

# Condenser Coil Installation, Operation and Maintenance



Guidelines for the installation, operation and maintenance of the Heatcraft brand of refrigerant condenser 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 technician 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**<sup>®</sup> 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

<b>5</b>	<b>C</b>	<b>N</b>	<b>14</b>	<b>06</b>	<b>C</b>	<b>24.00</b>	x	<b>144.00</b>
<b>5 = Tube O.D.</b> 3 = 0.375" 4 = 0.500" 5 = 0.625"			<b>06 = Rows</b>					
<b>W = Coil Type</b> C = Condenser		<b>C = Fin Design</b> 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)						
<b>N = Circuiting</b> N = Normal - Single Circuit F = Face Control - Multiple Circuits		<b>24.00 = Fin Height (in)</b>						
<b>14 = Fins Per Inch</b>		<b>144.00 = Finned Length (in)</b>						

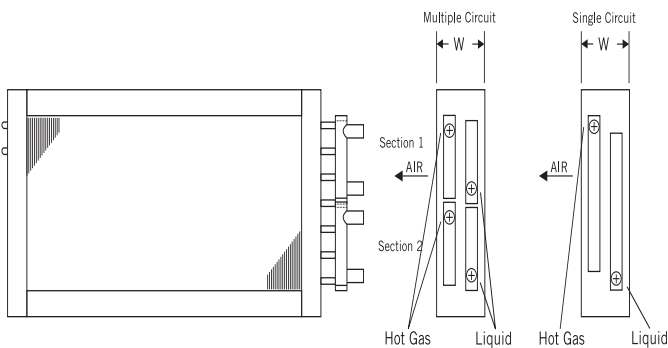


Figure 1 - Condenser Coils

## Mounting

1. Position the coil such that the liquid header is at the entering airside of the coil and the hot gas header is at the leaving airside of the coil. This orientation provides counter flow heat exchange, which is required for proper coil performance. (Fig. 1).
2. The hot gas connection is located at the top of the hot gas header and the liquid connection is located at the bottom of the liquid header when properly installed. (Fig. 1)

## Coil Types

1. Heatcraft coil model CN is used for applications where capacity control is not required for a single compressor circuit.
2. Face control (model CF) is another coil option offered. Face control is the simplest form of capacity control. Type CF coils are normally furnished with two or more hot gas connections and two or more liquid connections offering various capacity reduction capabilities.

## Installation

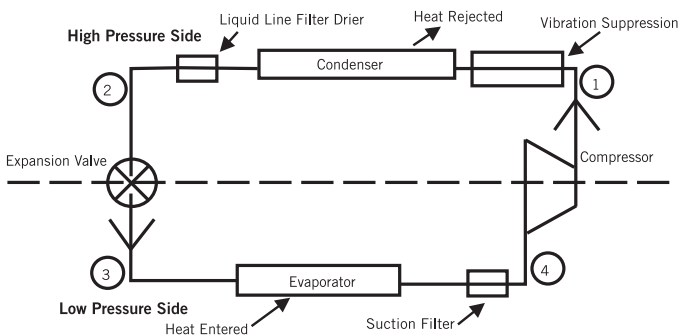
1. Carefully remove the coil from the shipping package to avoid damage to the finned area. Damaged fins can be straightened using an appropriate fin comb.
2. Luvata recommends cleaning the coil with a commercially available coil cleaner prior to installation. Refer to Maintenance on Page 4 for cleaning recommendations.
3. Proper clearance should be maintained between the coil and other structures such as the fan, guards, transition areas, etc.
4. All field brazing and welding should be performed using high quality materials and an inert gas purge (such as nitrogen) to reduce contamination by oxidation of the internal surface of the coil.
5. Connect any fittings, valves, and bypass lines to the coil.
6. Luvata recommends vibration suppressors between the incoming hot gas and the compressor to guard against stress cracks in the connections and brazed joints.
7. Pressurize the coil, bypass line (if any), and connections to 100 psig with dry nitrogen or other suitable gas. The coil should be left pressurized for a minimum of 10 minutes
8. If the pressure does not change, 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. 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 Heatcraft coil representative. Unauthorized repair of the coil may void the coil's warranty.
9. 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

# Installation, Operation and Maintenance

would indicate that moisture is still present and that the coil should be further vacuumed until the moisture has been removed.

10. 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.
11. All field piping must be self-supporting.
12. Refer to Figure 2 - General Diagram, for general plumbing.

**Figure 2 - General Plumbing**



## Operation

1. Proper air distribution is vital to coil performance. Airflow anywhere on the coil face should not vary by more than 20%.
2. Air velocities should be maintained at 400 feet per minute or above to insure proper heat transfer.

## Maintenance

1. 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).
2. Routine cleaning of the coil surface is needed to maintain optimum performance. Caution should be exercised in selecting the cleaning solution as well as the cleaning equipment. Use of high-pressure water can cause damage to the fin surface. Low-pressure water is recommended when cleaning the coil. Improper selection can result in damage to the coil and/or health hazards. Clean the coil from the leaving airside 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.
3. The use of filter-driers in the system piping is recommended. 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.