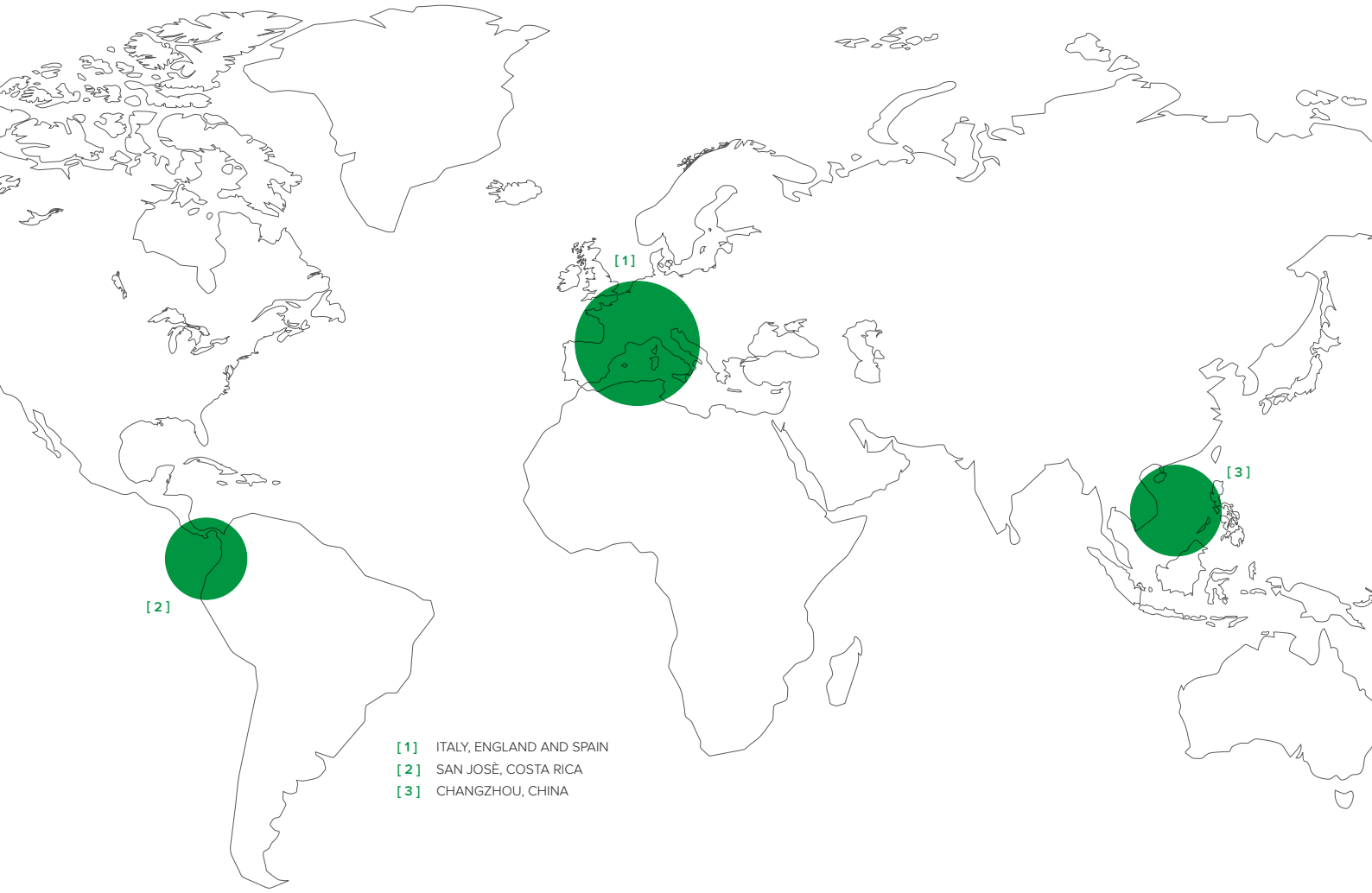
VORTICE

vortice.com

RESIDENTIAL VENTILATION

# CONTROLLED MECHANICAL VENTILATION AND HEAT RECOVERY

# VORTICE GROUP




[1] ITALY, ENGLAND AND SPAIN
[2] SAN JOSÈ, COSTA RICA
[3] CHANGZHOU, CHINA


Vortice Headquarters

Today **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 portfolio of products that guarantee air quality and climate comfort. The historical headquarters of **VORTICE S.p.A.** are in Tribiano (Milan).

The **VORTICE GROUP** also includes:

1



2


3


4


5


1 **VORTICE UK Ltd**, English branch opened in 1977 based in Burton on Trent.

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

3 **CASALS** historic Spanish brand of VENTILACIÓN INDUSTRIAL IND. S.L., based in Sant Joan de les Abadesses, Girona, acquired in 2019.

4 **VORTICE Ventilation System**, company inaugurated in 2013 with headquarters in Changzhou China.

5 **VORTICE Latam**, based in San Josè, Costa Rica, established in 2012.

# INDEX

# VORT NOTUS RANGE

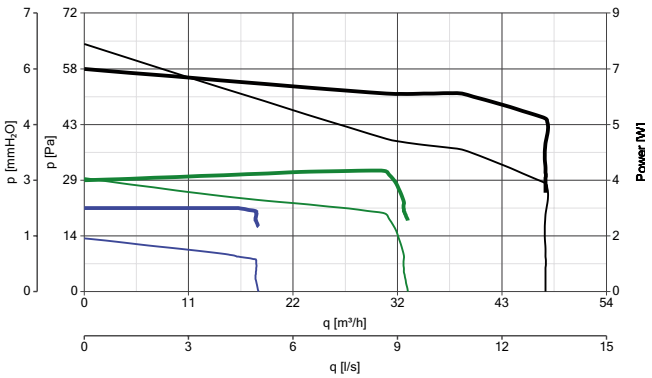
## AXIAL FANS FOR CONTINUOUS VENTILATION

**CENTRALIZED VENTILATION** | **WALL MOUNTED** | **UP TO 60/90 M²**

Axial wall and ceiling fans compatible with in-line installation, ideal for continuous ventilation, thanks to the very low consumption of the EC (brushless) motor used, of small and medium-sized residential and commercial premises whose plan allows direct or short ducted discharge.


- Self-extinguishing polypropylene casing.
- DC-EC motor with very low electrical consumption (max 6.4W), constant flow operation.
- Built-in adjustable timer (3'-20'), built-in humidity control sensor (adjustable from 60% to 90%).
- Protection degree IPX4.
- Power supply 220-230V - 50Hz

## PERFORMANCE AND ABSORPTION



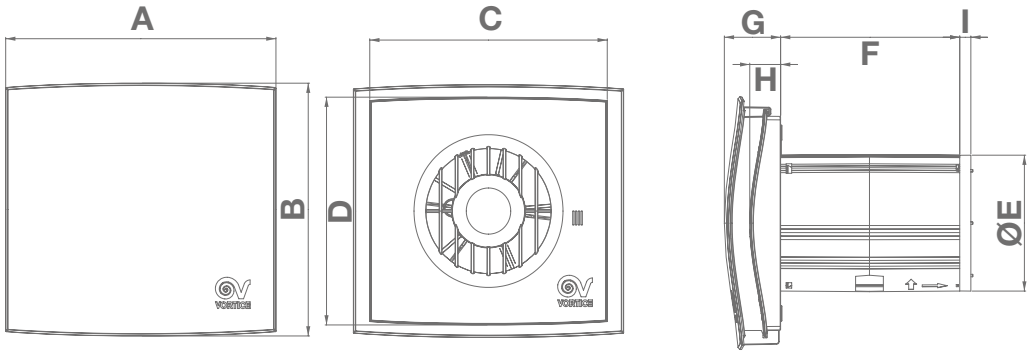

### TECHNICAL DATA

| PRODUCTS | CODE | Nom. Ø (mm) | (m³/h) | (W) | (PA) | Lp [dB (A)] 3m |
|---|---|---|---|---|---|---|
| VORT NOTUS | 11177 | 100 | 42 | 6.4 | 86.3 | 17.3 |
| VORT NOTUS T-HCS | 11903 | 100 | 42 | 2.8 | 86.3 | 17.3 |

CONSUMPTION CURVES
max
med
min

PERFORMANCE CURVES
max
med
min

## DIMENSIONS




| PRODUCTS | CODE | A | B | C | D | ØE | F | G | H | I |
|---|---|---|---|---|---|---|---|---|---|---|
| VORT NOTUS | 11177 | 194.6 | 182 | 171 | 164 | 97.8 | 129 | 40.5 | 22.2 | 8 |
| VORT NOTUS T-HCS | 11903 | 194.6 | 182 | 171 | 164 | 97.8 | 129 | 40.5 | 22.2 | 8 |

*Dimensions in mm*

## ENERGY DATA

| | UNIT OF MEASURE | VORT NOTUS<br>VORT NOTUS T-HCS |
|---|---|---|
| MANUFACTURER'S NAME OR TRADE NAME | - | VORTICE |
| CLASS OF SPECIFIC ENERGY CONSUMPTION FOR TEMPERATE CLIMATE | - | NA* |
| SPECIFIC ENERGY CONSUMPTION SEC (TEMPERATE CLIMATE) | kWh/m² year | -6.2 |
| SPECIFIC ENERGY CONSUMPTION SEC (COLD CLIMATE) | | -19.5 |
| SPECIFIC ENERGY CONSUMPTION SEC (WARM CLIMATE) | | 1.5 |
| DECLARED TYPE OF THE VENTILATION UNIT | - | UVR-U** |
| DRIVE TYPE | - | NA* |
| HRS TYPE HEAT EXCHANGER | - | absent |
| THERMAL EFFICIENCY OF HEAT RECOVERY AT THE HRS REFERENCE FLOW RATE | % | NA* |
| MAXIMUM FLOW RATE | m3/h | 43 |
| TOTAL ELECTRIC POWER ABSORBED BY THE FAN AT MAXIMUM FLOW RATE | w | 3.5 |
| Sound LEVEL | LWA [dB(A)] | 32.4 |
| REFERENCE FLOW RATE | m3/s | 0.0084 |
| REFERENCE PRESSURE DIFFERENCE | Pa | 62 |
| SPI**** | W/(m3/h) | 0.22591 |
| CTRL CONTROL FACTOR | - | 1 |
| CONTROL TYPE | - | manual |
| MAXIMUM PERCENTAGE OF INTERNAL LEAKAGE | % | NA* |
| MAXIMUM PERCENTAGE OF EXTERNAL LEAKAGE | % | NA* |
| MIXING RATE | - | NA* |
| POSITION AND DESCRIPTION OF THE VISUAL FILTER SIGNAL | - | na* |
| AIR FLOW SENSITIVITY AT PRESSURE VARIATIONS OF ± 20 PA | - | NA* |
| INDOOR/OUTDOOR AIR SEALING | m3/h | NA* |
| AEC ANNUAL ELECTRICITY CONSUMPTION | kWh of electricity/year | 311 |
| TEMPERATE AHS ANNUAL HEATING SAVINGS | kWh of primary energy /year | 1397 |
| COLD AHS ANNUAL HEATING SAVINGS | | 2732 |
| WARM AHS ANNUAL HEATING SAVING | | 632 |

** NA: Not applicable. ** UVR-U: Residential Ventilation Unit - Uni-directional. *** VM: Multiple speeds. VSD: Variable Speed Drive.*
***** SPI: Specific power input.*

# VORT NOTUS RANGE

## AXIAL FANS FOR CONTINUOUS VENTILATION

## TECHNICAL CHARACTERISTICS

- **2 models** with a nominal diameter of 100 mm, also in version with timer and humidistat.
- **Plastic resin construction** (ABS) white, resistant TO impact and aging due to exposure to the sun ("UV resistant").
- **EC motors (brushless)**, thermally protected, with external rotor, with shafts mounted on ball bearings to guarantee prolonged continuous service (at least 30,000 h) at the maximum plate temperature, characterized by very low consumption and capable of delivering 3 different flow levels, 2 of which can be set as an alternative at the time of installation.
- Helical impellers with wing profile blades **optimized to combine high efficiency with low sound emissions**.
- T-HCS model **equipped with an electronic board with relative humidity sensor (RH**) which automatically switches from the minimum flow previously set to the maximum flow. The board integrates an electronic timer that restores operation at minimum speed, after the return of the RH below the threshold value, with a delay that can be set during installation in the 3'-20' interval (default setting 3').
- Performance and safety certified by third parties ( and BRE).
- **Degree of dust and water protection**: IPX4 (suitable for Zone 1 installation).
- **Electrical insulation class**: II (grounding not required).

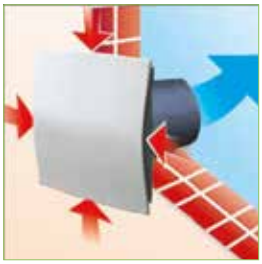
## TECHNICAL DATA

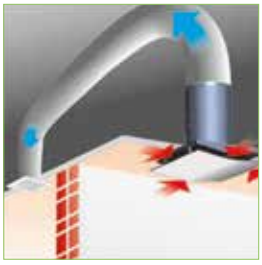
| PRODUCTS | CODE | V~50HZ | W min/max | A min/max | MAX FLOW RATE | | MAX PRESSURE | | Lp dB(A)* 3m min/max | °C* MAX | KG |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | $m^3/h$ min/max | l/s min/max | $mmH_2O$ min/max | Pa min/max | | | |
| VORT NOTUS | 11903 | 220-230 | 1.5<br>2.8 | 0.018<br>0.025 | 11.7<br>42.0 | 3.3<br>11.7 | 2.4<br>8.8 | 23.5<br>86.3 | 10.1<br>17.3 | 50 | 0.80 |
| VORT NOTUS T-HCS | 11177 | 220-230 | 2.1<br>6.4 | 0.028<br>0.037 | 11.7<br>42.0 | 3.3<br>11.7 | 2.4<br>8.8 | 23.5<br>86.3 | 10.1<br>17.3 | 50 | 0.80 |

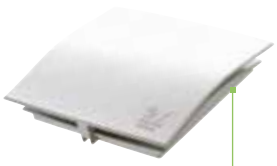
** Acoustic pressure measured from 3 m in free field, in compliance with ISO 3741.*

*** Maximum continuous operating temperature of the product.*

## DETAILS





Reduced thickness (approx. 40 mm) which minimizes visual impact.

Reliability over time: the duration of the motors is guaranteed for at least 30,000h of continuous operation at the maximum certified temperature.

LONG LIFE 30.000 h

Strong water protection, suitable for use in Zone 1 of the bathrooms and in the presence of high humidity levels.

# VORT PLATT RANGE

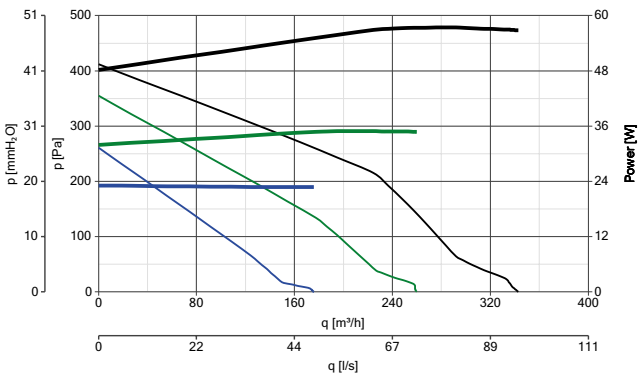
CENTRALIZED MECHANICAL VENTILATION UNIT

**C** **CENTRALIZED VENTILATION** **FALSE CEILING MOUNT**

Unit for simple flow centralized mechanical ventilation, reduced thickness. Installed in a false ceiling or in the attic, it extracts stale air from service rooms and facilitate the return of fresh external air through openings appropriately positioned in living rooms. A pair of relative humidity sensors enable the automatic adjustment of the performance provided to the actual needs of the moment.

- Enclosure in galvanized sheet metal and flanges in ABS, centrifugal-axial motor-fan unit mounted on ball bearings.
- Low consumption DC-EC single phase motor, absorption 12/50W.
- Delivery spigot Ø125mm, intake spigots 3 x Ø80mm + 1 x Ø125mm.
- Class II insulation.
- Integrated adjustable timer (max 30 ').
- Protection grade IPX4.

## PERFORMANCE AND ABSORPTION



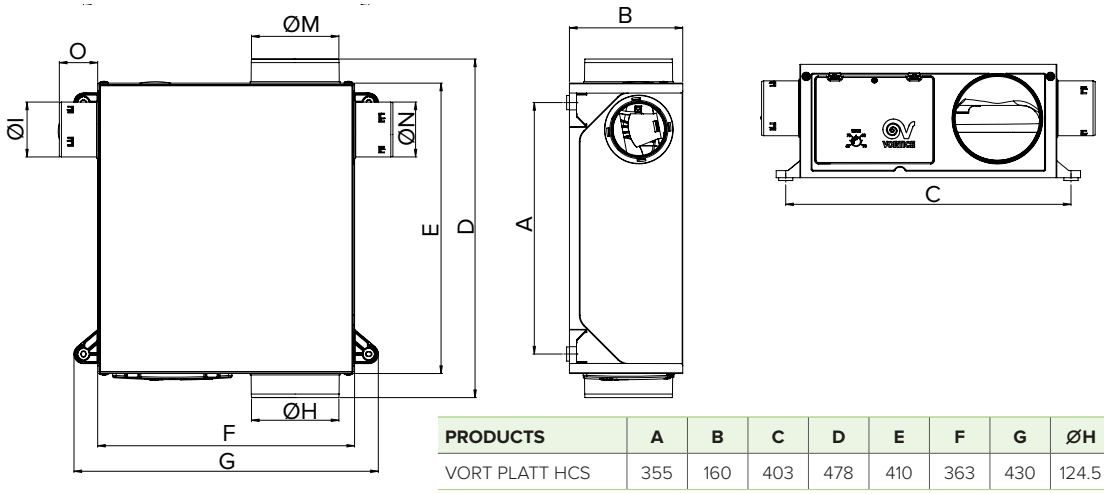

### TECHNICAL DATA

| PRODUCT | CODE | Nom. Ø (mm) | (m³/h) | (W) | (PA) | Lp [dB (A)] 3m |
|---|---|---|---|---|---|---|
| VORT PLATT HCS | 12108 | 80-125 | 343 | 56 | 411.7 | 34.9 |

CONSUMPTION CURVES
max
med
min

PERFORMANCE CURVES
max
med
min

## DIMENSIONS




*Dimensions in mm*

| PRODUCTS | A | B | C | D | E | F | G | ØH | ØI | ØM | ØN | O |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VORT PLATT HCS | 355 | 160 | 403 | 478 | 410 | 363 | 430 | 124.5 | 77.5 | 124.5 | 77.5 | 45 |

## ENERGY DATA

| | UNIT OF MEASURE | VORT PLATT HCS |
|---|---|---|
| MANUFACTURER'S NAME OR TRADE NAME | - | VORTICE |
| CLASS OF SPECIFIC ENERGY CONSUMPTION FOR TEMPERATE CLIMATE | - | C |
| SPECIFIC ENERGY CONSUMPTION SEC (TEMPERATE CLIMATE) | kWh/m² year | -25.4 |
| SPECIFIC ENERGY CONSUMPTION SEC (COLD CLIMATE) | | -52.4 |
| SPECIFIC ENERGY CONSUMPTION SEC (WARM CLIMATE) | | -9.9 |
| DECLARED TYPE OF THE VENTILATION UNIT | - | UVR-U** |
| DRIVE TYPE | - | VM*** |
| HRS TYPE HEAT EXCHANGER | - | absent |
| THERMAL EFFICIENCY OF HEAT RECOVERY AT THE HRS REFERENCE FLOW RATE | % | NA* |
| MAXIMUM FLOW RATE | m³/h | 280 |
| TOTAL ELECTRIC POWER ABSORBED BY THE FAN AT MAXIMUM FLOW RATE | w | 57.6 |
| Sound LEVEL | LWA [dB(A)] | 57 |
| REFERENCE FLOW RATE | m³/s | 0.05 |
| REFERENCE PRESSURE DIFFERENCE | Pa | 100 |
| SPI**** | W/(m³/h) | 0.18 |
| CTRL CONTROL FACTOR | - | 0.65 |
| CONTROL TYPE | - | local premise |
| MAXIMUM PERCENTAGE OF INTERNAL LEAKAGE | % | NA* |
| MAXIMUM PERCENTAGE OF EXTERNAL LEAKAGE | % | 7.4 |
| MIXING RATE | - | NA* |
| POSITION AND DESCRIPTION OF THE VISUAL FILTER SIGNAL | - | NA* |
| AIR FLOW SENSITIVITY AT PRESSURE VARIATIONS OF ± 20 PA | - | NA* |
| INDOOR/OUTDOOR AIR SEALING | m³/h | NA* |
| AEC ANNUAL ELECTRICITY CONSUMPTION | kWh of electricity/year | 117 |
| TEMPERATE AHS ANNUAL HEATING SAVINGS | kWh of primary energy /year | 2830 |
| COLD AHS ANNUAL HEATING SAVINGS | | 5536 |
| WARM AHS ANNUAL HEATING SAVING | | 1280 |

** NA: Not applicable. ** UVR-U: Residential Ventilation Unit - Uni-directional. *** VM: Multiple speeds. VSD: Variable Speed Drive.*
***** SPI: Specific power input.*

# VORT PLATT RANGE

CENTRALIZED MECHANICAL VENTILATION UNIT

## TECHNICAL CHARACTERISTICS

- **1 model**.
- Cover in **galvanized sheet steel**.
- Rear flange in black plastic resin (ABS) **resistant to impact and aging** due to sun exposure ("UV resistant") integral with the fixing brackets to the target surface and the seat, protected by a black ABS sealed cover, of the terminals for connection to the electricity grid.
- **4 intake spigots**, three of nominal diameter of 80 mm and one of 125 mm and 1 discharge spigot, also 125 mm large, on the lateral surface of the product.
- **3 speed AC motor**, thermally protected, shaft mounted on ball bearings, guarantees prolonged service (at least 30,000 h) at the maximum rated temperature; speed selector and ON/OFF control available as an option.
- Impeller, of the centrifugal type with backward curved blades, **in plastic resin loaded with glass fibers**, to combine dimensional stability, strength and resistance to aggressive agents.
- Relative humidity sensors, electronically managed, with **adjustable threshold at installation.**
- **2 connection sleeves to the intake pipes in plastic resin** (PP), designed for interlocking in the 80 mm spigots. Special integral mylar valves to maintain at 30 $m^3$/ h the extracted flow rate, regardless of pressure drops and the number of connected rooms.
- 1 cap with a diameter of 80 mm, for closing the spigot that may not be used, supplied as standard.
- **Safety certified by a third party** (Ⓨ).
- **Electrical insulation class**: II (grounding not required).

## TECHNICAL DATA

| PRODUCTS | CODE | V~50HZ | W min/max | A min/max | RPM min/max | MAX FLOW RATE | | MAX PRESSURE | | Lp dB(A)* 3m max | °C* MAX | KG |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | $m^3/h$ min/max | l/s min/max | $mmH_2O$ min/max | Pa min/max | | | |
| VORT PLATT HCS | 12108 | 230 | 23<br>56 | 0.21<br>0.25 | 1300<br>2610 | 176<br>343 | 48.8<br>95.2 | 26.6<br>41.9 | 261<br>411.7 | 34.9 | 60 | 5.4 |

** Acoustic pressure measured from 3 m in free field, in compliance with ISO 3741.*

*** Maximum continuous operating temperature of the product.*

## ACCESSORIES

| MODELS | DESCRIPTION | | CODE | VORT PLATT HCS code 12108 |
|---|---|---|---|---|
|  | FLOW REGULATOR | 15$m^3$/h | 22324 | ✓ |
| | | 30$m^3$/h | 22325 | |
|  | SPIGOT 80 HYGRO | | 22847 | ✓ |

## DETAILS

The internal duct design guarantees high performance, low consumption and lower sound levels.

Light and at the same time robust construction.

Reliability over time: the duration of the motors is guaranteed for at least 30,000h of continuous operation at the maximum certified temperature.

LONG LIFE 30.000 h

# VORT PENTA RANGE

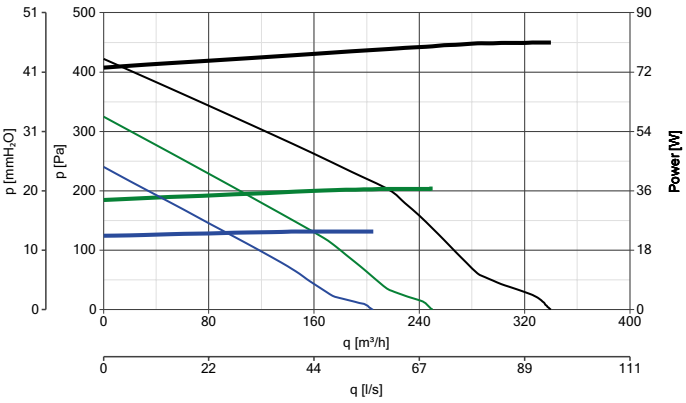
CENTRALIZED MECHANICAL VENTILATION UNIT

**C** | **CENTRALIZED VENTILATION** | **FALSE CEILING MOUNT**

Unit for simple flow centralized mechanical ventilation. Installed in a false ceiling or in the attic, it extracts stale air from service rooms and facilitate the return of fresh external air through openings appropriately positioned in living rooms. A pair of relative humidity sensors enables the automatic adjustment of the performance to the actual needs of the moment.

- Centralized unit for single flow residential MCV for up to 6 rooms.
- ABS casing, centrifugal-axial motor-fan mounted on ball bearings.
- Low consumption single phase DC-EC motor.
- Delivery spigot Ø125mm, intake spigots 5 x Ø80mm + 1 x Ø125mm.
- Class II insulation.
- Integrated adjustable timer (max 30').
- Protection degree IPX4.
- Integrated relative humidity sensor.

## PERFORMANCE AND ABSORPTION



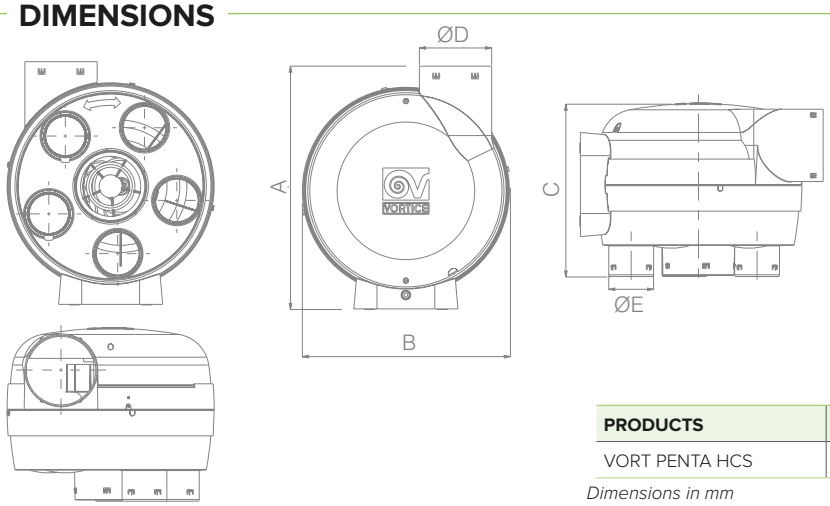

### TECHNICAL DATA

| PRODUCT | CODE | Nom. Ø (mm) | (m³/h) | (W) | (PA) | Lp [dB (A)] 3m |
|---|---|---|---|---|---|---|
| VORT PENTA HCS | 12103 | 125 | 340 | 73 | 421.9 | 31.9 |

CONSUMPTION CURVES
- max
- med
- min

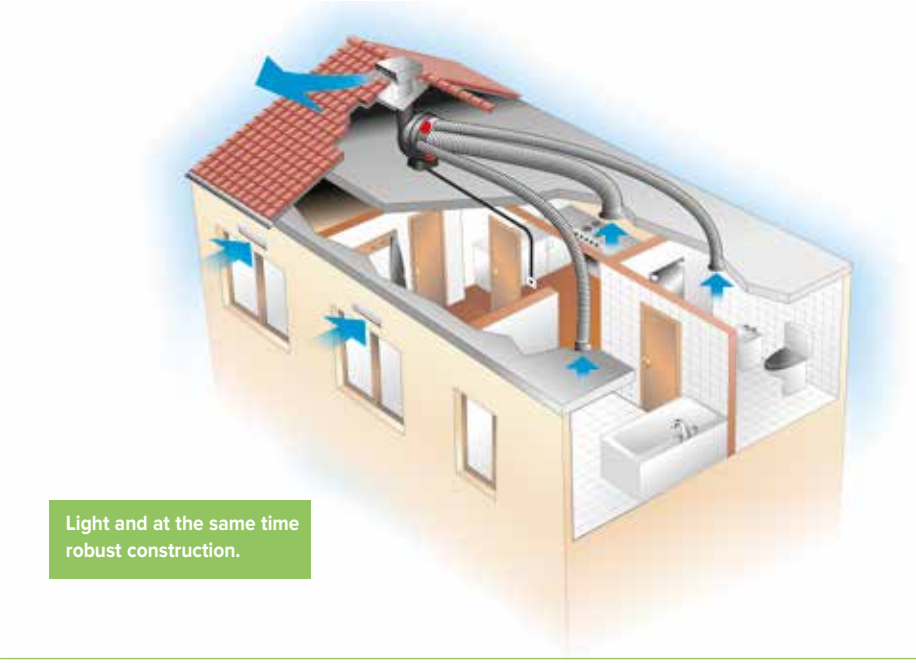
PERFORMANCE CURVES
- max
- med
- min

## DIMENSIONS




| PRODUCTS | A | B | C | ØD | ØE |
|---|---|---|---|---|---|
| VORT PENTA HCS | 420 | 358 | 300 | 125 | 77.5 |

*Dimensions in mm*



Light and at the same time robust construction.

## ENERGY DATA

| | UNIT OF MEASURE | VORT PENTA HCS |
|---|---|---|
| MANUFACTURER'S NAME OR TRADE NAME | - | VORTICE |
| CLASS OF SPECIFIC ENERGY CONSUMPTION FOR TEMPERATE CLIMATE | - | C |
| SPECIFIC ENERGY CONSUMPTION SEC (TEMPERATE CLIMATE) | kWh/m² year | -25,124 |
| SPECIFIC ENERGY CONSUMPTION SEC (COLD CLIMATE) | | -52,187 |
| SPECIFIC ENERGY CONSUMPTION SEC (WARM CLIMATE) | | - 9,621 |
| DECLARED TYPE OF THE VENTILATION UNIT | - | UVR-U** |
| DRIVE TYPE | - | VM*** |
| HRS TYPE HEAT EXCHANGER | - | absent |
| THERMAL EFFICIENCY OF HEAT RECOVERY AT THE HRS REFERENCE FLOW RATE | % | NA* |
| MAXIMUM FLOW RATE | m³/h | 268 |
| TOTAL ELECTRIC POWER ABSORBED BY THE FAN AT MAXIMUM FLOW RATE | w | 80 |
| Sound LEVEL | LWA [dB(A)] | 50 |
| REFERENCE FLOW RATE | m³/s | 0.052 |
| REFERENCE PRESSURE DIFFERENCE | Pa | 90 |
| SPI**** | W/(m³/h) | 0.193 |
| CTRL CONTROL FACTOR | - | 0.65 |
| CONTROL TYPE | - | local premise |
| MAXIMUM PERCENTAGE OF INTERNAL LEAKAGE | % | NA* |
| MAXIMUM PERCENTAGE OF EXTERNAL LEAKAGE | % | 9.6 |
| MIXING RATE | - | NA* |
| POSITION AND DESCRIPTION OF THE VISUAL FILTER SIGNAL | - | NA* |
| AIR FLOW SENSITIVITY AT PRESSURE VARIATIONS OF ± 20 PA | - | NA* |
| INDOOR/OUTDOOR AIR SEALING | m³/h | NA* |
| AEC ANNUAL ELECTRICITY CONSUMPTION | kWh of electricity/year | 127 |
| TEMPERATE AHS ANNUAL HEATING SAVINGS | kWh of primary energy /year | 2830 |
| COLD AHS ANNUAL HEATING SAVINGS | | 5536 |
| WARM AHS ANNUAL HEATING SAVING | | 1280 |

** NA: Not applicable. ** UVR-U: Residential Ventilation Unit - Uni-directional. *** VM: Multiple speeds. VSD: Variable Speed Drive.*
***** SPI: Specific power input.*

## TECHNICAL CHARACTERISTICS

• **1 model.**

• **Black plastic resin (ABS) casing** resistant to impact and aging due to sun exposure ("UV resistant"); the lower surface integrates 6 intake spigots, 5 with a nominal diameter of 80 mm and one with a 125 mm diameter. The discharge mouth, with a nominal diameter of 125 mm, is on the lateral surface.
On the upper surface, protected by a sealed black ABS cover.

• **Plastic resin bracket** (ABS) black, sliding along the side of the products and integrating the holes for fixing the appliance to the target surface

• **3 speed AC motor,** thermally protected, shaft mounted on ball bearings, guarantees prolonged service (at least 30,000 h) at the maximum rated temperature.

• Impeller, of the centrifugal type with backward curved blades, in plastic resin loaded with glass fibers, to combine **dimensional stability, strength and resistance to aggressive agents**.

• **Relative humidity sensors**, electronically managed, with threshold adjustable at installation.

• 2 sleeves connecting to the intake pipes in plastic resin (PP), designed for interlocking in the 80 mm spigots, integrating special mylar valves to maintain the extracted flow rate at 30 $m^3/h$, regardless of pressure drops and the number of connected rooms.

• **4 caps** with an 80 mm diameter, for closing any spigot that may not be used, supplied as standard.

• **Safety certified by a third party** (Ⓨ)

• **Degree of dust and water protection**: IPX4.

• **Electrical insulation class**: II (grounding not required).

## TECHNICAL DATA

| PRODUCTS | CODE | V~50HZ | W min/max | A min/max | RPM min/max | MAX FLOW RATE | | MAX PRESSURE | | Lp dB(A)* 3m min/max | °C* MAX | KG |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | $m^3/h$ min/max | l/s min/max | $mmH_2O$ min/max | Pa min/max | | | |
| VORT PENTA HCS | 12103 | 230 | 21<br>73 | 0.19<br>0.34 | 1245<br>2160 | 205<br>340 | 59.9<br>94.4 | 24.4<br>43.0 | 240.1<br>421.9 | -<br>31.9 | 40 | 4.4 |

** Acoustic pressure measured from 3 m in free field, in compliance with ISO 3741.*

*** Maximum continuous operating temperature of the product.*

## ACCESSORIES

| MODELS | DESCRIPTION | | CODE | VORT PENTA HCS code 12103 |
|---|---|---|---|---|
|  | FLOW REGULATOR | $15^3/h$ | 22324 | ✓ |
| | | $30^3/h$ | 22325 | |
|  | SPIGOT 80 HYGRO | | 22847 | ✓ |

## DETAILS

Suitable for installation in false ceilings or attics, they are designed for suspended mounting using a cable supplied as standard.

The internal duct design guarantees high performance, low consumption and reduced sound levels.

Alternatively, an integrated rotating bracket is available, which facilitates the installation of the fan in any position, ensuring the correct arrangement for the needs of the system.

Reliability over time: the duration of the motors is guaranteed for at least 30,000 h of continuous operation at the maximum certified temperature.

*LONG LIFE* 30.000 h

# VORT HRW MONO RANGE

## DECENTRALIZED HEAT RECOVERY UNITS

**A** | **CENTRALIZED VENTILATION** | **WALL MOUNTED** | **UP TO 20 M²**

Decentralized ventilation unit with heat recovery specifically designed for the exchange of air in residential and commercial premises, newly built or renovated, characterized by high levels of thermal insulation. They can be installed on perimeter walls between 300 mm and 700 mm thick, available in a manual control version, with on-board controls or remote control, and an automatic control version with humidistat.

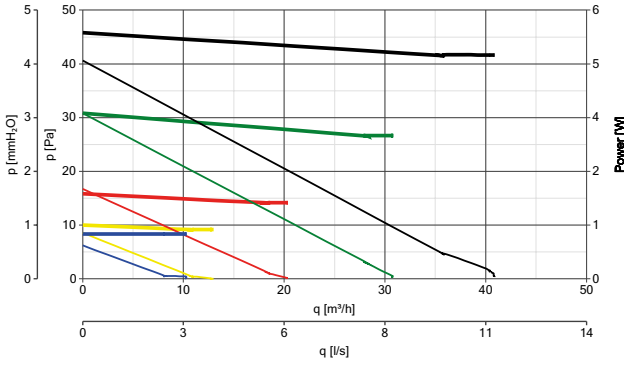
VORT HRW 20 MONO CODE 11634
VORT HRW 20 MONO HCS CODE 11631

REMOTE CONTROL UNIT
CODE 22693

VORT HRW 20 MONO RC CODE 11635

- Single room alternating flow MCV unit with a very high efficiency heat recovery unit (up to 90%), piping Ø 160mm, ceramic exchange pack.
- 5 adjustable speeds (from 18 to 40 m³/h).
- G3 Filters (F5 opt.).
- Controls on the machine.
- Relative humidity sensor on the machine (extraction at max speed if the set threshold is exceeded).

## PERFORMANCE AND ABSORPTION



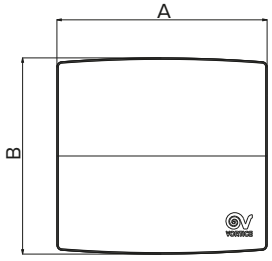

### TECHNICAL DATA

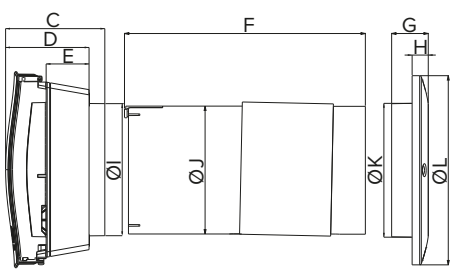
| PRODUCT | CODE | Nom. Ø (mm) | (m³/h) | (W) | (PA) | Lp [dB (A)] 3m |
|---|---|---|---|---|---|---|
| VORT HRW 20 MONO | 11634 | 160 | 41 | 5.5 | 40.6 | 23.6 |
| VORT HRW 20 MONO RC | 11635 | 160 | 41 | 5.5 | 40.6 | 23.6 |
| VORT HRW 20 MONO HCS | 11631 | 160 | 41 | 5.5 | 40.6 | 23.6 |

CONSUMPTION CURVES:
- 5th sp. (max)
- 4th sp.
- 3th sp.
- 2th sp.
- 1th sp. (min)

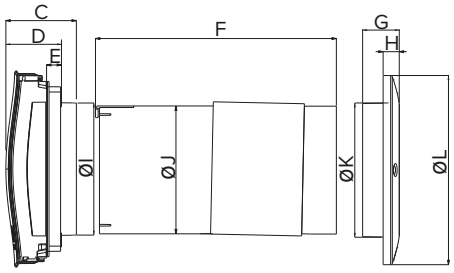
PERFORMANCE CURVES:
- 5th sp. (max)
- 4th sp.
- 3th sp.
- 2th sp.
- 1th sp. (min)

## DIMENSIONS




VORT HRW 20 MONO (code 11634)
VORT HRW 20 MONO HCS (code 11631)




VORT HRW 20 MONO RC (code 11635)

*Dimensions in mm*

| PRODUCTS | A | B | C | D | E | F | G | H | ØI | ØJ | ØK | ØL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VORT HRW 20 MONO | 240 | 224 | 113 | 95 | 49 | 275 | 42 | 18 | 151 | 146 | 153 | 216 |
| VORT HRW 20 MONO RC | 240 | 224 | 80 | 64 | 17 | 275 | 42 | 18 | 151 | 146 | 153 | 216 |
| VORT HRW 20 MONO HCS | 240 | 224 | 113 | 95 | 49 | 275 | 42 | 18 | 151 | 146 | 153 | 216 |

## ENERGY DATA

| | UNIT OF MEASURE | VORT HRW 20 MONO |
|---|---|---|
| MANUFACTURER'S NAME OR TRADE NAME | - | VORTICE |
| CLASS OF SPECIFIC ENERGY CONSUMPTION FOR TEMPERATE CLIMATE | - | A |
| SPECIFIC ENERGY CONSUMPTION SEC (TEMPERATE CLIMATE) | kWh/m² year | -39.8 |
| SPECIFIC ENERGY CONSUMPTION SEC (COLD CLIMATE) | | -83.3 |
| SPECIFIC ENERGY CONSUMPTION SEC (WARM CLIMATE) | | -14.9 |
| DECLARED TYPE OF THE VENTILATION UNIT | - | UVR-U** |
| DRIVE TYPE | - | VM*** |
| HRS TYPE HEAT EXCHANGER | - | recovery |
| THERMAL EFFICIENCY OF HEAT RECOVERY AT THE HRS REFERENCE FLOW RATE | % | 90 |
| MAXIMUM FLOW RATE | m³/h | 31 |
| TOTAL ELECTRIC POWER ABSORBED BY THE FAN AT MAXIMUM FLOW RATE | w | 5.1 |
| Sound LEVEL | LWA [dB(A)] | 44 |
| REFERENCE FLOW RATE | m³/s | 0.006 |
| REFERENCE PRESSURE DIFFERENCE | Pa | 10 |
| SPI**** | W/(m³/h) | 0.166 |
| CTRL CONTROL FACTOR | - | 1 |
| CONTROL TYPE | - | manual |
| MAXIMUM PERCENTAGE OF INTERNAL LEAKAGE | % | NA* |
| MAXIMUM PERCENTAGE OF EXTERNAL LEAKAGE | % | NA* |
| MIXING RATE | - | NA* |
| POSITION AND DESCRIPTION OF THE VISUAL FILTER SIGNAL | - | NA* |
| AIR FLOW SENSITIVITY AT PRESSURE VARIATIONS OF ± 20 PA | - | 0.48 |
| INDOOR/OUTDOOR AIR SEALING | m³/h | 0 |
| AEC ANNUAL ELECTRICITY CONSUMPTION | kWh of electricity/year | 229 |
| TEMPERATE AHS ANNUAL HEATING SAVINGS | kWh of primary energy /year | 4550 |
| COLD AHS ANNUAL HEATING SAVINGS | | 8901 |
| WARM AHS ANNUAL HEATING SAVING | | 2057 |

** NA: Not applicable. ** UVR-U: Residential Ventilation Unit - Uni-directional. *** VM: Multiple speeds. VSD: Variable Speed Drive.*
***** SPI: Specific power input.*

# VORT HRW MONO RANGE

DECENTRALIZED HEAT RECOVERY UNITS

## TECHNICAL CHARACTERISTICS

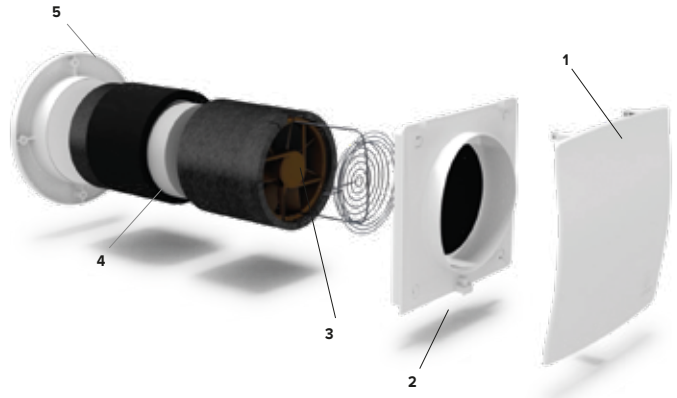
- **3 models**, also in version with relative humidity sensor, with integrated or remote controls, compatible with recessed housing in standard UNI 503 and DIN boxes.
- **Wall frames and internal panels in plastic resin** (ABS) self-extinguishing (V0) white resistant to impact and aging due to sun exposure ("UV resistant").
- The panels, **internally lined with thermal insulation material** to avoid condensation, are without frontal openings (perimeter intake and delivery) for better aesthetic integration in the target environment.
- In the VORT HRW 20 MONO and VORT HRW 20 MONO HCS models, **the frames house the controls**, the power supply of the fan motor and the relative humidity sensor and integrate the spigot of the ventilation duct.
  They are also prepared for in-wall wiring.
- **Casings in expanded polypropylene** (PPE), designed for housing in a hole, with a nominal diameter of 160 mm, drilled in the target perimeter wall.
- **External molded rubber grilles**, fit from the inside through the hole in the target wall, to simplify the installation of the product. They include an easily removable insect net to simplify cleaning operations.
- EC motor fans, to guarantee **very low consumption**, powered by low voltage and with shafts mounted on ball bearings. Characterized by 5 operating speeds, for the best compromise between air flow rate, consumption and sound emission, they are designed to work in a clockwise and anti-clockwise direction, and thus allow the product to operate in the Intake, Ventilation and Ventilation with heat recovery modes.
- **High efficiency storage heat exchangers**, made of ceramic material of the hexagonal cell type to maximize the heat exchange surface. In winter operation (in summer the logic is reversed), thanks to the periodic inversion of the rotation direction of the motor fan, the exchange pack is cyclically heated by the extracted hot air and subsequently transfers most of this heat to the incoming cold renewal air.
- **Washable and easily accessible G3 filters** for maintenance/cleaning.
- **Pre-filters**, housed on the external side.
- The VORT HRW 20 MONO models, designed to **maximize the simplicity of installation**, are complete with controls, integrated in the wall frames, for switching the appliance on or off and selecting the operating mode and speed. They also include diagnostic and signaling LEDs concerning the filter status and the power supply of the fan motor. The VORT HRW 20 MONO HCS models differ from the previous ones for the presence of a relative humidity (RH) sensor, with an alternatively adjustable threshold value, at installation, of 60%, 70%, 80% or 90%, for switching the automatic operation to intake mode when the concentration of RH in the target environment exceeds the preset limit.
- The VORT HRW 20 MONO RC models, **designed to minimize the aesthetic impact** of the installed product, are characterized by a particularly thin wall frame (17 mm only). They are combined with the HRW RC remote control unit, (available as an accessory), with wired connection, wall-mountable in a recessed housing like a standard UNI 503 box.
- **Degree of dust and water protection**: IPX4.
- **Electrical insulation class**: II (grounding not required).

## TECHNICAL DATA

| PRODUCTS | CODE | V~50 | W min/max | A min/max | MAX FLOW RATE | | MAX PRESSURE | | Lp dB(A)* 3m min/max | °C* MAX | KG |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | $m^3/h$ min/max | l/s min/max | $mmH_2O$ min/max | Pa min/max | | | |
| VORT HRW 20 MONO | 11634 | 230 | 1.0<br>5.0 | 0.015<br>0.050 | 10<br>41 | 2.77<br>11.3 | 0.64<br>4.10 | 6.2<br>40.6 | <16.0<br>23.6 | 30 | 2.55 |
| VORT HRW 20 MONO RC | 11635 | 230 | 1.0<br>5.5 | 0.015<br>0.050 | 10<br>41 | 2.77<br>11.3 | 0.64<br>4.10 | 6.2<br>40.6 | <16.0<br>23.6 | 30 | 2.55 |
| VORT HRW 20 MONO HCS | 11631 | 230 | 1.0<br>5.5 | 0.015<br>0.050 | 10<br>41 | 2.77<br>11.3 | 0.64<br>4.10 | 6.2<br>40.6 | <16.0<br>23.6 | 30 | 2.60 |

** Acoustic pressure measured from 3 m in free field, in compliance with ISO 3741. ** Maximum continuous operating temperature of the product.*

## MAIN COMPONENTS





1 - Aesthetic plastic panel in self-extinguishing V0 polymer (ABS), internally covered with heat-insulating material.
2 - Wall frame of the Vort HRW 20 Mono and VORT HRW 20 MONO HCS models.
3 - EC brushless motor with high performance and extremely low consumption, with low sound emissions.
4 - Accumulation heat exchanger made of high efficiency ceramic material.
5 - Molded rubber external grille, mountable on the outside with dowels or internally insertable through the hole in the wall without having to use external scaffolding.
6 - 3-position slide selector for the ventilation mode: position 1 → heat recovery (cyclic inversion of the direction of rotation every 60 sec); position 2 → extraction; position 3 → delivery.
7 - Speed Knob: 0 = Off, 1-5 = fan speed.
8 - LED indicator for filter status: LED off → clean filters; LED on → filters to be cleaned or replaced.
9 - Humidity sensor only in HCS models (code 11631)

# VORT HRW MONO RANGE

## DECENTRALIZED HEAT RECOVERY UNITS

## REGULATORS

| MODELS | DESCRIPTION | DIMENSIONS | CODE | VORT HRW MONO code 11631 | VORT HRW MONO code 11634 | VORT HRW MONO code 11635 | REMOTE CONTROL UNIT code 22693 |
|---|---|---|---|---|---|---|---|
|  | **HRW RC**<br>Control box | **116x83x68.5** | **22693** | | | ✓ | |
|  | **C TEMP**<br>Temperature detector | **144x54x55.8** | **12992** | | ✓ | ✓ | |
|  | **C HCS**<br>Humidity detector | **144x54x55.8** | **12994** | | ✓ | ✓ | |
|  | **WALL BOX HRW RC** | - | **22732** | | | | ✓ |
|  | **BUILT-IN BOX TYPE 503** | - | **22461** | | | | ✓ |

*System components (description and data from page 96).*

*Regulators (description and data from page 152).*

## ACCESSORIES

| MODELS | DESCRIPTION | CODE | VORT HRW MONO code 11631 | VORT HRW MONO code 11634 | VORT HRW MONO code 11635 |
|---|---|---|---|---|---|
|  | **PVC HRW PIPE**<br>Rigid PVC duct (diameter 160 and length 700 mm) for wall mounting. | **22599** | ✓ | ✓ | ✓ |
|  | **MWS**<br>Metal grille | **21148** | ✓ | ✓ | ✓ |
|  | **WA KIT**<br>Circular or rectangular adapter for mounting the window grille. | **21191** | ✓ | ✓ | ✓ |
|  | **WSG-INOX**<br>Rectangular stainless steel grille for WA KIT | **21193** | ✓ | ✓ | ✓ |
|  | **WSG-W**<br>White rectangular grille for WA KIT | **21192** | ✓ | ✓ | ✓ |

# VORT HRW MONO D RANGE

DECENTRALIZED HEAT RECOVERY UNITS

**A** | **CENTRALIZED VENTILATION** | **WALL MOUNTED** | **UP TO 20 M²**

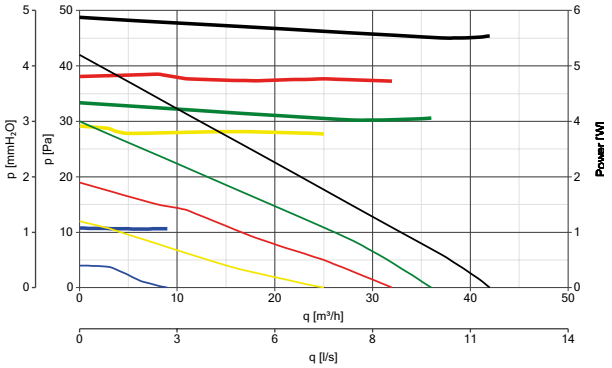
Decentralized ventilation system with heat recovery, high efficiency, suitable for recessed installation (nominal hole diameters 160 mm) in outside walls of thickness between 300 mm and 700 mm. Quiet, efficient, energy saving and antiallergic (thanks to built-in filers preventing the release of pollutants and allergens into the surrounding air), easy to install and maintain, the VORT HRW 20 MONO D (code 11671), represents the ideal alternative to traditional dual flow centralized ventilation systems.

VORT HRW 20 MONO D CODE 11671

REMOTE CONTROL UNIT
CODE 11671

- Single room alternating flow MCV unit with a very high efficiency heat recovery unit (up to 90%), piping Ø 160mm, ceramic exchange pack.
- Recessed wall-mount installation with housing made of expanded polypropylene (PPE).
- 5 adjustable speeds (from 18 to 40 $m^3/h$).
- G3 Filters (F5 opt.).
- High efficiency storage heat exchanger, made of ceramic honeycomb material designed to maximize the heat exchange surface.

## PERFORMANCE AND ABSORPTION



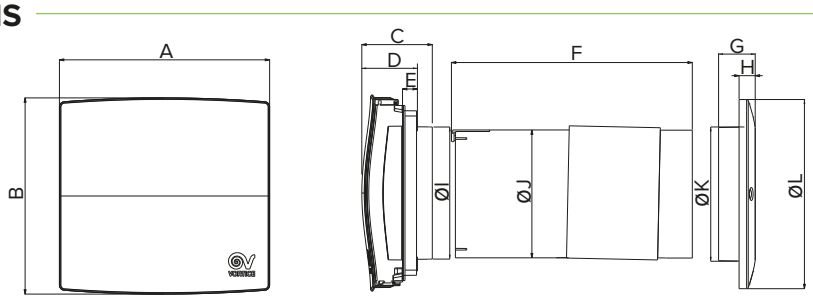

### TECHNICAL DATA

| PRODUCT | CODE | Nom. Ø (mm) | ($m^3/h$) | (W) | (PA) | Lp [dB (A)] 3m |
|---|---|---|---|---|---|---|
| VORT HRW 20 MONO D | 11671 | 160 | 42 | 5 | 40.6 | 26 |

CONSUMPTION CURVES:
- 5th sp. (max)
- 4th sp.
- 3th sp.
- 2th sp.
- 1th sp. (min)

PERFORMANCE CURVES:
- 5th sp. (max)
- 4th sp.
- 3th sp.
- 2th sp.
- 1th sp. (min)

## DIMENSIONS




VORT HRW 20 MONO D (code 11671)

| PRODUCTS | A | B | C | D | E | F | G | H | ØI | ØJ | ØK | ØL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VORT HRW 20 MONO HCS | 240 | 224 | 80 | 64 | 17 | 275 | 42 | 18 | 151 | 146 | 153 | 216 |

*Dimensions in mm*

## ENERGY DATA

| | UNIT OF MEASURE | VORT HRW 20 MONO D |
|---|---|---|
| MANUFACTURER'S NAME OR TRADE NAME | - | VORTICE |
| CLASS OF SPECIFIC ENERGY CONSUMPTION FOR TEMPERATE CLIMATE | - | A |
| SPECIFIC ENERGY CONSUMPTION SEC (TEMPERATE CLIMATE) | kWh/m² year | -40.2 |
| SPECIFIC ENERGY CONSUMPTION SEC (COLD CLIMATE) | | -83.3 |
| SPECIFIC ENERGY CONSUMPTION SEC (WARM CLIMATE) | | 2.5 |
| DECLARED TYPE OF THE VENTILATION UNIT | - | UVR-U** |
| DRIVE TYPE | - | VSD*** |
| HRS TYPE HEAT EXCHANGER | - | recovery |
| THERMAL EFFICIENCY OF HEAT RECOVERY AT THE HRS REFERENCE FLOW RATE | % | 89 |
| MAXIMUM FLOW RATE | m³/h | 35 |
| TOTAL ELECTRIC POWER ABSORBED BY THE FAN AT MAXIMUM FLOW RATE | w | 5 |
| Sound LEVEL | LWA [dB(A)] | 46 |
| REFERENCE FLOW RATE | m³/s | 25 |
| REFERENCE PRESSURE DIFFERENCE | Pa | 19 |
| SPI**** | W/(m³/h) | 0.12598 |
| CTRL CONTROL FACTOR | - | 1 |
| CONTROL TYPE | - | manual |
| MAXIMUM PERCENTAGE OF INTERNAL LEAKAGE | % | NA* |
| MAXIMUM PERCENTAGE OF EXTERNAL LEAKAGE | % | NA* |
| MIXING RATE | - | NA* |
| POSITION AND DESCRIPTION OF THE VISUAL FILTER SIGNAL | - | NA* |
| AIR FLOW SENSITIVITY AT PRESSURE VARIATIONS OF ± 20 PA | - | 0.27 |
| INDOOR/OUTDOOR AIR SEALING | m³/h | 0 |
| AEC ANNUAL ELECTRICITY CONSUMPTION | kWh of electricity/year | 174 |
| TEMPERATE AHS ANNUAL HEATING SAVINGS | kWh of primary energy /year | 4515 |
| COLD AHS ANNUAL HEATING SAVINGS | | 2732 |
| WARM AHS ANNUAL HEATING SAVING | | 2042 |

** NA: Not applicable. ** UVR-U: Residential Ventilation Unit - Uni-directional. *** VM: Multiple speeds. VSD: Variable Speed Drive.*
***** SPI: Specific power input.*

## TECHNICAL CHARACTERISTICS

- **Ultra low power consumption** (2.8 W to 8.6 W), perfectly compatible with operation 24/7.
- **High heat exchange efficiency (up to 89%),** certified by independent body, guaranteeing comfort and minimal waste of energy.
- **Extremely low noise levels**, compatible with installation in living rooms (lounge, study, bedroom), and use during the night.
- Offering **compact dimensions,** plus ease of installation and set-up, these VORT HRW 20 MONO D units are ideal both for new buildings and for renovation projects.
- **Wide range of alternative operating modes**, allowing selection of the best balance between performance, power consumption and noise levels.
- **Simple and intuitive to use.**
- **Ventilation duct with damper mechanism**, to prevent the risk of contaminants entering from outside and maximize heat insulation in the event that the room will not be occupied for extended periods.
- **Facility of operation in conjunction with an extractor fan**, to ensure continuous and correct ventilation of the dwelling.
- **Option of operation** in automatic mode, enabled by installing temperature and relative humidity sensors (optional).
- Possibility of installation on outside walls of thickness between 300 mm and 700 mm (with optional accessory).
- Operation permissible across a wide range of outdoor temperatures (-20° / 50° C).
- **Internal panel made of self-extinguishing plastic polymer (ABS V0)**, coated with heat-insulating material to avoid condensation and designed without frontal vents so as to blend effortlessly into the interior decor (peripheral intake and outlet vents). Provision made for chased wiring.
- External grille made of plastic resin, complete with fly screen.
- F**an unit with EC motor, guaranteeing ultra low energy usage**, powered at low voltage and with shaft mounted on ball bearings to ensure virtually “maintenance free” operation. 5 fan speeds, favouring selection of the best balance between volume of air handled, power consumption and noise level.
- **G3 filter, mounted in separate frame to facilitate user serviceability,** washable and easily accessible for cleaning and maintenance.
- **Mesh prefilter** housed adjacent to the external grille.
- **Wired remote control unit supplied as standard accessory (code 21145)**, wall-mounted and compatible with DIN standard circular back box, diameter 60 mm. Complete with circuit board designed for use in combination with three alternative power adapters (optional), in versions for recessed mounting or panel installation (DIN rail) and designed to serve a maximum of 4 or 6 products, the control unit includes 2 Leds (indicating the operational status of the product and warning when the filter is clogged) and is factory prepared for use in combination with IR remote control.
- **Degree of dust and water protection**: IPX4.
- **Electrical insulation class**: II (grounding not required).

## TECHNICAL DATA

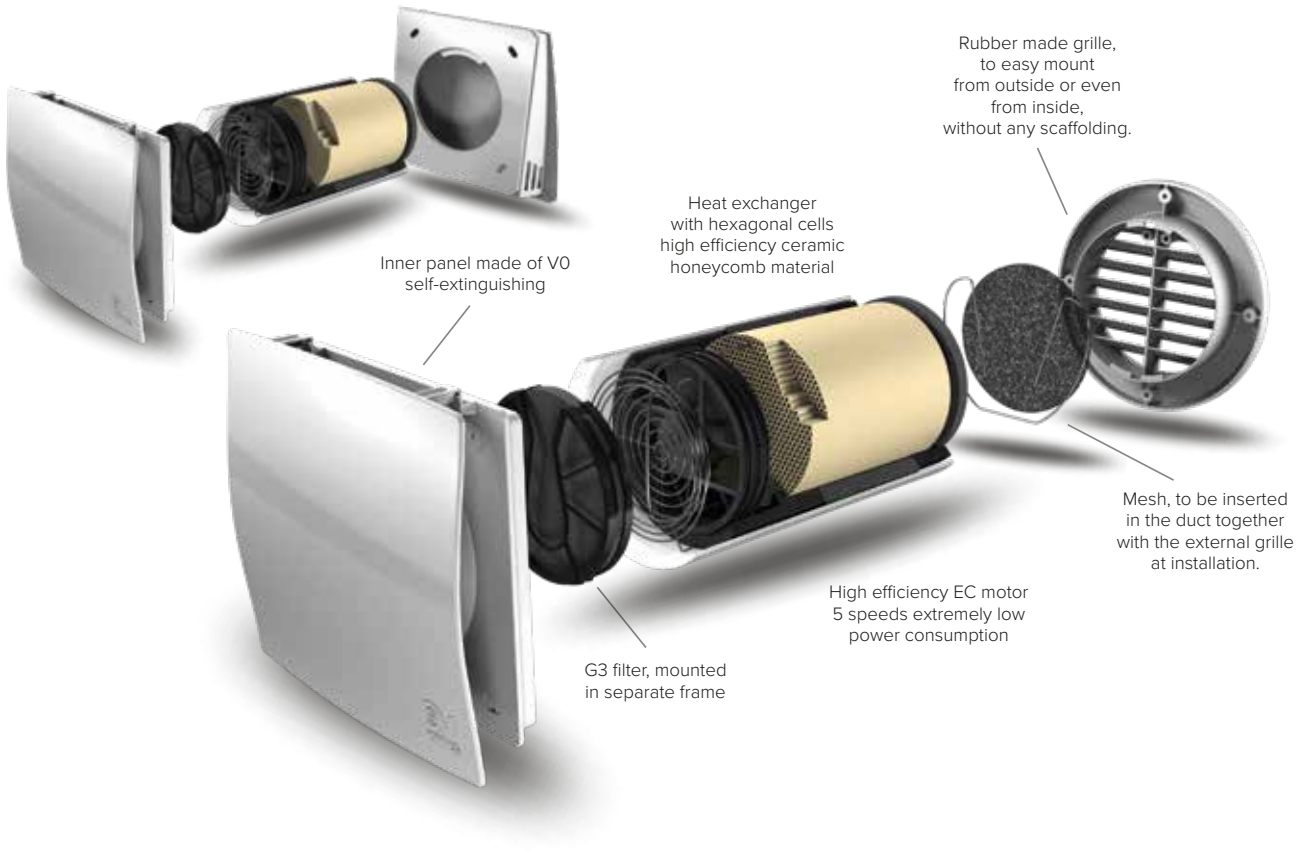
| SPEED | 1 | 2 | 3 | 4 | BOOST |
|---|---|---|---|---|---|
| Supply/extract airflow at different speed leves $m^3/h$ | 9 | 16 | 25 | 33 | 42 |
| Fan power W | 2 | 2,7 | 3,7 | 5,0 | |
| Heat recovery efficciency | up to 89% | | | | |
| Supply voltage V | input 230 V - 50/60 Hz /output 12 V | | | | |
| Nominal current A | 0,026 | 0,035 | 0,048 | 0,056 | - |
| Weight Kg | 2,55 | | | | |
| Temperature Max C° | | | -20° / 50° C | | |

## SOUNDS LEVELS

| | |
|---|---|
| **Sound pressure LPA dB(A)*** | 16/22/26 |
| **Standard sound pressure difference Dn,e,w**** | 32 - 48 dB |

** Sound pressure levels have been calculated at 3 mt in free field according to UNI EN ISO 3741:2010. ** Rating according to EN ISO 10140-2-2010 depending on accessories.*

## MAIN COMPONENTS

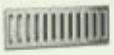


## REGULATORS

| MODELS | DESCRIPTION | DIMENSIONS | CODE | VORT HRW MONO D code 11671 |
|---|---|---|---|---|
|  | **C SMOKE** Smoke sensor | **116x83x68.5** | **12992** | ✓ |
|  | **C TEMP** Temperature detector | **144x54x55.8** | **12992** | ✓ |
|  | **C HCS** Humidity detector | **144x54x55.8** | **12994** | ✓ |

*System components (description and data from page 96).*
*Regulators (description and data from page 152).*

## ACCESSORIES

| MODELS | DESCRIPTION | CODE | VORT HRW MONO D code 11671 |
|---|---|---|---|
|  | **PVC HRW PIPE** Rigid PVC duct (diameter 160 and length 700 mm) for wall mounting. | **22599** | ✓ |
|  | **MWS** Metal outer grille | **21148** | ✓ |
|  | **MWS-A** Outside stainless steel windshield panel | **21219** | ✓ |
|  | **WA KIT** Circular or rectangular adapter for mounting the window grille. | **21191** | ✓ |
|  | **WSG-INOX** Rectangular stainless steel grille for WA KIT | **21193** | ✓ |
|  | **WSG-W** White rectangular grille for WA KIT | **21192** | ✓ |
|  | **M 5** Filter | **22699** | ✓ |
|  | **M 5** Filter Kit | **22466** | ✓ |

## ADVANCED ELECTRONICS SUITE

**HRW RCD D - code 21145**
Remote control


Mode Selection:
→ extraction
→
→ Normal ventilation
(without heat recovery)
→
← Heat recovery

Filter status indicator LED:
LED off → filter clean;
LED on → filters to be cleaned or replaced

Speed selection

Boost speed

**PS24W - code 21187**
Power supply for wall mounting - up to 4 units

**PS36W - code 21188**
Power supply for wall mounting - up to 6 units

**PS36WDIN - code 21189**
Power supply for electrical panel (DIN bar) - up to 6 units

# VORT HR NETI RANGE

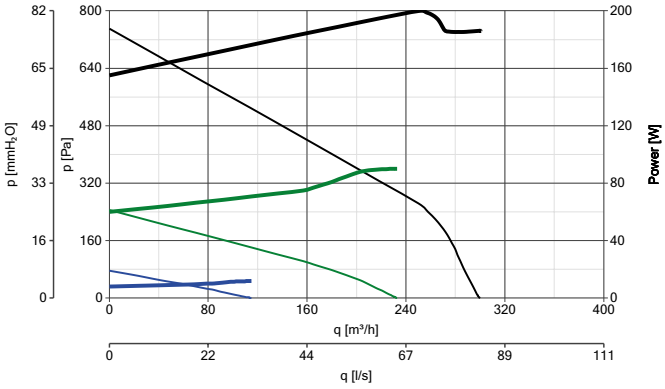
WALL-MOUNTED HEAT RECOVERY UNIT

**A** | **CENTRALIZED VENTILATION** | **WALL AND FLOOR MOUNTING** | **UP TO 180 M²**

Centralized dual flow ventilation unit with heat recovery for floor and wall installation, ideal for ventilation of homes and residential and commercial premises with a surface area of up to 180 $m^2$.

- Internal structure in high density expanded polypropylene 40kg/$m^3$.
- Aesthetic front panel in plastic resin, glossy white finish.
- Connection spigots to pipes with a nominal diameter of 125 mm, backward curved centrifugal fans directly coupled to EC motors.
- High efficiency counter flow heat exchanger in plastic material (PS).
- Automatic mechanical by-pass for free-cooling.
- Filters ePM10 50% (M5) and Coarse 65% (G4), located respectively in correspondence with the inlet and outlet ducts.
- Integrated control panel (Remote control panel with optional wired connection)
- Supporting bracket for wall installation integrated in the product
- Can be integrated into residential home automation systems (ModBus protocol) on RS485 SLAVE mode.

## PERFORMANCE AND ABSORPTION



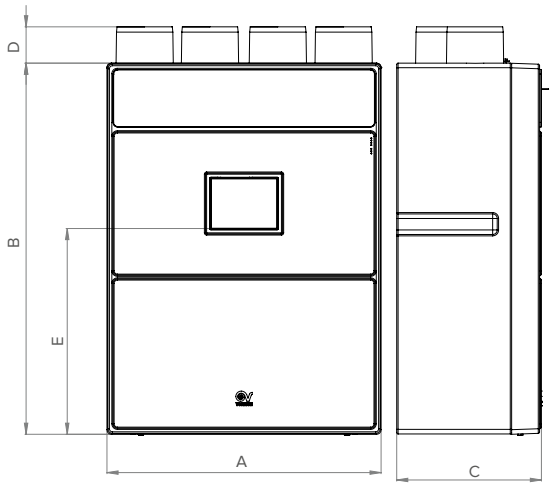

## TECHNICAL DATA

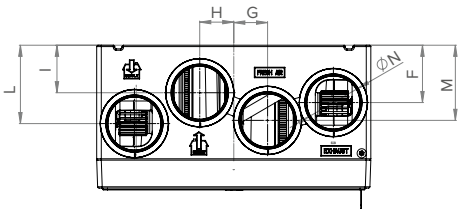
| PRODUCT | CODE | Nom. Ø (mm) | ($m^3$/h) | (W) | (PA) | Lp [dB (A)] 3m |
|---|---|---|---|---|---|---|
| VORT HR 300 NETI | 10935 | 125 | 300 | 190 | 735 | 24 |

CONSUMPTION CURVES
- max
- med
- min

PERFORMANCE CURVES
- max
- med
- min

## DIMENSIONS




| PRODUCTS | A | B | C | D | E | F | G | H | I | L | M | ØN |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VORT HR 300 NETI | 600 | 812 | 317 | 80 | 450 | 125 | 74 | 74 | 104 | 172 | 165 | 125 |

*Dimensions in mm*

## ENERGY DATA

| | UNIT OF MEASURE | VORT HR 300 NETI |
|---|---|---|
| MANUFACTURER'S NAME OR TRADE NAME | - | VORTICE |
| CLASS OF SPECIFIC ENERGY CONSUMPTION FOR TEMPERATE CLIMATE | - | A |
| SPECIFIC ENERGY CONSUMPTION SEC (TEMPERATE CLIMATE) | kWh/m² year | - 35 |
| SPECIFIC ENERGY CONSUMPTION SEC (COLD CLIMATE) | | - 74 |
| SPECIFIC ENERGY CONSUMPTION SEC (WARM CLIMATE) | | - 11 |
| DECLARED TYPE OF THE VENTILATION UNIT | - | UVR-B** |
| DRIVE TYPE | - | VSD*** |
| HRS TYPE HEAT EXCHANGER | - | recovery |
| THERMAL EFFICIENCY OF HEAT RECOVERY AT THE HRS REFERENCE FLOW RATE | % | 87.9 |
| MAXIMUM FLOW RATE | m³/h | 270 |
| TOTAL ELECTRIC POWER ABSORBED BY THE FAN AT MAXIMUM FLOW RATE | w | 190 |
| Sound LEVEL | LWA [dB(A)] | 57.2 |
| REFERENCE FLOW RATE | m³/s | 0.0525 |
| REFERENCE PRESSURE DIFFERENCE | Pa | 56 |
| SPI**** | W/(m3/h) | 0.4392 |
| CTRL CONTROL FACTOR | - | 0.85 |
| CONTROL TYPE | - | centralized env. |
| MAXIMUM PERCENTAGE OF INTERNAL LEAKAGE | % | 2.8 |
| MAXIMUM PERCENTAGE OF EXTERNAL LEAKAGE | % | 2.3 |
| MIXING RATE | - | NA* |
| POSITION AND DESCRIPTION OF THE VISUAL FILTER SIGNAL | - | See instruction booklet |
| AIR FLOW SENSITIVITY AT PRESSURE VARIATIONS OF ± 20 PA | - | NA* |
| INDOOR/OUTDOOR AIR SEALING | m³/h | NA* |
| AEC ANNUAL ELECTRICITY CONSUMPTION | kWh of electricity/year | 442 |
| TEMPERATE AHS ANNUAL HEATING SAVINGS | kWh of primary energy /year | 4573 |
| COLD AHS ANNUAL HEATING SAVINGS | | 8946 |
| WARM AHS ANNUAL HEATING SAVING | | 2068 |

** NA: Not applicable. ** UVR-U: Residential Ventilation Unit - Uni-directional. *** VM: Multiple speeds. VSD: Variable Speed Drive.*
***** SPI: Specific power input.*

# VORT HR NETI RANGE

WALL-MOUNTED HEAT RECOVERY UNIT

## TECHNICAL CHARACTERISTICS

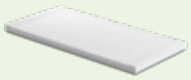
- **1 model**.
- Fire resistant expanded polypropylene casing (DIN EN 13501). Brackets for wall installation included in the standard equipment.
- Aesthetic front panels in white polycarbonate (alternative colors available on request), integrating the panels for direct access to the filters.
- Intake and delivery spigots compatible with the connection to pipes with a nominal diameter of 125 mm.
- Pair of motor fans driven by EC (brushless) motors of the external rotor type, with shafts mounted on ball bearings to ensure a virtually “maintenance free” operation, directly coupled to backward curved centrifugal impellers to guarantee high aeraulic efficiency. 3 operating speeds, independently settable at installation.
- High efficiency counter flow heat exchanger in plastic material (PS).
- Anti frost protection with automatic activation, to prevent the formation of frost at the heat exchanger.
- Mechanical, automatic and 100% filtered by-pass, to guarantee the comfort of the occupants of the rooms in mid seasons, or whenever the outside temperature does not require the action of the heat exchanger.
- Control unit with LCD display, for:
  - turning the product on and off;
  - the initial configuration of the product;
  - manual setting of the operating mode;
  - automatic management of the product and monitoring of its correct operation;
  - system diagnostics;
  - constant monitoring of the filters condition and signaling the need for their maintenance/replacement;
  - updating the firmware release.
- Pair of M5 filters (F7 filter available as an option for the delivery duct), easily accessible for periodic maintenance.
- Condensate collection tray with drain devices.
- Possibility of integration in home automation environments through the ModBus communication protocol.
- Possibility of interlocking with external environmental sensors (optional), for the automatic control of the operating mode.
- Degree of protection from dust and water: IPX2.
- Electrical insulation class: I (grounding required).

## TECHNICAL DATA

| PRODUCTS | CODE | V~50 / 60HZ | W max | A max | MAX FLOW RATE | | MAX PRESSURE | | °C* MAX | KG |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | $m^3/h$ | l/s | $mmH_2O$ | Pa | | |
| VORT HR 300 NETI | 10935 | 220 - 240 | 190 | 1.33 | 300 | 83 | 75 | 735 | 40 | 15 |

** Maximum temperature with continuous operation of the product.*

## FILTERS

| MODELS | DESCRIPTION | DIMENSIONS | CODE | VORT HR NETI code 10935 |
|---|---|---|---|---|
|  | **M5 FILTER** | **275X125X48** | **21410** | ✓ |
|  | **G4 FILTER** | **275X125X48** | **21411** | ✓ |

## REGULATORS

| MODELS | DESCRIPTION | DIMENSIONS | CODE | VORT HR NETI code 10935 | CB LCD R code 21194 |
|---|---|---|---|---|---|
|  | **CB LCD R**<br>remote control unit with wired LCD panel,<br>For recessed installation. | **116x83x65** | **21194** | ✓ | |
|  | **WALL BOX HRW RC** | - | **22732** | ✓ | ✓ |
|  | **BUILT-IN BOX TYPE 503** | - | **22461** | ✓ | ✓ |
|  | **C HCS**<br>Humidity detector | **144x54x55.8** | **12994** | ✓ | |
|  | **C PIR**<br>Presence detector | **144x54x55.8** | **12998** | ✓ | |
|  | **C TEMP**<br>Temperature detector | **144x54x55.8** | **12992** | ✓ | |
|  | **C SMOKE**<br>Polluted air detector | **144x54x55.8** | **12993** | ✓ | |

*System components (description and data from page 96).*
*Regulators (description and data from page 152).*

## ACCESSORIES

| MODELS | DESCRIPTION | CODE | VORT HR NETI code 10935 |
|---|---|---|---|
|  | **HEATER 750**<br>Pre-heater to prevent the formation of frost in correspondence of the heat exchanger, also in particularly harsh climates.<br>Power 750W | **22735** | ✓ |

# VORT HR AVEL RANGE

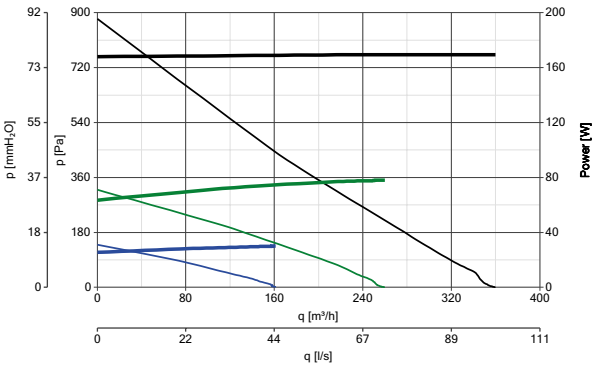
WALL-MOUNTED HEAT RECOVERY UNIT

**A** | **CENTRALIZED VENTILATION** | **WALL MOUNTED** | **UP TO 240 M²**

Centralized dual flow units with heat recovery for floor and wall installation, ideal for ventilation of homes and residential and commercial premises with a surface area of up to 240 m², characterized by high levels of thermal insulation.

- Internal and external structure in high density expanded polypropylene 40kg/m³.
- Connection spigots to pipes with a nominal diameter of 150 mm, centrifugal fans with backward curved blades directly coupled to EC motors.
- High efficiency counter flow heat exchanger in plastic material (PS).
- Automatic mechanical by-pass for free-cooling.
- Filters ePM10 50% (M5) and Coarse 30% (G3), located respectively in correspondence with the inlet and outlet ducts.
- Automatic anti frost function.
- Wired remote LCD control panel, can be housed in a 503 box.
- Bracket for wall installation supplied as an option
- Floor or wall installation. Can be integrated into residential home automation systems (ModBus protocol) on RS485 SLAVE mode.

## PERFORMANCE AND ABSORPTION



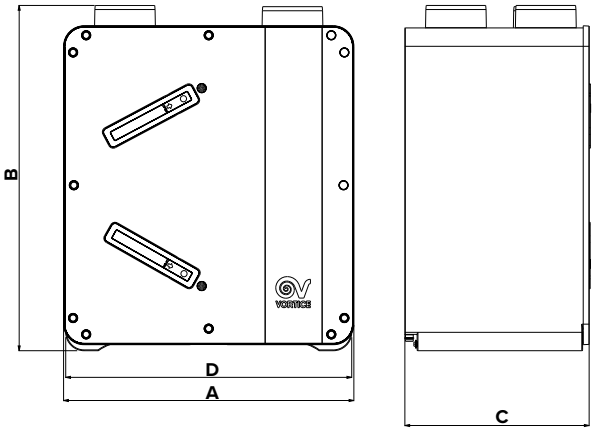

CONSUMPTION CURVES
max
med
min

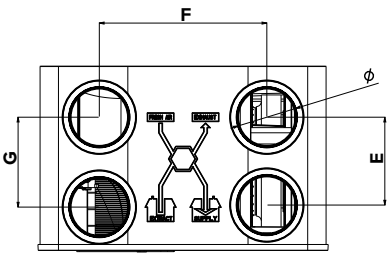
PERFORMANCE CURVES
max
med
min

## TECHNICAL DATA

| CODE | Nom. Ø (mm) | (m³/h) | (W) | (PA) | Lp [dB (A)] 3m |
|---|---|---|---|---|---|
| 12106 | 150 | 350 | 165 | 880 | 23.1 |

## DIMENSIONS




| PRODUCTS | A | B | C | D | E | F | G | Ø |
|---|---|---|---|---|---|---|---|---|
| VORT HR 350 AVEL | 712 | 845 | 455 | 700 | 215 | 410 | 220 | 150 |

*Dimensions in mm*

## ENERGY DATA

| | UNIT OF MEASURE | VORT HR 350 AVEL |
|---|---|---|
| MANUFACTURER'S NAME OR TRADE NAME | - | VORTICE |
| CLASS OF SPECIFIC ENERGY CONSUMPTION FOR TEMPERATE CLIMATE | - | A |
| SPECIFIC ENERGY CONSUMPTION SEC (TEMPERATE CLIMATE) | kWh/m² year | -38.4 |
| SPECIFIC ENERGY CONSUMPTION SEC (COLD CLIMATE) | | -77.0 |
| SPECIFIC ENERGY CONSUMPTION SEC (WARM CLIMATE) | | -13.6 |
| DECLARED TYPE OF THE VENTILATION UNIT | - | UVR-B** |
| DRIVE TYPE | - | VSD*** |
| HRS TYPE HEAT EXCHANGER | - | recovery |
| THERMAL EFFICIENCY OF HEAT RECOVERY AT THE HRS REFERENCE FLOW RATE | % | 88.9 |
| MAXIMUM FLOW RATE | m³/h | 315 |
| TOTAL ELECTRIC POWER ABSORBED BY THE FAN AT MAXIMUM FLOW RATE | w | 170.0 |
| Sound LEVEL | LWA [dB(A)] | 57 |
| REFERENCE FLOW RATE | m3/s | 0.0613 |
| REFERENCE PRESSURE DIFFERENCE | Pa | 70 |
| SPI**** | W/(m³/h) | 0.31746 |
| CTRL CONTROL FACTOR | - | 0.85 |
| CONTROL TYPE | - | centralized env. |
| MAXIMUM PERCENTAGE OF INTERNAL LEAKAGE | % | 3.4 |
| MAXIMUM PERCENTAGE OF EXTERNAL LEAKAGE | % | 3.3 |
| MIXING RATE | - | NA* |
| POSITION AND DESCRIPTION OF THE VISUAL FILTER SIGNAL | - | see instruction booklet |
| AIR FLOW SENSITIVITY AT PRESSURE VARIATIONS OF ± 20 PA | - | NA* |
| INDOOR/OUTDOOR AIR SEALING | m³/h | NA* |
| AEC ANNUAL ELECTRICITY CONSUMPTION | kWh of electricity/year | 332 |
| TEMPERATE AHS ANNUAL HEATING SAVINGS | kWh of primary energy /year | 4600 |
| COLD AHS ANNUAL HEATING SAVINGS | | 8999 |
| WARM AHS ANNUAL HEATING SAVING | | 2080 |

** NA: Not applicable. ** UVR-U: Residential Ventilation Unit - Uni-directional. *** VM: Multiple speeds. VSD: Variable Speed Drive.*

***** SPI: Specific power input.*

# VORT HR AVEL RANGE

WALL-MOUNTED HEAT RECOVERY UNIT

## TECHNICAL CHARACTERISTICS

- Fire resistant expanded polypropylene casings (DIN EN 13501). Front panel in loaded plastic resin with panels for direct access to the filters.
- Spigots for **intake and delivery** compatible with pipes with a nominal diameter of 150 mm.
- **Pair of motor fans driven by EC motors** (brushless) of the external rotor type, with shafts mounted on ball bearings to ensure a virtually “maintenance free” operation, directly coupled to centrifugal impellers with backward curved blades to guarantee high aeraulic efficiency. 2 operating speeds.
- **High efficiency heat exchanger**, of the cross-flow type with counterflow, made of plastic resin (PS).
- **Automatic activation anti frost protection**, to prevent the formation of frost at the heat exchanger.
- **Mechanical, automatic and 100% filtered by-pass**, to guarantee the comfort of the occupants of the rooms in mid seasons, or whenever the outside temperature does not require the action of the heat exchanger.
- **Pair of M5 filters** (F7 filter available as an option for the delivery pipe) and **pair of filters Class ePM1 70%**
- **Condensate collection tray** with drain devices.
- **Brackets for wall installation** included in the standard equipment.
- Possibility of **interlocking with external environmental sensors** (optional), for the automatic control of the operating mode.
- **Degree of protection from dust and water**: IPX2
- **Electrical insulation class**: I (grounding required).

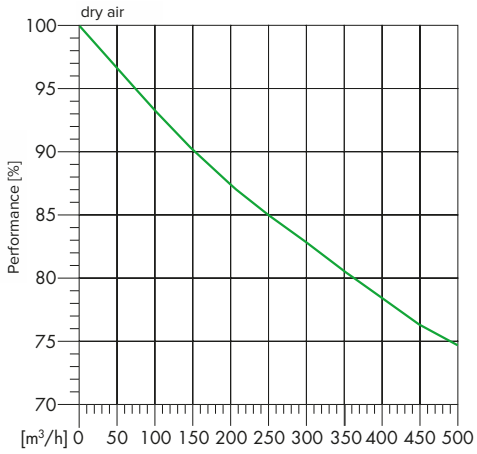
## TECHNICAL DATA

| PRODUCTS | CODE | V~50HZ | W max | A max | MAX FLOW RATE | | MAX PRESSURE | | °C* MAX | KG |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | $m^3/h$ | l/s | $mmH_2O$ | Pa | | |
| VORT HR 350 AVEL | 12106 | 230 | 165 | 1.4 | 350 | 100 | 90 | 880 | 40 | 23 |

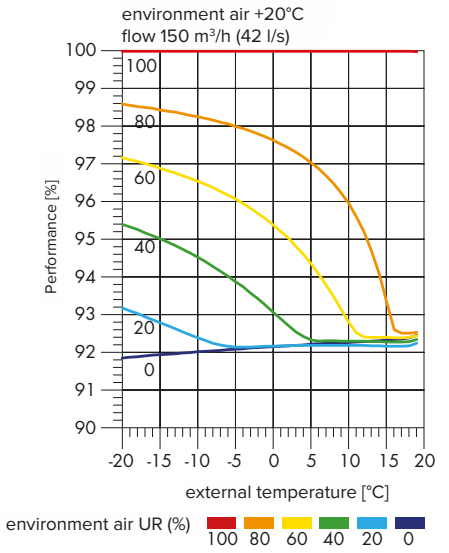
** Maximum temperature with continuous operation of the product.*

## EFFICIENCY CURVES

EFFICIENCY IN ACCORDANCE WITH FLOW RATE




EFFICIENCY IN ACCORDANCE WITH CONDENSATION HEAT




# VORT HR AVEL RANGE

WALL-MOUNTED HEAT RECOVERY UNIT

## FILTERS

| MODELS | DESCRIPTION | DIMENSIONS | CODE | VORT HR AVEL 350 code 12106 |
|---|---|---|---|---|
|  | G3 FILTER | 198x398x15 | 22661 | ✓ |
|  | M5 FILTER | 198X398X15 | 22662 | ✓ |

## REGULATORS

| MODELS | DESCRIPTION | DIMENSIONS | CODE | VORT HR AVEL 350 code 12106 |
|---|---|---|---|---|
|  | C TEMP<br>Temperature detector | 144x54x55.8 | 12992 | ✓ |
|  | C SMOKE<br>Polluted air detector | 144x54x55.8 | 12993 | ✓ |
|  | C HCS<br>Humidity detector | 144x54x55.8 | 12994 | ✓ |
|  | C PIR<br>Presence detector | 144x54x55.8 | 12998 | ✓ |

## ACCESSORIES

| MODELS | DESCRIPTION | CODE | VORT HR AVEL 350 code 12106 |
|---|---|---|---|
|  | AVEL WALL FIXING KIT | 22663 | ✓ |
|  | 750W HEATER<br>Pre-heater to prevent the formation of frost in corre-spondenceof the heat exchanger, also in particularly harsh climates | 22735 | ✓ |

*System components (description and data from page 96).*
*Regulators (description and data from page 152).*

## NOTES

# VORT AVEL HR 450 D RANGE

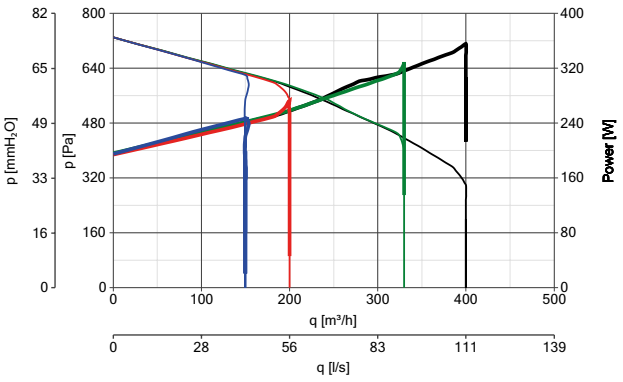
WALL-MOUNTED HEAT RECOVERY UNIT

**A** | **CENTRALIZED VENTILATION** | **WALL MOUNTED**

Double flow centralised unit with heat recovery for wall installation. Ideal for ventilation of homes and residential and commercial premises with surface areas up to 260 m$^2$.

- Vertical wall installation.
- Galvanised and painted steel sheet casing. Brackets for wall-installation included in standard supply.
- Aesthetic plastic resin (ABS) front panel.
- Plastic resin (PPE) internal parts.
- Extraction and delivery spigots compatible with ducts having nominal iameter equal to 160 mm.
- Pair of electric fans driven by external rotor constant flow regulation IEC motors (brushless) with shafts mounted on ball bearings to ensure virtually "maintenance-free" operation, directly coupled to forward-blade centrifugal impellers. 4 operating speeds, can be set independently on installation.
- High efficiency counter cross flow heat exchanger, made in plastic resin.

## PERFORMANCE AND ABSORPTION



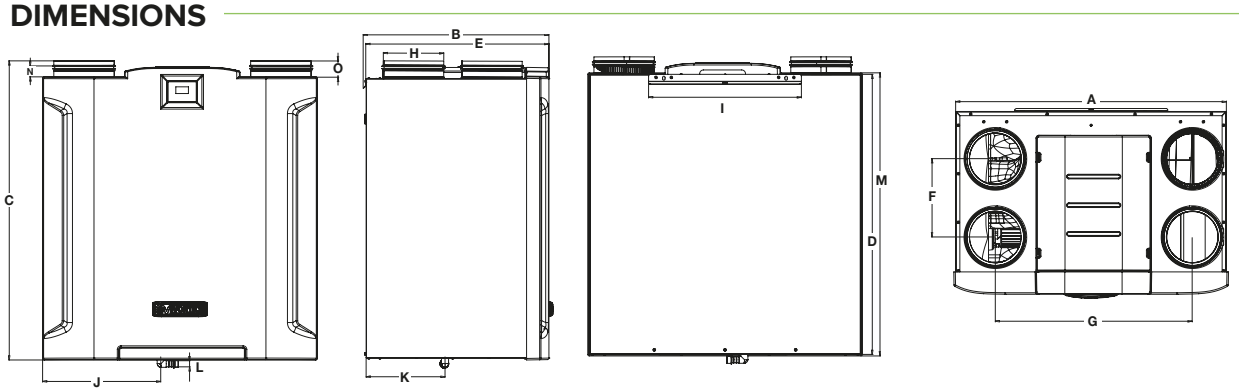

## TECHNICAL DATA

| CODE | Nom. Ø (mm) | (m$^3$/h) | (W) | (PA) | Lp [dB (A)] 3m |
|---|---|---|---|---|---|
| 12101 | 158 | 400 | 350 | 680 | 23.1 |

Power consumption
- Min. Speed
- Med. Speed
- Max Speed
- Boost Speed

Performance curves
- Min. Speed
- Med. Speed
- Max Speed
- Boost Speed

## DIMENSIONS




| PRODUCTS | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VORT AVEL HR 450 D | 709 | 486 | 783 | 733 | 479 | 205 | 516 | Ø158 | 400 | 308 | 207 | Ø16 | 741 | 26.5 | 40 |

*Dimensions in mm*

## SOUND LEVELS

| VORT AVEL HR 450 D | Lw db (A) | Lp db (A) 3 m* |
|---|---|---|
| **Supply to internal** | 61,5 | 25,2 |
| **Extract to internal** | 45,7 | 41 |
| **Breakout** | 47,2 | 26,7 |

** Acoustic pressure calculated at 3 m in free field in compliance with ISO 9614.*

## ENERGY DATA

| | | |
|---|---|---|
| **MANUFACTURER'S NAME OR TRADE NAME** | - | VORTICE |
| **CLASS OF SPECIFIC ENERGY CONSUMPTION FOR TEMPERATE CLIMATE** | - | A |
| **SPECIFIC ENERGY CONSUMPTION SEC (TEMPERATE CLIMATE)** | kWh/m² year | -37 |
| **SPECIFIC ENERGY CONSUMPTION SEC (COLD CLIMATE)** | | -75 |
| **SPECIFIC ENERGY CONSUMPTION SEC (WARM CLIMATE)** | | -12 |
| **DECLARED TYPE OF THE VENTILATION UNIT** | - | UVR-B** |
| **DRIVE TYPE** | - | VSD*** |
| **HRS TYPE HEAT EXCHANGER** | - | with recovery |
| **THERMAL EFFICIENCY OF HEAT RECOVERY AT THE HRS REFERENCE FLOW RATE** | % | 88 |
| **MAXIMUM FLOW RATE** | m³/h | 400 |
| **TOTAL ELECTRIC POWER ABSORBED BY THE FAN AT MAXIMUM FLOW RATE** | w | 258.5 |
| **Sound LEVEL** | LWA [dB(A)] | 47,2 |
| **REFERENCE FLOW RATE** | m3/s | 0.0778 |
| **REFERENCE PRESSURE DIFFERENCE** | Pa | 50 |
| **SPI**** | W/(m³/h) | 0.384 |
| **CTRL CONTROL FACTOR** | - | 0.85 |
| **CONTROL TYPE** | - | local demand control |
| **MAXIMUM PERCENTAGE OF INTERNAL LEAKAGE** | % | 0.3 |
| **MAXIMUM PERCENTAGE OF EXTERNAL LEAKAGE** | % | 0.6 |
| **MIXING RATE** | - | NA* |
| **POSITION AND DESCRIPTION OF THE VISUAL FILTER SIGNAL** | - | See user manual |
| **AIR FLOW SENSITIVITY AT PRESSURE VARIATIONS OF ± 20 PA** | - | NA* |
| **INDOOR/OUTDOOR AIR SEALING** | m³/h | NA* |
| **AEC ANNUAL ELECTRICITY CONSUMPTION** | kWh of electricity/year | 393 |
| **TEMPERATE AHS ANNUAL HEATING SAVINGS** | kWh of primary energy /year | 4576 |
| **COLD AHS ANNUAL HEATING SAVINGS** | | 8951 |
| **WARM AHS ANNUAL HEATING SAVING** | | 2069 |

** NA: Not applicable. ** UVR-U: Residential Ventilation Unit - Uni-directional. *** VM: Multiple speeds. VSD: Variable Speed Drive.*
***** SPI: Specific power input.*

# VORT AVEL HR 450 D RANGE

WALL-MOUNTED HEAT RECOVERY UNIT

## TECHNICAL CHARACTERISTICS

- **Automatic frost protection** to prevent the formation of frost at the heat exchanger.
- **100%,mechanical by-pas**s, automatic operation and filtered to guarantee the comfort of the occupants of the rooms in mid-season, or when the outdoor temperature does not require the action of the heat exchanger.
- **Three ISO Coarse 90% (G4) class filters**, set respectively on the extraction duct, on the air delivery duct and on the by-pass (M5 and F7 filters available as an optional for the delivery duct and the by-pass), easily accessible for periodic maintenance.
- Condensate collection tray with drain devices.
- Possibility of interlocking to outdoor environmental sensors (optionals) for automatic control of the operating mode.
- **High performance**, suitable for the correct ventilation of large apartments and villas.
- **Easy installation and maintenance**: the front panel gives direct access to the main internal components. The position of the electrical contacts and the electronics, located on the upper facade of the product, facilitates connection to the mains and maintenance operations.
- **Low consumption,** perfectly compatible with 24-hour continuous operation.
- **Full compliance with German standards.**

## TECHNICAL DATA

| PRODUCTS | CODE | V~50HZ | W max | A max | MAX FLOW RATE | | MAX PRESSURE | | °C* MAX | KG |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | $m^3/h$ | l/s | $mmH_2O$ | Pa | | |
| VORT HR AVEL 450 D | 12101 | 220-240 | 350 | 1.6 | 400 | 110 | 69 | 680 | 40 | 40 |

** Maximum temperature with continuous operation of the product.*

## DETAILS

Can operate with environmental sensors

Control panel with display integrated

CERTIFIED COMPONENT
Passive House Institute

*Full compliance with PassivHaus requirements

High heat exchange efficiency

Automatic By-pass

Can be integrated into home automation environments by means of ModBus communication protocol

Magnetic cover easily removable for filter replacement

*in association with F7 filters, pre heater and silencer. Please refer to system accessories page 11

# VORT AVEL HR 450 D RANGE

WALL-MOUNTED HEAT RECOVERY UNIT

## FILTERS

| MODELS | DESCRIPTION | DIMENSIONS | CODE | VORT HR AVEL 450 D code 12101 |
|---|---|---|---|---|
|  | FTR EPM10 50% (M5) | 184x398x21 | 21625 | ✓ |
|  | FTR EPM1 55% (F7) | 184x398x21 | 21624 | ✓ |
|  | FTR ISO COARSE 90% (G4) | 200x420x5 | 21628 | ✓ |
|  | FTR EPM10 50% (M5) | 54x200x21 | 21627 | ✓ |
|  | FTR EPM1 55% (F7) | 54x200x21 | 21626 | ✓ |
|  | FTR ISO COARSE 90% (G4) | 59x420x5 | 21629 | ✓ |

## REGULATORS

| MODELS | DESCRIPTION | DIMENSIONS | CODE | VORT HR AVEL 450 D code 12101 |
|---|---|---|---|---|
|  | **C SMOKE**<br>Polluted air detector | 144x54x55.8 | 12993 | ✓ |
|  | **C HCS**<br>Humidity detector | 144x54x55.8 | 12994 | ✓ |

## ACCESSORIES

| MODELS | DESCRIPTION | CODE | VORT HR AVEL 450 D code 12101 |
|---|---|---|---|
|  | **1200W HEATER**<br>Pre-heater to prevent the formation of frost in correspondenceof the heat exchanger, also in particularly harsh climates | 21622 | ✓ |
|  | **2400W HEATER**<br>Pre-heater to prevent the formation of frost in correspondenceof the heat exchanger, also in particularly harsh climates | 21623 | ✓ |
|  | **NA 160 PHI**<br>Circular silencer for ducts | 21643 | |
|  | **AF 169**<br>Filter box | 12993 | ✓ |

## ADVANCED ELECTRONICS SUITE

**Control panel with LCD for:**

- Product switch-on and switch-off;
- Initial configuration of the product;
- Selection of operating speed;
- Weekly operating mode programming;
- Monitoring of the correct operation of the product (any malfunctioning is highlighted through error messages shown on the display)
- Display of the operating status (set speed, by-pass status, active defrosting procedure, any pre and/or post heater on, etc.)
- Indication of the condition of the saturated filters on the display

**CB LCD D - code 21381**
Wired remote control panel with
LCD display and menu


The Remote Control user interface allows users to:
Regulate fan speed
Modify weekly programming
View and manage any alarm situations

*System components (description and data from page 96).*
*Regulators (description and data from page 152).*

# VORT PROMETEO PLUS RANGE

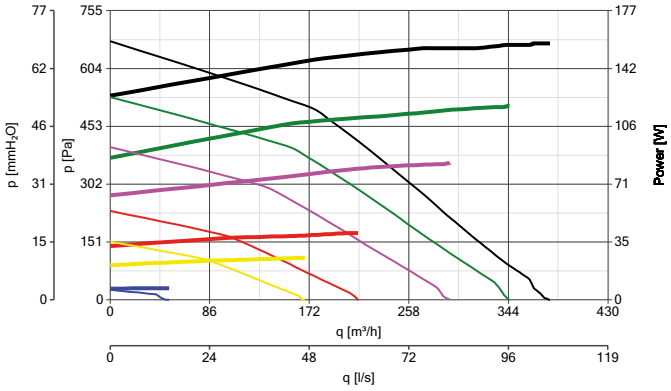
HEAT RECOVERY UNIT

**A** | CENTRALIZED VENTILATION | WALL AND FLOOR MOUNTING | UP TO 240 M²

Centralized dual flow unit with heat recovery for floor and wall installation, horizontal and vertical, ideal for ventilation of homes and residential and commercial premises with a surface of up to 240 m².

- Internal and external structure in high density expanded polypropylene 40kg/m³.
- Connection spigots to pipes with a nominal diameter of 150 mm, centrifugal fans with backward curved blades directly coupled to EC motors.
- High efficiency counter flow heat exchanger in plastic material (PS).
- Automatic mechanical by-pass for free-cooling.
- Pair of filters Class ePM10 (M5) 50% (F5)
- Automatic anti frost function, temperature, relative humidity and CO2 concentration probes.
- RF radio control and silencer included.
- Floor or wall installation. Can be integrated into residential home automation systems (ModBus protocol) on RS485 SLAVE mode.

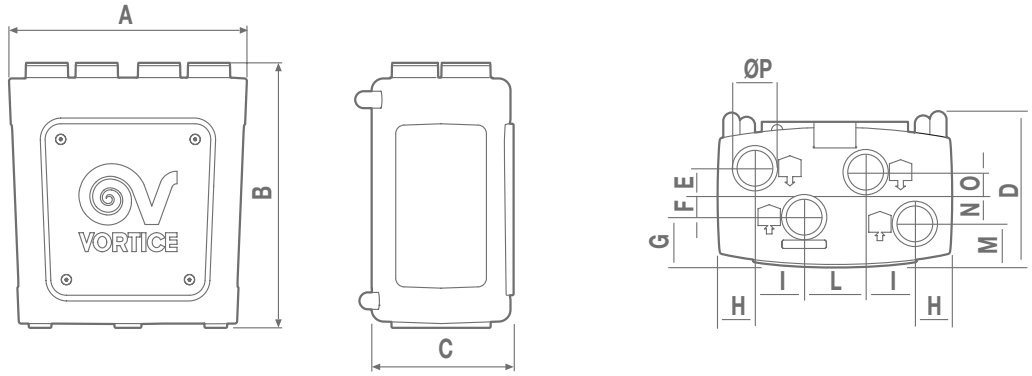
## PERFORMANCE AND ABSORPTION




### TECHNICAL DATA

| CODE | Nom. Ø (mm) | (m³/h) | (W) | (PA) | Lp [dB (A)] 3m |
|---|---|---|---|---|---|
| 11582 | 150 | 380 | 160 | 675 | 41 |

## DIMENSIONS




*Dimensions in mm*

| PRODUCTS | A | B | C | D | E | F | G | H | I | L | M | N | O | ØP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VORT PROMETEO PLUS HR 400 | 840 | 935 | 502 | 560 | 85 | 100 | 156.7 | 133.6 | 176 | 220 | 180.7 | 76 | 99 | 150 |

## SOUND LEVELS

| RPM | | Lw dB (A) 125 Hz | 250 Hz | 500 Hz | 1000 Hz | 2000 Hz | 4000 Hz | 8000 Hz | Lw dB (A) | Lw dB (A) 3m* |
|---|---|---|---|---|---|---|---|---|---|---|
| 700 | Delivery | 8.4 | 9.3 | 14.0 | 22.6 | 5.0 | 9.2 | 10.1 | 28.0 | 7.5 |
| | Intake | 5.7 | 15.0 | 18.1 | 16.4 | 13.9 | 12.2 | 7.5 | 27.5 | 7.0 |
| | Casing | 14.3 | 39.2 | 18.3 | 20.6 | 2.9 | 7.1 | na** | 44.0 | 23.5 |
| 1600 | Delivery | 18.5 | 24.1 | 29.4 | 37.5 | 24.8 | 15.6 | 13.3 | 43.2 | 22.7 |
| | Intake | 16.0 | 25.6 | 27.9 | 28.4 | 18.8 | 6.8 | 3.3 | 37.6 | 17.1 |
| | Casing | 21.7 | 31.9 | 38.3 | 34.0 | 23.8 | 11.8 | 7.5 | 48.4 | 27.9 |
| 2100 | Delivery | 16.9 | 32.3 | 36.6 | 48.3 | 35.8 | 24.7 | 10.2 | 56.7 | 36.2 |
| | Intake | 14.9 | 34.7 | 32.8 | 38.4 | 29.2 | 15.7 | na** | 46.4 | 25.9 |
| | Casing | 24.6 | 41.1 | 41.6 | 47.1 | 34.8 | 20.8 | 5.6 | 58.0 | 37.5 |
| 2650 | Delivery | 20.3 | 40.9 | 46.0 | 64.7 | 41.8 | 33.7 | 18.5 | 65.5 | 45.0 |
| | Intake | 19.1 | 42.5 | 38.4 | 60.0 | 36.0 | 25.6 | 13.8 | 60.7 | 40.2 |
| | Casing | 31.3 | 43.0 | 48.1 | 59.2 | 41.4 | 29.1 | 13.6 | 61.3 | 40.8 |
| 3000 | Delivery | 23.5 | 41.3 | 47.5 | 52.0 | 44.1 | 37.1 | 22.8 | 59.4 | 38.9 |
| | Intake | 19.7 | 42.7 | 40.6 | 43.2 | 38.0 | 27.1 | 12.2 | 53.6 | 33.1 |
| | Casing | 28.9 | 45.7 | 47.9 | 47.4 | 43.9 | 33.3 | 16.2 | 59.5 | 39.0 |
| 3350 | Delivery | 25.3 | 44.4 | 49.7 | 54.8 | 48.4 | 42.3 | 28.8 | 62.7 | 42.2 |
| | Intake | 23.6 | 43.4 | 43.2 | 45.7 | 41.5 | 31.6 | 13.5 | 55.5 | 35.0 |
| | Casing | 31.8 | 46.7 | 51.5 | 55.2 | 47.5 | 37.4 | 22.0 | 62.4 | 41.9 |

** Acoustic pressure calculated at 3 m in free field in compliance with ISO 9614.*

## ENERGY DATA

| | UNIT OF MEASURE | VORT PROMETEO PLUS HR 400 |
|---|---|---|
| MANUFACTURER'S NAME OR TRADE NAME | - | VORTICE |
| CLASS OF SPECIFIC ENERGY CONSUMPTION FOR TEMPERATE CLIMATE | - | A |
| SPECIFIC ENERGY CONSUMPTION SEC (TEMPERATE CLIMATE) | kWh/m² year | -37.6 |
| SPECIFIC ENERGY CONSUMPTION SEC (COLD CLIMATE) | | -76.1 |
| SPECIFIC ENERGY CONSUMPTION SEC (WARM CLIMATE) | | -12.9 |
| DECLARED TYPE OF THE VENTILATION UNIT | - | UVR-B** |
| DRIVE TYPE | - | VSD*** |
| HRS TYPE HEAT EXCHANGER | - | recovery |
| THERMAL EFFICIENCY OF HEAT RECOVERY AT THE HRS REFERENCE FLOW RATE | % | 88.3 |
| MAXIMUM FLOW RATE | m3/h | 340 |
| TOTAL ELECTRIC POWER ABSORBED BY THE FAN AT MAXIMUM FLOW RATE | w | 156.0 |
| Sound LEVEL | LWA [dB(A)] | 62 |
| REFERENCE FLOW RATE | m3/s | 0.0661 |
| REFERENCE PRESSURE DIFFERENCE | Pa | 118 |
| SPI**** | W/(m3/h) | 0.34454 |
| CTRL CONTROL FACTOR | - | 0.85 |
| CONTROL TYPE | - | centralized env. |
| MAXIMUM PERCENTAGE OF INTERNAL LEAKAGE | % | 1.2 |
| MAXIMUM PERCENTAGE OF EXTERNAL LEAKAGE | % | 3.2 |
| MIXING RATE | - | NA* |
| POSITION AND DESCRIPTION OF THE VISUAL FILTER SIGNAL | - | see instruction booklet |
| AIR FLOW SENSITIVITY AT PRESSURE VARIATIONS OF ± 20 PA | - | NA* |
| INDOOR/OUTDOOR AIR SEALING | m3/h | NA* |
| AEC ANNUAL ELECTRICITY CONSUMPTION | kWh of electricity/year | 357 |
| TEMPERATE AHS ANNUAL HEATING SAVINGS | kWh of primary energy /year | 4584 |
| COLD AHS ANNUAL HEATING SAVINGS | | 8967 |
| WARM AHS ANNUAL HEATING SAVING | | 2073 |

** NA: Not applicable. ** UVR-U: Residential Ventilation Unit - Uni-directional. *** VM: Multiple speeds. VSD: Variable Speed Drive.*

***** SPI: Specific power input.*

# VORT PROMETEO PLUS RANGE

## HEAT RECOVERY UNIT

## TECHNICAL CHARACTERISTICS

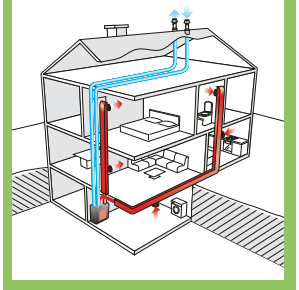
- **1 model**.
- **Expanded polypropylene casing** fire resistant (DIN EN 13501). Brackets for wall installation included in the standard equipment.
- **Front panel in plastic resin** loaded with panels for direct access to the filters.
- **Intake** and delivery spigots compatible with pipes with a nominal diameter of 150 mm.
- **Pair of motor fans driven by EC motors** (brushless) of the external rotor type, with shafts mounted on ball bearings, directly coupled to backward curved centrifugal impellers to guarantee high aeraulic efficiency. 3 operating speeds, independently settable at installation.
- **High efficiency heat exchanger**, of the cross-flow type with counterflow, made of plastic resin (PS).
- **By-pass 100%** automatic or manual control.
- **Equipped with bidirectional remote control** with radio frequency for the initial setting, selecting the operating mode and diagnosing the product.
- Equipped with **Temperature + Relative Humidity (RH) sensor and CO sensor**$_2$ whose readings enable the automatic adjustment of the operating speed for the best balance between ambient air quality, consumption and sound emissions
- Automatic control of the filter clogging status.
- **Condensate drain tube**
- **Pipette for connecting the drain tube**
- **Silencer**, with a nominal diameter of 150 mm and 0.5 m long, to be positioned downstream of the product, on the delivery pipe
- **Automatic anti frost protection**, to prevent the formation of frost at the heat exchanger.
- **Pair of M5 filters** (F7 filter available as an option for the delivery duct), easily accessible for periodic maintenance.
- **Safety certified by a third party** (Ⓨ)
- **Degree of dust and water protection**: IPX2.
- **Electrical insulation class**: II (grounding not required).

## TECHNICAL DATA

| PRODUCTS | CODE | V~50HZ | W max | A max | MAX FLOW RATE | | MAX PRESSURE | | °C* MAX | KG |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | $m^3/h$ | l/s | $mmH_2O$ | Pa | | |
| VORT PROMETEO PLUS HR 400 | 11582 | 230 | 160 | 1.3 | 380 | 106 | 68.8 | 675 | 50 | 25 |

** Maximum temperature with continuous operation of the product.*

## DETAILS



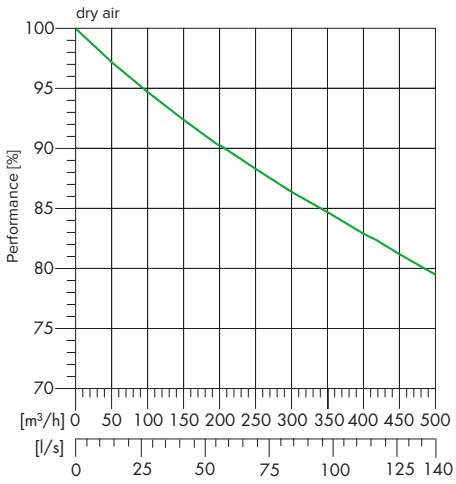
Examples of installations.

Intake and delivery spigots.

4 feet for horizontal installation supplied.

## CURVES

EFFICIENCY IN ACCORDANCE WITH FLOW RATE



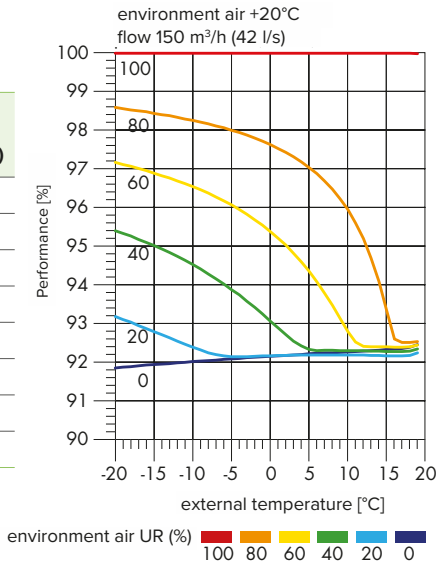

*Efficiency according to flow rate*

**RESULTS**
(tests according to EN 308)

| AIR FLOW RATE IN EXTRACTION (m3/h) | HEAT RECOVERY PERFORMANCE (%) |
|---|---|
| 54 | 93 |
| 76 | 91 |
| 98 | 90 |
| 119 | 89 |
| 140 | 89 |
| 162 | 88 |
| 184 | 88 |
| 205 | 87 |

Test conditions: +5°C/70%; +25°C/28%.

EFFICIENCY IN ACCORDANCE WITH CONDENSATION HEAT




## FILTERS

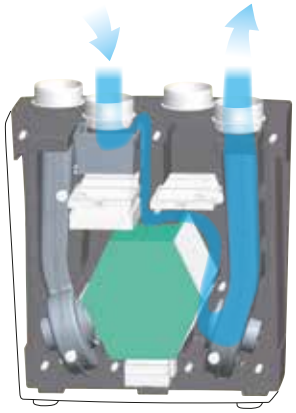
| MODELS | DESCRIPTION | DIMENSIONS | CODE | VORT PROME-TEO PLUS code 11582 |
|---|---|---|---|---|
|  | M5 FILTER | 192x395x24 | 22342 | ✓ |

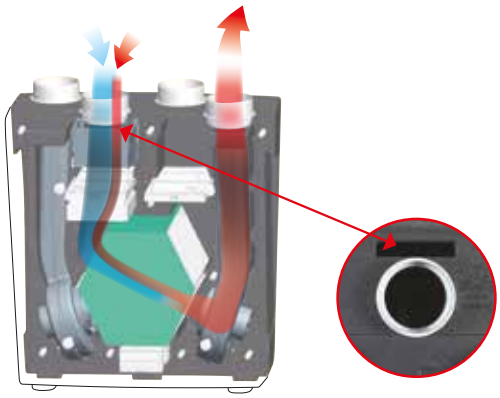
## REGULATORS

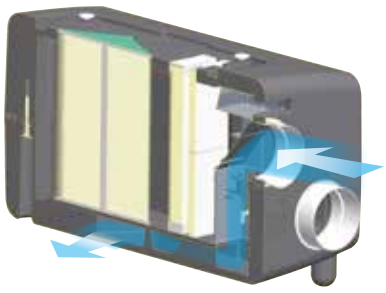
| MODELS | DESCRIPTION | DIMENSIONS | CODE | VORT PROME-TEO PLUS code 11582 |
|---|---|---|---|---|
|  | REMOTE CONTROL | - | 22464 | ✓ |
|  | EXTERNAL RF MODULE | - | 22479 | ✓ |

*System components (description and data from page 96).*
*Regulators (description and data from page 152).*

## FUNCTIONS AND EQUIPMENT OF THE VORT PROMETEO PLUS RANGE







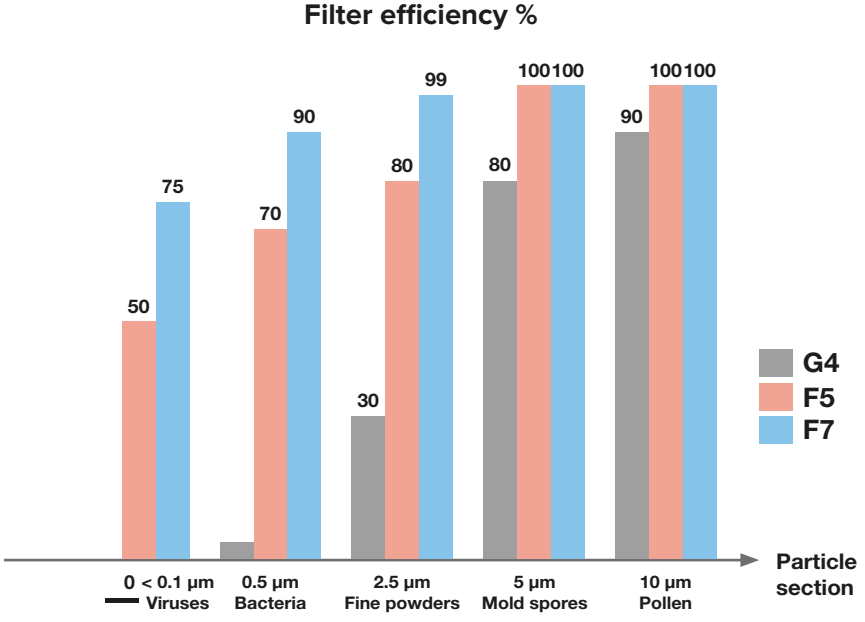
**BY-PASS**
In ISOTHERMAL situations (when the temperature of the internal and external environment is the same) or external temperature coinciding with the desired internal setting, the by-pass valve is activated by excluding the exchanger and enabling direct ventilation (FREE-COOLING).

**FROST PROTECTION (DEFROSTING)**
In situations where the outside air has a temperature and RH% such as to cause the formation of ice in the exchanger, the anti frost valve is automatically activated to allow the intake of more temperate air from the environment, which mixing with the air coming from the outside mitigates the temperature. At the same time, an appropriate speed variation of the motors driven by the electronic control makes the defrosting action faster and more effective. In particularly harsh climates, we recommend the additional installation of a 500 W, 1200 W or 1800 W pre-heater which is automatically activated by the on-board electronics.

**FILTERS**
The VORT PROMETEO PLUS Range is equipped with 2 F5 filters, respectively dedicated to the incoming air and to the exchanger protection. An additional optional F7 filter is available for further removal of impurities from the incoming air. An F5 filter box is also provided as an accessory to be installed outside the machine. The efficiency of the filters is monitored by the on-board electronics, which visually and acoustically trigger a maintenance alarm on the RF remote control.

**FILTERS**

- The air we breathe contains a large number of harmful particles; more than 90% of these particles are less than 1 µm in size, for example: fine particles emitted by motor vehicles and heating systems; viruses; bacteria.
  For this reason, it is very important to use air exchange systems that are equipped with high efficiency filters, i.e. they allow the retention of most of these harmful particles.
- The controlled mechanical ventilation systems such as the VORT PROMETEO PLUS HR 400 heat recovery units filter the air entering the home and preserve the health and well-being of the people living in the premises in which the product is installed.
- Filters can be identified based on their filtration efficiency in 2 main classes: Type G: wide mesh filter and Type F: fine mesh filter. These classes are defined by the European standard EN779. Within the two classes, a progressive number indicates the efficiency level of the filter: the higher the number, the more effective the filter is in the treatment of particles, as shown in the graph below.




F filters are most effective on small particles.

**DON'T FORGET**
With prolonged use, the filters become clogged, increasing the pressure drops of the aeraulic circuit; periodic maintenance must be carried out to replace the filters when they are exhausted.

# VORT HRI MINI RANGE

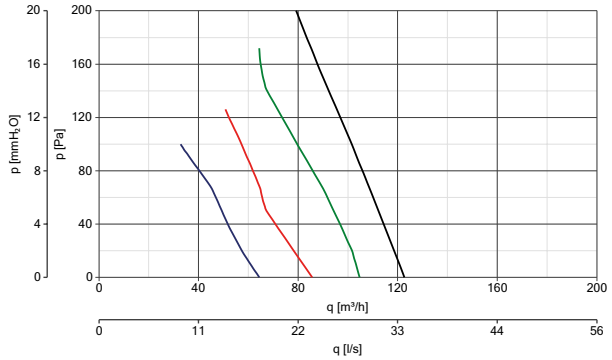
FALSE CEILING MOUNTED HEAT RECOVERY UNIT

**A** | **CENTRALIZED VENTILATION** | **FOR FALSE CEILING** | **UP TO 80 M²**

Centralized dual-flow ventilation unit with heat recovery for false ceiling mounting, ideal for the ventilation of homes, hotel rooms or general premises with a surface area of up to 80 m², characterized by high levels of thermal insulation.

- Suitable for false ceiling installation.
- Internal structure in high density expanded polypropylene 40kg/m³.
- Aesthetic paneling in galvanized sheet.
- Connection spigots to pipes with a nominal diameter of 100/125 mm, backward curved centrifugal fans directly coupled to EC motors.
- High efficiency counter flow heat exchanger in plastic material (PS).
- G2 Class filters (Coarse 30% UNI ISO 16890).
- Wired remote LCD control panel supplied (optional LCD panel housed in a 503 box).
- Automatic thermodynamic bypass, based on the temperature probes present in the machine.
- Its small size makes the product suitable for installation in niches (inside or outside).

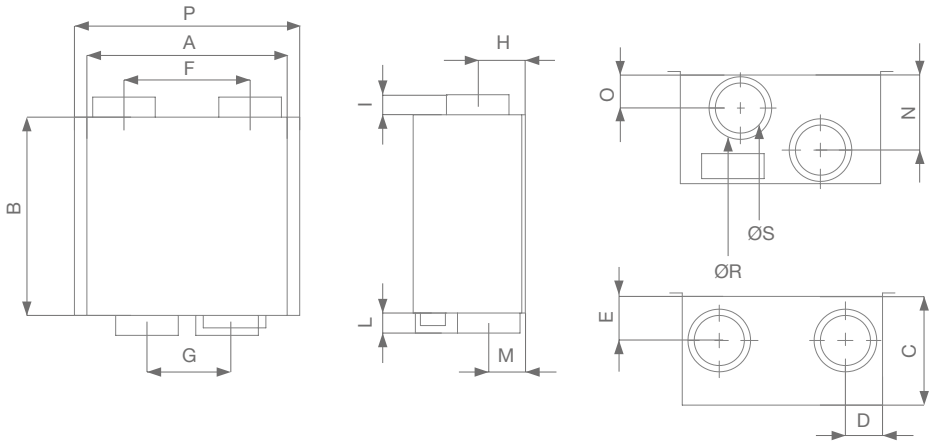
## PERFORMANCE AND ABSORPTION




### TECHNICAL DATA

| PRODUCT | CODE | Nom. Ø (mm) | (m³/h) | (W) | (PA) | Lp [dB (A)] 3m |
|---|---|---|---|---|---|---|
| VORT HRI MINI | 12163 | 100-125 | 122 | 86 | 200 | - |

## DIMENSIONS




*Dimensions in mm*

| PRODUCTS | A | B | C | D | E | F | G | H | I | L | M | N | O | P | ØR | ØS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VORT HRI MINI | 400 | 396 | 224 | 74 | 88 | 252 | 160 | 95 | 40 | 40 | 73 | 150 | 66 | 450 | 125 | 100 |

## ENERGY DATA

| | UNIT OF MEASURE | VORT HRI MINI |
|---|---|---|
| MANUFACTURER'S NAME OR TRADE NAME | - | VORTICE |
| CLASS OF SPECIFIC ENERGY CONSUMPTION FOR TEMPERATE CLIMATE | - | A |
| SPECIFIC ENERGY CONSUMPTION SEC (TEMPERATE CLIMATE) | kWh/m² year | -39.4 |
| SPECIFIC ENERGY CONSUMPTION SEC (COLD CLIMATE) | | -78.4 |
| SPECIFIC ENERGY CONSUMPTION SEC (WARM CLIMATE) | | -14.4 |
| DECLARED TYPE OF THE VENTILATION UNIT | - | UVR-B** |
| DRIVE TYPE | - | VM *** |
| HRS TYPE HEAT EXCHANGER | - | recovery |
| THERMAL EFFICIENCY OF HEAT RECOVERY AT THE HRS REFERENCE FLOW RATE | % | 87.7 |
| MAXIMUM FLOW RATE | m³/h | 103 |
| TOTAL ELECTRIC POWER ABSORBED BY THE FAN AT MAXIMUM FLOW RATE | w | 79.0 |
| Sound LEVEL | LWA [dB(A)] | 42 |
| REFERENCE FLOW RATE | m³/s | 0.0200 |
| REFERENCE PRESSURE DIFFERENCE | Pa | 50 |
| SPI**** | W/(m³/h) | 0.50000 |
| CTRL CONTROL FACTOR | - | 0.65 |
| CONTROL TYPE | - | local env. |
| MAXIMUM PERCENTAGE OF INTERNAL LEAKAGE | % | 5 |
| MAXIMUM PERCENTAGE OF EXTERNAL LEAKAGE | % | 5 |
| MIXING RATE | - | NA* |
| POSITION AND DESCRIPTION OF THE VISUAL FILTER SIGNAL | - | NA* |
| AIR FLOW SENSITIVITY AT PRESSURE VARIATIONS OF ± 20 PA | - | NA* |
| INDOOR/OUTDOOR AIR SEALING | m³/h | NA* |
| AEC ANNUAL ELECTRICITY CONSUMPTION | kWh of electricity/year | 310 |
| TEMPERATE AHS ANNUAL HEATING SAVINGS | kWh of primary energy /year | 4646 |
| COLD AHS ANNUAL HEATING SAVINGS | | 9088 |
| WARM AHS ANNUAL HEATING SAVING | | 2101 |

** NA: Not applicable. ** UVR-U: Residential Ventilation Unit - Uni-directional. *** VM: Multiple speeds. VSD: Variable Speed Drive.*
***** SPI: Specific power input.*

# VORT HRI MINI RANGE

FALSE CEILING MOUNTED HEAT RECOVERY UNIT

## TECHNICAL CHARACTERISTICS

- **1 model**.
- **Casings in galvanized sheet steel** integrating support brackets for false ceiling mounting; internal shell covered in sound-absorbing and heat-insulating fire-resistant material (DIN EN 13501).
- **Intake and delivery spigots compatible** with pipes with a nominal diameter of 100 mm and 125 mm.
- **Pair of motor fans driven by EC motors** (brushless) of the external rotor type, with shafts mounted on ball bearings directly coupled to backward curved centrifugal impellers to guarantee high aeraulic efficiency. 2 operating speeds, independently settable at the time of installation, managed by the control electronics which include the monitoring function of any malfunctions, recorded in the microcontroller memory.
- **High efficiency heat exchanger**, of the cross-flow type with counterflow, made of plastic resin (PS).
- **Automatic activation frost protection**, to prevent the formation of frost at the heat exchanger.
- **Thermodynamic by-pass**, manually and automatically operated and 100% filtered, to guarantee the comfort of the occupants of the rooms in mid seasons, or whenever the outside temperature does not require the action of the heat exchanger.
- **Remote control unit**, wire connected, for:
  - selecting the minimum or maximum operating speed;
  - manual opening/closing of the thermodynamic by-pass;
  - setting the operation of the product in Manual or Automatic mode (see instruction booklet);
  - signaling, by means of an indicator light, the saturated filters condition.
- **Pair of G2 filters**, at the intake and delivery spigots.
- **Condensate collection tray** with overflow protection and discharge devices.
- **Degree of dust and water protection**: IPX2.
- Electrical insulation class: II (grounding not required).

## TECHNICAL DATA

| PRODUCTS | CODE | V~50HZ | W min/max | A min/max | MAX FLOW RATE | | MAX PRESSURE | | °C* MAX | KG |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | $m^3/h$ min/max | l/s min/max | $mmH_2O$ min/max | Pa min/max | | |
| VORT HRI MINI | 12163 | 230 | 6<br>86 | 0.1<br>0.37 | 64<br>122 | 17<br>34 | 10<br>20 | 100<br>200 | 40 | 8.3 |

** Maximum temperature with continuous operation of the product.*

## REGULATORS

| MODELS | DESCRIPTION | DIMENSIONS | CODE | VORT HR MINI EP code 12163 |
|---|---|---|---|---|
|  | **BUILT-IN BOX TYPE 503** | | **22461** | ✓ |
|  | **HRI MINI CB**<br>Optional remote control panel for 503 box | **116X83X75** | **12868** | ✓ |

*System components (description and data from page 96).*
*Regulators (description and data from page 152).*

## DETAILS


Low thickness, which makes it ideal for false ceiling installations.

Filters easily removable for replacement.

G2 FILTERS

Remote control unit supplied as standard.

# VORT HRI FLAT RANGE

HEAT RECOVERY UNITS FOR FALSE CEILING MOUNTING

**A** | **CENTRALIZED VENTILATION** | **FOR FALSE CEILING** | **UP TO 240 M²**

Centralized dual flow ventilation units with heat recovery for false ceiling. The ideal balance between performance, functions and purchase and operating costs makes the VORT HRI FLAT range the most cost-effective solution for the ventilation of homes and residential and commercial premises with an area of up to 90 m² (VORT HRI 200 FLAT) or 240 m² (VORT HRI 350 FLAT), characterized by high levels of thermal insulation.

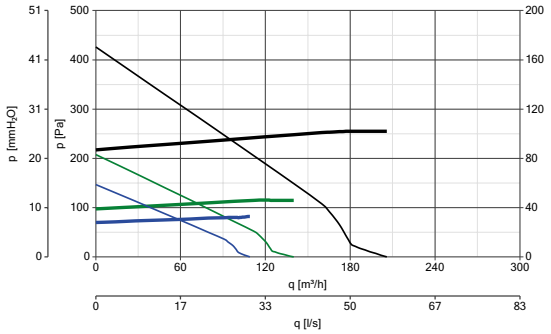
- Suitable for false ceiling installation.
- Self-supporting casing in galvanized sheet metal (10/10), with internal sound-absorbing coating.
- Connection spigots to pipes with a nominal diameter of 125mm (FLAT200) and 150mm (FLAT350), centrifugal fans backward with curved blades directly coupled to EC motors.
- High efficiency heat exchanger of the counterflow type in plastic material (PS).
- Automatic thermodynamic bypass, based on the temperature probes present in the machine.
- Pair of filters Class ePM10 (M5) 50% (F5).
- Three-speed control panel supplied as standard, suitable for a 503 box.

## PERFORMANCE AND ABSORPTION

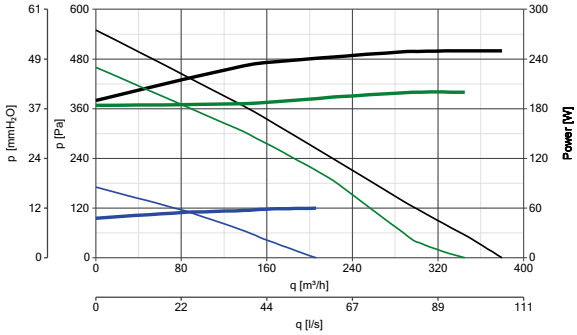
### TECHNICAL DATA

| PRODUCTS | CODE | Nom. Ø (mm) | (m³/h) | (W) | (PA) | Lp [dB (A)] 3m |
|---|---|---|---|---|---|---|
| VORT HRI 200 FLAT | 11281 | 125 | 206 | 102 | 426 | 22.8 |
| VORT HRI 350 FLAT | 11282 | 150 | 380 | 250 | 550 | 16.7 |

VORT HRI 200 FLAT



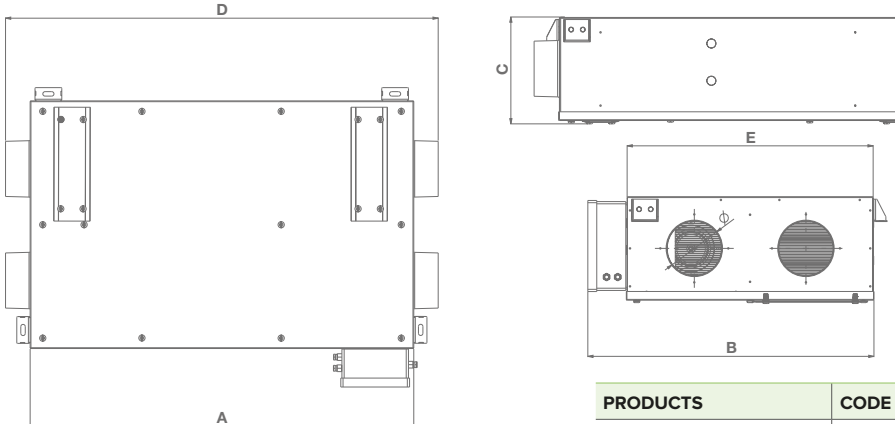

VORT HRI 350 FLAT




CONSUMPTION CURVES
max
med
min

PERFORMANCE CURVES
max
med
min

## DIMENSIONS




*Dimensions in mm*

| PRODUCTS | CODE | A | B | C | D | E | Ø |
|---|---|---|---|---|---|---|---|
| VORT HRI 200 FLAT | 11281 | 860 | 643 | 240 | 969 | 551 | 125 |
| VORT HRI 350 FLAT | 11282 | 1183 | 740 | 288 | 1287 | 650 | 150 |

## SOUND LEVELS

| VORT HRI 200 FLAT | | Lw dB (A) 125 Hz | 250 Hz | 500 Hz | 1000 Hz | 2000 Hz | 4000 Hz | 8000 Hz | Lw dB (A) | Lw dB (A) 3m* |
|---|---|---|---|---|---|---|---|---|---|---|
| MIN. SPEED | Delivery | 22.7 | 31.4 | 17.4 | 14.9 | 10.1 | na** | na** | 43.3 | 22.8 |
| | Intake | 24.2 | 36.8 | 23.0 | 15.4 | 14.0 | 7.3 | na** | 36.5 | 16.0 |
| | Casing | 35.7 | 36.9 | 29.2 | 22.2 | 17.0 | 9.8 | na** | 43.1 | 22.6 |

| VORT HRI 350 FLAT | | Lw dB (A) 125 Hz | 250 Hz | 500 Hz | 1000 Hz | 2000 Hz | 4000 Hz | 8000 Hz | Lw dB (A) | Lw dB (A) 3m* |
|---|---|---|---|---|---|---|---|---|---|---|
| MIN. SPEED | Delivery | 16.7 | 27.4 | 24.3 | 17.1 | 16.9 | 7.1 | na** | 37.2 | 16.7 |
| | Intake | 16.3 | 32.1 | 22.2 | 11.3 | 15.5 | 6.2 | na** | 37.8 | 17.3 |
| | Casing | 33.4 | 35.6 | 41.6 | 38.0 | 37.2 | 30.4 | 27.3 | 51.0 | 30.5 |

** Acoustic pressure measured at 3 m in free field with the intensimetric method in a semi-anechoic cabin at maximum speed in accordance with ISO 9614. ** Data not available.*

## ENERGY DATA

| | UNIT OF MEASURE | VORT HRI 200 FLAT | VORT HRI 350 FLAT |
|---|---|---|---|
| MANUFACTURER'S NAME OR TRADE NAME | - | VORTICE | VORTICE |
| CLASS OF SPECIFIC ENERGY CONSUMPTION FOR TEMPERATE CLIMATE | - | A | A |
| SPECIFIC ENERGY CONSUMPTION SEC (TEMPERATE CLIMATE) | kWh/m² year | -36.3 | -38.0 |
| SPECIFIC ENERGY CONSUMPTION SEC (COLD CLIMATE) | | -74.7 | -77.0 |
| SPECIFIC ENERGY CONSUMPTION SEC (WARM CLIMATE) | | -11.7 | -13.0 |
| DECLARED TYPE OF THE VENTILATION UNIT | - | UVR-B** | UVR-B** |
| DRIVE TYPE | - | VSD*** | VSD*** |
| HRS TYPE HEAT EXCHANGER | - | recovery | recovery |
| THERMAL EFFICIENCY OF HEAT RECOVERY AT THE HRS REFERENCE FLOW RATE | % | 87.8 | 90.4 |
| MAXIMUM FLOW RATE | m³/h | 163 | 280 |
| TOTAL ELECTRIC POWER ABSORBED BY THE FAN AT MAXIMUM FLOW RATE | w | 100.0 | 165.0 |
| Sound LEVEL | LWA [dB(A)] | 43 | 51 |
| REFERENCE FLOW RATE | m³/s | 0.0317 | 0.0544 |
| REFERENCE PRESSURE DIFFERENCE | Pa | 50 | 70 |
| SPI**** | W/(m³/h) | 0.39474 | 0.35204 |
| CTRL CONTROL FACTOR | - | 0.85 | 0.85 |
| CONTROL TYPE | - | centralized env. | centralized env. |
| MAXIMUM PERCENTAGE OF INTERNAL LEAKAGE | % | 8.5 | 8.7 |
| MAXIMUM PERCENTAGE OF EXTERNAL LEAKAGE | % | 8.5 | 5.2 |
| MIXING RATE | - | NA* | NA* |
| POSITION AND DESCRIPTION OF THE VISUAL FILTER SIGNAL | - | see instruction booklet | see instruction booklet |
| AIR FLOW SENSITIVITY AT PRESSURE VARIATIONS OF ± 20 PA | - | NA* | NA* |
| INDOOR/OUTDOOR AIR SEALING | m³/h | NA* | NA* |
| AEC ANNUAL ELECTRICITY CONSUMPTION | kWh of electricity/year | 402 | 364 |
| TEMPERATE AHS ANNUAL HEATING SAVINGS | kWh of primary energy /year | 4570 | 4641 |
| COLD AHS ANNUAL HEATING SAVINGS | | 8940 | 9078 |
| WARM AHS ANNUAL HEATING SAVING | | 2067 | 2098 |

** NA: Not applicable. ** UVR-U: Residential Ventilation Unit - Uni-directional. *** VM: Multiple speeds. VSD: Variable Speed Drive.*

***** SPI: Specific power input.*

## TECHNICAL CHARACTERISTICS

- **2 models**, different in size and performance provided.
- **Casings in galvanized sheet steel** integrating support brackets for false ceiling mounting; internal shell covered in sound-absorbing and heat-insulating fire-resistant material (DIN EN 13501). Tie rods for suspended installation included in the standard equipment.
- **Intake and delivery spigots** compatible with pipes with a nominal diameter of 125 mm

  (VORT HRI 200 FLAT) and 150 mm (VORT HRI 350 FLAT).
- **Pair of motor fans driven by EC motors** (brushless) of the external rotor type, with shafts mounted on ball bearings, directly coupled to backward curved centrifugal impellers to guarantee high aeraulic efficiency. 3 operating speeds, independently settable at installation.
- **High efficiency heat exchanger**, of the cross-flow type with counterflow, made of plastic resin (PS).
- **Automatic activation frost protection**, to prevent the formation of frost at the heat exchanger.
- **Mechanical by-pass**, automatic and 100% filtered, to guarantee the comfort of the occupants of the rooms in mid seasons, or whenever the outside temperature does not require the action of the heat exchanger.
- **Remote control unit**, wire connected, for:
  - switching the product on and off;
  - selecting the product's minimum, average or maximum speed;
  - signaling, by means of an indicator light, the saturated filters condition.
- **Pair of M5 filters** (F7 filter available as an option for the delivery duct), easily accessible for periodic maintenance.
- **Condensate collection tray** with drain devices.
- **Possibility of interlocking with external environmental sensors** (optional), for the automatic control of the operating mode.
- **Degree of dust and water protection**: IPX2.
- **Electrical insulation class**: II (grounding not required).

## TECHNICAL DATA

| PRODUCTS | CODE | V~50HZ | W max | A max | MAX FLOW RATE | | MAX PRESSURE | | °C* MAX | KG |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | $m^3/h$ | l/s | $mmH_2O$ | Pa | | |
| VORT HRI 200 FLAT | 11281 | 230 | 102 | 1.0 | 210 | 58.3 | 48.4 | 475 | 40 | 24 |
| VORT HRI 350 FLAT | 11282 | 230 | 250 | 2.0 | 380 | 105 | 56.0 | 550 | 50 | 33 |

** Maximum temperature with continuous operation of the product.*

## DETAILS

Condensate drain nozzles.

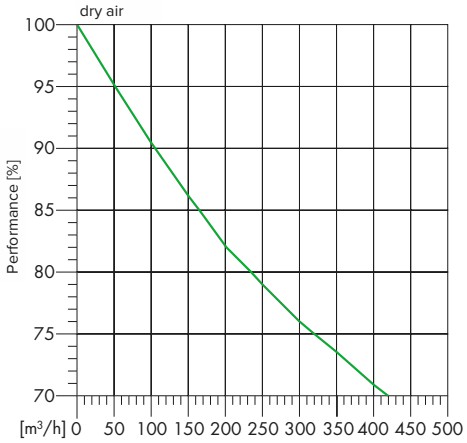
Easily removable filters.


Remote control unit supplied as standard.

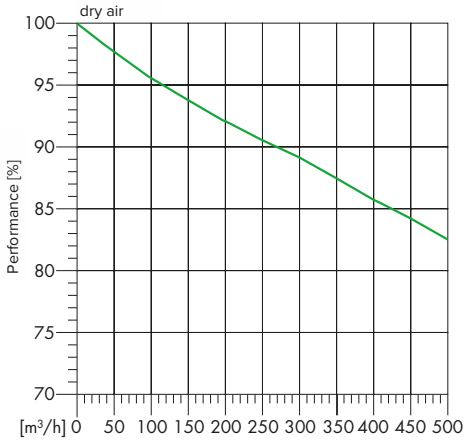
VORT HRI 200 FLAT code 11281
VORT HRI 350 FLAT cod. 11282

## EFFICIENCY CURVES

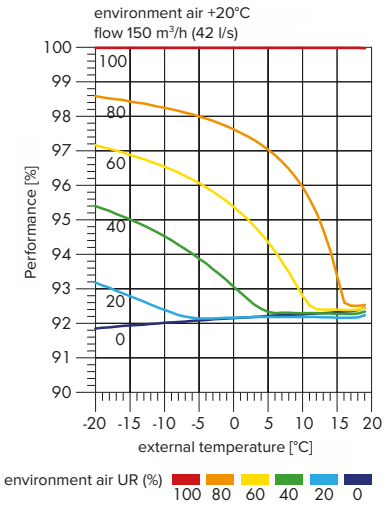
Efficiency in accordance with flow rate
VORT HRI 200 FLAT



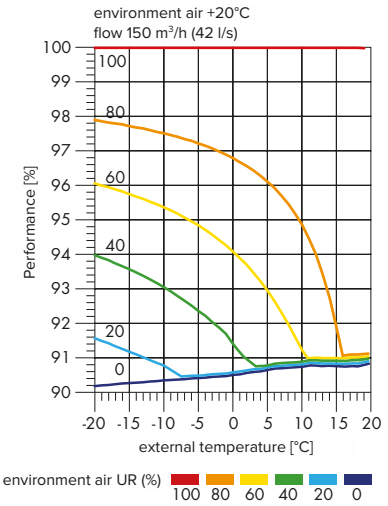

Efficiency in accordance with flow rate
VORT HRI 350 FLAT




Efficiency in accordance with condensation heat




Efficiency in accordance with condensation heat



## FILTERS

| MODELS | DESCRIPTION | DIMENSIONS | CODE | VORT HRI 200 FLAT code 11281 | VORT HRI 350 FLAT cod. 11282 |
|---|---|---|---|---|---|
|  | F7 FILTER | 228X224X24 | 22625 | ✓ | |
| | F7 FILTER | 230X250X48 | 22628 | | ✓ |

## ACCESSORIES

| MODELS | DESCRIPTION | CODE | VORT HRI 200 FLAT code 11281 | VORT HRI 350 FLAT cod. 11282 |
|---|---|---|---|---|
|  | **500W HEATER** Pre-heater to prevent the formation of frost in corre-spondenceof the heat exchanger, also in particularly rigid climates | 22734 | ✓ | |
| | **750W HEATER** Pre-heater to prevent the formation of frost in corre-spondenceof the heat exchanger, also in particularly rigid climates | 22735 | | ✓ |

*System components (description and data from page 96).*
*Regulators (description and data from page 152).*

# VORT HRI PHANTOM RANGE

HEAT RECOVERY UNITS FOR FALSE CEILING MOUNTING

**A** | **CENTRALIZED VENTILATION** | **FOR FALSE CEILING** | **UP TO 240 M²**

Centralized dual-flow ventilation units with heat recovery for false ceilings, ideal for ventilation of homes and residential and commercial premises with a surface area of up to 90 m² (VORT HRI 200 PHANTOM) or 240 m² (VORT HRI 350 PHANTOM), characterized by high levels of thermal insulation.

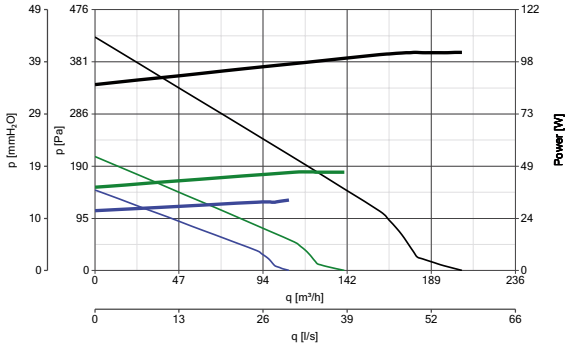
- Suitable for false ceiling installation
- Self-supporting casing in galvanized sheet metal (10/10), with internal fire-resistant sound-absorbing coating, lower cover in ABS.
- Connection spigots to pipes with a nominal diameter of 125mm (PHANTOM 200) and 150mm (PHANTOM 350), backward curved centrifugal fans directly coupled to EC motors.
- High efficiency counter flow heat exchanger in plastic material (PS).
- Automatic thermodynamic bypass, based on the temperature probes present in the machine.
- Automatic mechanical bypass, based on the temperature probes present in the machine (BP MODELS)
- Pair of filters Class ePM10 (M5) 50% (F5)
- Wired remote LCD control panel supplied as standard.

## PERFORMANCE AND ABSORPTION

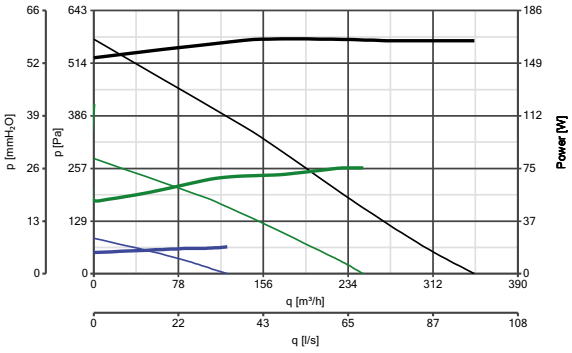
### TECHNICAL DATA

| PRODUCTS | CODE | Nom. Ø (mm) | (m³/h) | (W) | (PA) | Lp [dB (A)] 3m |
|---|---|---|---|---|---|---|
| VORT HRI 200 PHANTOM BP | 11291 | 125 | 206 | 102 | 426 | 22.8 |
| VORT HRI 350 PHANTOM BP | 11293 | 150 | 350 | 165 | 568 | 16.7 |

VORT HRI 200 PHANTOM BP



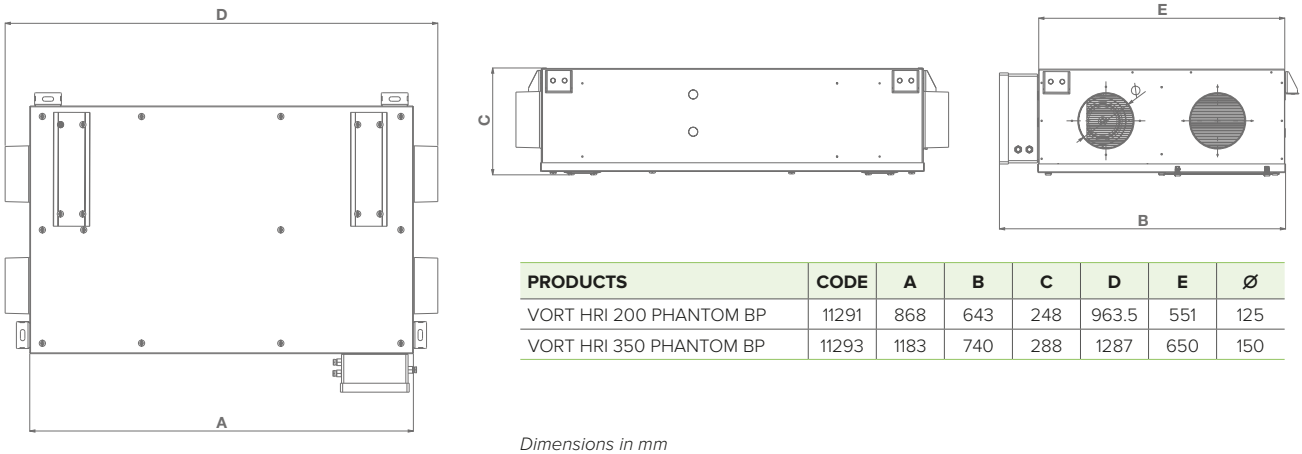

VORT HRI 350 PHANTOM BP




CONSUMPTION CURVES
max
med
min

PERFORMANCE CURVES
max
med
min

## DIMENSIONS




| PRODUCTS | CODE | A | B | C | D | E | Ø |
|---|---|---|---|---|---|---|---|
| VORT HRI 200 PHANTOM BP | 11291 | 868 | 643 | 248 | 963.5 | 551 | 125 |
| VORT HRI 350 PHANTOM BP | 11293 | 1183 | 740 | 288 | 1287 | 650 | 150 |

*Dimensions in mm*

## SOUND LEVELS

| VORT HRI 200 PHANTOM BP | | 125 Hz | 250 Hz | 500 Hz | Lw dB (A) 1000 Hz | 2000 Hz | 4000 Hz | 8000 Hz | Lw dB (A) | Lw dB (A) 3m* |
|---|---|---|---|---|---|---|---|---|---|---|
| MIN. SPEED | Delivery | 22.7 | 31.4 | 17.4 | 14.9 | 10.1 | na** | na** | 43.3 | 22.8 |
| | Intake | 24.2 | 36.8 | 23.0 | 15.4 | 14.0 | 7.3 | na** | 36.5 | 16.0 |
| | Casing | 35.7 | 36.9 | 29.2 | 22.2 | 17.0 | 9.8 | na** | 43.1 | 22.6 |

| VORT HRI 350 PHANTOM BP | | 125 Hz | 250 Hz | 500 Hz | Lw dB (A) 1000 Hz | 2000 Hz | 4000 Hz | 8000 Hz | Lw dB (A) | Lw dB (A) 3m* |
|---|---|---|---|---|---|---|---|---|---|---|
| MIN. SPEED | Delivery | 16.7 | 27.4 | 24.3 | 17.1 | 16.9 | 7.1 | na** | 37.2 | 16.7 |
| | Intake | 16.3 | 32.1 | 22.2 | 11.3 | 15.5 | 6.2 | na** | 37.8 | 17.3 |
| | Casing | 33.4 | 35.6 | 41.6 | 38.0 | 37.2 | 30.4 | 27.3 | 51.0 | 30.5 |

** Acoustic pressure measured at 3 m in free field with the intensimetric method in a semi-anechoic cabin at maximum speed in accordance with ISO 9614. ** Data not available.*

## ENERGY DATA

| | UNIT OF MEASURE | VORT HRI 200 PHANTOM BP | VORT HRI 350 PHANTOM BP |
|---|---|---|---|
| MANUFACTURER'S NAME OR TRADE NAME | - | VORTICE | VORTICE |
| CLASS OF SPECIFIC ENERGY CONSUMPTION FOR TEMPERATE CLIMATE | - | A | A |
| SPECIFIC ENERGY CONSUMPTION SEC (TEMPERATE CLIMATE) | kWh/m² year | -36.3 | -38.0 |
| SPECIFIC ENERGY CONSUMPTION SEC (COLD CLIMATE) | | -74.7 | -77.0 |
| SPECIFIC ENERGY CONSUMPTION SEC (WARM CLIMATE) | | -11.7 | -13.0 |
| DECLARED TYPE OF THE VENTILATION UNIT | - | UVR-B** | UVR-B** |
| DRIVE TYPE | - | VSD*** | VSD*** |
| HRS TYPE HEAT EXCHANGER | - | recovery | recovery |
| THERMAL EFFICIENCY OF HEAT RECOVERY AT THE HRS REFERENCE FLOW RATE | % | 87.8 | 90.4 |
| MAXIMUM FLOW RATE | m³/h | 163 | 280 |
| TOTAL ELECTRIC POWER ABSORBED BY THE FAN AT MAXIMUM FLOW RATE | w | 100.0 | 165.0 |
| Sound LEVEL | LWA [dB(A)] | 43 | 51 |
| REFERENCE FLOW RATE | m³/s | 0.0317 | 0.0544 |
| REFERENCE PRESSURE DIFFERENCE | Pa | 50 | 70 |
| SPI**** | W/(m3/h) | 0.39474 | 0.35204 |
| CTRL CONTROL FACTOR | - | 0.85 | 0.85 |
| CONTROL TYPE | - | centralized env. | centralized env. |
| MAXIMUM PERCENTAGE OF INTERNAL LEAKAGE | % | 8.5 | 8.7 |
| MAXIMUM PERCENTAGE OF EXTERNAL LEAKAGE | % | 8.5 | 5.2 |
| MIXING RATE | - | NA* | NA* |
| POSITION AND DESCRIPTION OF THE VISUAL FILTER SIGNAL | - | see instruction booklet | see instruction booklet |
| AIR FLOW SENSITIVITY AT PRESSURE VARIATIONS OF ± 20 PA | - | NA* | NA* |
| INDOOR/OUTDOOR AIR SEALING | m³/h | NA* | NA* |
| AEC ANNUAL ELECTRICITY CONSUMPTION | kWh of electricity/year | 402 | 364 |
| TEMPERATE AHS ANNUAL HEATING SAVINGS | kWh of primary energy /year | 4570 | 4641 |
| COLD AHS ANNUAL HEATING SAVINGS | | 8940 | 9078 |
| WARM AHS ANNUAL HEATING SAVING | | 2067 | 2098 |

** NA: Not applicable. ** UVR-U: Residential Ventilation Unit - Uni-directional. *** VM: Multiple speeds. VSD: Variable Speed Drive.*
***** SPI: Specific power input.*

# VORT HRI PHANTOM RANGE

HEAT RECOVERY UNITS FOR FALSE CEILING MOUNTING

## TECHNICAL CHARACTERISTICS

- **4 models**, different in size and performance, equipped with thermodynamic or mechanical by-pass.
- **Casings in galvanized sheet steel** integrating support brackets for false ceiling mounting; internal shell covered in sound-absorbing, heat-insulating and fire-resistant material (DIN EN 13501). Tie rods for suspended installation included in the standard equipment.
- **Plastic resin bottom covers** (PP) thermoformed, integrating the panels for direct access to the air filters.
- **Intake and delivery spigots**compatible with pipes with a nominal diameter of 125 mm (VORT HRI 200 PHANTOM) and 150 mm (VORT HRI 350 PHANTOM).
- **Pair of motor fans driven by EC motors** (brushless) of the external rotor type, with shafts mounted on ball bearings, directly coupled to backward curved centrifugal impellers to guarantee high aeraulic efficiency. 3 operating speeds, independently settable at installation.
- **High efficiency heat exchanger**, of the cross-flow type with counterflow, made of plastic resin (PS).
- **Automatic activation frost protection**, to prevent the formation of frost at the heat exchanger.
- **By-pass, thermodynamic or mechanical (BP models), automatic and 100% filtered**, to guarantee the comfort of the occupants of the rooms in mid seasons, or whenever the outside temperature does not require the action of the heat exchanger.
- **Remote control unit with LCD display**, of the wired connection type, for:
  - turning the product on and off;
  - the initial configuration of the product;
  - selecting the minimum, average or maximum speed of operation;
  - programming the operation;
  - displaying the time and room temperature;
  - monitoring the correct operation of the product (any malfunctions are highlighted through error messages shown on the display);
  - signaling the saturated filters condition on the display.
- **Pair of M5 filters** (F7 filter available as an option for the delivery duct), easily accessible for periodic maintenance.
- **Condensate collection tray** with drain devices.
- **Possibility of interlocking** with external environmental sensors (optional), for the automatic control of the operating mode.
- **Degree of dust and water protection**: IPX2.
- **Electrical insulation class**: II (grounding not required).

## TECHNICAL DATA

| PRODUCTS | CODE | V~50HZ | W max | A max | MAX FLOW RATE | | MAX PRESSURE | | °C* MAX | KG |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | $m^3/h$ | l/s | $mmH_2O$ | Pa | | |
| VORT HRI 200 PHANTOM | 11290 | 230 | 102 | 1.0 | 206 | 57.2 | 43.5 | 426 | 40 | 24 |
| VORT HRI 200 PHANTOM B.P. | 11291 | 230 | 102 | 1.0 | 206 | 57.2 | 43.5 | 426 | 40 | 24 |
| VORT HRI 350 PHANTOM | 11292 | 230 | 165 | 1.4 | 350 | 97.0 | 58.0 | 568 | 50 | 33 |
| VORT HRI 350 PHANTOM B.P. | 11293 | 230 | 165 | 1.4 | 350 | 97.0 | 58.0 | 568 | 50 | 33 |

** Maximum temperature with continuous operation of the product.*

## DETAILS

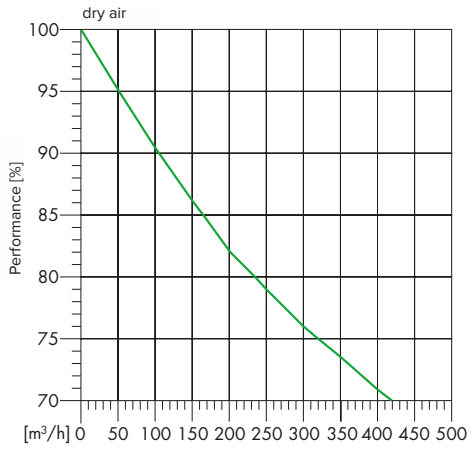
Condensate drain nozzles.


Full version lcd display supplied as standard (see operating detail on page 76).

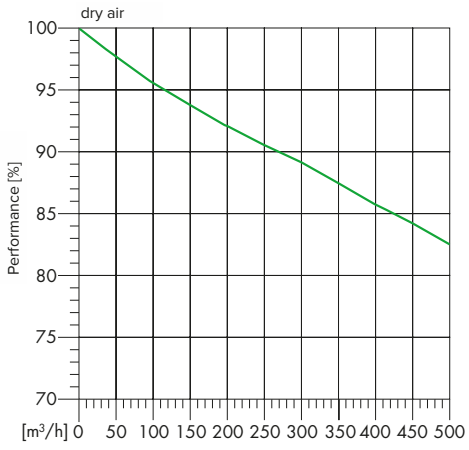
Side profile, versions with by-pass.

## EFFICIENCY CURVES

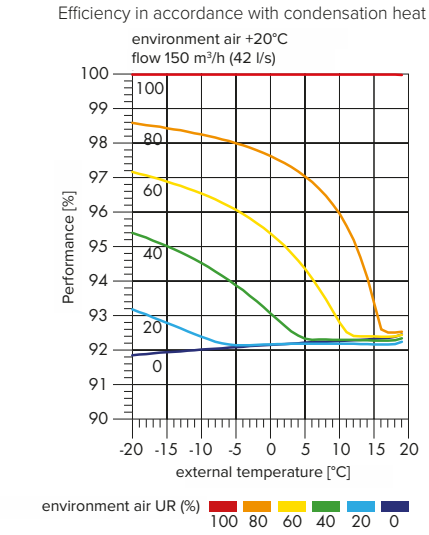
Efficiency in accordance with flow rate
VORT HRI 200 PHANTOM



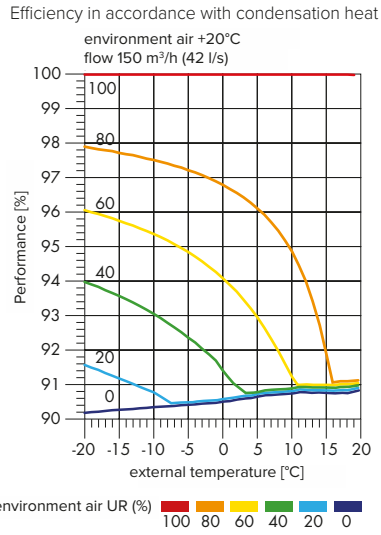

Efficiency in accordance with flow rate
VORT HRI 350 PHANTOM




Efficiency in accordance with condensation heat




Efficiency in accordance with condensation heat



## FILTERS

| MODELS | DESCRIPTION | DIMENSIONS | CODE | VORT HRI 200 PHANTOM code 11290 | VORT HRI 200 PHANTOM BP code 11291 | VORT HRI 350 PHANTOM code 11292 | VORT HRI 350 PHANTOM BP code 11293 |
|---|---|---|---|---|---|---|---|
|  | F7 FILTER | 228X224X24 | 22625 | ✓ | ✓ | | |
| | F7 FILTER | 230X250X48 | 22628 | | | ✓ | ✓ |
| | FM5 FILTER | 230X250X48 | 22646 | | | ✓ | ✓ |
| | FM5 FILTER | 212X227X24 | 22647 | ✓ | ✓ | | |

## REGULATORS

| MODELS | DESCRIPTION | DIMENSIONS | CODE | VORT HRI 200 PHANTOM code 11290 | VORT HRI 200 PHANTOM BP code 11291 | VORT HRI 350 PHANTOM code 11292 | VORT HRI 350 PHANTOM BP code 11293 |
|---|---|---|---|---|---|---|---|
|  | **C TEMP** Temperature detector | 144x54x55.8 | 12992 | ✓ | ✓ | ✓ | ✓ |
|  | **C SMOKE** Polluted air detector | 144x54x55.8 | 12993 | ✓ | ✓ | ✓ | ✓ |
|  | **C HCS** Humidity detector | 144x54x55.8 | 12994 | ✓ | ✓ | ✓ | ✓ |
|  | **C PIR** Presence detector | 144x54x55.8 | 12998 | ✓ | ✓ | ✓ | ✓ |
|  | **SKP10 INSTALLER PANEL** Installer panel | - | 22629 | ✓ | ✓ | ✓ | ✓ |

## ACCESSORIES

| MODELS | DESCRIPTION | CODE | VORT HRI 200 PHANTOM code 11290 | VORT HRI 200 PHANTOM BP code 11291 | VORT HRI 350 PHANTOM code 11292 | VORT HRI 350 PHANTOM BP code 11293 |
|---|---|---|---|---|---|---|
|  | **500W HEATER** Pre-heater to prevent the formation of frost in correspondence of the heat exchanger, also in the presence of particularly harsh climates | 22734 | ✓ | ✓ | | |
| | **750W HEATER** Pre-heater to prevent the formation of frost in correspondence of the heat exchanger, also in the presence of particularly harsh climates | 22735 | | | ✓ | ✓ |
|  | **DCW 250 D.150** Cold battery | 24146 | ✓ | ✓ | ✓ | ✓ |

## LCD DISPLAY - SUPPLIED AS STANDARD


### SOME ICONS SHOWN ON THE PANEL

| ICONS | FUNCTIONS |
|---|---|
| | No-Frost |
| P1 - P2 | Time profiles |
| | Speed |
| | OFF |
| | Alarm |
| | By-pass |
| | Time schedule programming |
| FILT | Filter replacement notice |
| HA | Antibacterial function |

Please note: For a complete and in-depth explanation of the icons and the associated functions, please refer to the instruction booklet.

The LCD display controls the electronics of the product. Among the various functions, the control panel can be used for:

- turning the machine on and off,
- the initial configuration,
- the manual setting of the operating mode,
- the selection of the 3 speeds,
- the automatic management of the free-cooling function (only models with By-pass),
- setting the time slots and the room temperature,
- the display of the time or outside temperature,
- continuous monitoring of correct operation (any problems are signaled by error messages displayed on the control panel),
- constant monitoring of the filter status (need for maintenance highlighted on the control panel display).

*System components (description and data from page 96).*
*Regulators (description and data from page 152).*

# VORT HRI PHANTOM MINI BP HCS

HEAT RECOVERY UNIT

**A** | **CEILING-MOUNTED CENTRALIZED** | **FALSE CEILING** | **UP TO 80 M²**

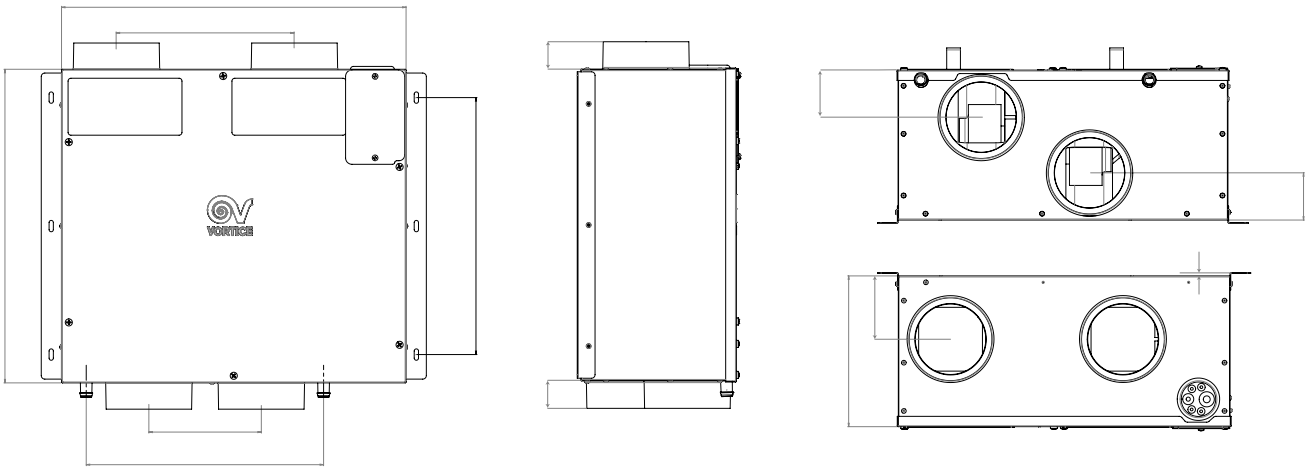
Dual flow centralized unit with heat recovery for false ceiling installation. Specifically designed for the ventilation of small flats, offices, holiday apartments and hotel rooms with surfaces up to 80 m².

- Great installation flexibility thanks to its small size, which facilitates installation in limited spaces typical of renovations.
- Easy to handle and set up thanks to its light weight.
- Easy maintenance: the filters, electrical connections and all main components are directly accessible from the lower part of the product.
- Guaranteed energy savings as a result of its high heat exchange efficiency (up to 87% according to European standard EN 308).
- Suitable for continuous 24/7 operation thanks to its low consumption.
- Operation can be optimized on cool summer nights, thanks to the free cooling function.
- Easy to use, thanks to the automatic operation functions.

## TECHNICAL DATA

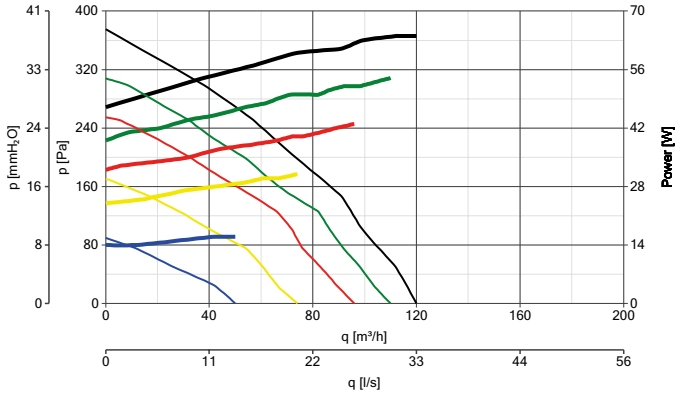
| MODEL | CODE | V~50HZ | W min/ max | A min/ max | RPM min/ max | MAX AIRFLOW | | MAX PRESSURE | | IP | KG |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | $m^3/h$ min/max | l/s min/max | $mmH_2O$ | Pa | | |
| VORT HRI PHANTOM MINI BP HCS | 12219 | 220-240 | 16<br>64 | 0.30<br>0.65 | 1830<br>3900 | 50<br>120 | 13.9<br>33.3 | 38.2 | 375 | X2 | 14 |

## DIMENSIONS



| MODEL | A | B | C | D | E | F | G | H | I | J | K | L | M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VORT HRI PHANTOM MINI BP HCS | 484 | 440.5 | 218 | 40 | 40 | 250 | 158 | 69 | 69 | 92 | 333 | 5 | 361 |

## PERFORMANCE AND ABSORPTION




## ENERGY DATA

| | UNIT OF MEASURE | VORT HRI PHANTOM MINI BP HCS |
|---|---|---|
| MANUFACTURER'S NAME OR TRADE NAME | - | VORTICE |
| CLASS OF SPECIFIC ENERGY CONSUMPTION FOR TEMPERATE CLIMATE | - | A |
| SPECIFIC ENERGY CONSUMPTION SEC (TEMPERATE CLIMATE) | kWh/m² year | -35 |
| SPECIFIC ENERGY CONSUMPTION SEC (COLD CLIMATE) | | -73 |
| SPECIFIC ENERGY CONSUMPTION SEC (WARM CLIMATE) | | -10 |
| DECLARED TYPE OF THE VENTILATION UNIT | - | UVR-B*** |
| DRIVE TYPE | - | VSD**** |
| HRS TYPE HEAT EXCHANGER | - | recovery |
| THERMAL EFFICIENCY OF HEAT RECOVERY AT THE HRS REFERENCE FLOW RATE | % | 87 |
| MAXIMUM FLOW RATE | m³/h | 100 |
| TOTAL ELECTRIC POWER ABSORBED BY THE FAN AT MAXIMUM FLOW RATE | W | 63 |
| Sound LEVEL | LWA [dB(A)] | 46 |
| REFERENCE FLOW RATE | m³/s | 0.0194 |
| REFERENCE PRESSURE DIFFERENCE | Pa | 60 |
| SPI**** | W/(m³/h) | 0.457 |
| CTRL CONTROL FACTOR | - | 0.85 |
| CONTROL TYPE | - | centralized env. |
| MAXIMUM PERCENTAGE OF INTERNAL LEAKAGE | % | 3.0 |
| MAXIMUM PERCENTAGE OF EXTERNAL LEAKAGE | % | 3.0 |
| MIXING RATE | - | NA* |
| POSITION AND DESCRIPTION OF THE VISUAL FILTER SIGNAL | - | see user manual |
| AIR FLOW SENSITIVITY AT PRESSURE VARIATIONS OF ± 20 PA | - | NA* |
| INDOOR/OUTDOOR AIR SEALING | m³/h | NA* |
| AEC ANNUAL ELECTRICITY CONSUMPTION | kWh of electricity/year | 459 |
| TEMPERATE AHS ANNUAL HEATING SAVINGS | kWh of primary energy /year | 4548 |
| COLD AHS ANNUAL HEATING SAVINGS | | 8898 |
| WARM AHS ANNUAL HEATING SAVING | | 2057 |

** NA: Not applicable. ** UVR-U: Residential Ventilation Unit - Uni-directional. *** UVR-B: Residential Ventilation Unit - Bi-directional.*

***** VM: Multiple speeds. VSD: Variable Speed Drive. ***** SPI: Specific power input.*

## TECHNICAL CHARACTERISTICS

- White galvanized and painted steel sheet casing, including brackets in galvanized and painted steel sheet, supplied as standard and necessary for hanging installation of the unit.
- Expanded polypropylene (PPE) internal parts, integrating the connection inlets with the extraction and delivery piping with nominal diameter 100 and 125mm.
- Special panels located at the bottom of the product for easy access to the filters and to the main internal components (fans, heat exchanger, electronics and connection terminal board to the mains).
- Condensate collection tank in plastic resin, complete with "overflow" sensor to prevent the risk of overflowing.
- Pair of centrifugal fans driven by 3-speed EC motors (brushless) that can be adjusted independently.
- High efficiency counter cross flow heat exchanger in plastic resin.
- 100% filtered mechanical by-pass with automatic activation.
- Multiple cable gland in compliance with international safety standards UNI EN 60335-2-80.
- Pair of ISO Coarse 45% (G3) class filters set near the extraction and delivery ducts.
  As an option, ISO Coarse 65% G4 filters are available for the extraction duct and ePM10 50% (M5), and PM1 55% F7 and ePM1 80% (F9) class for the delivery duct.

## SOUNDS LEVES

| | | SOUND POWER LwA dB(A) | | | | | | | | SOUND PRESSURE dB(A) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 125 | 250 | 500 | 1k | 2k | 4k | 8k | LwA | LpA 3m |
| 100% | DELIVERY | 37 | 44 | 51 | 42 | 39 | 25 | 8 | 53 | 35 |
| | INTAKE | 47 | 58 | 65 | 64 | 61 | 51 | 46 | 69 | 52 |
| | CASING | 35 | 45 | 48 | 43 | 46 | 47 | 36 | 53 | 36 |
| 90% | DELIVERY | 35 | 43 | 51 | 40 | 38 | 24 | 8 | 52 | 34 |
| | INTAKE | 46 | 56 | 66 | 62 | 59 | 49 | 43 | 69 | 51 |
| | CASING | 32 | 44 | 49 | 41 | 44 | 45 | 34 | 53 | 35 |
| 80% | DELIVERY | 35 | 41 | 53 | 38 | 35 | 8 | 8 | 53 | 36 |
| | INTAKE | 46 | 56 | 66 | 62 | 59 | 49 | 43 | 69 | 51 |
| | CASING | 32 | 42 | 47 | 38 | 41 | 42 | 32 | 50 | 33 |
| 60% | DELIVERY | 31 | 49 | 37 | 31 | 27 | 7 | 8 | 50 | 32 |
| | INTAKE | 41 | 55 | 50 | 50 | 47 | 37 | 33 | 58 | 40 |
| | CASING | 28 | 44 | 34 | 32 | 34 | 34 | 34 | 46 | 25 |
| 40% | DELIVERY | 26 | 31 | 30 | 21 | 7 | 7 | 8 | 34 | 17 |
| | INTAKE | 35 | 45 | 43 | 42 | 37 | 26 | 8 | 49 | 31 |
| | CASING | 26 | 34 | 27 | 23 | 22 | 7 | 8 | 36 | 16 |

## DETAILS

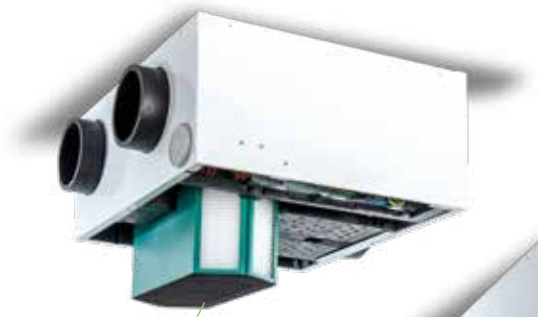
Easy access to each terminal board for connection to the mains.

By-pass duct with automatic activation for improved energy efficiency.

Condensate collection tray

Relative humidity sensor integrated for optimal control of indoor environmental conditions.

Connection for Ø 100 and 125 universal ducting.



Sealed cable gland for improved and safer electrical connection.

Easily removable heat exchanger

Easily removable filters

Circuit board installed on a slide that can be removed from the bottom, to facilitate electrical connections and maintenance.

# VORT HRI PHANTOM MINI BP HCS

## Heat Recovery Unit

### INSTALLATION

False ceiling. The area intended to contain the product must include an inspection hatch of adequate size to allow for filters, electrical connections and the circuit board.

### FUNCTIONS

- **HOLIDAY** mode: the product operates at trickle speed to ensure adequate ventilation of the premises when not occupied for prolonged periods.
- **MIN**: the product operates at minimum speed to ensure the necessary air exchange in the presence of occupants.
- **MAX**: the product operates at maximum speed to reduce relative humidity and the concentration of pollutants.
- **AUTO**: the changeover from minimum speed to minimum speed is performed automatically based on the concentration of relative humidity detected by the relative humidity sensor (the threshold can be set at installation).
- **MAN**: selection of the product operating speed among those previously set is left to the user.
- **BOOST/ROOM LIGHT**: operation at maximum speed is set automatically when the bathroom light is switched on.
- **QUIET**: product operation at maximum speed is restricted within a pre-set time period, which can be set during installation.
- **BY-PASS**: when the outdoor temperature allows it, fresh, suitably filtered outside air is released into the premises without passing through the heat exchanger.
- **NO-FROST** mode: in the presence of low outdoor temperatures, the speeds of the two fans are automatically adjusted to prevent the formation of ice on the heat exchanger. Automatic start-up of the pre-heater (optional) ensures correct operation of the product in particularly harsh climates.

### ADVANCED ELECTRONICS SUITE

- Setting during installation of the product operating parameters: fan speed, relative humidity threshold, SLEEP mode time inter val, automatic activation temperatures of free-cooling mode.
- Display of the set operating mode.
- Monitoring of filter occlusion conditions and signaling of the necessary cleaning/maintenance operations via optical signal on the remote control panel display.
- Possibility of subordinating the changeover to BOOST mode for consent of a remote presence sensor (PIR) wired to the device.

#### WIRED REMOTE CONTROL UNIT WITH LCD DISPLAY for:

- Initial product setting
- Start-up/stop
- Selection of the desired operating mode
- Display of the selected operating speed
- Display of the set relative humidity threshold
- Display of the defrosting procedure activation
- Display of saturated filter conditions
- Display of any error codes

#### RECESSED CONTROL UNIT IN STANDARD DIN BOX

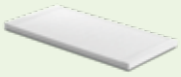
## PRE-HEATER

| MODEL | DESCRIPTION | CODE |
|---|---|---|
|  | **AH 125 (0,5kW)**<br>Electronic Pre-heater | **22797** |

## CONTROLS

| MODELS | DESCRIPTION | DIMENSIONS | CODE |
|---|---|---|---|
|  | **C SMOKE**<br>Smoke sensor | **144x54x55.8** | **12993** |
|  | **C HCS**<br>Humidity sensor | **144x54x55.8** | **12994** |
|  | **BUILT-IN BOX TYPE 503** | **144x54x55.8** | **22461** |
|  | **BUILT-IN DIN BOX** | **102x95x50** | **12898** |

## FILTER

| | DESCRIPTION | DIMENSIONS | CODE |
|---|---|---|---|
|  | **ISO Coarse 45% (G3)** | **206x132x5** | **21805** |
|  | **ISO Coarse 65% (G4)** | **206x132x5** | **21806** |
|  | **ePM10 50% (M5)** | **208x127x25** | **21802** |
|  | **ePM1 55% (F7)** | **208x127x25** | **21803** |
|  | **ePM1 80% (F9)** | **208x127x25** | **21804** |

*System components (description and data from page 96).*
*Regulators (description and data from page 152).*

# VORT HRI E RANGE

## HEAT RECOVERY UNITS FOR FALSE CEILING MOUNTING

**A** | **CENTRALIZED VENTILATION** | **FOR FALSE CEILING** | **UP TO 240 M²**

Dual flow centralized ventilation unit with heat recovery for false ceiling mounting, ideal for ventilation of homes and residential and commercial premises with a surface of up to 120 m² (HRI- AND ONE) or 240 m² (HRI- TWO), characterized by high levels of thermal insulation.

- Suitable for false ceiling installation
- Internal and external structure in high density expanded polypropylene 40kg/m³
- Connection spigots to pipes with a nominal diameter of 125mm (HRI E ONE) and 150mm (HRI E TWO), backward curved centrifugal fans directly coupled to EC motors.
- High efficiency heat exchanger of the counter flow type in plastic material (PS).
- Automatic mechanical bypass, based on the temperature probes present in the machine (BP MODELS)
- Pair of filters Class ePM10 (M5) 50% (F5)
- Wired remote LCD control panel supplied as standard.
- Floor or wall installation. Can be integrated into residential home automation systems (ModBus protocol) on RS485 SLAVE mode.

## PERFORMANCE AND ABSORPTION

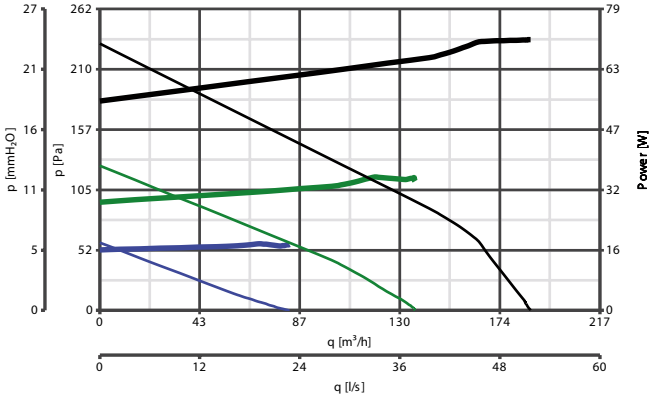
### TECHNICAL DATA

| PRODUCTS | CODE | Nom. Ø (mm) | (m³/h) | (W) | (PA) | Lp [dB (A)] 3m |
|---|---|---|---|---|---|---|
| HRI-E ONE F | 11218 | 125 | 187 | 71 | 232 | 23 |
| HRI-E TWO F | 11228 | 125 | 365 | 167 | 758 | 57 |

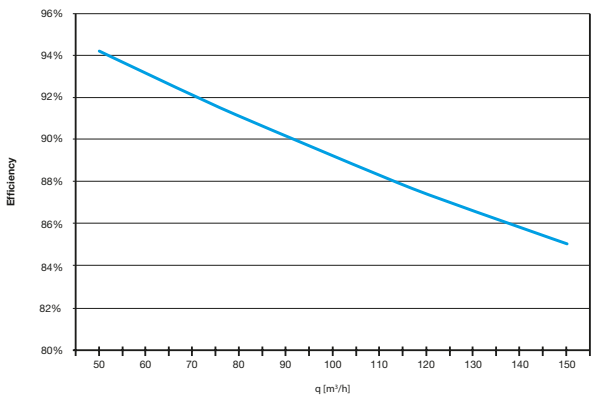
CONSUMPTION CURVES
max
med
min

PERFORMANCE CURVES
max
med
min

HRI-E ONE - HRI-E ONE F

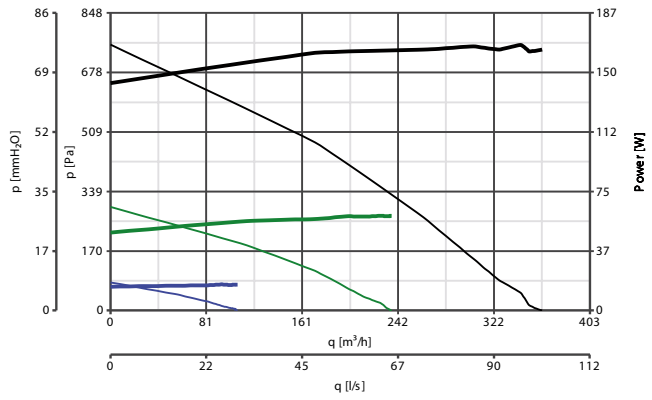



HRI-E ONE - HRI-E ONE F EFFICIENCY

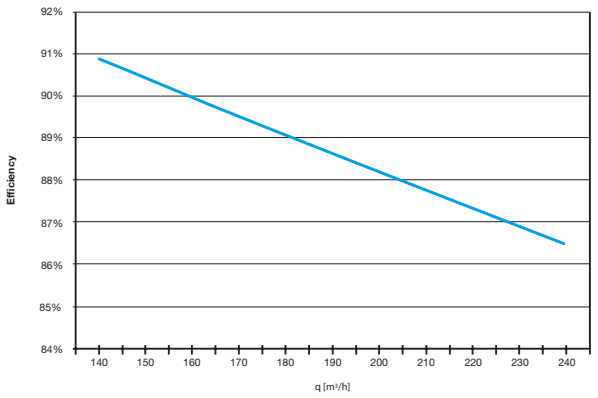



Test conditions according to EN 308: +5°C/70%; +25°C/28%.

HRI-E TWO - HRI-E TWO F

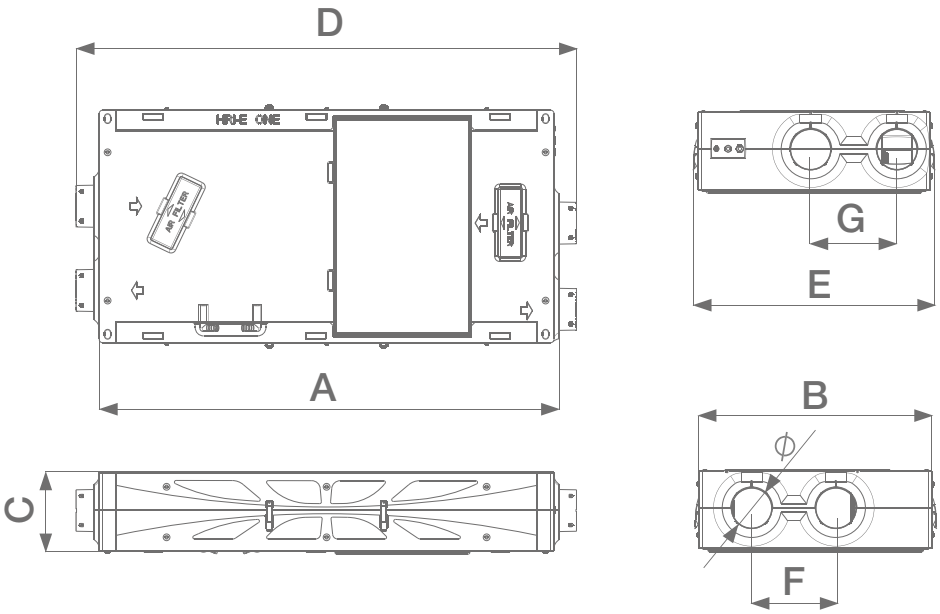



HRI-E TWO - HRI-E TWO F EFFICIENCY



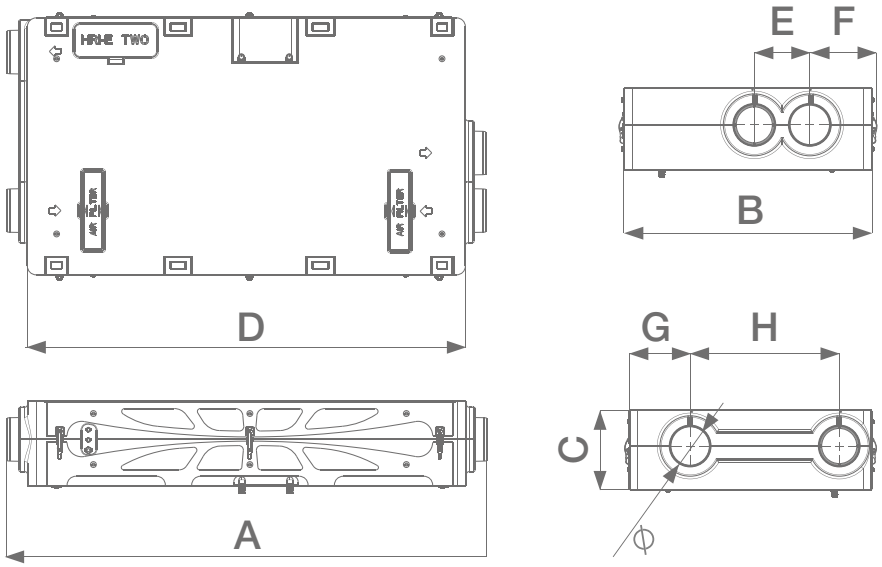

Test conditions according to EN 308: +5°C/70%; +25°C/28%.

## DIMENSIONS




| PRODUCT | CODE | A | B | C | D | E | F | G | Ø |
|---|---|---|---|---|---|---|---|---|---|
| HRI-E ONE F | 11218 | 1350 | 690 | 244 | 1485 | 720 | 250 | 256 | 123 |

*Dimensions in mm*




| PRODUCT | CODE | A | B | C | D | E | F | G | H | Ø |
|---|---|---|---|---|---|---|---|---|---|---|
| HRI-E TWO F | 11228 | 1640 | 916 | 290 | 1500 | 197 | 238 | 238 | 543 | 149 |

*Dimensions in mm*

## ENERGY DATA

| | UNIT OF MEASURE | HRI-E ONE F | HRI-E TWO F |
|---|---|---|---|
| MANUFACTURER'S NAME OR TRADE NAME | - | VORTICE | VORTICE |
| CLASS OF SPECIFIC ENERGY CONSUMPTION FOR TEMPERATE CLIMATE | - | A | A |
| SPECIFIC ENERGY CONSUMPTION SEC (TEMPERATE CLIMATE) | kWh/m² year | -38.0 | -38.8 |
| SPECIFIC ENERGY CONSUMPTION SEC (COLD CLIMATE) | | -76.8 | -77.1 |
| SPECIFIC ENERGY CONSUMPTION SEC (WARM CLIMATE) | | -13.1 | -14.3 |
| DECLARED TYPE OF THE VENTILATION UNIT | - | UVR-B** | UVR-B** |
| DRIVE TYPE | - | VSD*** | VSD*** |
| HRS TYPE HEAT EXCHANGER | - | recovery | recovery |
| THERMAL EFFICIENCY OF HEAT RECOVERY AT THE HRS REFERENCE FLOW RATE | % | 89.8 | 87.5 |
| MAXIMUM FLOW RATE | m³/h | 134 | 335 |
| TOTAL ELECTRIC POWER ABSORBED BY THE FAN AT MAXIMUM FLOW RATE | w | 65.5 | 170.0 |
| Sound LEVEL | LWA [dB(A)] | 56 | 69 |
| REFERENCE FLOW RATE | m³/s | 0.0261 | 0.0651 |
| REFERENCE PRESSURE DIFFERENCE | Pa | 50 | 370 |
| SPI**** | W/(m³/h) | 0.34648 | 0.28145 |
| CTRL CONTROL FACTOR | - | 0.85 | 0.85 |
| CONTROL TYPE | - | centralized env. | centralized env. |
| MAXIMUM PERCENTAGE OF INTERNAL LEAKAGE | % | <1 | 6.7 |
| MAXIMUM PERCENTAGE OF EXTERNAL LEAKAGE | % | 3.9 | 2.5 |
| MIXING RATE | - | NA* | NA* |
| POSITION AND DESCRIPTION OF THE VISUAL FILTER SIGNAL | - | see instruction booklet | see instruction booklet |
| AIR FLOW SENSITIVITY AT PRESSURE VARIATIONS OF ± 20 PA | - | NA* | NA* |
| INDOOR/OUTDOOR AIR SEALING | m³/h | NA* | NA* |
| AEC ANNUAL ELECTRICITY CONSUMPTION | kWh of electricity/year | 359 | 300 |
| TEMPERATE AHS ANNUAL HEATING SAVINGS | kWh of primary energy /year | 4624 | 4562 |
| COLD AHS ANNUAL HEATING SAVINGS | | 9046 | 8924 |
| WARM AHS ANNUAL HEATING SAVING | | 2091 | 2063 |

** NA: Not applicable. ** UVR-U: Residential Ventilation Unit - Uni-directional. *** VM: Multiple speeds. VSD: Variable Speed Drive.*
***** SPI: Specific power input.*

## SOUND LEVELS

| HRI-E ONE F RPM | | Lw dB (A) 125 Hz | 250 Hz | 500 Hz | 1000 Hz | 2000 Hz | 4000 Hz | 8000 Hz | Lw dB (A) | Lw dB (A) 3m* |
|---|---|---|---|---|---|---|---|---|---|---|
| MIN. SPEED | Casing | 3.1 | 14.7 | 17.4 | 20.5 | 2.7 | 7.2 | 24.2 | 27.3 | 6.8 |
| | Delivery | 7.3 | 17.6 | 20.4 | 27.6 | 14.6 | 0.4 | 14.1 | 33.4 | 12.9 |
| | Intake | 11.4 | 21.9 | 31.4 | 32.4 | 19.2 | 9.3 | 4.0 | 39.1 | 18.6 |
| MED. SPEED | Casing | 13.7 | 23.9 | 25.8 | 31.2 | 14.8 | 7.5 | 9.0 | 37.0 | 16.5 |
| | Delivery | 15.3 | 23.0 | 25.6 | 35.5 | 23.0 | 12.8 | 3.0 | 40.2 | 19.7 |
| | Intake | 19.7 | 28.9 | 36.7 | 42.4 | 30.5 | 25.4 | 15.5 | 48.1 | 27.6 |
| MAX. SPEED | Casing | 22.3 | 30.7 | 32.1 | 36.5 | 23.7 | 16.7 | 3.9 | 43.7 | 23.2 |
| | Delivery | 22.5 | 29.9 | 32.9 | 40.9 | 31.1 | 21.1 | 9.3 | 46.8 | 26.3 |
| | Intake | 23.4 | 35.7 | 50.9 | 46.9 | 38.5 | 33.9 | 25.7 | 55.5 | 35.2 |

** Acoustic pressure calculated at 3 m in free field in compliance with ISO 9614.*

| HRI-E TWO F RPM | | Lw dB (A) 125 Hz | 250 Hz | 500 Hz | 1000 Hz | 2000 Hz | 4000 Hz | 8000 Hz | Lw dB (A) | Lw dB (A) 3m* |
|---|---|---|---|---|---|---|---|---|---|---|
| MIN. SPEED | Casing | 23.7 | 32.0 | 37.6 | 34.8 | 28.9 | 20.0 | 15.2 | 47.5 | 26.96 |
| | Delivery | 17.1 | 24.7 | 23.5 | 16.3 | 15.2 | 13.6 | 14.9 | 31.8 | 11.26 |
| | Intake | 23.8 | 32.5 | 39.4 | 33.1 | 27.4 | 18.2 | 17.7 | 45.5 | 24.96 |
| MED. SPEED | Casing | 31.3 | 52.4 | 54.0 | 53.4 | 48.4 | 43.2 | 29.2 | 64.7 | 44.16 |
| | Delivery | 16.7 | 39.2 | 35.3 | 28.5 | 24.7 | 16.0 | 15.4 | 45.7 | 25.16 |
| | Intake | 36.1 | 48.7 | 51.1 | 46.8 | 43.6 | 35.3 | 22.0 | 58.2 | 37.66 |
| MAX. SPEED | Casing | 39.2 | 53.4 | 64.0 | 63.2 | 59.8 | 55.6 | 43.9 | 78.3 | 57.76 |
| | Delivery | 24.1 | 41.7 | 44.3 | 34.6 | 35.2 | 23.6 | 15.2 | 54.7 | 24.16 |
| | Intake | 42.5 | 51.3 | 60.2 | 55.5 | 53.9 | 47.2 | 33.2 | 69.3 | 48.76 |

** Acoustic pressure calculated at 3 m in free field in compliance with ISO 9614.*

# VORT HRI E RANGE

HEAT RECOVERY UNITS FOR FALSE CEILING MOUNTING

## TECHNICAL CHARACTERISTICS

- **2 models**, different in size and performance, equipped with mechanical by-pass.
- **Fire resistant expanded polypropylene casings** (DIN EN 13501). Side closing plates in galvanized steel. Tie rods for suspended installation included in the standard equipment.
- **Intake and delivery spigots** compatible with pipes with a nominal diameter of 125 mm (HRI E ONE) and 150 mm (HRI E TWO).
- **Pair of motor fans driven by EC motors** (brushless) of the external rotor type, with shafts mounted on ball bearings, directly coupled to backward curved centrifugal impellers to guarantee high aeraulic efficiency. 3 operating speeds, independently settable at installation.
- **High efficiency heat exchanger**, of the cross-flow type with counterflow, made of plastic resin (PS).
- **Automatic activation frost protection**, to prevent the formation of frost at the heat exchanger.
- **Mechanical by-pass**, automatic and 100% filtered, to guarantee the comfort of the occupants of the rooms in mid seasons, or whenever the outside temperature does not require the action of the heat exchanger.
- **Remote control unit with LCD display**, of the wired connection type, for:
  - turning the product on and off;
  - the initial configuration of the product;
  - selecting the minimum, average or maximum speed of operation;
  - programming the operation;
  - displaying the time and room temperature;
  - monitoring the correct operation of the product (any malfunctions are highlighted through error messages shown on the display);
  - signaling the saturated filters condition on the display.
- **Pair of M5 filters** (F7 filter available as an option for the delivery duct), easily accessible for periodic maintenance.
- **Condensate collection tray** with drain devices.
- **Possibility of interlocking with external environmental sensors** (optional), for the automatic control of the operating mode.
- **Safety certified by a third party** (Ⓨ).
- **Degree of protection from dust and water**: IPX2.
- **Electrical insulation class**: II (grounding not required).

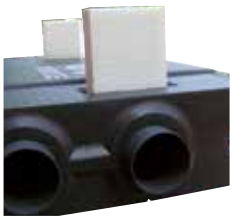
## TECHNICAL DATA

| PRODUCTS | CODE | V~50HZ | W max | A max | MAX FLOW RATE | | MAX PRESSURE | | °C* MAX | KG |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | $m^3/h$ | l/s | $mmH_2O$ | Pa | | |
| HRI-E ONE F | 11218 | 230 | 71 | 0.55 | 187 | 52 | 23.7 | 232 | 45 | 17.5 |
| HRI-E TWO F | 11228 | 230 | 167 | 1.4 | 365 | 101 | 77.3 | 758 | 45 | 29.5 |

** Maximum temperature with continuous operation of the product.*

## DETAILS

Pair of Brushless motors.



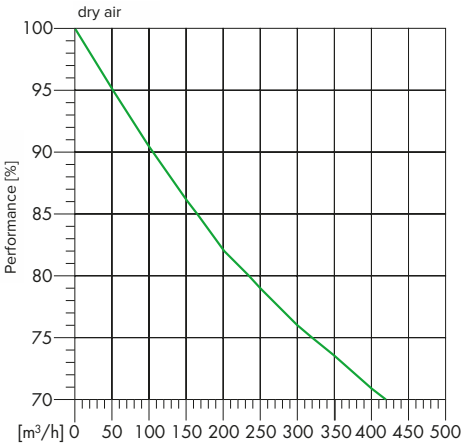
M5 FILTERS

LCD display supplied as standard

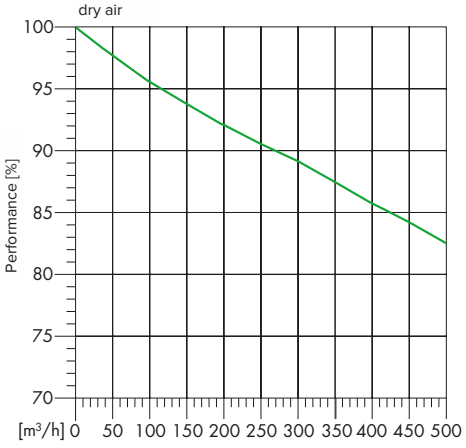
Condensate drain nozzles.

## EFFICIENCY CURVES

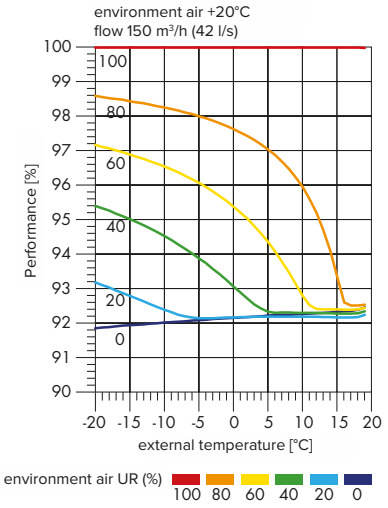
Efficiency in accordance with flow rate
HRI-E ONE



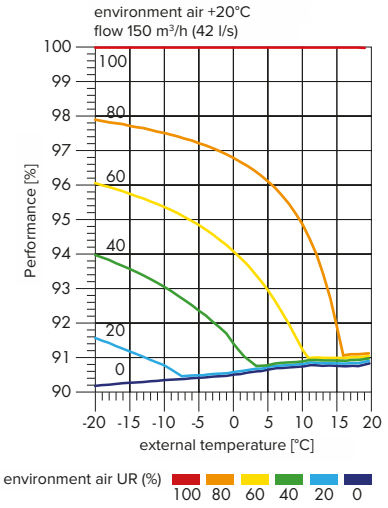

Efficiency in accordance with flow rate
HRI-E TWO




Efficiency in accordance with condensation heat




Efficiency in accordance with condensation heat



## FILTERS

| MODELS | DESCRIPTION | DIMENSIONS | CODE | VORT HRI-E ONE F code 11218 | VORT HRI-E TWO F code 11228 |
|---|---|---|---|---|---|
|  | **F7 FILTER** | **200X183X48** | **22549** | ✓ | |
| | **F7 FILTER** | **230X250X48** | **22628** | | ✓ |
| | **M5 FILTER** | **200X183X43** | **22645** | ✓ | |
| | **M5 FILTER** | **230X250X48** | **22646** | | ✓ |

## REGULATORS

| MODELS | DESCRIPTION | DIMENSIONS | CODE | VORT HRI-E ONE F code 11218 | VORT HRI-E TWO F code 11228 |
|---|---|---|---|---|---|
|  | **C TEMP**<br>Temperature detector | **144x54x55.8** | **12992** | ✓ | ✓ |
|  | **C SMOKE**<br>Polluted air detector | **144x54x55.8** | **12993** | ✓ | ✓ |
|  | **C HCS**<br>Humidity detector | **144x54x55.8** | **12994** | ✓ | ✓ |
|  | **C PIR**<br>Presence detector | **144x54x55.8** | **12998** | ✓ | ✓ |
|  | **INSTALLER PANEL SKP10**<br>Installer panel | - | **22629** | ✓ | ✓ |

## ACCESSORIES

| MODELS | DESCRIPTION | CODE | VORT HRI-E ONE code 11218 | VORT HRI-E TWO code 11228 |
|---|---|---|---|---|
|  | **BRACKET KIT**<br>Bracket kit for fixing | **22548** | ✓ | |
|  | **BRACKET KIT**<br>Bracket kit for fixing | **22648** | | ✓ |
|  | **500W HEATER**<br>PRE-HEATING BOX HRI-E ONE | **22598** | ✓ | |
|  | **750W HEATER**<br>PRE-HEATING BOX HRI-E TWO | **22627** | | ✓ |

## LCD DISPLAY - SUPPLIED AS STANDARD


### SOME ICONS SHOWN ON THE PANEL

| ICONS | FUNCTIONS |
|---|---|
| | No-Frost |
| P1 - P2 | Time profiles |
| | Speed |
| | OFF |
| | Alarm |
| | By-pass |
| | Time schedule programming |
| FILT | Filter replacement notice |
| HA | Antibacterial function |

Please note: For a complete and in-depth explanation of the icons and the associated functions, please refer to the instruction booklet.

The LCD display controls the electronics of the product. Among the various functions, the control panel can be used for:

- turning the machine on and off,
- the initial configuration,
- the manual setting of the operating mode,
- the selection of the 3 speeds,
- the automatic management of the free-cooling function (only models with By-pass),
- setting the time slots and the room temperature,
- the display of the time or outside temperature,
- continuous monitoring of correct operation (any problems are signaled by error messages displayed on the control panel),
- constant monitoring of the filter status (need for maintenance highlighted on the control panel display).

*System components (description and data from page 96).*
*Regulators (description and data from page 152).*

# VORT HA SYSTEM

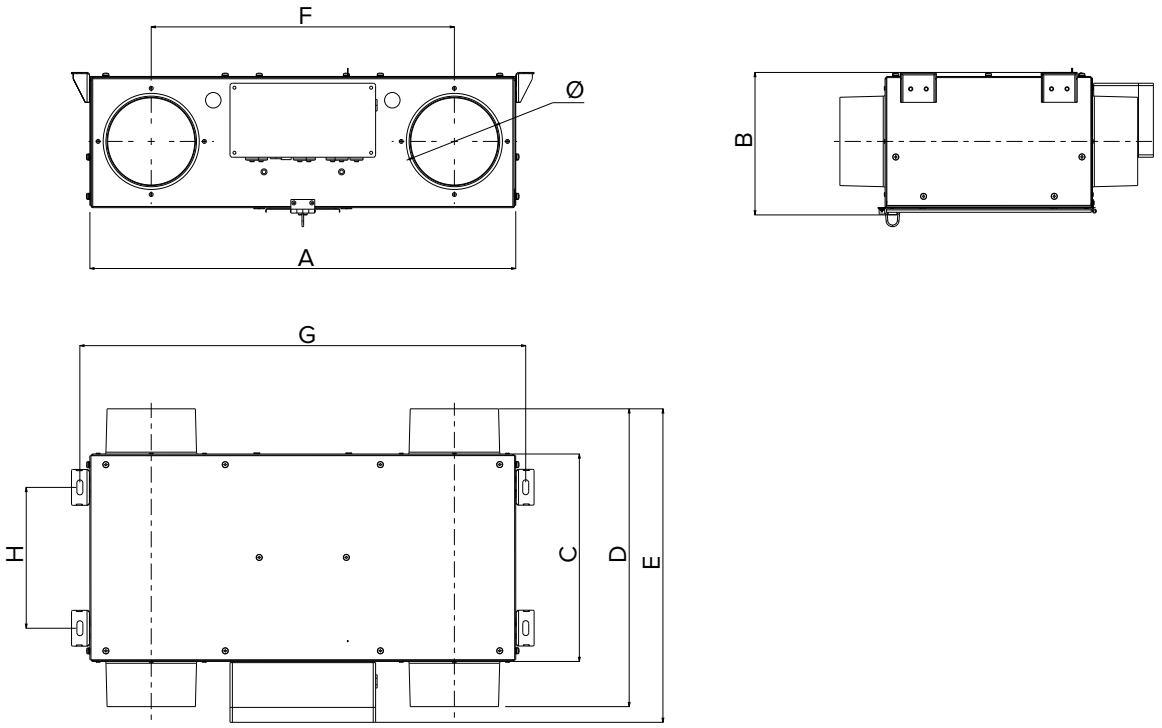
PURIFICATION AND SANITIZATION SYSTEM

## CENTRALIZED VENTILATION

System obtained by combining a centralized dual-flow ventilation unit with heat recovery from the Vortice Range equipped with a mechanical by-pass with an external filter module with antibacterial capabilities.
The device thus designed performs the exchange of ambient air essential for maintaining oxygen and relative humidity levels ideal for the comfort of the occupants, while reducing the concentrations of pollutants (carbon dioxide CO2, carbon monoxide CO, nitrogen oxides NOx, volatile organic compounds VOC and bacteria), harmful to health.

- Combination of ventilation with centralized heat recovery and air purification.
- Antibacterial action through innovative patented filters.
- Exhausted filters that can be disposed of through the methods used for separate collection.

## DIMENSIONS




Dimensions in mm

| PRODUCTS | A | B | C | D | E | F | G | H | Ø |
|---|---|---|---|---|---|---|---|---|---|
| VORT HA | 714 | 238 | 348 | 499 | 525 | 508 | 747 | 236 | 148 |

* For the systems VORT HA AVEL 350 , VORT HA PHANTOM 200 and VORT HA PHANTOM 350 and HA HRI-E ONE F and HRI-E TWO F consider in addition to the dimensions of the VORT HA shown in the table the respective dimensions of VORT HAS AVEL 350, VORT HRI 200 PHANTOM BP, VORT HRI 350 PHANTOM BP, of HRI-E ONE F and HRI-E TWO F

## HA SYSTEM

HA SYSTEM

VORT HRI 200 PHANTOM BP CODE 11290
VORT HRI 350 PHANTOM BP CODE 11292

## TECHNICAL DATA

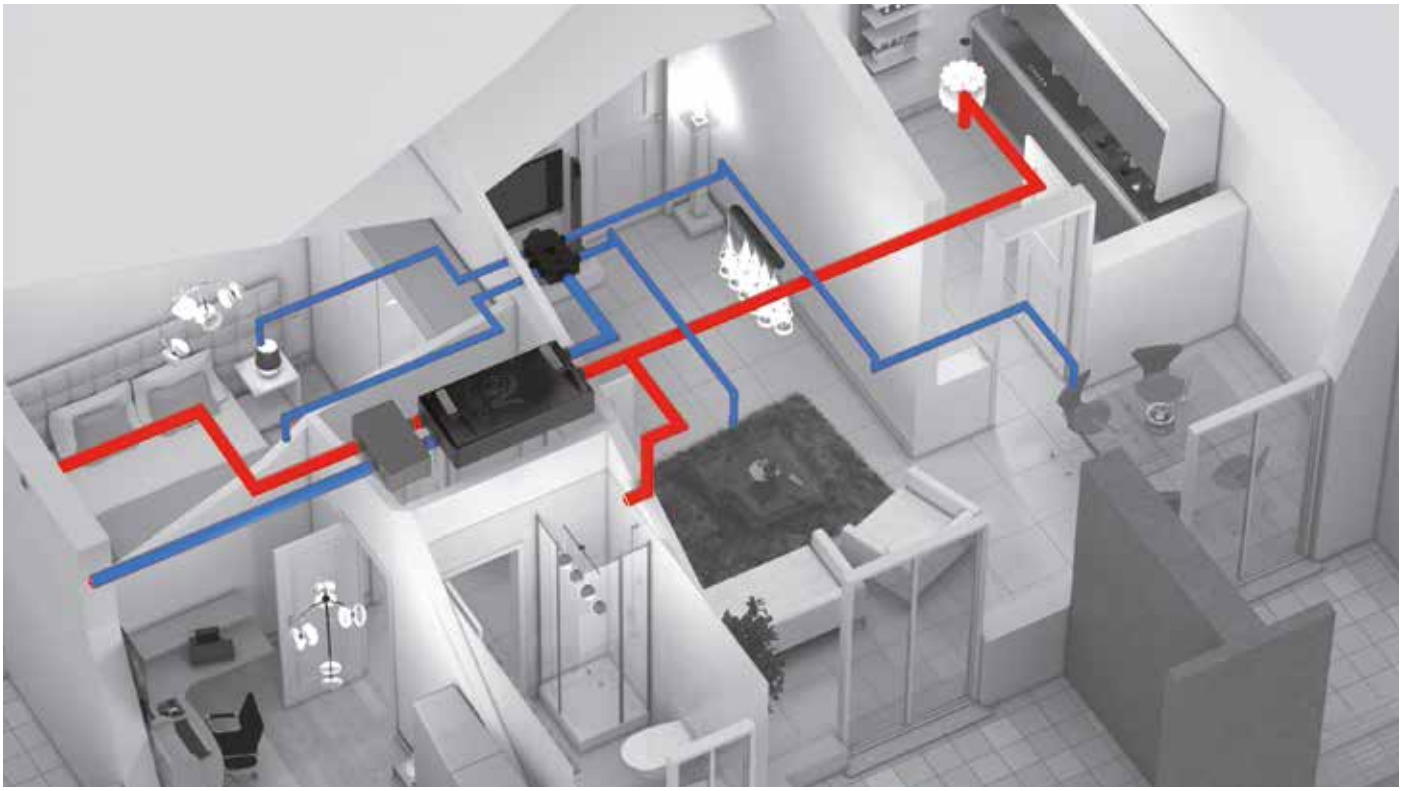
| PRODUCTS | CODE | Nom. Ø (mm) | ($m^3$/h) | (W) | (PA) | Lp [dB (A)] 3m |
|---|---|---|---|---|---|---|
| SYSTEM HA PHANTOM 200 | 11448 | 125 | 206 | 102 | 426 | 22.8 |
| SYSTEM HA PHANTOM 350 | 11449 | 150 | 350 | 165 | 568 | 16.7 |

**NOTES**

The performance and absorption curves for the systems VORT HA AVEL 350 (code 11404), VORT HA Phantom 200 (code 11448), VORT HA Phantom 350 (code 11449), HA HRI-E ONE f (code 11434) and HA HRI-E TWO F (code 11447) are to be considered respectively those of VORT HA AVEL 350, VORT HRI 200 PHANTOM BP, VORT HRI 350 PHANTOM BP, HRI-E ONE F and HRI-E TWO F.

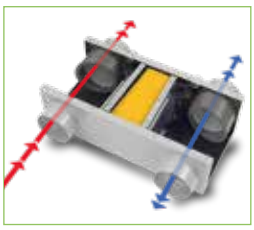
## TECHNICAL CHARACTERISTICS

- **Centralized dual flow ventilation unit with heat recovery derived from the models of the Range VORT HR AVEL, VORT HRI PHANTOM and HRI E , from which it differs for the operating logic programmed in the electronic controller.**
- External filter box, in galvanized sheet steel, designed for false ceiling installation, complete with by-pass and hinged lower cover to facilitate periodic maintenance of the filter, of the mechanical type and covered by patent, which achieves the drastic decrease of the bacterial load and concentration of CO, NOx and VOC in the environment.
- In normal operation, the VORT HA system operates as a traditional heat recovery unit, extracting stale air from the premises and supplying fresh air from the outside. Periodically (for example in the morning hours, and in any case according to the pre-programmed times), when the rooms are not occupied and therefore the need for fresh air supply is lower, the system switches from Ventilation to Purification mode: the delivery fan stops, the mechanical by-pass inside the heat recovery unit opens and with it the one contained in the filter box. The fan usually employed for the extraction of the stale air thus forces the internal air to circulate repeatedly through the external filter, where the pollutants and bacteria are retained and neutralized (the antibacterial action of the substance of the filter enables its elimination without special attention measures once the saturation condition is reached).
- At the end of the purification cycle, the duration of which is usually set at 30', the by-pass inside the heat recovery unit and the external filter box close again, the delivery fan restarts and the system operates again as a normal heat recovery unit.

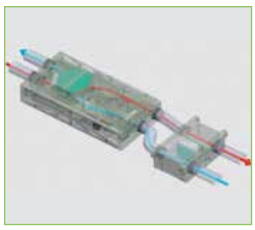


## OPERATING MODE

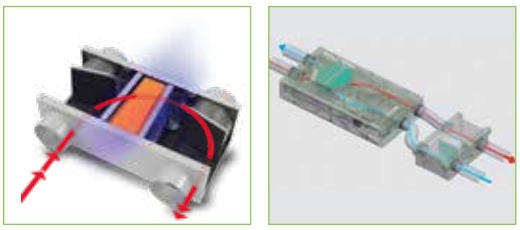
- The operation of the HA system presupposes the alternation of the ventilation and purification methods according to the actual needs of the people who live in the premises.
- In the presence of people, for example in the early hours of the morning, at lunchtime, in the evening and for most of the night, the HA system operates like a traditional heat recovery unit, thanks to the high efficiency of the combined recovery units, replenishing the stale air expelled outside with fresh renewal air, suitably pre-heated or pre-cooled (in winter or summer) and filtered.
- On the other hand, during the hours when the rooms are not inhabited, the fresh air delivery stops and the ambient air is purified thanks to the VORT HA, forcing its recirculation in the purifier to maximize the effectiveness of the related filter (protected by patent).
- In particular, when activating the HA SYSTEM, the air flow to the outside is blocked through special shutters, and diverted directly to a special antibacterial filter treated with a solution of Chitosan and Titanium Dioxide. Low voltage UV lamps emit radiation at 415nm activating photocatalysis, an active ingredient that inhibits the proliferation of bacteria, killing them, and returning effectively purified air.
- A door located outside the module facilitates the replacement of the filter which can be removed in total safety as it is free of active bacteria.
- The air purification cycle provides for the alternation between replacement activities with heat recovery and antibacterial filtering activity, a cycle that can be activated automatically according to the pre-set programming or manually by the user according to his specific needs.
- It is advisable to prefer the filtering function in times of least use of the premises, for example in a private home during the day when the occupants are at work or school so that on their return they can find a healthy and comfortable environment.



VORT HA filter combined with the VORT HR AVEL, VORT HRI PHANTOM and HRI E heat recovery unit



Blocking air flows to the outside through the special dampers and deviating them towards the special filter.



Activation of photocatalysis thanks to the UV lamp and re-introduction of purified air.

# VORT HRI DH RANGE

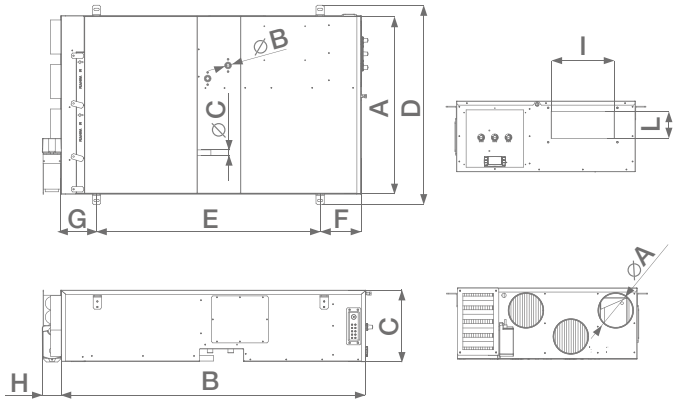
## HEAT RECOVERY UNITS WITH DEHUMIDIFICATION FUNCTION

**CENTRALIZED VENTILATION** | **FOR FALSE CEILING** | **UP TO 240 M²**

Centralized dual-flow ventilation units with heat recovery for false ceiling installation, including direct expansion cooling circuit, designed for ventilation and dehumidification of residential and commercial premises with a surface of up to 120 m² (VORT HRI DH 260) and at 240 m² (VORT HRI DH 500) which feature a radiant water cooling system.

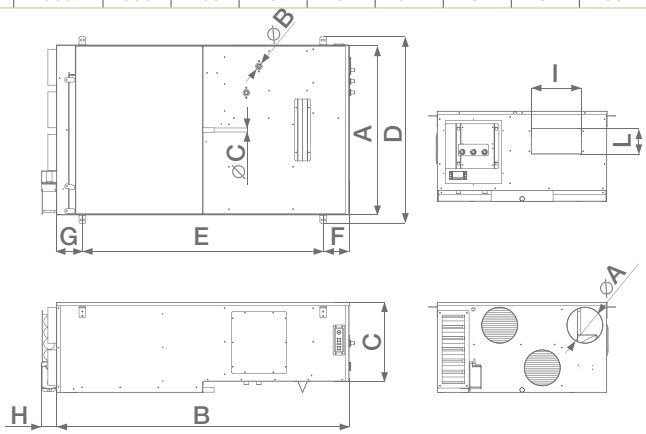
- Double flow with very high efficiency heat recovery (up to 90%) and integrated dehumidifier, galvanized sheet steel casing, exchange pack of the cross-flow type in polyethylene (PE), condensate collection tray, DC EC motors with very low electricity consumption, adjustable speeds, G4 filters on intake and delivery; automatic anti-frost function.
- Total cooling capacity 1400W/2800W; useful dehumidification capacity 30l/24h/62l/24h.
- Reciprocating compressor operating with R 134 A gas, double water and air condenser, flow switch, 3-way modulating valve, control electronics with microprocessor including LCD display on the machine controlling the refrigerant circuit, integrated management of the aeraulic and hydronic sections, summer/winter switching, frost protection, diagnostics of any malfunctions, supervision via RS485 serial port and/or via the Internet (opt.), filter monitoring (opt.).
- False ceiling installation.
- Remote control panel with display (opt.) .
- Can be combined with a dedicated electronic temperature and humidity probe.
- External air intake/stale air expulsion/return air spigots Ø 125mm / Ø 160mm rectangular delivery spigot.
- Automatic motorized recirculation damper.

## DIMENSIONS




*Dimensions in mm*

| PRODUCTS | CODE | A | B | C | D | E | F | G | H | I | L | ØA | ØB | ØC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VORT HRI 260 DH | 45091 | 655 | 1103 | 262 | 702 | 821 | 152 | 132 | 65 | 232 | 99 | 125 | 1/2” | 20 |
| VORT HRI 260 DH RC | 45092 | 655 | 1103 | 262 | 702 | 821 | 152 | 132 | 65 | 232 | 99 | 125 | 1/2” | 20 |




*Dimensions in mm*

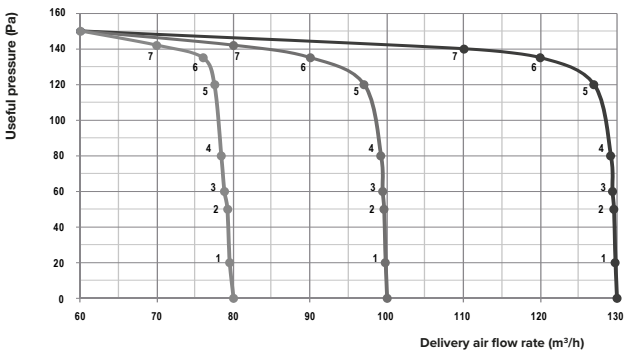
| PRODUCTS | CODE | A | B | C | D | E | F | G | H | I | L | ØA | ØB | ØC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VORT HRI 500 DH | 45093 | 756 | 1304 | 405 | 802 | 1074 | 116 | 152 | 65 | 224 | 114 | 160 | 1/2” | 20 |
| VORT HRI 500 DH RC | 45094 | 756 | 1304 | 405 | 802 | 1074 | 116 | 152 | 65 | 224 | 114 | 160 | 1/2” | 20 |

## PERFORMANCE AND ABSORPTION

VORT HRI 260 DH
DELIVERY FAN

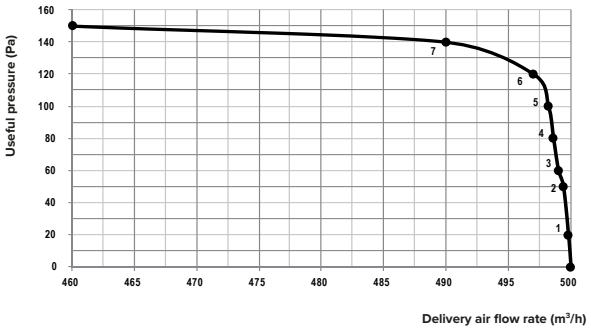

| Absorbed power | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| 260 M³/H | 18W | 30W | 36W | 40W | 46W | 51W | 60W |

VORT HRI 260 DH
EXPULSION FAN




| Absorbed power | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| 80 M³/H | 10W | 11W | 11W | 12W | 12W | 12W | 12W |
| 100 M³/H | 11W | 13W | 15W | 15W | 17W | 18W | 18W |
| 130 M³/H | 11W | 13W | 15W | 19W | 22W | 30W | 34W |

VORT HRI 500 DH
DELIVERY FAN




| Absorbed power | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| 500 m³/h | 38W | 60W | 72W | 80W | 92W | 103W | 120W |

VORT HRI 500 DH
EXPULSION FAN


| Absorbed power | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| 160 m³/h | 20W | 22W | 22W | 24W | 24W | 24W | 24W |
| 200 m³/h | 22W | 26W | 30W | 30W | 34W | 36W | 36W |
| 260 m³/h | 22W | 26W | 30W | 38W | 44W | 60W | 68W |

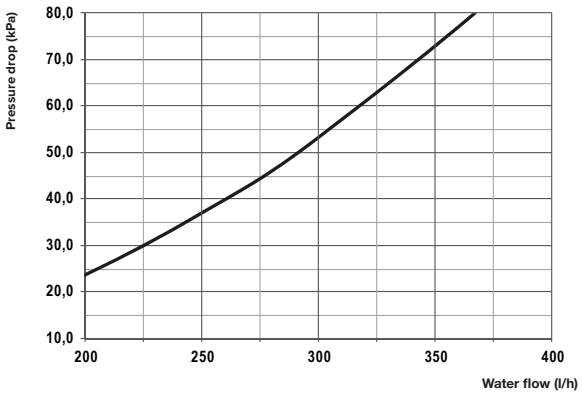
# VORT HRI DH RANGE

HEAT RECOVERY UNITS WITH DEHUMIDIFICATION FUNCTION

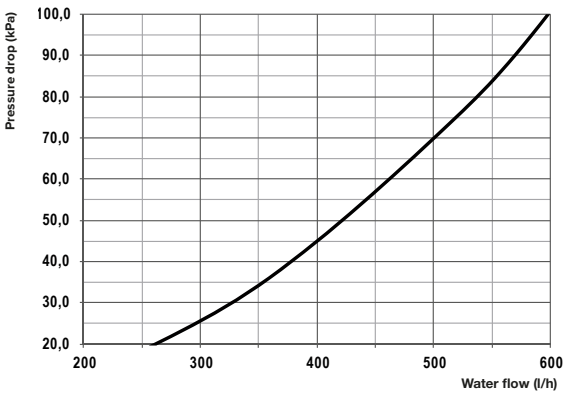
## PERFORMANCE AND ABSORPTION

### HYDRAULIC CIRCUIT PRESSURE DROPS

VORT HRI 260 DH - VORT HRI 260 DH RC



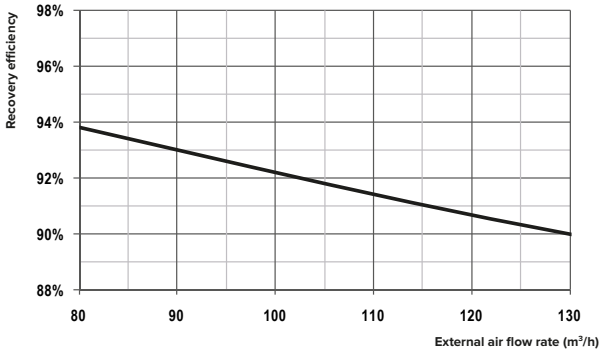

VORT HRI 500 DH - VORT HRI 500 DH RC



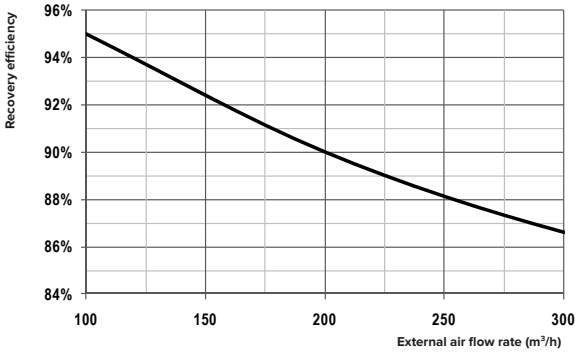

### RECOVERY EFFICIENCY

Winter: internal conditions 20 °C, 50% RH external air conditions: -5°C, 80% RH

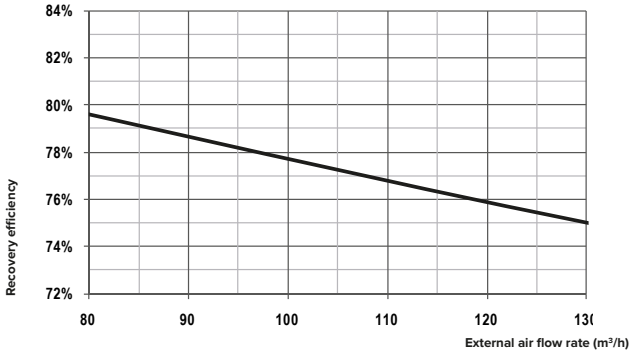
VORT HRI 260 DH - VORT HRI 260 DH RC



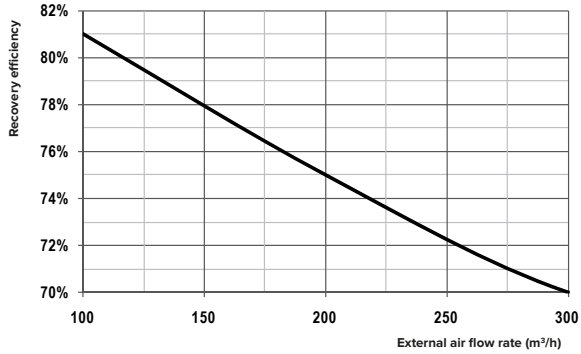

VORT HRI 500 DH - VORT HRI 500 DH RC




VORT HRI 260 DH - VORT HRI 260 DH RC



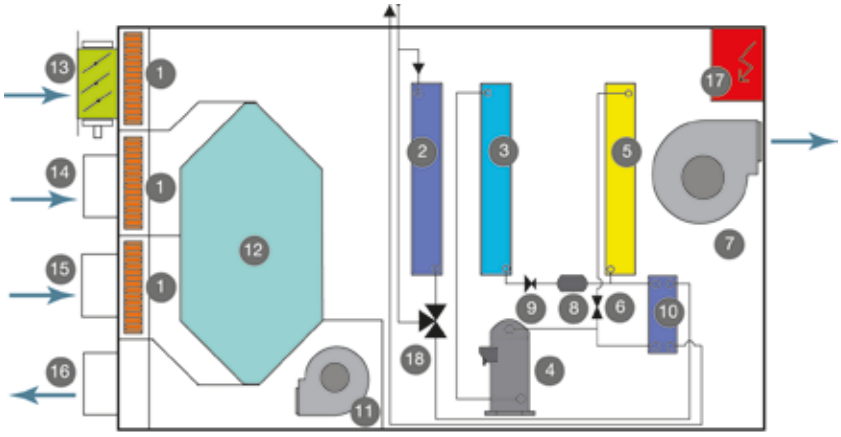

VORT HRI 500 DH - VORT HRI 500 DH RC




## TECHNICAL DATA

| PRODUCTS | CODE | Nom. Ø (mm) | (m³/h) | (W) | (PA) | Lp [dB (A)] 3m |
|---|---|---|---|---|---|---|
| VORT HRI 260 DH | 45091 | 125 | 130-260 | 86 | 150 | 39 |
| VORT HRI 260 DH RC | 45092 | 125 | 130-260 | 86 | 150 | 39 |
| VORT HRI 500 DH | 45093 | 160 | 250-500 | 150 | 150 | 44 |
| VORT HRI 500 DH RC | 45094 | 160 | 250-500 | 150 | 150 | 44 |

## MAIN COMPONENTS

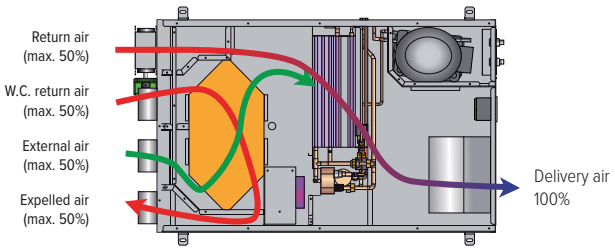



1 - Air filter.
2 - Hydronic coil pre-cooling (summer function) post-heating (winter function).
3 - Evaporator.
4 - Compressor.
5 - Air condenser.
6 - Solenoid.
7 - Supply fan with EC motor.
8 - Dehydrator filter.
9 - Lamination.
10 - Water condenser.
11 - Exhaust fan with EC.
12 - Very high efficiency cross-flow recovery system.
13 - Motorized return damper (recirculation).
14 - Return air damp rooms.
15 - External air.
16 - Expelled air.
17 - Electrical cabinet.
18 - Three-way modulating valve.

## OPERATING MODE

### SUMMER OPERATION (COMPRESSOR ACTIVE) WITH EXTERNAL AIR

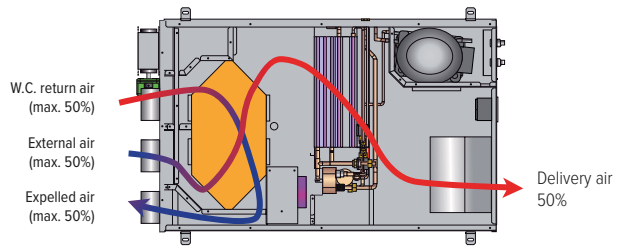
- By setting this function, the unit renews the ambient air with external one through the extremely high efficiency heat recovery unit.
- The possible functions in this configuration are:
  - Renewal + Dehumidification with neutral air: the unit condenses partially in air and partially in water through the plate condenser, obtaining dehumidified and thermally neutral air.
  - Renewal + Dehumidification with cooling: the unit operates with 100% condensation in water, obtaining dehumidified and cooled air.




*Please note: In summer mode the appliance cannot operate without the aid of cold and/or hot water. In the event of low or no water flow, the unit is turned off and the safety devices are activated.*

### OPERATION IN WINTER AND BETWEEN SEASONS (COMPRESSOR OFF) WITH EXTERNAL AIR

- By setting this function, the unit renews the ambient air with external one through the extremely high efficiency heat recovery unit.
- Renewal with air heating: The compressor is off, the battery can be supplied with hot water from the radiant system, (even if by virtue of the very high efficiency of the heat recovery unit it is possible to obtain a delivery air temperature of 17 °C, without using hot water, with an outside air temperature of -5 °C), and behaves like a normal thermoventilator with recuperator).




*Please note: In winter mode the appliance has the compressor off and operates as a thermo fan with very high efficient heat recovery.*

## TECHNICAL CHARACTERISTICS

- **4 models**, different in size, performance, equipment and offered features.
- **Casing in galvanized sheet steel** with removable panels for direct access to internal filters. VORT HRI 260 DH models have the lower cover in thermoformed plastic resin. Tie rods for suspended installation supplied as standard.
- **Intake and delivery spigots** compatible with pipes with a nominal diameter of 125 mm (VORT HRI 260 DH) and 160 mm (VORT HRI 500 DH).
- **Pair of centrifugal fans driven by EC motors** (brushless) of the external rotor type, with shafts mounted on ball bearings, directly coupled to centrifugal impellers. 2 operating speeds, independently settable at installation.
- **High efficiency heat exchanger**, of the cross-flow type with counterflow, made of plastic resin (PS).
- **Automatic activation frost protection**, to prevent the formation of frost at the heat exchanger.
- **Motorized circulation damper**.
- **Ready for the connection** to mechanical (optional) or electronic (DH versions) hygrostats (optional).
- **Compressor running on gas type HFC R134a.**
- **Modulating valve** 3-way.
- **Double condenser** (water + air).
- Flow meter.
- Control electronics with microprocessor, including **LCD display**.
- **Pair of G4 filters**, easily accessible for periodic maintenance.
- **Condensate collection tray** with drain devices.
- **Three operating modes**:
  - SUMMER: ventilation with heat recovery (neutral air) and dehumidification;
  - SUMMER + COOLING: ventilation with heat recovery (cooled air) and dehumidification;
  - WINTER: ventilation with heat recovery.
- **Degree of dust and water protection**: IPX2.
- **Electrical insulation class**: I (grounding required).

## TECHNICAL DATA

| PRODUCTS | VORT HR 260 DH CODE 45091 | VORT HR 260 DH RC CODE 45092 | VORT HR 500 DH CODE 45093 | VORT HR 500 DH RC CODE 45094 |
|---|---|---|---|---|
| POWER SUPPLY | 230 V /50 Hz | 230 V /50 HZ | 230 V /50 HZ | 230 V /50 HZ |
| DELIVERY FAN ABSORBED POWER (MIN/NOM/MAX) (W) | 10-30-86 | 10-30-86 | 30-60-130 | 30-60-130 |
| RECOVERY FAN ABSORBED POWER (MIN/NOM/MAX) (W) | 11-22-43 | 11-22-43 | 22-44-68 | 22-44-68 |
| TOTAL FRIDGE POWER IN THE ENVIRONMENT (W) | 1380 | 1380 | 2820 | 2820 |
| NOMINAL ABSORBED POWER OF THE COMPRESSOR (W) | 340 | 340 | 480 | 480 |
| WINTER THERMAL POWER RECOVERED (W) | 950 | 950 | 1850 | 1850 |
| TYPE OF REFRIGERANT | R134A | R134A | R134A | R134A |
| USEFUL DEHUMIDIFICATION CAPACITY (L/24H) | 30.1 | 30.1 | 61.8 | 61.8 |
| RECOVERED NOMINAL EFFICIENCY (%) IN SUMMER | 70 | 70 | 70 | 70 |
| RECOVERED NOMINAL EFFICIENCY (%) IN WINTER | 90 | 90 | 90 | 90 |
| HYDRAULIC CIRCUIT PRESSURE DROPS (NOM) (KPA) | 38 | 38 | 35 | 35 |
| BATTERY WATER FLOW RATE (MIN/NOM/MAX) (L/H) | 150-250-400 | 150-250-400 | 200-350-600 | 200-350-600 |
| SUMMER DELIVERY AIR FLOW (M3/H) | 260 | 260 | 500 | 500 |
| DELIVERY AIR FLOW RATE IN WINTER (M3/H) | 0-130 | 0-130 | 0-250 | 0-250 |
| Sound LEVEL LW DB (A) | 47 | 47 | 52 | 52 |
| ACOUSTIC PRESSURE LP DB(A) 3M | 39 | 39 | 44 | 44 |
| USEFUL PRESSURE OF DELIVERY FAN (NOM/MAX) (PA) | 50-140 | 50-140 | 50-140 | 50-140 |
| USEFUL RECOVERY FAN PRESSURE (NOM/MAX) (PA) | 50-140 | 50-140 | 50-140 | 50-140 |
| KG | 60 | 60 | 80 | 80 |

# VORT HRI DH RANGE

## HEAT RECOVERY UNITS WITH DEHUMIDIFICATION FUNCTION

## DETAILS

Predisposition for combination with mechanical (RC versions) or electronic (DH versions) hygrostats (optional).

Adapter available for circular duct passage:
R2T 260 - R2T 500

Control electronics with microprocessor, including LCD display.

Back of the product.

CONTROL PANEL supplied as standard. (see details of operation below).

## CONTROL DISPLAY - SUPPLIED AS STANDARD

Summer mode button

Winter mode button

SET button
(set-point display, access to menus, confirmation of parameter value during modification)


UP button
(menu navigation, parameter scrolling, parameter value scrolling)

DOWN button
(menu navigation, parameter scrolling, parameter value scrolling)

MENU button
(access to menu navigation)

Please note: For a complete and in-depth explanation of the icons and the associated functions, please refer to the instruction booklet.

## REGULATORS

| MODELS | DESCRIPTION | CODE | VORT HR 260 DH CODE 45091 | VORT HR 260 DH RC CODE 45092 | VORT HR 500 DH CODE 45093 | VORT HR 500 DH RC CODE 45094 |
|---|---|---|---|---|---|---|
|  | **RCP (HRI DH)**<br>Remote control panel | **22607** | ✓ | ✓ | ✓ | ✓ |
|  | **ETRH (HRI DH)**<br>Electronic probe for humidity and temperature detection. | **22608** | ✓ | | ✓ | |
|  | **MTRH (HRI DH)**<br>Remote mechanical hygrostat. | **22609** | | ✓ | | ✓ |

*System components (description and data from page 96).*
*Regulators (description and data from page 152).*

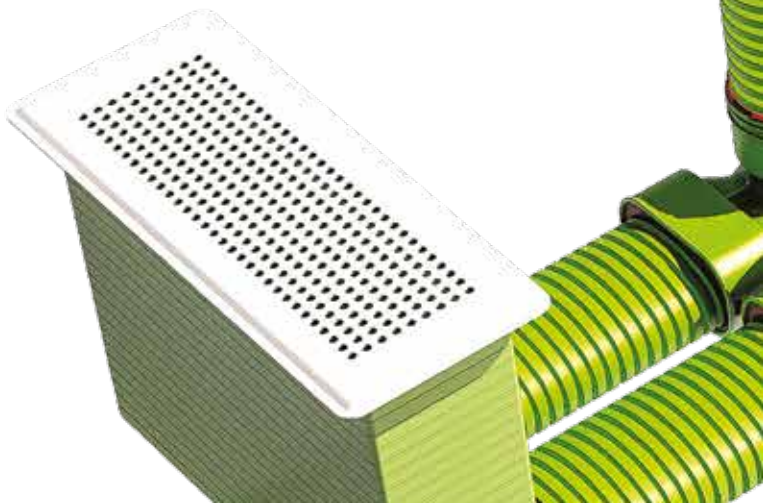
## ACCESSORIES

| MODELS | DESCRIPTION | CODE | VORT HR 260 DH CODE 45091 | VORT HR 260 DH RC CODE 45092 | VORT HR 500 DH CODE 45093 | VORT HR 500 DH RC CODE 45094 |
|---|---|---|---|---|---|---|
| | **R2T 260 (HRI DH)**<br>Conveyor | **22656** | ✓ | ✓ | | |
| | **R2T 500 (HRI DH)**<br>Conveyor | **22657** | | | ✓ | ✓ |

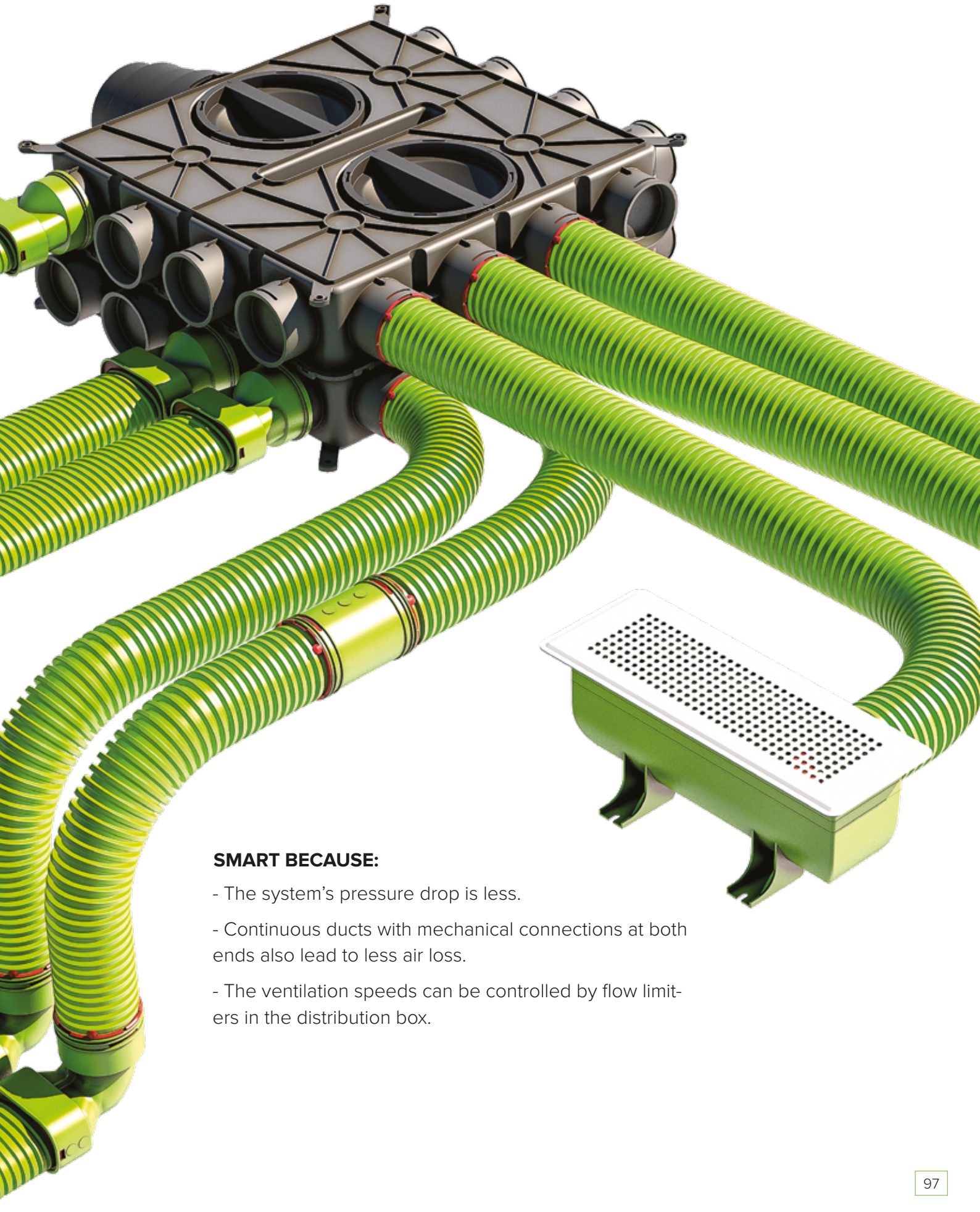
# COMPONENTS

## A SMART SYSTEM IS AN EFFECTIVE SYSTEM

The distribution plenums are a very important part of the distribution system, regulating the air flow of the individual lines. The air volumes of the individual ducts are managed through the flow regulators connected directly to the distribution plenum.



| SYSTEMS | | |
|---|---|---|
| **WDG75** | Ø 75 | plastic |
| **WDG63** | Ø 63 | plastic |
| **WDG35** | Ø 35 | plastic |
| **WD63** | Ø 63 | galvanized sheet |



**SMART BECAUSE:**

- The system's pressure drop is less.

- Continuous ducts with mechanical connections at both ends also lead to less air loss.

- The ventilation speeds can be controlled by flow limiters in the distribution box.

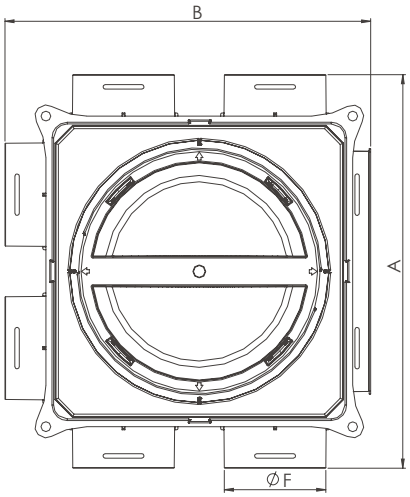
# SYSTEM WDG63 - WDG75 - WDG35
## DISTRIBUTION PLENUM

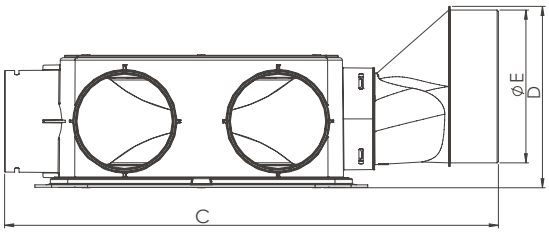
**CENTRALIZED VENTILATION**

The PE distribution system plenum **WDG-PH PLUS-C** is compact and light, it comes with **6** standard connections. Ideal for residential applications of limited volume or in case of small installation spaces.

- Air flow adjustable with the use of 12-level static flow regulators (code 25074) easy to clean and easy reassembly of the flow regulators (maintenance).
- Made from exclusively virgin PP granulate.
- With adapter for 125 mm flow duct (code 25074).
- Including adjustment diaphragms and 3 caps.

## DIMENSIONS




| | CODE | A | B | C | D | ØE | ØF |
|---|---|---|---|---|---|---|---|
| WDG-PH PLUS-C 6X63 | 21323 | 318 | 299 | 399 | 148 | 125 | 85 |

*Dimensions in mm*

## TECHNICAL DATA

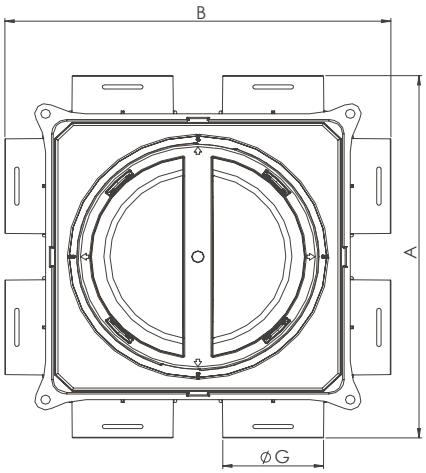
| Box configuration | with adapter for 125 mm flow duct |
|---|---|
| Qv (Volume) [m3/h] | Pressure drop (Pa) |
| 50 | 2.0 |
| 75 | 3.0 |
| 100 | 4.0 |
| 125 | 5.0 |
| 150 | 8.0 |
| 175 | 10.0 |
| 200 | 12.0 |
| 225 | 14.0 |
| 250 | - |
| 300 | - |
| 350 | - |

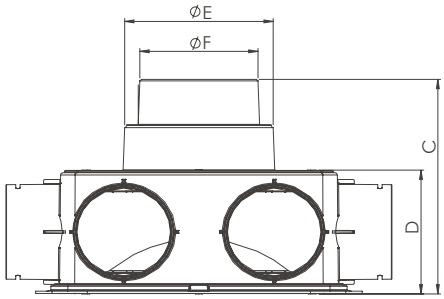
## CENTRALIZED VENTILATION

The distribution plenum in PE of the system Range **WDG-PH PLUS-C** is compact and light, it comes with **8 connections**. The distribution plenum is ideal for residential applications of limited volume or in case of small installation spaces.

- Air flow adjustable with the use of 12-level static flow regulators (code 25074).
- Easy to clean and easy reassembly of the flow regulators (maintenance).
- Made from exclusively virgin PP granulate.
- Including adjustment diaphragms and 4 caps.

## DIMENSIONS




| | CODE | A | B | C | D | ØE | ØF | ØG |
|---|---|---|---|---|---|---|---|---|
| WDG-PH PLUS-C 8X63 | 21324 | 318 | 318 | 188 | 109 | 125 | 100 | 85 |

*Dimensions in mm*

## TECHNICAL DATA

| Box configuration | 1 | 2 |
|---|---|---|
| Qv (Volume) [m3/h] | Pressure drop (Pa) | |
| 50 | 1.0 | 1.0 |
| 75 | 1.5 | 1.5 |
| 100 | 2.0 | 2.0 |
| 125 | 3.0 | 3.0 |
| 150 | 5.0 | 5.0 |
| 175 | 6.5 | 6.5 |
| 200 | 8.0 | 8.0 |
| 225 | 9.0 | 9.0 |
| 250 | 10.0 | - |
| 300 | - | - |
| 350 | - | - |

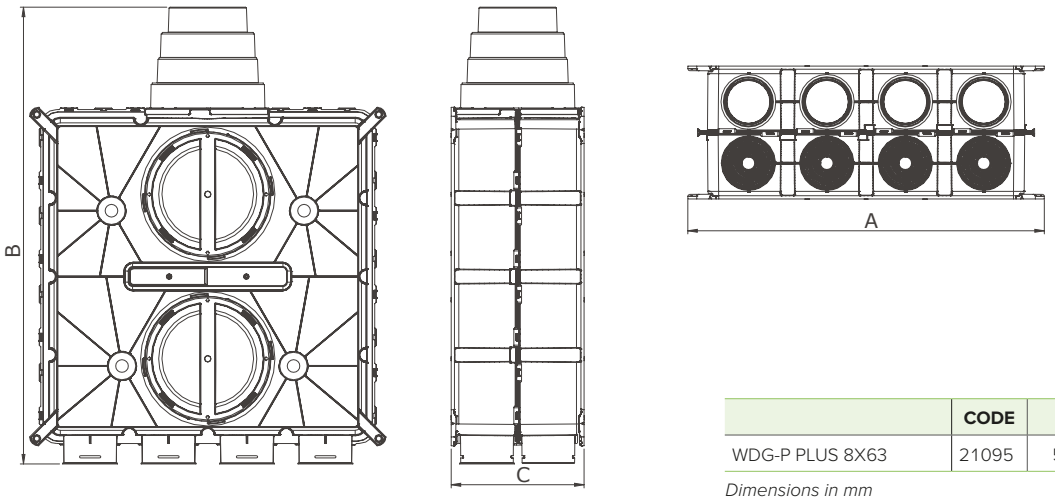
1 with adapter for multi-diameter flow duct 125-180 mm
2 with adapter for multi-diameter flow duct 100-125 mm

## CENTRALIZED VENTILATION

**WDG-P PLUS** is a duct system specifically designed for controlled mechanical ventilation of rooms with or without heat recovery, for homes or small commercial areas. The ventilation unit is connected to the distribution plenums by means of insulated ducts and silencers, the air is distributed through the semi-rigid ducts to supply fresh air to the habitable rooms and extract the exhausted one from the damp rooms.

- Distribution plenum **8 connections** for WDG system
- Including adjustment diaphragms and 4 caps.
- Made from exclusively virgin PP granulate.

## DIMENSIONS




| | CODE | A | B | C |
|---|---|---|---|---|
| WDG-P PLUS 8X63 | 21095 | 565 | 722 | 210 |

*Dimensions in mm*

## TECHNICAL DATA

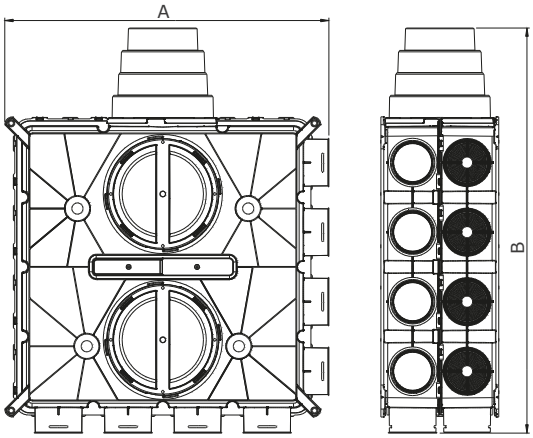
**Pressure drop**

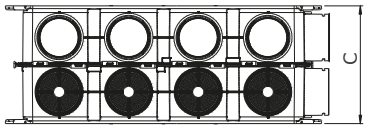
| Qv (Volume) [m3/h] | Pressure drop (Pa) |
|---|---|
| 100 | 1.0 |
| 150 | 1.7 |
| 200 | 2.7 |
| 250 | 4.0 |
| 300 | 5.7 |
| 350 | 7.6 |
| 400 | 9.9 |
| 450 | 12.4 |

**WDG-P PLUS** is a duct system specifically designed for controlled mechanical ventilation of rooms with or without heat recovery, for homes or small commercial areas. The ventilation unit is connected to the distribution plenums by means of insulated ducts and silencers, the air is distributed through the semi-rigid ducts to supply fresh air to the habitable rooms and extract the exhausted one from the damp rooms.

- Distribution plenum connection Ø 125-150-160-180 mm.
- **16 connections** for WDG system.
- Including adjustment diaphragms and 8 caps.

## DIMENSIONS




| | CODE | A | B | C |
|---|---|---|---|---|
| WDG-P PLUS 16X63 | 21096 | 578 | 722 | 210 |

*Dimensions in mm*

## TECHNICAL DATA

**Pressure drop**

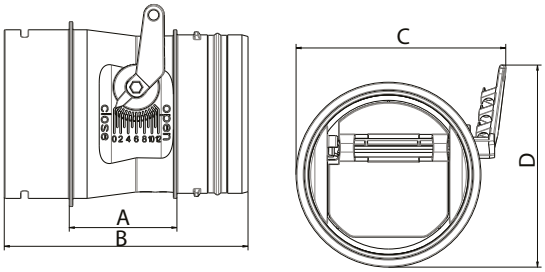
| Qv (Volume) [m3/h] | Pressure drop (Pa) |
|---|---|
| 100 | 1.0 |
| 150 | 1.7 |
| 200 | 2.7 |
| 250 | 4.0 |
| 300 | 5.7 |
| 350 | 7.6 |
| 400 | 9.9 |
| 450 | 12.4 |

## ACCESSORIES

The **flow regulator** makes it possible to set the air flow determined for each duct.
It is connected directly to the distribution plenum and with the use of adapters it can be connected to any type of duct. The setting can be defined by aeraulic calculations. The air flow can be easily adjusted thanks to the lever without the need to intervene on the system.

- Enables the precise setting of the air flow between the distribution plenums and the various rooms.
- Easy flow rate adjustment in case of system changes
- Quick and easy installation.
- Installable on distribution plenums, compatible with the whole range of ducts through the use of adapters.
- Made from exclusively virgin PP granulate.

## DIMENSIONS




| | CODE | A | B | C | D |
|---|---|---|---|---|---|
| WDG-RRM | 25074 | 53 | 120 | 103 | 99 |

*Dimensions in mm*

## TECHNICAL DATA

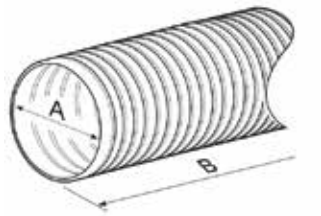
| Qv (Volume) [m3/h] | V (Speed) [m3/h] | Pressure drop (Pa) | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Pos. 0 | Pos. 1 | Pos. 2 | Pos. 3 | Pos. 4 | Pos. 5 | Pos. 6 | Pos. 7 | Pos. 8 | Pos. 9 | Pos. 10 | Pos. 11 | Pos. 12 |
| 5.6 | 0.5 | 38.8 | 28.6 | 11.0 | 1.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 |
| 11.2 | 1.0 | 89.1 | 70.9 | 35.6 | 12.0 | 0.4 | 0.0 | 0.0 | 0.0 | 0.2 | 0.1 | 0.3 | 0.4 | 0.3 |
| 16.8 | 1.5 | 150.8 | 127.0 | 73.8 | 33.1 | 10.9 | 0.4 | 0.0 | 0.0 | 1.6 | 0.9 | 0.8 | 0.9 | 0.7 |
| 22.4 | 2.0 | 218.4 | 193.3 | 124.0 | 64.9 | 30.3 | 13.9 | 5.8 | 6.2 | 5.2 | 3.1 | 1.8 | 0.9 | 0.5 |
| 28.1 | 2.5 | 307.0 | 279.5 | 190.5 | 105.8 | 53.8 | 26.0 | 11.5 | 9.5 | 8.1 | 4.8 | 3.0 | 2.0 | 1.5 |
| 33.7 | 3.0 | 405.8 | 378.4 | 270.4 | 156.8 | 84.3 | 42.6 | 20.1 | 14.4 | 11.9 | 7.1 | 4.4 | 3.2 | 2.5 |
| 39.3 | 3.5 | 514.9 | 490.0 | 363.6 | 217.9 | 121.8 | 63.7 | 31.7 | 20.9 | 16.7 | 9.9 | 6.2 | 4.6 | 3.7 |
| 44.9 | 4.0 | 634.3 | 614.3 | 470.2 | 289.2 | 166.3 | 89.5 | 46.1 | 29.0 | 22.5 | 13.3 | 8.2 | 6.2 | 5.0 |
| 50.5 | 4.5 | 764.0 | 751.2 | 590.2 | 370.5 | 217.8 | 119.7 | 63.5 | 38.6 | 29.2 | 17.3 | 10.6 | 7.9 | 6.4 |
| 56.1 | 5.0 | 904.0 | 900.8 | 723.5 | 462.1 | 276.3 | 154.6 | 83.7 | 49.9 | 36.8 | 21.9 | 13.2 | 9.8 | 8.0 |
| 61.7 | 5.5 | - | - | 870.2 | 563.7 | 341.8 | 193.9 | 106.9 | 62.7 | 45.4 | 27.0 | 16.2 | 11.9 | 9.7 |
| 67.3 | 6.0 | - | - | 1030.3 | 675.5 | 414.2 | 237.9 | 132.9 | 77.1 | 54.9 | 32.7 | 19.5 | 14.1 | 11.5 |
| 72.9 | 6.5 | - | - | - | 797.3 | 493.6 | 286.4 | 161.9 | 93.1 | 65.5 | 38.9 | 23.1 | 16.5 | 13.4 |
| 78.6 | 7.0 | - | - | - | 929.4 | 580.0 | 339.4 | 193.7 | 110.7 | 76.8 | 45.7 | 26.9 | 19.0 | 15.5 |
| 84.2 | 7.5 | - | - | - | - | 673.4 | 397.1 | 228.5 | 129.9 | 89.1 | 53.1 | 31.1 | 21.8 | 17.7 |
| 89.8 | 8.0 | - | - | - | - | 773.8 | 459.2 | 266.1 | 150.6 | 102.4 | 61.1 | 35.6 | 24.6 | 20.0 |
| 95.5 | 8.5 | - | - | - | - | 881.2 | 526.0 | 306.7 | 172.0 | 116.7 | 69.6 | 40.4 | 27.7 | 22.4 |
| 101.0 | 9.0 | - | - | - | - | - | 597.3 | 350.1 | 196.9 | 131.8 | 78.6 | 45.5 | 30.9 | 25.0 |
| 106.6 | 9.5 | - | - | - | - | - | 673.1 | 396.5 | 222.4 | 148.0 | 88.3 | 50.9 | 34.3 | 27.7 |
| 112.2 | 10.0 | - | - | - | - | - | 753.5 | 445.7 | 249.5 | 165.1 | 98.5 | 56.6 | 37.8 | 30.6 |

## DUCTS

Double-walled semi-flexible corrugated hose internally smooth in PEAD (high density polyethylene). Self-extinguishing external and antistatic internal treatment.
It can be used for a floor distribution system (walkable).

- Quick and easy to install.
- Corrugated external surface to protect against any installation damage.
- Smooth internal surface to minimize pressure drops and ensure long-term cleaning.
- Antistatic and antibacterial properties.
- Suitable for new and renovated buildings.
- Made from exclusively virgin PE granulate.

## DIMENSIONS




| | CODE | ØA | B |
|---|---|---|---|
| WD 63 | 23209 | 63 | 50000 |
| WD 75 | 21325 | 75 | 50000 |

*Dimensions in mm*

## TECHNICAL DATA

**WD63** **WD63**

| Radius [mm] | 0 | | 150 | |
|---|---|---|---|---|
| Duct route | 1 | | 1 | |
| Qv (Volume) [m³/h] | v [m/s ] | (Pa) | v [m/s] | (Pa) |
| 0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 5 | 0.4 | 0.0 | 0.4 | 0.1 |
| 10 | 0.9 | 0.2 | 0.9 | 0.4 |
| 15 | 1.3 | 0.6 | 1.3 | 0.9 |
| 20 | 1.8 | 1.2 | 1.8 | 1.7 |
| 25 | 2.2 | 2.0 | 2.2 | 2.6 |
| 30 | 2.7 | 2.9 | 2.7 | 3.8 |
| 35 | 3.1 | 4.1 | 3.1 | 5.2 |
| 40 | 3.6 | 5.4 | 3.6 | 6.7 |
| 45 | 4.0 | 7.0 | 4.0 | 8.5 |
| 50 | 4.5 | 8.7 | 4.5 | 10.5 |
| 55 | 4.9 | 10.6 | 4.9 | 12.8 |
| 60 | 5.3 | 12.7 | 5.3 | 15.2 |

**WD75** **WD75**

| Radius [mm] | 0 | | 150 | |
|---|---|---|---|---|
| Duct route | 1 | | 1 | |
| Qv [m³/h] | v [m/s ] | (Pa) | v [m/s] | (Pa) |
| 0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 5 | 0.3 | 0.0 | 0.3 | 0.1 |
| 10 | 0.6 | 0.1 | 0.6 | 0.1 |
| 15 | 0.9 | 0.2 | 0.9 | 0.3 |
| 20 | 1.3 | 0.4 | 1.3 | 0.5 |
| 25 | 1.6 | 0.6 | 1.6 | 0.9 |
| 30 | 1.9 | 0.9 | 1.9 | 1.2 |
| 35 | 2.2 | 1.3 | 2.2 | 1.7 |
| 40 | 2.5 | 1.7 | 2.5 | 2.2 |
| 45 | 2.8 | 2.2 | 2.8 | 2.8 |
| 50 | 3.1 | 2.7 | 3.1 | 3.4 |
| 55 | 3.5 | 3.3 | 3.5 | 4.2 |
| 60 | 3.8 | 3.9 | 3.8 | 4.9 |
| 65 | 4.1 | 4.6 | 4.1 | 5.8 |
| 70 | 4.4 | 5.4 | 4.4 | 6.7 |
| 75 | 4.7 | 6.2 | 4.7 | 7.7 |
| 80 | 5.0 | 7.1 | 6.0 | 8.8 |

## DUCTS

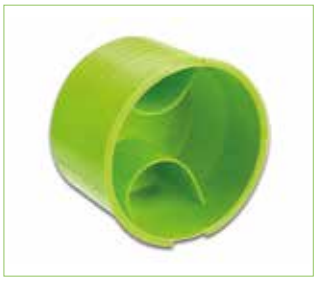
Circular reduction from WDG63 to WDG75 system.

| | CODE |
|---|---|
| WDG - R 63-75 | 21355 |

Straight connector for WDG63 and WDG75 systems.

| | CODE |
|---|---|
| WDG-J 63 | 21085 |
| WDG-J 75 | 21325 |

Cap for WDG63 system

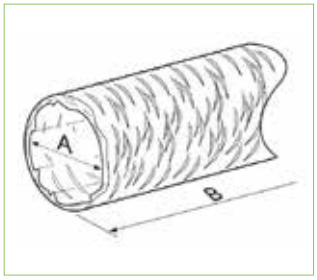


| | CODE |
|---|---|
| WDG-X 63 | 21087 |

Anti-slip ring for WDG63 and WD75 system (10 pieces).

| | CODE |
|---|---|
| WDG-RR 63 | 21088 |
| WDG-RR 75 | 21329 |

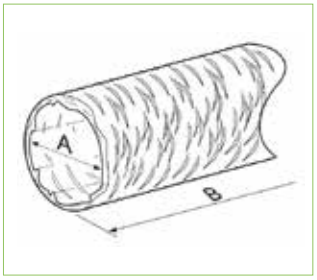
Flexible aluminum pipe with glass wool insulation circular section.




| | CODE | ØA | B |
|---|---|---|---|
| INSULATED PIPE AL. Ø 127 | 46272 | 127 | 10000 |
| INSULATED PIPE AL. Ø 154 | 46428 | 154 | 10000 |

*Dimensions in mm*

Silencer pipe.




| | CODE | ØA | B |
|---|---|---|---|
| SILENCER PIPE Ø 125 | 22366 | 127 | 5000 |
| SILENCER PIPE Ø 150 | 22316 | 154 | 5000 |

*Dimensions in mm*

## DUCTS

Sealing ring **(10 pieces)** for systems WDG63 and WDG75.

| | CODE |
|---|---|
| WDG-OR 63 | 21086 |
| WDG-OR 75 | 21328 |

## SUGGESTION

**Flow duct adapter for WDG-PH PLUS-C plenum**
The flow duct can be connected vertically by means of the 125/150/160/180 mm multi-diameter adapter or with a 100/125 mm adapter.

| | CODE |
|---|---|
| WDG - CO | 21356 |

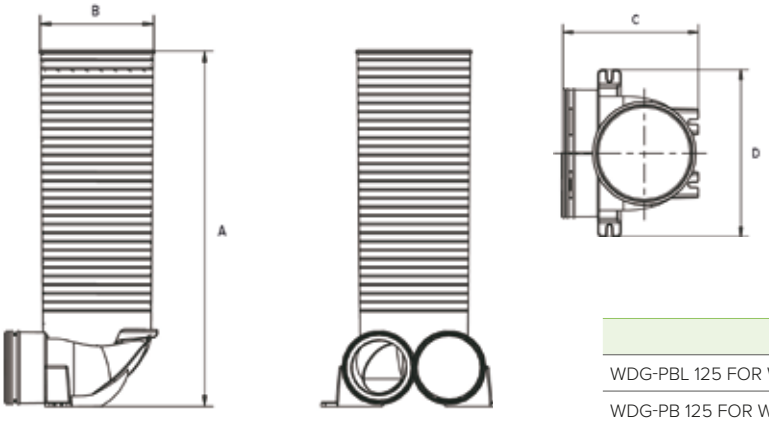
Positioning of the sealing ring (black) and anti-slipping ring (red)

## DIFFUSION TERMINALS

The valve adapter has been developed for ceiling or wall installations. It has been designed to cross most of structures such as walls, screeds or false ceilings. The adapter can be cut to size with common equipment and then assembled with the termination of the ventilation system: the air delivery or extraction valve.

- For air intake and extraction.
- For ceiling or wall installations.
- Easy to cut to the desired size.
- Antistatic and antibacterial properties.
- Made from exclusively virgin PP granulate.

## DIMENSIONS




| | CODE | A | B | C | D |
|---|---|---|---|---|---|
| WDG-PBL 125 FOR WDG 75 | 21326 | 396 | 125 | 173 | 190 |
| WDG-PB 125 FOR WDG 63 | 21090 | 411 | 125 | 175 | 215 |

*Dimensions in mm*

## TECHNICAL DATA

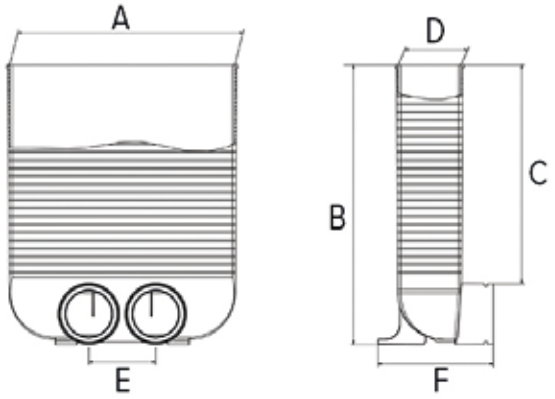
| | Air intake | | | | Air extraction | | | |
|---|---|---|---|---|---|---|---|---|
| Duct route | 1 | | 2 | | 1 | | 2 | |
| Qv (Volume) [m³/h] | v [m/s ] | (Pa) | v [m/s] | (Pa) | v [m/s ] | (Pa) | v [m/s] | (Pa) |
| 0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 5 | 0.7 | 0.3 | 0.3 | 0.0 | 0.7 | 0.2 | 0.3 | 0.1 |
| 10 | 1.3 | 1.0 | 0.7 | 0.2 | 1.3 | 0.9 | 0.7 | 0.2 |
| 15 | 2.0 | 2.3 | 1.0 | 0.4 | 2.0 | 2.1 | 1.0 | 0.5 |
| 20 | 2.6 | 4.1 | 1.3 | 0.7 | 2.6 | 3.7 | 1.3 | 1.0 |
| 25 | 3.3 | 6.4 | 1.6 | 1.2 | 3.3 | 5.7 | 1.6 | 1.5 |
| 30 | 3.9 | 9.2 | 2.0 | 1.7 | 3.9 | 8.3 | 2.0 | 2.2 |
| 35 | 4.6 | 12.5 | 2.3 | 2.3 | 4.6 | 11.3 | 2.3 | 2.9 |

## DIFFUSION TERMINALS

The grille adapter has been originally developed only for the introduction of air and for floor or wall installations. It can be cut in length with common equipment. It comes with a dust cap on the outlet and a removable cap on one of the two connections for circular duct.

- For air intake.
- For wall or floor installations.
- Easy to cut to the desired size.
- Antistatic and antibacterial properties.
- Made from exclusively virgin PP granulate.

## DIMENSIONS




| | CODE | A | B | C | D | E | F |
|---|---|---|---|---|---|---|---|
| WDG-PB 310X85 | 21093 | 309 | 384 | 300 | 86 | 92 | 159 |

*Dimensions in mm*

## TECHNICAL DATA

**Air intake with grille**

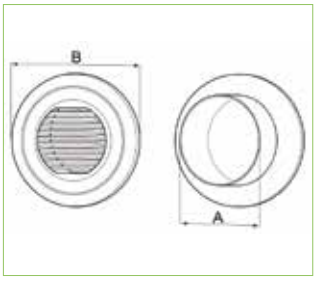
| Duct route | 1 | | 2 | |
|---|---|---|---|---|
| Qv (Volume) [m³/h] | v [m/s ] | (Pa) | v [m/s] | (Pa) |
| 0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 5 | 0.4 | 0.1 | 0.2 | 0.1 |
| 10 | 0.9 | 0.5 | 0.4 | 0.3 |
| 15 | 1.3 | 1.2 | 0.7 | 0.7 |
| 20 | 1.8 | 2.1 | 0.9 | 1.2 |
| 25 | 2.2 | 3.3 | 1.1 | 1.8 |
| 30 | 2.7 | 4.8 | 1.3 | 2.6 |
| 35 | 3.0 | 6.0 | 1.6 | 3.5 |
| 40 | 3.1 | 6.5 | 1.8 | 4.6 |
| 45 | 3.6 | 8.5 | 2.0 | 5.9 |
| 50 | 4.0 | 10.7 | 2.2 | 7.2 |
| 55 | 4.5 | 13.2 | 2.5 | 8.8 |

**Air intake with grille**

| Duct route | 1 | | 2 | |
|---|---|---|---|---|
| Qv (Volume) [m³/h] | v [m/s ] | (Pa) | v [m/s] | (Pa) |
| 60 | 4.9 | 16.0 | 2.7 | 10.4 |
| 65 | 5.3 | 19.1 | 2.9 | 12.2 |
| 67 | - | - | 3.0 | 13.1 |
| 70 | - | - | 3.1 | 14.2 |
| 75 | - | - | 3.3 | 16.3 |
| 80 | - | - | 3.6 | 18.5 |
| 85 | - | - | 3.8 | 20.9 |
| 90 | - | - | 4.0 | 23.5 |
| 95 | - | - | 4.2 | 26.1 |
| 100 | - | - | 4.5 | 28.9 |
| 105 | - | - | 4.7 | 31.9 |
| 110 | - | - | 4.9 | 35.0 |
| 115 | - | - | 5.1 | 38.3 |

## DIFFUSION TERMINALS

Flow/return spigot with adjustable launch. White polystyrene casing, manual opening/closing/adjustment system.

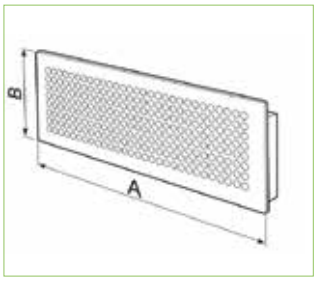



| | CODE | ØA | B |
|---|---|---|---|
| BOREA 125 | 23199 | 125 | 165 |

*Dimensions in mm*

**Example of Borea 125 terminal installation with Plenum WDG.**

High induction spigot 300x100, with perforated front in white powder-coated galvanized steel. Suitable for delivery and extraction.

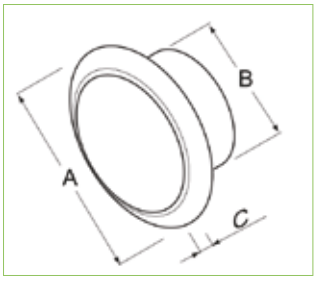



| | CODE | A | B |
|---|---|---|---|
| WDG-BF 310X85 | 21094 | 310 | 85 |

*Dimensions in mm*

**Example of perforated terminal installation with WDG rectangular Plenum.**

Extraction/delivery spigot in white thermoplastic polystyrene. Enables air flow regulation with a simple adjustment of the rotating core. To be applied to ceilings, ventilation ducts, false ceilings, etc.

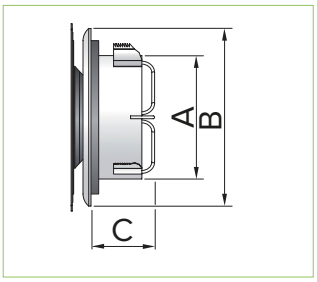



| | CODE | ØA | ØB | C |
|---|---|---|---|---|
| AV 125 | 22190 | 166 | 125 | 15 |

*Dimensions in mm*

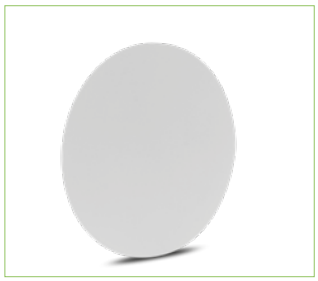
## DIFFUSION TERMINALS

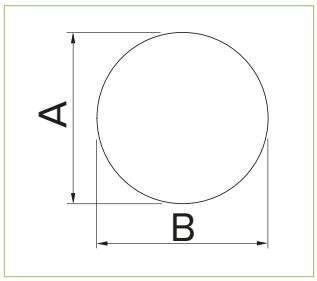
Steel extraction/intake spigots. They enable the regulation of the air flow with a simple adjustment of the rotating core. To be applied to ceilings, ventilation ducts, false ceilings, etc. To be combined with an aesthetic mask (circular, square and rectangular). Revolutionary sound data that guarantee excellent sound levels.




| | CODE | ØA | ØB | C |
|---|---|---|---|---|
| AV PLUS BD 125 | 26794 | 114 | 156 | 57 |

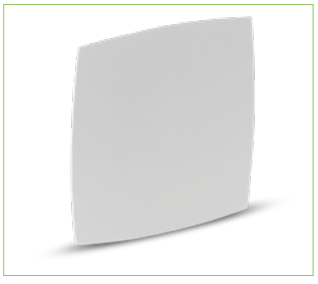
*Dimensions in mm*

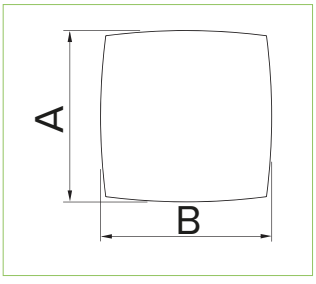





| | CODE | ØA | ØB |
|---|---|---|---|
| AV PLUS RND (CIRCULAR) | 26797 | 165 | 165 |

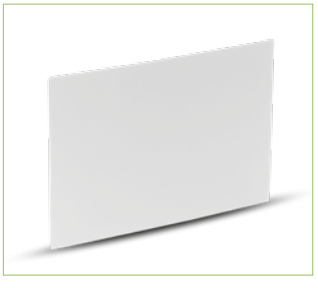
*Dimensions in mm*

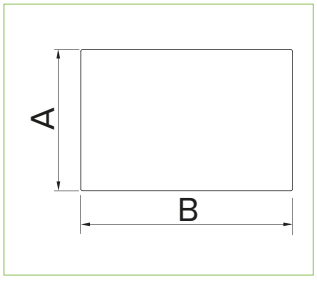





| | CODE | A | B |
|---|---|---|---|
| AV PLUS BOW (SQUARE) | 26795 | 165 | 165 |

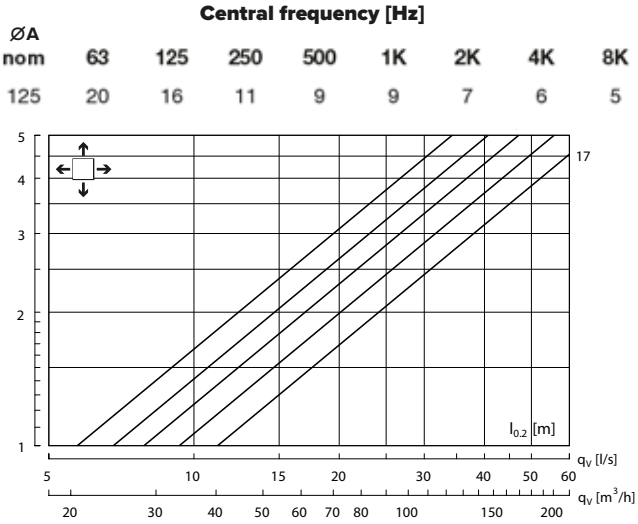
*Dimensions in mm*



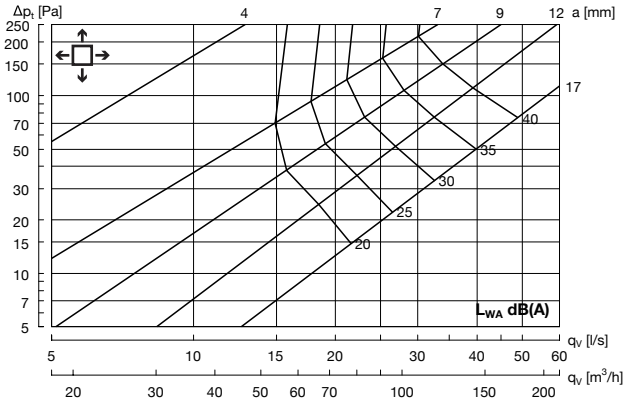



| | CODE | A | B |
|---|---|---|---|
| AV PLUS RCT (RECTANGULAR) | 26796 | 165 | 248 |

*Dimensions in mm*

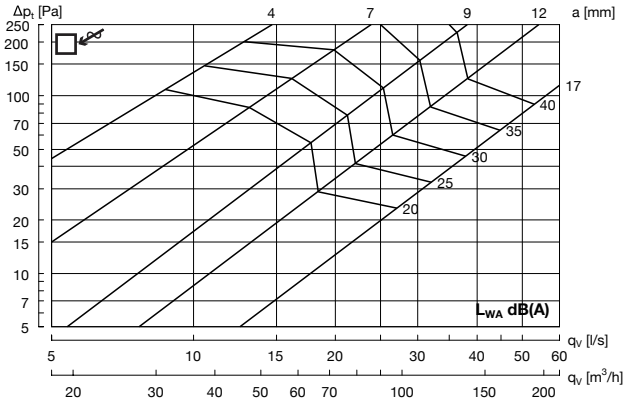



### Delivery curve




| Hz | 63 | 125 | 250 | 500 | 1K | 2K | 4K | 8K |
|---|---|---|---|---|---|---|---|---|
| $K_{ok}$ | 4 | -6 | -1 | 0 | -6 | -11 | -15 | -15 |

### Recovery curve



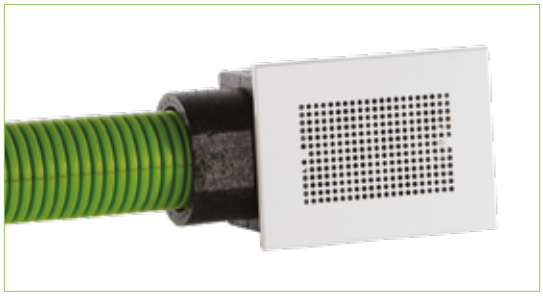

| Hz | 63 | 125 | 250 | 500 | 1K | 2K | 4K | 8K |
|---|---|---|---|---|---|---|---|---|
| $K_{ok}$ | 8 | -9 | -3 | -3 | -5 | -6 | -17 | -21 |

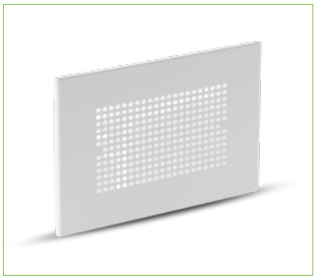
## DIFFUSION TERMINALS

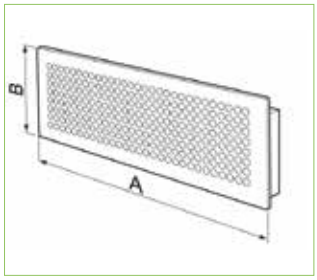
Rectangular plenum spigot multiple connection in PE, size 170x 120. Includes connection for WD63 (75mm) or WD75 (90mm). Brackets for wall or plasterboard fixing included. Filter included. Possibility to connect several spigot plenums in Range and to choose the position of the joint.

| | CODE |
|---|---|
| WDPE-PB 170X120 | 26798 |

High induction spigot, with perforated front in white powder coated galvanized steel. Suitable for delivery and extraction.

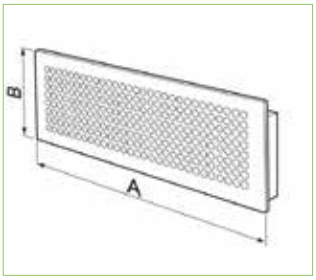







| | CODE | A | B |
|---|---|---|---|
| WDPE-BF 193X140 | 26799 | 193 | 140 |

*Dimensions in mm*



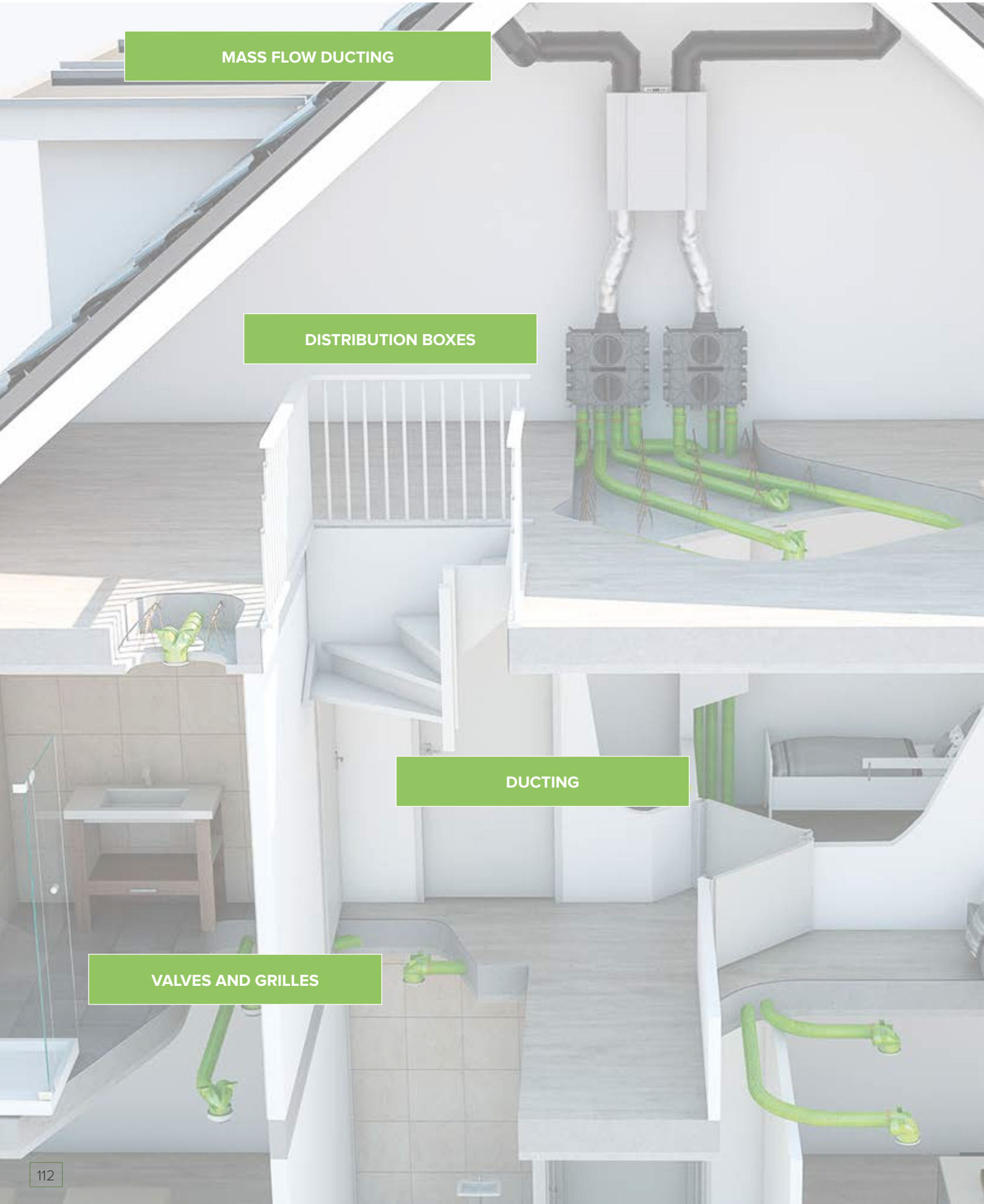

| | CODE | A | B |
|---|---|---|---|
| WDPE-BF 366X140 | 25073 | 366 | 140 |

*Dimensions in mm*

## NOTES

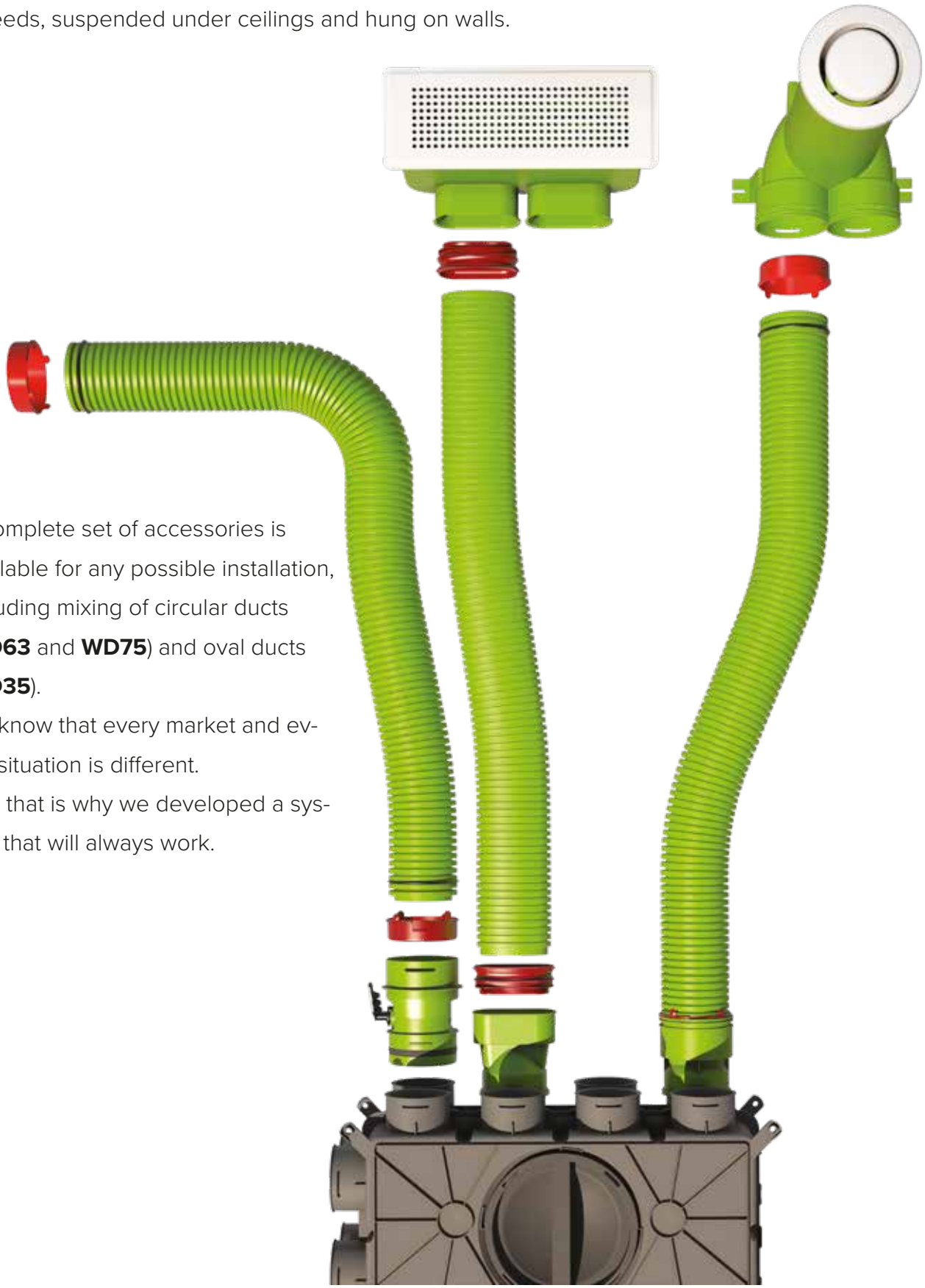
# SYSTEM **WDG35**

OVAL



**FOR ALL NEW CONSTRUCTION AND RENOVATION APPLICATIONS.**

Rolled ducting is easy to roll out, cut to size and fold around obstacles. The ducting can be laid under screeds, suspended under ceilings and hung on walls.



A complete set of accessories is available for any possible installation, including mixing of circular ducts (**WD63** and **WD75**) and oval ducts (**WD35**).

We know that every market and every situation is different.

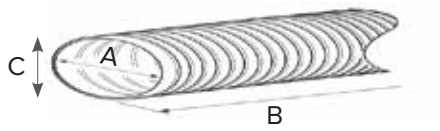
And that is why we developed a system that will always work.

## DUCTS

The circular WDG35 ducting enables the efficient distribution of air from the distribution plenums to the various environments. Thanks to its oval section, the ducting is easy to install and ensures minimal pressure drops.

- Quick and easy to install.
- Corrugated external surface to protect against any installation damage.
- Smooth internal surface to minimize pressure drops and ensure long-term cleaning.
- Antistatic and antibacterial properties.
- Suitable for new and renovated buildings.
- Made from exclusively virgin PE granulate.

## DIMENSIONS




| | CODE | A | B | C |
|---|---|---|---|---|
| WD 35 | 21478 | 102 | 50000 | 50 |

*Dimensions in mm*

## TECHNICAL DATA

| | WD 35 | | WD 35 vertical | | WD 35 horizontal | |
|---|---|---|---|---|---|---|
| Radius [mm] | 0 | | 150 | | 200 | |
| Duct route | 1 | | 1 | | 1 | |
| Qv (Volume) [m³/h] | v [m/s ] | (Pa) | v [m/s] | (Pa) | v [m/s] | (Pa) |
| 0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 5 | 0.5 | 0.3 | 0.5 | 0.1 | 0.5 | 0.1 |
| 10 | 0.9 | 0.7 | 0.9 | 0.2 | 0.9 | 0.3 |
| 15 | 1.4 | 1.1 | 1.4 | 0.6 | 1.4 | 0.6 |
| 20 | 1.8 | 1.7 | 1.8 | 1.0 | 1.8 | 1.1 |
| 25 | 2.3 | 2.3 | 2.3 | 1.5 | 2.3 | 1.8 |
| 30 | 2.7 | 3.0 | 2.7 | 2.2 | 2.7 | 2.6 |
| 35 | 3.2 | 3.8 | 3.2 | 3.0 | 3.2 | 3.5 |
| 40 | 3.6 | 4.7 | 3.6 | 3.9 | 3.6 | 4.6 |
| 45 | 4.1 | 5.7 | 4.1 | 5.0 | 4.1 | 5.8 |
| 50 | 4.6 | 6.8 | 4.6 | 6.1 | 4.6 | 7.1 |
| 55 | 5.0 | 8.0 | 5.0 | 7.4 | 5.0 | 8.6 |


## SUGGESTION

Use adapter code 21492 WDG-R 63-35 to connect the oval channel to the plenums of the WDG Range.

## TECHNICAL DATA

WD 35

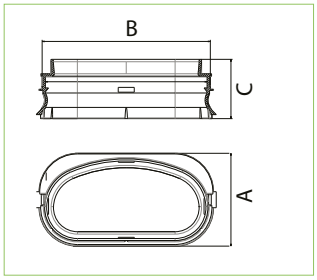
WD 35 vertical

WD 35 horizontal

| Radius [mm] | 0 | | 150 | | 200 | |
|---|---|---|---|---|---|---|
| Duct route | 1 | | 1 | | 1 | |
| Qv (Volume) [m³/h] | v [m/s ] | (Pa) | v [m/s] | (Pa) | v [m/s] | (Pa) |
| 0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 5 | 0.2 | 0.1 | 0.2 | 0.0 | 0.2 | 0.0 |
| 10 | 0.5 | 0.3 | 0.5 | 0.1 | 0.5 | 0.1 |
| 15 | 0.7 | 0.5 | 0.7 | 0.1 | 0.7 | 0.2 |
| 20 | 0.9 | 0.7 | 0.9 | 0.2 | 0.9 | 0.3 |
| 25 | 1.1 | 0.9 | 1.1 | 0.4 | 1.1 | 0.4 |
| 30 | 1.4 | 1.1 | 1.4 | 0.6 | 1.4 | 0.6 |
| 35 | 1.6 | 1.4 | 1.6 | 0.8 | 1.6 | 0.9 |
| 40 | 1.8 | 1.7 | 1.8 | 1.01 | 1.8 | 1.1 |
| 45 | 2.1 | 2.0 | 2.1 | 1.2 | 2.1 | 1.4 |
| 50 | 2.3 | 2.3 | 2.3 | 1.5 | 2.3 | 1.8 |
| 55 | 2.5 | 2.6 | 2.5 | 1.9 | 2.5 | 2.2 |
| 60 | 2.7 | 3.0 | 2.7 | 2.2 | 2.7 | 2.6 |
| 65 | 3.0 | 3.4 | 3.0 | 2.6 | 3.0 | 3.0 |
| 70 | 3.2 | 3.8 | 3.2 | 3.0 | 3.2 | 3.5 |
| 75 | 3.4 | 4.3 | 3.4 | 3.5 | 3.4 | 4.0 |
| 80 | 3.6 | 4.7 | 3.6 | 3.9 | 3.6 | 4.6 |
| 85 | 3.9 | 5.2 | 3.9 | 4.4 | 3.9 | 5.1 |
| 90 | 4.1 | 5.7 | 4.1 | 5.0 | 4.1 | 5.8 |
| 95 | 4.3 | 6.3 | 4.3 | 5.5 | 4.3 | 6.4 |
| 100 | 4.6 | 6.8 | 4.6 | 6.1 | 4.6 | 7.1 |
| 105 | 4.8 | 7.4 | 4.8 | 6.8 | 4.8 | 7.8 |
| 110 | 5.0 | 8.0 | 5.0 | 7.4 | 5.0 | 8.6 |

## DUCTS

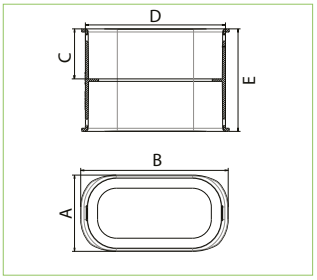
The **sealing ring** for the oval duct is an essential component of the WDG35 system for the hermetic sealing of the connections between the ducts, accessories and distribution plenums. The composite material (PP and TPE) make the sealing ring flexible for easy assembly and the creation of hermetic connections **(1 piece)**.




| | CODE | ØA | B | C |
|---|---|---|---|---|
| WDG-OR 35 | 21485 | 58 | 105 | 37 |

*Dimensions in mm*

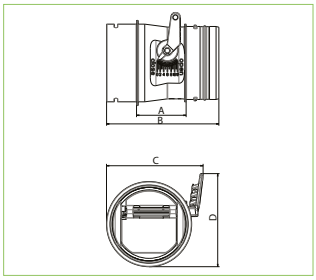
For the straight connection of the oval duct, for ceiling or wall installations.
Easy to assemble with gasket and sealing ring.
Antistatic and antibacterial properties, made from exclusively virgin PP granulate.




| | CODE | A | B | C | D | E |
|---|---|---|---|---|---|---|
| WDG-J 35 | 21482 | 61 | 118 | 40 | 118 | 82 |

*Dimensions in mm*

The **regulator** makes it possible to set the air flow for each duct. It is connected directly to the distribution plenum and with the use of adapters it can be connected to any type of duct. The setting can be defined by aeraulic calculations. The air flow can be easily adjusted thanks to the lever without the need to intervene on the system.



| | CODE | A | B | C | D |
|---|---|---|---|---|---|
| WDG-RRM | 25074 | 53 | 120 | 103 | 99 |

*Dimensions in mm*

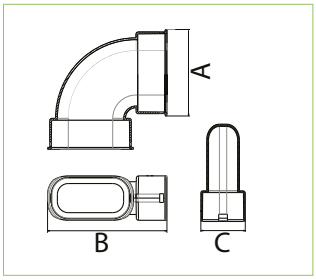
Circular/oval connection from WDG63 to WDG35.

| | CODE |
|---|---|
| WDG-R 63-35 | 21492 |

## DUCTS

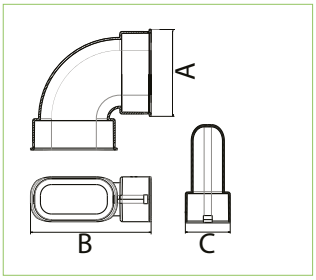
The 90° accessory has been developed to create precise curves with minimal pressure drop around obstacles and to change the direction from horizontal to vertical.

Possibility of making narrow, vertical or horizontal curved lines for wall, floor and ceiling installation. Antistatic and antibacterial properties. Made from exclusively virgin PP granulate.




| | CODE | A | B | C |
|---|---|---|---|---|
| WDG-CV 35 | 21483 | 107 | 118 | 61 |

*Dimensions in mm*




| | CODE | ØA | B | C |
|---|---|---|---|---|
| WDG-CH 35 | 21484 | 118 | 164 | 61 |

*Dimensions in mm*

## TECHNICAL DATA

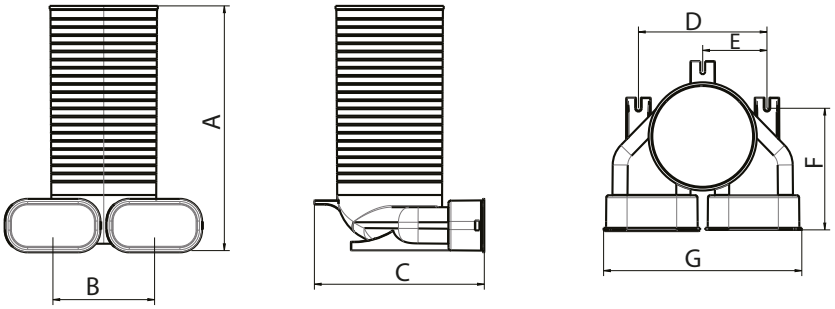
| | Horizontal curve | | Vertical curve | |
|---|---|---|---|---|
| Duct route | 1 | | 1 | |
| Qv (Volume) [m³/h] | v [m/s ] | (Pa) | v [m/s] | (Pa) |
| 0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 5 | 0.5 | 0.0 | 0.5 | 0.1 |
| 10 | 0.9 | 0.1 | 0.9 | 0.3 |
| 15 | 1.4 | 0.3 | 1.4 | 0.6 |
| 20 | 1.8 | 0.5 | 1.8 | 1.1 |
| 25 | 2.3 | 0.7 | 2.3 | 1.7 |
| 30 | 2.7 | 1.0 | 2.7 | 2.4 |
| 35 | 3.2 | 1.4 | 3.2 | 3.3 |
| 40 | 3.6 | 1.8 | 3.6 | 4.3 |
| 45 | 4.1 | 2.3 | 4.1 | 5.5 |
| 50 | 4.6 | 2.8 | 4.6 | 6.8 |
| 55 | 5.0 | 3.4 | 5.0 | 8.2 |

## DIFFUSION TERMINALS

**The 90° valve adapter** has been developed for ceiling or wall installations. It has been designed to cross most of the structures such as walls, screeds or false ceilings. The adapter can be cut to size with common equipment and then assembled with the termination of the ventilation system: the air intake or extraction valve. The adapter has two connections for the oval duct and is supplied with a dust cap on the valve connection (125 mm) and a removable cap on one of the two connections for the oval duct.

- For air intake and extraction.
- For ceiling or wall installations.
- Easy to cut to the desired size.
- Antistatic and antibacterial properties.
- Made from exclusively virgin PP granulate.

## DIMENSIONS




| | CODE | A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|---|---|
| WDG-PB 125-35 | 21479 | 301 | 125 | 209 | 158 | 79 | 149 | 244 |

*Dimensions in mm*

## TECHNICAL DATA

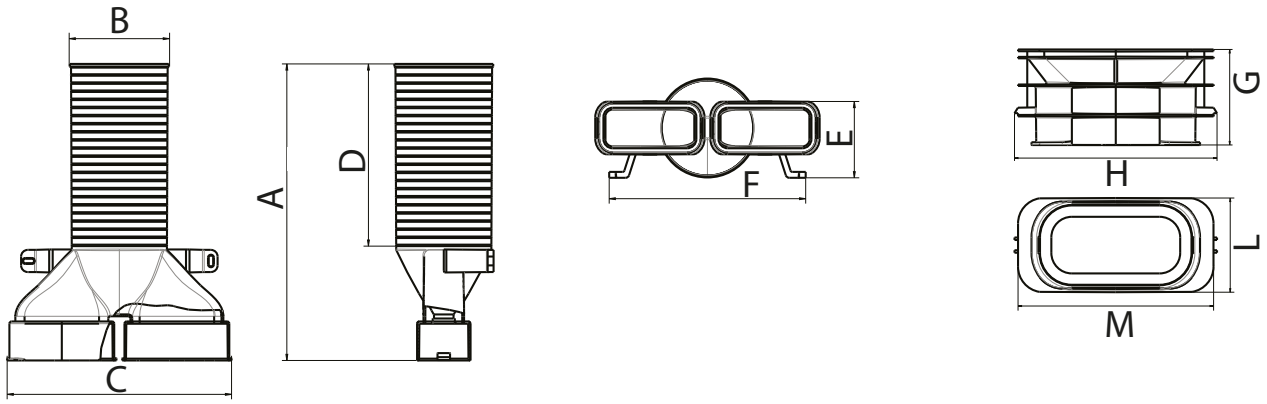
| | Air intake | | | | Air extraction | | | |
|---|---|---|---|---|---|---|---|---|
| Duct route | 1 | | 2 | | 1 | | 2 | |
| Qv (Volume) [m³/h] | v [m/s ] | (Pa) | v [m/s] | (Pa) | v [m/s ] | (Pa) | v [m/s] | (Pa) |
| 0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 5 | 0.5 | 0.1 | 0.2 | 0.0 | 0.5 | 0.2 | 0.2 | 0.0 |
| 10 | 0.9 | 0.5 | 0.5 | 0.1 | 0.9 | 0.6 | 0.5 | 0.2 |
| 15 | 1.4 | 1.2 | 0.7 | 0.2 | 1.4 | 1.4 | 0.7 | 0.4 |
| 20 | 1.8 | 2.1 | 0.9 | 0.4 | 1.8 | 2.5 | 0.9 | 0.7 |
| 25 | 2.3 | 3.3 | 1.1 | 0.6 | 2.3 | 4.0 | 1.1 | 1.2 |
| 30 | 2.7 | 4.8 | 1.4 | 0.9 | 2.7 | 5.7 | 1.4 | 1.7 |
| 35 | 3.2 | 6.5 | 1.6 | 1.3 | 3.2 | 7.8 | 1.6 | 2.3 |
| 40 | 3.6 | 8.5 | 1.8 | 1.6 | 3.6 | 10.1 | 1.8 | 3.0 |
| 45 | 4.1 | 10.7 | 2.1 | 2.1 | 4.1 | 12.8 | 2.1 | 3.8 |
| 50 | 4.6 | 13.3 | 2.3 | 2.6 | 4.6 | 15.8 | 2.3 | 4.7 |
| 55 | 5.0 | 16.0 | 2.5 | 3.1 | 5.0 | 19.2 | 2.5 | 5.6 |
| 60 | - | - | 2.7 | 3.7 | - | - | 2.7 | 6.7 |
| 65 | - | - | 3.0 | 4.4 | - | - | 3.0 | 7.9 |
| 70 | - | - | 3.2 | 5.1 | - | - | 3.2 | 9.1 |
| 75 | - | - | 3.4 | 5.8 | - | - | 3.4 | 10.5 |
| 80 | - | - | 3.6 | 6.6 | - | - | 3.6 | 11.9 |
| 85 | - | - | 3.9 | 7.4 | - | - | 3.9 | 13.5 |
| 90 | - | - | 4.1 | 8.4 | - | - | 4.1 | 15.1 |
| 95 | - | - | 4.3 | 9.3 | - | - | 4.3 | 16.8 |
| 100 | - | - | 4.6 | 10.3 | - | - | 4.6 | 18.7 |
| 105 | - | - | 4.8 | 11.4 | - | - | 4.8 | 20.6 |
| 110 | - | - | 5.0 | 12.5 | - | - | 5.0 | 22.6 |

## DIFFUSION TERMINALS

**The 180° valve adapter** has been developed for ceiling or wall installations. It has been designed to cross most of the structures such as walls, screeds or false ceilings. The adapter can be cut to size with common equipment and then assembled with the termination of the ventilation system: the air intake or extraction valve. The adapter has two connections for the oval duct and comes with a dust cap on the valve connection (125mm) and a removable cap on one of the two connections for the oval duct.

- For air intake and extraction.
- For ceiling or wall installations.
- Easy to cut to the desired size.
- Antistatic and antibacterial properties.
- Made from exclusively virgin PP granulate.

## DIMENSIONS




| | CODE | A | B | C | D | E | F | G | H | L | M |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WDG-PBH 125-35 | 21480 | 402 | 125 | 304 | 247 | 103.5 | 266 | 67 | 143 | 66 | 138 |

*Dimensions in mm*

## TECHNICAL DATA

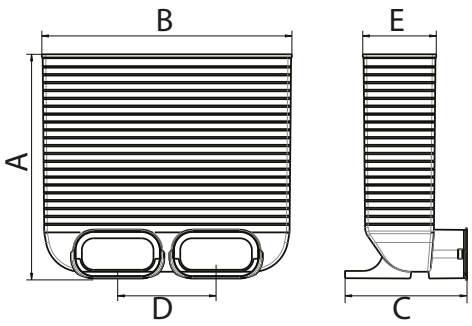
| | Air intake | | | | Air extraction | | | |
|---|---|---|---|---|---|---|---|---|
| Duct route | 1 | | 2 | | 1 | | 2 | |
| Qv (Volume) [m³/h] | v [m/s ] | (Pa) | v [m/s] | (Pa) | v [m/s ] | (Pa) | v [m/s] | (Pa) |
| 0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 5 | 0.5 | 0.1 | 0.2 | 0.0 | 0.5 | 0.2 | 0.2 | 0.1 |
| 10 | 0.9 | 0.4 | 0.5 | 0.1 | 0.9 | 0.6 | 0.5 | 0.2 |
| 15 | 1.4 | 0.9 | 0.7 | 0.2 | 1.4 | 1.4 | 0.7 | 0.5 |
| 20 | 1.8 | 1.7 | 0.9 | 0.3 | 1.8 | 2.5 | 0.9 | 0.8 |
| 25 | 2.3 | 2.6 | 1.1 | 0.5 | 2.3 | 3.9 | 1.1 | 1.3 |
| 30 | 2.7 | 3.8 | 1.4 | 0.7 | 2.7 | 5.7 | 1.4 | 1.8 |
| 35 | 3.2 | 5.1 | 1.6 | 0.9 | 3.2 | 7.7 | 1.6 | 2.5 |
| 40 | 3.6 | 6.7 | 1.8 | 1.6 | 3.6 | 10.1 | 1.8 | 3.2 |
| 45 | 4.1 | 8.5 | 2.1 | 1.5 | 4.1 | 12.7 | 2.1 | 4.1 |
| 50 | 4.6 | 10.4 | 2.3 | 1.8 | 4.6 | 15.7 | 2.3 | 5.0 |
| 55 | 5.0 | 12.6 | 2.5 | 2.2 | 5.0 | 19.0 | 2.5 | 6.1 |
| 60 | - | - | 2.7 | 2.6 | - | - | 2.7 | 7.2 |
| 65 | - | - | 3.0 | 3.1 | - | - | 3.0 | 8.5 |
| 70 | - | - | 3.2 | 3.5 | - | - | 3.2 | 9.9 |
| 75 | - | - | 3.4 | 4.1 | - | - | 3.4 | 11.3 |
| 80 | - | - | 3.6 | 4.6 | - | - | 3.6 | 12.9 |
| 85 | - | - | 3.9 | 5.2 | - | - | 3.9 | 14.5 |
| 90 | - | - | 4.1 | 5.9 | - | - | 4.1 | 16.3 |
| 95 | - | - | 4.3 | 6.5 | - | - | 4.3 | 18.2 |
| 100 | - | - | 4.6 | 7.2 | - | - | 4.6 | 20.1 |
| 105 | - | - | 4.8 | 8.0 | - | - | 4.8 | 22.2 |
| 110 | - | - | 5.0 | 8.8 | - | - | 5.0 | 24.4 |

## DIFFUSION TERMINALS

**The 90° grille adapter** was originally developed only for air intake and for floor or wall installations. It can be cut in length with common equipment. It comes with a dust cap on the outlet and a removable cap on one of the two connections for the oval duct. The adapter has two connections for the oval duct and comes with a dust cap on the connection to the rectangular grille and a removable cap on one of the two connections for the oval duct.

- For air delivery.
- For wall or floor installations.
- Easy to cut to the desired size.
- Antistatic and antibacterial properties.
- Made from exclusively virgin PP granulate.

## DIMENSIONS




| | CODE | A | B | C | D | E |
|---|---|---|---|---|---|---|
| WDG-PB 310X85 | 21481 | 287 | 318 | 155 | 125 | 96 |

*Dimensions in mm*

## TECHNICAL DATA

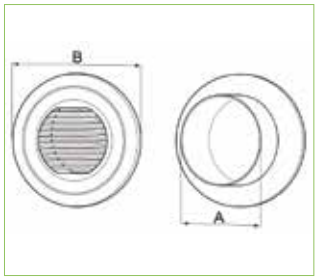
Air delivery without grille

Air intake with grille

| Duct route | 1 | | 2 | | 1 | | 2 | |
|---|---|---|---|---|---|---|---|---|
| Qv (Volume) [m³/h] | v [m/s ] | (Pa) | v [m/s] | (Pa) | v [m/s ] | (Pa) | v [m/s] | (Pa) |
| 0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 5 | 0.5 | 0.1 | 0.2 | 0.0 | 0.5 | 0.2 | 0.2 | 0.1 |
| 10 | 0.9 | 0.4 | 0.5 | 0.1 | 0.9 | 0.6 | 0.5 | 0.3 |
| 15 | 1.4 | 0.9 | 0.7 | 0.2 | 1.4 | 1.4 | 0.7 | 0.7 |
| 20 | 1.8 | 1.6 | 0.9 | 0.3 | 1.8 | 2.5 | 0.9 | 1.2 |
| 25 | 2.3 | 2.6 | 1.1 | 0.5 | 2.3 | 3.8 | 1.1 | 1.8 |
| 30 | 2.7 | 3.7 | 1.4 | 0.7 | 2.7 | 5.5 | 1.4 | 2.6 |
| 35 | 3.0 | 4.5 | 1.6 | 1.0 | 3.0 | 6.6 | 1.6 | 3.6 |
| 40 | 3.2 | 5.1 | 1.8 | 1.3 | 3.2 | 7.5 | 1.8 | 4.7 |
| 45 | 3.6 | 6.6 | 2.1 | 1.6 | 3.6 | 9.8 | 2.1 | 5.9 |
| 50 | 4.1 | 8.4 | 2.3 | 2.0 | 4.1 | 12.4 | 2.3 | 7.3 |
| 55 | 4.6 | 10.3 | 2.5 | 2.4 | 4.6 | 15.3 | 2.5 | 8.9 |
| 60 | 5.0- | 12.5 | 2.7 | 2.8 | 5.0- | 18.6 | 2.7 | 10.6 |
| 65 | - | - | 3.0 | 3.3 | - | - | 3.0 | 12.4 |
| 66 | - | - | 3.0 | 3.4 | - | - | 3.0 | 12.7 |
| 70 | - | - | 3.2 | 3.8 | - | - | 3.2 | 14.4 |
| 75 | - | - | 3.4 | 4.4 | - | - | 3.4 | 16.5 |
| 80 | - | - | 3.6 | 5.0 | - | - | 3.6 | 18.8 |
| 85 | - | - | 3.9 | 5.7 | - | - | 3.9 | 21.2 |
| 90 | - | - | 4.1 | 6.4 | - | - | 4.1 | 23.8 |
| 95 | - | - | 4.3 | 7.1 | - | - | 4.3 | 26.5 |
| 100 | - | - | 4.6 | 7.9 | - | - | 4.6 | 29.3 |
| 105 | - | - | 4.8 | 8.7 | - | - | 4.8 | 32.3 |
| 110 | - | - | 5.0 | 9.5 | - | - | 5.0 | 35.5 |

## DIFFUSION TERMINALS

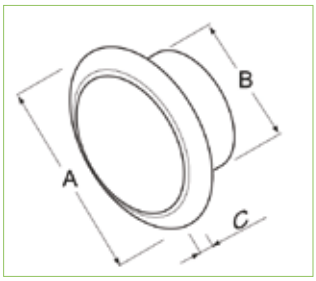
Supply/return launch spigot, manual opening/closing/adjustment system.




| | CODE | ØA | B |
|---|---|---|---|
| BOREA 125 | 23199 | 125 | 165 |

*Dimensions in mm*

Extraction/delivery spigot in white thermoplastic polystyrene. Enables air flow regulation with a simple adjustment of the rotating core. To be applied to ceilings, ventilation ducts, false ceilings, etc.

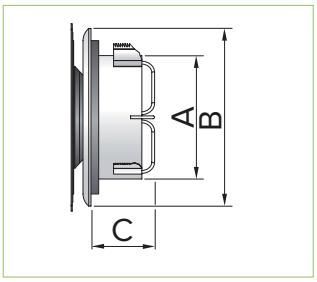



| | CODE | ØA | ØB | C |
|---|---|---|---|---|
| AV 125 | 22190 | 166 | 125 | 15 |

*Dimensions in mm*

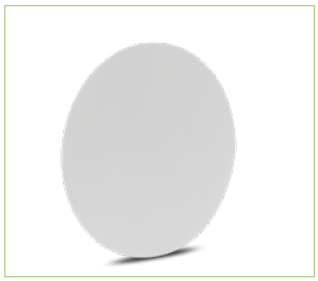
## DIFFUSION TERMINALS

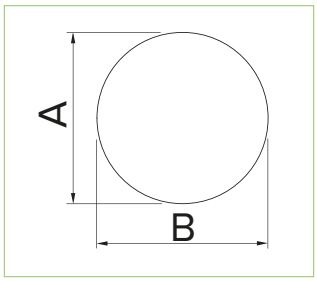
Steel extraction/intake spigots. They enable the regulation of the air flow with a simple adjustment of the rotating core. To be applied to ceilings, ventilation ducts, false ceilings, etc. To be combined with an aesthetic mask (circular, square and rectangular). Revolutionary sound data that guarantee excellent sound levels.




| | CODE | ØA | ØB | C |
|---|---|---|---|---|
| AV PLUS BD 125 | 26794 | 114 | 156 | 57 |

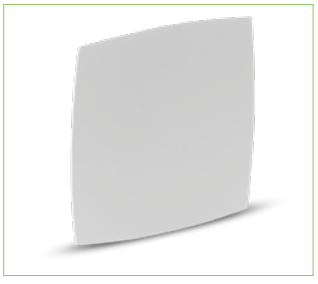
*Dimensions in mm*

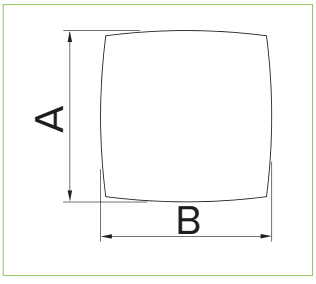





| | CODE | ØA | ØB |
|---|---|---|---|
| AV PLUS RND (CIRCULAR) | 26797 | 165 | 165 |

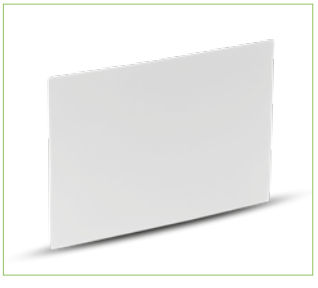
*Dimensions in mm*

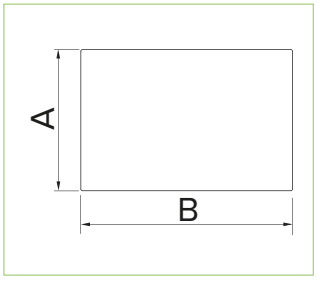





| | CODE | A | B |
|---|---|---|---|
| AV PLUS BOW (SQUARE) | 26795 | 165 | 165 |

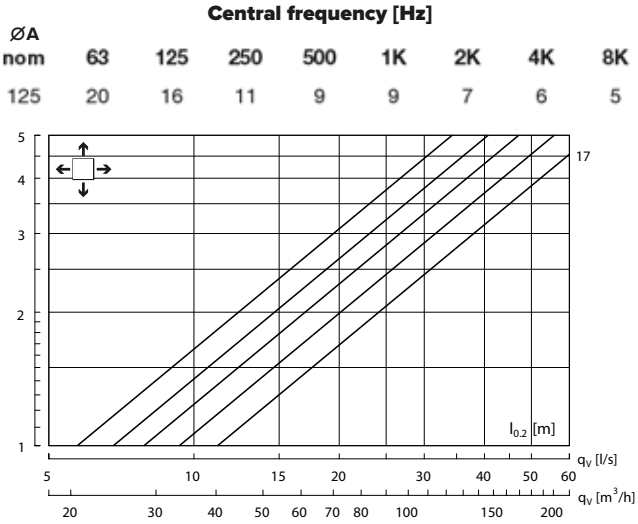
*Dimensions in mm*



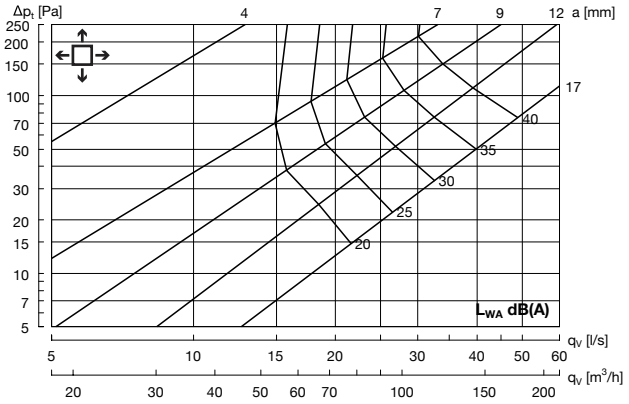



| | CODE | A | B |
|---|---|---|---|
| AV PLUS RCT (RECTANGULAR) | 26796 | 165 | 248 |

*Dimensions in mm*

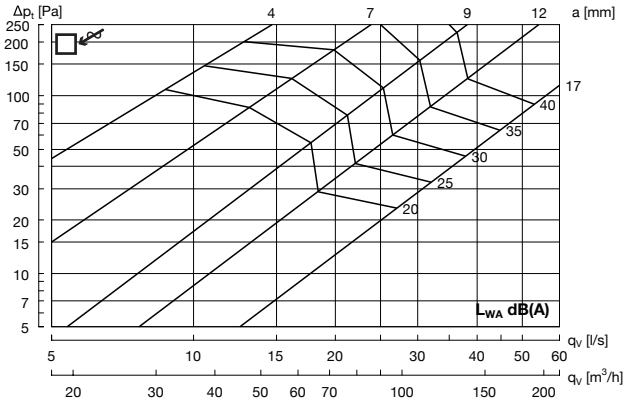



### Delivery curve




| Hz | 63 | 125 | 250 | 500 | 1K | 2K | 4K | 8K |
|---|---|---|---|---|---|---|---|---|
| $K_{ok}$ | 4 | -6 | -1 | 0 | -6 | -11 | -15 | -15 |

### Recovery curve




| Hz | 63 | 125 | 250 | 500 | 1K | 2K | 4K | 8K |
|---|---|---|---|---|---|---|---|---|
| $K_{ok}$ | 8 | -9 | -3 | -3 | -5 | -6 | -17 | -21 |

## DUCTS

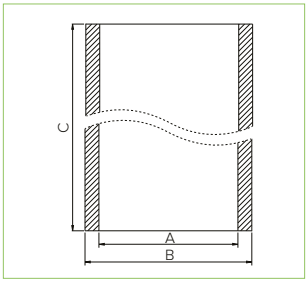
**Rigid insulated ducting systems ideal for connecting the machine to the outside air intakes.**

In ventilation (heating/cooling), insulating ducts are used to minimize heat loss or prevent condensation from forming inside or outside the duct.

Duct that reduces the pressure drop due to its very smooth internal surface. Light, easy to cut and foldable, impact resistant (for example dent free) does not rust. Duct length 2 meters, diameters 125 and 150 mm. Easy to disassemble, which makes maintenance very simple

# DUCTS

## EPE rigid duct, circular section.

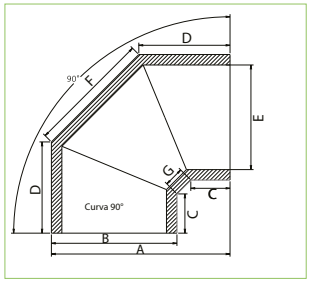



| | CODE | ØA | B | C |
|---|---|---|---|---|
| RIGID EPE DUCT Ø 125 2MT | 21468 | 125 | 157 | 2000 |
| RIGID EPE DUCT Ø 150 2MT | 21473 | 150 | 182 | 2000 |

*Dimensions in mm*

| VOLUME [M³/H] | PRESSURE DROP [PA] | |
|---|---|---|
| | Ø 125 | Ø 150 |
| 100 | 1.0 | 1.0 |
| 200 | 2.7 | 1.1 |
| 300 | 6.1 | 2.5 |
| 400 | 10.8 | 4.5 |
| 500 | 16.9 | 7.0 |
| 600 | 24.3 | 10.1 |

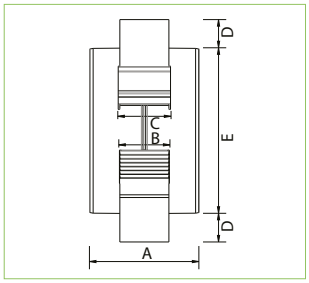
## 90° curve in EPE circular section diameter 125-150mm.




| | CODE | ØA | ØB | C | D | ØE | F | G |
|---|---|---|---|---|---|---|---|---|
| 90° CURVE IN EPE Ø 125 | 21469 | 238 | 157 | 60 | 125 | 125 | 159 | 30 |
| 90° CURVE IN EPE Ø 150 | 21474 | 263 | 182 | 60 | 135 | 150 | 181 | 30 |

*Dimensions in mm*

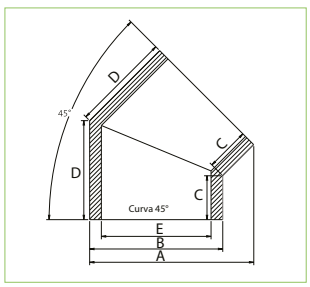
## Connector in EPE diameter 125mm and 150mm.




| | CODE | A | B | C | D | E |
|---|---|---|---|---|---|---|
| CONNECTOR IN EPE Ø 125 | 21471 | 100 | 45 | 48 | 15 | 125 |
| CONNECTOR IN EPE Ø 150 | 21476 | 100 | 45 | 48 | 15 | 150 |

*Dimensions in mm*

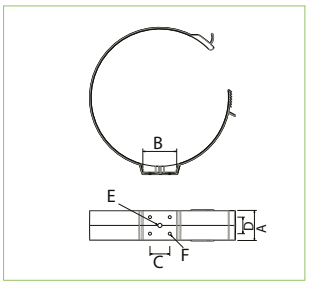
## 45° curve in EPE circular section diameter 125-150mm.




| | CODE | ØA | ØB | C | D | ØE |
|---|---|---|---|---|---|---|
| 45° CURVE IN EPE Ø 125 | 21470 | 199 | 157 | 60 | 125 | 125 |
| 45° CURVE IN EPE Ø 150 | 21475 | 224 | 182 | 60 | 135 | 150 |

*Dimensions in mm*

## Fixing clip for circular ducts in EPE.




| | CODE | A | B | C | D | E | ØF |
|---|---|---|---|---|---|---|---|
| CLIP IN EPE Ø 125 | 21472 | 45 | 50 | 30 | 25 | M8 | 4.5 |
| CLIP IN EPE Ø 150 | 21477 | 45 | 50 | 30 | 25 | M8 | 4.5 |

*Dimensions in mm*

## EXTERNAL GRILLES

Vertical ejection terminal connection diameter 125-150mm.

| | CODE |
|---|---|
| TE-V Ø 125 | 21486 |
| TE-V Ø 150 | 21487 |

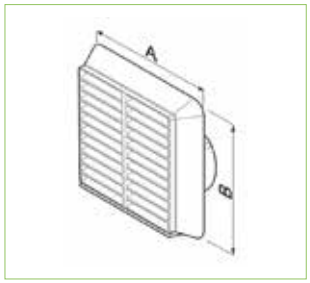
Black tile diam. 125/150/160mm 5-25°/ 25-45°/ 35-55° for roof ejection terminal.

| | CODE |
|---|---|
| TEG Ø 125/150 5-25° | 21489 |
| TEG Ø 125/150 25-45° | 21490 |
| TEG Ø 125/150 35-55° | 21491 |

Flat tile Diam. 125/150mm for roof ejection terminal.

| | CODE |
|---|---|
| TEG Ø 125/150 FLAT | 21488 |

Polypropylene grille with anti-bird protection.




| | CODE | A | B |
|---|---|---|---|
| OUTDOOR ANTI-BIRD GRILLE Ø 125 | 46058 | 155 | 155 |
| OUTDOOR ANTI-BIRD GRILLE Ø 150 | 46059 | 185 | 185 |

*Dimensions in mm*

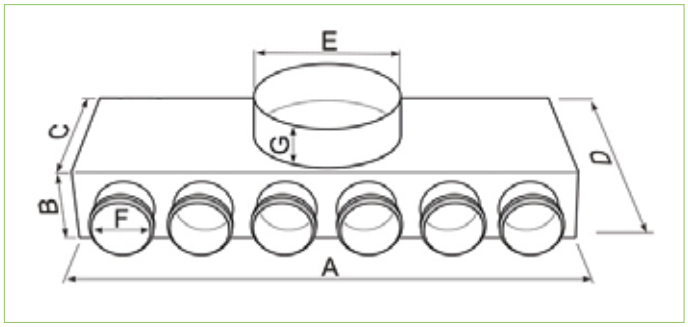
## NOTES

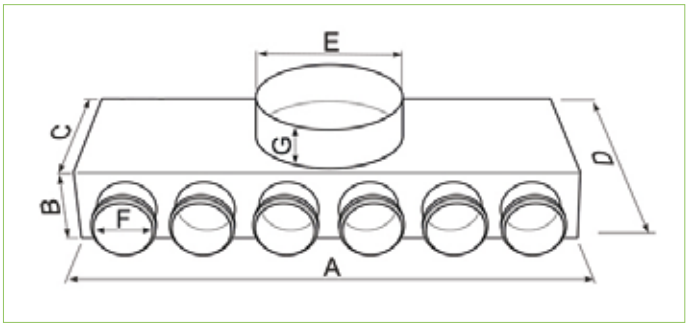
## PLENUM GALVANIZED SHEET

Distribution plenum in galvanized sheet metal with connections for WD63 ducts.

**6 CONNECTIONS**
connection Ø 125 mm
6 connections Ø 63 mm

**10 CONNECTIONS**
connection Ø 160 mm
10 connections Ø 63 mm




| | CODE | A | B | C | D | ØE | ØF | G |
|---|---|---|---|---|---|---|---|---|
| WD-P 6X63 | 23649 | 525 | 90 | 190 | 232 | 125 | 63 | 45 |

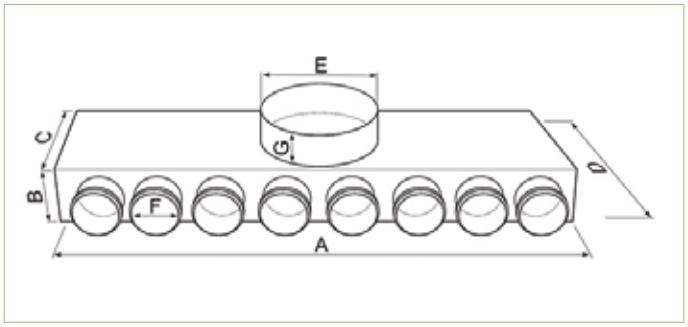
*Dimensions in mm*

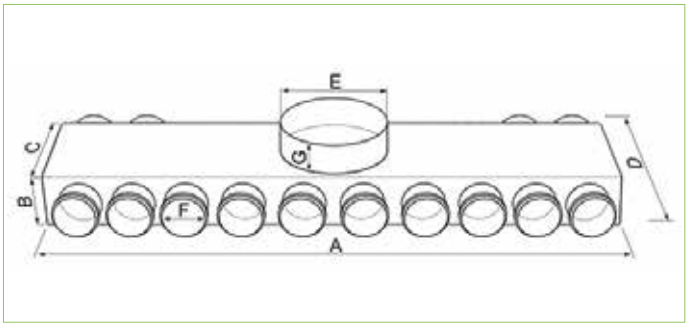
| | CODE | A | B | C | D | ØE | ØF | G |
|---|---|---|---|---|---|---|---|---|
| WD-P 10x63 | 23212 | 515 | 82 | 180 | 265 | 160 | 63 | 45 |

*Dimensions in mm*

**8 CONNECTIONS**
connection Ø 160 mm
8 connections Ø 63 mm

**14 CONNECTIONS**
connection Ø 160 mm
10 connections Ø 63 mm




| | CODE | A | B | C | D | ØE | ØF | G |
|---|---|---|---|---|---|---|---|---|
| WD-P 8X63 | 23650 | 695 | 90 | 190 | 232 | 160 | 63 | 45 |

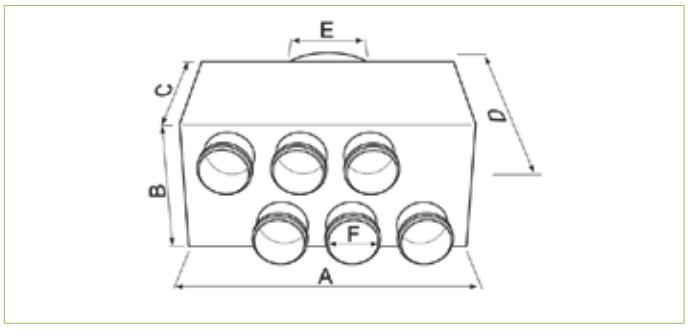
*Dimensions in mm*

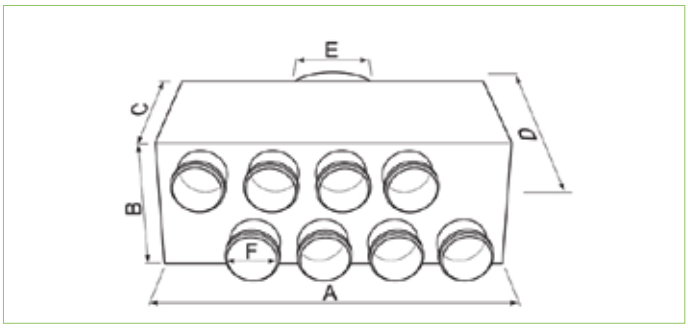
| | CODE | A | B | C | D | ØE | ØF | G |
|---|---|---|---|---|---|---|---|---|
| WD-P 14x63 | 23213 | 850 | 82 | 180 | 265 | 160 | 63 | 45 |

*Dimensions in mm*

**6 CONNECTIONS**
connection Ø 125 mm
6 Ø 63 mm IN LINE
connections

**8 CONNECTIONS**
connection Ø 160 mm
10 connections Ø 63 mm




| | CODE | A | B | C | D | ØE | ØF |
|---|---|---|---|---|---|---|---|
| WD-PH 6X63 | 23651 | 355 | 200 | 190 | 277 | 125 | 63 |

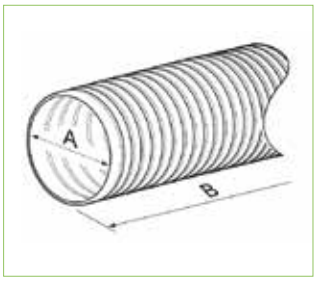
*Dimensions in mm*

| | CODE | A | B | C | D | ØE | ØF |
|---|---|---|---|---|---|---|---|
| WD-PH 8X63 | 23652 | 440 | 200 | 190 | 277 | 160 | 63 |

*Dimensions in mm*

## DUCTS

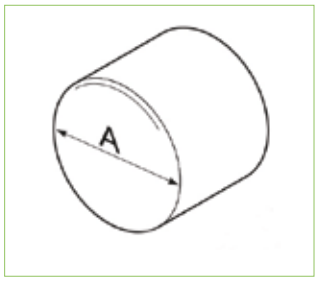
Smooth semi-flexible corrugated channel internally in PEAD.




| | CODE | ØA | B |
|---|---|---|---|
| WD 63 | 23209 | 63 | 50000 |

*Dimensions in mm*

Steel cap Ø 63mm.




| | CODE | ØA |
|---|---|---|
| WD-X 63 | 23219 | 63 |

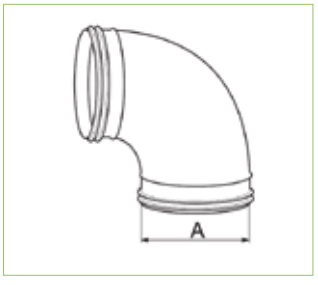
*Dimensions in mm*

Connection for internal ducts Ø 63 mm, in galvanized steel, with rubber seals.

| | CODE |
|---|---|
| WD-R 63-80 | 23200 |

*Dimensions in mm*

90° curve for duct internal Ø 63 mm, in galvanized steel, with rubber seals.

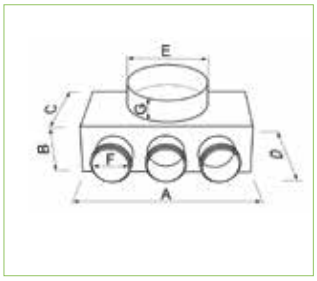



| | CODE | ØA |
|---|---|---|
| WD-C 63 | 23211 | 63 |

*Dimensions in mm*

## DIFFUSION TERMINALS

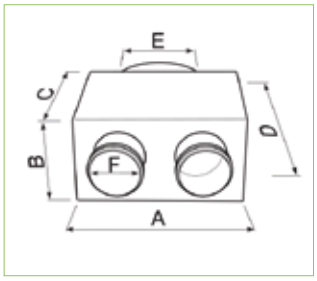
Plenum in galvanized steel sheet for return air delivery for false ceiling installations. Corner configuration. Designed for mounting circular spigots. Connections with seals. Code 23218 - 2 connections Ø 63 mm.
Code 23217 - 3 connections Ø 63 mm.




| | CODE | A | B | C | D | ØE | ØF | G |
|---|---|---|---|---|---|---|---|---|
| WD-PB 100 | 23218 | 170 | 87 | 122 | 163 | 100 | 63 | 45 |
| WD-PB 125 | 23217 | 245 | 87 | 190 | 125 | 125 | 63 | 45 |

*Dimensions in mm*

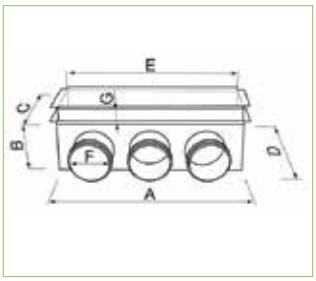
Plenum in galvanized steel sheet for return air delivery for false ceiling installations. In-line configuration. Designed for mounting circular spigots. Connections with seals. Code 23658 - 2 connections Ø 63 mm.
Code 23657 - 3 connections Ø 63 mm.




| | CODE | A | B | C | D | ØE | ØF |
|---|---|---|---|---|---|---|---|
| WD-PBH 100 | 23658 | 170 | 122 | 87 | 175 | 100 | 63 |
| WD-PBH 125 | 23657 | 245 | 147 | 87 | 175 | 125 | 63 |

*Dimensions in mm*

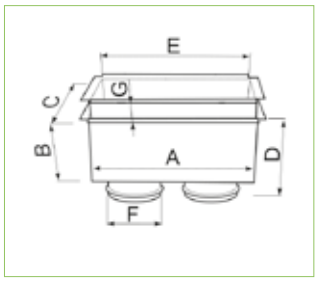
Plenum in galvanized steel sheet for return air delivery for false ceiling installations. Corner configuration. Designed for mounting rectangular spigots.  Connections with seals. Code 23653 - 2 connections Ø 63 mm.
Code 23214 - 3 connections Ø 63 mm.




| | CODE | A | B | C | D | E | ØF | G |
|---|---|---|---|---|---|---|---|---|
| WD-PB 200X100 | 23653 | 200 | 85 | 100 | 144 | 195 | 63 | 37 |
| WD-PB 300X100 | 23214 | 300 | 85 | 100 | 144 | 295 | 63 | 37 |

*Dimensions in mm*

Plenum in galvanized steel sheet for return air delivery for false ceiling installations. In-line configuration. Designed for mounting rectangular spigots.  Connections with seals.
Code 23655 - 2 connections Ø 63 mm.
Code 23654 - 3 connections Ø 63 mm.

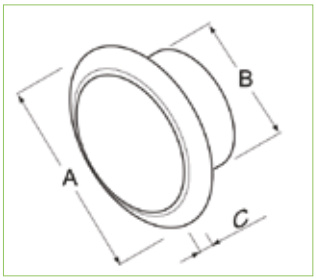



| | CODE | A | B | C | D | E | ØF | G |
|---|---|---|---|---|---|---|---|---|
| WD-PBH 200X100 | 23655 | 200 | 85 | 100 | 130 | 195 | 63 | 37 |
| WD-PBH 300X100 | 23654 | 300 | 85 | 100 | 130 | 295 | 63 | 37 |

*Dimensions in mm*

## DIFFUSION TERMINALS

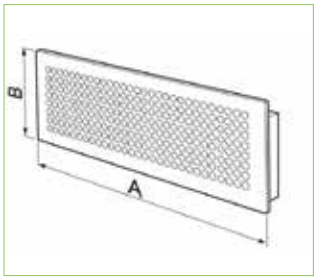
Extraction/delivery spigot in white thermoplastic polystyrene. Enables air flow regulation with a simple adjustment of the rotating core. To be applied to ceilings, ventilation ducts, false ceilings, etc.




| | CODE | ØA | ØB | C |
|---|---|---|---|---|
| AV 100 | 22189 | 140 | 100 | 13 |
| AV 125 | 22190 | 166 | 125 | 15 |

*Dimensions in mm*

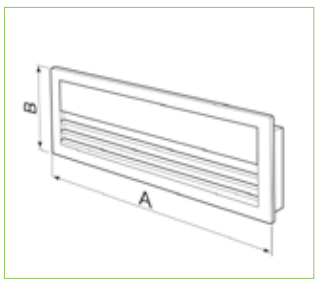
High induction spigot, with perforated front in white powder coated galvanized steel. Suitable for delivery and extraction.




| | CODE | A | B |
|---|---|---|---|
| WD-BF 200X100 | 23656 | 200 | 100 |
| WD-BF 300X100 | 23215 | 300 | 100 |

*Dimensions in mm*

High induction spigot 300x100, with adjustable fins in white powder coated galvanized steel. Suitable for horizontal launch delivery.



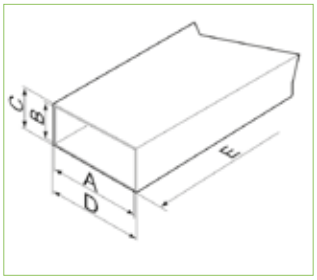

| | CODE | A | B |
|---|---|---|---|
| WD-BA 300X100 | 23216 | 300 | 100 |

*Dimensions in mm*

# SYSTEM **204x60**
RECTANGULAR DUCTING

## DUCTS

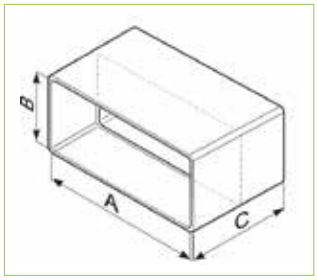
Connector for flat duct in polystyrene.




| | CODE | A | B | C | D | E |
|---|---|---|---|---|---|---|
| RECTANGULAR PIPE 1MT | 46155 | 200 | 54 | 60 | 204 | 1000 |
| RECTANGULAR PIPE 2MT | 46157 | 200 | 54 | 60 | 204 | 1000 |

*Dimensions in mm*

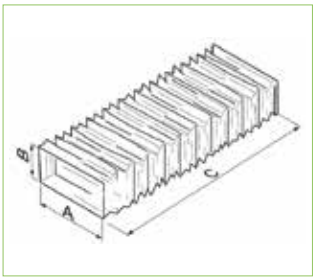
Connector for flat duct in polystyrene.




| | CODE | A | B | C |
|---|---|---|---|---|
| SYSTEM 204 FLAT DUCT CONNECTOR | 46162 | 205 | 60 | 74 |

*Dimensions in mm*

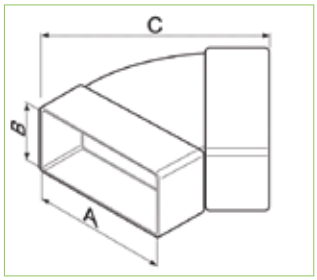
PVC flexible duct rectangular section.




| | CODE | A | B | C |
|---|---|---|---|---|
| PVC FLEX PIPE 204X60 | 46244 | 206 | 62 | 3000 |

*Dimensions in mm*

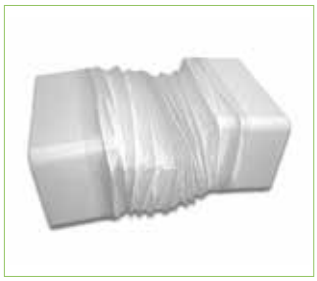
Horizontal curve rectangular section in polystyrene.

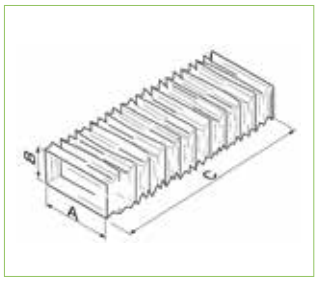



| | CODE | A | B | C |
|---|---|---|---|---|
| HORIZONTAL CURVE 45° SYSTEM 204 | 46167 | 204 | 60 | 203 |
| HORIZONTAL CURVE 90° SYSTEM 204 | 46159 | 204 | 60 | 244 |

*Dimensions in mm*

Flexible/extendable curve rectangular section in polystyrene/PVC.

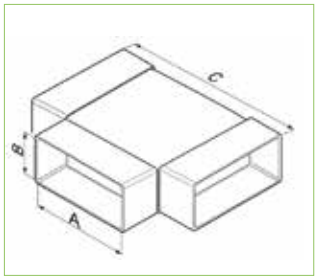





| | CODE | A | B | C |
|---|---|---|---|---|
| FLEXIBLE CURVE SYSTEM 204 | 46170 | 204 | 60 | 660 |

*Dimensions in mm*

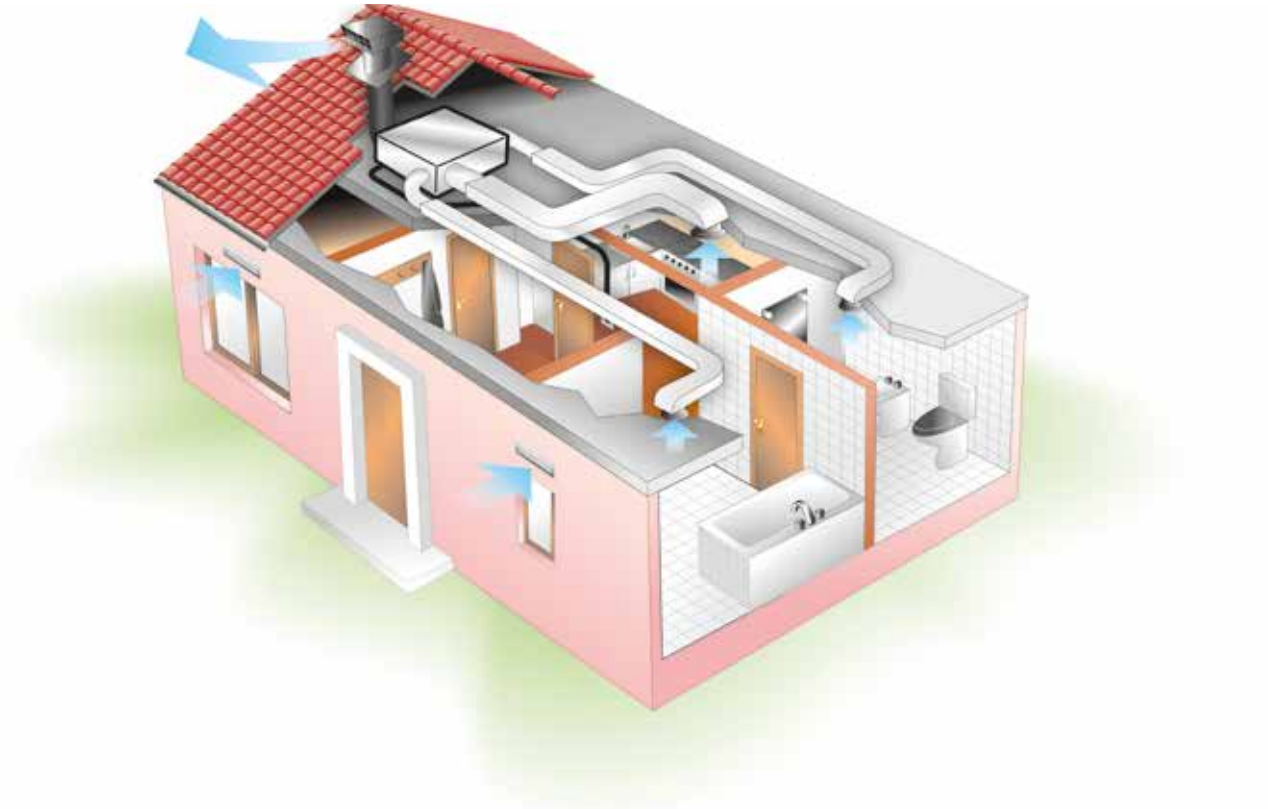
T-junction rectangular section in polystyrene.



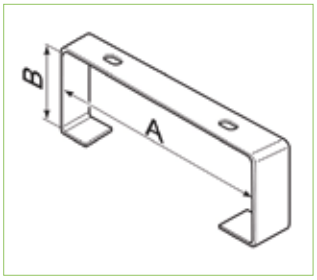

| | CODE | A | B | C |
|---|---|---|---|---|
| T PIECE SYSTEM 204 | 46171 | 204 | 60 | 279 |

*Dimensions in mm*

# DUCTS



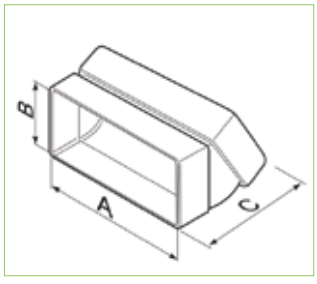
Fixing clip for flat polystyrene ducts.




| | CODE | A | B |
|---|---|---|---|
| FLAT DUCT FASTENING SYSTEM 204 | 46163 | 204 | 60 |

*Dimensions in mm*

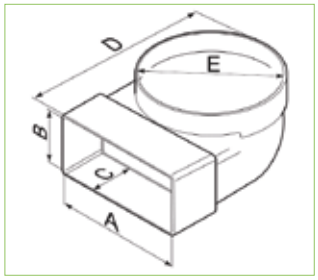
Vertical curve rectangular section in polystyrene.




| | CODE | A | B | C |
|---|---|---|---|---|
| VERTICAL CURVE 90° SYSTEM 204 | 46164 | 204 | 60 | 98 |

*Dimensions in mm*

90° curve with rectangular polystyrene adapter.

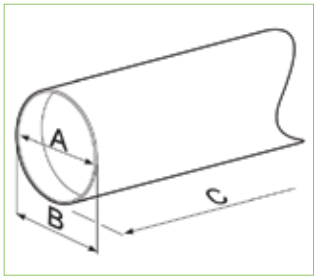



| | CODE | A | B | C | D | ØE |
|---|---|---|---|---|---|---|
| ROTATING ELBOW CURVE SYSTEM 204/125 | 46160 | 204 | 60 | 35 | 240 | 125 |

*Dimensions in mm*

## DUCTS

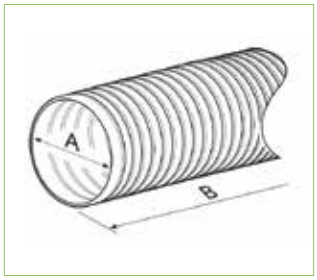
Rigid PVC pipe circular section, 1 and 2 meters in length.




| | CODE | ØA | ØB | C |
|---|---|---|---|---|
| ROUND PIPE Ø 100 1MT | 46184 | 100 | 103 | 1000 |
| ROUND PIPE Ø 100 2MT | 46186 | 100 | 103 | 2000 |
| RIGID PIPE Ø 125 1MT | 46197 | 125 | 128 | 1000 |
| RIGID PIPE Ø 125 2MT | 46199 | 125 | 128 | 2000 |
| RIGID PIPE Ø 150 1MT | 46209 | 149 | 153 | 1000 |
| RIGID PIPE Ø 150 2MT | 46211 | 149 | 153 | 2000 |

*Dimensions in mm*

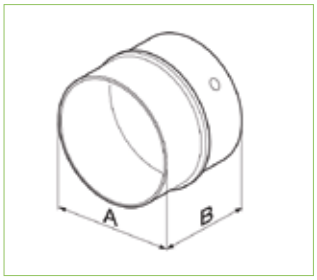
Flexible PVC duct circular section.




| | CODE | ØA | B |
|---|---|---|---|
| PVC FLEX PIPE Ø 102 | 46224 | 102 | 15000 |
| PVC FLEX PIPE Ø 127 | 46230 | 127 | 15000 |
| PVC FLEX PIPE Ø 152 | 46235 | 152 | 15000 |

*Dimensions in mm*

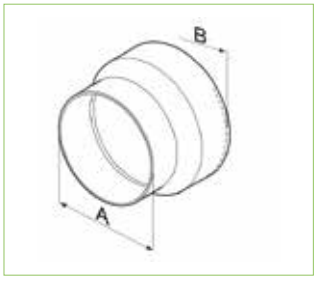
Connector for circular duct in polystyrene.




| | CODE | ØA | B |
|---|---|---|---|
| PIPE-PIPE CONNECTOR Ø 100 | 46188 | 98 | 60 |
| PIPE-PIPE CONNECTOR Ø 125 | 46205 | 124 | 62 |
| PIPE-PIPE CONNECTOR Ø 150 | 46216 | 149 | 62 |

*Dimensions in mm*

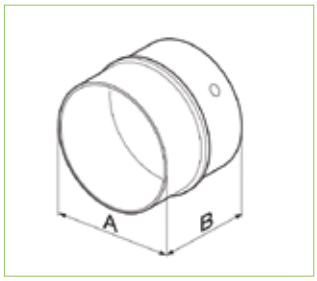
Circular reduction in polystyrene.




| | CODE | ØA | ØB |
|---|---|---|---|
| REDUCER Ø 100-80 | 46415 | 80 | 100 |
| REDUCER Ø 125-100 | 46312 | 100 | 125 |
| REDUCER Ø 150-100 | 46314 | 100 | 150 |
| REDUCER Ø 150-125 | 46313 | 125 | 150 |
| REDUCER Ø 200-150 | 46315 | 150 | 160 |

*Dimensions in mm*

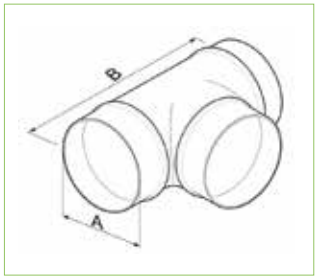
Connector with damper for circular polystyrene channel.




| | CODE | ØA | B |
|---|---|---|---|
| ROUND CONNECTOR Ø 150 | 46215 | 149 | 62 |

*Dimensions in mm*

T junction circular section in polystyrene.

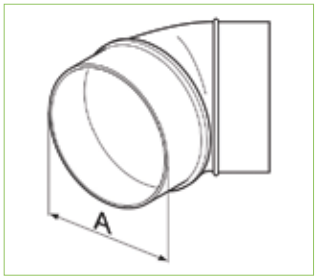



| | CODE | ØA | B |
|---|---|---|---|
| T JOINT Ø 100 | 46193 | 99 | 168 |
| T JOINT Ø 125 | 46203 | 124 | 197 |
| T JOINT Ø 150 | 46214 | 149 | 223 |

*Dimensions in mm*

# DUCTS

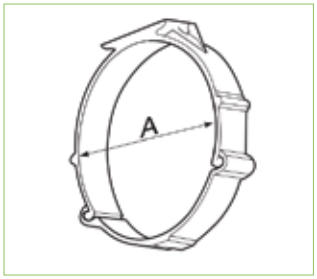
45° and 90° curves circular section in polystyrene.




| | CODE | ØA |
|---|---|---|
| 45° ELBOW CURVE Ø 100 | 46192 | 99 |
| 45° ELBOW CURVE Ø 125 | 46202 | 124 |
| 90° ELBOW CURVE Ø 100 | 46191 | 99 |
| 90° ELBOW CURVE Ø 125 | 46201 | 124 |
| 90° ELBOW CURVE Ø 150 | 46213 | 149 |

*Dimensions in mm*

Fixing clip for circular duct in polystyrene.




| | CODE | ØA |
|---|---|---|
| CLIP Ø 100 | 46195 | 99 |
| CLIP Ø 125 | 46204 | 124 |
| CLIP Ø 150 | 46217 | 180 |

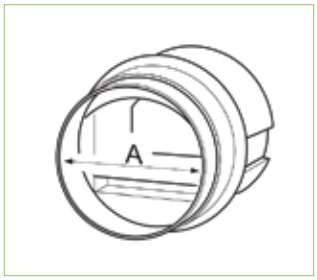
*Dimensions in mm*

Manual duct calibration damper.

| | CODE |
|---|---|
| RRM Ø 80 | 24825 |
| RRM Ø 100 | 24827 |
| RRM Ø 125 | 24828 |
| RRM Ø 150 | 24829 |

*Dimensions in mm*

Duct flow regulator in thermoplastic material. Maximum temperature 60 °C. Complete with rubber seal. Activated by pressures between 50 and 200 Pa.




| | CODE | ØA |
|---|---|---|
| RD 15 M/H Ø 80 | 23050 | 80 |
| RD 30 M/H Ø 80 | 23052 | 80 |
| RD 45 M/H Ø 80 | 23053 | 80 |
| RD 15 M/H Ø 100 | 23056 | 100 |
| RD 30 M/H Ø 100 | 23058 | 100 |
| RD 45 M/H Ø 100 | 23059 | 100 |
| RD 60 M/H Ø 100 | 23061 | 100 |
| RD 75 M/H Ø 100 | 23062 | 100 |
| RD 90 M/H Ø 100 | 23063 | 100 |
| RD 15 M/H Ø 125 | 23066 | 126 |
| RD 30 M/H Ø 125 | 23068 | 126 |
| RD 45 M/H Ø 125 | 23069 | 126 |
| RD 60 M/H Ø 125 | 23071 | 126 |
| RD 75 M/H Ø 125 | 23072 | 126 |
| RD 90 M/H Ø 125 | 23073 | 126 |
| RD 120 M/H Ø 125 | 23075 | 126 |
| RD 150 M/H Ø 125 | 23076 | 126 |
| RD 180 M/H Ø 125 | 23077 | 126 |
| RD 120 M/H Ø 150 | 23079 | 150 |
| RD 150 M/H Ø 150 | 23080 | 150 |
| RD 180 M/H Ø 150 | 23081 | 150 |
| RD 210 M/H Ø 150 | 23082 | 150 |
| RD 240 M/H Ø 150 | 23083 | 150 |
| RD 270 M/H Ø 150 | 23084 | 150 |
| RD 300 M/H Ø 150 | 23085 | 150 |
| RD 210 M/H Ø 200 | 23095 | 200 |
| RD 240 M/H Ø 200 | 23096 | 200 |
| RD 270 M/H Ø 200 | 23097 | 200 |
| RD 350 M/H Ø 200 | 23098 | 200 |
| RD 300 M/H Ø 201 | 23099 | 200 |

*Dimensions in mm*

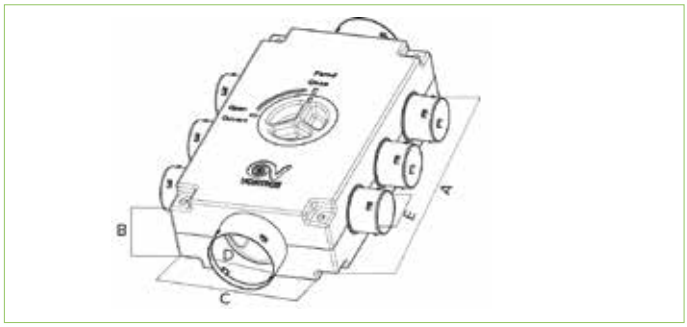
# VORT **PLENUM**
PPE

**CENTRALIZED VENTILATION**

## DISTRIBUTION PLENUM

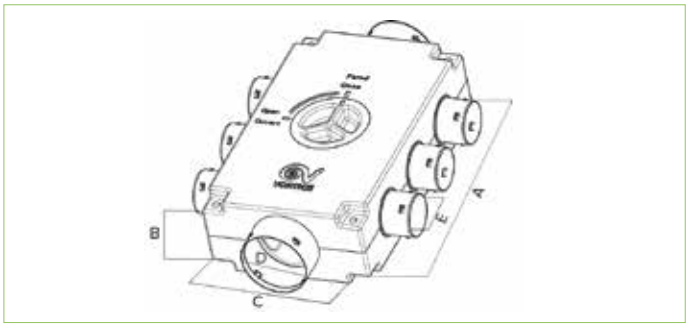
**Vort plenum 6+1**
for air delivery/extraction ducts
**up to 6 rooms+kitchen**
Ø pipes: inlet 125 mm
outlets 1x125mm - 6x80mm

**Vort Plenum 5+1 AR**
for air extraction ducts
**up to 5 rooms+kitchen**
self-adjusting spigots pipes
Ø: inlet 1x125 mm outlets
125 mm + 5x80 mm




| | CODE | A | B | C | ØD | ØE |
|---|---|---|---|---|---|---|
| VORT PLENUM 6+1 | 22343 | 490 | 150 | 300 | 125 | 77.5 |

*Dimensions in mm*




| | CODE | A | B | C | ØD | ØE |
|---|---|---|---|---|---|---|
| VORT PLENUM 5+1 AR | 22347 | 490 | 150 | 300 | 125 | 77.5 |

*Dimensions in mm*

## ACCESSORIES

Flow regulator 15 $m^3/h$ and 30 $m^3/h$
for plenum 5+1 R and 6+1.

| | CODE |
|---|---|
| REGULATOR 15 | 22324 |
| REGULATOR 30 | 22325 |

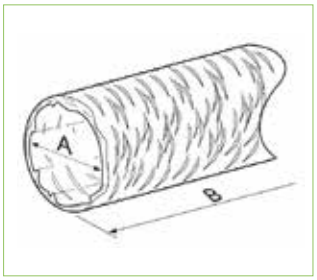
## CAP

Plenum cap 5+1 AR and 6+1.

| | CODE |
|---|---|
| CAP Ø 80 RED | 22605 |
| CAPØ 80 GRAY | 22606 |

## DUCTS

Flexible pipe with thermal and acoustic insulation. Internal duct in perforated aluminum, insulation in glass wool, external covering in aluminum film reinforced with fiberglass.




| | CODE | ØA | B |
|---|---|---|---|
| AFD-ACU 80-10 | 23201 | 82 | 10000 |
| AFD-ACU 125-10 | 23203 | 127 | 10000 |

*Dimensions in mm*

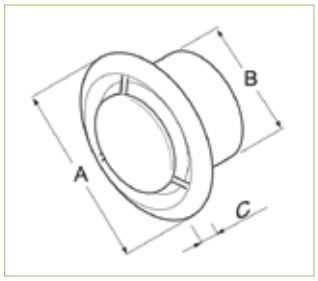
Circular section flexible aluminum duct.


| | CODE | ØA | B |
|---|---|---|---|
| ALUMINUM PIPE Ø 80 10MT | 46257 | 82 | 10000 |
| ALUMINUM PIPE Ø 127 10MT | 46259 | 127 | 10000 |

*Dimensions in mm*

## DIFFUSION TERMINALS

Intake/injection spigot not adjustable.

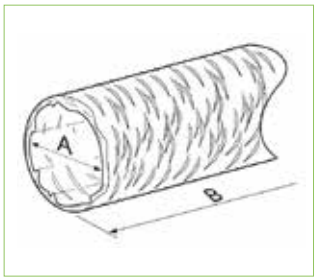



| | CODE | ØA | ØB | C |
|---|---|---|---|---|
| EXTRACTION SPIGOT Ø 80 | 22326 | 119 | 80 | 19 |
| EXTRACTION SPIGOT Ø 125 | 22327 | 169 | 125 | 27 |

*Dimensions in mm*

## DUCTS

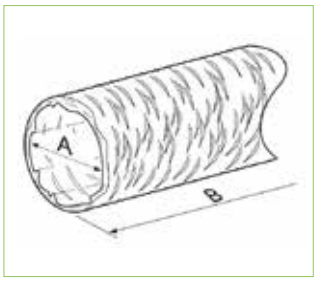
Flexible aluminum pipe with glass wool insulation circular section.




| | CODE | ØA | B |
|---|---|---|---|
| INSULATED PIPE AL. Ø 102 10MT | 46271 | 102 | 10000 |
| INSULATED PIPE AL. Ø 127 10MT | 46272 | 127 | 10000 |
| INSULATED PIPE AL. Ø 154 10MT | 46428 | 154 | 10000 |
| INSULATED PIPE AL. Ø 202 10MT | 46274 | 202 | 10000 |
| INSULATED PIPE AL. Ø 254 10MT | 46276 | 254 | 10000 |
| INSULATED PIPE AL. Ø 315 10MT | 46278 | 315 | 10000 |

*Dimensions in mm*

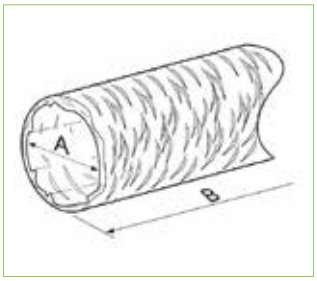
Flexible pipe with thermal and acoustic insulation. Internal duct in perforated aluminum, insulation in glass wool, external covering in aluminum film reinforced with fiberglass.




| | CODE | ØA | B |
|---|---|---|---|
| AFD-ACU 80-10 | 23201 | 82 | 10000 |
| AFD-ACU 100-10 | 23202 | 102 | 10000 |
| AFD-ACU 125-10 | 23203 | 127 | 10000 |
| AFD-ACU 150-10 | 23204 | 152 | 10000 |
| AFD-ACU 160-10 | 23205 | 162 | 10000 |

*Dimensions in mm*

Silencer pipe.




| | CODE | ØA | B |
|---|---|---|---|
| SILENCER PIPE Ø 125 | 22366 | 125 | 500 |
| SILENCER PIPE Ø 150 | 22316 | 150 | 500 |

*Dimensions in mm*

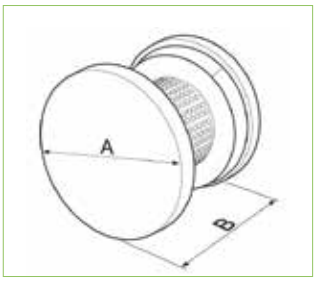
Circular section flexible aluminum duct.


| | CODE | ØA | B |
|---|---|---|---|
| ALUMINUM PIPE Ø 102 10 MT | 46258 | 102 | 10000 |
| ALUMINUM PIPE Ø 127 10MT | 46259 | 127 | 10000 |
| ALUMINUM PIPE Ø 152 10MT | 46260 | 152 | 10000 |
| ALUMINUM PIPE Ø 160 10MT | 46261 | 160 | 10000 |
| ALUMINUM PIPE Ø 203 10MT | 46263 | 203 | 10000 |
| ALUMINUM PIPE Ø 254 10MT | 46264 | 254 | 10000 |
| ALUMINUM PIPE Ø 315 10MT | 46266 | 315 | 10000 |
| ALUMINUM PIPE Ø 80 10MT | 46257 | 82 | 10000 |

*Dimensions in mm*

# DUCTS

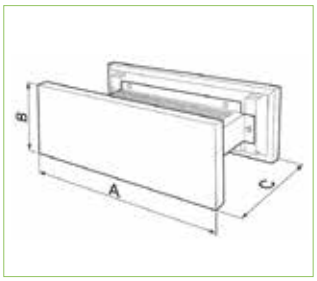
Circular aphonic transit grille with telescopic sleeve for thicknesses from 90 to 170 mm. White powder coated galvanized steel deflectors. Perforated stainless steel through section - internal insulation in mineral wool.




| | CODE | ØA | B |
|---|---|---|---|
| GTA Ø 100 | 23207 | 160 | 90/170 |
| GTA Ø 125 | 23208 | 200 | 90/170 |

*Dimensions in mm*

Rectangular aphonic transit grille with telescopic sleeve for thicknesses from 90 to 170 mm. White powder coated galvanized steel deflectors. Pre-drilled through section in stainless steel internal insulation in mineral wool.




| | CODE | A | B | C |
|---|---|---|---|---|
| GTA 400X100 | 23206 | 400 | 130 | 90/170 |

*Dimensions in mm*

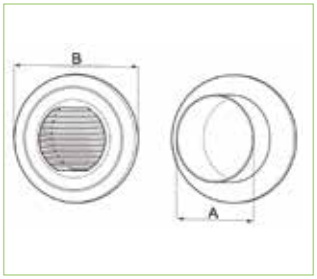
Fixing clip for circular aluminum ducts.

| | CODE |
|---|---|
| CLIP Ø 100 | 46309 |
| CLIP Ø 125 | 46310 |

*Dimensions in mm*

## DIFFUSION TERMINALS

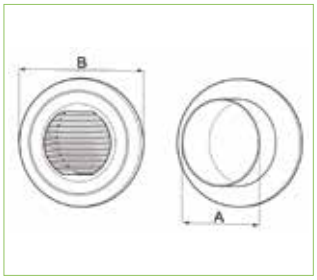
Flow/return spigot with adjustable launch. White polystyrene casing, manual opening/closing/adjustment system.




| | CODE | ØA | ØB |
|---|---|---|---|
| BOREA 80 | 23198 | 80 | 110 |
| BOREA 125 | 23199 | 125 | 165 |

*Dimensions in mm*

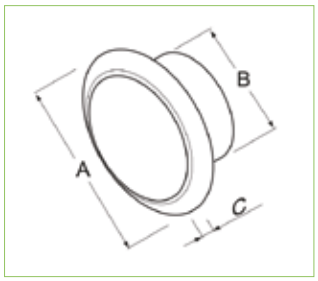
Self-adjusting extraction spigot.
White polystyrene casing. Internal self-regulating module activated by pressures between 50 and 160 Pa. Code 23197 Vortpack Alize Self Insulation - accessory component that can be combined with Vortpack Alize spigots.




| | CODE | ØA | ØB |
|---|---|---|---|
| VORTPACK ALIZE' AUTO TEMPO 20/75 | 24820 | 125 | 160 |
| VORTPACK ALIZE' AUTO TEMPO 30/90 | 24821 | 125 | 160 |
| VORTPACK ALIZE' AUTO TEMPO 45/105 | 24822 | 125 | 160 |
| VORTPACK ALIZE' AUTO TEMPO 45/120 | 24823 | 125 | 160 |
| VORTPACK ALIZE' AUTO TEMPO 45/135 | 24824 | 125 | 160 |
| VORTPACK ALYZE AUTO 15 | 22912 | 125 | 160 |
| VORTPACK ALYZE AUTO 30 | 22911 | 125 | 160 |
| VORTPACK ALYZE AUTO 45 | 23193 | 125 | 160 |
| VORTPACK ALYZE AUTO 60 | 23194 | 125 | 160 |
| VORTPACK ALYZE AUTO 75 | 23195 | 125 | 160 |
| VORTPACK ALYZE AUTO 90 | 23196 | 125 | 160 |
| VORTPACK ALYZE AUTO ACOUSTIC INSULATION | 23197 | 125 | 160 |

*Dimensions in mm*

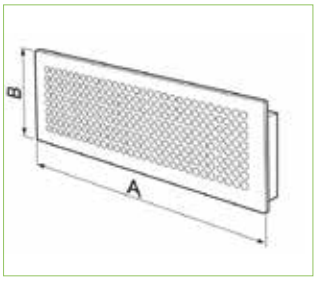
Extraction/delivery spigot in white thermoplastic polystyrene. Enables air flow regulation with a simple adjustment of the rotating core. To be applied to ceilings, ventilation ducts, false ceilings, etc.




| | CODE | ØA | ØB | C |
|---|---|---|---|---|
| AV 100 | 22189 | 140 | 100 | 13 |
| AV 125 | 22190 | 166 | 125 | 15 |
| AV 150 | 22191 | 204 | 150 | 17 |
| AV 160 | 22192 | 204 | 160 | 17 |
| AV 200 | 22193 | 242 | 200 | 17 |

*Dimensions in mm*

High induction spigot 300x100, with perforated front in white powder-coated galvanized steel. Suitable for delivery and extraction.

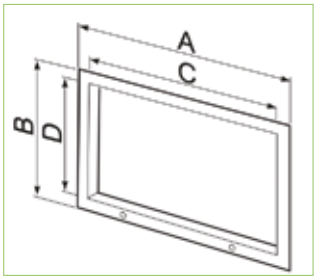



| | CODE | A | B |
|---|---|---|---|
| WD-BF 200X100 | 23656 | 200 | 100 |
| WD-BF 300X100 | 23215 | 300 | 100 |
| WDG-BF 310X85 | 21094 | 310 | 85 |
| WDPE-BF 193X140 | 26799 | 193 | 140 |
| WDPE-BF 366X140 | 25073 | 366 | 140 |

*Dimensions in mm*

## DIFFUSION TERMINALS

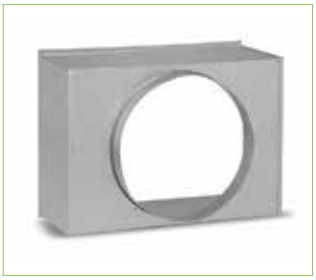
Duct counterframe.

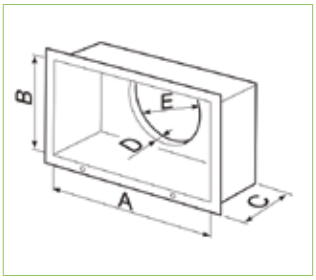



| | CODE | A | B | C | D |
|---|---|---|---|---|---|
| CO 200X100 | 22227 | 235 | 135 | 200 | 100 |
| CO 300X100 | 22228 | 335 | 135 | 300 | 100 |
| CO 300X150 | 22229 | 388 | 185 | 300 | 150 |
| CO 500X200 | 22230 | 535 | 235 | 500 | 200 |

*Dimensions in mm*

Galvanized steel plenum for grilles.

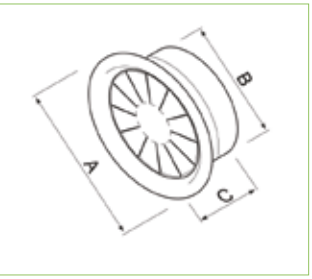





| | CODE | A | B | C | D | ØE |
|---|---|---|---|---|---|---|
| PGB 200X100 | 22231 | 200 | 100 | 200 | 50 | 97 |
| PGB 300X100 | 22232 | 300 | 100 | 200 | 50 | 97 |
| PGB 300X150 | 22233 | 300 | 150 | 200 | 50 | 125 |
| PGB 500X200 | 22234 | 500 | 200 | 200 | 50 | 160 |
| PGB 500X350 | 22244 | 500 | 350 | 200 | 50 | 315 |

*Dimensions in mm*

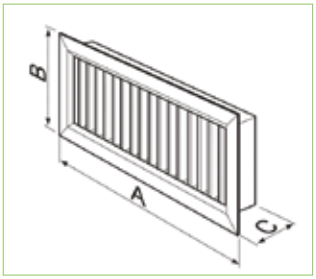
Circular diffuser to be applied to ceilings, ventilation ducts, false ceilings, etc.




| | CODE | A | B | C |
|---|---|---|---|---|
| DE 160 | 22237 | 260 | 157 | 84 |
| DE 250 | 22238 | 350 | 247 | 84 |
| DE 315 | 22239 | 415 | 312 | 84 |

*Dimensions in mm*

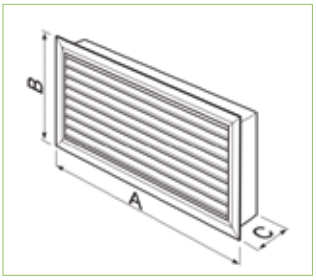
Rectangular delivery/return spigot with fixed horizontal fins and movable vertical fins, with manual adjustment. To be applied to square or rectangular ventilation ducts by means of a counter frame, or to circular ducts by means of related plenums.




| | CODE | A | B | C |
|---|---|---|---|---|
| BM 200X100 | 22215 | 200 | 100 | 85 |
| BM 300X100 | 22216 | 300 | 100 | 85 |
| BM 300X150 | 22217 | 300 | 150 | 85 |
| BM 500X200 | 22218 | 500 | 200 | 85 |

*Dimensions in mm*

Return grille with fixed inclined fins, pitch 25 mm, in natural anodized extruded aluminum, fixing with clips.



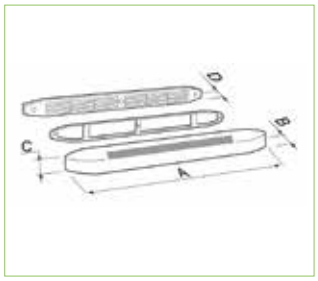

| | CODE | A | B | C |
|---|---|---|---|---|
| GA 200X100 | 22219 | 200 | 100 | 25 |
| GA 300X100 | 22220 | 300 | 100 | 25 |
| GA 300X150 | 22221 | 300 | 150 | 25 |
| GA 500X200 | 22222 | 500 | 200 | 25 |
| GA 500X350 | 22243 | 500 | 350 | 25 |

*Dimensions in mm*

## DIFFUSION TERMINALS

**Self-regulating air inlet suitable for applications in single flow VMC systems.**

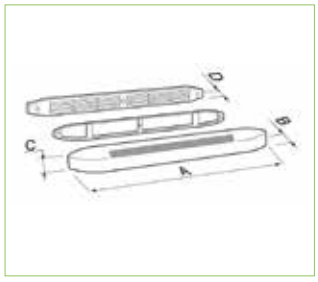
Self-regulating air inlet 15 $m^3$.




| | CODE | A | B | C | D |
|---|---|---|---|---|---|
| EA 15 BL | 91012 | 295 | 20 | 23 | 12 |
| EA 30 BL | 91014 | 295 | 20 | 23 | 12 |

*Dimensions in mm*

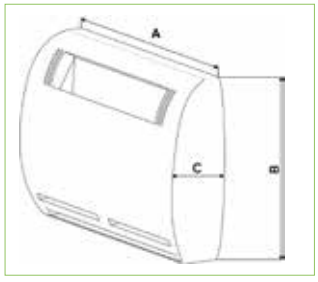
Self-regulating delivery spigot with acoustic thickness.




| | CODE | A | B | C | D |
|---|---|---|---|---|---|
| EAA22 BL | 91016 | 400 | 38 | 36 | 12 |
| EAA30 BL | 91018 | 400 | 38 | 36 | 12 |
| EAA45 BL | 91035 | 400 | 38 | 36 | 12 |

*Dimensions in mm*

Self-adjusting delivery spigot with acoustic thickness and Ø 125 rear connection (30 $m^3$/ H).

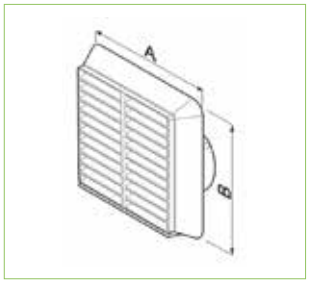



| | CODE | A | B | C |
|---|---|---|---|---|
| EM A 30 | 24639 | 220 | 150 | 52 |

*Dimensions in mm*

## EXTERNAL GRILLES

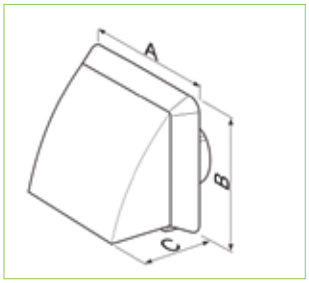
Polypropylene grille with anti-bird protection.




| | CODE | A | B |
|---|---|---|---|
| OUTDOOR ANTI-BIRD GRILLE Ø 100 | 46056 | 155 | 155 |
| OUTDOOR ANTI-BIRD GRILLE Ø 125 | 46058 | 155 | 155 |
| OUTDOOR ANTI-BIRD GRILLE Ø 150 | 46059 | 185 | 185 |

*Dimensions in mm*

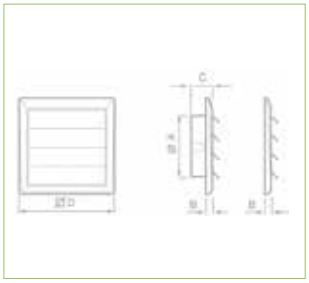
White polypropylene expulsion grille with gravity shutter and rain cover.




| | CODE | A | B | C |
|---|---|---|---|---|
| WHITE ANTI-WIND GRILLE Ø 100 | 46072 | 155 | 155 | 60 |
| WHITE ANTI-WIND GRILLE Ø 125 | 46074 | 155 | 155 | 70 |

*Dimensions in mm*

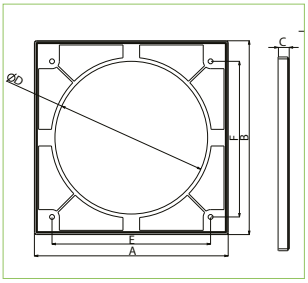
Gravity grille to be installed on the wall.
It prevents the return of air and objects from outside. Made entirely of UV resistant shockproof thermoplastic resin.



| | CODE | ØA | B | C | D |
|---|---|---|---|---|---|
| GGR 100 | 22332 | 99 | 8 | 28 | 140 |
| GGR 120/125 | 22333 | 119 | 8 | 28 | 160 |
| GGR 150/160 | 22334 | 155 | 8 | 28 | 198 |
| GGR 200 | 22335 | 199 | 14 | 28 | 254 |
| GGR 250 | 22336 | 249 | 14 | 28 | 299 |
| GGR 315 | 22337 | 324 | 14 | 28 | 391 |

*Dimensions in mm*

Spacer flange for external wiring.




| | CODE | A | B | C | ØD | E | F |
|---|---|---|---|---|---|---|---|
| SPACER FLANGE Ø 100/4 | 22253 | 140 | 140 | 12 | 100 | 105 | 102 |
| SPACER FLANGE Ø 120/5 | 22254 | 160 | 160 | 12 | 120 | 125 | 120 |
| SPACER FLANGE Ø 150/6 | 22255 | 200 | 200 | 12 | 160 | 160 | 162 |

*Dimensions in mm*

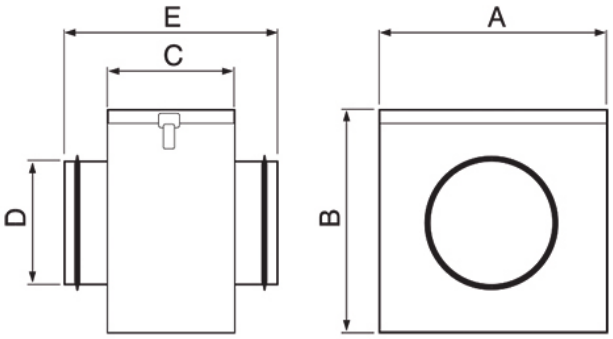
# FILTER BOX AND HEATERS

## FILTERS

The AF Range air filters have been designed to enable remote filtration in forced ventilation systems and especially to be coupled to ventilation units. The filter media is composed of fibers coated with a highly adhesive substance to improve the collection of dust. A metal wire structure keeps the mattress flat to facilitate the uniform passage of air. The container is made of galvanized steel with an inspection hatch that can be easily opened for the ordinary maintenance of the filter elements. The connection with the ducts is provided with circular joints with unified diameters of 100-125-150-160-200-250-315 mm (DIN 24145).

- Intended for indoor environments with max temperature of 60 °C.
- They have the function of separating ordinary impurities such as: dust, fluff, dirt, etc.
- It is connected to the system by forced insertion on two cylindrical galvanized steel connections with built-in circular rubber "T" seals.

## DIMENSIONS

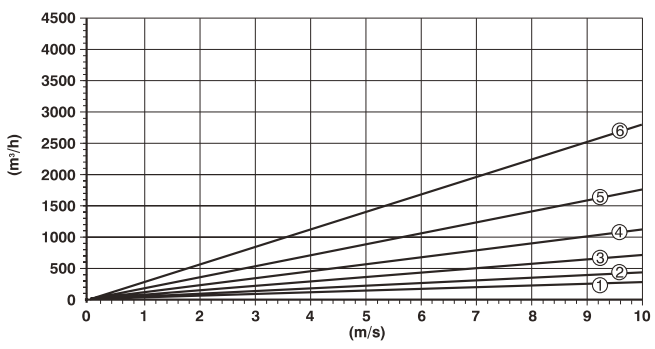



| | CODE | A | B | C | ØD | E | KG |
|---|---|---|---|---|---|---|---|
| AF 100 | 22793 | 210 | 170 | 125 | 100 | 227 | 2.1 |
| AF 125 | 22794 | 220 | 205 | 145 | 125 | 252 | 2.1 |
| AF 150 | 22799 | 270 | 235 | 160 | 150 | 267 | 2.3 |
| AF 160 | 22795 | 270 | 235 | 160 | 160 | 267 | 2.3 |
| AF 200 | 22787 | 320 | 275 | 185 | 200 | 302 | 3.5 |
| AF 250 | 22788 | 355 | 320 | 235 | 250 | 352 | 3.5 |
| AF 315 | 22789 | 430 | 390 | 335 | 315 | 452 | 6.1 |

*Dimensions in mm*

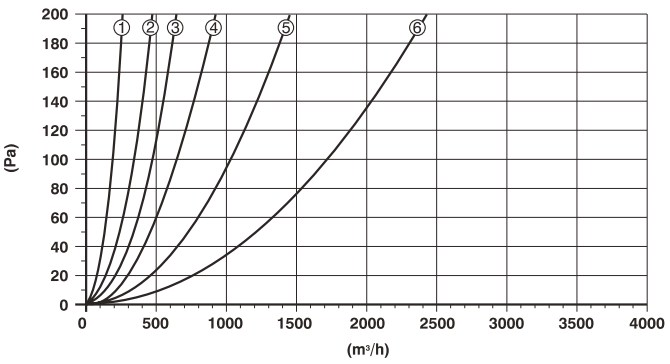
## CURVES

Graph to calculate the air flow rate based on the average speed.




① AF - 100
② AF - 125
③ AF - 150 AF - 160
④ AF - 200
⑤ AF - 250
⑥ AF - 315

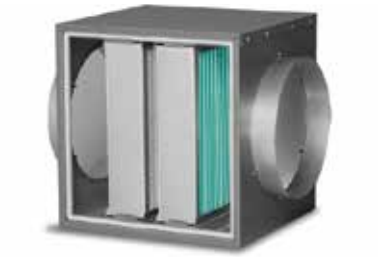
Initial pressure drop curves, filtration class G4.




① AF - 100
② AF - 125
③ AF - 150 AF - 160
④ AF - 200
⑤ AF - 250
⑥ AF - 315

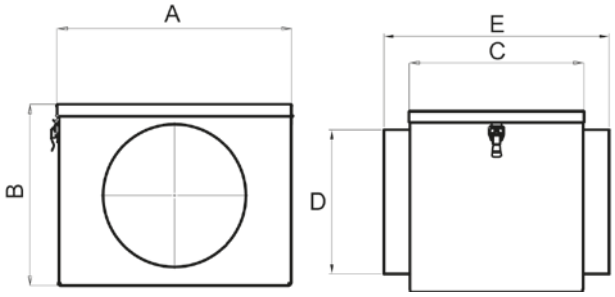
## FILTERS

The FB Range air filters have been designed to enable remote filtration in forced ventilation systems. These appliances have the function of separating ordinary impurities such as: dust, fluff, dirt, etc. In the case of use in combination with products already originally equipped with filters, in order not to compromise performance, we recommend removing them at the time of installation.
The filter media is composed of composite polypropylene (filter F7). The container is made of galvanized steel with an inspection hatch that can be easily opened for the ordinary maintenance of the filter elements. The connection with the ducts is provided with circular joints with unified diameters of 200- 250- 315- 355- 450 mm (DIN 24145). The FB Range air filters are intended for use in covered environments with a maximum temperature of 70 °C (with F7 filter).



- Intended for use in covered environments with a maximum temperature of 70 °C (with F7 filter)
- Filtration class: F7;
- Filter media: non-flammable synthetic microfibers
- Maximum operating temperature: 70 °C
- It is connected to the system by forced insertion on two cylindrical galvanized steel connections with built-in circular rubber "T" seals.

## DIMENSIONS

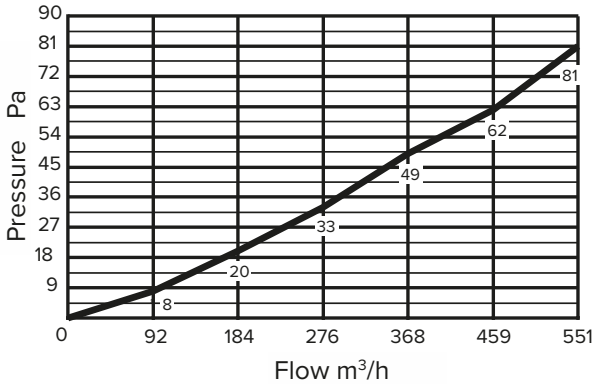



| | CODE | A | B | C | D | E | KG |
|---|---|---|---|---|---|---|---|
| FB 500 Ø 200 | 24139 | 240 | 285 | 300 | 200 | 390 | 6.5 |
| FB 800 Ø 250 | 24140 | 410 | 315 | 300 | 250 | 440 | 9 |
| FB 1200 Ø 315 | 24141 | 470 | 370 | 600 | 315 | 735 | 16 |
| FB 2000 Ø 315 | 24142 | 560 | 485 | 600 | 315 | 735 | 20 |
| FB 2500/3000 Ø 350 | 24143 | 630 | 500 | 700 | 355 | 830 | 27 |
| FB 4000/5000 Ø 450 | 24145 | 710 | 608. 5 | 900 | 450 | 1080 | 34 |
| FB 6000 Ø 450 | 24147 | 710 | 805 | 900 | 450 | 1080 | 40 |

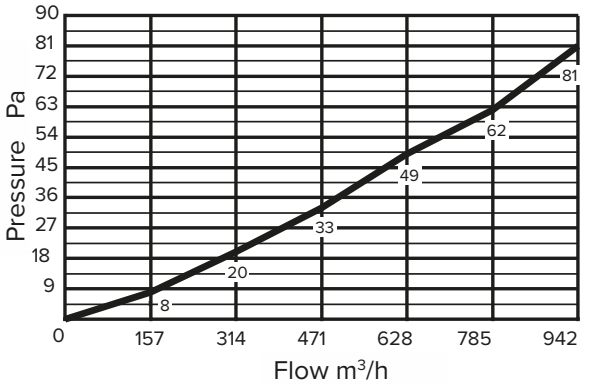
*Dimensions in mm*

## CURVES

**FB 500- F7**



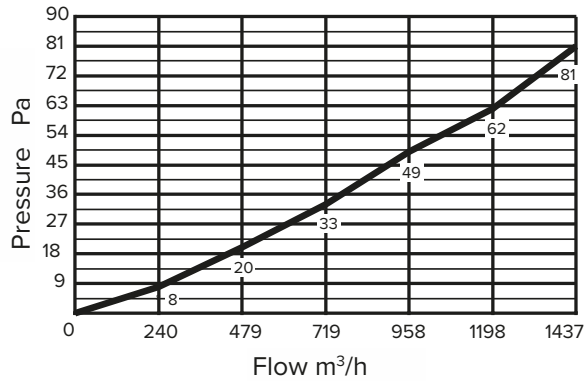

**FB 800- F7**



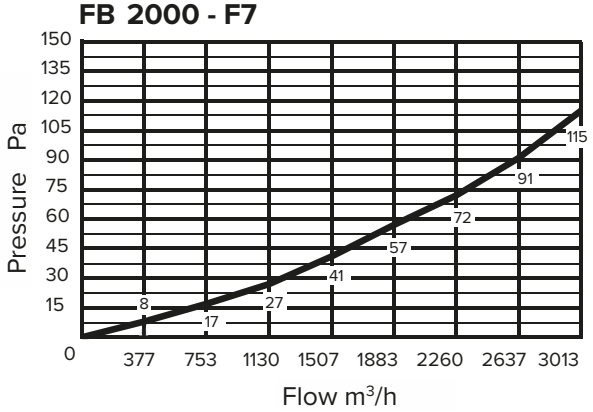
## FILTERS

### CURVES

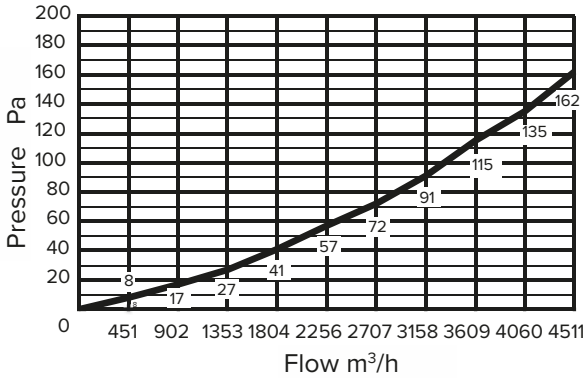
**FB 1200 - F7**



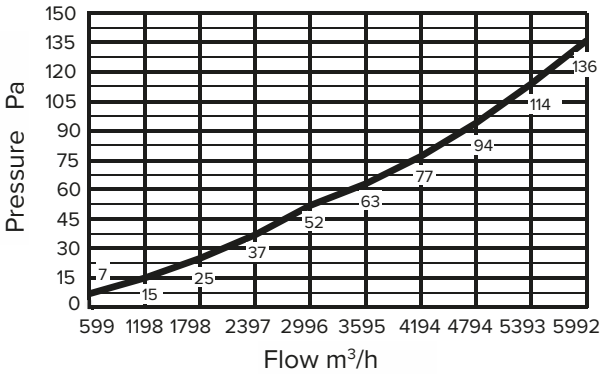

**FB 2000 - F7**



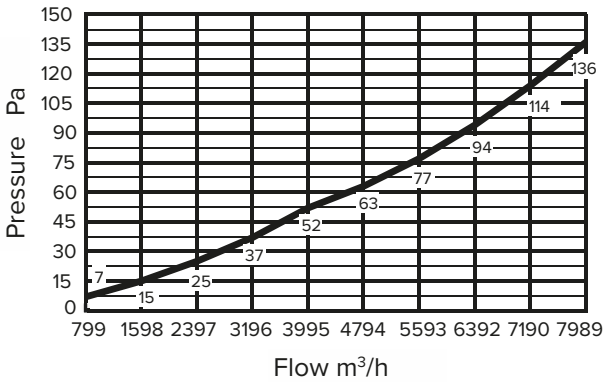

**FB 2500/3000 -F7**




**FB 4000/5000 - F7**




**FB 6000 -F7**

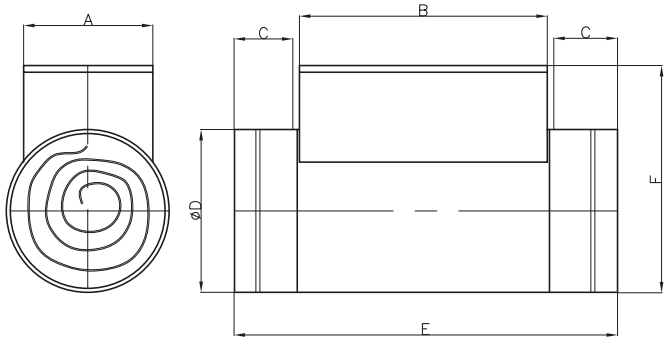


# HEATERS

Heater to be installed in the ventilation system, always downstream of the fan, and/or the sound attenuator/air filter. To optimize the efficiency of the heater it is possible, by means of regulators, to adjust the thermal power according to the desired temperature in the room. The installation must always be carried out in covered spaces, with an ambient temperature between -30 °C and + 50 °C, with free air, without dust, fluff and chemical impurities.
The casing is made of galvanized sheet metal with T-shaped rubber seals on both sides, diameters for standard circular ducts mm 100 125-150-160-200-250-315 (DIN 24145).

- Equipped with circular section electric batteries consisting of armored elements in stainless steel.
- To be used in covered places with ambient temperature from + 30 to + 50 °C with free air without dust or chemical impurities.
- Degree of protection of the electrical connection box IP43.
- Does not require special maintenance except for periodic operating checks.

## DIMENSIONS




| | CODE | A | B | C | ØD | E | F | KG |
|---|---|---|---|---|---|---|---|---|
| AH 100 | 22796 | 100 | 285 | 40 | 100 | 325 | 185 | 2.01 |
| AH 125 | 22797 | 125 | 285 | 40 | 125 | 325 | 225 | 2.57 |
| AH 150 | 22759 | 150 | 285 | 40 | 150 | 380 | 250 | 2.6 |
| AH 160 | 22798 | 160 | 285 | 40 | 160 | 380 | 260 | 2.95 |
| AH 200 | 22790 | 200 | 285 | 40 | 200 | 380 | 300 | 3.5 |
| AH 250 | 22791 | 250 | 285 | 40 | 250 | 380 | 350 | 3.83 |
| AH 315 | 22792 | 150 | 285 | 60 | 315 | 380 | 315 | 5.1 |
| H3-315 | 22779 | 150 | 285 | 60 | 315 | 380 | 315 | 5.3 |

*Dimensions in mm*

## TECHNICAL DATA

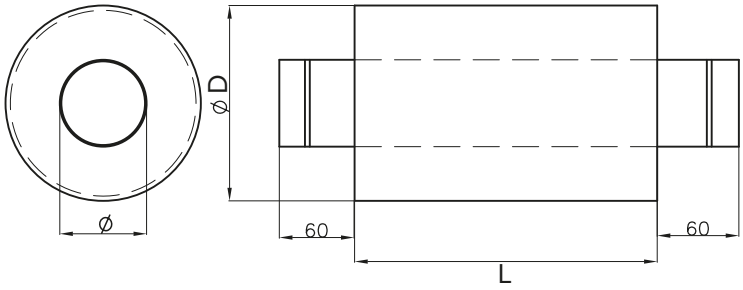
| | CODE | (KW) | NO. OF PHASES | NO. OF RESISTANCES | NO. OF SECTIONS | (A) | M3/H | (V) | (HZ) | (IP) |
|---|---|---|---|---|---|---|---|---|---|---|
| AH 100 | 22796 | 0.4 | 1 | 1X0.4 | 1/1 | 1.7 | 21 | 230 | 50 | 40 |
| AH 125 | 22797 | 0.5 | 1 | 1X0.5 | 1/1 | 2.2 | 27 | 230 | 50 | 40 |
| AH 150 | 22759 | 1.2 | 1 | 1X1.2 | 1/1 | 5.2 | 64 | 230 | 50 | 40 |
| AH 160 | 22798 | 1.2 | 1 | 1X1.2 | 1/1 | 5.2 | 64 | 230 | 50 | 40 |
| AH 200 | 22790 | 2.0 | 1 | 1X2,0 | 1/1 | 8.7 | 107 | 230 | 50 | 40 |
| AH 250 | 22791 | 3.0 | 1 | 2X1,5 | 2/2 | 13 | 161 | 230 | 50 | 40 |
| AH 315 | 22792 | 1.0 | 1 | 1X1,0 | 1/1 | 4.3 | 54 | 230 | 50 | 40 |
| H3-315 | 22779 | | 1 | - | - | 13 | 161 | 230 | 50 | 40 |

# SOUND ATTENUATOR

Attenuator to be installed in the ventilation system always after the fan and/or the filter box and/or the heater in the duct. Useful when a particularly low sound level is required.

- Operating temperature from - 30 °C to + 60 °C.
- Maximum operating pressure: 2000 Pa.
- Maximum air speed: 25 m/s.
- Internal pipe made with spiral of perforated aluminum sheet, 0.1 mm thick.
- PE film containment heads.
- Wool insulation, 40 mm thick basalt. Heat resistance R = 1.00 m2k/W.
- External spiral pipe in aluminum sheet, thickness 0.1 mm.

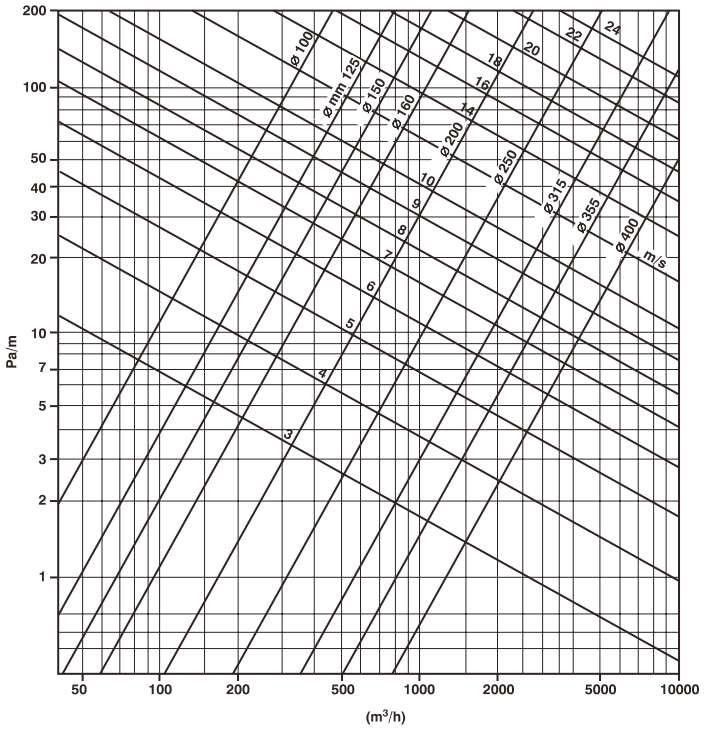
## DIMENSIONS




| | CODE | Ø | ØD | L | KG |
|---|---|---|---|---|---|
| NA 100 | 22780 | 100 | 211 | 1000 | 2 |
| NA 125 | 22781 | 125 | 241 | 1000 | 2 |
| NA 150 | 22756 | 150 | 266 | 1000 | 2 |
| NA 160 | 21425 | 260 | 160 | 1000 | 9.1 |
| NA 200 | 22784 | 200 | 316 | 1000 | 2 |
| NA 250 | 22785 | 250 | 367 | 1000 | 3 |
| NA 315 | 21428 | 415 | 315 | 1000 | 15.2 |
| NA 125/6 | 23222 | 125/6 | - | 600 | - |
| NA 160/6 | 23223 | 160/6 | - | 600 | - |

*Dimensions in mm*

### Graph to calculate pressure losses

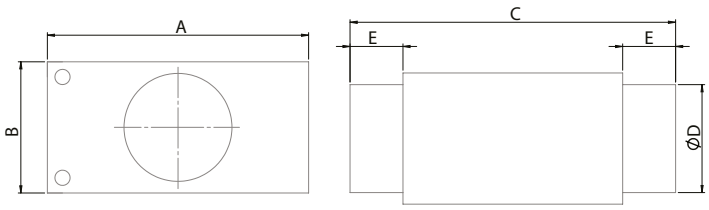


# BATTERIES
## HOT AND COLD

### HOT BATTERY

Hot water battery for duct.

## DIMENSIONS




| | CODE | A | B | C | ØD | KG |
|---|---|---|---|---|---|---|
| DHW 500 Ø 200 | 24148 | 465 | 320 | 700 | 200 | 4 |
| DHW 800 Ø 250 | 24149 | 490 | 350 | 700 | 250 | 4.5 |
| DHW 1500 Ø 315 | 24150 | 650 | 400 | 700 | 315 | 7.2 |
| DHW 3000 Ø 350 | 24151 | 900 | 530 | 700 | 350 | 10 |
| DHW 5000 Ø 450 | 24152 | 1180 | 740 | 700 | 450 | 17 |

*Dimensions in mm*

## HOT WATER BATTERY THERMAL YIELDS

**TABLE LEGEND:**

RH = Relative Humidity
Q = Air flow rate
A iT = Air inlet temp
A PΔ = Air pressure drop
A oT = Air outlet temp
Pow. = Power
W q = Water flow rate
W PV = Water pressure drops

**DHW 500 - CODE 24148**

| AIR (70% RH) | | | WATER IN/OUT 80/70 °C | | | | WATER IN/OUT 80/60°C | | | | WATER IN/OUT 60/40°C | | | | WATER IN/OUT 55/45°C | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Q | A iT | A PΔ | A Ot | Pow. | kW | W PΔ | A Ot | Pow. | W q | W PΔ | A Ot | Pow. | W q | W PΔ | A Ot | Pow. | W q | W PΔ |
| m³/h | °C | Pa | °C | kW | m³/h | kPa | °C | kW | m³/h | kPa | °C | kW | m³/h | kPa | °C | kW | m³/h | kPa |
| 430 | -15 | 8 | 5.16 | 3.31 | 0.29 | 3.00 | 2.78 | 2.92 | 0.13 | 1.00 | - 2.84 | 2.92 | 0.09 | 0.01 | - 1.90 | 2.15 | 0.19 | 1.00 |
| 430 | -10 | 8 | 9.10 | 3.08 | 0.27 | 3.00 | 6.79 | 2.71 | 0.12 | 1.00 | 1.35 | 1.83 | 0.08 | 0.01 | 2.17 | 1.96 | 0.17 | 1.00 |
| 430 | -5 | 8 | 13.04 | 2.86 | 0.25 | 2.00 | 10.75 | 2.50 | 0.11 | 1.00 | 5.54 | 1.67 | 0.07 | 0.01 | 6.23 | 1.78 | 0.15 | 1.00 |
| 430 | 0 | 7 | 16.97 | 2.51 | 0.22 | 2.00 | 14.97 | 2.21 | 0.10 | 0.01 | 9.73 | 1.44 | 0.06 | 0.01 | 11.00 | 1.62 | 0.14 | 1.00 |
| 430 | 5 | 8 | 20.91 | 2.36 | 0.20 | 2.00 | 18.80 | 2.04 | 0.09 | 0.01 | 13.53 | 1.26 | 0.05 | 0.01 | 14.36 | 1.39 | 0.12 | 1.00 |
| 430 | 10 | 8 | 24.81 | 2.24 | 0.19 | 2.00 | 22.45 | 1.88 | 0.08 | 0.01 | 16.86 | 1.04 | 0.05 | 0.01 | 18.42 | 1.27 | 0.11 | 1.00 |

**DHW 800 - CODE 24149**

| AIR (70% RH) | | | WATER IN/OUT 80/70 °C | | | | WATER IN/OUT 80/60°C | | | | WATER IN/OUT 60/40°C | | | | WATER IN/OUT 55/45°C | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Q | A iT | A PΔ | A Ot | Pow. | kW | W PΔ | A Ot | Pow. | W q | W PΔ | A Ot | Pow. | W q | W PΔ | A Ot | Pow. | W q | W PΔ |
| m³/h | °C | Pa | °C | kW | m³/h | kPa | °C | kW | m³/h | kPa | °C | kW | m³/h | kPa | °C | kW | m³/h | kPa |
| 800 | -15 | 20 | 9.01 | 7.34 | 0.631 | 16.0 | 6.51 | 6.57 | 0.283 | 4.00 | 0.57 | 4.76 | 0.205 | 2.00 | 1.60 | 5.07 | 0.436 | 8.00 |
| 800 | -10 | 20 | 12.84 | 6.85 | 0.589 | 14.0 | 10.33 | 6.10 | 0.262 | 3.00 | 4.33 | 4.30 | 0.185 | 2.00 | 5.42 | 4.62 | 0.398 | 7.00 |
| 800 | -5 | 20 | 16.63 | 6.37 | 0.548 | 12.0 | 13.04 | 5.32 | 0.229 | 3.00 | 8.06 | 3.85 | 0.166 | 1.00 | 9.23 | 4.19 | 0.361 | 6.00 |
| 800 | 0 | 18 | 20.97 | 5.76 | 0.496 | 10.0 | 18.37 | 5.05 | 0.217 | 2.00 | 12.13 | 3.33 | 0.143 | 1.00 | 13.04 | 3.58 | 0.308 | 4.00 |
| 800 | 5 | 19 | 24.10 | 5.45 | 0.469 | 9.0 | 20.91 | 4.54 | 0.195 | 2.00 | 15.29 | 2.94 | 0.126 | 1.00 | 16.63 | 3.32 | 0.286 | 4.00 |
| 800 | 10 | 19 | 27.78 | 5.00 | 0.430 | 8.0 | 24.85 | 4.17 | 0.179 | 2.00 | 19.11 | 2.56 | 0.110 | 1.00 | 20.28 | 2.89 | 0.248 | 3.00 |

# BATTERIES
## HOT AND COLD

## HOT WATER BATTERY THERMAL YIELDS

**TABLE LEGEND:**

RH = Relative Humidity
Q = Air flow rate
A iT = Air inlet temp
A PΔ = Air pressure drop
A oT = Air outlet temp
Pow. = Power
W q = Water flow rate
W PV = Water pressure drops

### DHW 1500 - CODE 24150

| AIR (70% RH) | | | WATER IN/OUT 80/70 °C | | | | WATER IN/OUT 80/60°C | | | | WATER IN/OUT 60/40°C | | | | WATER IN/OUT 55/45°C | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Q | A iT | A PΔ | A Ot | Pow. | kW | W PΔ | A Ot | Pow. | W q | W PΔ | A Ot | Pow. | W q | W PΔ | A Ot | Pow. | W q | W PΔ |
| m³/h | °C | Pa | °C | kW | m³/h | kPa | °C | kW | m³/h | kPa | °C | kW | m³/h | kPa | °C | kW | m³/h | kPa |
| 1200 | -15 | 14 | 12.16 | 12.45 | 1.07 | 18.00 | 9.37 | 11.17 | 0.48 | 4.00 | 2.63 | 8.08 | 0.35 | 2.00 | 3.35 | 8.41 | 0.72 | 9.00 |
| 1200 | -10 | 13 | 15.85 | 11.63 | 1.00 | 16.00 | 13.01 | 10.36 | 0.45 | 4.00 | 6.23 | 7.30 | 0.31 | 2.00 | 7.04 | 7.67 | 0.59 | 7.00 |
| 1200 | -5 | 13 | 19.41 | 10.79 | 0.93 | 14.00 | 16.63 | 9.56 | 0.41 | 3.00 | 9.80 | 6.45 | 0.28 | 2.00 | 10.73 | 6.95 | 0.60 | 6.00 |
| 1200 | 0 | 13 | 22.97 | 9.88 | 0.85 | 12.00 | 20.31 | 8.73 | 0.38 | 3.00 | 12.73 | 5.47 | 0.24 | 1.00 | 14.42 | 6.20 | 0.53 | 5.00 |
| 1200 | 5 | 13 | 26.54 | 9.22 | 0.79 | 10.00 | 22.79 | 7.61 | 0.33 | 2.00 | 16.67 | 5.00 | 0.22 | 1.00 | 18.11 | 5.61 | 0.48 | 4.00 |
| 1200 | 10 | 13 | 30.10 | 8.47 | 0.73 | 9.00 | 26.60 | 7.00 | 0.30 | 2.00 | 20.30 | 4.34 | 0.19 | 1.00 | 21.63 | 4.90 | 0.42 | 3.00 |
| 1800 | -15 | 26 | 6.88 | 15.04 | 1.29 | 25.00 | 4.50 | 13.41 | 0.58 | 6.00 | - 0.96 | 9.65 | 0.42 | 3.00 | - 0.15 | 10.21 | 0.88 | 12.00 |
| 1800 | -10 | 26 | 10.78 | 14.03 | 1.21 | 22.00 | 8.42 | 12.43 | 0.54 | 5.00 | 2.96 | 8.75 | 0.38 | 3.00 | 3.79 | 9.31 | 0.80 | 11.00 |
| 1800 | -5 | 26 | 14.68 | 13.05 | 1.12 | 19.00 | 12.34 | 11.49 | 0.49 | 4.00 | 6.80 | 7.83 | 0.34 | 2.00 | 7.73 | 8.44 | 0.73 | 9.00 |
| 1800 | 0 | 25 | 18.67 | 12.04 | 1.04 | 17.00 | 16.27 | 10.50 | 0.45 | 4.00 | 10.70 | 6.90 | 0.30 | 2.00 | 11.67 | 7.53 | 0.65 | 7.00 |
| 1800 | 5 | 25 | 22.40 | 11.17 | 0.96 | 15.00 | 20.01 | 9.64 | 0.41 | 3.00 | 13.92 | 5.73 | 0.25 | 1.00 | 15.55 | 6.78 | 0.58 | 6.00 |
| 1800 | 10 | 17 | 26.21 | 10.24 | 0.88 | 12.00 | 23.10 | 8.28 | 0.36 | 2.00 | 18.11 | 5.12 | 0.22 | 1.00 | 19.32 | 5.89 | 0.51 | 5.00 |

### DHW 3000 - CODE 24151

| AIR (70% RH) | | | WATER IN/OUT 80/70 °C | | | | WATER IN/OUT 80/60°C | | | | WATER IN/OUT 60/40°C | | | | WATER IN/OUT 55/45°C | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Q | A iT | A PΔ | A Ot | Pow. | kW | W PΔ | A Ot | Pow. | W q | W PΔ | A Ot | Pow. | W q | W PΔ | A Ot | Pow. | W q | W PΔ |
| m³/h | °C | Pa | °C | kW | m³/h | kPa | °C | kW | m³/h | kPa | °C | kW | m³/h | kPa | °C | kW | m³/h | kPa |
| 2500 | -15 | 16 | 9.91 | 23.78 | 2.05 | 28.00 | 7.53 | 21.52 | 0.93 | 7.00 | 2.21 | 16.43 | 0.71 | 4.00 | 3.30 | 17.47 | 1.50 | 16.00 |
| 2500 | -10 | 16 | 14.78 | 23.33 | 2.00 | 27.00 | 11.35 | 20.01 | 0.86 | 6.00 | 5.86 | 14.87 | 0.64 | 4.00 | 6.69 | 15.90 | 1.37 | 14.00 |
| 2500 | -5 | 16 | 18.50 | 21.64 | 1.86 | 24.00 | 15.16 | 18.57 | 0.80 | 5.00 | 8.79 | 12.70 | 0.55 | 3.00 | 10.60 | 14.37 | 1.24 | 12.00 |
| 2500 | 0 | 15 | 22.27 | 19.95 | 1.72 | 21.00 | 18.97 | 17.00 | 0.73 | 5.00 | 12.73 | 11.40 | 0.49 | 2.00 | 14.28 | 12.79 | 1.10 | 9.00 |
| 2500 | 5 | 15 | 25.74 | 18.50 | 1.59 | 18.00 | 22.79 | 15.86 | 0.68 | 4.00 | 16.67 | 10.41 | 0.45 | 2.00 | 17.76 | 11.38 | 0.98 | 8.00 |
| 2500 | 10 | 15 | 29.32 | 16.97 | 1.46 | 16.00 | 26.60 | 14.59 | 0.63 | 3.00 | 20.20 | 8.97 | 0.39 | 1.00 | 21.29 | 9.92 | 0.85 | 6.00 |
| 3000 | -15 | 22 | 7.53 | 25.82 | 2.22 | 33.00 | 5.16 | 23.10 | 0.99 | 8.00 | 0.54 | 17.81 | 0.77 | 5.00 | 1.56 | 18.98 | 1.63 | 19.00 |
| 3000 | -10 | 21 | 11.35 | 24.01 | 2.07 | 29.00 | 9.10 | 21.48 | 0.92 | 7.00 | 4.36 | 16.15 | 0.69 | 4.00 | 5.37 | 17.30 | 1.49 | 16.00 |
| 3000 | -5 | 21 | 16.31 | 23.56 | 2.03 | 28.00 | 13.04 | 19.93 | 0.86 | 6.00 | 8.10 | 14.48 | 0.62 | 3.00 | 9.12 | 15.60 | 1.34 | 13.00 |
| 3000 | 0 | 20 | 20.22 | 21.73 | 1.87 | 24.00 | 16.97 | 18.25 | 0.79 | 5.00 | 11.23 | 12.07 | 0.52 | 2.00 | 12.94 | 13.91 | 1.20 | 11.00 |
| 3000 | 5 | 20 | 23.82 | 20.14 | 1.73 | 20.00 | 20.91 | 17.03 | 0.73 | 5.00 | 15.29 | 11.02 | 0.47 | 2.00 | 16.55 | 12.36 | 1.06 | 9.00 |
| 3000 | 10 | 18 | 27.57 | 18.85 | 1.59 | 18.00 | 24.85 | 15.64 | 0.67 | 4.00 | 19.23 | 9.72 | 0.42 | 2.00 | 20.25 | 10.79 | 0.93 | 7.00 |

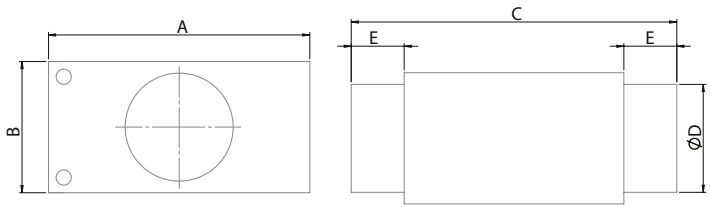
### DHW 5000 - CODE 24152

| AIR (70% RH) | | | WATER IN/OUT 80/70 °C | | | | WATER IN/OUT 80/60°C | | | | WATER IN/OUT 60/40°C | | | | WATER IN/OUT 55/45°C | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Q | A iT | A PΔ | A Ot | Pow. | kW | W PΔ | A Ot | Pow. | W q | W PΔ | A Ot | Pow. | W q | W PΔ | A Ot | Pow. | W q | W PΔ |
| m³/h | °C | Pa | °C | kW | m³/h | kPa | °C | kW | m³/h | kPa | °C | kW | m³/h | kPa | °C | kW | m³/h | kPa |
| 4000 | -15 | 12 | 13.89 | 44.13 | 3.80 | 23.00 | 11.15 | 39.96 | 1.72 | 6.00 | 4.13 | 29.22 | 1.26 | 3.00 | 5.10 | 30.71 | 2.64 | 12.00 |
| 4000 | -10 | 11 | 17.48 | 41.21 | 3.54 | 21.00 | 13.60 | 35.39 | 1.52 | 5.00 | 7.64 | 24.46 | 1.14 | 3.00 | 8.67 | 28.00 | 2.41 | 10.00 |
| 4000 | -5 | 11 | 21.04 | 38.38 | 3.30 | 18.00 | 17.29 | 32.84 | 1.41 | 4.00 | 10.42 | 22.72 | 0.98 | 2.00 | 12.23 | 25.39 | 2.18 | 9.00 |
| 4000 | 0 | 11 | 24.67 | 35.37 | 3.04 | 16.00 | 20.97 | 30.06 | 1.29 | 3.00 | 14.23 | 20.40 | 0.88 | 2.00 | 15.79 | 22.64 | 1.95 | 7.00 |
| 4000 | 5 | 11 | 27.99 | 32.80 | 2.82 | 14.00 | 24.66 | 28.06 | 1.21 | 3.00 | 17.97 | 18.51 | 0.80 | 1.00 | 19.14 | 20.19 | 1.74 | 6.00 |
| 4000 | 10 | 11 | 31.41 | 30.11 | 2.59 | 12.00 | 28.35 | 25.81 | 1.11 | 3.00 | 21.33 | 15.93 | 0.69 | 1.00 | 22.52 | 17.61 | 1.52 | 5.00 |
| 5000 | -15 | 17 | 9.91 | 47.57 | 4.09 | 27.00 | 7.05 | 43.03 | 1.85 | 6.00 | 1.98 | 32.44 | 1.40 | 4.00 | 3.08 | 34.53 | 2.97 | 15.00 |
| 5000 | -10 | 16 | 13.60 | 44.24 | 3.81 | 23.00 | 11.35 | 40.02 | 1.71 | 6.00 | 4.85 | 27.85 | 1.20 | 3.00 | 6.67 | 31.42 | 2.70 | 13.00 |
| 5000 | -5 | 16 | 17.29 | 41.05 | 3.53 | 20.00 | 15.16 | 37.13 | 1.60 | 5.00 | 8.79 | 25.40 | 1.09 | 3.00 | 10.41 | 28.39 | 2.44 | 11.00 |
| 5000 | 0 | 16 | 22.02 | 39.46 | 3.39 | 19.00 | 18.97 | 33.99 | 1.46 | 4.00 | 12.73 | 22.81 | 0.98 | 2.00 | 14.11 | 25.28 | 2.17 | 9.00 |
| 5000 | 5 | 16 | 24.66 | 35.07 | 3.02 | 15.00 | 22.79 | 31.73 | 1.36 | 4.00 | 16.50 | 20.51 | 0.88 | 2.00 | 17.60 | 22.48 | 1.93 | 7.00 |
| 5000 | 10 | 15 | 28.55 | 32.22 | 2.77 | 13.00 | 26.56 | 29.07 | 1.25 | 3.00 | 20.07 | 17.67 | 0.76 | 1.00 | 20.67 | 18.47 | 1.61 | 5.00 |
| 5800 | -15 | 21 | 8.78 | 52.68 | 4.53 | 32.00 | 6.46 | 47.55 | 2.05 | 8.00 | 0.63 | 34.63 | 1.49 | 4.00 | 1.60 | 36.78 | 3.16 | 17.00 |
| 5800 | -10 | 21 | 12.64 | 49.24 | 4.24 | 28.00 | 10.28 | 44.10 | 1.89 | 7.00 | 4.42 | 31.35 | 1.35 | 4.00 | 5.42 | 33.53 | 2.88 | 14.00 |
| 5800 | -5 | 20 | 16.44 | 45.80 | 3.94 | 25.00 | 13.04 | 38.54 | 1.66 | 6.00 | 8.18 | 28.17 | 1.21 | 3.00 | 9.22 | 30.39 | 2.61 | 12.00 |
| 5800 | 0 | 20 | 20.35 | 42.29 | 3.64 | 22.00 | 16.97 | 35.28 | 1.52 | 5.00 | 11.23 | 23.34 | 1.00 | 2.00 | 13.01 | 27.04 | 2.33 | 10.00 |
| 5800 | 5 | 20 | 23.96 | 39.23 | 3.37 | 19.00 | 20.91 | 32.92 | 1.42 | 4.00 | 15.29 | 21.30 | 0.92 | 2.00 | 16.63 | 24.07 | 2.07 | 8.00 |
| 5800 | 10 | 20 | 27.68 | 36.00 | 3.10 | 16.00 | 24.85 | 30.25 | 1.30 | 3.00 | 19.27 | 18.87 | 0.81 | 1.00 | 20.30 | 20.98 | 1.81 | 6.00 |

# COLD BATTERY

Attenuator to be installed in the ventilation system always after the fan and/or the filter box and/or the heater in the duct. Useful when a particularly low sound level is required.

## DIMENSIONS




| | CODE | A | B | C | ØD | E | KG |
|---|---|---|---|---|---|---|---|
| DCW 250 Ø 150 | 24146 | - | - | - | 150 | - | - |
| DCW 500 Ø 200 | 24153 | 465 | 320 | 700 | 200 | 150 | 8.5 |
| DCW 800 Ø 250 | 24154 | 520 | 350 | 700 | 250 | 150 | 10.8 |
| DCW 1500 Ø 315 | 24155 | 655 | 405 | 700 | 315 | 150 | 18 |
| DCW 3000 Ø 350 | 24156 | 900 | 540 | 700 | 350 | 150 | 23.4 |
| DCW 5000 Ø 450 | 24157 | 1250 | 740 | 700 | 450 | 150 | 43 |

*Dimensions in mm*

## THERMAL YIELDS OF COLD WATER BATTERY

**TABLE LEGEND:**

RH = Relative Humidity
Q = Air flow rate
A iT = Air inlet temp
A PΔ = Air pressure drop
A oT = Air outlet temp
Pow. = Power
W q = Water flow rate
W PV = Water pressure drops

### DCW 250 - CODE 24146

**AIR (80% RH)**

| Q m³/ h | A iT °C | A PΔ Pa |
|---|---|---|
| 300 | 25 | 38 |
| 300 | 30 | 43 |
| 250 | 25 | 28 |
| 250 | 30 | 32 |
| 200 | 25 | 20 |
| 200 | 30 | 23 |
| 150 | 25 | 13 |
| 150 | 30 | 15 |
| 100 | 25 | 6 |
| 100 | 30 | 8 |

**WATER IN/OUT 7/12°C**

| A Ot °C | Pow kW | kW m³/ h | W PΔ kPa | condensate l/h |
|---|---|---|---|---|
| 17.1 | 1.84 | 0.32 | 18.6 | 1.5 |
| 19.9 | 2.65 | 0.45 | 35.7 | 2.4 |
| 16.6 | 1.65 | 0.28 | 14.5 | 1.4 |
| 19.2 | 2.38 | 0.41 | 29.8 | 2.1 |
| 16.0 | 1.40 | 0.24 | 10.8 | 1.2 |
| 18.5 | 2.05 | 0.35 | 22.1 | 1.8 |
| 15.2 | 1.16 | 0.20 | 7.7 | 0.9 |
| 17.4 | 1.69 | 0.29 | 15.5 | 1.5 |
| 14.0 | 0.86 | 0.15 | 4.5 | 0.7 |
| 16.0 | 1.26 | 0.22 | 9.2 | 1.2 |

**WATER IN/OUT 55/45 °C**

| A Ot °C | Pow kW | W q m³/ h | W PΔ kPa | condensate l/h |
|---|---|---|---|---|
| 20.9 | 0.90 | 0.16 | 4.9 | 0.7 |
| 23.6 | 1.74 | 0.30 | 16.2 | 1.6 |
| 20.6 | 0.79 | 0.16 | 3.8 | 0.6 |
| 23.3 | 1.54 | 0.30 | 13.2 | 1.4 |
| 20.4 | 0.67 | 0.14 | 2.9 | 0.5 |
| 22.6 | 1.34 | 0.27 | 9.8 | 1.2 |
| 19.9 | 0.54 | 0.12 | 1.7 | 0.4 |
| 21.9 | 1.10 | 0.23 | 6.8 | 1.0 |
| 19.3 | 0.39 | 0.07 | 1.1 | 0.3 |
| 20.9 | 0.82 | 0.14 | 3.8 | 0.7 |

### DCW 500 - CODE 24153

**AIR (50% RH)**

| Q m³/h | A iT °C | A PΔ Pa |
|---|---|---|
| 430 | 25 | 30 |
| 430 | 30 | 34 |
| 430 | 35 | 34 |

**WATER IN/OUT 7/12°C**

| A Ot °C | Pow. kW | kW m³/h | W PΔ kPa |
|---|---|---|---|
| 16.54 | 1.48 | 0.26 | 3.00 |
| 19.04 | 2.51 | 0.43 | 7.00 |
| 21.46 | 3.83 | 0.66 | 14.00 |

**AIR (70% RH)**

| W °m³/ h | A iT °C | A PΔ Pa |
|---|---|---|
| 430 | -10 | 24 |
| 430 | 0 | 21 |
| 430 | 10 | 22 |

**AIR (70% RH)**

| A Ot °C | Pow. kW | W q m³/h | W PΔ kPa |
|---|---|---|---|
| 25.85 | 5.78 | 0.25 | 2.00 |
| 30.62 | 4.52 | 0.19 | 1.00 |
| 34.36 | 3.68 | 0.18 | 1.00 |

**WATER IN/OUT 55/45 °C**

| A Ot °C | Pow. kW | W q m³/h | W PΔ kPa |
|---|---|---|---|
| 26.54 | 5.89 | 0.51 | 7.00 |
| 31.71 | 4.68 | 0.40 | 5.00 |
| 34.96 | 3.77 | 0.32 | 3.00 |

## THERMAL YIELDS OF COLD WATER BATTERY

**TABLE LEGEND:**

RH = Relative Humidity
Q = Air flow rate
A iT = Air inlet temp
A PΔ = Air pressure drop
A oT = Air outlet temp
Pow. = Power
W q = Water flow rate
W PV = Water pressure drops

### DCW 800 - CODE 24154

| AIR (50% RH) | | | WATER IN/OUT 7/12°C | | | | AIR (70% RH) | | | AIR (70% RH) | | | | WATER IN/OUT 55/45 °C | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Q | A iT | A PΔ | A Ot | Pow. | kW | W PΔ | W | A iT | A PΔ | A Ot | Pow. | W q | W PΔ | A Ot | Pow. | W q | W PΔ |
| m³/h | °C | Pa | °C | kW | m³/h | kPa | °m³/ h | °C | Pa | °C | kW | m³/h | kPa | °C | kW | m³/h | kPa |
| 800 | 25 | 47 | 16.96 | 2.64 | 0.45 | 9.00 | 800 | -10 | 36 | 24.10 | 10.23 | 0.44 | 7.00 | 24.92 | 10.47 | 0.90 | 0.90 |
| 800 | 30 | 52 | 19.63 | 4.44 | 0.76 | 22.00 | 800 | 0 | 32 | 29.12 | 8.00 | 0.34 | 4.00 | 29.43 | 8.43 | 0.73 | 0.73 |
| 800 | 35 | 53 | 22.31 | 6.68 | 1.15 | 45.00 | 800 | 10 | 33 | 32.86 | 6.31 | 0.27 | 3.00 | 33.67 | 6.54 | 0.56 | 0.56 |

### DCW 1500 - CODE 24155

| AIR (50% RH) | | | WATER IN/OUT 7/12°C | | | | AIR (70% RH) | | | AIR (70% RH) | | | | WATER IN/OUT 55/45 °C | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Q | A iT | A PΔ | A Ot | Pow. | kW | W PΔ | W | A iT | A PΔ | A Ot | Pow. | W q | W PΔ | A Ot | Pow. | W q | W PΔ |
| m³/h | °C | Pa | °C | kW | m³/h | kPa | °m³/ h | °C | Pa | °C | kW | m³/h | kPa | °C | kW | m³/h | kPa |
| 1200 | 25 | 46 | 16.02 | 4.36 | 0.751 | 10.00 | 1200 | -10 | 38 | 27.60 | 16.92 | 0.728 | 7.00 | 28.17 | 17.17 | 1.477 | 26.00 |
| 1200 | 30 | 49 | 18.29 | 7.27 | 1.251 | 24.00 | 1200 | 0 | 33 | 32.23 | 13.28 | 0.571 | 5.00 | 32.29 | 13.31 | 1.145 | 17.00 |
| 1200 | 35 | 48 | 20.56 | 10.79 | 1,856 | 49.00 | 1200 | 10 | 35 | 35.23 | 10.63 | 0.457 | 3.00 | 35.95 | 10.93 | 0.940 | 12.00 |
| 1800 | 25 | 94 | 17.18 | 5.48 | 0.943 | 15.00 | 1800 | -10 | 76 | 22.35 | 21.84 | 0.939 | 12.00 | 23.29 | 22.47 | 1.932 | 42.00 |
| 1800 | 30 | 102 | 19.94 | 9.05 | 1.556 | 36.00 | 1800 | 0 | 67 | 27.73 | 17.14 | 0.737 | 8.00 | 28.17 | 17.42 | 1.498 | 27.00 |
| 1800 | 35 | 100 | 22.66 | 13.48 | 2.318 | 73.00 | 1800 | 10 | 71 | 31.75 | 13.75 | 0.591 | 5.00 | 32.59 | 14.27 | 1.228 | 19.00 |

### DCW 3000 - CODE 24156

| AIR (50% RH) | | | WATER IN/OUT 7/12°C | | | | AIR (70% RH) | | | AIR (70% RH) | | | | WATER IN/OUT 55/45 °C | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Q | A iT | A PΔ | A Ot | Pow. | kW | W PΔ | W | A iT | A PΔ | A Ot | Pow. | W q | W PΔ | A Ot | Pow. | W q | W PΔ |
| m³/h | °C | Pa | °C | kW | m³/h | kPa | °m³/ h | °C | Pa | °C | kW | m³/h | kPa | °C | kW | m³/h | kPa |
| 2500 | 25 | 59 | 16.74 | 8.29 | 1.43 | 4.00 | 2500 | -10 | 45 | 26.67 | 29.16 | 1.25 | 2.00 | 28.51 | 30.86 | 2.65 | 9.00 |
| 2500 | 30 | 66 | 19.35 | 13.98 | 2.41 | 10.00 | 2500 | 0 | 41 | 29.23 | 25.10 | 1.08 | 2.00 | 30.92 | 26.55 | 2.28 | 7.00 |
| 2500 | 35 | 67 | 21.92 | 21.26 | 3.66 | 21.00 | 2500 | 10 | 42 | 33.11 | 19.94 | 0.86 | 1.00 | 34.17 | 20.86 | 1.79 | 5.00 |
| 3000 | 25 | 81 | 17.25 | 9.17 | 1.58 | 5.00 | 3000 | -10 | 62 | 25.04 | 33.20 | 1.43 | 3.00 | 25.73 | 33.96 | 2.92 | 11.00 |
| 3000 | 30 | 92 | 20.07 | 15.36 | 2.64 | 12.00 | 3000 | 0 | 56 | 27.73 | 28.57 | 1.23 | 2.00 | 29.20 | 30.09 | 2.59 | 9.00 |
| 3000 | 35 | 94 | 22.84 | 23.41 | 4.03 | 24.00 | 3000 | 10 | 57 | 31.86 | 22.64 | 0.97 | 2.00 | 33.05 | 23.87 | 2.05 | 6.00 |

### DCW 5000 - CODE 24157

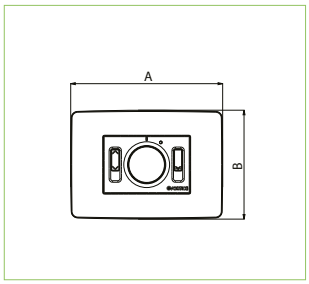
| AIR (50% RH) | | | WATER IN/OUT 7/12°C | | | | AIR (70% RH) | | | AIR (70% RH) | | | | WATER IN/OUT 55/45 °C | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Q | A iT | A PΔ | A Ot | Pow. | kW | W PΔ | W | A iT | A PΔ | A Ot | Pow. | W q | W PΔ | A Ot | Pow. | W q | W PΔ |
| m³/h | °C | Pa | °C | kW | m³/h | kPa | °m³/ h | °C | Pa | °C | kW | m³/h | kPa | °C | kW | m³/h | kPa |
| 4000 | 25 | 34 | 15.48 | 16.25 | 2.80 | 7.00 | 4000 | -10 | 27 | 30.49 | 60.73 | 2.61 | 5.00 | 30.95 | 61.43 | 5.28 | 18.00 |
| 4000 | 30 | 37 | 17.64 | 27.27 | 4.69 | 18.00 | 4000 | 0 | 23 | 33.73 | 46.34 | 1.99 | 3.00 | 34.91 | 47.96 | 4.12 | 12.00 |
| 4000 | 35 | 37 | 19.80 | 40.81 | 7.02 | 38.00 | 4000 | 10 | 25 | 38.86 | 37.72 | 1.62 | 2.00 | 37.55 | 38.69 | 3.33 | 8.00 |
| 5000 | 25 | 51 | 16.16 | 18.45 | 3.17 | 9.00 | 5000 | -10 | 39 | 27.60 | 70.50 | 3.03 | 7.00 | 28.17 | 71.56 | 6.15 | 24.00 |
| 5000 | 30 | 55 | 18.57 | 30.97 | 5.33 | 23.00 | 5000 | 0 | 34 | 32.07 | 55.08 | 2.37 | 4.00 | 32.29 | 55.46 | 4.77 | 15.00 |
| 5000 | 35 | 56 | 21.00 | 46.41 | 7.98 | 47.00 | 5000 | 10 | 36 | 35.11 | 44.08 | 1.90 | 3.00 | 35.30 | 44.41 | 3.82 | 10.00 |
| 6000 | 25 | 66 | 16.60 | 20.06 | 3.45 | 11.00 | 6000 | -10 | 51 | 25.80 | 77.86 | 3.35 | 8.00 | 26.45 | 79.27 | 6.82 | 29.00 |
| 6000 | 30 | 73 | 19.18 | 33.61 | 5.78 | 27.00 | 6000 | 0 | 44 | 30.50 | 60.76 | 2.61 | 5.00 | 30.92 | 61.60 | 5.30 | 18.00 |
| 6000 | 35 | 73 | 21.80 | 50.28 | 8.65 | 54.00 | 6000 | 10 | 46 | 33.98 | 48.02 | 2.07 | 3.00 | 34.17 | 48.40 | 4.16 | 12.00 |

## NOTES

# REGULATORS AND CONTROLLERS

## REGULATORS

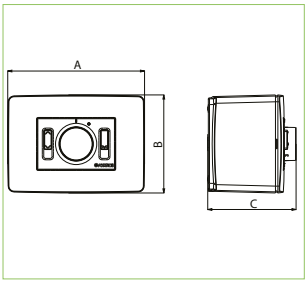
Control box




| | CODE | A | B |
|---|---|---|---|
| HRW RC | 22693 | 116 | 83 |

*Dimensions in mm*

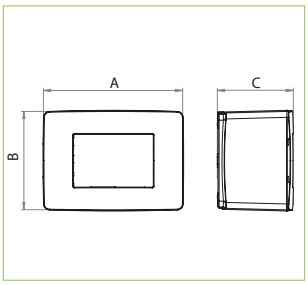
Control unit for VORT HRI MINI.
Single phase power supply 220-240 V / 50-60 Hz.
Wall and recessed installation in a standard UNI 503 electrical box.
Functions: On/Off, speed selection (3 alternatives), by-pass On/Off selection, saturated filter signal.




| | CODE | A | B | C |
|---|---|---|---|---|
| HRI MINI CB | 12868 | 116 | 83 | 75 |

*Dimensions in mm*

Remote control unit with wired LCD panel, for recessed installation.




| | CODE | A | B | C |
|---|---|---|---|---|
| CB LCD R | 21194 | 116 | 83 | 29 |

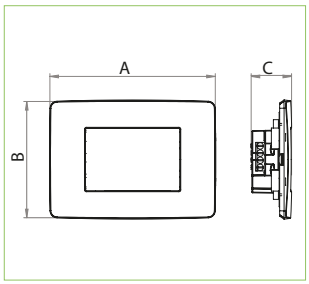
*Dimensions in mm*

Wall box for housing the control unit.

| | CODE |
|---|---|
| WALL BOX HRW RC | 22732 |

*Dimensions in mm*

Remote control unit with wired LCD panel, for wall installation.




| | CODE | A | B | C |
|---|---|---|---|---|
| CB LCD W | 21195 | 116 | 83 | 65 |

*Dimensions in mm*

Recessed box type 503 for housing the control unit.

| | CODE |
|---|---|
| BUILT IN BOX TYPE 503 | 22461 |

*Dimensions in mm*

## REGULATORS

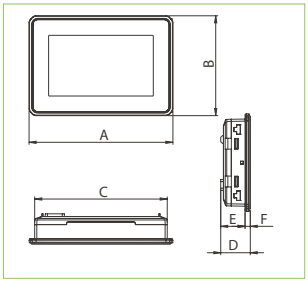
Installer panel.

| | CODE |
|---|---|
| SKP10 INSTALLER PANEL | 22629 |

Radio frequency remote control with large display is the only command/control instrument of VORT PROMETEO PLUS HR 400; each function is activated, regulated and monitored through it.

| | CODE |
|---|---|
| VORT HR 400 PLUS REMOTE CONTROL | 22464 |

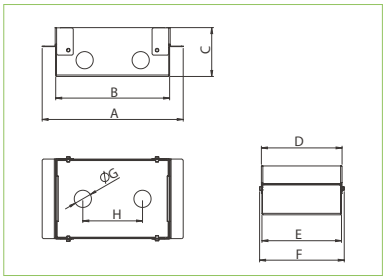
Wired remote control unit (maximum distance from the unit 150 m) with color LCD touch display for VORT HR 550 AVEL heat recovery unit. Wall or recessed installation in SI TNF box.




| | CODE | A | B | C | D | E | F |
|---|---|---|---|---|---|---|---|
| TNF | 21603 | 134 | 93 | 123.5 | 28.1 | 23.1 | 5 |

*Dimensions in mm*

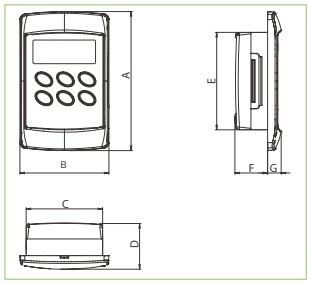
Recessed-mounting box, complete with brackets for fixing on plasterboard walls, for housing the TNF remote control panel.




| | CODE | A | B | C | D | E | F | ØG | H |
|---|---|---|---|---|---|---|---|---|---|
| SI TNF | 21604 | 156 | 126 | 54 | 89.2 | 88 | 93.6 | 19 | 66 |

*Dimensions in mm*

Wired remote control unit (maximum distance from the unit 50 m) with LCD display for VORT HR 550 AVEL heat recovery unit. Vertical recessed installation in a standard 503 box. The interface, functions, keys etc. do not differ from the control unit installed on the machine.

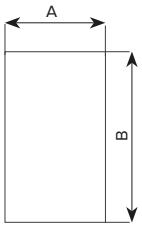



| | CODE | A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|---|---|
| TAL | 21602 | 100 | 64 | 55 | 32.8 | 70 | 23.5 | 9.7 |

*Dimensions in mm*

## REGULATORS

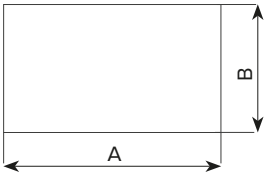
Control panel with LCD display for remote control (wired connection) of the VORT HRI DH Range heat recovery units.




| | CODE | A | B |
|---|---|---|---|
| CPR (HRI DH) | 22607 | 62 | 102 |

*Dimensions in mm*

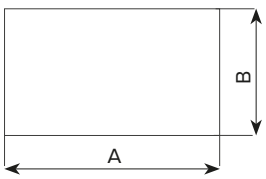
Electronic thermo-hygrostat for heat recovery units VORT HRI 260 DH and VORT HRI 500 DH. To be installed in the relevant room at a height between 1.2 and 1.5 m from the floor and at a maximum distance of 20 m from the combined heat recovery unit.




| | CODE | A | B |
|---|---|---|---|
| ETRH (HRI DH) | 22608 | 120 | 80 |

*Dimensions in mm*

Mechanical hygrostat for VORT HRI 260 DH RC and VORT HRI 500 DH RC heat recovery units. To be installed in the relevant room at a height between 1.2 and 1.5 m from the floor.



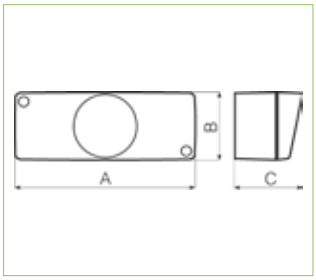

| | CODE | A | B |
|---|---|---|---|
| MTRH (HRI DH) | 22609 | 127 | 75 |

*Dimensions in mm*

## SENSORS

### TEMPERATURE DETECTOR

Controls the ambient air temperature: the fan is automatically activated when it detects an adjustable temperature with an external trimmer from 10° to 40° higher than the set threshold value.

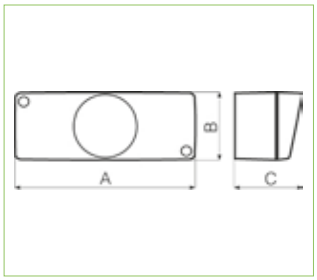



| | CODE | A | B | C |
|---|---|---|---|---|
| C TEMP | 12992 | 144 | 54 | 55.8 |

*Dimensions in mm*

### POLLUTED AIR DETECTOR

Controls the air quality in the presence of cigarette smoke, odors and other pollutants: the fan is automatically activated when it detects a concentration of odors higher than the set value adjustable with an external trimmer.

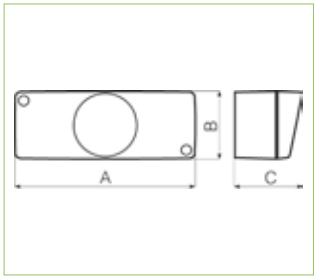



| | CODE | A | B | C |
|---|---|---|---|---|
| C SMOKE | 12993 | 144 | 54 | 55.8 |

*Dimensions in mm*

### HUMIDITY DETECTOR

Checks the relative humidity of the air: the fan is automatically activated when the percentage of relative humidity exceeds 65%.

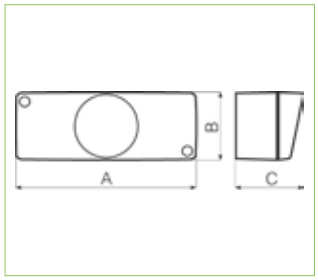



| | CODE | A | B | C |
|---|---|---|---|---|
| C HCS | 12994 | 144 | 54 | 55.8 |

*Dimensions in mm*

### PRESENCE DETECTOR

Checks for the presence of people in the environment: the fan is automatically activated when it detects the presence of a person in its range.

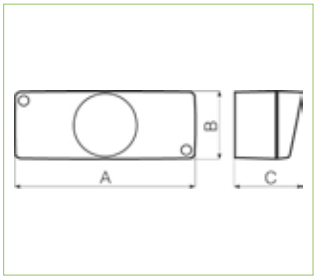



| | CODE | A | B | C |
|---|---|---|---|---|
| C PIR | 12998 | 144 | 54 | 55.8 |

*Dimensions in mm*

### TIMER

Checks the operating time of the product to which it is connected: the fan is automatically activated a few seconds after the light is turned on and continues to operate for a preset time, adjustable with an internal trimmer from 3 to 20 minutes, after the shutdown.




| | CODE | A | B | C |
|---|---|---|---|---|
| C TIMER | 12999 | 144 | 54 | 55.8 |

*Dimensions in mm*

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