



Venkon

► Assembly, installation and operating instructions

Keep these instructions in a safe place for future use!

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1 General

1.1 About these instructions

These instructions ensure the safe and efficient handling of this equipment. These instructions form an integral part of the equipment and have to be kept in the direct vicinity of the equipment and available to personnel at all times.

All personnel must have carefully read through these instructions prior to commencing all work on the equipment. A fundamental prerequisite for safe working is compliance with all the stated safety instructions and other instructions contained in this manual.

In addition all local occupational health and safety at work regulations apply, as do general safety provisions governing the use of the equipment.

Illustrations in this guide are intended to provide a basic understanding and may differ from the actual model.

Ongoing tests and further developments may result in small variations between the unit supplied and the instructions.

1.2 Explanation of Symbols

**DANGER!**

This combination of symbol and signal word indicates an immediately dangerous situation caused by electrical power, which will cause death or serious injury if not avoided.

**WARNING!**

This combination of symbol and signal word indicates a possible hazardous situation.

**IMPORTANT NOTE!**

It represents a potentially hazardous situation, which could lead to damage to property or for a measure to optimise workflows.

**IMPORTANT NOTE!**

This symbol highlights useful hints, recommendations and information for efficient and trouble-free operation.

2 Safety

This section provides an overview of all important safety aspects to ensure optimum protection of personnel as well as safe and trouble-free operation. In addition to the safety instructions in these operating instructions, the valid safety, accident prevention and environmental protection regulations must be observed for the area of use of the unit. It is the duty of the operator to ensure that instructions relating to maintenance (e.g. relating to hygiene) are complied with.

2.1 Correct use

The units are only intended to be used for heating and cooling air in frost-free and dry rooms. The units are only intended for connection to an air duct unit and for supplying air in only one room. Within the room, the unit needs to be connected to the building's heating/cooling/ventilation system and to the building's waste water and power network. The operating limits and limits of use described in Chapter 2.2 [▶ 7] must be complied with.



IMPORTANT NOTE!

Only use the unique after completion of the complete building and system. Site heating is not deemed to be correct and proper use.

Intended use of the unit also includes adherence to these instructions.

Information in accordance with EN60335-1

- ▶ This unit can be used by children aged 8 years or more and also by people with reduced physical, sensory or mental capabilities or a lack of experience and knowledge, if they are supervised or have been instructed in the safe use of the unit and the resulting dangers. Do not allow children to play with the unit. Do not allow children to clean and maintain the unit without supervision.
- ▶ The unit is not intended for operation above 2,000 m.a. s.l.
- ▶ This unit is not intended for permanent connection to the drinking water supply system.
- ▶ This unit is intended for being accessible to the general public.

Any use beyond or other than the stated intended use is considered as misuse.

Any change to the unit or use of non-original spare parts will cause the expiry of the warranty and the manufacturer's liability.

2.2 Limits of operation and use

Limits of operation		
Min./max. water temperature	°C/°F	40-90 / 104-194
Min./max. air intake temperature	°C/°F	6-40 / 43-104
Min./max. air humidity	%	15-75
Min. operating pressure	bar/kPa	-
Max. operating pressure	bar/kPa/psi	10/1000/145
Min./max. glycol percentage	%	25-50

Tab. 1: Limits of operation

Operating voltage	115 V/ 60 Hz
Power/Current consumption	On the type plate

Tab. 2: Operating voltage

We would refer to VDI-2035 Sheets 1 & 2, DIN EN 14336 and DIN EN 14868 with regard to the properties of the medium used to protect the equipment. The following values provide further guidance.

The water used should be free of contamination, such as suspended substances and reactive substances.

Water quality		
pH value (at 20 °C / 68°F)		8-9
Conductivity (at 20 °C / 68°F)	µS/cm / ppm	<700 / <350
Oxygen content (O ₂)	mg/l / (lb/gal)	<0.1 / (<0.0000083)
Hardness	°dH / ppm CaCO ₃	4-8.5 / 0.224-0.476
Sulphur ions		nicht messbar
Sodium ions (Na ⁺)	mg/l / (lb/gal)	<100 / (<0.00083)
Iron ions (Fe ²⁺)	mg/l / (lb/gal)	<0.1 / (<0.0000083)
Manganese ions (Mn ²⁺)	mg/l / (lb/gal)	<0.05 / (<0.00000415)
Ammonia ions (NH ⁴⁺)	mg/l / (lb/gal)	<0.1 / (<0.0000083)
Chlorine ions (Cl)	mg/l / (lb/gal)	<100 / (<0.00083)
CO ₂		<50
Sulfate ions (SO ₄ ²⁻)	mg/l / (lb/gal)	<50 / (<0.000415)
Nitrite ions (NO ₂)	mg/l / (lb/gal)	<50 / (<0.000415)
Nitrate ions (NO ₃)	mg/l / (lb/gal)	<50 / (<0.000415)

Tab. 3: Water quality



IMPORTANT NOTE!

Danger of frost in cooling mode!

There is a risk of the heat exchanger freezing when used in unheated rooms.

- ▶ Make sure that the unit is equipped with a frost protection sensor and/or thermostat in this case.



IMPORTANT NOTE!

Warning of misuse!

In the event of misuse, as itemised below, there is a danger of limited or failing operation of the unit. Ensure that the airflow can circulate freely.

- ▶ Never operate the unit in humid areas, such as swimming pools, wet areas etc.
- ▶ Never operate the unit in rooms with an explosive atmosphere.
- ▶ Never operate the unit in aggressive or corrosive atmospheres (e.g. sea air).
- ▶ Never operate the unit above electrical equipment (such as switch cabinets, computers or other electrical units, or contacts that are not drip-proof).



IMPORTANT NOTE!

Energy losses due to misuse!

Operating the unit with open windows (or other room openings) can result in significant energy losses.

- ▶ Heating and cooling modes (particularly when operating different units) need to be coordinated with each other.

2.3 Risk from electrocution!



DANGER!

Risk of fatal injury from electrocution!

Contact with live parts will lead to fatal injury from electrocution. Damage to the insulation or individual components can lead to a fatal injury.

- ▶ Only permit qualified electricians to work on the electrics.
- ▶ Immediately disconnect the system and repair it in the event of damage to the insulation.
- ▶ Keep live parts away from moisture. This can cause a short circuit.
- ▶ Properly earth the unit.

2.4 Personnel requirements - Qualifications

Specialist knowledge

The installation of this product requires specialist knowledge of heating, cooling, ventilation, installation and electrical engineering. This knowledge, generally learned in vocational training in one of the fields mentioned above, is not described separately.

Damage caused by improper installation is the responsibility of the operator or installer. The installer of these units should have adequate knowledge of the following gained from specialist vocational training

- ▶ Safety and accident prevention regulations
- ▶ Guidelines and recognised technical regulations, i.e. Association of German Electricians (VDE) regulations, DIN and EN standards.
- ▶ VDI 6022; Maintenance personnel must be trained to Category B (possibly Category C) to comply with hygiene requirements (if necessary).

The installation, operation and maintenance of this unit must comply with the applicable laws, standards, provisions and regulations in the respective country and the current state of the art!

2.5 Personal Protective Equipment

Personal protective equipment is used to protect people from impaired safety and health when working with the unit. The applicable accident prevention regulations at the place of use apply in all cases.

Personnel have to wear personal protective equipment during maintenance and troubleshooting on and with the unit.

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3 Transport, storage and packaging

3.1 General transport instructions

Check on delivery for completeness and transport damage.

Proceed as follows in the event of visible damage:

- ▶ Do not accept delivery or only accept with reservations.
- ▶ Record any transport damage on the transportation documents or on the transport company's delivery note.
- ▶ Submit a complaint to the freight forwarder.



IMPORTANT NOTE!

Warranty claims can only be made within the applicable period for complaints. (More information is available in the T&Cs on the Kampmann website)



IMPORTANT NOTE!

2 people are needed to transport the unit. Wear personal protective clothing when transporting the unit. Only lift the unit on both sides and not by the pipes / valves.



IMPORTANT NOTE!

Material damage caused by incorrect transport!

Units being transported can drop or topple over if transported wrongly. This can cause serious material damage.

- ▶ Proceed carefully when unloading the equipment on delivery and when transporting it on site and note the symbols and instructions on the packaging.
- ▶ Only use the holding points provided.
- ▶ Only remove packaging shortly before assembling the unit

3.2 Scope of delivery



IMPORTANT NOTE!

Check the scope of delivery!

- ▶ Check the delivery for damage.
- ▶ Check that the articles and type numbers are correct.
- ▶ Is the delivery and number of items delivered correct?

3.3 Storage

Store packaging under the following conditions:

- ▶ Do not store outdoors.
- ▶ Store in a dry and dust-free place.
- ▶ Store in a frost-free place.
- ▶ Do not expose to aggressive media.
- ▶ Protect from direct sunlight.
- ▶ Avoid mechanical vibrations and shocks.



IMPORTANT NOTE!

Under certain circumstances, packages can carry storage instructions that go beyond the requirements listed here. Comply with these instructions accordingly.

3.4 Packaging

Handling packaging materials



IMPORTANT NOTE!

Dispose of packaging materials in line with the applicable statutory requirements and local regulations.



IMPORTANT NOTE!

The packaging is also use to protect the product from site dust and dirt. Only remove packaging shortly before assembling the unit

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4 Technical data

Unit	Venkon EC			
Model	61	63	66	67
Length of basic unit [mm]	625	925	1375	1725
Casing length [mm]	900	1200	1650	2000
Weight of basic unit [kg]	19	24.5	36.5	46.5
Air volume [l/s]	50 – 215	65 – 275	115 – 480	130 – 545
Internal volume of 2-pipe system [l]	1.3	2.0	3.1	3.9
Internal volume of 4-pipe system [l] heating	0.5	0.6	0.9	1.1
Internal volume of 4-pipe system [l] cooling	1.0	1.6	2.4	2.9
MCA [A]	1.25	1.50	2.75	3.25
MOP [A]	15	15	15	15
Heat output [kW] ¹	2.8 – 11.2	3.4 – 14.7	5.9 – 24.9	7.2 – 29.9
Cooling output [kW] ²	1.2 – 4.0	1.4 – 5.7	2.5 – 9.6	3.1 – 12.2
Sound power level [dB(A)]	35 – 68	29 – 60	36 – 69	32 – 63

Unit	Venkon EC			
Model	61	63	66	67
Length of basic unit [inch]	24.6	36.4	54.1	69.9
Casing length [inch]	35.4	47.2	65	78.7
Weight of basic unit [pound]	41.9	54	80.5	102.5
Air volume [cfm]	110-455	135-580	240-1020	275-1150
Internal volume of 2-pipe system [US gal.]	0.29	0.30	0.31	0.32
Internal volume of 4-pipe system [l] heating [US gal.]	0.29	0.30	0.31	0.32
Internal volume of 4-pipe system [l] cooling [US gal.]	0.29	0.30	0.31	0.32
MCA [A]	1.25	1.50	2.75	3.25
MOP [A]	15	15	15	15
Heat output [MBH] ³	4.6-14.4	5.8-20.8	9.9-34.3	12.1-42.9
Cooling output [MBH] ⁴	3.1-8.3	3.6-12.7	6.4-21.1	7.7-27.5
Sound power level [dB(A)]	35-68	29-60	36-69	32-63

¹ at LPHW 75 / 65°C, $t_{l1} = 20^{\circ}\text{C}$

² at CHW 7/12°C, $t_{l1}=27^{\circ}\text{C}$, rel. humidity 50%

³ at LPHW 120 / 100°F, $t_{l1} = 68^{\circ}\text{F}$

⁴ at CPW 45/55 °F, $t_{l1} = 75^{\circ}\text{F}$ rel. humidity 50%

typeplate sample model 61

Type 14861DUL210U02M	
Voltage	115 V / 60 Hz
Amperage	1.0 A
Power	65 W
Max. operating pressure	10 psi
Max. operating temperature	90 °C/ 194 °F
Max. ambient temperature	40 °C/ 104 °F
Protection class	IP 20
MCA	1,25 A
MOP	15 A
Serial no.	KSN2100332343318
Article no.	14861DUL210U02M
ID	1162899
Kampmann GmbH & Co. KG / Friedrich-Ebert-Str. 128-130 / 49811 Lingen (Ems) / Germany	

Tab. 4: Fan Coil Venkon EC

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5 Construction and function

5.1 Overview

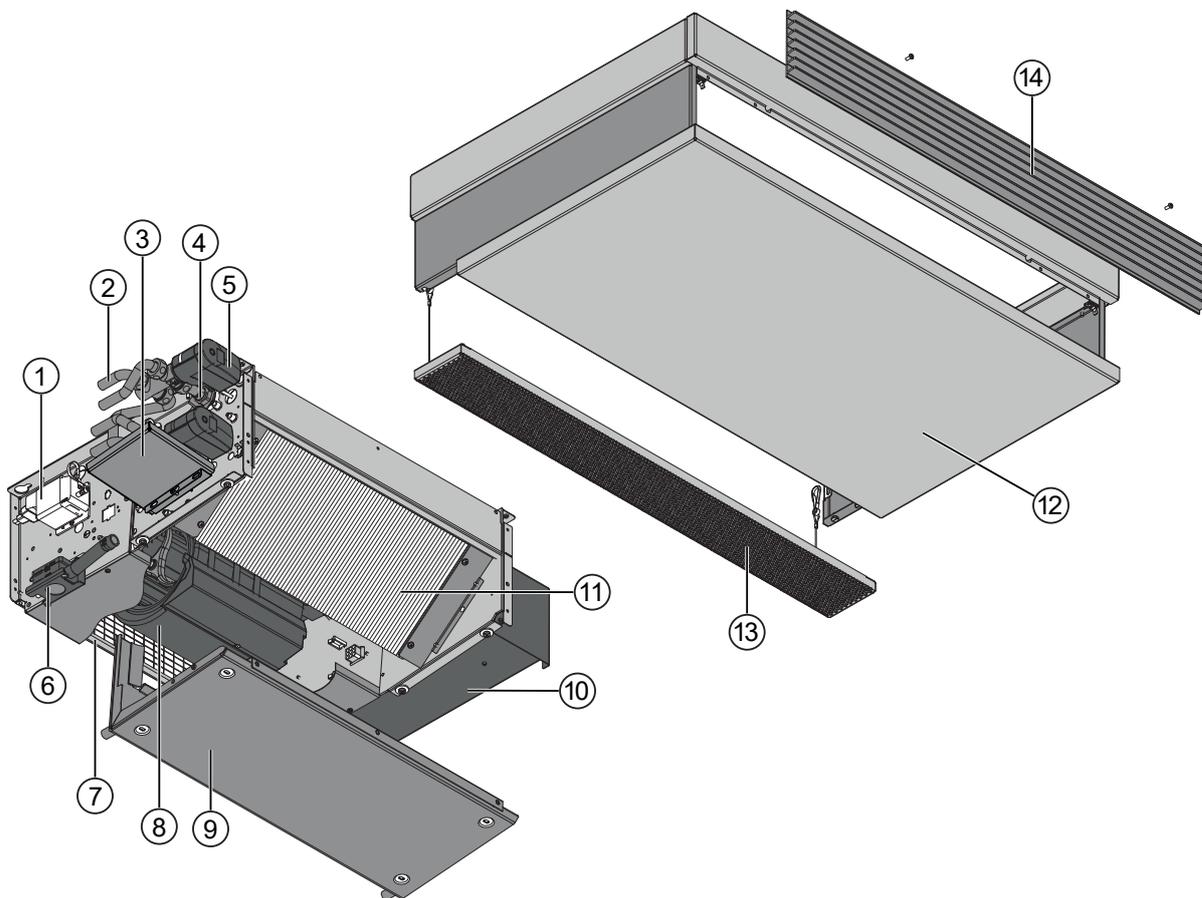


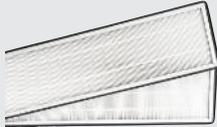
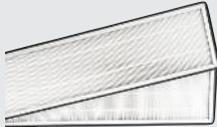
Fig. 1: Venkon at a glance (example of ceiling model)

1	Condensation pump	8	AC or EC fan
2	Pipework	9	Condensation tray
3	Valve condensation tray	10	Control in the electrical housing (e.g. C1 control)
4	Water connections	11	Heat exchanger
5	Actuator	12	Casing
6	Float switch	13	Intake air grille
7	Filter	14	Air outlet grille

5.2 Brief description

Venkons are decentralised units for heating, cooling and filtering air, for use in hotels, offices and business premises, among others. Secondary air is drawn in filtered by the fan and passed through the copper/aluminium heat exchanger. Here the air is either heated or cooling depending on the temperature of the water in the heat exchanger. The heated or cooled air is discharged into the room through the air outlet grille.

5.3 Wear parts list

Figure	Article	Properties	Suitable for	Art. no.
	Replacement filter with frame	1 no.	Venkon AC and EC	Model 61: 14869BBB0101
				Model 63: 14869BBB0301
				Model 66: 14869BBB0601
				Model 67: 14869BBB0701
	Spare filter eP-M10>50% (M5)	1 no.	Venkon AC and EC	Model 61: 14869BBB0105
				Model 63: 14869BBB0305
				Model 66: 14869BBB0605
				Model 67: 14869BBB0705
	Spare filter eP-M1>50% (F7)	1 no.	Venkon AC and EC	Model 61: 14869BBB0107
				Model 63: 14869BBB0307
				Model 66: 14869BBB0607
				Model 67: 14869BBB0707

6 Installation and wiring

6.1 Definition of the connection side

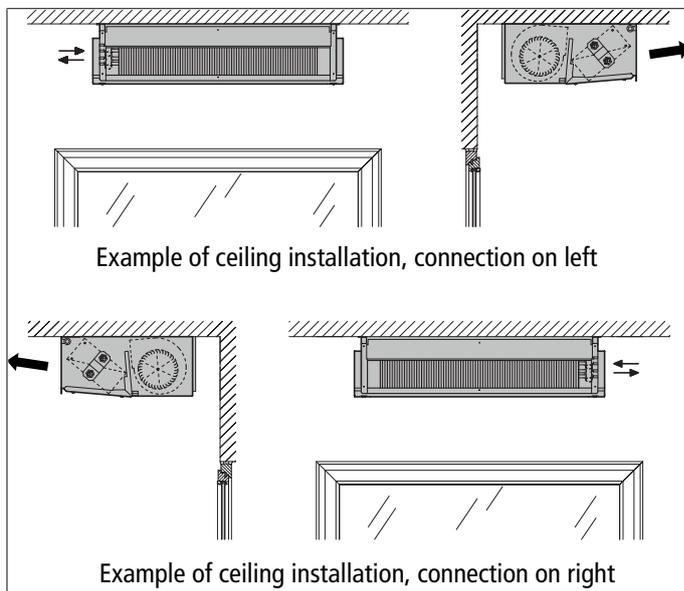


Fig. 2: Ceiling-mounted, connection on left and right

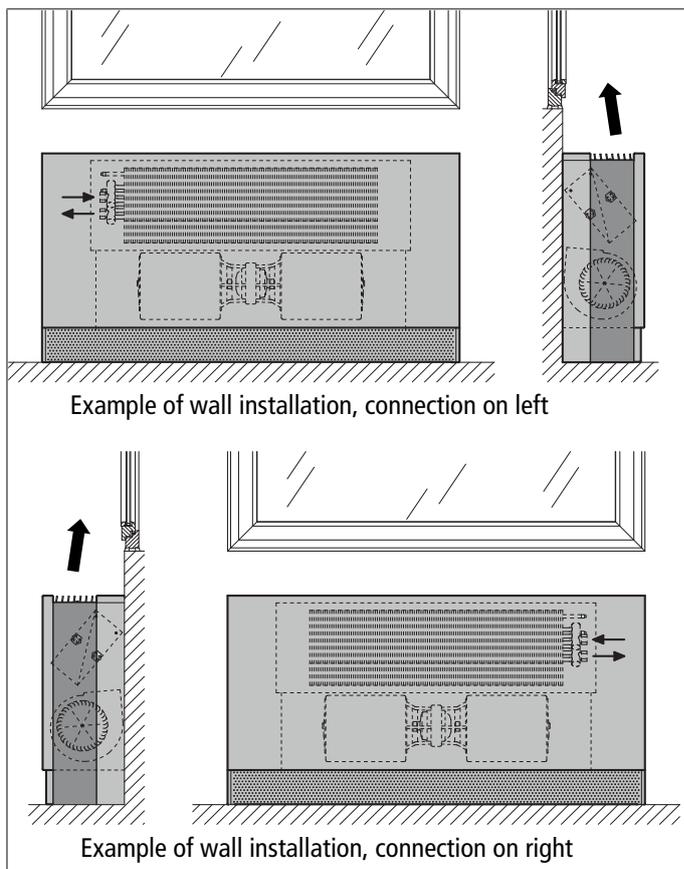


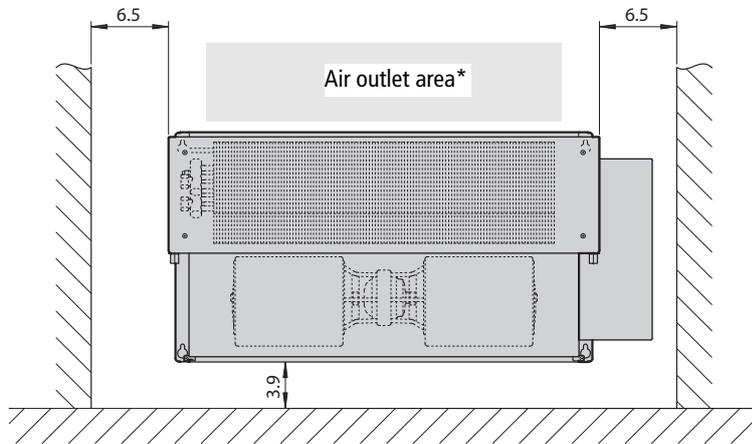
Fig. 3: Wall-mounted, connection on left and right

6.2 Requirements governing the installation site

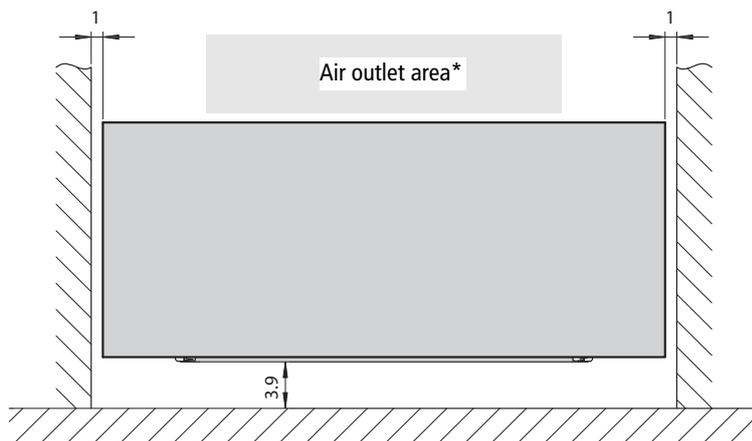
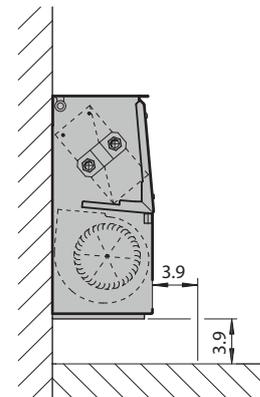
Only install and assemble the unit if the following conditions are met:

- ▶ Make sure that the wall/ceiling is sufficiently load-bearing to take the weight of the unit (Technical data [▶ 12]).
- ▶ Make sure that the ceiling is sufficiently load-bearing to take the weight of the unit (Technical data [▶ 12]).
- ▶ Make sure that the unit is securely suspended/standing.
- ▶ Ensure that the airflow can circulate freely.
- ▶ Provide adequate space for flow and return water connections on site (Connection to the pipe network [▶ 30]).
- ▶ There is a power supply on site (Maximum electrical rating values [▶ 40]).
- ▶ If need be, provide a condensation connection with a sufficient gradient on site.

6.3 Minimum clearances

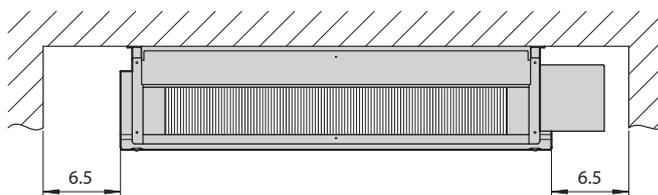


Example of basic unit, wall-hanging (without casing)

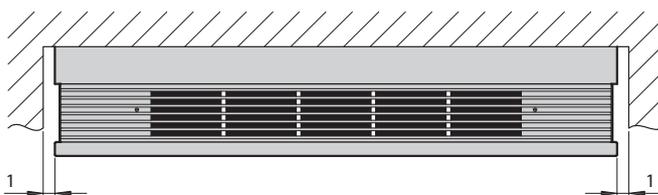
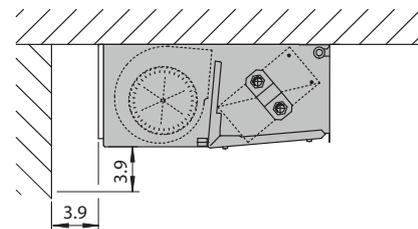


Example of unit, wall-hanging with casing

*The air outlet area needs to be completely barrier-free to guarantee the free circulation of air! There needs to be a 50 mm freely accessible clearance above the casing to be able to remove the casing.



Example of basic unit, ceiling (without casing)



Example of unit, ceiling-mounted with casing

Fig. 4: Minimum clearances

6.4 Installation

2 people are needed to install the unit.



CAUTION!

Risk of injury from sharp metal housing!

The inner metal of the casing can have sharp edges.

- ▶ Wear suitable protective gloves.



IMPORTANT NOTE!

Horizontal installation of units!

When installing the units, ensure that they are completely horizontal to ensure proper operation.



IMPORTANT NOTE!

Avoid draughts!

Consider the occupied zone when installing/suspending the units. Do not expose people to the direct air flow. Position the unit accordingly and adjust the air outlet if required.

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6.4.1 Installation of basic unit

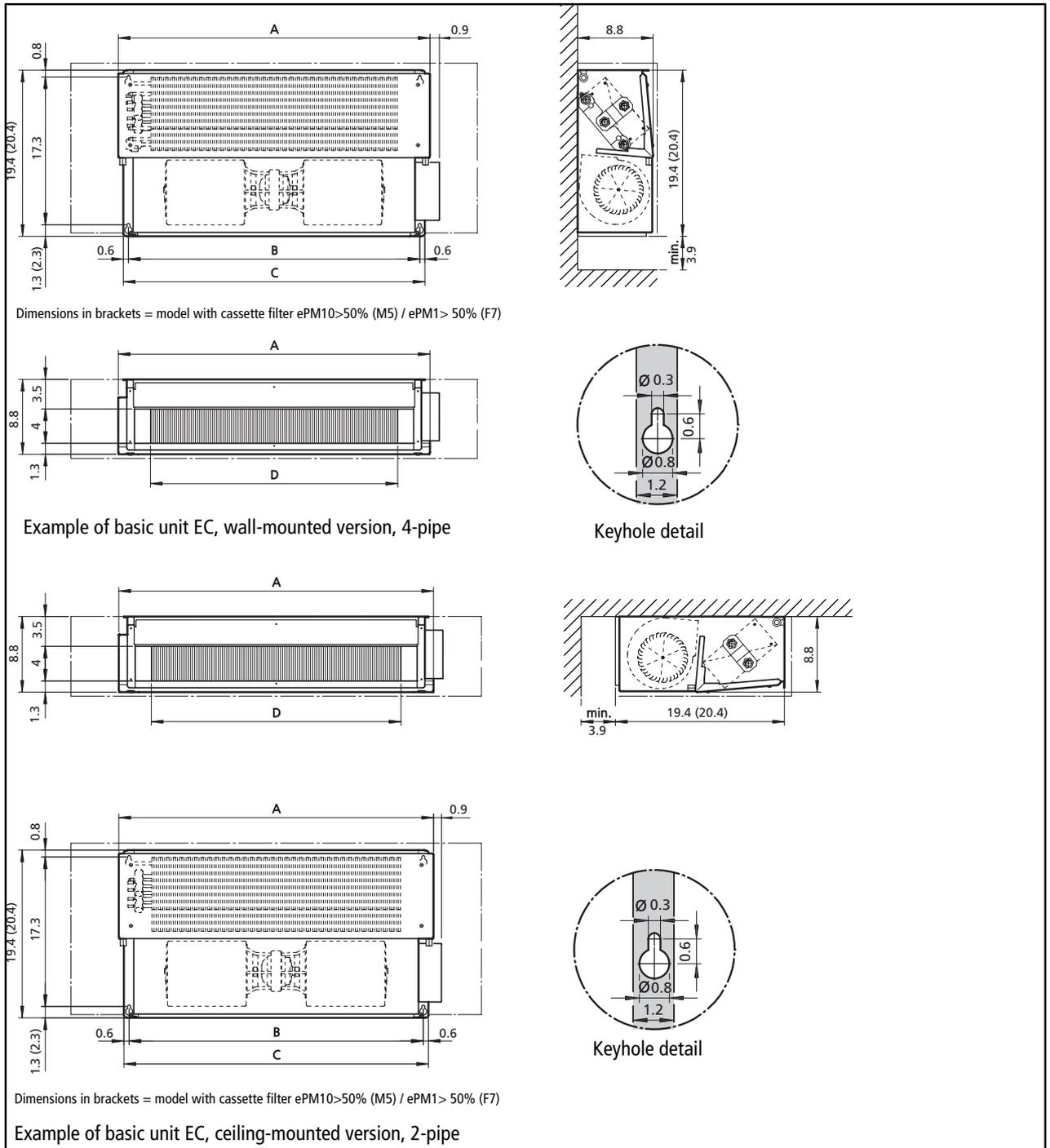


Fig. 5: Suspension points for basic unit

	A (Width of basic unit)	B (Distance of suspension points)	C (Rear wall)	D (Outlet opening)
Model 61	625 mm / 24,6 inch	560 mm / 22 inch	590 mm / 23,2 inch	431 mm / 17 inch
Model 63	925 mm / 36,4 inch	860 mm / 33,9 inch	890 mm / 35 inch	731 mm / 28,8 inch
Model 66	1375 mm / 54,1 inch	1310 mm / 51,6 inch	1340 mm / 52,8 inch	1181 mm / 46,5 inch
Model 67	1725 mm / 67,9 inch	1660 mm / 65,4 inch	1690 mm / 66,5 inch	1531 mm / 60,3 inch

Tab. 5: Dimensions of basic unit

Note the Venkon minimum clearances when installing the basic units!

- ▶ Highlight the dimensions and clearances of the key holes on the wall or ceiling as per the table, drill the holes and use appropriate fixing materials to install the basic unit.
- ▶ Align the basic unit for correct operation. Install the basic unit with a gradient on the condensation discharge side should condensation be produced.
- ▶ Once the basic unit has been aligned, prevent the fixing material from coming loose.

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6.4.2 Installation of casing

Casing overview

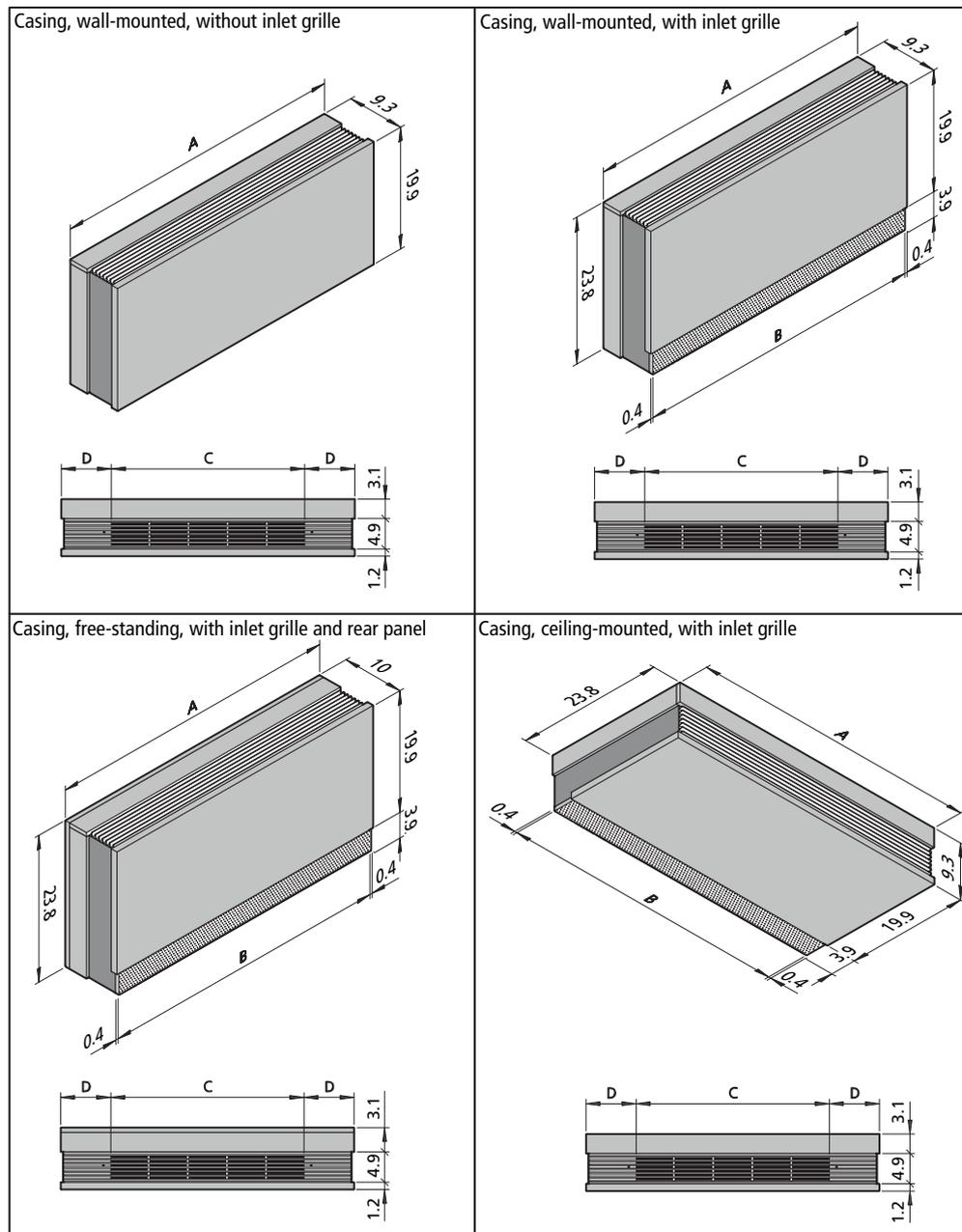


Fig. 6: Overview of casings

	A	B	C	D
Model 61	900 / 35,4 inch	880 / 34,6 inch	470 / 18,5 inch	215 / 8,5 inch
Model 63	1200 / 47,2 inch	1180 / 46,5 inch	790 / 31,1 inch	205 / 8,1 inch
Model 66	1650 / 65 inch	1630 / 64,2 inch	1270 / 50 inch	190 / 7,5 inch
Model 67	2000 / 78,7 inch	1980 / 78 inch	1590 / 62,6 inch	205 / 8,1 inch

General information on casings

- ▶ Casings are factory-fitted as standard.
- ▶ Casings for wall-mounted and ceiling-mounted models are installed and dismantled in the same way.
- ▶ Always remove the casing ahead of maintenance work (apart from filter replacement).



Fig. 7: Dismantling the air inlet grille

1	Loosen the air inlet grille from the magnet.	2	Unhook the air inlet grille.
---	--	---	------------------------------

Dismantling/installing the air inlet grille

With casings with air inlet grille, remove the grille from the casing before installation and dismantling as the casing cannot otherwise be removed or fitted!

Wire cables are fitted to the wire inlet grille on ceiling-mounted units to prevent it from falling out and which are fixed to the side panel of the casing with a carabiner hook.

1. Push the air intake grille to the side so that it comes out of the support in the side panel and from the magnet.
2. Unhook the wire cables and remove the air inlet grille.

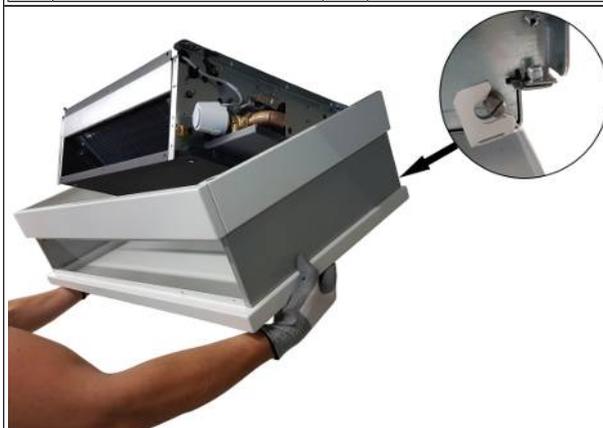


Fig. 8: Suspending the casing

Suspending the casing

Push the mounting brackets (left and right) on shoulder screws so that the casing is hooked in place.

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Fig. 9: Fold up the casing and press in place

Press the casing upwards and insert the retaining tabs into the slots of the main support panels of the basic unit.



Fig. 10: Fix the casing with screws

Screw the casing to the basic unit with 2 countersunk screws. After screwing the casing in place refit the air inlet grille [► 000].



Fig. 11: Install the air outlet grille

Insert the air outlet grille and use 2 flat-head screws to attach it to the basic unit.

6.4.3 Installing the sheet steel accessories

Overview, air-side sheet steel accessories

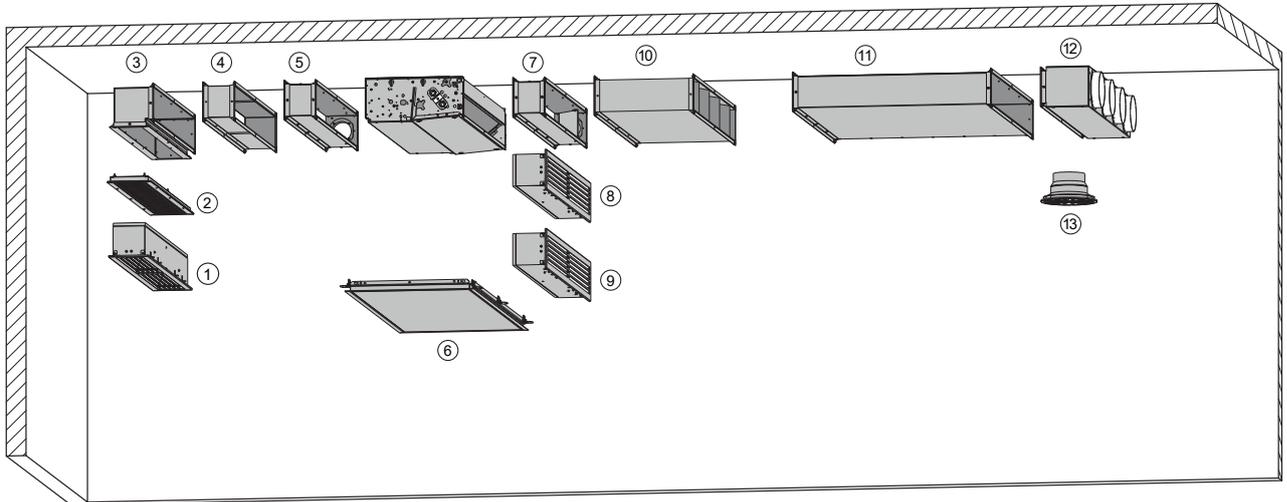


Fig. 12: Diagram of arrangement of sheet steel accessories for ceiling-mounted units

1	Hotel air opening with inlet box and filter	8	Outlet box with hotel air opening
2	Internal air grille	9	Discharge box with primary air connection and hotel air opening
3	90° duct bend	10	Splitter noise attenuator
4	Flexible connector	11	Air duct
5	Inlet box with primary air connection	12	Flexible pipe connection unit Ø 198 mm
6	Service hatch with frame	13	Ceiling swirl diffuser
7	Outlet box with primary air connection		

Figure	Description	Dimensions [mm]				
		61	63	66	67	
	Hotel air opening with inlet box and filter	A	620 24.4 inch	920/ 36.2 inch	1370/ 53.9 inch	1720/ 66.3 inch
		B	583/ 23 inch	883/ 34.8 inch	1333/ 52.5 inch	1683/ 66.3 inch

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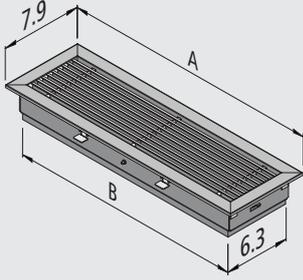
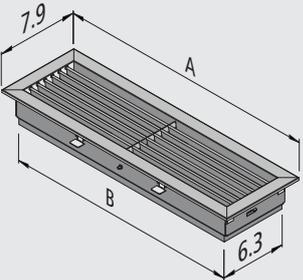
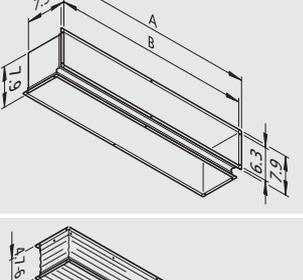
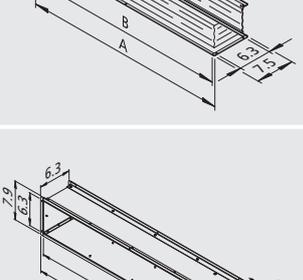
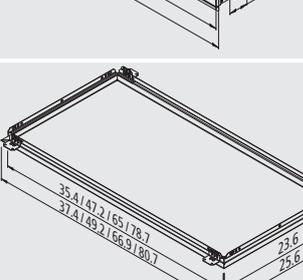
Figure	Description	Dimensions [mm]				
		61	63	66	67	
	Internal air grille	A	625/ 24.6 inch	925/ 36.4 inch	1375/ 54.1 inch	1725/ 67.9 inch
		B	583/ 23 inch	883/ 34.8 inch	1333/ 52.2 inch	1683/ 66.3 inch
	90° duct bend	A	570/ 22.4 inch	870/ 34.3 inch	1320/ 52 inch	1670/ 65.7 inch
		B	530/ 20.9 inch	830/ 32.7 inch	1280/ 50.4 inch	1630/ 64.2 inch
	Flexible connector	A	570/ 22.4 inch	870/ 34.3 inch	1320/ 52 inch	1670/ 65.7 inch
		B	530/ 20.9 inch	830/ 32.7 inch	1280/ 50.4 inch	1630/ 64.2 inch
	Inlet box with primary air connection	A	570/ 22.4 inch	870/ 34.3 inch	1320/ 52 inch	1670/ 65.7 inch
		B	530/ 20.9 inch	830/ 32.7 inch	1280/ 50.4 inch	1630/ 64.2 inch
	Service hatch with frame					

Figure	Description	Dimensions [mm]				
		61	63	66	67	
	Outlet box with primary air connection	A	570/ 22.4 inch	870/ 34.3 inch	1320/ 52 inch	1670/ 65.7 inch
		B	530/ 20.9 inch	830/ 32.7 inch	1280/ 50.4 inch	1630/ 64.2 inch
	Outlet box with hotel air opening	A	620/ 24.4 inch	920/ 36.2 inch	1370/ 53.9 inch	1720/ 67.7 inch
		B	583/ 23 inch	883/ 34.8 inch	1333/ 52.5 inch	1683/ 66.3 inch
	Discharge box with primary air connection and hotel air opening	A	620/ 24.4 inch	920/ 36.2 inch	1370/ 53.9 inch	1720/ 67.7 inch
		B	583/ 23 inch	883/ 34.8 inch	1333/ 52.5 inch	1683/ 66.3 inch
	Splitter noise attenuator	A	570/ 22.4 inch	870/ 34.3 inch	1320/ 52 inch	1670/ 65.7 inch
		B	530/ 20.9 inch	830/ 32.7 inch	1280/ 50.4 inch	1630/ 64.2 inch
	Air duct	A	570/ 22.4 inch	870/ 34.3 inch	1320/ 52 inch	1670/ 65.7 inch
		B	530/ 20.9 inch	830/ 32.7 inch	1280/ 50.4 inch	1630/ 64.2 inch
	Flexible pipe connection unit \varnothing 198 mm	A	570/ 22.4 inch	870/ 34.3 inch	1320/ 52 inch	1670/ 65.7 inch
		B	530/ 20.9 inch	830/ 32.7 inch	1280/ 50.4 inch	1630/ 64.2 inch

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Figure	Description	Dimensions [mm]
	Ceiling swirl diffuser DN180, including clamping flange for installation in suspended ceilings, white painted, for connection to flexible pipe Ø 158 mm	Outlet Ø 180 mm/ 7.1 inch Flexible pipe Ø 158 mm/ 6.2 inch

Tab. 6: Air-side sheet steel accessories

Frame connection dimensions

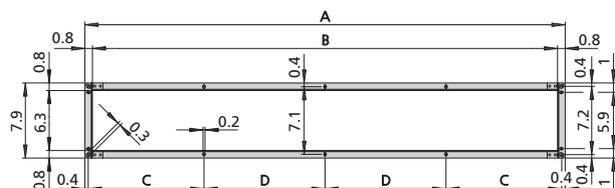


Fig. 13: Frame connection dimensions

Model	A	W	C	D
61	570 mm/ 22.4 inch	530 mm/ 20.9 inch	276 mm/ 10.9 inch	-
63	870 mm/ 34.3 inch	830 mm/ 32.7 inch	426 mm/ 16.8 inch	-
66	1320 mm/ 52 inch	1280 mm/ 50.4 inch	651 mm/ 25.6 inch	-
67	1670 mm/ 65.7 inch	1630 mm/ 64.2 inch	406 mm/ 16 inch	420 mm/ 16.5 inch

6.5 Installation

Hydraulic connection

Note the following points when connecting the hydraulic side:

- ▶ Install and test safety components (expansion vessels, pressure relief valves and overflow valves).
- ▶ Route condensation lines with a sufficient cross-section without bends and narrow sections with a gradient to the waste water pipe on site.
- ▶ Allow adequate space for the air flow (air inlet and outlet).

Pay attention to the following additional points with cooling mode:

- ▶ Provide continuous vapour-tight insulation on all components that carry water (pipes, valves, connections) as far as the unit.
- ▶ Select appropriate pipe brackets (cooling clamps) for cooling mode.
- ▶ Size the diameter of the condensation line appropriately.
- ▶ Prevent any traps (if fitted) in the condensation line from drying out.

6.5.1 Connection to the pipe network

The flow and return connections are located as standard on the left side of the unit, seen from the front panel.

Route the pipes so that no mechanical stresses are transferred to the heat exchanger and that the unit can be accessed with ease for maintenance and repair work. Proceed as following when connecting up the unit's hydraulic pipework:

- ▶ Shut off the heating/cooling medium and prevent it from being opened accidentally before connecting to on-site pipework and making the hydraulic connections on the basic unit, as there is a danger of scalding from escaping heating medium!
- ▶ With cooling units there is a danger to the user from the cold and a danger to the environment from the use of glycol. Take appropriate safety measures.
- ▶ Remove protective caps from the flow and return.
- ▶ With cooling mode, route pipes and valves directly over the side condensation tray (accessory) to drain any condensation produced on the pipes during cooling mode into the tray.
- ▶ Seal and tighten the connections. Prevent the connection nuts from shearing and twisting.
- ▶ When connecting the unit to the on-site pipework, make sure that you use a suitable tool to hold the unit's water connections in place!
- ▶ Make sure that the pipes can be vented.
- ▶ Use suitable insulating material (impermeable for cooling units).
- ▶ Tighten all threaded connectors once the pipes have been fitted and check that they are not under any tension.

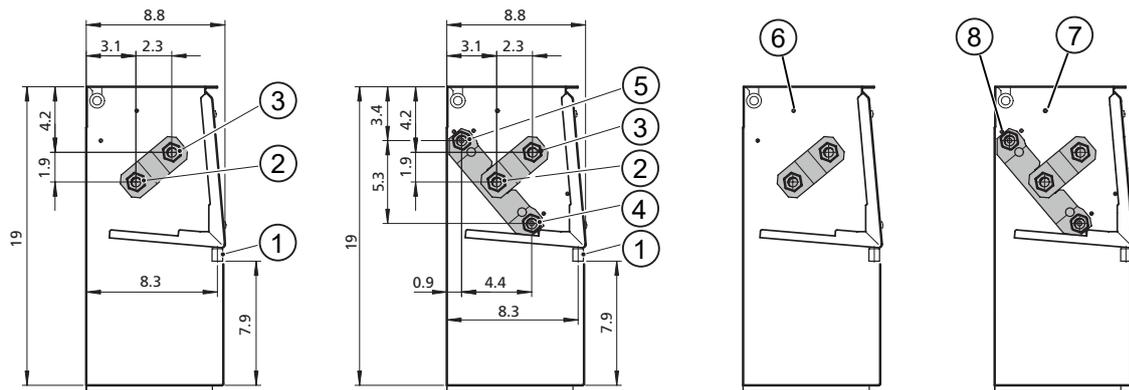


Fig. 14: Wall-mounted basic unit, 2-pipe and 4-pipe

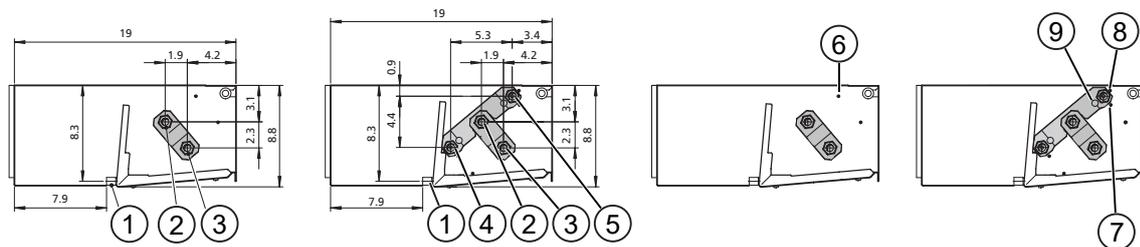


Fig. 15: Ceiling-mounted basic unit, 2-pipe and 4-pipe

1	Drain connection on main condensation tray Ø15/ 0.6 inch	2	Cooling return (also heating with 2-pipe)*
3	Cooling flow (also heating with 2-pipe)*	4	Heating return*
5	Heating flow*		

*	2-pipe		4-pipe		
Model	Models 61 – 63	Models 66 – 67	Models 61 – 63	Models 66 – 67	
Coil	Heating/cooling		Heating/cooling	Heating	Cooling
Connection (Rp)	1/2"	3/4"	1/2"	1/2"	3/4"

Tab. 7: * Water connections

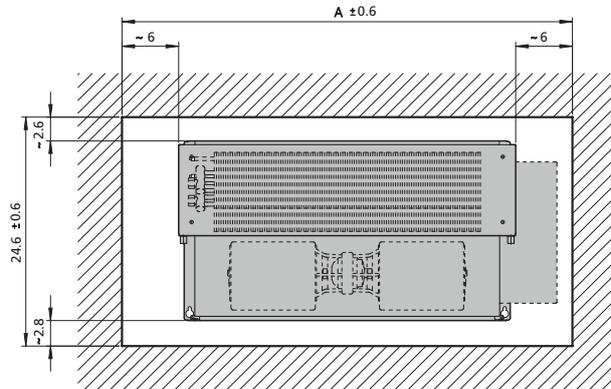


Fig. 16: Inspection opening

6.5.2 Sealing the pipework to the valve condensation tray

Proceed as follows when using the valve condensation tray to collect condensation from the valves:

	<p>Fit diffusion-tight insulation to the pipe from below through the opening of the valve condensation tray to the top edge.</p>					
	<p>Press the rubber pipe collar ① to the insulation ② and the neck of the valve condensation tray and glue in place.</p> <p>Important: There is a danger that condensation will escape if the insulation is not leak-tight!</p>					
<table border="1"> <tbody> <tr> <td>1</td> <td>Rubber pipe collar</td> <td>2</td> <td>Insulation</td> </tr> </tbody> </table>		1	Rubber pipe collar	2	Insulation	
1	Rubber pipe collar	2	Insulation			

Fig. 17: Insulation with wall-mounted units

Fig. 18: Gluing rubber pipe collars with insulation

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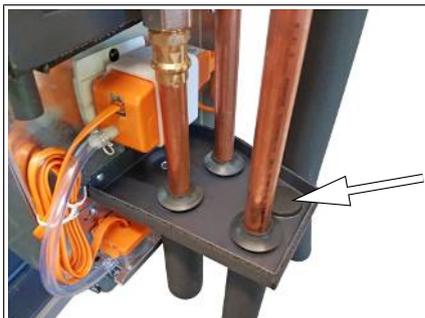


Fig. 19: Closing unused holes

Press plastic plugs (supplied) into unused holes in the valve condensation tray.

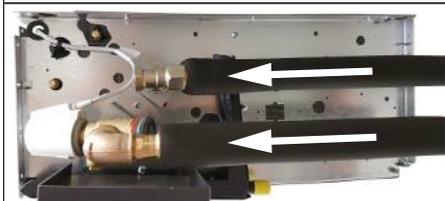
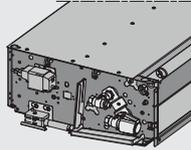
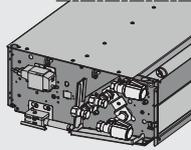
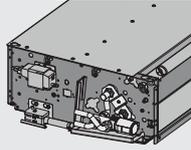
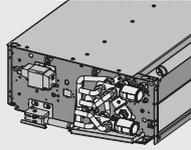
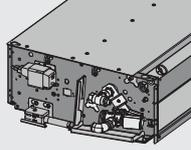
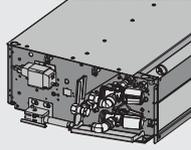


Fig. 20: Insulating with ceiling units

Fit diffusion-tight insulation as far as the area above the valve condensation tray.

6.5.3 Overview of valve kits

Accessories for recirculating air basic unit, water-side, factory-fitted to the basic unit					
	2-way valve kit	Water connection on left	2-pipe model with adjustable 2-way valve with return shut-off valve	Fits all models, combinable control: U02M	Art. no. 14863BBL2*2A
		Water connection on right			Art. no. 14863BBR2*2A
	2-way valve kit	Water connection on left	4-pipe model with adjustable 2-way valve with return shut-off valve	Fits all models, combinable control: U02M	Art. no. 14863BBL4*2A
		Water connection on right			Art. no. 14863BBR4*2A
	3-way valve kit	Water connection on left	2-pipe unit with 3-way valve	Fits all models, combinable control: U02M	Art. no. 14863BBL2*3A
		Water connection on right			Art. no. 14863BBR2*3A
	3-way valve kit	Water connection on left	4-pipe unit with 3-way valve	Fits all models, combinable control: U02M	Art. no. 14863BBL4*3A
		Water connection on right			Art. no. 14863BBR4*3A
	Differential pressure-independent valve kit	Water connection on left	2-pipe differential pressure-independent valve fit with return shut-off valve	Fits all models, combinable control: U02M	Art. no. 14863BBL2*DA
		Water connection on right			Art. no. 14863BBR2*DA
	Differential pressure-independent valve kit	Water connection on left	4-pipe differential pressure-independent valve fit with return shut-off valve	Fits all models, combinable control: U02M	Art. no. 14863BBL4*DA
		Water connection on right			Art. no. 14863BBR4*DA

Tab. 8: Valve kit accessories

Important: The valve kit dimensions are identical for the left and right connection side.

Actuator with 'First Open' function

- ▶ When delivered, the actuator is normally open in a de-energised state, thanks to the First Open function. This enables heating mode to run even if the electric wiring is not yet completed.
- ▶ When subsequently commissioned and with the application of power (for longer than 6 minutes), the First Open function is automatically unlocked so that the actuator becomes fully operational.

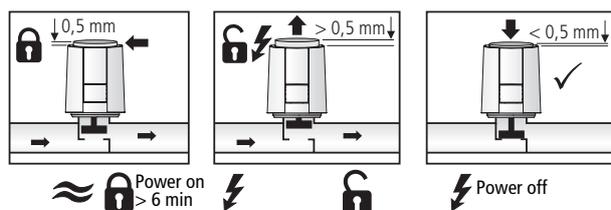


Fig. 21: "First Open" function

6.5.4 Connection of 2-way valve kit

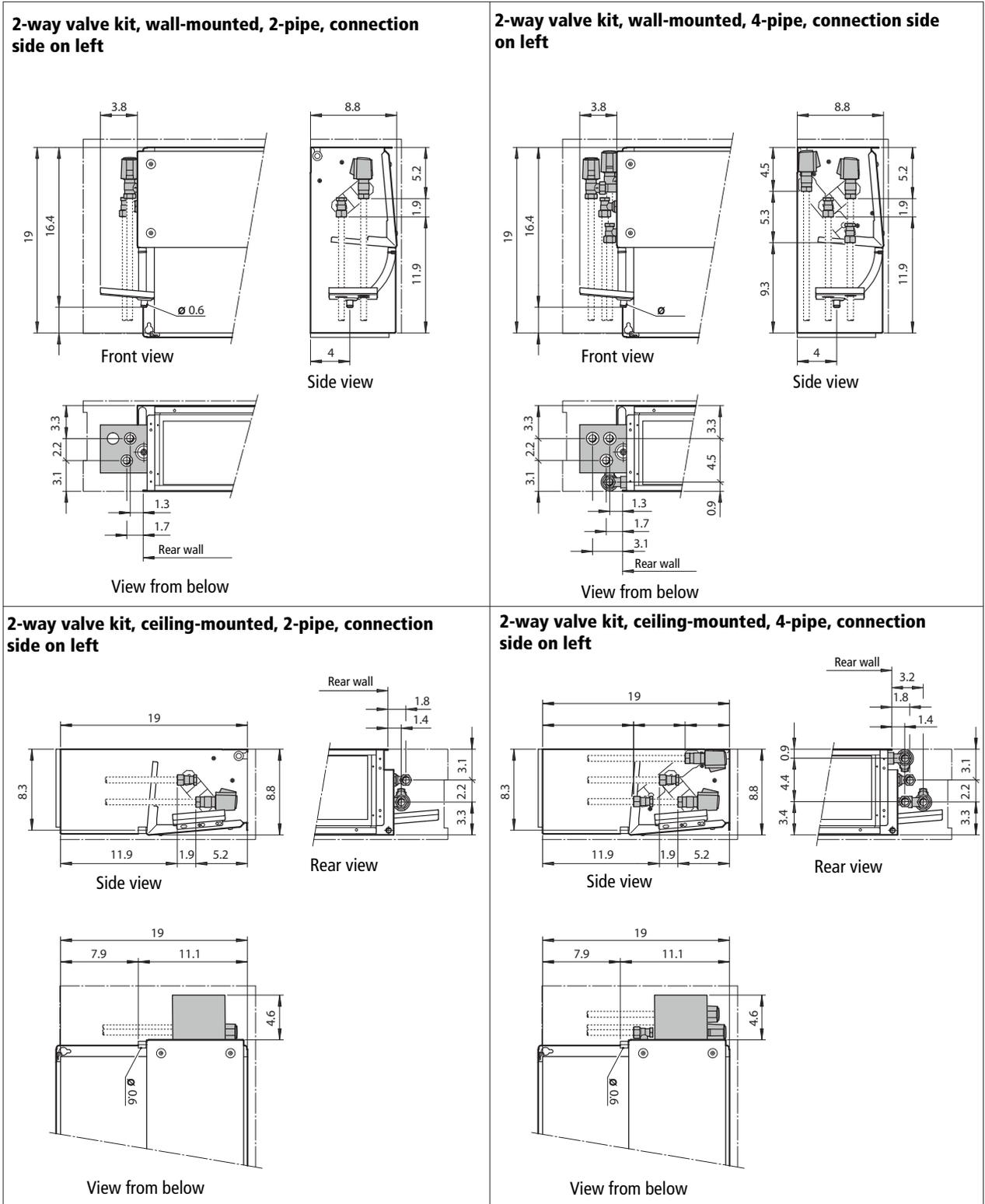


Fig. 22: Valve kit dimensions 2way

6.5.5 Connection of 3-way valve kit

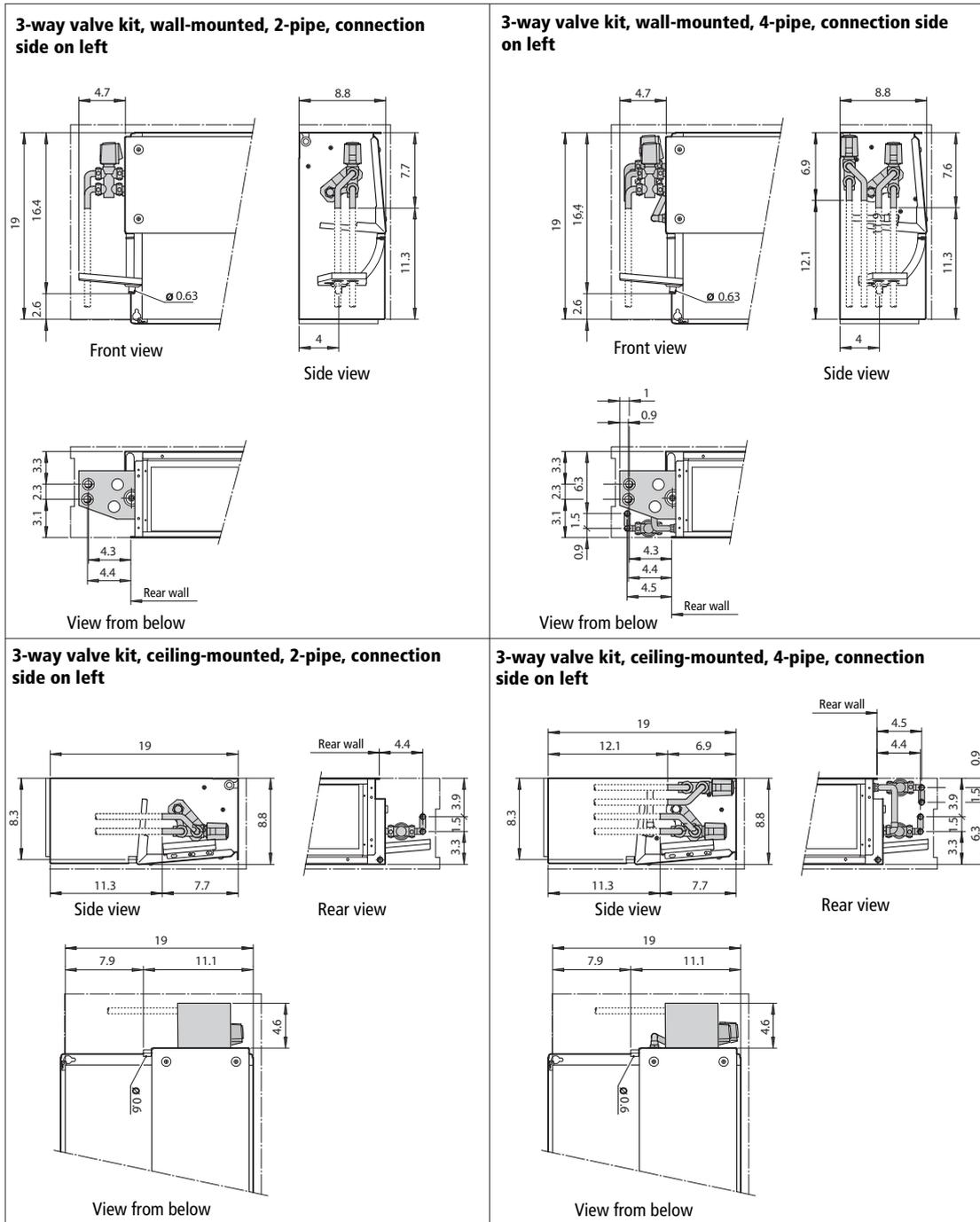


Fig. 23: valve kit dimensions 3 way

6.5.6 Connection of differential pressure-dependent valve kit

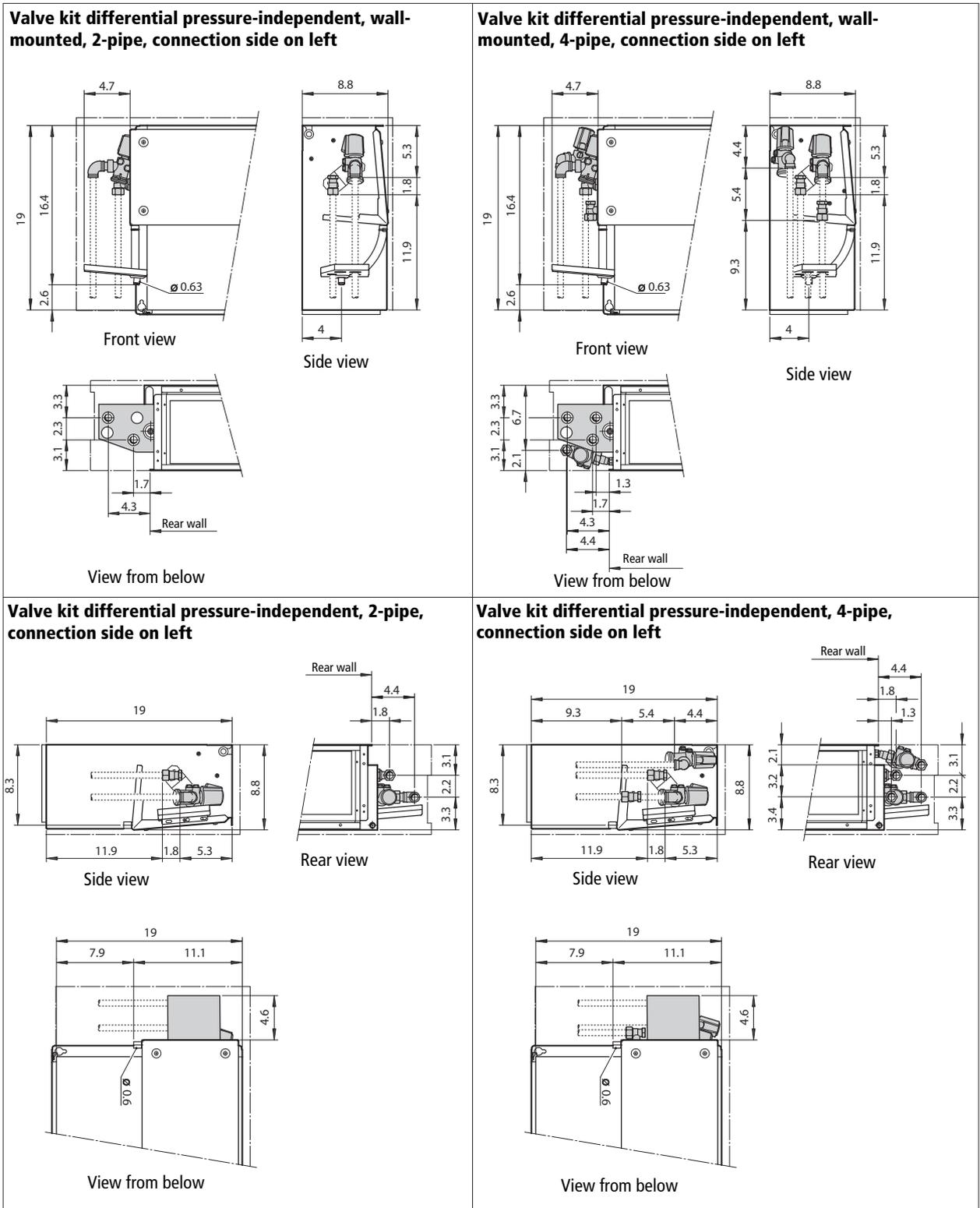


Fig. 24: Valve kit dimensions DDU

6.5.7 Connection, on-site pipework

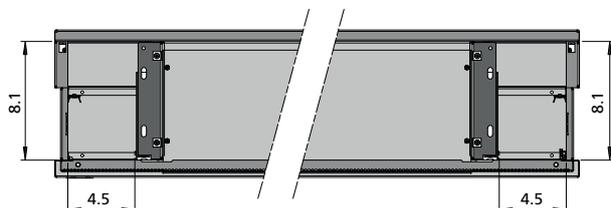


Fig. 25: Bottom view (basic unit with casing)

6.5.8 Condensation connection

6.5.8.1 Condensation drain with natural gradient

It is essential that a condensation drain is connected and appropriately fixed to a Venkon condensation drain connector (drain size 15 mm / 0.6 inch). Ensure that the gradient is at least 1 cm/m (0.1 inch/foot), without restrictions and without rising sections of pipe to ensure the drainage of condensation from the basic unit. Take into account all applicable regulations, such as the use of a ball trap, when connecting the condensation line to the sewer system. Protect the trap from drying out. The suction effect of the fan on the condensation drain neck could otherwise produce troublesome odours. Consider using water vapour-impermeable insulation depending on the pipe material used for the condensation drain. You will need a condensation pump (optional accessories) should a natural gradient be impossible on site. This is used to pump the condensation into higher collection or drainage equipment.

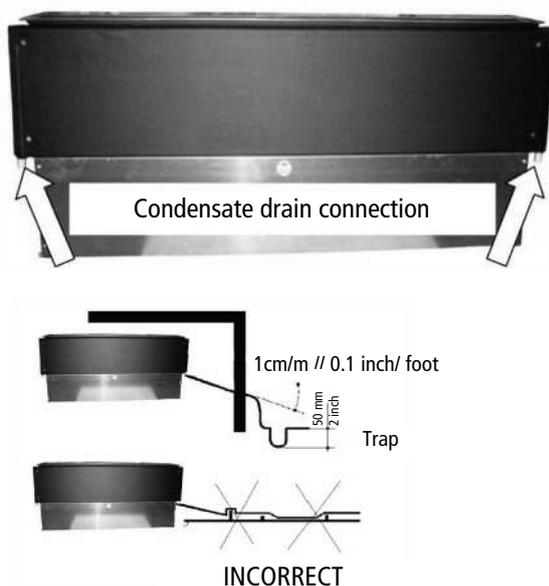


Fig. 26: Correct condensation drainage

6.5.8.2 Condensation drain via condensation pump (accessory)

The water is drawn off by the condensation pump and discharged along a hose (supplied loose) connected on the pressure side. Depending on conditions on site, the water can be discharged into drainage lines, possibly with a trap connection.

In the event of a fault with the condensation drain, the water level will continue to rise until the float switch triggers an alarm contact. The contact can be analysed by external signalling devices.

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We would recommend automatically terminating cooling operation, possibly with a shut-off valve, if the alarm contact is triggered to prevent the condensation tray from overflowing.

Condensate drain

- ▶ Drainage of condensation from the condensation pump has to be provided along a natural gradient with an adequate cross-section (minimum 1/2"). Increase the cross-section of the line with longer condensation lines.
- ▶ Check whether the condensation line needs to be insulated to prevent the build-up of condensation along the line.
- ▶ Do not use a rigid transition to the on-site condensation drain, as this lengthens the pump's pressure hose. We would recommend free overflow into a trap.

Installation, cabling of the condensation pump (accessory)

The condensation pump needs a separate power supply 230 V/50 Hz. We would generally advise against connecting it via the room thermostat, as residual condensation could be produced after it has been switched off. Additional wires are needed to analyse the alarm contact.

Use the following types of cable:

- ▶ Mains supply: NYM-J, 1.5 mm²
- ▶ Alarm contact: The cable for the alarm contact depends on the kind of alarm analysis used (e.g. shielded cable).

Connecting the Condensate Pump

Push the suction hose as far as it will go and fix in place with a cable tie to prevent the pump from running dry.

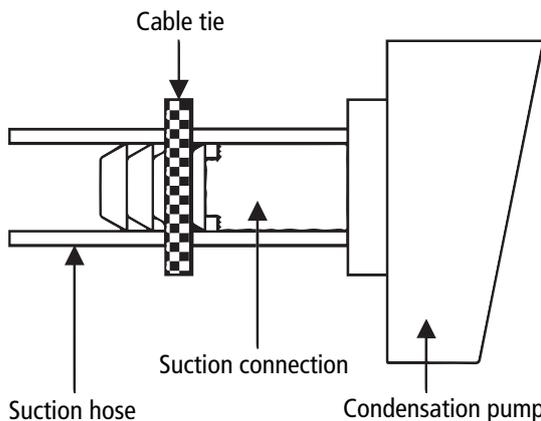


Fig. 27: Fixing the suction hose

- ▶ Supply power and wire alarm contact (separate cable with plug) as per the wiring diagram.
- ▶ Connect the hose to the condensation drain (separate). Direction of flow: refer to the arrow on the side of the housing

Operating voltage [V]	AC 120
Mains frequency [Hz]	60
Safety shut-off [A]	8 A resistive (5 A inductive)
Flow rate [l/h]	Max. 14
Delivery height [m]	8
Suction height [m]	1
Switched by "Hall effect"	
Integrated thermal cut-out	

Tab. 9: Technical data on the condensation pump

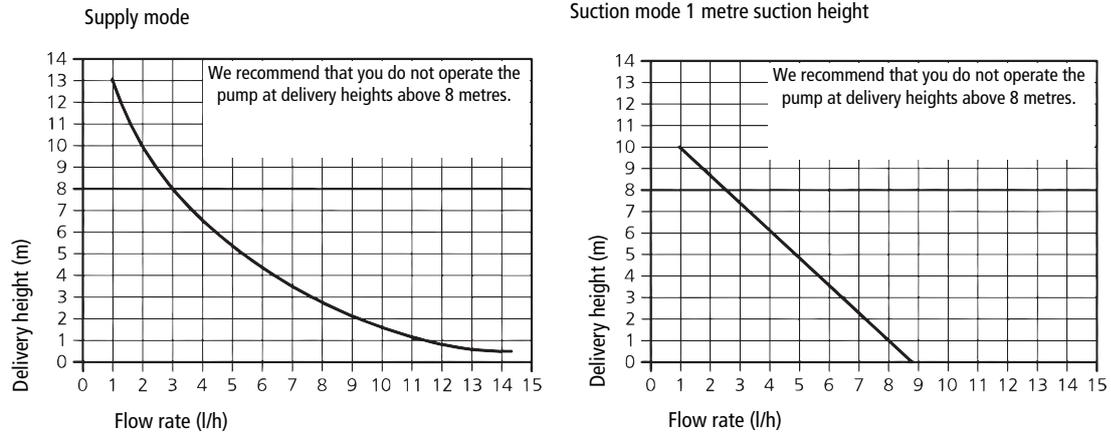


Fig. 28: Characteristic curves of the condensation pump

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7 Electrical wiring



IMPORTANT NOTE!

Condensation formation in the cooling unit!

In the event of on-site valve control, the cooling valve must be closed when the fans are switched off.

7.1 Maximum electrical rating values

Venkon EC, electromechanical model (U02M)

Model	Number of fans	Nominal voltage	Mains frequency	Nominal power	Nominal current	Protection rating	Protection class
61	1x Single	115 V~	60 Hz	65 W	1.0 A	IP20	I
63	1x Tandem	115 V~	60 Hz	100 W	1.5 A	IP20	I
66	1x Single, 1x Tandem	115 V~	60 Hz	136 W	2.1 A	IP20	I
67	2x Tandem	115 V~	60 Hz	170 W	2.4 A	IP20	I

Tab. 10: Maximum electrical rating values for Venkon EC

7.2 Electromechanical control, Venkon EC

7.2.1 Connection (U02M), Venkon EC

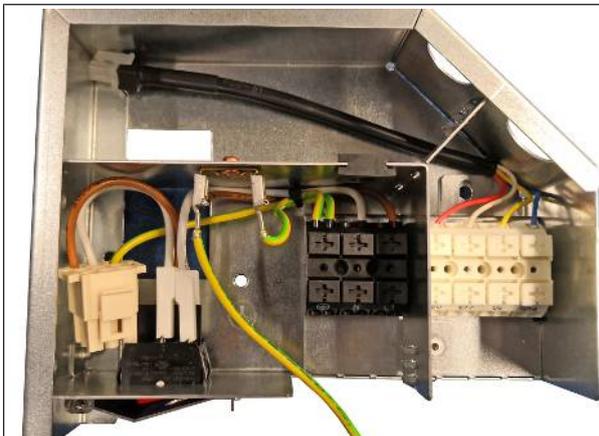


Fig. 29: junction box

The junction box for electromechanical control (EC) as well as the junction box for the condensation monitor can be electrically installed separately from the side panel of the basic unit. Simply remove the covering with screws to open the junction box.

8 Pre-commissioning checks

Check before initial commissioning whether all necessary conditions have been met so that the unit can function safely and properly.

Structural tests

- ▶ Check that the unit is securely standing and fixed.
- ▶ Check that the unit is levelled.
- ▶ Check the completeness and correct seating of all filters (dirt side).
- ▶ Check whether all components are properly fitted.
- ▶ Check whether all air ducts are mechanically fixed in place.
- ▶ Check whether all dirt, such as packaging or site dirt, has been removed.

Electrical tests

- ▶ Check whether all lines have been properly laid.
- ▶ Check whether all lines have the necessary cross-section.
- ▶ Are all wires connected in accordance with the electric wiring diagrams?
- ▶ Is the earth wire connected and wired throughout?
- ▶ Check all external electrical connections and terminal connections are fixed in place and tighten if necessary.

Water-side checks

- ▶ Check whether all supply and drainage lines have been properly connected.
- ▶ Fill pipes and unit with water and bleed.
- ▶ Check whether all bleed screws are closed.
- ▶ Check leak tightness (pressure test and visual inspection).
- ▶ Check whether the parts carrying water have been flushed through.
- ▶ Check whether any shut-off valves fitted on site are open.
- ▶ Check whether any electrically actuated shut-off valves have been properly connected.
- ▶ Check whether all valves and actuators are working properly (note permitted mounting position).

Air-side checks

- ▶ Check whether there is unimpeded flow at the air inlet and outlet.
- ▶ Check whether the air inlet filter is fitted and dirt-free.

Condensation water connection

- ▶ Check whether the condensation tray is free of building rubble.
- ▶ Check the condensation drain and operation of the alarm signal on the condensation pump.
- ▶ Check whether the cooling valve switches off in the event of an alarm signal.

Condensation water connection

- ▶ Check whether the unit is connected leak-free to the on-site condensation connection.
- ▶ Check whether the waste water lines are clean and have a sufficient gradient.
- ▶ Check whether the condensation pump has a working power supply.

Once all checks have been completed, initial commissioning can be carried out in line with Kapitel 9 „Maintenance“.

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9 Maintenance

9.1 Securing against reconnection



DANGER!

Risk of death by unauthorised or uncontrolled restart!

Unauthorised or uncontrolled restarting of the equipment can result in serious injury or death.

- ▶ Before restarting, ensure that all safety devices are fitted and working properly and that there is no hazard to humans.

Always follow the procedure described below to prevent accidental restart:

1. de-energise.
2. Prevent accidental re-connection.
3. Check that the equipment is de-energised.
4. Cover and cordon off adjacent live parts.



WARNING!

Risk of injury from rotating parts!

The fan impeller can cause severe injuries.

- ▶ Switch off the unit and prevent it from reconnection before commencing any work on moving components of the fan. Wait until all parts have come to a standstill.

9.2 Maintenance Schedule:

The sections below describe maintenance work needed for the proper and trouble-free operation of the equipment.

If there are signs of increased wear during regular checks, shorten the required maintenance intervals to the actual wear and tear. Contact the manufacturer with any questions about maintenance work and intervals.

Interval	Maintenance task	Personnel
As required	Regular visual checks and acoustic checks for damage, dirt and function.	User
quarterly	Check filter for dirt, clean and change filter when needed.	User
every six months	Clean unit components (heat exchanger, condensation tray, condensation pump, float switch).	User
every six months	Check water-side connections, valves and fittings for dirt, leak-tightness and function.	User
every six months	Check the electrical wiring.	Qualified personnel
every six months	Clean components/surfaces that come into contact with air.	User
quarterly	Check the heat exchanger for dirt, damage, corrosion and leak-tightness. Carefully vacuum the heat exchanger if dirty.	User

Interval	Maintenance task	Personnel
quarterly	Check the condensation tray, float switch and drain connection for dirt, damage and leak-tightness. Remove any condensation deposits that have accumulated.	User

9.3 Maintenance work

9.3.1 Replacing the filter.



CAUTION!

Risk of injury from sharp metal housing!

The inner metal of the casing can have sharp edges.

- ▶ Wear suitable protective gloves.



Fig. 30: Turning latches downwards

Turn latches (left and right) downwards using a flat-blade screwdriver.
Important: With units with casing with air inlet grille, the grille needs to be dismantled before changing the filter (Installation of casing [▶ 000]).



Fig. 31: Removing the filter

Remove the filter.

9.3.2 Visual checks

Check heat exchanger for dirt and carefully vacuum if necessary. Avoid damage to the pipes and fins.

Remove the casing prior to visual inspections!

Remove the casing before all visual inspections and maintenance work to access the basic unit.

With units with casing with air inlet grille, the grille needs to be dismantled before changing the filter. Then proceed as follows:

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Fig. 32: Loosen screws

Undo 2 screws and remove the air outlet grille.



Fig. 33: Remove the screws

Remove 2 screws in casing.



Fig. 34: Lift the casing tabs from the basic unit

Raise the casing to remove the tabs from the basic unit.

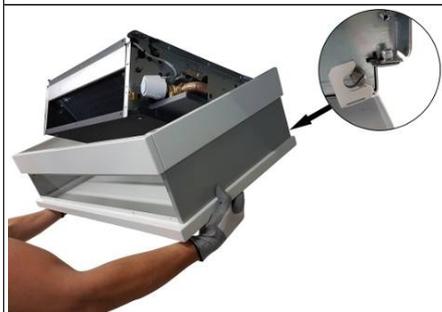


Fig. 35: Lowering the casing

Lower the casing and pull it so that the mounting brackets come out of the pivot bolt.

9.3.3 Cleaning the main condensation tray



Fig. 36: Dismantling the main condensation tray (ceiling model)

Remove 4 screws.



IMPORTANT NOTE!

Re-use rubber washers.

When screwing on the main condensation tray, it is essential that you use the rubber washers to guarantee a good seal.



Fig. 37: Removing the main condensation tray (ceiling)

Remove the main condensation tray downwards and forwards.



Fig. 38: Removing the main condensation tray (wall)

Remove 4 screws.



IMPORTANT NOTE!

Re-use rubber washers.

When screwing on the main condensation tray, it is essential that you use the rubber washers to guarantee a good seal.



Fig. 39: Removing the main condensation tray

Remove the main condensation tray horizontally.

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9.3.4 Cleaning the valve condensation tray



Fig. 40: Dismantle the valve condensation tray (ceiling model)

Dismantle and clean the valve condensation tray.



Fig. 41: Valve condensation tray (wall model)

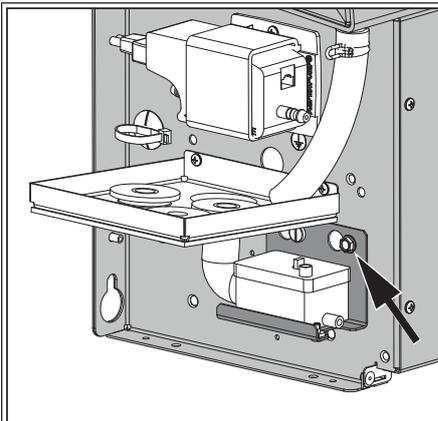
Clean the valve condensation tray.

9.3.5 Cleaning the float switch



Fig. 42: Loosening the wire clip

Use pliers to loosen the wire clip, pull it back and remove the hose.



Loosen the screw on the retaining plate and remove the retaining plate with the float switch fitted. Carefully remove the black hose bend from the underside of the valve condensation tray.

Fig. 43: Dismantling the float switch



Remove the cover and clean the open float switch.

After cleaning, make sure that the float switch is water-tight when you assemble it!

Fig. 44: Clean the float switch.

9.3.6 Clean the inside of the unit

Check all elements that come into contact with air (internal surfaces of the unit, outlet elements etc.) for dirt or deposits during maintenance and use a commercially available product to remove.

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10 Faults

The following chapter describes possible causes of faults and the work needed to rectify them. Should faults occur frequently, shorten the maintenance intervals in line with the actual loading on the unit.

Contact the manufacturer with any faults that cannot be rectified using the following information

Behaviour in the event of faults

The following applies:

1. Immediately switch off the unit with faults that pose an immediate danger to persons or property!
2. Determine the cause of the fault!
3. Switch off the unit and prevent it from being reconnected if rectifying the fault requires work in the hazard area. Immediately advise a supervisor on site about the fault.
4. Either rectify the fault yourself or have it repaired by authorised personnel, depending on the nature of the fault.

The fault table, Chapter 11.1 "Fault table" [► 50], provides information on who is authorised to rectify and remedy faults.

10.1 Fault table

Fault	Possible cause	Remedy
No function.	No power supply.	Check voltage, switch on repair switch. Replace fuse.
	Fault on the heat exchanger.	Replace the heat exchanger if you need to.
Water outlet	Hydraulic connection not properly done.	Check flow and return and tighten, if necessary.
	Condensate drain outlets blocked.	Clean condensate outlets and check for adequate gradient.
Water outlet	Chilled water line incorrectly insulated.	Check insulation.
	Condensate drain not properly installed.	Check correct operation of condensate pump. Check and clean condensate outlet.
Unit not heating or cooling sufficiently (LPHW/CHW)	Fan is not switched on.	Switch on fan at controller.
	Air volume is too low.	Set a higher speed.
	Filter is dirty.	Replace filter.
	No heating or cooling medium.	Switch on heating and/or cooling system, switch on circulation pump, vent unit/system.
	Valves not operating.	Replace faulty valves.
	Water volume too low.	Check pump output, check hydraulics.
	Setpoint temperature on the controller set too low/high.	Adjust temperature setting on the controller.
	Operating unit with integral sensor and/or external sensor is exposed to direct sunlight or positioned over a heat source.	Place operating unit with integral sensor and/or external sensor in a suitable position.
	Air cannot blow out or in freely.	Remove obstacles at the air outlet/air inlet.
	Heat exchanger dirty.	Clean heat exchanger.
	Air in the heat exchanger.	Vent heat exchanger.
Unit too loud	Speed too high.	Set a lower speed, if possible.
	Air inlet/outlet opening is obstructed.	Free air ducts.
	Filter dirty.	Replace filter.

Fault	Possible cause	Remedy
	Rotating parts unbalanced	Clean and/or replace impeller. Please make sure that no balancing clips are removed during cleaning.
	Fan dirty.	Clean dirt from fan.
	Heat exchanger dirty.	Clean dirt from Heat exchanger.

10.2 Start-up after rectification of fault

After correction of the fault, carry out the following steps to re-start:

1. Make sure that all maintenance covers and access openings are sealed.
2. Switch off the unit.
3. Acknowledge fault on controller, if necessary.

11 Certificates



AUTHORIZATION TO MARK

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Standard(s):	Safety Of Household And Similar Electrical Appliances, Part 1: General Requirements [UL 60335-1:2016 Ed.6] Household And Similar Electrical Appliances – Safety – Part 2-40: Particular Requirements For Electrical Heat Pumps, Air-Conditioners And Dehumidifiers [UL 60335-2-40:2017 Ed.2] Safety Of Household And Similar Appliances - Part 1: General Requirements [CSA C22.2#60335-1:2016 Ed.2] Household And Similar Electrical Appliances – Safety – Part 2-40: Particular Requirements For Electrical Heat Pumps, Air-Conditioners And Dehumidifiers [CSA C22.2#60335-2-40:2017 Ed.2]
Product:	Fan Coil
Brand Name:	Kampmann
Models:	14851 followed by U or V; followed by L or R; followed by 0B; followed by 1, 2, 3, 4, 5, 6, or 7; followed by 2 or 4; followed by 4U00. 14861 followed by D or W; followed by U or V; followed by L or R; followed by 2 or 4; followed by 1, 3, 6 or 7; followed by 0U02M.

Venkon

Assembly, installation and operating instructions

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