TYPE-CERTIFICATE

DATA SHEET

NO. EASA.A.319

for
Jeżów sailplanes

Type Certificate Holder:
Zakład Szybowcowy „Jeżów”
Henryk Mynarski

ul. Długa 93
58-521 Jeżów Sudecki
POLAND

Models:

SZD-9 bis 1D “Bocian”
SZD-9 bis 1E “Bocian”
SZD-22B “Mucha Standard”
SZD-22C “Mucha Standard”
SZD-24C “Foka”
SZD-24-4 “Foka 4”
SZD-24-4A “Foka 4”
SZD-25A “Lis”
SZD-30 “Pirat”
SZD-30C “Pirat”
SZD-32A “Foka 5”
SZD-36A “Cobra 15”
SZD-38A “Jantar 1”
SZD-41A “Jantar Standard”
SZD-42 “Jantar 2”
SZD-42-1 “Jantar 2”
SZD-42-2 “Jantar 2B”
SZD-45A “Ogar”
SZD-45AM “Ogar”
SZD-48 “Jantar Standard 2”
SZD-48M “Jantar Standard 2M”
SZD-48-1 “Jantar Standard 2”
SZD-48-1M “Jantar Standard 2M”
SZD-48-3M “Brawo”
SZD-48-3M1 “Brawo”
SZD-52-3 “Krokus S”
SZD-52-4 “Krokus”

Table of Content

Section A: SZD-9 bis 1D "Bocian"

A.I. General

1.	a) Type: b) Model:	Jeżów sailplanes SZD-9 bis 1D "Bocian"
2.	Airworthiness Category:	Sailplane, Utility "U"
3.	Type Certificate Holder:	Zakład Szybowcowy „Jeżów" Henryk Mynarski ul. Długa 93 58-521 Jeżów Sudecki POLAND
4.	Manufacturer:	Zakłady Sprzętu Lotnictwa Sportowego nr 2 w Jeżowie ul. Długa 93 58-521 Jeżów Sudecki POLAND Zakłady Sprzętu Lotnictwa Sportowego nr 5 w Krośnie (later: Wytwórnia Sprzętu Komunikacyjnego Krosno) ul. Żwirki i Wigury 6 38-400 Krosno POLAND
5.	Type Certification Date:	12 October 1960

6. **For technical details and limitations refer to the Polish CAA TCDS No. 11/TL/60, Issue 12.10.1960.**

A.II. Notes

1. Operation of the sailplane according to the Service Bulletin No. BE-032/2003 issued on 10.09.2003.

Section B: SZD-9 bis 1E “Bocian”

B.I. General

1.	a) Type: b) Model:	Jeżów sailplanes SZD-9 bis 1E “Bocian”
2.	Airworthiness Category:	Sailplane, Utility “U”
3.	Type Certificate Holder:	Zakład Szybowcowy „Jeżów“ Henryk Mynarski ul. Długa 93 58-521 Jeżów Sudecki POLAND
4.	Manufacturer:	Zakład Szybowcowy w Jeżowie Sudeckim ul. Długa 93 58-521 Jeżów Sudecki POLAND
5.	Type Certification Date:	11 November 1967

6. **For technical details and limitations refer to the Polish CAA TCDS No. BG-036/2, Issue 1 dated on 22 March 2004.**

B.II. Notes

1. Operation of the sailplane according to the Service Bulletin No. BE-032/2003 issued on 10.09.2003.

Section C: SZD-22B “Mucha Standard”

C.I. General

1.	a) Type: b) Model:	Jeżów sailplanes SZD-22B “Mucha Standard”
2.	Airworthiness Category:	Sailplane, Utility “U”
3.	Type Certificate Holder:	Zakład Szybowcowy „Jeżów“ Henryk Mynarski ul. Długa 93 58-521 Jeżów Sudecki POLAND
4.	Manufacturer:	Zakłady Sprzętu Lotnictwa Sportowego nr 5 w Krośnie ul. Żwirki i Wigury 6 38-400 Krosno POLAND
5.	Type Certification Date:	25 May 1960

6. **For technical details and limitations refer to the Polish CAA TCDS No. 6/TL/60, Issue 25.05.1960.**

C.II. Notes

1. Operation of the sailplane according to the Bulletin No. BE-009/86 “Mucha” issued in 1986.

Section D: SZD-22C “Mucha Standard”

D.I. General

1.	a) Type: b) Model:	Jeżów sailplanes SZD-22C “Mucha Standard”
2.	Airworthiness Category:	Sailplane, Utility “U”
3.	Type Certificate Holder:	Zakład Szybowcowy „Jeżów“ Henryk Mynarski ul. Długa 93 58-521 Jeżów Sudecki POLAND
4.	Manufacturer:	Zakłady Sprzętu Lotnictwa Sportowego nr 5 w Krośnie ul. Żwirki i Wigury 6 38-400 Krosno POLAND
5.	Type Certification Date:	12 October 1960

6. **For technical details and limitations refer to the Polish CAA TCDS No. 13/TL/60, Issue 12.10.1960.**

D.II. Notes

1. Operation of the sailplane according to the Bulletin No. BE-009/86 “Mucha” issued in 1986.

Section E: SZD-24C “Foka”

E.I. General

1.	a) Type: b) Model:	Jeżów sailplanes SZD-24C “Foka”
2.	Airworthiness Category:	Sailplane, Utility “U”
3.	Type Certificate Holder:	Zakład Szybowcowy „Jeżów” Henryk Mynarski ul. Długa 93 58-521 Jeżów Sudecki POLAND
4.	Manufacturer:	Zakłady Sprzętu Lotnictwa Sportowego nr 4 we Wrocławiu ul. Lotnicza 14 54-155 Wrocław POLAND
5.	Type Certification Date	29 December 1961

6. This TCDS, Section E, replaces the TCDS EASA.A.319 issue 01, dated on 18.02.2010, which replaced Polish CAA TCDSs No.:
   - 8/TL/61 dated on 29 December 1961
   - 8/TL/64 dated on 17 July 1964

E.II. Certification Basis

1.	Certification Basis:	Defined in 1960
2.	Airworthiness Requirements:	Polish Civil Airworthiness Requirements, Section G - Gliders, issued on 1959

E.III. Technical Characteristics and Operational Limitations

1. Type Design Definition: Drawings No. SZD 24 C 40-00-00
SZD 24 C 10-00-00
SZD 24 C 74-00-00

2. Description: Single seat, standard class sailplane. Cantilever high-wing monoplane with classic tail unit (fixed stabilizer with elevator, swept-back fin and rudder). Mainly wooden structure, with undevelopable parts of fuselage shells made of glass-polyester composite. Bipartite tapered wings with main and auxiliary spars and sandwich structure shells. Fixed undercarriage consists of main wheel equipped with drum brake, long wooden nose skid with shock absorption and steel tailskid. Double-plate airbrakes protruding from upper and lower surface of wings.

3. Equipment: Standard equipment:
- airspeed indicator,
- altimeter,
- compass,
- bank-and-turn indicator,
- two rate-of-climb indicators,
- towing hook,
- pilot safety belts.

4. Dimensions:

Span	14,98 m
Wing area	12,16 m²
Aspect Ratio	18,5
Length	7,00 m
Height	1,40 m

5. Launching Hook:

standard:	SZD-III A 56
also permissible:	TOST Europa G 72, G 73, G 88, TOST E 72, E 75, E 85

6. Weak links: Ultimate Strength: 628 ÷ 686 daN (640 ÷ 700 kG)

7. Air Speeds:

Manoeuvring Speed	V_A	130 km/h
Never Exceed Speed	V_{NE}	165 km/h
Maximum permitted speeds		
- in rough air	V_{RA}	130 km/h
- in aero-tow	V_T	140 km/h
- in winch-launch	V_W	110 km/h

8. Operational Capability VFR Day,

9. Masses:

Max. Take Off Mass	375 kg
Max. Empty Mass	265 kg

10. Centre of Gravity Range:

Empty sailplane with standard equipment:

Forward Limit:	551 mm aft of datum point (ADP)
Rearward Limit:	599 mm aft of datum point (ADP)

Centre of Gravity operational limits:

Forward Limit:	205 mm (ADP) (23,0% MAC)
Rearward Limit:	350 mm (ADP) (39,3% MAC)

MAC is 890 mm; 0% MAC is on the same coordinates along longitudinal axis as the datum.

Datum:	Leading edge and wing-fuselage division plane intersection.
Levelling means:	Levelling marks on fuselage sides.

11. Seating Capacity: 1

12. Lifetime limitations: Refer to Service Bulletin No. BE-009/24/2016

13. Other limitations:

Bungee launching is not permitted.
Cloud, wave or night flying are not permitted.
Aerobatics are not permitted.

Manoeuvring load factor limits: +4,0 / -1,5

14. Deflection of control surfaces:

Aileron:	- up	34°	± 2°
	- down	16°	± 1°
Elevator:	- up	23°	± 1,5°
	- down	18°	± 1°
Elevator trim tab:	- up	15°	± 3°
	- down	40°	± 3°
Rudder:	- left	35°	- 3°
	- right	35°	- 3°

15. Wing free vibrations frequency: 175 ± 13 [1/min]

E.IV. Operating and Service Instructions

1. Flight Manual:

   Polish: Szybowiec wyczynowy SZD-24C „Foka",
   Instrukcja Użytkowania,
   wydanie I - 1961 r.

   Polish: Szybowiec SZD-24C „Foka",
   Instrukcja Użytkowania w Locie,
   wydanie II - 1965 r.

   German: Flughandbuch für das Segelflugzeug SZD-24C „Foka",
   Ausgabe März 1964.

2. Maintenance Manual:

   Polish: Opis Techniczny, Instrukcja Obsługi Technicznej,
   Terminarz prac okresowych,
   Szybowiec SZD-24C „Foka",
   wydanie I - maj 1965 r.

   German: Betriebsanleitung für das Hochleistungs -
   Segelflugzeug SZD-24C „Foka",

3. Flight & Maintenance Manual:

   English: SZD-24C „Foka",
   High Performance Sailplane,
   Flight & Maintenance Manual
   approved by Polish Aviation Authority on 3 September 1965

4. Repairs Manual:

   Polish: Instrukcja remontu szybowca SZD-24C „Foka",
   część szczegółowa,
   wydanie I, 1968 rok.

   German: Segelflugzeug - Reparaturanweisung (Holzbau)
   Ausgabe II, 1967.

E.V. Notes

1. Serial Numbers:

   W-136 ÷ W-223

2. Operation of the sailplane according to the Service Bulletin No. BE-009/24/2016 issued on 15.04.2016.

Section F: SZD-24-4 & SZD-24-4A "Foka 4"

F.I. General

1.	a) Type: b) Model:	Jeżów sailplanes SZD-24-4 "Foka 4" SZD-24-4A "Foka 4"
2.	Airworthiness Category:	Sailplane, Utility "U"
3.	Type Certificate Holder:	Zakład Szybowcowy „Jeżów" Henryk Mynarski ul. Długa 93 58-521 Jeżów Sudecki POL:AND
4.	Manufacturer:	Zakłady Sprzętu Lotnictwa Sportowego Szybowcowy Zakład Doświadczalny ul. Cieszyńska 325 43-300 Bielsko-Biała POLAND Zakład Szybowcowy we Wrocławiu ul. Lotnicza 14 54-155 Wrocław POLAND
5.	Type Certification Date:	4 June 1966

6. **For technical details and limitations refer to the Polish CAA TCDS No. BG-013/1, Issue 1 dated on 30 August 2005.**

F.II. Notes

1. Operation of the sailplane according to the Service Bulletin No. BE-009/24/2016 issued on 15.04.2016.

Section G: SZD-25A “Lis”

G.I. General

1.	a) Type: b) Model:	Jeżów sailplanes SZD-25A “Lis”
2.	Airworthiness Category:	Sailplane, Utility “U”
3.	Type Certificate Holder:	Zakład Szybowcowy „Jeżów“ Henryk Mynarski ul. Długa 93 58-521 Jeżów Sudecki POLAND
4.	Manufacturer:	Zakłady Sprzętu Lotnictwa Sportowego nr 5 w Krośnie ul. Żwirki i Wigury 6 38-400 Krosno POLAND
5.	Type Certification Date:	13 November 1961

6. **For technical details and limitations refer to the Polish CAA TCDS No. 7/TL/61, Issue 13.11.1961.**

Section H: SZD-30 “Pirat”

H.I. General

1.	a) Type: b) Model:	Jeżów sailplanes SZD-30 “Pirat”
2.	Airworthiness Category:	Sailplane, Utility “U”
3.	Type Certificate Holder:	Zakład Szybowcowy „Jeżów“ Henryk Mynarski ul. Długa 93 58-521 Jeżów Sudecki POLAND
4.	Manufacturer:	Zakłady Sprzętu Lotnictwa Sportowego Szybowcowy Zakład Doświadczalny ul. Cieszyńska 325 43-300 Bielsko-Biała POLAND Zakład Szybowcowy we Wrocławiu ul. Lotnicza 14 54-155 Wrocław POLAND WSK “PZL-Świdnik” ul. Lotników Polskich 1 21-045 Świdnik POLAND
5.	Type Certification Date:	20 May 1967

6. **For technical details and limitations refer to the Polish CAA TCDS No. BG-32/2, Issue 1 dated on 24 February 2004.**

H.II. Notes

1. Operation of the sailplane according to the Bulletin No. BE-035/30/2010 issued on 11.01.2011.

Section I: SZD-30C “Pirat”

I.I. General

1.	a) Type: b) Model:	Jeżów sailplanes SZD-30C “Pirat”
2.	Airworthiness Category:	Sailplane, Utility “U”
3.	Type Certificate Holder:	Zakład Szybowcowy „Jeżów“ Henryk Mynarski ul. Długa 93 58-521 Jeżów Sudecki POLAND
4.	Manufacturer:	PDPSz “PZL-Bielsko” Zakład Szybowcowy w Jeżowie Sudeckim ul. Długa 93 58-521 Jeżów Sudecki POLAND
5.	Type Certification Date:	16 March 1978

6. **For technical details and limitations refer to the Polish CAA TCDS No. BG-117/1, Issue 2 dated on 25 February 2004.**

I.II. Notes

1. Operation of the sailplane according to the Bulletin No. BE-035/30/2010 issued on 11.01.2011.

Section J: SZD-32A “Foka 5”

J.I. General

1.	a) Type: b) Model:	Jeżów sailplanes SZD-32A “Foka 5”
2.	Airworthiness Category:	Sailplane, Utility “U”
3.	Type Certificate Holder:	Zakład Szybowcowy „Jeżów“ Henryk Mynarski ul. Długa 93 58-521 Jeżów Sudecki POLAND
4.	Manufacturer:	Zakład Szybowcowy we Wrocławiu ul. Lotnicza 14 54-155 Wrocław POLAND
5.	Type Certification Date:	17 March 1969

6. **For technical details and limitations refer to the Polish CAA TCDS No. BG-054/2, Issue 1 dated on 26 February 2004.**

J.II. Notes

1. Operation of the sailplane according to the Service Bulletin No. BE-007/32/2016 issued on 15.04.2016.

Section K: SZD-36A “Cobra 15”

K.I. General

1.	a) Type: b) Model:	Jeżów sailplanes SZD-36A “Cobra 15”
2.	Airworthiness Category:	Sailplane, Utility “U”
3.	Type Certificate Holder:	Zakład Szybowcowy „Jeżów“ Henryk Mynarski ul. Długa 93 58-521 Jeżów Sudecki POLAND
4.	Manufacturer:	Zakład Szybowcowy we Wrocławiu ul. Lotnicza 14 54-155 Wrocław POLAND
5.	Type Certification Date:	28 December 1971

6. **For technical details and limitations refer to the Polish CAA TCDS No. BG-071/2, Issue 1 dated on 27 February 2004.**

K.II. Notes

1. Operation of the sailplane according to the Service Bulletin No. BE-007/36/2010 issued on 17.09.2010.

Section L: SZD-38A "Jantar 1"

L.I. General

1.	a) Type: b) Model:	Jeżów sailplanes SZD-38A "Jantar 1"
2.	Airworthiness Category:	Sailplane, Utility "U"
3.	Type Certificate Holder:	Zakład Szybowcowy „Jeżów" Henryk Mynarski ul. Długa 93 58-521 Jeżów Sudecki POLAND
4.	Manufacturer:	Przedsiębiorstwo Doświadczalno-Produkcyjne Szybownictwa PZL Bielsko (PDPSz „PZL-Bielsko") ul. Cieszyńska 325 43-300 Bielsko-Biała POLAND
5.	Type Certification Date:	25 April 1974

6. **For technical details and limitations refer to the Polish CAA TCDS No. BG-086/1, Issue 1 dated on 05 August 2005.**

Section M: SZD-41A "Jantar Standard"

M.I. General

1.	a) Type: b) Model:	Jeżów sailplanes SZD-41A "Jantar Standard"
2.	Airworthiness Category:	Sailplane, Utility "U"
3.	Type Certificate Holder:	Zakład Szybowcowy „Jeżów" Henryk Mynarski ul. Długa 93 58-521 Jeżów Sudecki POLAND
4.	Manufacturer:	Przedsiębiorstwo Doświadczalno-Produkcyjne Szybownictwa PZL Bielsko (PDPSz „PZL-Bielsko") ul. Cieszyńska 325 43-300 Bielsko-Biała POLAND
5.	Type Certification Date:	30 May 1975

6. **For technical details and limitations refer to the Polish CAA TCDS No. BG-098/1, Issue 1 dated on 1 March 2004.**

Section N: SZD-42 "Jantar 2"

N.I. General

1.	a) Type: b) Model:	Jeżów sailplanes SZD-42 "Jantar 2"
2.	Airworthiness Category:	Sailplane, Utility "U"
3.	Type Certificate Holder:	Zakład Szybowcowy „Jeżów" Henryk Mynarski ul. Długa 93 58-521 Jeżów Sudecki POLAND
4.	Manufacturer:	Przedsiębiorstwo Doświadczalno-Produkcyjne Szybownictwa PZL Bielsko (PDPSz „PZL-Bielsko") ul. Cieszyńska 325 43-300 Bielsko-Biała POLAND
5.	Type Certification Date:	26 May 1976

6. **For technical details and limitations refer to the Polish CAA TCDS No. BG-110/2, Issue 3 dated on 5 March 2004.**

Section O: SZD-42-1 “Jantar 2”

O.I. General

1.	a) Type: b) Model:	Jeżów sailplanes SZD-42-1 “Jantar 2”
2.	Airworthiness Category:	Sailplane, Utility “U”
3.	Type Certificate Holder:	Zakład Szybowcowy „Jeżów“ Henryk Mynarski ul. Długa 93 58-521 Jeżów Sudecki POLAND
4.	Manufacturer:	Przedsiębiorstwo Doświadczalno-Produkcyjne Szybownictwa PZL Bielsko (PDPSz „PZL-Bielsko“) ul. Cieszyńska 325 43-300 Bielsko-Biała POLAND
5.	Type Certification Date:	26 May 1976

6. **For technical details and limitations refer to the Polish CAA TCDS No. BG-110/2, Issue 3 dated on 5 March 2004.**

Section P: SZD-42-2 “Jantar 2B”

P.I. General

1.	a) Type: b) Model:	Jeżów sailplanes SZD-42-2 “Jantar 2B”
2.	Airworthiness Category:	Sailplane, Utility “U”
3.	Type Certificate Holder:	Zakład Szybowcowy „Jeżów“ Henryk Mynarski ul. Długa 93 58-521 Jeżów Sudecki POLAND
4.	Manufacturer:	Przedsiębiorstwo Doświadczalno-Produkcyjne Szybownictwa PZL Bielsko (PDPSz „PZL-Bielsko“) ul. Cieszyńska 325 43-300 Bielsko-Biała POLAND
5.	Type Certification Date:	9 January 1979

6. **For technical details and limitations refer to the Polish CAA TCDS No. BG-110/2, Issue 3 dated on 5 March 2004.**

Section Q: SZD-45A & SZD-45AM "Ogar"

Q.I. General

1.	a) Type: b) Model:	Jeżów sailplanes SZD-45A "Ogar" SZD-45AM "Ogar"
2.	Airworthiness Category:	Powered Sailplane, Utility "U"
3.	Type Certificate Holder:	Zakład Szybowcowy „Jeżów" Henryk Mynarski ul. Długa 93 58-521 Jeżów Sudecki POLAND
4.	Manufacturer:	Przedsiębiorstwo Doświadczalno-Produkcyjne Szybownictwa PZL Bielsko (PDPSz „PZL-Bielsko") ul. Cieszyńska 325 43-300 Bielsko-Biała POLAND
5.	Type Certification Date:	02 July 1975 24 March 1998 for SZD-45AM model

6. **For technical details and limitations refer to the Polish CAA TCDS No. BX-104/1, Issue 2 dated on 31 August 2005.**

Section R: SZD-48(M) "Jantar Standard 2(M)"

R.I. General

1.	a) Type:	Jeżów sailplanes
	b) Model:	SZD-48 "Jantar Standard 2" SZD-48M "Jantar Standard 2M"
2.	Airworthiness Category:	Sailplane, Utility "U"
3.	Type Certificate Holder:	Zakład Szybowcowy „Jeżów" Henryk Mynarski ul. Długa 93 58-521 Jeżów Sudecki POLAND
4.	Manufacturer:	Zakład Szybowcowy we Wrocławiu ul. Lotnicza 14 54-155 Wrocław POLAND
5.	Type Certification Date:	26 May 1978 14 July 2004 for SZD-48M model

6. This TCDS replaces the TCDS No. EASA.A.446 issue 01, dated on 22.03.2007, due to merger of TCs to "Jeżów sailplanes".
The latter one replaced Polish Type Certificate No. BG-119/1,
which replaced the BG-119 on March 25, 2002, due to TC transfer from PDPSz "PZL-Bielsko".

R.II. Certification Basis

1.	Airworthiness Requirements:	OSTIV Airworthiness Requirements for Sailplanes, September 1976.
2.	Requirements elected to comply:	None
3.	Special Conditions:	None
4.	Exemptions:	

2.43. The sailplane without water ballast and with rear C.G. position is able to trim only up to speed 110 km/h instead of required 136 km/h.

2.62. Because of unreliable airspeed indications near minimum speed, there is no possibility to evaluate a margin between stalling speed and stall warning speed

2.72. Airbrakes closing force at $0{,}75 \times V_{NE}$ = 188 km/h is 22 daN. It is less than 20 daN at V < 180 km/h.

2.81. During spinning with rear CG positions flat spin turns into steep one.
Recovering from flat spin needs almost 1¼ turn and slightly over 100 m altitude loss.

7.32. V_{NE} = 250 km/h is less than required.

5.	Equivalent Safety Findings:	None

R.III. Technical Characteristics and Operational Limitations

1. Type Design Definition: Drawing No. SZD-480-00-10-00
+ ZSJ-48.100/A1÷A4 (for SZD-48M)

2. Description: Single seat, standard class sailplane. Cantilever high-wing monoplane with T-shaped tail unit (fixed stabilizer with elevator, fin and rudder). All composite glass-epoxy structure. Bipartite tapered wing may be equipped with winglets removable for transport. Retractable main landing gear with disk brake and without shock absorbers; fixed tail wheel. Plate airbrakes protruding from upper and lower surface of wings. Integral water ballast tanks in wings.
SZD-48M is a modification which consists in installation of one piece canopy from SZD-48-3. It has been confirmed with Certificate of Approval No Z-BG-09/04, dated July 14th, 2004.

3. Equipment: Standard equipment:
- airspeed indicator,
- altimeter,
- compass,
- bank-and-turn indicator,
- two rate-of-climb indicators,
- towing hook (or hooks),
- pilot safety belts.

4. Dimensions:

Span	15,00 m
Wing area	10,66 m²
Aspect Ratio	21,1
Length	6,71 m
Height	1,51 m

5. Launching Hook:
Nose towing hook TOST E 72, E 75,E 85
or SZD-III A-56;
Bottom towing hook (optional) TOST EUROPA G 72, G 73, G 88
or SZD-III A-56;

6. Weak links: Ultimate Strength: 6770 N (± 10%)

7. Air Speeds:

Manoeuvring Speed	V_A	170 km/h
Never Exceed Speed	V_{NE}	255 km/h
Maximum permitted speeds		
- in rough air	V_{RA}	200 km/h
- in aero-tow	V_T	150 km/h
- in winch-launch	V_W	125 km/h
- landing gear operating	V_{LO}	255 km/h

8. Operational Capability VFR Day,
Cloud flying permitted.

9. Masses:

Max. Mass with water ballast	535 kg
Max. Mass without water ballast	385 kg
Max. Empty Mass	265 kg

10. Centre of Gravity Range:

Empty sailplane with standard equipment:

Forward Limit:	510 mm aft of datum point (ADP)
Rearward Limit:	550 mm aft of datum point (ADP)

Centre of Gravity operational limits:

Forward Limit:	158 mm (ADP) (21,3% MAC)
Rearward Limit:	
- without water ballast	336 mm (ADP) (45,3% MAC)
- with water ballast (150 kg)	282 mm (ADP) (38,0% MAC)

MAC is 742 mm; 0% MAC is on the same coordinates along longitudinal axis as the datum.

Datum:	Leading edge and wing-fuselage division plane intersection.
Levelling means:	A trailing point of root chord - 22 mm under its leading point. Root chord is 950 mm.

11. Seating Capacity: 1

12. Lifetime limitations: Refer to Maintenance Manual

13. Other limitations: Aerobatic is permissible only without water ballast.

Manoeuvring load factor limits: +5,3/-2,65

14. Deflection of control surfaces:

Aileron:	- up	27°	± 2°
	- down	16°	± 2°
Elevator:	- up	32°	± 1°
	- down	18°	± 1°
Rudder:	- left	29°	± 1°
	- right	29°	± 1°

R.IV. Operating and Service Instructions

1. Flight Manual:

   Polish: Instrukcja Użytkowania w Locie,
   Szybowiec SZD-48 „Jantar Standard 2",
   wydanie I - maj 1978 r.

   English: SZD-48 "Jantar Standard 2" sailplane,
   Flight Manual
   issue I - May 1978

   Polish: Instrukcja Użytkowania w Locie
   Szybowca SZD-48M „Jantar Standard 2M",
   wydanie I - czerwiec 2004 r.

2. Maintenance Manual:

   Polish: Szybowiec SZD-48 „Jantar Standard 2",
   Opis Techniczny, Instrukcja Obsługi Technicznej
   z terminarzem prac okresowych,
   wydanie I - maj 1978 r.

   English: SZD-48 "Jantar Standard 2" sailplane,
   Technical Description, Technical Service Manual
   with the Schedule of Maintenance Works
   issue I - May 1978

   Polish: Szybowiec SZD-48M „Jantar Standard 2M",
   Opis Techniczny, Instrukcja Obsługi Technicznej
   z terminarzem prac okresowych,
   wydanie I - czerwiec 2004 r.

3. Repairs Manual:

   Polish: Instrukcja napraw szybowca laminatowego
   SZD-48 „Jantar Std 2"
   wydanie I, 1978 r.

R.V. Notes

1. Serial Numbers:
   W-846 ÷ W-890
2. All sailplane outside surfaces exposed to sunlight must be white painted apart from registration number and anti-collision marks.

Section S: SZD-48-1(M) "Jantar Standard 2(M)"

S.I. General

1.	a) Type:	Jeżów sailplanes
	b) Model:	SZD-48-1 "Jantar Standard 2" SZD-48-1M "Jantar Standard 2M"
2.	Airworthiness Category:	Sailplane, Utility "U"
3.	Type Certificate Holder:	Zakład Szybowcowy „Jeżów" Henryk Mynarski ul. Długa 93 58-521 Jeżów Sudecki POLAND
4.	Manufacturer:	Zakład Szybowcowy we Wrocławiu ul. Lotnicza 14 54-155 Wrocław POLAND Przedsiębiorstwo Doświadczalno-Produkcyjne Szybownictwa PZL Bielsko (PDPSz „PZL-Bielsko") ul. Cieszyńska 325 43-300 Bielsko-Biała POLAND
5.	Type Certification Date:	30 November 1978 14 July 2004 for SZD-48-1M model

6. This TCDS replaces the TCDS No. EASA.A.446 issue 01, dated on 22.03.2007, due to merger of TCs to "Jeżów sailplanes".
The latter one replaced Polish Type Certificate No. BG-119/1,
which replaced the BG-119 on March 25, 2002, due to TC transfer from PDPSz "PZL-Bielsko".

S.II. Certification Basis

1.	Airworthiness Requirements:	OSTIV Airworthiness Requirements for Sailplanes, September 1976.
2.	Requirements elected to comply:	None
3.	Special Conditions:	None
4.	Exemptions:	
	2.72.	Airbrakes closing force at $0{,}75 \times V_{NE}$ = 188 km/h is 22 daN. It is less than 20 daN at V < 180 km/h.
	2.81.	During spinning with rear CG positions flat spin turns into steep one. Recovering from flat spin needs almost 1¼ turn and slightly over 100 m altitude loss.
5.	Equivalent Safety Findings:	None

S.III. Technical Characteristics and Operational Limitations

1. Type Design Definition: Drawing No. SZD-481-00-10-00
+ ZSJ-48.100/A1÷A4 (for SZD-48-1M)

2. Description: Single seat, standard class sailplane. Cantilever high-wing monoplane with T-shaped tail unit (fixed stabilizer with elevator, fin and rudder). All composite glass-epoxy structure. Bipartite tapered wing may be equipped with winglets removable for transport. Retractable main landing gear with disk brake and without shock absorbers; fixed tail wheel. Plate airbrakes protruding from upper and lower surface of wings. Integral water ballast tanks in wings.
SZD-48-1M is a modification which consists in installation of one piece canopy from SZD-48-3. It has been confirmed with Certificate of Approval No Z-BG-09/04, dated July 14th, 2004.

3. Equipment: Standard equipment:
- airspeed indicator,
- altimeter,
- compass,
- bank-and-turn indicator,
- two rate-of-climb indicators,
- towing hook (or hooks),
- pilot safety belts.

4. Dimensions:

Span	15,00 m
Wing area	10,66 m²
Aspect Ratio	21,1
Length	6,71 m
Height	1,51 m

5. Launching Hook:

Nose towing hook	TOST E 72, E 75, E 85
	or SZD-III A-56;
Bottom towing hook (optional	TOST EUROPA G 72, G 73, G 88
	or SZD-III A-56;

6. Weak links: Ultimate Strength: 6770 N (± 10%)

7. Air Speeds:

Manoeuvring Speed	V_A	170 km/h
Never Exceed Speed	V_{NE}	285 km/h
Maximum permitted speeds		
- in rough air	V_{RA}	200 km/h
- in aero-tow	V_T	150 km/h
- in winch-launch	V_W	125 km/h
- landing gear operating	V_{LO}	255 km/h

8. Operational Capability: VFR Day,
Cloud flying permitted.

9. Masses:

Max. Mass with water ballast	535 kg
Max. Mass without water ballast	385 kg
Max. Empty Mass	265 kg

10. Centre of Gravity Range:

Empty sailplane with standard equipment:

Forward Limit:	510 mm aft of datum point (ADP)
Rearward Limit:	550 mm aft of datum point (ADP)

Centre of Gravity operational limits:

Forward Limit:	148 mm (ADP) (20,0% MAC)
Rearward Limit:	
- without water ballast	336 mm (ADP) (45,3% MAC)
- with water ballast (150 kg)	282 mm (ADP) (38,0% MAC)

MAC is 742 mm; 0% MAC is on the same coordinates along longitudinal axis as the datum.

Datum:	Leading edge and wing-fuselage division plane intersection.
Levelling means:	A trailing point of root chord - 22 mm under its leading point. Root chord is 950 mm.

11. Seating Capacity: 1

12. Lifetime limitations: Refer to Maintenance Manual

13. Other limitations: Aerobatic is permissible only without water ballast.

Manoeuvring load factor limits: +5,3/-2,65

14. Deflection of control surfaces:

Aileron:	- up	27°	± 2°
	- down	16°	± 2°
Elevator:	- up	32°	± 1°
	- down	18°	± 1°
Rudder:	- left	29°	± 1°
	- right	29°	± 1°

S.IV. Operating and Service Instructions

1. Flight Manual:

   Polish: Instrukcja Użytkowania w Locie,
   Szybowiec SZD-48-1 „Jantar Standard 2",
   wydanie I - listopad 1978 r.

   English: SZD-48-1 "Jantar Standard 2" sailplane,
   Flight Manual
   issue I - November 1978

   Polish: Instrukcja Użytkowania w Locie
   Szybowca SZD-48-1M „Jantar Standard 2M",
   wydanie I - czerwiec 2004 r.

2. Maintenance Manual:

   Polish: Szybowiec SZD-48-1 „Jantar Standard 2",
   Opis Techniczny, Instrukcja Obsługi Technicznej
   z terminarzem prac okresowych,
   wydanie I - listopad 1978 r.

   English: SZD-48-1 "Jantar Standard 2" sailplane,
   Technical Description, Technical Service Manual
   with the Schedule of Maintenance Works
   issue I - November 1978

   Polish: Szybowiec SZD-48-1M „Jantar Standard 2M",
   Opis Techniczny, Instrukcja Obsługi Technicznej
   z terminarzem prac okresowych,
   wydanie I - czerwiec 2004 r.

S.V. Notes

1. Serial Numbers:
   W-891 ÷ W-926,
   B-985 ÷ B-1064,
   B-1095 ÷ B-1124,
   B-1135 ÷ B-1274.
2. All sailplane outside surfaces exposed to sunlight must be white painted apart from registration number and anti-collision marks.

Section T: SZD-48-3M "Brawo"

T.I. General

1.	a) Type:	Jeżów sailplanes
	b) Model:	SZD-48-3M "Brawo"
2.	Airworthiness Category:	Sailplane, Utility "U"
3.	Type Certificate Holder:	Zakład Szybowcowy „Jeżów" Henryk Mynarski ul. Długa 93 58-521 Jeżów Sudecki POLAND
4.	Manufacturer:	Przedsiębiorstwo Doświadczalno-Produkcyjne Szybownictwa PZL Bielsko (PDPSz „PZL - Bielsko") ul. Cieszyńska 325 43-300 Bielsko-Biała POLAND
5.	Type Certification Date:	21 May 1985

6. This TCDS replaces the TCDS No. EASA.A.446 issue 01, dated on 22.03.2007, due to merger of TCs to "Jeżów sailplanes".
The latter one replaced Polish Certificate of Approval No. BG-14/85.

T.II. Certification Basis

1.	Airworthiness Requirements:	OSTIV Airworthiness Requirements for Sailplanes, September 1976, Amendment No 1, June 1983.

T.III. Technical Characteristics and Operational Limitations

1.	Type Design Definition:	Drawing No. SZD-483M-00-10-00
2.	Description:	Single seat, standard class sailplane. Cantilever high-wing monoplane with T-shaped tail unit (fixed stabilizer with elevator, fin and rudder). All composite glass-epoxy structure. Bipartite tapered wing equipped with plate airbrakes protruding only from upper surface. Retractable main landing gear with disk brake and without shock absorbers; fixed tail wheel. Integral water ballast tanks in wings and fin. SZD-48-3M is a modification of SZD-48-3 (TCDS EASA.A.041). Main changes include: trailing edge elongation, fin ballast tank installation, airbrakes protruding only from upper surface.
3.	Equipment:	Standard equipment: - airspeed indicator, - altimeter, - compass, - bank-and-turn indicator, - rate-of-climb indicator, - towing hook, - pilot safety belts.

4.	Dimensions:	Span	15,00 m	
		Wing area	10,90 m²	
		Aspect Ratio	20,64	
		Length	6,71 m	
		Height	1,51 m	
5.	Launching Hook:		SZD-III-56 c	
6.	Weak links:	Ultimate Strength:	6770 N (± 10%)	
7.	Air Speeds:	Manoeuvring Speed	V_A	180 km/h
		Never Exceed Speed	V_{NE}	285 km/h
		Maximum permitted speeds		
		- in rough air	V_{RA}	180 km/h
		- in aero-tow	V_T	150 km/h
8.	Operational Capability	VFR Day, Cloud flying permitted.		
9.	Masses:	Max. Mass with water ballast		490 kg
		Max. Mass without water ballast		360 kg
		Max. Empty Mass		240 kg
10.	Centre of Gravity Range:	Empty sailplane with standard equipment:		
		Forward Limit:	520 mm aft of datum point (ADP)	
		Rearward Limit:	540 mm aft of datum point (ADP)	
		Centre of Gravity operational limits:		
		Forward Limit:	145 mm (ADP) (19,0% MAC)	
		Rearward Limit:	319 mm (ADP) (42,0% MAC)	
		MAC is 760 mm; 0% MAC is on the same coordinates along longitudinal axis as the datum.		
		Datum:	Leading edge and wing-fuselage division plane intersection.	
		Levelling means:	A trailing point of root chord - 22 mm under its leading point. Root chord is 970 mm.	
11.	Seating Capacity:	1		
12.	Lifetime limitations:	Refer to Maintenance Manual		
13.	Other limitations:	Winch launching is forbidden Aerobatic with water ballast is forbidden Cloud flying with water ballast is forbidden		
		Manoeuvring load factor limits:	+5,3/-2,65	
14.	Deflection of control surfaces:	Aileron:	- up	27° ± 2°
			- down	16° ± 2°
		Elevator:	- up	32° ± 1°
			- down	20° − 1°
		Rudder:	- left	29° ± 1°
			- right	29° ± 1°

T.IV. Operating and Service Instructions

1. Flight Manual:

   Polish: Szybowiec SZD-48-3M „Brawo”
   Instrukcja Użytkowania w Locie,
   wydanie I - maj 1985 r.

2. Maintenance Manual:

   Polish: Szybowiec SZD-48-3M „Brawo”,
   Opis Techniczny, Instrukcja Obsługi Technicznej
   z terminarzem prac okresowych,
   wydanie I - maj 1985 r.

T.V. Notes

1. Serial Numbers:
   B-1510
2. All sailplane outside surfaces exposed to sunlight must be white painted apart from registration number and anti-collision marks.

Section U: SZD-48-3M1 "Brawo"

U.I. General

1.	a) Type:	Jeżów sailplanes
	b) Model:	SZD-48-3M1 "Brawo"
2.	Airworthiness Category:	Sailplane, Utility
3.	Type Certificate Holder:	Zakład Szybowcowy „Jeżów" Henryk Mynarski ul. Długa 93 58-521 Jeżów Sudecki POLAND
4.	Manufacturer:	Przedsiębiorstwo Doświadczalno-Produkcyjne Szybownictwa PZL Bielsko (PDPSz „PZL-Bielsko") ul. Cieszyńska 325 43-300 Bielsko-Biała POLAND
5.	Type Certification Date:	06 June 1988

6. This TCDS replaces the TCDS No. EASA.A.446 issue 01, dated on 22.03.2007, due to merger of TCs to "Jeżów sailplanes".
The latter one replaced Polish Certificate of Approval No. BG-14/85.

U.II. Certification Basis

1.	Certification Basis:	Defined 21 May 1985
2.	Airworthiness Requirements:	OSTIV Airworthiness Requirements for Sailplanes, September 1976, Amendment No 1, June 1983.

U.III. Technical Characteristics and Operational Limitations

1.	Type Design Definition:	Drawing No. SZD-483M1-00-10-00
2.	Description:	Single seat, standard class sailplane. Cantilever high-wing monoplane with T-shaped tail unit (fixed stabilizer with elevator, fin and rudder). All composite glass-epoxy structure. Bipartite tapered wing equipped with plate airbrakes protruding only from upper surface. Retractable main landing gear with disk brake and without shock absorbers; fixed tail wheel. Integral water ballast tanks in wings and fin. SZD-48-3M1 is a modification of SZD-48-3 (TCDS EASA.A.041). Main changes include: fin ballast tank installation, airbrakes protruding only from upper surface. SZD-48-3M1 differs from SZD-48-3M that there is no trailing edge elongation.

3. Equipment:

Standard equipment:
- airspeed indicator,
- altimeter,
- compass,
- bank-and-turn indicator,
- rate-of-climb indicator,
- towing hook,
- pilot safety belts.

4. Dimensions:

Span	15,00 m
Wing area	10,66 m²
Aspect Ratio	21,1
Length	6,71 m
Height	1,51 m

5. Launching Hook: SZD-III-56 c

6. Weak links: Ultimate Strength: 6770 N (± 10%)

7. Air Speeds:

Manoeuvring Speed	V_A	180 km/h
Never Exceed Speed	V_{NE}	285 km/h
Maximum permitted speeds		
- in rough air	V_{RA}	180 km/h
- in aero-tow	V_T	150 km/h

8. Operational Capability: VFR Day; Cloud flying permitted.

9. Masses:

Max. Mass with water ballast	490 kg
Max. Mass without water ballast	365 kg
Max. Empty Mass	240 kg

10. Centre of Gravity Range:

Empty sailplane with standard equipment:

Forward Limit:	520 mm aft of datum point (ADP)
Rearward Limit:	540 mm aft of datum point (ADP)

Centre of Gravity operational limits:

Forward Limit:	141 mm (ADP) (19,0% MAC)
Rearward Limit:	311 mm (ADP) (42,0% MAC)

MAC is 742 mm; 0% MAC is on the same coordinates along longitudinal axis as the datum.

Datum:	Leading edge and wing``-fuselage division plane intersection.
Levelling means:	A trailing point of root chord - 22 mm under its leading point. Root chord is 950 mm.

11. Seating Capacity: 1

12. Lifetime limitations: Refer to Maintenance Manual

13. Other limitations:

Winch launching is forbidden
Aerobatic with water ballast is forbidden
Cloud flying with water ballast is forbidden

Manoeuvring load factor limits: +5,3/-2,65

14. Deflection of control surfaces:

Aileron:	- up	27°	± 2°
	- down	16°	± 2°
Elevator:	- up	32°	± 1°
	- down	20°	− 1°
Rudder:	- left	29°	± 1°
	- right	29°	± 1°

U.IV. Operating and Service Instructions

1. Flight Manual:

   Polish: Szybowiec SZD-48-3M1 „Brawo”
   Instrukcja Użytkowania w Locie,
   wydanie I - maj 1988 r.

2. Maintenance Manual:

   Polish: Szybowiec SZD-48-3M1 „Brawo”,
   Opis Techniczny, Instrukcja Obsługi Technicznej
   z terminarzem prac okresowych,
   wydanie I - maj 1988 r.

U.V. Notes

1. Serial Numbers:
   B-1508
2. All sailplane outside surfaces exposed to sunlight must be white painted apart from registration number and anti-collision marks.

Section V: SZD-52-3 "Krokus S"

V.I. General

1.	a) Type:	Jeżów sailplanes
	b) Model:	SZD-52-3 "Krokus S"
2.	Airworthiness Category:	Sailplane, Utility "U"
3.	Type Certificate Holder:	Zakład Szybowcowy „Jeżów" Henryk Mynarski ul. Długa 93 58-521 Jeżów Sudecki POLAND
4.	Manufacturer:	Przedsiębiorstwo Doświadczalno-Produkcyjne Szybownictwa PZL Bielsko (PDPSz „PZL-Bielsko") ul. Cieszyńska 325 43-300 Bielsko-Biała POLAND
5.	Type Certification Date:	13 February 1985

6. This TCDS replaces the TCDS No. EASA.A.441 issue 01, dated on 14.02.2007, due to merger of TCs to "Jeżów sailplanes".
The latter one replaced Polish Type Certificate No. BG-144/1,
which replaced the BG-144 on March 25, 2002, due to TC transfer from PDPSz "PZL-Bielsko".

V.II. Certification Basis

1.	Certification Basis:	Defined 13 February 1985
2.	Airworthiness Requirements:	JAR-22, Amendment 2, issued September 13, 1982
3.	Requirements elected to comply:	None
4.	Special Conditions:	None

5. Exemptions:

JAR-22.25(b)	Minimum weight of occupant with parachute is 65 kg instead of required 55 kg.
JAR-22.73(a)	A dive angle is about 37º with MTOW, V_{NE} and airbrakes extended. If weight is 370 kg (without water ballast) the dive angle is 45º. Aerobatics and cloud flying with water ballast are forbidden.
JAR-22.207	There is no stall warning with rear C.G. position, when airbrakes are extended or in turning. The sailplane doesn't meet also JAR-22.207(d) requirements in such cases. The exemption was permitted because of good flying qualities during stall and recovery, and little loss of altitude.
JAR-22.221	Behaviour of sailplane in spinning is not clear. In most CG positions it's impossible to make a five turns spin. Recovering from spin and spiral comply with requirements. In Flight Manual the intentional spinning was forbidden.

JAR-22.411(a)	Control system stretch is 37-38 % for elevator and 26-28 % for rudder instead of required 25 %. Lower control system stiffness has no disadvantageous effect on controllability and aero-elasticity.
JAR-22.595	There is no attachment point for the parachute ripcord.
JAR-22.655 JAR-22.683	Tests were made only during flight tests according to Polish regulations PZTCSL, point 2-18.
JAR-22.697(c)	Airbrakes retracting at V_A=176 km/h needs a hand force slightly exceeding required 20 daN. 20 daN appears at 160 km/h. Increased forces don't make airbrakes using difficult.
JAR-22.1529	Not all information required in this point is described in Maintenance Manual. Information relating to repairs is included to separate Repairs Manual.

6. Equivalent Safety Findings: None

V.III. Technical Characteristics and Operational Limitations

1. Type Design Definition: Drawing No. SZD-523-00-10-00.

2. Description: Single seat, standard class sailplane. Cantilever high-wing monoplane with T-shaped tail unit (fixed stabilizer with elevator, fin and rudder). All composite glass-epoxy structure. Bipartite double-tapered wing with plate airbrakes protruding from upper surface. Retractable main landing gear with disk brake and without shock absorbers; fixed tail wheel. Integral water ballast tanks in wings.

3. Equipment: Standard equipment:
   - airspeed indicator,
   - altimeter,
   - compass,
   - bank-and-turn indicator,
   - rate-of-climb indicator,
   - towing hook,
   - pilot safety belts.

4. Dimensions:

Span	15,00 m
Wing area	10,30 m²
Aspect Ratio	21,8
Length	7,00 m
Height	1,55 m

5. Launching Hook: SZD III A 56 P

6. Weak links: Ultimate Strength: 677 daN (± 10%)

7. Air Speeds:

Manoeuvring Speed	V_A	176 km/h
Never Exceed Speed	V_{NE}	255 km/h
Maximum permitted speeds		
- in rough air	V_{RA}	200 km/h
- in aero-tow	V_T	140 km/h
- landing gear operating	V_{LO}	240 km/h

8.	Operational Capability:	VFR Day, Cloud flying permitted.	
9.	Masses:	Max. Mass with water ballast	480 kg
		Max. Mass without water ballast	370 kg
		Empty Mass	248 kg

10. Centre of Gravity Range:

Empty sailplane with standard equipment:

Forward Limit	620 mm aft of datum point
Rearward Limit	640 mm aft of datum point

Centre of Gravity operational limits:

Forward Limit	217 mm aft of datum point (20,0% MAC)
Rearward Limit	374 mm aft of datum point (42,0% MAC)

MAC is 715 mm; 0% MAC is 74 mm behind the datum.

Datum:	Leading edge and wing-fuselage division plane intersection.
Levelling means:	Leading and trailing points of root chord (900 mm) at the same level.

11. Seating Capacity: 1

12. Lifetime limitations: Refer to Maintenance Manual

13. Other limitations:

Aerobatic and cloud flying are permissible only without water ballast.

Intentional spinning is forbidden.

14. Deflection of control surfaces:

Aileron:	- up	20°	± 1°
	- down	14°	± 1°
Elevator:	- up	30°	± 1°
	- down	20°	± 1°
Rudder:	- left	30°	± 2°
	- right	30°	± 2°

V.IV. Operating and Service Instructions

1. Flight Manual:

Polish: Instrukcja Użytkowania w Locie,
Szybowiec SZD-52-3 „Krokus S",
wydanie II z dnia 20.12.1984 r.

2. Maintenance Manual:

Polish: Szybowiec SZD-52-3 „Krokus S",
Opis Techniczny,
Instrukcja Obsługi Technicznej z Terminarzem Prac Okresowych,
wydanie z dnia 26.11.1984 r.

3. Repairs Manual:

Polish: Instrukcja napraw szybowców laminatowych SZD-52-3 „Krokus S" i SZD-52-4 „Krokus",
wydanie I, 1984 r.

V.V. Notes

1. Serial Numbers:
X-138,
X-139.

2. All sailplane outside surfaces exposed to sunlight must be white painted apart from registration number and anti-collision marks.

Section W: SZD-52-4 “Krokus”

W.I. General

1.	a) Type: b) Model:	Jeżów sailplanes SZD-52-4 “Krokus”
2.	Airworthiness Category:	Sailplane, Utility “U”
3.	Type Certificate Holder:	Zakład Szybowcowy „Jeżów” Henryk Mynarski ul. Długa 93 58-521 Jeżów Sudecki POLAND
4.	Manufacturer:	Przedsiębiorstwo Doświadczalno-Produkcyjne Szybownictwa PZL Bielsko (PDPSz „PZL-Bielsko”) ul. Cieszyńska 325 43-300 Bielsko-Biała POLAND
5.	Type Certification Date:	13 February 1985

6. This TCDS replaces the TCDS No. EASA.A.441 issue 01, dated on 14.02.2007, due to merger of TCs to “Jeżów sailplanes”.
The latter one replaced Polish Type Certificate No. BG-144/1,
which replaced the BG-144 on March 25, 2002, due to TC transfer from PDPSz “PZL-Bielsko”.

W.II. Certification Basis

1.	Certification Basis:	Defined 13 February 1985
2.	Airworthiness Requirements:	JAR-22, Amendment 2, issued September 13, 1982
3.	Requirements elected to comply:	None
4.	Special Conditions:	None
5.	Exemptions:	The same as SZD-52-3 (look at V.II. Certification Basis)
6.	Equivalent Safety Findings:	None

W.III. Technical Characteristics and Operational Limitations

1.	Type Design Definition:	Drawing No. SZD-524-00-10-00.
2.	Description:	Single seat, 15 m class sailplane. Cantilever high-wing monoplane with T-shaped tail unit (fixed stabilizer with elevator, fin and rudder). All composite glass-epoxy structure. Bipartite double-tapered wing with flaps and plate airbrakes protruding from upper surface. Retractable main landing gear with disk brake and without shock absorbers; fixed tail wheel. Integral water ballast tanks in wings.

3. Equipment:

Standard equipment:
- airspeed indicator,
- altimeter,
- compass,
- bank-and-turn indicator,
- rate-of-climb indicator,
- towing hook,
- pilot safety belts.

4. Dimensions:

Span	15,00 m
Wing area	10,30 m²
Aspect Ratio	21,8
Length	7,00 m
Height	1,55 m

5. Launching Hook:

SZD III A 56 P

6. Weak links:

Ultimate Strength: 677 daN (± 10%)

7. Air Speeds:

Manoeuvring Speed	V_A	176 km/h	
Never Exceed Speed	V_{NE}	255 km/h	flaps at -12º ÷ 0º
Maximum permitted speeds			
- with flaps extended	V_{FE}	236 km/h	flaps at 2º ÷ 7º
- in rough air	V_{RA}	200 km/h	
- in aero-tow	V_T	140 km/h	
- landing gear operating	V_{LO}	240 km/h	

8. Operational Capability:

VFR Day,
Cloud flying permitted.

9. Masses:

Max. Mass with water ballast	480 kg
Max. Mass without water ballast	370 kg
Empty Mass	256 kg

10. Centre of Gravity Range:

Empty sailplane with standard equipment:

Forward Limit	620 mm aft of datum point
Rearward Limit	640 mm aft of datum point

Centre of Gravity operational limits:

Forward Limit	217 mm aft of datum point (20,0% MAC)
Rearward Limit	374 mm aft of datum point (42,0% MAC)

MAC is 715 mm; 0% MAC is 74 mm behind the datum.

Datum:	Leading edge and wing-fuselage division plane intersection.
Levelling means:	Leading and trailing points of root chord (900 mm) at the same level.

11. Seating Capacity:

1

12. Lifetime limitations:

Refer to Maintenance Manual

13. Other limitations:

Aerobatic and cloud flying are permissible only without water ballast.

Aerobatic is permissible only with flaps at "0" position.

Intentional spinning is forbidden.

14. Deflection of control surfaces:

Aileron:	- up	20°	± 1°
	- down	14°	± 1°
Elevator:	- up	30°	± 1°
	- down	20°	± 1°
Rudder:	- left	30°	± 2°
	- right	30°	± 2°
Flaps:	- up	12°	± 1°
	- down	7°	± 1°

W.IV. Operating and Service Instructions

1. Flight Manual:

   Polish: Instrukcja Użytkowania w Locie,
   Szybowiec SZD-52-4 „Krokus”,
   wydanie II z dnia 20.12.1984 r.

2. Maintenance Manual:

   Polish: Szybowiec SZD-52-4 „Krokus”,
   Opis Techniczny,
   Instrukcja Obsługi Technicznej z Terminarzem
   Prac Okresowych,
   wydanie z dnia 26.11.1984 r.

3. Repairs Manual:

   Polish: Instrukcja napraw szybowców laminatowych
   SZD-52-3 „Krokus S” i SZD-52-4 „Krokus”,
   wydanie I, 1984 r.

W.V. Notes

1. Serial Numbers:
   X-140,
   X-142.
2. All sailplane outside surfaces exposed to sunlight must be white painted apart from registration number and anti-collision marks.

Administrative Section

I. Acronyms

N/A

II. Type Certificate Holder Record

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III. Change Record

Issue	Date	Changes
Issue 01	18.02.2010	Transfer from Polish Approvals: • 8/TL/61 dated on 29 December 1961 • 8/TL/64 dated on 17 July 1964 Concerned the SZD-24C “Foka” model only.
Issue 02	27.11.2018	Transfer from EASA and Polish Type Certificates and Approvals (initiated in April 2015) and merger of TCDSs for models listed on the title page into one common TCDS with type designation changed to “Jeżów sailplanes”.

END