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EOZ 2.0 Ozone Generator Installation Guide

ETS NORD

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General

This guide contains information for the safe installation of the ETS NORD EOZ 2.0 Ozone generator.

Read the guide carefully before installing this product.

All the installation activities described in the manual must be performed before the ETS NORD technician comes to the site to set up the system. ETS NORD AS reserves the right to issue an additional invoice if the prescribed works have not been performed.

After the installation, the EOZ 2.0 pre-commissioning checklist must be filled out and forwarded to ETS NORD when ordering the commissioning of the ozone cleaning system. The checklist can be found at the link www.etsnord.com/products/eoz-ozone-generator/.

ATTENTION!

• EOZ 2.0 must be installed in a way it has easy access for service and maintenance, preferably above the ceiling. Removal of the ozone units from inside must be enabled.

• EOZ 2.0 chassis can be mounted in any position. It is very important to keep in mind that the direction of the airflow must correspond with the arrow on the EOZ 2.0 chassis.

• All duct installation materials between the outlet of the EOZ 2.0 unit and the main exhaust duct, including screws, rivets and saddle, must be acid resistant stainless steel (AISI 316).

• Fire dampers are used in accordance with local and country codes.

Check the product shipment

Check that the packaged products do not have visible damage. Immediately notify the supplier and manufacturer of the products damaged or missing components.

Make sure that the product is in accordance with the order and that all parts specified in the delivery note are included. Incorrect delivery and transport damage must be immediately reported to both the cargo carrier and ETS NORD Service.

The time for filing a complaint or shipment discrepancy is 5 days after delivery. ETS NORD is not responsible for defects that have occurred after goods have been handed over to the buyer.

If goods purchased from ETS NORD have defects for which ETS NORD is responsible, ETS NORD will repair or replace the defective goods. If the goods cannot be repaired or replaced, ETS NORD will refund to the buyer all fees for such items resulting from the sales contract.

If you have any problems, please contact ETS NORD Service!

The EOZ 2.0 Ozone generator packaging includes:

- A. EOZ 1 - 2.0 or EOZ 2 - 2.0 ozone generator
- B. Power cable IEC C13 with plug (1,5 m)
- C. Pressure measurement hose (3 m)
- D. Cable ties (10 pcs)
- E. Adhesive cable tie mount (10 pcs)
- F. Pressure measurement nozzle (1 pcs)
- G. User manual for personnel
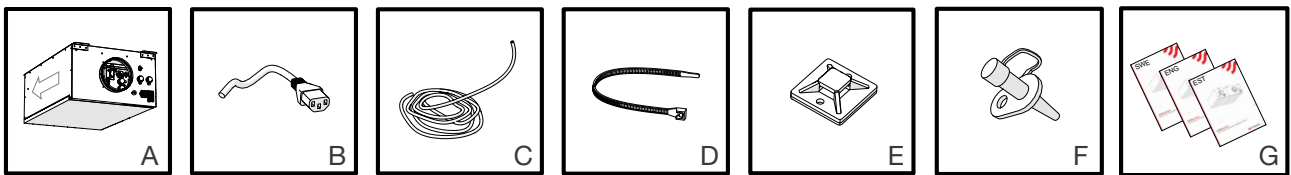
The LCD control panel packaging include:

- A. LCD control panel with wall mount
- B. One sheet of ozone unit device address identification labels
- C. Installation guide
- D. M-Link remote access device*
- E. LAN cable for connection between M-Link and Master ozone generator (0,5m)*
- F. DIN rail + 2 x M5 bolts for mounting M-Link*

* Is included in the package of LCD control panel with M-Link.
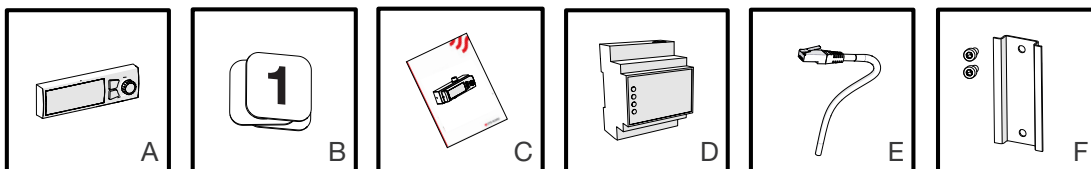
Safety

Failure to comply with the instructions for the use and safety of the ozone unit or improper use may cause bodily injury.

The ozone cleaning system is designed to treat air with ozone only as described in this guide.

Ozone reduces odors and breaks down grease, mold and bacteria. ETS NORD AS assumes no responsibility if the product is not used in accordance with the instructions contained in this guide.

Ozone is harmful to health. Prolonged exposure may cause subsequent damage:

- skin rash and burns;
- respiratory tract irritation and breathing problems.

Warnings!

Ozone danger!
Long-term exposure to ozone can cause health damage.

When removing grease filters, make sure that the ozone cleaning system is switched off!

Risk of falling!
Make sure installation and service personnel have stable work platforms when installing the device.

Risk of electric shock!
Electrical connections to the system may only be made by a qualified and authorized electrician.

Before maintenance work, always switch off the system and disconnect the plug from the mains!

Images are for illustrative purposes.
We reserve the right to make changes.
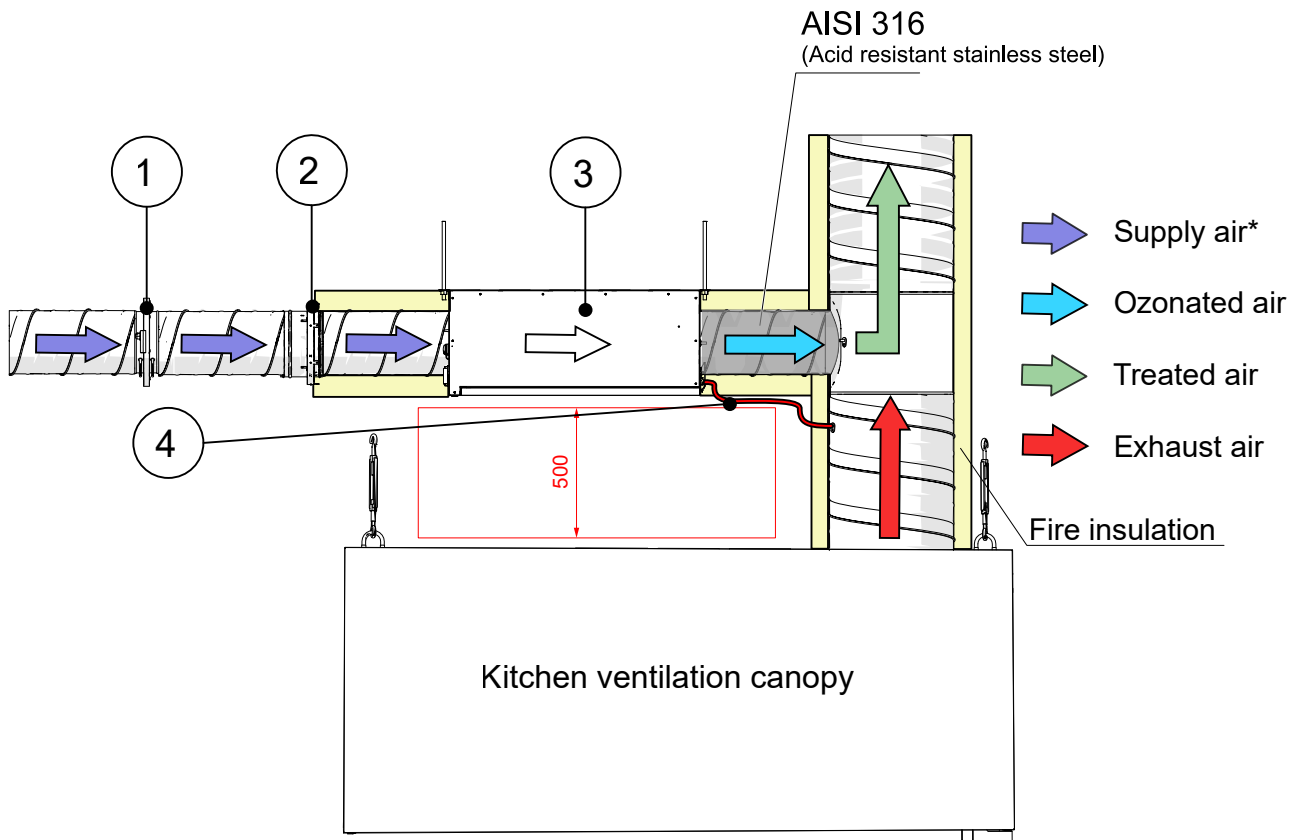
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System overview

EOZ 1 - 2.0 consists of one OZ 4.0 Ozone unit and EOZ 2 - 2.0 consists of two OZ 4.0 Ozone units. EOZ 2.0 can be used together in one system with OZ 4.0 Ozone units which are located inside the canopies.

Ozone units generate ozone what is a very effective oxidant, and when mixed into the kitchen's exhaust air brakes down grease and odor particles to water vapor, carbon dioxide and dry minerals what are being removed through the exhaust system.

In one ozone cleaning system, behind one control panel there can be a maximum of 9 ozone units.

Installation method

AISI 316
(Acid resistant stainless steel)

- Supply air*
- Ozonated air
- Treated air
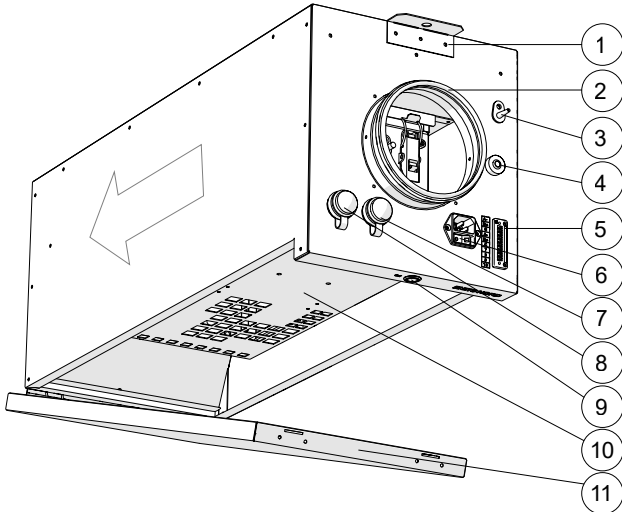- Exhaust air

Fire insulation

500

Kitchen ventilation canopy

*Supply air must be clean air coming from the air handling unit.

1 – KRI Regulating damper
2 – Fire damper (used in accordance with local and country codes)
3 – EOZ 2.0 Ozone Generator
4 – Pressure tube

**ATTENTION!** Fire dampers are used in accordance with local and country codes.

EOZ 1 - 2.0

1 – Suspension brackets
2 – Supply air connection
3 – Ambient air pressure nozzle (+)
4 – Cable grommet
5 – EOZ 1 - 2.0 unit input connector X1
6 – Power supply socket
7 – M-Link socket
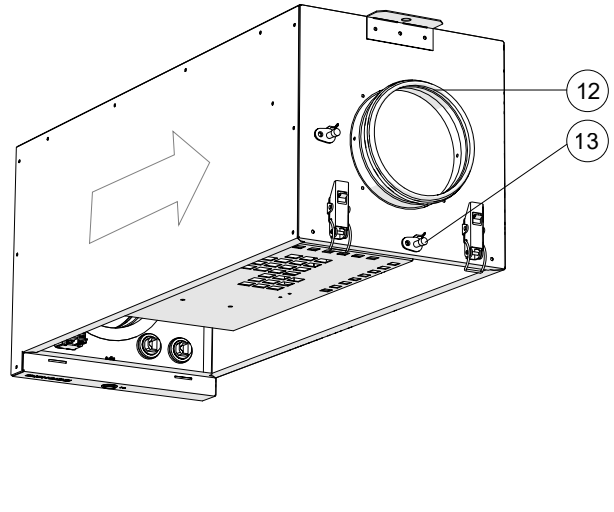
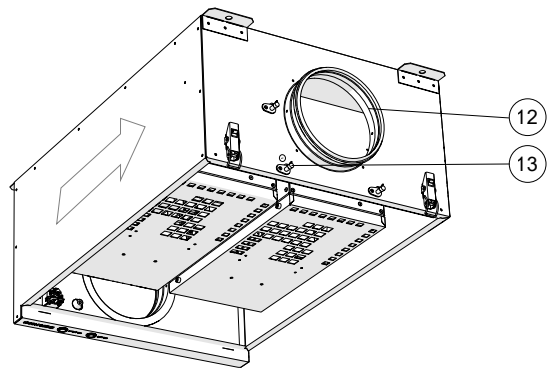8 – LCD control panel socket
9 – Status LED
10 – OZ 4.0 Ozone unit
11 – Service hatch
12 – Exhaust air connection
13 – Exhaust air pressure nozzle (-)

EOZ 2 - 2.0
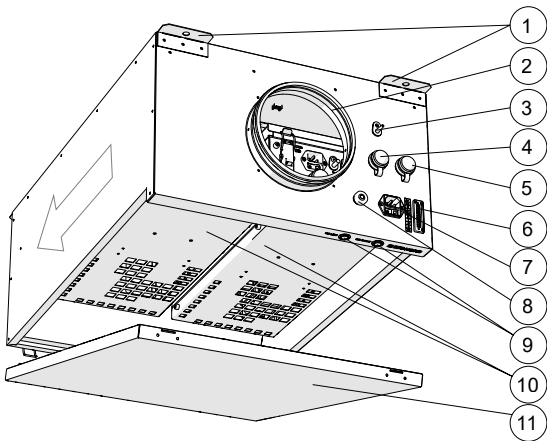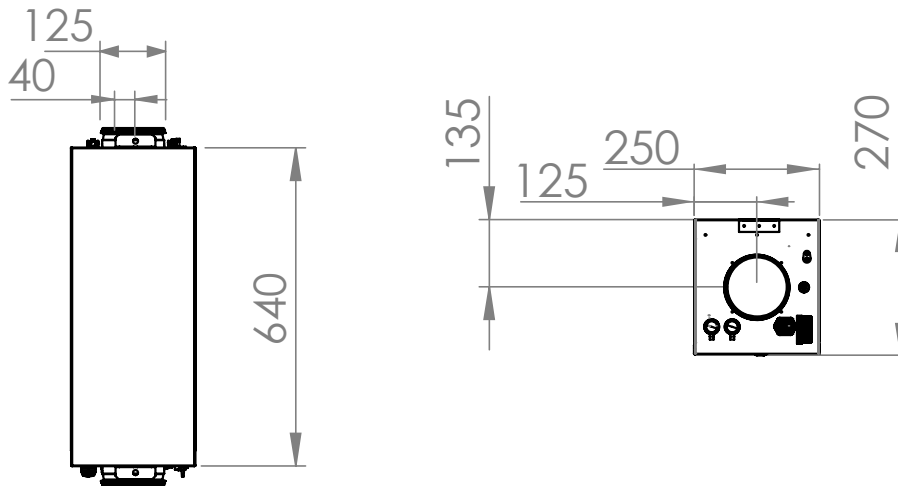

1 – Suspension brackets
2 – Supply air connection
3 – Ambient air pressure nozzle (+)
4 – M-Link socket
5 – LCD control panel socket
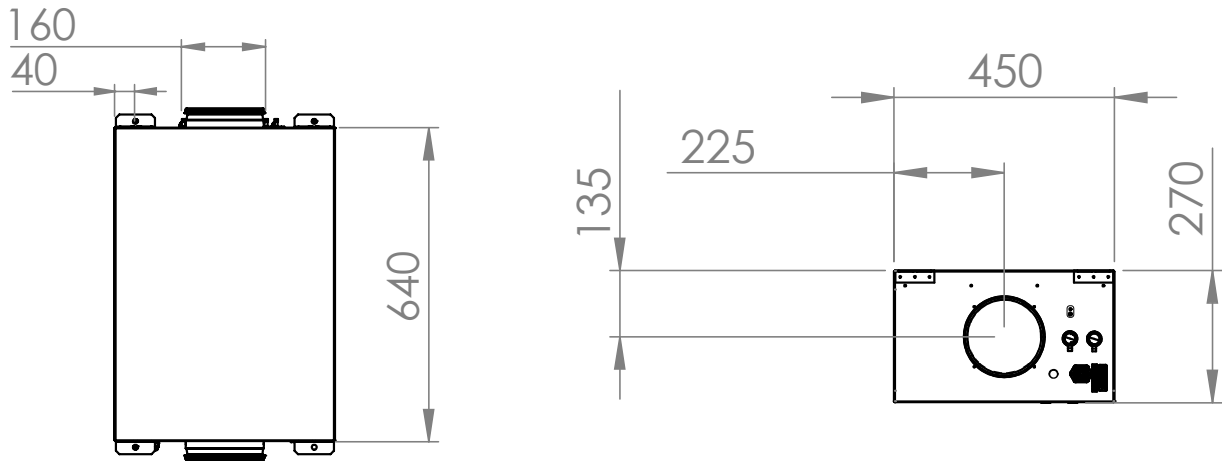6 – EOZ 2 – 2.0 unit input connector X1
7 – Power supply socket

8 – Cable grommet
9 – Status LEDs
10 – OZ 4.0 Ozone unit
11 – Service hatch
12 – Exhaust air connection
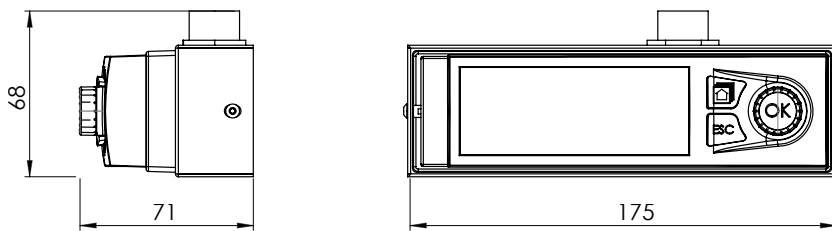13 – Exhaust air pressure nozzle (-)

EOZ 1 - 2.0 Ozone generator dimensions

EOZ 2 - 2.0 Ozone generator dimensions

LCD control panel dimensions

1. Installing the EOZ 2.0

The EOZ 2.0 unit may be installed in any convenient location in the kitchen space, ideally with easy access to supply air and within **3m** of the canopy connection to the exhaust duct.

Keep in mind that all duct installation materials between the outlet of the EOZ 2.0 unit and the main exhaust duct, including screws, rivets, and the connecting flange, must be acid resistant stainless steel (AISI 316).

> **NOTE!** Direction of the airflow must correspond with the arrow on the EOZ 2.0.

The following sections in the chapter describe installing EOZ 2 - 2.0 however EOZ 1 - 2.0 is similarly installed.

1.1 Mounting the EOZ 2.0 chassis

Begin by mounting four (4) M8 threaded rods to the ceiling. Suspend the EOZ 2.0 unit from the rods with M8 nuts and washers as shown . Adjust height as needed.
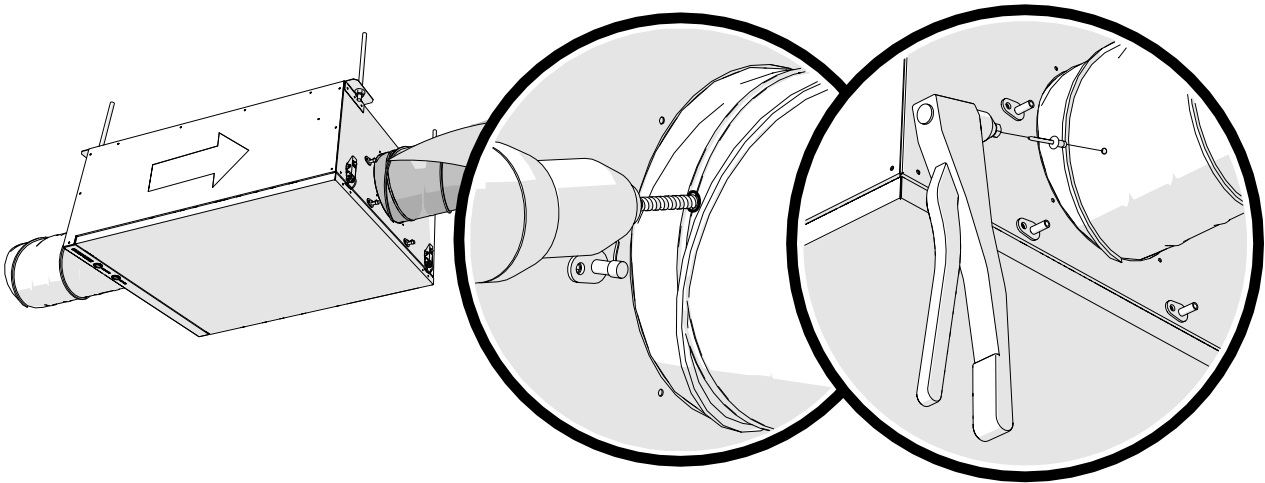

4x M8
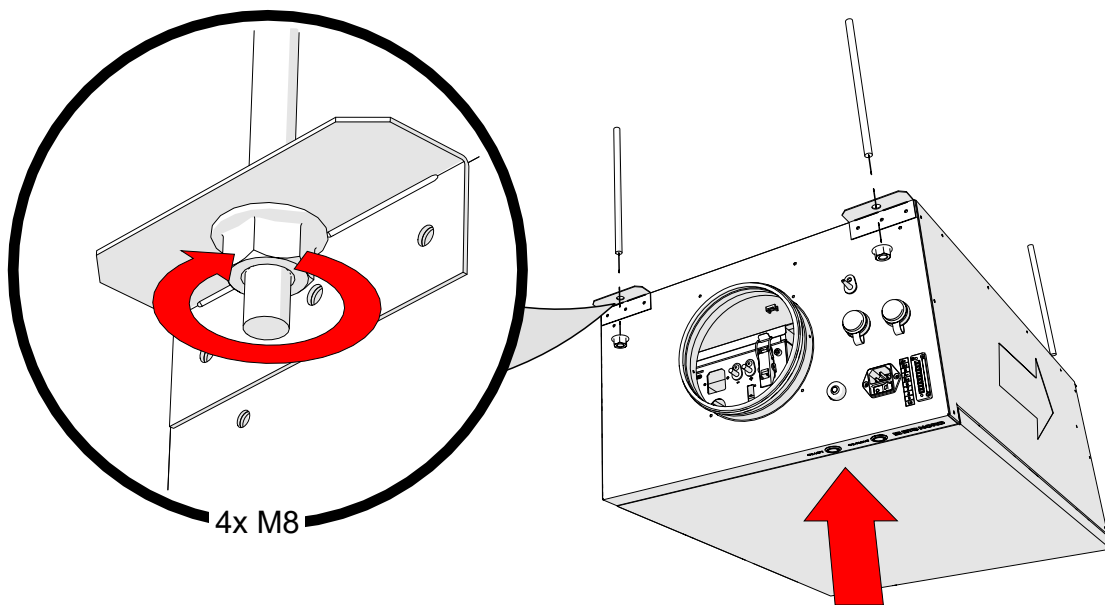
1.2 Connect to the ventilation ducts

After the EOZ 2.0 unit has been securely attached to the ceiling, connect the supply air and exhaust air ducts.

Images are for illustrative purposes.
We reserve the right to make changes.
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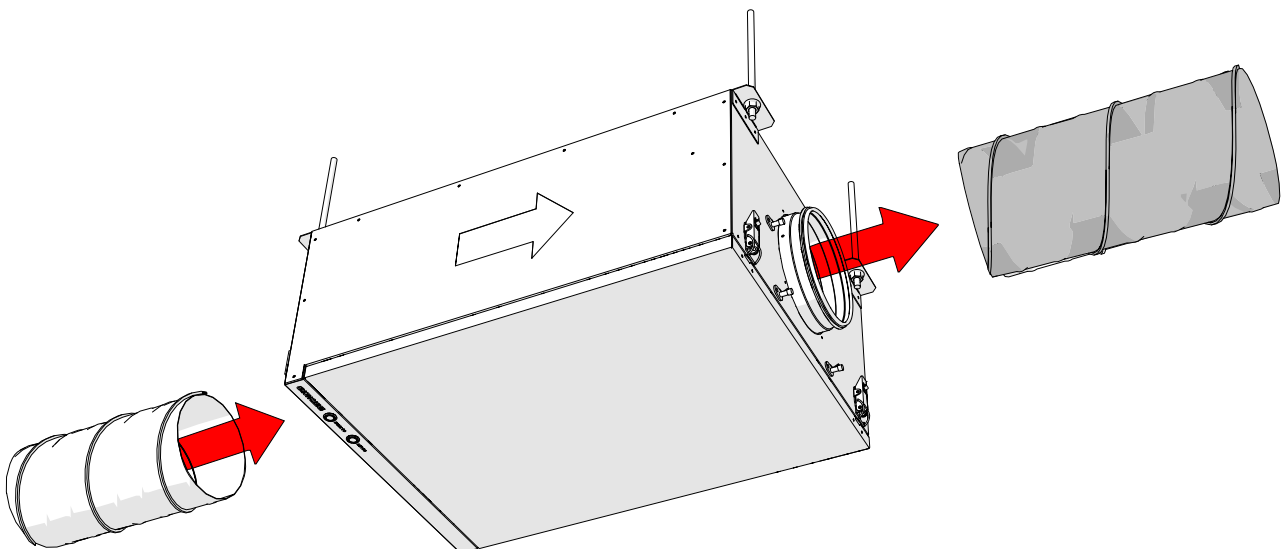
Secure the ducts with **stainless steel** rivets or sheet metal screws from both sides and ensure the connection is airtight.

1.3 Connect the pressure measurement hose to the exhaust duct

**NOTE! This hose must be connected between
the EOZ 2.0 unit and main exhaust duct for proper operation.**

Drill a hole and mount the pressure measurement nozzle to the exhaust duct ahead of the EOZ 2.0 connection pipe as shown below.


Stainless steel rivet
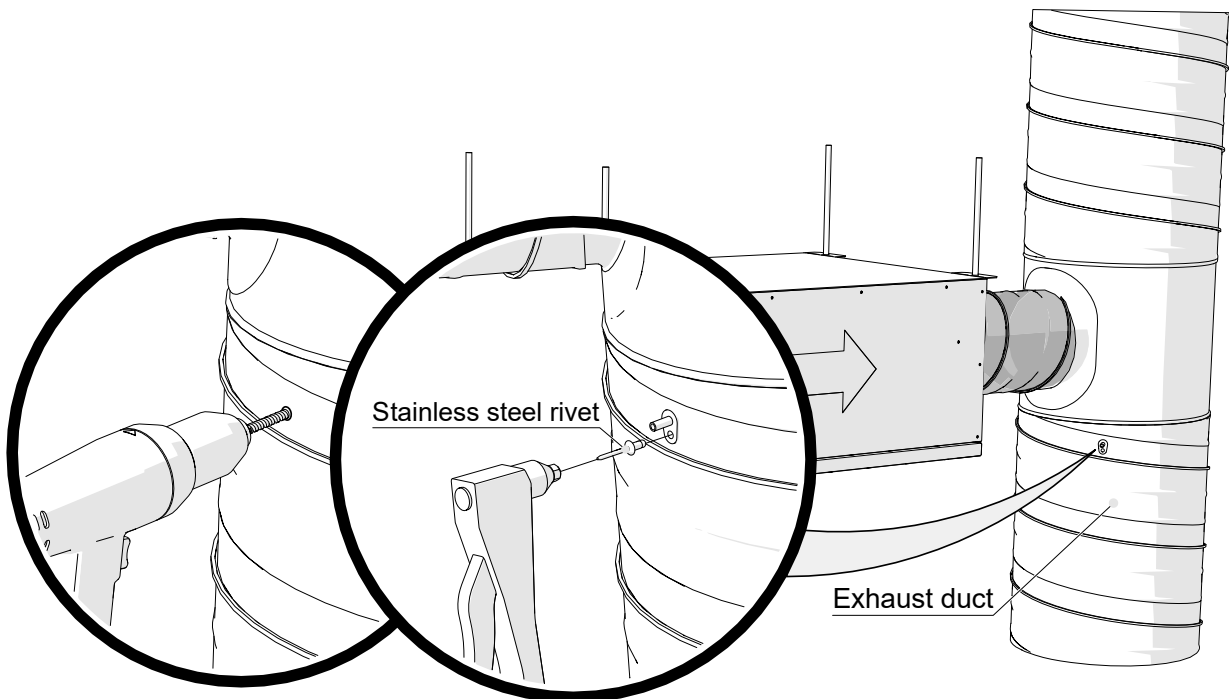
Exhaust duct

Connect the pressure hose from the EOZ 2.0 **"-"** (minus) nozzle to the newly installed nozzle on the exhaust duct.

> **NOTE! Be sure that the hose is connected to the proper nozzle on the EOZ 2.0 and that the caps of the nozzles has been removed.**
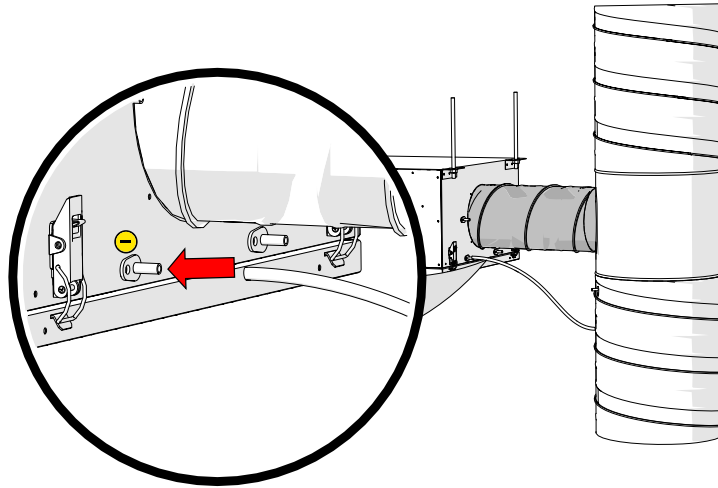
Finally, secure the hose to the duct using adhesive cable tie mounts and cable ties that can found in the EOZ 2.0 packaging.

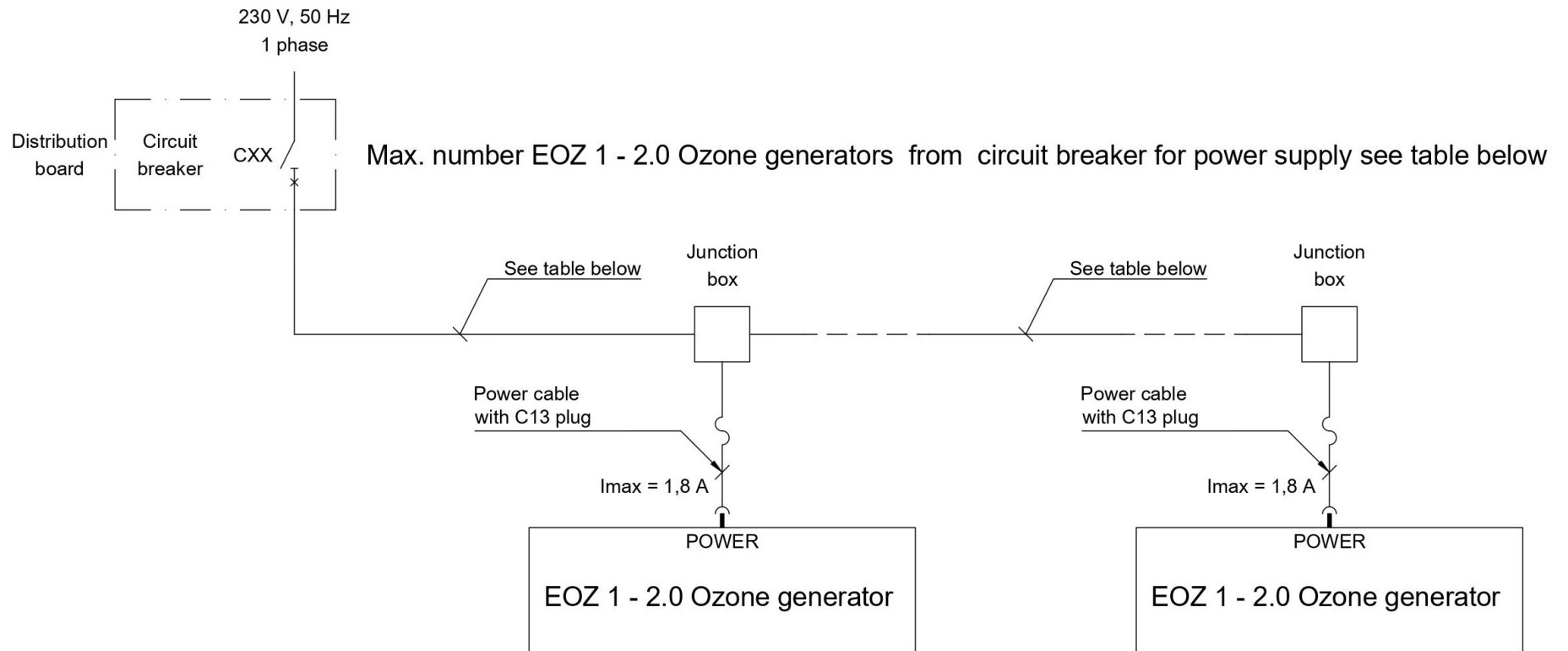> **NOTE! Be careful not to tighten the cable ties to strongly to ensure that the airflow through the hose is not blocked.**
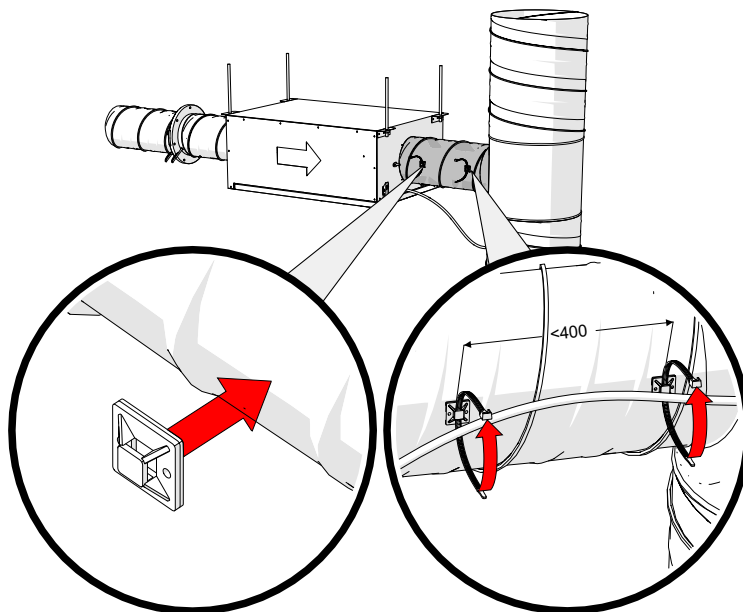
2. Electrical Installation

> **NOTE!** Electrical installation must be performed by an authorized electrician and follow local, regional and national standards and regulations.

The following sections in the chapter use EOZ 2 - 2.0 illustrations however same is applied with EOZ 1 - 2.0.

The EOZ 2.0 must be connected to the supply and exhaust ventilation system. When connecting the EOZ 2.0, the pressure hoses must be connected according to the installation drawings. The EOZ 2.0 is equipped with pressure sensors which are functional on the exhaust side of the ventilation system.

As an additional protection, the client can use the "Work permission" input to communicate with different master devices, see OZ 4.0 Ozone Cleaning System Automation Guide.

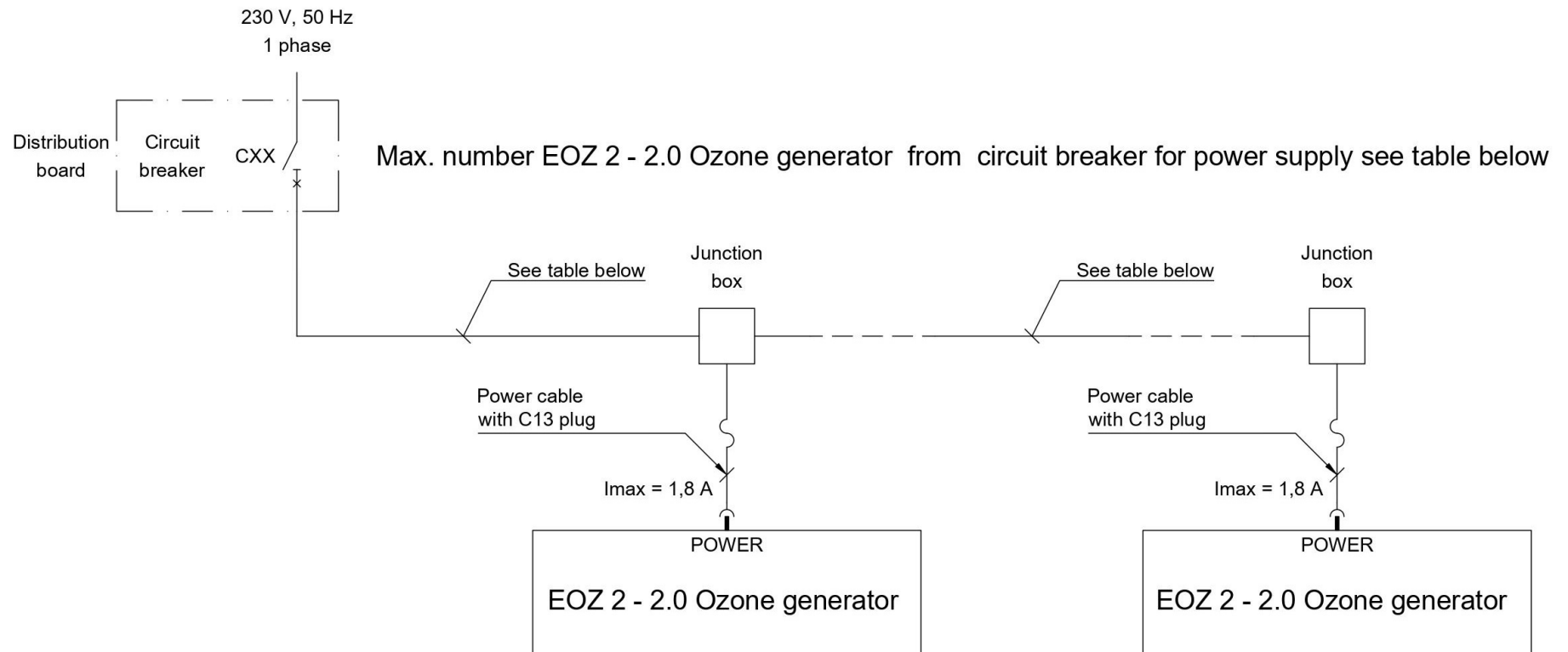**Connection diagram 1** - EOZ 1 - 2.0 unit(s) power supply possible connections

230 V, 50 Hz
1 phase

Distribution board | Circuit breaker | CXX

Max. number EOZ 1 - 2.0 Ozone generators from circuit breaker for power supply see table below

See table below

Junction box

See table below

Junction box

Power cable with C13 plug

Power cable with C13 plug

Imax = 1,8 A

Imax = 1,8 A

POWER

EOZ 1 - 2.0 Ozone generator

POWER

EOZ 1 - 2.0 Ozone generator

Power cables with C13 plugs are supplied by ETS NORD.

Installation work must be done by the customer.

Maximum EOZ 1 - 2.0 units per one circuit breaker		
Number of EOZ 1 - 2.0 units	Type and nominal current of circuit breaker	Cable
1 or 2	C6 or C10	3G1,5 mm2
4	C10	3G1,5 mm2
6	C16	3G2,5 mm2

Connection diagram 2 - EOZ 2 - 2.0 unit(s) power supply possible connections

230 V, 50 Hz
1 phase

Distribution board   Circuit breaker   CXX

Max. number EOZ 2 - 2.0 Ozone generator from circuit breaker for power supply see table below

See table below   Junction box   See table below   Junction box

Power cable with C13 plug   Power cable with C13 plug

Imax = 1,8 A   Imax = 1,8 A

POWER   POWER

EOZ 2 - 2.0 Ozone generator   EOZ 2 - 2.0 Ozone generator

Power cables with C13 plugs are supplied by ETS NORD.

Installation work must be done by the customer.

Maximum EOZ 2 - 2.0 units per one circuit breaker		
Number of EOZ 2 - 2.0 units	Type and nominal current of circuit breaker	Cable
1	C6 or C10	3G1,5 mm2
2	C10	3G1,5 mm2
3	C16	3G2,5 mm2

2.1 EOZ 2.0 power supply

EOZ 2.0 is supplied with a power cable that can be found inside the packaging. Connect it to the EOZ 2.0 as shown below.
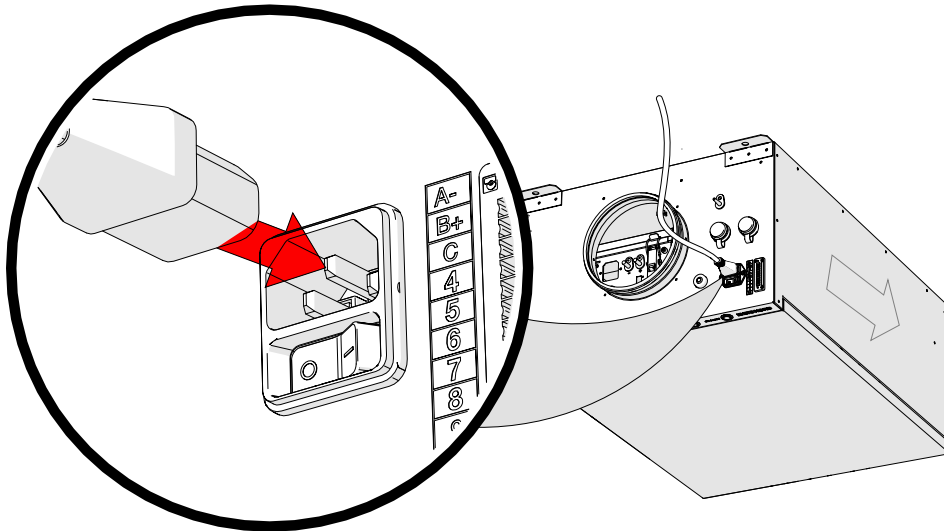
2.2 EOZ 2.0 connections to connector X1
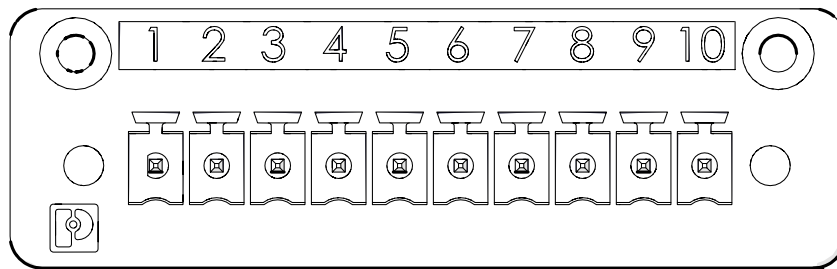
Input connector	IO grouping	IO name	Terminological name
A+ (1)	Modbus RTU (for connection between EOZ 2.0 units)	A	Modbus data (A)-
B- (2)		B	Modbus data (B)+
C (3)		GND	Modbus grounding
4	Modbus RTU for Building management system	A2	Master EOZ 2.0 only Modbus data (A)-
5		B2	Master EOZ 2.0 only Modbus data (B)+
6		GND	Master EOZ 2.0 only Modbus grounding
7	Work permission	Work permission +	Fire alarm system or work permission
8		Work permission -	Fire alarm system or work permission
9	Reserve input		
10			

* NB! Maximum cable core cross-section is 1,5 mm² (solid conductors) for X1 connector.

2.3 EOZ 2.0 Modbus data connection between the EOZ 2.0 units

If there is more than one EOZ 2.0 unit then they must be connected in parallel directly to the next EOZ 2.0 unit.

The first device from which the cable passes to the next device must be the Master device, i.e., the LCD control panel (and LED notification panel) must be connected to this (Master) EOZ 2.0 unit in the future.

- Maximum of **9 EOZ 1 - 2.0** units can be in one system behind one LCD panel.
- Maximum of **4 EOZ 2 - 2.0** units can be in one system behind one LCD panel.

Use a 2x2x0,25 mm2 twisted pair cable for Modbus connection between devices.

Input connector	Input connector (number on the connector plug)	IO name	Terminological name
X1	A- (1)	A	Modbus data A
	B+ (2)	B	Modbus data B
	C (3)	GND	Modbus grounding
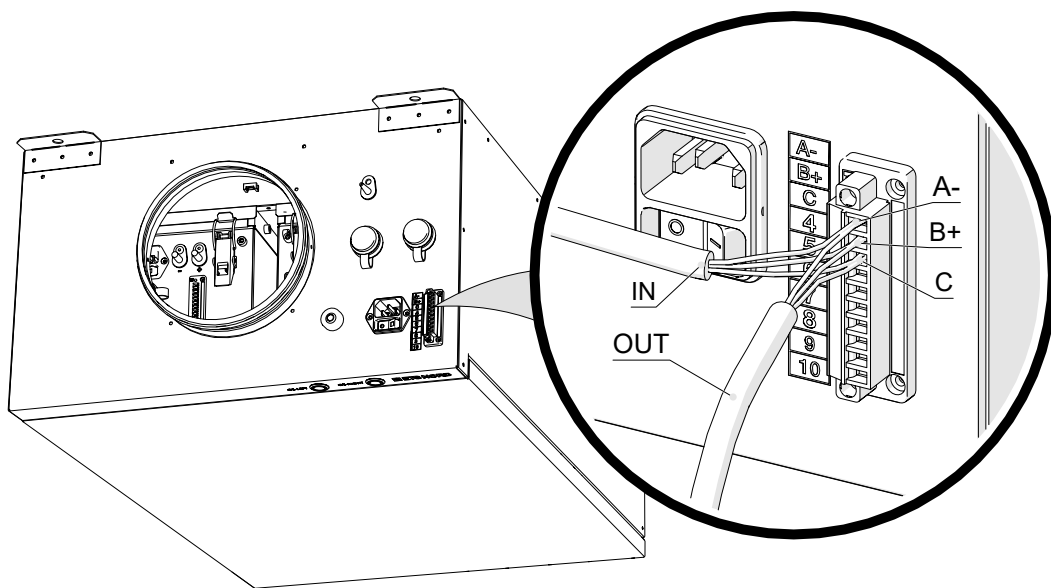
The following picture illustrates Modbus connection between EOZ 2.0 units and the LCD control panel with ethernet cable.

CAT6   min 2x2x0.25   min 2x2x0.25

LCD control panel   EOZ 2 - 2.0   EOZ 1 - 2.0   EOZ 1 - 2.0
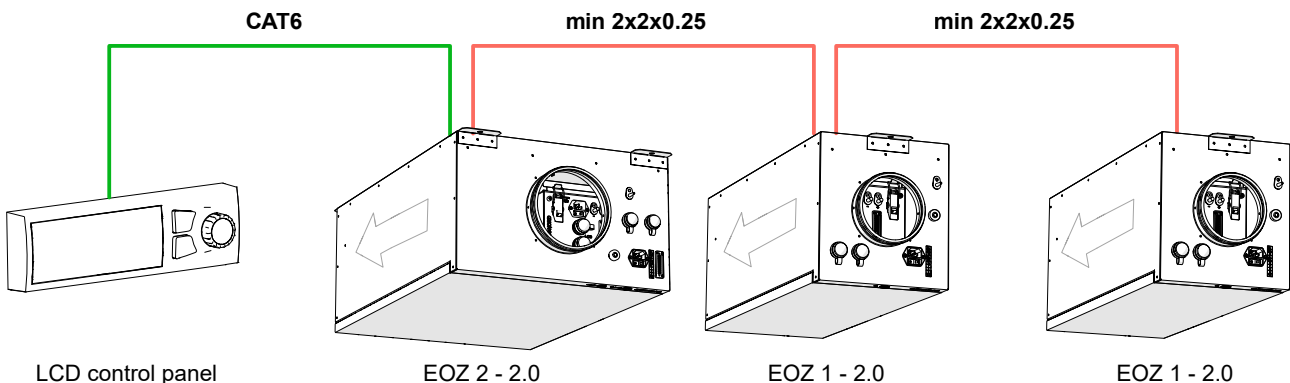
It is possible to combine different OZ 4.0 devices (OZ 4.0 Ozone unit, EOZ 1 - 2.0 or EOZ 2 - 2.0) with each other using Modbus.

- EOZ 1 - 2.0 consists of 1 OZ 4.0 ozone unit
- EOZ 2 - 2.0 consists of 2 OZ 4.0 ozone units

Keep in mind when connecting the units, that behind 1 LCD control panel the maximum number of OZ 4.0 devices is 9 (1 Master & 8 Slaves).
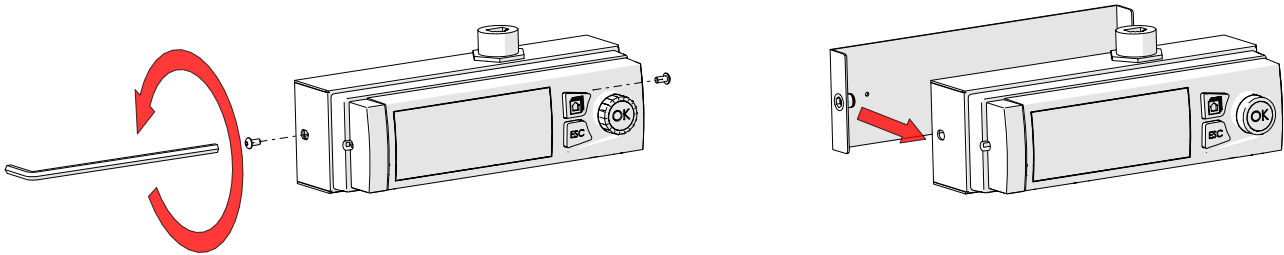
3. LCD control panel installation

NB! To install the control panel, choose a location in the kitchen or its immediate vicinity that is visible and easily accessible only to the staff. Avoid placing the control panel above kitchen appliances.
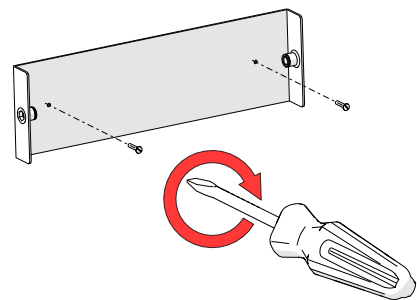
3.1 Attaching the mounting frame and connecting the LAN cable

LCD control panel is delivered in separate packages.

First, remove the rear bezel of the control panel by removing the two bolts on each side.

Attach the mounting frame to the wall or the side of the canopy so that the user always has free access to it. Avoid installing the control panel in a greasy area.

Reattach the control panel to the mounting frame and fix it with bolts on both sides.
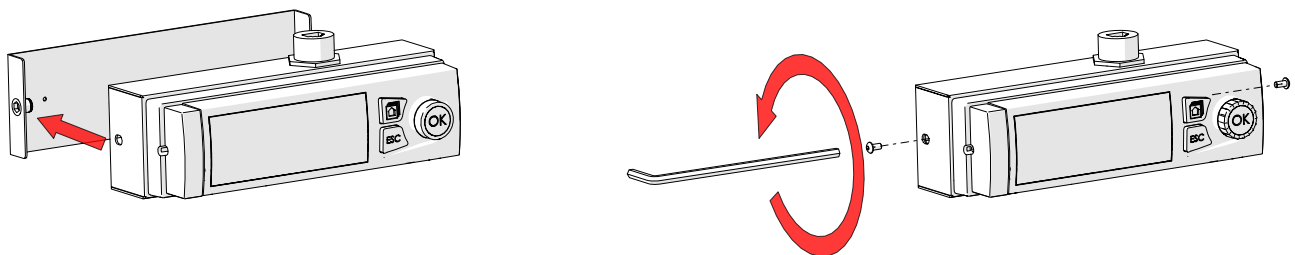

Connect the LAN cable from the LCD control panel to the Master ozone unit or Master EOZ 2.0 socket marked „LCD".
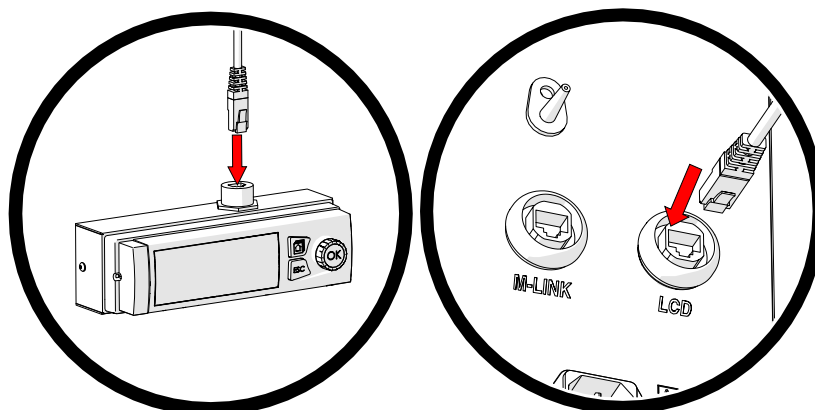
3.2 Fixing the control panel to the wall without a metal case

If you want to install the control panel on the wall so that its LAN cable comes from the back and remains inside the wall, the metal housing of the control panel must be dismantled, and the plastic mounting frame attached to the wall.
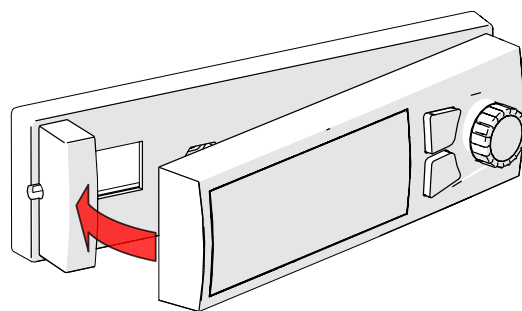
Remove the control panel from the mounting frame.
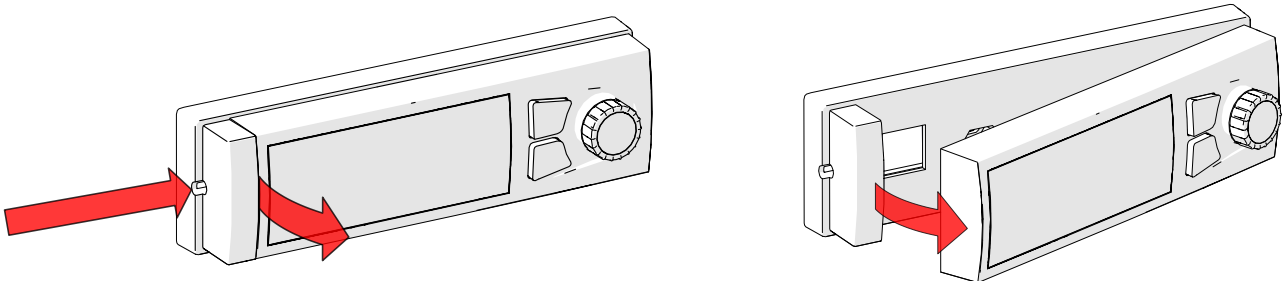
Attach the mounting frame to the wall so that the LAN cable can come through the wall from the back.

The drawing shows the mounting holes in the mounting frame.

∅ 22,50 mm

25mm   48mm
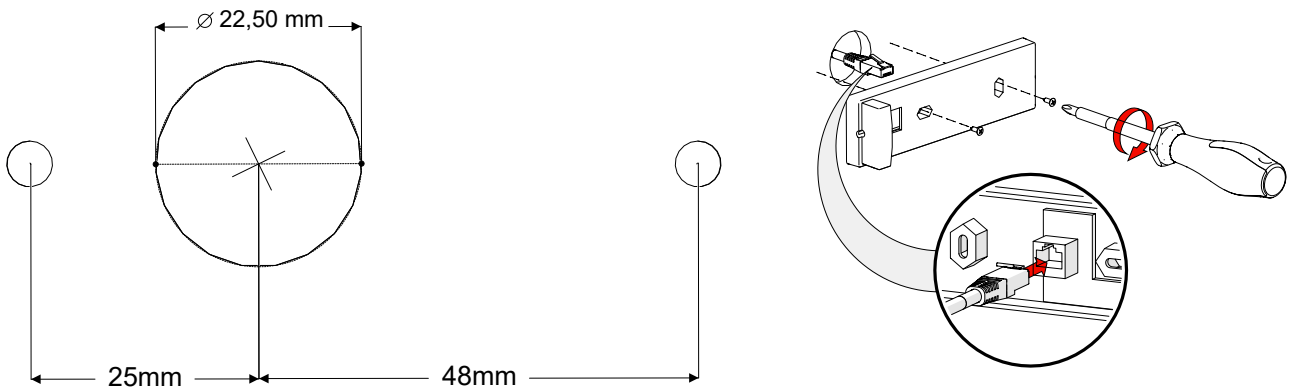
Place the screen back on the mounting frame and connect the LAN cable to the EOZ 2.0 „LCD" socket.

4. Connecting the remote access device M-Link

The M-Link remote access device is an accessory and is supplied if the user wants to use the Modbus TCP/IP protocol or the remote management and maintenance service provided by ETS NORD.
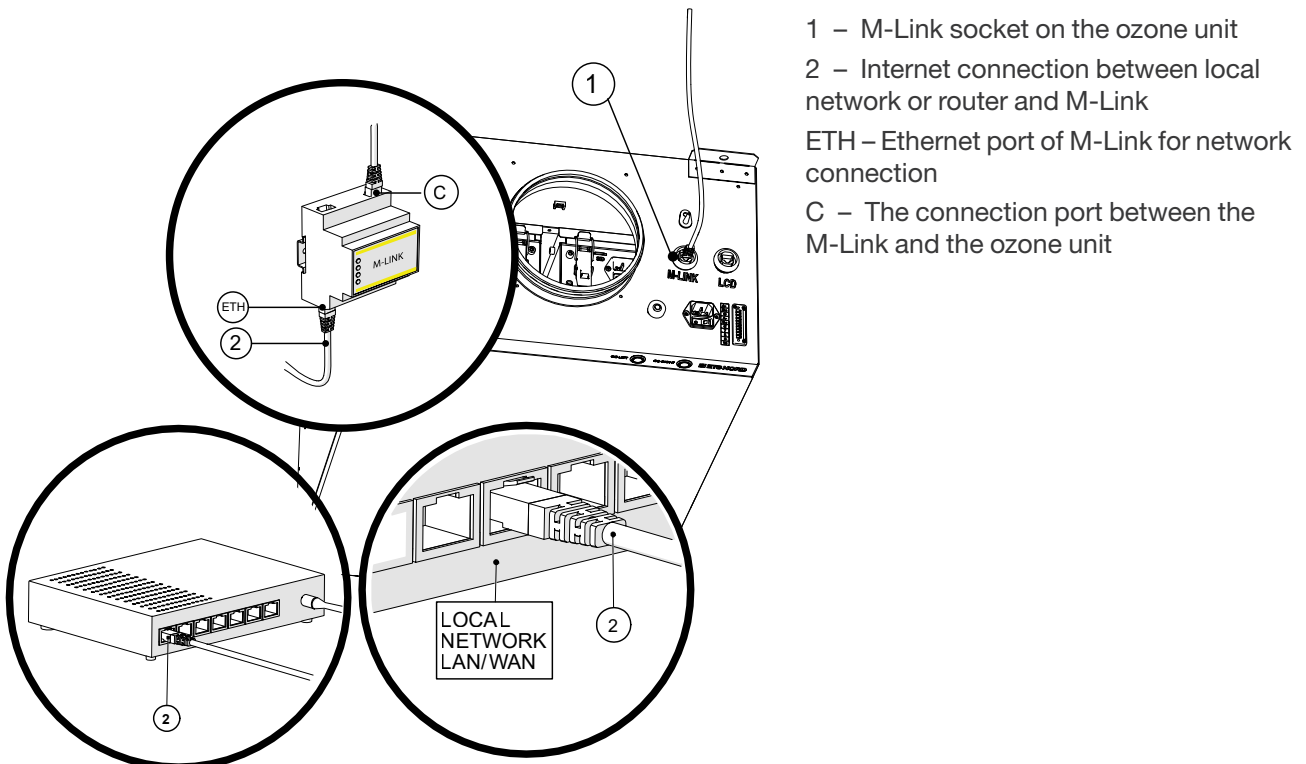
This device must be connected to the Master ozone unit or EOZ 2.0 Ozone generator. **Master is the one with the LCD control panel connection.**

Mount the M-Link device into an electrical panel and install it onto a wall with a maximum distance from the EOZ 2.0 Ozone generator of 10 m.

A – LAN cable connection between the device and the ozone unit

B – Ethernet port, for network connection
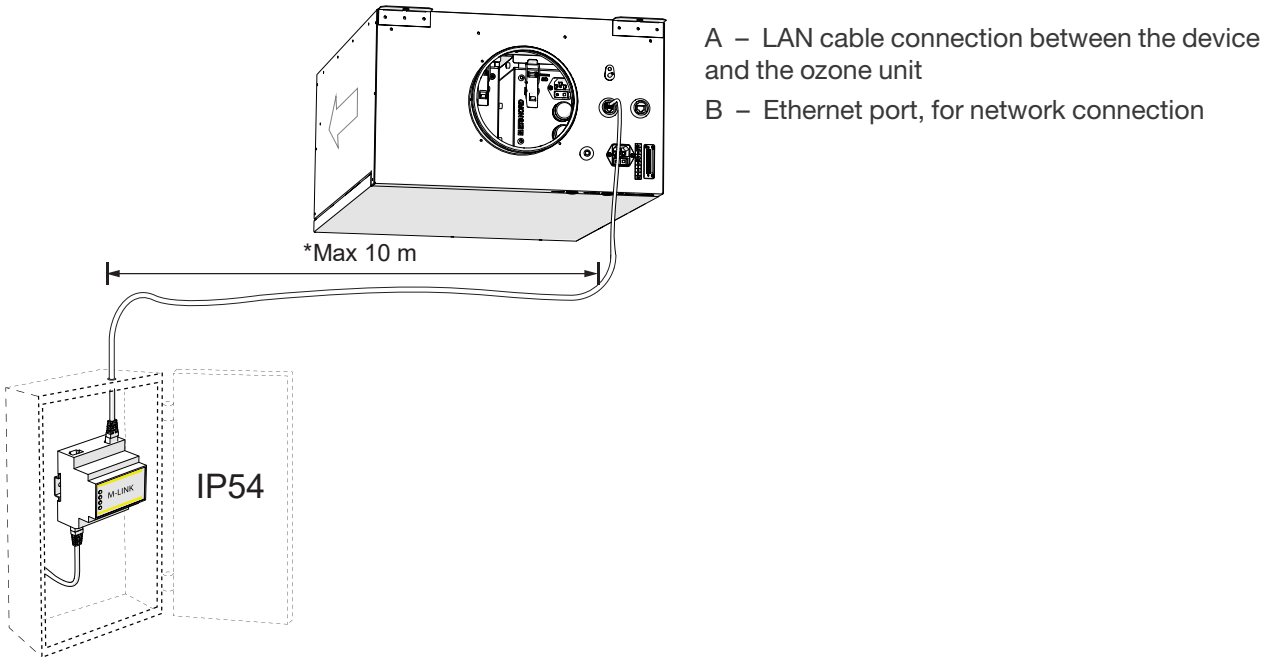
Connect the LAN cable from the router or directly from the local network to the M-Link Ethernet port.

From the C port of the M-Link, connect the LAN cable included in the package to the "M-LINK" connector of the ozone unit.

1 – M-Link socket on the ozone unit

2 – Internet connection between local network or router and M-Link

ETH – Ethernet port of M-Link for network connection

C – The connection port between the M-Link and the ozone unit

A local network is required, and it must be possible to connect the M-Link to it. If the customer does not want to connect the remote access device to their local network, there is also the option of using a 4G router. The router can be purchased through the ETS NORD sales department, and additional costs are incurred.

When using a router, an electrical connection must be provided by an electrician via an additional plug so that the router can be connected to the mains.

Without the M-Link remote access device, it is not possible for ETS NORD to provide the customer with a maintenance service, during which the customer is informed of the malfunctions that have occurred and the necessary maintenance or repair of the ozone unit is carried out.

5. LED notification panel installation

NB! To install the LED panel, choose a location in the kitchen that is highly visible to the staff. Avoid placing the LED panel above kitchen appliances.

The LED notification panel is an accessory and is supplied if the user wants to have a quick and simplified manner of understanding the EOZ 2.0 Ozone generator status.

The LED notification panel must be connected to the Master ozone unit or EOZ 2.0 Ozone generator. **Master is the one with the LCD control panel connection.**

You will need a separate cable (min 4x0.25mm^2 used for LED notification panel and EOZ 2.0 Ozone generator connection) and in-wall junction box (screw distance 60 mm, min depth 30 mm). These items are not included in the LED notification panel package.
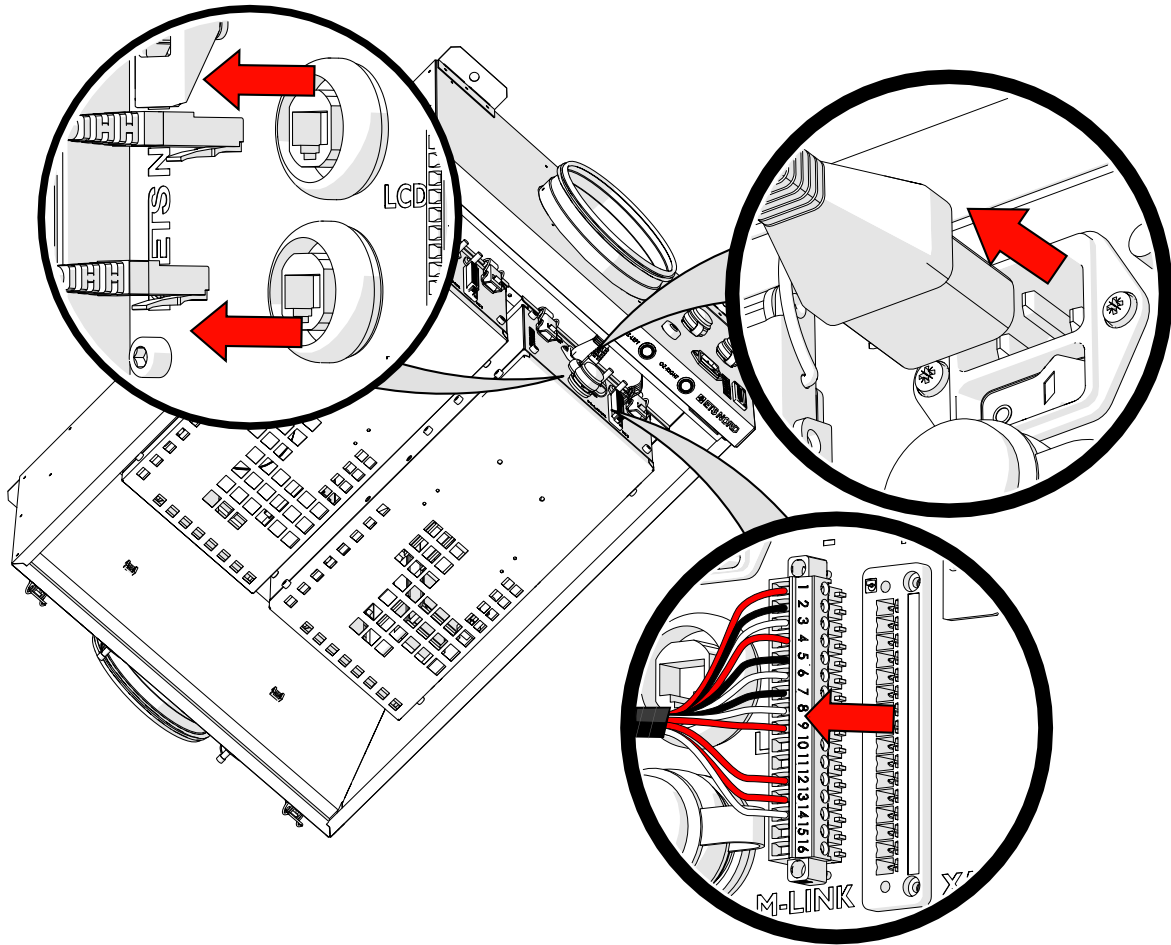
5.1 Opening EOZ 2.0 hatch

Turn off and disconnect the electrical power cord from the EOZ 2.0 chassis before proceeding.
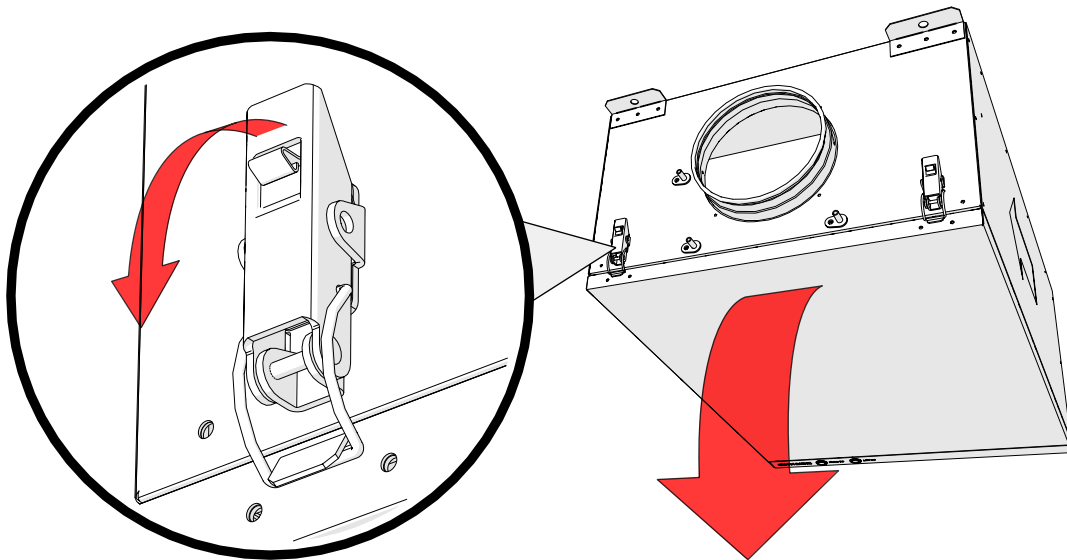
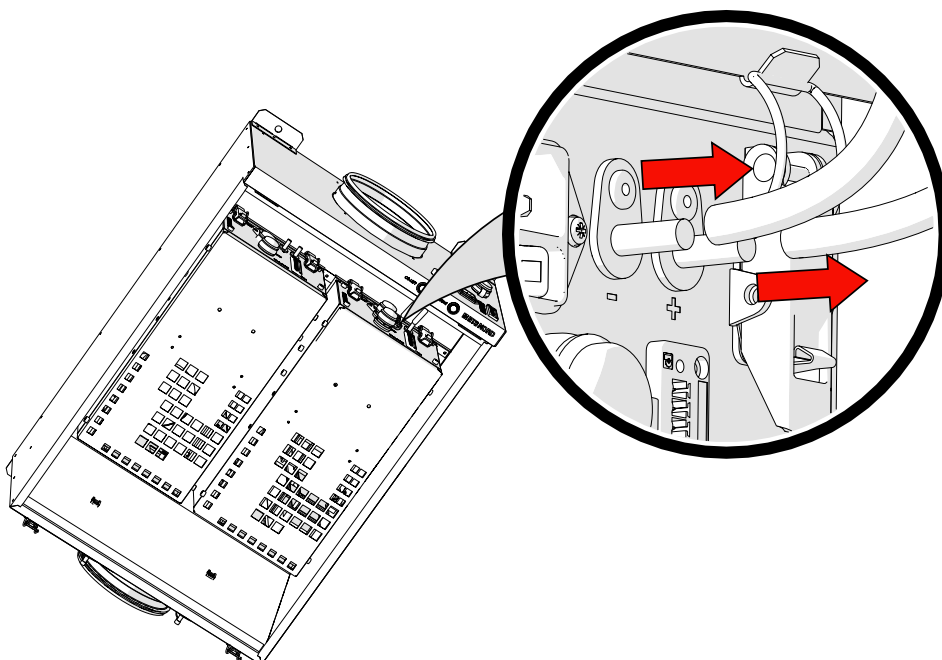Start by opening the front panel by opening two (2) clamps that are holding the panel.

5.2 Disconnect cables inside the EOZ 2.0

Disconnect both the data and power cables from the **RIGHT** Ozone Module inside the EOZ 2.0 chassis.
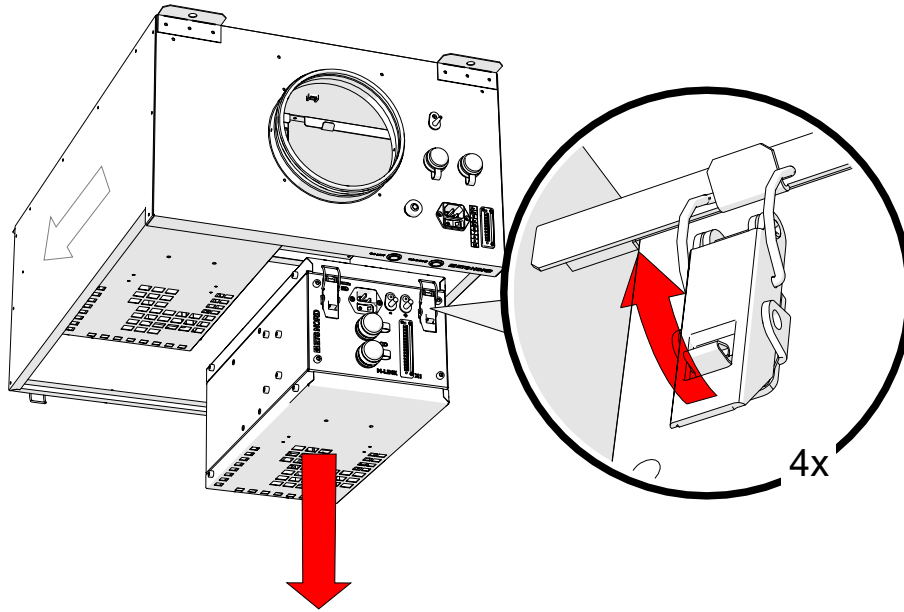

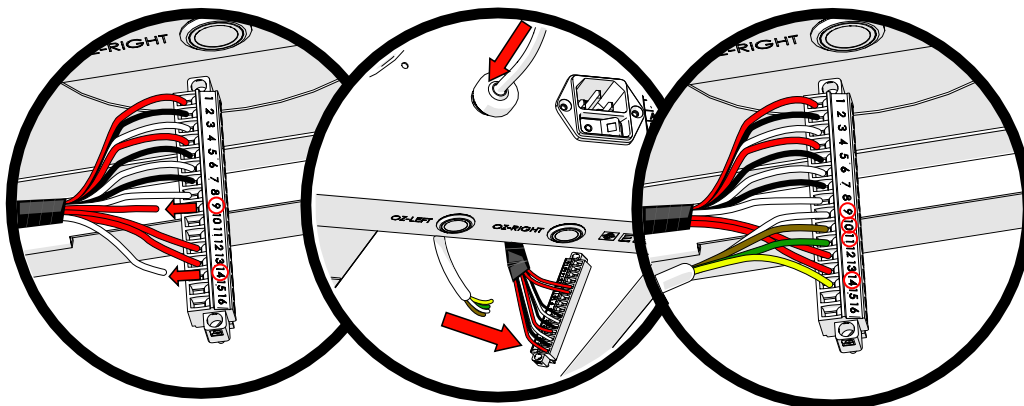## 5.3 Remove the OZ module and disconnect the pressure measurement hose

Remove the pressure measurement hose from the data connection side.
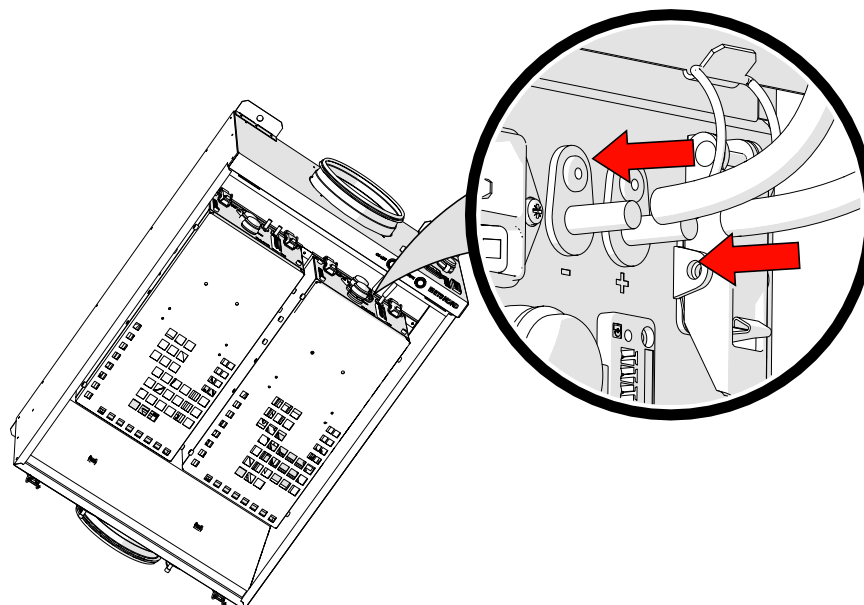
Next, while supporting the Ozone Module, release its four (4) clamps that fasten it in place.

4x

After carefully lowering the module and setting it aside, disconnect the wires on the X1 connector socket pins 9&14. Push the cable through the cable grommet located on the EOZ 2.0 unit and connect it to pins 9, 10, 11 and 14.
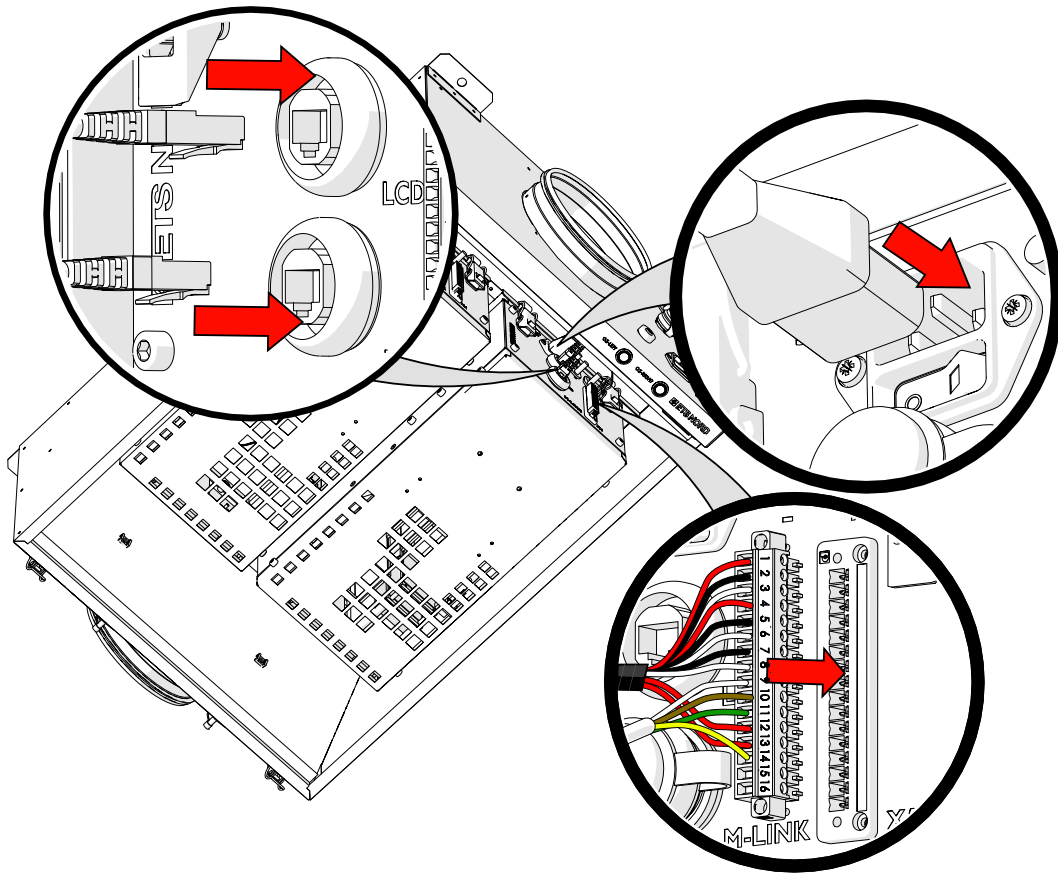

5.4 Mounting the OZ module back into the EOZ 2.0 chassis

Images are for illustrative purposes.
We reserve the right to make changes.

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5.5 Cable connections

Carefully reinstall data connector inside the EOZ 2.0 chassis to the Ozone Module and power supply socket.

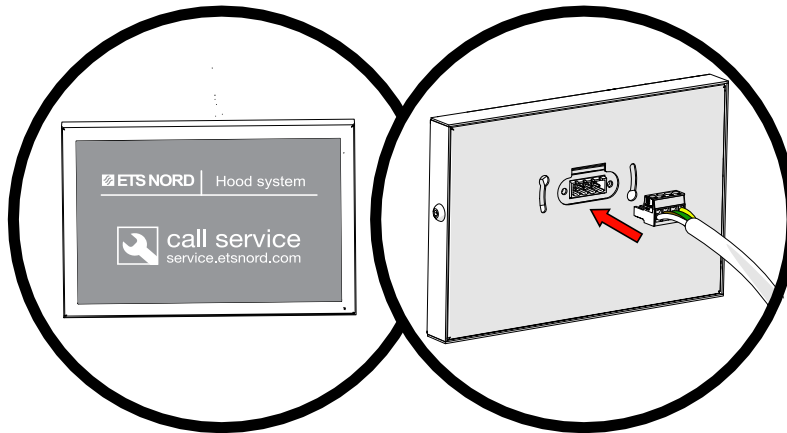## 5.6 Reinstall the bottom panel

Finally, reinstall the EOZ 2.0 bottom panel and secure it with its two (2) clamps. Ensure the panel is sitting flush and is airtight.
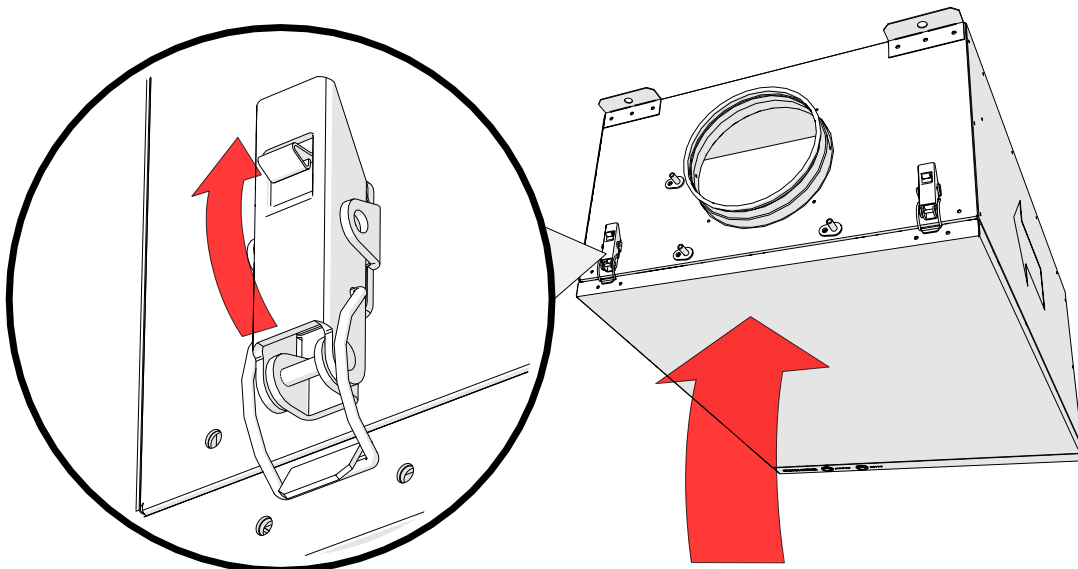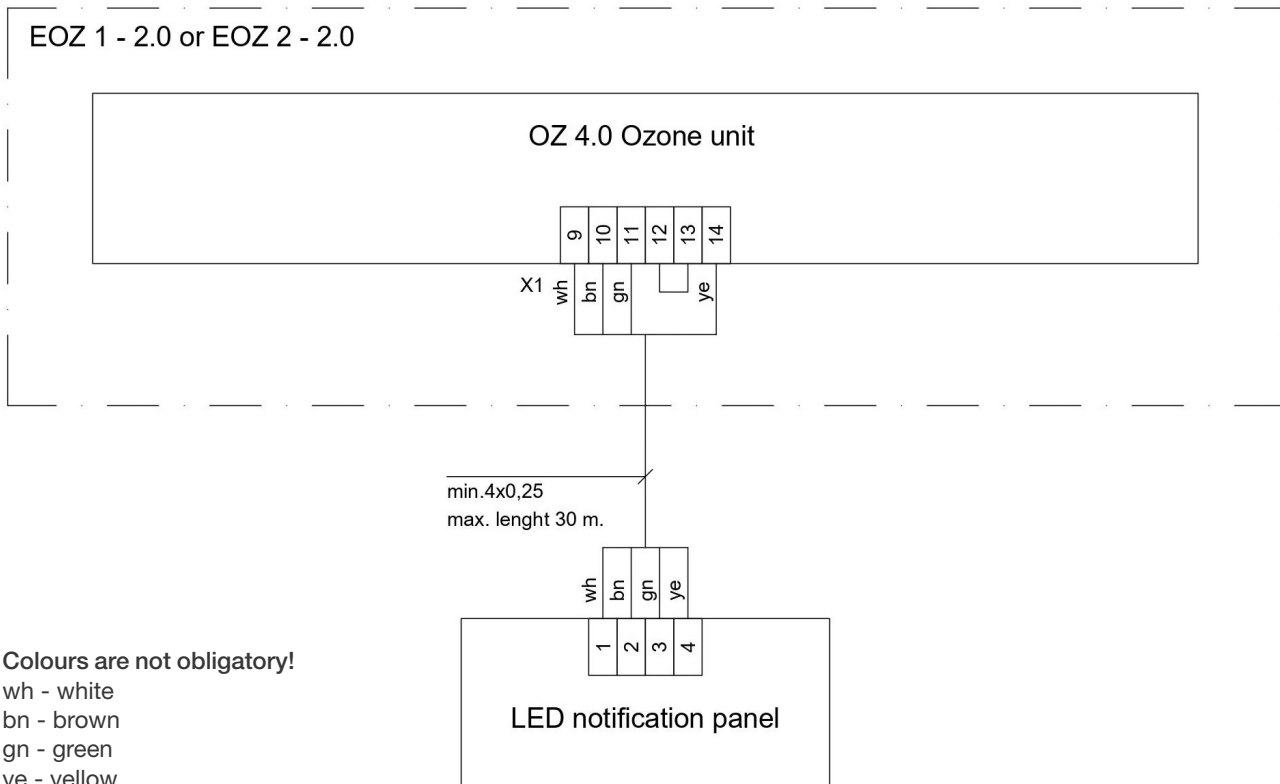

Remember to reapply power to the unit for operation.

5.7 LED panel connections

Connect the other end of the cable (from EOZ 2.0 cable grommet) to the LED panel connector, see the connection diagram below and mount the panel on the wall.

Connection diagram 3 - EOZ 2.0 connection to LED notification panel

EOZ 1 - 2.0 or EOZ 2 - 2.0

OZ 4.0 Ozone unit

min.4x0,25
max. lenght 30 m.

LED notification panel

Colours are not obligatory!
wh - white
bn - brown
gn - green
ye - yellow

Connection of EOZ digital outputs with LED notification panel:

1. disconnect indication LED-lamp (9 and 14 terminals) from X1 of OZ 4.0 Ozone unit (in case of EOZ 2 - 2.0 - from right OZ 4.0 Ozone unit (OZ-RIGHT) of Master EOZ 2 - 2-0);

2. install control cable throw grommet and connect it according to this diagram.

BMS - building management system.

These connections are only used for the Master EOZ 2.0 ozone generator nor single EOZ 2.0 ozone generator. Single EOZ 2.0 ozone generator is the only ozone generator in the Ozone Cleaning system without Slave EOZ 2.0 ozone generators.

All the cables are supplied, installed and connected to the devices at the installation site by the customer. Max cable core cross-section is 1,5 mm^2 (solid constructors) for X1 connector.

Images are for illustrative purposes.
We reserve the right to make changes.

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6. Measure and adjust airflow

1. Measure the airflow at the KRI damper installed before the EOZ 2.0 to find operational airflow of the unit. For more information refer to KRI regulating damper installation guide.
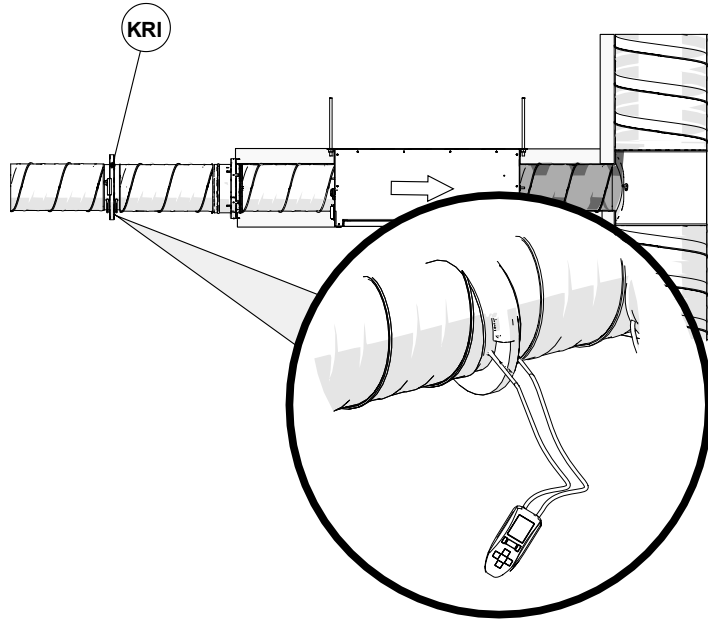
2. Measure the air pressure difference of the EOZ 2.0 unit from both nozzles as seen in the picture (both measurements need to be approximately the same).
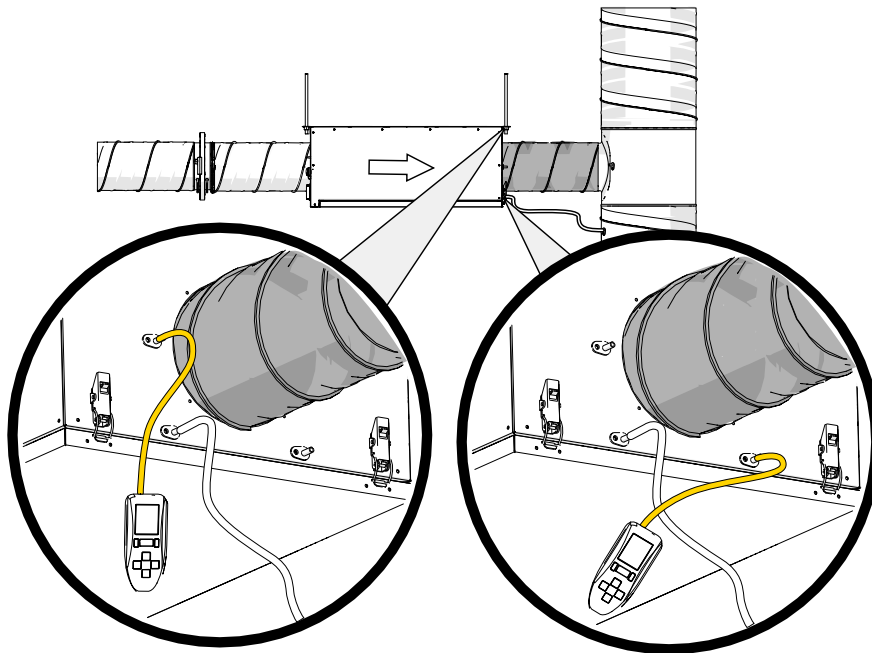
Confirm that the system airflow and pressures fall within the following specifications:

Model	Operational airflow (l/s)	Pressure difference (Pa)	Pressure drop (Pa)
EOZ 1 – 2.0	30	-20	71
EOZ 2 – 2.0	60	-25	41

Facts about ozone

- Ozone is a colorless gas, the sharp smell of which can be detected by a person at a concentration of 0.02 ppm (0,4 mg/m3).
- The smell of ozone is similar to the smell of chlorine used in swimming pools.
- The use of ozone is subject to the applicable protection legislation. For example, in Sweden, the Swedish Work Environment Authority provides the following hygienic limits for ozone:
    - 0,05 ... 0,2 ppm (during working time, 8 hours)
    - (Directive 2000/39/EC) 0.3 ppm (15 minutes)
- Acute exposure to ozone may result in the following damage:
    - skin irritation and burning sensation
    - severe irritation and burns in eyes and vision loss
    - pulmonary irritation in the respiratory tract and respiratory problems
- If the presence of ozone is detected indoors, the Ozone Module must be switched off immediately and the area must be ventilated.

Limited warranty of device

Warranty conditions:

- General warranty conditions can be found on producers homepage
- The new device is covered by a 2-year warranty against defects and manufacturing defects, if:
    - the initial commissioning of the device has been performed by an authorized partner of ETS NORD AS
    - the equipment is serviced every 12 months after commissioning
    - specified components (eg ozone generating equipment) have been replaced as required
- The warranty for a new device covers the repair or replacement of a defective part
- The warranty for replacement parts for manufacturing defects is valid for ninety (90) days from the installation of the replacement part
- The warranty is valid from the date of commissioning and product registration

Service and maintenance

Maintenance and configuration of Ozone Modules may only be carried out by ETS NORD trained personnel or its authorized contractors. Technical assistance or annual maintenance can be requested from the website: www.etsnord.com/service.

- An Ozone Module generates ozone. If an Ozone Module is used by people who have not read these instructions, there is a risk of damage, such as lung irritation or electrical shock. Always follow the rules and recommendations for the particular work environment issued by national authorities.
- This manual describes how to install a typical Ozone Module. Installation may differ according to local regulations related to building materials, ventilation systems or building/room design. Always contact the manufacturer before installation if something seems unclear.

*Let's move the air **together!***