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McLean THERMAL
A Pentair Company

INSTRUCTION MANUAL FOR:

ProAir CR29



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ProAir CR29
Instruction Manual

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NOTE: Some of the information in this manual may not apply if a special unit was ordered. If additional drawings for a special unit are necessary, they have been inserted. Contact McLean Thermal if further information is required.

RECEIVING THE AIR CONDITIONER

Inspect the air conditioner. Check for concealed damage that may have occurred during shipment. Look for dents, scratches, loose assemblies, evidence of oil, etc. Damage evident upon receipt should be noted on the freight bill. Damage should be brought to the attention of the delivering carrier -- NOT to McLean Thermal -- within 15 days of delivery. Save the carton and packing material and request an inspection. Then file a claim with the delivering carrier.

McLean Thermal cannot accept responsibility for freight damages; however, we will assist you in any way possible.

HANDLING & TESTING THE AIR CONDITIONER

If it is necessary to place the air conditioner in a horizontal position after unpacking, be certain it is placed in an upright, vertical or mounting position for a minimum of five (5) minutes before operating.

Never attempt to operate the air conditioner while it is horizontal or on its side, back or front. The refrigeration compressor is filled with lubricating oil. Running the compressor without oil in the lower part of the housing will cause permanent damage to the air conditioner. This also voids the warranty.

TEST FOR FUNCTIONALITY **BEFORE** MOUNTING THE AIR CONDITIONER TO THE ENCLOSURE.

Refer to nameplate for proper electrical current requirements, then connect power cord to a properly grounded power supply. Minimum circuit ampacity should be at least 125% of the amperage shown in the design data section for the appropriate model. No other equipment should be connected to this circuit to prevent overloading.

Operate the air conditioner for five (5) to ten (10) minutes. No excessive noise or vibration should be evident during this run period. The condenser blower (ambient air), the evaporator blower (enclosure air), and the compressor should be running.

Condenser air temperatures should be warmer than normal room temperatures within a few minutes.

The compressor is provided with automatic reset thermal overload protection. This thermo-switch is located and mounted inside the plastic enclosure clipped to the compressor. The switch operates when the compressor overheats due to clogged or dirty inlet air filter or if ambient air temperatures exceed nameplate rating or if enclosure dissipated heat loads exceed the rated capacity of the air conditioner. The thermal overload switch will actuate and stop compressor operation. The blowers will continue to operate and the compressor will restart after it has cooled to within the thermal overload cut-in temperature setting.

INSTALLATION

Step 1: Inspect air conditioner. Verify functionality before mounting the air conditioner, see Handling & Testing the Air Conditioner on page 1.

Step 2: Using the cutout dimensions shown in this manual, prepare the air “IN” and air “OUT” openings, and mounting bolt hole pattern for the enclosure.

Step 3: Using the gasket kit provided, install gaskets to air conditioner. See gasket kit illustration in this manual for proper location.

Step 4: Mount air conditioner on enclosure using mounting bolts and washers provided to secure unit to enclosure. Allow unit to remain upright for a minimum of five (5) minutes before starting. Caution: Air conditioner must be in upright position during operation.

Step 5: Refer to top of nameplate for electrical requirements. Connect the power cord to a properly grounded power supply. Use of an extension cord is not recommended. Electrical circuit should be fused with slow blow or HACR circuit breaker.

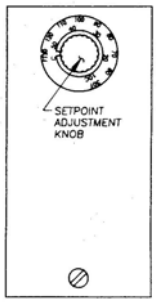
Step 6: When the unit is equipped with an automatic temperature controller, the controller is preset at the factory for your convenience and should not require adjustment.

SYSTEM CONTROLS

Level I Temperature Controller

The Level I controller is located inside the air conditioner. To adjust, disconnect power to the air conditioner. Open the front panel by loosening the front panel screw. Refer to figure 2 (page 4) to locate the controller. Turn the controller adjustment screw slot counter-clockwise to increase and clockwise to decrease the temperature set pint (see figure 1). The thermostat cooling setpoint is indicated by the alignment of the adjustment screw slot with the dial decal. After completing adjustment, close the front panel and tighten the front panel screw. Restore power to the air conditioner for operation.

Figure 1



Level II and III Temperature Controller

The Level II and III controller mounted on the air conditioner front panel and is factory set for standard operation. All operating parameters are programmable for custom applications. Refer to the Level II and III programming and Operating Instruction Manual, 10-1008-161 (standard) or 10-1008-162 (low ambient).

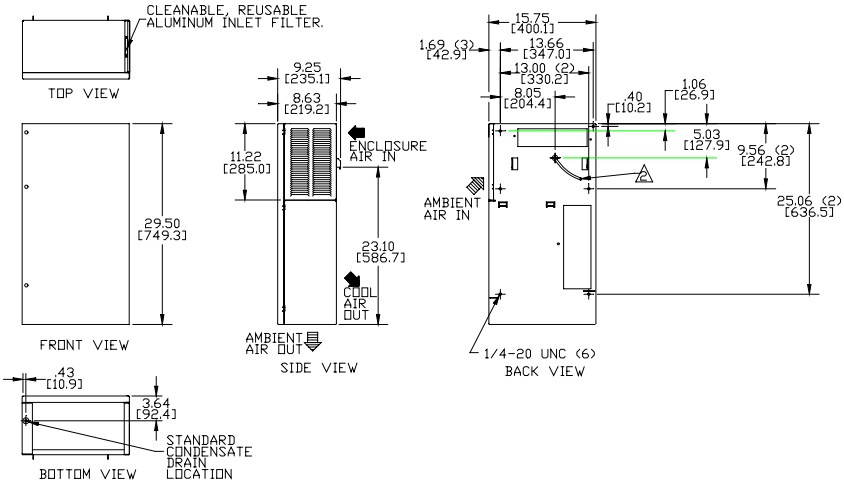
ProAir CR29

2000-4000 BTU/Hr. (586-1172 Watts) HxWxD: 29.5" (749) x 15.75" (400) x 8.63" (219)

Model	Voltage	Hz	Phase	BTU/Hr @ 131°F/131°F	Amps @ 131°F/131°F	BTU/Hr @ 131°F/131°F	Amps @ 95°F/95°F	MAX Amb Temp °F/°C	Shipping Weight Lbs/Kgs
CR29-0216-GXXX	115	50/60	1	2000/2200	7.4/7.4	1700/2000	7.0/6.0	131/55	98/44
CR29-0226-GXXX	230	50/60	1	2500/2700	4.6/3.9	1900/2300	4.4/3.3	131/55	98/44
CR29-0416-GXXX	115	50/60	1	3500/4000	13.5/13.5	2400/2800	10.7/9.6	131/55	118/54
CR29-0426-GXXX	230	50/60	1	3500/4000	6.7/6.6	2400/2800	5.9/5.3	131/55	118/54

-XXX will be replaced with a three-digit number designating all desired options. Consult the factory for specific model numbers.

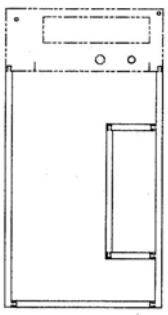
CR29 Model Drawing



CR29 Mounting Gasket Kit

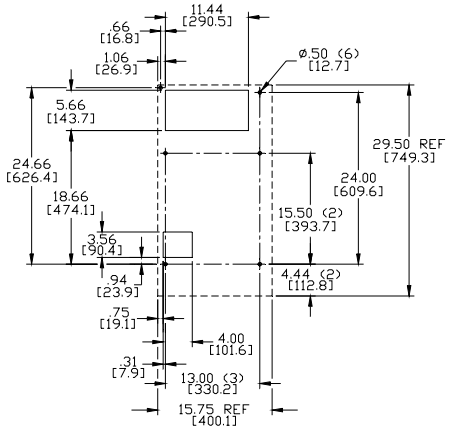
DESIGN NOTES:

1. GASKET KIT INCLUDED. APPLY GASKET TO REAR OF AIR CONDITIONER BEFORE MOUNTING ON ENCLOSURE.
2. SERVICE CORD TERMINATED WITH APPROPRIATE PLUG CAP.
3. MILLIMETER DIMENSIONS [ ] ARE FOR REFERENCE ONLY; DO NOT CONVERT TO INCH DIMENSIONS.
4. ALLOW AT LEAST 4" INLET AND 6" OUTLET CLEARANCE FOR PROPER AMBIENT AIR FLOW. ALLOW 20" ABOVE FILTER FOR REMOVAL.



MOUNTING GASKET KIT
PART NO. 29-4100-02 AS APPLIED TO REAR OF CR29.

CR29 Mounting Cutout Dimension



CUT-OUT NOTES:

1. DASH LINES REPRESENT AIR CONDITIONER
2. CUT-OUT DIMENSIONS FOR STANDARD PRODUCT ONLY

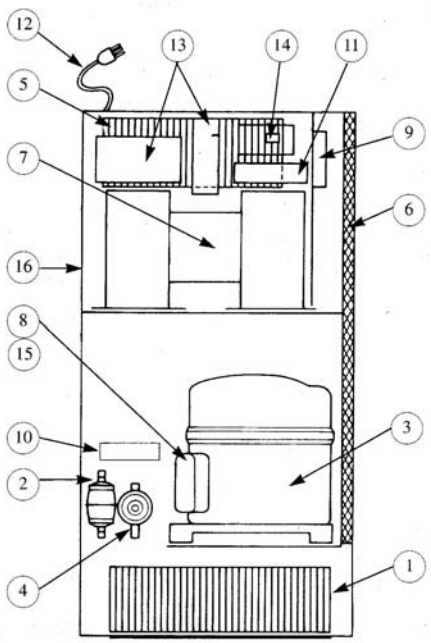
CR29 Components List (Table A)

Part Description	115 Volt 2200	115 Volt 4000
Blower, Condenser	29-4121-10	29-4121-10
Blower, Evaporator	29-4121-10	29-4121-10
Capacitor, Compressor	N/A	10-1032-13
Compressor	10-1016-23 SP	10-1016-26 SP
Thermal Overload, Compressor	10-1007-19	10-1007-45
Filter, Air, Reusable	10-1000-32	10-1000-32
Thermostat, SPST, 55-100F	52-6155-00	52-6155-00
Mounting Gasket Kit	29-4100-02	29-4100-02
Relay, Compressor	10-1028-20	10-1028-14
Power Cord	Consult factory	Consult factory

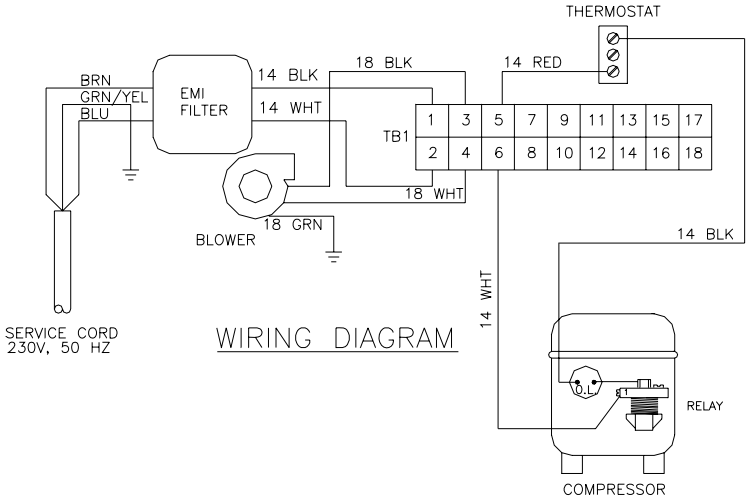
Part Description	230 Volt 2700	230 Volt 4000
Blower, Condenser	29-4120-10	29-4120-10
Blower, Evaporator	29-4120-10	29-4120-10
Capacitor, Compressor	10-1032-09	10-1032-14
Compressor	10-1026-74 SP	10-1026-77 SP
Thermal Overload, Compressor	10-1007-57	10-1007-51
Filter, Air, Reusable	10-1000-32	10-1000-32
Thermostat, SPST, 55-100F	52-6155-00	52-6155-00
Mounting Gasket Kit	29-4100-02	29-4100-02
Relay, Compressor	10-1028-07	10-1028-15
Power Cord	Consult factory	Consult factory

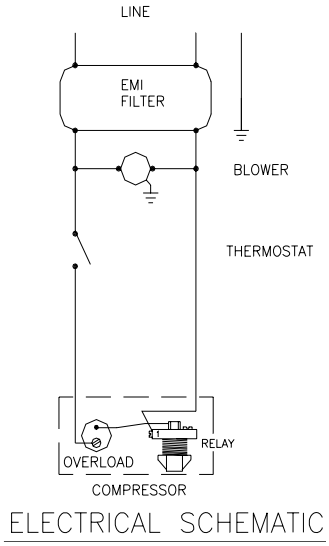
Part	Description	Part No.
1	Condenser Coil	29-4101-00
2	Filter, drier, refrigerant	52-6028-00
3	Compressor	See Table
4	Hot Gass bypass valve (CR29-04xx units only)	52-6027-11
5	Evaporator coil	29-4102-00
6	Inlet air filter, reusable aluminum	10-1000-32
7	Blower (115V) Blower (230V)	29-4121-10 29-4120-10
8	Compressor thermal overload switch	See Table
9	Capacitor, compressor (CR29-04xx units only)	See Table
10	Capacitor, compressor (CR29-0226 units only)	See Table
11	Terminal block	086912
12	Power cord	Consult Factory
13	Temperature controller	Consult Factory
14	Relay, compressor (CR29-04xx units only)	See Table A
15	Relay, compressor (CR29-02xx units only)	See Table A
16	Mounting gasket kit	29-4100-02

Figure 2



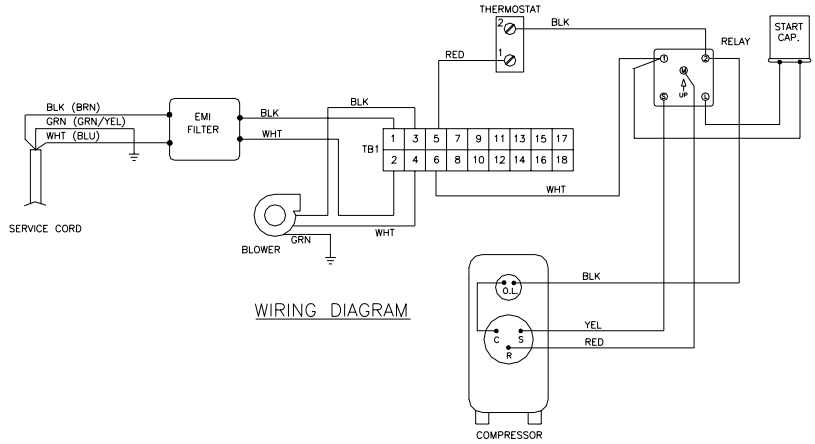
CR29 Wire Diagram, Level I, 2000 BTU

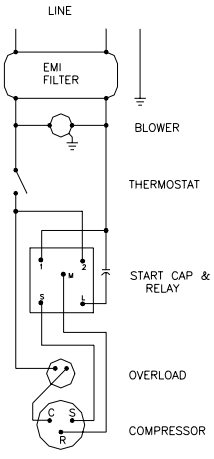




ELECTRICAL SCHEMATIC

CR29 Wire Diagram, Level I, 4000 BTU

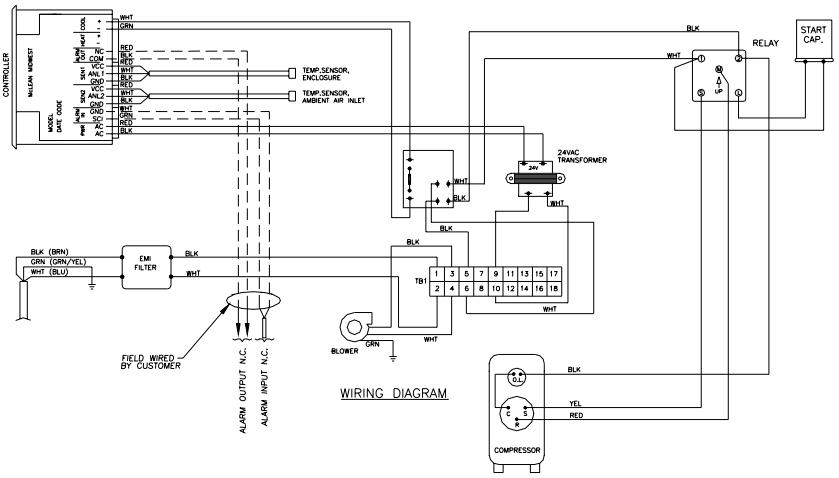


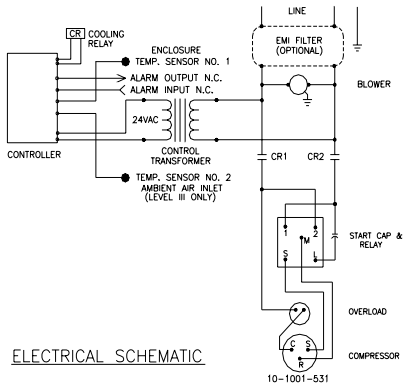


ELECTRICAL SCHEMATIC

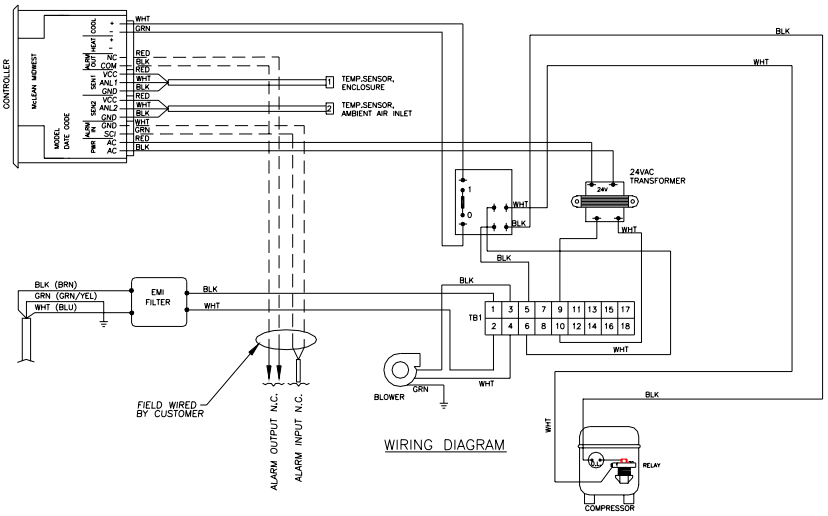
NOTE: For voltage, hertz, and options not shown in this manual, refer to the wiring diagram attached to the unit.

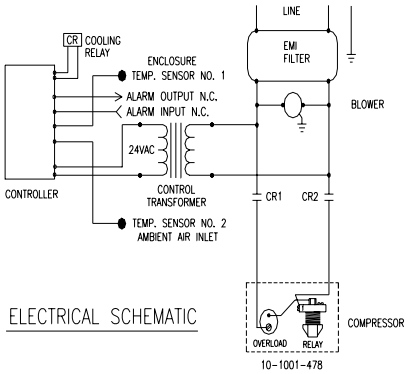
CR29 Wire Diagram, Level II & III, 2000 BTU





CR29 Wire Diagram, Level II & III , 4000 BTU





NOTE: For voltage, hertz, and options not shown in this manual, refer to the wiring diagram attached to the unit.

TEMPERATURE CONTROL

The electromechanical thermostat is factory preset to 75^{o}F/23^{o}C. To change the temperature setting, remove the nylon plug from the back face of the unit. Use a standard screwdriver to adjust thermostat. For cooler temperatures turn clockwise, for warmer temperatures turn counterclockwise.

PRINCIPLES OF OPERATION

If electrical power to the air conditioner is interrupted and reapplied immediately, (within 3 to 5 seconds), the compressor may not restart due to the high back pressure of the compressor. It takes a minimum of one (1) minute after shut-down for the compressor suction and discharge pressures to equalize in order for the air conditioner to restart.

Operating the air conditioner below the minimum ambient temperature or above the maximum ambient temperatures indicated on the nameplate voids all warranties.

It is recommended that the warranty section of this manual be read in order to familiarize yourself with parameters of restricted operation.

The moisture that the enclosure air can contain is limited. If moisture flows from the drain tube continuously this can only mean that ambient air is entering the enclosure. Be aware that frequent opening of the enclosure's door admits humid air which the air conditioner must then dehumidify.

MAINTENANCE

Compressor

The compressor requires no maintenance. It is hermetically sealed, properly lubricated at the factory and should provide years of satisfactory operating service.

Should the refrigerant charge be lost, recharging ports (access fittings) on the suction and discharge sides of the compressor are provided for recharging and/or checking suction and discharge pressures.

Under no circumstances should the access fitting covers be loosened, removed or tampered with.

Breaking of seals on compressor access fittings during warranty period will void warranty on hermetic system.

Recharging ports are provided for the ease and convenience of reputable refrigeration repair service personnel for recharging the air conditioner.

Inlet Air Filter

Proper maintenance of the inlet air filter, located behind the right side panel, will assure normal operation of the air conditioner. If filter maintenance is delayed or ignored, the maximum ambient temperatures under which the unit is designed to operate will be decreased.

If the compressor's operating temperature increases above designed conditions due to a dirty or clogged filter (or plugged condenser coil), the air conditioner's compressor will stop operating due to actuation of the thermal overload cut-out switch located on the compressor housing. As soon as the compressor temperature has dropped to within the switch's cut-in setting, the compressor will restart automatically. However the above condition will continue to take place until the filter or coil has been cleaned. It is recommended that power to the air conditioner be interrupted intentionally when abnormally high compressor operating temperature causes automatic shut-down of the unit.

The above described shut-down is symptomatic of a clogged or dirty filter, thus causing a reduction in cooling air flow across the surface of the compressor and condenser coil.

Do not run the air conditioner for extended periods of time with the filter removed. Particles of dust, lint, etc., can plug the fins of the condenser coil which will give the same reaction as a plugged filter. The condenser coil is not visible through the filter opening, so protect it with a filter.

Continued operation under the above conditions can and will damage and shorten compressor life. The air conditioner is available with an easily removable inlet filter to facilitate necessary cleaning. There should be no reason to neglect this necessary maintenance.

How To Remove, Clean or Install a New Inlet Air Filter

RP aluminum washable air filters are designed to provide excellent filtering efficiency with a high dust holding capacity and a minimum amount of resistance to air flow. Because they are constructed entirely of aluminum they are lightweight and easy to service. Optimum filter performance is maintained by recoating the filters after washing with RP Super Filter Coat adhesive. To achieve maximum performance from your air handling equipment, air filters should be cleaned on a regular basis.

The inlet air filter is located behind the right side panel. To access filter, pull from slot in top cover. The filter may now be cleaned or new filter installed.

Cleaning Instructions:
1. Flush the filter with warm water from the exhaust side to the intake side. DO NOT USE CAUSTICS.

2. After flushing allow filter to drain. Placing it with a corner down will assure complete drainage.

3. Recoat the filters with RP Super Filter Coat adhesive. When spraying filter do so from both sides for maximum concentration of adhesive.

Condenser and Evaporator Blower

Blower motor requires no maintenance. All bearings, shafts, etc. are lubricated during manufacturing for the life of the motor.

If the blower motor should fail, it is not necessary to remove the air conditioner from the cabinet or enclosure to replace the blower. The blower is mounted on its own bulkhead and is easily accessible by opening the front cover.

Caution: Operation of the air conditioner in areas containing airborne caustics or chemicals can rapidly deteriorate filters, condenser coils, blower and motor, etc. Contact McLean Thermal for special recommendations.

Refrigerant Loss

Each air conditioner is thoroughly tested prior to leaving the factory to insure against refrigeration leaks. Shipping damage or microscopic leaks not found with sensitive electronic refrigerant leak detection equipment during manufacture may require repair or recharging of the system. This work should only be performed by qualified professionals, generally available through a local, reputable air conditioning repair or service company.

Refer to the data on the nameplate which specifies the type of refrigerant and the charge size in ounces.

Before recharging, make sure there are no leaks and that the system has been properly evacuated into a deep vacuum.

TROUBLE SHOOTING

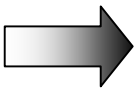
Basic Air Conditioning Trouble Shooting Check List

1. Check manufacturer's nameplate located on the unit for *correct power supply.*

2. Turn the power to the unit on. The evaporator (Enclosure or "COLD" air) blower should come on. Is there airflow?

   YES, proceed to step # 3.

   NO, possible: Open motor winding
   Stuck blower motor
   Obstructed wheels/blades

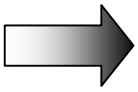
   

   Repair or Replace defective parts.

3. Check thermostat setting? Adjust thermostat to the lowest setting. This should turn the condenser blower and the compressor on. Did condenser blower and compressor come on when the thermostat was turned on?

   YES, proceed to step #4.

   NO, possible: Defective thermostat

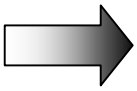
   Replace part.

4. Are both blowers and the compressor running? If not the unit will not cool properly.

5. Check condenser (Ambient or "HOT" air) blower for airflow. Is there airflow ?

   YES, proceed to step # 6.

   NO, possible: Defective thermostat
   Open motor winding
   Stuck blower motor
   Obstructed wheels/blades

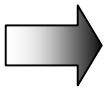
   

   Repair or Replace defective parts.

6. Carefully check the compressor for operation - motor should cause slight vibration, and the outer case of the compressor should be warm.

   YES, wait 5 minutes, then proceed to step #7.

   NO, possible: Defective thermostat
   Defective capacitor
   Defective overload
   Defective relay

   Repair or Replace defective parts.

7. Make sure the coils are clean. Then check evaporator "air in" and "air out" temperatures. If the temperatures are the same:

   Possible loss of refrigerant
   Possible bad valves in the compressor

   Repair or Replace defective parts.

8. To check for a bad thermostat. Turn power to the unit off. Remove control box cover, place both thermostat wires onto one terminal (replace control box cover for safety). This will bypass the switch in the thermostat. Turn the power on. If both blowers and the compressor come on, the thermostat needs to be replaced.

Symptoms and Possible Causes:

SYMPTOM	POSSIBLE CAUSE
Unit won't cool	* Blower not running * Compressor not running * Compressor runs, but has bad valves * Loss of refrigerant
Compressor tries to start but won't run	* Low line voltage at start. Should be +/-10% rated voltage * Compressor motor stuck * Bad relay * Bad overload switch * Bad run/start capacitor
Unit blows breakers	* Under sized breaker/fuse or not time delayed * Short in system
Getting water in enclosure	* Drain plugged * Drain tube kinked * Enclosure not sealed (allowing humidity in)

For additional technical information(ie., amp draw, pressures, temperatures) contact McLean Thermal at 763-323-8200.

McLEAN THERMAL WARRANTY

Please note: Warranty effective at time of shipment.

McLean Thermal warrants that all material and workmanship are free of defects in quality which impair the usefulness of the air conditioner or heat exchanger for a period of five (5) years for non-operating parts, except for the filter; and for one (1) year for everything else when installed and operated under the following conditions:

A. Maximum voltage variation no greater than plus or minus 10% of nameplate nominal rating.
B. Maximum frequency variation no greater than plus or minus 3 Hz. of nameplate nominal rating.
C. Must not exceed minimum and maximum stated temperatures on the nameplate.
D. Not to exceed (BTU/Hr.) rating, including any heat sink, as indicated on the nameplate.
E. The unit must not be restarted for a period of one (1) minute after intentional or accidental shut-off. (This does not apply to heat exchanger or filter fan.)

McLean Thermal warrants that all material and workmanship are free of defects in quality which impair the usefulness of the filter fan package and all custom air conditioners and heat exchangers for a period of one (1) year, except for the filter, when installed and operated under conditions A, B, C and D as listed above.

Not covered in this warranty is damage to the air conditioner or heat exchanger due to the introduction of other than the nameplate-designated refrigerant. Operation of any McLean Thermal product that has not been designed with proper protective coatings and/or options and is in an abnormal or corrosive environment voids the warranty. Prolonged operation with dirty filters also voids the warranty.

Should any part prove defective within the above warranty period, the customer may choose to return the defective product that is under warranty to McLean Thermal for repair at no charge or the customer has the option to repair the defective products at his own expense and McLean Thermal will supply repair parts at no charge providing the defective part is returned and found to have failed under warranty. Parts supplied as warranty replacement parts will assume the balance of the warranty on the part returned for warranty consideration.

Please be advised: According to the Federal Register, no person maintaining, servicing, repairing, or disposing of appliances may knowingly vent or otherwise release into the environment any class I or class II substance used as refrigerant.

McLean Thermal assumes no liability beyond the repair or replacement of its own product. Customer modification of any McLean Thermal product voids this warranty.

The purchaser assumes the responsibility of grounding the unit and installing it in accordance with local electrical and safety codes, as well as the National Electric Code (NEC) and OSHA.

This express warranty constitutes the entire warranty with respect to the PRODUCT and IS IN LIEU OF ALL OTHERS, EXPRESS OR IMPLIED, INCLUDING ANY WARRANTY OR MERCHANTABILITY AND WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE AND IN NO EVENT IS MCLEAN THERMAL RESPONSIBLE FOR ANY CONSEQUENTIAL DAMAGES OF ANY NATURE WHATSOEVER.

HOLD HARMLESS

In consideration of purchase of equipment from McLean Thermal by a customer, McLean Thermal agrees to indemnify and hold harmless such customer and users with a defense, as to any claim, demand, statutory court cost, fees for attorney's services provided for below, and/or judgment, for actual of alleged patent infringement in any country, arising out of the use, sale or advertisement of any equipment manufactured or sold by McLean Thermal to McLean Thermal's own specifications, provided that the customer or user shall promptly notify McLean Thermal in writing of any such claim or demand, provided further that McLean Thermal shall have the right and option to undertake and control the entire defense of such claim, or demand instituted against the customer or user, but limited to the products made or sold by McLean Thermal, through counsel selected by McLean Thermal, and to settle and pay any claim award arising out of such claim or demand, and provided further that the customer or user will provide such information and assistance as McLean Thermal may request subject to reimbursement by McLean Thermal for any out-of pocket expense incurred in providing such requested assistance. Liability of McLean Thermal for any infringement or claim thereof shall be limited to the above undertaking.

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