



## INFLATABLE PFD's – THE SEQUEL

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The *Inflatable PFD Mysteries Exposed* article addressed the basics of inflatable PFD's – especially those worn by Auxiliary boat crews. Subsequent input from Coast Guard Lifesaving & Fire Safety Division and Recreational Boating Product Assurance Branch provided more information. We share the following to educate all about these great new style PFD's.

There are three brands of mechanisms accepted by the USCG for automatic inflating PFD's. The Halkey-Roberts is used in Mustang Survival and SOSpenders brands. The bobbin assembly is designed to disintegrate when exposed to water and allow the firing mechanism to puncture a CO<sub>2</sub> cylinder and fill the inflatable chamber. The “new and improved” yellow shell bobbin replaced the original red shell bobbin in August 2002 and any red bobbins still in use should be replaced.

The date of manufacture is on the bobbin's side; and, they have a PFD manufacturer's *shelf life* of up to 4 years if properly stored. *Service life* commences at point of sale to the user and Halkey-Roberts recommends changing recreational use bobbins every 3 years, more often in extreme conditions such as high temperature and high humidity. Bobbins used in a commercial marine environment should be changed every 2 years. Owners should visually inspect bobbins to ensure the "ridges" are still evident (the exposed surface has ridges) and the bobbin is not cracked or the white fill discolored.



**H-R BOBBIN**

The Secumar inflator mechanism in Stearns brand PFD's uses a “pill” which has a smooth surface. A visual inspection of the pill encompasses ensuring the pill retains its original shape, and is not cracked, discolored or otherwise damaged. Recommend the same change rules as for bobbins apply.



**SECUMAR PILLS**

The original article mentioned the half moon top green plastic pin that inserts into Halkey-Roberts and Secumar mechanisms and retains the manual arm in place. These can break when removed (see photo on right). We found two sources that offer rearming kits and/or individual components. They are Leland Limited at: [www.maximuminflation.com/](http://www.maximuminflation.com/) and Lifesaving Systems Corp at: [www.lifesavingsystems.com/](http://www.lifesavingsystems.com/); however, a word of caution is warranted. While knowledgeable Auxiliarists obtaining individual replacement components, such as a pin, bobbin or pill, may be cost effective, as a rule inflatable PFD owners should purchase the rearm kit specified for their PFD. That is because the opportunity to use an incorrect CO<sub>2</sub> cylinder exists. The critical time for needing a functioning PFD is not when a boater should discover a mistake was made purchasing components. Stick with the manufacturers recommended product to be safe and always check your PFD before boarding.





The third accepted mechanism is the CM Hammar inflator used in the Mustang hydrostatic PFD (shown in this photo). The Hammar automatic system is activated by water pressure and has a hydrostatic valve in place of a bobbin or pill. When submerged in at least 4 inches of water, the hydrostatic valve activates, and the CO<sub>2</sub> cylinder pierces allowing the air to inflate the PFD bladder. This type PFD is not affected by getting wet inside a boat (unless the boat sinks☺). Also unlike the other two systems, the CO<sub>2</sub> cylinder is positioned inside of the bladder. What these PFD's do have in common with the other two systems is a manual override and oral inflation capability. Once used, or every five years, the complete inflator and CO<sub>2</sub> cylinder must be replaced to rearm this type PFD.

An excellent table provided by Lifesaving & Fire Safety Division is at the end of this article. It identifies the different model inflator systems on the USCG approved inflatable PFD list. The diagrams and other detailed information provided is worth having handy at boat show exhibits and other PFD wear promotions so visitors questions can be accurately answered. It should also be noted that some inflatables are not USCG approved but may use similar components.

We also learned that not all automatic inflatable PFD's can be immediately rearmed for manual inflation only with just a CO<sub>2</sub> cylinder and no bobbin or pill. There are some convertible PFD's designed to be armed in manual only or manual-automatic modes. However, since Auxiliary crews under orders are precluded from using manually inflating PFD's, this bit of information only applies to civilian recreational boaters (or when playing trivia games).

The USCG does not specify a maximum service life for inflatable PFD's like some foreign countries do. A PFD or lifejacket remains approved if it is in "serviceable condition." If a PFD can be used properly and is not deteriorated, it is acceptable as meeting carriage requirements.

The most significant factors in PFD service life are their use, storage and maintenance. With a high usage, poor storage, and poor maintenance, a PFD can wear out to the point of being unserviceable within a year or less. For inflatable PFD's, beside routine checks on the CO<sub>2</sub> cylinder and inflation mechanisms, there is some added maintenance at least annually for checking the bladder as specified by the manufacturer. For automatic inflatables, the care of the automatic components are particularly important and may have a limit on service life of only a few years or less in accordance with the manufacturer's instructions.

As with most items aboard any vessel, reading instructions, becoming familiar with how to properly wear and inflate the PFD, and properly maintaining the equipment with clean storage will promote a better service life which could possibly save a life when necessary.

I was pleasantly surprised to learn in addition to the Stearns' regular pet PFD's, there are also automatic inflatable PFD's available for dogs and cats from Critter's Inflatable that operate on the same life saving principal as for humans. When inflated, in addition to keeping the animal afloat, they keep its head out of the water. They use a Halkey-Roberts bobbin equipped mechanism with an 8 gram CO<sub>2</sub> cylinder for up to 15 pound pets, 12 gram for up to 40 pounds, and a 25 gram for up to 200 pounds. These PFD's also have manual and oral inflation capability. Visit: <http://www.crittersinflatable.com/> to view the selection. While animal PFD's are not USCG

approved, they nevertheless have a place in the market and can help promote pet owner PFD wear, and especially PFD wear by children.



**BEFORE INFLATION**



**PET INFLATED**

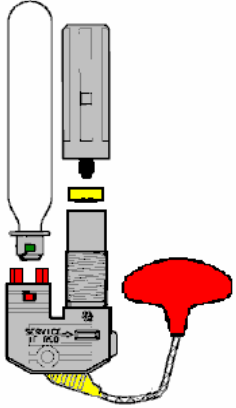
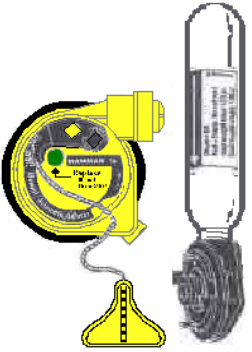
Disclaimer: the U.S. Coast Guard Auxiliary does not endorse any brand or product over another.

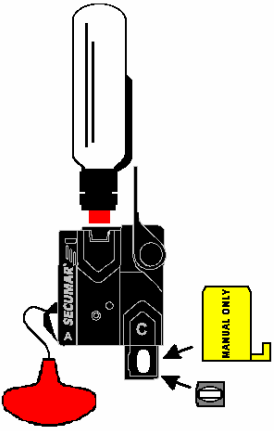
Contributors: Martin Jackson from Coast Guard Office of Boating Safety, Leland Ltd., and Halkey-Roberts all provided valuable information used in this article.

Photo credits: Our appreciation to Halkey-Roberts, CM Hammar/Mustang Survival and Critter's Inflatable for permitting use of their photos.

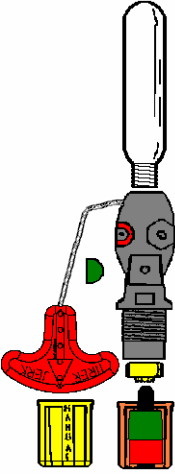
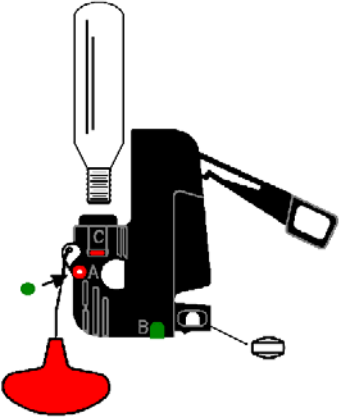
Contact the author at: [cgauxstu@yahoo.com](mailto:cgauxstu@yahoo.com) with any questions or comments.

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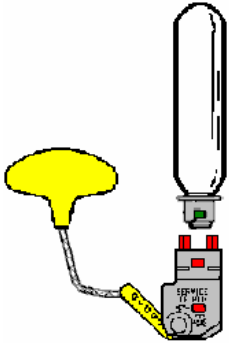
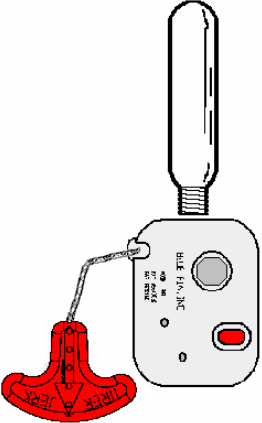
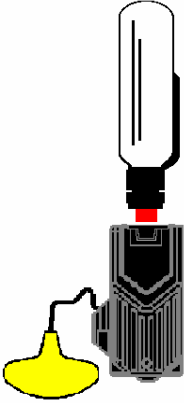
Manual-Auto 1F Cylinder seal indication		
 <p>Halkey-Roberts V86000</p>	Manufacturer/ Type	Halkey-Roberts Manual-Auto w/ Cylinder seal indication Non-Convertible
	Description	Grey inflator with red spring-loaded tab, with red pull-tab Bobbin (water sensing element) Gray threaded cap Bayonet CO2 cylinder (1/2"-20)
 <p>C M HAMMAR - MA1</p>	Manufacturer/ Type	C M HAMMAR Manual-Auto w/ Cylinder seal indication Non-Convertible
	Description	Yellow cap/body with yellow pull tab, clear sealing ring black Body with CO2 cylinder (1/2"-20)

Manual-Auto 6F Cylinder seal indication		
 <p>SECUMATIC 4001 and 4001S</p>	Manufacturer/ Type	SECUMAR-STEARNES Manual-Auto Convertible w/ Cylinder seal indication(See Note 1)
	Description	Black inflator body with red pull-tab Black Bayonet CO2 cylinder with green indicator (red under) on cylinder (green indicator pops-off when actuated leaving a red indicator) Gray housing with white pill (water sensing element) Yellow manual override

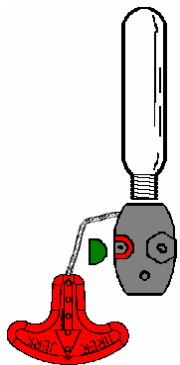
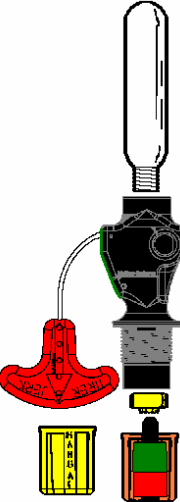
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<b>Manual-Auto 6F Without Cylinder seal indication</b>		
 <p>Halkey-Roberts V85000</p>	<b>Manufacturer/ Type</b>	Halkey-Roberts Manual-Auto Convertible (See Note 1) No Cylinder seal indication
	<b>Description</b>	Grey body with red or yellow pull-tab Bobbin (water sensing element) Green break away pin (red under) Gold cap and Yellow manual override cap CO2 cylinder (THD sized: 3/8"-24 or 1/2"-20)
 <p>SECUMATIC 3001S 11362</p>	<b>Manufacturer/ Type</b>	SECUMAR-STEARNES Manual-Auto Non-Convertible Non- Cylinder seal indication
	<b>Description</b>	Black body with red pull-tab Green break away pin and 2 additional red/green indicators White pill (water sensing element) CO2 cylinder (THD size 1/2" – 20)

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<b>Manual 3F Cylinder seal indication</b>		
 <p style="text-align: center;">Halkey-Roberts V86160</p>	<b>Manufacturer/ Type</b>	Halkey-Roberts Manual w/ Cylinder seal indication
	<b>Description</b>	Grey inflator with red spring-loaded tab, with yellow pull-tab (V86160J is right hand pull and V86160W is left hand pull)  Bayonet CO2 cylinder (1/2"-20)
 <p style="text-align: center;">Blue Fin TMB-1</p>	<b>Manufacturer/ Type</b>	Blue Fin Manual w/ Cylinder seal indication
	<b>Description</b>	Grey Inflator Body with Indicator Window with Cord with Red pull tab  CO2 cylinder (THD sized: 3/8"-24 or 1/2"-20)
 <p style="text-align: center;">SECUMATIC 401 and 401S P/N: 12150</p>	<b>Manufacturer/ Type</b>	SECUMAR-STEARNES Manual w/ Cylinder seal indication
	<b>Description</b>	Black Inflator Body with yellow pull-tab  Black Bayonet CO2 cylinder with green indicator (red under) on cylinder (green indicator pops-off when actuated leaving a red indicator)

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Manual 6F Without Cylinder seal indication		
 <p style="text-align: center;">Halkey-Roberts 840</p>	Manufacturer/ Type	Halkey-Roberts Manual w/o Cylinder seal indication
	Description	Grey Inflator Body with red or yellow pull-tab CO2 cylinder (THD sized: 3/8"-24 or 1/2"-20) Green indicator tab pops-off when actuated leaving a red indicator
 <p style="text-align: center;">Halkey-Roberts V90000</p>	Manufacturer/ Type	Halkey-Roberts Manual-Auto Convertible (See Note 1) w/o Cylinder seal indication
	Description	Black inflation body with red pull-tab Bobbin (water sensing element) Green indicator clip Gold cap and Yellow Manual override cap CO2 cylinder (THD sized: 3/8"-24 or 1/2"-20)

Note:

1. An inflation system that is designed with an override feature that allows it to be converted from "Manual-Auto mode" to "Manual Only mode" and vice versa, may only be used on USCG approved PFDs that are marked that the PFD is convertible and the PFD must be sold with all of the features necessary for the user to be armed the PFD in both modes. This means that a manufacturer **may not** use a convertible inflator on a PFD that is marked only as "Manual-Auto inflation" and **may not** use a convertible inflator on a PFD that is only marked as "Manual inflation". The Coast Guard's policy is that once a manual-auto inflator is designed to accept an overriding feature making the inflator convertible, from that point on that model inflator may not be sold as a non-convertible inflator unless the inflator design is modified such that the overriding feature will not work on the modified inflator and the inflator is given a different model number.