



SERVICE AND APPLICATION NOTES

C-13-12

May 20, 2014

Revised August 11, 2015

Cleaning and Repairing Aluminum Coils

(including hybrid - all aluminum coil slabs with copper manifolding)

OUTDOOR COILS

WARNING

Improper installation, adjustment, alteration, service or maintenance can cause personal injury, loss of life, or damage to property.

Installation and service must be performed by a licensed professional installer (or equivalent) or a service agency.

The coils should be inspected and preferably cleaned a minimum of once a year or more often, if necessary.

1. Put on personal protective equipment – Safety glasses and/or face shield, waterproof clothing and gloves.
2. Remove any foreign debris attached to the coil. (Leaves, grass cuttings, or trim back shrubs crowding the unit, etc)
3. Only clean potable water should be used to clean the coils. Clean coil slab surfaces by spraying steady and uniformly at a vertical angle of 30 to 45 degrees with a constant stream of water at moderate pressure (**less than 50 psig**) from top to bottom. A fan nozzle will work best. Do not spray the coil from a horizontal direction.

Note: For outdoor unit coils in coastal regions, potable water will dissolve away any salt deposits. (Wash coils with potable at least every 3 to 6 months)

Footnote: For applications with coils with heavy oil/grease build-up, we recommend a coil cleaner with a pH range between 5 and 9 (7 being neutral). Coil must be thoroughly flushed with clean potable water to remove ALL residue of the cleaning solution approximately 10 to 15 minutes after application.

WARNING

Use of acidic (below 5) or alkaline (above 9) cleaners can strip off factory protective coatings and reduce the life of an aluminum coil.

Alkaline (also called no-acid) coil cleaners are products that has a pH greater than 7. Acid coil cleaners are products that have a pH less than 7.

INDOOR COILS

The coils should be inspected and preferably cleaned a minimum of once a year or more often, if necessary. Cleaning of the indoor unit's coil should be performed by a licensed professional service technician (or equivalent).

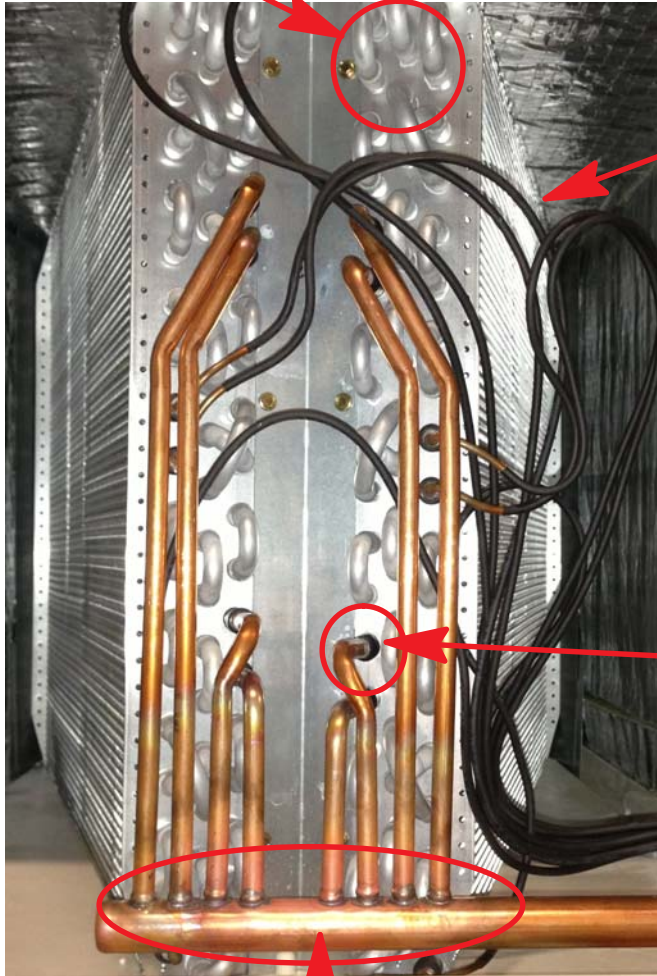
1. Put on personal protective equipment – Safety glasses and/or face shield, waterproof clothing and gloves.
2. Vacuum or brush the coil to remove any matted or surface foreign debris from the fins (dirt, animal hair, etc).
3. Only clean potable water should be used to clean the coils. Clean coil slab surfaces by spraying steady and uniformly at a vertical angle of 30 to 45 degrees with a constant stream of water at moderate pressure (**less than 50 psig**) from top to bottom. A fan nozzle will work best. Do not spray the coil from a horizontal direction.

Note: Attempting to back flush from the inside of the coil will require removing parts from the unit, and it may be very difficult to flush the whole coil surface. Attempting to blow water through a coil will slow the water stream and reduce the flushing action of the outer fin surface.

REPAIRING (INDOOR COILS)

If the hybrid coil (all aluminum coil slabs with copper manifold) was to develop a refrigerant leak, the location of the leak will determine proper repair procedure.

Aluminum to Aluminum – Can be field repaired.
(Refer to proper repair procedure section)



Aluminum Fin Areas –
Not field repairable.

Copper to Aluminum (with high temperature adhesive shrink wrap) – Not field repairable.



Copper to Copper - Can be field repaired. (Refer to proper repair procedure section)

Figure 1. Repairable Coil Components

Aluminum to Aluminum – Can be field repaired.
(Refer to proper repair procedure section)



Aluminum Fin Areas –
Not field repairable.

**Copper to Aluminum (with high
temperature adhesive shrink
wrap)** – Not field repairable.

Figure 2. Repairable Coil Components

REPAIRING (OUTDOOR COIL)

If the aluminum coil was to develop a refrigerant leak, the location of the leak will determine proper repair procedure.

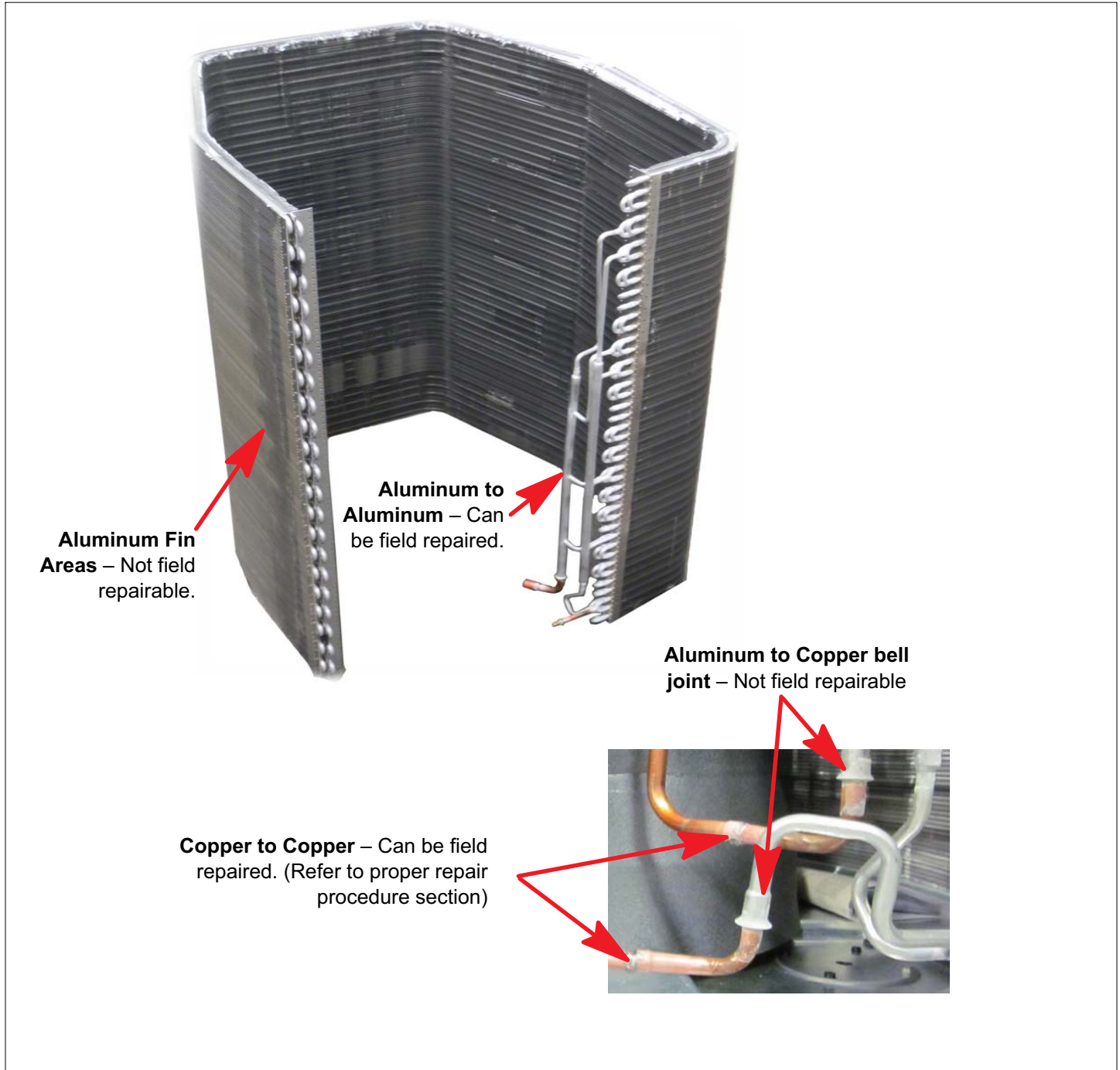


Figure 3. Repairable Coil Components

TOOLS REQUIRED

Table 1. Copper to Copper and Aluminum to Aluminum










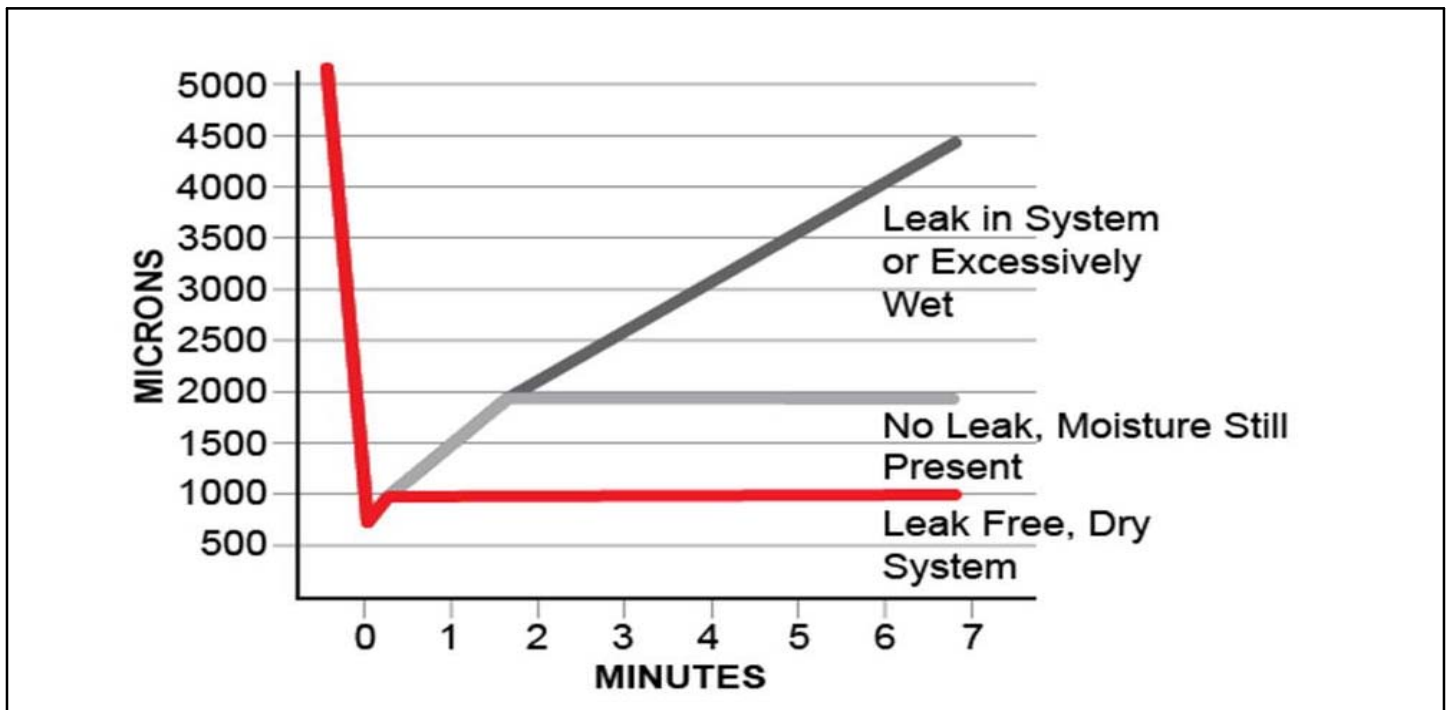
Part Picture (Example)	Tool/Supplies	Part Picture (Example)	Tool/Supplies
Common tools for both Copper and Aluminum			
	<p>Refrigerant leak detector (HCFC and HFC)</p>		<p>Vacuum Pump</p>
	<p>Refrigerant Gauge Manifold (Appropriate refrigerant)</p>		<p>Refrigerant</p>
	<p>Refrigerant Recovery Machine C/W Recover Tank</p>		<p>Wet Rags</p>
	<p>Nitrogen Bottle C/W Regulator</p>		<p>Filter Drier</p>

Table 1. Copper to Copper and Aluminum to Aluminum (continued)

Part Picture (Example)	Tool/Supplies	Part Picture (Example)	Tool/Supplies
Tools for Copper to Copper field repairs		Tools for Aluminum to Aluminum field repairs	
	<p>Copper Pipe Cleaning Brush</p>		<p>Stainless Steel Bristle Brush</p>
	<p>Oxy/Acetylene Torch Kit</p>		<p>Oxy/Acetylene Torch Kit or Mapp Gas Torch</p>
	<p>Torch Tip (Tip size is dependent on copper line size)</p>		<p># 2 Torch Tip</p>
	<p>Copper Braze Rod (Recommend silver ally brazing rod with 5% minimum silver alloy for copper to copper brazing)</p>		<p>AL822 Flux Cored Solder (.090" diameter x 20" x 4 stickers per tube (Lennox catalog number Y6331)</p>

OUTDOOR AND INDOOR COIL INSPECTION PROCEDURE

1. Turn all power **OFF** to system.
2. If refrigerant pressure in system is 150 psig or higher, leak check system.
3. If refrigerant pressure in system is below 150 psig, install refrigerant gauges and recovery machine. Remove the remaining refrigerant in the system.
4. If the system is void of pressure, add a trace of refrigerant to the system so electronic leak detector can sense leak location. (2 to 3 psig)
5. Hook up nitrogen bottle to system and bring the system pressure up to 150 psig to identify leak location. Maximum pressure is 450 psig.
6. Purge all pressure from the system.
7. Refer to the figure 1 to determine if leak location is repairable
8. Locate leak location:
 - A. Not repairable. Replace coil.
 - B. Repairable see step 9.
9. Repair Leak Procedure
 - A. Clean leak area with stainless steel brush.
 - B. Use appropriate brazing material and torch to repair leak.
 - C. Purge nitrogen through the system while repairing leak location to prevent oxidation build up in internal piping. (Purge with 2 to 3 psig of pressure)
 - D. Pressure system with nitrogen to confirm leak is repaired.
 - E. Pull vacuum on system to 500 microns and use the chart below to determine leak status.

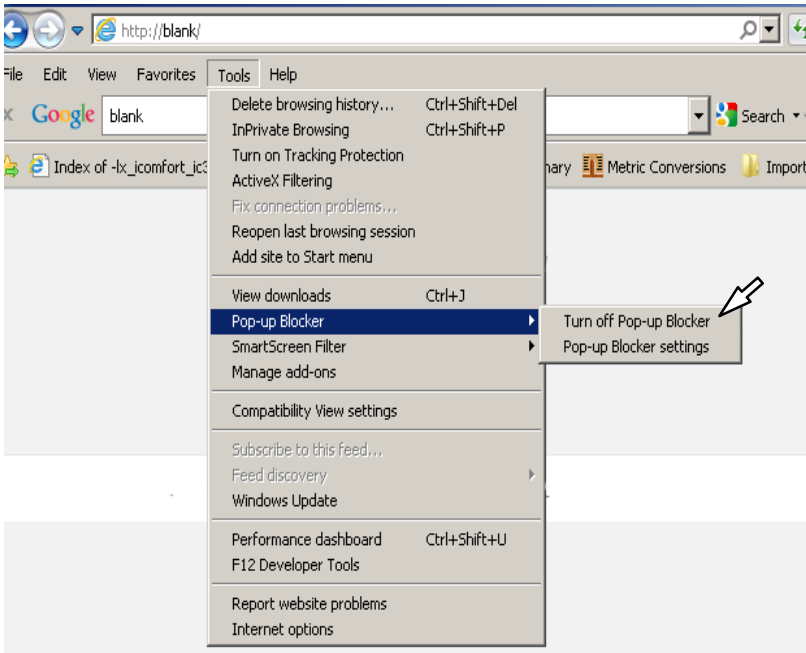


- F. Recharge system.

HOW TO REPAIR ALUMINUM COILS VIDEO

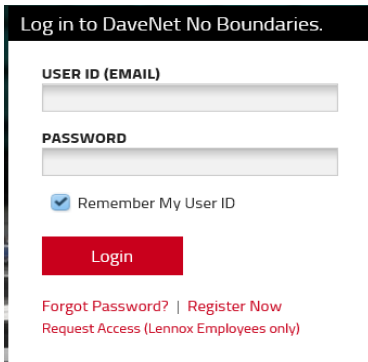
DISABLING POP-UP BLOCKING (INTERNET EXPLORER)

A video on how to repair an aluminum evaporator coils is available on DaveNet. Pop-up blocker will need to be disabled in order to view the reference video. From Internet Explorer, click on **Tools > Pop-up Blocker > Turn off Pop-up Blocker**.



VIEW VIDEO

1. Go to <https://public.davenet.com/Pages/login.aspx>.
2. Login with your **user ID** (email) and **password**.



3. Click on **My Learning** which is located along the top of the screen.



4. A new windows will appear. **Note:** You will need to disable pop-up blocking.
5. In the search box, enter "How to repair an aluminum evaporator coil."



6. A new Training Detail page will appear. Click on the video title.

Training results (1)



How to repair an aluminum evaporator coil



Online Class | Lennox Residential Technical Support OLT | \$0.00

Learn how to properly repair an aluminum evaporator, what repair alloys are available and the correct tools to use during the repair

7. Press on **Request** to continue. A transcript page will appear with the listed video. Press **Launch** under options to start the video.

*Note: you may get a message along the bottom of the screen that indicates "Internet Explorer blocked a pop-up from Lennox.cosd.com, press **Allow Once** to continue.*