



Venkon XL UL

► 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.

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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 appliances are used exclusively for heating and chilling air in frost-free and dry interior spaces.

- ▶ The units are only intended for connection to an air duct unit and for supplying air in only one room.

The appliance must be connected to the on-site heating / cooling / ventilation system and the on-site waste water and power grid within the room to be treated. The Operating and application limits in chapter 2.2 [▶ 6] must be observed.



IMPORTANT NOTE!

Only use the unit 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.

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

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

Information in accordance with UL60335-1

- ▶ 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 permanent connection to a heating water circuit, and may not be connected using hose sets.
- ▶ The water network needs to include safety measures to prevent the danger of overpressure.
- ▶ This unit is not intended to be accessible to the general public. The water network needs to include safety measures to prevent the danger of overpressure.

2.2 Limits of operation and use

Operating limits		
Min./max. water temperature	°C/°F	40-90 / 39-194
Min./max. air intake temperature	°C/°F	6-40 / 43-104
Min./max. air humidity	%	20-60
Min. operating pressure	bar/kPa	-
Max. operating pressure	bar/kPa/psi	10/1000 / 145
Min./max. glycol content	%	0-50

Tab. 1: Operating limits

Operating voltage	115 V/ 60 Hz. 208 V/ 60 Hz. 240 V/ 60 Hz
Power/Current consumption	On the typeplate

Tab. 2: Operating voltage

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 / (<0.00000083)
Hardness	°dH / ppm CaCO ₃	4-8.5 / 0.224-0.476
Sulphur ions		not measurable
Sodium ions (Na ⁺)	mg/l / (lb/gal)	<100 / (<0.00083)
Iron ions (Fe ²⁺)	mg/l / (lb/gal)	<0.1 / (<0.00000083)
Manganese ions (Mn ²⁺)	mg/l / (lb/gal)	<0.05 / (<0.000000415)
Ammonia ions (NH ₄ ⁺)	mg/l / (lb/gal)	<0.1 / (<0.00000083)
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

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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).
- ▶ Never use the unit as a construction site heater.
- ▶ Never operate the unit in areas with a high dust content.



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 electrical system.
- ▶ Carry out all electrical work in accordance with the National Electric Code (NEC and CEC).
- ▶ Immediately disconnect the system from the power supply 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.

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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, e.g. National Electric Code (NEC) and Canadian Electric Code (CEC).

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.

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?

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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 exceed 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.

4 Technical data

Unit	Venkon XL			
Model	1	2	3	4
Width base unit [inch]	25.39	37.20	54.92	68.70
Height base unit [inch]	10.24	10.24	10.24	10.24
Depth base unit [inch]	25.59	25.59	25.59	25.59
Width cladding [inch]	39.37	51.18	68.90	82.68
Height cladding [inch]	10.83	10.83	10.83	10.83
Depth cladding [inch]	35.04	35.04	35.04	35.04
Weight base unit [lb]	42.77	68.56	115.52	131.62
Internal volume 2-pipe [US gal.]	0.46	0.75	1.19	1.50
Internal volume 4-pipe heating [US gal.]	0.15	0.31	0.48	0.62
Internal volume 4-pipe cooling [US gal.]	0.33	0.46	0.73	0.90

Operating voltage		115 V					115 V			
Size		1	2	3	4		1	2	3	4
	Unit					Unit				
Air volume	[l/s]	27 - 202	61 - 373	83 - 496	111 - 646	[cfm]	57 - 427	128 - 789	176 - 1203	235 - 1581
MCA	[A]	1.88	3.13	4.75	6.00	[A]	1.88	3.13	4.75	6.00
MOP	[A]	15.00	15.00	15.00	15.00	[A]	15.00	15.00	15.00	15.00
Heat output ²	[kW]	1.08 - 10.92	2.64 - 20.14	3.73 - 30.78	4.93 - 40.74	[MBH] ⁹	1.85 - 17.59	4.57 - 32.65	6.52 - 49.84	8.66 - 66.51
Cooling output ¹	[kW]	0.73 - 4.72	1.55 - 8.68	2.23 - 13.31	2.94 - 17.62	[MBH] ⁵	1.67 - 11.19	3.65 - 20.85	5.23 - 31.84	6.91 - 42.89
Sound power level	[dB(A)]	36 - 66	39 - 68	43 - 69	43 - 69	[dB(A)]	36 - 66	39 - 68	43 - 69	43 - 69
Sound pressure level	[dB(A)]	28 - 58	31 - 60	35 - 61	35 - 61	[dB(A)]	28 - 58	31 - 60	35 - 61	35 - 61

Tab. 4: Technical specifications Venkon XL 115 V

² at LPHW 75 / 65°C, $t_{l1} = 20^{\circ}\text{C}$

⁹ at LPHW 120 / 100°F, $t_{l1} = 68^{\circ}\text{F}$

¹ at CHW 7/12°C, $t_{l1} = 27^{\circ}\text{C}$, 50% relative humidity

⁵ for car 45/55 °F, $t_{l1} = 51^{\circ}\text{F}$, rel. humidity 50 %

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Operating voltage		208 V					208 V			
Size		1	2	3	4		1	2	3	4
	Unit					Unit				
Air volume	[l/s]	42 - 203	50 - 350	94 - 565	97 - 806	[cfm]	107 - 537	106 - 861	198 - 1363	205 -
MCA	[A]	2.00	2.25	4.13	4.38	[A]	2.00	2.25	4.13	4.38
MOP	[A]	15.00	15.00	15.00	15.00	[A]	15.00	15.00	15.00	15.00
Heat output ²	[kW]	1.79 - 13.51	2.25 - 21.84	4.11 - 34.59	4.42 - 43.83	[MBH] ⁹	2.89 - 21.77	3.96 - 35.4	7.12 - 56	785 - 71.45
Cooling output ¹	[kW]	1.15 - 5.75	1.35 - 9.35	2.43 - 14.83	2.68 - 18.84	[MBH] ⁵	2.71 - 13.74	3.14 - 22.54	5.75 - 35.62	6.22 - 45.96
Sound power level	[dB(A)]	45 - 72	47 - 70	47 - 74	47 - 72	[dB(A)]	45 - 72	47 - 70	47 - 74	47 - 72
Sound pressure level	[dB(A)]	37 - 64	39 - 62	39 - 66	39 - 64	[dB(A)]	37 - 64	39 - 62	39 - 66	39 - 64

Tab. 5: Technical specifications Venkon XL 208 V

Operating voltage		240 V					240 V			
Size		1	2	3	4		1	2	3	4
	Unit					Unit				
Air volume	[l/s]	63 - 254	65 - 448	253 - 690	126 - 887	[cfm]	133 - 539	137 - 949	253 - 1461	268 - 1879
MCA	[A]	1.75	2.50	3.88	4.63	[A]	1.75	2.50	3.88	4.63
MOP	[A]	15.00	15.00	15.00	15.00	[A]	15.00	15.00	15.00	15.00
Heat output ²	[kW]	2.16 - 13.55	2.78 - 23.91	5.06 - 36.9	5.51 - 47.9	[MBH] ⁹	3.38 - 21.85	4.79 - 38.74	8.57 - 59.72	9.56 - 77.98
Cooling output ¹	[kW]	1.32 - 5.77	1.57 - 10.17	51 - 75	3.13 - 20.45	[MBH] ⁵	3.22 - 13.79	3.84 - 24.61	6.97 - 37.91	7.68 - 50.04
Sound power level	[dB(A)]	48 - 73	45 - 72	51 - 75	47 - 74	[dB(A)]	48 - 73	45 - 72	51 - 75	47 - 74
Sound pressure level	[dB(A)]	40 - 65	37 - 64	43 - 67	39 - 66	[dB(A)]	40 - 65	37 - 64	43 - 67	39 - 66

Tab. 6: Technical specifications Venkon XL 240 V

Type 34821DUL225U00	
Voltage	208 V / 50 Hz
Current	1.68 A
Power	168 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	2.25 A
MOP	15 A
Serial number	KSN2100332343318
Item number	34821DUL225U00
ID	1162899
Kampmann GmbH & Co.KG / Friedrich-Ebert-Str. 128-130 / 49811 Lingen (Ems) / Germany	

Tab. 7: Nameplate (example)

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5 Construction and function

5.1 Overview

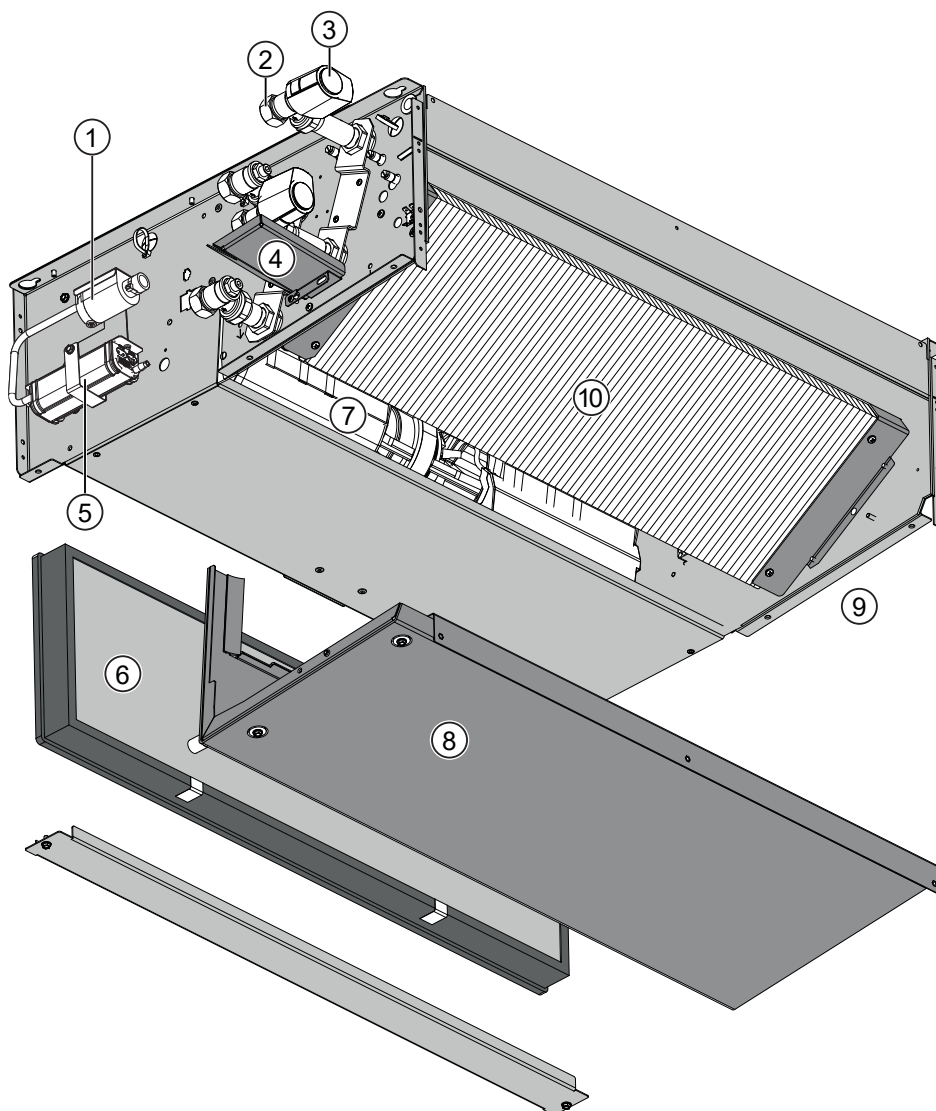




Fig. 1: Venkon XL at a glance (example ceiling version)

1	Float switch	2	Water connection
3	Actuator	4	Valve condensate tray
5	Condensate pump	6	Filter
7	Fan	8	Main condensate drip tray
9	Control (hidden)	10	Heat exchanger

5.2 Brief description

Venkon XL are decentralised units for the heating, cooling and filtering of 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 optional connection unit for circular pipes.

5.3 Wear parts list

Figure	Item	Features	Suitable for	Item no.
	Replacement filter ePM10>50% (M5) MERV 8	1 piece	Size 1	34869B0B0105
			Size 2	34869B0B0205
		1 piece	Size 3	34869B0B0305
			Size 4	34869B0B0405
	Replacement filter ePM10>50% (F7) MERV 13	1 piece	Size 1	34869B0B0107
			Size 2	34869B0B0207
		1 piece	Size 3	34869B0B0307
			Size 4	34869B0B0407

The device may only be operated with filters conforming to the manufacturer's specifications or with sufficient external pressure drop, as otherwise drops may be ejected from the device in the event of cooling.

6 Installation and wiring

6.1 Definition of the connection side

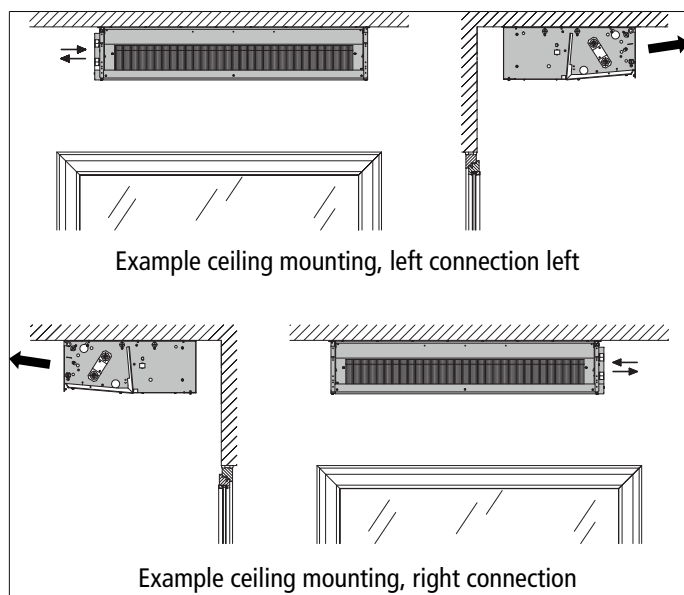


Fig. 2: Ceiling mounting, left and right connection

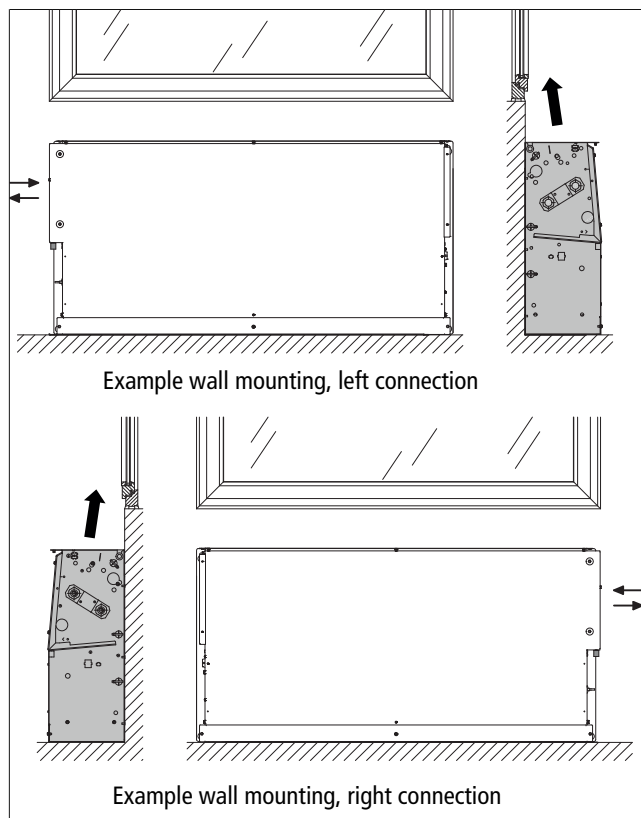


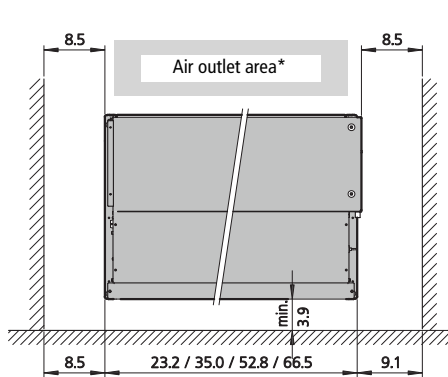
Fig. 3: Wall mounting, left and right connection

6.2 Requirements governing the installation site

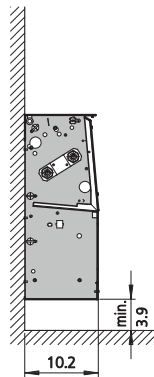
Only install and assemble the unit if the following conditions are met:

- ▶ Make sure that the wall/ceiling is sufficiently load-bearing to take the weight of the unit (Technical data [► 13]).
- ▶ Make sure that the unit is securely suspended/standing.
- ▶ Ensure that the airflow can circulate freely.
- ▶ Provide adequate space for appropriately sized flow and return water connections on site (Connection to the pipe network [► 28]).
- ▶ There is a power supply on site (Maximum electrical rating values [► 42]).
- ▶ If need be, provide a condensation connection with a sufficient gradient on site.

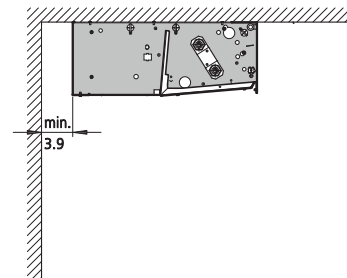
6.3 Minimum clearances



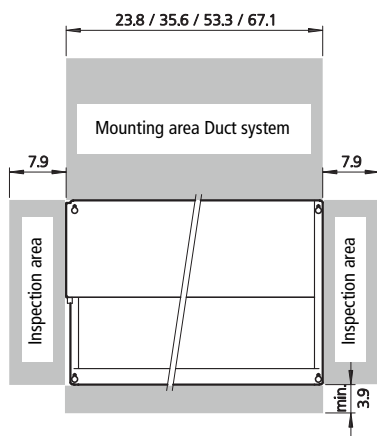
Minimum distances Size 1-4



Wall mounting



Ceiling mounting



Mounting and inspection areas

* The air outlet area must be completely unobstructed to ensure unhindered air circulation! At least 2 inches must be freely accessible above the cladding in order to be able to remove the cladding.

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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.



IMPORTANT NOTE!

Sound insulation

Provide for sound isolation between the Venkon XL and the adjacent building if required.

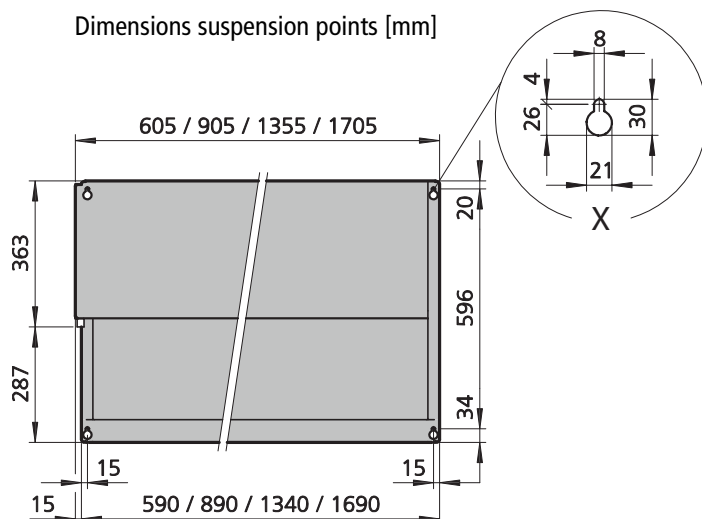
6.4.1 Installation of basic unit

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.

Venkon XL are fixed per unit at 4 points on the ceiling or on a construction provided by the customer. For this purpose, the devices are suspended from the suspension brackets, e.g. from threaded rods (M8).

Dimensions suspension points [mm]



Dimensions suspension points [inch]

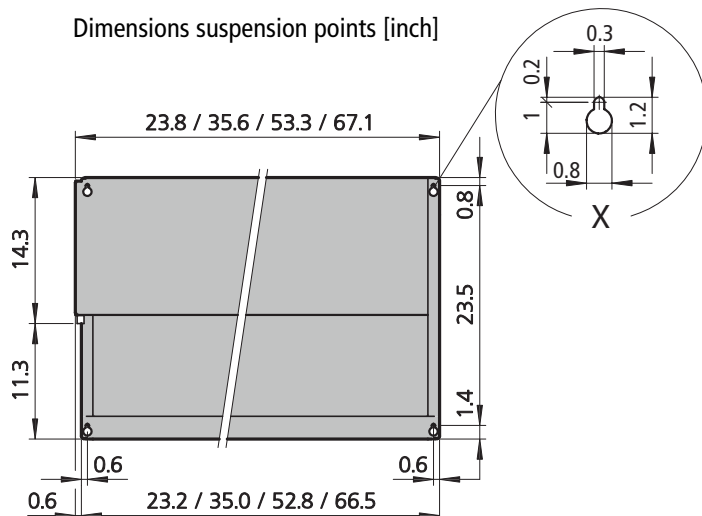


Fig. 4: Suspension points

6.4.2 Installation of casing

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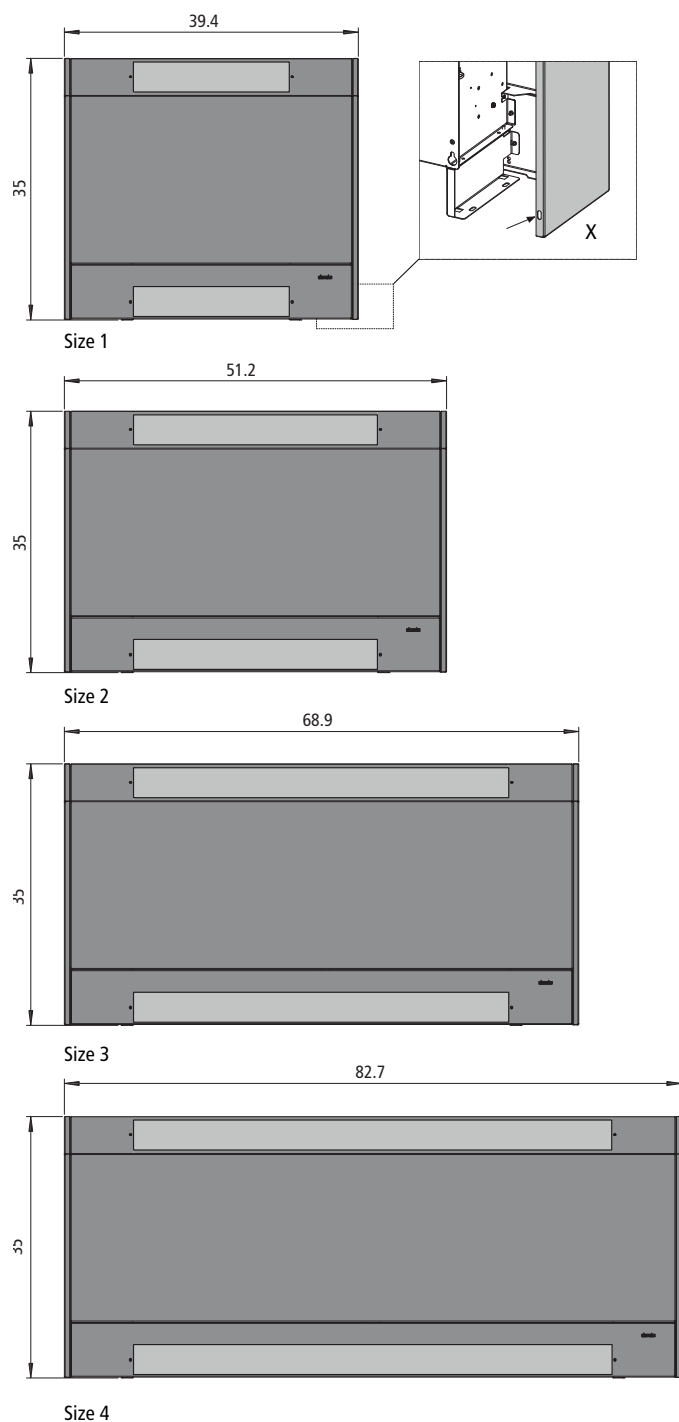


Fig. 5: Views cladding (simplified representation)

The cladding depth X for all sizes is 275 mm / 10.8 inches.

By means of the holes in the side panels (see detail X), the cladding can be fixed to the wall for better fixation.

	<ul style="list-style-type: none"> ► Fit the fixing brackets for the casing.
	<ul style="list-style-type: none"> ► Glue the spacers; maintain a min. distance of 2 cm from above to prevent the edge of the casing from colliding with the spacers.
	<ul style="list-style-type: none"> ► Position the casing on the basic unit.

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► Attach the casing to the basic unit.



► Attach the suction panel to the basic unit.

6.4.3 Installation of sheet steel accessories

Overview, air side steel sheet accessories

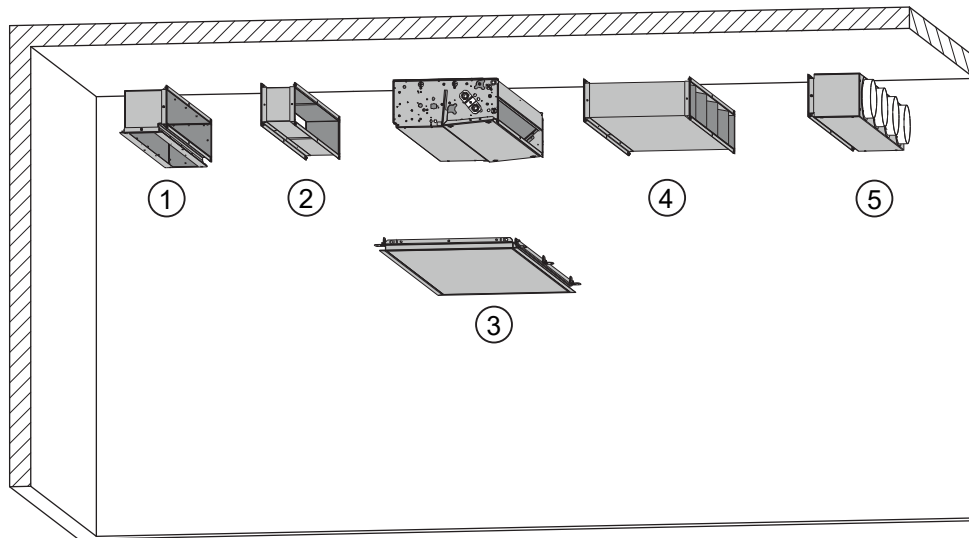
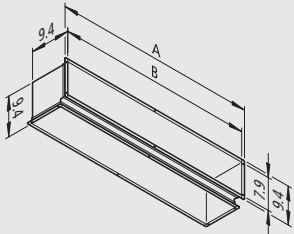
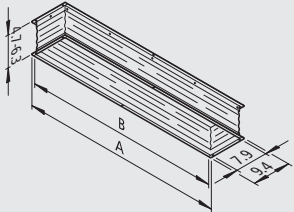
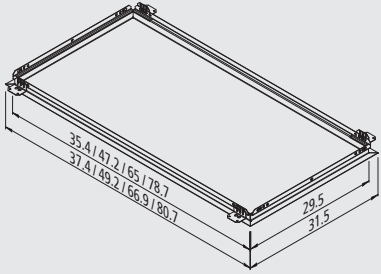
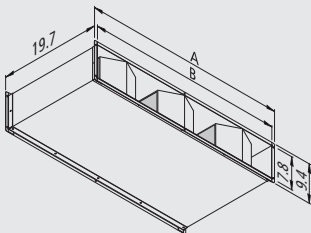
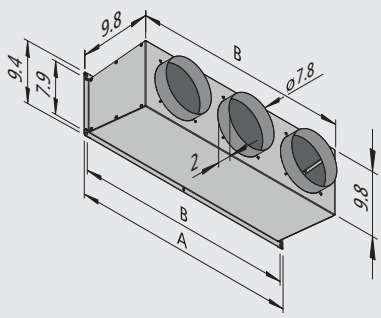


Fig. 6: Schematic layout of steel sheet accessories for ceiling mounting

1	Air duct bend 90°	4	Splitter silencer
2	Elastic connecting piece	5	Flex pipe connection unit Ø 198 mm (other diameters available upon request)
3	Inspection hatch with frame		

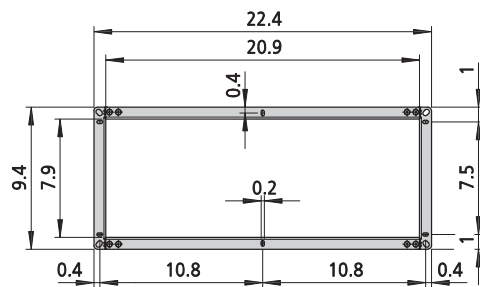
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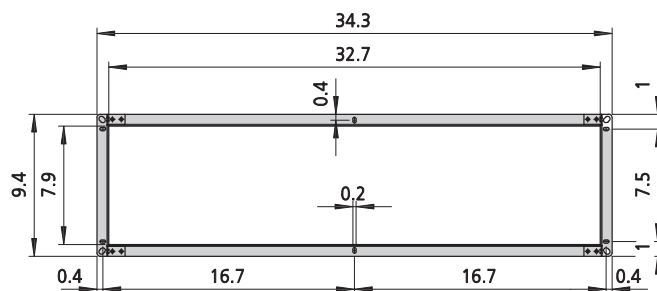
Figure	Description	Dimensions [inch]				
	Air duct bend 90°		1	2	3	4
		A	22.54	34.3	52	65.7
	Elastic connecting piece		1	2	3	4
		A	22.54	34.3	52	65.7
	Inspection hatch with frame		1	2	3	4
		A	22.54	34.3	52	65.7
	Splitter silencer		1	2	3	4
		A	22.54	34.3	52	65.7
	Flex pipe connection unit Ø 198 mm (other diameters and number of sockets also available)		1	2	3	4
		A	22.54	34.3	52	65.7
		B	20.9	32.7	50.4	64.2
		B	20.9	32.7	50.4	64.2

Tab. 8: Air side steel sheet accessories

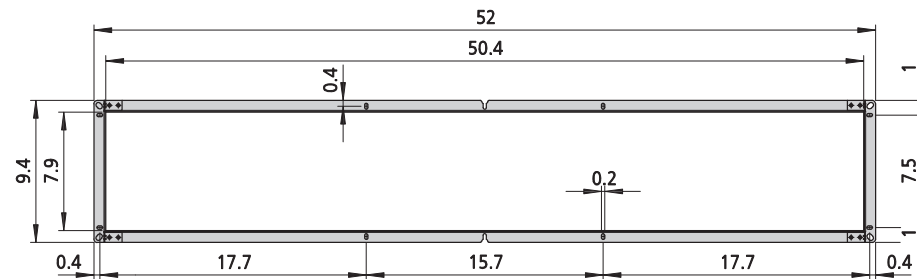
Frame connection dimensions



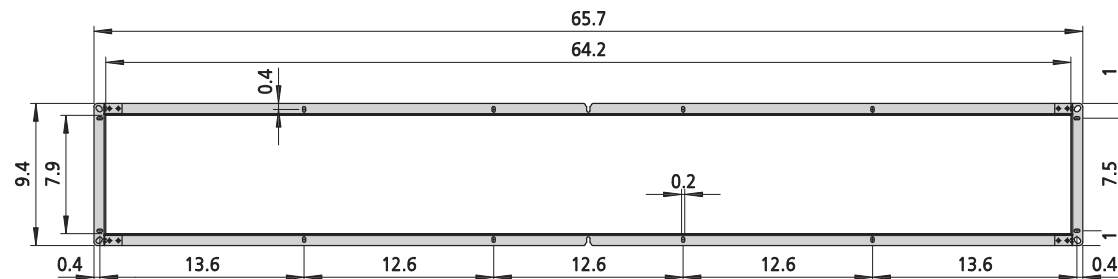
Size 1



Size 2



Size 3



Size 4

Fig. 7: Frame connection dimensions

Venkon XL UL

Assembly, installation and operating instructions

6.5 Installation

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.

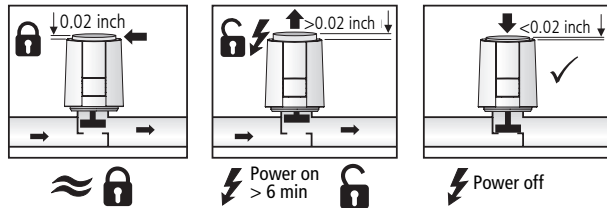


Fig. 8: "First Open" function

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 in situ waste water pipe.
- ▶ Allow adequate space for the air flow (air inlet and outlet).

Observe the following additional points for cooling operation:

- ▶ Install continuous, vapor diffusion-tight insulation on all water-bearing components (piping, valves, connections), in each case up to the unit.
- ▶ Select suitable pipe hangers (cold clamps) for cooling operation.
- ▶ Sufficiently dimension the diameter of the condensate pipe.
- ▶ Protect siphons (if any) in the condensate pipe from drying out.
- ▶ When using the units without filters, ensure that the unit is operated at a maximum of 7.3 V, otherwise condensate may drip. This will not happen with Kampmann filters installed.
- ▶ When using filters not approved by the manufacturer, no guarantee regarding the performance specifications can be given. In such a case, drops may also be ejected from the device.

6.5.1 Connection to the pipe network

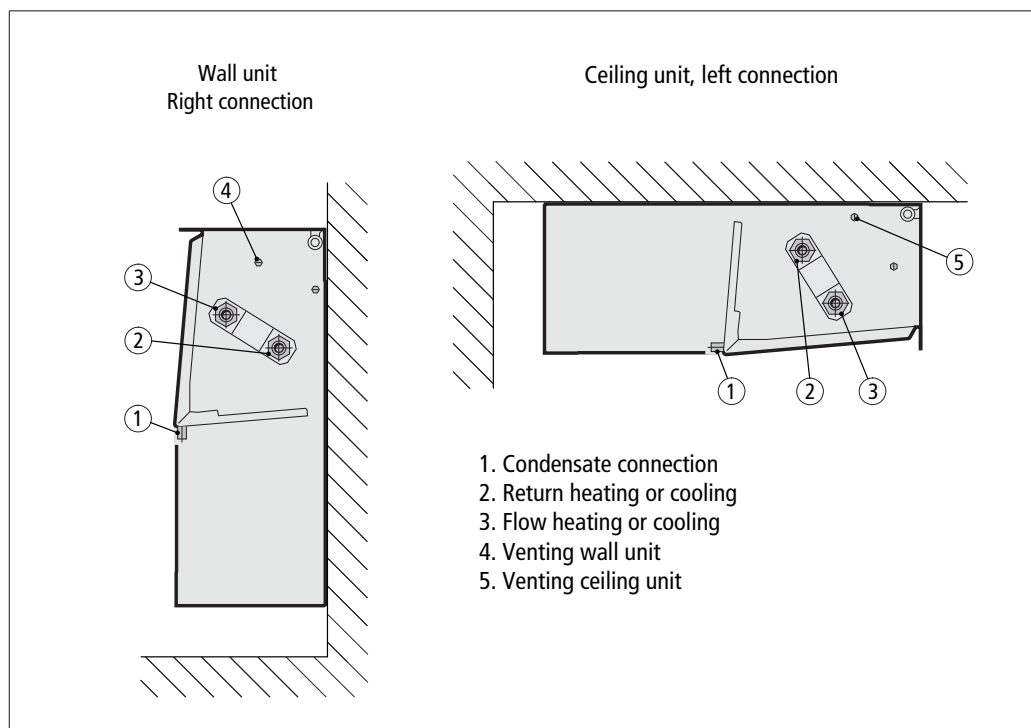
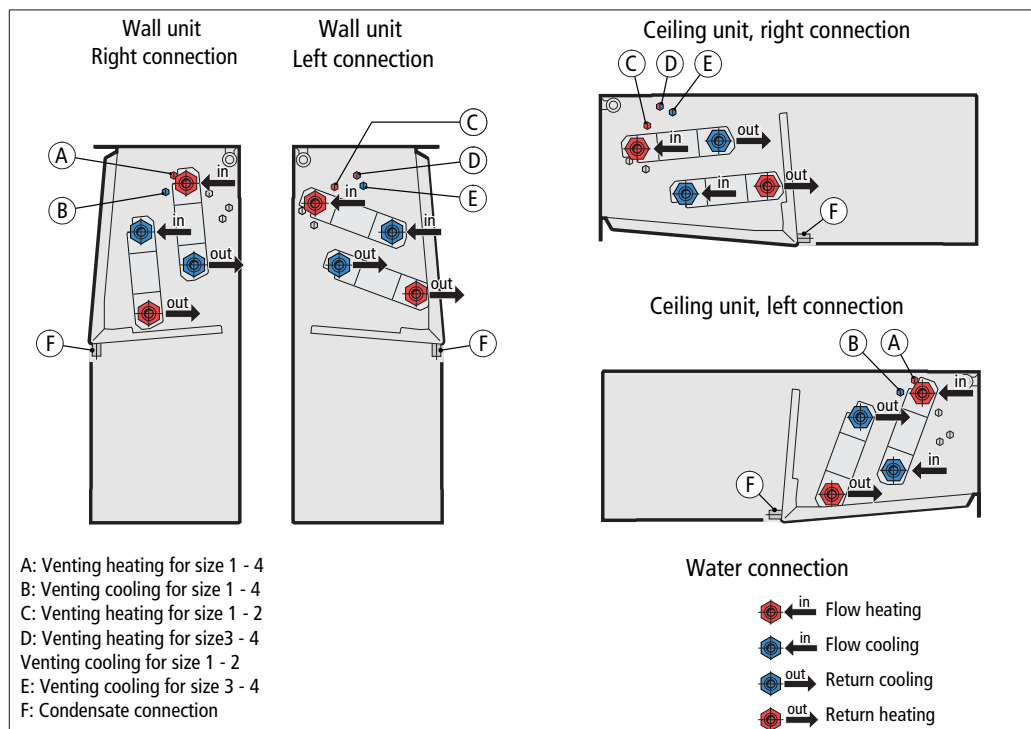
The supply and return connections are located on the left or right side of the unit, as seen in the direction of the air flow.

The piping must be laid in such a way that no mechanical stresses are transferred to the heat exchanger and the accessibility of the unit during maintenance and repair work is not impaired. Proceed as follows when connecting the unit hydraulically:

- ▶ Before installing the piping provided by the customer and the hydraulic connection of the base unit, shut off the heating/cooling medium and secure it against unintentional opening, otherwise there is a risk of scalding due to escaping heating medium!
- ▶ With cooling equipment, there is danger to the user from cold and danger to the environment when glycol is used. Follow appropriate safety precautions.
- ▶ Remove the protective covers from the supply and return pipes.
- ▶ **For 2-pipe:** Remove red protective caps from $\frac{3}{4}$ " connection.
- ▶ **For 4-pipe:** Remove red protective caps from $\frac{3}{4}$ " connection.
- ▶ In the case of cooling operation, install pipes and, if necessary, valves directly above the protruding condensate tray in order to drain the condensate occurring on the pipes into the tray during cooling operation.
- ▶ Seal and screw in the connections. Secure the connecting nut against shearing and twisting.
- ▶ When connecting the unit to the piping provided by the customer, it is essential to hold the water connections in place with a suitable tool!
- ▶ Ensure venting of the pipelines by the customer.
- ▶ The connections of the heat exchanger are made in $\frac{3}{4}$ " with NPT female thread.
- ▶ Use suitable insulating material, for cooling units use diffusion-tight insulating material.
- ▶ After completion of all connection work, all screw connections must be retightened and checked for tension-free assembly.

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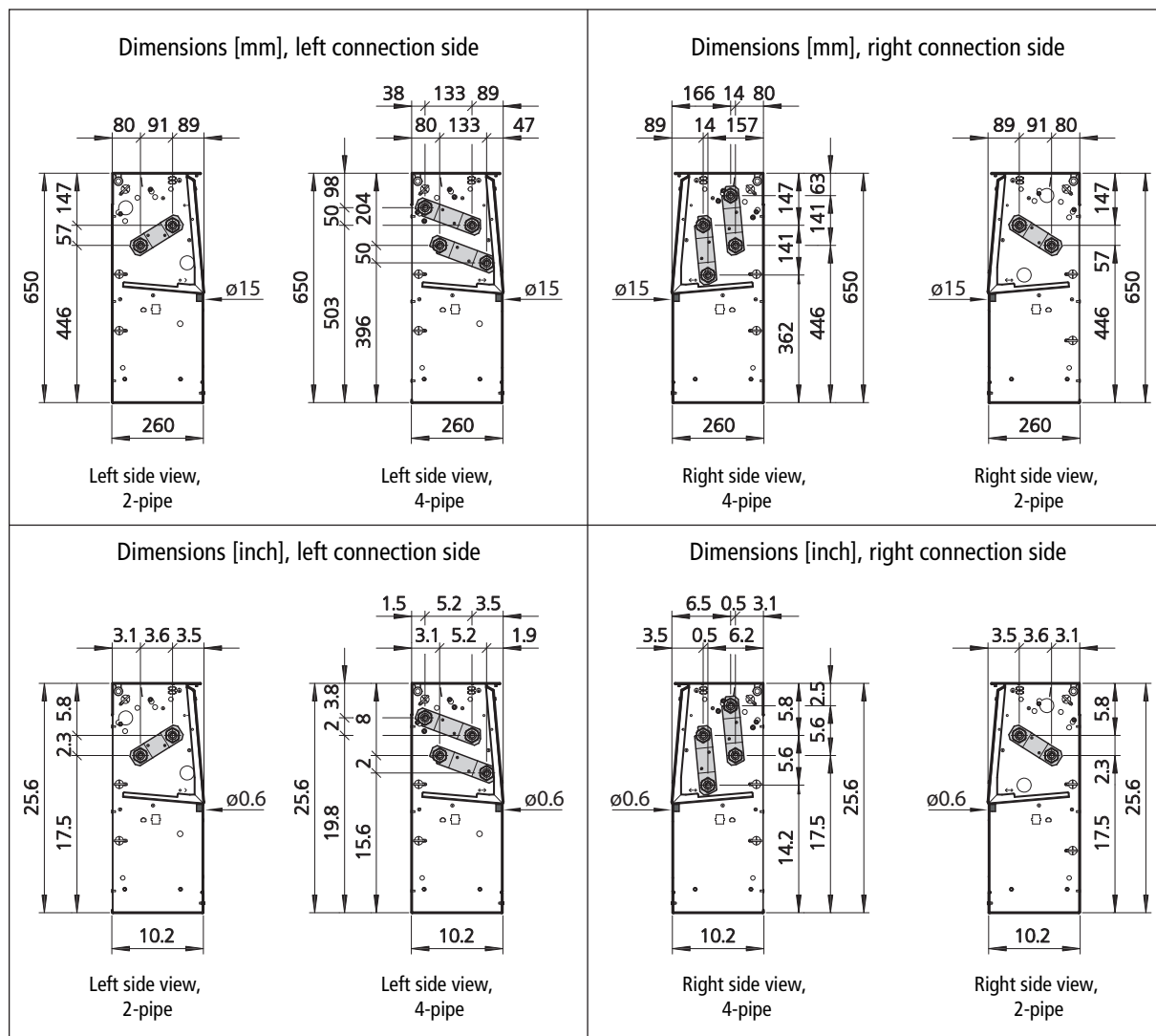
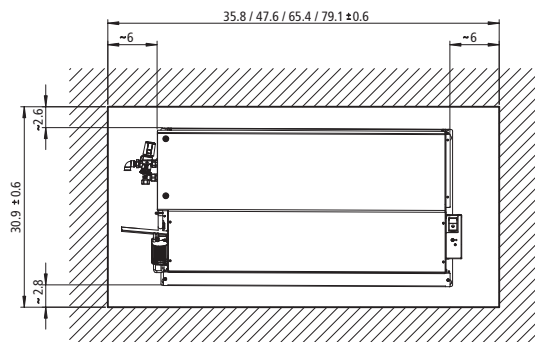


Fig. 9: Water connections dimensions

Provide inspection port.





For maintenance and inspection of false ceiling units, provide the following inspection port dimensions.



Venkon XL UL

Assembly, installation and operating instructions

6.5.2 Overview of valve kits

Accessories recirculation basic unit, water side, factory mounted on base unit					
	2-way valve kit	Mounting water connection left	2-pipe version with preset 2-way valve, can be shut off with return screw fitting	Suitable for all sizes	Item no. 34823B0B2*2
		Mounting water connection right			
	2-way valve kit	Mounting water connection left	4-pipe version with preset 2-way valve, can be shut off with return screw fitting	Suitable for all sizes	Item no. 34823B0B4*2
		Mounting water connection right			
	Differential pressure independent valve kit	Mounting water connection left	2-pipe differential pressure-independent valve kit, can be shut off with return screw fitting	Suitable for all sizes	Item no. 34823B0B2*D
		Mounting water connection right			
	Differential pressure independent valve kit	Mounting water connection left	4-pipe differential pressure-independent valve kit, can be shut off with return screw fitting	Suitable for all sizes	Item no. 34823B0B4*D
		Mounting water connection right			

Tab. 9: Valve seat accessories

Note: The valve kit dimensions are the same for both the left and right connection sides.

6.5.3 Connection of 2-way valve kit

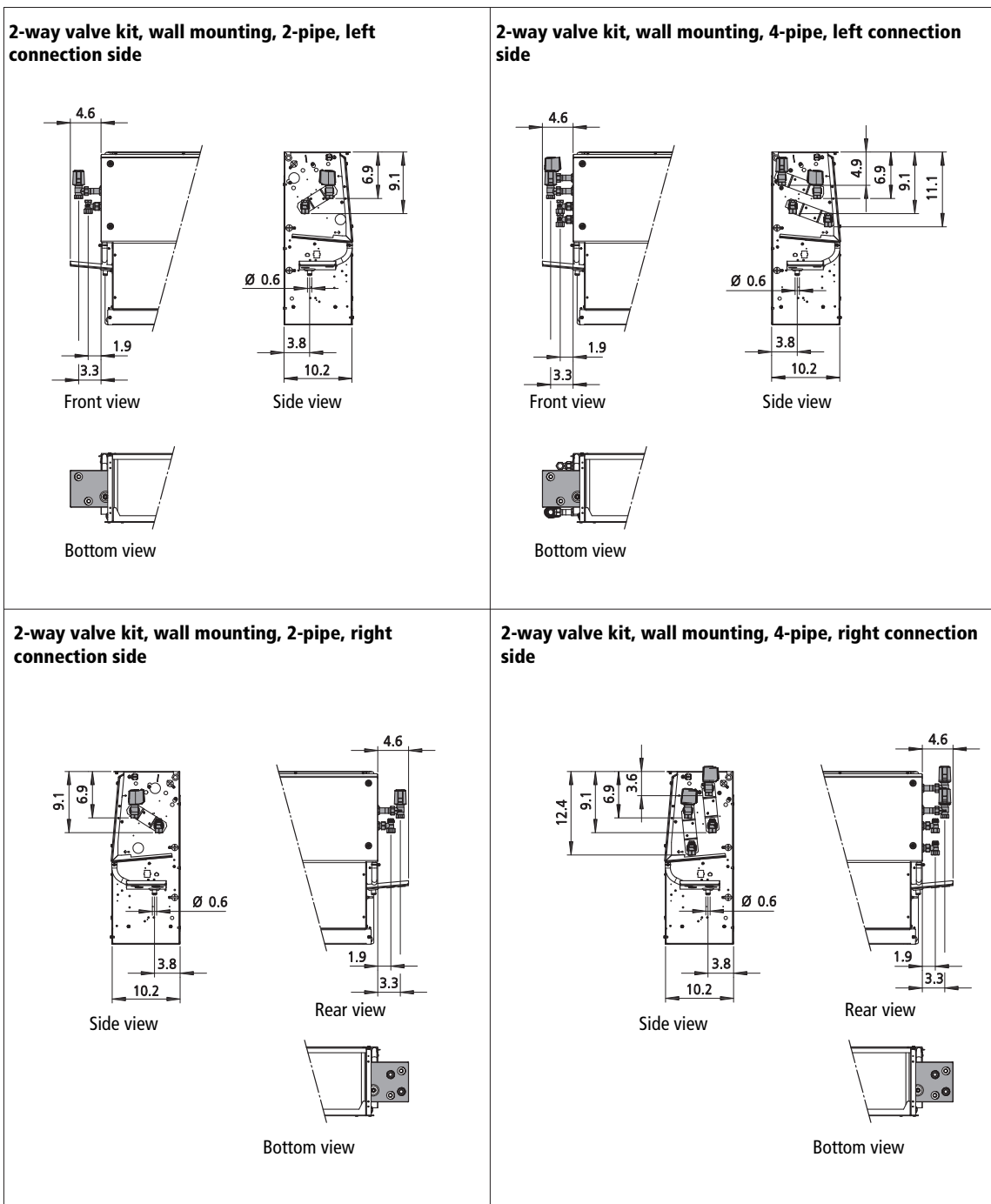
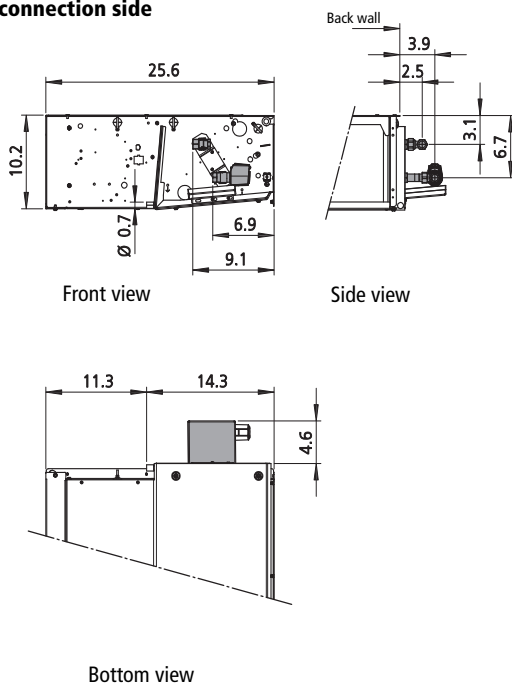


Fig. 10: Dimensions 2-way valve kit (wall-mounted version)

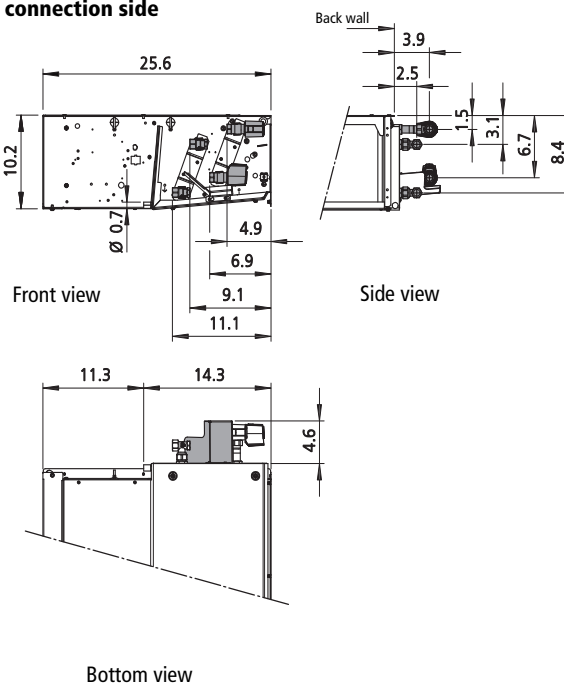
Venkon XL UL

Assembly, installation and operating instructions

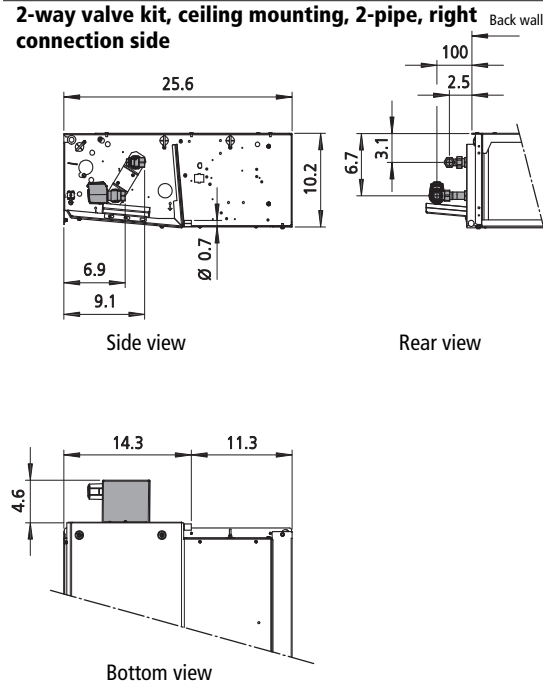
2-way valve kit, ceiling mounting, 2-pipe, left connection side



2-way valve kit, ceiling mounting, 4-pipe, left connection side



2-way valve kit, ceiling mounting, 2-pipe, right connection side



2-way valve kit, ceiling mounting, 4-pipe, right connection side

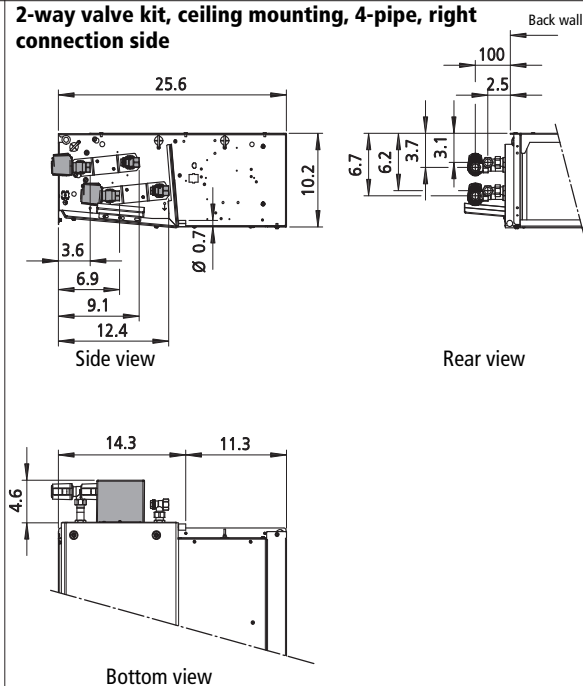


Fig. 11: Dimensions 2-way valve kit (ceiling-mounted version)

6.5.4 Connection of differential pressure-dependent valve kit

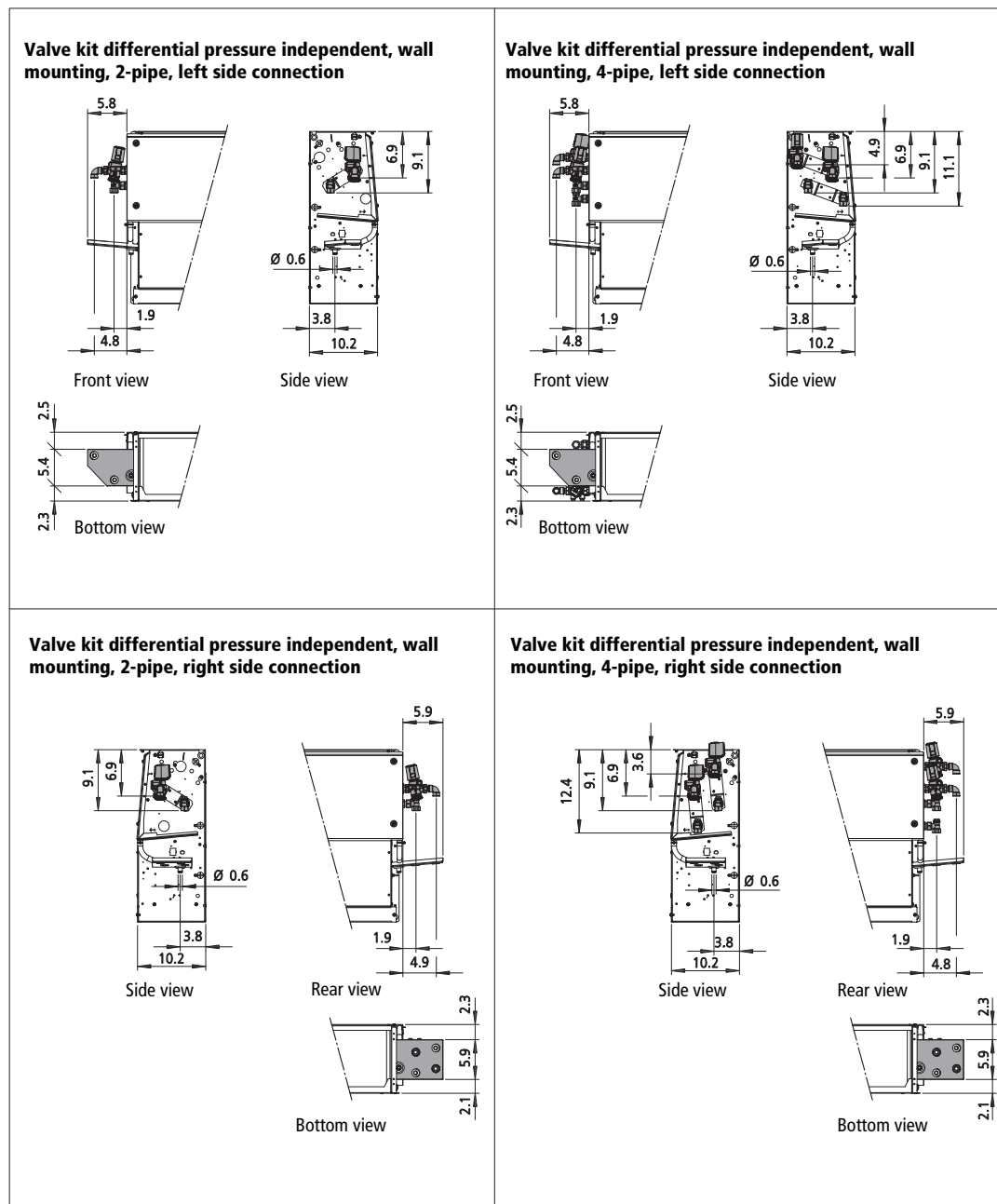
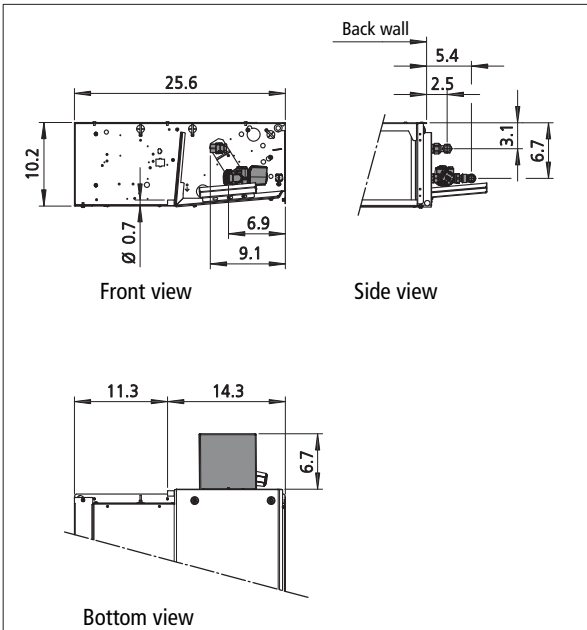


Fig. 12: Dimensions valve kit differential pressure independent (wall-mounted version)

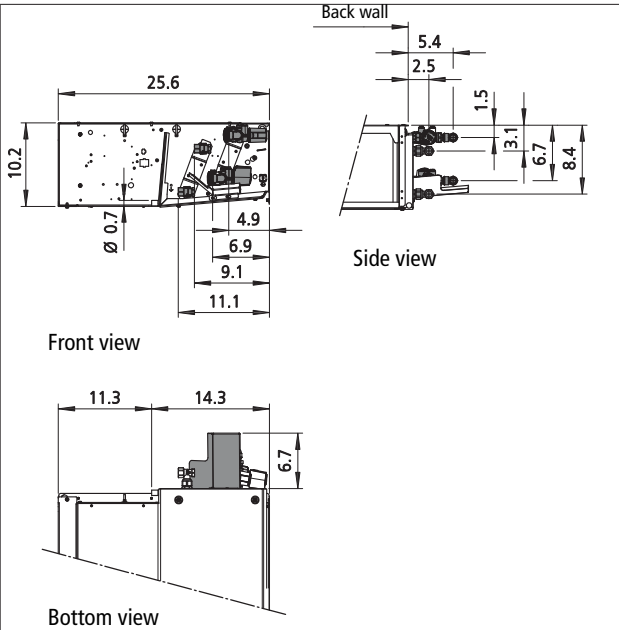
Venkon XL UL

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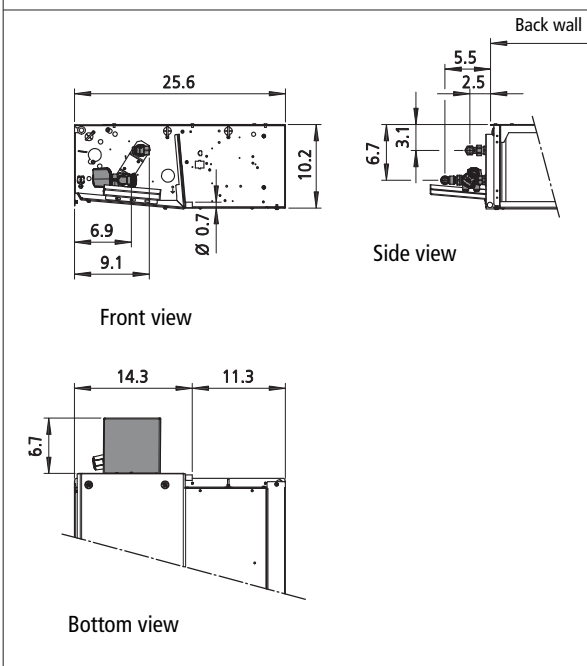
Valve kit differential pressure independent, ceiling mounting, 2-pipe, left side connection



Valve kit differential pressure independent, ceiling mounting, 4-pipe, left side connection



Valve kit differential pressure independent, ceiling mounting, 2-pipe, right side connection



Valve kit differential pressure independent, ceiling mounting, 4-pipe, right side connection

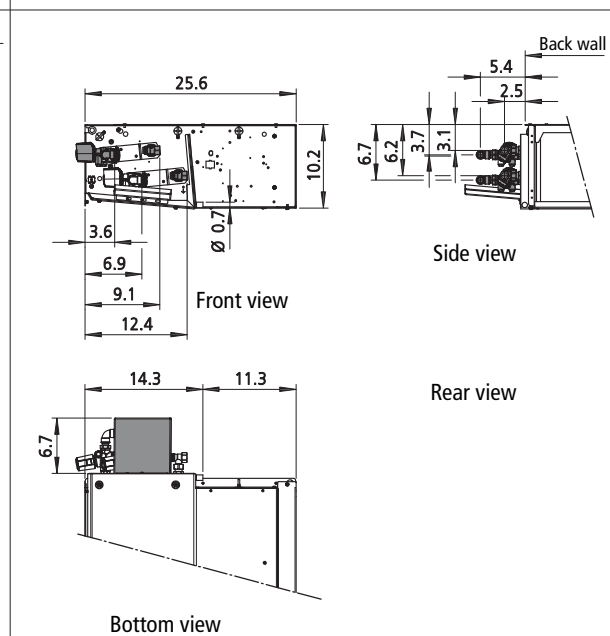


Fig. 13: Dimensions valve kit differential pressure independent (ceiling-mounted version)

6.5.5 Connection, on-site pipework

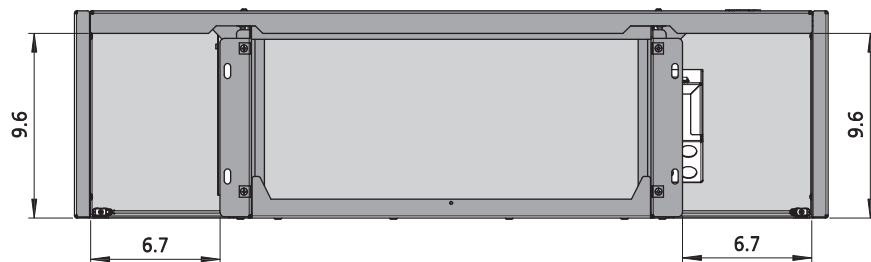


Fig. 14: Bottom view (base unit with cladding)

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Assembly, installation and operating instructions

6.5.6 Condensation connection

6.5.6.1 Condensation drain with natural gradient

A condensate drain provided by the customer must be connected to a condensate drain socket of the Venkon (size of drain 15 mm / 0.6 inch) and fastened accordingly. To ensure condensation drainage from the base unit, the slope must be at least 1 % without restriction and without rising pipe sections (according to DIN EN 12056; old: DIN 1986-100). Ensure that the base unit is mounted horizontally. Should this not be possible, only install the unit with a slight slope in the condensate drain direction, otherwise condensate will remain in the main condensate tray. When connecting the condensate drain to the sewage system, the valid regulations must be observed, such as the use of a ball siphon. The siphon must be protected from drying out. Due to the suction effect of the fan on the condensate drain socket, it could otherwise lead to odor nuisance. Depending on the pipe material used by the customer for the condensate drainage, vapor diffusion-tight insulation may be required. Should a natural slope not be possible on site, a condensate pump (optional accessory) is required. Its purpose is to transport the condensate to collection or discharge facilities located at a higher level.

6.5.6.2 Condensate drainage using a condensate pump (accessory)

The water is drawn off by the condensate 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 condensate 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.

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

Condensation 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 condensate 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 condensate pump needs a separate power supply 230 V/50 Hz. We would generally advise against connecting it via the room thermostat, as residual condensate 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).

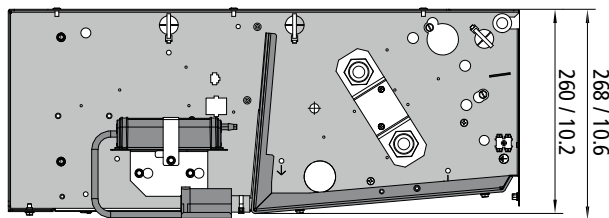


Fig. 15: Installation height with factory-mounted condensate pump

Note: With the condensate pump installed at the factory, the minimum installation height increases from 260 mm to 268 mm or from 10.2 inches to 10.6 inches.

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.

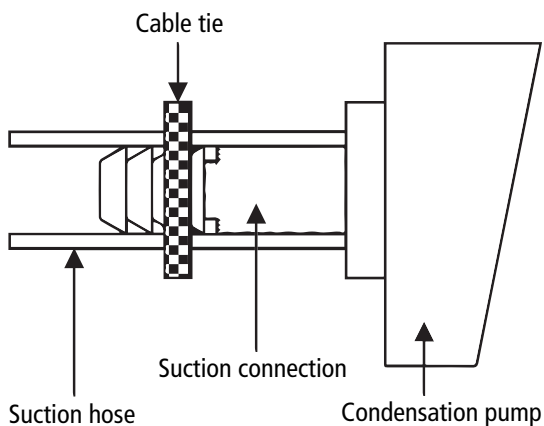


Fig. 16: Fixing the suction hose

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

Technical Data	
Maximum flow rate	42 l/Hr. (11 GPH)
Maximum suction	3 m (9.80 ft.) self priming
Maximum head	20 m (65.60 ft.)
Maximum horizontal run	100 m (330 ft.) at 0 head and 0 suction
Sound	20 dBA at 1 m DIN EN ISO 3741:2011 / DIN EN ISO 3744:2010
Voltage	100 ~ 240 VAC 50/60 Hz auto sensing universal power input
Power	8W during maximum operation at 110V
Alarm relay	7 Amps contacts with integrated replaceable 6.3A fuse 5 × 20 mm
Weight	1'000 g (2.2 lb.)
Discharge star tube	6.25 mm I.D. (1/4") × 1 m (3.3 ft.)
Packaging dimensions	250 x 340 x 54 mm (9.9 x 13.4 x 2.1 inches)
Color	RAL #7040 Grey and RAL #1023 Yellow
Protection:	Fully potted, IP-44
Operation temp:	Ambient 5°C to 40°C (41°F to 104°F) / Water 5°C to 40°C (41°F to 104°F)
Compliance:	Conforms to UL: 778 and certified to CSA C22.2 #68

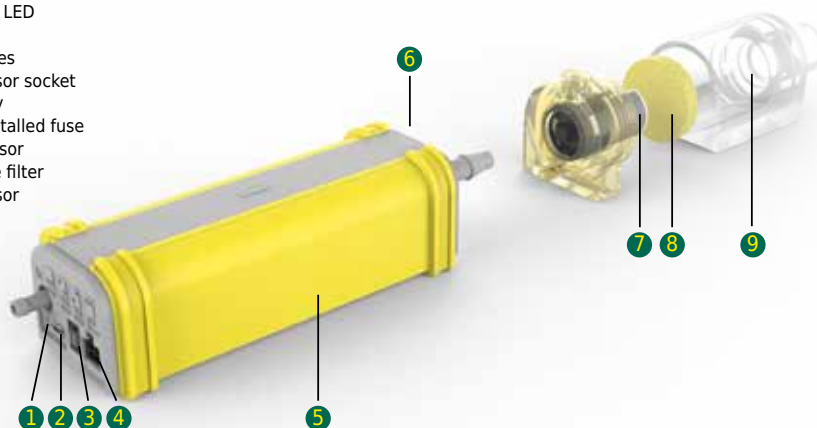
Tab. 10: Technical data for condensate pump

Venkon XL UL

Assembly, installation and operating instructions

Product description

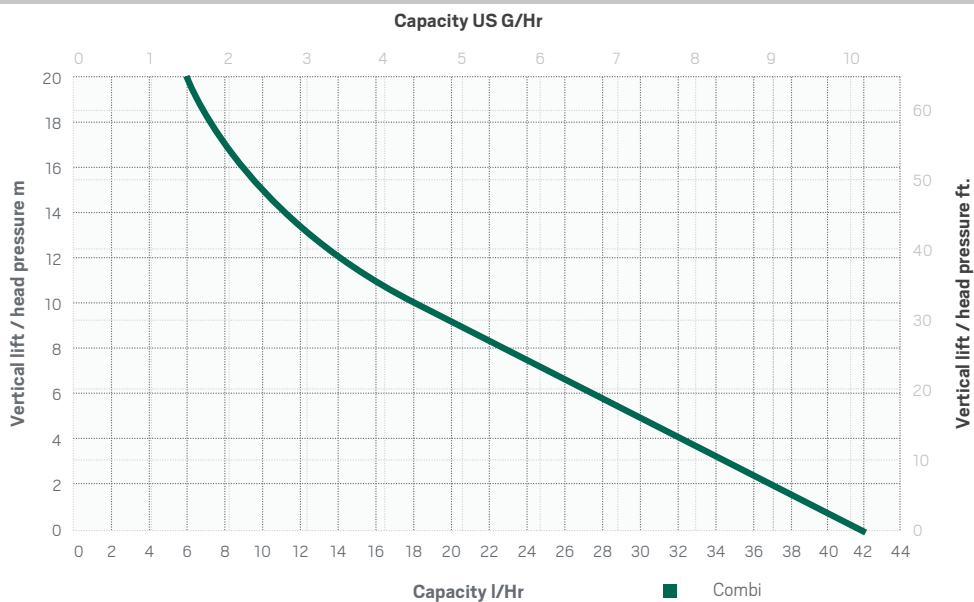
- 1 Diagnostic LED
- 2 USB port
- 3 DIP-switches
- 4 Water sensor socket
- 5 Pump body
- 6 Factory-installed fuse
- 7 Digital sensor
- 8 Replacable filter
- 9 Water sensor



Dimensions pump



Capacity



DO NOT use tools to connect the tubing.

DO NOT operate this product in ambient temperatures below 5 °C (41 °F).

DO NOT operate with incoming water above a temperature of 40 °C (104 °F).

CAUTION: Do not allow any chemicals to come in contact with this condensate pump. Please remove the pump and water sensor before using any coil cleaning solutions and other chemicals. Flush the evaporator coils with water before reinstalling the condensate pump and water sensor.

Ensure the evaporator coils are free of chemicals before reinstallation of the REFCO Combi pump.

CAUTION: This appliance incorporates an earth connection for functional purposes only.



Power cable ① must not be entered with a tensile load.



Alarm cable ② and power cable must be completely pressed into the jack.



Only use the original power cable ① and alarm cable ②.

Technical data

Maximum flow rate:	42 l/Hr. (11 GPH)
Maximum suction:	3 m (9.80 ft.) self priming
Maximum head:	20 m (65.60 ft.)
Maximum horizontal run:	100 m (330 ft.) at 0 head and 0 suction
Sound:	20dBA at 1 m DIN EN ISO 3741:2011 / DIN EN ISO 3744:2010
Voltage:	100 ~ 240 VAC 50/60 Hz auto sensing universal power input
Power:	8W during maximum operation at 110V
Alarm relay:	7 Amps contacts with integrated replaceable 6.3A fuse 5 x 20 mm
Weight:	1'000 g (2.2 lb.)
Discharge star tube:	6.25 mm I.D. (1/4") x 1 m (3.3 ft.)
Packaging dimensions:	250 x 340 x 54 mm (9.9 x 13.4 x 2.1 inches)
Bulk pack dimensions:	10 Pcs dimensions are 590 x 265 x 365 mm (23.2 x 10.4 x 14.4 inches)
Color:	RAL #7040 Grey and RAL #1023 Yellow
Protection:	Fully potted, IP-44
Operation temp:	Ambient 5°C to 40°C (41°F to 104°F) / Water 5°C to 40°C (41°F to 104°F)
Compliance:	Conforms to UL: 778 and certified to CSA C22.2 #68



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7 Electrical connection



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 XL, electromechanical version (115 V)

Size	Number of fans	Rated voltage [VAC]	Power frequency [Hz]	Rated power [W]	Rated current [A]	Leakage current [mA]	Ri analog input [KΩ]	MCA	MOP	Protection class	Protection class
1	1x Single	115	60	100	1.5	1.29	100	1.88	15	IP21	I
2	1x Tandem	115	60	170	2.5	1.29	100	3.13	15	IP21	I
3	1x Single, 1x Tandem	115	60	268	3.8	2.58	50	4.75	15	IP21	I
4	2x Tandem	115	60	342	4.8	2.58	50	6.00	15	IP21	I

Tab. 11: Maximum electrical connection values Venkon XL EC, electromechanical version (115 V)

Venkon XL, electromechanical version (208 V)

Size	Number of fans	Rated voltage [VAC]	Power frequency [Hz]	Rated power [W]	Rated current [A]	Leakage current [mA]	Ri analog input [KΩ]	MCA	MOP	Protection class	Protection class
1	1x Single	208	50	170	1.6	1.29	100	2.00	15	IP21	I
2	1x Tandem	208	50	200	1.8	1.29	100	2.25	15	IP21	I
3	1x Single, 1x Tandem	208	50	377	3.3	2.58	50	4.13	15	IP21	I
4	2x Tandem	208	50	412	3.5	2.58	50	4.38	15	IP21	I

Tab. 12: Maximum electrical connection values Venkon XL EC, electromechanical version (208 V)

Venkon XL, electromechanical version (240 V)

Size	Number of fans	Rated voltage [VAC]	Power frequency [Hz]	Rated power [W]	Rated current [A]	Leakage current [mA]	Ri analog input [KΩ]	MCA	MOP	Protection class	Protection class
1	1x Single	240	50	170	1.4	1.29	100	1.75	15	IP21	I
2	1x Tandem	240	50	247	2.0	1.29	100	2.50	15	IP21	I
3	1x Single, 1x Tandem	240	50	414	3.1	2.58	50	3.88	15	IP21	I
4	2x Tandem	240	50	489	3.7	2.58	50	4.68	15	IP21	I

Tab. 13: Maximum electrical connection values Venkon XL EC, electromechanical version (240 V)

7.2 Electromechanical control

7.2.1 Connection (U02M)

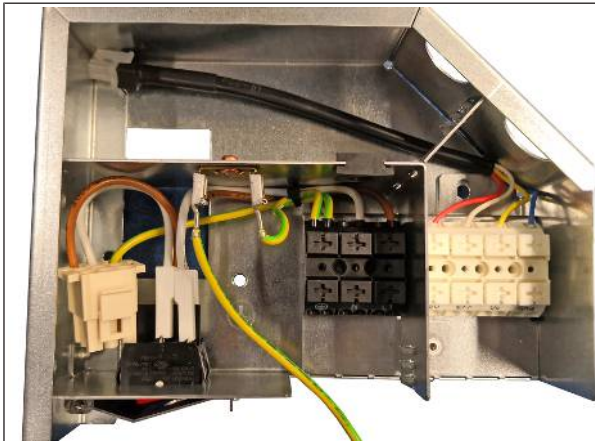


Fig. 17: Regelungsbox

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.

Venkon XL UL

Assembly, installation and operating instructions

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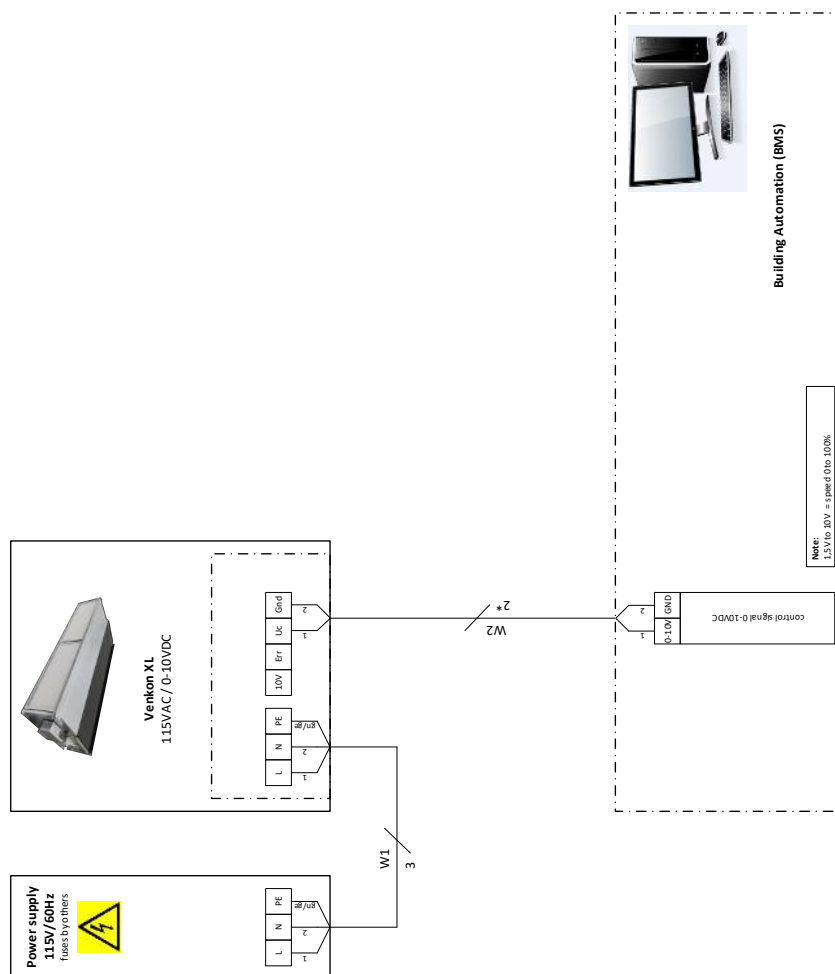
The points described below must be observed for the cable routing and wiring plans listed under electrical installation:

- The information on cable types and cable routing must be complied with, taking into account the National Electric Code (NEC) and the Canadian Electric Code (CEC).
- Without *: NYM-J. The required number of cores incl. protective earth conductor is indicated on the cable. Cross-sections are not indicated, as the cable length is included in the calculation of the cross-section.
- With *: J-Y(STY) 0.8 mm. Lay separately from power cables.
- If other cable types are used, they must be at least equivalent.
- The connection terminals on the unit are suitable for a maximum wire cross-section of 2.5 mm².
- For the design of the on-site mains supply and fuse protection, the relevant electrical data must be observed.



Venkon XL UL

Cable routing Venkon XL UL, control via BMS



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Venkon XL UL

Assembly, installation and operating instructions

8 Pre-commissioning checks

During initial commissioning, it must be ensured that all necessary requirements are met so that the appliance can function safely and as intended.

Structural tests

- ▶ Check that the unit is securely standing and fixed.
- ▶ Check the horizontal installation/suspension of the unit.
- ▶ Check the completeness and correct seating of all filters (dirt side).
- ▶ Check whether all components are properly fitted.
- ▶ 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.
- ▶ 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 Chapter 9 "Operation".

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Assembly, installation and operating instructions

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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 work
If necessary	Regular visual inspections and acoustic tests for damage, soiling and function.
External filter (with cooling): quarterly External air filter (heating only): every six months Secondary air filter: annually	Check filter for dirt, clean and change filter if necessary.
Humid cooling: every six months Dry cooling: annually	Check and clean appliance components (heat exchanger, condensate tray, condensate pump, condensate drain, float switch).
every six months	Check water-side connections, valves and screw connections for dirt, leaks and function.
annually	Check electrical connections.
annually	Clean air-conducting components/surfaces.

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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.



- ▶ Loosen the screws of the filter cover.



- ▶ Remove the filter cover.



- ▶ Change filter.
- ▶ When inserting the filter, ensure that the arrow on the filter points in the direction of the device.
- ▶ Ensure that a suitable, manufacturer-compliant filter (M5 / MERV 8 or F7 / MERV 13) is installed in the air intake area, otherwise condensate may escape in the air outlet area during cooling.

9.3.2 Visual checks

Clean the heat exchanger.

Check the heat exchanger for soiling and carefully vacuum if necessary. Avoid damage to the pipework and fins.

9.3.3 Cleaning the main condensation tray



- ▶ Loosen the main condensate tray screws.



- ▶ Remove the main condensate tray.

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Assembly, installation and operating instructions



- ▶ Clean the main condensate tray.

9.3.4 Cleaning the float switch



- ▶ Pull off the float switch from the Velcro.



- ▶ Clean the float switch.
- ▶ Pull the yellow strainer out of the intake area, clean it as well and reinsert it.

9.3.5 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.

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 [► 53] provides information on who is authorised to rectify and remedy faults.

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10.1 Fault table

Fault	Possible cause	Remedy
No function.	No power supply.	Check voltage, switch on repair switch.
		Replace fuse.
System water leakage	Heat exchanger defect.	Replace heat exchanger if necessary.
	Hydraulic connection not correct.	Check flow and return, retighten if necessary.
Water leakage condensate	Drains of the condensate tray clogged.	Clean condensate drains and check for sufficient slope.
	Cold water pipe not properly insulated.	Check insulation.
	Condensate drain not properly installed.	Check the function of the condensate pump. Check condensate drain, clean if necessary.
	Air-conducting accessory components not properly insulated.	Check insulation.
Water leakage condensate	In humid cooling mode, no manufacturer-compliant M5 / MERV 8 or F7 / MERV 13 filter is used.	Use manufacturer-compliant filter.
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	Fan speed too high.	Set a lower fan speed, if possible.
	Air intake / air discharge opening is obstructed.	Free air routes.
	Filter dirty.	Replace filter.
	Rotating parts unbalanced	Clean and/or replace impeller. Make sure that no balancing brackets are removed during cleaning.
	Fan dirty.	Clean dirt from fan.
	dirty.	Clean dirt from the .

10.2 Start-up after rectification of fault

After correction of the fault, carry out the following steps for recommissioning:

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

11 Certificates



AUTHORIZATION TO MARK

This authorizes the application of the Certification Mark(s) shown below to the models described in the Product(s) Covered section when made in accordance with the conditions set forth in the Certification Agreement and Listing Report. This authorization also applies to multiple listee model(s) identified on the correlation page of the Listing Report.

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Country:	Germany	Country:	Germany

Party Authorized To Apply Mark: Same as Manufacturer
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for L. Matthew Snyder, Certification Manager



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Intertek Testing Services NA Inc.
 545 East Algonquin Road, Arlington Heights, IL 60005
 Telephone 800-345-3851 or 847-439-5667 Fax 312-283-1672

Standard(s):	Household and Similar Electrical Appliances - Part 2 - 40: Particular Requirements for Electrical Heat Pumps, Air-Conditioners, and Dehumidifiers [UL 60335-2-40:2019 Ed.3]
	Household and Similar Electrical Appliances - Safety - Part 2-40: Particular Requirements for Electrical Heat Pumps, Air-Conditioners and Dehumidifiers [CSA C22.2#60335-2-40:2019 Ed.3]
	Household And Similar Electrical Appliances, Part 1: General Requirements [UL 60335-1:2016 Ed.6]
	Safety Of Household And Similar Appliances - Part 1: General Requirements [CSA C22.2#60335-1:2016 Ed.2]
Product:	Fan Coil Unit
Brand Name:	Kampmann

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AUTHORIZATION TO MARK

Models:	3480 followed by 1, 2, 3 or 4; followed by 10; followed by 3 or 4; followed by 03; followed by 2 or 4; followed by UL.
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