



VARIO CO₂ KIT



Axial extractor fans
with Co₂ sensor





VORTICE S.p.A. is part of a multinational group, **VORTICE GROUP**, which operates through its own companies or local distributors in over 90 countries worldwide and has a rich product portfolio that guarantees air quality and climate comfort. The headquarters of VORTICE S.p.A are in Tribiano (Milan).



VORTICE GROUP also includes:

[1]
VORTICE UK Ltd, English branch of VORTICE S.p.A, established in 1977 and based in Burton on Trent.

[2]
VORTICE INDUSTRIAL, born from the acquisition in 2010 of Loran srl, based in Isola della Scala (VR).

[3]
VORTICE Ventilation System, a company inaugurated in 2013 with headquarters in Changzhou, China.

[4]
VORTICE Latam, based in Alajuela in Costa Rica, established in 2012.

[5]
CASALS VENTILACIÓN AIR INDUSTRIAL S.L., historic Spanish brand, based in Sant Joan de les Abadesses, Girona, acquired in 2019.



THE IMPORTANCE OF AIR

The quality of indoor air has never been as crucial for a healthy life and for the people's well-being as it is today. Air quality technologies represent essential solutions to reduce the risk of spread of pathogens such as viruses, bacteria and moulds, but also dust, mites, seasonal pollen and fine dust.

To improve air quality, it is essential to focus on air exchange in order to dilute pollutants and pathogens and ensure the health and safety of people in the environment.

Proper ventilation that ensures adequate air exchange makes it possible to breathe clean air at home, in the office or in any other enclosed space, which is essential for the health of those who live there.

Regulatory standards

The VARIO-CO₂ KIT complies with the following Directives and Regulations in their latest version:

- Low Voltage Directive: 2014/35/EC;
- Electromagnetic Compatibility Directive: 2014/30/EC;
- RoHS Directive (2011/65/UE);
- Reach Regulation (1907/2006/EC);
- ECODESIGN Directive 2009/125/EC;
- Electrical Safety Regulations: EN 60335-1; EN 60335-2-80; EN 60529; EN 62233;
- Electromagnetic Compatibility Emission Standard: EN 55014-1, EN 55014-2 + A1 + A2, EN 61000-3-2, EN 61000-3-3.



VARIO CO₂ KIT

AXIAL EXTRACTOR FANS WITH CO₂ SENSOR FOR RESIDENTIAL, COMMERCIAL AND INDUSTRIAL ENVIRONMENTS.

VARIO CO₂ KIT

Axial extractor fans with CO₂ sensor for residential, commercial and industrial environments.

VARIO-CO₂ KIT is a ventilation system that ensures the rapid exchange of ambient air in relation to the concentration of carbon dioxide (CO₂) detected by a special sensor, thus ensuring adequate oxygenation rates, avoiding the accumulation of carbon dioxide and preventing the concentration of pathogens resulting from the metabolism of the occupants.

4



USE

The VARIO-CO₂ KIT enables the correct ventilation of rooms with a volume of 50 m³, 100 m³ and 350 m³ respectively, depending on the model, assuming two complete air exchanges per hour. The correct sizing of the individual system also presupposes the correct evaluation of the occupancy rate of the environment, understood as the maximum number of occupants expected.


Easy to install on perimeter walls, windows or shop windows of the target environment.


VARIO-CO₂ KIT is ideal for ventilating confined spaces open to the public such as classrooms, canteens, meeting rooms, waiting rooms in medical and dental practices, bars and restaurants, locker rooms and open-plan offices.

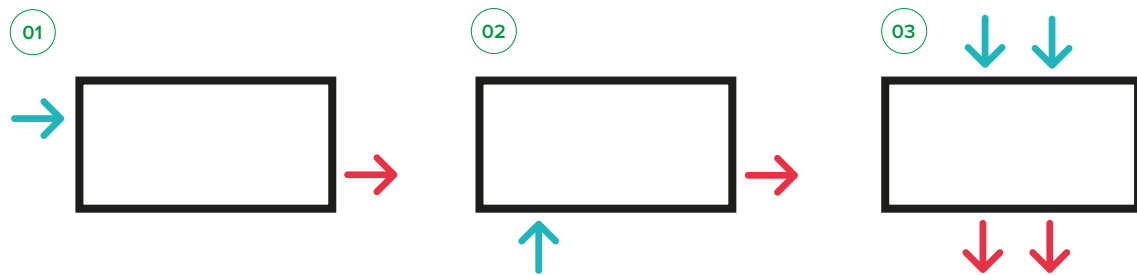
The correct functioning of the system also requires the proper relative positioning of the two fans in the target room, in order to facilitate air exchange.

Below are some sample installation diagrams.

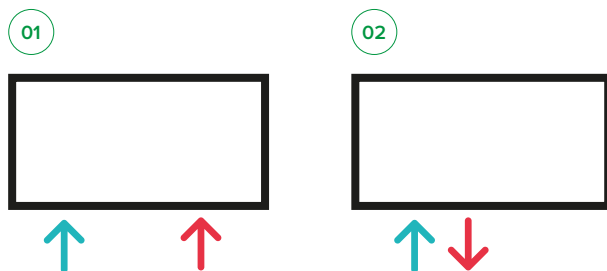
EXAMPLES OF CORRECT INSTALLATIONS

 fresh air intake

 stale air removal



EXAMPLES OF INCORRECT INSTALLATIONS



OPERATING PRINCIPLE

High rates of carbon dioxide (CO₂) are known to cause loss of concentration, drowsiness, heaviness, and headaches. It is also known that CO₂ is the product of our metabolism: by breathing we take in oxygen and emit carbon dioxide. This aspect takes on particular importance in this period of pandemic linked to the spread of the SARS-CoV-2 virus that, beyond the consequences on the health of all of us, imposes limits on the normal activities and personal contacts.

An adequate ventilation rate, able to dilute the concentration of a possible viral load below the danger threshold, is, together with the use of appropriate personal protective equipment, the main and most effective means of reducing the spread of the epidemic, as evidenced, among others, by the study of the Working Group ISS Environment and Indoor Air Quality "Interim indications for the prevention and management of indoor environments in relation to the transmission of SARS-CoV-2 virus infection" of May 25, 2020.

Each VARIO-CO₂ KIT consists of two axial extractor fans, installed at perimeter walls or windows of the room and controlled by a wired CO₂ sensor.

The setting of the rotation direction, and therefore the direction of the induced flow, of each of the two fans is done at the time of installation and cannot be changed by the end user.

When the rate of carbon dioxide present in the environment, representative of its crowding index, exceeds the previously set limit, the sensor automatically activates the two fans to obtain the necessary air exchange.

In particular, the combined operation of the two extractor fans, which remove stale and potentially infected air, reintegrating it with external air, rich in oxygen and free of viral load, ensures adequate ventilation rates of the environment, while avoiding the risk of entry by depression from neighboring rooms of potentially infected air, possible in the presence of a single extractor fan.





BENEFITS FOR THE INSTALLER

01

Simple and quick installation

Only two holes are required in the target walls, shop windows or home windows, with a nominal diameter of 150, 230 or 300 mm, depending on the model. The graphic LCD display of **SCO2IAQ (the Co₂ sensor)**, facilitates the initial configuration of the system and enables the setting of threshold values at which the pair of extractor fans starts - to ensure the necessary air exchange - or stops, when the ventilation needs are no longer present.

02

Wide range of possible installations

The wide variety of accessories, common to the VARIO range, allows the VARIO-CO₂ KIT to be used in a wide range of contexts. (see accessories on page 17).

03

Possibility of integrating the system into a BMS*

For a more effective overall management of the target building.

**Building Management System.*





BENEFITS FOR THE USER

01 Breathing clean air

02 Great effectiveness

The flow rates of the fans ensure a correct ventilation of environments with a surface area of up to 130 m² (the calculation is based on the assumption of 2 exchanges per hour in rooms with a height of 2.7 m)

03 Continuous ventilation of the premises

Possibility of programming, on a weekly basis, the air exchange in the environment, thus enabling the installation of the SCO2AIQ CO₂ sensor in a different environment from that in which the fans are placed.

04 Reduced operating costs

Thanks to the low power consumption and the automatic control guaranteed by the CO₂ sensor, which limits operation to the conditions of actual need.

05 Great reliability

Even in particularly harsh operating conditions, as proven by the experience of using the VARIO range in critical environments and climates.

06 Great robustness

As a result of the design and construction solutions adopted, starting from the casing, which boasts excellent resistance to impact and corrosion.

07 Ease of use

Once the CO₂ thresholds allowed in the environment have been set, the VARIO-CO₂ KIT operates in fully automatic mode.

08 Low maintenance costs

Limited to the periodic and regular removal of dust from the grilles of the fans.

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APPLICATIONS



10





TECHNICAL CHARACTERISTICS

Available models

- The VARIO-CO2 KIT consists of two extractor fans of the VARIO range in AR version, combined with the CO2 sensor called SCO2IAQ, available in three versions, different in size and with increasing performance.
- The VARIO 150/6" - CO2 KIT (code 90016) consisting of: 2 VARIO 150/6" AR + 1 SCO2IAQ.
- The VARIO 230/9" - CO2 KIT (code 90017) consisting of: 2 VARIO 230/9" AR + 1 SCO2IAQ.
- The VARIO 300/12" - CO2 KIT (code 90018) consisting of: 2 VARIO 300/9" AR + 1 SCO2IAQ.

VARIO AR extractor fans

- Plastic resin casing (ABS), resistant to impact and aging when exposed to the sun ("UV resistant").
- Moulded resin axial impellers resistant to aggressive agents, optimised for clockwise and anti-clockwise operation and characterised by saber-shaped blades to combine high performance with low noise emissions.
- Motors, thermally protected, with shafts mounted on bushings with collar, self-centering and self-lubricating, to guarantee a silent operation over time.
- Automatically operated closing fins to prevent the entry of outside air and the spread of unpleasant odors when the conditions of the target environment make system operation unnecessary.
- Performance and safety certified by a third party (CE).
- Degree of protection against dust and water: IPX4 (suitable for Zone 1 installation).
- Electrical insulation class: II (grounding not required).

SCO2IAQ CO₂ sensor

- CO₂ sensor with adjustable threshold and safety values in the 0 - 5,000 ppm range (exceeding the threshold value determines the switching on of the two fans, the decrease of the carbon dioxide concentration below the safety value leads to their switching off).
- Relative humidity sensor (enables the display of temperature and RH values in the room).
- Possibility of programming, on a weekly basis, the switching on and off of the fans (ideal, for example, in the case of use in classrooms, refectories, canteens, etc.).
- Possible integration into a *Building Management System (BMS)*, Modbus protocol, integrated RS485 port.
- Graphic display for immediate understanding of system status and representation of environmental parameters.



Low consumption.

Design: F. Trabucco & Ass.
Awards: 2003 "Intel Design" mention.
2003 "Design Index Adi" mention.



Wide range of possible installations thanks to the various accessory KITS common to the VARIO range,



01



02



03

- 01 Wall installation.
- 02 Glass installation with anti-glare screen.
- 03 Glass installation.



Quiet operation.

The graphic display of the SCO2IAQ CO₂ sensor allows for easy initial setting of CO₂ threshold levels and for continuous monitoring of CO₂ concentration in the environment.



Easy and intuitive to use

VARIO CO₂ KIT

AXIAL EXTRACTOR FANS WITH CO₂ SENSOR FOR RESIDENTIAL, COMMERCIAL AND INDUSTRIAL ENVIRONMENTS.

The VARIO-CO₂ KIT consists of two extractor fans of the VARIO range in AR (Automatic and Reversible) version, combined with the CO₂ sensor, called SCO2IAQ, available in three versions, different in size and with increasing performance.

- **VARIO 150/6" - CO₂ KIT (code 90016)** consisting of: 2 VARIO 150/6" AR code 12612 + 1 SCO2IAQ code 20125.
- **VARIO 230/9" - CO₂ KIT (code 90017)** consisting of: 2 VARIO 230/9" AR code 12452 + 1 SCO2IAQ code 20125
- **VARIO 300/12" - CO₂ KIT (code 90018)** consisting of: 2 VARIO 300/9" AR code 12412 + 1 SCO2IAQ code 20125.

Technical data

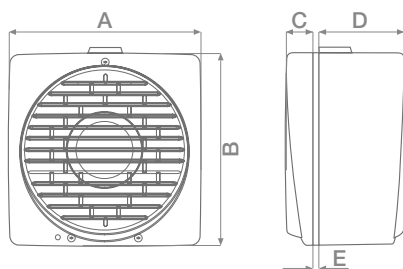
PRODUCT	CODE	V~50/60Hz	W max	A max	RPM max	MAX FLOW RATE m ³ /h	l/s	Lp dB (A) 3m max	°C max	WEIGHT Kg
VORTICE 150/6" AR	12612	220-240	25	0.11	1340 ⁽¹⁾ 2040 ⁽²⁾	235 ⁽¹⁾ 150 ⁽²⁾	65.3 ⁽¹⁾ 41.7 ⁽²⁾	37.5	50	2.07
VORTICE 230/9" AR	12452	220-240	26	0.13	790 ⁽¹⁾ 1080 ⁽²⁾	480 ⁽¹⁾ 310 ⁽²⁾	133 ⁽¹⁾ 86 ⁽²⁾	35.6	50	3.45
VORTICE 300/12" AR	12412	220-240	45	0.21	840 ⁽¹⁾ 1085 ⁽²⁾	1050 ⁽¹⁾ 700 ⁽²⁾	292 ⁽¹⁾ 194.4 ⁽²⁾	40.2	50 (50 HZ) 40 (60 HZ)	6.13

⁽¹⁾Intake - ⁽²⁾Ventilation.

* Acoustic pressure calculated at 3 m in free field in compliance with ISO 3741.

** Maximum continuous operating temperature of the product.

Dimensions

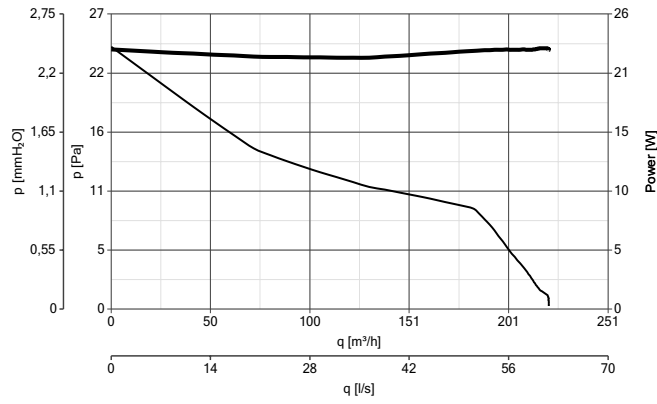


PRODUCT	∅A	B	C	D	MIN/MAX	∅ HOLE GLASS/WALL
VORTICE 150/6"	215	218	31	97.5	2/38	185÷190
VORTICE 230/9"	294	297	31	130	2/38	257÷262
VORTICE 300/12"	390	393	31	147	2/38	324÷329

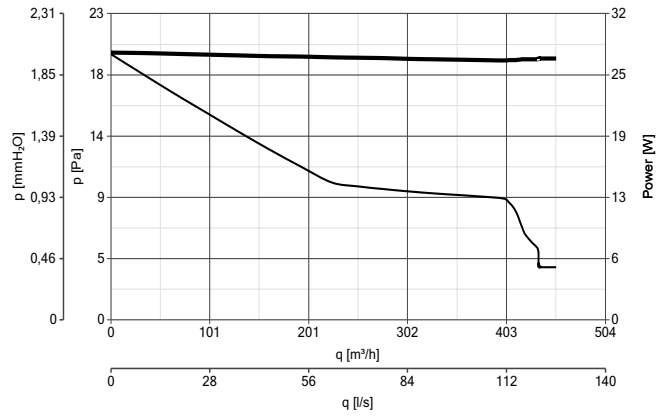
Dimensions in mm

Performance curves

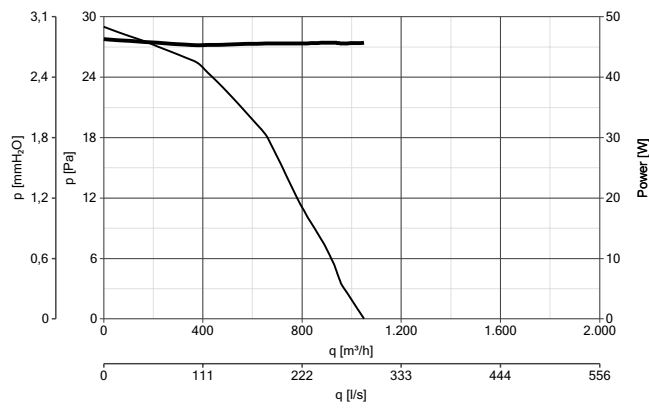
VORTICE 150/6" AR



VORTICE 230/9 AR



VORTICE 300/12" AR









Absorbed power
 Static pressure

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Accessories on request

	DESCRIPTION		CODE	PRODUCTS
	KIT VV Double glazing openable kit.	150/6"	13021	12612
		230/9"	13022	12452
		300/12"	13023	12412
	KIT FF Double openable window kit.	150/6"	13024	12612
		230/9"	13025	12452
		300/12"	13026	12412
	MU KIT Wall kit to connect the external grilles to the box.		13018	12612 12452 12412
	KIT TC Flange kit with conduit.	150/6"	13027	12612
		230/9"	13028	12452
		300/12"	13029	12412
	KIT TURRET Is applied to the outer hole for a windproof function.	150/6"	13001	12612
		230/9"	13002	12452
		300/12"	13003	12412
	KIT SA Anti-light shield kit applied to the outer hole to prevent light from entering. Useful for darkrooms.		13004	12452



Notes

VORTICE GROUP COMPANIES

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