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MINOR CHANGE CERTIFICATION DOCUMENT FOR
SZD-JEZOW GLIDERS

EASA Project No.:

Doc. No. 2/AGL/MCC/2025

Person Responsible For Project:
Michał Wójcik
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Table of Contents

1 Description of change

The minor change is for usage of Nicopress crimping sleeves for crimpling control cables in PW-5 Smyk and PW-6 gliders, as listed in the paragraph 2 - Applicability.

These gliders have control cables crimped with SZD crimping sleeves, which are very hard to buy from a long time, or using the method of braiding the cables, which is very time consuming.

Nicopress is commonly used among gliders, for example in Germany, where manufacturers allowed usage of Nicopress crimping sleeves long time ago. It was also implemented in 2023 in Polish gliders from Allstar PZL Glider: SZD-50-3 Puchacz, SZD-51-1 Junior, SZD-48-3 Jantar Standard 3, SZD-54-2 Perkoz, SZD-59 Acro and SZD-55 (BE-001/SZD/2023), using Minor Change as a legal basis.

Nicopress allows to crimp steel cables from the 1 mm to 16 mm. Most popular sizes of steel cables in gliders are 2 mm, 2.5 mm and 3 mm, which shows that these sizes are not uncommon for Nicopress system.

The range of Nicopress sleeves, as well as applicable crimping tools, which are subject of the change, are listed in the paragraph 1.2 - Part Numbers.

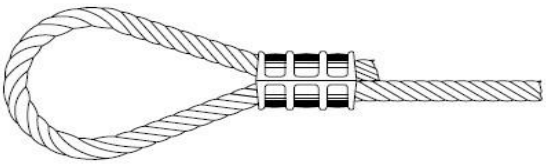

Fig. 1 Cable crimp made using the NICOPRESS

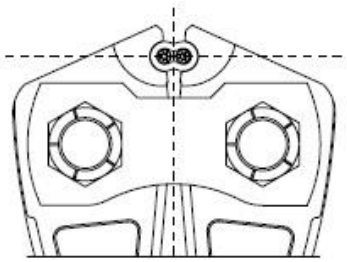

Fig. 2 Setting the sleeve in the tool

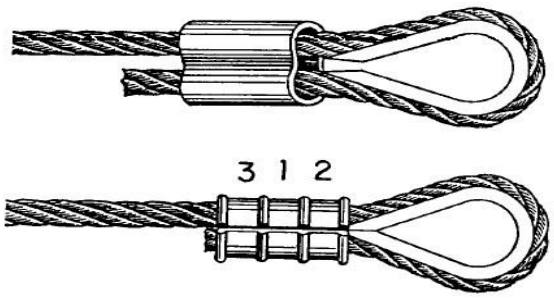

Fig. 3 Schematic diagram of crimping the rope loop

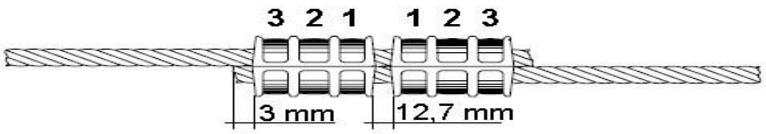

Fig. 4 Schematic diagram of crimping the cable connection

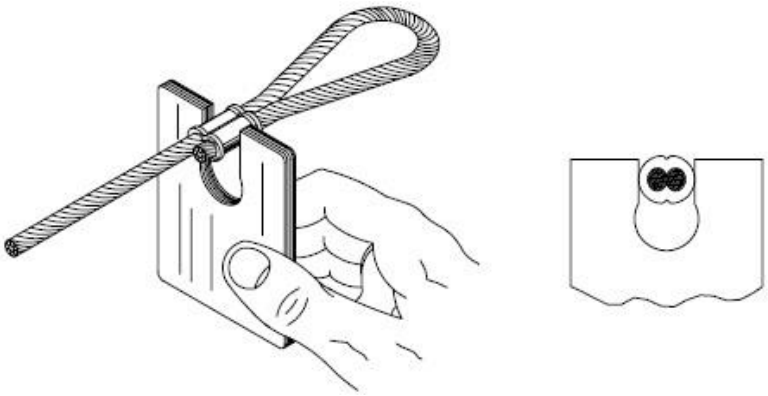

Fig. 5 Method of checking the crimping of the sleeves

Fig. 6 Tool for checking the crimping of the sleeves

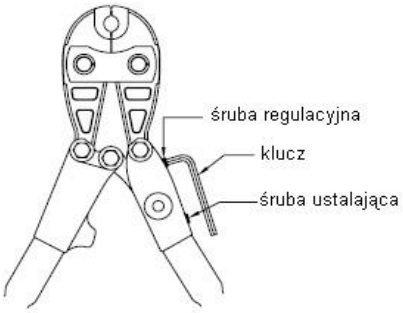

Fig. 7 NICOPRESS sleeve crimping pliers

1.1 Classification of change

It has been assessed in accordance with Part 21.A.21, including GM 21.A.91 with Appendix A, that the modification described above has no appreciable effect on the mass, balance, structural strength, reliability, operational characteristics, operational suitability data, or other characteristics affecting the airworthiness of the product or its environmental characteristics. Therefore the modification has been classified as Minor Change.

1.2 Part Numbers

Cable dimension		Crimping sleeve part number		Tool	
PN-91/M80235	MIL-W-1511 (steel) MIL-W-5424 (stainless)	Copper	Zinc plated	Number of crimps	Type of tool
2 mm	1/16”	18-1-C	28-1-C	1	64-CGMP
2 mm	1/16”	18-1-C	28-1-C	1	32-VC-VG
2,5 (2,4) mm	3/32”	18-2-G	28-2-G	1	64-CGMP
2,5 (2,4) mm	3/32”	18-2-G	28-2-G	2 (overlapped)	32-VC-VG
3,2 mm	1/8”	18-3-M	28-3-M	3	64-CGMP

2 Applicability

PW-5 Smyk

PW-6, PW-6U

3 Certification Basis (CB)

For each aircraft type listed in the paragraph 2 - Applicability, the original Certification Basis remains valid.

4 Structural Considerations

There is no structural modification of airframe in this minor change. Any stress calculation or structural test are not required.

5 Aircraft Flight Manual (AFM) Impact

The nature of these Minor Change does not give any impact on flight performance. Therefore, AFM supplement is not implemented.

6 Weight and Balance Impact

The nature of these Minor Change does not give any impact on weight and balance of aircraft.

7 Installation Considerations

The technological process for the application of this Minor Change is described in the “Instructions for crimping cables and connecting them with crimping sleeves - NICOPRESS”, document no. 1/AGL/IC/2025, Issue 1, dated 14.02.2025.

8 Testing

To ensure that Nicopress sleeves are strong enough to withstand loads, which occur on steel cables during flight and are also specified in technical standards PN-65/80235 and PN-91/80235, the test was performed in order to check, whether the steel cable or Nicopress sleeve would snap first during strength test.
The test was performed on 28.04.2025 in the area of the Aeroclub in Gliwice.
It was performed using digital dynamometer with tension sensor. The tension on steel cable with Nicopress sleeves was applied using a vehicle and a stationary heavy object. One part of the tested set, which was connected to the stationary object, was thicker steel cable or belt with the strength of 2 tones. The second part was the tested steel cable with Nicopress sleeves. Between them the tension sensor was placed. Details of the test stand are presented on Figures 8, 9, 10 and 11.

Every diameter of steel cables, which is mentioned in this document, was tested twice in order to avoid measurement errors. Before every test every Nicopress sleeve was checked using approved tool to check the diameter of the sleeve after crimping it.

At first the vehicle slowly was straining the set to the point, when dynamometer showed minimal values of tension and whole set was visibly tensile. Then it started to increase the tension on set to the point, when the steel cable or Nicopress sleeves would snap. In all samples the steel cable was the first one to snap below the Nicopress sleeve, where the Nicopress sleeves were still holding. The sample of broken cable is presented on the Figure 12.

In every attempt the steel cable broke at force, which is higher than minimum braking load specified in the technical standards (Fig. 13, 14, 15, 16, 17, 18).

This test shows that application of the Nicopress process ensures sufficient strength of cable connections with use of Nicopress sleeves.

Fig. 8 Test stand

Fig. 9 Tested set – belt, tension sensor and steel cable with Nicopress sleeve

Fig. 10 Tested part of steel cable with Nicopress sleeve, from the tension sensor site

Fig. 11 Tested part of steel cable with Nicopress sleeve, from the vehicle site

Fig. 12 Sample of steel cable with Nicopress sleeve after the test

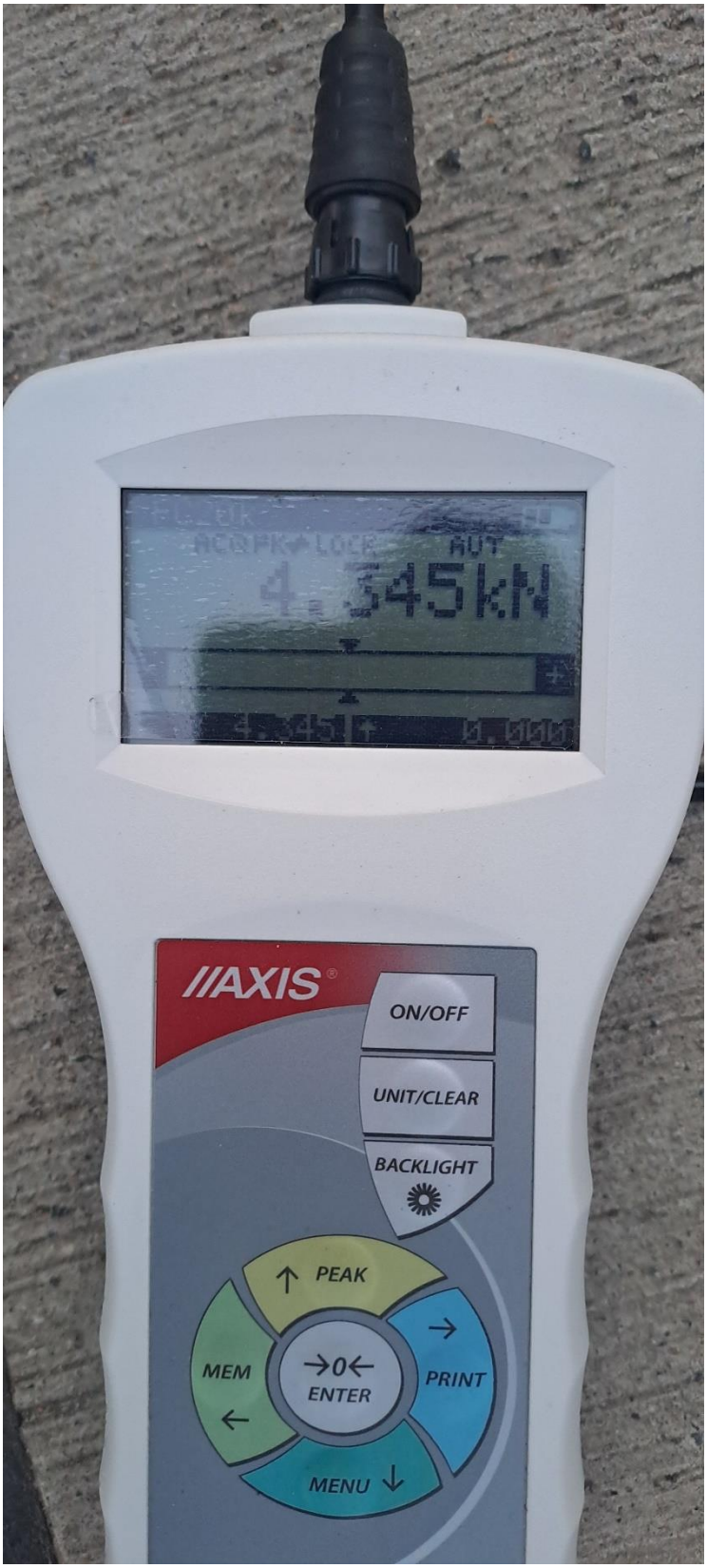

Fig. 13 Value of actual destructive strength for 2 mm steel cable

Fig. 14 Value of actual destructive strength for 2,5 mm steel cable

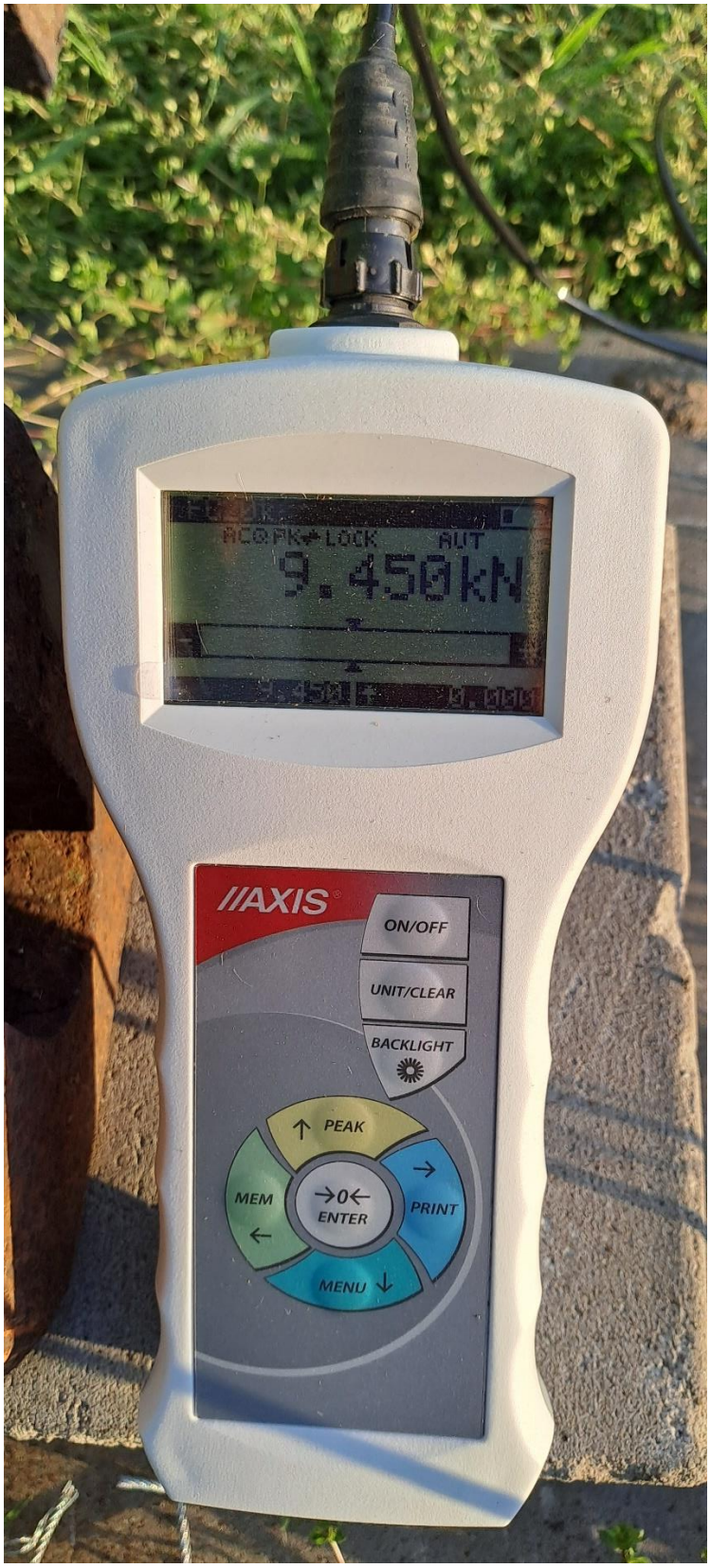

Fig. 15 Value of actual destructive strength for 3,2 mm steel cable

Deklaracja zgodności (certyfikat jakości) i Świadectwo odbioru wedlug EN 10204 typ 3.1/3.2

Declaration of Compliance and Inspection Certificate according to EN 10204 Type 3.1/3.2

Klient: Customer:	**Miejsce produkcji:** Manufacturing Location:	**Marka:** Brand:
AEROKLUB GLIWICKI LOTNISKO POLSKA	WIRECO Poland sp. z o.o. 87-800 Włocławek Poland	WIRECO A World Ahead

Numer certyfikatu: Certificate #:	F24000001328 / 2025	**Data wystawienia:** Date of Issue:	14-JAN-2025
Numer zamówienia klienta: Customer PO #:	Zamówienie Q1009788	**Data zamówienia klienta:** PO Date:	15-NOV-2024
Numer zamówienia: Order #:	JK271594	**Data zamówienia:** Order Date:	15-NOV-2024
Numer faktury: Invoice #:	G2500006	**Data wystawienia faktury:** Invoice Date:	14-JAN-2025
Numer indeksu: Item #:	L0200C186L1I2AO015	**Norma wykonania:** Specification:	PN-65/M-80235
Konstrukcja: Construction:	6x7LOTNICZA-WSC		
Uwagi: Comments:			

Średnica nominalna: Nominal Diameter:	2,00 mm 0.079 in	**Typ rdzenia:** Core Type:	WSC
Klasa wytrzymałoŚci liny: Rope Grade:	1860 N/mm2	**Pokrycie drutu:** Wire Finish:	B
Minimalna siła zrywająca: Minimum breaking load:	3,73 kN 838.54 lbf	**Kierunek zwicia liny:** Lay:	sZ RIGHT REGULAR
Nominalna dlugosc liny: Cut Length(s):	200 m 656.17 ft	**Średnia waga metra:** Ave. Wt./Unit lgth.:	1,880 kg/100 m 0.013 lb/ft
Numer liny: Lot Number:	PL537590-1061-1	**Numer wyrobu fabrykowanego:** FAB Lot #(s):	F24000001328
Średnica rzeczywista: Actual Diameter:	2,16 mm 0.085 in	**Liczba splotów zewnętrznych:** Number of Outer Strands:	
Rzeczywista siła zrywająca: Actual breaking load:	4,175 kN 938.58 lbf	**Ilość drutów przenoszących obciążenie w splotach zewnętrznych:** Load-bearing Wires of Outer Strands:	
Data testu: Date of Test:	03-DEC-2024	**Współczynnik odkrętności:** Rotation Behavior per ASTM:	
Przykładowe dopuszczalne maksymalne obciążenie robocze: Example Working Load Limit:	0,75 kN 167.71 lbf	**Do użycia z krętlikami:** Use of a Swivel:	

Based on a design factor of 5. Your application's differ and should be considered when calculating your limit.

DEKLARACJA ZGODNOŚCI. / QUALITY ASSURANCE

Responsible Person: Ada Łanek
Position: Quality Manager

Outside Inspector (if applicable)

Approved Signee (if applicable)

It is declared that the above particulars are correct, and that the product was in compliance with the applicable specification at the time of testing. This declaration becomes invalid if the product is modified without prior approval from the manufacturer or is improperly used, stored or maintained, or if the user is not in compliance with applicable industry product safety standards.

Dionne Dillon, V.P. Global Quality and Process Engineering

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United States

Fig. 16 Data for steel cable, 2 mm

Deklaracja zgodności (certyfikat jakości) i Świadectwo odbioru według EN 10204 typ 3.1/3.2

Declaration of Compliance and Inspection Certificate according to EN 10204 Type 3.1/3.2

Klient: Customer:	**Miejsce produkcji:** Manufacturing Location:	**Marka:** Brand:
AEROKLUB GLIWICKI LOTNISKO POLSKA	WIRECO Poland sp. z o.o. 87-800 Włocławek Poland	WIRECO A World Ahead

Numer certyfikatu: Certificate #:	F24000001333 / 2025	**Data wystawienia:** Date of Issue:	14-JAN-2025
Numer zamówienia klienta: Customer PO #:	Zamówienie Q1009788	**Data zamówienia klienta:** PO Date:	15-NOV-2024
Numer zamówienia: Order #:	JK271594	**Data zamówienia:** Order Date:	15-NOV-2024
Numer faktury: Invoice #:	G2500006	**Data wystawienia faktury:** Invoice Date:	14-JAN-2025
Numer indeksu: Item #:	L0250C196L1I2AO011	**Norma wykonania:** Specification:	PN-91|M-80235
Konstrukcja: Construction:	6x7LOTNICZA-WSC		
Uwagi: Comments:			

Średnica nominalna: Nominal Diameter:	2,50 mm 0.098 in	**Typ rdzenia:** Core Type:	WSC
Klasa wytrzymałoŚci liny: Rope Grade:	1960 N/mm2	**Pokrycie drutu:** Wire Finish:	B
Minimalna siła zrywająca: Minimum breaking load:	5,19 kN 1166.76 lbf	**Kierunek zwicia liny:** Lay:	sZ RIGHT REGULAR
Nominalna dlugosc liny: Cut Length(s):	200 m 656.17 ft	**Średnia waga metra:** Ave. Wt./Unit lgth.:	2,400 kg/100 m 0.016 lb/ft
Numer liny: Lot Number:	PL537601-1061-1	**Numer wyrobu fabrykowanego:** FAB Lot #(s):	F24000001333
Średnica rzeczywista: Actual Diameter:	2,60 mm 0.102 in	**Liczba splotów zewnętrznych:** Number of Outer Strands:	7
Rzeczywista siła zrywająca: Actual breaking load:	6,186 kN 1390.67 lbf	**Ilość drutów przenoszących obciażenie w splotach zewnętrznych:** Load-bearing Wires of Outer Strands:	49
Data testu: Date of Test:	04-DEC-2024		
Przykładowe dopuszczalne maksymalne obciażenie robocze: Example Working Load Limit:	1,04 kN 233.35 lbf	**Współczynnik odkrętności:** Rotation Behavior per ASTM:	Nie Dotyczy Not Applicable
Based on a design factor of 5. Your application's differ and should be considered when calculating your limit.		**Do użycia z krętlikami:** Use of a Swivel:	Nie Dozwolony Not Allowed

DEKLARACJA ZGODNOŚCI. / QUALITY ASSURANCE

Responsible Person: Ada Łanek
Position: Quality Manager

Outside Inspector (if applicable) Approved Signee (if applicable)

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Fig. 17 Data for steel cable, 2,5 mm

Deklaracja zgodności (certyfikat jakości) i Świadectwo odbioru według EN 10204 typ 3.1/3.2

Declaration of Compliance and Inspection Certificate according to EN 10204 Type 3.1/3.2

Klient: Customer:	**Miejsce produkcji:** Manufacturing Location:	**Marka:** Brand:
AEROKLUB GLIWICKI LOTNISKO POLSKA	WIRECO Poland sp. z o.o. 87-800 Włocławek Poland	WIRECO A World Ahead

Numer certyfikatu: Certificate #:	F24000001338 / 2025	**Data wystawienia:** Date of Issue:	14-JAN-2025
Numer zamówienia klienta: Customer PO #:	Zamówienie Q1009788	**Data zamówienia klienta:** PO Date:	15-NOV-2024
Numer zamówienia: Order #:	JK271594	**Data zamówienia:** Order Date:	15-NOV-2024
Numer faktury: Invoice #:	G2500006	**Data wystawienia faktury:** Invoice Date:	14-JAN-2025
Numer indeksu: Item #:	L0320C196L2I2AO011	**Norma wykonania:** Specification:	PN-91|M-80235
Konstrukcja: Construction:	6x19M-WSC		
Uwagi: Comments:			

Średnica nominalna: Nominal Diameter:	3,20 mm 0.126 in	**Typ rdzenia:** Core Type:	WSC
Klasa wytrzymałoŚci liny: Rope Grade:	1960 N/mm2	**Pokrycie drutu:** Wire Finish:	B
Minimalna siła zrywająca: Minimum breaking load:	8,88 kN 1996.30 lbf	**Kierunek zwicia liny:** Lay:	sZ RIGHT REGULAR
Nominalna dlugosc liny: Cut Length(s):	200 m 656.17 ft	**Średnia waga metra:** Ave. Wt./Unit lgth.:	3,900 kg/100 m 0.026 lb/ft
Numer liny: Lot Number:	PL537602-1261-1	**Numer wyrobu fabrykowanego:** FAB Lot #(s):	F24000001338
Średnica rzeczywista: Actual Diameter:	3,31 mm 0.130 in	**Liczba splotów zewnętrznych:** Number of Outer Strands:	
Rzeczywista siła zrywająca: Actual breaking load:	9,512 kN 2138.38 lbf	**Ilość drutów przenoszących obciążenie w splotach zewnętrznych:** Load-bearing Wires of Outer Strands:	
Data testu: Date of Test:	05-DEC-2024	**Współczynnik odkrętności:** Rotation Behavior per ASTM:	
Przykładowe dopuszczalne maksymalne obciążenie robocze: Example Working Load Limit:	1,78 kN 399.26 lbf	**Do użycia z krętlikami:** Use of a Swivel:	

Based on a design factor of 5. Your application's differ and should be considered when calculating your limit.

DEKLARACJA ZGODNOŚCI. / QUALITY ASSURANCE

Responsible Person: Ada Łanek
Position: Quality Manager

Outside Inspector (if applicable) Approved Signee (if applicable)

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Fig. 18 Data for steel cable, 3,2 mm

9 Statement of Compliance and Minor Change approval holder obligations

As shown in this document, the proposed Minor Change ensures that the cable connections strength is not worse than in solutions applied so far. It has not any other impact on the requirements of the Certification Basis for all affected glider models. **Therefore it is hereby declared that the Minor Change complies with requirements of the Certification Basis.** The document is ready for approval by the Agency.

It is hereby confirmed that the holder of this Minor Change is aware and ready to discharge his obligations according to 21.A.109.

Michał Wójcik

10 Document History

Issue	Date	Change
0	11 JUL 2025	Initial Issue