



HAMMERHEAD™
LIFE PRESERVER P/N 67003

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TABLE OF CONTENTS

1.	SAFETY	1
1.1	GENERAL	1
2.	EQUIPMENT OVERVIEW	2
2.1	PURPOSE OF EQUIPMENT	2
2.2	SPECIFICATIONS	3
2.3	PARTS AND FEATURES	4
01.	4
2.4	COMPONENT SUB-ASSEMBLIES	5
2.4.1	<i>Structural Over-shell</i>	5
2.4.2	<i>Chassis Harness</i>	5
2.4.3	<i>Inflatable Bladder</i>	5
2.4.4	<i>Inflation System</i>	5
2.5	CONFIGURATION FOR TACTICAL USE	6
2.5.1	<i>Attachment Straps</i>	6
2.5.2	<i>Stand-Alone Harness</i>	7
3.	EQUIPMENT OPERATION	8
3.1	PRE-DONNING INSPECTION	8
3.1.1	<i>Inspect the Life Preserver for Damage</i>	8
3.1.2	<i>Check the Condition of the CO₂ Cylinder</i>	8
3.1.3	<i>Check the CO₂ Inflator installation</i>	8
3.1.4	<i>Check the Arming Status Indicator</i>	9
3.2	DONNING	10
3.3	INFLATION	11
3.3.1	<i>Automatic Inflation:</i>	11
3.3.2	<i>Manual Inflation:</i>	11
3.3.3	<i>Inflation by Mouth:</i>	11
3.4	DEFLATION	12
3.5	CONVERSION TO MANUAL INFLATION MODE	17
4.	REARMING AND PACKING	18
4.1	HALKEY-ROBERTS V80040 BOBBIN ASSEMBLY	18
4.2	REARMING THE MECHANICAL INFLATORS	18
4.3	REARMING PROCEDURE:	19
4.4	FOLDING AND PACKING	22
5.	CARE AND MAINTENANCE	26
5.1	RINSING	26
5.2	CLEANING	26

5.3	STORAGE	27
5.4	SERVICE INSPECTION PROCEDURES.....	27
5.4.1	<i>Visual Inspection</i>	28
5.4.2	<i>Firmness Check</i>	28
5.5	PERIODIC MAINTENANCE INSPECTION	28
5.6	SERVICE LIFE LIMIT	29
6.	ACCESSORIES AND PARTS LIST	30

1. SAFETY

1.1 General



CAUTION

The following describes potential hazards or procedures that, if not performed correctly, can result in damage to or failure of the life preserver, personal injury or death.

- Only persons who have been trained in the operation and care of this device should use it.
- This life preserver must be inflated to provide buoyancy to the user.
- Never inflate the life preserver fully by mouth first and then discharge the CO₂ cylinders manually or automatically. Doing so may cause injury to the user or damage to the life preserver.
- Each set of CO₂ cylinders will only inflate the life preserver once. The life preserver must be rearmed with new cylinders following each CO₂ inflation.
- Do not dry clean, iron or machine-wash your life preserver.
- Avoid exposure to acids or acid environments. Acids can severely degrade the nylon webbing.
- Do not use damaged life preservers. Send them to an approved repair facility for inspection, maintenance and repair.
- Unless indicated herein, no objects or equipment should be attached to the Hammerhead over-shell to avoid risk of harm to the system or user.
- No objects or piece of equipment should interfere with the chassis or slide rails as this will prevent actuation.
- Do not inhale CO₂ gas. Doing so may cause you to become nauseous.

2. EQUIPMENT OVERVIEW

2.1 Purpose of Equipment

The Hammerhead™ Tactical Life Preserver is a high-buoyancy, constant-wear, inflatable life preserver designed for discrete tactical operations. To function properly, it must be integrated with a harness system that incorporates seat or leg straps. Side-release buckles on the life preserver's chassis provide secure harness attachment points.

In its packed configuration, the life preserver fits closely to the neck and extends across the shoulders at the outside of the chest area. The harness attachment points run to the outside of the hipbone at the waist and down the center of one's back. The packed side lobes extend only to the breast and should not interfere with tactical load-carriage or other equipment. When inflated, the life preserver will cover the chest area and support the neck.

The Hammerhead™ should not be worn under any other carriage system or under clothing. The life preserver system should be the outermost system in any tactical configuration.



Figure 2.1: *Hammerhead™*
P/N 67003
Front View - Packed



Figure 2.2: *Hammerhead™*
P/N 67003
Front View - Inflated

2.2 Specifications

SPECIFICATIONS		
Inflated Buoyancy	65 lbs nominal (289 Newtons)	
Operating Temperature:	Automatic Inflation (In Water)	32°F to 90°F (0°C to 32°C)
	Manual Inflation (In Water)	0°F to 110°F (-18°C to 43°C)
	Manual Inflation (Air)	0°F to 110°F (-18°C to 43°C)
Dimensions:	Inflated	20" wide x 28" long x 8" thick 50.8cm x 71.1cm x 20.3cm
	Packed	13" wide x 18" long x 3" thick 33cm x 45.7cm x 7.6cm
Weight (ready to deploy)	4.0lbs (1.8kg)	
Inflatable Buoyancy Chambers	2 Inflatable Chambers	
Material	Polyether Polyurethane Film	
Construction	RF Heat Sealed Seams	
Cell Container Material	Polyurethane-coated Nylon	
Construction	Sewn Seams	
CO ₂ Gas Charge	2 x 35 grams (1.23 oz) cylinders	
Service Life	Indefinite; unit must continue to pass periodic maintenance inspections	
Frequency of Inspection	See Service Inspection Procedure	

Table 2.1: Hammerhead™ P/N 67003 Specifications

2.3 Parts and Features



Figure 2.3: Hammerhead™ P/N 67003 Front View - Inflated

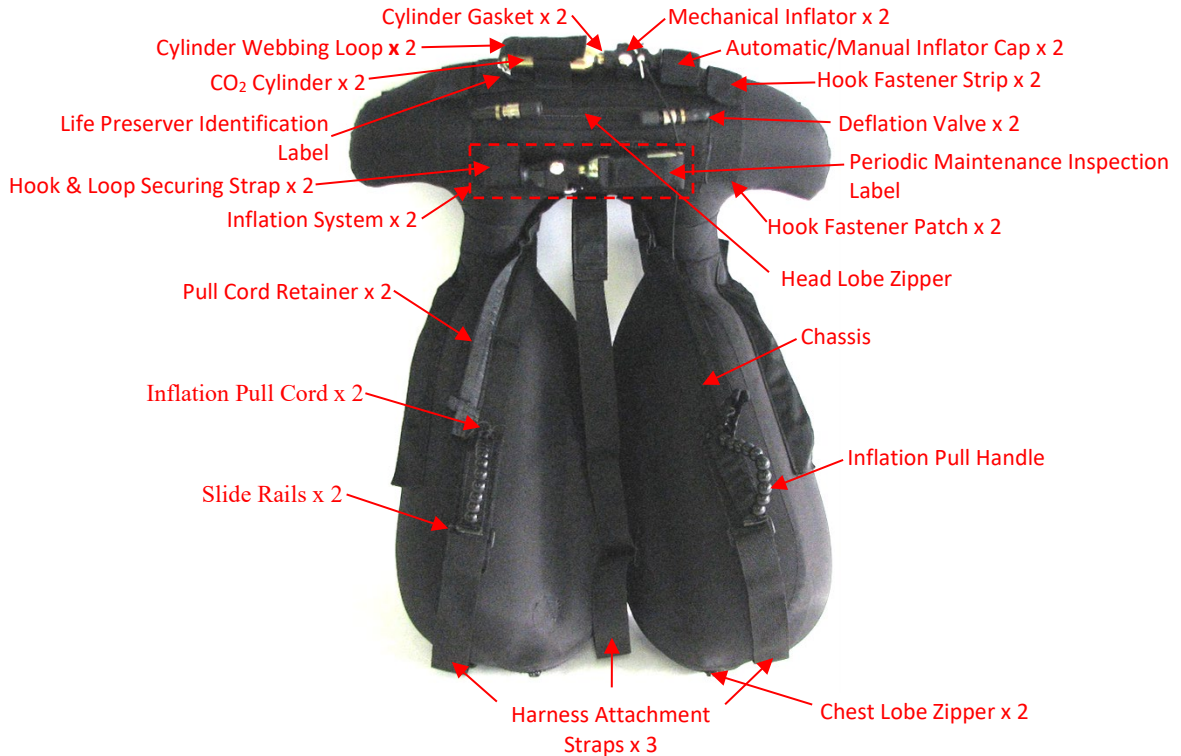


Figure 2.4: Hammerhead™ P/N 67003 Rear View - Inflated

2.4 Component Sub-Assemblies

2.4.1 Structural Over-shell

The inflatable compartment consists of a structural over-shell container and a dual-chamber inflatable bladder. The over-shell is comprised of two chest lobes that cover the chest area when inflated, and a head lobe to support the wearer's head. Internal baffles in the chest lobes restrict the radius of the lobes upon inflation while webbing reinforcements serve to reduce stress along the baffle seams.

Hook and loop fastener strips on the inflatable cell container allow the life preserver to be folded in upon itself to form a compact package for constant wear. A hook and loop strap closure can be used to secure the chest lobes when the jacket is inflated. Attachment loops and patches are provided on the chest lobes to which personal locator lights or retro reflective patches can be fixed.

The structural over-shell container includes three zipper openings which allow access to the inflatable bladder for servicing or replacement. The zipper openings are for maintenance only and should not be accessed by the user as doing so may allow foreign particles to be introduced into the cell container.

2.4.2 Chassis Harness

The chassis is fitted with side-release buckles to provide the life preserver with three-points of attachment to a harness system. The neck attachment point is the male portion of a 1.5-inch side-release buckle. The remaining two attachment points are also 1.5-inch side-release buckles all designed to fit with their female portions on a separate harness. Slide rails located on the lower portion of the chassis ensure positive connection of the chest lobes to the chassis, while allowing the chest lobes to be packed away higher on the chest.

2.4.3 Inflatable Bladder

The inflatable bladder is constructed from three layers of polyether polyurethane film sealed together to form two independent, superimposed inflatable chambers. Each chamber has a mechanical inflator, an oral inflator, and a dump valve. The bladder extends throughout the inflation compartment so that inflation symmetry is maintained even with one chamber deflated. The bladder is designed to be larger than the over-shell to ensure that upon inflation, the bladder is not stressed. The structural over-shell bears the full force of inflation.

2.4.4 Inflation System

The CO₂ (carbon dioxide) inflation system is located at the back of the neck. It consists of two Halkey-Roberts Alpha 9000 series mechanical inflators, one for each chamber, attached to the underside of the head lobe. Two CO₂ cylinders are held in place by hook and loop fastener and

webbing loops. Only the specified CO₂ cylinders are compatible with this life preserver (see Parts List).

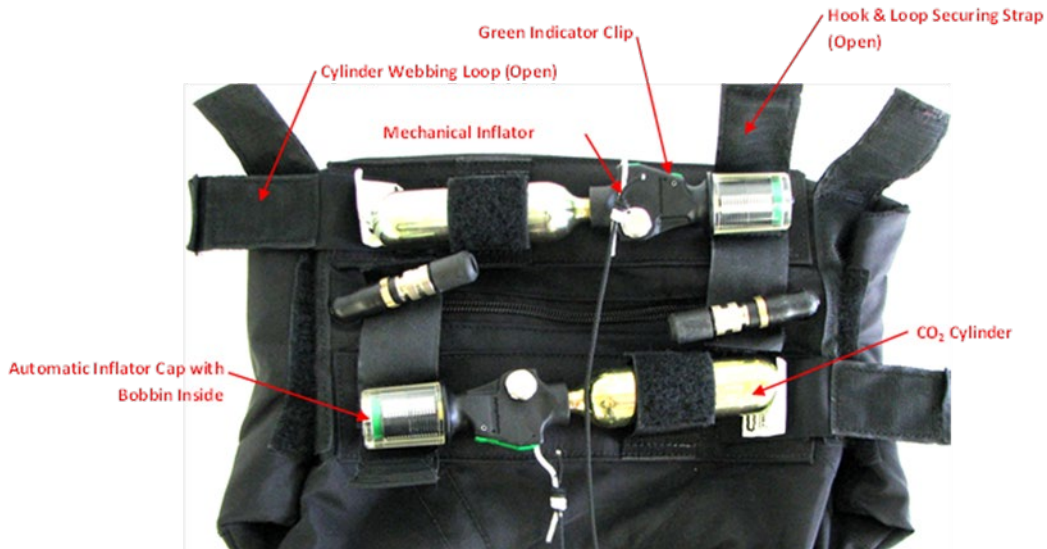


Fig 2.5: *Mechanical Inflation System*

Each chamber also has an oral inflation valve connected to an oral tube located on the front of the chest lobes. The valves have threaded safety locks to prevent inadvertent deflation and are secured to the over-shell with hook & loop fastener tabs. Two additional oral valves on the head lobe serve as deflation valves.

Manual activation is provided through two inflation handles located on the lower portion of the chassis. A tear-away pull cord system runs along the chassis and connects the handles to the inflator mechanism. Hook & loop fastener strips are used to secure the manual inflation handles and pull cord to the chassis to prevent any snagging.

Automatic inflation is possible when the inflators are fitted with an automatic inflator cap. The automatic inflator cap uses a bobbin designed to disintegrate when exposed to water. This allows the firing mechanism to puncture the CO₂ cylinder and fill the inflatable chamber.

2.5 Configuration for Tactical Use

2.5.1 Attachment Straps

A set of three harness attachment straps, p/n 67304, allows integration of the life preserver to a standard climb harness. The straps may be permanently installed on the climb harness to facilitate rapid donning and doffing of the Hammerhead.



Figure 2.6: *Harness Attachment Strap Set*

2.5.2 Stand-Alone Harness

A stand-alone harness incorporating leg straps, p/n 67303, is provided for applications where a climb harness is not standard equipment.

NOTE: The stand-alone harness is not designed for and should never be used for climbing.



Figure 2.7: *Stand-Alone Harness*

3. EQUIPMENT OPERATION

3.1 Pre-Donning Inspection

Before each use, the life preserver should be unpacked, and the condition checked as follows:

3.1.1 Inspect the Life Preserver for Damage

Check that the fabric and webbing components are free of rips, tears or holes; that all seams are securely sewn and that all hardware is securely attached and operational.

3.1.2 Check the Condition of the CO₂ Cylinder

To check the condition of the cylinder, unscrew it from the inflator mechanism. Once removed, look at the flat face of the cylinder just above the threads. An empty cylinder will have a visible puncture hole on the face and cannot be reused. The cylinder should also be discarded and replaced if it shows signs of corrosion. If the cylinder is serviceable and the sealing gasket is inspected and found to be undamaged and properly seated, the cylinder can then be re-installed by screwing it back into the inflator mechanism. Hand-tighten only. If the cylinder is used or damaged, discard the cylinder and rearm the mechanism per the instructions in Section 4.2 Rearming the Mechanical Inflators.

3.1.3 Check the CO₂ Inflator installation

Visually inspect the position of the hex cap nut to ensure proper inflator installation. If the hex cap nut is cross-threaded, CO₂ leakage could occur at inflation. Cross-threading is evident when the hex nut appears angled to the inflator body, as shown in Figure 3.1.

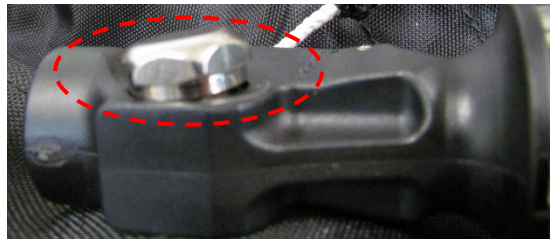


Figure 3.1: Hex nut, evidence of cross-threading

If cross-threading is suspect, forward the unit to an approved repair facility for maintenance inspection and repair before returning the life preserver to service.

3.1.4 Check the Arming Status Indicator

Check that the green indicator clip is in place on the inflator's lever. The green clip should be in place if the mechanism is properly armed. If the green clip is broken or missing, rearm the mechanism as per the instructions in Section 4.2 [Rearming the Mechanical Inflators](#).

Check that the automatic inflator cap end is green indicating that a bobbin is installed in the automatic inflator cap assembly. If the cap assembly is red, install a bobbin per the instructions in Section 4.2 [Rearming the Mechanical Inflators](#).

3.2 Donning

If using a standard climb harness, install the three harness attachment straps onto the waistband of the climb harness. Position them so that two attachment straps are located at the front and one centered at the back. Don the harness and fasten securely.

If using the Hammerhead™ Stand-Alone Harness, don the harness by first stepping into the leg loops, then fastening the waist band. Adjust waist and legs straps to appropriate fit and fasten securely.

Place the Hammerhead™ life preserver around the neck so that the beaded manual inflation pull handles face towards the body.

Connect the male portions of the side-release buckles located on the life preserver to the female portions located on the Attachment Straps or the Stand-Alone Harness.

Tighten the adjustable straps so that the chassis is secure to the body, but range of motion is not unduly restricted. The life preserver should be worn with the collar as close as possible to the back of the neck. Fastening points on the harness should be wide, leaving the chest area free to access tactical equipment.



Figure 3.2: *Integration with Stand-Alone Harness*

3.3 Inflation

3.3.1 Automatic Inflation:

Inflation of the Hammerhead™ will occur automatically upon immersion of the life preserver in water if the unit is configured for auto-inflation. Activation of the inflator mechanism should occur within 5 seconds of exposure and full inflation should occur within 5 seconds of activation.

3.3.2 Manual Inflation:

For manual inflation, detach the inflation handles from the chassis by pulling outward, perpendicular to one's side at shoulder height, quickly and forcefully on both handles until inflation is activated. Approximately 25 lbs (111 Newtons) of pull force is required for manual activation.

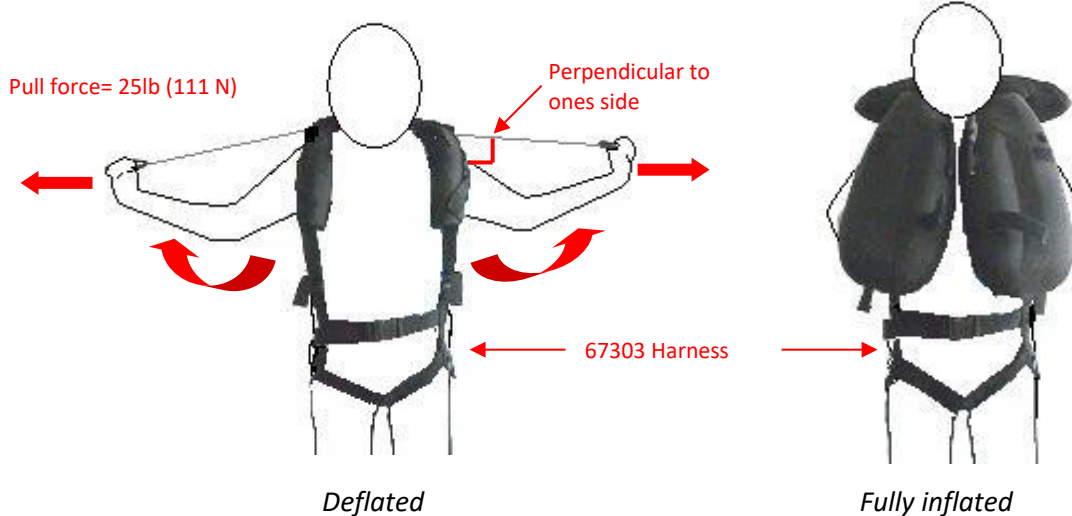


Figure 3.3: Manual Inflation of the Hammerhead™

3.3.3 Inflation by Mouth:

To inflate the life preserver orally, the life preserver must first be unpacked. To unpack, separate the hook and loop fastening strips located on each of the chest lobes and the head lobe. Free the two oral tubes from their holders by releasing the hook and loop tab closures. Unlock the oral inflation valve by screwing down the safety mechanism. Depress the valve and breathe forcefully into the bladder until the life preserver is firm.

Note: Never inflate the life preserver fully by mouth first and then discharge the CO₂ cylinders automatically or manually. Doing so may cause injury to the user or damage to the life preserver.

3.4 Deflation

1. Detach the Hammerhead™ from the harness and place it on a flat surface, with the inflation system on the head lobe facing downwards. Remove the oral tubes from their keepers on the chest lobes and fully unscrew the safety lock on each oral inflation valve. Take one oral tube in each hand and depress the oral inflation valve to begin deflation. You should hear gas coming out of each oral tube and feel the life preserver deflate. You can put the chest lobes on top of each other and use your arms and body to squeeze the lobes as much as possible to push the gas out while depressing the oral tube ends (Fig. 3.4). Continue compression until no more gas comes out of the oral tubes. There may still be gas left in the cell at this time.

Figure 3.4: *Compressing the Hammerhead™ to deflate*



2. The Hammerhead™ should now be deflated enough to pack one chest lobe. To pack the first chest lobe; begin by screwing the safety lock closed on the oral inflation valve for this lobe. The oral tube end should not be able to be depressed when properly locked. Then place the oral tube back into its keeper.



Figure 3.5: *Closing the safety lock on the oral inflation valve*



Figure 3.6: *Placing the oral tube back into its keeper*

3. Grasp the bottom of the chest lobe and the harness attachment buckle. Pull the chest lobe up and fold it upon itself (Fig. 3.7). Tuck the hook strap closure into the fold. The slide rail loop will travel on the slide rail to allow the chest lobes to be folded up and limit the extent of the fold.

Figure 3.7: *Chest lobe folded upward*



4. Roll the chest lobe around the oral tube towards the fastener strip (Fig. 3.8). Once it is completely rolled, fasten it closed using the hook and loop fastener strips (Fig. 3.9). At this point, there should be no gas left in this chest lobe. By packing this lobe, the gas is transferred into the remaining chest and head lobe, preventing any gas from re-entering.

NOTE: When packing and mating the hook and loop fasteners, be careful to avoid excessive tightening as this may impede inflation.



Figure 3.8: *Chest lobe rolled towards the fastener strip*



Figure 3.9: *Chest lobe rolled and fastened closed*

5. Turn the Hammerhead™ over. Unlock both head lobe deflation valves as done for the oral tubes and depress them while using your body and arms to exhaust any remaining gas.

Figure 3.10: *Deflation through head lobe deflation valves*



6. At this time the second chest lobe should be ready to be packed. To begin, screw the safety lock closed on the oral inflation valve for this lobe and place the oral tube back into its keeper. Grasp the bottom of the chest lobe and the harness attachment buckle. Pull the chest lobe up and fold it upon itself (Fig. 3.7). Roll the chest lobe around the oral tube towards the fastener strip (Fig. 3.8). Once it is completely rolled, fasten it closed using the hook and loop fastener strips (Fig. 3.9). At this point, there should be no gas left in this chest lobe, and any remaining small amounts of gas should be transferred to the head lobe.
7. Fold each side of the head lobe from the outside towards the inflation system until the hook and loop fastener patches on the back and front sides of the head lobe mate and secure them in place. Use the deflation valves to exhaust any remaining gas.

Figure 3.11: *Folding sides of neck lobe*



8. The used CO₂ cylinders should now be removed. Beginning with the upper inflator; open the webbing loop covering the CO₂ cylinder & unscrew the CO₂ cylinder from the inflator.

NOTE: If the cylinder has been used, it will have a hole pierced in the end of it. Discard the used CO₂ cylinder.

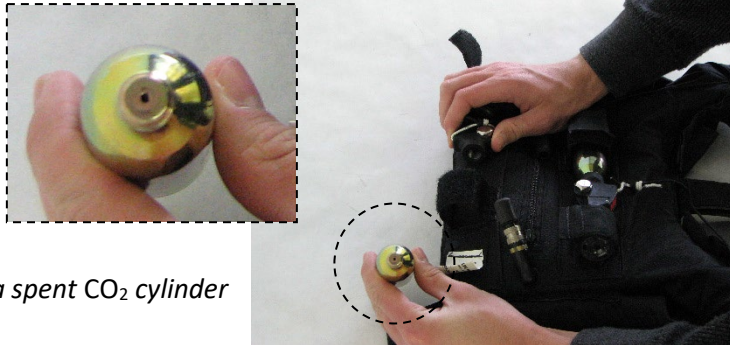


Figure 3.12: *Removing a spent CO₂ cylinder*

9. Repeat this procedure for the lower inflator.
10. Next, fold one corner of the head lobe over and apply pressure while depressing one of the head lobe deflation valves. Repeat this procedure for the other corner.



Figure 3.13: *Deflating head lobe*

11. Lock the head lobe deflation valves as done for the oral tube valves.

12. Roll the head lobe from the top towards the chassis. Secure the head lobe in the rolled position by attaching the single hook fastener strip in the center (Fig. 3.14) and the two on the sides, to the loop patches on the back of the head lobe (Fig. 3.15).



Figure 3.14: *Fastening Head Lobe Center*



Figure 3.15: *Fastening Head Lobe Sides*

13. When all the lobes can be packed without any bulging, the Hammerhead™ is sufficiently deflated. Otherwise, unpack and repeat the process until the Hammerhead™ is properly deflated.

3.5 Conversion to Manual Inflation Mode

When automatic activation upon immersion in water is not desirable, the Hammerhead™ can be set up for manual inflation only. To set up the inflation system for manual mode, remove the clear inflator caps which hold the automatic inflation bobbins and replace each with a yellow manual mode cap (P/N 3219-001). The automatic inflation mode is now disabled and inflation can only occur by manual activation.



Figure 3.16: *Installation of Manual Mode Cap*

To convert the life preserver back to automatic inflation mode, remove the yellow Manual Mode cap and reinstall the bobbins and automatic inflation caps (refer to Section 4.2 [Rearming the Mechanical Inflators](#)).

4. REARMING AND PACKING

4.1 Halkey-Roberts V80040 Bobbin Assembly

The V80040 Bobbin Assembly is designed to disintegrate when exposed to water. This allows the firing mechanism to puncture the CO₂ cylinder, filling the inflatable chamber. To ensure consistent service from the automatic inflator, the bobbin is to be changed at the life preserver's Periodic Maintenance Inspection interval.

Shelf Life: The bobbin must be stored in a cool dry environment. (65 °F to 85 °F, 19 °C to 29 °C; Maximum 60% RH). Halkey-Roberts recommends a shelf life of five (5) years. Use the Date Code printed on the bobbin case to determine the expiry date. For older bobbins the manufacturing date is provided, i.e. when shelf life begins. The date of expiry is 5 years from that date. For newer bobbins both the manufacturing date and expiry date are provided.



Figure 4.1: V80040 Bobbin Date Code

Service Life: Service life is twelve (12) months and begins when the bobbin is removed from a cool dry environment or when the bobbin is installed in an inflator, whichever comes first. While in service, it should be replaced more frequently if exposed to more extreme conditions, i.e. high temperature or high humidity. Shelf life plus service life is not to exceed the expiration date, five (5) years from the Date of Manufacture. Replace the bobbin (discard) when the expiry date has been reached.

4.2 Rearming the Mechanical Inflators

Each time the mechanical inflation system is actuated, the inflators must be rearmed, the bobbins replaced (for automatic inflation) and the empty CO₂ cylinders replaced. All the necessary parts are included in the arming kits, available from the manufacturer.

Arming Kit —Tulmar Safety Systems Part No: 5675-100

A complete arming kit contains 2 CO₂ cylinders, 2 bobbins and 2 green indicator clips along with arming instructions. The arming components can also be procured separately.

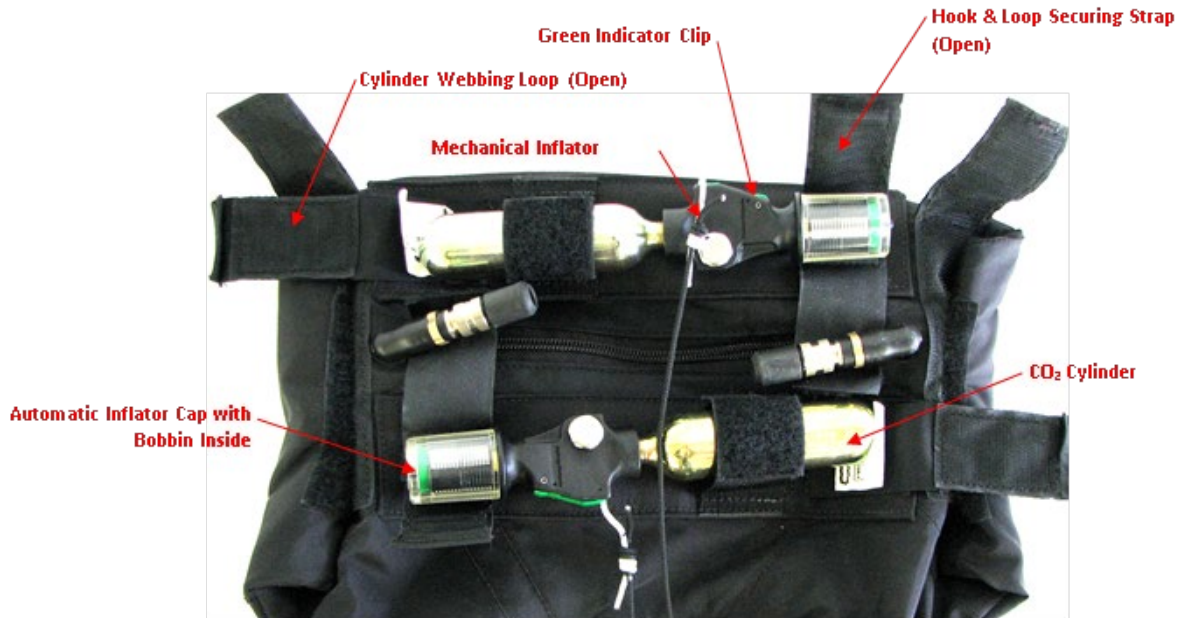


Figure 4.2: Mechanical Inflation System

4.3 Rearing Procedure:

CAUTION: IT IS VERY IMPORTANT TO FOLLOW THE ARMING SEQUENCE AS OUTLINED BELOW. IF AN ATTEMPT IS MADE TO REPLACE THE CYLINDER BEFORE REPLACING THE BOBBIN, THE PIERCING PIN WILL STRIKE THE SURFACE OF THE CYLINDER AS IT IS THREADED IN, TRIGGERING INFLATION.

1. Unscrew the used CO₂ cylinder in a counter-clockwise direction and discard immediately.
2. Ensure the inflator lever is properly closed and seated in the inflator body and the piercing pin is not protruding into the cylinder cavity.
3. If Manual Inflation Mode is desired, install the manual mode inflator cap as described in section 3.5, and then proceed to step 6.
4. To access the automatic inflator cap, undo the hook and loop securing strap. Unscrew the automatic inflator cap from the inflator head. Remove the bobbin and discard (Fig. 4.3). The bobbin should be changed even if the life preserver was not exposed to water, or if it was manually inflated. Blow out the automatic inflator cap and the end of the inflator with air to remove any moisture from the bobbin holder.

5. Insert a new bobbin into the bobbin holder, white side facing away from the inflator, aligning the slots on the bobbin with the ridges inside the threaded housing. The bobbin will slide in easily if correctly installed. Reinstall the automatic inflator cap. Green will appear through the end of the transparent cap, indicating that the auto-inflator mechanism is armed (Fig. 4.4).



Figure 4.3: *Bobbin Replacement*



Figure 4.4: *Automatic Inflator Cap with Green Indicator*

6. Look into the threaded cylinder receiver of the inflator and view the cylinder gasket. If the gasket is missing or torn, or if the edges are frayed, it must be replaced. Remove the life preserver from service and return to an approved maintenance facility for replacement.

Figure 4.5: *Checking Cylinder Gasket at bottom of inflator cavity*



7. Before installing a new cylinder; inspect the cylinder seating face. Be sure it is smooth and has no holes or scratches.
8. To install the cylinder, slip it through the elastic cylinder keeper and thread it into the hole in the inflator body, turning in a clockwise direction. Ensure the cylinder is snugly seated, but do not over-tighten. Fasten the cylinder webbing loop and fasteners.
9. To indicate the inflator is armed, install a new green arming indicator clip if one is missing. Otherwise simply make sure the green clip is properly installed around the closed inflator

lever. Ensure the inflation pull cords are not caught in the green clip. Close the hook and loop securing straps.

Figure 4.6: *Installing Arming Status Indicator Clip*



10. Repeat steps 1 through 9 for the other inflation system.

4.4 Folding and Packing

The packing of the Hammerhead™ generally follows the deflation and re-arm procedures and is accomplished by first packing the chest lobes and then the head lobe.

1. Lay the fully deflated Hammerhead™ on a flat surface with the inflation system on the head lobe facing downwards. Ensure the chest lobes are positioned so that the oral tubes are facing each other.



Figure 4.7: *Hammerhead™ Ready for Packing*

2. Grasp the bottom of the chest lobe and the harness attachment buckle. Pull the chest lobe up and fold it upon itself. Tuck the hook or loop strap closure into the fold. The slide rail loop will travel on the slide rail to allow the chest lobes to be folded up, limiting the extent of the fold.

Figure 4.8: *Chest Lobe Folded Upward*



3. Roll the chest lobe around the oral tube towards the fastener strip. Once it is completely rolled, fasten it closed by aligning the hook fastener strips and loop patches and then securing them in place. Repeat for the other chest lobe.

NOTE: Avoid excessive force when packing the lobes and securing the hook and loop fastenings. Tightening excessively may hamper release of the hook and loop fasteners and impede inflation. When properly packed, the Hammerhead™ should form a firm, compact package.

Figure 4.9: *Chest Lobe Rolled and Fastened*



4. Turn the Hammerhead™ over. Fold each side of the head lobe from the outside towards the CO₂ inflation system until the hook and loop fastener patches on the back and front sides of the head lobe connect and secure in place (Fig. 4.10).

Figure 4.10: *Folding and Securing Neck Lobe*



5. Roll the head lobe from the top towards the chassis. Secure the head lobe in the rolled position by attaching the single hook fastener strip in the center (Fig. 4.11) and the two on the sides, to the loop patches on the head lobe (Fig. 4.12).



Figure 4.11: *Fastening Head Lobe Center*



Figure 4.12: *Fastening Head Lobe Side*

NOTE: Avoid excessive force when packing the lobes and securing the hook and loop fastenings. Tightening excessively may hamper release of the hook and loop fasteners and impede inflation. When properly packed, the Hammerhead™ should form a firm, compact package.

6. Ensure the inflation pull cords are not crossed and free of any snagging hazards while passing on each side of the center hook fastener strip. Attach the pull handles to their fastener locations on the chassis.

Figure 4.13: *Inflation pull cords placed on each side of center fastener strip*



7. Separate the hook and loop fastener using the pull tabs to open the pull cord retainers. Begin placing the pull cord in the retainer starting at the pull cord handles and move towards the head lobe. The small amount of excess cord can be tucked inside of the head lobe, ensuring the cord will not get caught on anything when pulled.

Figure 4.14: *Inflation pull cords placed in the pull cord retainers*



Figure 4.15: *Hammerhead™
P/N 67003
Back View Packed*

5. CARE AND MAINTENANCE

CAUTION: WATER BORNE CONTAMINANTS SUCH AS FOUND IN SALT WATER, POOL WATER, WATERWAYS AND OTHER ENVIRONMENTS MAY HAVE A DETRIMENTAL EFFECT ON LIFE PRESERVER FABRIC, WEBBINGS, GASKETS AND COMPONENTS, CONSEQUENTLY ON THE UNITS SERVICE LIFE AND PERFORMANCE.

CAUTION: CONTAMINANTS SUCH AS PETROLEUM SOLVENTS, FUEL, GREASE, OIL AND HYDRAULIC FLUIDS MAY HAVE A DETRIMENTAL EFFECT ON LIFE PRESERVER FABRIC AND CONSEQUENTLY ON THE UNITS SERVICE LIFE AND PERFORMANCE. DISCONTINUE USE OF THE HARNESS SYSTEM IF IT HAS COME INTO CONTACT WITH ANY OF THE ABOVE LISTED OR ANY SUSPECT CHEMICAL AGENTS.

5.1 Rinsing

CAUTION: DISARM THE INFLATION SYSTEM BEFORE PERFORMING ANY CLEANING PROCEDURE WITH WATER TO AVOID INADVERTENT INFLATION OF THE WATER ACTIVATED COMPONENTS. TO DISARM THE INFLATION SYSTEM, REMOVE THE BOBBIN FROM THE AUTOMATIC INFLATOR CAP (SEE SECTION 4.3 STEP 4) AND KEEP AN EMPTY CYLINDER SCREWED IN THE INFLATOR BODY TO AVOID WATER ENTERING THE BLADDER THROUGH THE INFLATION PORT.

ALWAYS USE CLEAN FRESH WATER TO CLEAN AND RINSE LIFE PRESERVER

1. Avoid allowing the life preserver to dry after use without rinsing.
2. If the life preserver has dried, soak it for ten (10) minutes to re-dissolve the salt crystals and/or loosen sand and silt that has accumulated in tight places. Agitate the life preserver under water to ensure proper cleaning.
3. Soak the harness system in clean water for 5 minutes, occasionally agitating the harness under water. Repeat two or three times.
4. Thoroughly rinse the life preserver and harness system.
5. Allow life preserver to air dry in a 15°C to 27°C area (60°F to 80 °F), out of direct sunlight. A circulating fan can be used to assist with air drying. Do not use forced air or dry with heat.

5.2 Cleaning

CAUTION: ENSURE THE WORK AREA IS CLEAN, SMOOTH AND FREE FROM SHARP OBJECTS, SPLINTERS, ABRASIVE AND CORROSIVE MATERIALS. COVER ROUGH WOOD OR CONCRETE SURFACES WITH TARPAULIN OR HEAVY PAPER.

CAUTION: DISARM THE INFLATION SYSTEM BEFORE PERFORMING ANY CLEANING PROCEDURE WITH WATER TO AVOID INADVERTENT INFLATION OF THE WATER ACTIVATED COMPONENTS. TO DISARM THE INFLATION SYSTEM, REMOVE THE BOBBIN FROM THE AUTOMATIC INFLATOR CAP (SEE SECTION 4.3 STEP 4) AND KEEP AN EMPTY CYLINDER SCREWED IN THE INFLATOR BODY TO PREVENT WATER FROM ENTERING THE BLADDER THROUGH THE INFLATION PORT.

ALWAYS USE CLEAN FRESH WATER TO CLEAN AND RINSE LIFE PRESERVER.

1. If local contamination with oil, grease, fluids is present, wash affected area with a concentrated solution of clothing wash detergent. Thoroughly rinse the area with clean fresh water before proceeding to clean the entire unit.
2. Life preservers that are encrusted with sand or have had the zippers accidentally opened, should be returned to an approved maintenance facility as it may have allowed grit to enter the bladder compartment.
3. Using a solution of mild soap and water, clean the entire unit by lightly scrubbing or gently hand washing.
4. Thoroughly rinse the life preserver and harness components with clean fresh water.
5. Allow components to air dry in a 15°C to 27°C area (60°F to 80 °F), out of direct sunlight. A circulating fan can be used to assist with air drying. Do not use forced air or dry with heat.

5.3 Storage

CAUTION: CONTAMINANTS SUCH AS PETROLEUM SOLVENTS, FUEL, GREASE, OIL AND HYDRAULIC FLUIDS MAY HAVE A DETRIMENTAL EFFECT ON LIFE PRESERVER FABRIC AND CONSEQUENTLY ON THE UNITS SERVICE LIFE AND PERFORMANCE.

CAUTION: IT IS NOT RECOMMENDED TO STORE THE LIFE PRESERVER AT TEMPERATURES BELOW 0°C (32°F) WITH THE BOBBIN INSTALLED AS THIS WILL AFFECT THE OPERATION OF THE LIFE PRESERVER IN AUTOMATIC MODE.

Refer to Section 2.2 Specifications, for operating temperature limits which also define the storage temperature range. Refer to Section 4.1: Halkey-Roberts V80040 Bobbin Assembly, for proper storage temperature range for the automatic bobbin.

Store the Hammerhead life preserver in a clean, dry, well-ventilated place. Recommended storage temperature is between -18°C to 43°C (0°F to 110°F) without the bobbin. A damp or wet life preserver should be hung on a clothesline and dried before storage. Do not store the unit where it can be exposed to chemicals. Do not leave in direct sunlight or in hot areas for long periods. Avoid storing the life preserver inflated.

5.4 Service Inspection Procedures

Service Inspection includes temporarily removing the life preserver from service and performing visual inspection and firmness check following the instructions below. Service inspection should be performed at least every 180 days.

5.4.1 Visual Inspection

Open the hook and loop fastener strips and unfold the life preserver. Check the life preserver cover for rips, tears, holes or punctures that might indicate damage. Check the life preserver straps for loose stitching. Check the hardware for damaged or missing components. If any damages are present or components are missing, forward the unit to an approved repair facility for maintenance inspection and repair before returning the life preserver to service.

Inspect the harness and attachment strap set to assure they are in serviceable condition. Check for worn or damaged parts, ensuring all hardware is present and do not have any sharp edges, burrs or cracks. Ensure all buckles function properly. Inspect webbings for wear, cuts, burns, frayed edges or other damage. Inspect all stitching for abrasion and wear.

Discontinue use of the harness and/or strap set and remove from service if inspection reveals an unsafe condition.

Discontinue use of the harness system if it has come into contact with any corrosive or caustic chemical agents such as acids, bases or petroleum products.

Harnesses and strap sets which have been subjected to the forces of arresting a fall must be removed from service and destroyed.

5.4.2 Firmness Check

Check the inflatable cell for leaks by inflating the life preserver orally until the cell becomes hard. Refer to Section [3.3.3—Inflation by Mouth](#). Tighten the threaded safety locks on the inflation valve. Allow the life preserver to sit overnight (11 to 12 hours) and then check to see if the inflatable cell is still firm. A leaking life preserver will have become soft and should not be used. Send leaking life preservers to an approved repair facility for maintenance inspection and repair.

5.5 Periodic Maintenance Inspection

The life preserver should undergo Periodic Maintenance Inspection by an approved repair station. Repair facility personnel must be trained and experienced in working on inflatable life-saving appliances and the facility approved by the manufacturer to service its products. If an approved facility is not available in your area, return the unit to Tulmar Safety Systems for Periodic Maintenance Inspection.

Periodic Maintenance Inspection is much more extensive than the 180 day Service Inspection (See Section 5.1) and includes a leakage test, pressure test, CO₂ cylinder weight test and replacement of automatic inflation bobbins and gaskets. Special tooling and equipment such as calibrated pressure gauges and manometers are required.

The periodic maintenance inspection should be performed within 12 months from the date a new life preserver has been entered into service. However, the first maintenance inspection must be

performed no later than 24 months from the life preserver's date of manufacture. The date of manufacture is clearly marked on the life preserver identification label on the inside of one of the cylinder webbing loops. Perform all subsequent maintenance inspections within 12 months of the date of the last maintenance inspection regardless of whether a life preserver has been returned to service or removed from service and placed in storage.

5.6 Service Life Limit

The Hammerhead life preserver has no prescribed service life or life limit. The life preserver may remain in service indefinitely as long as it continues to pass the Periodic Maintenance Inspections. Service life of the Hammerhead will be prolonged with proper care and maintenance.

6. ACCESSORIES AND PARTS LIST

Part No	Part Description	NSN
5675-100	Arming Kit, Automatic Inflation, c/w CO ₂ Cylinder (2), Bobbin (2), Arming Indicator Clip (2), arming instructions	
3219-100	Inflator Caps, Manual Mode (yellow indicator), Set of 2	
3251-102	Inflator Cap, Automatic. each	
3168	Cylinder, CO ₂ , 35g, MIL-PRF-25369, TY3 equivalent	4220-21-913-8072
3220	Bobbin, Auto Inflation (Halkey-Roberts V80040)	8465-21-911-8541
3251-100	Arming Indicator Clip, Green, for V90000 Inflator	
3251-103	Instructions, Re-Arming	
67303	Harness, Standard	
67304	Strap Set, HH Climb Harness Integration	

Table 6.1: *Accessories and Parts List*

For technical support or questions regarding servicing of this product, please contact the manufacturer:

Tulmar Safety Systems Inc.
1123 Cameron St.
Hawkesbury, ON, Canada, K6A 2B8
Tel: 613-632-1282
Fax: 613-632-2030
www.tulmar.com