

# TECHNICAL MANUAL

# ACQVARIA i

Cassette fan coil with BLDC motor

3 - 10 kW



BLDC motor



Supervision  
GARDA



2 pipes systems



4 pipes systems



Touch screen  
device

## PLUS

- » GreenTech Technology
- » Permanent magnet BLDC motor insures a precise, continuous control of operation
- » Low energy consumption
- » Fresh air with direct or mixed introduction
- » Condensate drainage pump for height differences of up to 0.9 m
- » Reduced installation and commissioning time

CE

Dear Customer,

Thank you for placing your trust in one of the products of Galletti S.p.a

This product is the result of our work and our commitment to design, research, and production and has been made from the finest materials, employing state-of-the-art components and production technology.

The CE marking of the product ensures its compliance with the safety requirements of the following directives: the Machinery Directive, the Electromagnetic Compatibility Directive, the Electrical Safety Directive, and the Pressure Equipment Directive. Fulfillment of the Ecodesign requirements is fully in keeping with the environmental awareness that has always guided our company.

The company certification of the Quality and Safety management system ensures that product quality is constantly checked and improved, and that the product is manufactured in full compliance with the highest standards.

By choosing our product, you have opted for Quality, Reliability, Safety, and Sustainability.

At your disposal, once again.

Galletti S.p.a

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# 1 MAIN FEATURES

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## COMFORT, LOW NOISE, AND EFFICIENCY IN PERFECT HARMONY!

The new series of hydronic cassette units ACQVARIA, with inverter-controlled permanent magnet BLDC motor, consists of six models (10-20-30-40-50-60) for 2-pipe systems and four models (10-30-40-60) for 4-pipe systems.

The engineering of the unit makes it possible to develop up to 5 kW in the cooling mode in a standard 600x600 mm modular suspended ceiling and over 10 kW in the 860x860 mm modularity, with exceptionally low noise levels in the phases for maintaining interior comfort.

The well-known advantages of BLDC motors are combined with GreenTech technology (in models 10, 20, and 30), which integrates the inverter directly into the fan drive assembly.

ACQVARIA leverages the entire Galletti, MYCOMFORT, EVO, and TED10 microprocessor controller platform that incorporate sophisticated adjustment logics based on air temperature, air humidity, and water temperature.

These benefits translate into greater accuracy in achieving and maintaining the desired comfort conditions through appropriate modulation of the fan speed as well as the reduction of noise emissions, which adapt to the actual thermal load.

Lastly, electricity consumption is reduced by up to 75% in comparison to conventional fixed-speed AC motors.

The suspended ceiling unit houses all the components, heat exchange coil, fan drive assembly, and condensate collection and drainage system. Its structure is designed for introducing fresh air into the space, mixing it with recovered air, and distributing the treated air from the cassette unit to adjacent rooms.

The design and colour, RAL9003 or RAL9010, of the air intake and diffusion louvre guarantee optimal integration into the suspended ceiling panels. Easy access to the air filter for cleaning operations.

The unit can be supplied complete with valves, including pressure-independent balancing and control valves, the use of which significantly reduces commissioning time.

## OPERATING LIMITS

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Thermal carrier fluid: **water**  
Water temperature: **5°C ÷ 70°C**  
Air temperature: **5°C ÷ 43°C**  
Supply voltage: **230 V - 50 Hz**

Maximum water pressure during operation: **10 bar**  
Relative humidity limit of the ambient air: **RH < 75% not condensing**

## AVAILABLE VERSIONS

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**AQB0** Unit with one coil for 2-pipe systems  
**AQBB** Unit with one coil for 4-pipe systems

### Accessories supplied with the unit

- Auxiliary water drip tray;
- Installation and use manual;
- Brackets for securing the unit.

## CONFIGURATOR

1	2	3	4	5	6	7	8	9	10	11	12	13
AQ	10	Q	I	B	0	0	0	0	0	0	0	A
Family	Size	Version	Motor	Std.Coil	DF Coil	Valves	Control	Probe	Accessories various	Various options	Release / Special	
	10 20 30 40 50 60	Q hydronic cassette	0 3 speed I Brushless	B standard	0 absent B coil 1R	0 absent A 3 way - on/off 230V 2.2 way - on/off 230V B 3way - modulating 4.2 way - modulating C 3 way - on/off 24V 6.2 way - on/off 24V 7.3V on/off 230V C.A. 8.2V on/off 230V C.A. H 2V press. Ind. ON/OFF I 2V press. Ind. Modul.	0 absent E EVO board G opz.E + NAVEL wifi	0 absent 1 SA 2 SW 3 SU 4 SA+SW 5 SA+SU 6 SA+SU+SW	0 absent 6 shell valves	0 none	0A first release	

## GRILLE CONFIGURATOR

1	2	3	4	5	6	7	8
AQ	Y	GR	3	0	F	1	A
Family	Version		Size	Control		Variants	Release
		GR grid	30 AQ10-20-30 60 AQ40-50-60	F wire		1 RAL9003 2 RAL9010	A first release

## AVAILABLE ACCESSORIES

Electronic microprocessor control panels with display	
<b>DIST</b>	MY COMFORT controller spacer for wall mounting
<b>EVO-2-TOUCH</b>	2.8" touch screen user interface for EVO control
<b>EVOBOARD</b>	Circuit board for EVO control
<b>EVO DISP</b>	User interface with display for EVO controller
<b>EYNAVEL</b>	Device for Wi-Fi or Bluetooth communication between EVOBOARD and smartphone
<b>MCLE</b>	Microprocessor control with display MY COMFORT LARGE
<b>MCSUE</b>	Humidity sensor for MY COMFORT (medium e large), EVO
<b>MCSWE</b>	Water sensor for MYCOMFORT and EVO controllers
Electronic microprocessor control panels	
<b>TED 10</b>	Electronic controller for BLDC fan equipped with inverter and ON/OFF valves 230 V
<b>TED SWA</b>	Water temperature sensor for TED controls

<b>Valves</b>	
<b>PIC-AQi</b>	PRESSURE-INDEPENDENT 2-way valves for models with 1 or 2 coils
<b>V2-AQi</b>	2-way valve, ON/OFF or MODULATING actuator, 230 V or 24 V power supply, hydraulic kit, for model with 1 or 2 heat exchangers
<b>V3-AQi</b>	3-way valve, ON/OFF or MODULATING actuator, 230 V or 24 V power supply, hydraulic kit, for model with 1 or 2 heat exchangers
<b>Plenum, air intake modules, air inlet and outlet connectors</b>	
<b>BAR</b>	Spigot for introduction of mixed renewal air
<b>PAR</b>	Plenum for introduction of unmixed renewal air
<b>PMAA</b>	Air outlet plenum

## 2 MAIN COMPONENTS

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### 2.1 STRUCTURE

Made of galvanised steel sheet with internal polyurethane foam coating and external closed-cell polyethylene foam to guarantee heat and sound insulation. Fresh air can be introduced into the room directly through the unit due to the provision of connections for neutral or mixed introduction. Accessories are

available for connection to ducts. There are systems on the unit for anchoring it to the ceiling. The electrical wiring is housed in a containment box and is easily accessible from the side for easy connection.

### 2.2 AIR FILTER

Honey-comb polypropylene washable air filter, easily removable

for maintenance operations.

### 2.3 HEAT EXCHANGER

Copper pipe and high efficiency aluminium fins secured to the pipe by mechanical expansion. With at least two rows in the models for 2-pipe systems, it is available in the 2+1 configuration

in the models for 4-pipe systems. The coil comes complete with manual air vent valves. On request, valves can be connected to the coil to regulate and balance the operation of the unit.

### 2.4 FAN DRIVE ASSEMBLY

Inverter-controlled permanent magnet BLDC electric motor (integrated in the GreenTech models) directly connected to a

centrifugal fan with backward-curving blades with profile optimised for stable operation at all speeds.

### 2.5 CONDENSATE COLLECTION SYSTEM

Located under the heat exchanger, the main drip tray is made of polystyrene and is inserted inside the profiles optimised for the distribution of air in the room. The supply is completed by the

auxiliary water drip tray for the collection of condensate from the regulating valves.

### 2.6 CONDENSATE DISCHARGE SYSTEM

The condensate drainage pump, with built-in check valve, can lift the condensate up to 0.9 m from the exit point from the unit. The operation of the pump is controlled by a float switch with three levels of action that activate it and stop it during normal

operation. If the critical water level inside the main drip tray is exceeded, an alarm signal closes the control valves, stopping the flow of water inside the exchanger.

### 2.7 LOUVRE

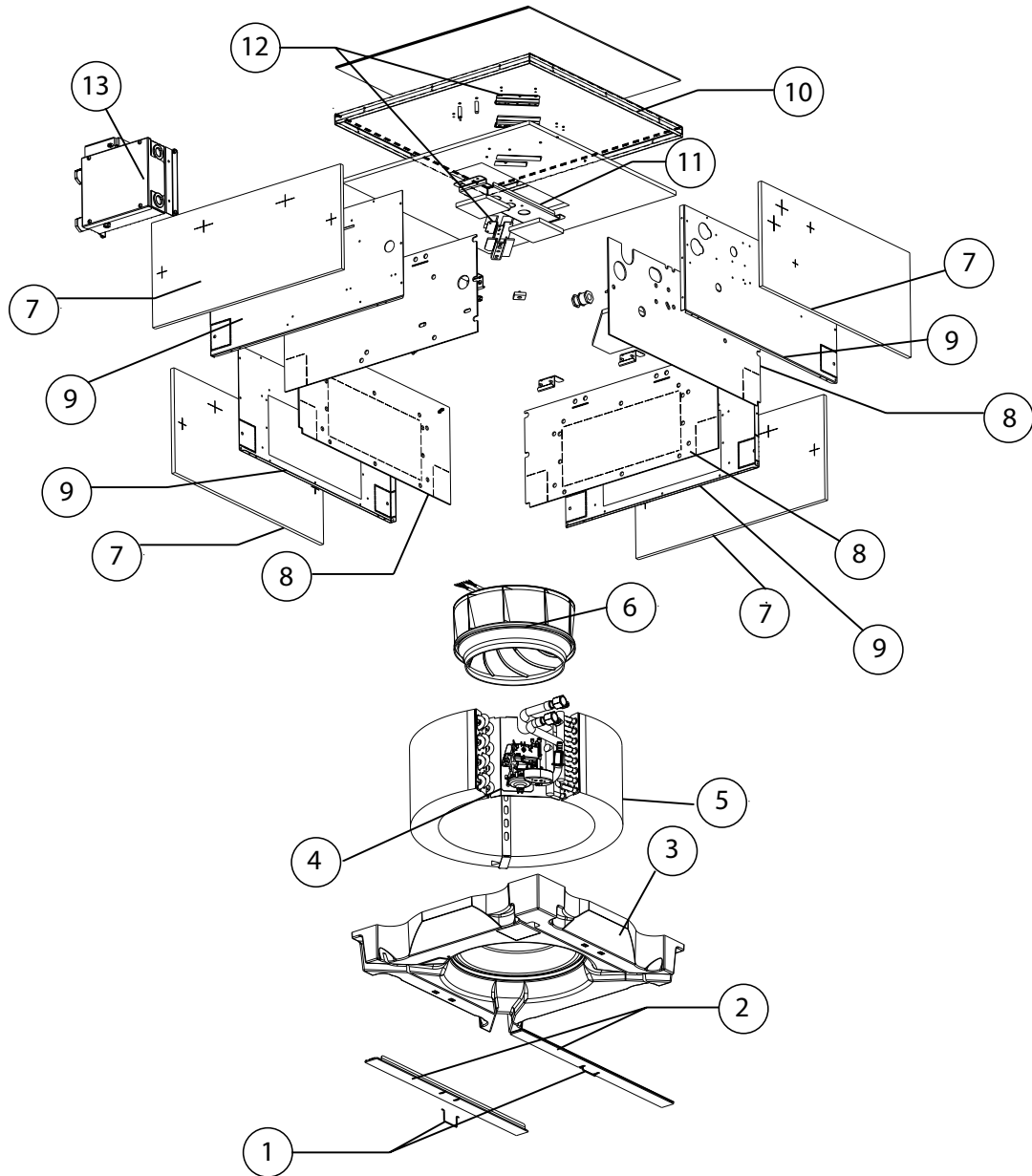
It is square shaped for the intake and diffusion of air in the space, and it is made of ABS, colour RAL9003 or RAL9010. The air intake louvre can be opened for access to the air filter. Air is diffused in

the space through the 4 sides, each of which is equipped with an adjustable fin with suitable thermal insulation.



## 2.8 EXPLODED VIEW

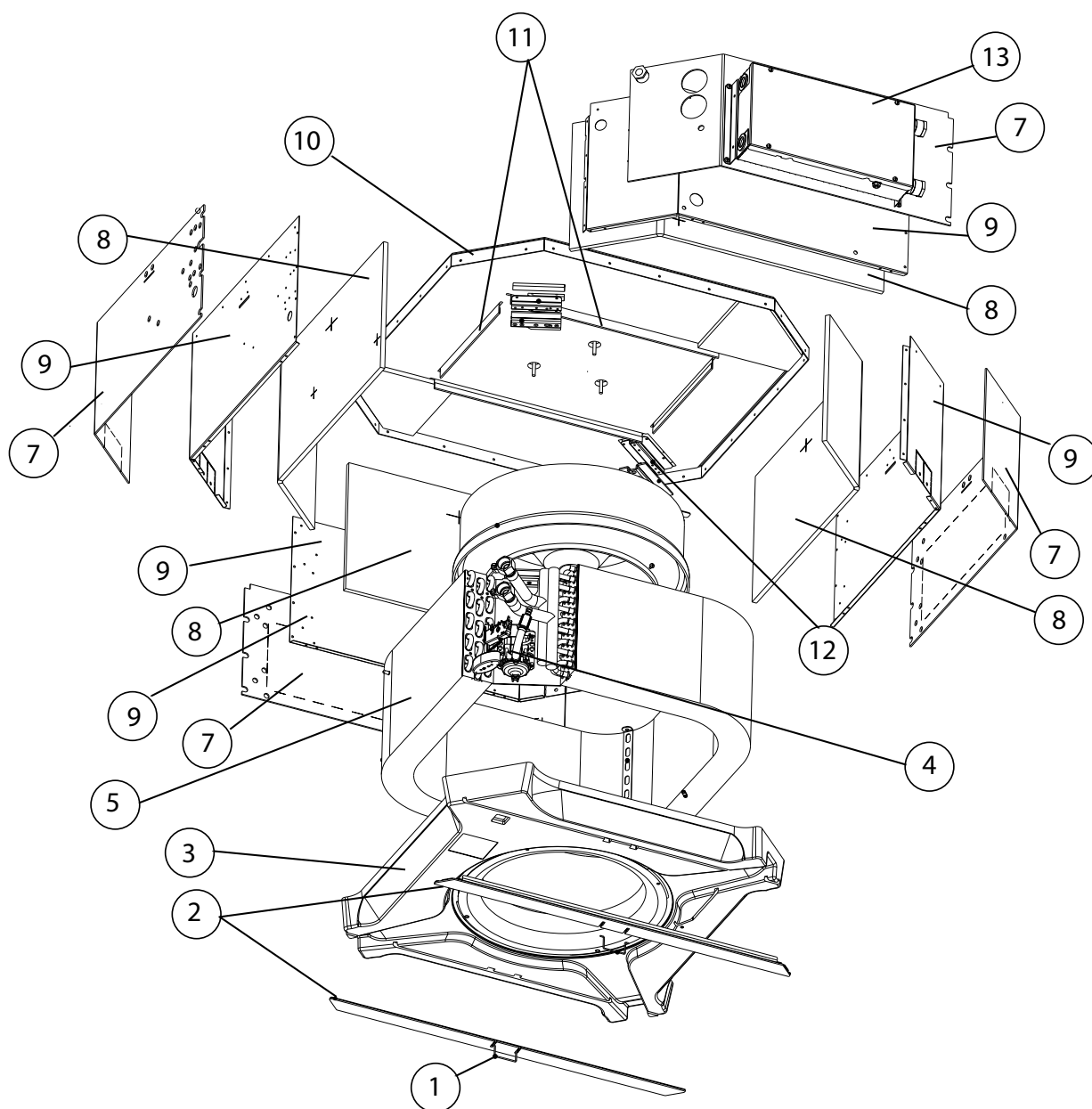
» 2.2 Exploded view, units AQ 10-20-30



1. Locking clips
2. Tie rods
3. Condensate drip tray
4. Condensate drainage pump
5. Heat exchanger
6. Fan drive assembly
7. External insulation
8. Internal insulation
9. Lateral sheet metal
10. Sheet metal back
11. Fan drive assembly support bracket
12. Exchanger support brackets
13. Electric box

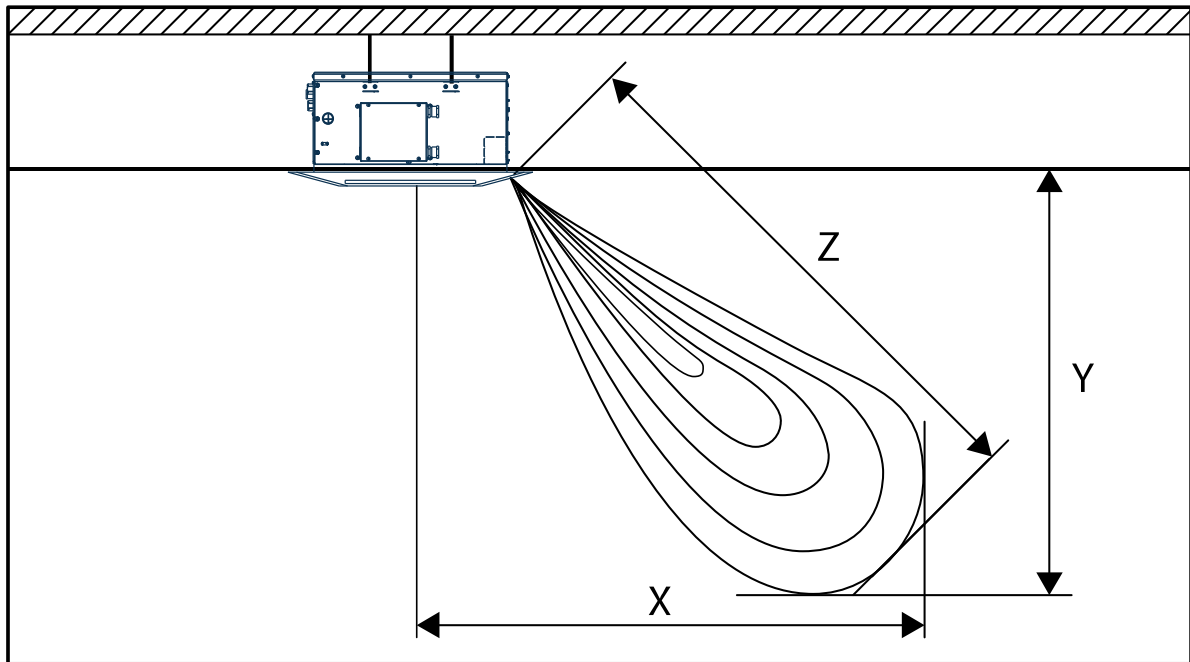


» 2.3 Exploded view, units AQ 40-50-60



1. Locking clips
2. Tie rods
3. Condensate drip tray
4. Condensate drainage pump
5. Heat exchanger
6. Fan drive assembly
7. External insulation
8. Internal insulation
9. Lateral sheet metal
10. Sheet metal back
11. Reinforcement brackets
12. Exchanger support brackets
13. Electric box

### 3 AIR RANGE



• Flap inclination 45°

Model	AQ10				AQ20				AQ30				AQ40				AQ50				AQ60				
Control voltage	V	2,00	3,50	4,50	6,00	2,00	4,0	5,5	8,0	2,00	4,0	6,5	10,0	2,00	3,0	5,0	10,0	2,00	3,0	5,0	8,0	2,00	4,0	6,5	10,0
Air range	X (m)	2,3	3,4	3,8	4,3	2,3	3,5	4,2	4,7	2,3	3,5	4,4	5,2	3,7	4,4	4,9	5,5	3,7	4,1	4,7	5,1	3,7	4,4	5,0	5,5
Height	Y (m)	1,5	2,2	2,5	2,8	1,5	2,4	2,8	3,1	1,5	2,4	3,0	3,4	2,3	2,7	3,0	3,4	2,3	2,5	2,9	3,3	2,3	2,7	3,1	3,4
Distance	Z (m)	1,9	2,5	2,8	3,2	1,9	2,6	3,1	3,6	1,9	2,6	3,3	3,9	2,9	3,4	3,8	4,4	2,9	3,2	3,7	4,0	2,9	3,4	3,9	4,4

## 4 INSTALLATION

**⚠ WARNING:** unit installation and start-up must be entrusted to competent personnel and performed in a workmanlike manner, in accordance with current regulations.

**⚠ WARNING:** It is mandatory to install the 3-way (or 2-way) valve accessory in order to avoid the circulation of cold water in the exchanger if the unit is not operated for long periods of time, with the fan off. Install the auxiliary water drip tray, provided together with the base unit, in order to prevent valve kits from dripping.

For each unit an (IL) switch should be mounted on the power supply, with opening contacts at a distance of at least 3 mm and a suitable protection fuse (F).

**⚠ WARNING:** before carrying out any operation, check that the voltage and frequency of the unit correspond exactly to those of the main power supply.

**⚠ WARNING:** Install the unit, circuit breaker (IL) and/or any remote controls in a place out of reach of persons who may be taking a bath or shower.

**⚠ WARNING:** the EMC filters connected to frequency converters (inverters) can create leakage currents toward ground (in order to make the unit EMC compliant, by reducing conducted emissions on power supply line). Depending on installation site, this can force the cut out of the differential safety switch. It is recommended to install a separate differential safety switch, only for the BLDC unit, with an adjustable threshold for the cut out current.

**⚠ WARNING:** keep the unit's grille in its original packaging until final assembly.

**👉 RECOMMENDED:** to ensure optimal comfort (homogeneous air temperature in the room), it is recommended not to exceed a heat exchanger water inlet temperature of 55 °C.

**⚠ WARNING:** during a shutdown for installation, in the event of a connection to a fresh air intake or an ambient temperature close to 0 °C, there is a risk of the pipes freezing. Provide drainage for the water circuit.

### 4.1 INSTALLATION REQUIREMENTS

The fan coils should be installed in a position where the room can be heated or cooled evenly, on ceilings able to support their weight. Store the unit in its packaging until you are ready to install it.

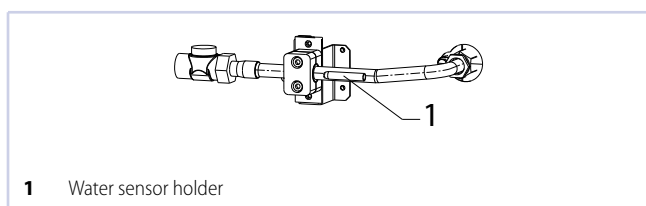
For installation and use of accessories, please refer to the relative technical sheets.

Install any remote **control panel** in an easily accessible position allowing the user to set the functions while ensuring an accurate reading of the ambient temperature, if provided.

Avoid therefore:

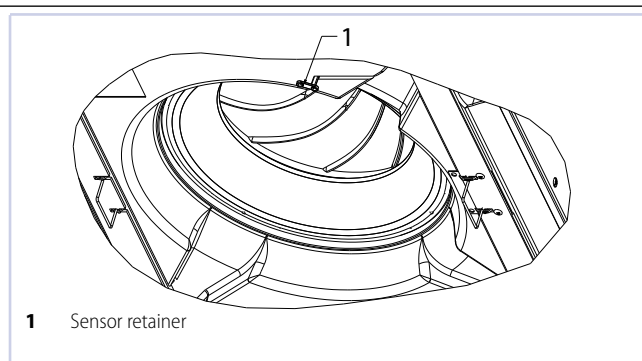
- positions directly exposed to sunlight;
- positions exposed to direct currents of warm or cold air
- placing obstacles that impede an accurate temperature reading

**👉 NB:** The water sensor, where present, must be mounted in the appropriate trap on the valve kit, on the INLET pipe.



- If a valve kit other than the one suggested is used, it is necessary to install the sensor on the INLET pipe, by means of the special copper socket filled with conductive paste.
- Lastly, the sensor must be properly isolated to ensure that it reads the water temperature correctly.

**👉 NB:** The air and humidity sensors, where present, must be attached in the appropriate section located in the intake area of the base unit.



Make the plumbing connections to the heat exchanger and, where the cooling function is to be used, to the condensate drainage outlet.

**⚠ WARNING:**

In normal operation, particularly with the fan at minimum speed and ambient air with high relative humidity, condensation may form on the air outlet and on some external parts of the unit.

To avoid such issues while always remaining within the operating limits envisaged for the unit, it is necessary to limit the inlet temperature of the water inside the heat exchanger. In particular, the difference between the air dew point ( $T_{A,DP}$ ) and the inlet water temperature ( $T_W$ ) must NOT exceed 14 °C, according to the following relationship:  $T_W > T_{A,DP} - 14$  °C

**Example:** in the case of ambient air at 25 °C with 75% relative humidity, the dew point temperature is about 20 °C and therefore the inlet temperature of the water in the battery must be greater then:

- $20 - 14 = 6$  °C in order to avoid condensation on a fancoil equipped with a valve.

		Fan coil with valve						
		Air temperature dry bulb (°C)						
		21	23	25	27	29	31	33
Relative humidity %	40	5	5	5	5	5	5	5
	50	5	5	5	5	5	6	8
	60	5	5	5	5	7	9	11
	70	5	5	6	8	9	11	13
	80	5	6	8	10	12	14	16
	90	6	8	10	12	14	16	18

If the valves are not installed, there could be abundant condensation, especially if the unit is not operated for long periods of time.

During wintertime periods of quiescence, drain water from the system, to prevent ice from forming. If anti-freeze solutions are used, check for their freezing point using the table below.

% Glycol by weight	Freezing temperature (°C)	Capacity adjustment	Pressure drop adjustment
0	0	1,00	1,00
10	-4	0,97	1,05
20	-10	0,92	1,10
30	-16	0,87	1,15
40	-24	0,82	1,20

#### 4.1.1 Electrical connections

**Make the electrical connections whilst the power supply is disconnected, in accordance with current safety regulations, carefully following the wiring diagram and its legend.**

Check that the mains electricity supply is compatible with the voltage shown on the unit rating plate.

The electrical connections indicated must be made by the installer.

For each fan coil a switch (IL) should be mounted on the power supply, with opening contacts at a distance of at least 3 mm and a suitable protection fuse (F).

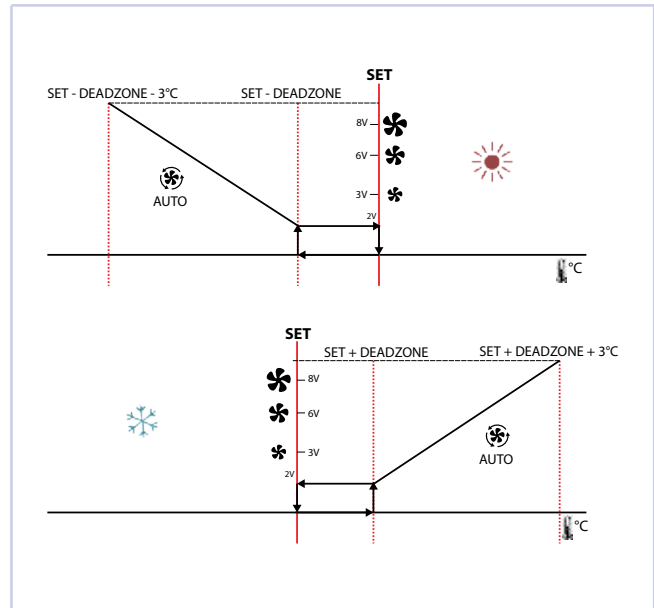
For the electrical connections of the controls, follow the diagrams in the figures from: p. 20.

**⚠ WARNING:** The power supply to the pump-float switch device must never be interrupted.

#### 4.1.2 Galletti control dedicated (EVO - TED - MY COMFORT)

Galletti controls implement a logic that makes it possible to set a fixed speed (shown in the figure with analog signal 3, 6, 8 V) or automatic speed modulation, that takes full advantage of the BLDC motor.

The automatic logic varies the analog signal to the motor between 2 and 10 V, based on the distance from the set-point, in order to accelerate the implementation phases and then settle at a very low holding speed.



#### 4.1.3 Hydraulic connections

Unit	Exchanger connection	
AQ10B0, AQ20B0, AQ30B0 (2 pipes)	1/2" gas F	
AQ40B0, AQ50B0, AQ60B0 (2 pipes)	3/4" gas F	
	Cooling	Heating
AQ10BB, AQ30BB (4 pipes)	1/2" gas F	1/2" gas F
AQ40BB, AQ60BB (4 pipes)	3/4" gas F	1/2" gas F

To optimise performance, it is advisable to make the following connections on the exchanger:

- Unit outlet: connection below.
- Unit return: connection above.

**⚠ WARNING:** While making the connections, hold the water connections of the unit tightly in place with a hexagonal wrench or make sure that they do not rotate, in order to prevent the pipes inside the unit from being damaged.



- Carefully insulate the inlet and outlet water pipes as well as the devices installed in the network (on/off valves...). Use a material that is suitable for the operating conditions and water temperature.
- Bleed air from the exchanger by means of the air vent valves located next to the water connections of the coil. Depending on the installation, it may be necessary to place other vent valves on the hydraulic system.

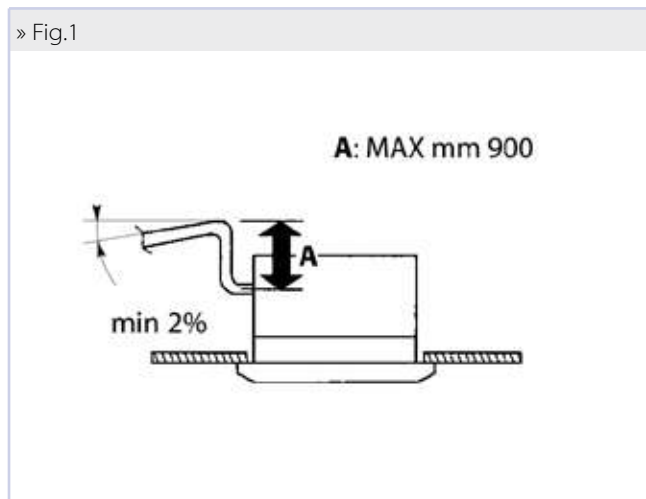
##### 4.1.3.1 Condensate drain connection

Connect a rigid PVC pipe to the end of the hose and secure it with a clamp

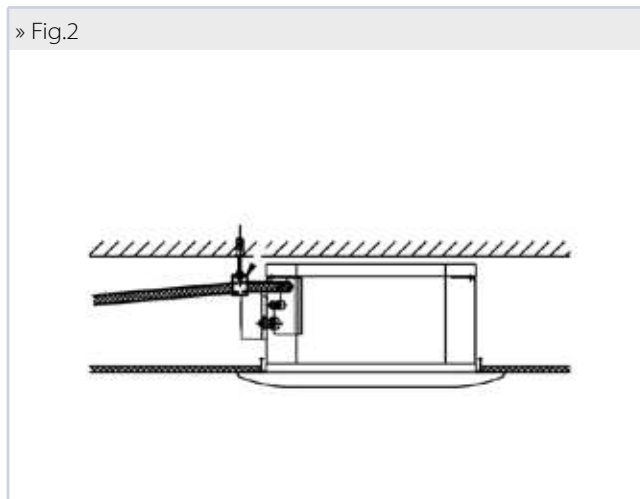
Correctly insulate the pipe with polyethylene foam.

- Be careful of the risk of freezing in winter in suspended ceilings.
- If necessary, the condensate pipe can be routed immediately after the unit's outlet. Maximum height: 900 mm (FIGURE 1).
- Make sure that the drainpipe has a slight slope in the direction of flow and that it does not form a siphon (FIGURE 1).
- The piping must have several supports (FIGURE 2).
- Do not install an air vent (FIGURE 3) in the wrong position.

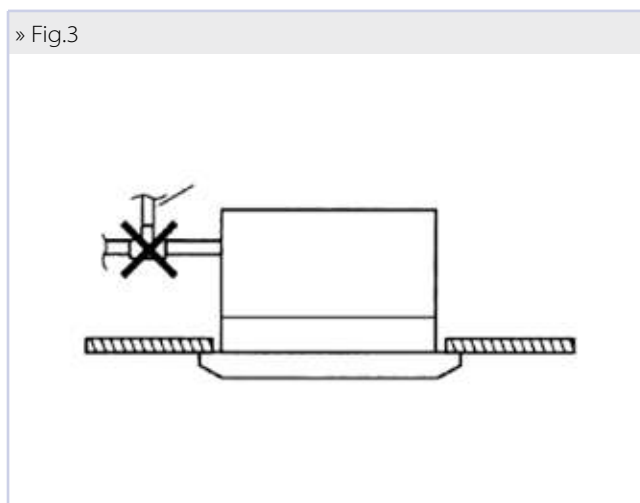
» Fig.1



» Fig.2



» Fig.3



## 4.2 DIMENSIONAL UNIT ASSEMBLY

- Use the dimensional drawings to determine the position of the suspension rods (Fig.4 AQ 10-20-30) (Fig.5 AQ 40-50-60)
- Position the suspension rods (not supplied) in place.
- Attach the supplied brackets (Fig.6 ) to the suspension rods (Fig.7 ). The length of the suspension rods depends on the space between the suspended ceiling and the structural ceiling.
- The distance C (Fig.7 ) must be:

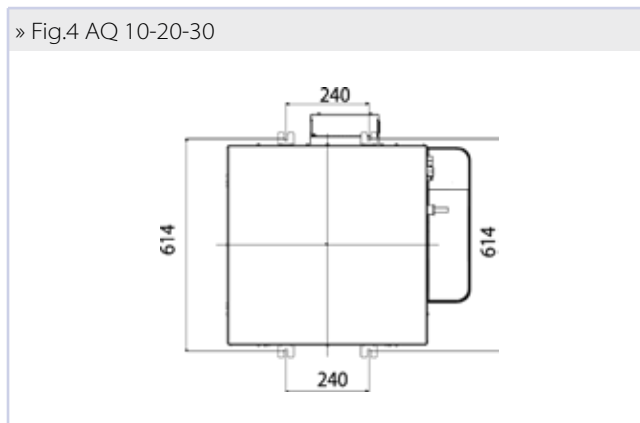
Model	C- Bracket distance to the false ceiling
ACQVARIA 10-20-30	270
ACQVARIA 40-50-60	312

- Pay attention to the excess length B of the suspension rod (Fig.7 ): it may interfere with the unit's electrical box.
- Place the fan coil unit in the suspended ceiling, orienting the side with the water connections in the most appropriate position, using the hooks on the brackets to provide quick temporary installation.
- Then attach the unit to the threaded bars with the screws provided and check that it is level (Fig.8 )
- Adjust the distance between the unit and suspended ceiling D (Fig.9 AQ 10-20-30 and Fig.10 AQ 40-50-60) using the nuts of the suspension rods:

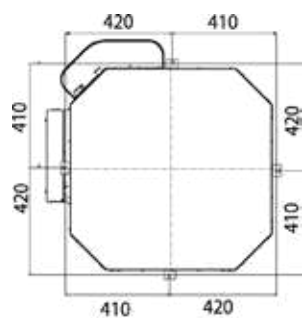
Model	D - Distance from unit to false ceiling
ACQVARIA 10-20-30	23
ACQVARIA 40-50-60	48

- Make sure that the unit does not touch the ceiling: contact may cause noise.

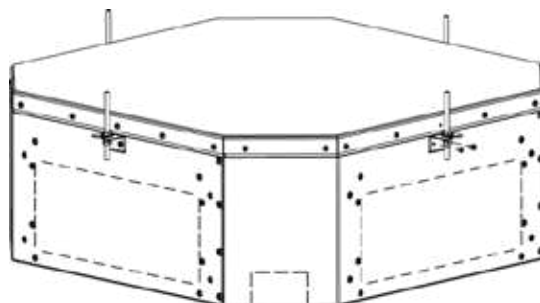
» Fig.4 AQ 10-20-30



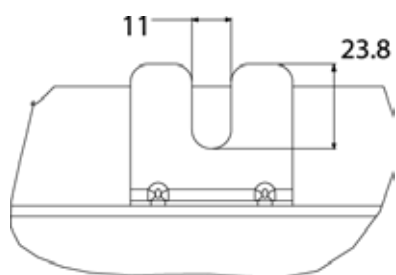
» Fig.5 AQ 40-50-60



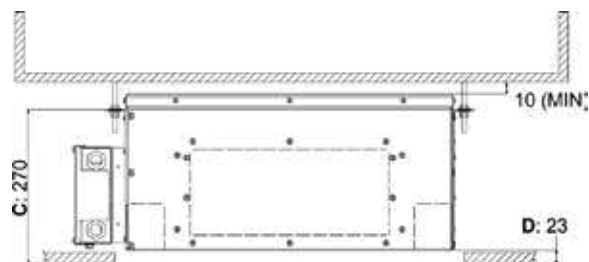
» Fig.8



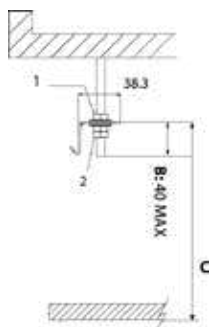
» Fig.6



» Fig.9 AQ10-20-30

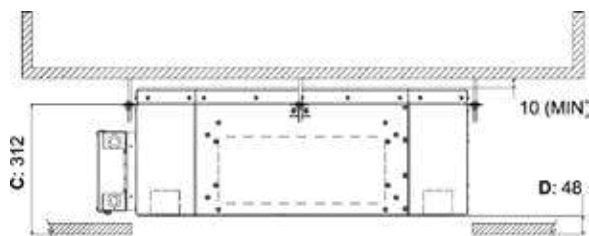


» Fig.7



1. Nut + washer
2. Washer + nut + lock nut

» Fig.10 AQ40-50-60



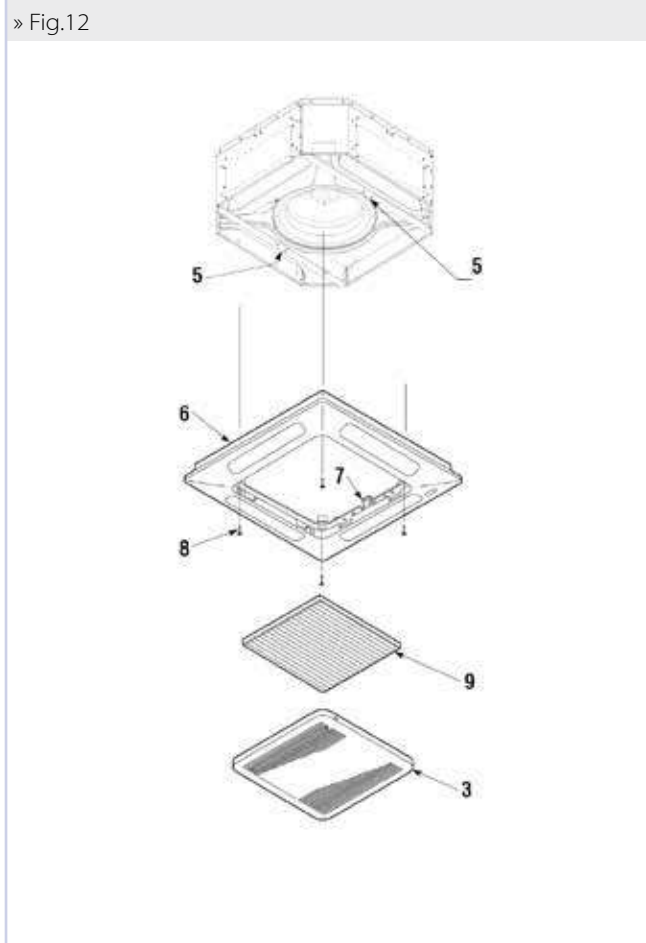
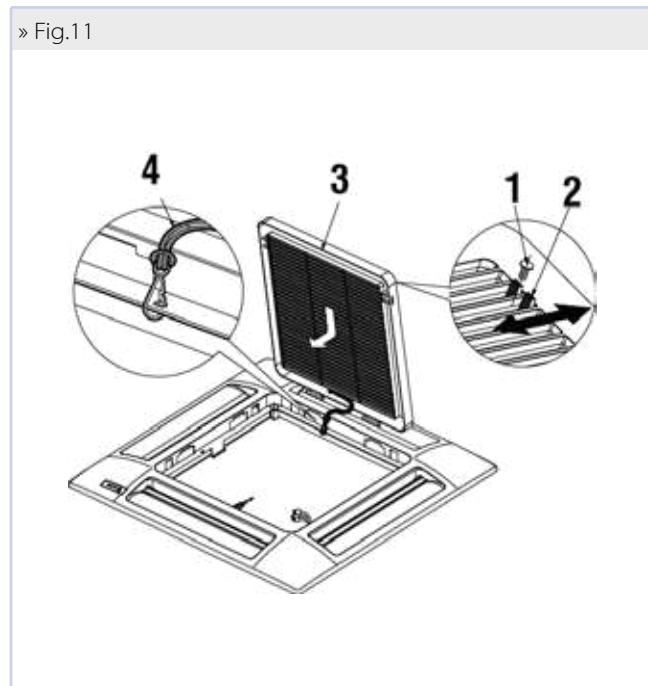
#### 4.2.1 Front panel/grille assembly

The front panel/grille, available in RAL9003 and RAL9010 versions, is delivered in a separate cardboard box:

- AQYGR30 for models AQ 10-20-30
- AQYGR60 for models AQ 40-50-60

Before installing the front panel: (Fig.11 )

- Remove the screws (1) securing the retainers (2) on each side (remember to put these screws back in place after installation).
- To open the grille (3), move the two retainers (2) in the direction of the arrow.
- Open the grille (3) by 45°.
- Detach the control panel's safety cable (4) (remember to attach it again after installation).
- Lift the grille to remove it from the control panel.



To install the front panel: (Fig.12 )

- Turn the two locking clips (5) downwards.
- Attach the control panel of the panel (6) to the unit by means of the two hooks (7), matching them to the locking clips (5).
- Check the exact position of the panel's control panel in relation to the suspended ceiling. Adjust the position of the indoor unit as necessary.
- Attach the panel's control panel to the unit using the special screws and washers (8) provided.
- Put the grille (3) in place, making sure that the filter (9) is correctly positioned.
- Hook the safety cable to the control panel, close the grille, and put the screws securing the retainers (2) back in place.

## 5 RATED TECHNICAL DATA

» Rated technical data ACQVARIA - 2 pipes

ACQVARIA			AQ10B0				AQ20B0				AQ30B0			
Speed			1	2	3	4	1	2	3	4	1	2	3	4
Control voltage		V	2,00	3,50	4,50	6,00	2,00	4,00	5,50	8,00	2,00	4,00	6,50	10,0
Total cooling capacity	(1)	kW	1,33	1,93	2,24	2,63	1,49	2,68	3,40	4,39	1,54	2,76	3,95	5,23
Sensible cooling capacity	(1)	kW	0,99	1,51	1,81	2,20	1,03	1,94	2,54	3,41	1,05	1,98	2,96	4,11
FCEER class			A											
Water flow	(1)	l/h	229	331	385	452	256	460	584	754	264	473	678	898
Water pressure drop	(1)	kPa	2	4	5	7	3	10	15	23	3	9	18	29
Heating capacity	(2)	kW	1,49	2,27	2,70	3,25	1,42	2,69	3,48	4,58	1,47	2,77	4,09	5,55
FCCOP class			A				B				B			
Water flow	(2)	l/h	258	395	470	565	248	468	605	797	255	481	711	965
Water pressure drop	(2)	kPa	2	5	6	9	3	8	13	21	3	8	16	27
Rated air flow		m <sup>3</sup> /h	212	397	454	583	187	397	551	796	190	397	650	980
Power input		W	6	6	9	17	6	9	14	37	6	10	21	67
Total sound power level	(3)	dB(A)	28	35	40	46	28	37	44	54	29	38	49	61
Cross-section area of power cables	(4)	mm <sup>2</sup>	1,00				1,00				1,00			
Power supply cable type			N07V-K											
Safety fuse F		A	2				2				2			
Fuses type			gG											

ACQVARIA			AQ40B0				AQ50B0				AQ60B0			
Speed			1	2	3	4	1	2	3	4	1	2	3	4
Control voltage		V	2,00	3,00	5,00	10,0	2,00	3,00	5,00	8,00	2,00	4,00	6,50	10,0
Total cooling capacity	(1)	kW	4,80	5,36	6,39	8,27	5,17	5,92	7,26	9,01	5,26	6,70	8,17	10,5
Sensible cooling capacity	(1)	kW	3,80	3,92	4,75	6,35	3,66	4,24	5,31	6,78	3,69	4,80	6,06	7,97
FCEER class			A				A				B			
Water flow	(1)	l/h	833	921	1097	1420	888	1015	1245	1545	902	1150	1401	1805
Water pressure drop	(1)	kPa	12	16	21	34	10	13	18	27	10	15	23	33
Heating capacity	(2)	kW	5,50	6,00	7,30	9,74	5,43	6,33	7,99	10,2	5,48	7,23	9,14	12,2
FCCOP class			A				B				B			
Water flow	(2)	l/h	953	1043	1269	1692	944	1100	1390	1779	952	1257	1590	2116
Water pressure drop	(2)	kPa	3	16	23	38	9	12	19	29	9	15	24	36
Rated air flow		m <sup>3</sup> /h	843	978	1276	1916	724	864	1143	1554	710	976	1350	1831
Power input		W	13	18	36	150	15	18	36	93	15	25	60	150
Total sound power level	(3)	dB(A)	35	39	45	57	35	39	45	53	36	43	50	58
Cross-section area of power cables	(4)	mm <sup>2</sup>	1,00				1,00				1,00			
Power supply cable type			N07V-K											
Safety fuse F		A	2				2				2			
Fuses type			gG											

(1) Water temperature 7°C / 12°C, air temperature dry bulb 27°C, wet bulb 19°C (47% relative humidity) according to EN1397:2015

(2) Water temperature 45°C / 40°C, air temperature 20°C

(3) Sound power measured according to standards ISO 3741 and ISO 3742

(4) The shown section is to be considered as the minimum recommended section. The cables must be chosen in compliance with CEI - UNEL 35024/1. standard.

Power supply 230-1-50 (V-ph-Hz)



» Rated technical data ACQVARIA - 4 pipes

ACQVARIA			AQ10BB				AQ30BB				AQ40BB				AQ60BB			
Speed			1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Control voltage		V	2,00	3,50	4,50	6,00	2,00	4,00	6,50	10,0	2,00	3,00	5,00	10,0	2,00	4,00	6,50	10,0
Total cooling capacity DF 1R	(1)	kW	1,24	1,85	2,18	2,60	1,26	2,05	2,80	3,61	4,61	5,34	6,61	9,07	4,70	6,09	7,62	9,50
Sensible cooling capacity DF 1R	(1)	kW	0,92	1,46	1,79	2,23	0,92	1,62	2,38	3,31	3,34	3,94	5,03	7,29	3,37	4,50	5,82	7,56
FCEER class DF			A				A				A				B			
Water flow DF 1R		l/h	213	317	374	447	216	352	480	620	792	917	1135	1555	806	1045	1307	1631
Water pressure drop DF 1R		kPa	2	4	6	8	2	5	9	14	12	15	22	37	11	17	25	37
Heating capacity DF 1R	(2)	kW	2,03	2,90	3,34	3,86	2,04	3,14	4,06	4,98	7,01	7,96	9,53	12,3	7,15	8,96	10,8	12,9
FCCOP class DF 1R			A				B				A				B			
Water flow DF 1R	(2)	l/h	178	254	292	338	178	275	356	435	613	697	834	1078	626	785	947	1133
Water pressure drop DF 1R	(2)	kPa	3	6	8	11	3	7	11	16	11	14	19	30	12	18	24	33
Rated air flow DF 1R		m <sup>3</sup> /h	199	356	460	610	195	395	643	982	687	841	1137	1823	673	956	1314	1823
Power input DF 1R		W	6	6	9	17	6	11	21	67	15	18	36	150	15	25	60	150
Total sound power level DF 1R	(3)	dB(A)	28	35	40	46	29	38	49	61	35	39	45	57	36	43	50	58
Cross-section area of power cables	(4)	mm <sup>2</sup>	1,00				1,00				1,00				1,00			
Power supply cable type			N07V-K															
Safety fuse F		A	2				2				2				2			
Fuses type			gG															

- (1) Water temperature 7°C / 12°C, air temperature dry bulb 27°C, wet bulb 19°C (47% relative humidity) according to EN1397:2015  
 (2) Water temperature 65°C / 55°C, air temperature 20°C  
 (3) Sound power measured according to standards ISO 3741 and ISO 3742  
 (4) The shown section is to be considered as the minimum recommended section. The cables must be chosen in compliance with CEI - UNEL 35024/1. standard.  
 Power supply 230-1-50 (V-ph-Hz)

ACQVARIA		AQ 10-20-30	AQ 40-50-60
<b>CONDENSATE DRAINAGE PUMP</b>			
Power supply	V - ph - Hz	230 - 1 - 50	230 - 1 - 50
Rated current	l/h	24	24
Lifting height above the unit	mm	900	900
Power input	kW	0,011	0,011

<b>INTAKE OF FRESH AIR TO BE TREATED</b>			
Number of intakes	nr	3	
Connection dimensions	mm	Ø 100	

<b>OUTLET OF AIR IN ADJACENT ROOMS</b>			
Number of intakes	nr	2	2
Connection dimensions	mm	Ø 150	Ø 180

<b>INTRODUCTION OF FRESH AIR DIRECTLY INTO THE ROOM</b>			
Number of intakes	nr	2	2
Connection dimensions	mm	Ø 150	Ø 180

## 6 WEIGHTS

ACQVARIA		AQ10	AQ20	AQ30	AQ40	AQ50	AQ60
Weight	kg	23 + 2,5	23 + 2,5	23 + 2,5	43 + 5	43 + 5	43 + 5

## 7 PERFORMANCES

Galletti has developed on its [www.galletti.com](http://www.galletti.com) web-area the new ON-LINE integrated platform for product selection, configuration and the making of the economic offer.

The software, whose use is easy and intuitive, allows the identification of the desired products by calculating their performances based on real working conditions and their configuration helping the user in choosing options and accessories. It also allows to obtain a detailed report which includes performances, dimensional drawings, tender specifications and the economic offer.



### **Product selection:**

- Filters to make the identification of the requested product easier
- Performance calculation and saving of results
- Performance comparison between products belonging to different series



### **Configuration and project history**

- Wizard configuration of accessories and options for chillers, heat pumps and hydronic units
- Creation of a project which collects all products of interest
- Complete management of the stored history projects



### **Report:**

- Generation of a detailed list report in pdf format
- Choice of the sections to be included in the print:
  - Products performances
  - Dimensional drawings
  - Tender specifications

## 8 SOUND LEVELS

Lw: Sound power level by octave band, not weighted

LwA: Total sound power level, weighted A

ACQVARIA i	Lw								LwA
	Control voltage	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	
	V	dB	dB	dB	dB	dB	dB	dB	dB <sub>A</sub>
AQ 10	2	31,1	31,8	26,6	21,4	11,1	9,3	12,1	28,0
	3,5	36,7	37,7	33,8	29,7	23,4	11,9	7,7	35,0
	4,5	41,8	42,8	38,9	34,8	28,5	17,0	12,8	40,0
	6	47,5	48,5	44,6	40,5	34,2	22,6	18,5	46,0
AQ 20	2	31,3	32,0	26,8	21,6	11,3	9,5	12,3	28,0
	4	38,8	39,8	35,9	31,8	25,5	14,0	9,8	37,0
	5,5	45,9	46,9	43,0	38,9	32,6	21,1	16,9	44,0
	8	53,3	55,4	52,1	48,2	44,4	38,5	27,7	54,0
AQ 30	2	32,3	33,0	27,8	22,6	12,3	10,5	13,3	29,0
	4	39,7	40,7	36,8	32,7	26,4	14,9	10,7	38,0
	6,5	50,8	51,8	47,9	43,8	37,5	26,0	21,8	49,0
	10	60,3	62,3	59,0	55,2	51,4	45,5	34,7	61,0
AQ 40	2	37,7	38,3	34,3	26,8	19,5	18,2	20,4	35,0
	3	40,3	42,2	36,8	33,7	25,8	17,4	17,1	39,0
	5	45,4	47,3	43,2	39,3	34,8	26,4	19,4	45,0
	10	56,7	59,3	55,3	51,0	48,1	43,5	35,3	57,0
AQ 50	2	38,0	38,6	34,6	27,1	19,8	18,5	20,7	35,0
	3	40,6	42,5	37,1	34,0	26,1	17,7	17,4	39,0
	5	45,7	47,6	43,5	39,6	35,1	26,7	19,7	45,0
	8	55,0	55,5	51,3	46,8	44,1	37,6	28,7	53,0
AQ 60	2	38,4	39,0	35,0	27,5	20,2	18,9	21,2	36,0
	4	44,7	46,6	41,2	38,1	30,3	21,8	21,5	43,0
	6,5	50,3	52,2	48,1	44,2	39,7	31,3	24,3	50,0
	10	57,4	59,9	55,9	51,6	48,7	44,1	36,0	58,0

## 9 ELECTRICAL CONNECTION DIAGRAMS

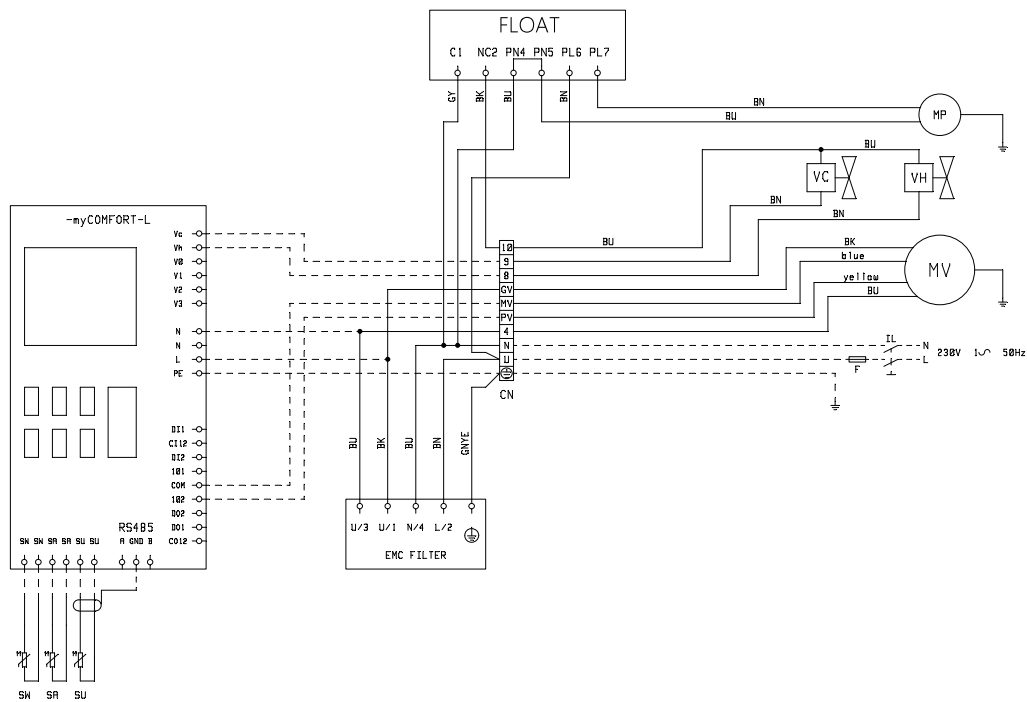
**⚠ WARNING:** The traced electrical connections must be made by the installer.

For each unit an (IL) switch should be mounted on the power supply, with opening contacts at a distance of at least 3 mm and a suitable protection fuse (F).

Make the electrical connections with the power supply disconnected, in accordance with current safety regulations, and following the base wiring diagram and pertinent legend.

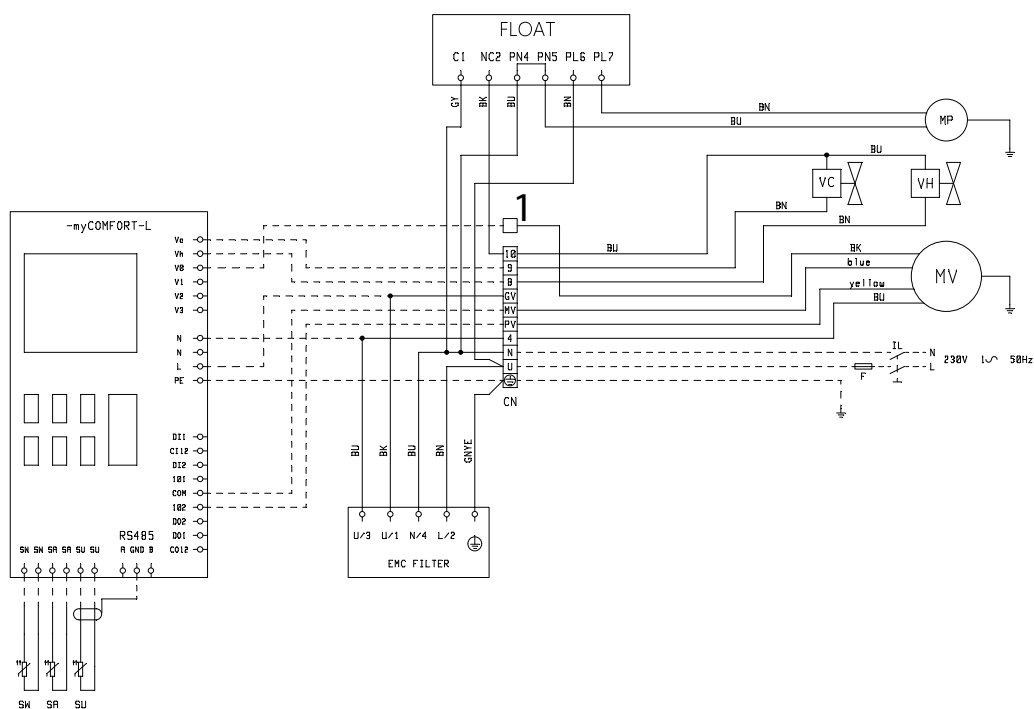
Check that the mains electricity supply is compatible with the voltage shown on the unit rating plate.

### » 9.1 My Comfort Large wiring diagram for models AQ 10-20-30



- MV** : Fan motor
- MP**: Condensate drainage pump
- FLOAT**: Float switch
- VC/H**: Water valve (hot and cold)
- F**: 2A fuse (not supplied)
- IL**: Circuit breaker (not supplied)
- CN**: Fast-on connector
- EMC FILTER**: EMI/RFI noise filter
- SU**: Umidity sensor
- SW**: Water temperature sensor
- SA**: Room temperature sensor
- BK (MV)**: Black = motor power supply line
- BU (MV)**: Blue = motor power supply neutral
- blue (MV)**: Blue = GND control signal
- yellow (MV)**: Yellow = 0-10V signal
- BN (FLOAT)**: Brown = pump power supply line
- BU (FLOAT)**: Blue = pump power supply neutral
- BK (FLOAT)**: Black = float switch alarm signal
- GY (FLOAT)**: Grey = COM alarm
- BN (VC/H)**: Brown = valve actuator line
- BU (VC/H)**: Blue = valve actuator neutral
- BN (L2 FILT)**: Brown = filter IN line
- BU (N4 FILT)**: Blue = filter IN neutral
- BK (U1 FILT)**: Black = filter OUT line
- BU (U3 FILT)**: Blue = filter OUT neutral

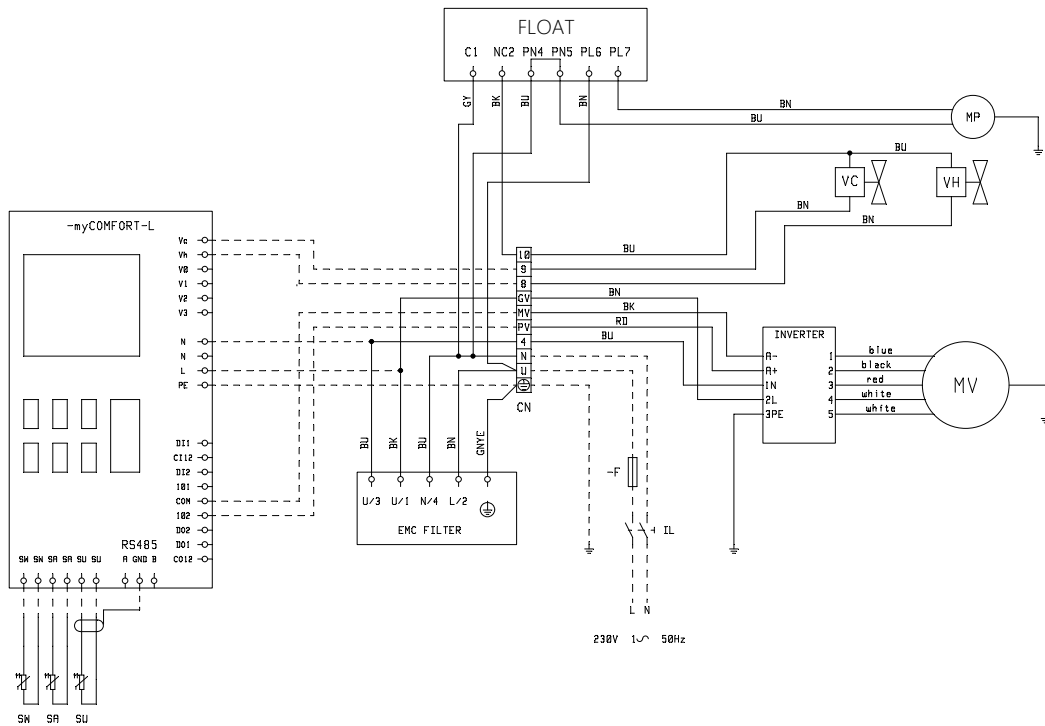
» 9.2 My Comfort Large wiring diagram (alternative wiring) for models AQ 10-20-30



- MV:** Fan motor
- MP:** Condensate drainage pump
- FLOAT:** Float switch
- VC/H:** Water valve (hot and cold)
- F:** Fuse (not provided)
- IL:** Circuit breaker (not supplied)
- CN:** Fast-on connector
- EMC FILTER:** EMI/RFI noise filter
- SU:** Umidity sensor
- SW:** Water temperature sensor
- SA:** Room temperature sensor
- BK (MV):** Black = motor power supply line
- BU (MV):** Blue = motor power supply neutral
- blue (MV):** Blue = GND control signal
- yellow (MV):** Yellow = 0-10V signal
- BN (FLOAT):** Brown = pump power supply line
- BU (FLOAT):** Blue = pump power supply neutral
- BK (FLOAT):** Black = float switch alarm signal
- GY (FLOAT):** Grey = COM alarm
- BN (VC/H):** Brown = valve actuator line
- BU (VC/H):** Blue = valve actuator neutral
- BN (L2 FILT):** Brown = filter IN line
- BU (N4 FILT):** Blue = filter IN neutral
- BK (U1 FILT):** Black = filter OUT line
- BU (U3 FILT):** Blue = filter OUT neutral

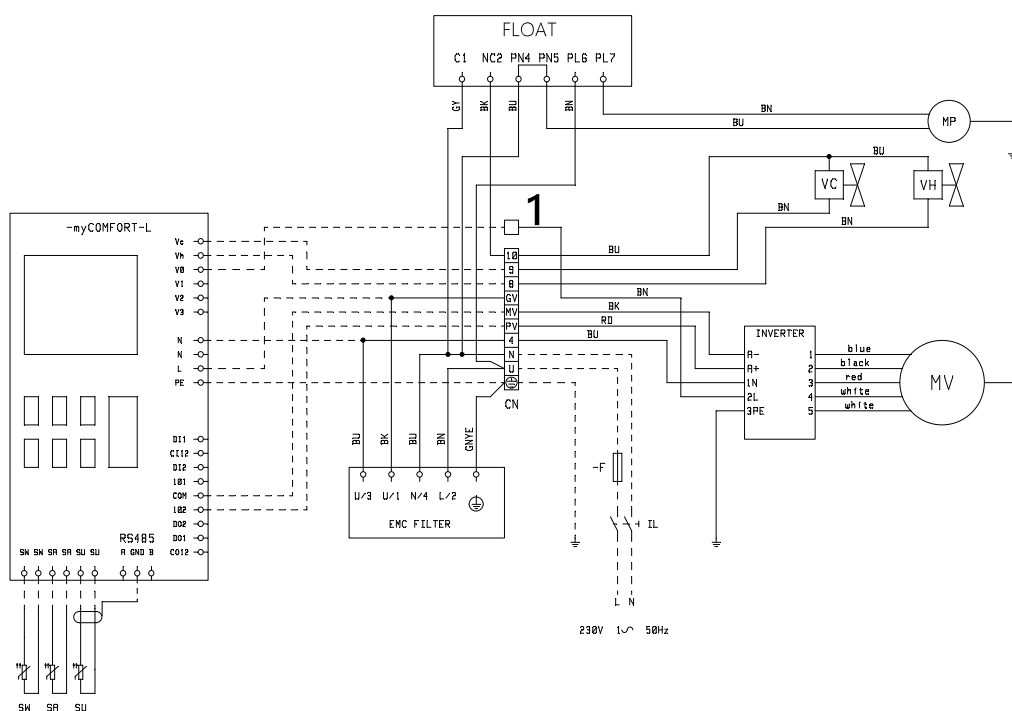
1. Alternative wiring with inverter power supply disconnection to allow de-energizing of the motor when the control is OFF.

» 9.3 My Comfort Large wiring diagram for models AQ 40-50-60



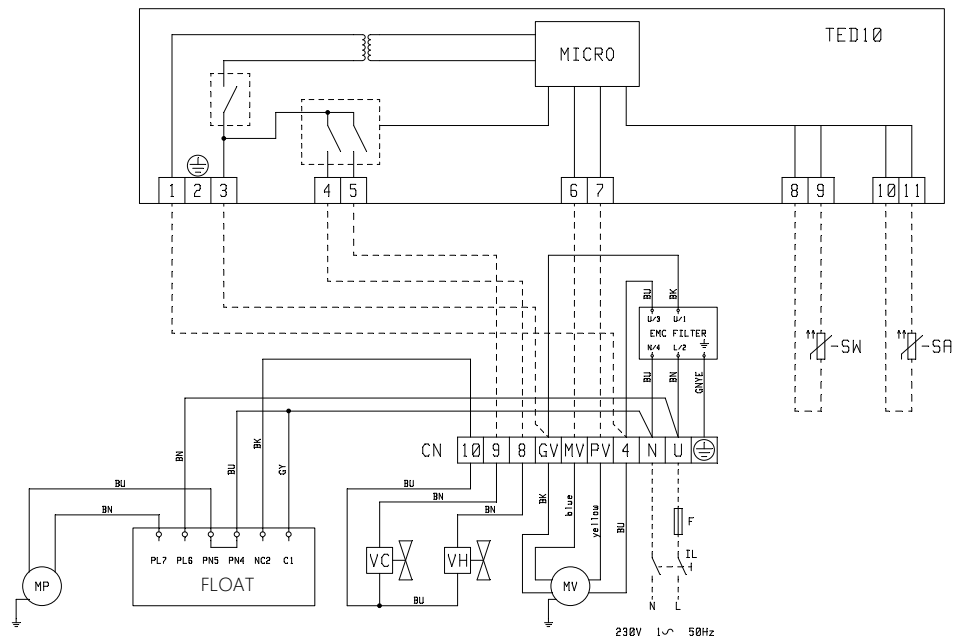
- MV:** Fan motor
- MP:** Condensate drainage pump
- FLOAT:** Float switch
- VC/H:** Water valve (hot and cold)
- F:** 2A fuse (not supplied)
- IL:** Circuit breaker (not supplied)
- CN:** Fast-on connector
- EMC FILTER:** EMI/RFI noise filter
- SU:** Umidity sensor
- SW:** Water temperature sensor
- SA:** Room temperature sensor
- BK (MV):** Black = motor power supply line
- BU (MV):** Blue = motor power supply neutral
- blue (MV):** Blue = GND control signal
- yellow (MV):** Yellow = 0-10V signal
- BN (FLOAT):** Brown = pump power supply line
- BU (FLOAT):** Blue = pump power supply neutral
- BK (FLOAT):** Black = float switch alarm signal
- GY (FLOAT):** Grey = COM alarm
- BN (VC/H):** Brown = valve actuator line
- BU (VC/H):** Blue = valve actuator neutral
- BN (L2 FILT):** Brown = filter IN line
- BU (N4 FILT):** Blue = filter IN neutral
- BK (U1 FILT):** Black = filter OUT line
- BU (U3 FILT):** Blue = filter OUT neutral

» 9.4 My Comfort Large wiring diagram (alternative wiring) for models 40-50-60



- MV:** Fan motor
- INVERTER:** Fan motor inverter
- MP:** Condensate drainage pump
- FLOAT:** Float switch
- VC/H:** Water valve (hot and cold)
- F:** 2A fuse (not supplied)
- IL:** Circuit breaker (not supplied)
- CN:** Fast-on connector
- EMC FILTER:** EMI/RFI noise filter
- SU:** Umidity sensor
- SW:** Water temperature sensor
- SA:** Room temperature sensor
- BN (INV):** Brown = motor power supply line
- BU (MV):** Blue = motor power supply neutral
- BK (MV):** Black = GND control signal
- RD (INV):** Red = 0-10V signal
- BN (FLOAT):** Brown = pump power supply line
- BU (FLOAT):** Blue = pump power supply neutral
- BK (FLOAT):** Black = float switch alarm signal
- GY (FLOAT):** Grey = COM alarm
- BN (VC/H):** Brown = valve actuator line
- BU (VC/H):** Blue = valve actuator neutral
- BN (L2 FILT):** Brown = filter IN line
- BU (N4 FILT):** Blue = filter IN neutral
- BK (U1 FILT):** Black = filter OUT line
- BU (U3 FILT):** Blue = filter OUT neutral

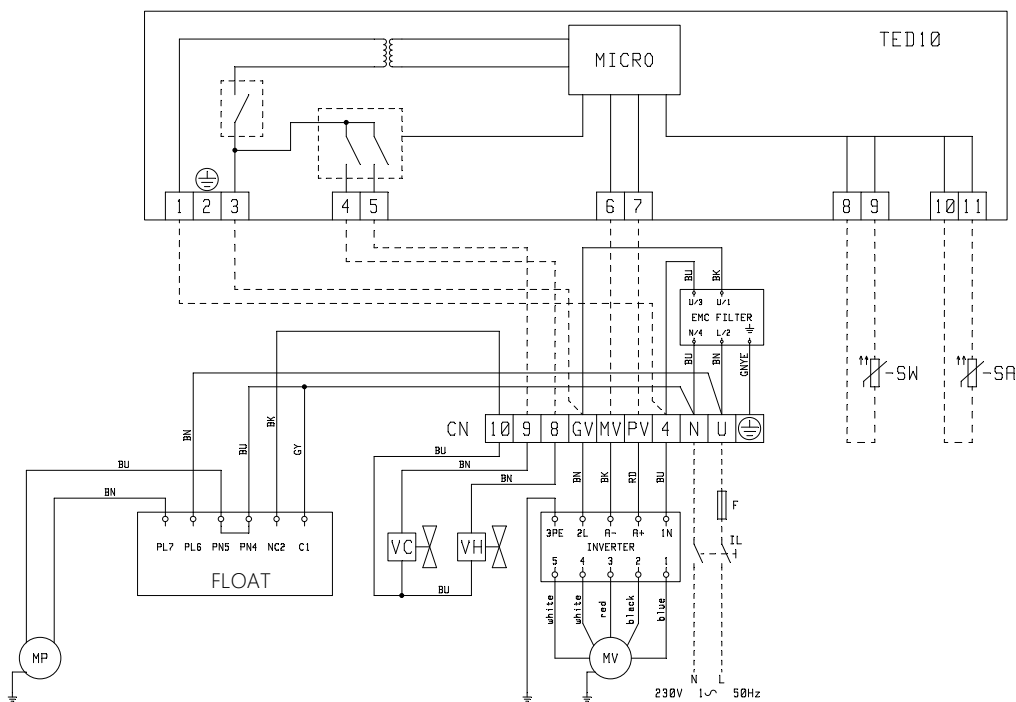
1. Alternative wiring with inverter power supply disconnection to allow de-energizing of the motor when the control is OFF.



- MV** : Fan motor
- MP:** Condensate drainage pump
- FLOAT:** Float switch
- VC/H:** Water valve (hot and cold)
- F:** 2A fuse (not supplied)
- IL:** Circuit breaker (not supplied)
- CN:** Fast-on connector
- EMC FILTER:** EMI/RFI noise filter
- SW:** Water temperature sensor
- SA:** Room temperature sensor
- BK (MV):** Black = motor power supply line
- BU (MV):** Blue = motor power supply neutral
- blue (MV):** Blue = GND control signal
- yellow (MV):** Yellow = 0-10V signal
- BN (FLOAT):** Brown = pump power supply line
- BU (FLOAT):** Blue = pump power supply neutral
- BK (FLOAT):** Black = float switch alarm signal
- GY (FLOAT):** Grey = COM alarm
- BN (VC/H):** Brown = valve actuator line
- BU (VC/H):** Blue = valve actuator neutral
- BN (L2 FILT):** Brown = filter IN line
- BU (N4 FILT):** Blue = filter IN neutral
- BK (U1 FILT):** Black = filter OUT line
- BU (U3 FILT):** Blue = filter OUT neutral

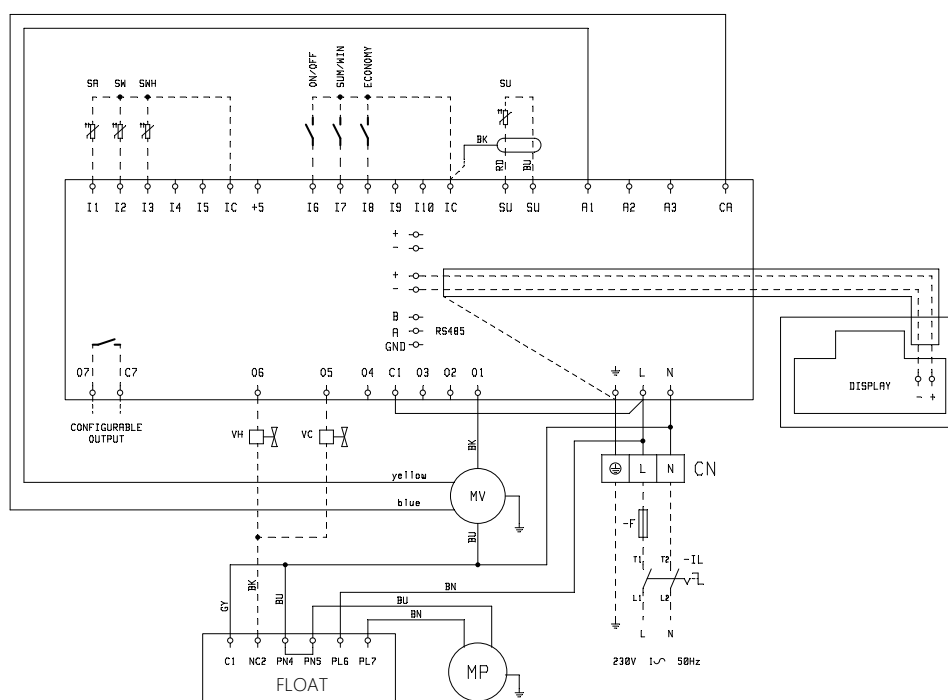


» 9.6 TED10 wiring diagram for models 40-50-60



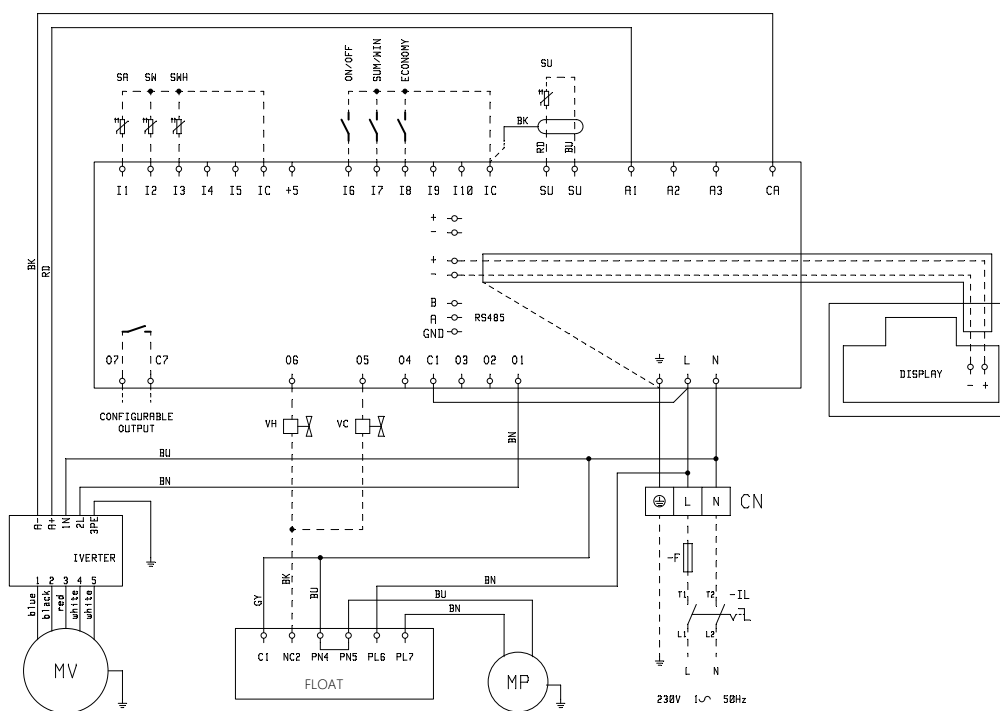
- MV:** Fan motor
- MP:** Condensate drainage pump
- FLOAT:** Float switch
- VC/H:** Water valve (hot and cold)
- F:** 2A fuse (not supplied)
- IL:** Circuit breaker (not supplied)
- CN:** Fast-on connector
- EMC FILTER:** EMI/RFI noise filter
- SW:** Water temperature sensor
- SA:** Room temperature sensor
- BK (MV):** Black = motor power supply line
- BU (MV):** Blue = motor power supply neutral
- blue (MV):** Blue = GND control signal
- yellow (MV):** Yellow = 0-10V signal
- BN (FLOAT):** Brown = pump power supply line
- BU (FLOAT):** Blue = pump power supply neutral
- BK (FLOAT):** Black = float switch alarm signal
- GY (FLOAT):** Grey = COM alarm
- BN (VC/H):** Brown = valve actuator line
- BU (VC/H):** Blue = valve actuator neutral
- BN (L2 FILT):** Brown = filter IN line
- BU (N4 FILT):** Blue = filter IN neutral
- BK (U1 FILT):** Black = filter OUT line
- BU (U3 FILT):** Blue = filter OUT neutral

» 9.7 EVO BOARD wiring diagram for models AQ 10-20-30



- MV:** Fan motor
- MP:** Condensate drainage pump
- FLOAT:** Float switch
- F:** 2A fuse (not supplied)
- IL:** Circuit breaker (not supplied)
- CN:** Fast-on connector
- SU:** Umidity sensor
- SW:** Water temperature sensor
- SA:** Room temperature sensor
- BK (MV):** Black = motor power supply line
- BU (MV):** Blue = motor power supply neutral
- blue (MV):** Blue = GND control signal
- yellow (MV):** Yellow = 0-10V signal
- BN (FLOAT):** Brown = pump power supply line
- BU (FLOAT):** Blue = pump power supply neutral
- BK (FLOAT):** Black = float switch alarm signal
- GY (FLOAT):** Grey = COM alarm

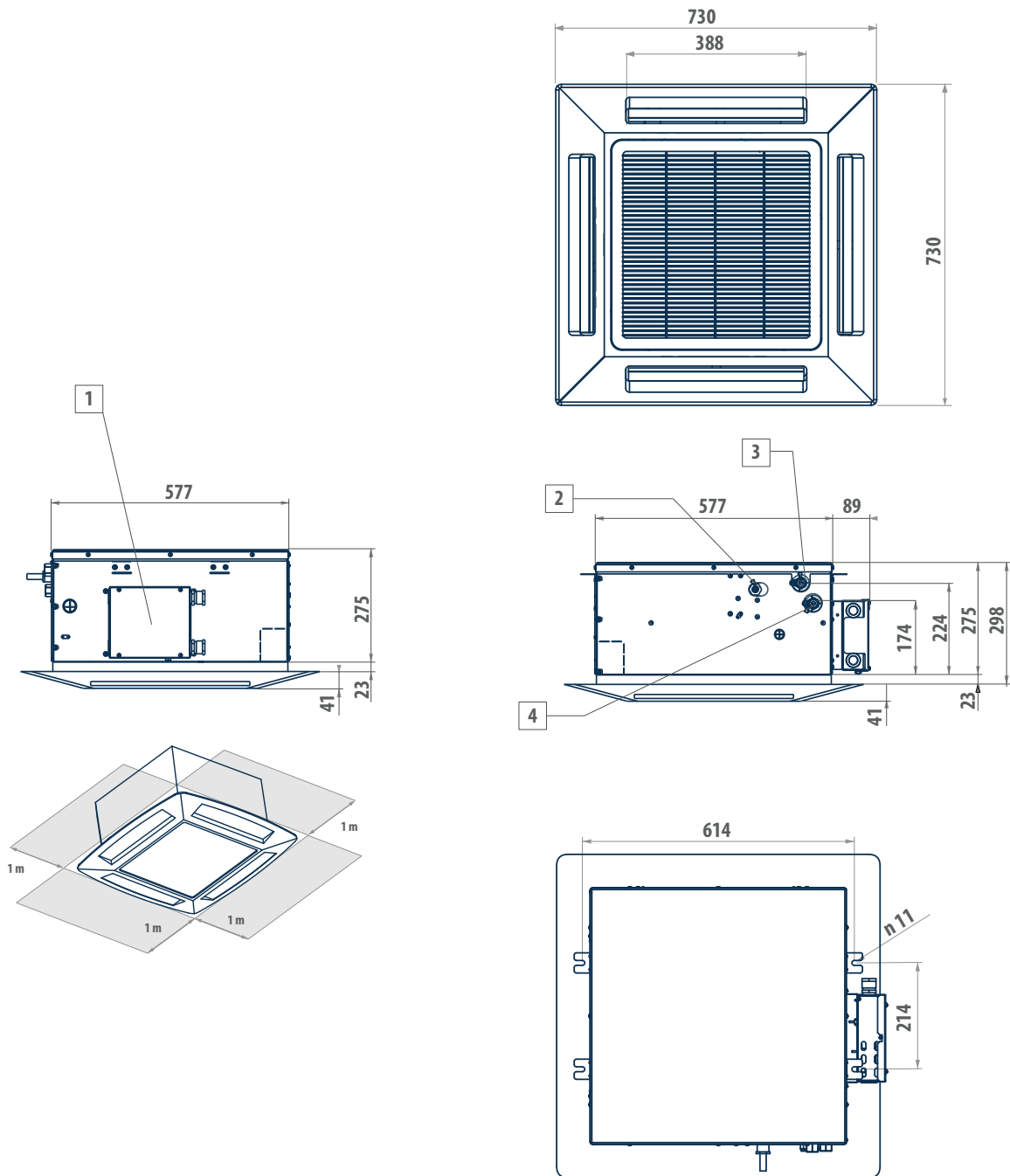
» 9.8 EVO BOARD wiring diagram for models AQ 40-50-60



- MV:** Fan motor
- MP:** Condensate drainage pump
- FLOAT:** Float switch
- F:** 2A fuse (not supplied)
- IL:** Circuit breaker (not supplied)
- CN:** Fast-on connector
- SU:** Umidity sensor
- SW:** Water temperature sensor
- SA:** Room temperature sensor
- BK (MV):** Black = motor power supply line
- BU (MV):** Blue = motor power supply neutral
- blue (MV):** Blue = GND control signal
- yellow (MV):** Yellow = 0-10V signal
- BN (FLOAT):** Brown = pump power supply line
- BU (FLOAT):** Blue = pump power supply neutral
- BK (FLOAT):** Black = float switch alarm signal
- GY (FLOAT):** Grey = COM alarm

# 10 OVERALL DIMENSIONS

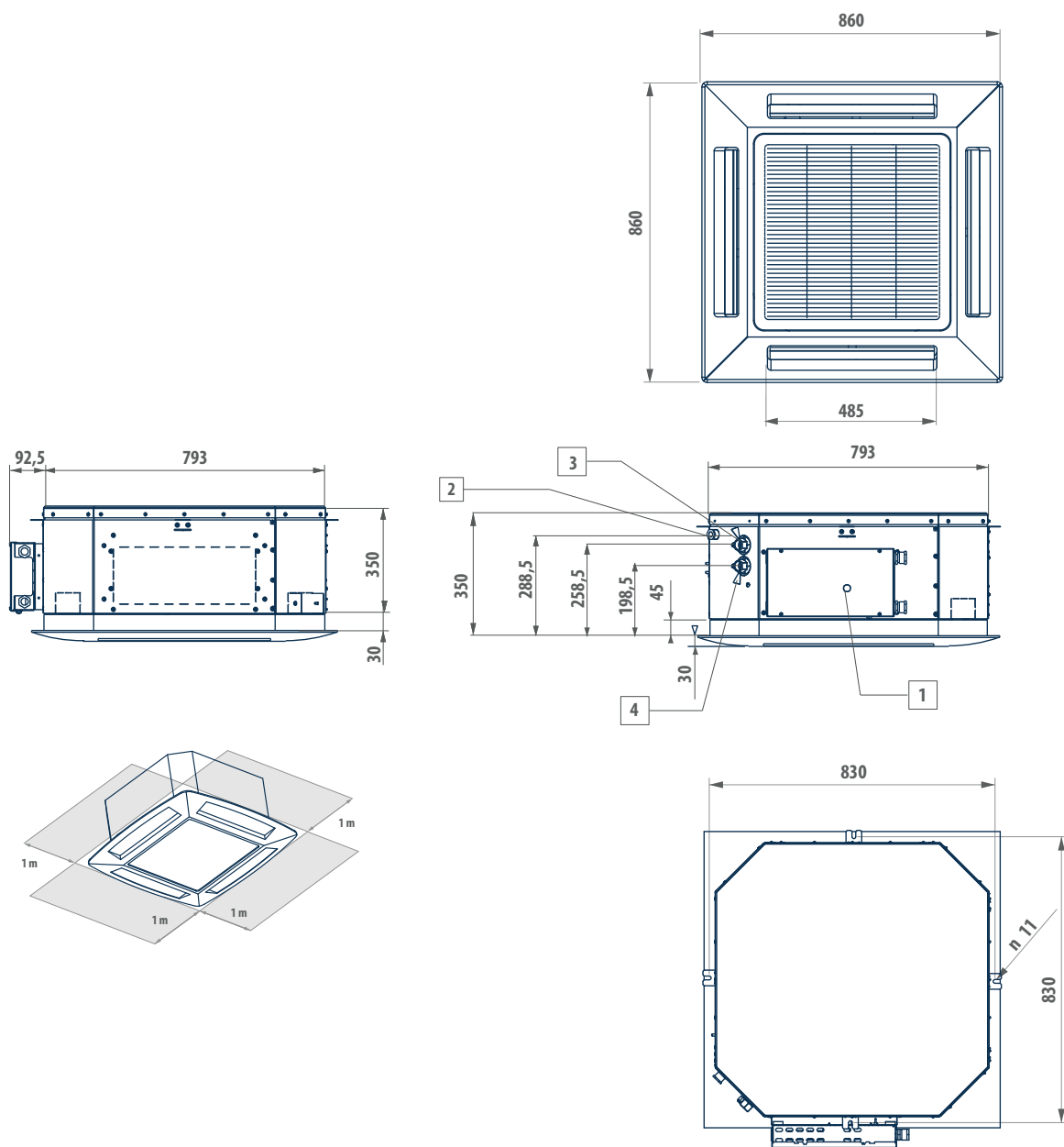
» 10.1 Dimensional drawing AQ 10-20-30, 2 pipes



**LEGEND**

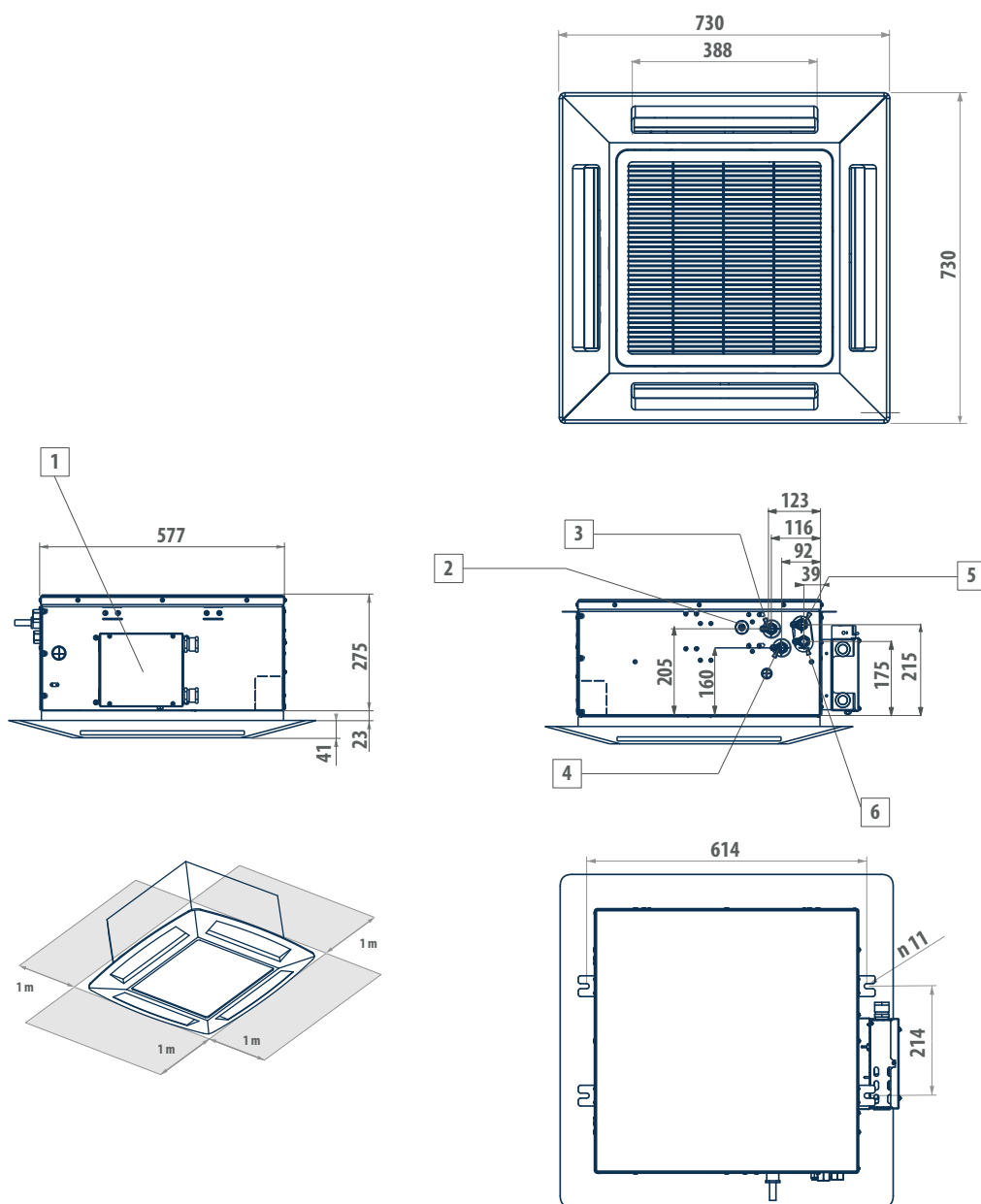
- 1 Electric box
- 2 Condensate discharge  $\varnothing$  10
- 3 Water outlet  $\varnothing$  1/2" female gas
- 4 Water inlet  $\varnothing$  1/2" female gas

» 10.2 Dimensional drawing AQ 40-50-60, 2 pipes



**LEGEND**

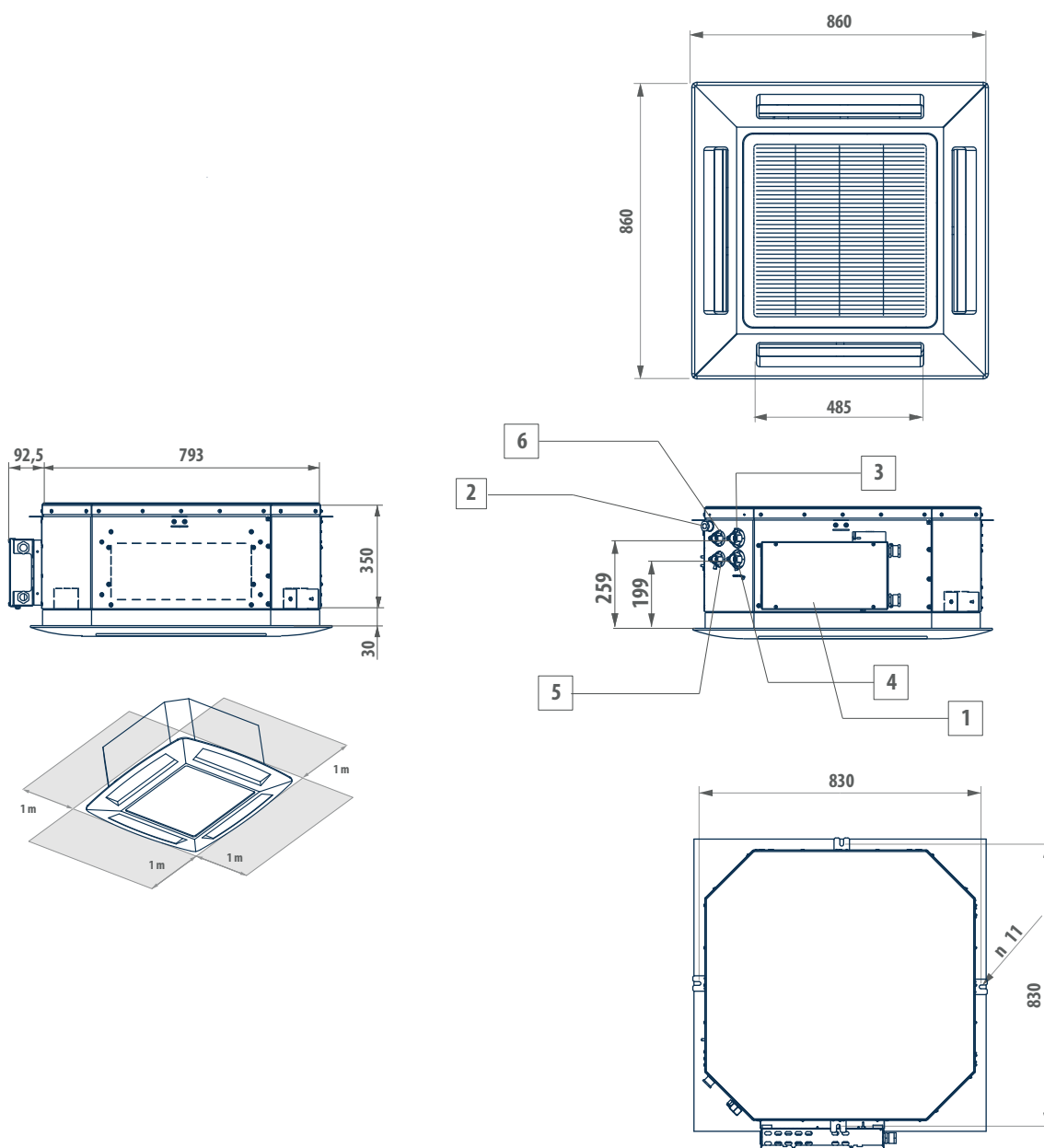
- 1 Electric box
- 2 Condensate discharge  $\varnothing 10$
- 3 Water outlet  $\varnothing 3/4"$  female gas
- 4 Water inlet  $\varnothing 3/4"$  female gas



**LEGEND**

- 1** Electric box
- 2** Condensate discharge  $\varnothing$  10
- 3** Cooling exchanger water outlet, 1/2" gas F
- 4** Cooling exchanger water inlet, 1/2" gas F
- 5** Heating exchanger water outlet, 1/2" gas F
- 6** Heating exchanger water inlet, 1/2" gas

» 10.4 Dimensional drawing AQ 40-60, 4 pipes



**LEGEND**

- 1** Electric box
- 2** Condensate discharge  $\varnothing$  10
- 3** Cooling exchanger water outlet, 3/4" gas F
- 4** Cooling exchanger water inlet, 3/4" gas F
- 5** Heating exchanger water inlet, 1/2" gas F
- 6** Heating exchanger water outlet, 1/2" gas F

# 11 ACCESSORIES

## EVO - wall-mounted or remote microprocessor split controller

Composed of:

EVO BOARD: circuit board

EVO DISP: user interface with display

Main functions:

- Room air temperature reading and adjustment
- Room humidity reading and adjustment
- Water temperature reading (water sensor as an optional)
- Manual/automatic regulation of the fan speed with ON-OFF step and modulating control
- Automatic adjustment of valve opening with ON/OFF and modulating controller
- Manual and automatic switching of heating and cooling mode depending on the water temperature within the heat exchanger or on the room temperature, with a selectable neutral zone
- Clock and hourly timer-programmed operation
- 3 Analogue outputs for controlling modulating devices -10V
- Economy function and minimum temperature
- 1 Digital outputs for controlling (On/Off) external devices (novoltage contacts)
- Serial port for RS485 connection
- Serial port for OC connection
- 3 digital inputs for remote setting of ON OFF, Economy, operating modes

Operating mode

The controller is equipped with a programmable display to show and set all the functions of the hydronic unit through a dedicated interface with the parameter description.



## TED10 - on-board or wall-mounted electronic controller for BLDC fan control and one or two valves ON/OFF 230V.

Main functions:

- It supports terminal units equipped with BLDC electric motor thanks to its internal 0-10 V signal generator
- for 2 and 4 pipes systems
- Manual and automatic fan speed adjustment mode
- temperature-based management of water flow enabling



## TED SWA - Water or air temperature sensor for controls TED

NTC resistive probe connected directly to the microprocessor control TED10, depending on connection, it measures indifferently the temperature of the water passing through the finned coil or the temperature of the air inlet to the fan coil.

Ventilation is disabled in heating and cooling operation mode if the detected temperature is less than 30 °C and above 22 °C respectively.



## MYCOMFORT LARGE - wall-mounted microprocessor control having the following main features:

- Room air temperature reading and adjustment
- Room humidity reading and adjustment
- Water temperature reading (water probe as an optional)
- Manual and automatic adjustment of fan speed
- Manual and automatic switching of heating and cooling mode depending on the water temperature within the heat exchanger or on the room temperature, with a neutral zone that can be selected in the range from 2° to 5°C.
- Clock and hourly timer-programmed operation
- 2 Analogue outputs for controlling modulating devices 0-10 V
- 2 Digital outputs for controlling (On/Off) external devices (novoltage contacts)
- Serial port for Bus connection

The controller is equipped with a large display (3") to show and set all the functions of the unit.



## MCSWE - water temperature sensor for microprocessor controls model EVO, MYCOMFORT

Directly connected to the microprocessor controllers EVO and MYCOMFORT to measure the water temperature through the heat exchanger. If the temperature detected is less than 17°C, the unit will operate in the cooling mode and the controller will use the summertime temperature scale (19 - 31°C); if the temperature detected is greater than 37°C the unit will function in the heating mode and the controller will use the wintertime temperature scale (14 / 26°C). If the temperature detected by the probe is in the range of 17°C to 37°C, the controller will inhibit operation of the fan coil unit.



## MCSUE - Humidity sensor for EVO and MYCOMFORT microprocessor controller

Directly connected to the microprocessor controllers EVO and MYCOMFORT, it enables the control of the heating element ventilation (if present, as support in heating mode) and the automatic cooling/heating changeover according to the water temperature.



### 11.1 2- OR 3-WAY MOTOR-DRIVEN VALVE KITS

**⚠ WARNING:** The installation of a valve kit on the fan coil unit is mandatory ACQVARIA.

The kit is made up of:

- Brass 2- or 3-way valve with 4 connections with built-in bypass, maximum operating pressure 16 bar.
- Electrothermal actuator with 230 V or 24 V power supply, ON/OFF (or modulating) function, total opening time 3 minutes.
- Hydraulic kit with O-ring for connection with the exchanger and paper gasket for connection with the valve

— Brackets for fastening the hydraulic kit on the side of the unit in order to ensure stability during transport if the valves are already installed.

**🔧 NOTE:** for units AQ10-AQ20-AQ30 it is necessary to install the 3-way valves inclined so as to comply with the space constraint regarding the height of the base unit.

The valve kits are shown in the figures from page: p. 33. Pressure drops of the valve/hydraulic kit assembly are calculated using the following formula:

$$\Delta P_W = (Q_W / K_V)^2$$



Where:

$\Delta P_W$  = pressure drop in kg/cm<sup>2</sup>

$Q_W$  = water flow rate in m<sup>3</sup>/h

$K_V$  = water flow rate coefficient of the valve obtained from the table

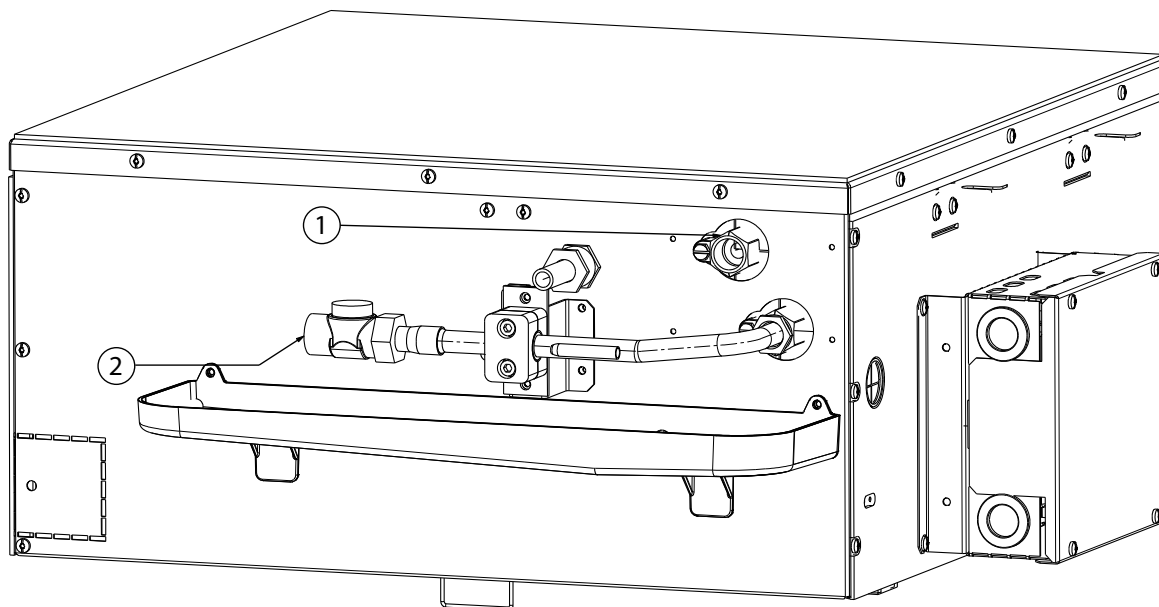
Unit	Valve type	Connection	Kvs straight	Kvs by-pass
AQ10B0, AQ20B0, AQ30B0 (2 pipes)	3-way	3/4" M	2,5	1,6
AQ40B0, AQ50B0, AQ60B0 (2 pipes)	3-way	3/4" M	4	1,6

Unit	Valve type	Cooling		Heating			
		Connection	KVS direct way	Kvs by-pass	Connection	KVS direct way	Kvs by-pass
AQ10BB, AQ30BB (4 pipes)	3-way	3/4" M	2,5	1,6	3/4" M	2,5	1,6
AQ40BB, AQ60BB (4 pipes)	3-way	3/4" M	4	1,6	3/4" M	2,5	1,6

Unit	Valve type	Connection	KVS
AQ10B0, AQ20B0, AQ30B0 (2 pipes)	2-way	3/4" M	2,8
AQ40B0, AQ50B0, AQ60B0 (2 pipes)	2-way	3/4" M	4

Unit	Valve type	Cooling		Heating	
		Connection	KVS	Connection	KVS
AQ10BB, AQ30BB (4 pipes)	2-way	3/4" M	2,8	3/4" M	2,8
AQ40BB, AQ60BB (4 pipes)	2-way	3/4" M	4	3/4" M	2,8

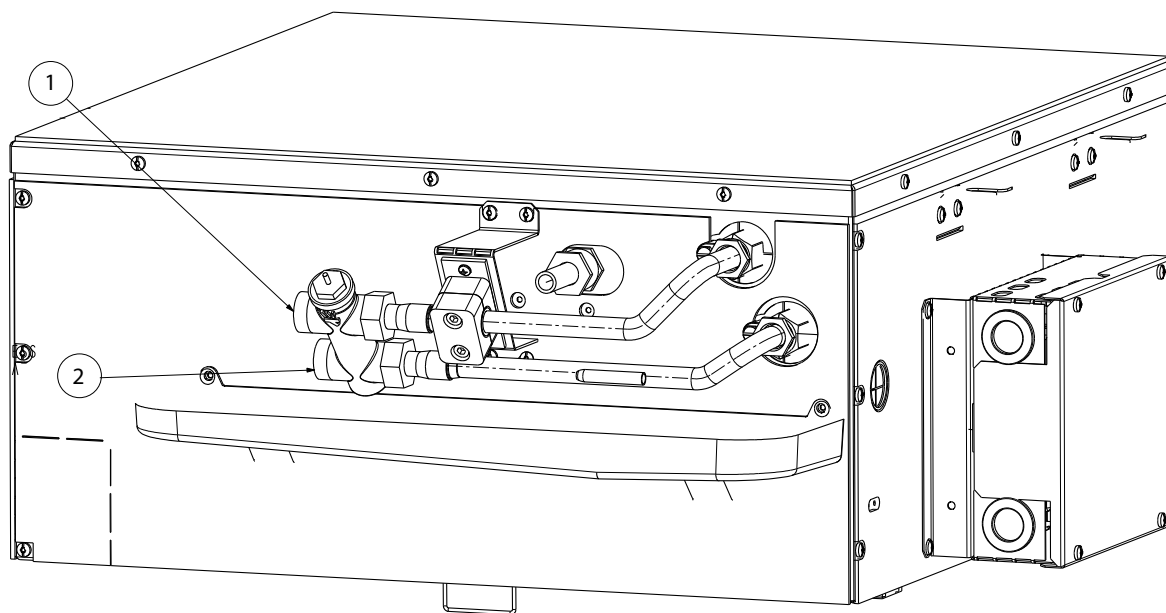
» 2-way valve kit - 2 pipes, AQ 10-20-30



- 1 Chilled water outlet
- 2 Chilled water inlet

**NOTE: The actuator is not shown.**

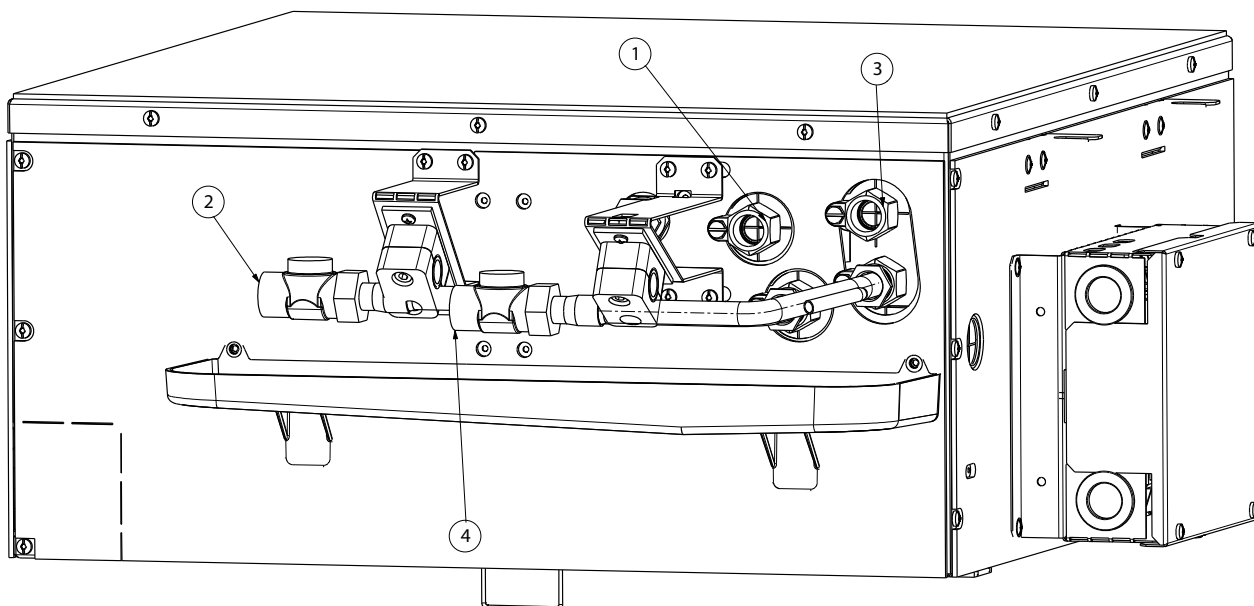
» 3-way valve kit - 2 pipes, AQ 10-20-30



- 1 Chilled water outlet
- 2 Chilled water inlet

**NOTE: The actuator is not shown.**

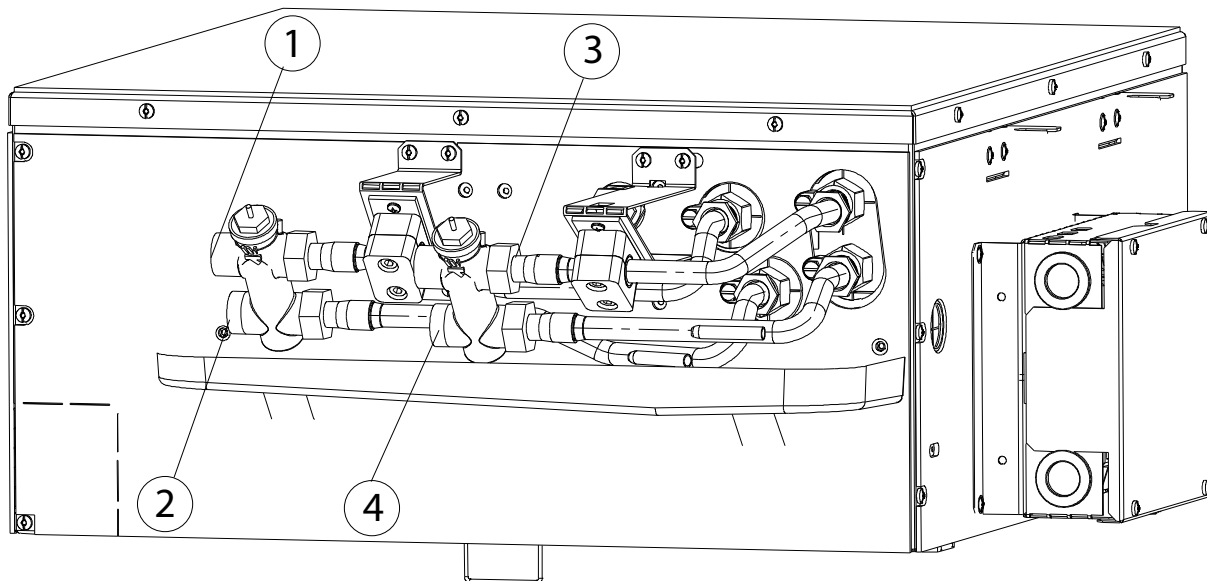
» 2-way valve kit - 4 pipes, AQ 10-20-30



- 1 Cold water outlet
- 2 Cold water inlet
- 3 Hot water outlet

- 4 Hot water inlet
- NOTE: The actuators are not shown.**

» 3-way valve kit - 4 pipes, AQ 10-20-30

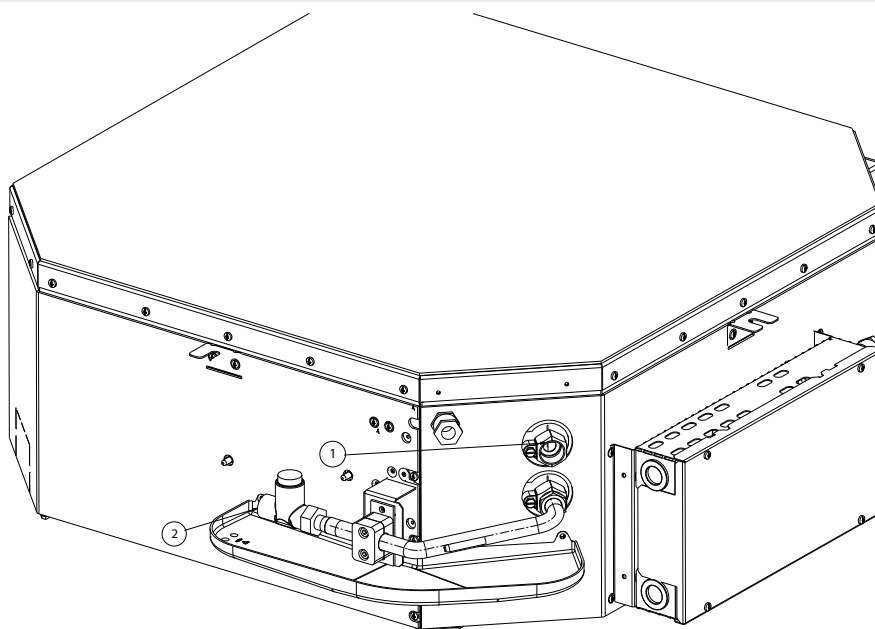


- 1 Cold water outlet
- 2 Cold water inlet
- 3 Hot water outlet

- 4 Hot water inlet

**NOTE: The actuators are not shown.**

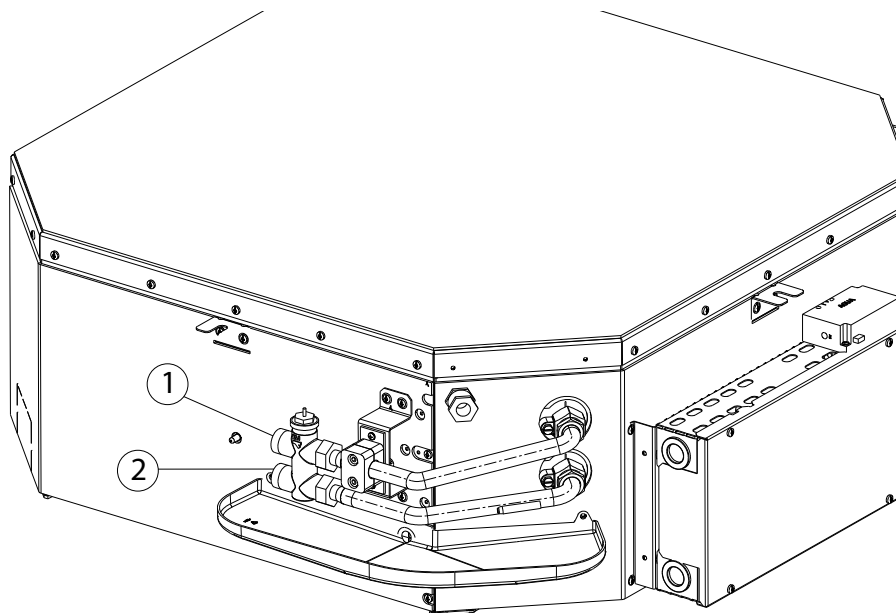
» 2-way valve kit - 2 pipes, AQ 40-50-60



- 1 Chilled water outlet
- 2 Chilled water inlet

**NOTE: The actuator is not shown.**

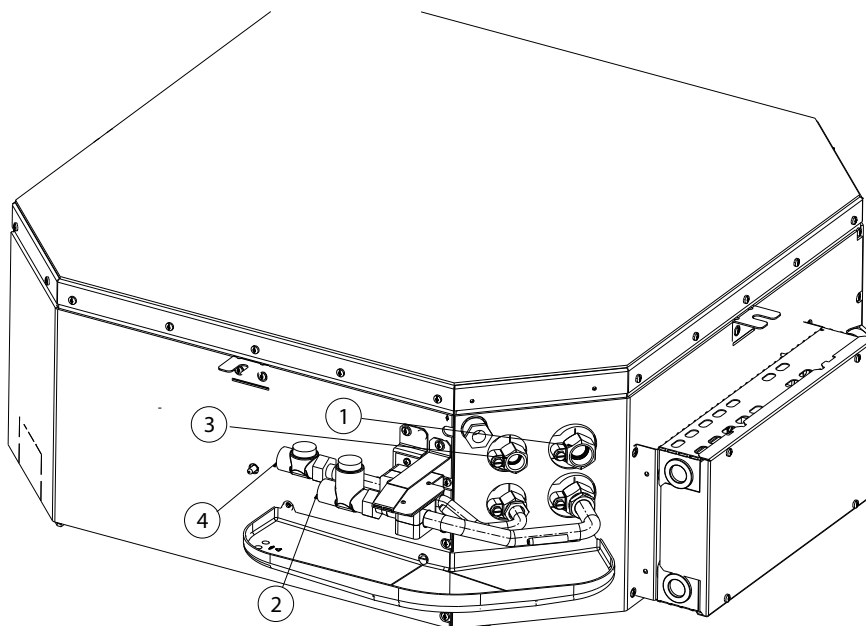
» 3-way valve kit - 2 pipes, AQ 40-50-60



- 1 Chilled water outlet
- 2 Chilled water inlet

**NOTE: The actuator is not shown.**

» 2-way valve kit - 4 pipes, AQ 40-50-60

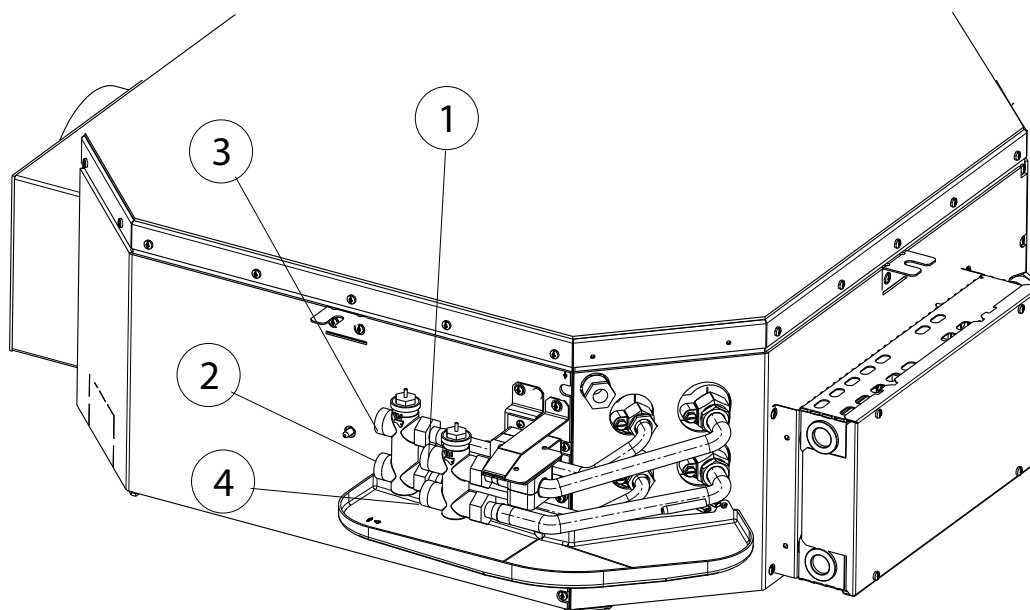


- 1 Cold water outlet
- 2 Cold water inlet
- 3 Hot water outlet

- 4 Hot water inlet

**NOTE: The actuators are not shown.**

» 3-way valve kit - 4 pipes, AQ 40-50-60



- 1 Cold water outlet
- 2 Cold water inlet
- 3 Hot water outlet

- 4 Hot water inlet
- NOTE: The actuators are not shown.**

## 11.2 PRESSURE-INDEPENDENT MOTOR-DRIVEN 2-WAY VALVE KIT

**⚠ WARNING:** The installation of a valve kit on the fan coil unit is mandatory ACQVARIA.

The pressure-independent 2-way valve kit consists of:

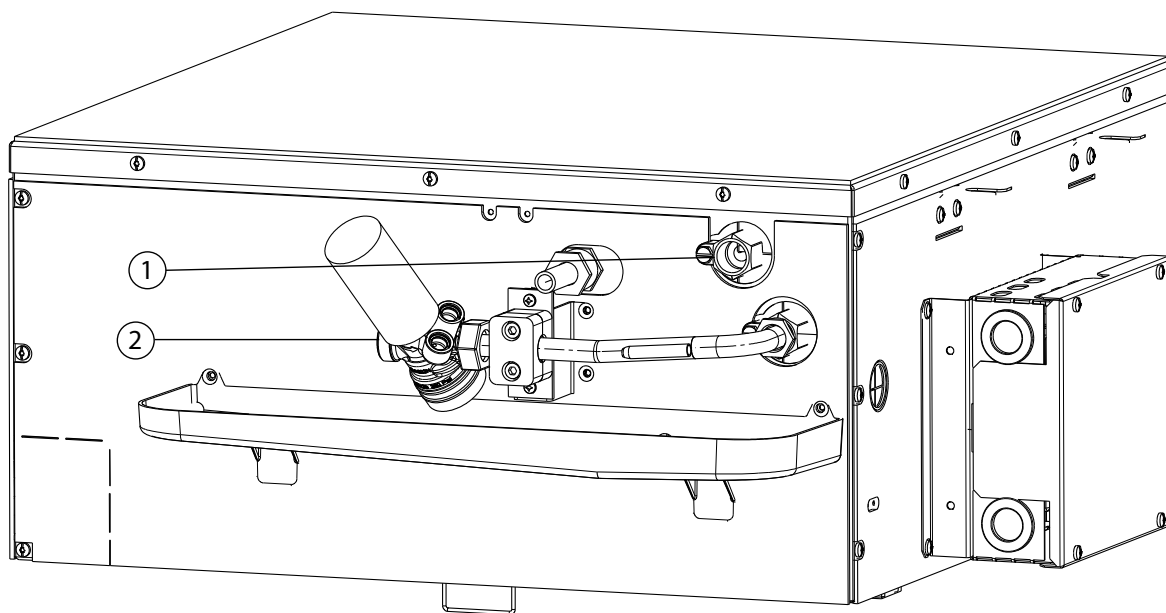
- 2-way valve with maximum operating pressure of 16 bar.
- Electrothermal actuator with 230 V or 24 V power supply, ON/OFF (or modulating) function, total opening time 3 minutes.

- Hydraulic kit with O-ring for connection with the exchanger and paper gasket for connection with the valve.
- Brackets for fastening the hydraulic kit on the side of the unit in order to ensure stability during transport if the valves are already installed.

The valve kits are shown in the figures on page: p. 38, p. 39, p. 38, and p. 39.

Unit	Valve type	Connection	Δp min [kPa]		
AQ10B0, AQ20B0, AQ30B0 (2 pipes)	2-way	3/4" M	32		
AQ40B0, AQ50B0, AQ60B0 (2 pipes)	2-way	1 1/4" M	20		
		Cooling		Heating	
Unit	Valve type	Connection	Δp min [kPa]	Connection	Δp min [kPa]
AQ10BB, AQ30BB (4 pipes)	2-way	3/4" M	16	3/4" M	16
AQ40BB, AQ60BB (4 pipes)	2-way	1 1/4" M	20	1" M	16

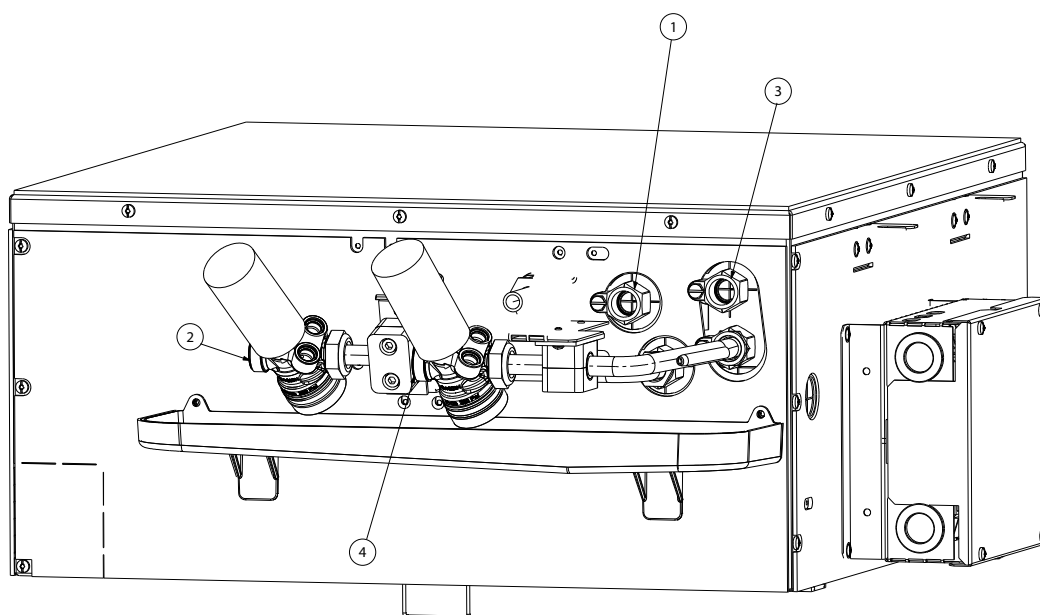
» 2-way VPIC valve kit - 2 pipes, AQ 10-20-30



1 Chilled water outlet

2 Chilled water inlet

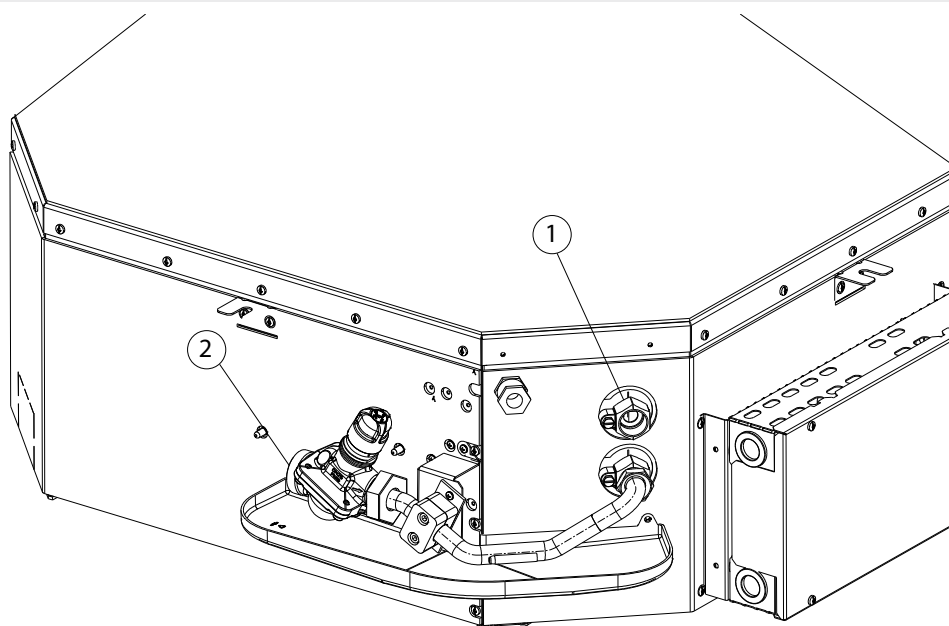
» 2-way VPIC valve kit - 4 pipes, AQ 10-20-30



1 Cold water outlet  
2 Cold water inlet

3 Hot water outlet  
4 Hot water inlet

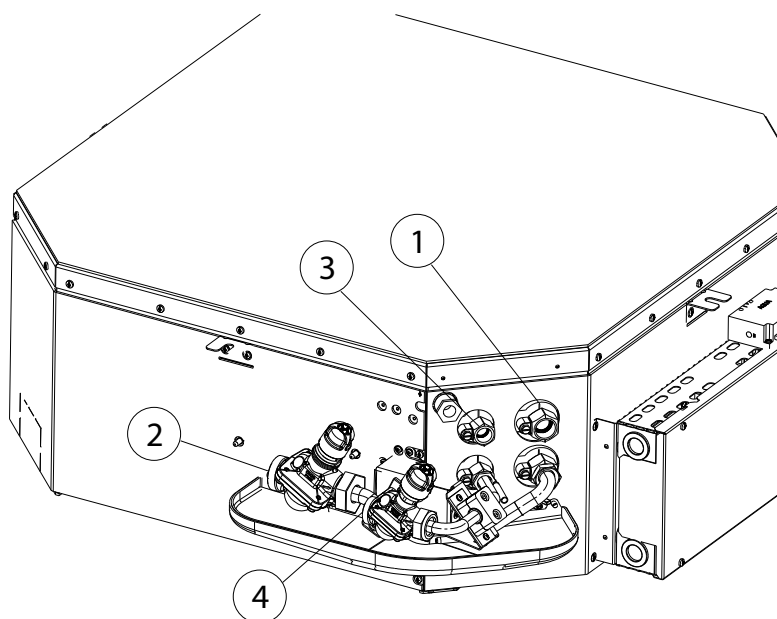
» 2-way VPIC valve kit - 2 pipes, AQ 40-50-60



1 Chilled water outlet

2 Chilled water inlet

» 2-way VPIC valve kit - 4 pipes, AQ 40-50-60



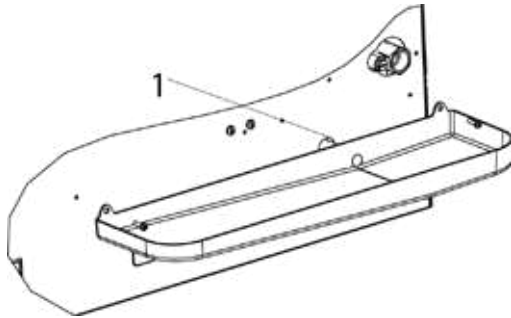
1 Cold water outlet  
2 Cold water inlet

3 Hot water outlet  
4 Hot water inlet

### 11.3 AUXILIARY WATER DRIP TRAY FOR COLLECTING CONDENSATE FROM THE CONTROL VALVES

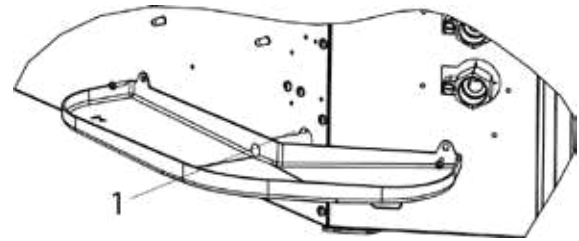
The auxiliary water drip tray is supplied with the base unit together with two fastening screws. Its function is to collect the condensate generated by the control valves and to convey it inside the main condensate drip tray of the unit. (FIGURE 15, FIGURE 16)

» Fig.15



1 Condensate discharge

» Fig.16



1 Condensate discharge

**⚠ WARNING:** The installation of the auxiliary water drip tray is mandatory.

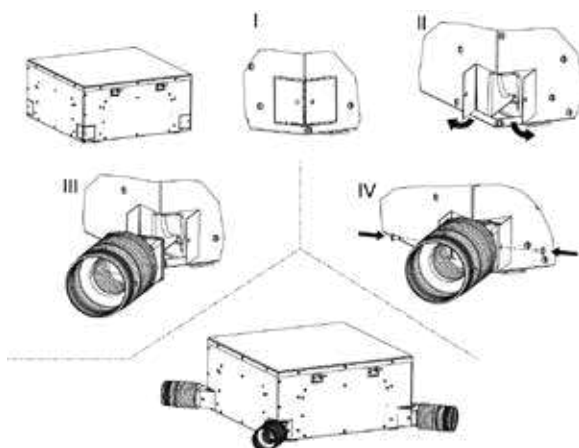
### 11.4 CONNECTION FOR INTAKE OF FRESH AIR TO BE TREATED

The units are equipped with 3 fresh air inlets, positioned in the corners. This air mixes with the air drawn in from the indoor environment and is then treated by the heat exchanger. (Fig. 17 - Fig. 18)

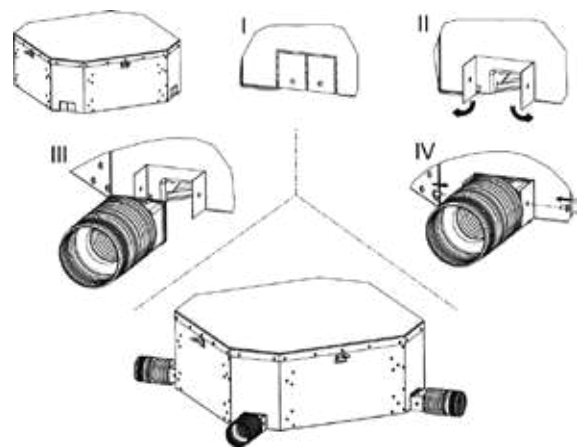
- The BAR accessory is available: a fitting for Ø100 pipe to be connected to the inlets located on the unit.
- It is necessary to filter the fresh air before introducing it in the unit, making sure that its temperature is not too low.
- To avoid operating and noise-related problems, the fresh air flow rate is limited to 20% of the unit's air flow at average speed, with a maximum of 110 m<sup>3</sup>/h for each intake.

**⚠ WARNING:** It is necessary to prevent the intake of dust and impurities that could foul the unit's exchanger.

» Fig.17



» Fig.18





## 11.5 CONNECTION FOR OUTLET OF AIR IN ADJACENT ROOMS

The units are equipped with 2 rectangular air outlets for connection to separate distribution ducts.

- These outlets are located on the sides not occupied by the electrical box and water connections.

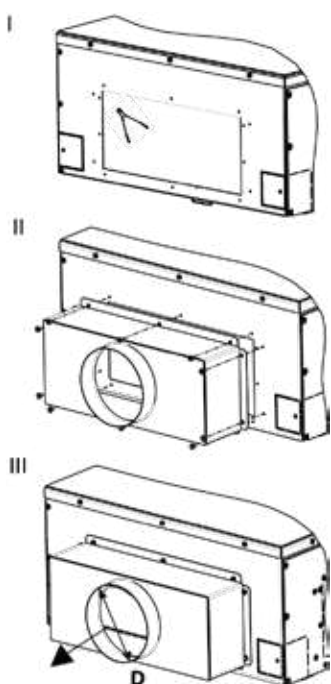
- The PMAA accessory is available: a plenum to connect the rectangular outlets located on the unit to the round distribution ducts with diameter D:

Model	D
ACQVARIA 10-20-30	150
ACQVARIA 40-50-60	180

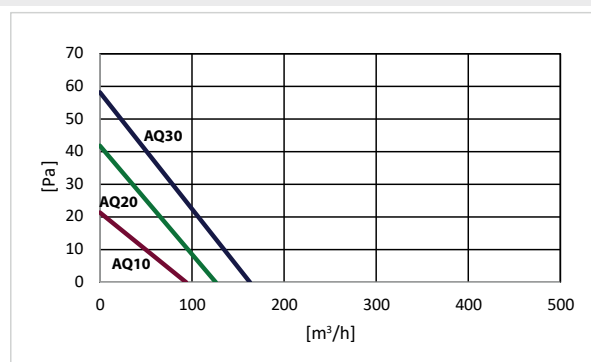
**⚠ WARNING:** The air ducts from the fan coil unit must be thermally insulated to prevent the formation of surface condensation.

The following graphs show the air flow values as a function of the pressure drops of the duct at the maximum fan speed.

» Fig.19

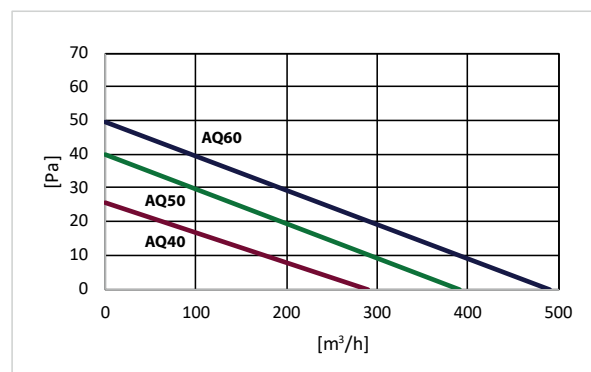


» AQ 10-20-30 n. 2 output used



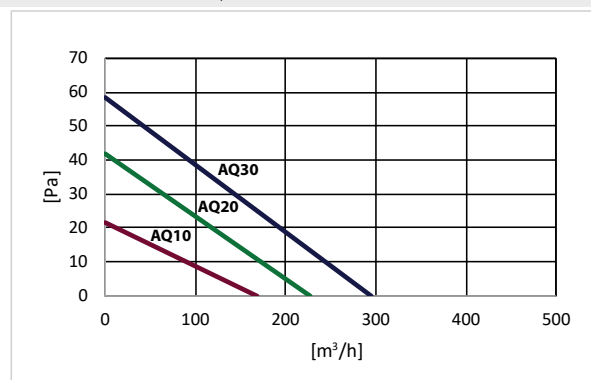
- Pa: Water pressure drop
- m³/h: Air flow

» AQ 40-50-60 n. 1 output used



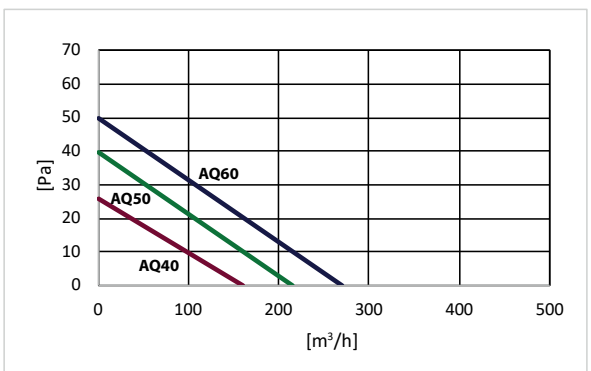
- Pa: Water pressure drop
- m³/h: Air flow

» AQ 10-20-30 n. 1 output used



- Pa: Water pressure drop
- m³/h: Air flow

» AQ 40-50-60 n. 2 output used



- Pa: Water pressure drop
- m³/h: Air flow

## 11.6 CONNECTION FOR INTRODUCTION OF FRESH AIR INTO ROOM

The units are equipped with 2 rectangular arrangements for connection to ducts for the introduction of fresh air directly into the room.

- • These arrangements are located on the sides not occupied by the electrical box and water connections.

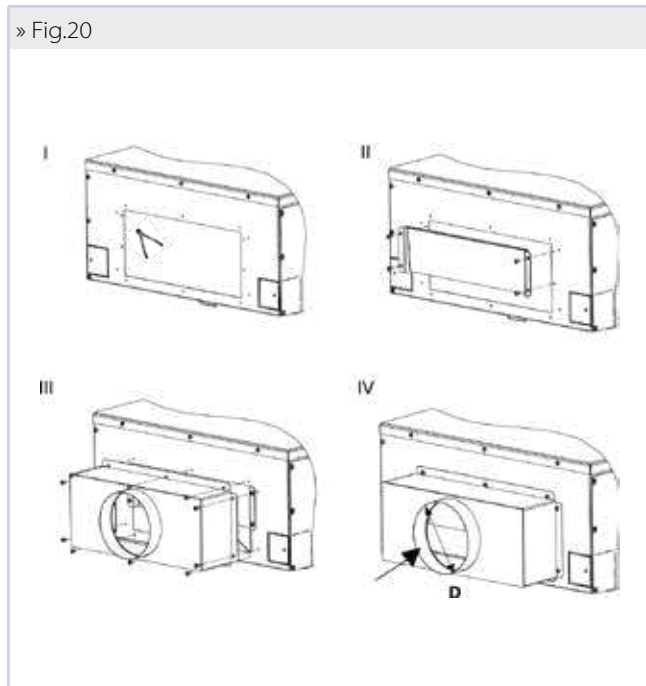
- The PAR accessory is available, consisting of a duct and a plenum: fresh air is introduced into the installation room by-passing the heat exchanger by means of a supply fin of the unit.

- The dimensions of diameter D are:

Model	D
ACQVARIA 10-20-30	150
ACQVARIA 40-50-60	180

- It is necessary to filter the fresh air before introducing it in the unit, making sure that its temperature is not too low.

Below is the correlation between the flow of primary air introduced and the pressure drop of the PAR accessory.



» Intake bypass air

AQ10-20-30		AQ40-50-60	
m <sup>3</sup> /h	Air flow rate	m <sup>3</sup> /h	Air flow rate
50	8	100	8
100	11	200	11
160	22	320	22
200	32	400	32
220	39	440	39

## 12 MAINTENANCE

**For safety reasons, before carrying out any maintenance or cleaning jobs, turn off the unit by moving the fan speed selector to "OFF" and putting off the main switch 0 (OFF).**

**Any work must be carried out by personnel qualified and authorised to work on this type of unit.**

**⚠ DANGER!** Due caution must be taken while carrying out maintenance: some metal parts may cause injuries; wear protective gloves.

The material must undergo maintenance in order to retain its characteristics over time. Lack of maintenance may have the

effect of voiding the product warranty. The operations consist of cleaning the air filter, the internal and external exchangers, the cabinet, and cleaning and protecting the condensate drip trays. Odour treatment and disinfection of the surfaces and spaces also contribute to the healthiness of the air breathed by users. Whenever starting up the unit after it has not been used for a long time, check that there is no air in the heat exchanger. Before the period of operation in the cooling mode, check that condensate is properly drained.

**Adequate periodic maintenance will ensure save both energy and cost savings.**

### 12.1 CLEANING THE AIR FILTER

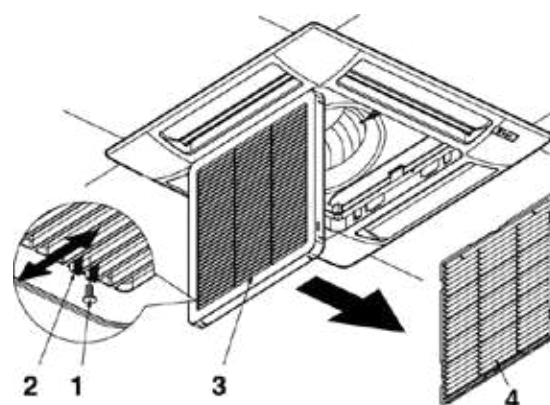
Clean the air filter at least once a month and in any case at the start of the period of use (before the heating and the air conditioning season).

To clean the air filter, proceed as follows (Figure 21):

1. Before performing any work on the unit, disconnect it from the power supply.
2. Remove the screws (1) securing the retainers (2) on each side.
3. To open the grille (3), push on the two retainers (2) in the direction of the arrow.
4. Open the grille (3) downwards.
5. Remove the filter (4) from the grille.
6. Use a vacuum cleaner to remove dust. If dust is glued to the filter, remove it with clean or soapy water, rinse the filter with clean water and dry it.
7. Put the filter back into its place in the grille, close the grille, moving the two retainers outwards, then put the screws securing the retainers back in place.

It is recommended to replace the air filter once a year, using an original replacement filter; the indoor unit model can be found on the identification plate located on the tank inside the unit, behind the air filter.

» Fig.21

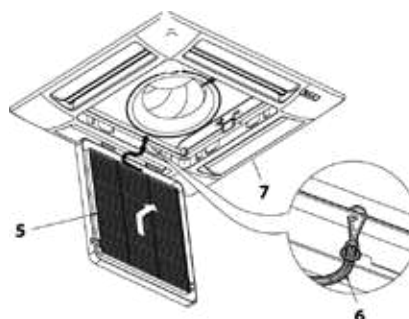


### 12.2 CLEANING THE AIR INTAKE GRILLE

The grille can be removed for cleaning. (Fig.22 )

- After opening the grille (5), detach the safety cable (6) of the control panel (7) (remember to attach it again after maintenance and cleaning).
- Lift the grille and pull it towards you to release the two hinges
- Clean the grille gently using a soft sponge, then dry well. A neutral detergent can be used to remove difficult residues. Rinse well with water, then dry.
- Never use harsh chemical solvents.
- Do not use excessively hot water to clean the unit.

» Fig.22



### 12.3 CLEANING THE CABINET

- Use a soft cloth
- Never pour liquids onto the unit, as this could cause electrical discharges and damage the internal components.

- Never use harsh chemical solvents.

## 12.4 ELECTRIC CONTROL BOARD

Once a year, check that the electrical wires are properly tightened on their terminal blocks.

## 12.5 ADDITIONAL MAINTENANCE

Inspecting, cleaning, or replacing internal components requires the removal of the main condensate tank.

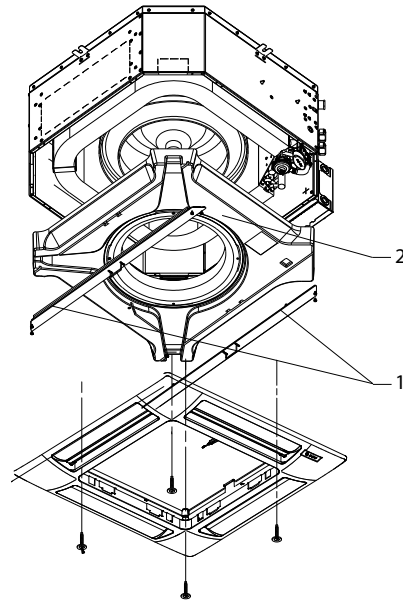
Tank removal (Fig. 23):

- Remove the air intake grille.
- Empty the condensate remaining in the tank into a bucket by means of a pump through the condensate drain opening of the auxiliary water drip tray (Fig. 15 and Fig. 16).
- Remove the front panel / grille assembly (2) by unscrewing the four fastening screws. Remove the support plates (1) of the tank (2) by removing the screws.
- Remove the tank, handling it with care
- Clean the inside of the tank.
- Check that the heat exchanger is clean. If needed, use a vacuum cleaner with a rubber tip to remove dust being careful not to damage the fins.

Reinstallation of the tank:

- Put the tank (2) back in place with its supporting plates (1) and tighten the fastening screws.
- Put the front panel back in place using the two tank plate clips to keep it suspended on the unit.
- Tighten the fastening screws
- Put the grille back in place together with the air filter.
- Hook the grille's safety cable to the control panel, close the grille, and put the screws securing the retainers back in place.

» Fig.23



## 12.6 ABNORMAL WATER LEVEL

In case of abnormal backflow of water into the condensate tank (due to a faulty pump, a dirty tank, a plugged drain pipe, etc.), a safety contact (float switch) closes the control valves.









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