

TURBO BOATABAG®

EXTERNAL WATER BALLAST SYSTEM

Patents 6029595 & D400492

The **Turbo Boatabag** levels your boat on a reach for unprecedented performance, comfort and safety, and outperforms internal water ballast systems without taking up valuable internal space. The portable **Turbo Boatabag** attaches in seconds to most boats without alterations, and can be moved from one rail to another or from one similar size boat to another. It requires no active pumping for the emergency release of water and is compliant with the 10 degree (heel) static rule for offshore safety (ORC).

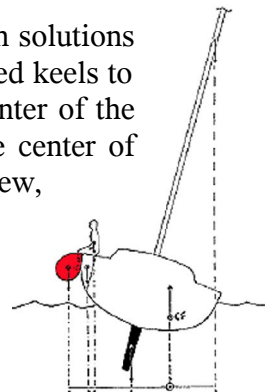
The filling and draining mechanism for the **Turbo Boatabag** is a self contained part of the water ballast system, requiring no alterations to the boat. To fill the weather **Boatabag** while under sail, the water powered **Turbo** pump is deployed into the water from it's holder on the lifelines. The short filling hose automatically closes the drain valve and the water powered **Turbo** (turbine) pump will fill the container in approximately seven minutes. When the **Boatabag** is filled with the desired amount of water, the Turbo pump is retrieved by it's tether line and placed back into it's holder, and you're ready to go!



If the wind has decreased and you want less water ballast, *gently* pull on the filling hose to release controlled quantities of water. To completely drain the **Boatabag** *firmly* tug on the filling hose which will lock the drain valve in the open position (30 seconds) and the **Boatabag** will automatically retract up to the rail with the loss of water. The retraction mechanism automatically folds and retracts the **Boatabag** neatly along the rail as shown on the left.

Stability and what hangs in the balance

Reaching speed is directly related to the heeling angle of a sailboat. Some expensive high-tech solutions involve lightening the sail rig by the use of Kevlar® sails and carbon fiber masts, or use of bulbed keels to lower the center of gravity. To measure the effect of weight loss from the rig, project the center of the weight loss straight down from it's location as shown on the right. On the other side of the center of flotation (CF), measure the stabilizing force of the keel or movable ballast, i.e., water ballast, crew, etc. Removing 200 lbs. from the rig with the boat heeling 15 degrees would have the similar effect of adding 200 lbs. to the keel, or only 100 lbs. on the beam rail. Adding water ballast or crew on the boat's rail is the least expensive and most dramatic stabilizing force, especially within the optimal heeling/performance range for the modern sailboat.



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