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Modular air handling units

Transport and assembly manual

Transport and assembly manual

NOTE: »Modular AHU Start-up & Commissioning Manual« and »Modular AHU Service & Maintenance Manual« are available on www.oc-impklima.com/en/products/air-handling-units

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June 2022

1 General

- The air handling unit can be supplied in several shipment units, which are factory protected with wooden beams or pallets, protective foil, props and other aids to ensure safe transportation. Check the packing list for a complete inventory and check for transportation damage.
- Please note that some components are not factory mounted in the air handling unit, but are transported with as separate packages. Each separate component is supplied with a manual provided by the manufacturer of the component. Prior to assembly, please remove the packaging and follow the installation instructions for each component.
- Please note that certain components, such as fans, are transported with blockers, which must be removed prior to the assembly.
- Prior to performing any work on the air handling unit, please read the transport and assembly manual.
- Prior to installation, store the air handling unit in a roofed and dry area.
- Always place the air handling unit on even ground. Lift the air handling unit by applying the hoisting procedure described in this manual.

2 Warnings & Tips

- The air handling unit may only be installed, checked, commissioned and maintained by trained personnel, who must observe engineering standards and local safety regulations.
- When installing, commissioning or maintaining functional components produced by manufacturers other than OC IMP Klima, the instructions provided by the manu-facturer of the component must be followed.
- The air handling unit shall only be used for the purpose and under the operating conditions specified in the technical sheets, generated by the selection software AirCalc++.
- The air handling unit manufacturer shall not be held liable in cases of failure to observe the information provided in the instructions, or in cases of alteration of electrical or mechanical components without prior approval by the manufacturer.

3 Transportation

3.1 Truck loading and forklifting

- Protect each unit to prevent damage during loading, transportation and unloading, due to tumbling, sliding or uncontrolled release from the vehicle. Futhermore, protect staff against any health and safety hazards.
- During delivery at the installation site, each air handling unit must remain secured with all guards and protective means (diagonal restraints, wooden supports, pallets under the structural frame, protective foil etc.).
- During transportation, any manipulation of the air handling unit must be carried out by means of the structural frame. **Do not apply pressure to the housing!**
- All shipment units are factory protected by:
  - wooden beams (unit with support base frame), see Figure 1 or

Figure 1

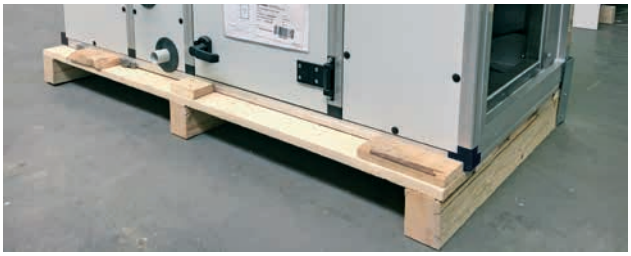

Figure 2

  - wooden pallets (unit without support base frame), see Figure 2
- When loading or unloading with a forklift always transport the air handling unit on the wooden beams or pallet provided (Figure 3).
- When loading or unloading with a crane always use the lifting tubes as shown in Figure 4.

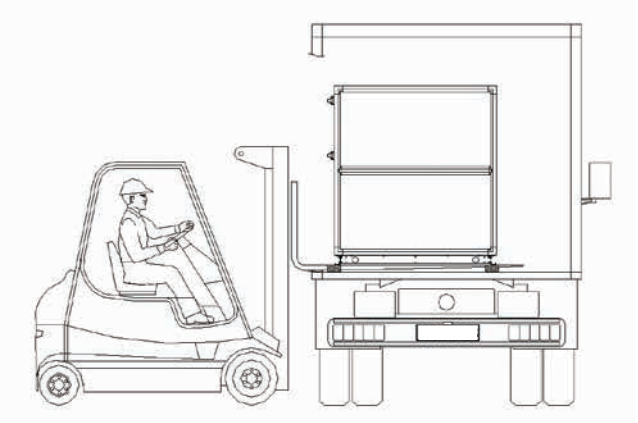

Figure 3

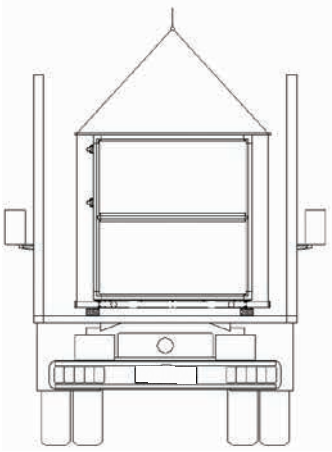

Figure 4

- Always observe the weight and the position (centre of gravity) of the packaged shipment.
- **Pay special attention not to excert any pressure to the bottom cover of the air handling unit or to the components attached under the cover** (e.g. the ground drain pipes – Figure 6)
- Forklifts may excert pressure only to the bottom frame of the air handling unit. The fork should reach beyond the outermost part of the structural frame – Figure 5.

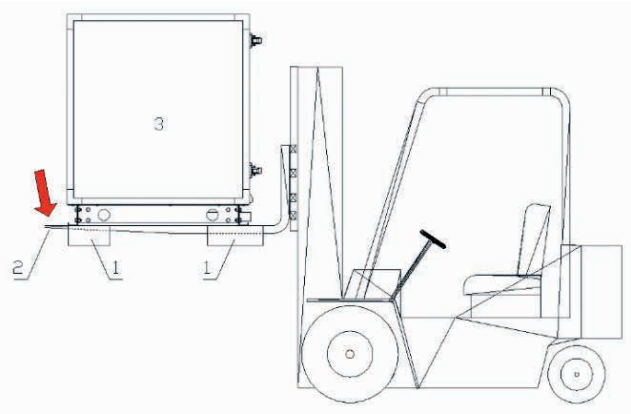

Figure 5

1 - wooden beams or palette
2 - forks
3 - transport unit

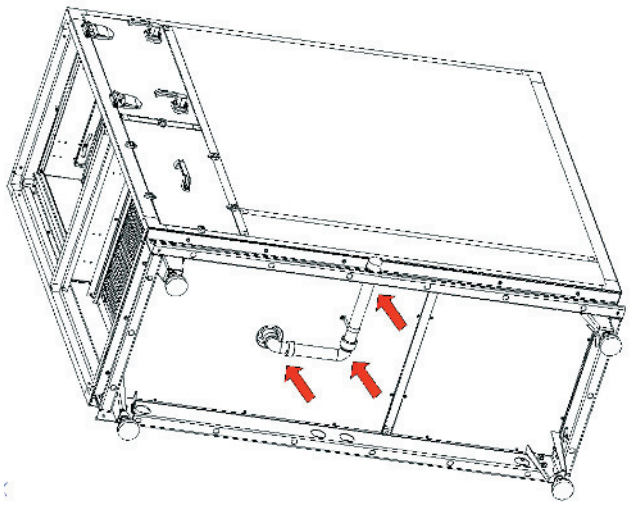

Figure 6

3.2 Hoisting with a crane

Any crane hoisting of packaged components is to be performed by means of the structural frame provided underneath the component.

- Insert appropriate tubes (thick wall tube of outside diameter ø 48.3 mm and wall thickness of 10 mm) through the circular leads in the structural frame. For lifting, apply steel hoisting cables or chains; in all cases, apply two spacer supports (Figure 7, detail A). Appropriate guards must be applied to both ends of the tubes (Figure 7, detail B).
- Hoisting without spacer supports (Figure 8) is not allowed, as this may damage the housing.

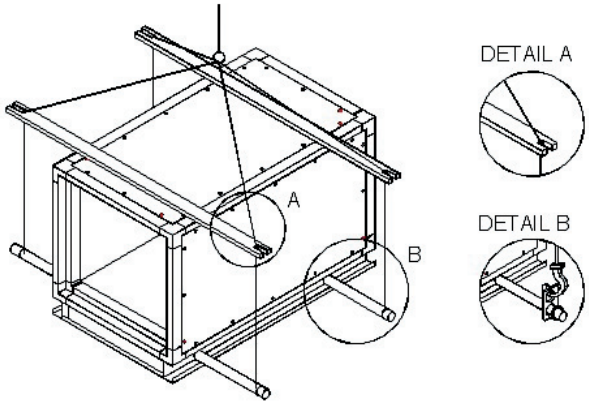

Figure 7

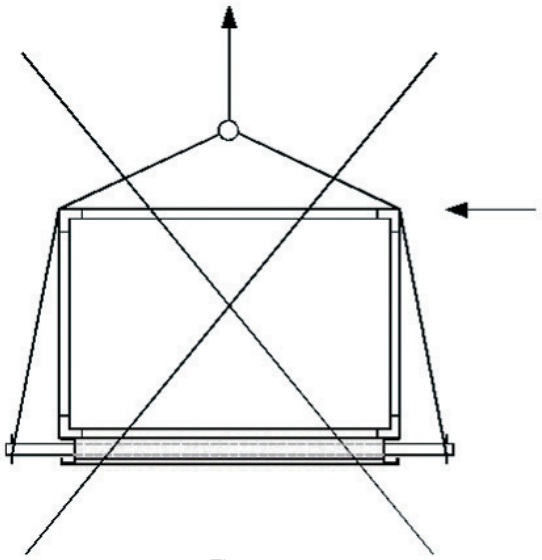

Figure 8

3.3 Transportation of disproportional units

In the case of functional units with short and disproportionately high section combinations, the transport packaging must be constructed so as to prevent the hazard of tumbling during transport or storage, and to add to the safety of exposed persons.

- If the rotary wheel or plate heat exchanger are delivered separately, refer to the additional manufacturer's instructions.

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4 Assembly and installation

4.1 Assembly and servicing area

To allow maintenance interventions and operation (e.g. withdrawal of a heat exchanger), always provide a clear area with a minimum width of 1.3 x unit width on the air handling unit servicing side.

- To facilitate the assembly, a clearance area with a minimum width of 0.5 m should be provided on the non-servicing side (Figure 9).
- In case of installation on an elevated platform, provide safe access to the platform and the necessary servicing area on the platform.
- If the total height of air handling units exceeds 2 m, provide for unimpeded and safe access by maintenance personnel to elevated parts of the air handling unit.

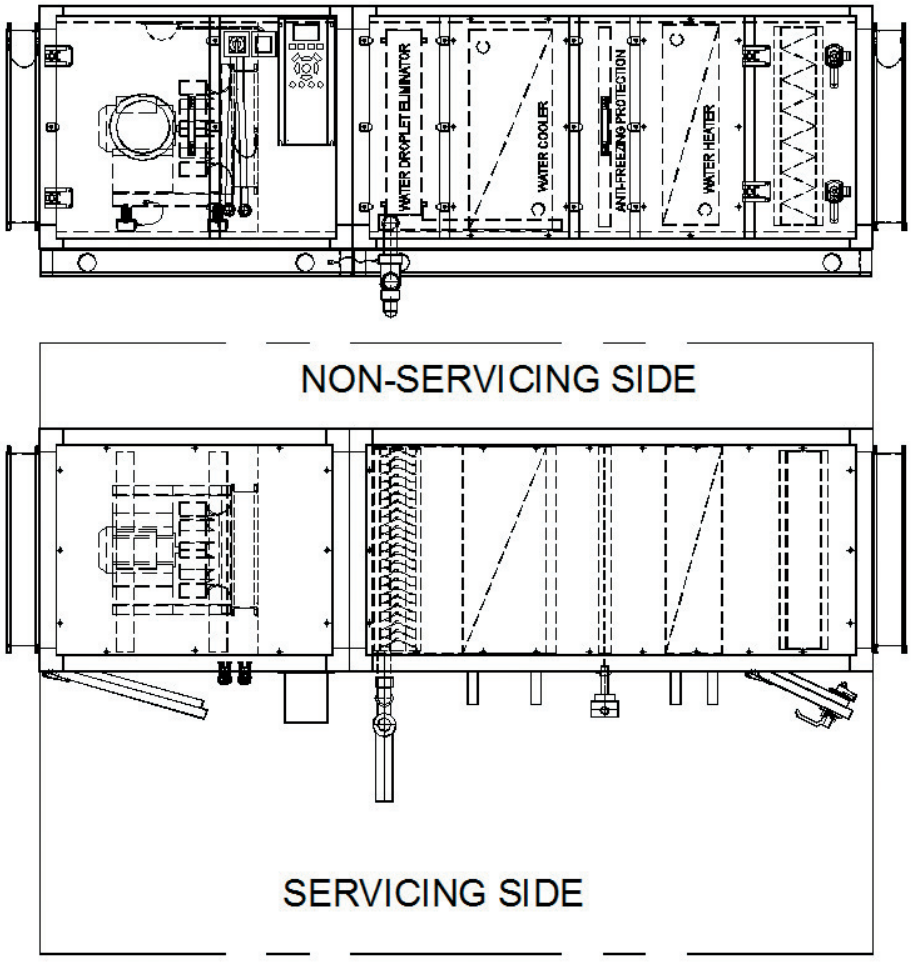

Figure 9

4.2 Construction of a foundation

- Mount the air handling unit onto an appropriately high, levelled and flat concrete or steel foundation.
- The minimum foundation height is determined by the elevation of the drain siphon. The foundation must be dimensioned according to the dimensions and masses of the devices listed in the technical calculation.
- **IMPORTANT**: air handling units with widths of 2 m or more must be additionally equipped with a longitudinal support bar under the center of the air handling unit in the entire unit length, as shown in Figure 10. If in doubt, consult OC IMP Klima.

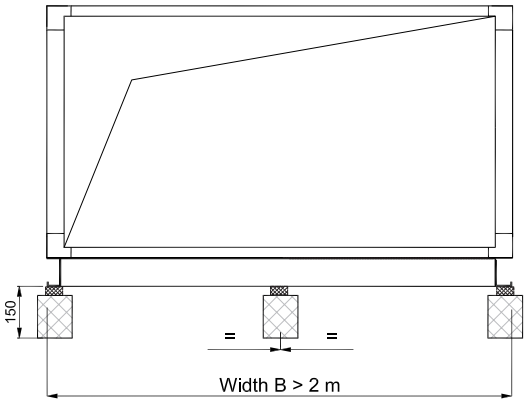

Figure 10

4.3 Mounting of an air handling unit on legs

- The foundation may be substituted by mounting the air handling unit onto base legs, fitted with a structural noise and vibration insulation bolt, allowing levelling within a range of 30 mm (Figure 13).
- The legs are to be mounted on site. Mount the legs to the base frame from the inner side with M10x20 bolts, as shown in Figure 13.
- To level each leg within the 30 mm range use a wrench for M16 bolts. The height of the leg can be adjusted with the lower nut, – see Figure 13. After reaching the correct level, tighten the upper nut.
- For additional vibration and noise insulation we can offer antivibration insulation pads as an option.

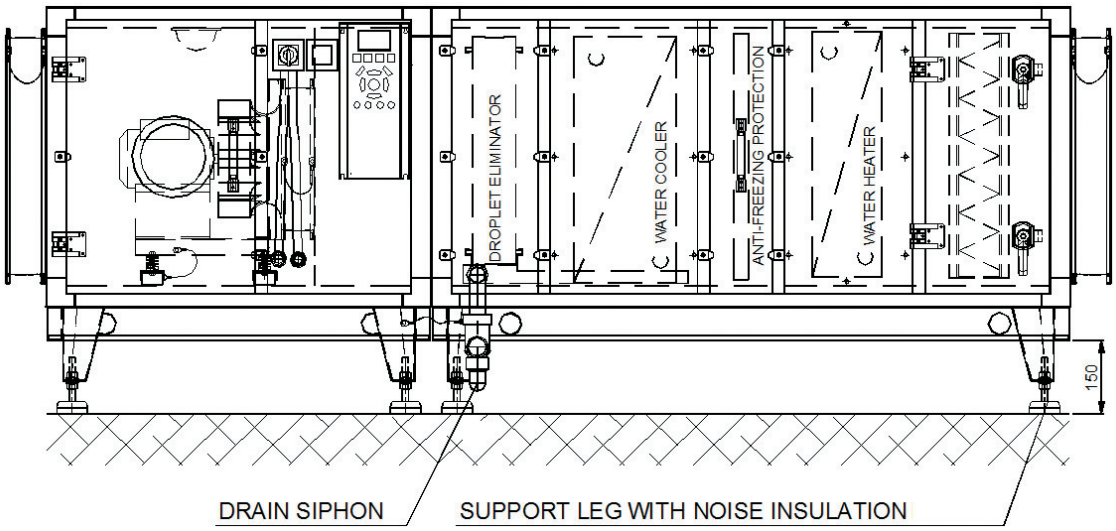

Figure 11

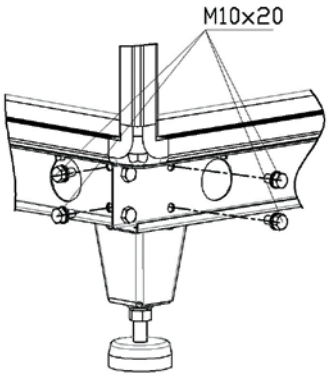

Figure 12

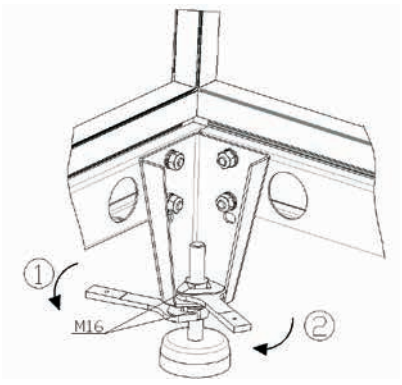

Figure 13

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4.4 Air handling unit assembly

Remove the protective foil, guards, diagonal restraints, wooden supports, pallets under the structural frame, etc. and ensure that the foundation is in level and flat.

Figure 14: Apply self-adhesive EPDM rubber sealing tape with a 20 x 8 mm cross-section (supplied with the air handling unit) onto the contact front faces (housing frame), when connecting the sections with aluminium profile.

Figure 15: The sealing tape must overlap at the corners. When connecting two sections, apply the sealing tape only on one of the sections.

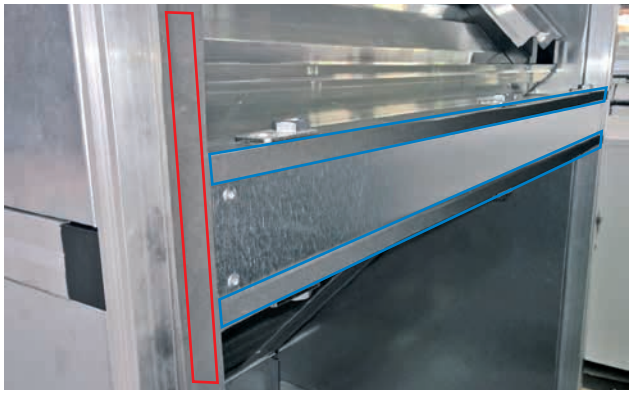

Figure 16: For sections with a steel profile (e.g. plate heat exchanger or rotary wheel section), additional EPDM rubber sealing tape with a 15 x 5 mm cross-section is used, see also blue marked tape.
The self-adhesive EPDM rubber sealing tape with a 20 x 8 mm cross-section is applied where the tape is marked red.

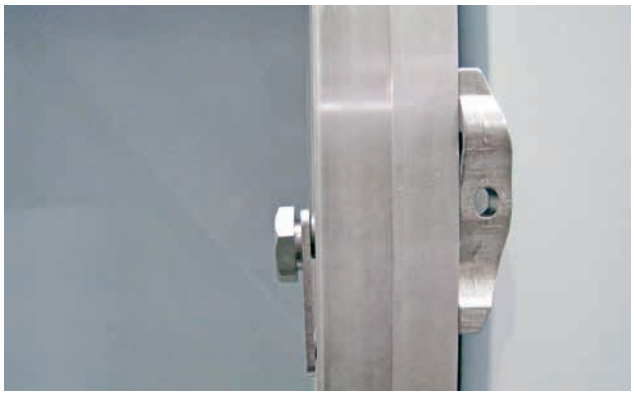

Figure 17: The sections are equipped with clamps on both the vertical and horizontal sides and both inside and outside.

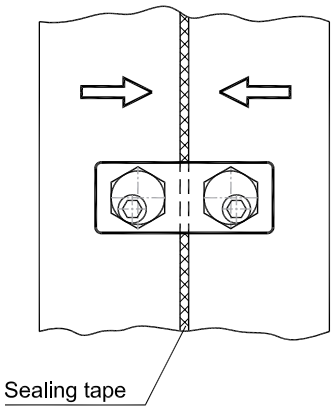

Figure 18: Draw the individual sections together by means of the tightening clamps, which are mounted in the structural frame openings. **Do not apply pressure to the housing!**

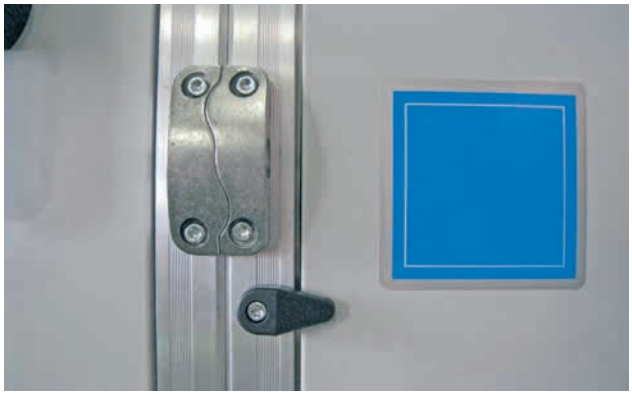

Figure 19: After having drawn the sections together, join them by means of eccentric clamps fitted on the section frames. The eccentric clamps are fitted on both vertical and horizontal sides either inside (Figure 20) or outside (Figure 19) on the frame.

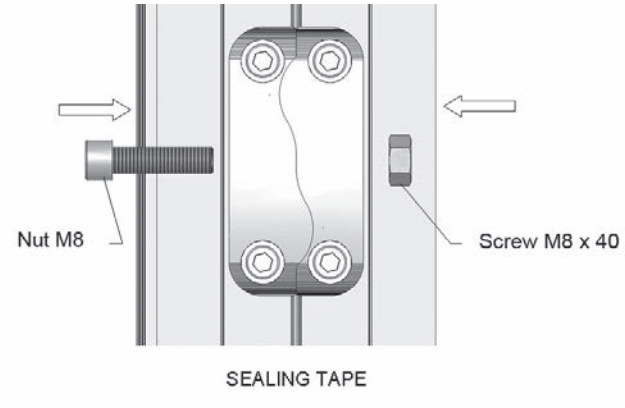

Figure 20: Connect outside type clamps with standard M8x40 screws. Screws are included as separate delivery.

Figure 21: Connect inside type clamps with special eccentric M8x25 screws. Screws are included as separate delivery.

Figure 22: The overpressure doors and de-mounting service covers are attached to the housing by blockers. To remove / attach the blockers use a 4 mm imbus key.

Figure 23: All overpressure door are additionally secured with a locking chain.

4.4.1 Assembly checklist

- Remove packaging.
- Ensure that the foundation is in level and flat.
- Apply rubber sealing tape onto the contact front faces of sections
- Draw the individual sections together.
- Join sections by means of clamps fitted on the section frames.
- Mount legs.
- Open all sections and remove transportation blockers.
- Remove instructions attached to components inside sections.
- Store instructions at a safe place.
- Close sections.

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4.5 Outdoor installation of air handling units

- Mount the air handling unit on a foundation of adequate height.
- Construct the foundation, so as to protect the air handling unit and its components from sliding or tumbling due to wind gusts.
- The roof of the air handling unit is factory mounted. However, when assembling sections on site, roof joints must be sealed and watertight. Mount the ridge tiles on the joints with rust-proof rivets (Figure 24) and seal (watertight) all the vertical joints between sections.

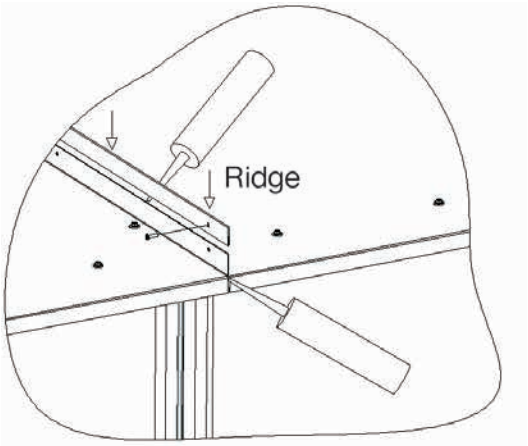


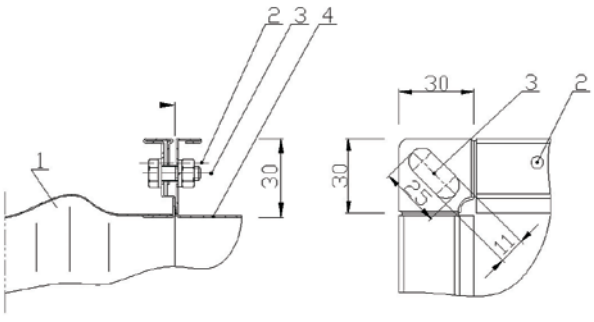
Figure 24

4.6 Duct connection

- The different types of duct connections are described below. In case of outdoor air handling units, all joints between the connections and the intake and outflow air ducts must be sealed and watertight. If the intake and exhaust air run to/from the air handling unit via ducts, the joints between the connections and the ducts must be sealed and watertight.

4.6.1. AHU delivered with flexible rectangular duct connections

- The flexible connection is attached to the duct by means of M8 bolts in the corners and, additionally with ø 4,8x19 mm bolts along the flange, as shown in Figure 25.

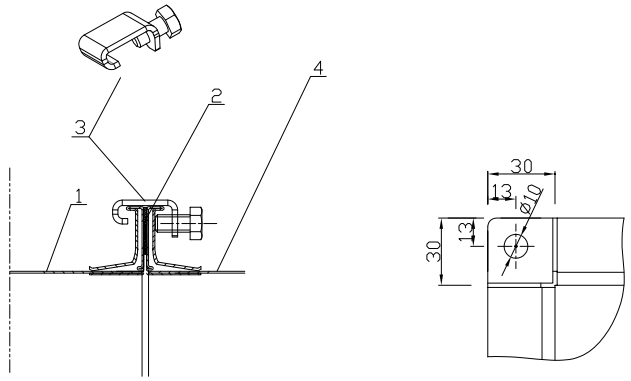


1 - flexible connection mounted on AHU housing
2 - Self drilling screw ∅4,8x19; 3 - Screw connection M 8; 4 - Duct

Figure 25

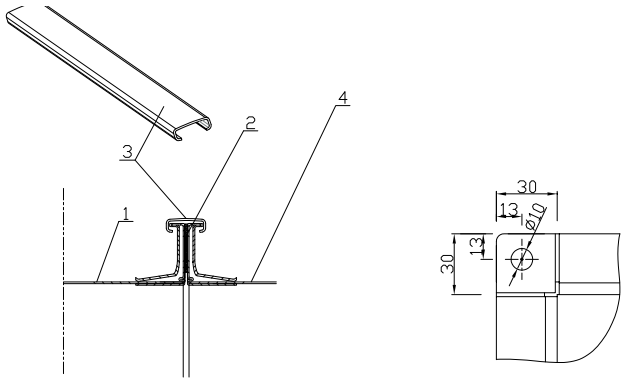
4.6.2 AHU delivered with fixed rectangular duct connections

- The fixed connection is attached to the rectangular duct either by means of RJFP clamps, as shown in Figure 26 or, by means of RJFP profile, as shown in Figure 27.



1 – RJFP connection mounted on AHU housing;
2 – rubber sealing tape 19 x 5mm
3 – RJFP clamp; 4 – Duct

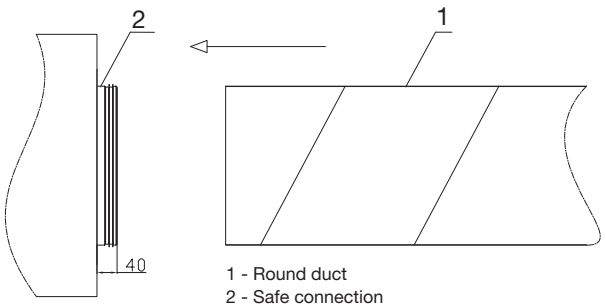
Figure 26



1 – RJFP connection mounted on AHU housing;
2 – rubber sealing tape 19 x 5mm
3 –RJFP Profil; 4 – Duct

Figure 27

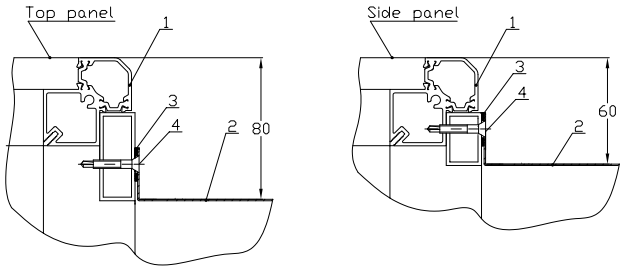
4.6.3 AHU delivered with fixed round duct connections



1 - Round duct
2 - Safe connection

Figure 28

4.6.4 AHU delivered with duct mounted on unit casing



1 – AHU housing, 2 – Duct 3 – Rubber sealing tape 19 x 5mm, 4 – Self drilling screw ø4,8x19

Figure 29

- Fixing of the duct directly to the air handling unit's casing is shown in Figure 29.

Figure 30

4.7 Siphon installation

- All sections, where condensation is likely to occur, are equipped with a drip tray and a drain. It is important, that the siphon mounted on the drainpipe is designed correctly and has correct dimensions.
- Both positive and negative pressure may occur in sections that require draining. The siphon assures the water drainage and prevents escaping of conditioned air through the drain or unconditioned air being dragged into the unit.
- In case of negative pressure a siphon type with ball shown on Figure 31 is normally used. In case of positive pressure in the section, a siphon similar to Figure 30 is to be used. Make sure to flood the positive pressure siphon with water.
- All drain pipes are size ø40, with smooth pipe connection.

Figure 31

NOTE:

- In case of outdoor installed air handling unit the drainpipe and siphon should be insulated and equipped with a heating cable.
- Please always assure, that the rubber sealing of the siphon is mounted tightly around the drain pipe – see Figure 32.
- Do not connect the drain directly to the sewer system. Condensate must be able to flow freely from the siphon to the sewer through an open funnel. The drain pipe should be installed with a minimum 2% slope in the drain direction.

Figure 32

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4.7.1 Siphon sizing

- The height of the siphon must be larger than the total negative or positive pressure inside the air handling unit section being drained. Please take into account the increased pressure loss generated during normal operation.
- Below the installation of positive pressure siphon (Figure 33) and the installation of negative pressure siphon (Figure 34) is shown.

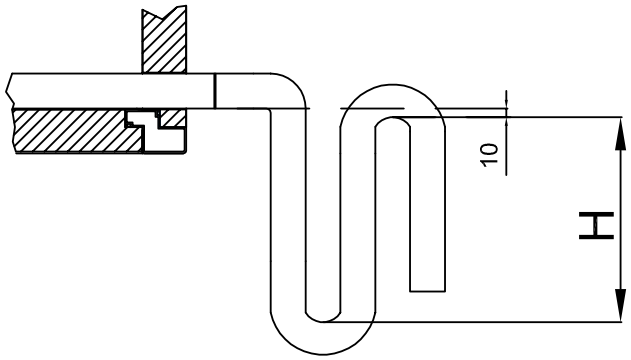

Figure 33

- Please assure for a 10 mm lower outlet bend, preventing water build up inside the drip tray.

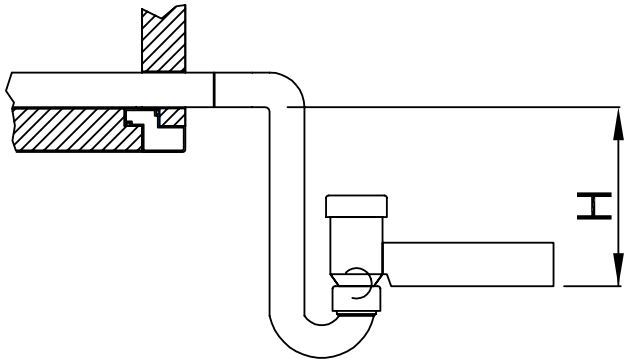

Figure 34

- For quick selection the minimum dimension H is shown in the following table.

Section pressure (Pa)	H (mm) Positive pressure / negative pressure
300	40
600	75
900	110
1200	140
1500	175
1800	210
2100	240

- Please note, that the piping from driptray under plate heat exchangers is run below section – see Figure 35.

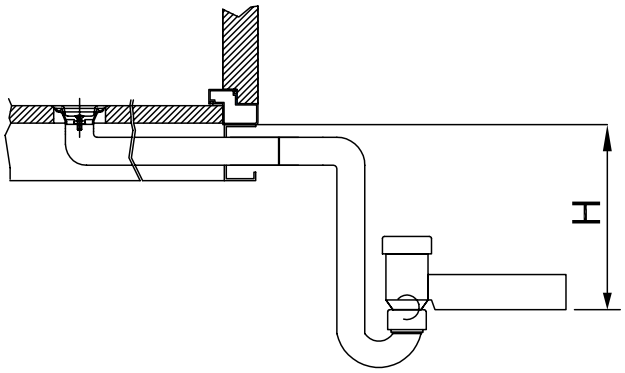

Figure 35

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