

## HOW WE TESTED

**P**S tested harnesses for design and function (Does it work?), construction and materials (Can I rely on it, and will it last?), and fit, comfort, and adjustability (Will I wear it? Does it inhibit my work on deck?).

All harnesses were weighed before testing. Inflatable PFD/harnesses were weighed with CO<sub>2</sub> cylinders armed. Harnesses were donned and examined for ease of adjustment and clarity of instructions. Undesirable features such as magnetism (which would impact compass headings), suspect welds, and accidental inflation were noted.

PS relied on manufacturer's published safe working load limits and breaking strength of harness materials collected from laboratory tests. In all cases, breaking strength was certified to be at least four times the safe working load. Testers also subjected each harness to 900 pounds of load, using a come-along device. Quality of materials, chest band slippage, and stitching were evaluated by visual inspection during these pulls.

Harnesses were evaluated in a harbor and at sea, under ocean conditions aboard a 27-foot sloop. Except for children's harnesses, all harnesses were worn by both experienced and novice sailors, men and women, varying in height from 5 feet, 3 inches to 6 feet, and weighing 120 to 200 pounds. Harnesses were evaluated with and without foul weather gear being worn.

To evaluate the harnesses on comfort and breathing ease, once the boat reached 6 knots, a test subject "fell" over 28-inch-high lifelines while wearing a harness, foul weather jacket, and helmet. The harness was tethered to a taut West Marine Jackline (breaking strength 6,000 pounds), and the MOB was towed alongside the boat. The wearer was then lifted diagonally upward by the harness to determine whether there was any tendency of the wearer to slip out of the harness while being pulled back on board by the tether. If the PFD auto-inflated during the test, this was also noted.

PS's ocean testing differed from the



*To evaluate harness security and the viability of using it to lift a person back onboard, testers were pulled vertically over the lifelines via a halyard and winch.*

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2005 Crew Overboard Rescue Symposium, ([www.boat-us.com/foundation/findings/COBfinalreport](http://www.boat-us.com/foundation/findings/COBfinalreport)) conducted on San Francisco Bay. During the Rescue Symposium, the overboard "victims" were afloat some distance from the rescue boat. In our testing, the volunteer man overboard remained tethered to the boat. The boat was then put head to wind, a halyard was clipped to the harness/tether, and the MOB was winched five vertical feet from the water and over the lifelines. Security and ease of using the harness as a lifting device were evaluated in these vertical lifts.

Older harnesses and tethers were used as an historical comparison for evaluating newer products. PS noted on older inflatable PFD/harnesses that the velcro closures securing the inflatable PFD bladder often had lost adhesiveness. Rusting welds in some older D-rings were also observed. Printed instructions on inflatable PFD/harnesses had worn off or otherwise become illegible on most older harnesses.

Finally, interviews were conducted with professional crew members who recently circumnavigated via the Southern Ocean in the often grueling 2006 Volvo Ocean Race.