LESSTRO air handling units with heat recuperation

User manual

Contents

1. Introduction

LESSTRO series ventilation units with heat recuperation are suitable for using in heated and unheated premises, handling air at outdoor temperatures from -30 ° C to + 40 ° C. It is not recommended to install the unit in living areas, choosing separate areas is advised, such as storage rooms, boiler rooms, attics, etc.

The air handling unit has to be installed in such a way, that the connected ducting and piping would not restrict the access to it during maintenance. The open space left in front of the access hatch has to be sufficient to be able to conveniently change filters and do other maintenance work.

Control automation ensures safe and economical operation of the air handling unit. The operation of automation is described in detail in the controller manual, attached separately.

2. Safety requirements

The installation and maintenance work of the air handling unit has to be carried out by qualified personnel, having the required permits.

Grounding has to be installed according to EN61557 standard, BS 7671. The contact block with power lines is connected via contactor with a leakage current relay 30 mA (RCD).

Before opening the doors or hatches one has to turn off the unit and wait at least 2 minutes for the ventilators to fully stop.

In order to avoid burns, do not touch the heating elements.

Do not use the equipment if the air contains grease, oil, smoke, flammable, explosive or corrosive vapours.

Users have to make sure that condensate would not flow into the unit by the inner surfaces of the ducts.

In order to avoid freezing in the cold season, units with water heater have to be provided with uninterrupted feed. The water temperature in the system has to be enough that it would not freeze. The unit has to be always in the RUN/ON position. If these circumstances are not met, the system has to be filled with antifreeze!

If the system is filled with antifreeze glycol – it is a dangerous substance, inhalation could cause poisoning and is harmful on the contact with skin.

Equipment which has drainage: if the unit is in unheated area, condensate drainage pipe has to be isolated and, if needed, heated with a heating cable.

Do not use the unit with dirty or without any air filters – it leads to the clogging of the heat exchanger, efficiency loss and failure.

The person or organisation, when finishing the installation, bears all the responsibility if during the warranty period a failure of the unit occurs due to a fault in installation, because the work is done according to the requirements and the national standards of the country the equipment is installed in.

3. Marking

"Lesstro" units differ by the type of heat exchanger, type of air heater and design.

"Lesstro R500HE-DE RP027" a marking example, where:

"Lesstro" is a trademark of ventilation units manufactured by UAB "LEOVIRA".

R – Identification of unit type:

[R] – supply and exhaust air handling unit with heat recuperation;
[T] – only either air supply or extract device.

500 – Nominal capacity of the unit [m^3/h].

H – Duct connection:

[H] - horizontal;
[V] - vertical.

E – Main heater type:

[E] - electric;
[W] - water.

D – Service side:

[K] - left;
[D] - right.

E – Type of ventilator motor:

[A] - alternating current motor;
[E] - EC motor.

R – Type of heat exchanger:

[A] - aluminium crossflow;
[C] - cellulose crossflow;
[R] - rotary;
[S] - counter flow.

P – Construction of the unit:

[H] - on the floor, ducts connecting horizontally;
[V] - on the floor, ducts connecting vertically;
[P] - on the ceiling, ducts connecting from opposite sides;
[N] - on the ceiling, ducts connecting on the same side.

027 – Manufacturing index.

Lesstro R500HE-DE RP027 - recuperator, 500m^3/h, horizontal duct connection, electric air heater, service side - right, EC motor, rotary heat exchanger, mounted on the ceiling, manufacturing index No. 027.

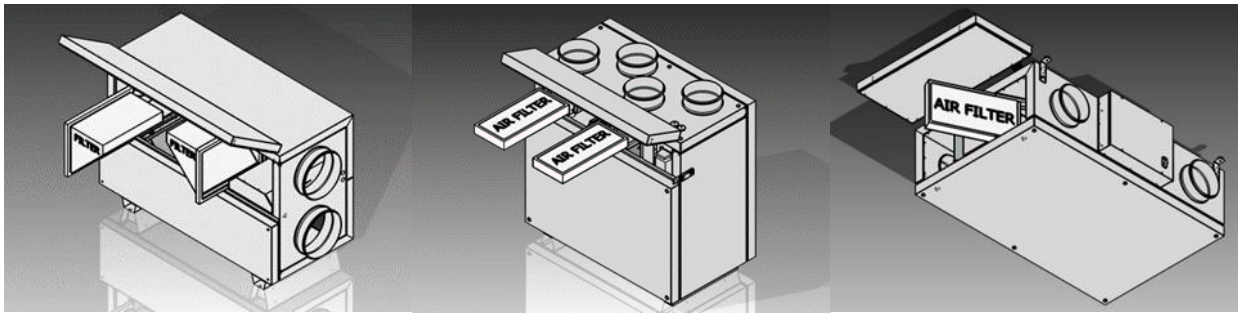

Figure 1. Construction variants: horizontal, vertical and ceiling mounted.

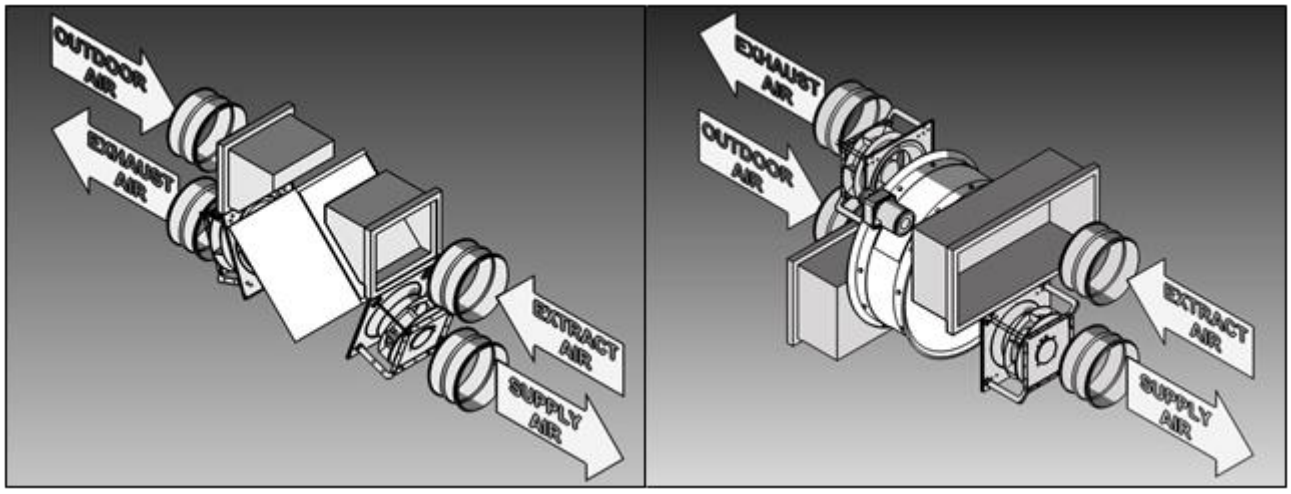

Figure 2. Units with crossflow and rotary heat exchangers.

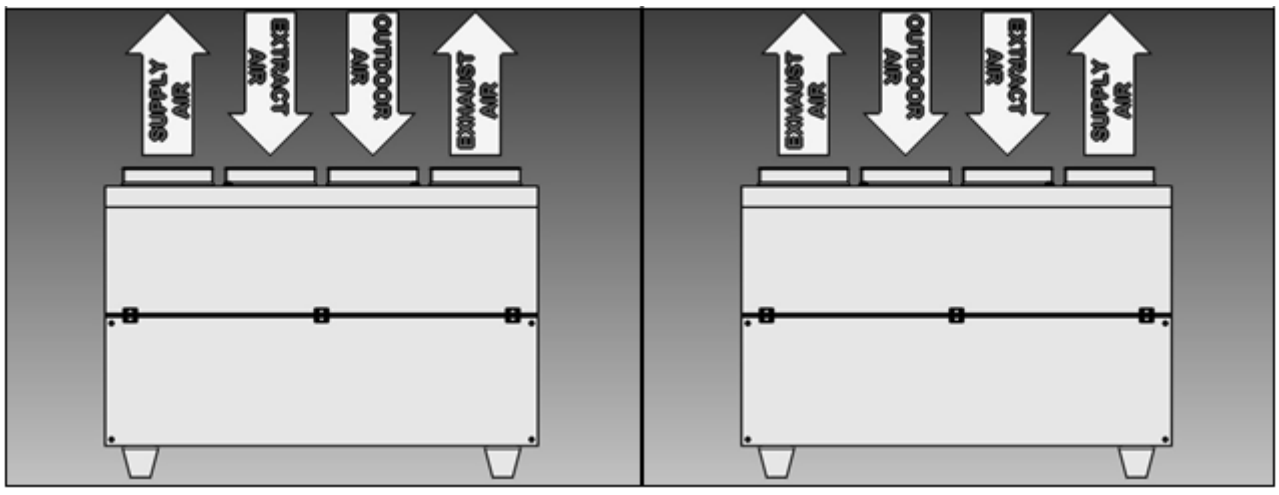

Figure 3. Unit with service side on the left and on the right.

4. Transportation and storage

Ventilation equipment is wrapped in a protective film to avoid dust and moisture. When transporting, the unit is placed on a wooden pallet, also could be additionally attached with screws.

Outer corners of the unit and edges where the securing straps are attached are additionally protected with a layer of cardboard.

Ambient temperature at the time of transportation should be from -40 °C to +65 °C, relative humidity – up to 95% at +35 °C temperature.

Equipment should be stored in a closed space, at temperatures from -40 °C to +40 °C and relative humidity at most 80% at +20°C temperature.

There must not be any aggressive gases, acids or dust in the storage area.

When storing for a long term (more than 1 month) packaging film should be removed to avoid staining the surface.

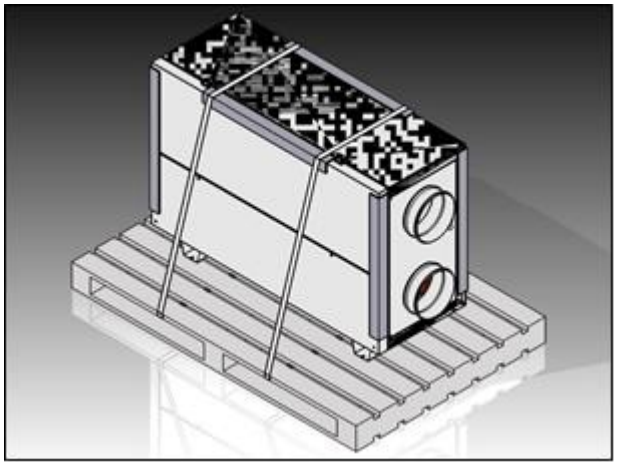

Figure 4. Preparation for transporting.

5. Installation

To achieve good energy efficiency and low noise levels, ducts have to be calculated for low air velocities and small pressure differences. To ensure durability and longevity, we recommend galvanised sheet metal ducts.

Air inlet from outside and discharge to outside ducts should be insulated to prevent condensation. Furthermore, ducts, which border the dwelling premises, should also be insulated if there is a risk of condensation. The air handling unit should be connected to ductwork via noise silencers if it is near the dwelling premises.

Do not change the spatial orientation of the unit (tilt to one side or flip).
Intake and supply air temperature sensors are mounted in a duct at a distance not less than 0,5m from the duct flange of the unit.

Pressure relay settings: 100 Pa – for smaller systems, 150 Pa – for bigger systems.

Units of bigger volume are made of several sections for transporting and installing to be easier. Connections between the sections should be evenly tightened with bolts. Right before the joining of the sections a gasket is glued in the gap between.

The connection of the ventilation unit to the heating system should be carried out by heating specialists.

Water heater is connected in such a way, that the air flow relative to the fluid flow in the heater would be opposite, as shown in fig. 5.

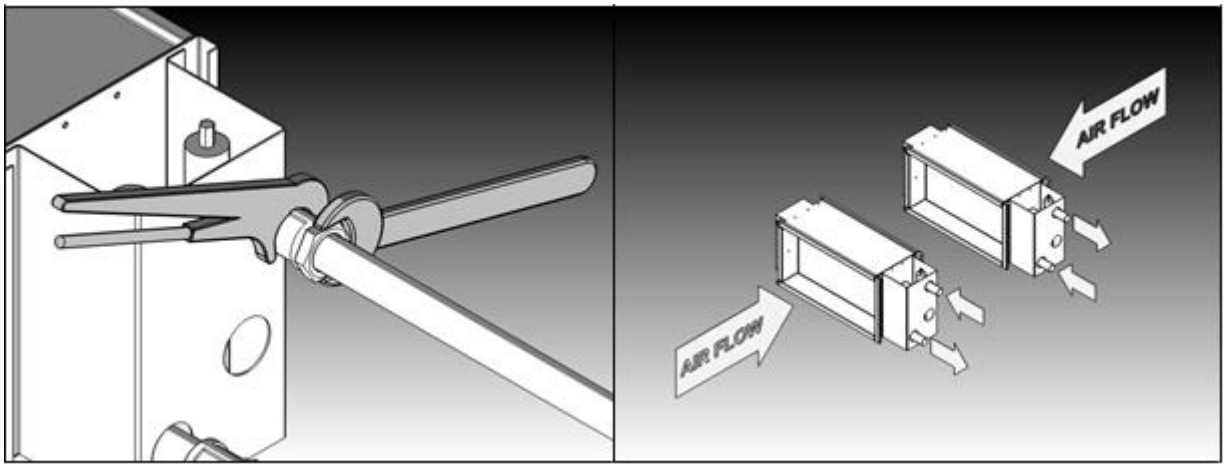

Figure 5. Heater connection and the direction of the flow.

In units that generate condensation at their operation, condensate collection trays and drainage holes are designed. A syphon should be connected to the drainage point. Water height should be at least 60mm, unless it is stated differently in technical documentation.

Before beginning the installation, equipment has to be checked. Remove all the redundant items and make sure that the outside inlet duct grille is mounted. Without the grille installed, unwanted items might be sucked into the ventilator, thus causing serious damage to the equipment.

6. Maintenance

The plan of work at the time of maintenance:

All the work that involves opening the service hatch must be carried out with the unit switched off from the grid. Wait at least 2 minutes after the switching off before opening the hatches.

Preventive maintenance (every 6 months or more often):

• External check on the unit for unwanted noise and vibrations. The unit works at different ventilator speeds (from min. to max.).

• Check the state of the filters. The frequency of changing the filters depends on the contamination of air. It is recommended to change filters at least 2 times per year. Contaminated filters worsen the unit's performance, can cause failures.

• Check the inlet grille, exhaust and supply diffusors, if needed, clean off the dirt and leaves.

Comprehensive inspection (every 12 months):

• The state of ventilators is checked, if needed, they should be carefully cleaned.

• For recuperators with rotary heat exchanger: check the state of rotor's driving gear. The driving belt should not be damaged or dirty, also it should not freely slide on the surface of the rotor. If the belt is loose, it has to be replaced.

• Check the drainage permeability – pour some water into the condensate collection tray.

• Before the beginning of the heating season the state of the electric heaters should be checked. Dust should be cleaned off with a soft brush, vacuum cleaner or compressed air. Do not use penetrative cleaning! Severely contaminated heater could become not only a source of unpleasant smells, but also fire!

Attention: if the users carry out the comprehensive inspection work on their own, they are responsible for the quality of the work and for the possible damage to the ventilation unit, which could lead to cancellation of the warranty. In order to have the technical care done professionally, without the risk of damage, it is recommended to use the services that we offer.

In case of a failure of the air handling unit, it is best to inform us via email, including the information about the signs of malfunction, photographs, etc. After assessing the situation, we will send a qualified person to repair the unit or if there is only a minor issue, we could instruct the user on how to resolve the problem.