

## **Upgrade Kit for the 15 inch OFFBoard® Vermin Shield (Rat Shield)**

### **Background**

The 15 inch Vermin Shield was created for houseboat owners who wanted to have additional protection on their mooring lines to keep mice, rats and other vermin from gaining access to their vessel. The OFFBoard® Vermin Shield is unique in a couple of ways:

- 1) It uses a spring loaded door to enable the OFFBoard® Vermin Shield to be easily attached to a mooring line. Open the door, insert on the line, close the door and it is attached on the line wher ever the owner wants it. Open the door and it is easily removed for storage.
- 2) Because we never know the exact diameter of your mooring line, we provide four inserts that fit in one end of the door. These inserts, once attached via two dovetails in the door, reduce the size of the center hole based on the diameter of the mooring line. If the mooring line was a ½ inch diameter, the insert for a ½ line is used. Other inserts for 5/8" line, 3/4 inch line and 7/8 inch line are provided. A one inch line does not need an insert.

### **Reason for Change**

After more than 10 years in use, we have decided to change the way inserts are placed on the 15 inch OFFBoard® Vermin Shield. This resulted in a new design in the end of the door and a new design of the inserts. The original disc design was not changed.

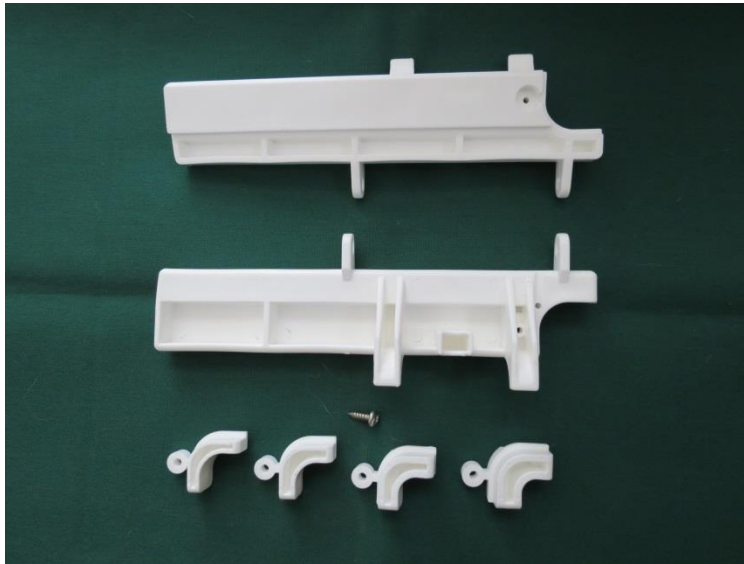
- 1) The die used to mold the inserts and the door became worn producing products that required significant hand reworking.
- 2) The dovetails themselves became worn and would not hold when the door was opened and closed during normal use.
- 3) Customers asked for modifications to the door/insert to keep the insert in place.
- 4) After repeated use, it was possible to break the insert at the point where the dovetail is attached to the body of the insert.

### **New Design objectives**

- 1) Based on the success of the 17 inch OFFBoard® Vermin Shield using a screw to hold an insert in the door, we discarded the dovetail design and decided on a much more robust attachment design.
- 2) The design of the inserts was changed to attach to the door more efficiently than the use of dovetails.
- 3) A screw was added to secure the insert in place rather than friction.
- 4) The door was redesigned to hold the insert in place and serve as a base for the screw.

## The Upgrade Kit.

The Upgrade Kit Consists of a new door, four new inserts and the connecting screw shown here.



(The upgrade kit only includes one door. The top of the picture shows the bottom of the door where the inserts are attached with the screw as well as the top of the door. )

## The Upgrade Process

To upgrade the existing 15 inch OFFBoard® Rat Shield to the new design requires the replacement of the door. **Note that the spring is “loaded” and requires special handling. Before starting notice the hook on one end of the spring and the long handle on the other end.**

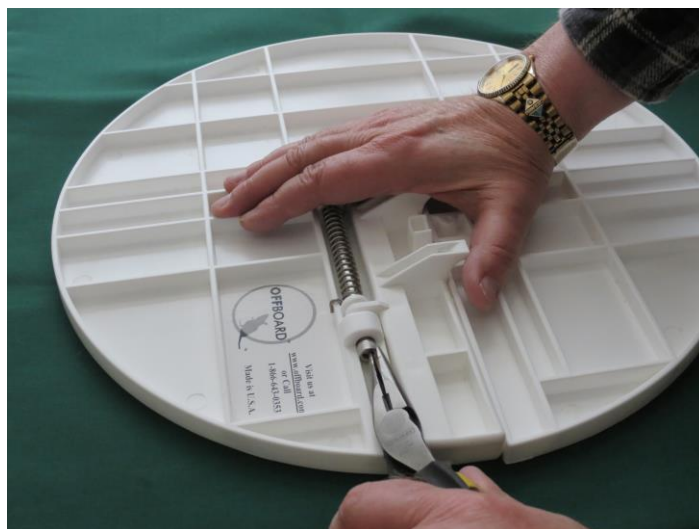
## Tools Needed

- 1) A flat blade screw driver
- 2) A ¼ inch Allen Wrench
- 3) A needle nose pliers
- 4) A heavy right hand glove. (Optional)

## Dis-assembly Process

This is the removal of the bolt and nut that holds the door to the disc.

- 1) Using a ¼ Allen wrench , unscrew the bolt from the nut. Because the nut has a self-sealing washer, it may be necessary to use a flat blade screw driver to hold the nut from turning. **Keep the Nut.**
- 2) After the nut is removed, push the bolt to expose the head. Use the needle nose pliers to pull the bolt out.



3) You may want to use a glove over the spring at this point. While pulling the bolt out, hold your hand over the spring so that as the bolt is withdrawn the spring does not fly off the door. **Retain the spring.**

4) After the bolt is removed , remove the door and appropriately discard it along with the old inserts. **Keep the Bolt.**

### **Assembly Process**

1) Place the new door on the disc.

2) Insert the bolt partially so the screw threads are visible between bolt retaining holes.

3) Place the spring with the hook end over the screw threads. Hook it on to the wall of the disc. Take the long handle and rotate it clockwise. Place the end of the long handle in the hole provided for it. This loads the spring so the door will close.

4) Push the spring down into the slot, then push the bolt onto the disc until it goes through the bolt retaining hole .

5) Use the ¼ inch Allen wrench to screw the bolt on to the nut until it reaches the self-sealing washer. Installation of the door is complete.

6) Next : Select and install the insert on the OFFBoard® Vermin Shield if your mooring line is less than an inch in diameter.

### **Instructions for Center Insert**

Use an insert to reduce the size of the center hole to ensure a tight fit of the OFFBoard® Vermin Shield on your mooring line.

**The following are instructions to adjust its size.**

This package holds a set of four inserts for the 15 inch Vermin Shield. There is one of each for 1/2, 5/8, 3/4, and 7/8 inch mooring line. Select the one that matches the size of your mooring lines. Keep the unused inserts for possible future use.

After selecting the right size, open the spring door and place the insert in the end of the door.

It is designed so that it goes in only one way.



The fit is intended to be snug. Due to various sizes of ropes and their age, it might be necessary to select the next smaller or larger size insert.



Make sure that the insert is fully seated in the door as shown in this picture. Use the stainless steel screw provided and place it into the retaining hole until it is all the way in. Do not over tighten.



Close the door and the shield is ready for use.