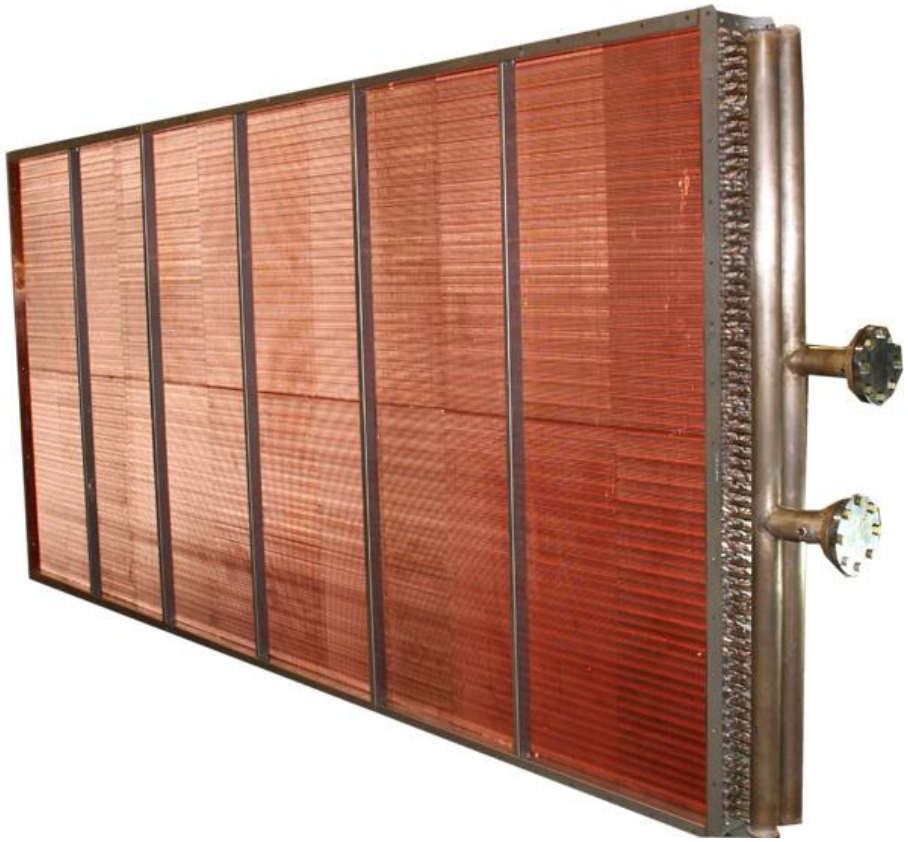
DIRECT COIL INC.

INNOVATIVE HEAT TRANSFER PRODUCTS

WATER COILS

INSTALLATION AND OPERATING MANUAL



A SINGLE SOURCE FOR ALL YOUR COIL NEEDS AND CUSTOM ENGINEERED HEAT TRANSFER PRODUCTS

Contents

For more information on Direct Coil products call (613) 544 2200 | 5055 Taylor Kidd Blvd, Millhaven, Ontario K0H 1G0
www.directcoil.com

Introduction

Custom designed for specific use; Direct Coil takes pride in enabling customization from design to manufacture. Variations are offered in design, connections, casing, fins, circuitry and materials.

Extensively tested and sized using proprietary software, Direct Coil water coils are designed for comfort conditioning, heating and industrial applications.

Features

A water coil has five main features:

- Connections
- Casing
- Fins
- Header(s) (optional)
- Drain and vents (optional)

Nomenclature

Any coil is designated a standard Direct Coil model number.

Ex., 5W-02-30.0-08-45.0-20

5 ➔ Tube OD

This parameter is codified by the following table

Figure 1 - Handing and Header Location

Number	Tube OD	Tube Pattern
2	5/16	1.00 X 0.625
1	**3/8**	1.00 X **0.750**
3	3/8	1.00 X 0.866
6	**3/8**	1.25 X **1.083**
4	1/2	1.25 X 1.083
7	**1/2**	1.50 X **1.299**
5	5/8	1.50 X 1.299

W → Coil type (W for water coil)

02 → Rows

30.0 → Fin height (FH)

08 → Fins per inch (FPI)

45.0 → Fin length (FL)

20 → Number of Feeds

Drawings

Figure 1 - Right Handed Coil

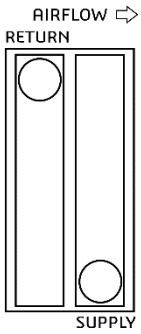
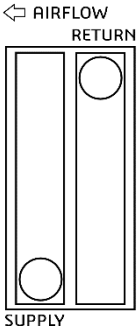


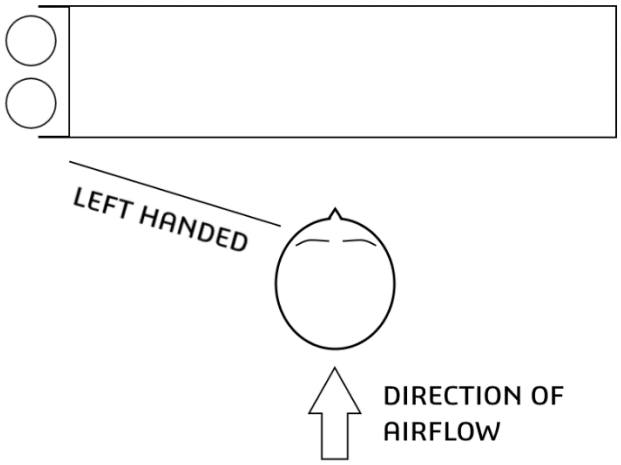
Figure 2 - Left Handed Coil



The arrow on the top of the view indicates both the direction of airflow, and the handing of the coil.

Another way of determining the coil handing is to consider where the headers would be if one was looking at the coil with the airflow hitting the back of his or her head.

Figure 3 – Airflow when Viewing a Coil



Installation

Receiving

1. The coils should be carefully inspected for shipping damage upon receipt
2. The freight BOL should also be checked against items received for complete delivery
3. Any shortage or damage should be noted on the delivery receipt; doing this lets the courier know that you intend to file a claim.

If any shortage or damage is discovered after unpacking the unit, call the courier for a concealed damage or shortage inspection. For additional assistance, contact your Direct Coil representative.

Installation

1. Remove the coil from the shipping container and avoid damaging the fins. Any bends can be straightened using the appropriate equipment
2. It is recommended to clean the coil using an industrial coil cleaner before installation
3. Pressure test the system before adding the water/glycol solution. Test pressure should not exceed low pressure
4. Fill the system until the coil is half full, then purge air from all vents. Operate system for a minute then purge all vents again and add fluid as required. Repeat the purging of all vents after the first hour of operation and again after several hours of operation
5. Connect the water supply to the bottom connection on the header assembly. Connect the water return to the top connection on the header assembly. Connecting the supply and/or return in any other configuration will impact performance
6. Ensure that the coil is mounted in a level position to insure drainability and that clearance is given between the coil face and any surrounding structures.

All pipe brazing must be done using high quality materials and must be tested for leaks. Pipe sizes for the system must be selected based on the head (pressure) available from the circulation pump. For chilled water coils, the condensate drainpipe should be sized adequately to ensure the condensate drains properly **(see Piping Schematics)**

Recommendations

1. All piping should be in accordance with accepted industry standards.
2. Water coils are not normally recommended for use with entering air temperatures below 40°F (4°C). Glycol solutions or brines are the recommended safe operating media for water coils with low temperature entering air conditions

Lifting Instructions

When lifting a coil, one should ensure that proper precautions are taken, including:

- Wearing safety equipment, such as hard-toe shoes
- Safety gloves

One should also lift while maintaining proper posture, as water coils are heavy and improper procedure could cause harm.

NEVER LIFT A COIL BY THE HEADER, CIRCUITS, OR CONNECTIONS.

1. Any coil that is 45 pounds or heavier will have two removeable lifting brackets. Use only these when lifting the coil
2. When lifting a coil, lifting should be done by the legs and the coil kept close to the center of gravity
3. If the coil is too heavy, find help and perform an assisted lift

Piping Schematics

This section is a guide for the correct installation of the cooled water piping system; however, Direct Coil is not responsible for the installation of the piping.

1. After both glycol lines are connected, the entire system must be leak tested. Care should be given to those parts which will be inaccessible in future dates.
2. **DO NOT USE GALVANIZED PIPNG IF GLYCOL IS TO BE USED IN A CHILLED WATER SYSTEM:**
   - Chemical reactions between the glycol and the galvanized piping can be detrimental to the cooling system, the glycol and unit
3. The header, pipes, and brazed joints should not be used to support any loads or weight
4. Piping material may be copper, plastic, carbon or stainless steel depending on the requirements of each installation
5. Ensure that all field piping is self-supporting and can accommodate thermal expansion and contraction (of the coil)

All piping must be installed only by a licensed plumbing contractor, and in compliance with local codes. It is the responsibility of the engineer and/or the piping contractor to ensure that the piping is correctly sized in relation to the installation.

Operation and Maintenance

First Use Recommendations

1. The air vent (at the uppermost point on the assembly) should be opened during set-up to exhaust any air from the coil. To maintain heat transfer capacity, periodically vent the air in the coil

Air Distribution

1. Uniform air flow is crucial to coil performance and should not vary significantly across the coil face
2. The drain pan and its piping should be arranged such that there is not still water in the pan to be blown by the passing flow of air
3. The fluid and air velocity should be kept to near the specifications for the coil
4. The maximum operating temperature is 350°F for any Direct Coil coils

Filters

Filters upstream of the coil should be checked regularly for dirt and clogging. If the filters are dirty, they should be cleaned or replaced. It is important that the coils be clean to maintain maximum heat transfer capability.

Cleaning

1. Coils must be cleaned periodically to obtain maximum performance. Soiled fins reduce the capacity of the coil, and demand more energy from the fan
2. Periodic inspection of the coil for signs of damage, leaks or corrosion is also recommended. Any repair or replacement of parts should be performed by a qualified professional.
3. Any fluid passing through the coil should be free of any sort of contaminants. Periodic testing and correction will enable the coil to last longer.
4. Fins can be cleaned using spray washers or using commercial cleaners. Care must be taken not to damage the coils and to not allow water to touch any electrical equipment. However, caution should be exercised when working with the fins as the sharp edges can cause serious personal injury.
5. When the coil surface itself needs cleaning, ensure an appropriate solution and equipment are selected to avoid damage to the coil and/or enabling any health hazards. Cleaning should be done inwards from the airflow exit so any contaminant will later be pushed out of the coil. Follow the manufacturer's instructions with any cleaning solution or equipment
6. Drain-pans in any air conditioning unit contain moisture and must be cleaned regularly

Winterizing Coils

During the winter, if the coil is not in use all water should be drained from the coil. The coil should then be thoroughly flushed with a glycol solution.

Warranty

Direct Coil Inc. warrants to its direct purchasers that Products, including Service Parts, manufactured by the **Direct Coil Inc.** shall be free of defects in material or workmanship, under normal use and service for a period of one (1) year from date of original installation, or eighteen (18) months from date of shipment by Direct Coil, whichever first occurs. This warranty is not applicable if the purchaser has not fulfilled their payment obligations as per terms and conditions of sale.

Any Products covered by this warranty found to Direct Coil's satisfaction to be defective upon examination at Direct Coil's factory will at Direct Coil's option, be repaired or replaced and returned to Buyer via lowest common carrier, or Direct Coil may at its option grant Buyer a credit for the purchase price of the defective Product. Buyer must pay all costs for transportation of Products to Direct Coil's factory. The repair or replacement of such defects shall constitute full performance by Direct Coil of its obligations under this warranty. Product loss of any type is not covered. Refrigerant loss is not covered.

Direct Coil Inc. shall have no liability for expenses incurred for repairs made by Buyer except by prior, written authorization. Any claim under this warranty shall be made to Direct Coil in writing within the warranty period specified above otherwise such claim shall be deemed waived. In the event that parts of equipment have to be returned to the factory for repairs, return goods authorization number must be obtained by contacting sales department. No return goods shipment will be accepted without an authorization number.

Direct Coil Inc. shall have no warranty obligation whatsoever if its products have been subjected to alteration, misuse, negligence, free chemicals in system, corrosive atmosphere, accident, or if operation is contrary to Direct Coil's or manufacturer's recommendations, or if the serial number has been altered, defaced, or moved.

Direct Coil Inc. makes no warranty, express or implied, of fitness for any particular purpose, or of any other nature, with respect to products manufactured or sold by Direct Coil, except as specifically set forth above. No one is authorized to change this warranty or to create for on behalf of the Company any other obligation or liability in connection with the Products.

It is expressly understood and agreed that **Direct Coil Inc.** shall not be liable to buyer, or any customer of buyer, for direct or indirect, special, incidental, consequential or penal damages, or for any expenses incurred by reason of the use or misuse by buyer or third parties of the products.

All written correspondence is to be made to:

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