



VOLCANO

Hydronic Unit Heater





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VTS GROUP

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VOLCANO

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VTS GROUP – The manufacturer of technologically advanced devices for the HVAC industry applying innovative technologies in the field of design research, production and logistics.

OUR MISSION

NO. 1 MANUFACTURER IN THE WORLD



24/7 IMMEDIATE
AVAILABILITY

*-Logistics center





3 constituents of success

The highest quality of products. The best prices on the market. The shortest delivery times. These three pillars of our market policy are why VTS is always one step ahead worldwide.

Following the best world practices from the automotive industry, VTS has created a network of 5 efficient production & logistics centers (**Atlanta, Dubai, Moscow, Warsaw, Bangalore**) to guarantee the shortest delivery time on the market, regardless of your location.

Mass production scale of universally repeatable devices allows VTS to offer them **at the most competitive prices, while maintaining the highest quality.**

A multi-level control system allows VTS to offer **a 3-year warranty for devices as a standard.**

24/7 IMMEDIATE
AVAILABILITY

5 CENTERS
LOGISTICS

COMPETITIVE
\$ PRICE

100 000 SOLD
UNITS A YEAR

THE HIGHEST
QUALITY

3 YEARS GUARANTEE
FOR EACH
DEVICE



Reliable Business Partner

Thousands of satisfied customers around the World are the best recommendations of VTS.

The VOLCANO unit heater is the best solution for heating of large open spaces. Equipped with an axial fan and hydronic heating coil, the Volcano is capable of providing up to 256 MBH heating capacity. The high performance fan drives the air through the coil and fully configurable louver, to where it can be supplied to distant zones in your room.

Thanks to application of high capacity heating coils and high flow fans, the VOLCANO can heat-up your room about 3 times quicker than by wall-hung heating radiators of the same total capacity and also avoids the undesirable stratification of the air.

The VOLCANO is a best solution to be applied in facilities like:



sports halls



warehouses



workshops



restaurants



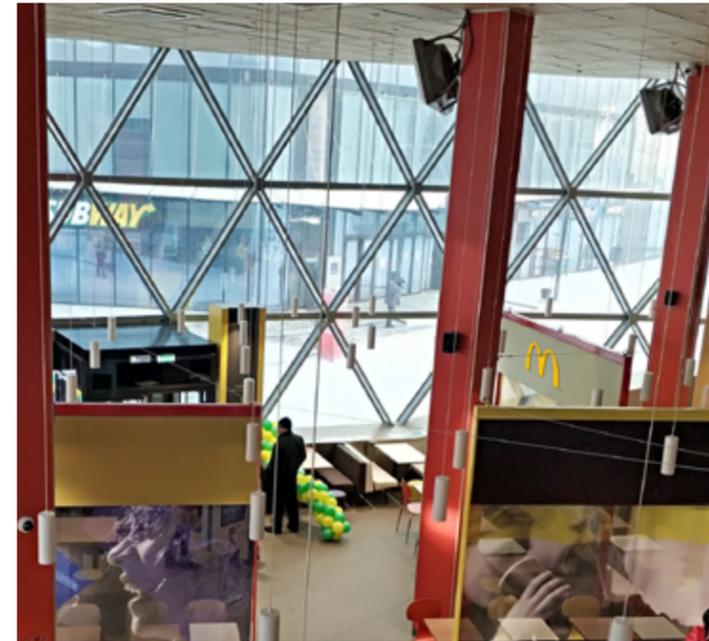
greenhouses



showrooms



churches



VOLCANO

The Volcano hydronic unit heaters are a new generation of devices combining innovative technical solutions with a modern design. Our precise and light casing resembles the beautiful diamond shape - ideal in its simplicity. The character of the device is emphasized by the composition of the selected materials and dynamically shaped air guide vanes.



ENERGY-SAVING
& RELIABLE
EC MOTORS



THREE-ROW WATER
EXCHANGERS



BIM COMPATIBLE
REVIT® FILES



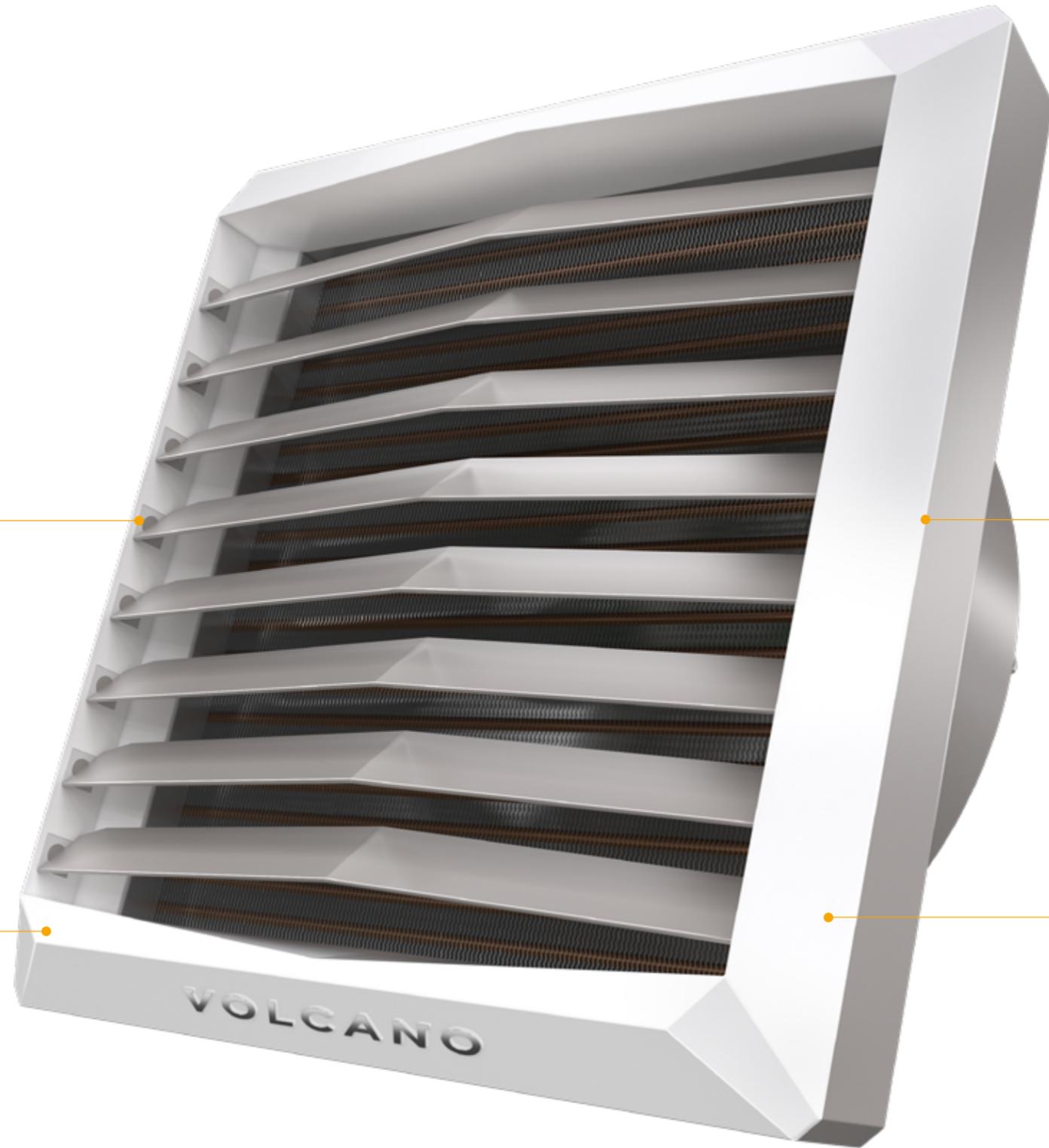
AVAILABLE
ONLINE 24/7

www.eshop.vtsgroup.com/usa

Modernity

DESIGN

Precisely designed casing form ensures optimal exchanger surface exposure while simultaneously hiding all of the structural elements.



MATERIAL

Made of the highest class ABS with an anti-UV pigment mixture, the casing is characterized by high mechanical strength, durability, and resistance to high temperatures. The material provides for unchangeable aesthetics, easy to clean surfaces and long-term durability.



SHAPE AND COLOR

The light and clean casing lines combined with a universal color palette provide for harmonious adaptation to every room type.

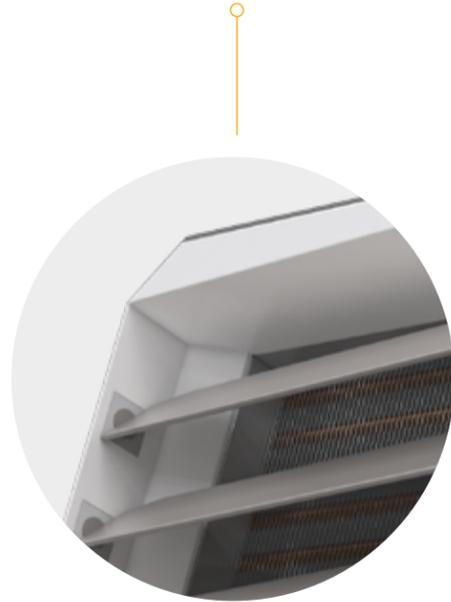
SMART LOCK

Patented locking system guarantees a durable and precise fit for all casing elements.

Innovation

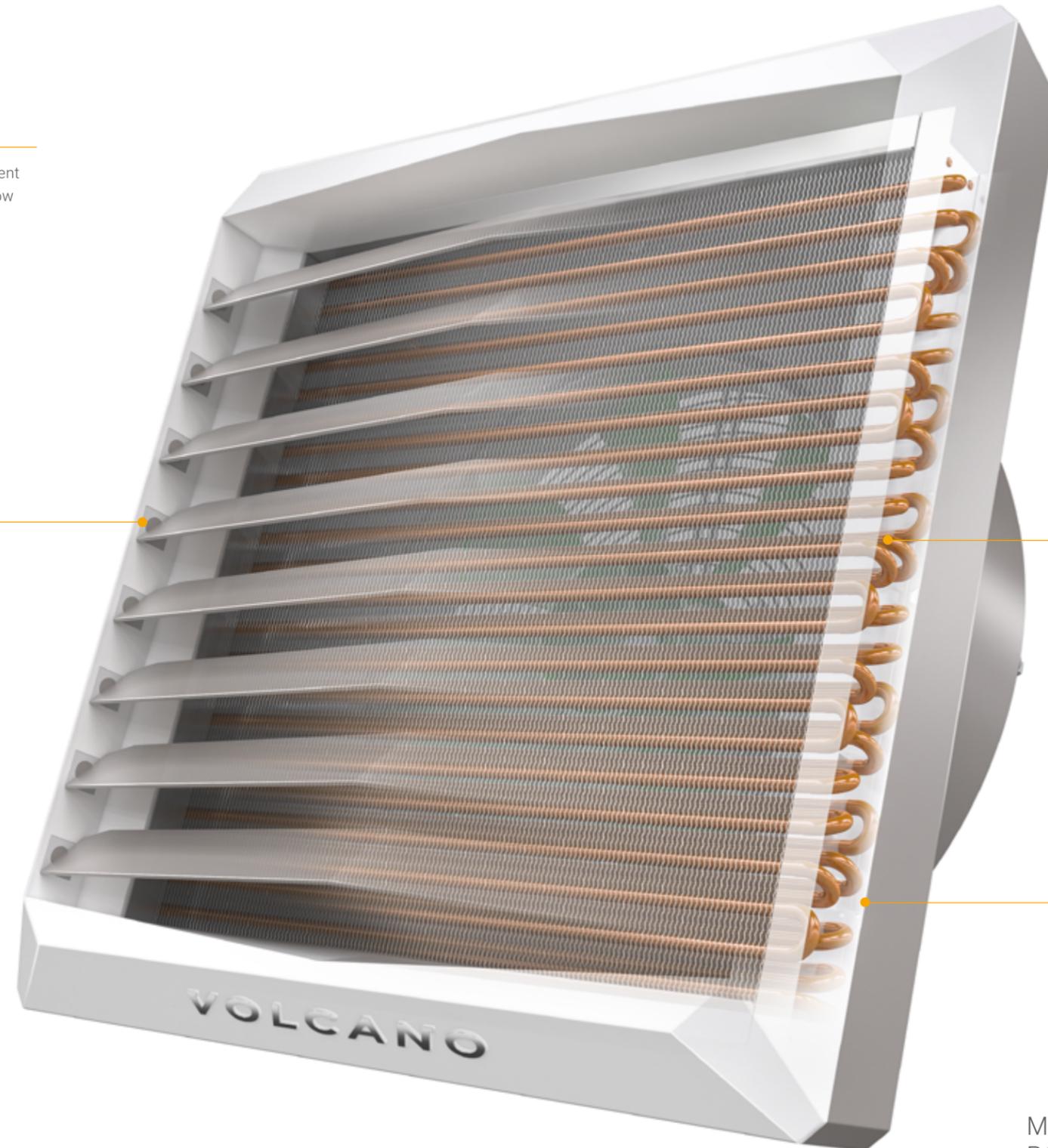
AIR GUIDE VANES

An innovative blade mount solution allows for their individual adjustment and stable positioning. The guide vane profile assures minimum air flow resistance rates.



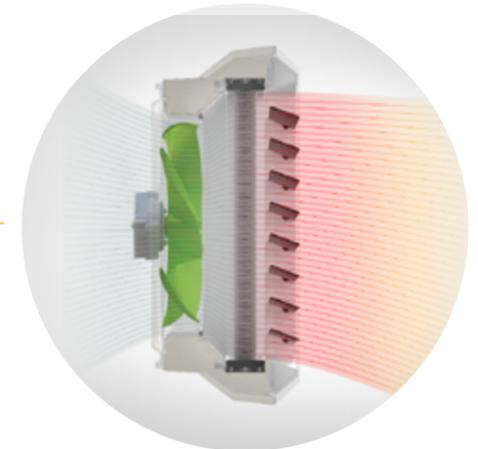
DIFFUSER

The design of the diffuser ensure total integration with the rear section of the casing and the fan.



WATER TO AIR HEAT EXCHANGERS

- 1, 2 and 3-row unit heaters featuring increased heat exchange surfaces guarantee optimal match of the heating power to the requirements of the facility;
- Enhanced heat transfer surface and ability to work with low temperatures agents;
- All exchangers are tested to guarantee 100% verification of tightness.



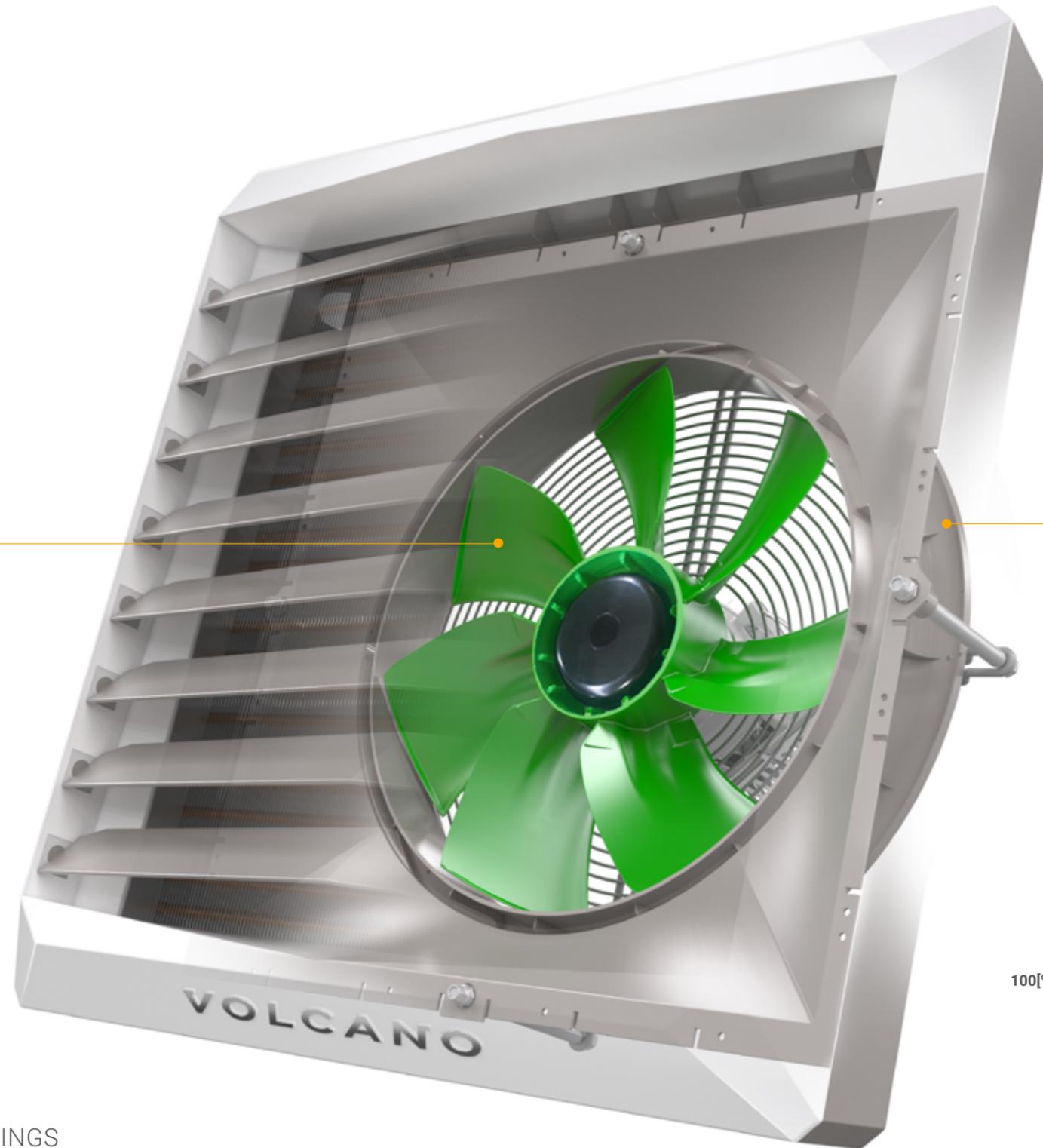
MAXIMUM AIR OUTPUT WITHOUT ANY POWER LOSS

Our ideally matching fan casing and a dedicated diffuser provide for equal distribution of air speed in the exchanger to secure small flow resistance rates and full use of the exchanger's power output.

Energy efficiency

EFFICIENT FANS

Optimized profile and increased blade surfaces provide for low maintenance costs and quiet operation.



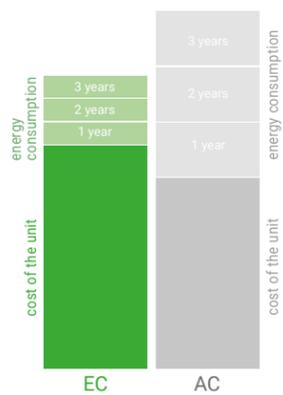
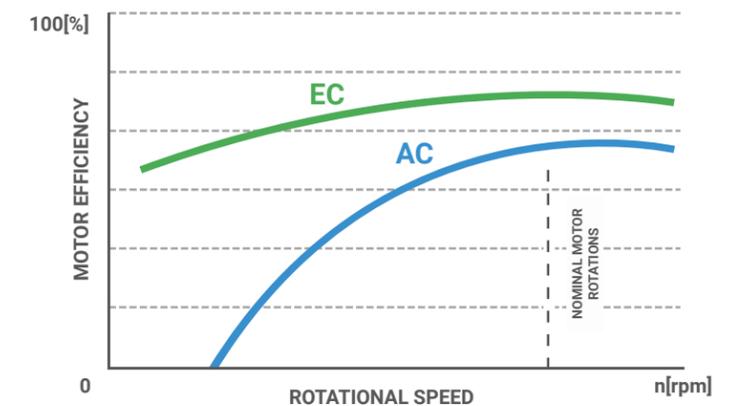
FULL RECYCLING

The device is environmentally friendly. 100% of the materials used can be recycled.



ENERGY-SAVING REGULATION

EC motors guarantee maximum unit efficiency even at reduced speed. Stepless rotation regulation is now available for EC motors allowing the unit to adapt to any requirements.



ELECTRICITY SAVINGS

Optimum shape of the fan and the use of the efficient EC engine save up to 40% of energy compared to conventional solutions. The investment pays off even after one year.

Device overview

VOLCANO EC

Comfort and cost efficiency

- high efficiency of the unit
- highly efficient EC motor
- stepless fan speed regulation
- up to 40% lower maintenance costs
- direct connection to BMS as an option
- silent operation even at high fan speed



HMI VOLCANO controller

- modern and compact design
- high contrast and clear screen
- advanced calendar for each day in the week
- ANTIFROST working mode
- BMS systems compatibility
- stepless fan speed regulation
- built - in thermostat and external temperature sensors cooperation
- valve with actuator connection possibility
- up to 8 heating units connected with the one controller



VOLCANO VR-D

Destratifier - an easy way to save energy

VR-D or VR-Mini destratifier supports the air distribution in the given room. It directs the hot air, that naturally goes up, back down, by which it is lowering the demand for heat from other sources.

Selection method based on the room size:

Assembly height should be no less than 3/4 of the height of the room, measuring from the floor up.

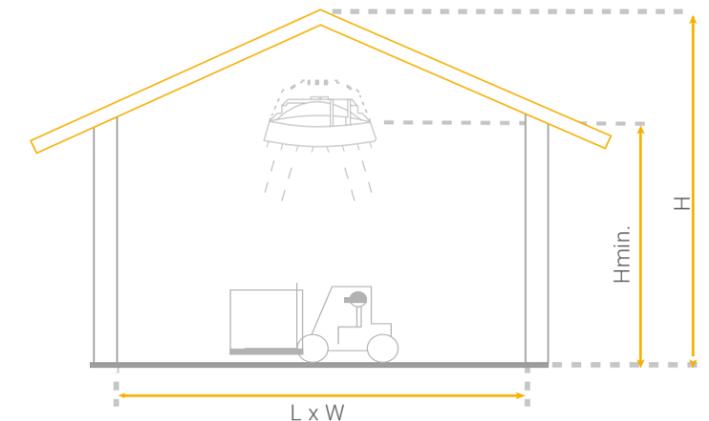
An example calculation of the minimal VOLCANO VR-D destratifier assembly height: $H_{MIN} = \frac{3}{4} \times H$

In a room of H=20 ft, the minimal VOLCANO VR-D destratifier assembly height will be: $H_{MIN} = \frac{3}{4} \times 20 \text{ ft} = 15 \text{ ft}$

The minimum number of destratifiers should be calculated in a way to allow for a 6-time exchange of the air over them in a period of one hour.

DESCRIPTION:

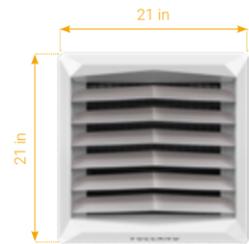
- H - height
- L - length
- W - width



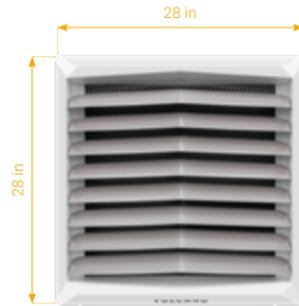
Device type series

VOLCANO	VR Mini	VR1	VR2	VR3	VR-D Mini	VR-D
HEATING POWER RANGE	10-68 MBH	17-102 MBH	27-171 MBH	44-256 MBH	-	-
MAXIMUM AIR OUTPUT*	1236 CFM	3119 CFM	2855 CFM	3355 CFM	1371 CFM	3826 CFM
HORIZONTAL RANGE (MAX.)	46 ft	75 ft	72 ft	82 ft	52 ft	92 ft
VERTICAL RANGE (MAX.)	26 ft	39 ft	36 ft	39 ft	32 ft	49 ft

*1.5 ft/s maximum speed



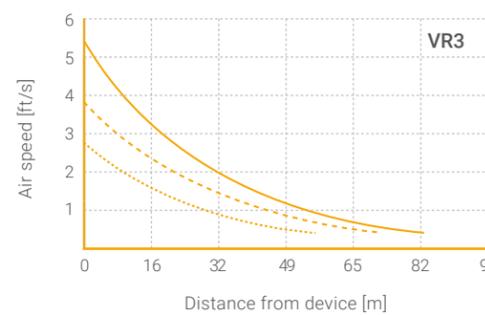
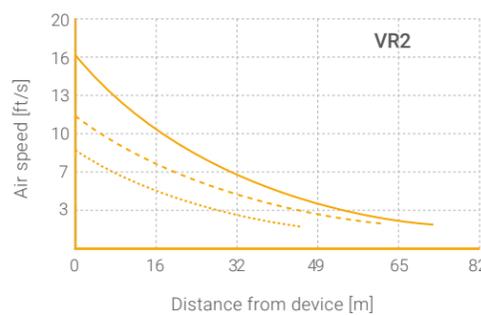
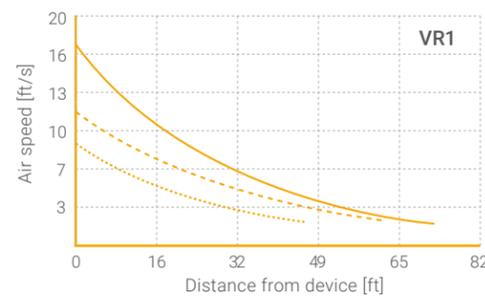
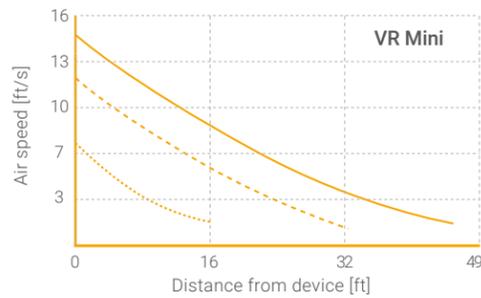
VR MINI, VR-D MINI



VR1, VR2, VR3, VR-D



AIR SPEED IN THE DISTANCE FUNCTION

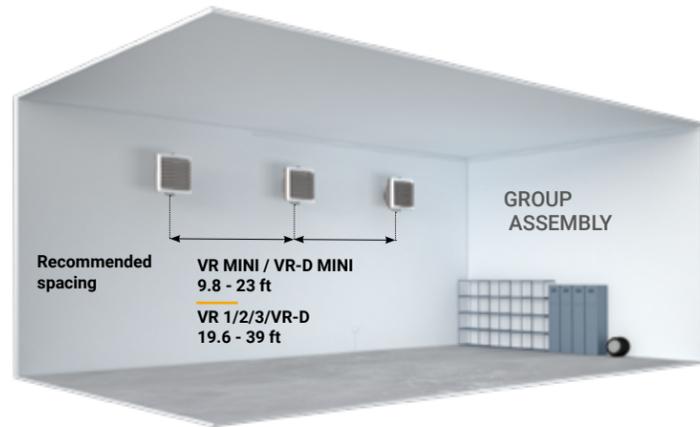
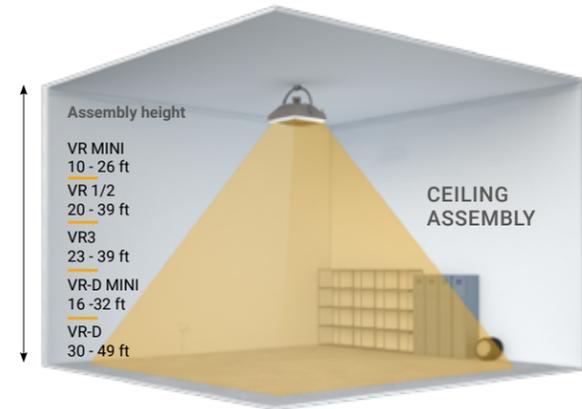
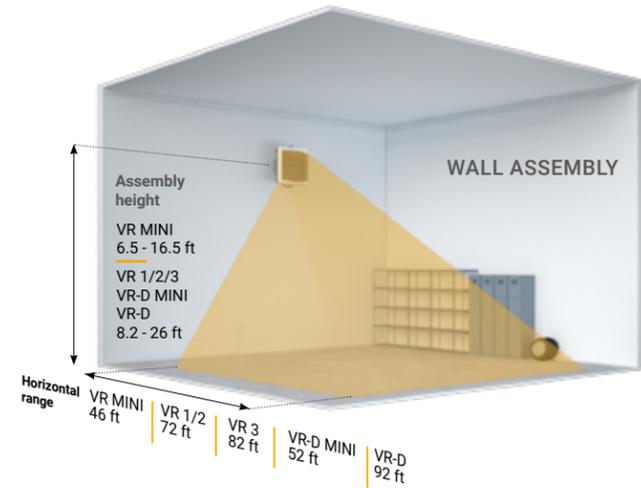


Controls

Parameters		HMI VOLCANO controller		Parameters		Valve with actuator	
VTS article No.		1-4-2801-0222		VTS article No.		1-2-1204-0003	
Motor support		EC		Power supply voltage		V/ph/Hz	240/1/60
Power supply voltage	V/ph/Hz	240/1/60		Power consumption electrical		W	1
Permissible load current	A	1A for 240 V AC 0,02A for 0-10V		Connection		-	3/4
Settings range	°F	41...104		Coefficient of Volume		-	4.5
Work mode	---	manual/automatic		opening/ closing time		min.	3/3
Hourly-weekly calendar	---	Yes		Protection rating		IP	54
Clock	---	Yes					
Temperature measurement	---						
The possibility of connecting a separate temperature sensor	pcs.	1 or 4					
Output signal	---						
Protection rate	IP	20					

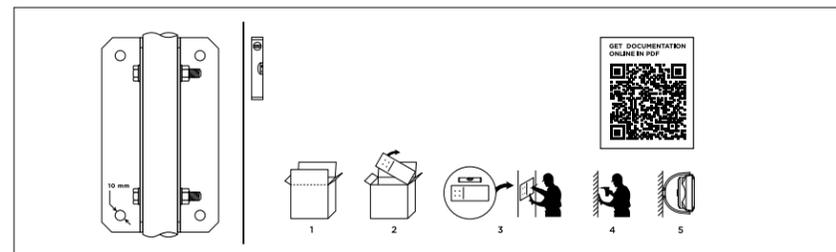
Parameters		Room NTC sensor (for the VOLCANO controller)		Parameters		Flex. connection hoses (set)	
VTS article No.		1-2-1205-1007		VTS article No.		1-2-2702-0076	
resistance measurement element	kΩ	NTC 10K		length		ft	2-3
assembly	---	wall-mounted		connection type		GW/GW	3/4"
max. signal wire length	yd	100		max. fluid pressure		psi	232
Ambient temperature	°F	-4...+150		min. working temperature for water		°F	41
Protection rating	IP	66		min. working temperature for glycol		°F	-4
				max. working temperature		°F	200
				set includes		hose (2 pcs) gasket (4 pcs)	

Assembly



VOLCANO sets are equipped with a standard assembly console for wall and ceiling mounting of the device. The maximum vertical range of the devices is 10-39 ft, depending on the type of heater. The maximum horizontal range of the devices is 16-92 ft.

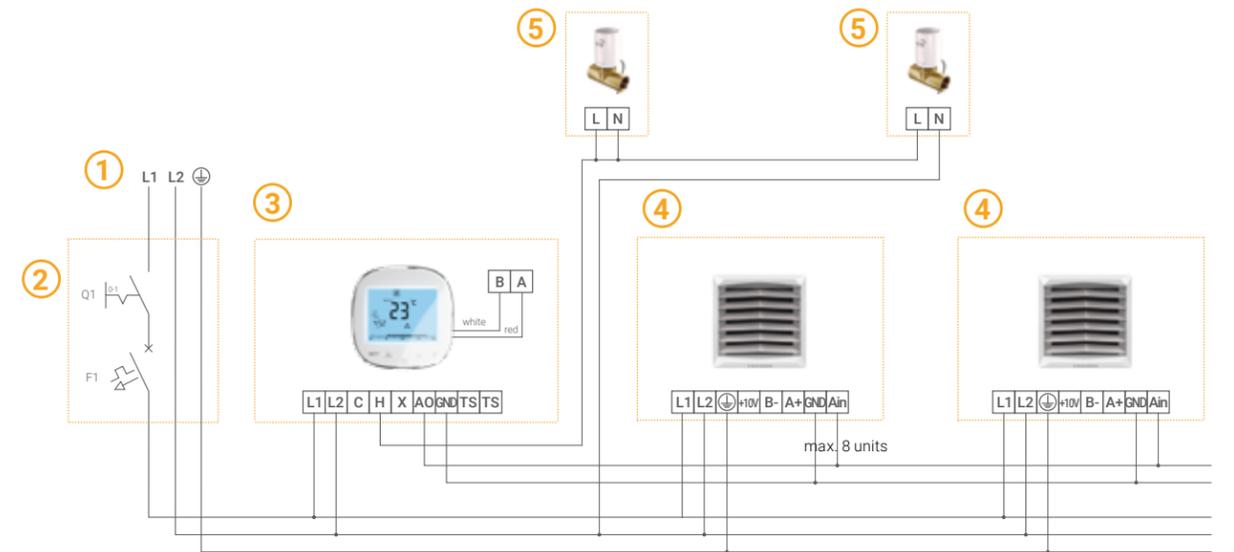
ASSEMBLY TEMPLATE



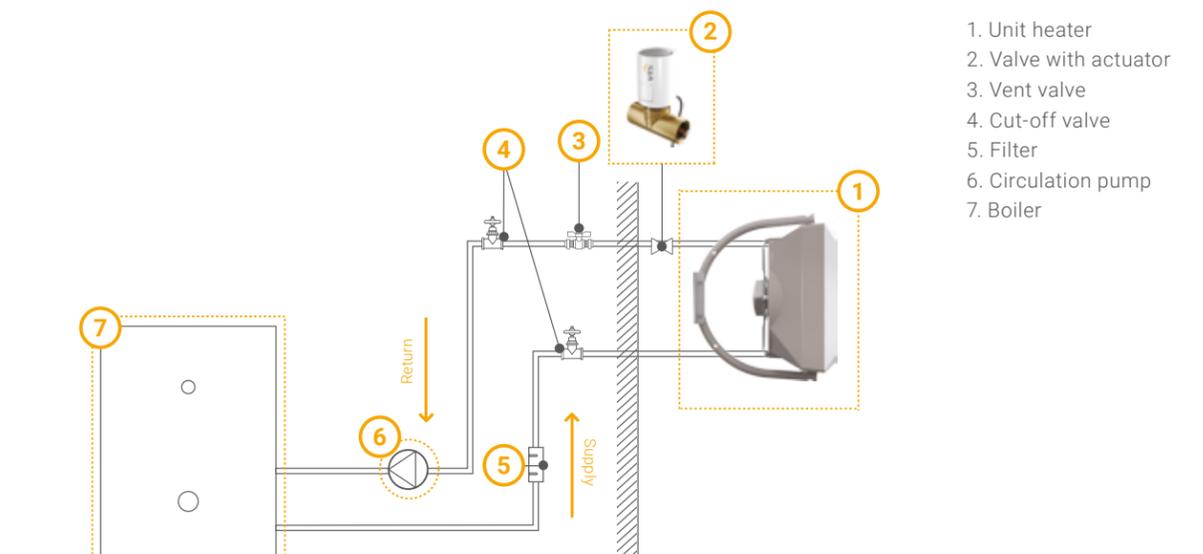
Each VOLCANO package has a printed template representing the spacing of boreholes and a leveling line to facilitate the mount of the console to the wall. Simply cut the template out of the cardboard lid and proceed to assembly.



EXAMPLE OF A HEATING UNIT CONNECTION



EXAMPLE OF A HYDRAULIC SYSTEM



Technical parameters

Parameter	Unit	VOLCANO VR MINI EC	VOLCANO VR1 EC	VOLCANO VR2 EC	VOLCANO VR3 EC	VOLCANO VR-D EC	VOLCANO VR-D MINI EC
VTS article No.		1-4-0101-0481	1-4-0101-0488	1-4-0101-0489	1-4-0101-0484	1-4-0101-0485	1-4-0101-0546
Number of heater rows	-	2	1	2	3	---	---
Maximum air output	CFM	1236	3119	2855	3355	3826	1371
Heating power range	MBH	10-68	17-102	27-171	44-256	---	---
Maximum temperature of the heating medium	°F	200				---	---
Maximum working pressure	psi	232				---	---
Maximum horizontal air range	ft	46	75	72	82	92	52
Maximum vertical air range	ft	26	39	36	39	49	32
Water capacity	in³	68	76	131	188	---	---
Connection pipes diameter	"	3/4				---	---
Device weight (without water)	lbs	30	46	47	54	34	18
Power supply voltage	V/Hz	1~240, 50/60Hz					
Motor power	HP	0.12	0.34		0.50		0.12
Rated current	A	0.6	1.3		1.6		0.6
Rated motor rotational speed	rpm	1200	1430		1400		1200
Motor protection level	IP	54					
Casing color palette		Front: RAL 9016 Traffic White, rear + console: RAL 7036 Platinum Gray, fan (EC): RAL 6038 Green					

PIPELINE DIAMETERS*

Number of heaters connected to the main line**	VR Mini		VR1		VR2		VR3	
	Max water flow [GPM]	Pipeline diameter ["]	Max water flow [GPM]	Pipeline diameter ["]	Max water flow [GPM]	Pipeline diameter ["]	Max water flow [GPM]	Pipeline diameter ["]
1	0.5	3/4	0.8	3/4	1.3	3/4	1.9	3/4
2	1.1	3/4	2.6	3/4	2.6	1	3.9	1 1/4
3	1.6	1	3.6	1	3.6	1 1/4	5.8	1 1/2
4	2.2	1	5.2	1	5.2	1 1/4	7.8	1 1/2
5	2.7	1	6.5	1 1/4	6.5	1 1/2	9.8	2
6	3.2	1 1/4	7.8	1 1/4	7.8	1 1/2	11.7	2
7	3.8	1 1/4	9.1	1 1/4	9.1	2	13.7	2 1/2
8	4.4	1 1/4	10.4	1 1/2	10.4	2	15.6	2 1/2
9	4.9	1 1/4	11.7	1 1/2	11.7	2	17.5	2 1/2
10	5.4	1 1/4	13	1 1/2	13	2 1/2	19.5	3

* Pipeline diameters selected for maximum water flow rate up to 8 ft/s
 ** Heaters connected successively to one main line

VOLCANO VR MINI

FAN SPEED		III	II	I
fan output	CFM	1236	971	647
noise level	dB(A)	50	40	27
motor power**	HP	0.12	0.07	0.05
electricity consumption***	HP	0.12	0.04	0.18
horizontal range	ft	14	8	16
vertical range	ft	8	5	10

VOLCANO VR1

FAN SPEED		III	II	I
fan output	CFM	5300	3900	2800
noise level	dB(A)	54	49	38
motor power**	HP	0.34	0.25	0.21
electricity consumption***	HP	0.27	0.10	0.06
horizontal range	ft	75	66	49
vertical range	ft	39	30	23

VOLCANO VR2

FAN SPEED		III	II	I
fan output	CFM	2855	2119	1413
noise level	dB(A)	54	49	38
motor power**	HP	0.34	0.25	0.21
electricity consumption***	HP	0.30	0.12	0.6
horizontal range	ft	72	62	46
vertical range	ft	36	26	20

VOLCANO VR3

FAN SPEED		III	II	I
fan output	CFM	3355	2413	1766
noise level	dB(A)	55	49	43
motor power**	HP	0.50	0.37	0.28
electricity consumption***	HP	0.48	0.17	0.7
horizontal range	ft	82	72	56
vertical range	ft	39	30	23

VOLCANO VR-D MINI

FAN SPEED		III	II	I
fan output	CFM	1354	1077	718
noise level	dB(A)	50	40	27
motor power**	HP	0.12	0.8	0.5
horizontal range	ft	52	33	23
vertical range	ft	33	23	16

VOLCANO VR-D

FAN SPEED		III	II	I
fan output	CFM	3826	2707	2001
noise level	dB(A)	56	50	43
motor power**	HP	0.50	0.37	0.28
horizontal range	ft	92	79	62
vertical range	ft	49	36	30

* reference conditions: 52.950 ft room volume, measurement performed at 16 ft
 ** EC motor power for the above specified fan outputs
 *** Standard laboratory conditions

VOLCANO VR MINI

Parameters Tz/Tp [°F]		194/158				176/140				158/122				122/86			
Tp1 [°F]	Qp [CFM]	Pg [MBH]	Tp2 [°F]	Qw [gpm]	Δp [psi]	Pg [MBH]	Tp2 [°F]	Qw [gpm]	Δp [psi]	Pg [MBH]	Tp2 [°F]	Qw [gpm]	Δp [psi]	Pg [MBH]	Tp2 [°F]	Qw [gpm]	Δp [psi]
30	1236	70.6	85.1	4.04	2.0	61.1	77.7	3.44	1.6	51.5	70.5	2.92	1.1	31.4	55.6	1.80	0.5
	971	61.8	90.7	3.52	1.6	53.2	82.8	3.07	1.2	44.7	74.7	2.54	0.9	27.3	58.3	1.57	0.4
	647	48.1	100.9	2.77	1.0	41.6	91.8	2.39	0.8	35.1	82.2	1.94	0.6	21.5	63.0	1.20	0.2
40	971	57.7	96.1	3.29	1.4	56.6	83.5	3.22	1.3	46.7	76.1	2.62	1.0	25.9	61.0	1.50	0.4
	1236	66.2	90.7	3.82	1.8	49.5	88.0	2.84	1.0	40.9	79.9	2.32	0.8	23.2	63.3	1.35	0.3
	647	45.4	105.6	2.62	0.9	38.6	96.4	2.17	0.7	32.1	86.9	1.80	0.5	18.4	67.3	1.05	0.2
50	1236	61.8	96	3.52	1.6	52.2	89.1	2.92	1.2	42.3	81.7	2.39	0.8	21.8	66.4	1.20	0.2
	971	53.9	96	3.07	1.2	45.4	93.4	2.62	0.9	36.9	85.1	2.09	0.6	19.1	68.2	1.05	0.2
	647	42.3	110	3.29	0.8	35.5	100.9	2.02	0.6	29.0	91.4	1.65	0.4	15.0	71.4	0.82	0.1
60	1236	57.3	101	3.29	1.4	47.4	94.6	2.69	1.0	37.5	87.3	2.09	0.6	16.7	71.6	0.97	0.2
	971	49.8	106	2.84	1.1	41.3	98.6	2.39	0.8	32.8	90.3	1.87	0.5	14.7	73.0	0.82	0.1
	647	39.2	115	2.24	0.7	32.4	105.6	1.87	0.5	25.9	95.9	1.42	0.3	11.3	75.4	0.67	0.1
70	1236	52.9	107	3.07	1.2	43.0	100.2	2.47	0.8	33.1	92.7	1.87	0.5	11.3	76.5	0.60	0.1
	971	46.1	111	2.62	0.9	37.5	103.6	2.09	0.6	28.7	95.4	1.65	0.4	9.6	77.2	0.52	0.1
	647	36.2	119	2.09	0.6	29.3	110.1	1.69	0.4	22.5	100.4	1.27	0.3	6.5	77.4	0.37	0.03

VOLCANO VR2

Parameters Tz/Tp [°F]		194/158				176/140				158/122				122/86			
Tp1 [°F]	Qp [CFM]	Pg [MBH]	Tp2 [°F]	Qw [gpm]	Δp [psi]	Pg [MBH]	Tp2 [°F]	Qw [gpm]	Δp [psi]	Pg [MBH]	Tp2 [°F]	Qw [gpm]	Δp [psi]	Pg [MBH]	Tp2 [°F]	Qw [gpm]	Δp [psi]
30	2855	170.9	87.3	9.72	3.5	147.1	79.7	8.38	2.7	123.5	72.1	7.03	2.0	76.1	56.7	4.26	0.8
	2119	143.0	94.5	8.15	2.5	124.5	86.0	7.03	1.9	104.1	77.5	5.91	1.4	64.1	60.1	3.59	0.6
	1413	111.6	105.1	6.36	1.6	96.6	95.4	5.54	1.2	81.6	85.5	4.64	0.9	50.5	65.1	2.84	0.4
40	2855	159.3	92.7	9.13	3.1	136.1	85.1	7.78	2.3	112.9	77.5	6.36	1.7	64.8	62.1	3.67	0.6
	2119	134.1	99.5	7.63	2.2	114.6	91.0	6.51	1.7	95.2	82.6	5.39	1.2	54.9	64.9	3.07	0.4
	1413	104.4	109.6	5.98	1.4	89.4	99.7	5.09	1.1	74.4	89.8	4.26	0.8	43.0	69.3	2.39	0.3
50	2855	61.8	98.2	8.53	2.7	125.2	90.7	7.11	2.0	101.7	83.1	5.76	1.4	53.2	67.3	2.99	0.4
	2119	53.9	104.7	7.11	1.9	105.4	96.1	5.98	1.4	86.0	87.6	4.86	1.0	45.0	69.8	2.54	0.3
	1413	42.3	113.9	5.61	1.2	82.6	104.0	4.71	0.9	67.2	94.1	3.82	0.6	35.5	73.2	1.94	0.2
60	2855	57.3	103.6	7.85	2.3	114.3	96.1	6.51	1.7	90.8	88.3	5.16	1.1	41.6	72.5	2.32	0.3
	2119	49.8	109.6	6.66	1.7	41.3	98.6	5.54	1.2	76.4	92.5	4.34	0.8	35.1	74.3	1.94	0.2
	1413	39.2	118.4	5.16	1.1	32.4	105.6	4.34	0.8	60.1	98.4	3.37	0.5	27.3	77.0	1.57	0.1
70	2855	52.9	109.0	7.26	2.0	43.0	100.2	5.91	1.4	79.5	93.7	4.49	0.9	28.7	77.4	1.65	0.1
	2119	46.1	114.6	6.13	1.5	37.5	103.6	5.01	1.0	67.2	97.3	3.82	0.6	23.9	78.4	1.35	0.1
	1413	36.2	122.7	4.79	0.9	29.3	110.1	3.89	0.6	52.9	102.6	2.99	0.4	18.1	79.9	1.05	0.06

Legend:

- T_z - device feed water temperature
- T_p - device return water temperature
- T_{p1} - device feed air temperature
- T_{p2} - device outlet air temperature

- P_g - device heating power
- Q_p - air output
- Q_w - water flow
- Δp - heat exchanger pressure loss

VOLCANO VR1

Parameters Tz/Tp [°F]		194/158				176/140				158/122				122/86			
Tp1 [°F]	Qp [CFM]	Pg [MBH]	Tp2 [°F]	Qw [gpm]	Δp [psi]	Pg [MBH]	Tp2 [°F]	Qw [gpm]	Δp [psi]	Pg [MBH]	Tp2 [°F]	Qw [gpm]	Δp [psi]	Pg [MBH]	Tp2 [°F]	Qw [gpm]	Δp [psi]
30	3119	102.6	62.2	5.83	3.8	88.0	58.1	3.44	0.67	74.0	54.0	4.19	2.1	45.0	45.5	2.54	0.9
	2295	86.7	66.9	4.94	2.8	74.7	62.1	3.07	0.57	62.8	57.4	3.59	1.6	38.6	47.5	2.17	0.7
	1648	72.3	72.7	4.11	2.0	62.4	67.1	2.39	0.48	52.5	61.5	2.99	1.1	32.1	50.2	1.80	0.5
40	3119	95.5	69.4	5.46	3.3	81.6	65.1	3.22	0.62	67.2	61.0	3.82	1.8	38.6	52.3	2.17	0.4
	2295	81.2	73.8	4.64	2.5	69.3	68.9	2.84	0.53	57.3	64.0	3.29	1.3	32.8	54.1	1.87	0.3
	1648	67.9	79.2	3.89	1.8	57.7	73.6	2.17	0.44	47.8	67.8	2.69	1.0	27.3	56.5	1.57	0.2
50	3119	89.1	76.5	5.09	2.9	75.1	72.3	2.92	0.57	60.7	68.0	3.44	1.5	31.4	59.4	1.80	0.2
	2295	75.7	80.6	4.34	2.2	63.8	75.7	2.62	0.48	51.5	70.9	2.92	1.1	27.0	60.8	1.50	0.2
	1648	63.1	85.5	3.59	1.5	53.2	79.9	2.02	0.41	43.3	74.3	2.47	0.8	22.5	62.6	1.27	0.1
60	3119	82.6	83.5	4.71	2.5	68.2	79.3	2.69	0.52	53.9	75.0	3.07	1.2	24.6	66.2	1.35	0.2
	2295	69.9	87.3	4.04	1.9	58.0	82.4	2.39	0.44	46.1	77.5	2.62	0.9	20.8	67.5	1.20	0.1
	1648	58.7	91.9	3.37	1.3	48.5	86.4	1.87	0.37	38.6	80.6	2.17	0.6	17.4	68.7	0.97	0.1
70	3119	75.7	90.5	4.34	2.2	61.8	86.4	2.47	0.47	47.1	82.0	2.69	0.9	17.1	73.0	0.97	0.1
	2295	64.5	94.1	3.67	1.6	52.5	89.2	2.09	0.40	40.3	84.2	2.32	0.7	14.3	73.8	0.82	0.1
	1648	53.9	98.2	3.07	1.1	44.0	92.7	1.65	0.34	33.8	86.9	1.87	0.5	11.9	74.7	0.67	0.03

VOLCANO VR3

Parameters Tz/Tp [°F]		194/158				176/140				158/122				122/86			
Tp1 [°F]	Qp [CFM]	Pg [MBH]	Tp2 [°F]	Qw [gpm]	Δp [psi]	Pg [MBH]	Tp2 [°F]	Qw [gpm]	Δp [psi]	Pg [MBH]	Tp2 [°F]	Qw [gpm]	Δp [psi]	Pg [MBH]	Tp2 [°F]	Qw [gpm]	Δp [psi]
30	3355	256.3	102.2	14.59	4.7	220.1	92.8	12.57	3.6	185.3	83.1	10.55	2.7	114.6	63.7	6.43	1.1
	2413	206.8	111.4	11.82	3.2	179.1	100.8	10.25	2.5	151.2	90.0	8.60	1.8	93.8	68.0	5.31	0.8
	1766	168.9	120.6	9.65	2.2	146.4	108.9	8.30	1.7	123.9	97.0	7.03	1.2	77.1	72.5	4.34	0.5
40	3355	238.5	106.9	13.61	4.2	204.0	97.3	11.59	3.1	169.2	87.8	9.58	2.2	97.9	68.0	5.54	0.8
	2413	193.8	115.3	11.07	2.8	166.2	104.7	9.50	2.1	138.2	93.9	7.85	1.5	80.2	71.8	4.49	0.6
	1766	158.3	124.0	9.05	1.9	135.8	112.3	7.78	1.5	112.9	100.2	6.43	1.1	65.9	75.6	3.67	0.4
50	3355	222.5	111.4	12.72	3.7	187.7	101.8	10.70	2.7	152.9	92.1	8.68	1.9	80.9	72.3	4.56	0.6
	2413	180.8	119.5	10.32	2.5	153.2	108.7	8.75	1.8	124.9	97.9	7.11	1.3	66.2	75.4	3.67	0.4
	1766	147.7	127.6	8.45	1.7	125.2	115.7	7.11	1.3	102.4	103.6	5.83	0.9	54.3	78.4	3.07	0.3
60	3355	206.1	115.9	11.82	3.2	171.3	106.3	9.80	2.3	136.5	96.6	7.78	1.5	62.8	76.3	3.52	0.4
	2413	167.9	123.4	9.58	2.2	139.9	112.6	8.00	1.6	111.6	101.8	6.36	1.0	51.5	78.8	2.92	0.3
	1766	137.2	131.0	7.85	1.5	114.6	119.1	6.51	1.1	91.4	106.9	5.16	0.7	42.3	81.1	2.39	0.2
70	3355	189.7	120.4	10.85	2.7	154.9	110.8	8.83	1.9	119.4	100.9	67.77	1.2	43.7	80.1	2.47	0.2
	2413	154.6	127.4	8.83	1.9	126.6	116.6	7.26	1.3	97.9	105.6	5.54	0.8	35.5			

Frequently asked questions

1. HOW DO I CORRECTLY SELECT A VOLCANO HEATER?

Step one: determine the temperature inside the target room and its heat demand for heating purposes. Air heating is one of the most dynamic methods of heating rooms, allowing for the application of temporary (e.g. overnight) temperature lowering in the heating room and its fast heating soon before entering it. This allows for significant reductions in heat consumption, but does not require any heating power surpluses to be added to the devices for quick heating.

Step two: determine the location for the heaters and the necessary air stream range to ensure the achievement of suitable temperatures in the areas of the room you are interested in. Notice that the air speed should not exceed the permissible values in human occupancy zones or on any other sensitive areas, e.g. in the vicinity of industrial processes.

Step three: obtain information on the temperature of the heating medium available in the building.

Step four: Once you have all the above data, take the VOLCANO catalogue and look for devices which fulfill the criteria of the required air stream and required heating power, considering the possibility of work at varying outputs (first, second or third speed). Use the charts presenting air speeds in the distance function to determine the range for each device size. Alternatively, use the chart on page 18, presenting the range for limit speed of 2 ft/s. Determine the heating power for each device speed and for various heating medium temperatures using the tables on pages 22-23.

Easy selection "shortcut": To make your work easier, use a selection program available at: ehcad.vtsgroup.com

2. HOW SHOULD WE CHOOSE THE FEEDING PIPELINE DIAMETER WHEN CONNECTING MORE HEATERS?

The main pipeline diameter should be chosen in a way, so the water flow is not higher than 8 ft/s. It is due to a compromise between the investment costs connected with the used pipes diameters, and maintenance costs, connected with water flow resistance. We suggest the following minimum pipeline diameters depending on the quantity and type of the heaters connected to the main line according to the table on p. 20. In case of a complex installation, that is when the units

are at least 33 ft from the heat source, one has to correct the pipe diameters recalculating them for smaller water flow speeds.

3. HOW TO CONNECT THE THERMOSTAT, SO THE AC FAN TURNS OFF TOGETHER WITH CLOSING OF THE VALVE?

VOLCANO technical documentation contains electrical connection schemes for various work modes. It is the easiest to achieve the close of the fan together with the closing of the valve by connecting the whole unit to a power grid, protected by a redundant circuit breaker, through a thermostat. In such case one has to pay attention to the maximum thermostat input load; the load should be at least 3 (10) A per one VOLCANO unit. If the thermostat input load is too small, or the higher number of the units controlled with the use of the thermostat, one has to use an electric relay, with a coil fed from a thermostat (240 AC), work input voltage will be 240 V AC, and work input load will be adjusted to the number of VOLCANOS under control.

4. CAN I CONNECT A FEED PIPELINE TO THE UPPER HEAT EXCHANGER MANIFOLD?

Yes, you can, although a heat exchanger powered by an upper manifold will be more difficult to vent. Remember to leave sufficient space for mounting a valve actuator, which should be installed on the return stub pipe.

5. HOW TO CONNECT A VALVE TO THE VOLCANO EC CONTROL PANEL, SO IT WILL CLOSE WHEN THE FAN IS TURNED OFF?

Connection of the valve with actuator to the Volcano EC controller is possible through dedicated input. This input on controller is marked as H. On H input, 240 V AC voltage appears when the controller changes modes for worked mode. It transfers the 0-10V DC voltage to the fan and 240 AC voltage to actuator of the valve, which opens it.

6. CAN I FEED VOLCANO VR MINI / VR1 / VR2/ VR3 HEATERS WITH A NON-FREEZE MEDIUM?

Yes, you can. The most frequently used non-freeze medium is a water solution of ethylene glycol. The heaters mounted in VOLCANO can support up to 50% mixtures. Make sure to check, however, if other elements of the technological heat installation (valves, pump, etc.) are adapted to work on glycol mix. To do this, check the recommendations of the manufacturers of particular components used. Remember that the use of glycol mixes, which are usually characterized by higher viscosity and lower thermal capacity, compared to water, increases the resistance of heating medium flow and reduces the heating power of the device.

7. CAN THE VOLCANO VR MINI/VR1 / VR2/ VR3 HEATER BE USED TO COOL DOWN AIR AS WELL?

Yes, but only when the temperature of the working medium is higher than the dew point of the cooled air, since VOLCANO devices are not equipped with drip trays and we shouldn't lead to the condensation of humidity. To switch a VOLCANO device to the cooling function, connect an ice water installation. When there is the risk that the temperature of the working medium could fall below the dew point of the cooled air, make sure to build a drip tray and install it under the device. In this case, the VOLCANO device will be able to work with the horizontal air outlet only. The use of a VOLCANO device with vertical air outlet can result in flooding the fan motor or the space under the device, since mounting a drip tray in this position of the device is impossible.

VOLCANO is not equipped with a drip tray, which is why you should always reduce its work efficiency in the cooling mode, in order to eliminate the phenomenon of drip-trapping by the air flowing through the heat exchanger.

8. CAN VOLCANO VR MINI / VR1 / VR2 / VR3 HEATERS SUPPORT HEAT PUMPS?

Yes, VOLCANO water hydronic can cooperate with heat pumps. However, when selecting the size of the device, take the low temperature of the heating medium into account. We recommend the use of heaters with large heat exchange surfaces. For this type of installation, we recommend the VR3 heater equipped with a three-row heat exchanger. Make sure to check VR Mini and VR2 with two-row heat exchangers as well.

9. IS THERE A POSSIBILITY TO CONNECT A CIRCULATION PUMP TO THE VOLCANO EC CONTROLLER?

Yes, there is such a possibility. One has to use H clamp on the controller, and for security additionally use an electric relay. On the H input, and then on the electric relay a 240 V AC voltage will appear when the controller turns into work mode. This way, provided the relay is correctly chosen, and can turn the circulation pump on and off.



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WING W

HYDRONIC HEAT EXCHANGER

HEATING POWER RANGE:
13-160 MBH

EXHAUST FLOW RATE:
1089-2589 CFM

MAXIMUM AIR COVERAGE:
12 ft

WING E

ELECTRIC HEATING COIL

HEATING POWER RANGE:
7-51 MBH

EXHAUST FLOW RATE:
1088-2648 CFM

MAXIMUM AIR COVERAGE:
12 ft

WING C

WITHOUT HEAT EXCHANGER (AMBIENT)

MAXIMUM AIR COVERAGE:
13 ft

EXHAUST FLOW RATE:
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AIR CURTAINS AVAILABLE IN FOLLOWING SIZES

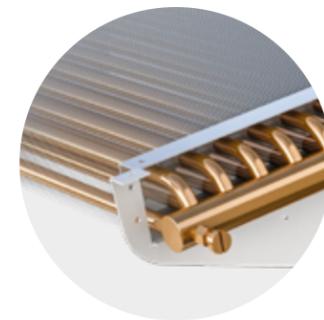
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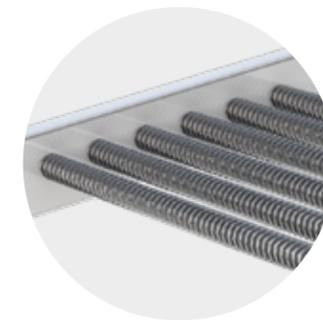
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