

BOTTOM HINGED FLOOD BARRIER

Installation Instructions/Operation and Maintenance Manual



Models:

BH-590

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Contact Information

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IMPORTANT! Read entire Instruction and Operations Manual to become familiar with the product.

NOTICE This product is a flood protection product. The effectiveness of the product is directly related to the proper installation and operation of this product. Failure to properly maintain this product **will** affect performance.

Publication Notice

This manual has been compiled and published covering the latest product descriptions and specifications.

The contents of this manual and the specifications of this product are subject to change without notice.

PS Flood Barriers reserves the right to make changes without notice in the specifications and materials contained herein and shall not be responsible for any damages (including consequential) caused by reliance on the materials presented, including but not limited to typographical and other errors relating to the publication.

PS Flood Barriers and/or its respective suppliers may make improvements and/or changes in the product(s)/ service(s) offered and/or the program(s) at any time without notice.

Retain this manual for future reference.

If you would like to download a copy of this manual, please go to psfloodbarriers.com

Safety Precautions

The following icons are used throughout this Manual.

- ▲ DANGER** Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.
- ▲ WARNING** Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
- ▲ CAUTION** Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderated injury.
- NOTICE** Indicates manufacturer's statement of additional information.
- IMPORTANT!** Indicates a required action.
- CRITICAL** Indicates a vital component to product performance.

Product Information

NOTICE Unauthorized modification of or to the Product voids this Limited Warranty. Authorized modifications, received in writing from PS INDUSTRIES INCORPORATED, as long as the modification is accomplished in strict accordance with PS INDUSTRIES INCORPORATED's instructions, does not void warranty. To request product modifications contact PS INDUSTRIES INCORPORATED, 1150 S. 48th Street, Grand Forks, ND 58201, phone 877-446-1519, email: 4psinfo@psindustries.com

I. General Information

This manual contains information regarding operation and maintenance of custom water-resistant Bottom Hinged Flood Barrier assemblies.

II. Operation Guidelines

The following procedures and information are supplied for the operation of the PS Flood Barriers' BH-590 Bottom Hinged Flood Barrier assemblies. Operation in a manner other than intended could result in damage or less than acceptable performance at time of need, for which the manufacturer will not be held responsible.

- ▲ CAUTION** Always plan for potential leakage and condensation that can occur during flooding conditions.
- ▲ WARNING** The Bottom Hinged Flood Barrier components MAY BE heavy, consult Approved for Construction drawings and included documents for weights and use appropriate lifting procedures and equipment.

III. Safety Precautions

- A. Flood Barriers may operate with or without warning. Precautions must be taken to ensure people are clear of barriers during operation.
- B. Ensure opening is clear of all obstructions or debris during operation.
- C. Do not force panels or components if they do not operate freely.
- D. When removing Bottom Hinge Flood Barrier components, protect all gaskets and hardware. Always consult original Approved for Construction drawings for all installation dimensions, details, hardware and specifications.

IV. Pre-flooding or Potential Flooding Conditions

- A. Conduct Inspection and Maintenance activities as described in this Operation and Maintenance Manual, at a minimum, annually and seasonally if seasonal flood conditions exist, prior to the flood season. This may require the replacement of gaskets, sealants, anchors, and accounting for all of the latching devices.
- B. Ensure BH-590, Bottom Hinged Flood Barrier system is operational prior to flood waters reaching the opening.

- ▲ WARNING** THIS IS A FLOOD PROTECTION BARRIER; NEVER UNLATCH OR DISASSEMBLE DURING ANY FLOOD CONDITIONS AS WATER LEAKAGE WILL OCCUR AND YOU MAY NOT BE ABLE TO RESEAL THE BARRIER.

Product Information

V. Flooding Conditions

- A. Ensure BH-590, Bottom Hinged Flood Barrier is deployed at anytime when flooding conditions are present.
- B. If feasible, inspect BH-590, Bottom Hinged Flood Barrier for leakage or condensation accumulation during flooding.
- C. Automatic Deployment of BH-590 for Flooding Condition (Electrical/Sensor Activation):
 - 1. A High-Water sensor located inside the Basin will detect standing water and initiate a close sequence through the control panel.
 - 2. The Panel will then deploy using electrical actuators at each opening.
- D. Procedure to lower Flood Barrier in to not deployed position:
 - 1. With the BH-590 in the deployed position, the panel can be lowered into the concealed position, determine the appropriate number of personnel required to perform (2 people minimum).
 - 2. If the gas spring actuated float assembly is in the upright position it must be reset, or lowered into the Basin before the Panel can be lowered.
 - 3. It may be necessary to manually remove all standing water in the Basin to allow the gas spring actuated float assembly to be reset into its lowered position.
 - 4. The Panel can then be lowered flush with ground level to complete the procedure.

VI. Additional Information

- A. Model BH-590 is specifically manufactured to meet the opening dimensions and Water Protective Height (WPH) of each customers' specific site requirements. **DUE TO THE CUSTOM NATURE OF EACH BH-590 THEY DO NOT ALL LOOK THE SAME NOR LATCH OR OPERATE EXACTLY THE SAME. REFER TO THIS DOCUMENT AND APPROVED FOR CONSTRUCTION DRAWINGS FOR YOUR SPECIFIC INSTALLATION AND OPERATION.**

NOTICE Please keep these instructions and Approved for Construction Drawings for later reference and read them before attempting any maintenance or deployment of the product.

- B. No additional allowances have been included for hydrodynamic loads, debris impact loads or wave loads, unless specifically detailed in additional documentation provided.
- C. All water pressure, impact, and operating loads are transferred to the building structure. Building structure design and capacity to accept loads from flood barriers, as well as, evaluation of loads to structure is by others, not PS Flood Barriers.
- D. If the water height exceeds the level of any door penetrations or water protective design height, leakage will occur.
- E. This product is equipped with compressible seals, which are not dependent on inflation devices.

NOTICE PS Flood Barriers recommends completing installation steps fully, testing, and completing a Training Drill for activation prior to storage of Flood Barrier System.

- F. The following information is available upon request:
 - 1. Structural Calculations:
 - a. A copy of PS Flood Barriers' design calculations by a qualified engineer, to verify the flood barrier's ability to withstand the design loading, is available upon request.
 - 2. Optional Stamped Structural Calculations:
 - a. Registered professional engineer stamped calculations from within the state or territory where the building will be constructed or substantially improved are available at additional cost.

Manual Deployment Operation

VII. Manual Deployment for Flooding Conditions (Without Electricity)

NOTICE Operation in a manner other than intended could result in damage or less than acceptable performance at time of need for which the manufacturer will not be held responsible.

NOTE: Inspect all components of Flood Plank Barrier before deployment, making sure to properly clean and remove contaminants. Contact PS Flood Barriers at 877-446-1519 for purchase of replacement components, if necessary.

STEP 1. Clean sill, and jambs of any debris.

STEP 2. Locate lift points on face of Panel, remove any covers that may be in place.

STEP 3. Using proper lifting equipment or appropriate manpower, lift panel into position.

STEP 4. Inspect gasket to ensure proper position and compression, if not adjust accordingly.

Manual Deployment Operation

VIII. Manual Deployment for Flooding Conditions (With Electricity)

NOTICE Operation in a manner other than intended could result in damage or less than acceptable performance at time of need for which the manufacturer will not be held responsible.

NOTE: Inspect all components of Flood Plank Barrier before deployment, making sure to properly clean and remove contaminants. Contact PS Flood Barriers at 877-446-1519 for purchase of replacement components, if necessary.

STEP 1. Clean sill, and jambs of any debris.

STEP 2. Initiate Flood Barrier closing sequence by one of the following methods:

- a. Locate key switch at opening, insert key and turn.
- b. Locate control panel in utility closet and press close button corresponding to each gate that needs to be deployed.

STEP 3. Inspect gasket to ensure proper position and compression, if not adjust accordingly.

Automatic Deployment Operation

IX. Automatic Deployment when Flooding Conditions are present (Buoyant Activated)

NOTE: If a high water condition occurs, standing flood water will deploy the panel once it has accumulated enough depth inside the Basin.

Automatic Deployment Operation

X. Automatic Deployment when Flooding Conditions are present (Electrical/Sensor Activation)

NOTE: A High-Water sensor located inside the Basin will detect standing water and initiate a close sequence through the control panel.

STEP 1. The Panel will then deploy using electrical actuators at each opening.

Concealed Position Procedure

XI. Procedure to lower Flood Barrier into Concealed Position

NOTICE Operation in a manner other than intended could result in damage or less than acceptable performance at time of need for which the manufacturer will not be held responsible.

NOTE: *Inspect all components of Flood Plank Barrier before deployment, making sure to properly clean and remove contaminants. Contact PS Flood Barriers at 877-446-1519 for purchase of replacement components, if necessary.*

STEP 1. With the BH-590 in the deployed position, the panel can be lowered into the concealed position, determine the appropriate number of personnel required to perform (2 people minimum).

STEP 2. If the gas spring actuated float assembly is in the upright position it must be reset, or lowered into the Basin before the Panel can be lowered.

STEP 3. It may be necessary to manually remove all standing water in the Basin to allow the gas spring actuated float assembly to be reset into its lowered position.

STEP 4. The Panel can then be lowered flush with ground level to complete the procedure.

Deployment Testing

XII. Procedure to Test Deployment (Buoyant Activated)

NOTICE Operation in a manner other than intended could result in damage or less than acceptable performance at time of need for which the manufacturer will not be held responsible.

NOTE: Inspect all components of Flood Plank Barrier before deployment, making sure to properly clean and remove contaminants. Contact PS Flood Barriers at 877-446-1519 for purchase of replacement components, if necessary.

STEP 1. Take precautions to direct pedestrian traffic away from the immediate area of testing.

STEP 2. Manually lift Flood Barrier open and plug ground water intake in the Basin to enable it to be filled with water.

STEP 3. Follow procedure to properly lower Flood Barrier into concealed position.

STEP 4. Disable electric actuators by turning off power to electric control panel.

STEP 5. Use a water supply to fill the pan with water.

STEP 6. The Panel will automatically deploy before the water level reaches ground surface level.

STEP 7. Unplug ground water intake to drain the Basin.

STEP 8. Follow procedure to properly lower barrier into concealed position.

STEP 9. It may be necessary to manually remove all standing water to allow the gas spring actuated float assembly to be reset into its lowered position.

NOTICE PS Flood Barriers recommends completing installation steps fully, testing, and completing a Training Drill for activation prior to storage of Flood Barrier System.

Deployment Testing

XIII. Procedure to Test Deployment (Automatic-Electric)

NOTICE Operation in a manner other than intended could result in damage or less than acceptable performance at time of need for which the manufacturer will not be held responsible.

NOTE: Inspect all components of Flood Plank Barrier before deployment, making sure to properly clean and remove contaminants. Contact PS Flood Barriers at 877-446-1519 for purchase of replacement components, if necessary.

STEP 1. Take precautions to direct pedestrian traffic away from the immediate area of testing.

STEP 2. Procedure for testing is specific to each site. PS Flood Barriers recommends that the building manager develop a testing procedure to simulate flooding conditions and test the function of the remove water sensor and control system to automatically deploy the Flood Barrier.

STEP 3. Follow procedure to properly lower Flood Barrier into concealed position.

Deployment Testing

XIV. Procedure to Test Deployment (Manual-Electric)

NOTICE Operation in a manner other than intended could result in damage or less than acceptable performance at time of need for which the manufacturer will not be held responsible.

NOTE: Inspect all components of Flood Plank Barrier before deployment, making sure to properly clean and remove contaminants. Contact PS Flood Barriers at 877-446-1519 for purchase of replacement components, if necessary.

STEP 1. Take precautions to direct pedestrian traffic away from the immediate area of testing.

STEP 2. Inspect gaskets, repair, or replace as necessary.

STEP 3. Clean sill. and jambs of any debris.

STEP 4. Initiate Flood Barrier closing sequence by one of the following methods:

- a. Locate key switch at opening, insert key, and turn.
- b. Locate control panel in utility closet, and press close button corresponding to each Bottom Hinged Flood Barrier, that needs to be deployed.

STEP 5. Inspect gasket to ensure proper position and compression, if not adjust accordingly.

NOTICE PS Flood Barriers recommends completing installation steps fully, testing, and completing a Training Drill for activation prior to storage of Flood Barrier System.

Inspection and Maintenance

XV. Inspection and Maintenance (Minimum Annually)

A. Panel, Jambs, and Embedded items:

1. Inspect items for damage and misalignment. Adjust, repair, or replace as needed, to meet original design tolerances.
2. Check all connections, making sure they meet original design standards (refer to Approved for Construction Drawings and Anchor Specifications).

B. Fasteners and mechanical connections:

1. All fasteners must be in place and adjusted to their original design standards. Replace any damaged components (refer to Approved for Construction Drawings and Anchor Specifications).

C. Gas Springs and Actuators:

1. Useful life expectancy dependent on deployment cycles, local climate, and other factors. Test all components of system prior to potential flood hazards to ensure proper function of system components.

D. Sealants and Waterstops:

1. Inspect all sealants used on jambs and connections to insure their effectiveness.
2. Replace any cracked, loose, or otherwise non-performing sealants.
3. Use only factory approved/supplied products.
 - a. Factory approved sealant/waterstops: Sika; Sikaflex-227, Quellpaste Typ E

E. Gasketing:

1. Inspect all gaskets for damage, continuous adhesion to the attached surface, and proper positioning and compression.
 - a. Inspect all basin gaskets as required.
 - b. Inspect all jamb gaskets as required.
2. Replace or repair if damage or deterioration to gaskets has occurred.
3. Use only factory approved materials (refer to Approved for Construction Drawings).

CRITICAL Gaskets are a critical component of the Flood Barrier protective performance and must meet minimum compression tolerances in the latched position.

F. Latching:

1. Operate all latching hardware to ensure smooth, uninhibited movement of all mechanical components.
2. Place flood barrier and check latches for proper engagement. If gaskets are not properly positioned and properly compressed, unlatch barrier panel and adjust latching accordingly.

G. Finishes:

1. Inspect and clean finishes annually.
2. Touch-up repair finishes, or refinish as necessary to protect the structural integrity of the Flood Barrier.

H. Labels and Placards:

1. Inspect all labels and placards.
2. Replace any labels and placards which are unreadable/missing.

I. Housekeeping:

1. Clean sill and jamb of any debris and keep the area clean throughout Bottom Hinged Flood Barrier opening.
2. Keep Basin free of debris and ensure Flood Barrier can freely rotate into deployed position without impending interference.

Inspection and Maintenance Log

CRITICAL Periodic Inspection and Maintenance Required. Inspect at minimum annually.

Date Purchased: _____

Product: _____

Model Number: _____ Opening Identifier/ Number: _____

Serial Number: _____ Location: _____

DATE INSPECTED	INSPECTED BY <i>(Print & Sign)</i>	INSPECTION ITEMS NOTED	CORRECTIVE ACTION	CORRECTED BY <i>(Print & Sign)</i>

Inspection and Maintenance Log

CRITICAL Periodic Inspection and Maintenance Required. Inspect at minimum annually.

Date Purchased: _____

Product: _____

Model Number: _____

Serial Number: _____

Opening Identifier/ Number: _____

Location: _____

DATE INSPECTED	INSPECTED BY <i>(Print & Sign)</i>	INSPECTION ITEMS NOTED	CORRECTIVE ACTION	CORRECTED BY <i>(Print & Sign)</i>

PS FLOOD BARRIER WARRANTY REGISTRATION FORM

PS Flood Barriers™ Product Warranty Registration: For PS Flood Barriers™ Products, the Limited Warranty will only be valid if the Owner completes, and returns, this PS Flood Barrier Warranty Registration Form within thirty (30) days of Product installation.

To request additional copies of the Warranty Registration Form, contact PS INDUSTRIES INCORPORATED, 1150 S. 48th Street, Grand Forks, ND 58201, phone 877-446-1519, email: 4psinfo@psindustries.com. For a fillable form, download a copy from www.psfloodbarriers.com/download-center/

The following information is required:

Owner Name: _____ Product Name: _____

Company: _____ Model: _____

Address: _____ Serial Number: _____

State/Province: _____ Date Installed: _____

Zip/Postal Code: _____

Country: _____

Although testing of flood barriers is not required, PS INDUSTRIES INCORPORATED recommends testing flood barriers after installation to verify the suitability of the installation and ensure proper adjustment of flood barrier for optimum performance.

The following information and signatures are required to ensure warranty coverage of installed product.

- Was the flood barrier field tested after installation? Yes No
- If tested, which type(s) of testing was conducted?
 - Hose Test per PS Flood Barriers testing procedure.
 - Hydrostatic Test per PS Flood Barriers testing procedure.
 - Other Testing Method (*describe below*):

Owner or Installer Name (Please print.)

Test Witness Name (Please print.)

Signature

Signature

Date

Date

Return form to:

PS Flood Barriers
Attention: Warranty
1150 S. 48th Street
Grand Forks, ND 58201

Fax: 701-746-8340
E-mail: 4psinfo@psindustries.com

(Make additional copies as necessary)



877.446.1519

4psinfo@psindustries.com | psfloodbarriers.com

1150 South 48th Street | Grand Forks, ND 58201