

Contents

1	Introduction	2
2	Warning	2
3	Conditions of use	2
4	Presentation	3
5	Nomenclature	4
6	Special features of the Hi-line	6
7	Safety of the Hi-line	8
8	Product identification	10
9	Installation	10
10	Using the marine version Hi-line	12
11	Using the combined or land version Hi-line	15
12	Maintenance	17
13	Service life	19
14	Criteria for scrapping	19
15	Responsibilities	21
16	Warranty	21
17	Contact	21
18	Monitoring inspections	22

[illegible]

18. Monitoring inspections

Owner :.....

Serial number :.....

Date of manufacture :.....

Date of first use :.....

Limit date of the weak links :

Weak link CR35L100 (Combined) :.....

Weak link CR35L100 (Bag) :.....

Weak link CR100L100 (Line) :.....

Weak link CR100L100 (Heaving line) :.....

Weak link strap CR100L300 :.....

Stretcher foot weak link strap CR100 :.....

.....

.....

.....

.....

.....

The follow-up table of checks must indicate :

- * Complete checks.
- * The controls as a result of an exceptional event or anomaly.
- * Replacements and repairs.
- * Date of scrapping.

1. Introduction

The Hi-line is a secured link with the winch cable of the helicopter in two versions of rescue.

In marine version, it keeps a permanent link with the winch cable. It is used when the position of the helicopter is offset from the vertical of the point of winching, due to strong swell, the large number of persons to be lifted, obstacles on the boat, mats, cable, etc. The guide rope cannot be released to avoid it from being caught in the boat's propeller.

In the combined or land version it is used to prevent the rotation of the stretcher during the hoisting phase by helicopter. In this version the Anti-Rotation line can be dropped by the rescuer before brining the stretcher into the helicopter or before the flight in lateral movement.

2. Warning

When using the Hi-line, the safety of rescuers and other persons depends on the good use made of it. All persons using it must have previously read and understood the user manual and have received practical training.

3. Conditions d'utilisations

The Hi-line should never be used outside its specific use.

All the elements are designed to ensure the safe guidance of the winching. Their technical characteristics are the result of a development and testing conducted specially for this use.

The assembly must not be dismantled or used otherwise than following the indications of the user manual.

To ensure the proper functioning of the Hi-line, observe the recommendations contained in the user manual exactly.

It is extremely important to:

Never go out to an operation without having firstly verified the condition of all the Hi-line components,

Ask advice from a TSLRESCUE technician if you find an anomaly,

Replace a part only by an original part or one that is certified by TSLRESCUE to be compatible,

Do not perform an assembly any different from that of origin, as described in this manual.

4. Presentation

The Hi-line includes:

- ① One weighted monkey with weak link that the rescuer throws in the direction of a person located on the winching point, to be directed towards it.
- ② A line for the rescuer on the ground to ensure the winching guidance.
- ③ A weak link and a sea extender at the end of the line.
- ④ One swivel snap shackle with weak link strap for an anti-rotation connection to the stretcher tip.
- ⑤ One swivel snap shackle with weak link to attach the bag to the rescuer harness.
- ⑥ Un prolongateur mixte avec fusible et mousqueton drisse de largage qui permet de rallonger le prolongateur mer pour une utilisation en version mixte ou terrestre où la corde anti rotation peut être larguée.



Figure

1

15. Responsabilités

15.1. Use and competence :

The Hi-line should be used only by competent and responsible persons. The users are under the responsibility of the helicopter base leader and must possess a skill and special technical training respecting the safety instructions. The user manual is not a training manual.

15.2. Monitoring and inspection

The owner of the equipment must designate a person responsible for monitoring and inspection of the equipment. He must supervise the condition of the assembly and refer to the manual to determine whether or not to use the Hi-line. Learning techniques and practical training are required for the use of the bag of the Hi-line.

16. Warranty

The bag of guidance is guaranteed for 1 year against any defect in material or workmanship. Excluded from the warranty: normal wear, changes or alterations, improper storage, poor maintenance, damage due to accidents, negligence or use for which this product is not intended.

17. Contact

For information or if your equipment requires repair, contact exclusively :

TSL RESCUE

9, rue du Pré Faucon - PAE Les Glaisins
74940 ANNECY LE VIEUX (France)
Tel +33 (0)4 50 02 80 29 / Fax +33 (0)4 50 01 28 97
e-mail info@tslrescue.com
www.tslrescue.com

The bag must be scrapped if:

The sewing thread and the weak link strap are damaged.



The parts of the bag are damaged by abrasion, cuts, chemical substances or other things.



The line and the heaving line appear to be damaged.



Les manilles et mousquetons fonctionnent mal.

Le bout et la touline se vrillent.

Le bout et la touline sont trop rigides.

Il y a eu contact avec des produits chimiques dangereux.

Il y a un doute sur la sécurité.

5. Parts lists

5.1. Complete assembly parts list

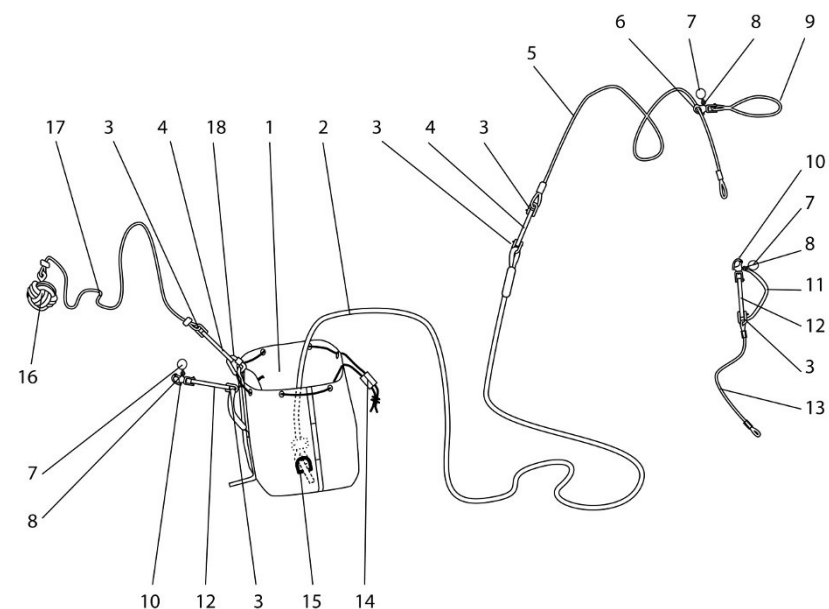


Figure 2

Item	Quantity	Description
1	1	Bag
2	1	Line
3	5	Captive swivel snap shackle
4	2	Weak link CR100L100
5	1	Sea extender
6	1	Swivel snap shackle L90
7	3	Heaving line
8	3	Cord
9	1	Stretcher foot weak link strap CR100
10	2	Swivel snap shackle L70
11	1	Weak link strap CR100L300
12	2	Weak link CR35L100
13	1	Combined extender
14	1	Closing cord with a blocker
15	1	Line fastening ring
16	1	Weight
17	1	Heaving line
18	1	Quick Delta link

5.2. Bag parts list

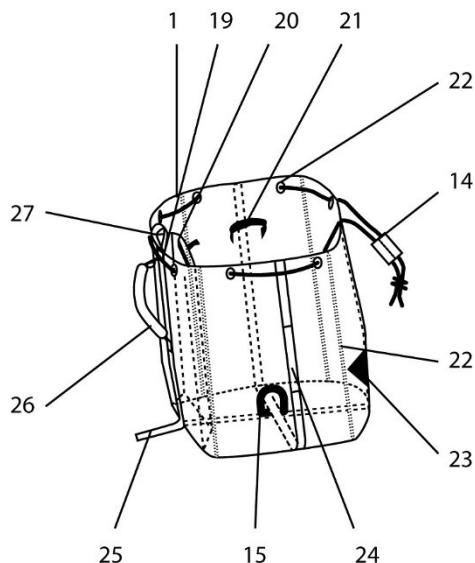


Figure 3

Item	Description
1	Bag
19	Product label and serial number
20	Internal pocket for heaving line
21	Velcro fastener for extender
22	Grommets
14	Closing cord with a blocker
22	Stiffener cheek
23	Logo
24	Reinforcement strap on the bottom and the 4 sides with reflective strips
15	Line fastening D ring
25	Locking strap at the foot
26	Handle
27	Heaving line fastening strap

6. Special features of the Hi-line

The bag :

- Tough 900g / m² red PVC tarp.
- Tough grid at base for quick water draining.

12.2 Maintenance :

The Hi-line must not be exposed unnecessarily to U.V. It must be stored in the shade, in a place free of humidity and away from any heat source. For transport, the same instructions must be observed.

The Hi-line must be stored so as to avoid cuts, tears, abrasion and damage caused by acids, oil, corrosives and heat.

The Hi-line must be kept clean and dry. Dirty parts can be washed. Oil must not touch the bag components.

Any chemical substance, corrosive and solvents should be considered as harmful. If a component touches these substances, the Hi-line must be withdrawn from service and TSLRESCUE must be contacted by giving specific details on the chemical substance to ensure safety.

In the case of soiling or contact with sea water, the entire Hi-line must be washed with clean water not exceeding 30°C without soap and rinsed in cold water. Then left to dry naturally away from any source of heat and without exposure to the sun.

13. Service life

The service life of the Hi-line assembly depends on specific use and regular maintenance as well as proper storage. It is defined according to the criteria of scrapping.

With the exception of the weak links, the service life of the Hi-line assembly is unlimited. The weak links are considered as "sensitive" components and require special attention so that they can retain their function of safety rupture within the defined tolerance margin.

Service life of the weak links = duration of storage prior to first use + duration of use.

- Storage duration of the weak links: in good conditions of storage, the weak links can be stored for 5 years before first use without affecting the future duration of use.
- Duration of use of weak links: It is limited to 5 years maximum and defined by the period extending from the date of first use up to the date of scrapping.

The service life of weak links (storage before use + duration of use) is limited to 10 years.

14. Criteria of scrapping

The criteria of scrapping are clearly defined in the user manual so that the equipment inspector can take the decision to withdraw the Hi-line from use temporarily for the time needed to replace the faulty component or withdraw it from service permanently if no repair can be performed.

This is a regular check of the condition of the entire Hi-line before and after each use. The check must be done visually and by touch :

- ⇒ Condition of the weak links (cut, beginning of rupture, etc.).
- ⇒ Condition, positioning and operation of the snap shackles, shackles and knots.
- ⇒ Condition and flexibility of the line and the heaving line.
- ⇒ Condition of the canvas and of the bag straps (presence of tear, worn fabric, etc.).

12.1.2. Complete inspection :

A complete and detailed inspection must be performed at least every 6 months by the person responsible for looking after the equipment. He can decide on more frequent inspections if he considers that the frequencies and the conditions of use of the Hi-line require it.

12.1.3. Inspection procedure :

No fault is found and the limit date of the weak links is not exceeded



The inspection is notified and dated.



The Hi-line is used.

The limit date of the weak links is exceeded



The Hi-line is withdrawn from service.



The weak links are replaced.



Complete inspection.



The inspection and replacement are notified and dated.



The Hi-line is put back into service.

A fault is found according to the criteria of scrapping or there is a doubt about the safety.



The Hi-line is withdrawn from service.



The faulty component is replaced or the Hi-line is sent for repair.



Complete inspection.



The Hi-line is compliant



The inspection and replacement are notified and dated.



The Hi-line is put back into service.



The Hi-line is not compliant



Disposal of the Hi-line.

The person responsible for the equipment must record everything in writing in the follow-up sheet to be able to have traceability if necessary.

- Four stiffeners to keep the bag in open position.
- Easy closing by grommet, cord and blocker whatever the conditions of use.
- Small strap at the base to keep the bag on the ground with the foot, during strong winds or heavy seas.
- 4 reinforcing straps on the sides and crossed in the bottom of the bag.
- 4 reflective strips positioned on the stiffener straps for night visibility.
- Large ergonomic handle grip.
- Large ergonomic handle grip.
- Stainless steel ring in the bottom of the bag to attach the line.
- Velcro on the side to attach the extender to make it easy to find.
- Inside pocket 25x30 cm to store the heaving line, with velcro closing and a strap and tab to facilitate opening.

The Heaving line

- Static rope heaving line of 10 m x 6 mm connected to the bag by a weak link of 100 kg breaking strain (CR).
- At its end, a weighted monkey of 400 grams at the end. Excellent grip, without rebound, tear resistant and not damaged by sea water.
- The heaving line is linked to the weak link shackle and the weight with a stop knot.

The line

- Static and floating 14 mm line of 50 m length, with a reflecting strand for night visibility. The rope diameter provides a good grip.
- One end of the line consists of a sewn loop. The other is attached to the bottom of the bag with a stop knot.

Safety weak links

- The weak links consist of an 8 mm polyamide strap whose breaking strain is linked with the sewing thread resistance.
- The resistance of the weak links is identified by the yellow colour thread of 35 kg breaking strain and the red one of 100 kg breaking strain.

The Extenders

- The sea extender length is 1.80 m to be used with all existing stretchers.
- The extenders are made of stainless steel cable.
- Their ends consist of stainless steel core ends and copper sleeves.
- The crimping includes a conical end to prevent any catching.

Stretcher foot link

- The foot of the stretcher is linked by an assembly including :
 - * a weak link strap of 100 kg breaking strain for tying with a lark's head knot to all stretchers,

- * a swivel snap shackle with an opening control consisting of a cord with a gripping ball handle.

Bag attachment to the rescuer's harness

- The bag is connected to the rescuer's harness by an assembly comprising :
 - * a swivel snap shackle with an opening control consisting of a cord with a gripping ball handle.
 - * a weak link of 35 kg.
 - * a swivel shackle.

The Shackles

- The shackles are made of stainless steel and fitted with a captive self-locking shaft.

The swivel spring hooks

- The spring hooks are made of stainless steel
 - * with swivel to avoid kinking ropes and straps.
 - * with shackle to replace the weak links easily.

7. Safety of the Hi-line

The Hi-line is equipped with safety weak links. Their function is to provoke an automatic rupture of linkage in the case of excessive traction force.

Six safety weak links are thus positioned between the following links :
CR = Breaking strain

	Localisation (Figure 4)	CR (kg)	Description
①	The sea extender and the line	100	Weak link CR100L100
②	The combined extender and the sea extender	35	Weak link CR35L100
③	If it breaks, a longer weak link strap (300 mm) allows the snap shackle to be opened and the release of the sea extender.	100	Weak link strap CR100L300
④	The heaving line and the bag	100	Weak link CR100L100
⑤	The snap shackle guide at the foot of the stretcher	100	Stretcher foot weak link strap CR100
⑥	The bag and the rescuer	35	Weak link CR35L100

11.1 Fastening the stretcher in the combined version (Figure 22)

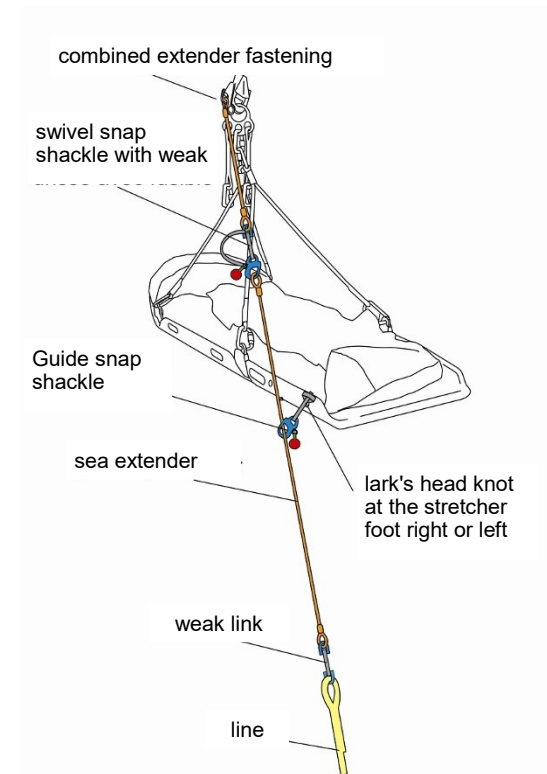


Figure 22

12. Maintenance Operations are servicing, inspection and changing defective parts. They can be easily performed by the person responsible for the equipment. All the Hi-line components can be easily inspected and changed. The procedure for inspection, scrapping conditions and a model of a follow-up sheet are included in the user manual.

12.1. Inspection :

12.1.1 The routine check :

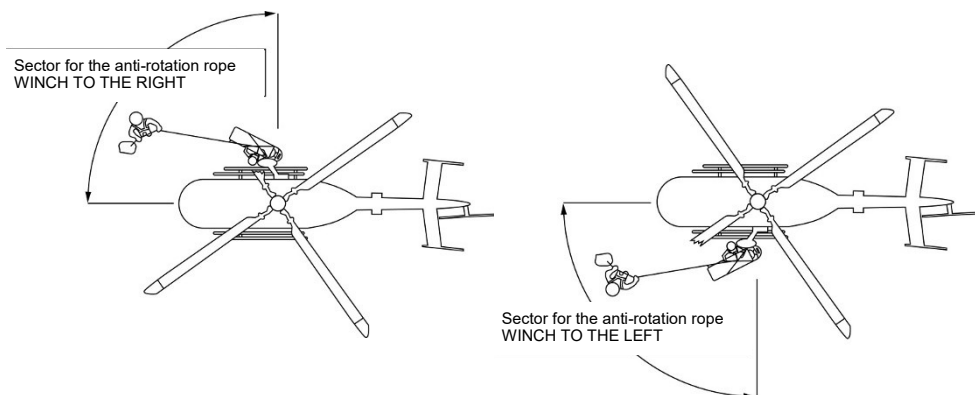


Figure 20

Under no circumstances should the line be released. It must be kept tight (breakage of the weak link at 35/100 kg).

On the order of the winch operator, the rescuer who is winched with the stretcher releases the line (Figure 21).
Figure 21

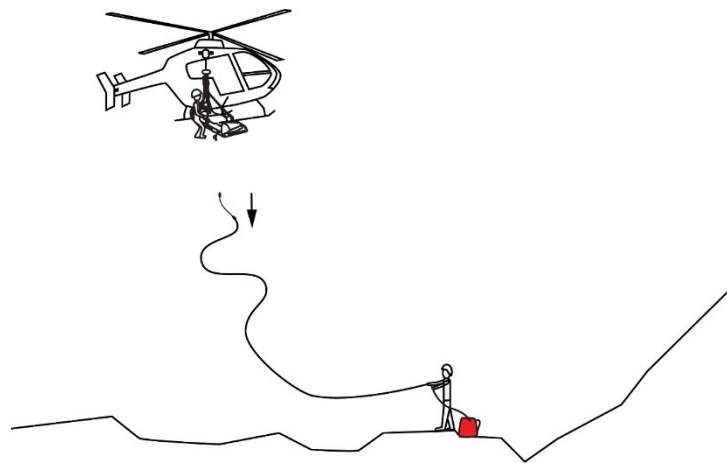


Figure 21

In the event of a rupture of the weak link, the pilot must apply the procedure which consists of going laterally.

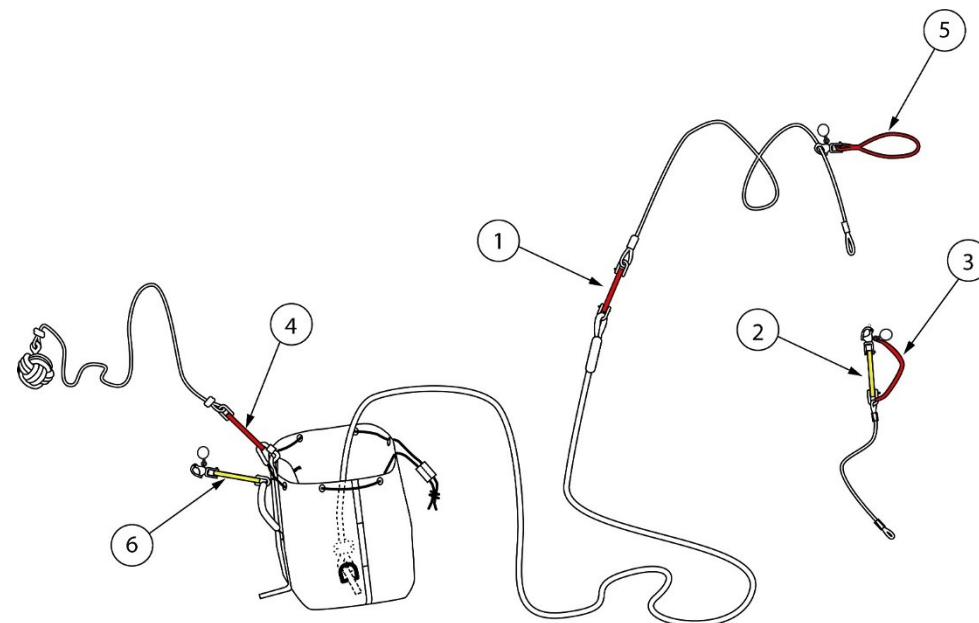


Figure 4

IMPORTANT

Regular inspection of the weak link condition is required.



Weak link between the sea extender and the line



Weak link and weak link strap between the combined extender and the sea extender



Weak link between the heaving line and the bag



8. Product identification

A product label is sewn to the inside of the bag (Figure 3 mark 19).

It includes :

- * The product reference.
- * The manufacture date.
- * The serial number.
- * Two places are reserved to be able to write in personal references.
- *

9. Installation

9.1. The line

- Fastening of the line to the bag :

The line is attached to the D ring in the bottom of the bag by a stop knot.

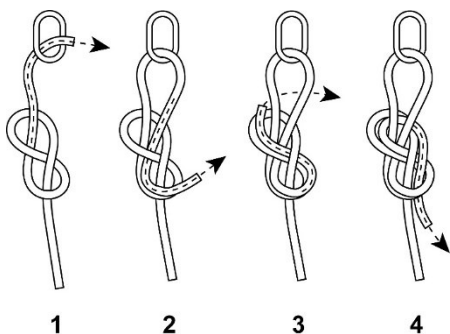


Figure 5

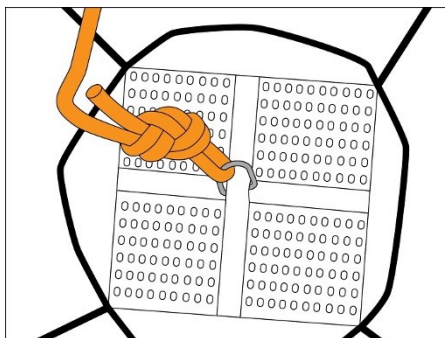


Figure 6

11. Using the combined or land version Hi-line

During the winching manoeuvre, the first rescuer on the ground who holds the line must wear adequate and stable PPE.

To stop the rotation of the stretcher effectively, the line must not be vertical (Figure 18).

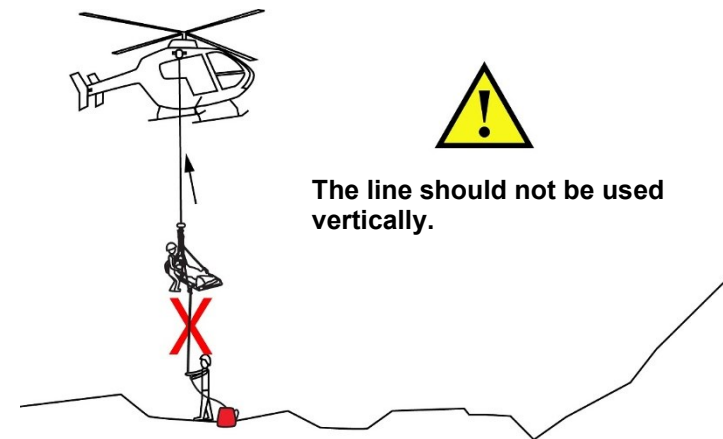


Figure 18

Figure 18

The line must be used at a certain angle, preferably towards the front sector, obtained by placing the rescuer or the helicopter (Figure 19 and 20).

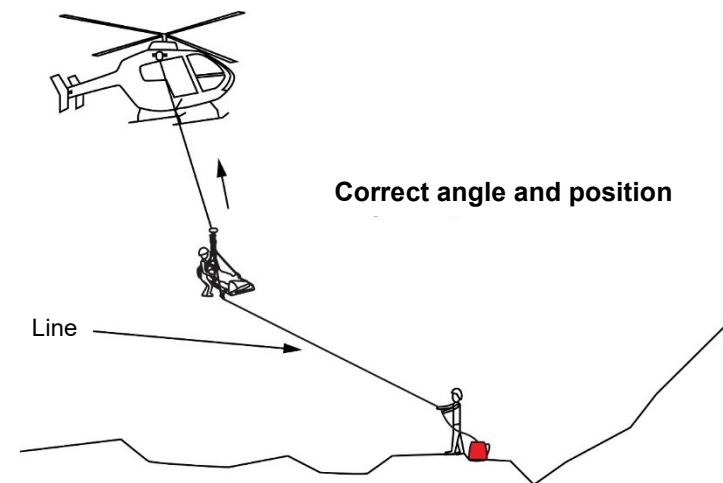


Figure 19

10.3. Lowering the Hi-line by the winch operator

If the approach of the rescuer is dangerous (risk of swinging) the bag of the weighted line can be lowered to the crew of the boat before the rescuer goes down (Figure 16).

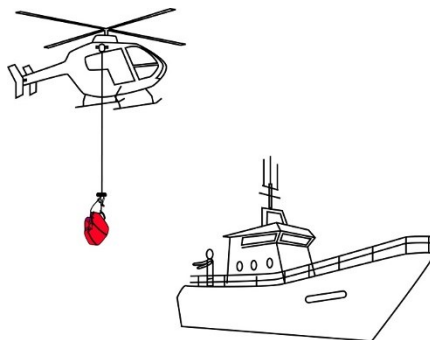


Figure 16

10.4 Fastening the stretcher in the marine version (Figure 17)

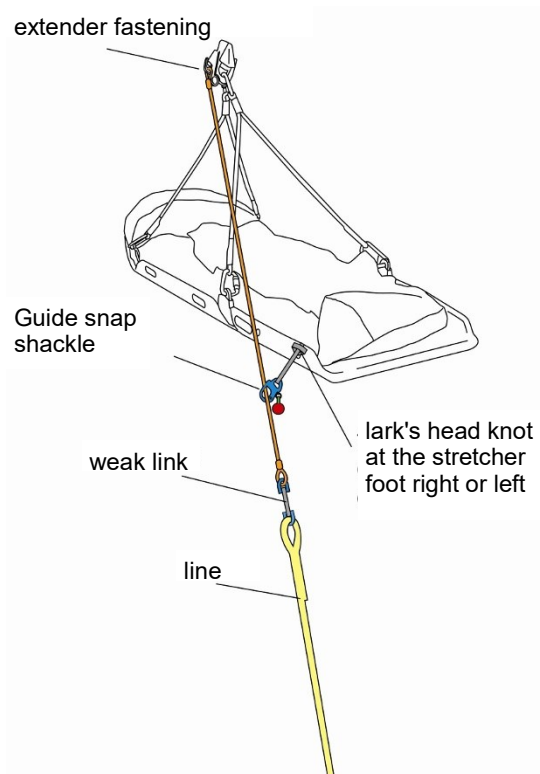


Figure 17

- **Storage of the line in the bag :**

The line must be put in place without being coiled so as to avoid its becoming twisted (Figure 7).

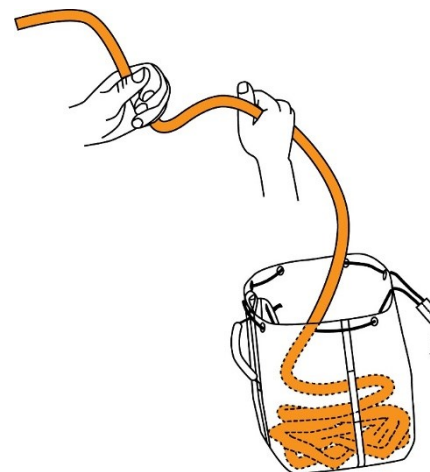


Figure 7

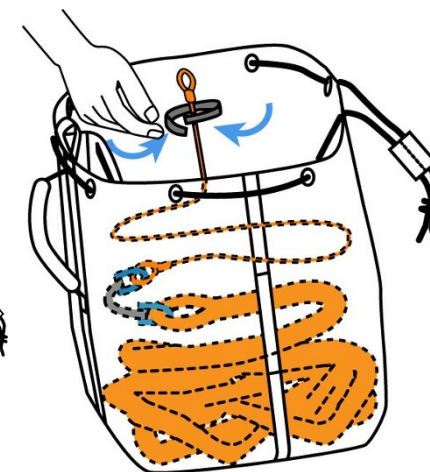


Figure 8

Attach the end of the extender to the velcro of the bag to find it more easily (Figure 8).

9.2. The heaving line :

- **Fastening the heaving line to the bag**

The heaving line is attached to the weak link shackle by a stop knot and the weak link is connected to the fastening loop by a quick delta link (Figure 9).

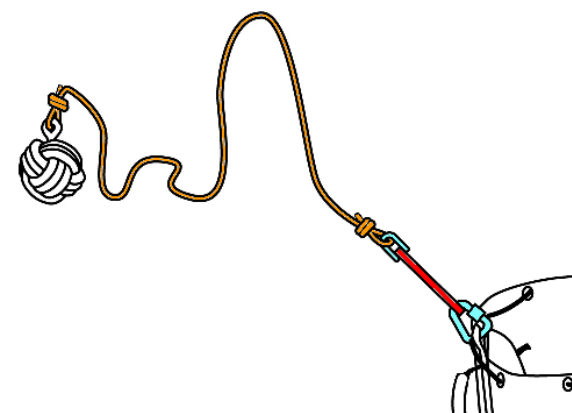


Figure 9

- **Storage of the heaving line in the bag**

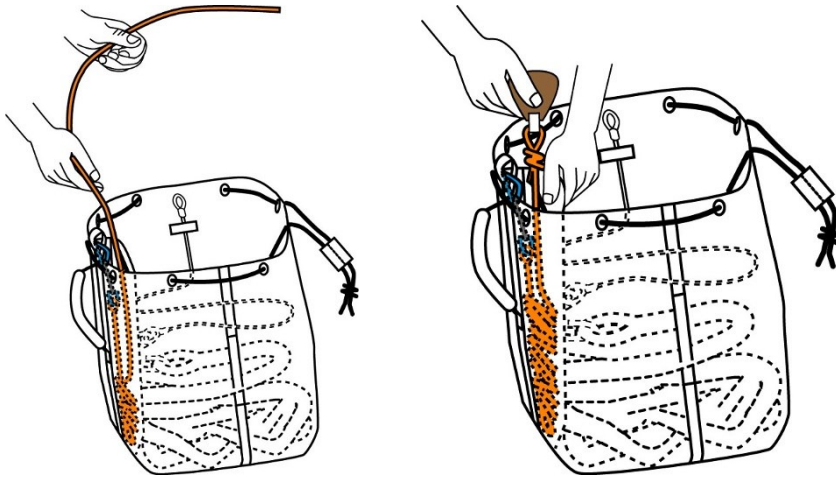
Like the line, the heaving line must be put in place in the bag without it being coiled so as to avoid its becoming twisted (Figure 10).

- **Installing the weight**

Put the weight above the heaving line and close the velcro of the bag (Figure 11).

Figure 10

Figure 11



10.1.Descent by the rescuer :

The heaving line is not used.

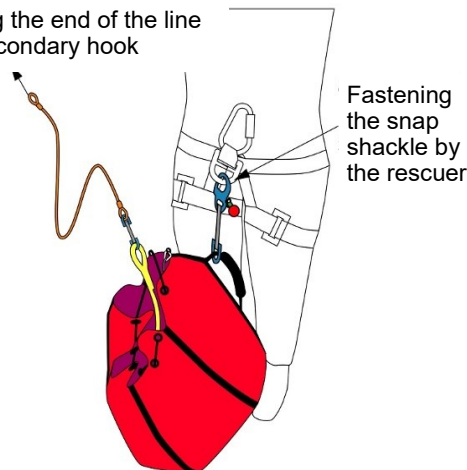
10. Using the marine version Hi-line

The line extender is attached to the secondary hook of the winch before the descent (Figure 12).

Attaching the end of the line in the secondary hook

Fastening the snap shackle by the rescuer

Figure 12



The rescuer descends with the bag attached to his harness using the swivel snap shackle (Figure 13).

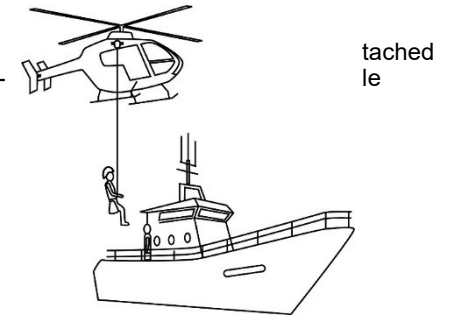


Figure 13

Once on the deck, the rescuer unhooks himself and ensures the guiding of the following winching operations using the line (Figure 14).

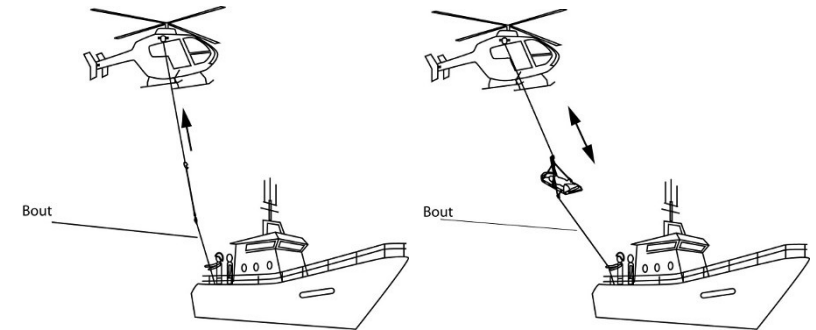


Figure 14

10.2. Lowering with throwing of the heaving line.

The line extender is attached to the secondary hook of the winch before the descent. Arrived in the vicinity of the deck (about 3 to 4 m above), the rescuer throws the weighted heaving line to the crew of the vessel. Once the heaving line is recovered, the crew guides the rescuer to the deck (Figure 15).

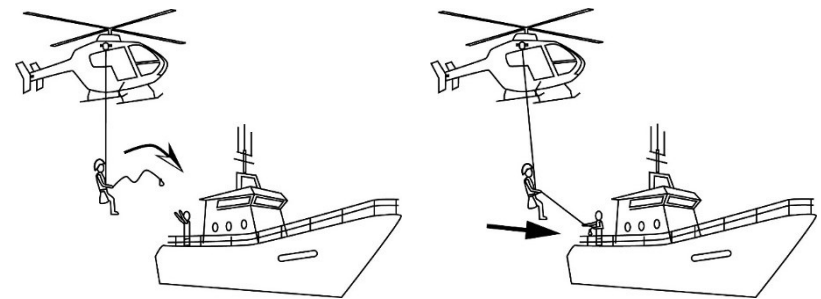


Figure 15

Once on the deck, the rescuer unhooks himself and ensures the guiding of the following winching operations using the line (Figure 14).