

**EngA**®

**ENGINEERED AIR**®

**INSTALLATION, OPERATION  
AND MAINTENANCE MANUAL  
FOR  
FLUID COILS**



UNIT MODEL NO. \_\_\_\_\_  
UNIT SERIAL NO. \_\_\_\_\_  
SERVICED BY: \_\_\_\_\_  
TEL. NO: \_\_\_\_\_

**CANADIAN  
HEAD OFFICE  
AND FACTORY**

**USA  
HEAD OFFICE  
AND FACTORY**

**CANADIAN  
EASTERN FACTORY**

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

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

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

**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.

[www.engineeredair.com](http://www.engineeredair.com)

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## WARRANTY

**LIMITED WARRANTY** ENGINEERED AIR will furnish without charge, F.O.B. factory, freight collect, replacement parts for, or repairs to products covered herein which prove defective in material or workmanship under normal and proper use for a period of twelve (12) months from the initial start-up or eighteen (18) months from the date of shipment, whichever expires sooner, provided the customer gives ENGINEERED AIR written notice of such defects within such time periods and provided that inspection by ENGINEERED AIR establishes the validity of the claim and all pertinent invoices have been paid in full. The repairs or replacements will be made only when the complete product(s) or part(s) claimed to be defective are returned to ENGINEERED AIR or a depot designated by ENGINEERED AIR, transportation charges prepaid. Repairs or replacements as provided for by this paragraph shall constitute fulfillment of all ENGINEERED AIR's obligations with respect to this warranty. The refrigerant charge is not included in any part of this warranty. This warranty does not apply to any products or parts thereof that have been subject to accident, misuse or unauthorized alterations, or where ENGINEERED AIR's installation and service requirements have not been met.

The foregoing warranty is in lieu of all other warranties, express or implied. ENGINEERED AIR specifically disclaims any implied warranty of merchantability and/or fitness for purpose. Under no circumstances shall ENGINEERED AIR be liable to, nor be required to indemnify, Buyer or any third parties for any claims, losses, labor, expenses or damages (including special, indirect, incidental, or consequential damages) of any kind, resulting from the performance (or lack thereof) of this Agreement or the use of, or inability to use the goods sold hereunder, including, but not limited to, damages for delay, temporary heating/cooling costs, loss of goodwill, loss of profits or loss of use. Furthermore, the parties agree that the Buyer's sole remedy under this agreement shall be limited to the limited warranty set forth in the preceding paragraph relating to the repair or replacement of any defective goods. Under no circumstances shall any claim or award against ENGINEERED AIR exceed the original contract price whether awarded through arbitration, litigation or otherwise.

ENGINEERED AIR Warranty is void if:

1. The unit is not installed in accordance with this manual.
2. The start-up and operation of the unit is not performed in accordance with this manual.
3. The unit is operated in an atmosphere containing corrosive substances.
4. The unit is allowed to operate during building construction.

## 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.

## 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.

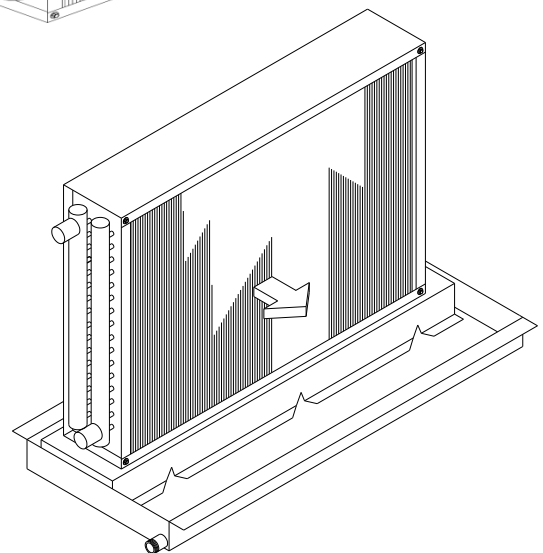
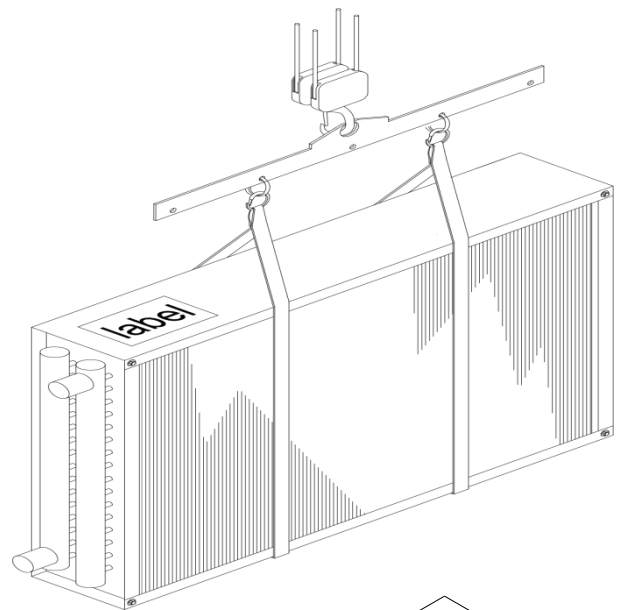
## INSTALLATION

### 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. The drain pipe must be trapped and disposed of in accordance with local regulations.



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.
- 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 inhibitors.

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

## HERESITE<sup>®</sup> MAINTENANCE

See Heresite coating manual supplement for information.

## 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 water treatment expert.

## 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 contaminants 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.

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. 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 the chemicals must be compatible with all materials used in the system (pipe, heat exchanger, etc.)

## 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.