

CIVIL AVIATION OFFICE

CIVIL AIRCRAFT INSPECTION BOARD

BG - 143/1
SZD-51-1"JUNIOR"
Issue 4
March 8, 2004

TYPE CERTIFICATE DATA SHEET

to Type Certificate No **BG-143/1**, of 25.03.2002

This Data Sheet constitutes the part of the Type Certificate No BG-143/1. It contains basic technical data, and defines operation conditions and limitations within which the glider, for which this document has been issued, complies with airworthiness requirements referred to in certification basis.

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1. **Glider model:** SZD-51-1 "Junior"
2. **Designer:** Przedsiębiorstwo Doswiadczalno- Produkcyjne Szybownictwa "PZL-Bielsko"
43-300 Bielsko-Biala, ul. Cieszyńska 325
3. **Type Certificate holder:** Allstar PZL Glider Sp. z o.o.
43-300 Bielsko-Biala, ul. Cieszyńska 325
4. **Base for operation allowance:** Type Certificate No **BG-143/1**
of March 25, 2002
5. **Glider Category:** Utility „U”
6. **General description:** SZD-51-1 „Junior” is a single seat, Utility category glider for primary and advanced training.
All composite, glass-epoxy structure.
Sandwich wing skin (composite -PVC foam-composite).
Shoulder wing with „T”-tail arrangement. Glider equipped with Schempp-Hirth air brake extending on top wing surface only, non sprung fixed landing wheel 400x140mm size and 200mm diameter tail wheel.

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B**7. Dimensions:**

- wing span	15.00	[m]
- length	6.69	[m]
- height	1.30	[m]
- wing area	12.51	[sqm]
- horizontal tailplane area	1.55	[sqm]
- vertical tailplane area	1.14	[sqm]
- Mean Standard Chord (MSC)	0.880	[m]
- Root Chord (RC)	1.115	[m]

8. Standard equipment:

- airspeed indicator	PR-250 S
- altimeter	W-10 S or W-12 S
- variometer	WRS-5 D or PR-03
- compensator	KWEC-2
- turn & bank indicator	EZS-2 or EZS-4
- compass	BS-1 or KI-13
- tow hooks	2 hooks SZD-III or TOST type
- safety belts	J5-00-00
- seat cushion	

This glider is adopted for installation of:

- transceiver
- oxygen equipment

C**9. Mass:**

maximum all-up mass:		380	[kg]
empty mass with standard equipment	minimum:	200	[kg]
	maximum	240	[kg]
minimum wing mass:		105¹⁾	[kg]
crew mass (pilot + parachute):	minimum:	55	[kg]
	maximum	110	[kg]
allowed baggage mass:		30	[kg]

¹⁾ Minimum wing mass is 105 kg. In case of wing mass below 105 kg, the maximum allowed all-up mass must be corrected appropriately.

10. Center of Gravity position:

The in-flight allowed range of C.G. position:

- front limit **28.7** [cm], corresponding to **22.7** % MSC
- rear limit **48.2** [cm], corresponding to **44.9** % MSC

C.G. position measured in reference to datum point. Datum point is wing leading edge at root rib. Leading edge of Mean Standard Chord is 8.7 cm aft of datum point.

For weighing, the wing chord at root rib must be set horizontal.

Installation of fixed ballast is provided, to retain the C.G. position of empty glider within the allowed limits.

(Installation of fixed ballast shall be recorded in the Weighing Protocol)

11. Airspeed limitations (IAS):

AIRSPEED		[km/h]
never exceed speed	V_{NE}	220
manoeuvring speed	V_A	155
rough air speed	V_{RA}	155
maximum winch launching speed	V_W	130
maximum aerotowing speed	V_T	150
maximum air brake extending and operating speed	smooth air	220
	rough air	155

12. The verified cross-wind velocity in take-off and landing: **15** [km/h]

13. Limit manoeuvring load factors:

- at manoeuvring speed $V_A = 155$ [km/h] **+5.30 g**
- at maximum diving speed $V_{NE} = 220$ [km/h] **+4.20 g**

NOTE: The above refers to glider smooth configuration (with air brake retracted).

With air brake extended, the positive limit factor of manoeuvring load is **+3.5**, over the whole range of operational airspeed.

14. The allowed aerobatic manoeuvres:

- Loop
- Stall turn
- Climbing turn
- Lazy eight
- Steep turns
- Spin

15. Safety link:

While aerotowed, the BZ-2 type safety link with rated strength of $690 \pm 10\%$ [kG] ($677 \pm 10\%$ [daN]), according to BN-65/3833-45 (branch standards) shall be used.

16. Limitations:

The glider is certified in "Utility" category, and intended for normal soaring flights in VFR conditions, by day.

The following are prohibited:

- night flying
- flying in icing conditions

Winch launched take offs, with C.G. hook only.

17. Control surfaces deflection:

a) Elevator

- up $40^{\circ} \pm 2^{\circ}$
- down $20^{\circ} \pm 2^{\circ}$

b) Rudder

- left $35^{\circ} \pm 2^{\circ}$
- right $35^{\circ} \pm 2^{\circ}$

c) Aileron

- up $30^{\circ} \pm 2^{\circ}$
- down $15^{\circ} \pm 1^{\circ}$

d) Airbrake

181 ± 5 [mm] – measured in reference to wing top surface

D**18. Certification basis :**

JAR-22, issue of April 1, 1980, with Change 3, effective since January 31, 1983.

19. Manuals, respectively:

- Fact. Nos X-132, and B-1495 through B-2150:
 - "Flight Manual", issue I, December 1984
 - "Technical Service Manual", issue I, December 1984
 - „Repair Manual”, issue I, December 1984
- Fact. Nos from B-2151 up:
 - "Flight Manual", issue I/JAR-22, January 1995
 - "Technical Service Manual", issue I/JAR-22, April 1995

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20. The glider external surfaces should have the white, not getting yellow, painting coat.

21. The colour markings on upper surfaces of wing and tailplane not allowed.

22. This Data Sheet is valid for Fact. Nos:

X-132, B-1495 ÷ B-1616; B-1767 ÷ B-2193, W-927 ÷ W-964;
511199243; 511199244, from 511A03001 up.

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