

# **Technical Description of The PZS – 92 Emergency Parachute**

## **Instructions for Packing and Use No. P - 003 - 93**



7<sup>th</sup> issue

In Jevíčko 09/2009



## **List of Changes**

In case of necessity to change or amend this manual, the holder will be notified by means of bulletins with new (corrected) sheets that will be enclosed to such bulletins. The holder of the manual is obliged to record obtained changes into the List of Changes and replace out-of-date sheets with valid sheets. Changed or amended texts will be marked with a vertical line along the side, they will be further marked with a change number and issue date at the bottom of the page.

| <b>Sequence<br/>no.<br/>of the<br/>change</b> | <b>Chapter</b> | <b>Nos. of sheets<br/>with referred<br/>change</b> | <b>New sheet<br/>issue date</b> | <b>No. of<br/>bulletin<br/>with issued<br/>change</b> | <b>Bulletin approval<br/>date</b> | <b>Date of Execution<br/>Signature</b> |
|-----------------------------------------------|----------------|----------------------------------------------------|---------------------------------|-------------------------------------------------------|-----------------------------------|----------------------------------------|
|                                               |                |                                                    |                                 |                                                       |                                   |                                        |

## WARNING!

1. Training and experience are required to reduce the risk of serious or fatal injuries.
  - A. Never use this equipment unless you have read and understood this warning label and you have completed a required training course for the use of this system
  - Or
  - B. Unless you have read and understood all relevant flight manuals and packing instructions and you have performed at least 100 jumps.
2. In order to eliminate the risk of a serious injury, death, destruction or damage of the canopy, it is recommended not to exceed the following limits:

|                                                                            |                                |
|----------------------------------------------------------------------------|--------------------------------|
| <b>MAXIMUM EXIT RATE</b>                                                   | <b>277 km/hour / 150 KNOTS</b> |
| <b>MAXIMUM SUSPENDED WEIGHT</b><br><b>(parachutist + gear + equipment)</b> | <b>115 kg / 254 lb</b>         |
| <b>MODEL</b>                                                               | <b>PZS-92 / V-076-1</b>        |
| <b>PART NO.</b>                                                            |                                |
| <b>SERIES</b>                                                              |                                |
| <b>DATE OF PRODUCTION</b>                                                  |                                |

This parachute is approved under TSO C 23 d.

**MarS a.s.**  
**Okružní II. čp. 239**  
**569 43 Jevíčko**  
**CZECH REPUBLIC**

## CHAPTER I.

### The Technical Description of the PZS – 92 Emergency Parachute

1. Specification
2. Technical Parameters
3. Technical Description

## CHAPTER II.

### Packing Instructions

1. General Guidelines
2. Pre-pack Parachute Inspection
5. Packing Tools
6. Parachute Packing

## CHAPTER I.

### ***Technical Description of the PZS – 92 Emergency Parachute***

## **1. Specification**

The PZS – 92 emergency parachute (hereinafter parachute) is designed for the rescue of parachutists.

The parachute was certified under TSO – C 23 d.

## **2. Technical Parameters**

### **2.1. Basic Parameters**

|                                                |                           |
|------------------------------------------------|---------------------------|
| Canopy area                                    | 36 m <sup>2</sup>         |
| Parachute weight excl. transport bag           | 3,5 kg                    |
| Vertical descent rate at the load of G = 77 kg | Up to 5 m s <sup>-1</sup> |
| Turn speed for 360°                            | 9,6 s                     |

### **2.2. List of product limitations**

|                                                                                             |                                    |
|---------------------------------------------------------------------------------------------|------------------------------------|
| The use of this parachute is limited to the weight -<br>with full equipment and parachutist | 115 kg (254 lb)                    |
| - to the opening moment rate of                                                             | 277 km h <sup>-1</sup> (150 knots) |
| - reliable functioning at temperatures ranging                                              | from – 40 to + 93,9°C              |
| - minimum permitted altitude                                                                | 100 m                              |
| - at the aircraft speed of                                                                  | 110 km h <sup>-1</sup>             |

Note:

Reliable parachute functioning was tested with suspended weight of 136 kg at the speed of 330 km h<sup>-1</sup>

### **2.3. Warranty Period**

The warranty period lasts 5 years on condition that repairs and replacements of used parts are performed, storage and transport conditions are maintained and regular maintenance with airing of the parachute are performed.

The warranty period begins with the shipment date of the parachute, in maximum 24 months since the production date (shown on the canopy).

During the warranty period the manufacturer will not accept claims in the cases as follows:

- Damage of parachute system parts or violation of instructions specified in the Technical description,
- Missing parachute logbook or its improper records

## **2.4. Life**

The life of the parachute is 15 years since the production date on condition that instructions in this Technical description – Instructions for packing and use no. P-003-93 are followed.

The parachute functioning is secured at the relative temperatures between – 40 and 93,3 °C and corresponding relative humidity.

The parachute can be packed for 180 days, in maximum, before its use.

After each use, the parachute must be checked and in case of its damage, it must be sent to a specialized repair service or to the manufacturer for a repair.

Parachute checks are to be recorded in the parachute logbook.

### **3. Technical Description of the Parachute**

#### **3.1. The V-076-1 Canopy (Fig. 1)**

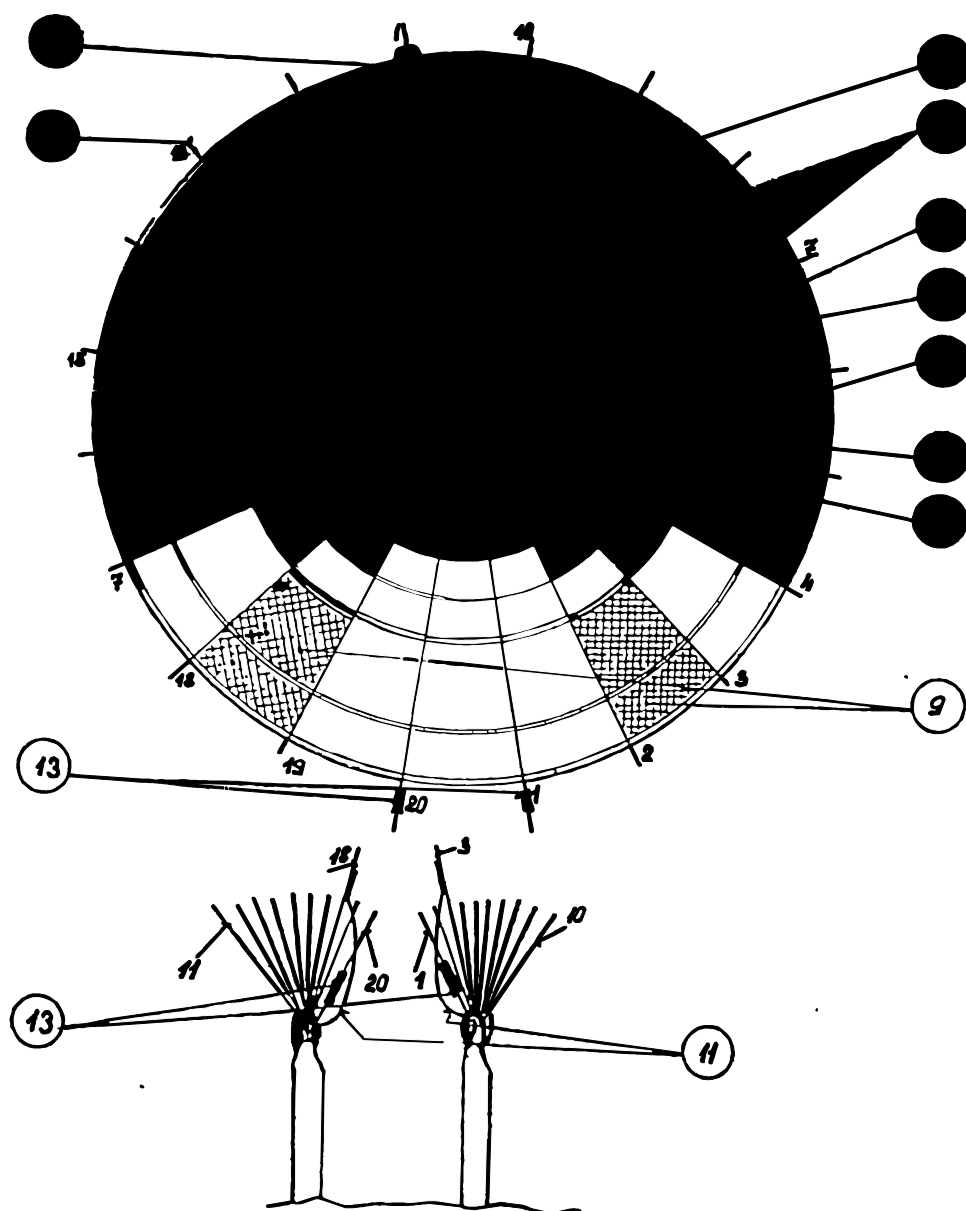
The canopy (1) with the area of 36 m<sup>2</sup> is made of UTT fabric and consists of 20 gores.

The canopy is strengthened with 13 mm webbings – suspension (2) and round (3)+(4) ones.

The bottom edge (5) and apex opening edge (6) are strengthened with webbings 25 mm wide. The apex opening is strengthened with vent lines (7). Two gores (9) in the back canopy section are made of polyamide tulle fabric securing stability, forward speed and steerability of the parachute. Twenty suspension lines (10) with the length of 5,000 mm and minimum tensile strength of 2,600 N are attached to the canopy. Red steering lines (11) are attached to the lines nos. 3 and 18 at the bottom part.

During packing the suspension lines are also put into 10 pcs rubber bands No. 2 x 3/8, S7100 of the closing flap (12), which is sewn at the bottom canopy edge near the suspension line no. 11. The suspension lines nos. 1 and 20 are equipped with colour identification (13) at the bottom edge and harness risers in order to enable an easier canopy folding.

**Fig. 1**



## **CHAPTER II.**

### ***Packing Instructions***

#### **1. General Guidelines**

- a) The parachute is packed only by a person authorized for parachute packing.
- b) The parachute entirety and its technical condition are to be checked before the parachute packing.
- c) Damaged parts are either replaced or repaired.
- d) The parachute repair is performed in accordance with the PZS-92 parachute Technical conditions for repairs no. 0-3-93.
- e) All replaced parts and repairs must be recorded in the parachute logbook.
- f) During packing it is recommended not to expose the canopy to direct sunlight.

#### **2. Pre-pack Parachute Inspection**

##### **2.1. Canopy Inspection**

Check the canopy when it is extended, preferably against light. Check the fabric, webbings and seams if they are not damaged. Then check also suspension and steering lines.

##### **2.2. Packing Tools**

The parachute is packed either on a packing table or field packing mat. In order to pack parachute, it is necessary to use temporary (auxiliary) packing lines 1m long and several weights.

##### **2.3. Parachute Packing**

The parachute is packed by one person.

After the packing is completed, record the packing into the parachute logbook.

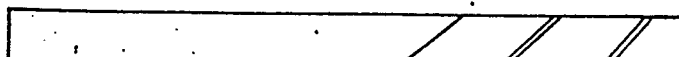
##### **2.4. Sequence of Packing Steps**

- Preparation of packing
- Canopy folding
- Inspection of the canopy and lines
- Stowage of lines into the closing flap
- Inspection of line stowage

### - Preparation of packing

Spread the parachute on the packing table. Fix the vent lines at the end of the packing table, stretch the canopy and suspension lines in full length. Put the pilot chute next to the canopy. Place the harness with the container so that the container lies on top, divide the canopy into two halves and leave the lines nos. 1-10 on the right and the lines nos. 11-20 on the left (Fig. 2).

**Fig. 2**



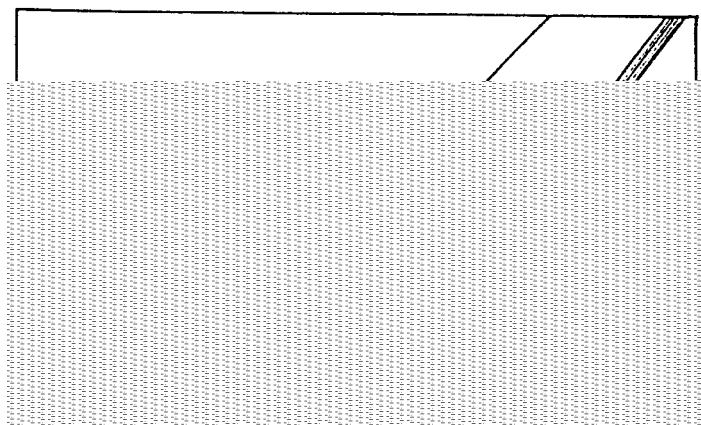
### - Canopy folding

Throw the left canopy half to the right side (Fig.3). Put the line no. 12 on the line no. 11, the gore between these two lines becomes half-folded, then straighten it along its length (Fig.4). Use the same way to fold the whole left part of the canopy up to the line no. 20 (Fig. 5).

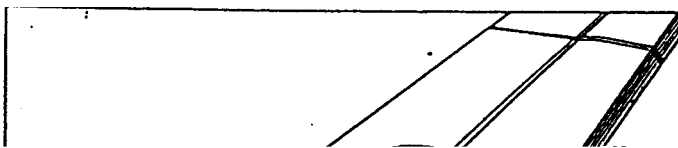
Throw the unfolded right canopy part on the folded left part and pack it in the same way as the left one. (Fig.6).

Put the gore between the lines nos. 1 and 20 to the left (Fig. 7). Fold the canopy 45° angle-wise at its bottom edge from the lines, bend both the left and right canopy halves in the middle (Fig. 8a) (Fig. 8b). Fold such a packed canopy into thirds - start with the canopy right side first, then put the left one on it and place weights on the canopy (Fig. 9).

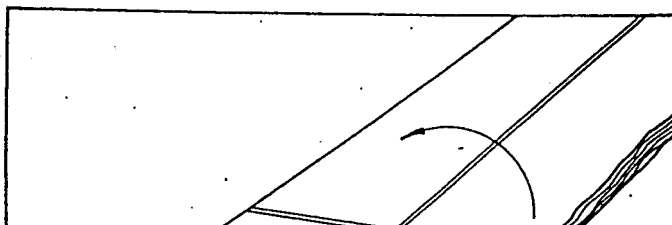
**Fig. 3**



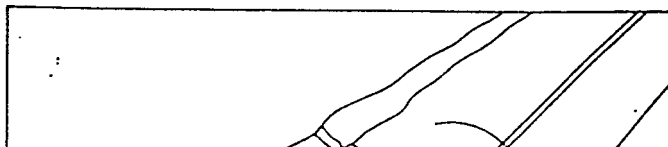
**Fig. 4**



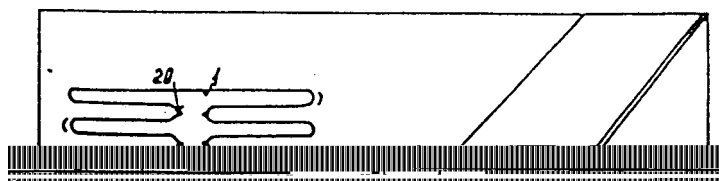
**Fig. 5**



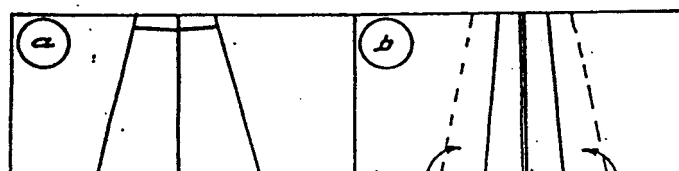
**Fig. 6**



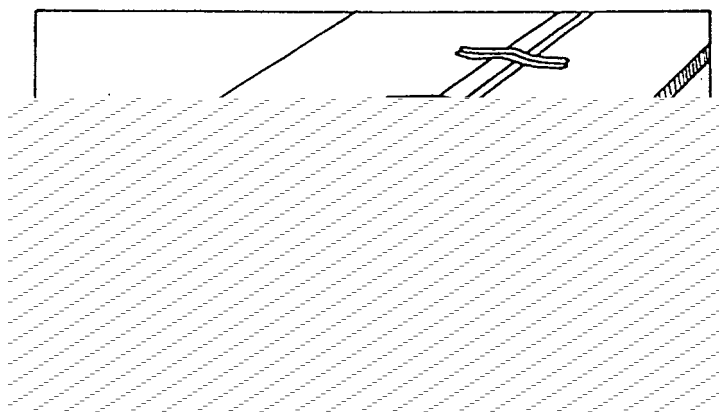
**Fig. 7**



**Fig. 8**



**Fig. 9**

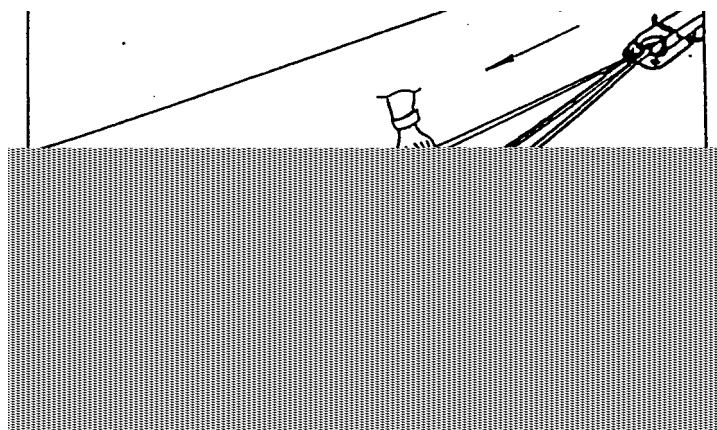


### - Inspection of the canopy and lines

The packer catches the lines nos. 1 and 20 (at the canopy and risers marked with red identification), lifts them up and goes from the canopy to the harness risers.

Check in the same way if these lines are loose from the canopy edge to the harness risers (Fig. 10).

**Fig. 10**



### - Stowage of lines into the closing flap

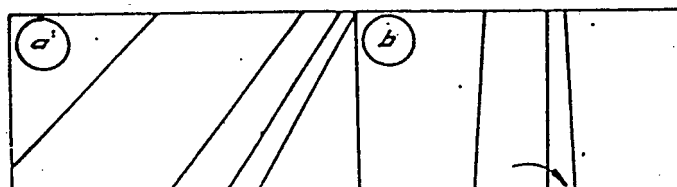
Catch the suspension lines at the canopy bottom edge and fold the canopy bottom part in such a manner that the closing flap is bended in the middle. Thread the rubber bands, which are attached along the sides of the folded canopy at the bottom part of the closing flap, through the grommets in the top part of the closing flap and put the suspension lines into rubber bands step by step. The rubber bands are in the bottom part of the closing flap (Fig. 11 a, b and 12).

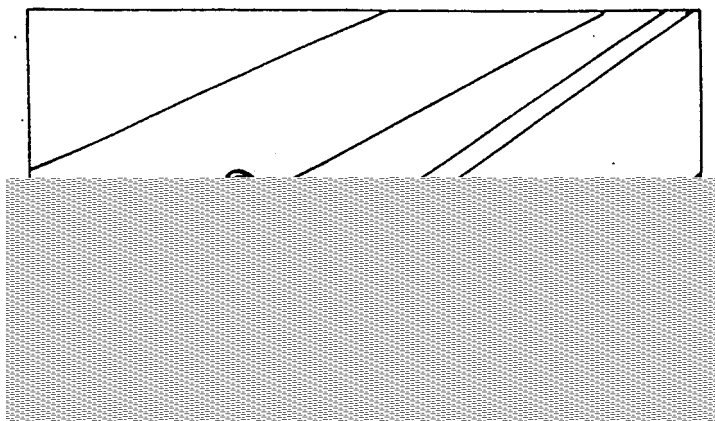
The length of loops after the rubber bands is between 30 and 50 mm.

The lines cannot be twisted.

When the lines are being stored, draw the container towards the canopy.

**Fig. 11**



**Fig. 12****- Inspection of line stowage**

The packer checks visually if the lines are stowed properly.

**Storage of the canopy into the OP-087 / OP-093/01 container**

Fold approx. half of the canopy line length into rubber bands placed on the container bottom (Fig. 1). The other half is stowed in the 12 pcs rubber bands No. 2 x 3/8, S 7100 on the canopy.

Fold the lines as shown in Fig. 1 and 2 while keeping them stretched. The reserve parachute closing line leads through single strands directly upright.

Do not put the end of the line (about 0.5m long from the canopy edge) into rubber bands. Put the lines loosely down (vertically on the line strands in rubber bands) and at the same time put the canopy bottom part with lines into the left corner of the container (Fig.3).

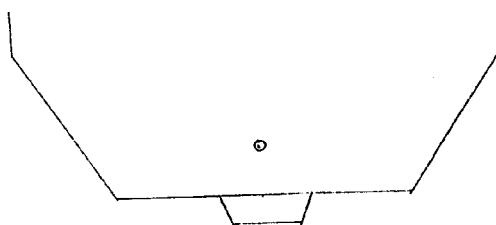
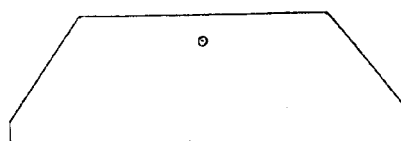
Then make pleats nos. 1 and 2 in order to even up the height of the folded canopy with lines (the left half of the canopy, Fig. 3). Continue in the container right bottom corner and make a fold over the first pleat and continue storing the folded canopy into the container (Fig. 4). The packing line passes through in an upright position.

The storage of the canopy into the container is completed with the last pleat where the apex opening with lines is turned down under the fabric (see the apex opening with vent lines under the fabric, Fig 4).

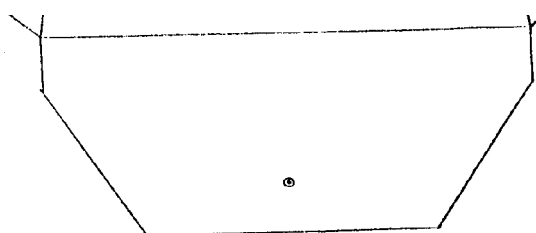
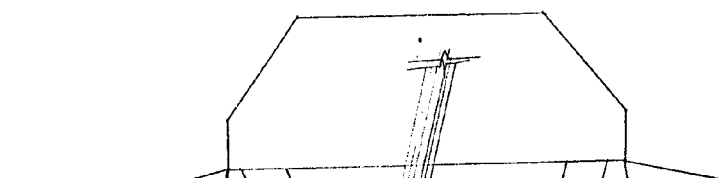
Open the container, i.e. first the bottom flap (no.1), then the top flap (no.2). Put the closing line on these flaps (under the PV-028 pilot chute bottom). Thread the packing line through the grommets on the pilot chute. Never insert the PV-028 fabric under the first (bottom) spring coil!

Continue to close the side (nos. 3,4), middle (5) and top (6) flaps. Insert the pin through the closing line loop and cover the flap no.7 (Fig.6).

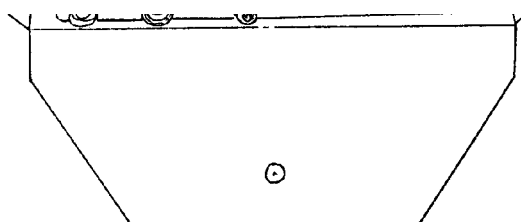
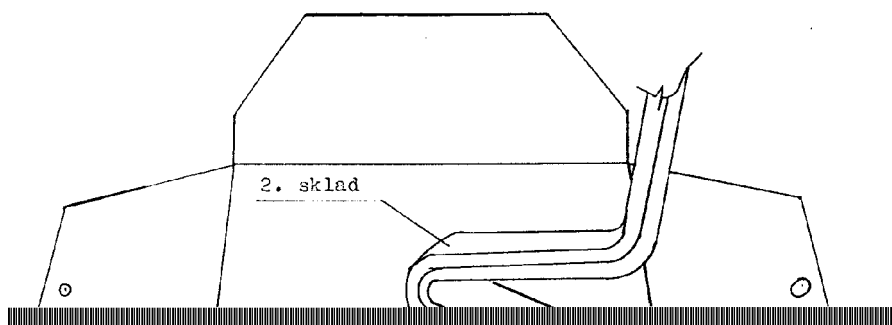
**Fig. no. 1**



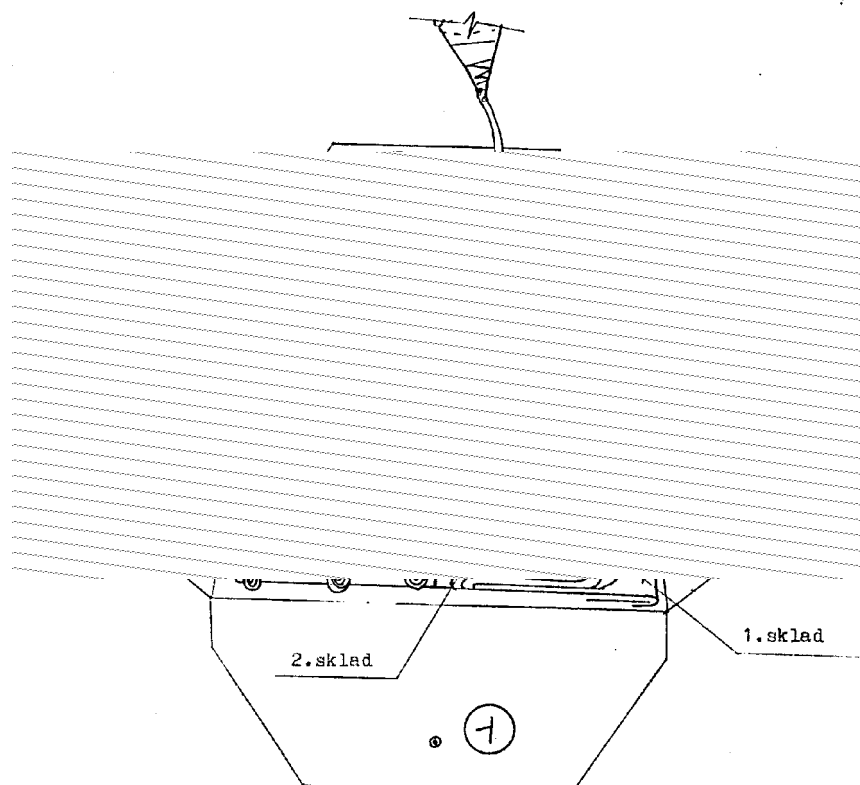
**Fig. 2**



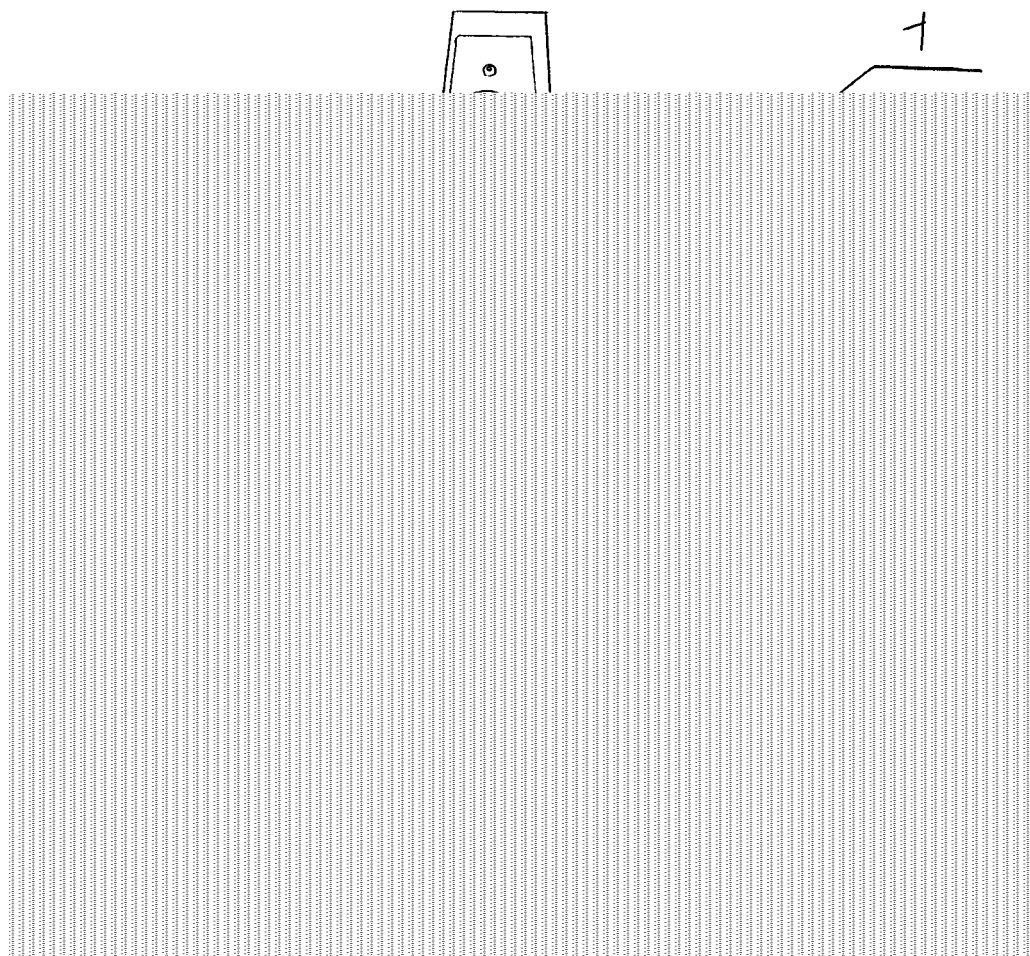
**Fig. 3**

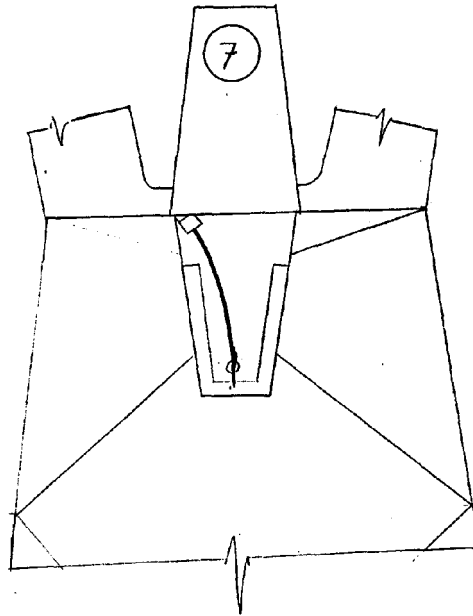


**Fig. 4**



**Fig. 5**



**Fig. 6****Warning:**

- Lead the reserve parachute closing line up between the lines and pleats.
- Only such a line that is specified for this purpose may be used as the closing line (i.e. sewn, with a loop for the release pin with the maximum length of 30 mm)
- Use only a spring with the minimal strength of 100N for the pilot chute container
- Do not pull the pilot chute fabric below the spring bottom suspension loop, which is placed on the reserve parachute flaps nos. 1 and 2.
- The reserve parachute must be activated with a manual release! RSL is not applied.