Product is subject to and complies with Regulation EU 1253/14 - ERP2018

Energy Smart Recovery Units

controlled mechanical ventilation system

TECHNICAL MANUAL

Energy Smart

Contents

Energy Smart

Energy Smart ENY-SP Vertical Units

The Sabiana Energy Smart units are high efficiency ventilation units with heat recovery, designed for residential applications.

The units replace the exhaust air of indoor environments with outdoor filtered air by means of a high efficiency ePM_1 55% - F7[1].

The hexagonal counterflow heat recovery unit prevents any winter heat drops due to the introduction of fresh air, thereby recovering up to 92.5%[2] of the extracted heat and conveying it to the clean air introduced in the occupied environment. Each unit is also equipped with an average (ePM_{10} 50% - M5) efficiency filter[3] installed on the inlet of the extraction section to prevent any dust from getting into the equipment.

All Energy Smart units comply with the 2018 efficiency limits imposed by Regulation 1253/14[4].

The Pro versions are equipped with an automatic centralized air flow control system operated by an integrated humidity sensor located in the extraction air duct. If the humidity of the indoor environment exceeds the reference parameters, to prevent the proliferation of mould and pathogenic bacteria, the fresh air flow is increased with the aim of restoring a healthy humidity level. The control also prevents from dropping below excessively low humidity levels, thus preventing excessively dry conditions inside the environments and, as a result, any health hazards. The units are NOT able, by themselves, to lower the level of internal humidity to a value below that of the outdoor humidity. All the units can be controlled by means of a **supervisory system** in accordance with the following protocols:

- **Modbus**, with direct access to the dedicated RS 485 web gateway
- **Konnex**, with KNX interface board (optional)

1 ePM_1 55% - F7 filtering efficiency compliant with Standard ISO 16890
2 Thermal efficiency compliant with Regulation EU 1253/2014
3 ePM_{10} 50% - M5 filtering efficiency compliant with Standard ISO 16890
4 Regulation EU 1253/14 does not apply to the ENY-SHP-150 unit as the nominal power input of each fan is less than 30W

ENERGY SMART CONSTRUCTION

The range can be classified according to the installation and control types:

- **Pro unit** with automatic centralized control via humidity probe:
  - ENY-SP (vertical)
  - ENY-SHP (horizontal-vertical)
- **Standard unit** with time programming control:
  - ENY-S (vertical)

ENY-SP and ENY-S units are designed
for vertical wall installation or,
with the addition of feet, floor installation.
Instead, ENY-SHP units are ideal
for both horizontal ceiling installation
and vertical wall installation.
The width of the ENY-SHP and ENY-S units
is such as to ensure easy insertion
into modular kitchen components,
since the width is less than 600 mm.

Energy Smart SHP 150 Unit

Energy Smart Vertical Units: ENY-SP and ENY-S

The Pro Versions are available in class A + while the Standard versions are in Class A. Both are equipped with high efficiency backward-curved blades and EC motors, driven by the integrated inverter control board for variable speed control.

All units have a remote control user interface (T-EP control), fitted in the frontal panel of ENY-SP and ENY-S units; it is also possible to disconnect the interface from the frontal panel and place it on the wall using a special cable.

The Pro versions are Passivhaus certified and are equipped with a centralized automatic flow rate control system, that works not only in accordance with a built-in humidity sensor, but also in response to CO_2 measurements. In this case, it is recommended to connect a 0-10V CO_2 sensor to the main control board, available on the market.

T-EP control

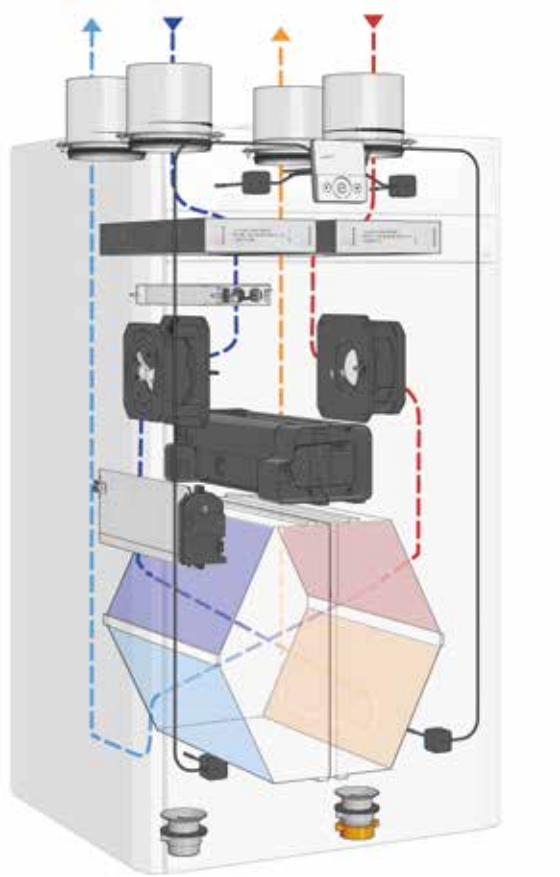
For more details about centralized control see chapter at page 64.

The units with automatic control via humidity or CO_2 sensor can enable the "AUTO" mode. In this mode, the fan speed is controlled by an automatic control cycle relating to internal instantaneous humidity and CO_2 variations. In variable-flow automatic control mode, the user can still intervene at any time by changing the fan speed manually as required.
The automatic mode will be restored at the next significant variation of ambient humidity or concentration of CO_2.

In the event that the user does not require automatic control but just simply time programming or even manual control, standard units are ideal.

There is a choice of 8 weekly programs for these units: 4 preset programs and 4 free programs that can be modified as required. The operation can be selected in various intervals of the day, **at one of the four standard speeds**, or at the hyperventilation speed **"Party"**. At any time, the user may force the programming manually, which will resume at the beginning of the next time interval.

In manual mode, in addition to the nominal speed, **there are 3 default speeds equal to 70%, 45%, and 25% of the project flow rate**. The timed intensive ventilation modes can be activated via the user interface ("Party" mode) or via a remote switch located in a particular room ("Booster" mode).



All the units are equipped with an automatic bypass system that totally disables use of the heat recovery unit to permit 100% **free-cooling** (or **free-heating**). The system is controlled by logic subject to the feedback of the integrated temperature sensors.

Also, the units have the following integrated control logic:

- The mass supply flow defined by the user is kept constant in all outdoor climatic conditions.
- The extraction flow is kept at a constant balancing percentage compared to the air supply flow, in order to preserve the desired overpressure or negative pressure for all operating conditions.

When installing the units in homes located in regions with particularly harsh climatic conditions[1], we recommend installing the units with integrated filament electric heaters (E versions), where the thermal power is continuously modulated to maintain exhaust air at the desired temperature, preventing freezing[2]. For all models, it is possible to use an external antifreeze coil, with continuous modulation.

To prevent excessive efficiency drops due to filter clogging, it is recommended to replace the filters at the end of the recommended period (usually every 6 months). The increase in filter dirt in fact leads to increased fan rotation resistance, causing a significant drop in flow rates. With regard to ENY-S units, the automatic constant flow control system (standard for the ENY-SP units), which prevents any drops in flow rates due to filter clogging, is available as an accessory. In this case, filter clogging may result in a significant increase in power consumption of the fans.

If the flows need to be inverted, all vertical units are reversible during installation (except for versions with electric heater).

For each model, a complete set of Accessories is also available to meet any installation need.

1 Minimum outdoor temperature below -10 °C
2 The ENY-SP units with antifreeze protection systems are Passivhaus certified

Energy Smart Horizontal and Vertical Units: ENY-SHP

The Energy Smart horizontal units are available in three sizes ENY-SHP-150, ENY-SHP-170 and ENY-SHP-270, in the Pro version only, that means they are equipped with an automatic centralized air flow control system operated by an integrated humidity sensor located in the extract air duct; all sizes are Passivhaus certified. The units are ideal for both horizontal ceiling installation and vertical wall installation.

The **SHP - 150** is distinguished by its extremely compact dimensions that make it easy to install in a false ceiling. The unit is equipped with a fitted control panel, that lets the calibration and activation of the unit. The Energy Smart SHP-150 unit can be connected to the T-EP remote control panel accessory to activate the following additional functions:

- Party Mode.
- Holiday Mode.
- Free-Cooling Mode: a single supply air flow to activate manually.
- There is a choice of 8 weekly programs for these units: 4 preset programs and 4 free programs that can be modified as required.
- Fan speed regulation by means of the T-EP touch pad by selecting one of the 3 default speeds equal to 70%, 45%, and 25% of the project flow rate.

The **SHP - 170** size, like the Energy Smart Pro vertical units, is equipped as standard with a T-EP control panel. The ENY-SHP 170 is equipped with a motorized bypass system with a double damper, that totally disables use of the heat recovery unit to permit 100% free-cooling (or free-heating) automatically. The ENY SHP-170 is also available with integrated filament electric heaters (E version), in which the thermal power is continuously modulated to keep the exhaust air at the desired temperature, thereby preventing any freezing.

The **SHP - 270** is distinguished by the perfect blend between compact dimensions and high air flows. The unit is equipped as standard with a T-EP control panel.

The ENY-SHP-270 is equipped with a motorized bypass system with a double damper, that totally disables the heat exchange between the air flows to permit 100% free-cooling (or free-heating) automatically.

The ENY-SHP-270 is also available with integrated filament electric heaters (E version), in which the thermal power is continuously modulated to keep the exhaust air temperature always within the safety limits, thereby preventing any freezing.

The ENY-SHP-270 is also equipped as standard with two humidity sensors and an advanced flow control system which allows an optimal control of the environment hygrometric conditions.

Vertical version with T-EP built-in/wall control

Pro Version

Version	Model	Max flow at 100 Pa (m^3/h)	Energy class	Width (mm)	Humidity Sensor	Automatic air flow control	Code
Pro	ENY-SP-180	180	A+	600	✔	✔	021B001
	ENY-SP-280	280	A+	600	✔	✔	021B002
	ENY-SP-370	370	A+	660	✔	✔	021B003
	ENY-SP-460	460	A	660	✔	✔	021B004
	ENY-SP-600	600	A	660	✔	✔	021B005
Pro with LH electric heater	ENY-SPEL-180	180	A+	600	✔	✔	021B011
	ENY-SPEL-280	280	A+	600	✔	✔	021B012
	ENY-SPEL-370	370	A+	660	✔	✔	021B013
	ENY-SPEL-460	460	A	660	✔	✔	021B014
	ENY-SPEL-600	600	A	660	✔	✔	021B015
Pro with RH electric heater	ENY-SPER-180	180	A+	600	✔	✔	021B021
	ENY-SPER-280	280	A+	600	✔	✔	021B022
	ENY-SPER-370	370	A+	660	✔	✔	021B023
	ENY-SPER-460	460	A	660	✔	✔	021B024
	ENY-SPER-600	600	A	660	✔	✔	021B025

Standard version

Version	Model	Max flow at 100 Pa (m^3/h)	Energy class	Width (mm)	Humidity Sensor	Automatic air flow control	Code
Standard	ENY-S-170	170	A	550	(*)	(**)	021A001
	ENY-S-270	270	A	550	(*)	(**)	021A002
	ENY-S-360	360	A	550	(*)	(**)	021A003
	ENY-S-460	460	A	660	(*)	(**)	021A004
	ENY-S-600	600	A	660	(*)	(**)	021A005
Standard with LH electric heater	ENY-SEL-170	170	A	550	(*)	(**)	021A011
	ENY-SEL-270	270	A	550	(*)	(**)	021A012
	ENY-SEL-360	360	A	550	(*)	(**)	021A013
	ENY-SEL-460	460	A	660	(*)	(**)	021A014
	ENY-SEL-600	600	A	660	(*)	(**)	021A015
Standard with RH electric heater	ENY-SER-170	170	A	550	(*)	(**)	021A021
	ENY-SER-270	270	A	550	(*)	(**)	021A022
	ENY-SER-360	360	A	550	(*)	(**)	021A023
	ENY-SER-460	460	A	660	(*)	(**)	021A024
	ENY-SER-600	600	A	660	(*)	(**)	021A025

Horizontal and vertical version

Version	Model	Max flow at 100 Pa (m^3/h)	Energy class	Height (mm)	Humidity Sensor	Automatic air flow control	T-EP	Code
Pro	ENY-SHP-150	150	A	191	✔	✔	(***)	021C002
	ENY-SHP-170	170	A+	330	✔	ND	✔	021C001
	ENY-SHPL-270 (1)	270	A	278	✔ (3)	✔	✔	021C003
	ENY-SHPR-270 (2)	270	A	278	✔ (3)	✔	✔	021C003D
Pro left range with electric heater	ENY-SHPEL-170	170	A+	330	✔	ND	✔	021C011
	ENY-SHPEL-270	270	A	278	✔ (3)	✔	✔	021C013
Pro right range with electric heater	ENY-SHPER-170	170	A+	330	✔	ND	✔	021C021
	ENY-SHPER-270	270	A	278	✔ (3)	✔	✔	021C023

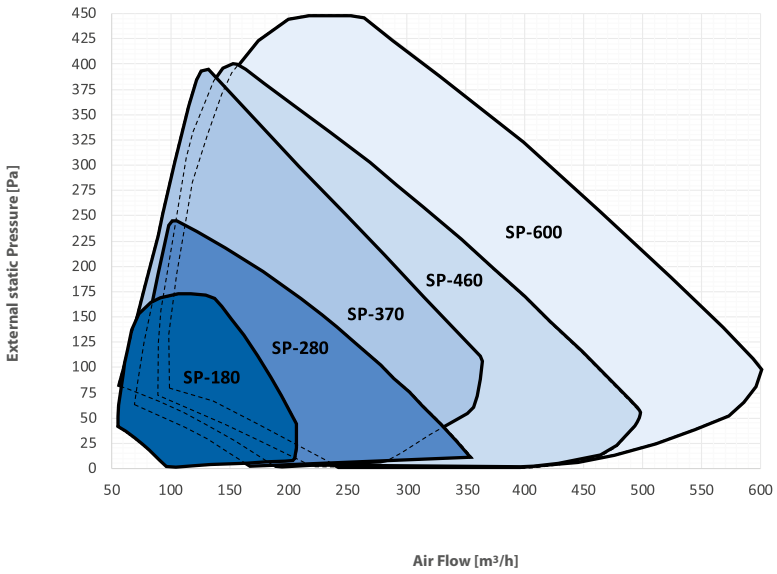
(1) left configuration
(2) right configuration
(3) double sensor

(*) Humidity Sensor available as Accessory
(**) Pressure transducer for the automatic control of air flow rates, available as accessory
(***) T-EP wall control available as accessory

Energy Smart | FAST UNIT SELECTION

Energy Smart units are suitable for operation in balanced or slightly unbalanced flow and return conditions. They ensure residential air exchange, recovering the heat from the extracted air and conveying it to the clean air. The chart below shows the recommended operating ranges in terms of volumetric supply air flow rate at standard conditions and available external static pressure.

Pro ENY-SP Vertical Version



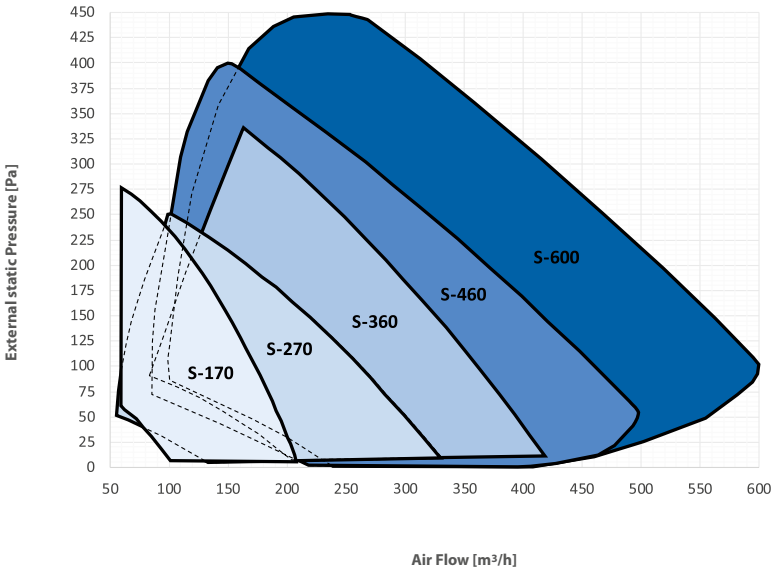
		ENY-SP-180	ENY-SP-280	ENY-SP-370	ENY-SP-460	ENY-SP-600*
Q_{max}	[m³/h]	180	280	370	460	600
Q_{rif}	[m³/h]	130	200	260	320	420
P_{el}	[W]	23	35	47	76	105
$\eta t_{\_rvu}$	[%]	91,5%	91,4%	92,5%	88,6%	88,00%
SPI	[W/m³/h]	0,174	0,174	0,179	0,237	0,247
CTRL	-	0,85	0,85	0,85	0,85	0,85
SEC	[kWh/m²a]	-42,32	-42,29	-42,47	-40,10	-39,71
Energy class		A+	A+	A+	A	A
Filter efficiency		ePM_1 55% - F7 ePM_{10} 50% - M5	ePM_1 55% - F7 ePM_{10} 50% - M5	ePM_1 55% - F7 ePM_{10} 50% - M5	ePM_1 55% - F7 ePM_{10} 50% - M5	ePM_1 55% - F7 ePM_{10} 50% - M5
L_{WA}	[dBa]	38,9	43,1	46,3	47,9	52,4
LK_I	[%]	1,2%	0,7%	0,5%	0,3%	0,60%
LK_E	[%]	1,7%	1,0%	0,8%	0,7%	1,84%
HEP	[W]	500	900	1250	1600	2000

* = not Passivhaus certified unit

LEGEND | all terms must be considered in compliance with Standard EU 1253/2014

Q_{max}	Maximum flow rate, at max. motor speed and external static pressure of 100 Pa	**SEC**	Specific energy consumption
Q_{ref}	Reference flow rate - 70% of Q_{max}	**L_{WA}**	Sound power level emitted by structure
P_{el}	Power supply at Q_{ref} and external static pressure of 50Pa	**LK_I**	Internal leakage at 100 Pa compared to Q_{ref}
$\eta t_{\_rvu}$	Thermal efficiency at Q_{ref}	**LK_E**	External leakage at 250 Pa compared to Q_{ref}
SPI	Specific power input	**HEP**	Pre-heater power (only mod. SPEL, SPER)
CTRL	Control factor - Centralised automatic control		

Standard ENY-S Vertical Version

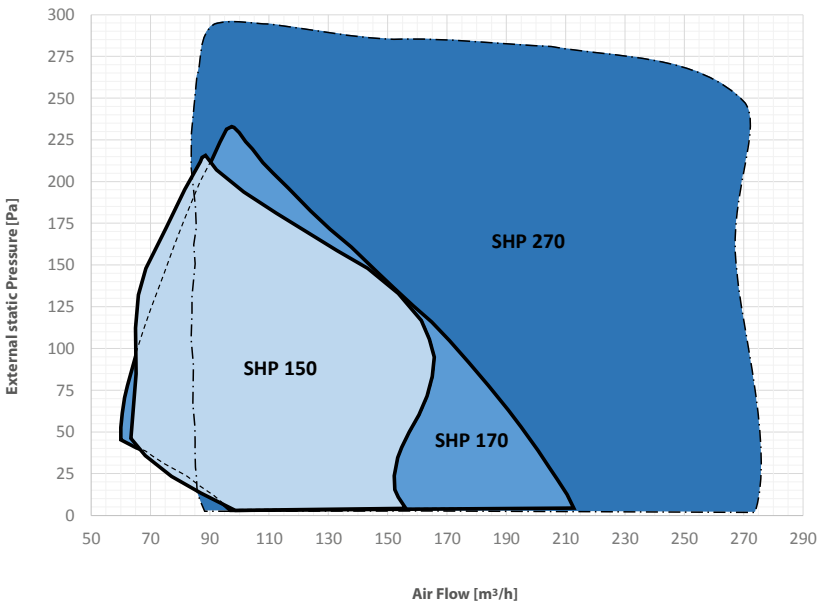


		ENY-S-170	ENY-S-270	ENY-S-360	ENY-S-460	ENY-S-600
Q_{max}	[m³/h]	170	270	360	460	600
Q_{rif}	[m³/h]	120	190	250	320	420
P_{el}	[W]	22	35	53	76	104
$\eta t_{\_rvu}$	[%]	87,0%	86,5%	90,1%	88,6%	88,00%
SPI	[W/m³/h]	0,183	0,184	0,209	0,237	0,247
CTRL	-	0,95	0,95	0,95	0,95	0,95
SEC	[kWh/m²a]	-39,4	-39,3	-39,6	-38,4	-37,9
Energy class		A	A	A	A	A
Filter efficiency		ePM_1 55% - F7 ePM_{10} 50% - M5	ePM_1 55% - F7 ePM_{10} 50% - M5	ePM_1 55% - F7 ePM_{10} 50% - M5	ePM_1 55% - F7 ePM_{10} 50% - M5	ePM_1 55% - F7 ePM_{10} 50% - M5
L_{WA}	[dBa]	40,6	46,6	49,0	47,9	52,4
LK_I	[%]	0,4%	0,4%	0,7%	0,3%	0,60%
LK_E	[%]	1,8%	1,4%	2,7%	0,7%	1,84%
HEP	[W]	500	900	1250	1600	2000

LEGEND | all terms must be considered in compliance with Standard EU 1253/2014

Q_{max}	Maximum flow rate, at max. motor speed and external static pressure of 100 Pa	**SEC**	Specific energy consumption
Q_{ref}	Reference flow rate - 70% of Q_{max}	**L_{WA}**	Sound power level emitted by structure
P_{el}	Power supply at Q_{ref} and external static pressure of 50Pa	**LK_I**	Internal leakage at 100 Pa compared to Q_{ref}
$\eta t_{\_rvu}$	Thermal efficiency at Q_{ref}	**LK_E**	External leakage at 250 Pa compared to Q_{ref}
SPI	Specific power input	**HEP**	Pre-heater power (only mod. SEL and SER)
CTRL	Control factor - Centralised automatic control		

ENY-SHP Pro Version



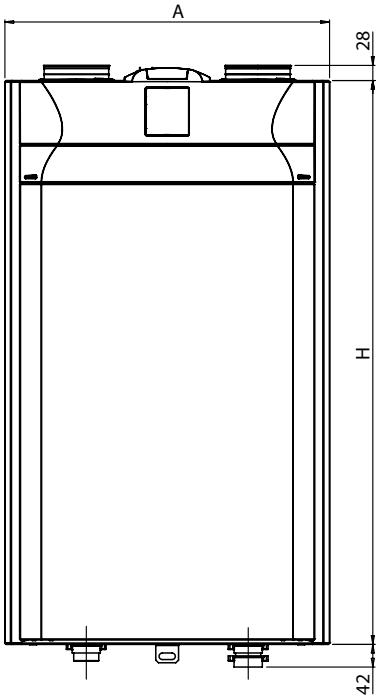
		ENY-SHP-150	ENY-SHP-170	ENY-SHP-270
Q_{max}	[m³/h]	150	170	270
Q_{rif}	[m³/h]	105	120	190
P_{el}	[W]	56	23	47,8
$\eta t_{\_rvu}$	[%]	87%	92,1%	84,4%
SPI	[W/m³/h]	0,227	0,193	0,24
CTRL	-	0,85	0,85	0,85
SEC	[kWh/m²a]	-39,90	- 42,05	-38,9
Energy class		A	A+	A
Filter efficiency		ePM_1 55% - F7 ePM_{10} 50% - M5	ePM_1 55% - F7 ePM_{10} 50% - M5	ePM_1 55% - F7 ePM_{10} 50% - M5
L_{WA}	[dBa]	38,0	44,9	41,3
LK_I	[%]	1,8%	0,5%	0,4%
LK_E	[%]	0,8%	2,3%	1,1%
HEP	[W]	-	600	900

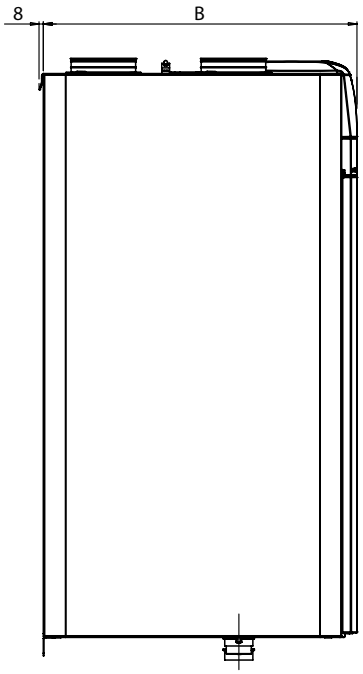
LEGEND | all terms must be considered in compliance with Standard EU 1253/2014

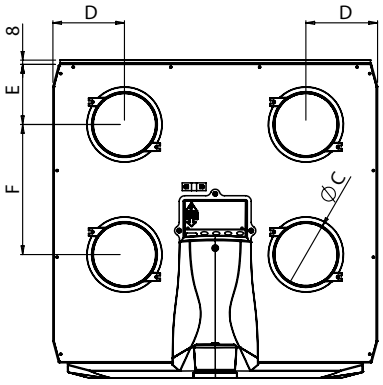
Q_{max}	Maximum flow rate, at max. motor speed and external static pressure of 100 Pa	**SEC**	Specific energy consumption
Q_{ref}	Reference flow rate - 70% of Q_{max}	**L_{WA}**	Sound power level emitted by structure
P_{el}	Power supply at Q_{ref} and external static pressure of 50Pa	**LK_I**	Internal leakage at 100 Pa compared to Q_{ref}
$\eta t_{\_rvu}$	Thermal efficiency at Q_{ref}	**LK_E**	External leakage at 250 Pa compared to Q_{ref}
SPI	Specific power input	**HEP**	Pre-heater power (only mod. SHPEL and SHPER)
CTRL	Control factor - Centralised automatic control		

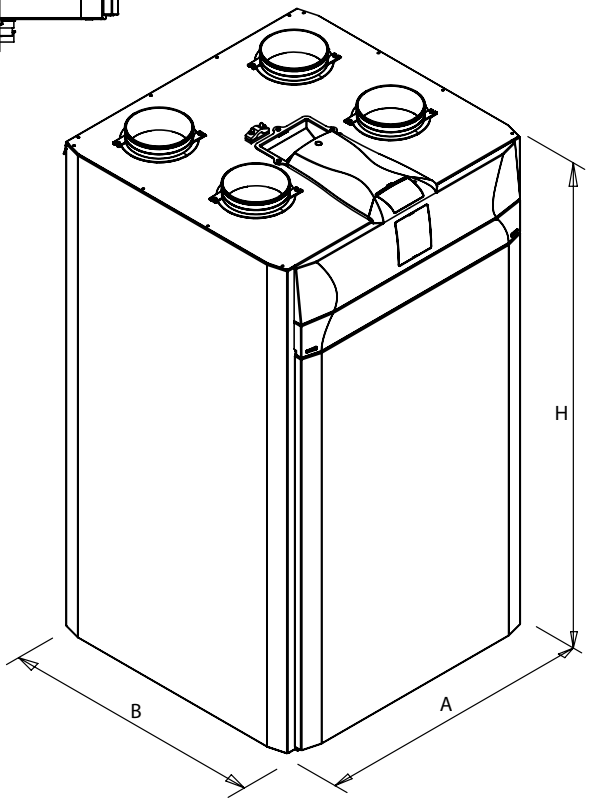
Pro ENY-SP version

All Pro Versions are equipped with a humidity sensor and automatic flow rate calibration system; the units are also equipped with panels with insulating features that ensure a reduction in sound emissions in the environment.



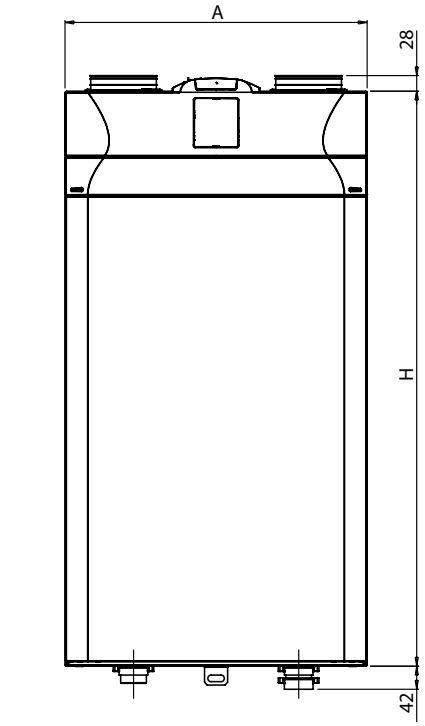


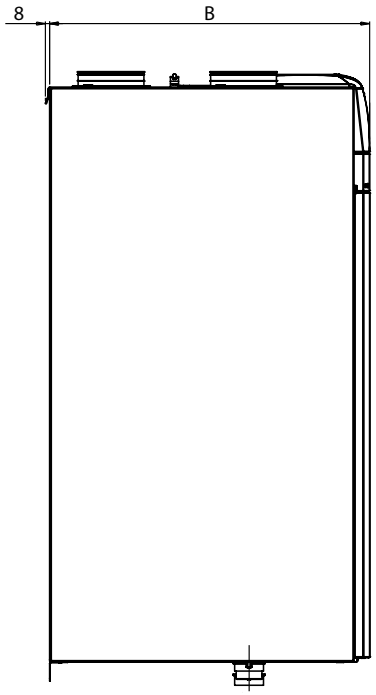


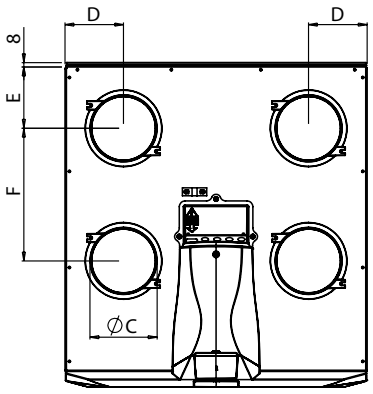


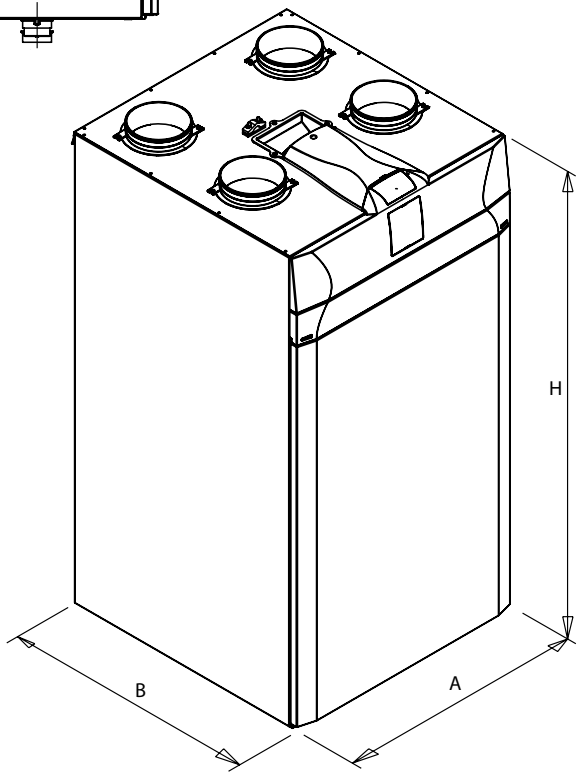
Model	A	B	ø C	H	D	E	F	Weight with packaging	Weight without packaging
ENY-SP-180	600	580	125	1041	132	111	240	63 kg	47 kg
ENY-SP-280	600	630	160	1041	132	111	290	67 kg	51 kg
ENY-SP-370	660	680	160	980	147	126	305	75 kg	56 kg
ENY-SP-460	660	680	180	980	147	126	305	75 kg	59 kg
ENY-SP-600	660	680	180	980	147	126	305	75 kg	60 kg

Standard ENY-S version









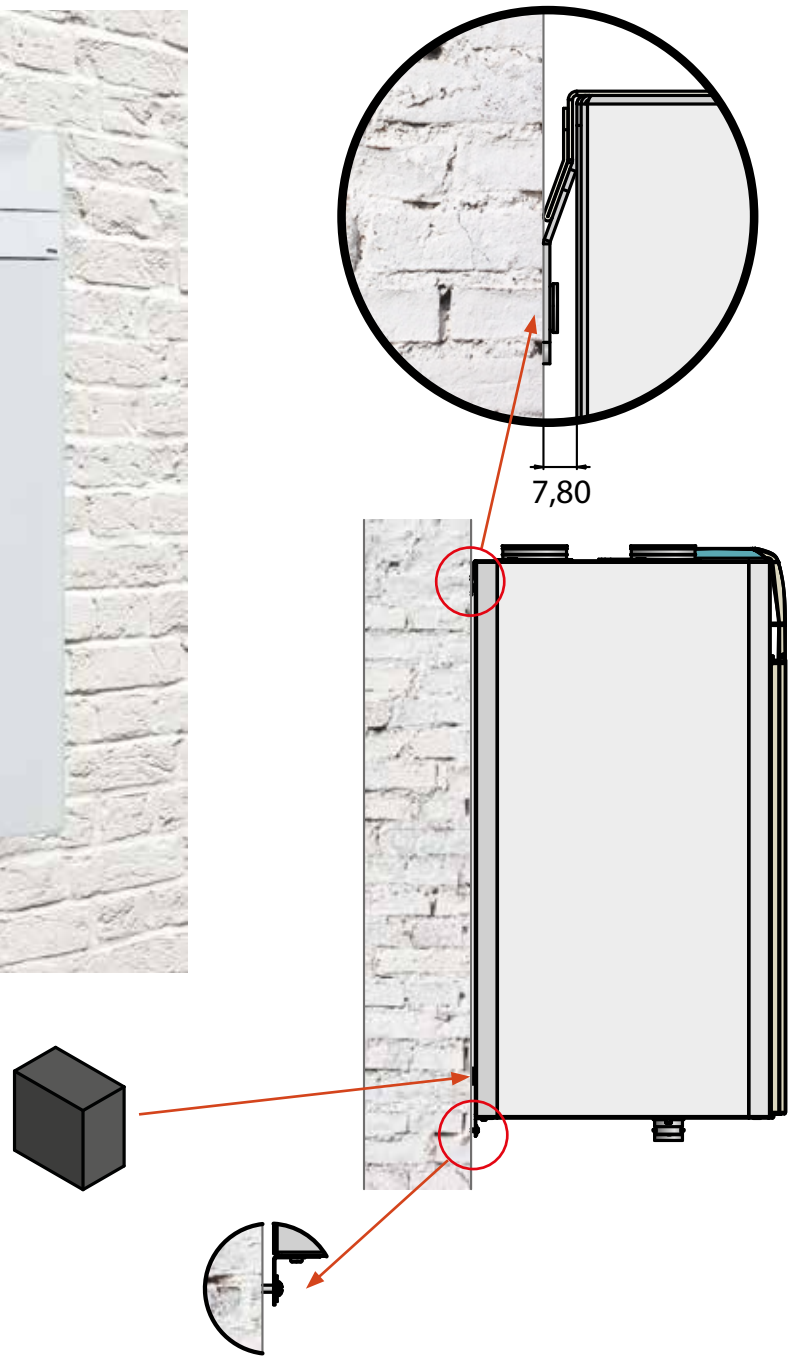
(*) For ENY-S-460 and ENY-S-600 drawings see page 16.

Model	A	B	ø C	H	D	E	F	Weight with packaging	Weight without packaging
ENY-S-170	547	505	125	1041	106	93.5	212.5	56 kg	40 kg
ENY-S-270	547	580	160	1041	106	111	240	64 kg	48 kg
ENY-S-360	547	630	160	1041	106	111	290	66 kg	50 kg
ENY-S-460*	660	680	180	980	147	126	305	75 kg	59 kg
ENY-S-600*	660	680	180	980	147	126	305	75 kg	60 kg

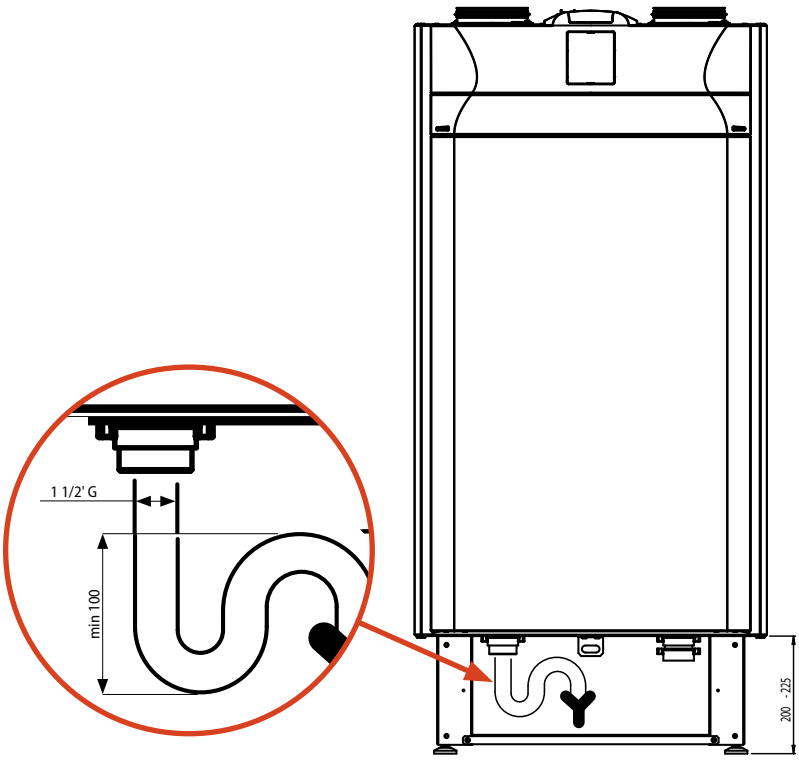
ENY-S and ENY-SP units can be easily installed on walls with the suspension brackets included in the unit. Along with the suspension brackets, an additional bracket is provided, to be placed at the bottom to further secure the unit. The back of the unit is provided with a rubber shim to prevent impacts that could damage the system.

General wall installation

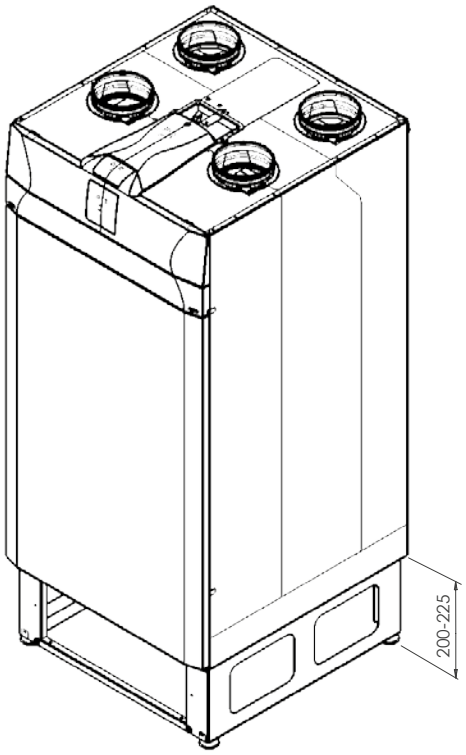
Suspension brackets details

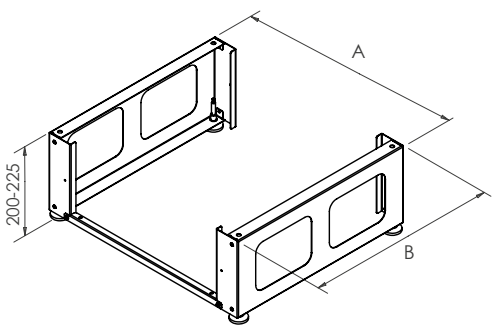


ENY-S and ENY-SP units can also be installed on the floor using the special feet, available as an accessory. It is recommended to use these feet to prevent any damage to the underside of the machine (the unit cannot be placed directly on the floor) and to install the drainage siphon. Using the feet raises the unit by about 20-23 cm from the floor. The siphon is mandatory but is not provided by Sabiana.



ENY-SP and ENY-S vertical version		
Model	**A**	**B**
ENY-SP-180	523	534
ENY-SP-280	523	584
ENY-SP-370	583	634
ENY-SP-460	583	634
ENY-SP-600	583	634
ENY-S-170	523	549
ENY-S-270	523	534
ENY-S-360	523	584
ENY-S-460	583	634
ENY-S-600	583	634





Energy Smart | Vertical Version |

Pro ENY-SP version with advanced air flow control

Model		ENY-SP-180	ENY-SP-280	ENY-SP-370	ENY-SP-460	ENY-SP-600*
Depth	mm	580	630	680	680	680
Width	mm	600	600	660	660	660
Height	mm	1041	1041	980	980	980
Duct connection	-	DN125	DN160	DN160	DN180	DN180
Weight[1]	kg	47	51	56	59	60
Maximum flow rate	m³/h	180	280	370	460	600
External static pressure at maximum flow rate	Pa	100	100	100	100	100
Reference flow rate	m³/h	130	200	260	320	420
External static pressure at reference flow rate	Pa	50	50	50	50	50
Minimum flow rate	m³/h	50	70	50	90	100
Maximum external static pressure	Pa	160	240	390	400	450
Thermal efficiency at reference flow rate EN 13141-7	%	91%	91%	92%	89%	88%
Filtering efficiency ISO 16980	-	ePM_1 55% - F7 supply / ePM_{10} 50% - M5 extraction				
Fan type	-	Centrifugal fan with EC brushless motor and backward-curved blades				
Maximum power absorbed by controls and fans	W	50	70	120	215	300
Maximum current absorbed by controls and fans	A	0,6	1,0	1,0	2,0	2,2
Power supply	-	Single phase -230 V – 50 Hz via 1.5m cable with Schuko CEE 7/7 connection				
Standby power		< 1 W				
Safety features		• IP protection rating: IP21		• CE compliance [2]		
Components and general materials	-	• T-EP capacitive touch pad integrated control • Main power board with Modbus interface • Main structure: Polystyrene • External covering: Painted galvanized steel plate • Plastic components: ABS • Acoustic insulation: Polyester fibre • Recovery unit: Counterflow plate heat recovery unit - PET		• Fan blades and housings: PA6 in plastic, reinforced fibreglass • Filters: Micro-pleated type - Synthetic • Motorised bypass dampers: 1) ON/OFF - ABS 2) ON/OFF - Steel plate • Temperature sensors PT1000 • Humidity Sensor Central Demand Control for Extract Air • Condensate Drainage 1"½ gas thread Male		
Accessories	-	• Feet		• External Electric Heater		
Maximum Defrost Pre-Heater power	W	500	900	1250	1600	2000
Maximum electric heater current	A	3	5	7	9,2	10

* = not Passivhaus certified unit

1 Without packaging

2 EN 60335-1, EN 60335-2-80, EN 62233, EN 55014-1, EN 55014-2, EN 61000-3-2, EN 61000-3-3, EN 50581, Reg. 1253/14, Reg. 1254/14 (EU Directives: 2014/35/EU, 2014/30/EU, 2006/42/EU, 2011/65/EU)

Standard ENY-S version with programmed timing profile control

Model		ENY-S-170	ENY-S-270	ENY-S-360	ENY-S-460	ENY-S-600
Depth	mm	505	580	630	680	680
Width	mm	547	547	547	660	660
Height	mm	1041	1041	1041	980	980
Duct connection	-	DN125	DN160	DN160	DN180	DN180
Weight[1]	kg	40	48	50	59	60
Maximum flow rate	m³/h	170	270	360	460	600
External static pressure at maximum flow rate	Pa	100	100	100	100	100
Reference flow rate	m³/h	120	190	250	320	420
External static pressure at reference flow rate	Pa	50	50	50	50	50
Minimum flow rate	m³/h	60	70	90	90	100
Maximum external static pressure	Pa	250	250	350	400	450
Thermal efficiency at reference flow rate EN 13141-7	%	87%	87%	90%	89%	88%
Filtering efficiency ISO 16890	-	ePM_1 55% - F7 supply / ePM_{10} 50% - M5 extraction				
Fan type	-	Centrifugal fan with EC brushless motor and backward-curved blades				
Maximum power absorbed by controls and fans	W	50	80	125	215	300
Maximum current absorbed by controls and fans	A	0,6	1,1	1,5	2,0	2,2
Power supply	-	Single phase -230 V – 50 Hz via 1.5m cable with Schuko CEE 7/7 connection				
Standby power		< 1 W				
Safety features		• IP protection rating: IP21		• CE compliance [2]		
Components and general materials	-	• T-EP capacitive touch pad fitted control • Main unit control board with Modbus interface • Main structure: Polystyrene • External covering and linings: Painted galvanized steel plate • Plastic components: ABS • Recovery unit: Counterflow plate heat recovery unit - PET		• Fan blades and housings: ABS • Filters: Micro-pleated type - Synthetic • Motorised bypass dampers: 1) ON/OFF - ABS 2) ON/OFF - Steel plate • Temperature sensors PT1000 • Condensate Drainage 1"½ gas thread Male		
Accessories	-	• Internal hot filament electric desfrosting pre-heater with reinforced metal lining, controlled by PWM signal • Differential pressure sensor for automatic flow rate control		• External Electric Heater • Feet • Humidity sensor		
Maximum Defrost Pre-Heater power	W	500	900	1250	1600	2000
Maximum electric heater current	A	3	5	7	9,2	10

1 Without packaging

2 EN 60335-1, EN 60335-2-80, EN 62233, EN 55014-1, EN 55014-2, EN 61000-3-2, EN 61000-3-3, EN 50581, Reg. 1253/14, Reg. 1254/14 (EU Directives: 2014/35/EU, 2014/30/EU, 2006/42/EU, 2011/65/EU)

ENY-SP and ENY-S Versions - Construction features of the main components

1 ENY-SP version external structure
made of hot-dip galvanised steel sheet panels painted in RAL 9003 and satin finish obtained with epoxy paint dried in oven at 180 °C; the side panels are insulated with a 25 mm thick padding, while the inspection cover is completely removable and is insulated with a 30 mm thick padding.

ENY-S version external structure
made of hot-dip galvanised steel sheet panels painted in RAL 9003 and satin finish obtained with epoxy paint dried in oven at 180 °C; the inspection cover is completely removable and is insulated with a 30 mm thick padding.

2 EPDM fan access closure

3 Polyethylene EPE filter access closure

4 Electric defrosting pre-heater
Hot filament electric heater with reinforced metal lining, controlled by PWM signal (only versions with integrated electric heater).

5 High efficiency filters compliant with Standard ISO 16890;
The filters have the following features:
- ePM_1 55% - F7 class for the supply air;
- ePM_{10} 50% - M5 class for the extract air.

6 ABS air distribution connections for inlet/outlet air flows

7/11 Extract air (7) and air supply (11) electric fan
consisting of:
- Permanent single-phase **synchronous EC** motor.
- **High efficiency ABS fans** with backward-curved blades.
- ABS **Motor/fan housing**.

8 High efficiency static heat recovery unit
with PET counterflow exchange plates. The reachable efficiency obtainable may be higher than 90% because they ensure counterflow heat transfer between two air flows at different inlet temperatures. The static heat recovery units do not feature moving parts and guarantee high reliability and safe operation.
In order to increase the efficiency of the heat exchanger, the plate surfaces feature special swirlers.

9 Main by-pass damper
made entirely of ABS and motorised with a Valemo actuator.

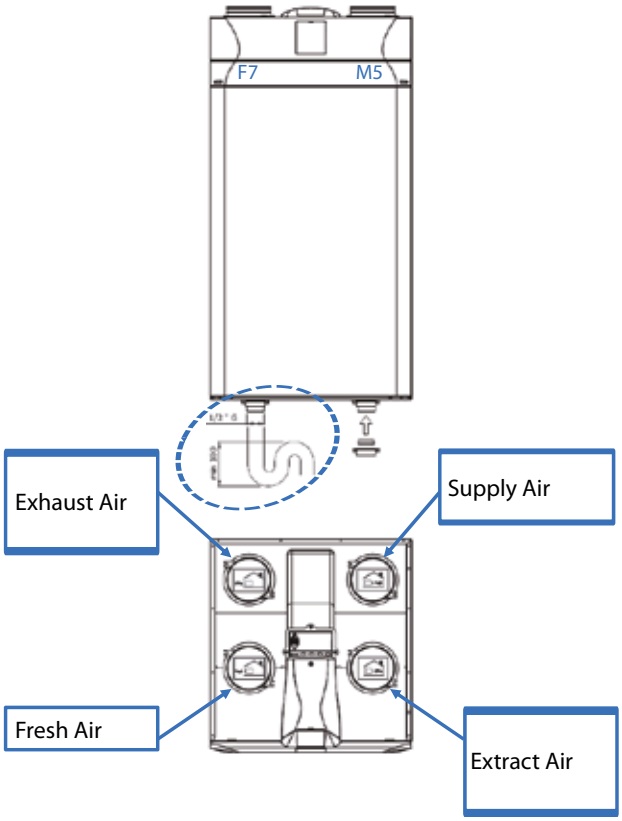
10 Secondary by-pass damper
consisting of a steel blade and motorised with a Valemo actuator.

12 T-EP control

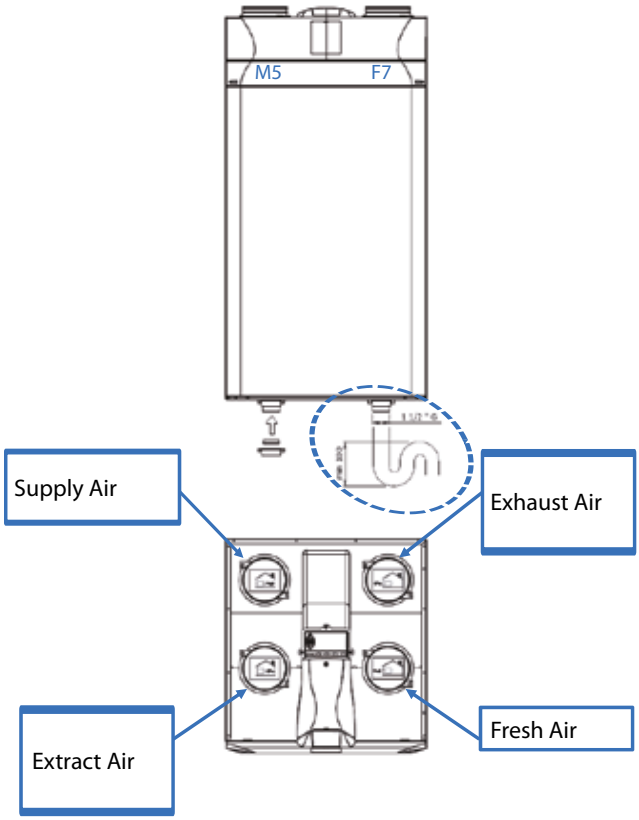
ENY-SP and ENY-S Versions

The units are configured with the fresh air fan on the front left side and that of the extracted air on the right side. If necessary, it is possible to invert the flows by inverting the position of the filters, the position of the condensate drain, the position of the humidity probe (ENY-SP versions only) and paying attention to the proper connection of the ducts to the machine; below is the standard configuration and the inverted flow configuration

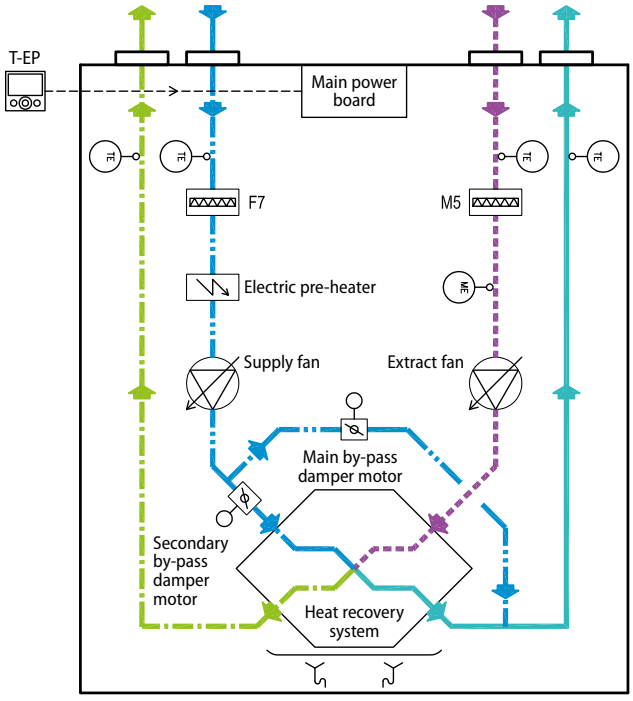
LEFT SIDE CONFIGURATION DEFAULT



RIGHT SIDE CONFIGURATION OPTIONAL



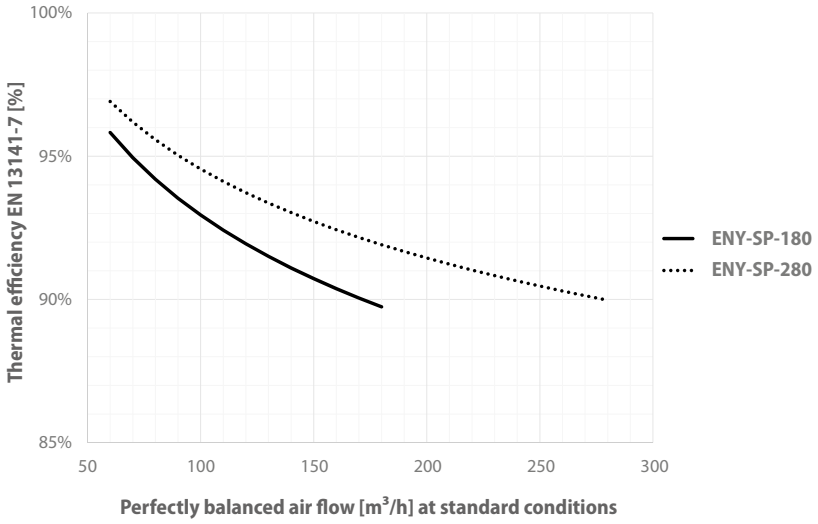
DIAGRAM

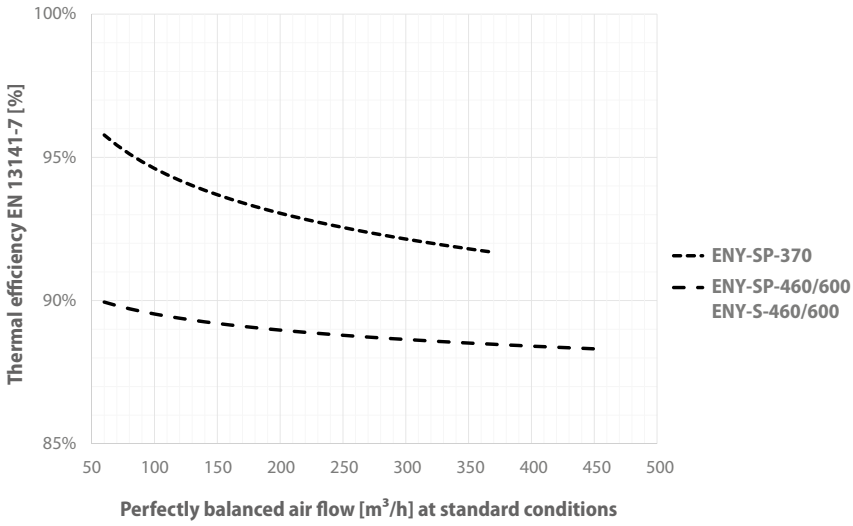


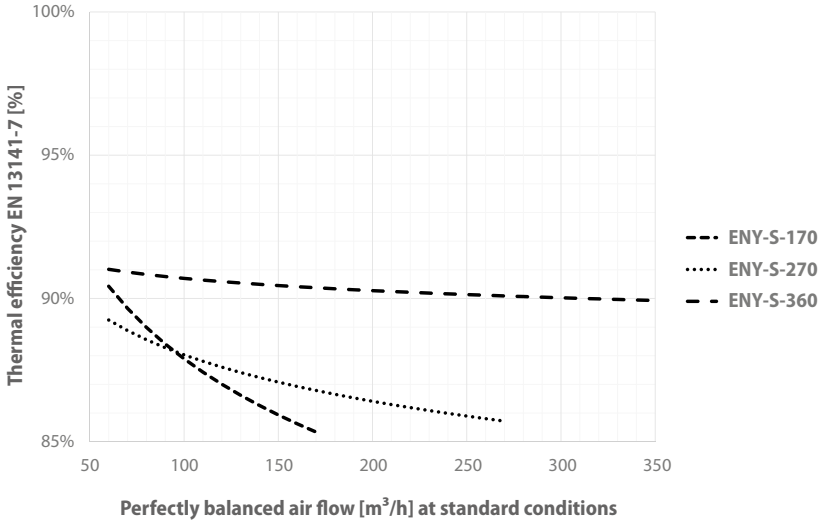
LEGEND	
	Fresh air
	Supply air
	Extract air
	Exhaust air
	Micro pleat filter
	Remote or on board control
	Electric pre-heater optional only required for cold climates
TE	Temperature sensor
HE	Humidity Sensor Central Demand Control
	Condensate Drainage

The thermal performance shown below was measured in compliance with Standard EN 13141-7, recommended by the European Commission documents enclosed in EU Regulation 1253-14. The conditions relating to the performance are the following:

- fresh air temperature= 7 °C
- indoor air temperature= 20 °C
- internal relative humidity = 45%



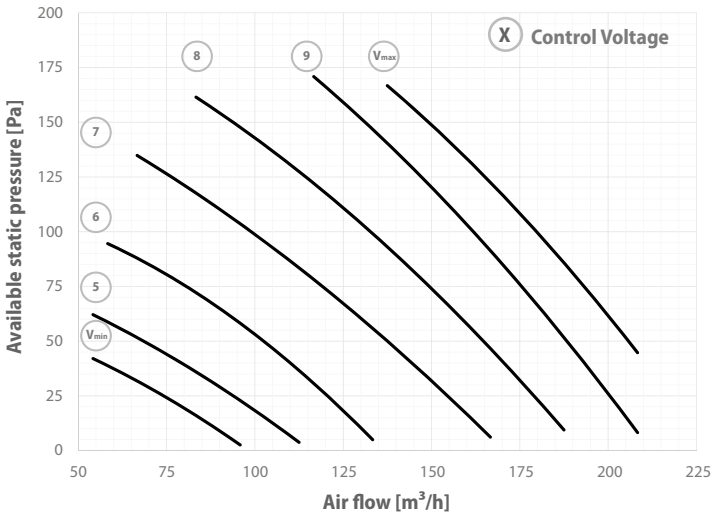




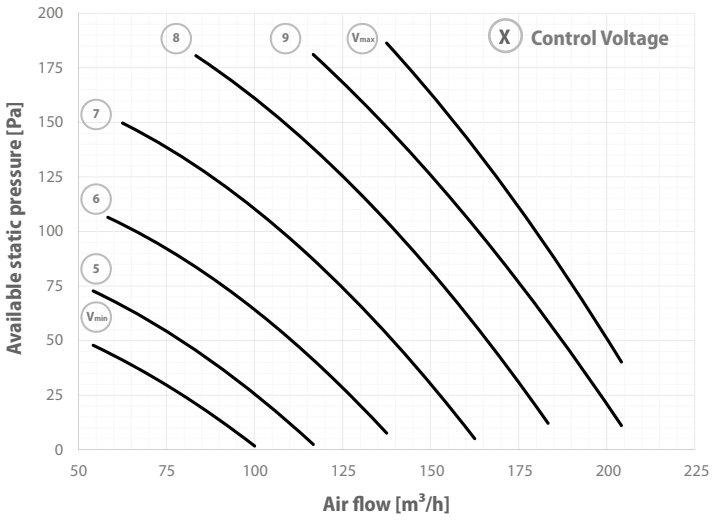
ENY-SP-180

All mechanical efficiency curves are measured in standard air conditions (1 atm, 20 °C)
- Nominal flow rate range V_{max} = 9.6 V ; V_{min} = 4.2 V
- Maximum current input I_{max} = 0.6 A at 10 V

Supply air

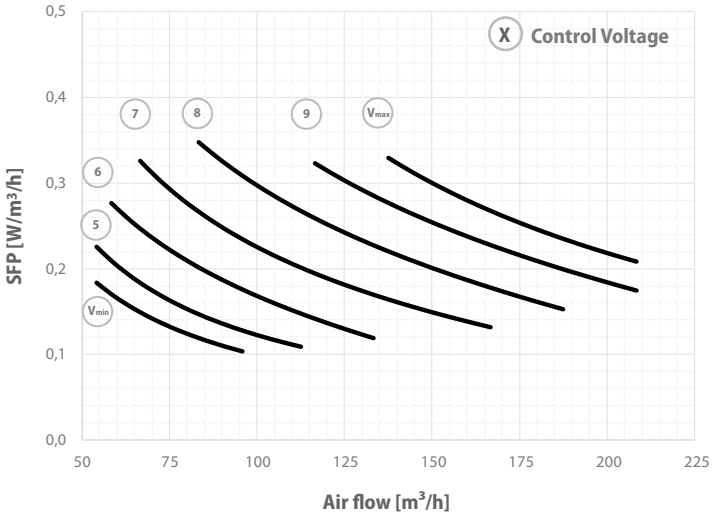


Extract air



Specific fan power - SFP

SFP includes the consumption of the fans and controls.
The curves apply in the event of balanced flow rates.

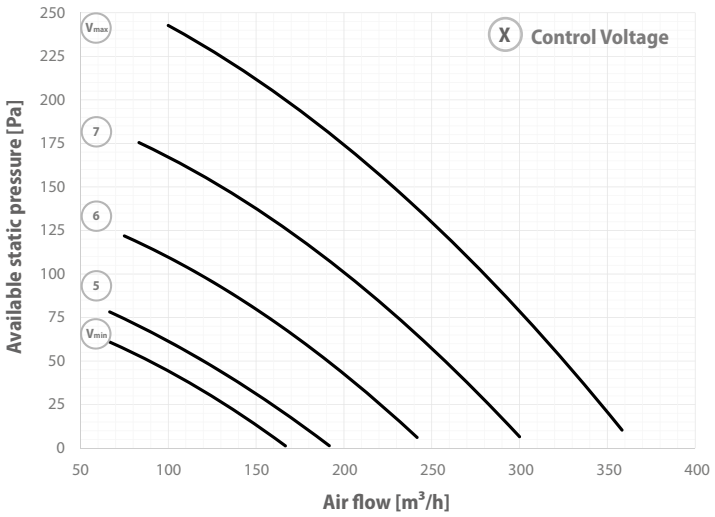


The minimum voltage indicated only refers to a minimum value that can be configured during the nominal flow rate calibration procedure.
In fact, during normal operation the motors can operate at lower voltages.

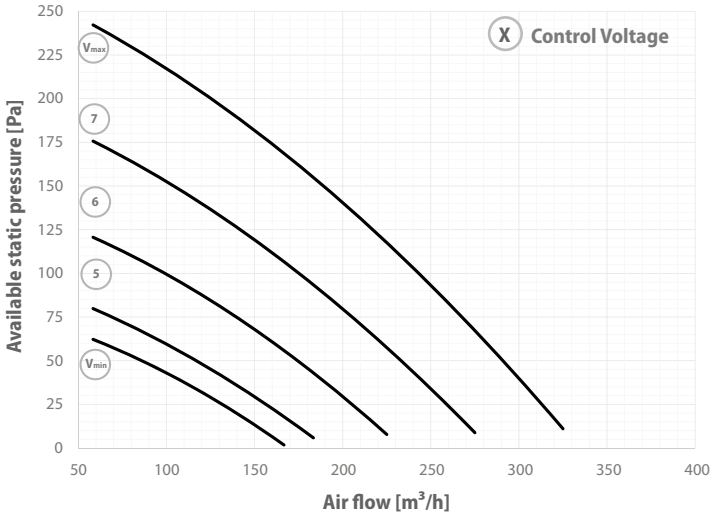
ENY-SP-280

All mechanical efficiency curves are measured in standard air conditions (1 atm, 20 °C).
- Nominal flow rate range V_{max} = 8,0 V ; V_{min} = 4,5 V.
- Maximum current input I_{max} = 1,0 A a 10 V.

Supply air



Extract air



Specific fan power - SFP

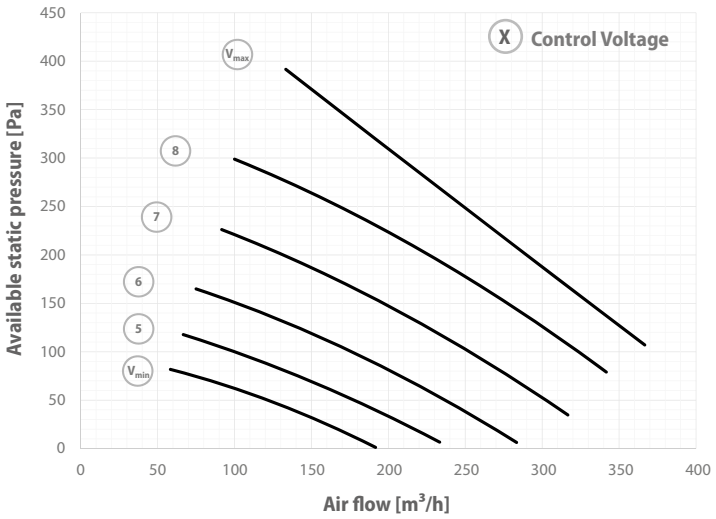
SFP includes the consumption of the fans and controls.
The curves apply in the event of balanced flow rates.

The minimum voltage indicated only refers to a minimum value that can be configured during the nominal flow rate calibration procedure.
In fact, during normal operation the motors can operate at lower voltages.

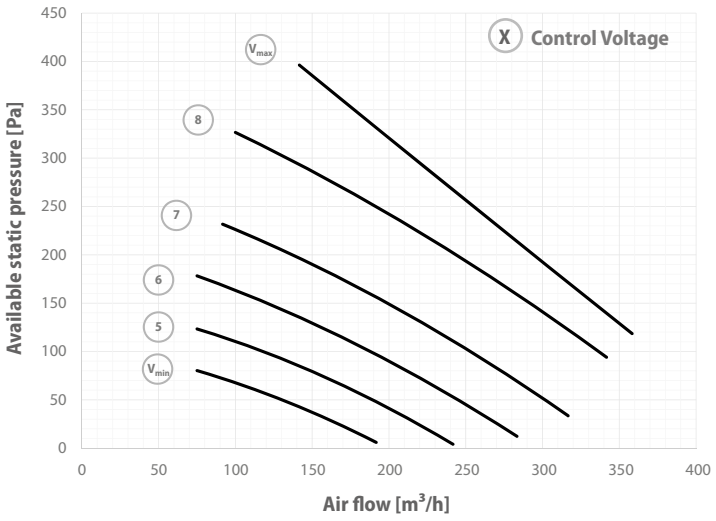
ENY-SP-370

All mechanical efficiency curves are measured in standard air conditions (1 atm, 20 °C).
- Nominal flow rate range V_{max} = 10,0 V ; V_{min} = 4,0 V.
- Maximum current input I_{max} = 1,0 A a 10 V.

Supply air

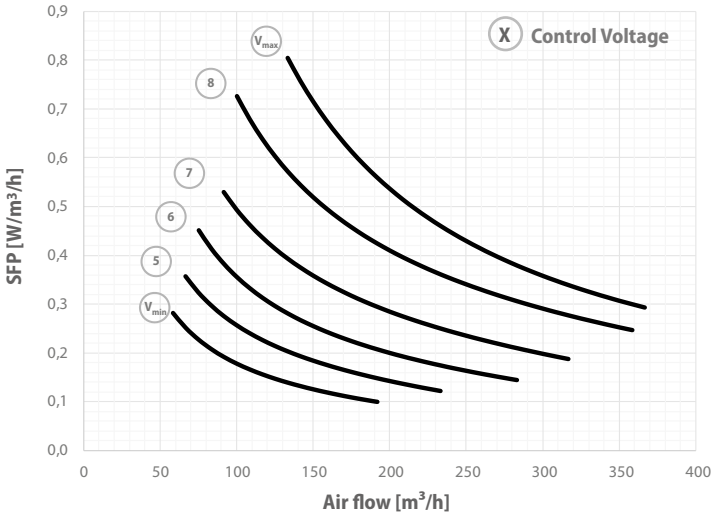


Extract air



Specific fan power - SFP

SFP includes the consumption of the fans and controls.
The curves apply in the event of balanced flow rates.

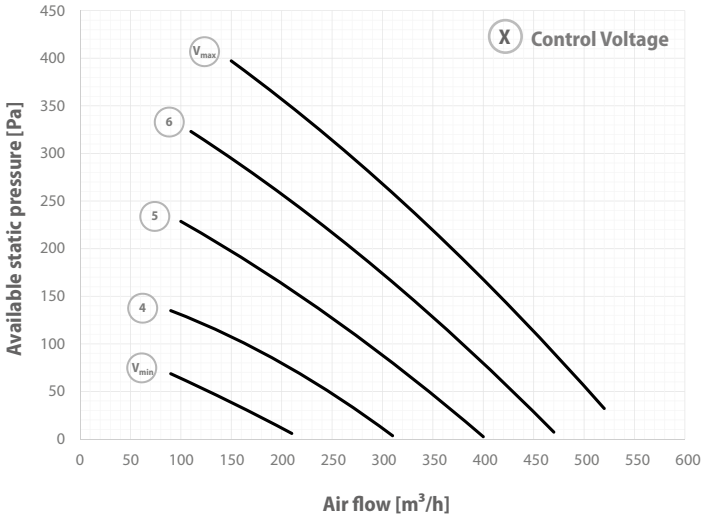


The minimum voltage indicated only refers to a minimum value that can be configured during the nominal flow rate calibration procedure.
In fact, during normal operation the motors can operate at lower voltages.

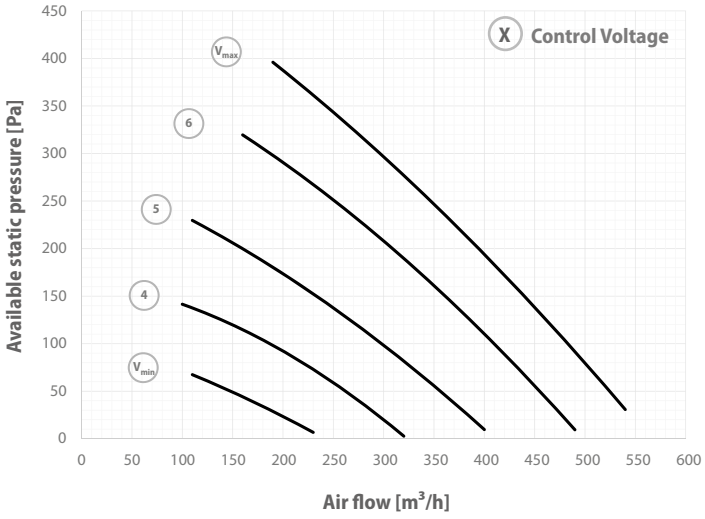
ENY-SP-460

All mechanical efficiency curves are measured in standard air conditions (1 atm, 20 °C).
- Nominal flow rate range V_{max} = 7,0 V ; V_{min} = 3,2 V.
- Maximum current input I_{max} = 2,0 A a 10 V.

Supply air

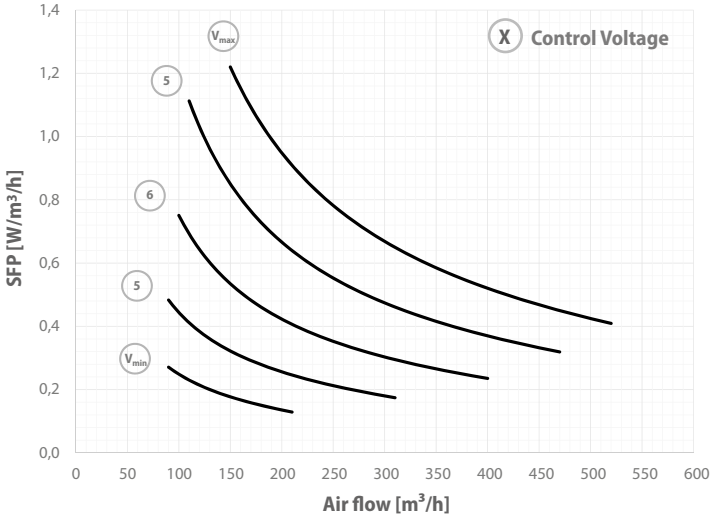


Extract air



Specific fan power - SFP

SFP includes the consumption of the fans and controls.
The curves apply in the event of balanced flow rates.

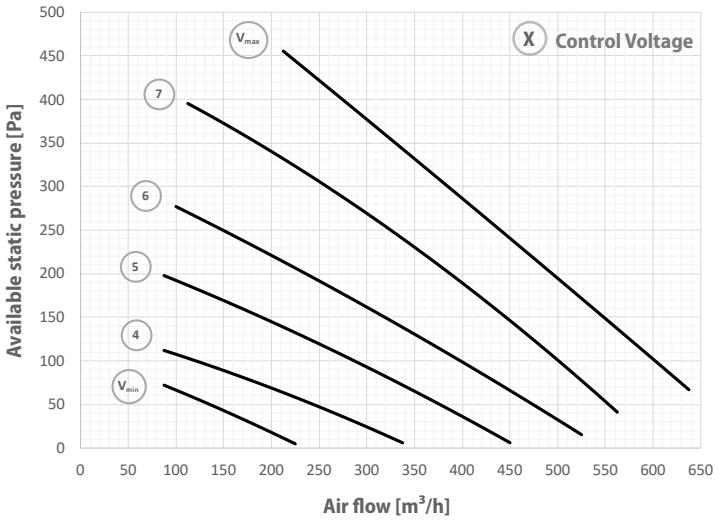


The minimum voltage indicated only refers to a minimum value that can be configured during the nominal flow rate calibration procedure.
In fact, during normal operation the motors can operate at lower voltages.

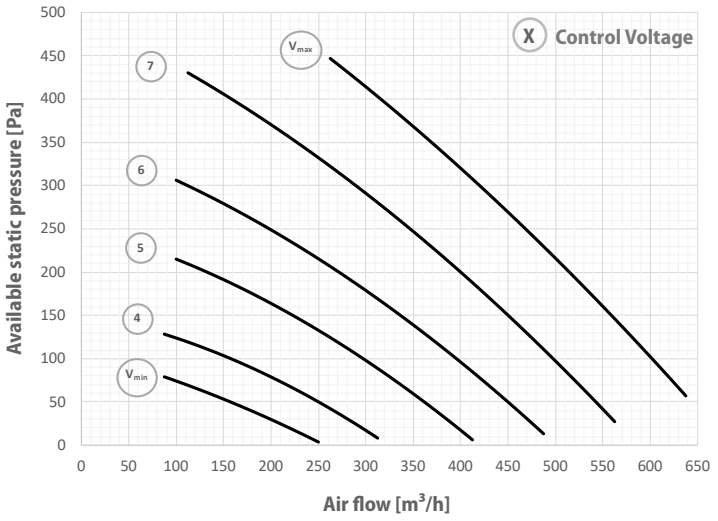
ENY-SP-600

All mechanical efficiency curves are measured in standard air conditions (1 atm, 20 °C).
- Nominal flow rate range V_{max} = 8 V ; V_{min} = 3,4 V.
- Maximum current input I_{max} = 3,0 A a 10 V.

Supply air

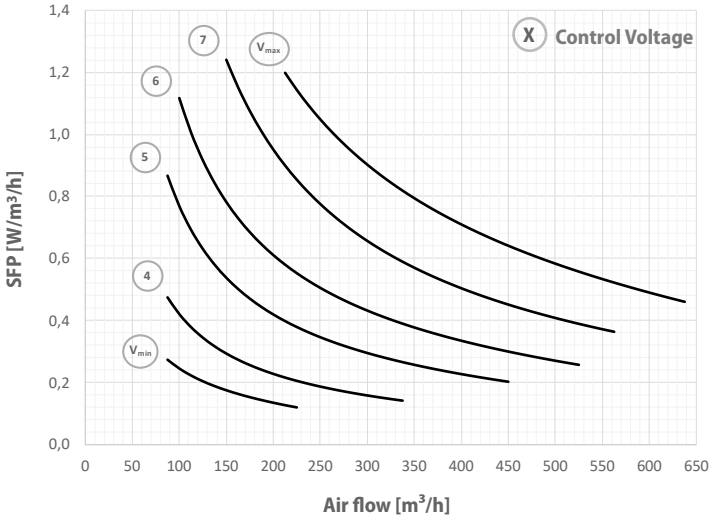


Extract air



Specific fan power - SFP

SFP includes the consumption of the fans and controls.
The curves apply in the event of balanced flow rates.

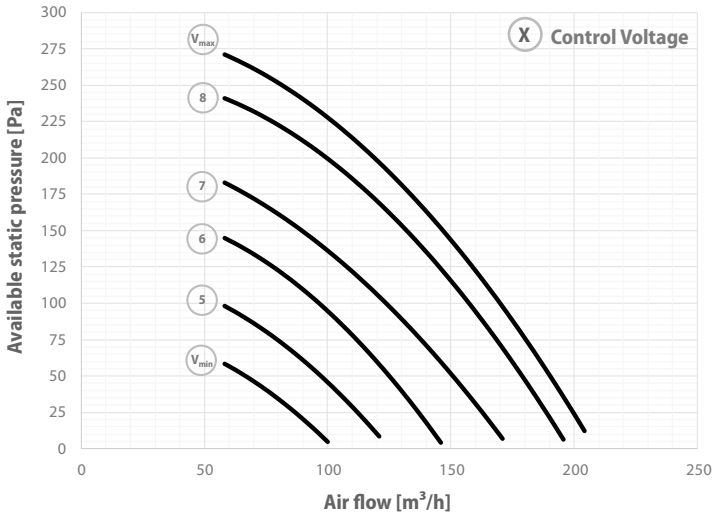


The minimum voltage indicated only refers to a minimum value that can be configured during the nominal flow rate calibration procedure.
In fact, during normal operation the motors can operate at lower voltages.

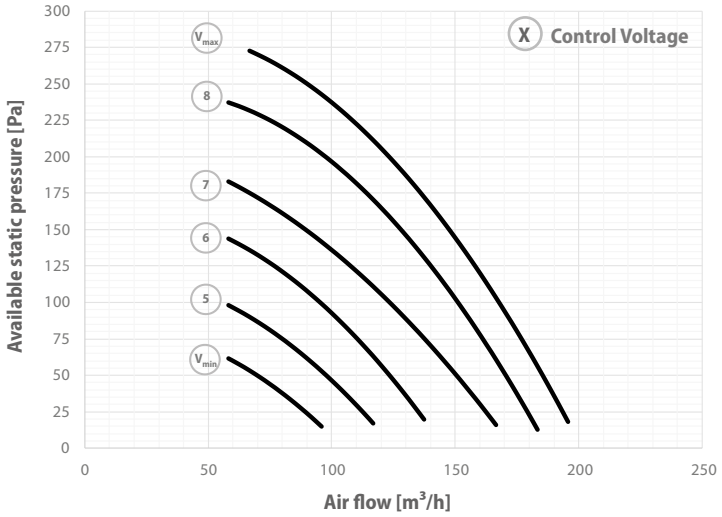
ENY-S-170

All mechanical efficiency curves are measured in standard air conditions (1 atm, 20 °C).
- Nominal flow rate range V_{max} = 9,0 V ; V_{min} = 4,0 V.
- Maximum current input I_{max} = 0,6 A a 10 V.

Supply air

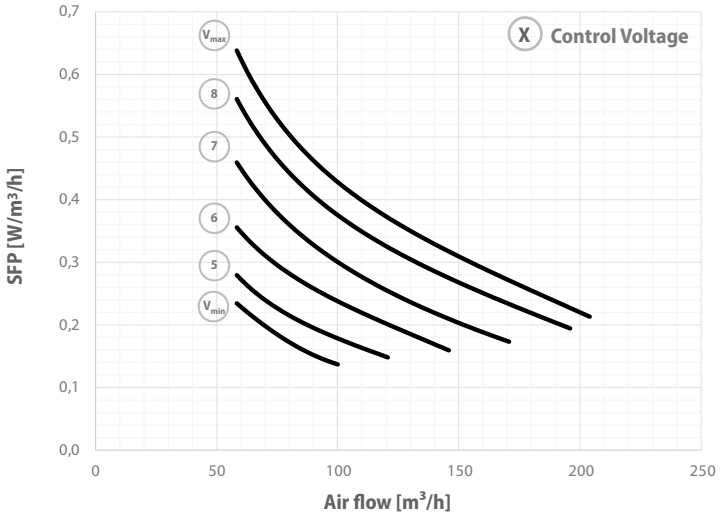


Extract air



Specific fan power - SFP

SFP includes the consumption of the fans and controls.
The curves apply in the event of balanced flow rates.

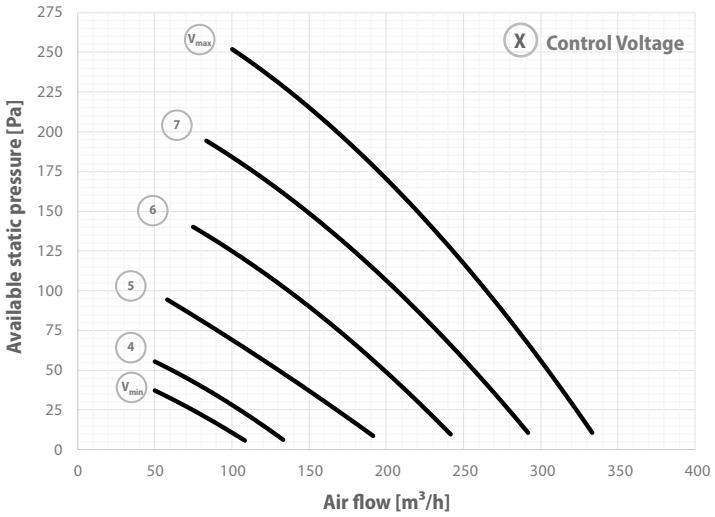


The minimum voltage indicated only refers to a minimum value that can be configured during the nominal flow rate calibration procedure.
In fact, during normal operation the motors can operate at lower voltages.

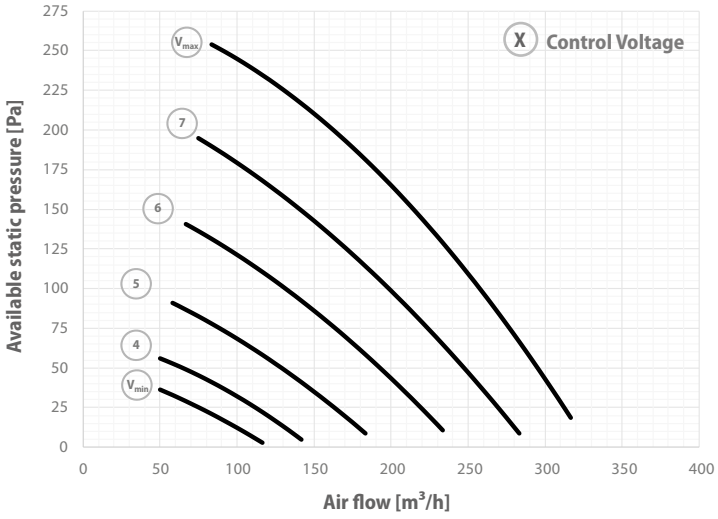
ENY-S-270

All mechanical efficiency curves are measured in standard air conditions (1 atm, 20 °C).
- Nominal flow rate range V_{max} = 8,0 V ; V_{min} = 3,5 V.
- Maximum current input I_{max} = 1,0 A a 10 V.

Supply air

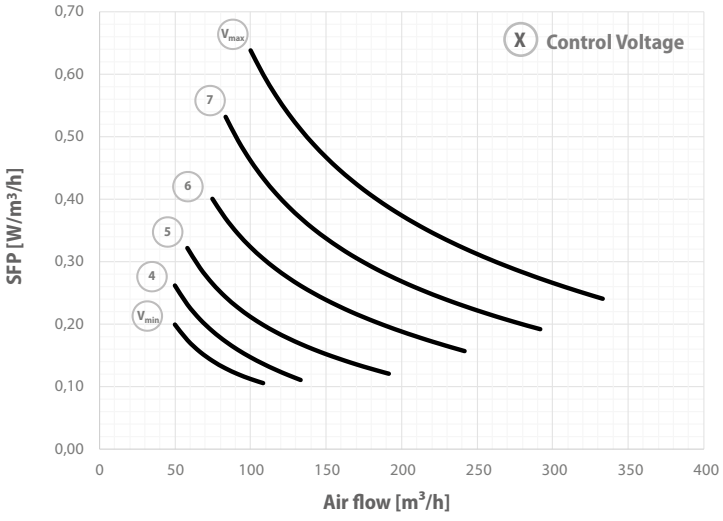


Extract air



Specific fan power - SFP

SFP includes the consumption of the fans and controls.
The curves apply in the event of balanced flow rates.

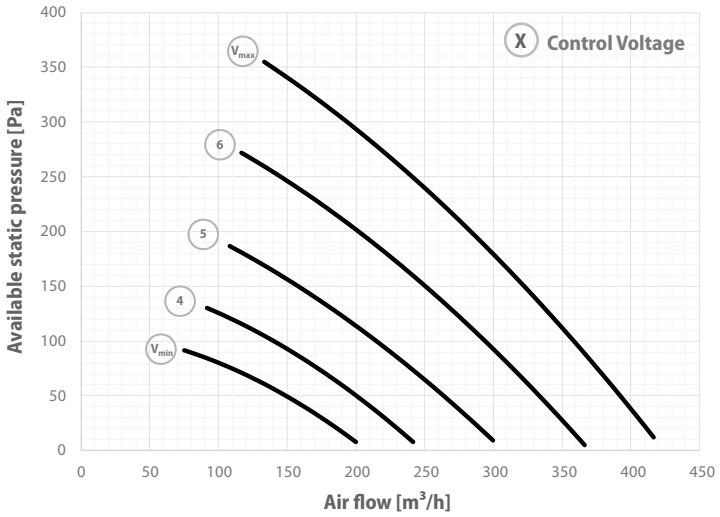


The minimum voltage indicated only refers to a minimum value that can be configured during the nominal flow rate calibration procedure.
In fact, during normal operation the motors can operate at lower voltages.

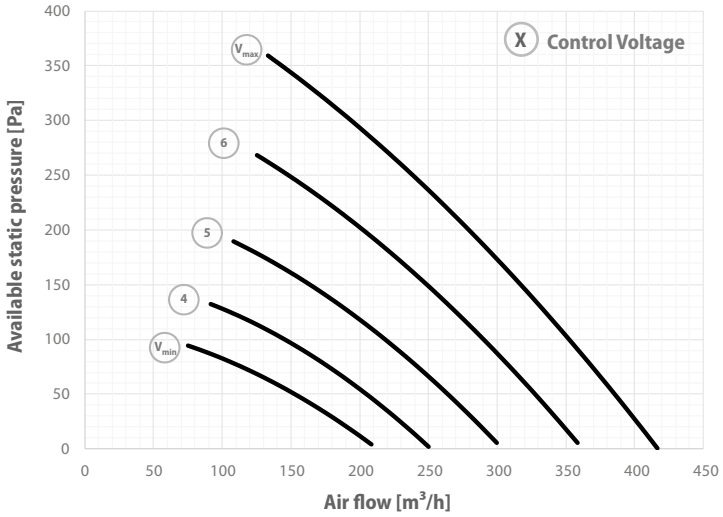
ENY-S-360

All mechanical efficiency curves are measured in standard air conditions (1 atm, 20 °C).
- Nominal flow rate range V_{max} = 7,0 V ; V_{min} = 3,0 V.
- Maximum current input I_{max} = 1,4 A a 10 V.

Supply air

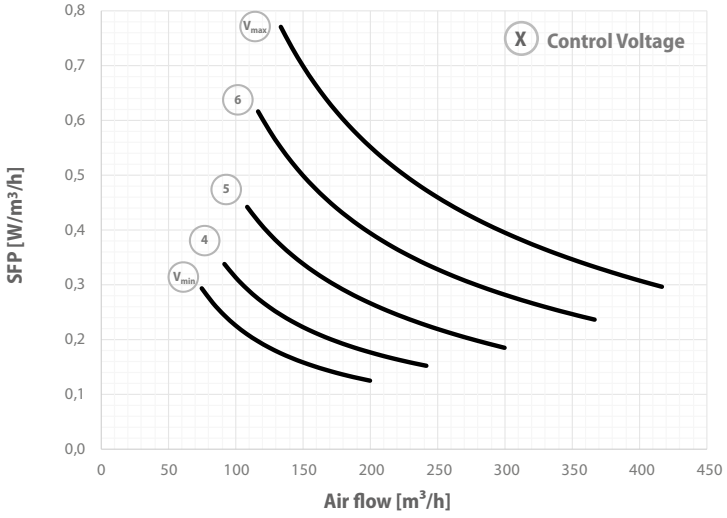


Extract air



Specific fan power - SFP

SFP includes the consumption of the fans and controls.
The curves apply in the event of balanced flow rates.

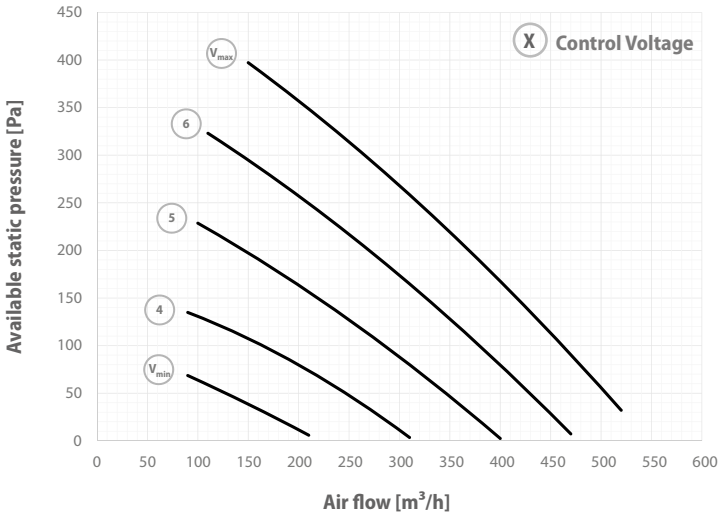


The minimum voltage indicated only refers to a minimum value that can be configured during the nominal flow rate calibration procedure.
In fact, during normal operation the motors can operate at lower voltages.

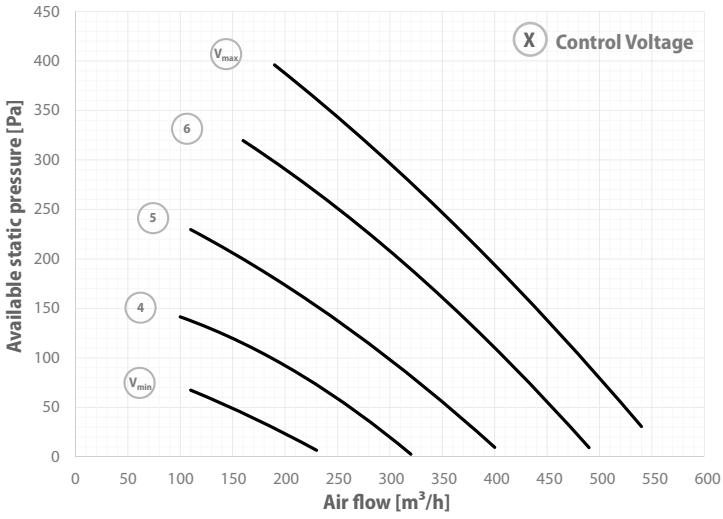
ENY-S-460

All mechanical efficiency curves are measured in standard air conditions (1 atm, 20 °C).
- Nominal flow rate range V_{max} = 7,0 V ; V_{min} = 3,2 V.
- Maximum current input I_{max} = 2,0 A a 10 V.

Supply air

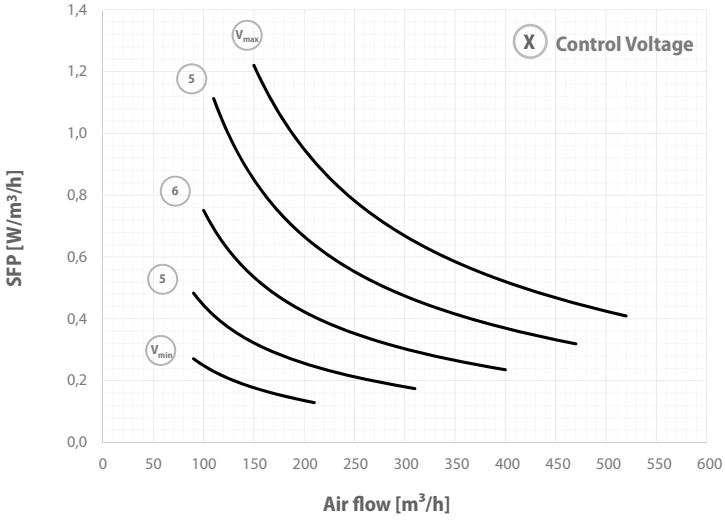


Extract air



Specific fan power - SFP

SFP includes the consumption of the fans and controls.
The curves apply in the event of balanced flow rates.

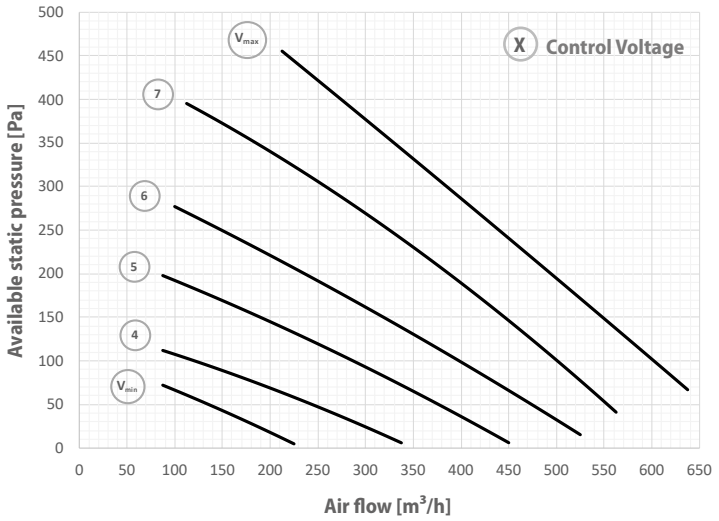


The minimum voltage indicated only refers to a minimum value that can be configured during the nominal flow rate calibration procedure.
In fact, during normal operation the motors can operate at lower voltages.

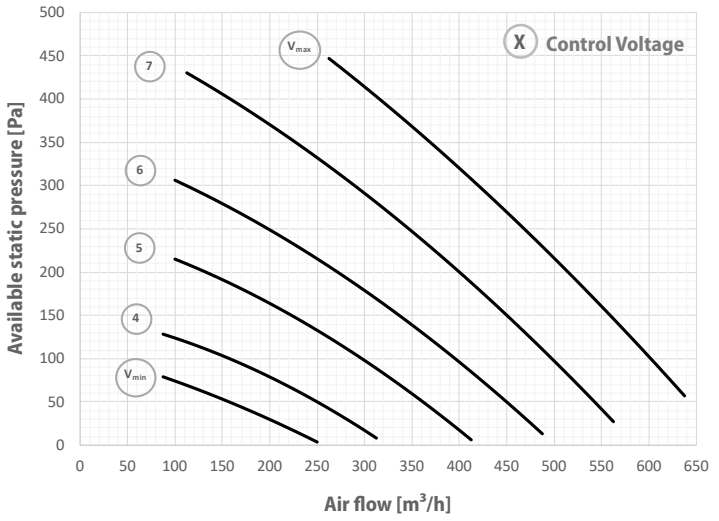
ENY-S-600

All mechanical efficiency curves are measured in standard air conditions (1 atm, 20 °C).
- Nominal flow rate range V_{max} = 8 V ; V_{min} = 3,4 V.
- Maximum current input I_{max} = 3,0 A a 10 V.

Supply air

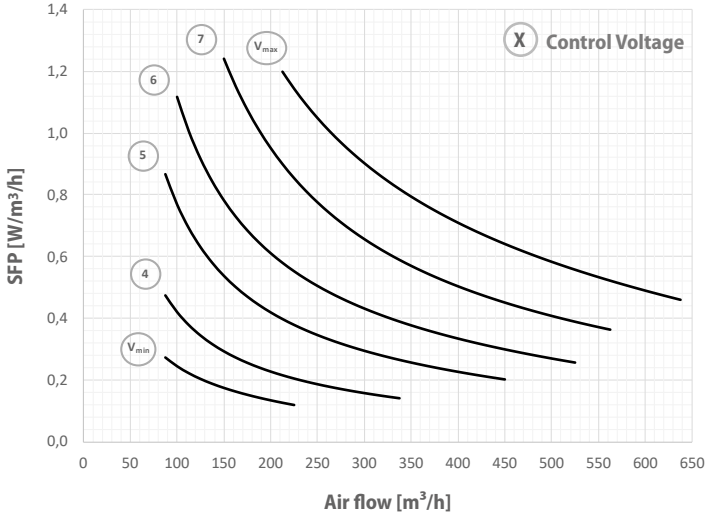


Extract air



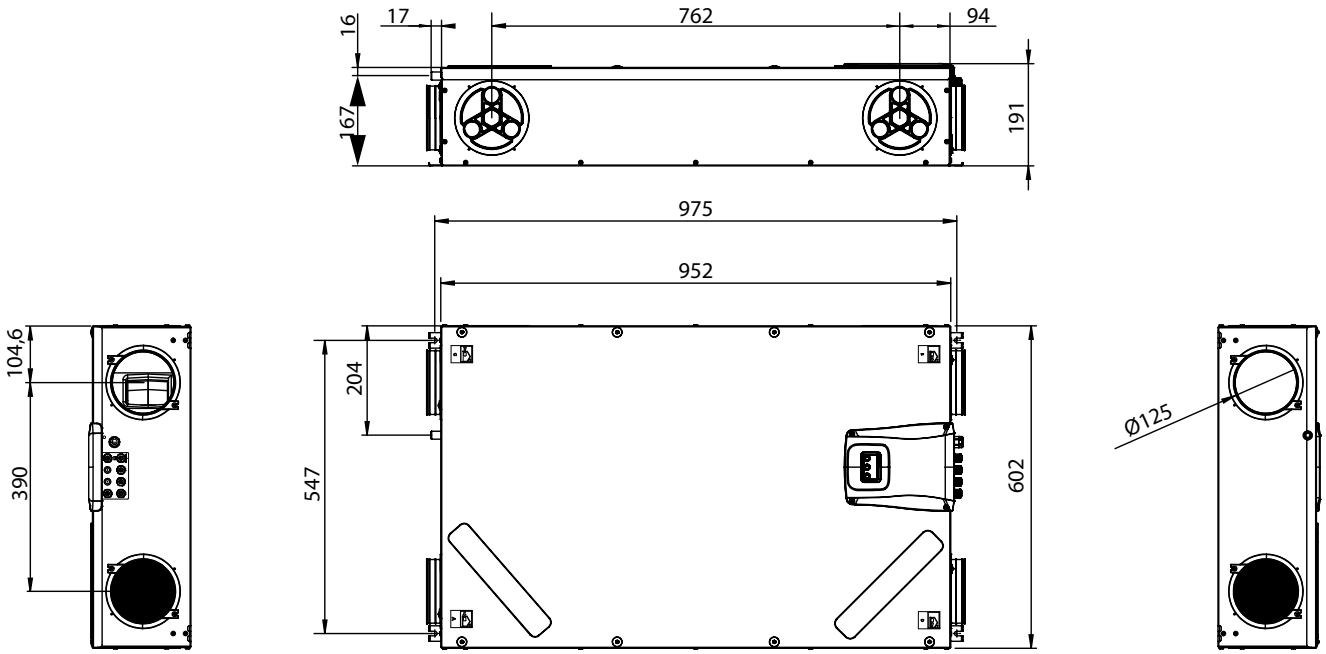
Specific fan power - SFP

SFP includes the consumption of the fans and controls.
The curves apply in the event of balanced flow rates.



The minimum voltage indicated only refers to a minimum value that can be configured during the nominal flow rate calibration procedure.
In fact, during normal operation the motors can operate at lower voltages.

ENY-SHP-150 Pro Version



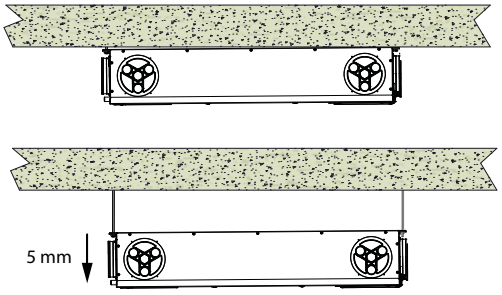
	Weight with packaging	Weight without packaging
ENY-SHP-150	25 kg	23 kg

INSTALLATION

The ENY-SHP-150 unit can easily be installed both horizontally and vertically.
Special support brackets pre-fitted on the unit are provided to install the unit horizontally on the ceiling and to install the unit vertically (especially in gaps between plasterboard walls and load-bearing walls).

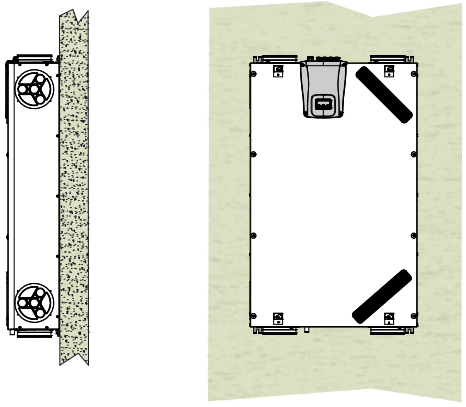
Horizontal installation

Spacer bars can be used to adjust the distance from the ceiling. It is recommended to install the unit tilted towards the side where the ePM_1 55% - F7 filter is placed, in order to facilitate condensate drainage. Provide a slope of min. 5 mm towards the condensate drain.



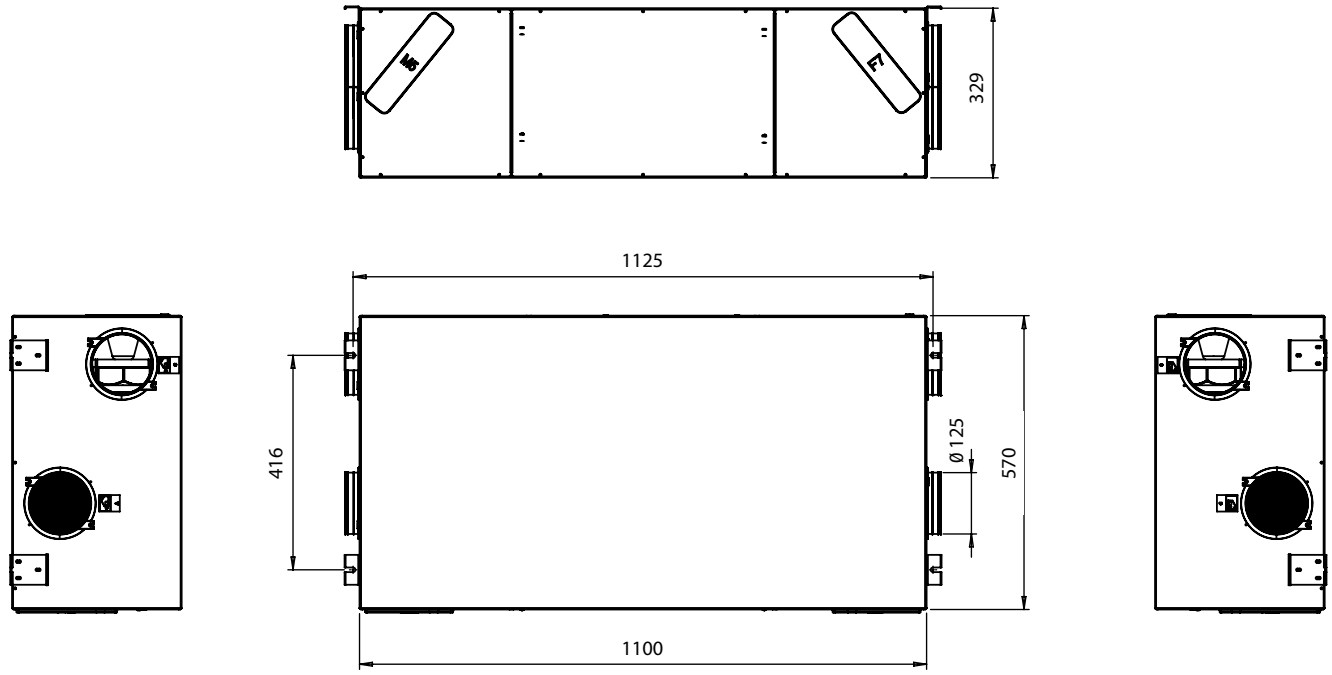
Vertical installation

Place the unit with the touch screen control upwards, so that the condensate drain connection remains downwards.



The instruction manual indicates the appropriate maintenance clearance for each type of installation.

ENY-SHP-170 Pro Version



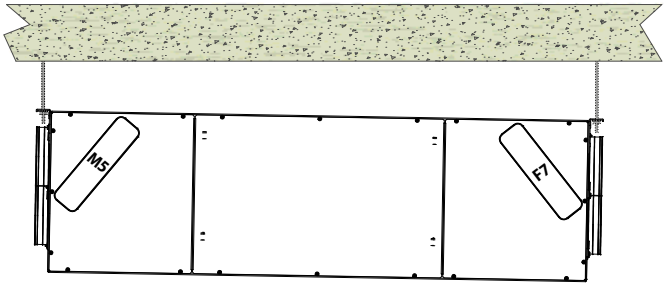
	Weight with packaging	Weight without packaging
ENY-SHP-170	35 kg	31 kg

INSTALLATION

The ENY-SHP-170 unit can easily be installed both horizontally and vertically.
Special support brackets are provided to install the unit horizontally on the ceiling and to install the unit vertically (especially in gaps between plasterboard walls and load-bearing walls).

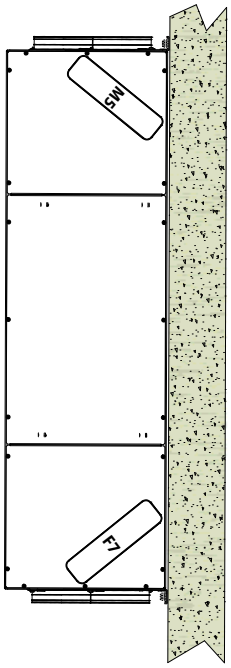
Horizontal installation

Spacer bars can be used to adjust the distance from the ceiling. It is recommended to install the unit tilted towards the side where the ePM_1 55% - F7 filter and the condensate drain pipe are placed, in order to facilitate condensate drainage (provide a slope of 2% towards the filter and of 1% towards the condensate drain pipe).



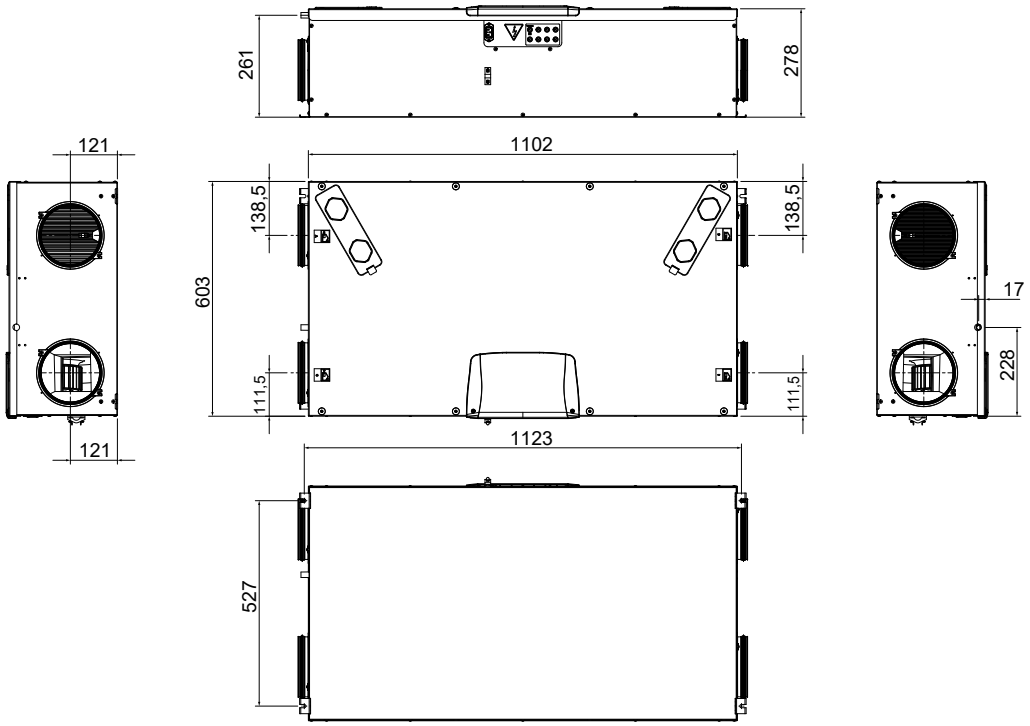
Vertical installation

Place the side ePM_1 55% - F7 downwards the unit.



The instruction manual indicates the appropriate maintenance clearance for each type of installation.

ENY-SHP-270 Pro Version



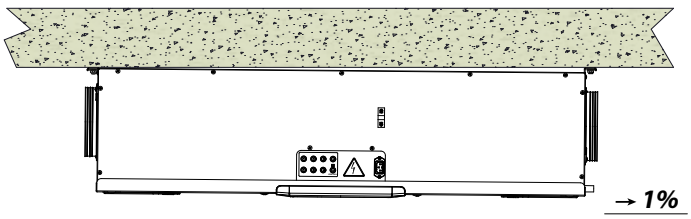
	Weight with packaging	Weight without packaging
ENY-SHP-270	38 kg	31 kg

INSTALLATION

The ENY-SHP-270 unit can easily be installed both horizontally and vertically.
Special support brackets are provided to install the unit horizontally on the ceiling and to install the unit vertically (especially in gaps between plasterboard walls and load-bearing walls).

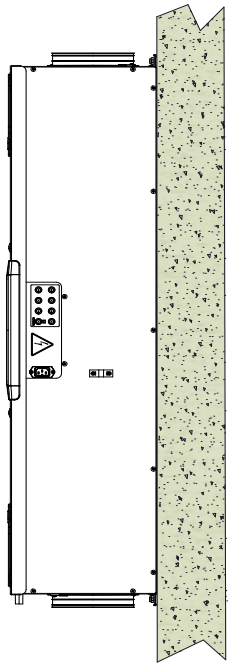
Horizontal installation

Spacer bars can be used to adjust the distance from the ceiling. It is recommended to install the unit tilted towards the side where the ePM_1 55% - F7 filter and the condensate drain pipe are placed, in order to facilitate condensate drainage (provide a slope of 2% towards the filter and of 1% towards the condensate drain pipe).



Vertical installation

Place the side ePM_1 55% - F7 downwards the unit.



The instruction manual indicates the appropriate maintenance clearance for each type of installation.

Pro ENY-SHP-150 Version with advanced air flow control

Model		ENY-SHP-150
Depth	mm	952
Width	mm	602
Height	mm	191
Duct connection	-	DN125
Weight[1]	kg	23
Maximum flow rate	m^3/h	150
External static pressure at maximum flow rate	Pa	100
Reference flow rate	m^3/h	105
External static pressure at reference flow rate	Pa	50
Minimum flow rate	m^3/h	60
Maximum external static pressure	Pa	150
Thermal efficiency at reference flow rate EN 13141-7	%	87%
Filtering efficiency ISO 16890	-	ePM_1 55% - F7 supply / ePM_{10} 50% - M5 extraction
Fan type	-	Centrifugal fan with EC brushless motor and forward curved blades
Maximum power absorbed by controls and fans[3]	W	59
Maximum current absorbed by controls and fans	A	0,5
Power supply	-	Single phase -230 V – 50 Hz via 1.5 m cable with Schuko CEE 7/7 connection
Standby power		< 1 W
Safety features		• IP protection rating: IP21 • CE compliance [2]
Components and general materials	-	• Recovery unit: counterflow plate heat recovery unit. • Main power board with Modbus interface built-in display. • Filters: micro-pleated type - synthetic. • Main structure: polystyrene. • Temperature sensors PT1000. • External covering: painted galvanized steel plate. • Humidity Sensor Central Demand Control for Extract Air. • Condensate drain pipe L=800 mm.
Accessories	-	• T-EP capacitive touch pad integrated control. • External Electric Heater. • KNX bus system.
Maximum Defrost Pre-Heater power[4]	W	600
Maximum electric heater current	A	3

1 Without packaging
2 EN 60335-1, EN 60335-2-80, EN 62233, EN 55014-1, EN 55014-2, EN 61000-3-2, EN 61000-3-3, EN 50581, Reg. 1253/14, Reg. 1254/14 (EU Directives: 2014/35/EU, 2014/30/EU, 2006/42/EU, 2011/65/EU)
3 Maximum power absorbed under ErP conditions with 100Pa maximum flow rate.
4 External electric heater (Accessory)

Pro ENY-SHP-170 Version with advanced air flow control

Model		ENY-SHP-170	
Depth	mm	1098	
Width	mm	568	
Height	mm	327	
Duct connection	-	DN125	
Weight[1]	kg	31	
Maximum flow rate	m³/h	170	
External static pressure at maximum flow rate	Pa	100	
Reference flow rate	m³/h	120	
External static pressure at reference flow rate	Pa	50	
Minimum flow rate	m³/h	60	
Maximum external static pressure	Pa	230	
Thermal efficiency at reference flow rate EN 13141-7	%	92%	
Filtering efficiency ISO 16890	-	ePM_1 55% - F7 supply / ePM_{10} 50% - M5 extraction	
Fan type	-	Centrifugal fan with EC brushless motor and backward-curved blades	
Maximum power absorbed by controls and fans	W	50	
Maximum current absorbed by controls and fans	A	0,6	
Power supply	-	Single phase -230 V – 50 Hz via 1.5 m cable with Schuko CEE 7/7 connection	
Standby power		< 1 W	
Safety features		• IP protection rating: IP21	• CE compliance [2]
Components and general materials	-	• T-EP capacitive touch pad integrated control . • Main power board with Modbus interface. • Maximum defrost pre-heater power: hot filament electric heater with reinforced metal lining, controlled by PWM signal (optional). • Main structure: Polystyrene. • External covering: Painted galvanized steel plate. • Recovery unit: Counterflow plate heat recovery unit - PET.	• Fan blades and housings: PA6 in plastic, reinforced fibreglass • Filters: Micro-pleated type - Synthetic Bypass damper with two louvers made of POM and steel. • Temperature sensors PT1000 • Humidity Sensor Central Demand Control for Extract Air • Condensate drain pipe L=800
Accessories	-	• Internal hot filament Defrost Electric Pre-Heater with reinforced metal lining, controlled by PWM signal • External Electric Heater	
Maximum Defrost Pre-Heater power	W	600	
Maximum electric heater current	A	3	

1 Without packaging
2 EN 60335-1, EN 60335-2-80, EN 62233, EN 55014-1, EN 55014-2, EN 61000-3-2, EN 61000-3-3, EN 50581, Reg. 1253/14, Reg. 1254/14 (EU Directives: 2014/35/EU, 2014/30/EU, 2006/42/EU, 2011/65/EU)

Pro ENY-SHP-270 Version with advanced air flow control

Model		ENY-SHP-270	
Depth	mm	1102	
Width	mm	773	
Height	mm	315	
Duct connection	-	160	
Weight[1]	kg	31	
Maximum flow rate	m³/h	270	
External static pressure at maximum flow rate	Pa	100	
Reference flow rate	m³/h	190	
External static pressure at reference flow rate	Pa	50	
Minimum flow rate	m³/h	88	
Maximum external static pressure	Pa	200	
Thermal efficiency at reference flow rate EN 13141-7	%	85,5%	
Filtering efficiency ISO 16890	-	ePM_1 55% - F7 supply / ePM_{10} 50% - M5 extraction	
Fan type	-	Centrifugal fan with EC brushless motor and forward curved blades	
Maximum power absorbed by controls and fans	W	184	
Maximum current absorbed by controls and fans	A	1,58	
Power supply	-	Single phase -230 V – 50 Hz via 1.5 m cable with Schuko CEE 7/7 connection	
Standby power		< 1 W	
Safety features		• IP protection rating: IP21	• CE compliance [2]
Components and general materials	-	• T-EP capacitive touch pad integrated control . • Main power board with Modbus interface. • Maximum defrost pre-heater power: hot filament electric heater with reinforced metal lining, controlled by PWM signal (optional). • Main structure: Polystyrene. • External covering: Painted galvanized steel plate. • Recovery unit: Counterflow plate heat recovery unit - PET.	• Fan blades and housings: PA6 in plastic, reinforced fibreglass Filters: Micro-pleated type - Synthetic Bypass damper with louvers made of ABS and steel. • Temperature sensors NTC10k • Double humidity Sensor Central Demand Control for Supply and Extract Air • Condensate drain pipe L=800 mm
Accessories	-	• Internal hot filament Defrost Electric Pre-Heater with reinforced metal lining, controlled by PWM signal • External Electric Heater	
Maximum Defrost Pre-Heater power	W	600	
Maximum electric heater current	A	4	

1 Without packaging
2 EN 60335-1, EN 60335-2-80, EN 62233, EN 55014-1, EN 55014-2, EN 61000-3-2, EN 61000-3-3, EN 50581, Reg. 1253/14, Reg. 1254/14 (EU Directives: 2014/35/EU, 2014/30/EU, 2006/42/EU, 2011/65/EU)

Pro ENY-SHP-150 Version
Construction features of the main components

1 ENY-SHP-150 version external structure
made of hot-dip galvanised steel sheet panels.

2 Internal structure
made of high density Polystyrene.

3 Frontal panel
galvanized, insulated and painted in RAL 9003.

4 Main power board
Main power board with built-in display, easy to use for calibration and activation of the unit.

5 High efficiency filters compliant with standard ISO 16890
High efficiency micro-pleated filters, frontal extraction have the following features:
- ePM_1 55% - F7 class for the supply air;
- ePM_{10} 50% - M5 class for the extract air.

6 ABS shanks for inlet/outlet flow connection

7 Caps made of ABS for the interchangeability of the position of the air distribution inlet/outlet connections.

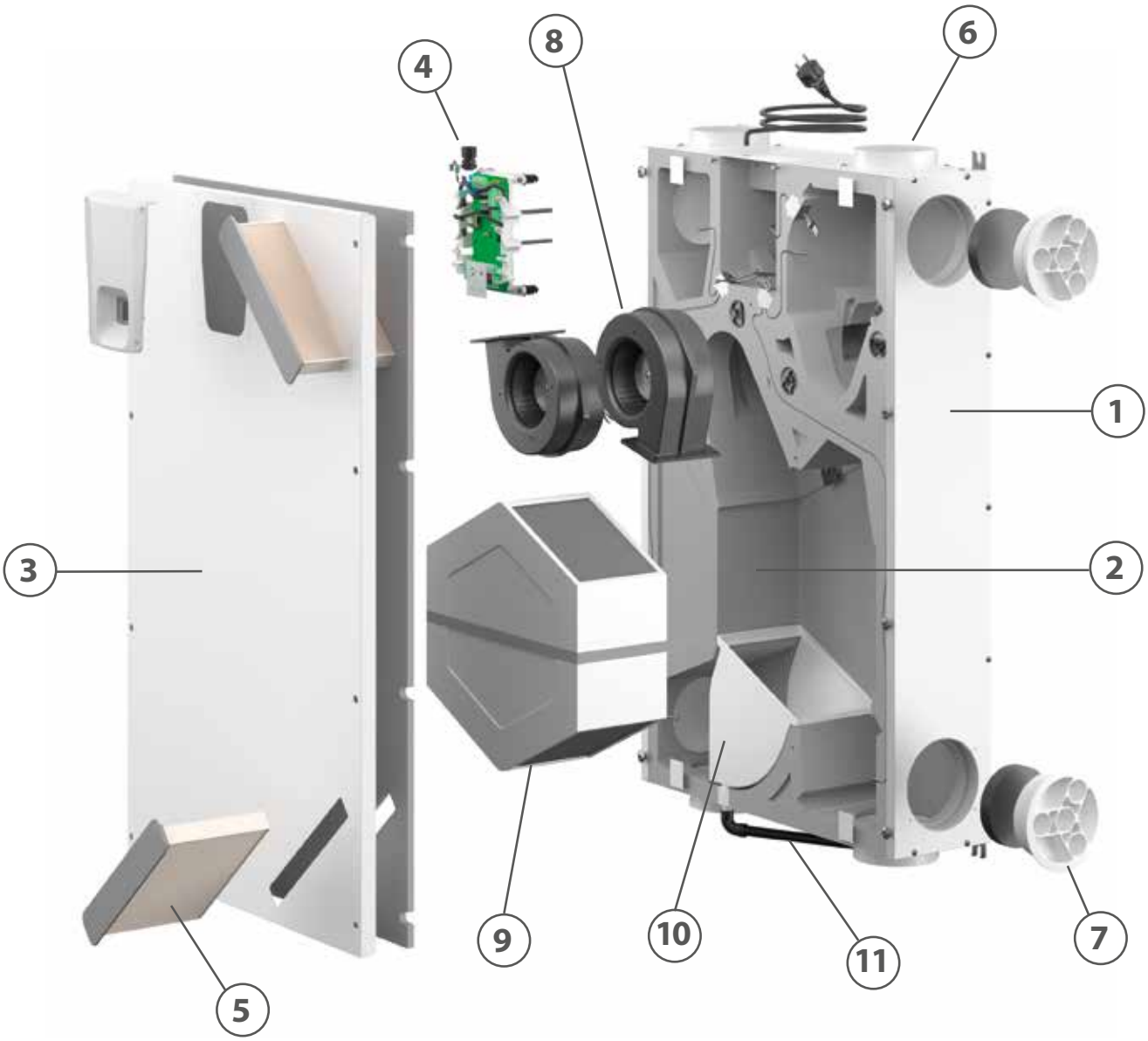
8 Extract air and air supply electric fan
high efficiency centrifugal fan with EC brushless motor and forward curved blades, steady control of air flow rate.

9 Static recovery unit
Counterflow heat recovery unit with low pressure drops. It prevents any winter heat drops due to the introduction of fresh air, thereby recovering up to 88% of the extract heat.
The static heat recovery units do not feature moving parts and guarantee high reliability and safe operation.

10 Condensate collection tray
The condensate collection tray made of ABS is designed for the correct condensate drain in every type of installations, ceiling or wall ones.

11 Condensate drain pipe
The units are equipped with a flexible corrugated pipe 800 mm long, pre-assembled with 90° bend fastening.
In case of water leakage, the drops are conveyed into the collection tray and directed towards the drain pipe.

Pro ENY-SHP-150 Version



Pro ENY-SHP-170 Version - Construction features of the main components

1 Pro ENY-SHP-170 version external structure
made of hot-dip galvanised steel sheet panels painted in RAL 9003 and satin finish obtained with epoxy paint dried in oven at 180 °C.

2 EPDM fan access closure

3 Polyethylene EPE filter access closure

4 Electric defrosting pre-heater
Electric heater hot filament with reinforced metal lining, controlled by PWM signal (only versions with integrated electric heater).

5 High efficiency filters compliant with standard ISO 16890
The filters have the following features:
- ePM_1 55% - F7 class for the supply air;
- ePM_{10} 50% - M5 class for the extracted air.

6 ABS shanks for inlet/outlet flow connection

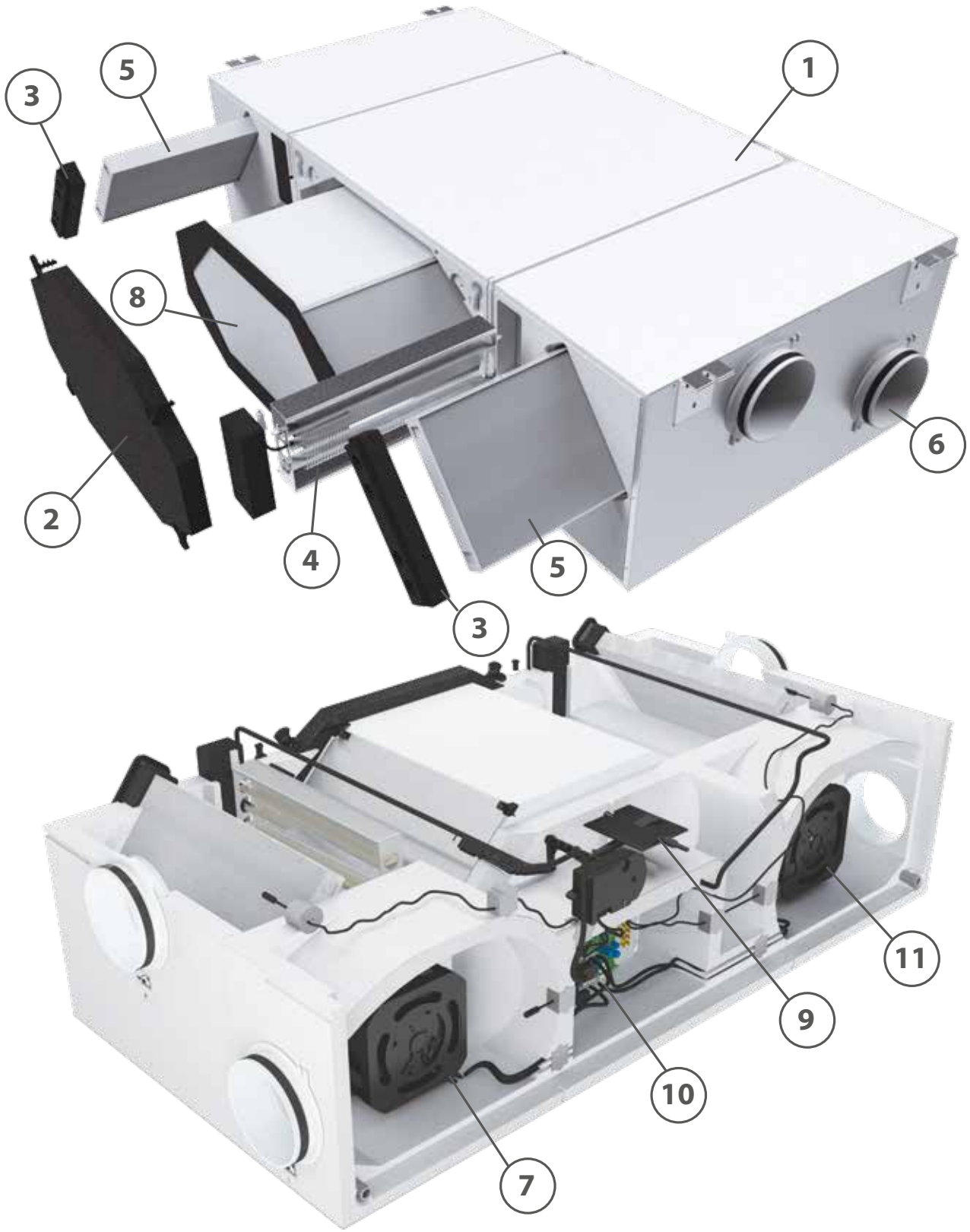
7/11 Extract air (7) and air supply (11) electric fan
consisting of:
- Permanent single-phase **synchronous EC motor**.
- **High efficiency PA fans** with backward-curved blades.
- **Motor/fan housing**.

8 High efficiency static heat recovery unit
with PET counterflow exchange plates. The reachable efficiency obtainable may be higher than 90% because they ensure counterflow heat transfer between two air flows at different inlet temperatures. The static heat recovery units do not feature moving parts and guarantee high reliability and safe operation.
In order to increase the efficiency of the heat exchanger, the plate surfaces feature special swirlers.

9 By-pass damper with 2 louvers driven by the same motor

10 Main power board

Pro ENY-SHP-170 Version



Pro ENY-SHP-270 Version - Construction features of the main components

1 Pro ENY-SHP-270 version external structure
made of hot-dip galvanised steel sheet panels.

2 Internal structure
made of high density Polystyrene.

3 Frontal panel
galvanized, insulated and painted in RAL 9003.

4 Electric defrosting pre-heater
Electric heater hot filament with reinforced metal lining, controlled by PWM signal (only versions with integrated electric heater)

5 High efficiency filters compliant with standard ISO 16890
High efficiency micro-pleated filters, frontal extraction have the following features:
- ePM_1 55% - F7 class for the supply air;
- ePM_{10} 50% - M5 class for the extract air.

6 ABS shanks for inlet/outlet flow connection

7 Extract air and air supply electric fan
high efficiency centrifugal fan with EC brushless motor and forward curved blades, steady control of air flow rate.

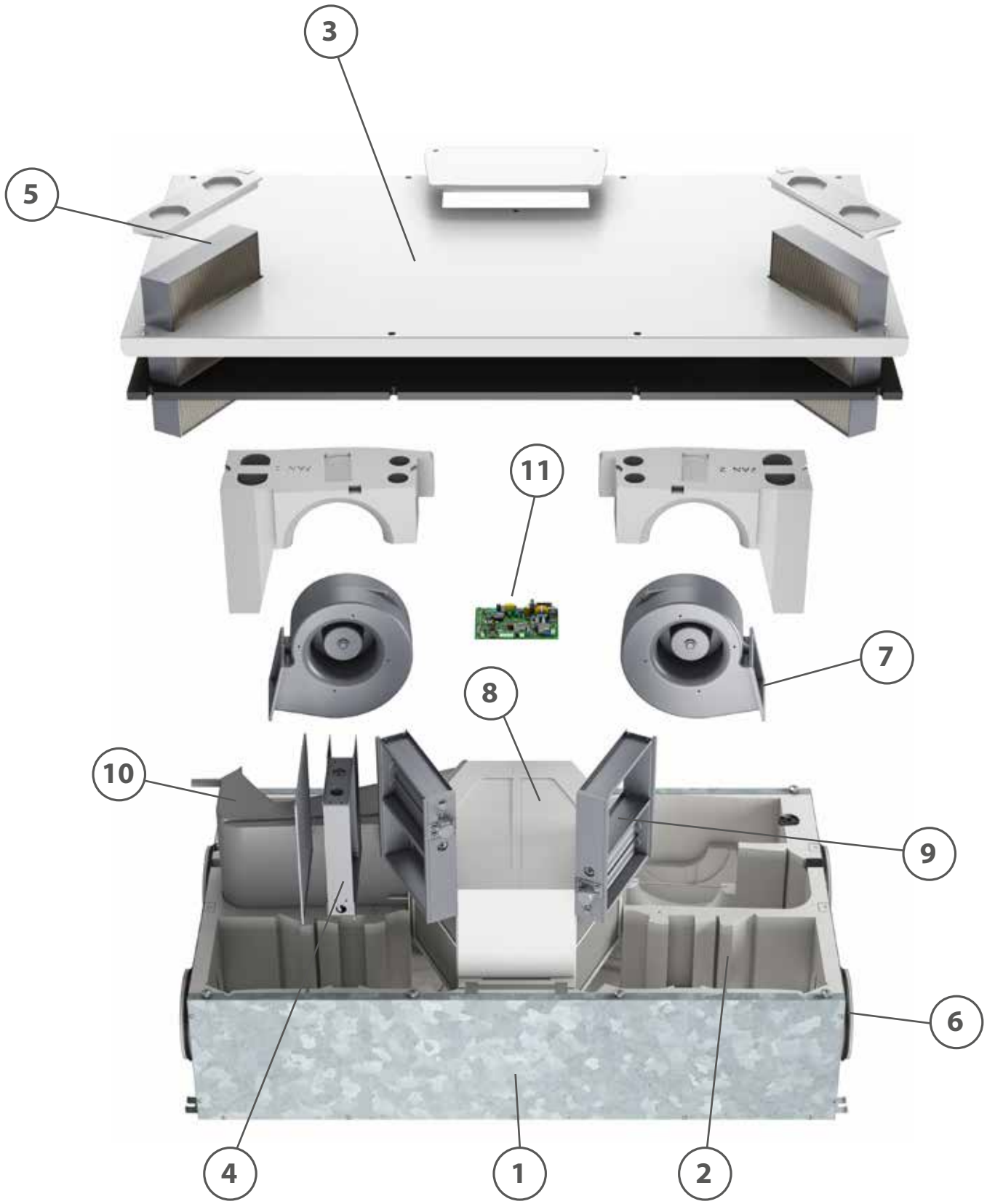
8 Static recovery unit
Counterflow heat recovery unit with low pressure drops. It prevents any winter heat drops due to the introduction of fresh air, thereby recovering up to 88% of the extract heat.
The static heat recovery units do not feature moving parts and guarantee high reliability and safe operation.

9 By-pass damper with 2 fins activated by stepper motor

10 Condensate collection tray
The condensate collection tray made of ABS is designed for the correct condensate drain in every type of installations, ceiling or wall ones.

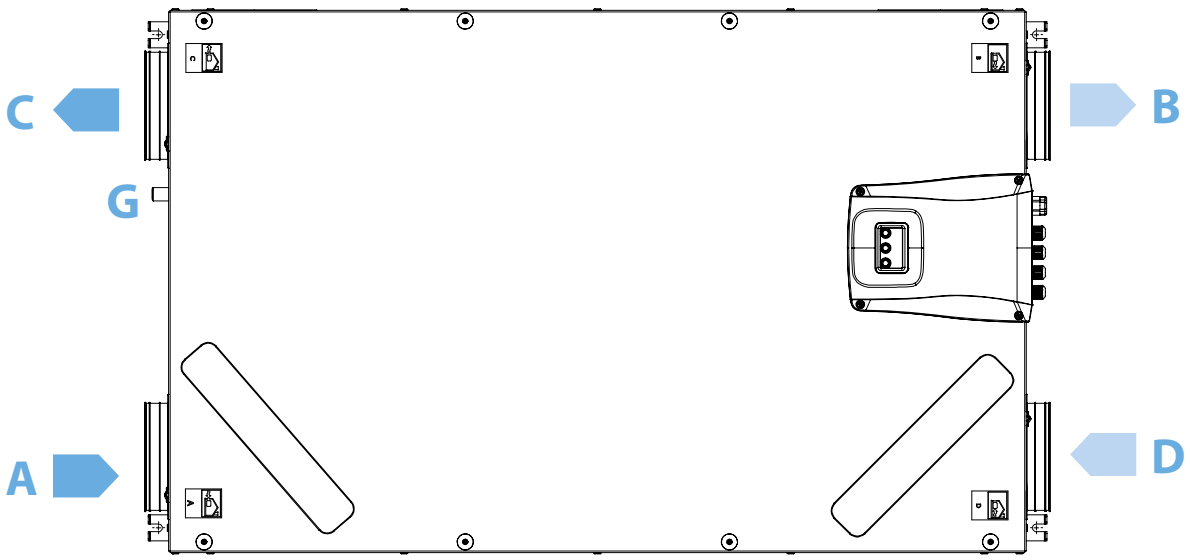
11 Main power board

Pro ENY-SHP-270 Version



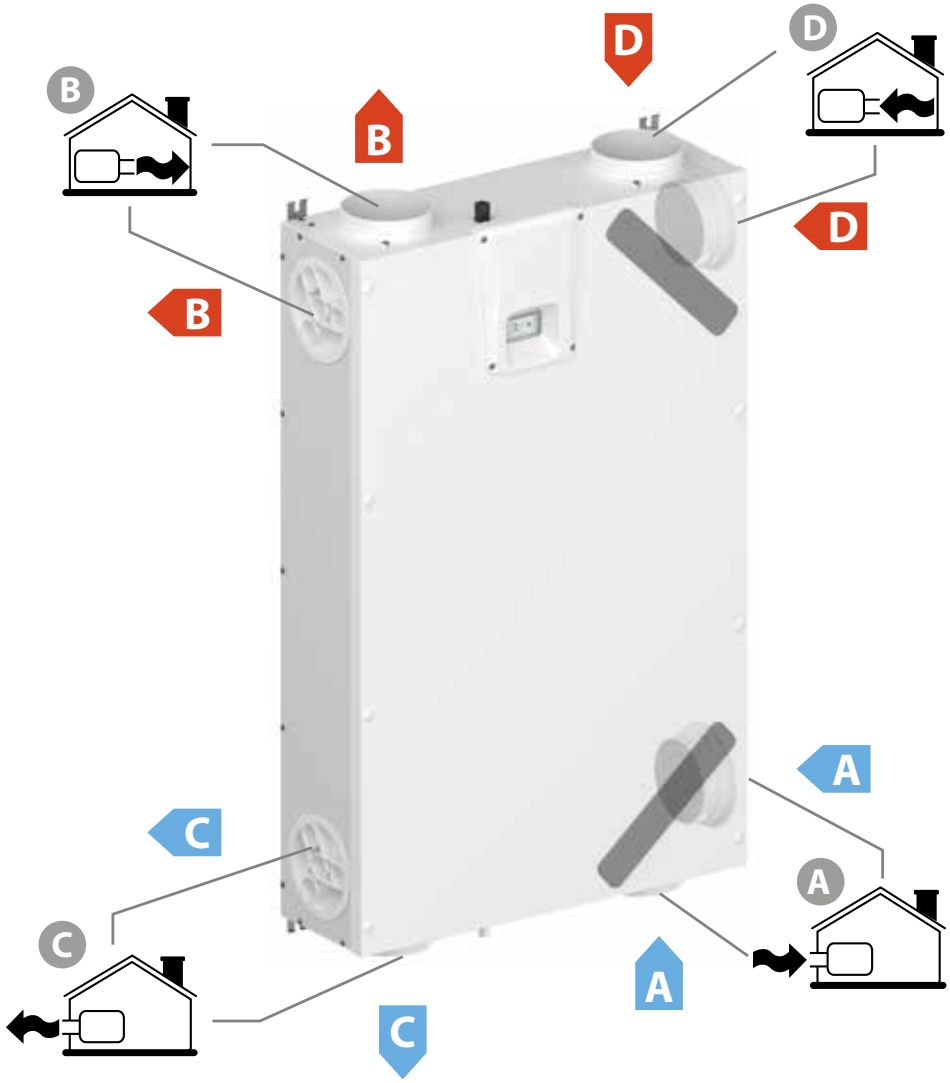
ENY-SHP-150 - Ceiling or Vertical Installation

The standard configuration of the unit provides that the air distribution connections are fitted on the short sides of the unit, with the extract air fan fitted on the short side nearest to the control panel.



VIEW FROM ABOVE

If necessary, it is possible to turn of 90° the position of one or more air connections to drive them on the long side near the unit.

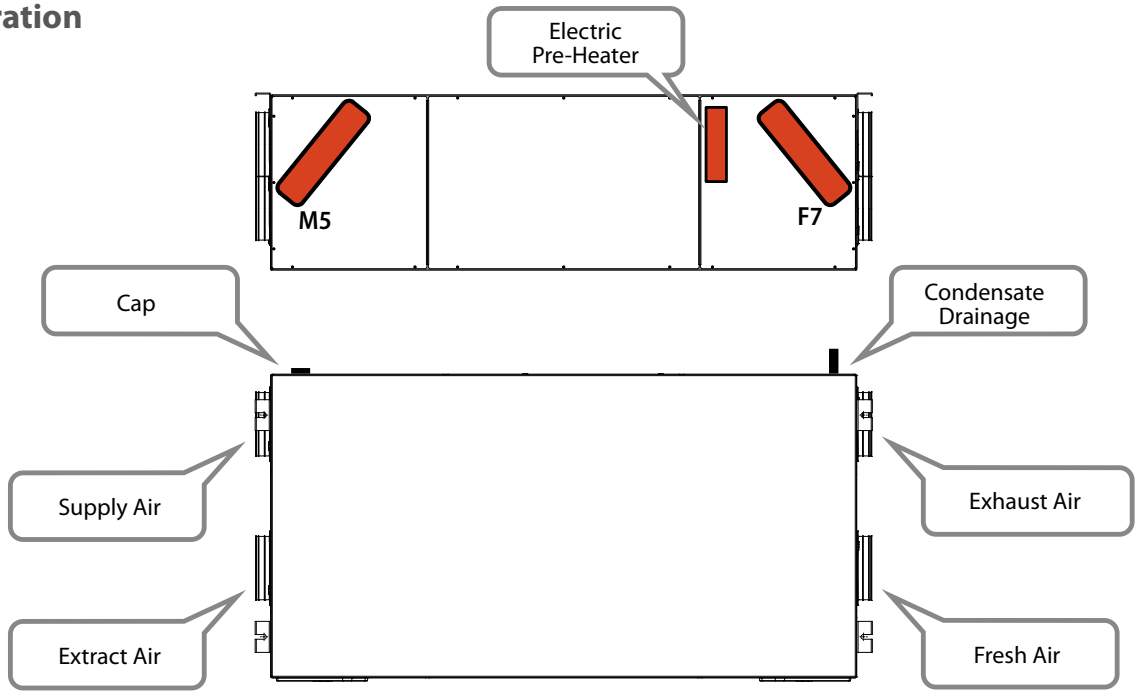


A = Fresh air
B = Supply air
C = Exhaust air
D = Extract air
G = Condensate drain

ENY-SHP-170 - Ceiling Version

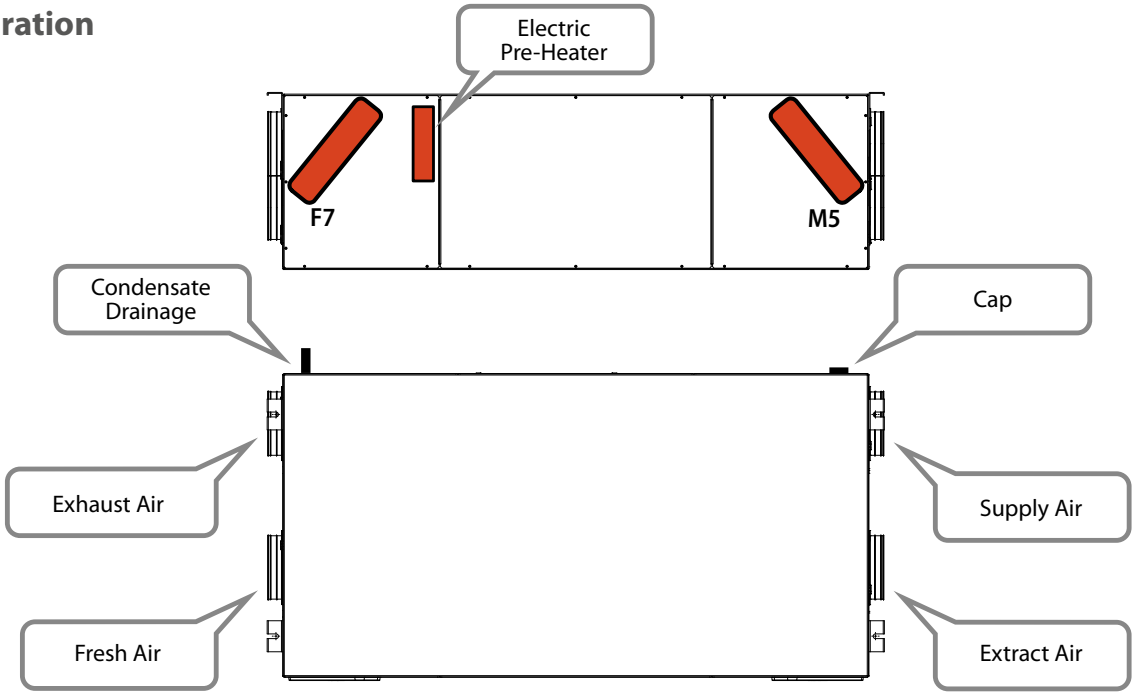
The standard units are configured with the supply fan on the front left side and the ePM_1 55% - F7 filter to the right, whereas the extracted air flow connection is located on the right side with the ePM_{10} 50% - M5 filter to the left. If necessary, it is possible to invert the flows by inverting the position of the filters, the position of the condensate drain, the position of the humidity probe and paying attention to the proper connection of the ducts to the machine; below is the standard configuration and the inverted flow configuration.

Default right side configuration



VIEW FROM ABOVE

Optional left side configuration

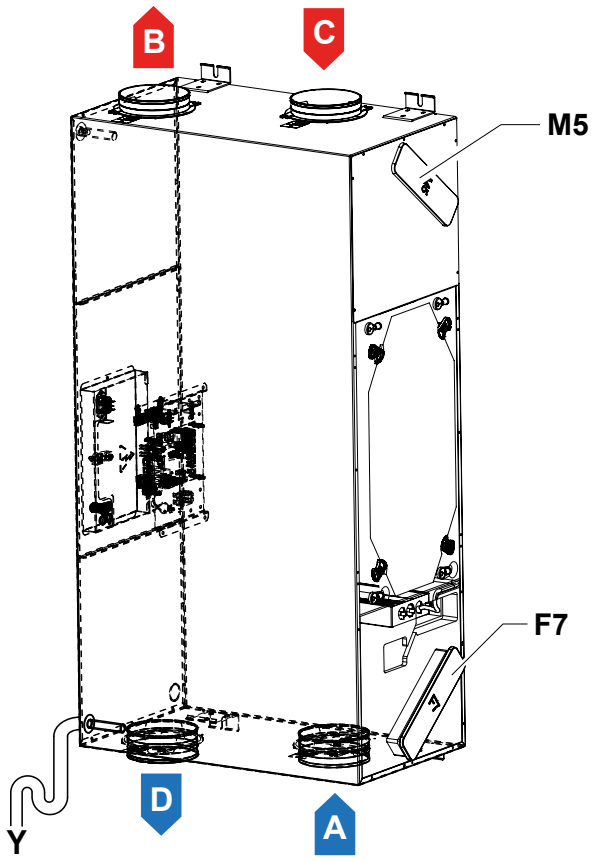


VIEW FROM ABOVE

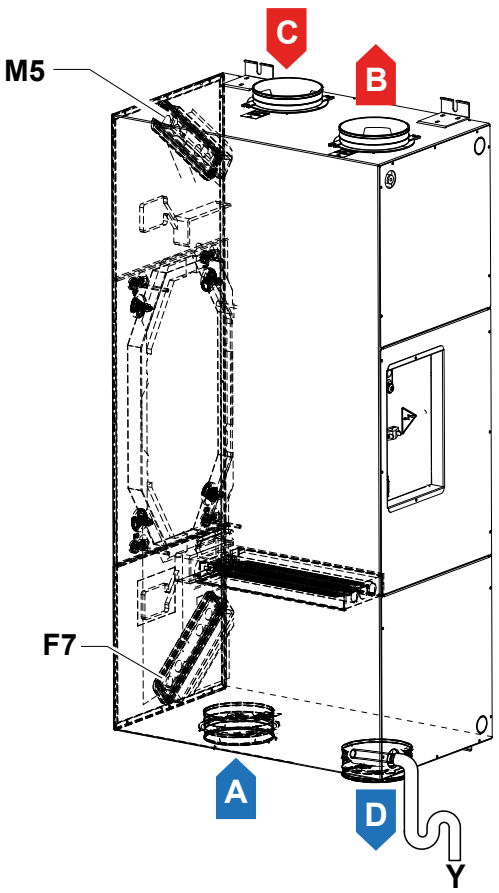
ENY-SHP-170 - Wall Version

By default, the units are configured in order to position the supply fan at the top, with the ePM_1 55% - F7 filter at the bottom, while the extraction flow connection is located at the bottom with the ePM_{10} 50% - M5 filter at the top. The flows can be inverted if necessary; below there is the standard configuration and the inverted flow configuration.

Standard initial configuration



Final inverted configuration



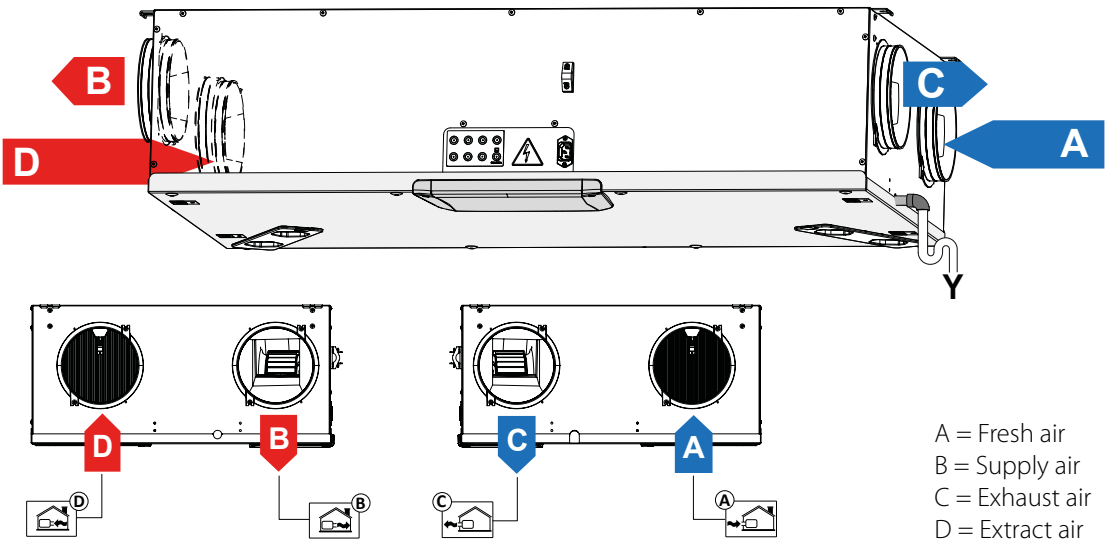
A = Fresh air
B = Supply air
C = Exhaust air
D = Extract air

ENY-SHP-270 - Ceiling Version

The standard units are configured with the supply fan on the front left side and the ePM$_1$ 55% - F7 filter to the right, whereas the extracted air flow connection is located on the right side with the ePM$_{10}$ 50% - M5 filter to the left.

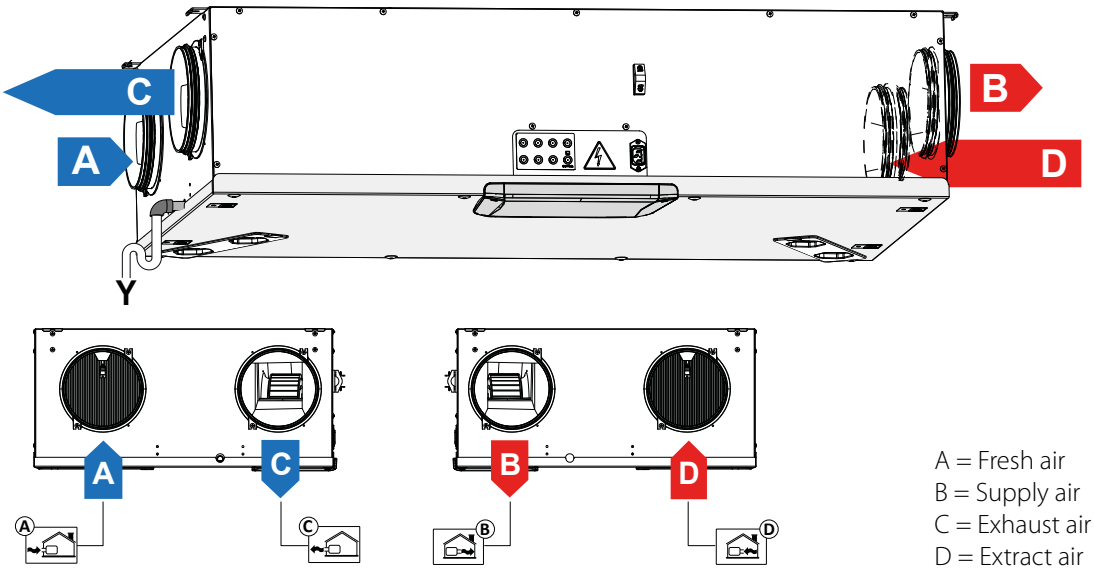
ATTENTION: It is not possible to invert the unit on site but it is possible to order the unit into the right configuration. Pay attention to the correct duct connection to the unit; as follows the standard configuration and the configuration with inverted flow rates are shown.

Horizontal left unit installation



A = Fresh air
B = Supply air
C = Exhaust air
D = Extract air

Horizontal right unit installation



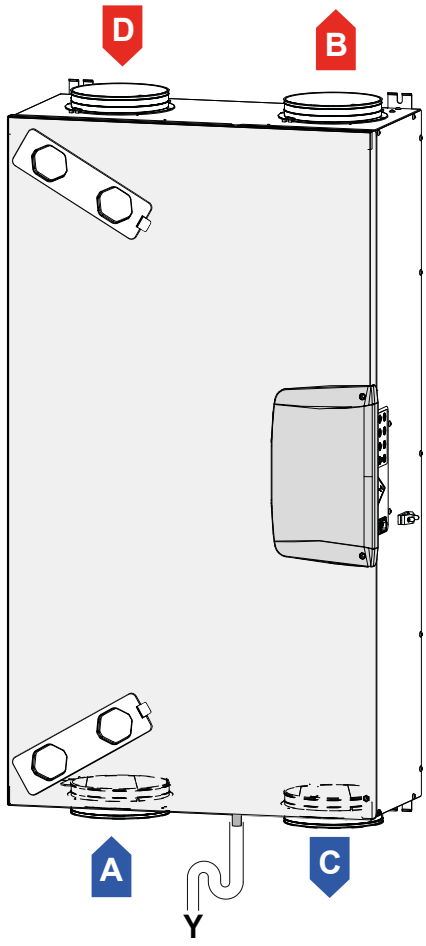
A = Fresh air
B = Supply air
C = Exhaust air
D = Extract air

ENY-SHP-270 - Wall Version

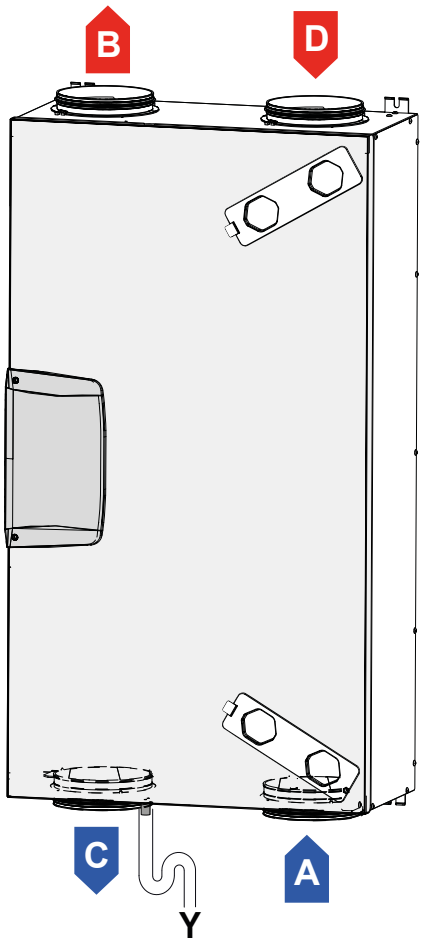
By default, the units are configured in order to position the supply fan at the top, with the ePM_1 55% - F7 filter at the bottom, while the extraction flow connection is located at the bottom with the ePM_{10} 50% - M5 filter at the top.

ATTENTION: It is not possible to invert the unit on site but it is possible to order the unit into the right configuration. Pay attention to the correct duct connection to the unit; as follows the standard configuration and the configuration with inverted flow rates are shown.

Vertical left unit installation

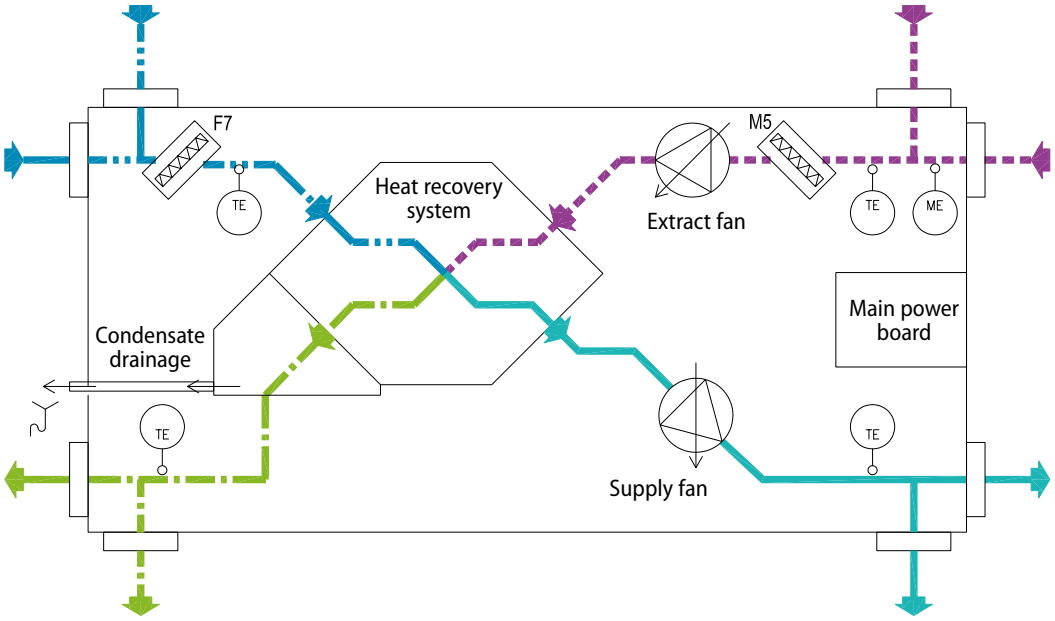


Vertical right unit installation

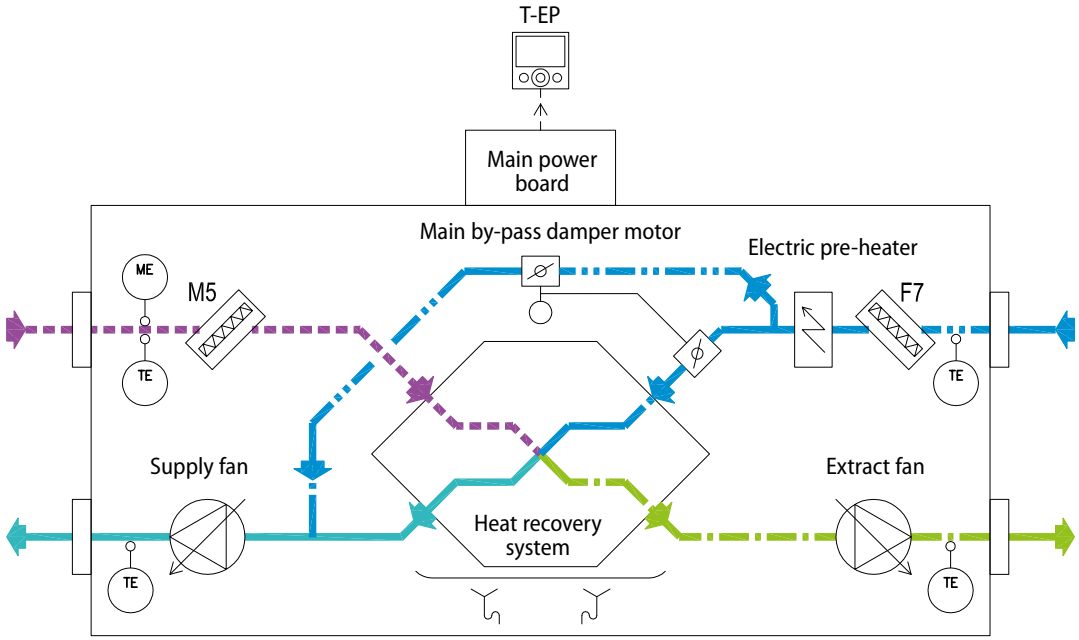


A = Fresh air
B = Supply air
C = Exhaust air
D = Extract air

ENY-SHP-150 DIAGRAM

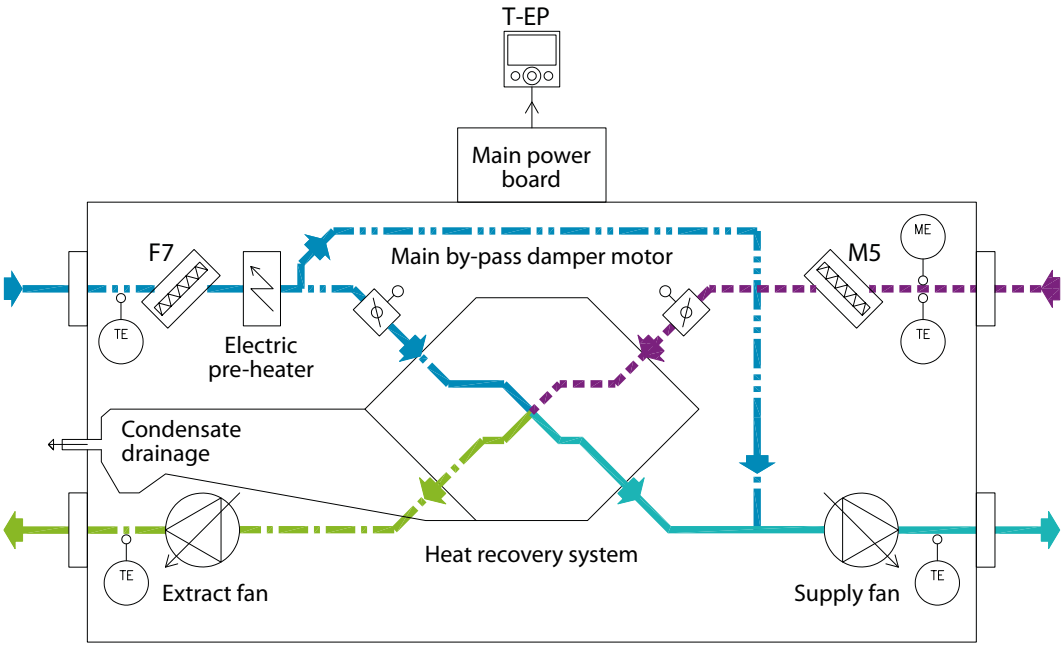


ENY-SHP-170 DIAGRAM



LEGEND			
	fresh air		remote control only for vertical unit
	supply air		electric pre-heater optional only required for cold climates
	extract air		temperature sensor
	exhaust air		humidity sensor central demand control
	micro pleat filter		condensate drainage

ENY-SHP-270 DIAGRAM

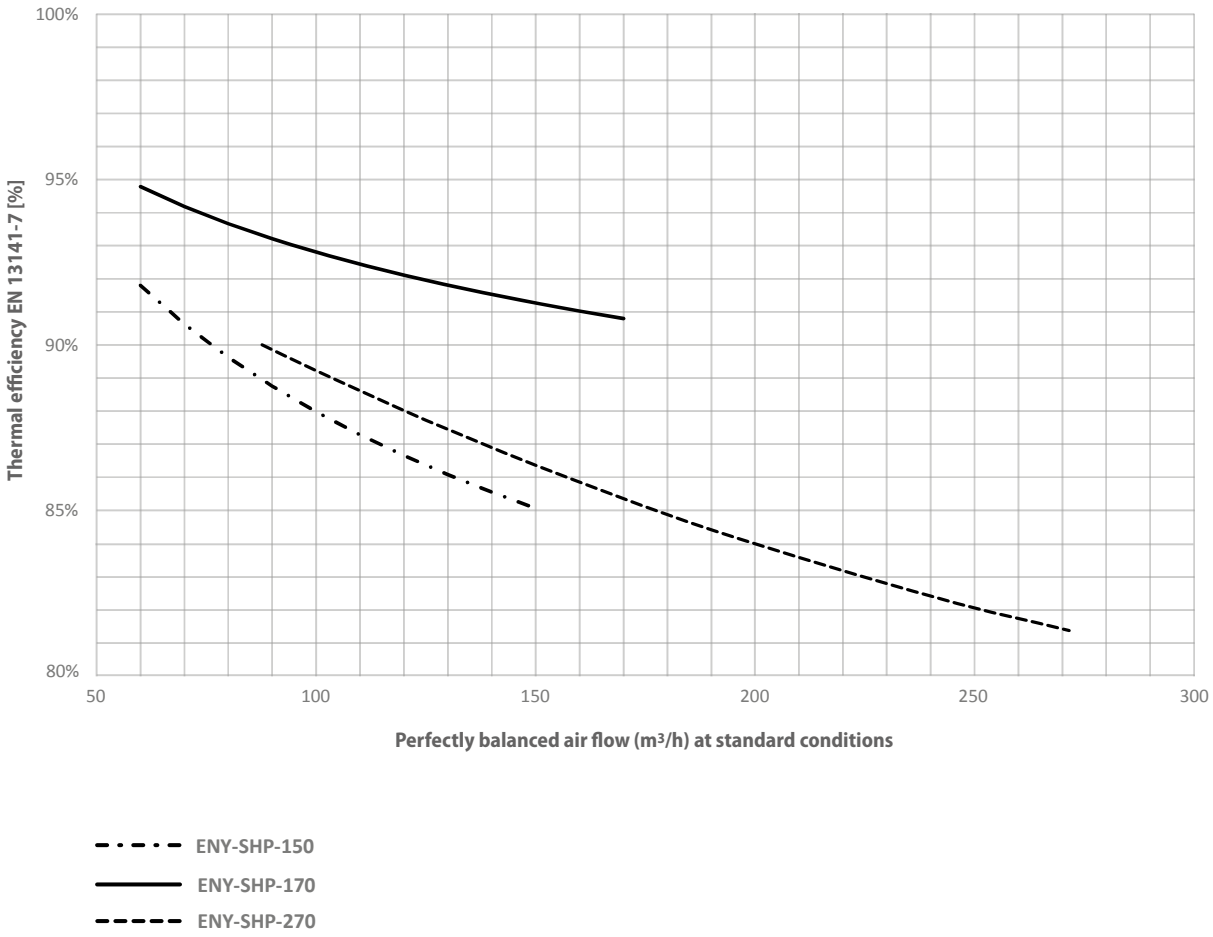


LEGEND			
	fresh air		remote control only for vertical unit
	supply air		electric pre-heater optional only required for cold climates
	extract air		temperature sensor
	exhaust air		humidity sensor central demand control
	micro pleat filter		condensate drainage

Thermal performance

The thermal performance was measured in compliance with Standard EN 13141-7, recommended by the European Commission documents enclosed in EU Regulation 1253-14.

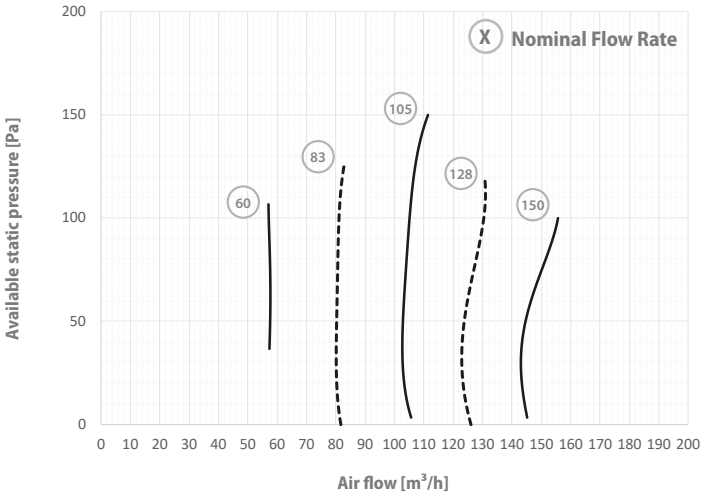
The conditions relating to the charts are the following:
- fresh air temperature = 7 °C
- indoor air temperature = 20 °C
- internal relative humidity = 45%



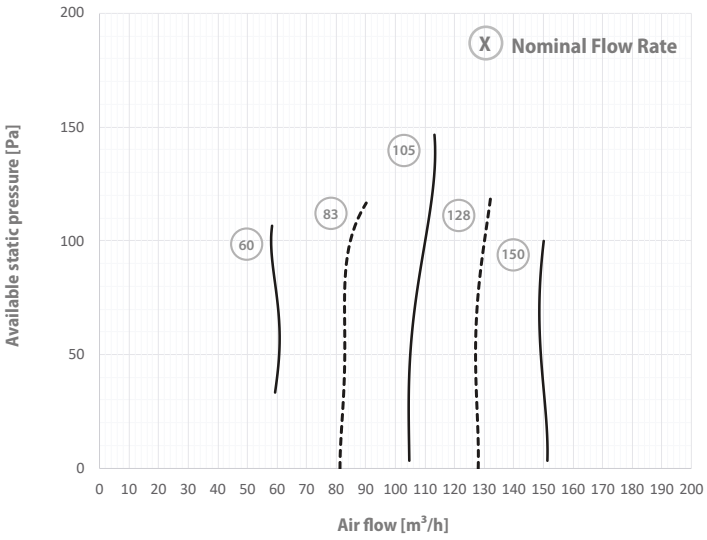
ENY-SHP-150

All mechanical efficiency curves are measured in standard air conditions (1 atm, 20 °C).
- Air flow: min. 60 m³/h, max. 150 m³/h.
- Curves with nominal flow rate 60, 83, 105, 128, 150 m³/h.

Supply air

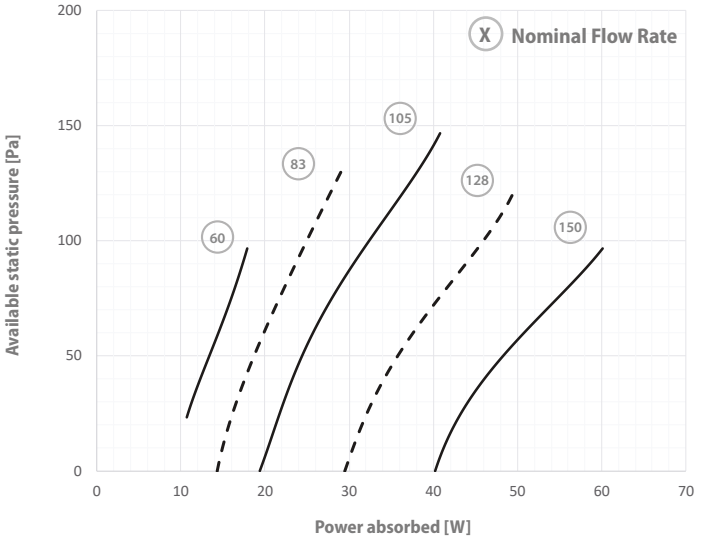


Extract air



Power absorbed

The curves apply in the event of balanced flow rates.

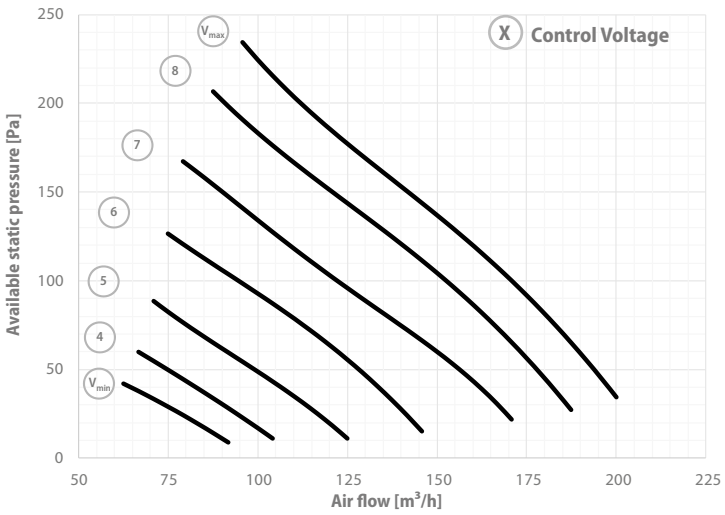


The minimum voltage indicated only refers to a minimum value that can be configured during the nominal flow rate calibration procedure.
In fact, during normal operation the motors can operate at lower voltages.

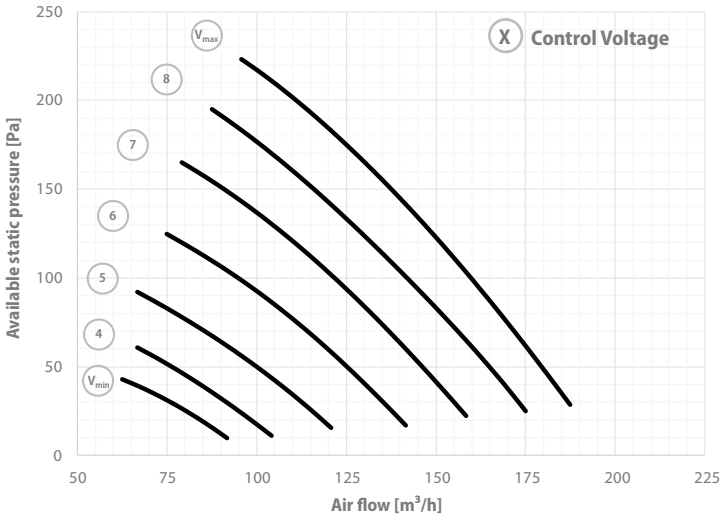
ENY-SHP-170

All mechanical efficiency curves are measured in standard air conditions (1 atm, 20 °C).
- Nominal flow rate range V_{max} = 8,9 V ; V_{min} = 3,0 V.
- Maximum current input I_{max} = 0,6 A a 10 V.

Supply air

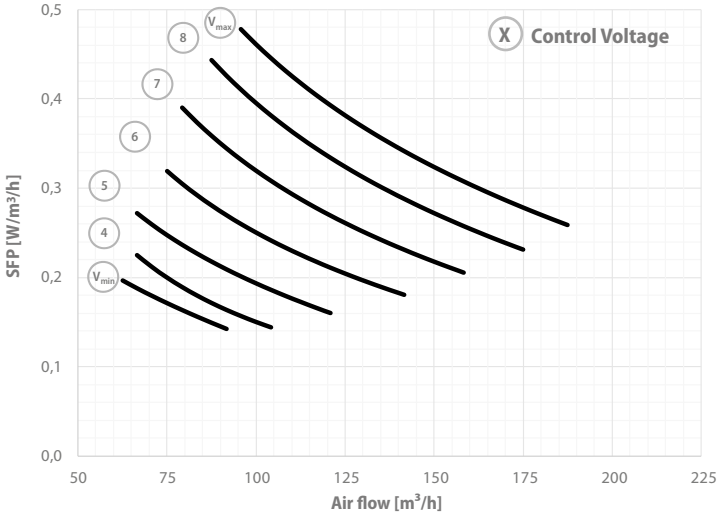


Extract air



Specific fan power - SFP

SFP includes the consumption of the fans and controls.
The curves apply in the event of balanced flow rates.

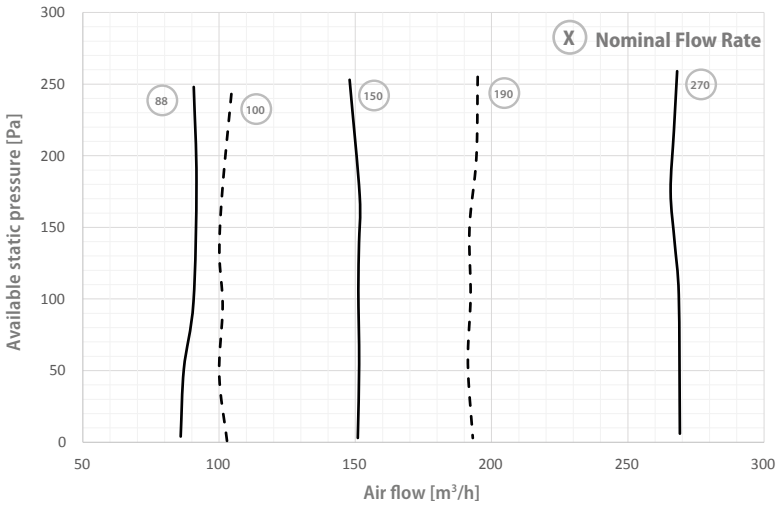


The minimum voltage indicated only refers to a minimum value that can be configured during the nominal flow rate calibration procedure.
In fact, during normal operation the motors can operate at lower voltages.

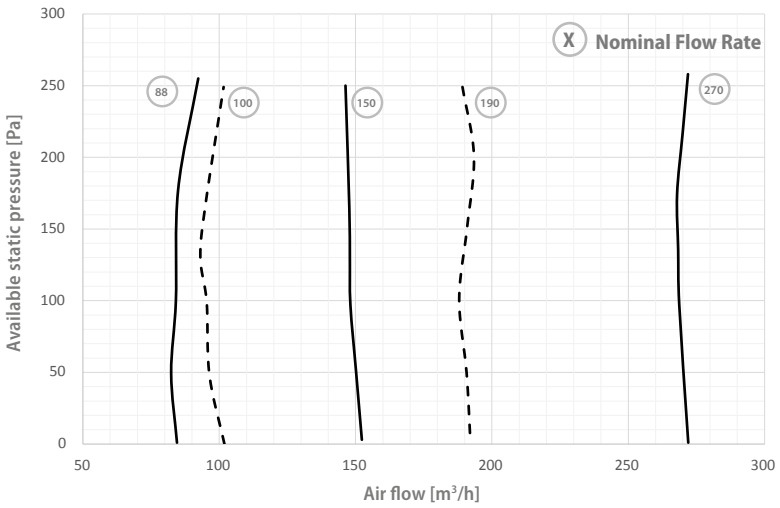
ENY-SHP-270

All mechanical efficiency curves are measured in standard air conditions (1 atm, 20 °C).
- Air flow: min. 88 m³/h, max. 270 m³/h.
- Curves with nominal flow rate 88, 100, 150, 190, 270 m³/h.

Supply air

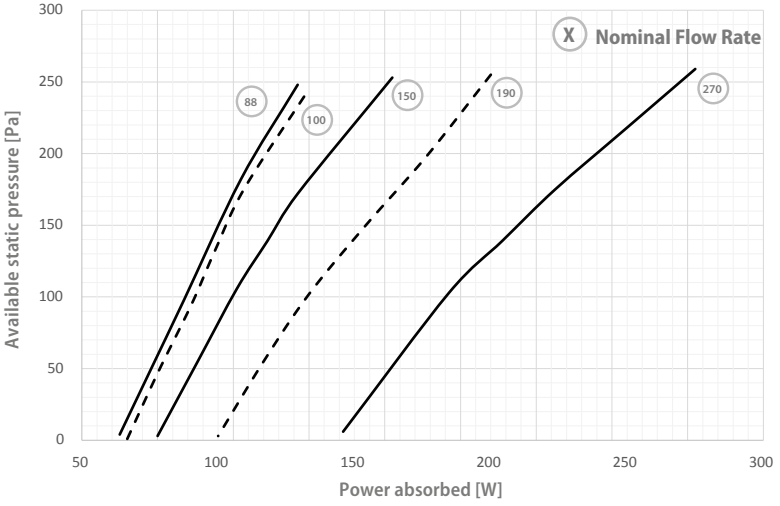


Extract air



Power absorbed

The curves apply in the event of balanced flow rates.



The minimum voltage indicated only refers to a minimum value that can be configured during the nominal flow rate calibration procedure.
In fact, during normal operation the motors can operate at lower voltages.

Energy Smart units are designed for controlled air exchange in residential ambiances and minimise heat dissipation due to ventilation.

As a result, the units must be sized according to the project air exchange flow rate (nominal flow rate Q_{SN}), based on the calculation rule applicable in the country where the unit is installed.

The calculation rule usually applied in Europe is Standard **DIN 1946-6**, therefore the nominal flow rates recommended are specified according to the area of the building heated directly or indirectly (table 5 of the standard). At the same time, the intake flow rate should not be less than the general extraction flow rate required (table 7 of the standard), while the **air exchange per person should be greater than or equal to 30 m³/h or, in the event of a particularly high density, greater than or equal to 20 m³/h**.

However, it is possible to use alternative calculation rules, in accordance with the national legislation in force or with the designer's policy.

After calculating Q_{SN}, it is the responsibility of the designer to assess the need of balancing the extraction flow (Q_{EN} = nominal extraction flow rate)*, as well as the value of the project static pressure, which must be indicated for each flow in order to counteract the pressure drops of the air ducts and distribution components (Δp_{SN}, Δp_{EN}).

Once the nominal flow rate/static pressure values have been defined, it is possible to use the pressure-flow rate diagrams to identify the most suitable model.

The model must be selected in order to enable the "Booster"/"Party" modes, which increase the nominal flow rate by 30%, resulting in an increase of the required static pressure.

Selection procedure:

1. The **maximum supply** and **maximum extraction flow rates** are defined as follows:
   a. $Q_{SN\_max} = 1.3\ Q_{SN}$
   b. $Q_{EN\_max} = 1.3\ Q_{EN}$

2. Quick selection procedure, through "fast selection table and diagrams"
   Identify the model whose declared maximum flow rate is just above the maximum value between Q_{SN_max} and Q_{EN_max}.

3. Check that the following maximum supply and extraction points are within the operating ranges of the fans of the selected unit:
   a. $(Q_{SN\_max}\ ;\ \Delta p_{SN\_max})$, where $\Delta p_{SN\_max} = 1.7\Delta p_{SN}$
   b. $(Q_{EN\_max}\ ;\ \Delta p_{EN\_max})$, where $\Delta p_{EN\_max} = 1.7\Delta p_{EN}$

4. In the event of a negative result, choose the larger model.

* An imbalance of ±10% between the supply flow and the extraction flow is usually accepted.

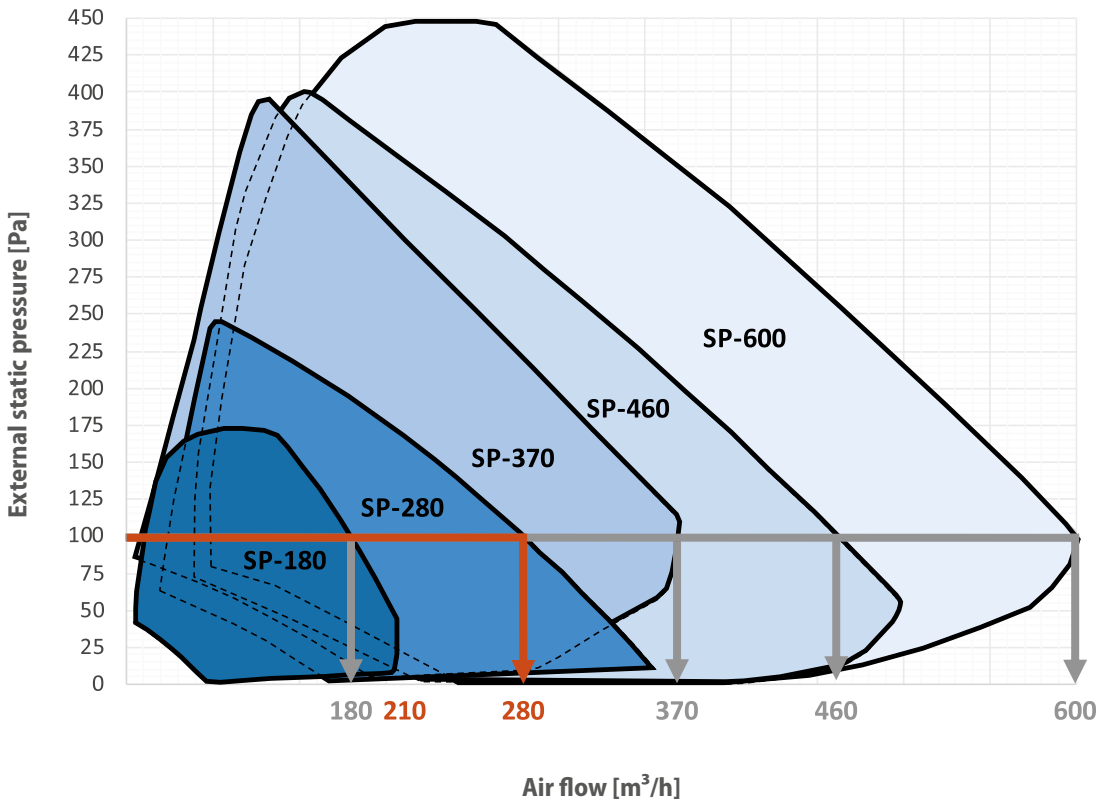
Example of model selection

Let's suppose a designer is interested in a vertical ENY-SP unit to be installed in a newly built flat.

Let's suppose that the designer calculates the following data, with the resulting identification of the maximum flows:

Supply flow	Extraction flow
Q_{SN} = 160 m³/h	Q_{EN} = 140 m³/h
Δp_{SN} = 90 Pa	Δp_{EN} = 80 Pa
Q_{SN_MAX} = 1.3 (160) ≈ 210 m³/h	Q_{EN_MAX} = 1.3 (140) ≈ 180 m³/h
Quick selection flow rate Q_{QS} = max (210; 180) = **210 m³/h**	

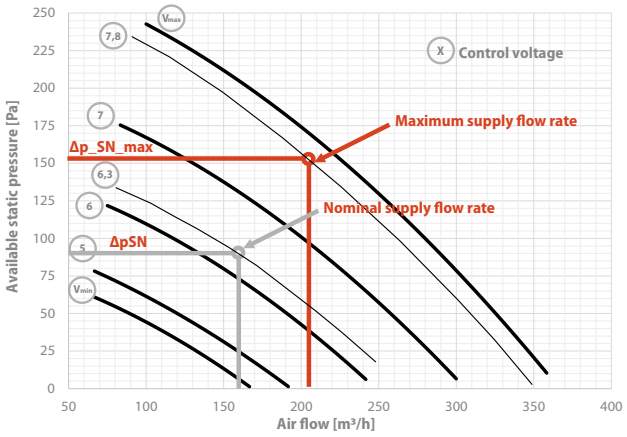
		ENY-SP-180	ENY-SP-280	ENY-SP-370	ENY-SP-460	ENY-SP-600
Q_{max}	[m³/h]	180	280	370	460	600
Q_{rif}	[m³/h]	130	200	260	320	420



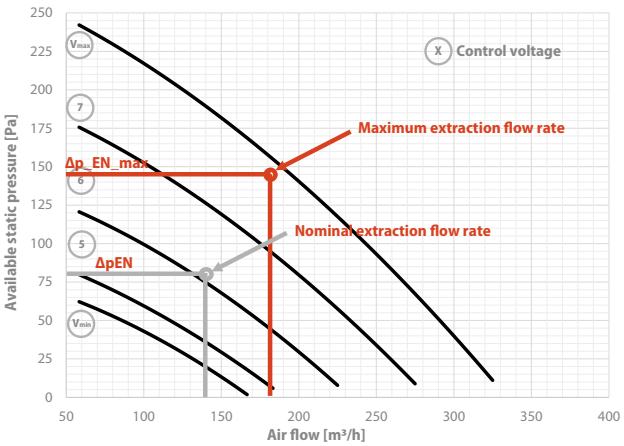
Model ENY-SP-280
is selected as the most suitable unit.

The following checks must in any case be performed in order to calculate the maximum power consumption of the unit:

Operating supply points control

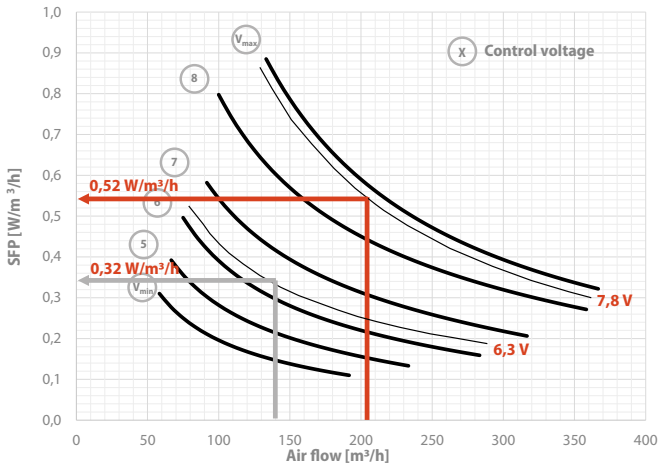


Operating extraction points control



The maximum supply and extraction capacity can be processed by the selected unit ENY-SP-280. In this case, the supply flow may be considered the main one because it is the one that involves the highest consumption between the two flows.

Power consumption



Hypothesis:
Unit without electric heater and set in the conservative case of flows balanced to the flow rate and available static pressure of the main flow.

$P_{max} = 110$ W
$P_{nom} = 45$ W

LEGEND of the selection procedure

Q_{SN}	Nominal supply flow rate	Q_{EN}	Nominal extraction flow rate
Δp_{SN}	Nominal supply external static pressure	Δp_{EN}	Nominal extraction external static pressure
Q_{SN_max}	Maximum supply flow rate	Q_{SN_max}	Maximum extraction flow rate
$\Delta p_{\_SN\_max}$	Maximum supply external static pressure	$\Delta p_{\_EN\_max}$	Maximum extraction external static pressure
P_{max}	Maximum electric power generated by the fans and controls in maximum flow and balanced flow conditions	P_{nom}	Electric power generated by the fans and controls in nominal flow and balanced flow conditions

All the ENERGY SMART vertical units and the ENY-SHP-170 and ENY-SHP-270 horizontal size are equipped with a heat recovery by-pass function, when it is beneficial to use the fresh air free-cooling (or free-heating) function.

The following setpoint temperatures must be set:

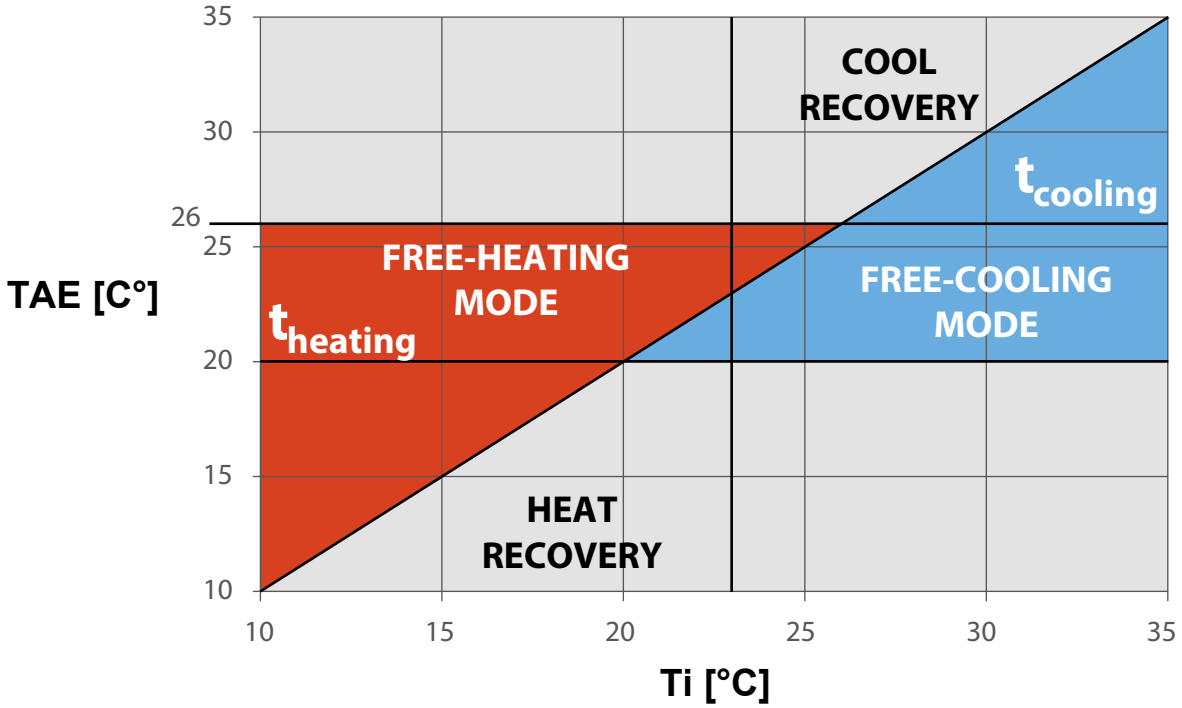
Internal heating system setpoint
• $t_{heating}$, usually set at 20 °C

Internal cooling system setpoint
• $t_{cooling}$, usually set at 26 °C

The temperatures entered must be determined by the installer in accordance with the Heating/Cooling system provided in the unit installation room.

Other temperatures are also defined:
• Ti, i.e. the internal temperature
• TAE, i.e. the external temperature

The following operating modes of the bypass damper (free heating/free cooling) are available:



If a geothermal water resource is available, a Dip Switch configuration can be used to control an on-off valve of a geothermal water coil, supplied by a third party and installed in a fresh air pre-treatment position. The geothermal water coil can be used in summer for pre-cooling fresh air, thus enhancing the standard free-cooling mode.

In fact, thanks to the pre-treatment, the cooled fresh air can be used in free-cooling mode even in warmer outdoor conditions than those normally used to operate by-pass dampers. In winter, the geothermal coil can be used as a hydronic antifreeze system, which ensures considerable energy savings compared to electrical systems.

Instead for the size ENY-SHP-150 the free-cooling is a manual function, that can be activated only with the optional accessory T-EP. For this size this function works only for the activation of supply air flow and for the deactivation of the extract air flow. In the free-cooling mode it is advisable to open a roof window in a living room.

T-EP control

The Energy Smart vertical units and the ENY-SHP-170 and ENY-SHP-270 horizontal sizes are equipped as standard with a T-EP control panel. For the size ENY-SHP-150 such an interface is an accessory instead. The use of the interface is very intuitive and thanks to the icons on the screen, the two keys and the touchpad, it is possible to display and change the operating status of the unit, display the values read by the temperature sensors and humidity sensor (if any), and display any alarm. The use of the interface is simplified by the presence of two sub-menus:

- **User Settings Menu** where the user can select the operating mode and set the clock
- **Technical Settings Menu** where the installer can calibrate the flow rates, change the unit operating parameters and monitor the operating status.

The **user settings menu** is used to select the following unit operating modes:

- **Manual Mode**: customised selection of desired air flow rate in manual mode:
  - 100% - Nominal ventilation (standard)
  - 70% - Reduced ventilation (nighttime)
  - 45% - humidity control for high humidity rate environments
  - 25% - humidity control for low humidity rate environments

  When this function is active on the main screen, the corresponding icon
- **Party Mode**: timed function, active for 3 hours after activation, in which the nominal speed is increased by 30%. When this function is active on the main screen, the icon will also be active.
- **Holiday Mode**: anti-mould function with the fans at minimum speed. When this function is active on the main screen, the icon
- **Automatic Mode**: speed controlled by means of an automatic control cycle relating to ambient instantaneous humidity and CO_2 variations. This mode is only available for the Pro version or for units equipped with an air quality sensor (humidity or CO_2). When this function is active on the main screen, the icon AUTO will also be active.

The user menu is also used to set the clock and perform weekly programming.

The **technical settings menu** is used to:
- Confirm or edit the operating parameters.
- Monitor the operating conditions.
- Set the nominal calibration speed of the fans.
- Enter and select the weekly program available to the user.

The Energy Smart Units not equipped with antifreeze electric heater, come with an **antifreeze function**, which, with a preventive logic, automatically sets the supply fan at minimum for 10 minutes every hour when the fresh air drops below - 5 °C. Also, if the temperature drops below -10° C, the unit stops automatically and a "**FROST**" alarm appears on the display. When the alarm is active, the unit switches off and restarts automatically when the critical climatic condition disappears. The "Frost" alert remains until the unit is switched off and back on. For units with electric heater, both integrated and installed as an external accessory, the activation of the electric heater is signalled on the T-EP with the activation of the icon .

For more information about the electric heater intervention logic, please refer to the dedicated chapters (p. 67-68).

Energy Smart units are equipped with a **visual warning signal when the filter needs replacing**. The signal is displayed via an icon on the main screen of the T-EP panel.

When the filters need replacing, the icon will turn on. Once the filters have been replaced, it is recommended to follow the warning icon removal procedure in order to reset the next countdown.

The T-EP control can be used to inhibit one or several functions among Party, Holiday, Manual, AUTO, machine shutdown ("OFF"), clock, weekly programming. When the **lock function** is active, the icon will appear on the auxiliary function lock screen and the locked functions will be disabled on the user screens.

Through 3 different dry contacts, the electronic board is also used to control:

- the **remote ON/OFF function** (contact C1-C1 closed = unit OFF)

- the "**Booster**" mode (contact C2-C2 closed="Booster" active) that, as with the "Party mode", determines a 30% increase in fan speed with respect to the nominal speed for the next 3 hours. If the function is active, the corresponding icon bOOSt on the T-EP will also be active

- the "fireplace" function or the "boiler" function (contact C3-C3). If the unit is interfaced with a negative pressure ambient pressure switch and is set in the DIP-SWITCH configuration recommended in presence of a natural draught chimney, the unit is turned off automatically when the fireplace is lit. This occurs in order to prevent the ambient pressure induced by the action of the dual flow ventilation unit from counteracting the natural draught of the fireplace and releasing smoke into the room. If the unit is interfaced with a remote switch and is set in the DIPSWITCH configuration recommended in presence of an atmospheric boiler, the unit is forced into a strong imbalance supply mode in order to facilitate ignition of the boiler. The mode remains active as long as the switch stays in the activation position.

Refer to the Installation Manual for more information.

Interfacing with Modbus protocol

The machines are equipped with a Modbus communication port that enables the units to be included in a supervisory network, which can be consulted from an operating control unit for their remote tracking, control and monitoring.
Thanks to the interfacing with the Modbus protocol, finally, the Energy Smart network can be integrated into the more complex context of a global Building Management System. The Technical Manual for interfacing Energy Smart units with Modbus protocol is available on request.

ENY-SHP-150 Control panel

The **Energy Smart ENY-SHP-150** unit is equipped with a built-in display of the control fitted on the unit. The control is easy to use and lets the reset of filter change timer and having access to the technical menu of the following functions:

- To do the automatic fan calibration during the installation.
- To set the filter change time during the installation.
- To set the automatic operating mode with the use of the built-in humidity probe.
- To activate the external modulating electric heater or relay for the ON/OFF valves with the antifreeze pre-heating function.
- To set the dry contact terminals and the digital signal during the installation.
- To visualize the operating parameters.
- To visualize the alarm and filter change notifications.
- To activate further ventilation modes with the use of the T-EP Accessory.

Energy Smart | CENTRALISED CONTROL

Generally, Energy Smart units operate at a constant flow rate, which can be set at a percentage of the nominal value configured during installation.

A variable flow mode (AUTO) is also available, according to a control based on the ambient air quality index reading (humidity or CO_2). This way, it is the minimum unit flow rate to be required to obtain the necessary air quality, thus improving internal comfort and energy consumption.

The central air quality sensors can be placed directly in the room or in the air extraction ducts.

Since in any case the unit electronics are designed to control only one central sensor, the control strategy is called "Centralised Control".

Two types of measurements can be selected when using the central sensor:
- Internal relative humidity, i.e. a measurement of indoor air salubrity compared to the risk of mould proliferation. All units are equipped with a humidity sensor located in the extracted air duct (for standard units, the humidity sensor is available as an accessory).
- Concentration of carbon dioxide, i.e. a measurement of the level of internal occupation. The CO_2 sensor, not supplied, is a 0-10V type commonly available on the market, to be installed directly inside the occupied room.

Regardless of the type selected, the AUTO mode is only available if the sensor is physically connected to the main control board. If the CO_2 sensor and the humidity sensor are simultaneously connected to the main electronic board, the AUTO mode will refer to the measurements from the CO_2 sensor.

When installing in regions with particularly harsh climatic conditions, the units must be equipped with a pre-heating coil to prevent freezing phenomena on the discharge air outlet side. The electric heater can be installed on the fresh air intake section, see the next dedicated paragraph, or, only for the units from size 170 to size 600, the version with electric heater fitted on the unit (E version) is available. In this case the electric heater is fitted within the ventilation unit, near the fresh air inlet section.

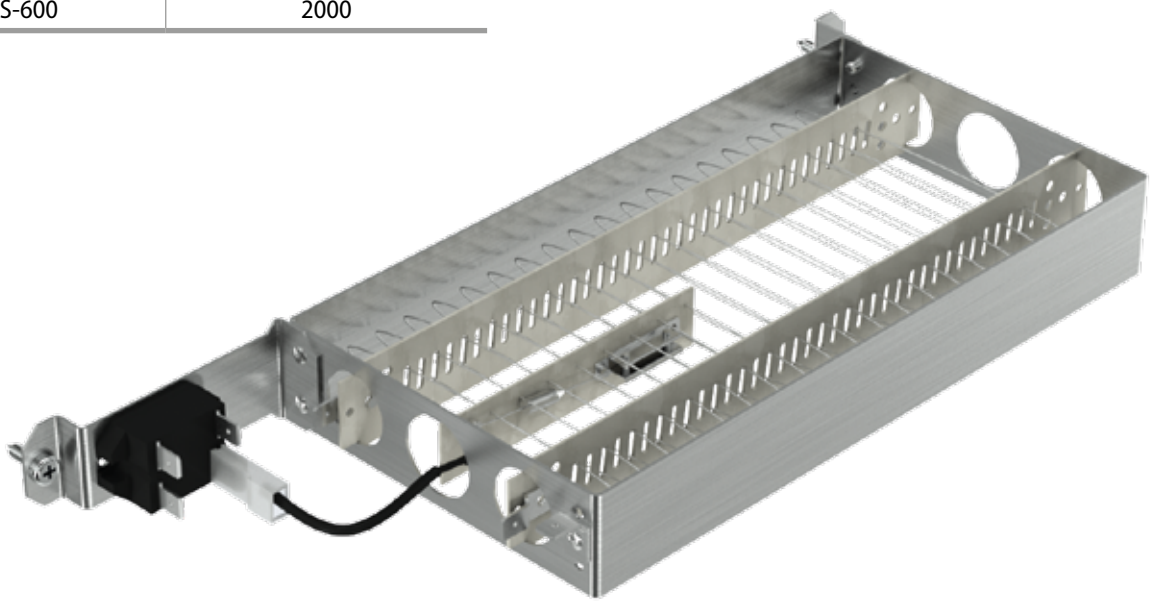
If the fresh air temperature drops below the default limit, resulting in the risk of the counterflow heat exchanger freezing, the electric heater is switched on and the thermal power is adjusted continuously in order to maintain the discharge air temperature within the desired range.

The electric heater is sized so as to ensure internal thermal comfort up to an outside temperature of -10 °C and is designed to prevent the effects of frost while the temperature remains above -15 °C. The units are kept in normal operating conditions until the supply air temperature drops below 5 °C or until the outside temperature drops below -20 °C; when these limits are exceeded, the machine is switched off for antifreeze emergency reasons ("Frost" alarm).

The electric heater is fitted with a safety thermostat that turns off the unit in case of uncontrolled heating. In case the electric heater does not start up, instead, the unit will turn off if the supply air temperature falls below 5 °C.

ENY-SP and ENY-S vertical version	
Model	**W**
ENY-SP-180	500
ENY-SP-280	900
ENY-SP-370	1250
ENY-SP-460	1600
ENY-SP-600	2000
ENY-S-170	500
ENY-S-270	900
ENY-S-360	1250
ENY-S-460	1600
ENY-S-600	2000

ENY-SHP horizontal and vertical version	
Model	**W**
ENY-SHP-170	600
ENY-SHP-270	



Circular electric external duct pre-heater

If a pre-heating coil is required only after the unit has been purchased, a circular electric heater accessory for duct application is available for each unit. The electric heater technology has been selected and developed for typical HVAC applications.

Armoured electric duct heaters have been used (single phase 230Vac - 50Hz power supply). The electric heater is equipped with all the required safety measures and is regulated through a modulated pulse width signal generated by the central PCB in response to operation of the PID controller.

ENY-SP and ENY-S vertical version

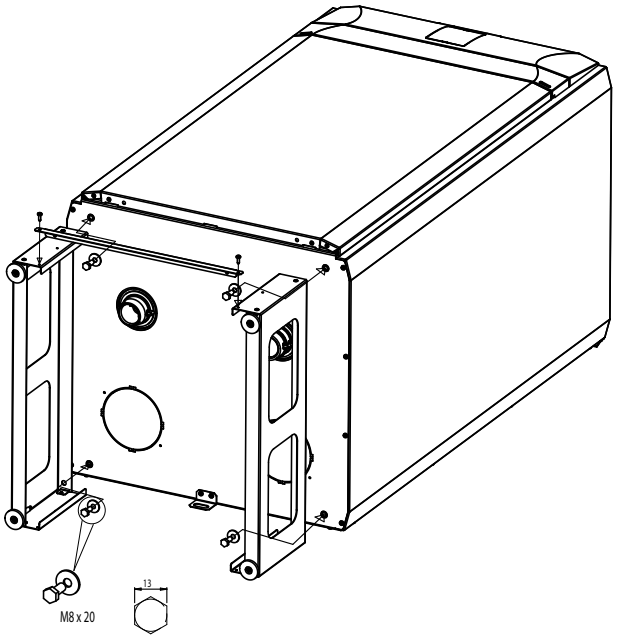
Model	Type	Code	W
ENY-SP-180	ES-E-600	9021105	600
ENY-SP-280	ES-E-900	9021106	900
ENY-SP-370	ES-E-1250	9021107	1250
ENY-SP-460	ES-E-1600	9021108	1600
ENY-SP-600	ES-E-2100	9021119	2100
ENY-S-170	ES-E-600	9021105	600
ENY-S-270	ES-E-900	9021106	900
ENY-S-360	ES-E-1250	9021107	1250
ENY-S-460	ES-E-1600	9021108	1600
ENY-S-600	ES-E-2100	9021119	2100

ENY-SP and ENY-S horizontal and vertical version

Model	Sigla	Codice	W
ENY-SHP-150	ES-E-600	9021105	600
ENY-SHP-170			
ENY-SHP-270	ES-E-900	9021106	900

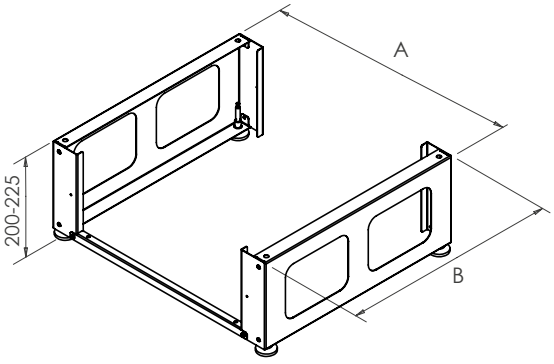
Feet

Feet screwed in and lifting structure. The height of the feet can be adjusted from 200 to 225 mm.



ENY-SP ed ENY-S vertical version

Model	Type	Code	A	B
ENY-SP-180	ES-P-180-270	9021312	523	534
ENY-SP-280	ES-P-280-360	9021313	523	584
ENY-SP-370	ES-P-370-600	9021314	583	634
ENY-SP-460	ES-P-370-600	9021314	583	634
ENY-SP-600	ES-P-370-600	9021314	583	634
ENY-S-170	ES-P-170	9021311	523	549
ENY-S-270	ES-P-180-270	9021312	523	534
ENY-S-360	ES-P-280-360	9021313	523	584
ENY-S-460	ES-P-370-600	9021314	583	634
ENY-S-600	ES-P-370-600	9021314	583	634

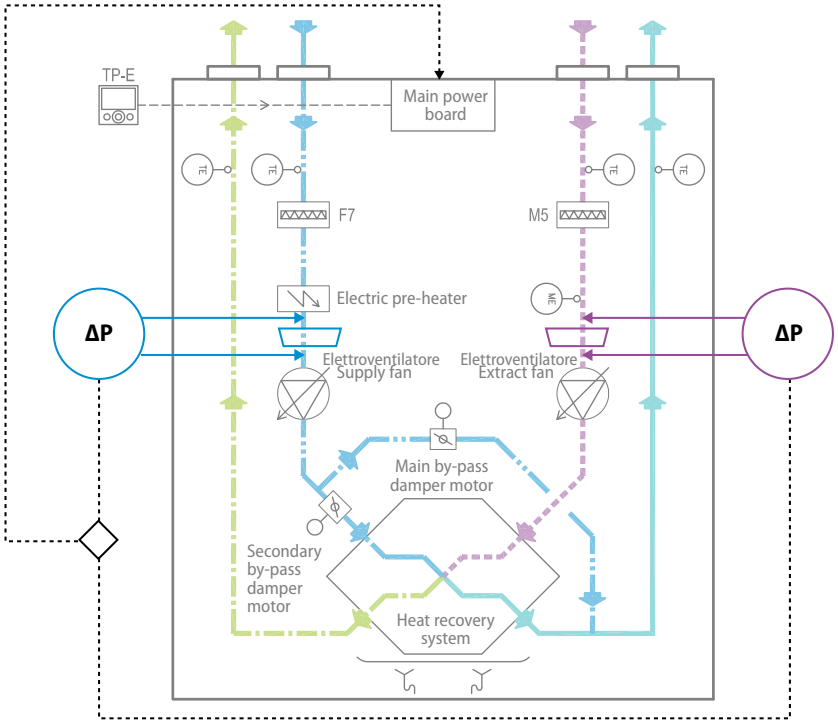


Pressure sensor for automatic control of ES-DP flow rates

(standard on ENY-SP, not available on ENY-SHP units)

ENY-S units can be equipped with an automatic flow rate control device. The calibration system of standard units consists in a manual balancing operation performed by the responsible technician, using a digital pressure gauge. After the first calibration, the unit control board is programmed to maintain the nominal and partial flow rate close to the desired value through fan speed control (indirect flow rate control method). Alternatively, an advanced control strategy is envisaged, enabling automatic flow rate calibration and maintaining it thanks to the action of differential pressure switches connected to the suction nozzles of the centrifugal fans. The pressure drop measured by this type of sensors is directly related to the flow rate of the fans, so that it can be considered as a direct flow rate measurement. If the units are equipped with accessory transmitters, the main control board detects the actual system flow rates at all times, making it react automatically to maintain the desired actual values.

Type	Code
ES-DP	9021200



Automatic control system
operating diagram

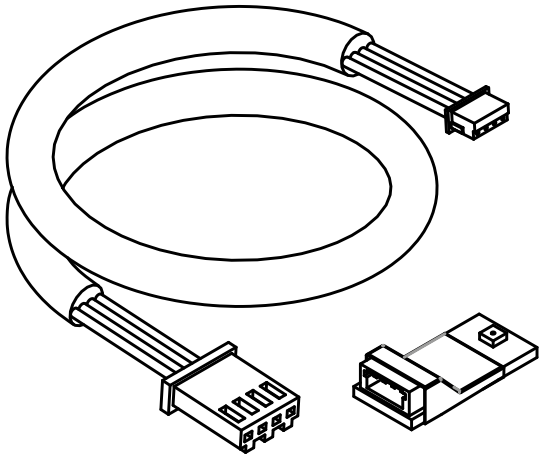
Below are the main benefits of installing an automatic flow rate control system on the units:

Topic	Benefits
The flow rate calibration is much easier	The system simply asks for the desired flow rate value and configures it automatically without any further intervention. No pressure gauges are required.
The flow rate is not affected by filter clogging	Without the automatic flow rate control system, failure to periodically replace the filters leads to an inevitable reduction in the flow rate that the unit manages to deliver. The system with direct measurement of the exchange flow rate through pressure transducers ensures that the flow rate stays constant regardless of the extent of filter clogging. The filters should however be replaced regularly according to the rules recommended in this brochure (see "Conformity Table with Regulations EU 1253/14 and EU 1254/14"), since in any case filter clogging leads to a significant increase in the electric power consumption of the unit and does not guarantee the best hygienic standards.

The automatic flow rate control system is compatible with the "AUTO" variable flow modes.

Capacitive humidity sensor

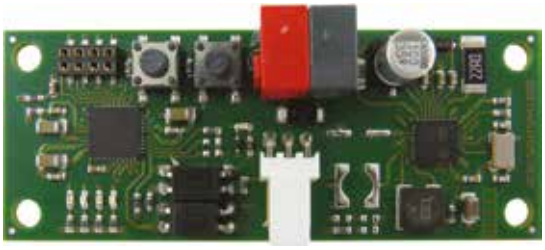
(standard on ENY-SP)



Type	Code
ES-SU	9021218

KNX Interface kit

The Energy Smart units can be monitored and controlled by a Modbus system and also by a KNX supervisory system. The Energy Smart Recovery Unit connection to the Konnex standard of building automatization is possible with the KNX interface board, available as accessory.
Such a board is supplied with the connecting cable for the same interface board to the electronic board of Energy Smart unit and the support for fastening during a speedy and easy installation within the ventilation unit.



Type	Code
KNX-RVU	9021109

Check availability for ENY-SHP-270 models.

Sabiana S.p.A. offers a wide range of accessories designed for air distribution in controlled mechanical heat recovery ventilation systems, used to ventilate small residential and commercial buildings, to install an air distribution network in the various environments and meet any need.

The system consists of several components:

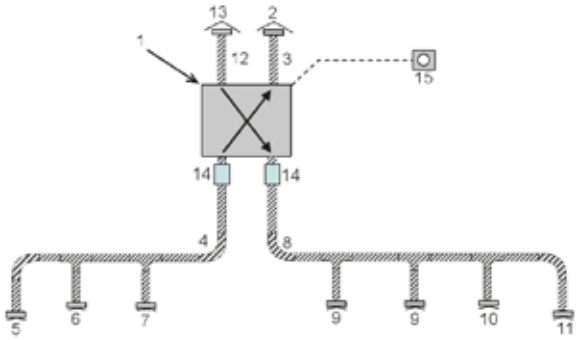
- Double wall, circular and semicircular flexible duct made of high density polyethylene (PE), smooth on the inside, suitable for false ceiling, wall and underfloor installation. On the internal surface, the ducts have an antibacterial and antistatic layer to ensure constant air cleaning. The flexible ducts are also available without the antibacterial and antistatic layer.
- Moulded PE accessories, including 90° horizontal and vertical bends, connectors, bracket elements, grid adapters and inlet and outlet valves complete the range of products.

The Sabiana Energy Smart unit is connected to the universal distribution boxes through insulated ducts and silencers, while the flexible duct is used to supply fresh air in the premises and to extract the stale and damp air from bathrooms and kitchens. To complete the system, there is a range of accessories, connectors, fasteners, and bends, which ensure sealed connections without using adhesive tape or glue, to fasten the flexible duct to the floor or ceiling, to make 90° horizontal or vertical bends with radius of curvature below that of the duct.

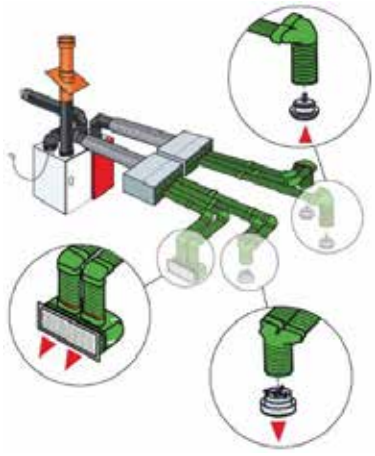
The volume of air going through each duct is determined by the flow rate regulators installed on the outlets of the universal distribution boxes. On request, Sabiana provides a free configurator for defining the number of rings to be removed from the flow rate regulators.

The Sabiana configurator requires the following information:

1. Air flow rate of each circuit;
2. Type of flexible duct;
3. Length of duct paths;
4. Number and type of bends (horizontal or vertical).



Traditional system



Sabiana radial system with flexible ducts and universal distribution boxes

The Sabiana solution:
- System with radial design for lower pressure drops compared to traditional systems
- Mechanical connection and seal
- Installation:
  - Flexible duct made of technical plastic material delivered in rolls, fast and easy to cut, which ensures fast installation even in confined spaces and in the presence of architectural obstacles.
  - Fast sealed mechanical connections, slip-proof even in the passage from the flexible duct to the rigid elements.
- Fast, high quality and accurate installation, using the configurator and air flow restrictor rings
- The universal distribution box insulation reduces noise transfer towards and between rooms
- Fast and easy maintenance and cleaning
- Compatibility between the systems to alternate the various types of ducts available in the various diameters and system sizes to reduce plant costs
- Reduced dimensions of Sabiana semioval ducts for application in walls or under the floor
- Certified antistatic and antibacterial properties
- No release of harmful substances or compounds into the air distributed in the rooms
- Ecological: all plastic materials used to make the air distribution network are completely recyclable

CARACTERISTICS ACCORDING TO TÜV SÜD TAK 01-2013	
Working temperature	from -20 °C to +60 °C
Leakage class	D class for ducts, distribution box accessories
Testing pressure	+2.000 Pa/ -2.000 Pa
Reaction to fire	E class according to EN 13501-1
Resistance to the external pressure	max. 200 mm of concrete
Microbiologic resistance	99.9% of the bacterial count eliminated during testing
Foodstuff compatible	no harmful substances released into the air during testing
Antistatic	Resistance $<10^{12}$ Ohm
Ordinary maintenance (Cleanliness)	according to the envisaged method by TÜV SÜD – TAK 01-2013 mark
Means / Use	Air duct system / Ventilation

Pressure drops

For each accessory, the pressure drops of each component are shown as the flow rate varies.

For some of them, a coefficient Z is used to calculate the contribution of the concentrated pressure drop related to the component form factor

Pressure drop (Pa) = 0.5 x R x Z x V^2
R = air density (1.2 kg/m^3)
V = air speed (m/s)

Consider that the pressure drop values are rounded to the minimum value of 1 Pa

Example of installation with circular ducts

Example of floor/wall/ceiling installation with semicircular ducts

Guide to choosing the components

Circular duct flow rate diagram

Dimensions		Air speed [m/s]			
		2.5	3.0	3.5	4.0
90/75 + 90/75		80	95	111	127
75/63 + 75/63	Qv [m³/h]	56	67	79	90
63/52 + 63/52		38	46	54	61
90/75		40	48	56	64
75/63		28	34	39	45
63/52		19	23	27	31

Diagram of the pressure drops according to the flow rate (length = 1 m)

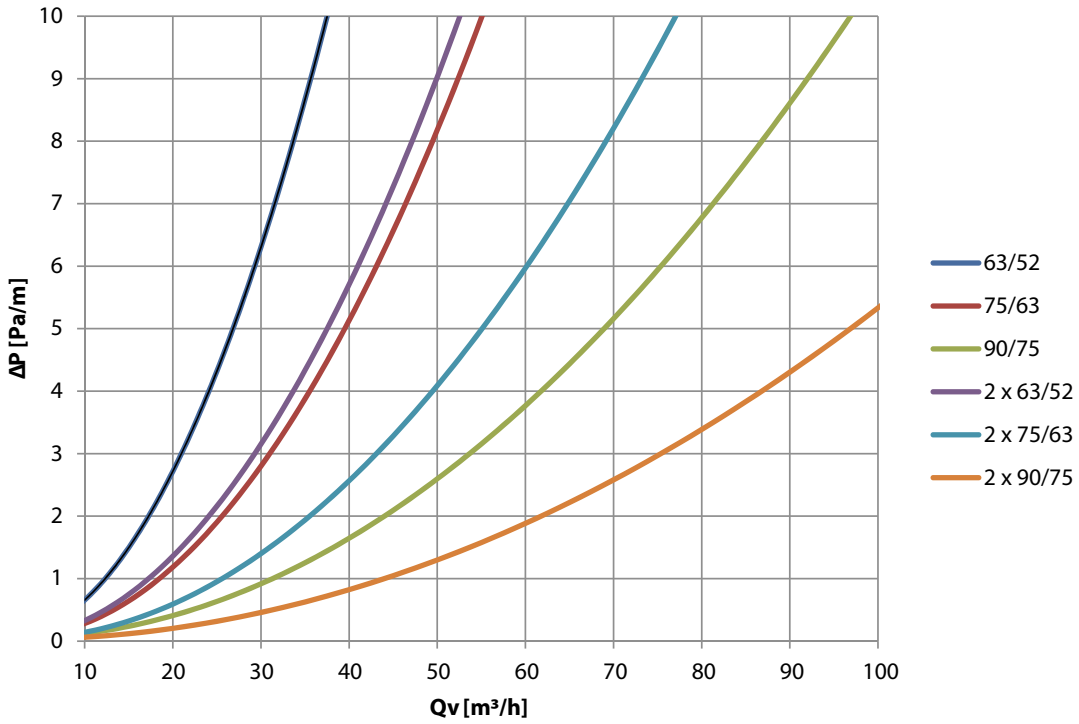
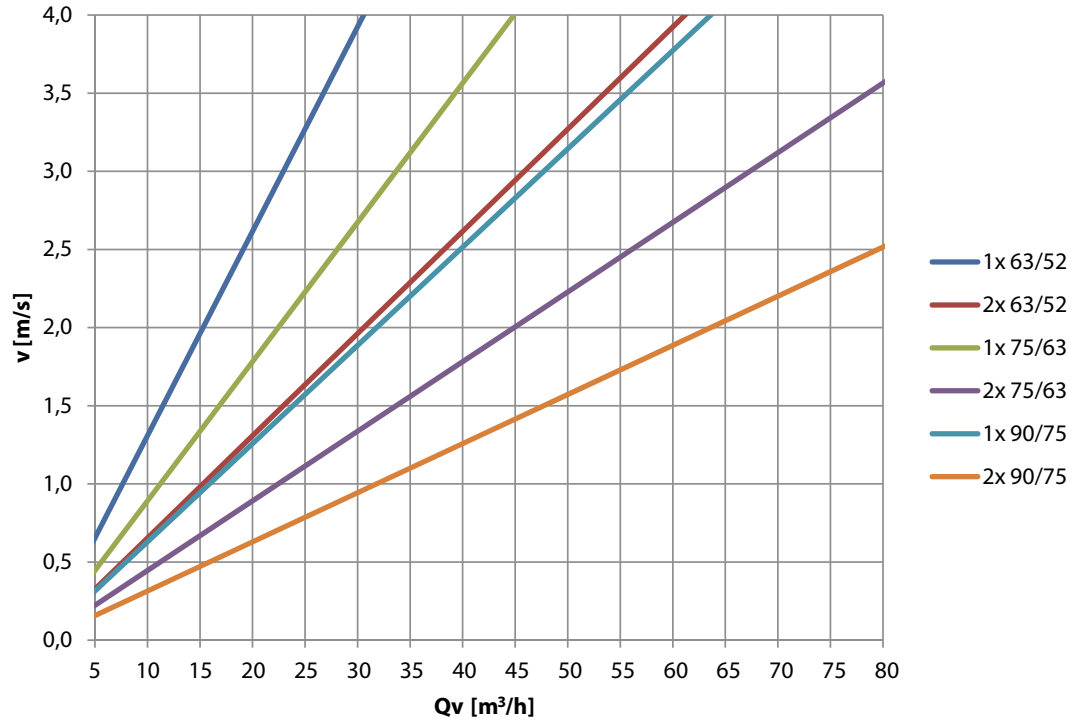


Diagram of the air speed according to the flow rate



LEGEND					
Qv	air flow	**Δp**	pressure drop	**v**	air speed

Antistatic and antibacterial flexible duct

50 m roll

External/internal PE layer with antistatic and antibacterial properties

Diameter	Code
DN ext/int 63/52mm	9021700
DN ext/int 75/63mm	9021701
DN ext/int 90/75mm	9021702

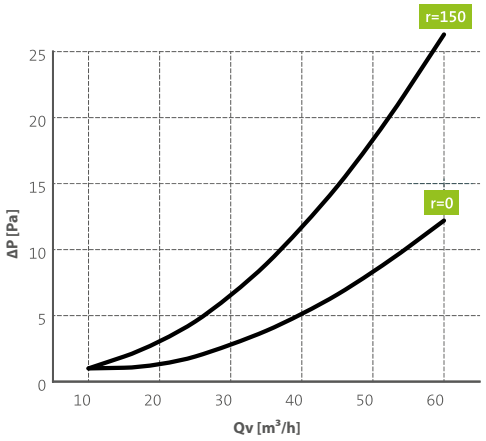
	63/52	75/63	90/75
D1 (mm)	52	63	75
D2 (mm)	63	75	90
A (m^2)	0.00212	0.00312	0.00442

Pressure drops

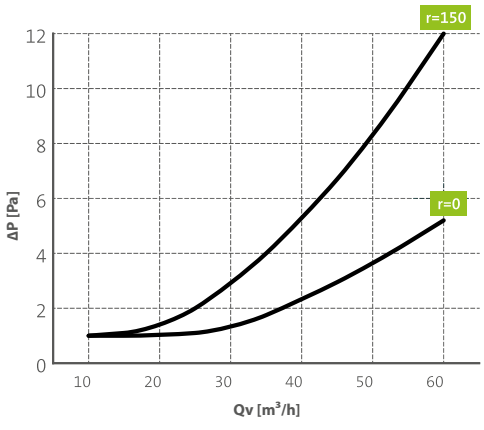
r = 150

Qv (m^3/h)	Δp (Pa)		
	63/52	75/63	90/75
10	1.0	1.0	1.0
20	2.8	1.2	1.0
30	6.3	2.8	1.0
40	11.5	5.2	1.7
50	18.1	8.2	2.6
60	26.3	12.0	3.8

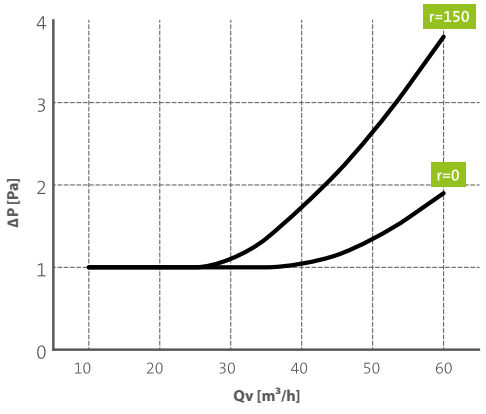
DN ext/int 63/52mm



DN ext/int 75/63mm



DN ext/int 90/75mm



LEGEND

Qv	air flow	**r=0**	straight pipe
Δp	pressure drop	**r=150**	pipe with radius of curvature of 150 mm

Flexible duct

50 m roll

External/internal PE layer

Diameter	Code
DN ext/int 63/52mm	9021703
DN ext/int 75/63mm	9021704
DN ext/int 90/75mm	9021705

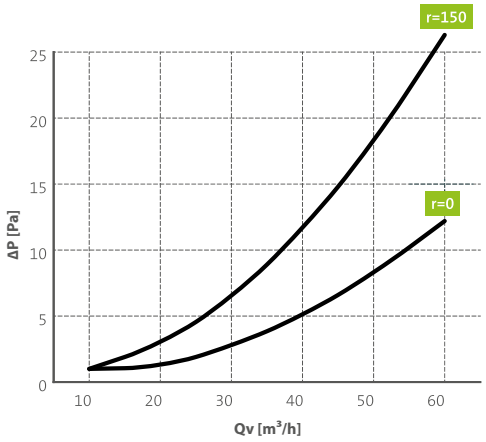
	63/52	75/63	90/75
D1 (mm)	52	63	75
D2 (mm)	63	75	90
A (m^2)	0.00212	0.00312	0.00442

Pressure drops

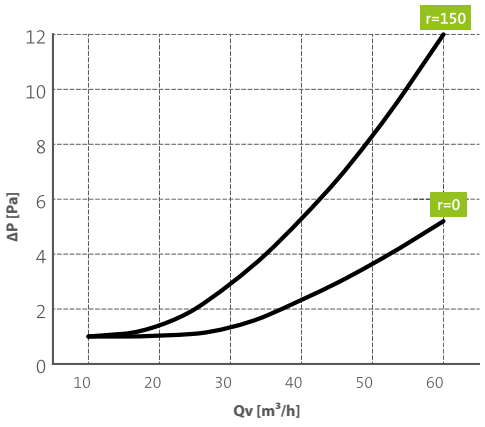
r = 150

Qv (m^3/h)	Δp (Pa)		
	63/52	75/63	90/75
10	1.0	1.0	1.0
20	2.8	1.2	1.0
30	6.3	2.8	1.0
40	11.5	5.2	1.7
50	18.1	8.2	2.6
60	26.3	12.0	3.8

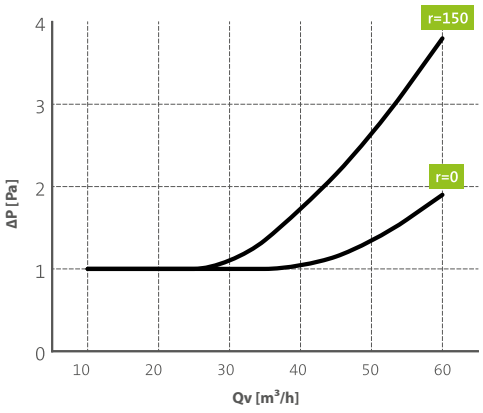
DN ext/int 63/52mm



DN ext/int 75/63mm



DN ext/int 90/75mm



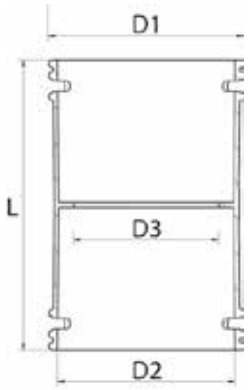
LEGEND

Qv	air flow	**r=0**	straight pipe
Δp	pressure drop	**r=150**	pipe with radius of curvature of 150 mm

Straight connector for flexible duct - antistatic and antibacterial (without sealing ring)

Antistatic and antibacterial
To connect straight parts of the flexible duct
Simple assembly with a sealing ring and slip-proof ring
For wall and ceiling installations
TÜV SÜD certified

Diameter	Code
DN ext/int 63/52mm	9021706
DN ext/int 75/63mm	9021707
DN ext/int 90/75mm	9021708

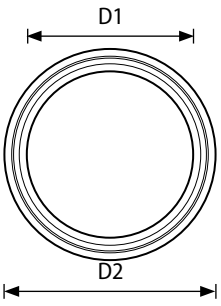


	63/52	75/63	90/75
D1 (mm)	71	83	98
D2 (mm)	67	79	95
D3 (mm)	55	65	75

Sealing ring for duct
(10 rings per bag)

EPDM black

Diameter	pcs. per bag	Code
DN ext/int 63/52mm	10	9021709
DN ext/int 75/63mm	10	9021710
DN ext/int 90/75mm	10	9021711

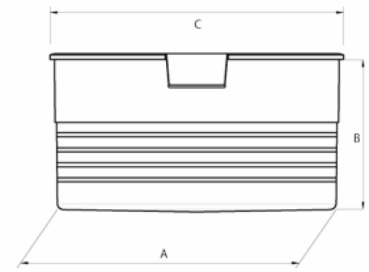


	63/52	75/63	90/75
D1 (mm)	52	63	75
D2 (mm)	67	79	91

Closing cap - antistatic and antibacterial for duct

PP antistatic with antibacterial properties

Diameter	Code
DN ext/int 63/52mm	9021712
DN ext/int 75/63mm	9021713
DN ext/int 90/75mm	9021714

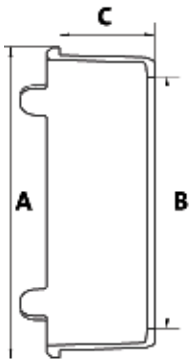


	63/52	75/63	90/75
A (mm)	65	78	93
B (mm)	45	45	50
C (mm)	71	83	98

Slip-proof ring for duct

(10 rings per bag)

Diameter	pcs. per bag	Code
DN ext/int 63/52mm	10	9021715
DN ext/int 75/63mm	10	9021716
DN ext/int 90/75mm	10	9021717

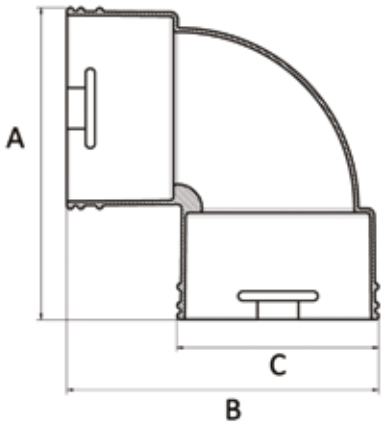


	63/52	75/63	90/75
A (mm)	69.5	81	96.3
B (mm)	57	67.5	80
C (mm)	25	25	25

90° bend

Antistatic and antibacterial
For tight bends execution.
For wall, ceiling and floor installations.
TÜV SÜD certified

Diameter	Code
DN est/int 63/52	9021880
DN est/int 75/63	9021881
DN est/int 69/75	9021882

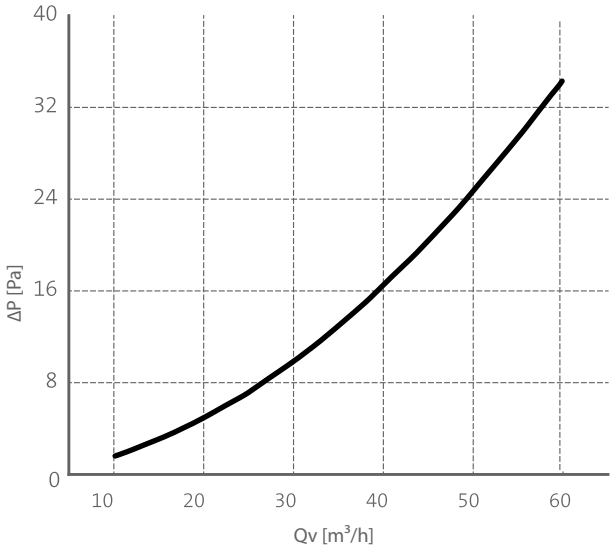


	63/52	75/63	90/75
A (mm)	122	133	161
B (mm)	122	133	161
C (mm)	74	86	102

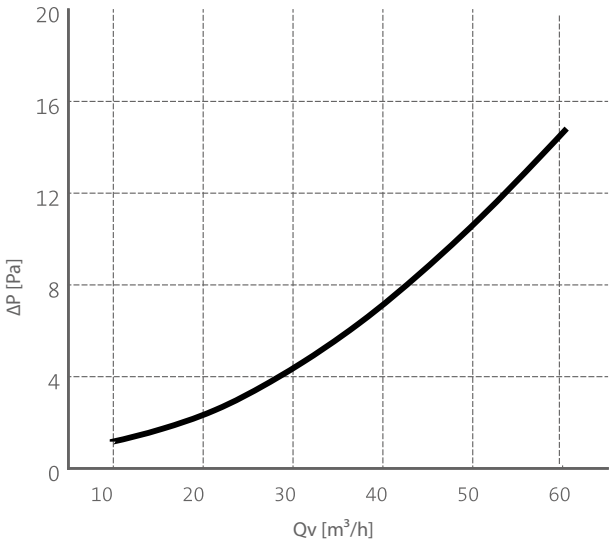
Pressure drops	63/52	75/63	90/75
Z	1,15	1,00	0,90
Qv (m^3/h)	Dp (Pa)	Dp (Pa)	Dp (Pa)
10	1,6	1,0	1,0
20	4,8	2,0	1,0
30	9,6	4,0	2,0
40	16,2	6,8	3,3
50	24,3	10,3	5,0
60	34,1	14,4	6,9

90° bend

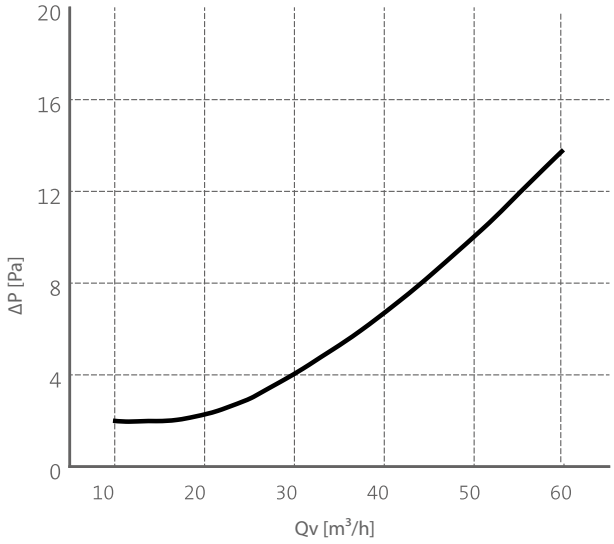
63/52



75/63



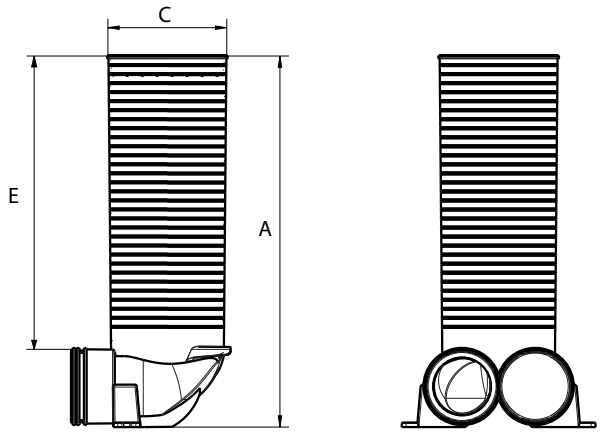
90/75

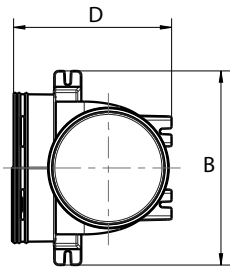


Adapter for valve DN125 + 1 closing cap - 2 for side connection

Antistatic and antibacterial
For supply air and extract air
For wall and ceiling installations
It is easily reduced to the desired size
TÜV SÜD certified

Diameter	Code
DN ext/int 63/52mm	9021721
DN ext/int 75/63mm	9021722
DN ext/int 90/75mm	9021723



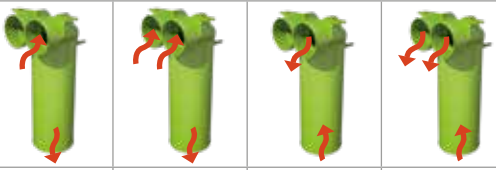


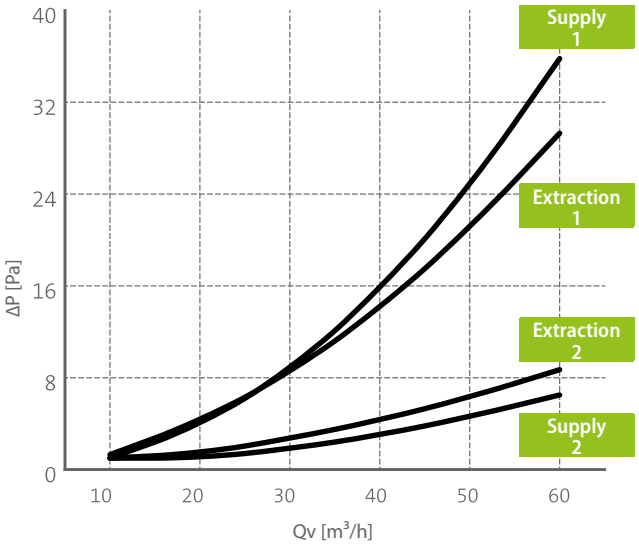
	63/52	75/63	90/75
A (mm)	396	411	411
B (mm)	190	215	215
C (mm)	DN125	DN125	DN125
D (mm)	173	173	173
E (mm)	325	325	325

LEGEND

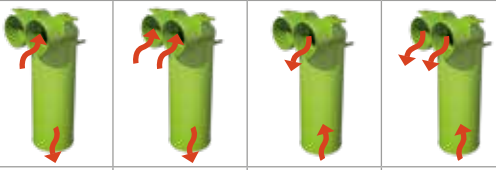
Qv	air flow
Δp	pressure drop

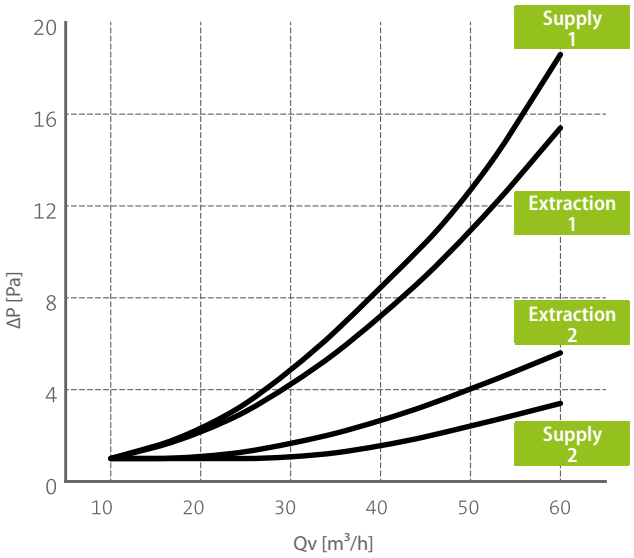
Pressure drops DN ext/int 63/52mm

Air flow	Supply		Extraction	
	1	2	1	2
Open ducts				
Z	1.01	0.74	0.91	0.95
Qv [m³/h]	**ΔP [Pa]**	**ΔP [Pa]**	**ΔP [Pa]**	**ΔP [Pa]**
10	1.0	1.0	1.3	1.0
20	3.8	1.0	4.2	1.4
30	8.6	1.8	8.4	2.7
40	15.6	3.0	14.0	4.3
50	24.6	4.6	21.0	6.3
60	35.8	6.5	29.3	8.7

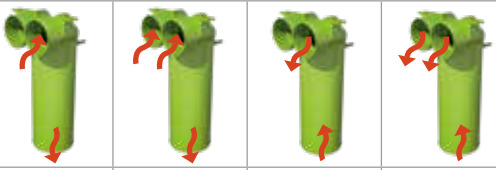


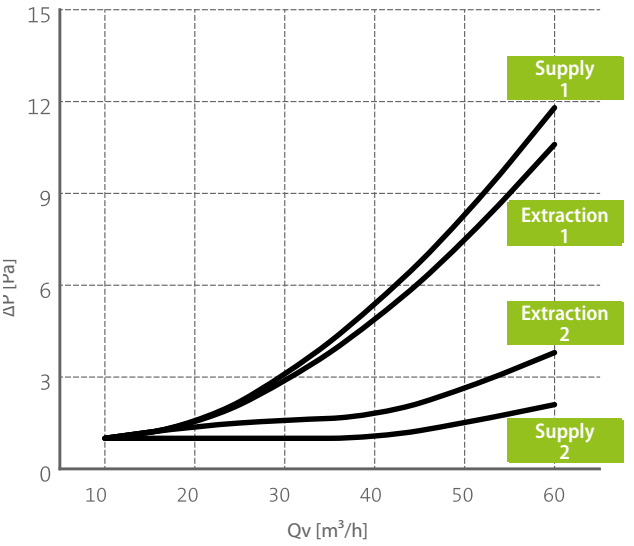
Pressure drops DN ext/int 75/63mm

Air flow	Supply		Extraction	
	1	2	1	2
Open ducts				
Z	1.15	0.77	0.97	1.34
Qv [m³/h]	**ΔP [Pa]**	**ΔP [Pa]**	**ΔP [Pa]**	**ΔP [Pa]**
10	1.0	1.0	1.0	1.0
20	2.1	1.0	2.0	1.0
30	4.7	1.0	4.1	1.6
40	8.4	1.5	7.1	2.6
50	12.4	2.4	10.8	4.0
60	18.6	3.4	15.4	5.6



Pressure drops DN ext/int 90/75mm

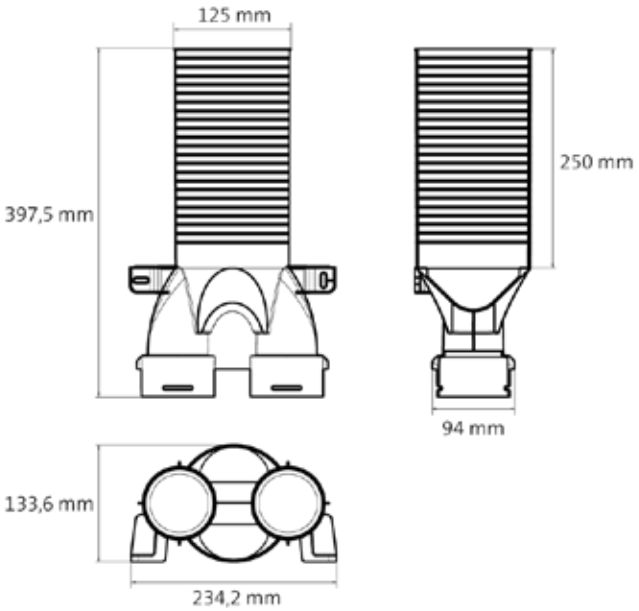
Air flow	Supply		Extraction	
	1	2	1	2
Open ducts				
Z	1.47	1.04	1.31	1.94
Qv [m³/h]	**ΔP [Pa]**	**ΔP [Pa]**	**ΔP [Pa]**	**ΔP [Pa]**
10	1.0	1.0	1.0	1.0
20	1.4	1.0	1.4	1.0
30	3.0	1.0	2.8	1.6
40	5.3	1.0	4.8	1.7
50	8.2	1.5	7.4	2.6
60	11.8	2.1	10.6	3.8



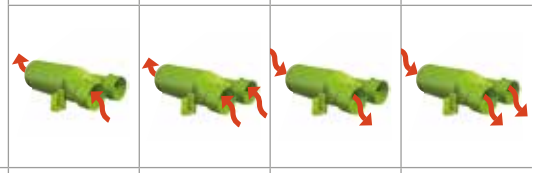
Adapter for DN125 valve + 1 detachable closing cap - 2 x DN 75 circular rear connection

Antistatic and antibacterial
For supply air and extract air.
For wall and ceiling installations.
It is easily reduced to the desired size.
TÜV SÜD certified.

Diameter	Code
DN ext/int 75/63 mm	9021739



Pressure drops

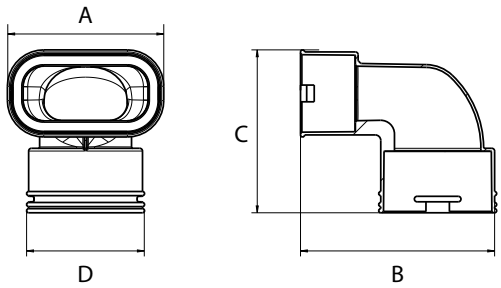
Air flow	Supply		Extraction	
	1	2	1	2
Open ducts				
Z	1,06	0,59	0,95	1,10
Qv [m³/h]	**ΔP [Pa]**	**ΔP [Pa]**	**ΔP [Pa]**	**ΔP [Pa]**
10	0	0	0	0
15	1	0	1	0
20	2	0	2	1
25	3	0	3	1
30	4	1	4	1
35	6	1	5	2
40	8	1	7	2
45	10	1	9	3
50	12	2	11	3
55	15	2	13	4
60	18	2	16	5
65	21	3	19	5
70	24	3	22	6
75	28	4	25	7
80	32	4	28	8
85	36	5	32	9
90	40	6	36	10
95	45	6	40	12
100	50	7	45	13

90° adapter for semicircular 50x102 to round 75/63 duct

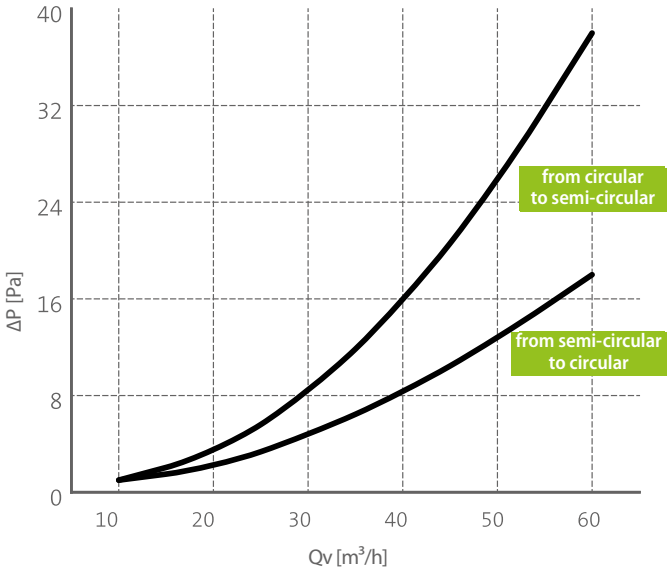
Antistatic and antibacterial
Bend for connecting circular ducts to semicircular ducts
For wall, ceiling and floor installations
TÜV SÜD certified

Diameter	Code
50x102 - 75/63	9021725

	From circular to semicircular	From semicircular to circular
Z	2.38	1.14
Qv (m^3/h)	Δp (Pa)	Δp (Pa)
10	1.0	1.0
20	3.1	2.0
30	8.1	4.7
40	15.6	8.2
50	25.6	12.7
60	38.0	18.0



A (mm)	114
B (mm)	143
C (mm)	119
D (mm)	86



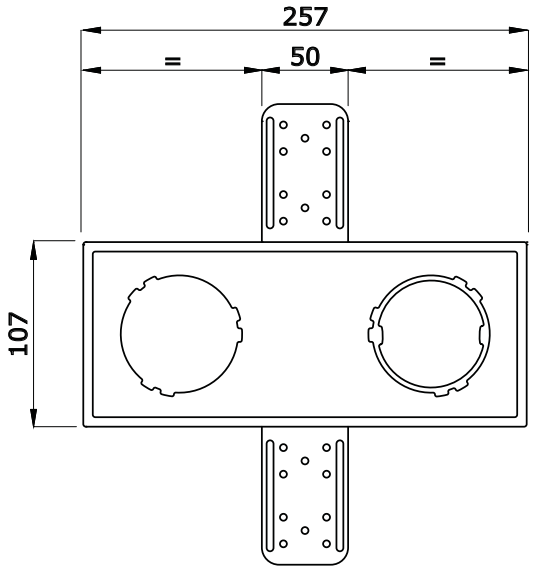
LEGEND

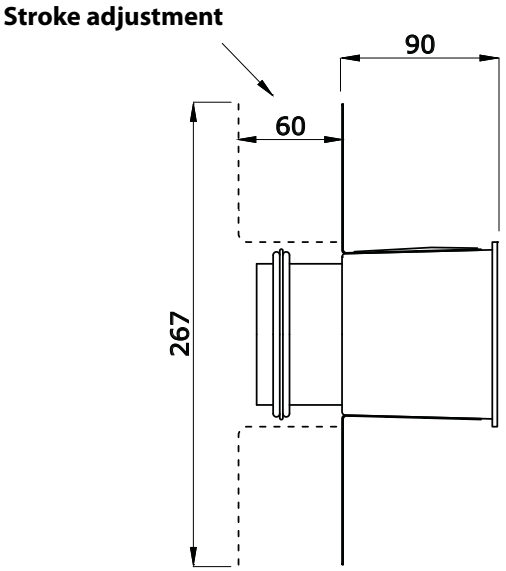
Qv	air flow
Δp	pressure drop

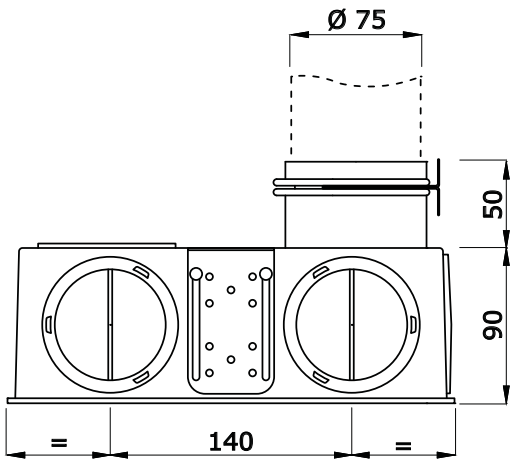
Rectangular grill adapter 257x107x90 mm, 4 DN 75/63 connections

Equipped with: 2 mounting brackets, 1 DN75/63 connection, 1 click-ring, 1 seal, 1 damper.

Diameter	Code
DN ext/int 75/63 mm	9021730





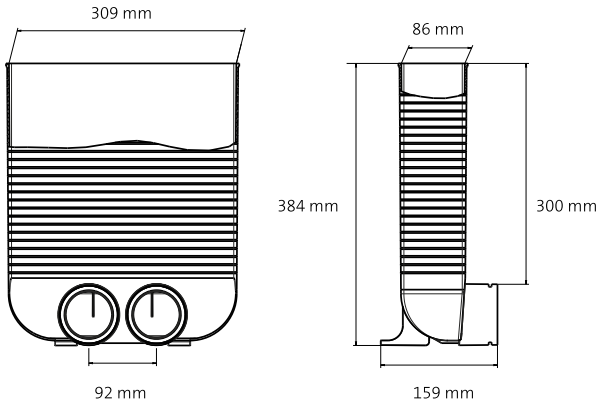


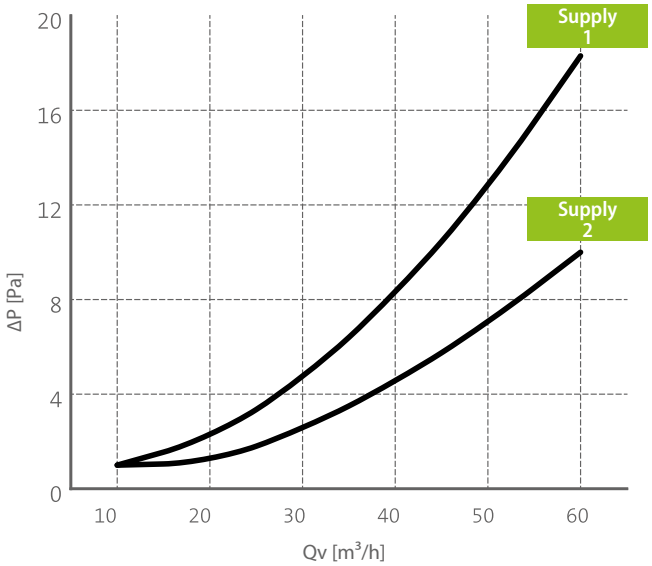
Adapter for rectangular grill + 1 closing cap - 2 for side connection 75/63

Antistatic and antibacterial
For supply air
For wall and floor installations
It is easily reduced to the desired size
TÜV SÜD certified

Diameter	Code
DN ext/int 75/63mm	9021726

Open ducts	1	2
Z	1.13	2.47
Qv (m^3/h)	Δp (Pa)	Δp (Pa)
10	1.0	1.0
20	2.1	1.1
30	4.6	2.5
40	8.2	4.5
50	12.7	7.0
60	18.3	10.0





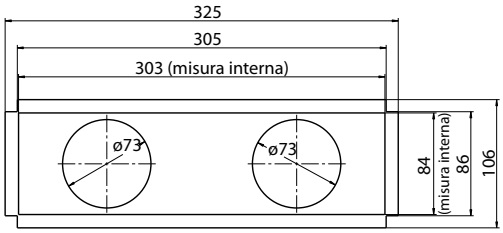
LEGEND

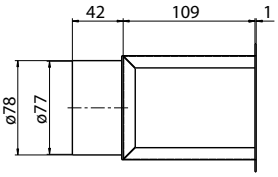
Qv	air flow
Δp	pressure drop

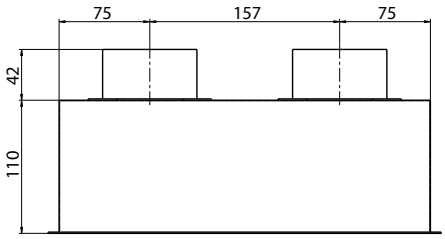
Grill adapter in galvanized steel sheet with double DN75 rear connections

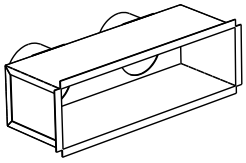
For supply and extract air.
For wall, ceiling and floor installations.

Diameter	Code
DN ext/int 75/63 mm	9021879



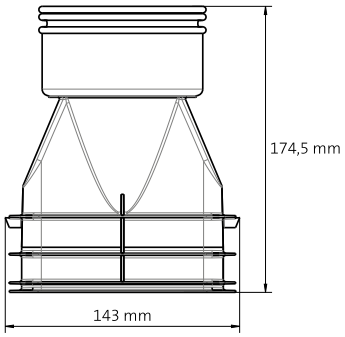






Adapter from semi-circular duct 60x132 to circular duct 90/75 antistatic and antibacterial properties

Diameter	Code
90/75 - 60x132	9021727



Semicircular duct flow rate diagram

Dimensions		V [m/s]			
		2.5	3.0	3.5	4.0
60/132 + 60/132		97	117	136	156
50/102 + 50/102	Qv [m³/h]	55	66	77	88
60/132		49	58	68	78
50/102		27	33	38	44

Diagram of the pressure drops according to the flow rate (L = 1 m)

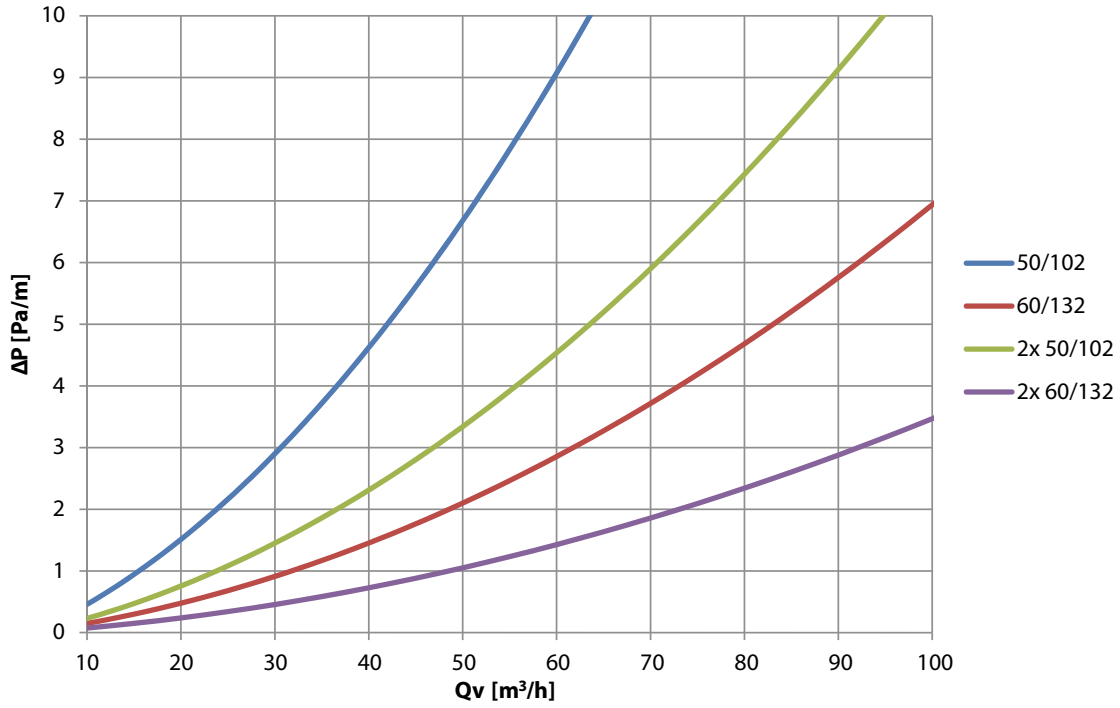
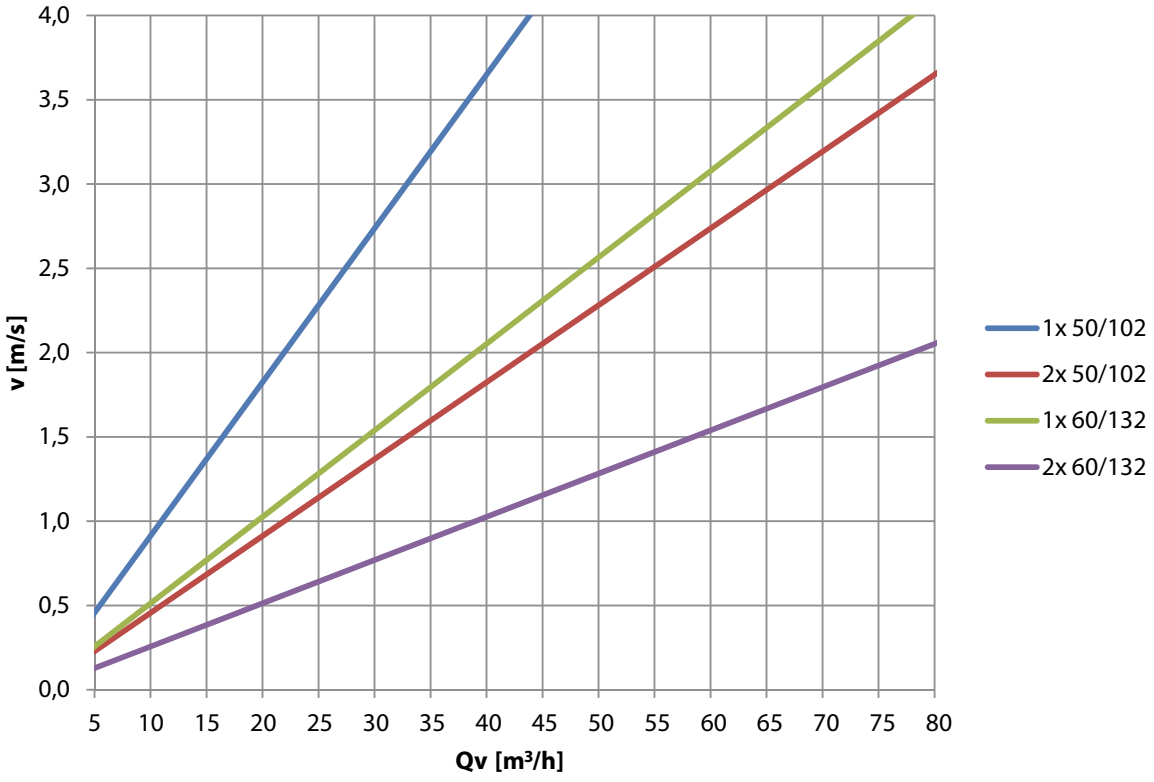


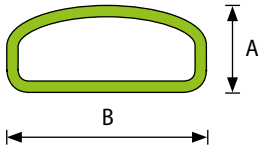
Diagram of the air speed according to the flow rate



LEGEND					
Qv	air flow	**Δp**	pressure drop	**v**	air speed

Semicircular antistatic and antibacterial duct

Internal/external PE lining with antistatic and antibacterial properties



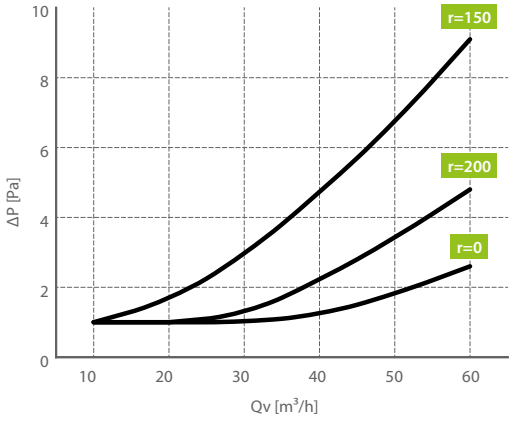
Dimensions	Length	Code
50/102 mm	50 m	9021740
60/132 mm	30 m	9021741

	50/102	60/132
A (mm)	50	60
B (mm)	102	132
C (m^2)	0.00304	0.00542

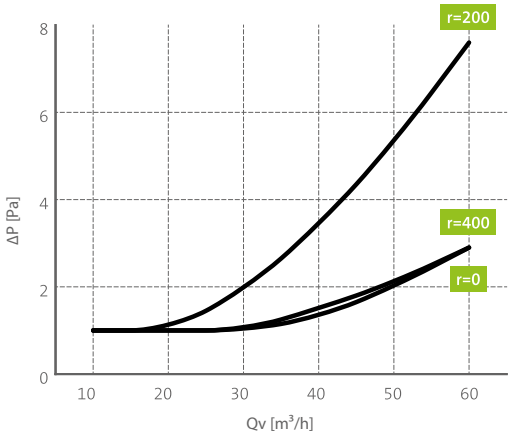
Pressure drops

Qv (m^3/h)	Δp (Pa)					
	50/102			60/132		
radius r	0	150	200	0	200	400
Z	-	0,15	0,27	-	1,33	0,51
10	1,0	1,0	1,0	1,0	1,0	1,0
20	1,0	1,6	1,0	1,0	1,0	1,0
30	1,0	2,9	1,2	1,0	1,9	1,0
40	1,2	4,7	2,2	1,3	3,4	1,5
50	1,8	6,7	3,4	2,0	5,3	2,1
60	2,6	9,1	4,8	2,9	7,6	2,9

DN ext/int 50/102mm



DN ext/int 60/132mm



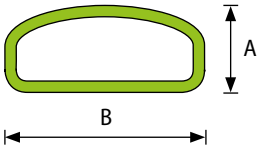
LEGEND

Qv	air flow
Δp	pressure drop

r=0	straight pipe
r=150	pipe with radius of curvature of 150 mm
r=200	pipe with radius of curvature of 200 mm
r=400	pipe with radius of curvature of 400 mm

Flexible semicircular duct

Internal/external PE lining



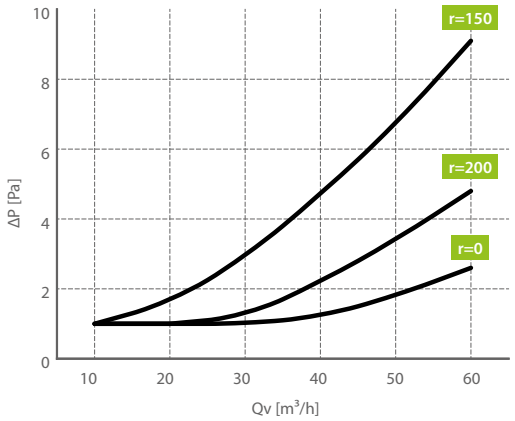
Dimensions	Length	Code
50/102 mm	50m	9021742

	50/102
A (mm)	50
B (mm)	102
C (m²)	0,00304

Pressure drops

Qv (m³/h)	Δp (Pa)		
	50/102		
radius r	0	150	200
Z	-	0,15	0,27
10	1,0	1,0	1,0
20	1,0	1,6	1,0
30	1,0	2,9	1,2
40	1,2	4,7	2,2
50	1,8	6,7	3,4
60	2,6	9,1	4,8

DN ext/int 50/102 mm



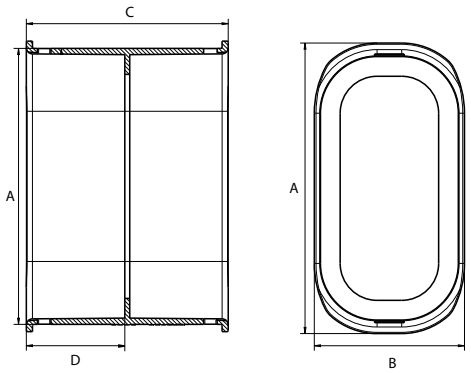
LEGEND

Qv	air flow	**r=0**	straight pipe
Δp	pressure drop	**r=150**	pipe with radius of curvature of 150 mm
		r=200	pipe with radius of curvature of 200 mm

Straight connector for flexible semicircular duct

Antistatic and antibacterial
To connect straight parts of the flexible duct
For wall and ceiling installations
Simple assembly with a sealing ring
TÜV SÜD certified

Dimensions	Code
50/102 mm	9021744
60/132 mm	9021745

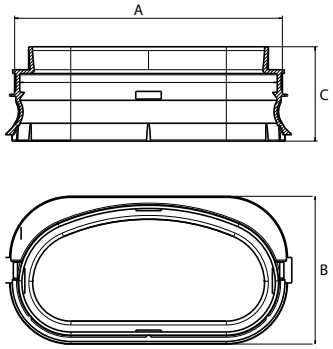


	50/102	60/132
A (mm)	118	148
B (mm)	61	71
C (mm)	82	102
D (mm)	40	50

Sealing ring for semicircular duct

The sealing ring is an essential component for the seal and ensures airtightness between the duct and all other elements of the system, such as bends, connectors and adapters.

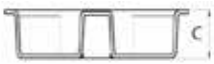
Diameter	Pieces per bag	Code
50/102 mm	1	9021746
60/132 mm	1	9021747

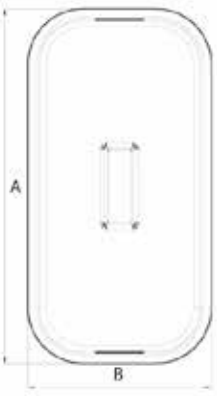


	50/102	60/132
A (mm)	105	137
B (mm)	58	69
C (mm)	37	47.5

Closing cap - antistatic and antibacterial for semicircular duct

Dimensions	Code
50/102 mm	9021748
60/132 mm	9021749



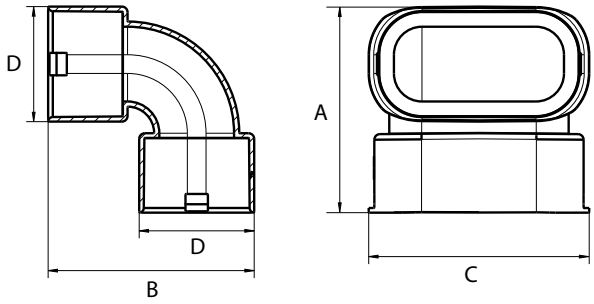


	50/102	60/132
A (mm)	117	147
B (mm)	66	76
C (mm)	20	20

Vertical bend (without sealing ring)

Antistatic and antibacterial
For tight bends, vertical version
For wall, ceiling and floor installations
TÜV SÜD certified

Dimensions	Code
50/102 mm	9021750
60/132 mm	9021751

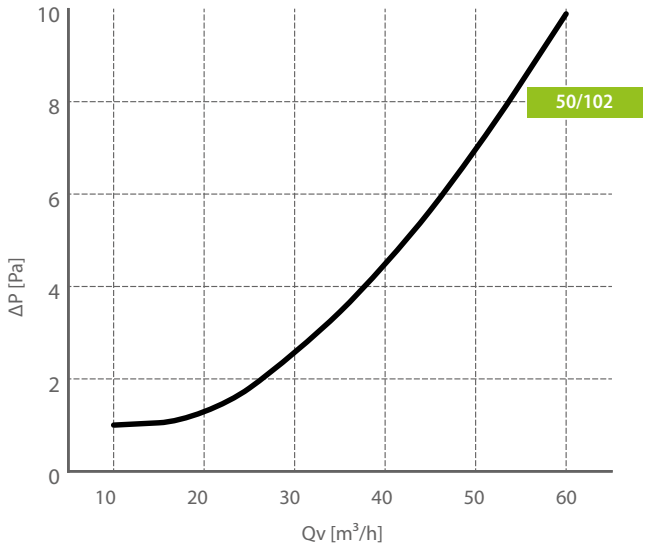


	50/102	60/132
A (mm)	107	131
B (mm)	118	131
C (mm)	118	144
D (mm)	61	71

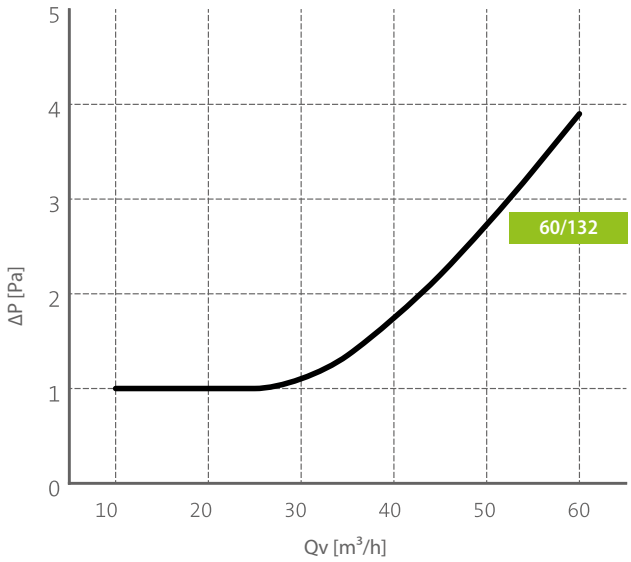
Pressure drops	50/102	60/132
Z	0.55	0.68
Qv (m^3/h)	Δp (Pa)	Δp (Pa)
10	1.0	1.0
20	1.1	1.0
30	2.5	1.0

Pressure drops	50/102	60/132
Qv (m^3/h)	Δp (Pa)	Δp (Pa)
40	4.4	1.7
50	6.9	2.7
60	9.9	3.9

50/102



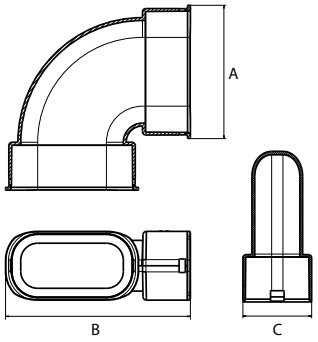
60/132



LEGEND **Qv** air flow **Δp** pressure drop

Horizontal bend (without sealing ring)

Antistatic and antibacterial
For tight bends, horizontal version
For wall, ceiling and floor installations
TÜV SÜD certified



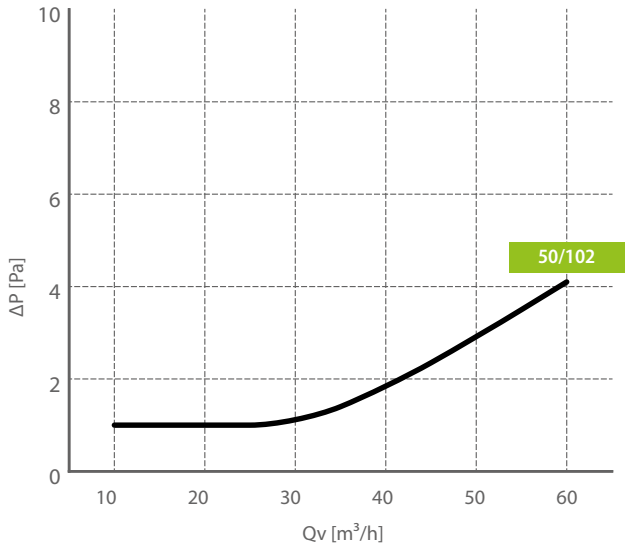
Dimensions	Code
50/102 mm	9021752
60/132 mm	9021753

	50/102	60/132
A (mm)	118	144
B (mm)	164	204
C (mm)	61	71

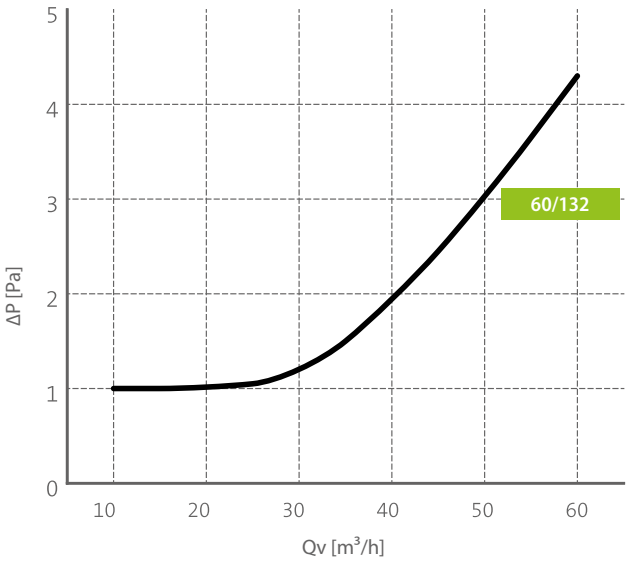
Pressure drops	50/102	60/132
Z	0.23	0.75
Qv (m^3/h)	Δp (Pa)	Δp (Pa)
10	1.0	1.0
20	1.0	1.0
30	1.0	1.1

Pressure drops	50/102	60/132
Qv (m^3/h)	Δp (Pa)	Δp (Pa)
40	1.8	1.9
50	2.9	3.0
60	4.1	4.3

50/102



60/132



LEGEND **Qv** air flow **Δp** pressure drop

Fastening collar for semicircular duct

Fastening collar to ensure secure duct fastening.
It is recommended to install a fastening collar every 2 metres of duct.
Several fastening collars can be joined together to form multiple parallel tracks of ducts.

Dimensions	Code
50/102 mm	9021754
60/132 mm	9021755

Connector for distribution box (spare part) antistatic and antibacterial for semicircular duct

Dimensions	Code
50/102 mm	9021758
60/132 mm	9021759

Air flow restrictor for semicircular duct

Air flow restrictors are used to adjust the flow rate in each circuit.
The restrictors are equipped with 4 rings that can be removed individually using a cutter.
The number of rings to be removed is determined by the Sabiana configurator.
Air flow restrictors must be installed directly on the universal distribution box connectors.

Dimensions	Code
50/102 mm	9021756
60/132 mm	9021757

	50/102				
	Number of rings removed				
	0	1	2	3	4
					
Z	19.32	5.18	1.52	0.45	0.23
Qv [m³/h]	**ΔP [Pa]**				
10	9.7	2.6	0.8	0.2	0.1
20	38.7	10.4	3.0	0.9	0.5
30	87.2	23.4	6.9	2.0	1.0
40	154.9	41.5	12.2	3.6	1.8
50	242.1	64.9	19.0	5.6	2.9
60	348.6	93.5	27.4	8.1	4.2

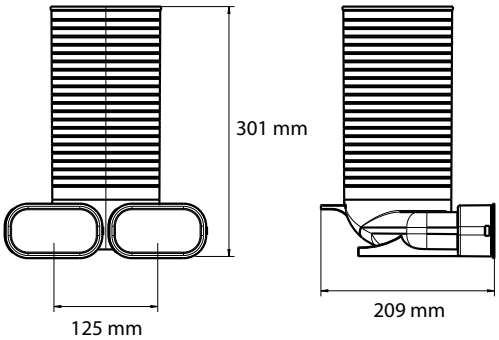
	60/132				
	Number of rings removed				
	0	1	2	3	4
					
Z	36.80	7.10	2.30	0.60	0.10
Qv [m³/h]	**ΔP [Pa]**				
10	5.8	1.1	0.4	0.1	0.0
20	23.3	4.5	1.5	0.4	0.1
30	52.5	10.1	3.3	0.9	0.1
40	93.3	18.0	5.8	1.5	0.3
50	145.8	28.1	9.1	2.4	0.4
60	209.9	40.5	13.1	3.4	0.6

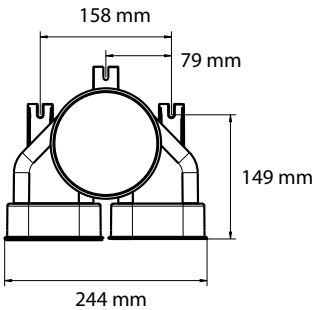
Adapter for valve DN125 + 1 closing cap - 2 for semicircular side connection

Antistatic and antibacterial
For supply air and extract air
For wall and ceiling installations
It is easily reduced to the desired size
TÜV SÜD certified

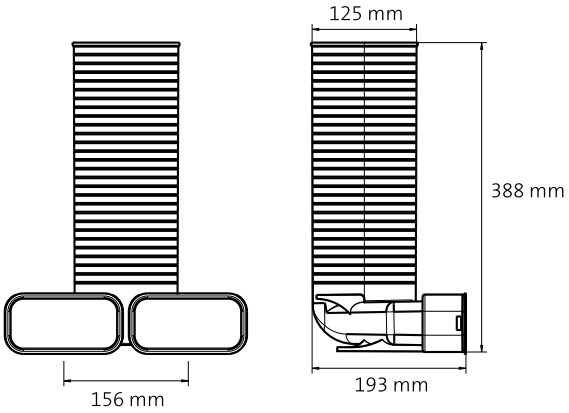
Dimensions	Code
50/102 mm	9021760
60/132 mm	9021761

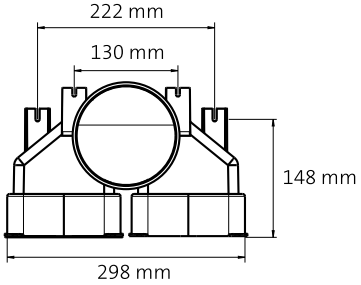
50/102



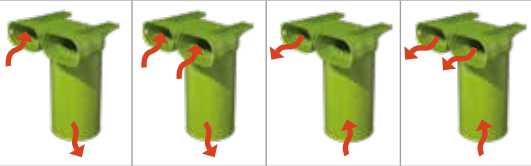


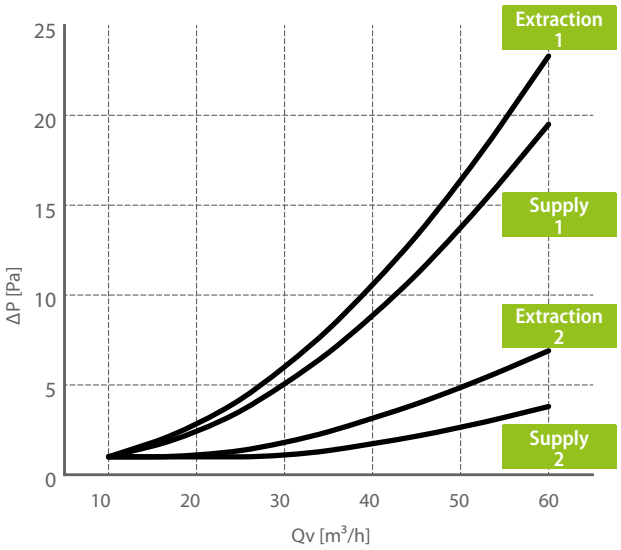
60/132





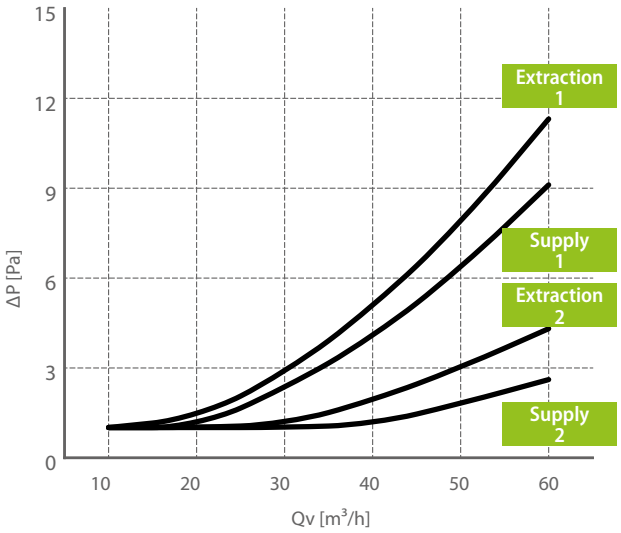
Pressure drops 50/102

Air flow	Supply		Extraction	
	1	2	1	2
Open ducts				
Z	1.08	0.84	1.29	1.52
Qv [m³/h]	**ΔP [Pa]**	**ΔP [Pa]**	**ΔP [Pa]**	**ΔP [Pa]**
10	1.0	1.0	1.0	1.0
20	2.2	1.0	2.6	1.0
30	4.9	1.0	5.8	1.7
40	8.7	1.7	10.4	3.1
50	13.6	2.6	16.2	4.8
60	19.5	3.8	23.3	6.9



Pressure drops 60/132

Air flow	Supply		Extraction	
	1	2	1	2
Open ducts				
Z	1.59	1.81	1.98	3.03
Qv [m³/h]	**ΔP [Pa]**	**ΔP [Pa]**	**ΔP [Pa]**	**ΔP [Pa]**
10	1.0	1.0	1.0	1.0
20	1.0	1.0	1.3	1.0
30	2.3	1.0	2.8	1.1
40	4.0	1.1	5.0	1.9
50	6.3	1.8	7.8	3.0
60	9.1	2.6	11.3	4.3



LEGEND

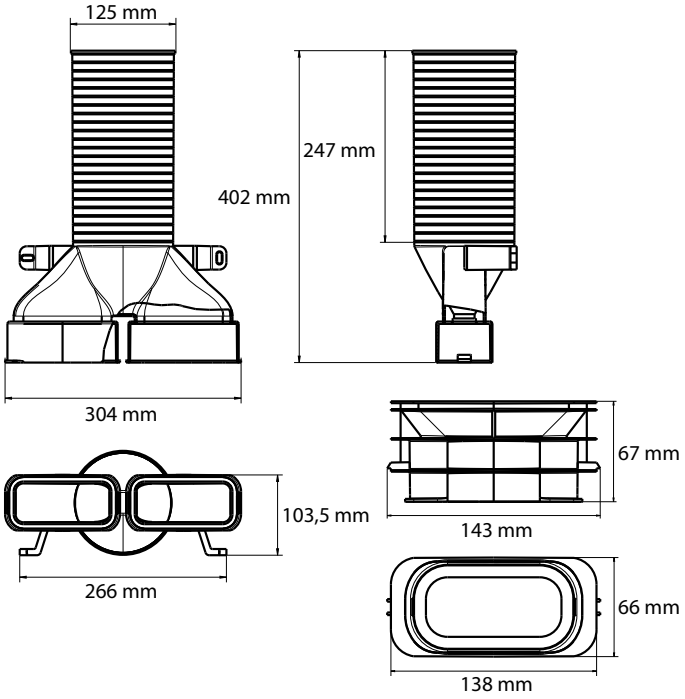
Qv	air flow
Δp	pressure drop

Adapter for valve DN125 + 1 closing cap - 2 for semicircular rear connection

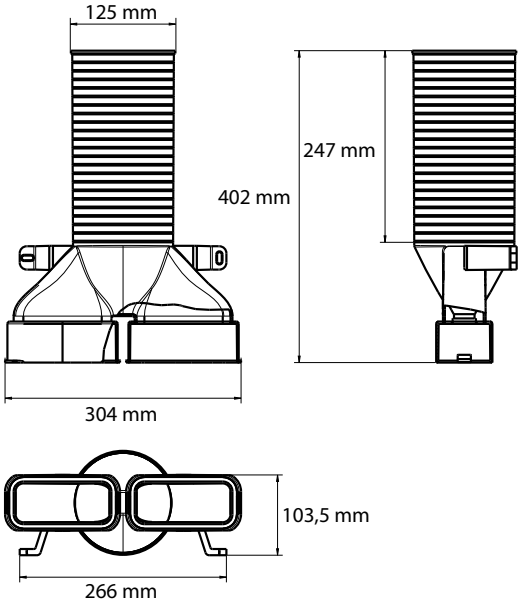
Antistatic and antibacterial
For supply air and extract air
For wall and ceiling installations
It is easily reduced to the desired size
TÜV SÜD certified

Dimensions	Code
50/102 mm	9021762
60/132 mm	9021763

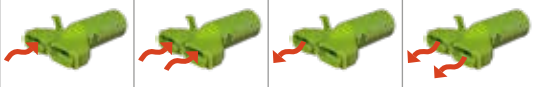
50/102

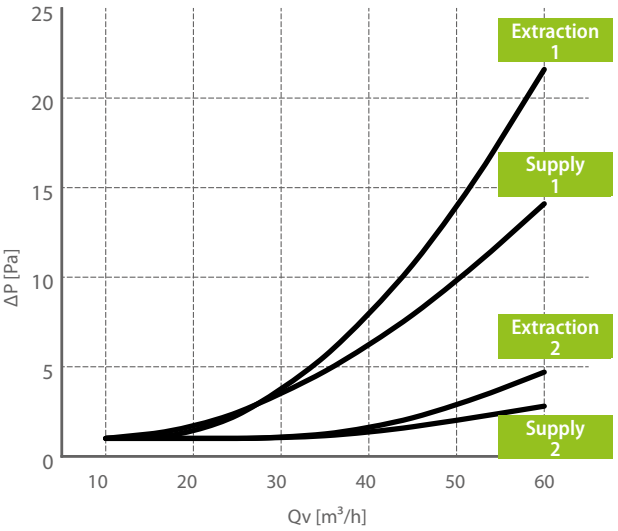


60/132

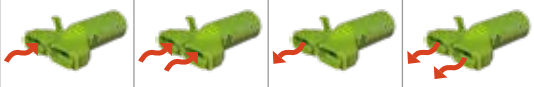


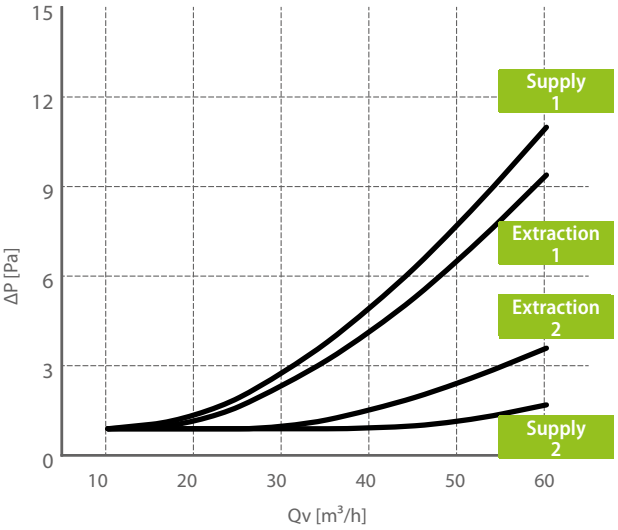
Pressure drops 50/102

Air flow	Supply		Extraction	
	1	2	1	2
Open ducts				
Z	0.85	0.59	1.28	1.64
Qv [m³/h]	**ΔP [Pa]**	**ΔP [Pa]**	**ΔP [Pa]**	**ΔP [Pa]**
10	1.0	1.0	1.0	1.0
20	1.5	1.0	1.1	1.0
30	3.4	1.0	3.5	1.0
40	6.1	1.3	7.7	1.5
50	9.7	2.0	13.7	2.8
60	14.1	2.8	21.6	4.7



Pressure drops 60/132

Air flow	Supply		Extraction	
	1	2	1	2
Open ducts				
Z	1.97	1.25	1.66	2.57
Qv [m³/h]	**ΔP [Pa]**	**ΔP [Pa]**	**ΔP [Pa]**	**ΔP [Pa]**
10	1.0	1.0	1.0	1.0
20	1.3	1.0	1.1	1.0
30	2.8	1.0	2.4	1.0
40	5.0	1.0	4.2	1.6
50	7.8	1.2	6.6	2.5
60	11.1	1.8	9.5	3.7



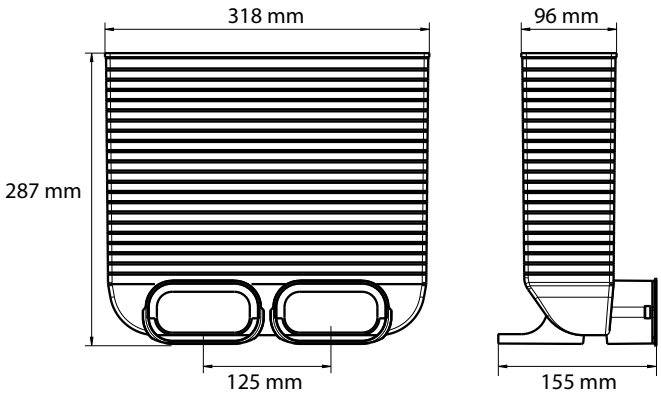
LEGEND

Qv	air flow
Δp	pressure drop

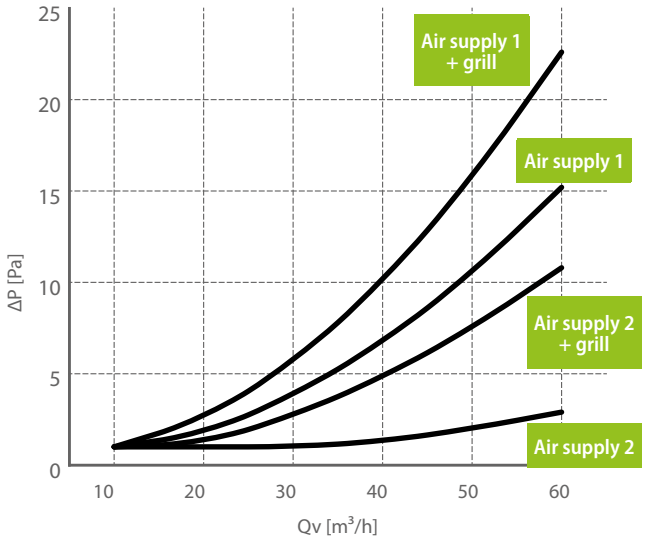
Adapter for rectangular grill + 1 closing cap - 2 for side connection

Antistatic and antibacterial
For supply air
For wall and floor installations
It is easily reduced to the desired size
TÜV SÜD certified

Dimensions	Code
50/102 mm	9021764



	Without grid		With grid	
Open ducts	1	2	1	2
Z	0.84	0.64	1.25	2.39
Qv	**ΔP [Pa]**	**ΔP [Pa]**	**ΔP [Pa]**	**ΔP [Pa]**
10	1.0	1.0	1.0	1.0
20	1.7	1.0	2.5	1.2
30	3.8	1.0	5.6	2.7
40	6.7	1.3	10.0	4.8
50	10.5	2.0	15.7	7.5
60	15.2	2.9	22.6	10.8

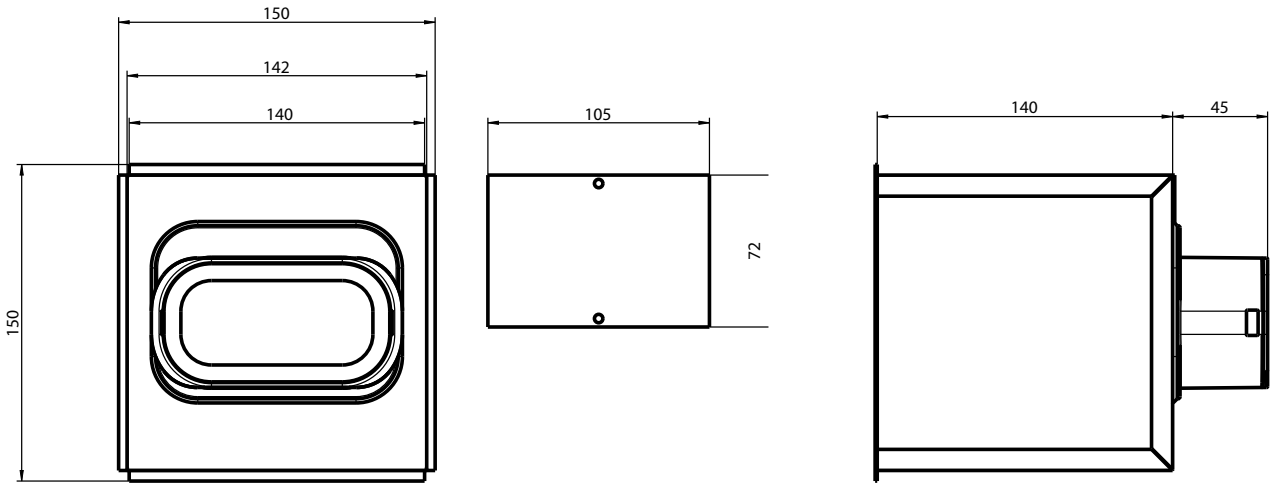


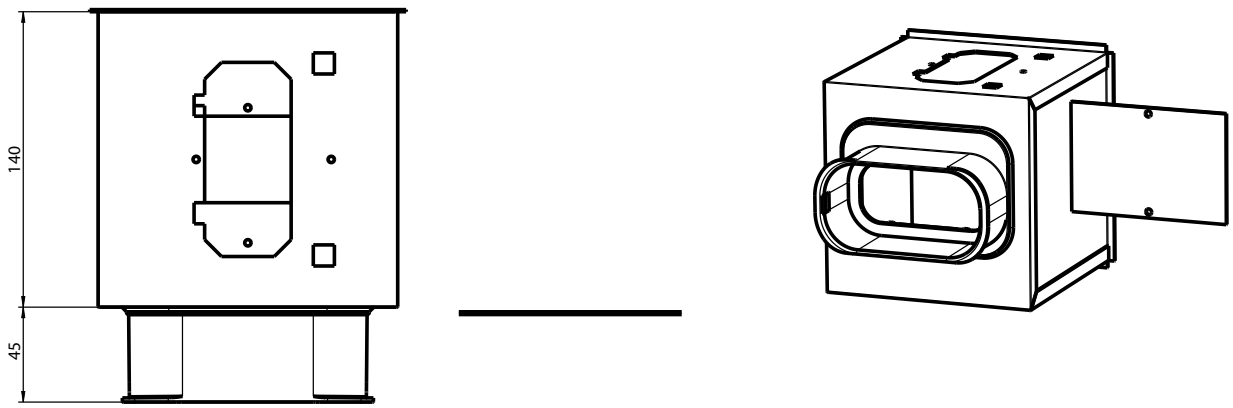
LEGEND

Qv	air flow
Δp	pressure drop

Adapter for square grill
1 for side or rear connection for semicircular duct - antistatic and antibacterial

Dimensions	Code
50/102 mm	9021766





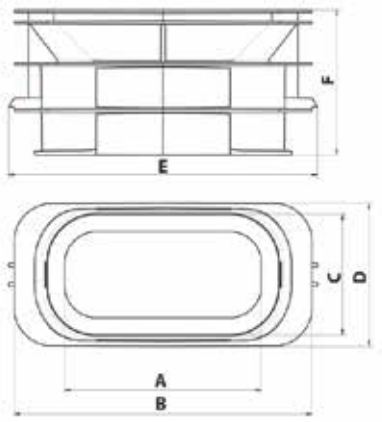
Semicircular duct closing cap

Dimensions	Code
50/102 mm	9021767
60/132 mm	9021768

Adapter for semicircular 60x132 to semicircular 50x102 duct

Antistatic and antibacterial

Dimensions	Code
50/102 mm	9021769



A [mm]	91
B [mm]	138
C [mm]	56
D [mm]	66.5
E [mm]	143
F [mm]	67.4

Insulated ducts for air distribution

In controlled mechanical distribution systems, for heating or air conditioning, it is often necessary to insulate the components in order to minimise thermal dispersion and prevent condensation on the duct surface.
Sabiana provides a complete system of insulated polyethylene foam (EPE) ducts to connect the Sabiana Energy Smart unit to the outside, inlet and extraction, which is easy to install and maintain. Available in a wide range of diameters and with components such as bends, coupling pieces, terminals and many accessories, such as chimney flashing and rainproof flashing.

The Sabiana solution:
- insulated and sound-absorbing ducts and bends
- minimum adhesion of dust thanks to the smooth surface
- joints between the sealing elements that do not require the use of glue or adhesive tape
- lightweight, easy to cut, elastic and flexible, impact-resistant material
- non-oxidizing
- elements up to 2.0 m in length
- insulated plastic roof terminals: lightweight, shatterproof and weatherproof

System benefits:
- interlocking connection (no need for adhesive tape or glue)
- easily removable, which makes maintenance and cleaning very simple
- smooth and continuous internal surface
- compact size, slim design
- no waste
- installation without tools

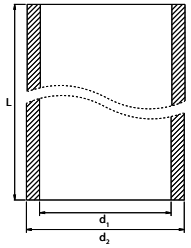
Condensate formation

When the air inside the ducts is colder than the ambient air (or vice versa), there is a risk of condensation forming on the internal or external surface of the ducts. For this reason, if these conditions occur, it is very important to use insulated ducts. Also, the high insulation of the system reduces thermal dispersion.

Performance

Material	EPE
Density	30 kg/m^3
Thermal transmittance	0.041 W/m K (EN 12667)
Thermal resistance	R = 0.56 m^2.K/W
Temperature range	min -30 °C max +60 °C
Wall thickness	16 mm
Fire resistance class	B1 (according to DIN 4102)
Fluid	air
Air permeability	C (according to EN 12237:2003)
Colour	grey
Clip clamp, fastening and clamping collar material	PP
Material	EPP

Diagram of the pressure drops according to the flow rate (Length = 1 m)



	125	150	160	180	200
d_1 [mm]	125	150	160	180	200
d_2 [mm]	157	182	192	212	232
L [mm]	2000	2000	2000	2000	2000
m [kg]	0,48	0,56	0,53	0,67	0,80

Qv [m^3/h]	ΔP [Pa/m]				
	125	150	160	180	200
100	1,0	1,0	1,0	1,0	0,1
200	2,7	1,1	1,0	1,0	0,2
300	6,1	2,5	1,8	1,0	0,5
400	10,8	4,5	3,1	1,6	0,9
500	16,9	7,0	4,9	2,5	1,3
600	24,3	10,2	7,0	3,6	1,9

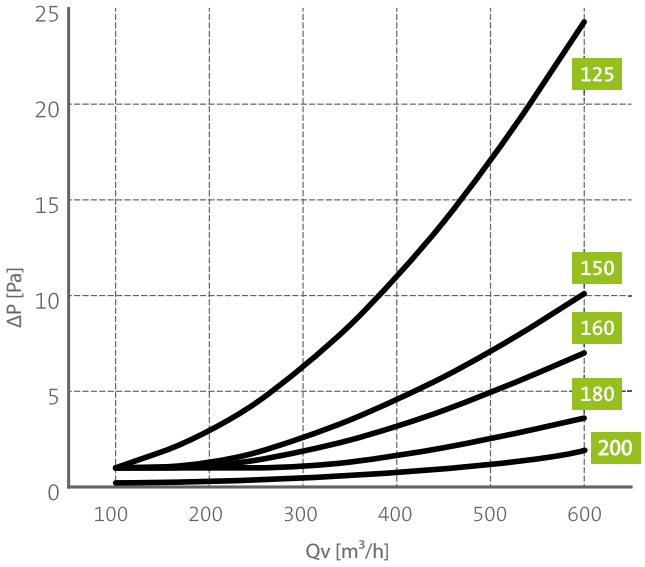
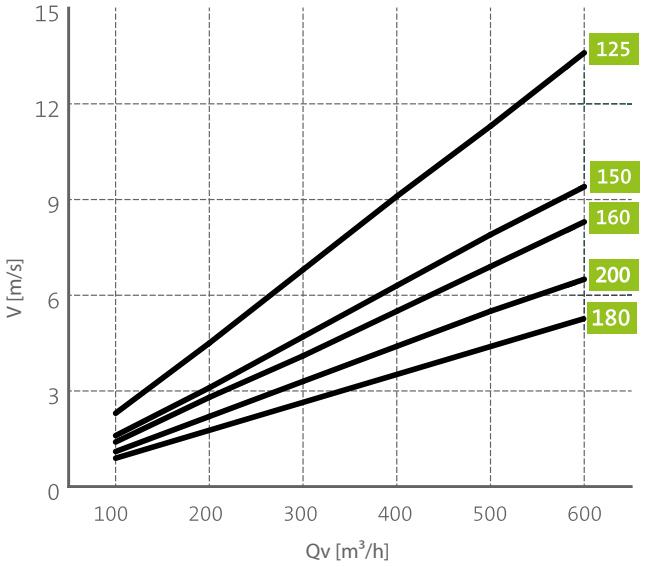


Diagram of the air speed according to the flow rate

Qv [m^3/h]	125	150	160	180	200
100	2,3	1,6	1,4	1,1	0,9
200	4,5	3,1	2,8	2,2	1,8
300	6,8	4,7	4,1	3,3	2,7
400	9,1	6,3	5,5	4,4	3,5
500	11,3	7,9	6,9	5,5	4,4
600	13,6	9,4	8,3	6,5	5,3



Insulated roof discharge units

Insulated roof discharge units specially designed for controlled mechanical ventilation are the ideal solution for residential buildings and small shops. Available in black, the four kits cover a wide range of sloping and flat roof installations. The very low pressure drop contributes to an increase in ventilation efficiency by decreasing energy consumption and thus lowering costs for the end user.

Technical characteristics:
- For sloping roofs (15-55°) with integrated sidewall flashing, weather-resistant in all conditions, and UV-resistant.
- Quick and easy installation thanks to intelligent perpendicular roof penetration.
- Designed to integrate with the EPE distribution system DN 160 mm and 200 mm (incremental fittings are included to fit DN 150 mm and 180 mm, respectively).
- High performance, very low pressure drop.
- Connection with cup joint.
- Colour: black.
- Elegant design. The design of the new discharge units prevents the entry of snow and rain thanks to a higher outlet and the presence of condensate drainage holes.

Materials:
- PP terminal
- EPS insulation
- EPE internal duct
- Sidewall flashing for sloping roof in PP, PA and UBIFLEX (Pb-free membrane)
- Aluminium sidewall flashing for flat roof

Flat roof discharge unit

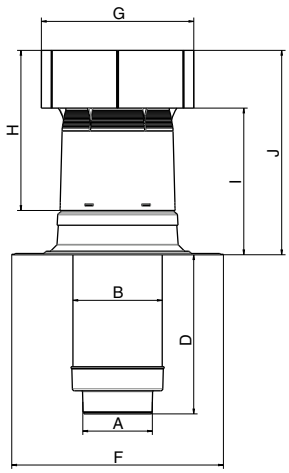
Diameter	Type of roof	Code
DN125	Flat roof	9021779 + 9021843
DN150	Flat roof	9021779
DN160	Flat roof	9021779
DN180	Flat roof	9021777
DN200	Flat roof	9021777

Sloping roof discharge unit

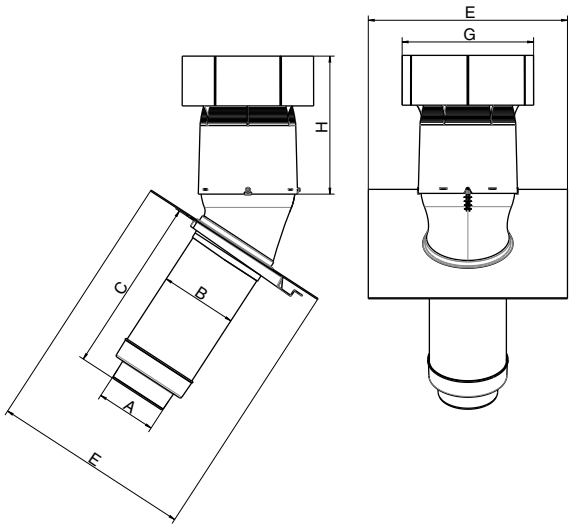
Diameter	Type of roof	Code
DN125	Sloping roof	9021778 + 9021843
DN150	Sloping roof	9021778
DN160	Sloping roof	9021778
DN180	Sloping roof	9021776
DN200	Sloping roof	9021776

Technical data

Solution for flat roofs



Solution for sloping roofs



	160 (150)	200 (180)
A [mm]	150	180
B [mm]	192	232
C [mm]	518	531
D [mm]	425	413
E [mm]	600	600
F [mm]	550	550
G [mm]	396	396
H [mm]	416	416
I [mm]	381	381
J [mm]	531	531

Pressure drops

			SUPPLY				EXTRACTION			
			ANGLE				ANGLE			
Z			<3°	15°	35°	55°	<3°	15°	35°	55°
			1,51	1,68	1,74	1,92	0,85	1,11	1,17	1,23
Qv [m3/h]	DN150	DN160	Δp [Pa]				Δp [Pa]			
	v [m/s]									
50	0,79	0,69	0,4	0,5	0,5	0,5	0,2	0,3	0,3	0,4
100	1,57	1,38	1,7	1,9	2,0	2,2	1,0	1,3	1,3	1,4
150	2,36	2,07	3,9	4,3	4,5	4,9	2,2	2,9	3,0	3,2
200	3,14	2,76	6,9	7,7	8,0	8,8	3,9	5,1	5,4	5,7
250	3,93	3,45	10,8	12,0	12,5	13,7	6,1	7,9	8,4	8,9
300	4,72	4,14	15,6	17,3	18,0	19,8	8,8	11,4	12,1	12,7
350	5,50	4,84	21,2	23,5	24,5	26,9	11,9	15,5	16,5	17,3
400	-	5,53	27,7	30,8	31,9	35,2	15,6	20,3	21,5	22,7
450	-	-	-	-	-	-	-	-	-	-
500	-	-	-	-	-	-	-	-	-	-
550	-	-	-	-	-	-	-	-	-	-
600	-	-	-	-	-	-	-	-	-	-

			SUPPLY				EXTRACTION			
			ANGLE				ANGLE			
Z			<3°	15°	35°	55°	<3°	15°	35°	55°
			2,44	2,61	2,69	2,79	1,61	1,75	1,83	1,96
Qv [m3/h]	DN180	DN200	Δp [Pa]				Δp [Pa]			
	v [m/s]									
50	0,55	0,44	0,3	0,3	0,3	0,3	0,2	0,2	0,2	0,2
100	1,09	0,88	1,1	1,2	1,3	1,3	0,8	0,8	0,9	0,9
150	1,64	1,33	2,6	2,8	2,8	2,9	1,7	1,9	1,9	2,1
200	2,18	1,77	4,6	4,9	5,1	5,2	3,0	3,3	3,4	3,7
250	2,73	2,21	7,2	7,7	7,9	8,2	4,7	5,1	5,4	5,8
300	3,27	2,65	10,3	11,0	11,4	11,8	6,8	7,4	7,8	8,3
350	3,82	3,09	14,0	15,0	15,5	16,1	9,3	10,1	10,6	11,3
400	4,37	3,54	18,3	19,6	20,2	21,0	12,1	13,2	13,8	14,7
450	4,91	3,98	23,2	24,8	25,6	26,5	15,3	16,7	17,4	18,6
500	5,46	4,42	28,6	30,7	31,6	32,8	18,9	20,6	21,5	23,0
550	-	4,86	34,6	37,1	38,2	39,6	22,9	24,9	26,1	27,8
600	-	5,31	41,2	44,2	45,5	47,2	27,3	29,6	31,0	33,1

White wall mounted air inlet terminal

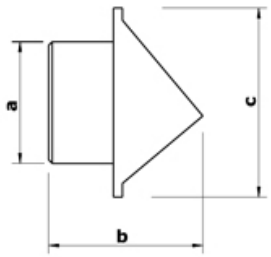
Diameter	Code
DN125	9021787
DN150	9021788
DN160	9021770
DN180	9021789

Black wall mounted air inlet terminal

Diameter	Code
DN125	9021790
DN150	9021791
DN160	9021771
DN180	9021792

Wall mounted air inlet terminal features

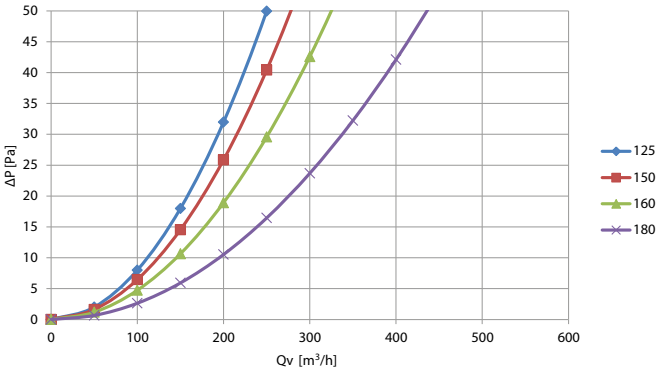
(white and black)



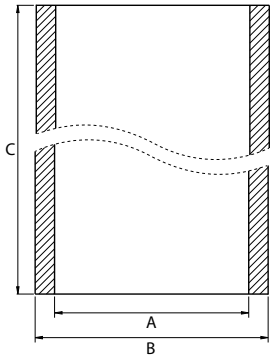
	DN125	DN150	DN160	DN180
a [mm]	125	150	160	180
b [mm]	194	194	194	200
c [mm]	233	233	233	268

Pressure drops

	DN125	DN150	DN160	DN180
Z	2.60	4.36	4.36	3.68
Qv (m^3/h)	**ΔP [Pa]**	**ΔP [Pa]**	**ΔP [Pa]**	**ΔP [Pa]**
100	8.0	6.5	4.7	2.6
200	32.0	25.9	18.9	10.5
300	71.9	58.2	42.6	23.7
400	127.9	103.4	75.7	42.1
500	199.8	161.6	118.3	65.8



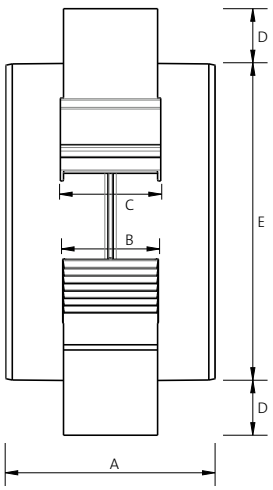
EPE duct length 2000 mm



Diameter	Code
DN125	9021793
DN150	9021794
DN160	9021795
DN180	9021796
DN200	9021859

	DN125	DN150	DN160	DN180	DN200
A [mm]	125	150	160	180	200
B [mm]	157	182	192	212	232
C [mm]	2000	2000	2000	2000	2000
m [kg]	0,48	0,56	0,53	0,67	0,80

EPE coupling piece

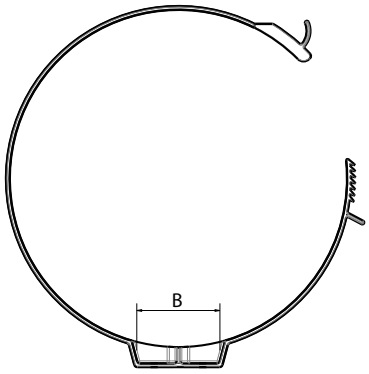


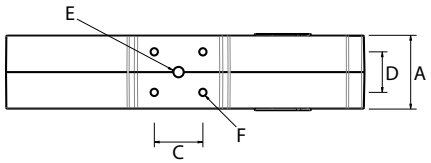
Diameter	Code
DN125	9021813
DN150	9021814
DN160	9021815
DN180	9021816
DN200	9021863

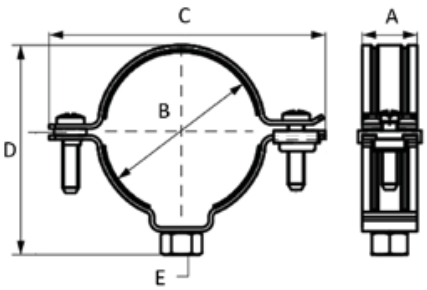
	DN125	DN150	DN160	DN180	DN200
A [mm]	100	100	100	120	120
B [mm]	45	45	45	45	45
C [mm]	48	48	48	48	48
D [mm]	15	15	15	15	15
E [mm]	125	150	160	180	200

EPE fastening collar

Fastening collar DN125÷DN180





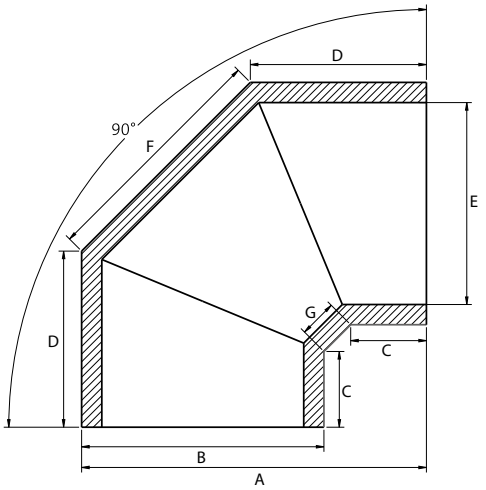


Diameter	Code
DN125	9021817
DN150	9021818
DN160	9021819
DN180	9021820
DN200	9021864

	125	150	160	180	200
A [mm]	45	45	45	45	23
B [mm]	50	50	50	50	200
C [mm]	30	30	30	30	248
D [mm]	25	25	25	25	225
E [mm]	M8	M8	M8	M8	M8
F [mm]	Ø 4,5	Ø 4,5	Ø 4,5	Ø 4,5	-

90° EPE bend

Diameter	Code
DN125	9021797
DN150	9021798
DN160	9021799
DN180	9021800
DN200	9021860



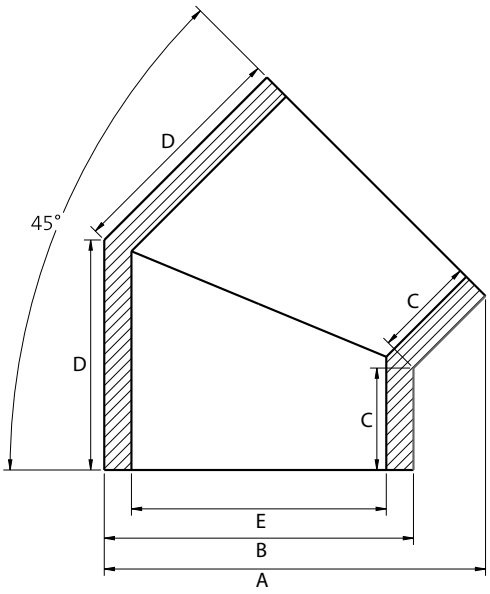
	DN125	DN150	DN160	DN180	DN200
A [mm]	238	263	274	298	318
B [mm]	157	182	192	212	232
C [mm]	60	60	60	65	65
D [mm]	125	135	140	153	161
E [mm]	125	150	160	180	200
F [mm]	159	181	189	206	222
G [mm]	30	30	30	30	30

Pressure drops

	DN125	DN150	DN160	DN180	DN200
Z	0,88	0,85	0,85	0,84	0,52
Qv (m^3/h)	**Δp (Pa)**	**Δp (Pa)**	**Δp (Pa)**	**Δp (Pa)**	**Δp (Pa)**
100	2,7	1,3	1,0	1,0	0,2
200	10,8	5,0	3,9	2,4	1,0
300	24,3	11,3	8,8	5,4	2,2
400	43,3	20,2	15,6	9,6	3,8
500	67,6	31,5	24,3	15,0	6,0

45° EPE bend

Diameter	Code
DN125	9021801
DN150	9021802
DN160	9021803
DN180	9021804
DN200	9021861



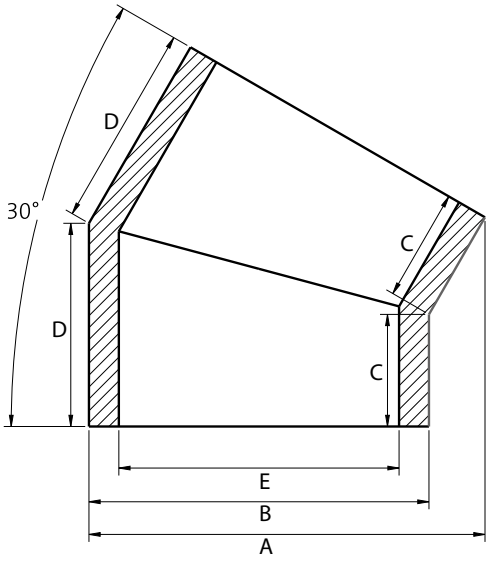
	DN125	DN150	DN160	DN180	DN200
A [mm]	199	224	235	258	278
B [mm]	157	182	192	212	232
C [mm]	60	60	60	65	65
D [mm]	125	135	137	153	161
E [mm]	125	150	160	180	200

Pressure drops

	DN125	DN150	DN160	DN180	DN200
Z	0,53	0,49	0,46	0,40	0,28
Qv (m^3/h)	**Δp (Pa)**	**Δp (Pa)**	**Δp (Pa)**	**Δp (Pa)**	**Δp (Pa)**
100	1,6	1,0	1,0	1,0	0,1
200	6,5	2,9	2,1	1,1	0,5
300	14,7	6,5	4,7	2,6	1,2
400	26,1	11,6	8,5	4,6	2,1
500	40,7	18,2	13,3	7,1	3,2

30° EPE bend

Diameter	Code
DN150	9021805
DN180	9021806



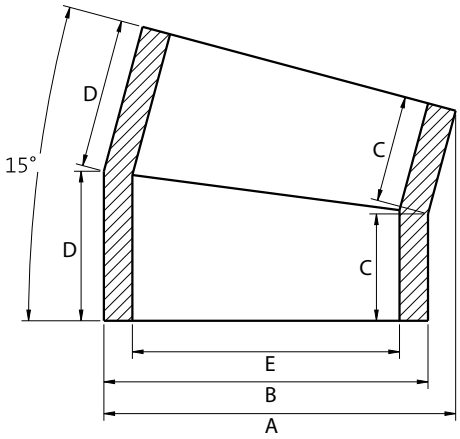
	DN150	DN180
A [mm]	212	245
B [mm]	182	212
C [mm]	60	69
D [mm]	109	122
E [mm]	150	180

Pressure drops

	DN150	DN180
Z	0.33	0.22
Qv (m^3/h)	**Δp (Pa)**	**Δp (Pa)**
100	1.0	1.0
200	2.0	1.0
300	4.4	1.4
400	7.9	2.5
500	12.3	3.9

15° EPE bend

Diameter	Code
DN150	9021807
DN180	9021808



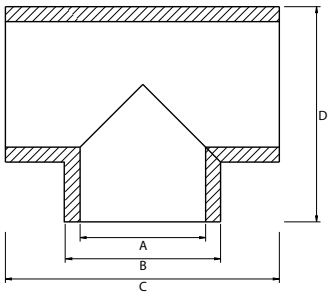
	DN150	DN180
A [mm]	198	229
B [mm]	182	212
C [mm]	60	65
D [mm]	84	93
E [mm]	150	180

Pressure drops

	DN150	DN180
Z	0.20	0.17
Qv (m^3/h)	**Δp (Pa)**	**Δp (Pa)**
100	1.0	1.0
200	1.2	1.0
300	2.7	1.1
400	4.7	1.9
500	7.4	3.0

90° EPE T

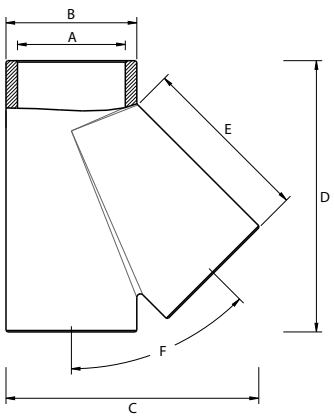
Diameter	Code
DN125	9021809
DN160	9021810



	DN125	DN160
A [mm]	125	160
B [mm]	157	192
C [mm]	276	316
D [mm]	216	254

45° EPE Y

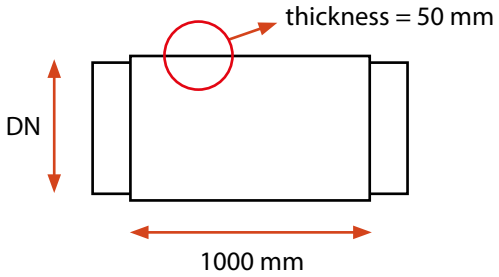
Diameter	Code
DN125	9021812
DN180	9021811



	DN150	DN180
A [mm]	150	180
B [mm]	182	212
C [mm]	352	410
D [mm]	377	440
E [mm]	240	278
F [°]	45	45

Silencer

All Energy Smart units can be equipped with silencers that can significantly reduce noise levels in the environment; these silencers have been designed to meet the strict Passivhaus requirements, thus ensuring sound power levels below 35 dBA in the maximum flow rate point of the Passivhaus operating range. To reduce noise emissions, it is recommended to install the silencers directly on the unit air supply and extraction shanks.



ENY-SP and ENY-S vertical version			
Model		**DN**	**Code**
ENY-SP-180	ENY-S-170	125	9021331
ENY-SP-280	ENY-S-270	160	9021332
ENY-SP-370	ENY-S-360		
ENY-SP-460	ENY-S-460	180	9021334
ENY-SP-600	ENY-S-600		
ENY-SP-460	ENY-S-460	200	9021335
ENY-SP-600	ENY-S-600		

ENY-SP and ENY-S horizontal and vertical version		
Model	**DN**	**Code**
ENY-SHP-150	125	9021331
ENY-SHP-170		
ENY-SHP-270	160	9021332

Silencers technical data

The ducted silencers meet the following minimum standards:
- Internal duct with polypropylene lining and aluminium/polyester laminated outer casing.
- Filling layer between the internal and external surfaces in sound-absorbing material.
- Hydrophobic and antibacterial internal duct.

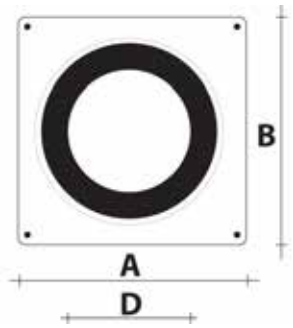
Maximum noise emissions envisaged on silenced supply and extraction outlets

Using the specified ducted silencers would result in the maximum noise emissions reductions listed below in the occupied premises. The silencers are selected in order to verify the Passivhaus requirements, which require a sound level limit up to 25 dBA for supply flows and 30 dBA for extraction flows.

Sound attenuation spectrum (dB)		**[Hz]**							
Model	**DN**	**63**	**125**	**250**	**500**	**1000**	**2000**	**4000**	**8000**
ENY-SP-180, ENY-S-180, ENY-SHP-150, ENY-SHP-170	125	17,7	26,3	35,4	29,2	33,3	45,4	40,5	26,5
ENY-SP-280, ENY-SP-370, ENY-S-270, ENY-S-360	160	16,5	24,1	30,6	27,5	29,6	41,7	28,7	18,1
ENY-SP-460, ENY-SP-600, ENY-S-460, ENY-S-600	180	17,3	28,5	28,9	25,1	30,7	38,3	22,7	18,3
ENY-SP-460, ENY-SP-600, ENY-S-460, ENY-S-600	200	6,5	21,1	27,1	30,5	35,8	35,8	19,4	12,3

Hermetic wall rosette

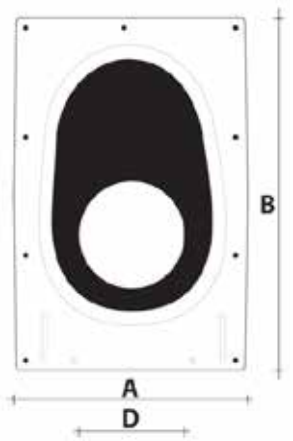
Diameter	Description	Code
DN125	Hermetic wall rosette DN100-131	9021824
DN150	Hermetic wall rosette DN150-186	9021825
DN180	Hermetic wall rosette DN180-250	9021826



	DN125	DN150	DN180
A [mm]	200	280	400
B [mm]	200	280	400
D [mm]	90	140	170

Hermetic ceiling rosette tilted 0-55°

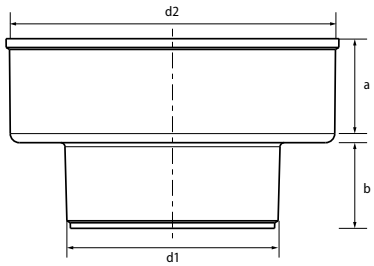
Diameter	Code
DN125	9021827
DN150	9021828
DN180	9021829



	DN125	DN150	DN180
A [mm]	230	280	400
B [mm]	360	425	600
D [mm]	90	140	170
Inclination [°]	0-55	0-55	0-55

Concentric reducer

Description	Code
Concentric reducer DN 150-125	9021840
Concentric reducer DN 160-125	9021843
Concentric reducer DN 180-125	9021841
Concentric reducer DN 180-150	9021842
Concentric reducer DN 180-160	9021848
Concentric reducer DN 200-180	9021862



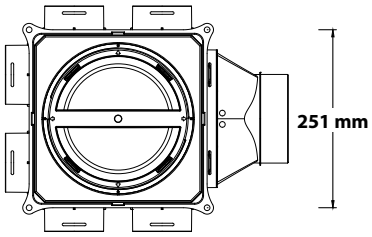
Dimensions	DN 150-125	DN 160-125	DN 180-125	DN 180-150	DN 180-160	DN 200-180
d2 [mm]	180	190	210	210	210	230
d1 [mm]	125	125	125	150	160	180
a [mm]	50	60	60	60	48	33
b [mm]	54	54	54	54	51	55

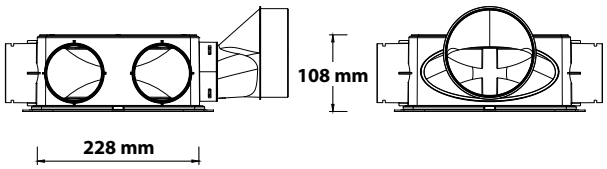
Universal distribution boxes

The boxes for the supply distribution network are made of PE and offer excellent performance in terms of acoustic and thermal insulation. There are universal distribution boxes available with a number of connections from a minimum of 6 to a maximum of 16, which can be placed on one or more sides of the box.
For each connection, a dedicated air flow restrictor is also available, which can be housed in the connection to maintain the correct air flow for every single room.
The ducts and the universal distribution box clip together for easy and fast assembly, ensuring excellent seal.

Universal distribution box PP 6 connections 75/63 + 3 closing caps + 6 air flow restrictors DN 125 mm connection

Model	Code
Universal distribution box PP6	9021844

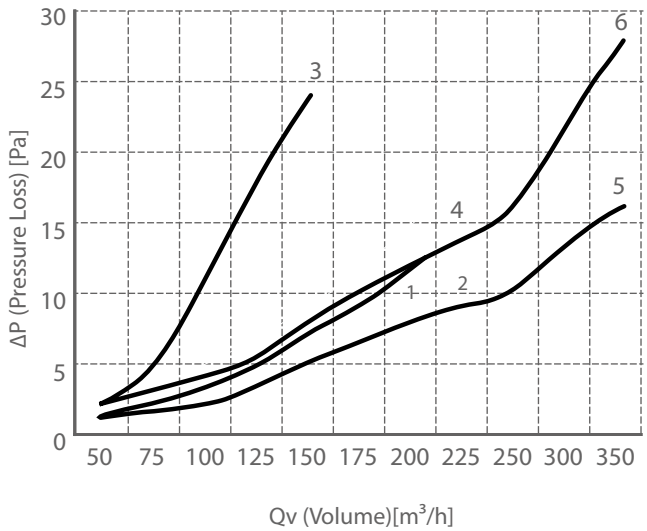




- High performance thanks to low pressure drops.
- Possible combination of 2 box together.
- Elliptical/circular adaptor for dia. 100/125mm.
- 12 levels air flow restrictors.
- 6 coupling pieces for ducts for all possible installations.
- Tested by standard TÜV SÜD TAK 01-2013 (System pressure: + 2000 Pa / - 2000 Pa).
- Low noise.
- Easy to clean system.
- Easy-to-position and replaceable air flow limiters.
- Lightweight and without edges.
- For wall, ceiling and floor installations.
- Mounting brackets.

Pressure drops

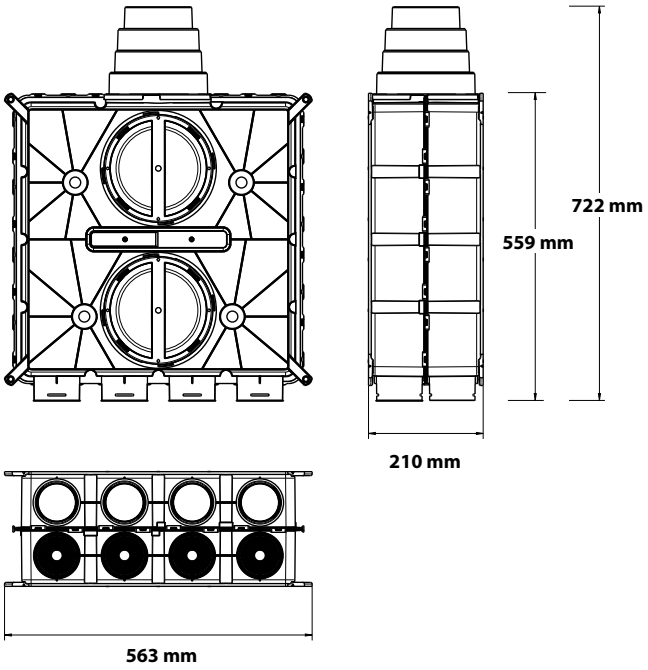
Pressure drop	4
Qv (m^3/h)	Δp (Pa)
50	2,0
75	3,0
100	4,0
125	5,0
150	8,0
175	10,0
200	12,0
225	14,0



Universal distribution box PP 8 connections 75/63 + 4 closing caps + 8 air flow restrictors DN125/150/160/180 connection

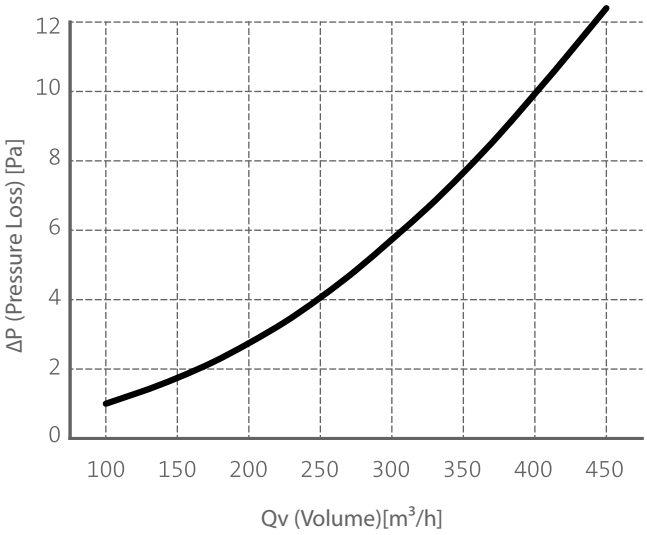
- High performance thanks to low pressure drops.
- 8 coupling pieces for ducts for all possible installations.
- Tested by standard TÜV SÜD TAK 01-2013 (System pressure: + 2000 Pa / - 2000 Pa).
- Low noise.
- Easy to clean system.
- Easy-to-position and replaceable air flow limiters.
- Lightweight and without edges.
- For wall, ceiling and floor installations.
- Mounting brackets on both sides.
- n. 5 duct connections (DN180 with EPDM gaskets) adaptable to all available diameters (DN125, DN150, DN160 and DN180).

Model	Code
Universal distribution box PP8	9021850



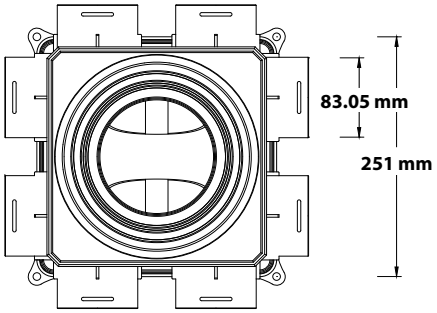
Pressure drops

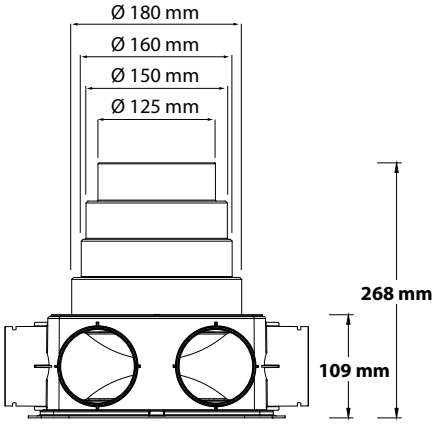
Qv (m³/h)	Δp (Pa)
100	1.0
150	1.7
200	2.7
250	4.0
300	5.7
350	7.6
400	9.9
450	12.4



Universal distribution box PP 8 connections 75/63 + 4 closing caps + 8 air flow restrictors DN 125/150/160/180 connection

Model	Code
Universal distribution box PP8	9021895

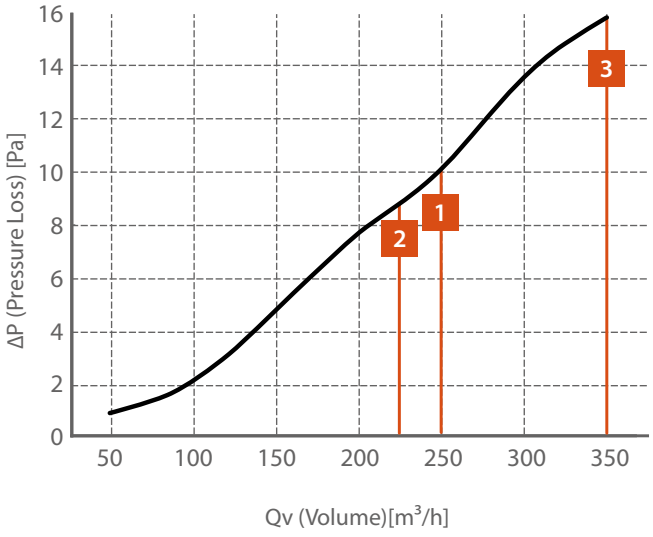




- High performance thanks to low pressure drops.
- 8 coupling pieces for ducts for all possible installations
- Possible horizontal or vertical combination of 2 box together.
- Step-up adaptor for dia. 125/150/160/180 mm.
- 12 levels air flow restrictors.
- Tested by standard TÜV SÜD TAK 01-2013 (System pressure: + 2000 Pa / - 2000 Pa).
- Low noise.
- Easy to clean system.
- Easy-to-position and replaceable air flow limiters.
- Lightweight and without edges.
- For wall, ceiling and floor installations.
- Mounting brackets on both sides.

Pressure drops

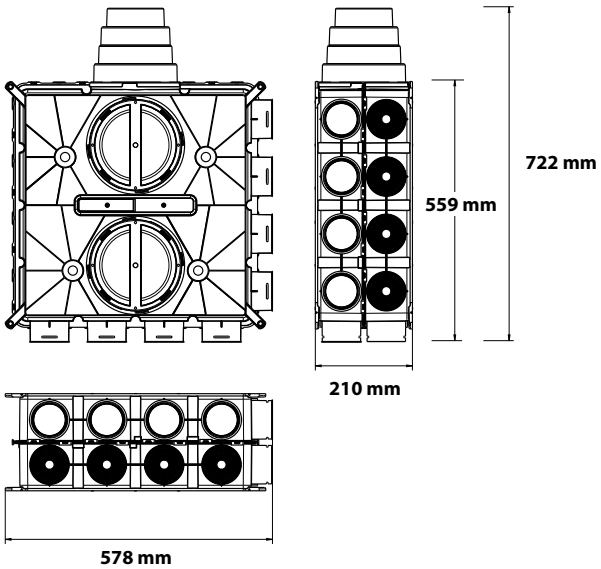
Pressure drop	2
Qv (m^3/h)	Δp (Pa)
50	1,0
75	1,5
100	2,0
125	3,0
150	5,0
175	6,5
200	8,0
225	9,0



Universal distribution box PP 16 connections 75/63 + 8 closing caps + 16 air flow restrictors DN125/150/160/180 connection

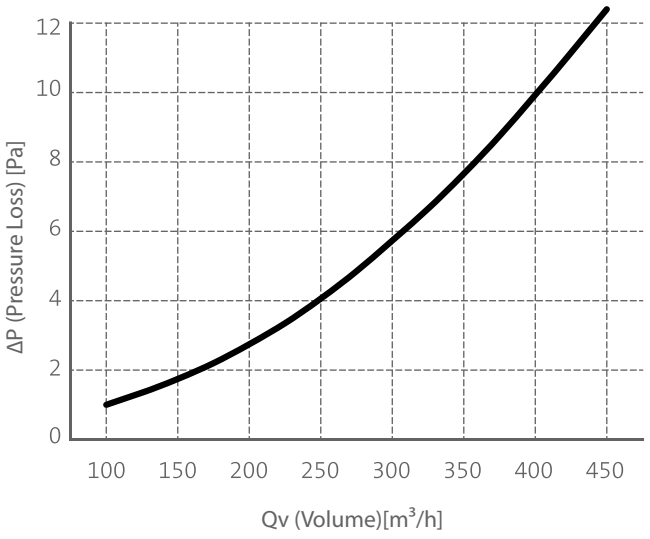
Model	Code
Universal distribution box PP16	9021851

- High performance thanks to low pressure drops
- 16 coupling pieces for ducts for all possible installations
- Tested by standard TÜV SÜD TAK 01-2013 (System pressure: + 2000 Pa / - 2000 Pa)
- Low noise
- Easy to clean system
- Easy-to-position and replaceable air flow limiters
- Lightweight and without edges
- For wall, ceiling and floor installations
- Mounting brackets on both sides
- 5 duct connections (DN180 with EPDM gaskets) adaptable to all available diameters (DN125, DN150, DN160 and DN180)



Pressure drops

Qv (m^3/h)	Δp (Pa)
100	1.0
150	1.7
200	2.7
250	4.0
300	5.7
350	7.6
400	9.9
450	12.4



Box - duct closing cap 75/63

Diameter of connections	Code
75/63	9021852

Box - air flow restrictor for duct 75/63

For duct diameter	Code
75/63	9021853

Rings removed	0	1	2	3	4	5	6	7	8	9	10	11	12
Z	20.01	15.98	12.45	9.41	7.32	5.30	3.63	2.62	1.82	1.24	0.77	0.41	0.18
Qv (m^3/h)	**Δp (Pa)**												
10	4.5	3.6	2.8	2.1	1.6	1.2	0.8	0.6	0.4	0.3	0.2	0.1	0.0
20	17.9	14.3	11.1	8.4	6.5	4.7	3.2	2.3	1.6	1.1	0.7	0.4	0.2
30	40.2	32.1	25.0	18.9	14.7	10.7	7.3	5.3	3.7	2.5	1.5	0.8	0.4
40	71.5	57.1	44.5	33.6	26.2	18.9	13.0	9.4	6.5	4.4	2.8	1.5	0.6
50	111.7	89.2	69.5	52.5	40.9	29.6	20.3	14.6	10.2	6.9	4.3	2.3	1.0
60	160.9	128.5	100.1	75.7	58.9	42.6	29.2	21.1	14.6	10.0	6.2	3.3	1.4

Box - Silencer Set (for cod. 9021850-9021851)

Description	Code
Silencer Set	9021854

Box - adapter

Description	Code
Adapter Ø75/63 - Ø52/63	9021855
Adapter Ø75/63 - Ø75/90	9021856

Box - adapter from circular to semicircular

Description	Code
Adapter from circular Ø75/63 to semicircular 50x102	9021857
Adapter from circular Ø75/63 to semicircular 60x132	9021858

Box - universal adapter DN 125/150/160/180

Description	Code
Universal adapter DN 125/150/160/180	9021846

Duct DN 75 mm connection kit (n° 05 pieces) complete with click-ring and damper

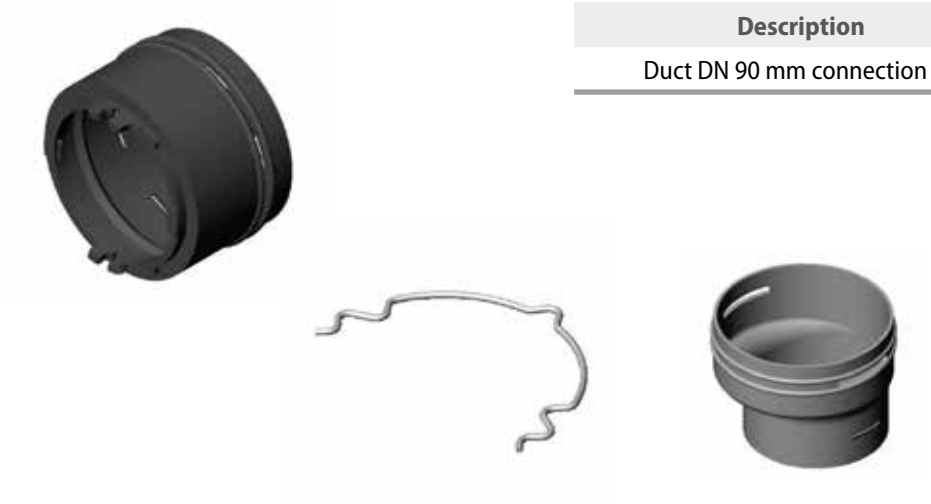
For 257x107x90 mm grill adapter code 9021730.

Description	Code
Duct DN 75 mm connection kit	9021728

Duct DN 90 mm connection kit (n° 05 pieces) complete with DN 75 connection, DN 75/90 mm increaser, click-ring and damper

For 257x107x90 mm grill adapter code 9021730.

Description	Code
Duct DN 90 mm connection kit	9021729



Semi-circular duct 50x120 mm connection kit (n° 05 pieces) complete with seal-ring and damper

For 257x107x90 mm grill adapter code 9021730.

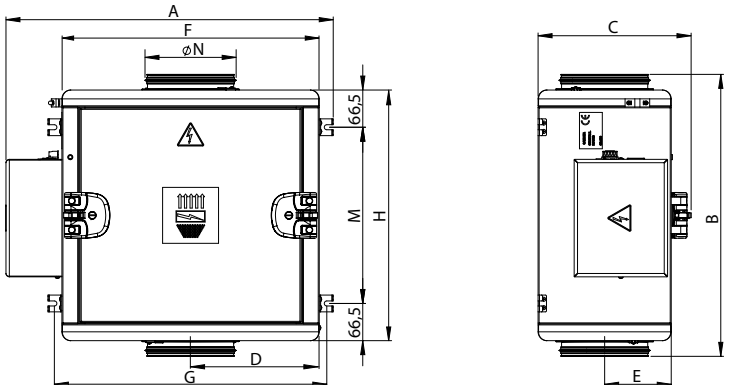
Description	Code
Semi-circular duct 50x120 mm connection	9021734

Crystall CR electrostatic filter (For more details, see Crystall Round technical manual)

Crystall Round units are designed to be applied on intake supply air distribution main duct, downstream of the VMC unit and on remote position from it, between the inlet grid and the ramification plenum of the plant.
Given the flattened shape of the units, the standard application near the above plenums is in a false ceiling. However wall or double-wall remote application is not excluded.
In case of remote application from the VMC unit, the right or left version of the Crystall Round depends on the specific need of field installation.

Description	Code
Crystall CR-200 Left version	0057002
Crystall CR-400 Left version	0057004
Crystall CR-600 Left version	0057006
Crystall CR-200-D Right version	0057002D
Crystall CR-400-D Right version	0057004D
Crystall CR-600-D Right version	0057006D

Left version dimension; for the right versions the dimensions are mirrored.



Model	A	B	C	D	E	F	G	H	M	ø N
CR 200	585	504	218	230	91	460	487	448	315	125
CR 400	585	504	274	230	119	460	487	448	315	160
CR 600	705	673	292	250	128	580	607	600	467	180

Recommended combinations

The typical case for this combination type is the wall installation for Energy Smart units with floor/wall support and on vertical position (S/SP). For flat Energy Smart units (SHP) is the ceiling/wall installation.

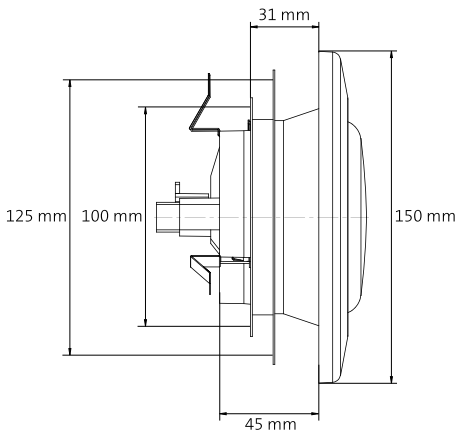
Model	SX external air connection Energy Smart	DX external air connection Energy Smart
ENY-S-170	CR200-D(*)	CR200
ENY-SP-180	CR200-D(*)	CR200
ENY-S-270	CR400-D(*)	CR400
ENY-SP-280	CR400-D(*)	CR400
ENY-S-360	CR400-D(*)	CR400
ENY-SP-370	CR400-D(*)	CR400
ENY-S-460	CR600-D(*)	CR600
ENY-SP-460	CR600-D(*)	CR600
ENY-S-600	CR600-D(*)	CR600
ENY-SP-600	CR600-D(*)	CR600
ENY-SHP-150	N/A	CR200(*)
ENY-SHP-170(**)	CR200-D	CR200(*)
ENY-SHP-270(**)	CR400-D	CR400

(*) Standard application without Energy Smart unit electronic board setup changes.
(**) Crystall Round accessory remote installation is recommended for ENY-SHP-170 and ENY-SHP-270 units.

Extraction valve DN125 in white ABS

- For air extraction
- For wall and ceiling installations
- For applications in damp environments
- Easy to adjust
- Easy to remove for cleaning

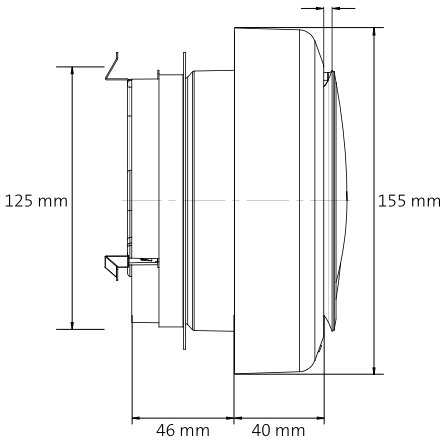
Description	Code
Extraction valve DN125 in white ABS	9021870



Supply valve DN125 in white ABS

- For supply air
- For wall and ceiling installations
- Easy to adjust
- Easy to remove for cleaning

Description	Code
Supply valve DN125 in white ABS	9021871

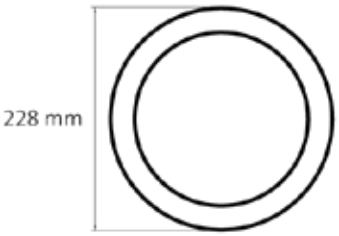


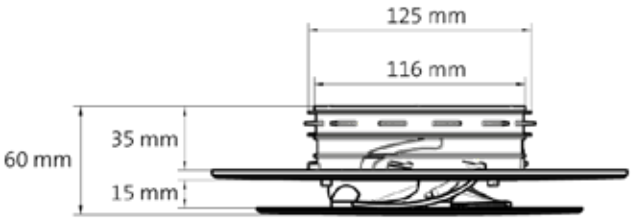
Adjustable intake / extract valve "Rondo" DN 125 of white RAL 9016 ASA

Intake/extract air universal valves in ASA,
high-grade plastic material, of white RAL 9016.

- Elegant design
- Adjustable air flow in 9 positions
- Suitable for wall and ceiling installation
- UV ray high resistance
- To be used with all adapters for DN 125 valve, without utensils
- Circular version
- Helicoidal 360° air distribution for a better diffusion
- Recommended maximum flow rate 75 m³/h

Description	Code
Adjustable intake / extract valve Rondo DN 125	9021737



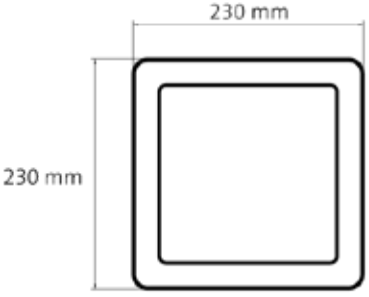


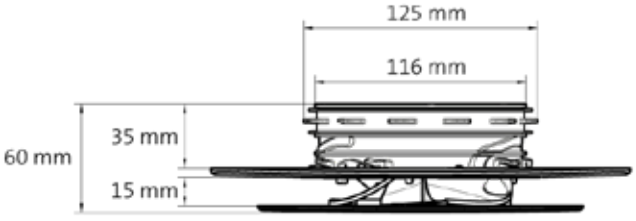
Adjustable intake / extract valve "Quadro" DN 125 of white RAL 9016 ASA

Intake/extract air universal valves in ASA,
high-grade plastic material, of white RAL 9016.

- Elegant design
- Adjustable air flow in 9 positions
- Suitable for wall and ceiling installation
- UV ray high resistance
- To be used with all adapters for DN 125 valve, without utensils
- Square version
- Helicoidal 360° air distribution for a better diffusion
- Recommended maximum flow ratea 75 m³/h

Description	Code
Adjustable intake / extract valve Quadro DN 125	9021738





Pressure drops

Air supply

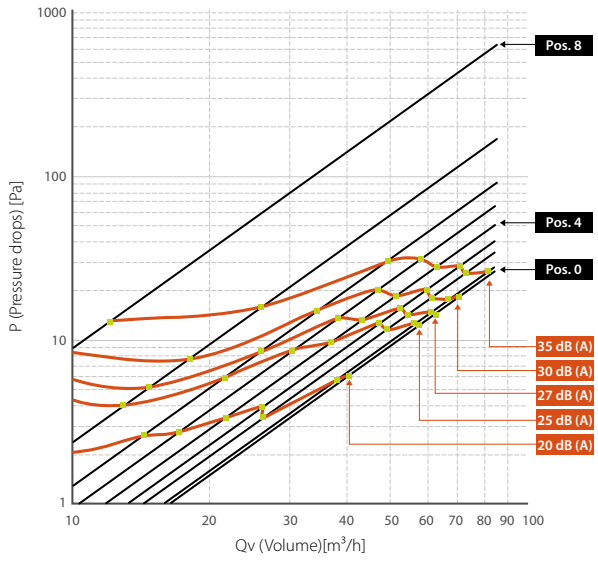
Qv	V Speed	Δp electric heaters [Pa]								
[m³/h]	m/s	Pos. 0	Pos. 1	Pos. 2	Pos. 3	Pos. 4	Pos. 5	Pos. 6	Pos. 7	Pos. 8
20,0	0,5	1,5	1,6	1,9	2,3	2,8	3,7	5,0	9,4	35,0
25,0	0,6	2,3	2,5	3,0	3,5	4,4	5,8	7,9	14,6	54,7
30,0	0,7	3,4	3,5	4,3	5,1	6,4	8,4	11,4	21,1	78,8
35,0	0,8	4,6	4,8	5,9	6,9	8,7	11,4	15,5	28,7	107,2
40,0	0,9	6,0	6,3	7,7	9,0	11,3	14,9	20,2	37,5	140,0
45,0	1,0	7,6	8,0	9,8	11,4	14,3	18,8	25,6	47,5	177,2
50,0	1,1	9,3	9,8	12,1	14,1	17,7	23,2	31,6	58,6	218,8
55,0	1,2	11,3	11,9	14,6	17,1	21,4	28,1	38,2	70,9	264,7
60,0	1,4	13,5	14,1	17,4	20,4	25,4	33,4	45,4	84,4	315,0
65,0	1,5	15,8	16,6	20,4	23,9	29,9	39,2	53,3	99,0	369,7
70,0	1,6	18,3	19,2	23,6	27,7	34,6	45,5	61,9	114,8	428,8
75,0	1,7	21,0	22,1	27,1	31,8	39,7	52,2	71,0	131,8	492,2

Extract air

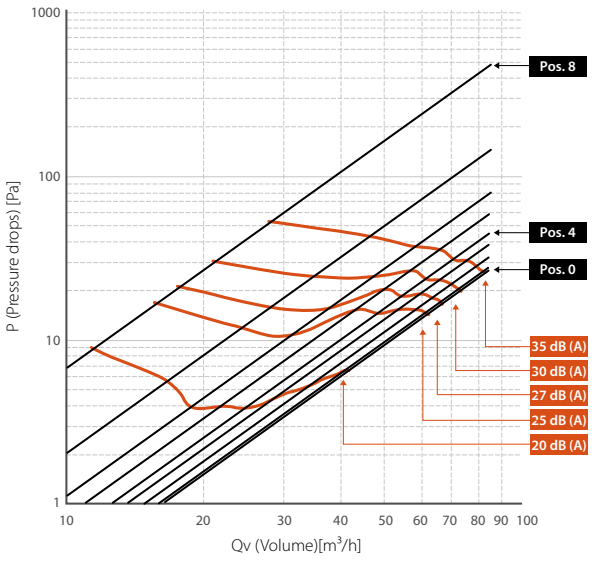
Qv	V Speed	Δp electric heaters [Pa]								
[m³/h]	m/s	Pos. 0	Pos. 1	Pos. 2	Pos. 3	Pos. 4	Pos. 5	Pos. 6	Pos. 7	Pos. 8
20,0	0,5	1,5	1,6	1,8	2,2	2,5	3,3	4,5	8,1	26,6
25,0	0,6	2,4	2,4	2,8	3,4	3,9	5,2	7,0	12,6	41,6
30,0	0,7	3,4	3,5	4,1	4,9	5,6	7,4	10,0	18,1	59,8
35,0	0,8	4,7	4,8	5,6	6,6	7,7	10,1	13,6	24,7	81,4
40,0	0,9	6,1	6,3	7,3	8,7	10,0	13,2	17,8	32,2	106,4
45,0	1,0	7,7	7,9	9,2	11,0	12,7	16,7	22,5	40,8	134,6
50,0	1,1	9,6	9,8	11,3	13,6	15,7	20,6	27,8	50,4	166,2
55,0	1,2	11,6	11,8	13,7	16,4	18,9	25,0	33,7	60,9	201,1
60,0	1,4	13,8	14,1	16,3	19,5	22,5	29,7	40,1	72,5	239,3
65,0	1,5	16,2	16,5	19,2	22,9	26,5	34,9	47,0	85,1	280,9
70,0	1,6	18,7	19,2	22,2	26,6	30,7	40,4	54,5	98,7	325,8
75,0	1,7	21,5	22,0	25,5	30,5	35,2	46,4	62,6	113,3	374,0

Sound levels

Air supply

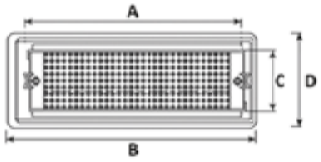


Extract air



Rectangular steel wall grill RAL9010

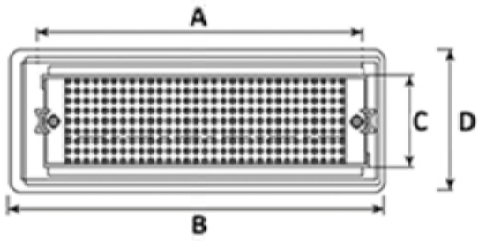
Description	Code
Rectangular steel wall grill RAL9010	9021872



	Dimensions
A [mm]	296
B [mm]	350
C [mm]	80
D [mm]	130

Stainless steel rectangular wall grill

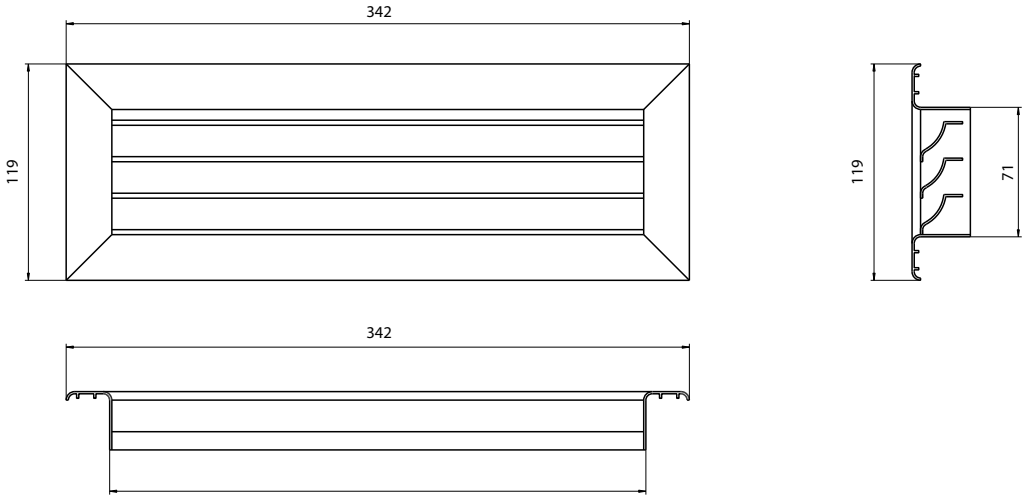
Description	Code
Rectangular stainless steel wall grill	9021873



	Dimensions
A [mm]	296
B [mm]	350
C [mm]	80
D [mm]	130

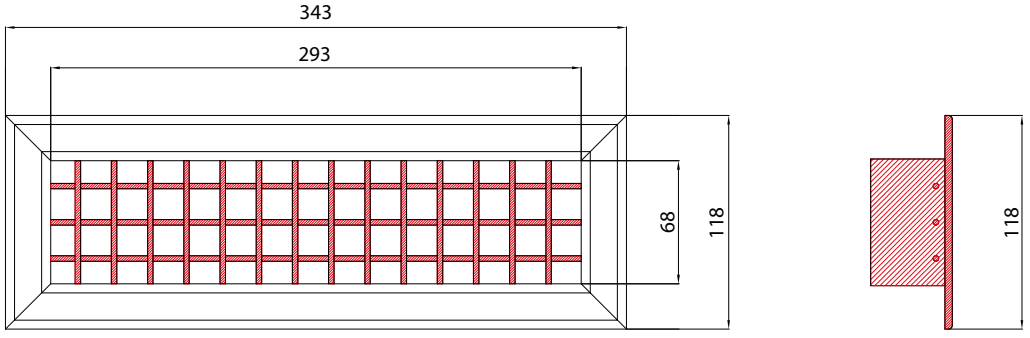
Rectangular aluminium grill fixed fins

Description	Code
Rectangular aluminium grill fixed fins	9021874



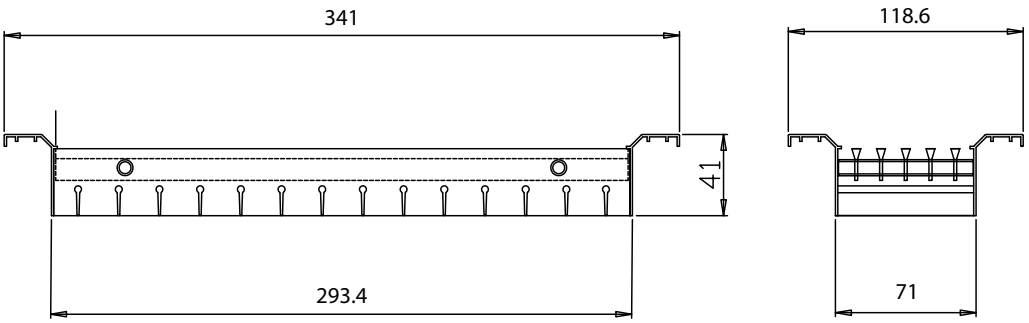
Rectangular aluminium grill adjustable fins

Description	Code
Rectangular aluminium grill adjustable fins	9021875



Rectangular aluminium grill rear adjustable fins

Description	Code
Rectangular aluminium grill rear adjustable fins	9021876



NETTUNO rectangular grill for wall installation

Made of painted steel RAL 9003 with dimensions: 280x130 mm.

Description	Code
NETTUNO rectangular grill for wall installation	9021731

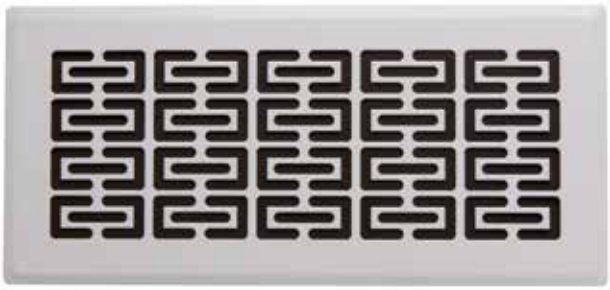
TERRA rectangular grill for wall installation

Made of painted steel RAL 9003 with dimensions: 280x130 mm.

Description	Code
TERRA rectangular grill for wall installation	9021732

SATURNO rectangular grill for wall installation

Made of painted steel RAL 9003 with dimensions: 280x130 mm.



Description	Code
SATURNO rectangular grill for wall installation	9021733

VENERE rectangular grill for wall installation

Made of painted steel RAL 9003 with dimensions: 280x130 mm.

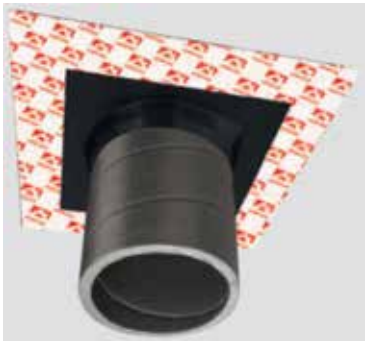
Description	Code
VENERE rectangular grill for wall installation	9021735

MARTE rectangular grill for wall installation

Made of painted steel RAL 9003 with dimensions: 280x130 mm.

Description	Code
MARTE rectangular grill for wall installation	9021736

Sleeve vapor barrier sealing



Description	Code
Vapour barrier sealing sleeve 15/110	9021877
Vapour barrier sealing sleeve 80/200	9021878

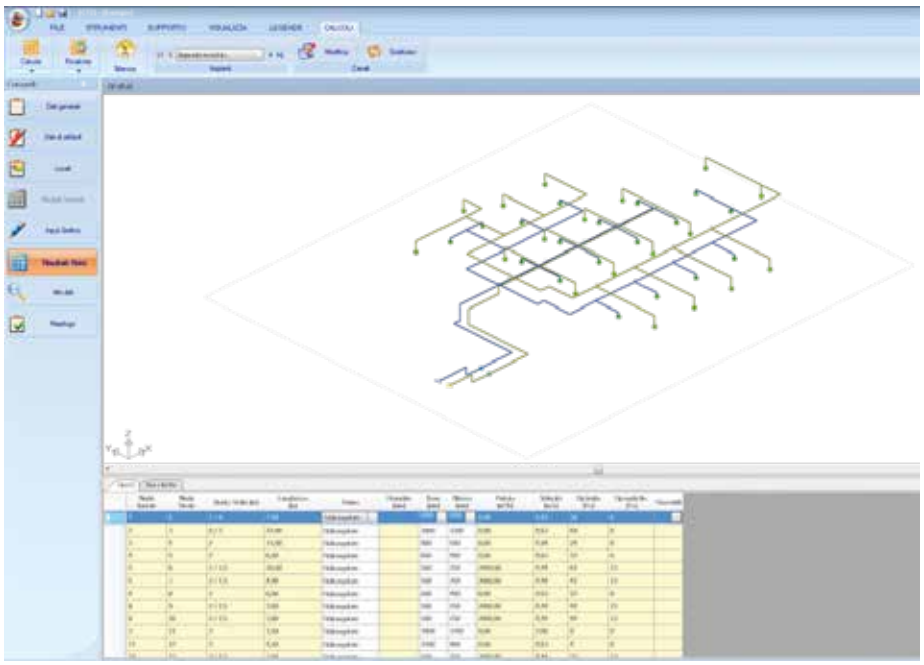
Elements required for proper assessment of components that must be part of the controlled mechanical ventilation system (VMC):

Layout of the premises	☐
Indication of the height of the single rooms	
Marking of premises concerned by the CMV system	☐
Energy Smart installation point	☐
Type of distribution	☐ wall ☐ false ceiling ☐ floor
Indication of the rooms where the false ceiling will be installed	
Indication of the fresh air intake point	☐ roof (indicate height) ☐ wall (indicate which one)
Indication of where to extract the exhausted air	☐ roof (indicate height) ☐ wall (indicate which one)
Accessories	☐ external circular electric heater ☐ pressure sensor for automatic control of flow rates ☐ feet
Customer name	

Sizing software

To make your estimate or project easier and faster, Sabiana has developed a **calculation and estimation program** available to all designers, **distributed free of charge by our sales network**.

The program is a tool that is helpful for designing controlled mechanical ventilation systems and that lets you conform, test, design and estimate your plant with the Sabiana Energy Smart systems.



Compliance with EU 1253/14

VERIFICATION ITEM	DECLARATION OF CONFORMITY
The VUs must be equipped with multiple speed drive or speed variator.	The units are equipped with centrifugal fans featuring backward-curved blades directly coupled with brushless synchronous electronic motors, with integrated inverter for continuous modulating speed through 0-10 V control signal.
The SEC value, calculated for an average climate, should not exceed 0 kWh/(m^2.a)	For models **ENY-SHP-170**, **ENY-SP-180/280/370**, which belong to energy class A+, the SEC is below -42 kWh/m^2 a. For models **ENY-S-170/270/360/460/600**, **ENY-SP-460/600 and ENY-SHP-270** which belong to energy class A, the SEC is below 0 or equal to -38 kWh/m^2 a.
All BVUs must be equipped with a thermal bypass device	To ensure the maximum amount of free-cooling, all units are provided with by-pass dampers for total by-pass of the heat recovery unit by the supply air flow.

Note: Regulation EU 1253/14 does not apply to the ENY-SHP-150 unit as the nominal power input of each fan is less than 30W

In Compliance with EU 1254/14 - Annex IV

Table of compliance with Regulations EU 1254/14 Annex IV - Energy Smart

Supplier name or brand	Sabiana SpA														
Supplier model identification	ENY-SP-180			ENY-SP-280			ENY-SP-370			ENY-SP-460			ENY-SP-600		
Specific energy consumption SEC in [kWh/(m²a)] for each applicable climate zone (temperate, hot, cold, climate)	-42,32	-17,2	-81,6	-42,29	-17,2	-81,6	-42,47	-17,2	-82,0	-40,10	-15,4	-78,6	-39,71	-15,1	-78,1
SEC class - temperate climatic zone	A+			A+			A+			A			A		
Type declared according to EU 1253/14	BVU			BVU			BVU			BVU			BVU		
Type of drive installed	Continuous speed variator			Continuous speed variator			Continuous speed variator			Continuous speed variator			Continuous speed variator		
Type of heat recovery system	Static sensitive heat recovery unit			Static sensitive heat recovery unit			Static sensitive heat recovery unit			Static sensitive heat recovery unit			Static sensitive heat recovery unit		
Thermal efficiency	91,5%			91,4%			92,5%			88,6%			88,0%		
Maximum flow rate [m³/h][3]	180			280			370			460			600		
Power absorbed by the fan drive, including all motor control devices, at maximum flow rate [W][4]	50			70			120			215			300		
Sound power level (LWA) in [dB(A)]	38,9			43,1			46,3			47,9			52,4		
Reference flow rate [m³/h]	130			200			260			320			420		
Reference pressure difference [Pa]	50			50			50			50			50		
SPI [W/(m³/h)]	0,174			0,174			0,179			0,237			0,247		
Control factor and type of control	0,85 Centralised ambient control with humidity sensor			0,85 Centralised ambient control with humidity sensor			0,85 Centralised ambient control with humidity sensor			0,85 Centralised ambient control with humidity sensor			0,85 Centralised ambient control with humidity sensor		
Maximum percentages declared [%] of internal and external leakage	Internal leakage: 1,2%			Internal leakage: 0,7%			Internal leakage: 0,5%			Internal leakage: 0,3%			Internal leakage: 0,6%		
	External leakage: 1,7%			External leakage: 1,0%			External leakage: 0,8%			External leakage: 0,7%			External leakage: 1,84%		
Position and description of the visual warning signal relating to the filter for RVUs intended for use with filters, including a text that emphasizes the importance of replacing the filter at regular intervals in order to safeguard unit performance and energy efficiency	Please refer to the following parts of the brochure: • T-EP control description • Recommendations for filter replacement: filters clogging could result into relevant flow rate reduction, which implies the need of frequent windows opening and consequent thermal demand increase. • Proper replacement period depends on background air quality, which can broadly vary between city centers and countryside. • In order to prevent filters clogging, optimum average period for filters replacement is 3 month. However, due to normal dust collection and spring pollens, maximum suggested period should not exceed 6 months. • Filters replacement period can be modified by maintainer with a precision of days (min 30, max 360).														
Internet address with the disassembly instructions	www.sabiana.it			www.sabiana.it			www.sabiana.it			www.sabiana.it			www.sabiana.it		
AEC (Annual Energy Consumption) [kWh/a]	203	158	740	203	158	740	207	162	744	260	215	797	269	224	806
AHS (Annual Heating Energy Savings) [kWh/a]	4670	2111	9136	4667	2110	9131	4697	2124	9189	4591	2076	8982	4576	2069	8951

In Compliance with EU 1254/14 - Annex IV

Table of compliance with Regulation EU 1254/14 Annex IV - Energy Smart

Supplier name or brand	Sabiana SpA														
Supplier model identification	ENY-S-170			ENY-S-270			ENY-S-360			ENY-S-460			ENY-S-600		
Specific energy consumption SEC in [kWh/(m²a)] for each applicable climate zone (temperate, hot, cold, climate)	-39,4	-15,2	-77,2	-39,3	-15,1	-76,9	-39,7	-14,9	-78,3	-38,4	-13,9	-76,6	-37,9	-13,5	-76,0
SEC class - temperate climatic zone	A			A			A			A			A		
Type declared according to EU 1253/14	BVU			BVU			BVU			BVU			BVU		
Type of drive installed	Continuous speed variator			Continuous speed variator			Continuous speed variator			Continuous speed variator			Continuous speed variator		
Type of heat recovery system	Static sensitive heat recovery unit			Static sensitive heat recovery unit			Static sensitive heat recovery unit			Static sensitive heat recovery unit			Static sensitive heat recovery unit		
Thermal efficiency	87,0%			86,5%			90,1%			88,6%			88,0%		
Maximum flow rate [m³/h][3]	170			270			360			460			600		
Power absorbed by the fan drive, including all motor control devices, at maximum flow rate [W][4]	45			76			125			215			300		
Sound power level (LWA) in [dB(A)]	40,6			46,6			49,0			47,9			52,4		
Reference flow rate [m³/h]	120			190			250			320			420		
Reference pressure difference [Pa]	50			50			50			50			50		
SPI [W/(m³/h)]	0,183			0,184			0,209			0,237			0,247		
Control factor and type of control	0,95 Timer control			0,95 Timer control			0,95 Timer control			0,95 Timer control			0,95 Timer control		
Maximum percentages declared [%] of internal and external leakage	Internal leakage: 0,4%			Internal leakage: 0,4%			Internal leakage: 0,7%			Internal leakage: 0,3%			Internal leakage: 0,6%		
	External leakage: 1,8%			External leakage: 1,4%			External leakage: 2,7%			External leakage: 0,7%			External leakage: 1,84%		
Position and description of the visual warning signal relating to the filter for RVUs intended for use with filters, including a text that emphasizes the importance of replacing the filter at regular intervals in order to safeguard unit performance and energy efficiency	Please refer to the following parts of the brochure: • T-EP control description • Recommendations for filter replacement: filters clogging could result into relevant flow rate reduction, which implies the need of frequent windows opening and consequent thermal demand increase. • Proper replacement period depends on background air quality, which can broadly vary between city centers and countryside. • In order to prevent filters clogging, optimum average period for filters replacement is 3 month. However, due to normal dust collection and spring pollens, maximum suggested period should not exceed 6 months. • For "ENY-S" range, in case where optional automatic flow system is provided, neglected filters replacement does not result into air flow decrease, however it would imply relevant power consumption increase. As a matter of fact, fans energy consumption due to filters operation could rise up by 2 or 3 times. • Filters replacement period can be modified by maintainer with a precision of days (min 30, max 360).														
Internet address with the disassembly instructions	www.sabiana.it			www.sabiana.it			www.sabiana.it			www.sabiana.it			www.sabiana.it		
AEC (Annual Energy Consumption) [kWh/a]	252	207	789	253	208	790	281	236	818	313	268	850	325	280	862
AHS (Annual Heating Energy Savings) [kWh/a]	4507	2038	8817	4492	2031	8787	4601	2080	8787	4555	2060	8912	4537	2052	8876

In Compliance with EU 1254/14 - Annex IV

Table of compliance with Regulation EU 1254/14 Annex IV - Energy Smart

Supplier name or brand	Sabiana SpA								
Supplier model identification	ENY-SHP-150			ENY-SHP-170			ENY-SHP-270		
Specific energy consumption SEC in [kWh/(m²a)] for each applicable climate zone (temperate, hot, cold, climate)	-39,9	-15,4	-78,0	-42,05	-16,8	-81,5	-38,9	-14,8	-76,4
SEC class - temperate climatic zone	A			A+			A		
Type declared according to EU 1253/14	BVU			BVU			UVB		
Type of drive installed	Continuous speed variator			Continuous speed variator			Continuous speed variator		
Type of heat recovery system	Static sensitive heat recovery unit			Static sensitive heat recovery unit			Static sensitive heat recovery unit		
Thermal efficiency	87,0%			92,1%			84,4%		
Maximum flow rate [m³/h][3]	150			170			270		
Power absorbed by the fan drive, including all motor control devices, at maximum flow rate [W][4]	59			50			105		
Sound power level (LWA) in [dB(A)]	38,0			44,9			41,3		
Reference flow rate [m³/h]	105			120			190		
Reference pressure difference [Pa]	50			50			50		
SPI [W/(m³/h)]	0,227			0,193			0,240		
Control factor and type of control	0,85 Centralised ambient control with humidity sensor			0,85 Centralised ambient control with humidity sensor			0,85 Centralised ambient control with humidity sensor		
Maximum percentages declared [%] of internal and external leakage	Internal leakage: 1,8%			Internal leakage: 0,5%			Internal leakage: 0,4%		
	External leakage: 0,8%			External leakage: 2,3%			External leakage: 1,1%		
Position and description of the visual warning signal relating to the filter for RVUs intended for use with filters, including a text that emphasizes the importance of replacing the filter at regular intervals in order to safeguard unit performance and energy efficiency	Please refer to the following parts of the brochure: • T-EP control description • Recommendations for filter replacement: filters clogging could result into relevant flow rate reduction, which implies the need of frequent windows opening and consequent thermal demand increase. • Proper replacement period depends on background air quality, which can broadly vary between city centers and countryside. • In order to prevent filters clogging, optimum average period for filters replacement is 3 month. However, due to normal dust collection and spring pollens, maximum suggested period should not exceed 6 months. • Filters replacement period can be modified by maintainer with a precision of days (min 30, max 360)								
Internet address with the disassembly instructions	www.sabiana.it			www.sabiana.it			www.sabiana.it		
AEC (Annual Energy Consumption) [kWh/a]	250	205	787	220	175	757	262	217	799
AHS (Annual Heating Energy Savings) [kWh/a]	4548	2057	8898	4690	2120	9170	4478	2025	8760

SABIANA
IL CLIMA AMICO

Costruzione e vendita di apparecchi per riscaldamento e condizionamento industriale e civile

Oggetto: **Dichiarazione di conformità UE**
Object: ***EU Declaration of conformity***

La presente dichiarazione di conformità è rilasciata sotto la responsabilità esclusiva del fabbricante.
This declaration of conformity is issued under the exclusive responsibility of the manufacturer.

Prodotto: Energy Smart - Recuperatori Versione ENY-SHP-150
Product: Energy Smart - ENY-SHP-150 Recovery Units

Modello / *Pattern:* ENY-SHP-150

al quale questa dichiarazione si riferisce, è conforme alle seguenti norme:
to which this declaration relates is in conformity with the following standards or other normative document(s):

EN 60335-1 (2012) + A11 (2014) + A13 (2017) + A1 (2019) + A14 (2019) + A2 (2019) + A15 (2021)

EN 60335-2-80 (2003) + A1 (2004) + A2 (2009)

EN 62233 (2008)

EN IEC 55014-1 (2021)

EN IEC 55014-2 (2021)

EN 61000-3-2 (2019)

EN 61000-3-3 (2013) + A1 (2019)

EN IEC 63000 (2018)

Regulation (UE) 1253/14

Regulation (UE) 1254/14

Regulation (EC) 1907/2006

L'oggetto della dichiarazione di cui sopra è conforme alla pertinente normativa di armonizzazione dell'Unione.
The object of the declaration described above is in conformity with the relevant Union harmonization legislation.
2014/35/UE 2014/30/UE 2006/42/EC 2011/65/UE 2014/53/UE

Il fascicolo tecnico è costituito presso: Sabiana S.p.A. Via Piave 53, 20011 Corbetta (MILANO-ITALY)
The technical file is made at: Sabiana S.p.A. Via Piave 53, 20011 Corbetta (MILANO-ITALY)

Corbetta, 10/01/2022

Nicola Binaghi
Presidente

SABIANA SpA Società a socio unico
Sede Legale e stabilimento:
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A company of Arbonia Group
ARBONIA

SABIANA
IL CLIMA AMICO

Costruzione e vendita di apparecchi per riscaldamento e condizionamento industriale e civile

Oggetto: **Dichiarazione di conformità UE**
Object: ***EU Declaration of conformity***

La presente dichiarazione di conformità è rilasciata sotto la responsabilità esclusiva del fabbricante.
This declaration of conformity is issued under the exclusive responsibility of the manufacturer.

Prodotto:	Energy Smart - Recuperatori Versione Orizzontale e Verticale
Product:	Energy Smart - Horizontal and Vertical Recovery Units
Modello / *Pattern:*	ENY-SHP-170, ENY-SHPEL-170, ENY-SHPER-170, ENY-SHPM-170, ENY-SHPMEL-170, ENY-SHPMER-170

al quale questa dichiarazione si riferisce, è conforme alle seguenti norme:
to which this declaration relates is in conformity with the following standards or other normative document(s):

EN 60335-1 (2012) + A11 (2014) + A13 (2017) + A1 (2019) + A14 (2019) + A2 (2019) + A15 (2021)

EN 60335-2-80 (2003) + A1 (2004) + A2 (2009)

EN 62233 (2008)

EN IEC 55014-1 (2021)

EN IEC 55014-2 (2021)

EN 61000-3-2 (2019)

EN 61000-3-3 (2013) + A1 (2019)

EN IEC 63000 (2018)

Regulation (UE) 1253/14

Regulation (UE) 1254/14

Regulation (EC) 1907/2006

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2014/35/UE 2014/30/UE 2006/42/EC 2011/65/UE 2014/53/UE

Il fascicolo tecnico è costituito presso: Sabiana S.p.A. Via Piave 53, 20011 Corbetta (MILANO-ITALY)
The technical file is made at: Sabiana S.p.A. Via Piave 53, 20011 Corbetta (MILANO-ITALY)

Corbetta, 10/01/2022

Nicola Binaghi
Presidente

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A company of Arbonia Group
ARBONIA

SABIANA
IL CLIMA AMICO

Costruzione e vendita di apparecchi per riscaldamento e condizionamento industriale e civile

Oggetto: **Dichiarazione di conformità UE**
Object: ***EU Declaration of conformity***

La presente dichiarazione di conformità è rilasciata sotto la responsabilità esclusiva del fabbricante.
This declaration of conformity is issued under the exclusive responsibility of the manufacturer.

Prodotto:	Energy Smart - Recuperatori di calore ENY-SHP-270
Product:	Energy Smart - ENY-SHP-270 Heat Recovery Unit
Modello / *Pattern:*	ENY-SHPL-270, ENY-SHPR-270, ENY-SHPML-270, ENY-SHPMR-270 ENY-SHPEL-270, ENY-SHPER-270, ENY-SHPMEL-270, ENY-SHPMER-270

al quale questa dichiarazione si riferisce, è conforme alle seguenti norme:
to which this declaration relates is in conformity with the following standards or other normative document(s):

EN 60335-1 (2012) + A11 (2014) + A13 (2017) + A1 (2019) + A14 (2019) + A2 (2019) + A15 (2021)

EN 60335-2-40 (2003) + A11 (2004) + A12 (2005) + A1 (2006) + A2 (2009) + A13 (2012)

EN 60335-2-80 (2003) + A1 (2004) + A2 (2009)

EN 62233 (2008)

EN IEC 55014-1 (2021)

EN IEC 55014-2 (2021)

EN 61000-3-2 (2019)

EN 61000-3-3 (2013) + A1 (2019)

EN IEC 63000 (2018)

L'oggetto della dichiarazione di cui sopra è conforme alla pertinente normativa di armonizzazione dell'Unione.
The object of the declaration described above is in conformity with the relevant Union harmonization legislation.
2014/35/UE 2014/30/UE 2006/42/EC 2011/65/UE 2014/53/UE

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This declaration of conformity is issued under the exclusive responsibility of the manufacturer.

Prodotto:	Energy Smart - Recuperatori Versione Verticale
Product:	Energy Smart - Vertical Recovery Units
Modello / *Pattern:*	ENY-SP-180, ENY-SP-280, ENY-SP-370, ENY-SP-460, ENY-SP-600, ENY-SPEL-180, ENY-SPEL-280, ENY-SPEL-370, ENY-SPEL-460, ENY-SPEL-600, ENY-SPER-180, ENY-SPER-280, ENY-SPER-370, ENY-SPER-460, ENY-SPER-600, ENY-SPM-180, ENY-SPM-280, ENY-SPM-370, ENY-SPM-460, ENY-SPMEL-180, ENY-SPMEL-280, ENY-SPMEL-370, ENY-SPMEL-460, ENY-SPMER-180, ENY-SPMER-280, ENY-SPMER-370, ENY-SPMER-460, ENY-S-170, ENY-S-270, ENY-S-360, ENY-S-460, ENY-S-600, ENY-SEL-170, ENY-SEL-270, ENY-SEL-360, ENY-SEL-460, ENY-SEL-600, ENY-SER-170, ENY-SER-270, ENY-SER-360, ENY-SER-460, ENY-SER-600.

al quale questa dichiarazione si riferisce, è conforme alle seguenti norme:
to which this declaration relates is in conformity with the following standards or other normative document(s):

EN 60335-1 (2012) + A11 (2014) + A13 (2017) + A1 (2019) + A14 (2019) + A2 (2019) + A15 (2021)

EN 60335-2-40 (2003) + A11 (2004) + A12 (2005) + A1 (2006) + A2 (2009) + A13 (2012)

EN 60335-2-80 (2003) + A1 (2004) + A2 (2009)

EN 62233 (2008)

EN IEC 55014-1 (2021)

EN IEC 55014-2 (2021)

EN 61000-3-2 (2019)

EN 61000-3-3 (2013) + A1 (2019)

EN IEC 63000 (2018)

Regulation (UE) 1253/14

Regulation (UE) 1254/14

Regulation (EC) 1907/2006

L'oggetto della dichiarazione di cui sopra è conforme alla pertinente normativa di armonizzazione dell'Unione.
The object of the declaration described above is in conformity with the relevant Union harmonization legislation.

2014/35/UE 2014/30/UE 2006/42/EC 2011/65/UE 2014/53/UE

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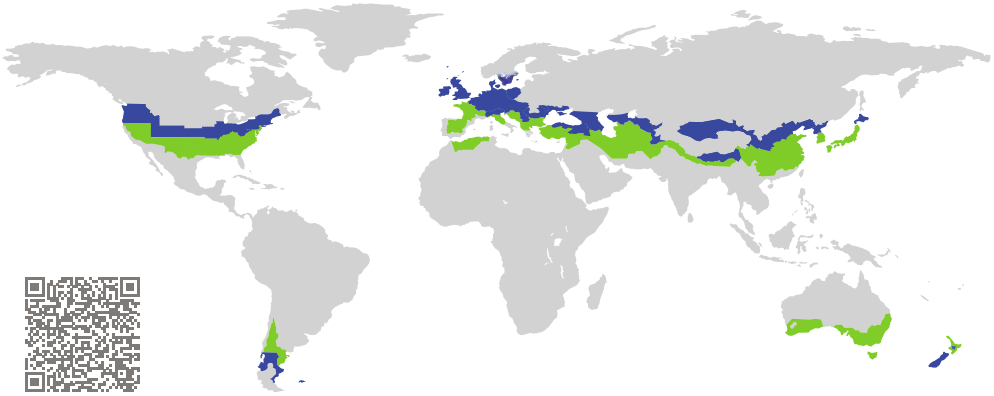
ARBONIA

CERTIFICATE

Certified Passive House Component

Component-ID 0958vs03 valid until 31st December 2022

Passive House Institute
Dr.Wolfgang Feist
64283 Darmstadt
Germany



Category:	**Air handling unit with heat recovery**
Manufacturer:	**Sabiana s.p.a.** **Italy**
Product name:	**ENY-SP-280**
Specification:	Airflow rate < 600 m^3/h
Heat exchanger:	Recuperative

This certificate was awarded based on the product meeting the following main criteria

Heat recovery rate	η_{HR}	≥	75 %
Specific electric power	$P_{el,spec}$	≤	0.45 Wh/m^3
Leakage		<	3 %
Comfort	Supply air temperature ≥ 16.5 °C at outdoor air temperature of –10 °C		

Airflow range
129–164 m^3/h
Heat recovery rate
η_{HR} = 88 %
Specific electric power
$P_{el,spec}$ = 0.25 Wh/m^3

cool, temperate climate

CERTIFIED COMPONENT
Passive House Institute

www.passivehouse.com

Sabiana s.p.a.
Via Piave 53, 20011 Corbetta (MI), Italy
☎ +39 02 972031 | ✉ info@sabiana.it | http://www.sabiana.it |

Passive House comfort criterion

A minimum supply air temperature of 16.5 °C is main tained at an outdoor air temperature of -10 °C.

Efficiency criterion (heat recovery rate)

The effective heat recovery rate is measured at a test facility using balanced mass flows of the outdoor and exhaust air. The boundary conditions for the measurement are documented in the testing procedure.

$$\eta_{HR} = \frac{(\theta_{ETA} - \theta_{EHA}) + \frac{P_{el}}{\dot{m} \cdot c_p}}{(\theta_{ETA} - \theta_{ODA})}$$

With

η_{HR}	Heat recovery rate in %
θ_{ETA}	Extract air temperature in °C
θ_{EHA}	Exhaust air temperature in °C
θ_{ODA}	Outdoor air temperature in °C
P_{el}	Electric power in W
$\dot{m}$	Mass flow in kg/h
c_p	Specific heat capacity in W h/(kg K)

Heat recovery rate
η_{HR} = 88 %

Efficiency criterion (electric power)

The overall electrical power consumption of the device is measured at the test facility at an external pressure of 100 Pa (50 Pa, respectively, for the intake and outlet). This includes the general electrical power consumption for operation and control but not for frost protection.

Specific electric power
$P_{el,spec}$ = 0.25 Wh/m^3

Efficiency ratio

The efficiency ratio provides information about the overall energy performance of the respective ventilation unit. It specifies the achieved reduction in ventilation heat losses by using a ventilation unit with heat recovery rather than without.

Efficiency ratio
ϵ_L = 0.71

Leakage

The leakage airflow must not exceed 3 % of the average airflow of the unit's operating range.

Internal leakage	External leakage
0.96 %	0.61 %

Settings and airflow balance

It must be possible to adjust the balance of airflows at the unit itself (either between the exhaust and the outdoor airflows or between the supply and the extract airflows, if the unit is respectively placed inside or outside of the insulated thermal envelope of the building).

- This unit is certified for airflow rates of 129–164 m^3/h.
- Balancing the airflow rates of the unit is possible.
- The user should have at least all the following setting options:
  - ✓ Switching the system on and off.
  - ✓ Synchronized adjustment of the supply and extract airflows to basic ventilation (70–80 %), standard ventilation (100 %) and increased ventilation (130 %) with a clear indication of the current setting.
- The device has a standby power consumption of 0.80 W. Hereby complies with the target value of 1 W.
- After a power failure, the device will automatically resume operation.

Acoustical testing

The required limit for the sound power level of the device is 35 dB(A) in order to limit the sound pressure level in the installation room. The sound level target value of less than 25 dB(A) in living spaces and less than 30 dB(A)in functional spaces must be ensured by installing commercial silencers.The following sound power levels are met at an airflow rate of 166 m^3/h:

Device	Duct			
	Outdoor	Supply air	Extract air	Exhaust air
44.9 dB(A)	55.3 dB(A)	44.3 dB(A)	59.1 dB(A)	52.4 dB(A)

- The unit does not fulfil the requirements for the sound power level. The unit must therefore be installed acoustically separated from living areas.
- One example of suitable silencers for supply and extract air ducts is mentioned in the detailed test report or can be obtained from the manufacturer. It is recommended to identify suitable silencers for each individual project.

Indoor air quality

This unit is to be equipped with the following filter qualities:

Outdoor air filter	Extract air filter
ISO ePM1 50%	ISO Coarse 60%

On the outdoor air side, the filter efficiency of ISO ePM1 50% (F7 according to EN 779) or better is recommended. For the extract air side, a filter efficiency of at least ISO Coarse 60% (G4 according to EN 779) is recommended. If not in standard configuration, the recommended filter is available as an accessory part.

Frost protection

Appropriate measures should be taken to prevent the heat exchanger and optional downstream hydraulic heater coil from getting damaged by frost during extreme winter temperatures (–15 °C). It must be ensured that the unit's ventilation performance is not affected during frost protection cycles.

- Frost protection of the heat exchanger:
  - ✓ In order to protect the heat exchanger from freezing, for cool-temperate climate, the unit is equipped as standard with an electrical preheater. The frost protection strategy is appropriate to protect the heat exchanger from frost down to an outdoor air temperature of -15 °C (verified by measurement results). The unit can also be equipped with a hydraulic heater.
- Frost protection of downstream hydraulic heater coils:
  - ✓ This unit provides a frost protection of the downstream hydraulic heater coils. In the case the hydraulic post-heating coil is used, the unit is automatically switched off when the supply air temperatures drops below 5 °C.

The certificates are available for download from the following link: https://database.passivehouse.com/en/components/list/ventilation_small

99A4210100 05/2022

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