General Service Bulletin

Unitary Light and Large Commercial Units

Microchannel Coil Servicing Guidelines

Product Codes (Light Commercial): 0411, 0419, 0514, 0518, 0463, 0465, 0467

Product Codes (Large Commercial): 0361, 0362, 0382, 0383, 0393, 0504

⚠SAFETY WARNING

Only qualified personnel should install and service the equipment. The installation, starting up, and servicing of heating, ventilating, and air-conditioning equipment can be hazardous and requires specific knowledge and training. Improperly installed, adjusted or altered equipment by an unqualified person could result in death or serious injury. When working on the equipment, observe all precautions in the literature and on the tags, stickers, and labels that are attached to the equipment.

July 2020 **RT-SVB83F-EN**

Introduction

Read this manual thoroughly before operating or servicing this unit.

Warnings, Cautions, and Notices

Safety advisories appear throughout this manual as required. Your personal safety and the proper operation of this machine depend upon the strict observance of these precautions.

The three types of advisories are defined as follows:

WARNING Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION Indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury. It could also be used to alert against unsafe practices.

NOTICE Indicates a situation that could result in equipment or property-damage only accidents.

Important Environmental Concerns

Scientific research has shown that certain man-made chemicals can affect the earth's naturally occurring stratospheric ozone layer when released to the atmosphere. In particular, several of the identified chemicals that may affect the ozone layer are refrigerants that contain Chlorine, Fluorine and Carbon (CFCs) and those containing Hydrogen, Chlorine, Fluorine and Carbon (HCFCs). Not all refrigerants containing these compounds have the same potential impact to the environment. Trane advocates the responsible handling of all refrigerants-including industry replacements for CFCs and HCFCs such as saturated or unsaturated HFCs and HCFCs.

Important Responsible Refrigerant Practices

Trane believes that responsible refrigerant practices are important to the environment, our customers, and the air conditioning industry. All technicians who handle refrigerants must be certified according to local rules. For the USA, the Federal Clean Air Act (Section 608) sets forth the requirements for handling, reclaiming, recovering and recycling of certain refrigerants and the equipment that is used in these service procedures. In addition, some states or municipalities may have additional requirements that must also be adhered to for responsible management of refrigerants. Know the applicable laws and follow them.

WARNING

Proper Field Wiring and Grounding Required!

Failure to follow code could result in death or serious injury. All field wiring MUST be performed by qualified personnel. Improperly installed and grounded field wiring poses FIRE and ELECTROCUTION hazards. To avoid these hazards, you MUST follow requirements for field wiring installation and grounding as described in NEC and your local/state electrical codes.

WARNING

Personal Protective Equipment (PPE) Required!

Failure to wear proper PPE for the job being undertaken could result in death or serious injury. Technicians, in order to protect themselves from potential electrical, mechanical, and chemical hazards, MUST follow precautions in this manual and on the tags, stickers, and labels, as well as the instructions below:

- **Before installing/servicing this unit, technicians MUST put on all PPE required for the work being undertaken (Examples; cut resistant gloves/sleeves, butyl gloves, safety glasses, hard hat/bump cap, fall protection, electrical PPE and arc flash clothing). ALWAYS refer to appropriate Safety Data Sheets (SDS) and OSHA guidelines for proper PPE.**
- **When working with or around hazardous chemicals, ALWAYS refer to the appropriate SDS and OSHA/GHS (Global Harmonized System of Classification and Labelling of Chemicals) guidelines for information on allowable personal exposure levels, proper respiratory protection and handling instructions.**
- **If there is a risk of energized electrical contact, arc, or flash, technicians MUST put on all PPE in accordance with OSHA, NFPA 70E, or other country-specific requirements for arc flash protection, PRIOR to servicing the unit. NEVER PERFORM ANY SWITCHING, DISCONNECTING, OR VOLTAGE TESTING WITHOUT PROPER ELECTRICAL PPE AND ARC FLASH CLOTHING. ENSURE ELECTRICAL METERS AND EQUIPMENT ARE PROPERLY RATED FOR INTENDED VOLTAGE.**

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⚠WARNING

Follow EHS Policies!

Failure to follow instructions below could result in death or serious injury.

- **All Trane personnel must follow the company's Environmental, Health and Safety (EHS) policies when performing work such as hot work, electrical, fall protection, lockout/tagout, refrigerant handling, etc. Where local regulations are more stringent than these policies, those regulations supersede these policies.**
- **Non-Trane personnel should always follow local regulations.**

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Revision History

Updated for Trane Technologies.

Table of Contents

General Information

Introduction

The purpose of this bulletin is to inform service technicians of microchannel coil technology as it applies to Trane Unitary Commercial HVAC systems. This bulletin will discuss the construction, handling, coil coating, cleaning, repairing and replacement of microchannel coils.

Discussion

Microchannel coils are an all aluminum coil that have been successfully used in the automotive industry for many years, and is now being applied in the HVAC industry. Microchannel technology is an entirely new coil design for air cooled (direct expansion) equipment. The all aluminum construction of microchannel coils consist of tubes, distributors, and ribbon fins that are all brazed together in a controlled air automated brazing furnace. This automated brazing process dramatically reduces the number of brazed joints that are typically seen with the traditional tube and fin condenser coils. Their compact all aluminum construction also helps to reduce the unit's weight improves recyclability and minimizes galvanic corrosion.

Key advantages of microchannel coils:

- Smaller coil, less refrigerant, same cooling capacity.
- Serpentine louvered fins transfer heat more efficiently.
- Small tube/channel size reduces refrigerant volume.
- Potential charge reductions from 30%-50% depending on unit configuration.
- Ability to claim LEED credit for reduced refrigerant per ton.
- Brazed fin/tube/header creates a more rigid structure compared to tube and fin coils.
- Extremely durable during shipping and handling.
- Because construction consist of rigid tubes, there are no thin fin material to comb out.
- No new requirements for use within R-410A equipment to charge, recover, recycle or pull a vacuum on refrigerant system.
- Compact all-aluminum microchannel coils help to reduce the unit weight.
- All-aluminum construction improves recyclability and minimizes galvanic corrosion.
- Strong aluminum brazed structure provides better fin protection.

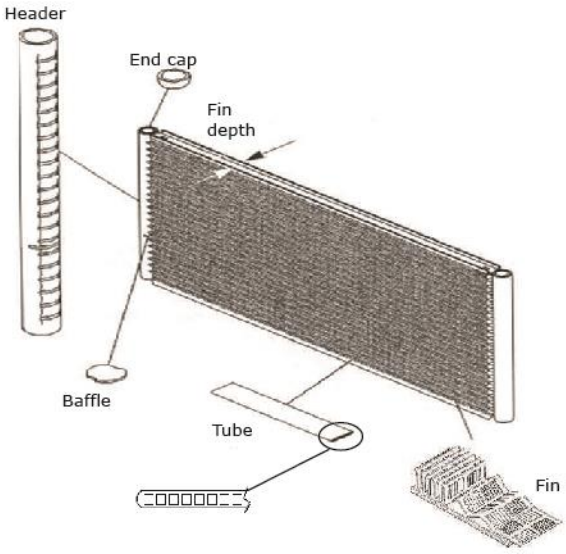
Microchannel Construction

The fully-brazed construction of a microchannel coil increases the coil rigidity making them more rugged to withstand the rigors of job site handling and damage due to shipping. The microchannel coil's headers, tubes and fins are assembled and then sprayed with a powder flux bonding agent. The coil is then sent through a large controlled air automated brazing furnace that completely joins these separate pieces as one solid microchannel coil. This process alone substantially decreases the chances of leaks due to improper brazing techniques.

Microchannel Condenser Coil

Refrigerant flows through the header assembly into multiple flat refrigerant filled tubes. Within each tube are ports that serve as paths for the refrigerant to flow through the microchannel coil. The bottom and top tubes of each condenser coil section are always inactive refrigerant paths. This is done to prevent refrigerant leaks due to corrosion that may be present from moisture resting between the top or bottom tube and the gasket material and also serve as a buffer during the installation and removal of the coil section. Each fin surface is angled and louvered to create air turbulence through the coil which enhances heat transfer without additional air pressure drop through the coil.

Figure 1 Microchannel condenser coil construction



For optimal performance and to ensure that the refrigerant arrives at the metering device in liquid form,

microchannel coils must also subcool the refrigerant just as a typical tube and fin condenser coil would.
Units with single section microchannel coils utilize a baffle internally brazed inside the header assembly. The purpose
of this baffle is to redirect refrigerant flow separating the condensing section of the coil from the subcooling portion; see Figure 2 Other units will accomplish this task by using two separate coils and connecting the condensing and subcooling sections through the use of a manifold header assembly (see Figure 3)

Figure 2. Microchannel condenser coil with baffle

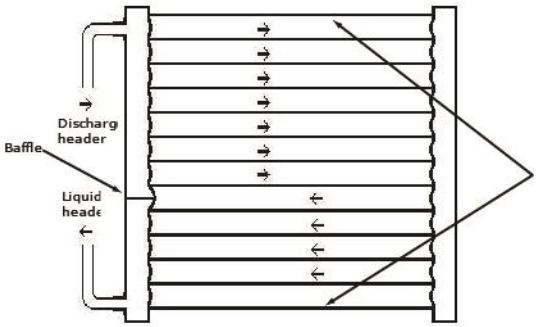
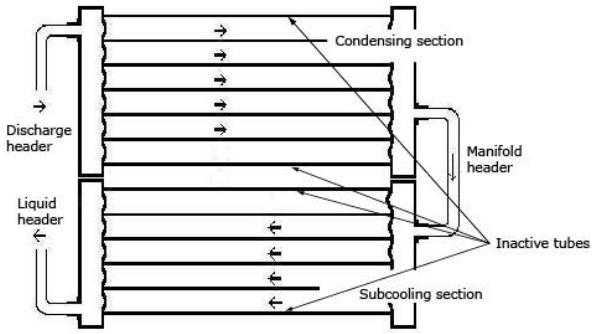


Figure 3. Double microchannel condenser coils with manifold



Some applications use a single microchannel coil that includes double circuits; see Figure 4.The applications may be replaced in the field with separate microchannel coils that are stacked inside the unit; see Figure 5.**Figure 5**

Figure 4. Single coil with double circuits

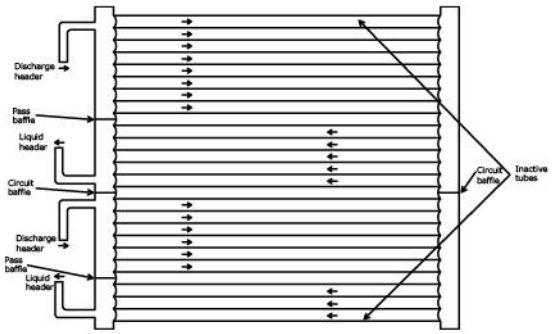
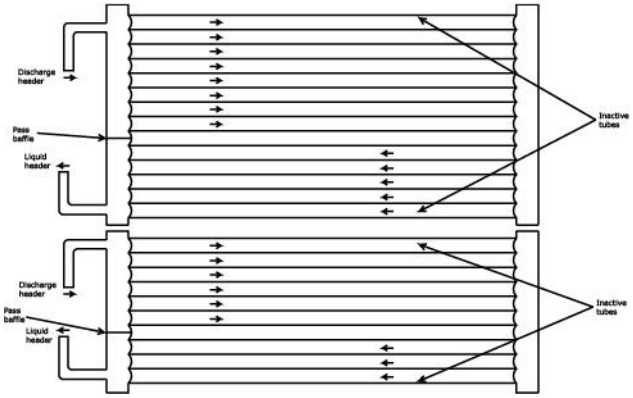


Figure 5. Separate coils stacked inside the unit



Pumping down refrigerant into the microchannel condenser coil on a unit with a standard tube and fin evaporator coil is not permissible. The reduced capacity of a microchannel coil compared to that of a tube and fin coil makes it impossible to store any considerable amount of refrigerant charge in the microchannel condenser coil. It still is possible with the addition of suction and discharge line service valves to replace the compressor without removing the total system charge and just evacuating the small amount of refrigerant left between the two valves.

Microchannel Evaporator Coil

Refrigerant flows through the header assembly into multiple flat refrigerant filled tubes. Within each tube are ports that serve as paths for the refrigerant to flow through the microchannel coil. The side tubes of each evaporator coil section are always inactive refrigerant paths. Aluminum brackets are riveted to the inactive refrigerant paths. This is done to mount the evaporator coil and prevent refrigerant leaks due to corrosion, and also serve as a buffer during the installation and removal of the coil section. Each fin surface is angled and louvered to create air turbulence through the coil which enhances heat transfer without additional air pressure drop through the coil.

Figure 6. Microchannel evaporator coil construction

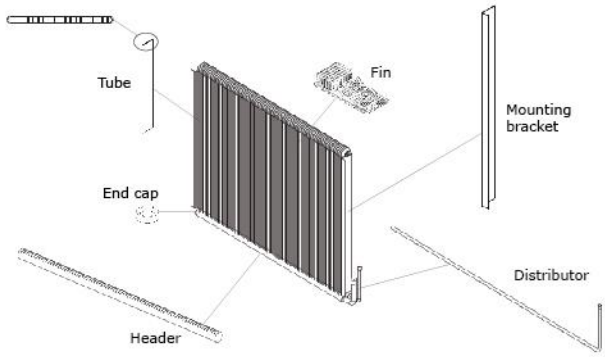
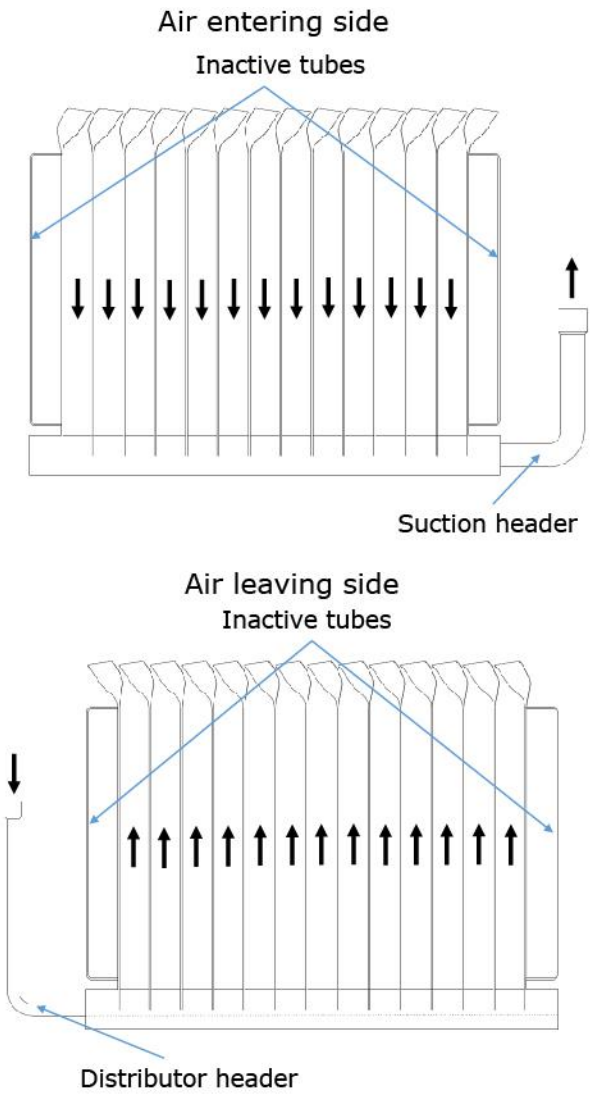


Figure 7. Microchannel evaporator coil with distributor



In order to join the coil with the rest of the unit's copper tubing, the coils have a manufactured flame brazed copper to aluminum connection. Because the joint consists of two dissimilar metals, if not sealed correctly galvanic corrosion can severely weaken the joint. For this reason, the copper to aluminum joint is fabricated at the manufacturing facility in an extremely controlled process and should not be made or repaired in the field. Any leaks seen at this joint warrant a replacement coil. A special protective heat shrink sleeve lined with adhesive helps protect the integrity of this joint from environmental corrosive agents (see Figure 10).

In order to prevent condensation water from running down from copper tubes to aluminum tubes to body, additional protective heat shrink sleeves need to cover all the aluminum tubes, and additional tar tape should be applied over the joint area (see**Figure *8*** Figure 8 and Figure 9***Figure 9***).**Error! Reference source not found.**

Should coil replacement ever be necessary, please be sure to replace the tar tape since it loses its properties in high temperatures.

Figure 8. Double protection shrinkwrap

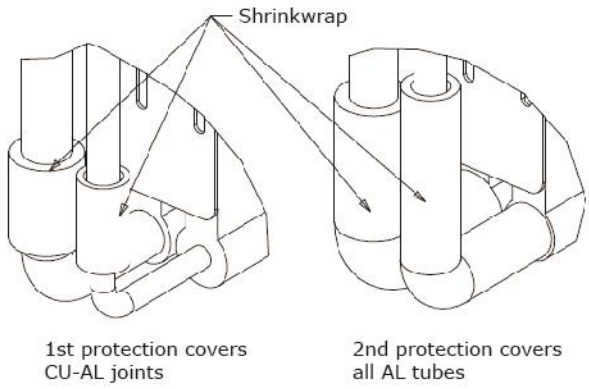
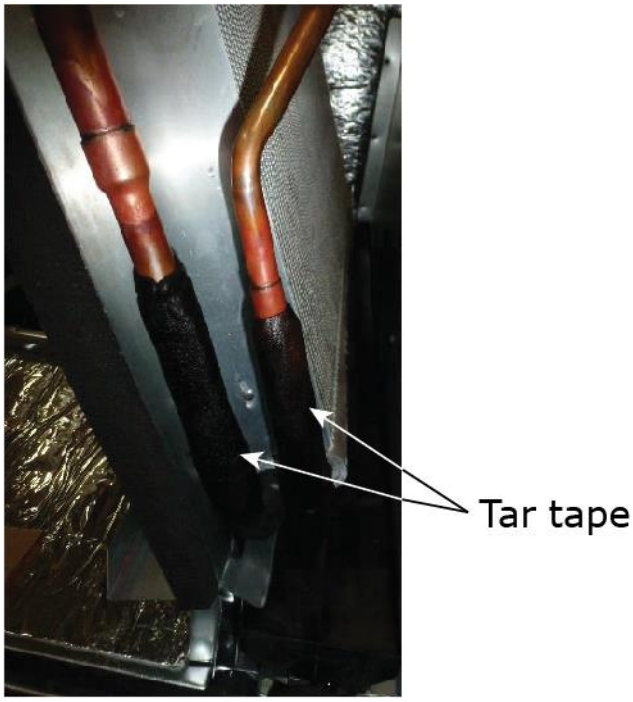


Figure 9. Shrinkwrap covered with tar tape



Microchannel Coils Copper to Aluminum Connection

In order to join the coil with the rest of the unit's copper tubing, the coils have a manufactured flame brazed copper to aluminum connection. Because the joint consists of two dissimilar metals, if not sealed correctly galvanic corrosion can severely weaken the joint. For this reason, the copper to aluminum joint is fabricated at the manufacturing facility in an extremely controlled process

and should not be made or repaired in the field. Any leaks seen at this joint warrant a replacement coil. A special protective heat shrink sleeve lined with adhesive helps protect the integrity of this joint from environmental corrosive agents (see Figure 10).

NOTICE

Coil Damage!

Failure to follow instruction below could result in coil damage.

When brazing in the new Microchannel coil, the temperature at the copper - aluminum joint MUST NOT exceed 465ºF.

⚠ WARNING

Explosion Hazard!

Failure to follow instructions below could result in an explosion which could result in death or serious injury, and equipment damage.

NEVER bypass system safeties in order to pump down the unit component's refrigerant into the microchannel heat exchanger (MCHE) coil. Do NOT depress the compressor contactor since it effectively bypasses the high-pressure control.

Should coil replacement ever be necessary, please be sure that when brazing the temperature at the copper to aluminum joint DOES NOT EXCEED 465ºF (240.5ºC).

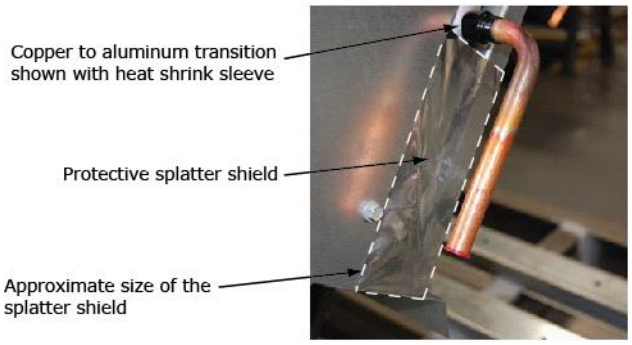
Protection of this joint is required when brazing the copper to copper connections. This can be accomplished by placing a wet rag or heat paste over the heat shrink sleeve during the brazing process.

Also, you will need to protect the coil from copper brazing filler metal splatter created when brazing the replacement coil's copper to copper connections. To do this, you need to create a splatter shield on the header using HVAC aluminum foil tape. This prevents the possibility of galvanic corrosion created by braze splatter interacting with the aluminum coil.

Create the splatter shield, using HVAC aluminum foil tape, in the approximate size indicated by the white dashed line shown in Figure 10. When you create your own splatter shield, make sure that there is no part of the coil exposed and that there are no gaps in the aluminum tape.

Note: *Be sure to remove the splatter shield after the brazing is completed.*

Figure 10. Splatter shield



Due to the extent of the thermal expansion rate of aluminum, microchannel coils should not be rigidly mounted to the unit. The unit structure or framing serves as an apparatus to support the coil's position but still allows the coil to float or expand freely due to the thermal changes.

Coil Coating

In applications where the microchannel condenser coil may be susceptible to corrosive elements a "factory" coated coil option is available. The "factory" coating option is a dipped and baked cathodic epoxy coating with a UV-A resistant topcoat. The coil coating is applied directly from the manufacturer and qualified to meet Trane's requirements for coating coverage, quality, corrosion resistance, UV-A resistance, heat transfer, air pressure drop performance, and still meet the unit’s published AHRI catalog ratings. The coating shall meet or exceed ASTM B117 Salt Spray Test and ASTM G85 A2 Cyclic Acidified Salt Fog Test requirements.
In applications where the microchannel evaporator coils may be susceptible to corrosive elements a "factory" coated coil option is available. The "factory coating option is the same dipped and baked cathodic epoxy coating as the condenser coils. However, the topcoat used on microchannel evaporators is not the same as the microchannel condenser coils. The evaporator topcoat does provide the same UV-A resistance, but due to the hydrophobic nature of epoxy coating, a topcoat with hydrophilic properties is applied. The hydrophilic property of the topcoat provides a water retaining surface such that the condensate water droplets formed on the coil surface during operation will retain proper surface tension and flow down the coil to the drain pan. The coil coating is applied directly from the manufacturer and qualified to meet Trane's requirements for coating coverage, quality, corrosion resistance, UV-A resistance, heat transfer, and air pressure drop. The coating shall meet or exceed ASTM B117 Salt Spray Test and ASTM G85 A2 Cyclic Acidified Salt Fog Test requirements.

Trane does not recommend the use of any field applied corrosion resistant coatings. Field applied corrosion coatings can not provide the same coating adhesion as

the "factory" coating option that completely encapsulates the coil with a dipped & baked on corrosion resistant coating. If a field coating is applied, Trane cannot guarantee that the unit will meet cataloged performance ratings or the coils resistance to corrosion. Field applied coatings do not meet the requirements of hydrophilicity on the surface of the microchannel evaporator coils. Should a field applied coating be used on microchannel evaporators, extensive water damage may occur to the unit and/or building.

Handling of Microchannel Coil

NOTICE

Coil Failure!

Failure to follow instruction below could result in premature failure of the coil at the manufactured joint, and coil replacement.

DO NOT handle a Microchannel coil by its copper to aluminum header assembly.

Although microchannel coils are extremely robust compared to fin and tube coils, care must still be taken to prevent leaks from occurring as the result of improper handling. Because refrigerant flows through the coil tubes so close to the edge, extra care with these coils around sharp objects or sudden impact must be taken. Although some leaks in the microchannel coil can be repaired, this repair is only temporary until a new coil can be ordered and installed.

The lightweight construction of microchannel means that two men should generally be able to handle the coil without any problems; however there are lifting lugs and mounting brackets with lifting holes located on microchannel coils for assisted removal and installation, and should avoid the use of straps being wrapped around the coils fin surface.

Repair Kit

When damage or a leak occurs in the field, it may be possible to temporarily repair the coil until another coil can be ordered. If the leak is found to be within the tube area of the coil, a field repair kit (KIT16112) is available through your local Trane parts center. Because of the all aluminum construction and aluminum's high thermal expansion rate, a leak located at or on the header assembly is considered irreparable.

Contents of the aftermarket parts repair kit (KIT16112):

- Tube brush
- Epoxy sealant
- Alcohol cleaning pad
- Sand paper
- Instruction sheet
- Aluminum wrapper

Required tools:

- Heat Gun; Part (TOL00182) is available through Trane Parts Centers
- Personal Protective Equipment (gloves, safety glasses, fire retardant clothing where applicable)
- Small to medium size needle nose pliers

Cleaning Procedure

Regular coil maintenance – including annual cleaning – enhances the unit's operating efficiency by minimizing compressor head pressure and amperage draw. The condenser coil should be cleaned at least once each year or more if the unit is located in a "dirty" or corrosive environment. Cleaning with cleansers or detergents is strongly discouraged due to the all aluminum construction; straight water should prove sufficient. Microchannel coils can be more susceptible to corrosion if the cleanser or detergent used is not thoroughly washed or rinsed off. Any breach in the tubes can result in refrigerant leaks.

⚠ WARNING

Hazardous Voltage!

Failure to disconnect power before servicing could result in death or serious injury.

Disconnect all electric power, including remote disconnects before servicing. Follow proper lockout/tagout procedures to ensure the power can not be inadvertently energized. Verify that no power is present with a voltmeter.

⚠ CAUTION

Personal Protective Equipment (PPE) Required!

Failure to follow all safety instructions below could result in minor to moderate injury.

ALWAYS wear Personal Protective Equipment (PPE) including goggles or face shield, chemical resistant gloves, boots, apron or suit as required. If it becomes necessary to use cleaning agent, refer to the manufacturer's Materials Safety Data Sheet and follow all recommended safe handling practices.

1. Disconnect power to the unit.
2. Wear proper personal protection equipment such as a face shield, gloves and waterproof clothing.
3. Remove enough panels from the unit to gain safe access to the microchannel coils.

Note: *It is better to clean the coil from the opposite direction of normal air flow (inside of unit out) because this allows the debris to be pushed out rather than forced further into the coil.*

⚠ WARNING

No Step Surface!

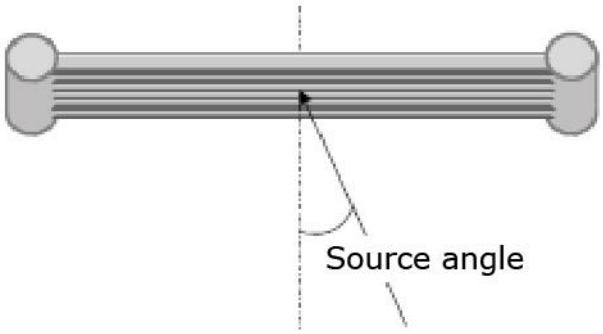
Failure to follow instruction below could result in death or serious injury.

Do not walk on the sheet metal drain pan. Walking on the drain pan could cause the supporting metal to collapse and result in the operator/technician falling.

Important: *Bridging between the main supports required before attempting to enter the unit. Bridging may consist of multiple 2 by 12 boards or sheet metal grating.*

4. Use a soft brush or vacuum to remove base debris or surface loaded fibers from both sides of the coil.
5. Using a sprayer and water ONLY, clean the coil following the guidelines below:
   a. Sprayer nozzle pressure should not exceed 600 psi.
   b. The maximum source angle should not exceed 25 degrees (see Figure 11) to the face of the coil. For best results spray the microchannel perpendicular to face of the coil.
   c. Spray nozzle should be approximately 1"-3" from the coil surface.
   d. Use at least a 15° fan type of spray nozzle.

Figure 11. Source angle



Important: *Only in extreme cases should any type of chemical cleaner or detergent be used on microchannel coils. If it becomes absolutely necessary because water alone did not clean the coil, one coil cleaner available through your local parts center is Nu- Calgon Evap Pow'R (Trane P/N CHM00351). If this can not be obtained specify a cleaner that is:*

- *pH neutral.*
- *Alkaline level no higher than 8 on the pH scale.*
- *Acidic level no lower than 6 on the pH scale.*

- *Does not contain any hydrofluoric acids.*
- *Non-glycol based*

Important: *Be sure to follow the instructions provided with any cleaner chosen. Keep in mind that it is still MANDATORY that the coils are thoroughly rinsed with water after the application of the cleaner even if the instructions specify a "No Rinse" cleaner. Cleaners or detergents that are left on the coil due to improper rinsing will significantly increase the possibility of corrosion damage on the microchannel coil, or permanent damage and loss of function of optional protective coatings.*

NOTICE

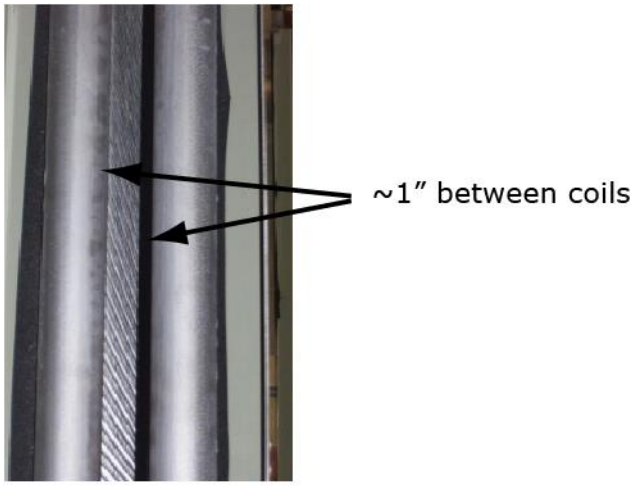
Coil Damage!

Failure to follow instructions below could result in coil damage.
To avoid damage from the spray wand make sure the 90º attachment does not come in contact with the tube and fin. Care must be taken when inserting the wand extension between the coil slabs.

6. In order to meet their required efficiencies, some units will have a double coil configuration (see Figure 12). For maximum effectiveness it will be necessary to clean between the two coils.

   Because of their close spacing (~1"), it will be necessary to add a 90º sprayer attachment to properly clean the coil.

Figure 12. Double coil configuration



Recommended attachments available through your local Trane Parts Center are listed below:

- TOL03661 9972-36-KIT 90º Nozzle attachment w/ quick disconnect 36" extension
- TOL03662 9972-48-KIT 90º Nozzle attachment w/ quick disconnect 48" extension

Figure 13. Goodway's Wonderw and with 90º attachment

Refrigerant Evacuation and Charging

⚠ WARNING

Refrigerant under High Pressure!

Failure to follow instructions below could result in an explosion which could result in death or serious injury or equipment damage.

System contains refrigerant under high pressure. Recover refrigerant to relieve pressure before opening the system. See unit nameplate for refrigerant type. Do not use non-approved refrigerants, refrigerant substitutes, or refrigerant additives.

NOTICE

Compressor Failure!

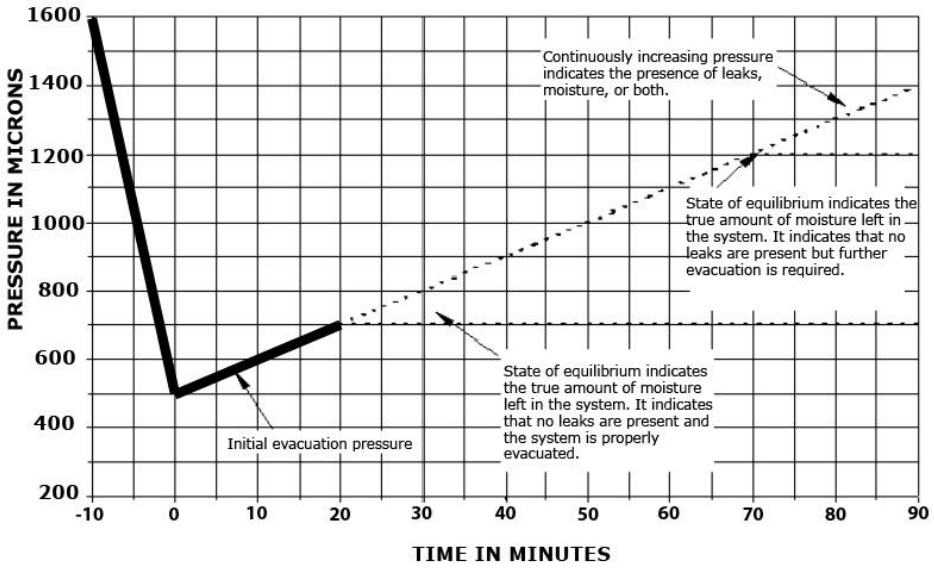
Failure to follow instruction below could result in compressor failure.

Unit must be powered and crankcase heaters energized at least 8 hours BEFORE compressors are started.

The unit is fully charged with R-410A refrigerant from the factory. However, if it becomes necessary to evacuate or charge the refrigerant system with refrigerant, it is important that the following actions and guidelines are taken:

- Do not release refrigerant to the atmosphere! If adding or removing refrigerant is required, the service technician must comply with all federal, state, and local laws.
- Sure to follow any specific instructions contained in the unit's Installation Operation and Maintenance (IOM) manual pertaining to refrigerant evacuation and charging.
- To prevent cross contamination of refrigerants and oils, use only dedicated R-410A service equipment. Disconnect unit power before evacuation and do not apply voltage to compressor while under vacuum.
- Due to the presence of POE oil, minimize system open time. Do not exceed 1 hour.
- Please refer to unit's nameplate data, Installation Operation and Maintenance (IOM) manual or Service Facts for proper refrigerant charge amounts.
- Perform a standing vacuum test before charging system with R-410A refrigerant. Evacuate the system to 500 microns or less vacuum gauge pressure. Let the system equalize for approximately 15 minutes. This is referred to as a "standing vacuum test". The maximum allowable rise over a 15 minute period is 200 microns. If the pressure rise is greater than 200 microns but levels off to a constant value, excessive moisture is present. If the pressure steadily continues to rise, a leak is indicated.
- Figure ***14*** illustrates three possible results of the "standing vacuum test". If a leak is encountered, repair the system and repeat the evacuation process until the recommended vacuum is obtained.

Figure 14. Evacuation time vs. pressure rise



- It is recommended that the compressor be off when the initial refrigerant recharge is performed.
- When recharging R-410A refrigerant, it should be charged in the liquid state.
- It is recommended that the initial refrigerant be charged into the liquid line prior to starting the compressor. This will minimize the potential damage to the compressor due to refrigerant in the compressor at startup.
- If suction line charging is needed to complete the charging process, only do so with the compressor operating. This decreases both the probability that the compressor will start with refrigerant in the compressor oil sump and the potential for compressor damage.
- Allow the crankcase heater to operate a minimum of 8 hours before starting the unit.

Repair Procedure

⚠ WARNING

Hazardous Voltage!

Failure to disconnect power before servicing could result in death or serious injury.

Disconnect all electric power, including remote disconnects before servicing. Follow proper lockout/tagout procedures to ensure the power can not be inadvertently energized. Verify that no power is present with a voltmeter.

⚠ WARNING

Refrigerant under High Pressure!

Failure to follow instructions below could result in an explosion which could result in death or serious injury or equipment damage.

System contains refrigerant under high pressure. Recover refrigerant to relieve pressure before opening the system. See unit nameplate for refrigerant type. Do not use non-approved refrigerants, refrigerant substitutes, or refrigerant additives.

⚠ CAUTION

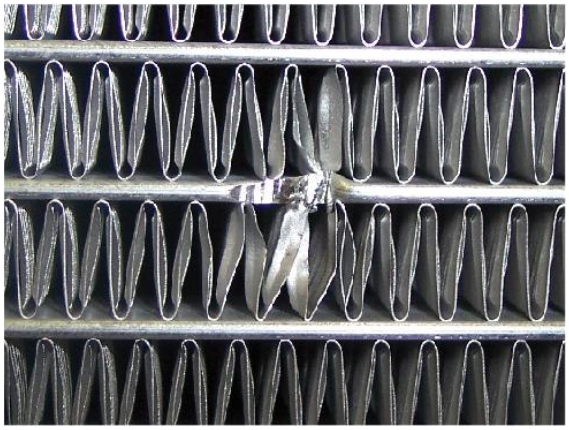
Sharp Edges!

Failure to follow instructions below could result in minor to moderate injury.

The service procedure described in this document involves working around sharp edges. To avoid being cut, technicians MUST put on all necessary Personal Protective Equipment (PPE), including gloves and arm guards.

1. Disconnect power to the unit.
2. Locate the source of the leak.

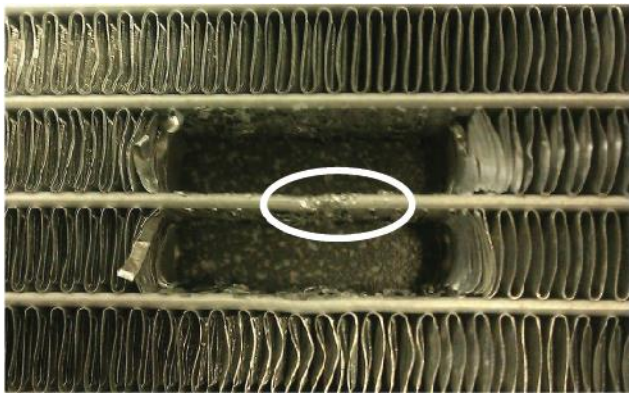
Figure 15. Leak Source



3. Evacuate any remaining refrigerant in the damaged coils circuit.
4. Using needle nose pliers, clear away approximately 1″ (½" of fin material from each side of leak) in order to gain sufficient access to the repair area (see Figure 16 and Figure 17).

Figure 16. Clear away approximately 1" of fin material

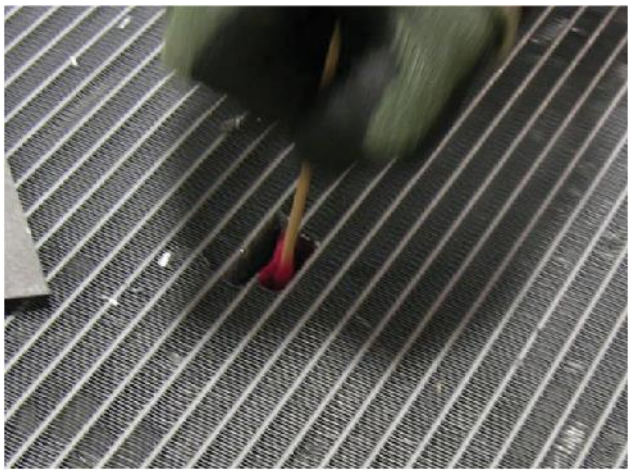
Figure 17. Leaky area cleared away



5. Prepare the aluminum wrapper by cutting it to approximately 2" in length and folding it in half. The aluminum wrapper should look similar to the one in once complete.
6. Using the aluminum oxide sandpaper remove any rough edges on upper and lower portion of the tube and also scuff the inside the aluminum wrapper.
7. Remove the powder flux from the repair area by vigorously brushing the upper and lower portion of the tube with the round wire brush.

8. Clean the surfaces with the supplied alcohol pad in order to remove any dirt, debris and/ or oils. Allow the surfaces to fully air dry.
9. Combine 2 equal portions of the two part epoxy together.
10. Apply the epoxy with the application tool to the leak area and along the cleared fin section.

Figure 18. Apply epoxy to the leaky area



11. Place a small portion of remaining epoxy to the inside of the aluminum wrapper.

Figure 19. Apply epoxy to the aluminum wrapper

12. Place the aluminum wrapper over the leak area.

Figure 20. Place the aluminum wrapper over the leak area

13. Lightly "crimp" the aluminum wrapper with the needle nose pliers.

Figure 21. Crimp wrapper over leak with needle nose plier

14. With use of a heat gun apply equally distributed heat to the repaired area for roughly 15-20 minutes until epoxy changes from red to gold in color. Allow an additional 30 minutes for epoxy to cure before leak checking the system.
15. Evacuate system down to 500 microns or less vacuum gauge pressure, following procedures

listed under “Refrigerant Evacuation and Charging” for a standing vacuum test.

16. Be sure to follow any specific instructions contained in the unit's Installation Operation and Maintenance (IOM) manual pertaining to refrigerant evacuation and charging.
17. Recharge unit with refrigerant. Please refer to unit’s nameplate data, Installation Operation and Maintenance (IOM) manual or Service Facts for proper refrigerant charge mounts.

Coil Replacement

Coil replacement procedures can vastly change depending on the unit type. Below are some guidelines to follow when replacing microchannel coils.

- Check with your local Trane Parts Center to determine if your damaged coil is set up for mandatory return. Should the return of your coil be necessary, please be sure to completely fill out all documentation or forms. Failure to complete documentation could result in reversal of claims associated with the coil failure. If your coil is not set up for return please be sure to dispose of coil following any local, state or federal laws.
- If the damaged coil is required to be returned, make sure that the shipping crate is kept intact and reused for shipping the coil back to the manufacturer.
- Reference HUB Documents below for more detailed instructions on Microchannel coil removal:
  - Replacing the MC coil on Large Commercial Unitary Equipment - DOC-102662
  - Replacing the MC condenser coil on Light Commercial Unitary Equipment - DOC-102663
  - Replacing the MC evaporator coil on Light Commercial Unitary Equipment - DOC-106005
- Do not set any removed panels on the microchannel coil and ensure that the panels do not accidentally fall into other coils.
- Coils are considerably lighter than traditional tube and fin coils. This means two technicians should be able to remove coil from the unit without any problems. However for easier removal, lifting lugs are built onto the coil.
- For condenser coils, only the damaged microchannel section or slab needs to be replaced.
- For evaporator coils, both the damaged microchannel coil and frames need to be replaced. Tar tape around the slab tubes must be replaced after brazing in the new Microchannel coil.
- Inspect gasketing material attached to support frame and replace if necessary.
- Carefully remove the replacement microchannel coil from its shipping container. Visually inspect the coil for any damage.

NOTICE

Coil Damage!

Failure to follow instruction below could result in coil damage.

When brazing in the new Microchannel coil, the temperature at the copper - aluminum joint MUST NOT exceed 465ºF.

- When brazing in the new coil, make sure the temperature at the copper - aluminum joint DOES NOT EXCEED 465° F (240.5° C). This can be accomplished by placing a wet rag or heat paste over the plastic sleeve during the brazing process.
- Please be sure to create an aluminum splatter shield, using HVAC aluminum foil tape, when brazing in the replacement coil to protect the coil from galvanic corrosion associated with splatter during the brazing process. Refer to Figure 8 for details on the location and approximate size of the splatter shield.

Note: *Be sure to remove the splatter shield after the brazing is completed.*

- Evacuate system down to 500 microns or less vacuum gauge pressure following procedures listed under Refrigerant Evacuation and Charging for a standing vacuum test.
- Be sure to follow any specific instructions contained in the unit's Installation Operating and Maintenance (IOM) pertaining to refrigerant evacuation and charging.

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