Inflatable Life Jacket Maintenance and Rearming

Chuck Hawley

What would you do if someone asked you to drive an unfamiliar car?

Adjust the seat position?

Put on the seatbelt?

Adjust the mirrors?

Check the gas?

Ask if it’s insured?

See if it’s a stick shift?

What would you do if someone handed you a firearm?

Make sure they are handing it to you in a safe way?

Point away from people and living things?

Put on the safety?

Drop the magazine out, or open the cylinder?

Treat it with the utmost respect?

What would you do if someone offered you a parachute?

Ask who packed it?

Check to see if the pins are bent?

Identify where the ripcord is?

Tighten the leg straps?

Why don’t we have a similar procedure when we are given an inflatable life jacket?

Is it ready to inflate?

Does it fit?

Do I understand its operation?

Is it manual or water-activated?

Where’s the inflation lanyard?

Where’s the oral inflation tube?

Bottom Line First

If you remember nothing else, remember the following key points about inflatable life jacket maintenance

1. Never assume an inflatable life jacket is “ready to go” unless you have verified its readiness
2. If you borrow a life jacket, take a minute to understand its operation and readiness
3. Understand the two or three methods that an inflatable life jacket uses to inflate and provide buoyancy
    a. Know where the oral inflation tube is located
    b. (It’s on the opposite side from the inflator.)
4. Know how to verify that your life jacket can hold air

Why wear a life jacket?

Life jackets provide buoyancy and allow you to maintain an airway until you can be rescued after accidental immersion.

Greater buoyancy can keep your mouth out of the water in rough conditions, avoiding “mouth immersions”.

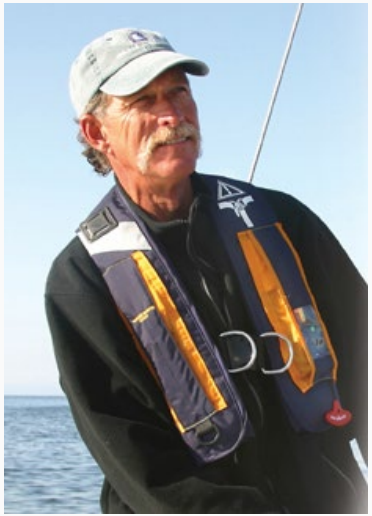
Inflatables combine freedom of movement on deck, with excellent in-water performance.

~~Two~~ Three basic kinds of life jackets

Inherently buoyant (foam)

Hybrid (foam and gas)

Inflatable (gas)



If you find yourself in the water...

1. If life jacket has not inflated, pull ripcord
2. If life jacket has still not inflated, expose oral inflation tube and blow
3. Verify that all PIW have fully-deployed life jackets (no Velcro binds)
4. Turn on any strobe lights or MOB beacons
5. Conserve heat
    a. HELP posture or huddle if three or more
    b. Close closures on FWG
    c. Don’t swim for help
6. Use whistle to attract attention
7. Splash to make yourself a larger target for aerial searchers

Types of Inflatables

Understand the various styles of inflatable life jackets so you can select the one that is best for your use.

1. Amount of buoyancy
    a. 16, 24, 35, 60# of buoyancy
    b. Hybrid with 7# foam + 15# inflatable
2. Type of inflator
    a. Manual, water-activated, or hydrostatic
3. Style
    a. Stole or vest Vs. belt pack
4. Integral harness (sailing) or no harness (everyone else)?
5. Type of closure
    a. Velcro or burstable zipper
6. Mandatory wear or not?

Manual, water activated, or hydrostatic?

Largely left up to the wearer or PIC

Issue with manual-only is cold-shock and the gasp reflex. May not allow user to pull the “ripcord” (lanyard)

Issue with water-activated is a risk of inflation when not intended

Hydrostatic models are resistant to splashes and humidity, but must be immersed 4” to activate.

Manual Inflator

Water-activated Inflator

Hydrostatic Inflator

Two different standards organizations

Underwriter’s Laboratories, UL

Uses a Standards Technical Panel to work on new performance and manufacturing standards for future life jackets. Generally required for US approved life jackets. Standards include UL1123, UL1180, etc.

International Standards Organization, ISO

Creates standards using expert standards-makers. Not involved with manufacturing compliance. Standards include 12401 (harnesses) and 12402 (life jackets)

UL and Coast Guard Inflator Designations

6F Older style with no cylinder seal indication.

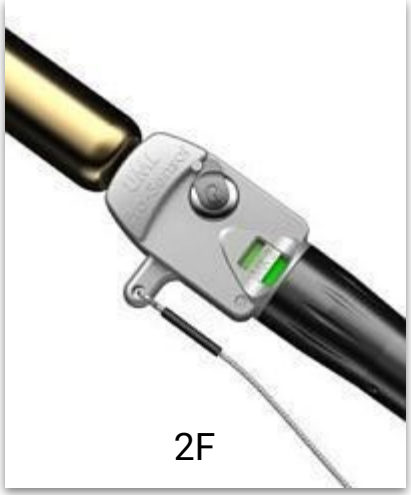
3F Manual activation with cylinder seal indication

2F Manual with water-backup, cylinder seal indicator, two indicators

1F Manual with water-backup, cylinder seal indicator, one indicator

6F

3F


2F

1F

Halkey Roberts Inflators

Most common in the U.S.; found on Mustang, West Marine, Stearns, Onyx and other life jackets

Available in all configurations

Uses a “bobbin” with the manufacturing date inkjetted on it.

Three year “shelf life”

Three year “service life”

Replace all red bobbins ASAP.

Common Manual Inflator

Hammar Inflators

Hydrostatic, meaning that they require water pressure to expose the water-sensing element.

Highly tolerant of splashes and humidity

Highly intolerant of internal pressure in the bladder and shallow (<4”) immersion

5 year replacement interval, $70-$110.

Secumar Inflators

Found on Stearns and West Marine life jackets

Available in all configurations

Water causes a “pill” to disintegrate

Manual Only flag converter

Bayonet-style cylinder requires 90 degree twist

United Moulders Ltd

UK company that makes inflators for ISO approved life jackets.

Compressed paper element for water sensor; turns to mush when wet

Commonly found on Spinlock Crewvest as an option to the Hammar Hydrostatic Inflator.

Mk 2

Mk 5

Pro Sensor

Pro Sensor Elite

Regular inspection, then say “good-bye”!

1. Every time the life jacket is used
    a. Verify that the CO2 cylinder is full and installed
    b. Verify that the water-sensing element is installed (when applicable)
2. Periodically (depends on manufacturer, but 2-12 months)
    a. Verify air-holding, accessory operation, replacement of dated items
    b. Repack and note maintenance in logbook
3. When is it time to say “good-bye”?
    a. Generally, 10 years, or possibly longer if life jacket is in excellent condition

When is a CO2 cylinder replaced?

If it’s been pierced in the small end of the cylinder

If it’s excessively corroded

If it’s part of an assembly with a replacement date (Hammar)

When is the water sensing element replaced?

When it’s been used and has disintegrated

When it’s past its date code (MFR or Replace By?)

When it shows signs of damage

Daily Inspection

Depends on the type of inflator

- 1F, 2F, or 3F inflator: check for green indicator showing in window.
- 6F or other inflator: open shroud and check cylinder and w.s.e.*

All: verify fit, condition, appropriateness

*Water Sensing Element

Periodic (annual) inspection

Varies by manufacturer

Read the instructions

Log your actions

Cylinders last a long time

Water sensing elements are cheap and do deteriorate

Basic Process (water activated instructions in parens)

1. Open shroud (cover)
2. Remove CO2 cylinder
3. (Remove water sensing element)
4. Orally or mechanically inflate until firm
5. Leave for several hours
6. If you detect an air leak, assume it's the o.i.t.
    a. Use soap bubble or spit to determine if it's leaking
    b. Press valve to try to resolve leak
    c. If not o.i.t., immerse vest in water to find leak
    d. If fabric or seam leaks, return to manufacturer or condemn
7. (Verify date and condition of water sensing element)
    a. Replace if necessary
8. Verify CO2 cylinder is rust-free and not previously used
9. Verify operation of all accessories (lights, MOB devices)
10. Deflate completely
11. (Re-install water sensing element)
12. Re-install CO2 cylinder
13. Refold according to MFR instructions

Videos can be found at US Sailing
Search: *US Sailing Life Jacket Maintenance*

SAFETY AT SEA RESOURCES

LIFE JACKET MAINTENANCE

These excerpts are taken from our Online Offshore Safety at Sea course. Click here for more information on the course or to order.

Inflatable Life Jacket Systems