INSTALLATION, OPERATION

AND MAINTENANCE MANUAL

FOR

FLUID COILS

UNIT MODEL NO. _____
UNIT SERIAL NO. _____
SERVICED BY: _____
TEL. NO: _____

CANADIAN HEAD OFFICE AND FACTORY

1401 HASTINGS CRES. SE
CALGARY, ALBERTA
T2G 4C8
Ph: (403) 287-2590
Fx: 888-364-2727

USA HEAD OFFICE AND FACTORY

32050 W. 83rd STREET
DESOTO, KANSAS
66018
Ph: (913) 583-3181
Fx: (913) 583-1406

CANADIAN EASTERN FACTORY

1175 TWINNEY DRIVE
NEWMARKET,
ONTARIO
L3Y 5V7
Ph: (905) 898-1114
Fx: (905) 898-7244

www.engineeredair.com

SALES OFFICES ACROSS CANADA AND USA

Retain instructions with unit and maintain in a legible condition.
Please give model number and serial number when contacting the factory for information and/or parts.

Feb 08 R1

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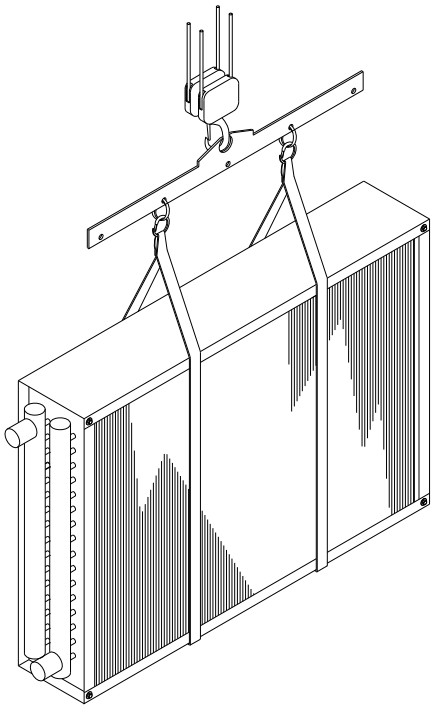
RECEIVING

All Engineered Air coils are inspected and factory tested prior to shipment. All Coils should be inspected upon receipt to determine that all items on the bill of lading are received and are in an undamaged condition. If there is any damage or shortage it should be reported immediately and a claim filed with the carrier. Should hidden damage be found upon uncrating or during installation, file a concealed damage claim with carrier. Several coils may be shipped within a single crate. Refer to the important freight procedure notice located on the back of the packing slip.

COIL TYPES

Engineered Air coils are custom designed for a particular application. While two coils may look similar, there may be variances in the fin spacing, circuiting pattern, and header design. Note the tag number on each coil for reference. Depending on the requirements, tubing may be copper or steel. The fin material is typically aluminum, however copper may be used.



RIGGING

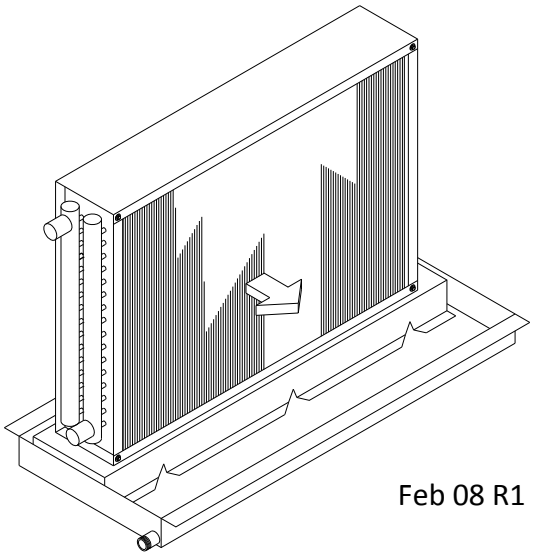
Coils must not be lifted by the connections, headers or tubing. Move and lift coil using only the outer frame, and lift using a sling.

INSTALLATION

GENERAL

Carefully remove the coil from the shipping container to avoid damage to the finned surface and tubing. Damaged fins can be straightened using a fin comb.

Confirm the tag number and handing of the coil prior to installation. Water and glycol coils are generally piped with the supply connection at the bottom, on the leaving air side, with the return connection at the top near the entering air side of the coil, to produce a counter flow heat exchange arrangement for maximum heat transfer.



All cooling coils must be located in a properly sized drain pan with properly sized drain traps and piping. All water must collect in the drain and leave through the drain pipe. This drain pipe must be trapped and connected to the building sewer.

If the installation requires two cooling coils to be stacked on top of one another, a diverter plate and intermediate drain pan is required. The drain from the upper coil can be piped directly into the lower drain pan.

The perimeter of the coil must be sealed to the surrounding enclosure to prevent air from bypassing the coil.

Air entering the face of the coil must be of uniform velocity for proper heat transfer. Do not locate the coil near fan outlets, duct elbows or transitions which could affect the airflow.

MOUNTING

Coils should be mounted level, although they may be sloped to a maximum of 1% towards the headers.

Ensure the coil and all connections have sufficient working clearance and component access.

Each coil must be individually vented.

PIPING

All piping is to be installed by a qualified pipe fitter.

Always use a back-up wrench for all threaded coil connections to avoid damaging the header and spigots.

All piping must be self-supporting and allow for thermal expansion and contraction.

Manual valves should be installed to isolate the coil for service.

Water coils must be protected from freezing. They should not be used with a throttling valve when entering air temperatures are below freezing.

STARTUP

Fill the coil with water. Remove all air from the coil. Perform a leak test of valves, connections, piping and controls.

Coil tubing may contain material or residue from manufacturing, transportation or storage. To prevent possible damage to other components in the system, the coils must be flushed and degreased. Consult a qualified water treatment specialist.

Remove the water and recharge with the intended heat transfer fluid.

After installation, the coil should be pressure tested. If the coil is found to be leaking, contact Engineered Air prior to attempting a repair. Damage to the coil incurred on site is not warrantable.

Untreated or improperly treated water, glycol or other fluids not approved for use in commercial heating and cooling systems and copper or steel tube coils can damage the coil. Only use water, inhibited glycol or other fluids suitable for use in commercial heating and cooling systems. Consideration must be given to the type of tubing in the coil and the materials used in the system piping. Follow the glycol manufacturer's recommendation for commercial heating and cooling systems for treatment, mixing and filling. Failure to do so could adversely affect coil performance or damage tubes or brazing.

SHUTDOWN

Water coils should be protected against freezing in event of system shutdown. Due to the design of the coil it may not be possible to drain the entire coil through the supply connection. Always remove the factory mounted drain plug to assist drainage.

- Drain water from coil.
- Blow out remaining water with compressed air.
- Fill entire coil with an appropriate strength pre-mixed inhibited HVAC glycol or other suitable antifreeze solution suitable for the lowest anticipated air temperature.
- Drain and recover the antifreeze solution from the coil.

MAINTENANCE

Regularly inspect the coil for signs of corrosion or leaks.

A water specialist should regularly test the heat transfer fluid to ensure it is free of any contaminants or sediments and has the proper concentration of inhibiters.

Inspect cooling coils and drain pans for cleanliness and biological growth once per year during the cooling season or more often as required.

WARNING: ⚠	**Follow the cleaning instructions and recommended inspection schedule to reduce the risk of mold or other bacterial growth. Property damage or personal injury claims may result from mold or bacterial growth arising from improper installation, inadequate maintenance, or failure to inspect. The manufacturer has no responsibility for and makes no express or implied warranties regarding mold or bacterial growth or and other indoor air quality issues. If mold or bacterial growth is present determine and fix the cause and remove the contamination. Properly clean and sanitize the affected area using only approved sanitizer's approved for HVAC equipment. Moisture carry over can also result from dirty coils.**

CAUTION: ⚠	**Coil fins are easily damaged. The finned surfaces of coils can be cleaned using a low pressure water spray. When using cleaning additives or solutions they must be compatible with the coil materials or coatings. Where possible clean coils reverse to airflow so dirt is pushed back out rather than deeper into the coil.**

CAUTION: ⚠	**Use of high pressure steam or water may damage the coil.**

HERESITE® MAINTENANCE

Heresite® is a baked on phenolic coating used to protect metals from some forms of chemical corrosion. At the time of purchase new coils can, as an option, have Heresite® applied at the factory.

If you have a Heresite® coated coil:

- Inspect once per year or more often as required.
- Clean with low pressure air and vacuum with a soft brush.
- Low pressure, chemical free water may be used.

Repair Instructions (using air-dried Heresite® touch-up spray):

1. Ensure surfaces are completely dry.
2. Use a nylon brush to remove any loose scale.
3. Roughen up areas to be repaired with a wire brush.
4. Vacuum fins or the affected area to ensure any loose residue is gone.
5. Spray or brush S-440 solvent* (or any equivalent cleaner) to dissolve any oils or grease.
6. Again, vacuum the affected area.
7. Allow one hour for the solvent to dissolve completely.
8. Cover areas not requiring repair with plastic (or equivalent) and masking tape.
9. Using Heresite® VR-554-T* coating spray all affected areas from different angles to ensure complete coverage. Apply 2-3 full coats. Let dry 3 to 4 hours between coats.
10. Allow Heresite® to cure 24 hours before putting equipment back into service.

* Review the MSDS documentation included with the solvent and coating spray.

SPRAYED COIL

The spray nozzles and coil should be inspected and cleaned each month. The inspection procedure is as follows:

1. Shut off the fan, but leave the pump running.
2. Check to see if the nozzles are providing complete coverage of the coil.
3. Clean the nozzles that are clogged. If necessary, the nozzle may be removed for cleaning.
4. Inspect all areas of the coil surface. If provided, the eliminators will have to be removed. Any corrosion, damage, or obstructions must be corrected.

NOTE: Air flow is restricted by dirty coils, dirty filters, slipping fan belts etc. This will reduce performance.

WATER TREATMENT

For specific recommendations on treatment of scale, corrosion, or biological control, consult a competent local water treatment supplier.

CORROSION AND SCALE CONTROL

As the water evaporates, the impurities originally present remain in the recirculating water. The concentration of the dissolved solids increases rapidly and can reach unacceptable levels. In addition, airborne impurities are often introduced into the recirculating water, intensifying the problem. If these impurities and contaminates are not effectively controlled, they can cause scaling, corrosion, and sludge accumulations which reduce heat transfer efficiency and increase system operating costs.

The degree to which total dissolved solids (TDS) and other impurities build up in the recirculating water may be defined as the cycles of concentration. Specifically, cycles of concentration is the ratio of dissolved solids (for example: TDS, chlorides, sulfates) in the recirculating water to dissolved solids in the make-up water.

In order to control the cycles of concentration, it will be necessary to bleed or blowdown a small amount of recirculating water from the system. This bleed water is replenished with fresh make-up water, thereby limiting the build-up of impurities.

Typically the bleed is accomplished automatically through a solenoid valve controlled by a conductivity meter. The conductivity meter set point is the water conductivity at the desired cycles of concentration and should be determined by a component local water treatment expert. Alternatively a bleed line with a valve can be used to continuously bleed from the system. In this arrangement, the rate of bleed can be adjusted using the valve in the bleed line and measured by filling a container of known volume while

noting the time period. The bleed rate and water quality should be periodically checked to ensure that adequate control of the water quality is being maintained.

1. If the site conditions are such that constant bleed-off will not control scale or corrosion, chemical treatment may be necessary. If a chemical water treatment program is used, it must meet the following requirements:

2. The chemicals must be compatible with galvanized (zinc coated) or stainless steel as well as all other materials used in the system (pipe, heat exchanger, etc.)

3. Chemicals to inhibit scale and corrosion should be added to the recirculating water by an automatic feed system on a continuously metered basis. This will prevent localized high concentrations of chemicals which may cause corrosion. It is recommended that the chemicals be fed into the system at the discharge of the recirculating pump. They should not be batch fed directly into the cold water sump.

Acid water treatment is not recommended unless the unit(s) are constructed of stainless steel - in which case acid treatment can be used provided the requirements of paragraph 1 and 2 above are maintained.

BIOLOGICAL CONTROL

Bleed-off with or without chemical treatment for scale and corrosion control is not adequate for control of biological contamination. The growth of algae, slimes, and other microorganisms, if unchecked, will reduce system efficiency and may contribute to the growth of potentially harmful micro-organisms, including Legionella, in recirculating water system.

Accordingly, a treatment program specifically designed to address biological control should be initiated when the system is first filled with water and administered on regular basis thereafter in accordance with the supplier's instructions.

SAFETY

At no time should this equipment be operated without all fan screens, access panels, and access doors in place.

The recirculating water system may contain chemicals or biological contaminants including Legionella, which could be harmful if inhaled or ingested. Accordingly, personnel who may be exposed directly to the discharge airstream and the associated drift mists generated during operation of the water distribution system and/or fans, or mists produced by high pressure water jets or compressed air should these be used to clean portions or components of the recirculating water system, should wear respiratory protection equipment approved for such use by OSHA and/or local occupational safety and health authorities.