

# Type IV Throwable PFDs

*The Jim-Buoy 24" life ring did well in throw and flotation tests, as did horseshoes from Jim-Buoy and Forespar. A new hybrid—the Lifeline cushion with attached throw rope—is a versatile device that could become a simple staple.*

**T**his spring and summer there were a number of well-publicized incidents of people falling off boats and having to be recovered by the crew. In almost all these cases, the MOBs were professional sailors aboard racing sailboats. One died, and was almost certainly unconscious from a traumatic blow when he hit the water. The others, who went swimming mid-ocean in rough conditions, were extremely lucky to have gone overboard in daylight, and to have been parts of competent crews.

There are always plenty of these incidents, and not all of them end happily. In almost every case, there are lessons learned. Nothing goes as planned. Luck, both good and bad, intervenes.

It's not our purpose here to try to cover the whole subject of man-overboard emergencies, or to quote from the many studies that have been done on the topic. We'd just like to offer the following reminders:

If someone goes over the transom unnoticed when the boat is moving at 6 knots, he or she will be a football field away in 30 seconds. Let's hope they're wearing a PFD. Meanwhile, assuming someone *did* notice them go overboard, the full crew now has a big project on their hands. The situation is immediately fraught with a number of dangers—injury, panic, spinning propeller, plunging hull, darkness or limited visibility, rough conditions, and any combination thereof. Then, assuming you can locate the person right away, you have the problem of keeping them in sight, reaching them, and establishing some sort of physical contact with them.

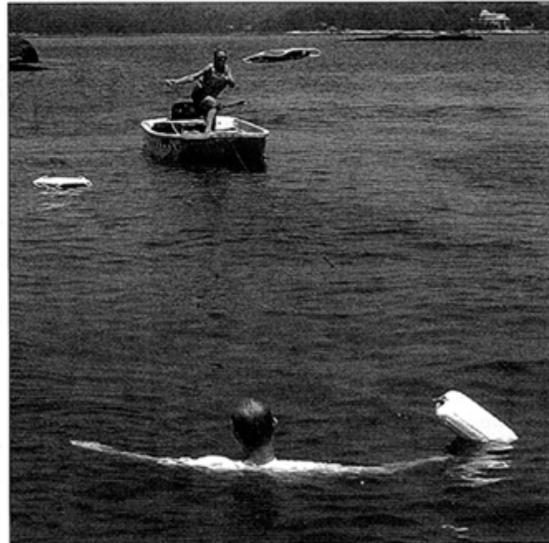
Finally, you face the very serious problem of getting them back on boat, in whatever state they're in.

For this evaluation we decided to tackle the middle set of problems—establishing physical contact with the MOB—simply by trying out the gear that's meant to apply: Type IV Throwable Devices, as required by the Coast Guard. We didn't include the Lifesling or launchable man-overboard modules in this evaluation; neither of these are throwable devices *per se*, and in any case the purposes and capabilities of the Lifesling are well-known. As a system for recovering people unable to come up a ladder or onto a swim platform, it's probably the best MOB recovery gear available for sailors.

We settled on two simple criteria for our evaluation: First, how easily and accurately do these throwable devices actually throw? Second, how do they perform once the MOB has them in hand?

## What We Tested

We last tested Type IV throwables back in 1993. Since then, the basic products available to boaters (cush-



*We threw Type IV rings, horseshoes, and cushions upwind along a 50' range in a moderate breeze.*

ions, rings and horseshoes) have remained much the same. For this evaluation, though, we included a prototype device brought to our attention by Dan McCormick, of the US Coast Guard's Lifesaving and Fire Safety Standards Division, who we called for a sanity check on our test procedures. Mr. McCormick suggested we check out a new cushion developed by two California powerboaters, Don Anderson and Jim Way. It's called the Lifeline P.F.D. It looks like a standard boat cushion but has a Velcro-closed pouch on one side that stores 42 feet of polypropylene line. The cushion end is spliced into a loop of webbing, heavily sewn on both ends inside the

## Value Guide: Type IV PFDs & Throw Ropes

Manufacturer/Brand	Price	Dimensions	Weight	Throw Rating	In-water effectiveness/fit
<b>Cushions</b>					
Lifeline P.F.D.	\$25*	15" x 15"	1-1/4 lbs.	Good	Good
Kent cushion	\$10	15" x 15"	1-1/2 lbs.	Fair	Fair
Stearns cushion	\$18	15" x 15"	1-1/2 lbs.	Poor	Fair
<b>Horseshoes</b>					
Cal-June Jim Buoy 920	\$55	23-1/2" x 23-1/2"	3-1/4 lbs.	Good	Excellent
Forespar Horseshoe Buoy	\$80	22-1/2" x 22"	2-1/4 lbs.	Good	Excellent
<b>Rings</b>					
Cal-June Jim-Buoy 30	\$60	30" diameter	5-1/2 lbs.	Good	Excellent
Cal-June Jim-Buoy 24	\$50	24" diameter	2-1/2 lbs.	Excellent	Excellent
<b>Throw Ropes</b>					
West Marine**	\$45	50' line	1 lb.	Excellent	na
Suspenders	\$50	70' line	1-1/4 lbs.	Excellent	na
Forespar	\$33***	70' line	1-3/4 lbs.	Good	na

\*Approximate. Price not established. \*\*West has improved the 70' model this year with reflective tape and a bright day-glow green bag.

cushion. The far end also has a spliced loop for the tosser to hold.

The Lifeline has already received USCG approval, and UL (Underwriters Laboratories) approval is expected before the end of the year, which means the product should be available early in 2003.

We also tested throwable cushions from Kent and Stearns.

Our rings (24" and 30") were both made by Jim-Buoy. (The company

also makes a 20-incher.) Horseshoe rings from Jim-Buoy and Forespar rounded out our Type IV test group.

Finally, we tried three throw-rope bags—70-footers from Suspenders and Forespar, and a 50-footer from West Marine.

### How We Tested

We set up a "test range" consisting of an old Boston Whaler (our throwing platform) anchored by the stern. At

the bow we cleated one end of a 50-foot red floating line. We stretched that line dead to windward and put the bitter end through a fender with a knot. Then we anchored the fender. This gave us a windward range, and luckily the wind blew at a steady 12-15 knots for most of the test time. After several people threw everything several times, we reoriented the 50-foot line across the wind by tying it to a dock.

The test tossers (three men and a woman) threw everything according to the directions, and also a few times according to our own sense of how to do things. We can report right here that we never did better with our own methods than with the directions, although sometimes we came out about even, as with the football toss of the rope bags. So we might as well follow the directions.

There are differences between tossing cushions and lines from an open Boston Whaler and from the deck of a sailboat, as anyone who has tried it will recognize. The added few feet of height will give a big advantage in how far the object can be tossed; how-

*Below: The Jim-Buoy 30" ring offers great buoyancy, but its bulk and weight made it hard to throw.*

*Right: All of the bagged ropes could be thrown accurately and far.*



## Comments

Versatile, good all-around device, well-made, one solid piece of foam inside.  
Standard boat cushion, multiple layers of foam.  
Also standard with multiple foam layers, but looser cover makes it too flexible and slippery.

Hard foam inside, excellent buoyancy, throws well.  
Softer foam interior, very well made, throws well, good buoyancy.

Top buoyancy in test, too bulky to throw far.  
Throw-distance record holder, good buoyancy; excellent in water.

Excellent accuracy, same as Sospenders but overpriced.  
Excellent accuracy, best price.  
Excellent accuracy, bag more water-resistant, lacks tube-covered MOB grip, heavier to throw.

\*\*\*SailNet price

ever, that advantage can be erased instantly if you hit or get tangled up with any of the obstacles that infest the aft end of a sailboat—notably the backstay, but also the mainsheet, runner tails, antennas, lifelines, and the stern pulpit and anything mounted on it.

## Results

**In the Air:** The hands-down winner of the distance toss was the white Jim-Buoy life ring. It has the best combination of weight and aerodynamic ability, and flew well when tossed with a backhand throw, more or less like a Frisbee. Two of the tosses took it to about 40', directly upwind with decent accuracy, and two of the cross-wind tosses took it to about 60' with decent accuracy.

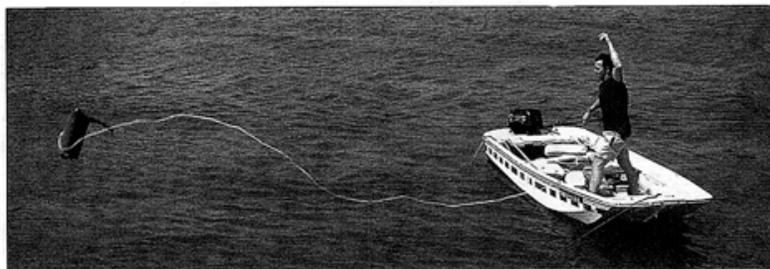
The orange Jim-Buoy life ring was also good at flying, but it was just too hefty to make it as far. The best toss for that was about 35', with decent accuracy. Most tosses were in the 25' range.

The Jim-Buoy and Forespar horseshoes both tossed surprisingly well, although technique varied. Some

throws were backhands, some were discus-style. The best tosses seemed to be with a grip on the fastened cross-strap, but in an emergency situation that strap would probably be undone after the horseshoe came out of its bracket.

The Jim-Buoy horseshoe is a bit larger than the Forespar, and filled with hard Styrofoam. The Forespar is filled with a softer foam. There was

*Testers had no problem flinging the Lifeline PFD about 40 feet. Surprisingly, its attached polypropylene line, which allows additional toss attempts, remained snarl-free.*



some debate about which tossed easier, but they performed about the same. Most tosses were in the 40' range upwind, and slightly better crosswind, with decent accuracy.

The three throw-rope bags also performed similarly, although there are some differences to report: The Sospenders and West Marine products we tried are nearly identical—same line, same bag construction and color, same closure hardware, same plastic tube enclosing the grab loop on the MOB end. An e-mail to West Marine confirmed that Sospenders makes West Marine's product, although West Marine's Chuck Hawley says that West is changing the bags to a day-glow green color and adding reflective tape. Forespar uses a slightly larger, more water-resistant bag, filled with 70 feet of thicker, heavier floating line. While the Sospenders and West lines have the plastic-handled loops for the MOB, the Forespar has a simple knot.

Our best tosser was able to achieve remarkable accuracy with the bags,



## \*Throwable Device (Type IV PFD):

- Designed to be grasped and held by the user until rescued.
- Provides enough buoyancy for users to hold their heads out of the water.

### Intended Uses

- For use on small boats in calm, inland waters with heavy boat traffic, where help is always nearby.
- For use on larger boats as an extra device to aid persons who have fallen overboard. May be used with a lanyard, "man-overboard" pole, locator light, or smoke signal.

### Advantages

- Can be thrown to someone within 40 feet.
- Can be used as a seat cushion, or some types can be placed in a bracket mounted above deck, where they are immediately available.
- Good back-up buoyancy for use with a wearable PFD.

### Disadvantages

- Not for an unconscious or exhausted person.
- Not for non-swimmers or children.
- Not for rough-water survival.

\* From the label commonly attached to Type IV PFDs.

eventually putting all three nearly on top of the 50' marker with consecutive tosses (both underhand, as per the instructions, and overhand, as per Joe Montana). Performance being about equal, he preferred the West and Suspenders products simply because they were smaller, lighter, and easier to handle. In pulling a MOB forcefully to the boat, we found the simple Forespar knot less desirable than the plastic-covered grab loops.

Note that these throw-ropes should always be stowed in their bags *flaked*,

not coiled. In the first case, they run out freely. In the second they're prone to snarls.

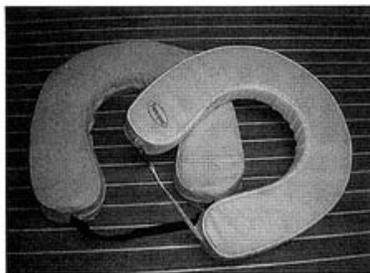
Finally, in the cushion competition, we weren't very surprised to confirm that these suckers just plain don't fly, either upwind or cross-wind. In fact, in some of the early upwind throws we were lucky not to have them land *behind* the tossing point. They toss better downwind, of course, but don't have enough mass to stay aloft for long, and it was hard not to throw them wild.

We found that the softness or rigidity of the cushions made a big difference in how they tossed. The Stearns cushion was too light and squishy. The Kent was somewhat better. In fact, these two are almost identical; the main difference is that the Stearns cover is looser-fitting. But that has a big effect—it makes the whole thing floppier, less throwable and less supportive in the water.

The best was the Lifeline. It was the most rigid of the three, and flew farthest, even with its line attached. In fact, it had a couple of fairly decent flights, and might have even traveled farther than its 42' line permitted it. We were surprised to see the thin polypropylene pay out as well as it did; we never encountered any significant snarls.

**In the Water:** Swimmers tried both rings, both horseshoes, and all the cushions on for size in the water. While all Type IV devices are intended for use in quick recoveries, things don't always work out that way, and often MOBs are in the water for a long time. We tried to imagine which devices would make us feel most secure if we had to float by ourselves for a matter of hours in rough or dark water. Logic suggests that the big orange Jim-Buoy ring would walk away with that award—it had the greatest buoyancy of all the devices. However, it was actually too big to offer a close fit, and a close fit in these matters is a good thing. The white Forespar ring, the Jim-Buoy horseshoe, and the Forespar horseshoe were bet-

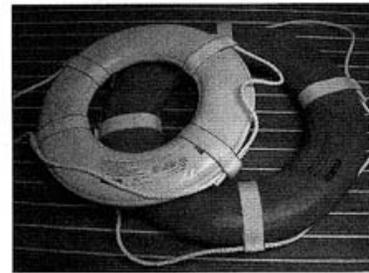
Horseshoes: Jim-Buoy (left) and Forespar (right).



Cushions: Kent (left), Stearns (top), and Lifeline PFD (right).



Rings: Jim-Buoy 24" (left) and Jim-Buoy 30" (right).



ter at offering a sense of security in that regard. Among those, it was tougher to choose.

The tricky part was figuring out the best ways to hang on to the things. You're not supposed to wear them, just hold them—but of course most people will try to wear them somehow anyway. A medium-sized man can fit through the hole in the Forespar ring, but a man bigger than about size 40 will have a tough time. That leaves what—a head and one arm? Or lying across the ring, forearms folded? The horseshoes offer more options—lying backwards in the curve, lying forwards in the curve, lying on top with arms folded across, etc. One swimmer even found it comfortable to lie backwards in the curve with both knees supported against the buckled strap.

Suggestion to the Type IV device makers: Put a diagram or two on the device itself, suggesting a few likely positions. The Kama Sutra of MOB.

Among the cushions, the winner again was the new Lifeline. Being stiffer, it was easier to maneuver in the water, yet it was still flexible enough to conform to the curve of the swimmer's body, offering steadier support. Its self-draining pouch also retained some water after each toss, which had the effect of slowing its speed across the surface in the wind, and making it act like a mini-drogue.

A single boat cushion will certainly not offer much of a sense of security to a MOB in the water for hours, although, as one tester put it, "It's a lot better than a big rock."

## Conclusions

The ratings in the chart on pages 9-10 will speak for themselves. Of the two rings, we prefer the smaller Jim-Buoy unit. Between the horseshoes, it's a toss-up. The Forespar is very nicely built and slightly easier to work with; the Jim-Buoy has a more utilitarian look and greater buoyancy. They performed about the same in the toss testing and in the water with the swimmers. If forced to give a nod, we'd give it to the Jim-Buoy because of the buoyancy, and because it costs less.

## MOB Emergency Moves

1. Stop the boat immediately. The closer you can stay to the spot where the MOB hits the water, the better the chances of a fast recovery—or any recovery. Make sure there are no lines in the water to foul the prop, and get the engine running.

2. The second someone goes overboard, throw the Type IV device, but also try to throw any large floating objects at hand, like cushions and fenders. If the MOB can't reach the Type IV, he may be able to get to a cushion. In any case, in limited visibility, the more the immediate area is littered with floating things, the better the chance of locating the MOB.

3. Assign one person to watch and point at the MOB at all times. That person's eyes never leave the MOB.

4. Think through your own protocols beforehand on whether and when to throw a line to the MOB. In general, a Type IV device is meant to be thrown without a line attached. It flies farther and straighter that way. Also, with a line attached, there's a good chance that the residual motion or drift of the boat will tow the float away from the MOB faster than he can swim to it. On the other hand, once an untethered float is thrown, it's gone, and as this test showed

us, it's easy to throw these things in places nowhere near the MOB. We spent a fair amount of time chasing Type IVs as they scudded this way and that in the wind or current. Again, the wisdom of using a tethered Type IV will depend on the situation—wind conditions, relative drift rates of MOB and boat, and the strength of the swimmer.

There's no question that you should be ready to get a line to the MOB once they're nearly alongside. It's at that point that the boat becomes hardest to maneuver effectively in relation to the MOB. Here's where throw-ropes and tethered Type IV devices can be critical—bringing the MOB to the boat instead of the other way around. In fact, a tethered float can sometimes be towed in a tightening C-loop around the MOB in the manner of the Lifesling or a waterskiing tow-rope. Any throw-rope, obviously, should float.

5. It's a truism that practice with real gear, real people, and real conditions greatly increases the chances of success in a real emergency. The practice is a pain in the neck, but it shows you how tough the job can be, and helps you figure out the best ways to tackle the problem. This truism was borne out to us during this evaluation time and again, with each different piece of gear we threw.

As for the throw-ropes, another toss-up. We'd lean toward West or Suspenders, for reasons already stated. BoatU.S. is currently selling the Suspenders bags for less than West Marine is selling the same bags under its own name. Meanwhile SailNet is offering the 70' Forespar bag for only \$33. Check all websites for the latest.

Among the cushions there's a clear winner, at least if you intend to rely on a cushion as Type IV device: the Lifeline cushion. As one tester said, "It doesn't do anything really well, but it does everything pretty well. If I had to pick only one of all these things, I'd pick that."

For sailors, a winning combination would be either of the horseshoes and the Lifeline cushion, although we can discover no reason,

other than recent tradition, that a ring can't be mounted on a bracket on a sailboat's stern pulpit. If you want to go round, go round.

Read the sidebar above, and remember, it's all worth practicing. ■

*Contacts—BoatU.S., 800/395-2628, www.boatus.com. Cal-June Jim-Buoy, 818/761-3516, www.jimbuoy.com. Kent Sporting Goods, 433 Park Ave., New London, OH, 44851, 419/929-7021. Lifeline PFDs, 714/893-1920, www.lifeline-pfd.com. Forespar Products, 949/858-8820, www.forespar.com. Suspenders, 208/452-5780, www.suspenders.com. Stearns, 800/697 5801, www.stearnsinc.com. West Marine, 800/BOATING, www.westmarine.com.*