

**Instructions for the packing and use
of container and harness
MACC (MarS Accuracy)
OP – 110, PS – 055**

**Technical description
of a container and harness**

P – 006 – 19



2nd issue

in Jevíčko 09/2019

List of Changes

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 The holder of the manual is obliged to record all obtained changes into the List of Changes and replace out-of-date sheets with valid sheets.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

Sequence No. of the Change	Chapter	Sheet nos. with Changes	Date of Issue of New Sheets	No. of the Bulletin with Issued Changes	Date of the Bulletin Approval	Date of execution Signature

WARNING!

It is necessary to pass appropriate parachutist training program to minimize the risk of serious injury or death or destruction or damage of the parachute set MACC.

Never use this parachute set in case that you have not read this warning, have not finished the prescribed training program, and you have not understood all appropriate handbooks for operating of this parachute set.

To prevent the risk of death, serious injury, destruction of the canopy or its damage, we recommend to meet following:

MAX. PARACHUTING VELOCITY	278 km/hour (150 KNOTS)
MAX. LOAD WEIGHT (parachutist + equipment + gear)	126 kg / 277 lb
M O D E L	OP-110 / PS-055

This parachute is certified under TSO C 23d.

MarS a.s.

Okružní II 239

569 43 Jevíčko

The Czech Republic

CHAPTER I.

Technical Description of the Container/Harness

1. Purpose
2. Tactical and technical parameters
3. Functions of the container
4. Parts of the container/harness
5. List of replaceable parts
6. Parts of the container/harness - technical description

CHAPTER II.

Instructions for Packing and Use

1. General instructions
2. Inspection of the container before use
3. Removal of faults/Troubleshooting
4. Guidelines for the replacement (assembly) of parachute parts
5. General conditions for assembling the safety devices into the reserve canopy package
6. Assembly of AAD an m2 MULTI device
7. Assembly of AAD a Cypres EXPERT device
8. Assembly of AAD a Vigil device
9. Packing Tools
10. Packing of the Container

CHAPTER III.

Storage and Transportation of the Parachute (container)

1. Preparation of the parachute (container) for storage
2. Storage of the parachute (container)
3. Transportation of the parachute

CHAPTER IV.

Removal of Dirt, Washing, Cleaning

CHAPTER V.

Ecological disposal instructions

CHAPTER I.

Technical description (TD) of the MACC (OP-110) container

1. Purpose

- 1.1. The aim of this technical description is to provide basic parameters, parts and guidelines for the use of the container/harness.
- 1.2. The container / harness is designed for para-sport discipline for accuracy landing. It is used only for free falls.

2. Tactical and Technical Parameters

2.1. Functional parameters of the container

The container assures proper functioning on condition that:

- The weight of the parachutist including gear is 126 kg / 277 lb
- Flight speed ranges between 90 to 278 km.h⁻¹
- The canopy is disconnected from the harness by means of the cutaway release
- Freefalls last 3 seconds in minimum.

2.2. Operational Conditions

- Main parachute can be packed for jumps for 180 days in maximum, reserve parachute can be packed for jumps for 365 days in maximum unless the manufacturer of the main and reserve parachutes do not specify a different period.
- The functioning of the container/harness is assured when stored between - 40 to + 93.7 °C at relative air humidity corresponding to such temperatures.
- The gear of the parachutist must be attached to the parachutist 's body in such a manner that assures the proper functioning of the container

2.3. Parameters Assuring Reliability

Warranty period

- a) Lasts 24 months on condition that repairs and replacements of used parts are carried out, storage conditions are maintained and regular inspections connected with the airing of the parachute are performed
- b) Begins with the date of the shipment of the parachute
- c) During warranty period the manufacturer will not accept claims in the following cases of:
 - Damage of parachute parts caused by their catching on gear
 - Violation of conditions of packing, storage and maintenance of the parachute by the user
 - Missing parachute log book or its improper records
 - Failure to follow the instructions of this technical description
 - Any unskilled handling with the parachute

2.4. General Overhaul

- Parachutes are accepted for general overhaul if a user/a representative of the user evaluates further use of such a parachute as not suitable.
- General overhaul is performed either directly by the manufacturer or by a organization or person authorized by the manufacturer.

2.5. Total Time Life

The total time life of the parachute is set to 20 years since the production date in maximum. However, it depends on the technical condition of each container. Therefore it is required to meet the following conditions:

- a) Replace damaged parts in time and without any delay. Any replacement of parts must be recorded in the parachute log book.
- b) Repair the parachute and its parts in time and without any delay, always according to technical conditions of repairs. Each and every repair must be recorded in the parachute log book.
- c) After the elapse of 5 years carry out overall technical inspections (validity - 2 years in maximum, result to be recorded in the parachute log book) till its unworthiness for jumps.
- d) In Main Risers VK – 33/ .../K-D, the Main Risers must be sent to the manufacturer or person authorised by the manufacturer (parachute technician, senior parachute technician with valid authorization) to perform specialist inspection and evaluate the actual condition of Main Risers at the latest upon completing 300 dives or after 5 years of use.

The evaluation of the technical condition of the parachute (technical inspection) is performed directly by the manufacturer or by an authorized organization or person.

3. Functions of the Container

Free falls with manual opening

After the exit out of the aircraft and after 3 seconds have passed in minimum, the parachutist throws away the pilot chute. The parachute container opens and the pilot chute withdraws the container with a stowed canopy. Suspension lines are unlaced from rubber loops on the container and the closing flap of the container becomes released. ATTENTION use only loops that encircle the bundle with lines tightly.

After the lines are extended in full length, the container is pulled off the canopy and canopy cells are gradually inflated with air.

The spreading of the canopy is slowed down by the slider, which is anchored on four bundles of suspension lines.

After all cells of the canopy are inflated with air and the slider moves to the risers of the supporting harness, the parachute is opened. The parachutist releases the steering loops and by their pulling (to their chest), steering lines are released from brake rings at risers. After all these operations are completed, the canopy begins gliding in the air. The parachutist controls the parachute with steering lines to a set place for landing.

4. Parts of the Container/Harness

4.1	Container (OP – 110)	1 piece
4.2	Harness (PS – 055)	1 piece
4.3	Ripcord Handle Reserve (U – 064)	1 piece
4.4	Three Ring Release Ripcord (U – 079)	1 piece
4.5	Reserve pilot chute (PV – 028 or PV – 055)	1 piece
4.6	Free bag (VV – 051/...)	1 piece
4.7	Reserve steering toggles (RP – 006)	1 pair
4.8	Main parachute risers (VK – 33/.../K-D)	1 pair
4.9	Main Deployment bag (VV – 041/...)	1 piece
4.10	Main pilot chute (PV – 026 or PV – 033)	1 piece
4.11	Hard aluminium knife (NK – 02)	1 piece

5. List of replaceable parts

Except for the packing and the harness, all other parts can be replaced.

6. Technical description harness packing parts

6.1 The Container OP – 110 (picture 1)

The parachute packing contains both the main parachute and the back-up parachute. The packing is trapezoidal, its edges are round, and is made of polyamide fabric. When sewn together the back strap, the main parachute's packing, and the reserve parachute's packing form one whole unit. The main parachute's packing is made of the back strap on the bottom and with the peripheral piece of the main parachute's packing along its circumference. This is sewn with a bottom flap and with the left and right side flaps of the reserve parachute's packing. The looser part of the central flap overlaps the upper part of the main parachute's packing and overhangs this same upper part as far as the reserve parachute's packing. The packing of the reserve parachute consists of a main part that changes into the left and right flaps of the reserve parachute. The neck section of the back strap is sewn with the reserve parachute's upper flap and closing flap, the former being inserted in the upper part of the central flap. The bottom of the reserve parachute is fitted with the closing line of the reserve parachute packing. The closing lines of the main parachute packing is sewn onto the bottom of the reserve parachute in the area of the main parachute packing.

6.2. The harness PS – 055 (picture 2)

Is made of a PAD strap and is designed for the attachment of the parachute container to the body of the parachutist. The supporting harness consists of main straps, leg straps, chest straps, back straps and lumbar strap.

The main strap is doubled and bifurcates into two parts above the cutaway ring. The divided strap forms ends with loops for the attachment of the reserve parachute. Pockets for the release of the reserve and main parachutes are sewn on the main straps. Another cutaway ring is sewn in the bottom part of the main strap. The lumbar strap, a part of the leg strap with a tightening buckle and part of the leg strap for drawing through the buckle lead from the cutaway ring. The main straps placed at the chest straps are divided with cutaway rings, to which chest straps are attached.

Reserve parachute brakes are sewn on the back strap.

The back strap leads from the cutaway ring placed after the bifurcated main strap.

Leg pads are sewn on leg straps, inner sides of leg pads are equipped with sewn-on loops for lacing through the rounded rubber designed for the tightening of the container to the parachutist's body. The size of the pressure strength can be regulated by different positions of knots made on the rounded rubber.



picture 1, 2

6.3. The Ripcord Handle Reserve U – 064 (picture 3)

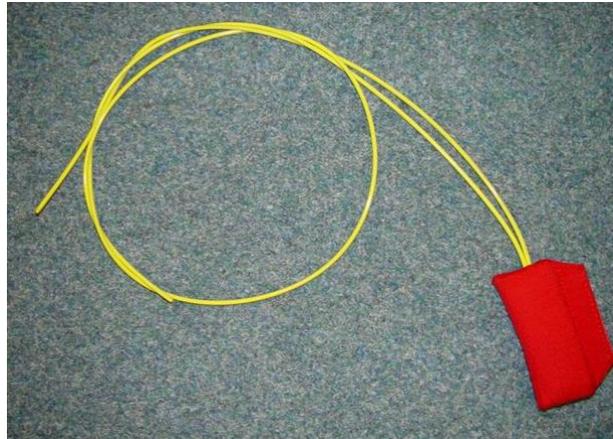
The U-064 opening of the reserve parachute container. It consists of a handle and a cable with a needle. A Velcro strap is sewn on the release handle, which helps fix the release in the pocket on the harness.



picture 3

6.4. The Three Ring Release Ripcord U – 079 (picture 4)

The U-079 the disconnecting of the main parachute canopy from the harness. It consists of a handle and a plastic-coated steel cable. A Velcro strap is sewn on the release handle, which helps fix the release in the pocket on the harness.



picture 4

6.5. The Reserve pilot chute PV – 028 or PV – 055 (picture 5)

The pilot chute secures the opening of the reserve container and pulling the free bag (with a stowed reserve parachute canopy) out of the reserve parachute container.

It is made of PAD fabric and net. The bottom is reinforced with duralumin sheet.

The PV-028 chute is equipped with a coiled spring with the minimal ejection strength of 100 N.

The PV-055 chute is equipped with a coiled spring with the minimal ejection strength of 180 N.



picture 5

6.6. The Free bag VV – 051/... (picture 6)

Is designed for stowing a packed canopy of the reserve parachute into the reserve parachute container. It is made of PAD fabric. A bushing is pressed-on in the middle of the container for leading the closing line of the reserve parachute. A loop for the attachment of the pilot chute is sewn on the other end of the webbing.



picture 6

6.7. The Reserve steering toggles RP-006 (picture 7)

Are made of a 20mm-wide PAD strap, is designed to control the Wing reserve parachute. Forms an eye with a pressed-on bushing at its end, which secures the connection of the main steering line.



picture 7

6.8. The Main Risers of the harness VK-33/.../K-D

Risers of the supporting harness of the main parachute are designed for the connection of the main parachute canopy to the PS-055 harnesses by means of a three-ring system.

They are made of a 43 mm wide PAD strap. The bottom (divided) part is made of the set of three rings that serve to fasten the parachute to the harness. The tapes end with loops into which the screwing clips introduce the supporting lines of the main parachute canopy.

Caution:

The strap near the rings, which are a part of a three-ring system, must remain slightly flexible. Therefore it is required to bend it at least once a month to prevent it from hardening which could result in worsening of its proper functions during the disconnection from the three-ring system. This caution applies to all types of risers of the harness.

6.9. The Main Deployment bag (VV – 041/...)

It is intended to stow the packed main parachute in the main parachute container. It is made of PAD fabric. In the closing flap there are 2 metal grommets used for closing the bag. In the bottom central part of the bag is a metal grommet.

6.10. The Main Pilot Chute PV – 026 or PV – 033

It is intended to be deployed from the parachutist's hand and to open the main parachute container and to pull the deployment bag containing the main canopy out of the parachute container.

It is sewn of the PAD fabric, lower part of the canopy is sewn of the porous fabric – micromesh.

6.11. The Hard Aluminium Knife NK – 02 (picture 8)

It is used to cut the suspension lines or the system parts and gear during malfunctions of the system or system parts.



picture 8

CHAPTER II.

Instructions for the packing of the container

1. General Instructions

- a) Before packing the parachute, it is necessary to check the entirety and technical condition of the parachute. Damaged parts are either replaced or repaired.
- b) It is not recommended to expose the parachute to direct sunlight during packing.
- c) The parachute is packed by one person. Each packing of the reserve parachute is to be recorded into the log book.
- d) The MACC container is used generally as a set with the canopies of the WP, each canopy size of the reserve parachute must correspond to a suitable container size.
- e) No adjustment of the parachute container/harness is acceptable.

2. Inspection of the Container before Use

Prior to packing, the user must perform visual inspection of all parts of the parachute set, if the parts are not damaged, the sewing is not interrupted, fabric, binding, straps, race closing, and metal parts. Damaged parts must be repaired or replaced.

In designated parts it is necessary to record the replacement into the parachute log.

Release ripcords

The ripcords surface must be undamaged, both ends must equally protrude from the tubes; the visible length must be at least 160 mm.

Each time the reserve parachute is repacked, the cord surface must be checked and dirt and dust must be removed. If the dirt is visibly present inside the tubes, it is necessary to clean the tubes.

The surface of the ripcords must be clean (in case of dirt, it is necessary to wipe the surface properly). To remove dirt it is possible to use silicone oil. However, after such cleaning, the cord must be wiped dry.

WARNING:

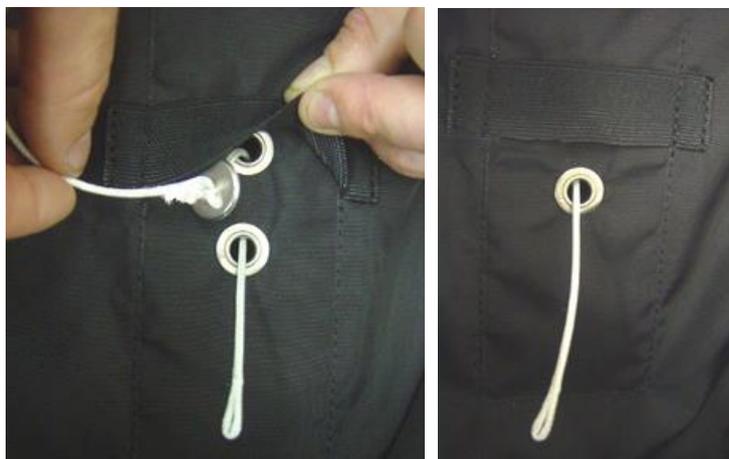
It is prohibited to perform diving with a parachute set with damaged or worn function parts!

3. Removal of Faults/Troubleshooting

- a) Removal of faults is carried out by an exchange of damaged parts or a repair according to instructions stated in Technical Conditions of Repairs.
- b) Parts that are permitted to be exchanged during the operation:
 - Ripcord Handle Reserve
 - Three Ring Release Ripcord
 - Exchange of risers of the main parachute harness
 - Closing line of the main and reserve parachute
 - Steering toggles of the reserve parachute
 - Free bag
 - Main Deployment bag
 - Reserve pilot chute
 - Main pilot chute.

4. Guidelines for the replacement (assembly) of parachute parts

a) Replacement of the reserve parachute packing string



b) Replacement of the main parachute packing string



c) Attachment of the pilot chute to the deployment bag webbing



d) Connection of the RP – 006 steering toggle to the main steering line



e) Reserve parachute braking



5. General conditions for assembling the safety devices into the reserve parachute package:

Installation of the safety device into the package part can be performed **solely** by a trained person with authorization of ‘Senior parachute Technician’.

The safety device **must be installed** only in the original set supplied by MarS and installed into the package directly by the manufacturer or another authorized person.

WARNING:

The closing cord designed for closing the reserve parachute package must always pass through the aperture in the cutter of the safety device!

6. Assembly of AAD an m2 MULTI device

The assembly is carried out according to Instructions for use
- the Users’Manual of m2 MULTI.

7. Assembly of AAD an CYPRES device

The assembly is carried out according to Instructions for use
- the Users’Manual of CYPRES.

8. Assembly of AAD an VIGIL device

The assembly is carried out according to Instructions for use
- the Users’Manual of VIGIL.

9.Packing Tools

We use the following tools for packing reserve parachutes:

- a) Accessory needle with a webbing
- b) Line for the limitation of the container extension
- c) Packing line
- d) To pack the kit, use the packing mat and the T-shaped packing tool.



10. Packing of the Container

The packing of the reserve parachute WP is carried out according to instructions for the packing of the reserve parachute canopy.

Stow the reserve parachute risers in the parachute container next to each other.



Further procedure is shown in the following pictures:

Close the reserve parachute container flaps in the order they are numbered, i.e. from number 1 to number 5.



Close flap no. 1.



Stow the deployment bag connection tape in the usual way in the shape of the letter “V” under flap no. 1.





Stow the remaining connection tape as shown in the picture and thread the auxiliary packing cord through the pilot chute.

Stow the remaining connection tape and thread the auxiliary packing cord through the pilot chute.

Compress the pilot chute and secure it with the auxiliary packing pin. Smooth out the pilot chute fabric.



WARNING:

At this stage of packing, perform the following check:

Grab the auxiliary packing cord attached to the loop in the closing cord and pull by approx. 220 ÷ 240 N and measure the distance between the top grommet edge of the pilot chute and the top of the closing loop.

The measured distance must range between 25 mm and 30 mm.

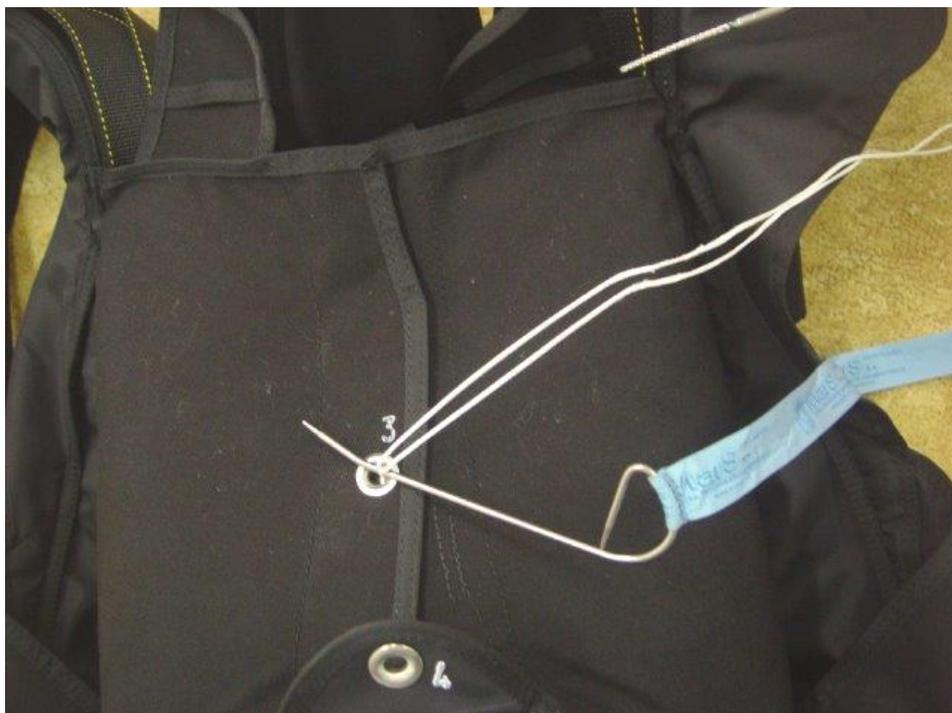
If not, adjust the length of the closing cord!



Close flap no. 2.



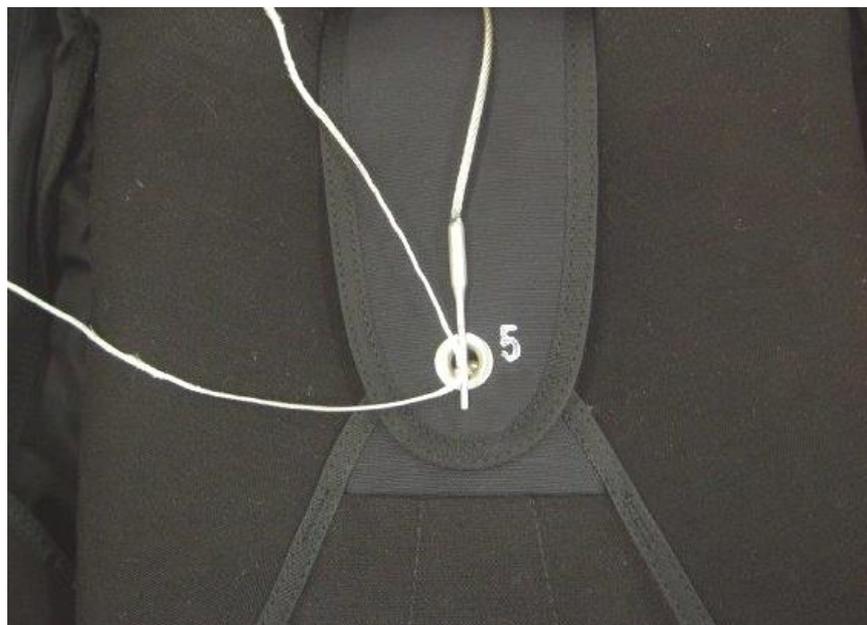
Close flap no. 3.



Close flap no. 4.



Close flap no. 5.



WARNING:

Check the force necessary to move the locking pin of the reserve parachute manual release.
If the necessary force is more than 40 N, extend the length of the closing cord.
The resulting force required to move the pin must be in the range of $30 \div 40$ N!

When the reserve parachute container is closed, seal the ripcord pin using a green sealing thread, strength $4.5 \div 7.5$ N.



Finish by closing the top flap.

Packing shall be recorded in the Parachute Kit Log.

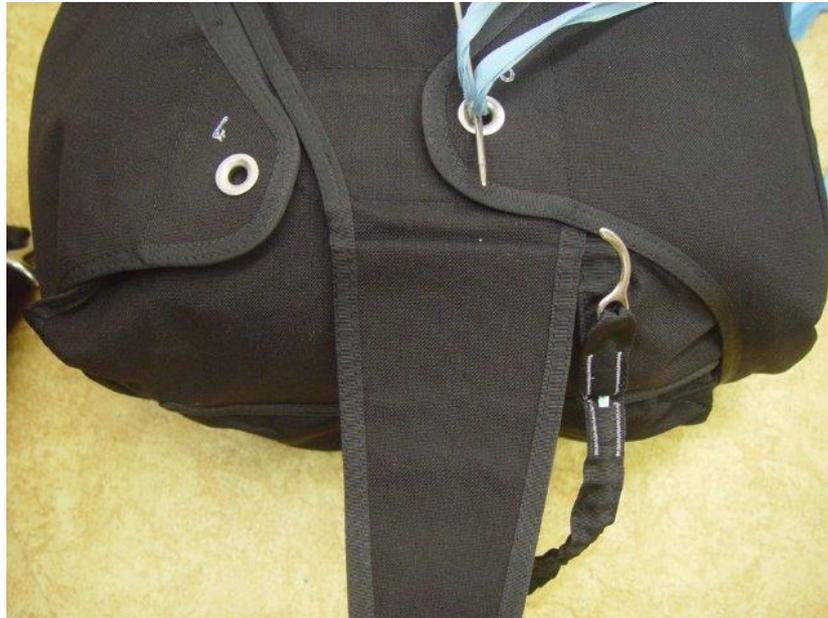
Packing of the main canopy is carried out according to technical description of the main parachute packing.



Close the bottom and the top flap.



Close the right flap.



Close the left flap.





Packing shall be recorded in the Parachute Kit Log.







3. Transportation of the parachute

On operational conditions, parachutes are transported in portable bags. During the transportation it is required to prevent:

- a. Moistening of the container
- b. Contamination of the container with oils and chemicals
- c. Mechanical damage

CHAPTER IV.

Dirt Removal, Washing, Cleaning

Dirt (sand, soil, mud, etc.) on the parachute container and supporting harness contaminated during the use can be cleaned mechanically (e.g. by brushing, shaking or rubbing off).

Dirt that cannot be removed mechanically, can be removed with a damp piece of cloth moistened in lukewarm water with soap or cleaning detergents. After such cleaning the container with the harness are to be dried on a place designated for such purposes.

The manufacturer warns the user that using a larger amount of water with detergents may cause the occurrence of stains of various colours or soaking of colours from the inside layer of material into the outside layer of material, in particular with containers of light colours. The warranty does not apply to such cases.

Washing of containers/harnesses manually or in any washing machines **is forbidden**.

Cleaning of containers/harnesses using chemical agents containing chlorine or organic solvents **is forbidden**.

CHAPTER V.

Ecological disposal instructions

Upon the total service life completion or due to wear and tear, terminate the parachute set.

Disposal of terminated parachute sets is performed as follows:

Metal parts

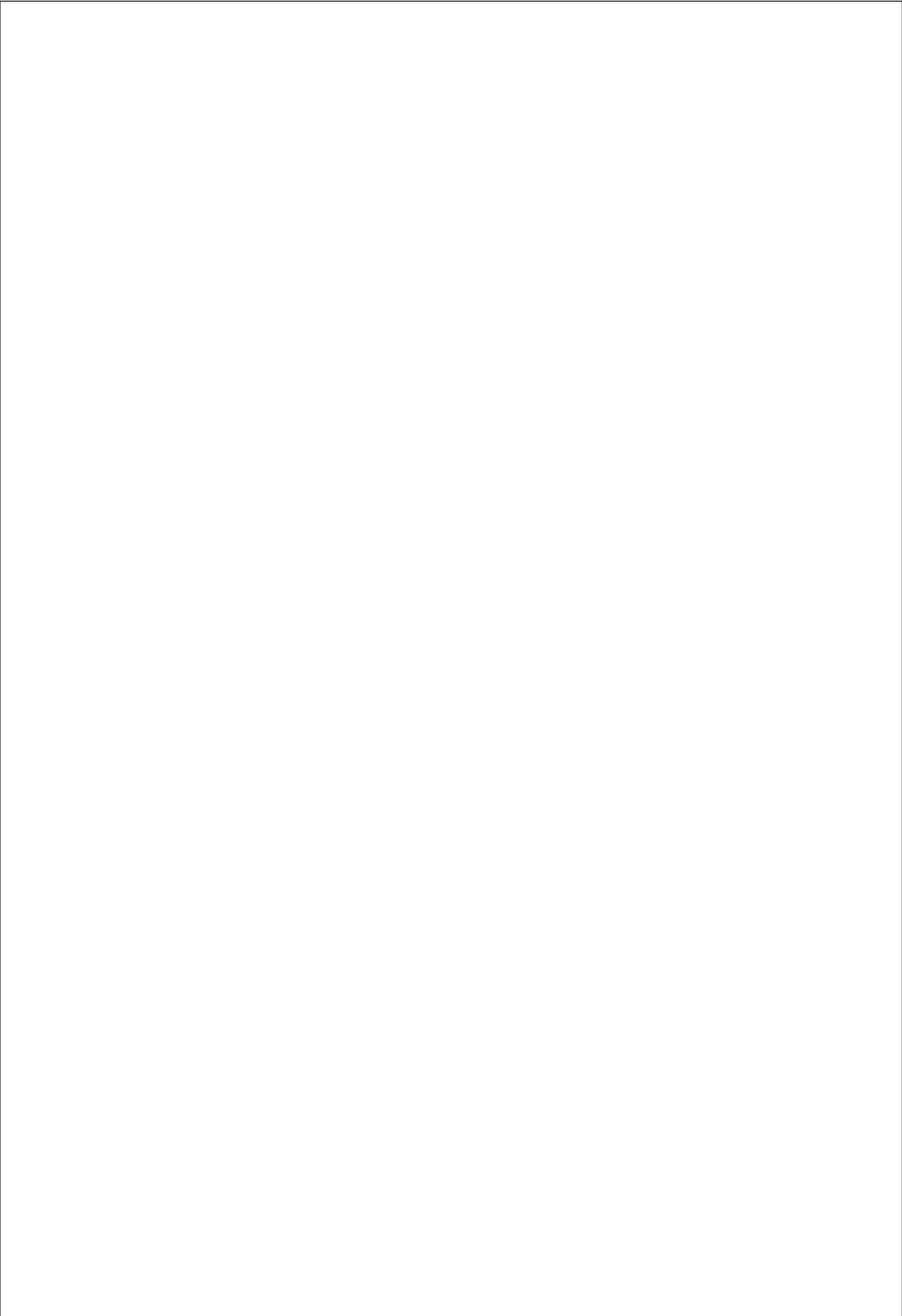
- Useable metal parts can be used within manufacturing upon inspection and repair work;
- Unused metal parts shall be delivered to the waste metal collection.

Textile parts can be disposed of as follows:

- Placing in the waste collection centre suitable for PAD, PES waste;
- Burning whilst complying with the conditions required for the waste disposal type, in cooperation with companies performing the disposal method.









2019

MarS a.s., Okružní II 239, 569 43 Jevíčko, THE CZECH REPUBLIC

phone: +420 461 353 841; fax: +420 461 353 861

<http://www.marsjev.com>, e-mail: mars@marsjev.cz