MARGAŃSKI & MYSŁOWSKI
ZAKŁADY LOTNICZE
S.A.
tel./fax (+48)33 8150110 office@marganski.pl www.marganski.pl www.orka-aircraft.eu

Enclosure No 1
to
Bulletin No BO-25/2018 MDM-1 FOX

INSTRUCTION

Modification of Bowden cable of C.G. release

glider: MDM-1 Fox

Technical content of this document is approved under the authority of the DOA EASA.21J.117.
Internal approval number: MDM-1 FOX/1/2018 DB

Made by:	Approved by:
[--] Jacek Dolina, Technologist	[--] Tadeusz Zboś, Head of AO
Checked by:	
[--] Mariusz Wolak, Chief Design Engineer	Issue: 05.08.2018
Translated by:	
TZboś Tadeusz Zboś	

Intentionally left blank.

Table of contents:

1 Repair preparation

1.1 Necessary tools

No.	Tool	Quantity
1	Brush	1
2	Scraper plane	1
3	Portable heater – To cure the repair area at 65°C temperature	1
4	resin mixing pots	as needed
5		
6		
7		
8		
9		

1.2 Materials

No.	Material	Quantity
1	Glass fabric Interglass 92110, 150-200g/m^2	0,035 m^2
2	Peeling fabric	0,035 m^2
3	Resin EP-53	0,1 kg
4	Hardener Z1	0,01 kg
5	Aerosil	as needed
6	PVC foam	300x20x20 [mm]
7	Bowden cable Ø8x1	0,5 m
8	Varnishing materials – adequate for lacquer coat used on the modified glider	as needed
9		
10		

1.3 Labour intensity

Time needed for repair: **6 hours / 1 person + curing**

2 Process

a) Check, and adjust as necessary placement and connections of cords in the releases actuating system.

b) Dismount the C.G. release's cord.
If the length of the cable is sufficient for modification planned then you should just unhook the cable from the release. Then it is necessary to cut the Bowden outer housing to put it on the cord. If the cord is too short it is necessary to replace it with longer one.
Prepare the area where the modification will be carried out, by securing or dismantling mechanisms that may be damaged or soiled during work.

c) Prepare tools and materials needed for modification, following the general guidelines for the manufacture of aircraft composite structures.

d) Prepare PVC foam (acc to **Fig. 1** and **Fig. 2**), fitting its shape to the fuselage.

e) Remove a top layer of paint and filler inside the fuselage in the area of modification, by grinding it down to bare composite.

f) Free the part of the Bowden cable Ø6x1, adjust prepared piece of PVC foam, and ensure a smooth transition of cable to new position. Determine the length of the new Ø8x1Bowden outer sheath and trim it to the right dimension (according to the picture below). If needed, cut the outer housing along to put on a steel cord.

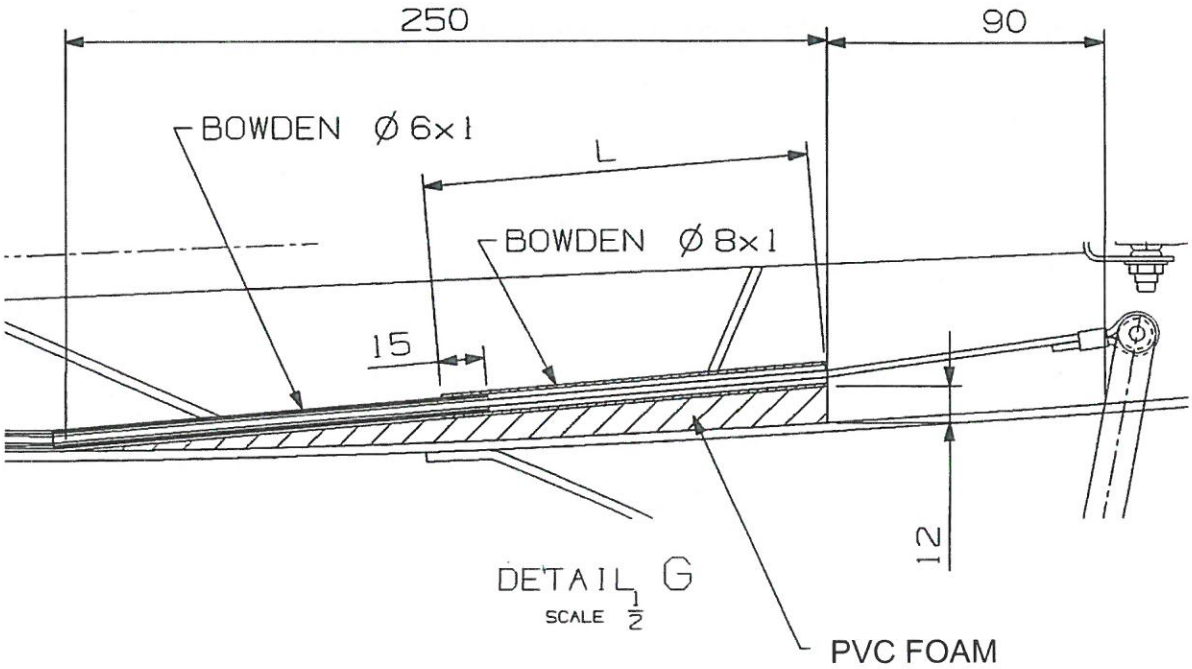


Fig. 1 **Scheme of Bowden cable's on PVC foam (side elevation)**

g) Prepare the surface for lamination.

h) Bond in the PVC foam (prepared earlier). Connect Bowden outer housing Ø8x1 and Ø6x1, through pulling Ø8x1 over Ø6x1, over a length of 15mm. Provide the smooth transition between both Bowden cables – composition for lamination: *EP53/Z1+Aerosil*. Carry out following general guidelines for the manufacture of aircraft composite structures.

i) Laminate with glass fabric 1x92110/ ±45°/ using EP-53/Z1 composition *(acc to Fig. 2 and Rys. 3)*, secure the laminated surfaces with the peel-ply.

Check correct realisation against general guidelines for the manufacture of aircraft composite structures.

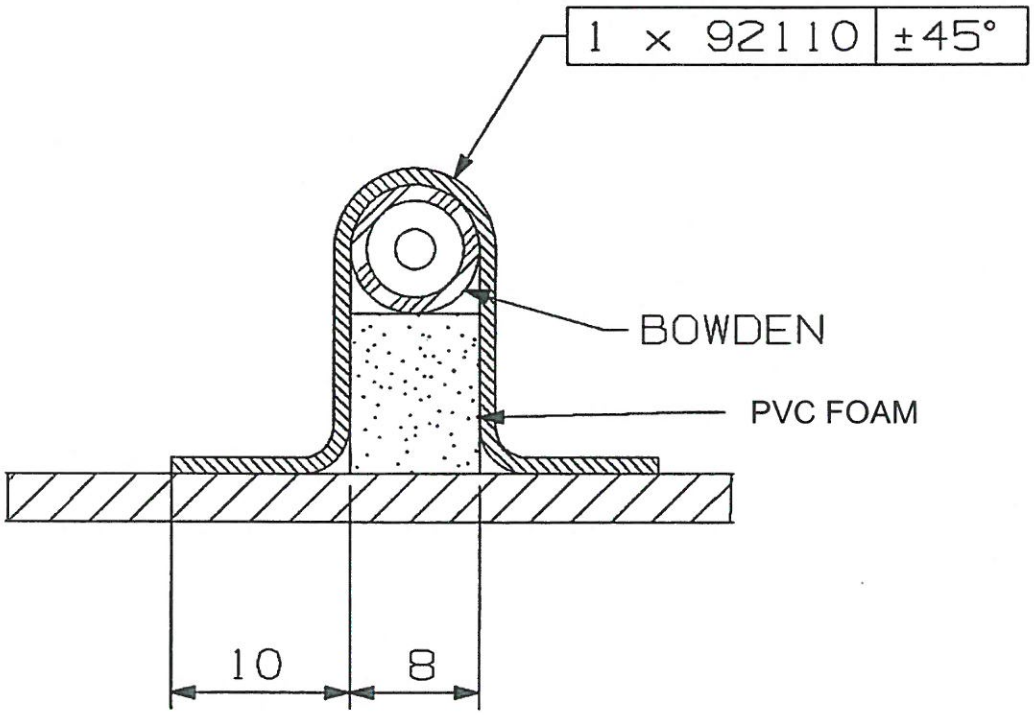
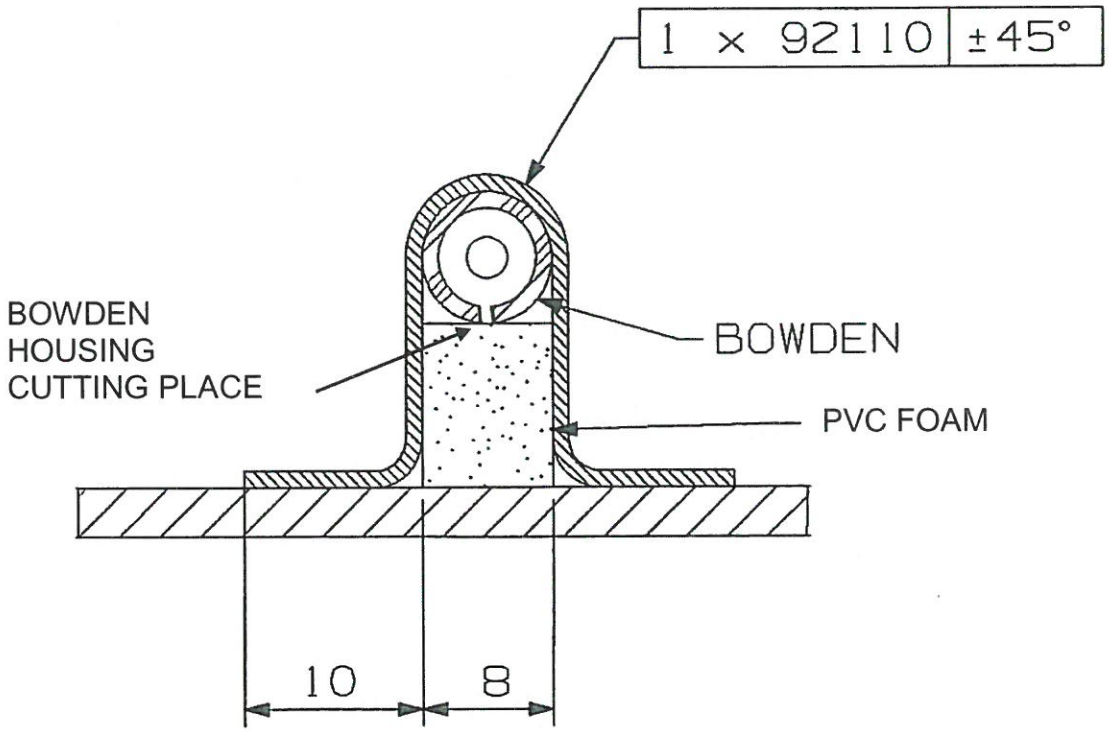


Fig. 2 Scheme of Bowden housing lamination (front view)



Rys. 3 Scheme of Bowden housing lamination (with cut) (front view)

j) Warm the composite structure in the area of modification (acc to **Table 1**).

Table 1

Stage	Epidian 53/Z1			
	Curing at ambient temperature:			
	19-24°C	**24-30°C**	**30-40°C**	**40-45°C**
Initial hardening	16h	14h	10h	3h
Final hardening	4 days	3 days	1 day	
Post curing	65°+/-5° /8h	65°+/-5° /8h	65°+/-5° /8h	65°+/-5° /8h

k) Remove peel-ply, and manually align the laminated surfaces for filling.

l) Apply filler and prepare the modified surfaces for lacquering, following guidelines for the manufacture of aircraft composite structures.

m) Restore the lacquer inner layer in area of modification. Carry out with guidelines for lacquering of aircraft composite structures.

n) Mount the C.G. release cord and all other mechanism components removed for the repair. In case of replacing the steel cord, the following steps should be done:

- Crimp the clamping sleeve on one end of the steel cord.
- Determine a total length of the cord
- crimp the second clamping sleeve on the other end of the steel cord

Check accuracy of preparing the new linkage according to general guidelines for the manufacture of aircraft linkage components by sleeve crimping, and to the following sketch (*Fig. 4*).

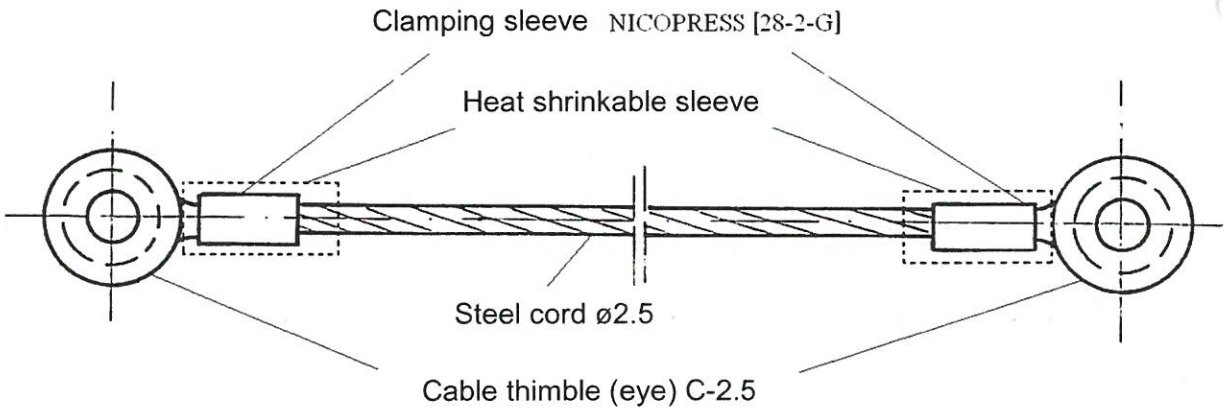


Fig. 4 Preparation of the new cord

3 Final provisions

The modification must be carried out by a licensed aircraft mechanic, according to the regulations of a glider's registration country.

After finishing the modification – check correct operation of the release's actuation system.