

# INSTRUCTION MANUAL

## **T-Series™** **Air Conditioner** *T43 Model*



**McLean**®  
COOLING TECHNOLOGY

*A Pentair Company*

*Protecting Electronics.  
Exceeding Expectations.™*

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10-1008-145-Rev. 10

# **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 MAI 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 MAI -- within 15 days of delivery. Save the carton and packing material and request an inspection. Then file a claim with the delivering carrier.

MAI 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 impeller (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 screws provided. “EZ” mount tabs can be used to hold unit on enclosure while mounting in place. 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: When routing the drain tube, caution should be taken to keep it from kinking or being elevated above the exit point of the air conditioner. The drain tube must be on a continuous downward slope. A slight elevation of the tube could result in secondary trap. **FAILURE TO FOLLOW THESE INSTRUCTIONS COULD RESULT IN OVERFLOWING OF THE CONDENSATE DRAIN PAN.**

Step 6: 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.

## T43 Series

6000-10000 Btuh (1756-2928 Watts)

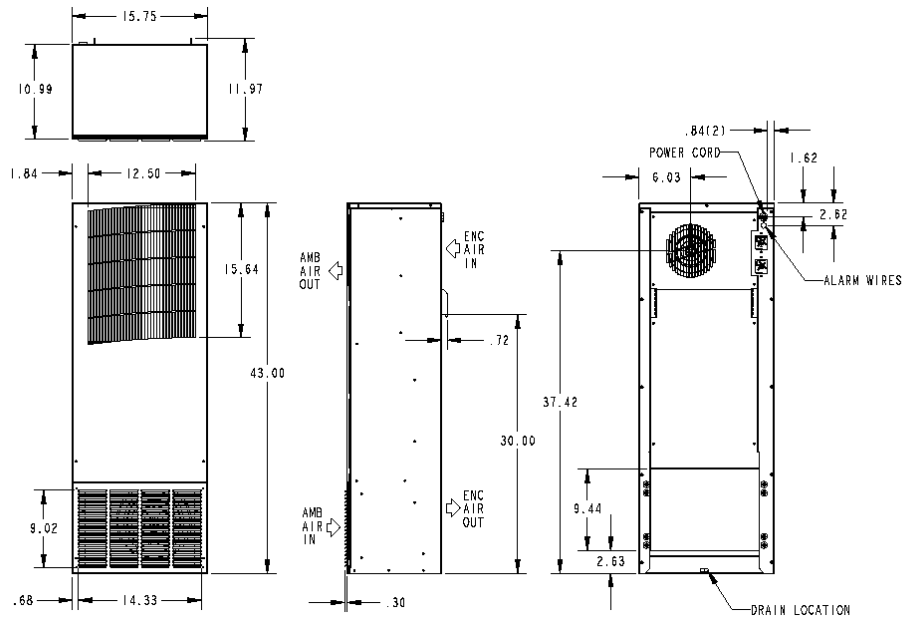
H x W x D: 43" (1092) x 15.75" (400) x 11" (279)

Model	Voltage	Hz	Full Load Amps	Phase	BTU/Hr @ Max Amb Temp	Max Amb Temp °F/°C	Shipping Weight Lbs/Kgs
T43-0616-G15X	115	50/60	8.6	1	6310/6680	131/55	125/57
T43-0626-G15X	230	50/60	3.8	1	6520/6770	131/55	125/57
T43-0816-G15X	115	50/60	10.4/11.2	1	7900/8600	131/55	125/57
T43-0826-G15X	230	50/60	5.2/5.4	1	7400/8200	131/55	125/57
T43-1016-G15X	115	50/60	16/20	1	9670/10290	131/55	125/57
T43-1026-G15X	230	50/60	9.0	1	10040/10670	131/55	125/57

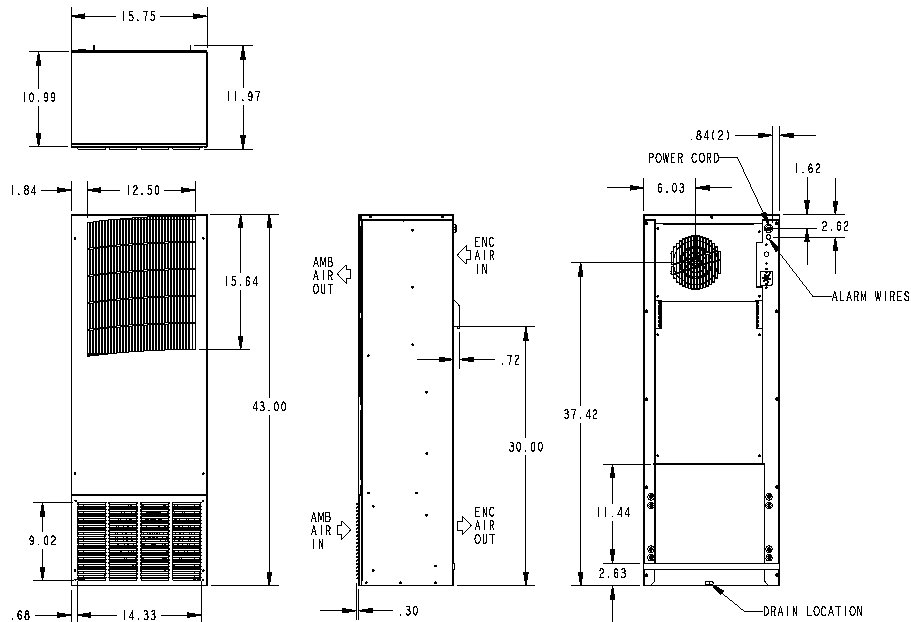
-X will be replaced with a three-digit number designating all desired options. Consult the factory for specific model numbers.

## T43 Model Drawings

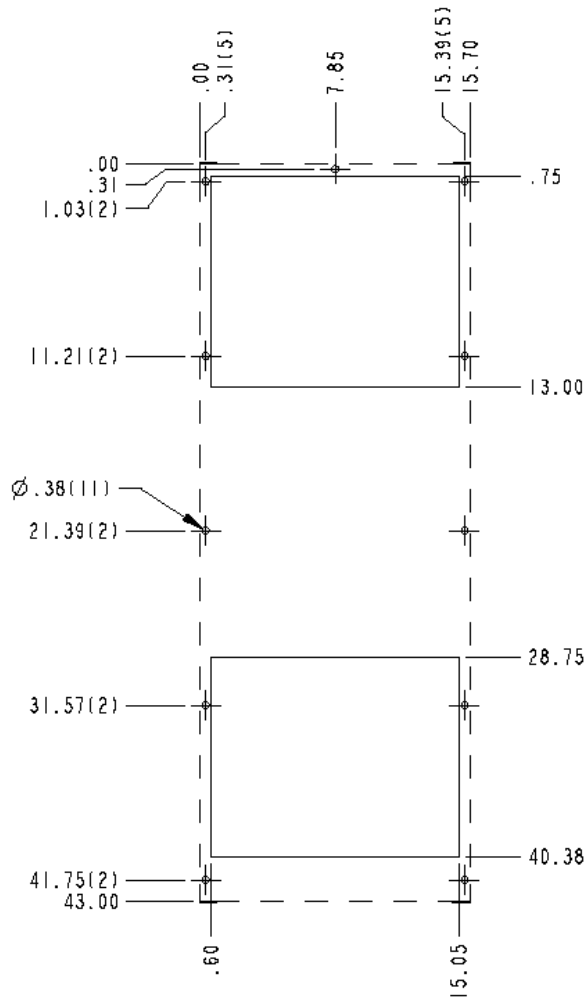
### 6K BTU



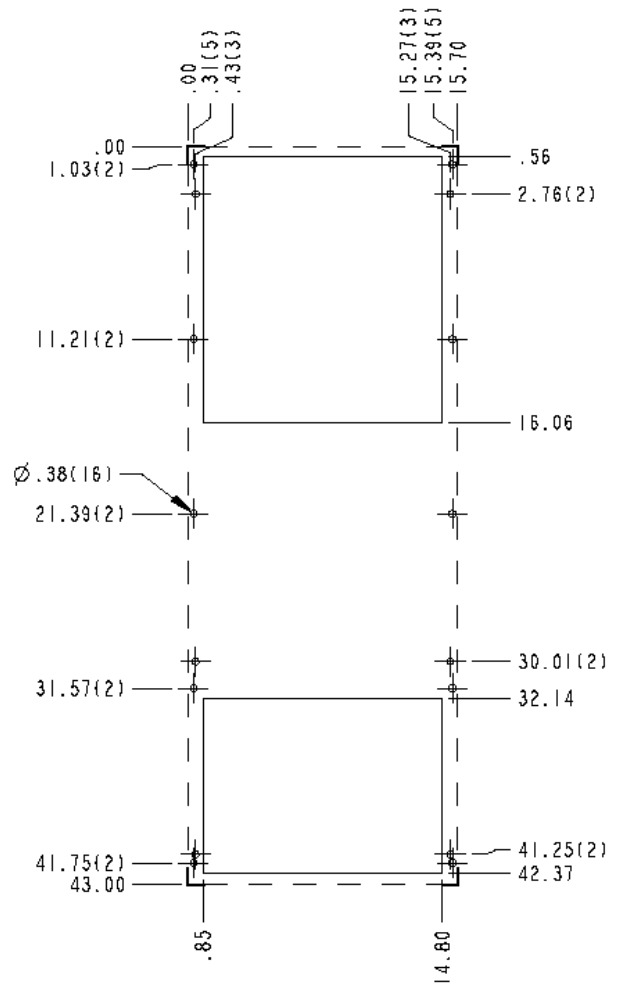
### 8-10K BTU



# T43 Mounting Cutout Dimensions



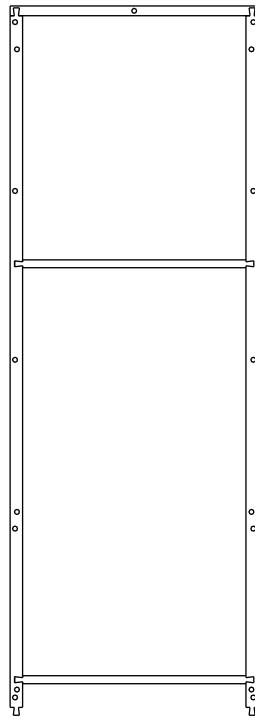
**External Cutout**



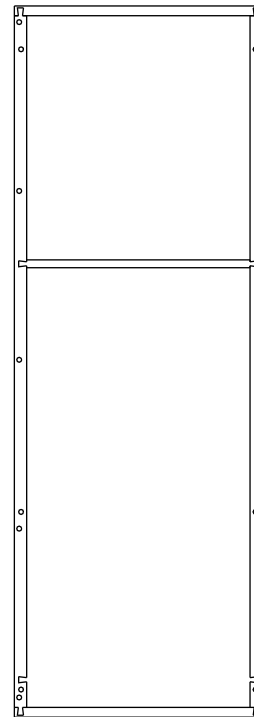
**Internal Cutout**

# T43 Mounting Gasket Kit

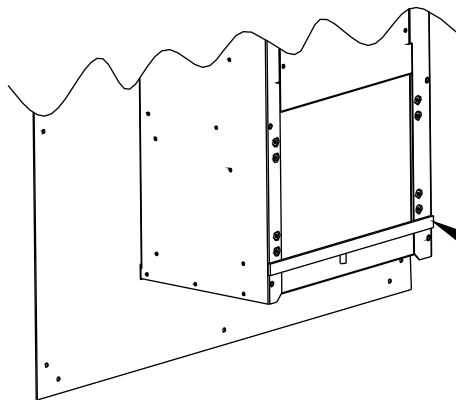
MOUNTING GASKET KIT, 45-1000-50 INCLUDED.  
APPLY GASKET TO AIR CONDITIONER BEFORE  
MOUNTING TO ENCLOSURE



EXTERNAL MOUNT  
(EVAP SIDE)



INTERNAL MOUNT  
(COND SIDE)



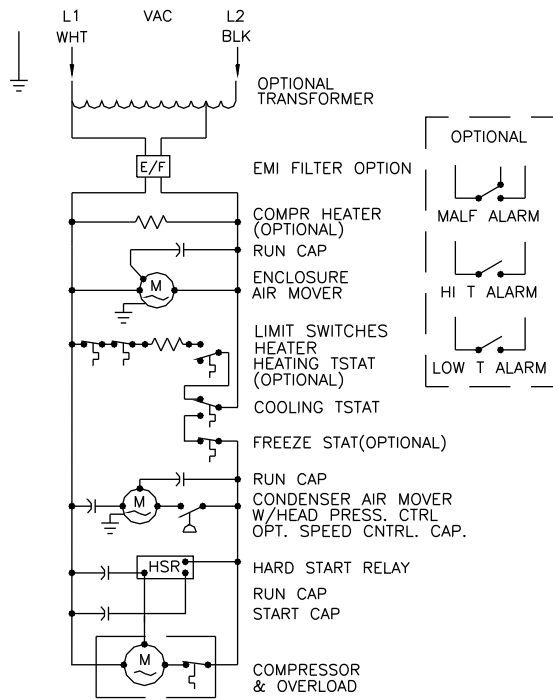
NOTE:  
ADD STRIP TO  
EVAP PAN IF  
INTERNALLY MOUNTED  
(INCLUDED)

## T43 Series Components List

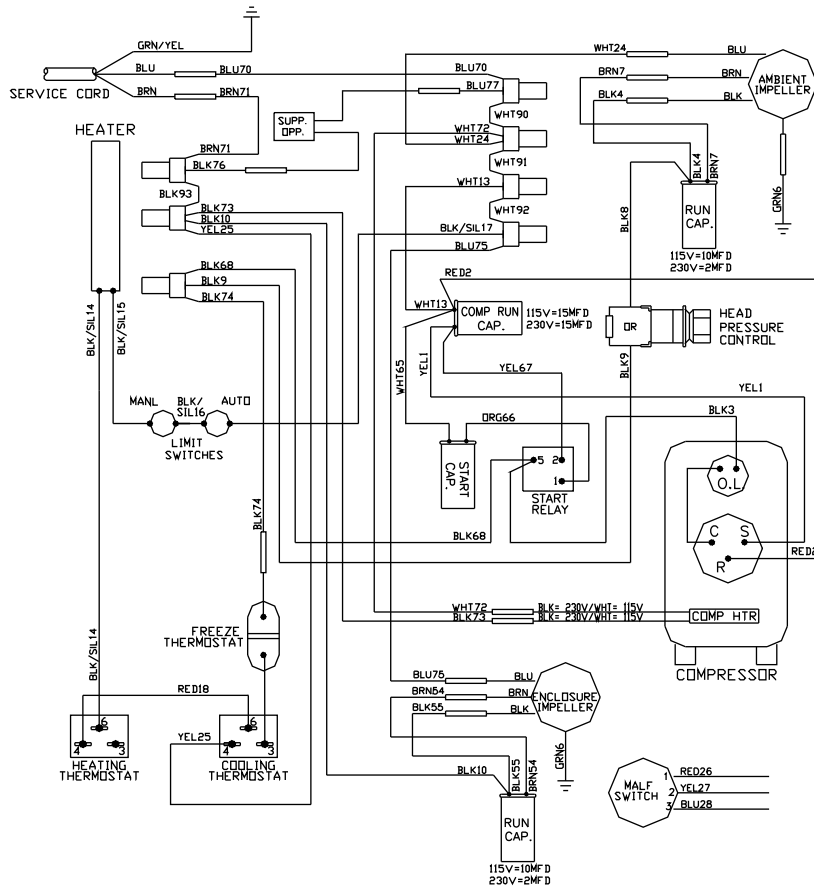
Part Description	Part Number (115 Volt)		
	6000 BTU	8000 BTU	10000 BTU
Capacitor, Compressor, Start	10-1032-05	10-1032-08	10-1032-32
Capacitor, Compressor, Run	S-6173	52-6032-01	52-6032-06
Capacitor, Impeller, Condenser	52-6084-01	52-6084-01	52-6031-03
Capacitor, Impeller, Evaporator	52-6084-01	52-6084-01	52-6084-01
Coil, Condenser	45-6051-00	45-6051-00	45-6051-00
Coil, Evaporator	43-6025-00	45-6050-00	45-6050-00
Compressor, RKA	10-1016-86	10-1016-85	10-1016-88
Filter, Air, Reusable	10-1000-96	10-1000-96	10-1000-96
Filter/Dryer	52-6028-00	52-6028-00	52-6028-00
Freeze Stat	10-1033-29	10-1033-29	10-1033-29
Head Pressure Control Switch	52-6104-26	52-6104-26	52-6104-26
Impeller, Condenser	10-1091-123	10-1091-123	10-1091-89
Impeller, Evaporator	10-1091-123	10-1091-123	10-1091-123
Relay, Compressor Start	10-1042-20	10-1042-07	10-1042-17
Service Cord	52-6035-143	52-6035-143	52-6035-85
Thermal Expansion Valve	99-0540-39 (cap tube)	10-1040-37	10-1040-38
Thermal Overload, Compressor	TTC=8300MRAL19 OR TI=MRA4761-114	TTC=8300MRAL22 OR TI=MRA4760-114	Internal
Thermostat, SPST, 55-100F	10-1061-16	10-1061-16	10-1061-16

Part Description	Part Number (230 Volt)		
	6000 BTU	8000 BTU	10000 BTU
Capacitor, Compressor, Start	10-1032-14	10-1032-08	10-1032-08
Capacitor, Compressor, Run	S-6173	S-6173	52-6032-01
Capacitor, Impeller, Condenser	52-6084-02	52-6084-02	52-6084-05
Capacitor, Impeller, Evaporator	52-6084-02	52-6084-02	52-6084-02
Coil, Condenser	45-6051-00	45-6051-00	45-6051-00
Coil, Evaporator	43-6025-00	45-6050-00	45-6050-00
Compressor, RKA	10-1026-109	10-1026-108	10-1026-107
Filter, Air, Reusable	10-1000-96	10-1000-96	10-1000-96
Filter/Dryer	52-6028-00	52-6028-00	52-6028-00
Freeze Stat	10-1033-29	10-1033-29	10-1033-29
Head Pressure Control Switch	52-6104-26	52-6104-26	52-6104-26
Impeller, Condenser	10-1091-124	10-1091-124	10-1091-90
Impeller, Evaporator	10-1091-124	10-1091-124	10-1091-124
Relay, Compressor Start	10-1042-21	10-1042-08	10-1042-17
Service Cord	52-6035-141	52-6035-141	52-6035-141
Thermal Expansion Valve	99-0540-39 (cap tube)	10-1040-37	10-1040-38
Thermal Overload, Compressor	TTC=8300MRAL20 OR TI=MRA4765-114	TTC=8300MRAL23 OR TI=MRA1706-114	TTC=8300MRAL30 OR TI=MRA4764-114
Thermostat, SPST, 55-100F	10-1061-16	10-1061-16	10-1061-16

## T43 Generic Schematic (actual unit options may vary)



## T43 Generic Wire Diagram (actual unit options may vary)





## **TEMPERATURE CONTROL**

The electromechanical thermostat is factory preset to 75°F/24°C. To change the temperature setting, remove the nylon plug (if applicable) from the back face of the unit. Use a standard screwdriver to adjust thermostat. For cooler temperatures turn clockwise, for warmer temperatures turn counterclockwise. The set point of the thermostat equals the off temperature. The on temperature is 10°F/5°C above the set point.

### **UNITS WITH HEAT**

The heating thermostat is factory preset to 55°F/13°C. The set point for the heating thermostat equals the on temperature. The off temperature is 10°F/5°C above the set point.

## **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 front cover, 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 lower access cover. To access filter, pull ring protruding from slot in bottom of front cover, or remove the lower access cover by removing the two screws at the bottom of unit, the filter is held in the cover, slide filter out. 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 Air Movers**

Impeller motors require no maintenance. All bearings, shafts, etc. are lubricated during manufacturing for the life of the motor.

If the condenser impeller motor (ambient impeller) should fail, it is not necessary to remove the air conditioner from the cabinet or enclosure to replace the blower. The condenser blower is mounted on its own bulkhead and is easily accessible by removing the lower access panel.

Caution: Operation of the air conditioner in areas containing airborne caustics or chemicals can rapidly deteriorate filters, condenser coils, blowers and motors, etc. Contact MAI 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.

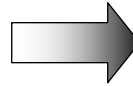
# TROUBLE SHOOTING

## 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) impeller should come on. Is there airflow?

YES, proceed to step # 3.

NO, possible:           Open motor winding  
                              Stuck impeller motor  
                              Obstructed wheel



**Repair or Replace  
defective part**

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

YES, proceed to step #4.

NO, possible:           Defective thermostat



**Replace part**

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

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

YES, proceed to step # 6.

NO, possible:           Defective thermostat  
                              Open motor winding  
                              Stuck impeller motor  
                              Obstructed wheel



**Repair or Replace  
defective part**

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 part**

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 part**

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 pass 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

- \* Clogged fins on coil(s)
- \* Dirty filter
- \* Impellers 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 contactor
- \* 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)
- \* Mounting gasket damaged

**For additional technical information (i.e., amp draw, pressures, temperatures) contact MAI at 317-257-6811.**

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Indianapolis, IN 46228

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317-257-1590 fax

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