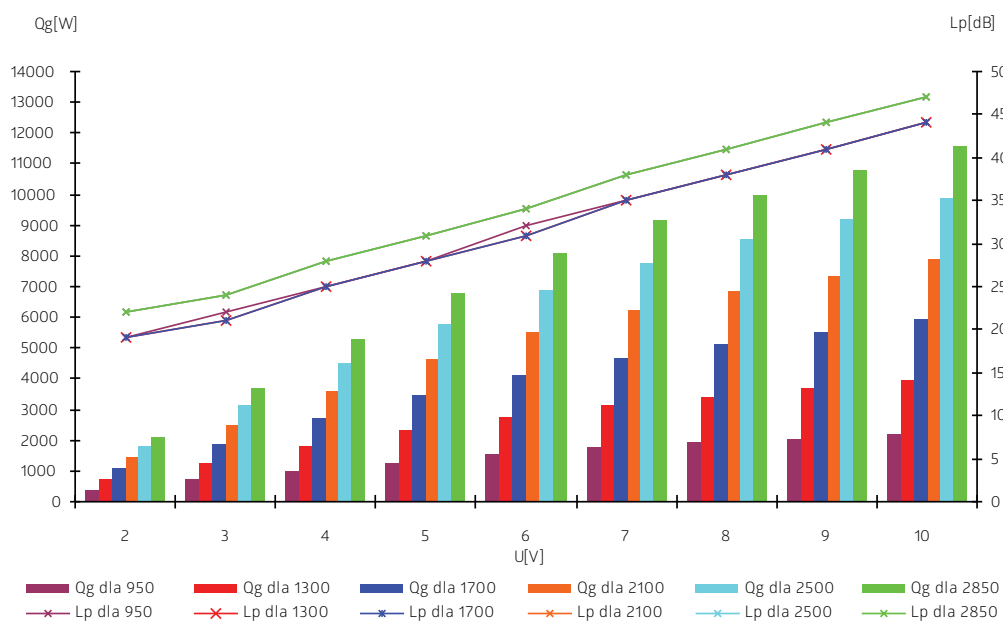
Due to the low sound power levels compared to the background measurement - value <28dB, which is out of the hearing values range, are not shown in the table.

## CVK 4

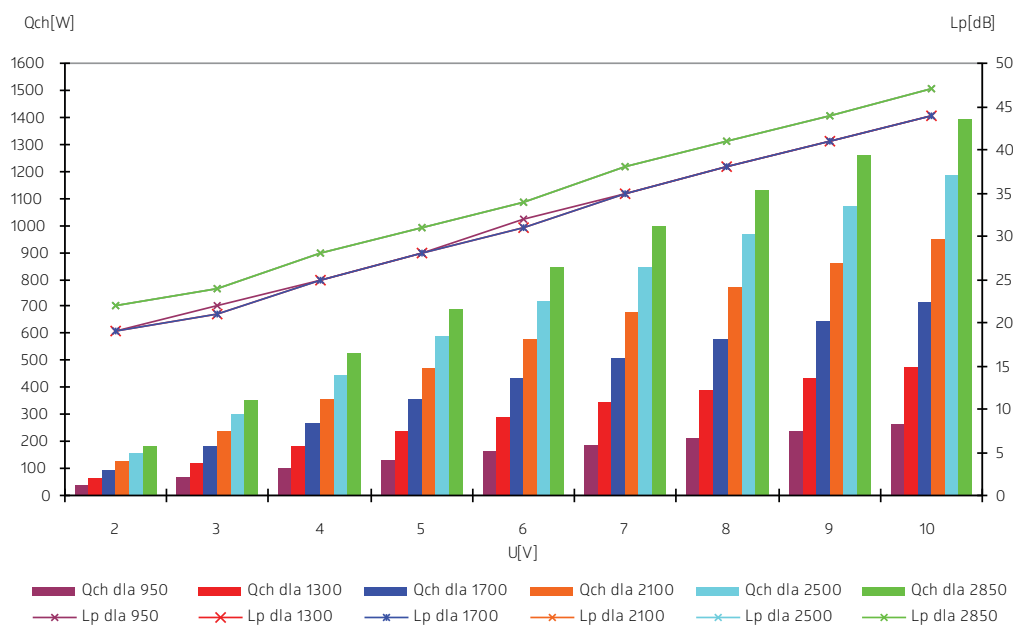
140 mm height

### Heating and cooling output and sound pressure

Please note! Example of the calculation of the heater output and sound pressure (for TURBO VKN5 and CVK) for various values of the voltage is located on page 71



Changes of the heater output  $Q$  [W] and the sound pressure level  $L_p$  [dB] as a function of control voltage  $U$  [V] for the climaconvector type CVK4-14/35/L-38 for  $T_s/T_r/T_i=75/65/20$

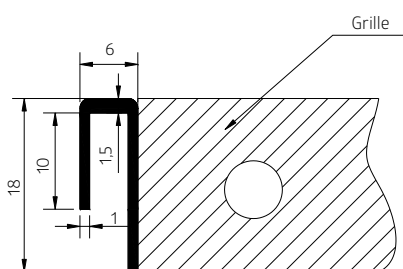


Changes of the cooling output  $Q$  [W] and the sound pressure level  $L_p$  [dB] as a function of control voltage  $U$  [V] for the climaconvector type CVK4-14/35/L-38 for  $T_s/T_r/T_i=19/21/28$

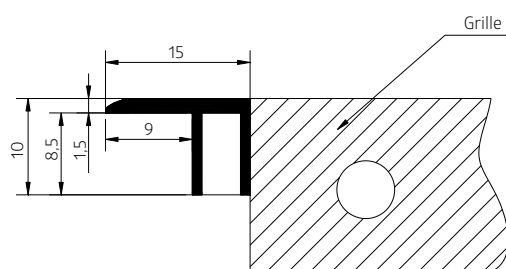


## Frame for trench heaters and climaconvectors

### Frame details



Frame type L

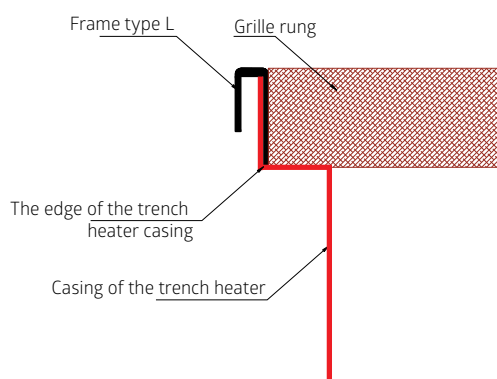


Frame type F

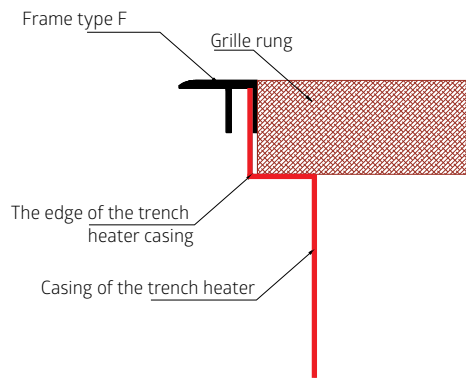
### Frame assembly instruction

Aluminium frame type L is a decorative element, and type F apart of the decorative function is also as a masking element which can cover the space between the floor and the duct of the trench heater.

The frame F is supplied as a cut off elements for self-assembly. Assembly of the frame type F must be done by using a silicone glue. The manufacturer is not liable for problems associated with frame assembling for trench casing deformation caused by the improper installation of the heater..



Frame type L



Frame type F

## FRAME

### Grilles for trench heaters and climaconvectors

#### Roll-up wooden grille

The grille is made of natural wood

Standard:

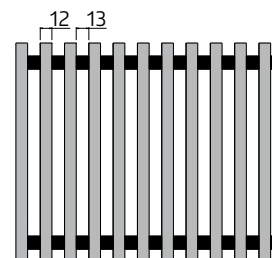
Spacings (sleeves) between the rungs are made of black PVC.

Option:

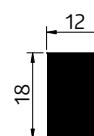
- Spacings (sleeves) are also available in colors:
  - gray WG-15
  - beige W8-29
  - light brown RAL 8256
  - dark brown RAL 8352
- wooden spacing (beech unvarnished, L = 17 mm)

The grille is only available in a roll-up version.

The maximum length of one grille section is 6000 mm



Top view



Cross-section of a wooden rung

Type of the grille	Name of the grille	Order code
Roll-up wooden grille	Roll-up oak grille	ZD-1,8/W/L
	Roll-up ash grille	ZJ-1,8/W/L
	Roll-up beech grille	ZB-1,8/W/L
	Roll-up merbau grille	ZM-1,8/W/L
	Roll-up jatoba grille	ZJB-1,8/W/L

#### Roll-up aluminium grille

The grille is made of aluminium - profile closed

The grille options:

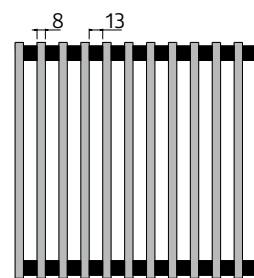
- natural aluminium
- aluminium painted in RAL
- anodized aluminium
- aluminium - wood imitation (profile closed only)

Standard:

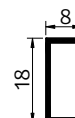
Spacings (sleeves) between rungs as a standard are made of black PVC.

Opcja:

- Spacings (sleeves) are also available in colors:
  - gray WG-15
  - beige W8-29
  - light brown RAL 8256
  - dark brown RAL 8352



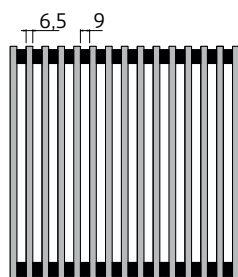
Top view



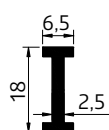
Cross-section of aluminium grille - profile closed

Type of the grille	Name of the grille	Order code
Roll-up aluminium grille - profile closed	Roll-up natural aluminium grille - profile closed	ZAL-1,8/W/L
	Roll-up painted in RAL aluminium grille - profile closed	ZRAL-1,8/W/L
	Roll-up anodized aluminium grille - profile closed	ZAAL-1,8/W/L
	Roll-up wood imitation aluminium grille - profile closed	ZIAL-1,8/W/L

## FRAME



Top view



Cross-section of grille  
- I-beam profile

### Roll-up aluminium grille – I-beam profile

The grille is made of aluminium – I-beam profile

The grille options:

- natural aluminium
- aluminium painted in RAL
- anodized aluminium

Standard:

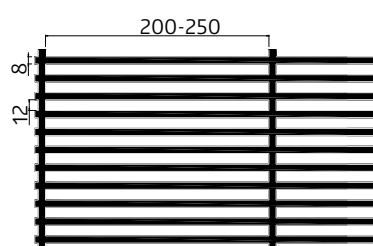
Spacings (sleeves) between rungs as a standard are made of black PVC.

Option:

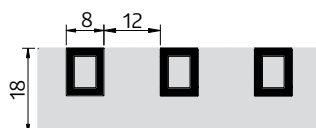
- Spacings (sleeves) are also available in colors:
  - gray WG-15
  - beige W8-29
  - light brown RAL 8256
  - dark brown RAL 8352



Type of the grille	Name of the grille	Order code
Roll-up aluminium grille – I-beam profile	Roll-up natural aluminium grille – I-beam profile	ZDW-1,8/W/L
	Roll-up painted in RAL aluminium grille – I-beam profile	ZRDW-1,8/W/L
	Roll-up anodized aluminium grille – I-beam profile	ZADW-1,8/W/L



Top view



Cross-section of linear grille  
painted in RAL

### Linear aluminium grille

The grille is made of aluminium – profile closed.

The grill is made in total of aluminium.

**The grille is only available in RAL colours.**

Standard colour is black RAL 9005.



Type of the grille	Name of the grille	Order code
Linear grille	Linear painted in RAL aluminium grille – profile closed	ALWR-1,8/W/L

## FRAME

### Modular aluminium grille

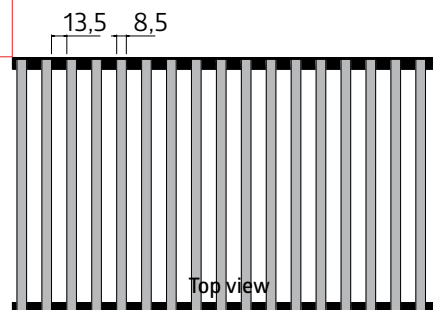
The grille is made of aluminium.

The grille options:

- natural aluminium
- aluminium painted in RAL
- anodized aluminium
- aluminium - wood imitation

Spacings (rung fasteners) are made of black plastic.

The length of single module is 440 mm.



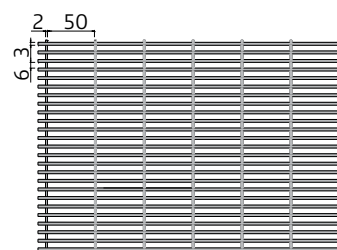
Type of the grille	Name of the grille	Order code
Modular aluminium grille – profile closed	Modular natural aluminium grille – profile closed	MAL-1,8/W/L
	Modular painted in RAL aluminium grille – profile closed	MRAL-1,8/W/L
	Modular anodized aluminium grille – profile closed	MAAL-1,8/W/L
	Modular wood imitation aluminium grille – profile closed	MIAL-1,8/W/L

### Linear stainless steel grille

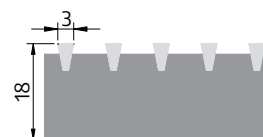
The grille is available only as a rigid version.

The maximum length of one section of the grille is 2000 mm.

Grille length longer than 2000mm are made of several elements of equal lengths.



Top view



Cross-section of stainless steel grille

Type of the grille	Name of the grille	Order code
Stainless steel grille	Linear stainless steel grille	SN-1,8/W/L



## FRAME

### Wooden grille



Oak



Ash



Beech



Merbau



Jatoba

### Wood imitation aluminium grille



Cherry  
WDWIS01



Pine  
WDSN01



Beech  
WDBK01



Bog Oak  
WDDB01



Golden oak  
WDZD01



Walnut  
WDOR01

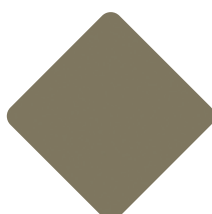


Mahogany  
WDMH01

### Anodized aluminium grille



Satin 01



Medium Brown 02



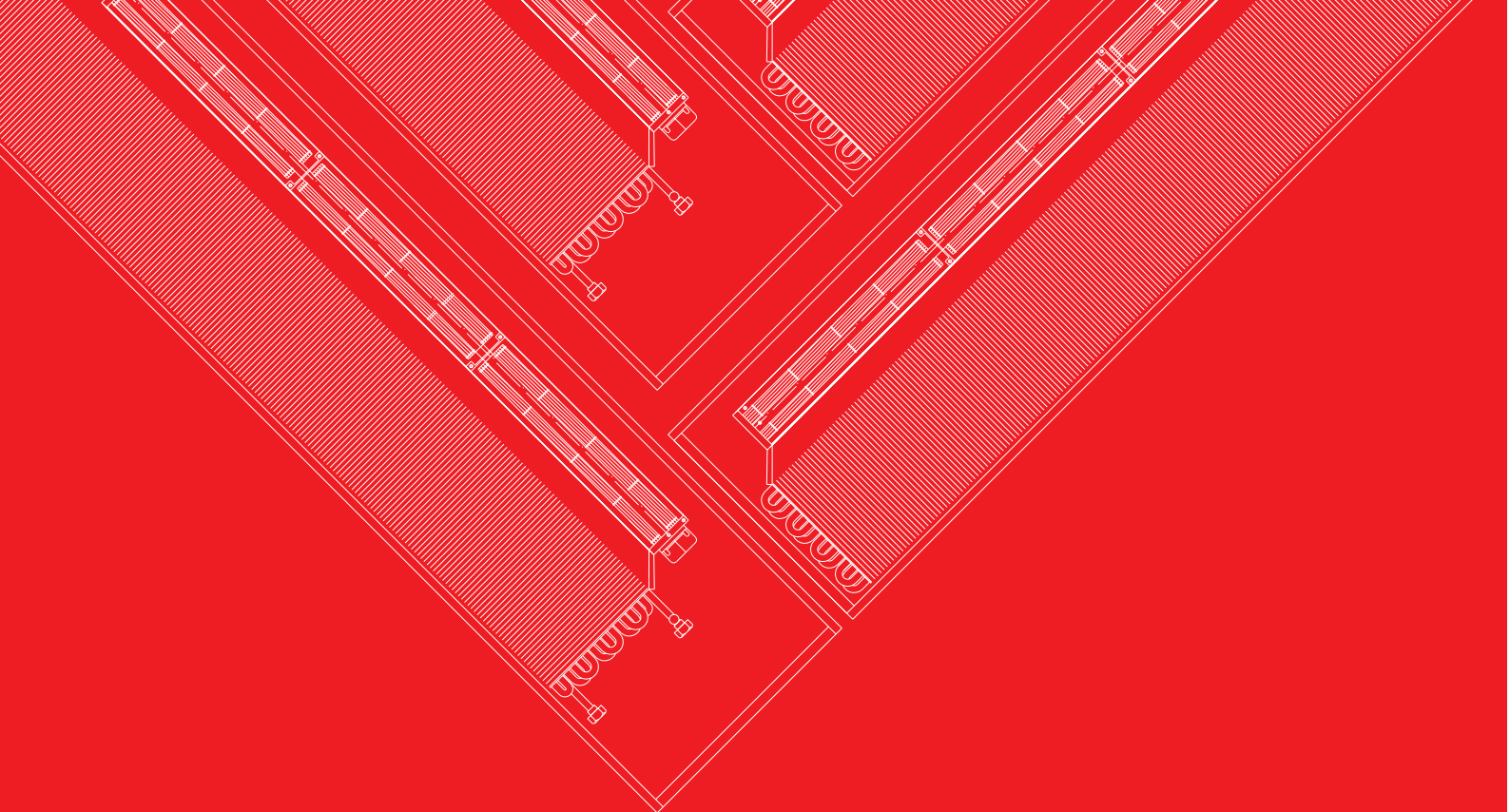
Black 05



Stainless steel 07



Gold 00



MDL SOLUTIONS  
NATIONAL DISTRIBUTOR  
**CANADA/ USA**

2275 UPPER MIDDLE RD, E  
OAKVILLE, ONTARIO  
**CANADA L6H 203**  
TEL: 289 799-3414;  
EMAIL: [GENERAL@MDLSOLN.COM](mailto:GENERAL@MDLSOLN.COM)



[www.mdlsoln.com](http://www.mdlsoln.com)

## Technical catalogue 2015\_01

After completion the edition of the directory on the 21.01.2015, may have been some changes in the products listed in.  
The manufacturer reserves the right to make changes to the design, color and specification.  
Illustrations may include optional accessories. Printing technology can affect the differences in the forward colors.  
Please contact to your local sales agent for the newest information of Verano products.