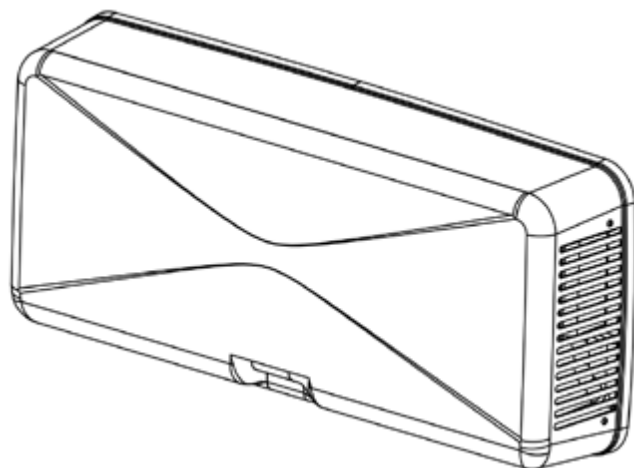


Installation Manual (installer & user)

QR100M - Heat Recovery Ventilation Unit



Read this manual carefully before using the product and keep it in a safe place for reference as necessary.

This product was constructed up to standard and in compliance with regulations relating to electrical equipment and must be installed by technically qualified personnel.

The manufacturer assumes no responsibility for damage to persons or property resulting from failure to observe the instructions contained in this manual.

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2 PRECAUTIONS

WARNING

Make sure that the mains supply to the unit is disconnected before performing any installation, service, maintenance or electrical work!

WARNING

The installation and service of the unit and complete ventilation system must be performed by an authorized installer and in accordance with local rules and regulations.

WARNING

If any abnormality in operation is detected, disconnect the device from the mains supply and contact a qualified technician immediately.

TRANSPORT AND STORAGE

- Do not leave the device exposed to atmospheric agents (rain, sun, snow, etc.).
- The front cover in ABS must be covered during storage and installation.

INSTALLATION

- After removing the product from its packaging, verify its conditions. Do not leave packaging within the reach of children or people with disabilities.
- Beware of sharp edges. Use protective gloves.
- The device should not be used as an activator for water heaters, stoves, etc., nor should it discharge into hot air/fume vent ducts deriving from any type of combustion unit or tumble dryer. It must expel air outside via its own special duct.
- If the environment in which the product is installed also houses a fuel-operating device (water heater, methane stove etc., that is not a "sealed chamber" type), it is essential to ensure adequate air intake, to ensure good combustion and proper equipment operation.
- The electrical system to which the device is connected must comply with local regulations.
- Before connecting the product to the power supply or the power outlet, ensure that:
 - the data plate (voltage and frequency) correspond to those of the electrical mains
 - the electrical power supply/socket is adequate for maximum device power
- For installation an omnipolar switch should be incorporated in the fixed wiring, in accordance with the wiring rules, to provide a full disconnection under overvoltage category III conditions (contact opening distance equal to or greater than 3mm).

USE

- The device should not be used for applications other than those specified in this manual.
- This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved. Children shall not play with the appliance. Cleaning and user maintenance shall not be made by children without supervision.
- Do not touch the appliance with wet or damp hands/feet.
- The device is designed to extract clean air only, i.e. without grease, soot, chemical or corrosive agents, or flammable or explosive mixtures.
- Do not use the product in the presence of inflammable vapours, such as alcohol, insecticides, gasoline, etc.
- **The system should operate continuously, and only be stopped for maintenance/service.**
- Do not obstruct grilles to ensure optimum air passage.
- Do not immerse the device or its parts in water or other liquids.
- Operating temperature: 0°C up to +40°C.

SERVICE

- Although the mains supply to the unit has been disconnected there is still risk for injury due to rotating parts that have not come to a complete standstill.
- Beware of sharp edges. Use protective gloves.
- Use original spare parts only for repairs.

3 PRODUCT INFORMATION

3.1 General

This is the Installation Manual of QR100M decentralised heat recovery ventilation unit.

This manual consists of basic information and recommendations concerning installation, commissioning, use and service operations to ensure a proper fail-free operation of the unit.

The key to proper, safe and smooth operation of the unit is to read this manual thoroughly, use the unit according to given guidelines and follow all safety requirements.

The QR100M is supplied with 2 condensation elbows, 1 plug, 2xØ98mm spigots for air intake and exhaust and 1 installation template.

3.2 Dimensions (mm) and Weight

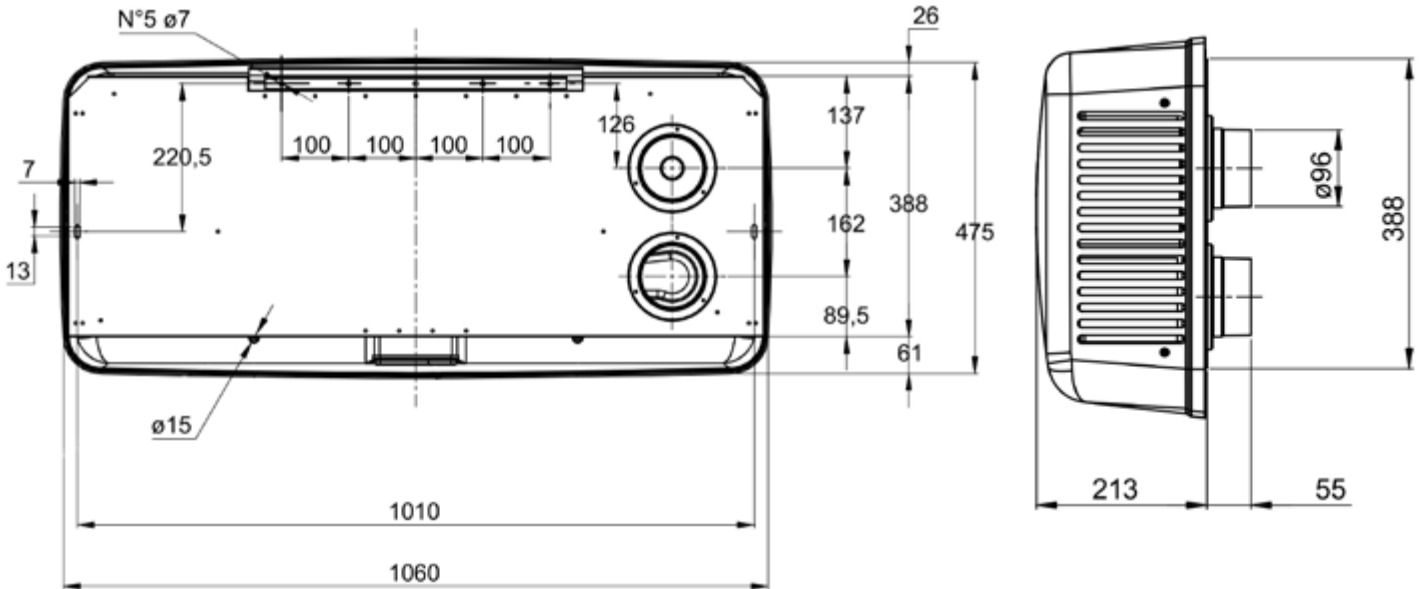


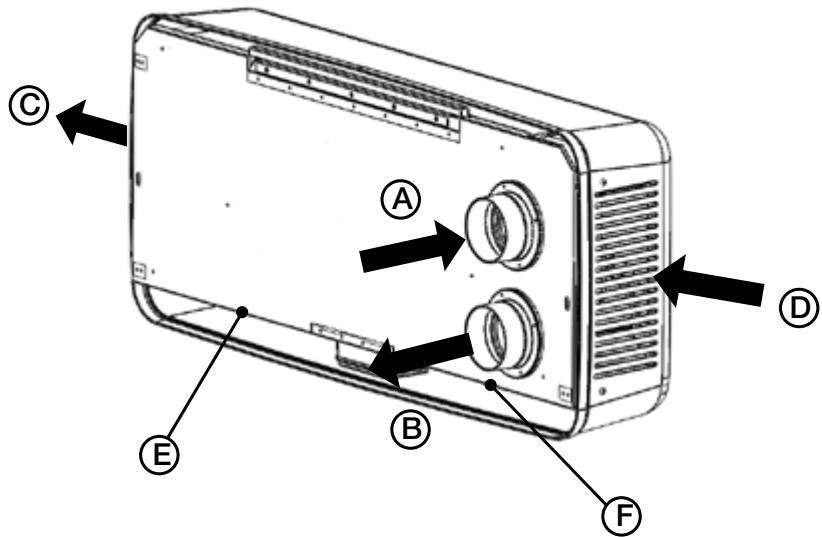
Fig. 3.a

Weight Kg
12,5

3.3 Connections

Fig. 3.b Connections

- Ⓐ Intake air from outside
- Ⓑ Exhaust air to outside
- Ⓒ Supply air to inside
- Ⓓ Extract air from inside
- Ⓔ Winter condensation drainage
- Ⓕ Summer condensation drainage



3.4 Space required

Make sure that enough space is left around the unit to allow easy maintenance (removal of the front cover for access to filters and terminal box).

It is recommended to leave at least 1m distance between the side grilles (supply and extract) and the perpendicular walls.

3.5 Rating label

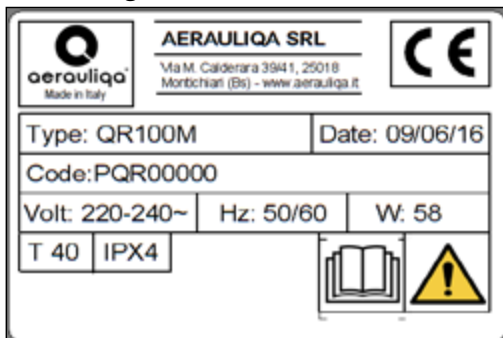


Fig.3.c Rating label

4 TRANSPORT AND STORAGE

WARNING

Make sure that specific warnings and cautions in Chapter 2 “Precautions” are carefully read, understood and applied!

The appliance is delivered in one carton box.

The appliances should be stored and transported in such a way that it is protected against physical damage that can harm spigots, casing etc. It should be covered so that dust, rain and snow cannot enter and damage the unit and its components.

5 INSTALLATION

WARNING

Make sure that specific warnings and cautions in Chapter 2 “Precautions” are carefully read, understood and applied!

This section describes how to install the unit correctly.

The unit must be installed according to these instructions.

5.1 Unpacking

Verify that the unit (and eventual accessories) delivered is according to order before starting the installation. Any discrepancies from the ordered equipment must be reported to the supplier.

5.2 Where/how to install

- All QR units are meant for indoor installation in a heated space.
- The unit must be installed on an external wall. The external grilles are visible from outside.
- The unit must always be mounted horizontally.
- Mount the unit on flat surface (wall).
- It's important that the unit is completely leveled before it is put into operation.
- Place the unit preferably in the middle of the area to be ventilated.
- When choosing the location it should be kept in mind that the unit requires maintenance regularly and that the inspection door should be easily accessible.
- Leave free space for opening the removable panel and for removal of the main components (see 3.4).
- The outdoor air grilles should if possible be put in the northern or eastern side of the building and away from other exhaust outlets like kitchen fan exhausts or laundry room outlets.
- Install the unit in a position where the condensation drainage can be carried out easily.

5.3 Installation

The unit must be installed in the following position.

It is important that the unit is completely flat in order for the condensation drainage to work properly.

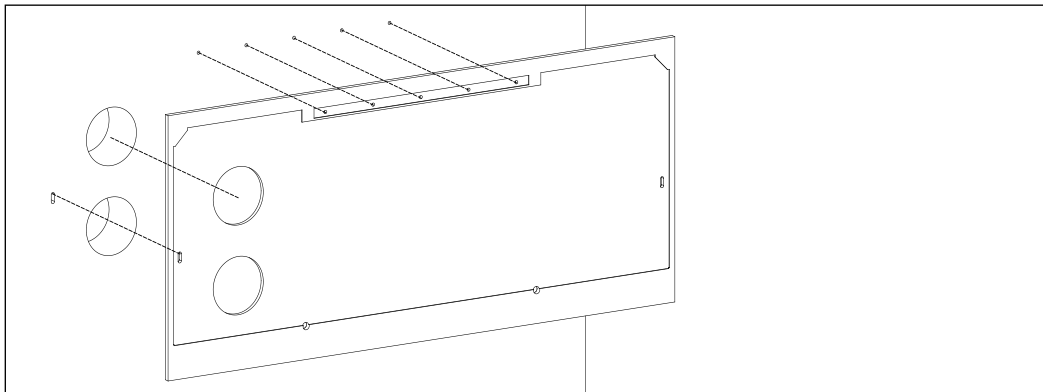


Fig. 5.a-b-c

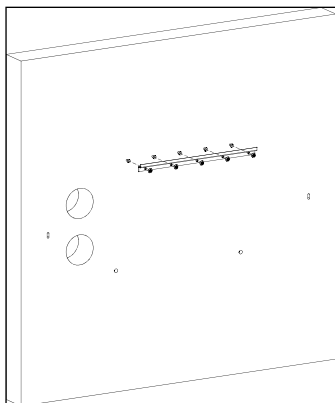


Fig. 5.d

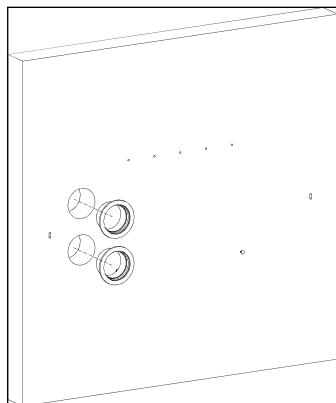


Fig. 5.e

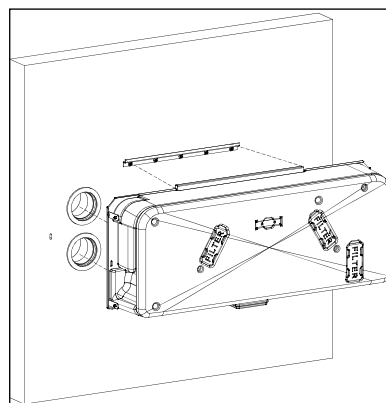


Fig. 5.f

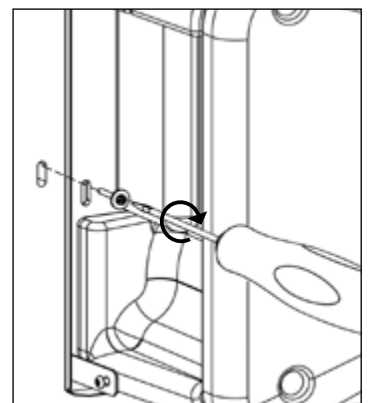


Fig. 5.g

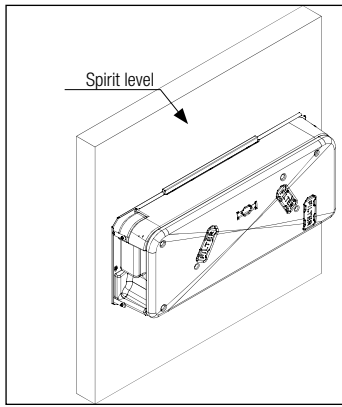


Fig. 5.h

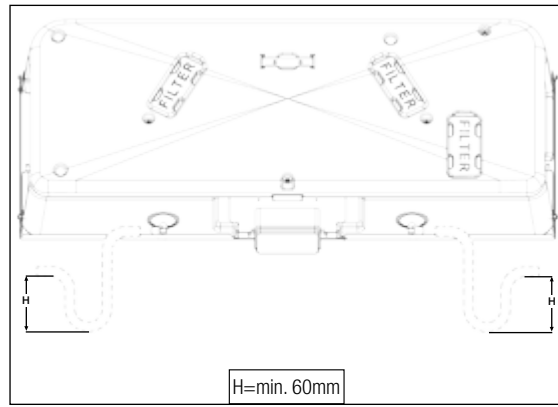


Fig. 5.i

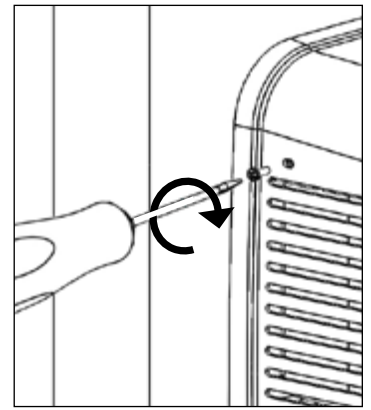


Fig. 5.j

- 5.a** Prepare the surface where the unit is to be mounted. Make sure that the surface is flat, leveled and that it supports the weight of the unit. Perform the installation in accordance with local rules and regulations.
- 5.b** Use the supplied template to mark the right positions of the air intake and exhaust holes, of the fixing screws of the mounting bracket, of the hole for the electrical cable and of the condensation drains. Make sure that the template is at spirit level.
- 5.c** Drill the holes in the external wall.
- 5.d** Use the appropriate fasteners (not supplied) to fix safely the mounting bracket on the wall: make sure that the bracket is properly installed to support the unit weight.
- 5.e** Fix the spigots in the wall safely.
- 5.f** Hook the main body of the unit at the bracket, making sure that the two holes on the rear side of the casing are in line with the spigots fixed at the wall.
- 5.g** Fix the main body to the wall by means of screws (not supplied).
- 5.h** Make sure that the unit is completely flat once installed.
- 5.i** Connect the condensation elbow(s) to the drainage hole(s) at the bottom of the casing: in case one hole is not used, close and seal it with the supplied plug. Make sure of water and air tightness of all connections. It is necessary to use a U-bend (or similar) in the condensation drainage pipe. Connect the unit electrically according to point 5.4. Check that it starts up correctly.
- 5.j** Fix the ABS cover to the main body by means of the supplied screws.

5.4 Electric Connections

WARNING

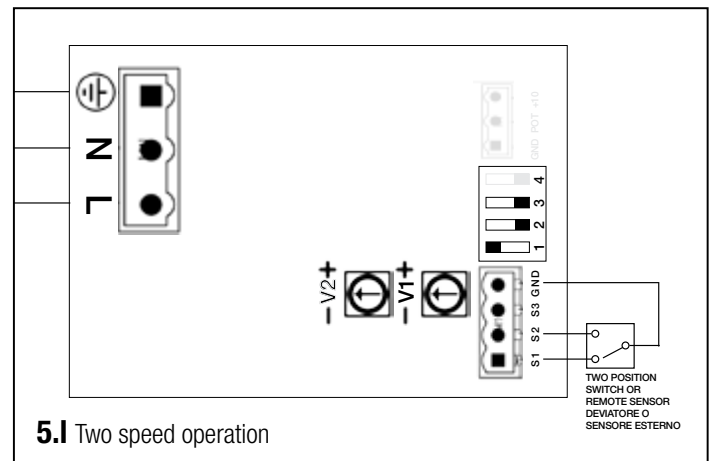
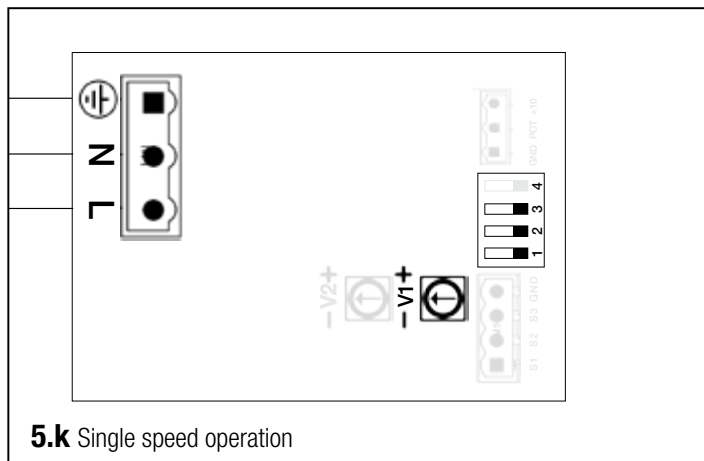
Make sure that the mains supply to the unit is disconnected before performing any installation, service, maintenance or electrical work!

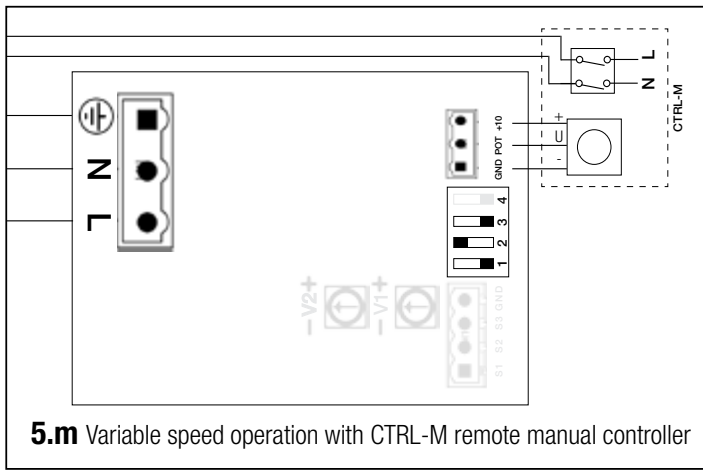
WARNING

The installation and service of the unit and complete ventilation system must be performed by an authorized installer and in accordance with local rules and regulations.

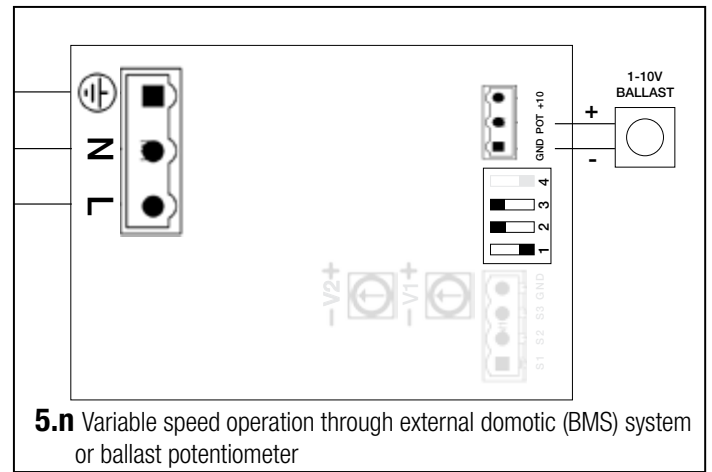
The unit must be earthed.

The QR100M is wired internally from factory. Figures below show the wiring diagrams.

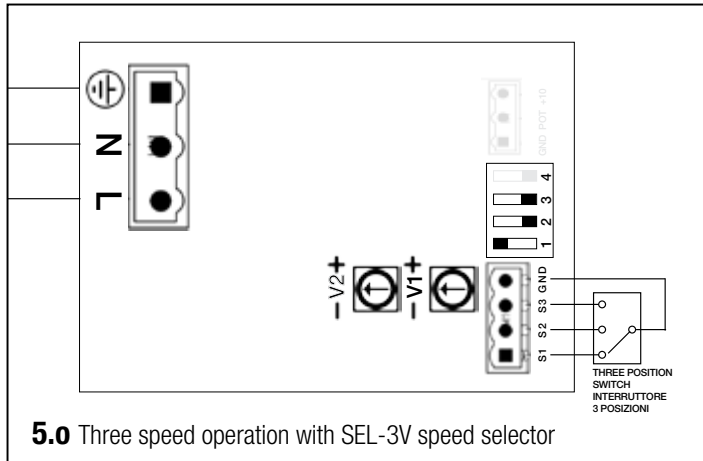




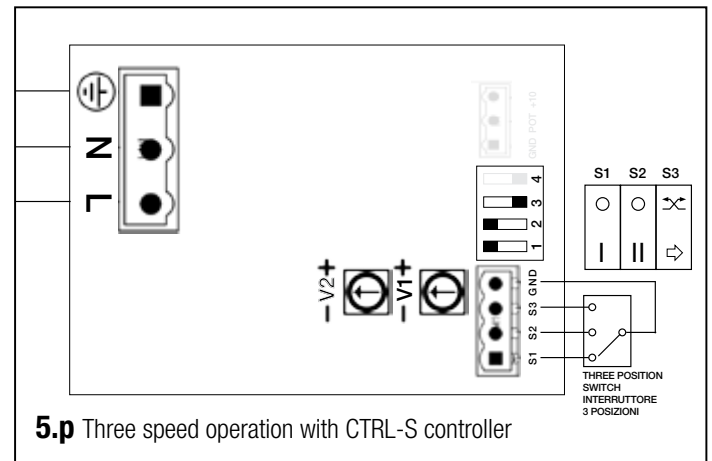
5.m Variable speed operation with CTRL-M remote manual controller



5.n Variable speed operation through external domotic (BMS) system or ballast potentiometer



5.o Three speed operation with SEL-3V speed selector



5.p Three speed operation with CTRL-S controller

5.q

Dip switch

1	2	3	4	Operation
0	0	0	0	Single speed
1	0	0	0	Two speed
0	1	0	0	Variable speed with CTRL-M remote manual controller
0	1	1	0	Variable speed through external domotic (BMS) system or ballast potentiometer
1	0	0	0	Three speed with SEL-3V
1	1	0	0	Three speed with CTRL-S



Fig. 5.r CTRL-M
(accessory on request)



Fig. 5.s SEL-3V
(accessory on request)



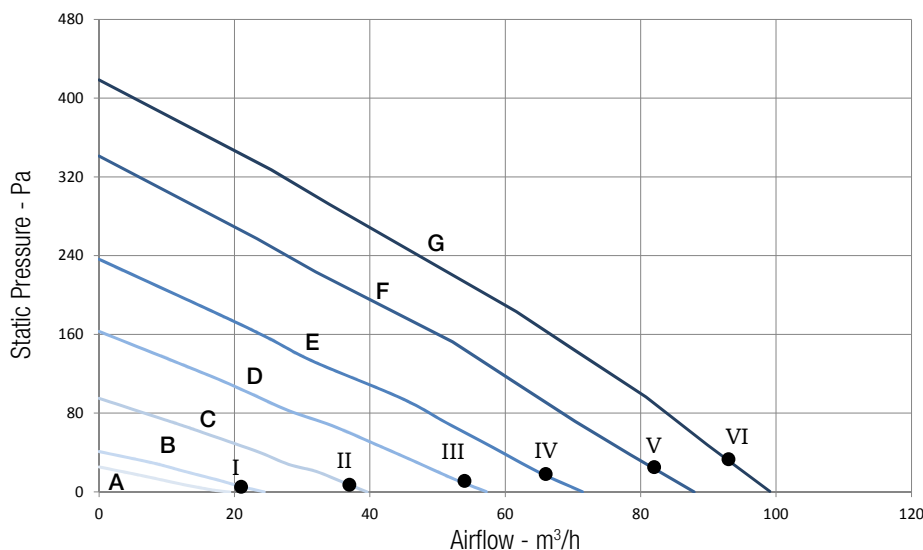
Fig. 5.t CTRL-S
(accessory on request)

6.1 Setting Fan speed

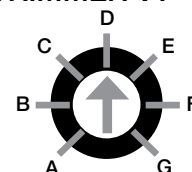
The speed of the unit can be adjusted during installation according to required ventilation rate.

Figure 6.a below shows performance curves (for supply air and extract air) at different settings of the 0-10V signal to the motors. Airflow and consumption refer to the 2 motors.

Table 6.b indicates the efficiency of the heat exchanger and of the condensation produced in different climatic conditions, to help the installer or the designer of the ventilation system to decide if to connect one or both condensation drainages. High production of condensation is the direct consequence of a high efficiency level as well as of the humidity rate.



TRIMMER V1- V2



Curve	Speed %	W max	m³/h max
A (min)	24	8	19
B	30	9	24
C	43	13	40
D	61	22	57
E	75	34	71
F	93	51	88
G (max)	100	58	100

Fig. 6.a Intake curve according to Reg. 1253/2014 (ErP). Product tested without filter F7.

Working point	W	m³/h	SPI (W/m³/h)	η_t % ⁽¹⁾
I	8,3	21	0,395	93
II	13	37	0,351	91
III	21,8	54	0,404	89
IV	33,1	66	0,5015	87
V	50,2	82	0,6122	85
VI	57,5	93	0,6183	84

(1) Termal efficiency of the unit.

EXTERNAL		INTERNAL		25 m³/h		50 m³/h		75 m³/h		100 m³/h	
T	R. H.	T	R. H.	η	H ₂ O	η	H ₂ O	η	H ₂ O	η	H ₂ O
°C	%	°C	%	%	kg/h	%	kg/h	%	kg/h	%	kg/h
-18	60	20	30	96,6	0,08	93,5	0,15	90,6	0,21	88	0,27
-18	70	20	40	97	0,11	94,3	0,21	91,9	0,31	89,6	0,4
-18	80	20	50	97,4	0,14	95,1	0,28	92,9	0,41	91	0,53
-10	60	20	30	96,4	0,05	93,1	0,09	89,9	0,13	87	0,16
-10	70	20	40	96,9	0,08	94,1	0,15	91,4	0,22	89	0,28
-10	80	20	50	97,4	0,11	94,9	0,21	92,7	0,3	90,6	0,39
0	50	20	30	95,6	0,01	91,3	0	87,5	0	84,1	0
0	60	20	40	96,3	0,03	92,8	0,05	89,5	0,07	86,3	0,08
0	70	20	50	96,9	0,05	94,1	0,1	91,4	0,14	88,9	0,18
10	50	20	40	95,4	0	91,3	0	87,5	0	84,1	0
10	60	20	50	95,4	0	91,3	0	87,5	0	84,1	0
10	70	20	60	96,1	0,01	92,3	0,02	88,6	0,02	84,9	0,01
35	60	26	50	95,5	0	91,4	0	87,7	0	84,3	0
35	70	26	55	96,9	0,02	93,9	0,04	91	0,05	88,1	0,06
35	80	26	60	98,1	0,05	96,4	0,09	94,7	0,13	93,1	0,17
40	60	26	50	97,1	0,04	94,4	0,08	91,7	0,1	89	0,12
40	70	26	55	98,1	0,07	96,3	0,14	94,5	0,2	92,9	0,26
40	80	26	60	98,8	0,1	97,6	0,19	96,6	0,29	95,6	0,37

Fig. 6.b Thermal efficiency of the heat exchanger and average production of condensation water. Data supplied by the manufacturer of the heat exchanger. The heat exchanger is tested at the University of Luzern (Hochschule Lezern).

6.2 Before Starting the System

When the installation is finished, check that:

- Filters are mounted correctly.
- The unit is installed in accordance with the instructions.
- The unit is correctly wired.
- Outdoor air intake is positioned with sufficient distance to pollution sources (kitchen ventilator exhaust, central vacuum system exhaust or similar).
- The unit is correctly set and commissioned.

7 OPERATION

WARNING

Make sure that specific warnings and cautions in Chapter 2 “Precautions” are carefully read, understood and applied!

7.1 Single speed operation

The unit runs at the speed set by turning the integral trimmer “V1” in the terminal box.

This is the default factory setting.

Wiring diagram: Fig. 5.k – Dip switch configuration: 0000 (Fig. 5.q).

7.2 Two speed operation

The unit runs continuously at the speed set by turning the integral trimmer “V1” in the terminal box and can be boosted at high speed, which is set by turning the integral trimmer “V2” in the terminal box. Boost is activated, when needed, by means of a remote two-position switch (not supplied) or by means of remote sensors (SEN-HY, SEN-CO2 or SEN-PIR), which are accessories on request.

Wiring diagram: Fig. 5.l – Dip switch configuration: 1000 (Fig. 5.q).

7.3 Variable speed operation with CTRL-M remote manual controller (accessory on request)

The unit runs at the speed set by turning the knob of the CTRL-M remote manual control panel (accessory, Fig. 5.r).

Wiring diagram: Fig. 5.m – Dip switch configuration: 0100 (Fig. 5.q).

7.4 Variable speed operation through external domotic (BMS) system or ballast potentiometer

The unit runs at the speed set by turning the knob of an external 1-10V ballast potentiometer or set by an external 1-10V signal from a domotic (BMS) system.

Wiring diagram: Fig. 5.n – Dip switch configuration: 0110 (Fig. 5.q).

7.5 Three speed operation with SEL-3V speed selector (accessory on request)

The unit runs at the speed selected by turning the knob of the SEL-3V speed selector (accessory, Fig. 5.s).

Speed 1 is set by turning the integral trimmer “V1” in the terminal box.

Speed 2 is set by turning the integral trimmer “V2” in the terminal box.



Speed 3 is the maximum speed achievable by the unit.



Wiring diagram: Fig. 5.o – Dip switch configuration: 1000 (Fig. 5.q).

7.6 Three speed operation with CTRL-S controller (accessory on request)

The unit runs at the speed selected by activating the two-position switches “S1”, “S2” and “S3” of the CTRL-S (accessory, Fig. 5.t).

“S1”	“S2”	Operation
○	○	OFF
I	○	Speed 1
○	II	Speed 2
I	II	Speed 3

“S3”	Operation
	Heat recovery
	Free cooling

S1	S2	S3
○	○	
I	II	

Speed 1 is set by turning the integral trimmer “V1” in the terminal box.

Speed 2 is set by turning the integral trimmer “V2” in the terminal box.

Speed 3 is the maximum speed achievable by the unit.

S3 switch allows to activate the “free cooling” operation (bypass) by reducing the intake airflow, so to mitigate the heat exchange when necessary.

Wiring diagram: Fig. 5.p – Dip switch configuration: 1100 (Fig. 5.q).

7.7 Anti-frost functionality

The unit is equipped with a thermostat which, when necessary, reduces the speed of the intake fan to prevent the freezing of the heat exchanger, which could get damaged irreparably.

WARNING

Make sure that specific warnings and cautions in Chapter 2 “Precautions” are carefully read, understood and applied!

Maintenance can be carried out by the user.

Service must be performed only by an authorized installer and in accordance with local rules and regulations.

Questions regarding installation, use, maintenance and service of the unit should be answered by your installer or place of purchase!

8.1 Components list

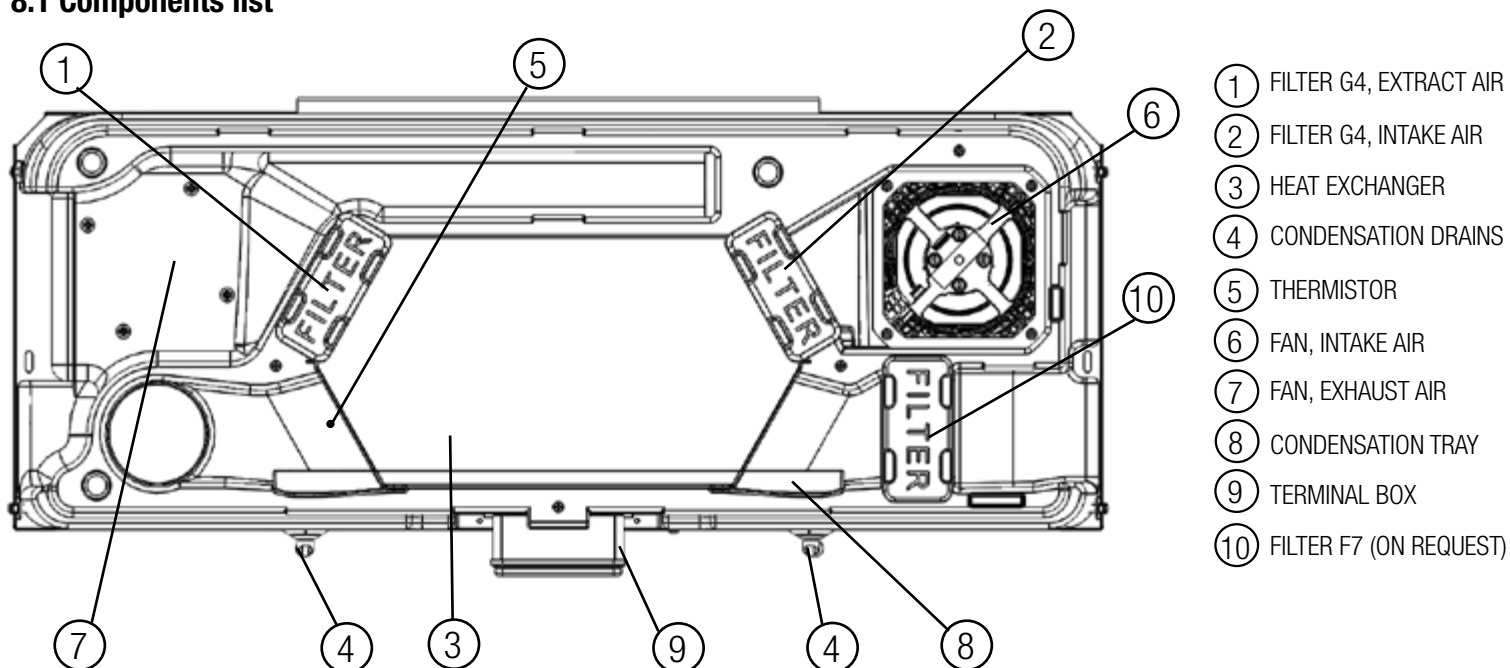


Fig. 8.a Internal components

8.2 Description of Components

Fans

The fans have external rotor motors of EC type which can be steplessly controlled individually between 10–100%. The motor bearings are life time lubricated and maintenance free.

Filters

The filters are of filter quality G4 for both the supply air and extract air filter. The filters need to be cleaned regularly (and replaced when polluted) during maintenance. New sets of filters can be acquired from your installer or wholesaler.

Heat exchanger

The unit is equipped with a highly efficient, counter-flow plate heat exchanger. Supply air temperature is therefore normally maintained without adding additional heat. The heat exchanger is removable for cleaning and maintenance during service.

Condensation drainage

Depending on the relative humidity in the extract air, condensation may occur on the cold surfaces of the heat exchanger, on one side in winter time, on the other side in summer time (Fig. 6.b). The condensate water is led out through drain plugs.

Thermostat

If external temperature is too low, the heat exchanger might get frosted, and therefore damaged. To avoid this, dedicated thermostat switches off the supply fan if and when needed.

8.3 Maintenance

WARNING

Make sure that the mains supply to the unit is disconnected before performing any installation, service, maintenance or electrical work!

- Keep the unit surface free from dust.
- Clean the filters every three months with a vacuum cleaner and replace the filters every year. This may differ per situation depending on internal and external environmental conditions (Fig. 8.b-c-d-e-f).

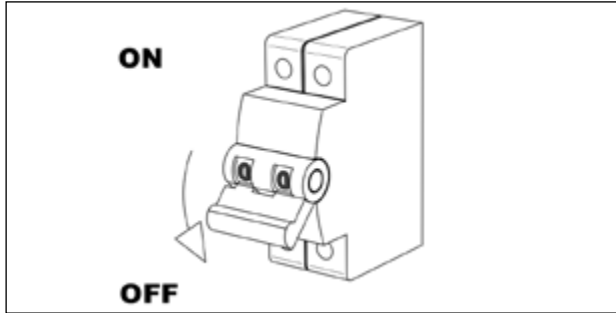


Fig. 8.b

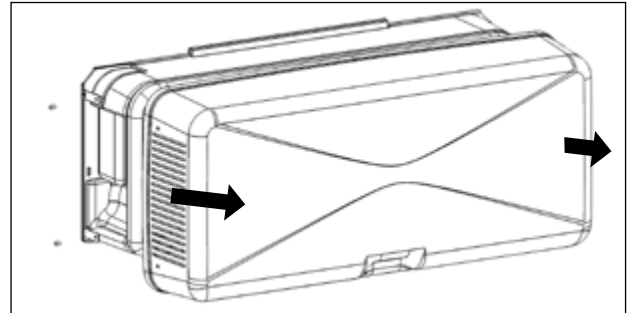


Fig. 8.c

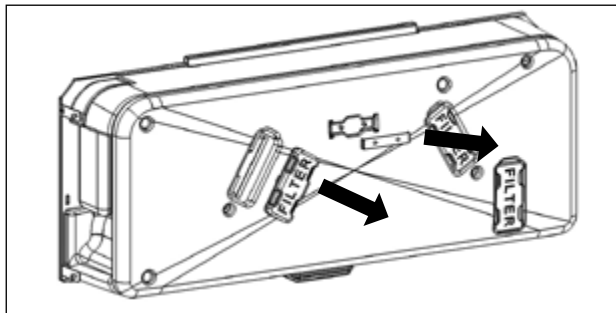


Fig. 8.d

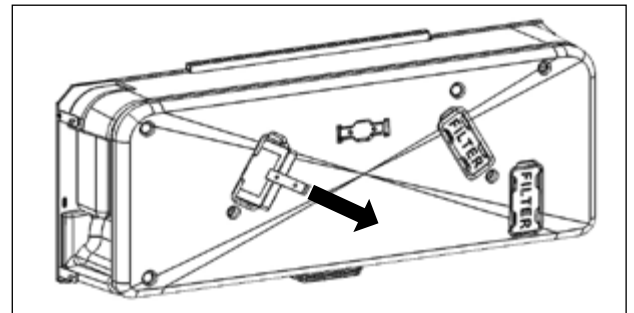


Fig. 8.e

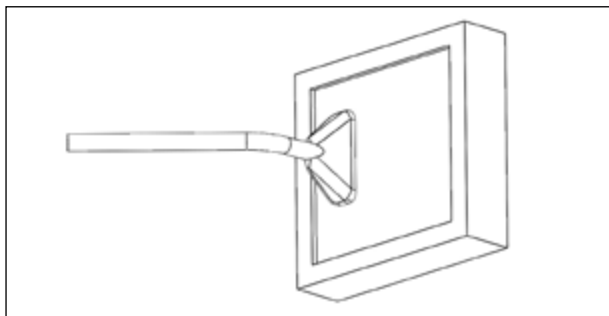


Fig. 8.f

8.4 Service

WARNING

Make sure that the mains supply to the unit is disconnected before performing any installation, service, maintenance or electrical work!

WARNING

The installation and service of the unit and complete ventilation system must be performed by an authorized installer and in accordance with local rules and regulations.

- Keep the unit surface free from dust.
- Clean the filters every three months with a vacuum cleaner and replace the filters every year. This may differ per situation depending on internal and external environmental conditions (Fig. 8.g-h-i-j-k).
- Clean the fans every year with a vacuum cleaner. This may differ per situation depending on internal and external environmental conditions and on frequency of filter cleaning. Do not move the balance clips (Fig. 8.g-h-l-m-n-o-p).
- Clean the heat exchanger every year with a vacuum cleaner. This may differ per situation depending on internal and external environmental conditions and on frequency of filter cleaning. To remove the heat exchanger unlock the specific bracket by turning the yellow screw (Fig. 8.g-h-l-q-r).
- Check the condensation drainage: remove the front covers and, if necessary, clean the condensation tray. Check the U-bend efficiency.

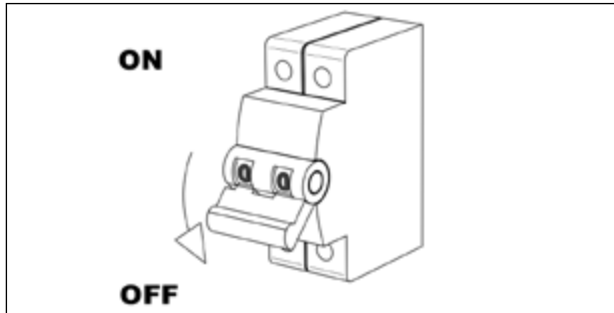


Fig. 8.g

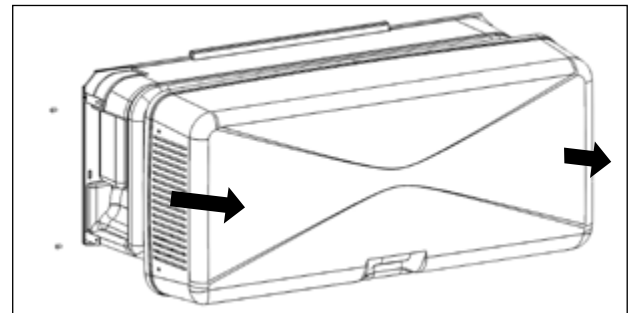


Fig. 8.h

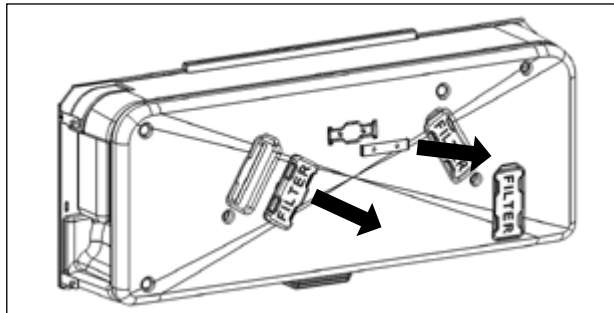


Fig. 8.i

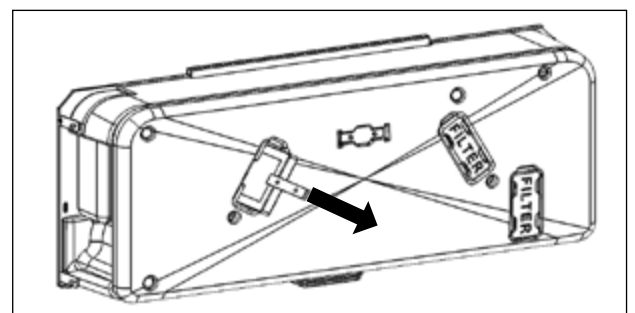


Fig. 8.j

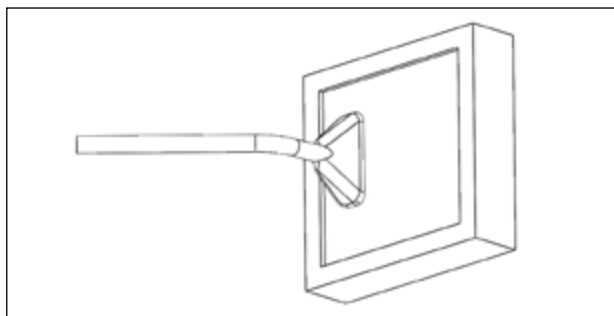


Fig. 8.k

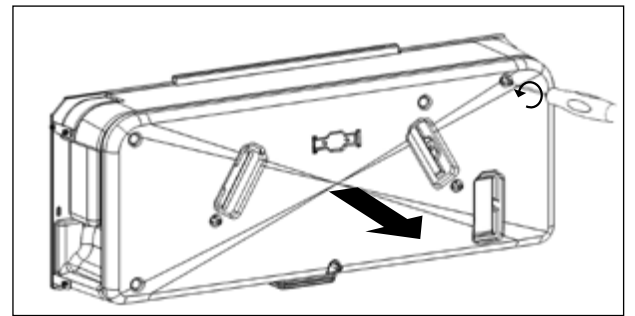


Fig. 8.l - max fastening torque 0,4Nm

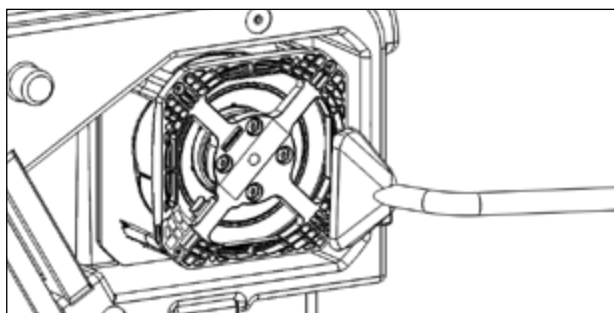


Fig. 8.m

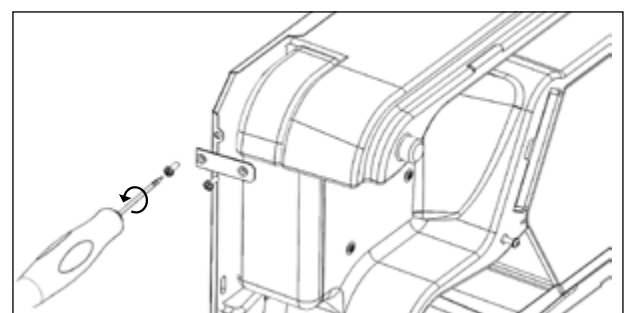


Fig. 8.n

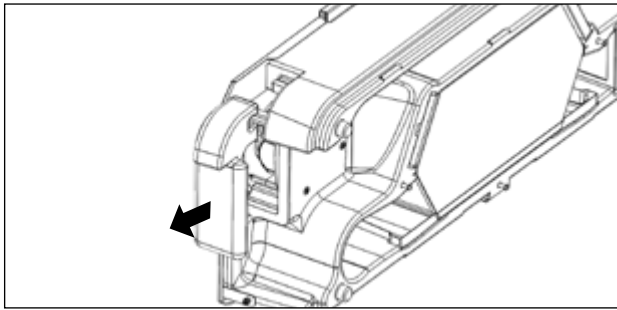


Fig. 8.o

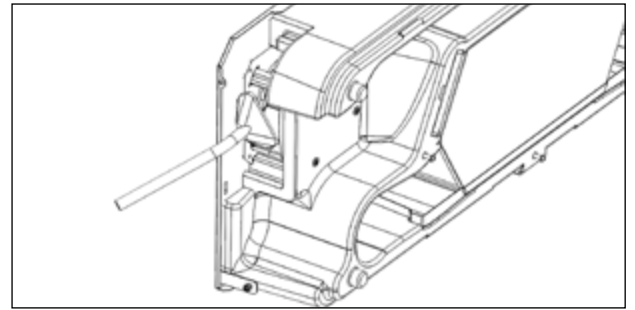


Fig. 8.p

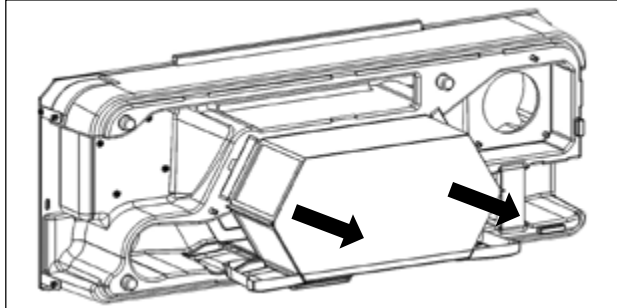


Fig. 8.q

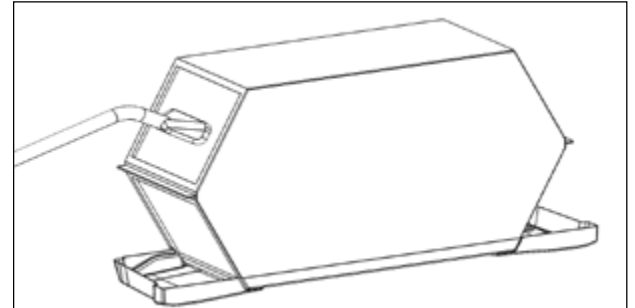


Fig. 8.r

8.5 Trouble shooting

Fans do not start

1. Check that main supply gets to the unit.
2. Check that all connections are working (all connections in terminal box and fast couplings of supply and extract air fans).
3. If only the supply fan is switched off and if the external temperature is below zero, maybe the no-frost thermostat is activated: wait until the thermostat is deactivated.

Reduced airflow

1. Check setting of fan speed in the terminal box or on the remote controls.
2. Check filters. Change of filters required?
3. Check grilles. Re-setting or cleaning of grilles required?
4. Check fans and heat exchange block. Cleaning required?
5. Check if air intake and exhaust have been clogged.

Fan noise/vibrations

1. Clean fan impellers. Cleaning required?
2. Check that the fans are firmly in place within the unit.
3. Check that the unit is firmly fixed to the mounting bracket.

Excessive air noise

1. Check setting of fan speed in the terminal box or on the remote controls.
2. Check grilles. Re-setting or cleaning of grilles required?

Gurgling noise

1. Drainage connections have not been installed correctly.
2. Drainage connections below the unit has a too low water level, fill it up with water.

Unpleasant smel

1. Drainage connections have not been installed correctly.
2. Drainage connections below the unit has a too low water level, fill it up with water.
3. Check filters. Change of filters required?
4. Check grilles. Cleaning necessary?

Water leakage near the unit

1. Drain connections and elbows/plugs have not been installed correctly. Sealing necessary?
2. Drain connections and elbows/plugs are dirty. Cleaning necessary?

ErP Directive - Regulations 1253/2014 - 1254/2014

a)	Mark	-	AERAULIQA	
b)	Model	-	QR100M	
c)	SEC class	-	A	B
c1)	SEC warm climates	kWh/m2.a	-13,3	-2,4
c2)	SEC average climates	kWh/m2.a	-38,1	-26,3
c3)	SEC cold climates	kWh/m2.a	-76,8	-63,4
	Energy label	-	Yes	
d)	Unit typology	-	Residential - bidirectional	
e)	Type of drive	-	Variable speed drive	
f)	Type of Heat Recovery System	-	Heat recovery	
g)	Thermal efficiency of heat recovery	%	87	
h)	Maximum flow rate	m3/h	97	
i)	Electric power input at maximum flow rate	W	58	
j)	Sound power level (L_{WA})	dB(A)	56	
k)	Reference flow rate	m3/h	68	
l)	Reference pressure difference	Pa	10	
m)	Specific power input (SPI)	W/m3/h	0,515	
n1)	Control factor	-	0,65	1
n2)	Control typology	-	Local demand control	Manual control (no DCV)
o1)	Maximum internal leakage rate	%	1	
o2)	Maximum external leakage rate	%	1	
p1)	Internal mixing rate	%	1	
p2)	External mixing rate	%	2	
q)	Visual filter warning	-	Absent	
r)	Instructions to install regulated grilles	-	N/A	
s)	Internet address for preassembly/disassembly instructions	-	www.aerauliqa.com	
t)	Airflow sensitivity to pressure variations	%	5	
u)	Indoor/outdoor air tightness	m3/h	20	
v1)	AEC - Annual electricity consumption - warm climates	kWh	3	7,1
v2)	AEC - Annual electricity consumption - average climates	kWh	3,4	7,5
v3)	AEC - Annual electricity consumption - cold climates	kWh	8,8	12,9
w1)	AHS - Annual heating saved - warm climates	kWh	20,8	20,1
w2)	Risparmio di riscaldamento annuo (AHS) climi temperati	kWh	46	44,4
w3)	Risparmio di riscaldamento annuo (AHS) climi freddi	kWh	90,1	87