

Operation manual X-TWO 90 | 110 | 130



# **X-TWO 90 | 110 | 130**

## **Operation manual**

Version 01 | 2019



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## 1. Forword

Dear Customer,

thank you very much, that you have decided for a **X-TWO**. You have not only acquired one of the most modern and innovative rescue equipment, you also opted for a brand that is committed to the sustainable use of the earth's resources. The ecological balance of our products is our priority. As probably not much before we dealt with the development and construction of rescue equipment in general and dealt in particular with the Cross canopy and steerable rescue equipment. Dozens of prototypes, hundreds of test airdrops and measuring flights have enriched our experiences and sharpened insights. The product of this unique history is a unrivaled light rescue equipment, such as the **X-TWO**!

The use of a rescue system is complex and it requires some practice to complete a successful rescue deployment. For this reason, I recommend intense workout for the use of the **X-TWO**. A perfect way for those who can learn only by themselves by repeating the exercises in the event of an emergency in the prevailing difficult condition and react correctly.

We naturally hope that the **X-TWO** must be used as little as possible. If nevertheless, the situation requires it, it should not be hesitated and the rescue device should be activate immediately. For this rare moments we have invested all our knowledge and our intelligence, so you can count completely on the reliability of the **X-TWO**.

We wish you much success and joy dealing with the **X-TWO**!

*Dani Loritz and Geri Roschmann*

**Team X-dream Fly ...  
... live your dream**

## 2. Introduction

### Safety instruction

The X-TWO is a parachute to be released by hand for paraglider pilots who are in an emergency situation. Due to their design characteristics it is not suitable for free-fall! The parachute, the suspension lines and their connection are not designed for an abrupt opening, because the necessary shock absorbers are missing. An unauthorized use is prohibited. It is essential to ensure the proper installation of the X-TWO to the harness. In the direct connection, a compatibility test must be carried out by an entitled person, to exclude possible non-compatibility between the harness and rescue device. Only a correctly mounted rescue equipment can function properly in case of an emergency and thus contribute to safety. In case of a release of the rescue device above water, for example, as part of safety training, should pay attention to the fact that a harness foam protector generates positive buoyancy and can bring the pilots in the „head-down“ position in water. There is also the risk that the foam protection soaks water during a longer stay in the water and then pulls the pilot down.

### Intended Use

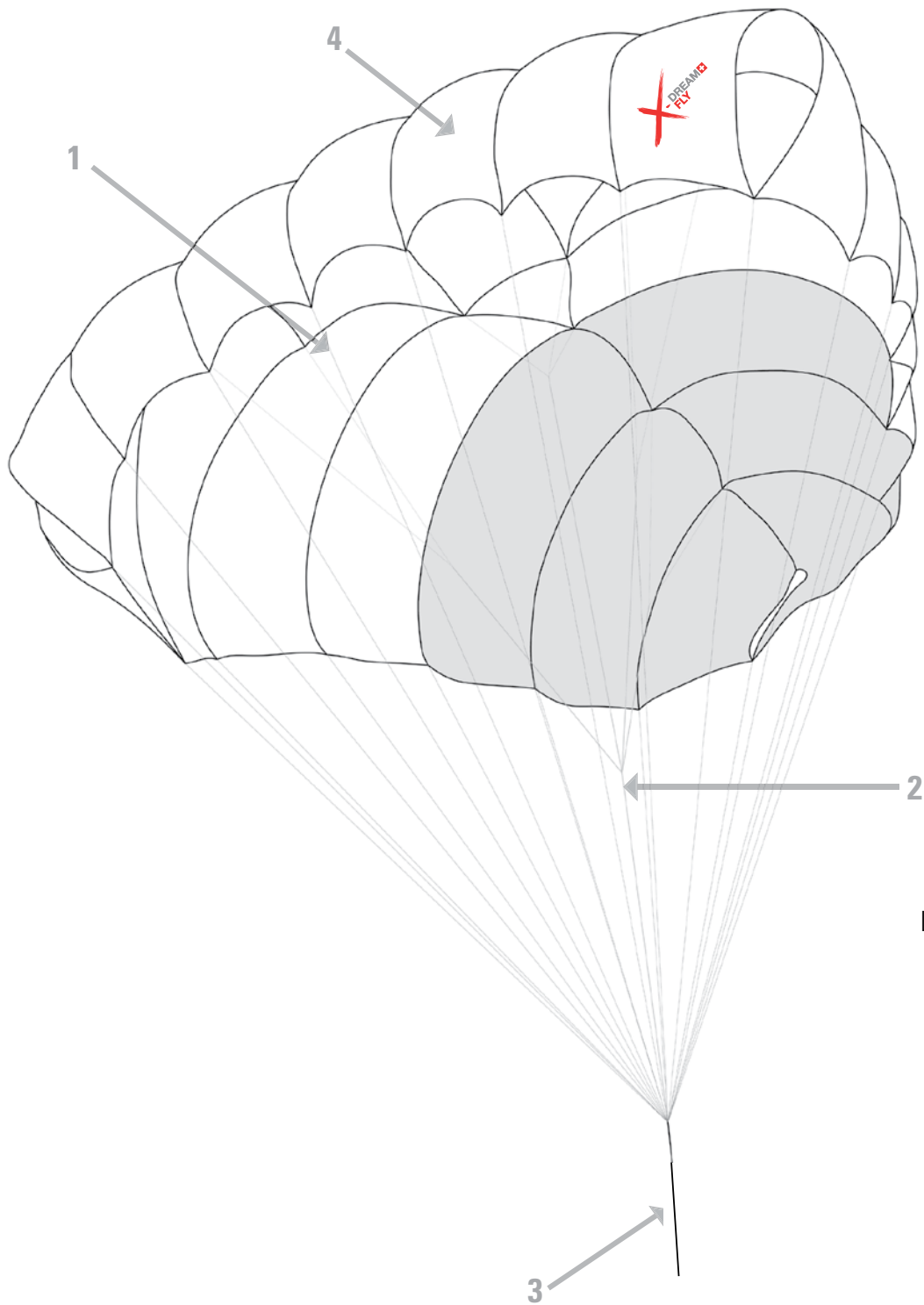
This rescue device has been developed and constructed exclusively for the paragliding sport.

## 3. Rescue canopy X-TWO

Through intensive research work we managed to develop a rescue system with maximum reliability, strength and fastest opening time at low sink rate. The X-TWO is easy to pack with a very small packing size, low overall weight and a very high pendulum stability. Despite a high maximum weight load we could achieve a very low sink rate.

The X-TWO is suitable for any aspiring pilot and is for acro and XC-pilots the measure of things. The compact size ensures the compatibility with all harnesses.

## The construction



### Legend:

- 1. side line
- 2. middle line
- 3. riser
- 4. canopy

We use only the highest quality materials such as Liros lines, 6.6 nylon Fabric from Delcotex, thread from the german manufacturer Amann in order to achieve a unique product. All materials used are manufactured in Europe. Sophisticated and modern production methods after ISO 9001 guarantee the best quality and long life. Due to the low pack size the compatibility is guaranteed with most harnesses.

### Specifications:

	X-TWO 90	X-TWO 110	X-TWO 130	X-TWO 220 Tandem
max.   min. load [kg]	90   45	110   50	130   70	220   110
number of panels	18	21	21	30
weight of parachute incl. riser [kg]	0,95	1,1	1,25	2,25
area [m <sup>2</sup> ]	26	30,5	35,7	63,9
number of lines	12	15	15	30
number of centerlines	2   4   3	2   4   3	2   4   3	3   5   3
sinkrate max. load [m/s]	EN 5,39	EN 5,07	EN 5,47	EN 5,35
certification	LTF   EN (Air Turquoise)	LTF   EN (Air Turquoise)	LTF   EN (Air Turquoise)	LTF   EN (Air Turquoise)
certification number	EP 216.2018	EP 215.2018	EP 204.2017	EP 206.2017
container size [cm]	L 22   B 19   H 8,5	L 24   B 19,5   H 9,5	L 25   B 20   H 10	L 29   B 24   H 14
container volume [cm <sup>3</sup> ]	3.100 (incl. lines)	4.000 (incl. lines)	4.600 (incl. lines)	7.000 (incl. lines)
system length [m]	4,5	4,8	4,9	7,3
max.area load [kg/m <sup>2</sup> ]	3,46	3,60	3,64	3,44

### Necessary documentation

- Operation manual
- Inspection record

### Components of the delivery

- X-dream Fly X-TWO rescue
- X-dream Fly X-TWO inner container (4-leaf container)
- X-dream Fly X-TWO pack instructions (in the operations manual for free download)
- X-dream Fly X-TWO inspection record
- X-dream Fly X-TWO operation manual

The operation manual is available for download at [www.x-dreamfly.ch](http://www.x-dreamfly.ch)

## Quality assurance

The X-dream Fly rescue devices go through a step by step control during the whole production. After every step, the product is accurately checked and only after a successful pass of the test the following step will be started. The fabric, the straps, lines and also the sewing machines are verified before use. Continuous quality controls of the production process ensure an error-free production. Each rescue unit is subjected to a strict final inspection before it leaves our factory.

## Materials used

The materials used were selected very carefully and under the strictest quality standards. So we choose a rip-stop 20-dtex 6.6 nylon fabric from Delcotex. This meets the required strengths, convinced by good workmanship and promises a longer life. The main seams are including a webbing which enhance the strength of the canopy. The lines are made out of high-strength Dyneema for an enormous weight reduction. The middle lines are made of polyester. The connection of the lines to the canopy are also made out of dyneema-polyester and corresponds to the international parachute workmanship.

## The components

The X-TWO consists of 4 components:

- the canopy (*triangle-canopy*)
- the suspension lines (*side and middle line*)
- main riser
- inner container

## Certification

The rescue device X-TWO by X-dream Fly are approved by the German airworthiness requirement LTF and EN-12491:2001. The approval is valid only in use with the original X-dream Fly 4-leaf inner container. When using a X-TWO in the context of a non-original inner container please note the corresponding release in the appendix of this manual.

## Operational limits

X-TWO Certification LTF = 150 km|h = 41,6m|s.

According to EN 12491 rescue equipment is not suitable for use at speeds greater than 32 m|s or 115 km|h.

Every 12 months the X-TWO rescue equipment need to be repacked. It makes sense when you throw the rescue package for training on this occasion in a clean, dry space. Currently, there is no verification requirement for rescue equipment. However, we recommend every 24 months a review of the rescue system. After each case of a real emergency opening the X-TWO rescue device should be checked by the manufacturer.

Permissible operating time: 12 years in compliance with the pack intervals and storage regulations. An extension up to 15 years is possible after an inspection of the manufacturer.



## 4. Throwing the X-TWO

The reserve is very often literally the lifesaver the “Second Chance” for paraglider pilots. In the close flown air-space of many flying areas a collision should not be underestimated as a danger on good flying days. Collisions with other aircraft are one of the principal reasons to pull the parachute. Disturbance in the glider as cravats, which leave the glider in spirals, fast twisted rotation movements or line breaks which makes the steering of the glider impossible are other good reasons for throwing the reserve. We recommend to study and train the use of the X-TWO in advance. In an emergency we seldom have much time and often is hectic and it is important that procedures are rehearsed and work blind.

### Deployment of the rescue canopy

You grab the handle of the rescue and throw the canopy with a strong lively movement slightly backwards. The more hard the movement precipitates, the faster the lines stretches themselves and pulls the canopy out of the container.

### After the opening

When the reserve opens (*usually behind the pilot*) the glider is momentarily unable to fly, any prior rotation stops immediately. The rescue rises above the pilot, the glider dives forward or sideways. Now you must immediately attempt to deform the glider strongly (*B- or C-Stall, or pull one line in*) that the glider disturbs the rescue in his movements as little as possible. If one does nothing at all, the glider rises above the pilot, the rescue shifts backwards and cannot carry properly. This can occur to the dreaded scissoring position (*down plane*) when the glider and the rescue are at an angle of 45° to each other. The rescue carries now only one part of the load, the rate of descent is dangerously high. Try to deflate the glider and don't let it fly anymore (*B- or C-Stall, pull one line in*). If the paraglider flutters only like a flag upwards, the rescue canopy can carry widely undisturbed and freely of pendulum. One more option would be the use of Quick-Out carabiners. After the rescue opening and release of first one riser and after a short moment the second one it is possible to get rid of the glider. The pilot don't need to stabilize the glider anymore and is able to concentrate fully on the rescue and the landing.

### The scissors position

The X-TWO is extremely pendulum stable. Nevertheless, the danger of a scissor position (*down plane*) should be reduced by stabilising or retraction the main glider. A scissor position increases the rate of descent and produce an oblique pilot position when landing and increases the risk of injury!

### Disconnect the glider

To achieve a proper operation of a rescue the rescue canopy should fly without any influence of the main glider above the pilot. A simple and effective way to achieve this situation are Quick-Out carabiners. This carabiners make it possible to disconnect one or even both riser of the glider.



We recommend for this reason the use of Quick-Out carabiners. It is also important if using a speed system that this is separated during the release process as well. The main glider should be only disconnected after the rescue canopy opens proper, inflates fully and fly well above the pilot. The separation of the two risers of the paraglider should never occur simultaneously. Separate first one side of the risers and if necessary the second one. It might be that one disconnected riser is enough to deform the glider to such an extent that he has no influence anymore on the rescue.

### Landing with the rescue device

Especially when triggered at low altitude the upright position in the harness is important. If you have a shoulder mount to the harness, it usually brings you in an upright position. It is essential to ensure that the glider doesn't deform the rescue device just before the ground.

It is important to note the following when landing on the rescue:

- upright pilot position
- legs together and knees slightly bent
- be ready to roll over yourself

### Potential errors and hazards

error in the deployment	rescue response   hazard	pilot reaction
release handle can not be achieved	rescue can not be triggered	compatibility-check after each complete new
closure on the outer container can not be opened	rescue can not be triggered	c-check after each complete new installation
inner container is not thrown away aggressively	rescue does not open or very delayed	strongly pull on the lines or riser of the rescue, pull second rescue

error in the deployment	rescue response   hazard	pilot reaction
no deformation of the paraglider	scissor position, strong commuting, uncontrolled impact	deform the glider, get rid of the glider (Quick-Out)



error in the deployment	rescue response   hazard	pilot reaction
too much concentration on the glider, pilot forget the upright position	pendulum, uncontrolled landing	occupy upright pilot position, prepare for landing
during the landing legs not together, wrong pilot position	uncontrolled landing	Ouch !!!

## 5. Maintenance and inspection of the X-TWO

Before each packing the parachute must be inspected by a packer. Was the emergency parachute opened for an emergency case then the rescue must be subjected from the manufacturer.

### Behaviour if damaged

If a check at the rescue system found some damage which affect the airworthiness of the device, the rescue equipment has to be send to the manufacturer for repair. This also applies to damages whose impact on the airworthiness of the system cannot be uniquely determined.

### Storage

A rescue device exists to save the life of the owner. It needs careful maintenance and care. UV radiation, moisture and chemicals are the worst enemies of your X-TWO rescue device. Avoid unnecessary burdens and let your X-TWO never unnecessarily lying in the sun. The rescue equipment should be dried in clean, dry and dark rooms. Rescue packages that are no longer used should be stored loosely rolled in a bag.

### Cleaning and drying

Dirty canopies and containers can be washed with clean clear water. Acids and mildew can affect the strength of the components. Such polluted parachutes have to be sent to the manufacturer for investigation and repaired if necessary.

### Repairs

The manufacturer or authorized X-dream Fly partners must perform all repairs.

### Correct disposal of the rescue equipment

As an environmentally conscious manufacturer of rescue equipment we pay great attention to produce our products eco social tolerated. The material we use in our products is evaluated according to environmental criteria and sub-ject to constant control. For the proper disposal the steel fittings should be separated at the metal disposal point. The canopy, the lines and straps can be disposed with household waste.

## 6. Attachment to the harness

Each new combination of harness and rescue has to be checked (*compatibility check*) by the manufacturer of the harness or by a trained and appointed person. Deploying the rescue system has to be possible out from each flying position according with the requirements of the building regulation. It should be noted that the release force of 7daN is not exceeded. The X-TWO must be connected with a carabiner or by looping through the V-line to the harness. When using a connection carabiner the breaking load of the carabiner must have a min. of 2400 daN.



## 7. Packing interval for the X-TWO

Before the rescue is repacked it must be subjected to a visual inspection by the packer. The reserve parachute must therefore be aired at a humidity of 60 - 65 % for min. 24 hours. The packing shall be done as possible on a packing table, but at least on a clean, anti static surface. The following photos are from a X-TWO.

**We remind you that you fly at your own risk.  
This also applies to the use of this life-saving device.**

## 8. Packing manual X-TWO

Before you start to re-pack, the X-TWO should be checked for any damage to the canopy, the lines and the main riser. The lines should be checked for proper performance and to unravel if necessary.

Following you see pictures of an X-TWO 130, the packing procedure itself is the same for all sizes of the X-TWO series 90 | 110 | 130. Only the number of panels and their configuration differ.

*Images 1 & 2*

Take a line and mount all the packing loops on top of the canopy.



Images 3 to 6

In the lower corners of the panels (*at the line attachments*) are black and blue arrows printed. Search the panels with the black and blue arrow printed pointing opposite each other. Drop the panel with the blue arrow to the left. Flatten and sort all panels nicely down to the base and to the top. Make sure that you put the excess fabric flat and pull it up, with one hand in the panel to sort the fabric nicely.



Images 7 to 11

Continue with sorting the panels till you reach a very width panel. Take half of this panel and fold it back like the others.





Images 12 to 14

Continue with sorting the panels till you reach the next corner panel. Grap trough the slot and search all center lines take them into your hand and roam them and the fabric freely from the base edge up to the top line attachments points.







Images 15 to 18

Keep on folding the panels till you reach the next width panel. Continue with folding this panel as explained in pic 7 - 11 and as you can see in pic. 15 - 18





Images 19 & 20

Continue with folding till you reach the next corner panel. The left side of the rescue is now ready. The arrows are pointing towards each other.



Images 21 to 23

Put now the right side of the X-TWO on the already sorted left side until the black arrow appears and start folding. The width panel should be folded like on the left side.



Images 24 to 28

Fold the right side like you did on the already sorted left side till you reach the corner panel with the arrows pointing towards each other. Grap trough the slot and search all center lines take them into your hand and roam them and the fabric freely from the base edge up to the top line attachments points. Both sides of the X-TWO are ready folded.





Images 29 to 32

Now the X-TWO canopy need to be folded in S-turns to container width (*one side upwards the other downwards*). The number of S-turns differs depending on the size of the X-TWO 90 | 110 | 130.





Image 33

**ATTENTION!**

The line at the top of the rescue (*packing loops line*) has to be removed from the canopy, otherwise the canopy can not open properly.



Images 34 to 36

In the next steps you have to fold the X-TWO on container length.



Images 37 & 38

Turn now the folded canopy 180° and put it into the deployment bag. The line attachments are showing upwards now.



Images 39 to 42

The deployment bag will be closed now. Pull the black rubber band in correct order of leaf non 1 up to leaf non 4. To close the bag use a short line which you can pull trough the black rubber.







Images 43 to 46

The lines are collected in S-folds so that it gives about 3 - 4 line bundles. Start from the riser side. Leave about 30 cm from the last bundle to the canopy.

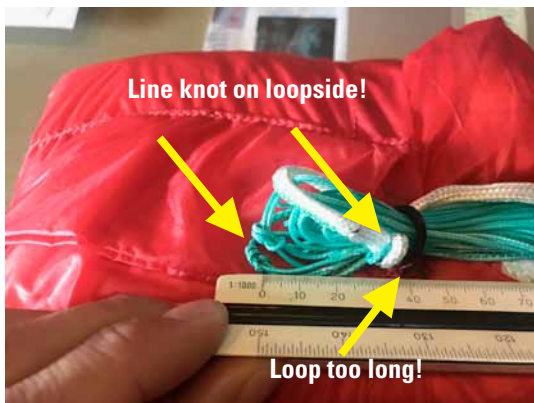




Image 47

With the 30 cm lines you fix the black rubber band with a line loop. This line loop on the black rubber band is made first, thereby the canopy is fixed into the container. This packing method ensures maximum throwing power. The lines released first, get stretched and opens the last line loop with the black rubber band, afterwards the canopy will be released from the container.





**NOT CORRECT**



**CORRECT**



**NOT CORRECT**



**CORRECT**

Image 48

The line bundles are stored into the line department in leaf no. 5 of the deployment bag. Now you can start to close the container leaf no. 5.



Images 49 & 50

The lateral ears of the container can be inserted under the fabric of the canopy as shown in the picture.



Images 51 to 55

The cover sheet leaf no. 5 is now closed with the plastic stick, starting from the inside out. Pull the black rubber band from the inside out through the eyelet in leaf no. 5 (*take care that the lines remain in position on top of the eyelet of leaf no. 4*). Pull the plastic stick through the black rubber band and slide back through the small hole. Store the line loop, the plastic stick and the flap of cover sheet no. 5 into the provided pocket.





Image 56

Final check and slight corrections. If necessary pull the lateral ears of the container inside under the fabric of the canopy.





## 9. Appendix

### Inspection records

<b>Wartung/Packnachweis</b> Serien Nr.				<b>Packing Advice/Inspection Book</b> Serial No.		
Nr.: No.:	Datum: Date:	Tätigkeit: Activity:	Notöffnung: Emergency use:	Spezielles: Specials:	Packwart: Name:	Unterschrift: Signature:
Nachprüfung Datum: Inspection Date:		Beanstandung: Result:		Spezielles: Specials:	Prüfer: Inspector:	Unterschrift: Signature:



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We wish you continued great flights and many happy landings with the X-dream Fly product **X-TWO**.

**Team X-dream Fly ...  
... live your dream**

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## Release

### **Release of X-dream Fly rescue equipment for external containers (harnesses with integrated reserve container)**

**Current status 10|09|2016**

#### **1. Content**

This release is valid for all X-dream Fly rescue equipment including X-ONE-series, X-CURVE-series, X-TRIANGLE-series and X-TWO-series in conjunction with non-original inner containers.

#### **2. Risk**

The compatibility of a harness with integrated | solid inner container to an external emergency equipment must be guaranteed by the manufacturer of the harness and is tested by internal tests with different bulky containers. The opening processes of the rescue device are dependent on the type and size of the inner container. There is the possibility that the rescue equipment have a slowed-down opening or not even open in use of a smaller inner container or inner container of other design. The original container of X-dream Fly have a separate line compartment for the S-loop line packages for a defined opening sequence. In a container without a separated line compartment the throwing power slows down by the early release of the entire rescue system. The X-dream Fly containers provide a maximum of throwing power and quality of defined opening. This ensures a faster opening. In addition, Dyneema lines are installed in most modern rescue equipment. These lines are coated with a polyurethane resin. In our rescue manufacturing (at X-dream Fly) we take care that different materials are handled separately. It is possible that minimal parts of this coating are solved and get transferred on the fabric if the lines and the fabric are packed together. This can lead to bonding and thus a delayed opening. Similarly, a defined packing method is recommended which is not useful or possible in each inner container from other brands. Changes that differ from the original packing method or the packaging size can increase the opening time and reduce the opening quality.

#### **3. Implementation and installation**

The implementation and installation of a X-dream Fly rescue unit in the inner container of a third-party may be made only by trained personal by X-dream Fly. During the conversion and installation of the rescue the manual of the rescue as also of the harness - or inside container manufacturer - has to exist and the corresponding installation and pack instructions need to be followed. The conversion in the non original inner container is to note in the packing ID and signed by the pack manager.



#### 4. Changes | Pack Interval | Opening Quality

We would like to point out that we pay much attention to a uniform development of our rescue systems. This refers to all system details and also includes the inner container. Who changes the inner container on our rescue equipment or remodels, change the quality of opening under certain circumstances. We definitely recommend a proper release during a compatibility-check. Take special care if the lines packed together with the canopy in the container and recheck the eventual problem explained in point 2. On the usual precautions (dry storage, no compact packing, no moisture in the system etc.) in the handling of harness, inner container and rescue device should be placed specialempphasis.

The operating manual as well as additional information can be found as download under [www.x-dreamfly.ch](http://www.x-dreamfly.ch)

Bach, 10|01|2019

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