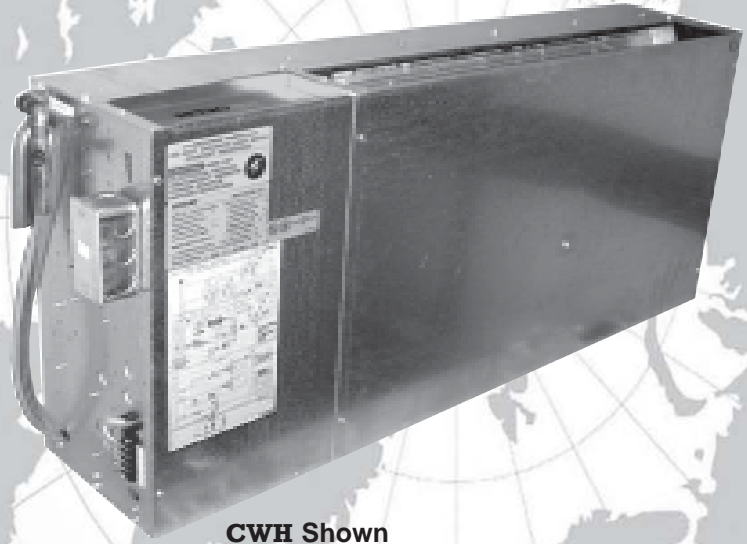


CWC/CWH/CMH CONSOLE WATER SOURCE STRAIGHT COOL/HEAT PUMP SERIES

Nominal Circuits: 8,000 -
10,000, 13,000 & 17,000

RETROAIRE
The Right Fit for Comfort



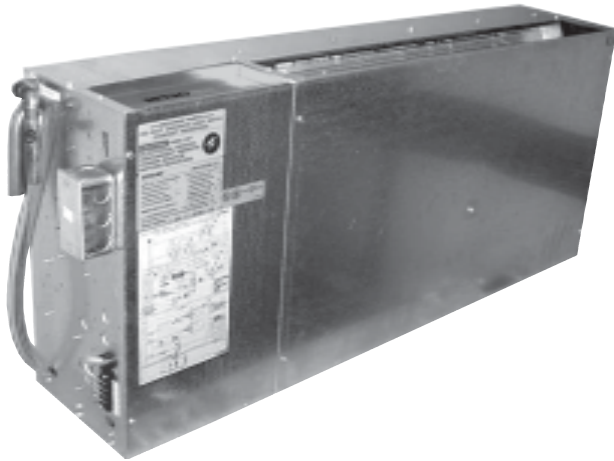
CWH Shown

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An  **ECR International Brand**
An ISO 9001-2000 Certified Company



INSTALLATION, OPERATION & MAINTENANCE GUIDE



Nominal Circuits:

8,000 -10,000, 13,000 & 17,000

The CWC/CWH High Efficiency (WSHP) is a complete replacement for Freidrich, Climate Master WC and "800" Series Water Source

The CMH is a complete Replacement Chassis for Freidrich and Climate Master "801" Series Water Source

! Recognize this symbol as an indication of important safety information !

Shipping Damage MUST be Reported to the Carrier IMMEDIATELY!!!

Examine the exterior. Remove cover and examine compressor and piping for signs of damage.

This manual is intended as an aid to a qualified service personnel for proper installation, operation, and maintenance of these RetroAire Water Source Units. Read the instructions thoroughly and carefully before attempting installation or operation. Failure to follow these instructions may result in improper installation, operation, service, or maintenance, possibly resulting in fire, electrical shock, property damage, personal injury, or death.

TO THE INSTALLER

- (1) Retain this manual and warranty for future reference.
- (2) Before leaving the premises, review this manual to be sure the unit has been installed correctly and run the unit for one complete cycle to make sure it functions properly.

RETROAIRE

The Right Fit for Comfort

CWC/CWH/CMH CONSOLE WATER SOURCE STRAIGHT COOL/HEAT PUMP SERIES

To obtain technical service or warranty assistance during or after the installation of this unit, contact your local representative. Visit our website www.retroaire.com for a local representative listing. For further assistance call 1-800-228-9364.

When calling for assistance, please have the following information ready:

- Model Number _____
- Serial Number _____
- Date of installation _____

SAFETY INSTRUCTIONS

Read all instructions before using the RetroAire Water Source Unit. Install or locate this unit only in accordance with these instructions. Use this unit only for its intended use as described in this manual.

- Check the rating plate on the RetroAire Water Source Unit before installation to make certain the voltage shown is the same as the electric supply to the unit.
- The RetroAire Water Source Unit must be connected only to a properly grounded electrical supply. Do not fail to properly ground this unit.
- Turn off the electrical supply before servicing the RetroAire Water Source Unit.
- Do not use the RetroAire Water Source Unit if it has damaged wiring, is not working properly, or has been damaged or dropped.

[Save These Instrucions]

P/N 240003075, Rev. 1.2 [02/05]

PRODUCT DESCRIPTION

The CWC/CWH/CMH EER ratings of 13.3 to 13.7 and COP's of 4.6 to 4.7 far exceed the ratings for the old units (even when they were new).

The CWC/CWH/CMH chassis is a complete package with compressor; heat pump with reversing valve; capillary tube metering; and all refrigeration components. Safety controls include overload protection and high/low pressure controls.

The CWC/CWH replacement chassis is available in nominal cooling capacities of 8,000, 10,000, 13,000, and 17,000 Btuh. Refer to Specifications for more information.

While the CMH replacement chassis is available in nominal cooling capacities of 8,000, 12,000, and 15,000 Btuh.

Units are tested and rated in accordance with ARI standards 320 and UL 484. Due to RetroAire's™ ongoing development programs, design and specifications may change without notice.

CONTROLS AND COMPONENTS

Factory Installed

- High pressure control
- Low temperature/low water flow cut-out switch
- Compressor lock-out relay
- Unit-mounted controls for temperature, fan speed, and mode control
- 4-way reversing valve with solenoid (energized for cooling mode) activated by line voltage

Options & Accessories

- Electrical resistance heat element (CWC only)
- Remote thermostat controls
- Motorized fresh air capability
- Unit mount ACO with fan cycle switch

INSPECTION

Be sure to inspect the shipping package of each console WSHP unit as it is received at the job site and before signing the freight bill. Verify that all items have been received and that there is no visible damage. Note any shortage or damage on all copies of the freight bill. ***In the event of damage or shortage, remember the purchaser is responsible for filing the necessary claims with the carrier. Concealed damage not discovered until after unloading must be reported to the carrier immediately.***

The unit's wire diagram is attached to the unit. Read this manual to become familiar with the unit and its operation. If the equipment is not needed for immediate installation upon arrival at the job site, it should be left in the shipping carton, vinyl wrap, or an equivalent protective covering. Open ends of piping stored on the job site must be capped to keep dirt and insects from getting into the piping. If stacking is necessary, do not stack more than 3 high with pallets between each layer of units. Examine each pipe, fitting and valve and remove any dirt before installation.

NOTE: *Keep all components clean. Double check all piping and components for debris and dirt before installation.*

GENERAL INFORMATION

RetroAire™ Console Water Source Heat Pump (WSHP) units are decentralized room units designed for field connection to a closed-circuit piping loop within the building. Models with 8,000-17,000 nominal Btuh cooling ratings are offered. These units are typically installed in perimeter zones usually on an outside wall, but can be installed on inside walls as well. Supply air is discharged into the conditioned space through discharge grilles located on the top of the unit.

DO NOT apply RetroAire™ console (WSHP) in locations subject to temperature extremes (i.e. attics, garages, rooftops etc.) The temperature, humidity and corrosive conditions which are often present under these circumstances can greatly inhibit performance, reliability and service life.

PRE-INSTALLATION

Use the following steps to prepare a RetroAire™ chassis for installation.

1. Compare the electrical data on the unit rating plate with ordering and shipping information to verify that the correct unit has been shipped.
2. Keep the chassis covered until installation is complete, and all plastering, painting, etc. is finished.
3. Tubing must be free of kinks or dents, it must not touch other unit components.
4. All electrical connections should be clean and tight at the terminals. The compressor of all RetroAire™ heat pumps are grommet mounted, there are no hold-down bolts to remove.

INSTALLATION

1. Remove the cabinet from the old chassis. If the older chassis is a Climate Master WC, 800 or 801 only the front half of the cabinet needs to be removed.
2. Shut off the electrical supply to the unit. Most units will have a line cord that can be pulled from the receptacle. If hard wired, put the disconnect switch in the off position and disconnect the wiring.
3. Close the hand operated shut off water valves on both supply and return piping.
4. Disconnect the hose connection (if not hard piped) from the supply and return connection to the unit.

SUGGESTION: *Drain any water in the hoses or unit into a small pan or bucket.*

5. Disconnect the condensate drain hose.
6. Remove any screws holding the old chassis to sub-base or wall.
7. Lift the old chassis out of the way. Clean any dirt or debris from under where the old chassis stood.
8. Put the new chassis in the same place where the old chassis stood, and secure it to the subbase or wall as the older unit was secured.
9. Pipe the new chassis with the same hoses (check the hose for cracks and/or brittleness, replace with new hoses if any damage is found). If the unit is to be hard piped, there should be union between the unit and the hand shut off valve for service or removal of the unit. Connect the condensate pipe.
10. Plug the line cord into the receptacle. If hard wired; connect power wiring to unit wires in the J-box. (See wiring diagram on unit). Wiring must be made in accordance with NEC and local codes.
11. Open water hand valves. Bleed air from the water lines with the air vent (if used) or by uncoupling the return water line and let the air be forced out of the heat exchanger in chassis. When a steady flow of water is visible in the bucket, shut off the hand valve and reconnect the hose. If the water appears dirty the entire water system should be flushed with the proper cleaners to obtain a PH value of 7 or 8. Exercise caution if any sort of glycol (antifreeze) is being used when cleaning the system. Be careful not to let this fluid get on any carpeting etc. It is best to use trained personnel to do this type of work.

ELECTRICAL WIRING

WARNING: Avoid possible injury/death from electrical shock. Shut power supply switch off and secure in the "off" position.

If the wiring for the old unit shows signs of wear or was improperly installed it may be necessary to re-work the electrical wiring to the replacement chassis.

CAUTION: Use only copper conductors for field installed electrical wiring.

All field-installed wiring including the electrical ground must comply with the National Electric Code, as well as applicable local codes. In addition, all low voltage field wiring must conform to the Class II temperature limitations described in the NEC. Refer to figure 1 for a schematic of the field connections which must be installed by installing (electrical) contractor.

Consult the unit wiring diagram on the side of the unit control box. Unit electrical data is provided in the spec sheets for the unit.

NOTE: Use flexible conduit at the unit connections to minimize vibration and sound transmission to the structure. When wiring is complete, check all unit electrical connections to the line and low voltage terminal boards. Make certain they are correct and secure.

All customer supplied wiring to be copper only and must conform to NEC and local electrical codes. Wiring showed with dashed lines are to be field supplied and installed.

INSTALLATION OF OPTIONAL WALL MOUNTED THERMOSTAT

RetroAire™ console WSHP units have standard unit mounted thermostats in manual change-over (MCO) configuration. No external field installed low-voltage wiring is required.

When specified, the console unit is equipped with a 24-Volt control circuit which is then field wired to a remote thermostat. The low-voltage wiring between the unit and the wall mounted thermostat must be made in compliance with the applicable electrical codes (i.e. NEC and local codes) and completed before the unit is installed. Use of four-wire, color coded, low-voltage cable is recommended. Recommended wire size and lengths for installing the thermostat are provided in Table #1 (page 5). The total resistance of these low-voltage wires must not exceed 1 ohm. Any resistance in excess of 1 ohm may cause a malfunction because of voltage drop.

START-UP

Fill out the **Start-Up/Inspection Seet** on pages 14-16 to thoroughly check out the system and units before and during start-up.

Use the procedure outlined below to initiate proper unit start up.

1. Adjust all hand water valves to the full open position, and turn on the power to the units. (If when taking the old unit out you marked the position of the hand water valve handle put it back to that position rather than full open.)

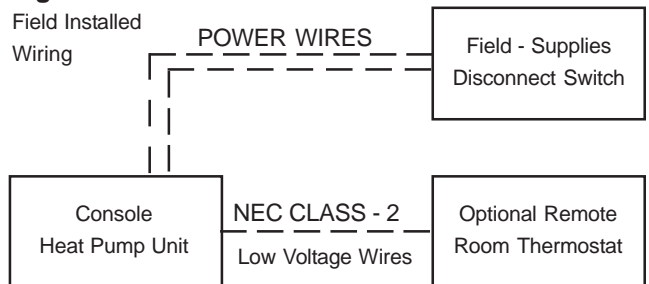
Recommended Wire Size Table #1

Wire Size	Maximum* Wire Length
18-Gauge	75 Feet
16-Gauge	125 Feet
14-Gauge	200 Feet

*Length = Physical distance from thermostat to unit.

WARNING: Use caution when working with energized equipment. High voltage is present in some areas of the electrical panels when the power is OFF.

Figure 1



2. Operate each unit in the cooling cycle first. Set thermostat temperature lower than the room temperature and depress the cool button. The entering water temperature (EWT) should be at least 60°F. for start up. The unit will start discharging cool air almost instantly. After the unit has been running about 5 minutes check the temperature of the EWT and the leaving water temperature (LWT). The difference should show a higher LWT by about 10°-12°. If you find you have this difference you also have the correct water flow. If the difference is less then 10°-12° you have too much water flowing through the unit and if the difference is higher then you don't have enough water flowing through the unit. You will have to adjust the hand water valve to get the temperature difference needed.

RetroAire Console WSHP Operating Ranges

(*EAT* and Ambient Temp. Surrounding the Unit are the same value)

Table #2

Air & Water	Cooling	Heating	Water Limits	Cooling	Heating
Rated *EAT DB/WB ° F	80/67	70/60	Min. EWT ° F	60	60
Rated **EWT ° F	85	70	Normal EWT ° F	85	70
Rated ***LWT ° F	95	N/A	Max. EWT ° F	95	90
Max. EAT DB/WB ° F	95/71	80/67			
Max. EWT ° F	95	90			
Min. *EAT DB/WB ° F	67/57	N/A			
Min. *EWT ° F	65	N/A			

*EAT-Entering Air Temp. **EWT-Entering Water Temp. ***LWT-Leaving Water Temp.

Unit Mount ACO (Automatic Change-Over) with Fan Cycle Switch (Optional): This option allows the operator of the CWC/CWH/CMH to have the evaporator fan cycle or run continuously. With the switch in the cycling position the evaporator fan will only run when the unit is calling for heat or cooling. When the switch is in the “CONSTANT” position, the evaporator fan will run continuously unless the unit is physically turned off.

Check the heating operation of the unit, turn the thermostat to slightly above room temperature and depress the heat button. The compressor and fan will operate. After about 5 minutes of operation check the water temperature of the EWT & LWT. There should be a difference of 6°F with the LWT less than the EWT. If the difference is approx. 6°F you have the correct water flow. If the difference is less than approx. 6°F there is excessive water flow. If the difference is more than approx. 6°F there is not enough water flow. Adjust the hand water valves until the EWT is about 6°F higher than the LWT. (See Table #2)

LIMITS OF RETROAIRE HEAT PUMP UNITS

NOTE: Three factors determine the operating limits of RetroAire™ heat pump units:

1. Return air temperature
2. Water temperature
3. Ambient temperature surrounding the unit

Whenever any one of these factors is at a minimum or maximum level, the other two factors must be at normal levels to ensure proper unit operation.

(1) Minimum air and water conditions can only be used at ARI flow conditions. (2) Only one max. or min. value maybe used, all other parameters must be at normal conditions. See Table #2 (page 5).

STARTING CONDITIONS

Unit will start and operate in an ambient of 50°F with entering air at 50°F with entering water temperature at 60°F with both the air and water at the flow rates used in the ARI Standard 320/98 rating test, for initial start up in winter. This is for start up only not long time running.

IF THE UNIT FAILS TO OPERATE, CHECK THE FOLLOWING

- a. Check the voltage and current: it should be in accordance with the electrical specifications on the unit rating plate.
- b. Look for wiring errors: check for loose terminals or wire nuts where wire connections have been made on both the line and low-voltage terminal boards. Check for water leaks around hose swivel joints or if hard piped check all joints.

After the unit is running check for leaks around the condensate drain hose and connection.

- c. If the fan fails to operate check to see if the fan wheel turns freely and that it is secured to the shaft. Determine whether the fan operates during heating and cooling modes. If these checks fail to reveal a problem and the unit will not operate, contact a trained service technician for proper diagnosis or call the factory service department for assistance.

MAINTENANCE AND CARE

Perform the maintenance procedures outlined below at the intervals indicated. Inspect/clean filters every three months. To avoid fouled machinery and extensive unit clean-up, do not operate units without filters in place or use as a temporary heat source during renovation.

To remove the filter from the console WSHP unit, slide the filter out of its frame located in the return air opening at the bottom front of the unit. When installing the filter be sure to use the slide in rails of the filter frame to guide the filter into the proper position.

FILTER MAINTENANCE AND CLEANING

Remove excess dirt and lint by rapping dirty side down or by vacuuming. Clean filter by flushing with a stream of water from both exhaust and intake side. If filter is extremely dirty or linted, fill container with warm water and mild detergent and "swish" filter in water. Rinse clean and allow to dry before re-coating with RP Super Filter Coat.

Check condensate drain pan for algae growth. When algae growth is apparent, consult a water treatment specialist for proper chemical treatment. Apply algaecide every 3 months to eliminate algae problems in most instances. All RetroAire™ heat pumps are permanently lubricated when shipped from the factory.

Visually inspect the unit at least once each year. When inspecting each Console WSHP unit, give special attention to the hose assemblies, note any signs of deterioration or cracking and repair any leaks immediately.

Check the compressor and fan motor amperage annually. Amperage draw on this equipment should not exceed normal full load or rated load amps by more than 10% of the values noted on the unit nameplate. Record the values obtained in this check in a log book so that a deteriorating condition in a fan motor or compressor can be detected prior to component failure.

Clean the air heat exchanger at least once a year or more frequently if the unit is located in a "dirty" environment to help maintain proper operating efficiency.

SAFETY CONTROL RESET

RetroAire™ Console WSHP units are equipped with high pressure and low temperature cutouts to prevent the machine from operating at abnormal conditions of temperature or water flow. The high pressure control used on RetroAire™ Heat Pumps is designed to open its contacts at 400 psi and automatically close them at 295 psi. The contacts of the low temperature switch open at 36°F and close at 50°F. A lockout relay is electrically linked with these cutouts, and interrupts the heating or cooling operation until the machine is reset manually.

First press the off button and then the on button to reset the unit in the desired mode of operation. The unit can also be reset by opening and closing the supply power disconnect switch.

NOTE: *If the unit must be reset more than twice, check it for a dirty filter, abnormal entering water temperature, inadequate or excessive water flow, and internal malfunctions, then contact a trained service technician.*

RetroAire™ encourages customers to contact their local representative for assistance. If the local representative is not available you may contact Customer Service at the factory.

RetroAire a Brand of ECR International
5780 Success Dr. Rome, NY 13440
Phone: 800/228-9364
Fax: 800/232-9364

CWC/CWH 08-10 CAPACITY SPECIFICATIONS

NOTE: Due to ongoing development programs, design and specifications may change without notice.

CWC/CWH 08 COOLING CAPACITY SPECIFICATIONS

ARI STANDARD 320: 350 CFM, 1.9 GPM/5.1 P.D. FT.

ENTERING WATER TEMP.	ENTERING AIR WET BULB TEMP.	TOTAL CAPACITY BTUH	WATTS INPUT	HEAT REJECTION BTUH	SENSIBLE CAPACITY BTUH ENT. AIR DRY BULB F°			EER
					75°	80°	85°	
55°	61°	7412	424	8859	6180	7662	—	17.5
	64°	7761	427	9217	5515	6997	8605	18.2
	67°	8118	430	9584	4850	6332	7940	18.9
	70°	8507	432	9983	3862	5344	6952	19.7
	73°	8897	435	10,383	—	4363	5971	20.5
65°	61°	7249	463	8830	6045	7494	—	15.7
	64°	7591	466	9181	5394	6844	8417	16.3
	67°	7940	469	9541	4744	6193	7766	16.9
	70°	8321	472	9932	3778	5227	6800	17.6
	73°	8702	475	10,324	—	4267	5840	18.3
75°	61°	7080	502	8794	5904	7319	—	14.1
	64°	7414	505	9137	5269	6684	8221	14.7
	67°	7755	509	9491	4634	6049	7586	15.2
	70°	8127	512	9874	3690	5105	6642	15.9
	73°	8500	515	10,258	—	4168	5704	16.5
85°	61°	6756	541	8602	5633	6984	—	12.5
	64°	7074	544	8932	5027	6378	7844	13
	67°	7400	548	9270	4421	5772	7238	13.5
	70°	7755	551	9637	3521	4872	6338	14.1
	73°	8110	555	10,005	—	3977	5443	14.6
95°	61°	6162	579	8139	5138	6370	—	10.6
	64°	6452	583	8441	4585	5817	7154	11.1
	67°	6749	587	8752	4032	5264	6601	11.5
	70°	7073	590	9088	3211	4443	5780	12
	73°	7397	595	9426	—	3627	4964	12.4

CWC/CWH 08 HEATING CAPACITY

ENTERING WATER TEMP.	ENTERING AIR TEMP.	HEATING CAPACITY BTUH	HEAT OF ABSORPTION BTUH	POWER INPUT WATTS	COP
55°	60°	8518	6698	533	4.7
	70°	8036	6179	544	4.3
	80°	7554	5660	555	4
70°	60°	10,388	8348	598	5.1
	70°	9800	7718	610	4.7
	80°	9212	7088	622	4.3
80°	60°	11,011	8893	621	5.2
	70°	10,388	8227	633	4.8
	80°	9765	7560	646	4.4

CWC/CWH 10 HEATING CAPACITY

ENTERING WATER TEMP.	ENTERING AIR TEMP.	HEATING CAPACITY BTUH	HEAT OF ABSORPTION BTUH	POWER INPUT WATTS	COP
55°	60°	11,126	8694	712	4.6
	70°	10,496	8015	727	4.2
	80°	9866	7335	742	3.9
70°	60°	13,568	10,842	799	5
	70°	12,800	10,018	815	4.6
	80°	12,032	9195	831	4.2
80°	60°	14,382	11,553	829	5.1
	70°	13,568	10,681	846	4.7
	80°	12,754	9809	863	4.3

CWC/CWH 10 COOLING CAPACITY SPECIFICATIONS

ARI STANDARD 320: 400 CFM, 2.6 GPM/12.7 P.D. FT.

ENTERING WATER TEMP.	ENTERING AIR WET BULB TEMP.	TOTAL CAPACITY BTUH	WATTS INPUT	HEAT REJECTION BTUH	SENSIBLE CAPACITY BTUH ENT. AIR DRY BULB F°			EER
					75°	80°	85°	
55°	61°	9815	562	11,733	8184	10,146	—	17.5
	64°	10,278	565	12,207	7304	9266	11,396	18.2
	67°	10,751	569	12,693	6423	8385	10,515	18.9
	70°	11,267	573	13,221	5115	7077	9207	19.7
	73°	11,783	577	13,751	—	5778	7907	20.4
65°	61°	9601	613	11,694	8005	9924	—	15.7
	64°	10,053	617	12,159	7144	9063	11,147	16.3
	67°	10,515	621	12,636	6283	8202	10,285	16.9
	70°	11,020	61°	13,154	5003	6922	9006	17.6
	73°	11,525	630	13,673	—	5651	7734	18.3
75°	61°	9377	665	11,646	7819	9693	—	14.1
	64°	9819	669	12,102	6978	8852	10,887	14.7
	67°	10,270	674	12,570	6136	8011	10,046	15.2
	70°	10,763	678	13,077	4887	6761	8796	15.9
	73°	11,256	682	13,586	—	5520	7554	16.5
85°	61°	8947	717	11,393	7461	9249	—	12.5
	64°	9369	721	11,829	6658	8447	10,388	13
	67°	9800	726	12,278	5855	7644	9586	13.5
	70°	10,270	730	12,763	4663	6452	8393	14.1
	73°	10,741	735	13,251	—	5267	7208	14.6
95°	61°	8160	767	10,779	6804	8435	—	10.6
	64°	8544	772	11,180	6072	7703	9474	11.1
	67°	8938	778	11,591	5340	6971	8742	11.5
	70°	9367	782	12,036	4253	5884	7655	12
	73°	9796	788	12,484	—	4803	6574	12.4

CWC/CWH CONDENSER WATER FLOW

COOLING CYCLE DESIGN Δ T	GPM		P.D. (FT. OF HD.)	
	8	10	8	10
8°	2.3	3.1	7.1	13.8
10°	1.9	2.6	5.1	12.7
12°	1.7	2.4	4.6	12.2
14°	1.6	2.3	4.2	11.8
16°	1.5	2	4	9.7

CWC/CWH 13-17 CAPACITY SPECIFICATIONS

NOTE: Due to ongoing development programs, design and specifications may change without notice.

CWC/CWH 13 COOLING CAPACITY SPECIFICATIONS

ARI STANDARD 320: 450 CFM, 3.3 GPM/14.1 P.D. FT.

ENTERING WATER TEMP.	ENTERING AIR WET BULB TEMP.	TOTAL CAPACITY BTUH	WATTS INPUT	HEAT REJECTION BTUH	SENSIBLE CAPACITY BTUH ENT. AIR DRY BULB F°			EER
					75°	80°	85°	
55°	61°	13,020	734	15,526	10,857	13,460	—	17.7
	64°	13,634	739	16,155	9689	11,124	15,117	18.4
	67°	14,261	744	16,800	8521	11,124	13,949	19.2
	70°	14,946	478	17,500	6785	9388	12,214	20
	73°	15,630	754	18,202	—	7664	10,490	20.7
65°	61°	12,735	802	15,472	10,619	13,165	—	15.9
	64°	13,335	807	16,088	9477	12,023	14,786	16.5
	67°	13,949	812	16,721	8334	10,880	13,644	17.2
	70°	14,619	817	17,407	6637	9183	11,946	17.9
	73°	15,288	823	18,096	—	7496	10,260	18.6
75°	61°	12,439	869	15,405	10,372	12,858	—	14.3
	64°	13,025	874	16,009	9256	11,743	14,422	14.9
	67°	13,624	881	16,629	8140	10,627	13,326	15.5
	70°	14,278	886	17,301	6482	8969	11,668	16.1
	73°	14,932	892	17,976	—	7322	10,021	16.7
85°	61°	11,869	937	15,066	9897	12,269	—	12.7
	64°	12,428	942	15,644	8832	11,205	13,780	13.2
	67°	13,000	949	16,239	7767	10,140	12,716	13.7
	70°	13,624	955	16,882	6185	8558	11,134	14.3
	73°	14,248	961	17,529	—	6986	9562	14.8
95°	61°	10,825	1003	14,248	9026	11,190	—	10.8
	64°	11,334	1009	14,779	8055	10,219	12,568	11.2
	67°	11,856	1016	15,325	7084	9248	11,597	11.7
	70°	12,425	1022	15,914	5641	7805	10,154	12.2
	73°	12,994	1029	16,508	—	9372	8721	12.6

CWC/CWH 13 HEATING CAPACITY

ENTERING WATER TEMP.	ENTERING AIR TEMP.	HEATING CAPACITY BTUH	HEAT OF ABSORPTION BTUH	POWER INPUT WATTS	COP
55°	60°	13,560	10,658	850	4.7
	70°	12,792	9831	867	4.3
	80°	12,024	9005	885	4
70°	60°	16,536	13,283	953	5.1
	70°	15,600	12,281	973	4.7
	80°	14,664	11,278	992	4.3
80°	60°	17,528	14,152	989	5.2
	70°	16,536	13,091	1009	4.8
	80°	15,544	12,030	1030	4.4

CWC/CWH 17 COOLING CAPACITY SPECIFICATIONS

ARI STANDARD 320: 500 CFM, 4.2 GPM/19.1 P.D. FT.

ENTERING WATER TEMP.	ENTERING AIR WET BULB TEMP.	TOTAL CAPACITY BTUH	WATTS INPUT	HEAT REJECTION BTUH	SENSIBLE CAPACITY BTUH ENT. AIR DRY BULB F°			EER
					75°	80°	85°	
55°	61°	17,027	989	20,402	14,197	17,601	—	17.2
	64°	17,828	995	21,225	12,670	16,074	19,768	17.9
	67°	18,649	1002	22,069	11,142	14,546	18,241	18.6
	70°	19,544	1008	22,985	8873	12,277	15,972	19.4
	73°	20,439	1015	23,904	—	10,022	13,717	20.1
65°	61°	16,654	1080	20,340	13,887	17,216	—	15.4
	64°	17,438	1086	21,147	12,393	15,722	19,336	16.1
	67°	18,241	1094	21,975	10,899	14,228	17,842	16.7
	70°	19,117	1101	22,873	8679	12,008	15,622	17.4
	73°	19,992	1108	23,775	—	9803	13,417	18
75°	61°	16,266	1171	20,262	13,563	16,815	—	13.9
	64°	17,032	1178	21,052	12,104	15,356	18,885	14.5
	67°	17,816	1186	21,864	10,645	13,896	17,426	15
	70°	18,671	1193	22,744	8477	11,729	15,258	15.7
	73°	19,526	1202	23,627	—	9575	13,104	16.2
85°	61°	15,521	1262	19,827	12,942	16,045	—	12.3
	64°	16,252	1269	20,584	11,549	14,652	18,020	12.8
	67°	17,000	1278	21,362	10,157	13,260	16,628	13.3
	70°	17,816	1286	22,202	8089	11,191	14,559	13.9
	73°	18,632	1295	23,051	—	9136	12,504	14.4
95°	61°	14,155	1351	18,767	11,803	14,633	—	10.5
	64°	14,822	1359	19,461	10,533	13,363	16,435	10.9
	67°	15,504	1369	20,176	9263	12,093	15,165	11.3
	70°	16,248	1377	20,948	7377	10,207	13,278	11.8
	73°	16,992	1387	21,725	—	8332	11,404	12.3

CWC/CWH 17 HEATING CAPACITY

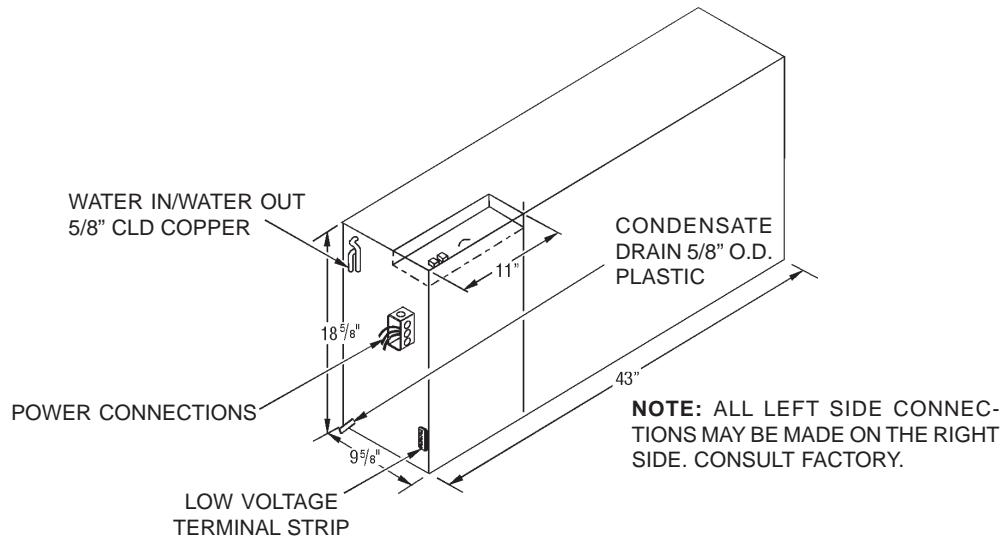
ENTERING WATER TEMP.	ENTERING AIR TEMP.	HEATING CAPACITY BTUH	HEAT OF ABSORPTION BTUH	POWER INPUT WATTS	COP
55°	60°	17,558	13,719	1125	4.6
	70°	16,564	12,647	1148	4.2
	80°	15,570	11,575	1171	3.9
70°	60°	21,412	17,109	1261	5
	70°	20,200	15,809	1287	4.6
	80°	18,988	14,509	1312	4.2
80°	60°	22,697	18,230	1309	5.1
	70°	21,412	16,854	1336	4.7
	80°	20,127	15,478	1362	4.3

CWC/CWH CONDENSER WATER FLOW

COOLING CYCLE DESIGN TEMP. DIFF.	GPM		P.D. (FT. OF HD.)	
	13	17	13	17
8°	4	5	14.6	19.4
10°	3.3	4.2	14.1	19.1
12°	3.1	4	13.2	18.2
14°	2.9	3.8	12.4	17.1
16°	2.6	3.3	12	16.3

CWC/CWH DIMENSIONS AND SPECIFICATIONS

NOTE: Due to ongoing development programs, design and specifications data may change without notice.



PERFORMANCE DATA AT ARI RATING POINTS AND MECHANICAL SPECIFICATIONS

UNIT SIZE	COOLING		HEATING		GPM	CFM	EVAPORATOR				WEIGHT	
	BTUH	EER	BTUH	COP			FACE FT. ²	ROWS DEEP	TUBE SIZE	FINS/IN	NET	SHIPPING
08	7,400	13.5	9,800	4.7	1.9	350	2	1	3/8"	12	131	151
10	9,800	13.5	12,800	4.6	2.6	400	2	1	3/8"	12	138	158
13	13,000	13.7	15,600	4.7	3.3	450	2	2	3/8"	12	144	164
17	17,000	13.3	20,200	4.6	4.2	500	2	3	3/8"	13.5	152	172

CWC/CWH ELECTRICAL SPECIFICATIONS

UNIT SIZE	VOLTS/HZ/PH	EVAP MOTOR		COMPRESSOR		TOTAL AMPS	MCA	MAX FUSE	MIN VOLTAGE
		FLA	HP	RLA	LRA				
08	115/60/1	1.40	0.09	5.7	40	7.1	8.5	15	104
	208-230/60/1	0.60	0.08	2.7	19	3.3	4.0	15	197
	265/60/1	0.67	0.08	2.4	16	3.1	3.7	15	240
10	115/60/1	1.40	0.09	7.4	44	8.8	10.7	15	104
	208-230/60/1	0.60	0.08	3.8	20	4.4	5.4	15	197
	265/60/1	0.67	0.08	3.3	18.6	4.0	4.8	15	240
13	115/60/1	1.40	0.09	9.7	54	11.1	13.5	20	104
	208-230/60/1	0.60	0.08	4.8	26.3	5.4	6.6	15	197
	265/1/60	0.67	0.08	4.2	28	4.9	5.9	15	240
17	208-230/60/1	0.60	0.08	6.4	38	7.0	8.6	15	197
	265/60/1	0.67	0.08	5.4	32	6.1	7.4	15	240

CWC/CWH OPTIONAL ELECTRIC HEAT SPECIFICATIONS

HEATER#	VOLTAGE	WATTS	BTUH	AMPS	TOTAL HEAT AMPS	MCA	MAX FUSE
2	208	1,636	5,600	7.9	8.5	10.4	15
	230	2,000	6,900	8.7	9.3	11.5	15
	265	2,655	9,100	10.0	10.7	13.2	15
3	208	2,454	8,400	11.8	12.4	15.3	20
	230	3,000	10,300	13.0	13.6	16.9	20
	265	3,983	13,600	15.0	15.7	19.5	20
4	208	3,271	11,200	15.7	16.3	20.3	25
	230	4,000	13,700	17.4	18.0	22.3	25
	265	5,310	18,200	20.0	20.7	25.7	30
5	208	4,089	14,000	19.7	20.3	25.2	30
	230	5,000	17,100	21.7	22.3	27.8	30

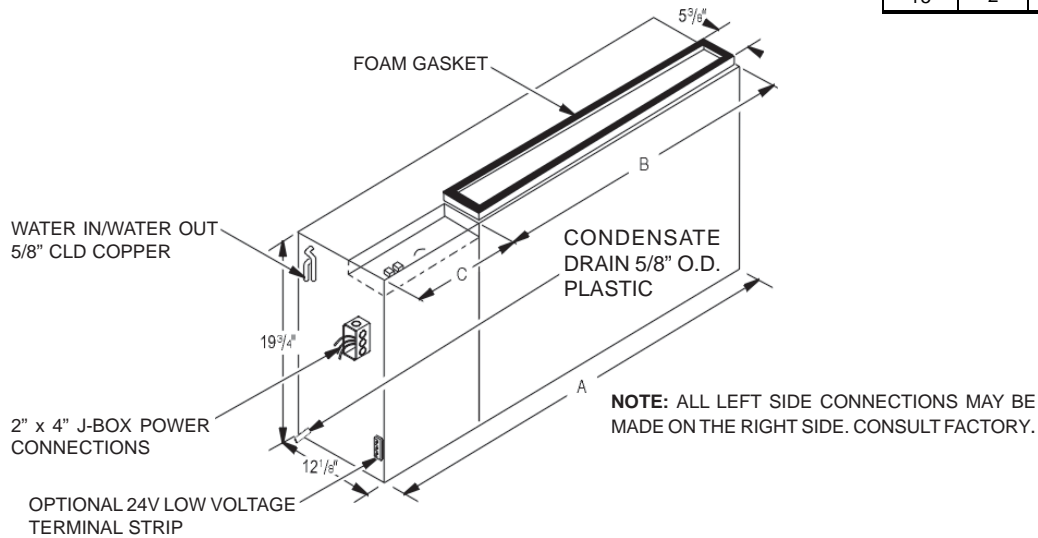
CMH DIMENSIONS AND SPECIFICATIONS

NOTE: Due to ongoing development programs, design and specifications data may change without notice.

UNIT SIZE	A	B	C
8-12	41"	32"	9"
15	45"	33 1/2"	11 1/2"

EVAPORATOR SPECIFICATIONS

UNIT SIZE	FACE FT. ²	ROWS DEEP	TUBE SIZE	FINS/IN
8	2	1	3/8"	14
12	2	2	3/8"	14
15	2	3	3/8"	12



CMC/CMH ELECTRICAL SPECIFICATIONS

Model Number	Voltage/hz/ph	Evap Motor		Compressor		Total Amps	MCA	Max Fuse	Min Voltage
		FLA	Hp	RLA	LRA				
8	115/60/1	1.4	0.09	5.7	40	7.1	8.5	15	104
	208/230/60/1	0.6	0.08	2.7	19	3.3	4.0	15	197
	265/60/1	0.67	0.08	2.4	16	3.1	3.7	15	240
12	115/60/1	1.4	0.09	9.7	54	11.1	13.5	20	104
	208/230/60/1	0.6	0.08	4.8	26.3	5.4	6.6	15	197
	265/60/1	0.67	0.08	4.2	28	4.9	5.9	15	240
15	208/230/60/1	0.6	0.08	6.4	38	7.0	8.6	15	197
	265/60/1	0.67	0.08	5.4	32	6.1	7.4	15	240

CMC/CMH Optional Electric Heat

Heater No.	Voltage	Watts	Btuh	Amps	Total Heat Amps	MCA	Max Fuse
2	208	1636	5600	7.9	8.5	10.4	15
	230	2000	6900	8.7	9.3	11.5	15
	265	2655	9100	10.0	10.7	13.2	15
3	208	2454	8400	11.8	12.4	15.3	20
	230	3000	10300	13.0	13.6	16.9	20
	265	3983	13600	15.0	15.7	19.5	20
4	208	3271	11200	15.7	16.3	20.3	25
	230	4000	13700	17.4	18.0	22.3	25
	265	5310	18200	20.0	20.7	25.7	30
5	208	4089	14000	19.7	20.3	25.2	30
	230	5000	17100	21.7	22.3	27.8	30

COOLING AND HEATING SPECIFICATIONS

NOTE: • Due to ongoing development programs, design and specifications may change without notice.
 • Data in **bold** is ARI standard.

CMH 08 COOLING CAPACITY SPECIFICATIONS

ARI STANDARD 320: 350 CFM, 1.9 GPM/5.1 P.D. FT.

ENTERING WATER TEMP.	ENTERING AIR WET BULB TEMP.	TOTAL CAPACITY BTUH	WATTS INPUT	HEAT REJECTION BTUH	SENSIBLE CAPACITY BTU/H ENT. AIR DRY BULB F°			EER
					75°	80°	85°	
55°	61°	7412	424	8859	6180	7662	—	17.5
	64°	7761	427	9217	5515	6997	8605	18.2
	67°	8118	430	9584	4850	6332	7940	18.9
	70°	8507	432	9983	3862	5344	6952	19.7
	73°	8897	435	10,383	—	4363	5971	20.5
65°	61°	7249	463	8830	6045	7494	—	15.7
	64°	7591	466	9181	5394	6844	8417	16.3
	67°	7940	469	9541	4744	6193	7766	16.9
	70°	8321	472	9932	3778	5227	6800	17.6
	73°	8702	475	10,324	—	4267	5840	18.3
75°	61°	7080	502	8794	5904	7319	—	14.1
	64°	7414	505	9137	5269	6684	8221	14.7
	67°	7755	509	9491	4634	6049	7586	15.2
	70°	8127	512	9874	3690	5105	6642	15.9
	73°	8500	515	10,258	—	4168	5704	16.5
85°	61°	6756	541	8602	5633	6984	—	12.5
	64°	7074	544	8932	5027	6378	7844	13.0
	67°	7400	548	9270	4421	5772	7238	13.5
	70°	7755	551	9637	3521	4872	6338	14.1
	73°	8110	555	10,005	—	3977	5443	14.6
95°	61°	6162	579	8139	5138	6370	—	10.6
	64°	6452	583	8441	4585	5817	7154	11.1
	67°	6749	587	8752	4032	5264	6601	11.5
	70°	7073	590	9088	3211	4443	5780	12.0
	73°	7397	595	9426	—	3627	4964	12.4

CMH 12 COOLING CAPACITY SPECIFICATIONS

ARI STANDARD 320: 350 CFM, 3.3 GPM/14.1 P.D. FT.

ENTERING WATER TEMP.	ENTERING AIR WET BULB TEMP.	TOTAL CAPACITY BTUH	WATTS INPUT	HEAT REJECTION BTUH	SENSIBLE CAPACITY BTU/H ENT. AIR DRY BULB F°			EER
					75°	80°	85°	
55°	61°	13,020	734	15,526	10,857	13,460	—	17.7
	64°	13,634	739	16,155	9689	11,124	15,117	18.4
	67°	14,261	744	16,800	8521	11,124	13,949	19.2
	70°	14,946	748	17,500	6785	9388	12,214	20.0
	73°	15,630	754	18,202	—	7664	10,490	20.7
65°	61°	12,735	802	16,472	10,619	13,165	—	15.9
	64°	13,335	807	16,088	9477	12,023	14,786	16.5
	67°	13,949	812	16,721	8334	10,880	13,644	17.2
	70°	14,619	817	17,407	6637	9183	11,946	17.9
	73°	15,288	823	18,096	—	7496	10,260	18.6
75°	61°	12,439	869	15,405	10,372	12,858	—	14.3
	64°	13,025	874	16,009	9256	11,743	14,442	14.9
	67°	13,624	881	16,629	8140	10,627	13,326	15.5
	70°	14,278	886	17,301	6482	8969	11,668	16.1
	73°	14,932	892	17,976	—	7322	10,021	16.7
85°	61°	11,869	937	15,066	9897	12,269	—	12.7
	64°	12,428	942	15,644	8832	11,205	13,780	13.2
	67°	13,000	949	16,239	7767	10,140	12,716	13.7
	70°	13,624	955	16,882	6185	8558	11,134	14.3
	73°	14,248	961	17,529	—	6986	9562	14.8
95°	61°	10,825	1003	14,248	9026	11,190	—	10.8
	64°	11,334	1009	14,779	8055	10,219	12,568	11.2
	67°	11,856	1016	15,325	7084	9248	11,597	11.7
	70°	12,425	1022	15,914	5641	7805	10,154	12.2
	73°	12,994	1029	16,508	—	9372	8721	12.6

COOLING AND HEATING SPECIFICATIONS

NOTE: • Due to ongoing development programs, design and specifications may change without notice.
• Data in **bold** is ARI standard.

CMH 15 COOLING CAPACITY SPECIFICATIONS

ARI STANDARD 320: 500 CFM, 4.23 GPM/19.1 P.D. FT.

ENTERING WATER TEMP.	ENTERING AIR WET BULB TEMP.	TOTAL CAPACITY BTUH	WATTS INPUT	HEAT REJECTION BTUH	SENSIBLE CAPACITY BTU/H ENT. AIR DRY BULB F°			EER
					75°	80°	85°	
					55°	61°	17,027	
	64°	17,828	995	21,225	12,670	16,074	19,768	17.9
	67°	18,649	1002	22,069	11,142	14,546	18,241	18.6
	70°	19,544	1008	22,985	8873	12,277	15,972	19.4
	73°	20,439	1015	23,904	—	10,022	13,717	20.1
65°	61°	16,654	1080	20,340	13,887	17,216	—	15.4
	64°	17,438	1086	21,147	12,393	15,722	19,336	16.1
	67°	18,241	1094	21,975	10,899	14,228	17,842	16.7
	70°	19,117	1101	22,873	8679	12,008	15,622	17.4
	73°	19,992	1108	23,775	—	9803	13,417	18.0
75°	61°	16,266	1171	20,262	13,563	16,815	—	13.9
	64°	17,032	1178	21,052	12,104	15,356	18,885	14.5
	67°	17,816	1186	21,864	10,645	13,896	17,426	15.0
	70°	18,671	1193	22,744	8477	11,729	15,258	15.7
	73°	19,526	1202	23,627	—	9575	13,104	16.2
85°	61°	15,521	1262	19,827	12,942	16,045	—	12.3
	64°	16,252	1269	20,584	11,549	14,652	18,020	12.8
	67°	17,000	1278	21,362	10,157	13,260	16,628	13.3
	70°	17,816	1286	22,205	8089	11,191	14,559	13.9
	73°	18,632	1295	23,051	—	9136	12,504	14.4
95°	61°	14,155	1351	18,767	11,803	14,633	—	10.5
	64°	14,822	1359	19,461	10,533	13,363	16,435	10.9
	67°	15,504	1369	20,176	9263	12,093	15,165	11.3
	70°	16,248	1377	20,948	7377	10,207	13,278	11.8
	73°	16,992	1387	21,725	—	8332	11,404	12.3

CMH 08 HEATING CAPACITY

ENTERING WATER TEMP.	ENTERING AIR TEMP.	HEATING CAPACITY BTUH	HEAT OF ABSORPTION BTUH	POWER INPUT WATTS	COP
55°	60°	8518	6698	533	4.7
	70°	8036	6179	544	4.3
	80°	7554	5660	555	4.0
70°	60°	10,388	8348	598	5.1
	70°	9800	7718	610	4.7
	80°	9212	7088	622	4.3
80°	60°	11,011	8893	621	5.2
	70°	10,388	8227	633	4.8
	80°	9765	7560	646	4.4

CMH 08 CONDENSER WATER FLOW

COOLING CYCLE DESIGN TEMP. DIFF.	GPM	P.D. (FT. OF HD.)
8°	2.3	7.1
10°	1.9	5.1
12°	1.7	4.6
14°	1.6	4.2
16°	1.5	4.0

CMH 12 HEATING CAPACITY

ENTERING WATER TEMP.	ENTERING AIR TEMP.	HEATING CAPACITY BTUH	HEAT OF ABSORPTION BTUH	POWER INPUT WATTS	COP
55°	60°	13,560	10,658	850	4.7
	70°	12,792	9831	867	4.3
	80°	12,024	9005	885	4.0
70°	60°	16,536	13,283	953	5.1
	70°	15,600	12,281	973	4.7
	80°	14,664	11,278	992	4.3
80°	60°	17,528	14,152	989	5.2
	70°	16,536	13,091	1009	4.8
	80°	15,544	12,030	1030	4.4

CMH 12 CONDENSER WATER FLOW

COOLING CYCLE DESIGN TEMP. DIFF.	GPM	P.D. (FT. OF HD.)
8°	4.0	14.6
10°	3.3	14.1
12°	3.1	13.2
14°	2.9	12.4
16°	2.6	12.0

CMH 15 HEATING CAPACITY

ENTERING WATER TEMP.	ENTERING AIR TEMP.	HEATING CAPACITY BTUH	HEAT OF ABSORPTION BTUH	POWER INPUT WATTS	COP
55°	60°	17,558	13,719	1125	4.6
	70°	16,564	12,647	1148	4.2
	80°	15,570	11,575	1171	3.9
70°	60°	21,412	17,109	1261	5.0
	70°	20,200	15,809	1287	4.6
	80°	18,988	14,509	1312	4.2
80°	60°	22,697	18,230	1309	5.1
	70°	21,412	16,854	1336	4.7
	80°	20,127	15,478	1362	4.3

CMH 15 CONDENSER WATER FLOW

COOLING CYCLE DESIGN TEMP. DIFF.	GPM	P.D. (FT. OF HD.)
8°	5.0	19.4
10°	4.2	19.1
12°	4.0	18.2
14°	3.8	17.1
16°	3.3	16.3

ALL PRODUCT LIMITED WARRANTY:

RetroAire warrants to the purchaser/owner, that the RetroAire products will be free from defects in material and workmanship under the normal use and maintenance for a period of twelve months for all components, and (60) months on unit compressors from date of the original installation or 15 months for all components and 63 months on unit compressors from the date of original sale whichever comes first.

WHAT WE WILL COVER:

RetroAire will replace any defective part returned to RetroAire's approved service organization with a new or rebuilt part at no charge. The replacement part assumes that unused portion of this warranty.


WHAT WE DON'T COVER:

THIS WARRANTY DOES NOT INCLUDE LABOR or others costs incurred for repairing, removing, installing, shipping, servicing, or handling of either defective or replacement parts.

RETROAIRE IS NOT RESPONSIBLE FOR:

- Normal maintenance
- Damage or repairs required as a consequence of faulty installation or application by others.
- Failure to start due to voltage conditions, blown fuses, open circuit breakers, or other damages due to the inadequacy or interruption of electrical service.
- Damage or repairs needed as a consequence of any misapplication, abuse, improper servicing, unauthorized alteration, or improper operation.
- Damage as a result of floods, winds, fires, lightning, accidents, corrosive atmosphere, or other conditions beyond the control of RetroAire.
- Parts not supplied or designated by RetroAire.
- Products installed outside the United States or Canada.
- Any damages to person or property of whatever kind, direct or indirect, special or consequential, whether resulting from use or loss of use of the product.

LIMITATION OF WARRANTIES: This Warranty is exclusive and in lieu of any implied warranties of merchantability and fitness for a particular purpose and all other warranties express or implied. The remedies provided for in this warranty are exclusive and shall constitute the only liabilities on the part of RetroAire including any statements made by any individual which shall be of no effect.

 An **ECR International Brand**
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