



Installation, use and maintenance manual

for

**Duplexvent Rotary
DV1500-DV15000 (indoor version)**

**Duplexvent Rotary Roof
DV1500-DV15000 (outdoor version)**

Installation, use and maintenance manual

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; applies only to appliances manufactured in compliance with the hygienic requirements of Regulation VDI 6022 (indicated 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 Before putting the appliance into operation, the acceptance test (see VDI2079 and DIN EN V 12599) of the entire HVAC system where the appliance is integrated must be carried out. The test must include the inspection of hygienic requirements as per Regulation VDI 6022 and must be documented. The operator must be able to provide the acceptance test report at any time. Otherwise the manufacturer may not guarantee compliance with hygienic requirement.

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.

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1 Storage and transport

- The appliance may only be stored in dry, covered places with ambient temperature between -25 °C and +55 °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 the parts carefully if needed.
- The equipment must contain no operating fluids (e.g. water in heating or cooling coil) during the storage and transport.
- During transportation the appliance must be protected against mechanical damage and leaking water and 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 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.

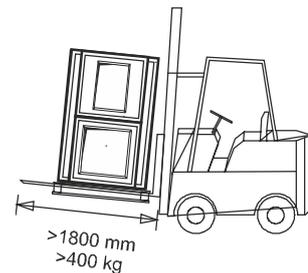
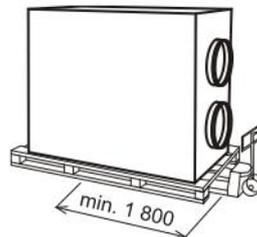
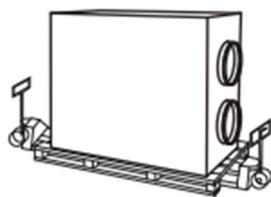
! Use only appropriate lifting machines such as fork lift truck, crane with a lifting bar, pallet truck.

! It is necessary to secure the unit in a stable position prior to any manipulation or transport of the unit. The unit must be secured to prevent the unit from falling down or tipping over.

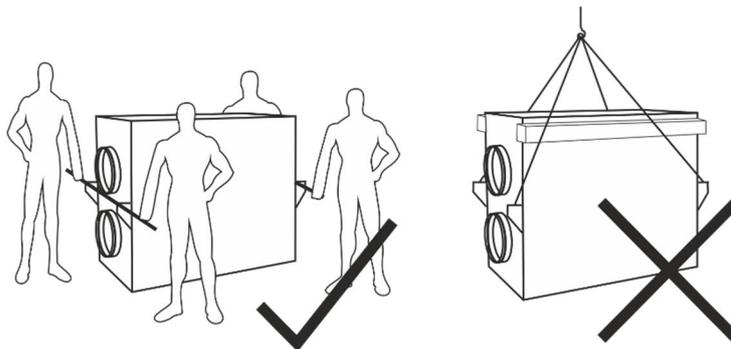
1.1 Transport of compact units

Compact units are understood as units that are placed in one compact casing: 1500 – 5000 Rotary(-N).

The only manipulation methods allowed:



Minimum fork distance 800mm



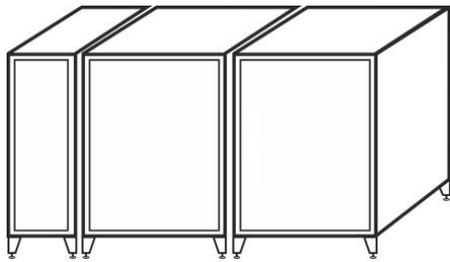
! Handles on the side of the device are intended for shipping and manipulation with units only!

Lift the units as one compact piece. Tie up the units from beneath before lifting them. The units are equipped with holes through which the rope can lead.

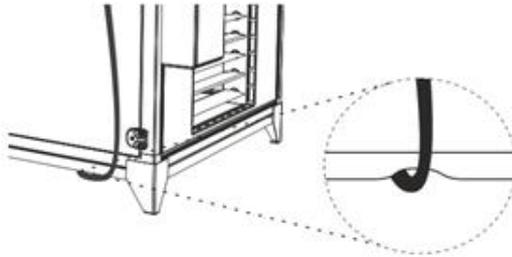
1.2 Transport of semicompact units

Semicompact units consist of three blocks that form the unit once they are connected together. This applies on units 8000-15000 Rotary(-N).

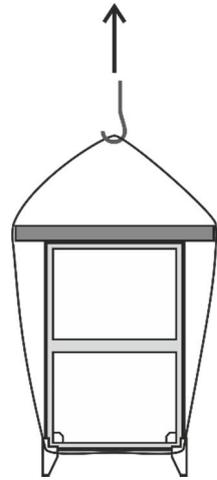
Lift the units in blocks, one after another. The blocks of units are equipped with rabbets where the rope can lead. Tie up each block from underneath and use bars before lifting the blocks.



Blocks of semicompact unit



Rabbet for leading the rope when tying up the block from underneath



! The bars must be wider than the unit itself.

2 Safety and hygienic instructions

2.1 Safety instructions

- Environment of unit installation
 - Indoor version (Rotary): temperature between +5°C and +55°C, relative humidity of air up to 60%(60% relative humidity at 20°C).
 - Outdoor version (Rotary-N): temperature between -25°C and +55°C, relative humidity is not limited.
- Protection of the unit's internal components from getting cold when the unit is not working is to be provided by a mechanical backflow damper (or by a damper with a servo drive) in i2 (EHA) ducting.
- The appliance may be operated within the temperature range:
 - Fresh air supply (ODA) from -25°C to +40°C, relative humidity is not limited (except for the conditions in the Chapter 2.2 bullet point 2).
 - Extract stale air (ETA) from +10°C to +40°C and relative humidity up to 80%.
- The appliance must be operated 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.
- Make sure that casing of the unit does not get damaged or deformed.
- After placing the equipment make sure its position is stable; secure the equipment against possible movement.
- Follow all work safety rules during the manipulation and installation work (including safety rules for work in heights and lifting weights), 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!
 - May only be operated if the heating system including the hot water heater and control set are filled with a heating medium, air bled and connected to a source of warm water; 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 remaining heating medium must be drained; the appliance must be dried properly and disconnected from power supply.

2.1.1 Prior to installation please check:

- Completeness of the delivery;
- The delivered unit has not been damaged in transport, manipulation and storage;
- The heat exchanger can revolve (check by hand); applies to exchanger delivered as assembled;
- Parameters of electricity supply network;
- Main power parameters that are needed for the unit to operate as intended;

All deviations from the standard and defects must always be remedied prior to installing the unit.

2.1.2 Prior to the first putting into operation please check:

- The tension of the belt;
- Disassemble fixing elements in case the rotary wheel is secured for transport;
- Make sure that rotating and static parts being adjoin are clean (clean these thoroughly especially from metal shavings and wooden sawdust);
- The rotary wheel can rotate freely;
- The sealing elements of rotary wheel are placed correctly (brushes, felt);
- Connections to the air handling, air ducts or building construction;
- Electrical installation;
- The overcurrent protection of electromotor must be set to the value that is lower than the value of the current stated on the label.

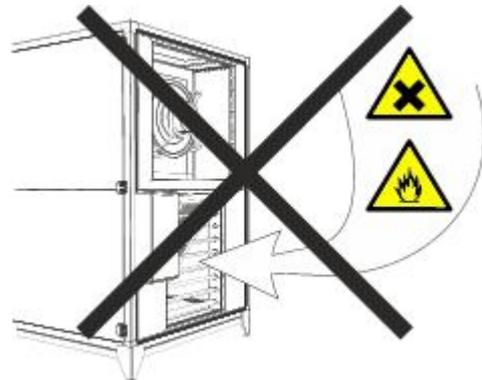
2.1.3 When launching the unit for the first time please check:

- The rotary wheel rotates in correct direction; correct direction of rotation is indicated by an arrow placed on the heat exchanger;
- Current consumption (it must not exceed the value stated on the label of electro motor).

When these conditions are met the heat exchanger can be put into trial operation.

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 available as 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 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



The unit must not suck pollutants

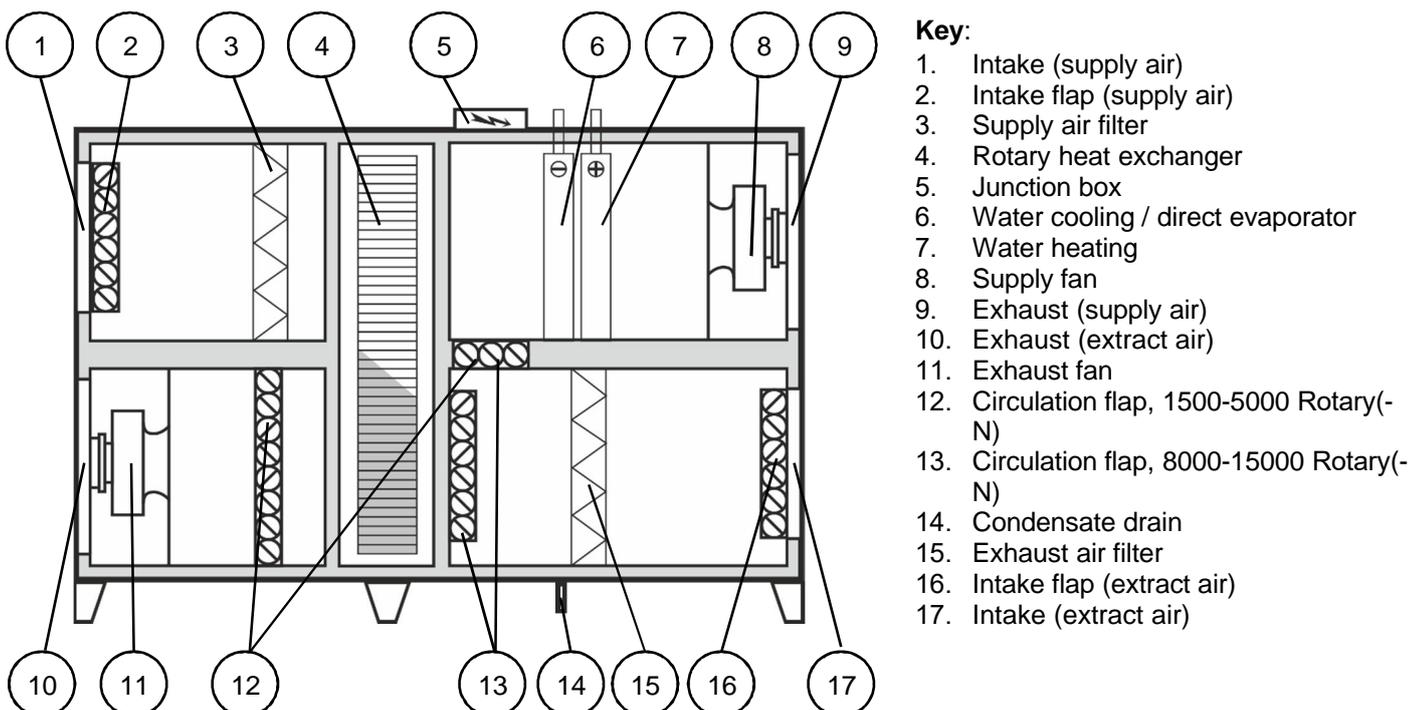
such a way so that positive pressure is on the supply side in comparison to the exhaust side. This must be ensured under all operating conditions of the system. For more details see EN 13779.

- 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 air cannot flow freely through the system. We recommend using shut-off dampers available as an accessory. It is the responsibility of the planner / specialist installation company 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% 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 a Class F7 / ePM1 50% filter in the duct at the e2/SUP outlet from the unit. Note: M5 / ePM10 50% and F7 / ePM1 55% filters are available as 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.

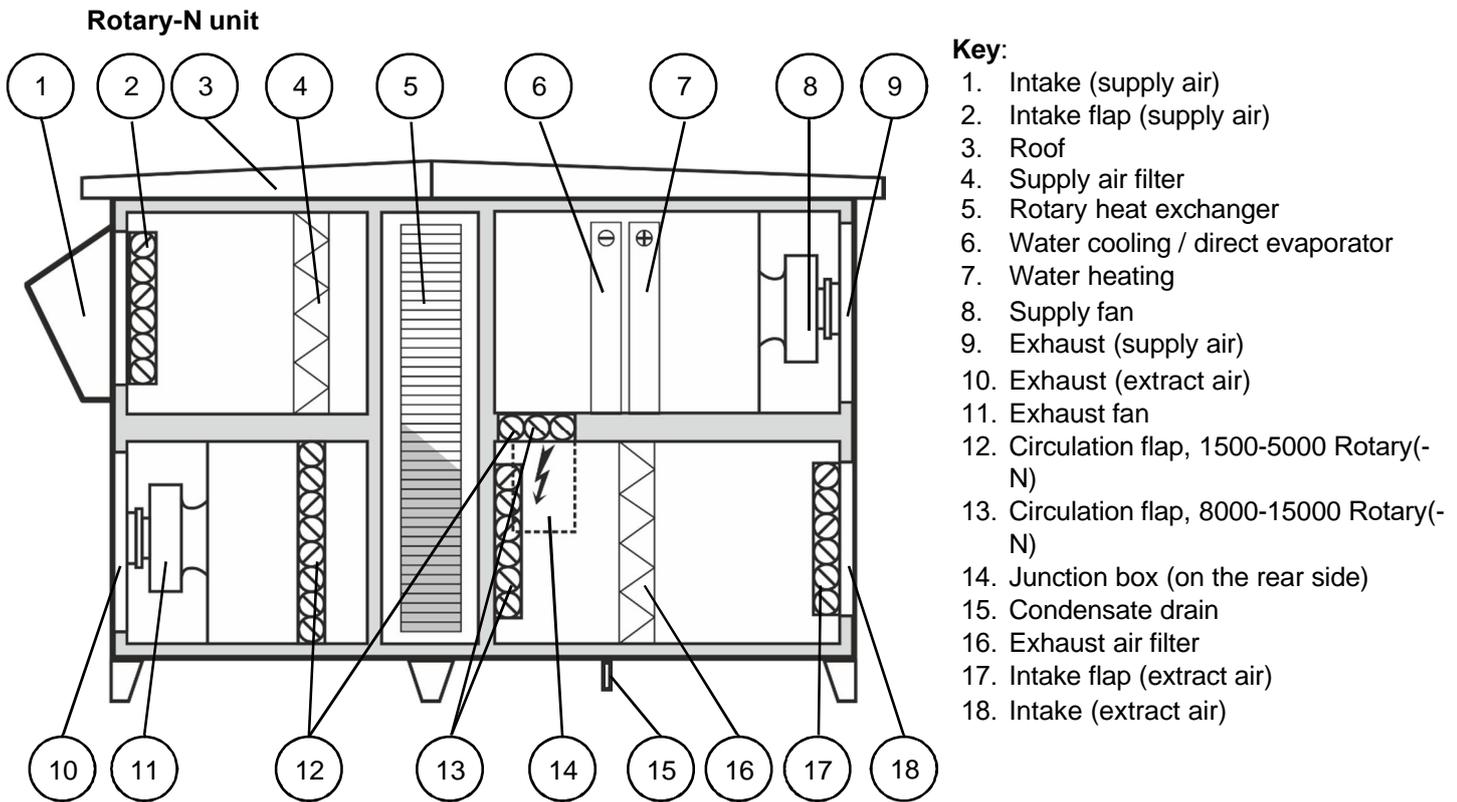
2.3 Description of units Rotary and Rotary-N

Duplexvent Rotary and Rotary-N represent a new generation of ventilation units with rotary heat exchanger. Units Rotary (indoor version) and Rotary-N (outdoor version) are used for comfortable ventilation, hot-air heating and cooling in small and large facilities, shop floors, stores, schools, restaurants, shops, sports and industrial halls. Units Rotary and Rotary-N meet requirements of Commission Regulation (EU) No. 1253/2014 (Ecodesign) in the defined working area.

Rotary unit



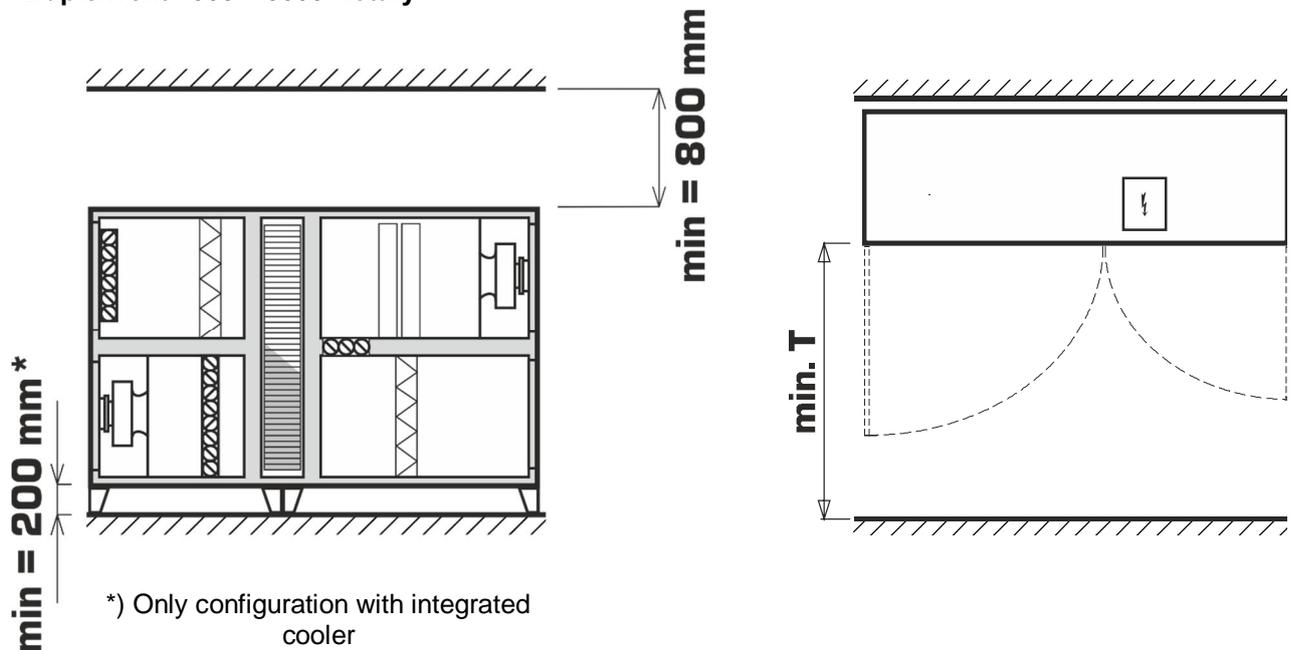
- Key:**
1. Intake (supply air)
 2. Intake flap (supply air)
 3. Supply air filter
 4. Rotary heat exchanger
 5. Junction box
 6. Water cooling / direct evaporator
 7. Water heating
 8. Supply fan
 9. Exhaust (supply air)
 10. Exhaust (extract air)
 11. Exhaust fan
 12. Circulation flap, 1500-5000 Rotary(-N)
 13. Circulation flap, 8000-15000 Rotary(-N)
 14. Condensate drain
 15. Exhaust air filter
 16. Intake flap (extract air)
 17. Intake (extract air)



2.4 Installation of compact units

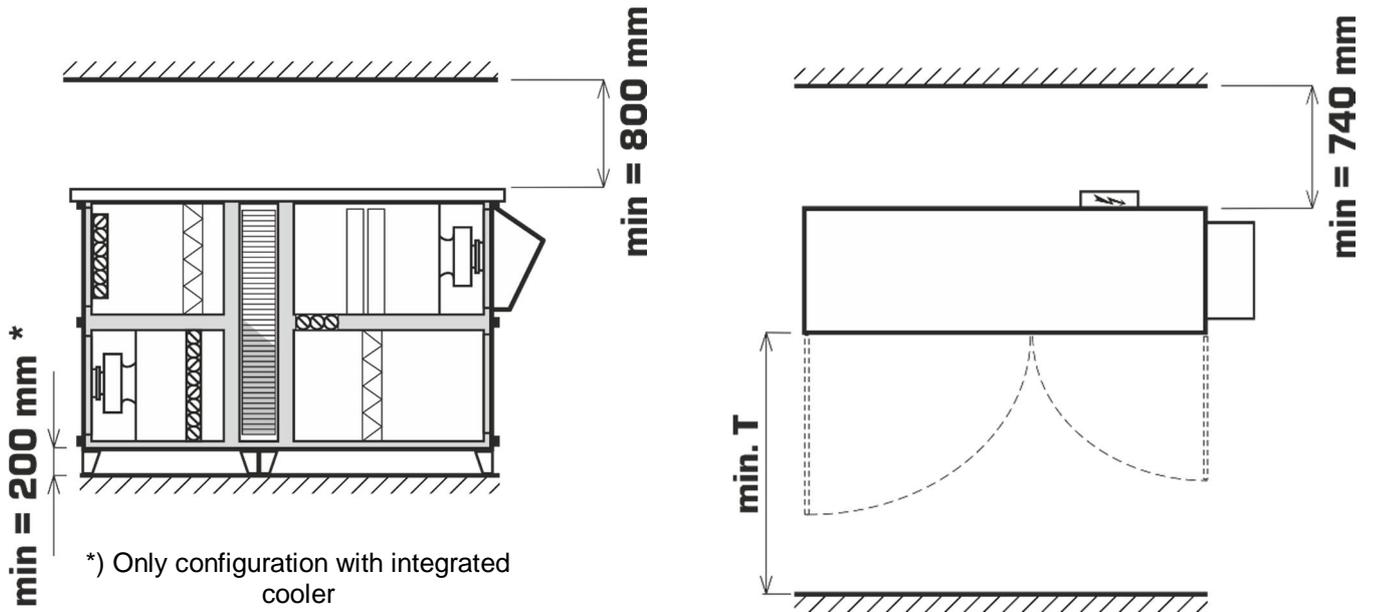
1. Make sure that the surface of the intended placement of the unit is even;
2. Place the unit on the surface, keep the recommended manipulation space;

Duplexvent 1500 – 5000 Rotary



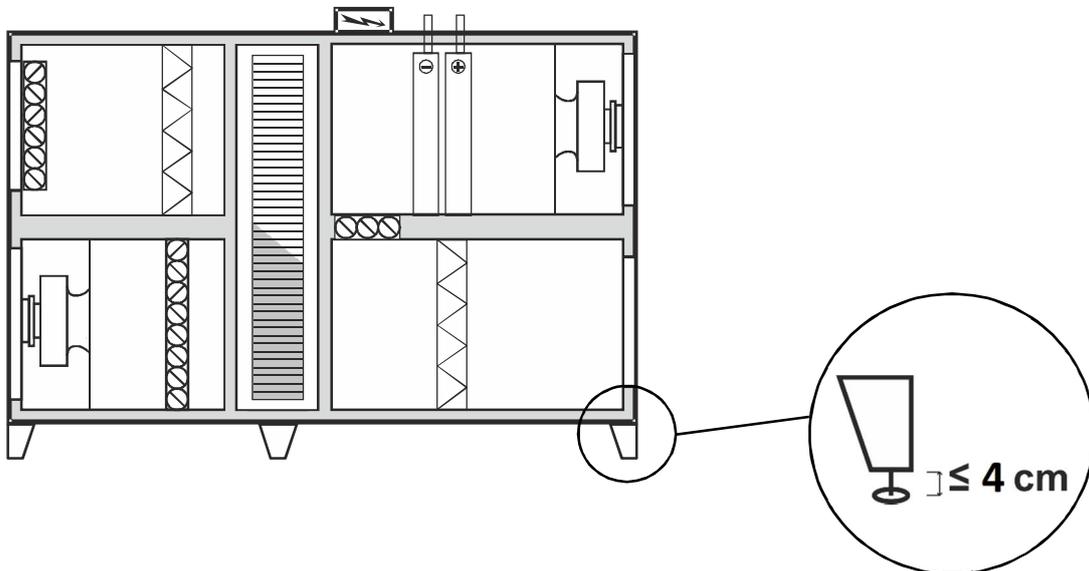
Type Duplexvent Rotary	Standard door T (mm)
Duplexvent 1500 and 2500 Rotary	900
Duplexvent 4000 and 5000 Rotary	1200

Duplexvent 1500-5000 Rotary-N



Type Duplexvent Rotary	Standard door T (mm)
Duplexvent 1500 Rotary	900
Duplexvent 2500 Rotary	900
Duplexvent 4000 Rotary	1200
Duplexvent 5000 Rotary	1200

3. Level the casing of the unit horizontally, adjust the stand feet as needed (part of delivery).



! The base frame of the unit must not be disassembled or modified in any way – there is a risk of mechanical damage to the unit.

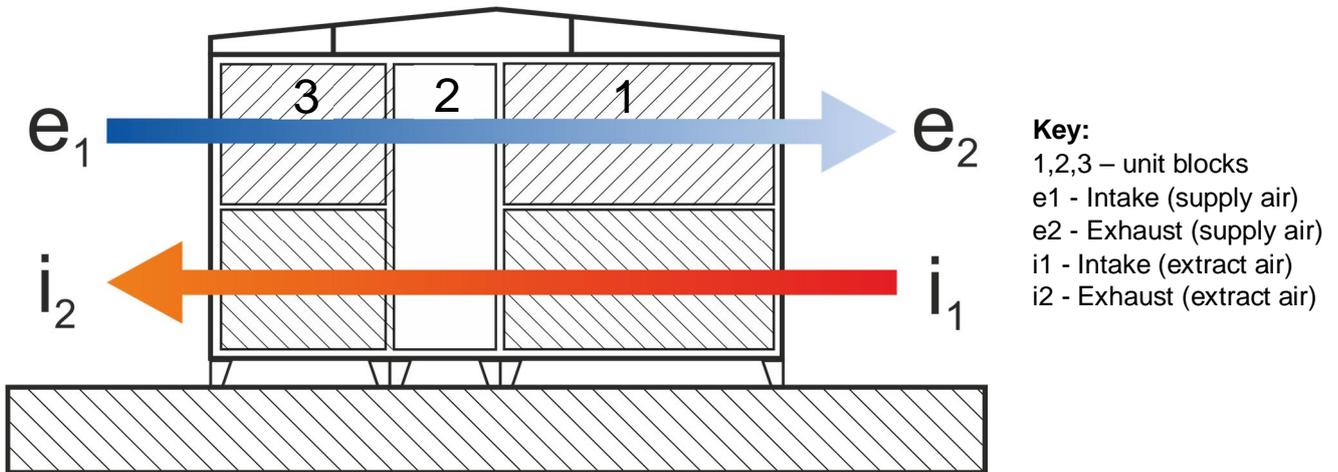
In case the unit is to be fastened to the roof we recommend using fastening elements (included in the delivery)



Fastening element to connect base frame with the roof or unit with the roof.

2.5 Assembly of semicompact units

The following steps describe the assembly of unit with the configuration of blocks and ports in the picture below. The way of connecting wires between blocks via wiring boxes is described in the Chapters 2.5.4 to 2.5.7. The alternative way using connectors is described in the Chapter 7.



Key:
 1,2,3 – unit blocks
 e1 - Intake (supply air)
 e2 - Exhaust (supply air)
 i1 - Intake (extract air)
 i2 - Exhaust (extract air)

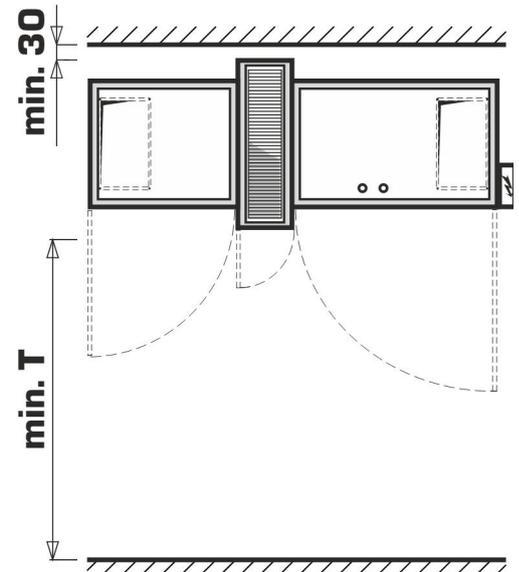
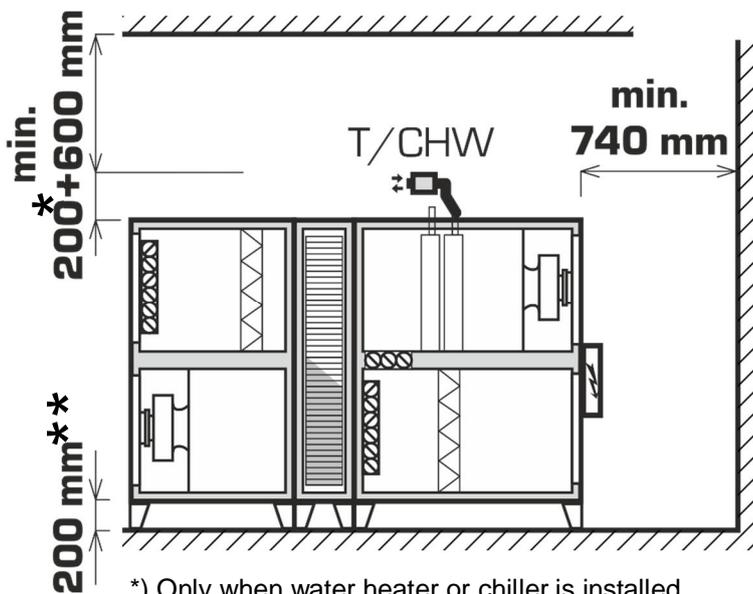
Example of semicompact unit Rotary-N

2.5.1 Assembly of blocks

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



Duplexvent 8000 – 15000 Rotary (indoor version)

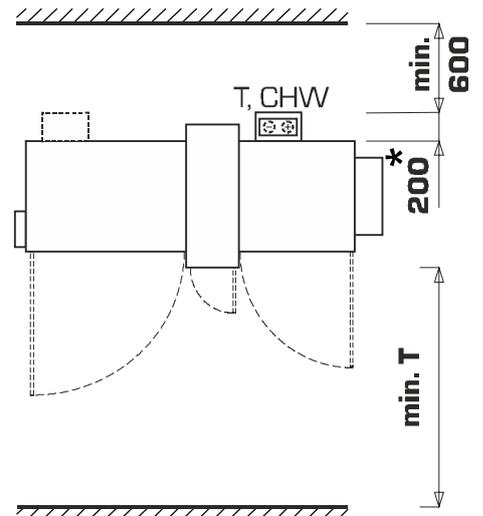
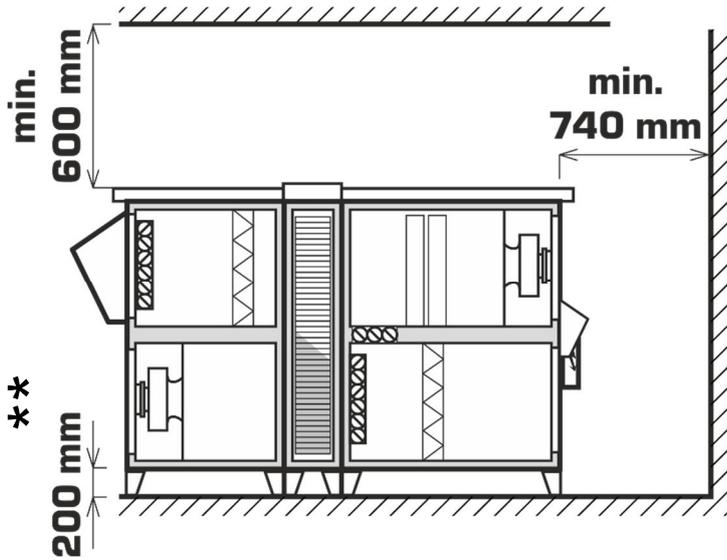


*) Only when water heater or chiller is installed

***) Only when integrated chiller is installed

Type Duplexvent Rotary	Standard door T (mm)
Duplexvent 8000 Rotary	1600
Duplexvent 12000 Rotary	1800
Duplexvent 15000 Rotary	2000

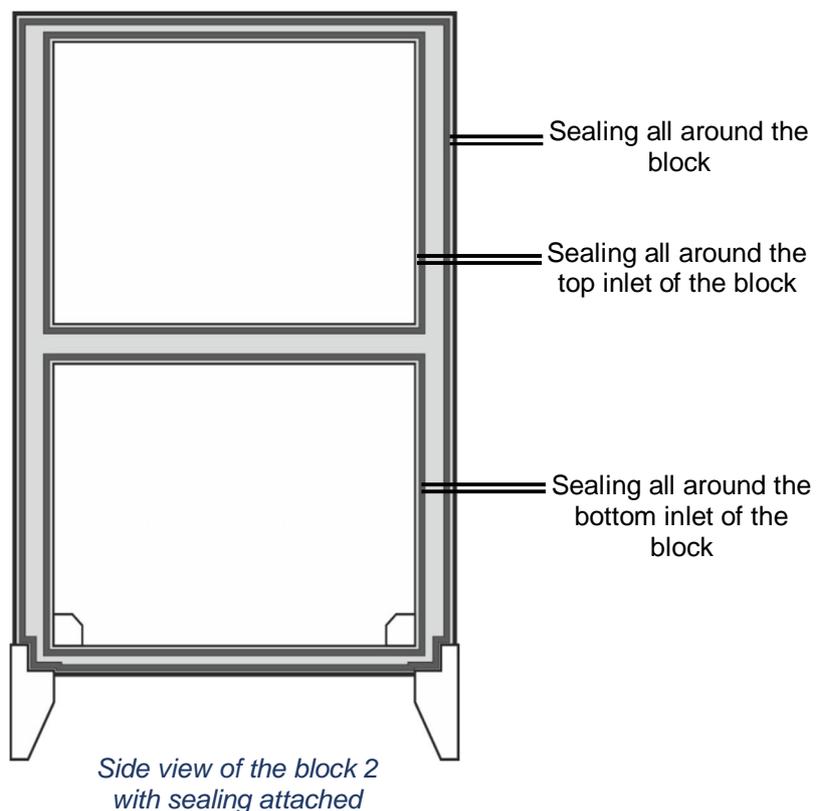
Duplexvent 8000 – 15000 Rotary-N (outdoor version)

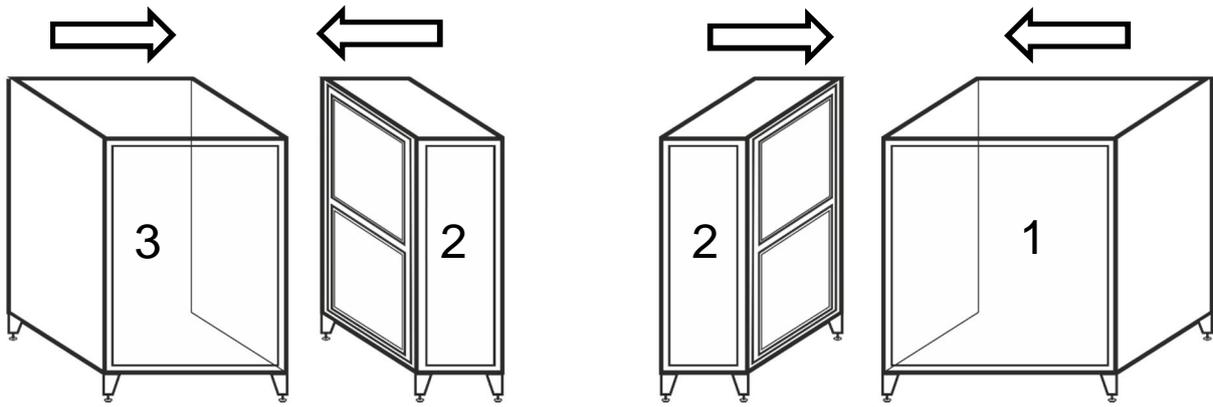


- *) Only when water heater or chiller is installed
- ***) Only when integrated chiller is installed

Type Duplexvent Rotary-N	Standard door T (mm)
Duplexvent 8000 Rotary-N	1600
Duplexvent 12000 Rotary-N	1800
Duplexvent 15000 Rotary-N	2000

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

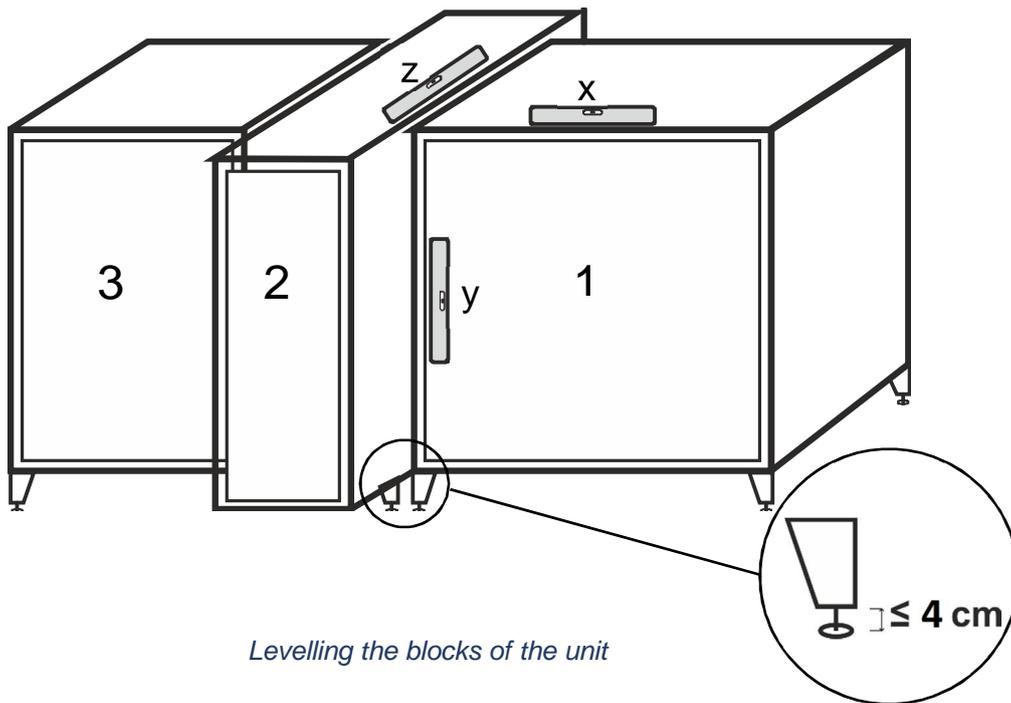




Connecting blocks 1, 2 and 3

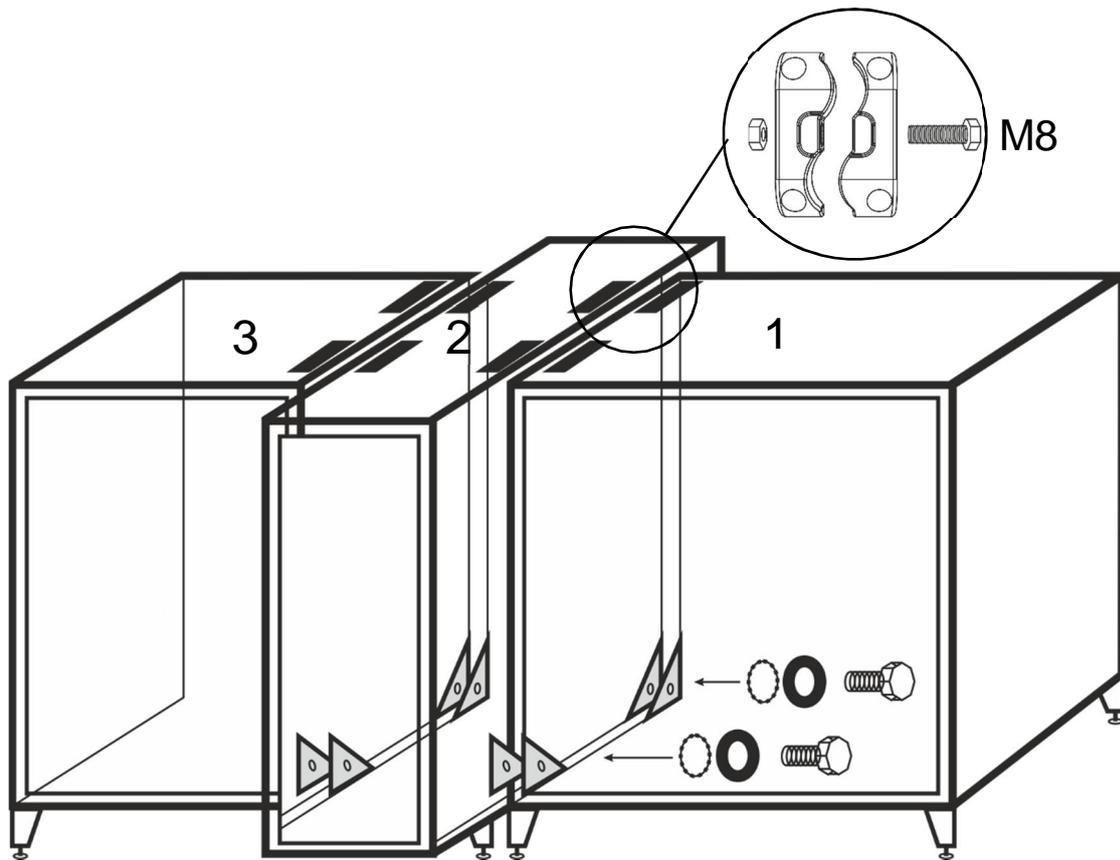
5. Place the blocks next to each other and make sure they are all levelled. Adjust the stand feet as needed. Using the spirit level make sure that the blocks 1, 2 and 3 are levelled in all three axes **x**, **y** and **z**.

! *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.*



Levelling the blocks of the unit

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

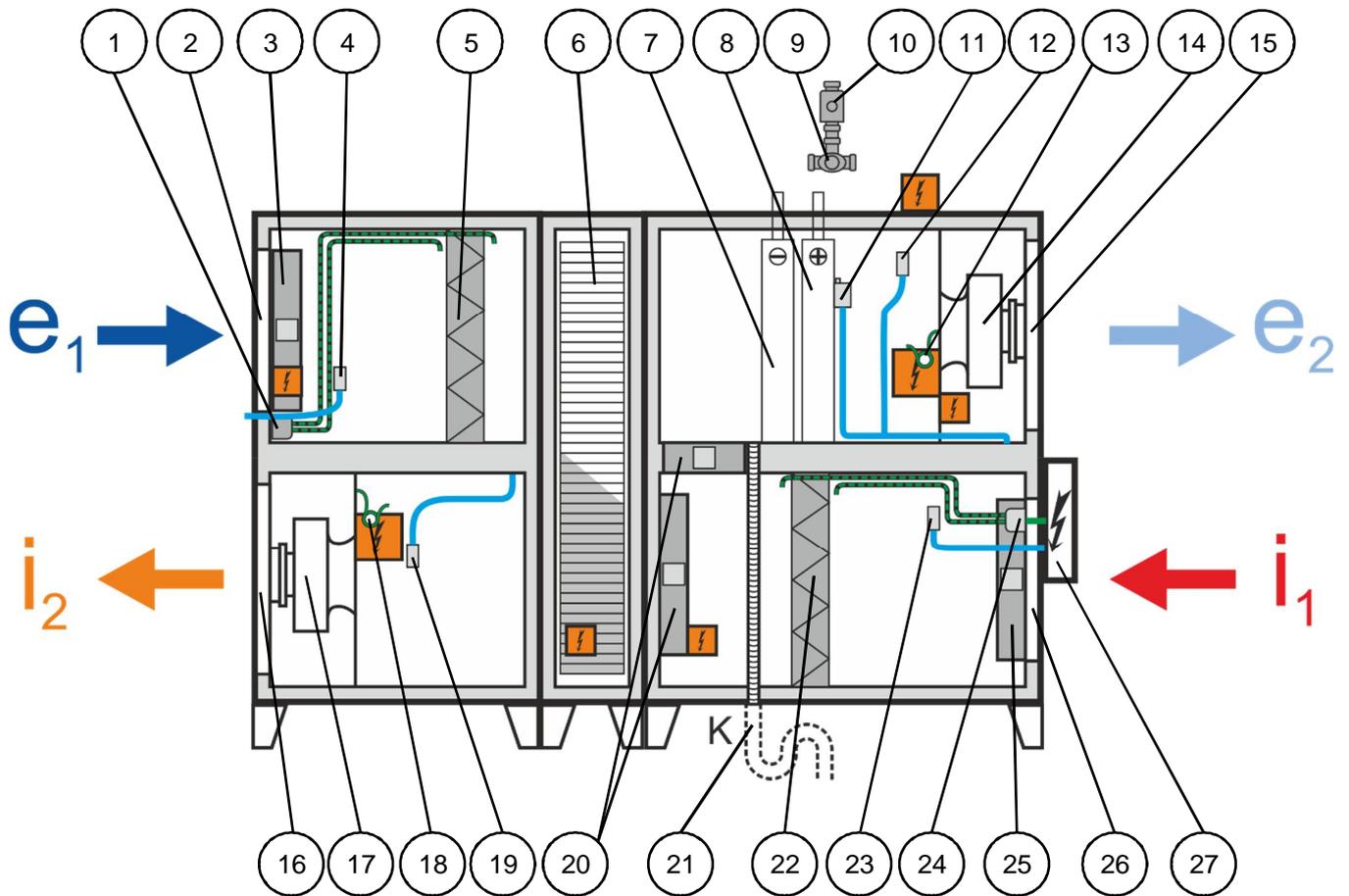


Tightening the unit blocks together

8. Gradually tighten the connections. Using the spirit level make sure that the blocks being connected remain levelled.
9. 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.
10. Repeat the steps 5 through 8 and connect the blocks 2 a 3.
11. Using the spirit level make sure that the connected blocks still remain levelled.

2.5.2 Description of assembled unit

Duplexvent 8000 – 15000 Rotary-N

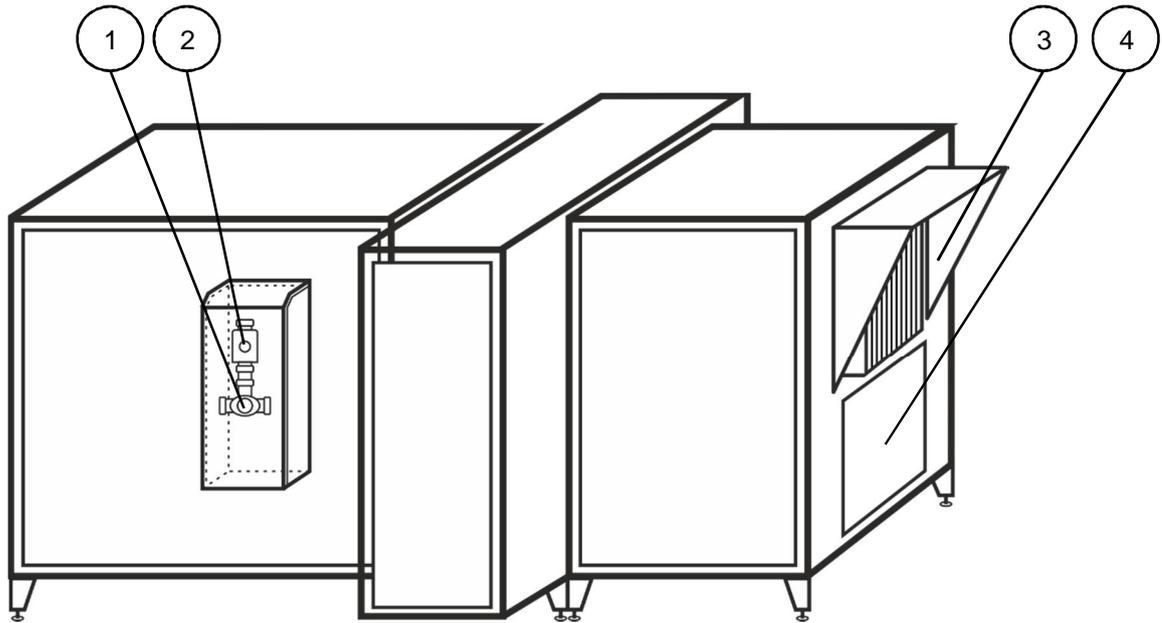


- | | |
|---|---------------------------------------|
| 1. Filter manostat PFe | 15. Exhaust (supply air) |
| 2. Intake (supply air) | 16. Exhaust (extract air) |
| 3. Shut-off flap (supply air) Se*) | 17. Exhaust fan Mi |
| 4. Temperature sensor TEA | 18. Manometer of exhaust fan PMi *) |
| 5. Supply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

*) Optional equipment

**) On Rotary-N units placed on the rear side

Duplexvent 8000 – 15000 Rotary-N, rear view



Key

- 1. Mixing valve *)
- 2. Water heater pump *)
- 3. Hood with droplet eliminator *)
- 4. Exhaust (extract air)

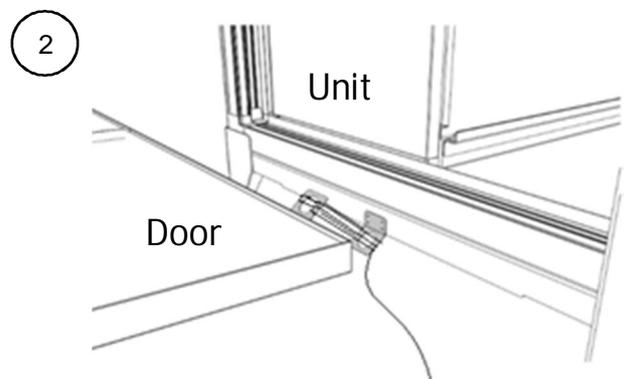
*) optional equipment

2.5.3 Manipulation with door on the roof

- Handle the door on the roof very carefully, especially when gusts of wind are imminent, to avoid any injury.
- When opening an outdoor unit, secure the door using securing eyelets; join these together using rope or any other tying mechanism.
- After removing the door, place it on the roof of the building. The door must always be secured using rope (tying mechanism).



1. Securing eyelet must be tied using a tying mechanism (rope) -> the door is secured in case of wind



2. We shorten and tighten the rope to the desired length to fit into the required manipulation area.

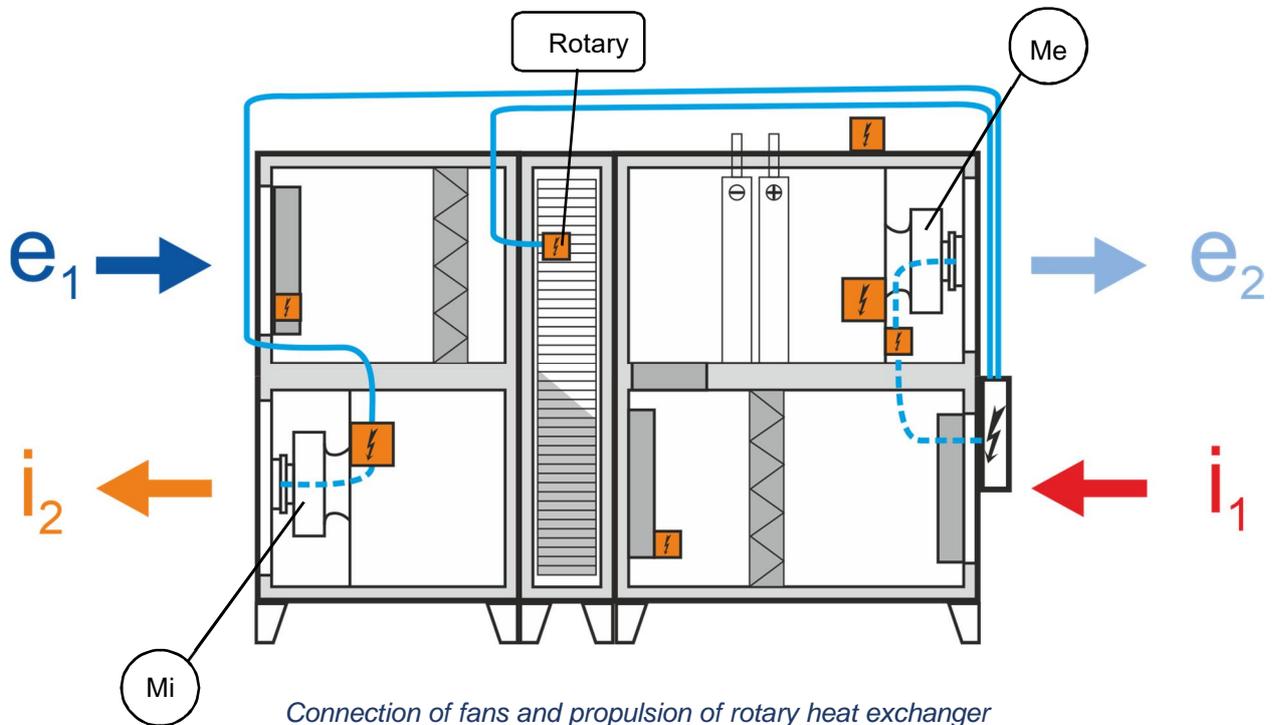
2.5.4 Connecting fans and propulsion of rotary heat exchanger

Connected on delivery:

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

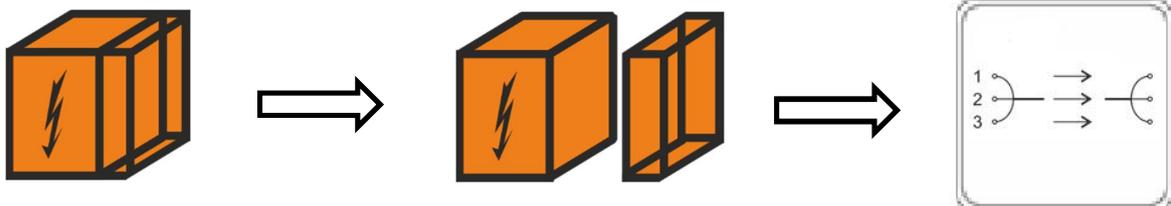
Connect:

- Lead the cable **Mi** with the working voltage 400V from the junction box into the wiring box.
- Lead the cable **Rotary** from the junction box into the wiring box.



- ----- = 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.



2.5.5 Connecting temperature sensors

Connected on delivery:

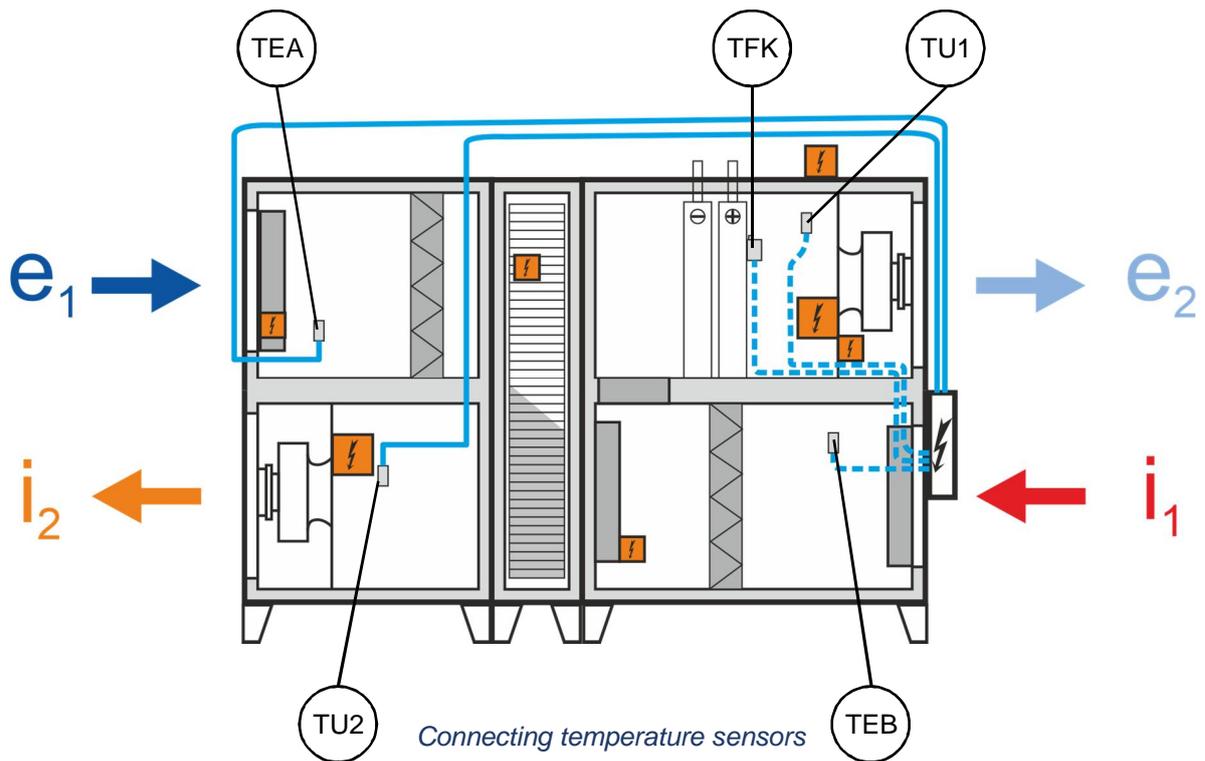
- Sensors **TEB** and **TU1** are completely connected up to the junction box.

Connected on delivery, optional equipment:

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

Connect:

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



2.5.6 Connecting pressure sensors

Connected on delivery:

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

Connected on delivery, optional equipment:

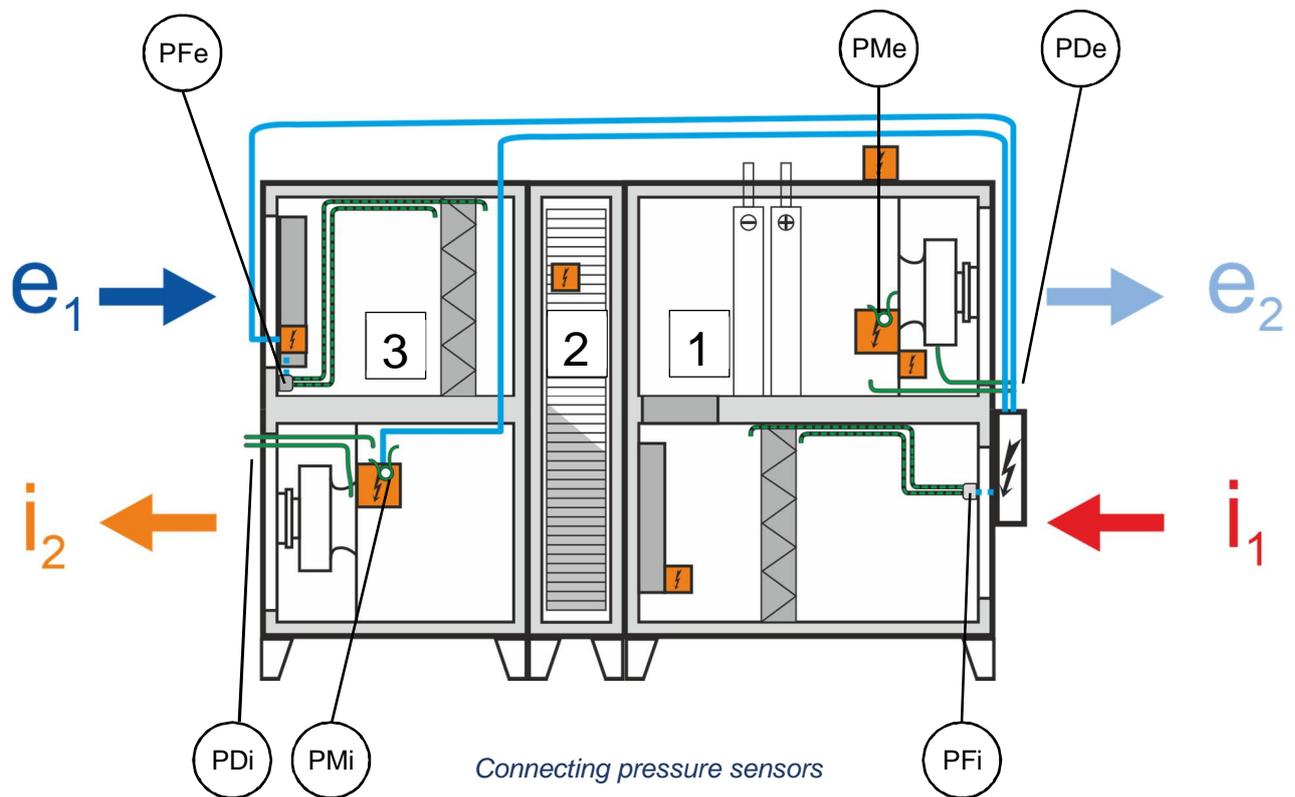
- Manometer **PMe** is placed in a wiring box that is connected to the junction box;
- Pressure measurement point **PDi** measuring the pressure increase of the fan **Mi** is installed on the left side of the unit. Pressure measurement hoses are installed.
- Pressure measurement point **PDe** measuring the pressure increase of the fan **Me** is installed on the right side of the unit. Pressure measurement hoses are installed.

Connect:

- Lead the cable **E1** into the wiring box from which the manostat **PFe** and a flap **Se** are powered. The wiring box is located in the upper part of the block 3.

Connect, optional equipment:

- Lead the cable **PMi** from the junction box into the wiring box of manometer **PMi**. The wiring box is located in the lower part of the block 3;



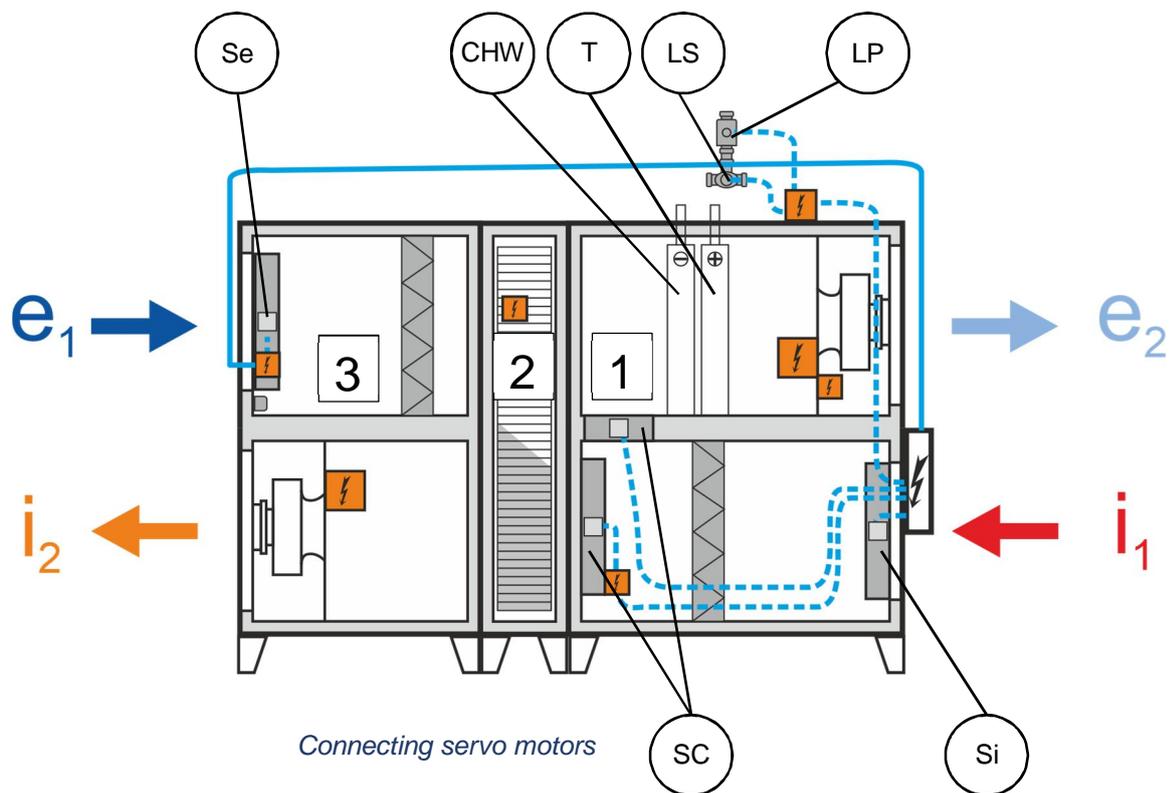
2.5.7 Connecting servo motors

Connected on delivery, optional equipment

- Both parts of the circulation damper (**SC**) are connected to the junction box.
- The circuit of cooler **CHW** is connected to the hydraulic kit.
- The circuit of heater **T** is connected to the hydraulic kit.
- Hydraulic kit **LS** controlling water chiller or heater is located on the top side of the unit (indoor version Rotary) or on the back side of the unit (outdoor version Rotary-N). The kit is completely connected up to the junction box.
- Water pump **LP** in the heating circuit is located on the top side of the unit (indoor version Rotary) or on the back side of the unit (outdoor version Rotary-N). The kit is completely connected up to the junction box;
- Shut-off flap **Si** is completely connected up to the junction box;
- Shut-off flap **Se** is connected to wiring box.

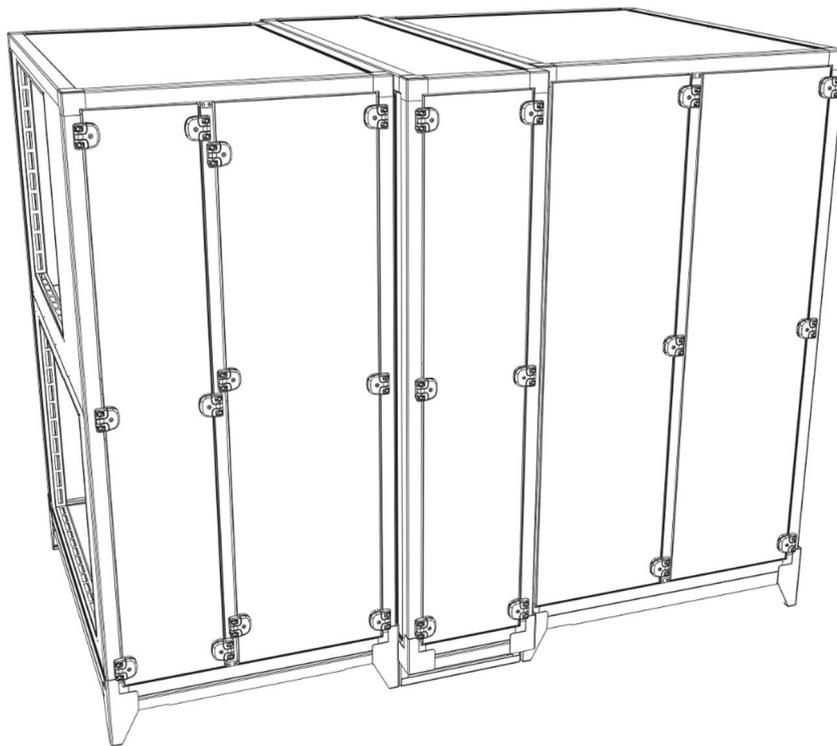
Connect, optional equipment

- Lead the cable **E1** to the wiring box from which the manostat **PFe** and the flap **Se** are powered. The wiring box is located in upper part of the block 3. If the unit is equipped with manostat **PFe**, you have already connected the cable in the Chapter 2.5.6.



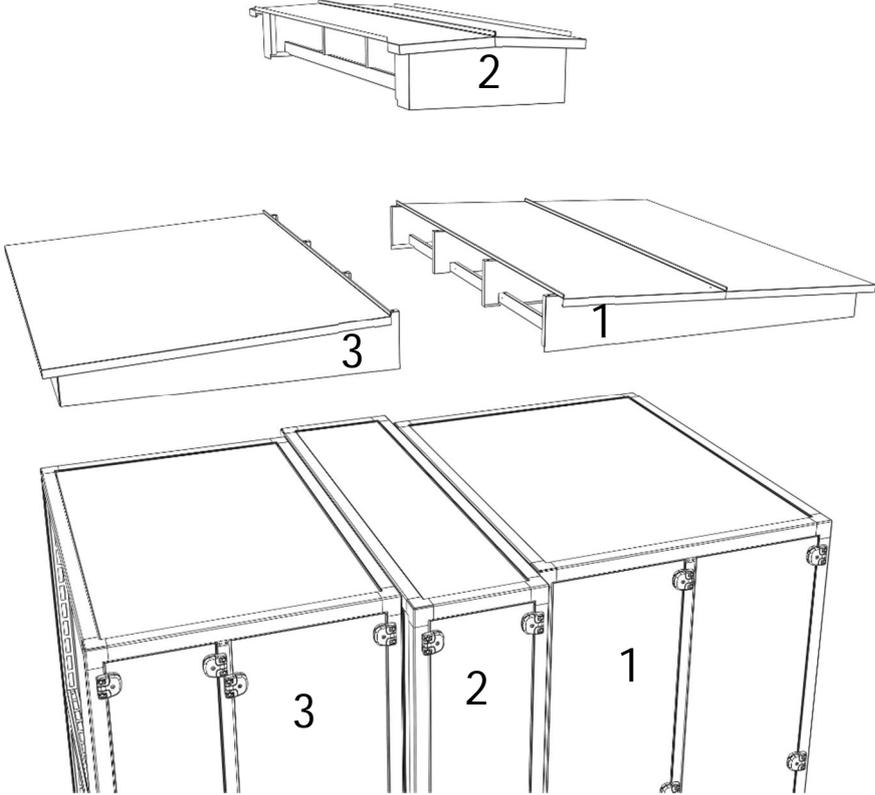
2.5.8 Roof assembly (only 8000-15000 Rotary-N)

1. Make sure that the unit is still levelled as described in the Chapter 2.5.1.

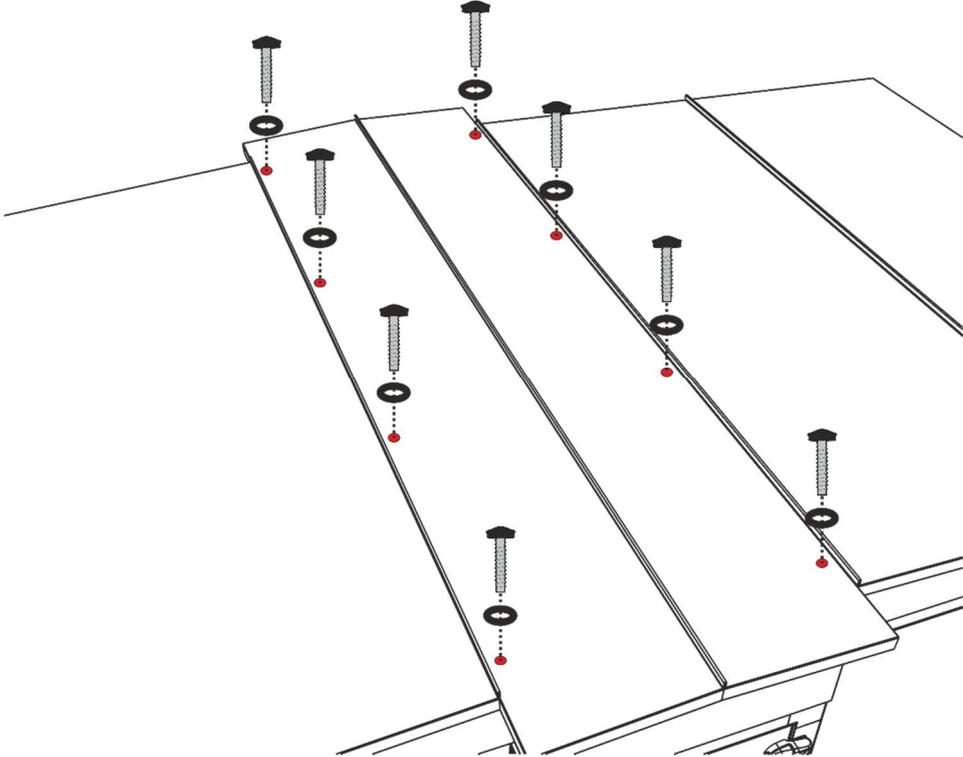


! Protect the unit from adverse weather conditions until the roof assembly is finished.

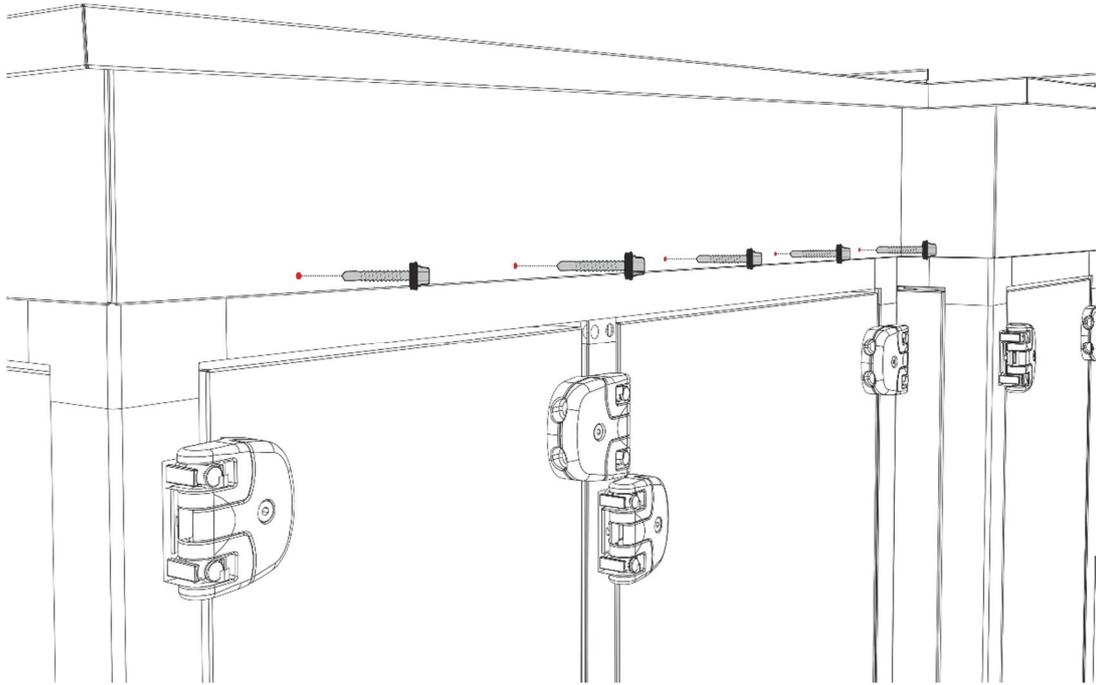
- 2. Put the roof blocks on the top side of unit casing. The length of roof blocks corresponds with the length of unit blocks.



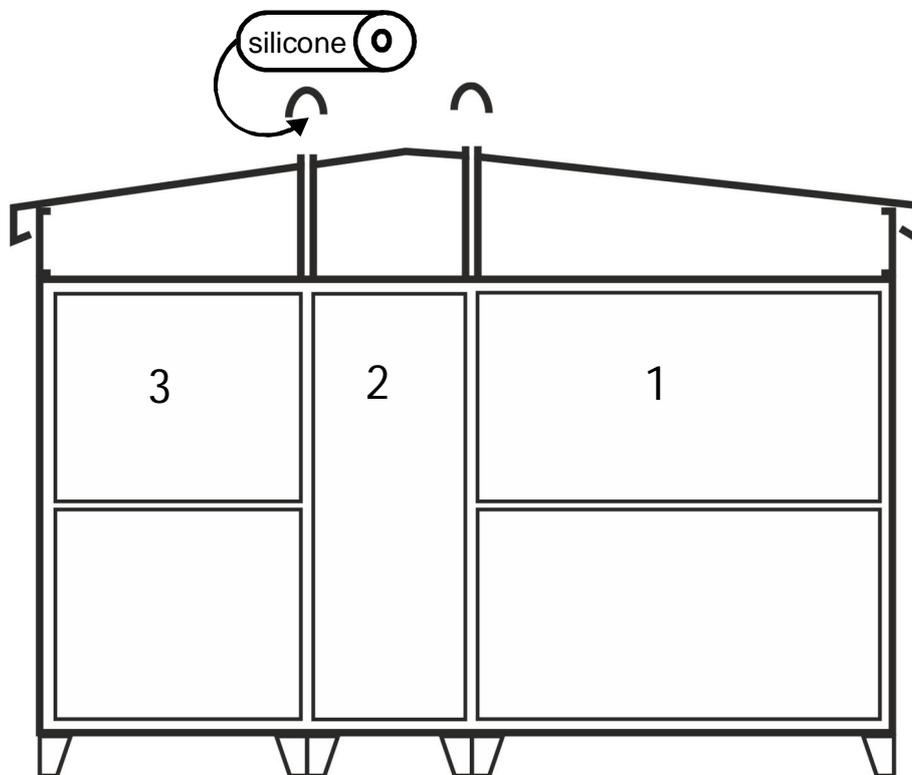
- 3. Fix the roof blocks together, use 8 screws M6, place waterproof washers (part of delivery) under the screws.



4. Attach side plates of roof blocks to the side of unit casing. Use holes that are drilled in the side plates. Use tek screws star 4x16mm (part of delivery). Attach the tek screws directly into the casing all around the unit.

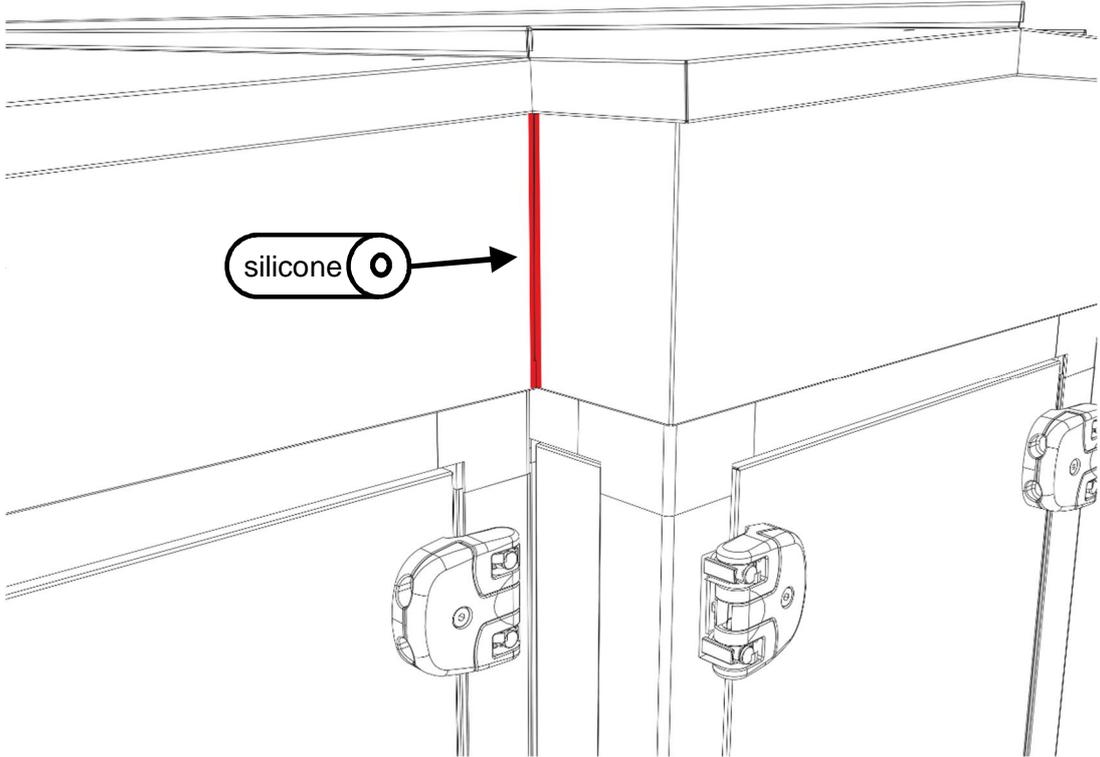


5. Paste silicone into metal U-shaped profiles. Put the profiles onto the connections of roof plates.

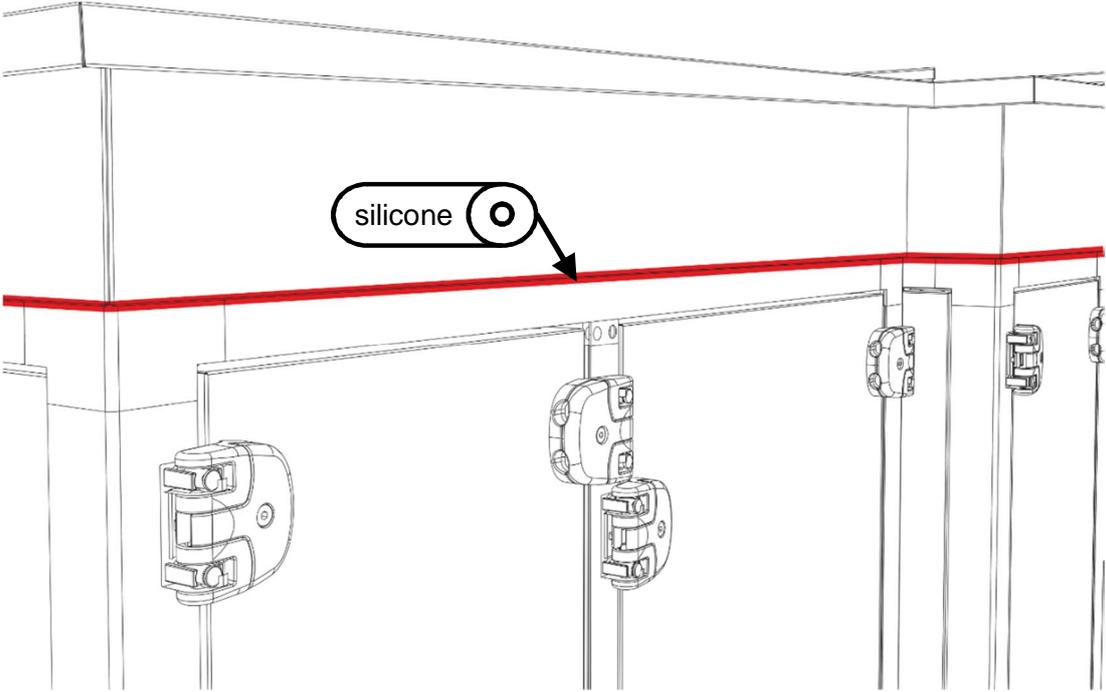


6. Seal the connections between attached U-profiles and roof plates by silicone. Seal the entire length of the connections; you will seal two connections along both ends of each U-profile.

7. Seal vertical connections between the middle and outer roof blocks. You will seal 4 connections altogether.

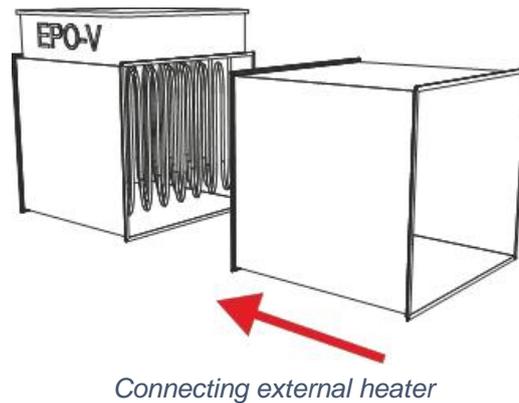


8. Seal the connection between the unit casing and the attached roof by silicone. Seal the connection all around the unit.



2.6 Ductwork connection

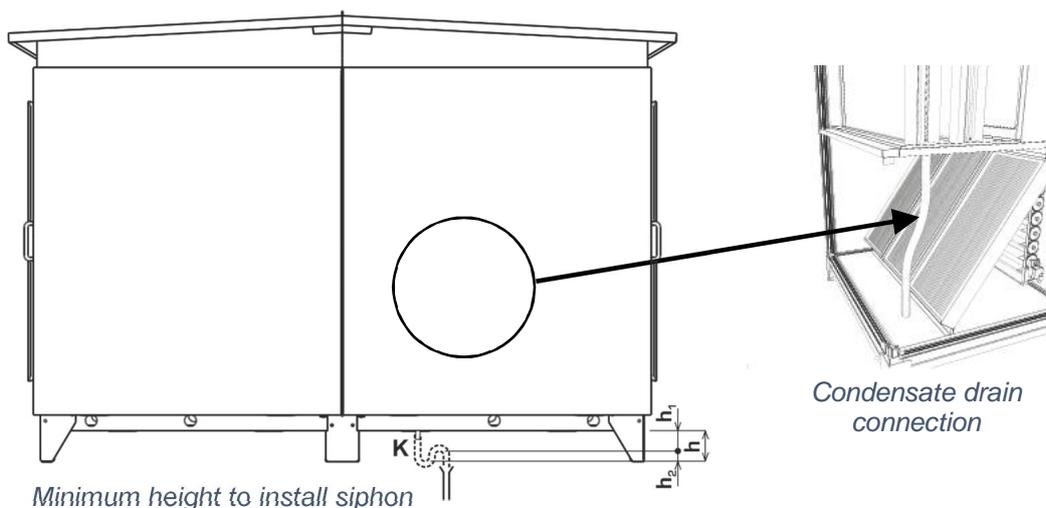
- Connect the ductwork according to the design documentation
- Ductwork being at least 1m long must be always firmly connected to all ports. This will ensure that an equal air speed profile is achieved throughout the whole port's cross-section area. The rule does not apply on the intake of supply air e1 when droplet eliminator with hood is fitted here.
- A duct of min. length of 2m must be always connected to the fan outlet 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.
- If there is a risk of short-circuit between the exhaust of stale air i2 (EHA) and intake of fresh air e1 (ODA) a straight duct being at least 3 m long must be connected to the outlet port i2. This applies to semicompact units 8000, 12000 and 15000 Rotary(-N).



2.7 Condensate drain connection

- Condensate drain is to be installed always when integrated cooler is used.
- Keep the unit levelled when you install a condensate drain.
- Shape a pipe to form a trap with dimensions stated below. Sufficiently fix the trap's shape.
- Connect a pipe of the same or larger diameter to the trap and connect this to a sewer.
- Check the pipe's slope and make sure the whole pipe run (including inside the equipment) is free of foreign materials.
- Fill the trap with water.

! Each condensate drain must be connected to its own trap.



$$h_1 = \frac{\Delta p}{10} + 50 \text{ [mm]} \quad h_2 = \frac{\Delta p}{2 \cdot 10} + 50 \text{ [mm]} \quad h = 1,5 \frac{\Delta p}{10} + 100 \text{ [mm]}$$

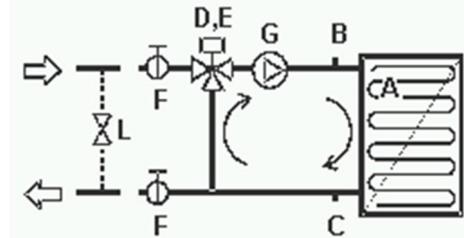
Δp - maximum positive / negative working pressure in the compartment of the unit. The height of trap $h = 15\text{-}20\text{cm}$ is sufficient for the vast majority of installations.

2.8 Connecting hot-water heating coil to a heating water supply

During the installation of water heating coil follow the guide that is enclosed to this optional accessory.

When connecting the water heating coil follow the instructions below:

- Maximum heating medium temperature allowed is 110 °C. The max. operating pressure is 1.0 MPa.
- 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 designed to cover pressure drop of the water heating coil only!
- If no shutoff damper on outdoor air intake (e1) is fitted on the equipment put a tight shutoff damper in the outside air inlet duct (we recommend a type with a spring return actuator, closing on power interruption).
- Water heating system in outdoor units Rotary-N must be protected by an antifreeze with sufficient thermal resistance.
- Fit a strainer in the equipment heating system inlet pipe.
- Pipes connecting the heating coils or mixing valves must be thermally isolated up to the heated part of the building.
- When using a 3-way mixing, we recommend fitting a short circuit. You will find the installation scheme and connection dimensions in the Duplexvent SW; in your project select **Operation point > Water heater**.



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

When connecting fluid 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 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:

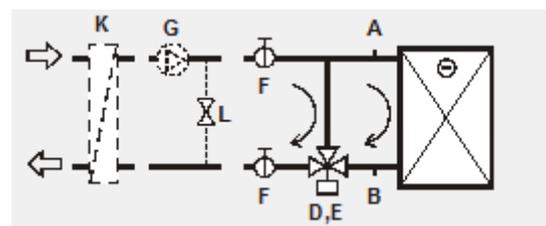
1. The pre-heater is used for protecting heat recovery exchangers from freezing.
2. The RD5 control system has a power control output.
3. Pre-heater control is continuous.
4. Pre-heaters are installed by service technicians.

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

2.9 Connecting water cooling coil to a chilled water supply

When connecting the water cooling coil follow the instructions below:

- Fill the water cooling coil with a non-freezing mixture with sufficient low-temperature resistance! Or drain the cooling coil when temperatures may drop under 3°C.
- The maximum operating pressure is 1.0 MPa!
- A strainer must be fitted on the inlet from the chilled water system into the equipment.



A: air release valve; 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

2.10 Connecting direct-expansion cooling coil

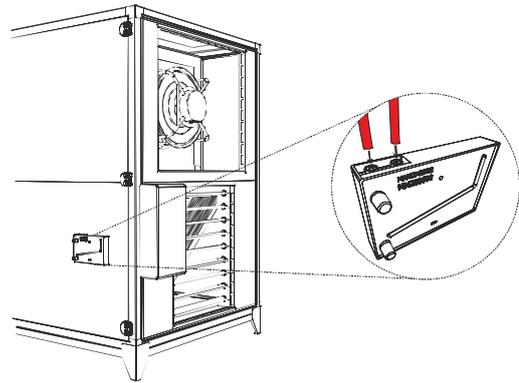
- When connecting the DX cooling coil follow instructions of your supplier of condensing unit and connecting pipes.

2.11 Installation of manometers for constant flow and constant pressure

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

2.12 Installation of liquid 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. Level manometers horizontally and secure them with self-tapping screws provided.
- Using hoses, connect manometers with the pressure measurement points inside 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 connection points marked identically by "+" or "-" (must not be swapped). Make sure that hoses from only one filter are connected to each single manometer!
- 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.
- 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.
- 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.

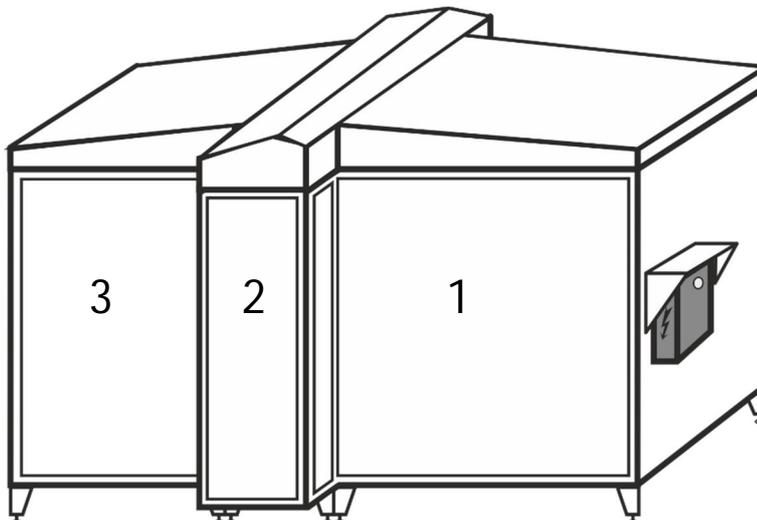


Connecting inclined manometer

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

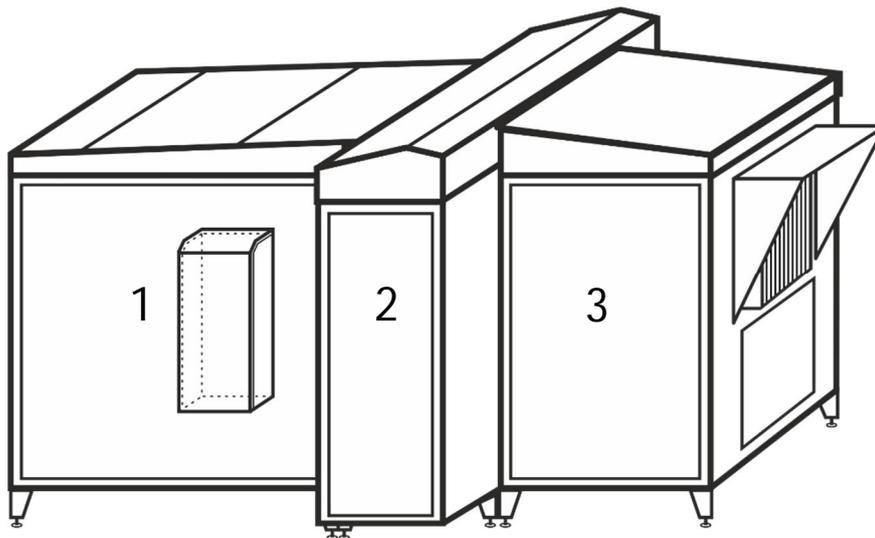
2.13 Covering the slots (semicompact units only)

1. Mount a roof cover above the connected junction box.



Semicompact unit with covered slots, front view

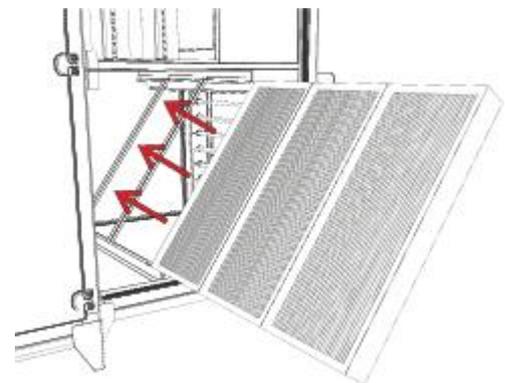
2. Hang up the cover of the manifold on the rear side of the unit. Fasten the cover by two screws (part of delivery).



Semicompact unit with covered slots, rear view

2.14 Fitting air filters

- Units Rotary(-N) are supplied with cassette filters; units 8000 up to 15000 Rotary(-N) can be supplied also with pocket filters.
 - 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).
 - Insert undamaged and clean cartridges into the guides.
 - 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 direction through the cartridge always points towards the heat exchanger!
 - Make sure that each section (supply, exhaust) contains filter cartridges with the appropriate filtration class as shown on the identification plate of the appliance.
- ☐ Record the date when the filters were replaced, e.g. in a book of unit's operation.



Fitting filters

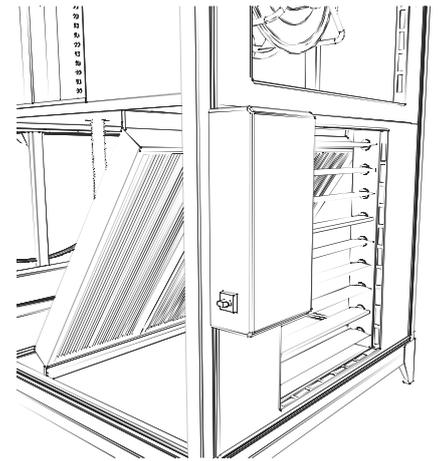
- ! Use only original filtration cartridges! If different cartridges are used, the manufacturer cannot guarantee their proper functionality!

3 Electrical wiring

3.1 General rules

- 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.
- Wiring diagram of the whole air-handling system is attached as an inseparable supplement of documentation enclosed to the unit. Installation guides and wiring diagrams of optional accessories are included in the documentation of these accessories.

- 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 fitted appropriately and 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. This applies only when the unit is not equipped by a main service switch.
- **Only Rotary-N:** Protection of the unit from the strike of flash must be carried out according to EN 62305-3 Physical damage to structures and life hazard. If the outer containment equipment does not protect the unit from direct strike of flash it is necessary to connect the conductors leading the flash currents to conductors that come from the unit into the premises. The purpose is to limit the intrusion of partial flash current into the premises.
- The way of commissioning may differ depending on the regulation. Commissioning is performed by a trained technician based on separate documentation.
- You will find the description of the control in a separate documentation called „Regulation control“.



Junction box

- ! Overcurrent protection of the unit must be provided by a circuit 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 of 5 kA.

4 Commissioning

4.1 Safety rules

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

- Carry out initial electrical audit according to valid standards. A written report must exist about this audit.
- Connect ducts to equipment's air inlet and outlet ports according to instructions stated in previous paragraphs.
- Fill in 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 mixing valve) with heating fluid even when operating the unit out of the normal heating period. When filling the circuit, make sure the manifold shut-off valves are open both on the heater fluid inlet and outlet. Make sure the air is bled from the system.
- Check the rotation direction of each fan impeller. In case of opposite direction swap phases.
- Check the current consumption of each fan at all speed steps. The current should not exceed the maximum value on the fan's label. In case of exceeding the maximum value properly decrease the air 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 manifold must be discharged. We recommend discharging the fluid using compressed air; do not rely simply on gravity drainage!

For more information please refer to this installation manual, alternatively ask the supplier of measuring and control system to provide the information.

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!

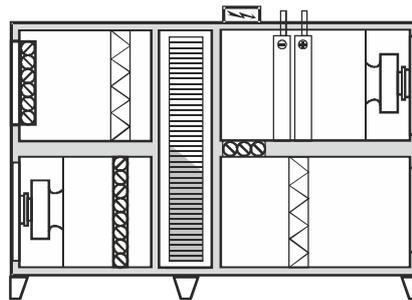
- Ü In case of stricter hygienic requirements the measurement of pathogen concentration must be carried out.
- Ü The appliance must not be operated without air filters.
- Ü The permanent low-frequency noise level (10 to 100 Hz) generated by the appliance must not exceed the audibility threshold. The 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

Duplexvent ventilation units 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 Disposal of package and disused unit

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 in the Controls / Specification line. This information is also included in the unit's Technical Specifications.

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 2.5.4 to 2.5.7).

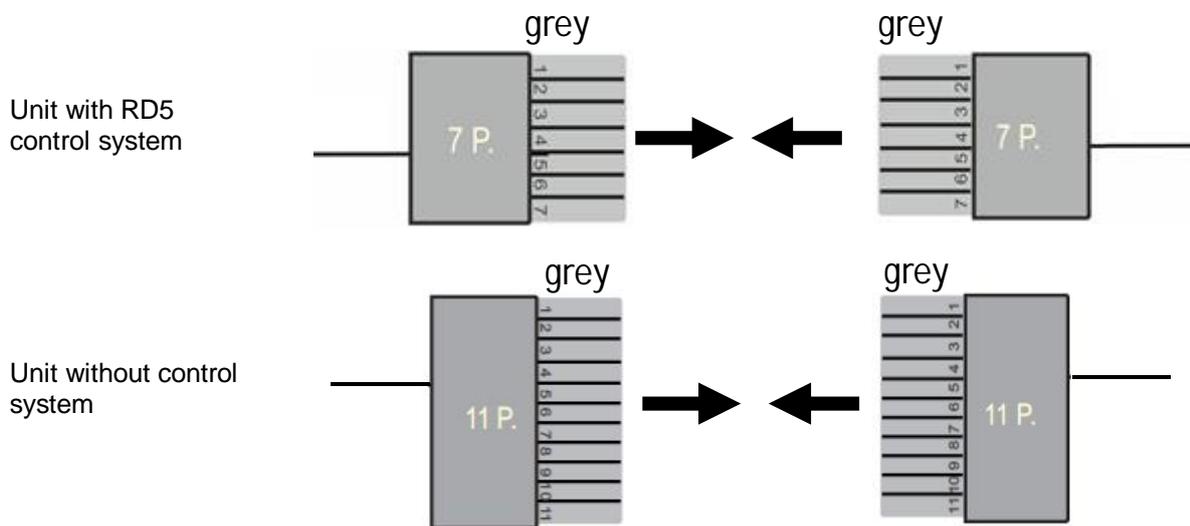
7.1 Connecting fans and propulsion of the rotary heat exchanger

Connected on delivery:

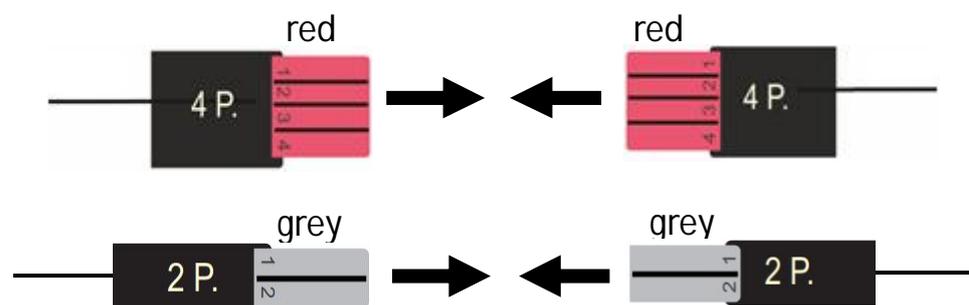
- Fan **Me** is completely connected up to the junction box.
- Fan **Mi** is connected to the connector.
- Powering of the rotary heat exchanger is connected to the connector.
- Control of the rotary heat exchanger is connected to the connector.

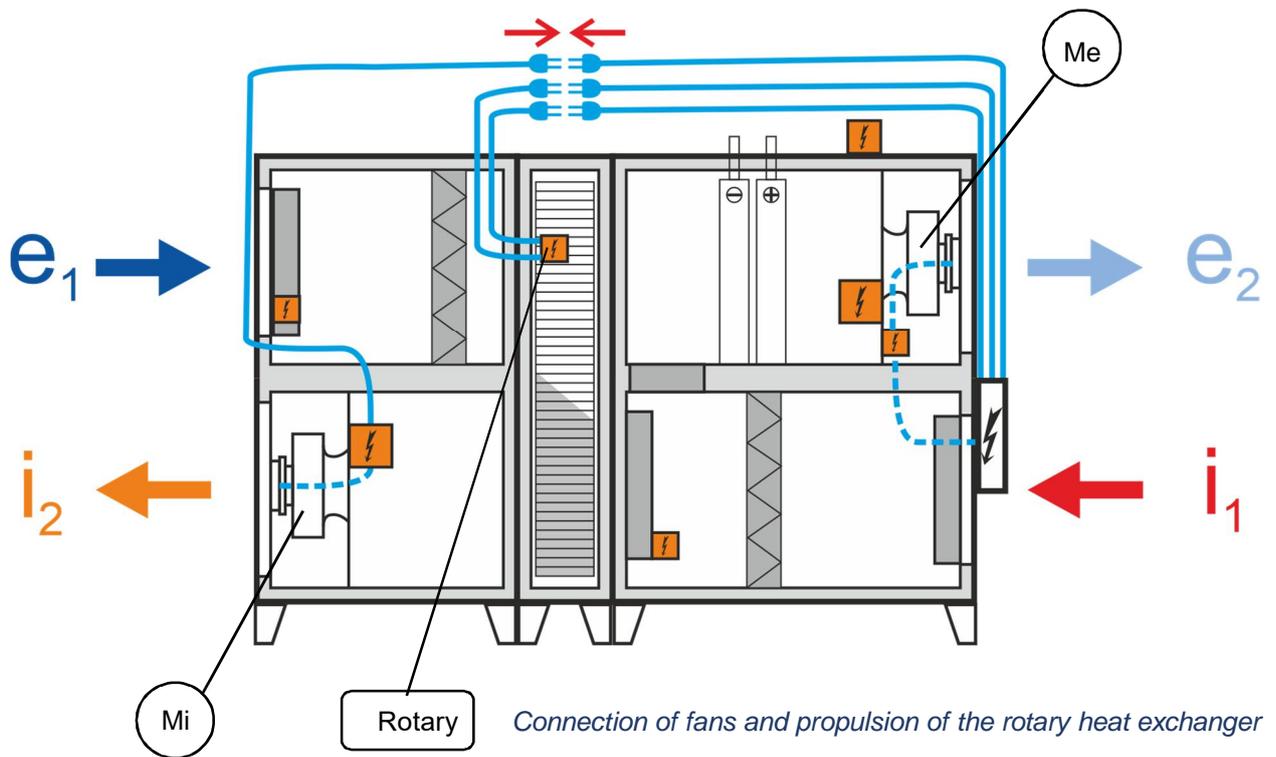
Connect:

- Fans - connect grey connector above the middle block.



- Rotary heat exchanger – connect red and grey connector above the middle block





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

7.2 Connecting temperature sensors

Connected on delivery:

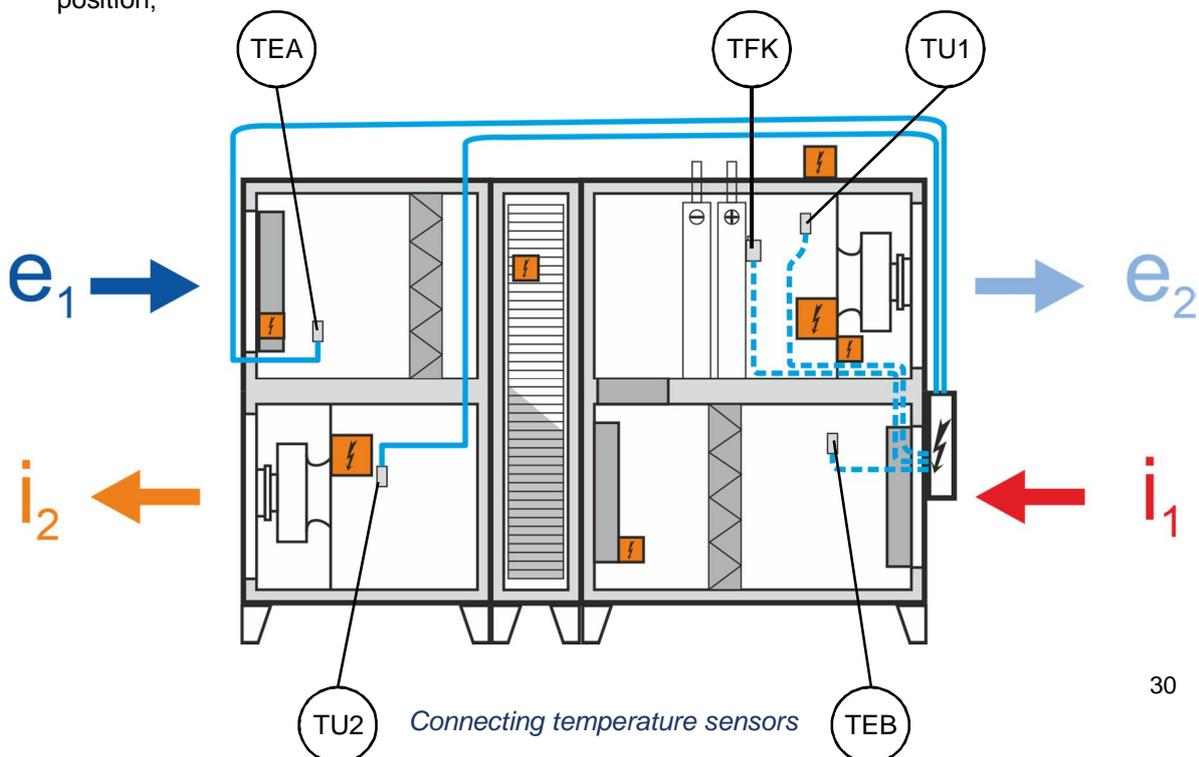
- Sensors **TEB** and **TU1** are completely connected up to the junction box.

Connected on delivery, optional equipment:

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

Connect:

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



7.3 Connecting pressure sensors

Connected on delivery:

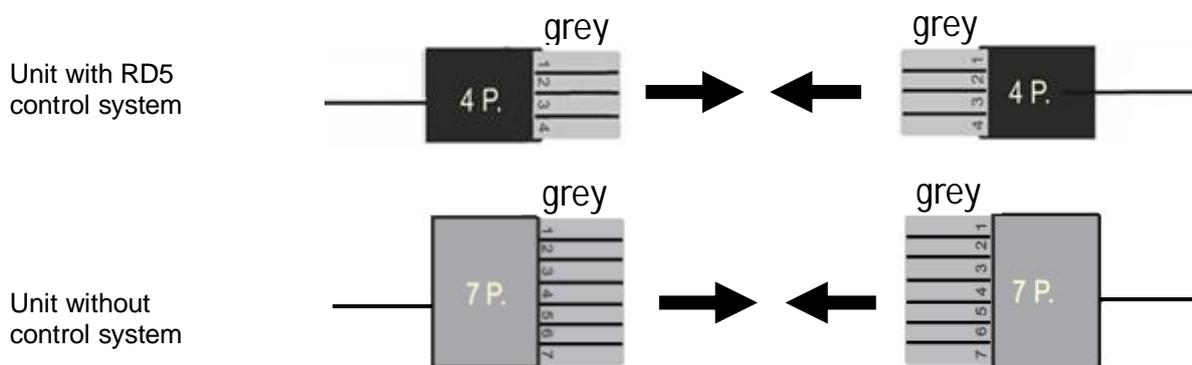
- Manostat **PFi** is completely connected up to the junction box;
- Manostat **PFe** is connected to the connector.

Connected on delivery, optional equipment:

- Manometer **PMe** is placed in a wiring box that 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 installed.
- Pressure measurement point **PDe** measuring the pressure increase of the fan **Me** is installed on the right side of the unit. Pressure measurement hoses are installed.

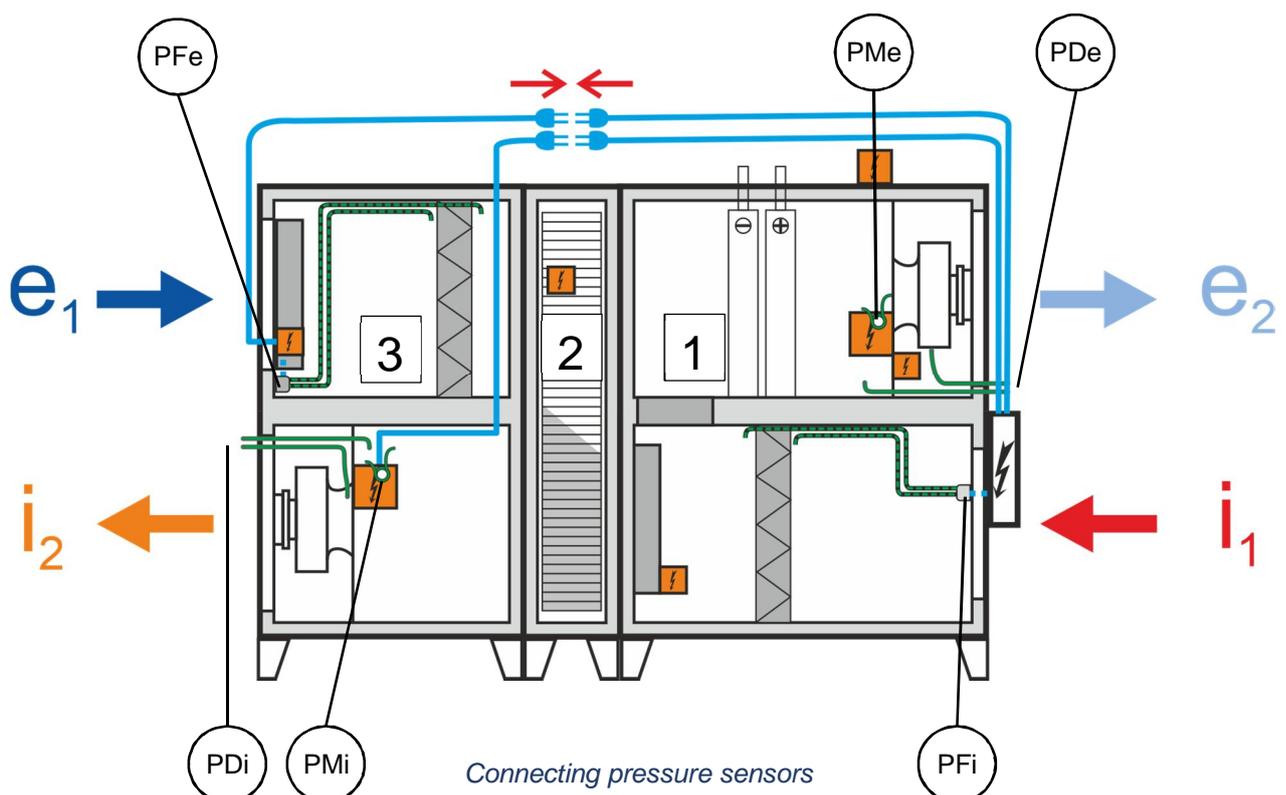
Connect:

- Plug in the connector powering the manostat **PFe**. The same connector powers also the servo drive of the flap **Se**.



Connect, optional equipment:

- Plug in the connector powering the manometer **PMi**. This applies **only** on units with RD5 control system.



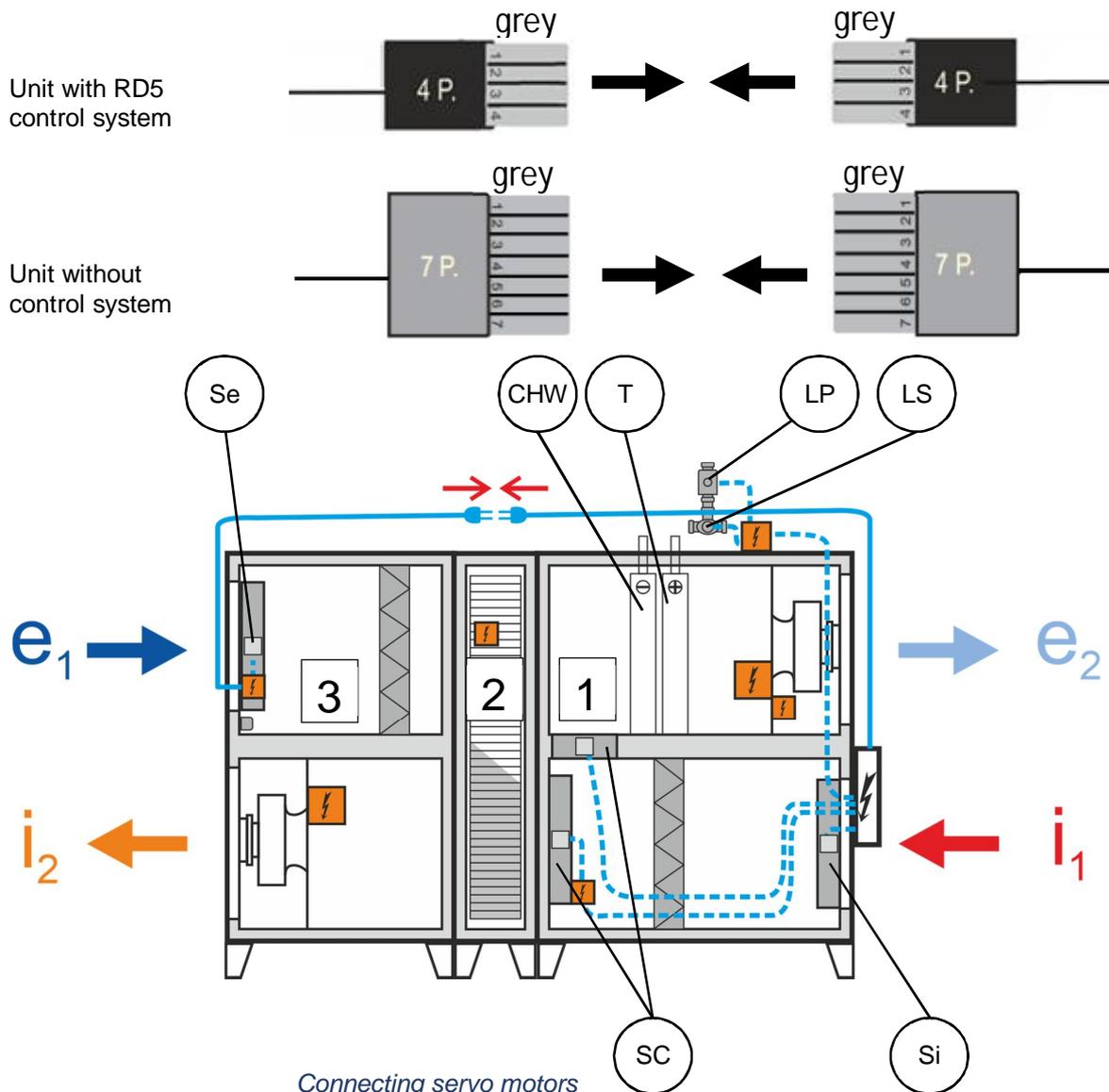
7.4 Connecting servo motors

Connected on delivery, optional equipment

- Both parts of the circulation damper (**SC**) are connected to the junction box.
- The circuit of cooler **CHW** is connected to the hydraulic kit.
- The circuit of heater **T** is connected to the hydraulic kit.
- Hydraulic kit **LS** controlling water chiller or heater is located on the top side of the unit (indoor version Rotary) or on the back side of the unit (outdoor version Rotary-N). The kit is completely connected up to the junction box.
- Water pump **LP** in the heating circuit is located on the top side of the unit (indoor version Rotary) or on the back side of the unit (outdoor version Rotary-N). The kit is completely connected up to the junction box;
- Shut-off flap **Si** is completely connected up to the junction box;
- Shut-off flap **Se** is connected to connector.

Connect, optional equipment

- Plug in the connector powering the flap **Se**; the same connector powers also the manostat **PFe**.



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