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**General  
Service  
Bulletin****RTAA-SB-20**

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Library	<b>Service Literature</b>
Product Section	<b>Refrigeration</b>
Product	<b>Air-cooled packaged units and condensers</b>
Model	<b>Clarksville A/C Products and RTAA-70-400</b>
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Literature History  
RTAA-SB-20 (original)

**Subject: Recommendations for Trane Pueblo and Trane Clarksville Air-cooled Units in Corrosive Environments****Introduction:**

The purpose of this bulletin is to explain the special needs for proper unit preparation, condenser coil cleaning, and condenser coil treatment for any of the Trane Pueblo or Trane Clarksville air-cooled units installed in seacoast applications with high salt concentrations or in other corrosive environments.

**Discussion:**

Trane Technical Service considers any Trane Pueblo or Trane Clarksville air-cooled chiller unit installed within 50 miles of any seacoast to be in an environment with potential for high salt concentrations in the ambient air. The actual salt exposure levels will vary with closeness to the coast, sea conditions, prevailing winds, surrounding walls, etc. Seacoast applications are considered to be very harsh and can be damaging to the unit. Other aggressive environments may include air-cooled chillers installed near engine exhausts, plumbing vents, manufacturing vents, etc.

Air-cooled units, with or without 'Black-Fin' coil protection, are intended to be installed in normal to moderately aggressive ambient conditions. Proper maintenance procedures are required to slow corrosion damage when the chiller is installed in a harsh or very aggressive seacoast application or in an application with an otherwise corrosive atmosphere. This bulletin will make recommendations that are useful to prevent or slow the occurrence of corrosion.

## 1. Recommendations:

Two important factors to slowing corrosion are:

- keeping the coils clean
- keeping the coils dry

Below are several recommendations they can be used to achieve the two objectives listed above. In some instances, keeping the coil dry is not an option, therefore the option of coating the fins is listed.

### 1-a. Coil Maintenance:

The recommendations for cleaning the condenser coils will remain the same as described in the IOMs for the units. Because seacoast applications are considered to be a 'dirty' environment for condenser coils, it is logical that the coils will need to be cleaned more often than a coil located inland.

Cleaning 4 times per year or more may be required if conditions are very poor or if corrosion damage begins to occur.

To clean the coils, use a soft brush and a sprayer, either the 'garden' pump-up type or a high-pressure type. A high quality detergent, such as "Trane Coil Cleaner, CHM0021" is recommended for both standard and coated aluminum coils. Follow the directions included with the detergent. The most effective method of coil cleaning is to remove the condenser end panels and clean the coils from the inside out using a pressure type sprayer.



**CAUTION: Avoid use of extremely high pressure while cleaning. The fins will fold under extreme pressures.**

*Note: If the detergent mixture used is strongly alkaline (pH greater than 8.5), an inhibitor must be added.*

*Note: Rinse the coil thoroughly after cleaning. Failure to completely flush the detergent from the coil can result in accelerated coil corrosion. Blow excess water from the coil using low-pressure air.*

*Note: The water used to clean the coils should always be clean fresh water (it should not be brackish, it should not contain excessive dissolved minerals, it should not contain chlorine, and it should not contain excessive water softener salts).*

### 1-b. Coil Washing

First and foremost, to slow the occurrence of corrosion in any environment, frequent washing of the coil are required in addition to the coil cleaning process listed under 1-a.

This would occur in between the coil cleaning procedures done with a coil cleaning detergent.

For the frequent washing, use the steps below:

1. Use potable water with a mild detergent (not the actual coil cleaner)
2. Thoroughly wash and cleans the coils from inside out as described in 1-a.

NOTE: The rest of the unit can benefit from the frequent washing, as well, with the water and mild detergent.

### 1-c. Condenser Coil Protection Panels:

Louvered panels are effective in deflecting light spray, rain, and mist from direct contact with the coil surface, resulting in a drier coil. A dry coil is less likely to suffer corrosion.

NOTE: Not available on Voyager I, II or III products.

### 1-d. Condenser Coil Material:

Pueblo RTAA units and Clarksville units are supplied with coils constructed with aluminum fins, either standard plain or factory coated with an epoxy (Black-fin). The factory applied epoxy fin coating is effective at providing a longer service life for the coils of a unit installed in most operating conditions. However, it has been observed that in a very aggressive environment, like a seacoast application, the service life of any coil, coated or uncoated, may be extended further by applying some simple added protections.

The recommendations made in this bulletin apply to

both standard and epoxy coated types of coils manufactured at either the Trane Pueblo or Trane Clarksville facilities.

**Note: The use of copper condenser fins is not always the best choice for seacoast applications. Pueblo does not offer a copper fin option. For further information regarding fin material please refer to Epinal bulletin A40 EB 034.**

#### **1-e. Unit Paint:**

For seacoast or corrosive applications it is recommended that the standard unit paint and galvanized coatings be enhanced with a field applied anti-corrosion paint. Any good, locally purchased anti-corrosion paint would be acceptable, but typical examples would include "America 400" special marine paint or Rust-Oleum® 5300 System Water Based Epoxy.

The paint should be applied by the installing contractor prior to the time of commissioning. The entire unit should be cleaned and painted, including the unit base rail, compressors, oil separators, copper lines, unit framework, condenser fan grills, unit top panels, etc. Do not paint over nameplates and identification tags, sight glasses, controls, and the unit control panel human interface. Newer production Pueblo RTAA chillers have galvanized steel fan blades replacing the painted steel blades that were originally used. The new galvanized fan blades are much more corrosion resistant and painting the blades is not necessary.

Any corrosion that then occurs during unit operation should be repaired and repainted as part of the normal monthly maintenance procedures.

#### **1-f. Condenser Coil Painting:**

In many cases it may be desired to field apply a light coat of special anti-corrosion paint to the surface of plain or Black-Fin condenser coils. The extra coating will give slightly added corrosion protection to a standard coil, and will also seal the 'cut' or 'open' edges of a condenser with the factory epoxy coating. Sealing the edges will help prevent corrosives from working their way beneath the factory coatings, and our experience shows this can be effective at extending the protection provided by the Black-Fin coils.



**CAUTION: Any coil painting can result in bridging of the fins which will decrease the heat transfer and can result in high head pressures. It is advised that no painting of the coils be done on units operating under a continuous heavy load and/or extremely high ambient conditions.**

An example of an acceptable special anti-corrosion coating for this purpose would be Bronz-Glow™ Husky "Green Fin" Coil Protector. Husky "Green Fin" is a flexible synthetic elastomer coating providing protection against attack from corrosive atmosphere. Husky "Green-Fin" has passed independent salt spray tests (\*ASTM B 117.85) of 1200 hours. Husky "Green-Fin" is intended to be applied to clean, new, non-corroded coils.

For convenience, a kit containing aerosol cans of "Green-Fin" is available from Trane parts. The Trane Part # is PAI0239. The kit contains cleaner, primer, and finish coat, and is enough to cover 6.32 square meters (68 square feet) of coil face area. Be aware that this coil protectant is normally intended for use on smaller units, and that the cost to apply to a larger unit may be substantial. For example, approximately 4 of the PAI0239 would be required to treat the full coil surface of a typical RTAA200.

Also available from Bronz-Glow™ is Husky Sea Coast Protector. It is an economical elastomer coating that is resistant to corrosive attack. Husky Sea Coast Protector can be applied by spray or roller to all surfaces of the RTAA including coils, pipe work, framework, cabinets, compressors, etc. The surface should be clean and non-corroded when the Sea Coast Protector is first applied. Husky Sea Coast Protector has passed independent salt spray tests (\*ASTM B 117.85) of 1000 hours.

For best results, the Sea Coast Protector product should be applied over a base coat of Husky 150 Primer. The Sea Coast Protector and Husky 150 Primer are available from Bronz-Glow. They are normally available in 5 gallon pails, and the coverage rate is 14 to 18.5 square meters/gallon (150-200

square feet/gallon).

In some cases it may be desired to apply industrial epoxy coatings like “Amerlock 400” special marine paint or Rust-Oleum® 5300 System Water Based Epoxy, or an equivalent product, to the outer surface of the coil. These coatings can be effective at enhancing the coil protection, but great care must be taken to avoid reducing the capacity of the condenser coil. The paint should be thinned and then lightly applied using a spray.



**CAUTION: Care MUST be taken to prevent over application of paint to the coil. Excessive paint will inhibit the heat transfer properties of the coil. The primary areas to coat with the paint are the leading edges and bottom edges of the coils. DO NOT restrict the air flow through the coil.**

**1-g. Motor Terminal Boards:**

The helical rotary compressors built in Pueblo are shipped with the motor terminal board painted. The paint slows the corrosion of the motor terminal board and the winding temperature sensor terminals. The regular maintenance performed on the chiller must include inspecting the motor terminal board, using a wire brush to remove loose corrosion and clean the terminal board. Apply a new coat of paint as needed.

**1-h. Coil Treatment:**

It is also recommended that all RTAA condenser coils and Clarksville condensing coils installed in seacoast or corrosive applications be treated at start-up and after each cleaning with a new product called “Cal-Shield™ Coil Protector”. It is a liquid formula based on Dupont Teflon®. Once Cal-Shield is applied to a clean coil, it forms a protective shield of Teflon that helps the coil resist the depositing of dirt, grime, and salt. This will allow the moisture to “bead up” and run off. Where coils are installed in aggressive environments, like corrosive salt air, the Teflon will help extend the coil's service life.

Cal-Shield is manufactured by Nu-Calgon Wholesaler, Inc., and is distributed through many refrigeration supply houses.

A light coating of Cal-Shield should be applied at least once every 3 months or after every coil cleaning. It is estimated that 2 or 3 gallons will be needed for every treatment of a RTAA200.

**2. Conclusion:**

The recommendations are made only to provide a means for the customer to extend the service life of an RTAA chiller installed in a harsh seacoast or corrosive environment. There is a sample cleaning schedule on the last page of the bulletin.

It is the customer's responsibility to assume all costs that may be incurred from following these recommendations. The Trane Company cannot warranty that these recommendations will prevent all corrosion from occurring. The standard terms and conditions of sale state that NO warranty is made against corrosion, erosion, or deterioration.

**3. Parts Ordering**

This service bulletin is informational only and does not authorize any parts or labor. Refer to Table 1 for a list of parts and or cleaners listed in the bulletin.

*Table 3-1: Part Numbers*

Part Number	Description
CHM0021	Trane Coil Cleaner
PAI0239	Trane Coil Painting Kit
	Cal-shield coil protector
	Mild Detergent

## Sample Coil Cleaning Schedule

Jan 1 - unit arrival	<input type="checkbox"/> Clean coil per “1-a. Coil maintenance” <input type="checkbox"/> Paint coil if applicable per “1-f. Condenser Coil Painting” <input type="checkbox"/> Treat Coil per “1-h Coil Treatment”
Feb 1	<input type="checkbox"/> Coil Washing per “1-b. Coil Washing”
March 1	<input type="checkbox"/> Coil Washing per “1-b. Coil Washing”
April 1	<input type="checkbox"/> Clean coil per “1-a. Coil maintenance” <input type="checkbox"/> Treat Coil per “1-h Coil Treatment”
May 1	<input type="checkbox"/> Coil Washing per “1-b. Coil Washing”
June 1	<input type="checkbox"/> Coil Washing per “1-b. Coil Washing”
July 1	<input type="checkbox"/> Clean coil per “1-a. Coil maintenance” <input type="checkbox"/> Treat Coil per “1-h Coil Treatment”
August 1	<input type="checkbox"/> Coil Washing per “1-b. Coil Washing”
September 1	<input type="checkbox"/> Coil Washing per “1-b. Coil Washing”
October 1	<input type="checkbox"/> Clean coil per “1-a. Coil maintenance” <input type="checkbox"/> Treat Coil per “1-h Coil Treatment”
November 1	<input type="checkbox"/> Coil Washing per “1-b. Coil Washing”
December 1	<input type="checkbox"/> Coil Washing per “1-b. Coil Washing”
January 1	<input type="checkbox"/> Clean coil per “1-a. Coil maintenance” <input type="checkbox"/> Re-paint coil if necessary per “1-f. Condenser Coil Painting” <input type="checkbox"/> Treat Coil per “1-h Coil Treatment”

**NOTES: This is merely an example of a typical sea coast applications cleaning schedule. Adjust the schedule as necessary for each application.**