



# **independence**

## **gliders for real pilots**

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## **Owner's manual**

Version 1.3 / 16.03.2009

### **Rescue system**

**Piccolo EVO**

**Annular EVO 20**

**Annular EVO 22**

**Annular EVO 24**

**Annular EVO Tandem**

**Annular EVO 22 HG**

**Annular EVO 24 HG**

**Annular EVO Tandem HG**

**with RAM AIR Pockets**

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## **Table of contents:**

1. Technical Data
2. Purpose
3. Conditions of use
4. Necessary documentation
5. Mode of operation
6. Inspection of the parachute
7. Behaviour if damages are noticed
8. Storage
9. Maintenance
10. Cleaning
11. Repairs
12. Nature and environment friendly behaviour
13. Environmentally compatible waste disposal
14. Spare parts / changeable parts
15. Structure of the parachute
16. Packing the parachute
17. Mounting in an outer container
18. Mounting / integration to a harness
19. Specialities for paraglider's winch towing
20. Biplane flights
21. Preflight check

# Warning

**It's not allowed to use this rescue parachute for skydiving!**

**According to EN 12491: Not suitable for usage at speeds above 32m/s (115km/h).**

The paragliding rescue systems of the Annular EVO series are certified according to the EN 12491 (European standard) and the LTF 35/03 (German type approval). The paragliding rescue system Piccolo EVO is certified according to LTF 35/03.

The hang gliding rescue parachutes are certified according to the LTF 35/03.

The manufacturer can not be made liable for any possible damages to persons or material damages, which may result from this rescue parachutes in any way.

## 1. TECHNICAL DATA

**Type of rescue-parachute:** Paragliding rescue system Piccolo EVO, Annular EVO 20/ 22/ 24/ 30  
Hanggliding rescue system Annular EVO 22 HG / 24 HG / 30 HG

**Manufacturer:** Fly market GmbH & Co. KG  
Am Schönebach 3  
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<b>Paragliding rescue-parachute: Hanggliding rescue-parachute:</b>	Piccolo EVO	Annular EVO 20	Annular EVO 22 Annular EVO 22 HG	Annular EVO 24 Annular EVO 24 HG	Annular EVO Tandem Annular EVO Tandem HG
Weight of the parachute (kg):	1,2	1,55	1,8	2,0	3,1
Surface (m²):	24	32	36	40	65
Number of lines / panels:	20	20	22	24	30
Length according to EN (m)	6,40	7,07	7,11 11,36	8,12 12,37	8,82 13,62
Max. Load (kg) according to LTF:	100	100	130	160	230
Sinkrate at max. load (LTF)	6,5 m/s at 85 kg	5,45m/s	5,67 m/s	6,20 m/s	6,10 m/s
Max. load (kg) according to EN (sinkrate 5,5 m/s)	-	100 at sinkrate of 5,45 m/s	120 at sinkrate of 5,5 m/s	135 at sinkrate of 5,5 m/s	195 at sinkrate of 5,5 m/s
Volume (Milliliter), without bridle	3700	4500	5000	5500	8400

## 2. Purpose

The emergency parachutes are manually-released parachutes for paraglider / hangglider (HG version) pilots in an emergency situation while flying. Annular EVO Tandem / Tandem HG (also called Annular30 / Annular 30 HG) are for biplace paragliders / hanggliders. All other models of the EVO series are for single seated paragliders / hang gliders.

## 3. Conditions of use

Maximum speed for usage: 115 km/h (32 m/s)

Interval for repacking: 12 month, then the rescue parachute has to be repacked and this repacking has to be recorded in the "Repack and inspection log book".

Interval of inspection: 24 month, then a complete inspection of the rescue parachute is necessary. The inspection have to be recorded in the "Repack and inspection log book".

Operational lifespan of parachute: 10 years. The lifespan can be extended for 2 more years if the rescue parachute is inspected yearly during this last two years. So the total max. possible lifespan is 12 years.

## 4. Necessary documentation:

a) Owner's manual

b) Repack and inspection log book (with recorded repack and inspection jobs).

## 5. Mode of operation:

During an emergency situation while flying the pilot pulls at the release handle with a firm tug. Thereby the outer container opens and the rescue parachute is released. After that the rescue parachute package (which is still packed in it's deployment bag) have to be thrown with a dynamic move into the free air-space. That means the release handle have to be thrown away together with the rescue parachute package!!!

The deployment bag, together with the integrated drogue parachute and the connection bridle, is designed in a way which releases the lines and canopy of the parachute not before the parachute package is thrown away.

This prevents an unintentional or too early opening of the rescue parachute. This is minimizing the danger of tangling up with the paraglider, the pilot or the reason which maybe causal for the emergency case (e.g. collision with another paraglider).

Moreover the maximum throwing speed of the deployment bag should be reached when the deployment bag leaves the pilot hand.

In general: The faster the rescue parachute package is thrown away, the quicker the parachute will open.

After the throw first the drogue-parachute at the deployment bag opens, then the deployment bag open itself. The powerful throw and/or the airstream elongates the lines and the canopy and the rescue parachutes opens.

After the rescue parachute is opened completely, you first have to check the altitude above ground.

If you have still enough height you should try to make the paraglider unable to fly according to the doctrine, to avoid an V-position of the paraglider and the rescue parachute.

If you do not have enough height anymore, just focus on the ground and prepare yourself for the landing fall.

## 6. Inspection of the parachute

A parachute must be controlled by a registered packer before it is packed. After being opened during an emergency rescue, the parachute must be inspected by the manufacturer or a workshop which is authorized by the manufacturer. A packed parachute which is to be repacked, should undergo a release test. This establishes whether the power of the release is between 2 kp and 7 kp.

## 7. Behaviour if damages are noticed

If you notice any damage at the rescue parachute, which may affect the airworthy condition of the rescue parachute, you have to send the rescue parachute for inspection/repair to the manufacturer. Also, if you are not sure about the airworthy condition in any way, you have to send the parachute to the manufacturer.

Attention: Chemicals, detergents, insects, mould stains or the like can have the same negative effects to the strength of the parts as mechanical influences.

## 8. Storage

Oil, grease, acid and paint should not be stored near the parachute. The storage space should be dry. Parachutes which have not been used for a long period of time should be opened and the canopy loosely rolled and stored in a bag. Avoid unnecessary high temperature (e.g in a parking car)!

## 9. Maintenance

The lifespan and condition depends mainly upon how carefully you handle and maintain your parachute. Out of this reason we recommend to control the parachute regularly, at the latest if it is repacked, if there are any wears or damages.

During normal use you have to take care of the following points:

If the parachute got wet, you have to open it and dry it at a well-ventilated place as soon as possible (but avoid direct sunlight!) The fast drying is important to avoid mould stains. After the parachute is complete dry it can be repacked.

If the parachute is strained more than normal (for example: a car drove over the harness in which the parachute is placed, or it maybe is damaged by a sharp object, or any other possible damage), you have to send the parachute to the manufacturer to check it.

Avoid contact with salt water, acids or other aggressive substances!

Also avoid unnecessary exposure to sunlight, cause the UV rays may damage the molecular structure of the material.

## 10. Cleaning

A dirty canopy and container can be carefully cleaned with clear water and a soft sponge.

Attention: Never use detergents, chemicals, brushes or hard sponges to clean the parachute! Also a cleaning in the washing machine is not allowed.

If the rescue parachute gets in contact with salt water, you have to wash it with fresh water. A too often cleaning accelerates the ageing of the system.

## 11. Repairs

Repair jobs have to be done only by the manufacturer or a workshop which is certified by the manufacturer.

## 12. Nature and environment friendly behaviour

Please do our nature-near sport in a way which do not stress nature and environment!

Please do not walk beside the marked ways, don't leave your litter, don't make unnecessary loud noises and respect the sensitive balance in the mountains. Especially at the take-off we have to take care for the nature!

## 13. Environmentally compatible waste disposal

The materials of which a rescue-parachute is made require a special waste disposal. So please send disused parachutes back to us. We will care about an professional waste disposal.

## 14. Spare parts / changeable parts

Beside the rubber bands the Annular Evo series do not need any other spare parts. Only certified rubber bands sized 30mm x3mm x1mm are allowed! This special rubber band you can get from us very well priced.

Beside an usage of a deployment bag as mentioned at point 18.4, the deployment bag is part of the rescue parachute. It's not allowed to use an other rescue parachute deployment bag model of other manufacturers. A change to an other deployment bag will cancel the operating license of the rescue parachute!

If you loose the deployment bag, because you have used your parachute in case of emergency or while doing a safety course, you have to replace it with a new original deployment bag.

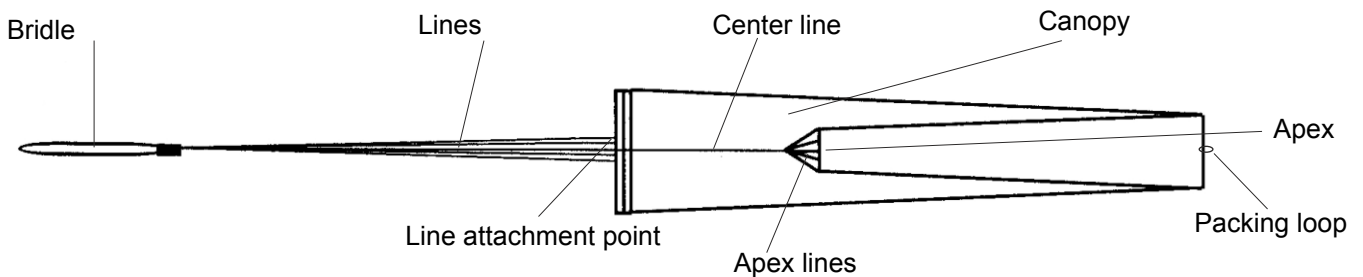
## 15. Structure of the parachute

The parachute has, depending on the model 20, 22, 24, 30 segments (see technical data).

The canopy is made of tear resistant, high-strength nylon fabric. The seams at the canopy are flat-fell seams. The base and the apex are reinforced with a band.

The lines are sewn to the canopy, and reinforced with V-tapes at the canopy. The apex is pulled in by the center line. The center line and all other lines are connected to the bridle.

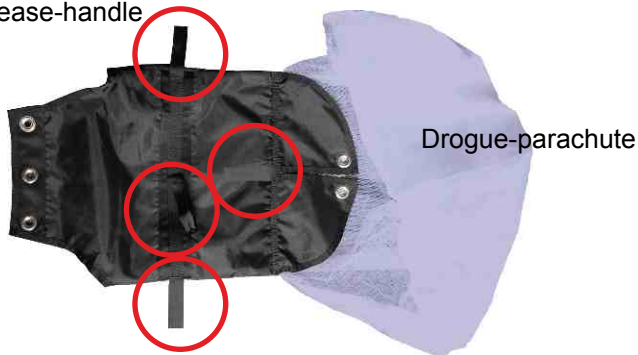
The bridle has a strength or more than 2400 kp. Hanggliding models only differ from paragliding models by a much longer bridle.



The deployment bag is made of nylon fabric and gets closed at three points. The small drogue-parachute is integrated to the innercontainer.

On the flat side of the deployment bag are four loops. At one of these loops the release-handle of the outercontainer or the harness is attached

Attachment points for release-handle



The outercontainer is made of robust, water-repellent Nylon fabric. It consists of 2 lateral flaps, the upper and lower flap, the release-handle with 2 pins, which close the container.



Backside of the outercontainer, with attachment-points



## 16. Packing the parachute



1. Slide on the packing-loops on a line (packing cord), and hook it in.



2. Gore 10 (Piccolo, Annular EVO 20) have to be put on the right side.

Annular EVO 22/22HG: gore 11

Annular EVO 24/24HG: gore 12

Annular EVO Tandem/ Tandem HG: gore 15



3. Lay all gores to the right, until gore 1 (stamped gore) is on the top, then put a weight (sand bag) on it.



4. Fold the left side onto the right side.



5. Now fold all gores of the left side.



6. When all gores are folded properly put a weight (sand bag) on both sides.





7. Check that line 1 and 20 (Annular EVO 20) and the center line are not twisted and running free. (Annular EVO 22/22HG: 1 and 22; Annular EVO 24/24HG: 1 and 24; Annular EVO Tandem/ Tandem HG: 1 and 30)



8. Fold the parachute like a "S", and pull out the Ram-Air-Pockets a little bit to the side.



9. Remove the packing cord!



10. Stow the top canopy into the deployment bag.



11. Fold the rest of the canopy in small S-folds and place it in front of the deployment bag.



12. Put the S-folded canopy in the deployment bag.





13. Bundle the lines in 3x3 "8-shapes". Do not bundle the last 60cm of the lines.

**Attention: You have to use new rubber bands for the line-bundles and the deployment bag everytime the parachute is packed.**



14. Close the deployment bag with the lines. First in the middle then the sides. The last 30cm lines are used to close the drogue chute.



15. Roll in the drogue chute.



16. Close the flaps of the drogue parachute with the rest of the lines.

## 17. Mounting in an outercontainer



1. Connect the release handle at the loop in the middle of the deployment bag. Place the bridle at the side of the container which you prefer.



2. Close the two lateral flaps of the outercontainer with two packing-cords and closed it with the pins of the handle provisionally.





3. Close the upper and lower flap with the pins. Remove the packing cords then!

4. Close the upper flap finally. Notice the packing in the “repack and inspection log book”.

5. To avoid an unintentional opening, the German type approval (LTF) prescribe a minimum release-force of 20 N. If the system does not have this minimum release-force, it is necessary to build in a predetermined breaking point (special thread). This have to define a minimum release force of 20 N.

The special thread which is used as predetermined breaking point must be put through the hole of the pin and around the loop as shown on the picture.

Both ends of this special thread are fixed with a knot and an additional seal.

To secure the pin it is only allowed to use certified material because if the strength of this material is too high the save operation of the rescue system is not guaranteed.

This thread is supplied by Fly market GmbH & Co. KG! **Do not use** other threads which may look the same!



## 18. Mounting / integration to a harness

### For harnesses without integrated rescue container:

If the harness does not have an integrated rescue container you can use the outercontainer which is shown at point 15. This outercontainer shown at point 15 has got several loops, eyelets and velcro-tapes on it's back side to attach it at the harness. The possibilities of the attachment to the harness depends on the harness. For a correct mounting you have to read the manual of the harness.

### Usage of a frontcontainer / outercontainer of an other manufacturer.

The possible usage of a frontal container or of an outercontainer of an other manufacturer depends on the size and if the container is certified. If the container is too small or not certified the operating license of the rescue parachute expires. If it is a container of an other manufacturer you have to read the manual of the container. For attaching it to the harness you have to read the manual of the harness.

### For harnesses with integrated rescue container:

Almost all modern harnesses have an intergrated rescue container in which a rescue parachute can be placed. For the correct mounting of the rescue parachute in such a container you have to read the manual of the harness.

## 18.4 Harnesses with combined deployment bag/release handle

Several harnesses are equipped with a complete release handle/deployment bag system, which is adapted optimally to the corresponding harness.

For such systems the size of the deployment bag maybe have to be adjusted to the size of the rescue parachute. The therefore necessary volume values of the rescue parachute can be found in this manual at "1. Technical Data"

The rescue-parachute has to be packed according to point 16, picture 1 - 9. The further process of packing it into the harness-specific deployment bag have to be done according to the harness' manual.

### Attention:

If the parachute is mounted to a harness or a front/outer container you have to check the compatibility. This check is only allowed to be done by therefore authorized persons. The compatibility check have to be noticed in the "Repack and inspection log book".

Beside some other points you have to take care particularly that the connection length of the release handle to the innercontainer is minimized. Therefore are three loops at the deployment bag at which the release handle can be attached. You should always try to use the shortest possible connection to ensure that the rescue parachute can be thrown as good as possible. But you also have to take care that the release out of the container is not hinderd in any way. (take care that the release pin does not block!!!). Read the manual of the harness in any way.

## 19. Specialities for paraglider's winch towing

For winch towing you have to consider the instructions of the harness-, paraglider- and towing release manufacturer! If you use a frontcontainer you have to ensure that the rescue parachute can be released in every situation.

## 20. Biplace flights

Only the Annular EVO Tandem (30) is certified for paragliding biplace flights. This rescue system has a very short bridle which has to be connected to the harness specific Y-bridle (usually by stowing). This harness specific Y-bridle should be "as short as possible and as long as necessary". Normally the harness manufacturer delivers a bridle with the correct length together with the harness. This V-bridle has to be connected to the rescue parachute and to the left and right side of the T-bar. (check manual of the harness!)

The strength of the bridle have to be certified and has to be at least 2400daN. So you have to take special care if you use an accessoire bridles.

Especially at biplace flights, you also have to ensure and check the compatibility of rescue parachute, harness and T-bar.

## 21. Pre-flight check

In addition to a normal preflight check (see manual of the glider/harness or maybe towing device), you have to check before every take off that the rescue container is closed correctly and the release handle is placed correctly.

If the rescue parachute connection bridle is removed after every flight (for example: when you use a frontcontainer) you also have to check the correct attachment of the bridle!



