ASSEMBLY AND OPERATION INSTRUCTION FOR UNITS H AND HL

These instructions are an integral part of the Technical Conditions TP12105_EN for the designed air-conditioning units of the H and HL series.

1. GENERAL PROVISIONS

Instructions for the assembly, commissioning, unit operation, servicing and maintenance of the H and HL air conditioners are included in this manual.

Before installing and using the H/HL series air handling units, it is necessary to familiarize yourself with and observe the directions and recommendations included in the following chapters. Compliance with these regulations is a condition for the validity of the warranty.

2. TRANSPORT AND HANDLING OF THE BLOCKS

Transport all blocks in the working position. Laying down for short time or tilting is not acceptable, especially for the rotary heat exchanger.

For lifting and handling compact units or unit blocks, use the lower reinforced frame or pallet. Holes for vertical transport by lifting sling with hooks or for clamping to a vehicle loading surface are provided in the base frames. If the block does not have a base frame, use handling hitches.

The units and their components must be adequately secured against movement and overturning on the vehicle.

The transported parts must be lifted by the transport pallet when loading and unloading with a forklift truck. Careful handling is required.

When lifting with a crane, it is necessary to pass the crane slings through the transport pallet and to balance the transported part.

Use the holes in the base frames to attach the crane sling with hooks for smaller blocks.

The crane sling with hooks must be braced to prevent them from compressing to the blocks in both cases. On the block edges can be also used a lath as a strut.

3. STORAGE ON THE BUILDING SITE

The units are stored depending on the package type in warehouses according to the standard CSN EN 60721-3-1: „Classification of environment conditions – Part 3: Classification of the environment parameter groups and their strictness rates – Section 1: Storage“. The units packed into the PE foil must be stored in the warehouses of the IE11 type.

Protect the equipment from mechanical damage and moisture during storage. Moisture in the air can condense under the PE foil and cause oxidation of the galvanized elements.

For storage under a shed, in the warehouses of the IE13 type, but fauna and flora negligible, it is necessary to make an advanced agreement about the packaging into the PE-foil, cardboard, crate on the edges and taping.

For a possible storage in the open area in the warehouses of the IE14 type, but fauna and flora negligible, it is possible to make an agreement on wooden packing.

4. UNIT ASSEMBLY

The equipment installation may be executed exclusively by a specialized assembly company with a licence pursuant to the Trade Licensing Act.

4.1 INSPECTION BEFORE STARTING ASSEMBLY

In particular, the following must be checked:

- delivery completeness
- if there is no damage from transport and storage
- if the fan set can be freely turned (by hand) and V-belts tension
- if the heat recovery rotary exchanger rotor can be freely turned (by hand) and belt tension
- movability of dampers
- construction readiness
- voltage supply system parameters
- pressure and temperature of the heating and cooling media

All defects found must be unconditionally removed before assembly.

4.2 UNIT PLACEMENT

Handle units with care, especially avoid crossing structures. It is of particular importance to exercise caution and attention when dealing with piping, drip traps, and plastic chambers. It is recommended that extra caution be exercised in temperatures below 5 °C, particularly when handling with plastic components.

The units whose contain water heat exchangers or sections with a condensate drain must be situated in such a way that their eventual failure (e.g. exchanger freezing or condensate outlet out offunction) could not cause any damage. It is recommended to place the units in a machine room with the water-proof floor and a gully trap.

4.2.1. PLACEMENT ON THE GROUND

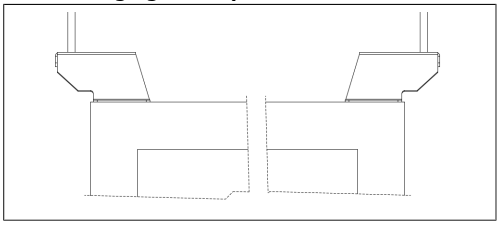
The units can be freely seated on a horizontal base (floor, landing); there is no need to anchor them but it is recommended to place a strip of riffled rubber under the unit to compensate small unevenness of the base. Levelness and horizontal alignment of the unit are one of the conditions for the proper functioning of the unit.

You can stack units of the same size in two layers on top of each other. When stacking smaller sized units on top of larger sized units, the longitudinal walls must always face each other on one side.

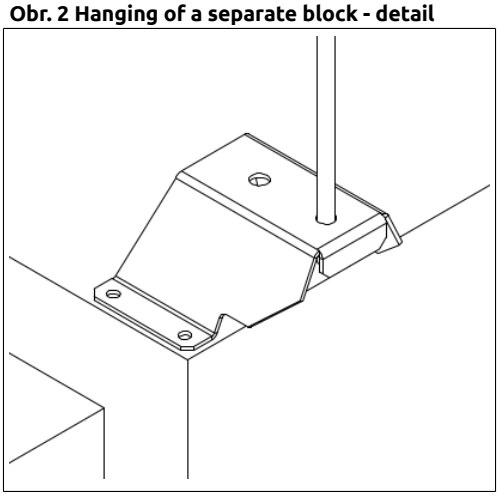
4.2.2. HANGING OF UNIT

The units that are designated for a hanging under a ceiling are hanged only on the suspenders (grips) which are components of the unit. The connection of the grips with the ceiling construction is provided by galvanized threaded bars M8. The threaded bars and anchors are not a part of the delivery of the units.

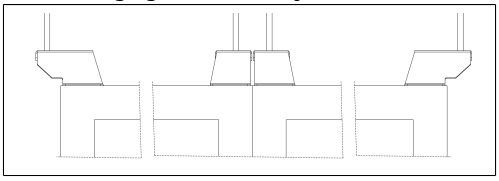
Obr. 1 Hanging of a separate block



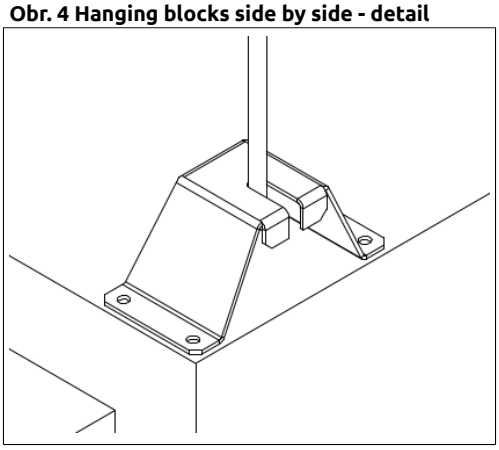
Obr. 2 Hanging of a separate block - detail



Obr. 3 Hanging blocks side by side



Obr. 4 Hanging blocks side by side - detail



4.3 SPACE FOR SERVICE ACCESS

On the floor-projection seating of the unit the following minimum lateral space-gaps between the service side of the units and other objects must be ensured:

- fan section 0.7 of the part width, min. 600 mm to enable being shifted out
- filter section min. 600 mm to enable the filtration inserts being shifted out
- exchanger section min 1.15 of the part width to enable being shifted out
- eliminator section min. 1.15 of the part width to enable being shifted out
- section with the plate heat recovery exchanger min 1.15 of the part width to enable the plate exchanger being shifted out
- section with the service opening min. 600 mm to enable access
- gas heating section min. 1,5 of the part width
- distance of flammable objects min. 200 mm from unit

NOTE.

At the units which are to be installed under a ceiling the doors and service openings are opened downwards, exchangers and etc. are shifted out in lateral direction.

4.4 CONNECTION OF THE BLOCKS

The connecting and sealing material for blocks connections is part of the unit delivery.

The blocks are connected from the outside. For ceiling units and side-by-side blocks, the compression nuts for the connection are located inside the blocks on the bottom and lid.

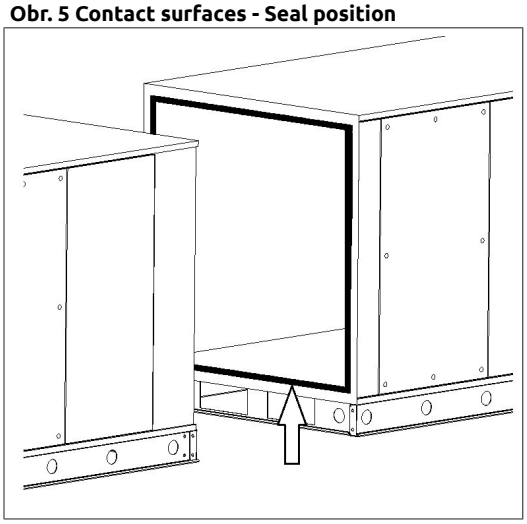
Connect the ceiling unit either on the ground and pull it up on the threaded rods as a whole, or (depending on the space and weight) pull the individual pieces up on the threaded rods and then connect them under the ceiling.

The couplings can be accessed through the filter section and fan doors. For plate recuperators and heating or cooling sections, remove the front panel and slide out the heat exchanger beforehand.

Blocks joining procedure

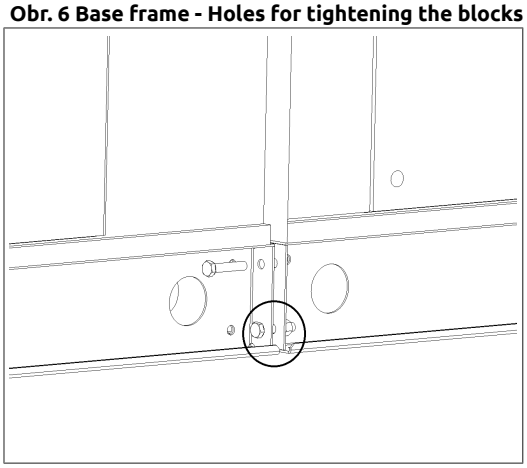
Stick self-adhesive seals to the contact surfaces of individual blocks – always only on one side of the block from the two blocks being joined. Level the seal on the inner edge of the contact surfaces.

Obr. 5 Contact surfaces - Seal position



After applying the sealant, bring the sectin together tightly. The blocks must fit tightly and align. During block clamping, ensure that the panels of the blocks are not damaged. To firmly bring the blocks together, you can use the holes in the base frames or tighten the sections with tightening straps at the top or bottom.

Obr. 6 Base frame - Holes for tightening the blocks



The connection of the individual sections in case of composed units is carried out by means of special connecting elements „MSHEX3“ or „MSHEX290“ by screwing them one to another.

Attach the MSHEX3 connector to one block using screws with washers through the round hole, and to the other block through the oval hole, and tighten slightly.

Due to the conductive connection of the blocks, always use fan washers instead of precision washers for one connection. For inspection purposes, we recommend making this conductive connection on the operator's side.

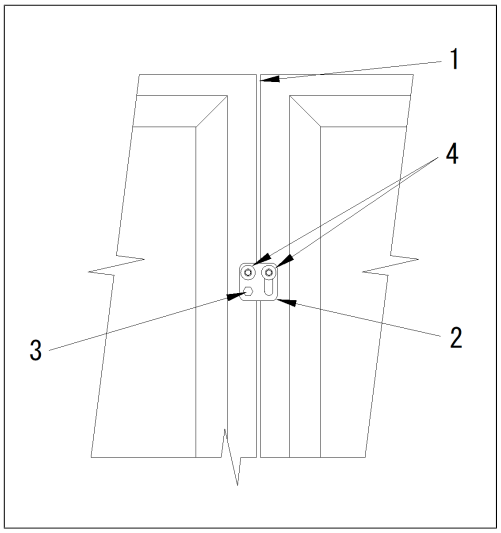
Insert the hex key into the hexagonal hole.

Use lever action of the hex key to lock the connector parallel to the block, ensuring a firm seating of the blocks.

Tighten the connector screws firmly.

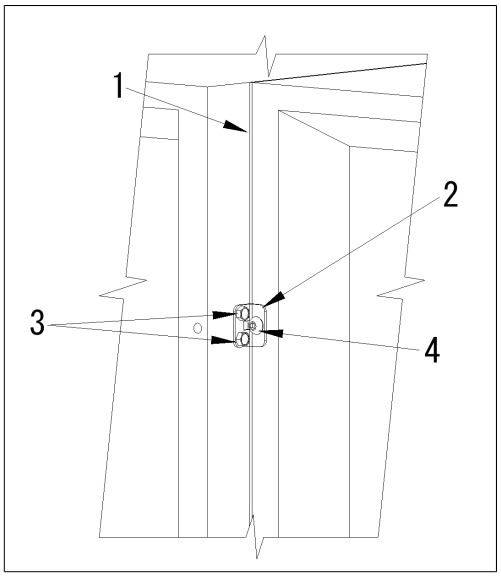
This procedure is repeated according to the number of blocks.

Obr. 7 Connection of the blocks - external



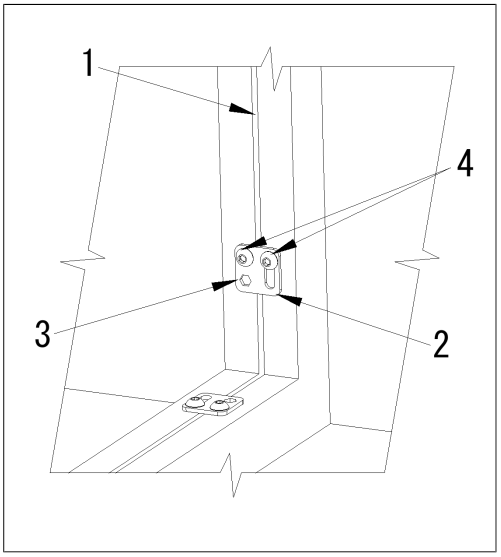
1. gasket MQTES1904, 2. connector MSHEX3, 3. hexagonal hole 8mm, 4. hex screw M8x16, precision washer /fan-shaped washer

Obr. 8 Connection of the blocks - different size of section



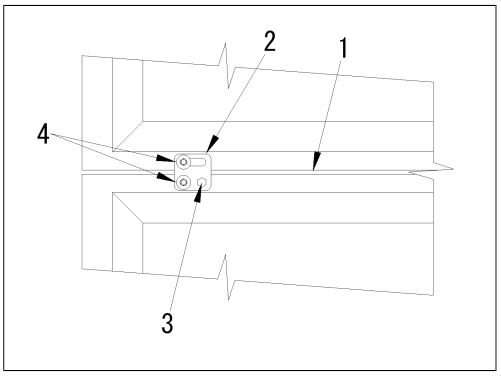
1. gasket MQTES1904, 2. connector MSHEX290, 3. screw M6x16, precision washer /fan-shaped washer, 4.hex screw M8x16 half round head, washer /fan-shaped washer

Obr. 9 Connection of the blocks - internal



1. gasket MQTES1904, 2. connector MSHEX3, 3. hexagonal hole 8mm, 4. hex screw M8x16, precision washer /fan-shaped washer

Obr. 10 Connection of the blocks - above each other



1. gasket MQTES1904, 2. connector MSHEX3, 3. hexagonal hole 8mm, 4. hex screw M8x16, precision washer /fan-shaped washer

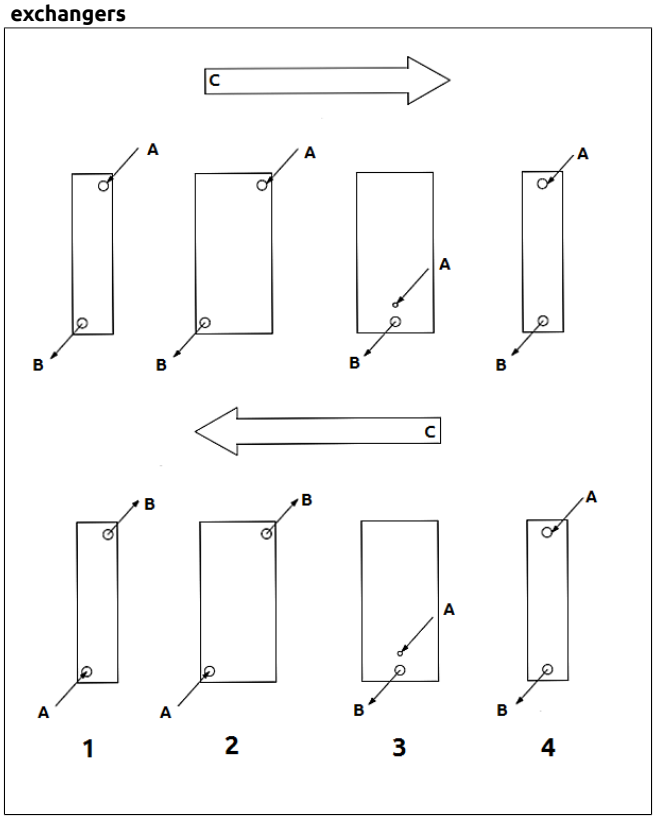
4.5 CONNECTION TO THE AIR DUCT

Connect the ductwork to the unit's flexible cuffs in such a way that the weight of the ductwork does not weigh them down or deform them.

4.6 CONNECTIONS TO HEATING AND COOLING MEDIA

Always connect multi-row water heat exchnger and evaporators in counter-flow.

Obr. 11 Position of medium inputs and outputs at the exchangers



A. input, B. output, C. air flow direction, 1. water heater, 2. water cooler, 3. direct evaporator, 4. steam heater

Dilatation forces and the weight of the fittings supplying the medium to the heat exchangers must not load the unit.

The piping for steam supply and condensate drainage must be separately suspended. It must not burden the heat exchanger connection pipe with its weight and expansion forces. Steam heater exchangers must always be connected to the piping system via pressure compensators.

Insulate the connection pipes of the heaters so that the surface temperature during operation does not exceed 60 °C.

WARNING

When connecting valves to heat exchangers, avoid turning the heat exchanger connection. Hold the connection with a suitable tool (two wrenches) against the direction of tightening. This will prevent damage to the input and output pipes of the exchanger.

For steam heaters, ensure perfect condensate drainage, including draining of the condensate pipe so that the heat exchanger is free of condensate after shutdown. Ensure that the system is fluently ramp-up up to avoid pressure surges and to allow any remaining condensate to be pushed out gradually.

It is strictly forbidden to drill any holes in the plastic case of the overpressure cooler sections.

4.7 PROTECTION AGAINST CONTACT WITH NON-ELECTRICAL PARTS OF THE UNIT

Provide protection by conductively connecting the air duct and other conductive non-electrical parts to the unit. The rivet nuts marked with the grounding symbol and the screws on the profiles of the dampers.

The individual blocks are conductively connected according to 4.4.

4.8 CABLE CONNECTIONS

Connect the electric current to the motors with a flexible cable through the gland located in the panel.

If the switchboard is not close to the unit, connect the motors via a service switch for safe shutdown located within reach of the unit.

If the holes for the motor connection cable are closed with a membrane, use a suitable tool to punch it out and insert a suitable gland. This must not damage the terminal block, the terminal plate and the cable connections in the inner space of the terminal block! Dust-tightly close unused cable holes in the terminal board.

Electrical devices located inside the unit (actuators, differential pressure gauges, solenoid valves, etc.) should also be connected via a cable routed through a gland in the panel.

4.9 CONDENSATE DRAIN CONNECTION

Ensure that condensate drains are properly designed, including the fitting of water traps.

Connect all condenser drains to the drain via water traps.

Place the water trap directly on the condensate drain pipe of the unit. Each condensate drain must be fitted with its own water trap. Do not connect the siphon directly to the drain, but its outlet of the whater trap must terminate in the air above the drain inlet.

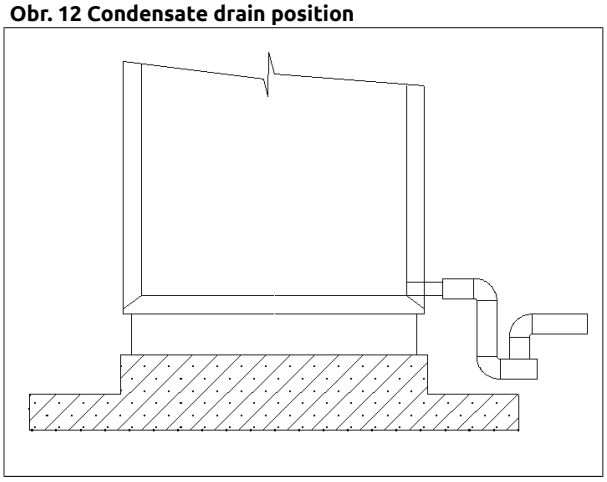
It is absolutely necessary to observe the prescribed height of the water column in the water trap:

If the total fan pressure < dP 1000 Pa, then the minimum height of water column h = 100 mm.

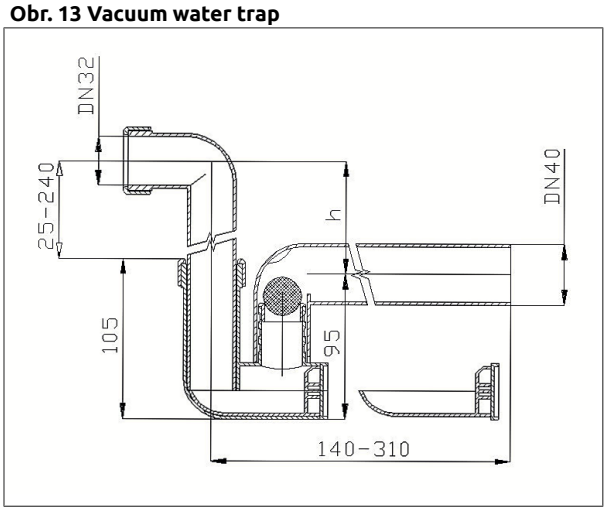
If the total fan pressure > dP 1000 Pa, then 1 [mm] = dPt [Pa]/10" (max overpressure 1800 Pa).

Condensate drain connection:

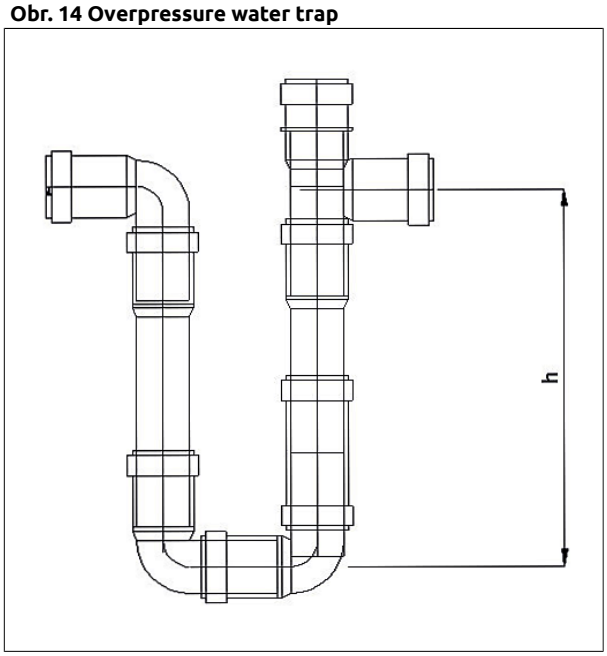
Obr. 12 Condensate drain position



Obr. 13 Vacuum water trap



Obr. 14 Overpressure water trap



The piping that drains the condensate must not be smaller than the size of the water trap. Minimum pipe gradient is 2%.

4.10 INSTALLATION OF GAS HEATING SECTION WITH PRESSURISED BURNER (GAS HEATER)

Place the exchange part on a horizontal and sufficiently solid floor or frame. The slope must not be more than 5 mm across the width of the heater.

The location must be such as to allow the combustion chamber to be replaced and the tube space to be cleaned. This means that at the front (on the side of the burner) there must be free space equal to the dimensions "length x width x height" of the heater.

Check the tightening of the fixing screws on the burner side of the exchanger chamber.

On the panel covering the tube plate of the heat exchanger chamber (opposite the chimney), nothing can be installed there due to dismantling when cleaning the tube plate.

4.10.1. SAFETY DISTANCES

The actual distance of the air heater from the flammable material must not be less than the safety distance that is 200 mm, according to ČSN 06 1008:97.

If this distance cannot be met, it is necessary to use a protective screen made of flammable material A or B. The thickness of the protective screen must be at least 3 mm. The protective screen must have a permanent position between the appliance and the protected material at a distance (30 + 5 mm) from the protected material. The protective screen must extend beyond the protected material to the nearest wall (ceiling) of non-flammable material, but at least 300 mm on the top and 150 mm on the sides. When using the protective screen, the required distance can be reduced by no more than half.

If the heater is installed on the floor of flammable material, an insulating, non-conducting pad is used in this case.

The material used for insulating pads - the degree of flammability A, B, must be resistant to the mechanical effects of the load. The dimensions of the pad must be at least the same as the heater floor plan. The thickness of the insulating pad must be at least 5 mm.

No flammable materials can be stored at the location of the heater, as this could create a fire hazard!

4.10.2. CONNECTION TO SMOKE FLUE

The installation of the smoke flue must comply with all applicable regulations and must be carried out by a specialist company. Each heater fitted with a gas overpressure burner must be connected through a separate smoke flue to a separate chimney flue.

WARNING

The necessity for all designs of MTP heaters is to ensure condensate drainage from the chimney flue.

4.10.3. CONDENSATE DRAIN CONNECTION

If the heater contains condensate drainage, it is advisable to ensure condensate drainage from the heater. The condensate has a temperature of up to 100°C and is a weak carbonic acid. From an environmental point of view, the condensate has the character of drinking water, only the pH is lower.

4.10.4. ASSEMBLY OF BURNER

The connection of the heating medium must be carried out by a professional company (according to the relevant project) and must comply with the standards for the operation of the type of burner.

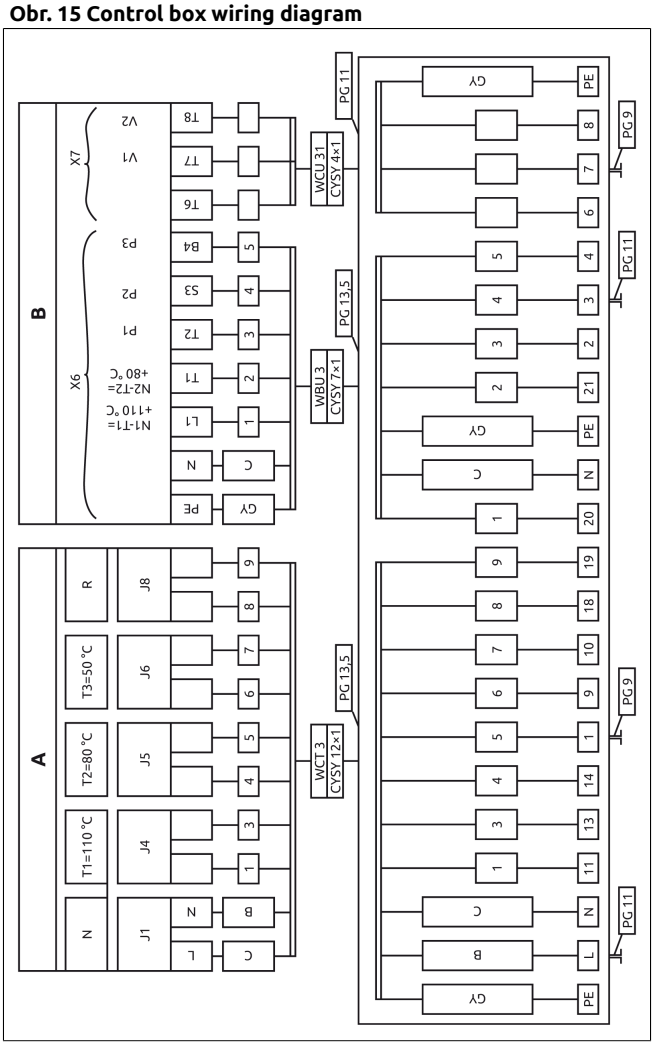
Installation and adjustment of the burner will be carried out by a service technician of the burner manufacturer. After the burner adjustment report has been submitted and the appropriate revisions have been made, the heat exchanger is ready for approval and operation.

Heat exchanger units are, as standard, fitted with flanges with seals for assembly of the burner by means of bolt connections. For the outdoor design of the heat exchanger unit, the corresponding cover is screwed over the burner.

Before installation, check that the local conditions of fuel distribution, fuel properties, overpressure and current heater settings are compatible.

4.10.5. ELECTRIC CONNECTION AND CONTROL

Obr. 15 Control box wiring diagram



A. Gas heater thermostats, B. Burner, N.,NT1.,NT2.,NT3. Power supply, T1.,T2.,T3. Thermostat, R. Reset, P1. RUN, P2. Information from burner - ALARM, P3. Information from burner - PROGRESS, V1. Performance control - INCREASE, V2. Performance control - REDUCE, C. Blue wire, B. Brown wire, GY. Green/Yellow wire,

Connect the gas burner to the parent system through a control box that provides at least the following breakdown heater functions.

Electric connection and control - specification

- L.,N.,PE. Power supply, 230 V, 50 Hz, request for power supply max. 10A.,
- The contact of the +50°C operating thermostat is connected to the terminals 9.,10. This contact must guarantee the operation of the fans even if the HVAC measuring and control system unit has set the fans to the off state(necessary for the aftercooling of the gas heater chamber.)
- A contact must be connected to the terminals 1., 2. to switch on the operation of the gas burner (230 V, 50 Hz).
- Terminals 18 and 19 can be connected to the burner fault reset contact (230 V, 50 Hz)
- Terminal 3. Alarm signal 230 V, 50 Hz.
- 4. Signál chod 230 V, 50 Hz
- 8.,7.,9. Terminals for burner power control. Connect terminals 6-7 to reduce power (performance control - minimum). Connect terminals 6-8 to reduce power (performance control - maximum).

If it is necessary to start the unit with the heater heated (winter start), then first switch on the burner, and after switching terminals 9 - 10, start the fans. If no heating is required, start the unit regardless of switching terminals 9 - 10.

When shutting down the unit in heating mode, control the fans with the fan thermostat (terminals 9 - 10 of the control box) - the fans must run when the contacts are closed.

The fan motors can be switched on several times (about 3 times) by the thermostat until the section is completely cooled down.

Do not turn off the entire unit without ensuring that the fans are running. The heat accumulated in the heat exchanger could damage the equipment due to the flow.

Do not turn off the fans when the burner is on.

4.10.6. GAS HEATER WITH BYPASS DAMPER

The gas heating chamber with bypass has two continuously adjustable variables - the burner output and the angle of the bypass damper, which controls the flow of air past the heat exchanger and through the bypass.

The recommended control method is that the bypass damper setting is continuously controlled according to the flue gas outlet temperature. The optimum flue gas outlet temperature is 160 °C, as this is the temperature at which the highest heat exchanger utilisation and lowest condensation occurs. The desired supply air temperature is achieved by adjusting the burner output.

This method of control requires two PI controllers, where the first one works in a closed loop and controls the bypass damper setting depending on the flue gas outlet temperature. The second controller then regulates the burner output depending on the requested temperature.

4.11 PIPE AND CABEL CONNECTION

All connections for heating, cooling, electrical or other constructions must not prevent full opening of the door, removal of filters and droplet eliminators, operation and maintenance of the unit.

4.12 INSTALLATION OF ACCESSORIES

Install the accessory according to the unit specification and the accessory installation instructions.

4.13 UNIT CLEANING

Clean the unit of dust and dirt generated during assembly.

5. COMMISSIONING PROCESS

5.1 COMMISSIONING

The unit may only be commissioned for the first time by a qualified technician.

5.2 BEFORE THE FIRST COMMISSIONING

Check before first commissioning:

- completeness of the unit according to the technical specification
- cleanliness of the unit inside and outside
- quality of installation
- tension of the rotary heat exchanger belt
- free rotation of the fan and electric motor
- free rotation of the rotary heat exchanger
- operating voltage and current of electric motors according to the label on the motor
- control and operating voltages on actuators
- the condition of the active surfaces and collectors of the heat exchangers, whether mechanical damage occurred during transport and installation
- connection of heat exchangers to a heat and cold source with a pressure of max. 0.6 MPa
- exchanger venting
- functionality of condensate drainage and water filling of water traps
- fitting and cleanliness of filters

- damper movement
- tightness of the unit connection to the air duct
- closing the doors and service panels of the unit

FILTERS

The unit must not be operated without filters. The filters are not fitted as standard from the factory, but are supplied in boxes separately to prevent contamination.

Troubleshoot any faults before starting the unit for the first time.

5.3 COMPLIANCE WITH ELECTRICAL REGULATIONS

REVISION

Before starting up the unit for the first time, carry out a test in accordance with EN 33 1500 "Electrotechnical regulations. Inspection of electrical equipment" initial inspection of electrical equipment according to ČSN EN 332000-6-61 "Electrical Regulations. Electrical installations Part 6: Inspection Chapter 61: Initial inspection procedures".

5.4 FIRST START-UP OF THE UNIT

5.4.1. CONNECTING FREQUENCY INVERTERS TO THE NETWORK

First check the power supply system of the inverter (1x 230 V, 3x 400 V) according to the unit label.

Connect ground wire.

For a 3-phase connection, connect the power wires to all three terminals.

For single-phase connections, connect the power wires to terminals L1/L and L3/N (terminal L2 is blanked).

Observe the wire cross-sections, recommended protection and other operating regulations of the frequency inverter (operating instructionsof frequency inverter)

5.4.2. ROTARY HEAT EXCHANGER SECTION

If you are operating a rotary heat exchanger with a frequency converter, the output frequency from the converter must not exceed the rating on the rotary heat exchanger label.

The connection of the rotary heat exchanger motor is the same as in the previous paragraph.

First start-up of the rotary heat exchanger section, check:

- belt tension
- free rotation of the rotor
- correct positioning of the rotor sealing elements - brush seals, felt seals
- correct rotor rotation
- motor current - must not higher then the value indicated on the electric motor label

5.4.3. ELECTRIC HEATING SECTION

Check the functionality of the returnable operating and breakdown thermostats.

Check the duration of the fans after switching off the electric heater.

5.4.4. GAS HEATER SECTION

Before commissioning, carry out electrical, gas and flue inspections. Burners may only be commissioned by a suitably qualified professional who will issue a report.

Check the functionality of the returnable operating and breakdown thermostats.

Check the duration of the fans after switching off the gas heater.

For bypass designs, set the maximum closure of the bypass damper to maintain the nominal airflow through the heating chamber as indicated on the label

5.4.5. FIRST START-UP THE UNIT, CHECK

Correct fan rotation according to the arrow on the fan.

Correct rotation of the rotary heat exchanger according to the arrow in the section.

Motor current - must not higher then the value indicated on the electric motor label.

Motor current protectors must be set to a value the same or lower than the value on the motor nameplate.

The wiring of the electric motor must match the voltage system to which the motor is connected, especially when using a frequency inverter. If a frequency converter is used, check the voltage version. This means that if the frequency inverter is supplied with single-phase voltage 1x 230 V, output voltage is 3x 230 V and the motor must be connected according to the motor power label (not according to the label on the HVAC door) to 3x 230 V!!! In case of using a frequency inverter supplied with 3x 400 V, the output voltage from this inverter is also 3x 400 V, which must correspond to the wiring of the motor terminal block according to the motor power label for 3x 400 V!!!

If a frequency inverter is not used, observe the minimum fan start-up times in a suitable way, e.g. with a sofstarter, as per the table below.

Fan type	Minimum start-up time [s]
RH22C - RH35C	10
RH40C - RH63C	20
RH71C - RH11C	30

Minimum fan motor start-up times. The type designation can be found on the fan label inside the fan section.

If the fan motor is equipped with thermocouples or PTC thermistors, connect them with a suitable system to block the fan operation if these protections are fitted. You can use a frequency inverter or a parent system system to control the thermostats.

In the event of a claim against such a motor, its validity cannot be taken into account.

5.5 TEST OPERATION

If you satisfy the above criteria, you can put the unit into test operation.

5.6 AIR PERFORMANCE SETTINGS

In the test operation, perform the correct setting of distribution elements on the air duct and complex tests of the equipment according to the project documentation, including measurement of the unit performance and verification function of the HVAC measuring and control system. Written evidence of the test results shall be issued.

5.7 USER TRAINING

The professional company commissioning the unit, or putting it into test operation, is required to train the operator and a written record must be made. The professional company commissioning the unit, or to the test operation, is required to train the operator and a written record must be made. Without such proof, the warranty shall not take effect and the equipment shall not be put into permanent operation.

6. OPERATION, CONTROL AND SERVICE

6.1 GENERAL

For the safe operation, control and service of air handling equipment, it is recommended to draw up local operating

regulations according to the scope and equipment of the air handling equipment and local conditions, including the provision of individual equipment with safety signs or notices. The local operating rules must include the provisions of this ASSEMBLY AND OPERATION INSTRUCTION.

OPENING THE UNIT
If you are servicing the unit where the unit will be opened, disconnect the unit from the power supply beforehand and take precautions to prevent unintentional switching on during the work.

NO OPERATION
It is forbidden to operate the unit when the doors or service panels are open.

6.1.1. CHECKING THE UNIT'S FUNCTION DURING OPERATION
During operation, check the correct operation and function of all parts of the units, the tightness of door joints and fixings, removable panels, the temperature of the media and transported air, and the clogging of the filters via sensors.

6.1.2. CHECKING OPERATING FILES(HEATING SYSTEM, HVAC MEASURING AND CONTROL SYSTEM)
Check the status and function of the operating files connected to the unit but not part of the unit. Files may not by part of the unit :

- electrical installation
- HVAC measuring and control system
- heating system
- cooling system
- sanitary (health) installations - condensate drainage

6.1.3. FREQUENCY OF SERVICE INSPECTIONS
Depending on the operating conditions, determine the intervals between thorough service inspections, at least twice a year before the summer and winter seasons.

Keep a record of service inspections. The record must show whether or not the service operations listed in the following section were carried out.

6.2 SERVICING OF INDIVIDUAL SECTIONS
Service actions:

clean

visual check

function check

repair / replacement

6.2.1. FAN SECTION
Check the function of the locks and handles.

Check the block seal.

Check unit´s flexible cuffs.

Check for dirt, damage and corrosion.

Clean, vacuum the dirt.

Check the rotation and cleanliness of the fan, clean it if necessary. Contact the manufacturer if debris causes the fan to unbalance and vibrate excessively.

Check the insulation and tightening of the wires in the motor terminal block.

Check the bearing noise by listening

Check protection by conductively connections.

The bearings of the lower horsepower motors are permanently lubricated and do not have to be relubricated. They are filled with lithium-type grease (theoretical life of 20,000 hours).

The bearings of heavy-duty motors are fitted with a grease nipple and must be lubricated with a lithium-type grease.

motor axial height (mm)	quantity grease (g)	2-pole motor (hrs)	4-pole motor (hrs)	6-pole motor (hrs)	8-pole motor (hrs)
160	25	3800	9300	12400	15200
200	25	3800	9300	12400	15200
225	30	3100	8900	12200	14800
280	40	800	3900	5600	6700
315	50	800	2300	4100	5100

Specified grease refilling intervals (hrs) for engines equipped with grease nipples, at air temperature up to 40 °C.

6.2.2. DAMPER AND DAMPER ACTUATORS
Check for dirt, damage and corrosion.

Clean, vacuum the dirt.

Check the movement of the dampers.

Check that the damper is tight and correctly closed.

Check that the damper is tight and correctly closed.

Check the function of the actuators, tighten the shaft clamp reversible and check the extreme positions.

6.2.3. FILTER SECTION
Check for dirt, damage and corrosion.

Clean, vacuum the dirt.

Check the function of the locks and handles.

Check the block seal.

Check filter clogging.

Check filter clogging detection functionality.

If the filter section is equipped with a pressure differential sensing device, check the correct setting of this device according to the documentation.

If the nominal air flow through the filter and the primary pressure drop of the clean filter [Pa] and its clogging reserve [Pa] reaches the value according to the documentation, the filter can be classified as clogged and must be replaced.

The replacement interval is determined on the basis of test operation and whenever the control system detects clogging of the filters.

Replace the filters at least once a year.

If the filters are clogged, replace the filter according to the filter type.

6.2.4. REPLACEMENT OF FILTERS

CLEANING
If you change filters , clean the dust and dirt inside of the section.

CLEANING
Use appropriate protective equipment during cleaning.

ENVIRONMENTAL DISPOSAL
Environmentally dispose of all used filter materials.

REGENERATION OF FAT TRAPS
Fat traps can be regenerated using hot water and a suitable detergent to promote degreasing.

Filter in rails

The procedure describes the replacement of these filters:

- paper frame prefilters 50 mm wide
- Bag filters with metal or plastic frame with bag length 360, 500, 635 mm
- compact filters with a length of 292 mm
- fat traps

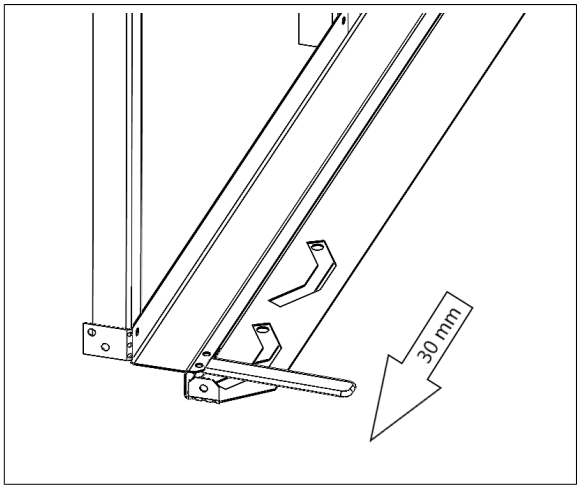
Open the servis panel marked with the sticker with the filter symbol.

Obr. 16 MIF-1 Sticker - filter symbol



Pull the lower and upper black lever of the rail to release the filters.

Obr. 17 Filters release



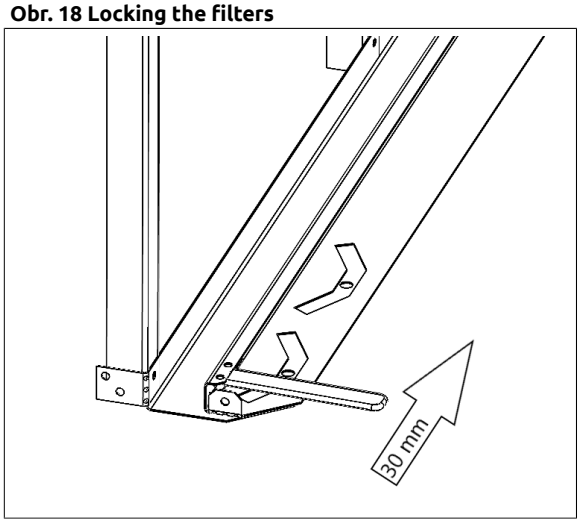
Remove the dirty filters into the service side.

When you combine two or more filters, apply a self-adhesive PE foam seal to the new filters. Always stick the seal to the rear vertical edge of the (plastic/metal) frame of each filter.

Insert the filters back between the rails and the frame.

Push the lower and upper black lever of the rail to lock the filters.

Obr. 18 Locking the filters



Check the tightness of the seating, especially on the vertical part of the frame.

Close the servis panel.

Cancel the filters clogging signalization in the parenst control system.

Activated carbon filtres

The procedure describes the replacement of these filters:

- Activated carbon cartridges

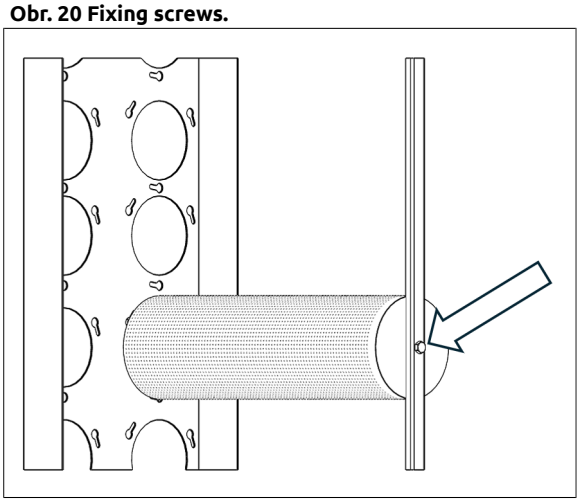
Open the servis panel marked with the sticker with the filter symbol.

Obr. 19 MIF-1 Sticker - filter symbol



Remove the fixing screws on the vertical rails.

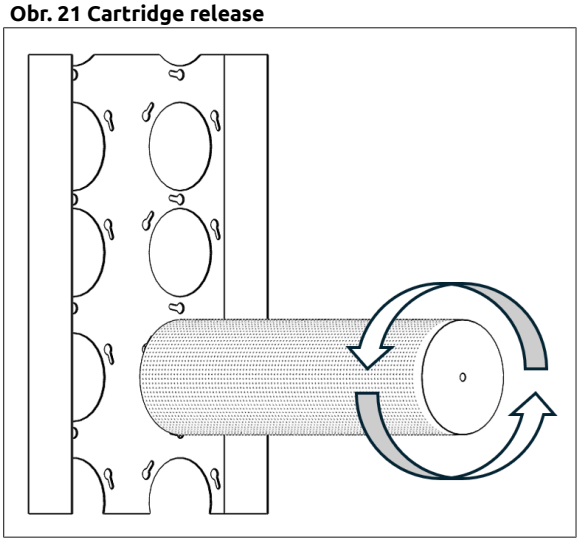
Obr. 20 Fixing screws.



Remove the vertical rails.

Turn the cartridge COUNTERCLOCKWISE. The cartridge is released.

Obr. 21 Cartridge release

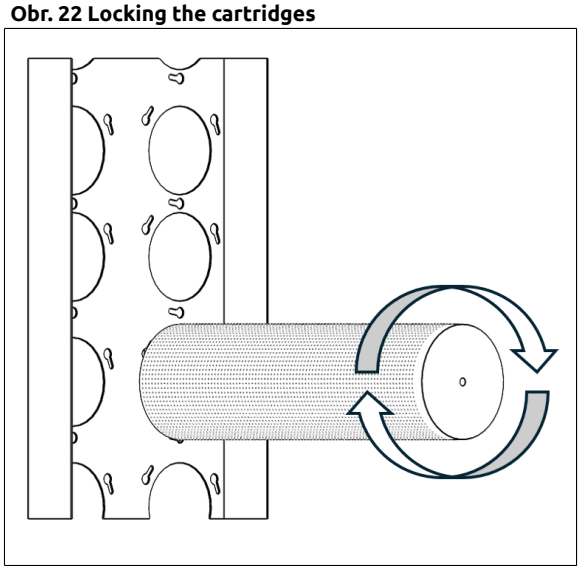


Remove the cartridges out of the section.

Insert the new/reactivated cartridges back into the locking holes.

Turn the cartridge CLOCKWISE. The cartridge is locked.

Obr. 22 Locking the cartridges



Install the vertical rails.

Screw the fixing screws back.

Close the servis panel.

SAURATION OF THE ACTIVED CARBON CARTRIDGES

The saturation of the activated carbon cartridge is evaluated by weighing. The maximum adsorption capacity is reached when the weight of the carbon increases 25%.

Absolute filters for microparticles

The procedure describes the replacement of these filters:

- ultrafilters- EPA, HEPA, ULPA

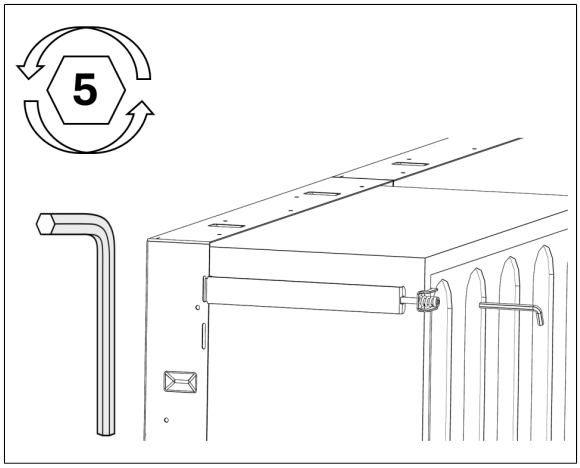
Open the servis panel marked with the sticker with the filter symbol.

Obr. 23 MIF-1 Sticker - filter symbol



Unscrew the hex screws of the pressing mechanism.

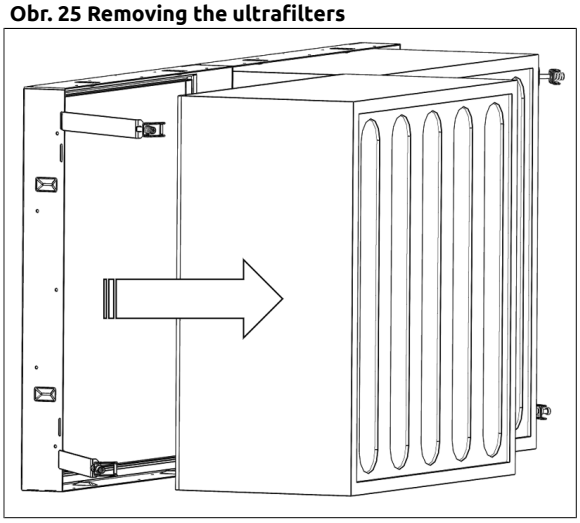
Obr. 24 Ultrafilters release



Swivel all pressing mechanisms to the side.

Remove the ultrafilters out of the section.

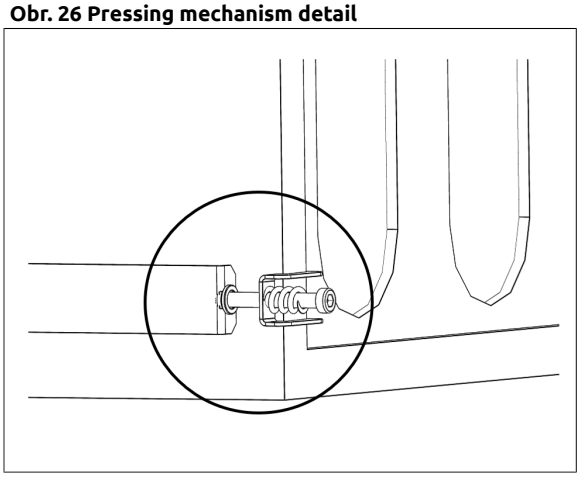
Obr. 25 Removing the ultrafilters



Insert the new ultrafilters back into the filter frames.

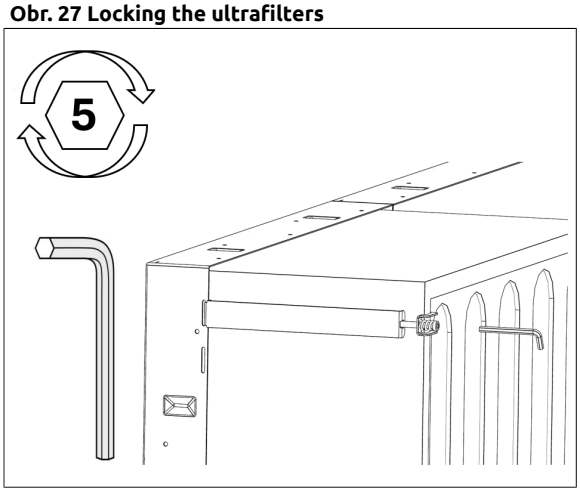
Fix the pressing mechanism behind the edge of the ultrafilter.

Obr. 26 Pressing mechanism detail



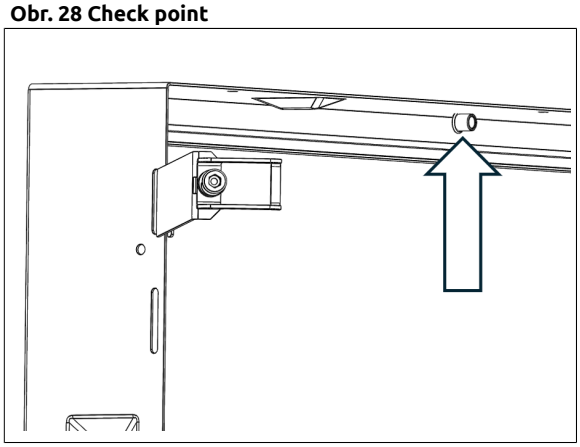
Screw in the hex screws of the pressing mechanism so that the ultrafilters are sealed against the ultrafilter frames.

Obr. 27 Locking the ultrafilters



Check the tightness of the filter seating (e.g. by using the check point on the ultrafilter frames).

Obr. 28 Check point



Close the servis panel.

6.2.5. HEATING AND COOLING SECTIONS

Check for dirt, damage and corrosion.

Clean, vacuum the dirt.

If the section becomes dirty, clean the heat exchanger surfaces with compressed air, steam or a hot water cleaner. Clean with care to avoid mechanical damage the fin of the heat exchanger. When cleaning, shut off the supply of heating or cooling medium or steam to the heating / cooling exchanger.

Check (always before the start of the heating period) the function of the heat exchanger anti-frost protection.

For heaters, check the functionality of the HVAC measuring and control system. For coolers, drain the water or check the antifreeze liquid.

If the heat exchanger is drained for the winter, remove the water from it completely, e.g. by blowing it out with pressurised air. When draining the heat exchanger, the water temperature must be below 60°C.

Some sections are equipped with heat exchangers with secondary drain valves. These valves are located inside the section on the heat exchanger and access to them is provided by servis panels at the bottom and lid. The panels shall be marked with a sticker with the valve symbol and shall be freely openable to allow sufficient space for the operator to vent and drain water or antifreeze.

Check the correct functioning of the control valves and feed pumps.

Check the system venting.

6.2.6. CONDENSATE DRAIN SECTION

Check the functionality of the condensate drain and siphon up to the waste bottle gully.

Refill the water trap for correct functioning of the pressure relief valve.

Take precautions against water freezing in the water trap before the winter season starts.

6.2.7. PLATE HEAT EXCHANGER SECTION

Check for dirt, damage and corrosion.

If the section becomes dirty, clean the plate heat exchanger surfaces with compressed air, steam or a hot water cleaner. Clean with care to avoid mechanical damage the fin of the plate heat exchanger.

6.2.8. ROTARY HEAT EXCHANGER SECTION

Check for dirt, damage and corrosion.

If the section becomes dirty, clean the rotary heat exchanger surfaces with compressed air, steam or a hot water cleaner. Clean with care to avoid mechanical damage the fin of the rotary heat exchanger.

Check free rotation of rotary heat exchanger.

Check tension of the rotary heat exchanger belt.

Chceck condition of rotor sealing elements - brush seals, felt seals.

Change and top up the oil in the gearbox: the filling of the gearbox is 0.08 l of PP 90H oil, change the oil after 4000 operating hours or after 2 years.

6.2.9. PUMPED GLYCOL ENERGY RECOVERY SECTION

Before the start of the winter season, check the system, especially the tightness, the functionality of the pump and the filling with antifreeze liquid.

Servicing, draining and cleaning of the glycol energy recovery section is the same as for the heating and cooling sections.

6.2.10. GAS HEATING SECTION

ATTENTION!

Do not switch off the entire device (burner and fans) without ensuring that the fans have stopped to cool the exchanger. The heat accumulated in the heat exchanger could damage the surrounding equipment due to the flow! It is not possible to switch off the fans and leave the burner on!

For the burner that is installed on the heat exchanger part, the "Operating instructions" supplied with it from the burner manufacturer apply.

Safety thermostat failure

If the maximum temperature set on the triple thermostat T1 (100-120 °C) is exceeded, which is optionally located on the left or right above the burner, the burner will turn off and block. For a new automatic burner start, press the button on the triple thermostat. Between the moment the burner is blocked and the triple thermostat is unblocked, the temperature must drop below the value set on the T1 thermostat. The condition for re-starting the heater is to remove the cause of overheating.

The electronic thermostat used allows the safety thermostat T1 to be reset remotely (e.g. by means of a button located on the control cabinet door), which is advantageous for heat exchanger parts located in hard-to-reach places (e.g. suspended from the ceiling).

When the mains supply voltage is interrupted (during burner operation), the temperature rises due to accumulated heat in the heat exchanger block and fan dysfunction. If the temperature exceeds the value set on the safety thermostat T1, the thermostat switches off and disconnects the power supply to the burner. The electronic thermostat resets itself when the mains is switched on again if the temperature has already fallen below the set value (in the event of a prolonged mains failure). In the event of a shorter outage, wait until the chamber is cooled by the fan and reset by pressing the button on the thermostat.

IMPORTANT!

After professional commissioning, do not change the equipment settings to ensure trouble-free running.

Always service the heat exchanger section when it is out of power.

During servis:

Clean, vacuum the dirt.

The burner checked and adjusted by an authorized mechanic at least once a year (preferably before the heating season starts). Heater operation is required for burner adjustment

Retighten the burner plate and tube cover screws, check after the first month of operation, then periodically before the heating season begins.

At least once a year (as required), clean the tubing. For light heating oil and diesel burners, clean the tubing regularly whenever the heating efficiency drops (once a month if necessary). After

cleaning, always tighten the screws on the tube lid properly or replace the gasket (check the tightening of the screws again after one month of operation!)

6.2.11. ELECTRIC HEATING SECTION

Check for dirt, damage and corrosion.

Clean, vacuum the dirt.

Check the functionality of the returnable operating and breakdown thermostats.

Check the condition of the heating elements and their position (so that they do not contact).

Check the condition of the insulation and tightening of the wires.

6.2.12. OTHER SECTIONS

Check for dirt, damage and corrosion.

Clean, vacuum the dirt.

6.2.13. THIRD-PARTY COMPONENT

Operation, servicing and maintenance of other components that are installed in the unit should be carried out according to the instructions for use of these components.

7. DISASSEMBLY AND LIQUIDATION

Disassemble and dispose of the unit at the end of its useful operating cycle.

Disassembly of the equipment may only be carried out by a professional company.

7.1 DISASSEMBLY PROCEDURE

First disconnect the unit from the power supply to prevent electric shock.

Disconnect the unit from the hot water supply, air ducts and pool water heat exhaust (if equipped).

Remove the refrigerant from the air conditioning.

Take care to avoid leakage of operating fluids (refrigerant, oil, glycol/water mixture).

Disassemble the unit into its individual components.

When disassembly, take care to ensure safe working conditions.

Tools needed to disassemble the unit:

- flat and Phillips screwdriver
- sada stranových klíčů
- wrench
- hacksaw for metal
- drill + drill bits

7.2 RECYCLING

Ensure safe and environmentally friendly disposal of operating and auxiliary substances, packaging materials and replacement components. Use and comply with local recycling options and regulations. For disposal, separate and sort the unit parts by material type as far as possible.

7.3 ENVIRONMENTAL DEGRADATION

Dispose of all parts and operating substances (such as oil, refrigerant and water/glycol mixtures) in an environmentally friendly manner according to local applicable laws and regulations.

8. REPLACEMENT PARTS

Replacement parts are not supplied with the unit. If necessary, you can order the necessary replacement parts from the manufacturer. In your order, please indicate the type and serial number of the unit, the year of manufacture and specify the parts needed.

9. SUPPLIER SERVICE

You can contract the supplier service directly from the manufacturer. The manufacturer can commission trained service companies to carry out contractor service. Filter replacements including environmental disposal and desorption can be arranged directly with the manufacturer.

The manufacturer reserves the right to change the assembly and operation instruction without prior notice.

If you have any questions or concerns, please contact us at \ info@cic.cz.