GatesAir Service

EQUIPMENT:	Heat Exchangers 9810147001/9810147002 50KW 9810146001 20KW	**APP GUIDE No:**	APN-022
		PART No:	7734520022
		DATE:	5-OCT-2022
UNIT(S) AFFECTED:	All Liquid cooled TV and FM transmitters	**ECO:**	71181
		REVISION:	A
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PURPOSE:	To show proper maintenance of Heat Exchangers		

Review the following documentation thoroughly prior to implementing.

ATTENTION:

All work pertaining to this bulletin must be carried out by a trained competent person using appropriate skills, knowledge, and experience for their own safety and that of others as well as what is adequate for successfully working on the equipment and installation.

"Competence of Personnel" as defined in the IEC-60215:2016 Safety Standard

Introduction: Routine System Operation and Maintenance of heat exchangers.
The single most important cooling maintenance step: Inspect the bottom of the heat exchanger/inlet air side coil bimonthly. Inspect the coil itself for any debris that may have become trapped on the coil face. This would block air flow and decrease cooling efficiency of the heat exchanger.
Debris can be removed using a hose and pressurized water system. In dusty environments or areas where an abundance of vegetation is present this inspection will be required weekly.

* For severely coated exchangers use of a brush or vacuum cleaner to remove excess before spraying is suggested.

Time Required: Typically, ½ hour per heat exchanger, depends on size of system**.**

Parts Required: Clean water source, approved heat exchanger cleaner(s) See Text and web addresses. Note if water is not available on site, it will need to be trucked in. Depending on the system it will require 250 gallons or more with a pump to provide flow to spray out the heat exchanger.

Tools Required: Vacuum Cleaner (ShopVac), stiff brush, Coil Fin Comb, Garden Hose and sprayer attachment, Pump Sprayer, Gloves and Eye Protection, LOW Pressure Power Washer (**that can be adjusted down to 100 psi or less**) with WIDE Nozzle, Metric Socket set or Wrenches, Straps, bungie cords (To support Fan while cleaning), Transfer Pump if having to pump from a tank.

Preparation: Ensure adequate water is available to fully flush out the exchangers. Ensure enough garden hose is available to reach all exchangers, have an extension cord available to power up a transfer pump and basic hand tools & fan support rigging is available. Mix the coil cleaner as prescribed by the manufacturer and put in the Pump Sprayer.

An example of a Low Pressure, Pressure washer is generally going to be an electric type, with maximum pressure ratings at about 1000-1200psi that can be adjusted down to 100 psi or less. They generally have an assortment of tips or an adjustable wand. A gas-powered Pressure Washer is NOT advisable as the maximum pressure produced is about 3000psi or greater and the possibility of damage to the coil is much greater.

Always use the widest tip or adjustment of the wand possible. The movement of the wand should be Top to Bottom at a 45-degree angle. PLEASE NOTE: NEVER MOVE THE WAND LEFT TO RIGHT WITH PRESSURE APPLIED AS IT WILL BEND OVER THE FINS OF THE COIL!

Regular Coil Manufacturer Maintenance Statement:

To continually deliver full heating capacity, both the external and internal heat transfer surfaces must be maintained as clean and corrosion free as possible. The finned surface can be maintained by the use and constant inspection of pre-filters. The filters should be replaced as needed. Should the finned surface become fouled, the coil can be cleaned using commercially available coil cleaning fluids. 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 health hazards. Be sure to carefully read and follow the cleaner manufacturer's recommendations before using any cleaning fluid. Clean the coil from the leaving airside so that foreign material will be washed out of the coil rather than pushed further in.

Cleaning Procedure

1. The exchangers can be cleaned one side at a time, Left or Right (turning off that fan at the disconnect). Or the exchangers can be cleaned with the transmitter off. Depending on which option is available will determine if the exchanger is cleaned half at a time or all at once. While the water will cool the exchanger if the transmitter is operating one side should be working to ensure the transmitter does not overheat.
2. It is strongly suggested that when flushing the heat exchanger (one side or both) the fan(s) be removed. First the power should be disconnected from that fan or fans. There are 4 bolts that hold each fan to the heat exchanger, once removed; a rope, ratchet strap or other convenient means be used to hang the fan assembly out of the way.
3. Either Vacuum or brush loose material from the inlet side of the heat Exchanger. If you have the Non-Corrosive coating on your heat Exchangers please utilize the recommended coil cleaner after this procedure. GatesAir, Inc. suggests Nu-Brite as an approved cleaner, this cleaner has a foaming action which assists in lifting dirt and grime. https://www.nucalgon.com/products/coil-cleaners-sprayers/condenser-cleaners/nu-brite/. (Note this link provides access to MSD and RTK sheets as well as usage instructions). Nu Calgon Product Bulletin is added to the final page of this document.
    a. If other cleaners are used it must be specially formulated for HVAC type equipment. Non approved cleaners can damage the heat exchanger. Read the active ingredients carefully and ensure that the cleaner contains NO ACIDS.
    b. Utilizing the pump sprayer, the nozzle should be adjusted so that there is not a stream and not a wide spray but somewhere in between. Apply this to both sides of the coil, Top to Bottom and Left to right. (WEAR Gloves and Safety Glasses/Goggles when handling Coil Cleaner) See Example A and B. Wait about 15min. and the Cleaner Should start foaming and you will see dirt and grime begin to fall out.
    c. With a Low Pressure, Pressure Washer < 100psi and a WIDE Fan Nozzle start in the front (FAN Side) and Hold the Nozzle at a 45degree to the coil and move up and down only to avoid from bending the fins of the coil. See Example C
    d. Once Complete Move to the Back of the coil and rinse from the back to the front. If Dirt is still present in the rinse water Repeat application of the Coil Cleaner and rinsing until the rinse water runs clear.
4. Obviously for double or triple stacked heat exchangers, one should start at the top and work down.

a. If cleaning half at a time, re-install fan then repeat process for other side. If cleaning both with transmitter off, replace both fan assemblies. Move onto the next and repeat the process.

Example A

Example B

Example C

Non-Corrosive Coated Coils are ‘painted’ with a black, corrosive resistant coating and are/were ordered in areas where the nature of the air inherently is corrosive such as near the beach or near large chemical plant operations such as oil refineries. The Part Number for Non-Corrosive Coils is 9810147002, additionally the coil and will appear to have been painted black.

There are special coil cleaners and a schedule in which to utilize, to ensure that the maintenance is completed properly and protecting the coil manufacturer’s warranty.

There are two cleaners that are required to protect this warranty, and they have a specific interval for use. It is advisable to read the instructions carefully regarding their use.

https://www.modinecoatings.com/electrofin-technical-documents/

Read selections from the Electrofin Documents section it will explain their use, provide a Maintenance record and where to procure the necessary cleaning agents to preserve the non-corrosive coating that has been applied to these heat exchangers.

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