User manual and installation guide

TX 3100A

Rev. 2023.09.26

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1.0 General information

1.1 Foreword

This user´s manual contains technical information regarding the installation and maintenance of a **TX 3100A** decentralized ventilation unit**.**

1.2 Field of application

Turbovex TX 3100A is designed for providing decentralized comfort ventilation in larger rooms such as industrial premises, auto workshops and indoor sports arenas and similar environments.

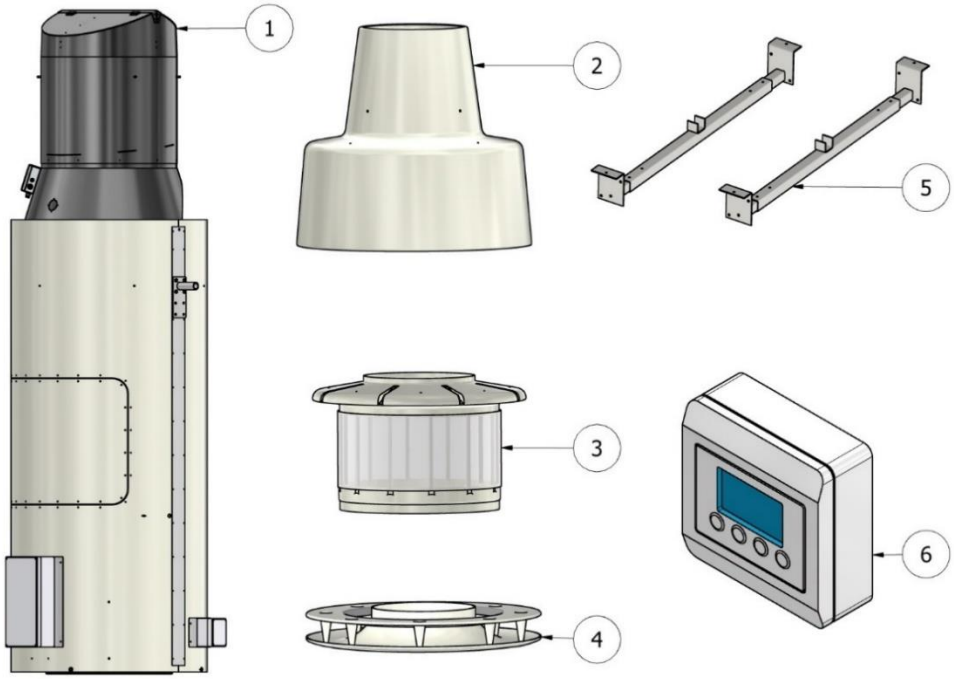
1.3 Scope of delivery

Turbovex TX 3100A is by default delivered with the main components listed below.

1. TX 3100A unit
2. Top cone
3. Filter holder
4. Inlet ring
5. Standard mounting brackets

In addition the unit is delivered with various screws and bolts, silicone rubber grout, wires and wire tensioners.
Following can be purchased as option:

6. TX Electronic Control



The scope of delivery may change when other options for installation is purchased.

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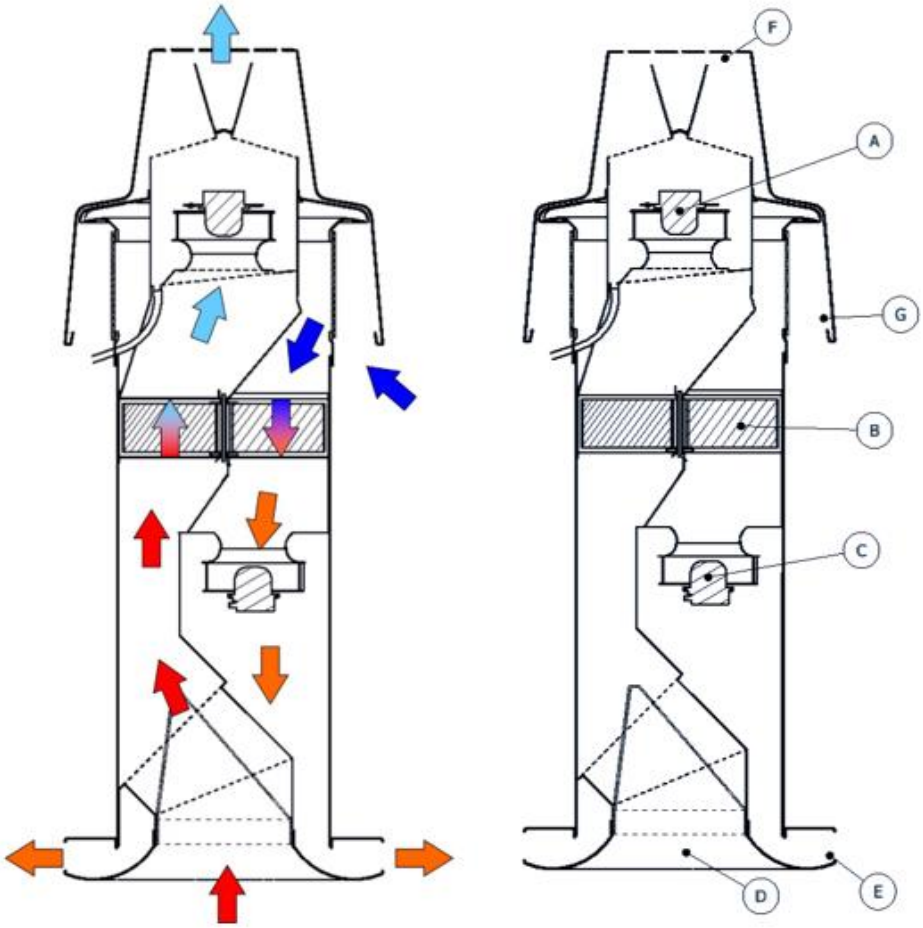
1.4 Function of the unit

The principle of heat recovery in the TX3100A is based on the rotating heat exchanger (B). The exhaust fan (A) draws the warm room air through the funnel of the inlet ring(D), through half of the heat exchanger (B), and send it through the exhaust cap (F). Simultaneously the inlet fan will (C) draws air through the inlet cap(G), sending it through the other half of the heat exchanger. The heated fresh air is sent through the inlet ring (E) and distributed evenly in the room.
One half of the rotating heat exchanger will always be in the hot airflow from the exhaust air. When the heated material in the heat exchanger is in the cool flow of the inlet air, it will transfer heat from the material to the fresh supply air.
The process is regenerative as the heat exchanger rotates at a constant low speed.



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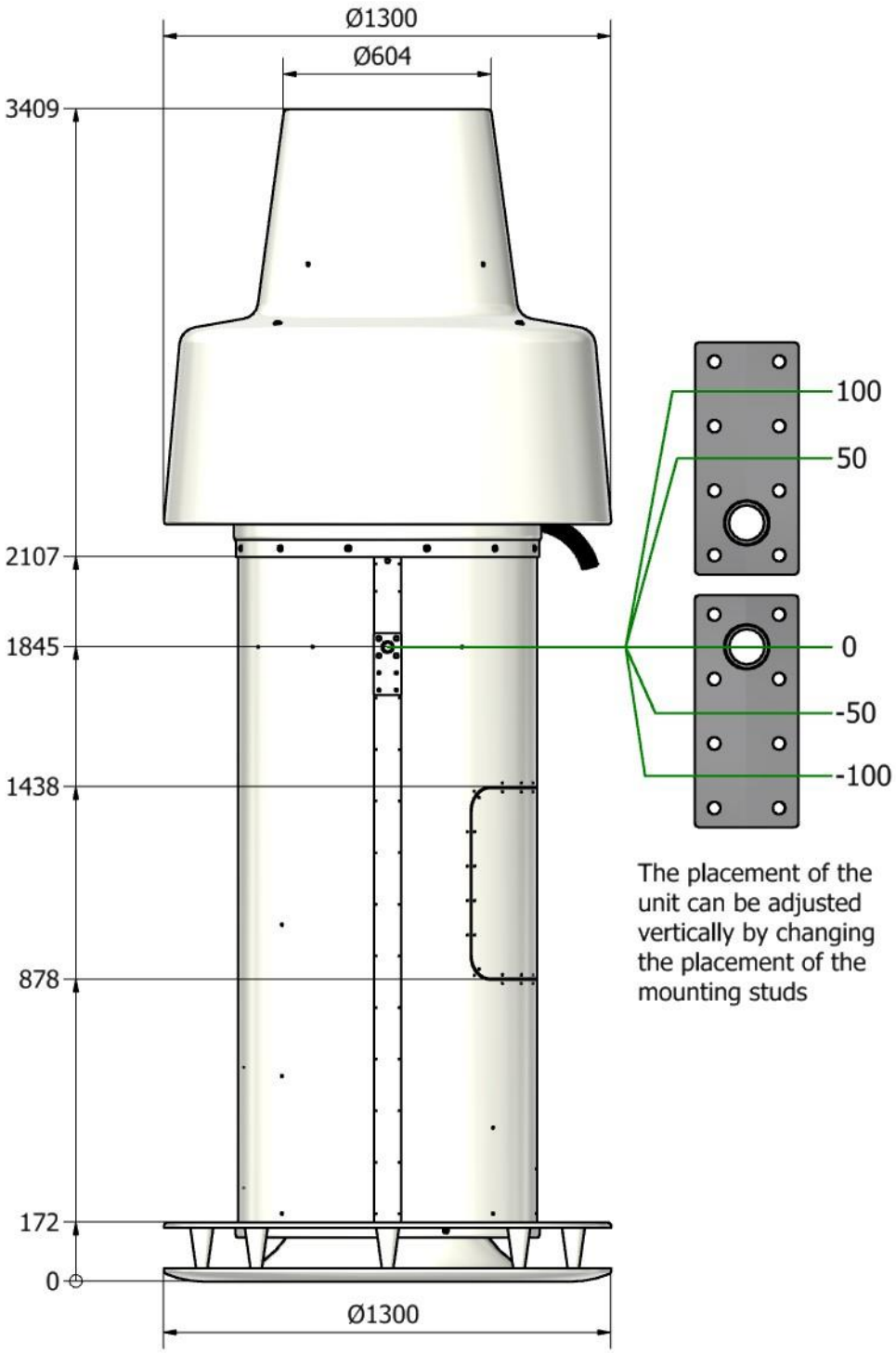
2.0 Installation

2.1 Dimensions



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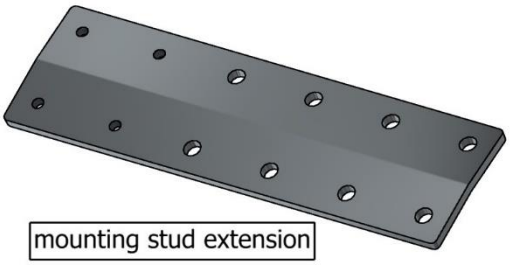
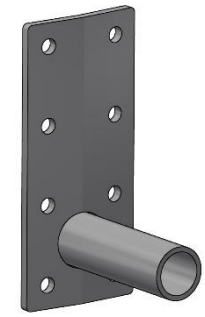
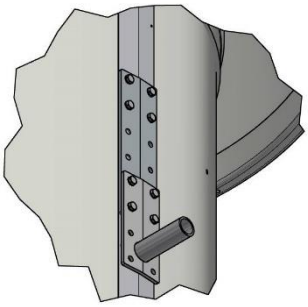
2.2 Mounting stud extensions

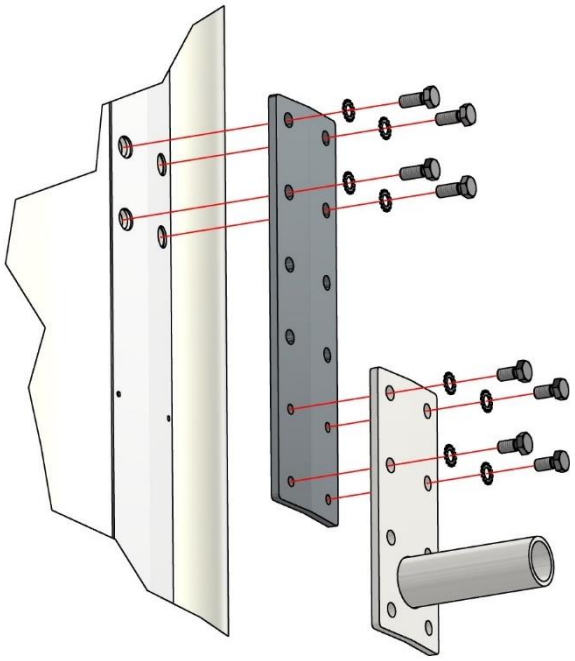
If further adjustment to the placement up or down of the unit is required, it is possible to install mounting stud extensions with the mounting studs. With the mounting stud extensions the placement can be adjusted additional 300 mm vertically.







The mounting stud extensions are attached to the TX3100A unit using the long M8 bolts and washers with which the mounting studs were attached by default. The mounting studs are attached to the mounting stud extensions using the short M8 bolts and washers that comes with the mounting stud extensions.



The mounting studs are attached to the mounting stud extensions using the short M8 bolts and washers through the threaded holes on the mounting stud extensions.

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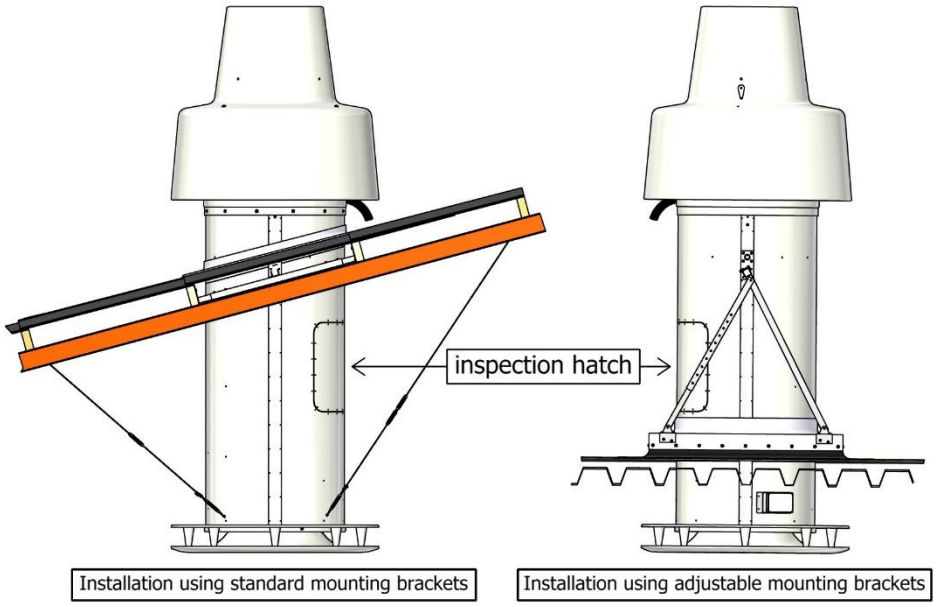
2.3 Placement

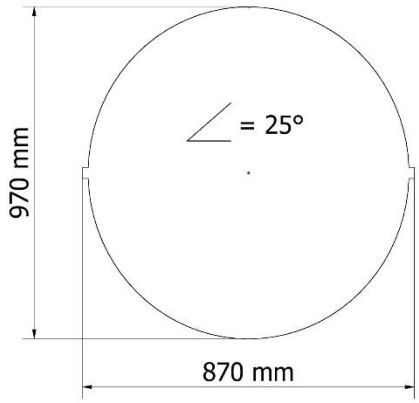
TX 3100A is intended for installation through the roof. The unit can be placed in roofs with inclines ranging from 0 to 45 degrees. TX3100A is available with two types of mounting brackets;
Standard mounting brackets place the unit with the inspection hatch inside the building while adjustable mounting brackets place the unit with the inspection hatch outside the building.



2.4 Template

It is recommended to create a template from the chart below based on incline of the roof. The illustration is shown with an incline of 25°

- ∠ 0° = Ø 870 mm
- ∠ 5° = 870 x 880 mm
- ∠ 10° = 870 x 890 mm
- ∠ 15° = 870 x 900 mm
- ∠ 20° = 870 x 930 mm
- ∠ 25° = 870 x 970 mm
- ∠ 30° = 870 x 1010 mm
- ∠ 35° = 870 x 1070 mm
- ∠ 40° = 870 x 1140 mm
- ∠ 45° = 870 x 1240 mm



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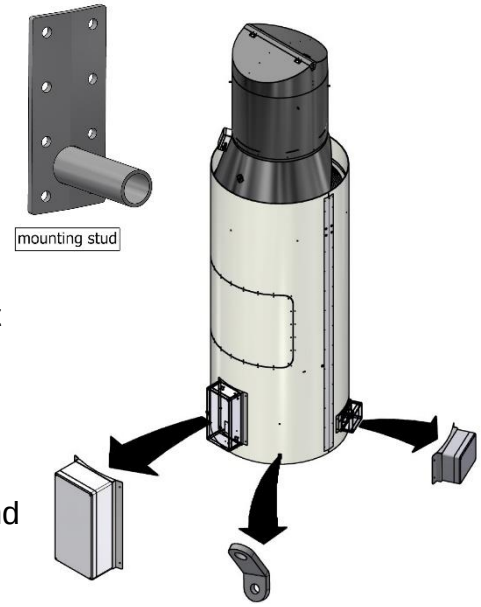
2.5 Installing the unit(standard mounting brackets)

If the unit is installed by hoisting it up through the roof, the following components must be temporarily removed for installing the unit:

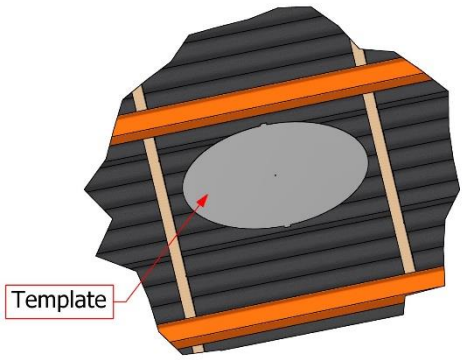
- the 2 mounting studs



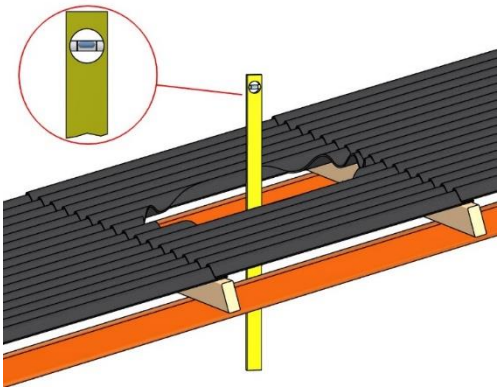
If the unit is to be installed by lowering it down through the roof, the following components must be temporarily removed for installing the unit:

- The 2 electrical boxes. The electrical wires that are connected to the boxes are long enough, so that they don't need to be disconnected while installing the unit.
- The 4 wire brackets

The placement of the unit can be adjusted vertically through the placement of the mounting studs as shown in ***2.1 Dimensions*** and ***2.2 Mounting stud extensions.***



The placement and center of the unit is marked through the roof. It is recommended using a template based on the chart in ***2.4 Template*** for this.



A hole is then drilled or cut vertically through the roof.

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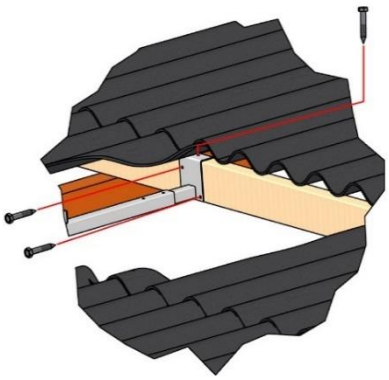
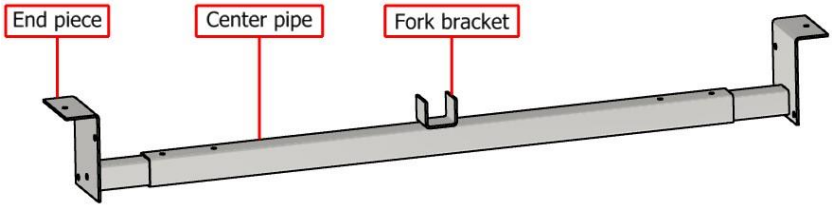
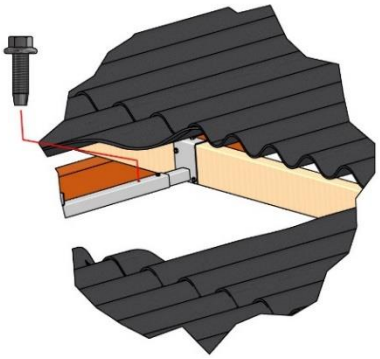
According to the placement of the unit it is measured where the two standard mounting brackets should be installed with a distance between them of 1000 mm, so that the unit is placed equally distanced from both.



The standard mounting brackets are designed for a distance between the purlins of up to 1070 mm. The end pieces are fastened to the purlins using the 12 included Ø8 mm wood screws.

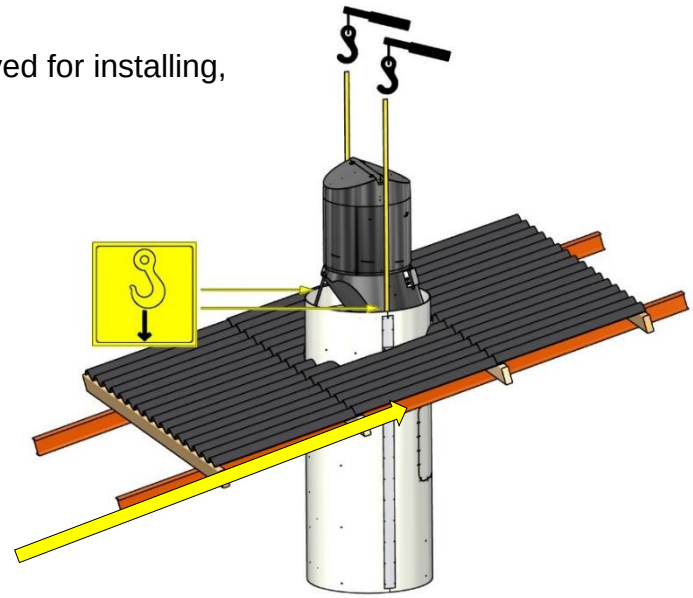




The center pipes are adjusted so that the fork brackets are horizontally aligned and so that their co-centric line is in the center of the hole. The center pipes are fixed in place through the endpieces with the 8 Ø6,3 mm self-drilling screws.

The unit is hoisted in place with a crane.

If the 2 mounting studs were temporarily removed for installing, they are now re-attached to the unit.



If the 2 electrical boxes has been detached for installing the unit, pay attention to them so that they are not stuck and damaged during the use of a crane with the unit.

When choosing installation with standard mounting brackets the unit must be placed with the service hatch facing towards the ridge of the roof.

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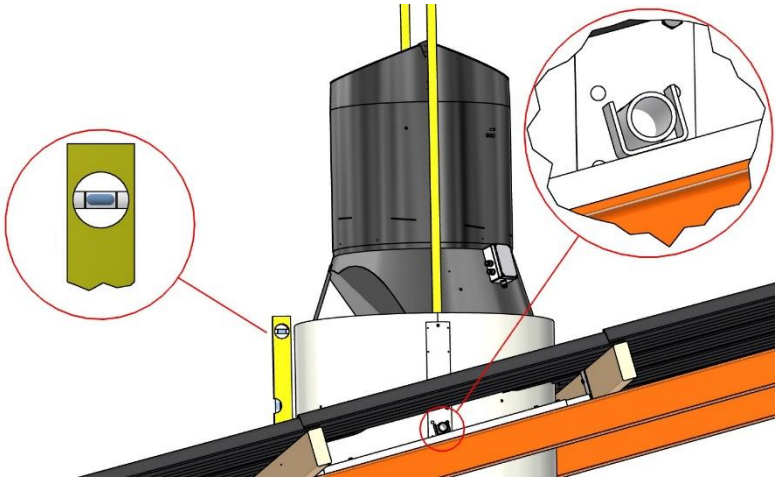
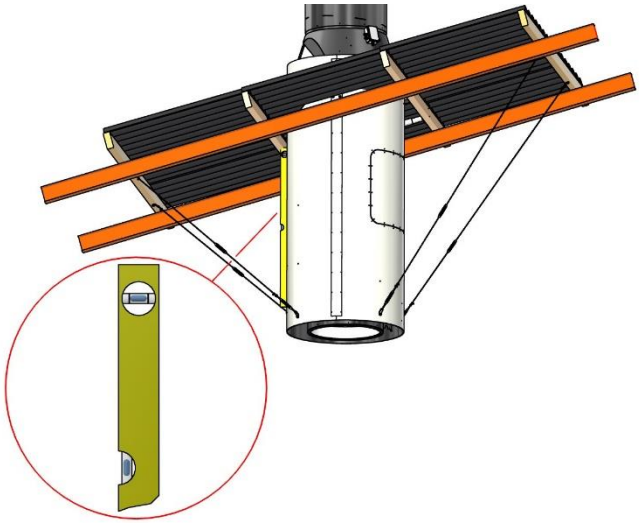
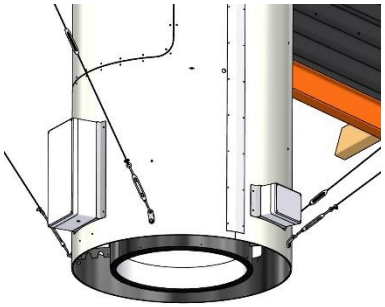
The unit is hoisted or lowered in place so that the mounting studs fall into place in the fork shaped brackets of the standard mounting brackets. It is checked that the unit is plumb.



If the 4 wire brackets were temporarily removed for installing the unit, they are now re-attached to the unit.
The remaining included 4 wire brackets are attached to the purlins or battens.
The included wires and wire tensioners are now attached between the 4 wire brackets on the unit and the 4 wire brackets on purlins or battens. The wire tensioners are tightened so that the unit is fixed and plumb.



With the unit and wires installed, fixed and adjusted the 2 electrical boxes can be re-attached to the unit.



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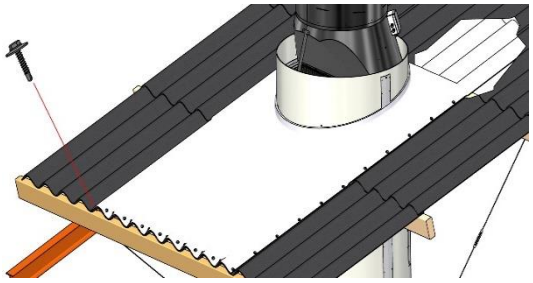
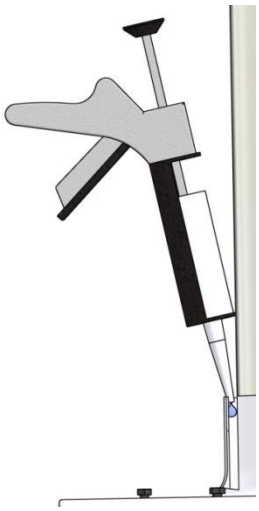
In the center of the soft cover a hole is cut. It is recommended to use the template from ***2.4 Template*** as reference. It must be taken into consideration when cutting the hole that the soft cover should be placed under either overlying roof plate(s) or the ridge of the roof with an overlap of minimum 100 mm.

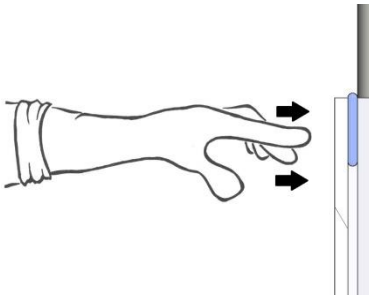
The hole in the soft cover is cut with a diameter approximately 100mm smaller than the hole in the roof to ensure proper seal around the unit



The overlying roof plate(s) the ridge of the roof is lifted to put the soft cover beneath it. The soft cover is fastened with the included Ø5,5 mm self-drilling screws, up to 50 screws, with a distance between them of approximately 200 mm or as required to ensure proper seal with the roof.



A joint of silicone rubber grout is laid where the softcover meets the unit. The soft cover is pressed against the unit by hand to ensure seal between the soft cover and unit.



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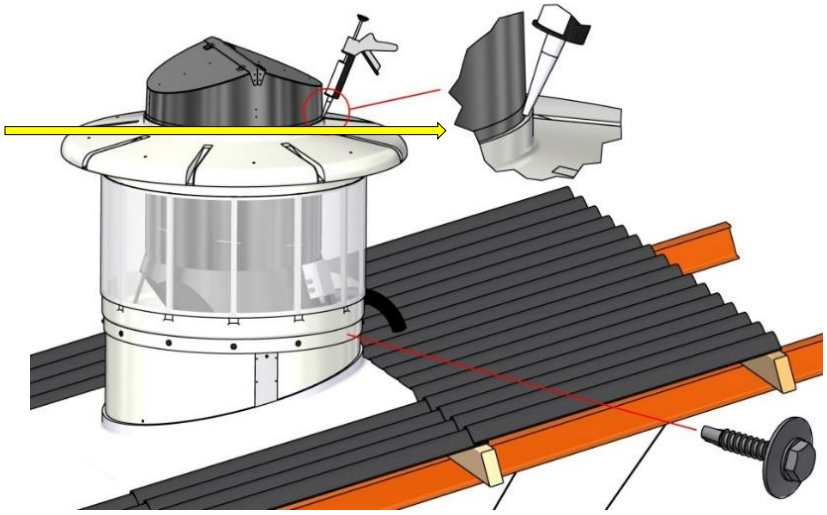
The filter holder is attached with the 12 included self-drilling screws. A silicone grout joint is laid all around the top against the unit as shown in the illustration.

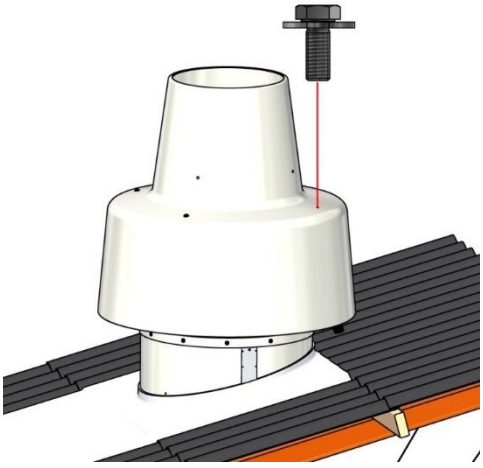
Be attentive to this joint as it is extremely important for the general seal of the unit.



The top cone is installed by placing it on top of the filter holder.

Be attentive to the 2 arrow markings on the filter holder and the top cone. They must face the same direction

The top cone is attached to the filter holder with the included 4 M8x20 mm bolts and washers.



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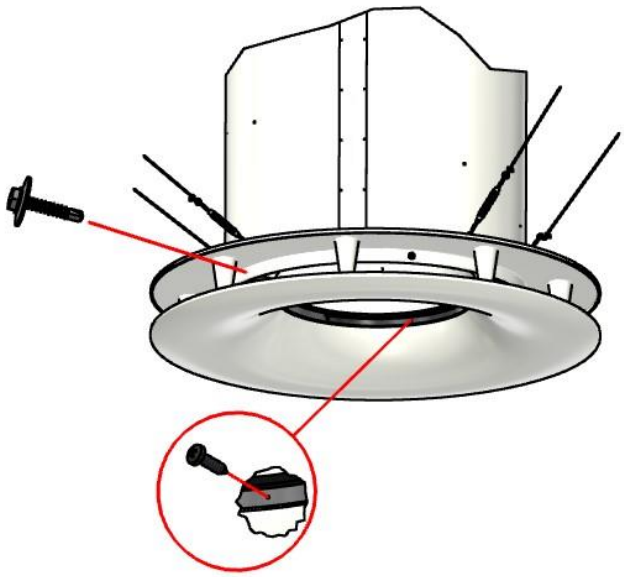
The inlet ring is installed by pushing it over the 2 tubes in the unit. The inlet ring is fastened from the inside tube with the 7 included chipboard screws and from the outside with the 4 included self-drilling gasket screws.



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2.6 Installing the unit(adjustable mounting brackets)

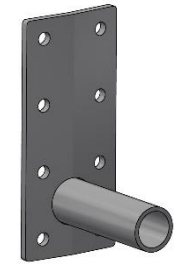
If the unit is installed by hoisting it up through the roof, the following components must be temporarily removed for installing the unit:

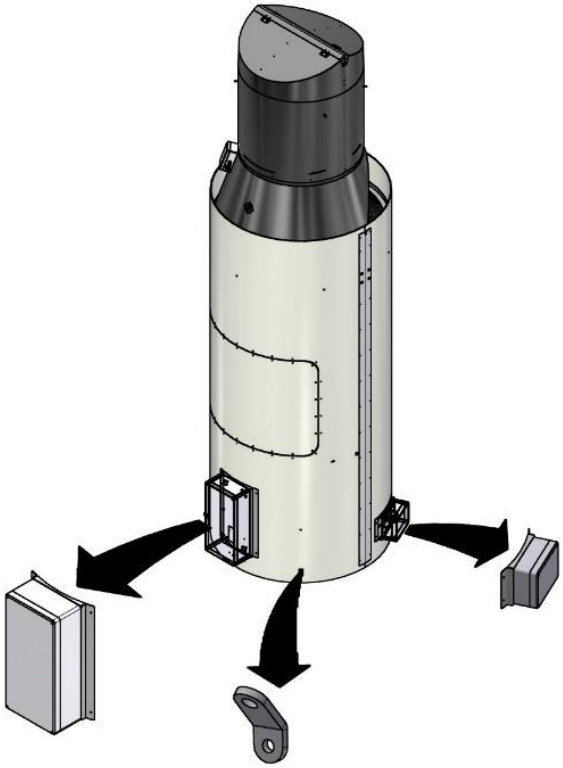
- the 2 mounting studs

If the unit is to be installed by lowering it down through the roof, the following components must be temporarily removed for installing the unit:

- The 2 electrical boxes. The electrical wires that is connected to the boxes are long enough, so that they don't need to be disconnected while installing the unit.
- The 4 wire brackets

The placement of the unit can be adjusted vertically, through the placement of the mounting studs as shown in ***2.1 Dimensions*** and ***2.2 Mounting stud extensions.***





The placement and center of the unit is marked through the roof. It is recommended using a template based on the chart in ***2.4 Template*** for this.

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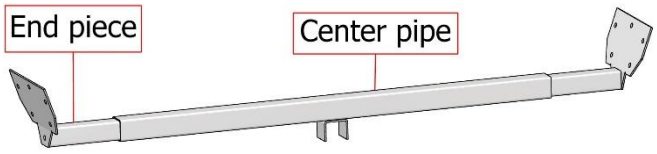
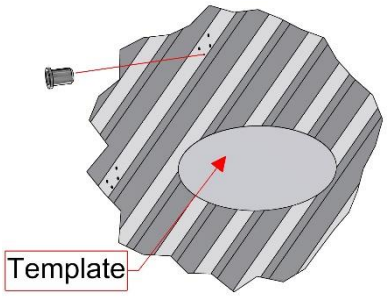
Reinforcing with trapezoidal brackets

The attachment of trapezoidal sheets should be reinforced, either with trapezoidal brackets or planned and constructed as part of the roof's structure.



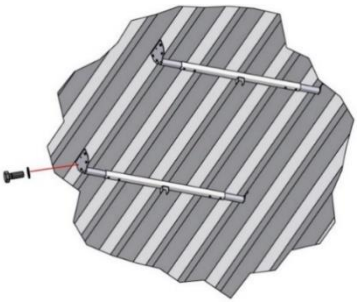
trapezoidal bracket

With the desired placement and center mark of the unit as reference(optionally using the template from 2.4 Template) it is determined where the 2 trapezoidal brackets should be placed. They must be placed with a distance to each other of 1400-1600 mm. They must be placed in an equal distance from the unit and so that they attach to first trapezoidal plate profile that will not be cut when making the hole for the unit. 4 M8 popnuts is installed in the trapezoidal profile corresponding to the final placement of each end piece.

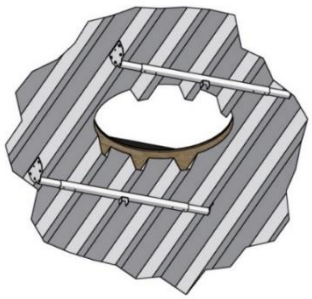


The two trapezoidal brackets are fixed to the trapezoidal profils using the included 16 M8 bolts and washers.

The center pipes are centered between the end pieces and the end pieces are fixed in place through the center pipes with the 8 Ø6,3 mm self-drilling screws.



Using the center mark and the 2 trapezoidal brackets as reference(optionally using the template in ***2.4 Template***) a Ø890 hole is cut through the roof.



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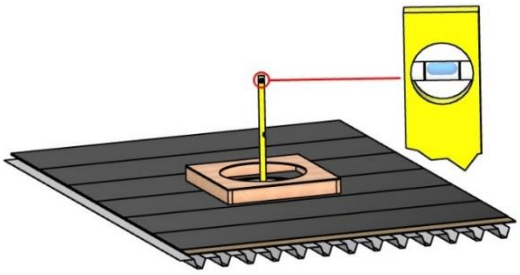
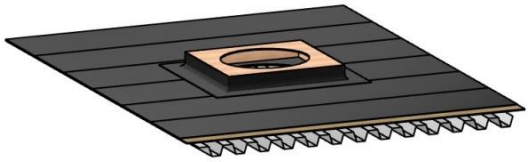
The wooden frame is placed with the cut hole as reference. Cut a square hole in the roofing material. Ensure the wooden frame is placed on a firm surface and fix the wooden frame

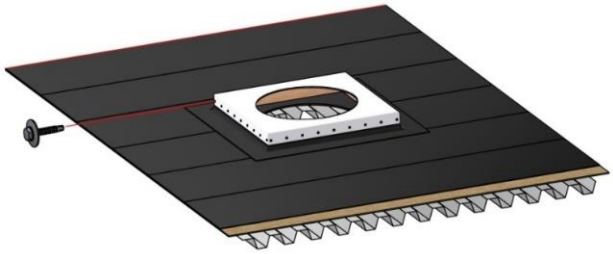


Asphalt roofing is applied so that it aligns with the top of the wooden frame and creates a sealed overlap on the roofing of the roof.



The soft cover is cut with the measurements of 1400x1400 mm and a hole for the unit is cut in the center of the soft cover.

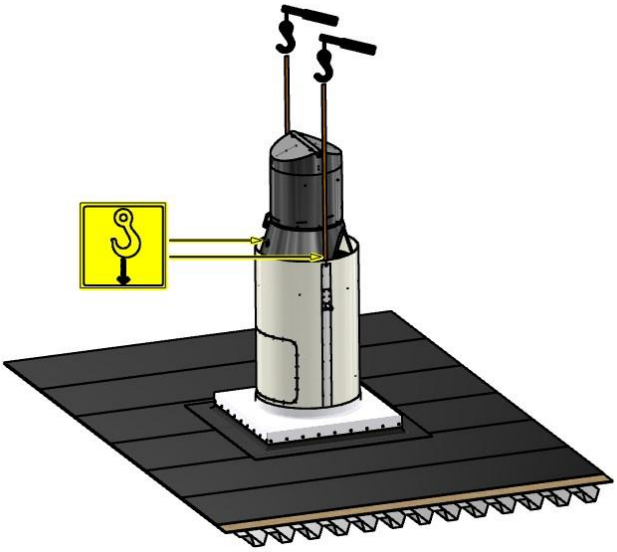
The hole in the soft cover is cut with a diameter approximately 100 mm smaller than the hole in the wooden frame.



The soft cover is fixed on to the wooden frame using the included self-drilling screws approximately 150 mm apart.

The unit is hoisted in place with a crane.

If the 2 mounting studs were temporarily removed for installing the unit, they are now re-attached to the unit.



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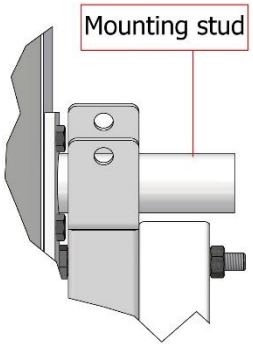
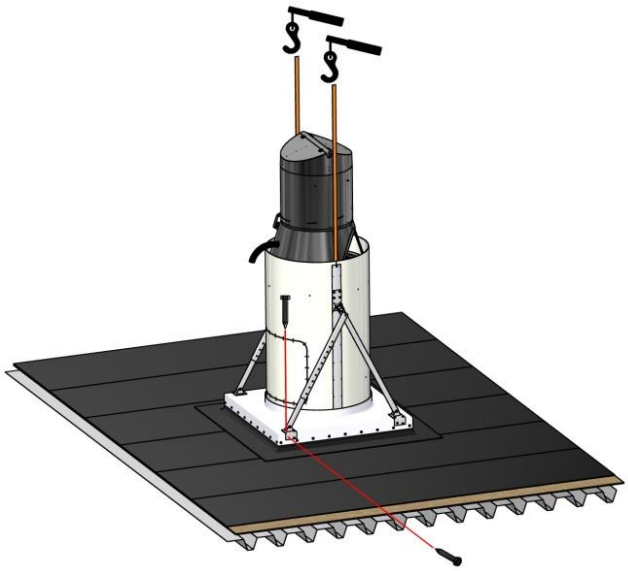
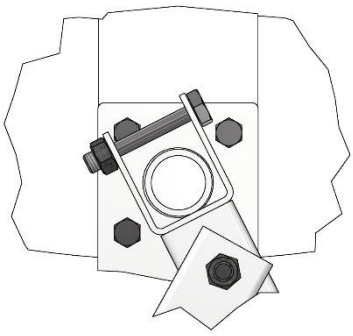
The 2 adjustable mounting brackets are placed and adjusted according to the final placement of the unit. The adjustable mounting brackets are placed as shown on the illustration so that the fork shaped bracket is situated closest to the unit.



The unit is hoisted or lowered in place so that the mounting studs fall into place in the fork shaped brackets of the adjustable mounting brackets. It is checked that the unit is plumb. The adjustable mounting brackets is fixed to the wooden frame through the soft cover using the 16 included wood screws.



Bolt and nut is installed thrugh the holes of the fork shaped brackets so they lock the mounting studs in place as shown in the illustration.



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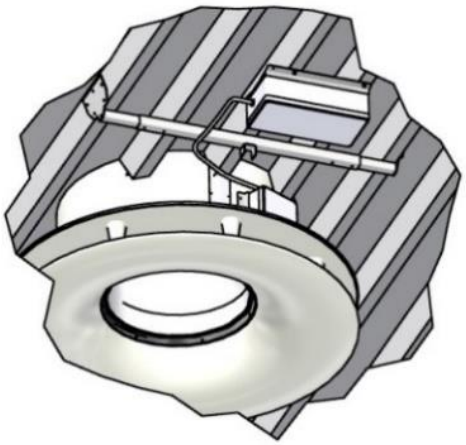
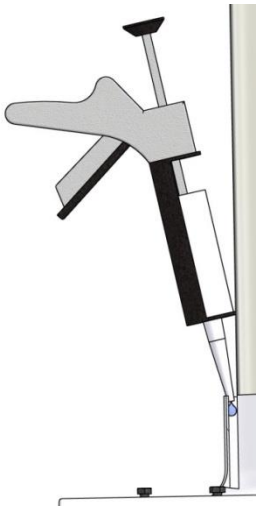
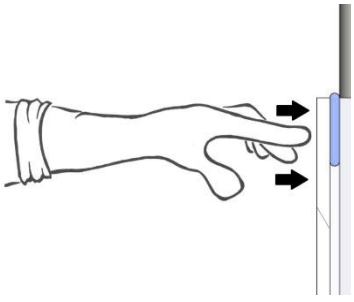
With the unit and adjustable mounting brackets installed and properly fixed the electrical box can be re-attached on to -or near the unit(as shown in example illustration)





A joint of silicone rubber grout is laid where the softcover meets the unit. The softcover is pressed against the unit by hand to ensure seal between the soft cover and unit.



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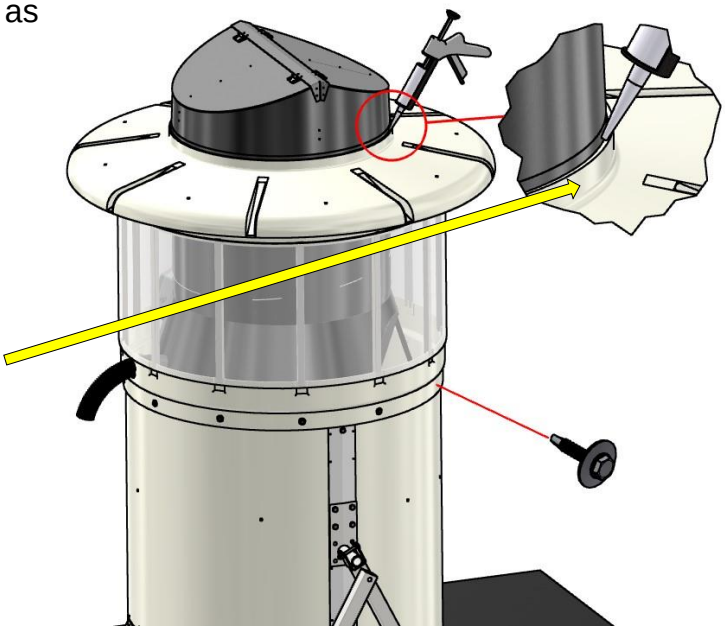
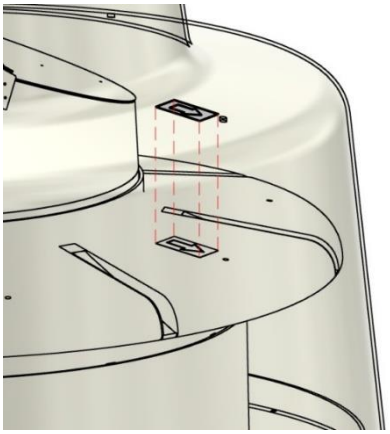
The filter holder is attached with the 12 included self-drilling screws. A silicone grout joint is laid all around the top against the unit as shown in the illustration.



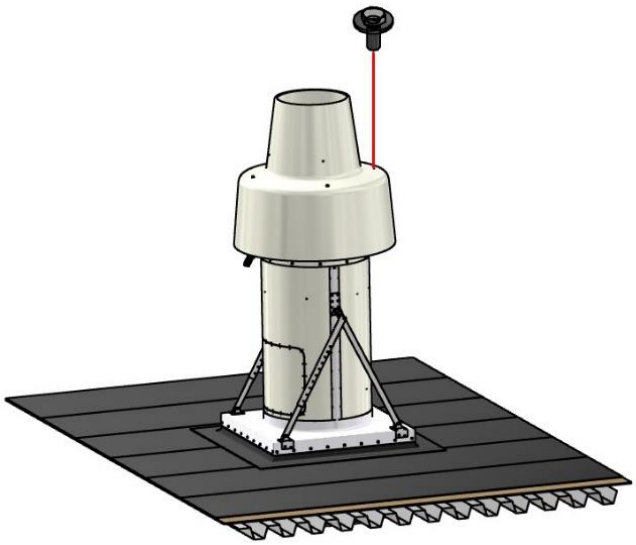
Be attentive to this joint as it is extremely important for the general seal of the unit.

The top cone is installed by placing it on top of the filter holder.



Be attentive to the 2 arrow markings on the filter holder and the top cone. They must face the same direction

The top cone is attached to the filter holder with the included 4 M8x20 mm bolts and washers.



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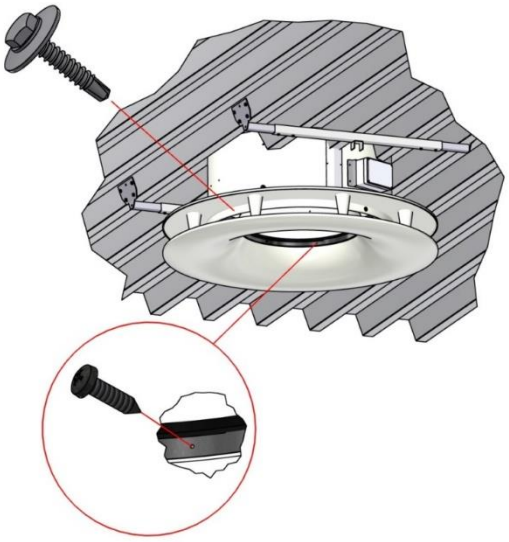
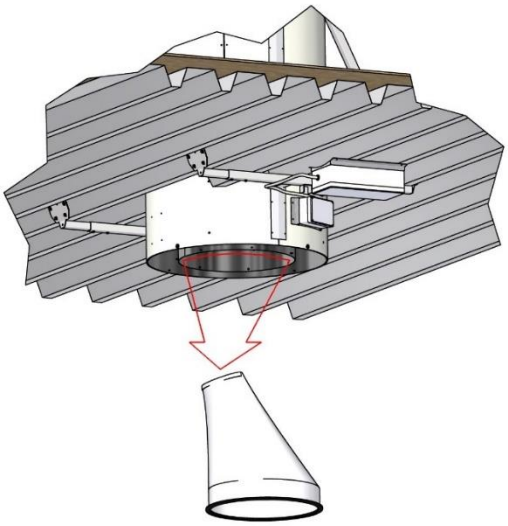
The inlet ring is installed by pushing it over the 2 tubes in the unit. The inlet ring is fastened from the inside tube with the 7 included chipboard screws and from the outside with the 4 included self-drilling gasket screws.

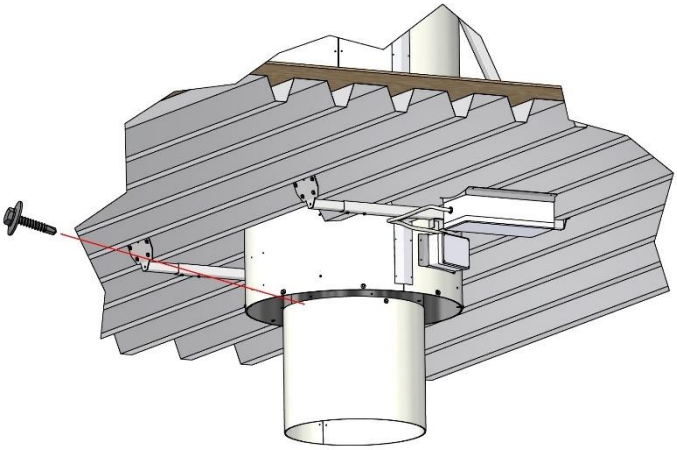


2.7 Installation of bottom extension

The bottom filter is removed



The inner tube of the bottom extension unit is placed in the inner tube of the unit and fixed in place using 7 Ø5,5 self-drilling screws.



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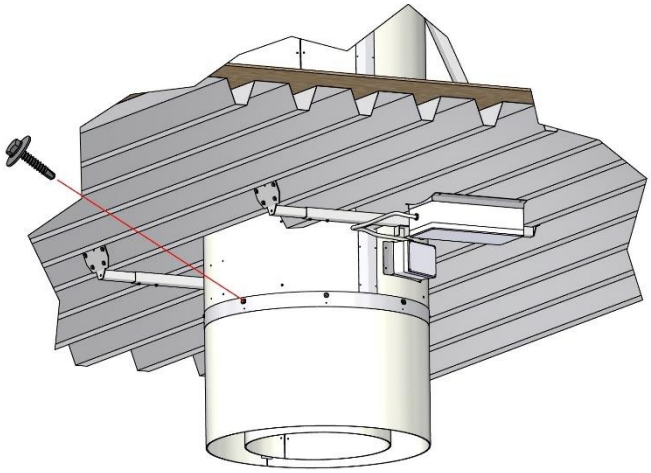
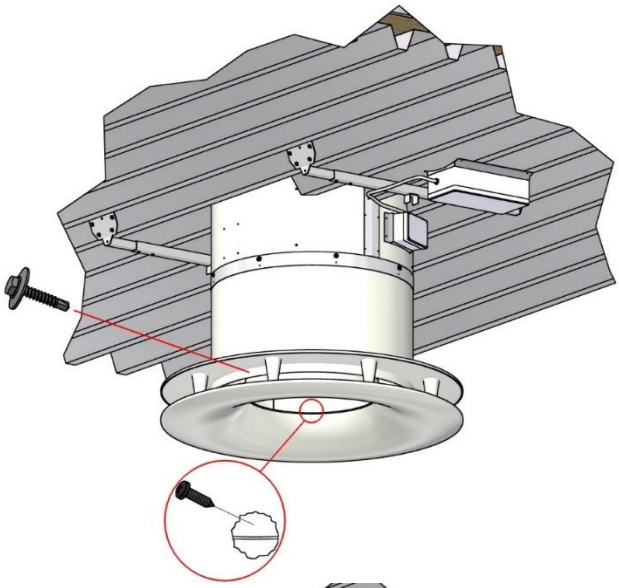
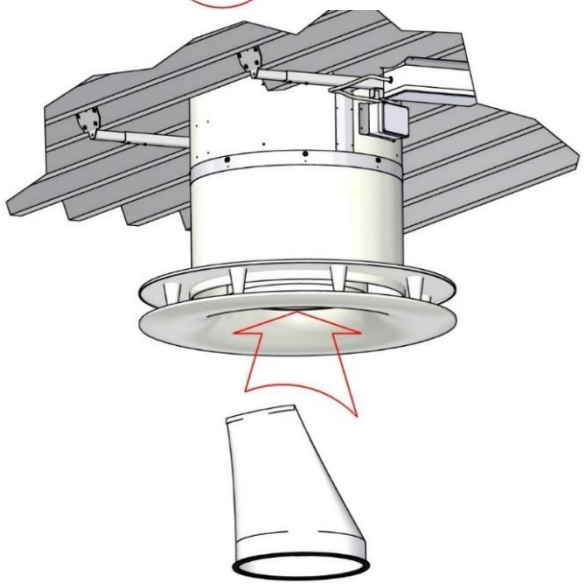
The outer tube of the bottom extension unit is placed over the outer tube of the unit and fixed in place using 10 Ø5,5 mm self-drilling screws.



The inlet ring is installed by pushing it over the 2 tubes in the bottom extension unit. The inlet ring is fastened from the inside tube with the 7 included chipboard screws and from the outside with the 4 included self-drilling gasket screws.



The bottom filter is placed back in the unit.



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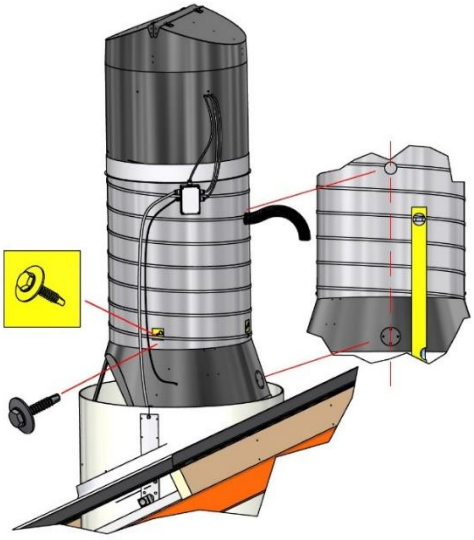
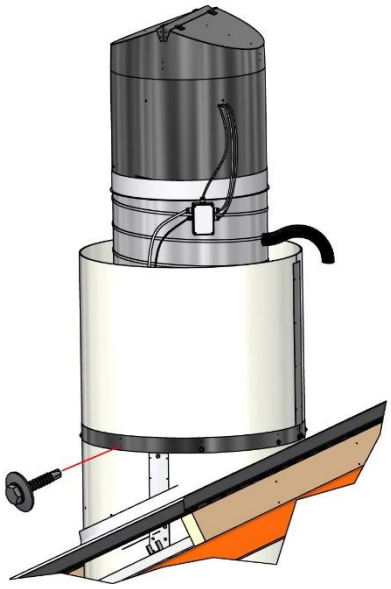
2.8 Installation of top extension

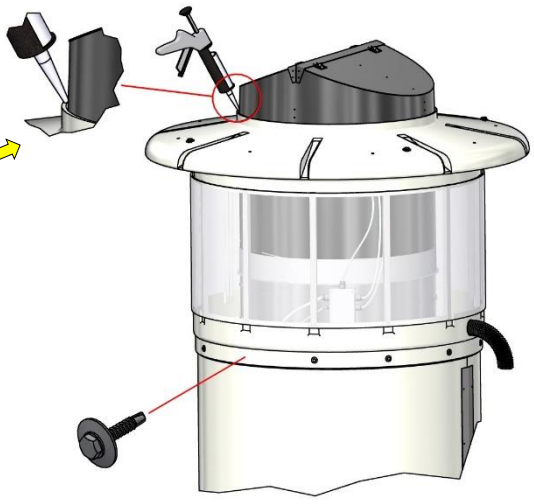


The inner part of the top extension unit, consisting of damper console with attached spiro tube is installed; the spiro tube is placed over the metal collar on the unit. The spiro tube is situated so that the hole for the drain hose is vertically aligned with the round plate on the unit as shown on the illustration. The spiro tube is fixed on place using 4 included self-drilling screws.

The wiring is installed according to the wiring diagrams in ***4.0 Electrical wiring diagrams***



The outer part of the top extension unit is placed on the plastic cover of the unit and is fixed in place using 10 self-drilling screws through the lower holes of the metal collar.



The filter holder is attached with the 12 included self-drilling screws. A silicone grout joint is laid all around the top against the unit as shown in the illustration.

Be attentive to this joint as it is extremely important for the general seal of the unit.

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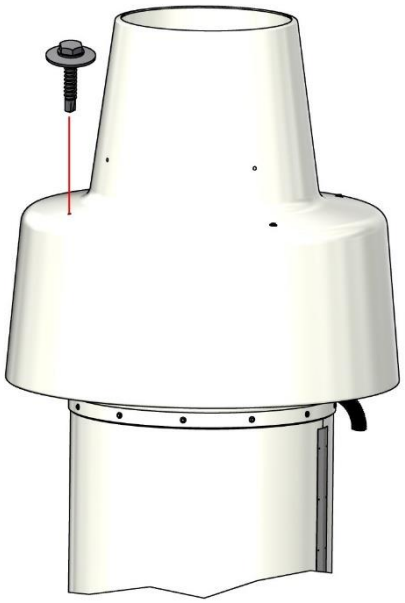
The top cone is installed by placing it on top of the filter holder.

Be attentive to the 2 arrow markings on the filter holder and the top cone. They must face the same direction

The top cone is attached to the filter holder with the included 4 M8x20 mm bolts and washers.



2.9 Thermal insulation against condensation and loss of energy

If the unit is placed in or partly in an unheated attic space, it is recommended that the unit is insulated on the outside to avoid condensation to form on the inside of the unit. Furthermore, cooling of the exhaust air will lower the heat recovery and thereby result in decrease in the temperature of the supply air.
It is recommended to insulate the unit according to DS 452:1999

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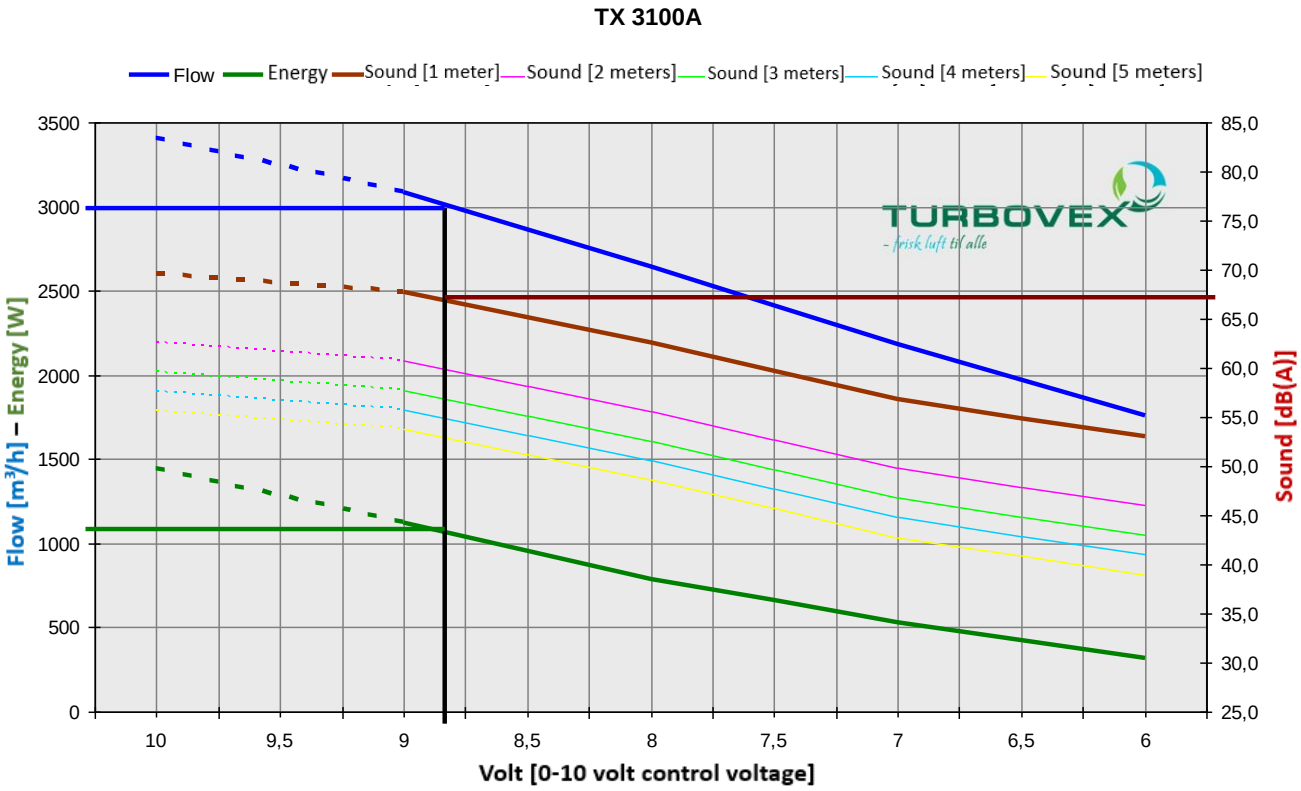
3.0 Technical specifications

3.1 Unit

type:	**Turbovex TX 3100A**
Capacity:	1400 – 3000 m^3/h
Forced operation	3400 m^3/h
Power:	1 x 230V / 50 Hz
Output (Motor):	Max. 2x750 Watt
Energy consumption (3000 m^3/h):	1044 W - 1,25 KJ/m^3
Heat recovery (3000 m^3/h):	75 %



The airflow indicates the balanced air exchange in relation to the control voltage. (0-10 volt) and is shown in m³/h. The unit can be adjusted manually to suit your required air exchange.
The sound level is shown in decibel – dB (A) in relation to air exchange.
The sound is measured in 1 to 5 meters from the unit under normal conditions.

Turbovex TX 3100A is tested in cooperation with Ziehl-abegg – www.ziehl-abegg.com

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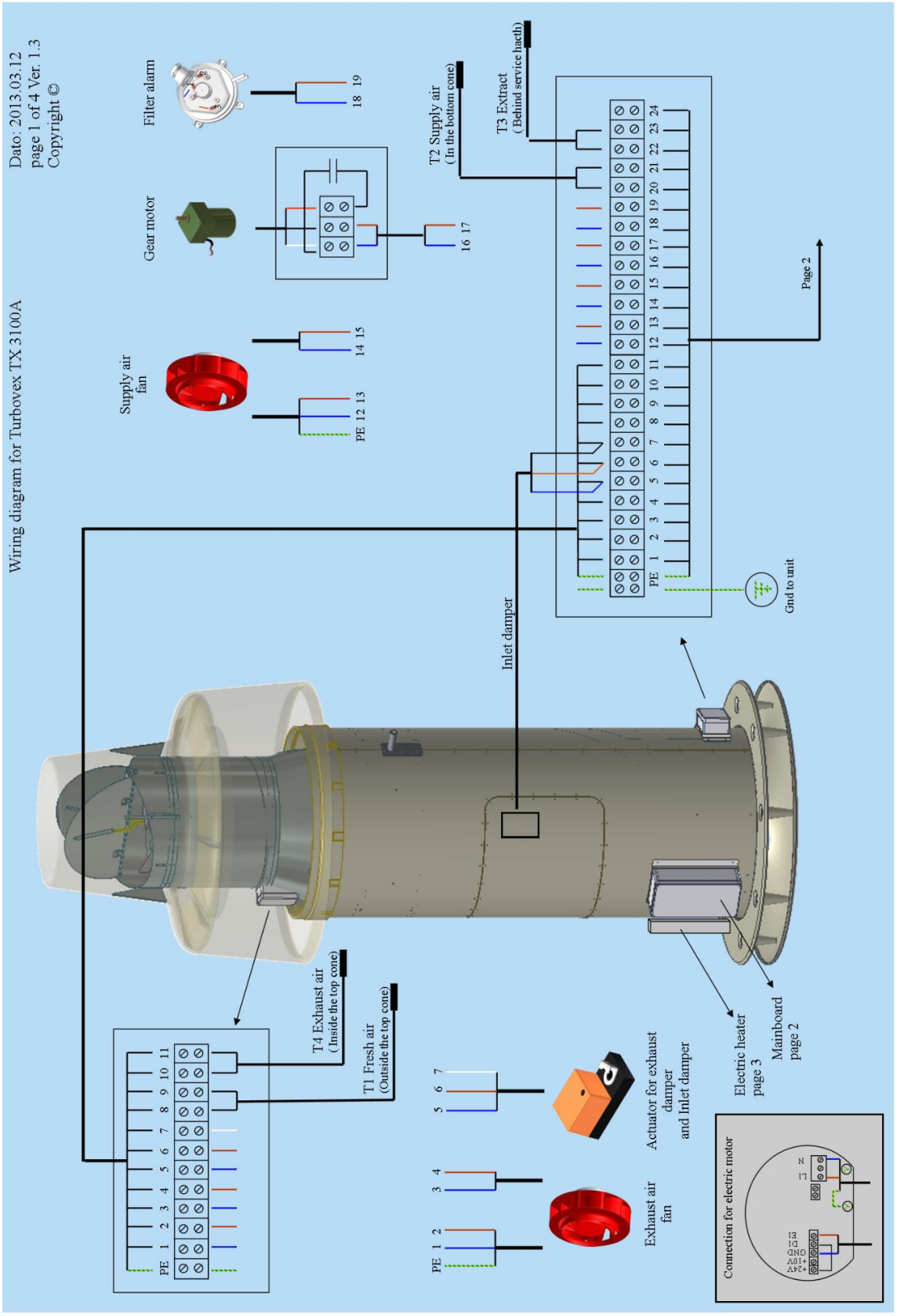
4.0 Electrical wiring diagrams



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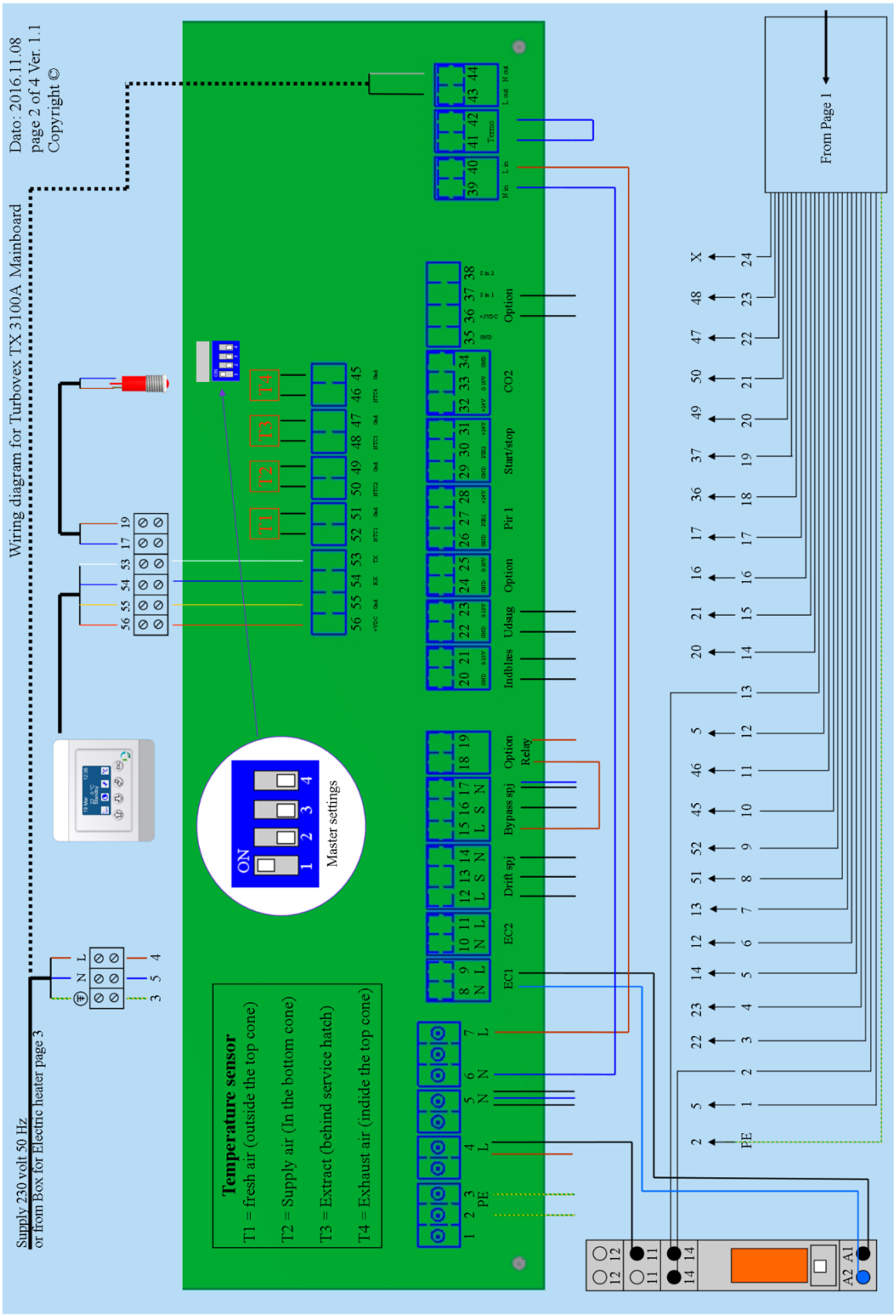

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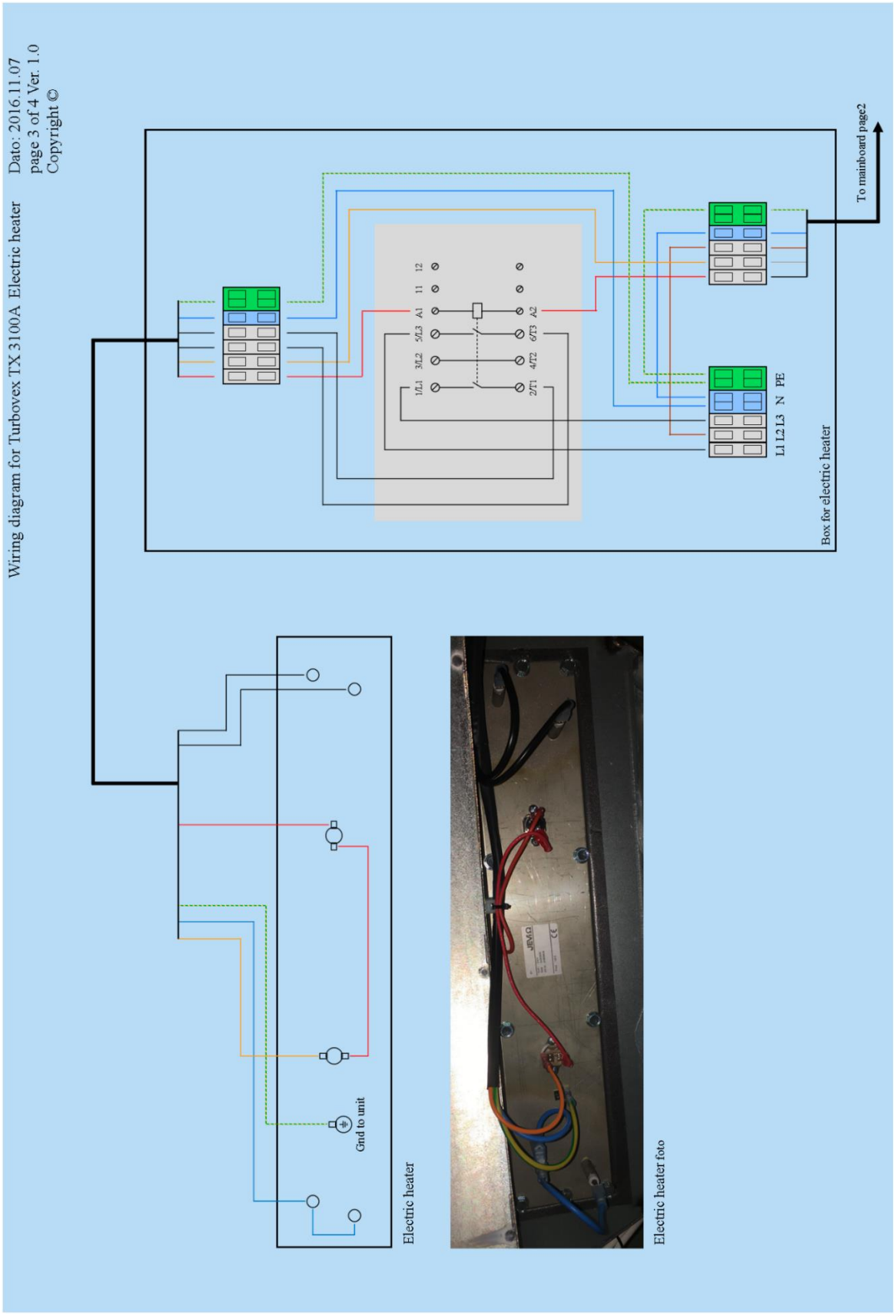

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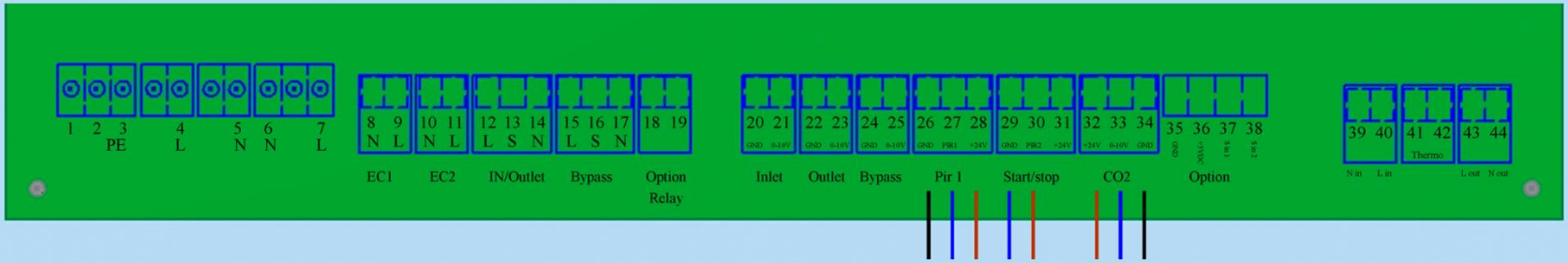


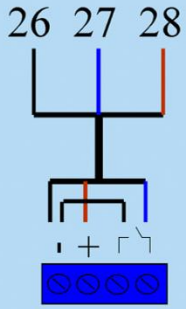
PIR / Hygrostat

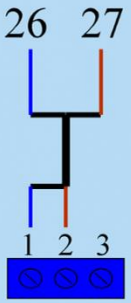
Setup and operation of sensor

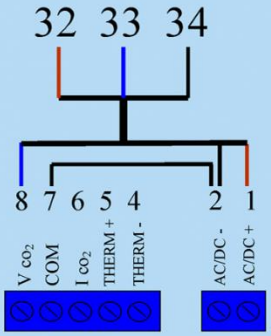
To operate with the sensor, system must be started as a PIR-operation

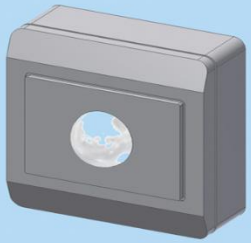
Setup und Betrieb des Sensors

Um mit dem Sensor-System ausgeführt werden muss als PIR-Operation gestartet werden.









PIR

Hygrostat

CO2

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5.0 Service

5.1 Maintenance inspections

It is adviced to have regular maintenance inspections performed on TX3100A units. The intervals between inspections depend on the specific unit's operation, but typically, there should not be more than 1 year between regular inspections.

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5.2 Service Checklist

Maintenance report for ComfortAir

Unit batch No. _____

Costumer _____

Adress of installation _____

Phone _____

Contact person _____

Phone _____

Task	completed	Changed	Comments
Visual inspection of unit			
Inspection of supply fan			
Inspection of exhaust fan			
Inspection of supply damper motor			
Inspection of exhaust damper motor			
Inspection of wiring and cable passages			
Inspection of Temperature sensor T1			
Inspection of Temperature sensor T2			
Inspection of Temperature sensor T3			
Inspection of Temperature sensor T4			
Inspection of bearings, heat exchanger			
Inspection of brushes, heat exchanger			
Inspection of Drive motor, heat exchanger			
Control panel function motorspeed			
Motorsuspension /rubber suspension			
Inspection of CO2 sensor			
Inspection of PIRsensor			
Inspection of adjustment of Pressure guard			
Adjusment of time and calendar function			
Supply filter change			
Exhaust filter change			
Cleaning of unit internally			
Cleaning of heat exchanger			
Other			
Date of maintenance:	Maintenance performed by:		_____

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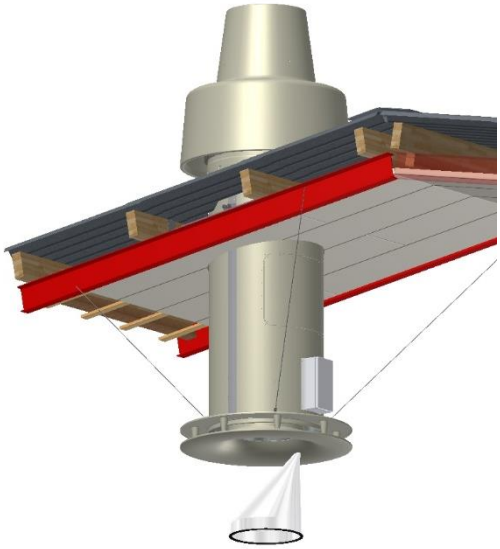
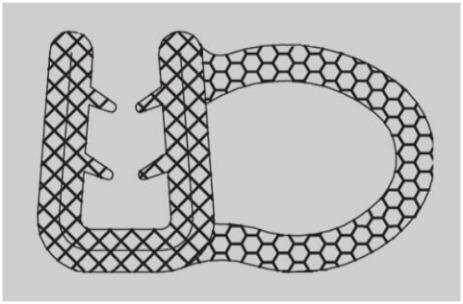
5.3 Filter change

There are 2 filters in the TX 3100A which need to be changed.
It is recommended that the filters are changed 2 to4 times a year or when the alarm B is shown in the display and alarm menu of the controller.
If maintenance of the filters is not done properly and timely it can lead to damaging the heat exchanger and the unit will not function properly.

The exhaust air filter is placed in the bottom of the unit and is changed by pulling the old vertically downwards to remove and replaced with a new filter.



The filter is kept in place by the rubber profile situated around the edge of the filter's collar.
The rubber seal must be placed so the circular part is facing outwards. Otherwise air leakage will occur and there will be a fall hazard of the filter



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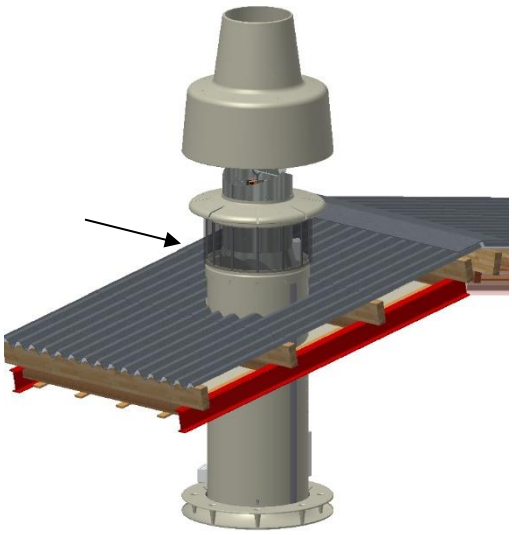
The supply air filter is placed under the top cone which shields the filter from the weather. The filter is changed by pulling the filter from the Velcro sitting on the unit and replacing it with a new filter.

Ensure that the filter fits tightly around the unit and that the ends of the filter reach each other.

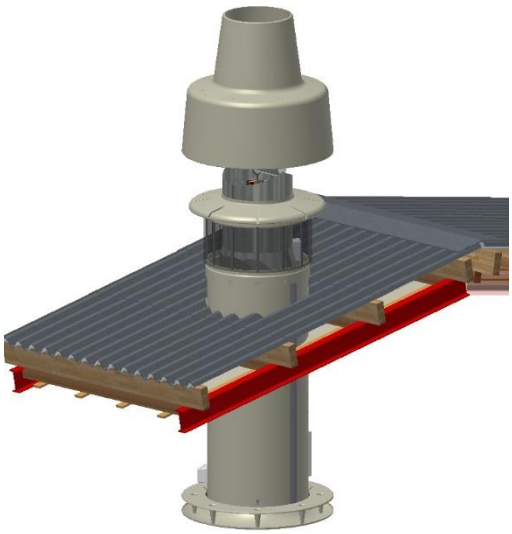
If the placement of the unit makes it difficult to reach the filter it is possible to remove the top cone for filter change by removing the 4 bolts on the top of the top cone.



5.4 Manual operation of exhaust damper

The TX3100A is equipped with a spring-return motor for operation of the exhaust damper. This means that the damper will always close if there is no power to the system.

If there is a need to open the exhaust damper manually, this can be done by removing the top cone. Unscrew the screws at the top and lift it free from the unit.



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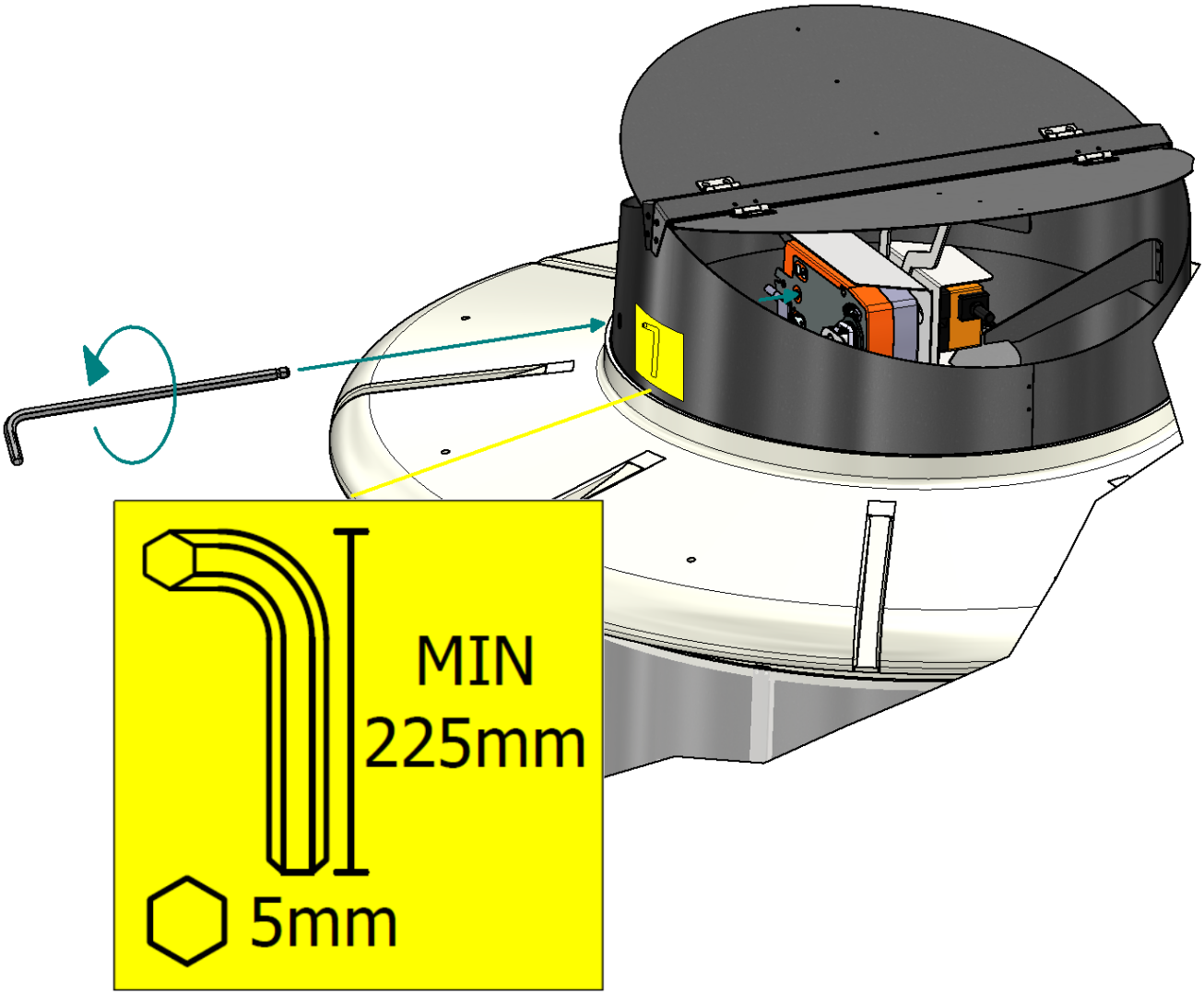
The damper is opened using a size 5 Allen key with a length of at least 225 mm turned counterclockwise.



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6.0 Declaration of conformity

The Declaration of conformity can be found on our webpage:

https://www.turbovex.dk/fileadmin/Documents/overensstemmelseserklaering_UK.pdf

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