



reventon
INDUSTRIAL SOLUTIONS

Technical datasheet

WALL MOUNTED SPLIT AIR CONDITIONERS VESPER SERIES



CONTENTS

INFORMATION ABOUT REFRIGERANT R32.	1
SAFETY PRECAUTIONS.	2-4
NAMES OF PARTS.	5
TECHNICAL DATA.	6
INDOOR UNIT LED DISPLAY.	6
EMERGENCY FUNCTION & AUTO-RESTART FUNCTION.	7
REMOTE CONTROLLER.	8-11
CONTROLLING.	12-16
WORKING CONDITIONS.	17
INSTALLATION.	17-28
MAINTENANCE.	29
TROUBLESHOOTING.	30
WARRANTY TERMS.	31
WARRANTY CARD.	31
MOUNTING CARD.	32

INFORMATION ABOUT REFRIGERANT R32

The refrigerant used for air conditioners VESPER is R32. This refrigerant is combustible, odorless and can explode under certain condition. However, there will be no risk of burning and explosion if you comply with the following manual to install the air conditioner in a room with an appropriate area and use it correctly.

Compared with ordinary refrigerants, R32 is environmentally friendly and do not destroy the ozone sphere and its influence on the greenhouse effect is also very low.

The method of determining the minimum area of the room in which VESPER air conditioner can be installed is presented in the "Maximum amount of refrigerant in the circuit and the required minimum area" in the ASSEMBLY MANUAL section. However, it is recommended not to install the air conditioner in rooms smaller than indicated in the table below.

REFRIGERANT	MODEL	ROOM AREA
R32	VESPER 3.4	above 4m ²
	VESPER 5.1	above 15m ²



WARNING



- Please read the manual before installation, using, maintenance.
- Do not use means to accelerate the defrosting process or to clean, other than those recommended by the manufacturer.
- Do not pierce or heat up the appliance.
- The device shall be stored in a room without continuously operating sources (for example: open flames, an operating ignition gas appliance or an operating electric heater).
- Please contact the nearest after-sale service center when maintenance is necessary. At the time of maintenance, the maintenance personnel must strictly comply with this manual provided by the corresponding manufacturer and any non-professional is prohibited to maintain the air conditioner.
- It is necessary to comply with the provisions of gas-related national laws and regulations (like F-gas Regulations).
- It is necessary to clear away the refrigerant from the system when maintaining or scrapping an air conditioner; this must be done in accordance with procedures by a certified installer.



Warning:
Combustible & Dangerous



Read the user manual






















Read the installation
manual


















Read the service manual

SAFETY PRECAUTIONS

-  Read this guide before installing and using of appliance.
-  During the installation of the indoor and out door units the access to the working area should be forbidden to children. Unforeseeable accidents could happen.
-  Make sure that the base of the outdoor unit is firmly fixed.
-  Check if air cannot enter the refrigerant system and check for refrigerant leaks when moving the air conditioner.
-  Carry out a test cycle after installing the air conditioner and record the operating data.
-  The ratings of the fuse installed in the built in control unit are T 5A / 250V.
-  The user must protect the indoor unit with a fuse of suitable capacity for the maximum input current or with another overload protection device.
-  Ensure that the mains voltage corresponds to that stamped on the rating plate. Keep the switch or power plug clean. Insert the power plug correctly and firmly into the socket, thereby avoiding the risk of electric shock or fire due to incorrect connection.
-  Check if the socket is suitable for the plug, otherwise have change the socket.
-  The appliance must be fitted with means for disconnection from the mains supply having a contact separation in all poles that provide full disconnection under overvoltage category III conditions, and these means must be incorporated in the fixed wiring in accordance with the wiring rules.
-  The air conditioner must be installed by professional or qualified persons.

-  Do not install the appliance at a distance of less than 50 cm from inflammable substances (alcohol, etc.) or from pressurised containers (e.g. spray cans).
-  If the appliance is used in areas without the possibility of ventilation, precautions must be taken to prevent any leaks of refrigerant gas from remaining in the environment and creating a danger of fire.
-  The packaging materials are recyclable and should be disposed of in the separate waste bins. Take the air conditioner at the end of its useful life to a special waste collection centre for disposal.
-  Use the air conditioner only as instructed in this booklet. These instructions are not intended to cover every possible condition and situation. As with any electrical household appliance, common sense and caution are always recommended for installation, operation and maintenance.
-  The appliance must be installed in accordance with applicable national regulations.
-  Before accessing the terminals, all the power circuits must be disconnected from the power supply.
-  The appliance shall be installed in accordance with national wiring regulations.
-  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.

SAFETY PRECAUTIONS

-  Do not try to install the conditioner alone; always contact specialized technical personnel.
 -  Cleaning and maintenance must be carried out by specialised technical personnel. In any case disconnect the appliance from the mains electricity supply before carrying out any cleaning or maintenance.
 -  Do not pull out the plug to switch off the appliance when it is in operation, since this could create a spark and cause a fire, etc.
 -  This appliance has been made for air conditioning domestic environments and must not be used for any other purpose, such as for drying clothes, cooling food, etc.
 -  Always use the appliance with the air filter mounted. The use of the conditioner without air filter could cause an excessive accumulation of dust or waste on the inner parts of the device with possible subsequent failures.
 -  The user is responsible for having the appliance installed by a qualified technician , who must check that it is earthed in accordance with current legislation and insert a thermomagnetic circuit breaker.
 -  The batteries in remote controller must be recycled or disposed of properly. Disposal of Scrap Batteries --- Please discard the batteries as sorted municipal waste at the accessible collection point.
 -  Never remain directly exposed to the flow of cold air for a long time. The direct and prolonged exposition to cold air could be dangerous for your health. Particular care should be taken in the rooms where there are children, old or ill people.
 -  If the appliance gives off smoke or there is a smell of burning, immediately cut off the power supply and contact the Service Centre.
-  The prolonged use of the device in such conditions could cause fire or electrocution.
 -  Repaires should be carried out only by an authorised Service Centre of the importer or a certified installer. Incorrect repair could expose the user to the risk of electric shock, etc.
 -  Switch off the automatic switch if you foresee not to use the device for a long time. The airflow direction must be properly adjusted.
 -  The deflectors must be directed downwards in the heating mode and upwards in the cooling mode.
 -  Ensure that the appliance is disconnected from the power supply when it will remain inoperative for a long period and before carrying out any cleaning or maintenance.
 -  Selecting the most suitable temperature can prevent damage to the appliance.

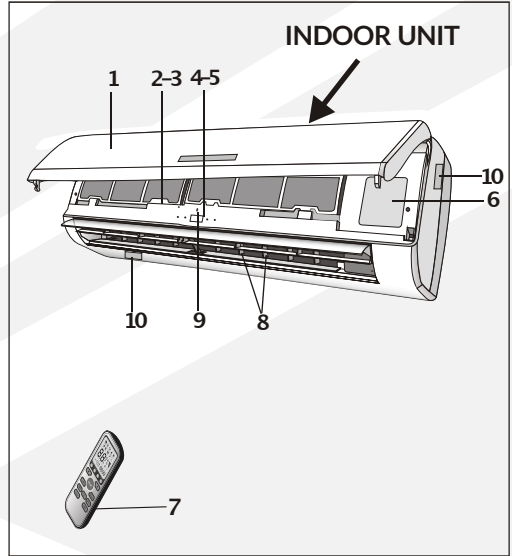
SAFETY PRECAUTIONS

- Do not bend, tug or compress the power cord since this could damage it. Electrical shocks or fire are probably due to a damaged power cord. ONLY Specialised technical personnel must replace a damaged power cord.
- Do not use extensions or integrated modules.
- Do not touch the appliance when barefoot or parts of the body are wet or damp.
- Do not obstruct the air inlet or outlet of the indoor or the outdoor unit.
The obstruction of these openings causes a reduction in the operative efficiency of the conditioner with possible consequent failures or damages.
- In no way alter the characteristics of the appliance.
- Do not install the appliance in environments where the air could contain gas, oil or sulphur or near sources of heat.
- Do not climb on top or place any heavy or hot objects on top of the appliance.
- Do not leave windows or doors open for long when the air conditioner is operating.
- Do not direct the airflow onto plants or animals.
- A long direct exposition to the flow of cold air of the conditioner could have negative effects on plants and animals.
- Do not put the conditioner in contact with water. The electrical insulation could be damaged and thus causing electrocution.
- Do not climb onto or place any objects on the outdoor unit.
- Never insert a stick or similar object into the appliance. It could cause injury.
- Children should be supervised to ensure that they do not play with the appliance. If the supply cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard.

NAMES OF PARTS

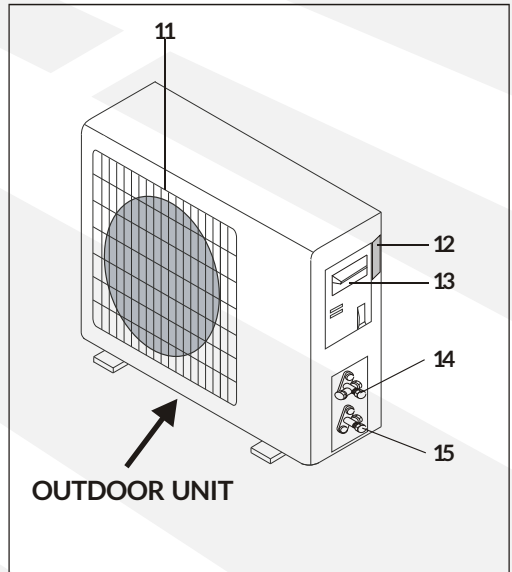
INDOOR UNIT

No.	Description
1	Front panel
2	Air filter
3	Ionic filter
4	LED display
5	Signal receiver
6	Terminal block cover
7	Remote controller
8	Deflector (transverse & longitudinal)
9	Emergency button
10	Indoor unit rating label



OUTDOOR UNIT

No.	Description
11	Air outlet grille
12	Outdoor unit rating label
13	Terminal block cover
14	Valve (gas)
15	Valve (liquid)



TECHNICAL DATA

MODEL		VESPER 3.4	VESPER 5.1
Product code		AC-VESPER34-2336	AC-VESPER51-2337
Airflow [m³/h]	indoor unit	305/346/407/488/550	457/497/600/720/800
	outdoor unit	1700	2600
Capacity [kW]	cooling	3.40 (1.00 - 3.77)	5.10 (1.25 - 5.91)
	heating	3.42 (1.00 - 3.81)	5.10 (1.25 - 6.07)
SEER [W/W]		6.1	6.1
SCOP [W/W]		4.0	4.0
Energy class [-]	cooling	A++	A++
	heating (A)	A+	A+
Operation temperature range [°C]		16 - 31	16 - 31
Ambient temperature range [°C]	indoor unit	cooling: 17 - 32 heating: 0 - 30	cooling: 17 - 32 heating: 0 - 30
	outdoor unit	cooling: -15 - 53 heating: from -20	cooling: -15 - 53 heating: from -20
Pipe diameter [inch]	liquid	1/4	1/4
	gas	3/8	3/8
Refrigerant type		R32	R32
Default amount of refrigerant [kg]		0.49	1.00
Max. refrigerant pipe length [m]		25	25
Max. difference in level [m]		10	10
Compressor type		rotary	rotary
Expansion device		capillary	capillary
Voltage [V] / Frequency [Hz]		230 / 50	230 / 50
Operating current [A]	cooling	5.8 (1.5 - 9.0)	8.1 (1.7 - 12.0)
	heating	5.1 (1.5 - 10.0)	7.0 (1.7 - 13.0)
Power consumption [W]	cooling	1130 (290 - 1500)	1580 (330 - 2340)
	heating	1005 (290 - 1720)	1374 (340 - 2520)
Net dimensions [mm]	indoor unit	777 x 250 x 201	910 x 294 x 206
	outdoor unit	712 x 276 x 459	853 x 602 x 349
Net weight [kg]	indoor unit	10	13
	outdoor unit	25	39
Sound pressure level [dB(A)]	indoor unit	22/25/33/37/40	27/35/38/41/43
	outdoor unit	50	55

* according to EU no. 626/2011

INDOOR UNIT LED DISPLAY



No.	FUNCTION	SYMBOL	MEANING
1	SLEEP		SLEEP mode active
2	Temperature display (if present) / Error code	88	(1) Lights up when the unit is turn on (2) Displays the malfunction code when a fault occurs
3	TIMER		TIMER ON or TIMER OFF active

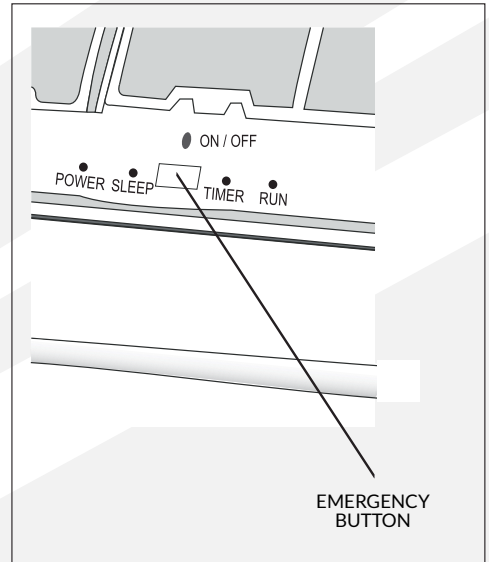
EMERGENCY FUNCTION & AUTO-RESTART FUNCTION

AUTO RESTART FUNCTION

The device has AUTO-RESTART function. In a case of a sudden power failure, the module memorizes the setting conditions before the failure. When the power restores, the unit restarts automatically with all the previous settings preserved by the memory function.

To deactivate the AUTO-RESTART function, proceed as follows:

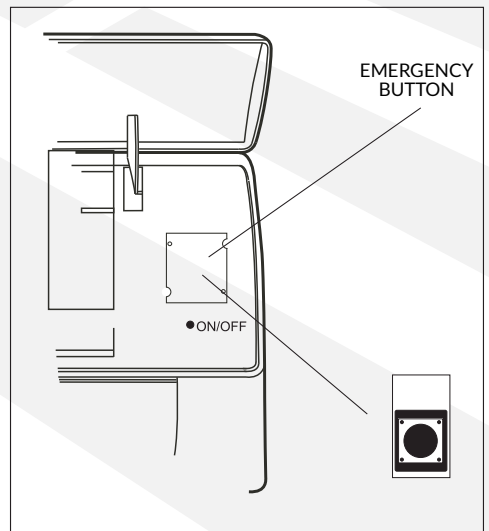
1. Switch the air conditioner off and plug it off.
2. Press the emergency button while plugging it in.
3. Keep pressing the emergency button for more than 10 seconds until you hear four short beeps from the unit. The AUTO-RESTART function is deactivated.
4. To activate the AUTO-RESTART function, follow the same procedure until you hear three short beeps from the unit.



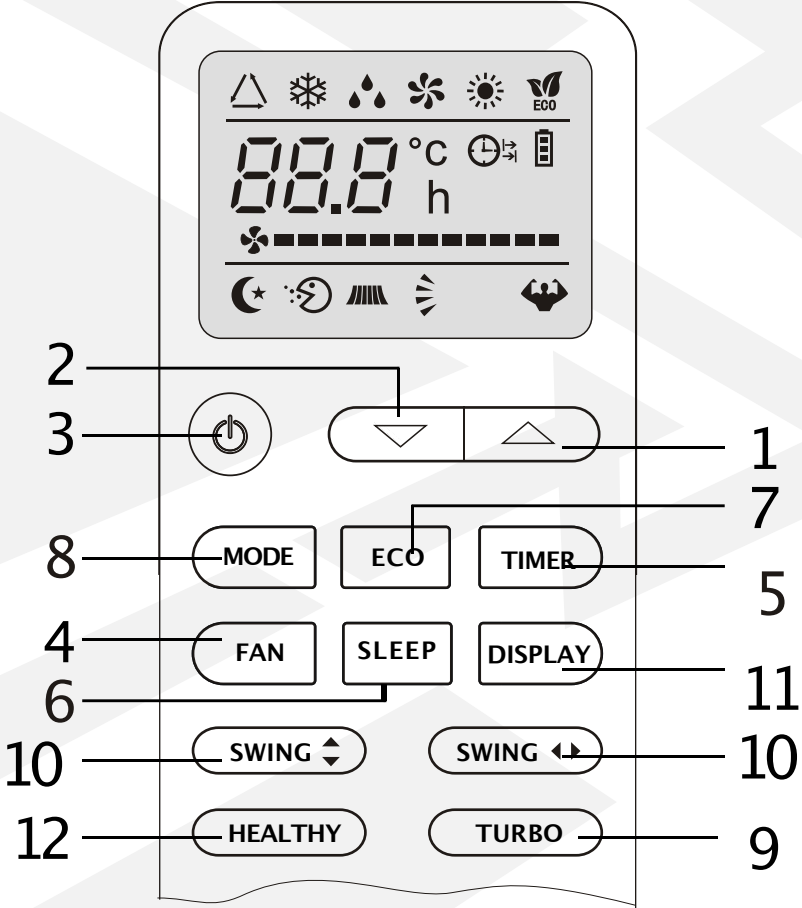
EMERGENCY FUNCTION

If the remote controller fails to work if the maintenance is necessary, the emergency controlling as below is possible:

1. One press of the emergency button (one beep) will lead to the forced operation in the COOLING mode. Signalled by the single sound.
2. Two presses of the emergency button within 3 sec (two beeps) will lead to the forced operation in the HEATING mode. Signalled by the double sound.
3. To switch off the unit, you just need to press the button again and keep it for a moment (a single long beep).
4. After 30 minutes of the forced operation, the air conditioner will automatically start to work in the COOLING mode, at AUTO fan speed and the set temperature 23°C.



REMOTE CONTROLLER





















REMOTE CONTROLLER

No.	BUTTON	FUNCTION
1	▲	Press it to increase temperature / time setting.
2	▼	Press it to decrease temperature/ time setting.
3	ON/OFF	Press it to start or stop operation.
4	FAN	Press it to change the fan's speed (see below).
5	TIMER	Press it to set TIMER ON or TIMER OFF (see below).
6	SLEEP	To activate the function SLEEP.
7	ECO	In the cooling mode, pressing the button causes the increase of setting temperature by 2°C. In the heating mode, pressing the button causes the decrease of setting temperature by 2°C.
8	MODE	To select the mode of operation (see below).
9	SUPER	Press this button to activate / deactivate the Super function which enables the unit to reach the preset temperature in the shortest time. In COOLING mode, the unit will give the maximum cooling temperature with 16 °C at high fan speed. In HEATING mode, the unit will give the maximum heating temperature with 31°C at high fan speed.
10	SWING	To activate or deactivate of the movement of the transverse and longitudinal deflectors.
11	DISPLAY	To switch on/off the LED display.
12	HEALTHY	The button is not needed - the healthy function is active as long as the ionic filter is installed. The filter additionally cleans the air.

⚠ The unit confirms the correct reception of each press button with a beep.

REMOTE CONTROLLER - meaning of symbols

No.	Symbols	Meaning
1		FEEL mode active
2		COOL mode active
3		DRY mode active
4		FAN mode active
5		HEAT mode active
6		SIGNAL RECEPTION indicator
7		TIMER OFF indicator
8		TIMER ON indicator
9	 (FLASH)	Chosen fan speed: AUTO
10		Chosen fan speed: LOW
11		Chosen fan speed: MEDIUM
12		Chosen fan speed: HIGH
13		SLEEP mode active
14		Automatic movement of deflactors
15		SUPER function active
16	 ECO	ECO function active
17		BATTERY indicator
18		CLOCK indicator

REMOTE CONTROLLER

Replacement of Batteries.

Remove the battery cover plate from the rear of the remote controller, by sliding it in the direction of the arrow. Install the new batteries according the direction (+and -)shown on the Remote Controller.Reinstall the battery cover by sliding it into place.

- ⚠ Use 2 LRO 3 AAA (1.5V) batteries. Do not use rechargeable batteries . Replace the old batteries with new ones of the same type when the display is no longer legible.
- ⚠ Do not dispose batteries as unsorted municipal waste, but hand them over to dedicated collection points.

When you open the battery cover, you can see a DIP switch on (see the picture 1).

The switch enables to set the following:

POSITION	FUNCTION
°C	The temperature is given in the Celsius degrees
°F	The temperature is given in the Fahrenheit degrees
COOL	Only COOLING mode is available
HEAT	Both COOLING and HEATING modes are available

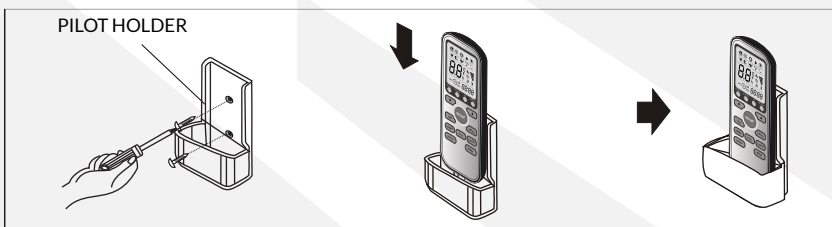
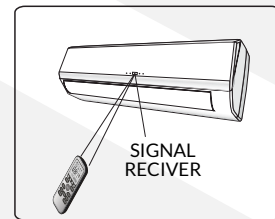
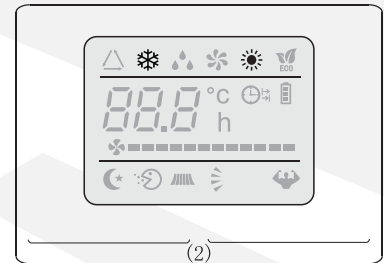
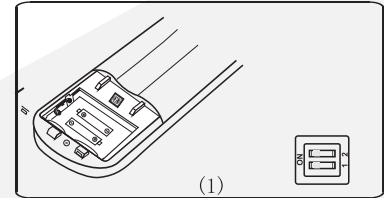
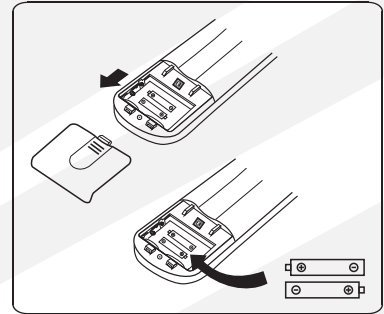
- ⚠ **WARNING:** After adjusting the function, you need to restart the remote controller by taking out the batteries and put them in again.

When you insert the batteries for the first time in the remote controller or if you change them, you need to program the remote controller you need to set the COOLING mode or COOLING AND HEATING mode.

When you insert the batteries, the symbols COOLING and HEATING start flashing. If you push whatever button when the symbol COOLING is displayed, the remote controller is adjusted in only cooling mode. If you push whatever button when the symbol HEATING is displayed, the remote controller is adjusted in cooling and heating mode.

- ⚠ **WARNING:** If you adjust the remote controller in cooling mode, it will not be possible to activate the heating function. If you need it, you have to take out the batteries and repeat the procedure described above.

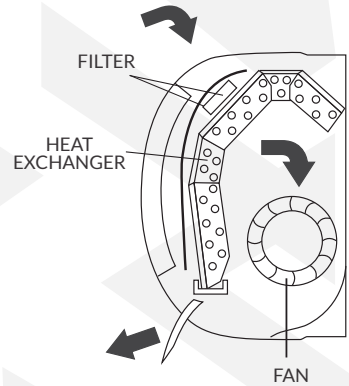
1. Direct the remote controller toward the air conditioner.
2. Check that there are no objects between the remote controller and the signal receptor in the indoor unit.
3. Never leave the remote controller exposed to the rays of the sun.
4. Keep the remote controller at a distance of at least 1 m from the television or other electrical appliances.
5. It is recommended to keep the remote controller in the wall-mounted holder.



CONTROLLING

The air sucked by the fan enters from the grill and passes through the filter, then it is cooled/dehumidified or heated through the heat exchanger.

The direction of the airflow can be adjusted with SWING buttons - see the point DEFLECTORS ADJUSTMENT below.



DEFLECTORS ADJUSTMENT

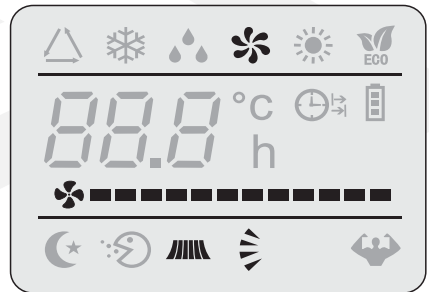



The function allows to ensure even distribution of air in the room.

Allows to lock the deflectors in an optimal position.


SWING UP-DOWN button activates the longitudinal deflectors, which start to move SWING LEFT - RIGHT button activates the transverse deflectors, which start to move them left and right.

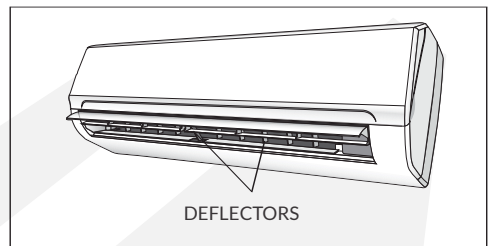
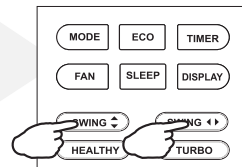
In cooling mode, point the deflector to the center horizontal direction (PARALLEL to ceiling).



 The adjustment must be done while the appliance is switched off.

 Never adjust deflectors manually, the delicate mechanism might be seriously damaged!

 Never poke fingers, sticks or other objects in the air inlet or outlet vents. Such an accidental contact might cause unforeseeable damage of unit or hurt.

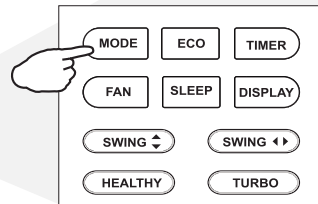
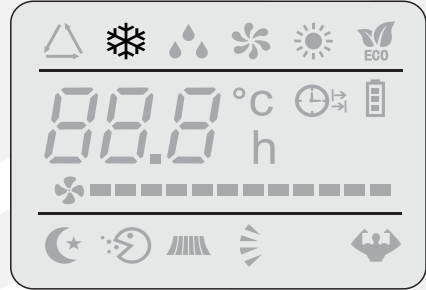


CONTROLLING

COOLING MODE



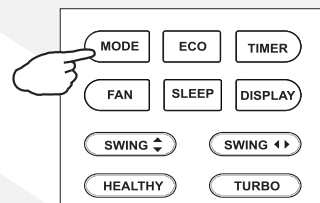
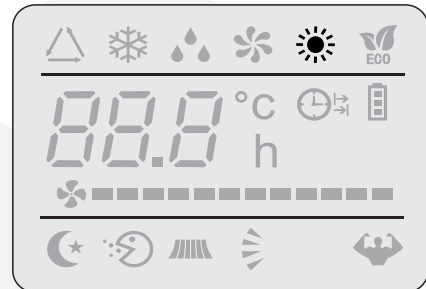
The cooling mode allows the air conditioner to cool the room and reduce the air humidity. To choose the COOLING mode, press MODE button until ❄️ appears on the display. Then with ARROW UP button or ARROW DOWN button set a required room temperature, lower than the current temperature in the room. To optimize the function of the air conditioner, adjust the temperature, the fan speed and the direction of the air flow by pressing the particular buttons.



HEATING MODE



The heating mode allows the air conditioner to heat up the room. To choose the HEATING mode, press MODE until ☀️ appears on the display. Then with ARROW UP button or ARROW DOWN button set a required room temperature, higher than the current temperature in the room. To optimize the function of the air conditioner, adjust the temperature, the fan speed and the direction of the air flow by pressing the particular buttons.



In HEATING operation, the unit can automatically activate a defrost cycle, which is essential to clean the frost on the evaporator so as to recover its heat exchange function. This procedure usually lasts for 2-10 minutes. During the defrosting, indoor unit fan stop its operation. After the process, VESPER resumes the operation in HEATING mode automatically.


CONTROLLING


TIMER - TIMER ON




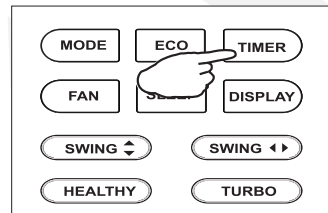
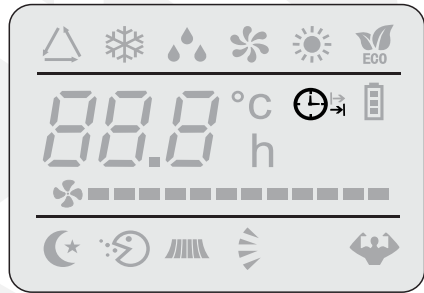
TIMER ON function allows to set the turn on time of VESPER unit. To set it, after turning off the device, the following procedure must be executed:

- 1) Press TIMER button at the first time and set the temperature with ARROW UP button or ARROW DOWN button.
- 2) Press TIMER button again and set the time remaining for automatic turning on with ARROW UP button or ARROW DOWN button.
- 3) Press TIMER button third time to confirm the setting. The time remaining for the turning on could be read on the display.

 **Warning:** Before proceeding with the timer, program the working mode of operation and the fan speed. Then turn off the unit.

 **Warning:** To cancel the set function, press TIMER button again.

 **Warning:** In case of power cut off it is necessary to set TIMER ON again, according to the above description.





TIMER- TIMER OFF

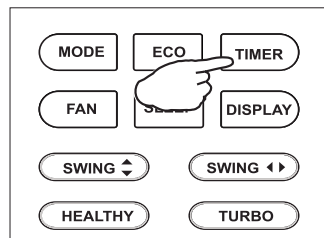
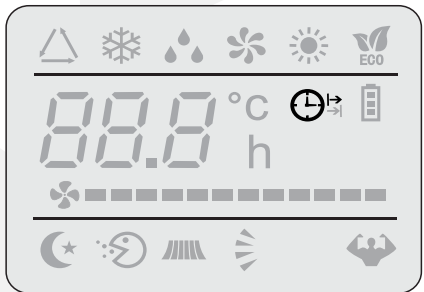


TIMER OFF function allows to set the turn off time of VESPER unit. To set it, after turning on the device, the following procedure must be executed:

- 1) Press TIMER button at the first time and set the time remaining for automatic turning off with ▲ or ▼ .
- 2) Press TIMER button again to confirm the setting. The time remaining for the turning off could be read on the display.

 **Warning:** To cancel the set function, press TIMER button again.

 **Warning:** In case of power cut off it is necessary to set TIMER OFF again, according to the above description.



CONTROLLING

FAN MODE



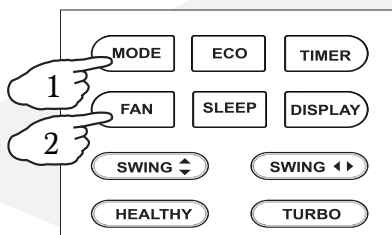
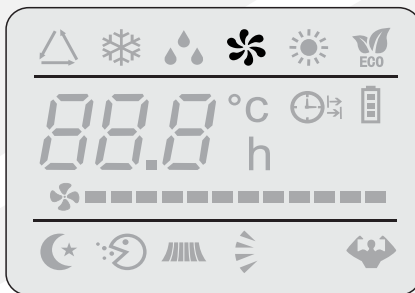
The air conditioner works in ventilation only (i. e. do not cool and heat).

To choose the FAN mode, press MODE button until  appears on the display. With FAN button, the fan speed can be changed in the following sequence: MUTE/LOW/MEDIUM/HIGH/SPEED/AUTO.

First five speeds correspond to the different airflows (see the table in the point Technical Data). At the AUTO speed, the unit works at the LOW speed if set temperature is achieved or at the SUPER speed if it is not achieved.

The remote control also stores the speed that was set in the previous mode of operation.


In FEEL mode, the air conditioner automatically chooses the fan speed and the mode of operation (COOLING or HEATING).

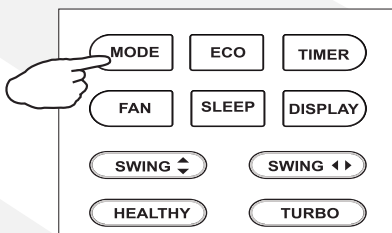
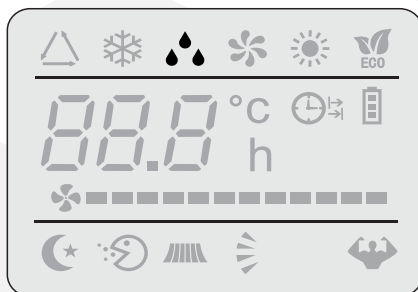


DRY MODE



This function reduces the humidity of the air.

To choose the DRY mode, press MODE button until  appears on the display.




CONTROLLING

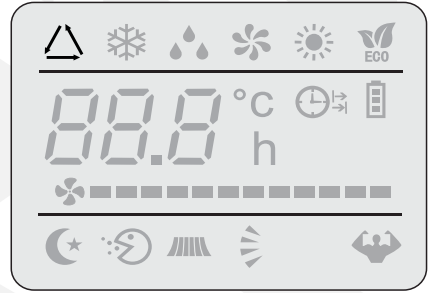
FEEL MODE



It is automatic mode.

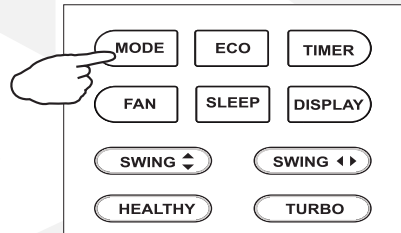
To choose the FEEL mode, press MODE button until  appears on the display.

In the FEEL mode, fan speed and set temperature are chosen automatically in accordance with the table below.




Ambient temp	Operation mode	Auto temp.
< 20°C	HEATING (FOR HEAT PUMP TYPE) FAN (FOR COOL ONLY TYPE)	23°C
20°C~26°C	DRY	18°C
> 26°C	COOL	23°C

To optimize the operation of the air conditioner, adjust the temperature (only $\pm 2^\circ\text{C}$), fan speed and air flow direction using the corresponding buttons.



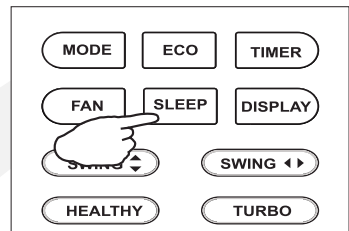
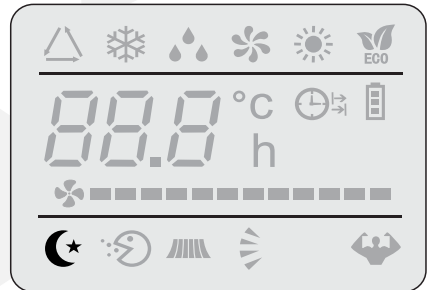
SLEEP MODE



To choose the SLEEP mode, press MODE button until  appears on the display.

The SLEEP mode automatically raises (in the COOL mode) or lowers (in the HEAT mode) the set temperature by 2°C in two hours (one degree every hour).


After 10 hours of operation in the SLEEP mode, the air conditioner automatically switches to the previously selected mode.



WORKING CONDITIONS

When the unit operates at the temperatures specified in the table below, some protection functions may be activated (e.g. frequent activation of the defrost process). Please remember to do not use the device in temperatures beyond the ones specified in the table with the technical data.







No.	MODE	AMBIENT TEMPERATURE
1	HEAT	Outdoor temperature is over 24 °C
		Outdoor temperature is below -7 °C
		Room temperature is over 27 °C
2	COOL	Outdoor temperature is over 43°C
		Room temperature is below 21 °C
3	DRY	Room temperature is below 18 °C

 The unit does not operate immediately if it is turned on, turned off or after changing the mode during operation. In some cases it is a normal self-protection action and you need to wait for about 3 minutes.

INSTALLATION



IMPORTANT NOTES

-  The purchased air conditioner must be installed by professional (certified) personnel. Mounting and installation should be subject to the requirements set out in this datasheet.
-  Assembly and installation should be subject to the requirements set out in this documentation. When charging the air conditioner with flammable refrigerant, any oversight or carelessness may cause serious injury or damage.
-  A leak test must be performed after installation is complete.
-  Before maintaining or repairing an air conditioner that uses a flammable refrigerant, it is essential to carry out a safety inspection to ensure that the risk of fire is kept to a minimum.
-  It is necessary to operate the device in a controlled manner to minimize the risk of combustible gas or vapor during operation.
-  The requirements for the total weight of charged refrigerant and the minimum area of the room in which the air conditioner is to be installed are shown in the following tables GG.1 and GG.2.

INSTALLATION

MAXIMUM AMOUNT OF REFRIGERANT IN THE CIRCULATION AND MINIMUM REQUIRED ROOM AREA

$$m_1 = 4 \text{ m}^3 \times \text{LFL}$$

$$m_2 = 26 \text{ m}^3 \times \text{LFL}$$

$$m_3 = 130 \text{ m}^3 \times \text{LFL}$$

where LFL is the lower flammable limit in kg/m^3 - LFL for R32 is 0.306 kg/m^3 .

For the units with a charge amount M higher than m_1 and lower than m_2 :

The maximum charge in a room shall be in accordance with the following formula:

$$m_{\max} = 2.5 \text{ m}^3 \times (\text{LFL})^{5/4} \times h_0 \times (A)^{1/2}$$

The required minimum floor area A_{\min} to install an unit with a refrigerant charge M (kg) shall be in accordance with the following formula:

$$A_{\min} = (M / (2.5 \times (\text{LFL})^{5/4} \times h_0))^2$$

Where:

m_{\max} is the allowable maximum charge in the room, in kg

M is the refrigerant charge amount in the unit (in the working loop) , in kg

A_{\min} is the minimum required area of the room where the air conditioner can be installed, in m^2

A is the area of the room where the air conditioner can be installed, in m^2 ; A cannot be lower than A_{\min}

LFL is the lower flammable limit in kg/m^3

h_0 is the installation height of the unit, in m

Table GG.1 – Maximum charge (kg)

Refrigerant	LFL (kg/m^3)	h_0 (m)	Floor area (m^2)						
			4	7	10	15	20	30	50
R32	0.306	0.6	0.68	0.9	1.08	1.32	1.53	1.87	2.41
		1	1.14	1.51	1.8	2.2	2.54	3.12	4.02
		1.8	2.05	2.71	3.24	3.97	4.58	5.61	7.254
		2.2	2.5	3.31	3.96	4.85	5.6	6.86	8.85

Table GG.2 – Minimum room area (m^2)

Refrigerant	LFL (kg/m^3)	h_0 (m)	Charge amount (M) (kg)						
			Minimum room area (m^2)						
R32	0.306		1.000 kg	1.224 kg	1.836 kg	2.448 kg	3.672 kg	4.896 kg	6.12 kg
		0.6	9	13	29	51	116	206	321
		1	3	5	10	19	42	74	116
		1.8	1	2	3	6	13	23	36
		2.2	1	1	2	4	9	15	24

INSTALLATION

SAFETY RULES DURING INSTALLATION



Open Flames Prohibited



Ventilation Necessary



Mind Static Electricity



Must wear protective clothing
and anti-static gloves



Use leakage detector



Don't use mobile phone

Please note that:

1. The installation site should be in a well-ventilated condition.
2. The sites for installing and maintaining an air conditioner using refrigerant R32 should be free from open fire and welding, smoking, drying oven or any other heat source higher than 548°C, which easily produces open fire.
3. When installing an air conditioner, it is necessary to take appropriate anti-static measures such as wear anti-static clothing and/or gloves.
4. It is necessary to choose the site convenient for installation or maintenance wherein the air inlets and outlets of the indoor and outdoor units should be not surrounded by obstacles or close to any heat source or combustible and/or explosive environment.
5. If the indoor unit suffers refrigerant leak during the installation, it is necessary to immediately turn off the valve of the outdoor unit and all the personnel should go out till the refrigerant leaks completely for 15 minutes. If the product is damaged, please contact with the importer immediately. It is forbidden to carry out repair activities in places not intended for this purpose.
6. It is necessary to choose the place where the inlet and outlet air of the indoor unit is even.
7. It is necessary to avoid the places where there are other electrical products, power switch plugs and sockets, kitchen cabinet, bed, sofa and other valuables right under the lines on two sides of the indoor unit.

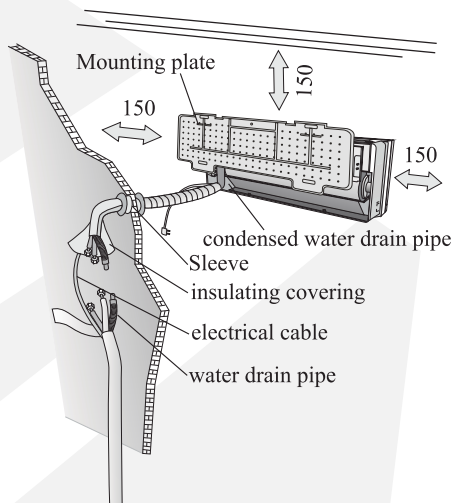
INSTALLATION - choice of installation location

SPECIAL TOOLS

TOOL NAME	REQUIREMENTS FOR UDE
Mini Vacuum Pump	It should be an explosion-proof vacuum pump; can ensure certain precision and its vacuum degree should be lower than 10 Pa.
Filling Device	It should be a special explosion-proof filling device; have certain precision and its filling deviation should be less than 5 g.
Leak Detector	It should be calibrated regularly; and its annual leak rate should not exceed 10g.
Concentration Detector	<p>a) The maintenance site should be equipped with a fixed-type detector of R32 concentration and connected to a safeguard alarm system; its error must be not more than 5%.</p> <p>b) The installation site should be equipped with a portable detector of R32 concentration which can realize two-level audible and visual alarm; its error must be not more than 10%.</p> <p>c) The concentration detectors should be calibrated regularly.</p> <p>d) It is necessary to check and confirm the functions before using the concentration detectors.</p>
Pressure Gauge	<p>a) The pressure gauges should be calibrated regularly.</p> <p>b) The pressure gauge dedicated for R4 10A can be used for refrigerant R32.</p>
Fire Extinguisher	It is necessary to carry fire extinguisher(s) when installing and maintaining an air conditioner. On the maintenance site, there should be two or more kinds of dry powder, carbon dioxide and foam fire extinguishers and that such fire extinguishers should be placed at stipulated positions, with eye-catching labels and in handy places.

INDOOR UNIT

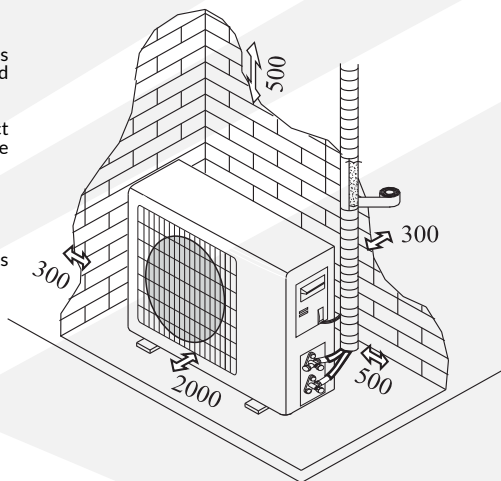
- Install the indoor unit on a strong wall that is not subject to vibrations.
- The inlet and outlet ports should not be obstructed, the air should be able to blow all over the room.
- Do not install the unit near a source of heat, steam or flammable gas.
- Install the unit near an electric socket or private circuit. Do not install the unit where it would be exposed to direct sunlight.
- Select a site where the condensed water can be easily drained out, and where it can be easily connected to outdoor unit.
- Check the device operation regularly and reserve the necessary spaces as shown in the picture.
- Select a place where the filter can be easily taken out.



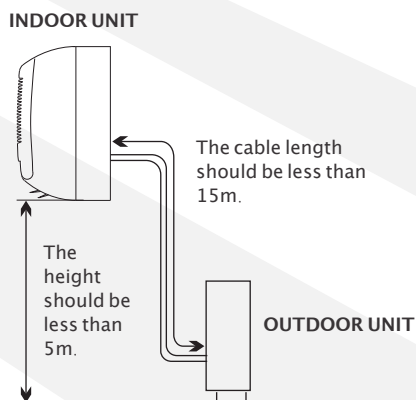
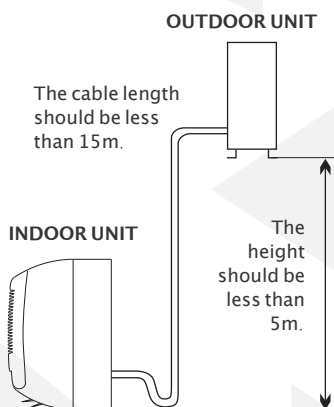
INSTALLATION - choice of installation location

OUTDOOR UNIT

- Do not install the outdoor unit near sources of heat, steam or flammable gas.
- Do not install the unit in too windy or dusty places.
- Do not install the unit in places where people pass frequently. Select a place where the air discharge and operating sound will not disturb the neighbors.
- Avoid installing the unit where it will be exposed to direct sunlight (otherwise protect the device against influence the sunlight; the protection can not affect the airflow).
- Reserve the spaces as shown in the picture.
- Install the outdoor unit in a safe and solid place. If the outdoor unit is subject to vibration, place rubber gaskets onto the feet of the unit.



POSITION OF THE INDOOR AND OUTDOOR UNITS



The purchaser must ensure that the person and/or company that will install, maintain or repair the air conditioner is qualified and experienced in refrigeration products.

INSTALLATION - indoor unit installation

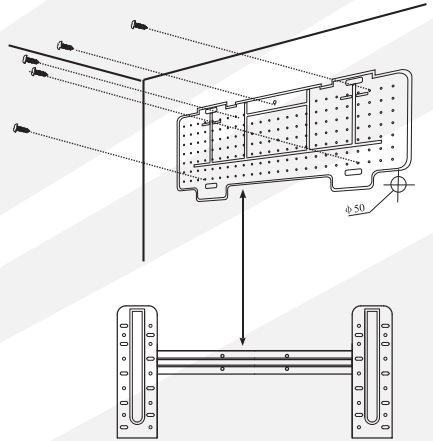
Before starting installation, decide on the position of the indoor and outdoor units, taking into account the minimum space reserved around the units (given above).

- ⚠ Do not install the VESPER unit in wet rooms such as bathroom or laundry etc.
- ⚠ The installation site should be 250 mm or more above the floor.

Step by step installation of VESPER unit

ASSEMBLY - mounting panel

1. The mounting plate should be installed horizontally (like on the picture on the right).
2. Drill 32 mm deep holes in the wall to fix the plate.
3. Insert the plastic anchors into the hole.
4. Fix the rear panel on the wall with provided tapping screws.
5. Be sure that the mounting panel has been fixed firmly enough to withstand the unit's weight.

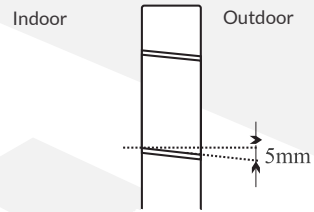


ASSEMBLY - hole for the pipe

1. Make the piping hole ($\Phi 55$) in the wall at a slight downward slant to the outdoor side.
2. Insert the piping-hole sleeve into the hole to prevent the connection piping and wiring from being damaged when passing through the hole.

The hole must slope downwards towards the outdoor.

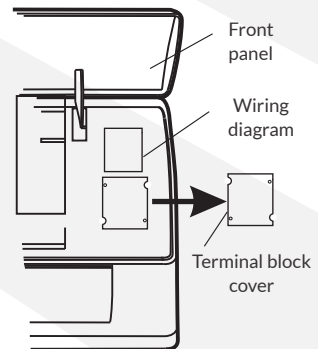
- ⚠ **Warning:** Keep the drain pipe down towards the direction of the wall hole, otherwise leakage may occur.



ELECTRICAL CONNECTIONS - indoor unit

1. Open the front panel.
2. Remove the cover of the terminal block as shown in the picture (unscrewing the screw).
3. Electrical connections are shown on the connection diagram on the right side of the device, under the front panel.
4. The electrical connection to the installation with the power supply parameters according to the data on the rating plate should be made in accordance with the connection diagram and applicable national safety regulations.

- ⚠ The cable connecting the indoor unit and outdoor unit must be suitable for outdoor use.
- ⚠ The plug/switch must also be easily accessible after the device has been installed, so that it can be removed if necessary.
- ⚠ Effective grounding must be ensured in accordance with applicable national safety regulations.
- ⚠ If the power cord is damaged, it must be replaced by an authorized service center or contact the importer directly.

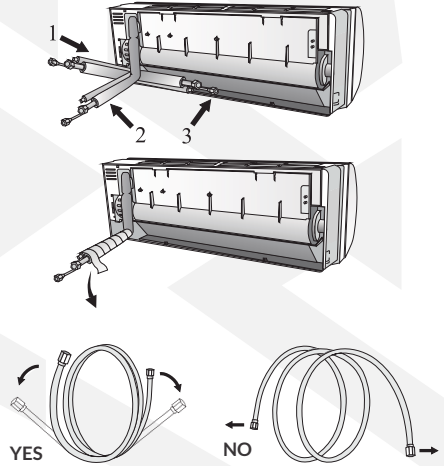


INSTALLATION - indoor unit installation

REFRIGERANT PIPING CONNECTION

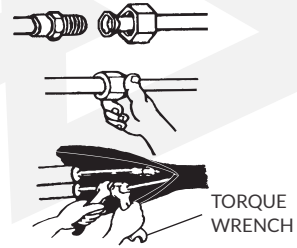
The piping can run in 3 directions indicated by numbers in the picture. When the piping runs in the direction 1 or 3, cut a notch along the groove on the side of the indoor unit with a cutter. Run the piping in the direction of the wall hole and bind the copper pipes, the drain pipe and the power cables together with the tape, with the drain pipe at the bottom, so that water can flow freely.

- ⚠ Do not remove the cap from the pipe until connecting it, to avoid dampness or dirt from entering.
- ⚠ If the pipe is bent or pulled too often, it will become stiff. Do not bend the pipe more than three times at one point.
- ⚠ When extending the rolled pipe, straighten the pipe by unwinding it gently as shown in the picture.



CONNECTION to the indoor unit

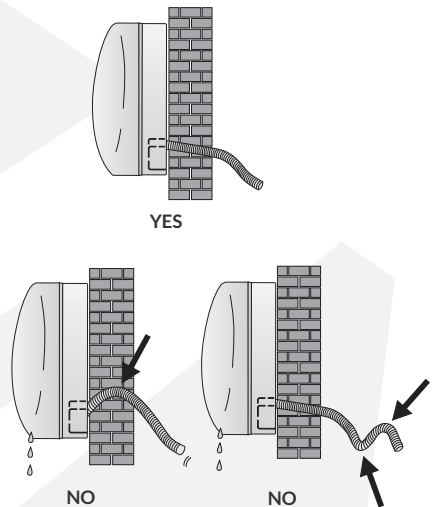
1. Remove the indoor unit pipe cap (check that there is no debris inside).
2. Insert the flare nut and create a flange at the extreme end of the connection pipe.
3. Tighten the connections by using two wrenches working in opposite directions.



ASSEMBLY - condensate drainage system from the indoor unit

The indoor unit condensed water drainage is fundamental for the proper operation of the air conditioner.

1. Run the drain hose below the refrigerant piping without creating traps.
2. The drain hose must slope downwards to facilitate drainage.
3. Do not bend the drain hose, leave it protruding or twisted, and do not submerge its end in water. If the drain hose is extended, make sure the connection is sealed.
4. If the piping is installed on the right side, the piping, power cable and drain hose must be wrapped and inserted into the appropriate receptacle at the back of the unit.



INSTALLATION - indoor unit installation

MOUNTING THE INDOOR UNIT ON THE WALL

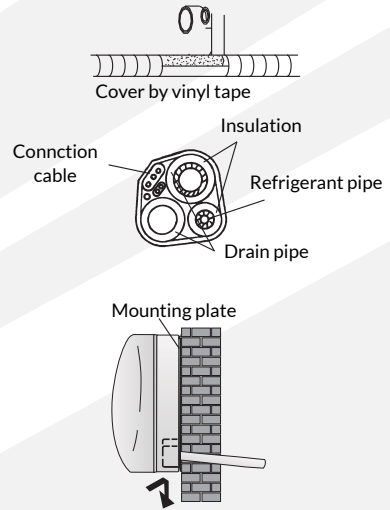
1. Ensure that the installation (connections) are made correctly. Connections of the indoor unit to the installations should be made in the following sequence:

- connection to the refrigerant installation,
- connection to the electrical installation,
- connection to the drainage installation.

2. Insulate the pipe joints with insulating material, securing it with vinyl tape like it is shown on the picture on the right.

3. Mount the indoor unit onto the upper part of the mounting plate securely.

4. Press and push the lower part of the VESPER unit tightly against the mounting plate.



INSTALLATION - outdoor unit installation

- The outdoor unit should be installed on a solid wall and fastened securely (e. g. with the mounting bracker VESPER; product code: MB-VESPER-2338).

- The following procedure must be observed before connecting the pipes and connecting the cables: decide which is the best position on the wall and leave enough space to be able to carry out the maintenance easily.

- Fasten the support to the wall using screw anchors which are particularly suited to the type of wall.

- Use a larger quantity of screw anchors than normally required for the weight. They have to bear to avoid vibration during the operation.

- The unit must be installed following the local regulations in force.

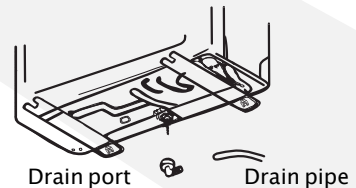
ASSEMBLY - mounting panel

Condensation and ice formed during the operation of the device should be drained from the tray by a drain pipe.

1. Fit the drain port in the 25mm hole at the bottom of the unit (as shown in the picture).

2. Connect the drain port and drain hose.

Make sure that the water is drained in the right place.



INSTALLATION - outdoor unit installation

ELECTRICAL CONNECTIONS - outdoor unit

1. Remove the cover on the right side plate of outdoor unit.
2. For the electrical connections, see the circuit diagram on the back of the cover.
3. The electric power supply from the cable from the indoor unit should be made in accordance with the connection diagram and the local regulations in force.
4. Close the cover.

- ⚠ The cable connecting the indoor unit and outdoor unit must be suitable for outdoor use.
- ⚠ Effective grounding must be ensured in accordance with applicable national safety regulations.
- ⚠ If the power cord is damaged, it must be replaced by an authorized service center or contact the importer directly.

REFRIGERANT PIPING CONNECTION to the outdoor unit

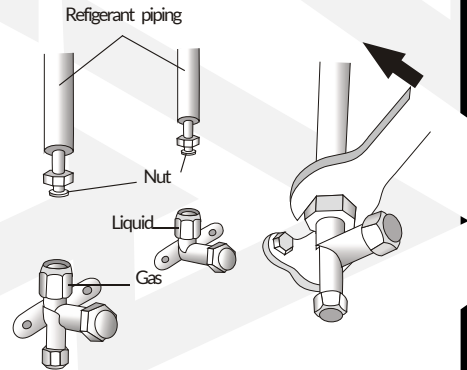
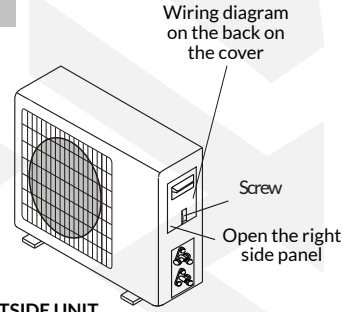
Screw the flare nuts to the outdoor unit coupling with the same tightening procedures described for the indoor unit. To avoid leakage, pay attention to the following points:

1. Tighten the flare nuts using two wrenches. Pay attention to not damage the pipes.
2. If the tightening torque is too high or too low, there is a serious risk of leakages. From this reason it is recommended to use a torque wrench and a flat wrench (for holding the unit's connectors). Please use the appropriate tightening torque according to the table two pages later.

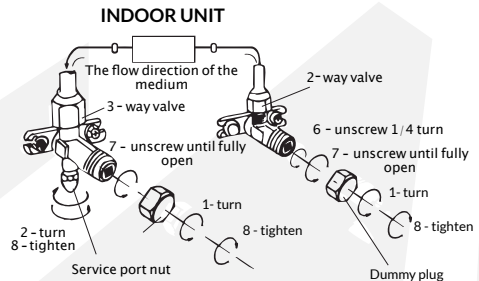
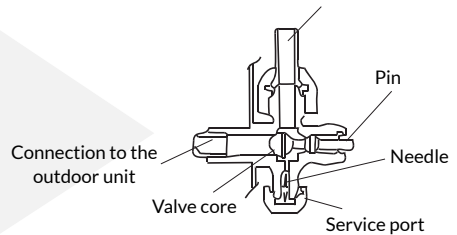
BLEEDING THE SYSTEM

Air and humidity left inside the refrigerant circuit can cause compressor malfunction. After having connected the indoor and outdoor units, bleed the air and humidity from the refrigerant circuit by using a vacuum pump in the following way:

1. Unscrew and remove the caps from the 2 - way and 3-way valves.
2. Unscrew and remove the cap from the service port.
3. Connect the vacuum pump hose to the service port.
4. Operate the vacuum pump for 10 - 15 minutes until an absolute vacuum of 10 mm Hg has been reached.
5. With the vacuum pump still in operation, close the low - pressure knob on the vacuum pump coupling. Then stop the vacuum pump.
6. Open the 2 - way valve by 1/4 turn and then close it after 10 seconds. Check all the joints for leaks using liquid soap or an electronic leak device.
7. Turn on the body of the 2-way and 3-way valves. Disconnect the vacuum pump hose.
8. Replace and tighten all the caps on the valves.



Scheme of a 3-way valve
Connection to the outdoor unit



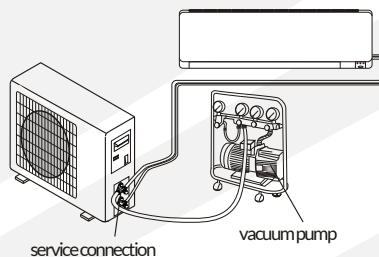
INSTALLATION - outdoor unit installation

PRESSURE INSPECTION AND LEAK TEST

In the case of R32, the pressure should be in the range:
- 0.8-1.2 MPa on the low pressure side,
- 3.2-3.7 MPa on the high pressure side.

Before starting the device, it is essential to verify the pressure in the system and perform a leak test using a leak detector. If leaks occur, seal the system.

The pressure value and the absence of leaks should be confirmed with an entry in point II of the Mounting Card.



REFRIGERANT PRESSURE INSPECTION AND LEAKAGE TEST

1. Wrap insulation covering around the joints of the indoor unit and fix it with the insulating tape like it is shown on the picture on the right.
2. Fix the exceeding part of the signal cable to the piping or to the outdoor unit.
3. Fix the piping to the wall (after having coated it with insulating tape) using clamps.
4. Seal the hole in the wall through which the piping is passed so that no air or water can fill.

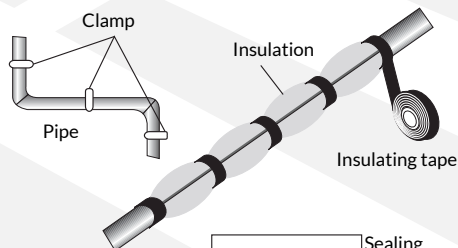
INDOOR UNIT TEST

Are the ON/OFF buttons and FAN work?
Does the MODE button work normally?

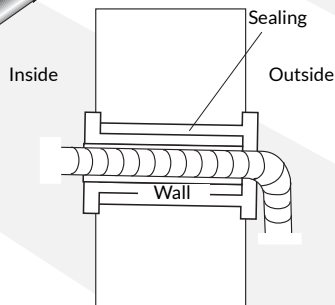
- Are the temperature setting and auto on/off working properly?
- Does the LED display light normally?
- Do the air deflectors operate normally?
- Is the condensation water drained regularly?

Outdoor unit test

- Is there any unusual noise or vibration during operation?
- Can noise, airflow or condensation disturb neighbors?
- Is there a coolant leak?



- ⚠ The electronic controller allows the compressor to start as soon as three minutes after the voltage reaches the system.



INSTALLATION - information for the installer

MODEL	VESPER 3.4	VESPER 5.1
Refrigerant	R32	R32
Maximal lenght of pipes with default charge amount (m)	4	4
Maximal distance between indoor and outdoor unit (m)*	15	15
Maximal diffrnce in level between indoor and outdoor unit (m)	5	5

* For each meter above the maximal length of pipes with default charge amount, approximately 15 g of refrigerant for the VESPER 3.4 device and about 25 g of refrigerant for the VESPER 5.1 device should be added to the system

TIGHTENING TORQUE FOR PROTECTION CAPS AND FLANGE CONNECTION

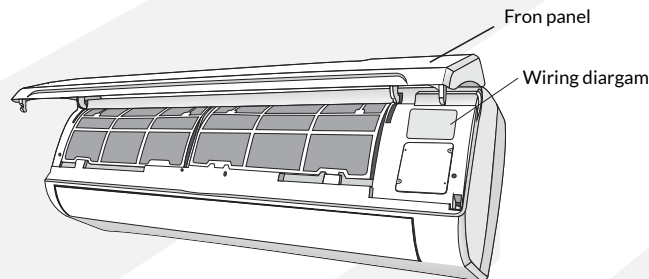
PIPE	TIGHTENING TORQUE [N x m]	CORRESPONDING STRESS (using a 20 cm wrench)		TIGHTENING TORQUE [N x m]
1/4 " (φ 6)	15 - 20	wrist strength	service connection	7 - 9
3/8 " (φ 9.52)	31 - 35	arm strength	dummy plug	25 - 30
1/2 " (φ 12)	35 - 45	arm strength		
5/8 " (φ 15.88)	75 - 80	arm strength		

CONNECTION DIAGRAM

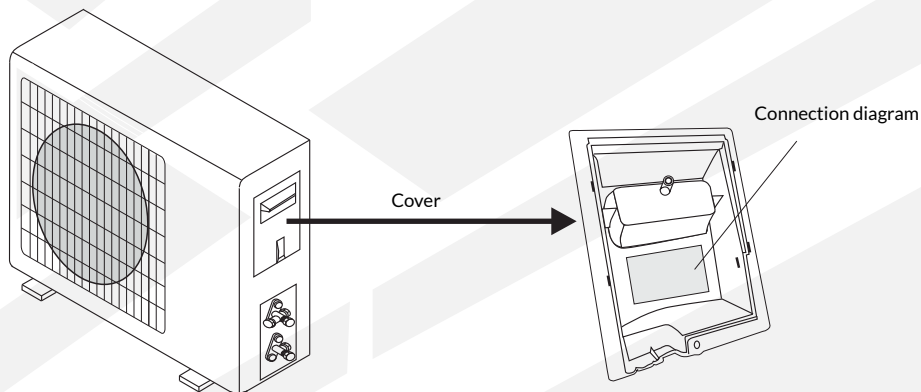
For different models, the wiring diagram may be different. Please refer to the wiring diagrams sticked on the indoor unit and outdoor unit respectively.

On indoor unit, the wiring diagram is sticked under the front panel.

On outdoor unit, the wiring diagram is sticked on the backside of the outdoor handle cover.



INSTALLATION - information for the installer



RECOMMENDED WIRES CROSS-SECTIONS

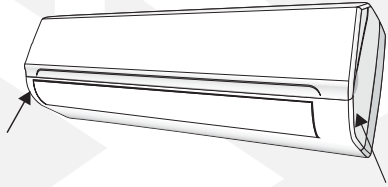
MODEL		VESPER 3.4	VESPER 5.1
Power cable	L	1.0mm ² (1.5mm ²) AWG18 (AWG16)	1.5mm ² AWG16
	N	1.0mm ² (1.5mm ²) AWG18 (AWG16)	1.5mm ² AWG16
	PE	1.0mm ² (1.5mm ²) AWG18 (AWG16)	1.5mm ² AWG16
Communication cable	L	1.0mm ² (1.5mm ²)	1.5mm ²
	N	1.0mm ² (1.5mm ²)	1.5mm ²
	1	1.0mm ² (1.5mm ²)	1.5mm ²
	PE	1.0mm ² (1.5mm ²)	1.5mm ²

The fuse of the indoor unit of the air conditioner is 50T, 3.15A.

MAINTENANCE

Periodic maintenance is essential for keeping your air conditioner efficient.

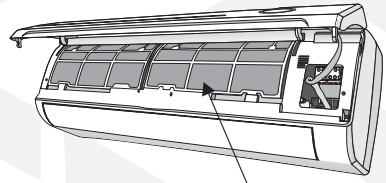
Before carrying out any maintenance, disconnect the power supply by taking the plug out from the socket or switching off the switch.



INDOOR UNIT

ANTIDUST FILTERS (at least once every six months)

1. Open the front panel following the direction of the arrow.
2. Keeping the front panel raised with one hand, take out the air filter with the other hand.
3. Clean the filter with water; if the filter is soiled with oil, it can be washed with warm water (not exceeding 45°C). Leave the filter to dry in a cool and dry place.
4. Keeping the front panel raised with one hand, insert the air filter with the other hand.
5. Close the panel.

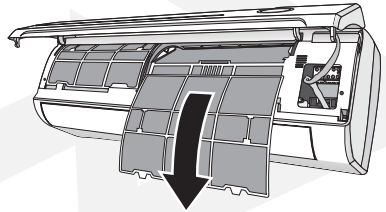


Filtr przeciwpyłowy

The ionic filter cannot be washed or regenerated and it should be replaced every 6 months.

CLEANING THE HEAT EXCHANGER (at least once every two years)

1. Dismantle the front panel of the indoor unit (lift it maximally, disconnect the cables of LED display and WIFI module and unhook it from the hinges).
2. Clean the indoor unit using a cloth with the water (not higher than 40°C) and neutral soap. Never use aggressive solvents or detergents.
3. If the outdoor unit is clogged, remove leaves, waste and remove dust with air jet or a bit of water.
4. Mount and close the front panel again.



MAINTENANCE BEFORE LONGER NON-USAGE PERIOD (i. e. longer than two weeks)

1. On a sunny day let the conditioner work in the FAN mode for some hours, so that the inside of the unit can dry completely.
2. Disconnect the automatic switch or the plug.
3. Clean and replace the filters.

MAINTENANCE AFTER LONGER NON-USAGE PERIOD (i. e. longer than two weeks)

1. Verify the condition of the electrical installation.
2. If necessary, clean and replace the filters.
3. Conduct the refrigerant system leakage test.
4. Perform cleaning and fumigation (if necessary).
5. Power the device (turn on the plug or switch).

REPLACING THE BATTERIES

WHEN: There is no confirmation sound from the indoor unit. The LCD display is not working.
HOW: Open the battery cover on the back of the remote control. Insert the batteries according to the direction (+ and -) shown on the remote control. Use only new batteries. Remove the batteries from the remote controller when the air conditioner is not operated for a long time.

ATTENTION! Do not dispose of batteries together with unsorted municipal waste, only in specially marked containers.

CLEANING AND FUMIGATION & LEAKAGE TEST

These activities must be carried out by a certified installer or company. It is recommended to perform the cleaning and fumigation of the unit at least once a year, and the leak test at least once every two years. It is recommended to make appropriate entries in point III of the Mounting Card.

TROUBLESHOOTINGS

PROBLEM	POSSIBLY CAUSES
The appliance does not operate	Power failure/plug pulled out
	Damaged indoor/outdoor unit fan motor
	Faulty compressor thermomagnetic circuit breaker
	Faulty protective device or fuses
	Loose connections or plug pulled out
	It sometimes stops operating to protect the appliance
	Voltage higher or lower than the voltage range
	Active TIMER-ON function
Strange odour	Damaged PCB board
Noise of running water	Air filter dirty
A fine mist comes from the air outlet	Back flow of liquid in the refrigerant circulation
A stragne noise can be heard	This occurs when the air in the room becomes very cold, for example in the COOLING or DEHUMIDIFYING modes
Insufficient airflow, either hot or cold	This noise is made by the expansion or contraction of the front panel due to variations in temperature and does not indicate a problem
	Inappropriate temperature setting
	Air inlet or outlet of indoor or outdoor unit has been blocked
	Air filter is blocked
	Fan speed set at minimum
	Other sources of heat in the room
The appliance does not respond to commands	No or too less refrigerant
	Remote control is not near enough to indoor unit
	Battery in Remote controller may have been exhausted
The display is off	Obstacles between remote control and signal receiver in indoor unit
	LED display is turn off with DISPLAY button
	Power failure

Switch off the air conditioner immediately and cut off the power supply in the event of:

- Strange noises during operation
- Faulty electronic PCB board
- Faulty fuses or switches
- Spraying water or objects inside the appliance
- Overheated cables or plugs
- Very strong smells coming from the appliance

In case of error, the display on the indoor unit shown the following error codes:

CODE	MEANING
E1	The fault of indoor temperature sensor
E2	The fault of indoor pipe temperature sensor
E6	Malfunction of indoor fan motor

Warranty Terms

I. The company Reventon Group Sp. z o. o. [Ltd.], hereinafter referred to as the guarantor, provides 24-month warranty protection period for the following devices:

- air conditioner VESPER 3.4
- air conditioner VESPER 5.1

II. The warranty protection is valid from the purchasing date by end user (i.e. the issue date of invoice) but not longer than 30 months from leaving the warehouse of Reventon Group Sp. z o. o. [Ltd.].

III. The warranty claim should be reported via the complaint form on the website (<https://reventongroup.eu/en/complaints>). The scan or the photo of the fulfilled Warranty Card, Mounting Card and the purchase invoice must be attached to the form. The Warranty Card is not required in case of accessories.

IV. The guarantor is committed to consider the claim within 14 working days since the date of reporting (i. e. the day of receipt of the correctly fulfilled warranty form).

V. In exceptional cases, the guarantor reserves the right to extend the time for consideration of the request, especially if the defect is not permanent one and its determination requires a deeper analysis. The extension must be notified by the guarantor before the end of the 14th working day.

VI. Under the warranty, the guarantor provides a repairment, replacement (the device or its component) or refund for the defective item within a specified time.

VII. In the case of replacement of a device component, the warranty protection of the whole unit is not prolonged.

VIII. The guarantor does not cover the costs of disassembly and eventual reassembly of the complaint device.

IX. The guarantor may decide to bring the defective device or its component to the service of Reventon Group Sp. z o. o. [Ltd.]. In such case the transport of the item is organised and paid by the guarantor. The responsibility of the device's owner is to prepare the item for the shipment - the device must be packed in a way which protects it against transport damages and the dimensions and weight of the package must not exceed 660 x 650 x 400 mm and 30 kg respectively. In the case of elements which cannot be packed in this way, the method of shipment must be agreed and approved by Reventon Group Sp. z o. o. [Ltd.]. In the case of sending a non-standard package without agreement of the service of Reventon Group Sp. z o. o. [Ltd.], the guarantor reserves the right to charge the owner of device with all additional transport costs.

X. In the case of arrival of the authorized service of the guarantor or an installer to fix the complaint item, the customer must ensure them seamless access to the device and all required media like electricity, water, lighting etc. free of charge.

XI. The warranty protection does not cover the parts of the device subject to the normal usage and the following cases:

- a) mechanical damage of the product
- b) defects and damages through:
 - improper storage or transport
 - improper or non-compliant use and maintenance (i. e. inconsistent with the manual)
 - using the device in the improper conditions (too high humidity, too high or too low temperature, impact of the surrounding, sun etc.)
 - unauthorized (i. e. by the user or other unauthorized persons) repairs, modifications or construction changes
 - connecting equipment inconsistent with the technical documentation
 - connecting additional equipment, which is not recommended by the guarantor
 - improper power supply
 - random events (like fire, flood, storm etc.)
- c) elements which wear and tear such as discolour of the housing

If there is any of the above, the claimant will be charged for transport and / or repairs.

XII. During collection of the device, the item must be checked exactly by the receiver to exclude transport damages. If any of them is observed, the damage report in presence of the product deliverer have to be filled - such report is the basement for the warranty claim. The damage report must be provided by the product deliverer.

XIII. The guarantor does not take the responsibility for potential losses and damages related to the downtime of the device during its failure and the complaint considering time.

XIV. Any changes in the Warranty Terms, improper use of the product as well as traces of self repairing (beyond the guarantor service) or alterations cause, the warranty become invalid.

XV. These Warranty Terms do not exclude or limit any rights arising from the pledge.

XVI. Not following to any of the warranty regulations makes the protection invalid.

XVII. All correspondence should be sent to the following address: Reventon Group Sp. z o.o. [Ltd.], 556 Wyzwolenia Street, 43 340 Kozy, Poland or email address: serwis@reventongroup.eu.

Warranty Card

<p>1 - Model and serial number or product code</p> <p>Indoor unit:</p> <p>Outdoor unit:</p>	<p>2 - Address and place of assembly</p>
<p>3 - Date of connection to electrical installation:</p>	<p>4 - Stamp and signature of certified installer:</p>
<p>5 - Date of refrigerant installation execution:</p>	<p>6 - Stamp and signature of certified installer:</p>

Mounting Card

I - General information		
The area of the room where the VESPER unit is installed, m ²		
The distance between the indoor and the outdoor units, m		
The level difference between the indoor and the outdoor units, m		
Mass of R32 refrigerant in the system, kg		
II - After installation tests		
	Date	Signature of certified installer
Leak test: The system is tight (no leaks)		
Refrigerant pressure inspection:		
The low-pressure side, Pa:		
The high-pressure side, Pa:		
III - Periodic inspection and maintenance		
	Date	Signature of certified installer
I service	Cleaning and fumigation	
II service	Cleaning and fumigation	
	Leak test: The system is tight (no leaks)	
III service	Cleaning and fumigation	
IV service	Cleaning and fumigation	
	Leak test: The system is tight (no leaks)	
V service	Cleaning and fumigation	
VI service	Cleaning and fumigation	
	Leak test: The system is tight (no leaks)	
VII service	Cleaning and fumigation	
VIII service	Cleaning and fumigation	
	Leak test: The system is tight (no leaks)	
IX service	Cleaning and fumigation	
X service	Cleaning and fumigation	
	Leak test: The system is tight (no leaks)	

Notes



reventon
INDUSTRIAL SOLUTIONS

Reventon Group Sp. z o.o. [Ltd.]
556 Wyzwolenia Street
43-340 Kozy
POLAND

www.reventongroup.eu