

Operation & maintenance instructions for the product range

ESENSA



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www.swegon.com



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Symbols and abbreviations



RX ROTARY EXCHANGER



PF PLEATED FILTER



PX PLATE HEAT EXCHANGER



BW BACKWARD CURVED FAN



WARNING !



Must be connected by a qualified electrician.
Warning! Hazardous voltage.



Electronic boards contains ESD sensitive components. Wear antistatic wrist strap connected to protective earth before to manipulate them. In alternative, discharge by touching the unit, handle boards at corners only and use antistatic gloves.



OUTDOOR AIR (1)



EXTRACT AIR (2)



EXHAUST AIR (3)



SUPPLY AIR (4)

Glossary

CT	Motorised damper (circular, rectangular)
DX	Direct expansion
EBA	Non-isolated external water coil
ECA	Insulated integrated casing
GF	Filter
IBA	Built-in water coil - postheating
IRS	Circular/rectangular adapter

Kit CA	Kit Constant Airflow
Kwin	Built-in electrical coil - preheating
Kwout	Built-in electrical coil - postheating
MS	Flexible connection
OUT	Roof for outdoor installation
SC	Slip-clamp connection
VEX	Roof for outdoor installation

1. General

1.1 General information

All staff must consult the instructions before starting any work on the unit. Any damages to the unit (or parts of it) due to a misuse cannot be considered subject to guarantee.

The product identification can be found on the silver label that is always stuck to the bottom of a panel on the unit. Refer to this label when you contact the supplier.

If the unit is installed in a cold place make sure that all joints are covered with insulation and are well taped.

Ordered optional accessories are not factory installed and must be ordered in advance (for example internal and external coils, motorised dampers, defrost kit and flexible sleeve. They are supplied separately from the unit. Therefore the connections to the unit is under the responsibility of the installer.

Make sure that the power supply to the unit is disconnected before performing any maintenance or electrical work.

All electrical connections must be carried out by an authorized installer and in accordance with local rules and controls

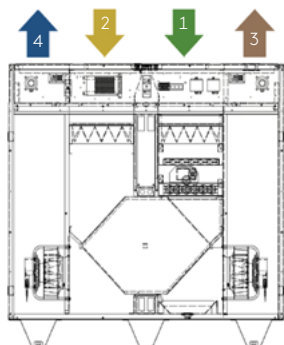
Before switching off the unit using the main switch, we recommend first to switch off the fans function using the control system, so that post-ventilation cools the electrical coils and prevents the internal components from overheating.

Unit should always be operated with closed doors and panels. Check that there are no foreign objects in unit, ducting system or functional sections.

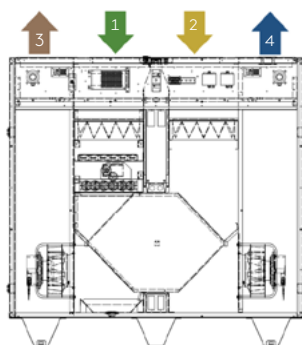
2. Product overview

2.1 General information

ESENSA PX Top



Left connection version



Right connection version

ESENSA RX Top

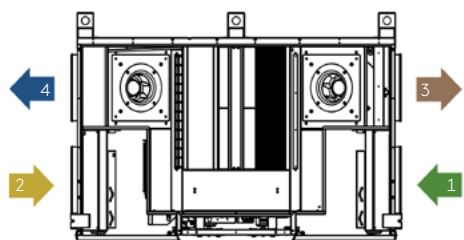


Left connection version

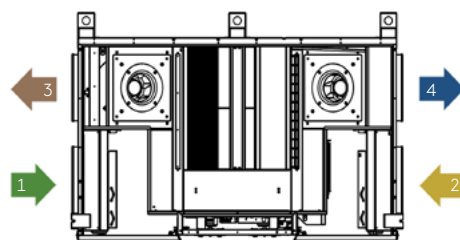


Right connection version

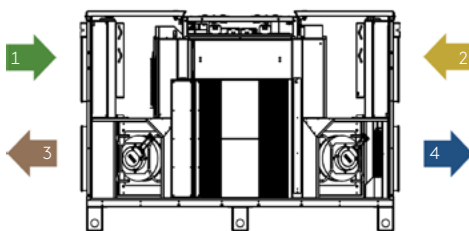
ESENSA PX Flex



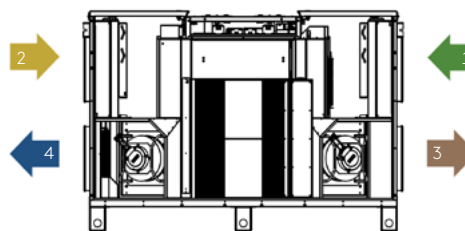
Horizontal left version (HL)



Horizontal right version (HR)



Vertical right version (VR)



Vertical left version (VL)

1. Outdoor air 2. Extract air 3. Exhaust air 4. Supply air

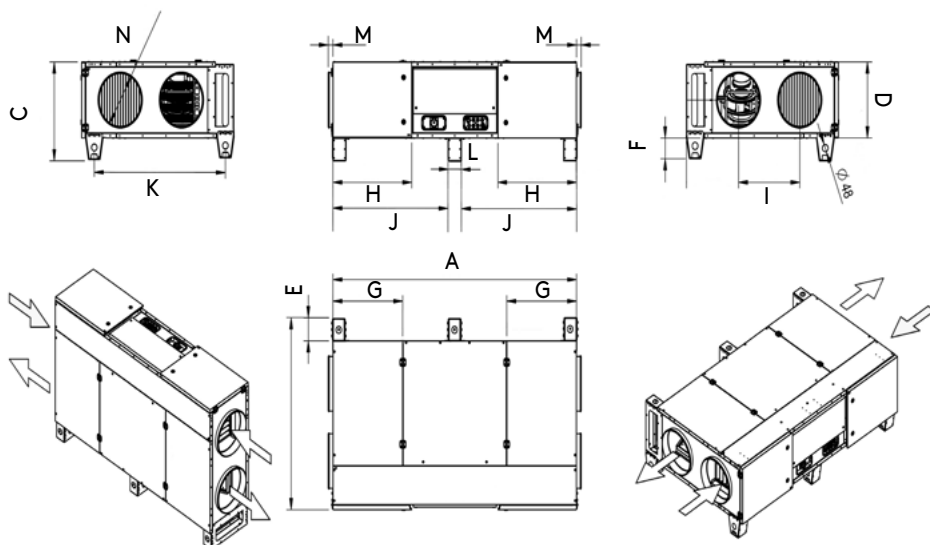
ESENSA PX Top

Unit	Model size	Weight [kg]	Aeraulic connection [mm]	Airflow [m³/h]	Airflow [l/s]
ESENSA PX Top	05	245	Ø 315	250-900	70-250
	09	320	Ø 355	300-1660	83-465
	12	340	600 x 300	300-2100	83-584
	13	395	800 x 300	350-2680	97-745

ESENSA RX Top

Unit	Model size	Weight [kg]	Aeraulic connection [mm]	Airflow [m³/h]	Airflow [l/s]
ESENSA RX Top	04	190	Ø 250	100-660	28-183
	05	225	Ø 315	200-1200	56-334
	12	320	500 x 300	300-2200	83-612
	16	365	700 x 300	400-3250	111-904

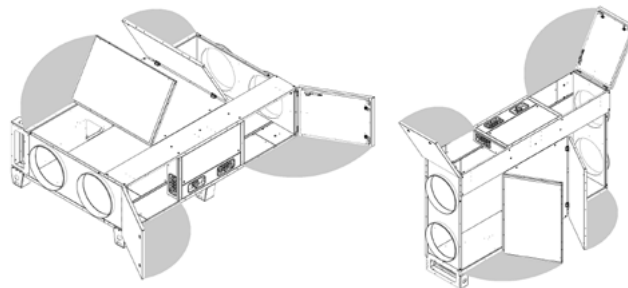
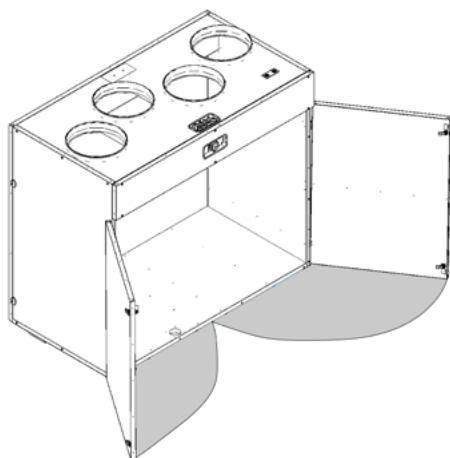
ESENSA PX Flex



Model size	Weight [kg]	Aeraulics connections [mm]	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]	H [mm]	I [mm]	J [mm]	K [mm]	L [mm]
05	215	Ø 355	2000	1250	644	494	150	150	572	647	503	1900	1070	100
10	290	Ø 500	2150	1445	784	634	150	150	572	652	593	2050	1265	100
13	360	Ø 500	2150	1870	784	634	150	150	570	652	827	2050	1690	100
20 H*	700	500 x 700	2800	2003	1106	956	50	150	910	1094	932	2430	1745	126
20 V*	680	500 x 700	2800	2103	1106	956	150	-	910	1094	932	2430	690	126

* H = Horizontal/V = Vertical

2.2 Maintenance area



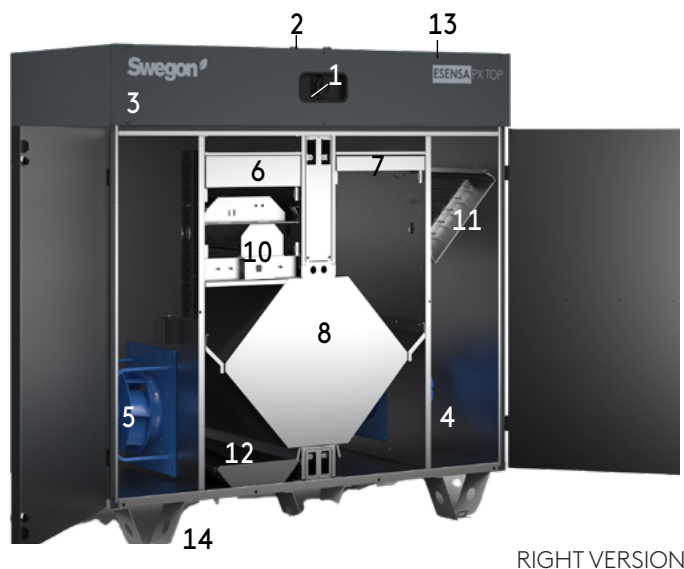
Unit	Model size	Front unit (without coil) [mm]	Front unit (with coil) [mm]
ESENSA PX Top	05	700	700
	09	820	820
	12	820	1040
	13	820	1260
ESENSA RX Top	04	620	630
	05	770	770
	12	820	1040
	16	820	1260

Unit	Model size	Behind unit (recommended) [mm]	Front unit [mm]	Above unit [mm]
ESENSA PX Flex Horizontal	05	600	700	600
	10	600	700	600
	13	600	700 1000*	600
	20	600	1100	950
	05	600	600	700
ESENSA PX Flex Vertical	10	600	600	700
	13	600	600	700 1000*
	20	600	1000	450

* This dimension is recommended if the unit is equipped with a preheating coil.

2.3 Components

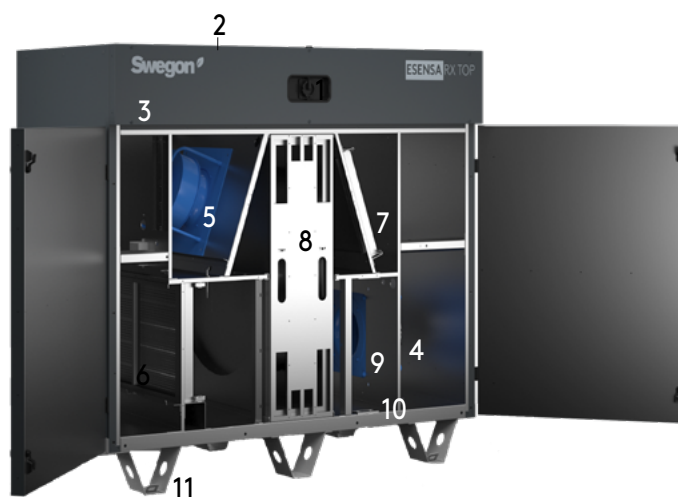
ESENSA PX Top



1. Main switch
2. Cable inlet
- ⚠ 3. Integrated electrical cabinet
4. Fan
5. Fan
6. Filter (mini-pleated)
7. Filter (mini-pleated)
8. High efficiency 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

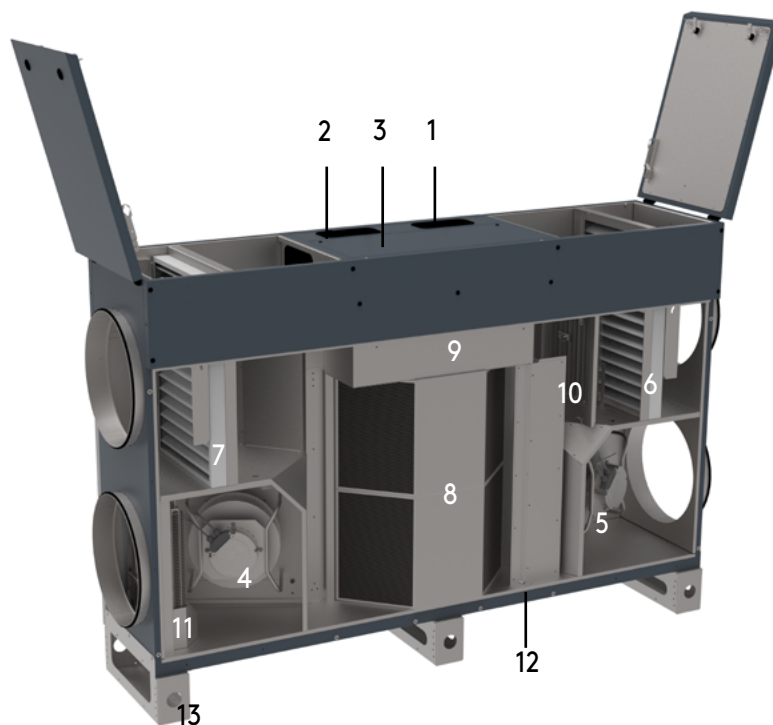
ESENSA RX Top

1. Main switch
2. Cable inlet
- ⚠ 3. Intergrated Electrical cabinet
4. Fan
5. Fan
6. Filter (mini-pleated)
7. Filter (mini-pleated)
8. High efficiency rotary heat exchanger
- ⚠ 9. Integrated postheating | water/electrical (option)
10. Hydraulic connection for postheating (option)
11. Base frame

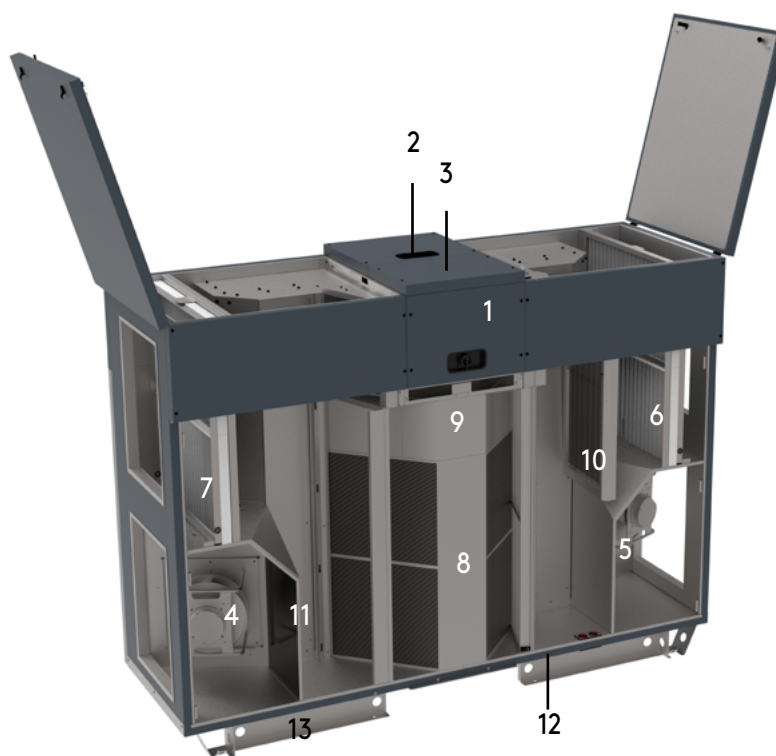


RIGHT VERSION

ESENSA PX Flex 05 - 10 - 13



ESENSA PX Flex 20



- 1. Main switch
- 2. Cable inlet
- 3. Integrated electrical cabinet
- 4. Fan
- 5. Fan
- 6. Filter(mini-pleated)
- 7. Filter (mini-pleated)



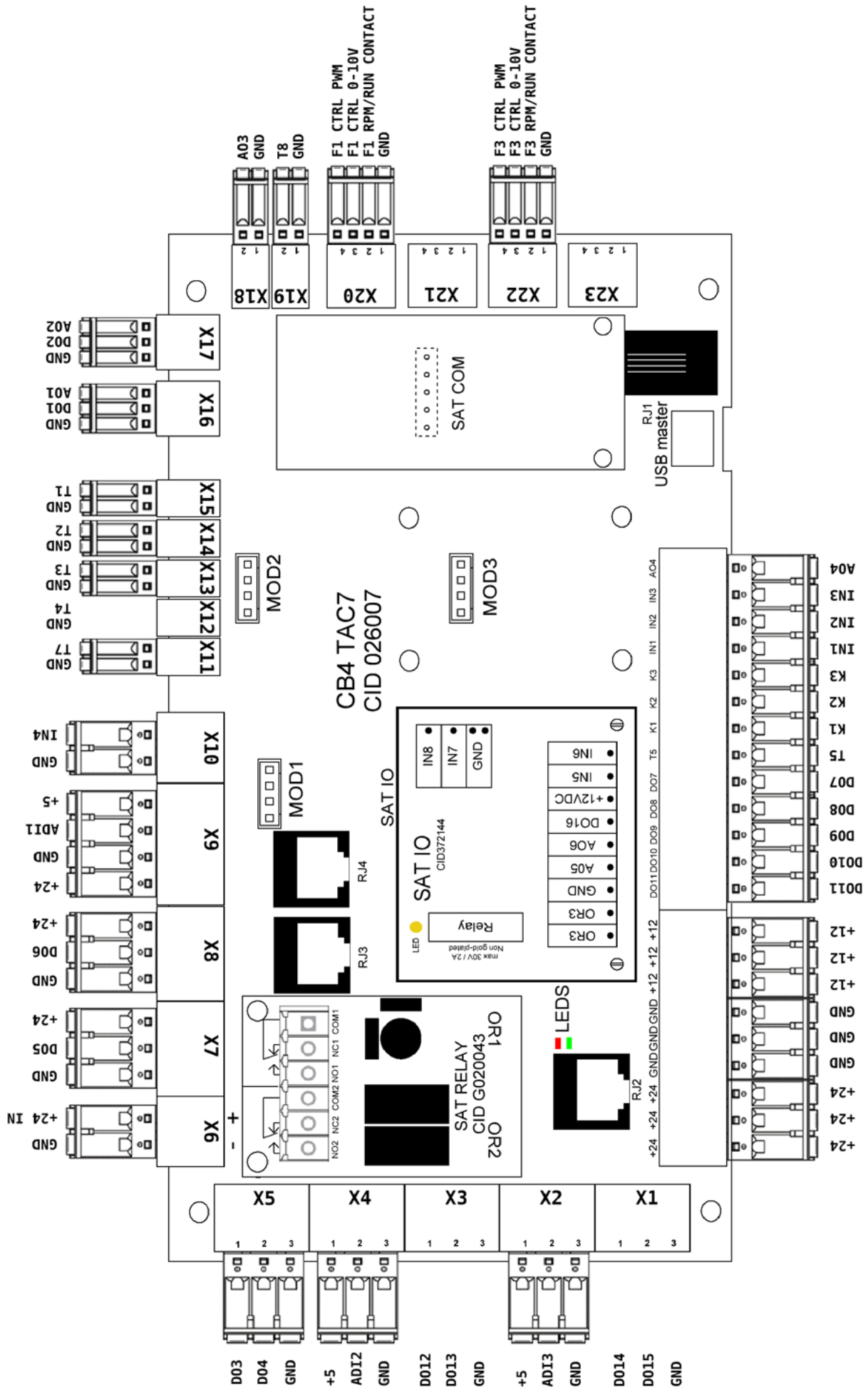
- 8. High efficiency plate heat exchanger (+ drain-pan & pipe connection at the back)
- 9. Modulating bypass
- 10. Integrated preheating | electrical (option)
- 11. Integrated postheating electrical/water (option)
- 12. Drain pan
- 13. Base frame

3. Main board

AO1 = output 0-10V for external waterborne reheater (Prewired or option)	T1 = from outdoor T° sensor (prewired)	
DO1 = KWout = output PWM for electric reheater power control (Prewired or option)	T2 = from indoor T° sensor (prewired)	
DO2 = KWin- PX: output PWM for electric pre-heater power control (Prewired or option) RX SPEED PWM - RX	T3 = to outdoor T° sensor (prewired)	
	T4 = Waterborne pre-heater (EBAin) T° sensor (option)	
AO2 = RX SPEED 0-10V - RX (option)	T5 = supply T° sensor for waterborne reheater (IBA)/electric reheater coil (KWout) (option)	
AO3 = 0-10V output to control cooling capacity or reversible heat/cool	T7 = Waterborne reheater (IBA)/waterborne pre-heater (EBA) anti freeze protection T° sensor (option)	
AO4 = output 0-10V for internal waterborne reheater (option)	T8 = Cooling coil frost protection sensor	
DO3 = BYPASS OPEN- PX (with rotary actuator) (prewired)	IN1 + 12/24V = FIRE ALARM	
DO4 = BYPASS CLOSE - PX (with rotary actuator) (prewired)	IN2 + 12/24V = BOOST	
DO5 = DAMPER 1 (with or without spring return, I _{max} = 0.5A DC) (Prewired or option)	IN3 + 12/24V = BYPASS ACTIVATION OVERRIDE	
DO6 = DAMPER 2 (with or without spring return, I _{max} = 0.5A DC) (Prewired or option)	IN4 + GND = Drain pan full contact (only for LP Unit - prewired)	
DO7 = HEAT OUTPUT (open collector; V _{max} =24 VDC; I _{max} =0,1 A)	K1 + 12/24V: Airflow MODE	= m³/h or l/s K1
DO8 = COOL OUTPUT (open collector; V _{max} =24 VDC; I _{max} =0,1 A)	Demand/Pressure control	= START/STOP
DO9 = ALARM OUTPUT (open collector; V _{max} =24 VDC; I _{max} =0,1 A)	K2 + 12/24V: Airflow control	= m³/h or l/s K2
DO10 = AL dPA OUTPUT (open collector; V _{max} =24 VDC; I _{max} =0,1 A)	Demand/Pressure control	= 0-10V INPUT
DO11 = FAN ON OUTPUT (open collector; V _{max} =24 VDC; I _{max} =0,1 A)	K3 + 12/24V: Airflow control	= m³/h or l/s K3
ADI1 = BYPASS POS - PX RX SPEED FEEDBACK - RX (prewired)	Demand/Pressure control	= % ON K3 or 0-10V INPUT
ADI2 = SUPPLY FILTER dPa	RJ1 = RJ12 connector for TACtouch (option)	
ADI3 = EXTRACT FILTER dPa	RJ2 = RJ12 connector for Modbus Pressure CP mode (option); Modbus Air quality sensors for demand control mode (option); Modbus Air quality sensors for BOOST in all modes (option)	
F1 = FAN 1 (SUPPLY)	RJ3 = RJ12 connector for ESENSA or GLOBAL PX LP: free; for GLOBAL PX/RX: Modbus Pressure sensors kit CA (prewired) and/or filters monitoring (option - prewired), on supply flow	
F3 = FAN 3 (EXHAUST)	RJ4 = RJ12 connector for Modbus Pressure sensors kit CA (prewired) and/or defrost detecting (option - prewired) and/or filters monitoring (option - prewired); NB: for GLOBAL PX/RX: sensor used for extract flow only	
SAT COM = SAT MODBUS or SAT KNX or SAT WIFI-ETHERNET - (option)		
GREEN LED ON = POWERED ON RED LED ON = ALARM		



Electronic boards contains ESD sensitive components. Wear antistatic wrist strap connected to protective earth before to manipulate them.
In alternative, discharge by touching the unit, handle boards at corners only and use antistatic gloves.



4. Preventive maintenance



Attention : before handling and/or opening the access panels it is compulsory to shut down the unit and disconnect the power supply using the general switch located on the front panel.

Do not isolate the power supply whilst the unit is running. If KWin and/or KWout are installed, then isolate the corresponding power supplies.

Regular maintenance is essential to guarantee good operation of the air handling unit and a long service life. The maintenance frequency will depend on the application and on the actual environment conditions but the following are general guidelines:

4.1 Once the unit operates in normal condition

Replace the filters with a kit of replacement filters.

4.2 Every 3 months

Check for any alarms indicated on the control device. In case of an alarm refer to troubleshooting section.

Check the state of filter clogging. The control device allows a pre-defined 'filter alarm' threshold to be set. Replace filters if necessary. Filters that are too clogged can generate the following problems:

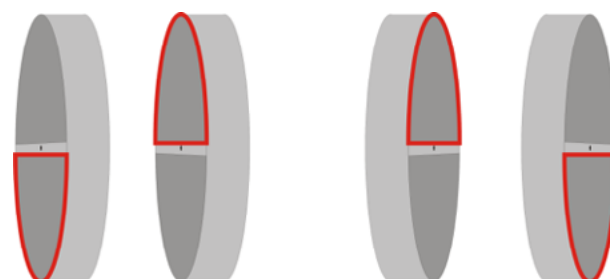
- Insufficient ventilation.
- Excessive increase of fan rotation speed.
- Excessive sound levels.
- Excessive power consumption (power consumption will increase exponentially to an increase in pressure drop, for a constant airflow).
- Unfiltered air passing through the heat exchanger (risk of clogging) and into ventilated rooms.

The list of replacement filter kits for each unit can be downloaded from our website.

- To locate the filter, refer to schemas on page 9 to 14.
- Inspection and cleaning of the inside of the unit:
 - Vacuum clean any accumulations of dust in the unit.
 - Inspect and gently vacuum clean the heat exchanger if necessary. Use a brush to protect the fins.
 - Clean any condensation stains.
 - For PX units, clean any accumulations in the drain pan.

4.3 Every 12 months

1. For rotary heat exchanger (RX) units, check the brush seals on the rotary heat exchanger along the perimeter in contact with the frame:



If necessary, bring the brush seals closer to the exchanger to ensure good sealing.

2. For RX units, check the tension of the driving belt on the rotating heat exchanger. If there is no tension or if the belt is damaged, please, contact the service department for a belt replacement.

Ideally the heat exchanger should be cleaned using vacuum cleaner with a soft nozzle to prevent damaging the air passages in the rotor. Turn the rotor by hand to enable you to vacuum clean its entire surface. If the heat exchanger is substantially fouled, it can be blown clean with compressed air.

3. Fan maintenance:

Check again whether the power supply is shut down and fans are not running.

Check and, if necessary, clean the fan blades to remove any deposits, taking care not to unbalance the blades (do not remove the balancing clips).

4. Check seals on the unit:

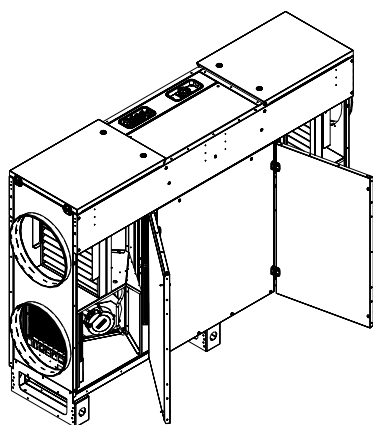
Ensure that the side access panels are fully closed and that the seals are intact. Replace if necessary.

5 For plate heat exchanger (PX) units:

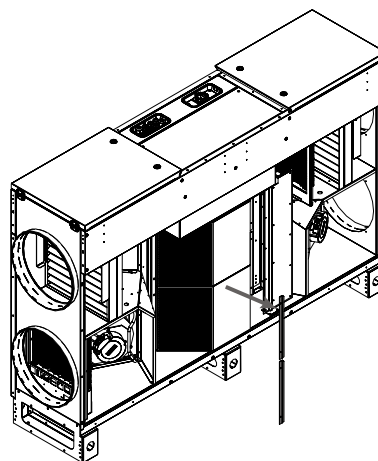
- Clean the drain pan
- Clean the inside of the bypass. To access the interior of the bypass it is necessary to force it open, proceed as follows: place a jumper between terminals IN3 and +12V on the TAC circuit board. The bypass is now open, regardless of the temperature conditions.
- Remember to remove the jumper between terminals IN3 and +12V once cleaning of bypass is done.
- Always clean against the direction of the airflow.
- Cleaning must only be done by blowing with compressed air, vacuum cleaning with a soft nozzle or through wet cleaning with water and/or solvent. Before you begin

cleaning, cover adjacent functional sections to protect them. If cleaning solvent is used, do not use solvent that will corrode aluminium or copper.

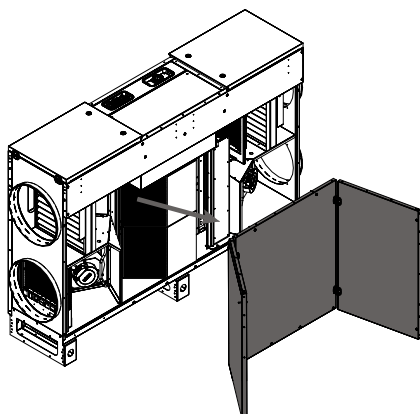
Procedure for accessing and cleaning plate heat exchangers:



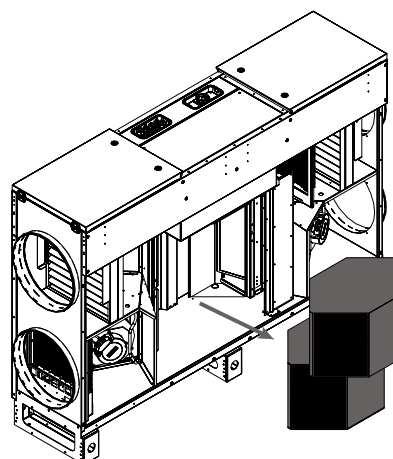
Remove the screws and open the side doors



Remove the exchanger mounting brackets.

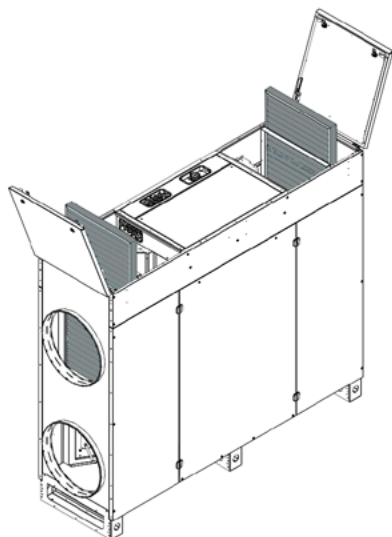


Unscrew and remove the central panel, as well as the two side doors.

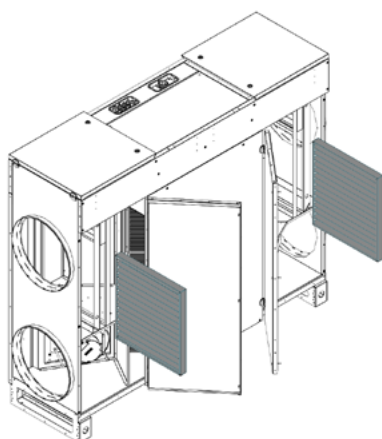


Remove the exchangers. If there are two, remove the upper one first.

4.4 Filter access



ESENSA PX Flex 05/10/13/20-H



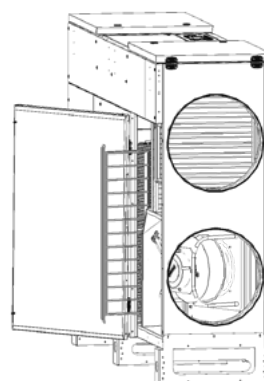
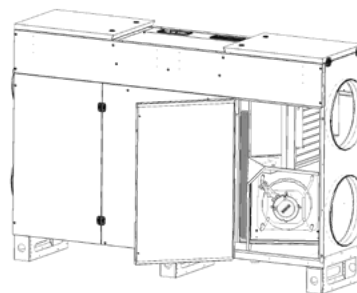
ESENSA PX Flex 13/20-V

Outdoor version will automatically be in the horizontal version.

4.5 Droplet eliminator

A droplet eliminator media is installed above the condensate tray (not applicable for ESENSA PX Flex 20). This media is necessary when the unit is installed in a vertical position.

In the horizontal position, the media is not required and can therefore be removed (see diagrams below).



4.6 Filter kit

Model	Code	Size [mm]/(qty)	Classe Supply/ Exhaust
PX Top 05	510154	470 x 287 x 47 (2)	ePM1 60% / ePM10 50%
PX Top 09	510155	400 x 380 x 47 (4)	
PX Top 12	510156	400 x 380 x 47 (2) 600 x 380 x 47 (2)	
PX Top 13	510157	600 x 380 x 47 (4)	
RX Top 04	510158	400 x 380 x 47 (2)	
RX Top 05	510158	400 x 380 x 47 (2)	
RX Top 12	510155	400 x 380 x 47 (4)	
RX Top 16	510160	600 x 510 x 47 (2) 400 x 510 x 47 (2)	
PX Flex 05	510161	455 x 426 x 47 (2)	ePM1 60% / ePM10 50%
PX Flex 10	510162	630 x 566 x 47 (2)	
PX Flex 13	510163	630 x 566 x 47 (2) 425 x 566 x 47 (2)	
PX Flex 20	510164	848 x 500 x 47 (4)	

5. Parameters/Commissioning Sheet

Please enter all settings specific to your installation in this table. Please keep this document at hand when there is a need to contact us to report a problem.

5.1 Main Parameters after Commissioning

1	ESENSA model:		
2	Operating mode:	☐ Constant Airflow ☐ Demand control	☐ Constant Torque ☐ Constant pressure
3	Constant Airflow:	K1 =	☐ [m³/h] ☐ [l/s]
		K2 =	☐ [m³/h] ☐ [l/s]
		K3 =	☐ [m³/h] ☐ [l/s]
4	Constant Torque:	K1 =	% Torque
		K2 =	% Torque
		K3 =	% Torque
5	Demand control:	Vmin =	V
		Vmax =	V
		m³h / %TQ ≡ Vmin =	☐ [m³/h] ☐ [l/s]
		m³h / %TQ ≡ Vmax =	☐ [m³/h] ☐ [l/s]
		% on K3 =	%
6	Constant pressure:	Assignment Pa =	☐ [V] ☐ [Pa]
		% on K3 =	%
7	Ratio exhaust / supply:	%	
8	Pressure alarm (not for pressure control mode)	Activated?	☐ Yes ☐ No ☐ Automatic ☐ Manual
		Setup Initialisation:	
		Supply:	☐ [m³/h] ☐ [l/s] ☐ [Pa]
		Exhaust:	☐ [m³/h] ☐ [l/s] ☐ [Pa]
9	If KWin option:	T° KWin =	°C
10	If KWout option	T° KWout =	°C
11	If IBA option:	T° IBA =	°C
12	Antifrost protection:	T° IBA =	°C

5.2 Track Changes

Enter details when the Setting of a parameter has been changed (use only one row per parameter):

Parameter Name	Setting before change	Setting of change #1	Date of change #1	Setting of change #2	Date of change #2

8. Certification



EC DECLARATION OF CONFORMITY

Manufacturer (and where appropriate his authorized representative):

Company: Swegon Operations Belgium
Address: Parc-industriel de Sauvenière 102 Chaussée de Tirlemont
B5030 Gembloux

Hereby declares that:

Following product range(s): ESENSA PX TOP / ESENSA RX TOP / ESENSA PX FLEX

Complies with the requirements of Machinery Directive 2006/42/EC (LVD included)

Complies also with applicable requirements of the following EC directives:

2014/30/EU	EMC
2009/125/EC	Ecodesign (Regulation nr 1253/2014 – LOT 6)
2011/65/EU	RoHS 2 (including amendment 2015/863/EU – RoHS 3)

Authorized to compile the technical file:

Name: Nicolas Pary
Address: Parc-industriel de Sauvenière 102 Chaussée de Tirlemont
B5030 Gembloux

Signature:

Place and date: Gembloux 2024-02-19

Signature: Name: Jean-Yves Renard
Position: R&D Director



UK DECLARATION OF CONFORMITY

Manufacturer (and where appropriate his authorized representative):

Company: Swegon Operations Belgium
Address: Parc-industriel de Sauvenière 102 Chaussée de Tirlemont
B5030 Gembloux

Hereby declares that:

Following product range(s): ESENSA PX TOP / ESENSA RX TOP / ESENSA PX FLEX

Conform with Supply of Machinery (Safety) Regulations 2008 including Electrical Equipment (Safety) Regulations 2016**Also conform to the following directives:**

Electromagnetic Compatibility Regulations 2016

The Ecodesign for Energy-Related Products Regulations 2010 (Commission regulation (EU) No. 1253/2014)

The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012

Authorized to compile the technical file:

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B5030 Gembloux

Signature:

Place and date: Gembloux 2024-02-19

Signature: Name: Jean-Yves Renard
Position: R&D Director





The document was originally written in English.