

Service Manual



ZoneAire Portable Air Conditioner

Model: P09A P09B P012A P012B

PORT-ServMan (04-09)

TECHNICAL SUPPORT CONTACT INFORMATION



FRIEDRICH AIR CONDITIONING CO. Post Office Box 1540 · San Antonio, Texas 78295-1540 4200 N. Pan Am Expressway · San Antonio, Texas 78218-5212 (210) 357-4400 · FAX (210) 357-4490

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Printed in the U.S.A.

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IMPORTANT SAFETY INFORMATION

The information contained in this manual is intended for use by a qualified service technician who is familiar with the safety procedures required for installation and repair, and who is equipped with the proper tools and test instruments required to service this product.

Installation or repairs made by unqualified persons can result in subjecting the unqualified person making such repairs as well as the persons being served by the equipment to hazards resulting in injury or electrical shock which can be serious or even fatal.

Safety warnings have been placed throughout this manual to alert you to potential hazards that may be encountered. If you install or perform service on equipment, it is your responsibility to read and obey these warnings to guard against any bodily injury or property damage which may result to you or others.

Your safety and the safety of others are very important. We have provided many important safety messages in this manual and on your appliance. Always read and obey all safety messages. This is a safety Alert symbol. This symbol alerts you to potential hazards that can kill or hurt you and others. All safety messages will follow the safety alert symbol with the word "WARNING" or "CAUTION". These words mean: WARNING You can be killed or seriously injured if you do not follow instructions. You can receive minor or moderate injury if you do not follow instructions. All safety messages will tell you what the potential hazard is, tell you how to reduce the chance of injury, and tell you what will happen if the instructions are not followed. A message to alert you of potential property damage will have the NOTICE word "NOTICE". Potential property damage can occur if instructions are not followed.

PERSONAL INJURY OR DEATH HAZARDS

ELECTRICAL HAZARDS:

- Unplug and/or disconnect all electrical power to the unit before performing inspections, maintenance, or service.
- Make sure to follow proper lockout/tag out procedures.
- Always work in the company of a qualified assistant if possible.
- Capacitors, even when disconnected from the electrical power source, retain an electrical charge potential capable of causing electric shock or electrocution.
- Handle, discharge, and test capacitors according to safe, established, standards, and approved procedures.
- Extreme care, proper judgment, and safety procedures must be exercised if it becomes necessary to test or troubleshoot equipment with the power on to the unit.

- Do not spray or pour water on the return air grille, discharge air grille, evaporator coil, control panel, and sleeve on the room side of the air conditioning unit while cleaning.
- Electrical component malfunction caused by water could result in electric shock or other electrically unsafe conditions when the power is restored and the unit is turned on, even after the exterior is dry.
- Never operate the A/C unit with wet hands.
- Use air conditioner on a single dedicated circuit within the specified amperage rating.
- Use on a properly grounded outlet only.
- Do not remove ground prong of plug.
- Do not cut or modify the power supply cord.
- Do not use extension cords with the unit.
- Follow all safety precautions and use proper and adequate protective safety aids such as: gloves, goggles, clothing, adequately insulated tools, and testing equipment etc.
- Failure to follow proper safety procedures and/or these warnings can result in serious injury or death.

REFRIGERATION SYSTEM HAZARDS:

- Use approved standard refrigerant recovering procedures and equipment to relieve pressure before opening system for repair.
- Do not allow liquid refrigerant to contact skin. Direct contact with liquid refrigerant can result in minor to moderate injury.
- Be extremely careful when using an oxy-acetylene torch. Direct contact with the torch's flame or hot surfaces can cause serious burns.
- Make sure to protect personal and surrounding property with fire proof materials.
- Have a fire extinguisher at hand while using a torch.
- Provide adequate ventilation to vent off toxic fumes, and work with a qualified assistant whenever possible.
- Always use a pressure regulator when using dry nitrogen to test the sealed refrigeration system for leaks, flushing etc.
- Make sure to follow all safety precautions and to use proper protective safety aids such as: gloves, safety glasses, clothing etc.
- Failure to follow proper safety procedures and/or these warnings can result in serious injury or death.

MECHANICAL HAZARDS:

- Extreme care, proper judgment and all safety procedures must be followed when testing, troubleshooting, handling, or working around unit with moving and/or rotating parts.
- Be careful when, handling and working around exposed edges and corners of sleeve, chassis, and other unit components especially the sharp fins of the indoor and outdoor coils.
- Use proper and adequate protective aids such as: gloves, clothing, safety glasses etc.
- Failure to follow proper safety procedures and/or these warnings can result in serious injury or death.

PROPERTY DAMAGE HAZARDS

FIRE DAMAGE HAZARDS:

- Read the Installation/Operation Manual for this air conditioning unit prior to operating.
- Use air conditioner on a single dedicated circuit within the specified amperage rating.
- Connect to a properly grounded outlet only.
- Do not remove ground prong of plug.
- Do not cut or modify the power supply cord.
- Do not use extension cords with the unit.
- Failure to follow these instructions can result in fire and minor to serious property damage.

WATER DAMAGE HAZARDS:

- Improper installation maintenance, or servicing of the air conditioner unit, or not following the above Safety Warnings can result in water damage to personal items or property such.
- Insure that the unit has a drain hose properly connected. (Drain hose is optional, see page13)
- Do not drill holes in the bottom of the drain pan or the underside of the unit.
- Failure to follow these instructions can result in damage to the unit and/or minor to serious property damage.

INTRODUCTION

This service manual is designed to be used in conjunction with the installation manuals provided with each unit.

This service manual was written to assist the professional HVAC service technician to quickly and accurately diagnose and repair any malfunctions of this product.

This manual, therefore, will deal with all subjects in a general nature. (i.e. all text will pertain to all models).

Regarding the Portable Air Conditioner

This Portable Air Conditioner is designed to provide a quick and easy cooling solution for areas that either do not have air conditioning or areas that the current system cannot maintain at a comfortable level.

This unit is also great as a back-up system in case the primary cooling system should fail. Other means of conditioning should be employed when the indoor temperature is either below $17^{\circ}C$ ($63^{\circ}F$) or above $35^{\circ}C$ ($95^{\circ}F$).

This unit is designed with human comfort in mind.

IMPORTANT: It will be necessary for you to accurately identify the unit you are servicing, so you can be certain of a proper diagnosis and repair. (See Unit Identification.)

UNIT INTRODUCTION



- 1. Control panel
- 2. Air outlet
- 3. Signal receptor
- 4. Handle
- 5. Caster
- 6. Air outlet hose
- 7. Air filter
- 8. Air intake hose
- 9. 1/2" water outlet drain
- 10. Power supply cord

UNIT MODEL AND SERIAL NUMBER UNIT IDENTIFICATION

MODEL NUMBER CODE

	Р	09	Α
Portable			
2nd and 3rd DIGIT - Approximate BTU/HR (Cooling) Heating BTU/Hr capacity listed in the Specification/Performance Data Section			
Design Series			

RAC SERIAL NUMBER IDENTIFICATION GUIDE

	Number e Manufa C=3 D=4 E=5	ctured F=6 G=7 H=8	J=9	L	н	G	К	00001 Production Run Number
Year M A=1 B=2 C=3	anufactu D=4 E=5 F=6	red G=7 H=8 J=9	K=0		1			Product Line R = RAC
A=Jan B=Feb	Manufac D=Apr E=May F=Jun	G=Jul H=Aug						

TECHNICAL SPECIFICATIONS P09A AND P12A

Model	Cooling Capacity BTU/h	Voltage / Hz	Amps	Watts	Dimensions (W" x H" x D")	Dehumidification (Pints/Hour)	Indoor Air Circulation (CFM)	Refrigerant Charge) (R-22)	Locked Rotor Amps	Net Weight (Ibs.)	Circuit Rating	Plug Face (NEMA#)
P09A	8900	115/60	8	923	19.5" x 33.6" x 15.5"	4.2	212	18	40.5	80	125V/15A	5-15P
P12A	11500	115/60	10.5	1280	19.5" x 33.6" x 15.5"	4.2	235	24.7	40.5	86	125V/15A	5-15P

Model	Cooling Capacity BTU/h	Voltage / Hz	Amps	Watts	Dimensions (W" x H" x D")	Dehumidification (Pints/Hour)	Indoor Air Circulation (CFM)	Refrigerant Charge) (410 A)	Locked Rotor Amps	Net Weight (Ibs.)	Circuit Rating	Plug Face (NEMA#)
P09B	10000	115/60	10.8	1200	19.25" x 33.62" x 15.55"	4.2	224	21.2	50	77.2	125V/15A	5-15P
P12B	12000	115/60	11.5	1300	19.25" x 33.62" x 15.55"	4.2	235	24.7	50	81.6	125V/15A	5-15P

PRECAUTIONS FOR USE

- Make sure the unit is installed in an accessible location.
- Do not locate the unit in direct sunlight so as to avoid discoloration of the plastic.
- Keep the unit 1 meter away from television sets or radios to avoid the risk of electromagnetic interference.
- Ensure that the discharge air outlet is free from obstructions and not impeded by walls or other structures.
- Operate the unity ONLY in the upright position.
- When unplugging the unit, hold the power plug securely and pull it out carefully.
- Do not use damaged or improper AC socket.

AWARNING



EXPLOSION HAZARD Do not use the unit near gas applian

Do not use the unit near gas appliances, or in the vicinity of flammable liquids.

Failure to follow this warning could result in serious injury or death.

CONTROL PANEL OPERATION



Dehumidifying and cooling operation

The operating range for cooling operation is $60^{\circ}F - 90^{\circ}F$, and the operating range for dehumidifying is $68^{\circ}F - 88^{\circ}F$.

Power source

- The AC socket must be firm and reliable.
- Don't connect the portable air conditioner to a multiple socket outlet which is also being used for other electrical appliances.
- Insert the AC power plug securely into the AC socket before using the unit, when it beeps after two seconds, press ON/ OFF button, the unit begins to run.

LCDI power cord information

All Friedrich portable air conditioners are shipped from the factory with a Leakage Current Detection Interrupter (LCDI) equipped power cord. The LCDI device meets the UL and NEC requirements for cord connected air conditioners effective August 2004.

To test your power supply cord:

- 1. Plug power supply cord into a grounded 3 prong outlet.
- 2. Press RESET (See drawing below).
- 3. Press TEST (listen for click; Reset button trips and pops out).
- 4. Press and release RESET (listen for click; Reset button latches and remains on). The power supply cord is ready for operation.

NOTE: LCDI device is not intended to be used as a switch. Once plugged in the unit will operate normally without the need to reset the LCDI device.

If the device fails to trip when tested or if the power supply cord is damaged it must be replaced with a new supply cord from the manufacturer. We recommend you contact our Technical Assistance Line at (800) 541-6645. To expedite service, please have your model and serial number available.



WARNING: NEVER CUT OR REMOVE THE GROUNDING PRONG FROM PLUG. NEVER USE EXTENSION CORDS TO OPERATE AN AIR CONDITIONER.

Mode control

The mode control has three settings– Cool, Dehumidify and Fan. The settings are adjusted with the Mode Control button. A light will indicate which setting is currently being used.

Cooling operation

1. Press MODE button to choose the cooling mode, LCD window will show "cool".

During the cooling operation, always place the air exhaust hose through an open window.

- Repeatedly press TEMP + or TEMP button to set a proper room TEMP. between 60°F - 90°F.
- 3. Press FAN SPEED button to choose between low, medium and high speeds.

NOTE:

In order to improve the cooling efficiency:

- a) If your room is directly exposed to the sun, draw the curtains.
- b) Do not place near other heat source.

Dehumidifying Operation

- 1. Keep the windows and the doors closed to aid in effectively dehumidifying the room.
- Press MODE button to choose the dehumidifying mode, LCD window will show "DRY", the fan speed cannot be adjusted.

When used as dehumidifier only it is not necessary to install the exhaust hose.

Time Set Function

To set the time to start the machine, with the unit off (but power supplied), press TIMER button, the LCD window will show " \bigcirc -оN", continually press the TIMER button, set the preferred start time. The setting range is 1-24 hours.

To set the time to stop the machine, with the unit running, press TIMER button, the LCD window will show " $\bigcirc - \bigcirc \square \square \square$ ", continually press the TIMER button ,set the preferred time to stop the machine. The setting range is 1-24 hours

NOTE: During timer mode if the TIMER button is pressed again it will cancel the timer operation.

Warning Light

Condensed water may accumulate in the unit. If the internal tank becomes full, the Warning Light will come on and the unit will not operate until the unit has been drained.

REMOTE CONTROL

Air Conditioner Remote Control

The functions work the same as your air conditioner's touch controls. All key function can be accessed from the remote control.



Battery replacement: Remove the cover on the back of the remote control and insert the batteries with the (+) and (-) poles pointing in the proper direction.



Use only AAA or IEC R03 1.5V batteries.

Remove the batteries if the remote control is not used for a month or longer. Do not attempt to recharge the supplied batteries.

All batteries should be replaced at the same time, do not mix old battery.

Do not dispose of the batteries in a fire as they may explode.

WINDOW ADAPTER KIT INSTALLATION

Window adapter kit

An installation parts kit is packed with your unit in a separate carton. Before you discard the packaging that your unit came in, please locate the carton that contains these parts and ensure that all parts are present.

- Window panel Attaches to window opening to allow air exchange for system air transfer.
- Window panel extensions Extends window panel to fit windows of various dimensions.
- **Tube adapters** Connect air exchange tubes to window panel.
- Screws 12 screws are included for assembling the window adapter kit. Some screws may be partially assembled onto window panel.
- Air exchange tubes Exchanges air between the unit and outdoors.

Minimum window extension	26"
Maximum window extension	46"
Minimum hose extension	20"
Maximum hose extension	60"



Instructions for assembling the window adapter kit

- 1. Insert tube adapters through the back of the window panel.
- 2. Secure each tube adapter with four screws through the front of the window panel.
- 3. Insert window panel extensions into window panel. Lightly tighten the screws in the window panel to hold the extensions in place.





Installing the window adapter kit

Note: The window adapter kit must be installed and connected for the air conditioner to work properly in Cool mode. The window adapter kit is not required when using the unit in Dehumidify or Fan modes.

Your window adapter kit has been designed to fit most standard vertical and horizontal window applications. However, it may be necessary for you to modify some aspects of the installation procedures for certain types of windows.

- 1. Open window.
- 2. Place window panel with extensions into window frame and adjust to width of window.

Window adapter kit may be installed vertically as well as horizontally. This installation may also be used for crank style windows.

- 3. Tighten the four screws on the window panel to secure the window panel extensions.
- 4. Close window.
- 5. The window adapter kit should now fit securely within the window frame and you can now attach the air exchange tubes. If you are having trouble attaching the air exchange tubes, you may attach the tubes prior to installing the window adapter kit.

Attaching the air exchange tubes to the air conditioner

- 1. Attach the tubes to the window adapter kit.
- 2. Attach the other end to the air conditioner.

To attach air exchange tubes: push tube onto tube adapter and twist until the tab is in place in the hole on the tube.

To remove air exchange tubes: twist the end until the tab is clear of the hole in the tube and pull off.

Do not attach the tubes if using the unit in dehumidify mode.

Maintain a clear distance (from walls, furniture, etc.) of at least 10 inches around the unit to allow proper air circulation and prevent damage to the unit.

Important: Do not over-stretch the exhaust tube or make any unnecessary bends in it.









CONDENSATION HANDLING

Your ZoneAire_® Portable Air Conditioner is designed to evaporate the condensation removed from the interior space through the exhaust hose. Under certain conditions it is possible that the unit will not evaporate 100% of the removed moisture.

The unit is designed with a built-in reservoir to accumulate excess condensate and help dispose of it.

Internal Water Level

- 1. Under any mode if the water level is in the "low" area the unit will function normally.
- 2. If the water level is in the "normal" area the unit will continue to function normally while internally evaporating the condensate.
- 3. If the unit cannot evaporate all of the condensate internally, the tank may become full. If the tank becomes full, the unit will turn off, and the Water Full light will illuminate.

Draining Water

The water can be drained from the unit by removing the base stopper and letting the water drain by gravity.

- 1. When the WATER FULL lamp is on unplug the unit and move the unit to a suitable location for draining the condensation.
- 2. Using the gravity drain method, ensure that the base stopper is located above a suitable area for draining the condensate and remove the stopper. Re-install the stopper once all water has drained.
- 3. Return the unit to the original location and restore power and duct connections.
- 4. The WATER FULL indicator should be off and the unit will return to normal operating mode.

Permanent Drainage

For permanent and continuous drainage, a 1/2" hose may be attached to the unit and led down a drain.



MAINTENANCE / SERVICE



RISK OF ELECTRIC SHOCK

Unplug and/or disconnect all electrical power to the unit before performing inspections, maintenances or service.

Failure to do so could result in electric shock, serious injury or death.

Cleaning the air filter

If the air filter is blocked with a lot of dust, the air flow volume will be reduced. Clean the filter once every two weeks.

Open and clean the air filter:

- 1. Pull the filter out as shown in the drawing.
- 2. Take out the air filter from the filter cover.
- 3. Wash the air filter by immersing it gently into warm (about 40°C or 104°F) water with a neutral detergent or vacuum the filter clean.
- 4. Rinse the filter and dry it thoroughly in a shaded place.
- 5. Install the air filter back to its original place.

Cleaning the air conditioner

Clean the surface of the unit with a damp cloth, then dry using a duster or similar.

Do not use chemical solvent (like benzene or alcohol) to clean the surface of the unit. If you do so, the surface may be scratched, damaged or even cause the case to become deformed.

Prior to operating seasons

- 1. Check to ensure that the air inlets and outlets of the unit are not blocked.
- 2. Make sure that air filter is properly in place before operating the machine. If the machine is operated with air filter removed, dust and foreign objects will result in faulty performance of the air conditioner.



Preparation for storage

- 1. Turn off the air conditioner, disconnect the power.
- 2. Perform proper maintenance to the air filter and other parts.
- 3. Open the base stopper to drain out all of the water from the base. Operating the unit in fan only mode for 12 hours will help ensure there is no moisture within the unit.
- 4. Cover the unit to prevent dust or filth from entering the unit.



IMPORTANT POINTS ON SERVICE OPERATING SAFETY

Please follow these instructions carefully:

- Unplug the unit to avoid any danger from electric shock before disassembling the unit for repair.
- If there is any sound of the refrigerant circulating when in operation, avoid touching the cooling coils.
- If you need to perform any welding or soldering, be sure you are in a well ventilated area.
- Only a qualified professional should perform any welding on the unit.
- When repairing the unit, the specifications listed in this manual must be strictly adhered to when replacing any components.
- When replacing any electrical components they should be factory approved units.
- Be sure that any electrical components are properly wired and in place.

FLOW CHART FOR INSPECTING AND REPAIRING THE UNIT



TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	REMEDIES
The air conditioner doesn't work	-There is a power failure -The plug is not connected -The timer is unable to work -The main switch has not been pressed	-Wait for the power return -Connect the plug -Provide repairment -Press the main switch
The air conditioner works for short period only	 The set temperature is too close to the room's temperature There is something blocking the suction vent on the back of condenser The fan on the condenser is blocked 	-Decrease the setting temperature -Remove any obstacles -Unblock
The air conditioner switches are off constantly	-Malfunction	-Turn off the appliance remove the plug and contact the service center
The air conditioner works but it does not cool the room	 There is a window opened There is a source of heat operating in the room (burner, lamp, etc.), or the room is crowded The air filter is clogged The capacity of the air conditioner is not suitable for the conditions or size of the room The evaporator is frozen 	 -Close the window -Remove/switch off the source of heat -Decrease the set temperature -Clean the filter -Clean the air filter -Change the purifier filter, if necessary -Do not make the appliance operating at too low temperature (below72°F)
The appliance is very noisy and vibrates violently	- The compressor bolts are loose or copper tubes are contacting other metal parts	- Tighten bolts - Adjust copper tubes

REFRIGERATOR SYSTEM DIAGRAM



SCHEMATIC WIRING DIAGRAM





Friedrich Air Conditioning Company P.O. Box 1540 San Antonio, TX 78295 210.357.4400 www.friedrich.com

PORTABLE AIR CONDITIONERS LIMITED WARRANTY

FIRST YEAR

ANY PART: If any part supplied by FRIEDRICH fails because of a defect in workmanship or material within twelve months from date of original purchase, FRIEDRICH will repair the product at no charge, provided the product is transported to a Friedrich Authorized Service Center for repair. ALL transportation charges are the sole responsibility of the owner. This remedy is expressly agreed to be the exclusive remedy within twelve months from the date of the original purchase.

SECOND THROUGH FIFTH YEAR

SEALED REFRIGERANT SYSTEM: If the Sealed Refrigeration System (defined for this purpose as the compressor, condenser coil, evaporator coil, reversing valve, check valve, capillary, filter drier, and all interconnecting tubing) supplied by FRIEDRICH in your Room Air Conditioner fails because of a defect in workmanship or material within sixty months from date of purchase, FRIEDRICH will pay a labor allowance and parts necessary to repair the Sealed Refrigeration System; **PROVIDED** FRIEDRICH will not pay the cost of diagnosis of the problem, removal, freight charges, and transportation of the air conditioner to and from the Service Agency, and the reinstallation charges associated with repair of the Sealed Refrigeration System. All such cost will be the sole responsibility of the owner. This remedy is expressly agreed to be the exclusive remedy within sixty months from the date of the original purchase.

APPLICABILITY AND LIMITATIONS: This warranty is applicable only to units retained within the Fifty States of the U.S.A., District of Columbia, and Canada. This warranty is not applicable to:

- 1. Air filters or fuses.
- 2. Products on which the model and serial numbers have been removed.
- 3. Products which have defects or damage which results from improper installation, wiring, electrical current characteristics, or maintenance; or caused by accident, misuse or abuse, fire, flood, alterations and/or misapplication of the product and/or units installed in a corrosive atmosphere, default or delay in performance caused by war, government restrictions or restraints, strikes, material shortages beyond the control of FRIEDRICH, or acts of God.

OBTAINING WARRANTY PERFORMANCE: Service will be provided by the **FRIEDRICH Authorized Dealer or Service Organization** in your area. They are listed in the Yellow Pages. If assistance is required in obtaining warranty performance, write to: Room Air Conditioner Service Manager, Friedrich Air Conditioning Co., P.O. Box 1540, San Antonio, TX 78295-1540.

LIMITATIONS: THIS WARRANTY IS GIVEN IN LIEU OF ALL OTHER WARRANTIES. Anything in the warranty notwithstanding, ANY IMPLIED WARRANTIES OF FITNESS FOR PARTICULAR PURPOSE AND/OR MERCHANTABILITY SHALL BE LIMITED TO THE DURATION OF THIS EXPRESS WARRANTY. MANUFACTURER EXPRESSLY DISCLAIMS AND EXCLUDES ANY LIABILITY FOR CONSEQUENTIAL OR INCIDENTAL DAMAGE FOR BREACH OF ANY EXPRESSED OR IMPLIED WARRANTY.

NOTE: Some states do not allow limitations on how long an implied warranty lasts, or do not allow the limitation or exclusion of consequential or incidental damages, so the foregoing exclusions and limitations may not apply to you.

OTHER: This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

PROOF OF PURCHASE: Owner must provide proof of purchase in order to receive any warranty related services.

All service calls for explaining the operation of this product will be the sole responsibility of the consumer.

All warranty service must be provided by an **Authorized FRIEDRICH Service Agency**, unless authorized by FRIEDRICH prior to repairs being made.

NOTES

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