

## SURVIVAL GEAR



*Winslow's Island Flyer series rafts include exterior and interior ladders to assist boarding, ballast bags and automatically inflating canopy.*

to length restrictions, we will just cover the high points.

The basic performance requirements for a life raft are pretty simple. It must inflate reliably and quickly, allowing survivors to get out of the water. Beyond that, it should ensure that they don't end up back in the water and provide protection from the harsh environment in which survivors may find themselves.

### TUBES? CHAMBERS?

The simplest life rafts are little more than a single-cell (chamber) self-inflating, single-buoyancy tube with a floor. Visualize a kiddie pool. They are adequate to get survivors out of the water, but provide little of the other features a survivor may find useful or, sometimes, vital. Examples of this style life raft are the Survival Products 4-Man Basic (12 pounds), Revere Aero Compact 4-person (15 pounds), EAM-5 4-5-person (20.5 pounds) and Winslow 4-Person Res-cueRaft (16 pounds). You can add a modestly equipped Survival Equipment Pack (SEP) and a manually erected minimalist canopy (except for the RescuRaft) for a modest increase in weight and cost.

If a single-cell life raft is punctured, there's no redundancy—you're back in the water. Redundancy can be provided by either dividing a single buoyancy tube into two independent buoyancy chambers or by having two independent buoyancy tubes, one stacked on top of the

# Life Rafts

*Select for stability, redundant flotation, ease of boarding and canopy. Though more expensive, Winslow is our pick for the best overall.*

by Doug Ritter

It's been over a decade since we last looked at aviation life rafts. While there have been noteworthy changes in the industry, numerous evolutionary improvements and some new offerings, it's also a case of the more things change, the more they stay the same. Winslow still, in our opinion, offers the best rafts—you pay a premium, but we feel you get the value for your dollars.

In this article, we'll focus on the most commonly available two- to six-person life rafts from EAM Worldwide (EAM), Revere Supply Co. (Revere), Survival Products and Winslow LifeRaft Co. (Winslow).

With a few exceptions, these life rafts are not certified in accordance with FAA TSO-C70a (we call them "non-approved") and are generally significantly less expensive and often weigh considerably less than approved life rafts.

### LIFE RAFTS 101

As a starting point, let's review what you should be looking for in your self-inflating emergency yacht. Some features we feel are desirable in any life raft, others are less important if flying to a Caribbean island versus crossing the Atlantic or Pacific oceans or overflying cold water. Due

### CHECKLIST

Boarding can be difficult. Exterior and interior ladders are valuable.

**O** Adequate ballast is critical to resist capsizing and to assist boarding.

A hanging strap as the boarding aid seriously compromises a raft.

*EAM's T4S, center, showing exterior and interior boarding ladders, ballast bags and automatically inflating canopy. EAM's hanging strap entry T4, lower left, has one tube and two cells. Revere's Aero Compact 45-AC4V-K3, lower right, with hanging strap entry and manual canopy.*



other. Another source of redundancy is an inflatable floor, but this must be manually inflated (except for in EAM's higher end life rafts).

Dual-chamber GA life rafts such as the Winslow RescueRaft2 and Island Flyer, Revere Aero Elite and EAM's approved T4S and twin-cell single-tube classic life rafts such as the T4 have bulkheads in the tube to provide a degree of redundancy. If one chamber deflates, you are left with half the tube inflated, like a donut broken in half, or in the case of the square Revere Elite, with an L-shaped section of tube inflated, open to the water. That provides some degree of redundant flotation, but won't likely keep survivors out of the water. An inflatable floor mitigates this issue to a great extent.

If a buoyancy tube on a double-tube life raft deflates, survivors are still out of the water, albeit with minimal freeboard.

## STABILITY

Stability—resistance to overturning—is a major concern. Beyond the weight of survivors in the life raft, two means are commonly provided to resist overturning, a sea anchor and ballast. Ballast is the more effective stability aid and another area where there are substantial differences among life rafts.

Ballast is typically a bag or bags suspended below the life raft that fill(s) with water. As a life raft starts to lift off the water surface in reaction to waves or if wind gets under the life raft floor, the weight of the water in the bag(s) counteracts the overturning moment.

The size, shape, number and location of the bag(s) determine how effective the ballast is in preventing a capsizing. In addition, to prevent capsizing during boarding, how quickly

the bag(s) fill with water after inflation of the life raft is important. When a life raft is not fully occupied—for example, only one or two persons in a four- or six-person raft—ballast becomes critical.

Survival Products' non-approved single-tube life rafts, EAM's classic line, unapproved and approved, and Winslow's RescueRaft have no ballast, though the latter can be fitted with optional ballast bags for \$48 each (we recommend at least three). Survival Products' approved life rafts and its six-person double-tube non-approved life raft are equipped with a single ballast bag in the center of the life raft. Revere Supply's Aero Compact has a pair of ballast bags. Beyond that, the more fully equipped life rafts from all manufacturers have at least three and up to five ballast bags around the periphery of the life raft.

We consider adequate ballast to be critical for any life raft likely to be used in the open ocean, the Great Lakes and in moderate or severe weather.

## BOARDING

Over the years, we have tested a lot of life rafts in swimming pools and open water. We've learned the hard way that without adequate entry aids, getting into a life raft from the water can be nigh on impossible for some—particularly anyone who is considerably overweight or for females who often lack upper body strength. A larger diameter buoyancy tube or double tubes that provide

more freeboard, desirable in most circumstances, also increase the difficulty of getting into the life raft. This is exacerbated when cold water is involved, as grip strength and energy are compromised.

Based on our experience and testing, entry aids are a major issue to consider in raft selection. A life raft with only the most basic entry aid—a single hanging webbing strap—is seriously compromised, in our opinion. That would include the Revere Aero Compact, Survival Products' entire line and EAM's conventional life rafts. We do not recommend them.

The next step up is just that, a ladder of some type, typically made of webbing. It needs to hang low enough to be easy to reach the first rung and to have at least one additional rung. The Revere Aero Elite and EAM's T4S and T4AS have two-rung ladders. Winslow's boarding ladders are probably the best entry aid, having three or four rungs.

The addition of an inside boarding ladder makes a huge difference in how easy it is to board. In our experience, the extension of the boarding ladder inside of the life raft enables even those with minimal upper body strength or who are overweight to haul themselves into the life raft. We consider the inside boarding ladder, along with exterior ladder or inflatable platform, to be a minimum requirement when selecting a raft.

We feel that Winslow and EAM best implement this feature.

The most capable entry aids are inflatable platform entries—optional

MANUFACTURER	MODEL AIDS	CAPACITY	WEIGHT	TUBES/CELLS	CANOPY	ENTRY	BALLAST	INFL. FLOOR? MSRP	
EAM	EAM-2B	2-3	14.5LB	1/1	OPTIONAL	HANGING STRAP	0	NO \$2467	
	EAM-5	4-5	20.5 LB	1/1	OPTIONAL	HANGING STRAP	0	NO \$2198	
	T2	2	23.5 LB	1/2	MANUAL	HANGING STRAP	0	NO \$2912	
	T4	4	36 LB	1/2	MANUAL	HANGING STRAP	0	NO \$3551	
	T4S	4	37 LB	1/2	AUTO	2 RUNG & INT LADDER	4X100LB	AUTO INFLATE \$4852	
	T4AS-VIP	4	35 LB	2 AUTO		3 RUNG & INT LADDER	4X100LB	OPTIONAL \$5852	
	T6	6	45 LB	1/2	MANUAL	HANGING STRAP	0	NO \$3912	
REVERE	AERO COMPACT 45-AC2V	2	13 LB	1/1	NO	HANGING STRAP	2X100	NO \$1075	
	AERO COMPACT 45-AC4V	4	15.5LB	1/1	NO	HANGING STRAP	2X100	NO \$1363	
	AERO COMPACT 45-AC2VP	4	18 LB	1/1	MANUAL	HANGING STRAP	2X100	NO \$1575	
	AERO COMPACT 45-AC2V-K1	4	20 LB	1/1	MANUAL	HANGING STRAP	2X100	NO \$1762	
	AERO ELITE 45-AE4V	4	45 LB	1/2	AUTO	2 RUNG & INT LADDER	4X100	YES \$2944	
	AERO ELITE 45-AE6V	6	50 LB	1/2	AUTO	2 RUNG & INT LADDER	4X100LB	YES \$3081	
	SURVIVAL PRODUCTS	4-MAN BASIC	4	12 LB	1/1	NO	HANGING STRAP	0	NO \$1370
4-MAN W/ CANOPY ONLY		4	14 LB	1/1 MANUAL		HANGING STRAP	0	NO * \$1590	
4-MAN W/STANDARD KIT		4	19 LB	1/1 MANUAL		HANGING STRAP	0	NO \$1775	
4-MAN TSOW/ CANOPY ONLY		4	16 LB	1/2 MANUAL		HANGING STRAP	1 X124LB	NO \$2035	
4-MAN TSO W/ FAR 91 KIT		4	22 LB	1/2 MANUAL		HANGING STRAP	1X124LB	NO \$2315	
6-MAN TSO BASIC (NO TSO CERT)		6	26 LB	2	NO	HANGING STRAP	1X124LB	NO \$3715	
6-MAN TSOW/ CANOPY ONLY		6	28 LB	2 MANUAL		HANGING STRAP	1X124LB	NO \$4015	
6-MAN TSOW PART 91 KIT		6	36 LB	2	MANUAL	HANGING STRAP	1X124LB	NO \$4295	
WINSLOW		RESCUERAFT 40SLRR	4	16 LB	1/1	NO	3-RUNG LADDER	OPTIONAL	OPTIONAL \$1495
		RESCUERAFT 60SLRR	6	23 LB	1/1	NO	LADDER	OPTIONAL	OPTIONAL \$1695
	RESCUERAFT 40SLRR2	4	19LB	1/2	NO		INT <sup>R</sup> LADDER <sup>1</sup>	OPTIONAL \$1945	
	RESCUERAFT 60SLRR2	6	26 LB	1/2	NO	3-RUNG & INT LADDER		OPTIONAL \$2075	
	ISLAND FLYER 46GAST	4	39 LB	1/2	AUTO	3-RUNG & 1/2 INT LADDER		3 X 80 LB	OPTIONAL \$2975
	ISLAND FLYER 69GAST	6	42 LB	1/2 AUTO		3-RUNG & INT LADDER	3 X 80 LB	OPTIONAL \$3195	
	DUALSAFE 46GADR	4	25 LB	2	OPTIONAL	4-RUNG & INT LADDER		3X80LB	OPTIONAL \$2500
	DUALSAFE 69GADR	6	33 LB	2	OPTIONAL	4-RUNG & INT LADDER		3 X 80 LB	OPTIONAL \$2550
ULTRA-LIGHT OFFSHORE 40ULO-B01-1-103		32 LB	2	AUTO		4-RUNG & INT LADDER	5 X 80 LB	OPTIONAL \$3500	

on the EAM VIP and all Winslow life rafts.

## CANOPY

A canopy provides some protection from wind, rain and sun. It can be either manually erected or auto-erecting. The two common types either use an orally inflatable support tube(s) or multiple aluminum tubes, referred to as a "stick canopy." In stark contrast, auto-erecting canopies, as the name suggests, are automatically erected when the life raft inflates—no action is required of the survivor.

Based on our examination, we feel the optional stick canopies used by EAM in their classic life rafts, both approved and non-approved, are a terrible design. In our experience, most untrained people have considerable difficulty erecting this style canopy, and many find it impossible.

The Survival Products canopy has a single, oral inflatable support tube that goes in the center of the raft, resulting in a teepee-style canopy that is secured with ties at the corners. A slit in one side with a Velcro closure serves as an entry and allows for ample ventilation when pulled back, although it doesn't offer a great seal against heavy weather.

Reveres Aero Compact also uses an orally inflated support, but in this case it forms a square arch. The bottom of the Compact's canopy is secured with elastic over the tube. This canopy has no entry "door," per

## CONTACTS

EAM Worldwide  
305-871-4050  
[www.eamworldwide.com](http://www.eamworldwide.com)

Revere Supply Co.  
877-738-3738  
[www.reveresupply.com](http://www.reveresupply.com)

Survival Products  
954-966-7329  
[www.survivalproductsinc.com](http://www.survivalproductsinc.com)

Winslow LifeRaft Co.  
800-838-3012  
[www.winslowliferaft.com](http://www.winslowliferaft.com)

## Buy a Pre-Owned Life Raft?

Many pilots considering a life raft purchase end up looking at "pre-owned" life rafts on eBay or other online sites. The apparent cost savings are not necessarily the entire story, and we urge potential purchasers to be wary.

As with any piece of safety gear, life rafts require regular service. That service is not inexpensive, often running hundreds of dollars, and in some cases, hidden damage to the raft can make it unusable. Significantly delaying service can increase the cost, so purchasing a raft that hasn't been serviced for many years is buying a pig in a

poke. You have no idea if the raft is even serviceable.

Unless you are knowledgeable about the raft's history and service status—for example, buying from a friend—or if the raft has been recently serviced by one of the manufacturer's authorized service centers (and not just any service center), we suggest avoiding pre-owned life rafts.

Since rental life rafts tend to be bottom-end rafts, some pilots will purchase a higher end life raft for a particular flight and then sell it at a substantial discount. It's rare, but it can be an excellent buy.

se, rather, one side is pulled up about halfway in the center to provide egress or minimal ventilation.

The standard auto-erecting canopies found on the more advanced life rafts from Winslow and EAM all feature single square-arch canopy support tubes. Their entries all have zippered closures. Winslow's canopies can be easily put down on the tube if desired. Winslow also offers the option of their Tri-Arch (three-way) canopy that provides considerably more headroom over much of the life raft, a definite improvement.

## INFLATABLE FLOORS

An inflatable floor enhances survival chances in cold water, as well as being a huge improvement in comfort. This is standard on the single-tube Revere Aero Elite and EAM T4S, optional on EAM VIP and all Winslow life rafts. The Revere and Winslow floors are manually inflated; EAM floors are automatically inflated, a nice feature. Once inflated, they also provide flotation redundancy, an asset in single-tube life rafts. We believe that an inflatable floor should be available when flying over water colder than 65 degrees.

## REPAIR KITS

Only the Revere Aero Elite, Winslow Ultra-Light Offshore and EAM's approved life rafts include a repair kit to fix a puncture—part of their included Survival Equipment Pack (SEP). The lack of a standard repair

kit in the other rafts is a failing, in our opinion. With the exception of Winslow—which offers repair kits as an option—to get the repair kit you must get their optional, minimal SEP at much greater added cost. In our opinion, every life raft should contain the essentials of a hand pump, bailer and repair kit.

## YOUR CHOICES

The chart on page 10 covers the salient differences between most of the available life rafts as well as pricing. We used MSRPs provided by the manufacturers; EAM said it will provide exact quotes on request to buyers. Some, particularly Winslow, offer a wide range of options to allow a raft to be tailored to the user's needs. Below, we'll take a look at some of the other notable issues that might bear on your selection of a particular life raft.

## EAM WORLDWIDE

EAM's non-approved, single chamber, single-tube life rafts, the EAM-2B and EAM-5, while rated at two-three and four-five persons, respectively, are the same size as their approved two- and four-person rafts. Don't kid yourself that they really accommodate another person when aviation life rafts are already rated at just 3.6 sq. ft. per person.

EAM's "classic" series of non-approved and approved single-tube life

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## Aviation Consumer

### Life Rafts

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rafts trace their roots back decades. They lack the attributes now commonly accepted as desirable, and included in the latest SAE AS 135 6 life raft standard, such as ballast and effective entry aids. In our opinion, their stick-built canopies have many serious drawbacks. We don't recommend those rafts.

EAM entered the modern era with their T4S and T4AS—approved life rafts that incorporate the features expected in a modern design. The standard, automatically inflating floor of the T4S is a definite advantage for this single-tube life raft. These life rafts are worth a look, but list price is expensive when compared with Winslow's functionally equivalent, non-approved life rafts.

When EAM provided list prices to us, they asked that we note that their life rafts are "competitively priced. Exact quotes available upon request." In essence, they told us they will consider adjusting the price to be competitive with comparable rafts.

#### REVERE SUPPLY CO.

Revere's offerings are the only ones reviewed here utilizing polyurethane-coated fabric (all the others are made from traditional neoprene-coated FAA-approved life raft fabric).

If low price and reasonably low weight are key for you, the Aero Compact seems the best buy. Its optional canopy is better in many respects than Survival Products' teepee. The included standard ballast is an advantage that may mitigate the nearly useless boarding aids.

Revere's Aero Elite offers a good

combination of features and reasonable cost, but at a significant weight penalty. It is vacuum packed, which allows a three-year repack cycle.

#### SURVIVAL PRODUCTS, INC.

If light weight is your key requirement, these are your rafts, albeit they have few other qualities, in our opinion. The approved version is only slightly better—the minimal ballast is better than nothing, but it still has inadequate entry aids, making it deficient, in our opinion. Beyond light weight, we find no compelling reason to select these rafts.

#### WINSLOW LIFERAFT CO.

Winslow's extended feature sets and multiple options do not come cheap, but the company has retained its reputation for premium quality rafts. We have long found it attentive to customer needs with a wide range of standard offerings and many options that allow you to tailor the life raft to your particular requirements and budget. It offers a vacuum pack option for extended service intervals. Winslow life rafts can be purchased from dealers, but to get your selection of specific options, we recommend contacting Winslow.

Believing that redundancy is a key criterion, we'd consider the dual-cell RescueRaft2 as our minimum specification single-tube life raft. Alternatively, you can save a few hundred dollars and add the optional inflatable floor (\$200-\$250) and interior boarding ladder (\$33) to the base RescueRaft. Adding a few optional ballast bags (\$48) and a Repair Kit (\$18) to either version would complete a very nice, basic life raft with all the essential features.

The Ultra-Light Offshore is effec-

For the October 2013 issue of *Aviation Consumer*, our Used Aircraft Guide will be on the Beech 36 series, the stretched, six-place Bonanza. We want to know what it's like to own these planes, how much they cost to operate, maintain and insure and what they're like to fly. If you'd like your airplane to appear in the magazine, send us any photographs you'd care to share. We accept digital photos e-mailed to the address below. We welcome information on mods, support organizations or any other pertinent comments. Not an owner? We still want to hear about your experience flying the Beech 36. Please send correspondence on the Beechcraft 36 series by August 1, 2013, to:

Aviation Consumer e-mail at:  
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tively the same as its FAA-approved Ultra-Light FA-AY(SA) that along with the Tri-Arch version (FA-AV(UL)) are supplied as standard equipment on the majority of new business jets, at nearly half the cost. All it lacks is the TSO certificate. There are no substantive differences in manufacture, materials or essential features, so it represents a relative bargain. For the weight conscious, it weighs in 18 percent less than the comparable single-tube Island Flyer, albeit at an 18 percent higher cost. However, you also get the redundancy of dual buoyancy tubes.

For any significant overwater adventure, the Ultra-Light Offshore is our pick of the life rafts reviewed here.