



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.

# 2 HP Grinder Pump

## Description

The 2 HP Grinder is a submersible wastewater pump designed specifically for pumping domestic sewage. One pump can handle the sewage for a maximum of 2 homes. These pumps are not to be used for pumping commercial or industrial sewage from factories, schools, motels, apartments, etc. **This pump is not for use in hazardous locations!**

## UNPACKING AND INSPECTION

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.

**NOTE:** Information that requires special attention.

## 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.

1. Know the pump application, limitations and potential hazards.

**▲ WARNING** Do not use to pump flammable or explosive fluids such as gasoline, fuel oil, kerosene, etc. Do not use in flammable and/or explosive atmospheres. Use to pump only with liquids compatible with pump components materials. Failure to follow this warning can result in personal injury and/or property damage.

2. Only qualified personnel should install, operate and repair this pump.
3. Make certain that the power source conforms to the requirement of the equipment.

**▲ DANGER** Disconnect power before servicing. If the power disconnect is out of sight, lock in the open position and tag it to prevent unexpected application of power. Failure to do so could result in fatal electrical shock!

4. Release all pressure within the system before servicing any component.
5. Drain all liquids from the system before servicing.

**▲ WARNING** This pump contains dielectric motor oil for motor heat transfer. Care should be taken when disposing of this oil. Do not use this pump in ponds or fountains because the motor oil can be harmful to aquatic life.

6. Check your local codes before installing. You must comply with local rules.



Figure 1

7. Vent any sewage or septic tank according to local codes.
8. Always keep the shut-off valve completely open when the system is in operation (unless advised otherwise by the proper authorities). Before removing the pump from the basin, be sure to close the shut-off valve. (This prevents back-flow from the pressure sewer.)
9. Keep the control panel locked or confined to prevent unauthorized access to it.
10. Secure the discharge line before starting the pump. An unsecured discharge line will whip, possibly causing personal injury and/or property damage.
11. Periodically inspect the pump and system components. Perform maintenance as required. If the pump is idle for long periods of time, add water to the basin occasionally to start the pump.

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

12. Provide a means of pressure relief for pumps whose discharge line can be shutoff or obstructed.
13. Do not install the pump in any location classified as hazardous by National Electric Code, ANSI/NFPA 70-1984.
14. Secure the pump in its operating position so it cannot tip over, fall or slide. Install this pump in the vertical position only.
15. Make sure lifting handles are securely fastened each time before lifting. Do not operate pump without safety devices in place. Always replace safety devices that have been removed during service or repair. **DO NOT LIFT PUMP BY POWER CORD.**
16. Do not run the pump dry. Dry running can overheat the pump and will void the warranty.
17. Personal Safety:
  - a. Wear safety glasses at all times when working with pumps. This pump is designed to handle materials that could cause illness or disease through direct exposure. Wear and use protective clothing when working on the pump or piping.
  - b. Do not wear loose clothing that may become entangled in the impeller or other moving parts.
  - c. Keep clear of suction and discharge openings. **DO NOT** insert fingers in the pump with power connected.
  - d. Keep work area clean, uncluttered and properly lighted: replace all unused tools and equipment.
  - e. Keep visitors a safe distance from the work area. Make workshop childproof with padlocks, master switches, and by removing starter keys.
18. A qualified electrician should perform all wiring of this pump. When wiring an electrically driven pump such as this, follow all electrical and safety codes, as well as the most recent National Electric Code (NEC) and the Occupational Safety and Health Act (OSHA).

**⚠ WARNING** *Risk of Electric Shock! Never connect the green (or green and yellow) wire to a live terminal!*

**NOTICE** *This unit is not designed for application involving salt water or brine. Use with salt water or brine will void warranty.*

### Installation

This pump may be installed on a guide-rail lift-out system for ease of inspection and service. Guide-rails allow removal of the pump without disturbing the piping and eliminates the need to enter the basin. If installed with a guide-rail system, place the pump opposite the influent opening to prevent stagnant areas where solids can settle.

Install the pump on a hard, level surface. Never place the pump directly on earth, clay or gravel surfaces. The basin must be at least 18" in diameter and 30" deep.

The discharge pipe must not be smaller than the pump discharge.

The motor is provided with a thermal overload switch (Single Phase Pump Motors Only). If the motor overloads or overheats for any reason, the switch opens, stopping the motor. As soon as the motor cools to normal temperature, the switch automatically closes and restarts the motor. **On 3-Phase pumps, the installer must provide the Motor Protection. In accordance with the National Electric Code, all 3-phase pumps must be installed with magnetic starters having 3 leg overload protection. For duplex installations, both pump motors must have separate overload protection.**

**⚠ WARNING** *Hazardous voltage. Can shock, burn, start a fire or kill. When installing, operating or servicing this pump, follow electrical safety instructions below. Only trained service personnel should install or service this pump.*

1. Do not splice the power cord.
2. Do not handle or service this pump while it is connected to the power supply.
3. Do not operate the pump unless it is properly grounded. Connect the pump according to all applicable codes.
4. Incorrect voltage can cause a fire or seriously damage the motor and voids the warranty. Make sure that the frequency and voltage shown on the nameplate corresponds to the frequency and voltage of the electrical supply.
5. Connect the pump to its own circuit with nothing else on the circuit. See Chart 1 for pump motor specifications. See Figure 2 for wiring diagram. Use a Control Panel sized to match the pump. Refer to Control Panel installation instructions for wiring connections information.
6. The pump rotation must be clockwise as viewed from the top of the pump. If a three-phase unit runs backwards, interchange two of the three power supply wires to reverse the motor's direction of rotation.
7. Install the pump in accordance with all electrical codes that apply. Install a fused disconnect switch or circuit breaker in accordance with local codes.

**⚠ WARNING** *Risk of electrical shock. Pumps are supplied with a grounding conductor on the power cord. The grounding conductor is the GREEN lead. To reduce the risk of electric shock, be certain the ground conductor is connected in the control box to the grounding bar, which is connected to a good suitable ground. The pump is not safe to operate unless it is properly grounded.*

Model Number	Motor		Frequency		Motor Full Load Amps
	HP	Voltage	Hz	Phase	
BAGP1-115	2	115	60	1	15.0
BAGP1-2021	2	230	60	1	14.5
BADSGP1-115	2	115	60	1	20.0
BARDSGP1-2021	2	230	60	1	14.5
BADSGP1-2001	2	200/208	60	1	16.9
BARDSGP1-2023	2	230	60	3	8.8
BAHGP2-2021	2	230	60	1	24.0
BAHGP2-2021C	2	230	60	1	24.0
BAHGP2-2021E1	2	230	60	1	14.8
BAHGP2-2023	2	230	60	3	12.2

**Chart 1 - Motor Specifications**

The double seal grinder pumps contain an electrode for detecting water within the unit. The electrode is housed within the seal chamber, isolated from the motor chamber by a mechanical shaft seal. If the electrode detects water within the oil-filled housing, it will close the circuit to the alarm light in the control panel, indicating the motor must be serviced before the upper mechanical shaft seal fails. The BLUE conductor is connected to the seal leak probe.

Refer to Wiring Diagrams for model specific wiring directions (See Figure 2).

## Control Panel and Level Sensing

BAGP1 & BADSGP1 grinder pumps have internal start and run capacitors. No control panel is required for operating the pump. An alarm box is recommended for high water alarm. See Chart 2 for starting component specifications per model.

BARDSGP1 and BAHGP2 models require control boxes containing properly sized start and run capacitors. Single-phase models require a Single-Phase Control Box with starting components equal to specifications listed in Chart 2.

The three-phase models require a Three-Phase Control Box with circuit breaker and overload heaters per the chart.

Intrinsically safe type float controls are recommended for all applications. An intrinsically safe control panel relay will limit the current and voltage to the level controls. A control panel can be supplied with this type of circuitry.

Recommended level sensing settings:

1. The lower "turn-off" control should be set so the pump stops with the liquid level at the top of the motor housing.
2. The upper "turn-on" control should be set approximately 8" above the "turn-off" control. This should limit the number of pump starts to not exceed 10 starts per hour.
3. The "lag-on" control for duplex operation should be set 4" above the "turn-on" control.
4. The "alarm" control is set 10" above the "turn-on" control.
5. No control should be set above the inlet pipe.

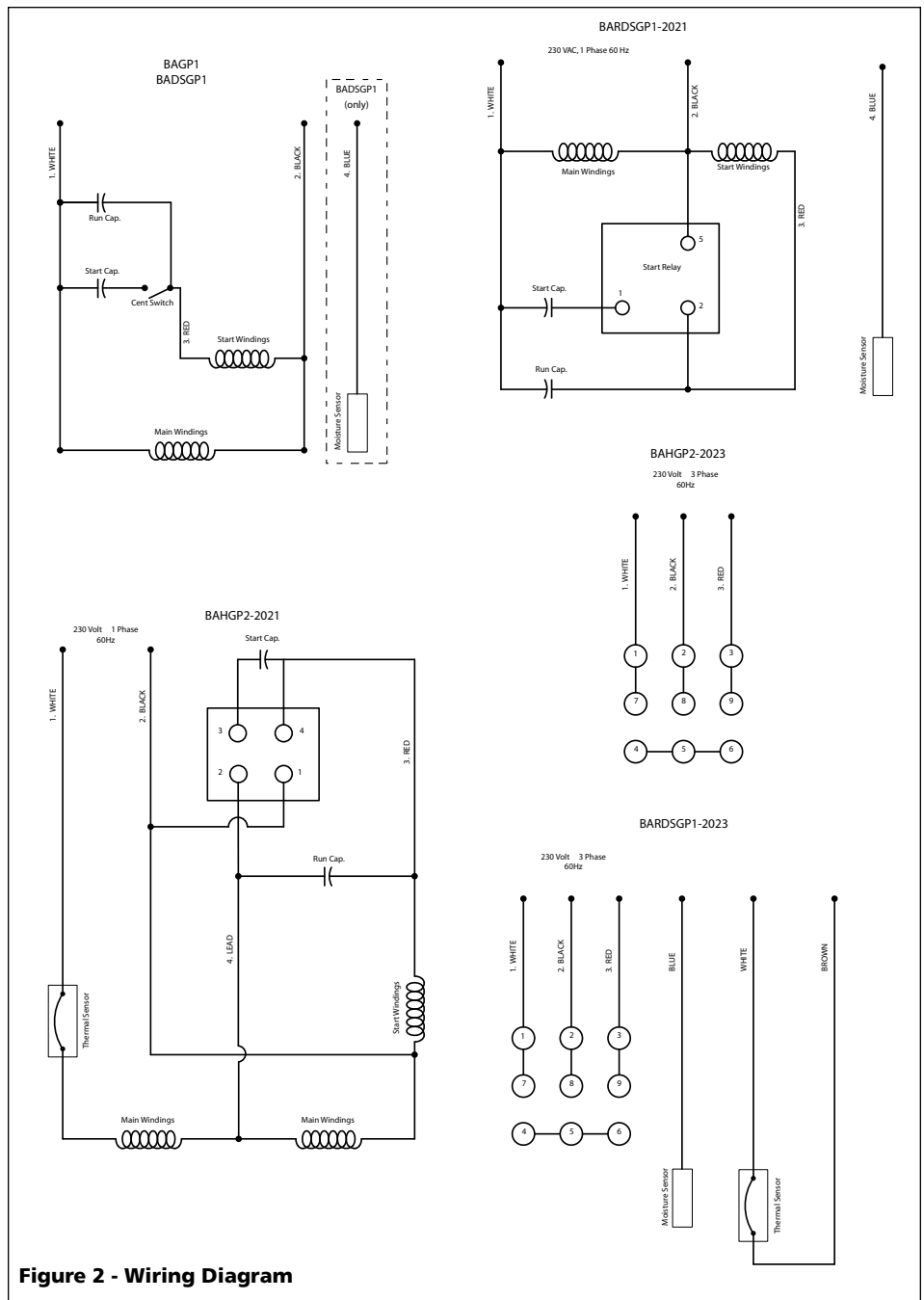


Figure 2 - Wiring Diagram

Model #	Start Capacitor	Run Capacitor	Starting Relay
BAGP1-115 BADSGP1-115	200mF 250 Vac	70mF 250 Vac	NA
BAGP1-2021 BADSGP1-2001	270-300mF 250-370 Vac	30mF 300 Vac	NA
BARDSGP1-2021	270-300mF 250-370 Vac	30mF 300 Vac	GE 3ARR3J3G3
BAHGP2-2021 BAHGP2-2021C BAHCP2-2021E1	400mF 250 Vac	90mF 250 Vac	Stearns 477104012401

Chart 2

HP	Voltage	Phase	Breaker Size	Heater Size
2	230	3	20 Amp	K-50
2	460	3	15 Amp	K-33

Chart 3

**Note:** If pump is not mounted on a lift-out rail system, the leg kit needs to be installed. Set leg height so a 3" – 4" clearance is achieved between the bottom pump inlet and basin bottom.

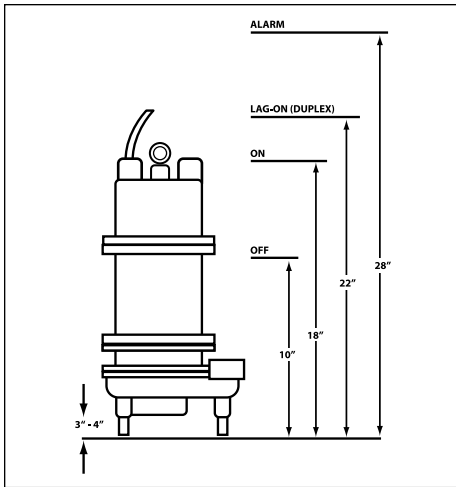


Figure 3 - Leg Kit

## Maintenance

Only qualified mechanics with proper tools and knowledge should attempt to service this pump.

### REPLACING GRINDER IMPELLER AND SHREDDING RING

**Note:** This is the only disassembly operation permitted in the field. All other repairs must be performed at an authorized service center or the factory.

#### Standard Tools Required:

- Standard socket wrench set
- Standard set of open-end wrenches
- Hammer
- Vise grip pliers
- Allen head socket set
- Screwdrivers
- Wire brush

**WARNING** *Disconnect all power and control wires to motor at the control panel before starting the disassembly operations. Do not rely upon opening the circuit breaker only.*

**WARNING** *Hazardous cutter. Rotation of the cutter with hands in the cutter area can cause loss of fingers. Keep hands away from the pump inlet opening when working on or handling the pump for any reason.*

**CAUTION** *Pump should be sanitized with bleach before starting work.*

- Pump should be thoroughly cleaned of trash and deposits before starting disassembly operations.
- Wear protective gloves and clothing.
- Always use a rag on the impeller when turning to prevent cutting hands on the sharp edges of the shredding ring.

### DISASSEMBLY OF SHREDDING RING AND GRINDER IMPELLER

1. Remove 3 bolts from grinder ring flange with socket wrench. The grinder ring is pressed into the flange for convenient removal.
2. Thread 2 of the bolts (removed from the grinder ring flange) into the tapped back-off holes in the flange and evenly tighten the bolts to back the grinding ring out of the pump housing.
3. Hold the grinder impeller by prying against the impeller cutting bar and remove the cap screw from the end of the shaft.
4. Use a large screwdriver to the slot of the shaft and tap on the cutter vane with a hammer. Tap in a counterclockwise direction (thread is right-hand).
5. If the impeller removes easily, clean and replace if worn.
6. Make sure the pump impeller has not loosened when the grinder impeller was removed. This can be checked on reassembly of grinder impeller and shredding ring. The tips of the impeller cutter vanes should extend 1/8" below the bottom of the shredding ring. If the distance is greater, the pump impeller has loosened. If the distance is less, shredding ring is not properly seated.
7. After the volute case has been removed, wrap emery cloth around the shaft and hold with vise grip pliers. Use a cloth on the impeller and thread tight against shoulder on shaft.
8. Clean all threads with a wire brush and file smooth any nicked threads. Apply an anti-seize or other graphite compound on threads before replacing grinder impeller.
9. Make sure cap screw in bottom of pump shaft is tight. Hold impeller with screwdriver between the cutter bar and teeth of shredding ring while tightening the cap screw.
10. Make sure the impeller turns freely by hand after reassembly. Some drag will be present due to the shaft seals. There should not be any binding or tight spots when turning the grinder impeller.
11. If there is any rub or drag on the shredding ring, loosen the 3 bolts in the shredding ring plate and tap lightly with the hammer to loosen. Retighten the bolts. Be sure to tighten the bolts evenly, applying pressure on all 3 bolts. **DO NOT COMPLETELY TIGHTEN ONE BOLT BEFORE TIGHTENING THE OTHER BOLTS. THIS WILL CAUSE MISALIGNMENT AND LOCKING OF SHREDDING RING AND GRINDER IMPELLER.**

## Troubleshooting

Symptom	Possible Cause(s)	Corrective Action
Motor Not Running	<ol style="list-style-type: none"> <li>1. Motor Protector Tripped</li> <li>2. Open circuit breaker or blown fuse</li> <li>3. Impeller clogged</li> <li>4. Cutter clogged</li> <li>5. Power cable damaged</li> <li>6. Bad control panel</li> <li>7. Defective liquid level switch</li> <li>8. Not enough liquid in wet well to activate controls</li> <li>9. Liquid level cords tangled</li> <li>10. Automatic controls defective</li> </ol>	<ol style="list-style-type: none"> <li>1. Allow motor to cool. Make sure pump is completely submerged. Clear debris from volute and impeller.</li> <li>2. Reset breaker. If circuit opens repeatedly, don't reset it. Call a licensed electrician.</li> <li>3. Check amp draw. If it is more than twice the nameplate amps, the impeller is locked. Bearings and shaft may be damaged. Disconnect Power, clear debris from volute, impeller and cutter as needed.</li> <li>4. Disconnect Power, pull pump and inspect cutter and cutter ring. Replace if worn.</li> <li>5. Resistance between power cable and ground should be infinity. If any reading is less than infinity, call a licensed electrician.</li> <li>6. Inspect control panel wiring. Call a licensed electrician.</li> <li>7. With switch disconnected from power, check continuity through switch while activating liquid level switch. Replace switch if necessary.</li> <li>8. Allow the liquid to rise several inches above the switch-on level.</li> <li>9. Untangle cords for free operation.</li> <li>10. Try running pump in manual mode. If it runs, the automatic control is at fault.</li> </ol>
Pump runs continuously	<ol style="list-style-type: none"> <li>1. Liquid level control cords tangled</li> <li>2. Pump is air-locked</li> <li>3. Incoming flow exceeds the pump's capacity</li> <li>4. Clogged line</li> </ol>	<ol style="list-style-type: none"> <li>1. Untangle cords for free operation.</li> <li>2. Stop pump for about one minute and then restart. Repeat stopping and starting until the airlock clears. If the airlock continues, Disconnect Power, pull the pump and drill a 1/8" hole in the discharge pipe between the pump discharge and the check valve.</li> <li>3. A larger pump or additional pumps may be required.</li> <li>4. Discharge line could be clogged. Unclog line.</li> </ol>
Pump delivers low volume of liquid	<ol style="list-style-type: none"> <li>1. Check valve plugged, stuck shut or installed backwards</li> <li>2. Systems head is too high</li> <li>3. Pump suction plugged</li> <li>4. Wrong voltage or not wired correctly</li> <li>5. Pump air-locked</li> <li>6. Worn or damaged impeller</li> <li>7. Liquid level controls incorrectly installed or defective</li> </ol>	<ol style="list-style-type: none"> <li>1. Make sure check valve is installed correctly and functioning correctly.</li> <li>2. Consult dealer.</li> <li>3. Disconnect power, pull pump, inspect and clear as needed.</li> <li>4. Check pump's rotation, check nameplate voltage against supply voltage, consult licensed electrician.</li> <li>5. Stop pump for about one minute and then restart. Repeat stopping and starting until the airlock clears. If the airlock continues, Disconnect Power, pull the pump and drill a 1/8" hole in the discharge pipe between the pump discharge and the check valve.</li> <li>6. Disconnect Power, pull pump and inspect impeller. Replace if necessary.</li> <li>7. Reposition or replace as necessary.</li> </ol>
Pump cycles frequently	<ol style="list-style-type: none"> <li>1. No discharge check valve installed</li> <li>2. Discharge check valve stuck open</li> <li>3. Sewage basin too small</li> <li>4. Liquid level controls incorrectly installed or defective</li> <li>5. Pump too small for inlet flow</li> </ol>	<ol style="list-style-type: none"> <li>1. Install discharge check valve.</li> <li>2. Repair or replace check valve as necessary.</li> <li>3. Consult dealer.</li> <li>4. Reposition or replace as necessary.</li> <li>5. Consult dealer about larger pump or second pump.</li> </ol>

**For Replacement Parts or Technical Assistance, Call 1-888-636-6628 or log onto our web-site at: [www.waynewatersystems.com](http://www.waynewatersystems.com)**

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.

**Service Parts**

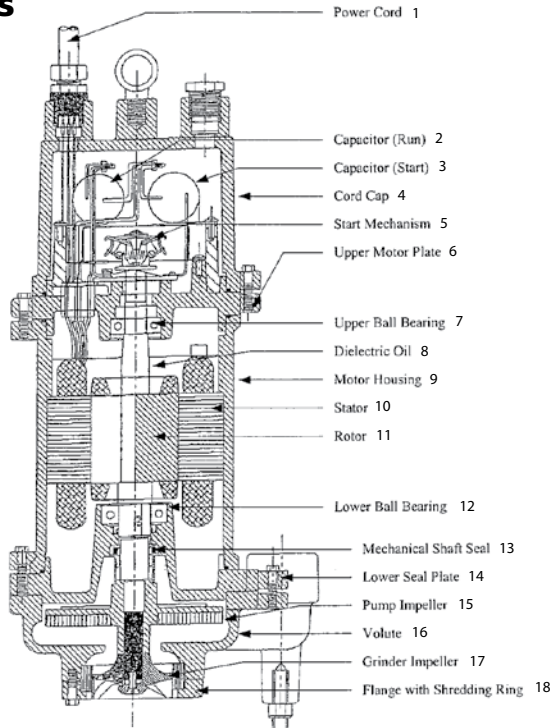


Figure 4 - BAGP1 Grinder Pump

SERVICE KITS	
Cord Cap Assembly (1 and 4)	63014-001
Capacitors (2 and 3)	63015-001 BAGP1-115
Capacitors (2 and 3)	63030-001 BAGP1-2021
Motor Assembly (5, 6, 7, 8, 9, 10, 11, 12 and 14)	63016-001 BAGP1-115
Motor Assembly (5, 6, 7, 8, 9, 10, 11, 12 and 14)	63031-001 BAGP1-2021
Mechanical Shaft (13)	63017-001
Pump Impeller (15)	63018-001
Volute (16)	63019-001
Grinder Assembly (17 and 18)	63020-001

**Service Parts**

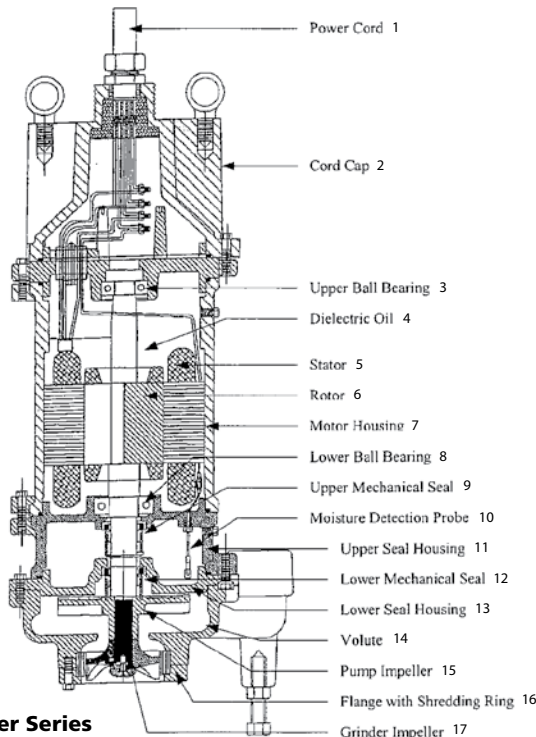


Figure 5 - BARD5GP1 Grinder Series

SERVICE KITS	
Cord Cap Assembly (1 and 2)	63021-001
Motor Assembly (3, 4, 5, 6, 7, 8, 10 and 11)	63022-001
Upper Mechanical Seal (9)	63023-001
Lower Mechanical Seal (12)	63024-001
Lower Seal Housing (13)	63025-001
Volute (14)	63026-001
Pump Impeller (15)	63027-001
Grinder Assembly (16 and 17)	63028-001
Starting Components (not shown)	63060-002

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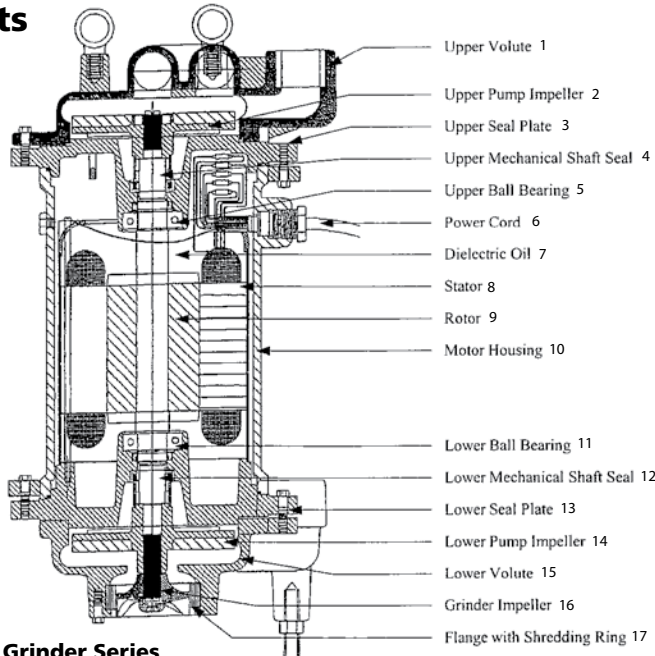
Please provide following information:

- 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.

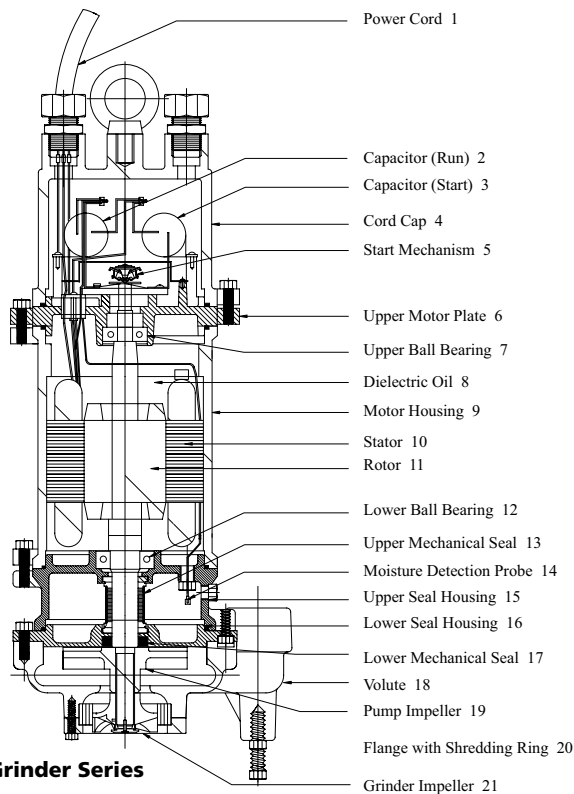
**Service Parts**



**Figure 6 - BAHGP2 Grinder Series**

SERVICE KITS	
Upper Volute (1)	63006-001
Upper Impeller (2)	63007-001
Motor Assembly (3, 4, 5, 6, 7, 8, 9, 10, 11, 12 and 13)	63008-001
Lower Mechanical Seal (12)	63009-001
Lower Impeller (14)	63010-001
Lower Volute (15)	63011-001
Grinder Assembly (16 and 17)	63012-001
Starting Components (not shown)	63013-001

**Service Parts**



**Figure 7 - BADSGP1 Grinder Series**

SERVICE KITS	
Cord Cap Assembly (1 and 4)	63014-001
Capacitors (2 and 3)	63013-001 BADSGP1-115
Capacitors (2 and 3)	63030-001 BADSGP1-2001
Motor Assembly (5, 6, 7, 8, 9, 10, 11, 12, 13, 14, and 15)	63036-001
Upper Mechanical Seal (13)	63023-001
Lower Mechanical Seal (17)	63024-001
Volute (18)	63026-001
Pump Impeller (19)	63027-001
Grinder Assembly (20 and 21)	63029-001

**Limited Warranty**

For two (2) years from date of purchase, Blue Angel Pumps 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 Pumps to be defective in materials or workmanship. Please call Blue Angel Pumps (1-888-636-6628) for instructions or see your dealer. Be prepared to provide the model 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 Pumps' 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 Pumps 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 Pumps (1-888-636-6628) for return authorization and instructions.

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

MODEL NO.: \_\_\_\_\_ SERIAL NO.: \_\_\_\_\_

INSTALLATION DATE: \_\_\_\_\_

**ATTACH YOUR RECEIPT HERE**