HRZ Plate heat exchangers

Operating Conditions and Position

Inlet and outlet air must not contain solid, fibrous, sticky, aggressive or explosive contaminants. Heat exchangers are designed to be installed into the air-handling system, into a parallel, perpendicular or diagonal (45ºaslant) air inlet/outlet duct line, or their various combinations. The disposition variability of the heat exchanger is provided by connecting elbows. The number of these elbows must be specified depending on the intended disposition.

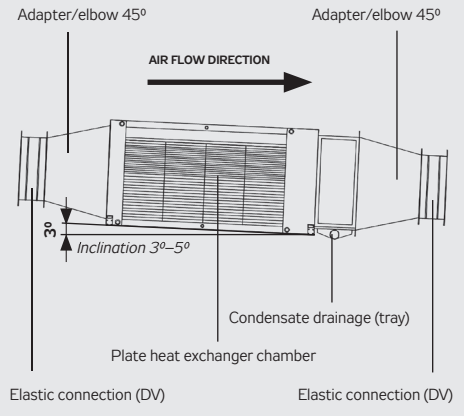
Warning:

- RHRZ heat exchangers without elbows or reducing adapters (the reducing adapters are specified but not included in the Remak delivery) do not have the standard connecting dimensions of the Vento system.
- These heat exchangers are designed only for indoor installation in the horizontal (overhead) or vertical (wall) position. If installed in the vertical position, condensate drainage from the outlet air duct behind the heat exchanger must be ensured.
- When designing the air-handling system, it is necessary to ensure access space for installation of the heat exchanger and servicing of the M&C elements.
- The chamber must always be suspended in the balanced position.

To ensure ideal condensate drainage, it is recommended to suspend the chamber with a positive inclination (towards the condensate drainage tray), 3º to 5º aslant depending on the condensate volume and pressure conditions. These effects cannot be defined in advance. Therefore, the installation should be performed so that additional inclination adjustment will be possible. The adjustment of the chamber inclination in relation to the building structure and air handling assembly can be enabled by using an elastic connection on fans along with elastic connections on other branches (not included in the Remak delivery).

Positioning with a negative inclination in relation to the condensate drainage is PROHIBITED!

Figure 54 – Chamber suspension with a positive inclination



Mounting and Installation

Installation of the heat exchanger can be performed in a way similar to the installation of other Vento system components. The specified dimensions of the reduction element inlet and outlet flanges (elbows and reduction adapters) are compatible with other elements of the duct line.

HRZ Chamber Suspension

Horizontal position (overhead installation)

The heat exchanger chamber can be suspended either using Z-hangers with silent-blocks (included in the Remak delivery) and M8 threaded rods (not included in the Remak delivery) or using other options, i.e., using suspension bars or brackets (not included in the Remak delivery).

Vertical position (wall installation)

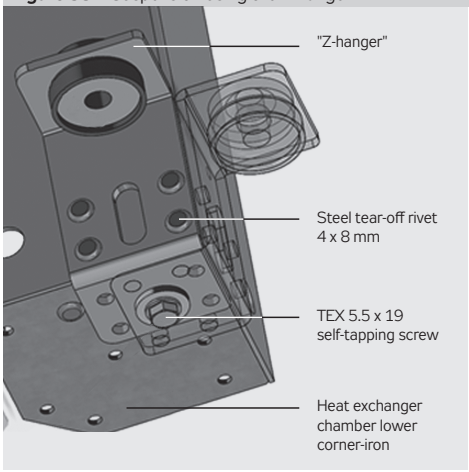
It is recommended to support and secure the heat exchanger chamber in the location of the edge support profiles. It is advisable to use suitable rubber pads between the chamber and supports (not included in the Remak delivery).

Z-Hanger Installation

The Z-hanger with a silent-block is designed only for horizontal overhead installation of the unit using the M8 threaded rods, and is always situated in the lower corners (corner-iron) of the heat exchanger chamber. When installing the Z-hanger, it is possible to select the side of the suspension silent-block location, e.g., due to the damper actuator linkage (if the Z-hanger collides with the actuator).

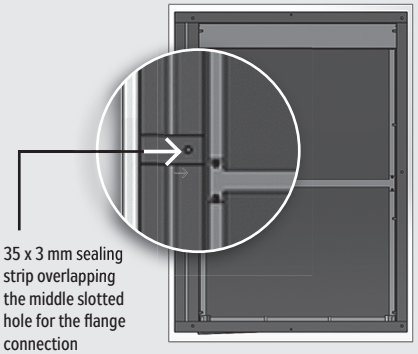
The Z-hanger is secured to the chamber corner-iron by the "TEX" 5.5 x 19 self-tapping screw with the M8 washer and four steel tear-off rivets 4 x 8 mm – if the location of the Z-hanger is changed, it is necessary to drill new holes for the rivets according to the holes in the Z-hanger using a drill bit of 4 mm diameter.

Figure 55 – Suspension using the Z-hanger



Note: To maintain the joint tightness and strength when connecting the 45º elbows, reduction adapters or other elements of the air-handling assembly to the flange of the condensate drainage tray, we recommend applying a self-adhesive 35 x 3 mm sealing strip (included in the Remak delivery).

Figure 56 – sealing strip application



Installation of 45º Elbows and Reduction Adapters

Before installation, always apply self-adhesive sealing onto the connecting flange faces of the 45º elbows and reduction adapters. The connection of the elbows and reduction adapters to the heat exchanger chamber is carried out using the flange with pressed nuts situated in the connecting chamber wall corners. To brace flanges with a side longer than 40 cm, it is advisable to also connect them in the middle (to prevent flange bar gapping). This centre connection to the heat exchanger chamber is carried out using self-tapping screws and to the duct or reduction adapter using screw coupling clamps. It is necessary to ensure conductive connection of the flange using fan-washers placed on both sides, on at least one flange connection.

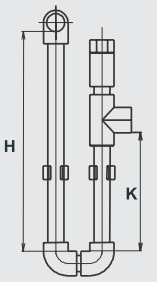
Mixing Damper Installation

Before installation, always apply self-adhesive sealing onto the connecting flange faces. The connection of the mixing damper to the heat exchanger chamber is carried out through with the pre-drilled holes in the flange to the pressed nuts on the connecting wall of the heat exchanger. It is necessary to ensure conductive connection of the damper flange using fan-washers, on at least one flange connection. If the damper is equipped with a linkage and actuator situated on the side, it is possible to change the right-hand or left-hand linkage location by turning the entire damper according to operating needs or space requirements.
Note: If retrofitting the mixing damper, the by-pass cover panel must be disassembled and removed to open the air inlet on the mixing damper side – the cover panel can be unscrewed from outside, i.e., from the side where the mixing damper is to be installed.

Condensate Drainage installation

It is recommended to place the siphon right behind the tray neck. The correctly selected siphon height depends on the total pressure of the fan, and ensures its proper functioning. The siphon height dimensions must be designed depending on the fan pressure.

Figure 57 – Condensate Draining



H (mm)	K (mm)	P (Pa)
100	55	600
200	105	1100
260	140	1400

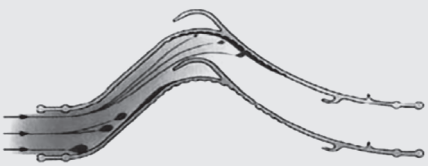
H... Siphon height
K... Siphon drain height
P... Total pressure of the fan

The condensate drainage tray is attached to the structure using sealing and screws which enable removal of the tray and its side arrangement – the left-hand or right-hand neck location.

Drop Eliminator Installation

The prepared attachments are situated in the condensate drainage tray's duct piece area, enabling the installation/insertion (also retrofitting) of the eliminator. The eliminator can be inserted into the condensate drainage tray's duct piece area through the removable (screwed) side covers of the duct piece, or through the removable (screwed) tray in the lower part of the duct piece. Removal of the eliminator, e.g., for cleaning, can be performed in the same way.

Figure 58 – The correct orientation of the eliminator's fin



Note: Please ensure the correct orientation of the eliminator's fins.

HRZ Plate heat exchangers

Installation of the M&C Elements

If necessary, the M&C elements can be installed/attached to the external side of the corner profiles of the chamber casing (here, the attachment holes can be drilled into the chamber casing).

Recommended locations of the M&C elements:

- NS 120 – standard installation on the ductwork, 45º elbow or reduction adapter behind the heat exchanger in accordance with the Sensor Installation Instructions.
- CAP (capillary tube) – installation on the chamber casing. The capillary tube must be evenly distributed in the area behind the heat exchanger.
- P33N –installation on the ductwork, 45º elbow or reduction adapter of the outlet branch in front of or behind the heat exchanger.

Warning: Never drill or install the M&C elements to the chamber bottom or chamber cover – there is a risk of damage to the heat exchanger or leakage from the casing.

Operation and Maintenance

When used in accordance with the project designed in AeroCAD software and instructions in the "Operating Conditions and Position" chapter, the HRZ heat exchangers require only minimum maintenance related mainly to the cleanliness of the condenser, free passage through the condensate drainage, functionality (rotation) of the dampers and functionality of the M&C elements.

Inspections

(minimum recommended interval for inspections and cleaning - 2x per year)

- Check the intactness and internal cleanliness of the heat exchanger and eliminator.
- Check the functionality of the dampers, linkage and actuators.
- Check the functionality of the installed M&C elements.
- Check free passage through the entire condensate drainage.
- Check the state of the unit's suspension

Access to Individual Components of the HRZ Heat Exchanger

- The dampers (by-pass and mixing) with actuators are installed from the outer side of the chamber – free access
- The installed heat exchanger – access through the elbows, reduction adapter (removable) and from above through the removable (screwed) cover of the heat exchanger chamber
- By-pass area – access from above through the removable (screwed) cover of the heat exchanger chamber
- The ductwork piece and tray with an eliminator – access through the removable (screwed) side covers and removable condensate drainage tray

Warning:

- The VCS control system includes the function of heat exchanger drying which, using fan run-out, helps remove the remaining condensate when the equipment is switched off. If a quick service action is needed, the equipment must be switched off via the main switch to eliminate fan run-out.
- The heat exchanger is made of thin aluminium profiles. Any unqualified handling can cause permanent and irreparable damage.
- The bypass duct must be regulated so that the air pressure loss in the duct bypass will be approximately the same as the air pressure loss in the heat exchanger. Otherwise, the parameters of the air-handling system could be changed, respectively the working point of the supply fan could be shifted into the non-working (forbidden) area. Therefore, the supply current of the fan must be checked during heat exchange mode as well as during bypass mode.
- Air filters must be installed in front of the cold and hot air inlets to avoid fouling of the heat-exchange surfaces, successive reduction of the heat exchanger effectiveness, and increasing pressure losses.

Handling and Transport

- Handling and transport of the chamber must always be performed in the horizontal position, i.e., with the by-pass channel situated upwards, on a flat surface (e.g., pallet + cardboard box).
- Lifting must be performed using the lower corners of the casing, respectively the lower edges of the chamber.
- The chamber structure allows 3 chambers to be stacked during transport. Cardboard must always be inserted between the chambers.
- The support area of the chamber is created by the corners and perimeter of the chamber. Therefore, **do not place** smaller items on the cover of the chamber – **risk of breakage of the chamber cover and area around the by-pass channel.**
- **The heat exchanger is made of thin aluminium profiles. Any unqualified handling can cause permanent and irreparable damage.**