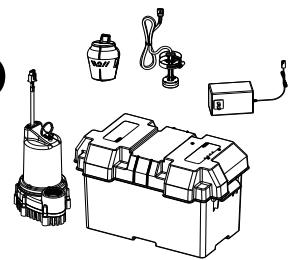




# 12-Volt Backup Sump Pump



**Please read and save these instructions. Read carefully before attempting to assemble, install, operate or maintain the product described. Protect yourself and others by observing all safety information. Failure to comply with instructions could result in personal injury and/or property damage! Retain instructions for future reference.**

## Description

The F12V is a battery operated back-up sump pump. It does not replace a regular pump. It is designed to provide protection in the event household electrical power fails.

## Unpacking

Inspect this unit before it is used. Occasionally, products are damaged during shipment. If the pump or components are damaged, return the unit to the place of purchase for replacement. Failure to do so could result in serious injury or death.

## Safety Guidelines

This manual contains information that is very important to know and understand. This information is provided for SAFETY and to PREVENT EQUIPMENT PROBLEMS. To help recognize this information, observe the following symbols.

**DANGER** *Danger indicates an imminently hazardous situation which, if NOT avoided, WILL result in death or serious injury.*

**WARNING** *Warning indicates a potentially hazardous situation which, if NOT avoided, COULD result in death or serious injury.*

**CAUTION** *Caution indicates a potentially hazardous situation which, if NOT avoided, MAY result in minor or moderate injury.*

**NOTICE** *Notice indicates important information, that if NOT followed, MAY cause damage to equipment.*

## General Safety Information

**DANGER** *Do NOT use to pump flammable or explosive fluids such as gasoline, fuel oil, kerosene, etc. Do NOT use in a flammable and/or explosive atmosphere. pump SHOULD only be used to pump clear water. Fatal injury and/or property damage COULD result.*

**DANGER** *If the basement has water or moisture on the floor, do NOT walk on wet area until all power is turned off. If the shutoff box is in the basement, call an electrician. Remove pump and either repair or replace. Failure to follow this warning COULD result in fatal electric shock.*

**WARNING** *All wiring must be performed by a qualified electrician.*

**DANGER** *Do NOT expose battery to sparks or flame as an explosion or fire COULD result.*



**WARNING** *Battery acid is corrosive. Avoid spilling on skin or clothing. Eye protection MUST be worn when handling the battery.*

**WARNING** *A check valve MUST be used on the primary sump pump discharge.*

**WARNING** *A ground fault circuit interrupter (GFCI) is required.*

**NOTICE** *This pump MUST only be used to pump clear water only. This pump is not designed to handle effluent, salt water, brine, laundry discharge, or any other application which may cause caustic chemicals and/or foreign materials. Pump damage MAY occur if used in these applications and WILL void the warranty.*

## Battery Information

The system is designed to operate most efficiently with sealed lead acid (SLA) batteries. Sealed lead acid batteries cost slightly more, but they can last longer. The oversize battery case (included) will accommodate a 12-volt SLA battery (up to a 27-frame size).

Be certain that the area around the batteries is well ventilated. Before servicing the batteries, blow away gasses by waving a piece of cardboard near the batteries.

**DANGER** *Dangerous hydrogen gas CAN be released from the batteries while charging. Sparks CAN ignite the gas in an enclosed space. Wear safety goggles when connecting batteries. Battery connections SHOULD be made in a well ventilated area.*

**DANGER** *Working in the vicinity of lead acid batteries CAN be dangerous. Before making the connections or servicing the batteries, read and follow instructions on all applicable instruction manuals. To reduce the risk of battery explosion, follow the instructions in this manual and those published by the battery manufacturer, as well as those of any other equipment used in the surrounding area.*

An assistant should be present or close enough to come to your aid in the event of an emergency. Have a reliable source of fresh water and soap nearby in case battery acid contacts skin or eyes.

**REMINDER:** Keep your dated proof of purchase for warranty purposes! Attach it to this manual or file it for safekeeping.

Wear eye or clothing protection when working around lead acid batteries. Avoid touching your eyes when working around lead acid batteries.

**WARNING** *If battery acid contacts your eye(s), flush with cold running water for 10 minutes and seek immediate medical attention. If acid contacts your skin or clothing, wash immediately with soap and water.*

**WARNING** *NEVER smoke or allow a spark or flame in the vicinity of the battery.*

**WARNING** *Avoid dropping metal tools on the battery posts because they MAY spark or short-circuit the system or battery, causing an explosion.*

## Installation

**NOTICE** *Installation of this unit may take several hours. Before disabling your main pump, have ready an appropriate means of evacuating the sump.*

1. Turn power to main pump off.
2. Pump must be installed using 1 1/4" or 1 1/2" rigid PVC piping.

## Pump Installation

The back-up pump can be installed with a separate dedicated discharge line (Method 1), or tied into an existing sump pump line (Method 2).

**DANGER** *Unplug the existing AC pump. Failure to follow this warning COULD result in fatal electric shock.*

1. Verify that the existing AC pump is in good working order. If the AC pump is questionable, it is typically recommended that the unit be replaced with a 1/3 or 1/2 HP pump.
2. Remove any silt or accumulated debris from the sump pit and surrounding area.

### Method 1 (Preferred)

1. Locate the back-up pump on a solid, level surface in the sump pit. Do not place the pump on a loose or sandy surface. Small stones or sand may damage the pump resulting in potential pump failure.
2. This pump has a 1 1/2" NPT discharge. If a 1 1/4" discharge pipe is desired, an adapter (not included) will be necessary. Smaller diameter piping will reduce pump flow, rate and performance.
3. Cut a 4' section of 1 1/4" or 1 1/2" diameter rigid PVC pipe. Cement 1 1/4" pipe to a threaded fitting. Cement 1 1/4" pipe into pipe coupling. Attach 1 1/4" pipe section to the back-up pump discharge adapter.
4. Screw on to pump discharge.

**NOTICE** *Be careful NOT to strip or cross thread plastic fittings or check valves. Flex hose is NOT recommended. Rigid PVC or metal pipe is required for permanent installation.*

5. Place the pump with the 4' section of PVC pipe on a solid, level surface in the sump pit on an elevated surface.
6. Attach a rubber check valve (sold separately) to the top of the discharge pipe. This will allow the pump or check valve to be removed easily for servicing.

**NOTE:** Check valves can be placed directly in the pump discharge if desired. However, for ease of disassembly, it is recommended that check valves be placed above the sump as shown in Figure 1.

The remainder of the discharge pipe installation will vary depending on individual circumstances. Using sound plumbing practices, route the discharge pipe to an exterior wall by the shortest path. Keep turns to a minimum because they reduce flow output of the pump. The pipe that exits the building structure should be sloped downward so that water will not freeze in the pipe.

When installing the separate discharge pipe, drill through the outside wall with appropriate drilling equipment. Seal the hole to prevent water from entering.

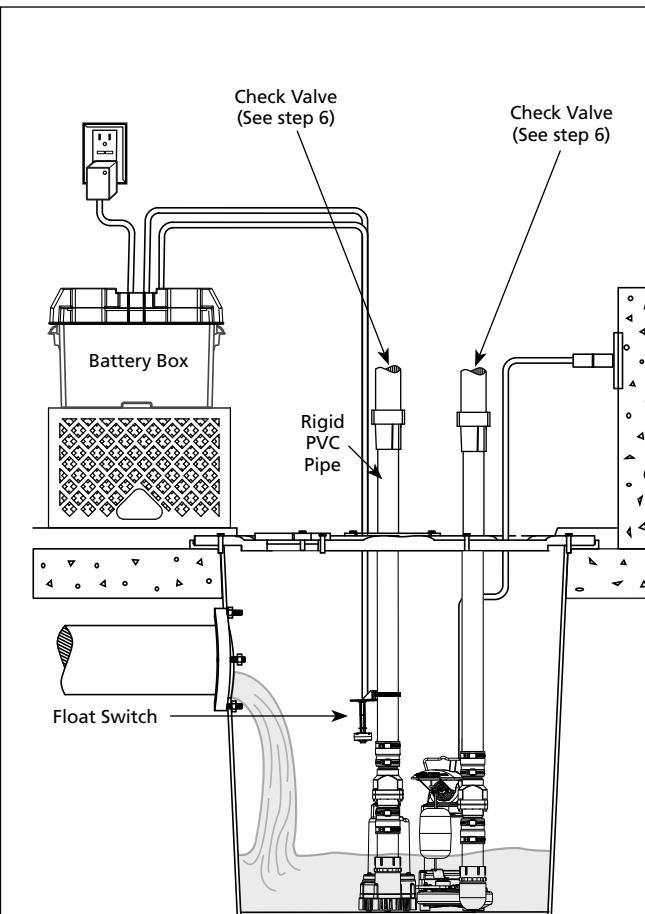


Figure 1 - Method 1

## Method 2

If a separate, dedicated discharge is not possible as in Method 1, the back-up pump can be tied into the AC operated pump's discharge pipe by installing a "Y" connector. Two check valves will be required.

1. Locate the back-up pump on a solid, level surface in the sump pit. Do not place the pump on a loose or sandy surface. Small stones or sand may damage the pump resulting on potential pump failure.
2. This pump has a 1 1/2" NPT discharge. If a 1 1/4" discharge pipe is desired, an adapter (not included) will be necessary. Smaller piping will reduce pump flow, rate and performance.
3. A check valve will be required in the discharge line of **BOTH** the Main AC pump and the back-up pump to prevent recirculation of water into the sump pit. System will not function without two check valves.
4. Cut a 4' section of 1 1/4" or 1 1/2" diameter rigid PVC pipe. Cement 1 1/4" pipe to a threaded fitting. Cement 1 1/4" pipe into pipe coupling. Attach 1 1/4" pipe section to the back-up pump discharge adapter.
5. Screw on to pump discharge.

**NOTICE**

**Be careful NOT to strip or cross thread plastic fittings or check valves.**

**Flex hose is NOT recommended. Rigid PVC or metal pipe is required for permanent installation.**

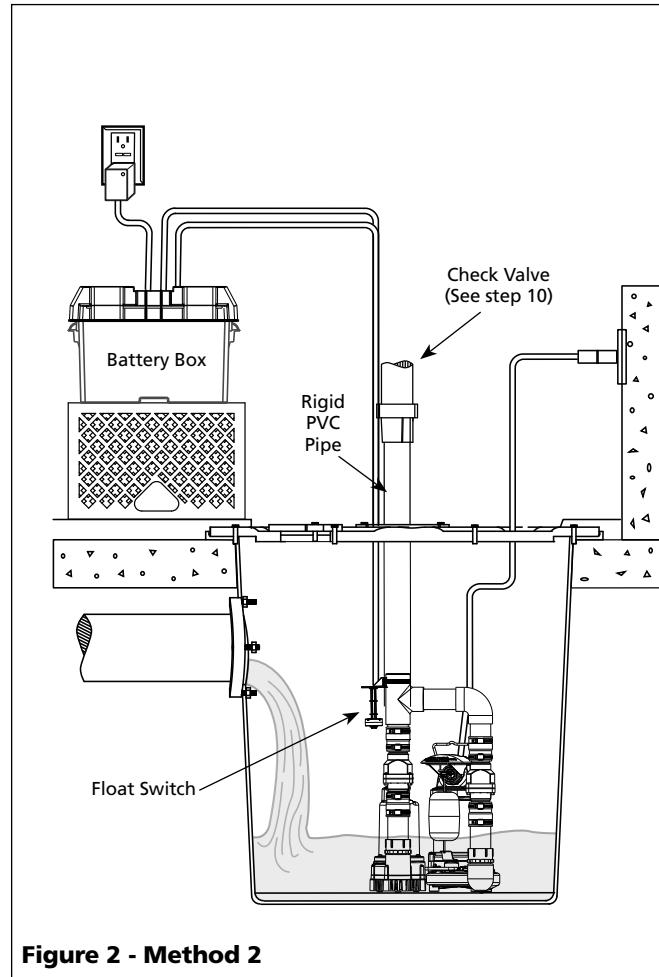
6. Place the pump with the 4' section of PVC pipe on the sump floor or on an elevated surface if required.
7. Attach a rubber check valve (sold separately) to the top of the discharge pipe. This will allow the pump or check valve to be removed easily for servicing.
8. Duplicate the discharge piping arrangement for the primary AC pump if the discharge line has to be adjusted to accomodate a second pump.
9. Glue a 45° elbow to the short pipe on the back-up pump. Glue a "Y" adapter to the short pipe on the existing pump, as shown in illustration for Method 2.
10. Glue a short piece of PVC pipe between the 45° elbow and the "Y".

**NOTE:** Check valves can be placed directly in the pump discharge if desired. However, for ease of disassembly, it is recommended that check valves be placed above the sump as shown in Figure 2.

The remainder of the discharge pipe installation will vary depending on individual circumstances. Using sound plumbing practices, route the discharge pipe to an exterior wall by the shortest distance.

## Methods 1 and 2

Install float switch at least 10"-12" above bottom of sump pit so that back-up unit turns on only when the water



**Figure 2 - Method 2**

level is higher than the normal "on" level for main pump. Use the wire ties provided to secure the switch to the discharge pipe. Make sure power wires do not interfere with float switch, pump inlet, or main pump operation. Back-up pump must not be allowed to run dry.

## Control Box Installation

1. Place battery in box, attach red cable to positive battery post and black cable to negative battery post.
- CAUTION** *If cables are reversed, damage to the control box or battery COULD result, and warranty will be void.*
2. Plug the float switch, pump and transformer into the appropriate connectors. The connections are all unique and cannot be interchanged.
3. Put lid on box, and place the battery within six feet of the sump and a 115 VAC separately fused outlet. The outlet must be protected by a ground fault circuit interrupter (GFCI). The area must also be clean, dry and well ventilated.

4. Test pump operation by filling the sump with water while the main pump is unplugged. If the pump operates properly, plug the transformer into the GFCI protected outlet to begin charging the battery.
5. Protect electrical cord from sharp objects, hot surfaces, oil and chemicals. Avoid kinking the cord and replace damaged components immediately.

## Operation

- DANGER** *Always disconnect the power source before attempting to install, service, relocate or maintain the pump. NEVER touch sump pump motor, water or discharge piping when pump is connected to electrical power. NEVER handle a pump or pump motor with wet hands or when standing on wet or damp surface or in water. Fatal electric shock COULD occur.*
- DANGER** *Risk of electrical shock! Use a GFCI receptacle to reduce the risk of fatal electric shock. Cutting the cord WILL void the warranty and make the pump inoperable.*



1. After installation, the back-up pump will start when the water level rises above the depth that the primary pump should start.
2. The control box has a DC charger designed to shorten the recharging time of your battery, and to prevent overcharging. In addition, the control box has a time delay which keeps the pump from repeated, short cycles when it shuts off. The time delay feature will allow the pump to run 20-25 seconds after the switch reaches the off position.
3. The control box contains multi-colored indicator lights. When AC power is present, the lights will indicate the charging state, and not reflect actual battery voltage, particularly with a defective battery. In order for the indicator light to provide an accurate reading, steps "a" through "d" must be followed.

- DANGER** *Unplug main AC pump and the transformer. Risk of electrical shock!*
- a. After main pump and transformer are unplugged, a power off alert tone will sound for 30 seconds.
  - b. Lift and release the float switch to activate the back up pump.

- c. When the pump stops, read the charge indicator lights:  
**Green:** Indicates the battery is fully charged.  
**Yellow:** Indicates battery is partially charged, but still operable.  
**Red:** Battery is completely discharged or defective.  
**Red blinking:** Battery discharged below level where pumping can occur. Motor is locked out by controller until battery is sufficiently charged to run pump.
- d. Plug in transformer and main AC pump.

When main AC power is out, and when pump has been running, the lights will indicate battery status.

4. A chirping sound from the control box will accompany the red light, indicating that the battery may require attention or replacement. Voltage is only an indicator of battery condition and may not reflect the true condition of the battery. See maintenance for instruction on assessing battery condition.
5. A single thirty (30) second tone will sound when power to the system is interrupted and the power failure light will illuminate. The unit will reset and the light will go out automatically when power is restored.
6. A three (3) second tone will sound every time the pump starts.

## Maintenance

- DANGER** *Always disconnect the electrical supply before attempting to install, service or relocate or perform any maintenance. If the power source is out of sight, lock and tag in the open (off) position to prevent unexpected power application. Failure to do so COULD result in fatal electric shock. Only qualified electricians should repair this unit. Improper repair COULD result in fatal electric shock.*



**NOTICE** *Once a month, check the battery condition. To check battery condition follow steps listed below:*

1. Unplug the transformer.
2. For batteries with top caps that can be removed, the electrolyte level should be checked and filled to manufacturer's specifications. The charge for each cell should be checked with a hydrometer. A gravity of 1.265 indicates the battery is at full charge. If the specific gravity of any of the cells varies more than .050, the battery should be replaced.

**NOTE:** An inexpensive hydrometer can be purchased at an automotive parts dealer.

3. Inspect the terminals and clamps for corrosion and tightness. Clean and tighten as required.
4. Unplug the main pump and fill sump with water until back-up pump turns on. Repeat process two times to make sure pump is operating normally.

5. If pump operates normally, plug transformer into wall outlet, turn on main pump. If pump fails to operate normally, see Troubleshooting guide and correct problem. Repeat step 5.

## Batteries

**DANGER** *Dangerous hydrogen gas CAN be released from batteries while charging. Sparks CAN ignite the gas in an enclosed space. Wear safety goggles when connecting batteries. Battery connections SHOULD be made in a well ventilated area.*

**DANGER** *Working in the vicinity of lead acid batteries CAN be dangerous. Before making connections or servicing the batteries, read and follow instructions in all applicable instruction manuals. To reduce the risk of battery explosion, follow the instructions in this manual and those published by the battery manufacturer, as well as those of any equipment used in the surrounding area.*

**WARNING** *If battery acid contacts your eye(s), flush with cold running water for 10 minutes and seek immediate medical attention. If acid contacts your eyes, skin or clothing, wash immediately with soap and water.*

**WARNING** *Never smoke or allow a spark or flame in the vicinity of the battery.*

**WARNING** *Avoid dropping metal tools on the battery posts because they may spark or short-circuit the system or battery, causing an explosion.*

Follow battery manufacturer's maintenance procedures and schedules. Be certain that the area around the batteries is well ventilated. Before servicing the batteries, blow away gasses by waving a piece of cardboard near the batteries.

## Troubleshooting Chart

Symptom	Possible Cause(s)	Corrective Action
Pump won't run	1. Connections not secure 2. Low or defective battery 3. Float switch stuck 4. Defective or blown fuse  5. Battery voltage below threshold, motor locked out	1. Check all connections 2. Check battery and replace if low or defective 3. Make sure nothing is interfering with operation of switch 4. Check internal fuse located inside the control box. Pull the transformer from the wall outlet and remove. If the fuse is blown, replace it with a 20 amp automotive type fuse 5. Wait for battery to recharge or replace with fresh battery
Motor hums but won't run	1. Defective battery 2. Impeller is locked	1. Check battery and replace if low or defective 2. Unplug pump, remove screen, and check to see if impeller is free to turn. If impeller is locked, remove the 7 screws on the bottom of the pump to release the housing around the impeller. Remove the obstruction. Reassemble pump and reconnect
Pump runs but pumps very little or no water	1. Check valve missing or improperly installed  2. Obstruction in discharge pipe 3. Discharge length and/or height exceeds capacity of pump 4. Low or defective battery	1. Check to make sure valves installed between primary pump discharge and back-up sump pump are functioning properly  2. Check for obstruction and clear if necessary 3. If discharge is too high, a separate line may be required with a lower discharge height 4. Check battery and replace if low or defective
Pump cycles too frequently	1. Check valve problem	1. Check to make sure valves installed between primary pump discharge and back-up sump pump are functioning properly
Power failure light is on but A/C power is available	1. Transformer is bad 2. Bad or no connection  3. Branch circuit breaker/fuse blown	1. Replace transformer 2. Check that A/C plug and transformer connection at lid are secure 3. Reset breaker or replace fuse

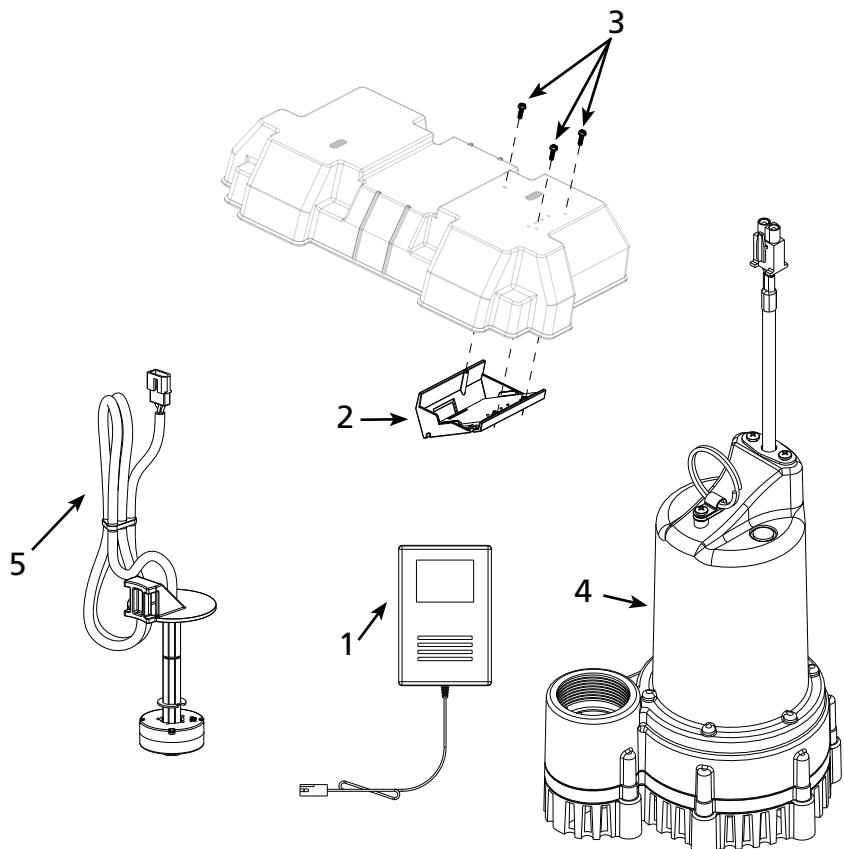
**For Replacement Parts or Technical Assistance,  
Call 1-888-636-6628**

*Please provide following information:*

- Model number
- Serial number (if any)
- Part description and number as shown in parts list

*Address any correspondence to:*

Blue Angel Pumps  
101 Production Drive  
Harrison, OH 45030 U.S.A.



Reference Number	Description	Part Number	Quantity
1	Transformer	30221-BLU1	1
2	Control Box	10133-BLU1	1
3	Screw - Control box	16119-BLU1	4
4	Pump	60160-BLU1	1
5	Float Switch	30070-BLU1	1

**Limited Warranty**

For Three (3) years from the date of purchase, Blue Angel Pumps ("Blue Angel") will repair or replace, at its option, for the original purchaser any part or parts of its Sump Pumps or Water Pumps ("Product") found upon examination by Blue Angel to be defective in materials or workmanship. Please call Blue Angel (1-888-636-6628) for instructions or see your dealer. Be prepared to provide the model and serial number when exercising this warranty. All transportation charges on Products or parts submitted for repair or replacement must be paid by purchaser.

This Limited Warranty does not cover Products which have been damaged as a result of accident, abuse, misuse, neglect, improper installation, improper maintenance, or failure to operate in accordance with Blue Angel's written instructions.

**THERE IS NO OTHER EXPRESS WARRANTY. IMPLIED WARRANTIES, INCLUDING THOSE OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE LIMITED TO THREE YEARS FROM THE DATE OF PURCHASE. THIS IS THE EXCLUSIVE REMEDY AND ANY LIABILITY FOR ANY AND ALL INDIRECT OR CONSEQUENTIAL DAMAGES OR EXPENSES WHATSOEVER IS EXCLUDED.**

Some states do not allow limitations on how long an implied warranty lasts, or do not allow the exclusions or limitations of incidental or consequential damages, so the above limitations might not apply to you. This limited warranty gives you specific legal rights, and you may also have other legal rights which vary from state to state.

In no event, whether as a result of breach of contract warranty, tort (including negligence) or otherwise, shall Blue Angel or its suppliers be liable for any special, consequential, incidental or penal damages including, but not limited to loss of profit or revenues, loss of use of the products or any associated equipment, damage to associated equipment, cost of capital, cost of substitute products, facilities, services or replacement power, downtime costs, or claims of buyer's customers for such damages.

You **MUST** retain your purchase receipt along with this form. In the event you need to exercise a warranty claim, you **MUST** send a **copy** of the purchase receipt along with the material or correspondence. Please call Blue Angel (1-888-636-6628) for return authorization and instructions.

**DO NOT MAIL THIS FORM TO BLUE ANGEL.** Use this form only to maintain your records.

MODEL NO. \_\_\_\_\_ SERIAL NO. \_\_\_\_\_ INSTALLATION DATE \_\_\_\_\_

**ATTACH YOUR RECEIPT HERE**

## Notes