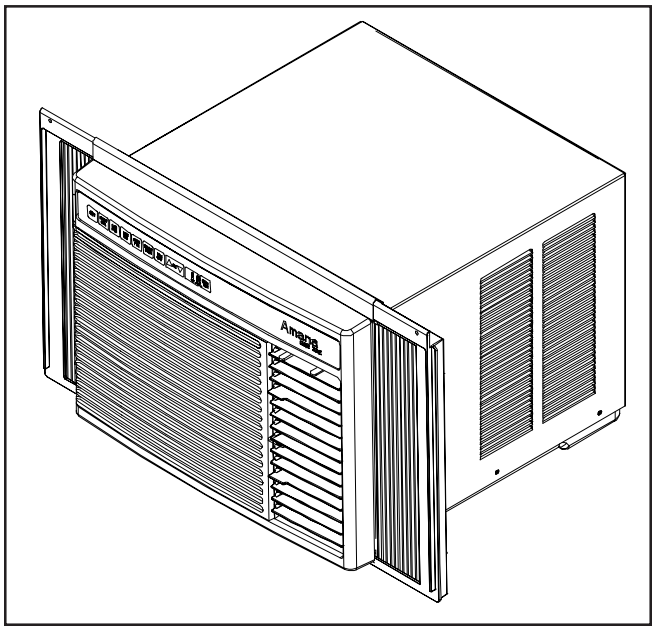
Base manual covers general information on Compact Series Mainline Room Air Conditioners. Refer to individual technical sheets for information on specific models.

Service

Compact Series Mainline Room Air Conditioners



This manual to be used by qualified appliance technicians only. Amana does not assume any responsibility for property damage or personal injury for improper service procedures done by an unqualified person.

Amana

RS4100008
Revision 0
March 1998

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Important Information

Pride and workmanship go into every product to provide our customers with quality products. It is possible, however, that during its lifetime a product may require service. Products should be serviced only by a qualified service technician who is familiar with the safety procedures required in the repair and who is equipped with the proper tools, parts, testing instruments and the appropriate service manual. **REVIEW ALL SERVICE INFORMATION IN THE APPROPRIATE SERVICE MANUAL BEFORE BEGINNING REPAIRS**.

Important Notices for Consumers and Servicers

⚠ WARNING

To avoid risk of serious injury or death, repairs should not be attempted by unauthorized personal, dangerous conditions (such as exposure to electrical shock) may result.

⚠ CAUTION

Amana will not be responsible for any injury or property damage from improper service procedures. If performing service on your own product, assume responsibility for any personal injury or property damage which may result.

To locate an authorized servicer, please consult your telephone book or the dealer from whom you purchased this product. For further assistance please call:

1-800-628-5782 (NATL SVC) **OR CONTACT**

Consumer Affairs Department
Amana
Amana, Iowa 52204

If outside the United States contact:

Amana
ATTN: Consumer Affairs Department
Amana, Iowa, USA 52204
Telephone: (319) 622-5511
Facsimile: (319) 622-2180
TELEX: 4330076 AMANA
CABLE: "AMANA", AMANA, IOWA, USA

Recognize Safety Symbols, Words, and Labels

⚠ DANGER

DANGER—Immediate hazards which **WILL** result in severe personal injury or death.

⚠ WARNING

WARNING—Hazards or unsafe practices which **COULD** result in severe personal injury or death.

⚠ CAUTION

CAUTION—Hazards or unsafe practices which **COULD** result in minor personal injury or product or property damage.

Important Safety Information

General Information

This Service Manual describes the operation, disassembly, troubleshooting, and repair of Amana Compact Mainline Room Air Conditioners. It is intended for use by authorized servicers who troubleshoot and repair these units.

NOTE: It is assumed that users of this manual are familiar with the use of tools and equipment used to troubleshoot and repair electrical, mechanical, and refrigeration systems; and understand the terminology used to describe and discuss them.

Amana urges you read and follow all safety precautions and warnings contained in this manual. Failure to comply with safety information may result in severe personal injury or death.

Related Publications

This is a base service manual, covering a range of similar models. It is intended to be used in conjunction with the Parts Manual and Technical Sheet covering specific model being serviced.

General Precautions and Warnings

⚠ WARNING

To avoid risk of personal injury or death due to electrical shock, disconnect electrical power to unit before attempting to service the unit.

⚠ WARNING

To avoid risk of personal injury or death due to electrical shock, DO NOT, under any circumstances, alter the grounding plug. Air conditioner must be grounded at all times. Do not remove warning tag from power cord. If a two-prong (non-grounding) wall receptacle is encountered, contact a qualified electrician and have the receptacle replaced with a properly grounded wall receptacle in accordance with the National Electrical Code.

⚠ WARNING

To avoid risk of personal injury or death due to electrical shock, grounding wires and wires colored like grounding wires are **NOT** to be used as current carrying conductors. The standard accepted color coding for ground wires is **green** or **green with a yellow stripe**. Electrical components such as the compressor and fan motor are grounded through an individual wire attached to the electrical component and to another part of the air conditioner. Grounding wires should not be removed from individual components while servicing, unless the component is to be removed and replaced. It is extremely important to replace all removed grounding wires before completing service.

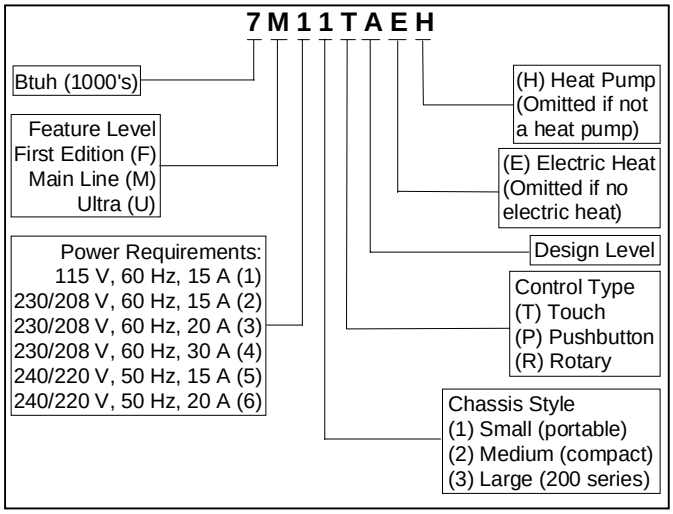
⚠ WARNING

To avoid risk of heat exposure, which may cause death or severe illness, air conditioner must be monitored when cooling persons or animals who cannot react if unit malfunctions or shuts down.

Product Identification

Every Amana® Room Air Conditioner has an identification plate showing the model number, P (manufacturing part) number, serial number, etc. of unit. Identification plate is located on front of unit, behind air filter, in lower left corner. Use plate to positively identify specific model of unit being serviced.

The following diagram explains how to interpret Amana Mainline Room Air Conditioner model numbers. Model numbers contain information about cooling capacity, chassis type, power requirements, feature set, and design series for unit.



Design Information

Many design features are incorporated into all Amana® Mainline Model Room Air Conditioners. Basic concepts of balance in refrigeration and air handling components are used in all models.

The outer case of unit, regardless of style, is designed to help circulate air across evaporator, condenser, compressor and fan motor. It must be in place to ensure maximum efficiency of unit, to prevent overheating of components, and to maintain system balance and capacity.

Structural components of room air conditioners are heavy, zinc-coated steel that is further treated with zinc phosphate. Exterior parts are hot-dipped galvanized steel that is chemically pretreated then primed with electro-coated primer, and finished with a baked-on polyester top coat.

Modular design allows easier and faster disassembly and assembly.

Acoustical and thermal insulation, used on partition panel and in side air discharge plenum, reduce noise and increase efficiency.

Large evaporator and condenser coils are designed to provide maximum heat transfer. Coils are manufactured from rifled copper tubing and rippled edge aluminum fins to achieve maximum heat transfer. Vibration loops in refrigeration tubes dampen and isolate system vibrations.

Fan motors are sealed to prevent moisture and dirt contamination of motor windings. Motor bearings are permanently lubricated. Large blower wheels and condenser fans reduce noise levels.

Condenser fans contain an integral slinger ring for condensate removal. The slinger ring picks-up condensate and sprays it against the condenser, increasing condenser evaporative cooling. In extreme humidity conditions, excess condensate drains from base pan through an overflow hole under compressor.

Condensate overflow can be routed away from home by installing condensate drain cup (included with unit), then attaching a ½-inch hose to cup.

Sizing Instructions

Sizing Room Air Conditioners for Area Being Cooled

Many complaints about room air conditioners are a result of units that are oversized or undersized for a given area. Oversized units cool an area before humidity can be adequately removed, resulting in air that feels cold and clammy. Undersized units do not provide sufficient cooling.

The following table contains guidelines for properly sizing a room air conditioner for a given area. To size unit:

1. Determine size (in square feet) of area to be cooled, then locate size in table.
2. Based on location of room in building, select appropriate column in table associated with size of room:
   - Room below attic; insulated ceiling above.
   - Room with occupied room above.
   - Top floor under insulated roof.

Number shown in table cell corresponding to room size/ location is approximate capacity (in Btu/hour) required of an air conditioner to ensure adequate cooling of area.

NOTE: Make sure additional conditions shown at bottom of table are taken into account when determining size of unit.

Size of Area to be Cooled (in square feet)	Required Air Conditioner Cooling Capacity—Btu/hour		
	Room below attic; insulated ceiling above	Room with occupied room above	Top floor under insulated roof (no attic)
100	3500 to 4000	4000 to 4500	4500 to 5000
150	4000 to 5000	4500 to 5000	5500 to 6500
200	4500 to 5500	5000 to 6000	6000 to 7000
250	5000 to 6000	5500 to 6500	7500 to 8500
300	6000 to 7000	6500 to 7500	8500 to 9500
350	6500 to 7500	7000 to 8000	10000 to 11000
400	7000 to 8000	8000 to 9000	11000 to 12000
450	7500 to 8500	8500 to 9500	11500 to 12500
500	8000 to 9000	9500 to 10500	13000 to 14000
600	9500 to 10500	11000 to 12000	15000 to 16000
700	10500 to 11 500	12000 to 13000	17000 to 18000
800	11500 to 13000	13500 to 14500	19000 to 20000
900	12500 to 14000	14500 to 16000	21000 to 22000
1000	13500 to 15000	15500 to 17000	23000 to 24500
1200	16000 to 17500	18000 to 20000	26500 to 28500
1400	18000 to 20000	21000 to 23000	30500 to 32500
1600	20000 to 22000	23000 to 25000	
1800	22000 to 24000	25500 to 27500	
2000	24000 to 26000	28000 to 30000	

Additional conditions:

- If average occupancy of area is more than two people, add 600 Btu/hour per person. If average is one person, subtract 600 Btu/hour.
- Add 1200 Btu/hour if area includes a kitchen.
- If room is heavily shaded, subtract 10 percent from capacity. Increase capacity by 10 percent if area is very sunny.

Note: For best results, select a room air conditioner with cooling capacity (Btu/hour rating) closest to, but not exceeding, estimated size.

Installation Instructions

Installing Room Air Conditioners

Proper installation of a room air conditioner helps ensure trouble free operation of the unit. Improper installation can result in problems ranging from noisy operation to property or equipment damage.

The following paragraphs provide general instructions and information on installing Amana Compact Mainline Model Room Air Conditioners. Detailed installation instructions are included with the unit, or with a separately purchased mounting kit.

Before attempting to install air conditioner:

- Carefully read all installation instructions provided with unit or installation kit *before* beginning. Make sure each step or procedure is understood and any special considerations are taken into account.
- Assemble all tools and hardware needed to complete installation. Some items may need to be purchased locally. Make sure required tools and hardware are on hand before starting.
- After deciding where to install unit, closely look the location over, both inside and outside. Note any potential obstacles or problems that might be encountered. Choose a more suitable location if necessary.

Electrical Requirements

WARNING

To avoid risk of personal injury or death due to electrical shock:

- Electrical grounding is required on this device.
- Check with a qualified electrician if you are not sure air conditioner is properly grounded.
- DO NOT ground to gas line.
- DO NOT use cold water pipe for ground if pipe is interrupted by plastic, nonmetallic gaskets, or other insulating (non conducting) materials.
- DO NOT modify plug on power cord or use an adaptor. If plug does not fit electrical outlet, have a proper outlet installed by a qualified electrician.
- DO NOT have a fuse in the neutral or ground circuit. A fuse in the neutral or ground circuit could result in an electrical shock.
- DO NOT use an extension cord with this appliance.
- Observe all local codes and ordinances.

Grounding Instructions

For safety, air conditioner must be grounded. All air conditioners have a power supply cord with a three-prong grounding plug. To minimize possible electrical shock hazard, the power cord must only be plugged into a matching grounding wall receptacle in accordance with the National Electrical Code (and any applicable local codes and ordinances). If an appropriate grounding-type wall receptacle is not available, it is the consumer's responsibility to have a properly grounded wall receptacle installed by a qualified electrician.

If codes permit, and a separate grounding wire is used, have a qualified electrician determine if grounding path is adequate and uninterrupted by plastic, nonmetallic gaskets, or other insulating (non conductive) materials.

Electrical Connection

A separate (dedicated) circuit is required for units labeled "Use on Single Outlet Circuit Only." Devices covered in this manual require a 60 Hz supply. Refer to unit name plate or Technical Sheet for exact voltage requirements.

Do not use an extension cord. If air conditioner power supply cord does not reach intended wall receptacle, have a qualified electrician install (or move) an appropriate receptacle closer to unit.

Do not use an adaptor plug. If plug on air conditioner does not match intended outlet, have a qualified electrician replace outlet with correct type.

Receptacle Wiring

Receptacle wiring must be of adequate size for unit. Refer to unit identification plate or Technical Sheet for exact power requirements of unit. Minimum size of wiring, based on power requirements, is:

Units up to 20 amps:	12 gauge
20–30 amp units:	10 gauge

Use copper wire only. It is consumer's responsibility to provide proper and adequate receptacle wiring that conforms to all applicable codes. All wiring should be installed by a qualified electrician.

Installation Instructions

Preparing for Installation

CAUTION

To avoid risk of personal injury or product damage due to the weight of this device and sharp edges that may be exposed:

- Air conditioners covered in this manual pose an excessive weight hazard. Two or more people are needed to safely move and install unit. To prevent injury or strain, use proper lifting and carrying techniques when moving unit.
- Carefully inspect location where unit is to be installed. Be sure it will support the weight of the unit over an extended period of time.
- Handle air conditioner with care. Wear protective gloves whenever lifting or carrying the unit. AVOID the sharp metal fins on front and rear coils.
- Make sure air conditioner does not fall during installation.

Tools Required

The following tools are required for installation:

- Flat head screwdriver
- Phillips head screwdriver
- 3/8-inch open end wrench (or adjustable wrench)
- ¼-inch hex socket and rachet
- Pliers
- Carpenter's level
- Tape measure
- Electric or hand drill
- 1/8-inch drill bit
- Sharp knife

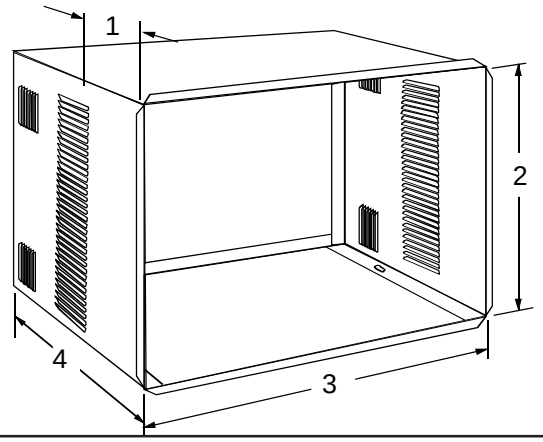
General Through-Wall Installation for Slide Out Chassis Model

Amana Room Air Conditioners with slide out chassis type cases are designed to be installed through a wall or in a window. The following instructions describe general procedures for wall installations. Specific instructions for installing individual models are packed with the unit. Use specific instructions to install unit.

NOTE: Window installations require a Window Mounting Kit. See an Authorized Amana Dealer for mounting kit RAWK1.

Typical Cabinet Dimensions

1. 9-inches
2. $15^{13}/_{16}$-inches
3. 23¾-inches
4. $23^{1}/_{16}$-inches



Typical Compact Cabinet Dimensions

General Instructions

See figure Typical Wall Opening. A finished opening in wall is required. Dimensions of opening are 24-inches wide by 16¼-inches high . Lower left inside corner of opening must be within 6-feet of an appropriate electrical outlet.

When installed, back of case should be 3/8-inch lower than front of case (for proper condensate drainage). Inside edge of case must extend ¾-inch beyond inside wall to properly seat air conditioner front cover. After installation, caulk completely around outside of unit to ensure it is properly sealed. Depending on wall construction and opening location, a lintel (not provided) may be required.

For appearance sake, it may be desirable to frame inside opening with decorative molding (not provided). If molding is used, mount case in opening so inside edge of case extends ¾-inch beyond molding.

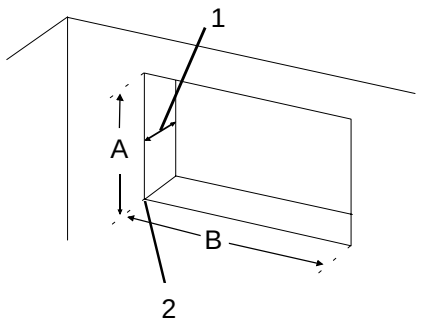
When installing unit through thick walls, special provisions must be made to ensure free airflow to side louvers on outer case. In general, these provisions must be made when installing unit in walls thicker than 9-inches. See paragraph Installation in Walls Exceeding Outer Case Dimensions.

Installation Instructions

A = 16¼-inches

B = 24-inches

1. Note special requirements when installing units in walls thicker than 9-inches.
2. Appropriate electrical outlet must be within 6-feet of this point.



Typical Wall Opening

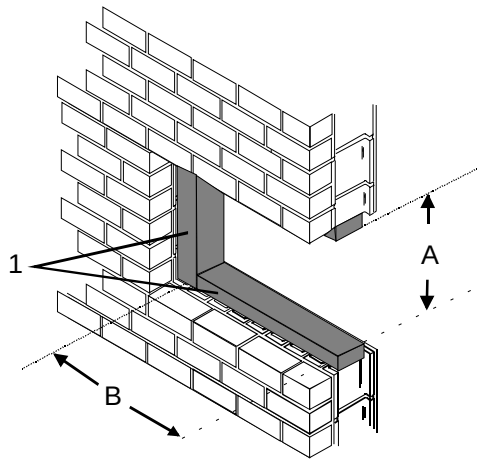
Brick Veneer or Frame Wall Construction

See figure Brick Veneer Wall Opening. A framed, finished opening of dimensions shown in figure should be cut out or built into wall. Frame opening with 2-inch x 4-inch lumber.

1. 2-inch x 4-inch framing lumber

A = 16¼-inches

B = 24-inches



Brick Veneer Wall Opening

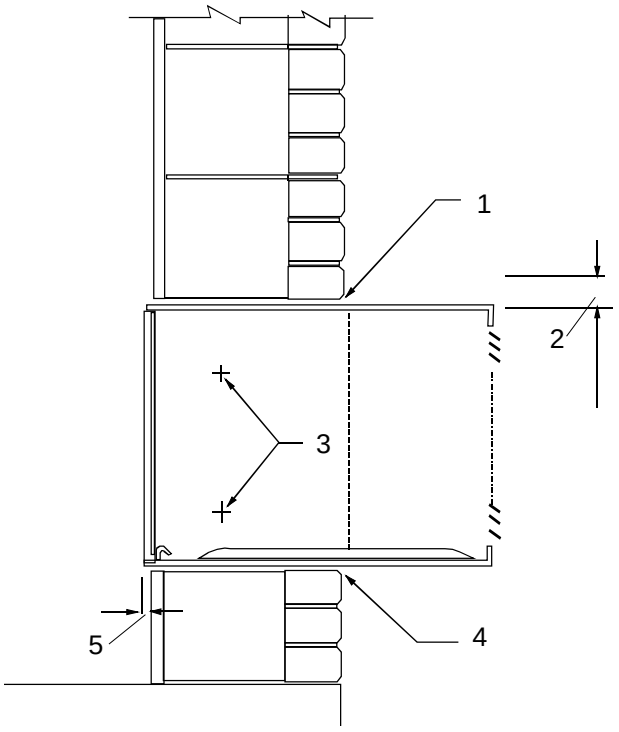
To install outer case in opening:

1. Remove air conditioner chassis from outer case (see Disassembly Section).
2. Place outer case in wall opening. Adjust case so front extends into room ¾-inch and case has a 3/8-inch back slope (lay carpenters level in case and adjust angle of case to obtain a ¼ bubble on level).

NOTE: If air conditioner is to be framed by decorative molding, extend case into room ¾-inch beyond molding.

3. When properly positioned, secure outer case in opening using four #10 x 1-inch (25 mm) wood screws (not provided). Predrill holes in each side of case at approximate locations shown in following figure , then attach case to framing.
4. Caulk all four sides of case to seal case in place.

1. Lintel and flashing (if required)
2. Provide 3/8-inch slope to outside for condensate drainage
3. Attach outer case to framing in two places, on each side of case
4. Completely caulk or seal all four sides of outer case
5. Outer case extends into room ¾-inch.



Securing Outer Case in Wall Opening

Masonry Construction

A finished opening 24-inches wide x 16¼-inches high should be cut out or built into masonry wall. Seal outer case in place with mortar, or secure to wall with concrete nails driven through sides of case.

NOTE: If securing case with concrete nails, predrill holes in case before driving nails into wall.

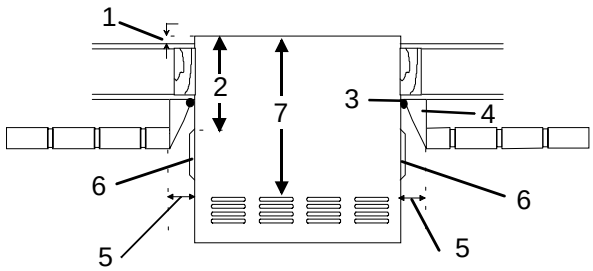
Installation Instructions

Installation in Walls Exceeding Outer Case Dimensions

NOTE: Wall installation not recommended in walls over 11-inches thick.

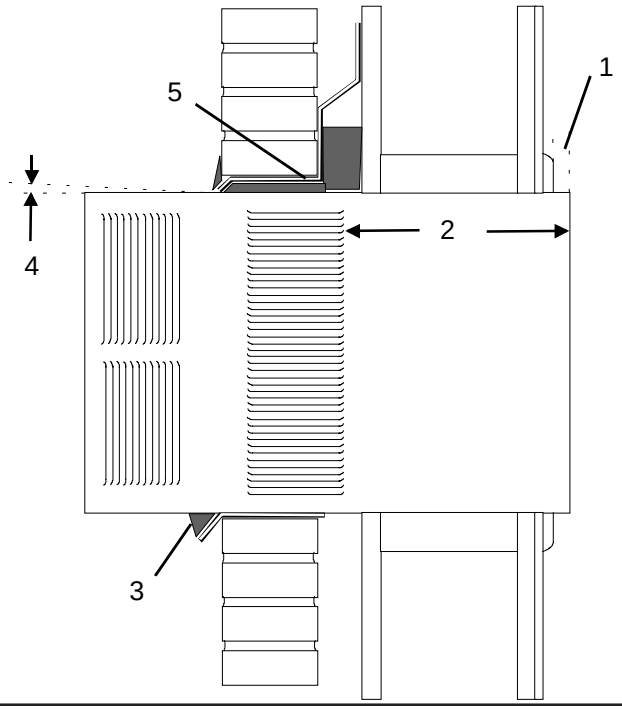
Airflow through louvers on outer case prevents overheating of compressor and fan motor. Air conditioner must be installed to allow unrestricted airflow to side louvers. If dimensions of wall prevent unrestricted airflow to louvers, wall opening must be modified. Modification consists of chamfering the vertical portions of the outside opening as shown in following figures.

1. Outer case extends into room ¾-inch
2. 9-inches from front of outer case to side louvers
3. Caulk around outer case to seal in place
4. Mortar
5. 4-inches (clearance required for unrestricted airflow)
6. Side louvers
7. 11¾-inches from front of outer case to top louvers



Chamfering Walls That Exceed Outer Case Dimensions (Top View)

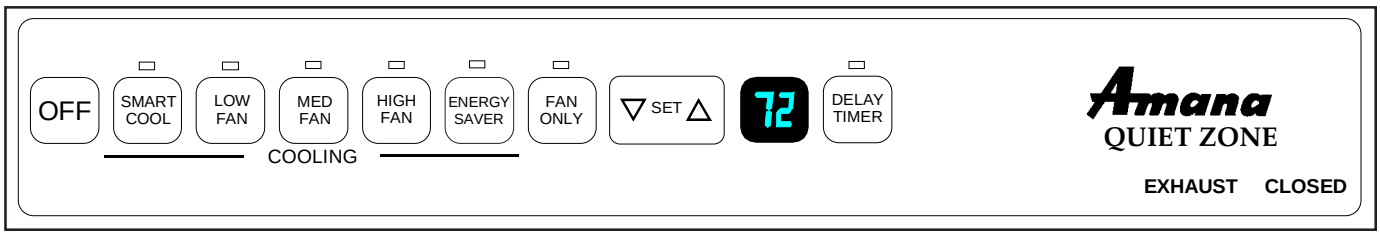
1. Outer case extends into room ¾-inch
2. 9-inches from front of outer case to side louvers
3. Caulk around outer case to seal in place
4. Install outer case $^{3}/_{8}$-inch slope to outdoor side
5. Install lintel and/or flashing if necessary



Chamfering Walls That Exceed Outer Case Dimensions (Side View)

Operating Instructions

Air Conditioner Controls



Touch Control Panel

Amana Mainline room air conditioners have an electronic touch control panel located across the top front of unit. The following paragraphs explain the functions and operation of each control.

Touch Panel Controls

To operate touch controls, press control pad until indicator above pad lights (does not apply to *OFF* or ▽ *SET* △ pads).

***OFF*—**Turns air conditioner off.

***SMART COOL*—**Places air conditioner in "smart" cooling mode. *SMART COOL* uses computer logic to cool area quickly and quietly. When unit first turns on, fan starts at high speed. As room temperature nears the set temperature, the fan automatically switches to medium speed, then low speed. When room cools to the set temperature, the fan continues to run at low speed and the compressor cycles on and off to maintain room temperature.

***LOW FAN*—**Fan operates continuously (except in power saver mode) at low speed. If unit is in a cooling mode, compressor cycles on and off as required to maintain set temperature. Select this setting for quietest operation.

***MED FAN*—**Fan operates continuously (except in power saver mode) at medium speed. If unit is in a cooling mode, compressor cycles on and off as required to maintain set temperature. Select this speed for reduced air circulation and quieter operation.

***HIGH FAN*—**Fan operates continuously (except in power saver mode) at high speed. If unit is in a cooling mode, compressor cycles on and off as required to maintain set temperature. Use this setting for maximum air circulation and faster cool down during initial start up.

***ENERGY SAVER*—**Places air conditioner in energy saving mode. Energy saving mode works in conjunction with *SMART COOL* mode and low, medium, or high fan speeds. In energy saving mode, air conditioner maintains room temperature within 1.5° F of programmed temperature setting. When *ENERGY SAVER* is selected, fan cycles on and off with compressor (instead of running continuously as in other modes). During first off cycle, fan automatically turns on after 5 minutes to sample room air temperature. If room temperature is within 1.5° F of programmed temperature after 2 minutes, fan turns off and 2 minutes is added to the air sampling cycle (fan does not turn on again for 7 minutes). Each subsequent sampling cycle that indicates room temperature is within 1.5° F of set temperature adds an additional two minutes between cycles, up to a maximum of 15 minutes.

If room temperature is more than 1.5° F above programmed setting, fan continues to run and compressor cycles on to cool room. When room cools to set temperature, compressor and fan turn off and air sampling cycle timer is reset to 5 minutes.

NOTE: Thermistor constantly monitors room temperature, even when fan is not running. Anytime room temperature rises 1.5° F above programmed setting, compressor and fan turn on to cool room.

***FAN ONLY*—**Fan operates continuously at set speed (high, medium or low) and compressor remains off. Use this setting to circulate air without cooling and, with *VENT CONTROL* in *EXHAUST* position, to vent room of stale air, odors, smoke, etc.

▽ *SET* △**—**Used to decrease (down arrow) or increase (up arrow) set temperature. When used in conjunction with *DELAY TIMER* function, arrow keys adjust delay start or stop time.

***DELAY TIMER*—**Allows programming a delay of up to 24 hours before air conditioner starts up, or programming air conditioner to automatically shut down after up to 24 hours of operation. Automatic start up or shut down is programmable from 1 hour (minimum) up to 24 hours (maximum), in one hour increments.

Operating Instructions

Vent Control
The vent control lever is located on lower right corner of control panel. It controls a damper that recirculates or exhausts room air.

When control is in *EXHAUST* position, damper is open. When open, room air is exhausted (vented) outside. Use exhaust position to remove stale or smoky air from area.

NOTE: To conserve energy, control panel should be in *FAN ONLY* position when using exhaust feature.

When control is in *CLOSED* position, damper is closed. When closed, air in area being cooled is recirculated through air conditioner, filtered and cooled, then returned to room. No air is exhausted (vented) outside.

NOTE: For maximum efficiency and cooling, vent control should remain in closed position any time air conditioner is cooling.

Before Turning Air Conditioner On

To operate air conditioner efficiently, and ensure it provides maximum comfort:

- Make sure all doors and windows in area being cooled are tightly closed.
- Make sure nothing obstructs airflow to or from the unit (do not place plants, furniture, lamps, etc. in front of the air conditioner return air vent or air discharge vent).
- Make sure outdoor louvers are free of obstructions and fins on evaporator and condenser coils are free of dirt and debris.
- Make sure air filter is clean.

NOTE: Air filter should be cleaned at least once a week during continuous operation. More frequent cleaning may be required in extremely dusty environments. NEVER operate air conditioner with air filter removed.

- Make sure power cord on air conditioner is plugged into an appropriate receptacle.

⚠ WARNING

To avoid risk of personal injury or death due to electrical shock, DO NOT, under any circumstances, alter grounding plug. Air conditioner must be grounded at all times. Do not remove warning tag from power cord. If a two-prong (non-grounding) wall receptacle is encountered, contact a qualified electrician and have the receptacle replaced with a properly grounded wall receptacle in accordance with the National Electrical Code.

Normal Cooling Mode

The air conditioner is in the "normal" cooling mode whenever *only* the *LOW FAN*, *MED FAN*, or *HIGH FAN* pads are pressed (no other pad is pressed in conjunction with these pads). To run air conditioner in the normal cooling mode:

1. Make sure vent control is closed. For maximum efficiency and cooling, vent door should be closed whenever air conditioner is cooling.
2. Press *HIGH FAN* pad on control panel. High fan speed will cool area to desired temperature quicker than slower speeds.

NOTE: Compressor lockout feature will delay start of compressor for 3 to 4 minutes after unit is turned on.

3. Press ∇ *SET* △ pad to set temperature at desired level of cooling.

When area cools to desired temperature, fan speed can be reduced for quieter operation. Compressor will periodically cycle on and off to maintain room temperature at selected level.

Smart Cool Mode

To operate air conditioner in the Smart Cool mode:

1. Make sure vent control is closed. For maximum efficiency and cooling, vent door should be closed whenever air conditioner is cooling.
2. Press *SMART COOL* pad on control panel. Fan begins operating at high speed, and automatically switches to medium then low speed as room air nears desired temperature.

NOTE: Compressor lockout feature will delay start of compressor for 3 to 4 minutes after unit is turned on.

3. Press ∇ *SET* △ pad to set temperature at desired level of cooling.

After room reaches set temperature, fan continues to run at low speed and compressor cycles on and off to maintain room temperature.

Operating Instructions

Energy Saver Mode

To operate air conditioner in the Energy Saver mode:

1. Make sure vent control is closed. For maximum efficiency and cooling, vent door should be closed whenever air conditioner is cooling.
2. Start air conditioner in desired cooling mode ("normal" or *SMART COOL*).

NOTE: Compressor lockout feature will delay start of compressor for 3 to 4 minutes after unit is turned on.

3. Press ▽ *SET* △ pad to set temperature at desired level of cooling.
4. Press *ENERGY SAVER* pad on control panel.

After room reaches set temperature, fan cycles on and off with compressor. See *ENERGY SAVER* description on previous page.

Fan Only Mode (No Cooling)

The Fan Only mode is useful for venting an area of stale or smoky air, removing odors, or simply circulating air without cooling. To operate air conditioner in Fan Only mode:

1. Open vent door by placing vent control in *EXHAUST* position. Opening the vent door allows indoor air to be vented (exhausted) outside, and brings fresh (outdoor) air into the area.
2. Select desired fan speed (low, medium, or high) by pressing appropriate pad (*LOW FAN*, *MED FAN*, or *HIGH FAN*) on control panel.
3. Press *FAN ONLY* pad.

Delay Timer Operation

To program DELAY TIMER up:

1. Turn unit off (press *OFF* pad).
2. Press *DELAY TIMER* pad (currently programmed temperature setting begins flashing on air conditioner display).
3. Program new temperature setting (if desired) using ▽ *SET* △ pad.

NOTE: Current temperature setting is used if not changed within 5 seconds.

4. Select desired operating mode and fan speed.
5. Press *DELAY TIMER* pad (currently programmed delay time—1 through 24 (hours)—flashes on air conditioner display).
6. Program new delay time (if desired) using ▽ *SET* △ pad.

NOTE: Current delay time is used if not changed within 5 seconds.

7. Press *DELAY TIMER* pad to start timer (air conditioner display shows time remaining until unit automatically starts). When programmed time elapses, unit automatically starts in programmed operating mode.

NOTE: Timer automatically starts after 5 seconds if *DELAY TIMER* pad is not pressed.

To program automatic shut down:

1. Start air conditioner in desired operating mode (if unit is already in desired mode, proceed to step 2).
2. Press *DELAY TIMER* pad (currently programmed time—1 through 24 (hours)—flashes on air conditioner display).
3. Program new time (if desired) using ▽ *SET* △ pad.

NOTE: Current time is used if not changed within 5 seconds.

4. Press *DELAY TIMER* pad to start timer (air conditioner display shows time remaining until unit shuts down). When programmed time elapses, unit automatically shuts down.

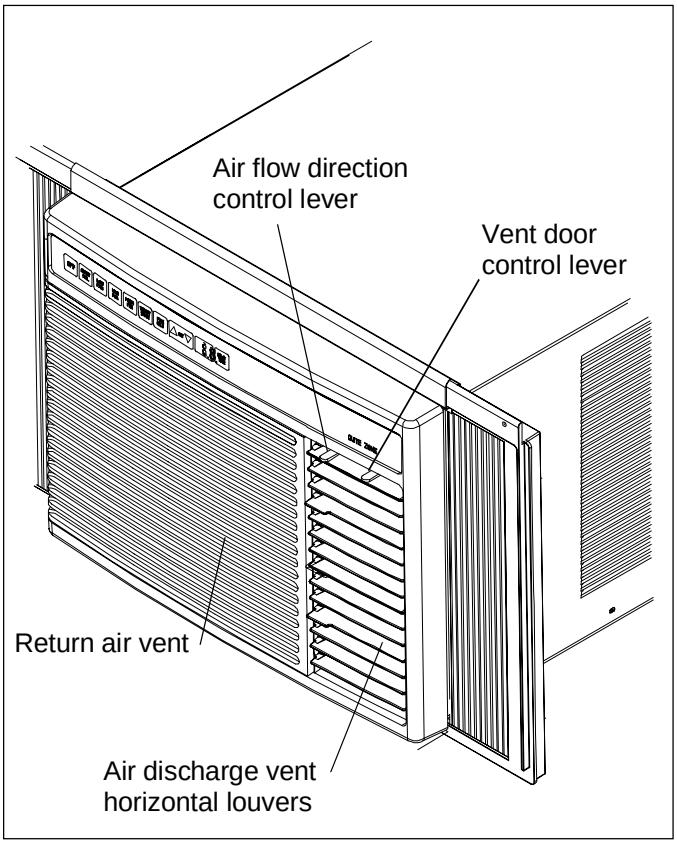
NOTE: Timer automatically starts after 5 seconds if *DELAY TIMER* pad is not pressed.

To cancel delay shut down program, press *DELAY TIMER* pad (after timer starts counting down), or turn unit off (press *OFF* pad).

Operating Instructions

Adjusting Airflow Direction

Position of the air discharge vent louvers determines direction of airflow out of vent. Direction can be adjusted upward, downward, left, and right.



Adjusting Airflow Direction

To adjust airflow upward or downward, move the horizontal louvers on outside of air discharge vent up or down.

To adjust airflow left or right, move airflow direction control lever left or right.

Energy Saving Tips

In addition to operating air conditioner in the energy saving mode, additional savings of energy (and money) can be realized by:

- Increasing insulation in walls and ceilings.
- Closing all heating and ventilation diffusers or vents (including furnace cold air return vent) in area being cooled.
- Closing drapes or blinds on windows that receive direct sunlight. Install window coverings or awnings on windows not currently covered.
- Make sure attic is adequately ventilated. Heat buildup in attic adds to air conditioner cooling load.
- Avoid using heat producing appliances during hottest parts of the day.
- Turn lights and appliances off when not needed.

Sounds Heard During Normal Operation

Certain sounds may be made by the air conditioner when it is running, especially in a cooling mode. Some sounds that may be heard include:

- Water splashing onto condenser. Caused by slinger ring (attached to condenser fan). Slinger ring picks-up condensate in base pan and sprays it on condenser to increase efficiency of unit.
- Compressor frequently cycles on. Compressors on Amana Mainline Room Air Conditioners cycle on more often than other air conditioner models in order to maintain room temperature within 1.5°F of the control panel temperature setting. This causes the compressor to run more frequently, but for a shorter time, than other room air conditioner models.
- Airflow from air discharge vent. If sound is distracting, try adjusting louvers on discharge vent, moving objects that may be obstructing airflow, or reducing fan speed.

Care and Maintenance

Maintenance Schedule

WARNING

To avoid death or personal injury due to electrical shock, turn fan control off and unplug power cord before cleaning or performing maintenance on this device.

Amana Room Air Conditioners are designed and manufactured to provide years of dependable service when properly cared for and maintained.

The Maintenance Schedule (below), shows the recommended maintenance required to keep the unit operating at peak efficiency. The Maintenance Procedures paragraphs describe how to perform various maintenance tasks.

Maintenance Schedule

Maintenance Required	Procedure	Frequency
Inspect/clean air filter.	Remove air filter and inspect. Clean if required, then replace. **NOTE:** Never operate air conditioner with filter removed.	Weekly
Inspect/clean air discharge louvers, return air grille, and electronic control.	Inspect air discharge louvers, return air grille, and electronic control for dust and dirt accumulation. Clean if necessary. **NOTE:** Inspect more often in dusty environments.	Weekly
Inspect louvers on outer case for obstructions.	Inspect louvers on outer case and remove any obstructions.	Monthly
Inspect condenser coil.	Inspect condenser coil for dirt, bent fins, and other obstructions. Clean/repair if necessary. **NOTE:** Inspect more often in dusty environments.	Annually
Inspect evaporator coil.	Inspect evaporator coil for dirt, bent fins, and other obstructions. Clean/repair if necessary. **NOTE:** Inspect more often in dusty environments.	Annually
Inspect outer case for signs of damage.	Inspect interior and exterior of outer case for scratches, paint blisters, rust, and other damage. Repair as necessary. **NOTE:** Inspect more often in salty or other corrosive environments.	Annually
Inspect/clean base pan.	Inspect base pan for scratches, blisters, rust, dents and other damage. Repair as necessary. Clean condensate drain passages of any accumulated material. **NOTE:** In areas of excessive humidity, using an algicide (an algae inhibitor) in base pan may reduce algae build up.	Annually

Maintenance Procedures

WARNING

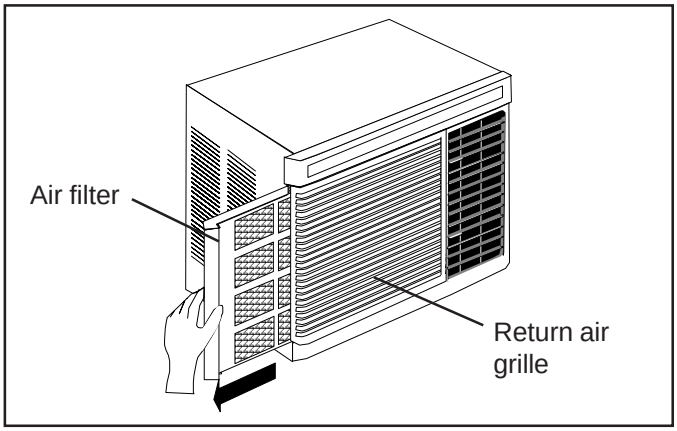
To avoid death or personal injury due to electrical shock, turn fan control off and unplug power cord before cleaning or performing maintenance on this device.

Air Filter Removal and Cleaning

NOTE: Never operate air conditioner with filter removed.

Air filter can be removed in two ways:

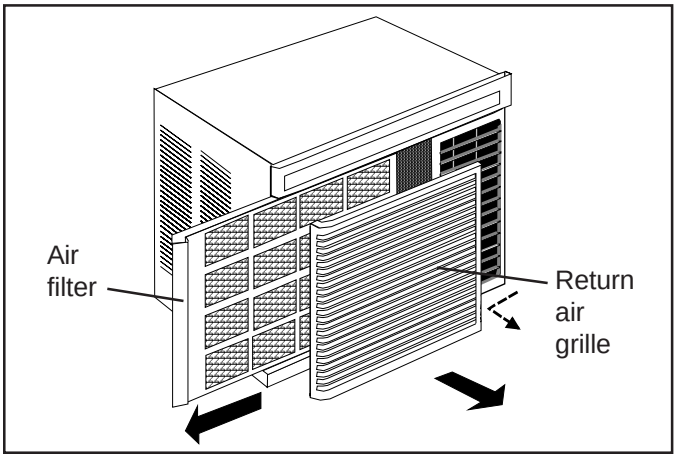
- See figure Removing Air Filter, Method One. Grasp filter handle and pull filter to the left. When filter clears return air grille, pull out and away from air conditioner.



Removing Air Filter, Method One

Care and Maintenance

- See figure Air Filter Removal, Method Two. Slide return air grille left until insert guides are free of guide rails, then pull insert out and away from front frame. Slide filter left until free of retaining clips.



Air Filter Removal, Method Two

Clean air filter by vacuuming. If filter is especially dirty, clean with a mild solution of warm soapy water. Rinse filter of all soap residue and completely dry before reinstalling.

Air Purification Filter

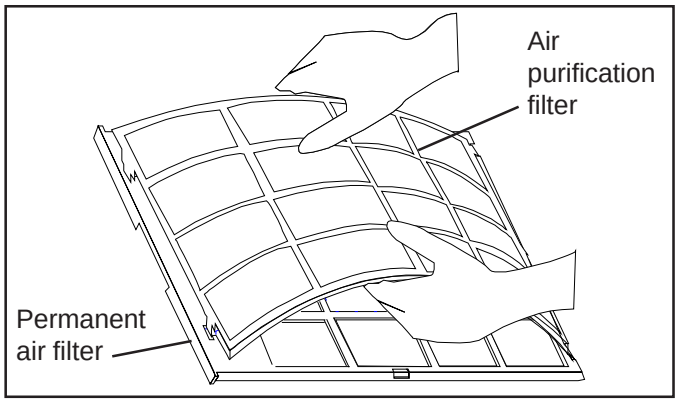
An optional, disposable air purification filter can be mounted behind permanent filter to reduce smoke, odor, pollen, and dust from area being cooled. After approximately 3 months of use the charcoal impregnated air purification filter should be discarded. New air purification filters are available from Authorized Amana Dealers. Request part number:

- P1224601 (Portable air conditioners)
- P1224602 (Compact air conditioners)
- P1224603 (200 Series air conditioners)

Optional Air Purification Filter Installation and Removal

1. Remove permanent air filter from air conditioner.
2. See figure Air Purification Filter Installation and Removal. Insert three tabs on right side of air purification filter into the three matching slots on back side of permanent air filter frame.
3. Carefully bow middle of air purification filter and insert two tabs on left side into matching slots on permanent filter frame.
4. Relax bow, and air purification filter should rest against back side permanent air filter.
5. Reinstall permanent air filter in air conditioner.

NOTE: Remove air purification filter by reversing the installation procedure.



Air Purification Filter Installation and Removal

Cleaning Air Discharge Louvers, Return Air Grille, and Electronic Control

Clean air discharge louvers, return air grille, and electronic control with a sponge or cloth dampened with a mild soap or detergent and water. After cleaning, wipe soap residue off with a clean damp cloth. Do not use cleaners with abrasives or polishing compounds; they may damage polycarbon surfaces.

Evaporator Coil, Condenser Coil, and Base Pan Maintenance

To inspect and clean base pan, condenser coil, and evaporator coil, outer case must be removed from air conditioner chassis. See Disassembly Procedures for removal instructions.

Inspecting and Cleaning Coils

Inspect evaporator and condenser coils. Check for bent fins and accumulations of dirt or other debris that may reduce or block airflow thorough coils. Reduced or blocked airflow affects air conditioner efficiency and can lead to premature compressor failure.

Attempt to straighten bent fins by "combing" fins with a fine tooth comb. Vacuum (or blow) dirt and debris from coils. Use a brush to loosen difficult accumulations of dirt.

Especially dirty coils may need washing. If washing is required, remove electronic control assembly from unit and seal remaining electrical components in plastic before beginning. Use a good quality cleaner specially formulated to clean air conditioner coils.

⚠ CAUTION

To avoid possible damage to compressor or fan motor from moisture contamination, do not allow any liquids to contact these components. Ensure they are completely sealed in plastic before attempting to clean coils on air conditioner.

Care and Maintenance

Inspecting and Cleaning Base Pan

Inspect base pan. Check for dirt and debris, algae build-up in condensate drain channels and base pan, and scratches, paint blisters, and rust spots.

- Vacuum or blow dirt and debris from base pan. Use a brush to loosen difficult accumulation of dirt.
- If algae build-up is present, clean with sponge or cloth dampened with warm soapy water.

NOTE: Placing an algicide in outdoor side of base pan may reduce or eliminate problem of algae build-up. For best results, thoroughly clean base pan of old algae before using an algicide.

- Use a wire brush to remove any rust and loose paint in base pan. Prime rust spots and bare metal with quality metal primer, then repaint areas using quality enamel paint.

Outer Case Maintenance

Inspect outer case. Check for scratches, paint blisters, and rust on both inside and outside of case.

NOTE: Remove outer case from chassis to inspect interior of outer case.

Repair scratches, rust and paint blisters using a quality enamel paint. Before painting, remove any loose paint and rust with a wire brush. Prime rust spots and bare metal with quality metal primer before repainting with quality enamel paint.

Troubleshooting Information

⚠ WARNING

To avoid risk of electrical shock, personal injury, or death, disconnect electrical power source to unit and discharge capacitor through a 10,000 ohm resistor before attempting to service, unless test procedures require power to be connected. Ensure all ground wires are connected before certifying unit as repaired and/or operational.

⚠ CAUTION

Units covered in this manual are polarized. Reversing polarity of a unit or any of its components will cause damage. To avoid reversing polarity, any wires disconnected or removed during service *must* be reconnected to the same location. To ensure wires are reconnected to the proper location, tag or otherwise mark the wires before disconnecting or removing.

Tools and Equipment

Accurate diagnosis and repair of malfunctioning air conditioners requires proper tools and equipment. In addition to standard hand tools (screw drivers, pliers, sockets, etc.), the following equipment is required:

- Thermocouple type temperature tester, with sufficient range to meet all testing and measuring requirements.
- Multimeter (combination voltmeter, ammeter, and ohmmeter) for reading current loads during start up and normal operation, verifying voltage levels, and testing various components for continuity.
- Standard refrigeration-type test cord for "live" testing of various electrical circuits and components, and direct wiring of compressor.
- Accurate leak detector, to check for refrigerant leaks.
- Vacuum pump capable of removing all non-condensables in sealed system.
- Charging manifold and related equipment to determine and replenish exact refrigerant charges.
- Recovery cylinder and related equipment to recover and store refrigerant charge in sealed system.

Additional tools and equipment may be required.

Troubleshooting Table

Troubleshooting table on following pages contains symptoms that may be seen in a malfunctioning air conditioner. Each group of symptoms is accompanied by one or more possible causes. Each possible cause is accompanied by a remedy, or a test to determine if suspect component(s) are working properly.

Troubleshooting Information

⚠ WARNING

To avoid risk of electrical shock, personal injury, or death, disconnect electrical power source to unit and discharge capacitor through a 10,000 ohm resistor before attempting to service, unless test procedures require power to be connected. Ensure all ground wires are connected before certifying unit as repaired and/or operational.

Symptom	Possible Causes	Corrective Action
Fan motor will not operate.	No power supplied to unit.	Check fuse box/circuit breaker for blown fuse or tripped breaker. Replace/reset.
	Power supply cord faulty.	Check power cord for opens. Replace cord if faulty.
	Wire(s) disconnected or loose.	Ensure all connections are tight and secure.
	Fan motor capacitor faulty.	Check capacitor for open/ short. Replace if faulty. **NOTE**: Discharge capacitor before testing.
	Fan motor faulty.	Check fan motor windings for shorts/opens. Replace if faulty.
	Electronic control faulty.	Ensure all control connections are tight and secure. Check control for proper operation and installation. Replace if faulty. **NOTE**: Eliminate all other possible causes before replacing electronic control.
Fan blade will not rotate.	Fan hitting shroud or blower wheel hitting scroll.	Check fan blade/blower wheel for proper alignment on motor shaft. Reposition if necessary. Check fan motor for proper position, ensure mounting nuts/bracket tight and secure.
	"O" clamp securing blade to fan motor shaft loose.	Ensure clamp is tight and properly positioned.
Fan motor operates intermittently.	Unit in *ENERGY SAVER* mode.	Fan only operates when compressor is on, or to sample room temperature when compressor is off.
	Wire(s) disconnected or loose.	Ensure all connections are tight and secure. Correct as required.
	Cycling on motor protector.	Replace motor.

Troubleshooting Information

WARNING

To avoid risk of electrical shock, personal injury, or death, disconnect electrical power source to unit and discharge capacitor through a 10,000 ohm resistor before attempting to service, unless test procedures require power to be connected. Ensure all ground wires are connected before certifying unit as repaired and/or operational.

Symptom	Possible Causes	Corrective Action
Fan motor operates intermittently.	Electronic control faulty.	Ensure all control connections are tight and secure. Check control for proper operation and installation. Replace if faulty. **NOTE**: Eliminate all other possible causes before replacing electronic control.
Fan motor noisy.	Outside coil fan blade or inside coil blower wheel loose or improperly aligned.	Check fan blade/blower wheel for proper position. Reposition if necessary. Ensure hardware attaching fan blade/blower wheel to motor shaft is tight. Tighten if loose; replace if stripped.
	Worn fan motor bearings.	Check bearings for wear/loss of lubricant. Replace motor if either condition found.
	Fan motor mounting hardware/bracket loose or grommets worn (if applicable).	Check mounting bolts/bracket for tightness. Tighten if necessary. Inspect grommets for wear. Replace if necessary.
Compressor does not run, fan motor operates normally.	Compressor lockout.	Lockout feature delays compressor start up for 3-4 minutes under certain conditions (see paragraph *Compressor Lockout Feature*).
	Wire(s) disconnected or loose.	Ensure all connections are tight and secure. Correct as required.
	Compressor motor capacitor faulty.	Check capacitor for open/ short. Replace if faulty. **NOTE**: Discharge capacitor before testing.
	Compressor faulty.	Check compressor motor windings for opens/shorts. Check compressor seals. Perform compressor direct wiring test. Replace compressor if faulty.

Troubleshooting Information

⚠ WARNING

To avoid risk of electrical shock, personal injury, or death, disconnect electrical power source to unit and discharge capacitor through a 10,000 ohm resistor before attempting to service, unless test procedures require power to be connected. Ensure all ground wires are connected before certifying unit as repaired and/or operational.

Symptom	Possible Causes	Corrective Action
Compressor does not run, fan motor operates normally.	Overload protector open.	Check protector for continuity. If open, replace. **NOTE**: Ensure compressor/ overload are below trip temperature before testing.
	Electronic control faulty.	Ensure all control connections are tight and secure. Check control for proper operation and installation. Replace if faulty. **NOTE**: Eliminate all other possible causes before replacing electronic control.
Compressor cycles on and off.	Wire(s) disconnected or loose.	Ensure all connections are tight and secure. Correct as required.
	Supply voltage out of specification.	Check input voltage for proper levels. Take appropriate action if voltage levels out of specification.
	Overload protector open.	Check protector for continuity. If open, replace. **NOTE**: Ensure compressor/ overload are below trip temperature before testing.
	Fan motor faulty.	Check fan motor for proper operation. Replace if faulty.
	Restricted air flow.	Inspect air filter, indoor/ outdoor coil for dirt. Clean as required. Check fins on coils for damage. Straighten fins if bent, attempt other repairs as necessary. Replace coil if repairs cannot be made.
	Compressor motor capacitor faulty.	Check capacitor for open/ short. Replace if faulty. **NOTE**: Discharge capacitor before testing.
	Sealed refrigerant system fault.	Test sealed system for proper charge, leaks, and restrictions. Repair as required.

Troubleshooting Information

WARNING

To avoid risk of electrical shock, personal injury, or death, disconnect electrical power source to unit and discharge capacitor through a 10,000 ohm resistor before attempting to service, unless test procedures require power to be connected. Ensure all ground wires are connected before certifying unit as repaired and/or operational.

Symptom	Possible Causes	Corrective Action
Insufficient cooling.	Low refrigerant charge.	Test sealed system for proper charge. Ensure system is free of leaks. Repair as required.
	Restricted air flow.	Inspect air filter, indoor/ outdoor coil for dirt. Clean as required. Check fins on coils for damage. Straighten fins if bent, attempt other repairs as necessary. Replace coil if repairs cannot be made.
	Vent control in exhaust position/ vent door stuck open.	Ensure vent control in closed position when unit is cooling (consumer education). Check vent door for proper operation. Replace/repair as required.
	Unit undersized for area/room.	Reduce area being cooled or replace unit with larger capacity model.
Excessive noise.	Outside coil fan blade or inside coil blower wheel loose or improperly aligned.	Check fan blade/blower wheel for proper position. Reposition if necessary. Ensure hardware attaching fan blade/blower wheel to motor shaft is tight. Tighten if loose, replace if stripped.
	Compressor mounting hardware loose or grommets worn.	Check mounting bolts for tightness. Tighten if necessary. Inspect grommets for wear. Replace if necessary.
	Free parts, loose screws causing or allowing excessive vibration.	Inspect unit for parts that may have worked free, loose/ missing screws, other problems that may cause excessive vibration. Repair as required.
	Worn fan motor bearings.	Check bearings for wear/loss of lubricant. Replace motor if either condition is found.

Troubleshooting Information

⚠ WARNING

To avoid risk of electrical shock, personal injury, or death, disconnect electrical power source to unit and discharge capacitor through a 10,000 ohm resistor before attempting to service, unless test procedures require power to be connected. Ensure all ground wires are connected before certifying unit as repaired and/or operational.

Symptom	Possible Causes	Corrective Action
Excessive noise.	Fan motor mounting hardware/ bracket loose or grommets worn (if applicable).	Check mounting bolts/bracket for tightness. Tighten if necessary. Inspect grommets for wear. Replace if necessary.
	Copper tubing improperly dressed or routed.	Inspect copper tubing for excessive vibration. Secure tubing as required.
	Compressor internal noise.	Inspect compressor for proper operation. Replace as required.
No cooling.	Low refrigerant charge or leak in sealed system.	Test sealed system for proper charge. Ensure system is free of leaks. Repair as required.
	Blockage in sealed system.	Evacuate sealed system. Remove blockage, recharge.
	Compressor faulty.	Check compressor motor windings for open shorts. Check compressor seals. Perform compressor direct wiring test. Replace compressor if faulty.
	Electronic control faulty.	Ensure all control connections are tight and secure. Check control for proper operation and installation. Replace if faulty. **NOTE**: Eliminate all other possible causes before replacing electronic control.
Wattage slowly decreases below minimum specification.	Undercharged, restricted strainer or plugged capillary tube.	Test sealed system for proper charge. Ensure system is free of leaks/blockage. Repair as required. Evacuate/recharge sealed system.

Troubleshooting Information

WARNING

To avoid risk of electrical shock, personal injury, or death, disconnect electrical power source to unit and discharge capacitor through a 10,000 ohm resistor before attempting to service, unless test procedures require power to be connected. Ensure all ground wires are connected before certifying unit as repaired and/or operational.

Symptom	Possible Causes	Corrective Action
Wattage decreases immediately.	No refrigerant.	Test sealed system for proper charge. Ensure system is free of leaks. Repair as required.
	Compressor faulty.	Check compressor motor windings for open/shorts. Check compressor seals. Perform compressor direct wiring test. Replace compressor if faulty.
Wattage continuously high.	Refrigerant overcharge.	Test sealed system for proper charge. Repair as required.
Evaporator coil partially frosted.	System low on refrigerant.	Test sealed system for proper charge. Ensure system is free of leaks. Repair as required.
	Restricted capillary tube.	Replace capillary tube.
	Insufficient air flow.	Inspect air filter, indoor/ outdoor coil for dirt. Clean as required. Check fins on coils for damage. Straighten fins if bent, attempt other repairs as necessary. Replace coil if repairs cannot be made.
Evaporator completely iced.	Low outside temperature.	Turn unit off. (Consumer education)
	Restricted capillary tube.	Replace capillary tube.
	Insufficient air flow.	Inspect air filter, indoor/ outdoor coil for dirt. Clean as required. Check fins on coils for damage. Straighten fins if bent, attempt other repairs as necessary. Replace coil if repairs cannot be made.

Testing Procedures

⚠ WARNING

To avoid risk of electrical shock, personal injury, or death, disconnect electrical power source to unit and discharge capacitor through a 10,000 ohm resistor before attempting to service, unless test procedures require power to be connected. Ensure all ground wires are connected before certifying unit as repaired and/or operational.

Low Voltage

Low voltage can result in one or more of the following problems:

- Unit will not operate.
- Compressor motor cycling.
- Premature failure of overload protector.
- Frequent blown fuses or tripped circuit breakers.
- Premature failure of compressor or fan motor.
- Noticeable dimming of lights when unit is operating.
- Evaporator icing, caused by reduced fan speed.

Units covered in this manual have a Low Voltage Protection feature. If supply voltage drops below 90 VAC (for units that require a 115 V supply) or 171 VAC (for units requiring a 230 V supply) the unit automatically shuts down. When supply voltage returns within specification, (98 ±2 VAC or 179 ±2 VAC) unit automatically restarts.

Common causes for low voltage include inadequate supply circuit wiring; use of extension cords; and loose fuses or connections in fuse box, circuit breaker, or distribution panel.

NOTE: A good indication of voltage problems caused by inadequate or faulty wiring is voltage levels that do not remain constant under load (supply voltage fluctuates).

A less common cause for low voltage is voltage from local electric utility is low (sometimes called "brown outs"). If this is the case, have consumer contact local electric utility for assistance.

All units should operate normally if power stays within specifications (refer to Technical Sheet for unit under test).

Test for low voltage using voltmeter. Verify voltage level at circuit breaker/distribution panel for unit under test, and at electrical outlet serving unit. Take initial voltage readings with air conditioner turned off. Take additional readings during start-up of unit, and again while unit is operating. All readings should be within specifications and remain constant.

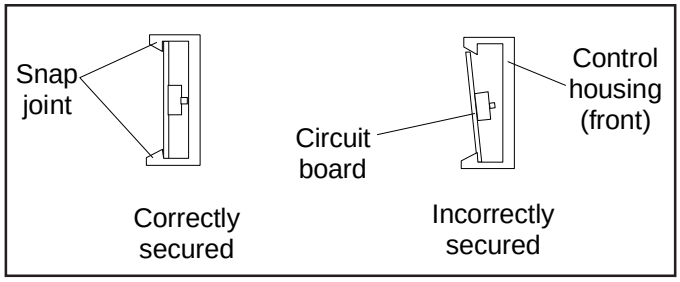
NOTE: Supply voltage may drop momentarily during initial start-up and when compressor first starts, but should always remain within specifications.

High Voltage

High voltage causes motors to overheat, cycle on their protectors, or break down electrically. This problem can only be solved by local electric utility.

Electronic Control

Ensure electronic control circuit board is securely mounted in control housing. See figure Electronic Control Mounting. Circuit board is held in place by 6 cantilever snap joints (three on top and three on bottom). Each snap joint must be correctly positioned to firmly secure circuit board in place and ensure proper control operation.



Electronic Control Mounting

Electronic control is not repairable. If any component in control is faulty, entire control must be replaced.

NOTE: Repair or replace all faulty line voltage components before testing or replacing electronic control. Do not assume problems are caused by electronic control system. Open, shorted, grounded or otherwise faulty line voltage components (including power cord and building wiring) can create problems that appear to be caused by electronic control.

Testing Procedures

WARNING

To avoid risk of electrical shock, personal injury, or death, disconnect electrical power source to unit and discharge capacitor through a 10,000 ohm resistor before attempting to service, unless test procedures require power to be connected. Ensure all ground wires are connected before certifying unit as repaired and/or operational.

Testing Capacitors

Compressors in these units use permanent split capacitor type motors, eliminating need for start capacitors and relays. A low capacitance "compressor run capacitor" assists during start, and remains in system during operation. Line side of run capacitor is marked with a dot and must be installed on line side of supply circuit. See directions on capacitor, and wiring diagram (on Technical Sheet) for unit under test.

Capacitors are also used on permanent split capacitor (PSC) fan motors.

To test capacitors:

1. Disconnect power to unit.
2. Discharge capacitor by shorting capacitor terminals through a 10,000 ohm resistor. Disconnect leads attached to capacitor terminals.
3. Set ohmmeter on highest scale. Attach ohmmeter leads to capacitor and observe ohmmeter display:
   - Good condition—indicator swings to zero and slowly returns toward infinity.
   - Shorted—indicator swings to zero and remains. Replace capacitor.
   - Open—indicator does not move. Replace capacitor.
4. Reverse ohmmeter leads on capacitor and repeat step 3.

Checking Overload Protectors

Overload protectors protect compressor from current and temperature overloads by removing power from compressor before it is damaged.

To check overload protector:

1. Disconnect power to unit.
2. Discharge capacitor by shorting capacitor terminals through a 10,000 ohm resistor.
3. Remove overload lead from compressor terminal.
4. Use ohmmeter to test continuity between overload terminals. If open, replace overload.

Checking Compressor Windings

Resistance Test

1. Disconnect power to unit.
2. Discharge capacitor by shorting capacitor terminals through a 10,000 ohm resistor.
3. Remove leads from compressor terminals.
4. Set ohmmeter to lowest scale.
5. Attach ohmmeter to compressor terminals C and S. Note reading.
6. Attach ohmmeter to compressor terminals C and R. Note reading.

If either compressor winding reads open (infinite or very high resistance) or dead short (0 ohms), replace compressor.

NOTE: Motor windings typically have very little resistance. When checking windings for shorts, ensure ohmmeter is set on lowest scale. Good windings may indicate as little as 2 ohms of resistance.

Ground Test

1. Disconnect power to unit.
2. Discharge capacitor by shorting capacitor terminals through a 10,000 ohm resistor.
3. Remove leads from compressor terminals.
4. Set ohmmeter to highest scale.
5. Attach one lead of ohmmeter to body of compressor. Ensure connection point is clean, and makes good contact with compressor.
6. Attach remaining lead on ohmmeter to C, then S, then R terminals on compressor.

If ohmmeter indicates continuity between compressor case and any terminal, replace compressor.

Testing Procedures

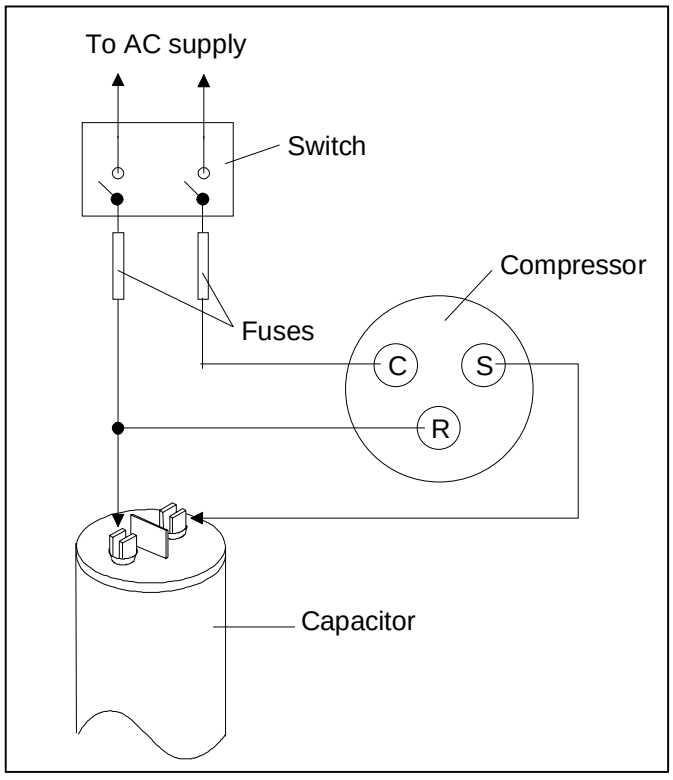
WARNING

To avoid risk of electrical shock, personal injury, or death, disconnect electrical power source to unit and discharge capacitor through a 10,000 ohm resistor before attempting to service, unless test procedures require power to be connected. Ensure all ground wires are connected before certifying unit as repaired and/or operational.

Operational Test (short term testing only)

If compressor voltage, capacitor, overload, and motor winding tests are successful (do not indicate a fault), perform the following test:

1. Disconnect power to unit.
2. Discharge capacitor by shorting capacitor terminals through a 10,000 ohm resistor.
3. Remove leads from compressor terminals.
4. Attach test cord to compressor windings.
   - Common lead on test cord attaches to C terminal on compressor.
   - Start lead on test cord attaches to S terminal on compressor.
   - Run lead on test cord attaches to R terminal on compressor.



Attaching Capacitor for Compressor Test

5. Connect a known good capacitor into circuit as shown above. For proper capacitor size and rating, see Technical Sheet for unit under test.

NOTE: Ensure test cord cables and fuses meet specifications for unit under test (see Technical Sheet for unit under test).

6. Replace compressor protector cover securely.
7. Plug test cord into outlet, then press and release start cord switch.

CAUTION

To avoid damage to compressor windings, immediately disconnect (unplug) test cord from power source if compressor does not start. Damage to compressor windings occurs if windings remain energized when compressor is not running.

If compressor runs when direct wired, it is working properly. Malfunction is elsewhere in system.

If compressor does not start when direct wired, recover system at high side. After system is recovered, repeat compressor direct wire test.

If compressor runs after system is recovered (but would not operate when wired direct before recovery) a restriction in sealed system is indicated.

If motor does not run when wired direct after recovery, replace faulty compressor.

Checking Electric Heater Assembly (on models so equipped)

1. Disconnect power to unit.
2. Ensure heater element is cold, then remove suspect heater and visually inspect element for obvious damage (breaks, cracks in element, etc.).
3. Attach ohmmeter to element leads. Check for continuity (14.4 ohms cold).

If element reads open (infinite or very high resistance):

4. Remove fuse links and test for continuity. Top fuse link, nearest the thermostat, opens at 305°F. Bottom fuse link opens at 200°F. If either or both are open, replace.
5. Check disc type thermostat for continuity (opens at 125°F ±5°, closes at 100°F ±4° automatic reset). If open replace.

Testing Procedures

WARNING

To avoid risk of electrical shock, personal injury, or death, disconnect electrical power source to unit and discharge capacitor through a 10,000 ohm resistor before attempting to service, unless test procedures require power to be connected. Ensure all ground wires are connected before certifying unit as repaired and/or operational.

Compressor Burnout

WARNING

To avoid personal injury, do not allow sludge or oil from compressor to contact skin. Severe burns may result.

NOTE: Before opening any refrigeration system, EPA regulations require refrigerant in system to be captured for safe disposal.

NOTE: Do not use captured or recycled refrigerant in Amana units. Captured or recycled refrigerant voids all Amana and/or compressor manufacturer's warranties.

When a compressor burns out, high temperature causes the refrigerant, oil, and motor insulation to decompose, forming acids and sludge.

If a compressor is suspected of burning out:

1. Disconnect power to unit.
2. Attach piercing valve to process tube of liquid line strainer. Discharge refrigerant in system to a recovery cylinder.
3. Remove compressor and obtain an oil sample from suction stub on compressor.
4. Analyze oil sample using Sporlan Acid Test Kit, AK-3 (or equivalent)

If oil sample is within parameters, a burnout has not occurred or is so mild that compressor replacement is not necessary. Reinstall compressor.

If acid level is unacceptable, replace compressor.

Fan Motor

1. Disconnect power to unit.
2. Discharge capacitor by shorting capacitor terminals through a 10,000 ohm resistor.
3. Disconnect fan motor leads from selector switch and respective capacitor.
4. Check for continuity between each motor lead with ohmmeter.
5. Check for ground by attaching one lead of ohmmeter to motor frame (ground). Attach remaining ohmmeter lead to each fan motor lead, one at a time.

NOTE: Ensure contact point between ohmmeter lead and motor frame is clean.

Replace fan motor if windings test open (very high or infinite resistance), or if any continuity is indicated between motor frame and windings.

When replacing fan motor:

- Replacement fan motor must be installed with motor leads below level of motor shaft.
- Drip loop in motor leads must be below wire openings in motor housing.
- Coat exposed areas of shaft from blower wheel or fan blade to end of shaft with Cosmoline or equivalent to prevent corrosion.
- Ensure evaporator blower wheel and/or condenser fan blade clearance tolerances are correct. Distance between evaporator blower wheel and orifice ring is exact and important (¼-inch on small and medium chassis units, 1/8-inch on large chassis).

Condenser fan blade should be centered in fan shroud ring. Distance between fan blade and condenser fins should be:

Small chassis	¾-inch
Medium chassis	2 15/16—3½-inch
Large chassis	1½-inch

Dehydrating Sealed Refrigeration System

Moisture in a room air conditioner sealed system, when exposed to heat generated by the compressor and motor, reacts chemically with refrigerant and oil in the system and forms corrosive hydrochloric and hydrofluoric acids. These acids contribute to the breakdown of motor winding insulation and corrosion of compressor working parts, causing compressor failure.

In addition, sludge, a residue of the chemical reaction, coats all surfaces of sealed system, and will eventually restrict refrigerant flow through capillary tube.

To dehydrate sealed system, evacuate system (see paragraph *Evacuation*).

Testing Procedures

⚠ WARNING

To avoid risk of electrical shock, personal injury, or death, disconnect electrical power source to unit and discharge capacitor through a 10,000 ohm resistor before attempting to service, unless test procedures require power to be connected. Ensure all ground wires are connected before certifying unit as repaired and/or operational.

Leak Testing

⚠ DANGER

To prevent serious injury or death from violent explosions, NEVER use oxygen or acetylene for pressure testing or cleanout of refrigeration systems. Free oxygen will explode on contact with oil. Acetylene will explode spontaneously when put under pressure.

It is important to check sealed system for refrigerant leaks. Undetected leaks can lead to repeated service calls and eventually result in system contamination, restrictions, and premature compressor failure.

Refrigerant leaks are best detected with halide or electronic leak detectors.

NOTE: The flame on a halide detector glows green in the presence of HCFC22 refrigerant.

Testing Systems Containing a Refrigerant Charge

1. Stop the operation (turn air conditioner off).
2. Holding leak detector exploring tube as close to system tubing as possible, check all piping, joints, and fittings.

NOTE: Use soap suds on areas leak detector cannot reach or reliably test.

Testing Systems Containing No Refrigerant Charge

1. Connect cylinder of nitrogen, through gauge manifold, to process tube of compressor and liquid line strainer.
2. Open valves on nitrogen cylinder and gage manifold. Allow pressure to build within sealed system.
3. Check for leaks using soap suds.

If a leak is detected in a joint, do not to attempt to repair by applying additional brazing material. Joint must be disassembled, cleaned and rebrazed. Capture refrigerant charge (if system is charged), unbraze joint, clean all parts, then rebraze.

If leak is detected in tubing, replace tubing. If leak is detected in either coil, replace faulty coil.

Brazing

⚠ CAUTION

To reduce risk of personal injury or property damage, take necessary precautions against high temperatures required for brazing.

Satisfactory results require cleanliness, experience, and use of proper materials and equipment.

Connections to be brazed must be properly sized, free of rough edges, and clean.

Generally accepted brazing materials are:

- **Copper to copper joints**: SIL-FOS (alloy of 15 percent silver, 80 percent copper, and 5 percent phosphorous). Use without flux. Recommended brazing temperature is approximately 1400°F. **DO NOT USE FOR COPPER TO STEEL CONNECTION**.
- **Copper to steel joints**: SILVER SOLDER (alloy of 30 percent silver, 38 percent copper, 32 percent zinc). Use with fluoride based flux. Recommended brazing temperature is approximately 1200°F.
- **Steel to steel joints**: SILVER SOLDER (see copper to steel joints).
- **Brass to copper joints**: SILVER SOLDER (see copper to steel joints).
- **Brass to steel joints**: SILVER SOLDER (see copper to steel joints).

Testing Procedures

⚠ WARNING

To avoid risk of electrical shock, personal injury, or death, disconnect electrical power source to unit and discharge capacitor through a 10,000 ohm resistor before attempting to service, unless test procedures require power to be connected. Ensure all ground wires are connected before certifying unit as repaired and/or operational.

Restriction Testing

Restrictions in sealed system generally occur in capillary tube or strainer, but can exist anywhere on liquid side of system. To determine if a restriction exists:

1. Attach gauge and manifold between suction and discharge sides of sealed system.
2. Turn unit on, and allow pressure on each side to stabilize. Inspect condenser side of system. Tubing on condenser should be warm and temperature should be equal throughout (no sudden drops at any point along tubing):
   - If temperature of condenser tubing is consistent throughout, go to step 3.
   - If temperature of condenser tubing drops at any point, tubing is restricted at point of temperature drop (if restriction is severe, frost may form at point of restriction and extend down in direction of refrigerant flow in system). Go to step 4.
3. Turn unit off and time how long it takes high and low pressure gauges to equalize:
   - If pressure equalization takes longer than 7 minutes, a restriction exists in the capillary tube/ strainer. Go to step 4.
   - If pressure equalization takes less than 7 minutes, system is not restricted. Check for other possible causes of malfunction.
4. Recover refrigerant in sealed system.

NOTE: Before opening any refrigeration system, capture refrigerant in system for safe disposal.

5. Remove power from unit.

⚠ CAUTION

To reduce risk of personal injury or property damage, take necessary precautions against high temperatures required for brazing.

6. Remove and replace restricted device.
7. Evacuate sealed system.
8. Charge system to specification.

NOTE: Do not use captured or recycled refrigerant in Amana units. Captured or recycled refrigerant voids all Amana and/or compressor manufacturer's warranties.

NOTE: Charge system with exact amount of refrigerant. See Technical Sheet or refer to unit nameplate for correct refrigerant charge. Inaccurately charged system will cause future problems.

Testing Procedures

WARNING

To avoid risk of electrical shock, personal injury, or death, disconnect electrical power source to unit and discharge capacitor through a 10,000 ohm resistor before attempting to service, unless test procedures require power to be connected. Ensure all ground wires are connected before certifying unit as repaired and/or operational.

Evacuation

CAUTION

To avoid risk of fire, sealed refrigeration system must be air free. To reduce risk of air contamination follow evacuation procedures exactly.

NOTE: Before opening any refrigeration system, EPA regulations require refrigerant in system to be captured for safe disposal.

Proper evacuation of sealed refrigeration system is an important service procedure. Usable life and operational efficiency of air conditioner greatly depends upon how completely air, moisture and other non-condensables are evacuated from sealed system.

Air in sealed system causes high condensing temperature and pressure, resulting in increased power requirements and reduced performance.

Moisture in sealed system chemically reacts with refrigerant and oil to form corrosive hydrofluoric and hydrochloric acids. These acids attack motor windings and parts, causing premature breakdown.

Equipment required to evacuate sealed system includes:

- High vacuum pump, capable of producing a vacuum equivalent to 25 microns.
- Thermocouple vacuum gauge capable of providing true readings of vacuum in system.

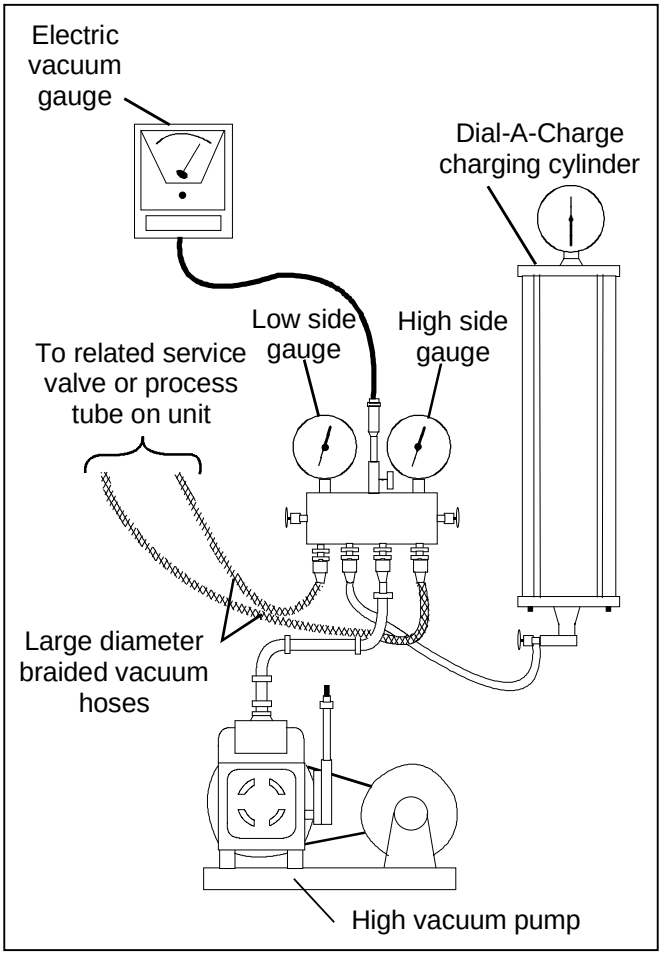
CAUTION

To avoid damage to compressor motor, never use air conditioner compressor as a vacuum pump or run compressor when system is under high vacuum.

To evacuate sealed refrigeration system:

1. Connect vacuum pump, vacuum tight manifold set with high vacuum hoses, thermocouple vacuum gauge and charging cylinder as shown in illustration.
2. Connect low side line to compressor process tube.
3. Connect high side line to process tube of liquid line strainer.

NOTE: If a compression or flare fitting cannot be attached to process tube(s) and still leave room for a pinch-off, swage tube(s) and braze on an additional length of tubing.



Evacuation Equipment Setup

4. Start vacuum pump and open shut off valve to high vacuum gauge manifold only.
5. After compound gauge (low side) drops to approximately 29 inches gauge, open valve to vacuum thermocouple gauge.
6. Ensure vacuum pump will blank-off to a maximum of 25 microns.

NOTE: A high vacuum pump can only produce a good vacuum if oil in pump is not contaminated.

7. If vacuum pump is working properly, close valve to vacuum thermocouple gauge.
8. Open high and low side valves of high vacuum manifold set. With valve on charging cylinder closed, open manifold valve to cylinder.
9. Evacuate system to at least 29 inches gauge. Open valve to thermocouple vacuum gauge.

Testing Procedures

WARNING

To avoid risk of electrical shock, personal injury, or death, disconnect electrical power source to unit and discharge capacitor through a 10,000 ohm resistor before attempting to service, unless test procedures require power to be connected. Ensure all ground wires are connected before certifying unit as repaired and/or operational.

10. Continue to evacuate to a maximum of 250 microns. Close valve to vacuum pump and watch rate of rise:
    - If vacuum does not rise above 1500 microns in three minutes, system can be considered properly evacuated.
    - If thermocouple vacuum gauge continues to rise, then levels off above 5000 microns, moisture and non-condensables are still present. Re-evacuate.
    - If gauge continues to rise above 5000 microns, a leak is present. Locate, repair, and re-evacuate.
11. When system is properly evacuated, close valve to thermocouple vacuum gauge and vacuum pump. Shut off pump and prepare to charge system.

Charging

NOTE: Do not use captured or recycled refrigerant in Amana units. Captured or recycled refrigerant voids all Amana and/or compressor manufacturer's warranties.

NOTE: Charge system with exact amount of refrigerant. See Technical Sheet or refer to unit nameplate for correct refrigerant charge. Inaccurately charged system will cause future problems.

To charge system:

NOTE: When using ambient compensated calibrated charging cylinder, allow liquid refrigerant to enter high side only.

1. With no power applied to unit, allow liquid refrigerant to flow into system until no more refrigerant can be added.
2. Close valve on high side of manifold.
3. Start (apply power to) system and charge to specification through low side. Do not charge through low side in a liquid form.
4. Close low side valve on manifold and pinch-off both process tubes. Remove manifold set, crimp shut open ends of process tubes and braze.
5. Recheck for refrigerant leaks.

Refrigerant Precautions

WARNING

To avoid personal injury, do not allow refrigerant to contact eyes or skin.

CAUTION

To avoid risk of property damage, do not use refrigerant other than that shown on unit serial number identification plate.

NOTE: All precautionary measures recommended by refrigerant manufacturers and suppliers apply and must be observed.

Using Line Piercing Valves

Line piercing valves can be used for diagnosis, but are not suitable for evacuating or charging due to holes pierced in tubing by valves.

NOTE: Do not leave line piercing valves on system. Connection between valve and tubing is not hermetically sealed. Leaks will occur.

Open Lines

During any processing of refrigeration system, never leave lines open to atmosphere. Open lines allow water vapor to enter system, making proper evacuation more difficult.

Performance Tests

⚠ WARNING

To avoid risk of electrical shock, personal injury, or death, disconnect electrical power source to unit and discharge capacitor through a 10,000 ohm resistor before attempting to service, unless test procedures require power to be connected. Ensure all ground wires are connected before certifying unit as repaired and/or operational.

Performance Tests

⚠ CAUTION

To avoid damage to air conditioner, do not run performance tests when cover is off unit or unit is not installed in mounting sleeve. Operation with cover/mounting sleeve removed changes design specifications for air movement in the unit, resulting in overheating of fan motor and causing refrigeration system to become unbalanced.

Performance tests provide reasonable assurance a unit is operating correctly and within specifications. Both performance tests must be successfully completed to provide this assurance. Perform tests after service, to verify a unit is operating within specifications. Tests can also be run as a diagnostic aid before service (retest unit after servicing).

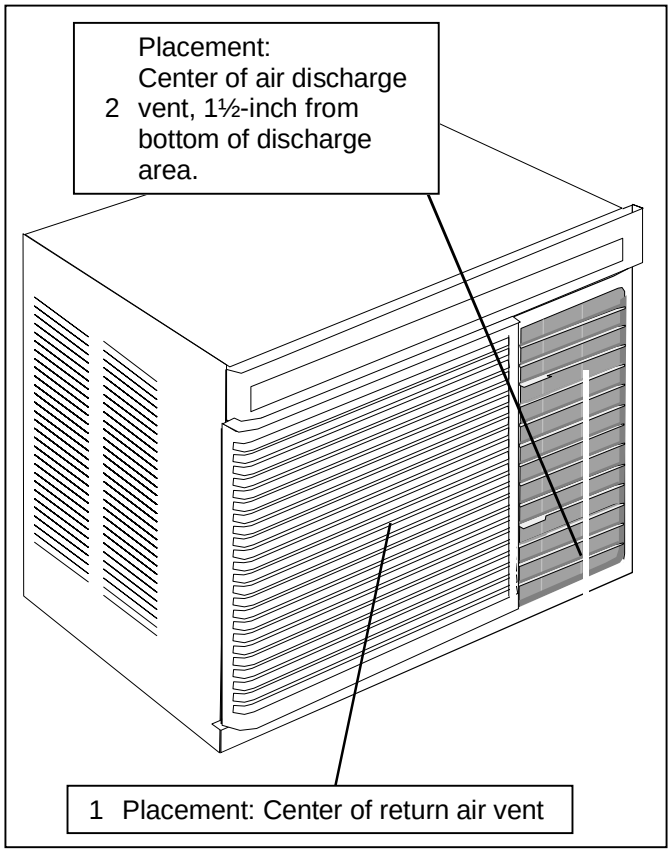
NOTE: Performance tests should not be run on installed units when outside temperature is more than 20°F below room temperature at testing location.

Test Set Up

A common reason for inefficient cooling is reduced air flow caused by a dirty condenser, evaporator, and/or air filter. Inspect each of these components and, if dirty, clean them before conducting any tests.

Results of performance tests are dependent upon the thermometers used, how they are handled, and where they are placed. To obtain accurate, reliable test results:

- Use two accurately calibrated refrigeration type thermometers, or a thermocouple potentiometer. A sling psychrometer is also required for these tests.
- See **Thermometer Testing Location** diagram. Secure thermometers to unit under test at locations 1 and 2 using masking tape, wire, or other suitable retainers.
- Ensure temperature scale on thermometers are readable *without having to touch or move thermometers to do* so.



Thermometer Testing Locations

Taking Sling Psychrometer Readings

The sling psychrometer obtains wet bulb temperatures used to determine percent relative humidity.

To obtain wet and dry bulb temperature readings with sling psychrometer:

1. Apply power to unit under test. Place unit in normal high cooling mode (press *HIGH FAN* pad), adjust temperature to lowest setting, and place *VENT CONTROL* to *CLOSED* position. Run unit under test at least 20 minutes before any readings are taken.
2. Saturate wick on sling psychrometer with clean water, slightly below room temperature (saturate wick only once during procedure).

NOTE: Ensure cold air blowing from unit under test is not blowing on sling psychrometer during either reading.

3. Take psychrometer reading approximately 5 feet in front of unit and 4 feet above floor. Record results.

Performance Tests

WARNING

To avoid risk of electrical shock, personal injury, or death, disconnect electrical power source to unit and discharge capacitor through a 10,000 ohm resistor before attempting to service, unless test procedures require power to be connected. Ensure all ground wires are connected before certifying unit as repaired and/or operational.

4. Remove wick from sling psychrometer. Take psychrometer reading at same location as reading taken in step 3. Record results (this is the sling psychrometer dry bulb temperature).

Cooling Performance Test

Best results are obtained when cooling test is conducted under "peak load" conditions.

1. Attach thermometers to unit under test at specified locations (see paragraph Test Set Up).
2. Apply power to unit under test. Place unit in normal high cooling mode press *HIGH FAN* pad), adjust temperature to lowest setting, and place *VENT CONTROL* to *CLOSED* position. Allow unit to run at least 20 minutes before any readings are taken.
3. Record following temperatures:
   A. Temperature at return air vent (Location 1 in Thermometer Testing Location diagram).
   B. Temperature at discharge vent (Location 2 in Thermometer Testing Location diagram).
   C. Wet bulb and dry bulb sling psychrometer readings (see paragraph Taking Sling Psychrometer Readings).

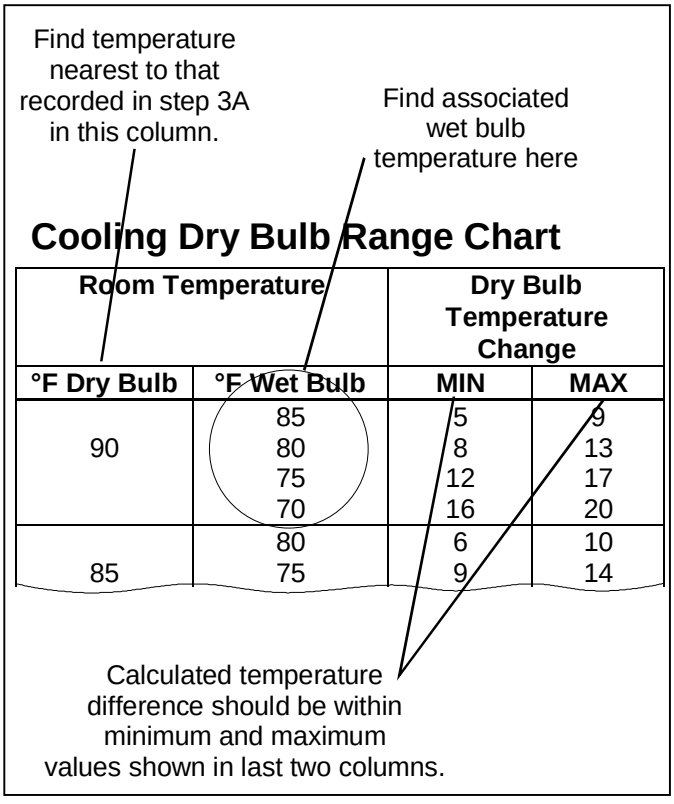
NOTE: Dry bulb sling psychrometer reading should be ±1°F of temperature recorded at return air vent.

4. Calculate difference between temperature readings taken in step 3A and 3B (subtract temperature recorded in step 3B from temperature recorded in step 3A). Record results.

NOTE: The remaining steps explain how to determine if unit under test is operating within specifications, using temperatures recorded in previous steps. See Cooling Dry Bulb Range Chart (on Technical Sheet for unit under test) to complete remaining steps. See Using Cooling Dry Bulb Range Chart diagram for additional directions.

5. Under °F DRY BULB, in ROOM TEMPERATURE column, find temperature nearest to the temperature recorded in step 3A (for example, if temperature recorded in step 3A was 87°F, the nearest temperature on chart would be 85°F). Use associated wet bulb temperatures (shown in next column on chart) in following step.
6. Using wet bulb temperatures associated with dry bulb temperature located in previous step, find temperature on chart nearest to wet bulb sling psychrometer reading obtained in step 3C.
7. Note minimum (MIN) and maximum (MAX) values shown to right of associated dry bulb/wet bulb temperatures.

Unit under test is within cooling specifications if temperature difference calculated in step 4 falls within minimum and maximum values noted in step 7. Unit is out of specifications if calculation from step 4 is greater or less than values from step 7. (See paragraph Performance Test Diagnosis Guide for additional information.)



Room Temperature		Dry Bulb Temperature Change	
°F Dry Bulb	°F Wet Bulb	MIN	MAX
90	85	5	9
	80	8	13
	75	12	17
	70	16	20
85	80	6	10
	75	9	14

Using Cooling Dry Bulb Range Chart

Performance Tests

WARNING

To avoid risk of electrical shock, personal injury, or death, disconnect electrical power source to unit and discharge capacitor through a 10,000 ohm resistor before attempting to service, unless test procedures require power to be connected. Ensure all ground wires are connected before certifying unit as repaired and/or operational.

Cooling Wattage Consumption Test

To perform cooling wattage consumption test:

1. Attach wattmeter to unit under test.
2. Turn unit under test on. Place unit in normal high cooling mode (press *HIGH FAN* pad), adjust temperature to lowest setting, and place *VENT CONTROL* to *CLOSED* position. Allow unit to run at least 20 minutes before any readings are taken.
3. Record outdoor temperature in vicinity of air conditioner.

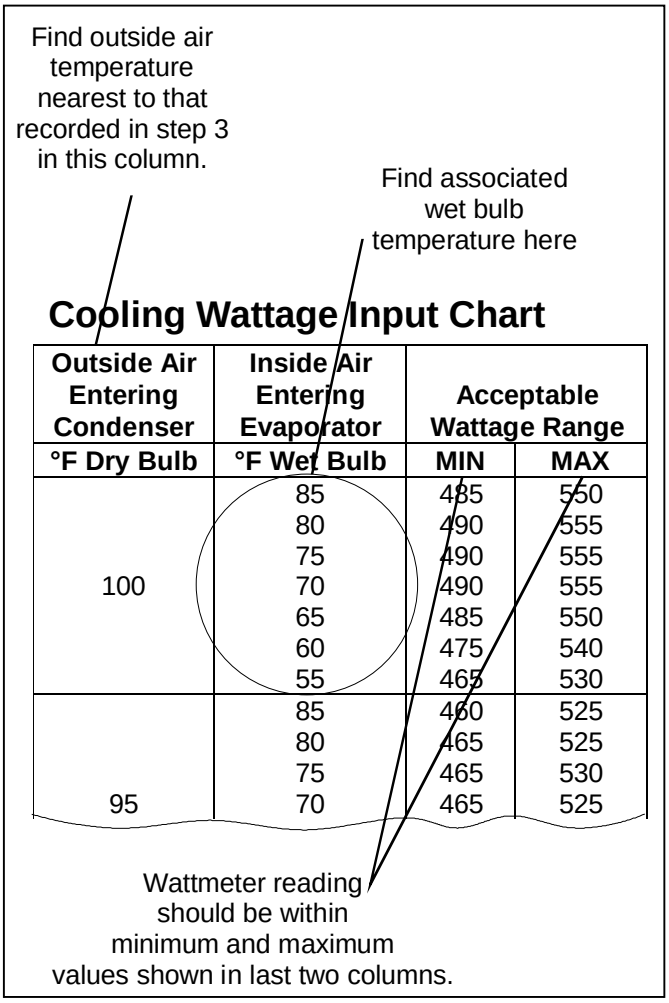
NOTE: When recording outdoor temperature, avoid exposing thermometer to direct sunlight or condenser discharge air.

4. Using sling psychrometer, record indoor wet bulb temperature (see paragraph Taking Sling Psychrometer Readings).
5. Record wattmeter reading.

NOTE: The remaining steps explain how to determine if unit under test is operating within specifications, using figures recorded in previous steps. See Cooling Wattage Input Chart (on Technical Sheet for unit under test) to complete remaining steps. See Using Cooling Wattage Input Chart graphic for additional directions.

6. In OUTSIDE AIR ENTERING CONDENSER column (on chart), locate temperature nearest to temperature recorded in step 3. Use associated room air wet bulb temperatures (shown in next column on chart) in following step.
7. Using room air wet bulb temperatures associated with dry bulb temperature located in previous step, find temperature on chart nearest to wet bulb sling psychrometer reading obtained in step 4.
8. Note minimum (MIN) and maximum (MAX) values shown to right of associated dry bulb/wet bulb temperatures.

Unit under test is within wattage specifications if wattmeter reading recorded in step 5 falls within minimum and maximum values noted in step 8. Unit is out of specifications if calculation from step 5 is greater or less than values from step 8. (See paragraph Performance Test Diagnosis Guide for additional information.)



Using Cooling Wattage Input Chart

Performance Tests

⚠ WARNING

To avoid risk of electrical shock, personal injury, or death, disconnect electrical power source to unit and discharge capacitor through a 10,000 ohm resistor before attempting to service, unless test procedures require power to be connected. Ensure all ground wires are connected before certifying unit as repaired and/or operational.

Performance Test Diagnosis Guide

Use following chart to determine possible causes for performance test failures.

Performance Test Results	Possible Malfunctions
Cooling wattage and cooling range both below minimum requirement.	Refrigerant charge low. Starved indoor coil. Sealed system leak. Restricted capillary tube. Weak (inefficient) compressor.
Cooling wattage and cooling range both exceed maximum requirement.	Refrigerant over charged. Slow fan motor.
Cooling wattage below minimum requirement, cooling range exceeds maximum requirement.	Restricted air flow (dirty filter, dirty evaporator coil, dirty condenser coil).

Disassembly Procedures

⚠ WARNING

To avoid risk of electrical shock, personal injury, or death, disconnect electrical power source to unit and discharge capacitor through a 10,000 ohm resistor before attempting to service, unless test procedures require power to be connected. Ensure all ground wires are connected before certifying unit as repaired and/or operational.

The following paragraphs describe how to disassemble unit under test. Disassembly to some extent is required to install unit, to perform troubleshooting procedures, and to remove and replace faulty components.

Component names used throughout disassembly procedures are the same as those used in Parts Manuals.

For quicker reassembly, disassemble unit under test only to extent necessary to troubleshoot and repair. Unless noted, reassembly is opposite of disassembly.

⚠ WARNING

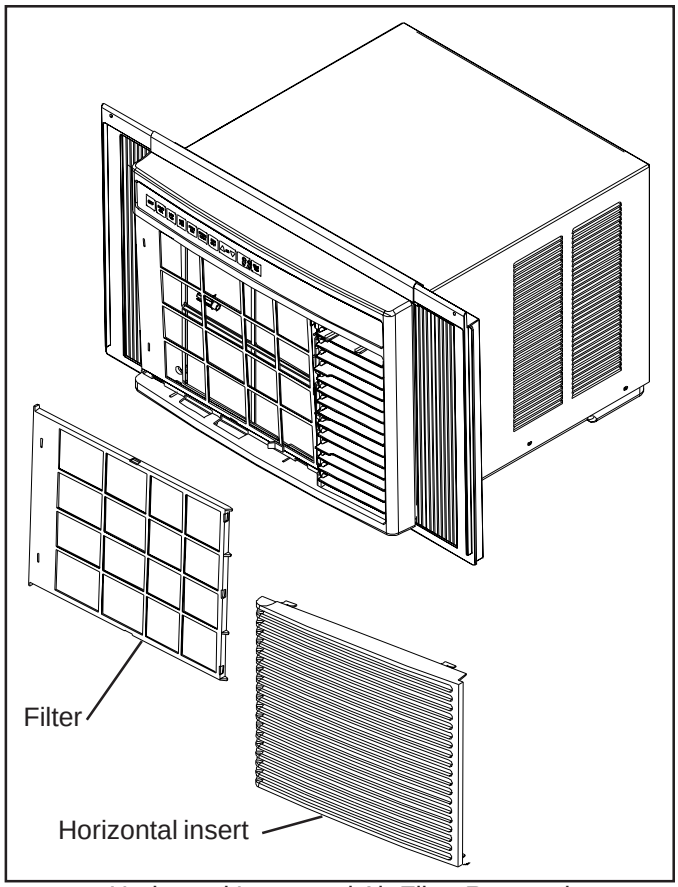
To avoid risk of personal injury or death due to electrical shock, ground wires and wires colored like ground wires are **NOT** to be used as current carrying conductors. The standard accepted color coding for ground wires is **green** or **green with a yellow stripe**. Electrical components such as the compressor and fan motor are grounded through an individual wire attached to the electrical component and to another part of the air conditioner. Ground wires should not be removed from individual components while servicing, unless the component is to be removed and replaced. It is extremely important to replace all removed ground wires before completing service.

Horizontal Insert (Front Grille) and Air Filter Removal

To remove horizontal insert and air filter:

1. Slide horizontal insert left until insert guides are free of guide rails, then pull insert out and away from front frame.
2. Slide air filter left until filter is free of filter alignment guides, then pull filter out and away from front frame.

NOTE: If air filter is dirty, clean with vacuum, or hand wash. Ensure filter is completely dry before reinstalling in unit.



Horizontal Insert and Air Filter Removal

Disassembly Procedures

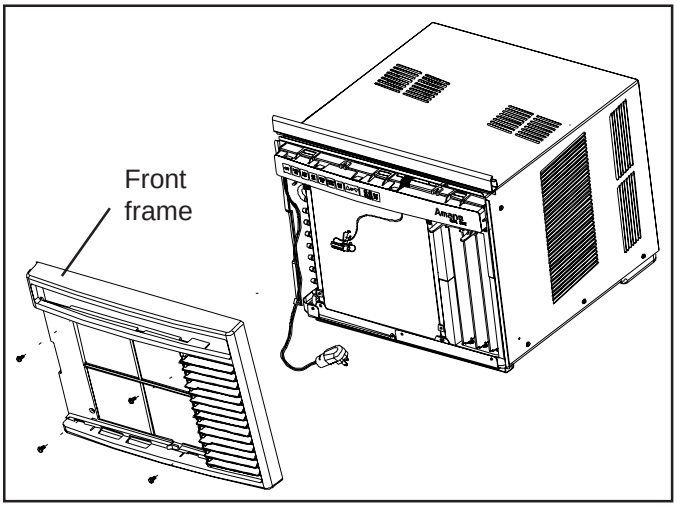
WARNING

To avoid risk of electrical shock, personal injury, or death, disconnect electrical power source to unit and discharge capacitor through a 10,000 ohm resistor before attempting to service, unless test procedures require power to be connected. Ensure all ground wires are connected before certifying unit as repaired and/or operational.

Front Frame Removal

To remove front frame:

1. Remove horizontal insert and air filter (see paragraph Horizontal Insert (Front Grille) and Air Filter Removal).
2. Remove screws securing front frame to air conditioner chassis.
3. Pull front frame out and away from air conditioner.



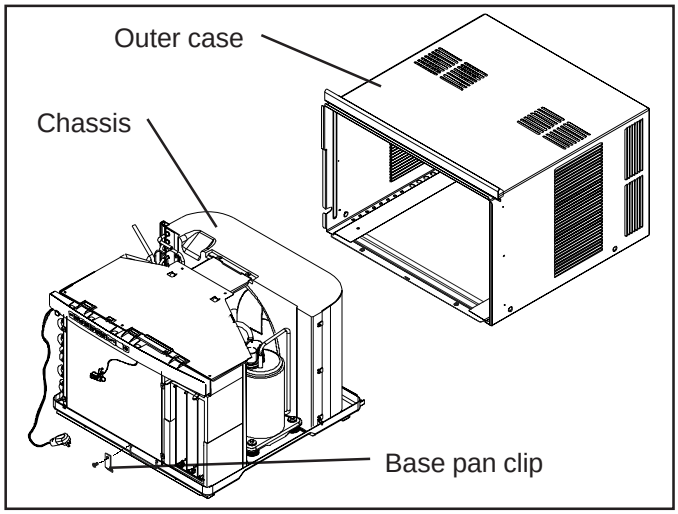
Front Frame Removal

Outer Case Removal

To remove outer case:

1. Remove front frame (see paragraph Front Frame Removal).
2. Remove screw securing base pan clip to chassis.
3. Remove chassis from outer case by pulling on base pan handle.

NOTE: Pull chassis from outer case slowly and evenly. When chassis is pulled 9 to 12-inches from case, have two people grasp base pan (one either side) and pull chassis completely out of case.



Outer Case Removal

Disassembly Procedures

⚠ WARNING

To avoid risk of electrical shock, personal injury, or death, disconnect electrical power source to unit and discharge capacitor through a 10,000 ohm resistor before attempting to service, unless test procedures require power to be connected. Ensure all ground wires are connected before certifying unit as repaired and/or operational.

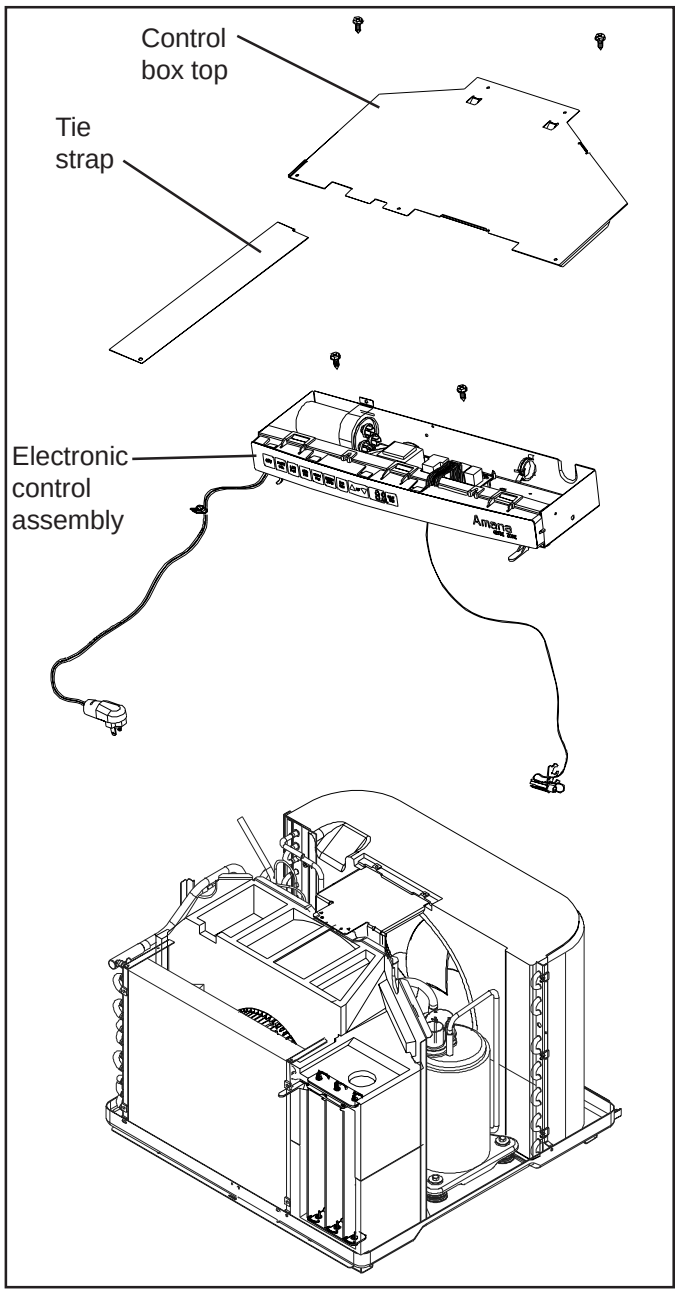
Electronic Control Assembly Removal

To remove electronic control assembly:

1. Remove outer case (see paragraph Outer Case Removal).
2. Remove screws securing control box top to chassis, then lift top up and away.
3. Remove screw securing tie strap to electronic control assembly, then lift strap up and away.
5. Discharge capacitor through 10,000 ohm resistor.
6. Disconnect fan motor and compressor wires attached to capacitor.
7. Disconnect fan motor and compressor wires attached to power supply circuit board.

NOTE: Before disconnecting or removing wires, always note position or location of wires. Ensure all disconnected wires are reconnected to proper location.

8. Remove screws securing control assembly to chassis.
9. Disengage vent door actuator from vent door.
10. Remove temperature sensing bulb from bulb retainer in condenser.
11. Lift control assembly up and away from control panel.



Electronic Control Assembly Removal

Disassembly Procedures

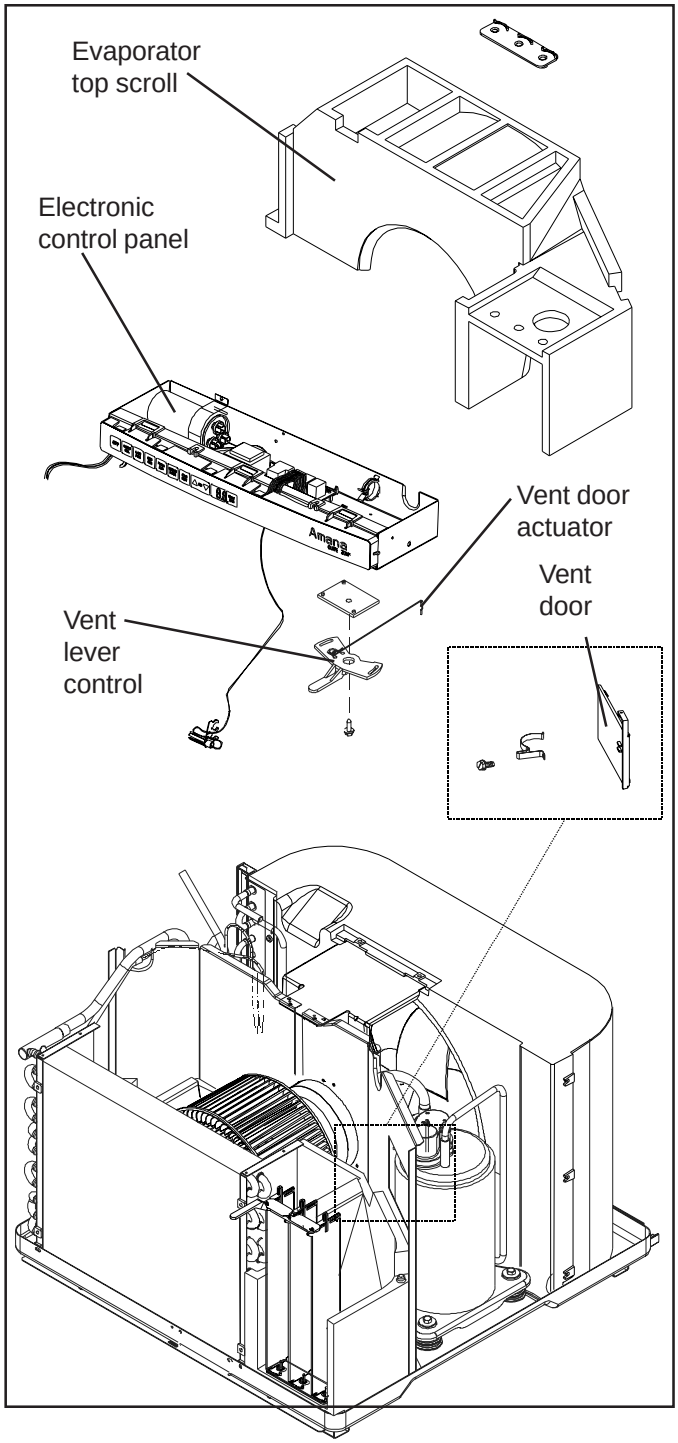
WARNING

To avoid risk of electrical shock, personal injury, or death, disconnect electrical power source to unit and discharge capacitor through a 10,000 ohm resistor before attempting to service, unless test procedures require power to be connected. Ensure all ground wires are connected before certifying unit as repaired and/or operational.

Vent Door and Vent Lever Control Removal

To remove vent door and vent lever control:

1. Remove electronic control assembly (see paragraph Electronic Control Assembly Removal).
2. Lift evaporator top scroll up and away from chassis.
3. Remove screw securing vent door to partition panel.
4. Remove vent door from partition panel by bowing door screen until top tabs securing screen to panel are free, then pull vent door out and away.
5. Remove screw securing vent lever control and attached vent door actuator to bottom of electronic control panel.



Vent Control Removal

Disassembly Procedures

⚠ WARNING

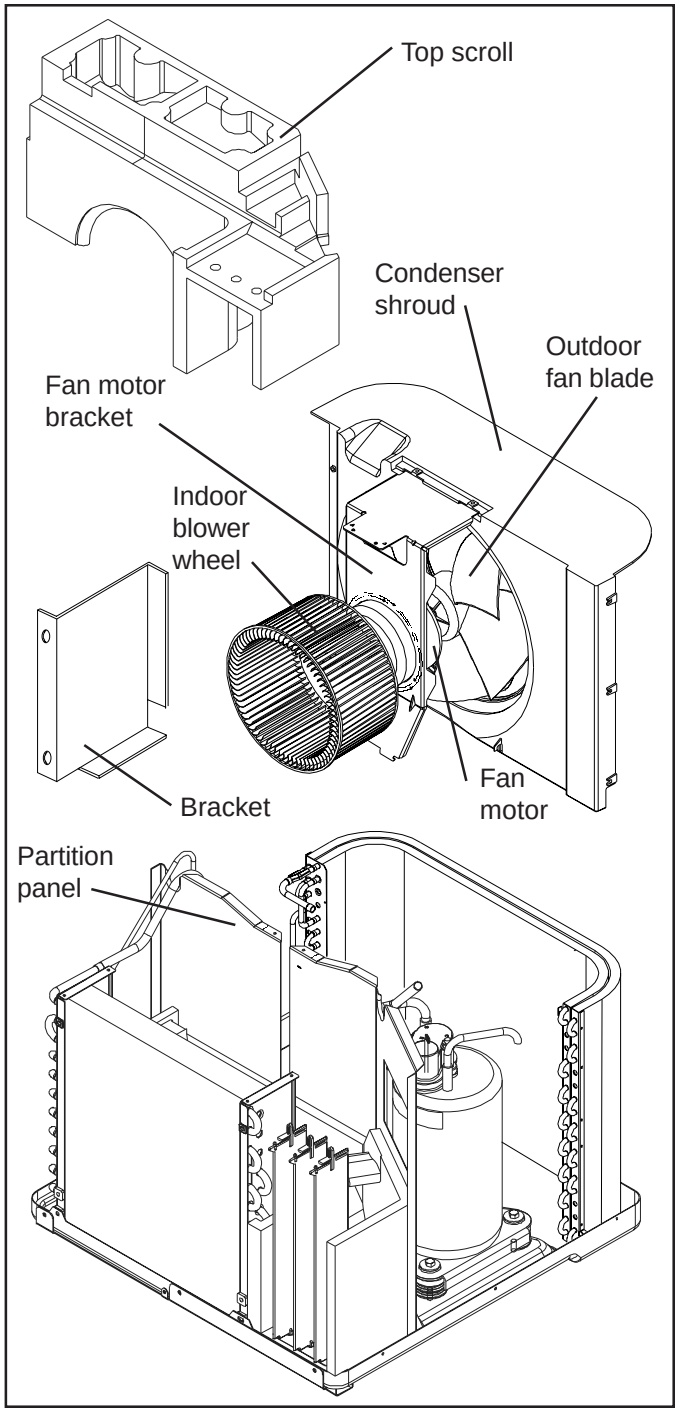
To avoid risk of electrical shock, personal injury, or death, disconnect electrical power source to unit and discharge capacitor through a 10,000 ohm resistor before attempting to service, unless test procedures require power to be connected. Ensure all ground wires are connected before certifying unit as repaired and/or operational.

Fan Motor Assembly and Condenser Shroud Removal

To remove fan motor assembly (including fan motor, motor bracket, indoor blower wheel, and outdoor (condenser) fan blade) and condenser shroud:

1. Remove electronic control assembly (see paragraph Electronic Control Assembly Removal).
2. Lift evaporator top scroll up and away from chassis.
3. Remove screws securing fan motor bracket to partition panel.
4. Remove screws securing condenser shroud to condenser (screws located on each side of shroud).
5. Remove screws securing left side bracket to partition panel.
6. Pull fan motor wires free of other wires.
7. Lift fan motor assembly and attached condenser shroud up and away from chassis.

NOTE: On reassembly, tabs on bottom of fan motor bracket MUST be fully seated in matching slots on partition panel.



Fan Motor Assembly and Condenser Shroud Removal

Disassembly Procedures

WARNING

To avoid risk of electrical shock, personal injury, or death, disconnect electrical power source to unit and discharge capacitor through a 10,000 ohm resistor before attempting to service, unless test procedures require power to be connected. Ensure all ground wires are connected before certifying unit as repaired and/or operational.

Disassembly of Fan Motor Assembly and Condenser Shroud

To disassemble fan motor assembly (including condenser shroud):

1. Remove fan motor assembly and condenser shroud from chassis (see paragraph Fan Motor Assembly and Condenser Shroud Removal).

NOTE: Indoor bower wheel and outdoor fan blade are secured to fan motor shaft by "O" clamps. "O" clamps are tightened in place by a hex head screw. A cutout on blower wheel allows access to hex head screw using a long hex driver. Hex head screw on outdoor fan blade is readily accessible.

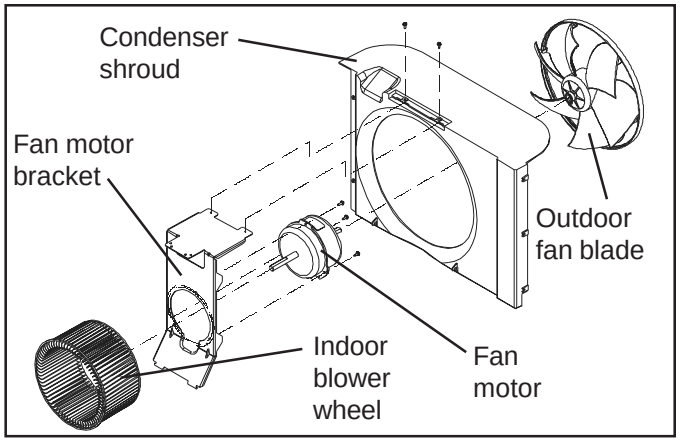
2. Loosen hex screw securing "O" clamp to indoor blower wheel/fan motor shaft, then remove clamp.
3. Pull indoor blower wheel off fan motor shaft.

NOTE: When installing blower wheel, ensure "O" clamp and hex head screw are facing flat part of motor shaft and aligned so screw can be tightened from access hole in blower wheel. Ensure distance between blower wheel and orifice ring is correct (see paragraph Fan Motor, in Testing Procedures section of manual).

4. Loosen hex screw securing "O" clamp to outdoor fan blade/fan motor shaft, then remove clamp.
5. Pull outdoor fan blade off fan motor shaft.

NOTE: When installing outdoor fan, ensure "O" clamp and hex head screw are facing flat part of motor shaft. Ensure distance between outdoor fan blade and condenser coil is correct (see paragraph Fan Motor, in Testing Procedures section of manual).

6. Pull condenser shroud away from fan motor assembly.
7. Remove screws securing fan motor to fan motor bracket, then pull fan motor free of bracket.



Disassembly of Fan Motor Assembly and Condenser Shroud

Disassembly Procedures

⚠ WARNING

To avoid risk of electrical shock, personal injury, or death, disconnect electrical power source to unit and discharge capacitor through a 10,000 ohm resistor before attempting to service, unless test procedures require power to be connected. Ensure all ground wires are connected before certifying unit as repaired and/or operational.

Condenser Removal

To remove condenser:

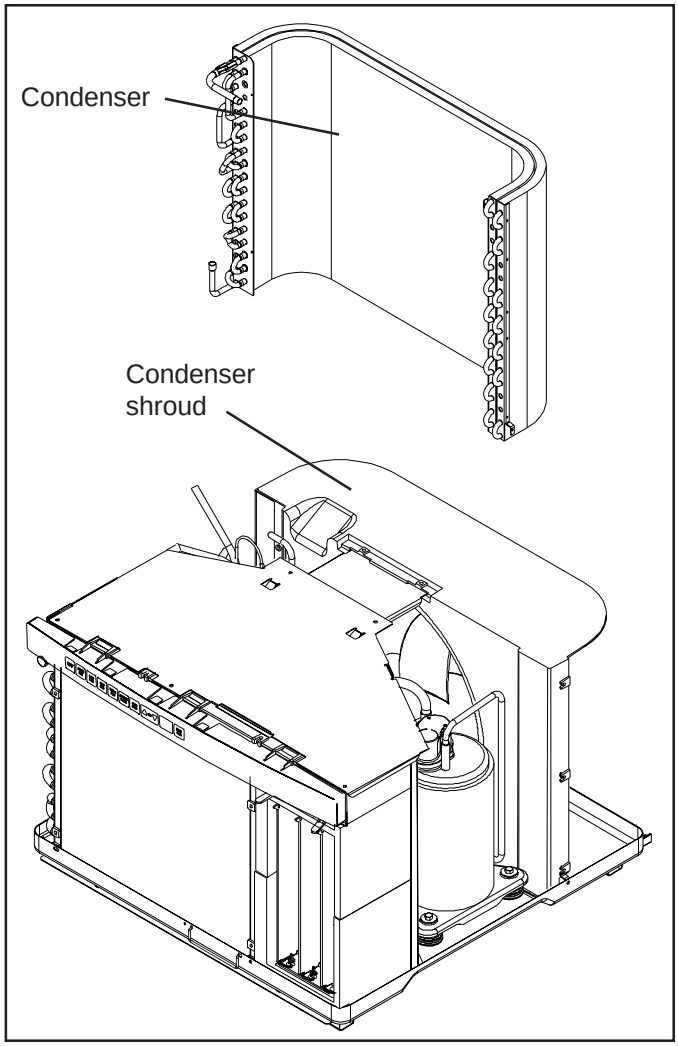
1. Remove outer case (see paragraph Outer Case Removal).
2. Remove screws securing condenser shroud to condenser (screws located on each side of shroud). Shroud remains in place.
3. Evacuate sealed system (see paragraph Evacuation, in Troubleshooting Information section).

NOTE: Before opening any refrigeration system, capture refrigerant in system for safe disposal.

⚠ CAUTION

To reduce risk of personal injury or property damage, take necessary precautions against high temperatures required for brazing.

4. Unbraze condenser discharge connection to compressor.
5. Unbraze condenser connection to capillary tube.
6. Remove two screws securing condenser to base pan.
7. Lift condenser up and away from chassis.



Condenser Removal

Disassembly Procedures

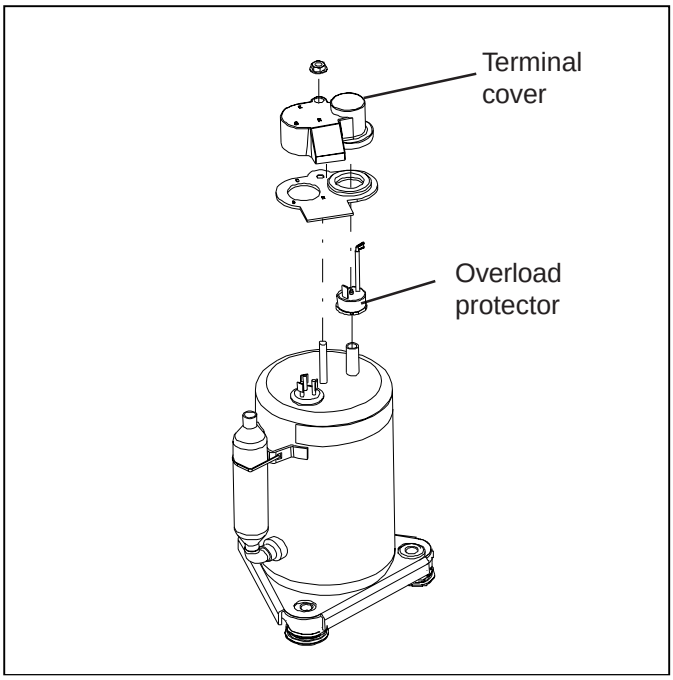
⚠ WARNING

To avoid risk of electrical shock, personal injury, or death, disconnect electrical power source to unit and discharge capacitor through a 10,000 ohm resistor before attempting to service, unless test procedures require power to be connected. Ensure all ground wires are connected before certifying unit as repaired and/or operational.

Compressor Overload Protector Removal

To remove compressor overload protector:

1. Remove outer case (see paragraph Outer Case Removal).
2. Discharge capacitor through 10,000 ohm resistor.
3. Remove nut securing terminal cover to compressor, then lift terminal cover up and away from compressor.
4. Disconnect overload protector leads.
5. Lift overload protector up and away from compressor.



Compressor Overload Protector Removal

Compressor Removal

To remove compressor:

1. Remove outer case (see paragraph Outer Case Removal).
2. Remove compressor overload protector (see paragraph Compressor Overload Protector Removal).
3. Disconnect leads on compressor.
4. Evacuate sealed system (see paragraph Evacuation, in Troubleshooting Information section).

NOTE: Before opening any refrigeration system, capture refrigerant in system for safe disposal.

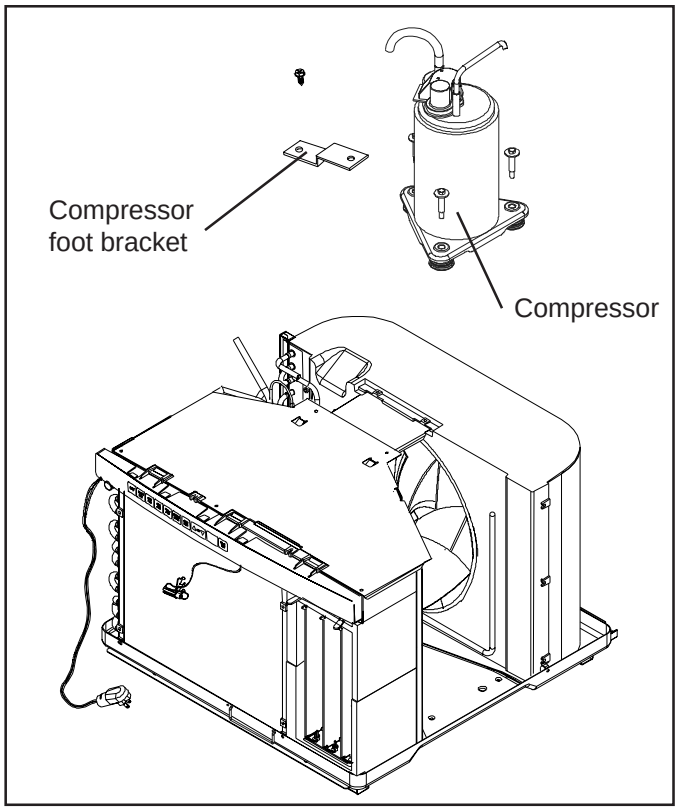
⚠ CAUTION

To reduce risk of personal injury or property damage, take necessary precautions against high temperatures required for brazing.

5. Unbraze compressor discharge tube connection to condenser (outside coil).
6. Unbraze compressor suction tube connection to evaporator (indoor coil).
7. Remove screw securing compressor foot bracket to base pan, then remove bracket.
8. Remove screws securing compressor to base pan.

NOTE: Some units may have one or more shipping nuts on bottom of base pan, threaded on compressor screws.

9. Lift compressor up and away from chassis.



Compressor Removal

Disassembly Procedures

⚠ WARNING

To avoid risk of electrical shock, personal injury, or death, disconnect electrical power source to unit and discharge capacitor through a 10,000 ohm resistor before attempting to service, unless test procedures require power to be connected. Ensure all ground wires are connected before certifying unit as repaired and/or operational.

Evaporator (Indoor Coil) Removal

To remove evaporator:

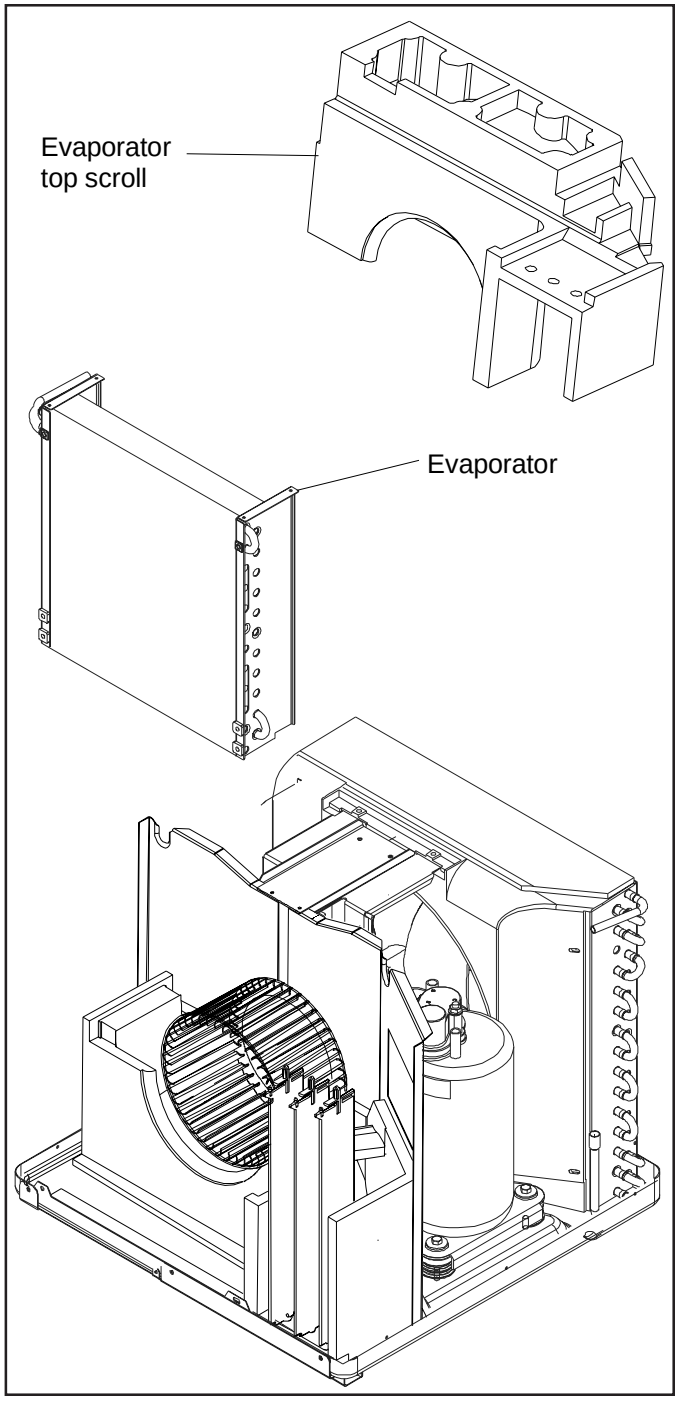
1. Remove control assembly (see paragraph Control Assembly Removal).
2. Lift evaporator top scroll, up and away from chassis.
3. Evacuate sealed system (see paragraph Evacuation, in Troubleshooting Information section).

NOTE: Before opening any refrigeration system, capture refrigerant in system for safe disposal.

⚠ CAUTION

To reduce risk of personal injury or property damage, take necessary precautions against high temperatures required for brazing.

4. Unbraze evaporator suction tube connection to compressor.
5. Unbraze evaporator connection to feeder tube.
6. Remove two screws securing bottom front of evaporator to base pan.
7. Lift evaporator up and away from chassis.



Evaporator Removal