



# USH

RESCUE SYSTEMS FOR UL AIRPLANES



## BALISTIC RESCUE PARACHUTE SYSTEMS

### TECHNICAL DESCRIPTION AND OPERATING LIMITATIONS

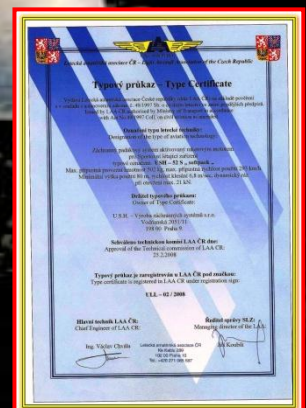


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**VODŇANSKÁ 2051/11 PRAHA 9**

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## 1. Purpose

The purpose of the RECOVERY PARACHUTE RESCUE SYSTEM USH is to rescue ultralight crew.

The RECOVERY PARACHUTE RESCUE SYSTEM was tested according to the ZS 2 “Requirements for ultralight rescue systems recognition“ issued by LAA ČR and “Lufttüchtigkeitsforderungen für Rettungsgeräte für Luftsportgeräte“ DULV / DaeC SRN. The rescue system received the type certificate DULV. The rocket engine UPI-PFE is approved BAM SRN.

## 2. Specifications

The technical parameters of the individual types of the rescue systems (RS) are listed in the register of the USH products, „PDF product chart“. A summary of operating restrictions for each single type of RS is listed in the technical specification (manual), which is delivered with the product and, if requested, also exists as an electronic data file.

Materials and construction: Materials comply with the EN ISO 9237, ČSN EN ISO 13934-1 requirements and construction comply with the standard based on production approval of aircraft technology, regulation No. 2/97 LAA ČR.

RECOVERY PARACHUTE RESCUE SYSTEM that is packed in a textile container must not be used unprotected against meteorological conditions (for example it must be placed inside the fuselage of the ultralight).

### Rescue warranty period

The warranty period is 6 years providing the maintenance and application instructions are observed. Any problem with the recovery system must be resolved by the manufacturer. The warranty period starts at the date of production specified in the letter of guarantee.

The component supplier doesn't accept customer complaints in following cases:

- in case of mechanical damage of the bag of the parachute-cap, the parachute-cap and the suspension ropes caused by entanglement in parts of the aircraft
- in case of damage of the fabric of the parachute-cap effected by singeing, caused by the suspension ropes or other parts
- in case of mechanical damage of the anchor ropes and of the connection-ropes
- in case of mechanical damage of the container, the rocket fastening tube with the rocket itself, including the bowden cable activating device
- in case of infiltration of liquids and lubricants into the RS
- in case of unapproved installation inside the aircraft
- in case of default of the technical instructions and of the operating restrictions
- in case of use of the RS after the end of the operational warranty of 6 years, or at the end of its life cycle
- in case of lost of the certificate of warranty or if it is not properly confirmed

a) Service life

Service life of the RECOVERY PARACHUTE RESCUE SYSTEM is 24 years providing the instructions of this technical description are observed. The 6 year revision is carried out by the manufacturer.

b) Operation

Operation of the RECOVERY PARACHUTE RESCUE SYSTEM is warranted in the temperatures ranging from - 30°C to +50° C and altitudes of 80 m AGL to 4000 m AMSL.

### 3. Operation of the recovery parachute rescue system

In case of emergency a pilot will activate the RECOVERY PARACHUTE RESCUE SYSTEM by pulling the activation handle which will result in rocket engine ignition and resulted thrust will release the container cap and extract the canopy together with its lines. Then the rocket engine is separated and falls along with the canopy cover. The parachute canopy will fill with air providing a drag for descent and safe landing of the ultralight. The process of the canopy inflation is affected by the slider disc and depends on the forward speed of the aircraft.

### 4. Recovery parachute rescue system assembly

Canopy with lines and slider disc	V
Canopy cover	VV
Connecting line	SPL
Release belt	UP
Textile container	Soft
Metal container	KH
Rocket motor	RM
Activation flexible housing	BO
Carbine	MAILON RAPIDE WLL 46 kN, or 79,5 kN

### 5. Operating instructions

RECOVERY PARACHUTE RESCUE SYSTEM can possibly be employed in case of emergency such as ultralight mechanical problems, collision of flying aircrafts, unserviceable ultralight controls, engine failure over danger area, sudden pilot dysfunction and the like. The decision to use the RECOVERY PARACHUTE RESCUE SYSTEM depends on judgement of the ultralight pilot.

Correct function of the RECOVERY PARACHUTE RESCUE SYSTEM requires observance of the following actions:

- Shut down the engine
- Pull briskly the activating handle (to its end stop)
- Make preparations for a sudden jolt at parachute opening.
- Seat belts should be in place

Inflation of the parachute canopy will be finished within 3 - 4,5 seconds maximum. Vertical speed of the falling and occupied ultralight is  $7,5 \text{ m}\cdot\text{sec}^{-1}$  maximum (according to the take off mass of the ultralight ).

## 6. Installation

Installation will be carried out either by the manufacturer or by the authorized person. The RECOVERY PARACHUTE RESCUE SYSTEM must be fitted so the distance between the launch tube and the fuel tanks is 500 mm minimum and the launch tube neck (direction of shoot) enables outlet of gases when the rocket engine is ignited. The rocket neck must be in the plane of the skin and the inside and the outside of the skin must be protected against inflammation.

When placing an order it is necessary to specify the type of the ultralight in order to ensure the mounting brackets and the length of the activation housing.

Remark!

The ultralight must be equipped with prescribed harness.

## 7. Pre-flight inspection

Following points need to be checked before flight:

Check:

- container and rocket attach to the ultralight
- locking of the rocket engine in the launch tube
- activation housing integrity
- correct placement and securing of the connecting lines and snap-hooks
- harness
- fastening belts of the pilots
- ensure that any no desired objects are positioned above the rescue system

**Remove the securing pin or block out of the activation handle prior to flight.  
Repalce the securing pin or block to the activation handle after landing.**

**IMPORTANT:**

It is necessary to become aware that the rocket engine possesses great energy and develops temperature of  $800^{\circ}\text{C}$ . This is why it is necessary to secure the activation handle consistently to protect both your life own and the health and life of other people in the vicinity of your ultralight !!!



## 8. Storage

Rescue system which is not fitted to the airplane must be stored under following conditions:

- air temperature 12°C up to 40°C
- air humidity 35% up to 73%

The rescue system must be stored in the original packing up from the producer.

This product is classified by decree CBU No. 174/1992 „about pyrotechnical products and manipulation with them“ as explosive objects class T2.

Every manipulation (assembling and disassembling) is forbidden (there is danger of health risk).

The producers are not responsible for any damages which can occur by incompetent manipulations and the product will loose certificate of warranty.

## 9. Liquidation

After the end of the service life span the user must send the product (at least the rocket engine) to the producer who will dismantle and provide the liquidation of the charge of the rocket in accordance with the valid law.

**In case of any emergency activation rocket system immediately inform the company:**

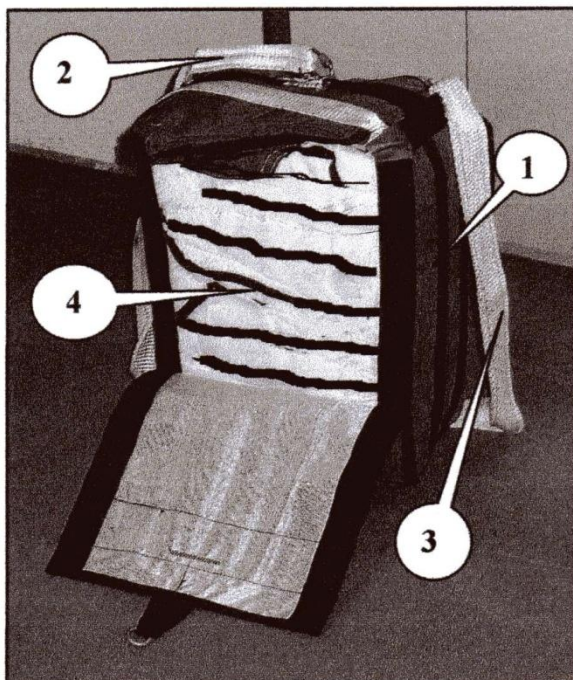
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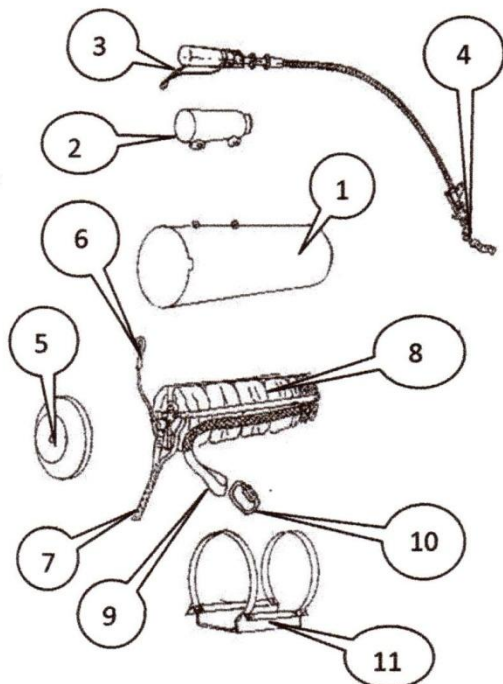
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### Rescue parachute systém USH soft



- 1. Textile container K
- 2. Opening flat line UP
- 3. Connecting line SPL
- 4. Pressed parachute

### Rescue parachute systém USH Alu-container



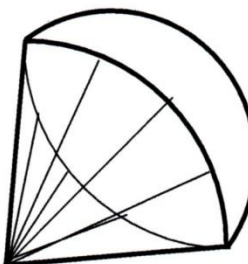
- 1. Metal container K
- 2. Rocket tube RK
- 3. Rocket engine UPI PFE
- 4. Priming device BO
- 5. Container cover VK
- 6. Opening line UL
- 7. Opening flat UP
- 8. Presset parachute
- 9. Connecting line SPL
- 10. Carbine hook
- 11. Container holder

**SAMPLE OF INSTALATION ON UL AIRPLANE**



**Rescue system**

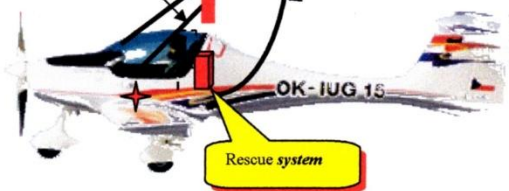
Connecting line  
SPL 025/4 PaD 45 kN



Direction of shot

Connecting flat line PaD 45 kN 2x

Stabilization steel line



**Rescue system**

Connecting line SPL 025/4 PaD 45 kN

Connecting flat line PaD 45 kN 2x

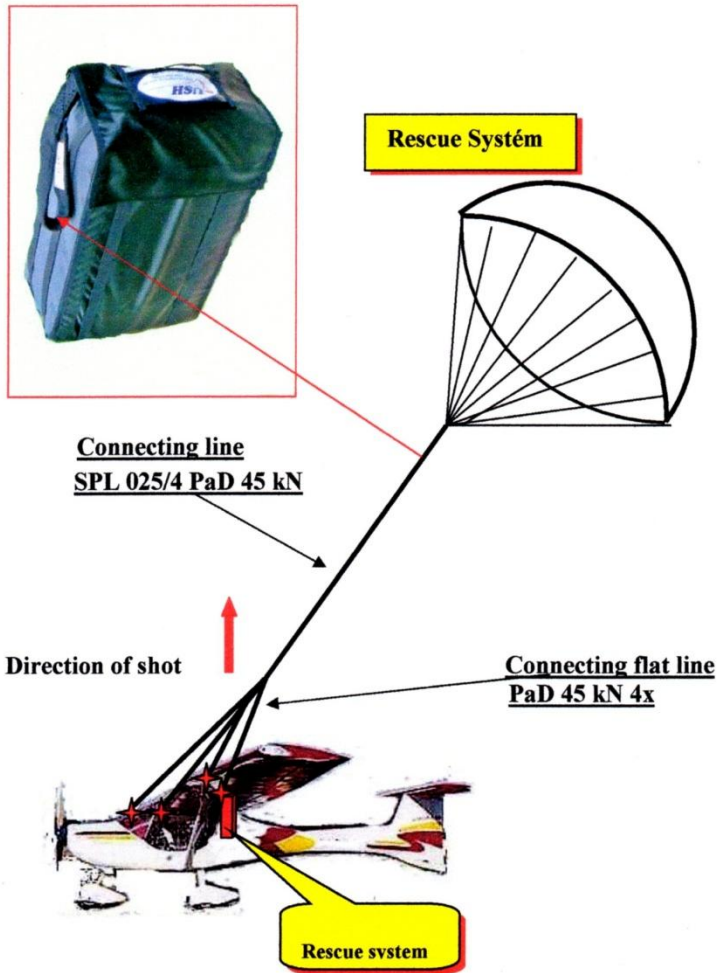
Stabilization steel line

Direction of shot



**Rescue system**

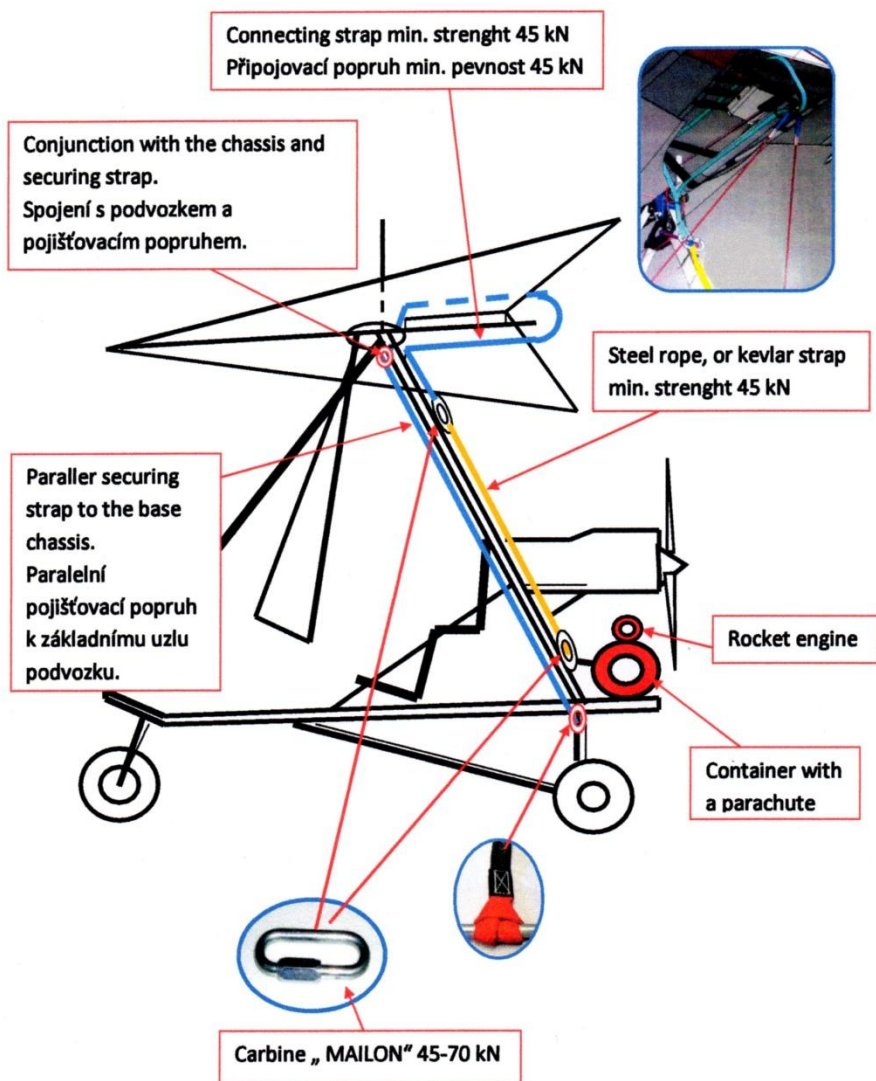
**SAMPLE OF INSTALATION ON UL AIRPLANE**





## Fitting the rescue system USH 520 Alu.container on trike.

### Příklad instalace záchranného systému USH 520 Al.kontejner na podvozek MZK.



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Thank you and we wish many safe flights.