

MICROCHANNEL HEAT EXCHANGER IOM

REPLACEMENT COIL FOR CARRIER 30RB& 30XA CHILLERS

MICROCHANNEL HEAT EXCHANGER INSTALLATION GUIDELINES



Model: 2C37.8x41x.83V-13K18-P1359C (E-Coated)

Alternative Replacement Coil for 30RB & 30XA Chillers

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INTRODUCTION

Evapco Alcoil replacement condenser coils are an alternative for Carrier brand chillers, specifically for the Carrier 30RB and the Carrier 30XA. These replacement coils are designed as near perfect drop-in, with higher quality, longer life construction and Epoxy coated for improved corrosion protection.

Since the Carrier 30RB and 30XA chillers are equipped with either Fin/Tube or Microchannel Coils, Evapco Alcoil's replacement coil can be used in either type of chiller coil replacement.

The Evapco Alcoil 2C37.8x41x.83V is designed as an alternative replacement coil for:

- Microchannel coils manufactured by Delphi and other for Carrier
- Fin/Tube coils manufactured by Carrier

What's Different?

There are several important Evapco Alcoil features, based on field experience that make the design more robust and easier to install. These features allow the contractor and end user to replace damaged or failed condenser coils with an alternative solution, upgraded for longer life and to restore the Carrier chiller to operating condition.

- Non-Automotive, industrial design with 25-30% Thicker tube walls
- Epoxy Coating for superior corrosion protection
- Lower Refrigerant Pressure drop for improved operation and oil return
- Built-in Mini-receiver (in lower header) to make it easier to charge
- Side Flange for drop in/slide in installation



Notice to Installer & User:

Evapco Alcoil is a major U.S. manufacturer of Microchannel coils for the HVAC/R industry and provides coils to the replacement market and to OEM's other than Carrier. Evapco Alcoil alternative replacement coils have not been endorsed by Carrier as a factory authorized part. All coil replacements should be performed by a trained and qualified HVAC/R Service Technician. Proper installation, procedures, handling of refrigerants, startup and operation of the equipment is the responsibility of the installing contractor and end user.

Note: Carrier is a registered Trademark of Carrier Corporation, a subsidiary of United Technologies.

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Why do Coils Fail?

Coils fail for a number of reasons. These include vibration, corrosion from pollution, acid rain, sea salt air, and organic debris (bugs), excessive fan cycling, low load cycling, physical damage and other reasons.

Fin/Tube coils are naturally susceptible to galvanic copper to aluminum corrosion that significantly reduces fin performance over time, and can also sacrifice the aluminum fin material in sea coast environments. Copper elbows and tubes also can corrode, pit and crack over time. Thus, a coil mean time to failure can range from 5-10yrs, and preferably 15-20 years or more, if robust.

Microchannel coils, manufactured by others can fail due to the same reasons listed above. In many OEM systems, these coils are automotive style and use thin tube walls, yet are susceptible to the worst of operating conditions, vibration and sea coast effects. Microchannel coils are the future of chiller condenser coils, but must take the same abuse, wear and tear.

Why Evapco Alcoil?

Evapco Alcoil is an all aluminum microchannel coil, designed for high efficiency, with fins integrally brazed to the tubes, and tubes integrally brazed to the headers. Evapco Alcoil, however is a robust industrial constructed coil with thicker tubes and thicker headers. It is the latest generation of high performance condenser coil with vertical tubes (not horizontal) to reduce standing water on the coil, reduce thermal stresses and provide features intended for longer life operation.



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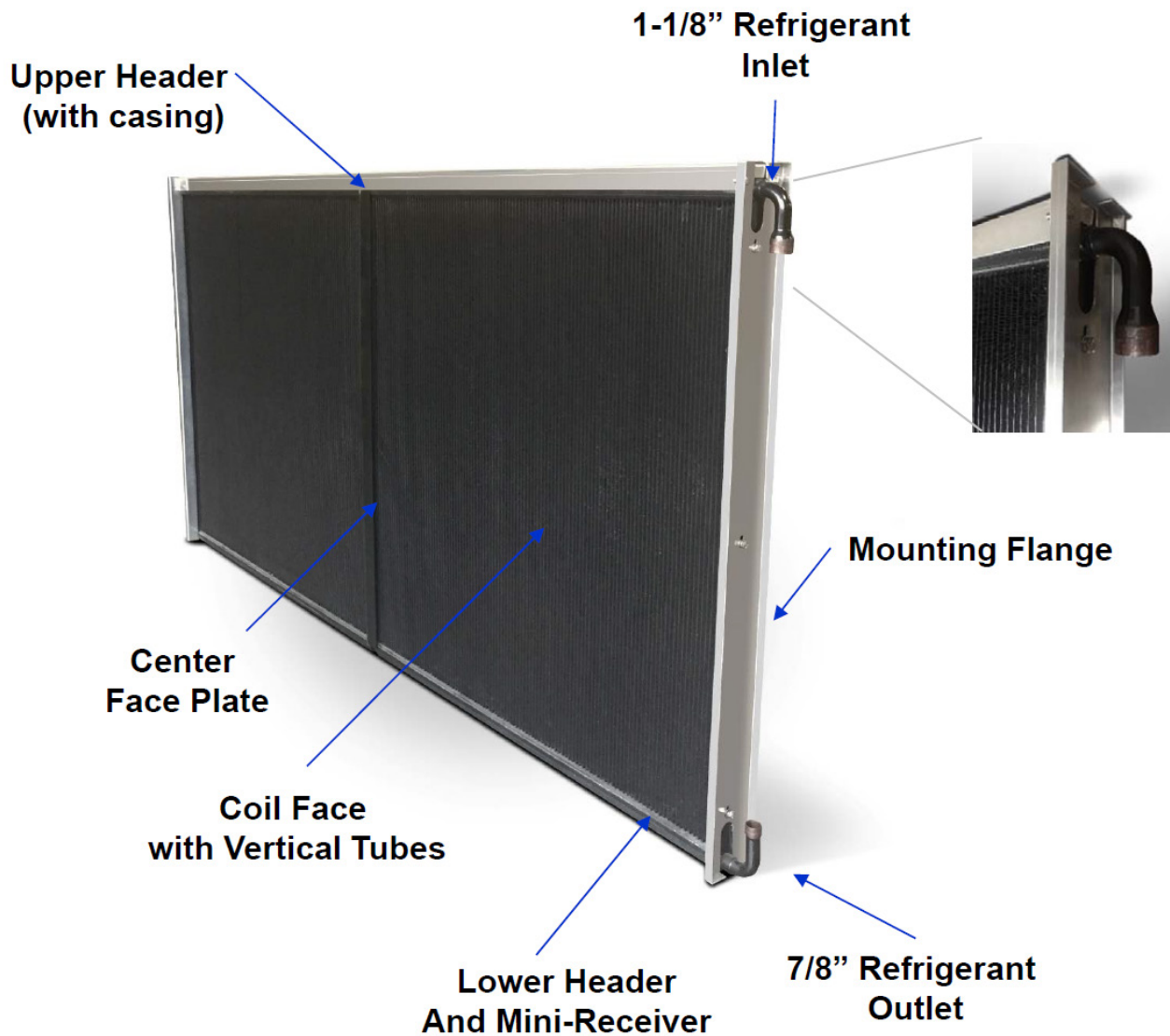
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EVAPCO ALCOIL MICROCHANNEL REPLACEMENT CONDENSER COILS



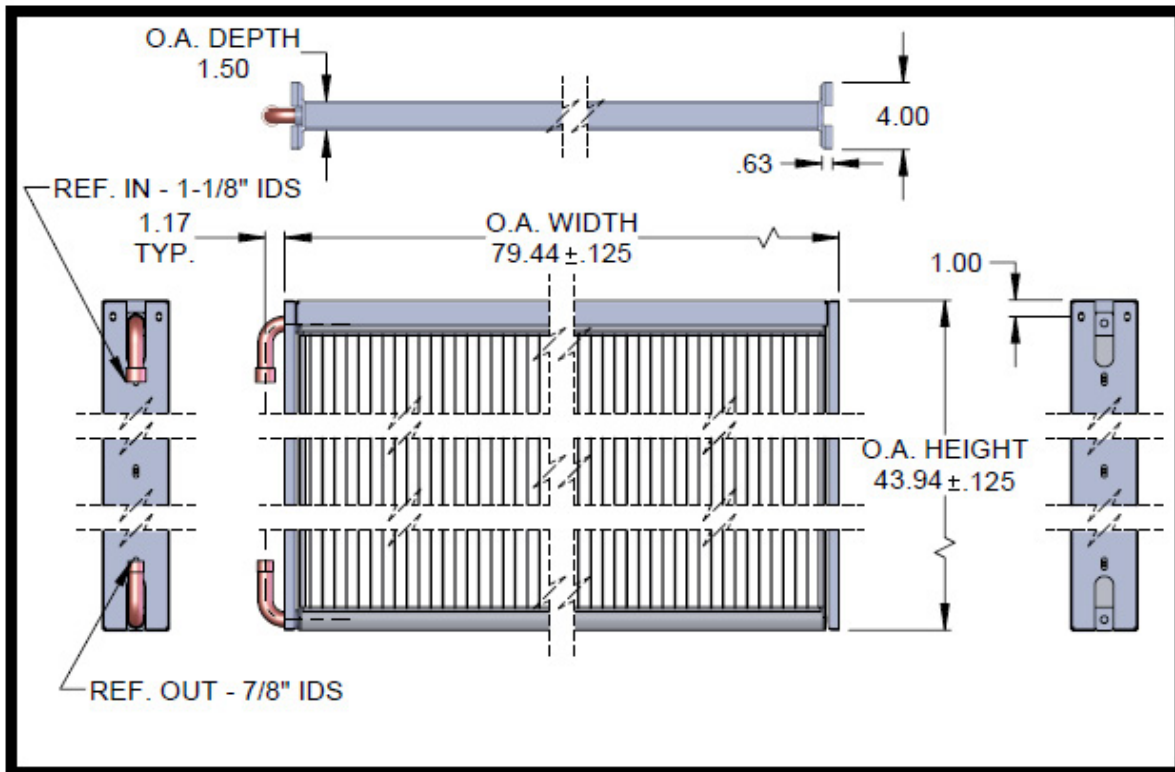
Design Working Pressure:	650psig
Maximum Design Temperature:	250F
Refrigerants:	R410a, R134a & R407C
Approvals:	U.L. Listed



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PRODUCT DRAWING



Model: 2C37.8x41x.83V-13K18-P1359C (E-Coated)

Overall Dimensions	79.4"L x 4.0"W x 43.94"H
Connections	1-1/8"IDS Copper Inlet, 7/8"IDS Copper Outlet
Mounting	Bolt-on Aluminum Mounting Flange
Weight	80LBS
Nitrogen Charge	Rubber Plugs w/ 5-15psi N2 charge
Epoxy Coated	Required for Carrier Replacement Coils

- Required in Industrial applications or within 50 miles of Sea Coast Environments.
- Required in Urban or Rural areas with high pollution and acid rain
- Required for replacement coils where the previously failed coil shows signs of refrigerant oil spots or leaks on the coil, due to corrosion or thermal cycling.
- Epoxy Electrocoat; 0.001 Inch Nominal Coating Thickness
- Black, Semi-gloss appearance

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PARTS LIST & RECOMMENDED TOOLS (NOT PROVIDED BY EVAPCO COIL)

Parts List Per Coil:

Discharge lines:

- 2 feet of 1-1/8" ACR Copper Tubing
- (1) 1-1/8" straight copper couplings
- (1) 1-1/8" copper 90 degree elbow

Liquid Lines:

- (1) 3/4" Copper 90 degree elbows
- (1) 7/8" Copper 90 degree elbows
- (1) Copper 90 degree elbows street
- (1) 7/8" to 3/4" copper reducers
- 1 foot 7/8" ACR Copper Tubing
- 1 foot 3/4" ACR Copper Tubing

(18) 5/16 Stainless Steel Self Tapping Screws (per coil)

Note: Copper piping & fittings may vary per Carrier model and for 30XA Models

Recommended Tools:

- Impact drill with hex drivers
- Vacuum Pump & Refrigerant Recovery Equipment
- 3/8" ratchet set
- Refrigerant Gages
- R410A Refrigerant & Scale
- Oxy Acetylene Torch
- Brazing Flux
- Brazing rod for Copper Connections
- Rags
- Grease or Lubricant



Evapco Alcoil Replacement Coils are individually packaged and shipped in a protective corrugated box. Multiple boxed coils arrive stacked on a pallet. Or crated for ocean export.

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SAFETY & MICROCHANNEL COIL HANDLING

- ✓ • Only trained professionals and service mechanics should install, start up, and service this equipment.
- ✓ • Always wear proper PPE (Personal Protective Equipment), and follow safe industry guidelines.
- ✓ • Always lift the coil using the upper and lower headers, or the mounting flanges.
- ✓ • Always use two people to lift the coil. Each Coil Weighs 80lbs
- ✗ • Never lift the coil using the copper connections.
- ✗ • Contact with sharp objects on the coil face can cause a permanent leak. Use caution to protect the coil face from damage when handling and installing.

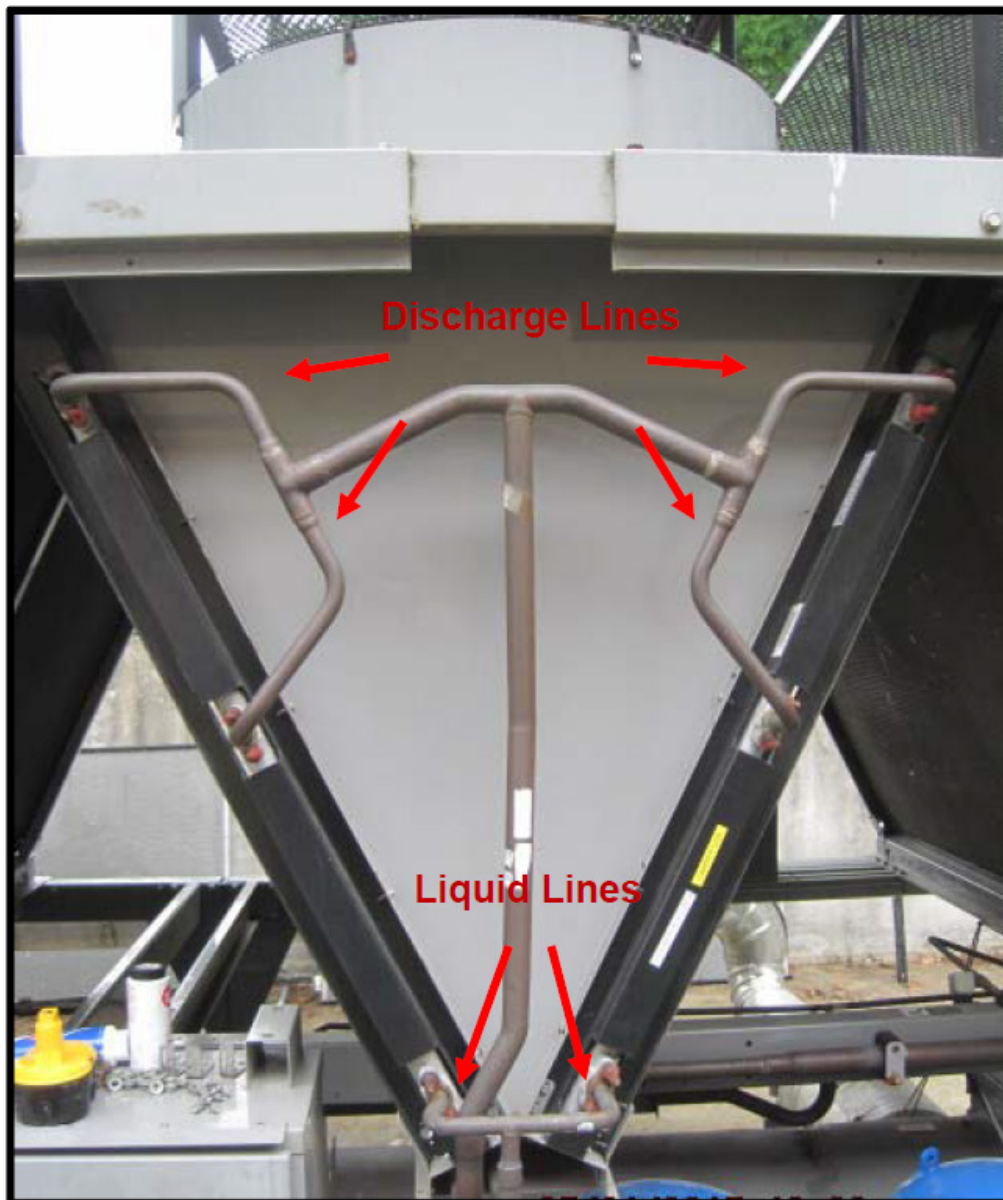


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INSTALLATION GUIDELINES

1. Turn off the chiller and turn off all electrical disconnects to the chiller
2. Recover the chiller's refrigerant from the system in accordance with industry procedures and regulations.
3. Using a socket wrench, remove the 6 nuts fastening the two discharge line flanges and one liquid line flange from each condenser.
4. Once removed, cap off all three lines to mitigate moisture from entering the system.



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5. Slide the coil and its black casing out of the frame. This is a two person operation.
6. Using a wet rag, clean dirt and grime from the upper and lower coil supports. Once clean, add a thin layer of grease or lubricant to the lower support. This will allow smooth installation of the new coil.



7. Make sure the coil is properly oriented (1-1/8" connection at the top of the coil); slide the new coil into place. Be cautious not to damage the coil face during installation. This is a two person operation.



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- Using the existing holes in "V Panel" flanges, use new stainless steel 5/16" self tapping screws to secure the coil thru the new coil's flanges.



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9. Cut the primary discharge lines & liquid lines to connect to the single Alcoil discharge line & liquid line.



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10. Using the refrigerant piping parts from the parts list, solder (braze) copper connections using Silver solder or Phos-Copper method.

Use wet rag on the Aluminum side of connections to protect the Al/Cu joint from overheating and damage to the Al/Cu joint.



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11. Leak check all connections and braze joints.
12. Re-charge the system using the original OEM's recommended refrigerant charge quantity. With the chiller operating, adjust the refrigerant charge using site glass (minimal bubbles) and subcooling at 5F to 10F.



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FIN/TUBE COIL REPLACEMENT(S)

If the Carrier 30RB or 30XA has Fin/Tube condensers, the Fin/Tube coil replacement using Alcoil replacement coils should follow the same procedures listed in this installation guideline.

There is one primary difference: The chiller Electronic Expansion Valve (EV) control must be adjusted on the control board to increase the reaction time of the EV. This difference is normal for Fin/Tube versus Microchannel coils for these chillers, due to the lower charge and lower thermal mass of the microchannel coil. (This EV adjustment allows the chiller to operate properly and to not trip out on low evaporator or high head conditions during startup.)

SINGLE COIL REPLACEMENT

It is recommended to replace all coils in a refrigerant circuit at the same time.

If a single Evapco Alcoil replacement coil is installed in the same refrigerant circuit with the original OEM coils, a valve **MUST** be installed on the outlet of each Evapco Alcoil replacement coil(s) to provide a method to balance the coil pressure drops. Without proper adjustment of this valve, liquid refrigerant may back up into the original OEM coil (higher pressure drop), versus the Evapco Alcoil replacement coil (lower pressure drop).

If single coil replacement is needed:

1. Purchase a manual inline type refrigeration valve with 3/4" connections.
2. Install valve in the liquid line exiting the Evapco Alcoil Coil.
3. Leak check connections and charge system per step 11.
4. With the system running, close valve 1/4 turn and check site glass for bubbles.
5. Repeat step 4 until the Evapco Alcoil replacement coil shows 5F to 10F subcooling and minimal bubbles in the site glass.



Manual Ball Type Refrigeration Valve
– 3/4" Connections

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MAINTENANCE & CARE

Routine inspection and general cleaning of the Microchannel coil(s) is required for proper life expectancy and to maintain warranty status.

13. Inspection and general cleaning is recommended quarterly, or more frequently depending upon install location, debris and scale build up, both visible and microscopic.
14. Coil Cleaning. Coils may exhibit a build-up of dirt, grass, ragweed and many other airborne contaminants. Avoid pushing or driving materials deeper into the coil while cleaning. Use a soft bristle brush and/or a shop vac to remove as much debris as possible from the surface of the coil. If necessary, wash the face of the coil using a pressure washer with a maximum pressure of 900 psi at the spray tip. This should be done at a distance of 8"-16" and in the direction of the fin stock.

Followup by applying commercial cleaner approved for MicroChannel coils and rinsing the coil with water depending on the cleaner instructions and manufacturer's recommendations

Installations with exposure to salt air:

Apply CHLOR*RID DTS directly onto the substrate. Sufficient product must be applied uniformly across the substrate to thoroughly wet the surface, with no areas missed. This may be accomplished by various methods such as airless sprayer, roller, brush, pump-up sprayer, or conventional spray gun. The method does not matter if the entire area to be cleaned is wetted. For most applications, an application rate of approximately 300 sq. ft. per gallon is satisfactory. After the substrate has been thoroughly wetted, the salts will have been solubilized and now it is necessary to rinse them off. It is highly recommended that a pressure washer, max pressure 900 psi to be used for the rinse off step, but a hose may be used if a pressure washer is not available. The water to be used for the rinse is recommended to be of potable quality. A dilution ratio of 50:1 is recommended for potable water, dependent upon water quality. Follow MSDS Safety Precautions prior to use.

15. Repairs. If the coil face becomes moderately damaged, the coil fins can be manually adjusted with a dental pick. If a tube is cut or breached, causing a leak, in most cases, the tube can be repaired using "RED EPOXY" brand repair kit, available from most local refrigeration wholesalers. DO NOT attempt a coil repair using tin, zinc or other solders, since these will not work or bond

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5 YEAR EXPRESS WARRANTY

Applies to EVAPCO Alcoi® heat exchanger product models.

MANUFACTURER'S EXPRESS WARRANTY

EVAPCO Alcoi warrants the unit identified above against failure caused by defects in materials and workmanship for five (5) years from the date of shipment by EVAPCO Alcoi. This warranty includes all structural components, tubes, fins, headers and connections. **Labor costs associated with any repair work performed under the terms of the warranty are NOT included within the warranty.** Damage caused by misuse of the product, including without limitation failure to properly install or maintain the product, is NOT covered by the warranty.

In addition to the unit warranty above, EVAPCO Alcoi warrants the thermal performance of the unit as shown on the certified drawings delivered to the customer for a period of one-year from the date installation is completed in accordance with good engineering practices, but in no event shall such warranty period exceed eighteen (18) months from the date the unit is shipped by EVAPCO Alcoi. If after installation and start-up there is any question regarding thermal performance of the equipment, at the owner's request EVAPCO Alcoi will send its engineers to the jobsite to conduct a performance test. This test may be observed by the owner and the consulting engineer or by their authorized representatives. If the results of the evaluation show the equipment to be deficient, EVAPCO Alcoi will make the necessary repairs or alterations to correct the deficiency subject to the limitations set forth below. If the equipment is found to be performing in accordance with its certified capacity, the owner will reimburse EVAPCO Alcoi for all direct expenses incurred in connection with such performance test.

EXCLUSIONS

The above warranty shall not apply to any product that has been modified or repaired contrary to EVAPCO Alcoi recommendations or generally accepted practices or procedures in the industry, or operated under conditions which may cause product failure. EVAPCO Alcoi shall not be responsible for any costs associated with the product damage, loss or replacement due to freeze-up, improper water treatment, improper cleaning, fluid chemistry exceeding EVAPCO Alcoi's recommendations, clogging and debris, fouling, corrosion, galvanic induced corrosion, vibration, thermal cycling, hydraulic shock, overpressurization, compressor failure, system contamination, loss of protective coating (where applied) and any other operating or system condition which may cause product failure.

LIMITATION OF LIABILITY

THE SOLE REMEDY FOR BREACH OF THE EXPRESS WARRANTIES DESCRIBED HEREIN SHALL BE REPAIR OR REPLACEMENT OF THE EQUIPMENT BY EVAPCO ALCOIL, OR REFUNDING THE PURCHASE PRICE SET FORTH ON THE PURCHASE ORDER. IT SHALL BE IN EVAPCO ALCOIL'S SOLE DISCRETION AS TO WHETHER REPAIR, REPLACEMENT OR REFUND IS THE OFFERED REMEDY. IF EVAPCO ALCOIL DECIDES TO MAKE REPAIRS, EVAPCO ALCOIL HAS THE OPTION OF COMPLETING ALL NECESSARY REPAIRS ITSELF, OR AUTHORIZING A THIRD PARTY TO PERFORM SUCH REPAIRS AT EVAPCO ALCOIL'S EXPENSE. EVAPCO ALCOIL IS NOT RESPONSIBLE FOR ANY REPAIR WORK PERFORMED BY A THIRD PARTY THAT EVAPCO DID NOT PRE-APPROVE IN WRITING. EVAPCO IS ONLY RESPONSIBLE FOR COSTS THAT PERTAIN TO REPAIR OR REPLACEMENT OF EQUIPMENT SUPPLIED BY EVAPCO (i.e., EVAPCO ALCOIL IS NOT RESPONSIBLE FOR REPLACEMENT OR MODIFICATION OF PIPING OR "IN AND OUT" COSTS SUCH AS THIRD PARTY LABOR, CRANE OR OTHER EQUIPMENT FEES).

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