



INSTRUCTION MANUAL

for

Duplexvent MULTI, MULTI-ECO and Basic units

- indoor version -

Dear customer,

Thank you for selecting our product. We hope it will work to your full satisfaction.

The installation manual contains all necessary instructions, information, advices and recommendations for safe and correct equipment installation and commissioning. Please, read the manual carefully and follow the instructions.

Explanation of used symbols:

Items or sections marked with **Ü**, or with grey background apply only to appliances manufactured in compliance with the hygienic requirements of Regulation VDI 6022 (marked on the identification plate, see following chapters).

Important notes

- **Only a qualified person may carry out the electrical wiring, commissioning and setting work.**
 - **Read carefully the installation manual and the operation and maintenance manual before installing the equipment!**
 - **The equipment, as well as all accessories must be installed and used in accordance with the design documentation, manufacturer's technical conditions and respective valid regulations and technical standards.**
 - **The equipment must not be installed and operated in aggressive environment, which could damage inner and outer parts of the equipment.**
 - **An initial electrical audit report for the power supply to the equipment must be obtained prior to bringing the equipment to a continuous operation.**
- Ü Prior to commissioning the unit it is necessary to perform an acceptance check of the complete air treatment system (see VDI2079 and DIN EN V 12599) where the installed unit is integrated. The check must involve checking the compliance with hygienic requirements according to the directive VDI 6022. The result of such check is to be recorded. The party running the unit must be able to present the record of acceptance check-up upon request. The manufacturer cannot guarantee compliance with hygienic standards when this procedure is not followed.

The manufacturer is not liable for damages caused by unprofessional installation, which was in contrast with the installation manual and common practice for air-handling systems and controls.

Contents

1. Storage and transport	4
1.1. Transport of compact units	4
1.2. Transport of semicompact units	5
2. Equipment installation	5
2.1. Safety rules	5
2.2. Hygienic instructions and requirements	6
2.3. Compact units Multi and Multi Eco	7
2.4. Compact units Basic	7
2.5. Assembly of compact units	8
2.5.1. Floor-standing position:	9
2.5.2. Ceiling-suspended position:	10
2.5.3. Floor-standing flat position:	12
2.6. Semicompact units	12
2.7. Assembly of semicompact units	13
2.7.1. Assembly of blocks	13
2.7.2. Description of assembled unit	16
2.7.3. Connecting fans	17
2.7.4. Connecting temperature sensors	18
2.7.5. Connecting pressure sensors	18
2.7.6. Connecting servo motors	19
2.7.7. Covering the slots	20
2.8. Ductwork connections	21
2.9. Condensate drain connection	21
2.10. Connecting hot-water heating coil to a heating water supply	22
2.11. Connecting chilled-water cooling coil to a chilled water supply	22
2.12. Connecting direct-expansion cooling coil	22
2.13. Installation and connection of manometers for constant flow and constant pressure feature	22
2.14. Installation and connection of inclined manometers	23
2.15. Fitting air filters	23
3. Electrical wiring	24
3.1. General rules	24
4. Commissioning	24
4.1. Safety rules	24
4.2. Hygienic instructions for the appliance to comply with VDI 6022	25
5. Access to the unit using the internet	25
6. Package disposal	25
7. Connecting blocks of semicompact units using connectors, annex	26
7.1. Connecting fans	26
7.2. Connecting temperature sensors and condensate drain heating	27
7.3. Connecting pressure sensors	28
7.4. Connecting servo motors	29

1. Storage and transport

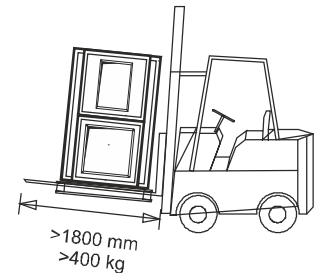
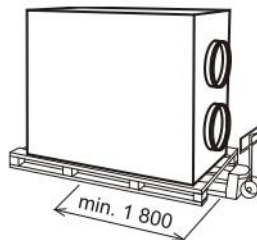
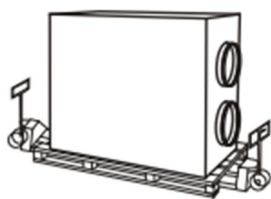
- The appliance may only be stored in dry, covered places with ambient temperature between -25°C and $+55^{\circ}\text{C}$ in such a manner so as to keep the surfaces that will be in contact with transported air weather-protected, dry and clean.
- The packaging may only be removed immediately before the installation of the appliance in its final position. Otherwise it is necessary to check all parts for cleanliness before installation and clean carefully if needed.
- The equipment may contain no operating fluids (e.g. water in heating or cooling coil) during the storage and transport.
- The appliance may only be transported when positioned on transportation racks (supplied as standard). The appliance must be protected against mechanical damage and leaking water during transportation and prior to completing the appliance assembly. All holes must be covered with protective lids. The same applies when the appliance is transported disassembled.
- Secure the equipment against falling during the transport. Also, the transport method should prevent the risk of falling or loosening the equipment.
- It is prohibited to carry out activities such as grinding, welding, cutting and other ancillary works near the unit that could irretrievably damage the surface or individual parts of the unit.

- ! It is necessary to fasten the unit safely prior to any manipulation with or transport of the unit.
- Secure the unit and its accessories against falling down or tipping over.

1.1. Transport of compact units

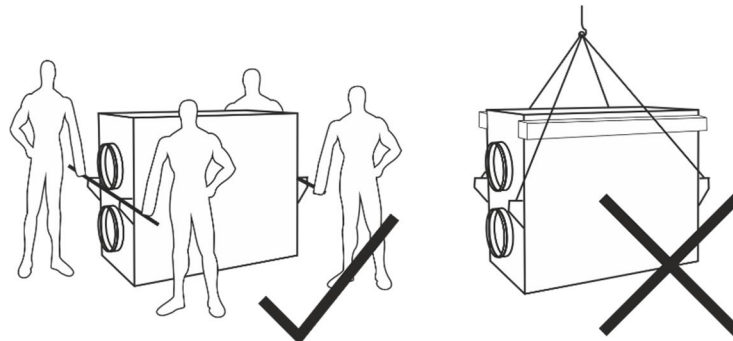
Compact units are understood as units that are placed in one compact casing.

The only manipulation methods allowed



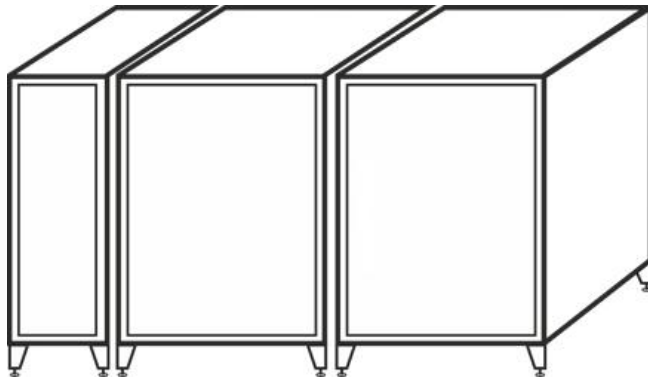
Minimum fork spacing 800mm

- ! Handles on the side of the device are intended for shipping and manipulation with units only!



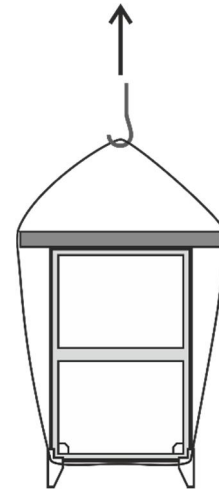
1.2. Transport of semicompact units

Semicompact units consist of two or three blocks that form the unit once they are connected together.



Blocks of semicompact unit

Lift the blocks of semicompact units one after another.
Tie up individual blocks from underneath before lifting them.



- ! The lifting bars must be
- wider than the lifted unit.

2. Equipment installation

2.1. Safety rules

- The equipment in the indoor version is designed for basic environment - environmental temperature must be between +5°C to +55°C, relative humidity 60% (60% relative humidity up to 20°C). If an equipment is placed in another location it is necessary to ensure the adequate protection.
- The source of warm water has to be permanently connected to the device, so the constant intake of warm water is ensured.
- Protect the unit from freezing internal components during periods of inactivity to ensure mechanical backflow valve in the pipe i2.
- The appliance may be operated within the temperature range of ventilation air between -25°C and +40°C with relative exhaust air humidity up to 80%, in an environment where there is no risk of fire or an explosion of flammable gases and fumes, and air transported must not contain organic solvents or aggressive substances that might damage mechanical parts of the unit. If there is a danger of such gases and fumes temporarily entering the duct system (e.g. during floor bonding, painting), the unit must be switched off sufficiently in advance.
- Be careful during the installation not to damage the unit casing (e.g. by hanging it only on two suspension brackets).
- After placing the equipment make sure its position is stable and secure the equipment against possible movement.
- Follow all work safety rules during the manipulation and installation work (including the work safety for work in heights and lifting weights) and use proper tools and protective clothing.
- Only a qualified person may operate the lifting equipment and binding tools.

Appliances with hot water heaters

- Must be permanently connected to power supply to provide for the anti-freeze protection of the hot water heater. In the case of a prolonged power outage the heating medium must be drained from the hot water heater including the control set. We recommend draining water from the heater with pressurized air, not using a gravity flow!
- It may only be operated if the heating system including the hot water heater and control set are filled with a heating medium and air bled; also applies to periods outside the heating season! In case the heating system including the hot water heater and control set are not filled with a heating

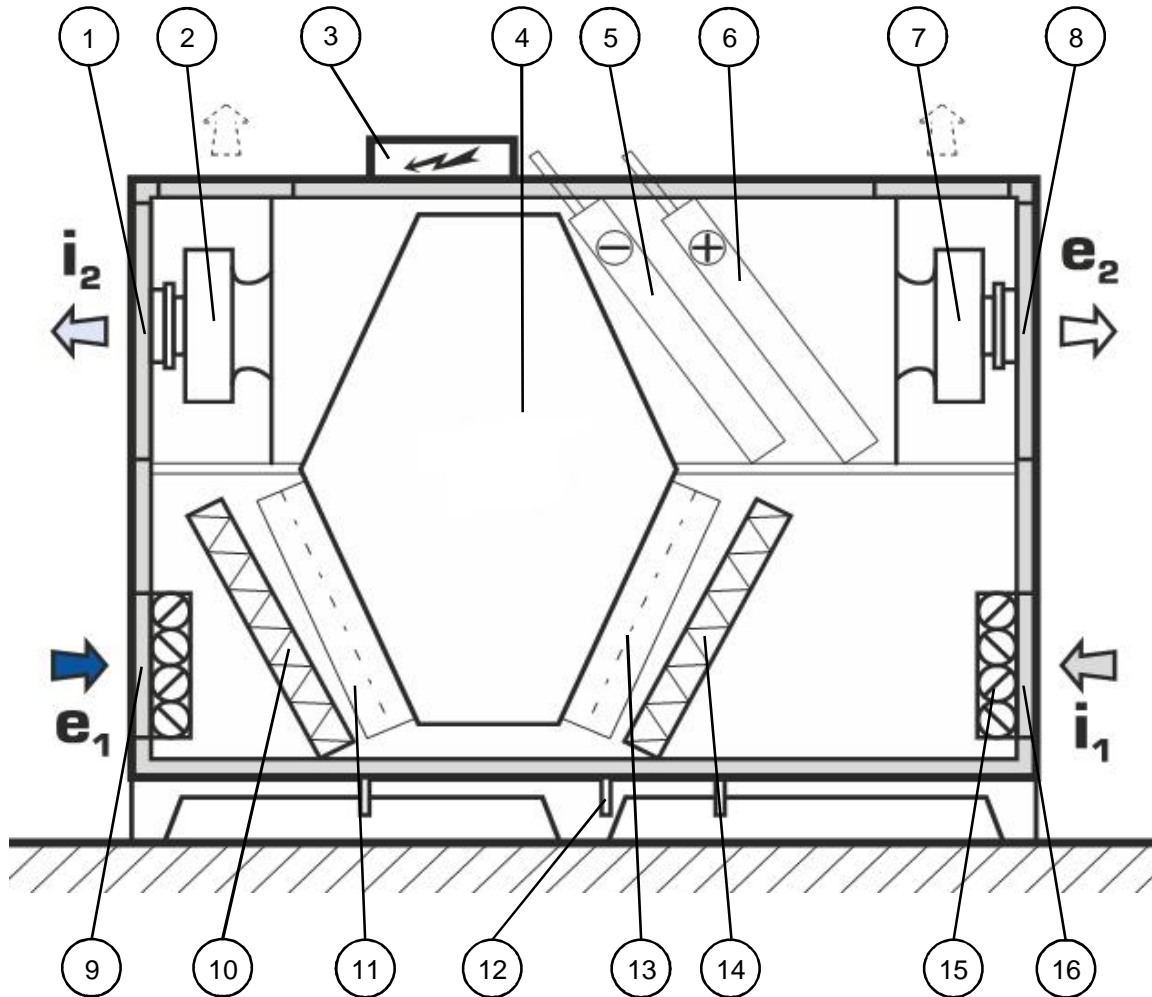
medium, the appliance must be drained of the remaining heating medium, dried properly and disconnected from power supply.

2.2. Hygienic instructions and requirements

- If installation is interrupted or heavy dusting occurs, cover all openings of the appliance in such a way so as to ensure that surfaces to be in contact with transported air remain protected against the weather and stay clean and dry.
 - If long-term high relative humidity (short-term more than 90 % or more than 80 % for three consecutive days) is likely to occur with the subsequent moistening of filters (e.g. in areas with frequent fogs, frequent and long rains, flying snow etc.), suitable measures must be taken to prevent microbiologic growth. Recommended measures include more frequent hygienic checks as per VDI 6022 or shorter filter replacement intervals. Another option is the preheating of air using an appropriate control devices (electrical duct heaters are an available accessory), or the appliance must be put out of operation for the period when filters are at the risk of moistening (if the type of operation allows this).
 - Should such weather conditions occur at the site of installation that would cause the dew point to be exceeded in the supply air region of the heat recovery exchanger, or an independent cooling system is installed in ventilated rooms, Duplexvent units may only be used provided that it has been arranged via appropriate measures that the dew point is not exceeded in the heat recovery exchanger. The typical weather of central Europe makes this condition almost impossible.
 - The e1/ODA air supply chamber has no water drain. An accessible and cleanable chamber with a drain of precipitated water must be installed upstream the outdoor air inlet into the appliance.
 - The HVAC network of appliances operated in an environment with Class ETA 2 extract air must be arranged for operation in such a way so that positive pressure is on the supply air side of the heat recovery unit; in an environment with Class ETA 3 extract air must be arranged for operation in such a way so that positive pressure is on the supply side in comparison to the exhaust side. This must be ensured under all operating conditions of the system. For more details see EN 13779.
 - Unpack and install air filters in the last step, just before putting the appliance into operation. You will prevent the filters from getting dirty.
 - Air duct including accessories with autonomous regulation of operation is to be connected on the fresh air supply. Such duct will, in compliance with the regulation VDI 6022, provide for appropriate treatment of supplied fresh air to prevent air filter from getting wet. In case the duct is not connected or if it does not include such accessory, the appliance is to be put out of operation as long as the risk of air filters to get wet persists (thick fog, snowing).
- Ü In compliance with hygienic standard VDI 6022 HVAC systems must be equipped with shut-off dampers to ensure the automatic closure of the system so that no air can flow freely through the system. We recommend using shut-off dampers available as an accessory. It is the responsibility of the planner / specialist installation firm to comply with this requirement.
- Ü Duplexvent series appliances have a single-stage filtration system. Appliances in a hygienic version in compliance with hygienic standard VDI 6022 must have a Class F7 / ePM1 50% filter fitted on the inlet; applies to outdoor air (e1/ODA) class ODA 1 and ODA 2. When outdoor air is Class 3, an M5 / ePM10 50% / ePM10 50% Class filter must be fitted in the duct upstream the outdoor air inlet into the HVAC unit; alternatively, an M5 / ePM10 50% Class filter may be installed in the HVAC unit and an F7 / ePM1 50% Class filter in the duct at the e2/SUP outlet from the unit. Note: M5 / ePM10 50% and F7 / ePM1 55% filters are separately supplied accessories.
- Ü Appliances in a hygienic version in compliance with hygienic standard VDI 6022 may be operated only if the use of recirculating air is suitable for hygienic reasons or the arrangement of operation of the HVAC network ensures positive pressure in the supply section of the appliance against the extraction section.

2.3. Compact units Multi and Multi Eco

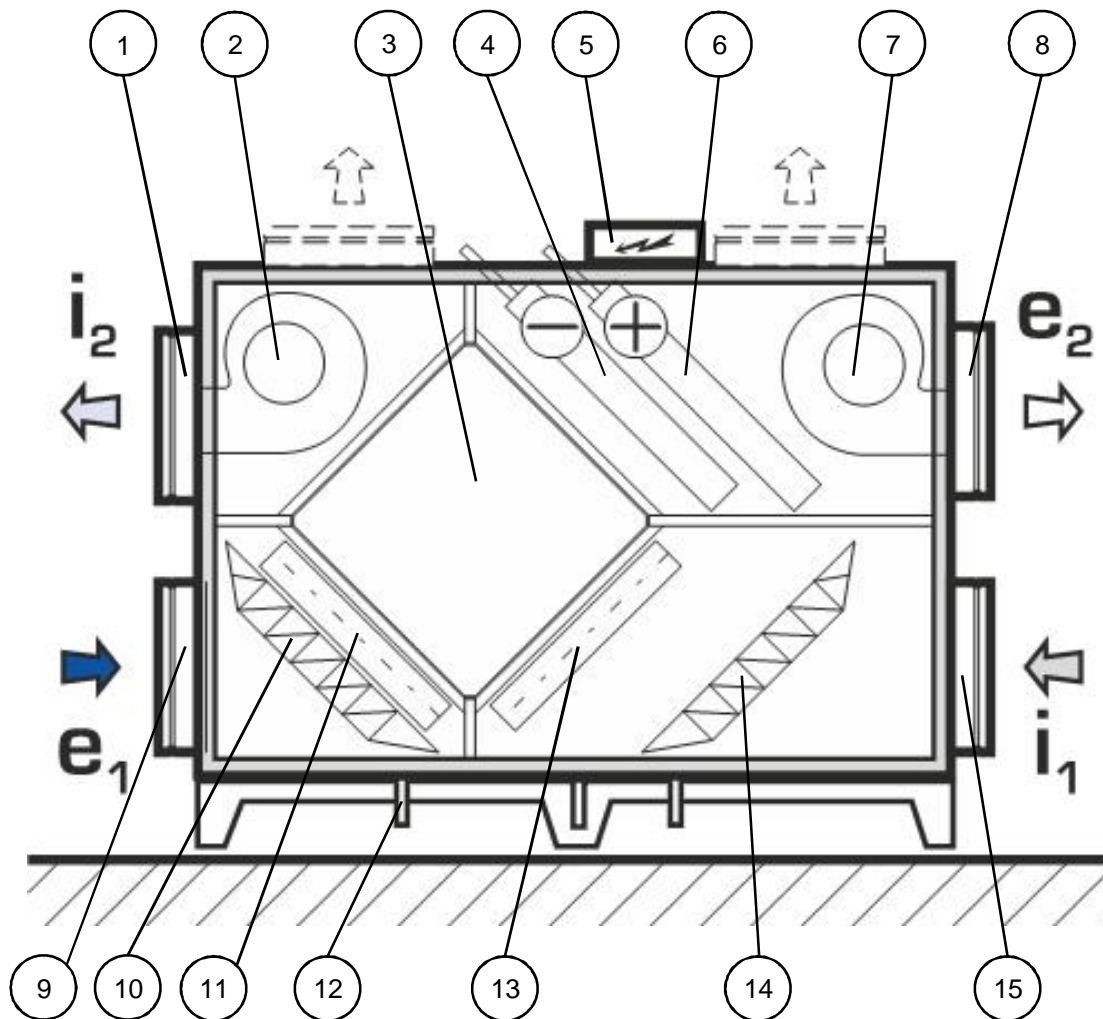
Units Duplexvent 1500 to 8000 Multi and Duplexvent 1500 to 6500 Multi Eco represent a new generation of versatile compact ventilation units with a counterflow heat exchanger. The units are intended for indoor installation; they are used for comfortable ventilation, hot-air heating and cooling in small facilities, shop floors, stores, schools, restaurants, shops, sports, industrial halls. Units Multi and Multi Eco meet requirements of Commission Regulation (EU) No. 1253/2014 (Ecodesign) in the defined working area.



- | | |
|--------------------------------------|-------------------------------|
| 1. Exhaust (extract air) | 9. Intake (supply air) |
| 2. Exhaust fan | 10. Supply air filter |
| 3. Junction box | 11. Bypass flap |
| 4. Heat exchanger | 12. Condensate drain |
| 5. Water cooling / direct evaporator | 13. Circulation flap |
| 6. Water heating | 14. Exhaust air filter |
| 7. Supply fan | 15. Intake flap (extract air) |
| 8. Exhaust (supply air) | 16. Intake (extract air) |

2.4. Compact units Basic

Duplexvent 1400 to 10100 Basic are new generation of versatile ventilation units with cross flow heat recovery exchanger. The units are intended for indoor installation; they are used for comfortable ventilation, hot-air heating and cooling in small facilities, shop floors, stores, schools, restaurants, kitchens, shops, sports and industrial halls. The units are designed solely for applications that do not fall within the scope of the Commission Regulation (EU) No. 1253/2014 (Ecodesign).

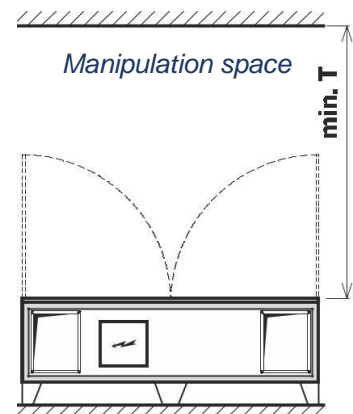


- | | |
|--------------------------------------|--------------------------|
| 1. Exhaust (extract air) | 9. Intake (supply air) |
| 2. Exhaust fan | 10. Supply air filter |
| 3. Heat exchanger | 11. Bypass flap |
| 4. Water cooling / direct evaporator | 12. Condensate drain |
| 5. Junction box | 13. Circulation flap |
| 6. Water heating | 14. Exhaust air filter |
| 7. Supply fan | 15. Intake (extract air) |
| 8. Exhaust (supply air) | |

Dimensions of ventilation units are depicted in Duplexvent selection SW when you select the Duplexvent unit > **Design > Show > total dimensions**. The information is available also in technical datasheets as well as in the technical specification which forms an integral part of contract on purchasing of the ventilation unit.

2.5. Assembly of compact units

- Before installation remove the wooden transport planks;
- Place the unit on the surface while keeping the recommended manipulation space.



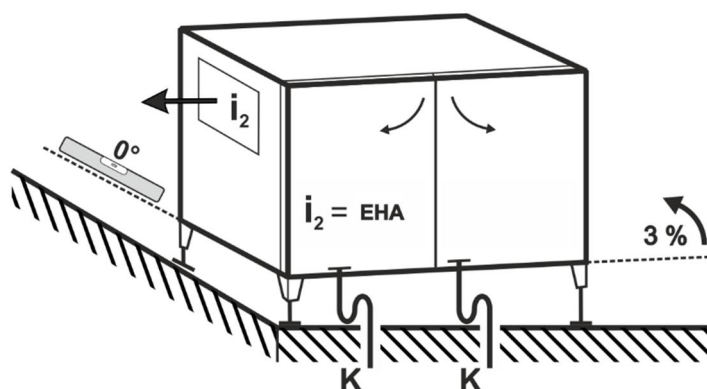
Duplexvent Unit Type		Standard door T (mm)	Hingeless door T (mm)
Multi	Multi Eco		
500 Multi	500 Multi Eco	800	500
1000 Multi	800 Multi Eco	900	500
	1100 Multi Eco	1000	500
1500 Multi	1500 Multi Eco	1200	500
2500 Multi	2500 Multi Eco	1200	600
3500 Multi		1200	680
	3500 Multi Eco	1200	680
5000 Multi	4500 Multi Eco	1300	900
6500 Multi	5500 Multi Eco	1300	1100
8000 Multi	6500 Multi Eco	1500	1300
Basic			
1400 Basic		1000	500
2400 Basic		1000	500
3400 Basic		1200	600
5400 Basic		1200	700
7100 Basic		1300	900
8100 Basic		1300	1100
10100 Basic		1500	1300

2.5.1. Floor-standing position:

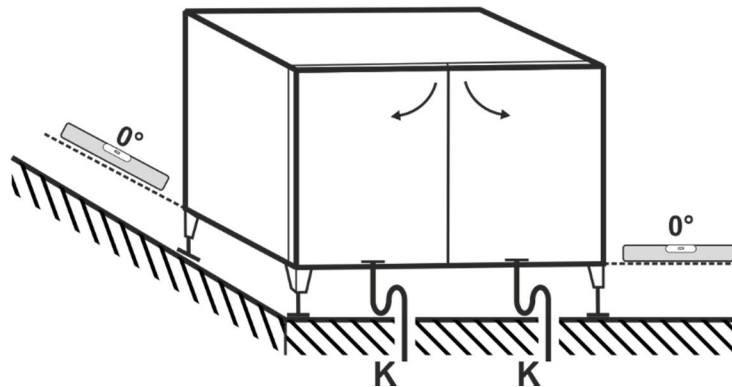
- The appliance is placed on a base frame, which is attached on the bottom side of the unit.

! It is not allowed to remove or modify the base frame – there is a risk of mechanical damage of the unit!

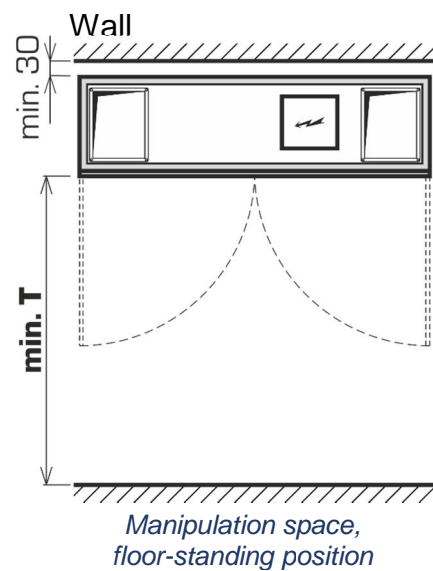
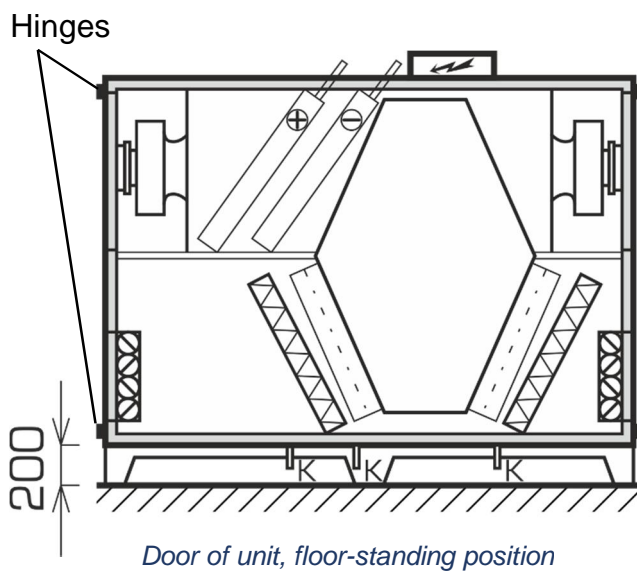
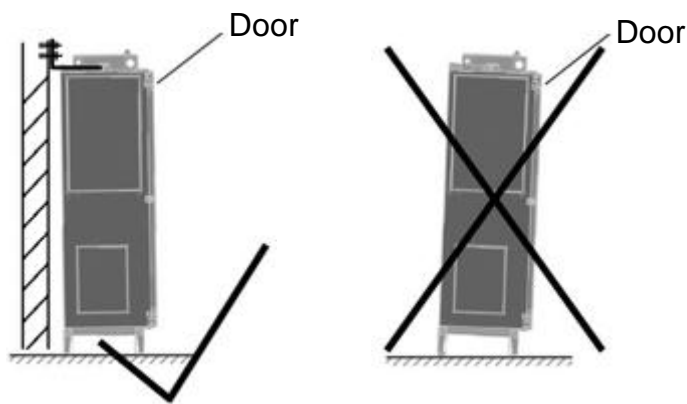
- Adjustable stand feet are delivered along with the unit. The feet are to be mounted into the integrated frame. Uneven ground under the unit can be levelled using the adjustable feet. Slope the unit as follows:
 - **Units 500 and 1000 Multi, 500 to 1100 MultiEco:** Slope the longer side of the casing 3% towards the condensate drain located at i_2 . Level the shorter side of the casing horizontally.



- **Units 1500 to 8000 Multi(-V), 1500 to 6500 MultiEco(-V), 1400 to 10100 Basic(-V):** Level both the longer and shorter side of the casing horizontally.

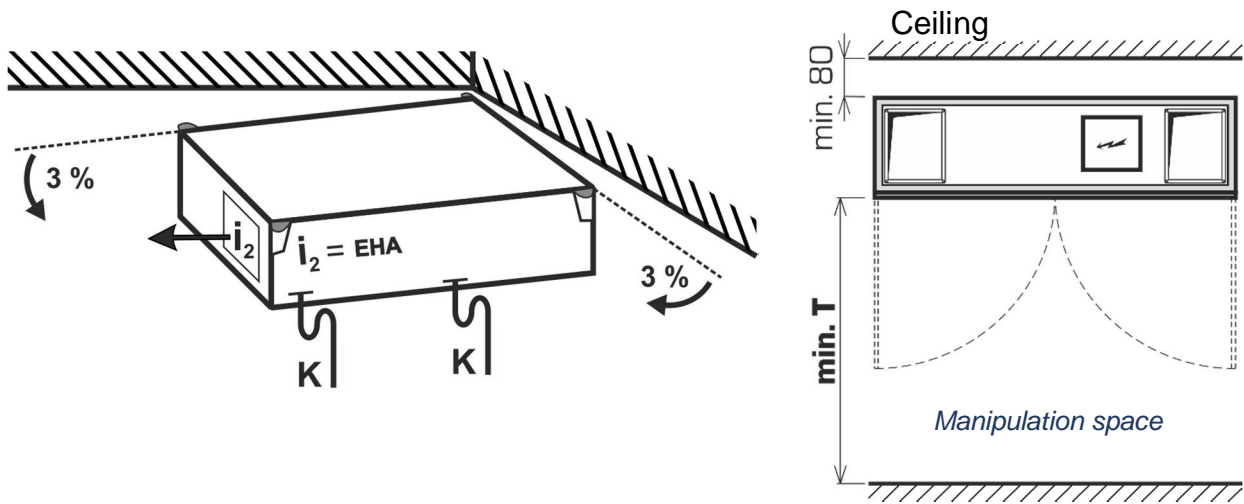


- The unit must be secured against movement.



2.5.2. Ceiling-suspended position:

- Slope both the longer and shorter side of the casing **3%** towards the condensate drain at exhaust air (i2).

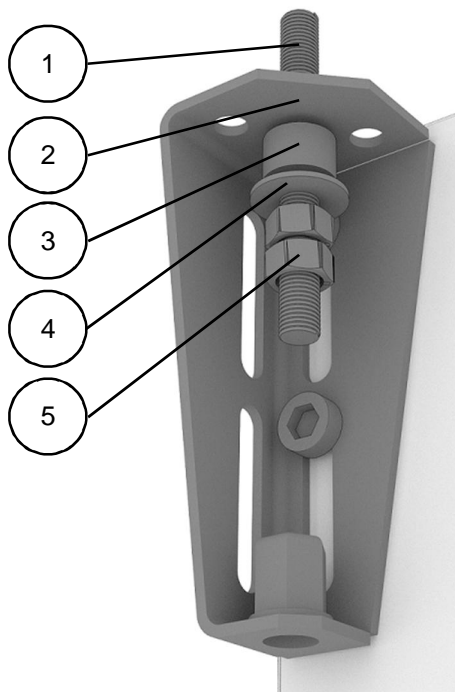


Use suspension brackets (standard supply) to hang the equipment on sufficiently-sized anchors (provided by the building contractor).

The dimensions of suspension points are detailed in the selection software Duplexvent in **Design > AHU placement method**, as well as in the technical specification that forms an integral part of purchase contract on the ventilation unit. Below you will find examples of unit suspension.

500 - 1000 Multi, 500 – 1100 MultiEco

Four brackets delivered separately



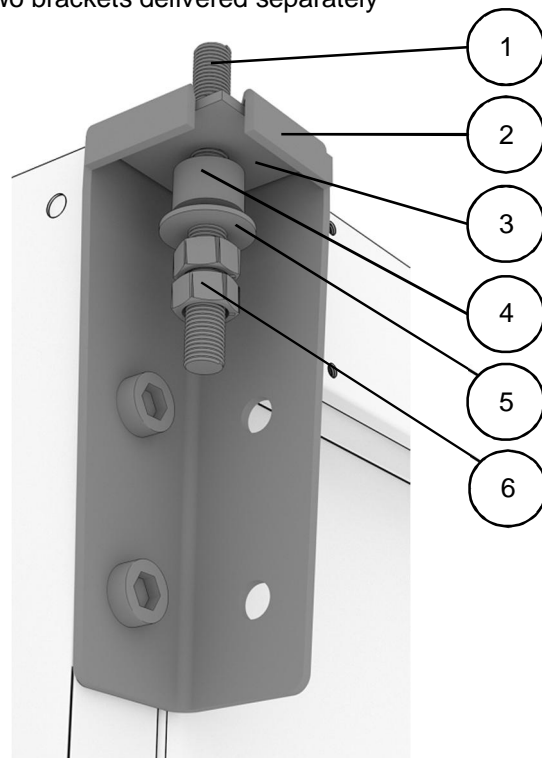
Description:

1. Screw rod M10 *)
2. Suspension bracket
3. Silent block *)
4. Washer M10 *)
5. Nut M10 *)

*) Not included in the delivery

1500 - 6500 Multi, 1500 – 5500 MultiEco,

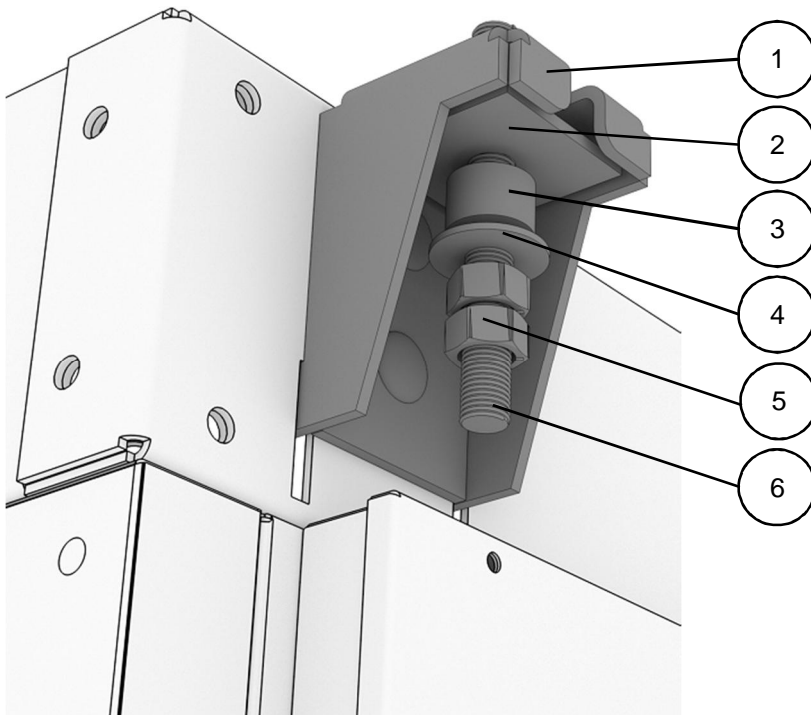
Two brackets integrated into the unit and two brackets delivered separately



Description:

1. Screw rod M10 *)
2. Suspension bracket
3. Washer spreading the weight
4. Silent block *)
5. Washer M10 *)
6. Nut M10 *)

8000 Multi, 6500 MultiEco
Eight brackets delivered separately



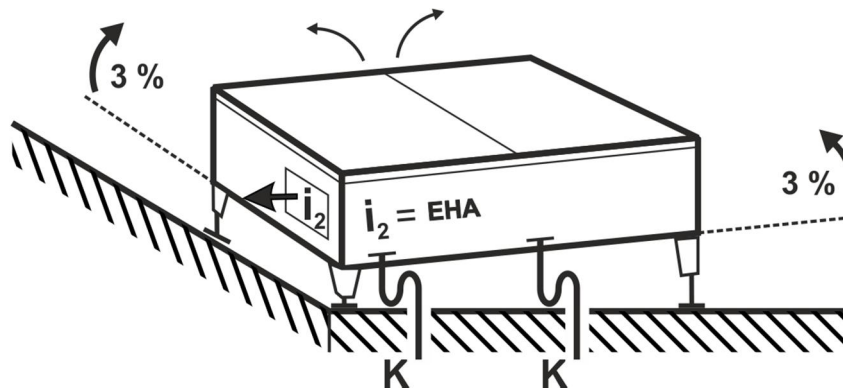
Description:

1. Suspension bracket
2. Washer spreading the weight
3. Silent block *)
4. Washer M10 *)
5. Nut M10 *)
6. Screw rod M10 *)

*) Not included in the delivery

2.5.3. Floor-standing flat position:

- Put the equipment on stand feet having the height of 150 mm.
- Slope both the longer and shorter side of the casing **3%** towards the condensate drain at exhaust air (i₂).

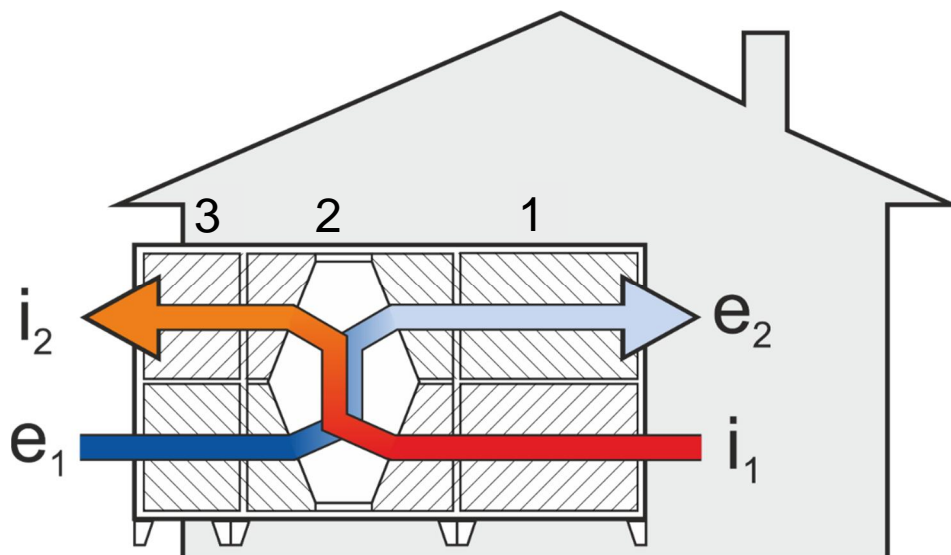


2.6. Semicompact units

Semicompact units Duplexvent 10000 - 11000 Multi, Duplexvent 7500 - 9000 Multi Eco and Duplexvent 12100 – 15100 Basic are a new generation of versatile outdoor ventilation units with counterflow

(Multi, Multi Eco) and crossflow (Basic) heat recovery exchangers. The units consist of two or three blocks that form the unit once they are connected together.

The units are used for comfortable ventilation, hot-air heating and cooling in large facilities, shop floors, stores, schools, restaurants, shops, sports and industrial halls. Units Multi and Multi Eco meet requirements of Commission Regulation (EU) No. 1253/2014 (Ecodesign) in the defined working area. Units Duplexvent 12100 – 15100 Basic are intended solely for applications that fall outside the scope of Commission Regulation (EU) No. 1253/2014.



Example of block arrangement in a semicompact unit
Duplexvent Multi / Multi Eco

Description:

1,2,3 – blocks of the unit

e1 - Intake (supply air)

e2 - Exhaust (supply air)

i1 - Intake (extract air)

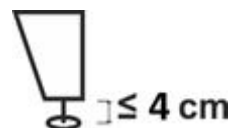
i2 - Exhaust (extract air)

2.7. Assembly of semicompact units

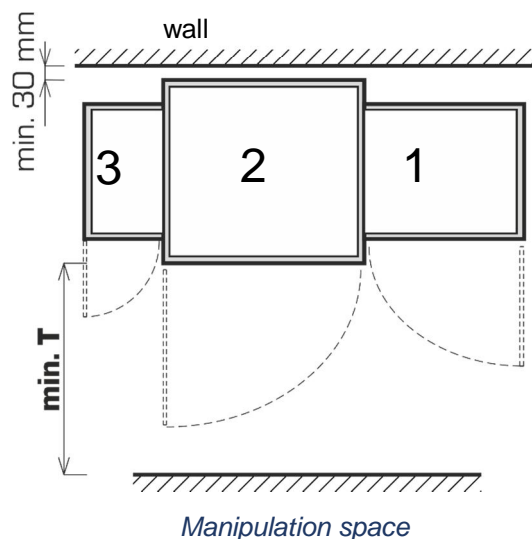
The following steps describe the assembly of unit with the configuration of blocks and ports in the Chapter 2.6 . The way of connecting wires between blocks via wiring boxes is described in the Chapters 2.7.3 to 2.7.6. The alternative way of using connectors is described in the Chapter 7.

2.7.1. Assembly of blocks

1. Make sure that the surface of the intended placement of the unit is even.
2. Mount adjustable bases (part of delivery) on all stand feet. Screw the adjustable bases approximately into the middle of the height.
3. Place the blocks on the surface, keep the recommended manipulation space.

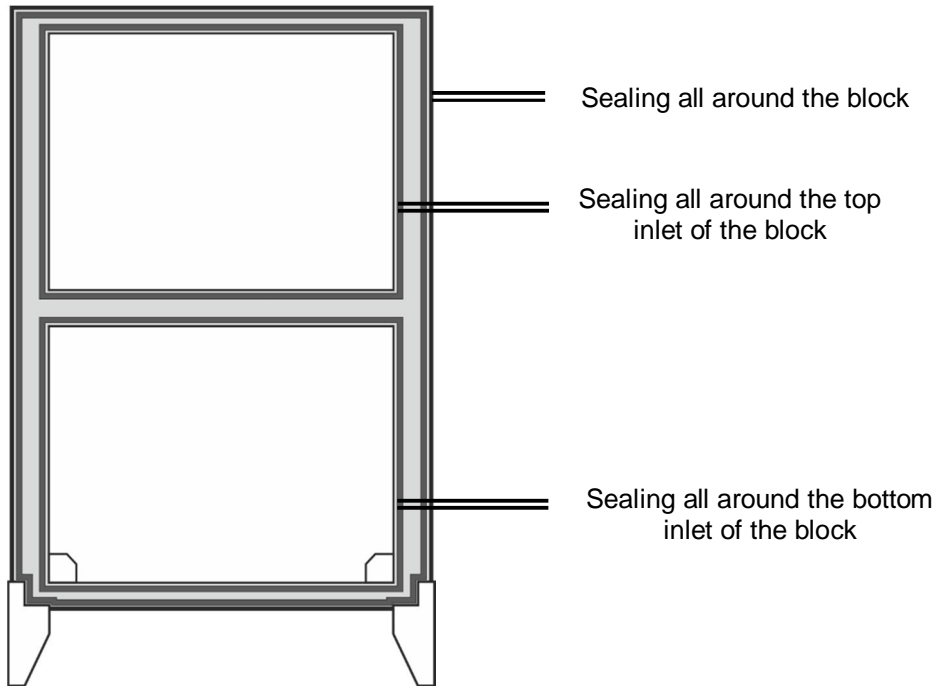


Type	Door T (mm)
Duplexvent 10000 Multi	1600
Duplexvent 11000 Multi	1600
Duplexvent 7500 Multi Eco	1600
Duplexvent 9000 Multi Eco	1600
Duplexvent 12100 Basic	1600
Duplexvent 15100 Basic	1700

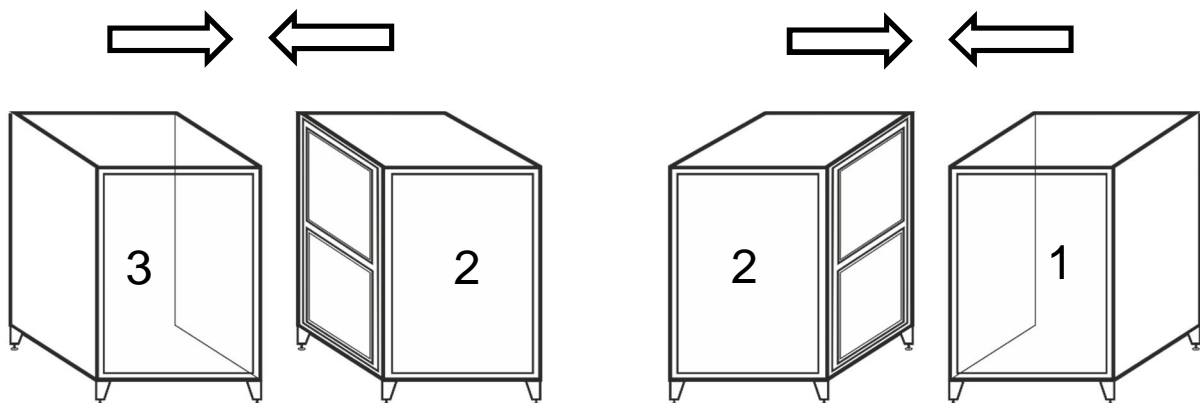


The door is attached to the unit by plastic lockers. Depending on which lockers you loosen, you can open the door to the right, to the left or loosen the door completely and pull the door away.

4. Make sure that the sealing on the middle block 2 is complete on the side both towards the blocks 1 and 3:
 - a. Sealing all around the block;
 - b. Sealing all around the top inlet of the block
 - c. Sealing all around the bottom inlet of the block



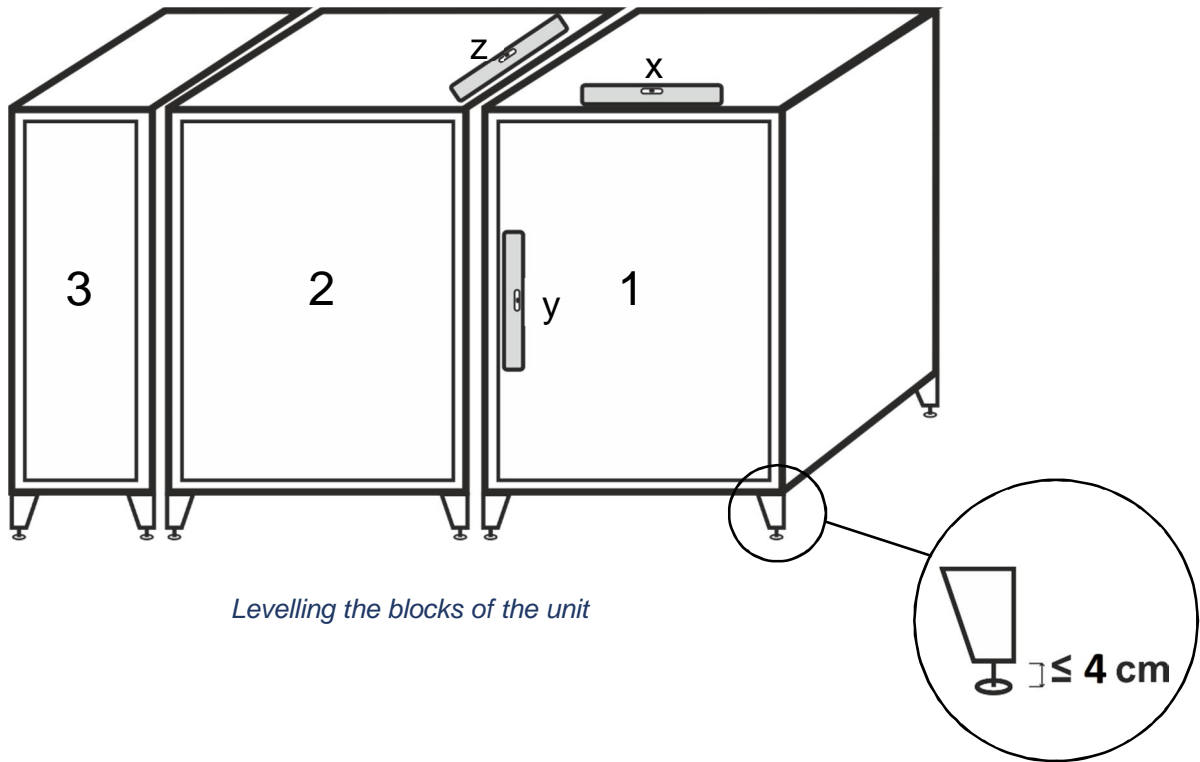
Side view of the block 2 with sealing attached



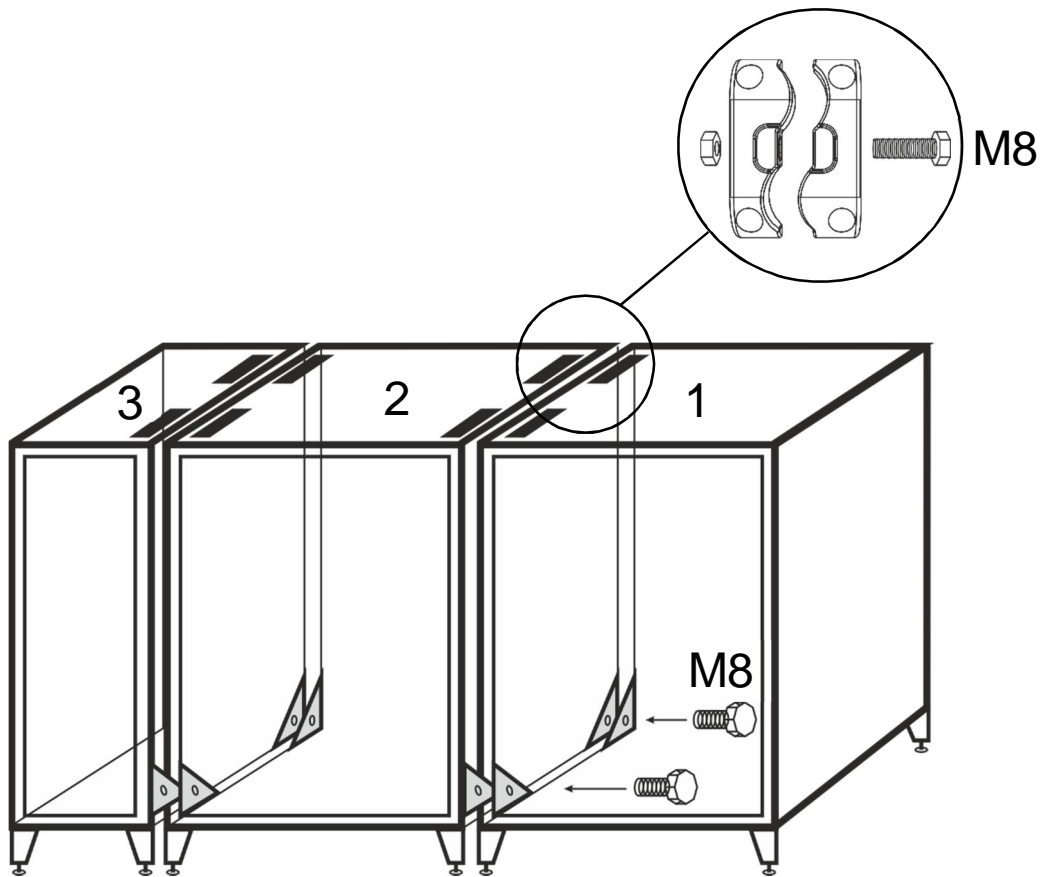
Connecting blocks 1, 2 and 3

Place the blocks next to each other and make sure they are all levelled. Adjust the stand feet as needed. Using the spirit level make sure that the blocks 1, 2 and 3 are levelled in all three axes **x**, **y** and **z**.

- ! **Open the door only after making the blocks even at least in the axes x and y. Failing to do so may cause irreversible bending of the door.**

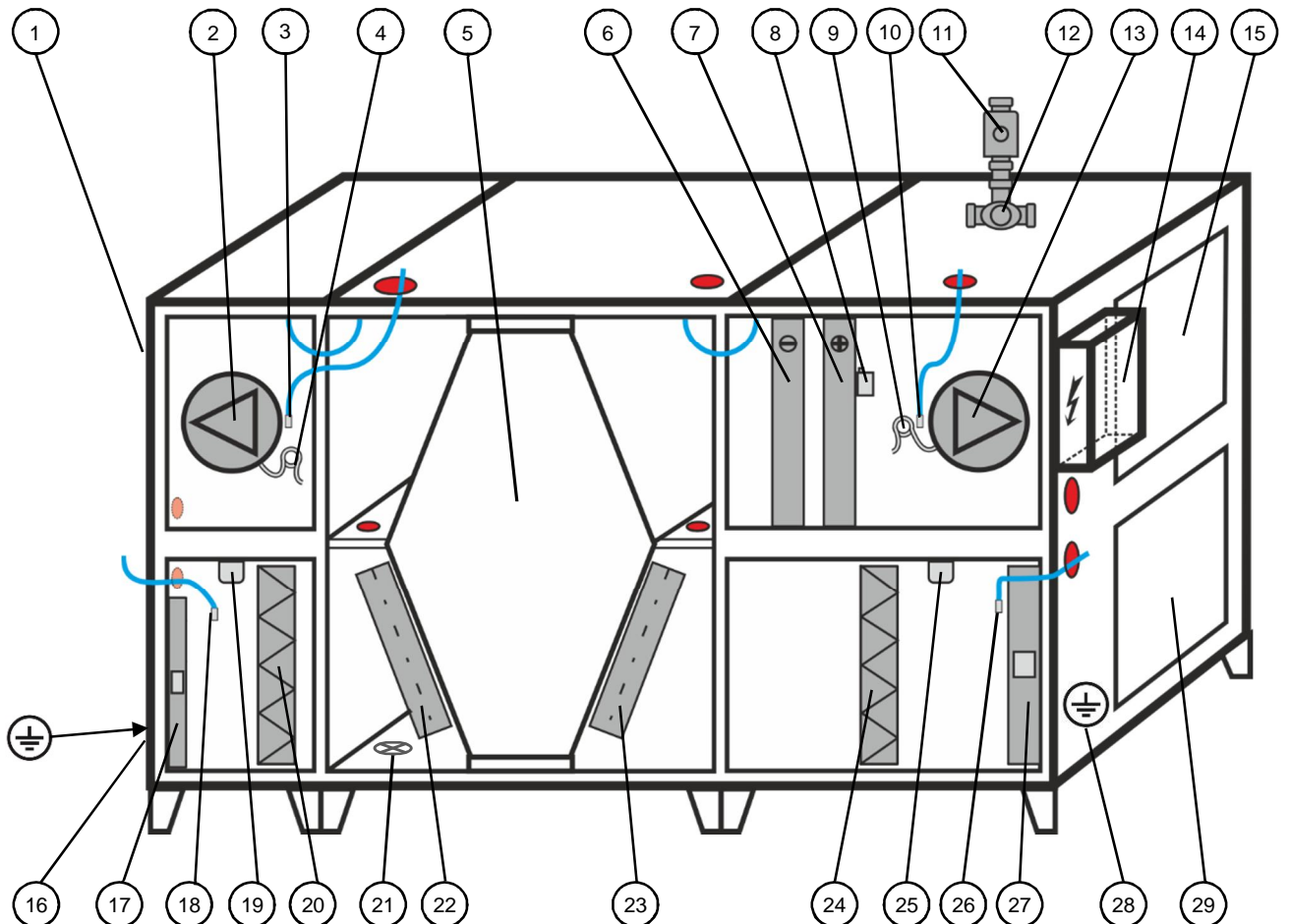


5. Tighten the lower part of blocks 1 and 2 by using M8 bolts slightly together. Use triangle members in inner corners.
6. Slightly tighten the upper part of blocks 1 and 2 using M8 bolts and nuts.



7. Gradually tighten the connections. Using the spirit level make sure that the blocks being connected remain levelled.
8. Once you connect the blocks 1 and 2 the sealing between the blocks should be adhering to the construction of blocks along the whole length of the sealed connection. Make a visual check to make sure that no light passes through the connection of the blocks.
9. Repeat the steps 5 through 8 and connect the blocks 2 a 3.
10. Using the spirit level make sure that the connected blocks still remain levelled.

2.7.2. Description of assembled unit



Key:

- | | |
|-----------------------------------------|---------------------------------------|
| 1. Exhaust (extract air) | 16. Intake (supply air) |
| 2. Exhaust fan Mi | 17. Shut-off flap (supply air) Se *) |
| 3. Temperature sensor TU2 | 18. Temperature sensor TEA |
| 4. Manometer of exhaust fan PMi *) | 19. Filter manostat PFe *) |
| 5. Heat exchanger | 20. Supply air filter |
| 6. Water cooling / direct evaporator *) | 21. Condensate drain |
| 7. Water heating *) | 22. Bypass flap SB |
| 8. Capillary thermostat TFK *) | 23. Circulation flap SC *) |
| 9. Manometer of supply fan PMe *) | 24. Exhaust air filter |
| 10. Temperature sensor TU1 | 25. Filter manostat PFi *) |
| 11. Water heater pump *) | 26. Temperature sensor |
| 12. Water heater pump mixing valve *) | 27. Shut-off flap (extract air) Si *) |
| 13. Supply fan Me | 28. Grounding point |
| 14. Junction box | 29. Intake (extract air) |
| 15. Exhaust (supply air) | |

*) Optional equipment

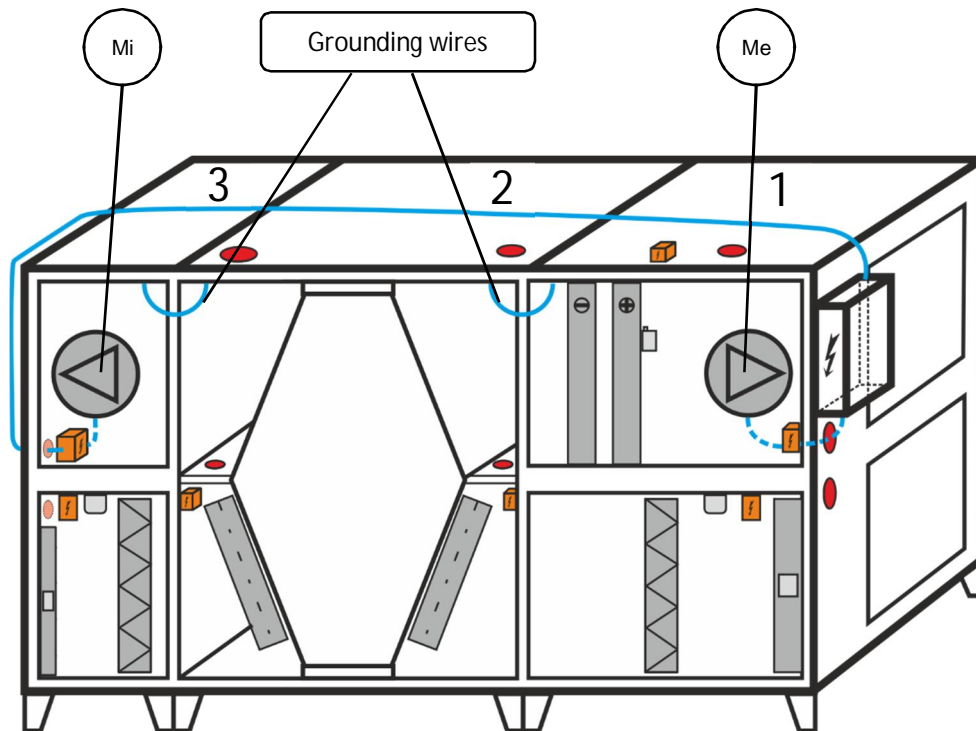
2.7.3. Connecting fans

Connected on delivery:

- Fan **Me** is connected to wiring box, leading further into junction box.
- Fan **Mi** is connected to wiring box.

Connect:

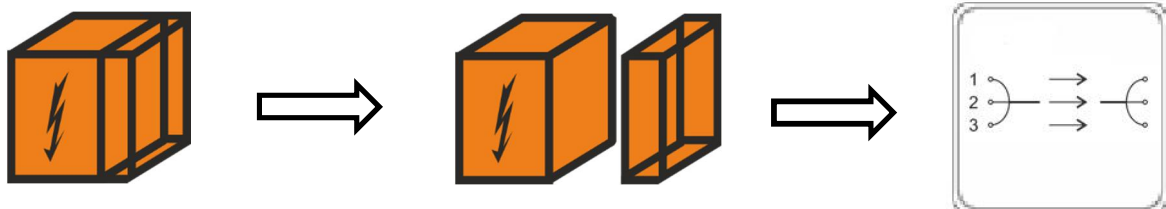
- Lead the cable **Mi** with the working voltage 400V from the junction box into the wiring box.
- Connect the blocks 1 with 2 and subsequently 2 with 3 by green-yellow grounding wires.



Connection of fans

- = cable comes connected on delivery
- = cable is to be connected

You will learn how to connect the wires in the wiring box after opening up the box.



2.7.4. Connecting temperature sensors

Connected on delivery

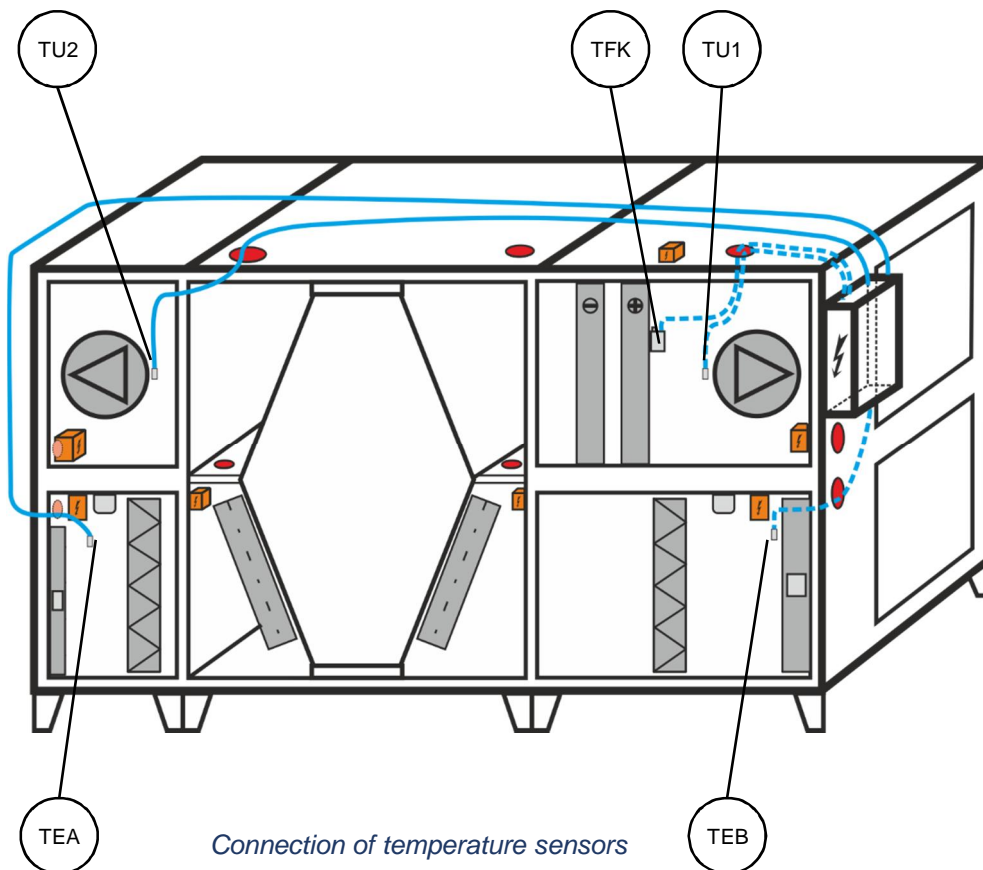
- Sensors **TEB** and **TU1** are connected to the junction box;

Connected on delivery, optional equipment

- Sensor **TFK** is connected to the junction box.

Connect

- Lead the cables **TEA** and **TU2** with temperature sensors from the junction box into their intended position;



2.7.5. Connecting pressure sensors

Connected on delivery

- Manostat **PFi** is connected to the wiring box in the compartment i1. The wiring box is connected to the junction box;
- Manostat **PFe** is connected to the wiring box.

Connected on delivery, optional equipment

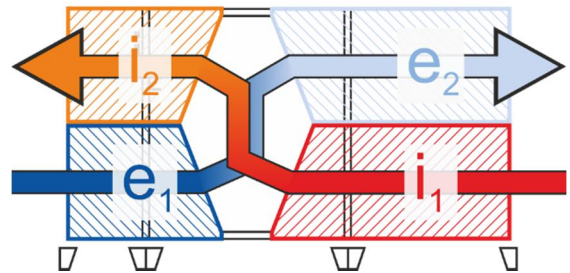
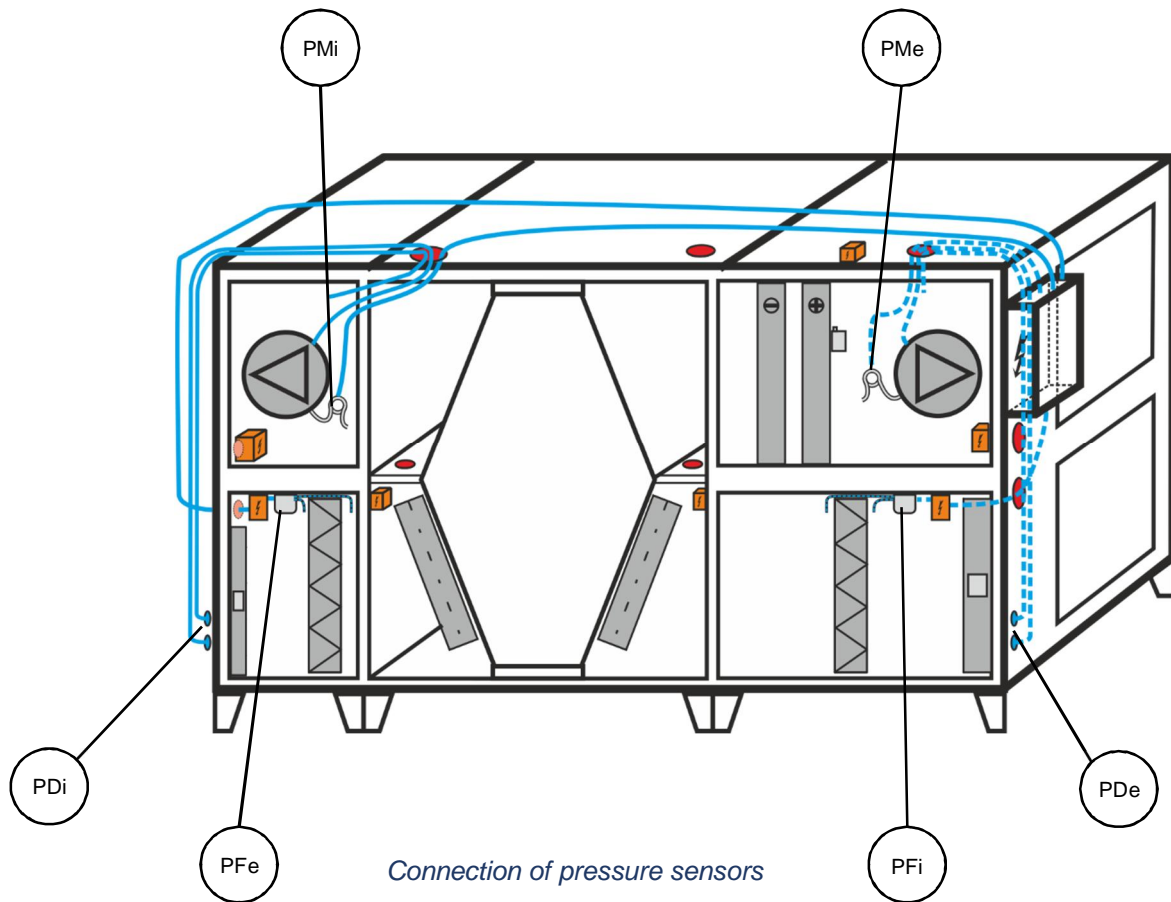
- Manometer cable **PMe** is connected to the junction box;
- Pressure measurement point **PDi** measuring the pressure increase of the fan **Mi** is installed on the left side of the unit. Pressure measurement hoses are located on the top side of the block 3.
- Pressure measurement point **PDe** measuring the pressure increase of the fan **Me** is installed on the right side of the unit. Hoses leading from the pressure measurement point are installed.

Connect

- Lead the cable of manostat **PFe** from the junction box to the wiring box in the compartment e1.

Connect, optional equipment

- Lead the cable **PMi** from the junction box to the manometer **PMi**;
- Lead the hoses of the pressure measurement point **PDi** from the top side of the compartment C through a feed-through. The shorter hose ends up after going through the feed-through. Lead the longer hose to the nozzle of the fan **Mi**.



2.7.6. Connecting servo motors

Connected on delivery

- By-pass damper (**SB**) servo motor is connected to the wiring box.

Connected on delivery, optional equipment

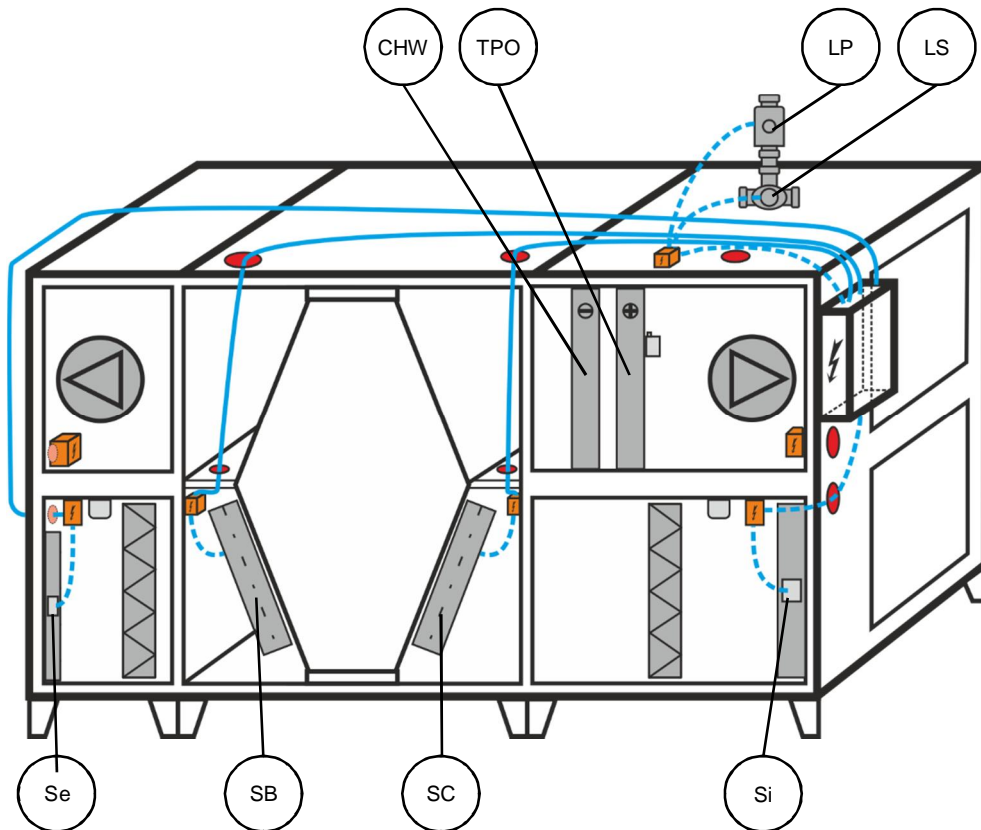
- The circuit of cooler **CHW** is connected to the hydraulic kit.
- The circuit of heater **TPO** is connected to the hydraulic kit.
- Hydraulic kit **LS** controlling the chiller or heater is connected to the junction box via a wiring box;
- Water pump **LP** in the heating circuit is connected to the junction box via a wiring box ;
- Cable actuating the flap **Si** is connected up to the junction box;
- Cable actuating the flap **Se** is connected to the wiring box;

Connect:

- Lead the cable actuating by-pass damper (**SB**) from the junction box to wiring box.

Connect, optional equipment

- Lead the cable actuating the circulation flap (**SC**) from the junction box to the wiring box;
- Lead the cable actuating the supply air flap **Se** from the junction box to the wiring box.

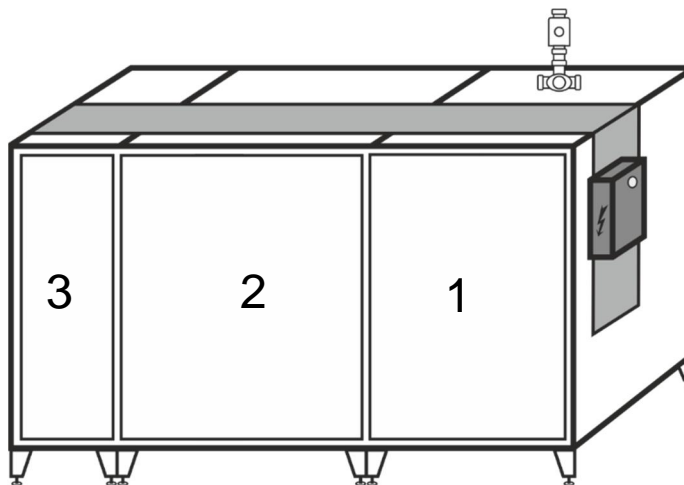


Connection of servo motors and regulation

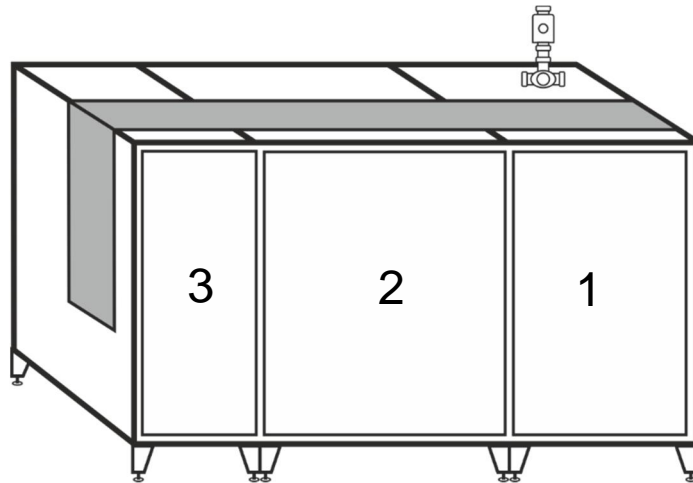
2.7.7. Covering the slots

Cover the slots where cables lead from the junction box. Use cover metal sheets and 4mm rivets supplied along with the unit. Cover the connected junction box.

In case the wires of unit blocks are connected using connectors (Chapter 7) the slot above the block No. 2 shall remain uncovered.



Unit with covered slots, view from the right side



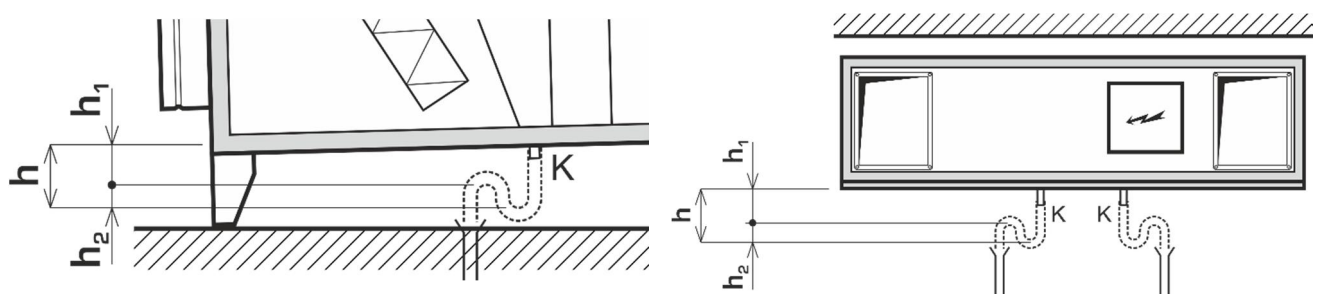
Unit with covered slots, view from the left side

2.8. Ductwork connections

- Connect the ductwork according to the design documentation. Make sure that the air exhausted at i2 does not return back to the fresh air supply e1.
- A straight duct being at least 1 m long must be firmly connected to all ports to achieve an equal air speed profile is throughout the whole port's cross-section area.
- A duct being at least 2 m long must be always connected to fan outlets to prevent injury caused by the fan's impeller. This duct must be connected in such a way that it can be dismantled only by using tools.

2.9. Condensate drain connection

1. Connect a pipe to each condensate drain outlet and shape traps with dimensions as in the picture below. Sufficiently fix the trap's shape.
2. Connect a pipe of the same or larger diameter to each trap and connect the pipes to a sewer.
3. Make sure the whole pipe run (including inside of the equipment) is free of foreign materials and it is sloped correctly.
4. Fill in the traps with water. Make sure the traps remain flooded regularly; inspect the traps each time you replace air filters in the unit. The traps must stay permanently flooded with water.



Condensate drain connection

$$h = 1,5 \frac{\Delta p}{10} + 100 \text{ [mm]}$$

$$h_1 = \frac{\Delta p}{10} + 50 \text{ [mm]}$$

$$h_2 = \frac{\Delta p}{2 \cdot 10} + 50 \text{ [mm]}$$

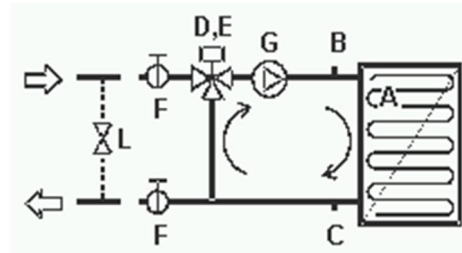
Δp – maximum positive / negative working pressure in the compartment of the unit. The height of trap $h = 15\text{-}20\text{cm}$ is sufficient for the vast majority of installations.

- ! Each condensate drain must be connected to its own trap!
- ! The number of condensate drains differs depending on the model of the unit.

2.10. Connecting hot-water heating coil to a heating water supply

When connecting the water heating coil follow the instructions below:

1. Maximum allowable heating medium temperature is 110°C. The max. operating pressure is 1.0 MPa.
2. To ensure correct performance of the heating coil hydraulic kit, fit the system with a pump with sufficient performance that covers the entire pressure drop. The pump supplied with the hydraulic kit is only designed to cover pressure drop of the water heating coil!
3. If the equipment is not equipped with a shutoff damper on outside air intake (e1) put a tight shutoff damper in the outside air inlet duct (we recommend a type with a spring return actuator, closing on power interruption).
4. Fit a strainer in the equipment heating system inlet pipe.
5. When using a 3-way mixing, we recommend installing a short circuit according to the diagram in Selection software (Operation point > Water heating coil).



A: frost thermostat; B: drain valve; C: drain valve; D: mixing valve; E: actuator; F: ball valve; G, pump L, short-circuit bypass

When connecting the pre-heater, observe the following principles:

1. The maximum permitted temperature of the heating fluid is 110°C and operating pressure is up to 1.0 MPa.
2. Antifreeze must be used for circulation in all units fitted with the thermal fluid air pre-heater.
3. The heating system must have a sludge filter fitted in the inlet to the unit.
4. When a 3-way mixing manifold is used, we recommend installing a short-circuit by-pass.

Fluid pre-heater power control:

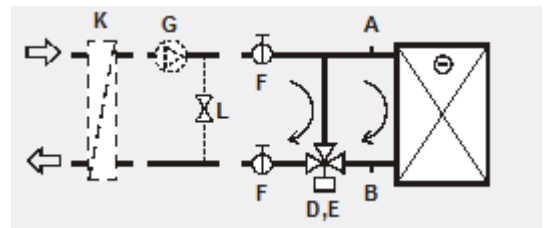
1. The pre-heater is used for protecting heat recovery exchangers from freezing.
2. The RD5 control system has a power control output.
3. Pre-heater control is continuous.
4. Pre-heaters are installed by service technicians.

! For the wiring diagram see the selection software (Controls > Wiring diagram) or service documentation.

2.11. Connecting chilled-water cooling coil to a chilled water supply

When connecting the water cooling coil follow the instructions below:

1. Fill the water cooling coil with a non-freezing mixture with sufficient low-temperature resistance. Or drain the coil for time period with risk of temperatures below +3°C.
2. The max. operating pressure is 1.0 MPa!
3. Fit a strainer in the equipment chilled water system inlet pipe.



A: strainer; B: strainer; D: 3-way ball tap; E: servo drive; F: ball valve; G: pump; L: short-circuit by-pass; K: water / ethylene glycol coil

2.12. Connecting direct-expansion cooling coil

When connecting the DX cooling coil follow instructions of your supplier of condensing unit and refrigeration system.

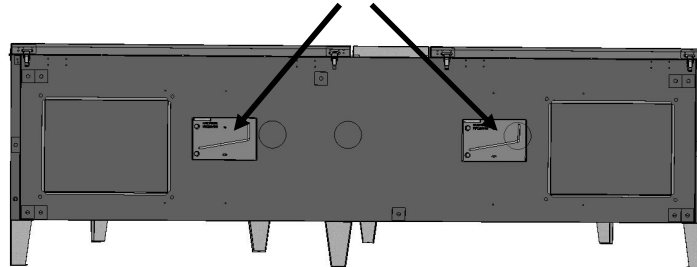
2.13. Installation and connection of manometers for constant flow and constant pressure feature

When installing the accessory mechanically and connecting its electronics please follow the guide enclosed to this optional accessory.

2.14. Installation and connection of inclined manometers

If the appliance is supplied without liquid manometers for measuring the pressure difference of air filters, place each manometer on a suitable vertical surface near the pressure measurement points (the maximum length of connecting hoses is 1 meter). Suitable location is indicated in the production by a sunk slot where drilling can begin. Make sure that the location of manometers enables regular inspection of values to be measured. Adjust manometers in horizontal position and secure them with self-tapping screws provided.

Installation of manometers (floor standing flat unit):

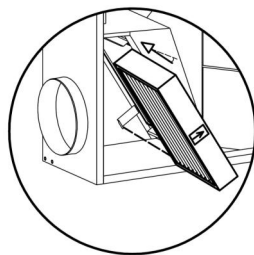


1. Connect manometers using hoses with the pressure measurement points on the casing of the appliance. Connect the hose on the top of the manometer and lead it to the plastic bushing on the casing of the appliance. The hose must always connect two identical connecting points marked with "+" or "-" (may not be combined). Make sure that hoses from only one filter are connected to each single manometer!
2. Stick a relevant label supplied together with accompanying documentation near each manometer. The label contains information about each air filter. Make sure that the location of the label enables regular inspection of values to be measured.
3. Fully unscrew the rotation knob for setting zero on the scale (bottom knob marked "+") and then screw it approximately two full turns back to allow for setting in both directions.
4. Unscrew the "FILL" plug (top knob) and start filling the appliance with measurement fluid (part of delivery) until you can see the fluid near zero on the scale. Use the bottom knob to accurately set the zero value on the scale. Screw the top filling plug back.

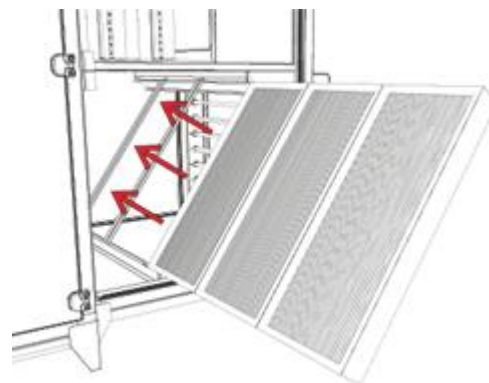
- ! After connecting manometers do not tilt the appliance or door if manometers are located there!
- Danger of measurement fluid leakage.

2.15. Fitting air filters

1. If the appliance was supplied with separately packed filter cartridges, unpack the cartridges and check their condition. If they are damaged or stained, replace them. Spare filter cartridges may be ordered from the manufacturer. Please include in the order the ordering number of the cartridge (the number is shown on the identification plate).
2. Insert undamaged and clean cartridges into the guides. To access filter in a semicompact unit open or pull away the door behind which the filter is located.



Fitting filter in compact unit



Fitting filter in semicompact unit

3. During insertion make sure that the identification plate of each cartridge faces towards you (i.e. towards the door of the appliance) and the arrow indicating air flow through the cartridge always points towards the heat exchanger!
4. Make sure that each section (supply, exhaust) contains filter cartridges with the appropriate filtration class as shown on the identification plate of the appliance.
5. Record the date when the filters were replaced, e.g. in a book of unit's operation.

- ! Use only original filtration cartridges! If different cartridges are used, the manufacturer cannot guarantee their proper functionality!

3. Electrical wiring

3.1. General rules

1. The electrical wiring in the equipment observes valid standards for electrical connections to the TN-C, TN-S, TN-C, S networks. Only a qualified person possessing valid service certificate issued by Airflow Developments Ltd. may carry out the electrical wiring work. The equipment is fitted with terminals for external common grounding.
2. Wiring diagram of the whole air-handling system is attached as an inseparable supplement of documentation attached to the unit. Installation guides and wiring diagrams of optional accessories are included in the documentation of these accessories.
3. A circuit-disconnecting device (a service switch) with the distance of disconnecting contacts of at least 3 mm at all poles must be placed into the power supply to the equipment. This disconnecting device must be located near the equipment. A standard circuit-braking device (supplied with the equipment) may be used as such a device if the electrical panel is located in reachable distance from the equipment.
4. The way of commissioning may differ depending on the regulation. Commissioning is performed by a trained technician based on separate documentation.
5. You will find the description of the control in a separate documentation called „Regulation control“.

- ! The unit shall be protected using a breaker with characteristics "C"
- ! In case of using additional overcurrent protection against accidental direct or indirect contact, it is necessary to use a special circuit breaker designed for frequency inverters and switching sources. It is a protector being sensitive to alternating and pulse DC residual currents, resistant to current surges 5 kA.

4. Commissioning

4.1. Safety rules

Ensure that the following is done prior to commissioning the equipment:

- An initial electrical audit according to valid standards. A written report must exist about this audit.
- Connecting ducts to equipment's air inlet and outlet ports according to instructions stated in previous paragraphs.
- Filling water to condensate drain trap.
- Fill the heating circuit including the hot water heater and regulatory coil (including external hot water heaters in ducts equipped with regulatory coils) with heating fluid even when operating the unit out of the normal heating period. When filling the circuit, closing fitting openings on the heater input and output for heating fluid must be checked and air locks bled from the system
- Checking rotation direction of each fan impeller. In case of opposite direction switch phases.
- Checking current consumption of each fan at all speed steps. The current should not exceed the max. value on the fan's label. In case of exceeding the max. value properly decrease the air volume flow in the ductwork.
- Appliances with hot water heaters (including external hot water heaters in ducts equipped with regulatory coils) must be permanently connected to the electricity supply to ensure antifreeze protection of the hot water heater. In case of longer power cuts the heating fluid in both the heater and the coil must be discharged. Discharging should be carried out using compressed air; do not rely simply on gravity drainage!

4.2. Hygienic instructions for the appliance to comply with VDI 6022

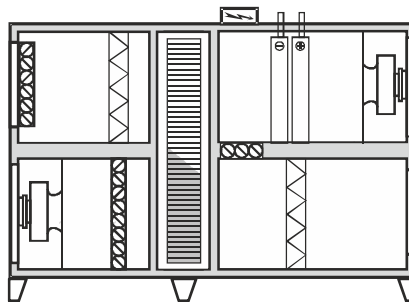
- Ü Before commissioning the appliance must be thoroughly cleaned; in case of stricter hygienic requirements wiping disinfection must be carried out.
- Ü After disinfecting make sure that no toxicologically suspicious or odour-active substances enter the air to be supplied!
- Ü In case of stricter hygienic requirements the measurement of pathogen concentration must be carried out.
- Ü The appliance must not be operated without air filters.
- Ü The permanent low-frequency noise level (10 to 100 Hz) generated by the appliance may not exceed the audibility threshold. The value to be applied as guidance is that the low-frequency level of acoustic pressure LCF should not exceed the value of acoustic pressure LAF by more than 20 dB (see DIN 45680). In case of doubt a frequency analysis of the low-frequency value of acoustic pressure must be carried out in order to make it possible to identify and suppress the source of the narrow band of the faulty zone.
- Ü Suitably record the date of your appliance's commissioning, e.g. in the plant log!

5. Access to the unit using the internet


Ventilation units Multi, MultiEco and Basic equipped with control system RD5 ¹⁾ can also be controlled using a web browser. This allows the user to do the following, either from a local network on site or through the Internet:

- Change user setting of the unit;
- Watch the unit's operational parameters including error messages;
- Browse the unit's operational history;
- Set e-mail notification with Alarm or Warning messages for up to three e-mail addresses.

You will find more information in the Guide on controlling ventilation units Duplexvent equipped with regulation RD5.



6. Package disposal

Materials marked with the symbol  are recyclable. Put these materials in the respective bins in order to be recycled.

PAP – corrugated cardboard
FOR – wood

PE – polyethylene
PS – polystyrene

PP – polypropylene

Please leave materials marked with the  symbol at the community place used for waste disposal!

Disused ventilation unit sold on the EU market can be recycled in compliance with the regulation 2012/19/EU. For further information please contact your distributor.



¹⁾ Information regarding the control module your unit contains is shown on the unit's name plate on the Controls / Specification line. The information is also included in the unit's Technical Specification.

7. Connecting blocks of semicompact units using connectors, annex

The chapter describes the way of connecting wiring between blocks of semicompact units by using connectors. It is an alternative to connecting the wires via wiring boxes (see Chapters 2.7.3 to 2.7.6).

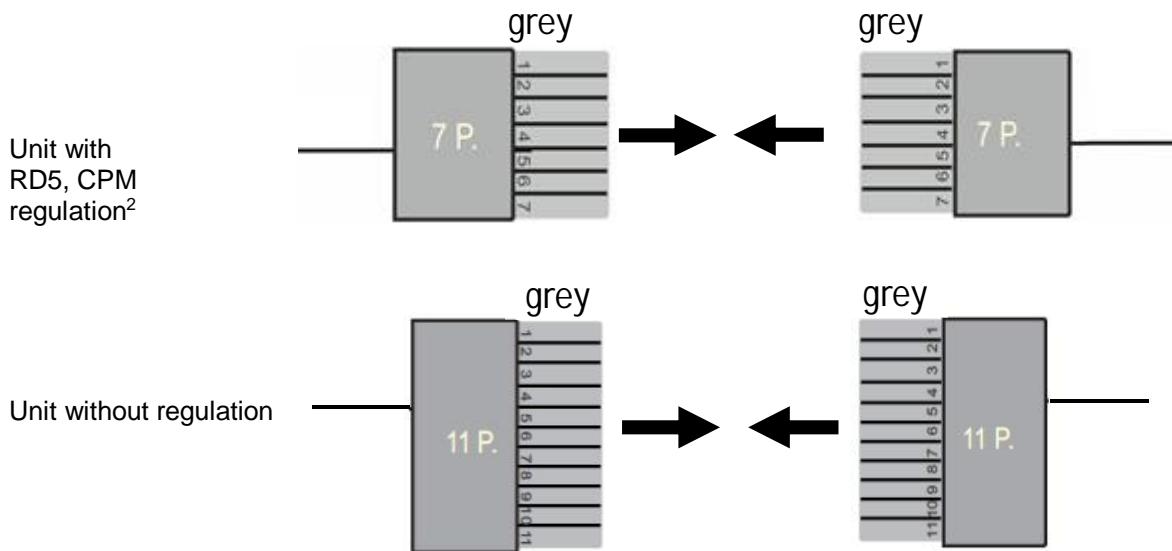
7.1. Connecting fans

Connected on delivery:

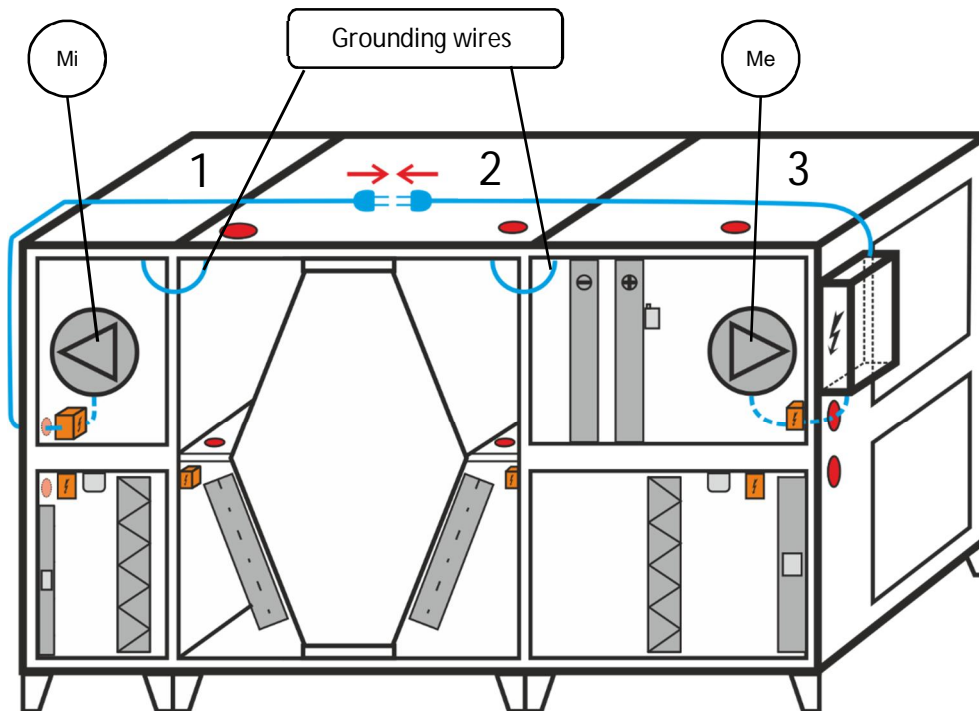
- Fan **Me** is connected up to the junction box.
- Fan **Mi** is connected to the connector.

Connect:

- Connect grey connector above the middle block.



- Connect the blocks 1 with 2 and subsequently 2 with 3 by green-yellow grounding wires.



Connection of fans

² Information regarding the control module your unit contains is shown on the unit's name plate on the Controls / Specification line. The information is also included in the unit's Technical Specification.

7.2. Connecting temperature sensors and condensate drain heating

Connected on delivery:

- Sensors **TEB** and **TU1** are connected up to the junction box;

Connected on delivery, optional equipment:

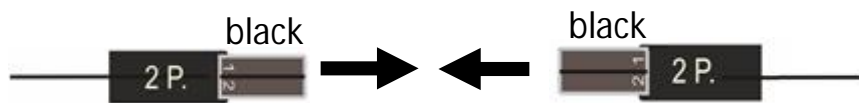
- Sensor **TFK** is completely connected up to the junction box.
- Cable powering the condensate heating **HC** is connected to the connector.


Connect:

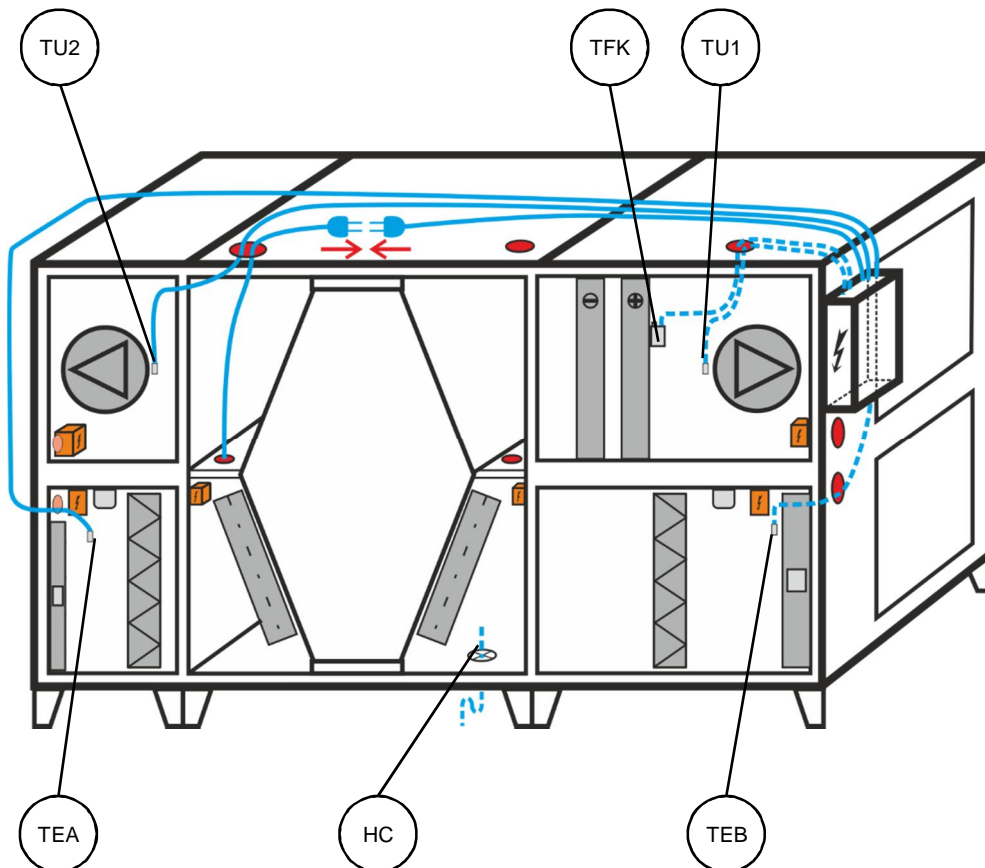
- Lead the cables **TEA** and **TU2** with temperature sensors from the junction box into their intended position;

Connect, optional equipment:

- Connect the black connector powering the **HC**.



 In units without regulation, temperature sensors are not included in the delivery package.



Connection of temperature sensors and condensate drain heating

7.3. Connecting pressure sensors

Connected:

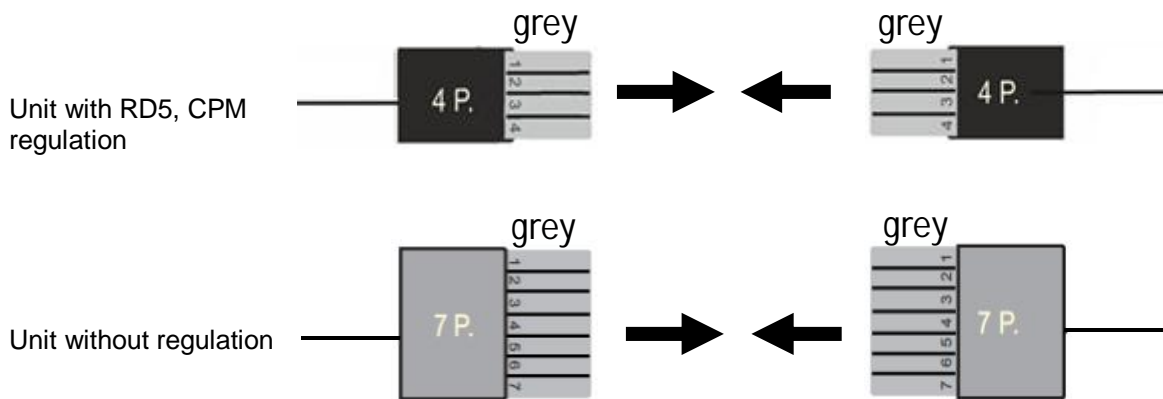
- Manostat **PFi** is connected up to the junction box;
- Manostat **PFe** is connected to the connector.

Connected, optional equipment:

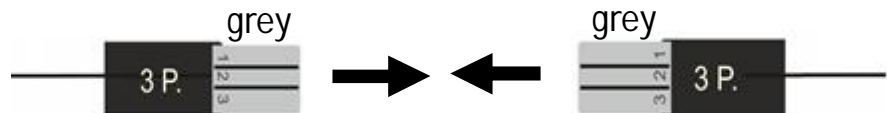
- Manometer cable **PMe** is connected up to the junction box;
- Pressure measurement point **PDi** measuring the pressure increase of the fan **Mi** is installed on the left side of the unit. Pressure measurement hoses are located on the top side of the block 3.
- Pressure measurement point **PDe** measuring the pressure increase of the fan **Me** is installed on the right side of the unit. Hoses leading from the pressure measurement point are installed.

Connect, optional equipment:

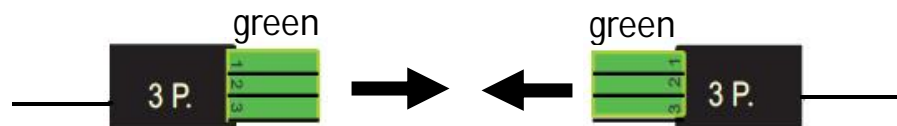
- Connect grey connector which powers manostat **PFe**. The same connector powers also the servo drive of the flap **Se**.

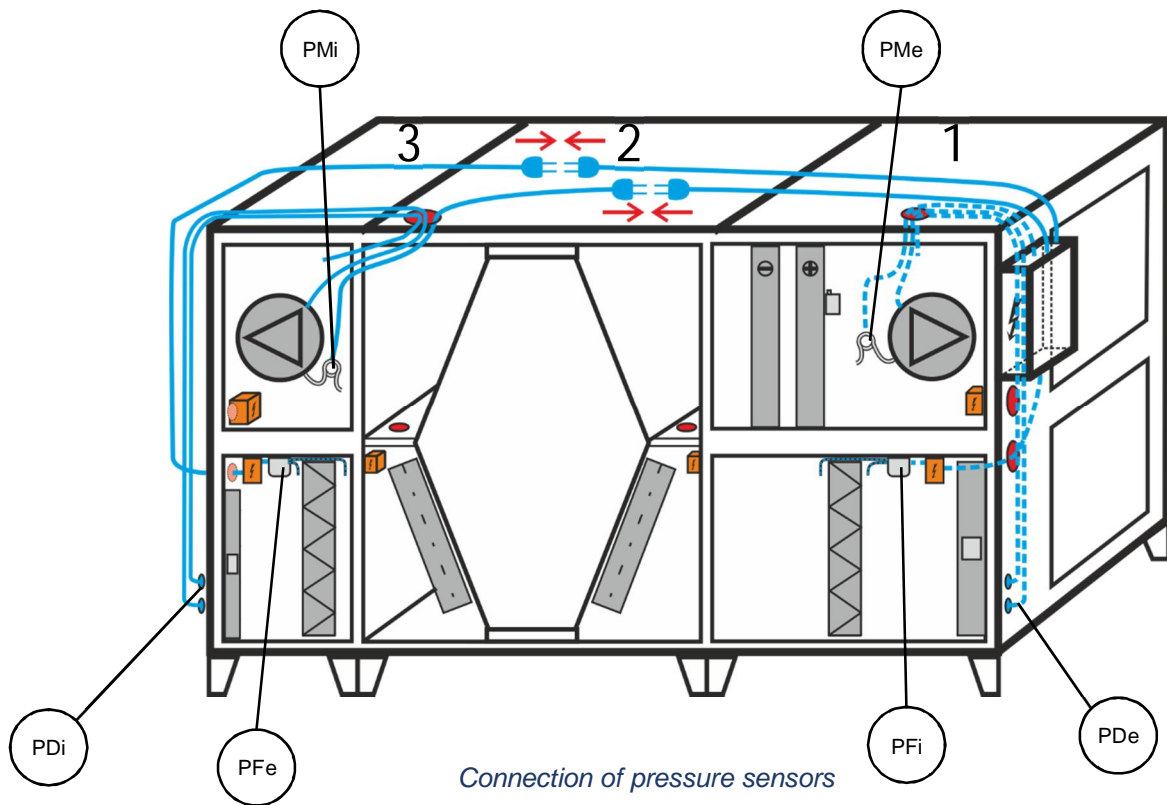


- Connect grey connector which powers manometer **PMi**. Available only for units with RD5 regulation.



- Lead the hoses of the pressure measurement point **PDi** folded on the top side of the block 3 through a feed-through. The shorter hose ends up after going through the feed-through. Lead the longer hose to the nozzle of the fan **Mi**.
- Connect green connector which powers manostat **PFR**; manostat PFR monitors whether heat recovery core is not freezing over. Available only for units without regulation.





7.4. Connecting servo motors

Connected:

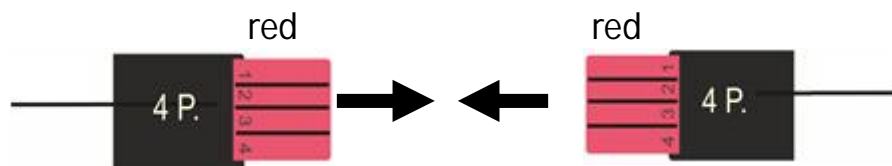
- Cable powering the by-pass flap (**SB**) is connected to the connector.

Connected, optional equipment

- Circulation damper (**SC**) servo motor is connected to the connector.
- The circuit of cooler **CHW** is connected to the hydraulic kit.
- The circuit of heater **TPO** is connected to the hydraulic kit.
- Hydraulic kit **LS** controlling the chiller or heater is located on the upper side of the unit. The kit is completely connected up to the junction box;
- Water pump **LP** in the heating circuit is located on the upper side of the unit. The kit is completely connected up to the junction box;
- Shut-off flap **Si** is connected up to the junction box;
- Shut-off flap **Se** is connected to the connector.

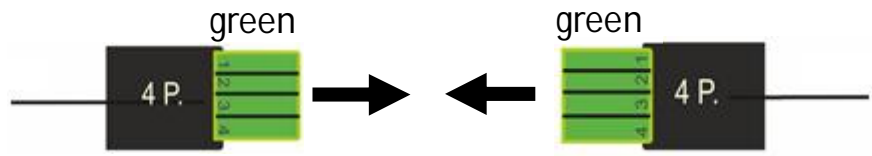
Connect

- Connect connector powering the by-pass flap (**SB**).

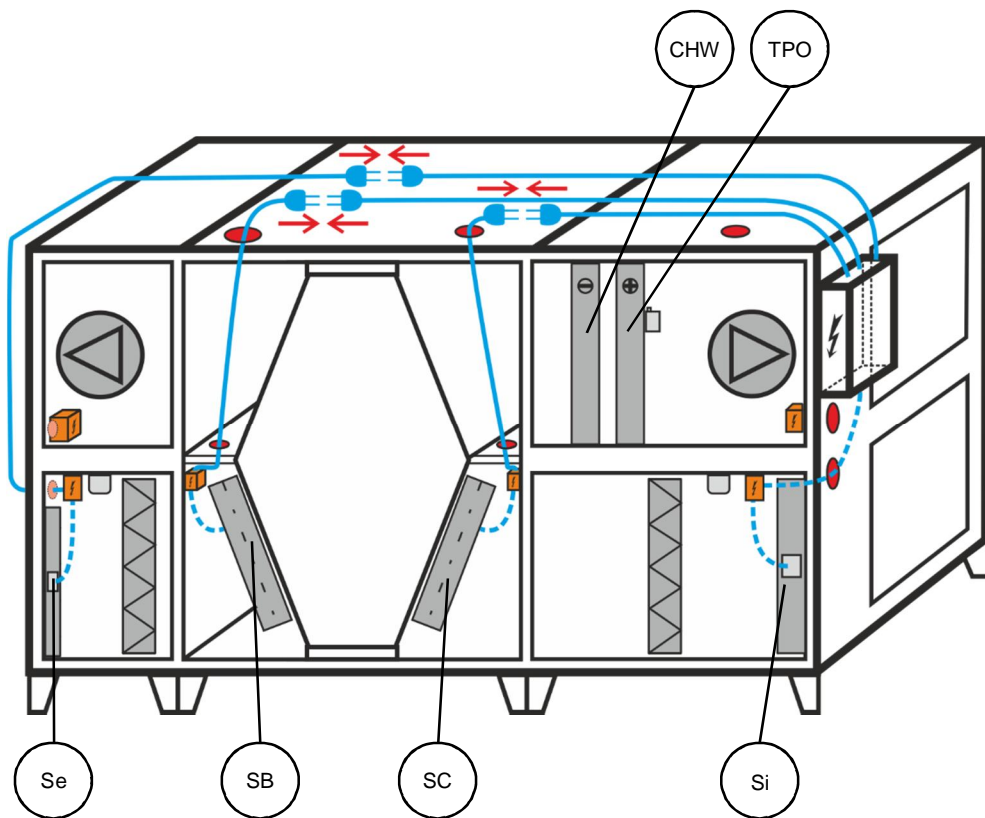
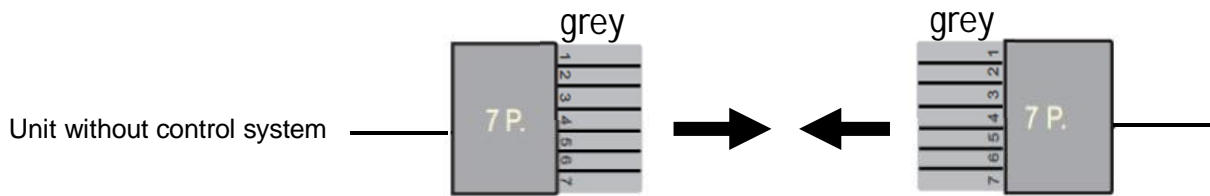


Connect, optional equipment:

- Connect connector powering the circulation flap (**SC**). Available only for units equipped by RD5 regulation or for units without regulation.



- Connect connector powering the supply air flap **Se**; the same connector powers also the manostat **PFe**.



Connection of servo motors and regulation, front view

Call: 01494 525252

Visit: airflow.com



Airflow Developments Limited
Aidelle House, Lancaster Road,
Cressex Business Park,
High Wycombe, Buckinghamshire,
United Kingdom, HP12 3QP

E-mail: info@airflow.com
Telephone: +44 (0) 1494 525252

airflow.com

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