

**Accident report of the German paragliding and hanggliding association (DHV)  
from October 5th 2021**

<b>Date</b>	August 12th 2021	<b>Time</b>	around 2:30 pm (local time)
<b>Country</b>	AT	<b>Site</b>	En route, Tennengebirge
<b>Pilot</b>	German; 59 Years old; experienced competition pilot; member of the German paragliding league		
<b>Equipment</b> PG <input checked="" type="checkbox"/> HG <input type="checkbox"/>	Gin Gliders Leopard L, EN/LTF D	<b>Laboratory</b>	DHV
<b>Weight range</b>	105-127 kg	<b>Take-off weight pilot</b>	unknown
<b>Harness</b>	Kortel Kanibal Race 2	<b>Reserve parachute</b>	Finsterwalder Diamond Cross 125 ST
<b>Injuries Pilot</b>	Fatal	<b>Injuries passenger</b>	-

A fatal accident occurred during the paragliding competition "Ikarus Open", which is held annually in Werfenweng / AT. A German league pilot fell into a spiral fall with a cravat, presumably as a result of a collapse. The reserve parachute, deployed very late, did not open. The pilot fell into high alpine terrain and suffered immediate fatal injuries on impact.

**Wind and weather**

Good cross-country flight conditions, according to statements from competitors not unusually turbulent.

**Accident sequence**

After taking off at the Bischlinghöhe take-off point, the pilot flew north over the Tennengebirge as part of the competition task. From there he flew west to turning point 1 of the task. On the way to turning point 2 to the east, he flew to the south side of the Tennengebirge again and gained approx. 600 m height in a thermal at the Eiskogel. At the end of the thermal ascent, he flew briefly to the East, when the disturbance occurred at an altitude of approx. 2500 m MSL, approx. 400 m above ground. None of the eyewitnesses observed the immediate cause of the cravat. However, 3 people who flew in the area noticed a very rapid transition into the spiral dive, caused by a small cravat. None of the eyewitnesses saw any reaction from the pilot to stop the spiral dive during this first part of the crash. A twist was also not observed, and the spiral dive was not like a SAT (as with large cravats), but similar to a steep spiral (typical for small cravats). After several very fast turns in the spiral dive, 2 of the 3 eyewitnesses noticed an extreme change in direction of the turn (original sound: "extreme turn to the opposite side", "loop to the other side") and another spiral dive, this time to the other direction. Shortly afterwards (witnesses estimate 6-8 seconds before the impact, 150 m above ground) the reserve parachute was deployed. The witnesses saw that the suspension lines of the reserve parachute were released ("a white ribbon that fluttered behind the pilot"), the reserve parachute did not come out of the inner container. It was a little to the side / above the pilot's position, but clearly below the paraglider canopy or the gallery lines. 2 of the 3 eyewitnesses clearly stated that the reserve parachute was not caught in the canopy or the gallery lines of the paraglider ("Retter-Fraß", reserve eaten by the canopy). In the still unbraked spiral dive (17 m / s) the pilot hit a high alpine scree field after a few more turns.

**Accident investigation**

**Flight equipment**

The accident investigation focused primarily on the question of why the deployed reserve parachute did not open.

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### Paraglider

The paraglider was subjected to a visual inspection. The impact had severely damaged the cell opening. There was no evidence of structural failure in flight.

### Harness

Regarding the issue of the reserve parachute deployment, following pertinent statements:

- The harness has an integrated reserve container on the left and right, the accident flight was carried out with only one reserve parachute in the right-hand container.
- The harness does not have an integrated inner container, but a deployment handle with a connecting line for looping into an inner reserve container.
- The deployment handle with the connecting line to the harness is more than 40 cm long. This is very long compared to most other handle designs.
- The rescue handle is comparatively strong structured. A stiff belt strap is attached at right angles to the plastic split pins, with which the handle is locked on the harness.
- The velcro tunnels to the shoulder suspension were closed. This shows that no load has been placed on the reserve lifeline lanyard.
- There were no indications that it was difficult to pull the reserve parachute out of the harness container.



*Picture 1 shows the length of the connection of 52 cm between the handle and the inner container (horizontal arrow) and the stiff strap that protrudes at right angles to the split pins (vertical arrow). In the background is an inner container of a different design with a much shorter length of less than 30 cm between handle and inner container.*

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*Picture 2 shows the deployment handle of the harness and the long connecting line to the inner container of the rescuer. The connection is also lengthened by the triangular cloth on the inner container.*



*Picture 3 shows that the length of the connecting line bring the heavily structured handle into the area of the released suspension lines before the reserve parachute is released.*

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*Picture 4 shows the strong and firm entanglement of the handle with the suspension lines of the reserve parachute. The accident equipment arrived at the DHV for investigation in this condition.*



*Picture 5 shows that the heavily structured release handle can cause a strong tangling / twisting with the reserve parachute 's suspension lines relatively easily and reproducibly (simulated).*

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### Reserve parachute

The reserve parachute, Finsterwalder Diamond Cross ST 125, is a steerable rescue parachute. The inner container is constructed in such a way that after the throw the suspension lines are released first, but the rescue parachute remains in the container. The container is only fully opened, and the reserve parachute released after the last suspension line has been stretched. That did not happen in the accident. The reserve parachute did not come out of the container before impact. An eyewitness saw the inner container, which was still locked with the last suspension line, when unloading the accident equipment from the helicopter. At the DHV, however, the reserve parachute arrived with the inner container open (but mostly in a packed state). The loop for looping the release handle is attached to a triangular cloth of 10 cm length on the inner container. This extends the connection between the handle and the inner container to 52 cm (see Pictures 1 and 2).

### Summary

After the reserve parachute was deployed, the inner container was prevented from opening and releasing the reserve parachute. The observations of the eyewitnesses and the technical investigation have given clear indications that the reason for the failure to open was an entanglement of the release handle with the suspension lines of the reserve parachute. This entanglement prevented the last suspension line from being pulled, which prevented the container from opening. **Note: See supplement 8.10.2021, page 7**

### Other

It is known from previous accident investigations that a long connection between the handle and the inner container is disadvantageous in several ways:

- A long haul is necessary before the inner container can be released from the harness container. With a 50 cm connection, around half of the arm span is required to pull it out - forcefully throwing the inner container away is not possible with the remaining arm span.
- The long connecting line is potentially dangerous because the deployment handle can then become entangled with the lines of the reserve parachute, as it probably happened in the present case. Entanglements with a riser or around the pilot's hand have also become known in the past with very long connecting lines.



*Picture 6 shows that a long connecting line from the handle to the inner container makes it difficult to throw the container because only a small arm span is available.*

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### Safety notes

1. State-of-the-art technology for the length of the connection between the handle and the inner container is a maximum of 30 cm. Modern, harness-specific inner containers also do not have a thin connecting line, but instead a short fabric triangle which, due to its short but wide design, cannot loop around the suspension lines of the reserve parachute.



*Pictures 7 and 8 show modern harness specific inner containers with a length of well under 30cm between the handle and the inner container with a fabric triangle instead of a thin connecting line.*

2. The accident shows again how important an individual harness and reserve parachute compatibility check is. In the case at hand, the very long connection between the handle and the inner container should have been noticed as problematic for the reserve parachute to be deployed. For the length of detachable connections (release handle of the harness is looped into the inner container), the following applies: As short as possible - to enable optimized throwing, as long as necessary - to ensure that the harness container (split pins) can be opened safely.

3. The case also shows that the connection between the handle and the inner container should not be so long that when deployed it can reach the area of the opening bundle of suspension lines.

4. Manufacturers and test laboratories are encouraged:

- to better observe the long-known problem of the long connection between the handle and the inner container, when designing and testing paraglider harnesses with the associated rescue handle. Connection lengths of 40 cm and more are unnecessary and potentially dangerous.

- Make sure that rescue device release handles do not have any stiff or protruding components that could become entangled /looped with the reserve parachute's suspension lines.

5. The committees responsible for the standardization of paragliding equipment (CEN standards and German airworthiness requirements, LTF) should specify a sensible, maximum permissible length of the connection between the handle and the inner container in the test regulations for paraglider harnesses and paraglider rescue equipment.

6. Pilots of high-performance paragliders and organizers of competitions should consider making it a rule to carry a second reserve parachute.

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7. Regarding the necessity of an early throw of the reserve parachute in the case of a cravat, please see this specialist article from DHV Info 229:

[https://www.dhv.de/fileadmin/user\\_upload/files/2021/Sicherheit\\_2021/Verhaenger-Du\\_hast\\_3\\_Sekunden.pdf](https://www.dhv.de/fileadmin/user_upload/files/2021/Sicherheit_2021/Verhaenger-Du_hast_3_Sekunden.pdf)

8. Training the pilot's reactions in cravat spirals is particularly important with high-performance paragliders (safety training over water)

### **Supplement 8.10.2021**

A photo of the unchanged accident site, only now available, shows the entanglement of the connecting line and deployment handle with the reserve suspension lines and the unopened inner container.



Gmund, October 5, 2021

Karl Slezak

DHV Safety and training