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## **SERVICE MANUAL**

for

# **EUROVINIL LEISURE SYNTESY LIFERAFTS & CREWSAVER ISO TYPE1(2) MK2 MARINER MK2**

**Ver.1**



EUROVINIL S.P.A. - GROSSETO - ITALY

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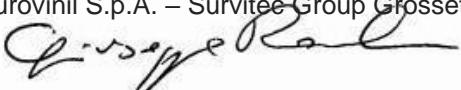
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<u>RECORD OF VERSIONS</u>			
Rev. No.	ISSUE DATE	INSERTED DATE	BY:
Initial Ver.1	Apr/21		GIUSEPPE ROSALIA Technical Dept. Eurovinil S.p.A. – Survitec Group Grosseto 

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## 1. INTRODUCTION TO THE SERVICE MANUAL

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## 1.1 GENERAL

- 1.1.1 This manual is intended for use by the people who will do the regular servicing work on the equipment. They will normally be employees of the Manufacturer or of Service Stations appointed by the Manufacturer.
- 1.1.2 The manual describes the procedures used to disassemble, inspect, repair and reassemble the equipment. These procedures must be strictly obeyed.
- 1.1.3 Eurovinil is the Design Authority for the equipment. The company has invested much effort to create the equipment and its servicing procedures, so that the equipment will be capable of reliable use, regardless of climate, weather conditions or circumstances.
- While comments intended to improve the efficiency of servicing procedures are always welcome, you must not make any changes to the servicing procedures without the permission of Eurovinil. Unauthorised changes may cause the equipment to malfunction. They may also void the approval of the equipment.
- 1.1.4 This manual covers the Eurovinil ISO and Leisure family of liferafts.
- 1.1.5 Items included in the liferaft may be subject to approval by the administration of the country where the liferaft is intended for use.

## 1.2 LIFERAFT MODELS AND CONSTRUCTION TECHNIQUE

- 1.2.1 EUROVINIL liferafts are constructed with high-tenacity polyester fabric coated with a specific mixture on both sides. This material is weather-proof and resistant to hydrocarbons and to temperature range. It is also rot-proof, it does not deteriorate with time and does not need any maintenance apart from normal cleaning with fresh water and detergent. Liferaft buoyancy tubes and floor are assembled by means of high frequency (HF) electronic welding.

WARNING: TALCUM POWDER, WHICH IS NORMALLY USED FOR GOOD PRESERVATION OF RUBBER MATERIALS, SHOULD NOT BE USED BY ANY MEANS ON EUROVINIL LIFERAFTS.

All liferafts EV have rectangular configuration.

Liferaft type	Container			Grab-bag
	ABS	VTR	VALISE	
<b>ISO9650 EUROVINIL</b>	SYNTESY 9650-1 >24H	X	X	X
	SYNTESY 9650-1 >24H GRAB-BAG	X	X	X
	SYNTESY 9650-1 <24H	X	X	X
	SYNTESY 9650-2	X	X	X
	SYNTESY 9650-1 SOLAS-B		X	X
	SYNTESY 9650-1 >24H USA		X	X
	SYNTESY 9650-1 <24H USA		X	X
	SYNTESY 9650-IT	X	X	X
	SYNTESY 9650-1 IT G/B	X	X	X
<b>ISO9650 CREWSAVER</b>	ISO TYPE1 MK2 (SYNTESY) >24H	X	X	X
	ISO TYPE1 MK2 (SYNTESY) >24H G/B	X	X	X
	ISO TYPE1 MK2 (SYNTESY) <24H	X	X	X
	ISO TYPE2 MK2 (SYNTESY)	X	X	X
<b>NON-ISO EUROVINIL</b>	SYNTESY-INTL		X	X
	SYNTESY-USA	X	X	X
	SYNTESY-E USA	X	X	X
	SYNTESY GREEK	X	X	X
<b>COASTAL</b>	COMPACT-DRY		X	X
<b>NON-ISO CREWSAVER</b>	MARINER MK2	X	X	X
	MARINER MK2 USC	X	X	X

TABLE 1.1 - Leisure Syntesy Liferaft models



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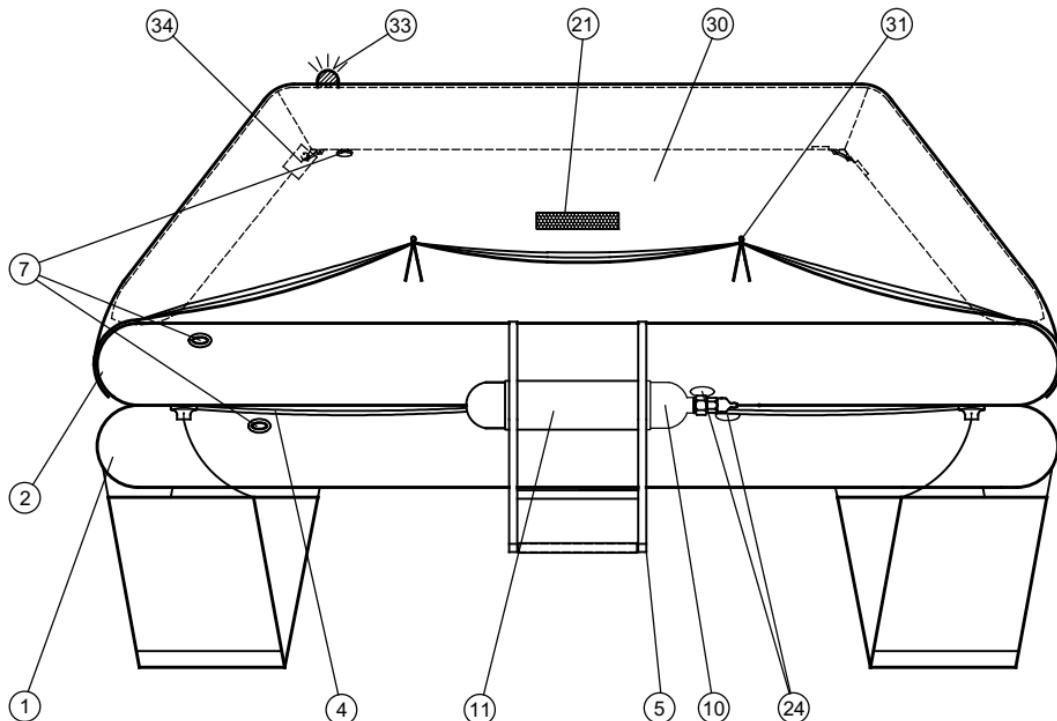
LEISURE SYNTESY LIFERAFTS

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## 2. CONSTRUCTION DETAILS

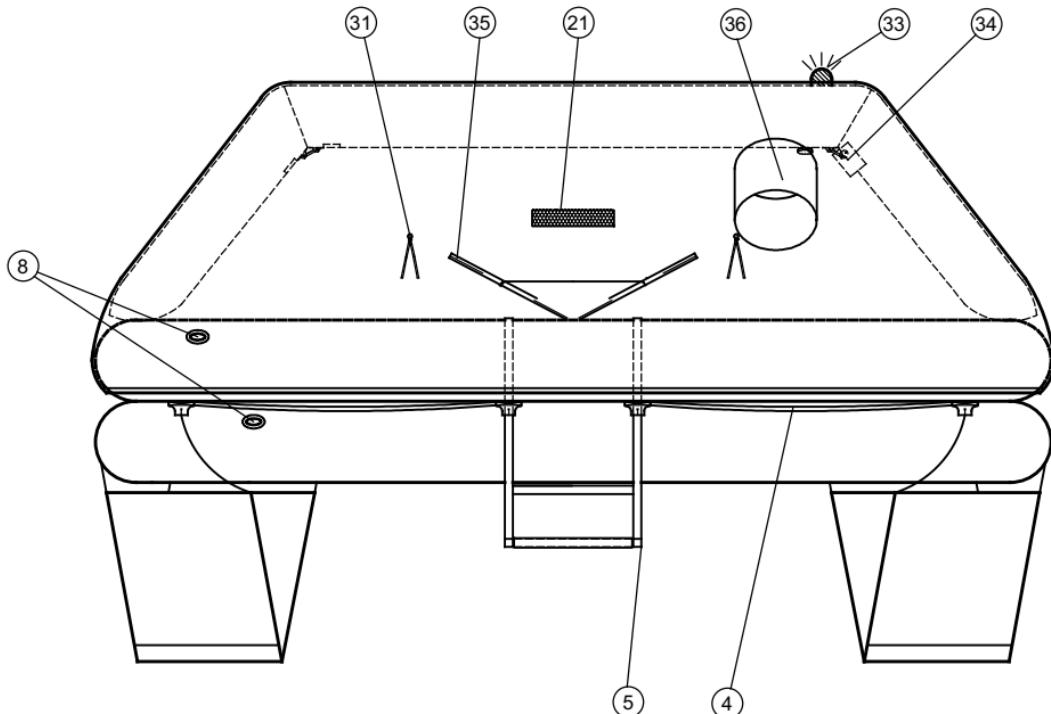
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## 2.1 LIFERAFT FRONT VIEW

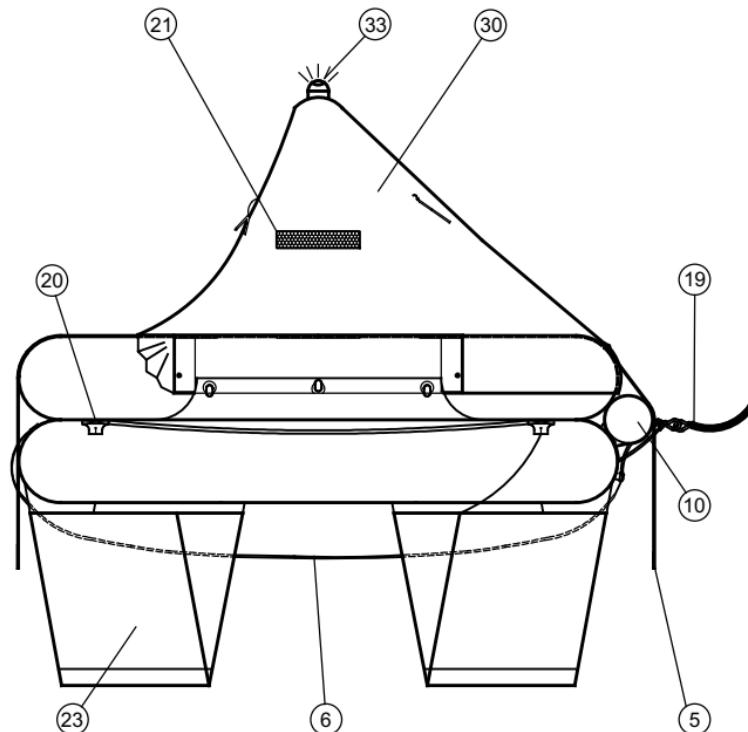


Item	Description	ISO	NON-ISO	COASTAL
1	Lower buoyancy	1	1	1
2	Upper buoyancy	1	1	1
4	External lifeline	1	1	1
5	External boarding ladder	2	2	2
7	Inflation/deflation valves	3	3	2
10	CO2+N2 Inflation system	1	1	1
11	Cylinder containing pocket / Boarding platform	1	1	1
21	Reflective tape on canopy 1000 cm <sup>2</sup>	1	(E-pack only)	(500 cm <sup>2</sup> upper tube)
24	Non-return valves for inflation system	2	2	2
30	Canopy	1	1	
31	Cord for fixing canopy open	4	4	
33	External light	1	(E-pack only)	
34	Internal light/battery pocket	1	(E-pack only)	

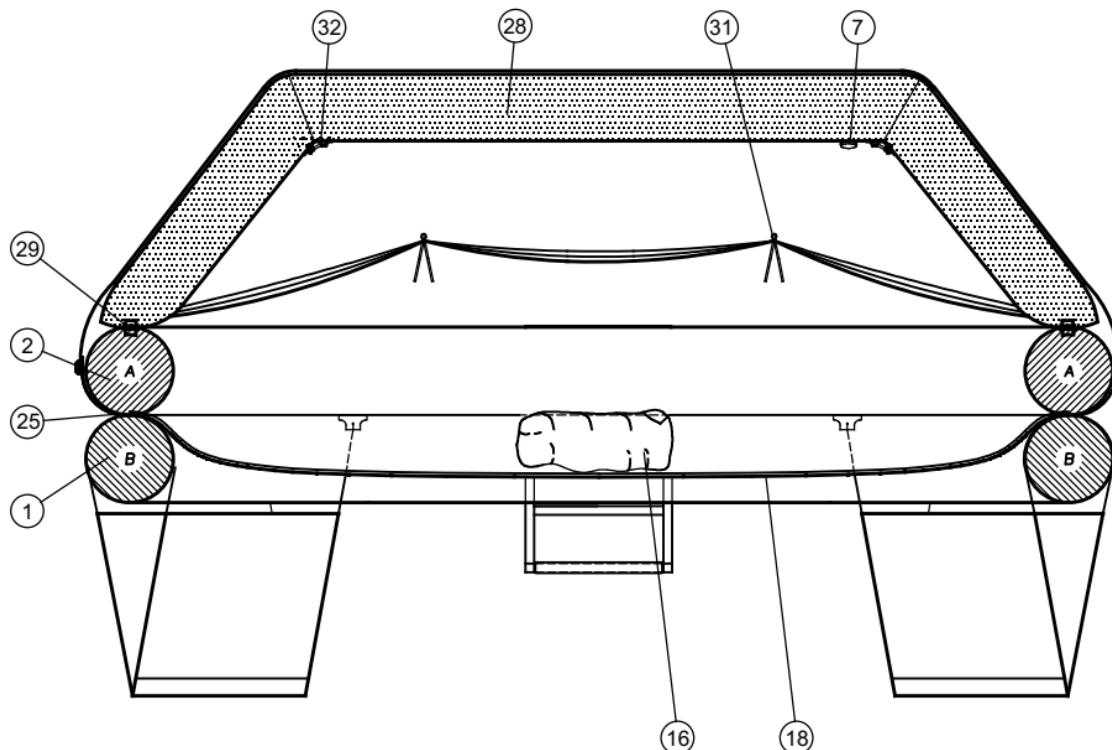
## 2.2 LIFERAFT REAR VIEW



Item	Description	ISO	NON-ISO	COASTAL
4	External lifeline	1	1	1
5	External boarding ladder	2	2	2
8	Pressure relief valves	2	2	2
21	Reflective tape on canopy 1000 cm <sup>2</sup>	1	(E-pack only)	(500 cm <sup>2</sup> upper tube)
31	Cord for fixing canopy open	4	4	
33	External light	1	(E-pack only)	
34	Internal light/battery pocket	1	(E-pack only)	
35	Rain water collecting gauge	1	1	
36	Ventilation sleeve	1	1	

**2.3 LIFERAFT SIDE VIEW**


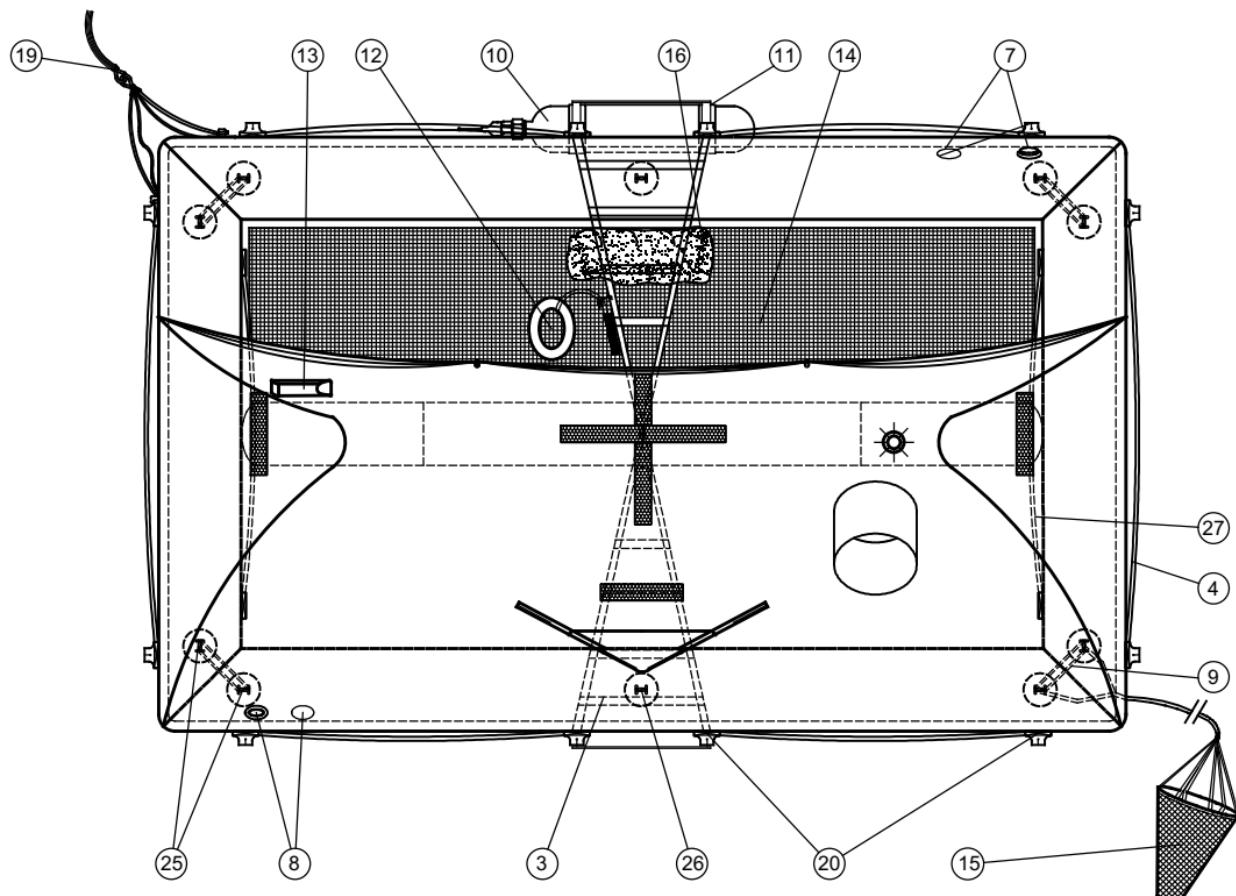
Item	Description	ISO	NON-ISO	COASTAL
5	External boarding ladder	2	2	2
6	Righting system	1	1	1
10	CO2+N2 Inflation system	1	1	1
19	Towing connection	1	1	1
20	Connection studs for external lifeline	-	-	-
21	Reflective tape on canopy 1000 cm <sup>2</sup>	1	(E-pack only)	(500 cm <sup>2</sup> upper tube)
23	Ballast pockets	4	2	2
30	Canopy	1	1	
33	External light	1	(E-pack only)	

**2.4 LIFERAFT SECTIONAL VIEW**


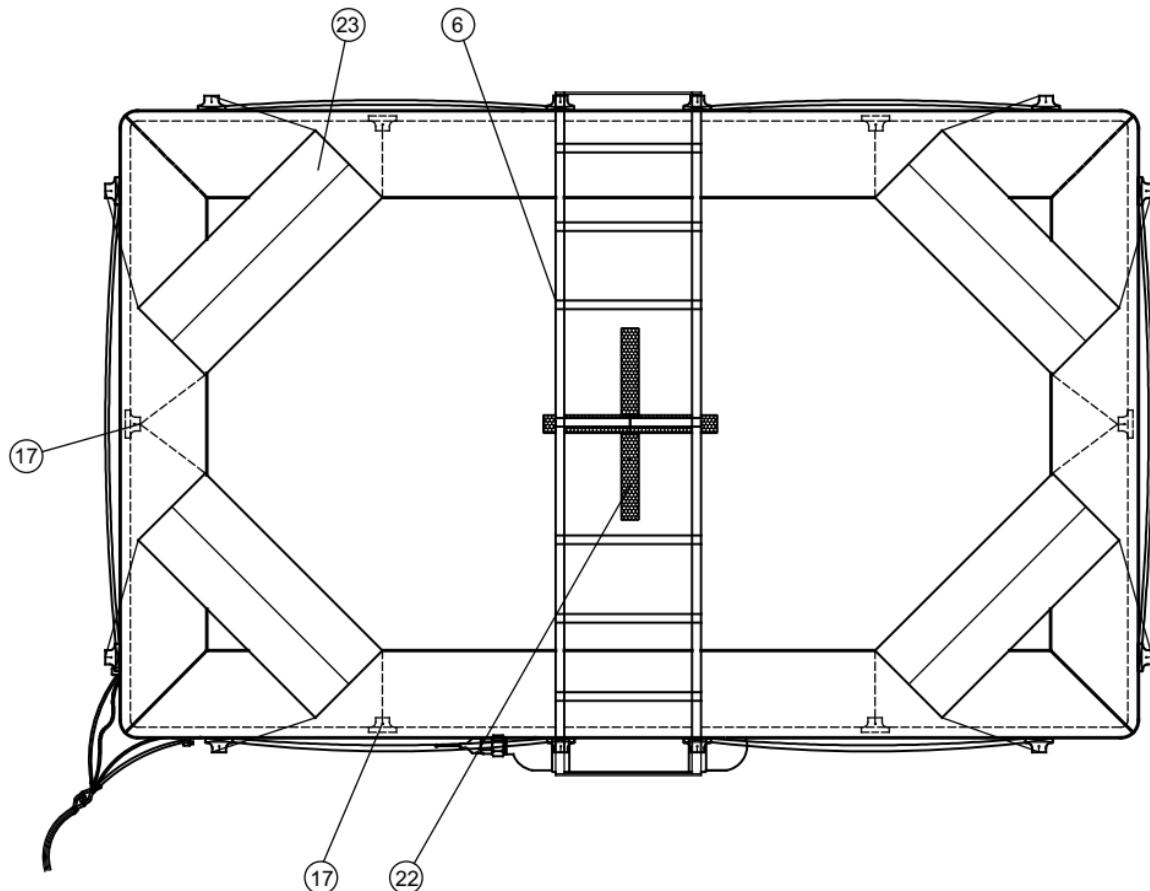
Item	Description	ISO	NON-ISO	COASTAL
1	Lower buoyancy	1	1	1
2	Upper buoyancy	1	1	1
7	Inflation/deflation valves	3	3	2
16	Equipment pack	1	1	1
18	Liferaft floor	1	1	1
25	Studs for upper-lower buoyancy connection	8	8	8
28	Canopy arch	1	1	
29	Upper buoyancy / canopy arch connection valve	2	2	
31	Cord for fixing canopy open	4	4	
32	Studs for canopy shape	4	4	

## 2.5

## LIFERAFT TOP VIEW (canopy opened on one side)



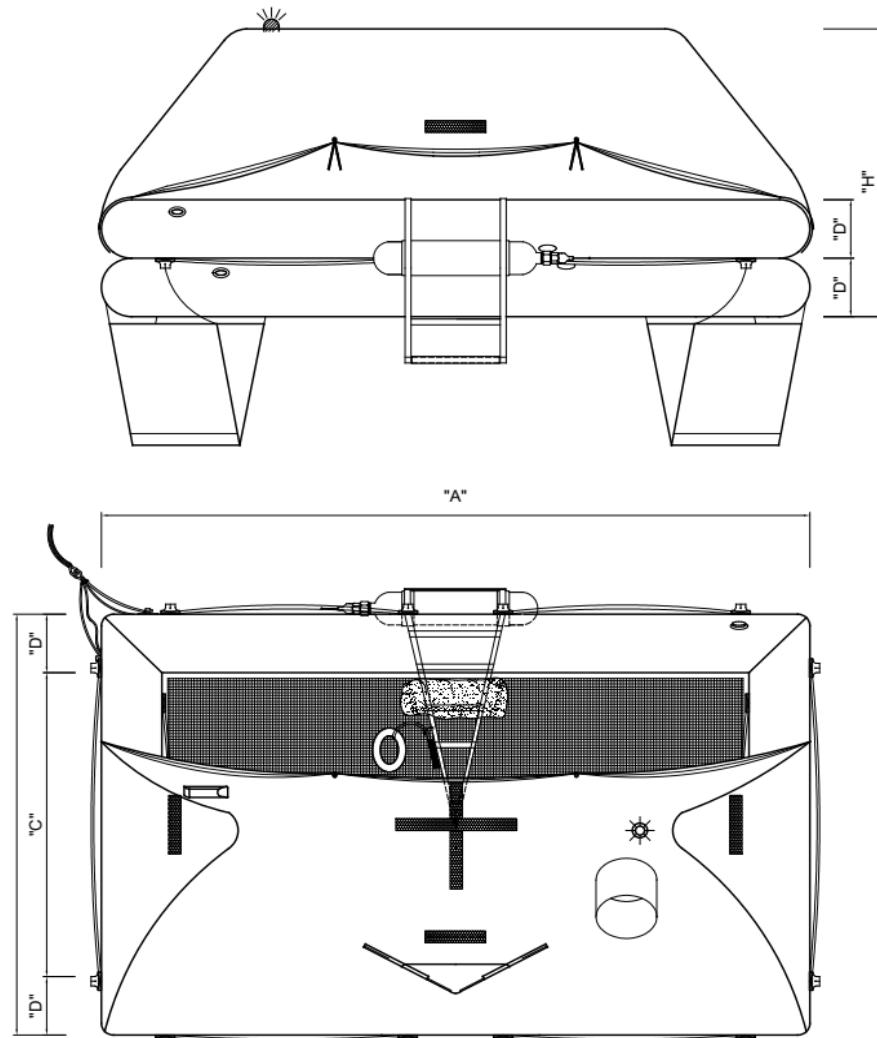
Item	Description	ISO	NON-ISO	COASTAL
3	Internal lifeline / boarding ladder	1	1	1
4	External lifeline	1	1	1
7	Inflation/deflation valves	3	3	2
8	Pressure relief valves	2	2	2
9	Studs for upper-lower buoyancies connection	-	-	-
10	CO2+N2 Inflation system	1	1	1
11	Cylinder containing pocket / Boarding platform	1	1	1
12	Rescue quoit and line	1	1	1
13	Knife pocket	1	1	1
14	Thermal insulating floor	1	(E-pack only)	
15	Sea-anchor	1	1	1
16	Equipment pack	1	1	1
19	Towing connection	1	1	1
20	Connection studs for external lifeline	-	-	-
25	Studs for upper-lower buoyancy connection	8	8	8
26	Additional studs for buoyancy connection (10-12P)	4	4	4
27	Additional internal lifeline (8-10-12P)	1	1	1
29	Upper buoyancy / canopy arch connection valve	2	2	

**2.6 LIFERAFT VIEW FROM BELOW**


Item	Description	ISO	NON-ISO	COASTAL
6	Righting system	1	1	1
17	Connection studs for ballast pockets	-	-	-
22	Reflective tape on floor 500 cm <sup>2</sup>	1	(E-pack only)	1
23	Ballast pockets	4	2	2

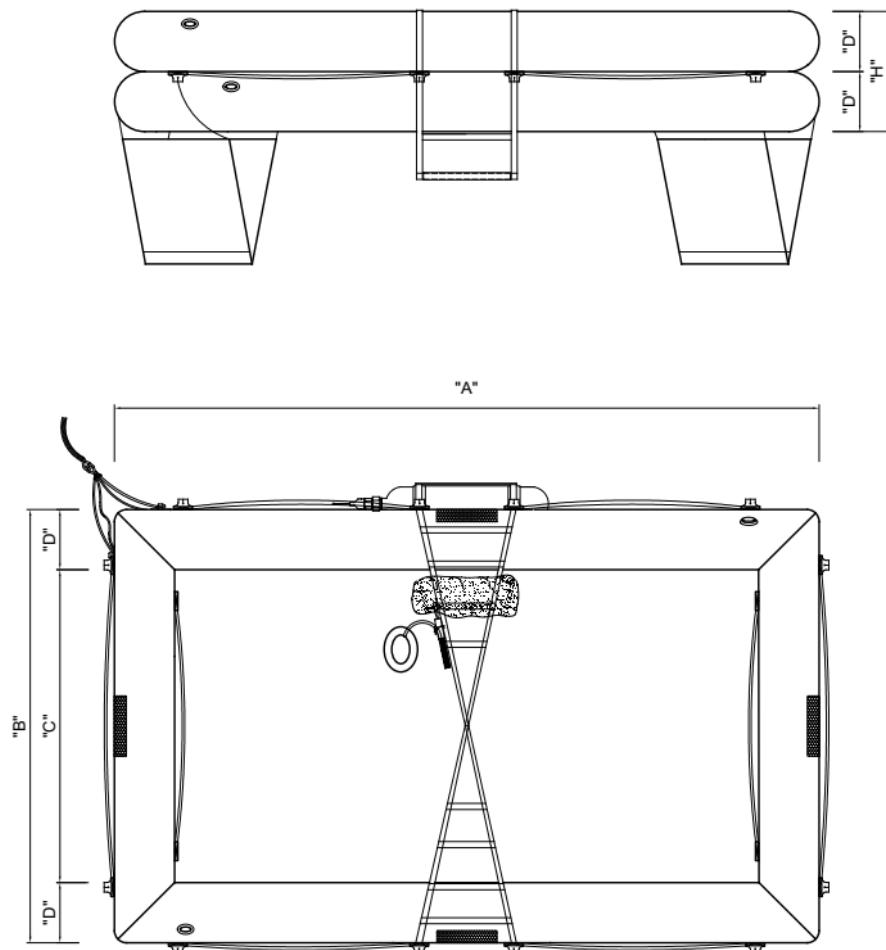
## 2.7

## LIFERAFT DIMENSIONS



Liferaft type	Size	Dimensions (cm)				
		A	B	C	D	H
Syntesy 9650-1 (ISO)	4P	180	160	118	21	120
	6P	215	180	134	23	120
	8P	293	180	130	25	122
	10P	352	180	130	25,5	122
	12P	355	209	154	27,5	122
Syntesy 9650-2 (ISO)	4P	180	160	118	21	120
	6P	215	180	134	23	120
	8-10P	228	180	130	25	122

**FIGURE 2.1**  
**Syntesy (ISO & NON-ISO) liferaft dimensions**



Liferaft type	Size	Dimensions (cm)				
		A	B	C	D	H
COASTAL	4P	180	160	118	21	42
	6P	215	180	134	23	46
	8P	293	180	130	25	50
	10P	352	180	130	25,5	51
	12P	355	209	154	27,5	55

**FIGURE 2.2**  
**Compact-Dry (Coastal) liferaft dimensions**



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### 3.1 PRELIMINARY INSPECTION

#### 3.1.1 RECEIVING AND CHECKING THE ACCOMPANYING DOCUMENTS

3.1.1.1 Servicing of the raft shall be carried out normally and at owner's expense and it will have to be marked on the obligatory documents that accompany it and that must follow the raft for its entire life.

So, firstly check that the raft is accompanied by the prescribed documents; take them off and put them away carefully in order to send them with the raft after reconditioning, associated to the related Certificate of Inspection.

#### 3.1.2 OPENING THE CONTAINER

##### 3.1.2.1. Rigid containers (ABS / VTR Fiberglass)

- (a) Check that the containers are not damaged or chapped as this might compromise the raft's functionality.
- (b) Check the integrity of the straps.
- (c) Check the readability and conformity of writings, note Serial Number.
- (d) Cut and remove straps and perimetral tape

WARNING: WEAR EYE, FACE AND HAND PROTECTION DURING STRAPS REMOVAL.



**FIGURE 3.1  
VTR fiberglass Rigid container**



**FIGURE 3.2  
ABS Rigid container**

**WARNING:** WEAR PROTECTION EQUIPMENT AND GLOVES WHEN CUTTING THE STRAP AROUND THE CONTAINER. THE STRAP CAN CAUSE INJURY TO FACE AND HANDS WHEN CUTTING IT.

### 3.1.2.2 PVC coated fabric valises

- (a) Check externally for cuts or abrasions.
- (b) Carefully open the valise from the perimetral Velcro tape, after cutting plastic seal.



**FIGURE 3.3  
Valise**

**3.1.3 CYLINDER REMOVAL**

As soon as you open the raft container proceed to the deactivation of the inflation system so to avoid it accidentally activates.

- (a) Release and remove the painter line clip from the activation cable as represented below.



**FIGURE 3.4  
Clamp for firing cable**

- (b) Untie the extremity of painter line laced to the vacuum bag hole.
- (c) Remove painter line and check its integrity.
- (d) Cut the vacuum bag and remove the liferaft inside.
- (e) Place the Liferaft on the worktable, laying it out with the canopy upwards.

**WARNING:** TAKE CARE NOT TO PULL THE ACTIVATION CABLE DURING LIFERAFT REMOVAL FROM VACUUM BAG.

- (f) Disconnect inflation system from buoyancy connection, then remove it from the raft.
- (g) Remove steel connection pipe and apply safety plug.
- (h) Make cylinder inspection as indicated on Par. 3.4.6.



**FIGURE 3.5**  
**Removal inflation system from CVT/09M connector**

**WARNING:** HOLD THE GAS CYLINDER IN A VICE OR SAFE CLAMPING MECHANISM WHEN INSTALLING OR REMOVING AN OPERATING HEAD.

**WARNING:** APPLY SAFETY CAPS ON VALVE BEFORE AND AFTER WEIGHT CHECK.

#### **3.1.4 PREPARATION FOR TESTING**

- (a) Lay completely the liferaft on the worktable with the canopy upwards.
- (b) Remove the equipment bags and note their exact position inside the raft.
- (c) Inflate the liferaft by dried compressed air through the inflation/deflation valve; stopping when the liferaft reaches its shape.
- (d) If the liferaft is wet after it has been inflated, dry it carefully, on the inside and the outside with a soft cloth.
- (e) Carefully examine the floor, the ballasts and the cylinder compartments, then the lower buoyancy, the upper buoyancy and, if fitted, the arch and canopy, checking that the openings are in order.

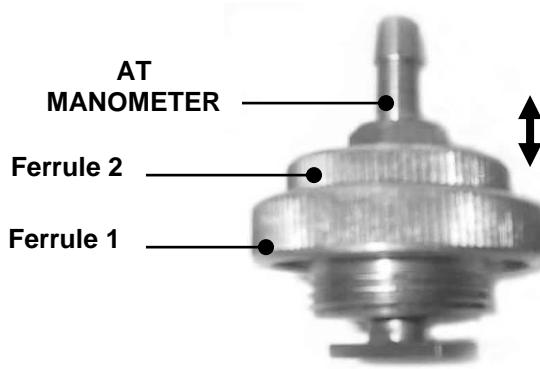
### 3.2 INFLATABLE PART - TESTING

#### 3.2.1 TESTING PREPARATION NOTES

- 3.2.1.1 Keep the records of all the inflation tests.
- 3.2.1.2 Keep the liferaft away from draughts and direct sunlight, as change in temperature affects pressure.
- 3.2.1.3 Keep a solution of hard soap (not detergent), water, and a quantity of clean, dry, lint free cloths in the area.
- 3.2.1.4 If a buoyancy chamber needs to be tested separately because of a repair, carry out a WP test.
- 3.2.1.5 Test each inflatable compartment of the liferaft: lower and upper buoyancy tubes, arch tube (if fitted).

#### 3.2.2 TESTING TOOLS

- 3.2.2.1 The items described in Par. 5.11 TESTING AND REPAIRING EQUIPMENT are necessary to test the liferaft.
- 3.2.2.2 Pressure control adapter P/N 99991001 for Supernova topping-up valves: operation instructions:



**FIGURE 3.6**  
**Pressure control adapter for Supernova valves**

- (a) Remove inflation valve cap.
- (b) Screw ferrule 1 onto the inflation valve body.
- (c) loosen the obturator with ferrule 2 and check pressure on the gauge;
- (d) check pressure on the gauge;
- (e) close (not strongly) the obturator with ferrule 2;
- (f) unscrew ferrule 1;
- (g) close the valve with its cap checking that the gasket is perfectly placed in its seat.

- 3.2.1.2 Pressure control plug P/N 10369064 for BRAVO 2005 topping-up valves: operation instructions



**FIGURE 3.7  
Pressure control adapter for Bravo 2005 valve**

- (a) Remove inflation valve cap.
- (b) Push the obturator pin in “open” position.
- (c) Screw pressure control plug and check pressure on the gauge;
- (d) Remove pressure control plug;
- (e) Push the obturator pin in “close” position;
- (f) Close the valve with its cap checking that the gasket is perfectly placed in its seat.

### **3.2.3 SERVICE INTERVALS**

- 3.2.3.1 The liferaft shall be submitted to pressure and other physical tests according to its age as defined in Tables 3.1 and 3.2, and as described in this chapter.
- 3.2.3.2 Blast Test is required on every service before effecting Working pressure test except when GI test is executed. For Blast test procedure see Par. 3.2.4.
- 3.2.3.3 Working Pressure (WP) test must be executed at every service, always after the other tests.

SERVICE INTERVALS	Syntesy 9650 IT	Syntesy 9650-1(2)	Syntesy 9650-1/B	
	Syntesy 9650-1 IT G/B Syntesy 9650 HR	ISO Type1(2) Mk2	Valise	ABS/VTR
End of 1 <sup>st</sup> year			WP	
End of 2 <sup>nd</sup> year	WP		WP	
End of 3 <sup>rd</sup> year		WP	WP	WP
End of 4 <sup>th</sup> year	WP + CT		WP	
End of 5 <sup>th</sup> year			GI	
End of 6 <sup>th</sup> year	OP	WP	WP	GI + WP
End of 7 <sup>th</sup> year			WP	WP
End of 8 <sup>th</sup> year	WP + CT		WP	WP
End of 9 <sup>th</sup> year		WP	WP	WP
End of 10 <sup>th</sup> year	WP		GI+FS+WP	GI+FS+WP
End of 11 <sup>th</sup> year			WP	WP
End of 12 <sup>th</sup> year	OP + CT	WP	WP	WP
End of 13 <sup>th</sup> year			NAP+FS+WP	NAP+FS+WP
End of 14 <sup>th</sup> year	WP		WP	WP
End of 15 <sup>th</sup> year		WP	GI+NAP+FS+WP	GI+NAP+FS+WP
End of 16 <sup>th</sup> year	WP + CT		WP	WP
End of 17 <sup>th</sup> year			WP	WP
End of 18 <sup>th</sup> year	WP	WP	NAP+FS+WP	NAP+FS+WP
End of 19 <sup>th</sup> year			WP	WP
End of 20 <sup>th</sup> year	WP + CT		GI+NAP+FS+WP	GI+NAP+FS+WP

WP: Working pressure test      GI: Gas Inflation test      OP: Overpressure strength test  
 CT: Cylinder Hydrostatic test      NAP: Necessary Additional Pressure      FS: Floor Seam test

TABLE 3.1 - Testing intervals for Syntesy ISO rafts

SERVICE INTERVALS	Syntesy-GREEK Syntesy E-USA	Syntesy -INTL Mariner Mk2	Syntesy-USA	Compact-Dry
End of 1 <sup>st</sup> year	WP			
End of 2 <sup>nd</sup> year	WP			
End of 3 <sup>rd</sup> year	WP		WP	WP
End of 4 <sup>th</sup> year	WP	WP		
End of 5 <sup>th</sup> year	GI			OP + CT
End of 6 <sup>th</sup> year	WP		WP	
End of 7 <sup>th</sup> year	WP	WP		WP
End of 8 <sup>th</sup> year	WP			
End of 9 <sup>th</sup> year	WP		WP	WP + CT
End of 10 <sup>th</sup> year	GI+FS	WP		
End of 11 <sup>th</sup> year	NAP+FS+WP			OP
End of 12 <sup>th</sup> year	NAP+FS+WP		WP	
End of 13 <sup>th</sup> year	NAP+FS+WP	WP		WP + CT
End of 14 <sup>th</sup> year	NAP+FS+WP			
End of 15 <sup>th</sup> year	GI+NAP+FS+WP		WP	WP
End of 16 <sup>th</sup> year	NAP+FS+WP	WP		
End of 17 <sup>th</sup> year	NAP+FS+WP			OP + CT
End of 18 <sup>th</sup> year	NAP+FS+WP		WP	
End of 19 <sup>th</sup> year	NAP+FS+WP	WP		WP
End of 20 <sup>th</sup> year	GI+NAP+FS+WP			
WP: Working pressure test      GI: Gas Inflation test      OP: Overpressure strength test CT: Cylinder Hydrostatic test      NAP: Necessary Additional Pressure      FS: Floor Seam test				

TABLE 3.2 - Testing intervals for Syntesy (Non-ISO) and Compact-Dry rafts

**3.2.4 BLAST TEST**

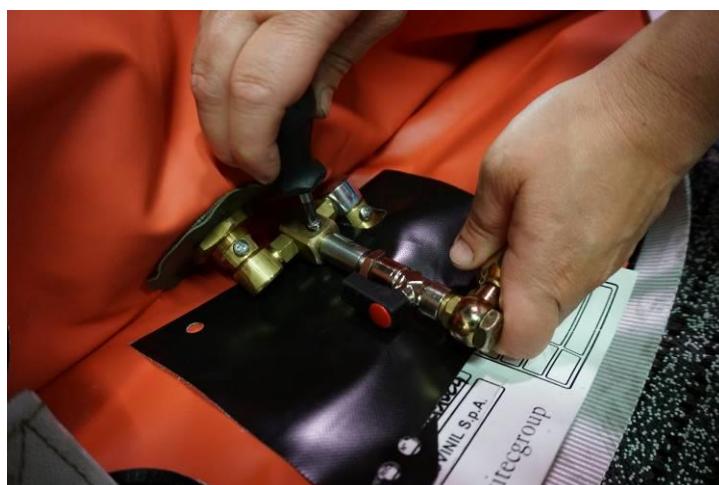
3..2.4.1 Blast test operation procedure is always required to check efficiency of non-return valves and connection CVT/09M.

3..2.4.2 For Blast Test proceed as follows:

- (a) Connect blast test adaptor to the inflation system connector CVT/09.
- (b) Secure adaptor by screw.



**FIGURE 3.8**  
**Connect blast test adaptor**



**FIGURE 3.9**  
**Screw blast test adaptor**

- (c) Push the red handles of the blast test kit up to put in contact the two clamps.
- (d) Make blast test three times.

**CAUTION:** CAUTION: FOR THE FIRST BLAST, KEEP HANDS AWAY FROM THE INLET VALVE IN CASE OF CO<sub>2</sub> BURN.



**FIGURE 3.10**  
**Blast test operation**

- (e) For each blast, the red handles of the Blast test cylinder should be closed together. The blast should last for 1 second.
- (f) If no gas leakage is observed on the first blast, then the second and third blasts should be conducted with the one hand near the inlet valve to detect leakage, BUT NOT IN CONTACT with it.
- (g) The hose should now be disconnected from the blast cylinder.

### **3.2.5 PRESSURE RELIEF VALVE (PRV) CHECK**

3.2.5.1 PRV check must be effected before Working Pressure (WP) test.

3.2.5.2 For PRV check proceed as follows:

- (a) Inflate buoyancies up to PRVs open.
- (b) Make sure that the PRVs open and release the excess pressure within 0.30 bar, registering the effective date.
- (c) After  $\frac{1}{2}$  hour check and register the value of the final pressure. This value must be not less than 0.18 bar.

NOTE:

FOR PRESSURE VALUES LOWER THAN WHAT INDICATED, REPLACE THE DEFEATED OVERPRESSURE VALVE, THAN REPEAT ALL THE TEST (OPEN AND CLOSURE OF THE OVERPRESSURE VALVE AND OVERPRESSURE STRENGTH).

### 3.2.6 WORKING PRESSURE (WP) TEST

- 3.2.6.1 The test should be carried out at steady temperature. In case of temperature variation greater than 3°C, the test should be repeated after taking all precautions to limit temperature variations.
- 3.2.6.2 In case of temperature variation smaller than 3°C, a correction equal to 0.004bar should be applied for each grade centigrade of temperature (positive for temperature decrease, negative otherwise).

**WARNING:** BEFORE STARTING THE INFLATION, MAKE SURE THAT THE MANOMETER IS SETTED TO "0".

3.2.6.3 For WP test, proceed as follows:

- (a) Connect the manometer with the pressure check device.
- (b) Inflate buoyancy tube from the inflation hoses up to the starting of the overpressure valve.
- (c) Check, by means of the manometer, the value on which the overpressure valve starts to work. That value must be comprehended between 0,22 e 0,35 bar.

**NOTE:** FOR DIFFERENT PRESSURE VALUES, REPLACE THE OVERPRESSURE VALVE AND REPEAT THE TEST.

- (d) After PRV test was completed, and pressure has become stabilized in the buoyancy tubes, restore pressure if lower than 0.20 bar.
- (e) After 60 minutes verify that the pressure lost is not more than 5% of the initial pressure, considering correction values above mentioned.

**NOTE:** FOR PRESSURE VALUES LOWER THAN WHAT INDICATED, CHECK THE CAUSE OF THE LOSS AND SEND LIFERAFT TO REPAIR. AFTER REPAIRED, REPEAT THE TEST.

- (f) During test, verify tightness of the inflation valves, overpressure valves and non-return valves on the lower buoyancy tube, upper buoyancy tube and canopy arch, by means of soapy water.
- (g) In case of air leakage proceed to eliminate the inconvenience (tighten the valve, replace the gasket, replace the valve body or the ferrule, repair the valve hole on the buoyancy tube, etc.) as described in the following chapters and repeat test.

### 3.2.7 OVERPRESSURE STRENGTH (OP) TEST

3.2.7.1 This test is specifically required for liferafts Syntesy 9650 IT (including Grab Bag version) and Compact-dry.

3.2.7.2 For OP test, proceed as follows:

- (a) Close PRV valve plug on both lower and upper buoyancy.
- (a) Connect manometer to the inflation valve for each buoyancy tube.
- (a) Inflate buoyancy tube up to a pressure of 0,25 bar.
- (a) After ½ hour from the test start, remove PRV valve plugs.
- (a) After 6 hours verify that the pressure lost is not more than 30% of the initial pressure, considering correction values above mentioned.

NOTE: FOR PRESSURE VALUES LOWER THAN WHAT INDICATED, CHECK THE CAUSE OF LOSS AND SEND LIFERAFT TO REPAIR. THEN REPEAT TEST.

### 3.2.8 GAS INFLATION (GI) TEST

NOTE: GAS INFLATION (GI) TEST MUST BE EFFECTED USING THE LIFERAFT'S CYLINDER.

3.2.8.1 When undertaking a gas inflation test, special attention should be paid to the effectiveness of the relief valves.

3.2.8.2 For GI test, proceed as follows:

- (a) Remove the liferaft from container/valise and from vacuum bag.
- (b) Activate gas inflation system by pulling the operating head cable.
- (c) Check that the liferaft inflates correctly.
- (d) Let the Liferaft settle for at least 2 hours in order to stabilize buoyancy tubes and let the solid particels of CO<sub>2</sub> evaporate.
- (e) restore pressure if lower than 0.20 bar, then submit the liferaft to Working Pressure (WP) test.

NOTE: AFTER EVERY ACTIVATION OF THE LIFERAFT INFLATION SYSTEM, THE CYLINDER MUST BE SUBMITTED TO HYDRAULIC TEST.

- (f) Should the test give negative results, look for causes of leaking and, if necessary, repair the liferaft, as shown in the following paragraphs.

### 3.2.9 NECESSARY ADDITIONAL PRESSURE (NAP) TEST

3.2.9.1 In addition to what indicated on tables 3.2 and 3.3, NAP test should be executed if deemed necessary as a result of visual inspection.

3.2.9.2 For NAP test, proceed as follows:

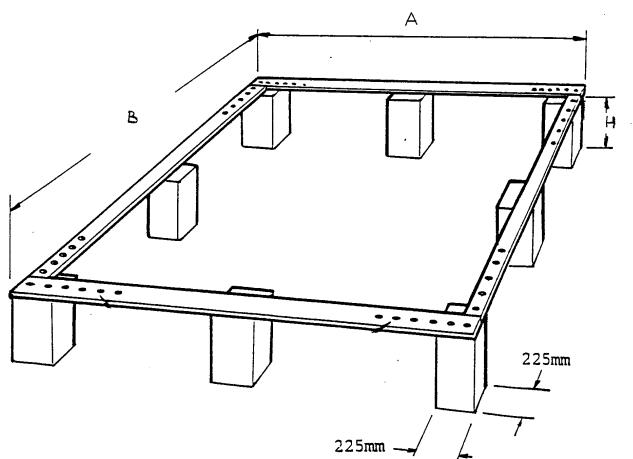
- (a) Close PRV valve plug on both lower and upper buoyancy.
- (b) Connect manometer to the inflation valve for each buoyancy tube.
- (c) Inflate gradually the buoyancy tubes up to a pressure of 0,40 bar.
- (d) During test check for seam slippage, cracking, or significant pressure drop.
- (e) After 5 minutes, reduce pressure in all buoyancies by removing simultaneously plugs from PRV valves.

### 3.2.10 FLOOR SEAM STRENGHT (FS) TEST

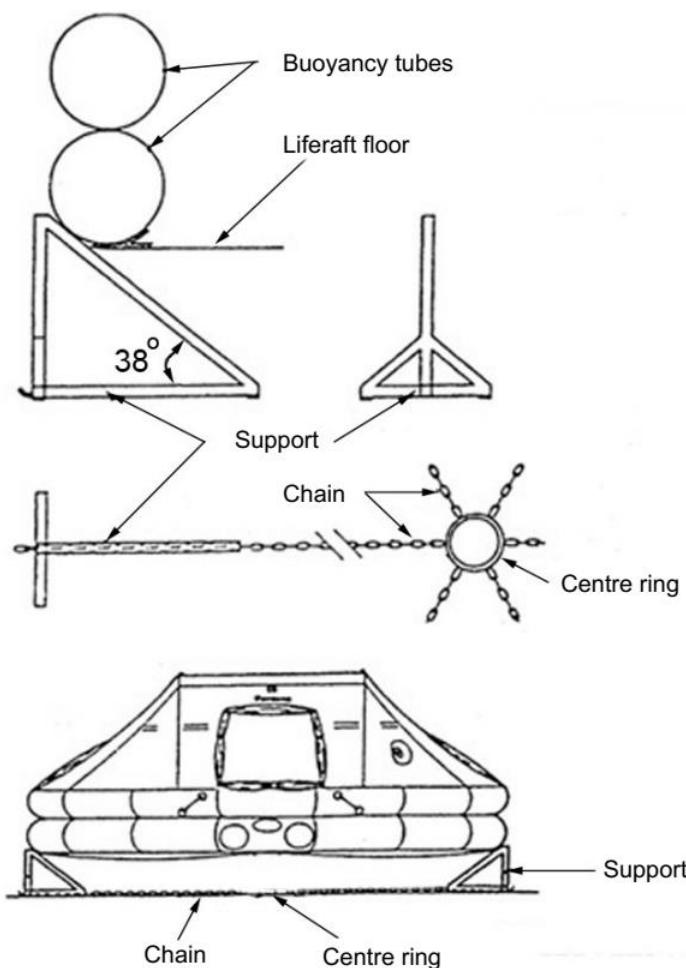
3.2.10.1 For FS test, proceed as follows:

- (a) Lift the liferaft at a height of not less than 45 cm above the service floor. The supports to be used in suitable number (varying according to the liferaft type) should be so fitted as to guarantee the liferaft stability.
- (b) First carry out a visual inspection of the seams between the floor and the buoyancy tubes.

- (c) A person weighing not less than 75 kg should walk/crawl around the perimeter of the floor for the entire circumference. Check floor seams again for integrity or any slippage.



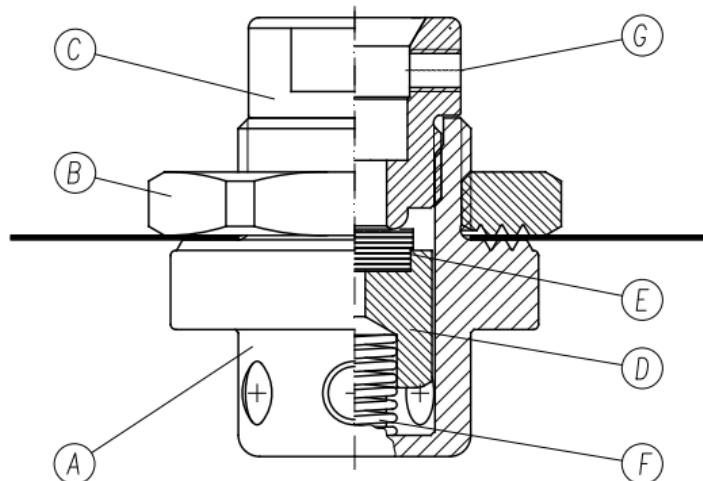
**FIGURE 3.11**  
**Floor Seam Test support**



**FIGURE 3.12**  
**Floor Seam Test support**

### 3.3 VALVES (NON-RETURN, INFLATION, PRV, CONNECTION)

#### 3.3.1 NON-RETURN (NR) VALVE



Item	Description
A	Valve Body
B	Ferrule
C	Nut
D	Spring Cap
E	Plastic Stopper
F	Spring
G	Side For Clamping Screw

**FIGURE 3.13**  
**NR valve - Construction design**

3.3.1.1 Check valve external airtightness by spraying soapy water in the surrounding area, checking for air bubbles near the valve body.

**CAUTION:** AVOID ANY INFILTRATION OF WATER INSIDE NT VALVE BODY.

3.3.1.2 In case of air leaking from external, proceed as under described:

- (a) Place a 17 mm open flat spanner on the nut (C) of the valve body so to hold it firmly.
- (a) With the other hand, tighten ferrule (B) with a 35 mm open torque wrench at a coupling torque of 25 Nm.

3.3.1.3 Check valve internal airtightness by pouring alcohol into the valve nut (C).

3.3.1.4 In case of leaking from valve body (internal), proceed as under described:

- (a) Insert a metal bar of suitable dimension and with rounded tip into the valve nut (C).



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## LEISURE SYNTESY LIFERAFTS

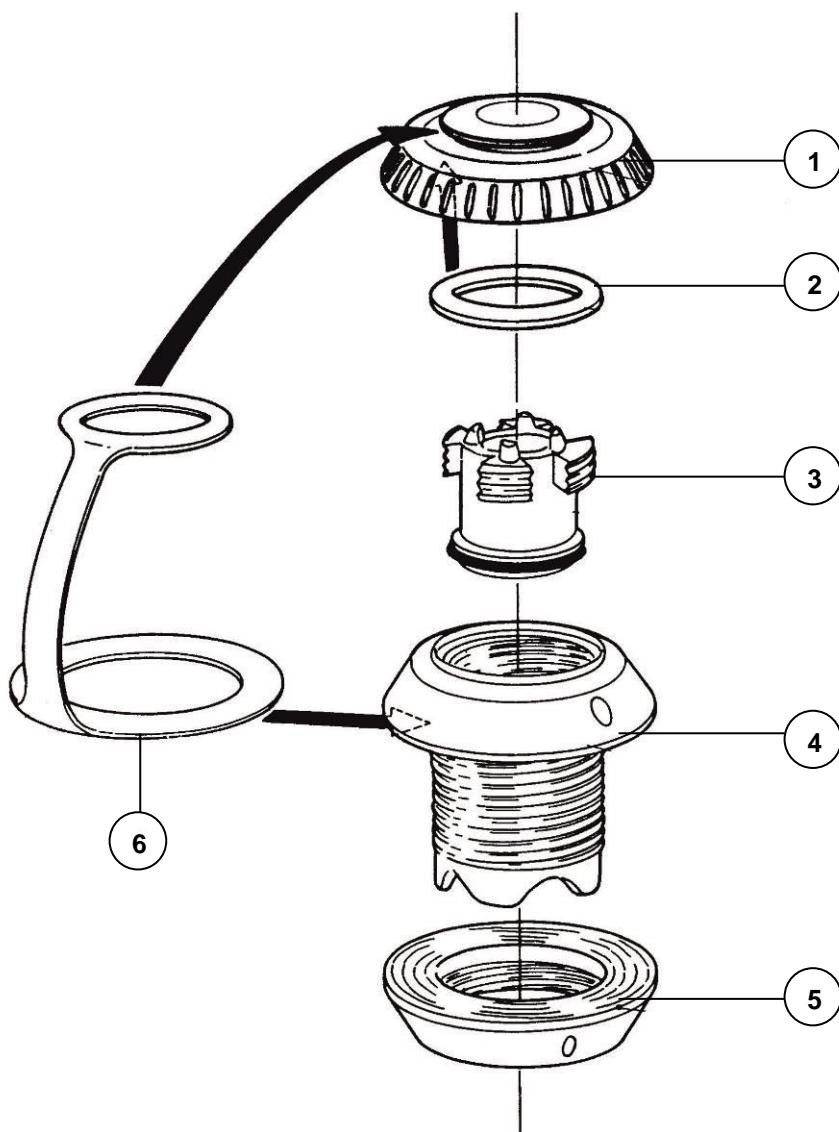
- (b) Press on the Plastic Stopper (E) until valve tightness has been restored;

NOTE: THE THREAD OF THE VALVE NUT IS COUNTERCLOCKWISE.

NOTE: IN NO CASE A NON-RETURN VALVE SHALL BE REMOVED OR REPLACED BY SERVICE STATION: IN THIS CASE SEND THE LIFERAFT TO MANUFACTURER.

## 3.3.2

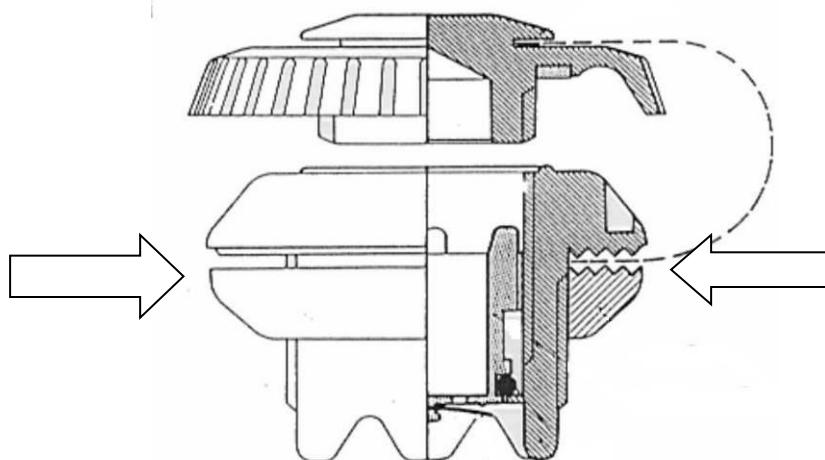
## INFLATION-DEFLATION VALVE TYPE SUPERNOVA



Item	Description	P/N
1	Plug	N/A
2	Plug gasket	10399292
3	Obturator	99139027
4	Valve body	N/A
5	Ferrule	N/A
6	Holder/Gasket	99139028

**FIGURE 3.14**  
Inflation-Deflation valve - Construction design

- 3.3.2.1 Check valve external airtightness by spraying soapy water in the surrounding area, checking for air bubbles near the valve body.
- 3.3.2.2 In case of air leaking, proceed as under described:
- Keep buoyancy tube inflated.
  - Tighten valve body by torque wrench and terminal 99200786 at 25 Nm.
  - If air leaking persists, replace the holder/gasket following procedure indicated on par. 3.3.2.5.
- 3.3.2.4 Check obturator's airtightness. Small leaking from the membrane is acceptable, as tightness should be guaranteed by the plug gasket. Should leaking be excessive, replace the obturator.
- 3.3.2.4 Check conditions of the plug gasket. Replace if damaged or hardened.



**FIGURE 3.15**  
**Inflation-Deflation valve - Detail**

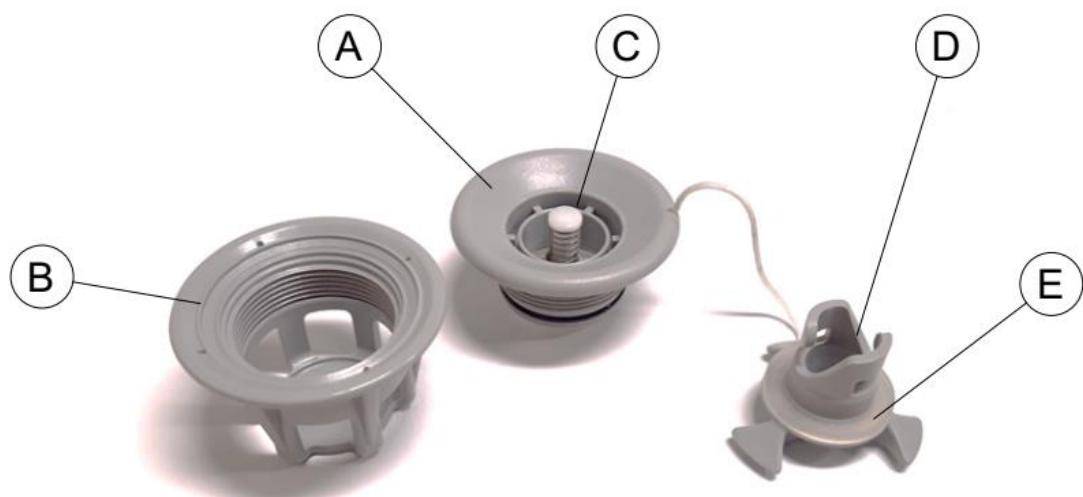
- 3.3.2.5 If valve body or holder/gasket needs to be replaced, proceed as under described:
- Keep buoyancy tube inflated.
  - Untighten valve body by spanner and terminal 99200486.
  - Unscrew valve body by hand, putting attention not to lose the ferrule inside the buoyancy chamber.
  - Remove valve body and/or holder/gasket and discard them.
  - Place new holder/gasket into the new valve body thread.
  - Screw new valve body to the ferrule inside buoyancy chamber, ensuring that the holder/gasket is properly fitted.
  - Inflate buoyancy chamber and progressively tighten valve body by torque wrench and terminal 99200786 until a torque value of 25 Nm is reached.
  - Submit buoyancy chamber to PRV and WP test as described in Par. 3.2.4 and Par. 3.2.5.

## 3.3.3

## INFLATION-DEFLATION VALVE TYPE BRAVO 2005



**FIGURE 3.16**  
Inflation-Deflation valve Type Bravo 2005 assembled



Item	Description
A	Valve Body
B	Valve Base
C	Closure/Opening Spring Button
D	Plug with Cord
E	Plug Gasket

**FIGURE 3.17**  
Inflation-Deflation valve - Construction design

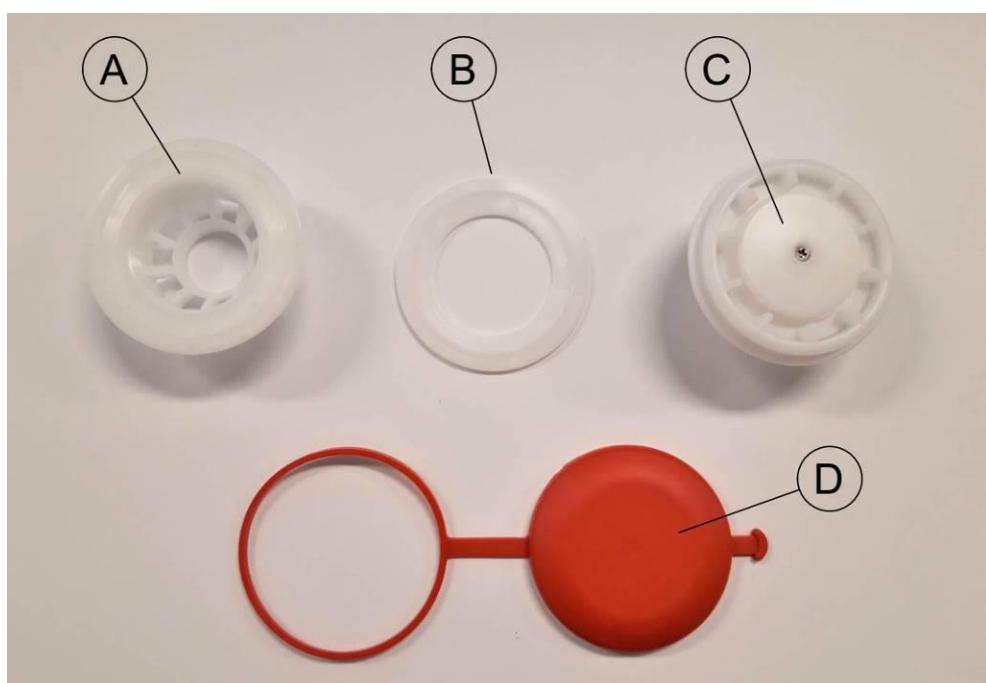
- 3.3.3.1 Check valve external airtightness by spraying soapy water in the surrounding area, checking for air bubbles near the valve body.
- 3.3.3.2 In case of air leaking, proceed as under described:
  - (a) Keep buoyancy tube inflated.
  - (b) Tighten valve body by torque wrench and terminal 99220776 at 25 Nm.
  - (c) If air leaking persists, replace the valve body following procedure indicated on par. 3.3.3.5.
- 3.3.3.3 Check valve body's airtightness. Small leaking from the membrane is acceptable, as tightness should be guaranteed by the plug gasket. Should leaking be excessive, replace the valve body.
- 3.3.3.4 Check conditions of the plug gasket. Replace if damaged or hardened.
- 3.3.3.5 If valve body needs to be replaced, proceed as under described:
  - (a) Keep buoyancy tube inflated.
  - (b) Untighten valve body by spanner and terminal 99220776.
  - (c) Unscrew valve body by hand, putting attention not to lose the valve base inside the buoyancy chamber.
  - (d) Remove valve body and discard it.
  - (e) Screw the new valve body to the ferrule inside buoyancy chamber.
  - (f) Inflate buoyancy chamber and progressively tighten valve body by torque wrench and terminal 99220776 until a torque value of 25 Nm is reached.
  - (g) Submit buoyancy chamber to PRV and WP test as described in Par. 3.2.4 and Par. 3.2.5.

## 3.3.4

## PRESSURE RELIEF VALVE (PRV)



**FIGURE 3.18**  
Pressure Relief valve type VA70 assembled



Item	Description
A	Valve Base
B	Ferrule
C	Valve Body
D	Plug

**FIGURE 3.19**  
Pressure Relief valve type VA70 - Construction design

- 3.3.4.1 Check valve external airtightness by spraying soapy water in the surrounding area, checking for air bubbles near the valve body.
- 3.3.4.2 In case of air leaking, proceed as under described:
- (a) Keep buoyancy tube inflated.
  - (b) Tighten valve body by torque wrench and terminal 99220796 at 25 Nm.
  - (c) If air leaking persists, replace the valve body following procedure indicated on par. 3.3.3.5.
- 3.3.4.3 If valve body needs to be replaced, proceed as under described:
- (a) Keep buoyancy tube inflated.
  - (b) Untighten valve body by spanner and terminal 99220796.
  - (c) Unscrew valve body by hand, putting attention not to lose the valve base inside the buoyancy chamber.
  - (d) Remove valve body and discard it.
  - (e) Screw the new valve body to the ferrule inside buoyancy chamber.
  - (f) Inflate buoyancy chamber and progressively tighten valve body by torque wrench and terminal 99220796 until a torque value of 25 Nm is reached.
  - (g) Submit buoyancy chamber to PRV and WP test as described in Par. 3.2.4 and Par. 3.2.5.

## 3.4

## INFLATION SYSTEMS

Inflation system - TPED Cylinders												
Size persons	Liferaft	Charged cylinder			Bare cylinder			Inflation system				
		Part No.	CO2 charge kg	N2 charge kg	Part No.	Volume Litre	Thread	Type	Valve Part No.	Operating Head Part No.	Membrane	Test pressure (bar)
4	Syntesy & Compact-Dry	10350060	1,70	0,07	99220663	2,7						
6	Syntesy & Compact-Dry	10350061	2,20	0,13	99220664	3,5	17E	VTE/87-PED	10399405	10399424	99201312	250
8	Compact-Dry	10350066	2,50	0,16	99220666	4						
8	Syntesy & Compact-Dry	10350067	3,10	0,20	99220667	5						
10	Syntesy & Compact-Dry	10350068	3,60	0,20	99220669	6	25E	VTE/99-ISO/V1W	10388046	10388043	99201319	250
12	Syntesy & Compact-Dry	10350069	4,25	0,27	99220670	7						

Inflation system - TPED Cylinders (alternative)												
Size persons	Liferaft	Charged cylinder			Bare cylinder			Inflation system				
		Part No.	CO2 charge kg	N2 charge kg	Part No.	Volume Litre	Thread	Type	Valve Part No.	Operating Head Part No.	Membrane	Test pressure (bar)
8	Compact-Dry	10350062	2,50	0,16	99220525	4						
8	Syntesy & Compact-Dry	10350063	3,10	0,20	99220470	5	1" NGT	VTE/99-ISO/V1	10388044	10388043	99201319	250
10	Syntesy & Compact-Dry	10350064	3,60	0,20	99220469	6						
12	Syntesy & Compact-Dry	10350065	4,25	0,27	99220471	7						

Inflation system - Tripe Approval Cylinders (TPED-DOT-TC)												
Size persons	Liferaft	Charged cylinder			Bare cylinder			Inflation system				
		Part No.	CO2 charge kg	N2 charge kg	Part No.	Volume Litre	Thread	Type	Valve Part No.	Operating Head Part No.	Membrane	Test pressure (bar)
4	Syntesy USA - Canada	10350070	1,70	0,07	51585001	3,5						
6	Syntesy USA - Canada	10350071	2,20	0,13	51585001	3,5						
8	Syntesy USA - Canada	10350072	3,10	0,20	51585002	5,4	25E	VTE/99-ISO/V1W	10388046	10388043	99201319	250
10	Syntesy USA - Canada	10350073	3,60	0,20	51585003	6,7						
12	Syntesy USA - Canada	10350074	4,25	0,27	51585003	6,7						

TABLE 3.3 - Inflation systems information

### 3.4.1 PERIODICITY OF INSPECTION

Operation	Periodicity			
	At every Liferaft service	At every Cylinder discharge and refilling	Max 5 years from last Hydrotest effected	Max 10 years from last Hydrotest effected
Cylinder weight check	x	x		
Operating head inspection	x	x		
Valve inspection		x		
Hydrostatic test (TPED Cylinders)		x		x (1)
Hydrostatic test (Triple Approval Cylinders)		x	x	

(1) unless otherwise specified by local regulation (see Table 3.1 & 3.2)

**TABLE 3.4 - Inflation system – Periodicity of inspection**

- 3.4.1.1 To carry out the checks and reconditioning listed below you need, besides normal workshop tools, also special devices for rearming the O.H. and for cylinder refilling, as listed in 5.11 TESTING AND REPAIRING EQUIPMENT.

### 3.4.2 CYLINDER WEIGHT CHECK

**WARNING:** RESPECT CAREFULLY THE SEQUENCE INDICATED.

- 3.4.2.1 After extracting the cylinder from the liferaft proceed as follows:
- (a) Secure the cylinder to a vise.
  - (b) Remove the Operating Head with a 27 mm wrench; hold the valve body with a 27 mm open wrench (VTE/87 valve) or a 35 mm open wrench (VTE/99 valve).
  - (c) Place the cylinder on a suitable scale.
  - (d) Remove safety plug and check weight. Tolerance admitted is  $\pm 55\text{g}$  on Total Weight as reported on label.
- 3.4.2.2 Discharge and recondition cylinder if one or more of the following cases is found:
- (a) Weight outside tolerance limits.
  - (b) Latest hydraulic test effected doesn't cover Liferaft next service (see date stamped on cylinder's top).

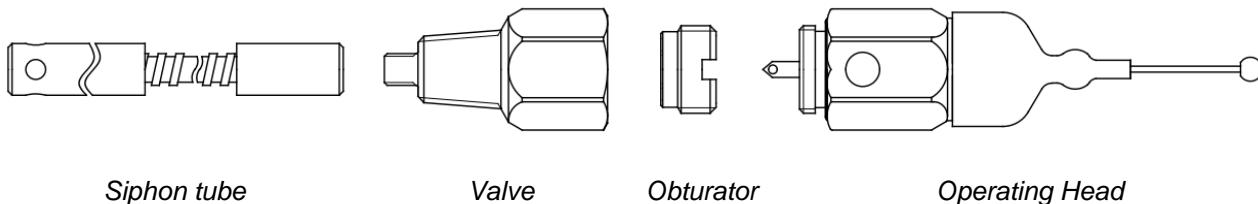
Cod 15210031 Operator Code: 1 - Prod. Code: 1 EUROVINIL S.p.a. 58100 GROSSETO. ITALY Via Genova 5 TEL +39.0564.487100 FAX +39.0564.487199	
Cylinder test date	01-20
Item Code	10350061
Cylinder S/N	L19765
Valve S/N	20J00422
CO2 Charge	2.200 Kg
N2 Charge	0.130 Kg
Tare	4.140 Kg
Total Weight	6.480 Kg
Theoric Weight	6.470 Kg
	12/08/2020

**FIGURE 3.20  
Cylinder label**

3.4.2.3 Reject and destroy cylinder if one or more of the following cases is found:

- (a) Visible swelling of the cylinder.
- (b) A dent which is deeper than 2 mm.
- (c) A dent which has a diameter of less than 30 times its depth.
- (d) A cut or gouge which is more than 2% of the cylinder's length.
- (e) A cut /gouge which is deeper than 5% of the cylinder wall thickness.
- (f) A crack in the metal.
- (g) Any delamination of the metal.
- (h) The wear of the base end of the cylinder has reduced the thickness to less than 75% of the original.
- (i) Heat damage has caused burning of the metal or distortion of the cylinder.
- (j) Stamp marks made by a metal punch on the parallel section of the cylinder.
- (k) Stamp marks are illegible.

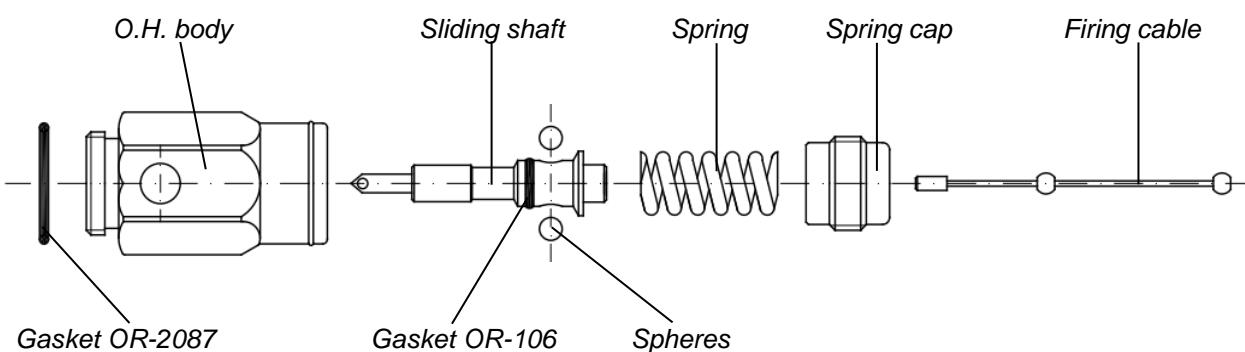
## 3.4.3

**INFLATION SYSTEM VTE/87-PED - CHECK AND INSPECTION**


**FIGURE 3.21**  
**VTE/87-PED inflation system - design**

## 3.4.3.1

The inspection of the Operating Head must be effected in every case, even if it seems externally in perfect condition.



**FIGURE 3.22**  
**VTE/87-PED Operating Head – Construction design**

## 3.4.3.2

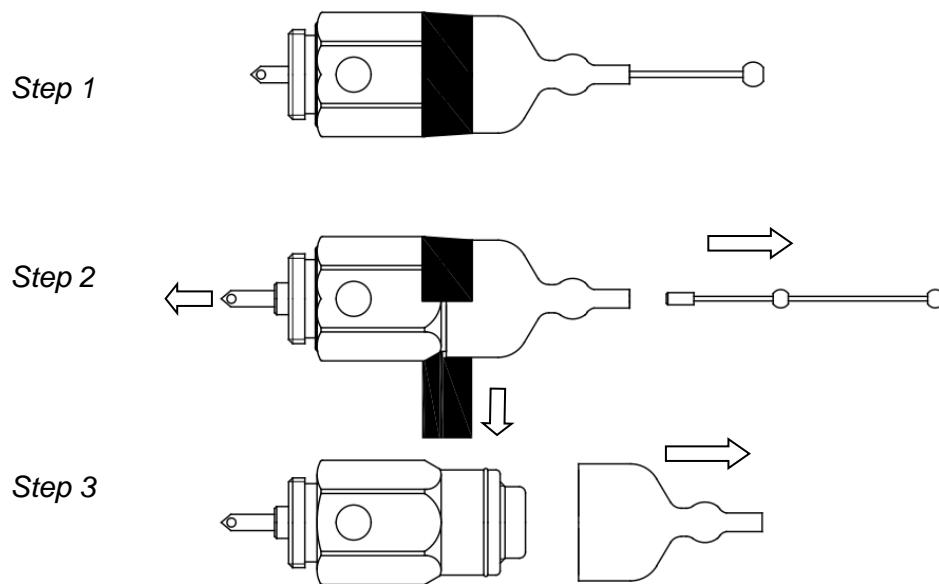
For the check proceed as follows:

- (a) After removing the Operating Head from the valve, pull the firing cable and verify that the sliding shaft has completed its stroke (Fig. 3.22 Steps 1-2).

**WARNING:** BE CAREFUL NOT TO HURT YOUR HANDS DURING ACTIVATION.

- (b) Remove the protection cap after removing the adhesive tape around it (Fig. 3.23 Step 3).
- (c) Unscrew the spring cap so to inspect the internal parts and verify that they are not compromised by grime and oxide; in case carry out the procedure described on Par. 3.4.3.3.

**WARNING:** VERIFY ALWAYS THE STATE OF THE SPRING CAP, IN CASE OF DAMAGE OR CRACKS, IMMEDIATELY REPLACE THE OPERATING HEAD.



**FIGURE 3.23  
VTE/87-PED Operating Head – Activation**

Otherwise, if the internal parts are contaminated by grime and oxide, proceed as follows:

- (a) Remove the spring from its side.
- (b) Remove the sliding shaft from its side.
- (c) Remove gaskets and spheres from their sides, clean the sliding shaft and the operative head body with petrol.
- (d) Remove gasket OR-2087 (P/N 99182145) from Operating Head body.
- (e) Verify that the spheres don't have any sign of oxide, otherwise replace them.
- (f) Spread gaskets and spheres with grease type Aeroshell or equivalent before lodging them.
- (g) Insert the sliding shaft in its side of the valve body (Fig. 3.23 Step 1).
- (h) Insert the spring (Fig. 3.23 Step 2), verifying that it enters the first part of the sliding shaft.
- (i) Screw the spring cap up to reach the bottom with a torque value of about 5Nm (Fig. 3.23 Step 3).

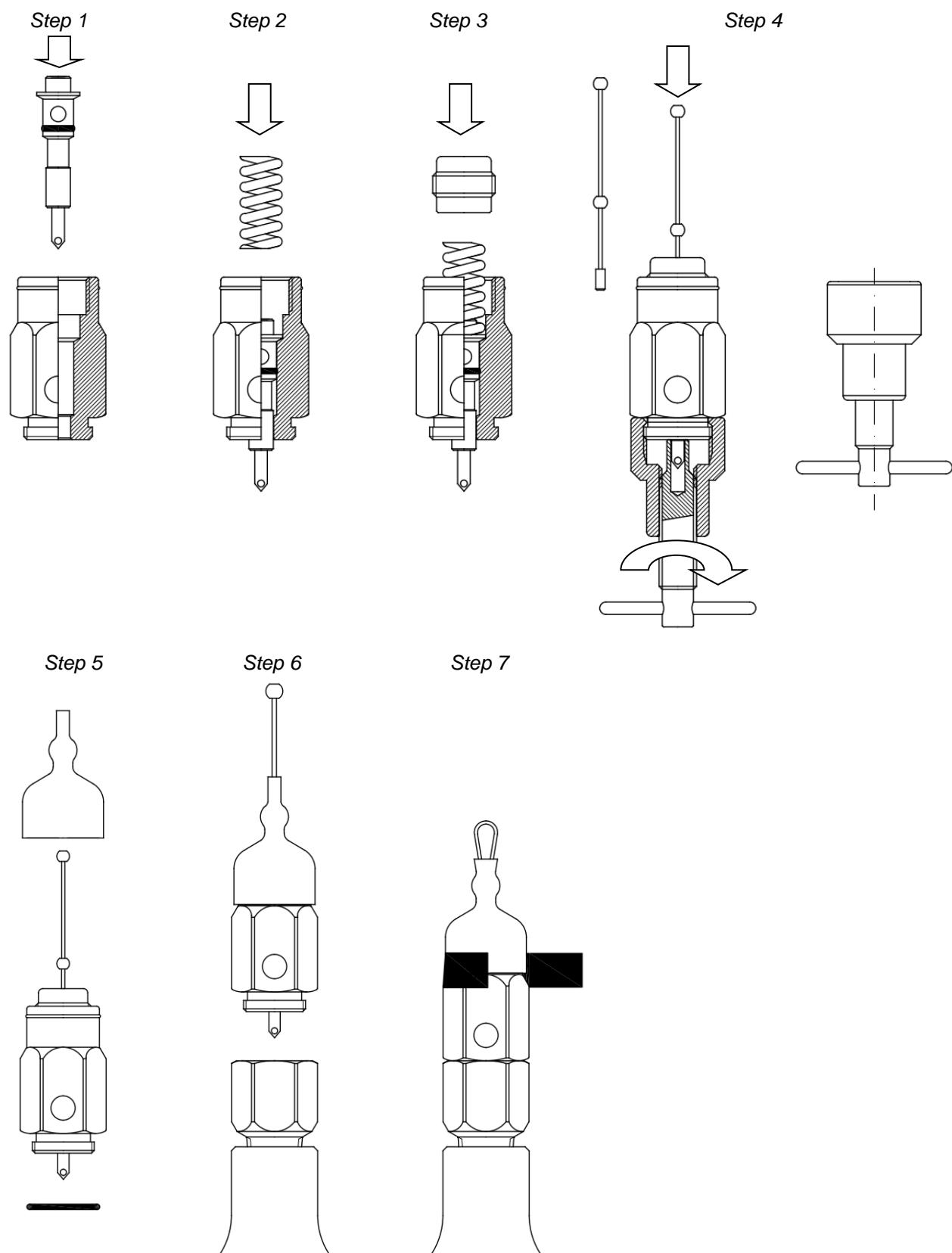
#### 3.4.3.3 To rearm the operative head proceed as follows:

- (a) Screw rearming tool P/N 99990985 to the operating head body (Fig. 3.23 Step 4).
- (b) Compress the sliding shaft up to its maximum travel.
- (c) Insert the firing cable up to reach the bottom (Fig. 3.23 Step 4).
- (d) Unscrew the lever of the rearming tool up to set free the axial effort.
- (e) Take the tool off the operating head.

- (f) Insert the protection cap (Fig. 3.23 Step 5) making it slide until the beginning of the hexagonal part (replace the protection cap if it's damaged). The sphere of the firing cable must be placed at about in the middle of the cylindrical terminal of the cap so to maintain the water-proof condition.
- (g) Apply a new gasket OR-2087 P/N 99182145 (Fig. 3.22 Step 5).
- (h) Install the Operating Head to the valve by a 27 mm torque wrench with a coupling torque of 40 Nm (Fig. 3.22 Step 6).
- (i) Fix the cap to the valve body with two turns of adhesive tape (Fig. 3.22 Step 7).

**WARNING:**

THE ONLY COMPONENTS THAT CAN BE REPLACED ARE THE "OR" GASKETS, SPHERES, CAP AND FIRING CABLE. IF ANY OTHER PART SHOULD BE DAMAGED, REPLACE THE COMPLETE OPERATIVE HEAD.



**FIGURE 3.24**  
VTE/87-PED Operating Head – Rarming illustrated procedure

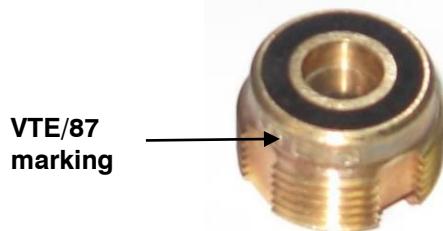
3.4.3.4 Valve check must be effected after every activation of the inflation system and, however, when there is weight loss on the cylinder.

3.4.3.5 For VTE/87-PED valve check proceed as under described:

**WARNING:** FOR YOUR SAFETY, BEFORE EXECUTING THE FOLLOWING OPERATION YOU MUST DRESS: PROTECTION GLASSES, GLOVES AND EAR PROTECTION CAP. SECURE THE CYLINDER AT A SOLID PLACE. PUT YOURSELF OUTSIDE THE GAS JET.

- (a) Secure the cylinder on a bench vice, then pull the firing cable and wait for the complete discharge of the cylinder.
- (b) Remove the Operating Head from the valve using a 27 mm open spanner and submit it to inspection as described in Par. 3.4.3.3.
- (c) Remove the valve from the cylinder using a 35 mm open spanner.
- (d) Remove the siphon tube from the valve and check its conditions.
- (e) Remove and discard the obturator.
- (f) Remove Teflon from the external thread of the valve body.
- (g) Clean the and check valve body, particularly the internal and external threads. Replace the valve if any of the two threads is found damaged
- (h) Install new obturator P/N 99201312 on the valve body, screw it without tighten.

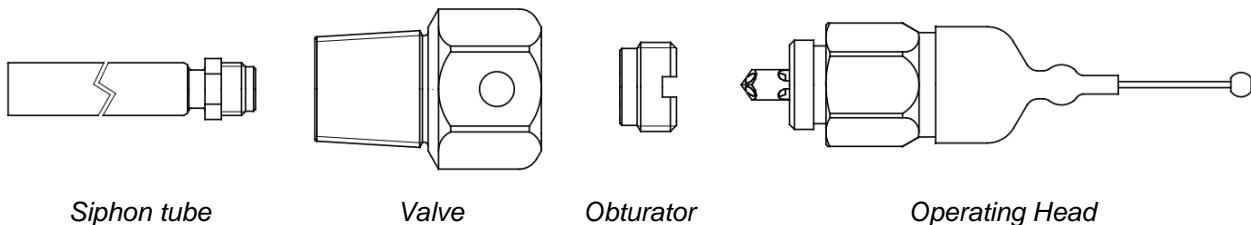
**WARNING:** USE EXCLUSIVELY OBTURATORS FOR VALVES VTE/87-PED (P/N 99201312), EASILY IDENTIFIABLE FOR "VTE/87" MARKING ON THE SIDE (SEE IMAGE).



**FIGURE 3.25**  
**VTE/87-PED Obturator**

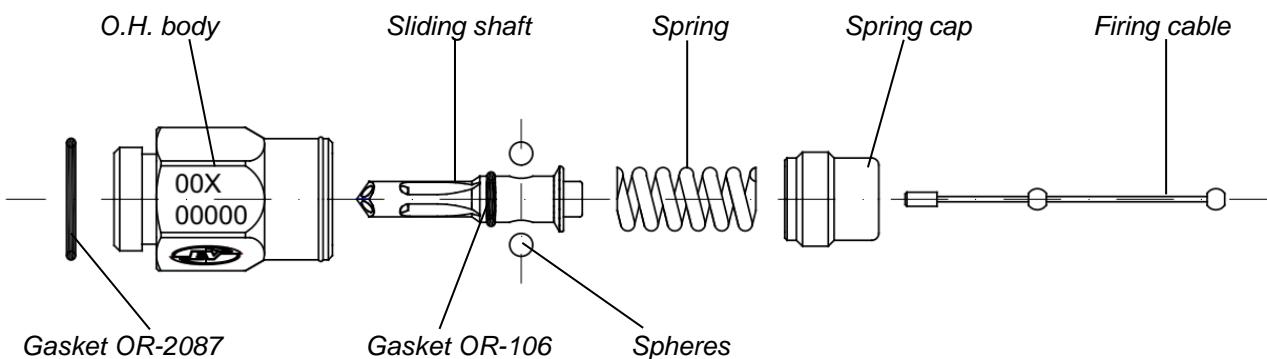
- (i) wrap the external thread of the valve to install with teflon tape, width 19.5mm and thickness 10/100, executing 12 turns well-tight, clockwise referring to the threaded side.
- (j) Screw the siphon tube to the valve, clutch with 10N/m torque.
- (k) Proceed to install valve on cylinder as described on following paragraphs.

## 3.4.4

**INFLATION SYSTEM VTE/99-PED - CHECK AND INSPECTION**


**FIGURE 3.26**  
**VTE99-PED inflation system - design**

3.4.4.1 The inspection of the Operating Head must be effected in every case, even if it seems externally in perfect condition.



**FIGURE 3.27**  
**VTE/99-PED Operating Head – Construction design**

3.4.4.2 For the check proceed as follows:

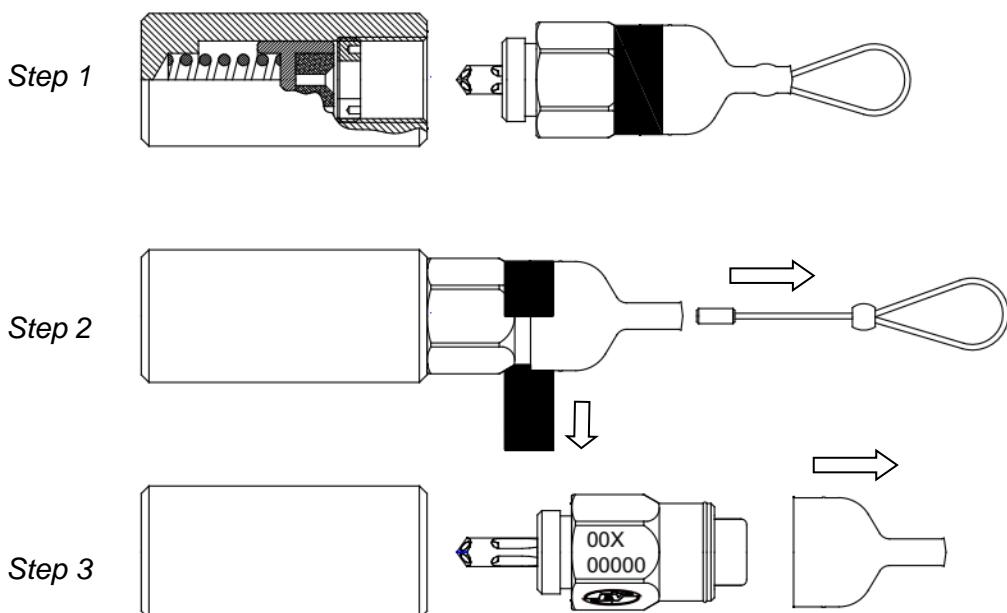
- After removing the Operating Head from the valve, fit it to the Shock absorber P/N 99220126 (Fig. 3.28 Steps 1-2).
- Pull the firing cable, remove O.H. from Shock absorber and verify that the sliding shaft has completed its stroke (Fig. 3.28 Steps 2-3).

**WARNING:** FOR VTE/99-PED PULL ALWAYS O.H. CABLE WITH SHOCK ABSORBER FITTED. THIS IN ORDER TO PROTECT HANDS FROM ACCIDENTAL HURT AND TO AVOID MECHANICAL STRESS TO THE SLIDING SHAFT.

- Remove the protection cap after removing the adhesive tape around it (Fig. 3.28 Steps 2-3).
- Unscrew the spring cap so to inspect the internal parts and verify that they are not compromised by grime and oxide; in case carry out the procedure described on Par. 3.4.4.3.

**WARNING:** VERIFY ALWAYS THE STATE OF THE SPRING CAP, IN CASE OF DAMAGE OR CRACKS, IMMEDIATELY REPLACE THE OPERATING HEAD.

- (e) Remove gaskets and spheres from their sides, clean the sliding shaft and the operative head body with petrol.



**FIGURE 3.28**  
**VTE/99-PED Operating Head – Activation**

- (f) Remove gasket OR-2087 (P/N 99182145) from Operating Head body.
- (g) Verify that the spheres don't have any sign of oxide, otherwise replace them.
- (h) Spread gaskets and spheres with grease type Aeroshell or equivalent before lodging them.
- (i) Insert the sliding shaft in its side of the valve body (Fig. 3.29 Step 1).
- (j) Insert the spring (Fig. 3.29 Step 2), verifying that it enters the first part of the sliding shaft.
- (k) Screw the spring cap up to reach the bottom with a torque value of about 5Nm (Fig. 3.29 Step 3).

#### 3.4.4.3

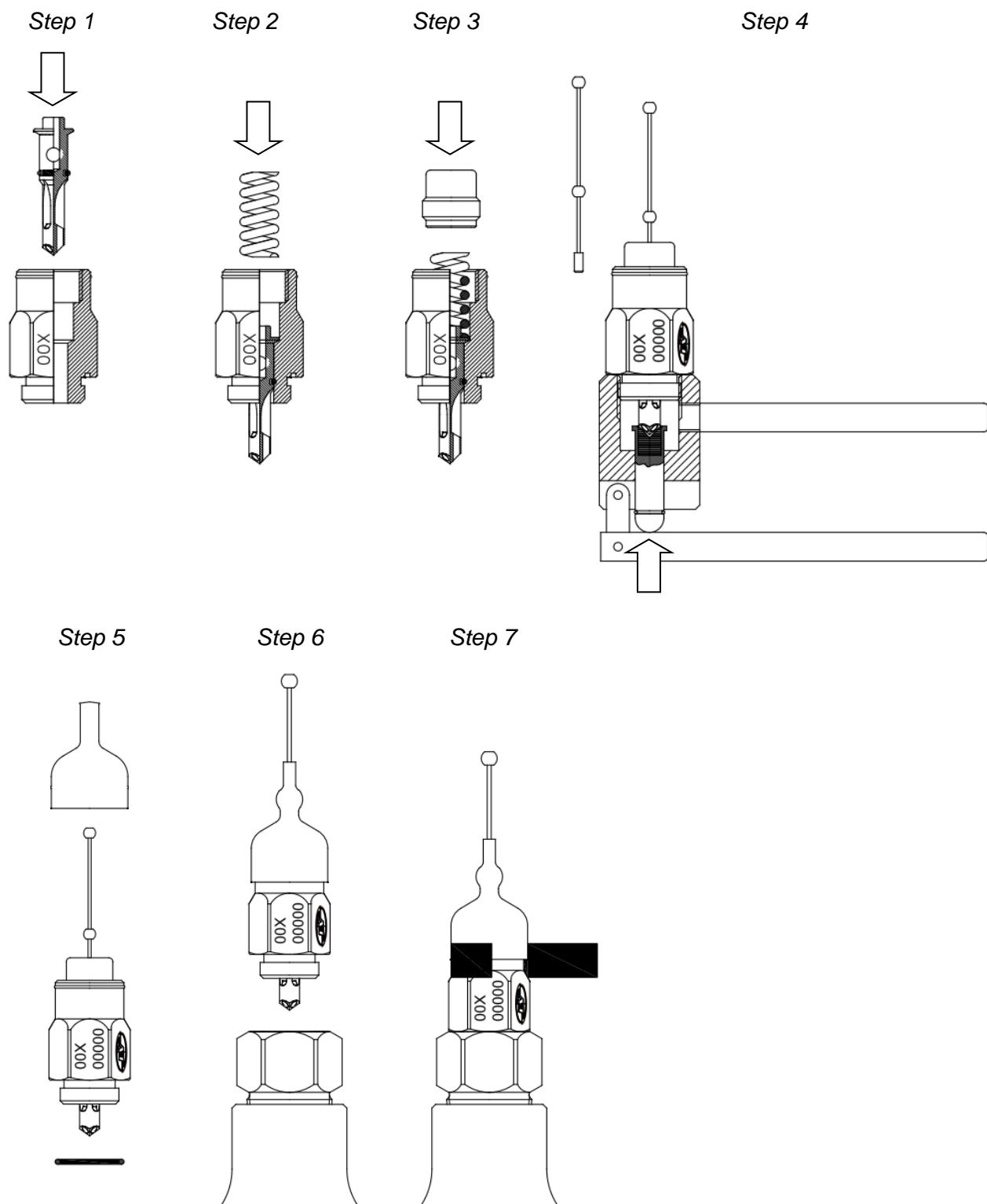
To rearm the operative head proceed as follows:

- (a) Screw rearming tool P/N 99990982 to the operating head body (Fig. 3.29 Step 4).
- (b) Push the lever and compress the sliding shaft up to its maximum travel.
- (c) Insert the firing cable up to reach the bottom (Fig. 3.29 Step 4).
- (d) Release the lever of the rearming tool up to set free the axial effort.
- (e) Take the tool off the operating head.
- (f) Insert the protection cap (Fig. 3.29 Step 5) making it slide until the beginning of the hexagonal part (replace the protection cap if it's damaged). The sphere of the firing cable must be placed at about in the middle of the cylindrical terminal of the cap so to maintain the water-proof condition.
- (g) Apply a new gasket OR-2087 P/N 99182145 (Fig. 3.29 Step 5).

- (h) Install the Operating Head to the valve by a 27 mm torque wrench with a coupling torque of 40 Nm (Fig. 3.29 Step 6).
- (i) Fix the cap to the valve body with two turns of adhesive tape (Fig. 3.29 Step 7).

**WARNING:**

ALL COMPONENTS CAN BE REPLACED EXCEPT OPERATING HEAD BODY AND SLIDING SHAFT. IF ONE OF THESE IS FOUND DAMAGED, REPLACE THE COMPLETE OPERATING HEAD.



**FIGURE 3.29**  
VTE/99-PED Operating Head – Rarming illustrated procedure

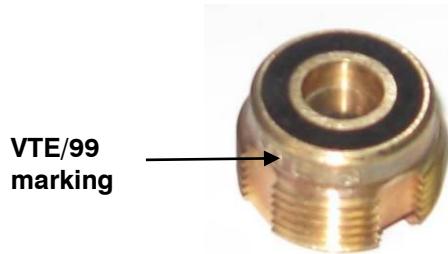
3.4.4.4 Valve check must be effected after every activation of the inflation system and, however, when there is weight loss on the cylinder.

3.4.4.5 For VTE/99-PED valve check, proceed as under described:

**WARNING:** FOR YOUR SAFETY, BEFORE EXECUTING THE FOLLOWING OPERATION YOU MUST DRESS: PROTECTION GLASSES, GLOVES AND EAR PROTECTION CAP. SECURE THE CYLINDER AT A SOLID PLACE. PUT YOURSELF OUTSIDE THE GAS JET.

- (a) Secure the cylinder on a bench vice, then pull the firing cable and wait for the complete discharge of the cylinder.
- (b) Remove the Operating Head from the valve using a 27 mm open spanner and submit it to inspection as described in Par. 3.4.3.3.
- (c) Remove the valve from the cylinder using a 35 mm open spanner.
- (d) Remove the siphon tube from the valve and check its conditions.
- (e) Remove and discard the obturator.
- (f) Remove Teflon from the external thread of the valve body.
- (g) Clean the and check valve body, particularly the internal and external threads. Replace the valve if any of the two threads is found damaged
- (h) Install new obturator P/N 99201312 on the valve body, screw it without tighten.

**WARNING:** USE EXCLUSIVELY OBTURATORS FOR VALVES VTE/99-PED (P/N 99201319), EASILY IDENTIFIABLE FOR "VTE/99" MARKING ON THE SIDE (SEE IMAGE).

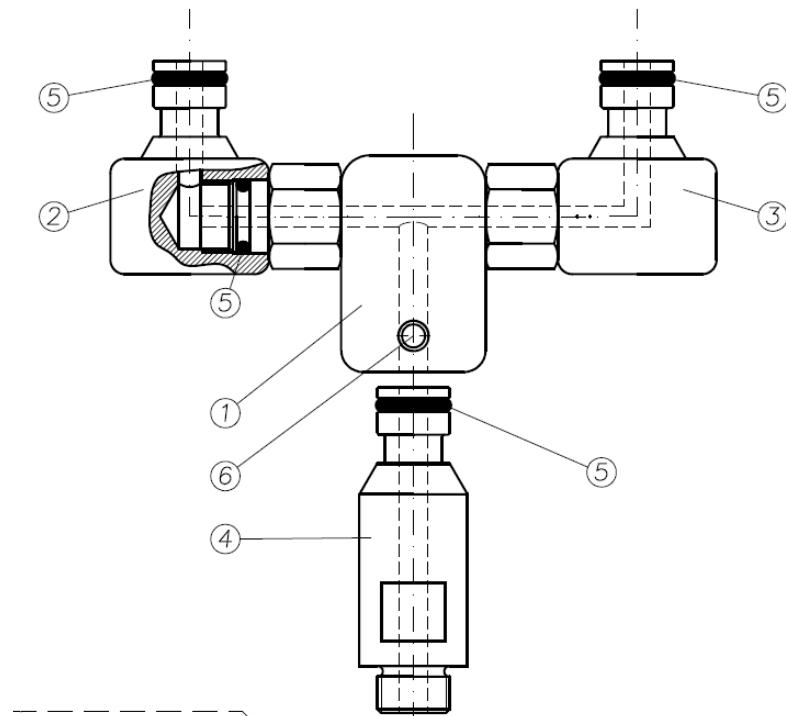


**FIGURE 3.30**  
**VTE/99-PED Obturator**

- (i) wrap the external thread of the valve to install with teflon tape, width 19.5mm and thickness 10/100, executing 12 turns well-tight, clockwise referring to the threaded side.
- (j) Screw the siphon tube to the valve, clutch with 10N/m torque.
- (k) Proceed to install valve on cylinder as described on following paragraphs.

## 3.4.5

## INFLATION SYSTEM / BUOYANCY CONNECTION CVT/09



Item	Description	P/N
1	Connection system CVT/09M	99201345
	Connection system CVT/09 (Compact-Dry)	99201331
2	Terminal for upper buoyancy (non-plated)	N/A
3	Terminal for lower buoyancy (plated)	N/A
4	Inox terminal	99201346
5	OR-106 gasket	99182147
6	Screw Inox M4x8	99220695

**FIGURE 3.31**  
**Connection system CVT/09M - Construction design**

- 3.4.5.1 Connection system CVT/09-M connects the inflation system to the Liferaft upper and lower buoyancies. Inox terminal connects CVT/09 system to Operating Head (VTE/87-PED) or Valve (VTE/99-PED)
- 3.4.5.1 It is allowed to replace only the components listed on figure 3.31.

### 3.4.6 CHECK AND TEST OF THE CYLINDER

**WARNING:** VERIFY THE PERFECT INTEGRITY OF THE CYLINDER EVEN ON CASE OF PERFECT TIGHTNESS OF THE COMPLETE INFLATION SYSTEM.

3.4.6.1 Visual check the cylinder, verifying conditions, i.e. dents, rust with corrosion of the material, etc.

3.4.6.2 In case of cylinder discharge, check the structural integrity submitting it to a hydraulic test.

**WARNING:** THE CYLINDER MUST BE SUBMITTED TO HYDRAULIC TEST WITHIN A MAXIMUM 10 YEARS (OR 5 YEARS IF REQUIRED BY LOCAL REGULATIONS OR BY CYLINDER TYPE) FROM LAST HYDRAULIC TEST OR ANY TIME THE INFLATION SYSTEM IS ACTIVATED (SEE TABLE 3.4).

3.4.6.3 Hydraulic test the cylinder up to the safety pressure reported on cylinder's neck. Check for the absence of damage or collapsing of the cylinder's structure. In case of damage or collapses, discard and destroy the cylinder.

3.4.6.4 After Hydraulic test is effected. check the integrity and functionality of the neck's threading, eliminate possible incrustation or rust, repaint it perfectly (primer and paint green RAL 6018), then reassemble the valve and refill.

### 3.4.7 CYLINDER REFILLING

3.4.7.1 Cylinder refilling procedure is common for VTE/87-PED and VTE/99-PED, varying only for specific details listed on Table 3.17.

	Valve VTE/87-PED	Valve VTE/99-PED
<b>Obturator</b>	99201312	99201319
<b>Cylinder refilling tool</b>	99990986	99200005
<b>Valve plug for refilling</b>	N/A	99201296
<b>Valve wrench size</b>	27 mm	35 mm
<b>Valve wrench torque</b>	100 Nm	130 Nm

**TABLE 3.5 - Valves – specific details**

3.4.7.2 Proceed to install the valve on the cylinder according to the following procedure:

- (a) Clean the cylinder's neck thread valve blowing with compressed air, throw out any impurity into the cylinder, beating the cylinder's neck on a nylon plate for two-three times.
- (b) Screw by hand the valve into the cylinder's neck and close by means a torque wrench with torque of 100 Nm (VTE/87-PED) or 130 Nm (VTE/99-PED).
- (c) Check presence of the obturator into the valve body, turn it up to reach the bottom (Fig. 3.30 Step 1).
- (d) Weight and register tare of the complex cylinder + valve + obturator.

**NOTE:** BEFORE CHARGING, PUT REFILLING TOOL AND PLUG ON THE SCALE AND SET BALANCE TO "0".

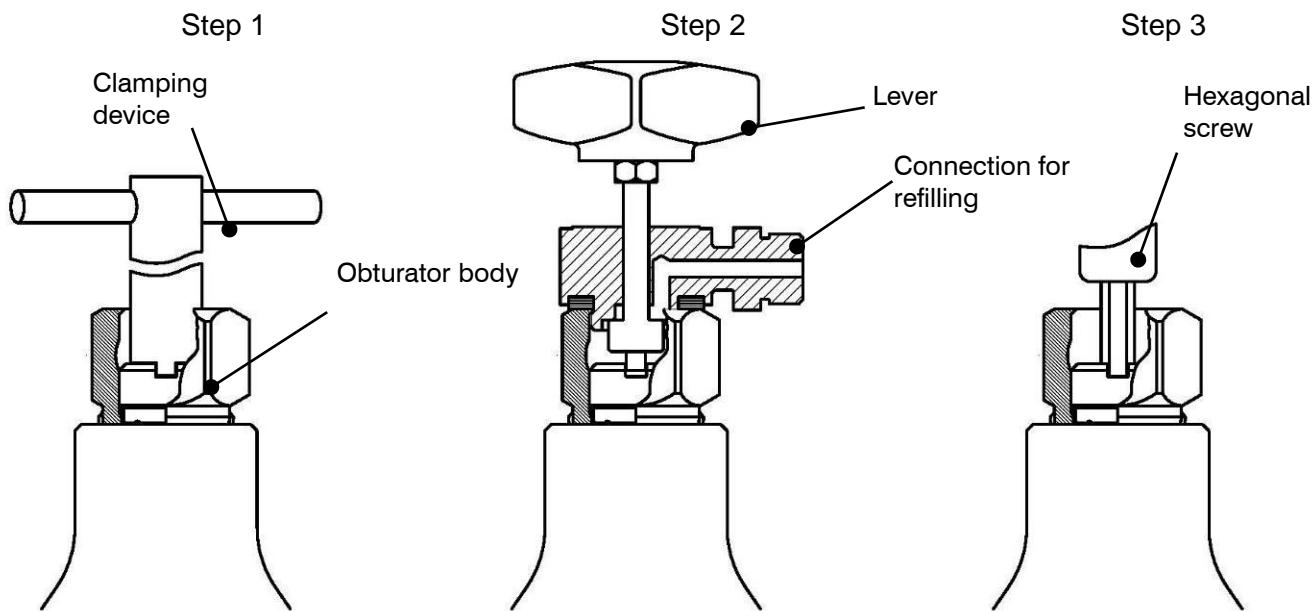
- (e) Close the valve exit by means of the plug P/N 99201296.
- (f) Screw on the valve the recharging tool. Verify that the edge enters into the side of the obturator body (Fig. 3.30 Step 2).
- (g) Turn the lever counterclockwise up to reach the stop and connect the refilling tube (Fig. 3.30 Step 2).
- (h) Insert the quantity of Carbon Dioxide (CO<sub>2</sub>) requested by the cylinder (see Table 3.15).
- (i) Insert the quantity of Nitrogen (N<sub>2</sub>) requested by the cylinder (see Table 3.15).

**WARNING:** DURING CHARGING OPERATION, MAXIMUM PRESSURE DOESN'T EXCEED 200 BAR AT 20 °C.

- (j) When the refilling operation is finished, close the pump and close the tap.
- (k) Turn clockwise the lever of the refilling tool up to close the obturator.
- (l) Discharge the residual gas from the refilling circuit.

**WARNING:** IT IS DANGEROUS TO UNSCREW THE RECHARGING TUBE BEFORE DISCHARGING THE RESIDUAL GAS FROM THE RECHARGING CIRCUIT

- (m) Disengage the refilling tube.
- (n) Check cylinder weight; only tolerances in excess up to 20 grams on total weight of the cylinder are allowed.
  - if over tolerance: release the excess gas turning refilling tool lever up to reach tolerance
  - if under tolerance: discharge, hydrotest and refill cylinder.
- (o) Remove the refilling tool from the valve, taking care to raise the lever so to don't hook the obturator body.
- (p) Tighten obturator by means of an 8mm hexagonal screw, applying a torque of 30 Nm (Fig. 3.30 Step 3).
- (q) Check the total weight obtained, reporting it on the label (effective weight).
- (r) Submit the charged cylinder to a quarantine period of at least 15 days or, as alternative, make chemical test of CO<sub>2</sub> leakage as indicated on Par. 3.4.8.
- (s) In case of gas loss, discharge the cylinder, hydrotest and repeat the procedure over described replacing the obturator.
- (t) Submit cylinder to Leak Test as described on Par. 3.4.7.



**FIGURE 3.32**  
**Refilling**

### 3.4.8 CYLINDER LEAK TEST

**WARNING:** ALWAYS CHECK WEIGHT OF THE CHARGED CYLINDER BEFORE INSTALLATION ON RAFT.

#### 3.4.8.1 Method A. 15-day quarantine period

- (a) Check the weight of the cylinder at regular intervals during the 15-day quarantine period.
- (b) After fifteen (15) days the weight must be the same as when it was first filled.
- (c) If the weight has decreased, proceed as described on par. 3.4.5.

**WARNING:** A CHARGED CYLINDER SHOWING LOSS OF WEIGHT CANNOT BE USED IN SERVICE.

- (d) If weight is the same, the cylinder can be used in service.

#### 3.4.8.2 Method B. Chemical leak test

- (a) Before the gas cylinder is chemically leak tested, the mass of the gas in the cylinder is to be recorded, ensuring that it is within the limits indicated ( $\pm 55\text{g}$ ). If there is insufficient gas in the cylinder, and/or a leak is detected, check cylinder as described in Par. 3.4.2.
- (b) Lay the cylinder to be tested on its side, in a rack, so that the valve end is protruding. Ensure the valve and shoulder of the cylinder are free from dust and other contaminates by carefully wiping using a clean, dry cloth.

- (c) Using the measuring cylinder provided in the test kit, transfer 25ml of the test solution into a polythene bag. The initial colour of the test solution will be a dark pink colour.
- (d) Attach the open end of the bag over valve head and attach it to the cylinder body using one or more elastic bands. Make sure there are no air gaps in the seal.
- (e) The polythene bag shall then hang 20 cm off the valve end of the cylinder with the test solution in one corner.
- (f) Maintain the test for a period of not less than one hour. Remove the bag, (ends closed), and gently shake the solution. Make the observation as detailed in Par. 3.4.7.3. Alternatively, the bag can be shaken while still hanging from the cylinder.
- (g) A control sample is necessary, this is made by introducing 25ml of test solution into a bag which is not fitted to a cylinder, but must be sealed at the open end, to exclude contamination from the atmosphere. This bag must be placed on the rack in the vicinity of the cylinders under test, and the above test method applied.

## 3.4.8.3

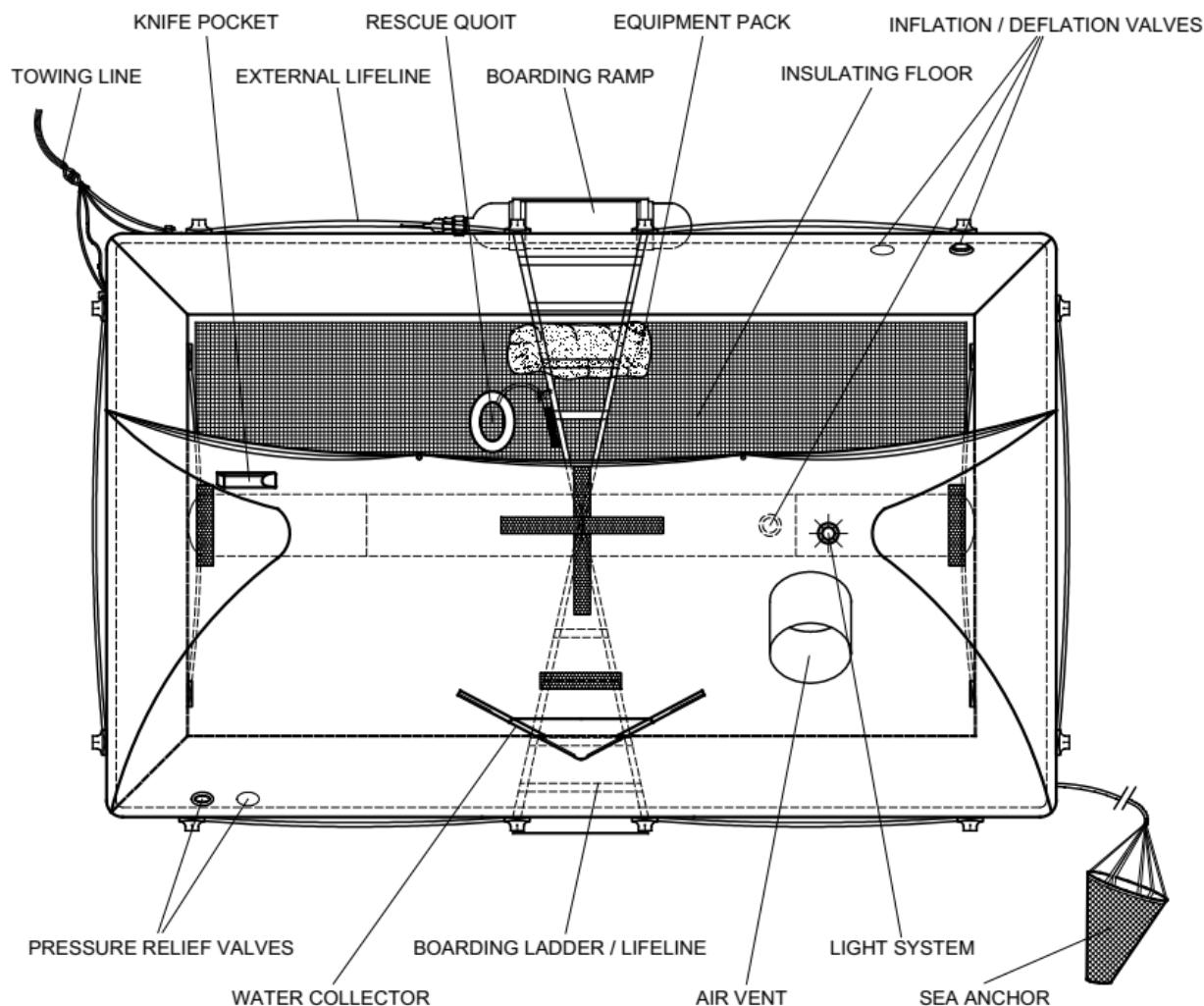
## Observations

- (a) CO<sub>2</sub> leaking from the cylinder will cause the pink colour of the test solution to be lost and the test solution will become clear.
- (b) If no colour change is observed there is no leak of gas from the cylinder.
- (c) The control sample shall not change colour during the test. If a colour change takes place, this indicates that the atmosphere in the test area is contaminated with CO<sub>2</sub> and tests carried out under this control sample are therefore invalidated.
- (d) Tests shall be repeated after corrective action has been taken on the atmosphere, i.e. area ventilated.

### 3.5 LIFERAFT EQUIPMENT

#### 3.5.1 RAFT STANDARD EQUIPMENT

3.5.1.1 After carrying out all the checks and testing on the pneumatic part, on the inflation system, on the valves, and after carrying out all the eventual repairs, make visual check, at raft inflated in the Liferaft standard equipment.



**FIGURE 3.31**  
Standard equipment position (ISO raft shown)

3.5.1.2 The operations are the following:

- Check the integrity, and in case repair, the canopy and the air vent. Also check the preservation of the lanyard and floating knife in the canopy's pocket (or in the internal boarding ladder for Compact-Dry rafts).
- Check integrity of the internal and external lifelines.
- Check integrity of the boarding ramps and capsizing system.
- Check integrity and, if necessary, replace the following details:

- Sea Anchor and lanyard, floating ring with lanyard, boarding ramps, towing system.
- (e) Check efficiency of the lighting system; from batteries to lights internal and external. Verify also the expiry date of the batteries, replace if expires before next service.
- (f) Check integrity of the reflecting tape (if fitted) and place new tape over, if the old one is defective.
- (g) Check the preservation conditions of the insulating floor (if fitted).
- (h) Check the presence and conditions of the immediate action leaflet.
- (i) Fill out the test schedule.

### 3.5.2 EQUIPMENT PACK

3.5.2.1 The equipment tables under reported indicate type and quantity of the packs needed for each configuration of the liferaft.

Equipment	Part Number	Quantity				
		4 P	6 P	8 P	10 P	12 P
<b>Equipment Pack (common ISO)</b>	-					
Adhesive repair kit	10360039	1	1	1	1	1
Whistle	99107003	1	1	1	1	1
Sponge	50300008	2	2	2	2	2
Bailer	10399465	1	1	1	1	1
Sea-sickness bags	52500506	4	6	8	10	12
Inflator	99991399	1	1	1	1	1
Connector for inflator	99173021	1	1	1	1	1
Connector for valve Bravo	99101110	1	1	1	1	1
Drinking vessel	99179201	1	1	1	1	1
Immediate Action leaflet	15100347	1	1	1	1	1
Signalling instructions	15100345	1	1	1	1	1
Polyethilene sachet 25x40cm	52500405	1	1	1	1	1
<b>Pack Rockets</b>	-					
Parachute Rocket	(see Table 3.18)	2	2	2	2	2
Polyethilene sachet 25x40cm	52500405	1	1	1	1	1
<b>Pack Handflares</b>	-					
Red handflare	(see Table 3.18)	3	3	3	3	3
Polyethilene sachet 10x26cm	52500015	1	1	1	1	1
<b>Equipment Pack</b>	-					
Leak stopper (Small)	99320013	1	1	1	1	1
Leak stopper (Medium)	99320012	1	1	1	1	1
Signalling mirror	10316653	1	1	1	1	1
LED light with spare	10316773	1	1	1	1	1
Spare batteries	10316703	2	2	2	2	2
Sea-sickness tablets (60pcs)	9R12864009	1	1	1	1	2
Polyethilene sachet 17x25cm	52500016	1	1	1	1	1

**TABLE 3.6 - Emergency Equipment < 24 hours**

Equipment	Part Number	Quantity				
		4 P	6 P	8 P	10 P	12 P
<b>Additional equipment Pack B</b>	-					
Thermal cover	9R06317009	2	2	2	2	2
First Aid Kit	99930166	1	1	1	1	1
Sea-anchor	10359060	1	1	1	1	1
Radar Reflector	96880092	1	1	1	1	1
Smoke signal	(see Table 3.18)	1	1	1	1	1
Polyethilene sachet 25x40cm	52500405	1	1	1	1	1

**TABLE 3.7 - Additional Emergency Equipment < 24 hours B-PACK**

Equipment	Part Number	Quantity				
		4 P	6 P	8 P	10 P	12 P
<b>Equipment Pack (common ISO)</b>	-					
Adhesive repair kit	10360039	1	1	1	1	1
Whistle	99107003	1	1	1	1	1
Sponge	50300008	2	2	2	2	2
Bailer	10399465	1	1	1	1	1
Sea-sickness bags	52500506	4	6	8	10	12
Inflator	99991399	1	1	1	1	1
Connector for inflator	99173021	1	1	1	1	1
Connector for valve Bravo	99101110	1	1	1	1	1
Drinking vessel	99179201	1	1	1	1	1
Immediate Action leaflet	15100347	1	1	1	1	1
Signalling instructions	15100345	1	1	1	1	1
Polyethilene sachet 25x40cm	52500405	1	1	1	1	1
<b>Pack Rockets</b>	-					
Parachute Rocket	(see Table 3.18)	2	2	2	2	2
Polyethilene sachet 25x40cm	52500405	1	1	1	1	1
<b>Pack Handflares</b>	-					
Red handflare	(see Table 3.18)	6	6	6	6	6
Polyethilene sachet 10x26cm	52500015	2	2	2	2	2
<b>Pack Food rations</b>	-					
Food rations	(see Table 3.16)	4	6	8	10	12
Polyethilene sachet 25x70cm	52500029	1	1	1	1	1
<b>Pack Water rations</b>	-					
Water rations	(see Table 3.17)	6 Lt	9 Lt	12 Lt	15 Lt	18 Lt
Polyethilene sachet 25x70cm	52500029	1	1	1	1	1
<b>Pack FAK &amp; batteries</b>						
First Aid Kit	99930166	1	1	1	1	1
Sea-sickness tablets (60pcs)	9R12864009	1	1	1	1	2
Spare batteries	10316703	4	4	4	4	4
Polyethilene sachet 25x40cm	52500405	1	1	1	1	1
<b>Pack no-lifed items</b>						
Thermal cover	9R06317009	2	2	2	2	2
Leak stopper (Small)	99320013	1	1	1	1	1
Leak stopper (Medium)	99320012	1	1	1	1	1
Signalling mirror	10316653	1	1	1	1	1
LED light with spare	10316773	1	1	1	1	1
Polyethilene sachet 25x40cm	52500405	1	1	1	1	1

[TABLE 3.8 - Emergency Equipment > 24 hours](#)

Equipment	Part Number	Quantity				
	-	4 P	6 P	8 P	10 P	12 P
<b>Equipment Pack (common)</b>	-					
Adhesive repair kit	10360039	1	1	1	1	1
Whistle	99107003	1	1	1	1	1
Sponge	50300008	2	2	2	2	2
Bailer	10399465	1	1	1	1	1
Sea-sickness bags	52500506	4	6	8	10	12
Inflator	99991399	1	1	1	1	1
Connector for inflator	99173021	1	1	1	1	1
Connector for valve Bravo	99101110	1	1	1	1	1
Drinking vessel	99179201	1	1	1	1	1
Immediate Action leaflet	15100347	1	1	1	1	1
Signalling instructions	15100345	1	1	1	1	1
Polyethilene sachet 25x40cm	52500405	1	1	1	1	1
<b>Pack Rockets</b>	-					
Parachute Rocket	(see Table 3.18)	2	2	2	2	2
Polyethilene sachet 25x40cm	52500405	1	1	1	1	1
<b>Pack Handflares</b>						
Red handflare	(see Table 3.18)	3	3	3	3	3
Polyethilene sachet 10x26cm	52500015	1	1	1	1	1
<b>Pack Water</b>	-					
Water rations	(see Table 3.17)	2 Lt	3 Lt	4 Lt	5 Lt	6 Lt
Polyethilene sachet 25x70cm	52500029	1	1	1	1	1
<b>Pack FAK &amp; batteries</b>						
First Aid Kit	99930166	1	1	1	1	1
Spare batteries	10316703	4	4	4	4	4
Polyethilene sachet 25x40cm	52500405	1	1	1	1	1
<b>Pack No-lifted items</b>						
Thermal cover	9R06317009	2	2	2	2	2
Leak stopper (Small)	99320013	1	1	1	1	1
Leak stopper (Medium)	99320012	1	1	1	1	1
Signalling mirror	10316653	1	1	1	1	1
LED light with spare	10316773	2	2	2	2	2
Polyethilene sachet 17x25cm	52500016	1	1	1	1	1
<b>Pack Grab Bag</b>	-					
Grab bag 4-8P	10399402	1	1	1	-	-
Grab bag 10-12P	10399412	-	-	-	1	1
Food rations	(see Table 3.16)	4	6	8	10	12
Water rations	(see Table 3.17)	4 Lt	6 Lt	8 Lt	10 Lt	12 Lt
Sea-sickness tablets (60pcs)	9R12864009	1	1	1	1	2

TABLE 3.9 - Emergency Equipment > 24 hours GRAB BAG

<b>Equipment</b>	<b>Part Number</b>	<b>Quantity</b>				
<b>Equipment Pack (common ITA)</b>	-	<b>4 P</b>	<b>6 P</b>	<b>8 P</b>	<b>10 P</b>	<b>12 P</b>
Adhesive repair kit	10360039	1	1	1	1	1
Whistle	99107003	1	1	1	1	1
Sponge	50300008	2	2	2	2	2
Bailer	99990017	1	1	1	1	1
Inflator	99991399	1	1	1	1	1
Connector for inflator	99173021	1	1	1	1	1
Connector for valve Bravo	99101110	1	1	1	1	1
LED light with spare	10316773	2	2	2	2	2
Polyethilene sachet 25x40cm	52500405	1	1	1	1	1
<b>Pack no-lifed items</b>	-					
Signalling mirror	10316653	1	1	1	1	1
Fishing kit	99930172	2	2	2	2	2
Signalling instructions	15100345	1	1	1	1	1
Sea-sickness bags	52500506	4	6	8	10	12
Immediate Action leaflet	15100347	1	1	1	1	1
Polyethilene sachet 17x25cm	52500016	1	1	1	1	1
<b>Pack Pyros ITA</b>	-					
Red handflare	(see Table 3.18)	4	4	4	4	4
Parachute Rocket	(see Table 3.18)	2	2	2	2	2
Smoke signal	(see Table 3.18)	2	2	2	2	2
Polyethilene sachet 25x70cm	52500029	1	1	1	1	1
<b>Pack Food rations</b>	-					
Food rations	(see Table 3.16)	4	6	8	10	12
Polyethilene sachet 25x70cm	52500029	1	1	2	2	2
<b>Pack Water rations</b>	-					
Water rations	(see Table 3.17)	6 Lt	9 Lt	12 Lt	15 Lt	18 Lt
Polyethilene sachet 25x70cm	52500029	1	1	1	1	1
<b>Pack FAK &amp; batteries</b>	-					
First Aid Kit	99930166	1	1	1	1	1
Sea-sickness tablets (60pcs)	9R12864009	1	1	1	1	2
Spare batteries	10316703	2	2	2	2	2
Polyethilene sachet 25x40cm	52500405	1	1	1	1	1
<b>Pack Thermal covers</b>						
Thermal cover	9R06317009	2	2	2	2	2
Polyethilene sachet 25x40cm	52500405	1	1	1	1	1

TABLE 3.10 - Emergency Equipment ISO 9650 ITA (DM219)

Equipment	Part Number	Quantity				
Equipment Pack (common ITA)	-	4 P	6 P	8 P	10 P	12 P
Adhesive repair kit	10360039	1	1	1	1	1
Whistle	99107003	1	1	1	1	1
Sponge	50300008	2	2	2	2	2
Bailer	99990017	1	1	1	1	1
Inflator	99991399	1	1	1	1	1
Connector for inflator	99173021	1	1	1	1	1
Connector for valve Bravo	99101110	1	1	1	1	1
LED light with spare	10316773	2	2	2	2	2
Polyethilene sachet 25x40cm	52500405	1	1	1	1	1
<b>Pack no-lifed items</b>	<b>-</b>					
Signalling mirror	10316653	1	1	1	1	1
Fishing kit	99930172	2	2	2	2	2
Signalling instructions	15100345	1	1	1	1	1
Sea-sickness bags	52500506	4	6	8	10	12
Immediate Action leaflet	15100347	1	1	1	1	1
Polyethilene sachet 17x25cm	52500016	1	1	1	1	1
<b>Pack Pyros ITA</b>	<b>-</b>					
Red handflare	(see Table 3.18)	4	4	4	4	4
Parachute Rocket	(see Table 3.18)	2	2	2	2	2
Smoke signal	(see Table 3.18)	2	2	2	2	2
<b>Pack Water rations</b>	<b>-</b>					
Water rations	(see Table 3.17)	2 Lt	3 Lt	4 Lt	5 Lt	6 Lt
Polyethilene sachet 25x70cm	52500029	1	1	1	1	1
<b>Pack Thermal covers</b>						
Thermal cover	9R06317009	2	2	2	2	2
Polyethilene sachet 25x40cm	52500405	1	1	1	1	1
<b>Pack FAK &amp; batteries</b>						
First Aid Kit	99930166	1	1	1	1	1
Spare batteries	10316703	2	2	2	2	2
Polyethilene sachet 25x40cm	52500405	1	1	1	1	1
<b>Pack Grab Bag</b>	<b>-</b>					
Grab bag 4-8P	10399402	1	1	1		
Grab bag 10-12P	10399412				1	1
Food rations	(see Table 3.16)	4	6	8	10	12
Water rations	(see Table 3.17)	4 Lt	6 Lt	8 Lt	10 Lt	12 Lt
Sea-sickness tablets (60pcs)	9R12864009	1	1	1	1	2

**TABLE 3.11 - Emergency Equipment ISO 9650-1 ITA GRAB BAG**

Equipment	Part Number	Quantity				
Equipment Pack	-	4 P	6 P	8 P	10 P	12 P
Adhesive repair kit	10360039	1	1	1	1	1
Whistle	99107003	1	1	1	1	1
Sponge	50300008	2	2	2	2	2
Bailer	10399465	1	1	1	1	1
Sea-sickness bags	52500506	4	6	8	10	12
Inflator	99991399	1	1	1	1	1
Connector for inflator	99173021	1	1	1	1	1
Connector for valve Bravo	99101110	1	1	1	1	1
Drinking vessel	99179201	1	1	1	1	1
Immediate Action leaflet	15100347	1	1	1	1	1
Signalling instructions	15100345	1	1	1	1	1
Polyethilene sachet 25x40cm	52500405	1	1	1	1	1

TABLE 3.12 - Emergency Equipment STANDARD INTERNATIONAL

Equipment	Part Number	Quantity				
Equipment Pack	-	4 P	6 P	8 P	10 P	12 P
Adhesive repair kit	10360039	1	1	1	1	1
Whistle	99107003	1	1	1	1	1
Sponge	50300008	2	2	2	2	2
Bailer	10399465	1	1	1	1	1
Inflator	99991399	1	1	1	1	1
Connector for inflator	99173021	1	1	1	1	1
Connector for valve Bravo	99101110	1	1	1	1	1
Drinking vessel	99179201	1	1	1	1	1
Torch	99991397	1	1	1	1	1
Spare bulb for torch	99991719	1	1	1	1	1
Red handflare	(see Table 3.18)	4	4	4	4	4
Parachute Rocket	(see Table 3.18)	2	2	2	2	2
Signalling instructions (Greek)	15100219	1	1	1	1	1
Spare battery for torch	99990907	4	4	4	4	4
Sea-anchor	99930115	1	1	1	1	1
Water rations	(see Table 3.17)	1,5 Lt	2 Lt	2,5 Lt	3 Lt	4 Lt
First Aid Kit (Greek)	9R12438009	1	1	1	1	1
Polyethilene sachet 40x70cm	52500025	1	1	1	1	1

TABLE 3.13 - Emergency Equipment STANDARD GREEK PACK

Equipment	Part Number	Quantity				
		4 P	6 P	8 P	10 P	12 P
<b>Pack no-lifed items</b>						
Adhesive repair kit	10360039	1	1	1	1	1
Whistle	99107003	1	1	1	1	1
Sponge	50300008	2	2	2	2	2
Bailer	10399465	1	1	1	1	1
Sea-sickness bags	52500506	4	6	8	10	12
Inflator	99991399	1	1	1	1	1
Connector for inflator	99173021	1	1	1	1	1
Connector for valve Bravo	99101110	1	1	1	1	1
Drinking vessel	99179201	1	1	1	1	1
Immediate Action leaflet	15100347	1	1	1	1	1
Signalling instructions	15100345	1	1	1	1	1
Polyethilene sachet 25x40cm	52500405	1	1	1	1	1
<b>Pack Rockets</b>						
Parachute Rocket	(see Table 3.18)	2	2	2	2	2
Polyethilene sachet 25x40cm	52500405	1	1	1	1	1
<b>Pack Handflares</b>						
Red handflare	(see Table 3.18)	3	3	3	3	3
Polyethilene sachet 10x26cm	52500015	1	1	1	1	1
<b>Pack E-specific</b>						
Leak stopper (Small)	99320013	1	1	1	1	1
Leak stopper (Medium)	99320012	1	1	1	1	1
Polyethilene sachet for equipment	52500401	1	1	1	1	1
Signalling mirror	10316653	1	1	1	1	1
LED light with spare	10316773	1	1	1	1	1
First Aid Kit	99930162	1	1	1	1	1
Sea-sickness tablets (60pcs)	9R12864009	1	1	1	1	2
Spare batteries	10316703	2	2	2	2	2
Cyalume stick	99990170	2	2	2	2	2
Fishing kit	99930172	1	1	1	1	1
Sea-anchor	99930115	1	1	1	1	1
Water rations	(see Table 3.17)	2 Lt	3 Lt	4 Lt	5 Lt	6 Lt
Polyethilene sachet 40x70cm	52500025	1	1	1	1	1

TABLE 3.14 - Emergency Equipment E-PACK

Equipment	Part Number	Quantity				
		4 P	6 P	8 P	10 P	12 P
<b>Equipment Pack (common ITA)</b>						
Adhesive repair kit	10360039	1	1	1	1	1
Whistle	99107003	1	1	1	1	1
Sponge	50300008	2	2	2	2	2
Bailer	99990017	1	1	1	1	1
Inflator	99991399	1	1	1	1	1
Connector for inflator	99173021	1	1	1	1	1
Connector for valve Bravo	99101110	1	1	1	1	1
LED light with spare	10316773	2	2	2	2	2
Polyethilene sachet 25x40cm	52500405	1	1	1	1	1
<b>Pack Water rations</b>						
Water rations	(see Table 3.17)	1 Lt	1,5 Lt	2 Lt	2,5 Lt	3 Lt
Spare batteries	10316703	2	2	2	2	2
Immediate Action leaflet	15100347	1	1	1	1	1
Polyethilene sachet 25x70cm	52500029	1	1	1	1	1

[TABLE 3.15 - Emergency Equipment COMPACT-DRY](#)

3.5.2.1 Locally sourced items: for pyrotechnics, food and water rations it is allowed to buy from local sources, limiting to the under reported items:

Part Number	Description	Manufacturer
99930151	Food rations	Compact AS "Seven Oceans"
06857009	Food rations	Datrex DX2400F
08069009	Food rations	Dauriac
11862009	Food rations	SOS Food Lab 2400 IMO

[TABLE 3.16 - Authorized food rations](#)

Part Number	Description	Manufacturer
99990237	Water	Compact AS "Seven Oceans"
07938009	Water	Datrex DX100EW
11860009	Water	SOS Food Lab 96PDW04

[TABLE 3.17 - Authorized water rations](#)

Part Number	Description	Manufacturer
9R04597009	Handflare	Pains Wessex
9R04598009	Rocket	
9R05645009	Smoke	
06349009	Handflare	Comet
06350009	Rocket	
11902009	Smoke	
99991273	Handflare	Albatross
99991270	Rocket	
99991274	Smoke	
06779009	Handflare	Hansson
06778009	Rocket	
06789009	Smoke	
08520009	Handflare	Dauriac
08530009	Rocket	
08540009	Smoke	
08827009	Handflare	Koa Kako
08828009	Rocket	
08829009	Smoke	

TABLE 3.18 - Authorized pyrotechnics

### 3.6 REPAIRS

#### 3.6.1 GENERAL

Repairing means mending the damage by means of fabric patches. The patch fabric must be the same as the fabric of the item to be repaired. There may also be repairs of items such as studs.

- 3.6.1.1 Glue. The glue to be used for repairing must be of the EV/C2 type.

**WARNING:** EV/C2 GLUE IS FLAMMABLE. KEEP AWAY FROM FLAME AND UNCOVERED LAMPS (NOT PROTECTED BY LAMP-SHADE. USE ONLY IN WELL VENTILATED AREAS. DO NOT SPRAY INTO YOUR EYES. WASH YOUR HANDS THOROUGHLY AFTER USING IT.

- 3.6.1.2 Glue preparation. The glue has to be prepared each time in the required quantity, as after activation through catalyst, the glue can last for three hours maximum.

The catalyst should be added to the glue in the quantity of 8% by measure of weight, and of 5% by measure of volume.

Once the two components have been mixed, shake well until you get an even colour.

It is important to get a complete blending to prevent the catalyst from separating as suspension medium.

- 3.6.1.3 Environment conditions. EV/C2 glue must be used in environments featuring the following:

Temperature: between 12°C and 35°C;

Relative humidity: not greater than 70%.

**WARNING:** AS TEMPERATURE INCREASES, THE CATALYSIS PERIOD BECOMES SHORTER, VICEVERSA WHEN TEMPERATURE DECREASES THE CATALYSIS PERIOD BECOMES LONGER.

- 3.6.1.4 Surfaces preparation. The surfaces must be degreased with MEK. Cleaning and degreasing should be thorough. The whole area for repairing should be cleaned and degreased as well as the edges of the torn part.

- 3.6.1.5 Glue application. Apply the glue to the surfaces to be joined in thin and even layers. Proceed as follows;

- (a) Apply the glue with a brush.
- (b) Wait 4-5 minutes.
- (c) Apply the glue again.
- (d) Wait 7-9 minutes.
- (e) Join the surfaces smoothing them uniformly.

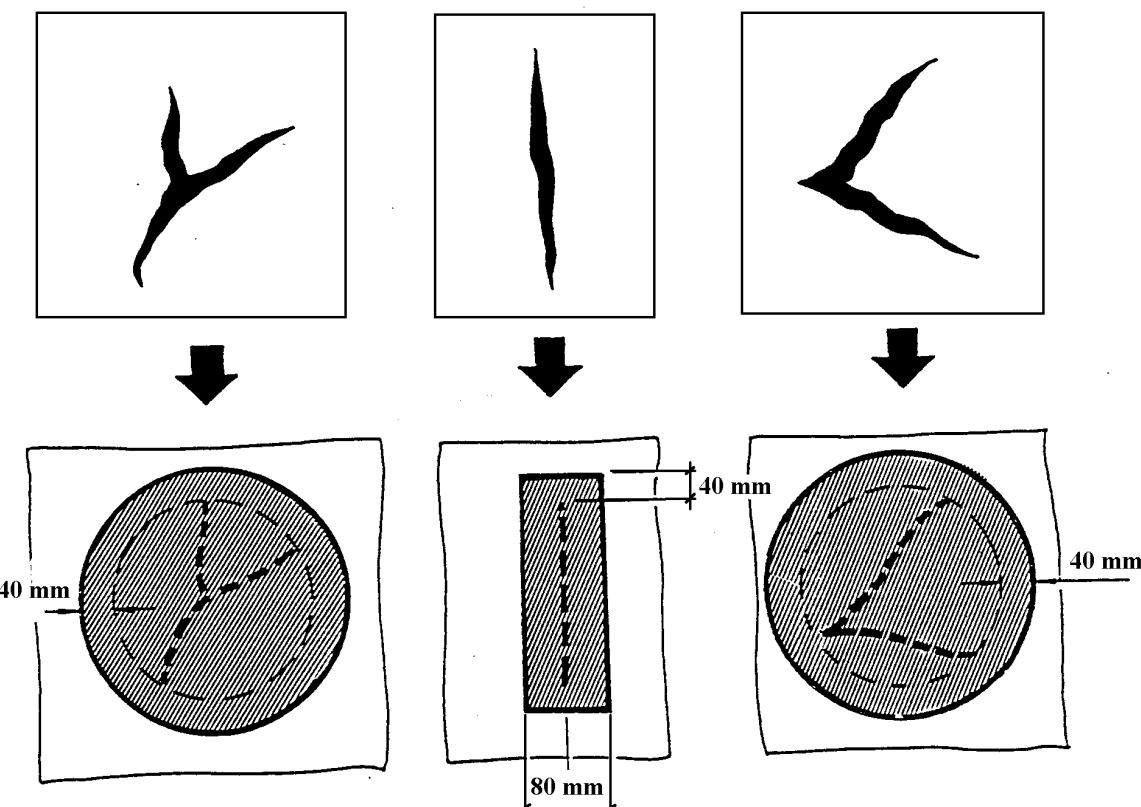
**WARNING:** THE GLUED PARTS SHOULD NOT BE SUBJECTED TO STRESS BEFORE 48 HOURS

### 3.6.2 REPAIRING TORN AREAS

Three types of repairing may be carried out on inflatable parts:

1. Minor: the typical dimension of the tear goes from a hole to a 5 cm tear, that is to say  $0 < x < 50$  mm; an example of minor repair is the patching of small holes or tears smaller than 50 mm.
2. Major: the typical dimension of a major tear does not go beyond 500 mm, that is to say  $50 < x < 500$  mm.
3. Critical: the typical dimension of a critical tear goes beyond 500 mm. In this case do not repair and send the liferaft to the Manufacturer.

For straight tears the characterizing dimension is the length. For more complex tears, "L" or "Y" types, the characterising dimension is the diameter of the circumference circumscribing the tear.



**FIGURE 3.32**  
Patching

#### 3.6.2.1 Repairing torn areas with patches

Patches should stretch for at least 40 mm beyond the perimeter of the damaged part. For instance, if the hole is 40 mm, the patch should have a diameter of at least 120 mm; if a straight tear is 100 mm long, the patch should be at least 180 x 80 mm. Complex tears should be treated as holes by taking the characterizing dimension of the tear as diameter of the hole.

**WARNING:**

THE SHAPE OF THE PATCHES SHOULD BE CIRCULAR OR  
RECTANGULAR WITH ROUNDED CORNERS

##### 3.6.2.1.1 Fitting the patches

Proceed as follows:

- 1- Cut a patch of suitable dimensions.
- 2- Prepare and clean the area to be repaired as described in 3.6.1.

3- Spread the glue as described in 3.6.1.

4- Place the patch making sure you remove all the air bubbles with a spatula. For major repairs use an inner patch as well.

5- After at least 48 hours, test the repair by inflating the part and checking that there is not pressure drop.

**WARNING:**

THE REPAIRED AREA SHOULD NOT INCLUDE ANY WELD OF THE INFLATABLE PART, AS GLUEING CAN NOT GUARANTEE TIGHTNESS ON THE STEP FORMED BY THE WELD AND THE BUTT STRAP.

If the tear is near a weld do not repair and send the liferaft to the Manufacturer.

**3.6.2.1.2 Limitations to repairing**

It is allowed to repair the inflatable parts with patches up to a percentual surface of 25% of the total surface of the panel. In any case, for each buoyancy chamber, when the buoyancy chamber consists of several panels (see buoyancy tubes of decagonal liferafts), there should not be more than fifteen patches.

As far as patches are concerned, the following limitations are given on the ratio between different dimensions of the patches:

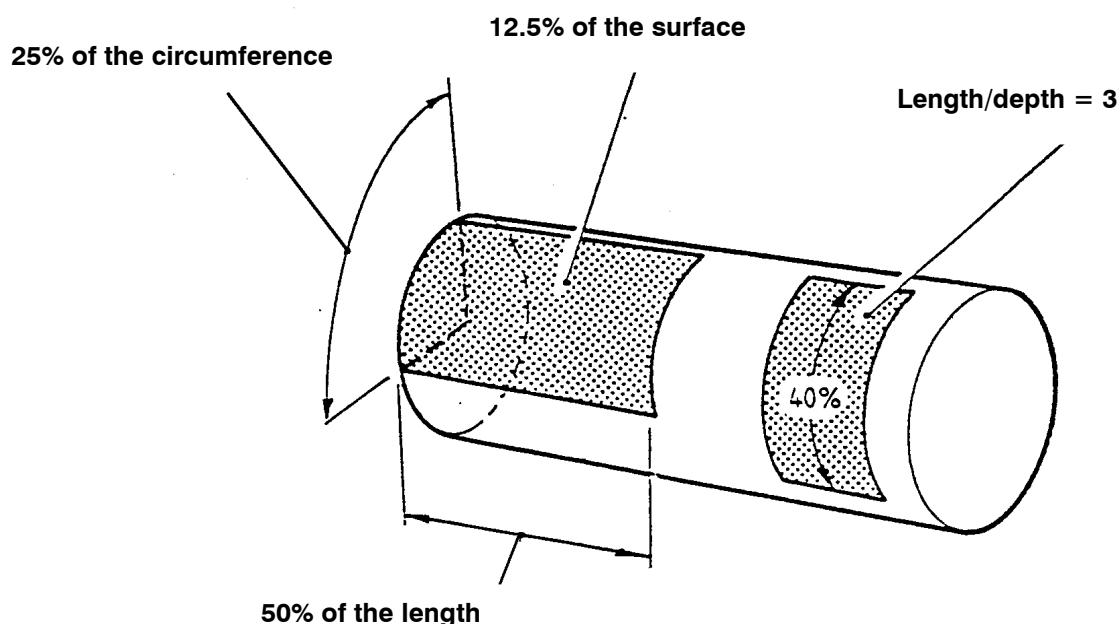
Maximum ratio between lenght of the patch and diameter of the panel = 25 %.

Maximum ratio between the area of the patch and the area of the panel = 12.5 %.

Maximum ratio between the lenght of the patch and the lenght of the panel = 50 %.

Maximum ratio between the peripherical length of the patch and the circumference of the panel = 40 %.

Maximum ratio between the length and the depth of the patch = 3 %.



**FIGURE 3.33**  
**Patching limitations**

**3.6.3 OTHER REPAIRS**

The other repairs that may be carried out without sending the liferaft to the Manufacturer are mainly repairs required by the out-of-roundness of the holes of the seats for the inflation, relief and non-return valves, or minor repairs of the VTR fiberglass containers.

In the first case, it is sufficient to glue to the panel a reinforcing circular rim having an inner diameter equal to the hole original one and an outer diameter greater by about 80 mm than the inner one.

Only minor damages on the container, that is to say faults in the outer layer of the gelcoat, may be repaired.  
Proceed as follows:

- 1- Scratch the damaged gelcoat.
- 2- Degrease and clean the area with acetone.
- 3- Fill up the damaged area with some stucco.
- 4- Once the stucco has solidified, abrade the area giving it the right shape; then polish the area and, if necessary, apply a thin layer of gelcoat.

## 4. PACKING

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**4.1 CONTAINERS / VALISES**

**FIGURE 4.1**  
Liferaft in VTR Fiberglass container



**FIGURE 4.2**  
Liferaft in Valise



**FIGURE 4.3**  
**Liferaft in ABS container**

#### **4.1.1 PRELIMINARY CHECKING**

Check the conditions of the container; replace the container in presence of wrecks or damages.  
Also check for the perfect preservation conditions of the seal. Replace it if necessary.  
Check for the perfect maintenance state of the painter line. If the painter line should be useless or damaged it must be replaced. If the raft enters reconditioning and the painter line has been used, it must be replaced.

**4.1.2 CONTAINERS CHART FOR SYNTESY LIFERAFTS**

	Capacity	Container	P/N	Size	Straps P/N	Straps Q.ty	Vac.Bag
SYNTESY 9650-1	4P	VTR	99991563	74x52x29	(See Table 4.11)	2	10304222
	6P		99991561	82x54x29			
	8P		99991562	82x54x31			
	10P		99991564	82x64x31			10304232
	12P		99991565	82x64x35			
ISO TYPE1 MK2	4P	Valise	10362153	70x41x26	n/a	n/a	10304222
	6P		10362163	70x50x28			
	8P		10362173	79x50x28			10304232
	10P						
PACK >24H	4P	ABS	99991024	70x41x26	(See Table 4.11)	2	10304222
	6P		99991025	71x49x29			
	8P		99991050	80x49x31			
	10P		99991050	80x49x31			
	12P		99991027	90x56x35			10304232

TABLE 4.1 - ISO9650-1 PACK >24H container information

	Capacity	Container	P/N	Size	Straps P/N	Straps Q.ty	Vac.Bag
SYNTESY 9650-1	4P	VTR	99991560	74x42x29	(See Table 4.11)	2	10304222
	6P		99991572	74x52x26			
	8P		99991563	74x52x29			10304232
	10P						
	12P		99991561	82x54x29			
ISO TYPE1 MK2	4P	Valise	10362213	68x40x23	n/a	n/a	10304222
	6P		10362163	70x50x28			
	8P		10362173	79x50x28			10304232
	10P						
PACK >24H GRAB BAG	12P	ABS	99991023	69x39x28	(See Table 4.11)	2	10304222
	4P		99991024	69x40x29			
	6P		99991025	71x49x29			
	8P						
	10P		99991050	80x49x31			10304232

TABLE 4.2 - ISO9650-1 PACK >24H GRAB BAG container information

	Capacity	Container	P/N	Size	Straps P/N	Straps Q.ty	Vac.Bag
SYNTESY 9650-1	4P	VTR	99991560	74x42x29	(See Table 4.11)	2	10304222
	6P		99991572	74x52x26			
	8P		99991563	74x52x29			10304232
	10P		99991561	82x54x29			
	12P		10362213	68x40x23			
ISO TYPE1 MK2	4P	Valise	10362163	70x50x28	n/a	n/a	10304222
	6P		10362173	79x50x28			
	8P		99991023	69x39x28			10304232
	10P		99991024	69x40x29			
PACK <24H	12P	ABS	99991025	71x49x29	(See Table 4.11)	2	10304222
	4P		99991050	80x49x31			
	6P		10362213	68x40x23			10304232
	8P		10362163	70x50x28			
	10P		99991023	69x39x28			

TABLE 4.3 - ISO9650-1<24H container information

	Capacity	Container	P/N	Size	Straps P/N	Straps Q.ty	Vac.Bag
SYNTESY 9650-2	4P	VTR	99991560	74x42x29	(See Table 4.11)	2	10304222
	6P		99991572	74x52x26			
	8P		99991563	74x52x29			10304222
	10P		10362213	68x40x23			
	4P	Valise	10362163	70x50x28			
ISO TYPE2 MK2	6P		99991023	69x39x28	(See Table 4.11)	2	10304222
	8P		99991024	69x40x29			
	10P		99991025	71x49x29			

TABLE 4.4 - ISO9650-2 container information

	Capacity	Container	P/N	Size	Straps P/N	Straps Q.ty	Vac.Bag
SYNTESY B-PACK	4P	VTR	99991563	74x52x29	(See Table 4.11)	2	10304222
	6P		99991561	82x54x29			
	8P		99991561	82x54x29			
	10P		99991562	82x54x31			
	12P		99991564	82x64x31			10304232
	4P	Valise	10362153	70x41x26	n/a	n/a	10304222
	6P		10362163	70x50x28			
	8P		10362163	70x50x28			
	10P		10362173	79x50x28			
	12P		10362173	79x50x28			10304232
	4P	ABS	99991024	69x40x29	(See Table 4.11)	2	10304222
	6P		99991025	71x49x29			
	8P		99991025	71x49x29			
	10P		99991026	74x56x29			
	12P		99991050	89x40x31			10304232

TABLE 4.5 - ISO SOLAS-B PACK container information

	Capacity	Container	P/N	Size	Straps P/N	Straps Q.ty	Vac.Bag
SYNTESY 9650 IT (DM219)	4P	VTR	99991563	74x52x29	(See Table 4.11)	2	10304222
	6P		99991561	82x54x29			
	8P		99991562	82x54x31			
	10P		99991564	82x64x31			
	12P		99991565	82x64x35			10304232
	4P	Valise	10362153	70x41x26	n/a	n/a	10304222
	6P		10362163	70x50x28			
	8P		10362173	79x50x28			
	10P		10362183	88x53x31			10304232
	12P		99991024	70x41x26			
	4P	ABS	99991025	71x49x29	(See Table 4.11)	2	10304222
	6P		99991050	80x49x31			
	8P		99991027	90x56x35			

TABLE 4.6 - ISO9650 ITALIA (DM219) container information

	Capacity	Container	P/N	Size	Straps P/N	Straps Q.ty	Vac.Bag
SYNTESY INTL	4P	VTR	99991560	74x42x29	(See Table 4.11)	2	10304212
	6P						
	8P		99991563	74x52x29			
	10P						10304222
	12P		99991561	82x54x29			
MARINER MK2	4P	Valise	10362203	68x37x19	n/a	n/a	10304212
	6P		10362213	68x40x23			
	8P		10362153	70x41x26			
	10P		10362173	79x50x28			10304222
	12P						
(NON- ISO)	4P	ABS	99991023	69x39x28	(See Table 4.11)	2	10304212
	6P		99991024	69x40x29			
	8P		99991025	71x49x29			
	10P		99991050	80x49x31			
	12P						10304222

TABLE 4.7 - Syntesy International (NON-ISO) container information

	Capacity	Container	P/N	Size	Straps P/N	Straps Q.ty	Vac.Bag
SYNTESY GREEK (NON- ISO)	4P	VTR	99991560	74x42x29	(See Table 4.11)	2	10304212
	6P		99991563	74x52x29			10304222
	8P						10304232
	10P						
	12P		99991561	82x54x29			
SYNTESY GREEK (NON- ISO)	4P	Valise	10362213	68x40x23	n/a	n/a	10304212
	6P		10362153	70x41x26			10304222
	8P						10304232
	10P						
	12P		99991023	69x39x28			10304212
SYNTESY GREEK (NON- ISO)	6P	ABS	99991024	69x40x29	(See Table 4.11)	2	10304222
	8P		99991025	71x49x29			
	10P		99991050	80x49x31			
	12P						10304232

TABLE 4.8 - Syntesy Greek (NON-ISO) container information

	Capacity	Container	P/N	Size	Straps P/N	Straps Q.ty	Vac.Bag
SYNTESY E-USA (NON-ISO)	4P	VTR	99991560	74x42x29	(See Table 4.11)	2	10304222
	6P		99991563	74x52x29			
	8P		99991563	74x52x29			
	10P		99991563	74x52x29			10304232
	4P	Valise	10362213	68x40x23	n/a	n/a	10304222
	6P		10362213	68x40x23			
	8P		10362213	68x40x23			
	10P		10362153	70x41x26			10304232
	4P	ABS	99991023	69x39x28	(See Table 4.11)	2	10304222
	6P		99991023	69x39x28			
	8P		99991024	69x40x29			
	10P		99991025	71x49x29			10304232

TABLE 4.9 - Syntesy E-USA (NON-ISO) container information

	Capacity	Container	P/N	Size	Straps P/N	Straps Q.ty	Vac.Bag
COMPACT-DRY	4P	VTR	99991570	74x42x26	(See Table 4.11)	2	10304212
	6P						
	8P						
	10P		99991560	74x42x29			
	12P		99991572	74x52x26			10304222
	4P	Valise	10362203	68x37x19	n/a	n/a	10304212
	6P						
	8P		10362213	68x40x23			
	10P		10362223	76x39x25			10304222
	12P						

TABLE 4.10 - Compact-Dry (NON-ISO) container information

Crimp securing tool P/N	Strap tensioning tool P/N	Brand	Straps & Crimps P/N
04877009	04876009	Eurovinil	9R41423002
		Eurovinil (Alternative)	9R50406003
		Crewsaver	9R41423003

TABLE 4.11 - Straps & Crimps and corresponding tools

**4.2 LIFERAFT PACKING****4.2.1 PRELIMINARY OPERATIONS**

2- Verify condition of the insulating floor (if fitted) and replace if damaged.



3- Verify conditions of the No. Persons label on canopy.



4- Secure with PVC cord the 2nd step of the boarding ladder to the external lifeline.



5- Check towing system is correctly tied up to the external studs. Secure ropes with PVC cord.



6a- (SYNTESY rafts) Check correct placement of the knife in its canopy pocket. Check presence of the protection on the blade.



6b- (COMPACT-DRY rafts) Check correct placement of the knife in its pocket, placed on the internal boarding ladder. Check presence of the protection on the blade.



7- Verify expiry date of internal/external light system (if fitted). Replace if expiry doesn't cover next service.



8- Check rescue quoit with line is secured to eyelet on buoyancy. Secure quoit to inner lifeline with PVC cord.



9- Check PRV plugs are open.

## 4.2.2

## CYLINDER PREPARATION



1- Install operating head to valve body (40Nm torque).



2- Apply sealing tape to the O.H. plastic cap



4a- (VTE/87) Fit the valve terminal to the operating head with 25 Nm torque.

4b- (VTE/99) Fit the valve terminal to the valve body with 25 Nm torque.

## 4.2.3

## CYLINDER INSTALLATION



1- Check that the connector CVT/09 and its protection are correctly fitted and secured.



2- Connect cylinder to liferaft inserting the valve terminal to the CVT/09 connection system (check OR gasket) and secure it by screw.

Make sure, by extraction tests, that the valve terminal is securely firmed to the CVT/09 connection system and this one is secured to the buoyancy valves.



3- Secure cylinder to buoyancies by means of velcro straps.



4- Close protection patch.

## 4.2.4

## PREPARING THE VACUUM BAG



NOTE: THE PROCESS SHOWN IS THE SAME USED FOR ALUMINIZED VACUUM BAGS

- 1- Insert an extremity of the towing line inside the sleeve of the vacuum bag and lace it around the "eye"



- 2- Place the vacuum bag inside the container lower shell. The vacuum bag must be positioned with the sleeve near the painter line exit.

NOTE: FOR "VALISE" VERSION, USE A CONTAINER OR SHAPE HAVING THE DIMENSION OF THE VALISE

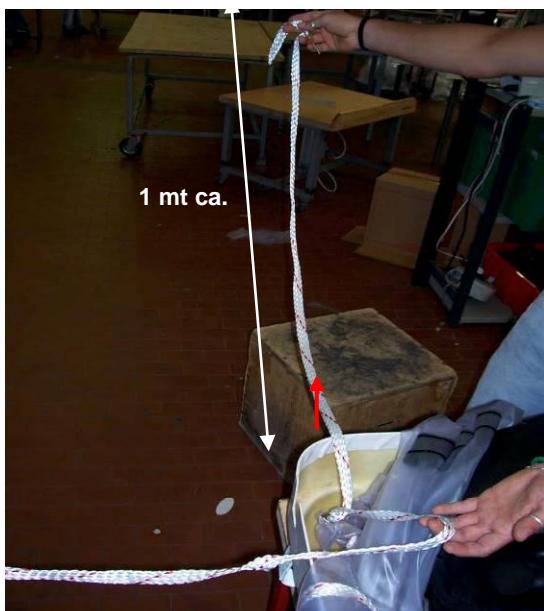
NOTE: FOR "ABS" VERSION, USE CONTAINER UPPER SHELL



- 3- Put the activation cable of the operative head inside the sleeve and apply the clamp on it



4- Fix the screw of the clamp taking attention to don't damage the vacuum bag



5- Insert an extremity of the painter line into the hole of the clamp and make 1st knot



6- Make 2nd knot in the painter line



7- Make 3rd knot in the painter line



8- Cross the extremity of the painter line through the "eye" of the vacuum bag, so to make a connection between painter line and towing line



9- Put the painter line horizontally on the smaller side of the shell, near the painter line exit (window).

Put the edge of the painter line outside the window.



10- Connect the towing line to the liferaft towing system.

## 4.2.5

## LIFERAFT PACKING PREPARATION



11a- (valve SUPERNOVA) Suck up the buoyancies and the canopy arch. Slightly release the obturator (1/4 turn) before expiration.



12a- (valve SUPERNOVA) Screw the valve obturators (by hand).

13a- (valve SUPERNOVA) Check presence of gasket on the valve plug before closing.



11b- (valve BRAVO 2005) Push the spring button in "open" position.



12b - (valve BRAVO 2005) Suck up the buoyancies and the canopy arch.



13b- (valve BRAVO 2005) Push the spring button in "closed" position and apply plug.



14- Place the open liferaft inside the bag, with cylinder on the long side of the container.



15- Insert the operating head cable into the proper manifold of the vacuum bag and apply clamp (apply thread stopper medium on screw).



16- Connect painter line terminal to the clamp (by splice) then to the eyelet of the vacuum bag (by bow knot).



17- Connect towing rope to the towing system.

## 4.2.6

## EQUIPMENT PACK AND SEA-ANCHOR INSTALLATION



18- Prepare the area for the equipment installation. For ISO9650:2005 only, apply resealable bag.



19- Insert food rations against cylinder, flares pack in the middle, then common equipment on the other side.



20- Insert water / food rations on the empty spaces. Apply paddles over food rations.



21- Apply water rations to occupy the space and cover the equipment formerly installed.

22- Secure all the equipment bags by red/white rope between them and finally to the stud of the lower buoyancy, cylinder side.

23- Apply sealed bag with identification card filled.



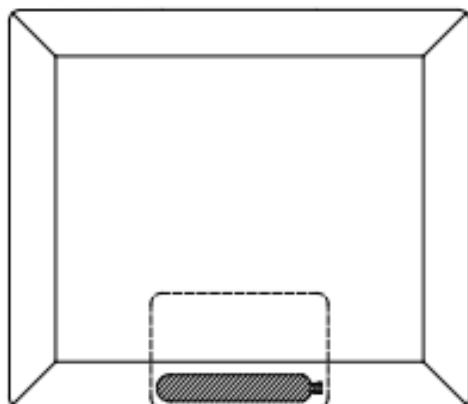
24- For ISO9650 ITA and STD only, place sea-anchor and drogue externally to the buoyancy.



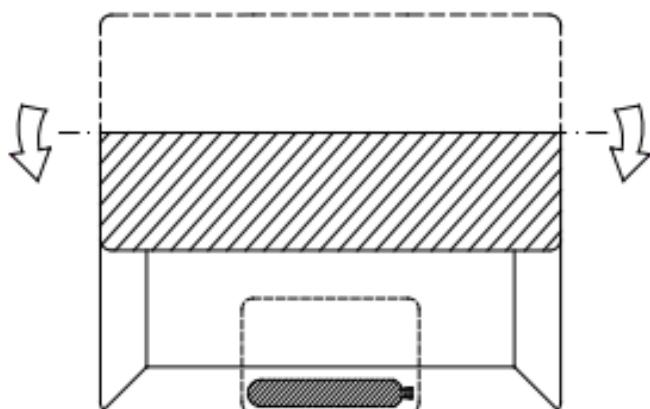
25- For ISO9650:2005 rafts, sea-anchor is placed over the folded raft. The drogue is placed in between the buoyancies.

## 4.2.7

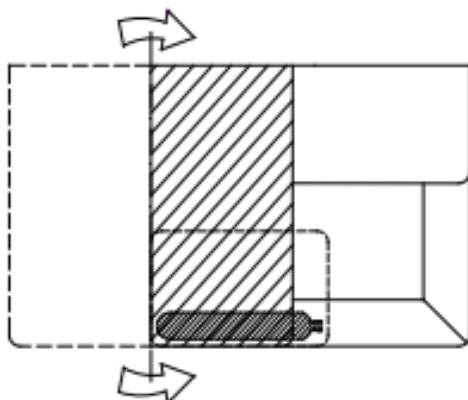
## FOLDING INSTRUCTIONS (COMPACT-DRY 4P ONLY)



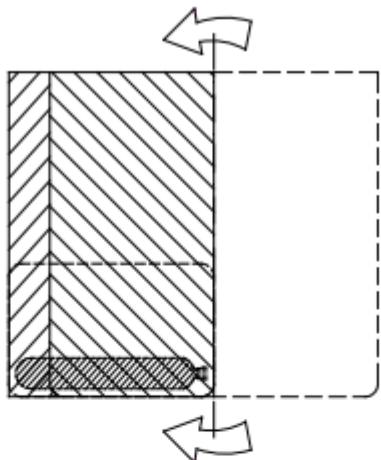
1- Lay the raft on the work surface.



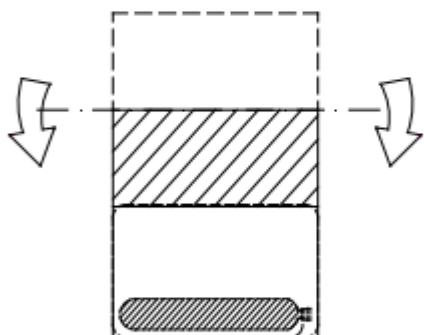
2- Make preliminarily the 1<sup>st</sup> longitudinal fold on the side for around 1/3 of the raft.



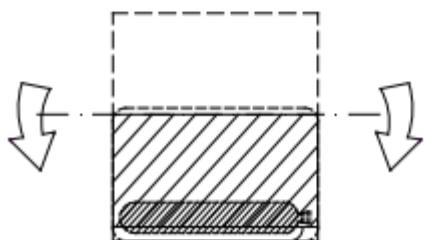
3- Make 1<sup>st</sup> fold, left side, using as reference the container side.



4- Make 2<sup>nd</sup> fold, right side, using as reference the container shape.

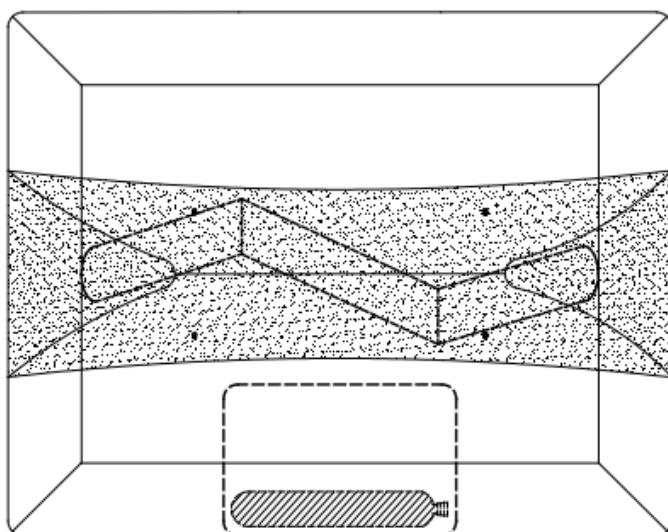


5- Make 2<sup>nd</sup> longitudinal fold.

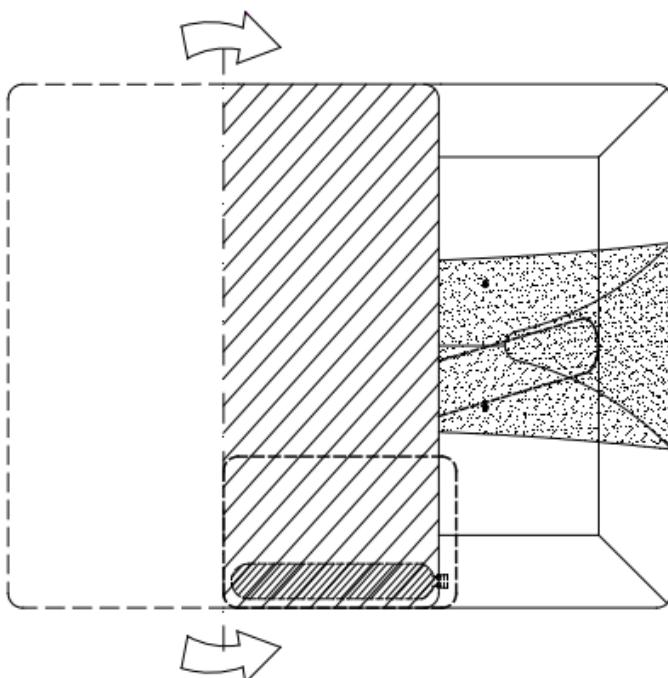


6- Make 3<sup>rd</sup> longitudinal fold, covering the container shape.

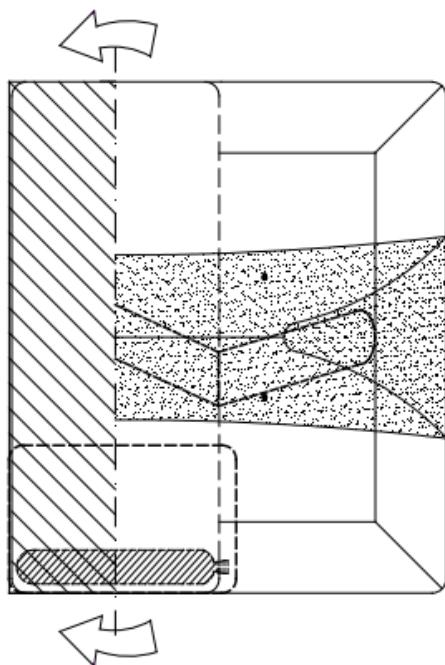
## 4.2.8 FOLDING INSTRUCTIONS



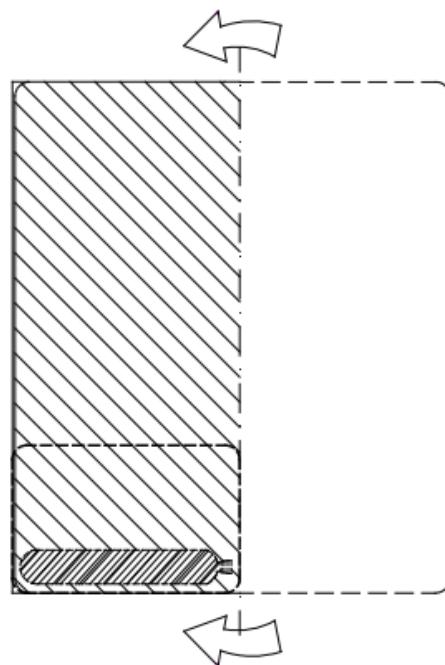
1- Lay the raft on the work surface, taking care to position the canopy arch as shown in the figure.



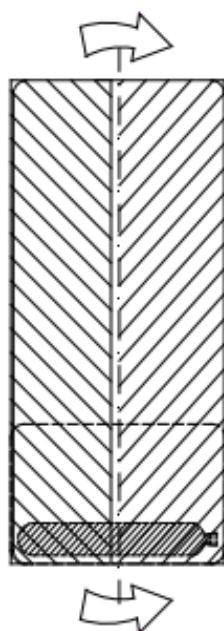
2- Make 1<sup>st</sup> fold, left side, using as reference the container side.



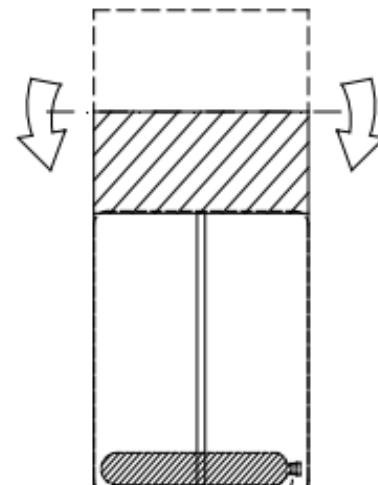
3- Make a counterfold on the 1<sup>st</sup> fold, right side, in the middle of the container shape.



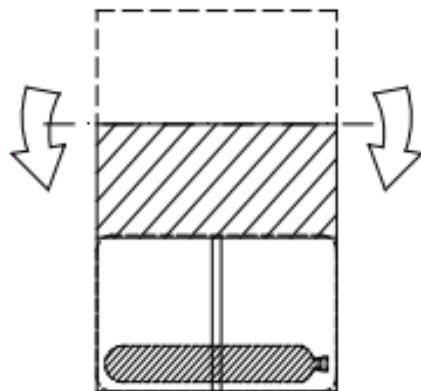
4- Make the 2<sup>nd</sup> fold, right side, using as reference the container shape.



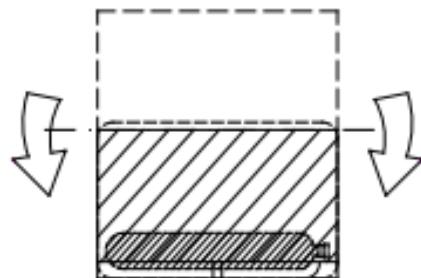
5- Make a counterfold on the 2<sup>nd</sup> fold, left side, in the middle of the container shape.



6- Make 1<sup>st</sup> longitudinal fold.



7- Make 2<sup>nd</sup> longitudinal fold.



8- Make 3<sup>rd</sup> longitudinal fold, covering the container shape.

## 4.2.9

## VACUUM-PACKING INTO CONTAINER



1- Pull up the vacuum bag from the containers side.

Close vacuum bag by welding machine. The weld should be placed as near as possible to the folded raft.

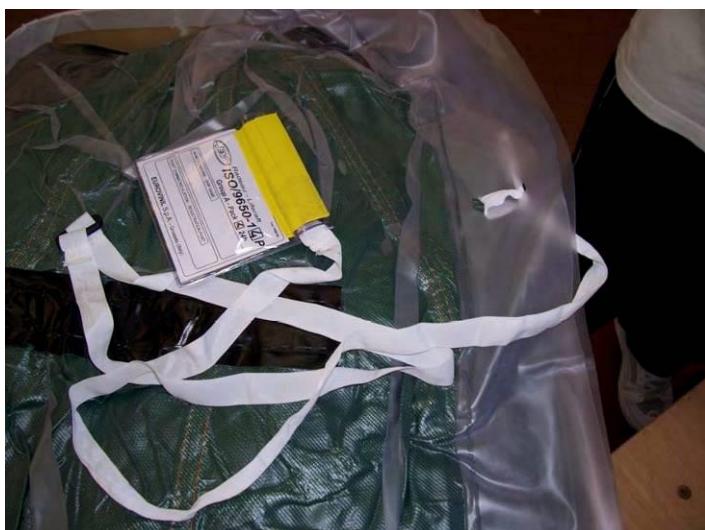


2- Create a small channel for vacuum aspiration.



3- Press, vacuum and compact the liferaft into container (or shape). During folding avoid that valves and other rigid parts go in contrast with cylinder body.

When vacuum is completed, close the channel by welding machine.



4- Secure the rope of the ID container (if fitted) to an edge of the vacuum bag.



5- Put the painter line through the water protection patch (rubber ring for ABS)



6- Apply water protection patch on its lodgement (window) of the container.



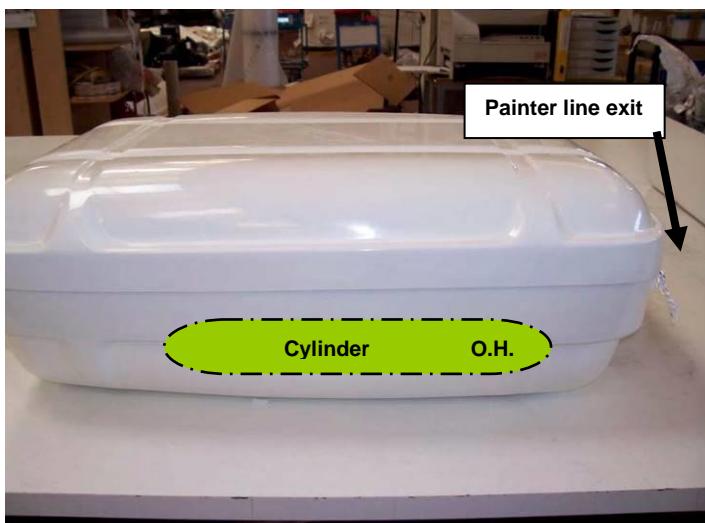
7- Close the container applying the upper shell.

8- Extract the envelope of the external log card.



9- Close the container applying the upper shell.

10- Extract the envelope of the external log card.



11- VTR Container: close the container applying the upper shell. The cylinder must be positioned in contact with the container lower shell, on the same side of the painter line exit



11a- ABS Container: close the container applying the lower shell. The cylinder must be positioned in contact with the container upper shell, on the opposite side of the painter line exit



12- Apply adhesive tape (white) on the edge of the painter line.



13- Apply EV adhesive tape on the straps.

14- Apply blue adhesive strip perimetraly on the lower shell.

15- Apply adhesive labels.

**4.2.10 PACKING VARIANT FOR VALISE**

For liferafts packed in valise, the procedure is the same except for the following steps:



- 1- Place the vacuum-packed Liferaft with cylinder in the upper side.

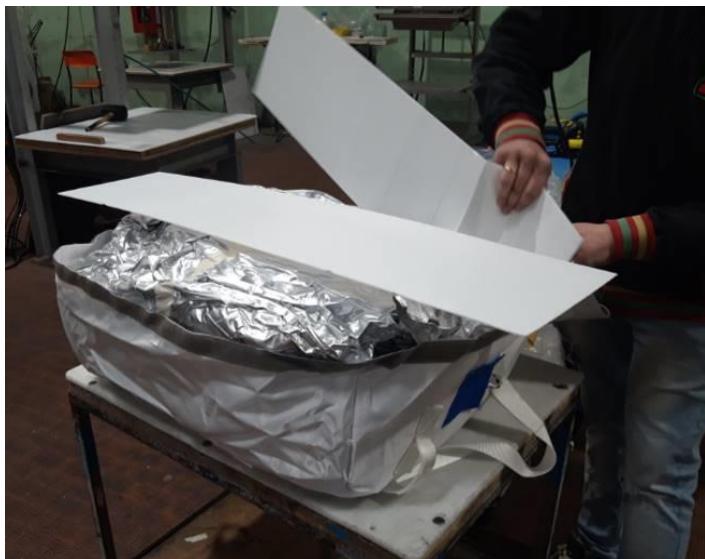
Apply painter line, by means of double-side tape, to the packed raft on the left side of the activation cable.



- 2- Apply the lower side of the valise placing the blue painter exit on the activation cable side.



- 3- Capsize the valise with the Liferaft inside.



4- Apply protections between valise and packed liferaft, taking care not to cover painter line exit.



5- Apply the filled labels to the valise from the inside.

Close valise coupling the Velcro straps on the upper and lower sides.



6- Check valise labels are complete and correctly filled.

## 4.2.11 GRAB-BAG ARRANGEMENT



1- Check and replace expired items.

2- Check the condition of the recovery quoit and its perfect connection between grab-bag and floating ring.

3- Fill the label with next inspection date.



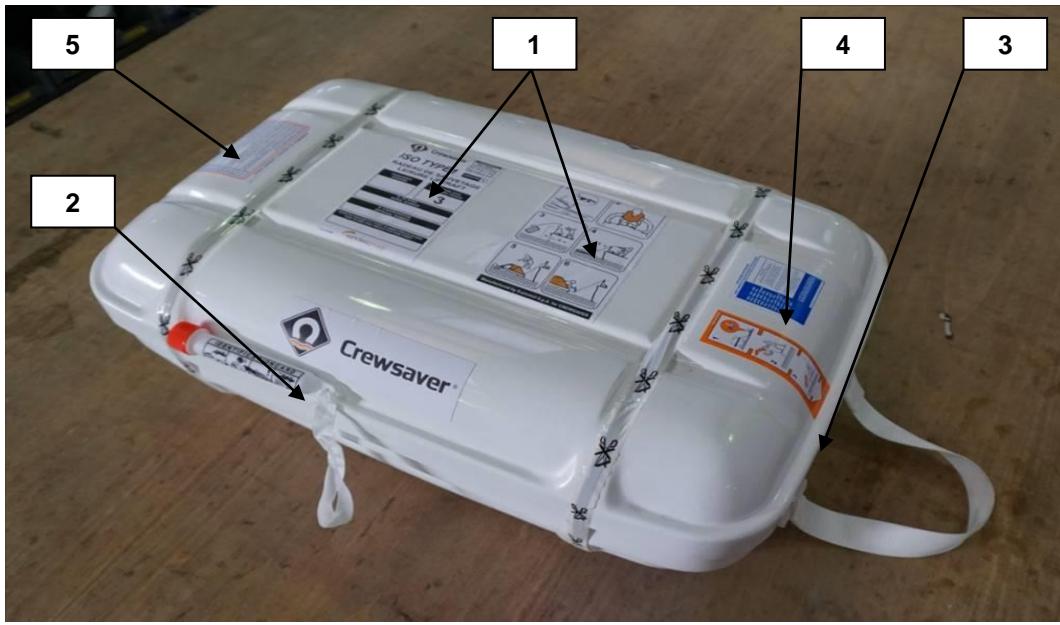
4- Close the grab-bag by rolling the upper part and lock the clip.



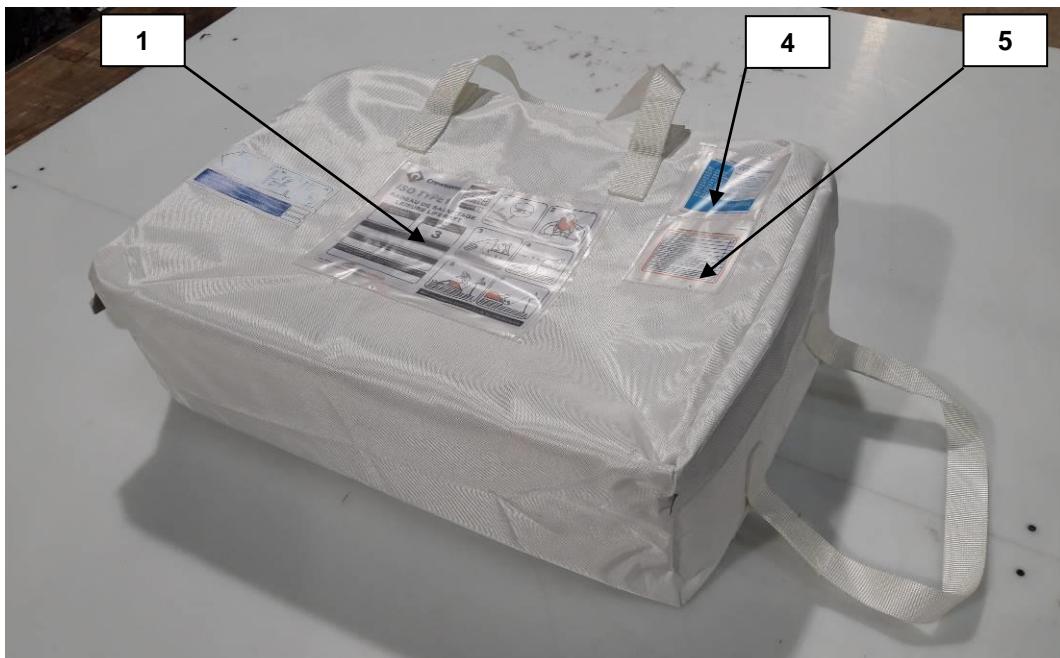
#### 4.3            **LABELS**

After closing the container check the integrity and readability of labels and replace them if necessary.

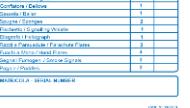
##### 4.3.1.        **LEGEND OF LABELS**



**FIGURE 4.4**  
Labels positioning on ABS / VTR container



**FIGURE 4.5**  
Labels positioning on valise

1	 	Description:	DATA / FIGURED LABEL FOR CONTAINER & VALISE
1	 	Application:	EV SYNTESY 9650:1 EV SYNTESY 9650:1 HR EV SYNTESY 9650 B-PACK
1		Part Number:	15310347
1	 	Description:	DATA / FIGURED LABEL FOR CONTAINER & VALISE
1		Application:	EV SYNTESY 9650 IT
1	 	Part Number:	15310349
1	 	Description:	DATA / FIGURED LABEL FOR CONTAINER & VALISE
		Application:	EV SYNTESY 9650-1 IT Grab Bag
		Part Number:	15310359

**TABLE 4.12 – EV Syntesy (ISO) data labels**

1	<p><b>Compact-Dry</b> Zattera aperta per la navigazione entro 12 miglia dalla costa</p> <p>1. Un aperto dal Manico della Rete di Salvataggio e del Traguardo 2. Indossa il Gilet di Salvataggio 3. Togli l'elmetto 4. Togli la cintura 5. Togli le scarpe 6. Togli il pantalone</p> <p>ULTIMA Revisione, LAST SERVICE EV-SYNTESY SA, EFFECTUER PAR PREMIUM REV-CODE, NEXT SERVICE</p>	Description:	DATA / FIGURED LABEL FOR CONTAINER & VALISE
		Application:	EV COMPACT-DRY
		Part Number:	15310356
1	<p><b>ZATTERA LIFERAFT RADEAU RETTUNGSINSEL PERSONS</b></p> <p>TIPO - TYPE - TYPE - TYP</p> <p>1. Un aperto dal Manico della Rete di Salvataggio e del Traguardo 2. Indossa il Gilet di Salvataggio 3. Togli l'elmetto 4. Togli la cintura 5. Togli le scarpe 6. Togli il pantalone</p> <p>REVISIONE Ogni ANNI SERVICE EVERY YEARS REVISION tous les ANNEE WARTUNG ALLE JAHRE</p> <p>NOM DU NAVIRE ET PORT D'IMMATRICULATION SHIP NAME AND REGISTRATION PORT</p> <p>EUROVINIL - MADE IN ITALY</p>	Description:	DATA / FIGURED LABEL FOR CONTAINER & VALISE
		Application:	EV SYNTESY INTL EV SYNTESY GREEK EV SYNTESY E-USA
		Part Number:	15310162

TABLE 4.13 – EV Syntesy (Non-ISO) & Coastal data labels

1	<p><b>Crewsaver ISO TYPE1 Syntesy</b> RADEAU DE SAUVETAGE LEISURE LIFERAFT</p> <table border="1"> <tr> <td>PERSONNES</td><td>REVISION (ANS)</td></tr> <tr> <td>3</td><td>SERVICING (YEARS)</td></tr> <tr> <td>N. DE SERIE</td><td>SERIAL NUMBER</td></tr> <tr> <td>N. D'APPROBATION</td><td>APPROVAL NUMBER</td></tr> </table> <p>NOM DU NAVIRE ET PORT D'IMMATRICULATION SHIP NAME AND REGISTRATION PORT</p> <p>survitec</p> <p>Manufactured by Eurovinil S.p.A. for CREWSAVER</p>	PERSONNES	REVISION (ANS)	3	SERVICING (YEARS)	N. DE SERIE	SERIAL NUMBER	N. D'APPROBATION	APPROVAL NUMBER	Description:	DATA / FIGURED LABEL FOR CONTAINER & VALISE
PERSONNES	REVISION (ANS)										
3	SERVICING (YEARS)										
N. DE SERIE	SERIAL NUMBER										
N. D'APPROBATION	APPROVAL NUMBER										
Application:	CREWSAVER ISO TYPE1 MK2 SYNTESY CREWSAVER ISO TYPE1 MK2 B-PACK										
Part Number:	15310364										
1	<p><b>Crewsaver ISO TYPE2 Syntesy</b> RADEAU DE SAUVETAGE LEISURE LIFERAFT</p> <table border="1"> <tr> <td>PERSONNES</td> <td>REVISION (ANS)</td> </tr> <tr> <td>3</td> <td>SERVICING (YEARS)</td> </tr> <tr> <td>N. DE SERIE</td> <td>SERIAL NUMBER</td> </tr> <tr> <td>N. D'APPROBATION</td> <td>APPROVAL NUMBER</td> </tr> </table> <p>NOM DU NAVIRE ET PORT D'IMMATRICULATION SHIP NAME AND REGISTRATION PORT</p> <p>survitec</p> <p>Manufactured by Eurovinil S.p.A. for CREWSAVER</p>	PERSONNES	REVISION (ANS)	3	SERVICING (YEARS)	N. DE SERIE	SERIAL NUMBER	N. D'APPROBATION	APPROVAL NUMBER	Description:	DATA / FIGURED LABEL FOR CONTAINER & VALISE
PERSONNES	REVISION (ANS)										
3	SERVICING (YEARS)										
N. DE SERIE	SERIAL NUMBER										
N. D'APPROBATION	APPROVAL NUMBER										
Application:	CREWSAVER ISO TYPE2 MK2 SYNTESY										
Part Number:	15310365										
1	<p><b>CREWSAVER MARINER Mk2</b> RADEAU DE SAUVETAGE RETUNGSINSEL</p> <table border="1"> <tr> <td>PERSONS</td> <td>SERVICE (YEAR) IMPROVVISAMENTO REGISTRATORE (JAHRE)</td> </tr> <tr> <td>3</td> <td>MAINTENANCE REGISTRATION (JAHRE)</td> </tr> <tr> <td>N. DE MATRICA</td> <td>MATRICELLENNR.</td> </tr> <tr> <td>PROXIMA REVIS.</td> <td>NÄCHSTE WARTUNG</td> </tr> </table> <p>SHIP NAME AND REGISTRATION PORT NOM DU NAVIRE ET PORT D'IMMATRICULATION</p> <p>survitec</p> <p>Manufactured by Eurovinil S.p.A. for CREWSAVER</p>	PERSONS	SERVICE (YEAR) IMPROVVISAMENTO REGISTRATORE (JAHRE)	3	MAINTENANCE REGISTRATION (JAHRE)	N. DE MATRICA	MATRICELLENNR.	PROXIMA REVIS.	NÄCHSTE WARTUNG	Description:	DATA / FIGURED LABEL FOR CONTAINER & VALISE
PERSONS	SERVICE (YEAR) IMPROVVISAMENTO REGISTRATORE (JAHRE)										
3	MAINTENANCE REGISTRATION (JAHRE)										
N. DE MATRICA	MATRICELLENNR.										
PROXIMA REVIS.	NÄCHSTE WARTUNG										
Application:	CREWSAVER MARINER MK2										
Part Number:	15310363										

TABLE 4.14 – Crewsaver (ISO & Non-ISO) data labels

2		Description:	EV LOGO LABEL
		Application:	ALL EV RAFTS IN CONTAINER
		Part Number:	15320017
2	 <b>Crewsaver®</b>	Description:	CREWSAVER LOGO LABEL
		Application:	ALL CREWSAVER RAFTS IN CONTAINER
		Part Number:	15310652
3		Description:	ACTIVATING LANYARD LABEL
		Application:	ALL RAFTS IN CONTAINER
		Part Number:	15110129
4		Description:	ACTIVATING LANYARD LABEL
		Application:	NEXT SERVICING LABEL
		Part Number:	15310181

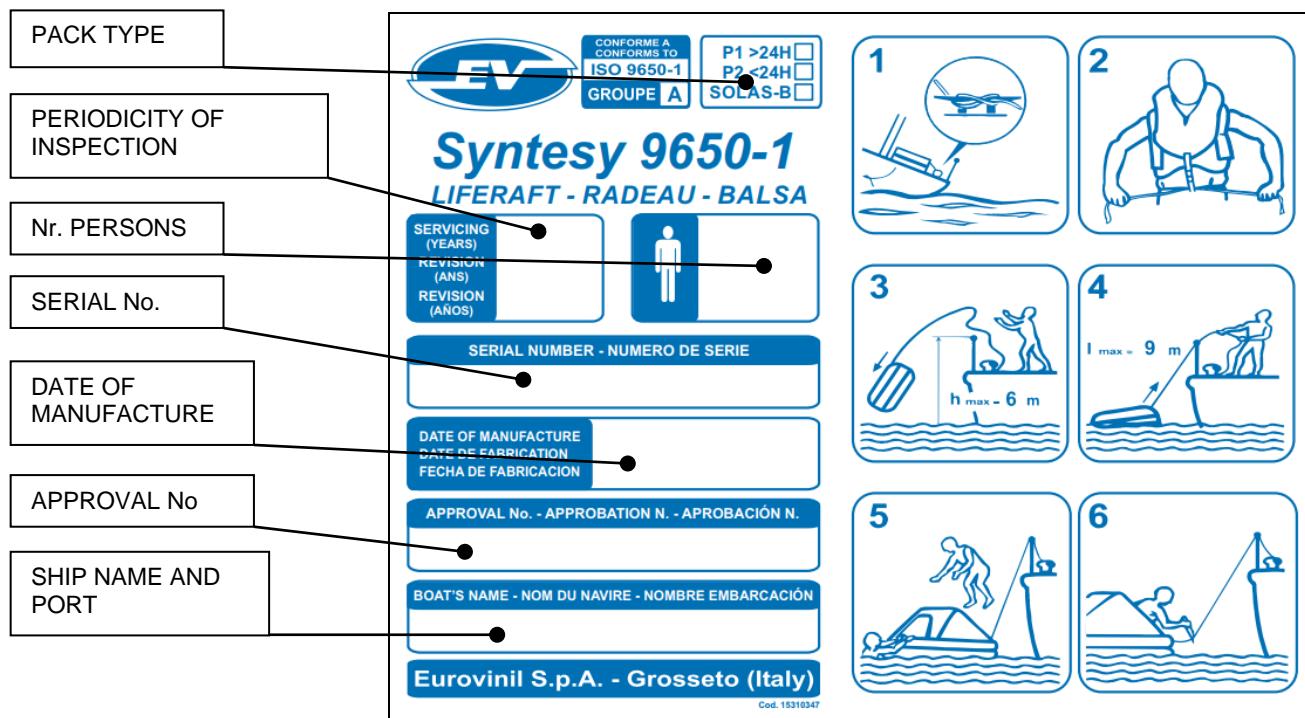
TABLE 4.15 – Additional labels

5		Description:	EQUIPMENT LABEL
		Application:	ISO9650-1 >24H EV & CREWSAVER
		Part Number:	15311707
5		Description:	EQUIPMENT LABEL
		Application:	ISO9650-1 >24H GRAB BAG EV & CREWSAVER
		Part Number:	15311708
5		Description:	EQUIPMENT LABEL
		Application:	ISO9650-1 <24H ISO9650-2 EV & CREWSAVER
		Part Number:	15311709
5		Description:	EQUIPMENT LABEL
		Application:	ISO9650-1 B-PACK EV & CREWSAVER
		Part Number:	15310748

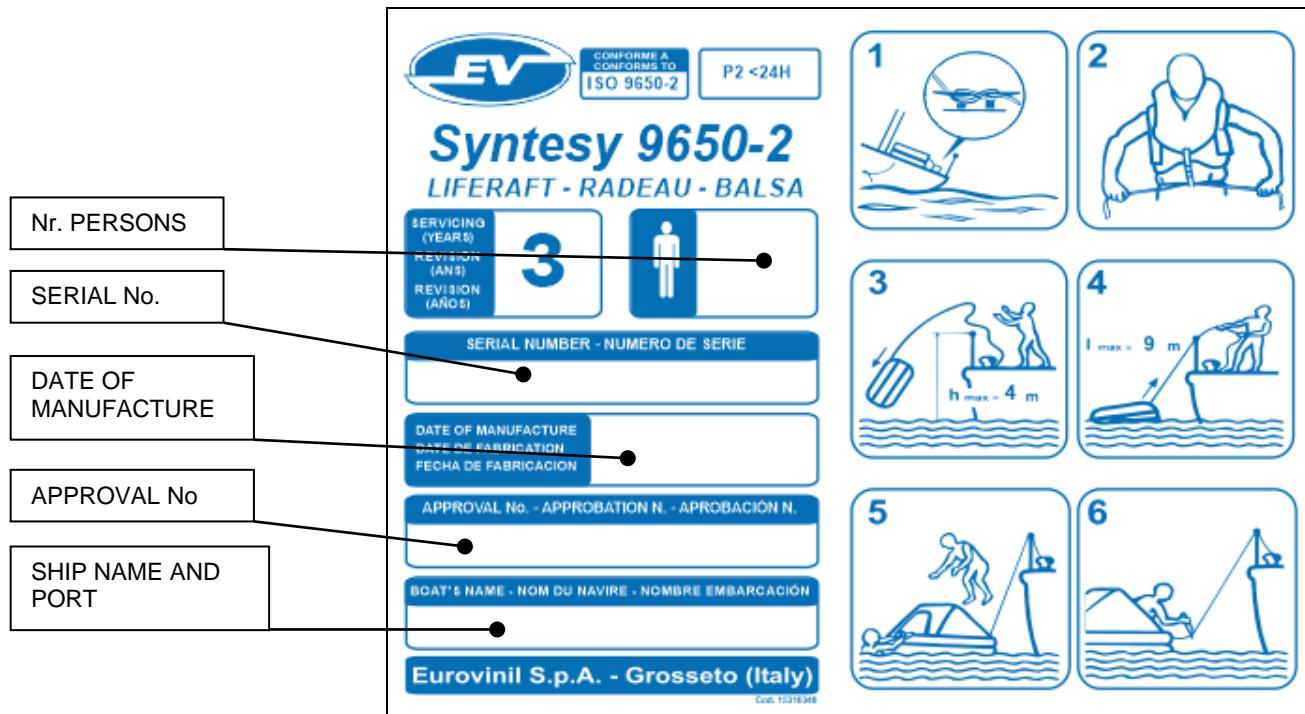
TABLE 4.16 – ISO9650-1(2) Equipment labels

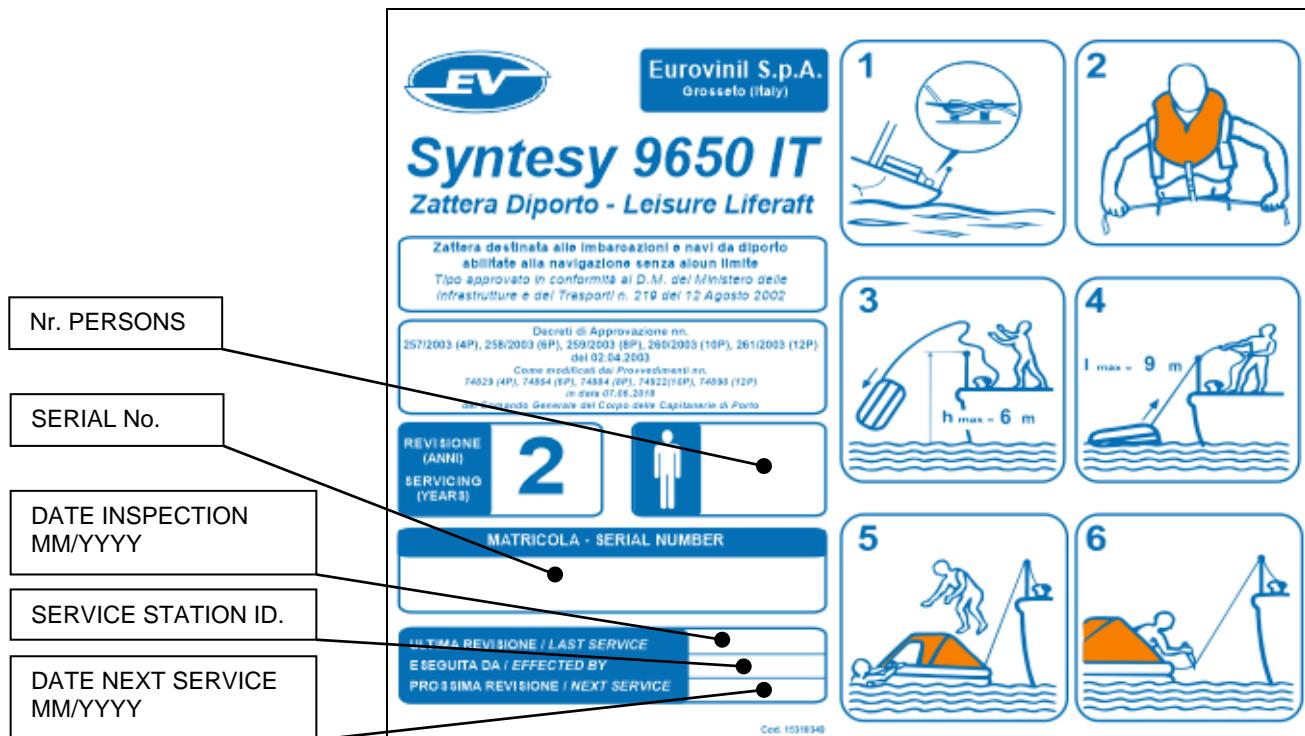
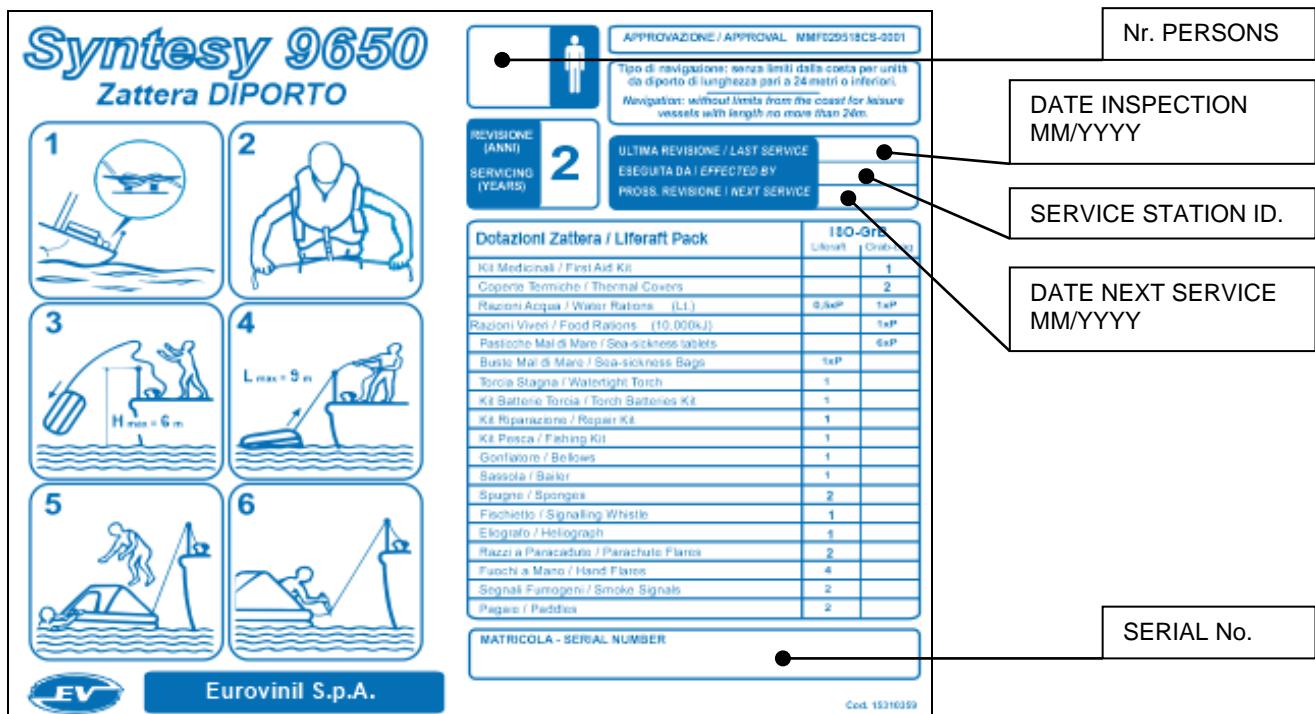
#### 4.3.2 INSTRUCTIONS FOR FILLING IN LABELS

##### 4.3.2.1 EV ISO9650-1:2005 Data label

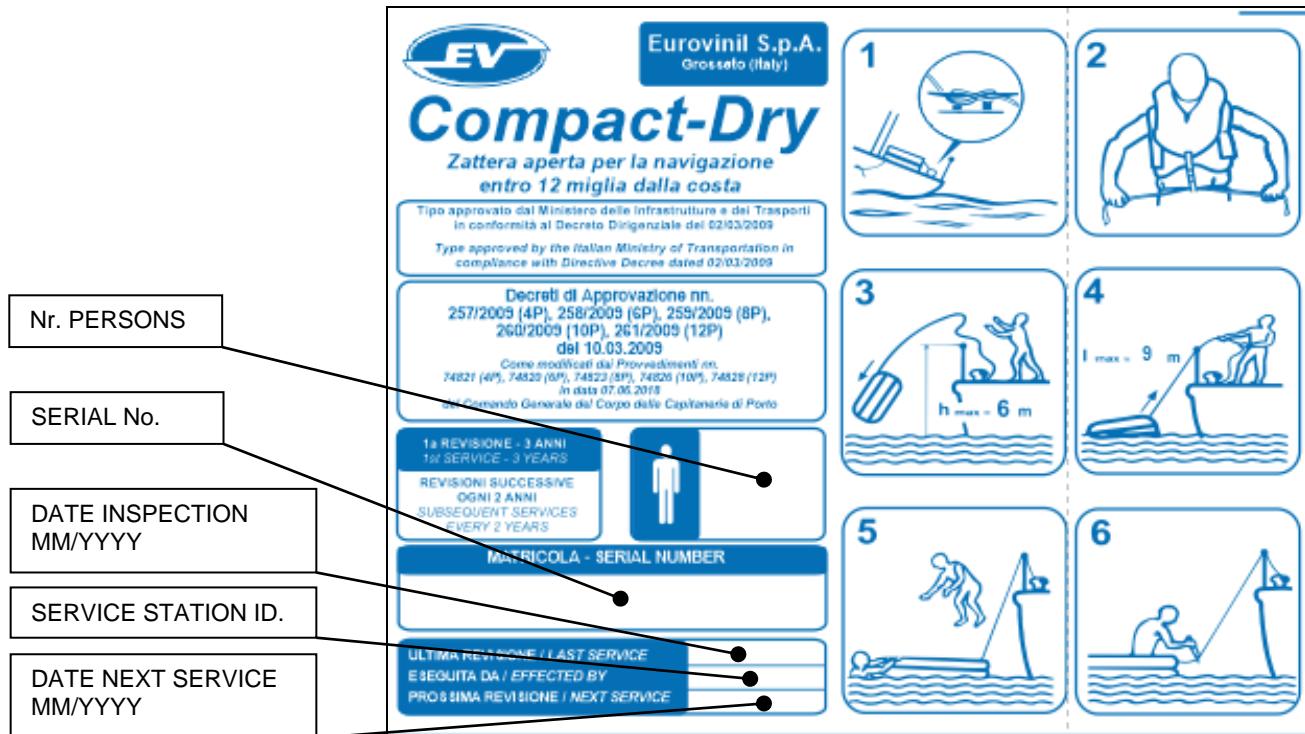


##### 4.3.2.2 EV ISO9650-2:2005 Data label

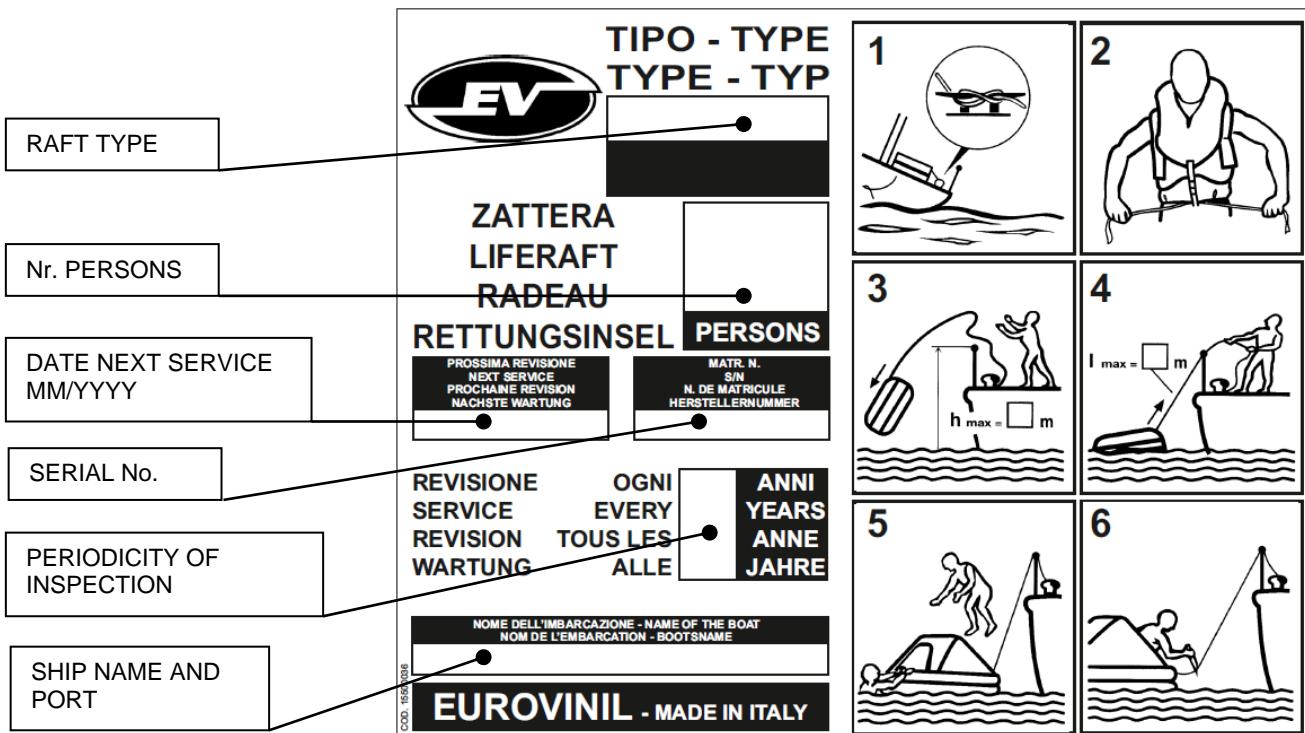


**4.3.2.3 EV ISO9650 ITALIA Data label**

**4.3.2.4 EV ISO9650-1 ITALIA Grab Bag Data label**


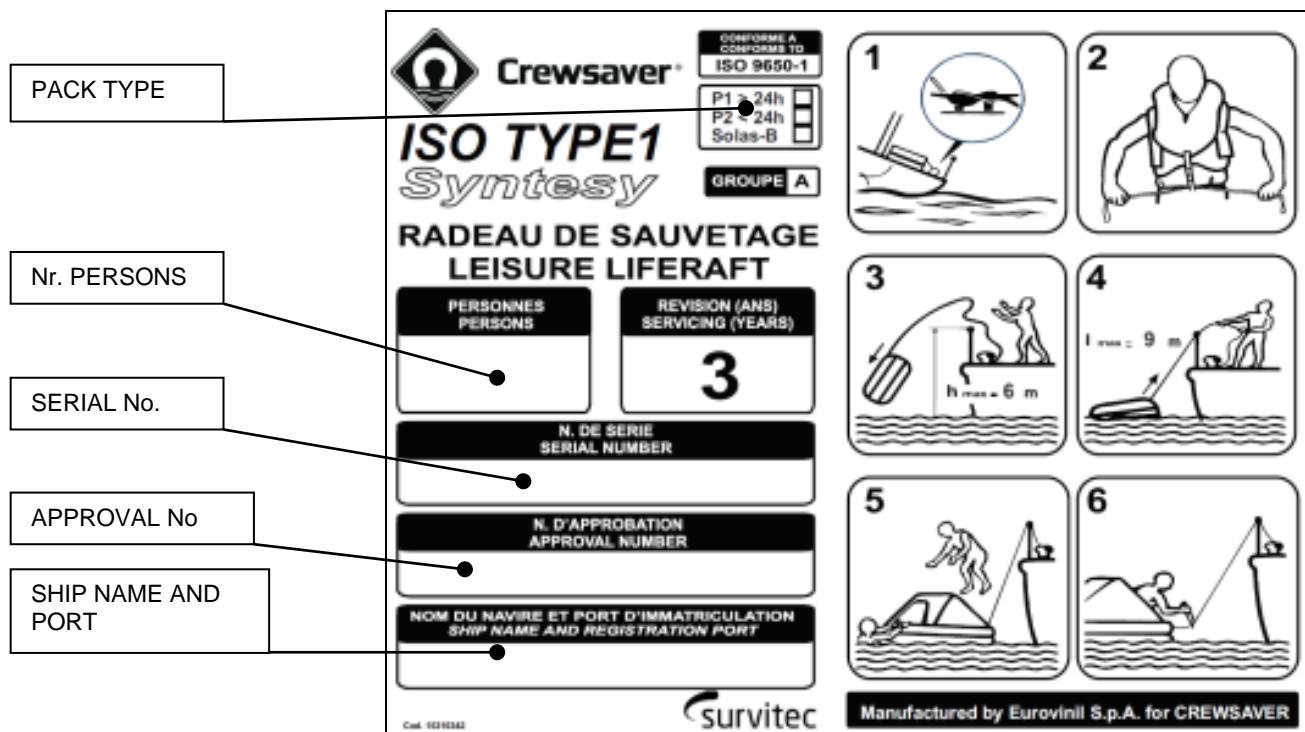
#### 4.3.2.5 EV Compact-Dry Data label



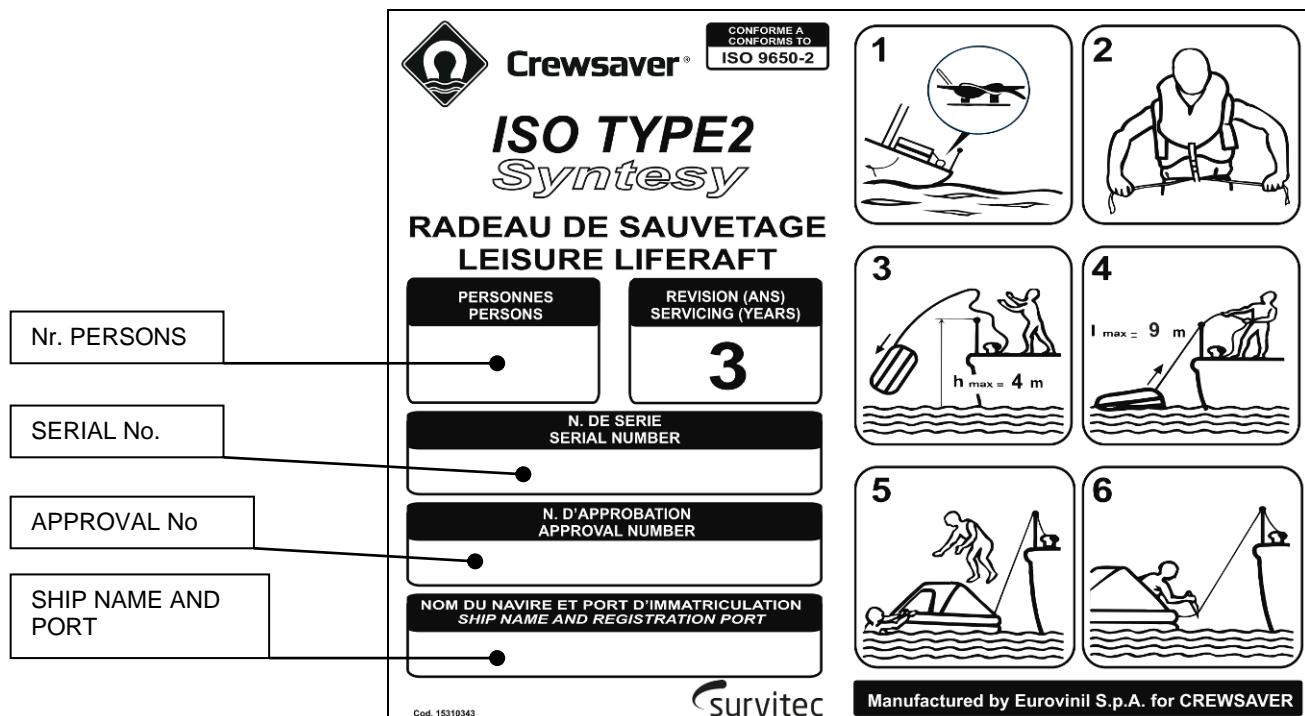
#### 4.3.2.6 EV Leisure (NON-ISO) Data label



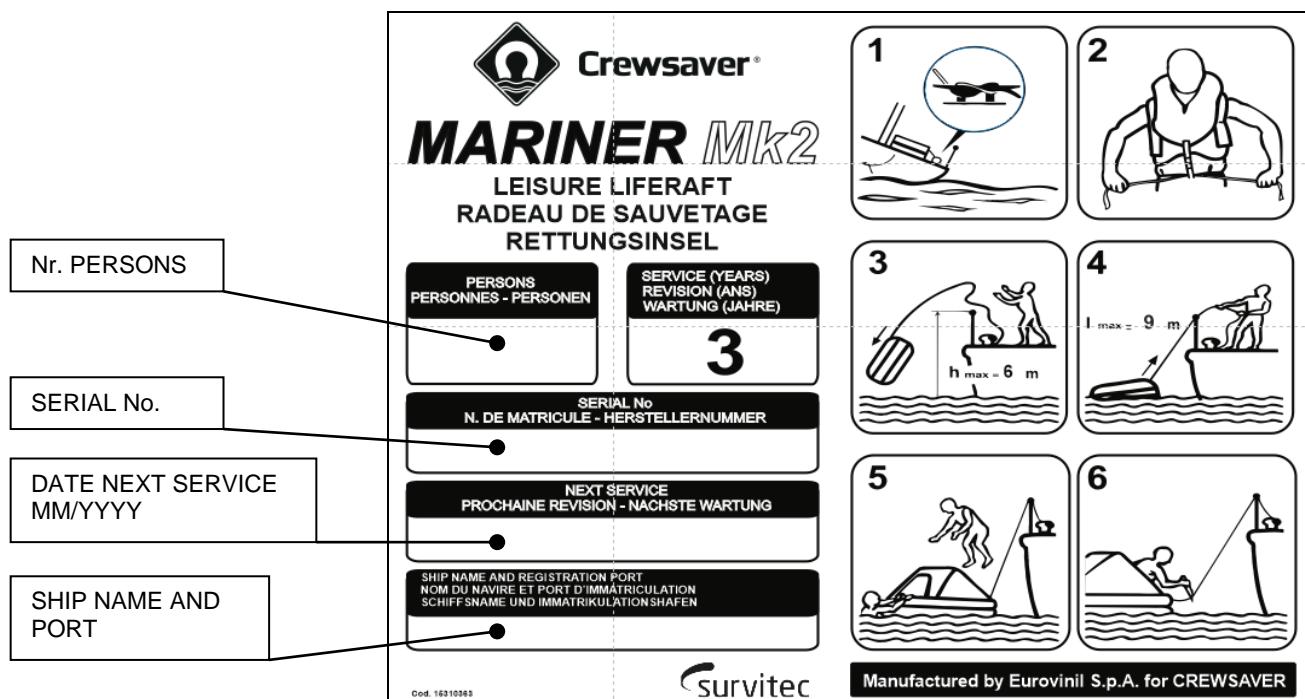
## 4.3.2.7 Crewsaver ISO TYPE1 Syntesy Data label



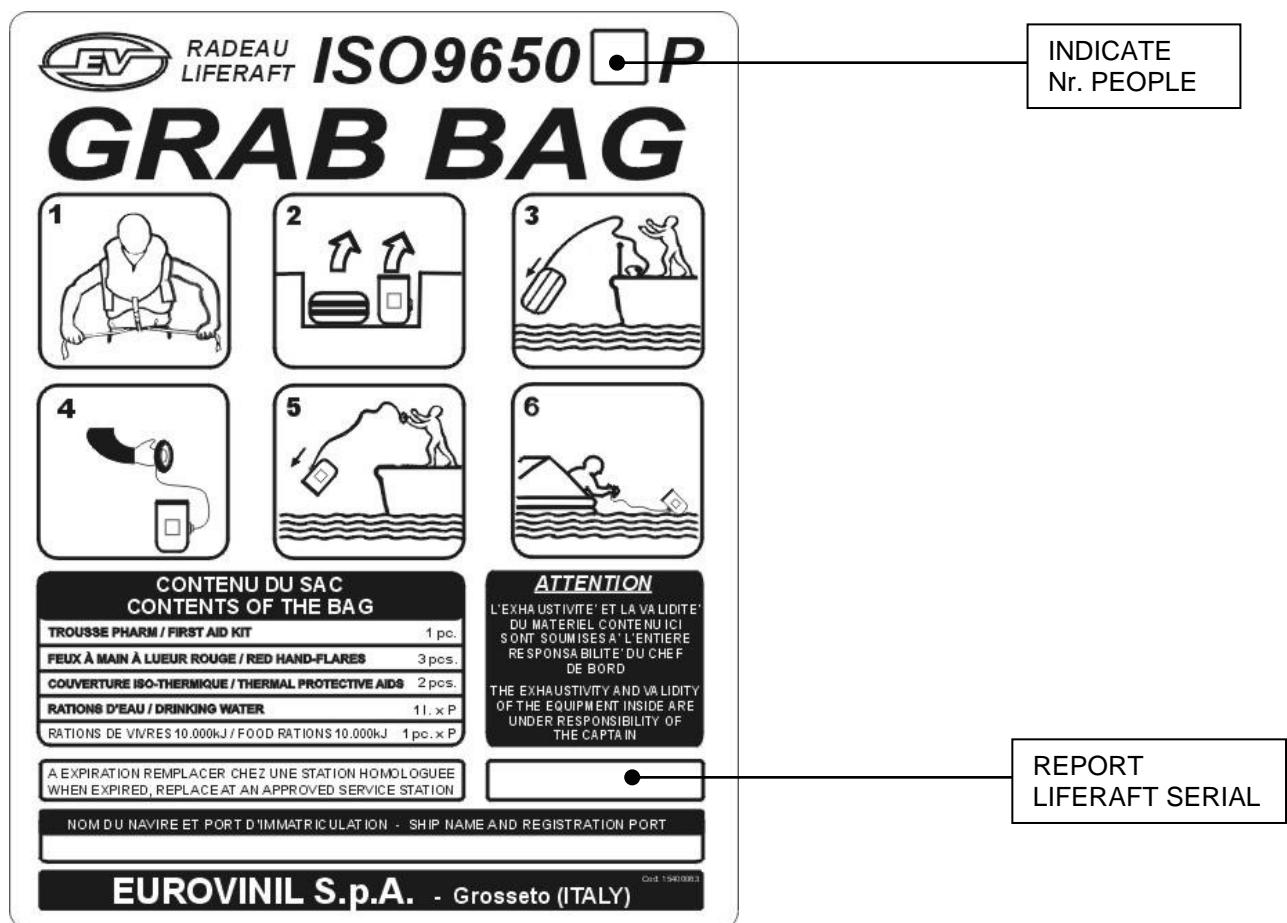
## 4.3.2.8 Crewsaver ISO TYPE2 Syntesy Data label



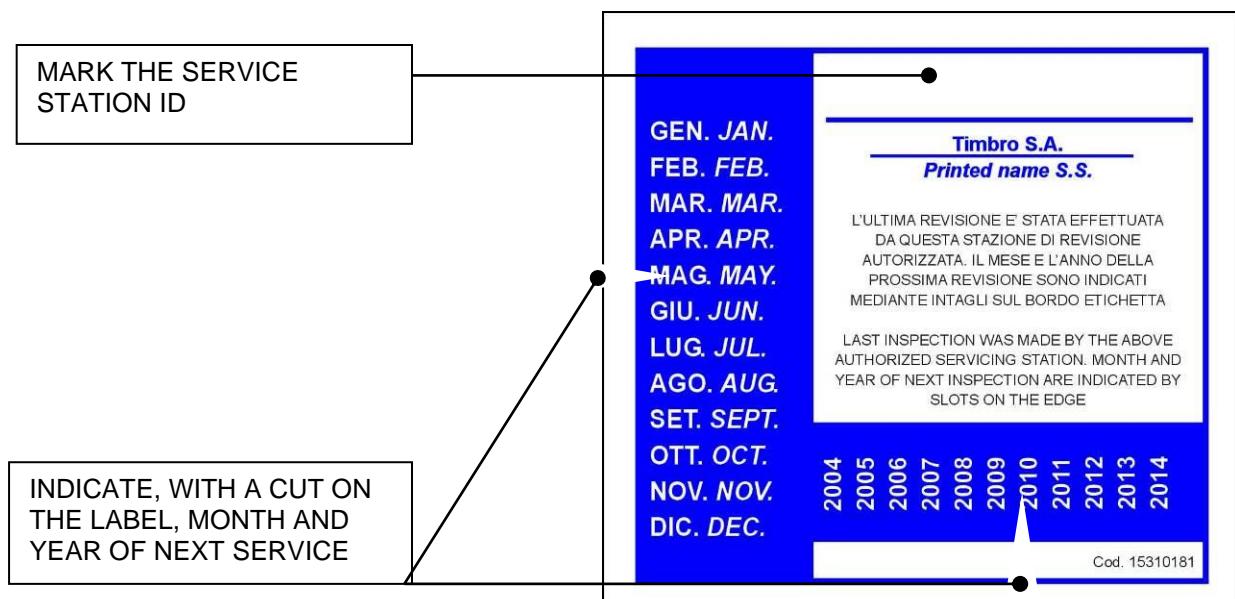
## 4.3.2.9 Crewsaver Mariner Mk2 Data label



## 4.3.2.10 Grab-Bag stamp



## 4.3.2.11 Next Servicing label (ISO9650 rafts only)



## 5. SPARE PARTS LIST

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**5.1 CONTAINERS AND RELATED ACCESSORIES**TABLE 5.1 - Containers, valises, vacuum bag

	<b>Description:</b>	VTR FIBREGLASS CONTAINER
	<b>Part Number:</b>	(see Table 4.1 to 4.10)
	<b>Description:</b>	ABS CONTAINER
	<b>Part Number:</b>	(see Table 4.1 to 4.10)
	<b>Description:</b>	VALISE
	<b>Part Number:</b>	(see Table 4.1 to 4.10)
	<b>Description:</b>	VACUUM BAG
	<b>Part Number:</b>	(see Table 4.1 to 4.10)

TABLE 5.2 - Container accessories

	<b>Description:</b>	STRAPS & CRIMPS
	<b>Part Number:</b>	(see Table 4.11)
	<b>Description:</b>	TAPE "DO NOT REMOVE" (EV LOGO)
	<b>Part Number:</b>	50300106
	<b>Description:</b>	TAPE "DO NOT REMOVE"
	<b>Part Number:</b>	9R15384002
	<b>Description:</b>	FOAM PROTECTION FOR PAINTER LINE EXIT (VTR FG CONTAINER)
	<b>Part Number:</b>	10359940
	<b>Description:</b>	PVC GASKET FOR PAINTER LINE EXIT (ABS CONTAINER)
	<b>Part Number:</b>	99189317
	<b>Description:</b>	LOG CARD CONTAINER (ISO9650:2005 ONLY)
	<b>Part Number:</b>	10359970

TABLE 5.3 - Container labels

	<b>Description:</b>	CONTAINER LABELS
	<b>Part Number:</b>	(see par 4.3.1)
	<b>Description:</b>	VALISE LABELS
	<b>Part Number:</b>	(see par 4.3.1)

## 5.2 LIFERAFT MATERIAL

TABLE 5.4 - Liferaft material

	<b>Description:</b>	PVC ORANGE EV-550 DTEX (FOR BUOYANCIES AND CANOPY ARCH)
	<b>Part Number:</b>	50200435
	<b>Description:</b>	FAB CANOPY 400 ORANGE (CANOPY AND BALLAST POCKETS)
	<b>Part Number:</b>	9R00202430
	<b>Description:</b>	BLACK ELASTIC CORD D. 6mm (CANOPY)
	<b>Part Number:</b>	52400200
	<b>Description:</b>	POLYPROPYLENE PLAIT H25 mm YELLOW (LIFELINES & RIGHTING SYSTEM)
	<b>Part Number:</b>	52400428
	<b>Description:</b>	WHITE POLYESTER PLAIT H16 mm (DROGUE FOR SEA-ANCHOR)
	<b>Part Number:</b>	52400016

## 5.3 LIFERAFT ACCESSORIES

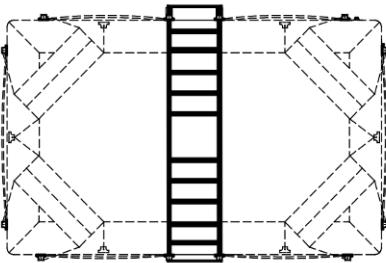
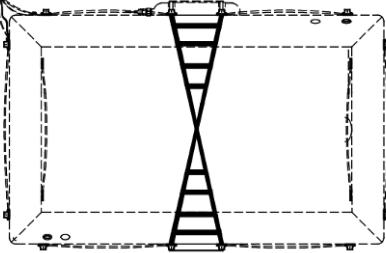
TABLE 5.5 - Painter lines and cordages

	<b>Description:</b>	PAINTER LINE (ISO9650)
	<b>Part Number:</b>	10359652
	<b>Description:</b>	PAINTER LINE (NON-ISO)
	<b>Part Number:</b>	10399983
	<b>Description:</b>	GRAB-BAG LINE
	<b>Part Number:</b>	10359662
	<b>Description:</b>	WHITE/RED PLAIT (FOR EQUIPMENT PACK)
	<b>Part Number:</b>	52400108
	<b>Description:</b>	PVC CORD (FOR VARIOUS SEALINGS)
	<b>Part Number:</b>	52010202

TABLE 5.6 - Sea-anchors

	<b>Description:</b>	SEA-ANCHOR (ISO9650:2005)
	<b>Part Number:</b>	10359063
	<b>Description:</b>	SEA-ANCHOR (ISO9650 ITA)
	<b>Part Number:</b>	10359060
	<b>Description:</b>	SEA-ANCHOR (LEISURE NON-ISO)
	<b>Part Number:</b>	99930115

TABLE 5.7 - Other accessories

	<b>Description:</b>	BUBBLEWRAP
	<b>Part Number:</b>	52509010
	<b>Description:</b>	QUOIT HANDLE
	<b>Part Number:</b>	99189003
	<b>Description:</b>	EXTERNAL BOARDING / CAPSIZING LADDER
	<b>Part Number:</b>	10309453 (4P & 6P rafts) 10309463 (8P & 10P rafts) 10309473 (12P rafts)
	<b>Description:</b>	INTERNAL BOARDING LADDER / LIFELINE
	<b>Part Number:</b>	10309413 (4P & 6P rafts) 10309423 (8P & 10P rafts) 10309433 (12P rafts)

## 5.4 INFLATION SYSTEM

TABLE 5.8 - Cylinders and cylinder labels

	<b>Description:</b>	TPED CYLINDER (THREAD 1"NGT)
	<b>Part Number:</b>	(see Table 3.3)
	<b>Description:</b>	TPED CYLINDER (THREAD 17E)
	<b>Part Number:</b>	(see Table 3.3)
	<b>Description:</b>	TPED CYLINDER (THREAD 25E)
	<b>Part Number:</b>	(see Table 3.3)
	<b>Description:</b>	TRIPLE APPROVAL TPED-DOT-TC CYLINDER (THREAD 25E)
	<b>Part Number:</b>	(see Table 3.3)
 	<b>Description:</b>	CYLINDER DATA LABEL
	<b>Part Number:</b>	15210041
	<b>Description:</b>	CYLINDER SAFETY LABEL
	<b>Part Number:</b>	15110234

TABLE 5.9 - PRV's, Inflation/deflation valves and accessories

	<b>Description:</b>	PRESSURE RELIEF VALVE VA70 COMPLETE
	<b>Part Number:</b>	10359166
	<b>Description:</b>	SUPERNOVA INFLATION/DEFLATION VALVE COMPLETE
	<b>Part Number:</b>	10399310
	<b>Description:</b>	SUPERNOVA INFLATION/DEFLATION VALVE COMPLETE
	<b>Part Number:</b>	99139027
	<b>Description:</b>	RUBBER GASKET FOR SUPERNOVA VALVE
	<b>Part Number:</b>	10399292
	<b>Description:</b>	GASKET/PLUG HOLDER FOR SUPERNOVA VALVE
	<b>Part Number:</b>	99139028
	<b>Description:</b>	BRAVO 2005 INFLATION/DEFLATION VALVE COMPLETE
	<b>Part Number:</b>	99101109

TABLE 5.10 - Valve/Buoyancy connector and related accessories

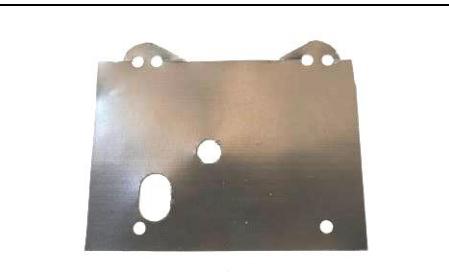
	<b>Description:</b>	VALVE/BUOYANCY CONNECTOR CVT/09 (FOR COASTAL LIFERAFT)
	<b>Part Number:</b>	99201331
	<b>Description:</b>	VALVE/BUOYANCY CONNECTOR CVT/09M
	<b>Part Number:</b>	99201345
	<b>Description:</b>	INOX TERMINAL FOR CONNECTOR CVT/09M
	<b>Part Number:</b>	99201346
	<b>Description:</b>	SCREW FOR CONNECTOR
	<b>Part Number:</b>	99220695
	<b>Description:</b>	PROTECTION PAD FOR CONNECTOR CVT/09M
	<b>Part Number:</b>	19505022

TABLE 5.11 - VTE/99-ISO inflation system and related accessories

	<b>Description:</b>	VALVE VTE/99-ISO/V1 1" NGT THREAD (engraved CC)
	<b>Part Number:</b>	10388044
	<b>Description:</b>	VALVE VTE/99-ISO/V1W 25E THREAD (engraved FF)
	<b>Part Number:</b>	10388046
	<b>Description:</b>	OPERATING HEAD VTE/99-ISO/TSV (engraved X)
	<b>Part Number:</b>	10388043
	<b>Description:</b>	VTE/99 OPERATING HEAD ACTIVATION CABLE
	<b>Part Number:</b>	10399596
	<b>Description:</b>	OBTURATOR FOR VALVE VTE/99-ISO
	<b>Part Number:</b>	99201319
	<b>Description:</b>	PLUMMER FOR VALVE VTE/99 (CYLINDERS UP TO 7LT.)
	<b>Part Number:</b>	99201015

TABLE 5.12 - VTE/87-PED inflation system and related accessories

	<b>Description:</b>	VALVE VTE/87-PED 17E THREAD (engraved J)
	<b>Part Number:</b>	10399405
	<b>Description:</b>	OPERATING HEAD VTE/87 - 1 WAY (engraved C)
	<b>Part Number:</b>	10399424
	<b>Description:</b>	VTE/87 OPERATING HEAD ACTIVATION CABLE
	<b>Part Number:</b>	10399594
	<b>Description:</b>	OBTURATOR FOR VALVE VTE/87-PED
	<b>Part Number:</b>	99201312
	<b>Description:</b>	PLUMMER FOR VALVE VTE87 (CYLINDERS UP TO 4LT.)
	<b>Part Number:</b>	99201035

TABLE 5.13 - Inflation system - common accessories

	<b>Description:</b>	WATERTIGHT CAP FOR OPERATING HEAD
	<b>Part Number:</b>	99182047
	<b>Description:</b>	OR 106 GASKET (RED) FOR OPERATING HEAD
	<b>Part Number:</b>	99182147
	<b>Description:</b>	OR 2087 GASKET O.H./VALVE COUPLING
	<b>Part Number:</b>	99182145
	<b>Description:</b>	INOX SPHERE FOR OPERATING HEAD
	<b>Part Number:</b>	99220082
	<b>Description:</b>	CLAMP FOR OPERATING HEAD CABLE
	<b>Part Number:</b>	99990585

## 5.5 SIGNAL MATERIAL

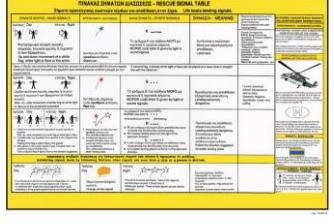
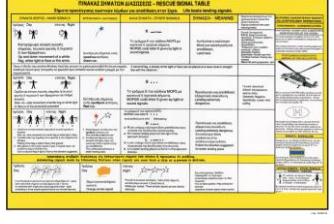
TABLE 5.14 - Signal material

	<b>Description:</b>	WATERPROOF LED TORCH WITH BATTERIES
	<b>Part Number:</b>	10399565
	<b>Description:</b>	REFLECTIVE TAPE
	<b>Part Number:</b>	52300005
	<b>Description:</b>	SIGNALLING MIRROR
	<b>Part Number:</b>	99990408
	<b>Description:</b>	WHISTLE
	<b>Part Number:</b>	99107003

TABLE 5.15 - Internal/external light system

	<b>Description:</b>	INTERNAL LAMP UNIT RL6
	<b>Part Number:</b>	9R12866009
	<b>Description:</b>	EXTERNAL LAMP UNIT RL6
	<b>Part Number:</b>	9R12868009

TABLE 5.16 - Pyrotechnics and related accessories

	<b>Description:</b>	PARACHUTE ROCKET RED HAND FLARE SMOKE SIGNAL
	<b>Part Number:</b>	(see Table 3.18)
	<b>Description:</b>	SIGNAL INSTRUCTION SHEET
	<b>Part Number:</b>	15100013
	<b>Description:</b>	SIGNAL INSTRUCTION SHEET (GREEK)
	<b>Part Number:</b>	15100219

**5.6 FIRST AID KIT**
TABLE 5.17 - First aid kit

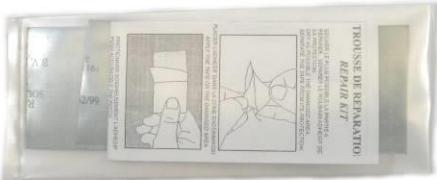
	<b>Description:</b>	FIRST AID KIT ISO
	<b>Part Number:</b>	99930156
	<b>Description:</b>	FIRST AID KIT (GREECE)
	<b>Part Number:</b>	9R12438009
	<b>Description:</b>	FIRST AID KIT (LEISURE NON-ISO)
	<b>Part Number:</b>	99930120
	<b>Description:</b>	SEA-SICKNESS TABLETS 60
	<b>Part Number:</b>	9R12864009

## 5.7 SURVIVAL ACCESSORIES

TABLE 5.18 - Food, water and other survival accessories

 	<b>Description:</b>	FISHING KIT
	<b>Part Number:</b>	99930172
	<b>Description:</b>	FOOD RATIONS
	<b>Part Number:</b>	(see Table 3.16)
	<b>Description:</b>	WATER RATIONS
	<b>Part Number:</b>	(see Table 3.17)
	<b>Description:</b>	THERMAL PROTECTIVE COVER
	<b>Part Number:</b>	9R06317009

**5.8 REPAIR KIT**TABLE 5.19 - Repair kit

	<b>Description:</b>	REPAIR KIT (ADHESIVE PATCHES)
	<b>Part Number:</b>	10360009
	<b>Description:</b>	LEAK STOPPER
	<b>Part Number:</b>	99320014 (SMALL) 99320015 (MEDIUM)

**5.9 EQUIPMENT PACK ACCESSORIES**
TABLE 5.20 - Equipment bags

	<b>Description:</b>	RESEALABLE PVC EQUIPMENT BAG
	<b>Part Number:</b>	10399312
	<b>Description:</b>	GRAB-BAG EV
	<b>Part Number:</b>	10399322 (40LT) 10399332 (60LT)
	<b>Description:</b>	BAG PET 20/100 FOR EQUIPMENT
	<b>Part Number:</b>	(see Table 3.6 to 3.12)
	<b>Description:</b>	PVC EQUIPMENT BAG
	<b>Part Number:</b>	10399112 (SMALL) 10399302 (LARGE)

TABLE 5.21 - Equipment accessories

	<b>Description:</b>	BAILER
	<b>Part Number:</b>	10399465
	<b>Description:</b>	SPONGE
	<b>Part Number:</b>	50300008
	<b>Description:</b>	PADDLE
	<b>Part Number:</b>	99230019
	<b>Description:</b>	BAG FOR SEA-SICKNESS
	<b>Part Number:</b>	51500307
	<b>Description:</b>	FLOATING KNIFE
	<b>Part Number:</b>	99990001
	<b>Description:</b>	RAIN WATER COLLECTING BAG
	<b>Part Number:</b>	10399389
	<b>Description:</b>	MANUAL INFLATOR
	<b>Part Number:</b>	99991399

## 5.10 ASSOCIATED DOCUMENTS

**TABLE 5.22 - Leaflets, instructions, log cards**

	<b>Description:</b> IMMEDIATE ACTION LEAFLET	
	<b>Part Number:</b> 15100347	
	<b>Description:</b> ISO LIFERAFT INSTRUCTION SHEET	
	<b>Part Number:</b> 15110198	
	<b>Description:</b> OWNER'S MANUAL	
	<b>Part Number:</b> 15100339 (EV SYNTESY 9650:2005) 15100343 (EV SYNTESY 9650 IT) 15100346 (CREWSAVER ISO TYPE1/2) 15100342 (EV COMPACT-DRY)	
	<b>Description:</b> LOG CARD	
	<b>Part Number:</b> 15300293 (EV SYNTESY 9650-1) 15300294 (EV SYNTESY 9650-2) 15300285 (CREWSAVER ISO TYPE-1) 15300286 (CREWSAVER ISO TYPE-2)	

**5.11 REPAIRING EQUIPMENT AND MATERIAL****TABLE 5.23 - Tools for Inflation and PRV valves**

	<b>Description:</b>	TORQUE TERMINAL FOR SUPERNOVA INFLATION/DEFLATION VALVE
	<b>Part Number:</b>	99220786
	<b>Description:</b>	TORQUE TERMINAL FOR BRAVO 2005 INFLATION/DEFLATION VALVE
	<b>Part Number:</b>	99220776
	<b>Description:</b>	TORQUE TERMINAL FOR PRV VALVE VA70
	<b>Part Number:</b>	99220796

TABLE 5.24 - Tools for testing

	<b>Description:</b>	SUPERNOVA VALVE ADAPTER FOR PRESSURE CHECK
	<b>Part Number:</b>	99991001
	<b>Description:</b>	BRAVO 2005 ADAPTER FOR PRESSURE CHECK
	<b>Part Number:</b>	99101110
	<b>Description:</b>	BLAST TEST ADAPTER FOR M14/M19 RAFTS
	<b>Part Number:</b>	96880417

TABLE 5.25 - Tools for Operating Head inspection

	<b>Description:</b>	SPANNER FOR VTE/87-99 SPRING CAP
	<b>Part Number:</b>	99990988
	<b>Description:</b>	REARMING TOOL FOR VTE/99-ISO OPERATING HEAD
	<b>Part Number:</b>	99990982
	<b>Description:</b>	REARMING TOOL FOR VTE/87 OPERATING HEAD
	<b>Part Number:</b>	99990985
	<b>Description:</b>	SHOCK ABSORBER FOR VTE/99-ISO OPERATING HEAD
	<b>Part Number:</b>	99200126

TABLE 5.26 - Tools for Valve refilling and protection

	<b>Description:</b>	CYLINDER REFILLING TOOL
	<b>Part Number:</b>	99200005 (VALVE VTE/99-ISO) 99990986 (VALVE VTE/87)
	<b>Description:</b>	FILLING BUNG FOR VALVE VTE/99
	<b>Part Number:</b>	99200005
	<b>Description:</b>	SCREW NUT FOR VTE/87-99 OBTURATOR
	<b>Part Number:</b>	99990987
	<b>Description:</b>	SAFETY PLUG FOR GAS EXIT
	<b>Part Number:</b>	99200125
	<b>Description:</b>	VALVE SAFETY CAP
	<b>Part Number:</b>	99200124 (VALVE VTE/99-ISO) 99200129 (VALVE VTE/87)

TABLE 5.27 - Vacuum bag sealing tool

	<b>Description:</b>	HEAT SEAL TOOL - 15cm/240V
	<b>Part Number:</b>	9R07981009
	<b>Description:</b>	HEAT SEAL TOOL - 15cm/110V
	<b>Part Number:</b>	9R08179009

TABLE 5.28 - Glue and Chemical leak test kit

	<b>Description:</b>	EV/C2 GLUE (250 gr.)
	<b>Part Number:</b>	96900004
	<b>Description:</b>	CHEMICAL LEAK TEST KIT
	<b>Part Number:</b>	9R45435001

## 6. SERVICING ACTIVITIES

Section	Title	Page
6.1	GENERAL	6.2
6.2	CERTIFIED PERSONNEL	6.2
6.3	SPARE PARTS	6.2
6.4	NON-CONFORMITY NOTIFICATIONS	6.2
6.5	FORMS	6.2
6.5.1	ONLINE CERTIFICATE OF REINSPECTION	6.2
6.5.2	TABLE OF SERVICING	6.2
6.5.2	NEXT SERVICE DATE LABEL	6.2

## 6.1 GENERAL

Servicing of EUROVINIL or CREWSAVER liferafts may be carried out only by stations which have been approved by SURVITEC. The working relationship is regulated by a contract which is undersigned upon approval of the station. The servicing station must comply with it.

## 6.2 CERTIFICATED PERSONNEL

Servicing may only be carried out by qualified persons who have been adequately trained and certificated by SURVITEC. The servicing station should promptly make personnel aware of any changes by the liferaft manufacturer and make available to them a copy of this manual and any other bulletins or instructions.

## 6.3 SPARE PARTS

The servicing station may only make use of SURVITEC spare parts, where so expressly required (see list Chapter 5), of approved materials, where so required, and of suitable materials in all other cases.

## 6.4 NON-CONFORMITY NOTIFICATION

Should the servicing station notice non-conformity situations which may impair the liferaft performance, the servicing station shall inform SURVITEC within 24 hours. Liferafts may not be withdrawn from service without a prior authorization by SURVITEC. In such a case, the service station shall contact the Customer Service for the procedure to be followed.

## 6.5 FORMS

### 6.5.1 ONLINE CERTIFICATE OF REINSPECTION

When the servicing is completed, the personnel shall fill out in all its parts the Online Certificate of Reinspection via "Survitec Service Portal".

Once completed, the Certificate of Reinspection must be printed and signed by the operator in 2 copies:

- Copy for the customer, together with the liferaft;
- Copy for the service station, to be maintained for not less than 5 years from the emission, associated to the Liferaft service record.

### 6.5.2 TABLE OF SERVICINGS

The PVC table is positioned in the lower buoyancy tube, to the inflation system connection. This table shall be filled out on servicing and shall show the stamp of the servicing station and the date of servicing.

### 6.5.3 NEXT SERVICING DATE LABEL

The label showing the date of next servicing shall be filled out once the servicing is over and shall be attached to the container or fitted on the valise.