ESENSA PX Top
ESENSA RX Top

Swegon

The easy choice

The ESENSA air handling unit is a standardised unit that can be easily customised thanks to a number of plug-and play options and accessories.

Suitable for light commercial applications, ESENSA is designed for moderate airflows up to 3.250 m³/h (900 l/s) for ESENSA RX Top and 2.680 m³/h (745 l/s) for ESENSA PX Top. To ensure high quality and meet industry standards, the range is Eurovent certified.

UNIT CASING

The unit is made of double skin panels with prepainted steel RAL7016 on the outer skin and galvanised steel for the inner skin. The insulation is composed of mineral wool panels (30 or 50 mm depending on size).

FANS

ESENSA is equipped with high efficiency composite impellers. The fan motor is of the EC type (electronically commutated) with integrated controller and the enclosure class is IP 54. The efficiency meets the requirements of ErP2018. The fans are dynamically balanced according to ISO 1940, class G6.3.

AIR FILTERS

All ESENSA units are equipped with high efficiency mini pleated filters. The function of the filters is to keep both the air and the internal components clean.
Standard for supply air side are compact filters of Class ISO ePM1 60% (F7) while compact ISO ePM10 50% filters (M5) are standard for the exhaust air side.

SUMMER NIGHT COOLING

The lower temperature at night can be used to cool down the building. Thanks to the bypass section, fresh outside air can go through the bypass to cool down the rooms. The quantity of incoming air can be adapted by modulating the bypass opening.

This reduces the cooling load during the first hours of the day, avoiding use of a potential cooling coil and thus offering cost savings.

ANTIFROST PROTECTION (ESENSA PX Top)

Disbalanced airflow: supply airflow modulation to prevent freezing while exhaust airflow is kept constant.

Modulating bypass: The antifrost protection is achieved by modulating the cold airflow inside the heat exchanger.

Electrical preheater: Modulating electrical coil power to preheat outside air.

INTERNAL HEATERS

The ESENSA units can be supplied with internal electrical preheating (PX Top) as well as electrical or waterborne postheating coils.

The preheating system prevents freezing in the counterflow heat exchanger, and the postheating function ensures a comfortable indoor climate. The heaters are delivered separately and can easily be installed in the unit on the installation site. The heaters are regulated so that constant temperature is maintained.

EXTERNAL HEATERS/COOLERS

The ESENSA units can be configured with non-isolated external heaters/coolers (direct expanding DX) or with non-isolated external water based cooler.

Its output temperature can be adjusted in order to maintain a constant supply air or constant extract air temperature. The waterborne unit is supplied as option with a 3-way valve option controlled by the TAC control unit. The TAC control can also interact with an heat pump via 0-10V signal to control the power needed and can manage a cooling or heating demands.

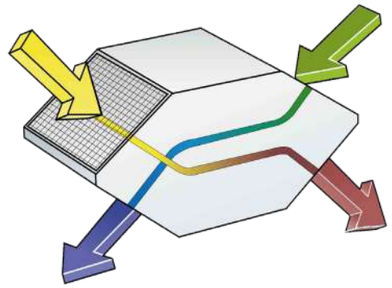
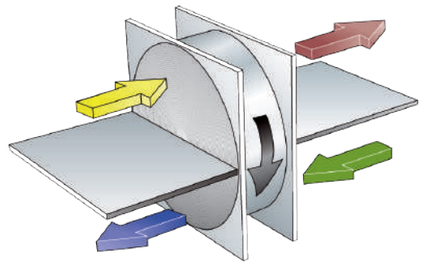


PLATE HEAT EXCHANGER (ESENSA PX Top)

The plate heat exchanger, which is of counterflow type, is made of corrosion resistant aluminium and has a high temperature efficiency of over 90%.



ROTARY HEAT EXCHANGER (ESENSA RX Top)

The rotary heat exchanger is made of corrosion resistant aluminium and has a high temperature efficiency of over 80%.The rotary heat exchanger is equipped with a purging sector which minimizes the internal air leakage. Rotation speed control is used to prevent freezing of the rotor.

INSTALLATION AND MAINTENANCE

With its self-supporting structure and its compact shape, the ESENSA unit has been designed with an optimised foot-print to facilitate installation and transportation within the building.

The doors have been designed for easy access to the internal components, which facilitates easy replacement and maintenance of various parts.

CONTROLS

The in-house developed TAC control technology allows configuration and control of indoor air quality parameters such as airflow, temperature, CO_2, etc.

The commissioning of the unit is easily done through a TAC-touch (HMI available as an option). To connect the air handling unit to a building management system (BMS), different satellite circuits are required : SAT MODBUS, SAT KNX, SAT MQTT (Ethernet + WiFi), BACnet.

HMI

The TACtouch interface is a simple and user-friendly touchscreen with an intuitive commissionning and control menu. The touch screen has a 2-metre long connection cable and a magnetic bracket, which means that it can be attached anywhere on the unit. The set values are stored in the memory, which means they are not lost in the event of a power failure.

The correct operating mode is important

Whether the ventilation system is to work with constant pressure, with a constant airflow or be controlled with voltage signal 0–10 V from a control system is dependent on the application and the requirements stipulated by the installation in question. The built-in control system ensures that the operation is always well-balanced.

Constant airflow

This operating mode is often used in buildings that do not require variable airflows and where the airflow requirement is relatively stable.

Demand control

Alternatively, the airflow can be adjusted automatically according to the ventilation requirements and the wishes of the users with the aid of the 0–10 V signal input, for example with a CO_2 sensor or using the customer's automated building management system or equivalent.

Constant pressure

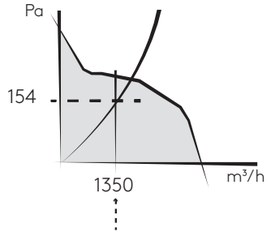
This operating mode is very well suited to premises where you ideally want to have the potential to control the airflow individually in the various rooms. A pressure sensor ensures that the pressure remains constant, even when the airflow is increased or decreased in accordance with the ventilation requirement in the room.

The airflow remains unchanged in all the other rooms, i.e. the ventilation system works constantly within its optimum operating range. Constant pressure operation requires an external pressure sensor.

THE 3 MAIN OPERATING MODES

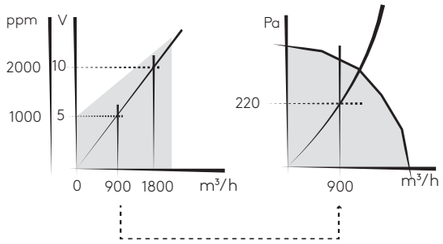
Constant airflow

The airflow is kept constant, regardless of changes in pressure.



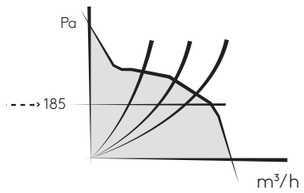
Demand control

The airflow is a linear function of the control voltage. The airflow is regulated with a control voltage of 0–10 V.

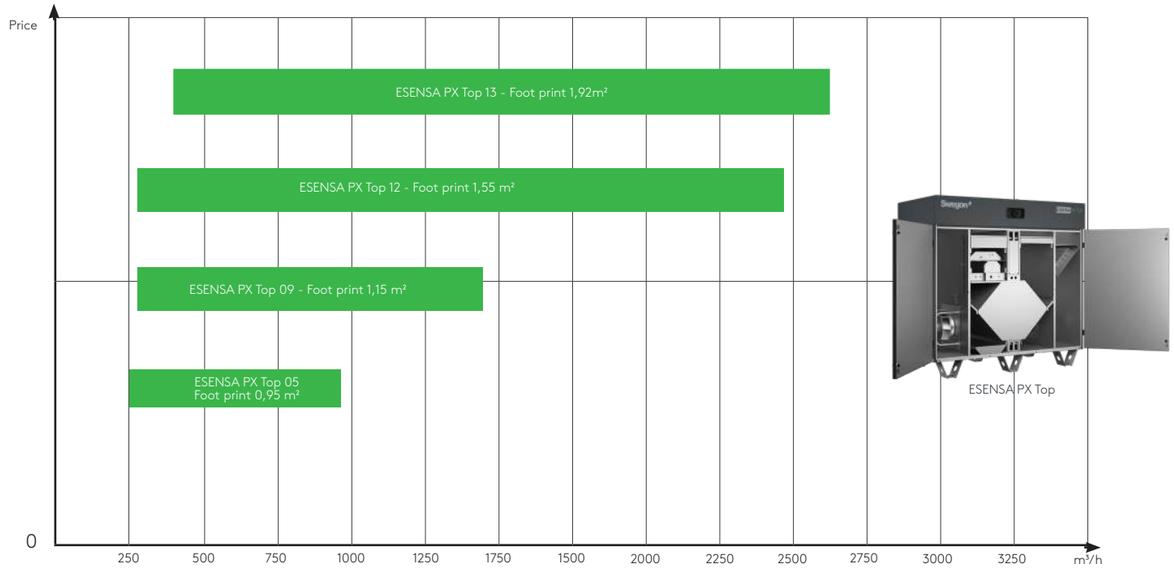


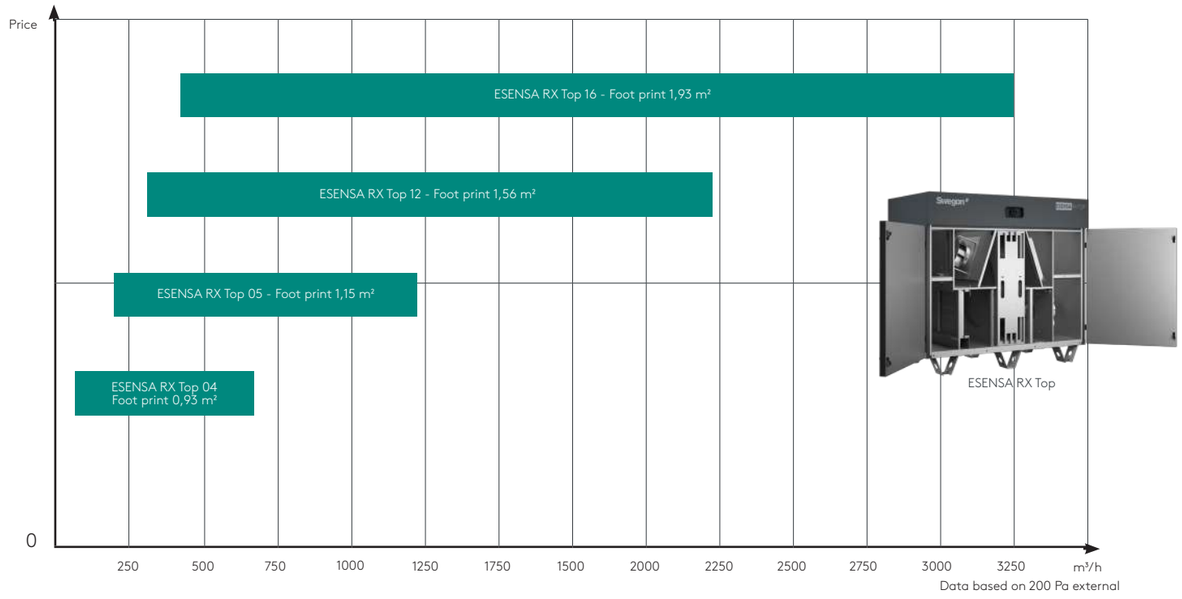
Constant pressure mode

The pressure is kept constant, regardless of changes in the external pressure. Constant pressure operation requires an external pressure sensor.



Selection chart

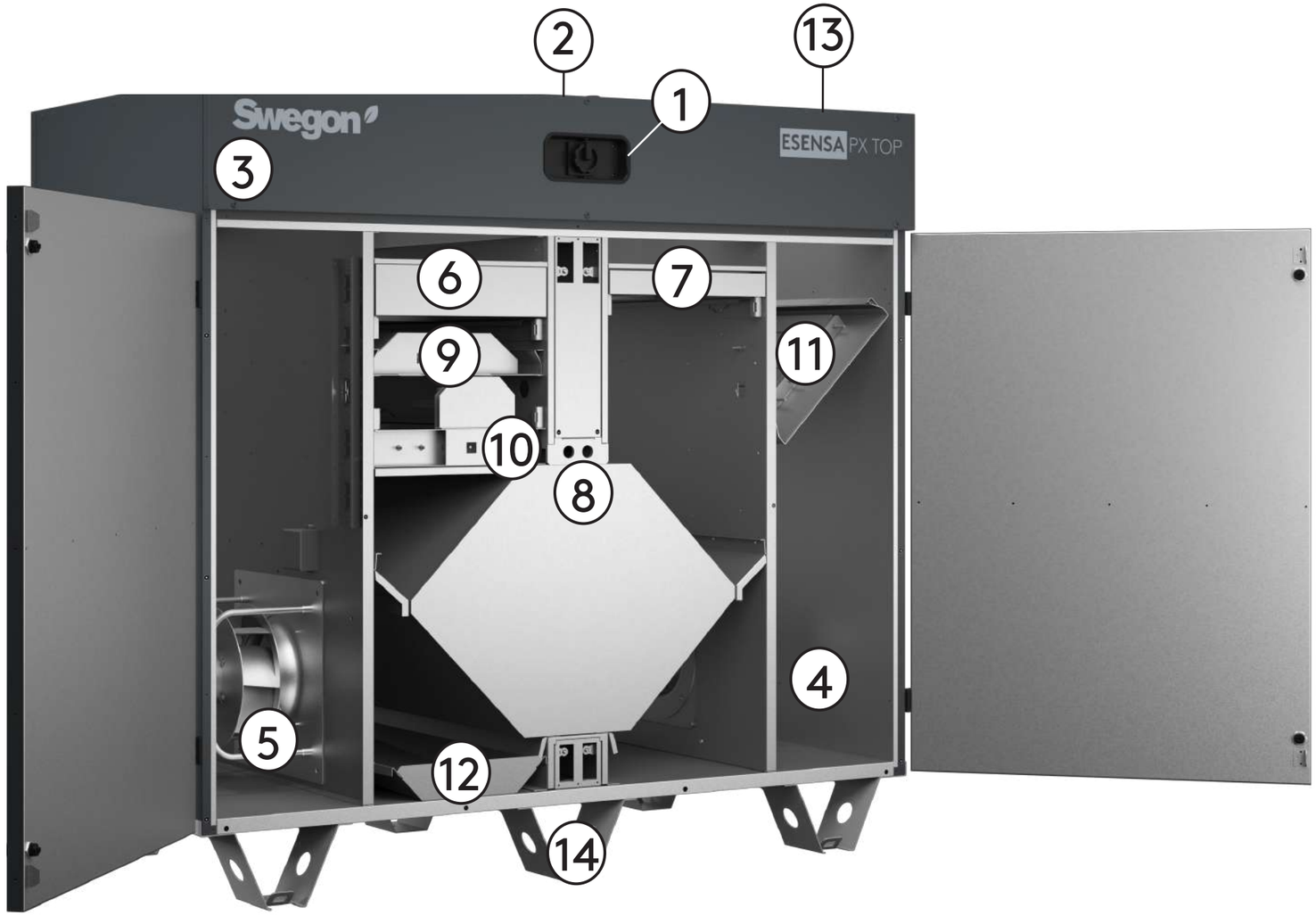




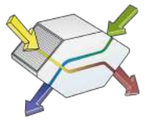
Data based on 200 Pa external

Components ESENSA PX Top

1. MAIN SWITCH
2. CABLE INLET
3. INTEGRATED ELECTRICAL CABINET
4. SUPPLY AIR FAN
5. EXTRACT AIR FAN
6. SUPPLY AIR FILTER(MINI-PLEATED)
7. EXTRACT AIR FILTER (MINI-PLEATED)
8. HIGH EFFIZIENZ PLATE HEAT EXCHANGER
9. INTEGRATED PREHEATING | ELECTRICAL (OPTION)
10. BYPASS
11. INTEGRATED POSTHEATING ELECTRICAL/WATER(OPTION)
12. DRAIN PAN
13. HYDRAULIC CONNECTION FOR POSTHEATING OPTION)
14. BASE FRAME

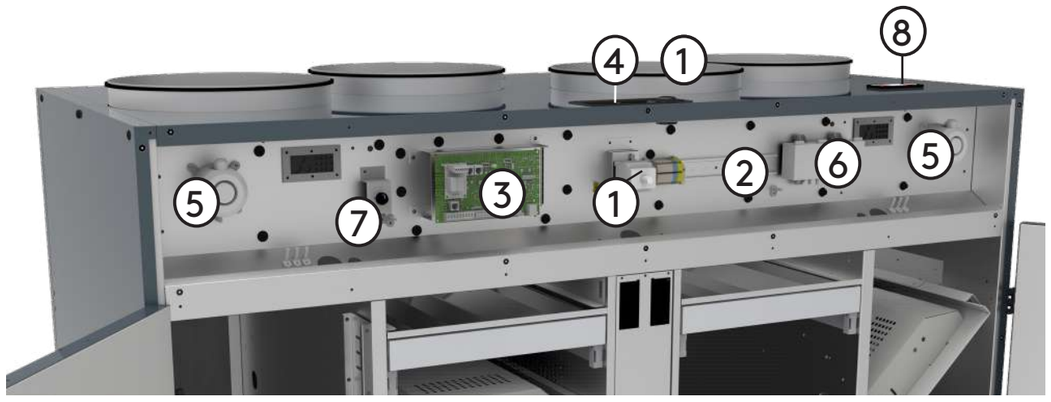


RIGHT VERSION

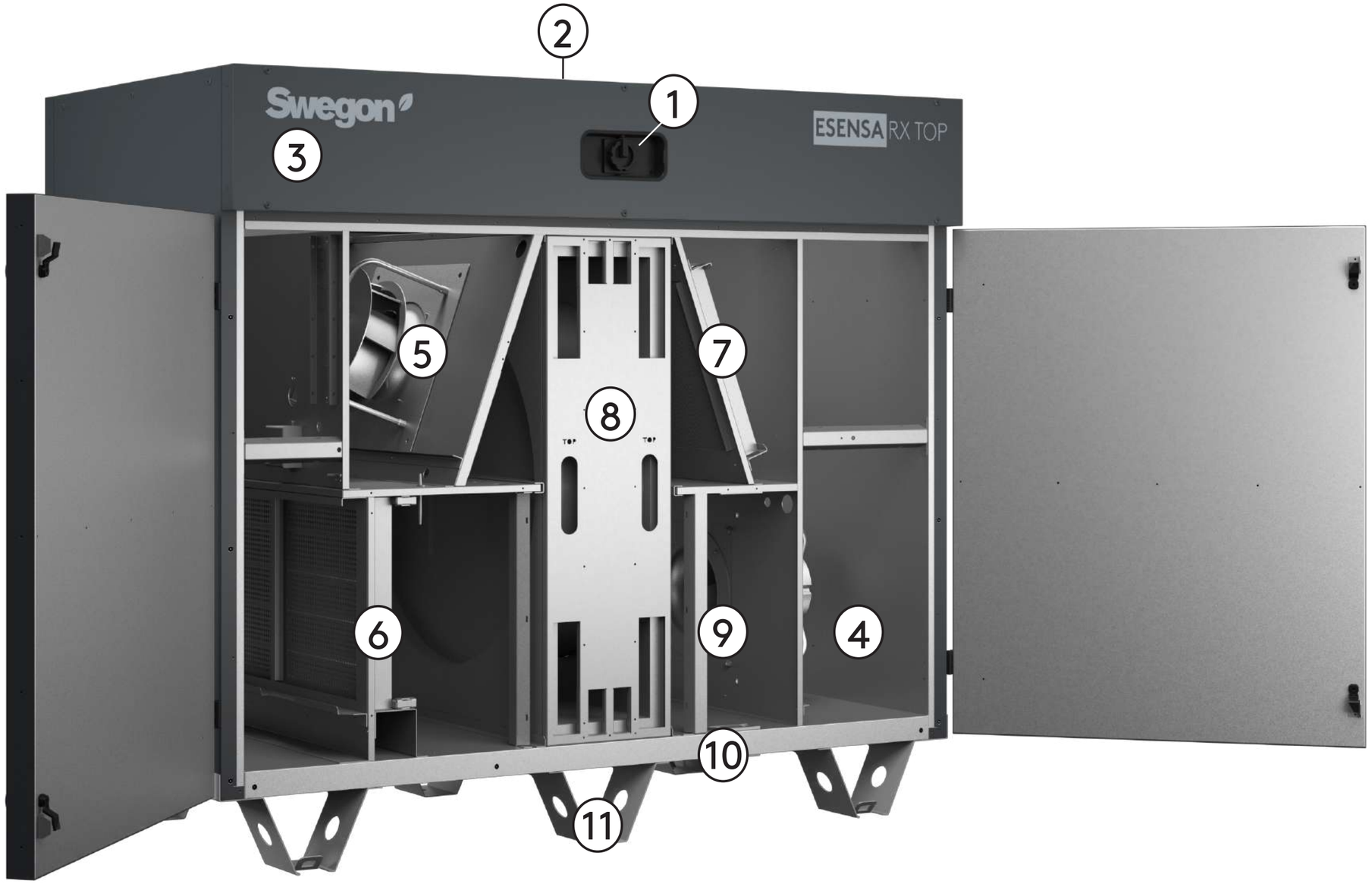


Integrated electrical cabinet

1. POWER SUPPLY
2. DIN RAIL FOR OTHERS CONNECTIONS
3. TAC CONTROL BOARD
4. ELECTRICAL CABLE INLET
5. FILTER PRESSURE SWITCH
6. AIRFLOW/PRESSURE MESUREMENT
7. POTENTIONMETER (NOT USED)
8. PX Top - HYDRAULIC CONNECTION POSTHEATING COIL (OPTION)



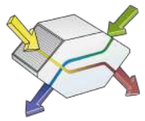
Components
ESENSA RX Top

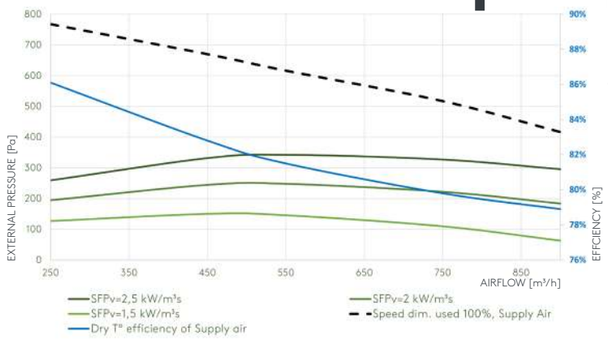


RIGHT VERSION

1. MAIN SWITCH
2. CABLE INLET
3. INTEGRATED ELECTRICAL CABINET
4. SUPPLY AIR FAN
5. EXTRACT AIR FAN
6. SUPPLY AIR FILTER(MINI-PLEATED)
7. EXTRACT AIR FILTER (MINI-PLEATED)
8. HIGH EFFICIENCY ROTARY HEAT EXCHANGER
9. INTEGRATED POSTHEATING | WATER/ELECTRICAL (OPTION)
10. HYDRAULIC CONNECTION FOR POSTHEATING (OPTION)
11. BASE FRAME

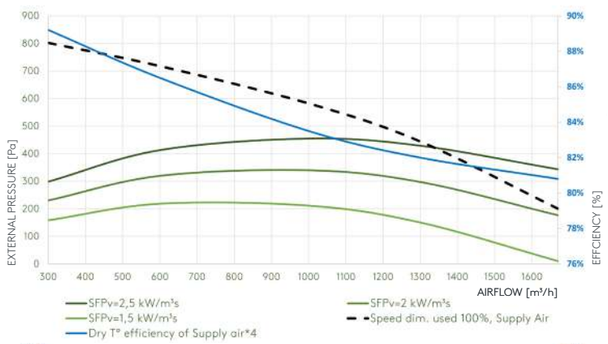
Fan diagrams ESENSA PX Top





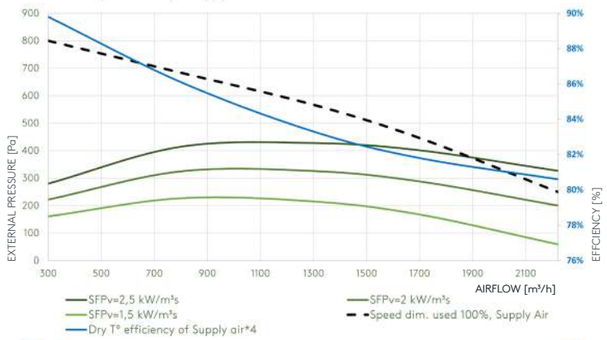
ESENSA PX Top 05

Airflow		Pa ext*1	SFPv*2	Speed dim.*3 used/max, Supply Air	Speed dim.*3 used/max, Exhaust Air	Absorbed power*2	Dry T° efficiency of Supply air*4
m³/h	l/s	[Pa]	kW/m³/s	%	%	W	%
250	70	200	2,04	59	54	142	86%
450	125	200	1,75	68	61	219	83%
550	153	200	1,76	71	65	268	82%
750	209	200	1,90	79	73	395	80%
900	250	200	2,07	86	81	518	79%



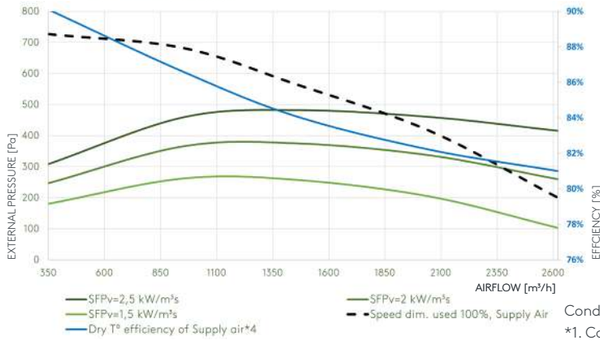
ESENSA PX Top 09

Airflow		Pa ext*1	SFPv*2	Speed dim.*3 used/max, Supply Air	Speed dim.*3 used/max, Exhaust Air	Absorbed power*2	Dry T° efficiency of Supply air*4
m³/h	l/s	[Pa]	kW/m³/s	%	%	W	%
300	83	200	1,77	55	52	147	89%
600	167	200	1,41	63	59	234	87%
1.000	278	200	1,45	76	72	403	84%
1.300	361	200	1,66	86	82	599	82%
1.670	464	200	2,07	100	97	960	81%



ESENSA PX Top 12

Airflow		Pa ext*1	SFPv*2	Speed dim.*3 used/max, Supply Air	Speed dim.*3 used/max, Exhaust Air	Absorbed power*2	Dry T° efficiency of Supply air*4
m³/h	l/s	[Pa]	kW/m³/s	%	%	W	%
300	83	200	1,79	54	52	149	90%
800	222	200	1,36	64	59	301	86%
1.300	361	200	1,43	76	69	517	83%
1.700	473	200	1,63	85	78	770	82%
2.220	617	200	2,00	97	91	1.233	81%

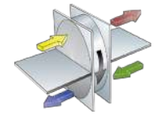


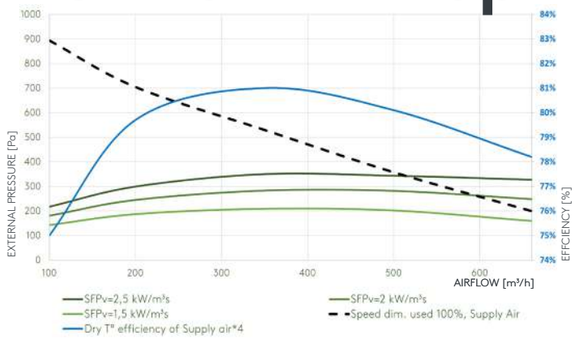
ESENSA PX Top 13

Airflow		Pa ext*1	SFPv*2	Speed dim.*3 used/max, Supply Air	Speed dim.*3 used/max, Exhaust Air	Absorbed power*2	Dry T° efficiency of Supply air*4
m³/h	l/s	[Pa]	kW/m³/s	%	%	W	%
350	97	200	1,60	53	51	155	90%
950	264	200	1,21	64	59	320	87%
1.450	403	200	1,26	74	67	508	84%
2.050	570	200	1,49	87	80	846	82%
2.620	728	200	1,81	100	92	1.317	81%

Conditions :
*1. Calculated values at 200 Pa of external pressure (150 SUP / 50 ODA & 150 ETA / 50 EHA)
*2. SFPv & Absorbed power calculated with clean filters
*3. Speed dim. is the maximal pressure available with semi-dirty filters
*4. T° efficiency folowing EN308

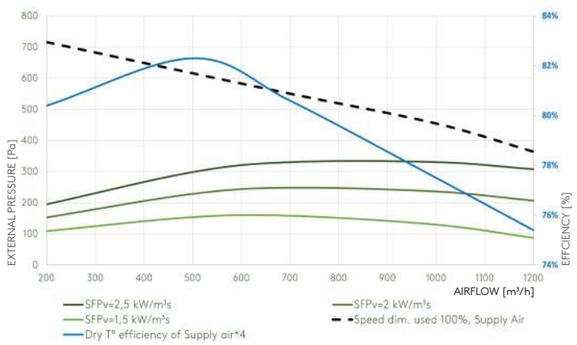
Fan diagrams ESENSA RX Top





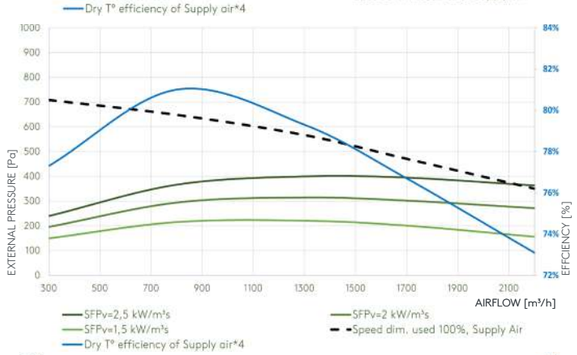
ESENSA RX Top 04

Airflow		Pa ext*1	SFPv*2	Speed dim.*3 used/max, Supply Air	Speed dim.*3 used/max, Exhaust Air	Absorbed power*2	Dry T° efficiency of Supply air*4
m³/h	l/s	[Pa]	kW/m³/s	%	%	W	%
100	28	200	2,22	53	49	62	75%
200	56	200	1,61	62	63	89	80%
350	97	200	1,44	74	74	140	81%
500	139	200	1,49	87	85	207	80%
660	183	200	1,72	100	99	315	78%



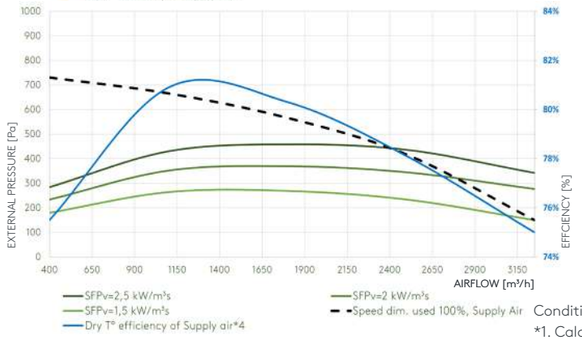
ESENSA RX Top 05

Airflow		Pa ext*1	SFPv*2	Speed dim.*3 used/max, Supply Air	Speed dim.*3 used/max, Exhaust Air	Absorbed power*2	Dry T° efficiency of Supply air*4
m³/h	l/s	[Pa]	kW/m³/s	%	%	W	%
200	56	200	2,51	57	54	139	80%
500	139	200	1,79	68	63	248	82%
700	195	200	1,72	73	69	334	81%
1000	278	200	1,82	82	80	505	78%
1200	334	200	1,97	89	86	657	75%



ESENSA RX Top 12

Airflow		Pa ext*1	SFPv*2	Speed dim.*3 used/max, Supply Air	Speed dim.*3 used/max, Exhaust Air	Absorbed power*2	Dry T° efficiency of Supply air*4
m³/h	l/s	[Pa]	kW/m³/s	%	%	W	%
300	83	200	1,98	55	53	165	77%
800	222	200	1,39	65	60	308	81%
1300	361	200	1,39	73	69	501	79%
1700	473	200	1,49	81	78	704	77%
2200	612	200	1,68	91	88	1027	73%



ESENSA RX Top 16

Airflow		Pa ext*1	SFPv*2	Speed dim.*3 used/max, Supply Air	Speed dim.*3 used/max, Exhaust Air	Absorbed power*2	Dry T° efficiency of Supply air*4
m³/h	l/s	[Pa]	kW/m³/s	%	%	W	%
400	111	200	1,62	54	52	180	76%
1100	306	200	1,14	63	60	348	81%
1800	500	200	1,18	74	72	589	80%
2500	695	200	1,36	87	86	945	78%
3250	904	200	1,67	102	101	1508	75%

Conditions :
*1. Calculated values at 200 Pa of external pressure (150 SUP / 50 ODA & 150 ETA / 50 EHA)
*2. SFPv & Absorbed power calculated with clean filters
*3. Speed dim. is the maximal pressure available with semi-dirty filters
*4. T° efficiency folowing EN308

Please refer to our air handling unit selection software AHU Design for detailled and updated information.

Options

COMMUNICATION	HMI	MODULES
ESENSA	 TACtouch	 BACnet MQTT  KNX  MODBUS

CIRCULAR FLEXIBLE SLEEVE	Internal size [mm]	External dimensions [mm]
ESENSA PX Top 05	Ø315	Ø315
ESENSA RX Top 09	Ø355	Ø355
ESENSA RX Top 04	Ø250	Ø250
ESENSA RX Top 05	Ø315	Ø315

RECTANGULAR FLEXIBLE SLEEVE 20 mm	Internal size [mm]	External dimensions [mm]
ESENSA PX Top 12	600 x 300	640 x 340
ESENSA PX Top 13	800 x 300	840 x 340
ESENSA RX Top 12	500 x 300	540 x 340
ESENSA RX Top 16	700 x 300	740 x 340

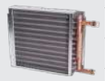
RECTANGULAR FLEXIBLE SLEEVE with Metu frame 30 mm	Internal size [mm]	External dimensions [mm]
ESENSA PX Top 12	580 x 280	640 x 340
ESENSA PX Top 13	780 x 280	840 x 340
ESENSA RX Top 12	480 x 280	540 x 340
ESENSA RX Top 16	680 x 280	740 x 340

FILTERS	Supply Dimensions [mm]/ (Quantity [pc])	Exhaust Dimensions [mm]/ (Quantity [pc])
ESENSA PX Top 05	470 x 287 x 47 (1)	470 x 287 x 47 (1)
ESENSA PX Top 09	400 x 380 x 97 (2)	400 x 380 x 47 (2)
ESENSA PX Top 12	400 x 380 x 47 (1) 600 x 380 x 47 (1)	400 x 380 x 47 (1) 600 x 380 x 47 (1)
ESENSA PX Top 13	600 x 380 x 47 (2)	600 x 380 x 47 (2)
ESENSA RX Top 04	400 x 380 x 47 (1)	400 x 380 x 47 (1)
ESENSA RX Top 05	400 x 380 x 47 (1)	400 x 380 x 47 (1)
ESENSA RX Top 12	400 x 380 x 47 (2)	400 x 380 x 47 (2)
ESENSA RX Top 16	600 x 510 x 47 (1) 400 x 510 x 47 (1)	600 x 510 x 47 (1) 400 x 510 x 47 (1)

IRS ADAPTER	Dimensions [mm]	Diameter [mm]
ESENSA PX Top 05	NA	NA
ESENSA PX Top 09	NA	NA
ESENSA PX Top 12	600 x 300	Ø400
ESENSA PX Top 13	800 x 300	Ø450
ESENSA RX Top 04	NA	NA
ESENSA RX Top 05	NA	NA
ESENSA RX Top 12	500 x 300	Ø355
ESENSA RX Top 16	700 x 300	Ø450

DAMPER with spring return motor	Internal dimensions [mm]	External dimensions [mm]
ESENSA PX Top 05	Ø315	Ø315
ESENSA PX Top 09	Ø355	Ø355
ESENSA PX Top 12	560 x 260	640 x 340
ESENSA PX Top 13	760 x 260	840 x 340
ESENSA RX Top 04	Ø250	Ø250
ESENSA RX Top 05	Ø315	Ø315
ESENSA RX Top 12	460 x 260	540 x 340
ESENSA RX Top 16	740 x 340	740 x 340

ELECTRICAL COIL	PREHEATING COIL POWER	REHEATING COIL POWER	POWER SUPPLY per coil - separated supply line
ESENSA PX Top 05	4 kW	4 kW	1 x 230V
ESENSA PX Top 09	9 kW	9 kW	3 x 400V
ESENSA PX Top 12	9 kW	9 kW	3 x 400V
ESENSA PX Top 13	12 kW	12 kW	3 x 400V
ESENSA RX Top 04	NA	4 kW	1 x 230V
ESENSA RX Top 05	NA	4 kW	1 x 230V
ESENSA RX Top 12	NA	9 kW	3 x 400V
ESENSA RX Top 16	NA	12 kW	3 x 400V

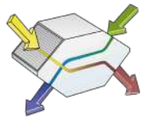


WATERBASED HEATING COIL	Heating nominal power *	Water connection [inch]
ESENSA PX Top 05	3,1 kW	1/2"
ESENSA PX Top 09	6 kW	1/2"
ESENSA PX Top 12	7,1 kW	1/2"
ESENSA PX Top 13	9,1 kW	1/2"
ESENSA RX Top 04	2,2 kW	1/2"
ESENSA RX Top 05	4,1 kW	1/2"
ESENSA RX Top 12	7,5 kW	1/2"
ESENSA RX Top 16	11,4 kW	1/2"

DUCTED COOLING COIL	Direct expansion - DX dimensions [mm]		Water dimensions [mm]	
ESENSA PX Top 05	Ø315	TBKC-4-000-031-1-1	Ø315	TBKA-5-000-031-1
ESENSA PX Top 09	Ø400	TBKC-3-000-040-1-1	Ø400	TBKA-5-000-040-1
ESENSA PX Top 12	Ø400	TBKC-3-000-040-1-1	Ø400	TBKA-5-000-040-1
ESENSA PX Top 13	Ø500	TBKC-4-000-050-1-1	Ø500	TBKA-5-000-050-1
ESENSA RX Top 04	NA	NA	NA	NA
ESENSA RX Top 05	Ø315	TBKC-4-000-031-1-1	Ø315	TBKA-5-000-031-1
ESENSA RX Top 12	Ø400	TBKC-3-000-040-1-1	Ø400	TBKA-5-000-040-1
ESENSA RX Top 16	Ø500	TBKC-3-000-050-1-1	Ø500	TBKA-5-000-050-1

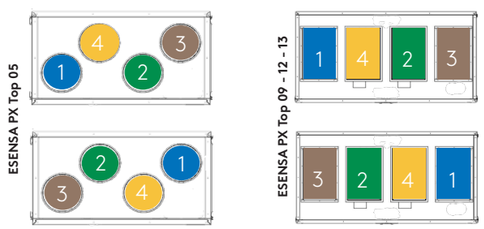
* Conditions : air : 15-25°C / fluid : 50-40°C at the max airflow (Ecodesign)

General overview ESENSA PX Top



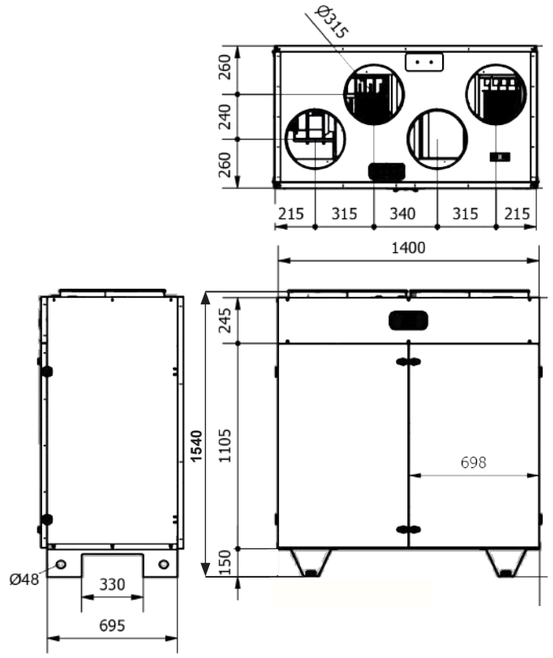
- ● Standard equipment
- ○ Available as option, needs to be assembled by the installer on site
- \- Not available

	ESENSA PX TOP 05	ESENSA PX TOP 09	ESENSA PX TOP 12	ESENSA PX TOP 13
Airflow m³/h | min-max (Ecodesign)	250 - 900	300 - 1.670	300 - 2.220	350-2.620
Airflow l/s | m³/s | min-max (Ecodesign)	70 - 250 | 0,07 - 0,25	83 - 464 | 0,08 - 0,46	83 - 617 | 0,08 - 0,62	97 - 728 | 0,10 - 0,73
Weight w/o option	245 kg	315 kg	340 kg	395 kg
Dimensions Depth/Width/Height	760/1.400/1.500 mm	885/1.640/1.550 mm	1.105/1.640/1.550 mm	1.330/1.640/1.550 mm
Foot print	1,06 m²	1,45 m²	1,81 m²	2,18 m²
Base frame height	150 mm	150 mm	150 mm	150 mm
Mineral wool panel thickness	30 mm	30 mm	30 mm	30 mm
Metu connection frame	30 mm	30 mm	30 mm	30 mm
Heat exchanger	Plate heat exchanger	Plate heat exchanger	Plate heat exchanger	Plate heat exchanger
Filter type	Mini-pleated	Mini-pleated	Mini-pleated	Mini-pleated
Filter class Supply/Exhaust	ePM1 60%/ePM10 50%	ePM1 60%/ePM10 50%	ePM1 60%/ePM10 50%	ePM1 60%/ePM10 50%
Fan material	Composite	Composite	Composite	Composite
Installation	Indoors	Indoors	Indoors	Indoors
Operating range				
Power connection w/o option | Max current	1 x 230 V 5,5 A	1 x 230 V 5,1 A	1 x 230 V 7,7 A	1 x 230 V 7,7 A
Recommended fuses	D6A - 10kA -AC3	D6A - 10kA -AC3	D6A - 10kA -AC3	D6A - 10kA -AC3
Communication TACtouch	○	○	○	○
Communication modules BACnet, Modbus RTU, KNX, MQTT (Ethernet, WiFi)	○	○	○	○
Dampers	○	○	○	○
IRS adapter	-	-	○	○
Flexible connection	○	○	○	○
Internal electrical preheater	○	○	○	○
Internal electrical postheater	○	○	○	○
Internal water postheater	○	○	○	○
Non isolated external DX coil	○	○	○	○
Non isolated external water coil	○	○	○	○
EN1886	T3/TB3/L2/D2	T3/TB3/L2/D2	T3/TB3/L2/D2	T3/TB3/L2/D2
Certification	Eurovent	Eurovent	Eurovent	Eurovent

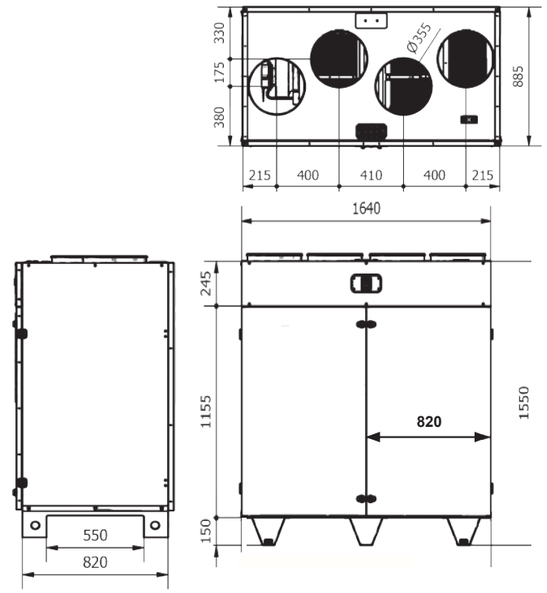


Technical drawings

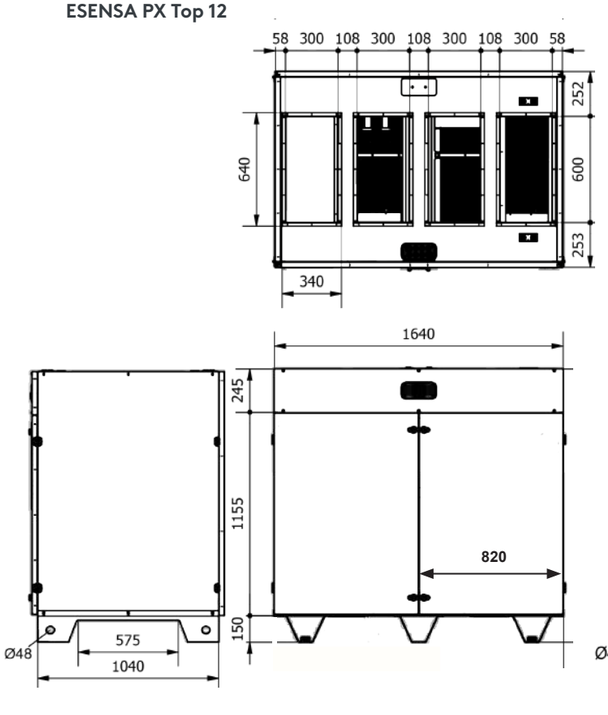
ESENSA PX Top 05



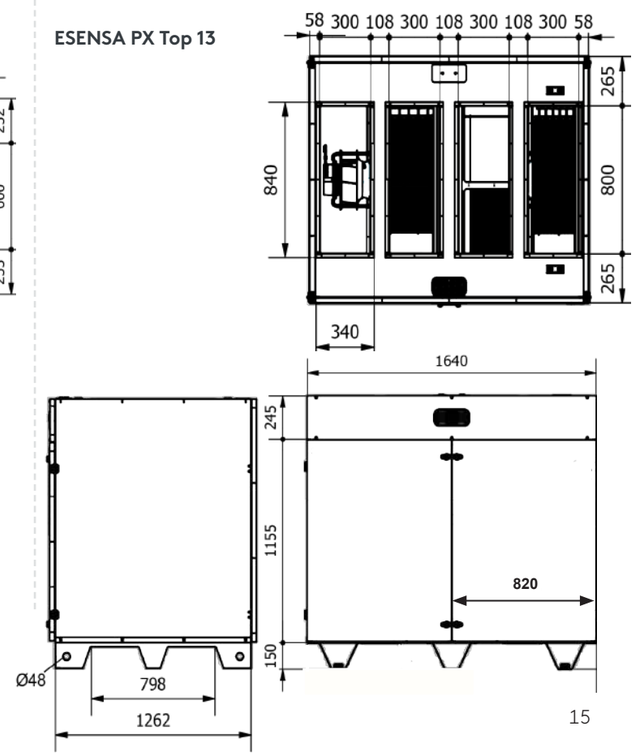
ESENSA PX Top 09



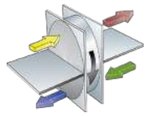
ESENSA PX Top 12



ESENSA PX Top 13



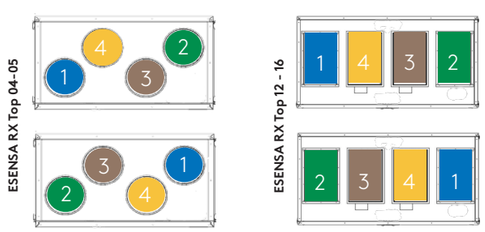
General overview ESENSA RX Top



- ● Standard equipment
- ○ Available as option, needs to be assembled by the installer on site
- \- Not available

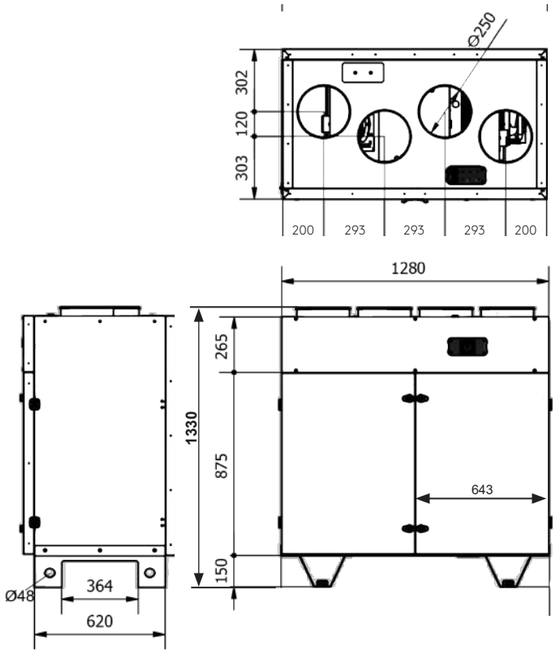
	ESENSA RX TOP 04	ESENSA RX TOP 05	ESENSA RX TOP 12	ESENSA RX TOP 16
Airflow m³/h | min-max (Ecodesign)	100 - 660	200 - 1.200	300 - 2.200	400-3.250
Airflow l/s | m³/s | min-max (Ecodesign)	28 - 183 | 0,03 - 0,18	56 - 334 | 0,06 - 0,33	83 - 611 | 0,08 - 0,61	111 - 902 | 0,11 - 0,99
Weight w/o option	190 kg	225 kg	320 kg	365 kg
Dimensions Depth/Width/Height	725/1.280/1.290 mm	725/1.580/1.290 mm	925/1.680/1.490 mm	1.145/1.680/1.590 mm
Foot print	0,93 m²	1,15 m²	1,56 m²	1,93
Base frame height	150 mm	150 mm	150 mm	150 mm
Mineral wool panel thickness	50 mm	50 mm	50 mm	50 mm
Metu connection frame	30 mm	30 mm	30 mm	30 mm
Heat exchanger	Rotary heat exchanger	Rotary heat exchanger	Rotary heat exchanger	Rotary heat exchanger
Filter type	Mini-pleated	Mini-pleated	Mini-pleated	Mini-pleated
Filter class Supply/Exhaust	ePM1 60%/ePM10 50%	ePM1 60%/ePM10 50%	ePM1 60%/ePM10 50%	ePM1 60%/ePM10 50%
Fan material	Composite	Composite	Composite	Composite
Installation	Indoor	Indoor	Indoor	Indoor
Operating range				
Power connection w/o option | Max current	1 x 230 V 3,8 A	1 x 230 V 5,8 A	1 x 230 V 7,7 A	1 x 230 V 7,7 A
Recommended fuses	D6A - 10kA -AC3	D6A - 10kA -AC3	D10A - 10kA -AC3	D10A - 10kA -AC3
Communication TACtouch	○	○	○	○
Communication modules BACnet, Modbus RTU, KNX, MQTT (Ethernet, WiFi)	○	○	○	○
Dampers	○	○	○	○
IRS adapter	○	○	○	○
Flexible connection	○	○	○	○
Internal electrical preheater	-	-	-	-
Internal electrical postheater	○	○	○	○
Internal water postheater	○	○	○	○
Non isolated external DX coil	○	○	○	○
Non isolated external water coil	○	○	○	○
EN1886*	T2/TB3/L2/L3/D2	T2/TB3/L2/L3/D2	T2/TB3/L2/L3/D2	T2/TB3/L2/L3/D2
Certification	Eurovent	Eurovent	Eurovent	Eurovent

* L2(-400Pa)/L3(+700Pa)

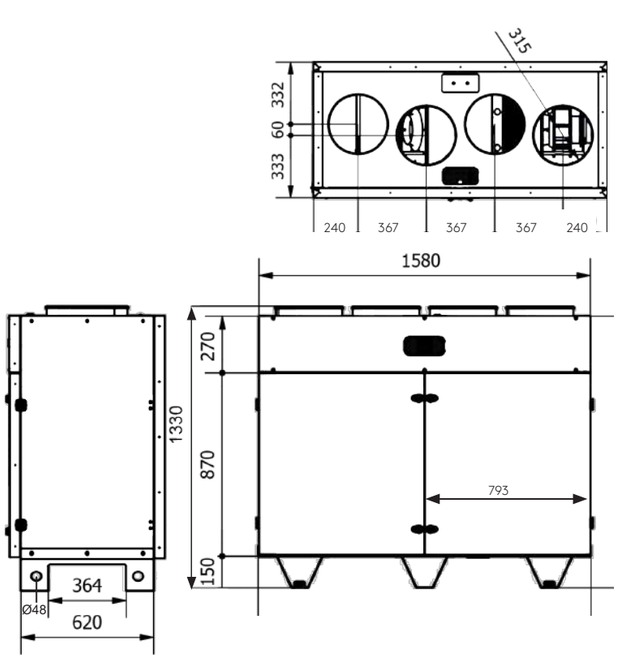


Technical drawings

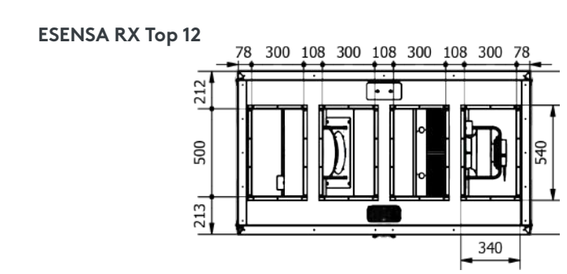
ESENSA RX Top 04



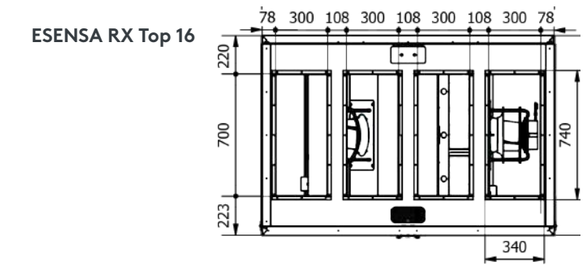
ESENSA RX Top 05

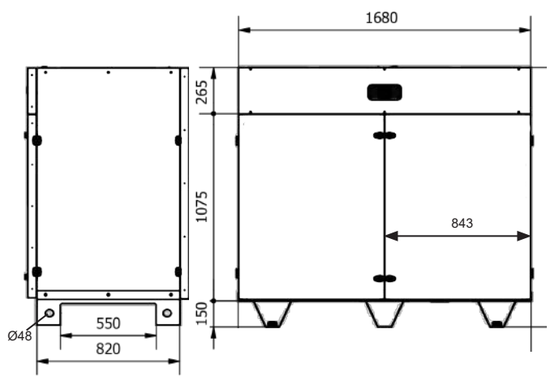


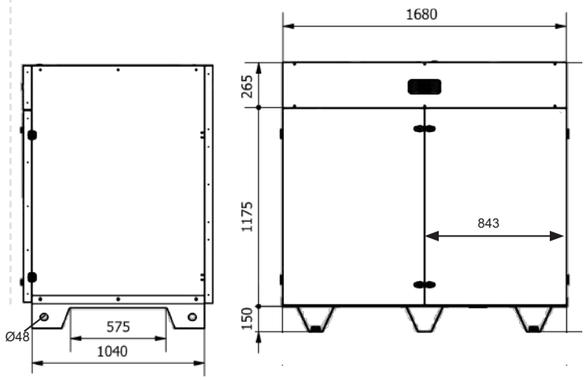
ESENSA RX Top 12



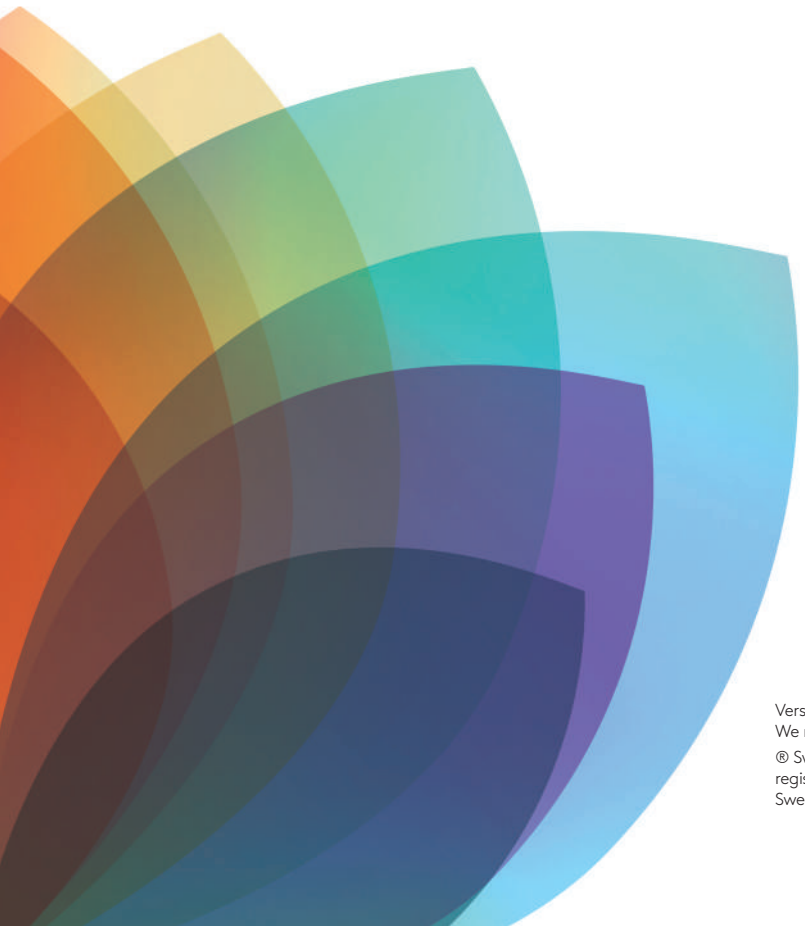
ESENSA RX Top 16







Feel good **inside**



Swegon