



# **USER'S MANUAL FOR THE PACKING AND USE**

## **PILOT EMERGENCY BACK PARACHUTE SYSTEM PTCH-P50**

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## **1. Objective, technical specifications, function description**

### **1.1 Objective**

- 1.1.1. Herein described parachute system PTCH-P50 (further described as the parachute) can be utilized to save the pilot's life in aircraft types where back type emergency parachute systems are or may be used.

### **1.2 Technical specifications**

The parachute comprises of the following parts:

- 1.2.1 Canopy V-066  
The main part of the drag inducing area that provides safe descent and landing.
- 1.2.2 Harness PS-041  
Attaches and fixes the parachute to the pilot's body, distributes and hence reduces dynamic loading caused by the opening shock.
- 1.2.3 Back padding P-020  
Provides the comfortable rest in the aircraft pilot seat. The pack padding is removable and can be washed.
- 1.2.4 Pilot chute PV-029  
Extracts the canopy with the suspension lines from the container.
- 1.2.5 Bridle SS-054  
Connect the pilot chute to the canopy.
- 1.2.6 Container OP-052  
Contains the canopy and suspension lines while in a packed state.
- 1.2.7 Ripcord U-041  
Designed for hand deployment of the canopy.
- 1.2.8 Carrying bag G-207  
Holds the parachute during transport and storage.
- 1.2.9 Static line VL-023  
Automatically retracts ripcord pins after leaving the aircraft. The part is supplied as a customer option and can be used only if conditions permit.
- 1.2.10 Back cushion P-021  
Back cushion is supplied only as a customer option and is removable.
- 1.2.11 Back cushion P-022  
Back cushion is supplied only as a customer option and is removable.

### **1.3 Function description**

- 1.3.1 After bailing out of the aircraft the pilot pulls the ripcord out of its pocket on the harness. This withdraws the ripcord pin and releases the pilot chute.
- 1.3.2 The pilot chute inflates and by the bridle extracts the canopy with the suspension lines. The suspension lines are unstowed and free the diaper.
- 1.3.3 The canopy fills with air and slows down the fall.
- 1.3.4 Flight direction of the canopy is controlled by pulling down the steering lines.

## **2. Technical parameters**

### **2.1 Technical data**

- 2.1.1 pilot chute area 0,7 m<sup>2</sup>

- |       |  |                       |
|-------|--|-----------------------|
| 2.1.2 | canopy area  | 44 m <sup>2</sup>     |
| 2.1.3 | maximum weight of the parachute without the carrying bag and seat cushion  | 8,6 kg                |
| 2.1.4 | maximum weight limit (pilot with the parachute)  | 115 kg                |
| 2.1.5 | descent rate with suspended 85 kg  | 4,8 m.s <sup>-1</sup> |
| 2.1.6 | 360° turn around time  | 8 s                   |
| 2.1.7 | dimensions of the packed parachute without the seat cushion  | 250 x 390 x 120 mm    |
| 2.1.8 | A reliable function of the parachute is guaranteed for immediate openings of the canopy after exiting horizontally flying aircrafts at speeds from 100 km.hod <sup>-1</sup> to 278 km.hod <sup>-1</sup> (150 kts).   |                       |
| 2.1.9 | The canopy guarantees safe landings for immediate openings after a bail out from a minimum height of 90 m and at minimum speed of 100 km.h <sup>-1</sup> ( <u>the pilot's body position must be stabilized during opening of the parachute!</u> ). Providing these conditions the canopy is fully inflated 4 seconds before landing. |                       |

## 2.2 Operation conditions

- 2.2.1 The thermal resistance of the canopy has been proven in the range -40°C to 93,3°C.
- 2.2.2 The re-pack cycle is 6 months.  
(determining date is the day in a month).

## 2.3 Vital reliability parameters

- 2.3.1 Service life – Reliable function of the parachute is guaranteed for the period of 10 years providing the prescribed conditions for storage, periodical inspections, airing, use and repairs are met. The service life is measured from the date of manufacture (month and year) stamped in the parachute packing card. The service life may be extended after an inspection at the manufacturer. Tests of mechanical and physical properties of the parachute will be carried out and according to their results the service life may be prolonged, with an extension of maximum two years. If the parachute requires a repair, it will be done only after receiving the parachute owner's agreement with the manufacturer stating the extension of the service life after the repair in the parachute packing card. The parachute must be delivered for a service life extension before the end of the original service life period. The manufacturer states the extension period in the packing card of the parachute. The service life may be prolonged repeatedly after repeated tests of mechanical and physical properties of the parachute fabrics, with the maximum total service life of 15 years.
- 2.3.2 Warranty – The warranty period is 24 months starting from the date of manufacture indicated in the parachute packing card. The warranty is valid only providing these conditions:
- the manufacturer's instructions for transport and storage are adhered to.
  - the parachute is properly checked, aired and re-packed every 6 months  
(determining date is the day in a month)
  - the parachute packing card is properly maintained.
  - damaged or excessively worn parts are repaired or replaced timely.
- The warranty is not valid for the parachutes where:
- the packing card has been lost.

- the packing card does not accompany the parachute.
- the packing card is not properly maintained;
- the manufacturer's instructions for storage and transport have not been adhered to.
- the parachute has been mechanically damaged by an incorrect use.
- the parachute has been handled in ways other than described in the Owner's manual for the packing and use.

- 2.3.3 Warranty after repair – Warranty after a repair carried out by the manufacturer is 24 months starting from the date of repair indicated in the parachute packing card. Warranty after repair is only applicable to the parachute parts that were repaired. If warranty after repair exceeds the end of the service life it is valid until the end of the service life only. Warranty after repair is valid providing the conditions indicated in the paragraph 2.3.2. are strictly adhered to.
- 2.3.4 Warranty after extension of service life – Warranty after extension of service life is not offered.

### **3. Technical documentation requirements**

#### **3.1 Technical documentation requirements are:**

- Parachute packing card
- User's manual for the packing and use

### **4. Ordering information**

#### **4.1 Information needed while ordering a parachute system:**

- parachute type
- number of units
- name and address for individual clients
- company name and address for corporate clients

#### **4.2 Information needed while ordering parachute parts:**

- parachute type with its serial number and packing card
- part name and type
- number of pieces

#### **4.3 Component list**

##### **4.3.1 The parachute comprises of the following parts:**

- Canopy V-066
- Harness PS-041
- Back padding P-020
- Pilot chute PV-029
- Bridle SS-054
- Container OP-052
- Ripcord U-041
- Carrying bag G-207
- Static line VL-023 (customer option)
- Back padding P-021 (customer option)
- Back padding P-022 (customer option)

#### 4.3.2 Packing tools delivered together with the parachute (PVC bag , p. n. 3611):

- |                                       |       |   |
|---------------------------------------|-------|---|
| - temporary pin with red warning cord | 2 pcs | PAD cord - red, p.n. 2113<br>temporary pin, p.n. 3610 |
| - pull-up cord                        | 2 pcs | PAD cord - khaki, p.n. 2115                           |
| - rubber band - $\varnothing$ 4 cm    | 8 pcs | p.n. 3001   |
| - rubber band 2"x3/8"x1/16"           | 3 pcs | p.n. 3218   |

#### 4.3.3 Parachute is supplied with the following items:

- Parachute packing card
- User's manual for the packing and use
- Authorized release certificate JAA FORM ONE

### 5. Instructions for use

#### 5.1 Limitations - in accordance with the paragraphs 2.1 and 2.2 of the User's manual for the packing and use.

#### 5.2 Standard use

##### 5.2.1 The parachute is checked and packed as described in the User's manual for the packing and use.

##### 5.2.2 After leaving the aircraft the pilot opens the parachute by pulling the ripcord out of ripcord pocket on the harness. Once the canopy is inflated, the pilot controls the flight. The parachute is controlled by the left and right steering line handle. The parachute rotates around its axis to the right when the right handle is pulled down and rotates around its axis to the left when the left handle is pulled. Before landing the pilot turns the parachute against the wind and releases the steering line handles. Push your legs together during landing.

#### 5.3 Warning

- use of a parachute can result in serious injury or death;
- parachutes may not function properly if handled in an incorrect way;
- parachute equipment sometimes malfunction, even when it is properly designed; built, assembled, packed, maintained, and used;
- failure to activate the parachute at a safe altitude can result in serious injury or death;

### 6. Maintenance instructions

#### 6.1 Before packing

- before packing the parachute for jump the parachute completeness and technical condition must be checked.
- the pre-pack inspection must be done according to the instructions specified in the User's manual for the packing and use.
- particular attention must be paid to the parts listed in paragraph 6.3.
- damaged replaceable parts must be replaced.
- replacement of any part of the parachute must be noted in the parachute packing card.

## 6.2 Replacement of damaged parts

User is entitled to replace the following parts:

- pilot chute PV-029
- bridle SS-054
- back padding P-020
- ripcord U-041
- carrying bag G-207
- static line VL-023
- back padding P-021
- back padding P-022

Individual parts must be replaced according to the instructions given by the User's manual for the packing and use.

## 6.3 Crucial parachute parts:

- canopy V-066 together with the suspension and steering lines
- pilot chute PV-029
- bridle SS-054
- ripcord U-041

Only an authorized packer or the manufacturer are entitled to assess condition of the above parts and decide about their replacement.

## 7. Repair instructions

The parachute can be repaired. Repairs are done by the manufacturer only.

## 8. Storage instructions

8.1 Before storage the parachutes must be inspected, repaired or any damaged parts replaced. The parachutes must be stored on shelves in a dry, dark, well ventilated room. Height of the bottom shelf must be at least 0,1 m as measured from the floor. The distance between the shelf and any adjacent wall must be at least 0,5 m and between the shelf and any heating element at least 1 m. Parachutes must be stored in maximum two layers. It is not allowed to store any iron objects other than parachute parts, oils, easily inflammable fluids, acids, or substances liberating active gases in the room where the parachutes are deposited.

8.2 If the parachute is stored for a longer period of time it must be aired for 24 hours every 6 months. Airing must be done in the shade and at a place with no direct sunshine. Airing must be noted in the parachute packing card.

8.3 The following conditions must be kept in the storage room:

- |                                    |               |
|------------------------------------|---------------|
| - Temperature during the day       | +14 až + 25°C |
| - Relative humidity during the day | 35 až 73 %    |
| - Annual average relative humidity | 45 až 55 %    |

8.4 If the above conditions are not adhered to the parachute must be sent to the manufacturer to assess the mechanical and physical properties of the parachute.

## **9. Transport instructions**

### **9.1 Transport and storage instructions - packed parachute**

The parachute is stored and transported in the carrying bag packed according to the instructions described in the User's manual for the packing and use.

### **9.2 Transport and storage instructions - open parachute**

If an opened parachute is to be stored and transported in the carrying bag, it must be packed in the bag according to this procedure:

- Pleat the canopy and chain-loop the suspension lines. Position the pilot chute on the apex of the canopy and roll the canopy toward its bottom skirt. Insert the container, harness and rolled canopy with the lines in the carrying bag.
- Close the bag zipper and seal the slider.



## 10. Packing instructions for the parachute PTCH-P50

### 10.1 General instructions

**Pre-pack inspection, damaged parts replacement, pre-pack set-up and packing can be done only by a packer certified by the manufacturer.**

Before packing the parachute must be checked thoroughly for completeness and any damage. Damaged parts must be repaired or replaced in accordance with the parachute technical drawings and specifications. It is not allowed to use the parachute with damaged or otherwise non-airworthy parts and materials. During packing it is not recommended to expose the parachute to direct sunshine.

### 10.2 Parachute pre-pack inspection:

#### 10.2.1 Canopy and suspension lines (V-066) inspection

Spread the canopy along a packing table. Check the fabric, binding tapes and stitching for any damage and the fabric for stains. After inspection use the bridle SS-054 to attach the canopy to the fixing point of the packing table.

Fig. A

Fig. A



Straighten the canopy along its whole length and inspect the suspension lines. Straighten the lines and inspect them thoroughly from the skirt of the canopy to the SL-01 link connectors. Inspect the lines from all sides

Fig. B

Fig. B



**The suspension lines must not be damaged, worn, or otherwise impaired.**

Ensure that all screws of the connector links are properly tightened.

**The screws must be tightened all the way using a wrench. It must not be possible to open the screws with your fingers.**

Further inspect bartacks of the suspension lines together with the 2"x3/8"x1/16" rubber bands holding in place the end loops of the lines. The rubber bands must not be damaged.

Fig. C.

Fig. C



### 10.2.2 Inspection of harness PS-041

During harness inspection, check for any damaged webbing and stitching. Further, check condition and functionality of harness hardware. Fig. D

**Fig. D**



### 10.2.3 Inspection of container OP-052

During inspection of the container check for any damaged fabric, binding tape, reinforcement or grommet.

### 10.2.4 Inspection of back padding P-020

During inspection of the back padding check for any damage of fabric and stitching.

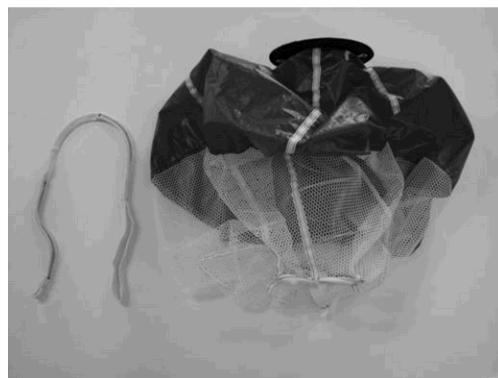
### 10.2.5 Inspection of ripcord U-041

Inspect the ripcord for any damage of the cable or bends of the pin. Also carefully look for any signs of the termination ball or pin becoming loose on the cable.

### 10.2.6 Inspection of the bridle SS-054

Check for any damage of stitching of the end loops. Fig. E

**Fig. E**



### 10.2.7 Inspection of the pilot chute PV-027

During inspection of the pilot chute inspect the pilot chute canopy fabric, stitching, and condition of the spring. Also look for sharp edges on the grommets stabilizing the pilot chute on the closing loop. Fig. E.

### 10.2.8 Inspection of the carrying bag G-207

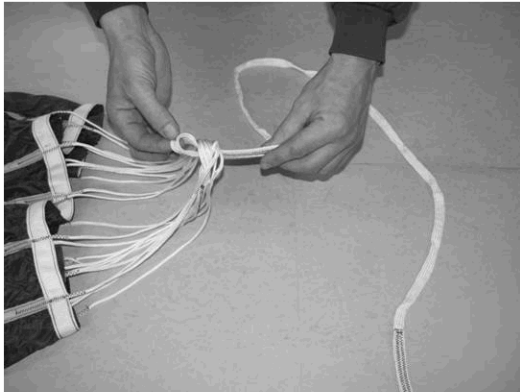
During inspection of the carrying bag inspect bag fabric and binding tapes for any damage or dirt.

## 10.3 Replacement of damaged parts

### 10.3.1 Bridle SS-054

Replace the bridle according to the figures F, G a H.

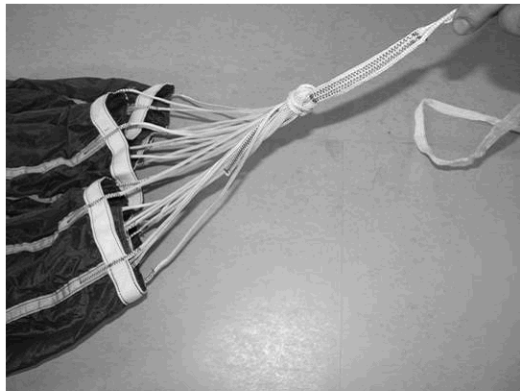
**Fig. F**



**Fig. G**



**Fig. H**



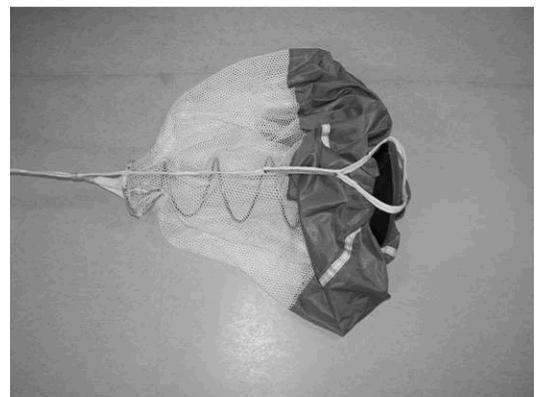
### 10.3.2 Pilot chute PV-029

Replace the pilot chute according to figures I, J a K.

**Fig. I**



**Fig. J**



**Fig. K**



### 10.3.3 Ripcord U-041

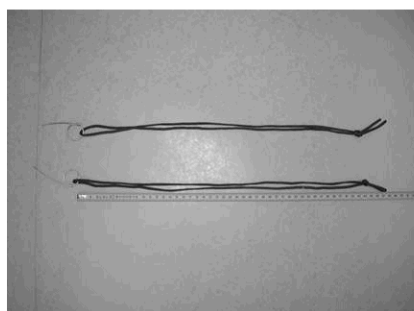
Replace a damaged ripcord with a new one.

### 10.3.4 Carrying bag G-207

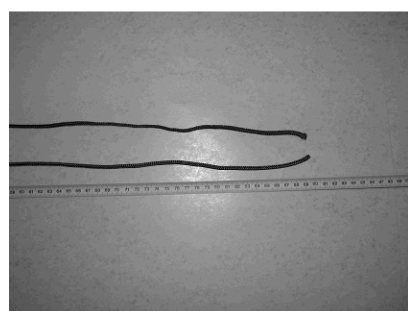
Replace a damaged carrying bag with a new one.

## 11. Packing tools.

Temporary pin with warning cord  
- 2 pcs.  
Cord length (from the pin to knot)  
500 mm.  
material: PAD cord - red, p.n. 2113  
temporary pin, p.n. 3610



Pull-up cord - 2 pcs  
Length 1050 mm  
material: PAD cord - khaki,  
p.n. 2115



Packing weight - 6 pcs

Green safety tie, tensile strength 4,5 - 7,5 N to seal the ripcord pin and pilot chute closing loop

## 12. Pre-packing set-up and packing

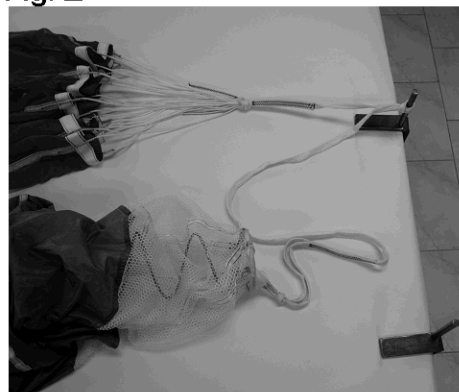
### 12.1 Pre-packing set-up

- 12.1.1 Stretch the canopy out on the packing table. Attach the bridle SS-054 to the end of the table (Fig.L). Separate the suspension lines into two groups (Fig. M), so that lines no. 1 to 12 are on the right side and lines 13 to 24 on the left side. The name plate gore should be in the middle and on top.

**Fig. M**



**Fig. L**



- 12.1.2 Do the suspension lines check (Fig. N and O).

**Fig.N**



**Fig.O**



- 12.1.3 Thread the ripcord cable into its flexible housing. Insert the ripcord handle in the pocket on the harness (Fig. P).

**Fig. P**



12.1.4 Lay out the harness with the container on the packing table as pictured in Fig. R.

**Fig. R**



## 12.2 Parachute packing

Place line no.13 (with the diaper) in the middle of the packing table (Fig.1), place line no. 14 on top of line no. 13 and continue in the same manner up to line no. 24 (Fig.2 and 2a). Pull out the individual gores.

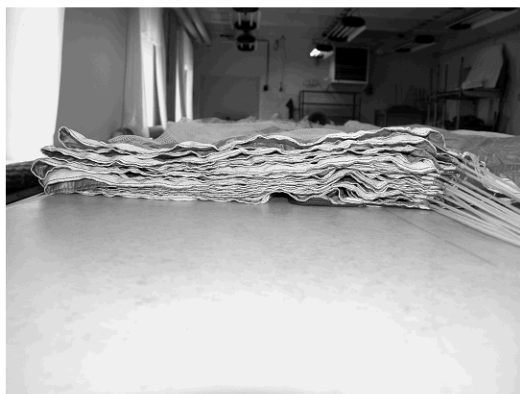
**Fig. 1**



**Fig. 2**



**Fig. 2a**



Secure the left half of the canopy with the weights (Fig.3) a flip the right side group of gores over the left (Fig.4).

**Fig. 3**

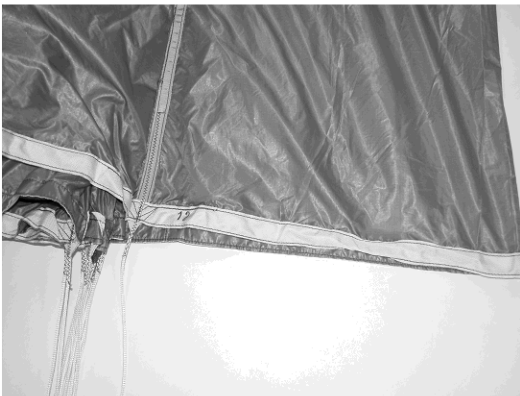


**Fig. 4**



Place line no.12 in the middle of the packing table (Fig.5), place line no.11 on top of line no.12 and continue in the same manner down to line no. 1 (Fig.6, 6a).

**Fig. 5**



**Fig.6**

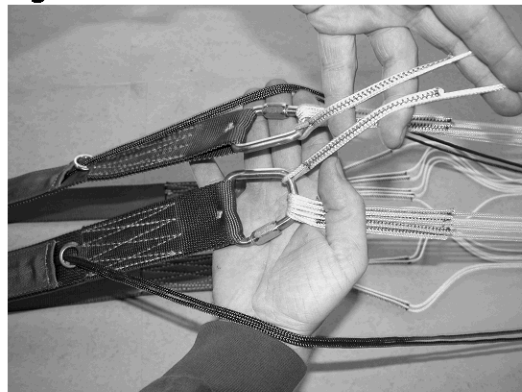


**Fig. 6a**



After pleating the canopy, check the suspension lines. Lift the upper risers with your right hand and separate the inner lines no.1 and 24 with the left hand (Fig.7). Slide your hands along the lines to the bottom of the canopy. There must be two distinct vertical halves (upper and lower) on the pleated canopy and the inner lines in your left hand must be lines marked no.1 and no. 24.

**Fig. 7**

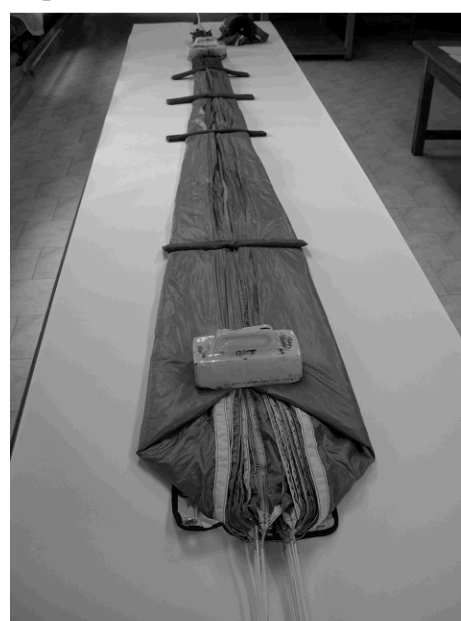


Fold the skirt up 90 degrees parallel to the radial seams (Fig.8). Long fold both sides of the canopy to meet at the center. Secure with the weights (Fig.9).

**Fig.8**

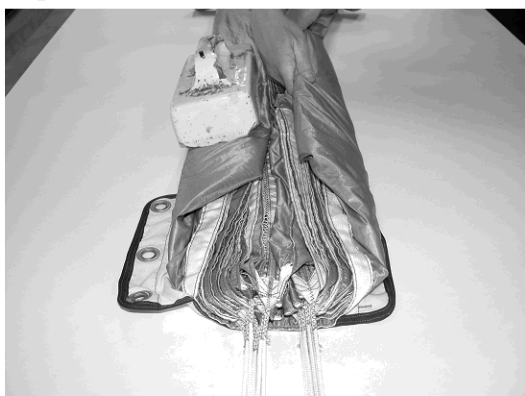


**Fig.9**



Long fold both sides to meet at the center again. Then, do the long fold again (Fig.11)

**Fig.10**



**Fig.11**





Secure the diaper by stowing the suspension lines (Fig.12, 13, 14, 15, 16).

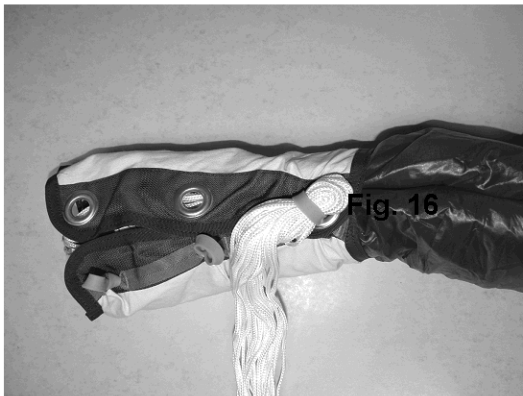
**Fig.12**



**Fig.13**



**Fig.14**



**Fig.15**



**Fig.16**



Move the harness together with the container towards the canopy (Fig 17). Route the risers as in Fig.18.

**Fig.17**



**Fig.18**



Cover the risers with the side flaps (Fig.19). Apply tension to the flaps and straighten the risers (Fig.20).

**Fig.19**



**Fig.20**



Route the suspension lines towards the center of the container (Fig. 21). Stow the lines in the rubber bands as depicted in Fig. 22, 23, 24, 25, 26, 27, 28, 29, and 30.

**Fig.21**



**Fig.22**



**Fig.23**



**Fig.24**



**Fig.25**



**Fig.26**



**Fig.27**



**Fig.28**



**Fig.29**



**Fig.30**

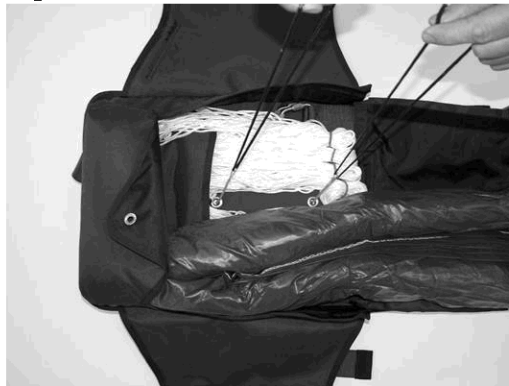


Pack the canopy in the container as in the Fig. 31. Place the diaper under the bottom closing flap (bottom of the container) and place the pull-up cords in the closing loops as depicted in Fig. 32.

**Fig.31**

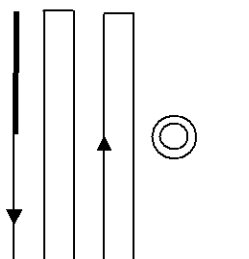


**Fig.32**



Continue S-folding the canopy as in Fig.33. Close the bottom part of the container with the pull-up cord and secure the bottom flap with a temporary pin (Fig.34). Smooth out the canopy that is already closed in the container.

**Fig.33**

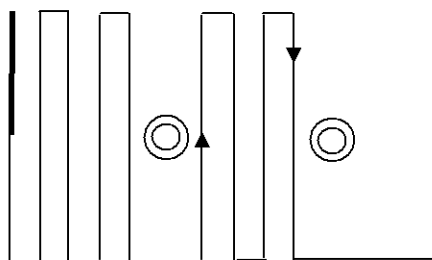


**Fig.34**



Fold the second third of the canopy in between the grommets as in Fig.35 and 36.

**Fig.35**



**Fig.36**



Fold the third third of the canopy according to the scheme in Fig. 37. Straighten out the vent lines and place them as in Fig.38

**The vent lines must not cross the closing loops!**

Fig. 37

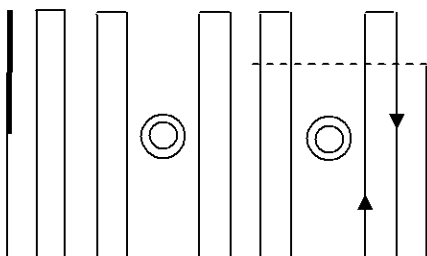


Fig. 38



Close the canopy in the container (Fig. 39) and secure the container with a temporary pin (Fig. 40).

Fig. 39



Fig. 40



Arrange the canopy in the container and close the container with the velcro strips along the sides of the container (Fig. 41 and 42).

**Make sure that the velcro strips overlap the whole width of the strip. Wrong placement of the velcro strips may deform the container!**

Fig.41



Fig.42



S-fold the bridle under the pilot chute (Fig.43). Position the pilot chute and make sure that after compressing the pilot chute the pilot chute grommets touch the container grommets. Secure the compressed pilot chute with the closing loops and temporary pins (Fig. 44). Arrange the pilot chute fabric according to the Fig. 44 and 45.

**Fig. 43**



**Fig. 44**



**Fig. 45**



Close the container with the remaining flaps as depicted in Fig. 46 and 47. Secure the closing loops with ripcord pins (Fig. 47).

**Fig. 46**



**Fig. 47**

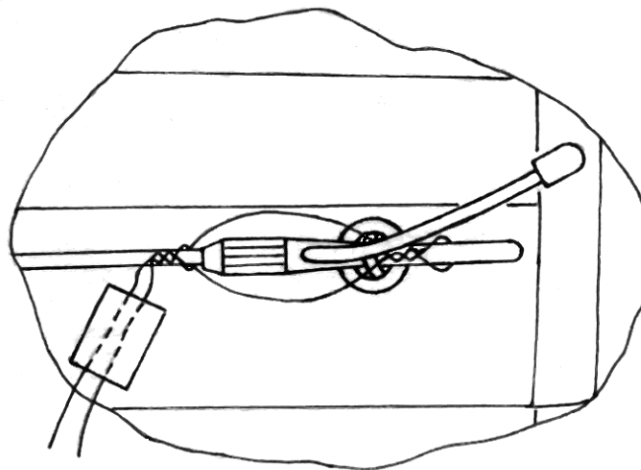


The ripcord pins should be inserted into the closing loop so that the pins cannot fall out accidentally. The body of the pins should not be touching the closing cords.

Remove the pull-ups.

Seal the container with the green safety tie of tensile strength of 4,5 - 7,5 N (Fig. 48). Cover both ends of the tie with a paper tape containing the date of packing, name of packer and his signature.

**Fig. 48**



Close the covering flap of the ripcord pins (Fig. 49). Attach the back padding to the container (Fig. 50).

**Fig. 49**



**Fig. 50**



### **13. Preflight preparation**

- 13.1 Before putting on the parachute system check it visually. Make sure that the safety tie around the pin is intact and correctly routed. Check the position of the ripcord handle as well as position of the ripcord pin. If any problem is found the parachute must not be used.
- 13.2 During putting on the parachute adjust main back web, leg, and chess straps. Fold and stow the loose webbing ends in the elastic keepers. The harness should not be loose, however at the same time it should not restrict the pilot's movement.