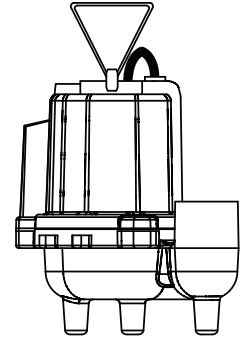


Please read and save these instructions. Read carefully before attempting to assemble, install, operate or maintain the product described. Protect yourself and others by observing all safety information. Failure to comply with instructions could result in personal injury and/or property damage! Retain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



# Sewer Ejector Pump

## Description

The submersible pump is designed for home applications. The unit is equipped with a 3-prong grounding type power cord. Motor is oil-filled and sealed for cooler running and designed to operate under water. This pump is not suitable for aquatic life.

## 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.

## Important Safety Instructions

**READ AND FOLLOW ALL INSTRUCTIONS**

### 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

### CALIFORNIA PROPOSITION 65

**⚠ WARNING** This product or its power cord may contain chemicals known to the State of California to cause cancer and birth defects or other reproductive harm. Wash hands after handling.

## 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. Personal injury and/or property damage could result.



**NOTICE** This pump is not designed to handle salt water, brine, laundry discharge or any other application which may contain caustic chemicals and/or foreign materials. Pump damage could occur if used in these applications and will void warranty.

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

**⚠ 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 shut-off box is in the basement, call an electrician. Remove pump and either repair or replace. Failure to follow this warning could result in fatal electrical shock.



## Specifications

### Power supply requirements

BSE50 . . . . . 120V, 60 hz  
BSE75, BSE100, and BSE200 . . . . 240V, 60 hz

Motor . . . . . Single phase, oil filled

### Horsepower/Current

BSE50 . . . . . 1/2 HP, 12A @ 115VAC  
BSE75 . . . . . 3/4 HP, 7A @ 230VAC  
BSE100 . . . . . 1 HP, 8.5A @ 230VAC  
BSE200 . . . . . 2 HP, 12A @ 230VAC

Liquid temperature range . . . . . 40°F to 120°F

Circuit requirements . . . . . 15 amps (min)

Dimensions . . . . . 11 1/2 in. high x 9 3/4 in. base

## Construction

Motor housing . . . . . Cast Iron  
Volute . . . . . Cast Iron  
Impeller . . . . . Cast Iron  
Shaft . . . . . Low carbon steel  
Seals . . . . . Buna N  
Discharge . . . . . 3 in. NPT  
2 in. NPT (Adapter included)

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

## General Information

### Sewage Pump Systems: Simplex System

A simplex system consists of one pump, its control switch, and one basin. It is used in applications where less than six toilets (units) are discharged into a basin. The simplex unit is generally operated with a contactor to turn the pump ON and OFF. The contactor is activated by a single pole float switch. The float switch is a wide-angle differential switch that rises with the liquid level and turns the pump ON. As the liquid level decreases, the float lowers and turns the pump OFF. The switch differential is 120°.

### Sewage Pump Systems: Duplex System

A duplex system is used in applications where more than six toilets (units) are discharged into a basin. However, each pump should be sized to handle the entire flow in case one pump fails. The duplex unit is controlled by a NEMA 1 control panel that has an automatic alternator, run lights, hand-off-auto switches, and an alarm bell. The duplex control panel is supplied with three float switches. The floats are to be positioned so that the lower float turns the pumps OFF. The second float alternates turning first one pump ON and then the other pump ON. The third float will turn **BOTH** pumps ON in case one pump cannot handle the flow. The third float will also sound the alarm (which remains on until the system is reset).

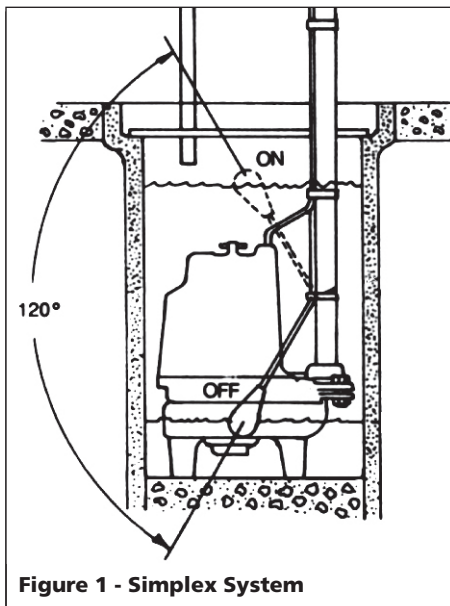


Figure 1 - Simplex System

Functionally, the liquid in the basin rises and trips the first float, but the pumps do not turn ON. As the liquid level rises, it trips the second float, activating one of the pumps. Once the liquid level recedes and no longer trips the second float, the pump will turn OFF. If the second float is tripped again, the other pump will turn ON.

If for some reason the liquid level increases past the second float and trips the third float, both pumps turn ON and trips the alarm.

Under normal circumstances, the first pump will handle the flow after the second float is tripped. In those cases, the liquid level will recede until it drops the lower float. This action turns the pump OFF. The next time that the liquid level rises, the other pump turns ON. This alternates the pumps; this prevents lock-up and extends the life of both pumps.

### Available Controls

For 115 volt only, a wide angle float switch can be supplied with a plug-thru series plug.

For 230 volt Simplex units, a NEMA 1 Simplex Controller with a hand-off-auto switch and run light can be supplied. This is supplied with a wide-angle switch for automatic operation.

For 230 volt Duplex units, a NEMA 1 control panel can be supplied with a hand-off-auto switches, run lights, pump alternator, and an alarm bell. This is supplied with a three float switch system for automatic operation.

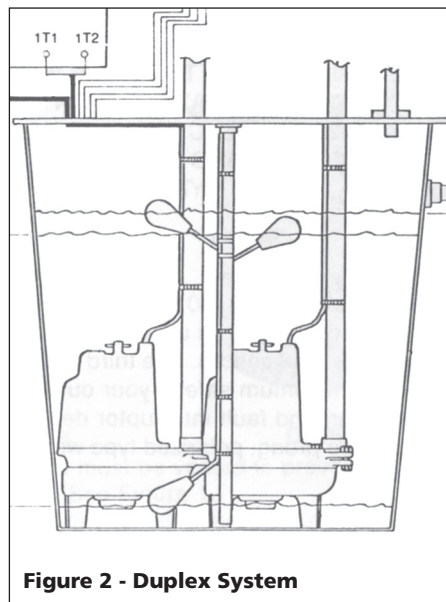


Figure 2 - Duplex System

## Installation

**⚠ DANGER** Always disconnect the power source before attempting to install, service, relocate or maintain the pump.



**Never touch sump pump, 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 electrical shock could occur.**

Some models of this product include a grounded plug for quick installation anywhere a grounded outlet is accessible. Some models must be incorporated into the building's electrical system. Models without plugs must be connected to a grounded circuit. The circuit should be equipped with a ground fault interrupter device.

All models without plug-in power cords systems must be installed by a qualified electrician. All models with a plug-in power cords system should still have a qualified electrician inspect the outlet being used to ensure proper wiring.

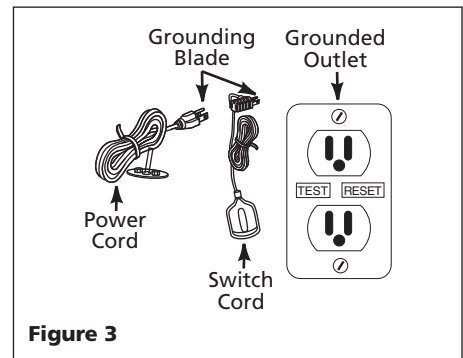


Figure 3

The control switch is a wide-angle system which prevents short cycling of the pump motor and the consequential problems that short cycling can cause. The switch can be mounted on the discharge pipe (just above the pump discharge flange). See illustrations for switch mounting arrangements.

## Installation (Continued)

### INSTALLATION BASICS:

1. NEVER lift this product by the electrical cords.
2. Install pump in a sump pit that fulfills the minimum size requirements (24 in. minimum). Construct sump pit of tile, concrete, steel or plastic. Do not install a pit smaller than recommended.
3. The unit should be located and rest on a solid, level foundation. Do not place pump directly on clay, earth, gravel or sandy surface. These surfaces contain small stones, gravel, sand, etc. that may clog or damage the pump and cause pump failure.

**▲ WARNING** *Flood risk. If flexible discharge hose is used, make sure pump is secured in pit to prevent movement. Failure to secure pump could allow pump movement and switch interference and prevent pump from starting or stopping.*

4. Thread the discharge pipe or pipe nipple into the discharge flange connection.
5. A check valve MUST be used in a solids-handling system. Mount the check valve in a horizontal position or at a 45° angle with the valve pivot on top. In a vertical position, solids tend to lodge on the valve flapper and can prevent it from opening.

6. Drill a 1/8 in. hole in the discharge pipe 1 to 2 inches above the flange. This will prevent air locking and loss of prime at startup. A gate valve should be installed in the system after the check valve. This gate valve should be a full port valve which will pass 2 in. solids or as required by state and local codes. The gate valve permits removal of the pump and/or the check valve for servicing (and will minimize back flow mess).
7. (OPTIONAL) Install a union between the check valve and the pump so the pump can be removed with the least amount of disturbance of the piping.
8. Connect 2 in. rigid pipe to check valve.

**▲ WARNING** *Support pump and piping when assembling and after installation. Failure to do so could cause piping to break, pump to fail, etc. which could result in property damage and/or personal injury.*

9. Protect electrical cord from sharp objects, hot surfaces, oil and chemicals. Avoid kinking the cord and replace damaged cords immediately.

**IMPORTANT:** Make sure there is adequate room for tether switch to swing freely during operation.

10. A pit cover must be installed to prevent debris from clogging or damaging the pump. All piping and

power cords will be brought through the appropriate openings in the basin cover. Do not modify existing openings in any way.

**▲ DANGER** *All sewage basins must be vented to prevent a build-up of methane gas. Consult your local codes for proper venting. DO NOT install venting in locations classified as hazardous in accordance with the National Electrical Code NFPA 70.*

## Operation

**▲ DANGER** *Always disconnect the power source before attempting to install, service, relocate or maintain the pump. Never touch pump, 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 electrical shock could occur.*



1. Verify pump and switch operate within the basin.

**▲ WARNING** *Risk of electrical shock! This pump is supplied with a grounding conductor and grounding type attachment plug. Use a grounded receptacle to reduce the risk of fatal electrical shock.*

*Never cut off the round grounding prong. Cutting the cord or plug will void the warranty and make the pump inoperable.*

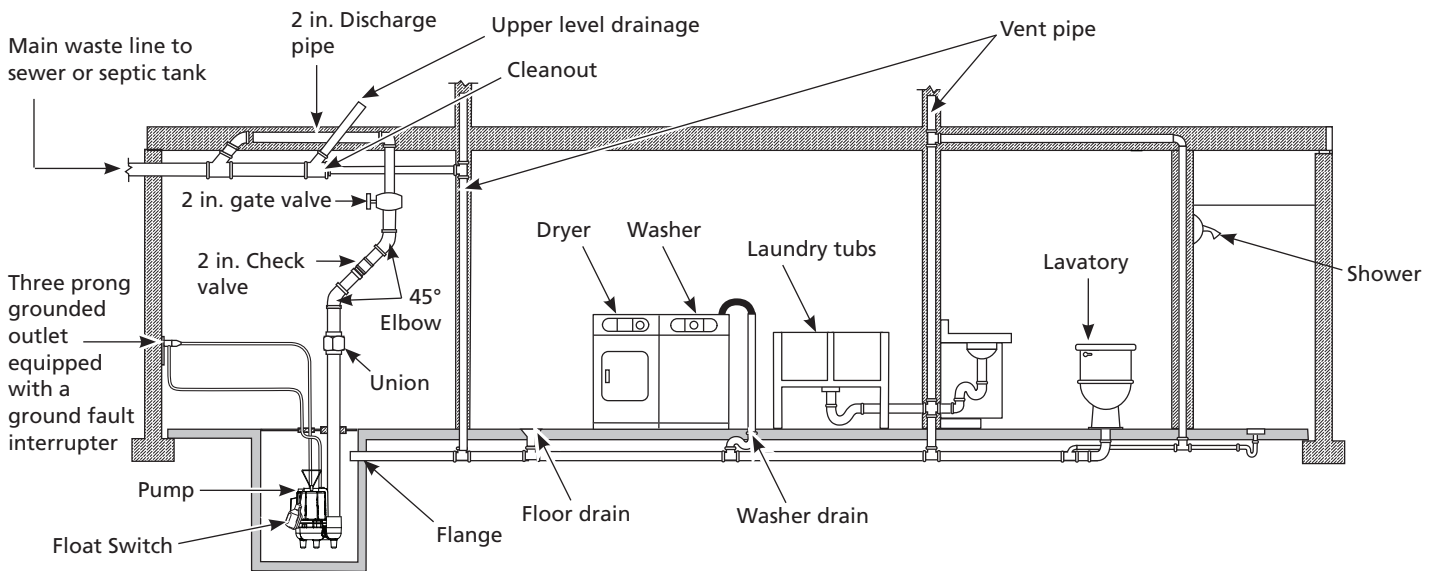


Figure 4 - Typical Installation

## Operation (Continued)

2. With the cover uninstalled, add water to the basin and observe the float control switch operation.
3. Also, test alarm switch if installed.
4. Secure and seal basin cover.

### **⚠ WARNING**

Do not run your pump in a dry sump.

### **⚠ WARNING**

Do not attempt to oil the motor. A special oil has been put in the motor housing at the factory. Use of any other oil could damage the pump and WILL void the warranty.

## Maintenance

### **⚠ DANGER**

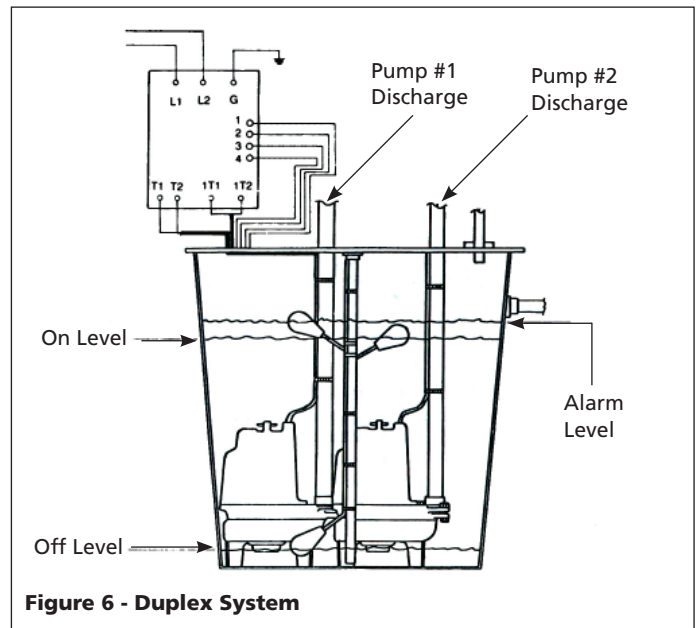
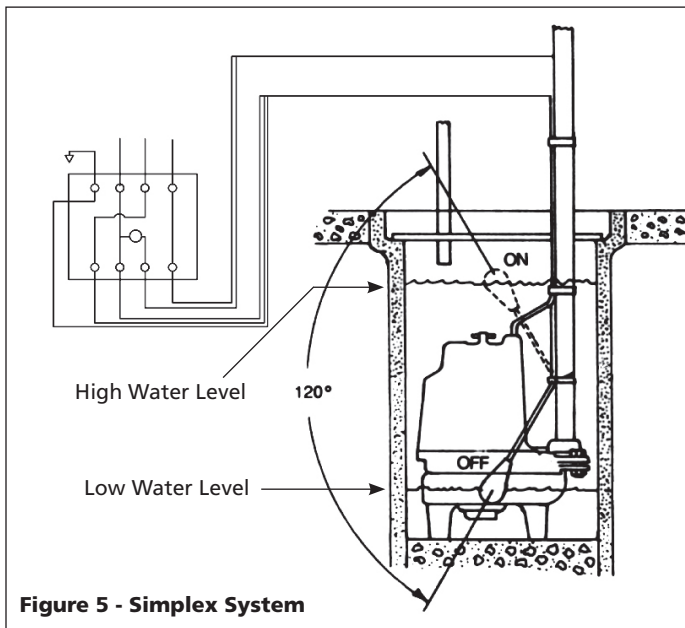
**Always disconnect the electrical supply before attempting to install, service, relocate or perform any maintenance. If the power source is out of sight, lock and tag in the open (off) position to prevent unexpected power application. Failure to do so could result in fatal electrical shock. Only qualified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

1. Let the pump cool for a minimum of two hours before servicing because the pump contains hot oil under pressure and the motor is hot.

2. Disassembly of the motor prior to expiration of warranty will void the warranty. If repairs are required, see troubleshooting chart.
3. Inlet should be kept clean and free of all foreign objects and inspect annually. A clogged inlet will damage pump.
4. Pump should be checked monthly for proper operation.

### **⚠ WARNING**

**This pump contains dielectric oil for cooling. This oil can be harmful to the environment. Check the state environmental laws before disposing this oil.**



## Troubleshooting Chart

Symptom	Possible Cause(s)	Corrective Action
Pump will not start or run	<ol style="list-style-type: none"> <li>1. Blown fuse, tripped breaker</li> <li>2. Low line voltage</li> <li>3. Defective motor</li> <li>4. Defective float switch</li> <li>5. Stuck impeller</li> <li>6. Float obstructed</li> </ol>	<ol style="list-style-type: none"> <li>1. If blown, replace with proper sized fuse or reset breaker</li> <li>2. If voltage is under 108 volts, check wiring size</li> <li>3. Replace pump</li> <li>4. Replace float switch</li> <li>5. If impeller will not turn, remove housing and remove blockage</li> <li>6. Make sure float(s) move freely up and down</li> </ol>
Pump starts and stops too often	<ol style="list-style-type: none"> <li>1. Back-flow of water from piping</li> <li>2. Faulty float switch</li> </ol>	<ol style="list-style-type: none"> <li>1. Install or replace check valve</li> <li>2. Replace float switch</li> </ol>
Pump will not shut off or thermal protector turns off	<ol style="list-style-type: none"> <li>1. Defective float switch</li> <li>2. Obstacle in piping</li> <li>3. Float obstructed</li> <li>4. Low line voltage</li> <li>5. Too many appliances on circuit</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace float switch</li> <li>2. Remove pump and clean pump and piping</li> <li>3. Make sure float move freely up and down</li> <li>4. If voltage is under 108 volts, check wiring size</li> <li>5. Install pump on dedicated circuit. <b>IMPORTANT:</b> Do not use extension cord to power pump.</li> </ol>
Pump operates but delivers little or no water	<ol style="list-style-type: none"> <li>1. Plugged impeller</li> <li>2. Check valve installed backwards</li> <li>3. Pump air locked</li> </ol>	<ol style="list-style-type: none"> <li>1. Clean out impeller</li> <li>2. Reverse position of check valve</li> <li>3. Check the 1/8 in. hole in discharge line between pump and check valve; it should be 1 in. to 2 in. above discharge flange and before the check valve</li> </ol>



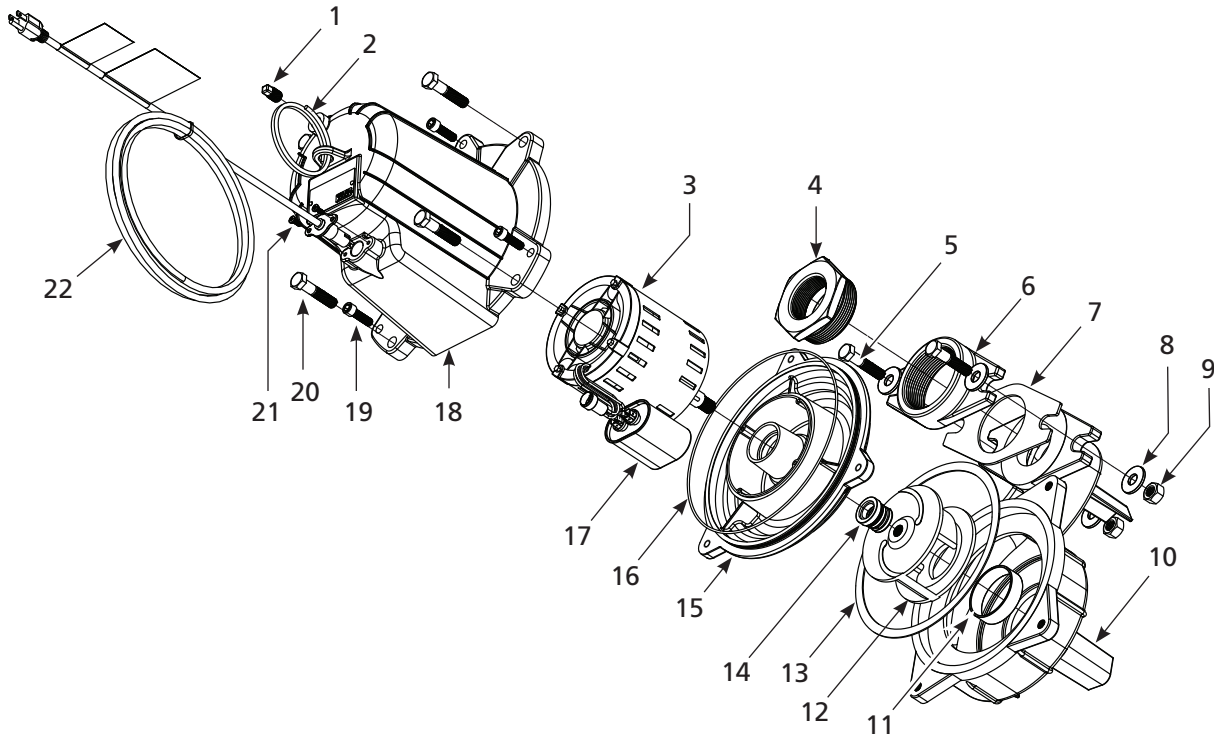
# For Replacement Parts or Technical Assistance, Call 1-888-636-6628

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.



Ref. No.	Description	Part Number	Qty
1	Pipe plug 1/4 in. NPT	16314	1
2	Lifting eye	23124	1
3	Motor	SEE CHART	1
4	Reducer bushing 3 in. NPT - 2 in. NPT	17436-001	1
5	1/2 - 13 UNC x 2 1/4 Hex head	16636	2
6	Discharge flange 3 in.	23100	1
7	3 in. Discharge gasket	23102	1
8	Washer	16635	4
9	1/2 - 13 UNC Hex nut	16637	2
10	Volute	56603	1
11	Volute wear ring	23112	1
12	Impeller	SEE CHART	1
13	Volute gasket	16735	1
14	Shaft seal kit	56884-002	1
15	Seal plate	56604	1
16	Cover gasket	16855	1
17	Capacitor		
	3/4 HP to 2 HP	23126	1
	1/2 HP only	23126-002	1
18	Motor housing	41048-001	1
19	3/8 - 16 UNC x 1 1/4 Socket head	16798	3

Ref. No.	Description	Part Number	Qty
20	1/2 -13 UNC x 2 1/4 Hex head	16636	4
21	Screw, 10 - 24 x 1/2	67050-001	2
22	Power supply cord		
	BSE50	31036-001	1
	BSE75, BSE100 & BSE200	31036-002	1
23	Locking cable tie (not shown)	17182-003	3
24	Dielectric oil - 1 gallon (not shown)	56435	1

**MOTOR / IMPELLER CHART**

HP	Motor Part Number	Impeller Part Number
1/2	3710-004	84341
3/4	3710-005	84342
1	3710-006	84343
2	3710-008	84345



## Limited Warranty

For two (2) years from the date of purchase, 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 number 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 TWO 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**