

# BARNES<sup>®</sup>

## INSTALLATION & OPERATION MANUAL

### **BB15-12** 12 Volt 1500 Watt Barnes Backup Systems



#### **IMPORTANT!**

*Read all instructions in this manual before operating pump.  
As a result of Crane Pumps & Systems, Inc., constant product improvement program,  
product changes may occur. As such Crane Pumps & Systems reserves the right to  
change product without prior written notification.*

**CRANE**<sup>®</sup>

A Crane Co. Company

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# SAFETY FIRST!

Please Read This Before Installing Or Operating Pump.  
This information is provided for **SAFETY and to PREVENT EQUIPMENT PROBLEMS**. To help recognize this information, observe the following symbols:



**IMPORTANT!** Warns about hazards that can result in personal injury or Indicates factors concerned with assembly, installation, operation, or maintenance which could result in damage to the machine or equipment if ignored.

**CAUTION !** Warns about hazards that can or will cause minor personal injury or property damage if ignored. Used with symbols below.

**WARNING !** Warns about hazards that can or will cause serious personal injury, death, or major property damage if ignored. Used with symbols below.



*Hazardous fluids can cause fire or explosions, burns or death could result.*



*Extremely hot - Severe burns can occur on contact.*



*Biohazard can cause serious personal injury.*



*Hazardous fluids can Hazardous pressure, eruptions or explosions could cause personal injury or property damage.*



*Rotating machinery Amputation or severe laceration can result.*



*Hazardous voltage can shock, burn or cause death.*

Only qualified personnel should install, operate and repair pump. Any wiring of pumps should be performed by a qualified electrician.



**WARNING !** - To reduce risk of electrical shock, pumps and control panels must be properly grounded in accordance with the National Electric Code (NEC) or the Canadian Electrical Code (CEC) and all applicable state, province, local codes and ordinances.

**WARNING!** - To reduce risk of electrical shock, always disconnect the pump from the power source before handling or servicing. Lock out power and tag.



**WARNING!** Operation against a closed discharge valve will cause premature bearing and seal failure on any pump, and on end suction and self priming pump the heat build may cause the generation of steam with resulting dangerous pressures. It is recommended that a high case temperature switch or pressure relief valve be installed on the pump body.



**CAUTION !** Never operate a pump with a plug-in type power cord without a ground fault circuit interrupter.



**CAUTION!** Pumps build up heat and pressure during operation-allow time for pumps to cool before handling or servicing.



**WARNING!** - **DO NOT** pump hazardous materials (flammable, caustic, etc.) unless the pump is specifically designed and designated to handle them.



Do not block or restrict discharge hose, as discharge hose may whip under pressure.



**WARNING! - DO NOT** wear loose clothing that may become entangled in the impeller or other moving parts.



**WARNING!** - Keep clear of suction and discharge openings. **DO NOT** insert fingers in pump with power connected.



Always wear eye protection when working on pumps.



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. Secure the pump in its operating position so it can not tip over, fall or slide.



**DO NOT** exceed manufacturers recommendation for maximum performance, as this could cause the motor to overheat.

**DO NOT** remove cord and strain relief. Do not connect conduit to pump.



**WARNING!** Cable should be protected at all times to avoid punctures, cut, bruises and abrasions - inspect frequently. Never handle connected power cords with wet hands.



**WARNING!** To reduce risk of electrical shock, all wiring and junction connections should be made per the NEC or CEC and applicable state or province and local codes. Requirements may vary depending on usage and location.

**WARNING!** Submersible Pumps are not approved for use in swimming pools, recreational water installations, decorative fountains or any installation where human contact with the pumped fluid is common.



**WARNING!** Products Returned Must Be Cleaned, Sanitized, Or Decontaminated As Necessary Prior To Shipment, To Insure That Employees Will Not Be Exposed To Health Hazards In Handling Said Material. All Applicable Laws And Regulations Shall Apply.



Bronze/brass and bronze/brass fitted pumps may contain lead levels higher than considered safe for potable water systems. Lead is known to cause cancer and birth defects or other reproductive harm. Various government agencies have determined that leaded copper alloys should not be used in potable water applications. For non-leaded copper alloy materials of construction, please contact factory.



**IMPORTANT!** - Crane Pumps & Systems, Inc. is not responsible for losses, injury, or death resulting from a failure to observe these safety precautions, misuse or abuse of pumps or equipment.

### Description of Operation:

The BB15-12 allows the user to have an automatic battery backup to power critical electrical systems in the event of a power outage. Sump pumps, furnaces, refrigeration units, and other appliances will operate on batteries while commercial AC power is off, then the BB15-12 will automatically switch from battery power to AC when the power is restored. The BB15-12 recharges backup batteries while AC power is on. Switchover is not instantaneous like that of an Uninterruptible Power Supply (UPS).

### Location and Installation Precautions:

Install the BB15-12 in a dry location or compartments that has minimal exposure to heat, dust, direct sunlight, or moisture. If installed in a basement for a power backup application, ensure that the unit is mounted away from where water may accumulate. Any electrical unit can be a shock hazard when exposed to water or moisture.

Mount the unit with 2.50" air clearance at front and back for proper ventilation and heat dispersion.

Do not mount the unit near magnetic storage media as this may cause data corruption or damage to circuit boards.

Do not install near flammable materials such as fuel, chemicals, paints, solvents, vapors, fumes, or other combustible materials.

### Electrical and Battery Precautions:



**IMPORTANT! Failure to connect proper battery polarities WILL result in damaging the power unit!**

The BB15-12 will not operate (with or without commercial power) until batteries are connected (see installation procedure on page 5).

Multiple battery systems must be comprised of batteries of identical voltage, age, amp-hours, capacity, and type (see connection instructions on page 6).

Batteries should be installed and maintained in a well-ventilated area to prevent accumulation of explosive hydrogen gas. If installed inside a compartment, a ventilation system that circulates outside air will provide safe and optimal performance.

Sparks can occur during battery connections. Always observe proper polarity while connecting battery cables. Serious personal injury or property damage can occur as a result of incorrect polarity when connecting live battery terminals.

Do not allow objects to come in contact with the two DC battery input terminals. Do not short or bridge these terminals together. Serious personal injury or property damage can occur as a result of shorting live battery terminals. Wearing gloves and safety glasses when working around batteries is recommended. Never smoke or use open flame when working around batteries.

### Equipment Connection Precautions:

Do not modify the BB15-12 **BEFORE** connecting batteries and AC power. Failure to follow these instructions may lead to personal injury and/or damage to the BB15-12 and other connected equipment.

Connect the BB15-12 only to a properly grounded AC power outlet or hardwired source. Do not plug the unit into its own receptacle, as this will damage the device and void the warranty.

You may experience uneven performance levels if the unit has a surge suppressor, line conditioner, or uninterruptible power supply (UPS) connected to the output of the unit.

### Operational Precautions:

The BB15-12 does not require routine maintenance. Do not open the casing for any reason. There are no user-serviceable parts inside.

Before making any changes with batteries, cabling, or any electrical devices connected to the BB15-12, always turn the unit off, then unplug the AC power cord. Potentially lethal voltages exist within the BB15-12. All connections to the BB15-12 must be disconnected prior to any service work.



**NOTE: Do not use the BB15-12 to power medical equipment. Not to be used with extension cords on load or line sides.**

### BB15-12 Specifications for 1500 W Unit:

- 12V DC Battery Input
- Modified sine wave (MSW) output
- Maximum 12 Amps combined total output load of all outlets
- 1500 Watt continuous power

- 3000 Watt surge power
- AC line input is protected with a 12 Amp slow-blow fuse
- Power service required: 15 Amps
- Has digital readout for battery voltage and Watts

**Indicator Lights:**



**Figure A**

**Power Indication LED:**

Green - Unit is operating and supplying AC power from the battery source.

Red - Unit is overheated, or battery voltage has dropped to below 10.5V.

**Charge Indication LED:**

**Solid:** Indicates that the battery is deeply discharged (less than 10V) and is being recharged in the high-current charge mode. Indicates no battery backup is available.

**Slow Flash (1 second):** Indicates that the battery is discharged to approximately 11.5V and is being recharged in the high-current charge mode.

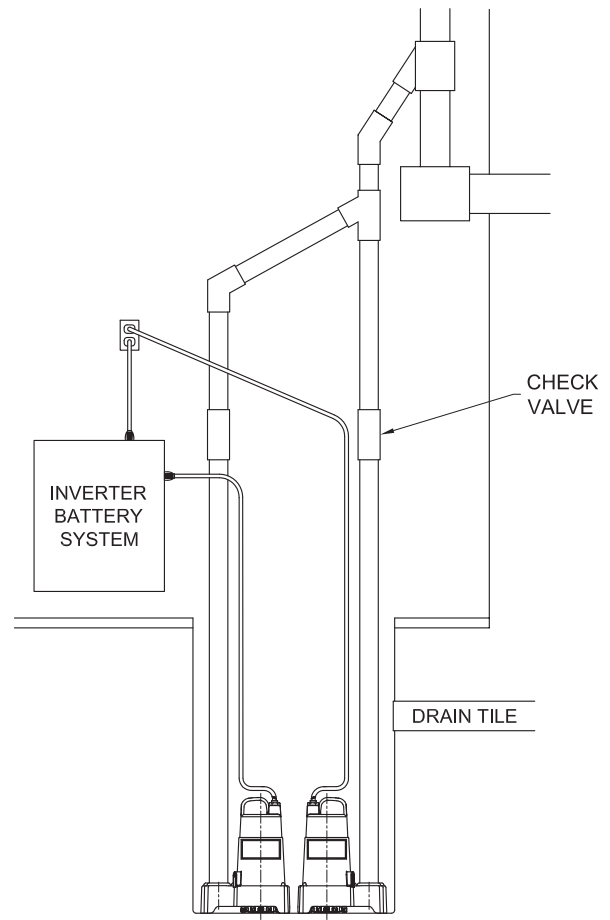
**Fast Flash (1/2 second):** Indicates that the battery is at or above 12.6V and is being maintained with a low-current trickle charge.

**Battery Recommendation:**

Minimum 100 Amp-Hour marine (or RV) deep-cycle 12 Volt.

**Installation Procedure:**

1. Fasten the BB15-12 to a wall or other secure mounting place with screws in each of the four mounting holes. A vertical mounting position will provide better cooling. Mount the unit so the indicator LED's are visible and the power switch is reachable. NOTE: The Location and Installation Precautions listed on page 4.
2. Connect battery supply using the provided cables. Connect the red cable to positive (+)



**Figure B**

terminals on the battery side and BB15-12 side. Connect the black cable to negative (-) terminals on the battery side and BB15-12 side. **IMPORTANT! Failure to connect proper battery polarities WILL result in damaging the BB15-12!**

3. Plug electrical appliance(s) into either AC receptacle on the BB15-12.
4. Plug BB15-12 cord into a wall socket. **NOTE: The Equipment Connection on page 4.**
5. Turn BB15-12 switch to 'ON'.
6. Ensure that the battery is charging. The red LED on the BB15-12 should either be on solid or flashing.
7. Turn the appliance on and verify operation.
8. Test the backup system by unplugging the BB15-12 AC cord from the wall socket. The BB15-12 should switch over to battery-powered devices are operating properly.

After verifying full battery-backup operation, plug the BB15-12 cord back into the wall socket.

Insure that the red (+) positive battery cable connection is made to red (+) terminal, and black (-) negative battery cable is to black (-) terminal.



**Figure C**

**How to Connect Multiple Batteries in Parallel for a Longer Run Time:**

Connect the positive terminal of the first battery to the positive terminal of the second battery. Connect the positive terminal of the second battery to the positive terminal of the third battery. Repeat this connection process with the negative terminals of the first, second, third batteries. This parallel connection of the battery bank will supply 12 volts and the total amp-hours will be the added sum of amp-hours of each battery.

Troubleshooting	
Problem	Solution
No input voltage	Turn off and unplug the BB15-12. Check and replace any blown fuses with the same type and rating.
	Turn off and unplug BB15-12 and disconnect battery cables. Clean battery and BB15-12 terminals, the ring terminals on the cables, and reconnect cables.
BB15-12 is shut down	If battery voltage is below 10V, either charge or replace the battery or batteries.
	If the BB15-12 is too hot, it will shut down automatically. If the red LED is lit, allow the unit to cool down. Check for adequate ventilation. Reduce the load by unplugging some of the appliances running off the BB15-12.
Low battery alarm on all the time	If the batteries cannot keep a voltage above 10.5V, check the condition of the battery cables and cleanliness of terminals. Recharge or replace the batteries if they cannot keep a minimum charge of 10.5V.

**Table A**

**BARNES®**

**BARNES®**  
PRESSURE **PS** SYSTEMS

**CROWN**

**burks®**

**WEINMAN®**

**DEMING®**

**PROSSER®**

## Limited 24 Month Warranty

Crane Pumps & Systems warrants that products of our manufacture will be free of defects in material and workmanship under normal use and service for twenty-four (24) months after manufacture date, when installed and maintained in accordance with our instructions. This warranty gives you specific legal rights, and there may also be other rights which vary from state to state. In the event the product is covered by the Federal Consumer Product Warranties Law (1) the duration of any implied warranties associated with the product by virtue of said law is limited to the same duration as stated herein, (2) this warranty is a LIMITED WARRANTY, and (3) no claims of any nature whatsoever shall be made against us, until the ultimate consumer, his successor, or assigns, notifies us in writing of the defect, and delivers the product and/or defective part(s) freight prepaid to our factory or nearest authorized service station. Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply. **THE SOLE AND EXCLUSIVE REMEDY FOR BREACH OF ANY AND ALL WARRANTIES WITH RESPECT TO ANY PRODUCT SHALL BE TO REPLACE OR REPAIR AT OUR ELECTION, F.O.B. POINT OF MANUFACTURE OR AUTHORIZED REPAIR STATION, SUCH PRODUCTS AND/OR PARTS AS PROVEN DEFECTIVE. THERE SHALL BE NO FURTHER LIABILITY, WHETHER BASED ON WARRANTY, NEGLIGENCE OR OTHERWISE.** Unless expressly stated otherwise, guarantees in the nature of performance specifications furnished in addition to the foregoing material and workmanship warranties on a product manufactured by us, if any, are subject to laboratory tests corrected for field performance. Any additional guarantees, in the nature of performance specifications must be in writing and such writing must be signed by our authorized representative. Due to inaccuracies in field testing if a conflict arises between the results of field testing conducted by or for user, and laboratory tests corrected for field performance, the latter shall control. **RECOMMENDATIONS FOR SPECIAL APPLICATIONS OR THOSE RESULTING FROM SYSTEMS ANALYSES AND EVALUATIONS WE CONDUCT WILL BE BASED ON OUR BEST AVAILABLE EXPERIENCE AND PUBLISHED INDUSTRY INFORMATION. SUCH RECOMMENDATIONS DO NOT CONSTITUTE A WARRANTY OF SATISFACTORY PERFORMANCE AND NO SUCH WARRANTY IS GIVEN.**

This warranty shall not apply when damage is caused by (a) improper installation, (b) improper voltage (c) lightning (d) excessive sand or other abrasive material (e) scale or corrosion build-up due to excessive chemical content. Any modification of the original equipment will also void the warranty. We will not be responsible for loss, damage or labor cost due to interruption of service caused by defective parts. Neither will we accept charges incurred by others without our prior written approval.

This warranty is void if our inspection reveals the product was used in a manner inconsistent with normal industry practice and/or our specific recommendations. The purchaser is responsible for communication of all necessary information regarding the application and use of the product. **UNDER NO CIRCUMSTANCES WILL WE BE RESPONSIBLE FOR ANY OTHER DIRECT OR CONSEQUENTIAL DAMAGES, INCLUDING BUT NOT LIMITED TO TRAVEL EXPENSES, RENTED EQUIPMENT, OUTSIDE CONTRACTOR FEES, UNAUTHORIZED REPAIR SHOP EXPENSES, LOST PROFITS, LOST INCOME, LABOR CHARGES, DELAYS IN PRODUCTION, IDLE PRODUCTION, WHICH DAMAGES ARE CAUSED BY ANY DEFECTS IN MATERIAL AND/OR WORKMANSHIP AND/OR DAMAGE OR DELAYS IN SHIPMENT. THIS WARRANTY IS EXPRESSLY IN LIEU OF ANY OTHER EXPRESS OR IMPLIED WARRANTY, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.**

No rights extended under this warranty shall be assigned to any other person, whether by operation of law or otherwise, without our prior written approval.

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**IMPORTANT!  
WARRANTY REGISTRATION**

Your product is covered by the enclosed Warranty.  
To complete the Warranty Registration Form go to:

<http://www.cranepumps.com/ProductRegistration/>

If you have a claim under the provision of the warranty, contact your local  
Crane Pumps & Systems, Inc. Distributor.

**RETURNED GOODS  
RETURN OF MERCHANDISE REQUIRES A "RETURNED GOODS AUTHORIZATION".  
CONTACT YOUR LOCAL CRANE PUMPS & SYSTEMS, INC. DISTRIBUTOR.**



**Products Returned Must Be Cleaned, Sanitized,  
Or Decontaminated As Necessary Prior To Shipment,  
To Insure That Employees Will Not Be Exposed To Health  
Hazards In Handling Said Material. All Applicable Laws  
And Regulations Shall Apply.**