Dry Coolers & Condensers

EC08(G) & ECV08(G)
EC09(G) & ECV09(G)

Installation and Operation Instructions

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1. GENERAL

This manual is for Ekocoil Dry Cooler models EC08(G), ECV08(G), EC09(G) and ECV09(G). The instructions in this manual are only for this particular model.

Ekocoil Dry Coolers and Condensers are suitable for heat transfer fluids that are not corrosive to copper.

The manual should be available for all persons installing, operating or maintaining the equipment.

Ekocoil takes no responsibility for failure to the equipment or to the system caused by negligence to follow the instructions and warnings in this manual.

If you encounter problems not solvable with these instructions or need clarification, please contact your Ekocoil representative.

2. FINAL INSPECTION BY MANUFACTURER PRIOR TO SHIPPING

1. Visual inspection
2. Test pressurized for leakage detection
3. Functional test of fans at +20 C
4. Sound and vibration inspection

3. STORAGE

1. The equipment must be transported horizontal with the legs detached.
2. For storage: the ground must be flat and robust enough to hold the weight of the equipment. Legs must be supported for storage at site (max 10mm variation between the legs). The storage environment should be kept dry and at a constant temperature.
3. Long storage may damage to motor bearing. Also humidity and temperature changes may allow water to condense inside motors through condense drain holes at the bottom of the motor. The same may occur inside copper tubes if not properly sealed. Installation must be performed at max 3 months time from delivery, unless agreed otherwise. The equipment must be attached to power outlet in 4 weeks time from delivery in order for the fan motors to start running at minimum speed.

4. INSPECTION BEFORE INSTALLATION

1. Before installation, check the equipment for possible transport damages. Immediately make a written note about damages to the transportation company and ask them to inspect the product. Manufacturer is not liable for damages that have occurred during transportation, lifting or installation.
2. Check weight and dimensions from technical specification.
3. The tubes in heat transfer part must be horizontal.

4. Check that all fixing points are even (variation no more than 2mm). Use additional filling under the legs if needed.
5. Ensure proper ventilation of the system.
6. For temperatures under 0°C, drain water from the radiators or use non-freezing liquid.

If you notice any damage in the equipment, always contact the manufacture before doing any repair work, otherwise the warranty may become void.

5. SPACE REQUIRED FOR PROPER FUNCTION OF COOLER

Reserve enough space around the cooler for the service. Minimum needed distance for operation is 600 mm. Do not block airflow with structures built for operation. It is recommended to install cooler at elevated level from the ground. Free path has to be guaranteed for air to flow from surroundings to surface of the heat exchanger. In some environments recirculation of air from outlet to inlet of cooler may occur if the cooler(s) are installed too close to each other, walls or other big obstacles. Figure 1 shows minimum recommended distances between wall and cooler and between two coolers. It is recommended to increase distances if there are more than one wall and one cooler or more than two coolers close to each other. If needed, use higher speed fans, air flow deflectors or oversized coolers to compensate recirculation.

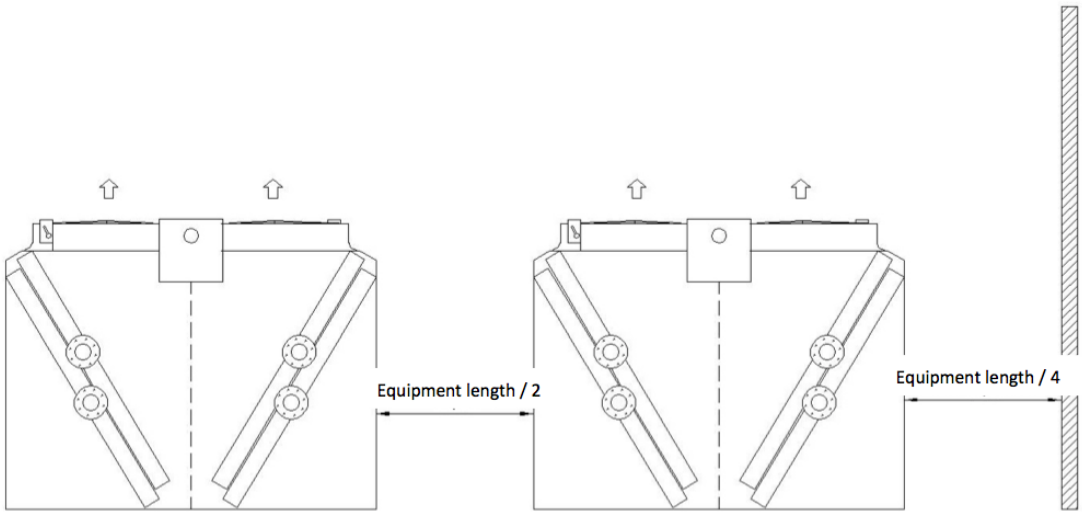


Figure 1.

6. LIFTING

Use crane boom and lift holes. See figure 2 (EC08) and figure 3 (ECV08). Follow the instruction for maximum wire angles. Lift instruction are attached to each cooler.

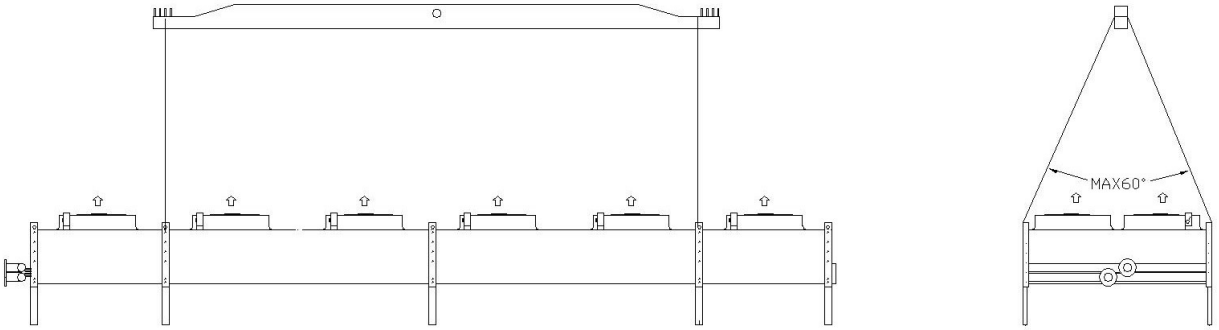


Figure 2. EC08
(legs pre-installed at factory)

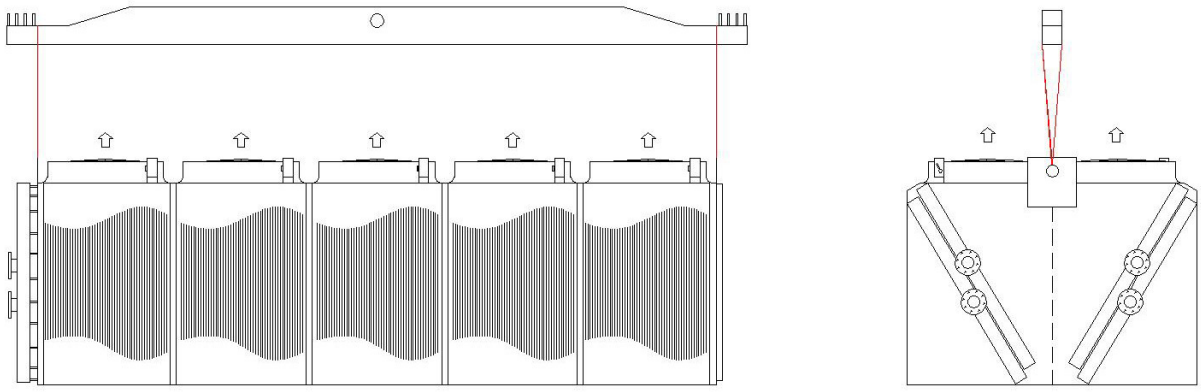


Figure 3. ECV08

7. INSTALLATION

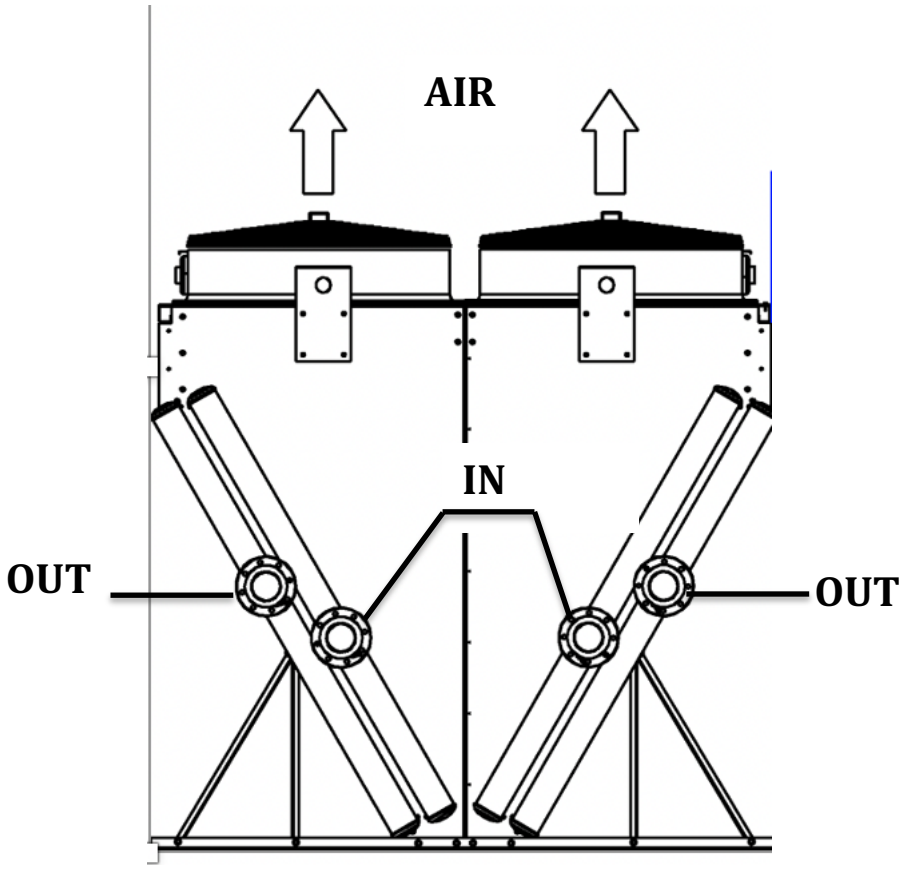
Install cooler so that venting and drainage valve are reachable. Drainage vent is located at the top of header tube. Drainage valve is located the bottom of the header. If water is used for pressure test make sure that water is drained totally before refilling with permanent circulating fluid (usually antifreezing water solution) to prevent freezing of the cooler at cold

climates. Refill the cooler as soon as possible to prevent inner tube erosion. Drain circulation fluid. Use of special dirt separator equipment is highly recommended. If there are air bubbles (visible and invisible) this may lead decrease of heat transfer performance and inner tube corrosion and void warranty.

8. CONNECTIONS TO INLET AND OUTLET

Tubes connected to inlet and outlet of cooler must allow thermal expansion of cooler, reduce vibration noise and damp pressure shocks. Use vibration isolators, flexible tubes and tube joints accordingly.

Use the picture below as guidance for connections to inlet and outlet.



9. WIRING OF FANS

NOTE! Only qualified electrical personnel must make electrical connections.

All valid standards for connecting electrical equipment must be observed. Fans should be used periodically according to the instruction label attached to cooler in order to remove

possible condensate water inside the fan motor. Frequency converter should be programmed so that it will warm the fans even when the fans are not running. This can be achieved by using DC-current or by setting fans to run at slow speed even if there is no need for cooling.

10. TEST RUN

Test run should include at least the same tests that are required in service instructions (see next page). Save the dated and signed trial protocol for later inspection.

NOTE! Remember to check fan rotation direction.

Correct air flow is vertical or horizontal depending on the type the cooler.
To correct rotation direction:
<u>3-phase fans without frequency converter:</u>
- swap two phase lines in the main electrical box connected to the end of the cooler.

<u>3-phase fan with frequency converter:</u>
- reprogram the inverter or swap two phase lines at motor connections of frequency converter

Note! Do not open electric boxes at the top of the fan. It will void warranty.

MAINTENANCE INSTRUCTIONS

1. MAINTENANCE CHECKS

The manufacturer requires that maintenance inspection be done periodically. The maintenance protocol has to be clearly documented, dated and signed.
It should include at least the following checks:
- Visual inspection of fans and heat transfer surface, clean if necessary
- Noise and vibration check
- Fan motor current measurements
- Function of thermal protection devices
- Function of safety switches
- Condensation prevention (running of fans periodically manually or by frequency converter)

Only proper documentation ensures that warranty will be valid. Maintenance inspection should be made once a year, at minimum.

2. HEAT TRANSFER SURFACE

Clean heat transfer surface if needed. Use compressed air or water with care to avoid damage to the aluminum fins.

Note! Do not spray water or compressed air to the fans.

Detergents designed for cleaning electric filters are usually suitable for heat transfer surfaces. pH slightly above 10 is recommended. Do not use detergents that will damage aluminum, copper or galvanized steel. Always follow instructions issued by detergent manufacturer. Rinse off detergent with water spray after cleaning.

3. REPLACEMENT OF DEFECTIVE FAN MOTOR

Note! Always contact the manufacturer for written approval before replacing the fan motor. Otherwise warranty will void.
Note! Only qualified electrician may change the motor.

1. Switch off the fan through the main switch or safety switch.
2. Lock the switch to prevent the device to switch on by accident.

Use only spare parts accepted or supplied by the manufacturer to ensure correct function of device in all circumstances. Installing other kind of spare parts may void warranty.