



## INFLATABLE PFD MYSTERIES EXPOSED

Stu Soffer, N-MS

Inflatable PFD's may be more expensive than the Type III PFD most boaters wear, but if you spend a considerable amount of time wearing one, you'll be amazed how the trade-off in comfort more than offsets the cost factor. They are comfortable and make patrolling in hot/humid weather a lot easier. In addition, they also contribute in alleviating crew fatigue. Regardless of personal preferences, we should all be able to answer boater's questions about inflatable PFD's.

While most inflatable PFD wearers know the bobbin should be installed, and a full CO<sub>2</sub> cylinder screwed in, many are not aware of other preventative maintenance requirements. As much as I've promoted new style PFD's for the past several years, I'm embarrassed to admit I didn't read my PFD's inner label until the subject of properly maintaining inflatable PFD's arose. I was aware of the basic maintenance requirement but research revealed some surprises which are worth sharing because in addition to personal safety, our members are likely to be asked questions by boaters.

The Coast Guard initially classified inflatable PFD's as Type V Hybrid Inflatable Devices with performance levels equal to a Type I, II or III PFD as noted on the label. They have evolved into the Type II and Type III categories making it easier for boaters to comply with boating laws.

Many Auxiliary boat crews or VE's wear U.S. Coast Guard approved Mustang, Stearns or SOSpenders PFD's activated by a Halkey-Roberts automatic inflating mechanism that has a 33 or 38 gram CO<sub>2</sub> cylinder and round chemical inflator bobbin. Some civilian models may have a "pill" activated mechanism and/or a bayonet tip cylinder that requires a 1/8<sup>th</sup> turn clockwise to a full stop to secure the cylinder rather than a screw in CO<sub>2</sub> cylinder. Regardless of type, the concept is the same. When the bobbin (or pill) is immersed in liquid it dissolves permitting a spring loaded firing pin to puncture the CO<sub>2</sub> cylinder, thereby inflating the PFD in about 3 seconds to provide 35 pounds of buoyancy. If for some reason the PFD does not automatically inflate, the wearer can pull the lanyard attached to the mechanism to manually puncture the CO<sub>2</sub> cylinder. The last option is to orally inflate the PFD using the tube located on the upper left side of the inner PFD.

The left side of this photo shows a PFD before inflation. After inflation is shown on the right side.

When worn by vessel examiners or at boat show exhibits, an inflatable PFD's comfort quotient is readily apparent to recreational boaters and anglers, which is why we wear them on land. Most of us unscrew the CO<sub>2</sub> cylinder at boat shows to prevent manual inflation by a prankster. So it's always a good idea to check the mechanism before embarking on a patrol.

The bobbin only goes into the holder one way and the holder should be completely screwed down before the CO<sub>2</sub> cylinder is screwed in to prevent puncturing the cylinder. When the bobbin holder is screwed down the firing pin retracts, and a green indicator is visible (arrow in photo). If you see a red indicator, something is amiss with the bobbin, or the holder is not screwed all of the way in. If the mechanism does not have a bobbin holder, it is a manually inflating PFD. I have encountered boaters who thought they received an automatic inflating PFD as a gift and it turned out to be a manual model. One boater almost drowned before he pulled the lanyard.



Particular care should be given when inserting CO<sub>2</sub> cylinders with bayonet tips. If the CO<sub>2</sub> cylinder is not completely turned, the mechanism is supposed to eject it. It was discovered in some production units a false positive green indication can be achieved by simply pushing the cylinder into the mechanism without turning it 1/8<sup>th</sup> turn to a full stop. If the cylinder is not fully turned to secure it in place, the PFD will not inflate with CO<sub>2</sub>. To be safe, check the Coast Guard Office of Boating Safety web site at: <http://www.uscgboating.org/> for recalls and the latest information.

If an automatic inflating PFD mechanism is activated by a liquid, ensure all parts of the bobbin compartment are thoroughly dried before inserting a new bobbin. If there is an immediate need to rearm the PFD for automatic inflation, you can try to blow dry the compartment then place the PFD in the hot sun to remove any moisture left. What I found works best is use a hair dryer to eliminate any remaining moisture and let it dry for 24 hours to be sure. Rearming a wet mechanism for automatic inflation will result in the bobbin dissolving and inflating the PFD. A recreational boater can immediately rearm a wet inflated PFD for manual inflation with only a CO<sub>2</sub> cylinder.

According to the Auxiliary Operations Policy Manual COMDTINST M16798.3 (series) "Auxiliarists utilizing an automatic inflatable PFD must check before donning that the device is armed and packed in accordance with the owner's manual, and that a fully charged CO<sub>2</sub> cylinder is in place. Scheduled maintenance recommendations in the owner's manual must be completed. Uncharged or manual only inflatable PFD's *are not authorized for Auxiliary use while on orders.*" Automatic inflatable PFD's hinder egress in an enclosed cabin environment and are not authorized for use on Auxiliary aircraft of any type.

A PFD Worksheet form (a copy is at the end of this article) found on the Eighth Western Rivers District web site is a good preventative maintenance guide and record if used in conjunction with the PFD owners manual/label; and what you learn from reading this primer.

For example, periodically orally inflating your PFD for an inflation leak check is a good idea. You should submerge it to check that the oral inflator tube and cap do not leak. Coast Guard literature reviewed requires a 2 hour inflated observation period semi-annually. The label on a SOSpenders recommends overnight evaluation. I was also delighted to learn using a small round nozzle shop vacuum cleaner attachment to deflate an inflatable PFD makes it a lot easier to repack.

In extreme weather conditions the chemical bobbin may deteriorate in less than 30 days. However, most of us are not operating under those conditions and the bobbins, which cost \$41.00 for a pack of 12 from Mustang and come in PFD rearm kits, can provide years of functional use.



When inspecting an inflator bobbin, ensure the "ridges" are still evident (i.e., one side is smooth and the other has ridges) and the bobbin is not cracked or the white fill portion discolored. The date on the bobbin's side is the date of manufacture not expiration, but we should all be using yellow bobbins by now. Any red bobbins still in use should be replaced and can be used up during annual PFD pool training. The small green plastic lanyard retaining pins break easily or can be lost, and you only get one per re-arm kit. The thin end of a tooth pick can serve the same purpose temporarily.

The main complaint I've heard about inflatable PFD's is if the bobbin gets wet the PFD will inflate. That's what is supposed to happen and also the reason we don't wear ours in the rain. Mustang Survival has introduced a Hydrostatic Inflatable PFD that inflates when the mechanism is submerged in 4 inches of water. No inflator maintenance is required for 5 years unless the PFD has been inflated; and rain or mist does not activate the inflator. You can easily view the inflator status and replacement date through the safety inspection window. As with the bobbin models, green indicates ready for use. Another complaint is if punctured by a fish hook inflatable PFD's won't hold inflation. No argument there; and if punctured the PFD should be removed from service.

Lastly, when purchasing a re-arm kit, ensure the kit is specified for that particular PFD model. PFD model numbers can be found on the inner side near the "U.S. Coast Guard Approved" statement. Always ensure the correct CO<sub>2</sub> cylinder is used. This is particularly important if a recreational boater is re-arming a belt pack PFD which use a smaller CO<sub>2</sub> cylinder than regular PFD's.



We hope this article answered all your questions about the operation, rearming, care and maintenance of inflatable PFD's. If it did not, Mustang Survival has videos that can be accessed at: <http://www.mustangsurvival.com/resources/documentation/training/md3031/index.html>. Although brand/manufacturer names and items are mentioned, the U.S. Coast Guard and Auxiliary do not endorse any product or brand. What we do endorse is wearing a PFD on the water. Readers are also invited to contact me at: [cgauxstu@yahoo.com](mailto:cgauxstu@yahoo.com) with additional questions or comments.

Photo credits: Our appreciation to Halkey-Roberts for permitting use of their mechanism and bobbin photos, and Stearns for their SOSpenders re-arm kit photo.



**PERFORMANCE QUALIFICATION STANDARD FOR  
MUSTANG SURVIVAL MD3031 WITH SURVIVAL EQUIPMENT POCKET,  
SOSPENDERS MODEL 38ASTD, AND STEARNS, INC MODEL 1341  
AUTOMATIC INFLATION PFD**

Crewmember: \_\_\_\_\_

Date: \_\_\_\_\_

In some weather conditions, the chemical bobbin may deteriorate in less than 30 days. Commanding Officers/Officers in Charge should consider training their crews to deflate, rearm and stow the bladder after inadvertent inflations. In addition, inadvertent inflations can cause a user to become temporarily disoriented. Training should include donning the vest and inflating to ensure users are aware of how rapidly the bladder expands.

PERFORMANCE CRITERIA

INITIAL

State the PFD's flotation characteristics.

\_\_\_\_\_

Locate and explain the following items:

Personal Marker Light

\_\_\_\_\_

Survival Knife

\_\_\_\_\_

Strobe Light

\_\_\_\_\_

Signal Mirror

\_\_\_\_\_

Whistle

\_\_\_\_\_

Oral Inflator

\_\_\_\_\_

Manual Inflator Cap and Spare CO2 Cylinder

\_\_\_\_\_

CO2 Cylinder

\_\_\_\_\_

Inflator Bobbin

\_\_\_\_\_

Don the vest and adjust waist belt as needed.

\_\_\_\_\_

Explain the three different methods of inflation.

\_\_\_\_\_

Demonstrate the procedures for re-arming the inflation assembly  
for manual use after inflation.

\_\_\_\_\_

Explain two indications of an armed and charged inflation assembly.

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ADDITIONAL PERFORMANCE CRITERIA FOR MUSTANG PFD's

Remove and install the equipment pocket using the "pull the dot" snaps.

\_\_\_\_\_

\_\_\_\_\_  
Member Signature

\_\_\_\_\_  
Date