Crewsaver®

SERVICE MANUAL

OFFSHORE 290

LIFEJACKET

Crewsaver®

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Service Bulletins and Amendments Register

No.	Description	Date
Issue 2	Reference to Venturi Vacuum System added (sections 6.1.2, 8.1.3 and Parts List) Back pressure testing of the operating head added	November 2016

Scope

This manual covers the servicing of the ALB Offshore 290 Lifejacket without any current derivatives.

Index

1.1 Introduction

1.1.1. This Service Manual will be published on the Crewsaver website (www.crewsaver.com). Click on PARTNER AREA/LOGIN at the top of the screen. Personnel who have been trained in the servicing procedures for this lifejacket will be issued with a Username and Password to enable them to access the download section. Each manual carries an Issue Number and records of issue are logged by Crewsaver to ensure that the service network maintains correct and up to date servicing information. Emails will be sent regarding any new Issues. Periodically service bulletins may be issued which will be published on the Crewsaver website (www.crewsaver.com). Emails will also be sent. It is the service station's responsibility to regularly check the website for any new bulletins and to ensure inclusion within the servicing manual. The service bulletin register at the front of the Manual should be completed.

1.1.2. The information referenced in each section, follows a standard servicing procedure by which the inspection should take place.

1.1.3. This servicing manual details information to enable regular maintenance and servicing of the lifejacket to help prolong the life of the product and ensure it functions correctly.

1.1.4. The manual should be used as a reference document following training in servicing procedures instructed by Crewsaver approved personnel. The manual also details the equipment and parts needed for correct maintenance to be performed.

1.1.5. Servicing must be carried out annually at a service station authorised by the manufacturer. 1 yr

1.1.6. Regular servicing is to be carried out by qualified personnel trained by Crewsaver and holding a valid servicing certificate. Certificates are valid for a period of 3 years.

1.2 Product Description

1.2.1. The ALB Offshore 290 is a twin chamber Level 275 PFD (Inflatable lifejacket), designed, tested and developed in collaboration with the RNLI, ensuring its complete suitability for use by rescue boat crews in offshore and extreme conditions.

1.2.2. The lifejacket is CE approved to BS EN ISO 12402-2.

1.2.3. The lifejacket is easy to don.

1.2.4. The buoyancy of the jacket is provided by twin chambers each fitted with an oral tube to ensure the full buoyancy can be achieved upon or after inflation.

1.2.5. One chamber of the lifejacket is inflated by a UM standard automatic operating head fitted with a 60 gr. CO_2 cylinder. A manual override system is provided for use when the lifejacket is worn in an aircraft or helicopter. The second chamber is fitted with an HR manual firing head fitted with a 60 gr. CO_2 cylinder. Each chamber is fitted with a 3.5 psi. pressure relief valve to prevent over inflation.

1.2.6. This lifejacket is fitted with an integral deck safety harness with a 2-hook safety line, a spray hood and a water activated light. The lifejacket has a YKK QBR Zip closure system.

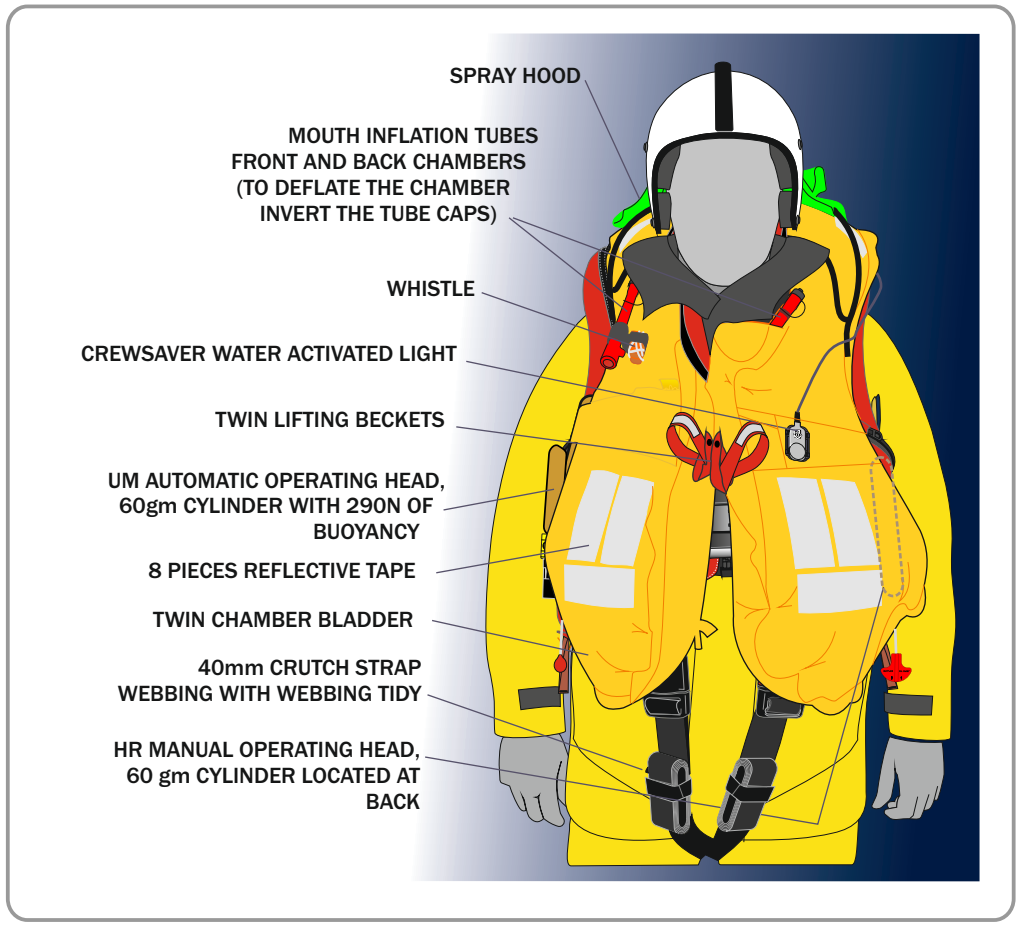
1.2.7 The outer cover is made from a hard wearing material.

1.2.8 This lifejacket has permanently fitted dual crutch straps and dual lifting beckets.

1.3.1 Data Sheet

Features:	**OFFSHORE 290N Lifejacket**
Chamber Buoyancy (each chamber):	290N
Buoyancy Category:	275N
Cover Colour	Red
MCA (UK) Approved	-
SOLAS Approved	-
CE Approved	X
Cylinder size	60g
Standard Automatic	X
Hammar Automatic	-
Manual Firing head	X
Manual Override	X
Oral inflation tubes	X
Pressure relief valves (3.5 psi)	X
Hard wearing cover	X
Whistle - fitted	X
Retro-reflective tape	X
Twin Lifting Becket - fitted	X
Light - fitted	X
Spray Hood - fitted	X
Dual Thigh straps - fitted	X
Integral Deck Safety Harness	X
Closure method	YKK QBR Zip
Alternative covers	-

1.4.1 General Features - ALB Offshore 290 Lifejacket

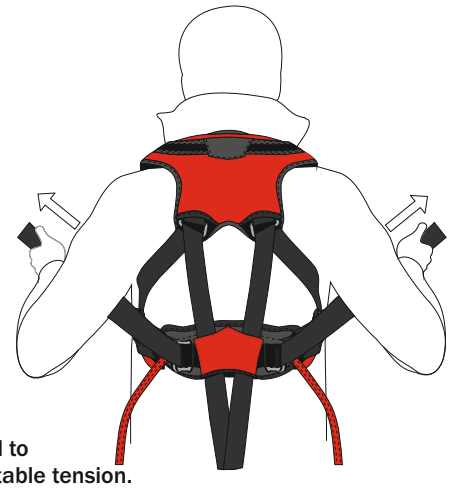


1.5.1 Donning Instructions - OFFSHORE ALB 290N

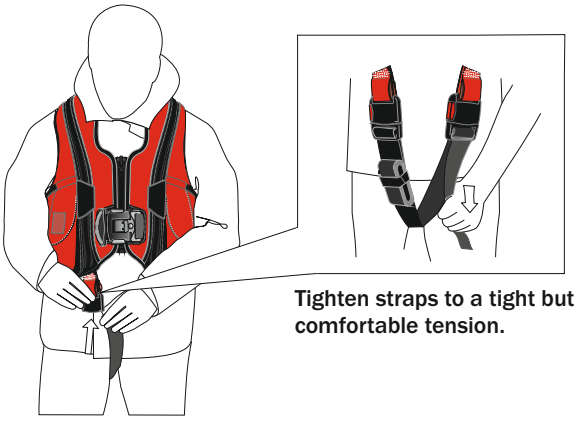
Don lifejacket like a waist coat

Close centre zip

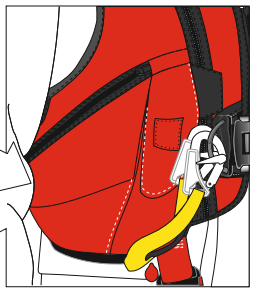
Fasten centre buckle.



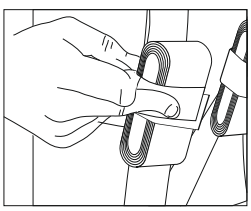
Pull straps forward to
a tight but comfortable tension.



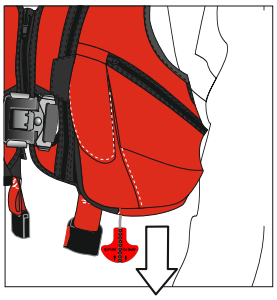
Tighten straps to a tight but
comfortable tension.



Fold excess waist webbing
into side openings.



Fold excess webbing into
Velcro webbing tidy.



Pull left Jerk to inflate lanyard
to inflate lifejacket manually.

Ensure crutch straps are fitted at all times

2.1 Service Stations

2.1.1 Service stations shall comply with the following as a minimum;
2.1.1.1 Servicing of Inflatable Lifejackets shall be carried out in a fully enclosed area only.
2.1.1.2 The area shall be well lit and protected from direct sunlight
2.1.1.3 The temperature and humidity shall be sufficiently controlled to ensure that the servicing of inflatable Lifejackets may be carried out successfully.
2.1.1.4 The area shall be efficiently ventilated but free from draught
2.1.1.5 Sufficient tools (including specialist tools) shall be available to ensure Lifejackets may be disassembled, tested and reassembled in accordance with this Manual. These shall include but not limited to:
2.1.1.5.1 Manometers and pressure gauges
2.1.1.5.2 Oil free and dry air supply
2.1.1.5.3 Scales for weighing Gas Cylinders
2.1.1.5.4 Crewsaver Service tool kit (See 2.6). This is recommended but similar calibrated devices may also be used.
2.1.1.6 Stock of materials and components to allow efficient servicing with readily available replacement parts to ensure a prompt service for the customer.
2.1.1.7 Only personnel trained and certified in accordance with Crewsaver requirements are approved to carry out Servicing and Maintenance. They must be holders of a valid Certificate issued by Crewsaver.
2.1.1.8 The service station shall be of an approved standard.
2.1.1.9 Procedures shall be introduced to ensure that service bulletins, Manuals and replacement parts are obtained from Crewsaver.
2.1.1.10 Subsequent to initial approval and thereafter the service station shall be subject to regular surveillance by Crewsaver.
2.1.1.11 The service station must comply and have met all QA criteria in the Crewsaver servicing protocol file.

2.2 On Receipt Inspection

2.2.1 On receipt of the Lifejacket(s), check the state of the packaging before opening and notify the owner and the company delivering the package of any defects or damage.
2.2.2 On opening the package, check the contents for their general condition and quantity.
2.2.3 Prepare Servicing Record Sheet.
2.2.4 Visually inspect the cover and inflation chamber for damage, abrasion, contamination etc. in accordance with this manual.
2.2.5 Note replacements required on the record sheet.
2.2.6 Unless obvious damage is evident, test the Lifejacket in accordance with Section 6. If it is considered that the damage found would cause the Lifejacket to fail the tests then corrective action shall be carried out prior to testing.
2.2.7 Damaged areas shall be marked using wax based crayon only. Marks shall be made with a small circle or
cross. Ballpoint, rollerball or other forms of ink shall not be used. If in doubt refer to Crewsaver for guidance.
2.2.8 Repairs to the outer cover and the webbing are not permitted.
2.2.9 Repairs to welded components including the inflation chamber are expressly forbidden.

2.3 General Care

2.3.1 The Lifejacket should be stowed in accordance with the manufacturer's instructions

2.3.1.1 Lifejackets should be stowed in a dry compartment. Avoid high humidity, such as a car boot.

2.3.1.2 Lifejackets should have stowage facilities which are provided with a method to encourage moisture removal.

2.3.1.3 Lifejackets should be stowed vertically, for example hung on hooks, in order that any trapped water or condensation can drain away naturally.

2.3.1.4 Lifejackets should be rinsed in fresh water and dried thoroughly after use.

WARNING Prior to sponging or washing remove automatic capsules from the firing mechanism. Allow to dry thoroughly afterwards.

2.3.2 Contaminants such as oil or diesel fuel may be sponged off immediately with clean water and allowed to dry naturally.

2.3.3 Mud can be removed with a stiff (not wire) brush when dry.

2.3.4 The outer cover may be hand washed in good quality mild detergent in cool water (40°C). Rinse well, drip dry naturally in air.

2.3.5 Sponge the inflation chamber with pure soap solution only. Rinse in clean water immediately, inflate and allow to dry naturally in air.

WARNING Do not use proprietary cleaning fluids, thinners, spirits or similar substances.

2.3.6 In cases of severe contamination the unit shall be deemed beyond economic repair and the customer advised to purchase a replacement lifejacket.

WARNING Make sure you know how to use and fit this Lifejacket before an emergency occurs.
Always try and inflate the Lifejacket in the water. If already inflated, cross arms over the chest before jumping.

2.3.7 It is advised that personnel are familiarised with the operation of all Lifejackets and lifesaving appliances.

2.4 Lifejacket Servicing Tools

Fig. 2.4 Table of Tools Required

Description	Type
Crewsaver Servicing Tool Kit	
A fine screw driver or tool suitable for removing gaskets	
Boning tool	
Roller	
Brushes	
Scissors or good quality trimming shears	
“Chinagraph” pencil	
Tailors chalk	
Fine point indelible pen	
1 off metal calibrated metre stick	
Scales to weigh gas cylinders	0-1000gram (+1/-1 grams)
Adaptor/tee piece for testing inflation chambers.	
Manometer	0-500Mbar
Timing Device	
Thermometer	0-40ºC
Clean and dry air supply	
1 off ball pein hammer	
450mm wide bag sealer (3mm element)	
Crewsaver Venturi Vacuum System	
Back pressure test unit	

Suitable large surface area for the work to be carried out

2.5 Lifejacket Service Record Sheet

2.5.1. An electronic copy of the sheet is available to aid reproduction (or copy next page).

2.5.2. Each lifejacket serviced should be recorded either individually or as a batch, showing the serial numbers and the work performed during the service.

2.5.3. The service record sheet should be signed and a copy given to the owner certifying that the lifejacket has been serviced.

2.5.4. All replacement parts should be noted - recording either the serial numbers of the component or the expiry date.

2.5.5 The record sheet shown on the next page is a recommended version. Similar record sheets, including the same information, may also be used.

Crewsaver®

CERTIFICATE NUMBER:

LIFEJACKET SERVICING SCHEDULE

W/O Number:

TYPE	
CUSTOMER	
VESSEL	
LAST SERVICED BY	DATE OF LAST SERVICE

SERIAL NUMBER/S:

CHAMBER INSPECTION	☑☒	COMMENTS
GENERAL CONDITION		
MATERIAL		
WELDS		
WEBBINGS		
RETRO TAPE		
WHISTLE		
ORAL TUBES		
RELIEF VALVES		
MANIFOLDS		
Schrader VALVES		
CYLINDERS		
LIGHT		
CYALUME POCKET		
BUDDY LINE		

COVER	☑☒	COMMENTS
MATERIAL		
VELCRO		
ZIP		
PLB POCKETS		

INFLATION MECHANISM	☑☒	COMMENTS
OPERATING MECHANISM		
CORD		
AUTOMATIC CAPSULE		
WASHERS		
RETAINING NUT		
RETAINING CLIP		
TOGGLE		

SPRAY HOOD	☑☒	COMMENTS
FABRIC		
ATTACHMENT		
VELCRO		

WEBBINGS	☑☒	COMMENTS
WAIST BELT / HARNESS		
BACK STRAP		
LIFTING BECKET		
CROTCH STRAP		
BUCKLES		
STITCHING		

PRESSURE TEST RESULTS

TIME		FRONT CHAMBER	REAR CHAMBER
ON			
OFF			
TEMP.		ON	OFF

RELIEF VALVE TEST RESULTS	FRONT CHAMBER	REAR CHAMBER
OPEN		
CLOSE		

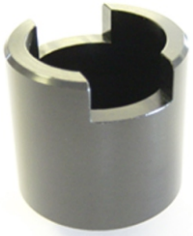
REPAIRED ITEMS (COMMENTS)

SERVICED BY:		DATE:	

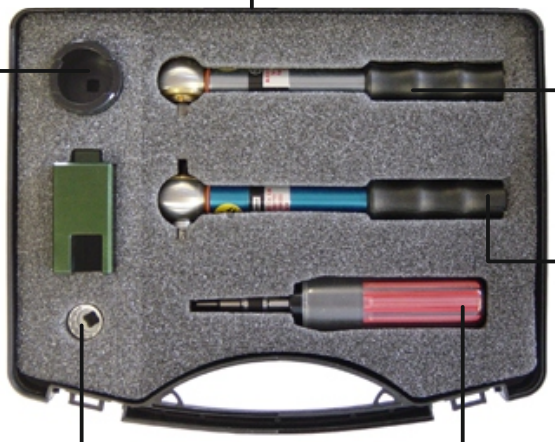
2.6 Lifejacket Servicing Tool Kit

Cylinder Torque Strap

Calibrated Socket Driver
(Tighten Cylinder)



UML Mk5i Auto Socket



Calibrated Socket Driver
(Remove & Replace Locking
Nuts For UML & HR)

Turned Socket

Manometer

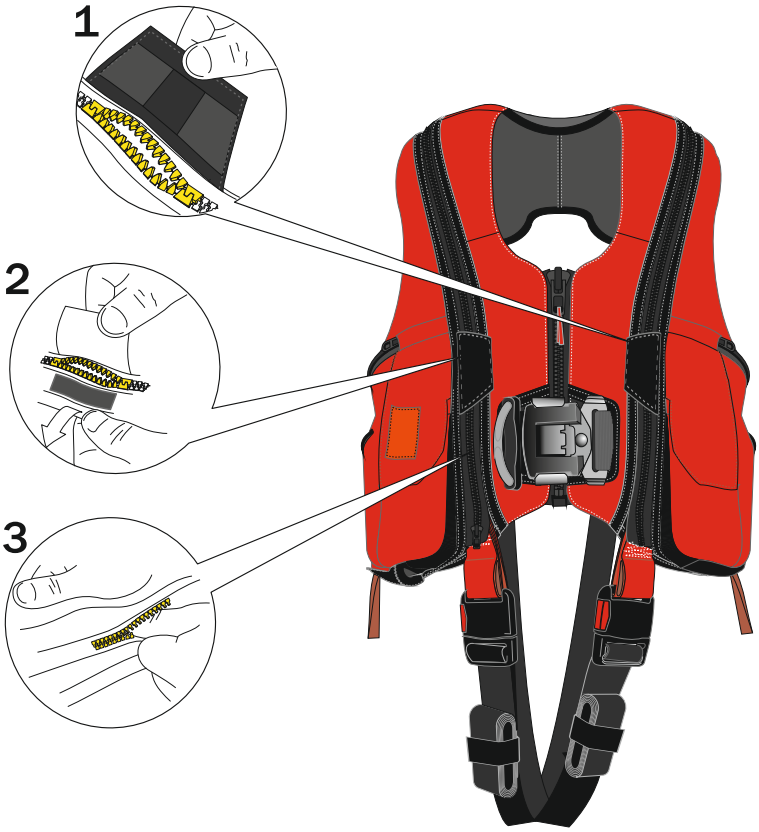
Inflation Adaptor

Valve Extraction Tool

Pressure Measuring
Adaptor

Calibrated Torque Driver
(Schraeder Valve)

3.1 Unpacking the OFFSHORE ALB 290N



OPENING THE LIFEJACKET COVER

1. Open the velcro tab.

2. Pull apart the zip, opening the zip via the 3 quick burst elements, holding the cover either side.

3. Once the zip has opened insert your finger and slide it around the Lifejacket.

Undo the zip all the way around the outside of the lifejacket. The Lifejacket cover should now be open and the inflation chamber visible.

Fully separate the zip. Both sides of the zip should be apart, with the zip slider free to move back around the lifejacket to the start.

WARNING: All defects should be noted onto the service record sheet.

3.1.2 Following unpacking refer to:

a.) Manual Operation: Fig 3.2 - Halkey Roberts operating head removal.

b.) Automatic Operation: Fig 3.3 - United Moulders Mk5i Automatic operating head.

3.1.2.1 Automatic Only. Unscrew the Automatic Capsule if fitted from the operating mechanism. Place to one side for testing and reassembly later. See Section 6 for details.

3.1.2.2 Carefully remove the inflation cylinder by unscrewing it from the operating mechanism. Retain for further Inspection. Refer to Section 5.

3.1.2.3 Remove Operating Mechanisms (and upper and lower manifold gaskets on Halkey Roberts operating heads only) by unscrewing the retaining nut on the top of the inflation mechanism. Retain for further Inspection. Refer to Section 5.

3.1.3 Remove light and battery. Place to one side for further inspection. Refer to section 5.

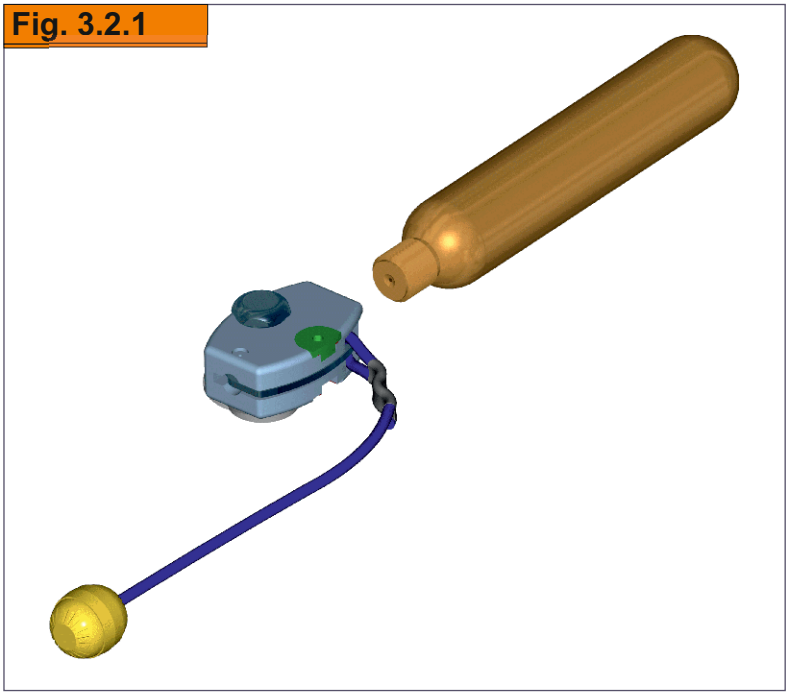
3.1.4 Remove safety line. Place to one side for further inspection. Refer to Section 5.

3.1.5 For Cleaning. Refer to Section 4.

3.1.6 Carry out visual inspection. Refer to section 5.

Fig 3.2 Halkey Roberts Operating Head

Fig. 3.2.1

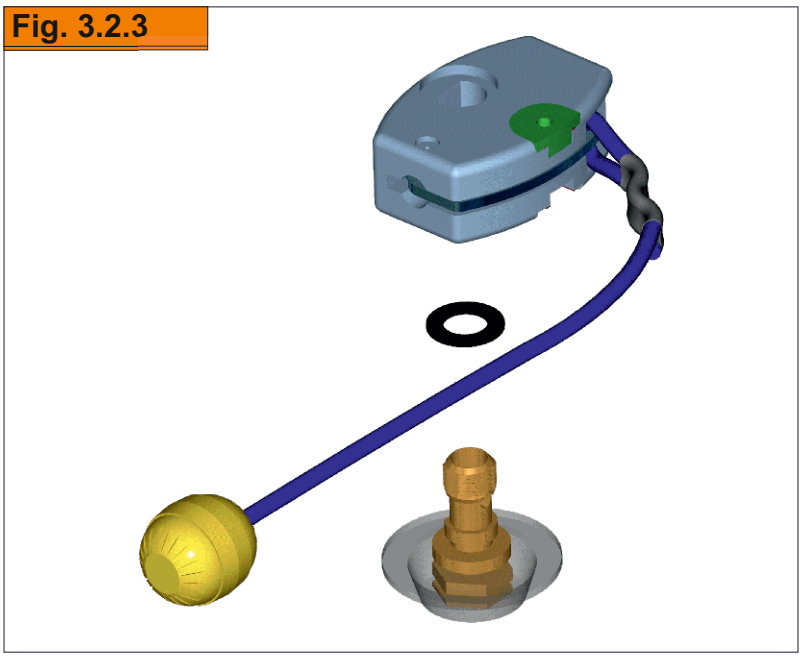


Unscrew the 60 gram cylinder from the manual firing head. Check to see if the cylinder has been used.
NOTE: This should be performed by check weighing. If under the min. weight as displayed on the cylinder body, discard in a safe manner.

Fig. 3.2.2

Unscrew the valve retaining nut from the top of the firing head, using a 9/16" socket or spanner. Check for corrosion, discard if corroded. Remove the top sealing gasket/ washer and discard. This must be replaced with a new part upon reassembly.

Fig. 3.2.3

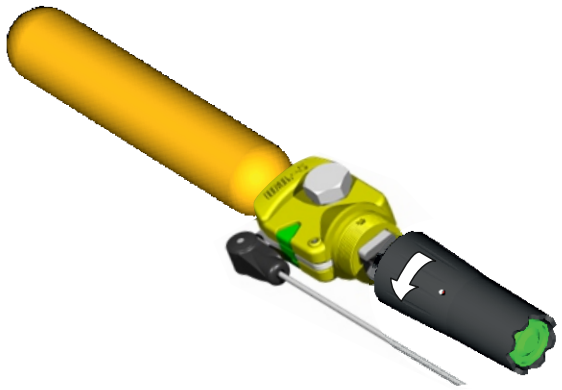


Remove the operating head from the manifold which is welded to the inflator fabric. Remove the bottom gasket / sealing washer and discard. This must be replaced with a new part upon reassembly.

Please Note: The operating head may not match the images above, but the processes are always the same.

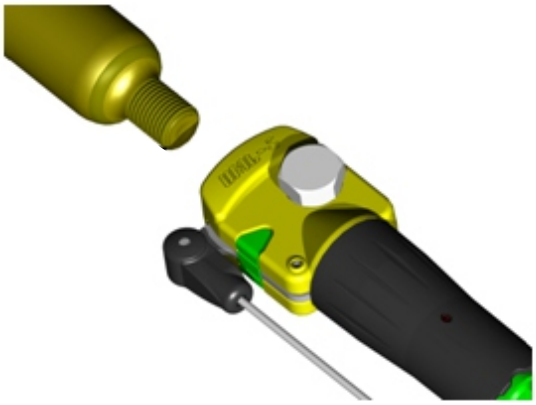
Fig 3.3 United Moulders Mk5i Operating Head

Fig. 3.3.1



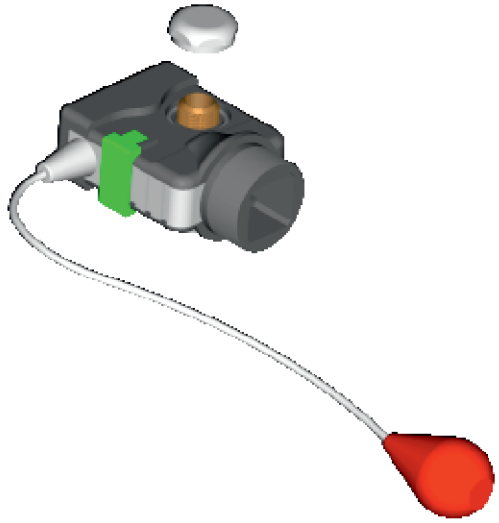
Unscrew the Automatic firing capsule from the end of the operating head. This should only be done after the test detailed in Section 6 has been performed in order to test the old unit, or if the operating head has already been fired. Discard and replace with a new automatic firing capsule upon reassembly. The Capsule must be replaced if it expires before the date of the next annual service.

Fig. 3.3.2



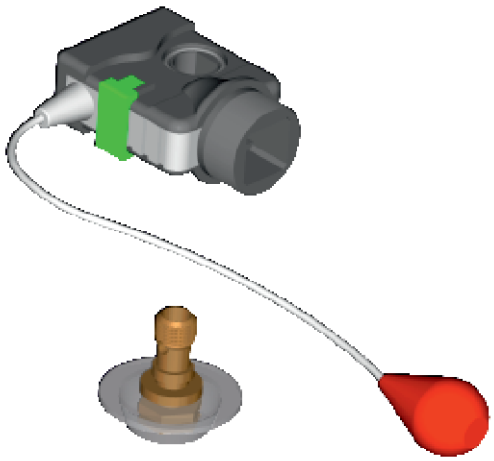
Unscrew the 60 gram cylinder from the automatic operating head. Once the cylinder has been removed inspect the cylinder O-Ring seal. Check the seal is in place and that it is in a good condition. Take the cylinder and check to see if the cylinder has been used. This should be performed by check weighing. If under the minimum weight as displayed on the cylinder body, discard in a safe manner.

Fig. 3.3.3



Unscrew the retaining nut from the top of the operating head. Check for corrosion and discard if corroded. Inspect the top sealing O-ring. This must be replaced with a new part if damaged.

Fig. 3.3.4



Remove the operating head from the manifold which is welded to the inflation chamber fabric. Inspect the bottom sealing O-ring. This must be replaced with a new part if damaged.

Please note: The operating head may not match the images above but the processes are always the same.

4.1 Cleaning Lifejackets

4.1.1 The current standard cover of the ALB Offshore 290N is made from a polyester fabric with a polyurethane coating that can be cleaned with care. In the event that contamination is such that the materials are inherently damaged refer to section 7.

4.1.2 For all types of cover, mud can be removed with clean water and the zip can be cleaned with a stiff (not wire) brush when dry.

4.1.2.1 Contaminants such as oil or diesel fuel may be sponged off immediately with clean water and allowed to dry naturally.

4.1.2.2 Mud can be removed with a stiff (not wire) brush when dry.

4.1.2.3 Covers may be hand washed in good quality mild detergent in cool water (40 °C). Rinse well, air drip dry.

4.1.3 Sponge the inflation chamber with PURE SOAP SOLUTION ONLY. Rinse in clean water immediately, inflate and air dry.

WARNING: Do not use proprietary cleaning fluids, thinners, spirits or similar substances.

5.1 Outer Cover Inspection

5.1.1 Visually inspect the cover material for wear, abrasion, pulled threads, contamination, cuts and holes.

5.1.2 If necessary the cover may be washed. Refer to Section 4.

5.1.3 Repairs to the outer cover are not permitted.

5.1.4 Carefully examine the zips and the slider for wear, broken teeth or slider and worn or fraying tape.

5.1.5 If it is considered that the cover is so badly damaged that the lifejacket is no longer serviceable, the customer shall be advised and offered a replacement lifejacket.

NOTE: Due to the construction of this lifejacket no individual cover is available for replacement, therefore the lifejacket as a whole must be replaced.

5.2 Inflation Chamber Inspection

5.2.1 Visually inspect the inflation chamber material for wear, pulled threads, contamination or signs of mistreatment .

5.2.2 Visually inspect all welds.

5.2.3 Visually inspect all webbings in accordance with Section 5.7

5.2.4 Visually inspect the whistle and its attachment to the lifejacket for mistreatment, defects, and fraying of the cord and its attachment.

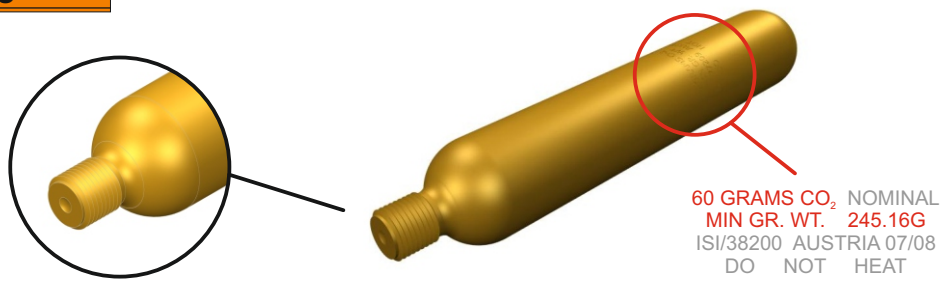
5.2.5 Test Lifejacket in accordance with Section 6.

5.3 Gas Cylinders

5.3.1 Visually examine:
5.3.1.1. For corrosion, in accordance with procedure detailed overleaf. (All cylinders corroded with red rust or with visible pitting must be replaced).
5.3.1.2. Pierced or damaged piercing disc.
5.3.1.3. That the cylinder has the correct gas charge - 60 grams CO_2

5.3.2 Check Min Weight of Cylinder again

Fig. 5.3



Remedial Action: If any of the above conditions are found to be incorrect the cylinder shall be replaced. See Section 9.

5.3 Gas Cylinders (cont.)

PROCEDURE FOR THE INSPECTION AND SERVICING OF MANUAL HEADS AND CYLINDERS WITH LEVELS OF CORROSION

5.3.3 INITIAL INSPECTION

Unscrew the cylinder from the automatic or manual head. If corrosion is present it will be seen as one of the following:

a) A white/grey powdery deposit on the cylinder and in the thread recess of the head.

b) A red rusty surface to the cylinder.

5.3.4 PROCEDURE FOR WHITE/GREY POWDERY DEPOSIT

Cylinder showing white rust on thread

5.3.4.1 All CO_2 cylinders showing signs of white rust and no pitting are considered fit for purpose. If the white/grey deposit is seen then both the cylinder and head can be reused after cleaning. Brush out the threads with a stiff bristled nylon brush (M.E.C. Reference Br1)

5.3.4.2 Blow out the threaded recess of the head and check that there are no significant particles or bristles from the brush across the sealing washer in the base of the recess. Check that the sealing washer is not damaged, either from cleaning or use, and will provide a good seal. Replace if damaged.

5.3.4.3 Check that the head operates freely.

5.3.4.4 If any white/grey powdery deposit is present on the body of the cylinder within the areas shown in Section 4 then it should be brushed or wiped off.

5.3.4.5 Re-assemble the cylinder to the manual or auto head.

5.3.5 PROCEDURE FOR RED RUSTY SURFACE

Cylinder showing red rust

5.3.5.1 If a red rusty surface is seen on the cylinder this means that the protective zinc coating has been penetrated and the steel is corroding.

5.3 Gas Cylinders (cont.)

5.3.6. PROCEDURE FOR ZINC/SUPER ZINC COATING

5.3.6.1 All CO_2 cylinders showing signs of wear and loss of Zinc/Super Zinc coating larger than $1cm^2$ are considered unfit for purpose.

Acceptable wear - less than $1cm^2$

Not acceptable wear - Reject. DO NOT USE

Acceptable wear - less than $1cm^2$

Not acceptable wear - Reject. DO NOT USE

5.4 Oral and Relief Valves

5.4.1 Visually inspect for damage.

5.4.2 Test in accordance with Section 6.

Remedial Action: These items are not repairable. Refer to Section 9 for replacement part.

5.5 Inflation System

5.5.1 Visually inspect the Operation of the Manual or Automatic Mechanism for:

5.5.1.1 Operation of the Manual override lever. This shall move easily and freely.

5.5.1.2 Operation of the firing pin cam action. Similarly this shall be a smooth action when the lever is operated.

5.5.1.3 Firing Pin centre discharge hole clear.

5.5.1.4 Activation cord for frays and damage.

5.5.1.5 Moulded body for cracks and damage. Special attention to be given to the areas around the operating lever/body connection pin.

5.5.1.6 Check the Automatic plunger (Automatic Head Only) at the base of the unit when depressed moves the firing pin and that the plunger and the firing pin return to their original positions when released.

Remedial Action: In the event that the Operating Mechanism fails any of the above inspection procedures, the complete unit shall be replaced. No Repairs are allowed. Refer to Section 9 for the part number of the relevant replacement part.

5.5.2 Visually inspect the Operation of the Automatic Capsule on the automatic Operating Head:

5.5.2.1 Check plug is in place at the base of the capsule.

5.5.2.2 New Capsules are to be fitted where the expiry date is before the next annual service of the lifejacket. E.g. capsules marked ‘Replace by 2010’ expire at the end of 2010.

5.5.2.2.1 If the capsule is to be replaced – Re-fit the old capsule and carry out operational tests. Refer to section 6.

5.5.3 Visually inspect the Manual Override Cap and ensure that the lanyard is attached..

Remedial Action: No repairs are allowed. In the case of damage being found, return the Lifejacket to Crewsaver.

5.6 Safety Line

5.6.1 Examine the Safety Line for any damage to the webbing or the stitching. If necessary remove any fluff from the webbing. Check that there is no rust on the hooks. Check the operation of the self locking hooks and spray with WD40 if necessary. Check that both of the hooks are facing the same way.

Remedial Action: No repairs are allowed. In the case of damage being found, return the Lifejacket to Crewsaver.

5.7 Webbings

5.7.1 Visually inspect for damage:
5.7.1.1. Fraying
5.7.1.2. Pulled Threads
5.7.1.3. Broken Stitches

Remedial Action: No repairs are allowed. In the case of damage being found, return the Lifejacket to Crewsaver.

5.8 Buckles

5.8.1 Check that the single point release buckle latches and unlatches correctly. Check that the two screws are flush with the surface and do not affect the latching operation of the buckle. DO NOT test the tightness of the screws using a conventional screwdriver as this may cause the thread to strip in the plastic saddle. If the tightness has to be checked it must be done with a torque screwdriver set to 15 lbf/in.

Remedial Action: No repairs are allowed. In the case of damage being found, return the Lifejacket to Crewsaver.

5.9 Labelling/Markings

5.9.1. Check all Markings and Labelling are clear and legible.

Remedial Action: No repairs are allowed. In the case of damage being found, return the Lifejacket to Crewsaver.

5.10 Lights

5.10.1 This lifejacket is fitted with the Crewsaver CSL water activated light.

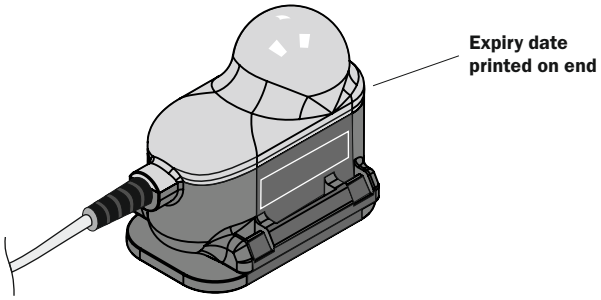
5.10.1.1 Check the expiry date of the light. Upon expiry the light should be removed by prising off the plastic security clip. Take care not to damage the jacket. A new light should then be fitted.

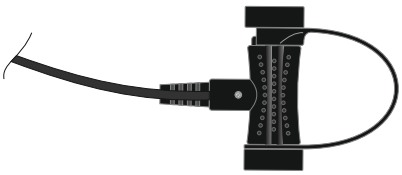
5.10.1.2 Inspect the light for any signs of damage. If there are chips or cracks the light must be replaced.

5.10.1.3 Check that the light is securely attached to the lifejacket.

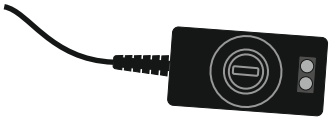
5.10.1.4 Ensure that the water activated switch is in the Auto-on position as shown below.

5.10.2 To test this unit to ensure the light is working correctly, immerse the water-activated switch in water. The light should flash. Remove the light from the water and dry it. The light should stop flashing. If the light does not flash when immersed in water the unit has expired and must be replaced.





Water activated switch in Auto-on position (Earlier models)



Water activated switch in Auto-on position (Later models)

5.10.3 These lights are not repairable; if the light fails inspection it must be replaced.

6.1 Inflation Chamber

6.1.1. Air Holding Test. (Both chambers must be tested independently)

6.1.1.1 Connect through a suitable Tee piece and adaptor, the oral tube with the oral valve in the open position, to a graduated water manometer (or a similar digital device for measuring back pressure).

6.1.1.2 Slowly inflate the lifejacket from a regulated supply until manometer reads 200mbar

Warning: Regulated supply pressure must not exceed 20psi.

6.1.1.3 Close off the air supply and leave for 10 minutes to ensure pressure is stable.

6.1.1.4 Check and record the pressure and temperature reading on the Service Record Sheet.

6.1.1.5 Leave for 30 minutes.

6.1.1.6 Check and record the pressure and temperature reading on the Service Record Sheet. The maximum difference in the two pressure readings (pressure drop) allowed is 10%. The temperature differential shall be within plus or minus 3 degrees of the original reading. For each degree Centigrade rise in temperature subtract 2.5 mbar. For each degree Centigrade drop in temperature add 2.5 mbar to the readings to obtain the actual pressure variation. Should the temperature variation be outside 3 degrees either way then the test shall be repeated.

PSI	in/H2O	in/Hg	mm/H2O	mm/Hg	kg/cm2	bar	mbar	Pa	kPa
1.0	27.71	2.036	703.1	51.75	0.0703	0.0689	68.95	6895	6.895
1.1	30.48	2.240	773.4	56.93	0.0773	0.0758	75.85	7585	7.585
1.2	33.25	2.443	843.7	62.10	0.0844	0.0827	82.74	8274	8.274
1.3	36.02	2.647	914.0	67.28	0.0914	0.0896	89.64	8964	8.964
1.4	38.79	2.850	984.3	72.45	0.0984	0.0965	96.53	9653	9.653
1.5	41.57	3.054	1054.7	77.63	0.1055	0.1034	103.43	10343	10.34
1.6	44.34	3.258	1125.0	82.80	0.1125	0.1102	110.32	11032	11.03
1.7	47.11	3.461	1195.3	87.98	0.1195	0.1171	117.22	11722	11.72
1.8	49.88	3.665	1265.6	93.15	0.1265	0.1240	124.11	12411	12.41
1.9	52.65	3.868	1335.9	98.33	0.1336	0.1309	131.01	13101	13.10
2.0	55.42	4.072	1406.2	103.50	0.1406	0.1378	137.90	13790	13.79
2.1	58.19	4.276	1476.5	108.68	0.1476	0.1447	144.80	14480	14.48
2.2	60.96	4.479	1546.8	113.85	0.1547	0.1516	151.69	15169	15.17
2.3	63.73	4.683	1617.1	119.03	0.1617	0.1585	158.59	15859	15.86
2.4	66.50	4.886	1687.4	124.20	0.1687	0.1654	165.48	16548	16.55
2.5	69.28	5.090	1757.8	129.38	0.1758	0.1723	172.38	17238	17.24
2.6	72.05	5.294	1828.1	134.55	0.1828	0.1791	179.27	17927	17.93
2.7	74.82	5.497	1898.4	139.73	0.1898	0.1860	186.17	18617	18.62
2.8	77.59	5.701	1968.7	144.90	0.1968	0.1929	193.06	19306	19.31
2.9	80.36	5.904	2039.0	150.08	0.2039	0.1998	199.96	19996	20.00
3.0	83.13	6.108	2109.3	155.25	0.2109	0.2067	206.85	20685	20.69
3.1	85.90	6.312	2179.6	160.43	0.2179	0.2136	213.75	21375	21.37
3.2	88.67	6.515	2249.9	165.60	0.2250	0.2205	220.64	22064	22.06
3.3	91.44	6.719	2320.2	170.78	0.2320	0.2274	227.54	22754	22.75
3.4	94.21	6.922	2390.5	175.95	0.2390	0.2343	234.43	23443	23.44
3.5	96.99	7.126	2460.9	181.13	0.2461	0.2412	241.33	24133	24.13
3.6	99.76	7.330	2531.2	186.30	0.2531	0.2480	248.22	24822	24.82
3.7	102.53	7.533	2601.5	191.48	0.2601	0.2549	255.12	25512	25.51
3.8	105.30	7.737	2671.8	196.65	0.2671	0.2618	262.01	26201	26.20
3.9	108.07	7.940	2742.1	201.83	0.2742	0.2687	268.91	26891	26.89
4.0	110.84	8.144	2812.4	207.00	0.2812	0.2756	275.80	27580	27.58
4.1	113.61	8.348	2882.7	212.18	0.2882	0.2825	282.70	28270	28.27
4.2	116.38	8.551	2953.0	217.35	0.2953	0.2894	289.59	28959	28.96
4.3	119.15	8.755	3023.3	222.53	0.3023	0.2963	296.49	29649	29.65
4.4	121.92	8.958	3093.6	227.70	0.3093	0.3032	303.38	30338	30.34
4.5	124.70	9.162	3164.0	232.88	0.3164	0.3101	310.28	31028	31.03
4.6	127.47	9.366	3234.3	238.05	0.3234	0.3169	317.17	31717	31.72
4.7	130.24	9.569	3304.6	243.23	0.3304	0.3238	324.07	32407	32.41
4.8	133.01	9.773	3374.9	248.40	0.3374	0.3307	330.96	33096	33.10
4.9	135.78	9.976	3445.2	253.58	0.3445	0.3376	337.86	33786	33.79
5.0	138.55	10.180	3515.5	258.75	0.3515	0.3445	344.75	34475	34.48
5.1	141.32	10.384	3585.8	263.93	0.3585	0.3514	351.65	35165	35.16
5.2	144.09	10.587	3656.1	269.10	0.3656	0.3583	358.54	35854	35.85
5.3	146.86	10.791	3726.4	274.28	0.3726	0.3652	365.44	36544	36.54
5.4	149.63	10.994	3796.7	279.45	0.3796	0.3721	372.33	37233	37.23
5.5	152.41	11.198	3867.1	284.63	0.3867	0.3790	379.23	37923	37.92
5.6	155.18	11.402	3937.4	289.80	0.3937	0.3858	386.12	38612	38.61
5.7	157.95	11.605	4007.7	294.98	0.4007	0.3927	393.02	39302	39.30
5.8	160.72	11.809	4078.0	300.15	0.4077	0.3996	399.91	39991	39.99
5.9	163.49	12.012	4148.3	305.33	0.4148	0.4065	406.81	40681	40.68
6.0	166.26	12.216	4218.6	310.50	0.4218	0.4134	413.70	41370	41.37

6.1.1.7. If Lifejacket fails the Air holding test inspect as follows.

6.1.1.7.1 With the lifejacket inflated carefully brush or spray the surface with a weak solution of soap and water or alternatively lower the lifejacket into a tank of water to observe for bubbles.

6.1.1.7.2 Identify and mark the source of leakage. Wash off in clean water and allow to dry naturally in air.

6.1.1.7.2.1 Special Attention to be given to:

a) Manifold Schrader Core
b) Oral Tube/ Top-up Valve

6.1.2 Subsequent to the air holding test in para 6.1.1 slowly inflate the lifejacket until the relief valve vents (Opens). Record the pressure reading on the manometer.

6.1.2.1. Allow the pressure to relieve through the valve until the relief valve reseats (Closes).Record the pressure reading. Note: Relief valves should operate at 3.5psi.Relief valves that do not operate within the 3.5 - 4.0 psi range must be replaced.

6.1.2.2. The Opening (vent) and closing (reseat) readings shall be within 15% of the original reading.Note: Valves that fail to reseat within the 15% tolerance must be replaced.

6.1.3 If the test is satisfactory deflate the Lifejacket in preparation for re-assembly. Refer to Section 8.

6.1.3.1. Insert the inverted oral valve dust cap into the top of the oral valve and expel the air. Lifejackets may also be deflated using the Crewsaver Venturi Vacuum System. For the part number, refer to Section 9.

6.1.4 Subsequent to remedial action being taken (see Section 7), retest the lifejacket in accordance with Section 6.

6.2 Valves

6.2.1. Oral Valves.

6.2.1.1. When removing the test adapter from each oral valve check that the oral valve reseats. If in doubt this may be checked by placing the valve underwater.

6.2.2. Relief Valves.

6.2.2.1. Relief Valves should be tested as detailed in 6.1.2. If defective the relief valve must be changed Refer to Section 9 for replacement part.

6.2.3 Schrader Valves.

6.2.3.1 Should a leak be found in the Schrader valve the faulty core must be removed and a new valve inserted using the Torque Screwdriver from the tool kit.

6.3 Inflation Mechanisms

6.3.1 Operational Test for Halkey Roberts Manual Operation.

6.3.1.1 Remove the operating mechanism from the lifejacket. With the cylinder also removed, pull the lever on the side of the operating head, and check that the firing pin is visibly moving inside the open end.

6.3.1.2 If the lever does not move, or the firing pin is not clearly moving, the operating head must be replaced. Refer to Section 9 for part number.

6.3.2 Operational Test for United Moulders Automatic Operating Heads (to be performed when capsules have expired).

6.3.2.1 Remove the operating mechanism from the lifejacket and remove the cylinder.

6.3.2.2 Assemble the expired capsule onto the body of the operating mechanism.

6.3.2.3 Place the complete unit into water and check that the unit operates within 5 seconds.

6.3.2.4 If the mechanism fails to pass this test replace the complete unit. Refer to Section 9 for part Number of the replacement part.

NOTE: all failures of this test must be reported to Crewsaver. Crewsaver may require the failed units to be returned, please do not discard.

6.4 Retro Reflective Tape

6.4.1 If the retro reflective tape shows any signs of degradation the following tests shall be carried out in accordance with Marine Guidance Note MGN 105 (M+F) Issued by the UK Marine and Coast guard Agency March 1999.

6.4.1.1 Place a new piece of the same retro-reflective material to, and on the same plane as, a representative piece of material fitted to the appliance.

6.4.1.2 Pour water over both pieces of material.

6.4.1.3 Using a powerful torch or "Aldis" lamp held at eye level, compare the performance of the two pieces of material from a distance of 10 Metres.

6.4.1.4 If a noticeable deterioration in performance is observed then the retro-reflective material on the appliance should be replaced.

6.4.1.5 Dry off the lifejacket before repacking.

7.1 Outer Cover

7.1.1 No repairs are permitted to the outer cover.

7.2 Inflation Chamber

7.2.1 No repairs are permitted to the inflator fabric or its assembly, due to the construction of this lifejacket.

7.2.2 Components attached to the inflator may be repaired in line with the limits defined below.

7.3 Gas Cylinders

7.3.1 No repairs permitted. For the Part No. of the replacement part refer to Section 9
7.3.2 Please ensure cylinders are disposed of in accordance with local regulations.
Treat empty cylinders as steel for recycling purposes.

7.4 Valves

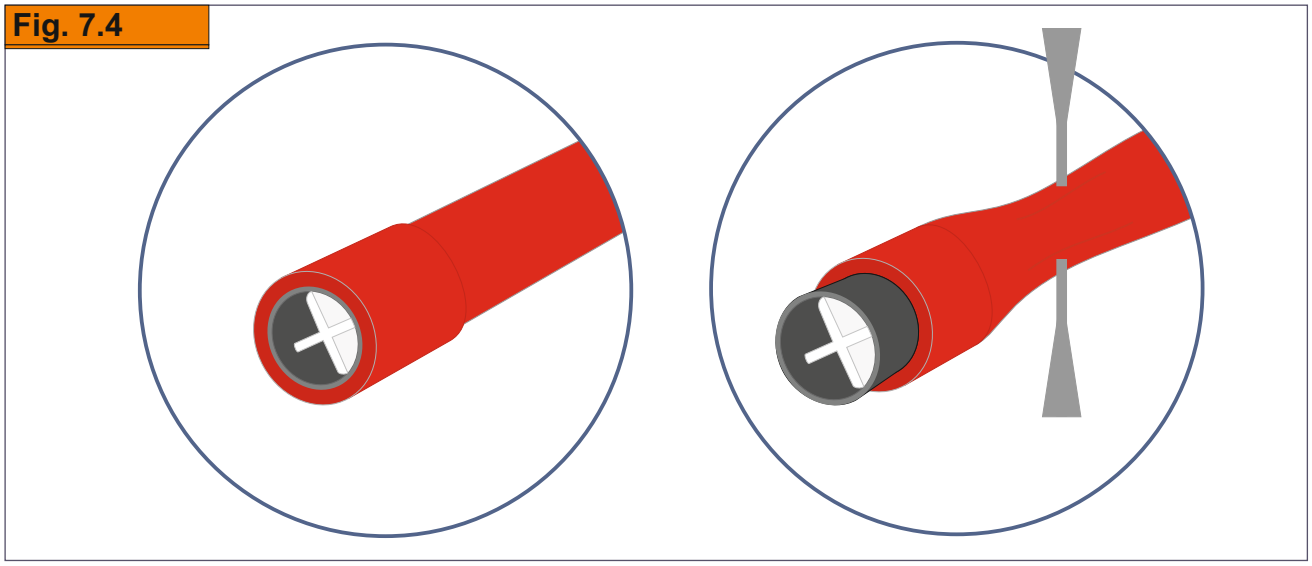
7.4.1 No repairs permitted. For the Part No. of the replacement parts refer to Section 9

7.4.2 Replacement of the Oral valve may be achieved by.

7.4.2.1 Carefully removing the defective unit by applying force, with a blunt instrument, behind the oral valve Squeezing the tube and gently pushing the valve out.

7.4.2.2 Push the replacement valve into the oral tube.

Fig. 7.4



7.5 Inflation System

7.5.1 A Schrader core is located inside the Valve Stem.

7.5.1.1 Remove and replace using the calibrated torque driver for Schrader valves set to 0.32 - 0.36 Nm. Refer to Section 9 for the Part No. of the replacement part.

WARNING: Only fit replacement Schrader valves obtained from Crewsaver.

7.5.2 Operating Mechanism.

7.5.2.1 No repairs permissible. Replace the complete unit.
Refer to Section 9 for the Part No. of the replacement part.

7.6 Webbings

7.6.1 No repairs are permitted to the webbing on the lifejacket. Lifejackets with damaged webbing (including crutch straps) should be returned to Crewsaver.

7.7 Buckles

7.7.1. These components are not repairable or replaceable. Lifejackets with damaged buckles should be returned to Crewsaver.

8.1 Assembly

8.1.1 Ensure the whistle is positioned and tied in correctly.

8.1.2 Expel the air from the chamber by inverting the dust cap on the oral tube. Lifejackets may also be deflated using the Crewsaver Venturi Vacuum System. For the part number, refer to Section 9.

8.1.3 Assemble the Operating Mechanism to the inflator.

8.1.3.1 For Halkey Roberts Manual Operating Mechanisms. See Fig 8.2

8.1.3.1.1 A new firing retaining pin/ clip, upper and lower manifold gaskets must be fitted. Refer to Section 9 for Part Numbers.

8.1.3.1.2 Fit new lower gasket.

8.1.3.1.3 Locate operating head onto manifold.

8.1.3.1.4 Fit new top gasket.

8.1.3.1.5 Tighten the retaining nut onto the body using the Calibrated torque driver provided in the Crewsaver servicing tools. Note: Retaining nut must be tightened to between 2.5 and 2.7 Nm.

8.1.3.1.6 Firmly screw the cylinder adaptor by hand into the head

8.1.3.1.7 Connect the cylinder adaptor to the pressure test unit

8.1.3.1.8 Pressurise the head to between 25 and 30 psi and release the control to its vertical position.

8.1.3.1.9 There may be a slight decrease in pressure over the first 2 seconds as the unit stabilises. Leave for 10 seconds and check for any further decrease in pressure shown on the gauge

8.1.3.1.10 Release the pressure by turning the control to deflate.

8.1.3.1.11 If there had been any decrease in pressure remove the cylinder adaptor, remove the operating head and check the following.

a. Thick and thin washer either side of the head.
b. Damage to the D post seating.
c. Cross thread chrome nut
d. The cylinder seating washer.
e. The schrader or pang valve in the ‘D’ post.
f. The operating head

8.1.3.1.12 Fit the gas cylinder to the firing mechanism by hand then check using the torque wrench (4Nm) and head adaptor from the tool kit. The operating head is gripped in one hand and the cylinder tightened using the torque wrench with the cylinder tightening tool held in the other hand.

Warning: Care must be taken not to ‘cross thread’ the connection.

8.1.3.2 For United Moulders Mk5i Automatic Operating Mechanisms. See Fig 8.3

8.1.3.2.1 A new retaining clip must be fitted. Refer to Section 9 for replacement parts.

8.1.3.2.2 Fit the new automatic firing capsule to the operating head, screw hand tight.

8.1.3.2.3 Locate Operating head onto the Manifold.

8.1.3.2.4 Tighten the retaining nut onto the body using the Calibrated torque driver provided in the Crewsaver servicing tools. Note: Retaining nut must be tightened to between 2.5 and 2.7 Nm.

8.1.3.2.5 Firmly screw the cylinder adaptor by hand into the head

8.1.3.1.6 Connect the cylinder adaptor to the pressure test unit

8.1.3.1.6 Pressurise the head to between 25 and 30 psi and release the control to its vertical position.

8.1.3.1.7 There may be a slight decrease in pressure over the first 2 seconds as the unit stabilises. Leave for 10 seconds and check for any further decrease in pressure shown on the gauge

8.1.3.1.8 Release the pressure by turning the control to deflate.

8.1.3.1.9 If there had been any decrease in pressure remove the cylinder adaptor, remove the operating head and check the following.

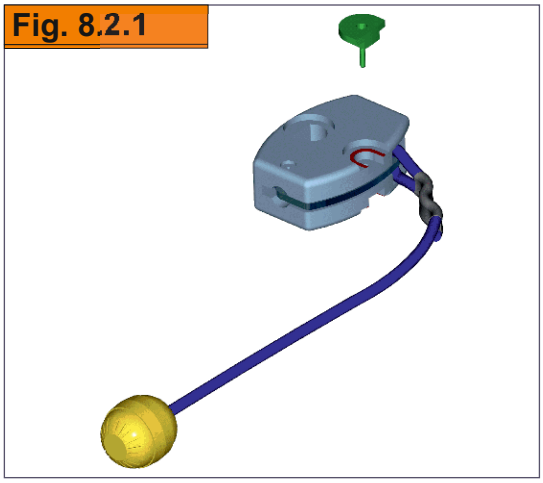
a. Thick and thin washer either side of the head.
b. Damage to the D post seating.
c. Cross thread chrome nut
d. The cylinder seating washer.
e. The schrader or pang valve in the ‘D’ post.
f. The operating head

Warning: Care must be taken not to ‘cross thread’ the connection.

8.1.3.2.10 Fit the gas cylinder to the firing mechanism by hand then check using the torque wrench and head adaptor from the tool kit (4Nm). The operating head is gripped in one hand and the cylinder tightened using the torque wrench with the cylinder tightening tool held in the other hand.

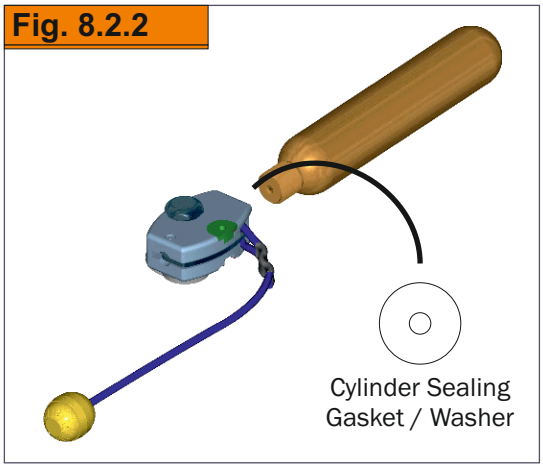
Fig 8.2 Halkey Roberts Operating Head

Fig. 8.2.1



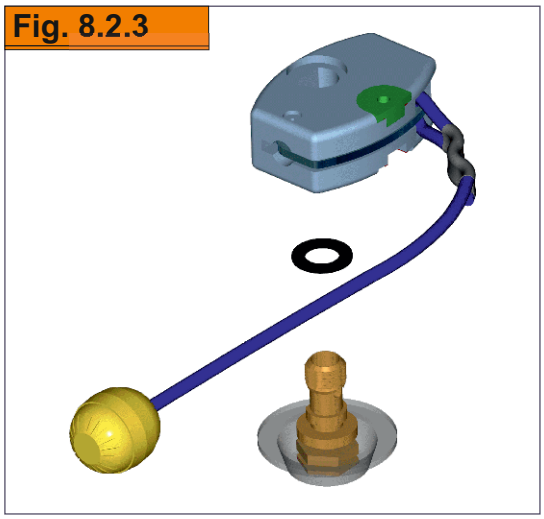
Following the inspection and testing procedures for Halkey Roberts Manual operating heads as detailed in Section 5 and 6. Fit the retaining clip or pin. Both the green retaining u-shaped clip and the green retaining pin, perform the same job, either may be fitted. The clip is fitted by pressing it over the firing arm and in to the recess either side in the centre of the operating head. The clip will click into place, thereby preventing the arm from moving. The pin is fitted by pushing down through the hole in the middle of the recess, and through the hole in the firing arm. The pin must be pushed in from the side that will be facing upwards, when the operating head is fitted on to the stole.

Fig. 8.2.2



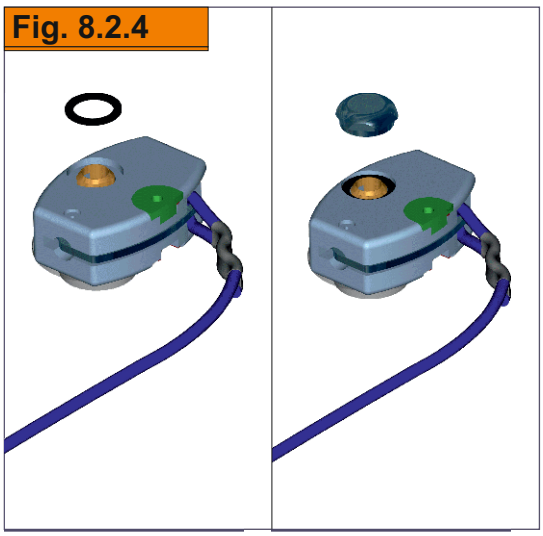
Check that the cylinder sealing gasket in the end of the operating head has been correctly fitted, or replaced if necessary. Ensure that the cylinder has been check weighed before fitting to the lifejacket. Fit the gas cylinder to the firing mechanism using the torque wrench (4Nm) and head adaptor from the tool kit. The cylinder is gripped in one hand and the head tightened using the torque wrench held in the other hand.

Fig. 8.2.3



Fit the new bottom sealing washer / gasket on to the manifold. The gasket must sit flat on the manifold and lie underneath the bottom collar at the base of the manifold. Before fitting the operating head onto the manifold, check that the Schrader valve is fitted. If fitting a new Schrader valve ensure it is only finger tight. Then place the operating head onto the manifold, so that the cylinder threaded opening is facing the cylinder elastic. (away from the bottom of the inflator).

Fig. 8.2.4



With the operating head fitted to the manifold, place the top gasket into the recess over the protruding end of the manifold. The two gaskets differ in size as shown below:-

Bottom Sealing Gasket / Washer

Top Sealing Gasket / Washer

With the top gasket in place, fit the retaining nut. The retaining nut should by screwed in to place using a torque wrench or driver fitted with a 9/16" socket. The wrench or driver should be set to between 2.5 and 2.7 Nm. This will prevent damage to the operating head and ensure a good seal is maintained.

Fig 8.3 United Moulders Mk5i Operating Head

Check that the cylinder sealing gasket in the end of the operating head has been correctly fitted, or replaced if necessary. Fit the 60 gram CO_2 cylinder. Ensure that the cylinder has been check weighed before fitting to the lifejacket. Fit the gas cylinder to the firing mechanism using the torque wrench (4Nm) and head adaptor from the tool kit. The cylinder is gripped in one hand and the head tightened using the torque wrench held in the other hand.

Fig. 8.2.1

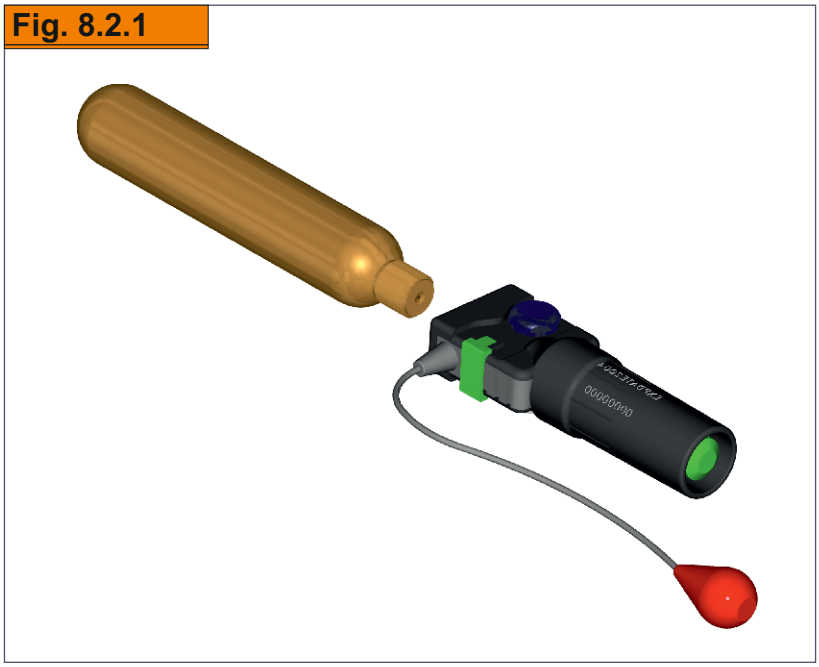
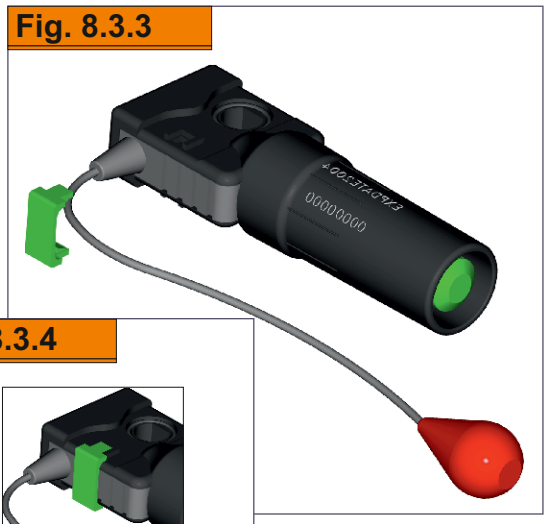


Fig. 8.3.2

Fit the new firing capsule onto the operating head. Capsules fitted on the United Moulders Mk5i head which is used on this jacket are black in colour. The capsule should be screwed tight to the end. Make a note of the batch number and manufacture date on to the service record sheet.

Fig. 8.3.3



With the firing capsule fitted, fit the retaining clip. The clip is fitted by pressing it over the firing arm and in to the recess either side in the centre of the operating head. The clip will click into place, thereby preventing the arm from moving.

Fig. 8.3.4

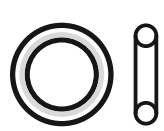
Please note: The operating head may not match the images above but the processes are always the same.

Fig 8.3 United Moulders Mk5i Operating Head

Fig. 8.3.5

Check the bottom O-ring seal is in place. Before fitting the operating head onto the manifold, check that the Schrader valve is fitted. If fitting a new Schrader valve use a calibrated torque driver set to 0.32 - 0.36 Nm. Then place the operating head onto the manifold , so that the cylinder is pointing upwards.

Fig. 8.3.6

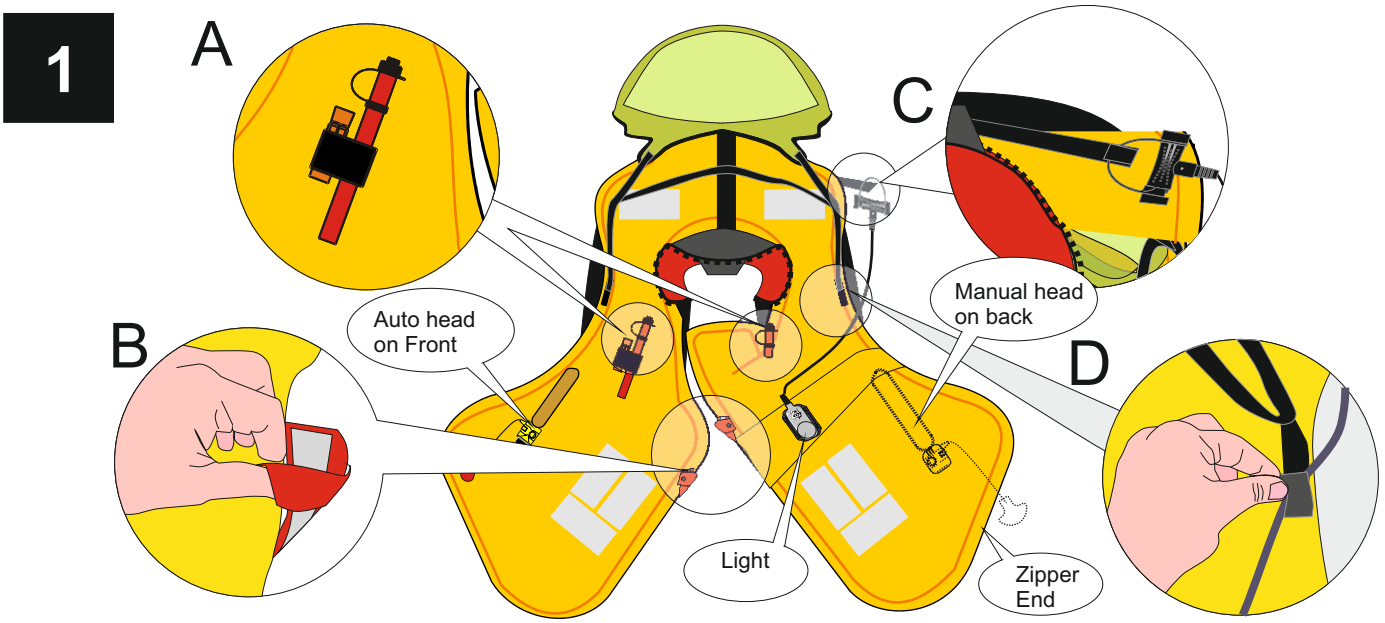


Sealing O-Ring

Fig. 8.3.7

Check the O-ring seal is in the recess on the top face of the operating head. With the top O-ring in place, fit the retaining nut. The retaining nut should be screwed into place using a torque wrench or driver fitted with a 9/16” socket. The wrench or driver should be set to between 2.5 and 2.7 Nm. This will prevent damage to the operating head and ensure a good seal is maintained.

Fig 8.3 Repacking the Offshore 290N

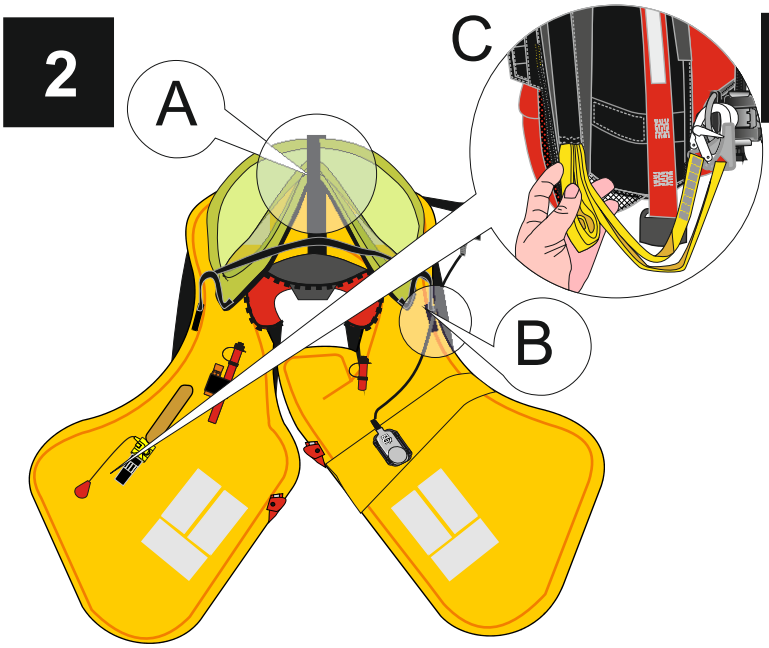


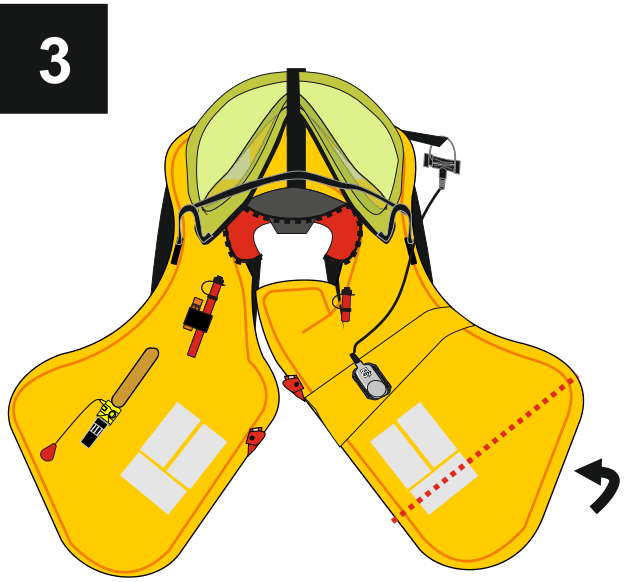
Following inspection of the lifejacket. Lay the deflated jacket out on a flat dry surface.

Ensure Inflation mechanisms, cylinders and light are fitted.

Ensure zipper is ready and sitting at the left side of the zip (As worn)

A. Ensure dust caps are fitted to Oral tubes.
B. Secure lifting beckets with red poppered retainers on inner edge of inflation chamber
C. Secure light Water activated switch with Light retainer velcro located on the webbing at the back of the inflation chamber.
D. Secure Light cord under the hood velcro retainer. (underneath the spray hood velcro tab)





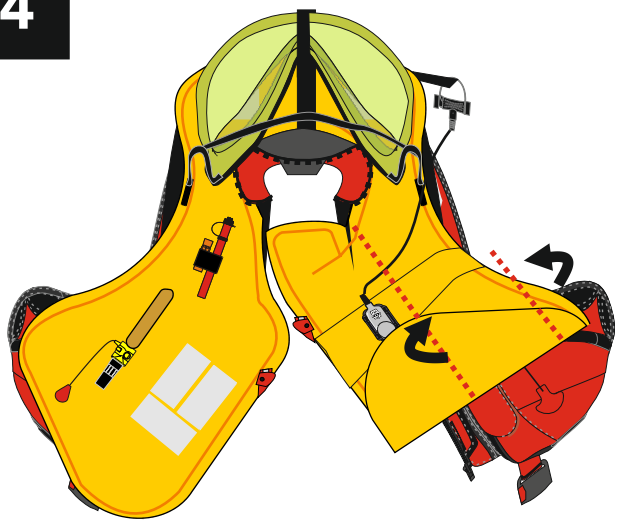
A. Gather spray hood up with the center velcro retainers and secure.
B. Ensure velcro tabs have been secured.

C. Insert folded (x3) safety line webbing into elasticated safety line pouch on the inner right cover. (As worn) Attach both hooks to the front D ring.

Fold lower left edge of chamber up over the tie in point.

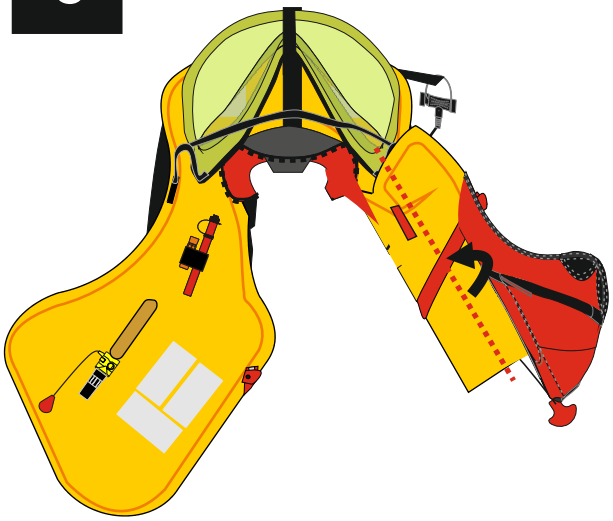
Fig 8.3 Repacking the Offshore 290N (cont.)

4



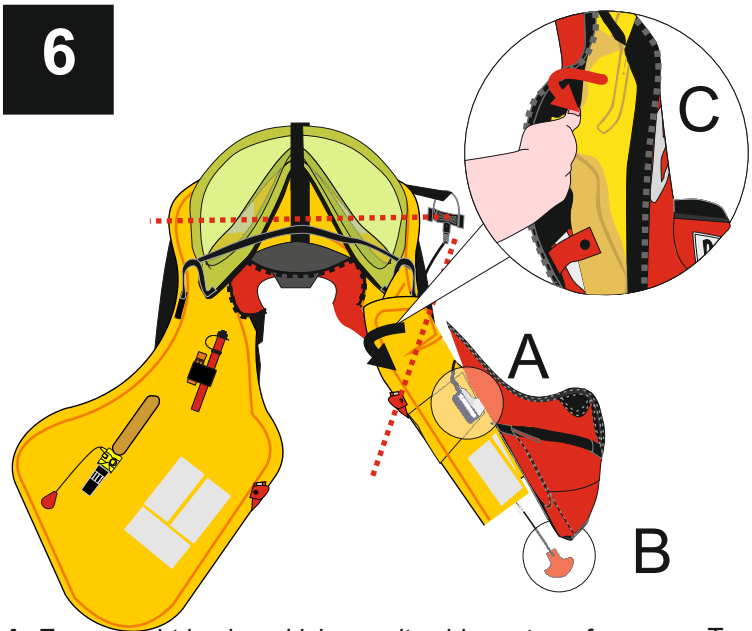
. Fold the left inner edge of Chamber to the left as far as it will go.
Fold left outer edge of chamber and tuck outer edge into cover.

5



Fold the inner edge back on its self..

6



A. Ensure light is placed lying on its side on top of chamber.
B. Ensure Jerk to inflate pull is protruding from the inflation chamber.
C. Tuck the chin rest part of the chamber underneath the folded chamber.
Tuck inside cover and start to fasten the quick burst zip up towards the chin support.

7

Turn jacket around for ease.
Place spray hood right up near the collar with the inflation chamber folded over with it.
Fold the inflation chamber over towards the collar a 2nd time. Close collar velcro tabs to hold in place whilst zipping up the cover.

Fig 8.3 Repacking the Offshore 290N (cont.)

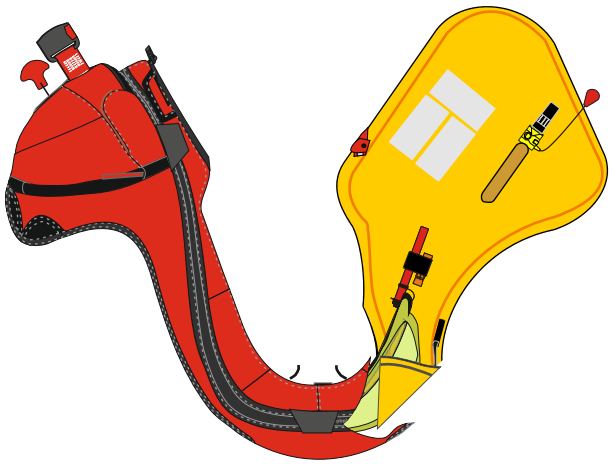
8

Fold in the corners of the top of the inflation chamber.

Ensure light water activator is layed on top of the folded chamber with the cord placed to avoid any snags.

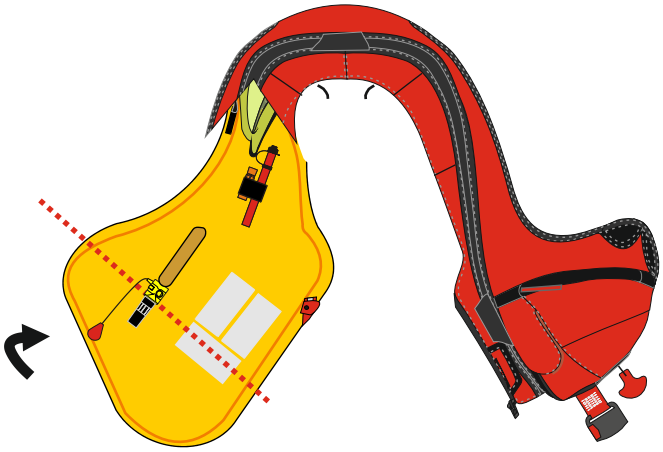
Tuck inside cover

9



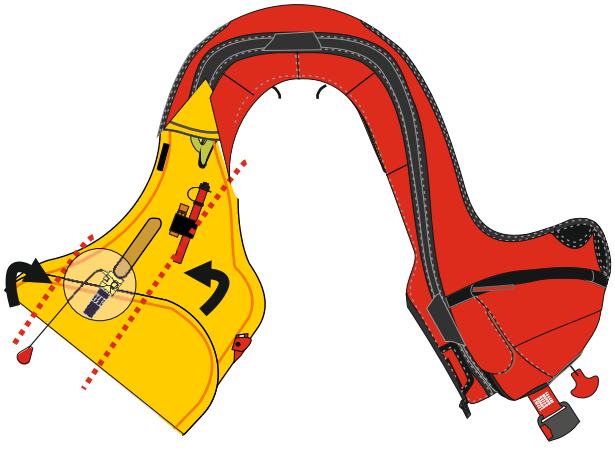
Zip cover up to the oral tube and close velcro burst tabs.

10



Turn jacket around to pack the Right side.
Fold lower edge of the right side up over the tie in point.

11



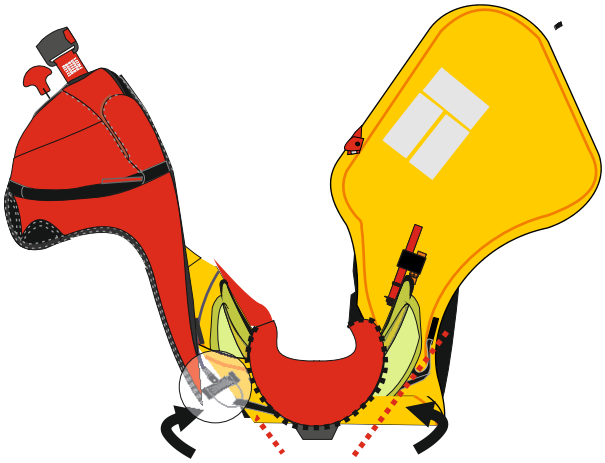
Ensure capsule and lanyard lay on top of the folded up inflation chamber.

Fold outer corner in and tuck inside cover.

Fold the Right inner edge of Inflation chamber to the right as far as it will go..

Fig 8.3 Repacking the Offshore 290N (cont.)

8

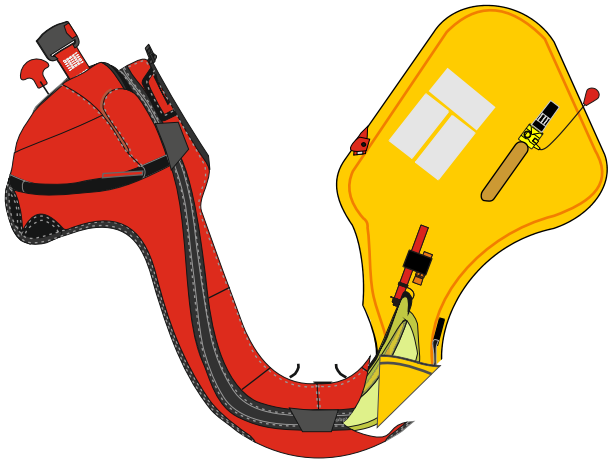


Fold in the corners of the top of the inflation chamber.

Ensure light water activator is layed on top of the folded chamber with the cord placed to avoid any snags.

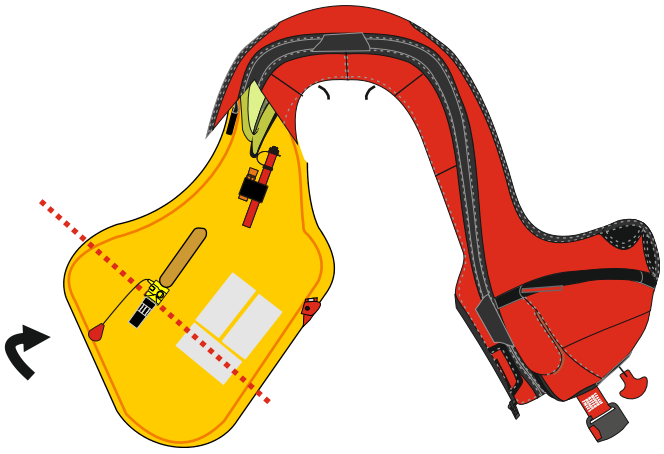
Tuck inside cover

9



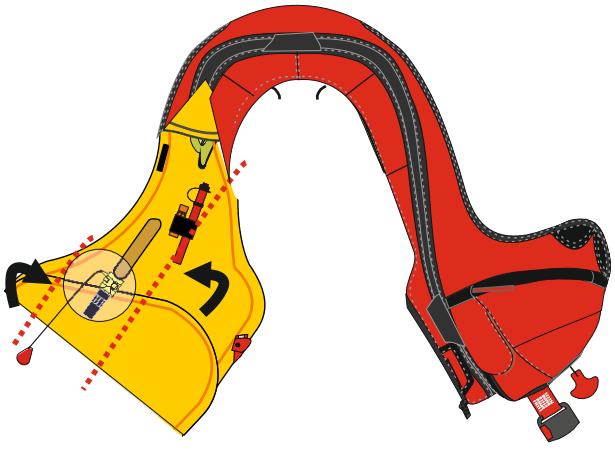
Zip cover up to the oral tube and close velcro burst tabs.

10



Turn jacket around to pack the Right side.
Fold lower edge of the right side up over the tie in point.

11



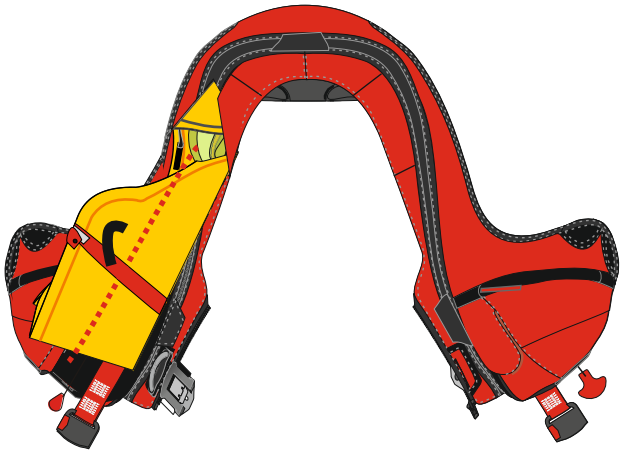
Ensure capsule and lanyard lay on top of the folded up inflation chamber.

Fold outer corner in and tuck inside cover.

Fold the Right inner edge of Inflation chamber to the right as far as it will go..

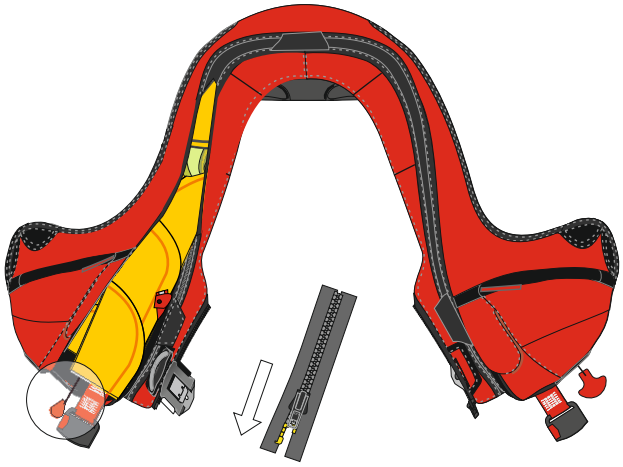
Fig 8.3 Repacking the Offshore 290N (cont.)

12



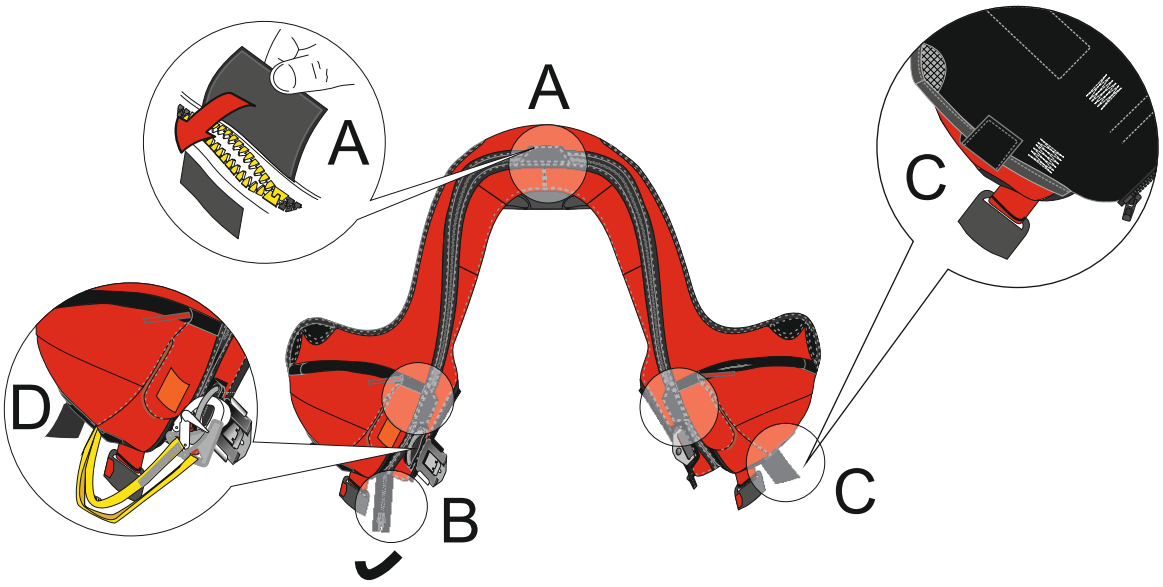
Fold the inside edge of the chamber back on its self.
Tuck inside cover

13



Zip up the rest of the cover so that the zipper end comes to the yellow marker at the end of the zip.
Ensure Auto Head Pull lanyard is protruding out from the bottom of the jacket

14



A. Ensure all 3 Burst point velcro tabs are secured.

B. Tuck left and right excess zip ends inside the cover.

C. Secure Left and right bottom cover velcro tabs to the jacket lining.

D. If safety line is stored in the safety line pouch inside the right cover (as in figure 2), attach the hooks to the D ring next to the center buckle.
(Safety line can also be stored in a side pocket if preferred.)

9.1 Parts List

Product Description	Part Number
60 gram CO_2 Cylinder	12050
Halkey Roberts Manual Head	10550
Manual Head Retaining Clip	10210
Manual Head Bottom Sealing Gasket	10096
Manual Head Top Sealing Gasket	10097
Manual Head Cylinder Sealing Gasket	10382
United Moulders Mk5 Auto Capsule	11042
United Moulders Mk5i Automatic Head with 19cm Pull Cord	R16923
Auto Head Retaining Clip	11043
Auto Head Sealing Gasket (Top and Bottom)	10373
UM Mk5i Auto Head Cutter 'O' Ring	11048
Manual Capsule with Lanyard and Tab	R16917
Whistle	10677
Crewsaver water activated Light	10220
Mouth Inflation Valve	10208
Mouth Inflation Valve Cap	10151
Schrader Valve	10049
3.5 psi Relief Valve	R31207
Safety Line	P87004
Owners Manual	
Retaining Nut	11047
Venturi Vacuum System	10481
Servicing tool kit	10467
Cylinder adaptor for back pressure System	900032
Back pressure test unit	900031
Cylinder tightening tool	900030