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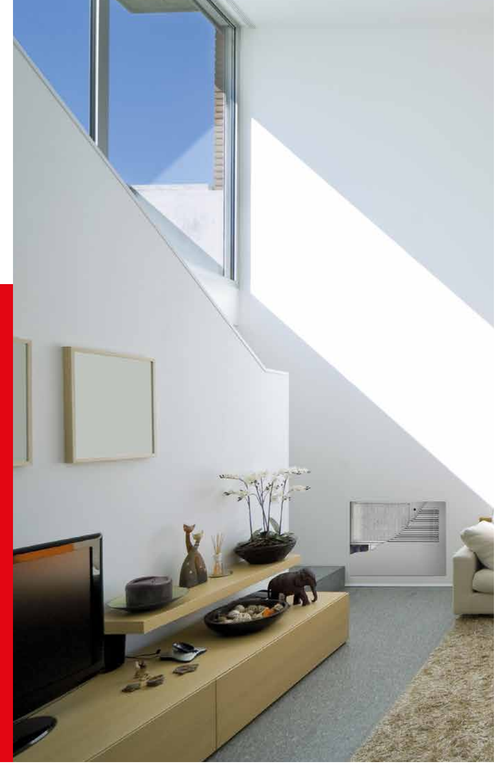

AIR TREATMENT AND RESIDENTIAL HRV

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GIACOMINI WATER E-MOTION

Radiant Systems

Catalog • Price List
05/2019 ITALY

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GIACOMINI WATER E-MOTION

Air Treatment and Residential HRV

Technical solutions for integration into radiant systems


GIACOMINI
WATER E-MOTION

CHAPTER 4

Centralized HRV: heat recuperators with dehumidification and hydronic integration

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CHAPTER 7

Pinch-point heat recuperators (decentralized HRV)

Introduction

In an ever-changing real estate market, high energy efficiency classes achieved with enhanced insulation systems are a must for modern buildings.

Modern thermal insulation techniques turn buildings into airtight containers that would be uninhabitable without proper exchange of indoor air.

Winter ventilation generally prevents the formation of mold (caused by a high percentage of humidity) and makes air healthier. In summer, on the contrary, we need more than simple air exchange to maintain relative humidity at acceptable comfort levels: the vapor produced by people inside residential units (latent load) must be disposed of through proper dehumidification systems. Air treatment (dehumidification and summer cooling) has therefore become essential in modern air conditioning systems[1].

1 - ACCORDING TO STANDARD EN ISO 7730, RELATIVE HUMIDITY SHOULD NOT EXCEED 60÷65% TO CONFER A SENSATION OF COMFORT AND GUARANTEE HEALTHY INDOOR AIR AT ALL TIMES. IN SUMMER, SANITARY AUTHORITIES GENERALLY RECOMMEND A 7-8 °C DIFFERENCE BETWEEN THE OUTDOOR AND INDOOR TEMPERATURE.

This catalog describes the technical solutions adopted by Giacomini to complete its radiant system range: ceiling and wall-mount units for controlled mechanical ventilation with heat recovery, dehumidification, cooling, all integrated in distribution systems specific for residential units.

Before describing in details the available options, below are a few definitions, typical of this topic, to better understand this catalog.

Ventilation (natural and mechanical)

Natural or mechanical ventilation provides air exchange in confined ambients. The activities carried out inside a building and its construction materials produce polluting substances on a constant basis: carbon dioxide and bioeffluents, carbon monoxide, organic vapors, breathable particles, suspended solids, formaldehyde, synthetic fibers, ozone, radon reascending from the ground. To guarantee good-quality indoor air at all times, foul air must be exchanged with cleaner fresh air from the outside: this is the principle of pollutant dilution on which most ventilation systems are based.

Natural ventilation in buildings is obtained through openings in the building structure, by exploiting the stack effect, the wind action and the temperature differences between the facades for differentiated solar radiation. Enhancing the movement of air increases its speed and cooling effects (passive cooling) in addition to renovating its pureness and freshness. Natural ventilation, combined to integrated planning of specific openings, provides a variety of disadvantages: no control of the air flow rate and quality of exchange air (potential pollutants, dust, undesired insects), potential increase of ambient noise, potential discomfort and risk of diseases caused by drafts, limited versatility, loss of thermal energy during the cold season - as the heat contained in foul air cannot be recovered - inflow of air excessively warm in summer or excessively cold in winter, housebreaking risks; a room should be ventilated every 2

2 - THE EASIEST AND MOST RENOWN WAY TO VENTILATE IS OPENING THE WINDOWS, A METHOD THAT IS MORE EFFECTIVE WHEN THE OPENINGS ARE ON OPPOSITE SIDES OF THE ROOM. GENERALLY, THE AIR FLOW RATE REQUIRED FOR AN INDIVIDUAL INSIDE A HOUSE AND CARRYING OUT A NORMAL ACTIVITY IS EQUAL TO 6 L/S (I.E. 21.6 M^3/H). OPENING AND CLOSING DOORS AND WINDOWS TO VENTILATE DOES NOT GUARANTEE THESE VALUES UNDER EVERY CLIMATE CONDITION AND, MOST OF ALL, IT DOES NOT GUARANTEE THEM IN TIME.

hours to obtain fresh air of acceptable quality, a condition unachievable both during the day and at night[2]; it is impossible to guarantee proper control of the water vapor contained in indoor air (and there is a potential risk of surface condensation leading to proliferation of mold and other bacterial growths) and prevent vapor diffusion through the containment structures (with potential interstitial condensation).

The innate drawback of natural ventilation - no flow rate control - can be solved by designing a ***mechanical ventilation*** system guaranteeing an ideal indoor air exchange, that is "controlled"[3].

These systems provide the right air flow rate through one or multiple fans in ductless installations (typical of industrial units) or duct-type installations that channel air as far as the air intake or recovery terminals. Duct-type systems are generally used in residential and commercial units, as the fans are positioned remotely with great benefits in terms of quietness. There are two types of Heat Recovery Ventilation: single-flow or dual-flow ventilation.

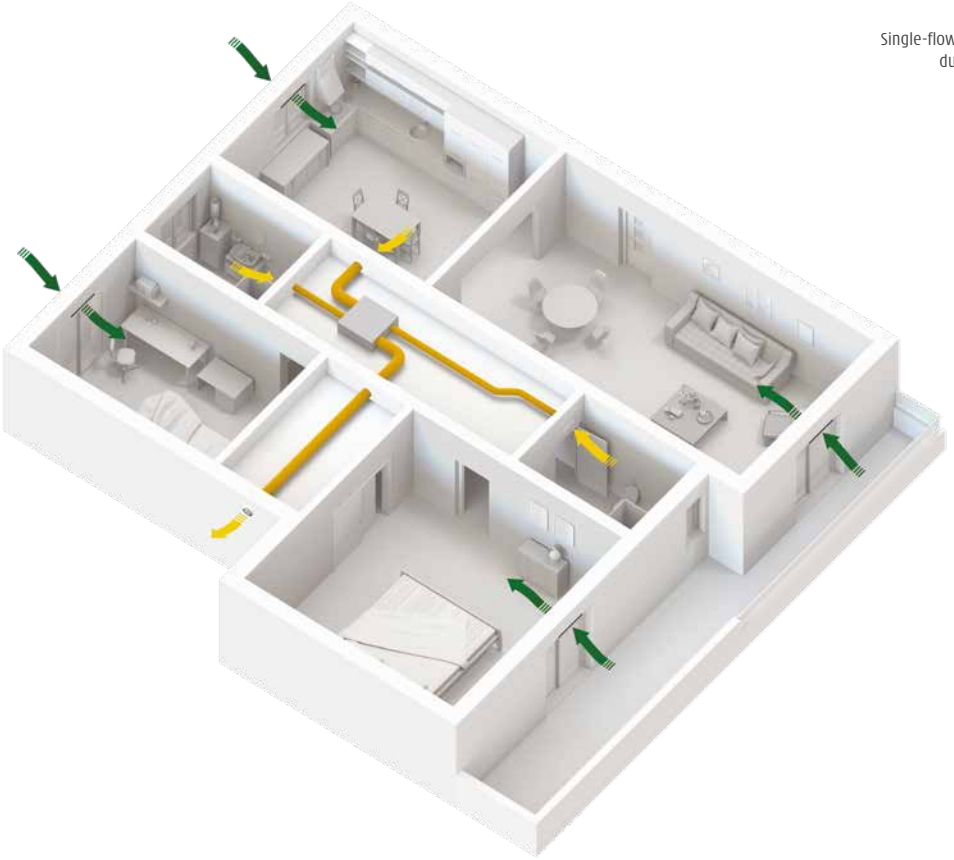
3 - BASED ON THE TYPE OF BUILDING AND ACTIVITY, THERE ARE REGULATIONS THAT SET THE AIR FLOW RATES REQUIRED TO MAINTAIN AN ACCEPTABLE AIR QUALITY.

UNI 10339:1995 "AERAULIC SYSTEMS FOR COMFORT PURPOSES. CHARACTERISTICS, CLASSIFICATION AND REQUIREMENTS"
IT PROVIDES A SYSTEM CLASSIFICATION, DEFINES THE MINIMUM REQUIREMENTS AND THE OPERATIONAL VALUES OF REFERENCE. IT APPLIES TO AERAULIC SYSTEMS DESTINED TO USERS' COMFORT, HOWEVER INSTALLED IN CLOSED RESIDENTIAL-ONLY BUILDINGS.

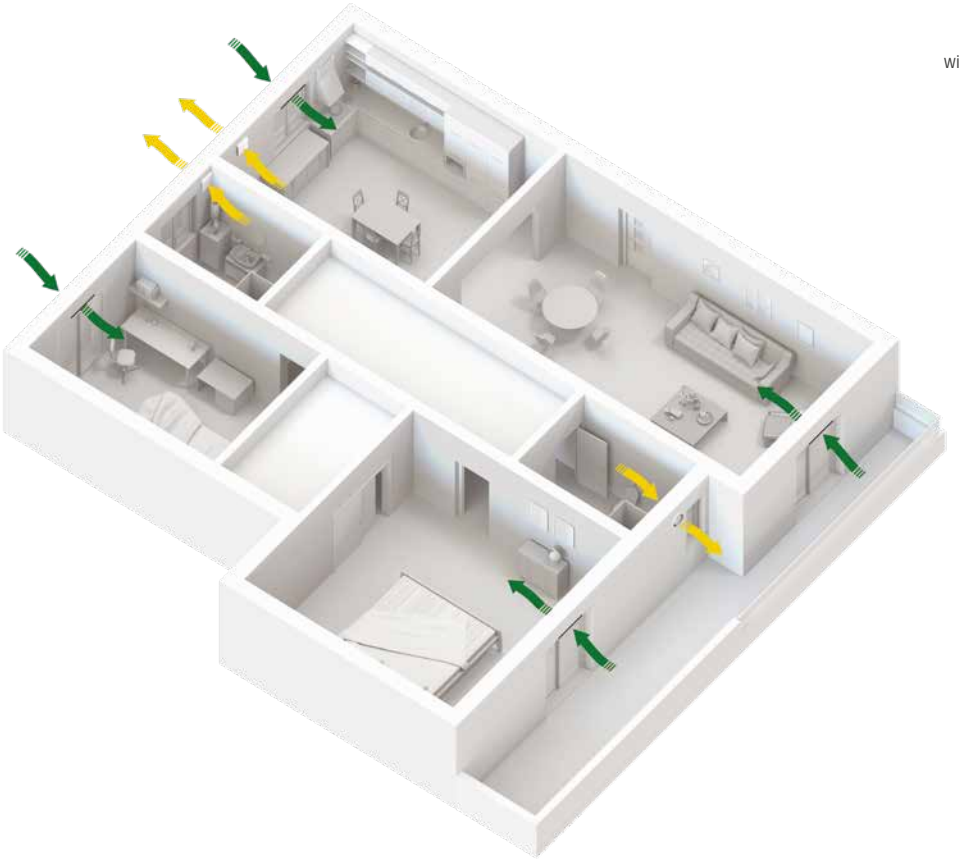
UNI EN 15251:2008 "CRITERIA FOR PLANNING INDOOR AMBIENTS AND EVALUATING THE ENERGY EFFICIENCY OF BUILDINGS BASED ON INDOOR AIR QUALITY, THERMAL AMBIENT, LIGHTING AND ACOUSTICS"
THE STANDARD APPLIES ESSENTIALLY TO NON-INDUSTRIAL BUILDINGS WHICH INDOOR CRITERIA ARE DEFINED BY HUMAN OCCUPATION AND WHERE THE PRODUCTIVE ACTIVITY OR PROCESSES HAVE NO SUBSTANTIAL IMPACT ON THE INDOOR ENVIRONMENT. IT APPLIES TO SINGLE DWELLINGS, CONDOMINIUMS, OFFICES, SCHOOLS, HOTELS AND RESTAURANTS, SPORT FACILITIES, WHOLESALE OR RETAIL TRADE BUILDINGS.

ANSI / ASHRAE STANDARD 62.1-2016 "VENTILATION FOR ACCEPTABLE INDOOR AIR QUALITY"
THE STANDARD DEFINES THE MINIMUM VENTILATION RATES, IN ADDITION TO OTHER PARAMETERS, TO GUARANTEE AN INDOOR AIR QUALITY ACCEPTABLE FOR HUMANS IN NEW AND EXISTING BUILDINGS WHILE LIMITING HAZARDOUS EFFECTS ON HEALTH.

NSI / ASHRAE STANDARD 62.2-2016 "VENTILATION AND ACCEPTABLE INDOOR AIR QUALITY IN LOW-RISE RESIDENTIAL BUILDINGS"
STANDARD 62.2 DEFINES THE ROLES AND MINIMUM REQUIREMENTS FOR MECHANICAL AND NATURAL VENTILATION SYSTEMS AS WELL AS THE BUILDING STRUCTURE THAT MUST PROVIDE ACCEPTABLE AIR QUALITY IN LOW-RISE RESIDENTIAL BUILDINGS. IT APPLIES TO SPACES FOR HUMAN OCCUPATION IN ONE-FAMILY HOUSES AND MULTI-FAMILY STRUCTURES, INCLUDING PREFABRICATED AND MODULAR HOUSES. THIS STANDARD DOES NOT APPLY TO TEMPORARY LODGINGS SUCH AS HOTELS, MOTELS, NURSING HOMES, DORMITORIES OR PRISONS.

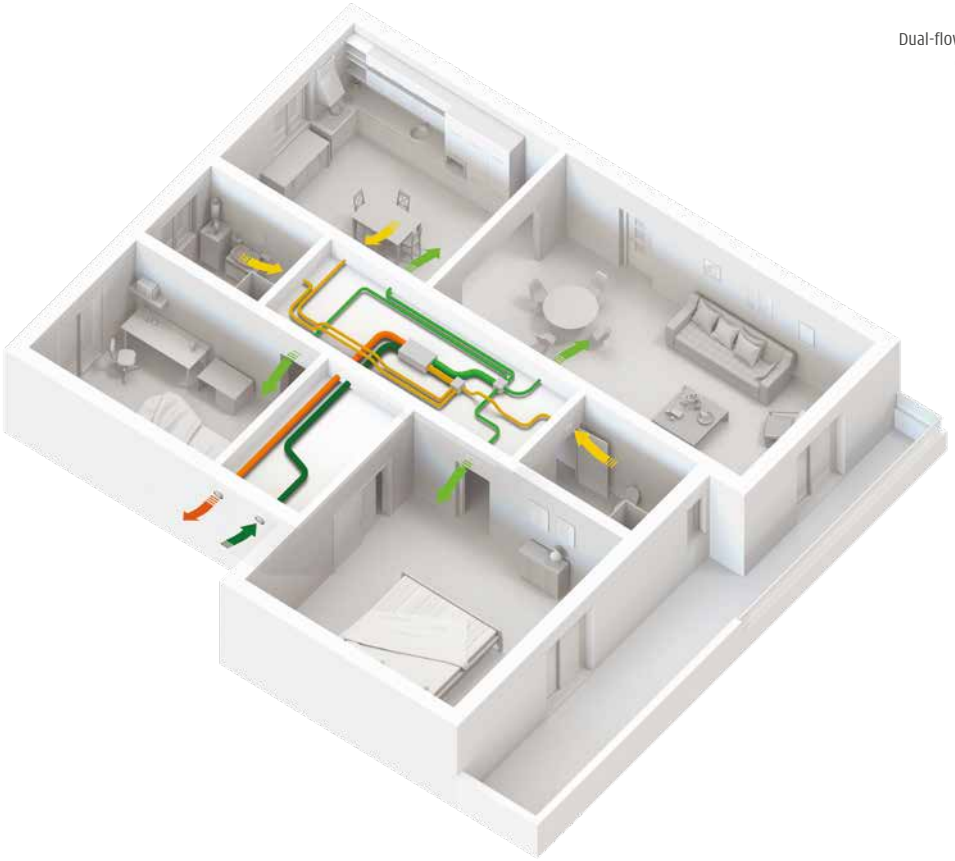


Single-flow system with extraction duct-type ventilation unit.



Single-flow system with extraction spot fans.

Alternated single-flow system with static heat recovery.



Dual-flow system with centralized extraction/exchange unit.

Single-flow or dual-flow mechanical ventilation

Single-flow HRV systems mechanically extract air from the confined ambient and channel it outside. There are various installation solutions based on the type of extraction fan: centralized units or pinch-point units.

The centralized unit is generally placed in a remote position for enhanced acoustic comfort. Intake of fresh air is provided naturally through special slits on perimetric walls or door and window frames.
In residential units, air is generally extracted from "wet" rooms (such as kitchens, bathrooms, laundry rooms) while fresh air is introduced in rooms enjoyed for longer periods, such as living rooms and bedrooms.
In administrative buildings, intake is provided in offices while extraction is performed in hallways through special grids on the ceiling connected to exhaust ducts.

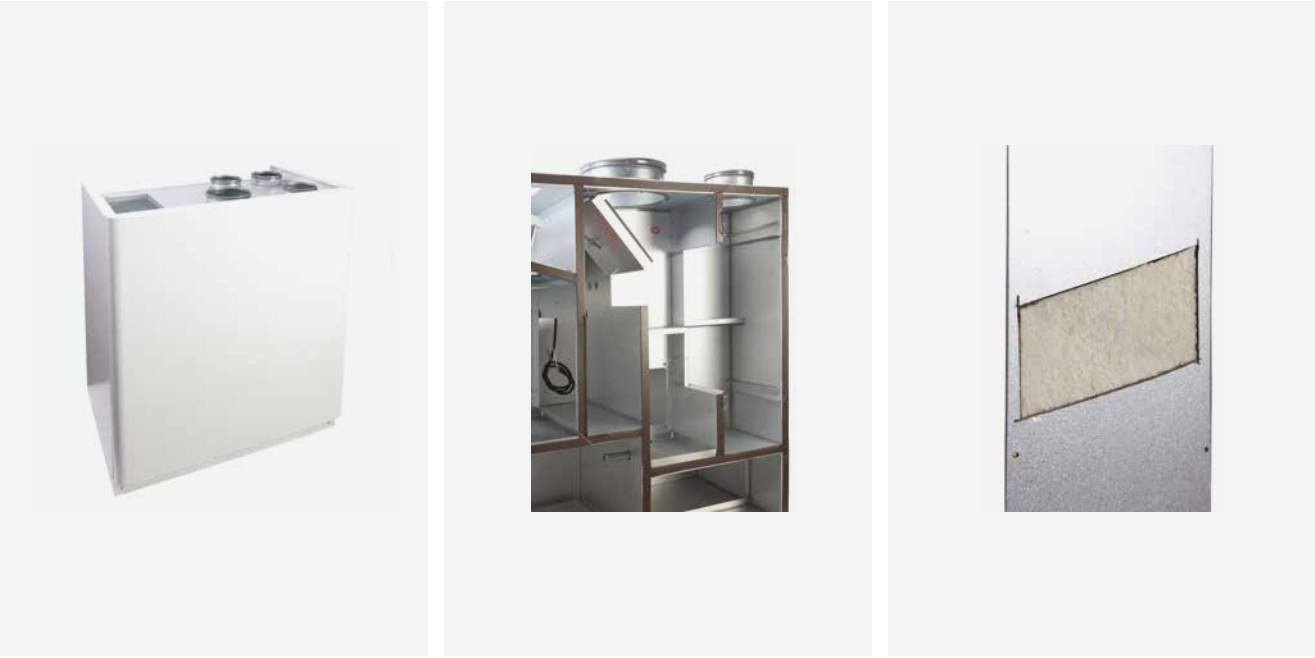
Dual-flow HRVs provide both foul-air extraction and fresh-air intake mechanically. Fresh air intake is obtained through a circuit separated from the extraction system and it consists of a dedicated fan, ducts and room diffusers.
A control system coordinates the intake and extracted air flows. Dual-flow systems can compensate energy dispersions by ventilation through heat recuperators that perform thermal exchange between inflow air and exhaust air.
The system can also treat intake air before channeling it into the room: it can be filtered, cooled down or warmed up, humidified or dehumidified (see Operational Principle page 23).

The heat recuperator

The heat recuperator is a dual-flow ventilation unit: it introduces "fresh" air while extracting foul air from the room. The two flows exchange heat inside the machine core - the exchanger - to make the warmer flow transfer its thermal energy to the colder one.
Dual-flow mechanical ventilation systems are typically installed in buildings with very low or no energy consumptions (passive houses).
The basic configuration is represented by the energy recuperator which is neither a heat generator nor an air cooler, so it must be used as an integration device in heating and/or air conditioning systems.

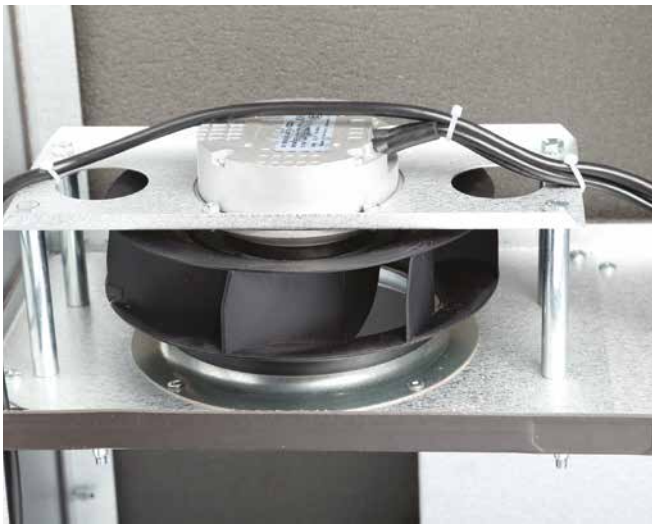
The machine consists mainly of the following components:

- ***Case***: it houses the various components and soundproofs the machine by applying an acoustic insulation. It can be made with a galvanized metal sheet or plastic materials.



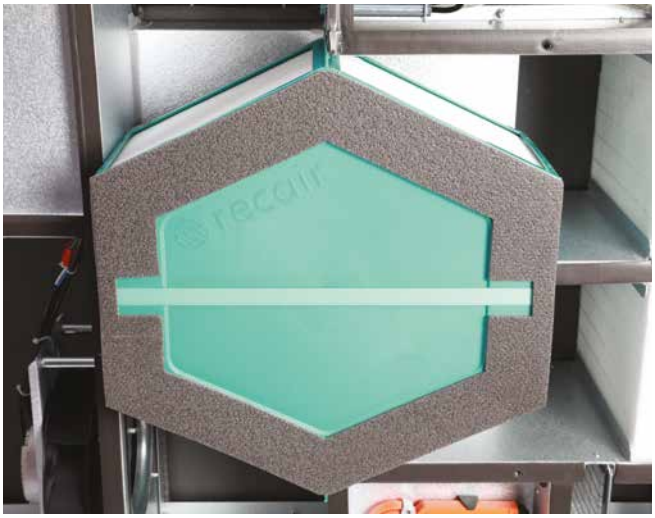
External case of KHRD-V heat recuperator, with double-wall support structure made with galvanized steel sheet and inner insulation.

- ***Fans***: these are motorized elements that force the airflows, an intake fan and an exhaust fan. Electronic commutation (EC) or brushless motors are highly efficient and as a consequence they cut down energy consumptions: an essential factor for energy recovery units that need to work continuously and must, by definition, save energy.



Fans used in heat recovery ventilation units.

Heat exchanger: this is the device that transfers heat between the airflows. Generally a standard plastic counter-current cross-flow static exchanger is used to recover sensible heat, as it is long lasting, highly efficient (over 90%) and easy to clean.



Counter-current cross-flow static exchanger for sensible heat recovery.

Enthalpy counter-current cross-flow static exchanger.

Enthalpy counter-current cross-flow exchangers provide high levels of sensible and latent energy recovery: an average of 85% of thermal energy and 65% of humidity. Its special configuration generates low losses of pressure. The internal polymeric membrane is made with anti-microbic technology: mold- and bacteria-resistant, it prevents cross-flow contamination and blocks odors. Enthalpy exchangers are easy to clean and do not require condensation draining. Enthalpy-recovery exchangers recover the humidity that would be dispersed outside reintroducing it into the room and preventing dry air in winter.

Filters: they have a dual purpose as they guarantee the quality of indoor air and protect the ventilation unit by eliminating air-dispersed elements inside single rooms. There are various filtering levels that must be guaranteed based on the use of the rooms. Of course air filtering in residential units cannot be the same of ambients where the asepsis level is essential for the users' safety (hospitals, white rooms, industrial chemical labs, electronic industries, nuclear power stations or others).

Filters are classified based on their performance. ISO ePM1 filters enable to filter inflow air. ISO Coarse filters protect the exchanger from dirt deposits that may compromise its efficiency and the ventilation motors from dust. All filters are easy to remove for maintenance and cleaning.

ISO ePM1 filters positioned inside heat recuperator.

Removal of filters for maintenance of suspended ceiling horizontal ventilation unit.

Filter performance

The International Standard Organization (ISO) has issued a new global standard, ISO 16890, that defines the classification and test procedures for air filters used in general ventilation systems. More specifically, ISO 16890 refers to air filtering elements taking into account particles with dimensions ranging between 0.3 µm and 10 µm.

The new standard, confirmed and enforced as of August 2018, replaces European regulations EN 779 and ASHRAE 52.2 (the latter more common in the US) so as to define

a sole international regulation. It provides a 4 group classification based on the filter performance with three different particulate fractions and a more specific percentage for the filter efficiency.

The new standard provides a performance classification and defines the efficiency of filtering elements for 3 particulate classes: PM10, PM2.5 and PM1. PM stands for Particulate Matter, in standard ISO 16890 PMx indicates particulates with an aerodynamic diameter between 0.3 µm and x µm.

The efficiency rate of a filter tested with a class PMx particulate is known as ePMx, it is expressed in % and defines the filter capacity of removing from a flow a mass fraction of particles included in a specific dimensional range.

EN 16890 defines an efficiency class for every dimensional range of PM10, PM2.5 and PM1 particulates.

EFFICIENCY	PARTICULATE DIMENSION – µm
ePM10	0.3 < x < 10
ePM2.5	0.3 < x < 2.5
ePM1	0.3 < x < 1

Filters that do not even reach 50% ePM10 are covered by a special group known as Coarse.

The tested filters are classified into 4 groups:

GROUP OF REFERENCE	MINIMUM REQUIREMENT	GIVEN VALUE
ISO Coarse	ePM1 min – | ePM2.5 min – | ePM10 < 50%	Initial arrestance
ISO ePM10	ePM1 min – | ePM2.5 min – | ePM10 ≥50%	ePM10
ISO ePM2.5	ePM1 min – | ePM2.5 min >50% | ePM10 –	ePM2.5
ISO ePM1	ePM1 min >50% | ePM2.5 min – | ePM10 –	ePM1

The ePM efficiency value given is rounded down to 5%, for filters part of the ISO Coarse group the ePM value can be omitted. The main differences between standard ISO 16890 and those in force so far generally concern tests that will become stricter, with a consequent improvement of Indoor Air Quality (IAQ) and the fact that finer particulate matters covered by the classification (PM1) are also the most hazardous for human health. Filters with higher efficiency rates able to block this type of particulates will contribute to improving the quality of the air we breathe.

Comparison table based on UNI EN 779:2012 and UNI EN ISO 16890:2017

GROUP	UNI EN 779:2012	UNI EN ISO 16890:2017			
Classification		Iso Coarse	ePM_{10}	$ePM_{2.5}$	ePM_{1}
Coarse	G1	40%	n/a	n/a	n/a
	G2	70%	n/a	n/a	n/a
	G3	80%	n/a	n/a	n/a
	G4	90%	n/a	n/a	n/a
Average	M5	n/a	50% to 55%	10% to 35%	5% to 20%
	M6	n/a	65% to 70%	50% to 55%	20% to 40%
Fine	F7	n/a	80% to 85%	70% to 75%	60% to 65%
	F8	n/a	90% to 95%	80% to 85%	75% to 80%
	F9	n/a	95% to 100%	90% to 95%	85% to 90%

There are a variety of filters that may be installed in Air Treatment Units, as listed below:

- cell filters
- rotary drum filters
- soft pocket filters
- rigid pocket filters
- HEPA absolute filters
- activated carbon filters

There are also innovative filtering systems such as:

- germicidal UV lamps
- electrostatic filters
- ionization systems.

Cell filters

The cell filter is the first filtering system placed upstream to actual filtering installations inside air treatment units. That is why it is also known as pre-filter. Cell filters are modular corrugated synthetic-fiber elements consisting of a galvanized steel frame and an electro-welded galvanized steel protective mesh placed on both filter sides between which the filtering material is placed to provide consistency to the package and evenness to the bend. In special applications, cell filters can be made with STAINLESS steel in place of galvanized steel. Cell filters can be partially regenerated as they can be flushed for a certain number of times, on average 10-15, with water and solvents sprayed at low pressure. They are provided as 60x60 cm modular elements with a 5 cm thickness.

Soft pocket filters

Soft pocket filters are low-cost and made with microfiber textile. The air-filtering textile is sewn so as to obtain pockets with a profile enhancing the filtering rate and the accumulation capacity. The pocket-support frame is made with galvanized steel.

Rigid pocket filters

Rigid pocket filters consist of waterproof glass-fiber paper pleated with a calibrated pitch. These filters feature low resistance to airflows and a large filtering surface, qualities that guarantee a long-lasting operational life.

HEPA absolute filters

HEPA filters (High Efficiency Particulate Air filters) are high-capacity filtering devices used in systems where maximum air asepsis is required. HEPA absolute filters are widely employed in sanitary buildings/hospitals, industrial nuclear power stations,

pharmaceutical and electronic buildings. These are flat filters consisting of water-repellent glass fiber paper with calibrated-pitch deep pleats. They feature a variety of devices and gaskets providing maximum seal and the containment profile of the filtering element is made of galvanized steel or aluminum.

Active carbon filters

Active carbon filters are elements used to dissolve organic and inorganic compounds. They consist of porous carbon grains which surface is highly adsorbing. Adsorption is the chemical-physical phenomenon that cumulates one or multiple liquid or gaseous fluid substances on the surface of the adsorbing material.

The active carbon can be mineral, vegetable or industrialized on purpose with special impregnating substances. There are three types of filters available:

- flat-cell filters, including two meshes on the two outer sides to contain the carbon grains
- coaxial cylindric filters with carbon grains inside
- pocket filters where carbon is contained in a polyurethane foam support

Active carbon filters remove gaseous contaminants (VOC Volatile Organic Compounds, PAC Polycyclic Aromatic Hydrocarbons, ozone, SO_2, NO_x) to achieve the best IAQ (Indoor Air Quality).

Air treatment - dehumidification with or without integration

"***Air treatment***" refers to the control of indoor thermo-hygrometric conditions through dehumidification and cooling. Air exchange and heat recovery are not provided.

Operational principal of air treatment units.

Basic air treatment units reduce indoor humidity only and are known as ***isothermal dehumidifiers***. Schematization of an isothermal dehumidifier is given in Fig. 1.

This type of machine vacuums and filters indoor wet air (1) (generally at a 26-27 °C temperature), which is then cooled down by a hydronic coil (2) supplied with water at approx. 15-18 °C.

The cooling stage brings the wet air as close as possible to condensation using the water already available to supply the radiant floor, with no additional work for the cooling circuit electric compressor.

The cooled air is now ready to flow through the cooling circuit evaporation coil (3): it is during this phase that it releases humidity by condensation.

The resulting air features a humidity percentage lower than the room humidity and therefore suitable for introduction into the room itself.

Prior to the intake phase, air passes through the condensation coil (5, left side): the air temperature is exploited to condensate the cooling fluid so as to repeat the cycle.

However, the air is now warmer by effect of the condensation heat from the fluid, and it is convenient to make it flow through a second post-cooling hydronic coil (5, right side) which brings it back to a temperature not exceeding the one it featured when entering the unit. In the final phase, the air is channeled into the room.

With a slight variation to the diagram of the machine described above, one obtains a ***dehumidifier with sensible cooling integration*** and a dual function: work as an isotherm dehumidifier or as a machine able to integrate sensible cooling by introducing air cooler than the inflow.

Compared to the isotherm dehumidifier, diagram of Fig. 2 shows a double condenser in the cooling circuit: next to the condenser interacting with air (3), there is another one (5) dispersing the condensation heat in water.
When this happens, i.e. when the unit works with integration, the air condenser (3) is blocked and dry fresh air can be introduced into the room.

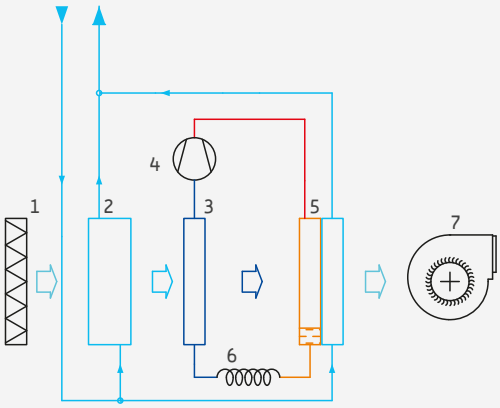


Fig. 1: schematization of an isotherm dehumidifier.

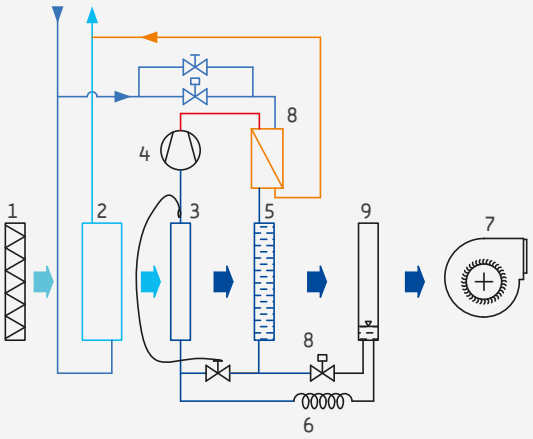


Fig. 2: schematization of a sensible integration dehumidifier.

Thermodynamic or hydronic integration

In addition to dehumidification, air treatment and HRV units can feature sensible integration in summer to meet the needs of zones with greater thermal loads.

Units with ***thermodynamic integration*** include a cooling circuit to provide air cooling along with dehumidification. Units with hydronic integration and no cooling circuit include a hydronic coil that provides, along with air dehumidification, summer cooling (delivery +7 °C, return +12 °C) or winter heating (delivery +50 °C, return +40 °C).

Operational principle of heat recuperator with dehumidification and thermo-dynamic integration.

According to the dehumidifier operational principle explained above, the benefits offered by thermo-dynamic integration units are straightforward:

- they work on water at 15-18 °C, the same temperature required by cooling radiant systems, and enable cooling units to work at water temperatures higher than the traditional 7 °C of hydronic air conditioning systems, with great benefits in terms of energy efficiency (EER - Energy Efficiency Ratio)
- their high latent power/air flow rate ratio - up to 2,5 W per m3/h - cuts down the quantity of air required to cover latent loads, resulting in quietness, no drafts and minimum consumption of electric energy

In addition to dehumidification and integration of sensible thermal power, heat recovery ventilation units (HRV) provide air exchange with high-efficiency heat recovery. They represent the most complete machines for indoor air treatment and, as expected, they are the ideal solution for continuous operation year round.

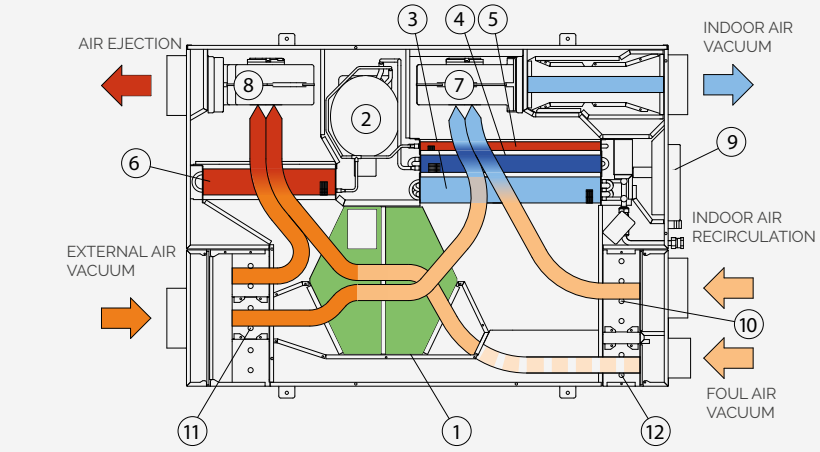
These units have the same cooling circuit of the one described for sensible integration dehumidifiers: they include two condensers, a post-heating condenser and a dissipation condenser.

We will use two units by Giacomini, KDVRW and KDVRA, to explain their operational principle. They differ for their inner layout and dissipation condenser: a water condenser for KDVRW and an air condenser for KDVRA.

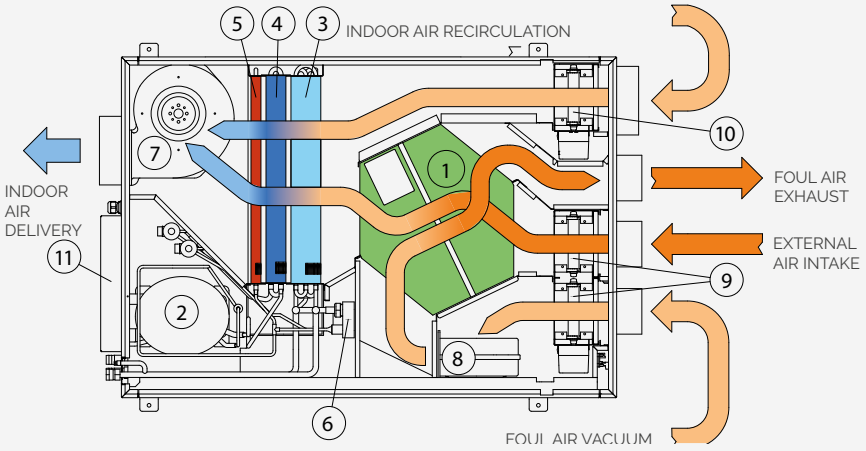
As shown by the diagrams of Fig. 3, before being transferred into the treatment coils, the external air (exchange) in both units is pre-cooled in an air-air recuperator (1) by exchanging it with foul air which is ejected from the room to be conditioned. When leaving the recuperator, it is mixed with the recirculation air and undergoes initial sensible cooling inside the water-fed finned coil (3), right after cooling and dehumidification in the cooling evaporator (4) and post-heating in the condenser (5). Finally, the delivery fan channels it into the conditioned room.

The dampers (10, 11, 12) modulate the recirculation and external air flow rates to reach the flow rate desired for the room air and foul air - to be ejected after recovery - which flows are triggered by the exhaust fan (8).

In unit KDVRA the dissipation condenser (6) is cooled through the extraction air flow combined, when necessary, to an additional flow of external air. On the contrary, condensation heat in unit KDVRW is disposed of in water through a plate exchanger.



1 Air-air recuperator
2 Cooling compressor
3 Water-fed coil
4 Cooling evaporator
5 Post-heating condenser
6 Dissipation condenser
7 Delivery fan
8 Exhaust fan
9 Electric board
10-11-12 Dampers



1 Air-air recuperator
2 Cooling compressor
3 Water-fed coil
4 Cooling evaporator
5 Post-heating condenser
6 Dissipation condenser
7 Delivery fan
8 Exhaust fan
9 Electric board
10-11 Dampers

Fig. 3 KDVRA (air, above) and KDVRW (water, below) diagrams.

Air distribution ducts and components

The air distribution system channels fresh air into every room while ejecting odors and wet foul air that contains pollutants.

It consists of a variety of elements, among which: external terminals, external ducts (rigid or flexible), manifolds, mufflers, flow rate regulators, flexible pipes and fittings for internal distribution, plenums and openings with matching grids. All together, they have to guarantee a safe and energy-efficient air transfer.

Various types of pipes used for air distribution in HRV systems.

Various types of plenums for openings used in HRV air distribution.

From an ***hygienic*** viewpoint, the materials used should not increase the concentration of pollutants (odors, gases or airborne particulates) hazardous for human health and the quality of the air inside the ventilation system. The entire distribution system should also be easy to clean.

From an energy standpoint, the ducts and fittings used to channel fresh air should be insulated (generally they feature factory insulation) and ensure limited losses of pressure.
They are normally installed inside the insulation layer of the outer slab, thus also guaranteeing greater safety to better prevent risks connected to condensation and improper installation.

Ecodesign

Directive ***2012/27/UE for energy efficiency*** has amended Ecodesign 2009/125/CE (ErP directive) developing a new frame of specifications for eco-friendly planning of energy-based products.
This directive is part of the "2020 strategy" based on which energy consumptions should be cut down by 20% and the share of renewable energies should increase by 20% within 2020.
As for "residential ventilation units" and "non-residential ventilation units with absorbed power higher than 30 W", the following regulations apply:
- Regulation (UE) N. 1253/2014 of 7 July 2014: enforcement of directive 2009/125/CE with regards to the specifications of ventilation unit eco-friendly planning
- Regulation (UE) N. 1254/2014 of 11 July 2014: integration to directive 2010/30/UE with regards to energy labeling of residential ventilation units

Ventilation units are appliances with electric motors including at least one rotor, a motor and a case and which purpose is to exchange the air used in a building or part of a building with external fresh air. Energy efficiency requirements for residential ventilation units refer to both the components and the information which manufacturers and distributors must provide to the market. Ecodesign requirements are mandatory as of January 2016 and up to release of new amendments (expected for 2018).
Component requirements:
- ventilation units must be provided with a variable-speed motor or a speed regulator
- dual-flow ventilation units must be provided with a heat recovery system and a by-pass system
- ventilation units with filters must be provided with a visual signal as pollution warning.

Information requirements - manufacturer's obligations:
- energy label

- product datasheet (accurate technical specifications)

- user's manual

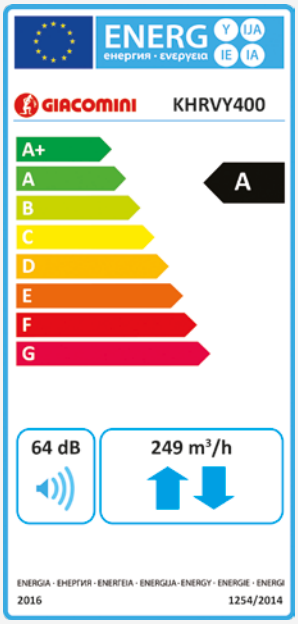
- every type of advertisement, communication or technical material shall specify the SEC class (Specific Energy Consumption)

Information requirements - distributors' obligations:

- energy efficiency label + product data sheet included with the product

SEC CLASS		SEC IN kWh/(m² a)
A+	MAX. EFFICIENCY	SEC < – 42
A		– 42 ≤ SEC < – 34
B		– 34 ≤ SEC < – 26
C		– 26 ≤ SEC < – 23
D		– 23 ≤ SEC < – 20
E		– 20 ≤ SEC < – 10
F		– 10 ≤ SEC < 0
G	MIN. EFFICIENCY	SEC ≥ 0

Specific energy consumption classes (SEC) of residential ventilation units based on average climatic conditions [in force as of 1 January 2016; soon SEC should be equal to or lower than -20 kWh/(m² a)].



Examples of energy labels.

Useful definitions
(as per (EU) Regulation N. 1253/2014 - Appendix I)

SPECIFIC ENERGY CONSUMPTION (SEC) [EXPRESSED IN kWh/(m²a)]: coefficient expressing the energy consumed to ventilate one m² of habitable heated surface in a house or building, calculated for Residential Ventilation Units (RVU) in compliance with appendix VIII of the Regulation.

SOUND POWER LEVEL (LWA): weighed sound power level A in dB referred to 1pW emitted by the case, expressed in decibels (dB), transmitted by air at the flow rate of reference.

MULTIPLE-SPEED ACTIVATION: a fan motor can be activated at three or more fix speeds in addition to position «off» («deactivated»).

VARIABLE SPEED DRIVE (VSD): an electronic regulator - an integrated device, working within the same system or separated with motor and fan - which adapts on a continuous basis the electric energy supplied to the motor to control the flow rate.

HEAT RECOVERY SYSTEM (HRS): part of a bidirectional ventilation unit provided with a heat exchanger to transfer the heat contained in exhaust air (contaminated) to the inflow air (fresh).

THERMAL EFFICIENCY IN A RESIDENTIAL HRS (η_t): ratio between the inflow air thermal gain and the exhaust air thermal loss, both referring to the external temperature, measured with dry HRSs and under standard climatic conditions, with balanced mass flow, at reference flow rate and with a 13 K internal/external thermal difference, no adjustment based on fan motor thermal gain.

INTERNAL LEAKAGE PERCENTAGE: fraction of exhaust air present in inflow air of HRS ventilation units for leakages between the exhaust and inflow airflows inside the case when the unit is operating at the flow rate of reference, measured on ducts; the test should be carried out at 100 Pa for RVUs.

RESIDUAL FLOW: the percentage of exhaust air reintroduced into inflow air for a regenerative heat exchanger according to the flow rate of reference.

EXTERNAL LEAKAGE PERCENTAGE: leakage fraction of the reference flow rate leaking from the unit case into the external air, or from external air towards the case when seal tested; the test must be carried out at 250 Pa for RVUs, both with underpressurization and overpressurization.

MIXTURE: instant recirculation or mixture of air flows between the exhaust and inflow openings, both on internal and external terminals, where such flows do not contribute to the actual ventilation of the indoor space when the unit is operating at the flow rate of reference.

MIXTURE PERCENTAGE: fraction of exhaust air flow, part of the total flow rate of reference, recirculating between the exhaust and inflow openings, both on internal and external terminals, without contributing to the actual ventilation of the indoor space when the unit is operating at the flow rate of reference (measured at 1 m from the inflow duct inside the building), less the internal leakage percentage.

ACTUAL POWER INPUT (EXPRESSED IN W): electric power absorbed at the flow rate of reference and at the corresponding total difference of external pressure, which includes the electric energy requirement for fans, regulation devices (including remote ones) and heat pump (when integrated).

SPECIFIC POWER INPUT (SPI) - EXPRESSED IN W/(m³/h): ratio between actual power input (in W) and flow rate of reference (in m³/h).

FLOW RATE-PRESSURE DIAGRAM: set of curves representing the flow rate (horizontal axis) and the pressure difference of a unidirectional RVU or the inflow side of a bidirectional RVU, where each curve represents a different fan speed, with at least eight equidistant measuring points. The number of curves depends on the number of distinct fan speed options (one, two or three) or, in case of fans with variable speed drive, it includes at least one minimum curve, one maximum curve and an appropriate intermediate curve close to the flow rate of reference and the pressure difference for SPI verification.

REFERENCE FLOW RATE (EXPRESSED IN m³/s): abscissa value of a point on the flow rate-pressure diagram curve, coinciding with a point of reference or at max. proximity possible, at least 70% of the max. flow rate and at 50 Pa for duct-type units and at min. pressure for ductless units. For bidirectional ventilation units, the reference flow rate applies to the fresh air intake.

CONTROL FACTOR (CTRL): correction factor for SEC calculation, based on the type of control included in the ventilation unit (as described in appendix VIII, table 1 of Regulation).

CONTROL PARAMETER: measurable parameter or set of parameters representing the ventilation requirement, for example relative humidity (RH), carbon dioxide (CO_2), volatile organic compounds (VOC) or other gases, attendance, movement or permanence sensors based on infrared body heat or ultrasound wave reflection, electric signals triggered by human intervention on lighting systems or machines.

MANUAL CONTROL: every type of control not using environment control.

ENVIRONMENT CONTROL: an integrated or separated device or set of devices reading a control parameter and using the results to automatically adjust the unit and/or duct flow rates.

TIMER: human clock interface (daytime setting) that adjusts the fan speed or the ventilation unit flow rate, with at least seven manual settings, one for each weekday, related to the flow rate and adjustable with at least two idle periods, that is periods with reduced or no flow rate.

DEMAND-CONTROLLED VENTILATION (DCV): ventilation unit with demand control.

DUCT-TYPE UNIT: ventilation unit dedicated to one or multiple rooms or indoor spaces of a building with air ductwork and fit for connection to ducts.

DUCTLESS UNIT: ventilation unit for ventilation of a single room or indoor space of a building and not fit for connection to ducts.

CENTRALIZED DEMAND CONTROL: demand control of a duct-type ventilation unit adjusting the fan speed and the flow rate on a constant basis according to sensor signals for the entire ventilated building or part of it, on centralized level.

LOCAL DEMAND CONTROL: demand control of a ventilation unit that adjusts the fan speed and the flow rate on a constant basis according to the signals of multiple sensors for a duct-type unit or one single sensor for a ductless unit.

STATIC PRESSURE(psf): total pressure minus the fan dynamic pressure.

TOTAL PRESSURE(pf): difference between stagnation pressure at fan outlet and stagnation pressure at fan inlet.

STAGNATION PRESSURE: pressure measured at a fix point of a gas flow if reduced to zero velocity by isentropic transformation.

DYNAMIC PRESSURE: pressure calculated from the gas mass flow rate and average density at outlet, and in the unit outlet zone.

RECOVERY HEAT EXCHANGER: heat exchanger for thermal energy transfer from an air flow to another without any moving element, such as a plate or tubular heat exchanger with parallel, transversal or counter-current flow, or a combination of the three, or a plate or tubular heat exchanger with water vapor.

REGENERATIVE HEAT EXCHANGER: rotating heat exchanger containing a revolving element to transfer thermal energy from one air flow to the other, with latent-heat compatible material, an activation mechanism, a case or frame and seal devices to reduce by-pass and leakage of air from one of the flows; these heat exchangers perform in different ways when recovering humidity based on the material used.

AIR FLOW SENSIBILITY TO PRESSURE VARIATIONS: in a ductless RVU, the ratio between the max. deviation from the RVU max. flow rate at +20 Pa of external total pressure difference and at -20 Pa.

INTERNAL/EXTERNAL AIR SEAL: in a ductless RVU, the flow rate (in m^3/h) between the inside and the outside with fans off.

DUAL UNIT: unit designed for ventilation but also for firefighting or fume exhaust purposes, complying with the basic specifications for fire prevention safety in construction works of Regulation (EU) n. 305/2011.

THERMAL BY-PASS DEVICE: every solution "bypassing" the heat exchanger, automatically or manually controlling the heat-recovery results, also when an air flow physical by-pass is present (for example, device for summer operation, rotor speed control, air flow control).

In a nutshell

HRV systems

Heat Recovery Ventilation in Giacomini systems is generally represented by a Centralized Double-Flow HRV: the ventilation unit, known as heat recuperator, provides air exchange through special ducts in adjoining rooms by extracting exhaust air and introducing fresh air with heat recovery. Air treatment is also available as optional (dehumidification with or without sensible integration).

As for single-flow systems, this catalog considers exclusively those with decentralized or pinch-point recuperators with alternated single flow and extraction pinch-point fans (decentralized HRV).

Hygiene and health

- Continuous and autonomous air exchange
- Control of indoor pollutants
- Reduction of pollutants from the outside (particulates)
- No proliferation of mold caused by humidity contained in air
- Healthy and comfortable indoor climate, guaranteed day and night
- Improved indoor climate for allergic users or individuals with breathing problems

Safety and comfort

- No drafts and sudden thermal changes
- Noiseless and no insects from the outside, as rooms are ventilated with closed windows
- Limited house breaking for open windows
- Exhaust of indoor smells
- Control of indoor humidity
- Noiseless operation, also during the night
- Ideal indoor climate combined to the radiant system
- Safety against condensation of radiant air conditioning systems
- Adapts to seasonal climatic conditions

Money-saving and eco-friendly

- Limited heat dispersions
- Thanks to energy recovery, the heating and air conditioning devices feature smaller dimensions
- Sensible and latent heat recovery of exhaust air enables to limit the heating and cooling system activation
- Efficient use of energy and a resulting reduction of polluting emissions
- Cooling circuits with next-generation cooling fluids to guarantee greater energy efficiency and protect the environment
- Ventilation system repaying itself in time through energy saving
- Enhanced energy performance of the building
- Increased value of the building maintained in time
- Tax relief benefits according to the laws in force

1 - Dehumidifiers

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2 - Plenums for room openings and grids

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3 - Ducts. fittings. accessories

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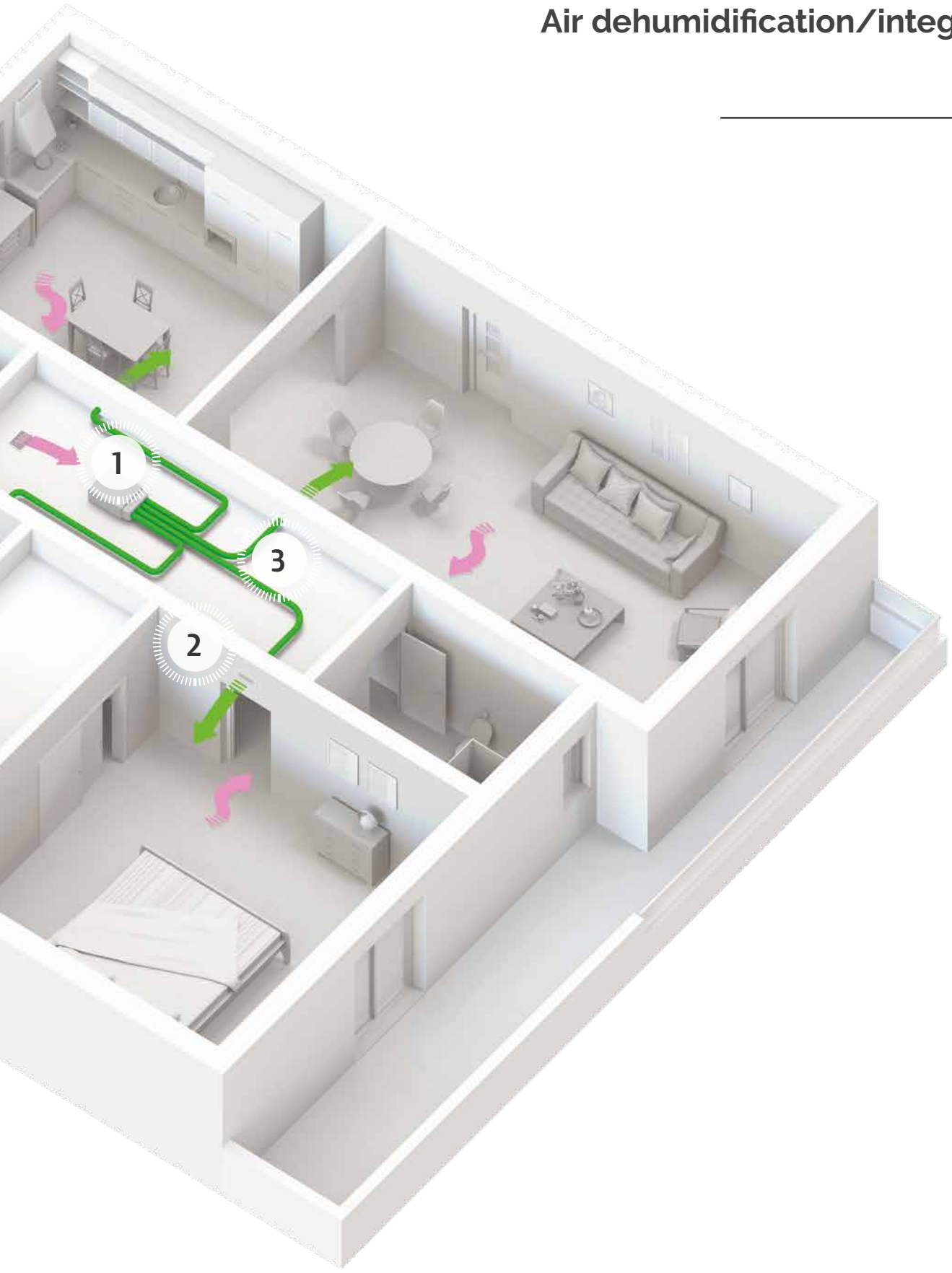
Chapter 1

Air dehumidification/integration



Chapter 1

Air dehumidification/integration

Dehumidifiers

KDP

Description / Product specifications

Monoblock unit for humidity control. wall flush-mounting and use with cooling radiant systems. Also available with sensible power integration. Equipped with removable synthetic filtering section. centrifugal fan with 3-speed direct coupled motor. cooling circuit with cooling gas R290. hydraulic circuit. coils with copper pipe and aluminum fins.

Available accessories: counter-case and front panel in white lacquered wood.

Dehumidification only

PRODUCT CODE	DESCRIPTION	EURO/pcs	CL		
KDPHY024	Nominal air flow rate 200 m³/h	1.710.00	K	1	-

For dehumidification and integration

PRODUCT CODE	DESCRIPTION	EURO/pcs	CL		
KDPRHY024	Nominal air flow rate 300 m³/h	2.328.00	K	1	-

Technical data

VENTILATION UNIT / AIR TREATMENT PERFORMANCE	KDPHY024		KDPRHY024	
	Dehumidification	Integration	Dehumidification	Integration
Nominal air flow rate - m^3/h	200	-	200	300
Useful dehumidification capacity[1] - l/24h	23	-	23	22.2
Sensible cooling power[1] - W	814	-	814	973
Latent cooling power[1] - W	665	-	665	644
Total cooling power[1] - W	1479	-	1479	1617
Power required by water cooler - W	879	-	879	1856
Total water flow rate - l/h	220	-	220	300
Water circuit loss of pressure - kPa	11		12	
Cooling gas	R290 (95 g)		R290 (105 g)	
Nominal working temperature range - °C	15÷30		15÷30	

ELECTRIC DATA	KDPHY024		KDPRHY024	
	Dehumidification	Integration	Dehumidification	Integration
Tension / Phases/ Supply frequency - V / - / Hz	230 / 1 / 50		230 / 1 / 50	
Max. absorbed power - W	250	-	250	290
Electric power absorbed by fan - W	30	-	30	40

ACOUSTIC DATA[2]	KDPHY024		KDPRHY024	
	Ventilation	Dehumidification / Integration	Ventilation	Dehumidification / Integration
Sound power level - db(A) (V1 / V2 / V3)	39.6 / 41.4 / 46.2	46.0 / 47.5 / 49.2	39.6 / 41.4 / 46.2	46.0 / 47.5 / 49.2

FILTERS	KDPHY024	KDPRHY024
Filter types	With synthetic fiber filtering material	With synthetic fiber filtering material
Filtering class (EN 779:2002)	G3	G3

DIMENSIONS. WEIGHT AND CONNECTIONS	KDPHY024	KDPRHY024
Length "L" - mm	722	722
Width "W" - mm	202	202
Height "H" - mm	573	573
Weight - kg	31	34
Water delivery - return connections - inch.	1/2" F - 1/2" F	1/2" F - 1/2" F
Condensation drain - mm	Ø19	Ø19

(1) Indoor air (room): temperature 26 °C. relative humidity 65%; water in 15 °C; nominal air flow rate.
(2) According to ISO 3747. The level of equivalent sound pressure varies based on the installation room and presence/absence of ducts and/or plenums. The value is generally 7÷10 dB(A). lower than sound power. and even lower with ducts and/or plenums.

Main features

• Structure in galvanized metal sheet panels. internally lined with open-cell polyurethane foam sound-absorbing pad

• 3-speed centrifugal fan with front blades. dual vacuum. direct coupled motor; configurable operational speed

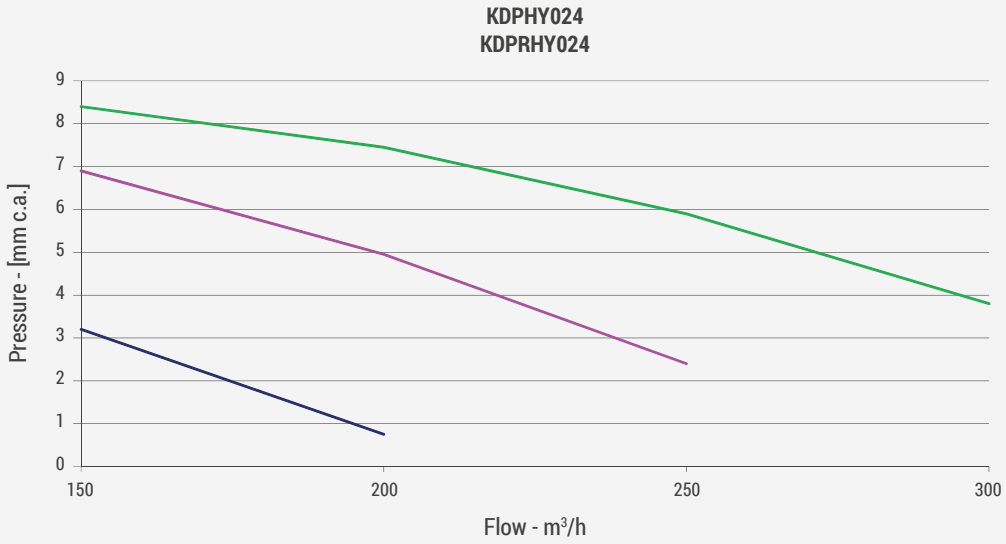
• Hydronic coil optimized for dehumidification and integration

• Cooling circuit with 10 cc piston alternative-cooling compressor optimized for use with propane cooling fluid R290. an eco-friendly gas of outstanding thermodynamic performance for top efficiency levels

• G3 synthetic filter (EN779:2002) with galvanized metal sheet frame. easy to remove from any side of the machine

Aeraulic performance

Pressure-flow rate diagram referred to the various speeds of the machine.



Dehumidifiers

KDS

Description / Product specifications

Duct-type monoblock unit for humidity control. ceiling installation and use with cooling radiant systems. Also available with sensible power integration. Equipped with removable synthetic filtering section. centrifugal fan with 3-speed direct coupled motor. cooling circuit with cooling gas R290. hydraulic circuit. coils with copper pipe and aluminum fins.

Available accessories: special delivery plenums (4- or 6-way plenum based on model).

Dehumidification only

PRODUCT CODE	DESCRIPTION	EURO/pcs	CL		
KDSHY026	Nominal air flow rate 200 m³/h	1.710.00	K	1	-

For dehumidification and integration

PRODUCT CODE	DESCRIPTION	EURO/pcs	CL		
KDSRHY026	Nominal air flow rate 300 m³/h	2.328.00	K	1	-
KDSRHY350	Nominal air flow rate 350 m³/h	3.000.00	K	1	-
KDSRY500	Nominal air flow rate 500 m³/h	3.763.00	K	1	-

Technical data

VENTILATION UNIT / AIR TREATMENT PERFORMANCE	KDSHY026		KDSRHY026		KDSRHY350		KDSRY500	
	Dehumidif.	Integr.	Dehumidif.	Integr.	Dehumidif.	Integr.	Dehumidif.	Integr.
Nominal air flow rate - m^3/h	200	-	200	300	350	350	500	500
Useful dehumidification capacity[1] - l/24h	24.7	-	24.7	23.8	38.6	38.6	60.1	60.1
Sensible cooling power[1] - W	844	-	844	1011	0	1469	2070	2070
Latent cooling power[1] - W	715	-	715	689	1116	1116	1740	1740
Total cooling power[1] - W	1559	-	1559	1700	1116	2585	3810	3810
Power required by water cooler - W	839	-	839	1930	1599	3021	n/a	n/a
Total water flow rate - l/h	240	-	240	280	350	350	n/a	n/a
Water circuit loss of pressure - kPa	11		11		20		n/a	
Hydraulic head available (factory configuration) - Pa	15	-	24	45	40	40	60	60
Cooling gas	R290 (84 g)		R290 (105 g)		R290 (110 g)		R134 a	
Nominal working temperature range - °C	15÷30		15÷30		15÷30		15÷30	

ELECTRIC DATA	KDSHY026		KDSRHY026		KDSRHY350		KDSRY500	
	Dehumidif.	Integr.	Dehumidif.	Integr.	Dehumidif.	Integr.	Dehumidif.	Integr.
Supply Tension / Phases / Frequency - V / - / Hz	230 / 1 / 50		230 / 1 / 50		230 / 1 / 50		230 / 1 / 50	
Max. absorbed power - W	260	-	260	270	520	520	650	650
Total electric power absorbed by fan - W	30	-	30	37	37	37	100	100

ACOUSTIC DATA[2]	KDSHY026		KDSRHY026		KDSRHY350		KDSRY500	
	Ventilation	Dehumidif. / Integr.	Ventilation	Dehumidif. / Integr.	Ventilation	Dehumidif. / Integr.	Ventilation	Dehumidif. / Integr.
Sound Power Level - db(A) Vmax / Vmin	46.2 / 39.6	49.2 / 46.0	50.4 / 39.6	51.2 / 46.0	50.4 / 39.6	52.2 / 47.0	n/a	n/a

FILTERS	KDSHY026	KDSRHY026	KDSRHY350	KDSRY500
Filter types	With synthetic fiber filtering material	With synthetic fiber filtering material	With synthetic fiber filtering material	With synthetic fiber filtering material
Filtering class (EN 779:2002)	G3	G3	G3	G3

DIMENSIONS. WEIGHT AND CONNECTIONS	KDSHY026	KDSRHY026	KDSRHY350	KDSRY500
Length "L" - mm	550	584	614	645
Width "W" - mm	645	654	627	767
Height "H" - mm	247	247	265	287
Weight - kg	29	32	41	n/a
Water delivery - return connections - inch.	1/2" F - 1/2" F	1/2" F - 1/2" F	1/2" F - 1/2" F	1/2" F - 1/2" F
Condensation drain - mm	Ø14	Ø19	Ø19	Ø19

(1) Indoor air (room): temperature 26 °C. relative humidity 65%; water in 15 °C; nominal air flow rate.
(2) According to ISO 3747. The level of equivalent sound pressure varies based on the installation room and presence/absence of ducts and/or plenums. The value is generally 7÷10 dB(A). lower than sound power. and even lower with ducts and/or plenums.

Main features

• Structure in galvanized metal sheet panels. internally lined with open-cell polyurethane foam sound-absorbing pad

• 4 speed centrifugal fan with front blades. dual vacuum. direct coupled motor; configurable operational speed

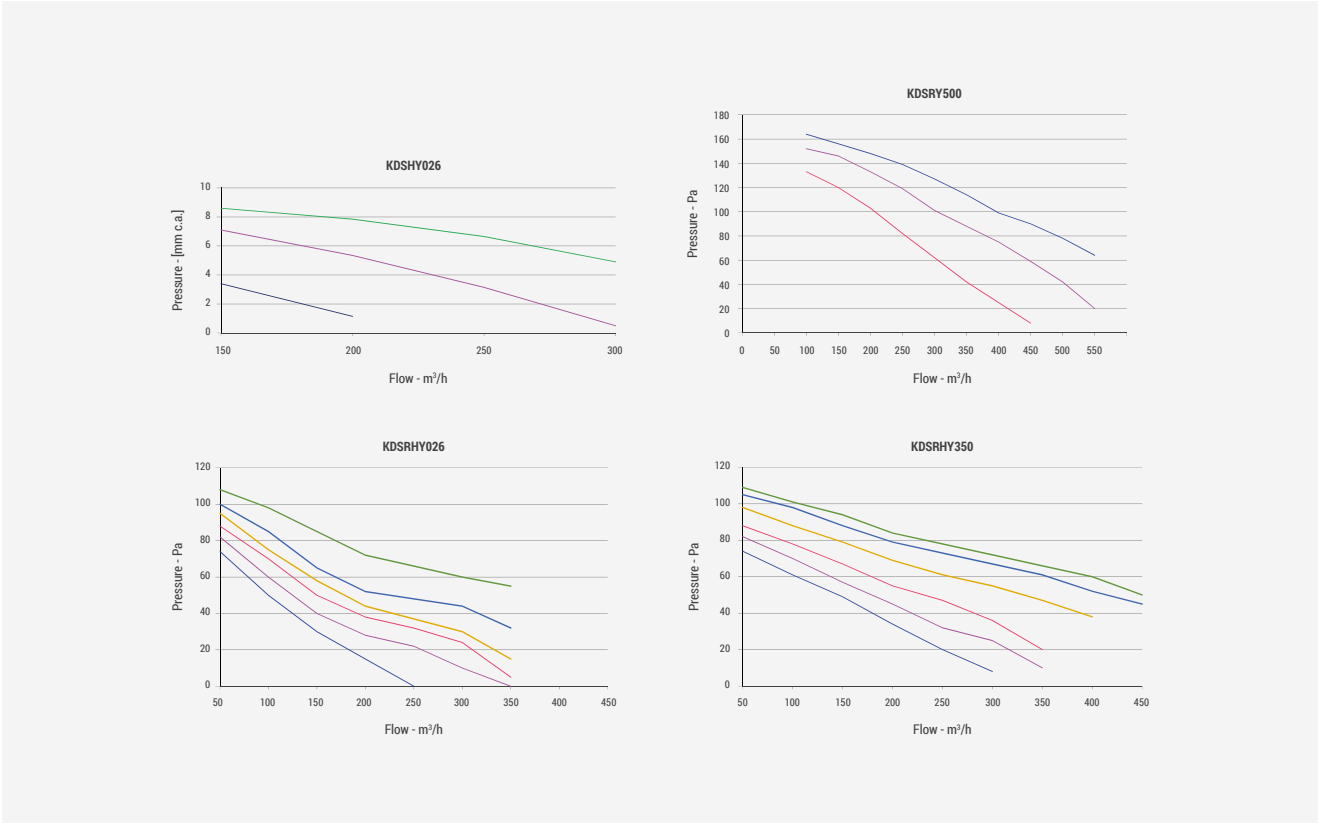
• Hydronic coil optimized for dehumidification and integration

• Cooling circuit with 10 cc piston alternative-cooling compressor optimized for use with propane cooling fluid R290. an eco-friendly gas of outstanding thermodynamic performance for top efficiency levels

• Synthetic fiber ISO Coarse filter with galvanized metal sheet frame. easy to remove from any side of the machine

Aeraulic performance

Pressure-flow rate diagrams referred to the various speeds of each machine.



Greater energy efficiency and environment protection: the innovation by Giacomini has no boundaries.

The new air treatment units by Giacomini combine top-notch technical performance to an eco-friendly core: the cooling fluid used in the cooling circuit is propane R290. a natural alternative to traditional GWP cooling gases. featuring an outstanding thermodynamic performance.

The Global Warming Potential parameter identifies the greenhouse-effect global warming potential caused by a specific gas in the atmosphere. Taking as reference value carbon dioxide CO_2. equal to 1. the choice of gas R290 was determined by its GWP=3. a value extremely lower than GWP=1300 of gas R134a used so far.
The technical development based on the load of refrigerant R290 has enhanced "key" components. such as the compressor. enabling to increase efficiency by 30% compared to the previous model.

Dehumidifier accessories

KDP-ACC

Description / Product specifications

Completion accessories for wall flush-mount dehumidifiers KDP.

• Counter-case: galvanized steel sheet for dehumidifier wall flush-mounting

• Front panel with grid: white lacquered mdf wood to conceal the dehumidifier with proper surface finish. Includes counter-case fitting rails to adapt it to the surface finish and magnets for simplified fitting without screw anchors

Counter-case

Front panel

PRODUCT CODE	DESCRIPTION	EURO/pcs	CL		
KDPCY024	Counter-case 760x619x219 mm (Length x Height x Width)	137.95	K	1	-
KDPFY024	Front panel 790x630x18 mm (Length x Height x Width)	347.55	K	1	-

Dehumidifier accessories

KDS-ACC

Description / Product specifications

Completion accessories for suspended ceiling dehumidifiers KDS.

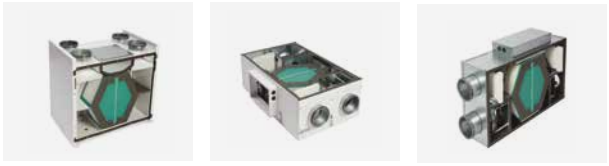
Delivery plenum. Made with galvanized steel sheet. insulated. pre-cut holes to fit the special supports included. The plenum must be connected to the machine. but it can be fixed to the ceiling autonomously to bear the duct weight during maintenance of the dehumidifier.

4-way delivery plenum

6-way delivery plenum

PRODUCT CODE	DESCRIPTION	EURO/pcs	CL		
KDSPLY026	Plenum for KDSY026 and KDSRY026. With four DN100 connections	204.10	K	1	-
KDSPLY350	Plenum for KDSRHY350. With six DN100 connections	226.20	K	1	-

1 - Ventilation units



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2 - Manifolds

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3 - Grids and external terminals

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4 - Plenums for room openings and grids

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5 - Ducts, fittings, accessories

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Chapter 2

Heat recuperators

Chapter 2

Heat recuperators

Ventilation units

KHR-V

Description / Product specifications

Dual flow duct-type ventilation unit with high efficiency heat recuperator, for wall or floor vertical installation. Compact dimensions for simplified installation in technical compartments or attics. Two models available: with standard static heat exchanger or enthalpy exchanger. Control panel with capacitative touchscreen, for wall surface mounting.

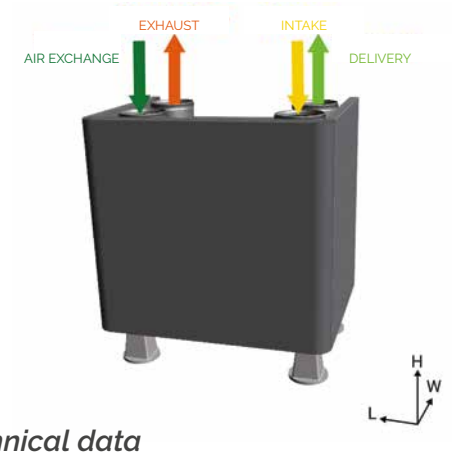
With standard exchanger

PRODUCT CODE	DESCRIPTION	EURO/pcs	CL		
KHRVY200	Nominal air flow rate 200 m³/h	2,895.00	K	1	-
KHRVY300	Nominal air flow rate 300 m³/h	3,070.00	K	1	-
KHRVY400	Nominal air flow rate 400 m³/h	3,355.00	K	1	-
KHRVY500	Nominal air flow rate 500 m³/h	3,560.00	K	1	-

With enthalpy exchanger

PRODUCT CODE	DESCRIPTION	EURO/pcs	CL		
KHRVX200	Nominal air flow rate 200 m³/h	3,175.00	K	1	-
KHRVX300	Nominal air flow rate 300 m³/h	3,620.00	K	1	-
KHRVX400	Nominal air flow rate 400 m³/h	4,085.00	K	1	-
KHRVX500	Nominal air flow rate 500 m³/h	4,290.00	K	1	-

Configuration of ventilation unit air flows



The product codes refer to the basic configuration ventilation unit (V1), with "outer circuit" (exchange/exhaust) and "inner circuit" (delivery/recovery) flows shown in the picture.

For specific work-site requirements, the reverse configuration (V2) is available on request, with "inner circuit"/"outer circuit" flows reversed (to be specified upon order).

Technical data

VENTILATION UNIT / AIR TREATMENT PERFORMANCE	KHRVY200	KHRVY300	KHRVY400	KHRVY500	KHRVX200	KHRVX300	KHRVX400	KHRVX500
Total air flow rate - m^3/h	158	306	375	475	158	306	375	482
Nominal efficiency of sensible recovery[1] - %	86.3	85.0	87.0	84.5	74.3	73.8	78.0	73.1
Latent recovery efficiency[1] - %	-	-	-	-	45.6	44.7	47.2	43.4
Fan useful static pressure - Pa	100	100	100	100	100	100	100	100

ELECTRIC DATA	KHRVY200	KHRVY300	KHRVY400	KHRVY500	KHRVX200	KHRVX300	KHRVX400	KHRVX500
Supply Tension / Phases / Frequency - V / - / Hz	230 / 1 / 50	230 / 1 / 50	230 / 1 / 50	230 / 1 / 50	230 / 1 / 50	230 / 1 / 50	230 / 1 / 50	230 / 1 / 50
Max. absorbed energy - A	0.74	1.60	1.60	3.50	0.74	1.60	1.60	3.50
Absorbed power - W	96	170	170	340	96	170	170	340
IP protection class	IP44	IP44	IP44	IP44	IP44	IP44	IP44	IP44

ACOUSTIC DATA[2]	KHRVY200	KHRVY300	KHRVY400	KHRVY500	KHRVX200	KHRVX300	KHRVX400	KHRVX500
Sound power level transmitted by structure - db(A)	60	62	60	66	60	62	60	66
Sound power level radiated by duct - db(A)	69	68	69	73	69	68	69	73
Sound power level 1m/3m - db(A)	46.4 / 38.6	47.7 / 41.0	45.9 / 38.4	51.9 / 44.4	46.4 / 38.6	47.7 / 41.0	45.9 / 38.4	51.9 / 44.4

FILTERS	KHRVY200	KHRVY300	KHRVY400	KHRVY500	KHRVX200	KHRVX300	KHRVX400	KHRVX500
Filter types	Flat filters	Flat filters	Flat filters	Flat filters	Flat filters	Flat filters	Flat filters	Flat filters
Filtering class/efficiency	ISO ePM1/80% (2x)	ISO ePM1/80% (2x)	ISO ePM1/80% (2x)	ISO ePM1/80% (2x)	ISO ePM1/80% (2x)	ISO ePM1/80% (2x)	ISO ePM1/80% (2x)	ISO ePM1/80% (2x)

DIMENSIONS. WEIGHT AND CONNECTIONS	KHRVY200	KHRVY300	KHRVY400	KHRVY500	KHRVX200	KHRVX300	KHRVX400	KHRVX500
Length "L" - mm	625	785	785	785	625	785	785	785
Width "W" - mm	430	575	735	735	430	575	735	735
Height "H" - mm	510	590	590	590	510	590	590	590
Weight - kg	36	54	65	65	36	54	65	65
Air connections - DN. mm								
- Fresh air inflow	DN125	DN160	DN160	DN160	DN125	DN160	DN160	DN160
- Foul air extraction	DN125	DN160	DN160	DN160	DN125	DN160	DN160	DN160
- External air intake	DN125	DN160	DN160	DN160	DN125	DN160	DN160	DN160
- Foul air exhaust	DN125	DN160	DN160	DN160	DN125	DN160	DN160	DN160
Condensation drain - mm	Ø16	Ø16	Ø16	Ø16	Ø16	Ø16	Ø16	Ø16

(1) Data according to standard UNI EN 13141-7. External air: temperature 7 °C, relative humidity 72%; indoor air (room): temperature 20 °C, relative humidity 28%; reference air flow rate.
(2) Data according to standard UNI EN 3741 and UNI EN 3744.

Main features

• Self-supporting monoblock structure with double panel made of metal sheet, galvanized inside and varnished outside (RAL9003), intermediate mineral wool pad (thickness 20 mm, density 42 kg/m^3) for thermal insulation and soundproofing

• Polypropylene counter-flow static heat exchanger for high efficiency recovery of sensible heat (also latent in enthalpy version). Easy to remove for periodical inspection and maintenance

• Radial centrifugal fans with reverse blades and EC speed modulation motors. Maximum efficiency, minimum consumptions and noise

• Electric panel excluded from air flow, complete of fan 4 speed control card, anti-freezing, automatic by-pass, temperature probes, post-heating coil control and automatic dirt-filter sensor

• Free cooling inside unit with wide air flow and damper with motorized actuator

• Motorized by-pass on electric panel for simplified maintenance

• Front panel easy to remove for inspection and maintenance

• Class ISO ePM1 filters upstream to exchanger, on external air intake and indoor foul air recovery. Filters with low losses of pressure, easy to remove without tools for periodical maintenance or replacement, washable

• Dual side drain for condensation disposal

• Dual installation: wall mounting with special fitting bracket included; floor mounting with feet kit

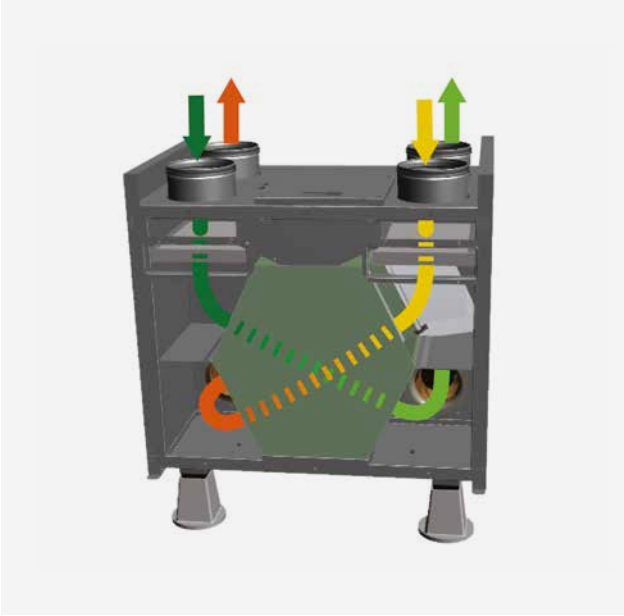
Operational principles

Winter/summer operational diagram.

External air is filtered and pushed into the exchanger where it recovers/releases heat from the ejected counter-flow before being channeled into the noble ambients.

Simultaneously, foul air from service rooms is pushed to the opposite side of the exchanger where it releases/gains heat from the counter-flow before being ejected outside.

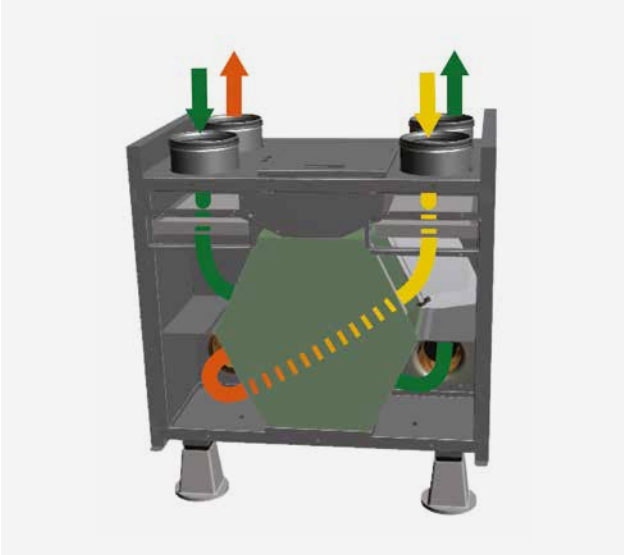
There is no contact or mixing between the air counter-flows inside the exchanger.



Summer operational diagram with active by-pass (free cooling).

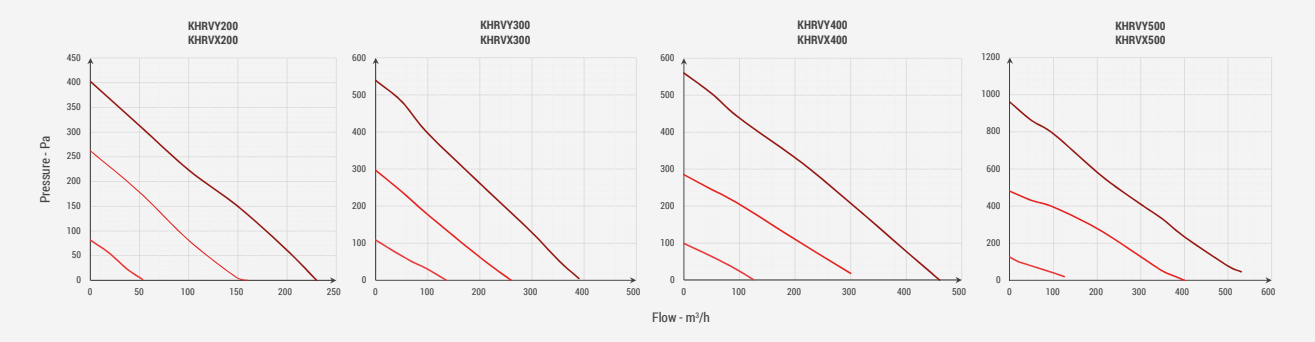
External air is filtered and pushed into a dedicated duct parallel to the exchanger before being channeled into the noble ambients.

Simultaneously, foul air from service rooms is pushed to the opposite side of the exchanger where it is then ejected outside. Only one of the two air flows crosses the exchanger with no heat transfer.



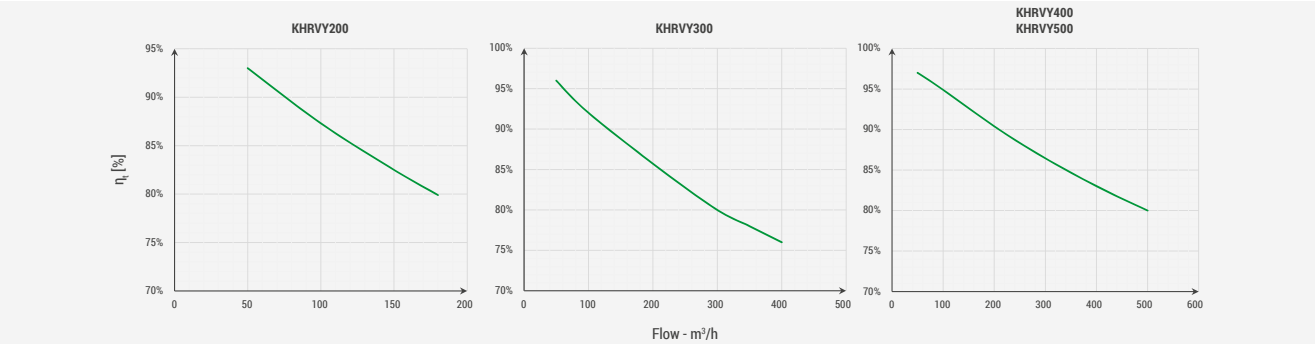
Aeraulic performance

Flow rate-pressure diagrams referring to: min. speed, speed corresponding to reference flow rate, max. speed.

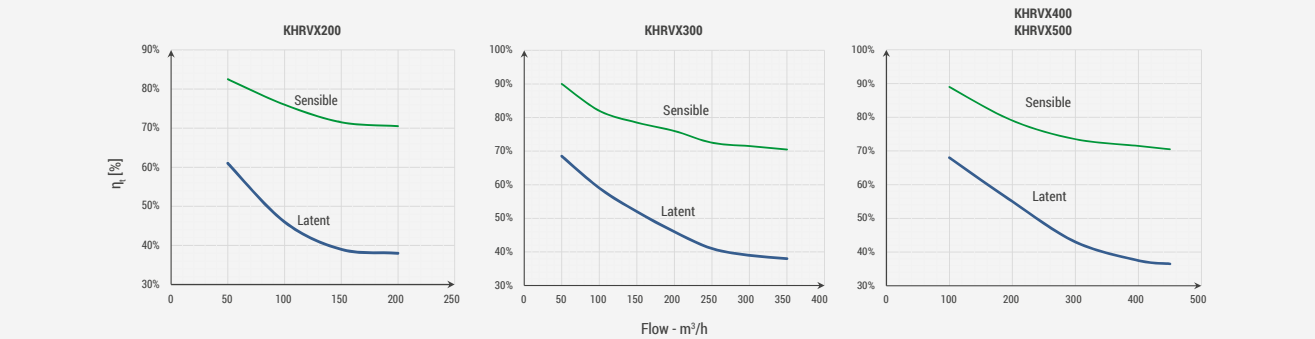


Heat recovery thermal efficiency

According to standard UNI EN 13141-7. External air: temperature 7 °C, relative humidity 72%; indoor air (room): temperature 20 °C, relative humidity 28%; reference air flow rate.



Efficiency curves, version with standard exchanger.



Efficiency curves, version with enthalpy exchanger.

ErP Ecodesign energy efficiency data

(complying with European Regulations 1253/2014 and 1254/2014)

Ref.	DESCRIPTION	KHRVY200	KHRVY300	KHRVY400	KHRVY500	KHRVX200	KHRVX300	KHRVX400	KHRVX500
A	Supplier's name or brand	Giacomini S.p.A.	Giacomini S.p.A.	Giacomini S.p.A.	Giacomini S.p.A.	Giacomini S.p.A.	Giacomini S.p.A.	Giacomini S.p.A.	Giacomini S.p.A.
B	Model identification code	KHRVY200	KHRVY300	KHRVY400	KHRVY500	KHRVX200	KHRVX300	KHRVX400	KHRVX500
C	Specific energy consumption (SEC) - kWh/m².a - Cold - Temperate - Warm - SEC class	 -70.30 -33.00 -9.02 B	 -67.00 -30.10 -6.30 B	 -72.30 -34.80 -10.60 A	 -69.60 -32.90 -9.20 B	 -61.40 -27.70 -5.80 B	 -59.70 -26.20 -4.40 B	 -64.60 -29.80 -7.30 B	 -60.50 -27.20 -5.50 B
D	Declared type	RVU Bidirectional	RVU Bidirectional	RVU Bidirectional	RVU Bidirectional	RVU Bidirectional	RVU Bidirectional	RVU Bidirectional	RVU Bidirectional
E	Type of activation installed	Adjustable speed drive	Adjustable speed drive	Adjustable speed drive	Adjustable speed drive	Adjustable speed drive	Adjustable speed drive	Adjustable speed drive	Adjustable speed drive
F	Heat recovery system	Recovery	Recovery	Recovery	Recovery	Recovery	Recovery	Recovery	Recovery
G	Heat recovery thermal efficiency - %	86.3	85.0	87.0	84.5	74.3	73.8	78.0	73.1
H	Max. flow rate - m³/s	0.044	0.085	0.104	0.131	0.046	0.087	0.108	0.134
I	Electric power absorbed at max. flow rate - W	96	170	170	340	96	170	170	340
J	Sound power level L_{WA} - dB(A)	60	62	60	66	60	62	60	66
K	Reference flow rate - m³/s	0.032	0.059	0.073	0.092	0.033	0.061	0.075	0.093
L	Reference pressure difference - Pa	50	50	50	50	50	50	50	50
M	SPI - W/(m³/h)	0.0356	0.0437	0.0307	0.0343	0.0403	0.0448	0.0374	0.0400
N	Control factor and type	1	1	1	1	1	1	1	1
O	Max. percentages declared for internal/external leakage - %	5.0 int. / 5.2 ext.	4.8 int. / 5.0 ext.	4.8 int. / 5.0 ext.	6.4 int. / 6.7 ext.	5.0 int. / 5.2 ext.	4.8 int. / 5.0 ext.	4.8 int. / 5.0 ext.	6.4 int. / 6.7 ext.
Q	Position and description of filter visual warning	Displayed on unit filter inspection and user's manual	Displayed on unit filter inspection and user's manual	Displayed on unit filter inspection and user's manual	Displayed on unit filter inspection and user's manual	Displayed on unit filter inspection and user's manual	Displayed on unit filter inspection and user's manual	Displayed on unit filter inspection and user's manual	Displayed on unit filter inspection and user's manual
S	Disassembly instructions URL	giacomini.com	giacomini.com	giacomini.com	giacomini.com	giacomini.com	giacomini.com	giacomini.com	giacomini.com

Ventilation units

KHR-H

Description / Product specifications

Dual flow duct-type ventilation unit with high efficiency heat recuperator, for wall or floor horizontal installation. Reduced height for simplified installation in suspended ceilings.

Two models available: with standard static heat exchanger or enthalpy exchanger.

Control panel with capacitative touchscreen, for wall surface mounting.

With standard exchanger

PRODUCT CODE	DESCRIPTION	EURO/pcs	CL		
KHRHY200	Nominal air flow rate 200 m³/h	2,795.00	K	1	-
KHRHY300	Nominal air flow rate 300 m³/h	2,905.00	K	1	-
KHRHY400	Nominal air flow rate 400 m³/h	3,345.00	K	1	-
KHRHY500	Nominal air flow rate 500 m³/h	3,560.00	K	1	-

With enthalpy exchanger

PRODUCT CODE	DESCRIPTION	EURO/pcs	CL		
KHRHX200	Nominal air flow rate 200 m³/h	3,070.00	K	1	-
KHRHX300	Nominal air flow rate 300 m³/h	3,455.00	K	1	-

Configuration of ventilation unit air flows

The product codes refer to the basic configuration ventilation unit (H1), with "outer side" (exchange/exhaust) and "inner side" (delivery/recovery) flows shown in the picture.

For specific work-site requirements, the reverse configuration (H2) is available on request, with "inner circuit/outer circuit" flows reversed (to be specified upon order).

Technical data

VENTILATION UNIT / AIR TREATMENT PERFORMANCE	KHRHY200	KHRHY300	KHRHY400	KHRHY500	KHRHX200	KHRHX300
Total air flow rate - m^3/h	155	302	354	450	165	310
Nominal efficiency of sensible recovery[1] - %	86.3	85.0	87.6	85.6	75.5	74.0
Latent recovery efficiency[1] - %	-	-	-	-	46.0	44.8
Fan useful static pressure - Pa	100	100	100	100	100	100

ELECTRIC DATA	KHRHY200	KHRHY300	KHRHY400	KHRHY500	KHRHX200	KHRHX300
Supply Tension / Phases / Frequency - V / - / Hz	230 / 1 / 50	230 / 1 / 50	230 / 1 / 50	230 / 1 / 50	230 / 1 / 50	230 / 1 / 50
Max. absorbed energy - A	0.74	1.60	1.60	3.50	0.74	1.60
Absorbed power - W	96	170	170	340	96	170
IP protection class	IP44	IP44	IP44	IP44	IP44	IP44

ACOUSTIC DATA[2]	KHRHY200	KHRHY300	KHRHY400	KHRHY500	KHRHX200	KHRHX300
Sound power level transmitted by structure - db(A)	61	63	64	69	61	63
Sound power level radiated by duct - db(A)	69	68	69	74	69	68
Sound power level 1m/3m - db(A)	48.7 / 40.8	49.5 / 41.7	50.3 / 42.6	55.3 / 47.6	48.7 / 40.8	49.5 / 41.7

FILTERS	KHRHY200	KHRHY300	KHRHY400	KHRHY500	KHRHX200	KHRHX300
Filter types	Flat filters	Flat filters	Flat filters	Flat filters	Flat filters	Flat filters
Filtering class/efficiency	ISO ePM1/80% (2x)	ISO ePM1/80% (2x)	ISO ePM1/80% (2x)	ISO ePM1/80% (2x)	ISO ePM1/80% (2x)	ISO ePM1/80% (2x)

DIMENSIONS. WEIGHT AND CONNECTIONS	KHRHY200	KHRHY300	KHRHY400	KHRHY500	KHRHX200	KHRHX300
Length "L" - mm	800	940	1350	1350	800	940
Width "W" - mm	480	620	650	650	480	620
Height "H" - mm	270	380	280	280	270	380
Weight - kg	33	50	56	56	33	50
Air connections - DN. mm						
- Indoor air delivery	DN125	DN160	DN160	DN160	DN125	DN160
- Foul air recovery	DN125	DN160	DN160	DN160	DN125	DN160
- External air intake	DN125	DN160	DN160	DN160	DN125	DN160
- Foul air exhaust	DN125	DN160	DN160	DN160	DN125	DN160
Condensation drain - mm	Ø16	Ø16	Ø16	Ø16	Ø16	Ø16

(1) Data according to standard UNI EN 13141-7. External air: temperature 7 °C, relative humidity 72%; indoor air (room): temperature 20 °C, relative humidity 28%; reference air flow rate.
(2) Data according to standard UNI EN 3741 and UNI EN 3744.

Main features

• Self-supporting monoblock structure with double panel made of metal sheet, galvanized inside and varnished outside (RAL9003), intermediate mineral wool pad (thickness 20 mm, density 42 kg/m^3) for thermal insulation and soundproofing

• Polypropylene counter-flow static heat exchanger for high efficiency recovery of sensible heat (and latent heat in enthalpy version). Easy to remove for periodical inspection and maintenance

• Radial centrifugal fans with reverse blades and EC speed modulation motors. Maximum efficiency, minimum consumptions and noise

• Electric panel excluded from air flow, complete of fan 4-speed control card, anti-freezing, automatic by-pass, temperature probes, post-heating coil control and automatic dirt-filter sensor

• Free cooling inside unit with wide air flow and damper with motorized actuator

• Motorized by-pass on electric panel for simplified maintenance

• Bottom panel easy to remove for inspection and maintenance

• Class ISO ePM1 filters upstream to exchanger, on external air intake and indoor foul air recovery. Filters with low losses of pressure, easy to remove without tools for periodical maintenance or replacement, washable

• Dual side drain for condensation disposal

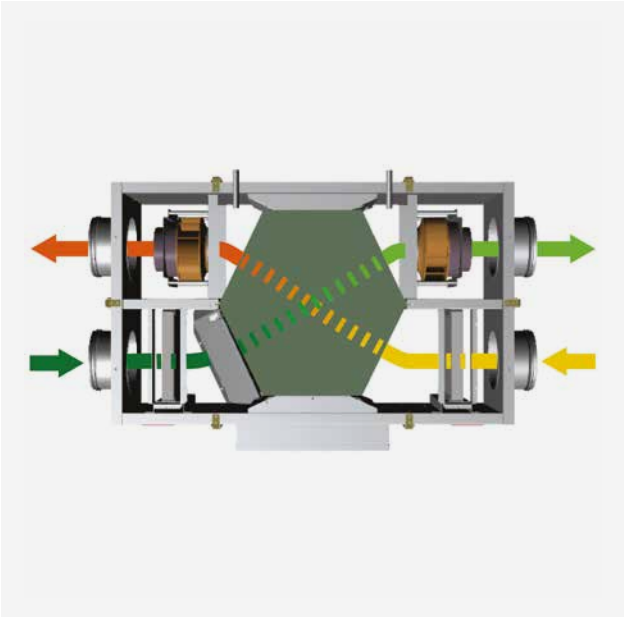
Operational principles

Winter/summer operational diagram.

External air is filtered and pushed into the exchanger where it recovers/releases heat from the ejected counter-flow before being channeled into the noble ambients.

Simultaneously, foul air from service rooms is pushed to the opposite side of the exchanger where it releases/gains heat from the counter-flow before being ejected outside.

There is no contact or mixing between the air counter-flows inside the exchanger.

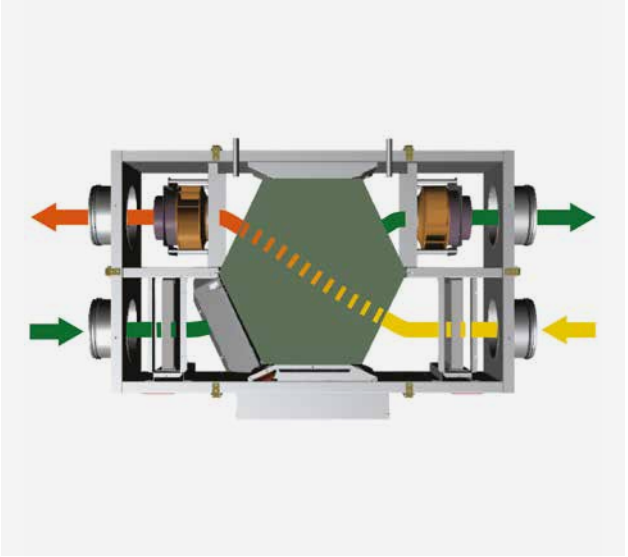


Summer operational diagram with active by-pass (free cooling).

External air is filtered and pushed into a dedicated duct parallel to the exchanger before being channeled into the noble ambients.

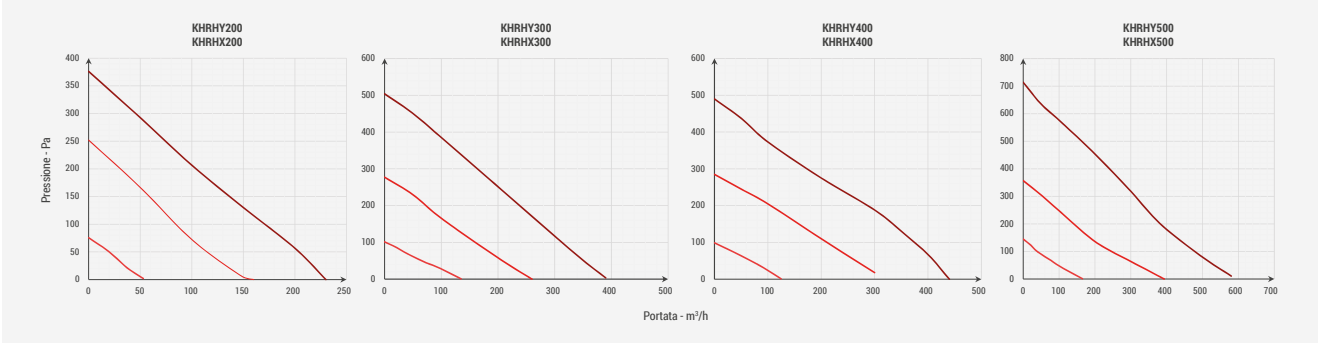
Simultaneously, foul air from service rooms is pushed to the opposite side of the exchanger where it is then ejected outside.

Only one of the two air flows crosses the exchanger with no heat transfer.



Aeraulic performance

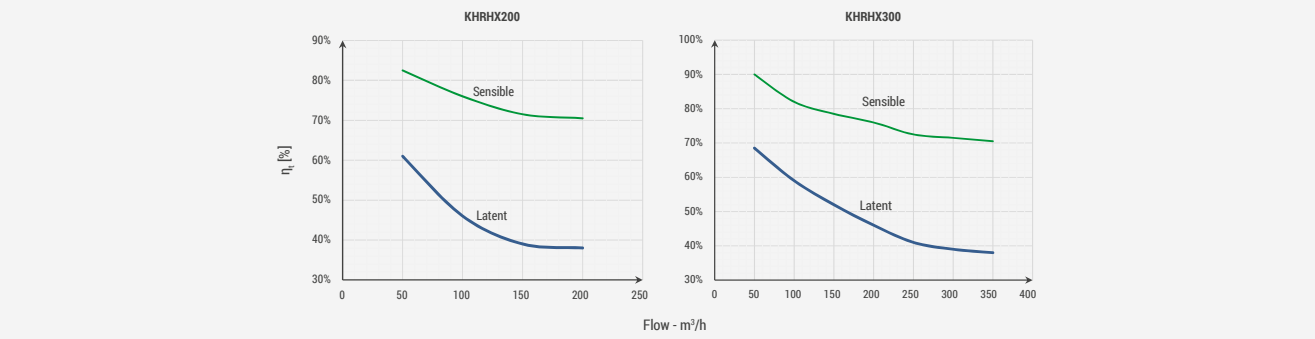
Flow rate-pressure diagrams referring to: min. speed, speed corresponding to reference flow rate, max. speed.



Heat recovery thermal efficiency

According to standard UNI EN 13141-7. External air: temperature 7 °C, relative humidity 72%; indoor air (room): temperature 20 °C, relative humidity 28%; reference air flow rate.

Efficiency curves, version with standard exchanger.



Efficiency curves, version with enthalpy exchanger.

ErP Ecodesign energy efficiency data

(complying with European Regulations 1253/2014 and 1254/2014)

Ref.	DESCRIPTION	KHRHY200	KHRHY300	KHRHY400	KHRHY500	KHRHX200	KHRHX300
A	Supplier's name or brand	Giacomini S.p.A.	Giacomini S.p.A.	Giacomini S.p.A.	Giacomini S.p.A.	Giacomini S.p.A.	Giacomini S.p.A.
B	Model identification code	KHRHY200	KHRHY300	KHRHY400	KHRHY500	KHRHX200	KHRHX300
C	Specific energy consumption (SEC) - kWh/m².a - Cold - Temperate - Warm - SEC class	 -71.20 -33.90 -9.93 B	 -66.90 -30.00 -6.26 B	 -70.40 -32.70 -8.50 B	 -65.80 -28.70 -4.80 B	 -63.70 -29.70 -7.60 B	 -59.80 -26.30 -4.40 B
D	Declared type	RVU Bidirectional	RVU Bidirectional	RVU Bidirectional	RVU Bidirectional	RVU Bidirectional	RVU Bidirectional
E	Type of activation installed	Adjustable speed drive	Adjustable speed drive	Adjustable speed drive	Adjustable speed drive	Adjustable speed drive	Adjustable speed drive
F	Heat recovery system	Recovery	Recovery	Recovery	Recovery	Recovery	Recovery
G	Heat recovery thermal efficiency - %	86.3	85.0	87.6	85.6	75.5	74.0
H	Max. flow rate - m³/s	0.043	0.083	0.098	0.125	0.045	0.086
I	Electric power absorbed at max. flow rate - W	96	170	170	340	96	170
J	Sound power level L_{WA} - dB(A)	61	63	64	69	61	63
K	Reference flow rate - m³/s	0.031	0.058	0.068	0.088	0.032	0.060
L	Reference pressure difference - Pa	50	50	50	50	50	50
M	SPI - W/(m³/h)	0.0327	0.0438	0.0379	0.0487	0.0353	0.0447
N	Control factor and type	1	1	1	1	1	1
O	Max. percentages declared for internal/external leakage - %	5.5 int. / 6.2 ext.	5.1 int. / 5.5 ext.	5.8 int. / 6.4 ext.	5.9 int. / 6.5 ext.	5.5 int. / 6.2 ext.	5.1 int. / 5.5 ext.
Q	Position and description of filter visual warning	Displayed on unit filter inspection and user's manual	Displayed on unit filter inspection and user's manual	Displayed on unit filter inspection and user's manual	Displayed on unit filter inspection and user's manual	Displayed on unit filter inspection and user's manual	Displayed on unit filter inspection and user's manual
S	Disassembly instructions URL	giacomini.com	giacomini.com	giacomini.com	giacomini.com	giacomini.com	giacomini.com

Ventilation units

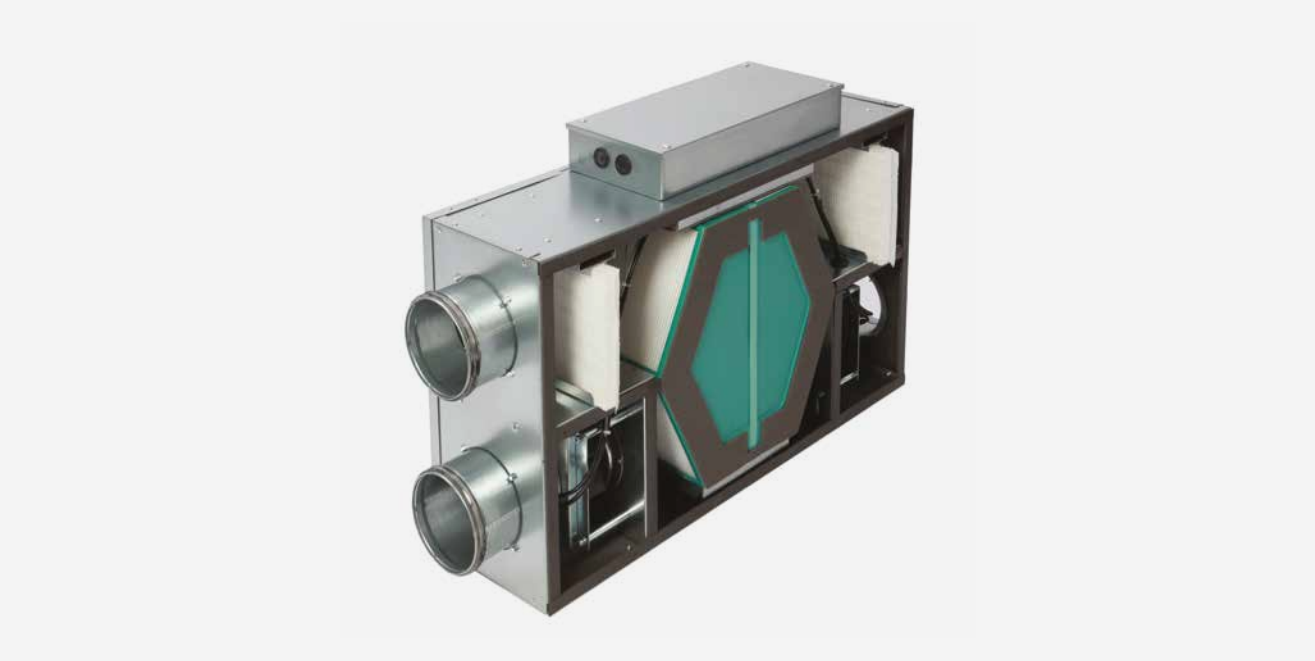
KHR-Z

Description / Product specifications

Dual flow duct-type ventilation unit with high efficiency heat recuperator, for horizontal ceiling installation or against wall. Compact and light construction.

With high efficiency standard static heat exchanger for sensible heat recovery.

Control panel with capacitative touchscreen, for wall surface mounting.



PRODUCT CODE	DESCRIPTION	EURO/pcs	CL		
KHRZY200	Nominal air flow rate 200 m³/h	2,415.00	K	1	-
KHRZY300	Nominal air flow rate 300 m³/h	2,555.00	K	1	-

Configuration of ventilation unit air flows

The product codes refer to the basic configuration ventilation unit (H1), with "outer side" (exchange/exhaust) and "inner side" (delivery/recovery) flows shown in the picture.

For specific work-site requirements, the reverse configuration (H2) is available on request, with "inner circuit/outer circuit" flows reversed (to be specified upon order).

Technical data

VENTILATION UNIT / AIR TREATMENT PERFORMANCE	KHRZY200	KHRZY300
Total air flow rate - m^3/h	137	298
Nominal efficiency of sensible recovery[1] - %	87.5	87.2
Fan useful static pressure - Pa	100	100

ELECTRIC DATA	KHRZY200	KHRZY300
Supply Tension / Phases / Frequency - V / - / Hz	230 / 1 / 50	230 / 1 / 50
Max. absorbed energy - A	0.74	1.6
Absorbed power - W	96	170
IP protection class	IP44	IP44

ACOUSTIC DATA[2]	KHRZY200	KHRZY300
Sound power level transmitted by structure - db(A)	60	63
Sound power level radiated by duct - db(A)	65	68
Sound power level 1m/3m - db(A)	46.8 / 38.9	49.5 / 41.7

FILTERS	KHRZY200	KHRZY300
Filter types	Flat filters	Flat filters
Filtering class/efficiency	ISO ePM1/80% (2x)	ISO ePM1/80% (2x)

DIMENSIONS. WEIGHT AND CONNECTIONS	KHRZY200	KHRZY300
Length "L" - mm	760	900
Width "W" - mm	445	595
Height "H" - mm	225	330
Weight - kg	33	41
Air connections - DN. mm - Fresh air inflow - Foul air extraction - External air intake - Foul air exhaust	 DN125 DN125 DN125 DN125	 DN160 DN160 DN160 DN160
Condensation drain - mm	Ø16	Ø16

(1) Data according to standard UNI EN 13141-7. External air: temperature 7 °C, relative humidity 72%; indoor air (room): temperature 20 °C, relative humidity 28%; reference air flow rate.
(2) Data according to standard UNI EN 3741 and UNI EN 3744.

Main features

• Self-supporting monoblock structure with simplified construction, made of a single galvanized metal panel combined to a polyethylene pad (thickness 10 mm) for thermal insulation and soundproofing

• Polypropylene counter-flow static heat exchanger for high efficiency recovery of sensible heat. Easy to remove for periodical inspection and maintenance

• Radial centrifugal fans with reverse blades and EC speed modulation motors. Maximum efficiency, minimum consumptions and noise

• Electric panel excluded from air flow, complete of fan 4-speed control card, anti-freezing, automatic by-pass, temperature probes, post-heating coil control and automatic dirt-filter sensor

• Free cooling inside unit with wide air flow and damper with motorized actuator

• Motorized by-pass on electric panel for simplified maintenance

• Panel easy to remove for inspection and maintenance

• Class ISO ePM1 filters upstream to exchanger, on external air intake and indoor foul air recovery. Filters with low losses of pressure, easy to remove without tools for periodical maintenance or replacement, washable

• Dual side drain for condensation disposal

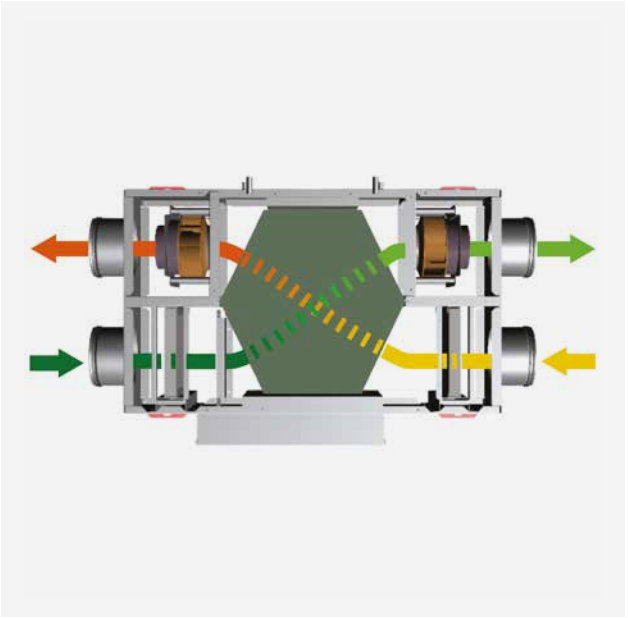
Operational principles

Winter/summer operational diagram.

External air is filtered and pushed into the exchanger where it recovers/releases heat from the ejected counter-flow before being channeled into the noble ambients.

Simultaneously, foul air from service rooms is pushed to the opposite side of the exchanger where it releases/gains heat from the counter-flow before being ejected outside.

There is no contact or mixing between the air counter-flows.

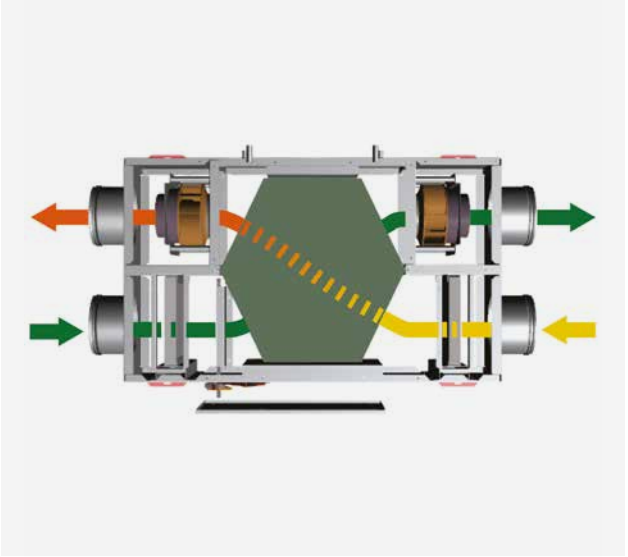


Summer operational diagram with active by-pass (free cooling).

External air is filtered and pushed into a dedicated duct parallel to the exchanger before being channeled into the noble ambients.

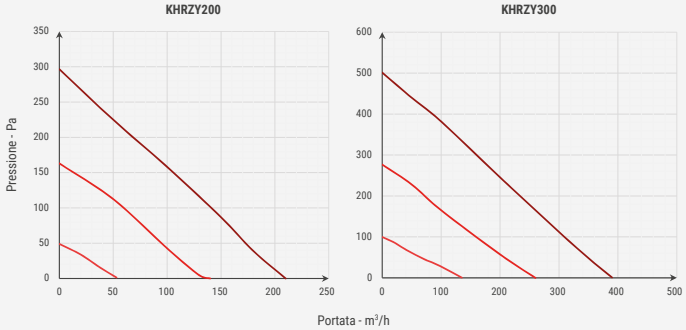
Simultaneously, foul air from service rooms is pushed to the opposite side of the exchanger where it is then ejected outside.

Only one of the two air flows crosses the exchanger with no heat transfer.



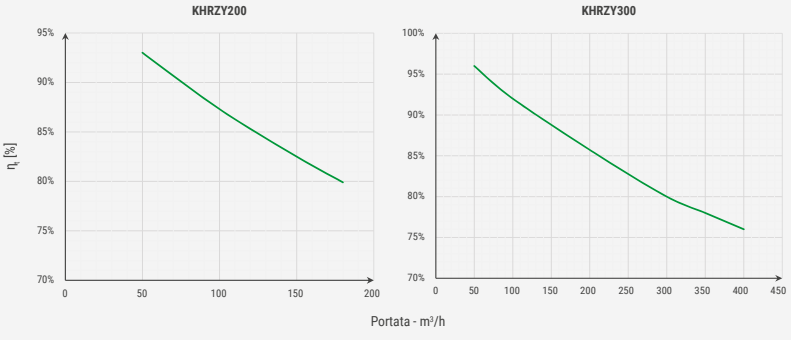
Aeraulic performance

Flow rate-pressure diagrams referring to: min. speed, speed corresponding to reference flow rate, max. speed.



Heat recovery thermal efficiency

According to standard UNI EN 13141-7. External air: temperature 7 °C, relative humidity 72%; indoor air (room): temperature 20 °C, relative humidity 28%; reference air flow rate.



ErP Ecodesign energy efficiency data

(complying with European Regulations 1253/2014 and 1254/2014)

Ref.	DESCRIPTION	KHRZY200	KHRZY300
A	Supplier's name or brand	Giacomini S.p.A.	Giacomini S.p.A.
B	Model identification code	KHRZY200	KHRZY300
C	Specific energy consumption (SEC) - kWh/m².a - Cold - Temperate - Warm - SEC class	 -69.90 -32.60 -8.64 B	 -69.90 -28.90 -5.10 B
D	Declared type	RVU Bidirectional	RVU Bidirectional
E	Type of activation installed	Adjustable speed drive	Adjustable speed drive
F	Heat recovery system	Recovery	Recovery
G	Heat recovery thermal efficiency - %	87.5	85.2
H	Max. flow rate - m³/s	0.038	0.083
I	Electric power absorbed at max. flow rate - W	96	170
J	Sound power level L_{WA} - dB(A)	61	64
K	Reference flow rate - m³/s	0.027	0.058
L	Reference pressure difference - Pa	50	50
M	SPI - W/(m³/h)	0.0368	0.0476
N	Control factor and type	1	1
O	Max. percentages declared for internal/external leakage - %	4.9 int. / 4.6 ext.	6.1 int. / 5.8 ext.
Q	Position and description of filter visual warning	Displayed on unit filter inspection and user's manual	Displayed on unit filter inspection and user's manual
S	Disassembly instructions URL	giacomini.com	giacomini.com

Accessories and spare parts

KHR-MP

Description / Product specifications

Anti-vibration feet kit with soundproofers for floor installation of vertical ventilation units KHR-V.

Steel screws and washers provided for installation in matching housings on ventilation unit supporting structure.

PRODUCT CODE	DESCRIPTION	EURO/pcs	CL		
KMPY001	Anti-vibration feet kit for ventilation units KHR-V	96.00	K	1	-

KHR-AQ

Description / Product specifications

Indoor air quality sensor for ventilation units KHR. For control of mixed gases (VOC, odorous substances and gases such as tobacco smoke, body odors, kitchen vapors, ethanol, acetone, methanol etc.) in indoor air.

The concentrations read by the sensor are compared to the internal set-point (factory setting) to activate or deactivate the HRV control. The behavior of the regulator outlet on/off insertion (control contacts for 230 V devices) features three different options that can be selected with a plug: good air quality/optimized energy consumption, excellent air quality/higher energy consumption, acceptable air quality/low energy consumption. Wall surface mounting. Protection class IP30.

PRODUCT CODE	DESCRIPTION	EURO/pcs	CL		
KAQY001	Supply 230 V. Absorbed power 0,5 VA. Dimensions (LxHxW): 96,4x101x39 mm	328.00	K	1	-

Accessories and spare parts

KFR

Description / Product specifications

Standard spare filter kit for ventilation units. Filters with low losses of pressure, easy to remove without tools for periodical maintenance or replacement, washable.

For KHR recuperators: polypropylene composite filters, pre-mounted upstream to the exchanger, on external air intake and indoor foul air recovery.

PRODUCT CODE	DESCRIPTION	EURO/pcs	CL		
KFRY001	ISO ePM1 2-filter kit/80% efficiency for KHR 200 m³/h	62.00	K	1	-
KFRY002	Kit of 2 ISO ePM1 filters/70% efficiency for KHR 300 m³/h	70.00	K	1	-
KFRY003	ISO ePM1 2-filter kit/70% efficiency for KHR-H 400 and 500 m³/h	91.00	K	1	-
KFRY004	ISO ePM1 2-filter kit/70% efficiency for KHR-V 400 and 500 m³/h	96.00	K	1	-

KFCA

Description / Product specifications

Spare activated-carbon filter made of polypropylene composite, low losses of pressure, easy to remove without tools for periodical maintenance or replacement, washable. Used as optional replacement for standard filters (one or both) pre-mounted upstream to the exchanger on ventilation units. It removes gaseous contaminants (VOC, PAC, ozone, SO_2, NO_x) to achieve the best IAQ (Indoor Air Quality).

PRODUCT CODE	DESCRIPTION	EURO/pcs	CL		
KFCAY001	ISO ePM1 filter/70% efficiency for KHR 200 m³/h	36.00	K	1	-
KFCAY002	ISO ePM2.5 filter/70% efficiency for KHR 300 m³/h	48.00	K	1	-
KFCAY003	ISO ePM2.5 filter/60% efficiency for KHR-H 400 and 500 m³/h	55.00	K	1	-
KFCAY004	ISO ePM2.5 filter/60% efficiency for KHR-V 400 and 500 m³/h	72.00	K	1	-

Spare filters for each ventilation unit

VENTILATION UNIT	STANDARD FILTER KIT	ACTIVATED-CARBON FILTER
KHRVY200 KHRVX200	KFRY001 (2 ISO ePM1 filters/80% efficiency)	KFCAY001 (1 ISO ePM2.5 filter/70% efficiency)
KHRVY300 KHRVX300	KFRY002 (2 ISO ePM1 filters/70% efficiency)	KFCAY002 (1 ISO ePM2.5 filter/60% efficiency)
KHRVY400 KHRVX400	KFRY004 (2 ISO ePM1 filters/70% efficiency)	KFCAY004 (1 ISO ePM2.5 filter/60% efficiency)
KHRVY500 KHRVX500	KFRY004 (2 ISO ePM1 filters/70% efficiency)	KFCAY004 (1 ISO ePM2.5 filter/60% efficiency)
KHRHY200 KHRHX200	KFRY001 (2 ISO ePM1 filters/80% efficiency)	KFCAY001 (1 ISO ePM2.5 filter/70% efficiency)
KHRHY300 KHRHX300	KFRY002 (2 ISO ePM1 filters/70% efficiency)	KFCAY002 (1 ISO ePM2.5 filter/60% efficiency)
KHRHY400	KFRY003 (2 ISO ePM1 filters/70% efficiency)	KFCAY003 (1 ISO ePM2.5 filter/60% efficiency)
KHRHY500	KFRY003 (2 ISO ePM1 filters/70% efficiency)	KFCAY003 (1 ISO ePM2.5 filter/60% efficiency)
KHRZY200	KFRY001 (2 ISO ePM1 filters/80% efficiency)	KFCAY001 (1 ISO ePM2.5 filter/70% efficiency)
KHRZY300	KFRY002 (2 ISO ePM1 filters/70% efficiency)	KFCAY002 (1 ISO ePM2.5 filter/60% efficiency)

Periodical and programmed replacement of the filters is strongly recommended to prevent increased energy consumptions and deterioration of indoor air quality (increase of carbon dioxide emissions and, in case of activated-carbon filters, progressive release of harmful compounds already captured).

Accessories and spare parts

KSR

Description / Product specifications

Polypropylene counter-flow static heat exchanger for high efficiency recovery of sensible heat (and latent heat in enthalpy version). Summer and winter operation. Easy to remove from ventilation unit for periodical inspection and maintenance.

Standard exchanger

PRODUCT CODE	DESCRIPTION	EURO/pcs	CL	▢	▦
KSRY001	Dimensions: 366x366x160 mm. For KHR 200 m³/h	239.00	K	1	-
KSRY002	Dimensions: 366x366x270 mm. For KHR 300 m³/h	335.00	K	1	-
KSRY003	Dimensions: 366x366x400 mm. For KHR-V 400 and 500 m³/h	500.00	K	1	-
KSRY004	Dimensions: 232x481x490 mm. For KHR-H 400 and 500 m³/h	562.00	K	1	-

Enthalpy exchanger

PRODUCT CODE	DESCRIPTION	EURO/pcs	CL	▢	▦
KSRX001	Dimensions: 366x366x160 mm. For KHR 200 m³/h	574.00	K	1	-
KSRX002	Dimensions: 366x366x270 mm. For KHR 300 m³/h	992.00	K	1	-
KSRX003	Dimensions: 366x366x400 mm. For KHR-V 400 and 500 m³/h	1,343.00	K	1	-

1 - Ventilation units

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2 - Plenums for machines and manifolds




p. 121

3 - Grids and external terminals



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4 - Plenums for openings and room grids



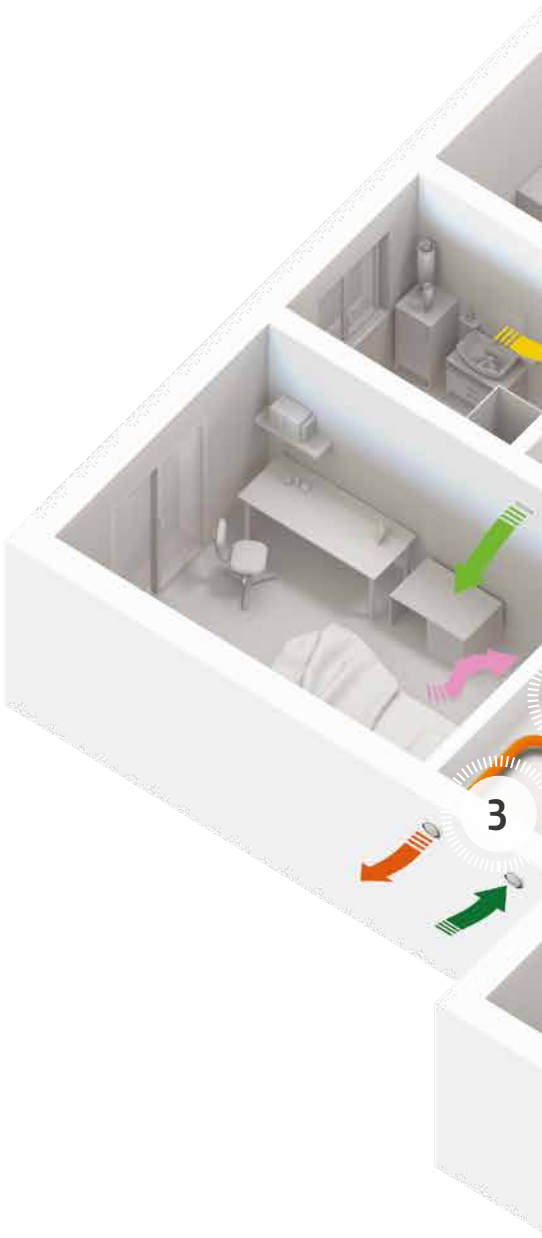
p. 128

5 - Ducts, fittings, accessories



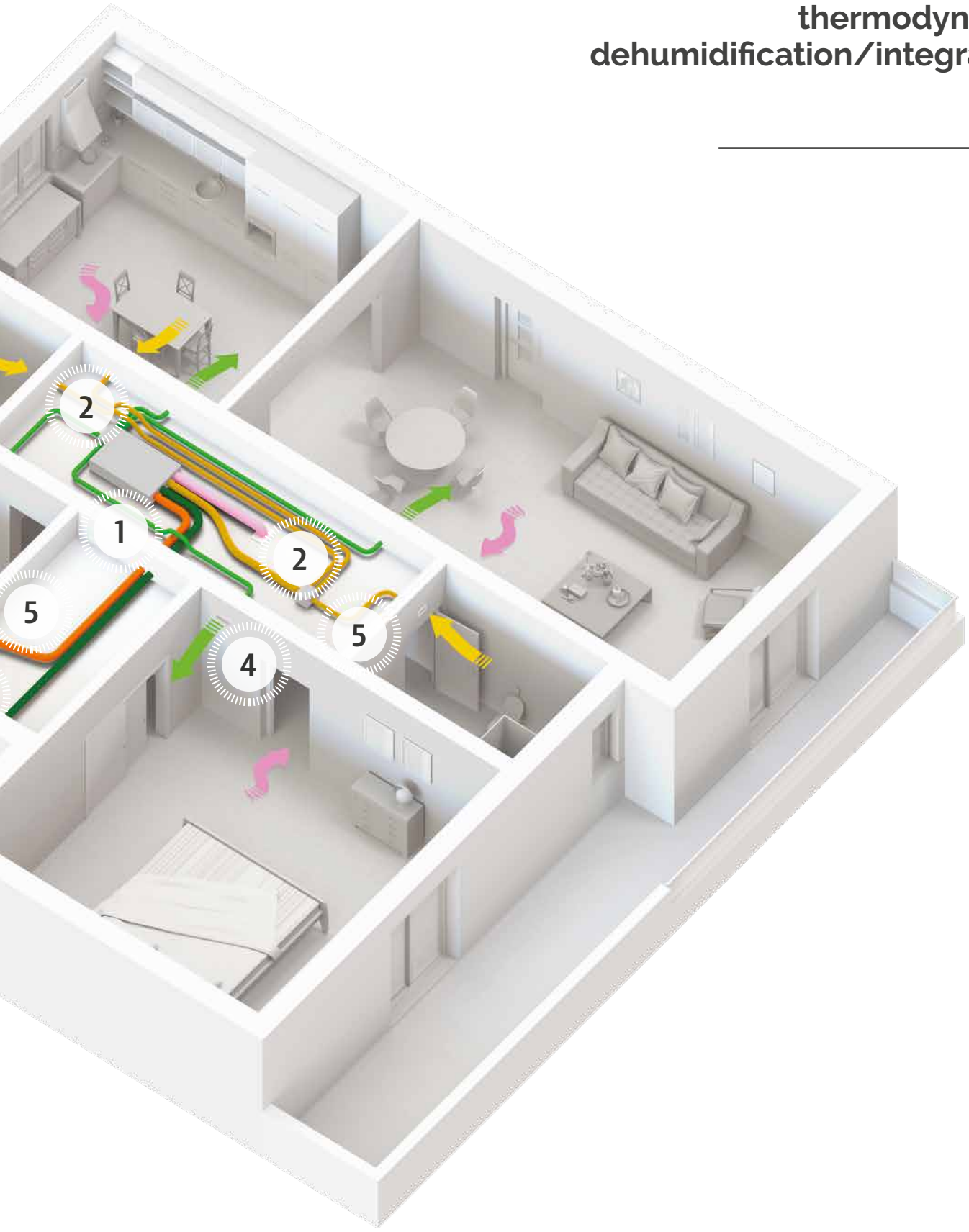


p. 134



Chapter 3

Heat recuperators with thermodynamic dehumidification/integration



Chapter 3

Heat recuperators with thermodynamic dehumidification/integration

Monoblock ventilation units

KHRD-V

Description / Product specifications

Dual flow duct-type ventilation units with high efficiency heat recovery, additional primary-air treatment section for dehumidification and optional heating/cooling integration based on model. Dehumidification and summer cooling through partial recirculation of indoor air and activation of unit cooling circuit. Wall or floor vertical installation. Compact dimensions for simplified installation in technical compartments or attics.

With enthalpy static heat exchanger for high efficiency recovery of sensible and latent energy.

Control panel with capacitative touchscreen, for wall surface mounting or flush mounting in special box.

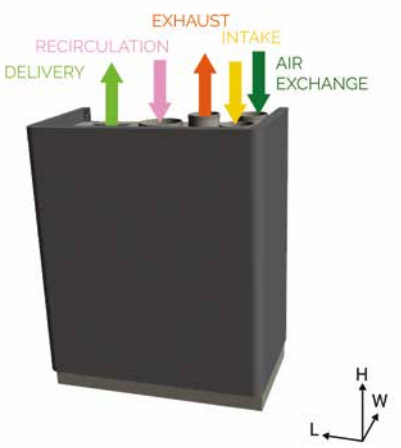
Dehumidification only

PRODUCT CODE	DESCRIPTION	EURO/pcs	CL		
KHRDVX300	Nominal air flow rate: total 300 m³/h - external 150 m³/h	6,770.00	K	1	-
KHRDVX500	Nominal air flow rate: total 500 m³/h - external 250 m³/h	7,455.00	K	1	-

For dehumidification and integration

PRODUCT CODE	DESCRIPTION	EURO/pcs	CL		
KHRDVRX300	Nominal air flow rate: total 300 m³/h - external 150 m³/h	7,275.00	K	1	-
KHRDVRX500	Nominal air flow rate: total 500 m³/h - external 250 m³/h	7,890.00	K	1	-

Configuration of ventilation unit air flows



Technical data

VENTILATION UNIT / AIR TREATMENT PERFORMANCE	KHRDVX300	KHRDVX500	KHRDVRX300	KHRDVRX500
Total air flow rate - m^3/h	297	520	297	520
External air nominal flow rate - m^3/h	154	265	154	265
Nominal efficiency of winter sensible recovery[1] - %	75.4	74.1	75.4	74.1
Latent recovery efficiency[1] - %	46.0	45.0	46.0	45.0
Nominal efficiency of summer sensible recovery[2] - %	73.1	71.5	73.1	71.5
Useful dehumidification capacity (net of external air enthalpy content)[2] - l/24h	22	31	22	31
Hydronic coil cooling power output[3] - kW	0.40	0.54	0.40	0.54
Compressor cooling power output[3] - kW	-	-	1.30	1.70
Summer operational water flow rate - m^3/h	0.20	0.35	0.20	0.35
Summer operational loss of pressure - kPa	13.0	9.4	13.0	9.4
Hydronic coil thermal power output[4] - kW	0.46	0.86	0.46	0.86
Winter operational water flow rate - m^3/h	0.20	0.35	0.20	0.35
Winter operational loss of pressure - kPa	13.0	9.4	13.0	9.4
Fan useful static pressure - Pa	100	100	100	100
Cooling gas	R134a	R134a	R134a	R134a
Heating operational limits - °C /UR% - External air - Indoor air	-20÷20 °C 15÷30 °C / 40÷90%	-20÷20 °C 15÷30 °C / 40÷90%	-20÷20 °C 15÷30 °C / 40÷90%	-20÷20 °C 15÷30 °C / 40÷90%
Cooling operational limits - °C /UR% - External air - Indoor air	20÷40 °C 18÷30 °C / 40÷90%	20÷40 °C 18÷30 °C / 40÷90%	20÷40 °C 18÷30 °C / 40÷90%	20÷40 °C 18÷30 °C / 40÷90%

ELECTRIC DATA	KHRDVX300	KHRDVX500	KHRDVRX300	KHRDVRX500
Supply Tension / Phases / Frequency - V / - / Hz	230 / 1 / 50	230 / 1 / 50	230 / 1 / 50	230 / 1 / 50
Max. absorbed energy - A	3.8	6.1	3.8	6.1
Absorbed power - W	130	230	130	230
IP protection class	IP44	IP44	IP44	IP44

ACOUSTIC DATA[5]	KHRDVX300	KHRDVX500	KHRDVRX300	KHRDVRX500
Sound power level transmitted by structure - db(A)	62	67	62	67
Sound power level radiated by duct - db(A)	67	68	67	68
Sound power level 1m/3m - db(A)	48.6 / 41.0	53.0 / 45.3	48.6 / 41.0	53.0 / 45.3

FILTERS	KHRDVX300	KHRDVX500	KHRDVRX300	KHRDVRX500
Filter types	Flat filters	Flat filters	Flat filters	Flat filters
Filtering class/efficiency	ISO ePM1/80% (2x) ISO Coarse (1x)	ISO ePM1/70% (2x) ISO Coarse (1x)	ISO ePM1/80% (2x) ISO Coarse (1x)	ISO ePM1/70% (2x) ISO Coarse (1x)

DIMENSIONS, WEIGHT AND CONNECTIONS	KHRDVX300	KHRDVX500	KHRDVRX300	KHRDVRX500
Length "L" - mm	870	970	870	970
Width "W" - mm	470	700	470	700
Height "H" - mm	880 (+145 for base)	980 (+145 for base)	880 (+145 for base)	980 (+145 for base)
Weight - kg	85 (+1 for base)	100 (+1 for base)	85 (+1 for base)	100 (+1 for base)
Air connections - DN, mm - Indoor air delivery - Foul air recovery - Indoor air recirculation - External air intake - Foul air exhaust	 340x170 DN125 DN160 DN125 DN125	 510x245 DN160 DN200 DN160 DN160	 340x170 DN125 DN160 DN125 DN125	 510x245 DN160 DN200 DN160 DN160
Water delivery-return connections - inch.	1/2" - 1/2"	1/2" - 1/2"	1/2" - 1/2"	1/2" - 1/2"
Condensation drain - mm	Ø20	Ø20	Ø20	Ø20

(1) External air: temperature 7 °C, relative humidity 72%; indoor air (room): temperature 20 °C, relative humidity 28%; reference air flow rate.
(2) External air: temperature 30 °C, relative humidity 60%; indoor air (room): temperature 25 °C, relative humidity 50%; reference air flow rate.
(3) Indoor air (room): temperature 25 °C, relative humidity 60%; water in 16 °C; water out 18 °C.
(4) Indoor air (room): temperature 20 °C, relative humidity 60%; water in 35 °C; water out 30 °C.
(5) Data according to standard UNI EN 3741 and UNI EN 3744.

Main features

• Plug&play for rapid and simplified installation

• Self-supporting monoblock structure with double panel made of metal sheet, galvanized inside and varnished outside (RAL9003), intermediate mineral wool pad (thickness 20 mm, density 42 kg/m^3) for thermal insulation and soundproofing

• Polypropylene counter-flow static enthalpy heat exchanger for high efficiency recovery of sensible and latent heat. Easy to remove for periodical inspection and maintenance

• Radial centrifugal fans with reverse blades and EC speed modulation motors.
Maximum efficiency, minimum consumptions and noise

• Electric panel on unit edge excluded from air flow, with fan control, display of machine built-in temperature probes, filter timer control, recirculation and exchange air control

• Modbus setting for integration in domotic systems

• Cooling circuit provided with high efficiency alternative compressor and minimum noise

• Front panel easy to remove for inspection and maintenance

• Class ISO ePM1 filters upstream to exchanger, on external air intake and indoor foul air recovery. ISO Coarse filter on recirculation air. All filters with low losses of pressure, easy to remove without tools for periodical maintenance or replacement, washable

• Dual side drain for condensation disposal

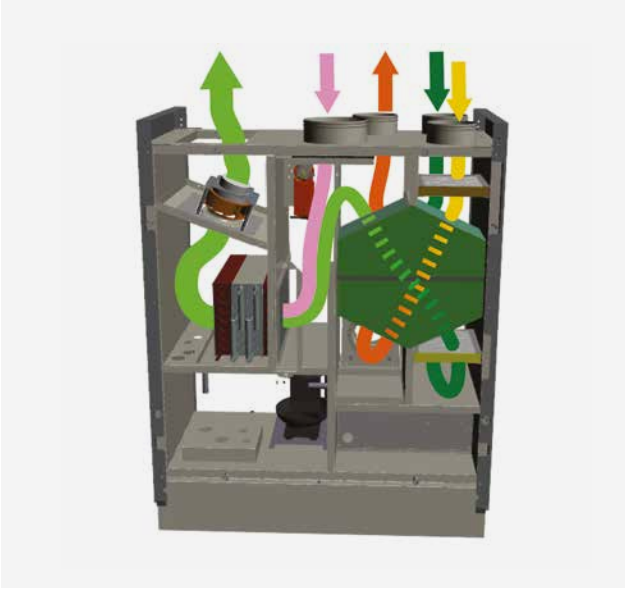
• Dual installation: wall mounting with special fitting bracket included; floor mounting with base included.

Operational principles

Winter operational diagram.

Winter heating can be integrated by supplying the post-treatment hydronic coil with the radiant system hot water. The cooling circuit compressor is OFF and the unit works as a thermo-ventilating device.

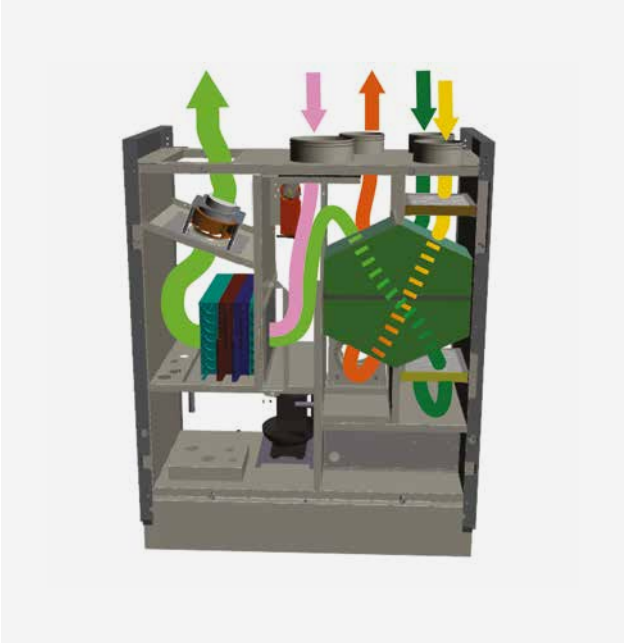
The delivery air flow rate is the sum of the flow rate from the outside which passes through the exchanger and the one partially recirculated from the ambient obtained by opening the special automatic damper.



Summer operational diagram.

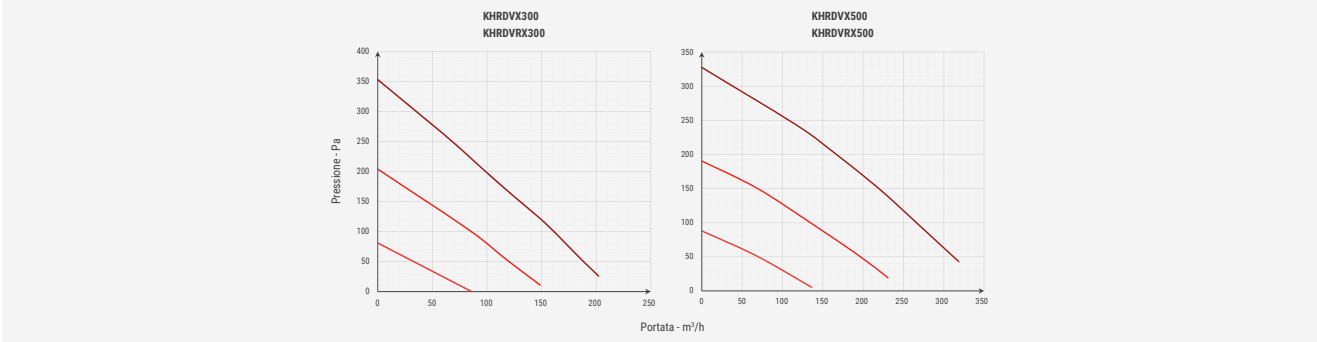
The cooling circuit - which includes a compressor, an air evaporation coil, an “air” condenser (version with dehumidification only) or a “radiant system air-water (version with integration) - activates through humidity and temperature probes.

The delivery air flow rate is the sum of the flow rate from the outside which passes through the exchanger and the one partially recirculated from the ambient obtained by opening the special automatic damper.



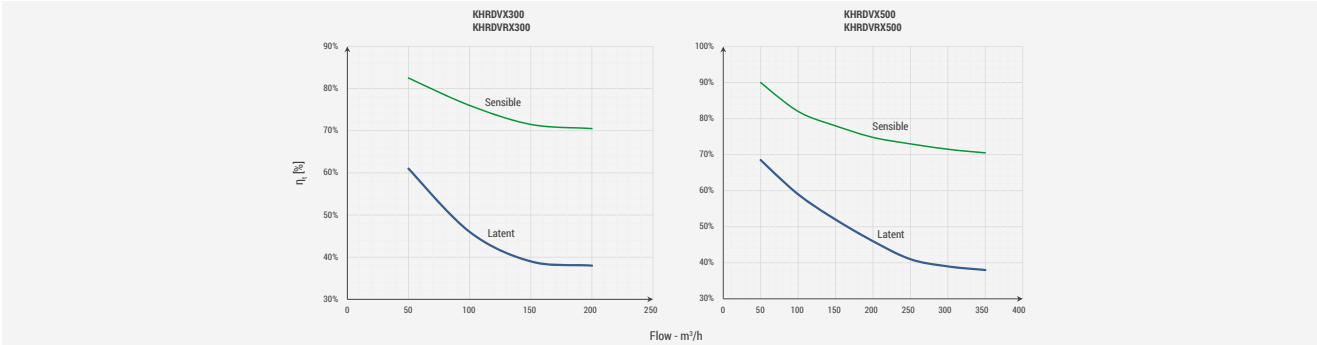
Aeraulic performance

Flow rate-pressure diagrams referring to: min. speed, speed corresponding to reference flow rate, max. speed.



Heat recovery thermal efficiency

According to standard UNI EN 13141-7. External air: temperature 7 °C, relative humidity 72%; indoor air (room): temperature 20 °C, relative humidity 28%; reference air flow rate.



ErP Ecodesign energy efficiency data

(complying with European Regulations 1253/2014 and 1254/2014)

Ref.	DESCRIPTION	KHRDVX300	KHRDVX500	KHRDVRX300	KHRDVRX500
A	Supplier's name or brand	Giacomini S.p.A.	Giacomini S.p.A.	Giacomini S.p.A.	Giacomini S.p.A.
B	Model identification code	KHRDVX300	KHRDVX500	KHRDVRX300	KHRDVRX500
C	Specific energy consumption (SEC) - kWh/m².a - Cold - Temperate - Warm - SEC class	 -61.90 -26.80 -4.10 B	 -65.40 -30.60 -8.10 B	 -61.90 -26.80 -4.10 B	 -65.40 -30.60 -8.10 B
D	Declared type	RVU Bidirectional	RVU Bidirectional	RVU Bidirectional	RVU Bidirectional
E	Type of activation installed	Adjustable speed drive	Adjustable speed drive	Adjustable speed drive	Adjustable speed drive
F	Heat recovery system	Recovery	Recovery	Recovery	Recovery
G	Heat recovery thermal efficiency - %	75.4	74.1	75.4	74.1
H	Max. flow rate - m³/s	0.050	0.078	0.050	0.078
I	Electric power absorbed at max. flow rate - W	130	230	130	230
J	Sound power level L_{WA} - dB(A)	62	62	62	62
K	Reference flow rate - m³/s	0.033	0.055	0.033	0.055
L	Reference pressure difference -Pa	50	50	50	50
M	SPI - W/(m³/h)	0.67	0.48	0.67	0.48
N	Control factor and type	0.65	0.65	0.65	0.65
O	Max. percentages declared for internal/ external leakage - %	5.3 int. / 5.0 ext.	5.9 int. / 5.6 ext.	5.3 int. / 5.0 ext.	5.9 int. / 5.6 ext.
Q	Position and description of filter visual warning	Visualization on unit display, remote control display and user's manual	Visualization on unit display, remote control display and user's manual	Visualization on unit display, remote control display and user's manual	Visualization on unit display, remote control display and user's manual
S	Disassembly instructions URL	giacomini.com	giacomini.com	giacomini.com	giacomini.com

Monoblock ventilation units

KHRD-H

Description / Product specifications

Dual flow duct-type ventilation units with high efficiency heat recovery, additional primary-air treatment section for dehumidification and optional heating/cooling integration based on model. Dehumidification and summer cooling through partial recirculation of indoor air and activation of unit cooling circuit.

Ceiling horizontal installation. Reduced height for simplified installation in suspended ceilings. With enthalpy static heat exchanger for high efficiency recovery of sensible and latent energy. Control panel with capacitative touchscreen, for wall surface mounting or flush mounting in special box.

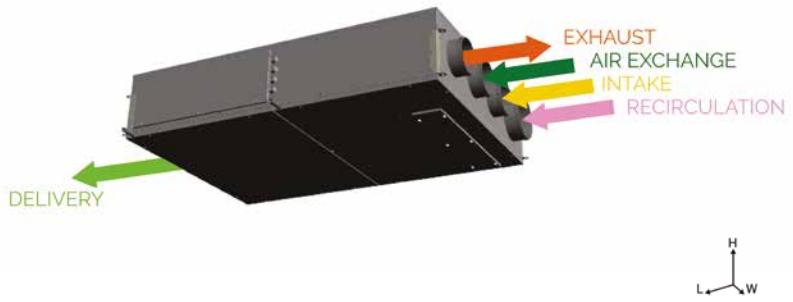
Dehumidification only

PRODUCT CODE	DESCRIPTION	EURO/pcs	CL		
KHRDHX300	Nominal air flow rate: total 300 m³/h - external 150 m³/h	6,770.00	K	1	-
KHRDHX500	Nominal air flow rate: total 500 m³/h - external 250 m³/h	7,455.00	K	1	-

For dehumidification and integration

PRODUCT CODE	DESCRIPTION	EURO/pcs	CL		
KHRDHRX300	Nominal air flow rate: total 300 m³/h - external 150 m³/h	7,275.00	K	1	-
KHRDHRX500	Nominal air flow rate: total 500 m³/h - external 250 m³/h	7,890.00	K	1	-

Configuration of ventilation unit air flows



Technical data

VENTILATION UNIT / AIR TREATMENT PERFORMANCE	KHRDHX300	KHRDHX500	KHRDHRX300	KHRDHRX500
Total air flow rate - m^3/h	297	520	297	520
External air nominal flow rate - m^3/h	154	265	154	265
Nominal efficiency of winter sensible recovery[1] - %	75.4	74.1	75.4	74.1
Latent recovery efficiency[1] - %	46.0	45.0	46.0	45.0
Nominal efficiency of summer sensible recovery[2] - %	73.1	71.5	73.1	71.5
Useful dehumidification capacity (net of external air enthalpy content)[2] - l/24h	22	31	22	31
Hydronic coil cooling power output[3] - kW	0.40	0.54	0.40	0.54
Compressor cooling power output[3] - kW	-	-	1.30	1.70
Summer operational water flow rate - m^3/h	0.20	0.35	0.20	0.35
Summer operational loss of pressure - kPa	13.0	9.4	13.0	9.4
Hydronic coil thermal power output[4] - kW	0.46	0.86	0.46	0.86
Winter operational water flow rate - m^3/h	0.20	0.35	0.20	0.35
Winter operational loss of pressure - kPa	13.0	9.4	13.0	9.4
Fan useful static pressure - Pa	100	100	100	100
Cooling gas	R134a	R134a	R134a	R134a
Heating operational limits - °C /UR% - External air - Indoor air	-20÷20 °C 15÷30 °C / 40÷90%	-20÷20 °C 15÷30 °C / 40÷90%	-20÷20 °C 15÷30 °C / 40÷90%	-20÷20 °C 15÷30 °C / 40÷90%
Cooling operational limits - °C /UR% - External air - Indoor air	20÷40 °C 18÷30 °C / 40÷90%	20÷40 °C 18÷30 °C / 40÷90%	20÷40 °C 18÷30 °C / 40÷90%	20÷40 °C 18÷30 °C / 40÷90%

ELECTRIC DATA	KHRDHX300	KHRDHX500	KHRDHRX300	KHRDHRX500
Supply Tension / Phases / Frequency - V / - / Hz	230 / 1 / 50	230 / 1 / 50	230 / 1 / 50	230 / 1 / 50
Max. absorbed energy - A	3.8	6.1	3.8	6.1
Absorbed power - W	130	230	130	230
IP protection class	IP44	IP44	IP44	IP44

ACOUSTIC DATA[5]	KHRDHX300	KHRDHX500	KHRDHRX300	KHRDHRX500
Sound power level transmitted by structure - db(A)	62	67	62	67
Sound power level radiated by duct - db(A)	67	68	67	68
Sound power level 1m/3m - db(A)	48.6 / 41.0	53.0 / 45.3	48.6 / 41.0	53.0 / 45.3

FILTERS	KHRDHX300	KHRDHX500	KHRDHRX300	KHRDHRX500
Filter types	Flat filters	Flat filters	Flat filters	Flat filters
Filtering class/efficiency	ISO ePM1/80% (2x) ISO Coarse (1x)	ISO ePM1/70% (2x) ISO Coarse (1x)	ISO ePM1/80% (2x) ISO Coarse (1x)	ISO ePM1/70% (2x) ISO Coarse (1x)

DIMENSIONS, WEIGHT AND CONNECTIONS	KHRDHX300	KHRDHX500	KHRDHRX300	KHRDHRX500
Length "L" - mm	1220	1220	1220	1220
Width "W" - mm	820	960	820	960
Height "H" - mm	255	330	255	330
Weight - kg	72	91	75	95
Air connections - DN, mm - Indoor air delivery - Foul air recovery - Indoor air recirculation - External air intake - Foul air exhaust	 350x180 DN125 DN160 DN125 DN125	 490x255 DN160 DN200 DN160 DN160	 350x180 DN125 DN160 DN125 DN125	 490x255 DN160 DN200 DN160 DN160
Water delivery-return connections - inch.	1/2" - 1/2"	1/2" - 1/2"	1/2" - 1/2"	1/2" - 1/2"
Condensation drain - mm	Ø20	Ø20	Ø20	Ø20

(1) External air: temperature 7 °C, relative humidity 72%; indoor air (room): temperature 20 °C, relative humidity 28%; reference air flow rate.
(2) External air: temperature 30 °C, relative humidity 60%; indoor air (room): temperature 25 °C, relative humidity 50%; reference air flow rate.
(3) Indoor air (room): temperature 25 °C, relative humidity 60%; water in 16 °C; water out 18 °C.
(4) Indoor air (room): temperature 20 °C, relative humidity 60%; water in 35 °C; water out 30 °C.
(5) Data according to standard UNI EN 3741 and UNI EN 3744.

Main features

• Plug&play for rapid and simplified installation

• Self-supporting monoblock structure with double panel made of metal sheet, galvanized inside and varnished outside (RAL9003), intermediate mineral wool pad (thickness 20 mm, density 42 kg/m^3) for thermal insulation and soundproofing

• Polypropylene counter-flow static enthalpy heat exchanger for high efficiency recovery of sensible and latent heat. Easy to remove for periodical inspection and maintenance

• Radial centrifugal fans with reverse blades and EC speed modulation motors. Maximum efficiency, minimum consumptions and noise

• Electric panel on unit edge excluded from air flow, with fan control, display of machine built-in temperature probes, filter timer control, recirculation and exchange air control

• Modbus setting for integration in domotic systems

• Cooling circuit provided with high efficiency alternative compressor and minimum noise

• Bottom panel easy to remove for inspection and maintenance

• Class ISO ePM1 filters upstream to exchanger, on external air intake and indoor foul air recovery. ISO Coarse filter on recirculation air. All filters with low losses of pressure, easy to remove without tools for periodical maintenance or replacement, washable

• Dual side drain for condensation disposal

Operational principles

Winter operational diagram.

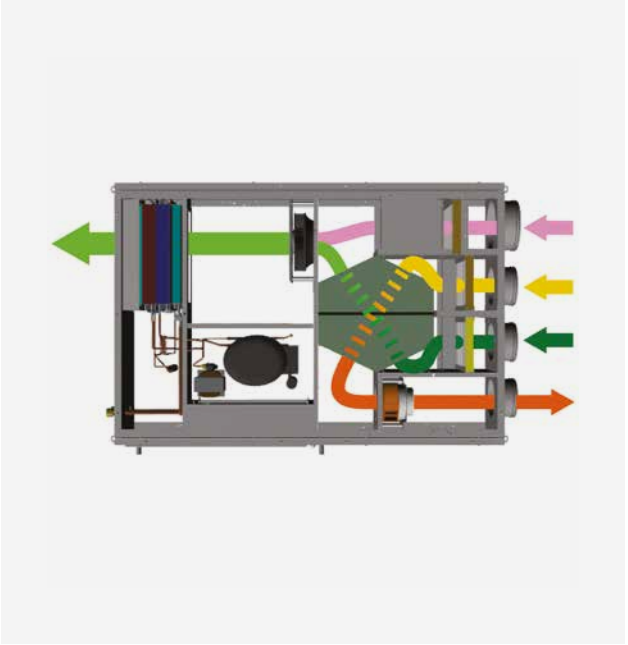
Winter heating can be integrated by supplying the post-treatment hydronic coil with the radiant system hot water. The cooling circuit compressor is OFF and the unit works as a thermo-ventilating device.

The delivery air flow rate is the sum of the flow rate from the outside which passes through the exchanger and the one partially recirculated from the ambient obtained by opening the special automatic damper.

Summer operational diagram.

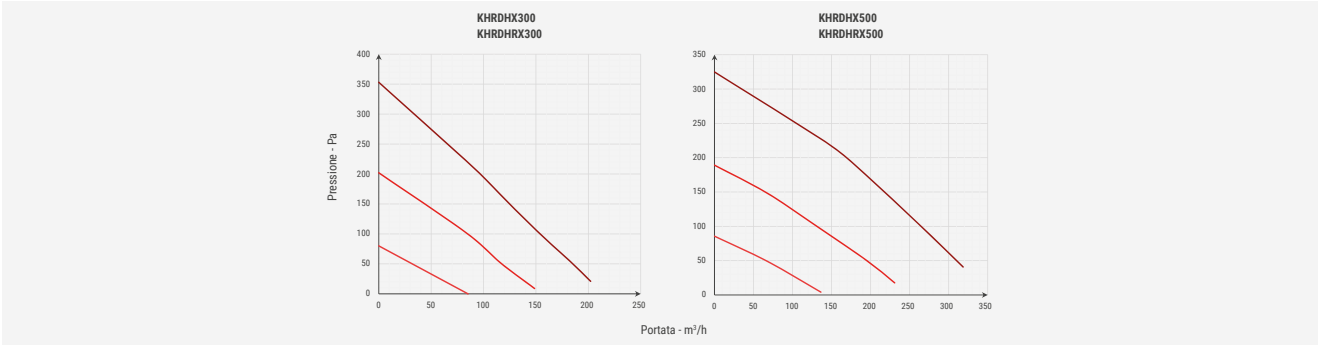
The cooling circuit - which includes a compressor, an air evaporation coil, an “air” condenser (version with dehumidification only) or a “radiant system air-water (version with integration) - activates through humidity and temperature probes.

The delivery air flow rate is the sum of the flow rate from the outside which passes through the exchanger and the one partially recirculated from the ambient obtained by opening the special automatic damper.



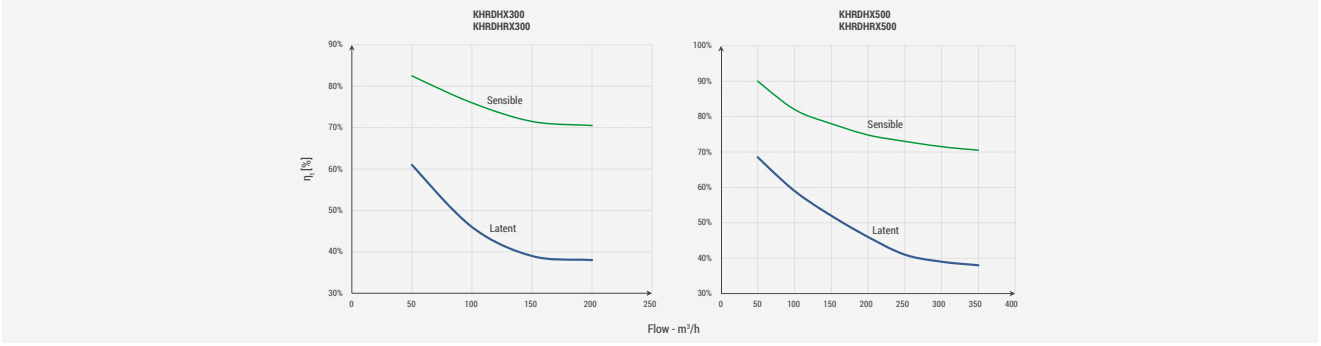
Aeraulic performance

Flow rate-pressure diagrams referring to: min. speed, speed corresponding to reference flow rate, max. speed.



Heat recovery thermal efficiency

According to standard UNI EN 13141-7. External air: temperature 7 °C, relative humidity 72%; indoor air (room): temperature 20 °C, relative humidity 28%; reference air flow rate.



ErP Ecodesign energy efficiency data

(complying with European Regulations 1253/2014 and 1254/2014)

Ref.	DESCRIPTION	KHRDHX300	KHRDHX500	KHRDHRX300	KHRDHRX500
A	Supplier's name or brand	Giacomini S.p.A.	Giacomini S.p.A.	Giacomini S.p.A.	Giacomini S.p.A.
B	Model identification code	KHRDHX300	KHRDHX500	KHRDHRX300	KHRDHRX500
C	Specific energy consumption (SEC) - kWh/m².a - Cold - Temperate - Warm - SEC class	 -61.90 -26.80 -4.10 B	 -65.40 -30.60 -8.10 B	 -61.90 -26.80 -4.10 B	 -65.40 -30.60 -8.10 B
D	Declared type	RVU Bidirectional	RVU Bidirectional	RVU Bidirectional	RVU Bidirectional
E	Type of activation installed	Adjustable speed drive	Adjustable speed drive	Adjustable speed drive	Adjustable speed drive
F	Heat recovery system	Recovery	Recovery	Recovery	Recovery
G	Heat recovery thermal efficiency - %	75.4	74.1	75.4	74.1
H	Max. flow rate - m³/s	0.050	0.078	0.050	0.078
I	Electric power absorbed at max. flow rate - W	130	230	130	230
J	Sound power level L_{WA} - dB(A)	62	62	62	62
K	Reference flow rate - m³/s	0.033	0.055	0.033	0.055
L	Reference pressure difference - Pa	50	50	50	50
M	SPI - W/(m³/h)	0.67	0.48	0.67	0.48
N	Control factor and type	0.65	0.65	0.65	0.65
O	Max. percentages declared for internal/ external leakage - %	5.3 int. / 5.0 ext.	5.9 int. / 5.6 ext.	5.3 int. / 5.0 ext.	5.9 int. / 5.6 ext.
Q	Position and description of filter visual warning	Visualization on unit display, remote control display and user's manual	Visualization on unit display, remote control display and user's manual	Visualization on unit display, remote control display and user's manual	Visualization on unit display, remote control display and user's manual
S	Disassembly instructions URL	giacomini.com	giacomini.com	giacomini.com	giacomini.com

Monoblock ventilation units

KDV

Description / Product specifications

Monoblock air treatment unit for ventilation, dehumidification and sensible power integration for use with cooling radiant systems. Provided with high efficiency counter-flow static heat exchanger.

Duct type for ceiling horizontal installation, floor installation over slab or against wall.

Cooling circuit provided with air- or water-cooled dissipative condenser based on machine model.

Remote control panel for configuration and operation control.

PRODUCT CODE	DESCRIPTION	EURO/pcs	CL		
KDVRAY360	Nominal air flow rate: total 360 m³/h - external 220 m³/h Air condensation	6,670.00	K	1	-
KDVRAY500	Nominal air flow rate: total 500 m³/h - external 300 m³/h Air condensation	9,486.00	K	1	-
KDVRWY300	Nominal air flow rate: total 300 m³/h - external 160 m³/h Water condensation	5,340.00	K	1	-

Technical data

VENTILATION UNIT / AIR TREATMENT PERFORMANCE	KDVRAY360	KDVRAY500	KDVRWY300
Total air flow rate - m^3/h	360	500	300
External air nominal flow rate - m^3/h	220	300	160
Nominal efficiency of winter sensible recovery[1] - %	87.0	87.5	91.0
Nominal efficiency of summer sensible recovery[2] - %	82.0	80.4	86.0
Total dehumidification capacity[3] - l/24h	56.0	74.1	44.9
Hydronic coil cooling power output[3] - kW	n/a	880	n/a
Compressor cooling power output[3] - kW	n/a	2580	n/a
Summer operational water flow rate - m^3/h	25.0	n/a	25.9
Summer loss of pressure - kPa	1.46	n/a	1.05
Hydronic coil thermal power output[4] - kW	360	500	400
Winter operational water flow rate - m^3/h	12	11	8
Heating operational limits - °C / UR% - External air - Indoor air	 200 200	 260 260	 200 100
Cooling gas	R134a	R134a	R134a

ELECTRIC DATA	KDVRAY360	KDVRAY500	KDVRWY300
Supply Tension / Phases / Frequency - V / - / Hz	230 / 1 / 50	230 / 1 / 50	230 / 1 / 50
Absorbed power - W	820	1100	560
Power absorbed by compressor - W	470	780	460
Max. power absorbed by fans - W - Delivery fan - Exhaust fan	 170 170	 160 160	 70 30

ACOUSTIC DATA	KDVRAY360	KDVRAY500	KDVRWY300
Sound pressure level 1m - db(A)	42.0	48.0	39.0

FILTERS	KDVRAY360	KDVRAY500	KDVRWY300
Filter types	Flat filters	Flat filters	Flat filters
Filtering class (EN 779:2002)	G4	G4	G4

DIMENSIONS, WEIGHT AND CONNECTIONS	KDVRAY360	KDVRAY500	KDVRWY300
Length "L" - mm	1290	1286	1178
Width "W" - mm	882	962	773
Height "H" - mm	276	424	276
Weight - kg	85	105	71
Air connections - DN, mm - Indoor air delivery - Foul air recovery - Indoor air recirculation - External air intake - Foul air exhaust	 DN150 DN125 DN150 DN150 DN150	 DN200 DN150 DN200 DN200 DN200	 DN150 DN100 DN150 DN100 DN100
Water delivery-return connections - inch.	1/2"F	1/2"F	1/2"F
Condensation drain - mm	n/a	n/a	n/a

(1) External air: temperature -5 °C, relative humidity 50%; indoor air (room): temperature 20 °C, relative humidity 50%; nominal air flow rate.
(2) External air: temperature 35 °C, relative humidity 80%; indoor air (room): temperature 26 °C, relative humidity 65%; nominal air flow rate.
(3) Indoor air (room): temperature 35 °C, relative humidity 50%; nominal air flow rate.
(4) Referred to recirculation. Indoor air (room): temperature 26 °C, relative humidity 50%; nominal air flow rate.

Main features

• Plug&play for rapid and simplified installation

• Monoblock self-supporting structure, made with a simple galvanized metal sheet panel along with thermal insulation and soundproofing

• Extremely versatile horizontal fitting: hanging from suspended ceiling, standing on floor slab

• Polypropylene counter-flow static heat exchanger for high efficiency recovery of sensible heat

• Brushless centrifugal fans with electronic control. The air flow rates treated by the machine can be set through the control panel. The fans automatically reach the speed required to overcome the duct losses of pressure

• Remote control panel for installation on DIN rail inside a wall-mount electric board

• Removable synthetic filtering section class G4 (EN779:2002)

• Two condensation drains, one for summer and one for winter

Operational principles

The following air treatments are provided:

• air exchange with high efficiency heat recovery, optional winter heating or summer cooling

• free-cooling air exchange, that is with no heat recovery, both in summer and winter

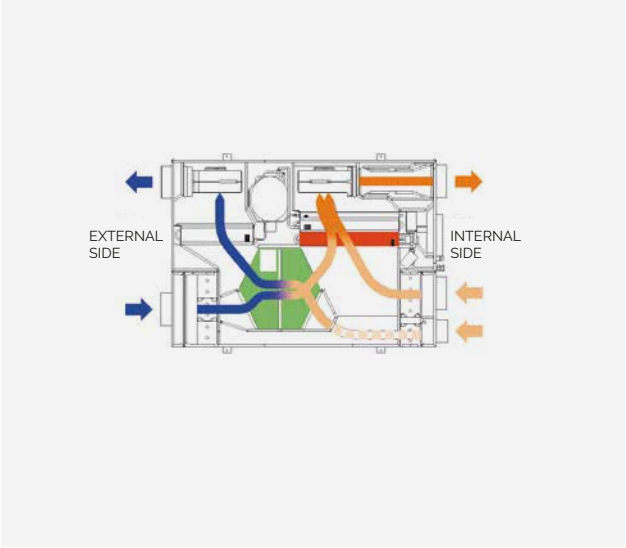
• air recirculation in winter with optional heating

• summer air recirculation with cooling, dehumidification or cooling and dehumidification

• air recirculation with an exchange share, in addition to all treatments provided

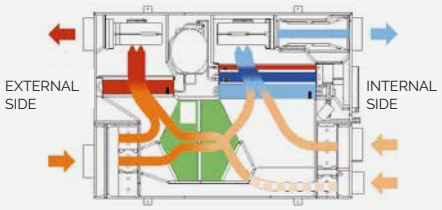
Winter operational diagram.

Both fans are ON. The water coil heats the inflow air. The ejected air preheats the exchange air through the recuperator.

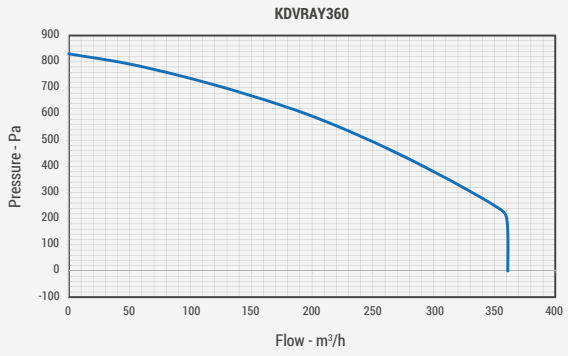


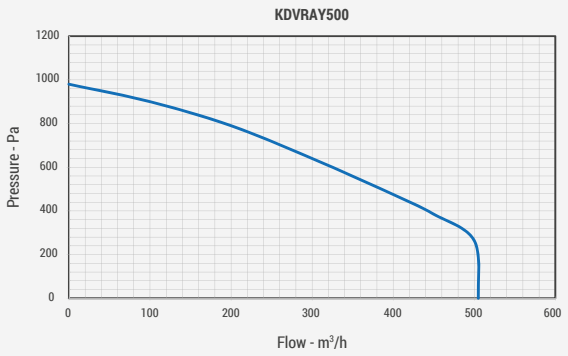
Summer operational diagram.

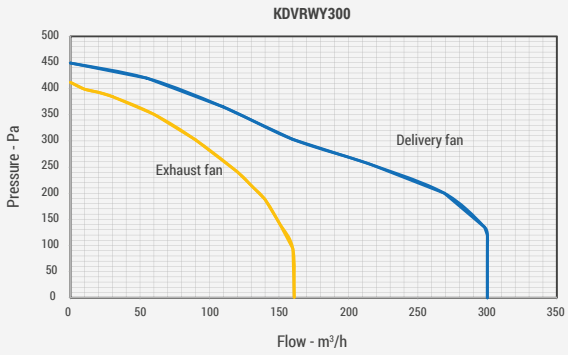
The compressor and both fans are ON. The entire dehumidification/integration coil unit treats the inflow air.



Aeraulic performance







Split module (combined to KHR recuperators)

KMSD

Description / Product specifications

Duct-type thermodynamic module for primary air treatment, for use with heat recuperators KHR (split installation). Equipped with indoor air recirculation section, it provides dehumidification and optional heating/cooling integration based on model. Dehumidification and summer cooling through partial recirculation of indoor air and activation of module cooling circuit.
Horizontal installation on ceiling. Reduced height for simplified installation in suspended ceilings.
Control through communication with chronothermostat or domotic systems.

Dehumidification only

PRODUCT CODE	DESCRIPTION	EURO/pcs	CL		
KMSDY300	Nominal air flow rate: total 300 m³/h - external 150 m³/h	2,895.00	K	1	-
KMSDY500	Nominal air flow rate: total 500 m³/h - external 250 m³/h	3,290.00	K	1	-

For dehumidification and integration

PRODUCT CODE	DESCRIPTION	EURO/pcs	CL		
KMSDRY300	Nominal air flow rate: total 300 m³/h - external 150 m³/h	3,615.00	K	1	-
KMSDRY500	Nominal air flow rate: total 500 m³/h - external 250 m³/h	3,940.00	K	1	-

Configuration of ventilation unit air flows

Technical data

VENTILATION UNIT / AIR TREATMENT PERFORMANCE	KMSDY300	KMSDY500	KMSDRY300	KMSDRY500
Total air flow rate - m^3/h	300	500	300	500
External air nominal flow rate - m^3/h	0÷150	0÷250	0÷150	0÷250
Useful dehumidification capacity (net of external air enthalpy content)1 - l/24h	22	31	22	31
Hydronic coil cooling power output[2] - kW	0.40	0.54	0.28	0.50
Compressor cooling power output[2] - kW	-	-	1.30	1.70
Summer operational water flow rate - m^3/h	0.20	0.35	0.20	0.35
Summer operational loss of pressure - kPa	13.0	9.4	13.0	9.4
Hydronic coil thermal power output[3] - kW	0.46	0.86	0.46	0.86
Winter operational water flow rate - m^3/h	0.20	0.35	0.20	0.35
Winter operational loss of pressure - kPa	13.0	9.4	13.0	9.4
Cooling gas	R134a	R134a	R134a	R134a
Heating operational limits - °C /UR% - External air - Indoor air	-20÷20 °C 15÷30 °C / 40÷90%	-20÷20 °C 15÷30 °C / 40÷90%	-20÷20 °C 15÷30 °C / 40÷90%	-20÷20 °C 15÷30 °C / 40÷90%
Cooling operational limits - °C /UR% - External air - Indoor air	20÷40 °C 18÷30 °C / 40÷90%	20÷40 °C 18÷30 °C / 40÷90%	20÷40 °C 18÷30 °C / 40÷90%	20÷40 °C 18÷30 °C / 40÷90%

ELECTRIC DATA	KMSDY300	KMSDY500	KMSDRY300	KMSDRY500
Supply Tension / Phases / Frequency - V / - / Hz	230 / 1 / 50	230 / 1 / 50	230 / 1 / 50	230 / 1 / 50
Max. absorbed energy - A	2.5	3.3	2.5	3.3
Nominal power absorbed by compressor[4] - W	350	470	350	470
Nominal power absorbed by recirculation fan - W	120	170	120	170
IP protection class	IP44	IP44	IP44	IP44

ACOUSTIC DATA[5]	KMSDY300	KMSDY500	KMSDRY300	KMSDRY500
Sound pressure level 3m - db(A)	36	38	36	38

FILTERS	KMSDY300	KMSDY500	KMSDRY300	KMSDRY500
Filter types	Flat filters	Flat filters	Flat filters	Flat filters
Filtering class/efficiency	ISO Coarse (1x)	ISO Coarse (1x)	ISO Coarse (1x)	ISO Coarse (1x)

DIMENSIONS, WEIGHT AND CONNECTIONS	KMSDY300	KMSDY500	KMSDRY300	KMSDRY500
Length "L" - mm	680	680	680	680
Width "W" - mm	680	800	680	800
Height "H" - mm	255	305	255	305
Weight - kg	41	54	43	56
Air connections - DN, mm - Indoor air delivery - Indoor air recirculation - External air intake	 310x178 DN160 DN160	 500x228 DN200 DN200	 310x178 DN160 DN160	 500x228 DN200 DN200
Water delivery-return connections - inch.	1/2" - 1/2"	1/2" - 1/2"	1/2" - 1/2"	1/2" - 1/2"
Condensation drain - mm	Ø20	Ø20	Ø20	Ø20

(1) External air: temperature 30 °C, relative humidity 60%; indoor air (room): temperature 25 °C, relative humidity 50%; nominal air flow rate.
(2) Indoor air (room): temperature 25 °C, relative humidity 60%; water in 16 °C; water out 18 °C.
(3) Indoor air (room): temperature 20 °C, relative humidity 60%; water in 35 °C; water out 30 °C.
(4) Indoor air (room): temperature 25 °C, relative humidity 60%; nominal air flow rate.
(5) Data according to standard UNI EN 3741 and UNI EN 3744.

Main features

• Self-supporting monoblock structure with simplified construction, made of a single galvanized metal sheet panel combined to a polyethylene pad (thickness 10 mm) for thermal insulation and soundproofing

• Radial centrifugal fan with front blades and EC speed modulation motors. Maximum efficiency, minimum consumptions and noise

• External damper motorized on recirculation included

• Cooling circuit provided with high efficiency alternative compressor and minimum noise

• Bottom panel easy to remove for inspection and maintenance

• ISO Coarse filter on air recirculation, low losses of pressure, easy to remove without tools for periodical maintenance or replacement, washable

• Side drain for condensation disposal

Operational principles

Winter operational diagram.

Winter heating can be integrated by supplying the post-treatment hydronic coil with the radiant system hot water. The cooling circuit compressor is OFF and the unit works as a thermo-ventilating device. The delivery air flow rate is the sum of the flow rate from the outside which passes through the exchanger and the one partially recirculated from the ambient obtained by opening the special automatic damper.

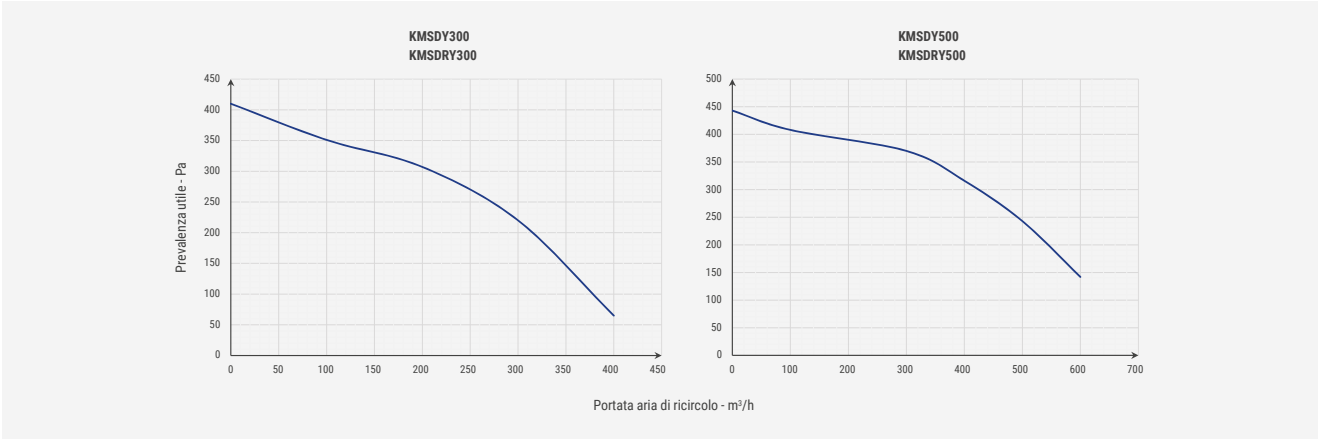
Summer operational diagram.

The cooling circuit - which includes a compressor, an air evaporation coil, an “air” condenser (version with dehumidification only) or a “radiant system air-water (version with integration) - activates through humidity and temperature probes.

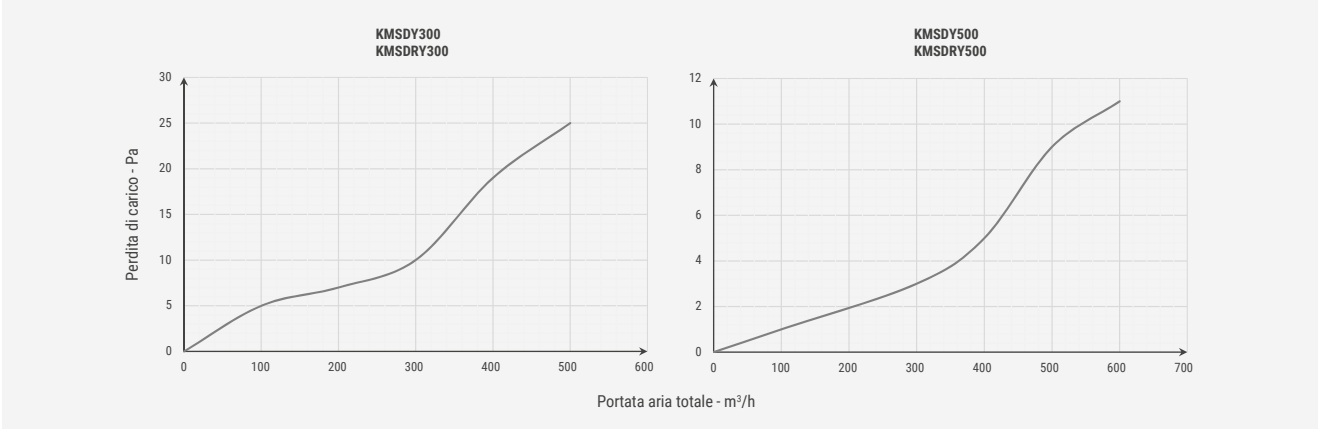
The delivery air flow rate is the sum of the flow rate from the outside which passes through the exchanger and the one partially recirculated from the ambient obtained by opening the special automatic damper.

Aeraulic performance

Recirculation fan useful pressure based on air flow rate at max. speed.

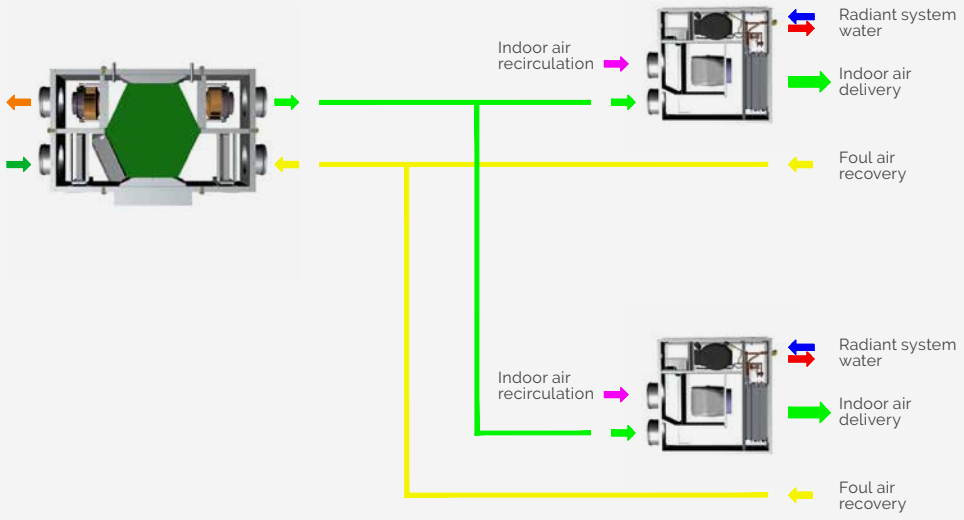


Loss of pressure on air circuit based on total air flow rate.



Split module (combined to KHR recuperators)

"Split systems" functional diagram with KHR central recuperator and thermodynamic modules KMSD for air conditioning of single zones (single-zone or multi-zone application).



Accessories and spare parts

KFR

Description / Product specifications

Standard spare filter kit for ventilation units. Filters with low losses of pressure, easy to remove without tools for periodical maintenance or replacement, washable.

For monoblock units KHRD: polypropylene composite filters, pre-mounted upstream to the exchanger, on external air intake and indoor foul air recovery. Honeycomb polypropylene filter (on galvanized metal sheet frame and electro-welded containment meshes) pre-mounted on recirculation air.

For split module KMSD: honeycomb polypropylene filter (on galvanized metal sheet frame and electro-welded containment meshes) pre-mounted on recirculation air.

PRODUCT CODE	DESCRIPTION	EURO/pcs	CL		
KFRY005	ISO ePM1 2-filter kit/80% efficiency + 1 ISO Coarse filter For KHRD 300 m³/h	81.00	K	1	-
KFRY006	ISO ePM1 2-filter kit/70% efficiency + 1 ISO Coarse filter For KHRD 500 m³/h	89.00	K	1	-
KFRY007	1 ISO Coarse filter. For KMSD 300 m³/h	29.00	K	1	-
KFRY008	1 ISO Coarse filter. For KMSD 500 m³/h	36.00	K	1	-

Accessories and spare parts

KFCA

Description / Product specifications

Spare activated-carbon filter made of polypropylene composite, low losses of pressure, easy to remove without tools for periodical maintenance or replacement, washable. Used as optional replacement for standard filters (one or both) pre-mounted upstream to the exchanger on ventilation units.

It removes gaseous contaminants (VOC, PAC, ozone, SO_2, NOx) to achieve the best IAQ (Indoor Air Quality).

PRODUCT CODE	DESCRIPTION	EURO/pcs	CL		
KFCAY005	ISO ePM1 filter/70% efficiency for KHRD 300 m^3/h	36.00	K	1	-
KFCAY006	ISO ePM2.5 filter/70% efficiency for KHRD 500 m^3/h	48.00	K	1	-

Spare filters for each ventilation unit

VENTILATION UNIT	STANDARD FILTER KIT	ACTIVATED-CARBON FILTER
KHRDVX300	KFRY005 (2 ISO ePM1 filters/80% efficiency + ISO Coarse filter)	KFCAY005 (1 ISO ePM1 filter/70% efficiency)
KHRDVX500	KFRY006 (2 ISO ePM1 filters/70% efficiency + ISO Coarse filter)	KFCAY006 (1 ISO ePM2.5 filter/70% efficiency)
KHRDVRX300	KFRY005 (2 ISO ePM1 filters/80% efficiency + ISO Coarse filter)	KFCAY005 (1 ISO ePM1 filter/70% efficiency)
KHRDVRX500	KFRY006 (2 ISO ePM1 filters/70% efficiency + ISO Coarse filter)	KFCAY006 (1 ISO ePM2.5 filter/70% efficiency)
KHRDHX300	KFRY005 (2 ISO ePM1 filters/80% efficiency + ISO Coarse filter)	KFCAY005 (1 ISO ePM1 filter/70% efficiency)
KHRDHX500	KFRY006 (2 ISO ePM1 filters/70% efficiency + ISO Coarse filter)	KFCAY006 (1 ISO ePM2.5 filter/70% efficiency)
KHRDHRX300	KFRY005 (2 ISO ePM1 filters/80% efficiency + ISO Coarse filter)	KFCAY005 (1 ISO ePM1 filter/70% efficiency)
KHRDHRX500	KFRY006 (2 ISO ePM1 filters/70% efficiency + ISO Coarse filter)	KFCAY006 (1 ISO ePM2.5 filter/70% efficiency)
KMSDY300	KFRY007 (1 ISO Coarse filter)	
KMSDY500	KFRY008 (1 ISO Coarse filter)	
KMSDRY300	KFRY007 (1 ISO Coarse filter)	
KMSDRY500	KFRY008 (1 ISO Coarse filter)	

Periodical and programmed replacement of the filters is strongly recommended to prevent increased energy consumptions and deterioration of indoor air quality (increase of carbon dioxide emissions and, in case of activated-carbon filters, progressive release of harmful compounds captured previously).

Accessories and spare parts

KSR

Description / Product specifications

Polypropylene counter-flow static enthalpy heat exchanger for high efficiency recovery of sensible and latent heat. Summer and winter operation. Easy to remove from ventilation unit for periodical inspection and maintenance.

PRODUCT CODE	DESCRIPTION	EURO/pcs	CL		
KSRX001	Dimensions: 366x366x160 mm. For KHRD 300 m³/h	574.00	K	1	-
KSRX002	Dimensions: 366x366x270 mm. For KHRD 500 m³/h	992.00	K	1	-

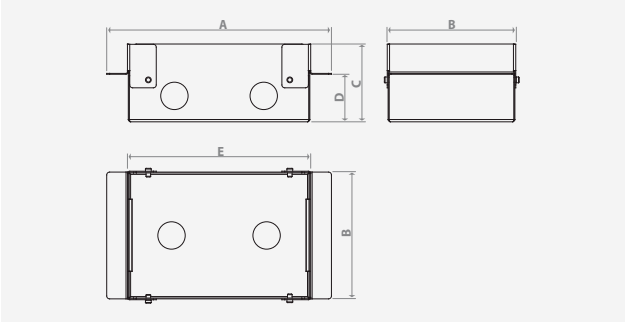
K489

Description / Product specifications

Flush mounting box for wall-mount installation of KHRD ventilation unit control panel.

PRODUCT CODE	DESCRIPTION	EURO/pcs	CL		
K489Y010	Total dimensions (LxHxW): 156x88x54 mm Dimension of flush-mounted part (LxHxW): 126x88x33 mm	58.00	K	1	-

PRODUCT CODE	A - mm	B - mm	C - mm	D - mm	E - mm
K489Y010	156	88	54	33	126



1 - Ventilation units



p. 93

2 - Plenums for machines and manifolds




p. 121

3 - Grids and external terminals



p. 143

4 - Plenums for room openings and grids



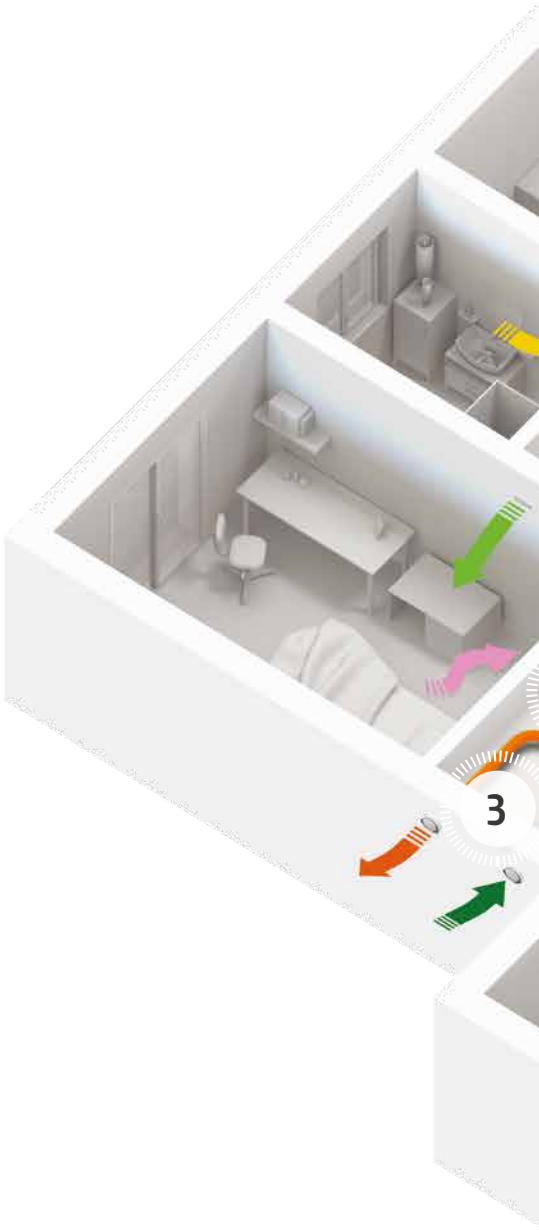
p. 128

5 - Ducts, fittings, accessories





p. 134



Chapter 4

Heat recuperators with dehumidification and hydronic integration

Chapter 4

Heat recuperators with dehumidification and hydronic integration

Monoblock ventilation units

KHRW-V

Description / Product specifications

Dual flow duct-type ventilation unit with high efficiency heat recovery and additional primary-air treatment section for dehumidification and optional heating/cooling integration. The unit has no cooling circuit but it is provided with a hydronic coil connected to the heating/cooling system.

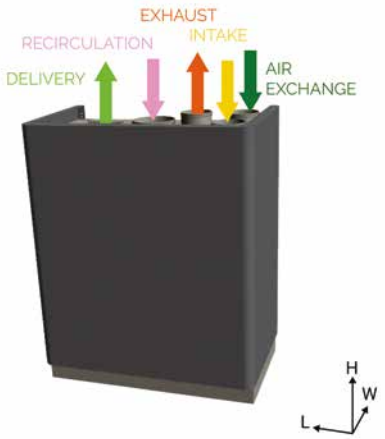
Wall or floor vertical installation. Compact dimensions for simplified installation in technical compartments or attics.

With enthalpy static heat exchanger for high efficiency recovery of sensible and latent energy.

Control panel with capacitative touchscreen, for wall surface mounting.

PRODUCT CODE	DESCRIPTION	EURO/pcs	CL		
KHRWVRX300	Nominal air flow rate: total 300 m³/h - external 150 m³/h	5,715.00	K	1	-
KHRWVRX500	Nominal air flow rate: total 500 m³/h - external 250 m³/h	6,385.00	K	1	-

Configuration of ventilation unit air flows



Technical data

VENTILATION UNIT / AIR TREATMENT PERFORMANCE	KHRWVRX300	KHRWVRX500
Total air flow rate - m^3/h	298	520
External air nominal flow rate - m^3/h	162	282
Winter nominal efficiency of sensible recovery[1] - %	75.3	74.0
Latent recovery efficiency[1] - %	46.0	45.0
Summer nominal efficiency of sensible recovery[2] - %	73.1	71.4
Useful dehumidification capacity (net of external air enthalpy content)[2] - l/24h	22	31
Hydronic coil cooling power output[3] - kW	2.03	3.32
Summer operational water flow rate - m^3/h	0.40	0.70
Summer operational loss of pressure - kPa	21.5	17.6
Hydronic coil thermal power output[4] - kW	2.25	3.88
Winter operational water flow rate - m^3/h	0.40	0.70
Winter operational loss of pressure - kPa	21.5	17.6
Fan useful static pressure - Pa	100	100
Cooling gas	R134a	R134a
Heating operational limits - °C / RU% - External air - Indoor air	 -20÷20 °C 5÷30 °C	 -20÷20 °C 5÷30 °C
Cooling operational limits - °C / RU% - External air - Indoor air	 20÷45 °C 15÷30 °C	 20÷45 °C 15÷30 °C

ELECTRIC DATA	KHRWVRX300	KHRWVRX500
Supply Tension / Phases/ Frequency - V / - / Hz	230 / 1 / 50	230 / 1 / 50
Max. absorbed energy - A	0.9	1.6
Absorbed power - W	130	230
IP protection class	IP44	IP44

ACOUSTIC DATA[2]	KHRWVRX300	KHRWVRX500
Sound power level transmitted by structure - db(A)	62	66
Sound power level radiated by duct - db(A)	67	68
Sound power level 1m/3m - db(A)	48.4 / 40.7	52.7 / 45.0

FILTERS	KHRWVRX300	KHRWVRX500
Filter types	Flat filters	Flat filters
Filtering class/efficiency	ISO ePM1/80% (2x) ISO Coarse (1x)	ISO ePM1/70% (2x) ISO Coarse (1x)

DIMENSIONS. WEIGHT AND CONNECTIONS	KHRWVRX300	KHRWVRX500
Length "L" - mm	870	970
Width "W" - mm	470	700
Height "H" - mm	880 (+145 for base)	980 (+145 for base)
Weight - kg	85 (+1 for base)	100 (+1 for base)
Air connections - DN. mm - Indoor air delivery - Foul air recovery - Indoor air recirculation - External air intake - Foul air exhaust	 340x170 DN125 DN160 DN125 DN125	 510x245 DN160 DN200 DN160 DN160
Water delivery-return connections - inch.	1/2" - 1/2"	3/4" - 3/4"
Condensation drain - mm	Ø20	Ø20

(1) External air: temperature 7 °C, relative humidity 72%; indoor air (room): temperature 20 °C, relative humidity 28%; reference air flow rate.
(2) External air: temperature 30 °C, relative humidity 60%; indoor air (room): temperature 25 °C, relative humidity 50%; reference air flow rate.
(3) Indoor air (room): temperature 25 °C, relative humidity 60%; water in 7 °C; water out 12 °C.
(4) Indoor air (room): temperature 20 °C, relative humidity 60%; water in 50 °C; water out 40 °C.
(5) Data according to standard UNI EN 3741 and UNI EN 3744.

Main features

• Self-supporting monoblock structure with double panel made of metal sheet, galvanized inside and varnished outside (RAL9003), intermediate mineral wool pad (thickness 20 mm, density 42 kg/m^3) for thermal insulation and soundproofing

• Polypropylene counter-flow static enthalpy heat exchanger for high efficiency recovery of sensible and latent heat. Easy to remove for periodical inspection and maintenance

• Radial centrifugal fans with reverse blades and EC speed modulation motors. Maximum efficiency, minimum consumptions and noise

• Electric panel on unit edge excluded from air flow, with fan control, display of machine built-in temperature probes, filter timer control, recirculation and exchange air control

• Hydronic coil optimized for dehumidification and integration (summer: delivery 7 °C, return 12 °C)

• Front panel easy to remove for inspection and maintenance

• Class ISO ePM1 filters upstream to exchanger, on external air intake and indoor foul air

recovery. ISO Coarse filter on recirculation air. All filters with low losses of pressure, easy to remove without tools for periodical maintenance or replacement, washable

• Dual side drain for condensation disposal

• Dual installation: wall mounting with special fitting bracket included; floor mounting with base included.

Operational principles

Winter operational diagram.

When supplying the hydronic coil with hot water (delivery 50 °C, return 40 °C), the unit works as thermoventilation device and provides rapid thermal integration to the room.

The delivery air flow rate is the sum of the flow rate from the outside which passes through the exchanger and the one partially recirculated from the ambient obtained by opening the special automatic damper.

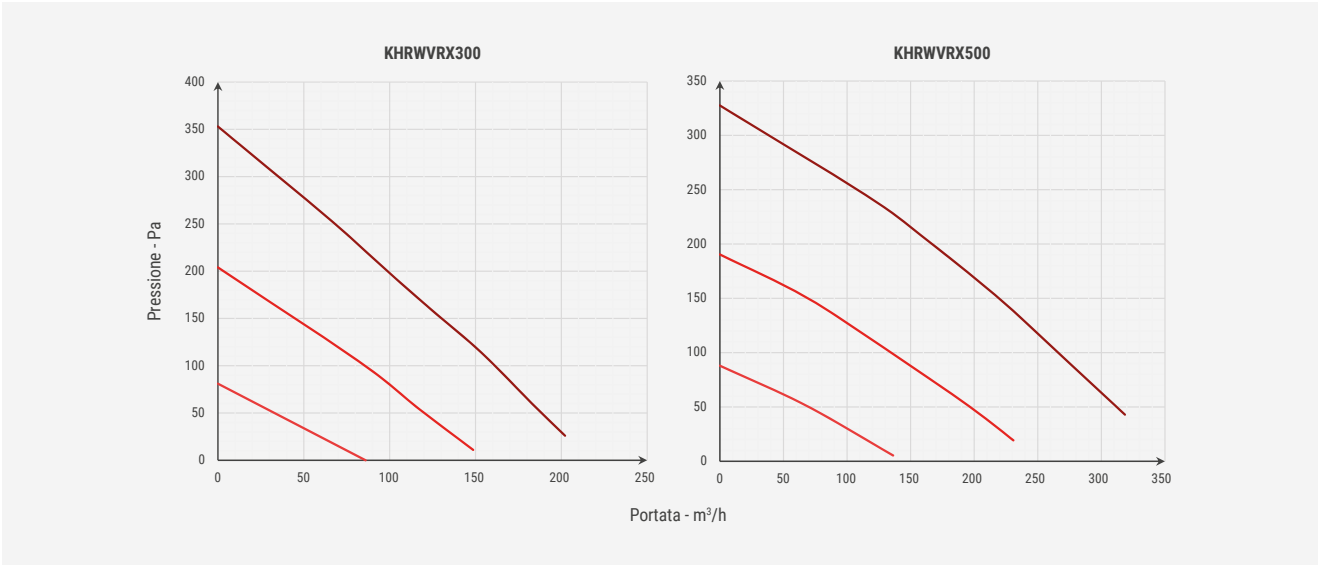
Summer operational diagram.

The unit hydronic coil is supplied with cooled water (delivery 7 °C, return 12 °C) to provide air dehumidification and cooling integration.

The delivery air flow rate is the sum of the flow rate from the outside which passes through the exchanger and the one partially recirculated from the ambient obtained by opening the special automatic damper.

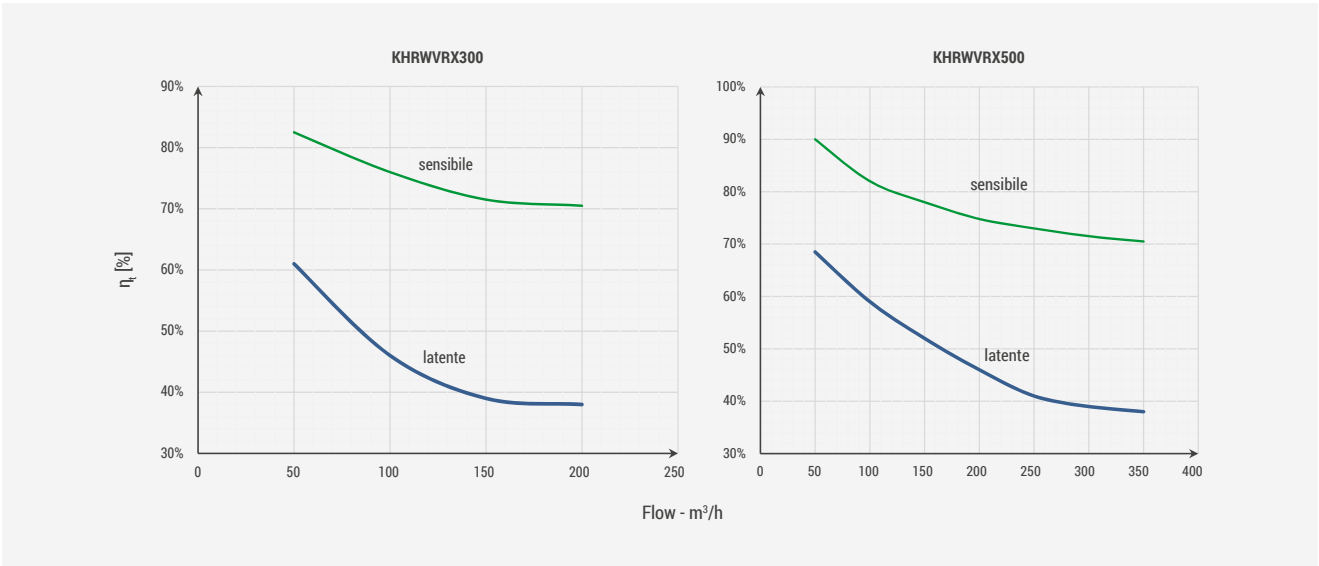
Aeraulic performance

Flow rate-pressure diagrams referring to: min. speed, speed corresponding to reference flow rate, max. speed.



Heat recovery thermal efficiency

According to standard UNI EN 13141-7. External air: temperature 7 °C, relative humidity 72%; indoor air (room): temperature 20 °C, relative humidity 28%; reference air flow rate.



ErP Ecodesign energy efficiency data

(complying with European Regulations 1253/2014 and 1254/2014)

Ref.	DESCRIPTION	KHRWVRX300	KHRWVRX500
A	Supplier's name or brand	Giacomini S.p.A.	Giacomini S.p.A.
B	Model identification code	KHRWVRX300	KHRWVRX500
C	Specific energy consumption (SEC) - kWh/m².a - Cold - Temperate - Warm - SEC class	 -61.90 -26.80 -4.10 B	 -65.40 -30.60 -8.10 B
D	Declared type	RVU Bidirectional	RVU Bidirectional
E	Type of activation installed	Adjustable speed drive	Adjustable speed drive
F	Heat recovery system	Recovery	Recovery
G	Heat recovery thermal efficiency - %	75.3	74.0
H	Max. flow rate - m³/s	0.050	0.078
I	Electric power absorbed at max. flow rate - W	130	230
J	Sound power level L_{WA} - dB(A)	62	62
K	Reference flow rate - m³/s	0.033	0.055
L	Reference pressure difference - Pa	50	50
M	SPI - W/(m³/h)	0.670	0.480
N	Control factor and type	0.85	0.85
O	Max. percentages declared for internal/external leakage - %	5.3 int. / 5.0 ext.	5.9 int. / 5.6 ext.
Q	Position and description of filter visual warning	Visualization on unit display. remote control display and user's manual	Visualization on unit display. remote control display and user's manual
S	Disassembly instructions URL	giacomini.com	giacomini.com

Monoblock ventilation units

KHRW-H

Description / Product specifications

Dual flow duct-type ventilation unit with high efficiency heat recovery and additional primary-air treatment section for dehumidification and optional heating/cooling integration. The unit has no cooling circuit but it is provided with a hydronic coil connected to the heating/cooling system.

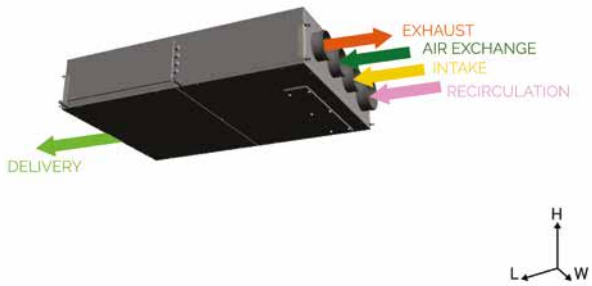
Horizontal installation on ceiling. Reduced height for simplified installation in suspended ceilings.

With enthalpy static heat exchanger for high efficiency recovery of sensible and latent energy.

Control panel with capacitative touchscreen, for wall surface mounting.

PRODUCT CODE	DESCRIPTION	EURO/pcs	CL		
KHRWHRX300	Nominal air flow rate: total 300 m³/h - external 150 m³/h	4,200.00	K	1	-
KHRWHRX500	Nominal air flow rate: total 500 m³/h - external 250 m³/h	4,870.00	K	1	-
KHRWHRX600	Nominal air flow rate: total 600 m³/h - external 150 m³/h	4,610.00	K	1	-

Configuration of ventilation unit air flows



Technical data

VENTILATION UNIT / AIR TREATMENT PERFORMANCE	KHRWHRX300	KHRWHRX500	KHRWHRX600
Total air flow rate - m^3/h	298	520	600
External air nominal flow rate - m^3/h	162	282	154
Winter nominal efficiency of sensible recovery[1] - %	75.3	74.0	75.4
Latent recovery efficiency[1] - %	46.0	45.0	46.0
Summer nominal efficiency of sensible recovery[2] - %	73.1	71.4	73.2
Useful dehumidification capacity (net of external air enthalpy content)[2] - l/24h	22	31	22
Hydronic coil cooling power output[3] - kW	2.03	3.32	3.70
Summer operational water flow rate - m^3/h	0.40	0.70	0.75
Summer operational loss of pressure - kPa	21.5	17.6	18.0
Hydronic coil thermal power output[4] - kW	2.25	3.88	4.50
Winter operational water flow rate - m^3/h	0.40	0.70	0.75
Winter operational loss of pressure - kPa	21.5	17.6	18.0
Fan useful static pressure - Pa	100	100	100
Cooling gas	R134a	R134a	R134a
Heating operational limits - °C / RU% - External air - Indoor air	 -20÷20 °C 5÷30 °C	 -20÷20 °C 5÷30 °C	 -20÷20 °C 5÷30 °C
Cooling operational limits - °C / RU% - External air - Indoor air	 20÷45 °C 15÷30 °C	 20÷45 °C 15÷30 °C	 20÷45 °C 15÷30 °C

ELECTRIC DATA	KHRWHRX300	KHRWHRX500	KHRWHRX600
Supply Tension / Phases/ Frequency - V / - / Hz	230 / 1 / 50	230 / 1 / 50	230 / 1 / 50
Max. absorbed energy - A	0.9	1.6	1.8
Absorbed power - W	130	230	211
IP protection class	IP44	IP44	IP44

ACOUSTIC DATA[2]	KHRWHRX300	KHRWHRX500	KHRWHRX600
Sound power level transmitted by structure - db(A)	62	66	65
Sound power level radiated by duct - db(A)	67	68	67
Sound power level 1m/3m - db(A)	48.4 / 40.7	52.7 / 45.0	49.8 / 42.8

FILTERS	KHRWHRX300	KHRWHRX500	KHRWHRX600
Filter types	Flat filters	Flat filters	Flat filters
Filtering class/efficiency	ISO ePM1/80% (2x) ISO Coarse (1x)	ISO ePM1/70% (2x) ISO Coarse (1x)	ISO ePM1/80% (2x) ISO Coarse (1x)

DIMENSIONS. WEIGHT AND CONNECTIONS	KHRWHRX300	KHRWHRX500	KHRWHRX600
Length "L" - mm	1220	1220	1220
Width "W" - mm	820	960	820
Height "H" - mm	255	330	255
Weight - kg	68	83	74
Air connections - DN. mm - Indoor air delivery - Foul air recovery - Indoor air recirculation - External air intake - Foul air exhaust	 350x180 DN125 DN160 DN125 DN125	 490x255 DN160 DN200 DN160 DN160	 550x180 DN125 DN200 DN125 DN125
Water delivery-return connections - inch.	1/2" - 1/2"	3/4" - 3/4"	3/4" - 3/4"
Condensation drain - mm	Ø20	Ø20	Ø20

(1) External air: temperature 7 °C, relative humidity 72%; indoor air (room): temperature 20 °C, relative humidity 28%; reference air flow rate.
(2) External air: temperature 30 °C, relative humidity 60%; indoor air (room): temperature 25 °C, relative humidity 50%; reference air flow rate.
(3) Indoor air (room): temperature 25 °C, relative humidity 60%; water in 7 °C; water out 12 °C.
(4) Indoor air (room): temperature 20 °C, relative humidity 60%; water in 50 °C; water out 40 °C.
(5) Data according to standard UNI EN 3741 and UNI EN 3744.

Main features

• Plug&play for rapid and simplified installation.

• Self-supporting monoblock structure with double panel made of metal sheet, galvanized inside and varnished outside (RAL9003), intermediate mineral wool pad (thickness 20 mm, density 42 kg/m^3) for thermal insulation and soundproofing

• Polypropylene counter-flow static enthalpy heat exchanger for high efficiency recovery of sensible and latent heat. Easy to remove for periodical inspection and maintenance

• Radial centrifugal fans with reverse blades and EC speed modulation motors. Maximum efficiency, minimum consumptions and noise

• Electric panel on unit edge excluded from air flow, with fan control, display of machine built-in temperature probes, filter timer control, recirculation and exchange air control

• Hydronic coil optimized for dehumidification and integration (summer: delivery 7 °C, return 12 °C)

• Bottom panel easy to remove for inspection and maintenance

• Class ISO ePM1 filters upstream to exchanger, on external air intake and indoor foul air recovery. ISO Coarse filter on recirculation air. All filters with low losses of pressure, easy to remove without tools for periodical maintenance or replacement, washable

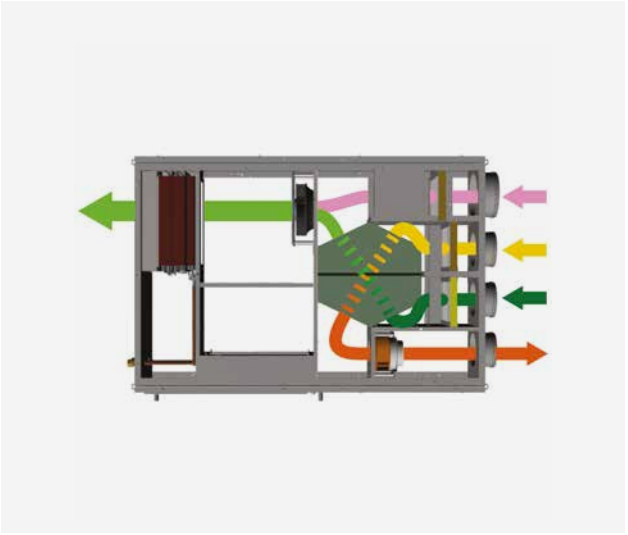
• Dual side drain for condensation disposal

Operational principles

Winter operational diagram.

When supplying the hydronic coil with hot water (delivery 50 °C, return 40 °C), the unit works as thermoventilation device and provides rapid thermal integration to the room.

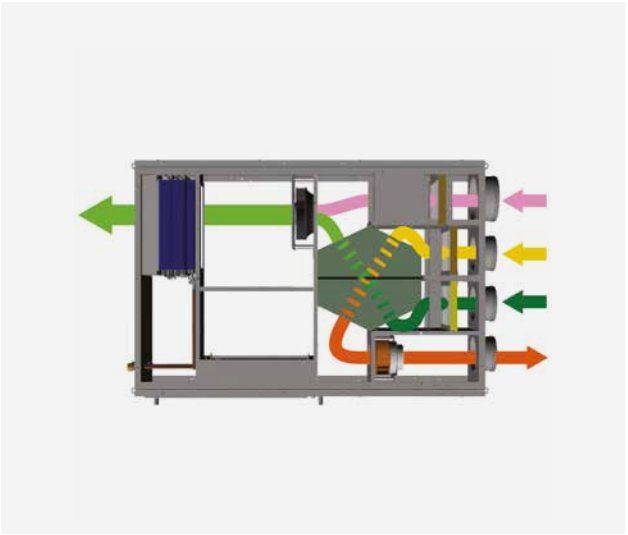
The delivery air flow rate is the sum of the flow rate from the outside which passes through the exchanger and the one partially recirculated from the ambient obtained by opening the special automatic damper.



Summer operational diagram.

The unit hydronic coil is supplied with cooled water (delivery 7 °C, return 12 °C) to provide air dehumidification and cooling integration.

The delivery air flow rate is the sum of the flow rate from the outside which passes through the exchanger and the one partially recirculated from the ambient obtained by opening the special automatic damper.

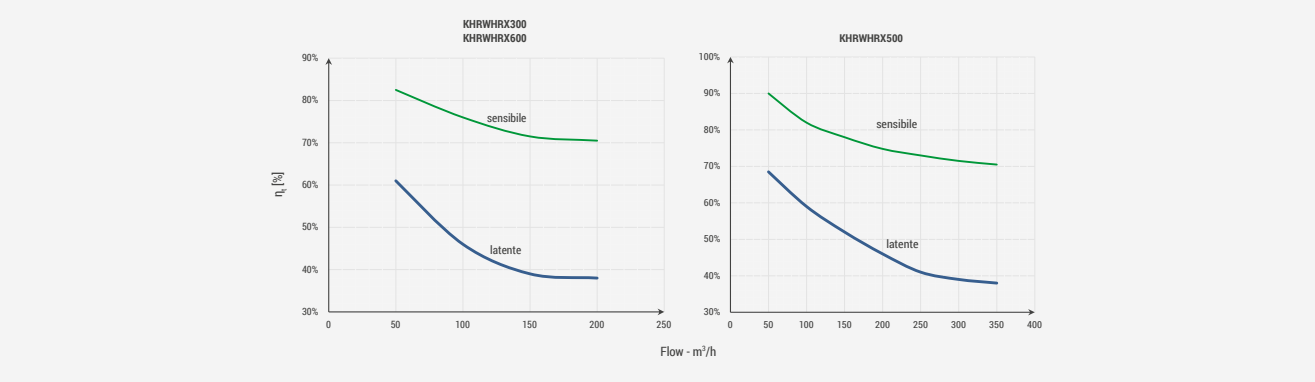


Aeraulic performance

Flow rate-pressure diagrams referring to: min. speed, speed corresponding to reference flow rate, max. speed.

Heat recovery thermal efficiency

According to standard UNI EN 13141-7. External air: temperature 7 °C, relative humidity 72%; indoor air (room): temperature 20 °C, relative humidity 28%; reference air flow rate.



ErP Ecodesign energy efficiency data

(complying with European Regulations 1253/2014 and 1254/2014)

Ref.	DESCRIPTION	KHRWHRX300	KHRWHRX500	KHRWHRX600
A	Supplier's name or brand	Giacomini S.p.A.	Giacomini S.p.A.	Giacomini S.p.A.
B	Model identification code	KHRWHRX300	KHRWHRX500	KHRWHRX600
C	Specific energy consumption (SEC) - kWh/m².a - Cold - Temperate - Warm - SEC class	 -61.90 -26.80 -4.10 B	 -65.40 -30.60 -8.10 B	 -59.60 -24.50 -1.80 C
D	Declared type	RVU Bidirectional	RVU Bidirectional	RVU Bidirectional
E	Type of activation installed	Adjustable speed drive	Adjustable speed drive	Adjustable speed drive
F	Heat recovery system	Recovery	Recovery	Recovery
G	Heat recovery thermal efficiency - %	75.3	74.0	75.4
H	Max. flow rate - m³/s	0.050	0.078	0.040
I	Electric power absorbed at max. flow rate - W	130	230	211
J	Sound power level L_{WA} - dB(A)	62	62	65
K	Reference flow rate - m³/s	0.033	0.055	0.030
L	Reference pressure difference - Pa	50	50	50
M	SPI - W/(m³/h)	0.670	0.480	0.770
N	Control factor and type	0.85	0.85	0.85
O	Max. percentages declared for internal/external leakage - %	5.3 int. / 5.0 ext.	5.9 int. / 5.6 ext.	5.3 int. / 5.1 ext.
Q	Position and description of filter visual warning	Visualization on unit display. remote control display and user's manual	Visualization on unit display. remote control display and user's manual	Visualization on unit display. remote control display and user's manual
S	Disassembly instructions URL	giacomini.com	giacomini.com	giacomini.com

Split module (combined to KHR recuperators)

KMSW

Description / Product specifications

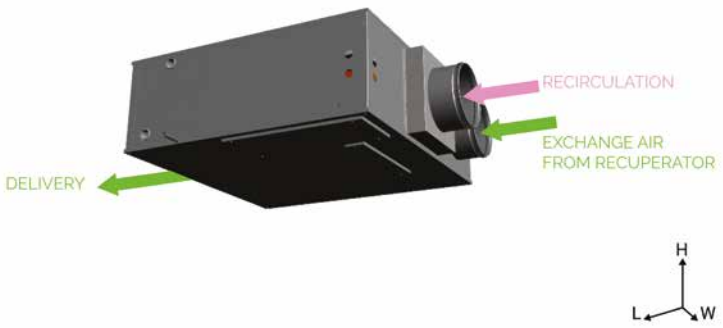
Duct-type hydronic module for primary air treatment for use with heat recuperators KHR (split installation). Equipped with indoor air re-circulation section, it provides dehumidification and heating/cooling integration. The unit has no cooling circuit but it is provided with a hydronic coil connected to the heating/cooling system.

Horizontal installation on ceiling. Reduced height for simplified installation in suspended ceilings.

Control panel with capacitative touchscreen, for wall surface mounting.

PRODUCT CODE	DESCRIPTION	EURO/pcs	CL		
KMSWRY300	Nominal air flow rate: total 300 m³/h - external 150 m³/h	2,700.00	K	1	-
KMSWYR600	Nominal air flow rate: total 600 m³/h - external 150 m³/h	2,795.00	K	1	-

Configuration of ventilation unit air flows



Technical data

VENTILATION UNIT / AIR TREATMENT PERFORMANCE	KMSWRY300	KMSWRY600
Total air flow rate - m^3/h	300	600
External air nominal flow rate - m^3/h	0÷150	0÷250
Useful dehumidification capacity (net of external air enthalpy content)[1] - l/24h	22	31
Hydronic coil cooling power output[2] - kW	2.50	4.70
Summer operational water flow rate - m^3/h	0.45	0.80
Summer operational loss of pressure - kPa	5.5	15.0
Hydronic coil thermal power output[3] - kW	2.30	4.20
Winter operational water flow rate - m^3/h	0.45	0.80
Winter operational loss of pressure - kPa	5.5	15.0
Heating operational limits - °C / RU% - External air - Indoor air	 -20÷20 °C 5÷30 °C	 -20÷20 °C 5÷30 °C
Cooling operational limits - °C / RU% - External air - Indoor air	 20÷45 °C 15÷30 °C	 20÷45 °C 15÷30 °C

ELECTRIC DATA	KMSWRY300	KMSWRY600
Supply Tension / Phases/ Frequency - V / - / Hz	230 / 1 / 50	230 / 1 / 50
Max. absorbed energy - A	1.28	1.60
Absorbed power - W	160	290
IP protection class	IP44	IP44

ACOUSTIC DATA[4]	KMSWRY300	KMSWRY600
Sound power level transmitted by structure - db(A)	60	63
Sound power level radiated by duct - db(A)	63	68
Sound power level 1m/3m - db(A)	48.4 / 39.5	49.7 / 41.8

FILTERS	KMSWRY300	KMSWRY600
Filter types	Flat filters	Flat filters
Filtering class/efficiency	ISO Coarse (1x)	ISO Coarse (1x)

DIMENSIONS, WEIGHT AND CONNECTIONS	KMSWRY300	KMSWRY600
Length "L" - mm	675	675
Width "W" - mm	730	730
Height "H" - mm	250	250
Weight - kg	38	38
Air connections - DN, mm - Indoor air delivery - Indoor air recirculation - External air intake	 500x200 DN160 DN160	 500x200 DN160 DN160
Water delivery-return connections - inch.	3/4" - 3/4"	3/4" - 3/4"
Condensation drain - mm	Ø12	Ø12

(1) External air: temperature 30 °C, relative humidity 60%; indoor air (room): temperature 25 °C, relative humidity 50%; nominal air flow rate.
(2) Indoor air (room): temperature 25 °C, relative humidity 60%; water in 7 °C; water out 12 °C.
(3) Indoor air (room): temperature 20 °C, relative humidity 50%; water in 50 °C; water out 40 °C.
(4) Data according to standard UNI EN 3741 and UNI EN 3744.

Main features

• Self-supporting monoblock structure with simplified construction, made of a single galvanized metal sheet panel combined to a polyethylene pad (thickness 10 mm) for thermal insulation and soundproofing

• Dual-vacuum radial centrifugal fan with front blades, provided with low-turn EC speed modulation motor. Maximum efficiency, minimum consumptions and noise

• Internal motorized damper for recirculation

• High-capacity thermal exchange hydronic coil, optimized for dehumidification and integration (summer: delivery 7 °C, return 12 °C). Fit for use with heat pumps, hybrid generators and condensation boilers

• Electric board with next-gen microprocessor to control the unit, the modulating 3-way valve, the recirculation damper and the recirculation fan

• Bottom panel easy to remove for full inspection and maintenance

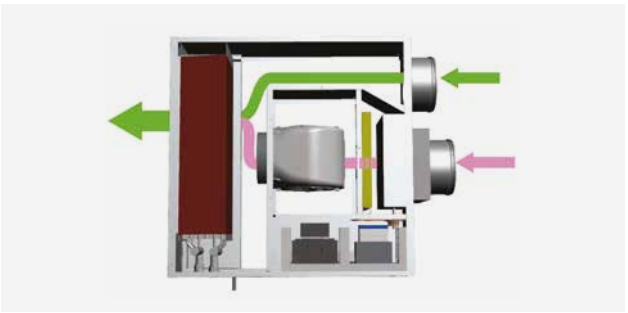
• ISO Coarse filter on air recirculation, low losses of pressure, easy to remove without tools for periodical maintenance or replacement, washable

• Side drain for condensation disposal

Operational principles

Winter operational diagram.

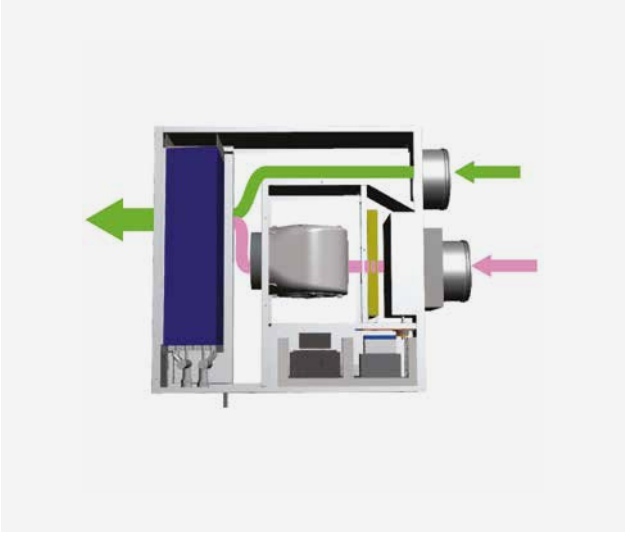
When supplying the hydronic coil with hot water (delivery 50 °C, return 40 °C), the unit works as thermoventilation device and provides rapid thermal integration to the room. The delivery air flow rate is the sum of the flow rate from the outside which passes through the exchanger and the one partially recirculated from the ambient obtained by opening the special automatic damper.



Summer operational diagram.

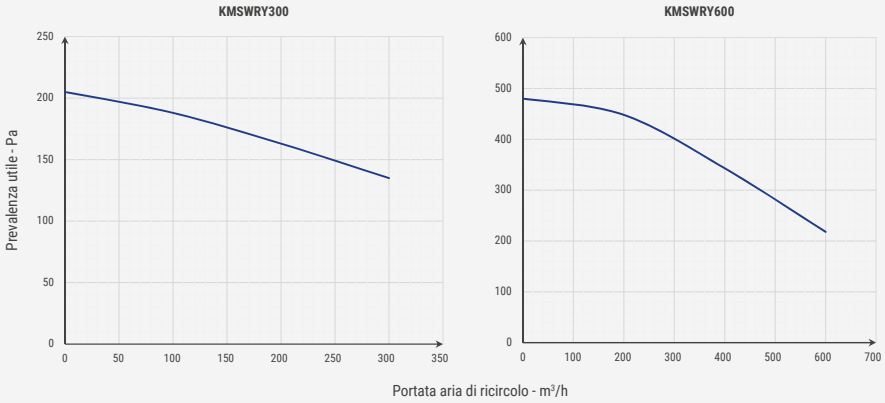
The unit hydronic coil is supplied with cooled water (delivery 7 °C, return 12 °C) to provide air dehumidification and cooling integration.

The delivery air flow rate is the sum of the flow rate from the outside which passes through the exchanger and the one partially recirculated from the ambient obtained by opening the special automatic damper.

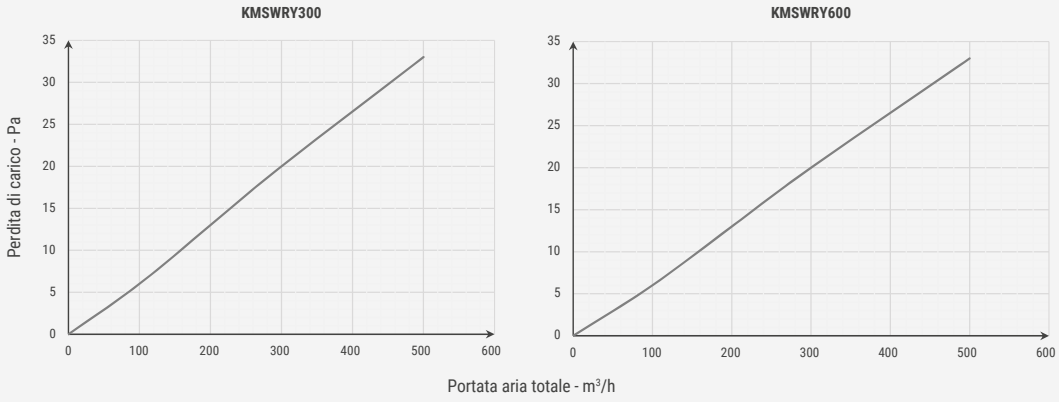


Aeraulic performance

Recirculation fan useful pressure based on air flow rate at max. speed.

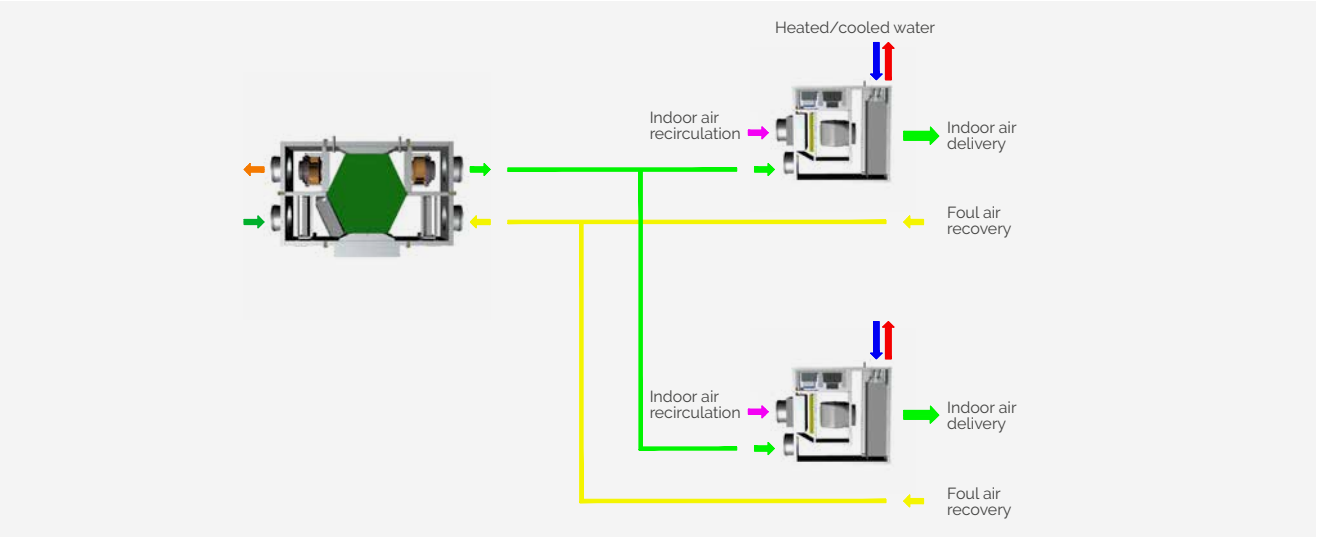


Loss of pressure on air circuit based on total air flow rate.



Split module (combined to KHR recuperators)

"Split systems" functional diagram with central recuperator KHR and hydronic modules KMSW for air conditioning of single zones (single-zone or multi-zone application).



Accessories and spare parts

KFR

Description / Product specifications

Standard spare filter kit for ventilation units. Filters with low losses of pressure, easy to remove without tools for periodical maintenance or replacement, washable.

For monoblock units KHRW: polypropylene composite filters, pre-mounted upstream to the exchanger, on external air intake and indoor foul air recovery. Honeycomb polypropylene filter (on galvanized metal sheet frame and electro-welded containment meshes) pre-mounted on recirculation air.

For split module KMSW: honeycomb polypropylene filter (on galvanized metal sheet frame and electro-welded containment meshes) pre-mounted on recirculation air.

PRODUCT CODE	DESCRIPTION	EURO/pcs	CL		
KFRY005	ISO ePM1 2-filter kit/80% efficiency + 1 ISO Coarse filter. For KHRW 300 and 600 m³/h	81.00	K	1	-
KFRY006	ISO ePM1 2-filter kit/70% efficiency + 1 ISO Coarse filter. For KHRW 500 m³/h	89.00	K	1	-
KFRY007	1 ISO Coarse filter. For KMSW 300 m³/h	29.00	K	1	-
KFRY008	1 ISO Coarse filter. For KMSW 600 m³/h	36.00	K	1	-

Accessories and spare parts

KFCA

Description / Product specifications

Spare activated-carbon filter made of polypropylene composite, low losses of pressure, easy to remove without tools for periodical maintenance or replacement, washable. Used as optional replacement for standard filters (one or both) pre-mounted upstream to the exchanger on ventilation units.

It removes gaseous contaminants (VOC, PAC, ozone, SO_2, NOx) to achieve the best IAQ (Indoor Air Quality).

PRODUCT CODE	DESCRIPTION	EURO/pcs	CL		
KFCAY005	ISO ePM1 filter/70% efficiency for KHRW 300 and 600 m³/h	36.00	K	1	-
KFCAY006	ISO ePM2.5 filter/70% efficiency for KHRW 500 m³/h	48.00	K	1	-

Spare filters for each ventilation unit

VENTILATION UNIT	STANDARD FILTER KIT	ACTIVATED-CARBON FILTER
KHRWVRX300	KFRY005 (2 ISO ePM1 filters/80% efficiency + ISO Coarse filter)	KFCAY005 (1 ISO ePM1 filter/70% efficiency)
KHRWVRX500	KFRY006 (2 ISO ePM1 filters/70% efficiency + ISO Coarse filter)	KFCAY006 (1 ISO ePM2.5 filter/70% efficiency)
KHRWHRX300	KFRY005 (2 ISO ePM1 filters/80% efficiency + ISO Coarse filter)	KFCAY005 (1 ISO ePM1 filter/70% efficiency)
KHRWHRX500	KFRY006 (2 ISO ePM1 filters/70% efficiency + ISO Coarse filter)	KFCAY006 (1 ISO ePM2.5 filter/70% efficiency)
KHRWHRX600	KFRY005 (2 ISO ePM1 filters/80% efficiency + ISO Coarse filter)	KFCAY005 (1 ISO ePM1 filter/70% efficiency)
KMSWRY300	KFRY007 (1 ISO Coarse filter)	
KMSWRY600	KFRY008 (1 ISO Coarse filter)	

Periodical and programmed replacement of the filters is strongly recommended to prevent increased energy consumptions and deterioration of indoor air quality (increase of carbon dioxide emissions and, in case of activated-carbon filters, progressive release of harmful compounds already captured).

KSR

Description / Product specifications

Polypropylene counter-flow static enthalpy heat exchanger for high efficiency recovery of sensible and latent heat. Summer and winter operation. Easy to remove from ventilation unit for periodical inspection and maintenance.

PRODUCT CODE	DESCRIPTION	EURO/pcs	CL		
KSRX001	Dimensions: 366x366x160 mm. For KHRW 300 and 600 m³/h	574.00	K	1	-
KSRX002	Dimensions: 366x366x270 mm. For KHRW 500 m³/h	992.00	K	1	-

1 - Ventilation units

p. 113

2 - Manifolds

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3 - Grids and external terminals

p. 143

4 - Plenums for room openings and grids

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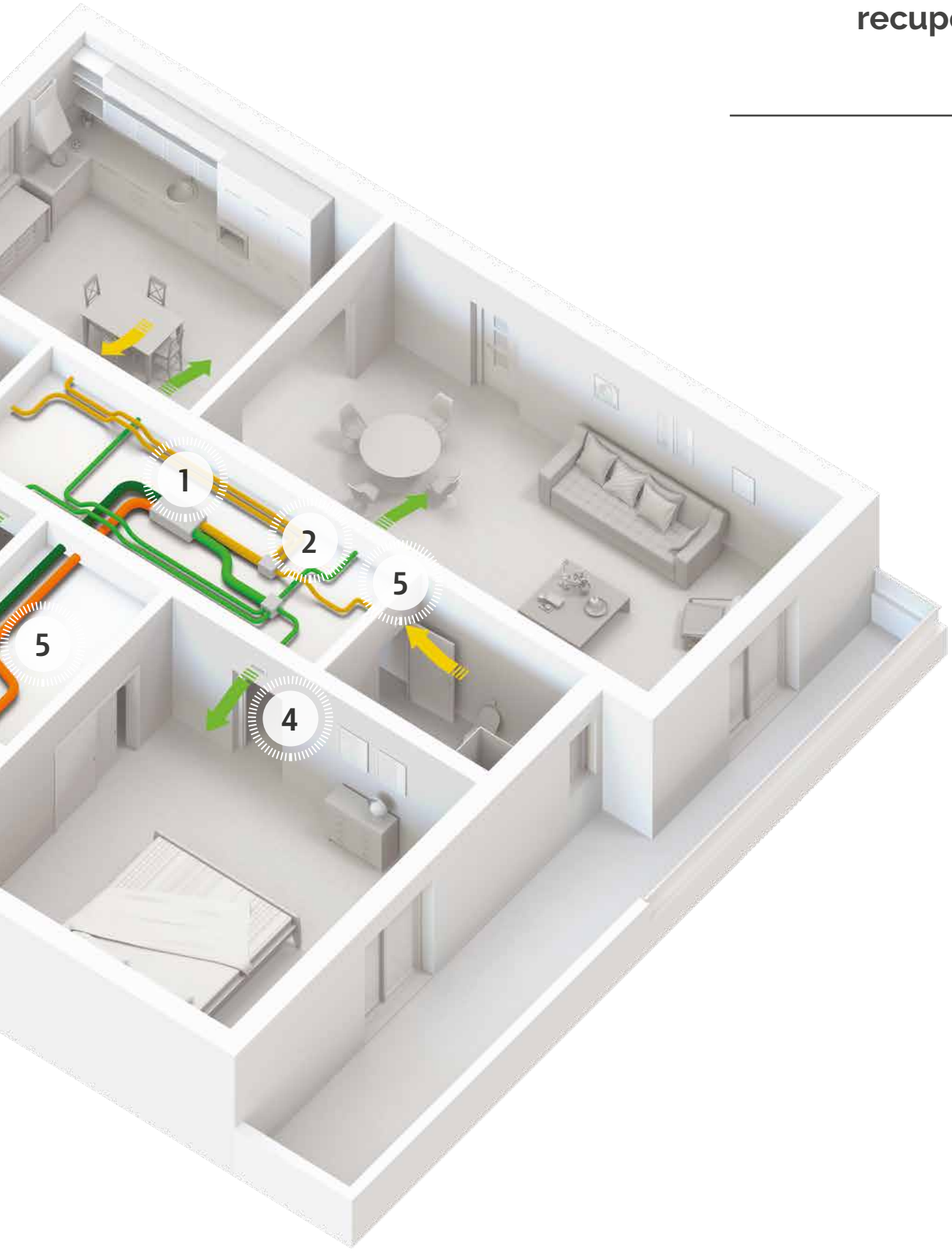
5 - Ducts, fittings, accessories

p. 134

Chapter 5

Active heat recuperators



Chapter 5

Active heat recuperators

Ventilation units

KHRA-H

Description / Product specifications

Dual flow duct-type ventilation unit with high efficiency heat recovery and additional primary-air treatment section for summer/ winter active thermodynamic recovery.

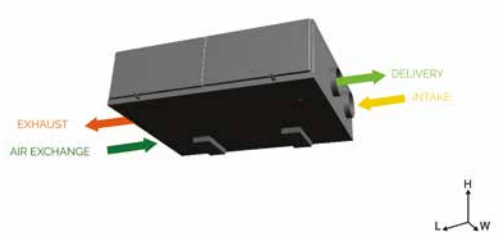
The unit provides, through a reversible heat pump circuit, a greater amount of energy compared to the quantity taken by the static recuperator ventilation. Horizontal installation on ceiling. Reduced height for simplified installation in suspended ceilings.

With enthalpy static heat exchanger for high efficiency recovery of sensible and latent energy.

Control panel with capacitative touchscreen, for wall surface mounting or flush mounting in special box.

PRODUCT CODE	DESCRIPTION	EURO/pcs	CL		
KHRAHX080	Nominal air flow rate 80 m³/h	7,655.00	K	1	-
KHRAHX140	Nominal air flow rate 140 m³/h	7,770.00	K	1	-
KHRAHX200	Nominal air flow rate 200 m³/h	8,415.00	K	1	-
KHRAHX300	Nominal air flow rate 300 m³/h	8,465.00	K	1	-

Configuration of ventilation unit air flows



Technical data

VENTILATION UNIT / AIR TREATMENT PERFORMANCE	KHRAHX080	KHRAHX140	KHRAHX200	KHRAHX300
Total air flow rate - m^3/h	80	140	190	300
Nominal efficiency of sensible recovery[1] - %	93.5	89.6	91.1	87.6
Latent recovery efficiency[1] - %	46.0	46.0	44.8	44.8
Fan useful static pressure - Pa	250	130	240	190
Winter total thermal power[2] - kW	0.96	1.64	2.53	3.49
Winter passive recovery[2] - kW	0.63	1.06	1.82	2.22
Winter active thermal power capacity[2] - kW	0.33	0.58	0.82	1.27
Winter absorbed capacity[2] - kW	0.09	0.17	0.22	0.35
COP	3.66	3.41	3.72	3.62
Summer total cooling power[3] - kW	0.62	1.02	1.42	2.13
Summer passive recovery[3] - kW	0.19	0.31	0.45	0.64
Summer active cooling capacity[3] - kW	0.43	0.71	0.97	1.49
Summer absorbed capacity[3] - kW	0.15	0.26	0.33	0.53
EER	2.86	2.73	2.93	2.81
Cooling gas	R134a	R134a	R134a	R134a
Heating operational limits - °C - External air - Indoor air	 -20÷20 °C 10÷25 °C	 -20÷20 °C 10÷25 °C	 -20÷20 °C 10÷25 °C	 -20÷20 °C 10÷25 °C
Cooling operational limits - °C - External air - Indoor air	 15÷38 °C 18÷28 °C	 15÷38 °C 18÷28 °C	 15÷38 °C 18÷28 °C	 15÷38 °C 18÷28 °C

ELECTRIC DATA	KHRAHX080	KHRAHX140	KHRAHX200	KHRAHX300
Supply Tension / Phases / Frequency - V / - / Hz	230 / 1 / 50	230 / 1 / 50	230 / 1 / 50	230 / 1 / 50
Max. absorbed energy - A	1.05	1.40	2.10	3.30
Absorbed power - W	170	250	320	630
Fan absorbed power - W	90	90	180	280
IP protection class	IP44	IP44	IP44	IP44

ACOUSTIC DATA[4]	KHRAHX080	KHRAHX140	KHRAHX200	KHRAHX300
Sound pressure level 3m - db(A)	38	41	44	48

FILTERS	KHRAHX080	KHRAHX140	KHRAHX200	KHRAHX300
Filter types	Flat filters	Flat filters	Flat filters	Flat filters
Filtering class/efficiency	ISO ePM1/80% (2x)	ISO ePM1/80% (2x)	ISO ePM1/70% (2x)	ISO ePM1/70% (2x)

DIMENSIONS. WEIGHT AND CONNECTIONS	KHRAHX080	KHRAHX140	KHRAHX200	KHRAHX300
Length "L" - mm	900	900	1040	1040
Width "W" - mm	690	690	900	900
Height "H" - mm	260	260	350	350
Weight - kg	71	75	86	86
Air connections - DN. mm				
- Indoor air delivery	DN125	DN125	DN160	DN160
- Foul air recovery	DN125	DN125	DN160	DN160
- External air intake	DN125	DN125	DN160	DN160
- Foul air exhaust	DN125	DN125	DN160	DN160
Condensation drain - mm	Ø16	Ø16	Ø16	Ø16

(1) Data according to standard UNI EN 13141-7. External air: temperature 7 °C, relative humidity 72%; indoor air (room): temperature 20 °C, relative humidity 28%; outdoor air reference flow rate.
(2) External air: temperature -5 °C, relative humidity 80%; indoor air (room): temperature 20 °C, relative humidity 50%; nominal air flow rate.
(3) External air: temperature 35 °C, relative humidity 50%; indoor air (room): temperature 27 °C, relative humidity 60%; nominal air flow rate.
(4) Sound pressure at 3 m in free field according to UNI EN 3744.

Main features

• Plug&play for rapid and simplified installation

• Self-supporting monoblock structure with double panel made of metal sheet, galvanized inside and varnished outside (RAL9003), intermediate mineral wool pad (thickness 20 mm, density 42 kg/m^3) for thermal insulation and soundproofing

• Polypropylene counter-flow static enthalpy heat exchanger for high efficiency recovery of sensible and latent heat. Easy to remove for periodical inspection and maintenance

• Radial centrifugal fans with reverse blades and EC speed modulation motors. Maximum efficiency, minimum consumptions and noise

• Modbus setting for integration in domotic systems

• Heat pump circuit with high efficiency compressor and minimum noise

• Bottom panel easy to remove for inspection and maintenance

• Class ISO ePM1 filters upstream to exchanger, on external air intake and indoor foul air recovery. Filters with low losses of pressure, easy to remove without tools for periodical maintenance or replacement, washable

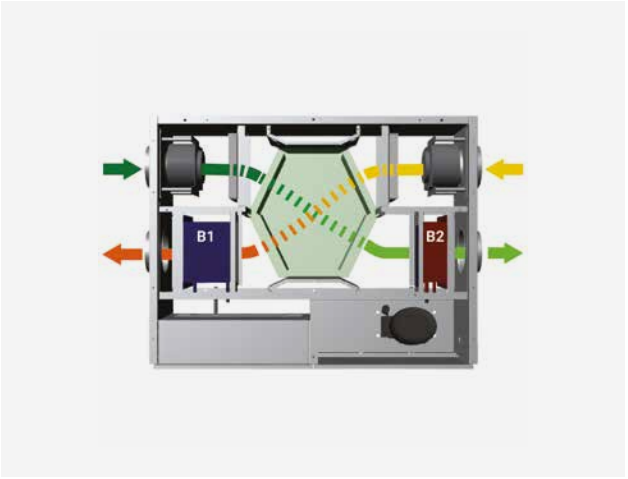
• Dual side drain for condensation disposal

Operational principles

Winter operational diagram.

Indoor foul air releases heat to the heat pump by passing through the evaporation coil (B1) and is only ejected at a later time.

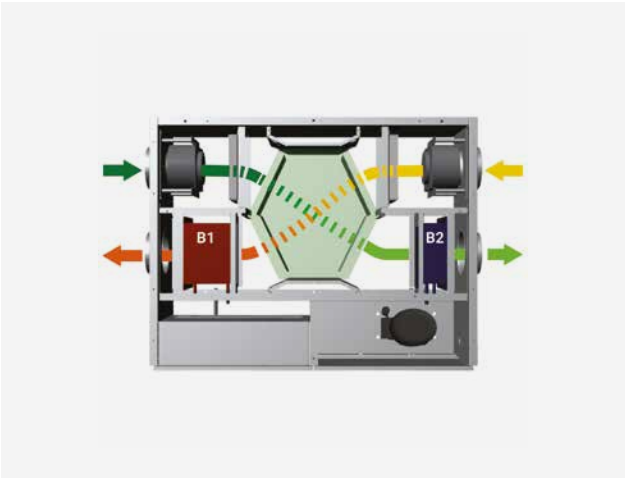
After taking energy from the exhaust air, the cooling fluid inside the heat pump transfers it to the exchange fresh air through the condensation coil (B2) before channeling it into the room.



Summer operational diagram.

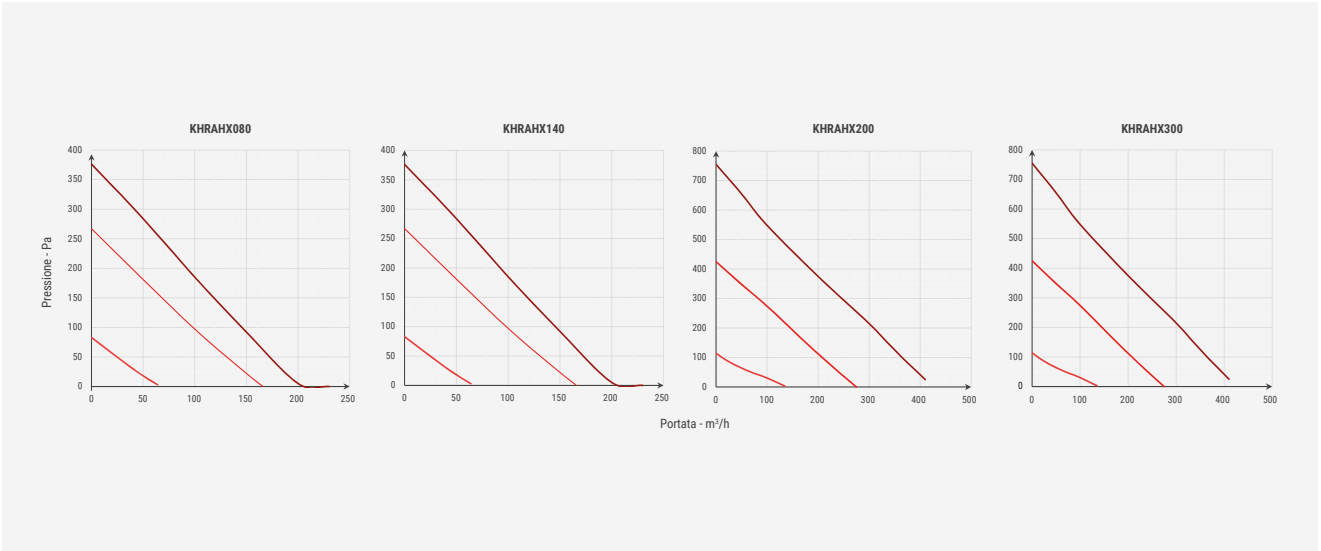
The cooling cycle is reversed thanks to a 4 way valve so as to recover the "cold" contained in the indoor air through the condensation coil (B1) before ejecting it.

External air is filtered, then cooled down and dehumidified through the evaporator (B2) before being channeled into the room.



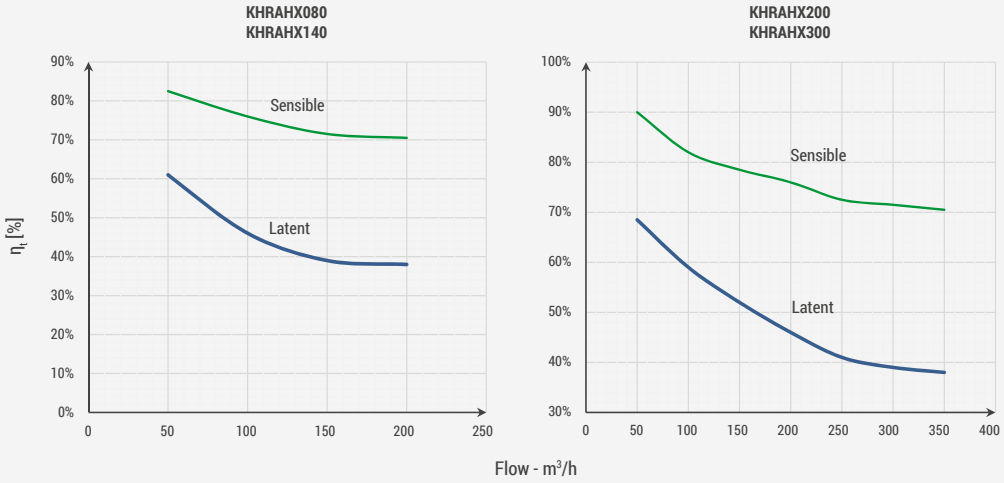
Aeraulic performance

Flow rate-pressure diagrams referring to: min. speed, speed corresponding to reference flow rate, max. speed.



Heat recovery thermal efficiency

According to standard UNI EN 13141-7. External air: temperature 7 °C, relative humidity 72%; indoor air (room): temperature 20 °C, relative humidity 28%; reference air flow rate.



Accessories and spare parts

KFR

Description / Product specifications

Spare standard filter kit for ventilation units. Filters with low losses of pressure, easy to remove without tools for periodical maintenance or replacement, washable.

For monoblock units KHRA: polypropylene composite filters, pre-mounted upstream to the exchanger, on external air intake and indoor foul air recovery.

PRODUCT CODE	DESCRIPTION	EURO/pcs	CL		
KFRY001	ISO ePM1 2-filter kit/80% efficiency for KHRA 80 and 140 m³/h	62.00	K	1	-
KFRY002	ISO ePM1 2-filter kit/70% efficiency for KHRA 200 and 300 m³/h	70.00	K	1	-

KFCA

Description / Product specifications

Spare activated-carbon filter made of polypropylene composite, low losses of pressure, easy to remove without tools for periodical maintenance or replacement, washable. Used as optional replacement for standard filters (one or both) pre-mounted upstream to the exchanger on ventilation units.

It removes gaseous contaminants (VOC, PAC, ozone, SO_2, NO_x) to achieve the best IAQ (Indoor Air Quality).

PRODUCT CODE	DESCRIPTION	EURO/pcs	CL		
KFCAY001	ISO ePM1 filter/70% efficiency for KHRA 80 and 140 m³/h	36.00	K	1	-
KFCAY002	ISO ePM2.5 filter/70% efficiency for KHRA 200 and 300 m³/h	48.00	K	1	-

Spare filters for each ventilation unit

VENTILATION UNIT	STANDARD FILTER KIT	ACTIVATED-CARBON FILTER
KHRAHX080	KFRY001 (2 ISO ePM1 filters/80% efficiency)	KFCAY001 (1 ISO ePM1 filter/70% efficiency)
KHRAHX140	KFRY001 (2 ISO ePM1 filters/80% efficiency)	KFCAY001 (1 ISO ePM1 filter/70% efficiency)
KHRAHX200	KFRY002 (2 ISO ePM1 filters/70% efficiency)	KFCAY002 (1 ISO ePM2,5 filter/70% efficiency)
KHRAHX300	KFRY002 (2 ISO ePM1 filters/70% efficiency)	KFCAY002 (1 ISO ePM2,5 filter/70% efficiency)

Periodical and programmed replacement of the filters is strongly recommended to prevent increased energy consumptions and deterioration of indoor air quality (increase of carbon dioxide emissions and, in case of activated-carbon filters, progressive release of harmful compounds already captured).

Accessories and spare parts

KSR

Description / Product specifications

Polypropylene counter-flow static enthalpy heat exchanger for high efficiency recovery of sensible and latent heat. Summer and winter operation. Easy to remove from ventilation unit for periodical inspection and maintenance.

PRODUCT CODE	DESCRIPTION	EURO/pcs	CL		
KSRX001	Dimensions: 366x366x160 mm. For KHRA 80 and 140 m³/h	574.00	K	1	-
KSRX002	Dimensions: 366x366x270 mm. For KHRA 200 and 300 m³/h	992.00	K	1	-

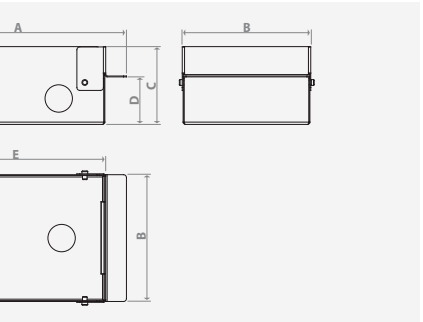
K489

Description / Product specifications

Flush mounting box for wall-mount installation of KHRA ventilation unit control panel.

PRODUCT CODE	DESCRIPTION	EURO/pcs	CL		
K489Y010	Total dimensions (LxHxW): 156x88x54 mm Dimension of flush-mounted part (LxHxW): 126x88x33 mm	58.00	K	1	-

PRODUCT CODE	A - mm	B - mm	C - mm	D - mm	E - mm
K489Y010	156	88	54	33	126



Chapter 6

Air distribution ducts and components

Plenums for machines and manifolds

KPL-F

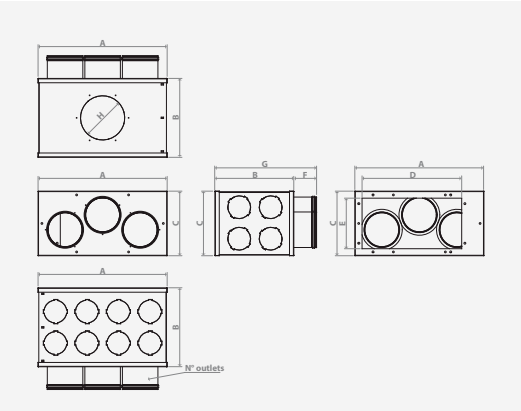
Description / Product specifications

Delivery plenum for connection to air intake opening of monoblock ventilation units for heat recovery/air treatment and split modules. With connections for KFLEX flexible ducts.

Consisting of a varnished galvanized metal sheet, lined internally on all sides with insulation material of suitable thickness.

PRODUCT CODE	DESCRIPTION	EURO/pcs	CL		
KPLFY001	Intake opening: 345x175 mm. 1 DN200 round connection	258.00	K	1	-
KPLFY011	Intake opening: 500x230 mm. 1 DN200 round connection	326.00	K	1	-
KPLFY021	Intake opening: 547x177 mm. 1 DN200 round connection	326.00	K	1	-
KPLFY031	Intake opening: 500x180 mm. 1 DN200 round connection	326.00	K	1	-
KPLFY003	Intake opening: 345x175 mm. 3 DN125 round connections	258.00	K	1	-
KPLFY015	Intake opening: 500x230 mm. 5 DN125 round connections	326.00	K	1	-
KPLFY025	Intake opening: 547x177 mm. 5 DN125 round connections	326.00	K	1	-
KPLFY035	Intake opening: 500x180 mm. 5 DN125 round connections	326.00	K	1	-

PRODUCT CODE	INTAKE OPENING D x E - mm	N° OF OUTLETS	A - mm	B - mm	C - mm	F - mm	G - mm	H - mm
KPLFY001	345 x 175	1 x DN200	447	273	224	79	352	150
KPLFY011	500 x 230	1 x DN200	677	294	297	79	372	150
KPLFY021	547 x 177	1 x DN200	677	294	297	79	372	150
KPLFY031	500 x 180	1 x DN200	677	294	297	79	372	150
KPLFY003	345 x 175	3 x DN125	447	273	224	79	352	150
KPLFY015	500 x 230	5 x DN125	677	294	297	79	372	150
KPLFY025	547 x 177	5 x DN125	677	294	297	79	372	150
KPLFY035	500 x 180	5 x DN125	677	294	297	79	372	150



Plenums for machines and manifolds

KPL-C

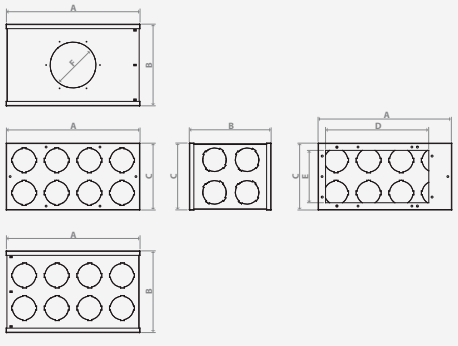
Description / Product specifications

Delivery plenum for connection to air intake opening of monoblock ventilation units for heat recovery/air treatment and split modules. Preset for initial adapter connections of KCORR corrugated ducts.

Consisting of a varnished galvanized metal sheet, lined internally on all sides with insulation material of suitable thickness. Pre-punched closed outlets to open upon installation based on the number of connections needed.

PRODUCT CODE	DESCRIPTION	EURO/pcs	CL		
KPLCY008	Intake opening: 345x175 mm Max. 8 DN75/DN90 round connections for initial adapters	239.00	K	1	-
KPLCY012	Intake opening: 515x249 mm Max. 12 DN75/DN90 round connections for initial adapters	289.00	K	1	-
KPLCY112	Intake opening: 547x177 mm Max. 12 DN75/DN90 round connections for initial adapters	289.00	K	1	-
KPLCY212	Intake opening: 500x180 mm Max. 12 DN75/DN90 round connections for initial adapters	289.00	K	1	-

PRODUCT CODE	INTAKE OPENING D x E - mm	MAX. N° OF STRAIGHT OUTLETS	A - mm	B - mm	C - mm	F - mm
KPLCY008	345 x 175	8 x DN75/DN90	447	273	224	150
KPLCY012	515 x 249	12 x DN75 DN90	676	294	294	150
KPLCY112	547 x 177	12 x DN75 DN90	676	294	294	150
KPLCY212	500 x 180	12 x DN75 DN90	676	294	294	150



Delivery plenum selection chart

	PLENUM WITH CONNECTIONS FOR KFLEX FLEXIBLE DUCTS								PLENUM WITH CONNECTION PRESETTING FOR KCORR CORRUGATED DUCTS			
Monoblock ventilation unit (air recovery/ treatment) and split modules (air treatment)	KPLFY001 345x175 mm 1 x DN200	KPLFY011 500x230 mm 1 x DN200	KPLFY021 547x177 mm 1 x DN200	KPLFY031 500x180 mm 1 x DN200	KPLFY003 345x175 mm 3 x DN125	KPLFY015 500x230 mm 5 x DN125	KPLFY025 547x177 mm 5 x DN125	KPLFY035 500x180 mm 5 x DN125	KPLCY008 345x175 mm Max. 8 x DN75/ DN90	KPLCY012 515x249 mm Max. 12 x DN75/ DN90	KPLFY112 547x177 mm Max. 12 x DN75/ DN90	KPLFY212 500x180 mm Max. 12 x DN75/ DN90
KHRDVX300	X				X				X			
KHRDVX500		X				X				X		
KHRDVRX300	X				X				X			
KHRDVRX500		X				X				X		
KHRDHX300	X				X				X			
KHRDHX500		X				X				X		
KHRDHRX300	X				X				X			
KHRDHRX500		X				X				X		
KMSDY300	X				X				X			
KMSDY500		X				X				X		
KMSDRY300	X				X				X			
KMSDRY500		X				X				X		
KHRWVRX300	X				X				X			
KHRWVRX500		X				X				X		
KHRWHRX300	X				X				X			
KHRWHRX500		X				X				X		
KHRWHRX600			X				X				X	
KMSWRY300				X				X				X
KMSWRY600				X				X				X

Plenums for machines and manifolds

KCI

Description / Product specifications

Universal galvanized metal sheet manifold, lined internally on all sides with insulation material of suitable thickness. Connection to ventilation units through connection for KFLEX flexible duct or KEPP rigid pipe. Two manifold models available based on type of indoor distribution used: with connections for KFLEX flexible duct or pre-punched closed connections for connection to initial adapters of KCORR corrugated ducts.

Available for model with pre-punched closed connections (to be opened upon installation based on number actually needed): straight or front connections, angle connections (90° to inlet on long side), right-side connections, left-side connections. Removable door for inspection on remaining free face.

Includes 4 wall brackets sliding along external rails on manifold body for installation at correct height.

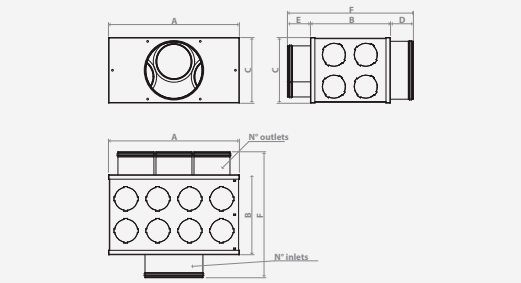
With connections for flexible duct

With connections preset for corrugated duct

Indoor distribution with flexible duct

PRODUCT CODE	DESCRIPTION	EURO/pcs	CL		
KCIY203	Ventilation unit connection: 1 x DN 200 mm. Indoor distribution connections: 3 x DN125	258.00	K	1	-
KCIY205	Ventilation unit connection: 1 x DN 200 mm. Indoor distribution connections: 5 x DN125	326.00	K	1	-

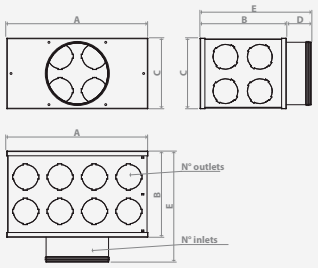
PRODUCT CODE	VENTILATION UNIT CONNECTION	INDOOR DISTRIBUTION CONNECTIONS	A - mm	B - mm	C - mm	D - mm	E - mm	F - mm
KCIY203	1 x DN200	3 x DN125	447	273	224	79	79	431
KCIY205	1 x DN200	5 x DN125	676	294	297	79	76	449



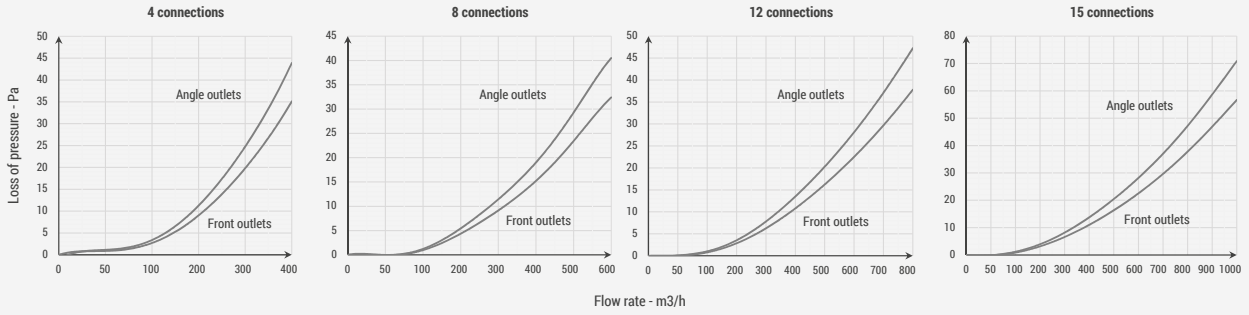
Indoor distribution with corrugated duct

PRODUCT CODE	DESCRIPTION	EURO/pcs	CL		
KCIY004	Ventilation unit connection: 1 x DN 125 mm. Indoor distribution connections: 4/4/4/4 x DN 75/DN90	205.00	K	1	-
KCIY104	Ventilation unit connection: 1 x DN 160 mm. Indoor distribution connections: 4/4/4/4 x DN75/DN90	205.00	K	1	-
KCIY108	Ventilation unit connection: 1 x DN 160 mm. Indoor distribution connections: 8/8/4/4 x DN75/DN90	239.00	K	1	-
KCIY208	Ventilation unit connection: 1 x DN 200 mm. Indoor distribution connections: 8/8/4/4 x DN75/DN90	239.00	K	1	-
KCIY112	Ventilation unit connection: 1 x DN 160 mm. Indoor distribution connections: 12/12/4/4 x DN75/DN90	289.00	K	1	-
KCIY212	Ventilation unit connection: 1 x DN 200 mm. Indoor distribution connections: 12/12/4/4 x DN75/DN90	289.00	K	1	-
KCIY215	Ventilation unit connection: 1 x DN 200 mm. Indoor distribution connections: 15/15/4/4 x DN75/DN90	338.00	K	1	-

PRODUCT CODE	VENTILATION UNIT CONNECTION	INDOOR DISTRIBUTION CONNECTIONS STRAIGHT/ANGLE /DX/SX	A - mm	B - mm	C - mm	D - mm	E - mm
KCIY004	1 x DN125	4/4/4/4 x DN75/DN90	223	272	235	79	350
KCIY104	1 x DN160	4/4/4/4 x DN75/DN90	223	272	235	79	350
KCIY108	1 x DN160	8/8/4/4 x DN75/DN90	447	273	224	79	352
KCIY208	1 x DN200	8/8/4/4 x DN75/DN90	447	273	224	79	352
KCIY112	1 x DN160	12/12/4/4 x DN75/DN90	677	288	297	79	366
KCIY212	1 x DN200	12/12/4/4 x DN75/DN90	677	288	297	79	366
KCIY215	1 x DN200	15/15/4/4 x DN75/DN90	801	289	296	79	368



Aeraulic performance of manifolds and plenums with KCORR corrugated ducts



Plenums for machines and manifolds

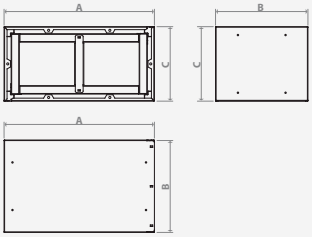
KSIL

Description / Product specifications

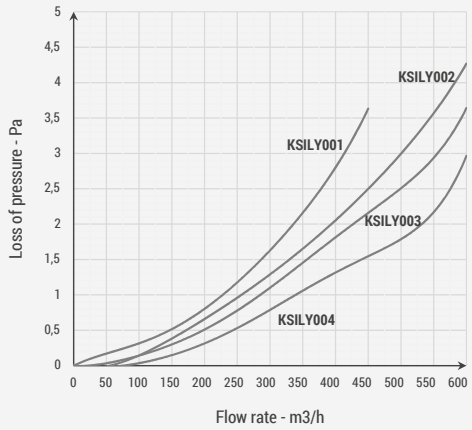
Muffler module for KPL-F or KPL-C plenums and KCI manifolds. Black-varnished metal sheet outer case. Installation between air intake opening and plenum or manifold body for sensible reduction of the dimensions required for a state-of-the-art installation. Galvanized steel sheet internal structure, lined internally with mineral wool sound-absorbing panels (thickness 20 mm) and provided with additional inner separator in central position to enhance the exchange surface and, in turn, soundproofing.

PRODUCT CODE	DESCRIPTION	EURO/pcs	CL		
KSILY001	Width 219 mm	198.00	K	1	-
KSILY002	Width 442 mm	236.00	K	1	-
KSILY003	Width 672 mm	268.00	K	1	-
KSILY004	Width 796 mm	318.00	K	1	-

PRODUCT CODE	A - mm	B - mm	C - mm
KSILY001	219	270	231
KSILY002	442	272	219
KSILY003	672	286	291
KSILY004	796	288	291



Aeraulic performance



Matching of plenum/manifold to muffler module

PLENUM	MUFFLER MODULE
KPLFY001	KSILY002
KPLFY011	KSILY003
KPLFY021	KSILY003
KPLFY031	KSILY003
KPLFY003	KSILY002
KPLFY015	KSILY003
KPLFY025	KSILY003
KPLFY035	KSILY003
KPLCY008	KSILY002
KPLCY012	KSILY003
KPLCY112	KSILY003
KPLCY212	KSILY003

MANIFOLD	MUFFLER MODULE
KCIY203	KSILY002
KCIY205	KSILY003
KCIY004	KSILY001
KCIY104	KSILY001
KCIY108	KSILY002
KCIY208	KSILY002
KCIY112	KSILY003
KCIY212	KSILY003
KCIY215	KSILY004

Plenums for room openings and grids

KPB-F

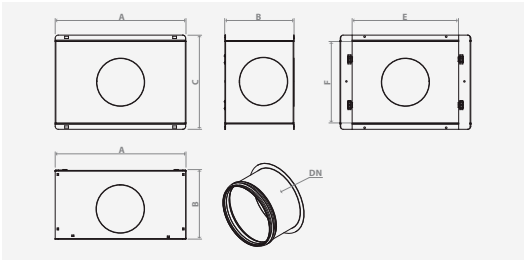
Description / Product specifications

Galvanized metal sheet opening plenum for connection to KFLEX flexible ducts. Insulated internally with a 6mm-thick adhesive polyethylene layer. Preset for a variety of connections the to flexible duct by inserting it into the cuts of the round sleeve metal sheet included: right and left side, top, bottom, back. Optional anchoring to brick walls (on bottom) or plasterboard walls (front) through special fitting eyelets. Clip connections included for coupling with KGR grids.

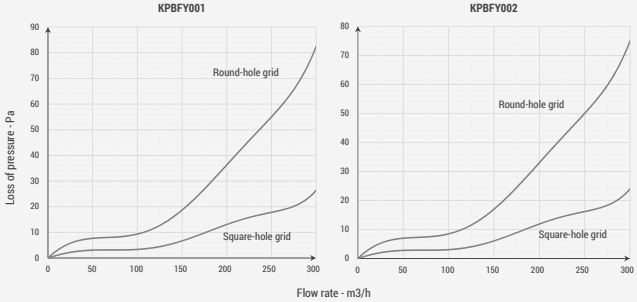
PRODUCT CODE	DESCRIPTION	EURO/pcs	CL		
KPBFY001	Air passage section: 281x217 mm. DN125 connection	65.00	K	1	-
KPBFY002	Air passage section: 381x167 mm. DN125 connection	65.00	K	1	-

To connect the opening to DN100 flexible ducts, use insulated metal sheet adapter KRIRY125.

PRODUCT CODE	AIR PASSAGE SECTION E x F / mm	A - mm	B - mm	C - mm	DN - mm
KPBFY001	281 x 217	345	182	248	DN125
KPBFY002	381 x 167	445	182	198	DN125



Aeraulic performance



Indoor ventilation

Fresh air must be channeled into every living, working noble ambient and bedroom. Foul air must be extracted from service rooms, that is kitchens, bathrooms, storage rooms and laundries. In general, hallways and stairs are in the air transition zones.
Normally, with dual-flow HRV units, the amount of intake air corresponds to the one extracted, thus setting a neutral pressure.
Tests have proven that the position of intake air openings in living rooms and bedrooms plays a secondary role and they can therefore be installed on walls or ceilings. Short circuits are quite rare even when the air intake is positioned right above a door. When choosing the position of intake openings, one must make sure the air flow doesn't affect people in standing zones with consequent discomfort.

Plenums for room openings and grids

KPB-C

Description / Product specifications

EPP polypropylene foam modular opening plenum for connection to KCORR corrugated ducts.

Preset for a variety of connections: side, top/bottom, back.

Optional connection to other modules for use with intake/extraction grids of various frontal dimensions.

Exclusive fitting design with impeccable seal.

Reduced width for installation on internal walls. It can be anchored to brick walls (on bottom) or plasterboard walls (front) through special metal brackets sliding inside special housings.

Clip connections included for coupling with KGR grids.

Included: adapters and seal rings for connection to DN75/DN90 corrugated ducts, caps for unused connections, joint for connection to additional module, ISO Coarse filter for positioning on special angular bases.

Working temperature: -25÷80 °C

Insulation grade: 0,042 W/(mK)

PATENTED

Opening plenum module

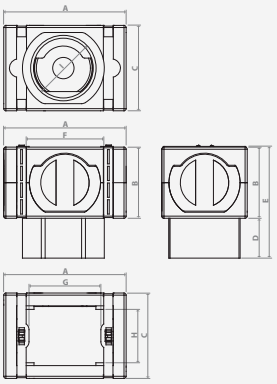
PRODUCT CODE	DESCRIPTION	EURO/pcs	CL		
KPBCY001	Air passage section: 101x75 mm. DN75/DN90 connection	84.00	K	1	-

Spare parts

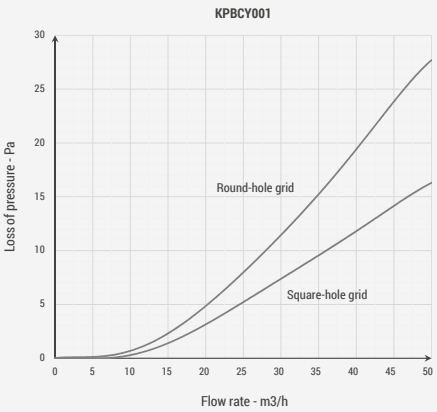
PRODUCT CODE	DESCRIPTION	EURO/pcs	CL		
KFRBY001	ISO Coarse spare filter for module KPBCY001	2.25	K	10	-

Coarse filter KFRBY001 is especially recommended in recovery circuits to limit pipe cleaning.

PRODUCT CODE	AIR PASSAGE SECTION G x H - mm	A - mm	B - mm	C - mm	D - mm	E - mm	F - mm	I - mm
KPBCY001	101 x 75	172	100	120	56	157	109	92



Aeraulic performance



Plenums for room openings and grids

KGR

Description / Product specifications

Air intake/extraction rectangular grid with flat front surface. Available in two models: with round or square holes.

Single-body molded steel, white varnish RAL9003 with surface treatment for top resistance to corrosion.

Rapid connection to opening plenum by fitting the rear pins in the matching clip housings of the plenum.

The steel pins provide for variable extension of the grid (0-30 mm) to correct possible plenum/wall misalignments.

In addition, their special profile prevents accidental uncoupling of housings and clips in case of ceiling mounting.

Round holes

PRODUCT CODE	DESCRIPTION	EURO/pcs	CL	▫	⊞
KGRY001	Front dimensions: 193x140 mm	82.00	K	1	-
KGRY002	Front dimensions: 366x140 mm	96.00	K	1	-
KGRY003	Front dimensions: 540x140 mm	106.00	K	1	-
KGRY004	Front dimensions: 366x260 mm	140.00	K	1	-
KGRY005	Front dimensions: 466x210 mm	106.00	K	1	-

Square holes

PRODUCT CODE	DESCRIPTION	EURO/pcs	CL	▫	⊞
KGRY011	Front dimensions: 193x140 mm	57.00	K	1	-
KGRY012	Front dimensions: 366x140 mm	77.00	K	1	-
KGRY013	Front dimensions: 540x140 mm	93.00	K	1	-
KGRY014	Front dimensions: 366x260 mm	134.00	K	1	-
KGRY015	Front dimensions: 466x210 mm	93.00	K	1	-

Opening / grid plenum coupling chart

TYPE OF DISTRIBUTION	OPENING PLENUM (TYPE, PRODUCT CODES, QUANTITY)		GRIDS (FRONT DIMENSIONS, PRODUCT CODE, TYPE)
FLEXIBLE DUCTS KFLEX	KPB-F 	KPBFY001 (x1)	366x260 mm KGRY004, with round holes KGRY014, with square holes
		KPBFY002 (x1)	466x210 mm KGRY005, with round holes KGRY015, with square holes
CORRUGATED DUCTS KCORR	KPB-C 	KPBCY001 (x1)	193x140 mm KGRY001, with round holes KGRY011, with square holes
	KPB-C 	KPBCY001 (x2)	366x140 mm KGRY002, with round holes KGRY012, with square holes
	KPB-C 	KPBCY001 (x3)	540x140 mm KGRY003, with round holes KGRY013, with square holes
	KPB-C 	KPBCY001 (x4)	366x260 mm KGRY004, with round holes KGRY014, with square holes

Ducts, fittings, accessories

KEPP

Description / Product specifications

Rigid EPP vapor-tight insulation pipe.

Fit for installation of HRV systems for external air intake, foul air exhaust, transfer to delivery inflow manifold, return from recovery manifold and recommended for exposed installations. It cuts down condensation and heat dispersions.

Bar pipes including a F-F sleeve for quick and easy connection to the other distribution components.

Extremely light, push-fitting connection, easy to cut on site.

Working temperature: -25÷80 °C

Insulation grade: 0,042 W/(m K)

PRODUCT CODE	DESCRIPTION	EURO/pcs	CL		
KEPPY125	DN125, length 1 m	75.00	K	5	-
KEPPY160	DN160, length 1 m	78.00	K	4	-

Ducts, fittings, accessories

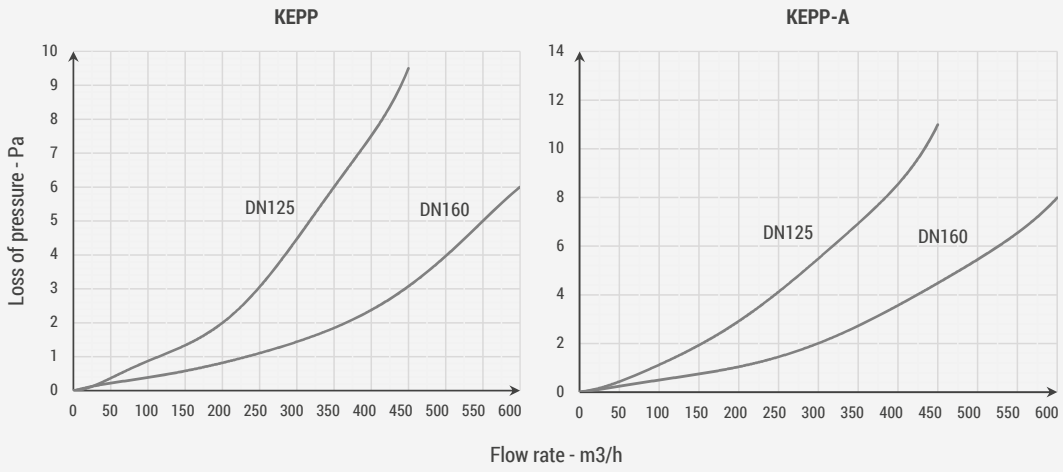
KEPP-A

Description / Product specifications

EPP 90°-curve vapor-tight insulation fitting.
Including a F-F sleeve for quick and easy connection to the other distribution components.
Extremely light, push-fitting connection, easy to cut on site. It can be split into two 45° angles thanks to the central insertion groove.
Working temperature: -25÷80 °C
Insulation grade: 0,042 W/(m K)

PRODUCT CODE	DESCRIPTION	EURO/pcs	CL		
KEPPAY125	DN125	49.45	K	3	-
KEPPAY160	DN160	52.75	K	3	-

Aeraulic performance of EPP distribution system



Ducts, fittings, accessories

KEPP-F

Description / Product specifications

Rigid EPP female-female vapor-tight insulation sleeve.

Quick and easy connection to the other distribution components.

Extremely light, push-fitting connection.

Working temperature: -25÷80 °C

Insulation grade: 0,042 W/(m K)

PRODUCT CODE	DESCRIPTION	EURO/pcs	CL		
KEPPFY125	DN125	15.25	K	6	-
KEPPFY160	DN160	15.25	K	6	-

EPP distribution system - Extruded polypropylene

EPP extruded polypropylene is a multi-purpose plastic material of outstanding engineering performance. Its special characteristics make it fit for a variety of applications and it helps improving the technical performance and absolute value of the end product.

Sturdy and non-deformable

EPP features a great resistance-weight balance, with an excellent load capacity and incredible optimization of weights and volumes. It is provided with memory, which means it returns to its original shape after collision deformation.

Light

EPP is an incredibly light material. This innate quality enables to greatly reduce the end-product weight with a substantial increase of resistance and efficiency.

Soundproofing

Its porosity makes EPP a great soundproofing material.

Thermal insulation

EPP's outstanding insulation capacity makes it especially fit for thermo-hydraulic and ventilation applications.

Hygienic and recyclable

Surfaces made with EPP are flawlessly smooth.

It is 100% recyclable.

KFLEX

Description / Product specifications

Flexible non-insulated duct consisting of polyester textile coated with polyolefin resins mixed with antibacterial and anti-mold agents, including harmonic steel-wire coil.

The sturdiness of thermo-bonded polyester fiber prevents microfiber dispersion as air flows through, guaranteeing its duration in time.

Suitable for heat recovery ventilation and air conditioning in concealed installations.

Supplied in spools.

Working temperature: -20/+90 °C

Min. bend radius: 800 mm

PRODUCT CODE	DESCRIPTION	EURO/m	CL		
KFLEXY100	DN100, spool length 10 m	4.25	K	10	-
KFLEXY125	DN125, spool length 10 m	5.30	K	10	-
KFLEXY160	DN160, spool length 10 m	6.35	K	10	-
KFLEXY200	DN200, spool length 10 m	8.10	K	10	-

Ducts, fittings, accessories

KFLEX-I

Description / Product specifications

Flexible insulated duct consisting of polyester textile coated with polyolefin resins mixed with antibacterial and anti-mold agents, including harmonic steel-wire coil. Polyester fiber thermo-insulation (thickness 25 mm, density 16 kg/m^3). Outer protection made with aluminum-metalized film (flame retardant).

It cuts down condensation and heat dispersions.

The sturdiness of thermo-bonded polyester fiber prevents microfiber dispersion as air flows through, guaranteeing its duration in time.

Suitable for heat recovery ventilation and air conditioning in concealed installations.

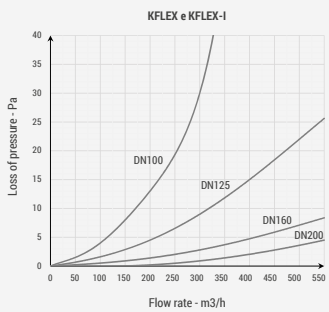
Supplied in spools.

Working temperature: -20÷+110 °C

Min. bend radius: 800 mm

PRODUCT CODE	DESCRIPTION	EURO/m	CL		
KFLEXIY100	DN100, spool length 10 m	13.25	K	10	-
KFLEXIY125	DN125, spool length 10 m	15.25	K	10	-
KFLEXIY160	DN160, spool length 10 m	18.15	K	10	-
KFLEXIY200	DN200, spool length 10 m	21.45	K	10	-

Aeraulic performance of KFLEX distribution system



Ducts, fittings, accessories

KFLEX-C

Description / Product specifications

AISI 304 stainless-steel pipe fastener for connection of flexible ducts. With galvanized hardened steel traction device.
Extremely versatile during start up, fit for every diameter of the product range.

PRODUCT CODE	DESCRIPTION	EURO/pcs	CL		
KFLEXCY001	For DN60÷DN200 diameters	2.10	K	10	-

KFLEX-K

Description / Product specifications

Black anti-condensation adhesive tape for aeraulic sealing of pipe joints. Closed-cell flexible elastomeric foam (FEF), fit for indoor and outdoor installations, combining low thermal conductivity, high resistance to water vapor diffusion and reduced flame propagation.

PRODUCT CODE	DESCRIPTION	EURO/pcs	CL		
KFLEXKY001	Thickness 6 mm, tape width 50 mm, spool length 10 m	10.40	K	1	-

The price refers to the entire spool.

Ducts, fittings, accessories

KFLEX-A

Description / Product specifications

Aluminum adhesive tape for aeraulic sealing of pipe joints. Fit for indoor and outdoor installations, it provides great malleability combined to enhanced mechanical resistance. Service temperature: -20÷120 °C, self-extinguishing Class 1.

PRODUCT CODE	DESCRIPTION	EURO/pcs	CL		
KFLEXAY001	Thickness 30 µm, tape width 50 mm, spool length 10 m	18.15	K	1	-

The price refers to the entire spool.

KRI-M

Description / Product specifications

Male-male airtight sleeve, with insulation. Made with galvanized steel sheet, including anti-aging EPDM synthetic rubber double-lip gaskets with homogeneous profile.

PRODUCT CODE	DESCRIPTION	EURO/pcs	CL		
KRIMY125	DN125	13.45	K	4	-
KRIMY160	DN160	15.50	K	4	-
KRIMY200	DN200	18.15	K	4	-

Ducts, fittings, accessories

KRI-F

Description / Product specifications

Female-female sleeve, with insulation. Made with galvanized steel sheet.

PRODUCT CODE	DESCRIPTION	EURO/pcs	CL		
KRIFY125	DN125	15.55	K	4	-
KRIFY160	DN160	16.50	K	4	-
KRIFY200	DN200	19.80	K	4	-

KRI-R

Description / Product specifications

Concentric female-male airtight adapter, with insulation. Made with galvanized steel sheet, including anti-aging EPDM synthetic rubber double-lip gaskets with homogeneous profile.

PRODUCT CODE	DESCRIPTION	EURO/pcs	CL		
KRIRY125	DN125 F – DN100 M	19.80	K	2	-
KRIRY160	DN160 F – DN125 M	23.10	K	2	-
KRIRY200	DN200 F– DN160 M	28.00	K	2	-

Ducts, fittings, accessories

KRI-T

Description / Product specifications

Airtight TEE fitting with insulation. Made with galvanized steel sheet, including anti-aging EPDM synthetic rubber double-lip gaskets with homogeneous profile.
To create airtight derivations with minimum losses of pressure.

PRODUCT CODE	DESCRIPTION	EURO/pcs	CL		
KRITY125	DN125	31.30	K	1	-
KRITY160	DN160	44.50	K	1	-
KRITY200	DN200	59.30	K	1	-

KEXT-G

Description / Product specifications

External wall grid for fresh air intake and foul air exhaust. Made with stainless steel to guarantee solidity and resistance to corrosion. Provided with anti-insect mesh and flow-deflecting blades.
Enhanced seal with fitting clips on insertion neck.
Also available with deflector shell.

Standard

PRODUCT CODE	DESCRIPTION	EURO/pcs	CL		
KEXTGY125	For DN125 pipe	40.00	K	2	-
KEXTGY160	For DN160 pipe	50.00	K	2	-

With deflector shell

PRODUCT CODE	DESCRIPTION	EURO/pcs	CL		
KEXTGDY125	For DN125 pipe	45.00	K	2	-
KEXTGDY160	For DN160 pipe	54.00	K	2	-

Air intake and ejection

The fresh air intake must be placed so as to prevent any possible form of pollution and discomfort (dust, odors, fuel gases from motors and heat generators). Vegetation and the maximum height of snow should be taken into account. The fresh air intake should be positioned at a minimum of 2,5 m above ground. The air ejection terminal must be realized so as to prevent short circuits with the inflowing external air and any type of discomfort for neighboring houses.

Ducts, fittings, accessories

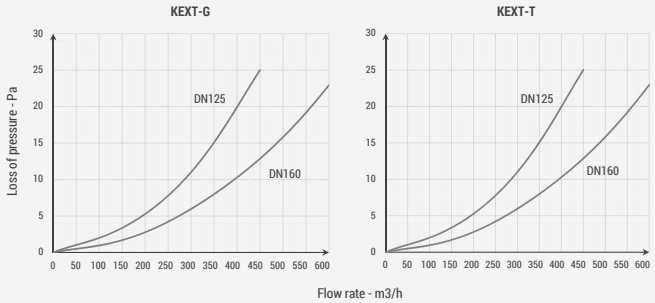
KEXT-T

Description / Product specifications

Roof terminal for fresh air intake and foul air exhaust. Made with stainless steel and featuring a special rain-resistant design.

PRODUCT CODE	DESCRIPTION	EURO/pcs	CL		
KEXTTY125	For DN125 pipe	167.00	K	1	-
KEXTTY160	For DN160 pipe	21.00	K	1	-

Aeraulic performance of grids and external terminals KEXT



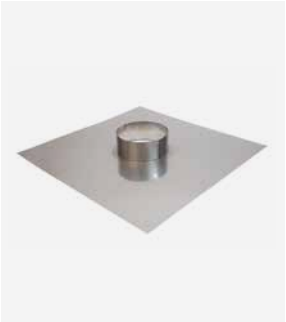
Ducts, fittings, accessories

KEXT-P

Description / Product specifications

Stainless steel tile for roof trampling. Possible air-tight connection to ventilation unit pipe, for direct coupling with roof terminal.

Available for flat and sloped roofs.



For flat roofs

PRODUCT CODE	DESCRIPTION	EURO/pcs	CL		
KEXTPY125	DN125	290.00	K	1	-
KEXTPY160	DN160	330.00	K	1	-

For sloped roofs

PRODUCT CODE	DESCRIPTION	EURO/pcs	CL		
KEXTPIY125	DN125	346.00	K	1	-
KEXTPIY160	DN160	396.00	K	1	-

KEXT-R

Description / Product specifications

EPDM seal gasket for roof trampling. Enhanced resistance to extreme temperatures and UV radiations, in can be easily connected to the terminal duct on site.

Aluminum base easy to deform based on roof external sloping.

PRODUCT CODE	DESCRIPTION	EURO/pcs	CL		
KEXTRY001	DN80 ➞ DN160	78.00	K	1	-

Ducts, fittings, accessories

KCORR

Description / Product specifications

Corrugated flexible pipe specific for installation of HRV systems in suspended ceilings, under floors and on walls. Two models available: with round section or lowered oval section.

Made with high-density anti-static and anti-bacterial polyethylene (HDPE), co-extruded with double layer, corrugated on the outside and smooth on the inside. Complying with rules certified by the German hygiene institute HY.

It confers high elasticity thanks to the certified anti-microbic treatment (reduction exceeding 99% of the bacterial load commonly found on the inner surface of ducts) and easiness of cleaning. It prevents allergies and asthma, bacterial growth, bad odors thanks to a special biocide active principle.

For top performance (high flow rates) and duration in time of HRV systems.

Supplied in spools with airtight caps for hygienic protection.

Working temperature: -25÷+60 °C

Compression resistance EN ISO 9969: >8 kN/m^2

DN75 max. flow rate: 30 m^3/h *(according to DIN 1946/6)*

DN90 max. flow rate: 45 m^3/h (*according to DIN 1946/6)*

Min. bending radius (for round pipe): 150 mm

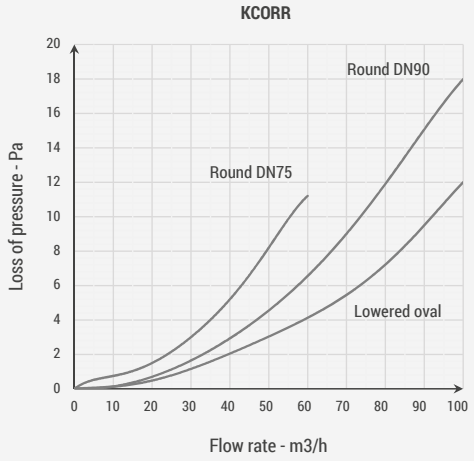
Round section

PRODUCT CODE	DESCRIPTION	EURO/m	CL		
KCORRY075	DN75 (external/internal diameters: 75/63 mm), spool length 50 m	6.00	K	50	-
KCORRY090	DN90 (external/internal diameters: 90/75 mm), spool length 50 m	8.40	K	50	-

Lowered oval section

PRODUCT CODE	DESCRIPTION	EURO/m	CL		
KCORRY001	External/internal dimensions: 51x138/38x120 mm, spool length 20 m	31.50	K	20	-

Aeraulic performance



Ducts, fittings, accessories

KCORR-P

Description / Product specifications

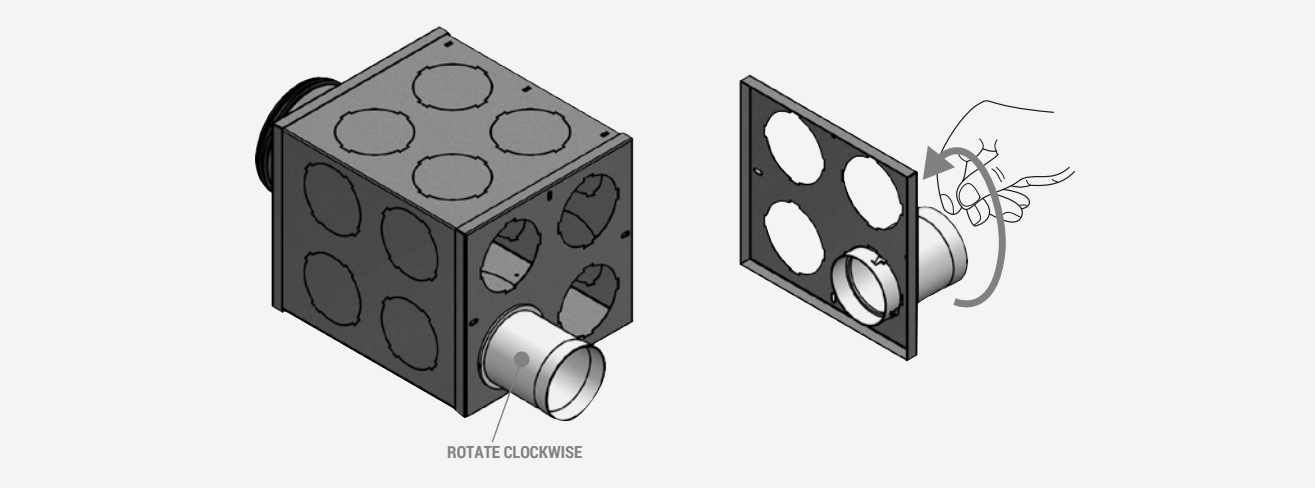
Initial adapter for connection of round flexible corrugated pipe to plenum or manifold connections. Made with high-density polyethylene (HDPE).

End-of-stroke inner profiling to prevent excessive insertion of the pipe.

Adapter easy to fit on plenum/manifold connection by inserting and rotating the part.

Seal ring for corrugated pipe included.

PRODUCT CODE	DESCRIPTION	EURO/pcs	CL		
KCORRPY075	DN75	10.00	K	4	-
KCORRPY090	DN90	10.00	K	4	-



Installation of initial adapter in plenum/manifold hole.

Ducts, fittings, accessories

KCORR-Z

Description / Product specifications

Transition fitting from round pipe to lowered oval pipe. The transition fitting must be connected to the oval pipe F-F sleeve and then connected to the oval pipe.

Seal ring for round pipe included.

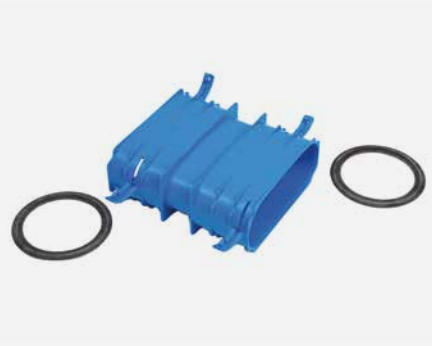
PRODUCT CODE	DESCRIPTION	EURO/pcs	CL		
KCORRZY001	DN90 ➞ 51x138 mm	119,00	K	6	-

KCORR-F

Description / Product specifications

Female-female sleeve for KCORR corrugated pipe joints.

Seal rings included.



Round section

PRODUCT CODE	DESCRIPTION	EURO/pcs	CL		
KCORRFY075	DN75	15.50	K	6	-
KCORRFY090	DN90	18.50	K	6	-

Lowered oval section

PRODUCT CODE	DESCRIPTION	EURO/pcs	CL		
KCORRFY001	51x138 mm	51.50	K	6	-

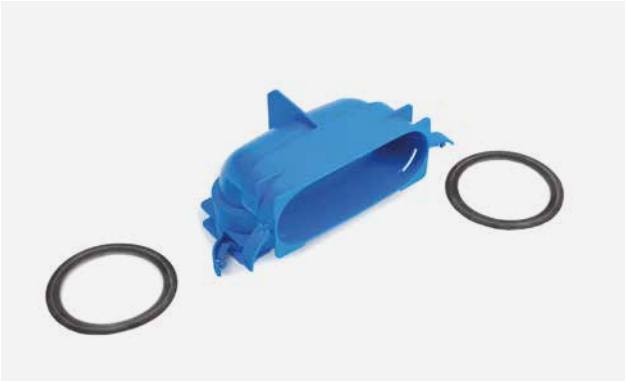
Ducts, fittings, accessories

KCORR-AV

Description / Product specifications

Vertical 90° angle fitting for connection of KCORR corrugated oval pipes.

Seal gaskets included.



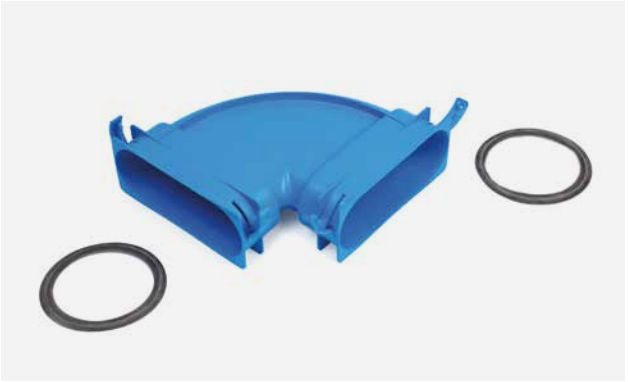
PRODUCT CODE	DESCRIPTION	EURO/pcs	CL		
KCORRAVY001	51x138 mm	41.50	K	6	-

KCORR-AH

Description / Product specifications

Horizontal 90° angle fitting for connection of KCORR corrugated oval pipes.

Seal gaskets included.



PRODUCT CODE	DESCRIPTION	EURO/pcs	CL		
KCORRAHY001	51x138 mm	40.00	K	6	-

Ducts, fittings, accessories

KCORR-OR

Description / Product specifications

Seal ring for KCORR corrugated pipes.

With EPDM synthetic material, no lubricants required for installation.

For round pipe

PRODUCT CODE	DESCRIPTION	EURO/pcs	CL		
KCORROY075	DN75	3.70	K	10	-
KCORROY090	DN90	4.45	K	10	-

For lowered oval pipe

PRODUCT CODE	DESCRIPTION	EURO/pcs	CL		
KCORROY001	51x138 mm	8.45	K	10	-

KCORR-T

Description / Product specifications

Airtight blind cap for hygienic protection inside KCORR corrugated pipe systems.

Made with PE polyethylene.

Round section

PRODUCT CODE	DESCRIPTION	EURO/pcs	CL		
KCORRTY075	DN75	7.20	K	5	-
KCORRTY090	DN90	8.30	K	5	-

Lowered oval section

PRODUCT CODE	DESCRIPTION	EURO/pcs	CL		
KCORRTY001	51x138 mm	16.50	K	10	-

Ducts, fittings, accessories

KCORR-C

Description / Product specifications

Pipe collar for installation of KCORR corrugated pipes on walls, ceilings or floors. Screws and screw anchors not included.
Round pipes are made with PE polyethylene, oval pipes are made with metal.

For round pipe

PRODUCT CODE	DESCRIPTION	EURO/pcs	CL	▢	▦
KCORRCY075	For DN75 pipes	1.95	K	12	-
KCORRCY090	For DN90 pipes	2.35	K	12	-

For lowered oval pipe

PRODUCT CODE	DESCRIPTION	EURO/pcs	CL	▢	▦
KCORRCY001	For 51x138 mm pipes	9.10	K	1	-

KCORR-I

Description / Product specifications

Insulation sleeve for KCORR corrugated pipes. Made with PE polyethylene for continuous extrusion and expansion, outer gray protective coating.
Working temperature: -8÷90 °C
Insulation thickness: 6 mm
Insulation grade: 0,038 W/(m K)
Min. bend radius: 150 mm

PRODUCT CODE	DESCRIPTION	EURO/m	CL	▢	▦
KCORRIY075	For DN75 oval corrugated pipe. Spool length 15 m	4.55	K	15	-
KCORRIY090	For DN90 oval corrugated pipe. Spool length 15 m	5.00	K	15	-
KCORRIY001	For 51x138 oval corrugated pipe. Spool length 15 m	6.00	K	15	-

Ducts, fittings, accessories

KFLOW-D

Description / Product specifications

Dynamic flow rate controller. Control through inner element with self-adjusting variable slanting. It automatically maintains the level set through the front selector at any differential pressure - upstream and downstream to the control module itself - and with no additional energy.

Direct installation inside initial adapters KCORR-P on plenum and manifold connections.

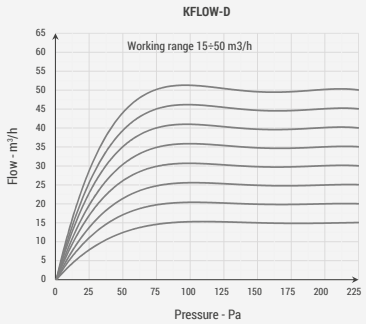
Working range: 15÷50 m^3/h

Regulation steps: 5 m^3/h

Adjustment tolerance: ±5 m^3/h

PRODUCT CODE	DESCRIPTION	EURO/pcs	CL		
KFLOWDY001	Ø 80 mm	38.00	K	6	-

Aeraulic performance



Ducts, fittings, accessories

KFLOW-S

Description / Product specifications

Static flow rate controller. With removable concentric inner elements: the flow section increases based on the number of concentric disks removed.

Direct installation inside opening plenums KPB.

Working range: 15÷50 m^3/h

Regulation steps: 5 m^3/h

PRODUCT CODE	DESCRIPTION	EURO/pcs	CL		
KFLOWSY001	Ø 80 mm	8.80	K	12	-

Ducts, fittings, accessories

KBW

Description / Product specifications

Cooling hydronic coil for stand-alone assembly on heat recuperator delivery duct. Consisting of a galvanized steel sheet frame containing the heat exchange coil made with copper pipes and aluminum fins.

Equipped with threaded connections including air vent valves and coil drain.

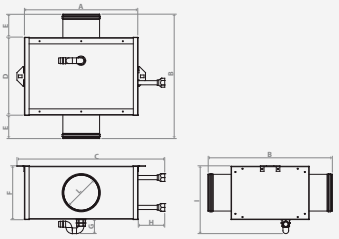
PRODUCT CODE	DESCRIPTION	EURO/pcs	CL		
KBWY001	0,88÷0,92 kW. DN125 connections For KHR 200 m³/h and KHRA-H 80 and 140 m³/h	722.00	K	1	-
KBWY002	1,63÷1,86 kW. DN160 connections For KHR 300, 400 and 500 m³/h and KHRA-H 200 and 300 m³/h	816.00	K	1	-

Technical data[1]

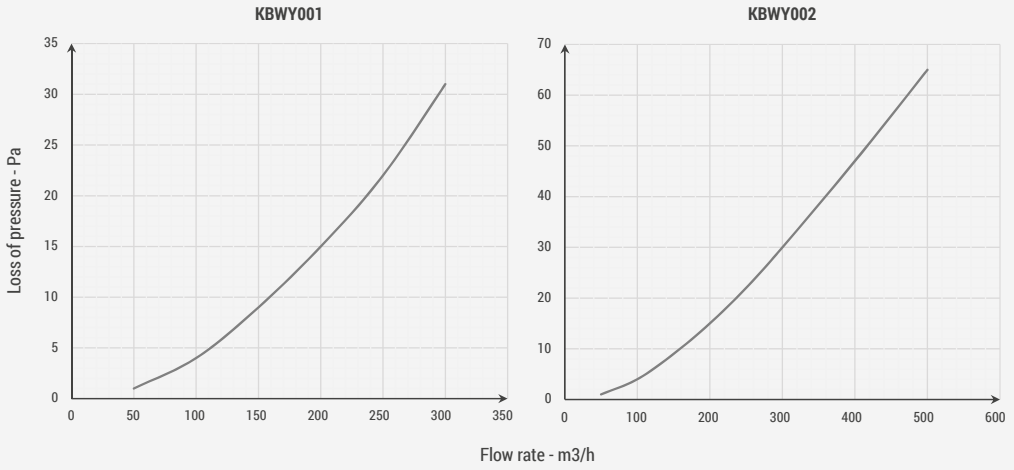
	KBWY001	KBWY002
Sensible cooling power - W	0.52	1.10
Latent cooling power - W	0.40	0.85
Nominal water flow rate - m³/h	0.16	0.33
Water circuit loss of pressure - kPa	15.1	16.3
Connection diameter	DN125	DN160
Water connections - inch.	1/2"	1/2"

(1) Referred to: inflow air at 25 °C and 60% relative humidity; water in 7 °C, water out 12 °C; nominal flow rates

PRODUCT CODE	A - mm	B - mm	C - mm	D - mm	E - mm	F - mm	G - mm	H - mm	I - mm	L - mm
KBWY001	381	417	495	262	78	180	50	89	225	DN125
KBWY002	381	417	485	262	78	281	48	80	327	DN160



Aeraulic performance



KBE

Description / Product specifications

Heating hydronic coil for stand-alone assembly on delivery duct. Consisting of a galvanized steel sheet frame containing an armor resistance. Round flanges for easier installation in ducts.

Equipped with side electric box (cable duct included) to access the internal components: automatic thermal protector; manual thermal protector; teletrembler; adjustable thermostat ±35 °C; terminal strip.

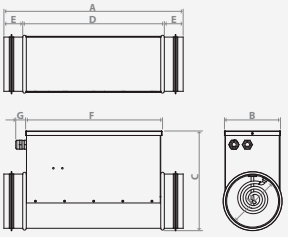
The thermostat assembled on the coil enables to set the delivery air temperature directly.

PRODUCT CODE	DESCRIPTION	EURO/pcs	CL	▢	⊞
KBEY001	0,5 kW. DN125 connections. For KHR 200 m³/h and KHRA-H 80 and 140 m³/h	690.00	K	1	-
KBEY002	1,0 kW. DN160 connections For KHR 300, 400 and 500 m³/h and KHRA-H 200 and 300 m³/h	814.00	K	1	-

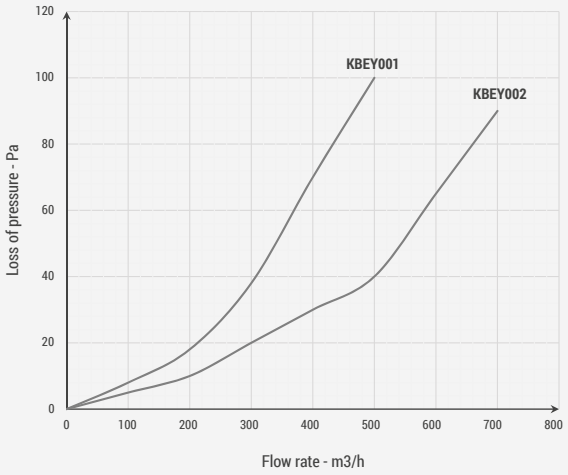
Technical data

	KBEY001	KBEY002
Nominal electric power - kW	0.5	1.0
Supply Tension / Phases/ Frequency - V / - / Hz	230 / 1 / 50	230 / 1 / 50
Max. absorbed energy - A	2.2	4.5
Connection diameter	DN125	DN160

PRODUCT CODE	A - mm	B - mm	C - mm	D - mm	E - mm	F - mm	G - mm	H - mm
KBEY001	400	125	221	316	42	304	22	121
KBEY002	400	161	252	320	48	303	22	160



Aeraulic performance



1 - Pinch-point heat recuperators

p. 163

2 - Extraction fan

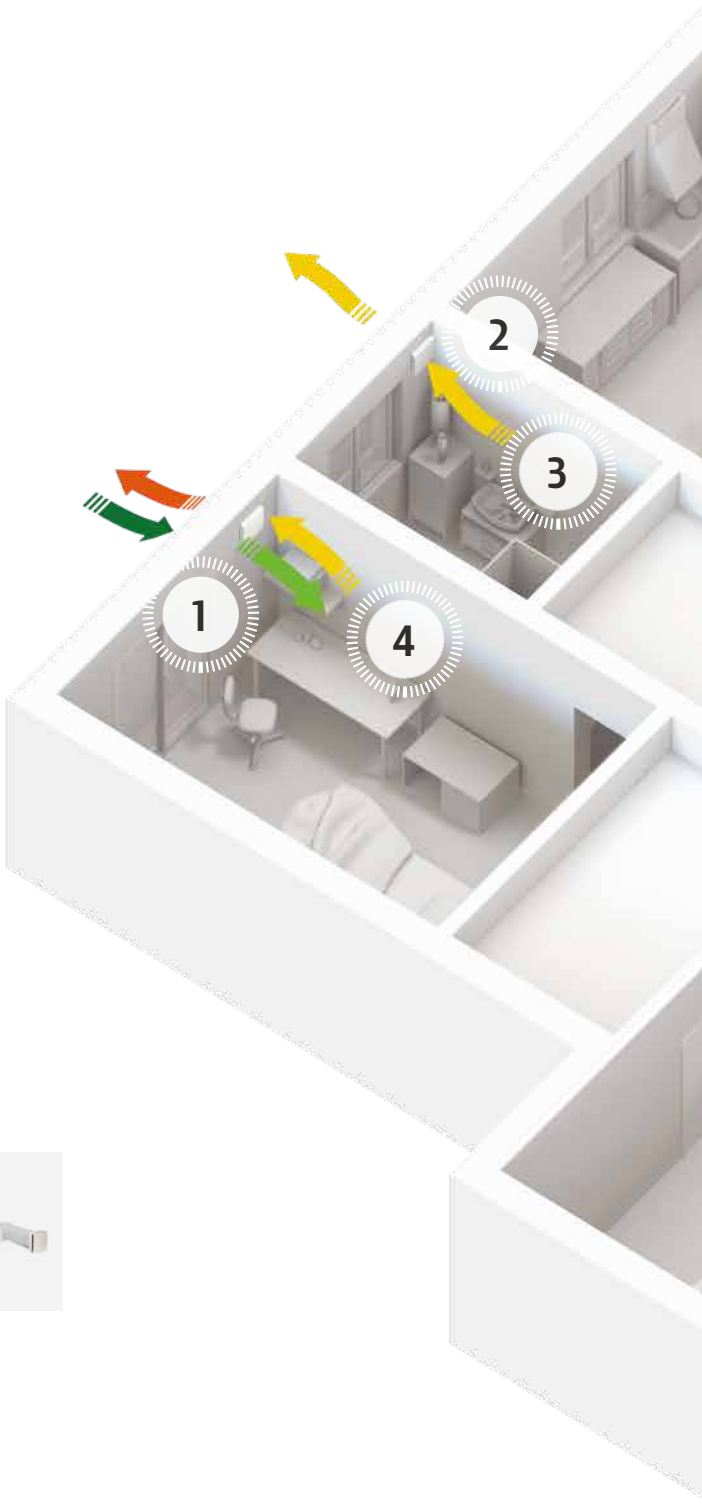
p. 168

3 - Accessories for extraction fans

p. 173

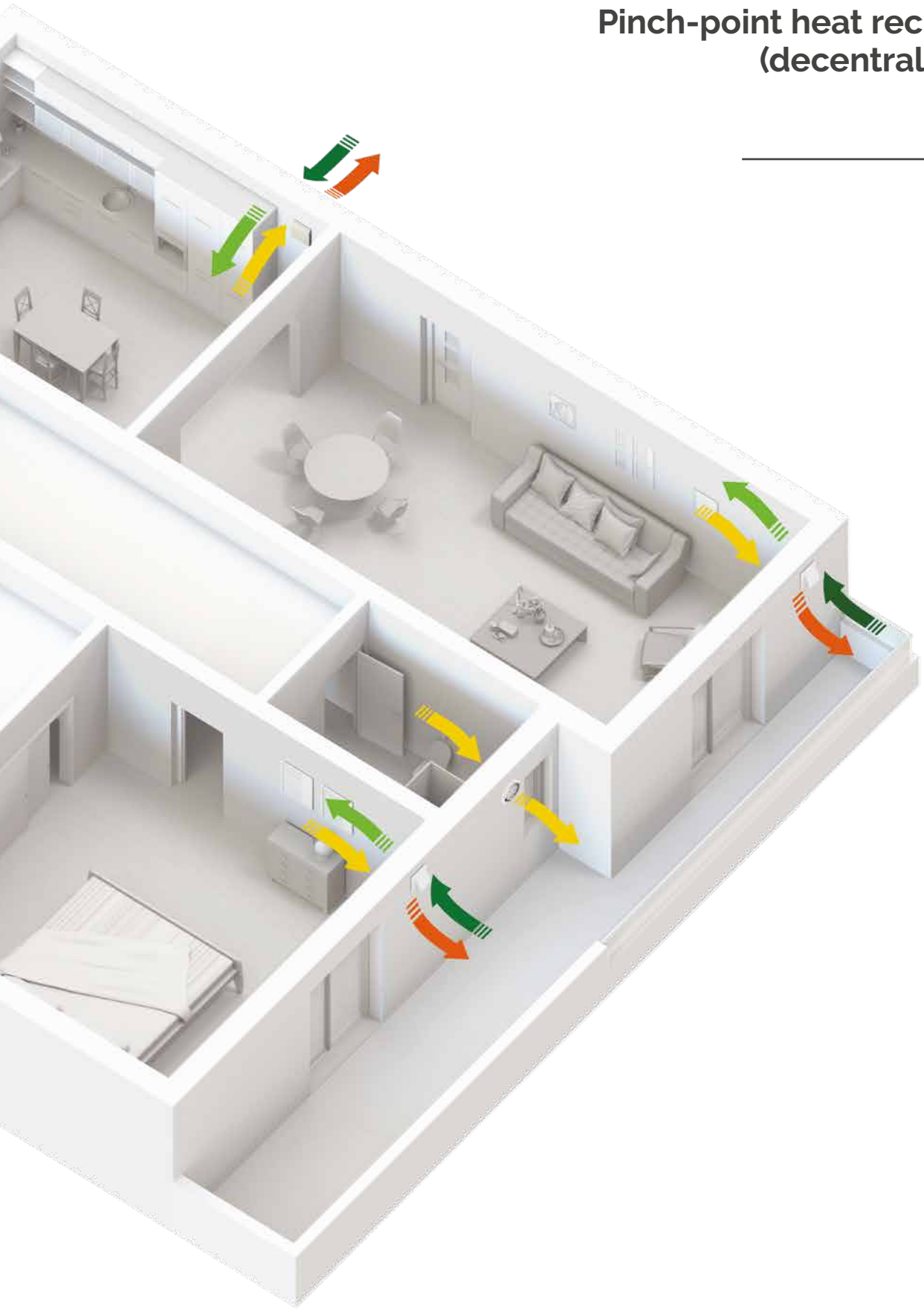
4 - Accessories for pinch-point recuperators

p. 170



Chapter 7

Pinch-point heat recuperators (decentralized HRV)



Chapter 7

Pinch-point heat recuperators (decentralized HRV)

Ventilation units

KHRP

Description

Alternated-flow ventilation unit with heat recovery for high-performance decentralized Heat Recovery Ventilation (HRV) in single residential units (houses, offices, surgeries). Operational principle based on regenerative heat recovery through a ceramic exchanger inside the unit. The exchanger accumulates the heat released by the air extracted from the room and transfers it back by heating the air during the inflow cycle.

Unit designed for indoor horizontal installation close to perimetric wall.

Available as Master (unit with electronic control and setting remote) and Slave (unit with no remote, fit for use with Master units without direct wiring). Combined operation of 1 Master unit and up to 16 Slave units.

Electronic control system for autonomous or coordinated operation of the installed appliances.

Master unit

Slave unit

PRODUCT CODE	DESCRIPTION	EURO/pcs	CL		
KHRPMY050	Master unit. Nominal air flow rate 50 m³/h. Duct diameter 160 mm	720.00	K	1	-
KHRPSY050	Slave unit. Nominal air flow rate 50 m³/h. Duct diameter 160 mm	595.00	K	1	-
KHRPMY025	Master unit. Nominal air flow rate 25 m³/h. Duct diameter 100 mm	720.00	K	1	-
KHRPSY025	Slave unit. Nominal air flow rate 25 m³/h. Duct diameter 100 mm	595.00	K	1	-

Technical data

VENTILATION UNIT / AIR TREATMENT PERFORMANCE	KHRPMY050 KHRPSY050	KHRPMY025 KHRPSY025
Nominal air flow rate - m^3/h.	50	24
In-cycle air flow rate - m^3/h	38	18
Air flow rate at max/med/min speed - m^3/h	50/25/15	24/12/8
In-cycle air flow rate at max/med/min speed - m^3/h	38/20/12	18/9/6
Recovery nominal efficiency[1] - %	77	79

ELECTRIC DATA	KHRPMY050 KHRPSY050	KHRPMY025 KHRPSY025
Supply Tension / Phases/ Frequency - V / - / Hz	230 / 1 / 50	230 / 1 / 50
Absorbed power - W	2.8	2.0
IP protection class	IPX4	IPX4

ACOUSTIC DATA[2]	KHRPMY050 KHRPSY050	KHRPMY025 KHRPSY025
Sound power level Lw at max/med/min speed - db(A)	44/38/29	39/37/34
Sound power level Lw at 1 m at max/med/min speed - db(A)	32/26/18	28/26/23

FILTERS	KHRPMY050 KHRPSY050	KHRPMY025 KHRPSY025
Filter types	Flat filters	Flat filters
Filtering class/efficiency	ISO Coarse	ISO Coarse

DIMENSIONS, WEIGHT AND CONNECTIONS	KHRPMY050 KHRPSY050	KHRPMY025 KHRPSY025
Front dimensions - mm	180 x 180	180 x 180
Diameter - mm	160	100
Pipe width - mm	230 / 540	230 / 540
Weight - kg	4.0	2.7

(1) Data according to standard UNI EN 13141-8. External air: temperature 7 °C, relative humidity 72%; indoor air (room): temperature 20 °C, relative humidity 28%; nominal air flow rate.
(2) Data according to standard UNI EN 3741 and UNI EN 3744.

Main features

• Ceramic regenerative heat exchanger with alternated flow. Made with technical ceramic for high-efficiency exchange and reduced losses of pressure

• Anti-static UV-resistant plastic head (ABS). Section-fitted structure for simplified inspection

• Brushless axial fan with modulating electronic motor. High efficiency and reduced noise

• Perimetric vacuum for reduced ambient noise when front panel is kept clean

• Side-mount electronic components with integrated feeder and microprocessor control card which adopts the ventilation settings most suitable for indoor comfort by processing the data provided by the unit sensors (temperature, humidity and luminosity)

• Wireless connection between Master and Slave units (up to 16 Slaves)

• Radio-frequency remote (868 MHz) for parameter setting: on/off and nighttime operation, 3 ventilation speeds, humidity sensor intervention threshold for extraction at max. speed, light sensor, operational mode (input only, extraction only, heat recovery cycle with manual or automatic time setting optimized through outdoor and indoor temperature reading). The remote features a straightforward and intuitive graphic design to set and change the range of operational modes and check the current settings

• The air introduced into the room flows through an ISO Coarse filter which blocks any impurity. Filter installed on front plate with low losses of pressure, easy to access from unit front, removable for periodical maintenance, washable

• Simplified installation through shock-proof PVC telescopic pipe (included) to house the recovery unit (head and ceramic exchanger)

• Standard external plastic grid, flexible for installation also from the inside. External finish grid available as accessory

• Standard internal cover, smooth white ABS. Wide range of internal covers to customize the recuperator for a variety of living contexts

Operational principles

The pinch-point recuperator provides for constant exchange of indoor air in winter (with heating system ON).

It includes a ceramic exchanger that accumulates heat when extracting air from the room; the stocked heat is then released into the cold air from the outside during the following inflow phase.

EXTRACTION FLOW

INFLOW

Pairing operation is recommended for pinch-point recuperator systems so as to alternate the inflow phase to extraction and efficiently "clean" the rooms without overpressurizations or depressurizations.

Paired appliances may be controlled by a single remote.

Foul air in bathrooms must be extracted separately through intermittent ventilation.

ErP Ecodesign energy efficiency data

(complying with European Regulations 1253/2014 and 1254/2014)

Ref.	DESCRIPTION	KHRPMY050 KHRPSY050	KHRPMY025 KHRPSY025
A	Supplier's name or brand	Giacomini S.p.A.	Giacomini S.p.A.
B	Model identification code	KHRPMY050 KHRPSY050	KHRPMY025 KHRPSY025
C	Specific energy consumption (SEC) - kWh/m².a - Cold - Temperate - Warm - SEC class	 -78.80 -41.80 -18.10 A	 -78.60 -41.30 -17.30 A
D	Declared type	RVU Bidirectional	RVU Bidirectional
E	Type of activation installed	Adjustable speed drive	Adjustable speed drive
F	Heat recovery system	Regenerative	Regenerative
G	Heat recovery thermal efficiency - %	77	79
H	Max. flow rate - m³/s	0.0105	0.0050
I	Electric power absorbed at max. flow rate - W	2.8	2.0
J	Sound Power Level L_{WA} - dB(A)	44	39
K	Reference flow rate - m³/s	0.0105	0.0050
L	Reference pressure difference -Pa	0	0
M	SPI - W/(m³/h)	0.0147	0.2220
N	Control factor and type	0.65	0.65
O	Max. percentages declared for internal/external leakage - %	n/a	n/a
P	Mixture rate of ductless units - %	4	5
Q	Position and description of filter visual warning	Displayed on remote control and user's manual	Displayed on remote control and user's manual
S	Disassembly instruction web URL	giacomini.com	giacomini.com
T	Air flow sensibility - %	n/a	n/a
U	External air seal - m³/h	3	2
V	AEC – annual energy consumption - kWh/a	2.4	3.4
W	AHS – annual heating saving - kWh/a - Cold - Temperate - Warm	 86.5 44.2 20.0	 87.4 44.7 20.2

Ventilation units

KVP

Description

Spot vacuum unit with constant flow rate for constant or intermittent foul air extraction in small/medium spaces such as bathrooms, kitchens, laundries, offices and shops.

Fit for wall-mount, ceiling or window-glass installation with special accessory. Available as duct-type unit.

Constant flow rate control through micro-switches on side-mount electronic card.

Optional operation with timers (basic timer or humidistat timer) through accessory electronic cards.

PRODUCT CODE	DESCRIPTION	EURO/pcs	CL		
KVPY001	Nominal air flow rate up to 80 m³/h. Duct diameter 100 mm	93.00	K	1	-

Technical data

VENTILATION UNIT / AIR TREATMENT PERFORMANCE	KVPY001
Nominal air flow rate - m^3/h	60
Max. air flow rate - m^3/h	80
Nominal available pressure - Pa	20
Max. available pressure - Pa	33

ELECTRIC DATA	KVPY001
Supply Tension / Phases/ Frequency - V / - / Hz	230 / 1 / 50
Absorbed power - W	19
IP protection class	IPX4

ACOUSTIC DATA	KVPY001
Sound pressure level at 1,5 - db(A)	38.5

DIMENSIONS, WEIGHT AND CONNECTIONS	KVPY001
Front dimensions - mm	180 x 180
Diameter / duct diameter - mm	97.5 / 100
Protrusion from wall edge - mm	47
Weight - kg	0.7

Main features

• Smooth front panel with minimal and refined profile matching any residential or commercial environment

• Top quality UV-resistant plastic material (anti-static ABS)

• Paired sections easy to install and inspect

• Induction motor with axial fan and thermo-protector included, high-efficiency and low noise levels

• Simplified installation and possible mounting on glass wall with optional kit

• External finish grid available as accessory

• Standard internal cover, smooth white ABS. Wide range of internal covers to customize the fan for a variety of living solutions

• Perimetric vacuum for reduced ambient noise when front panel is kept clean

• Reduced dimensions, suitable for any type of installation in wall ducts with initial curve very close to opening

Accessories and spare parts

KHRP-F

Description

Spare filter for pinch-point heat recuperator KHRP.

PRODUCT CODE	DESCRIPTION	EURO/pcs	CL		
KHRPFY001	1 ISO Coarse filter	5.55	K	1	20

KHRP-R

Description

Spare ceramic heat exchanger for pinch-point heat recuperator KHRP.

PRODUCT CODE	DESCRIPTION	EURO/pcs	CL		
KHRPRY160	For KHRPMY050 and KHRPSY050, diameter 160 mm	259.00	K	1	-
KHRPRY100	For KHRPMY025 and KHRPSY025, diameter 100 mm	259.00	K	1	-

Accessories and spare parts

KHRP-I

Description

Insulation kit (rigid pipe and caps) for pinch-point heat recuperator KHRP.

Made with polypropylene foam (EPP) for thermal insulation of the recuperator telescopic pipe to prevent thermal bridges and heat dispersions.

It enables to install the recovery unit after completion of the construction works.

PRODUCT CODE	DESCRIPTION	EURO/pcs	CL		
KHRPIY160	For KHRPMY050 and KHRPSY050, diameter 160 mm	162.00	K	1	-
KHRPIY100	For KHRPMY025 and KHRPSY025, diameter 100 mm	139.00	K	1	-

KHRP-A

Description

Spare angle outlet for pinch-point heat recuperator KHRP.

For installation of recovery unit 90° to the inflow/exhaust flow from the external grid (eg. in window/door frame).

Including: external rectangular grid, flat pipe bar with rectangular section (to be cut on site), rectangular sleeve fitting for bar/grid connection, 90° angle fitting round pipe – flat pipe for bar-recuperator telescopic pipe connection.

PRODUCT CODE	DESCRIPTION	EURO/pcs	CL		
KHRPAY160	For KHRPMY050 and KHRPSY050, diameter 160 mm	174.00	K	1	-
KHRPAY100	For KHRPMY025 and KHRPSY025, diameter 100 mm	134.00	K	1	-

Accessories and spare parts

KHRP-D

Description

Wall mounting template with rapid disassembly for pinch-point heat recuperator KHRP.
Convenient to inspect the recovery unit when disassembling the appliance through practical nuts and without removing the wall-mount screws included.
Varnished steel.

PRODUCT CODE	DESCRIPTION	EURO/pcs	CL		
KHRPDY001	174 x 174 mm	42.00	K	1	-

KHRP-E

Description

External grid for pinch-point heat recuperator KHRP.

Made with plastic UV-resistant anti-static material, with deflector shell.

PRODUCT CODE	DESCRIPTION	EURO/pcs	CL		
KHRPEY160	For KHRPMY050 and KHRPSY050, diameter 160 mm	46.00	K	1	-
KHRPEY100	For KHRPMY025 and KHRPSY025, diameter 100 mm	34.50	K	1	-

Accessories and spare parts

KHRP-C

Description

Front cover for pinch-point heat recuperator KHRP and extraction fan KVP.

Made with a variety of materials and finish for a wide range of living solutions.

Supplied with special assembly screws to replace the front panel included with the ventilation unit.




PRODUCT CODE	DESCRIPTION	EURO/pcs	CL		
KHRPCY001	Polished white steel. 230 x 230 mm	55.00	K	1	-
KHRPCY002	Polished black steel. 230 x 230 mm	55.00	K	1	-
KHRPCY003	Varnishable MDF wood. 230 x 230 mm	36.00	K	1	-

KVP-G

Description

Glass surface installation kit for pinch-point extraction fan KVP.

For easy and safe installation on glass up to 15 mm of thickness.

PRODUCT CODE	DESCRIPTION	EURO/pcs	CL		
KVPGY001	Front dimension: 180 x 180 mm	49.00	K	1	-

Accessories and spare parts

KVP-T

Description

Additional electronic card for spot extraction fan KVP. For timer operation.

TIMER: it enables the aspirator to start when the light or dedicated switch is turned on and to keep it running when they same are turned off, for a time included between 45 seconds and 20 minutes, programmable through an internal trimmer.

TIMER WITH HUMIDISTAT: it enables the aspirator to start when the level of relative humidity inside the room exceeds the activation set point, and it keeps running till the humidity level doesn't go below such threshold. When reaching the set point, the timing function enables the aspirator to keep running for a time programmable between 45 seconds and 20 minutes, so as to further reduce the relative humidity inside the room. The relative humidity threshold can be set between 40-80%.
Aspirator for manual use also with TIMER function.

PRODUCT CODE	DESCRIPTION	EURO/pcs	CL		
KVPTY001	Timer	44.00	K	1	-
KVPTY002	Timer with humidistat	76.00	K	1	-

Catalog Price List

Air Treatment and Residential HRV

PRICES IN EURO NET OF VAT

Check **supply terms and conditions** (delivery schedule, freight costs) with our Sales Area Manager.
For the **general sales conditions and warranty** make reference to the general ***Catalog Price List Italy*** in force or visit ***it.giacomini.com/informazioni-legali.***

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Rapid selection of heat recuperators

HOUSE SURFACE	TYPE OF LODGING	EXCHANGE AIR FLOW RATE CALCULATED*	HEAT RECUPERATOR			HEAT RECUPERATOR WITH AIR TREATMENT		
m²		m³/h	Type	Nominal flow rate	Catalog Page	Type	Nominal flow rate	Catalog Page
up to 50	Studio flat, two-roomed flat, 1 bathroom	max 70	**KHR-V**	200 m³/h	page 45	**KHRD-V**	300/150 m³/h	page 67
						KHRD-H	300/150 m³/h	page 73
			KHR-H	200 m³/h	page 50	**KHRW-V**	300/150 m³/h	page 93
			KHRA-H	80 m³/h	page 113	**KHRW-H**	300/150 m³/h	page 99
50÷60	Living room, kitchen 1-2-3 bedrooms 1-2 bathrooms	75	**KHR-V**	200 m³/h	page 45	**KHRD-V**	300/150 m³/h	page 67
						KHRD-H	300/150 m³/h	page 73
60÷70		90	**KHR-H**	200 m³/h	page 50	**KHRW-V**	300/150 m³/h	page 93
70÷80		105	**KHRA-H**	140 m³/h	page 113	**KHRW-H**	300/150 m³/h	page 99
80÷90		115				**KHRW-H**	600/150 m³/h	page 99
						KDV water cond	300/160 m³/h	page 79
90÷100	Living room, kitchen 2-3 bedrooms 2 bathrooms	130	**KHR-V**	200 m³/h	page 45	**KHRD-V**	500/250 m³/h	page 67
						KHRD-H	500/250 m³/h	page 73
100÷110		145	**KHR-H**	200 m³/h	page 50	**KHRW-V**	500/250 m³/h	page 93
110÷120		160	**KHRA-H**	200 m³/h	page 113	**KHRW-H**	500/250 m³/h	page 99
120÷130		170				**KDV air cond**	360/220 m³/h	page 79
120÷130	Living room, kitchen 2-3-4 bedrooms 2-3 bathrooms	170	**KHR-V**	300 m³/h	page 45	**KHRD-V**	500/250 m³/h	page 67
						KHRD-H	500/250 m³/h	page 73
130÷140		185	**KHR-H**	300 m³/h	page 50	**KHRW-V**	500/250 m³/h	page 93
140÷150		200	**KHRA-H**	300 m³/h	page 113	**KHRW-H**	500/250 m³/h	page 99
150÷160		210				**KDV air cond**	500/300 m³/h	page 79
160÷170	Living room, kitchen 2-3-4 bedrooms 2-3 bathrooms	225	**KHR-V**	400 m³/h	page 45	**KHR-V +**	400 m³/h	page 45
						split modules **KMSD**		page 83
180÷200		260	**KHR-H**	400 m³/h	page 50	or split modules **KMSD**		page 104
200÷220		285				**KHR-H +**	400 m³/h	page 50
						split modules **KMSD**		page 83
						or split modules **KMSD**		page 104
220÷250	Large residential units, multi-lodging, small tertiary unit	320	**KHR-V**	500 m³/h	page 45	**KHR-V +**	500 m³/h	page 45
						split modules **KMSD**		page 83
250÷280		360	**KHR-H**	500 m³/h	page 50	or split modules **KMSD**		page 104
						KHR-H +	500 m³/h	page 50
						split modules **KMSD**		page 83
						or split modules **KMSD**		page 104

*The volume of inflow air is calculated based on provisions of standard UNI EN 832 - UNI 10339, with values corresponding to 0,5 volumes/h referred to the lodging volume (standard internal height 2,7 m).