

Heating

Cooling

Fresh Air

Clean Air



ComfoAir Q 350 / ComfoAir Q 450



ComfoAir Q 600

Foreword



Read this document carefully before use.

With this document you can install the ComfoAir Q in a safe and optimal manner. In this document the ComfoAir Q will be referred to as “the unit”. The unit is subject to continuous development and improvement. Thus the unit may be slightly different from the given descriptions.

The following pictograms are used in the Zehnder documents:

Symbol	Meaning
	Point of interest.
	Risk of compromised performance or damage of the ventilation system.
	Risk of personal injury.

Information found in the user manual

General information about the ventilation system.
Warranty and liability conditions.
EEC declaration of conformity.
How to replace the filters in the unit.
How to clean the valves and/or grilles in the ventilation system.
How to use the display on the unit.

Information found in the service manual

Commissioning procedures
Maintenance procedures
Malfunction procedures
Available service parts
Possible combinations RF controls.
Extensive technical data

!? Questions

Contact your supplier when you have any questions or would like to order a new document or new filters. The contact details of the main supplier are:

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T +1 (603) 601-8544
info@zehnderamerica.com · www.zehnderamerica.com

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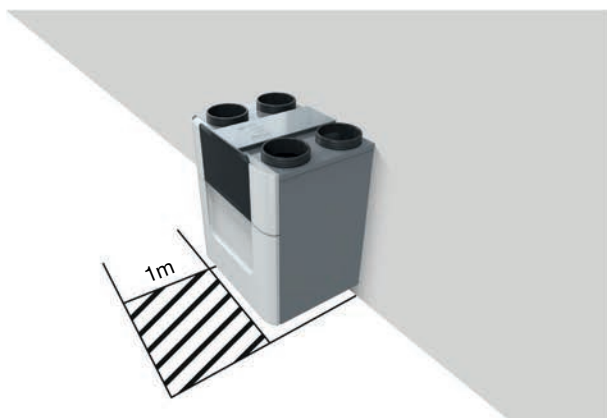
1 Safety instructions

- Always obey the safety regulations, warnings, comments and instructions given in this document. When the safety regulations, warnings, comments and instructions in this document are not obeyed personal injury or damage to the unit can occur;
- Always obey the general and locally applicable construction, safety and installation instructions of the local council, electricity and water boards or other agencies;
- Always connect air ducts of at least 900mm to the unit before you connect power to the unit. This ensures the motor cannot be touched while the unit is active;
- Do not turn on the power of the unit until all of the mechanical installation is finished. After installation all parts that can cause personal injury are secured inside the casing. Tools are required to open the casing;
- The installation, commissioning and maintenance must be carried out by a certified engineer unless the instructions state otherwise. A non-certified engineer can cause personal injury or damage the performance of the ventilation system;
- Do not modify the unit or the specifications given in this document. A modification can cause personal injury or damage the performance of the ventilation system;
- Always disconnect all poles of the power supply of the unit and optional connected ComfoSplitter before you start working on the ventilation system. The unit can cause personal injury when it is open while running. Make sure the unit cannot switch back on by accident;
- Always take ESD-inhibiting measures when dealing with electronics, such as wearing an antistatic wristband. The electronics can be damaged by static charges.



2 Installation conditions

- Install the unit on a 220-240V~ 50-60Hz mains connection. Any other power connection will damage the unit;
- The unit is designed for residential use. The unit is not made for industrial use, such as swimming pools or saunas. Installation in an industrial environment can damage the unit;
- Check if the installation area will remain in the permitted temperature range throughout the year. You can find the permitted temperature range in the chapter „Technical specifications“;
- It is recommended not to install the unit in areas with a higher than average humidity (such as bathroom or w.c.). This will prevent condensation on the outside of the unit;
- Check if the temperature of the moved air will remain in the permitted temperature range throughout the year. You can find the permitted temperature of the moved air in the chapter „Technical specifications“;
- Check if the electrical installation is suitable for the maximum power of the unit. You can find the maximum power values in the chapter “Technical specifications”;
- Check if the electrical installation is suitable for the maximum power of the desired optional ancillaries. You can find the technical specifications of the desired optional ancillaries in their associated manuals;
- Check if the installation area of the unit has sufficient room for the next aspects:
 - The unit (no additional room needed on the side)
 - Carrying out maintenance activities in front of the unit (at least 1m);
 - The condensation drain below the unit (optional);
 - The air duct system including sound attenuators;
 - The wiring for an external wired controller (optional);
 - The desired optional ancillaries and when needed its easily accessible electrical power connection;
 - The easily accessible electrical power connection of the unit. You can find the length of the power cable in the chapter “Technical specifications”.



3 Transport and unpacking










You can find the permitted transport and storage temperature in the chapter „Technical specifications“;

Transport and unpack the unit with care. Discard the packing material in an environmentally friendly manner.

Checking the delivery

Speak to your supplier immediately in case of damage or an incomplete delivery. The delivery should at least include:


Appearance example	Name
	The unit Check the identification plate to ensure that it is the correct type
	Mounting bracket
	Condensation drain set Unit with standard heat exchanger: ■ Condensation drain adapter 32mm pipe; ■ Condensation drain adapter 1¼" thread pipe; ■ Condensation drain sealing cap. Unit with enthalpy exchanger: ■ 2 condensation drain sealing caps.
	Power cord
	Documentation
	Dust cover  Remove the dust cover moments before you install the air ducts.

Information found on the identification plate	
Suffix	Meaning
ComfoAir	Product family name.
Q	Product type name.
350	Maximum air volume of 350 m ³ /h.
450	Maximum air volume of 450 m ³ /h.
600	Maximum air volume of 600 m ³ /h.
SI	Country code of the unit.
R	The unit has been set with the supply and extract air on the right side as default.
ST ¹⁵	The unit has four fixed air connections.
TR ¹⁶	The unit has four air connections which can turn.
ERV	The unit has an enthalpy exchanger installed as default.

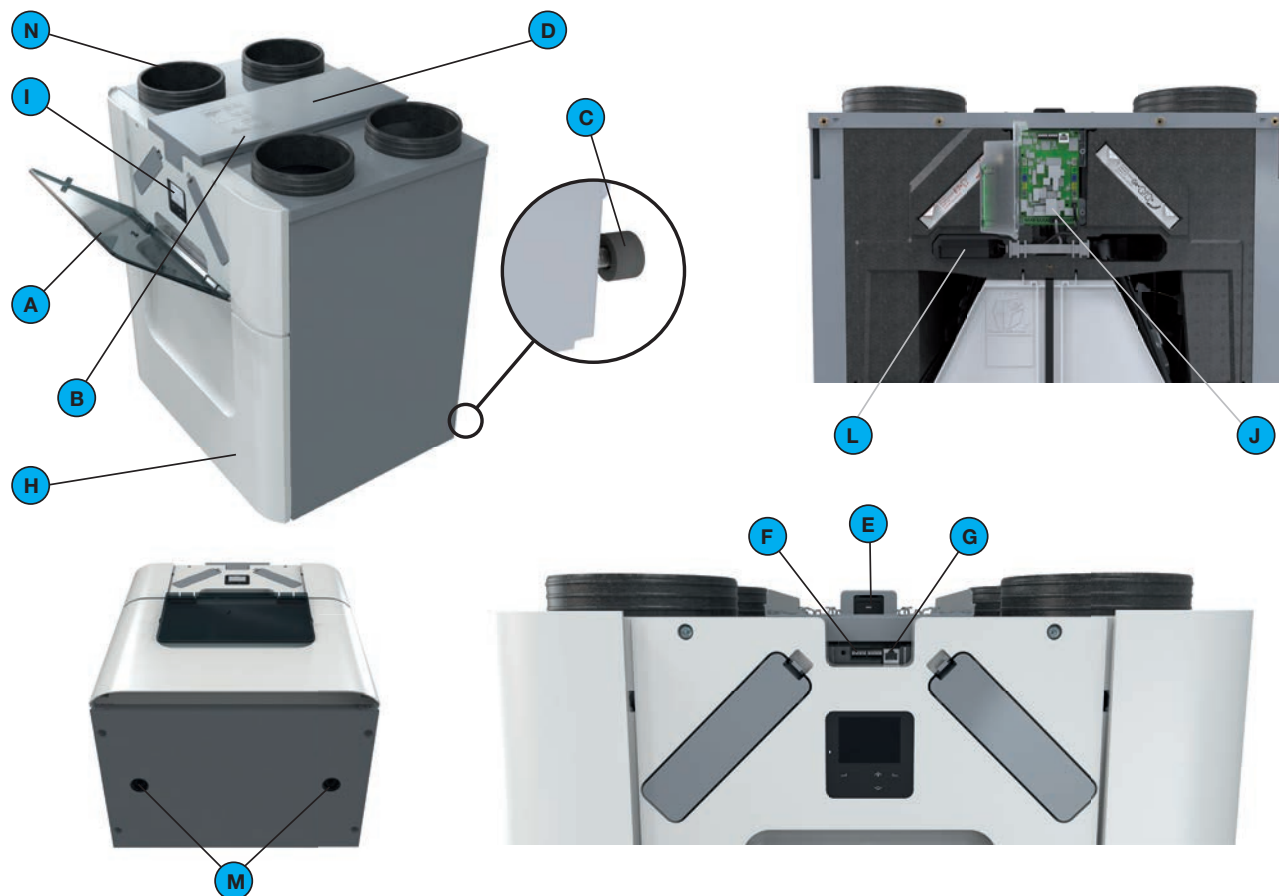
¹⁵ Not available on the ComfoAir Q 350 and 450.

¹⁶ Not available on the ComfoAir Q 600.

4 Technical specifications

	Q 350		Q 450		Q 600	
Performance						
Minimal airflow when preheater is off	75m ³ /h		75m ³ /h		75m ³ /h	
Minimal airflow when preheater is on	100m ³ /h		100m ³ /h		100m ³ /h	
Maximal airflow	350m ³ /h		450m ³ /h		600m ³ /h	
Thermal Efficiency (According to EN 13141-7:2010)	92%		90%		89%	
Electrical data						
Maximal power including pre-heater (At -15°C and max airflow)	1850W	10.00A	2240W	10.80A	2620W	12.70A
Maximal power excluding pre-heater	180W	1.42A	250W	1.98A	350W	2.77A
Power supply / power cord	230V±10%, single phase, 50-60Hz, 2.5m					
Cos φ	0.36 - 0.54		0.32 - 0.57		0.4 - 0.62	
Internal fuse	F5010 (10A)		F5015 (15A)		F5015 (15A)	
Connection data						
Air connection size (Ø)	Inside: 160mm Outside: 190mm		Inside: 160mm Outside: 190mm		Inside: 180mm Outside: 200mm	
Condensation drain size (Ø)	Tube version: 32mm Thread version: 1¼"					
ComfoNet data						
Maximal power	400mA@12V					
Maximal non powered devices	4					
Cable type	2x unshielded twisted pair, stiff (solid) wires 0,6mm ² (max 50m)					
Color code	<div>12V: red GND: black CAN_H: yellow CAN_L: white</div> <div></div>					
Material specifications						
Housing	Coated Sheet Steel					
Interior	EPP and ABS					
Heat Exchanger	Polystyrene					
Enthalpy Exchanger	Polyethylene-polyether-copolymer					
General						
IP classification	IP40					
ISO classification	B					
Temperature range during transport and storage	-40°C tot +60°C					
Temperature range moved air	-20°C tot +60°C					
Temperature range installation area	0°C tot 45°C					
Relative air humidity installation area	<90%; non-condensing					
Weight	50kg					
Filter class	Outdoor air: F7 (MERV 13 or ePM1) Extract air: G4 (MERV 8 or Course)					

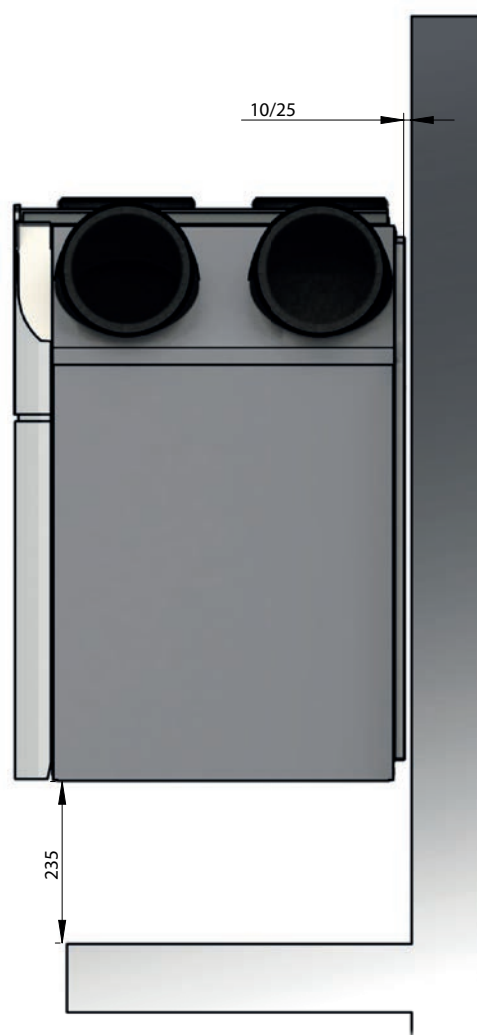
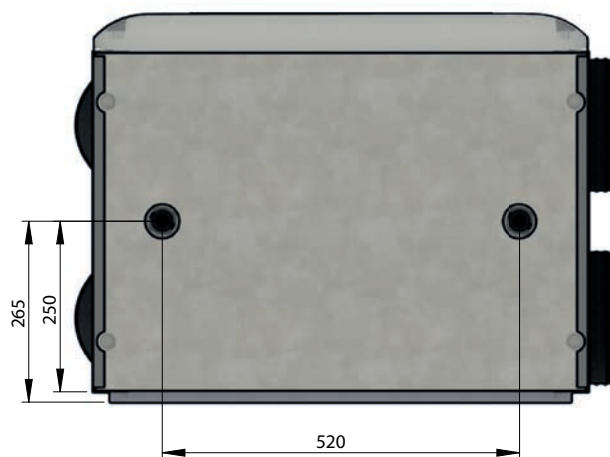
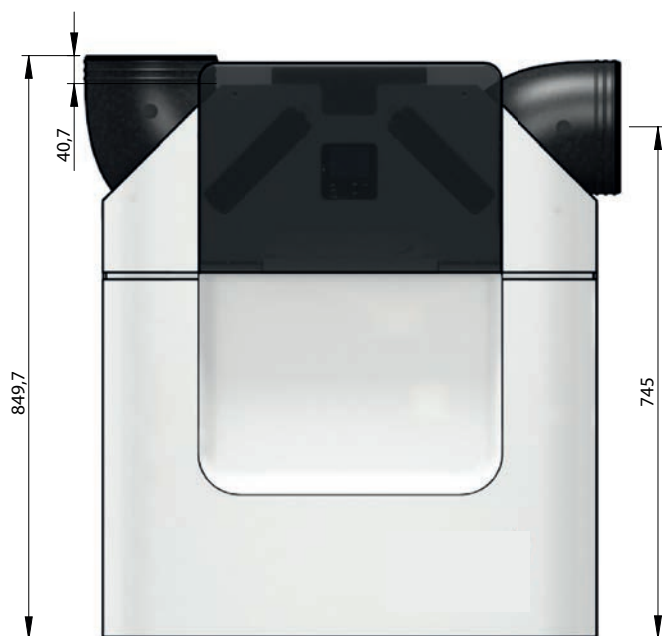
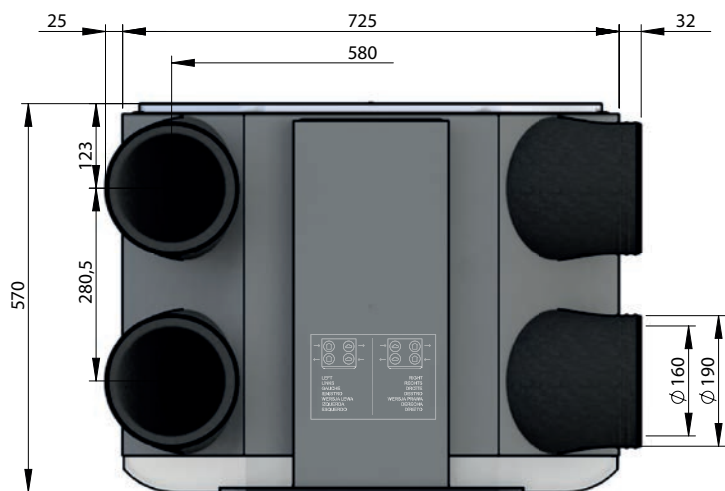
4.1 Unit configuration



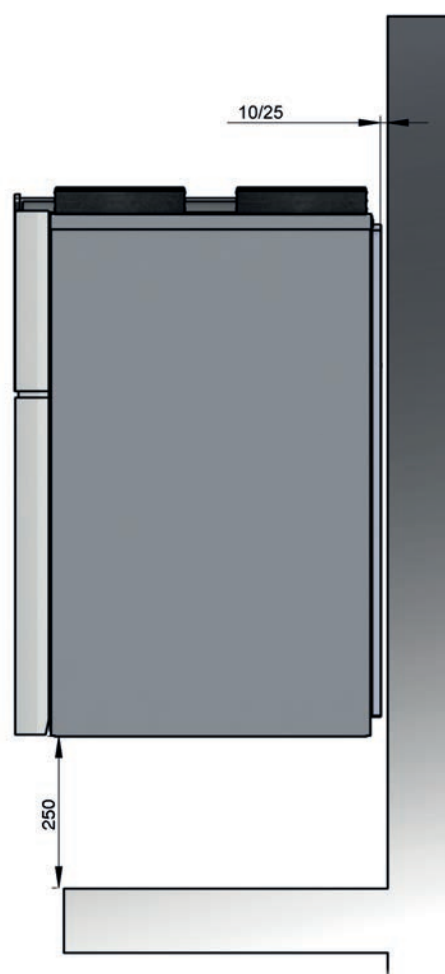
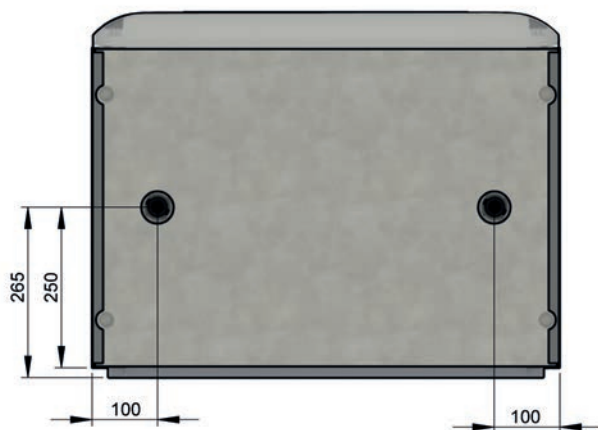
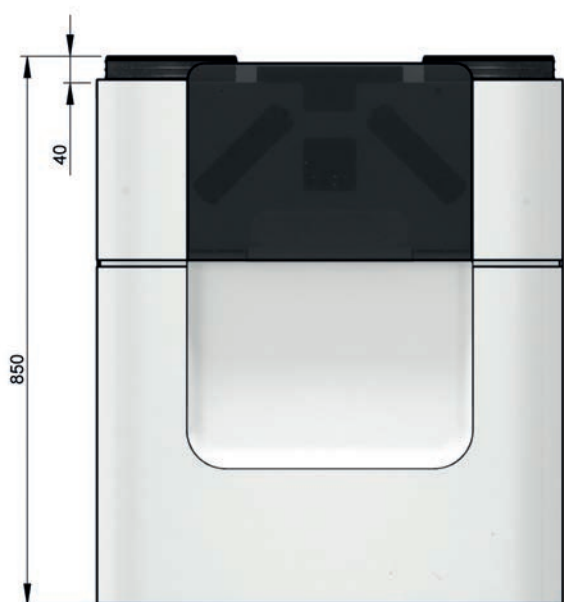
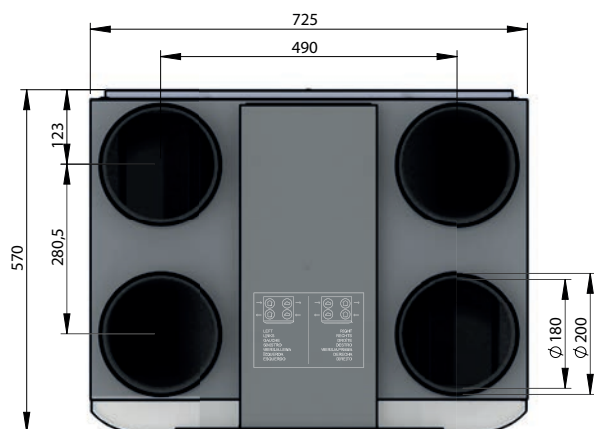
Position	Part
A	Semi-transparent visor for access to the display and the filter caps.
B	Engraving of the air connections on the cable tray cover.
C	2 level adjusters.
D	Cable tray cover for cover and protection of the connected cables.
E	Mains power connection and identification plate detailing information on the unit (not visible).
F	2 ComfoNet plug-in connections.
G	ComfoNet RJ45 connection.
H	Front cover for an air tight seal.
I	Display behind a display cover to operate the unit.
J	Main board behind the display cover.
L	Pre-heater for frost protection.
M	2 condensation drains to drain the condensation of the warm extract air.
N	4 connections for the air ducts.

4.2 Dimension sketch

ComfoAir Q 350 / ComfoAir Q 450



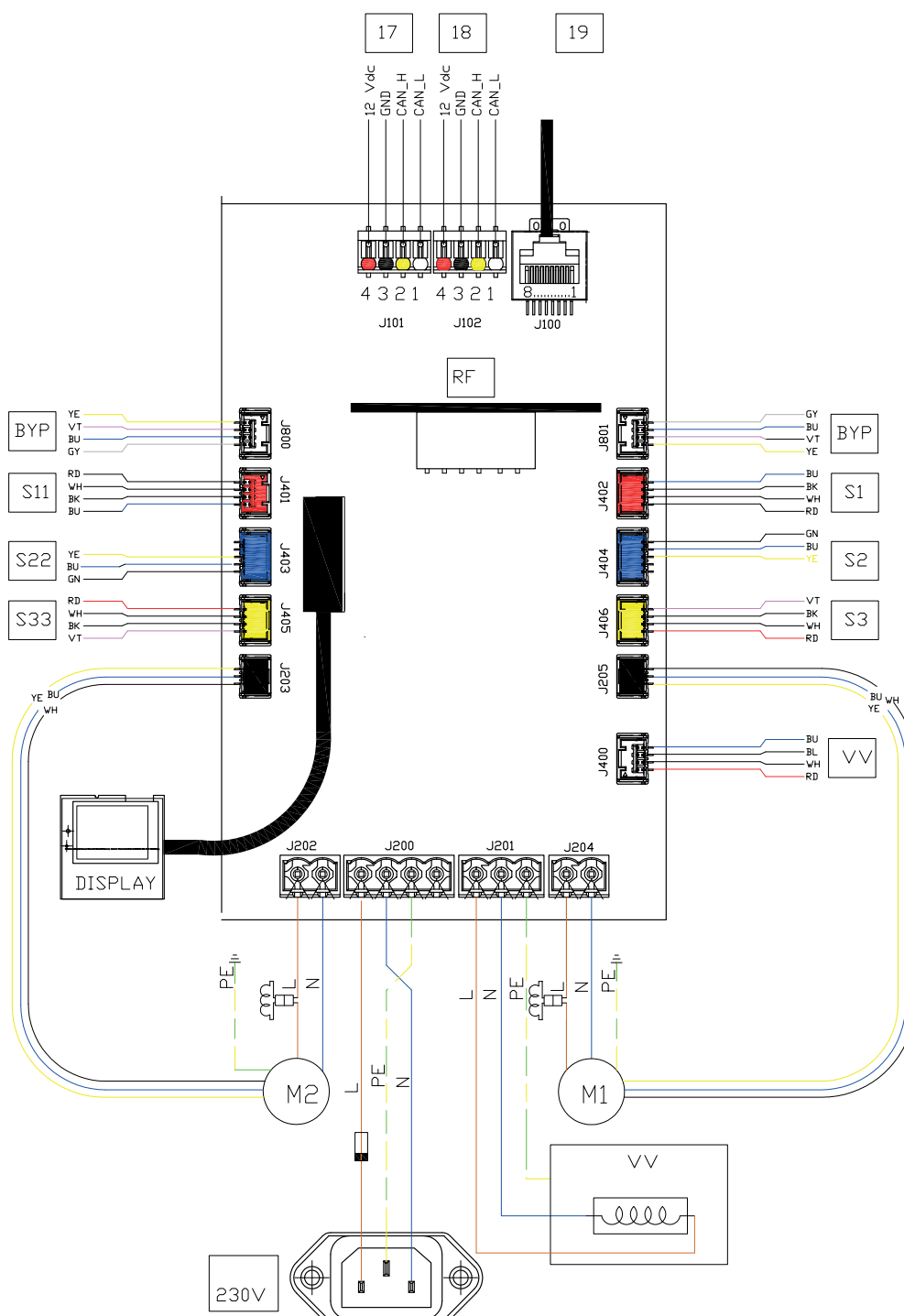
ComfoAir Q 600



4.3 Wiring diagram main board

Legend:

Code	Meaning	Meaning	
		Orientation: Right	Orientation: Left
PE	Green / Yellow	DISPLAY	Display screen
N / BU	Blue	RF	Not applicable
L / BK	Brown or Black	VV	Pre-heater
WH	White	BYP	Modulating by-pass actuator
RD	Red	M1	Exhaust motor
GN	Green	M2	Supply motor
YE	Yellow	S1	Sensor outdoor air
GY	Grey	S2	Exhaust air pressure sensor
VT	Violet	S3	Sensor supply air
17 / 18	ComfoNet plug-in	S11	Sensor extract air
19	ComfoNet RJ45	S22	Supply air pressure sensor
		S33	Sensor exhaust air



5 Installation procedures



Do not turn on the power of the unit until all of the mechanical installation is finished. After installation all parts that can cause personal injury are secured inside the casing. Tools are required to open the casing.

Be aware of electromagnetic interference (EMC) during installation.

- Make sure there is a barrier (e.g. separate channel or compartment) or minimum distance of 150 mm between power cables (e.g. 230V) and cables susceptible to interference (e.g. control, low voltage, interface, LAN, digital or analog signal);
- If interfering power cables and cables susceptible to interference need to intersect each other, make sure that this occurs perpendicularly.

These measures will minimise the EMC disturbance as much as possible and will provide the best communication.

5.1 Rework pre-heater unit



The unit is supplied with the supply and extract air on the right side of the unit. This is called **RIGHT** orientation of the unit during the commissioning.



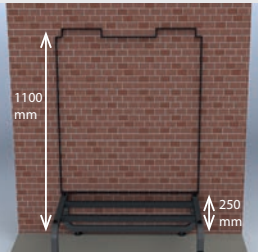

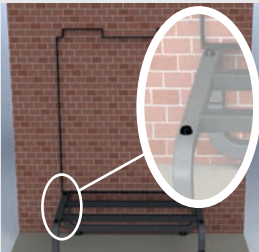
Follow the next steps when the supply and extract air are required on the left side of the unit: This is called **LEFT** orientation of the unit during the commissioning .

<p>Open the semi-transparent visor.</p>	<p>Unscrew the 3 screws of the front cover. Remove the front cover.</p>	<p>Pull the cable tray cover forwards.</p>
<p>Pull the filters out.</p>	<p>Interchange the filters. Make sure the arrow on the filters keep pointing upwards.</p>	<p>Place the filters back into the unit. = Left side; = Right side.</p>
<p>Unscrew the 2 screws of the display cover. Open the display cover.</p>	<p>Pull the pre-heater communication and power cable from the control PCB.</p>	<p>Pull the pre-heater, including its cable and grommet, from the left side of the unit.</p>
<p>Rotate the pre-heater 180°.</p>	<p>Slide the pre-heater, including its cable and grommet, back in the right side of the unit.</p>	<p>Install all parts back in reverse order.</p> <p> During installation:</p> <ul style="list-style-type: none"> ■ Tighten all screws manually (max. 1.5 Nm); ■ Place all cables in their guiding channels; ■ Place the bottom edge of the front cover behind the raised edge of the bottom plate. <p>This will guarantee an air-tight seal after the screws are tightened.</p>

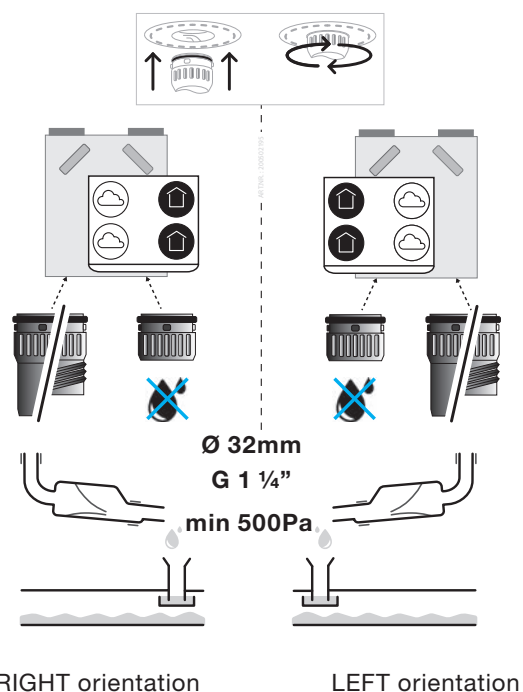
5.2 Installation on the wall

	<p>1</p> 	<p>2</p> 
<p>! Install the unit against a wall with a minimum mass of 200 kg/m².</p> <p>The given height is an indication. The selected type of condensation drain will determine the exact height.</p>	<p>Attach the mounting bracket to the wall.</p> <ul style="list-style-type: none"> ■ Make sure the openings on the bracket are on the top; ■ Make sure the bracket is level. 	<p>Hang the unit on the mounting bracket fixed to the wall.</p> <ul style="list-style-type: none"> ■ For Zehnder ComfoPipe Plus air ducts: use opening 1; ■ For all other air ducts: use opening 2.
<p>3</p> 	<p>4</p> 	<p>5</p> 
<p>Level the unit using the level adjusters.</p>	<p>Open the semi-transparent visor.</p>	<p>Pull the cable tray cover forwards.</p>
<p>6</p> <p>Example ancillaries</p> 	<p>7</p> <p>Example siphon</p> 	<p>8</p> <p>Example air duct</p> 
<p>Install the necessary ancillaries as instructed in their associated manuals.</p>	<p>Install the siphon to the bottom of the unit as instructed in the chapter "Installation of the condensation drain".</p>	<p>Install the air ducts to the unit as instructed in the installation chapter "Installation of the air ducts".</p> <p>! Remove the dust cover moments before you install the air ducts.</p>
<p>9</p> <p>Example valve Example grille</p> 	<p>10</p> 	<p>11</p> 
<p>Install the valves and grilles as instructed in the installation section of the valves and grilles.</p>	<p>Connect the power supply of the unit. Install all parts back in reverse order.</p>	<p>Commission the unit as instructed in the manual for the service engineer.</p> <p>! Run the first part (basic configuration) of the commissioning wizard immediately after turning on the power. These settings are necessary to protect the unit from frost and water damage.</p>

5.3 Installation on the floor

	<p>1 Example of instruction</p> 	<p>2</p> 
<p>Use a Zehnder mounting frame on the floor (available as an optional extra) for walls with a mass of less than 200 kg/m². This will reduce contact noise as much as possible.</p>	<p>Install the mounting frame as instructed in its installation instructions.</p>	<p>Place the unit on the mounting frame. ■ Make sure the unit is locked in place.</p>
<p>3 Continue at step 4 of the installation on the wall procedure.</p>		

5.4 Installation of the condensation drain



The condensation created by the unit must be drained off frost-free, at a gradient and incorporate an air seal.

To drain the condensation from the unit, two Zehnder bayonet connections are located on the bottom of the unit. These connections are not airtight. Thus it is necessary to close off these connections with the separately delivered sealing cap(s) or with a dry siphon.

! Do not install a water lock (U-bend) on to the unit. On warm days the water can evaporate from the siphon.


Enthalpy exchanger installed

When the unit is fitted with an enthalpy exchanger the humidity from the extracted air is partly transferred to the fresh supply air. In this case there is no condensate that must be drained from the unit. Thus a dry siphon is not necessary with an enthalpy exchanger.

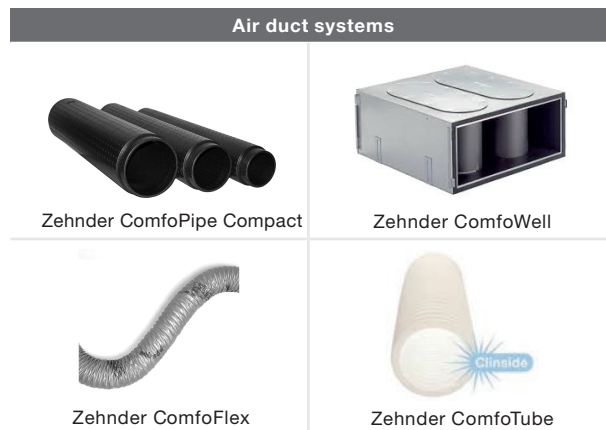
When no dry siphon is installed, seal off both Zehnder bayonet connections with the separately delivered condensation drain sealing caps. The unit is not airtight if these connections are left open.

👉 When desired you can always connect a dry siphon to any Zehnder bayonet connection.

1. Connect the supplied condensate drain sealing cap on the Zehnder bayonet connection to the supply / extract air side of the unit.
(Left orientation = left side;
Right orientation = right side).
2. Connect one of the supplied condensate drain adapters (or second condensate drain sealing cap) on the Zehnder bayonet connection on the outside / exhaust air side of the unit
(Left orientation = right side;
Right orientation = left side).
3. Connect a dry siphon to the condensate drain adapter. Please take into account the following issues:
 - The supplied condensate drain adapters are:
 - one smooth tube with a diameter of 32mm;
 - one threaded tube with a diameter of 1 $\frac{1}{4}$ ".
 - Zehnder recommends using a sealing sleeve to make an airtight connection between the condensate drain tube adapter. The condensate drain tube adapter is not suitable for gluing;
 - Make sure the installed pipeline is never higher than the bottom of the unit;
 - Install a dry siphon suitable for negative (under) pressure of at least 500Pa. This will guarantee an airtight seal. When using a siphon with ball as a dry lock this can be achieved by placing a pipe or hose of at least 90mm between the dry lock and the Zehnder bayonet connection;
 - The dry siphon of the unit may not be connected directly to the domestic waste-water system. The dry siphon of the unit must have a free outlet to the siphon of the domestic waste-water system.

 **Make sure the water lock of the domestic waste-water system is always filled with water. This prevents sewer smells from entering the dwelling.**

5.5 Installation of the air ducts




The unit can be installed with a special Zehnder air duct system. Read the installation instructions of the air duct system first.

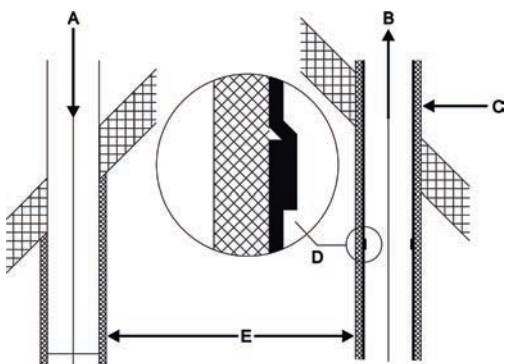
The next aspects must always be kept in mind during the installation of the air ducts:



- The air connections of the ComfoAir Q TR can be turned;

 **Always connect air ducts of at least 900mm to the unit before you connect the power to the unit. This ensures the motor cannot be touched while the unit is active.**

- Remove the dust cover moments before you install the air ducts;
- Install a silencer directly onto the supply air and extract air connections and ensure it is straight;
- Do not install a flexible air duct system. These will disturb the basic operating principle of the balanced ventilation system. When a semi-rigid air duct system is desired only use a Zehnder approved system. Any other semi-rigid air duct will disturb the basic operating principle of the balanced ventilation system;

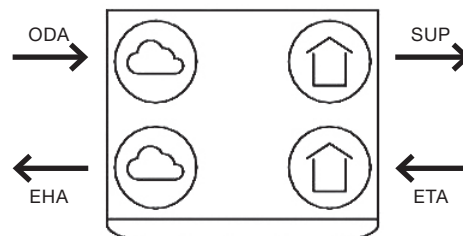


- The distance (E) between the opening of the outdoor air duct (A) and the opening of the exhaust air duct (B) must be at least 1.5 m;
- The position of the outdoor air opening (A) relative to other possible sources of stale air is very important (other exhaust-air outlets, street versus garden, etc.);
- Install thermal and vapour resistant insulation (C) to the exhaust air duct (B) from the unit till the end of the air duct. Insulating of the roof/wall passage will render the duct vapour resistant and prevents the formation of condensation on the outside of the ducts;
- Install thermal and vapour resistant insulation to the outdoor air duct (A) from the unit up to the roof/wall. This prevents the formation of condensation on the outside of the ducts;
- Drain the exhaust duct (D) in the direction of the unit.
- Zehnder recommends that you fit thermal and vapour resistant insulation to the supply duct from the unit up to the supply valves and or grilles. This will prevent unnecessary temperature loss in the summer and winter;
- Make sure the inside of the air ducts do not have an obstruction of any sort. Air ducts must not have sharp bends, dents or long screws inside. Obstructions will compromise the performance and maintenance of the system;
- Install the air duct with as little air resistance as possible and free from air leakage.

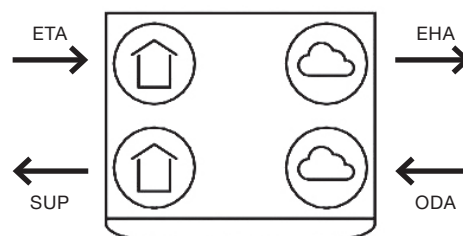
Size	Minimum internal air ducts ø	
		
350	160mm	not applicable
450	160 mm (180 mm recommended)	not applicable
600	not applicable	180 mm (200 mm recommended)

Legend

Code	Meaning
ODA	Outdoor air
SUP	Supply air
ETA	Extract air
EHA	Exhaust air
R	Supply and extract air on the right side
L	Supply and extract air on the left side



R



L

5.6 Installation of the valves and/or grilles



Example valve

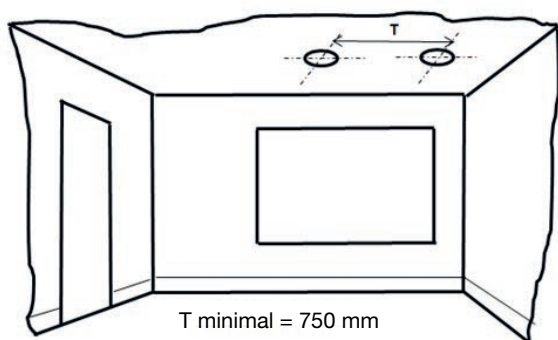


Example grille

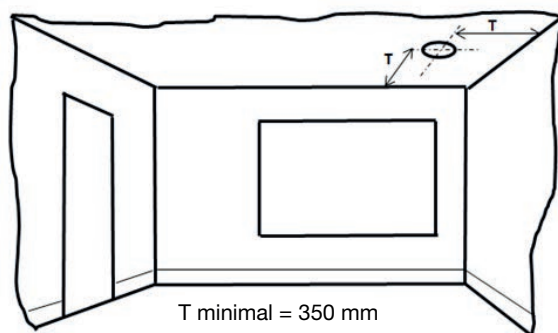
Do not obstruct these openings. For instance with furniture, draught excluders or deep pile carpet, as the airflow in the house will stagnate.

For the best comfort it is recommended that you install the ventilation system with supply and extract valves made by Zehnder.

- Install supply and extract valves and/or supply and extract grilles (e.g. in an open living kitchen) at least 750mm from each other. This will prevent the supply air short circuiting with the extract air;



- Install supply and extract valves and/or supply and extract grilles at least 350mm from the wall, ceiling or floor next to it. If the valves and/or grilles are installed closer to the wall, ceiling or floor next to it use clean sector valves and/or grilles or an air blocker on the side of the wall, ceiling or floor next to it. This will keep the wall, ceiling or floor next to it clean;





- To ensure good transfer of air throughout the dwelling, there should be a grille or gap near the inside doors. The grille or gap must provide an overflow of at least 12 cm² per l/s. This is equivalent to:
 - A gap under the inside doors of minimum area 7600mm² above the floor finish;
 - A gap under the inside doors of at least 10mm for a standard 760mm width door.

6 Available operating devices

Appearance Example	Name	Remark
	Unit display	For manual and automatic control of the unit. The automatic control is based on the unit settings and adjustable scheduler.
	Zehnder ComfoSense C 67	You can connect the ComfoSense C directly to the unit via a ComfoNet connection.
	Zehnder ComfoSwitch C 67	You can connect the ComfoSwitch C directly to the unit via a ComfoNet connection.
	Zehnder ComfoControl App	The ComfoControl App is available for Android and IOS devices. An installed ComfoConnect LAN C is necessary to use the ComfoControl App.
	Zehnder ComfoConnect LAN C	You can connect a ComfoConnect LAN C directly to the unit via a ComfoNet connection. The Zehnder ComfoConnect LAN C is also available in a portable version for the service engineer. All needed cables are supplied in the transport case.
	Zehnder Option box	You can connect the option box directly to the unit via a ComfoNet connection. You only need a separate power supply for the option box when you connect ancillaries to the option box which get their 230V supply from the option box.
	Bathroom Boost Switch	A connected Option Box is necessary to translate the signal from the Bathroom Boost Switch
	Zehnder CO ₂ sensor	A connected option box is necessary to translate the signal from the CO ₂ sensor.
	Zehnder Hygro (RH) sensor	A connected option box is necessary to translate the signal from the hygro sensor.

7 Optional ancillaries

Appearance Example	Name	Remark
	Zehnder ComfoFond-L Q	A connected option box is necessary to control the ComfoFond-L Q. You do need a separate power supply for the option box.
	Zehnder ComfoAir Q pre-heater	You can install the pre-heater on site into the unit.

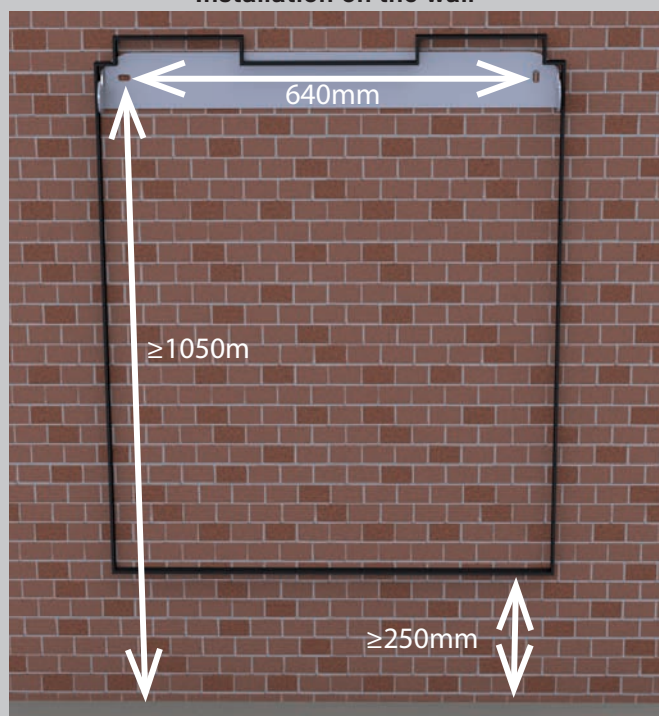
Quick Installation Guide

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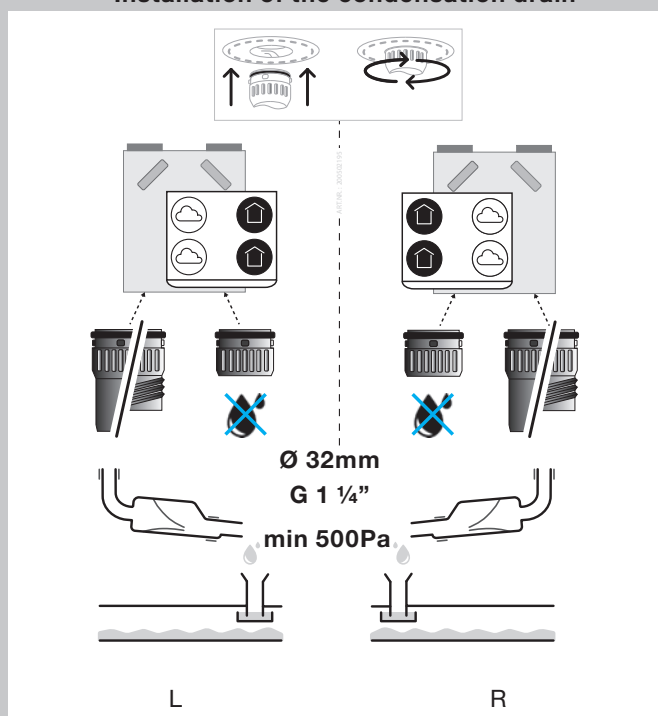
Code	Meaning
R	Supply and extract air on the right side
L	Supply and extract air on the left side
ODA	Outdoor air
SUP	Supply air
ETA	Extract air
EHA	Exhaust air



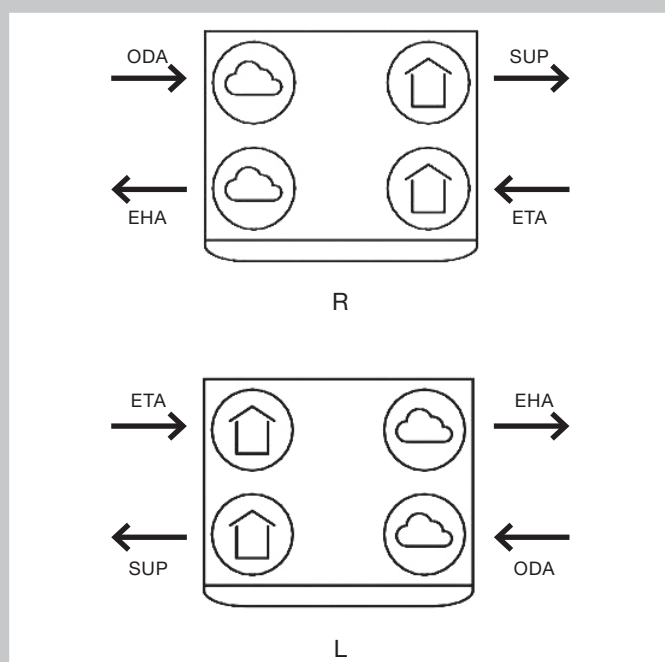
Installation on the wall



Installation of the condensation drain



Installation of the air ducts



Maintenance room

