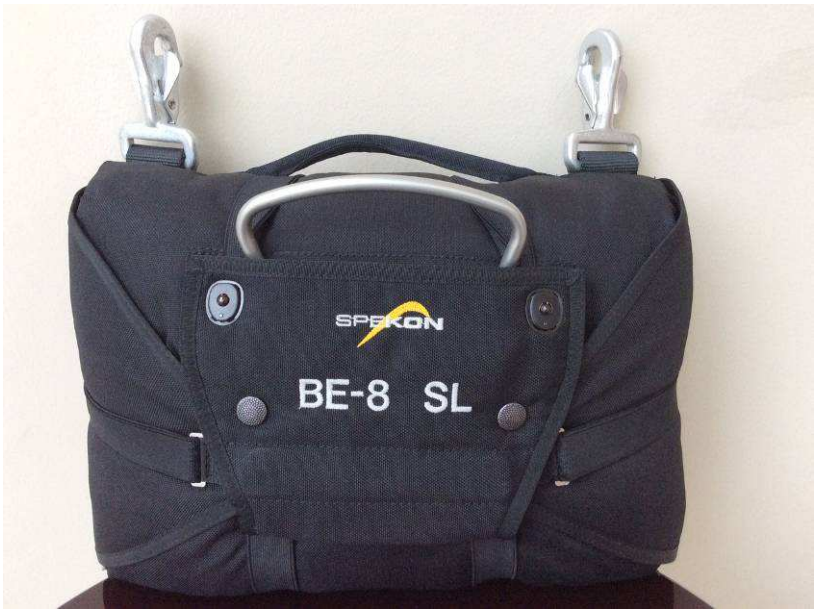

Parachute manual

for the emergency parachute BE-8 SL

Item No. 50-184 /11:00

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Contents

List of Amendment

Later amendments or the replacement of pages have to be listed in the following table.

Nr.	Date	date / name / signature

1. Technical Description

1.1. Intended purpose

The parachute BE-8 SL is a personal parachute which may be used as an emergency parachute by parachutists.

1.2. Technical specifications

This parachute is a chest parachute which must be manually opened with either the right or left hand. The effort required to that end ranges between 6-12 kp. The parachute may not be stored in packed condition for over 180 days prior to use.

The parachute ensures:
- connection to the jump parachute,
- that the Container will not open accidentally,
- high sink, directional,, and landing stability,
- Steering capability in the unfolded state.

Technical data:

- Deployment speed	100 – 250 km/h with immediate deployment 251 - 330 km / h with a 2s delay
- Minimum bail-out altitude in horizontal flight and with immediate deployment	60 m
- Minimum opening height in vertical drop	125 m
- Payload at v = 100 - 250 km / h	50 - 150 kg
at v = 251 – 330 km/h	50 – 130 kg
- Sink rate:	
with a 50 kp payload	4.6 m/s
with a 100 kp payload	6.5 m/s
with a 130 kp payload	7.2 m/s
- Forward speed	1 – 2 m/s
- Turn speed	12 s for 360°
- Canopy area	ca. 42 m²
- Service life	15 years
- Number of emergency jumps	6
- Weight of the parachute without transport bag	4.8 kg
- Dimensions of the parachute in packed condition	350 x 240 x 160 mm

1.3. Operation of the parachute

1.3.1. Use upon failure to deploy of the jump parachute, or after separation from the jump parachute canopy, as well as upon an emergency bail-out from the jump plane. Pull the locking pin out of the cone of the Container by pulling from the ripcord. Forcefully pull back the four flaps of the Container by means of rubber straps. The parachute canopy is caught by the air flow, spread out, and safely deployed.

1.3.2. Use upon minor damage to the jump parachute canopy (round canopy), or as a secondary parachute to an operational jump parachute (for normal or slightly increased rate of descent)
Cross your legs and pull from the ripcord handle of the emergency parachute, after which the free part of the emergency parachute canopy falls down and sideways behind the parachutist.
It will be lifted by the action of the pilot chute.
Proceed now to the opening process. To that end, hold the free part of the canopy with both hands at the top of the opened Container, and open the lock of the inner flaps by extending the arms. This releases the folded skirt of the parachute canopy. If necessary, manually unthread the suspension lines from the rubber loops of the Container.
For jump parachutes provided with steering lines, use only the steering knob to change direction and ensure proper descent rates. Refrain from operating the steering lines of the emergency parachute.

1.3.3. Use upon partial failure of the jump parachute (e.g., plume formation, unilateral separation)

In this case, the descent rate is generally so high that, after pulling the ripcord handle, the airflow extends and pulls the canopy of the emergency parachute out of the inside pocket, while unthreading the suspension lines before the canopy unfolds completely.
If, due to an excessively slow descent rate of the jumper, the airflow fails to pull the parachute canopy out of the inside pocket after stretching, the jumper must immediately release the canopy skirt from the Container as per point 1.3.2.
In this case, however, suspension lines need not be unthreaded.

1.3.4. Steering the parachute

Steer the parachute by pulling down from suspension lines 2 and 23 (about 350 mm) to turn right and left respectively.
If you pull from both steering lines at the same time, the canopy glides backwards and slows down the parachute.

1.4. Description of the parachute

Each parachute includes the following components:

- Canopy with suspension lines
- Connecting harness
- Container
- Locking device
- Transport bag
- Rigging certificate

1.4.1. Canopy with suspension lines (Fig. 1)

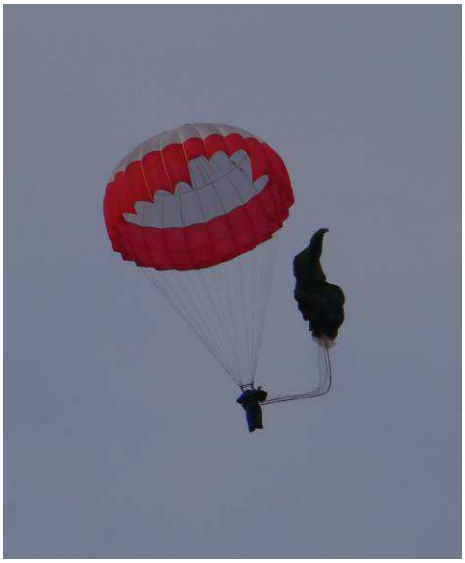


Fig.1 Parachute canopy BE-8 SL

The parachute canopy transforms the free fall of the parachutist into an uniform drop at lower speed, which guarantees a safe landing. The canopy consists of 24 gores and is made of nylon fabric with different air permeability in the apex and skirt area. The skirt area of gores No. 24, 1 and 2 features a drive vent which provides forward speed of 1 to 2 m/s and steering capabilities. Individual gores are numbered from 1 to 24. Each of the 24 gores consists of five panels. Panels are designated with I to IV from the skirt area up to the apex.

The lower and upper edge of the canopy (skirt and apex) are reinforced by means of a double 26mm-wide PAS tape. Reinforcement tapes are sewn onto the outside of the parachute canopy. Air pockets are sewn onto gores nos. 9 to 17 on the canopy skirt to support the deployment process. Two skirt retainers are sewn onto the skirt at approx. 40mm to the right and left of suspension line no. 12. Both skirt retainers are made of nylon fabric with sewn-on air pockets.

Their task is to temporarily enclose the skirt area when the canopy is stretching. The parachute apex canopy holds a pilot chute and a sewn-on vent line cover. The pilot chute supports the proper deployment of the parachute canopy, and develops by dynamic pressure the force required to pull open the clasp of the inner flap of the Container.
The vent has a diameter of approx. 580 mm and is guyed with 6 vent lines. Suspension lines link the canopy to the connecting harness. They are sewn onto gore seams below a tape cover on the skirt. The free length of the suspension lines measured from the canopy skirt to the snap-hooks is 4.75 m.
Suspension lines Nos. 2 and 23 are color-coded on their lower end and serve as steering lines at the same time.

1.4.2. Connecting harness (Fig.2)

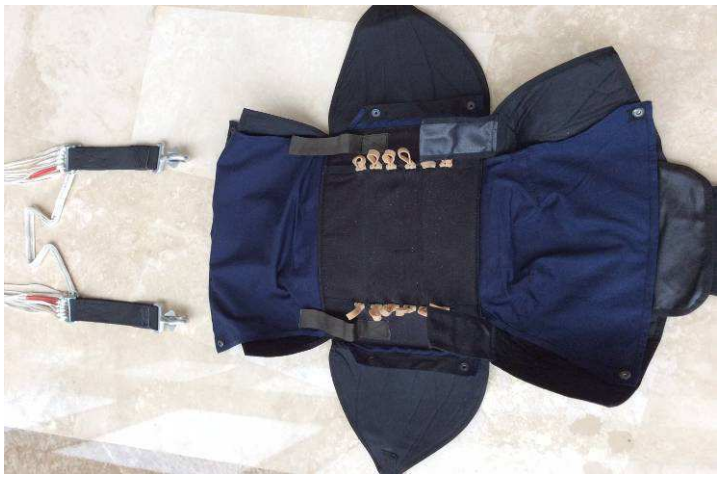


Fig.2 Connecting harness and inside of the container

The connecting harness links the emergency parachute to the harness of the jump parachute. It consists of two straps connected by means of a transverse strap. D-rings with bars for fixing the suspension lines and both opposite break-points, as well as snap-hooks for hanging the connecting harness in the harness of the jump parachute are sewn onto the four free ends.

1.4.3. Container (Fig. 2)

The Container holds the parachute canopy with the suspension lines, as well as a portion of the connecting harness, while protecting these components from dirt and damage. The Container features four flaps. Please note that the upper closure flap is larger than the lower one. Four inner flaps are sewn onto the inside of the Container bottom. After opening the Container, inner flaps temporarily enclose the skirt of the parachute canopy until this is fully deployed. Inner flaps are closed with snap fasteners.
The Container features a double-bottom with a reinforcing frame.
The inside of the Container bottom is fitted with rubber straps to stow suspension lines.
The outside of the Container bottom is fitted with a pocket to hold the parachute activity booklet (Fig. 3).

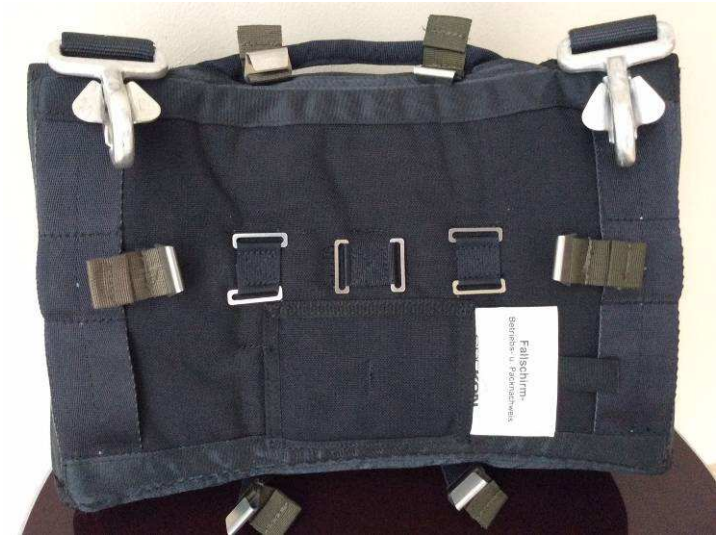


Fig.3 Container with pocket

The bottom of the Container features two strap loops to connect the emergency parachute to the jump parachute. The waist strap of the parachute Container is pulled through these loops. The load-bearing connection between the harness of the jumper and the reserve parachute relies on the snap-hook on the interim harness of the BE-8 SL.

The Container is closed with a bi-conical locking pin whereas the ripcord handle is perpendicular to the line connecting the cone. The upper flap is designed so that it also serves to cover the bi-conical locking pin and, therefore, protects the closing device against external influences. The ripcord handle also rests partly under this cover. You can attach an instrument case for an altimeter and a stopwatch using the upper rubber straps (Fig. 4).

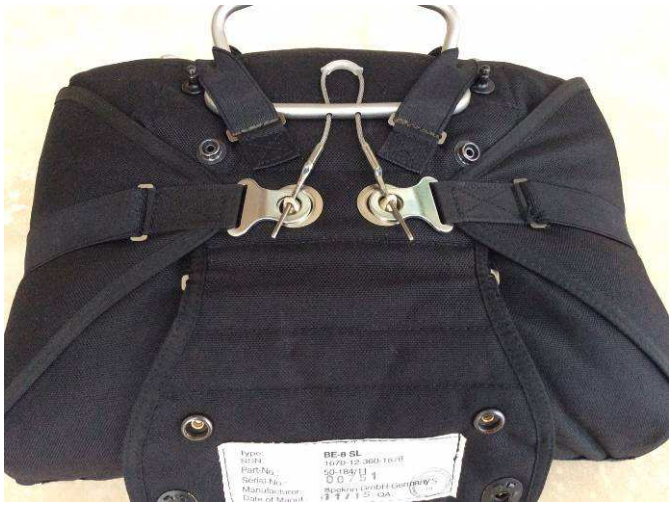


Fig. 4 Exterior of Container

Attention! Before using the emergency parachute, it is paramount to ensure that the cover on the upper closing flap is properly secured by means of the "Pull-Here" clasp and a snap fastener.

1.4.4. Locking device (Fig. 5)

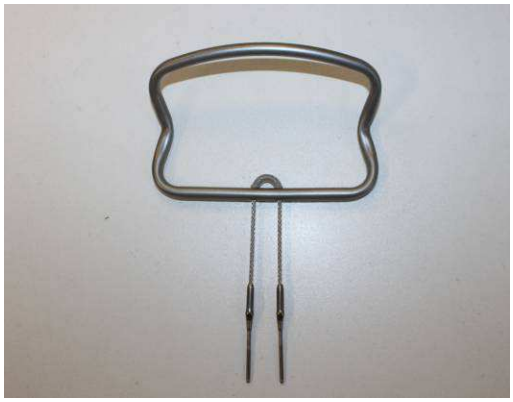


Fig. 5 Ripcord handle

The Container locking device consists of a metal ripcord handle and two short cables, each provided with a locking pin.

The Containers provides no handle pocket to hold the ripcord handle. This is held instead by the cover and the rubber straps on the upper closing flap of the Container. It can be identified by its signal-red colour, and is easily handled even when wearing gloves.

1.4.5. Transport bag

It is used for storage and transportation of the parachute and is made of nylon-heavy fabrics. The bag features a sealable lid, two carrying handles, and a small outside pocket.
This outside pocket bears the type designation and the works number of the parachute.

2. Instructions on rigging and pre-flight procedures of the emergency parachute

2.1. Rigging tools

Rigging may be performed on a rigging table or a field lane. To pack the parachute, you will need the following items: Rigging tapes, rigging hooks, spreading ruler, retainer pin, and two shot bags.

2.2. Inspection and airing

Before each rigging process, the parachute must undergo a thorough inspection. The inspection and subsequent rigging must be carried out by 2 people, namely the rigger and the rigging helper.

As inspection progresses, correct any deficiencies uncovered by taking any of the remedial actions below:

- Useless part replacement
- Parachute repair by its holder or operator
- Parachute repair by its manufacturer

Begin your inspection by ensuring that all items required for rigging are available Inspect all textile parts thoroughly. In particular, check

- fabric, straps and belts for cracks, smudges and other damage
- stitching for seam cracks

Inspect all metallic parts thoroughly. In particular, check them for

- efficiency
- breakage, cracking and rust spots

The parachute must be unfolded and aired on a regular basis.

2.3. Rigging process

2.3.1. Pre-rigging procedures

Set down the parachute on the rigging table or field rigging lane. Fasten the rigging strap with a loop around the apex of the parachute canopy, and hang it from a snap-hook on the front side of the rigging table, or from a tent peg if rigging on a field rigging lane. Please ensure that the apex ends of the gores are all positioned at identical level and cannot be twisted or misaligned when tightening suspension lines. Tighten the suspension lines and stow the connecting harness with the Container.
Loop the rubber straps on the deployment back through the eyelets on the bottom outside. Open up the cover flap of the upper closing flap. Arrange appropriately any tangled or twisted sections of the canopy or suspension lines. Ensure the proper arrangement of suspension lines by holding of nos. 1 and 24 at the skirt in your hand, and tracing them all the way to the connecting harness. Suspensions lines are deemed to be properly arranged if they appear free of entanglements and lie inside on the upper free strap ends (Fig. 6).

Fig. 6 Line inspection

2.3.2. Laying down the parachute canopy

Raise the strap-pair on the left to the D-rings, hook up suspension line 13, which is located inside on the left lower strap, and pull it down and out to the left. While holding this suspension line with the left hand and the remaining lines of the left strap-pair with the right one, move around to the skirt area.
In that position, hold suspension line 13 out to the left, and fold the left canopy section over the right one. Slide the right hand along the skirt from suspension line 13 to 14. To do so, lead the skirt between the thumb and the palm of your hand. Now, extend the right hand up and to the right to ensure the entire gore is taut (Fig. 7).

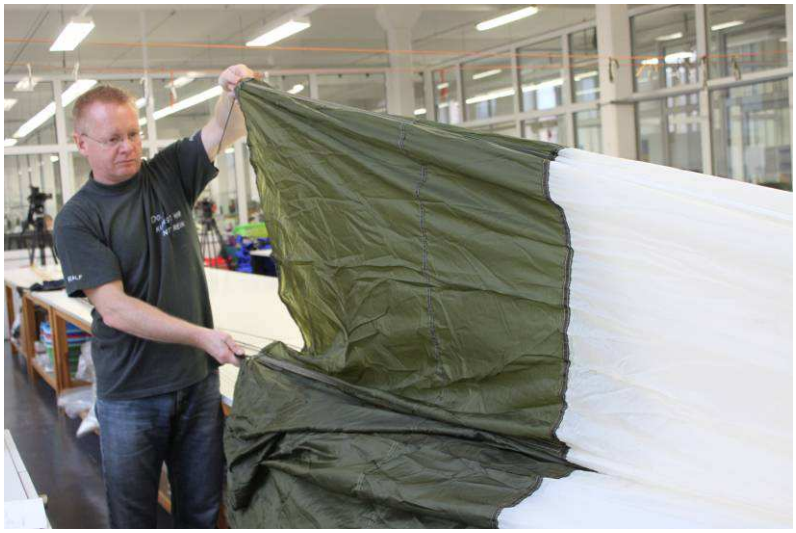


Fig. 7 Folding the parachute canopy

Lead your right hand abruptly downwards and to the left and then pass suspension line 14 over to the left hand
This abrupt movement of the right hand, from top right to bottom left, produces an air pocket under the gore. The gore will gradually straighten out as the air pocket vanishes. Arrange all gores analogously (Fig. 8).

Fig. 8 Folding the parachute canopy

Place the folded parachute canopy on the left side of the rigging table or field rigging lane (Fig. 9).

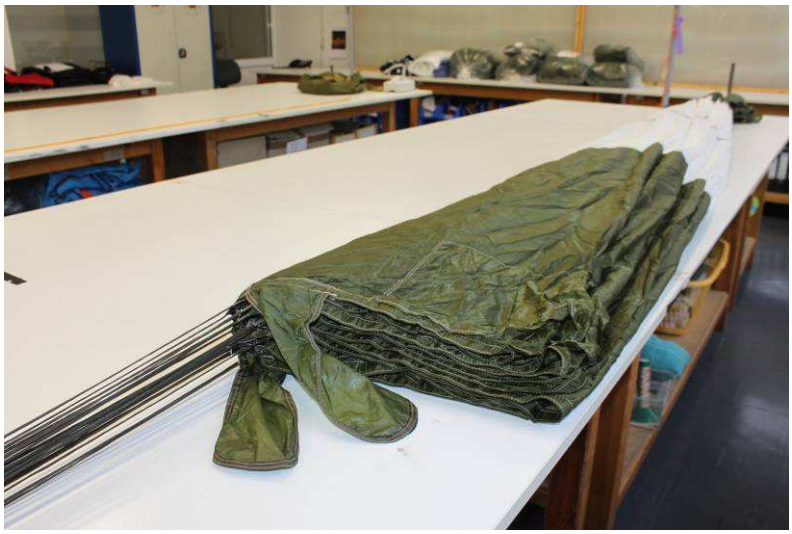


Fig.9 Laying down the canopy

Now, pleat the parachute canopy gore by gore.
When laying individual gores, the rigging helper can arrange suspension lines and skirts (Fig. 10).

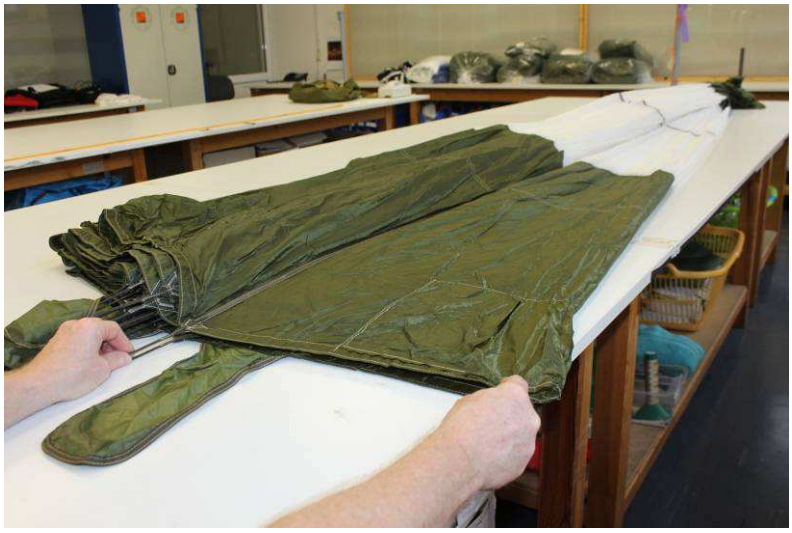


Fig. 10 Laying gore no. 1

Start pleating individual gores by placing gore No. 12 onto the rigging surface and continue pleating until gore No. 1 is placed on top; under this repeated arrangement, pleated gores are folded to the right in sheet-like fashion.

After placing gore No. 1 on top, weight down the right-hand half of the canopy with 2 shot bags, and place the left-hand half of the canopy upon the right-hand half that has been already arranged. Fold back and arrange the left-hand half gore by gore in the same way as you previously did with the right-hand half, so that that gore No. 24 is lying next to gore No. 1 in the end.

When laying down individual gores, make sure that:

- air pockets located on the skirt of gores Nos. 9 to 17 are put tautly to the outside direction when pleating individual gores.
- reinforcing tapes of individual gores do overlap.

After pleating individual canopy gores, check suspension lines again for proper arrangement. As a rigger, move to the end of the snap-hooks, tighten and re-arrange suspension lines by slightly hitting on the table or on the field rigging lane.
Your rigging helper can keep on checking suspension lines along the skirt. Subsequently, raise the free upper strap ends of the connecting harness and attached suspension line bundles.

If the parachute canopy and suspension lines have been properly arranged, the upper half of the parachute canopy can be raised. Briefly stow the left and right suspension line bundles under the skirt, and pull back and forth simultaneously to bring all gore seams close together inside the parachute canopy.
After this process, suspension lines 24 and 1 must lay inside between gore seams in the middle of the arranged parachute canopy.
(Fig. 11a).

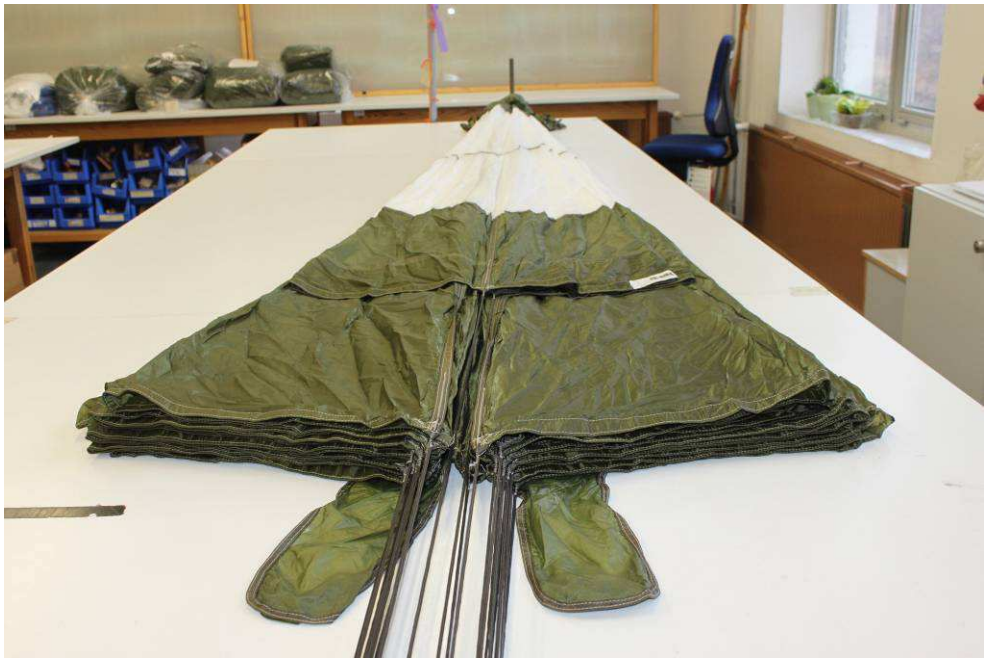


Fig. 11a Skirt of the inlaid parachute canopy

Attention! Inspect suspension before folding gores 24 and 23 and on each canopy third (Fig. 11b).

Fig. 11b Inspect suspension lines

After inspection, place gore no. 24 onto the right half of the canopy. Then, halve gores with a steering vent (gore 24, 1 and 2) by long folding them past the centre of the canopy (Fig. 12).

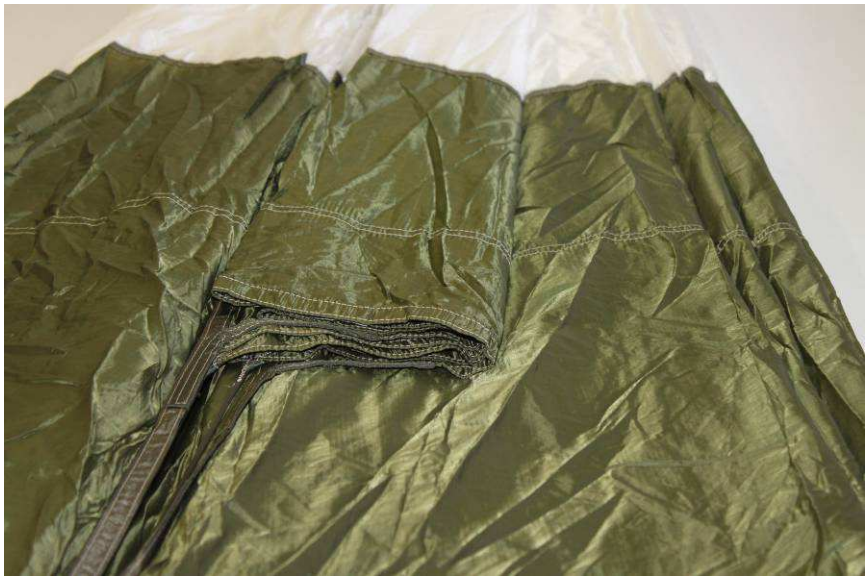


Fig. 12 Inlaid middle gores

Now, place gore No. 23 onto the right-hand canopy half over the halved drive gores to cover the steering vent.
Then, place the skirt retainers by turning up
these fabric bands towards the canopy apex (Fig. 13).

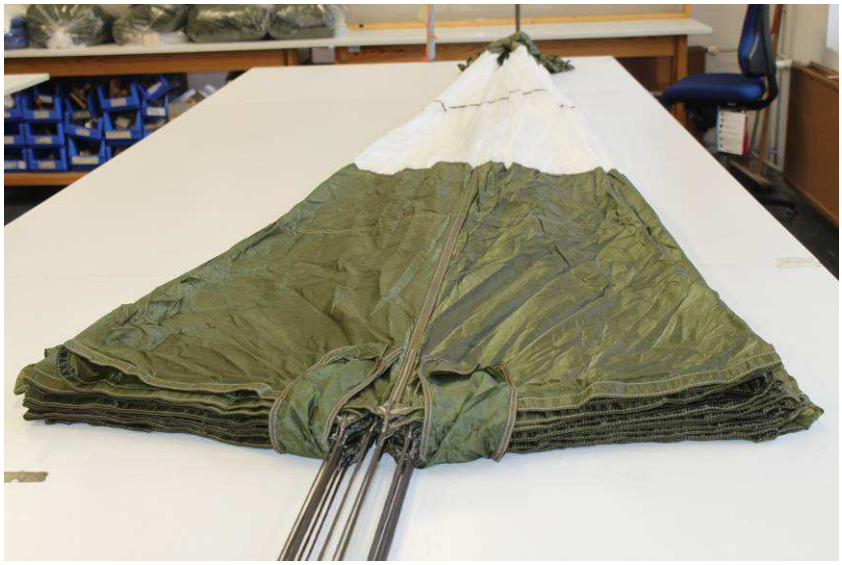


Fig. 13 Inlaid skirt retainers

Starting with the right half of the canopy, fold it back towards the second pilot chute reinforcement (i.e. up to the end of the third panel), and arrange the canopy skirt in the shape of a heart. Make sure that the folded parachute canopy matches the width of the Container, and hold it down with two shot bags.
(Fig. 14).

Fig. 14 Parachute canopy folded in thirds

Release the pack loop from the rigging table or tent peg and the parachute canopy.
After folding the canopy in thirds, pull the apex lines cover over the apex as follows. Hold all apex lines taut at their common mid-point, so that the skirt of the vent is placed at the same height. Gather together the vent skirt, and fold the apex lines in half to stow them in the parachute apex.
Lay the apex lines cover over the arranged vent. Please ensure that the entire vent skirt is covered (Fig. 15).

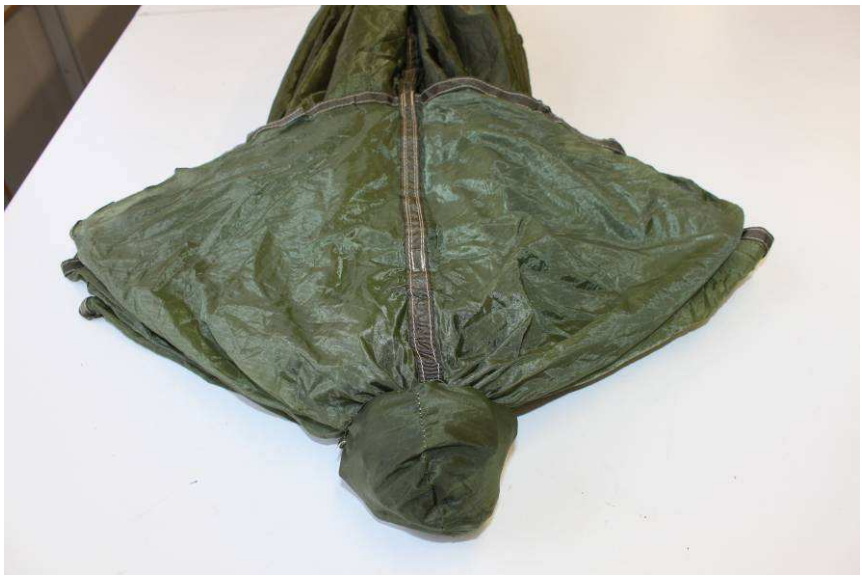


Fig. 15 Inlaid pilot chute

2.3.3. Stowing the connecting harness

Stow the connecting harness in the adjacent Container in the same position (described in pt. 2.3.2) as the D-rings placed in succession on the sides of the deployment pack bottom.
Lay the transverse strap of the connecting harness along the top edge of the Container as shown in Fig. 16, whereby the excess length is offset with a small overlapping fold in the middle.

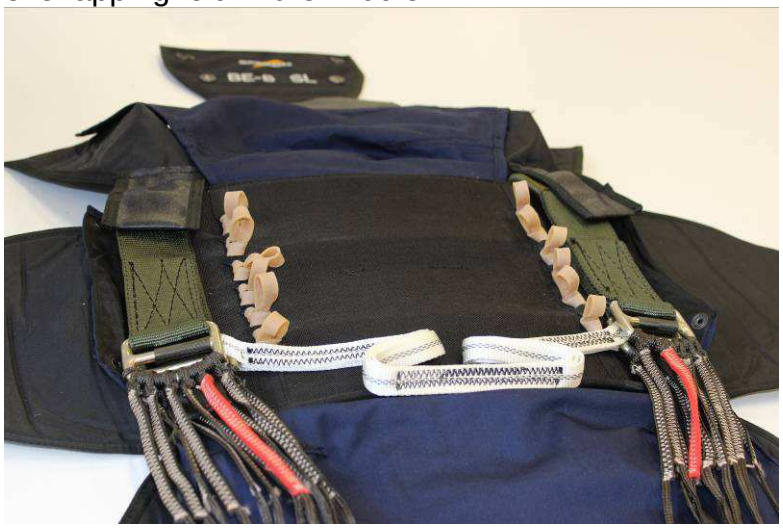


Fig. 16 Inlaid connection harness

2.3.4. Stowing the suspension lines

You should be able to recognise the suspension lines by their coloured lower end (about 300 mm from the D-ring).
When looping in suspension lines catch their coloured lower end with the rigging hook, and lead it through the bottom right-hand rubber band (Fig.17).

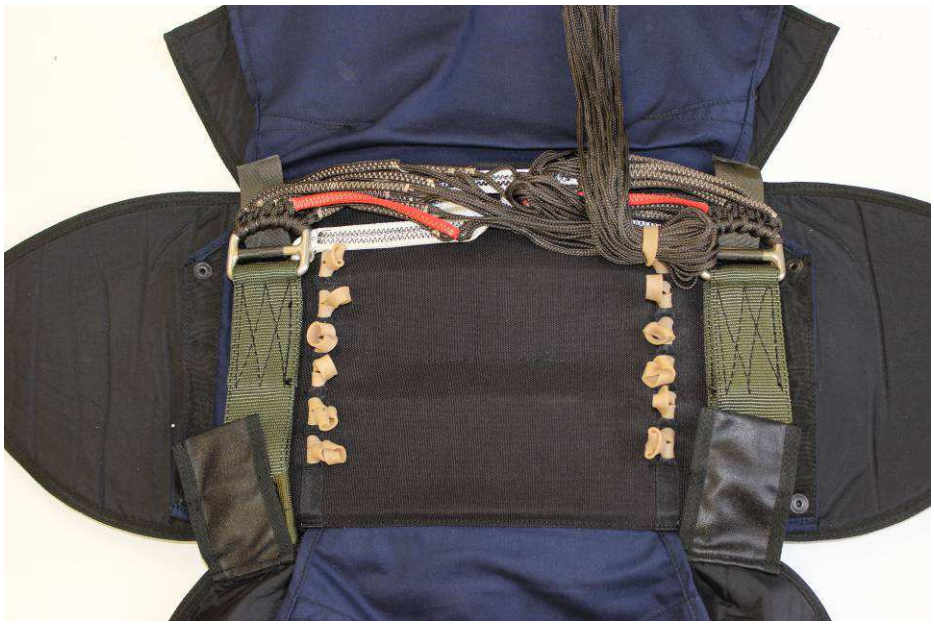


Fig. 17 Looping in of suspension lines. 1st fold

Rotate the Container by 90° clockwise around the canopy and continue looping in suspension lines until reaching the last rubber band (Fig. 18).

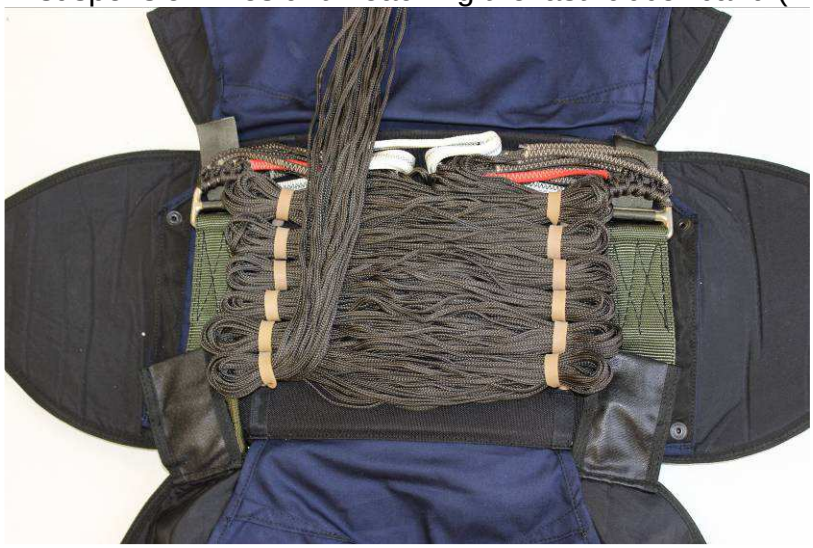


Fig. 18 Looped-in suspension lines

Warning: When looping both suspension line bundles, please avoid any twists and keep their length between 15 and 25 mm.

Rotate back the Container into normal position (note the direction of rotation!). Arrange the rest of the suspension line length - about 600-700 mm - in S-shaped folds across the looped-in suspension lines.

2.3.5. Stowing the parachute canopy in the Container

Before stowing, check the proper position of the connecting harness, and lay the tuck flaps of the upper closing flap on the straps. As the rigger, hold the suspension lines at the skirt with the right hand, and lift the skirt with the left hand. Ensure the rigging helper stands opposite to you while holding the canopy skirt. Lay the parachute canopy on the Container so that the skirt rests on the upper edge of the Container. Thereafter, pull the upper inner flaps taut over the heart-shaped skirt and use snap fasteners on the lower right and left corners to close the narrow inner flaps (Fig. 19).

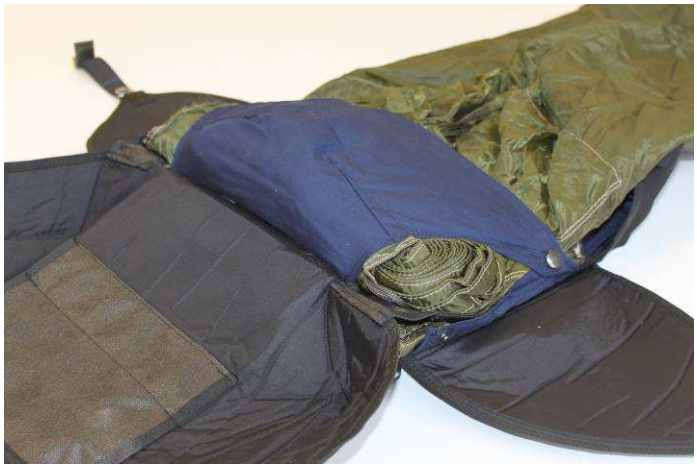


Fig. 19 Stowed parachute skirt

Before fitting the lower inner flap, place a fold of the inlaid parachute canopy on the closed upper inner flap. The rigging helper marks the Container bottom with the spreading ruler. Now, hold the right and left outer corner of the lower inner flap, pulls them taut across the inlaid fold of the canopy, and close them with the upper snap fasteners on the right and left narrow inner flaps (Fig. 20).

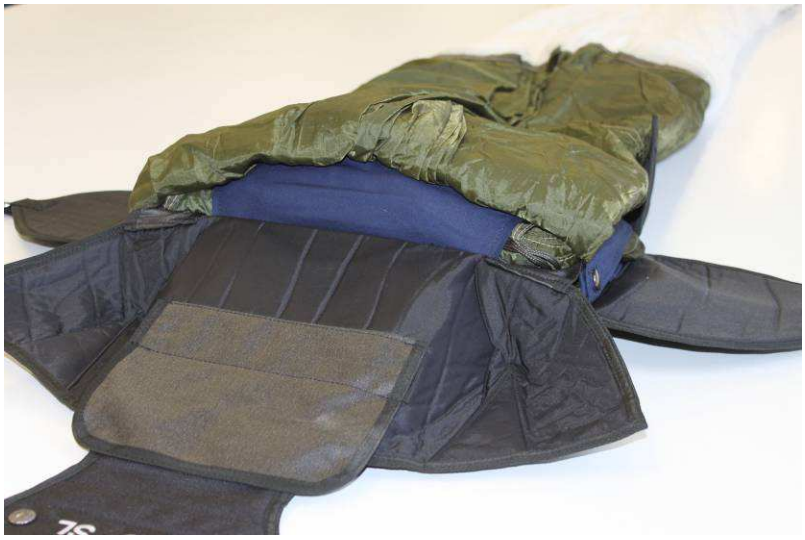


Fig. 20 Fixed 2nd fold of the parachute canopy

Warning: Please ensure that snap fasteners are not exposed to shocks, impacts or blows, and that no fabric is trapped inside upon closing. The Container is unusable with damaged or missing snap fasteners.

Arrange the rest of the inlaid parachute canopy in overlapping folds matching the width of the Container in fan-like fashion. The rigging helper marks the Container bottom with the spreading ruler. Stow the pilot chute canopy so that its opening engages with the lower edge of the superimposed parachute canopy, and presents itself to the lower closing flap. Fold the apex portion towards the inside (Fig. 21).

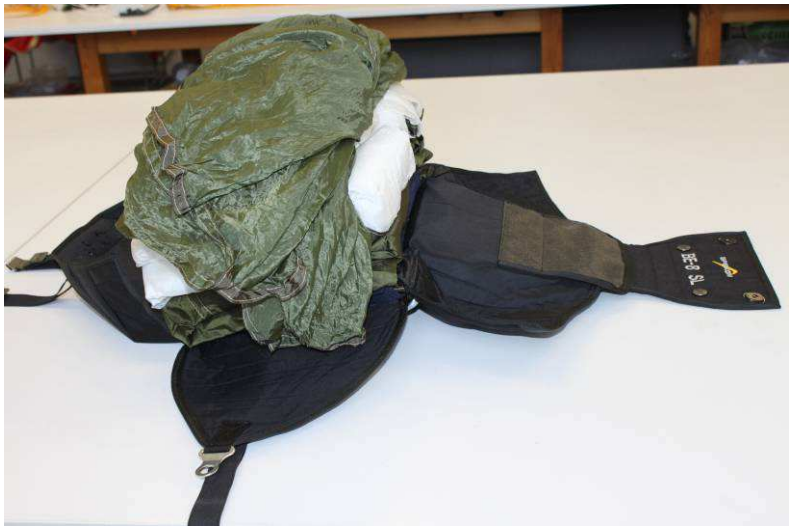


Fig.21 Inlaid canopy with pilot chute

2.3.6. Closing the Container

First close the lower and upper flaps. The rigger hold the closing flap with the right hand and have the rigging helper do the same with the left hand.
Now, the rigging helper pulls the closing flap over the inlaid parachute canopy, while pushing the inlaid parachute canopy towards the bottom of the Container with the other hand. The rigging helper holds on firmly to the closing flap which has been pulled over the canopy. At this point, the rigging helper presses down with his free hand on the pilot chute, the rigger pulls the upper closing flap over the pilot chute, and both (rigger and rigging helper) pull then the upper closing flap over the inlaid parachute canopy to the lower closing flap, until the eyelets lie above the cones. Both closing flaps are secured with retainer pins or with the pins of the handle (Fig. 22).

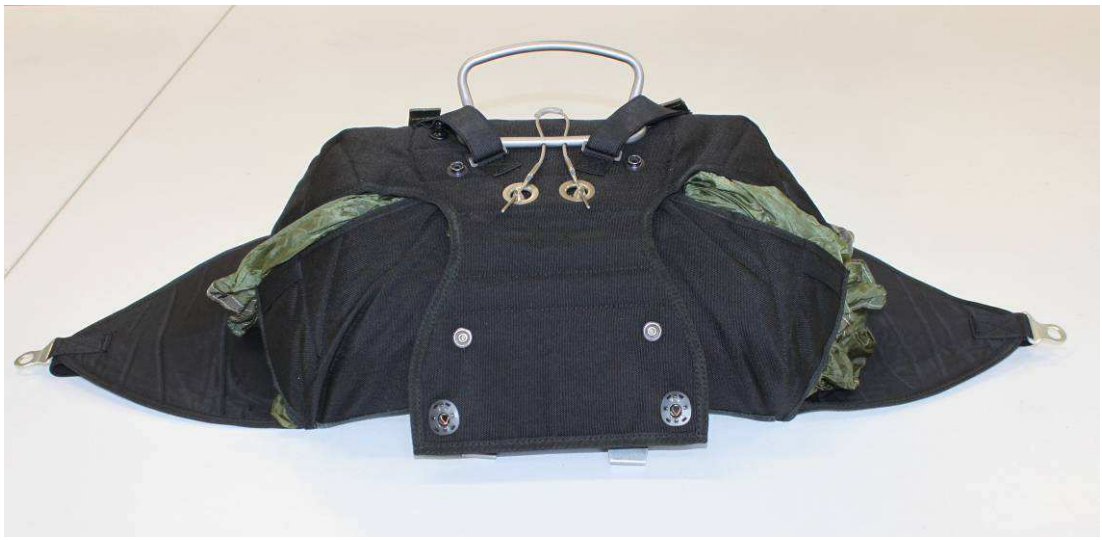


Fig. 22 Closing the lower and upper flaps

Arrange the exposed parts of the pilot chute and place on lower closing flap. When closing the left and right closing flaps, pull each flap eyelet over the respective cone, and press them against it. Change the retainer pins to secure both cones and spread the Container afterwards.
Replace now the retainer pins by the pins of the ripcord handle (Fig. 23).

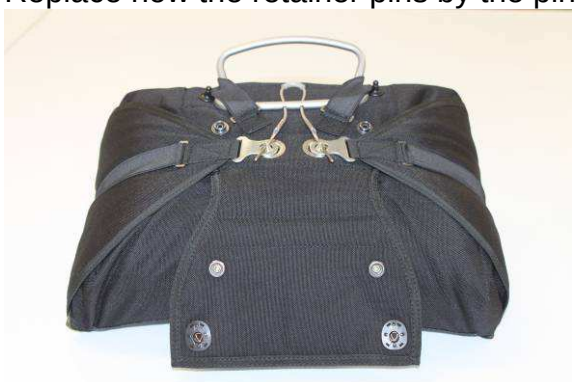


Fig. 23 Closed BE-8 SL with fixed handle

Secure the ripcord handle with both upper rubber straps by running them over the spacers on the lower side of the ripcord handle (Fig.24).

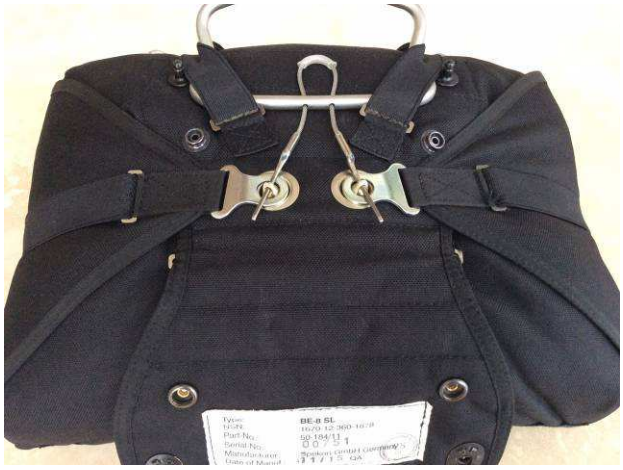


Fig. 24 secure the ripcord handle with the rupper straps

If the parachute is packed for immediate use, pull the rubber straps taut. Close the two snap-fastener and the two Pull-Here-buttons of the cover flap. (Fig. 25)

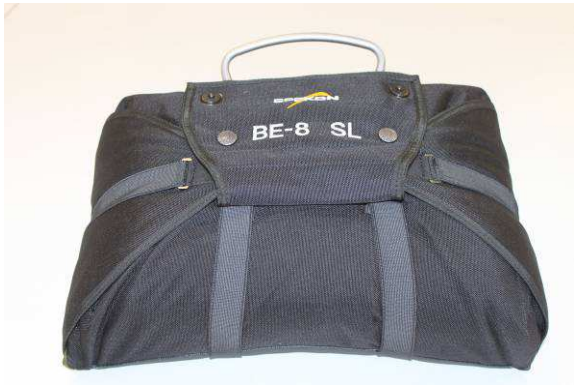
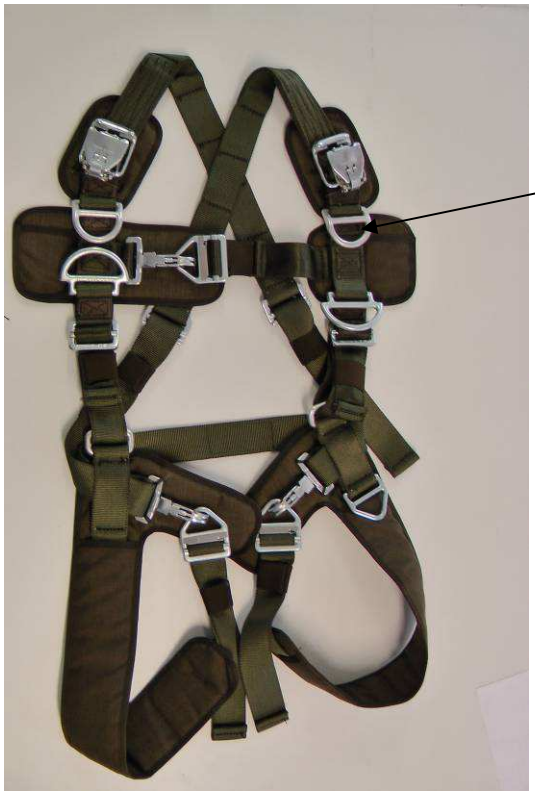


Fig. 25 Closed cover flap

After closing the cover flap, enter the corresponding rigging notes in the rigging certificate.

2.3.7. Connecting with the jump parachute

You can loadbearing connect the BE-8 SL via two snap-hooks on the connecting harness with the D-Rings of the jump parachute harness (Fig. 26)



”

Fig. 26 Loadbearing connection to jump parachute harness

You can non-loadbearing connect the container by attaching via the loops fitted on its back (Fig. 27).

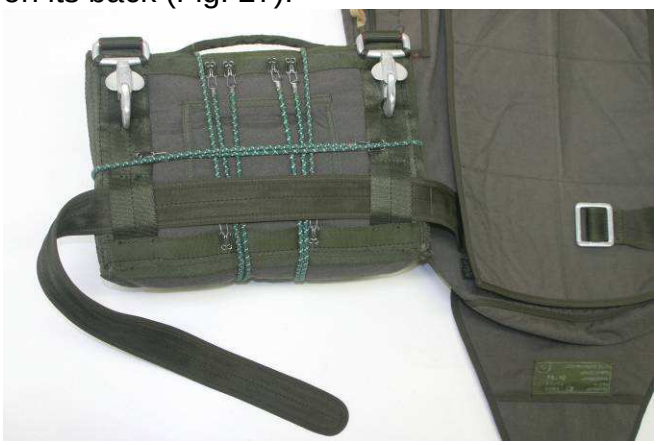


Fig. 27 Non-loadbearing connection to jump parachute

When preparing the BE-8 SL, pull first the waist strap of the jump parachute through both loops on the bottom of the BE-8 SL container. Then, latch both carabiners onto the D-rings of the harness of the jump parachute. After that, re-attach the waist strap to the jump parachute so tight as to prevent the Container from shifting upwards. Please refer to the Jump Parachute Manual.

2.4. Storage, maintenance and repair

The emergency parachute is subject to the regulations on storage, maintenance, repair and transport of personal parachutes.
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The instructions and guidelines of the holder must meet the minimum requirements of such
regulations.

2.4.1. Rigging for storage

If you don't intend to use the parachute for an extended period, it must be packed for extended storage. To this end, the following actions are necessary:

- Slacken the rubber straps
- Open the emergency parachute.
- Shake out the parachute canopy and air it briefly.
- Inspect the emergency parachute
- Roll up the canopy (from apex to skirt).
- Form a tail out of the suspension lines by daisy chaining them
- Stow the emergency parachute in the transport bag

2.5. Part number list

2.5.1. Assemblies and components

Designation	Item no.
- Canopy with suspension lines	50-186/09:00
- Container	50-185/12:00
- Ripcord handle	500-50-102
- Transport bag	50-138/03:00
- Connecting harness	50-78/08:00

2.5.2. Rigging tools

Designation	Item no.
- Rigging hooks	500-01-152 Form B
- Retention pin	500-01-89
- Spreading ruler	500-01-25
- Shot bags	500-236/01:00

2.6. Note for sports jumpers and jump students

To ensure that the active action of sports jumpers and jump students upon additional opening as per points 1.3.2. and point 1.3.3 is no longer necessary, the rigging procedure set out in point 2.3.5 must be modified (especially as regards the container closing):

1. Closing the Container

   After arranging the pilot chute, open both snap fasteners of the upper inner flap are (they can be found at the bottom, on the right and left narrow inner flaps).

2. Restriction of the application area

   Parachutes packed as indicated above may only be used under the following conditions:

- Deployment speed	50 – 180 km/h
and Load range of	50 – 100 kg

   .

3. Documentation

The parachute rigging note read "Ready for use until 180 km/h + 100 kg''.