



From: Gary Polson  
PropellerSafety.com  
P.O. Box 1381  
Stillwater OK 74076

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To: Department of Homeland Security  
U.S. Coast Guard

**Reference: Docket No. USCG-2010-0164  
National Boating Safety Advisory Council**

**Subject: Large outboard motors flipping into boats**

**Please distribute this document to the Council members.**

Thank you for the opportunity to comment.

As per my previous comment letters, large outboard motors, especially those on bass boats, are striking floating and submerged objects, breaking off, and flipping into the boat with the propeller still under power.

NBSAC itself noted this scenario on page 8 of the NBSAC95 minutes as quoted below. Captain Boross was speaking:

*"The Coast Guard did a five-year study. Of the 21,000 BARD entries from 2010 through 2014, there were 888 accidents involving propeller injuries of all forms and all causal factors. Some of these incidents occurred when a propeller of an underway vessel struck a submerged object and the propeller recoiled and the engine launched and came up out of the water and came inside the boat which amazed him and members of his staff, as **there were hundreds of those events.**"*

We note, most if not all of these events occurred when the skeg, nose cone, or leading edge of the outboard motor struck a submerged object, not the propeller.

We recently posted an updated version of our Design Chart for Preventing Outboard Motors From Entering Boats.

A pdf of the post is attached.

Thank you for the opportunity to comment.

Gary Polson

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## Design Chart for Preventing Outboard Motors From Entering Boats updated

by GARY

Back in July 2016, we posted a chart for use in designing and testing outboard motors in a way to prevent them from breaking off and entering boats when striking submerged objects.

Today we are posting an updated / enhanced version of that chart. The new chart specifically identifies three more potential design / testing paths to achieve the objective.

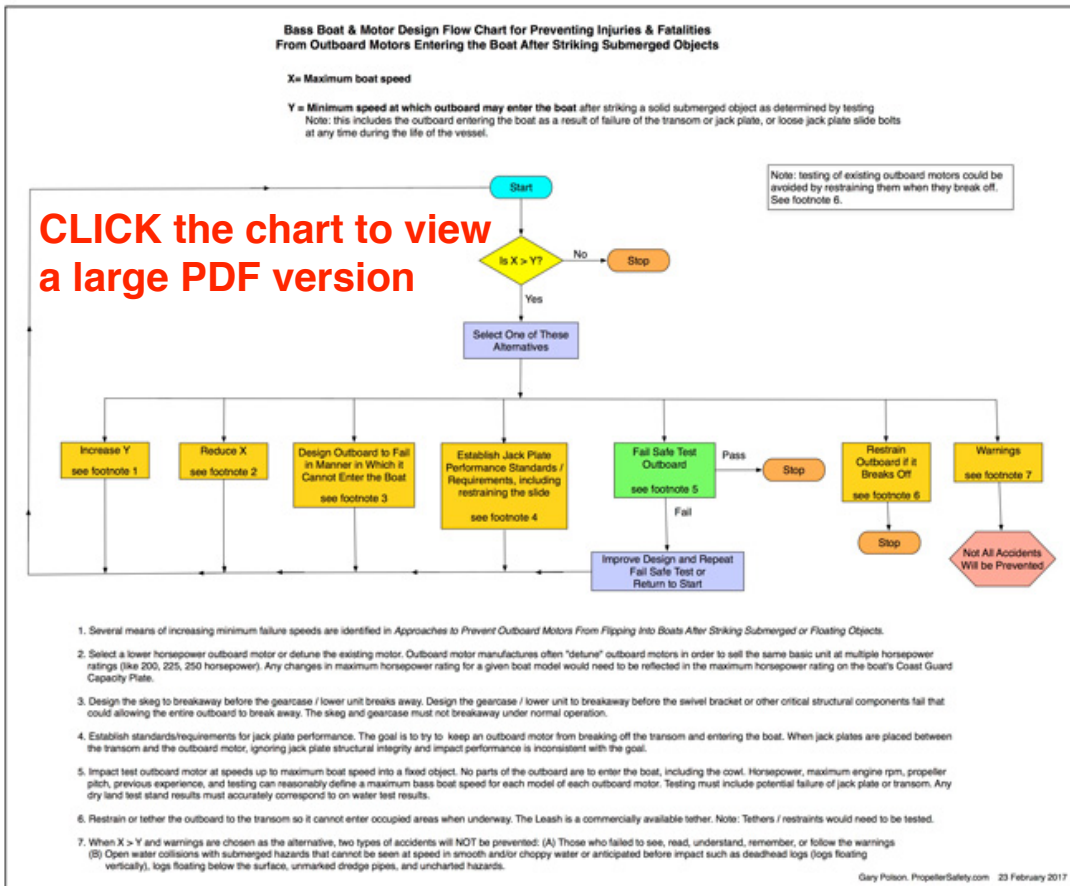
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One of the new paths focuses on designing the outboard so it will not break off and enter the boat. This can be done by making sure the skeg breaks away before the gearcase / lower unit breaks off, and by making sure the lower unit / gearcase breaks off before the swivel bracket or other mounting components break.

Another path calls for the establishment of jackplate performance standards / requirements.



Mercury outboard on jack plate. 2017 Tulsa Boat Show.

Jack plates are regularly being inserted between the boat and the outboard with:

1. No requirements being placed upon their structural integrity
2. No consideration to their performance during an impact at speed
3. No requirement for them to physically prevent the outboard from slipping up and out of the track, such as by use of a safety cable

fatality

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4. No consideration to the changes in geometry they bring that influence the forces, stresses, and strains felt by the outboard and transom

Please note we are not saying or implying that the Bob's Machine jack plate in the photo above may not be of the highest quality and meet all needs of the application. We are saying we are not seeing any jack plate standards, requirements, or testing procedures in place to assure that is so, not only of this particular jack plate, but of all jack plates in general.

The final new path recognizes Failsafe Testing is the procedure by which to verify no parts from the outboard will enter the boat during collisions with floating or submerged objects.

The new chart has also been inserted into the original post.

Outboards breaking off and flipping into boats with their propellers still running has particularly been associated with bass boats and tournament bass boats.



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