

THIS GUIDE IS INTENDED FOR THE END USER.

# GEAR PLATE ASSEMBLY ELECTRIC MOTOR WIRING DIAGRAM DRUM SWITCH GFCI WARRANTY

**BH-USA** assumes no responsibility or liability for installations and/or improper use of the equipment. This guide is intended to be used as a reference and general guideline only. **BH-USA** is not responsible for the design, construction or installation of docks, piers or lifts.



BH-USA for warranty consideration.

### RETURN PRODUCT TO: BH-USA RETURNS 2368 FM 2087 N. Longview, Texas 75603

### **PRODUCT MUST BE SENT VIA GROUND and NOT through the U.S. POSTAL SERVICE.**

Product returned via U.S. Postal Service, or without a copy of the original invoice will not be eligible for warranties.

Do NOT attempt to return the defective material to the dealer or contractor who installed your lift. All warranty issues must be handled directly with BH-USA.

### REQUIREMENT FOR OBTAINING A REPLACEMENT ON BH-USA WARRANTED ITEMS

- 1. DO NOT ATTEMPT TO RETURN THE DEFECTIVE MATERIAL TO THE DEALER WHO INSTALLED YOUR LIFT; ALL WARRANTY ISSUES MUST BE HANDLED DIRECTLY WITH BH-USA.
- 2. ITEM MUST BE RETURNED TO BH-USA AT CONSUMER'S EXPENSE. DO NOT RETURN VIA UNITED STATES POSTAL SERVICE. PRODUCT MUST BE SHIPPED BACK TO BH-USA VIA GROUND (FED-EX, UPS, ETC.)
- 3. FOR WARRANTY CONSIDERATION, A LETTER DETAILING THE DEFECT AND A COPY OF THE ORIGINAL INVOICE MUST BE SENT ALONG WITH THE PRODUCT RETURN FORM THE ITEM WILL BE TESTED, AND IF DETERMINED TO BE UNDER WARRANTY, A REPLACEMENT WILL BE SENT.

IF BH-USA DETERMINES THE ITEM IS NOT COVERED UNDER THE WARRANTY, THE CONSUMER WILL BE NOTIFIED; THE ITEM WILL BE RETURNED AT CONSUMER'S EXPENSE IF REQUESTED.

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## **ELECTRIC MOTORS**

### THIS GUIDE COVERS GENERAL INFORMATION ABOUT ELECTRIC MOTORS EXCLUSIVELY DISTRIBUTED BY BH-USA.

Electric, flat-plate hoist motors reverse using a drum switch and operate at 110 volts or 220 volts at 1725 RPM. Electric boat hoist are NOT water tight. All BH-USA's boat lift motors have a start capacitor, mount with a standard 56 frame, and are totally enclosed non-venting (TENV), meaning all thermal protection has been removed, giving these motors a maximum 15 minute run time.

When installing the boat hoist motor NEVER install the motor so that the capacitor is facing down. The capacitor housing could fill with water and damage the motor. Properly installed motors will not fill with water and motors returned with water in them or evidence of water damage are not covered under the BH-USA warranty.

BH-USA assumes no responsibility or liability from improper wiring or misuse of equipment. BH-USA does not assume responsibility, nor will help in the operation, wiring, or information pertaining to other equipment not supplied by BH-USA. If you are not a licensed electrician DO NOT attempt to wire or rewire any electrical component.

BH-USA MOTOR GENERAL SPECIFICATIONS					
3/4 HP MODEL	1 HP MODEL	1.5 HP MODEL			
AMPS NEEDED AT 115 VOLTS = 11.4	AMPS NEEDED AT 115 VOLTS = 15.2	AMPS NEEDED AT 115 volts = 18.2			
AMPS NEEDED AT 230 VOLTS = 5.7	AMPS NEEDED AT 230 VOLTS = 7.9	AMPS NEEDED AT 230 Volts = 9.1			
SERVICE FACTOR = 1.0 Frame = 56 Compliance = UL Max run Time = 15 min	SERVICE FACTOR = 1.25 FRAME = 56 Compliance = UL Max run time = 15 min	SERVICE FACTOR = 1.15 FRAME = 56 COMPLIANCE = UL			

Motors	Wire re	Amps To Run 120V	Amps To Run 240V	50 ft © 120V	50 ft 240V	100 ft @ 120V	100 ft @ 240V	200 ft @ 120V	200 ft 9 240V	300 ft @ 120V	300 ft @ 240V	400 ft 120V	400 ft 240V
1	3/4	10.8	5.4	#14	#14	#10	#14	#8	#12	#6	#12	#4	#10
1	1	12.8	6.4	#12	#14	#10	#14	#6	#12	#4	#12	#4	#10
1	1.5	17.0	8.5	#12	#14	#8	#12	#6	#10	#4	#10	#2	#8
2	3/4	21.6	10.8	#10	#12	#8	#12	#4	#10	#2	#8	хх	#6
2	1	25.6	12.8	#8	#10	#8	#10	#4	#10	#2	#6	хх	#4
2	1.5	34.0	17.0	#8	#10	#6	#10	#2	#8	#0	#4	xx	#2

BH-USA Equipment Guide

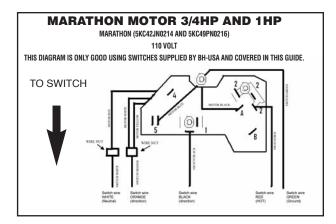
# **MARATHON MOTORS (115VAC)**

(FORMERLY GENERAL ELECTRIC)

### 115VAC WIRING PROCEDURE FOR ¾ HP MARATHON MOTOR MODEL 5KC42JN0214 AND 1 HP Marathon Model 5KC49PN0216.

The following procedure is for wiring the pre-wired drum switch\* to the motor using 14/5 control cable supplied by BH-USA.

- 1. MOTOR BLUE TO MOTOR TERMINAL 5
- 2. SWITCH GREEN TO GROUND
- 3. SWITCH BLACK TO MOTOR 1
- 4. SWITCH RED TO MOTOR 2
- 5. MOTOR RED TO SWITCH WHITE
- 6. MOTOR YELLOW AND MOTOR WHITE TO SWITCH ORANGE



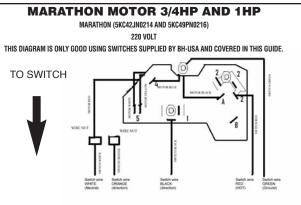
## **MARATHON MOTORS (230VAC)**

(FORMERLY GENERAL ELECTRIC)

### 230VAC WIRING PROCEDURE FOR ¾ HP MARATHON MOTOR MODEL 5KC42JN0214 AND 1 HP Marathon Model 5KC49PN0216.

The following procedure is for wiring the pre-wired drum switch\* to the motor using 14/5 control cable supplied by BH-USA.

- 1. MOTOR BLUE TO MOTOR TERMINAL 4
- 2. MOTOR RED AND WHITE TO MOTOR TERMINAL 5
- 3. SWITCH GREEN TO GROUND
- 4. SWITCH BLACK TO 1
- 5. SWITCH RED TO 2
- 6. MOTOR YELLOW TO Switch orange
- 7. CAP SWITCH WHITE



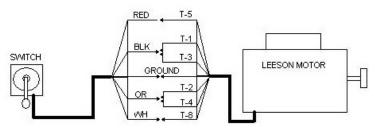
\* The Marathon wire procedures will ONLY work with the switches supplied by BH-USA: Salzer # P220-SE1518, Salzer #P220-SE1519, Bremas #CY0178099S2R, Bremas #CY0178068S2R, Furnas #D74756002, Furnas # D57341002

### 115VAC WIRING PROCEDURE FOR ¾ HP LEESON MOTOR MODEL C4C17NH12B AND 1.5 HP LEESON MOTOR Model C6C17NB47C, Leeson Motor Model C6C17WK15, Leeson Motor Model C6C17WK16, and Electra Gear Motor Models C6C17NK26A, C6C17NK27A, E75DTC-VD, 6439191210.

The following procedure is for wiring the already wired drum switch\* to the motor using 14/5 control cable supplied by BH-USA.

**1. REMOVE MOTOR CONNECTION BOX COVER.** 

- 2. CONNECT SWITCH BLACK WITH MOTOR WIRE TERMINAL 1 AND TERMINAL 3 WITH WIRE NUT.
- 3. CONNECT SWITCH WHITE WITH MOTOR WIRE TERMINAL 8 WITH WIRE NUT.
- 4. CONNECT SWITCH ORANGE WITH MOTOR WIRE TERMINAL 2 AND TERMINAL 4 WITH WIRE NUT.
- 5. CONNECT SWITCH RED WITH MOTOR WIRE TERMINAL 5 WITH WIRE NUT.
- 6. CONNECT SWITCH GROUND (GREEN) TO MOTOR GROUND NUT USING GROUNDING SCREW.
- 7. CHECK OPERATION OF MOTOR.
- 8. PUT COVER ON MOTOR. LOAD TEST.

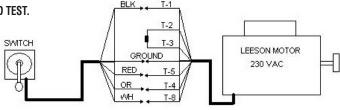


### 230VAC WIRING PROCEDURE FOR ¾ HP LEESON MOTOR MODEL C4C17NH12B AND 1.5 HP LEESON MOTOR Model C6C17NB47C, Leeson Motor Model C6C17WK15, Leeson Motor Model C6C17WK16, and Electra Gear Motor Models C6C17NK26A, C6C17NK27A, E75DTC-VD, 6439191210.

The following procedure is for wiring the already wired drum switch\* to the motor using 14/5 control cable supplied by BH-USA.

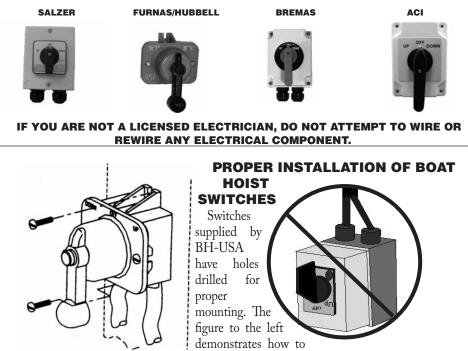
\*Leeson, Marathon, and Electra Gear motor wire procedures will ONLY work with these switches supplied by BH-USA: Salzer # P220-SE1518, Salzer # P220-SE1519, Bremas # CY0178099S2R, Furnas # D74756002, Furnas # D57341002

- **1. REMOVE MOTOR CONNECTION BOX COVER**
- 2. CONNECT SWITCH BLACK WITH MOTOR WIRE TERMINAL 1 WITH WIRE NUT.
- 3. CONNECT SWITCH WHITE WITH MOTOR WIRE TERMINAL 8 WITH WIRE NUT.
- 4. CONNECT SWITCH ORANGE WITH MOTOR WIRE TERMINAL 4 WITH WIRE NUT.
- 5. CONNECT SWITCH RED WITH MOTOR WIRE TERMINAL 5 WITH WIRE NUT.
- 6. CONNECT MOTOR WIRE TERMINAL 2 AND 3 TOGETHER.
- 7. CONNECT SWITCH GROUND (GREEN) TO MOTOR GROUND NUT USING GROUNDING SCREW.
- 8. CHECK OPERATION OF MOTOR.
- 9. PUT COVER ON MOTOR. LOAD TEST.



## **SWITCHES**

BH-USA will cover general information about electrical components exclusively distributed by BH-USA. BH-USA assumes no responsibility or liability from improper wiring, use, or operation of equipment. BH-USA does not assume responsibility, nor will help in the operation, wiring, or information pertaining to other equipment not supplied by BH-USA. Drum switches that have any signs of water damage or water inside the switch will not be covered under the manufacturer's defect warranty.



mount the switch. It should be mounted in a vertical position with two screws or bolts. When mounted correctly, the handle of the switch will point downward and the wires will protrude from the bottom of the switch. There are instructions on the back of the switch with an arrow showing how to mount the device.

### **IMPROPER INSTALLATION**

Never attempt to "hang" a switch from the boat hoist. Always permanently mount the switch to a structure. Switches should be mounted in a location requiring occupant to exit the boat in order to reach it.

BH-USA's line of flat plate hoists are not designed to lift people. DO NOT mount or hang the switch in any way that makes it accessible from within the boat. Hanging or mounting switches upside down will allow moisture and water to enter the switch and cause the switch to malfunction. BH-USA assumes no responsibility or liability for improperly installed equipment.

### PLEASE NOTE:

BH-USA will only be able to help with wiring the switches referenced in this guide. If you do not have one of these switches, BH-USA WILL NOT be able to help you wire it.

### **REVERSING THE MOTOR**

# If your motor is running in the wrong direction you need to switch the orange and black wires.

It is very rare for a switch to have a factory defect. Most problems with switches can be found in the connection of the wires to the switch terminals.

Moisture can be another problem. If there is moisture inside the switch it can cause corrosion between the terminal and the connection. This corrosion can disrupt the connection causing the switch to not work. Cleaning and tightening all connections inside of the switch will, in most cases, prevent this from happening.

Small insects such as ants can also get into the contacts.

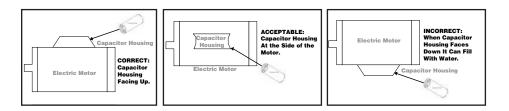
Drum switches that show signs of water inside the switch will not be covered under manufacturer's warranty.

### Switch warranties do not cover small insects or corroded terminals.

### **TROUBLE SHOOTING**

The ground fault circuit interrupter (GFCI) is designed to protect people from severe or fatal electric shocks. The GFCI is located in the hoist's wiring system and monitors the electricity flowing in a circuit to sense any loss of current. If the current flowing through the circuit differs by a small amount from that returning, the GFCI quickly switches off power to that circuit.\* BH-USA supplies all hoists and wired motors with a Class A UL compliance GFCI.

PROBLEM	CAUSE	SOLUTION
Hoist Not Lifting Boat Up	Low Voltage	Check Wire Size Chart
	Inadequate Installation Installation Guide	Check Flat Plate Hoist
	Lifting Too Much Weight	Check Hoist Instructions
Motor Is Smoking	Too Many Amps	Check Wire Size Chart
	Not Wired Correctly	Check Wiring Diagram
Motor Only Turning One Direction	Switch Terminals Are Corroded Or Blocked	Replace Or Clean Switch
	Motor/Switch Not Wired Correctly	Check Wiring
Motor Only Hums	Bad Capacitor	Replace Capacitor
Hoist Makes Noise When Lowering Boat	Not Properly Broken-In	Check Flat Plate Hoist Instructions
Motor Makes A Grinding Sound	Rusted Or Damaged Bearings	Replace Motor



SALZER	MAINTAIN SWITCH ROTARY CAM SWITCH #P220-SE1518 BHUSA #400033 AC-21A: 20A; AC-23A: 7.5KW 380-440V <u>COMPLIANCE = CE, UL</u> SPRING LOADED ROTARY CAM SWITCH #P220-SE1519 BHUSA #400032 AC-21A: 20A; AC-23A: 7.5KW 380-440V COMPLIANCE = CE, UL	WIRING PROCEDURE FOR SALZER BRAND SWITCHES #P220-SE1518 AND P220-SE1519 USING 5 COLOR- CODED WIRES (RED, ORANGE, BLACK, WHITE, AND GREEN). THIS PROCEDURE WILL WORK FOR WIRING THE FOLLOWING MOTORS TO THE SALZER SWITCH: MARATHON ¾ HP #5KC42JN0214, MARATHON 1 HP #5KC49PN0216, MARATHON 1.5 HP #5KCR49SN0068A, LEESON ¾ HP #C4C17NH11B, LEESON 1 HP #C4C17NH12B, LEESON 1.5 HP #C6C17NB47C, AND ELECTRA GEAR MOTORS.
FROM MOTOR	WIRE TO SWITCH, 120V OR 240V	FROM GFCI TO SWITCH,120V OR 240V
Control White	to Switch # 2	GFCI Black to Switch # 1
Red	to Switch to # 4	GFCI Whiteto Switch # 3
Black	to Switch # 8	Greento Control Green
Orange	to Switch # 12	
Green	to GFCI (power) Green	

### BREMAS



MAINTAIN SWITCH ROTARY CAM SWITCH #CY0178068S2R BHUSA #400003 120-240 VAC 1-3 PHASE COMPLIANCE = CE, UL, SA SPRING LOADED ROTARY CAM SWITCH #CY0178099S2R BHUSA #400004 120-240 VAC 1-3 PHASE COMPLIANCE = CE, UL, SA WIRING PROCEDURE FOR BREMAS BRAND SWITCHES #CY0178099S2R AND CY0178068S2R USING 5 COLOR-CODED WIRES (RED, ORANGE, BLACK, WHITE, AND GREEN). THIS PROCEDURE WILL WORK FOR WIRING THE FOLLOWING MOTORS TO THE BREMAS SWITCH: MARATHON ¾ HP #5KC42JN0214, MARATHON 1 HP #5KC49PN0216, MARATHON 1.5 HP #5KCR49SN0068A, LEESON ¾ HP #C4C17NH11B, LEESON 1 HP #C4C17NH12B, LEESON 1.5 HP #C6C17NB47C, AND ELECTRA GEAR MOTORS.

### FROM MOTOR WIRE TO SWITCH, 120V OR 240V

Control White	to Switch # T-1
Red	to Switch # T-2
Black	to Switch # 8
Orange	to Switch # 12
Greento GFC	CI (power) Green

### FROM GFCI TO SWITCH, 120V OR 240V

GFCI Black	to Switch # L1
GFCI White	to Switch # L2
Green	to Control Green

FURNAS HUBBELL	MAINTAIN SWITCH ROTARY CAM SWITCH #CY017806852R BHUSA #400003 120-240 VAC 1-3 PHASE <u>COMPLIANCE = CE, UL, SA</u> SPRING LOADED ROTARY CAM SWITCH #CY017809952R BHUSA #400004 120-240 VAC 1-3 PHASE <u>COMPLIANCE = CE, UL, SA</u>	WIRING PROCEDURE FOR FURNAS/HUBBELL BRAND SWITCHES #D74756002 AND D57341002 USING 5 COLOR-CODED WIRES (RED, ORANGE, BLACK, WHITE, AND GREEN). THIS PROCEDURE WILL WORK FOR WIRING THE FOLLOWING MOTORS TO THE FURNAS/HUBBELL SWITCH: MARATHON <sup>3</sup> / <sub>4</sub> HP #5KC42JN0214, MARATHON 1 HP #5KC49PN0216, MARATHON 1.5 HP #5KCR49SN0068A, LEESON <sup>3</sup> / <sub>4</sub> HP #C4C17NH11B, LEESON 1 HP #C4C17NH12B, LEESON 1.5 HP #C6C17NB47C, AND ELECTRA GEAR MOTORS.
FROM MOTOR V	VIRE TO SWITCH, 120V OR 240V	FROM GFCI TO SWITCH, 120V OR 240V
Control White	to Switch # 4	GFCI Blackto Switch # L1
Red	to Switch # 2	GFCI Whiteto Switch # L2
Black	to Switch # 1	Greento Control Green
Orange	to Switch # 3	
Green	to GFCI (power) Green	



MAINTAIN SWITCH MAINTAIN SWITCH ROTARY CAM SWITCH #101584J BHUSA #400046 120-240 VAC 1-3 PHASE <u>COMPLIANCE = CE, UL, SA</u> SPRING LOADED ROTARY CAM SWITCH #AC1101585J BHUSA #400047 120-240 VAC 1-3 PHASE COMPLIANCE = CE, UL, SA

FROM MOTOR WIRE TO SWITCH, 120V OR 240V

Control	
White	to Switch # 2 (T-1)
Red	to Switch # 4 (T-2)
Black	to Switch # 8
Orange	to Switch # 12
Green to	GFCI (power) Green

WIRING PROCEDURE FOR BHUSA/ACI BRAND SWITCHES USING 5 COLOR-CODED WIRES (RED, ORANGE, BLACK, WHITE, AND GREEN). THIS PROCEDURE WILL WORK FOR WIRING THE FOLLOWING MOTORS TO THE ACI SWITCH: MARATHON ¾ HP #5KC42JN0214, MARATHON 1 HP #5KC49PN0216, MARATHON 1.5 HP #5KCR49SN0068A, LEESON ¾ HP #C4C17NH11B, LEESON 1 HP #C4C17NH12B, LEESON 1.5 HP #C6C17NB47C, AND ELECTRA GEAR MOTORS.

### FROM GFCI TO SWITCH, 120V OR 240V

From GFCI to Switch, 120V or 240V	/
GFCI Blackto Switch # 1 (L1	)
GFCI Whiteto Switch # 3 (L2	)



### LIMITED WARRANTY ELECTRIC MOTOR

BH-USA hereby warrants to the original retail purchaser of an electric motor supplied by BH-USA that the motor is free from defective materials and workmanship for a period of one year from the date of purchase, unless otherwise stated, when purchased directly from BH-USA or a dealer authorized by BH-USA to sell such products. This limited warranty is valid only when this product is used under normal conditions of recommended use as outlined in the BH-USA Equipment Guide.

During the first year BH-USA will replace, at the option of BH-USA, the product manufactured, assembled, wired, or supplied by BH-USA without charge. Any products, component parts, equipment, and accessories not manufactured or supplied by BH-USA are not covered by the provisions of this warranty. This includes existing wire harnesses, if the motor is purchased without wire harness supplied by BH-USA. If this is the case, this warranty is only valid if a licensed electrician wired the existing wire harness to a motor supplied by BH-USA.

Other than as set forth above, BH-USA makes no other express or limited warranties with respect to any product or component part or manufactured part sold by BH-USA. Any implied warranties of merchantability or fitness for a particular purpose are limited to one year from the date of sale to the original purchaser.

### THE FOLLOWING ITEMS WILL VOID WARRANTY:

- 1. ANY PRODUCT OR COMPONENT PART WHICH HAS BEEN SUBJECT TO ABUSE, NEGLECT, ACCIDENT, OR IMPROPER USE;
- 2. ANY PRODUCT OR COMPONENT PART WHICH HAS BEEN ALTERED OR REPAIRED BY ANYONE NOT AUTHORIZED BY BH-USA TO MAKE SUCH ALTERATIONS OR REPAIRS DURING THE TERM OF THIS WARRANTY;
- 3. ANY PRODUCT OR COMPONENT PART WHICH HAS BEEN SUBJECTED TO UNNECESSARY STRESS;
- ANY DEFECT, DAMAGE, OR INJURY RESULTING FROM THE CONSUMER OR ANY OTHER PERSON STANDING ON ANY BOAT, PLATFORM, OR OTHER SUCH ITEM WHICH IS ATTACHED TO ANY PRODUCT OR COMPONENT PART THEREOF;
- 5. ANY DEFECT, DAMAGE, OR INJURY ATTRIBUTED TO TRANSPORTATION OF ANY PRODUCT OR COMPONENT PART THEREOF;
- 6. DEFECTS IN MATERIALS OR WORKMANSHIP WHICH COULD Have been discovered by a reasonable examination of the product or component parts under normal use and service;
- 7. ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES OR INJURIES.



### LIFETIME WARRANTY GEAR PLATE ASSEMBLY (GPA)

BH-USA guarantees to the original purchaser a lifetime warranty for as long as they own the gear plate assembly (GPA). The GPA is free from defective materials and workmanship for the life of the GPA. BH-USA will replace any GPA found to have a manufacturer's defect. This lifetime warranty is valid only when this product is used under normal conditions of recommended use as outlined in this packet.

BH-USA will only replace merchandise or products manufactured or supplied by BH-USA. All BH-USA gear plates have a rating posted on the front of the gear plate assembly. DO NOT EXCEED the rating of the gear plate being used. Exceeding the rating will void the warranty. BH-USA will not be responsible for any incidental or consequential damages or injuries. The guarantee does not cover ordinary wear and tear. As with any gear, component parts, especially moving parts, will show wear over time and may eventually need to be refurbished or replaced. This warranty is predicated on the hoist being inspected and serviced on an annual basis by a qualified technician.

A record of inspection is required with any warranty request. The BH-USA Lifetime Warranty is nontransferrable and only applies to the original purchaser who has filled out and returned the warranty registration form within two weeks of purchase.

### THE FOLLOWING ITEMS WILL VOID WARRANTY:

- 1. EXCEEDING THE WEIGHT RATING POSTED ON THE FRONT OF THE GEAR PLATE ASSEMBLY;
- 2. SUBJECTING THE GPA TO ABUSE, NEGLECT, ACCIDENT, OR IMPROPER USAGE;
- ALTERATION OR REPAIR OF THE GPA BY ANYONE NOT AUTHORIZED BY BH-USA;
- 4. INSTALLING THE GPA INCORRECTLY OR USING THE HOIST IN A LIFT THAT IS CONSIDERED IMPROPERLY INSTALLED;
- 5. USING THE GPA AS A LOAD BEARING UNIT;
- USING THE GPA FOR ANY PURPOSE OTHER THAN LIFTING A BOAT;
- IGNORING DEFECTS IN MATERIALS OR WORKMANSHIP WHICH COULD HAVE BEEN DISCOVERED BY A REASONABLE EXAMINATION OF THE PRODUCT OR COMPONENT PART UNDER NORMAL USE AND SERVICE;
- 8. USING THE GPA FOR NON-RESIDENTIAL OR COMMERCIAL USE;
- 9. ANYTHING BH-USA DEEMS OUTSIDE THE INTENDED USE OF THIS PRODUCT.

### ACCESS MORE INFORMATION AND ORDER ON-LINE AT

## WWW.BH-USA.COM

By Phone 800-259-8715 By Fax 903-758-3646 Monday — Friday, 8am to 5pm CST



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