LUVATA
Partnerships beyond metals

Evaporator (DX) Coil Installation, Operation and Maintenance

Guidelines for the installation, operation and maintenance of the Heatcraft brand of direct expansion (DX) cooling coils manufactured by Luvata in Grenada, MS have been provided to help insure proper performance of the coils and their longevity. These are general guidelines that may have to be tailored to meet the specific requirements of any one job. As always, a qualified party or individual should perform the installation and maintenance of any coil. Protective equipment such as safety glasses, steel toe boots and gloves are recommended during the installation and routine maintenance of the coil.

Receiving Instructions

All Heatcraft coils are factory tested, inspected and carefully packaged.

Damage to the coils can occur after they have left the factory. Therefore, the coils should be inspected for shipping damage upon receipt. The freight bill should also be checked against items received for complete delivery. Damaged and/or missing items should be noted on the carrier's freight bill and signed by the driver.

For additional assistance, contact your local Luvata coil representative.

Heatcraft® heat transfer coils

by LUVATA

Installation, Operation and Maintenance Guide

About Luvata

Luvata is a world leader in metal solutions manufacturing and related engineering services. Luvata's solutions are used in industries such as renewable energy, power generation, automotive, medicine, air-conditioning, industrial refrigeration, and consumer products. The company's continued success is attributed to its longevity, technological excellence and strategy of building partnerships beyond metals. Employing over 6,300 staff in 17 countries, Luvata works in partnership with customers such as Siemens, Toyota, CERN, and Carrier.

Nomenclature and Installation

Nomenclature

5 E N 14 06 C 24.00 x 144.00

5 = Tube O.D.
3 = 0.375”
4 = 0.500”
5 = 0.625”

E = Coil Type
E = Evaporator

N = Circuiting
N = Normal
F = Face Control
R = Row Control
J = Interlaced
K = Interlaced Face Control

14 = Fins Per Inch

06 = Rows

C = Fin Design
A - flat (Al, Cu)
B - corrugated (Al, Cu)
C - sine wave (Al, Cu)
D - raised lance (Al)
F - flat (SS, CS)
G - corrugated (SS, CS)
H - sine wave (SS, CS, Al, Cu)

24.00 = Finned Length (inches)

144.00 = Fin Height (inches)

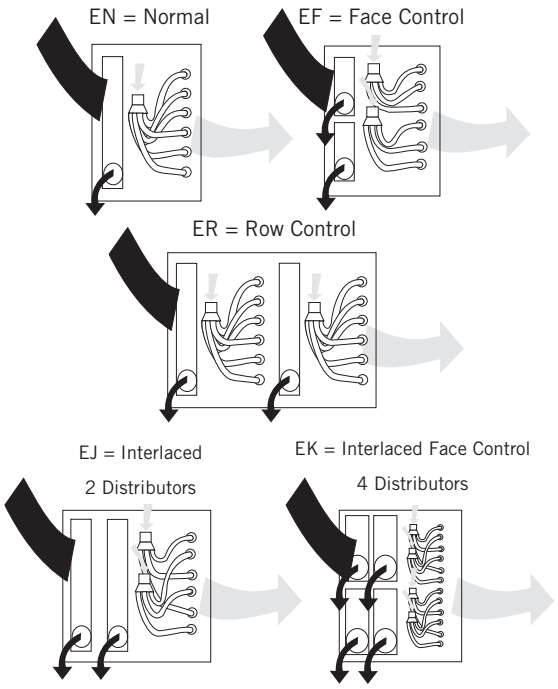


Figure 1. Evaporator Coils

Coil Types

1. Model EN evaporator coil is used for applications where capacity control is not required. Single or multiple distributors are used depending on the number of circuits required.
2. Model EF (Face control) is another evaporator coil option offered. Face control is the simplest form of capacity control. Model EF coils are normally furnished with two distributors and two suction connections offering 50% capacity reduction capabilities.
3. Model ER is only for six row evaporators. These coils are split two rows and four rows which offer approximately a 50% capacity reduction.
4. Model EJ coils come with interlaced circuiting. This form of capacity control utilizes two distributors with each feeding every other tube in the first row of the coil. Each distributor has a separate suction connection.
5. Model EK is used for applications that require face control and interlaced circuits. Interlaced face control utilizes four distributors and four suction connections.
6. See Figure 1 - Evaporator Coils.

Installation

1. If a hot gas bypass kit was ordered with the coil install it now. Complete installation instructions are in the box that contains the hot gas bypass kit. Align the side port with the hot gas line prior to brazing into place.
2. Connect the suction line and suction connection.
3. Install the expansion valve. Follow the expansion valve manufacturer’s recommendations for installation to avoid damaging the valve. If the valve is externally equalized, use a tubing cutter to cut off the plugged end of the factory installed equalizer line. Next, use a de-burring tool to remove any loose metal from the equalizer line and attach it to the expansion valve. If the valve is internally equalized, the factory installed equalizer line can be left as is.
4. The expansion valve’s remote sensing bulb should be securely strapped to the horizontal run of the suction line at the 3 or 9 o’clock position not more than 18” away from the evaporator and insulated.
5. Connect the liquid line to the expansion valve. Pressurize the coil, expansion valve assembly and suction connection to 100 psig with dry nitrogen or other suitable gas. The coil should be left pressurized for a minimum of 10 minutes.

Installation

6. If the coil holds pressure, the hook-up can be considered leak free. If the pressure drops by 5 psi or less, repressurize the coil and wait another 10 minutes. If the pressure drops again, there are more than likely one or more small leaks, which should be located and repaired. Pressure losses greater than 5 psi would indicate a larger leak, which should be isolated and repaired. Be sure to check valves and fittings as potential sites for leakage or bleed. If the coil is found to be leaking, contact your local Luvata coil representative.
7. Use a vacuum pump to evacuate the coil and any interconnecting piping that has been open to atmosphere. Measure the vacuum in the piping using a micron gauge located as far from the pump as possible (the vacuum at the pump will be greater than the rest of the system). Evacuate the coil to 500 microns or less then close the valve between the pump and the system. If the vacuum holds to 500 microns or less for one minute, the system is ready to be charged or refrigerant pumped down in another portion of the system can be opened to the coil. A steady rise in microns would indicate that moisture is still present and that the coil should be further vacuumed until the moisture has been removed.

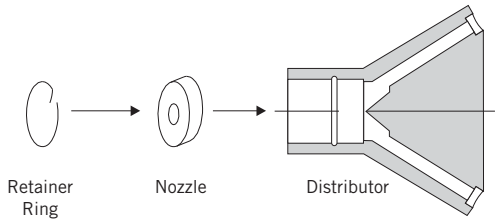


Figure 2. Distributor

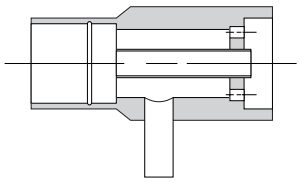


Figure 3. Hot Gas Bypass Kit

13. Failure to obtain a high vacuum is indicative of a great deal of moisture or a small leak. Break the vacuum with a charge of dry nitrogen or other suitable gas and recheck for leaks (soapy water works well). If no leaks are found, continue vacuuming the coil until the desired vacuum is reached.
14. All field piping must be self-supporting.
15. Refer to Figures 4 - Hot Gas Bypass Kit Installed and Figure 5 - Without Hot Gas Bypass Kit, for general piping.
16. If a mist eliminator was purchased with the coil installed, place the mist eliminator into its brackets. Make sure the mesh is aligned with the coil face area (finned area). See page 4 Figure 6.

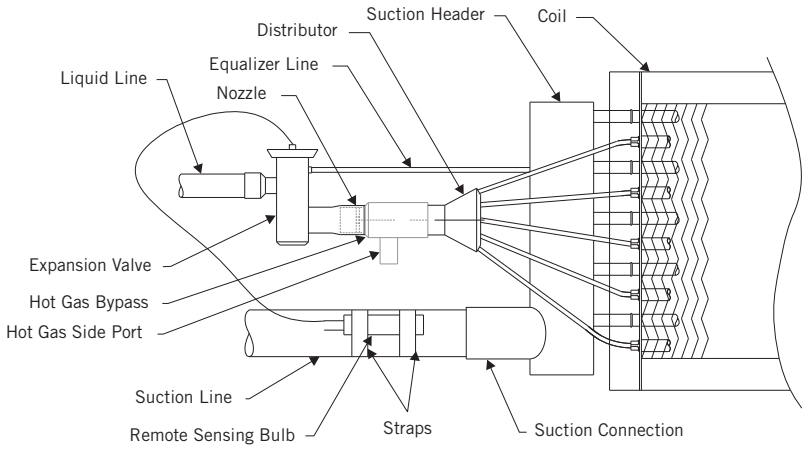


Figure 4. Hot Gas Bypass Kit Installed

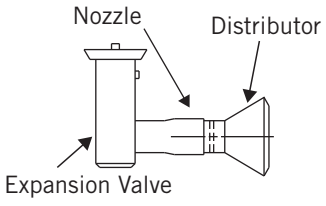
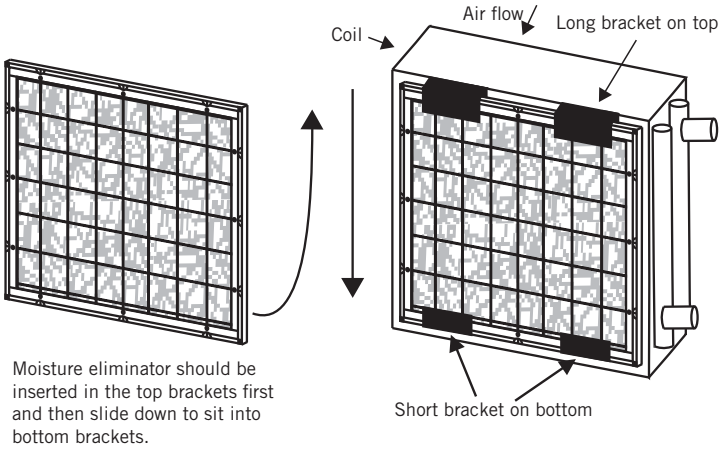


Figure 5. Without Hot Gas Bypass Kit

Operation and Maintenance

Operation

1. Proper air distribution is vital to coil performance. Air flow anywhere on the coil face should not vary by more than 20%.
2. Air velocities should be maintained between 200 and 550 feet per minute without a mist eliminator and between 200 and 750 feet per minute with a mist eliminator.
3. The drain pan should be designed and installed such that there is no standing water.



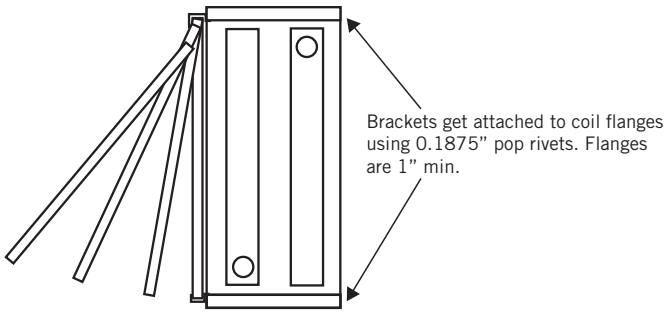


Figure 6. Mist Eliminator Installation

Maintenance

1. Filters and mist eliminators should be inspected on a regular basis and changed as needed. Maintaining clean filters and mist eliminators is a cost-effective way to help maintain maximum coil performance and service life.
2. Periodic inspection of the coil for signs of corrosion and for leaks is recommended. Small leaks can be detected using a Halide torch. Repair and replacement of the coil and the connecting piping, valves, etc., should be performed as needed by a qualified individual(s).
3. Should the coil surface need cleaning, caution should be exercised in selecting the cleaning solution as well as the cleaning equipment. Improper selection can result in damage to the coil and/or health hazards. Clean the coil from the leaving air-side so that foreign material will be washed out of the coil rather than pushed further in. Be sure to carefully read and follow the manufacturer's recommendations before using any cleaning fluid.
4. The use of filter-dryers in the system piping is recommended along with a sight glass that has a moisture indicator. Replace the filter dryer(s) as needed.

Note: Refrigerant conversions are beyond the scope of this manual and should only be performed by qualified parties.

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