SLOVENSKI STANDARD
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Oprema za jadralno padalstvo - Jadralna padala - 2. del: Zahteve in preskusne metode za razvrščanje po značilnostih, pomembnih za varno letenje (vključuje dopolnilo A1)

Paragliding equipment - Paragliders - Part 2: Requirements and test methods for classifying flight safety characteristics

Ausrüstung für das Gleitschirmfliegen - Gleitschirme - Teil 2: Anforderungen und Prüfverfahren zur Klassifizierung der sicherheitsrelevanten Flugeigenschaften

Équipement pour le parapente - Parapentes - Partie 2 : Exigences et méthodes d'essai pour la classification des caractéristiques de sécurité en vol

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ICS:

97.220.40	Oprema za športe na prostem in vodne športe	Outdoor and water sports equipment

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Paragliding equipment - Paragliders - Part 2: Requirements and test methods for classifying flight safety characteristics

Équipement pour le parapente - Parapentes - Partie 2 : Exigences et méthodes d'essai pour la classification des caractéristiques de sécurité en vol

Ausrüstung für das Gleitschirmfliegen - Gleitschirme - Teil 2: Anforderungen und Prüfverfahren zur Klassifizierung der sicherheitsrelevanten Flugeigenschaften

This European Standard was approved by CEN on 14 September 2013 and includes Amendment 1 approved by CEN on 10 August 2020.

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This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
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European foreword

This document (EN 926-2:2013+A1:2021) has been prepared by Technical Committee CEN/TC 136 “Sports, play-ground and other recreational facilities and equipment”, the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by June 2022, and conflicting national standards shall be withdrawn at the latest by June 2022.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document includes Amendment 1 approved by CEN on 2020-08-10.

This document supersedes [A1] EN 926-2:2013. [A1]

The start and finish of text introduced or altered by amendment is indicated in the text by tags [A1] [A1].

In comparison with the previous edition EN 926-2:2005, the following significant changes have been made:

— editorial revision;
— introduction of new definitions;
— modification of paraglider's classification;
— update of marking;
— introduction of additional lines paragraph;
— harness dimensions have been modified;
— test methods for asymmetric and symmetric collapse have been improved;
— update of test method for behaviour exiting a fully developed spiral dive.

This document is one of a series of standards on equipment for paragliding as follows:

— EN 926-1, *Paragliding equipment — Paragliders — Part 1: Requirements and test methods for structural strength*
— EN 926-2, *Paragliding equipment — Paragliders — Part 2: Requirements and test methods for classifying flight safety characteristics*
— EN 1651, *Paragliding equipment — Harnesses — Safety requirements and strength tests*
— EN 12491, *Paragliding equipment — Emergency parachutes — Safety requirements and test methods*

Any feedback and questions on this document should be directed to the users’ national committee. A complete listing of these bodies can be found on the CENELEC website.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

1 Scope

This document specifies requirements and test methods for classifying the flight safety characteristics of paragliders in terms of the demands on pilot flying skills.

This document is intended for the use of independent testing laboratories qualified for flight testing paragliders.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 926-1, *Paragliding equipment - Paragliders - Part 1: Requirements and test methods for structural strength*

EN 966, *Helmets for airborne sports*

EN 1651, *Paragliding equipment — Harnesses — Safety requirements and strength tests*

EN 12491, *Paragliding equipment - Emergency parachutes - Safety requirements and test methods*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at http://www.electropedia.org/
- ISO Online browsing platform: available at http://www.iso.org/obp

3.1
paraglider
ultralight glider with no primary rigid structure, for which take-off and landing are on foot, with the pilot (and potentially one passenger) carried in a harness (or harnesses) connected to the wing

3.2
harness
assembly composed of straps and fabric for supporting the pilot in the seated or semi-recumbent or standing position

Note 1 to entry: The harness is attached to the wing via two rings or connectors; it can also be integral with the wing via risers.

3.3
emergency parachute
emergency device intended to slow the descent of a paraglider pilot in the event of an incident in flight, which is deployed by the pilot by an intentional manual action

Note 1 to entry: This may be unsteered or steerable.

3.4
controls
primary steering and speed controls which are designated as such by the manufacturer

3.5
trimmer
lockable pitch adjustment system

Note 1 to entry: Action by the pilot is required to return it to the initial position.

3.6
accelerator
secondary pitch control mechanism generally operated by the feet, which automatically returns to the initial position when the action of the pilot stops

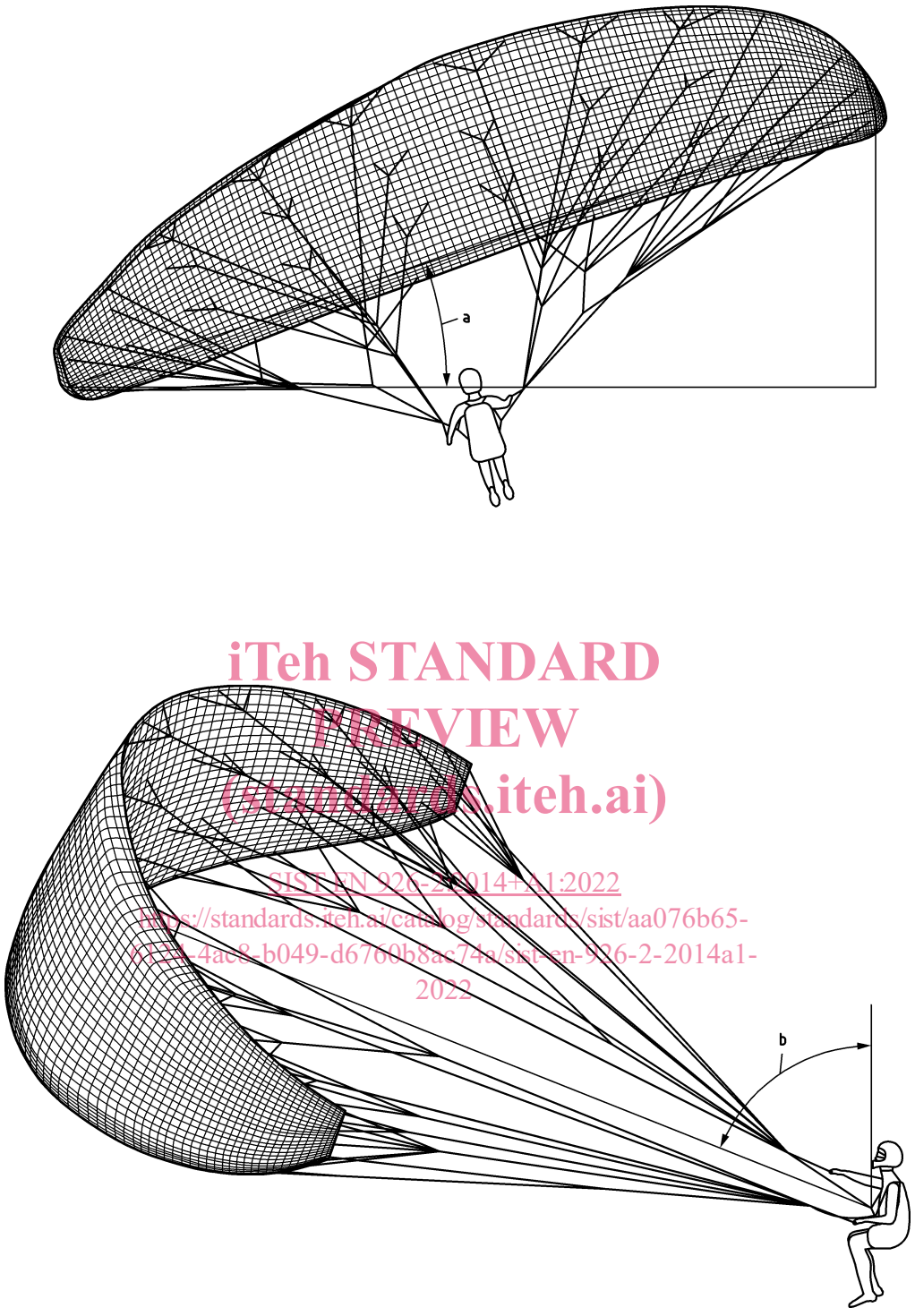
3.7
accelerator fully activated
when the mechanical limits of the glider are reached and further action on the accelerator does not result in a further decrease of the angle of attack

3.8
action of the pilot
any transfer of weight, action on the controls, the accelerator or on the trimmer

3.9
normal flight
flight condition in which the paraglider is fully inflated and is following a trajectory close to straight flight (at a speed close to trim speed) without any action on the part of the pilot

Note 1 to entry: A small number of cells may still be collapsed.

3.10
spiral dive
flight condition in which the paraglider is fully inflated and is following a circling, steep, nose down trajectory with pitch angle of more than 70° and the angle of the span relative to the horizontal between 0° and 40° as illustrated in Figure 1



Key

a angle of the span relative to the horizon

b pitch angle

Figure 1 — Illustration of a spiral dive

3.11
spontaneous recovery
when the paraglider returns to normal flight without any action on the part of the pilot

3.12
front collapse
folding under of the leading edge such that the top surface is visible to the pilot

Note 1 to entry: Deformation of the leading edge is not considered to be a front collapse.

3.13
cascade
transition from one involuntary abnormal flight condition to another involuntary abnormal flight condition

3.14
minimum speed
slowest airspeed maintainable without entering a deep stall or full stall

3.15
trim speed
airspeed of the paraglider in straight flight without activating the controls or the accelerator

3.16
maximum speed
airspeed of the paraglider in straight flight with the controls in the zero position and the accelerator fully activated

Note 1 to entry: Maximum speed is only used when referring to gliders equipped with an accelerator.

3.17
low speed
airspeed of the paraglider in straight flight with the controls at 50 % of travel between the zero and the symmetric stall position, i.e. 50 % of the symmetric control travel

3.18
weight in flight
total weight (mass) of the pilot and his entire paragliding equipment (including the glider) ready to fly

Note 1 to entry: For the purposes of this document, masses are indicated in kilograms rounded to the nearest integer value.

3.19
additional lines
cross lines or folding lines used to help the test pilot in achieving specified manoeuvres

3.20
cross line
single line going from one riser to any position on an opposite A-line or A-line attachment point

3.21
folding lines
〚A1〛 copy of the A-lines (with two allowed exceptions) used to help the test pilot achieving specific manoeuvers

Note 1 to entry: The allowed exceptions are that the number of upper level lines may be increased and the length of the upper level of lines may be altered by up to 100 mm to ensure that the profile of the glider is undeformed and the collapse follows the required pattern. 〚A1〛

4 Requirements

4.1 Paraglider classes

The class of a paraglider is determined according to 4.2.

The class is intended to give pilots a guideline on whether a paraglider is suitable for their level of skill (see Table 1).

Table 1 — Description of the paraglider classes

Class	Description of flight characteristics	Description of pilot skills required
A	Paragliders with maximum passive safety and extremely forgiving flying characteristics. Gliders with good resistance to departures from normal flight.	Designed for all pilots including pilots under all levels of training.
B	Paragliders with good passive safety and forgiving flying characteristics. Gliders with some resistance to departures from normal flight.	Designed for all pilots and may be suitable for pilots under training if recommended by the manufacturer.
C	Paragliders with moderate passive safety and with potentially dynamic reactions to turbulence and pilot errors. Recovery to normal flight may require precise pilot input.	Designed for pilots familiar with recovery techniques, who fly "actively" and regularly, and understand the implications of flying a glider with reduced passive safety.
D	Paragliders with demanding flying characteristics and potentially violent reactions to turbulence and pilot errors. Recovery to normal flight requires precise pilot input.	Designed for pilots well practised in recovery techniques, who fly very actively, have significant experience of flying in turbulent conditions, and who accept the implications of flying such a wing.

4.2 Classification of flight characteristics

When testing in accordance with the procedures 5.5.18.1 to 5.5.18.23, various aspects of the paraglider's behaviour are measured. These measurements are classified according to 4.4.1 to 4.4.24.

The class of a paraglider according to this document is determined by the highest classification obtained, i.e. by the highest level of pilot skill required (see Table 1).

4.3 Failure

The glider has failed the test procedure if either:

a) as a consequence of tests 5.5.18.1 to 5.5.18.23 any failure of any part or component occurs;

b) the results of any of the tests 5.5.18.1 to 5.5.18.23 are not classified A, B, C or D.

NOTE In the classification tables in 4.4.1 to 4.4.24 the letter "F" (failed) is used to identify unacceptable behaviour.

4.4 Flight characteristics

4.4.1 Inflation/take-off

When tested in accordance with 5.5.18.1, it is found out how difficult it is to take-off with this glider (including checking for undesirable tendencies).

The behaviour of the paraglider is measured according to Table 2 and classified according to Table 3.

Table 2 — Measurements and possible ranges in the inflation/take-off test

Measurement	Ranges
Rising behaviour	Smooth, easy and constant rising, no pilot correction required
	Easy rising, some pilot correction is required
	Overshoots, shall be slowed down to avoid a front collapse
	Hangs back
Special take-off technique required	No
	Yes

Table 3 — Classification of a paraglider's behaviour in the inflation/take-off test

Measurement and ranges (according to Table 2)	Classification
Rising behaviour	—
Smooth, easy and constant rising	A
Easy rising, some pilot correction is required	B
Overshoots, shall be slowed down to avoid a front collapse	C
Hangs back	D
Special take-off technique required	—
No	A
Yes	C

4.4.2 Landing

When tested in accordance with 5.5.18.2, it is found out how difficult it is to flare and land this glider (including checking for undesirable tendencies).

The behaviour of the paraglider is measured according to Table 4 and classified according to Table 5.

Table 4 — Measurements and possible ranges in the landing test

Measurement	Ranges
Special landing technique required	No
	Yes

Table 5 — Classification of a paraglider's behaviour in the landing test

Measurement and ranges (according to Table 4)	Classification
Special landing technique required	—
No	A
Yes	D

4.4.3 Speeds in straight flight

When tested in accordance with 5.5.18.3, it is made sure that the paraglider is not too slow (hands up) and that an adequate speed range is achievable using the controls only (not activating the accelerator).

The behaviour of the paraglider is measured according to Table 6 and classified according to Table 7.

(The speeds recorded in this test are not to be published.)

Table 6 — Measurements and possible ranges in the speeds in straight flight test

Measurement	Ranges
Trim speed more than 30 km/h	Yes
	No
Speed range using the controls larger than 10 km/h	Yes
	No
Minimum speed	Less than 25 km/h
	25 km/h to 30 km/h
	Greater than 30 km/h

Table 7 — Classification of a paraglider's behaviour in the speeds in straight flight test

Measurement and ranges (according to Table 6)	Classification
Trim speed more than 30 km/h	—
Yes	A
No	F
Speed range using the controls larger than 10 km/h	—
Yes	A
No	F
Minimum speed	—
Less than 25 km/h	A
25 km/h to 30 km/h	B
Greater than 30 km/h	D

4.4.4 Control movement

The paraglider shall have acceptable control force and control travel.

When tested in accordance with 5.5.18.4, the glider's control force and control travel are measured according to Table 8 and classified according to Table 9.

Table 8 — Measurements and possible ranges in the control movement test

Measurement	Ranges		
Symmetric control pressure	Increasing		
	Approximately constant		
	Decreasing		
Symmetric control travel (cm)	max. weight in flight up to 80 kg	max. weight in flight 80 kg to 100 kg	max. weight in flight greater than 100 kg
	Greater than 55	Greater than 60	Greater than 65
	40 to 55	45 to 60	50 to 65
	35 to 40	35 to 45	35 to 50
	Less than 35	Less than 35	Less than 35

Table 9 — Classification of a paraglider's behaviour in the control movement test

Measurement and ranges (according to Table 8)				Classification
Symmetric control pressure	Symmetric control travel (cm)			—
	max. weight in flight up to 80 kg	max. weight in flight 80 kg to 100 kg	max. weight in flight greater than 100 kg	—
Increasing	Greater than 55	Greater than 60	Greater than 65	A
Increasing	40 to 55	45 to 60	50 to 65	C
Increasing	35 to 40	35 to 45	35 cm to 50	D
Increasing	Less than 35	Less than 35	Less than 35	F
Approximately constant	Greater than 55	Greater than 60	Greater than 65	B
Approximately constant	40 to 55	45 to 60	50 to 65	C
Approximately constant	35 to 40	35 to 45	35 to 50	F
Approximately constant	Less than 35	Less than 35	Less than 35	F
Decreasing	any	any	any	F

4.4.5 Pitch stability exiting accelerated flight

This test is only required for paragliders equipped with an accelerator.

When tested in accordance with 5.5.18.5, it is checked that the paraglider returns to normal flight when the accelerator is quickly released.

The behaviour of the paraglider is measured according to Table 10 and classified according to Table 11.

Table 10 — Measurements and possible ranges in the pitch stability exiting accelerated flight test

Measurement	Ranges
Dive forward angle on exit	Dive forward less than 30°
	Dive forward 30° to 60°
	Dive forward more than 60°
Collapse occurs	Yes
	No

Table 11 — Classification of a paraglider's behaviour in the pitch stability exiting accelerated flight test

Measurement and ranges (according to Table 10)	Classification
Dive forward angle on exit	—
Dive forward less than 30°	A
Dive forward 30° to 60°	C
Dive forward more than 60°	F
Collapse occurs	—
No	A
Yes	F

4.4.6 Pitch stability operating controls during accelerated flight

This test is only required for paragliders equipped with an accelerator.

When tested in accordance with 5.5.18.6, the behaviour of the paraglider after activating the controls in accelerated flight is checked.

The behaviour of the paraglider is measured according to Table 12 and classified according to Table 13.

Table 12 — Measurements and possible ranges in the pitch stability operating controls during accelerated flight test

Measurement	Ranges
Collapse occurs	No
	Yes

Table 13 — Classification of a paraglider's behaviour in the pitch stability operating controls during accelerated flight test

Measurement and ranges (according to Table 12)	Classification
Collapse occurs	—
No	A
Yes	F