

Technical Note TN.JS-012

11 February 2013

TITLE

Trailer Modification for 21m Wing Tips

DESCRIPTION

The current Cobra trailers for JS1 can only store the 18m class wing tip. This Technical Note describes the modification of the trailer to accommodate both the 18 m tips and the 21 m tips.

Figure 1 shows a schematic of the trailer with all the modifications completed. It also illustrates reference sides i.e. left, right, rear and front.

To ensure compatibility with the 21m wing tips, the following modifications must be made to the trailer:

- New wing tip brackets at the rear to hold the wing tips at their roots.
- Narrower rear U-frame/saddle assembly to support the 18m tips.
- New front U-frame/saddle assembly to support the 21m tips.
- Modified rear tailplane bracket and new tailplane bracket spacer.
- New wing positioning brackets and relocated wing seats.

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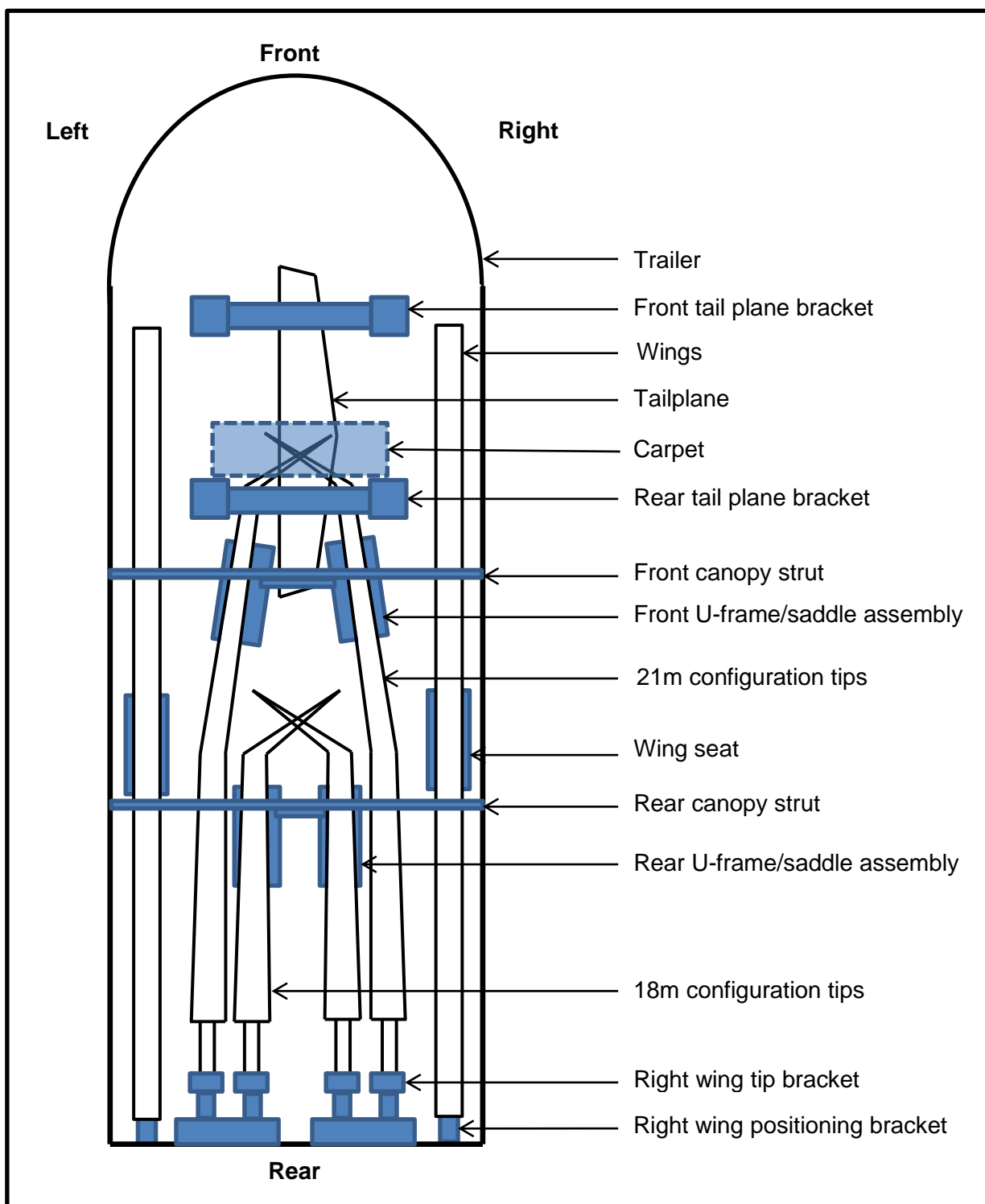


Figure 1

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				<i>Alister</i>	<i>Jonker</i>	

1. Replacing the current wing tip brackets

The wing tip brackets will secure the wing tips' roots. See [Figure 2](#).

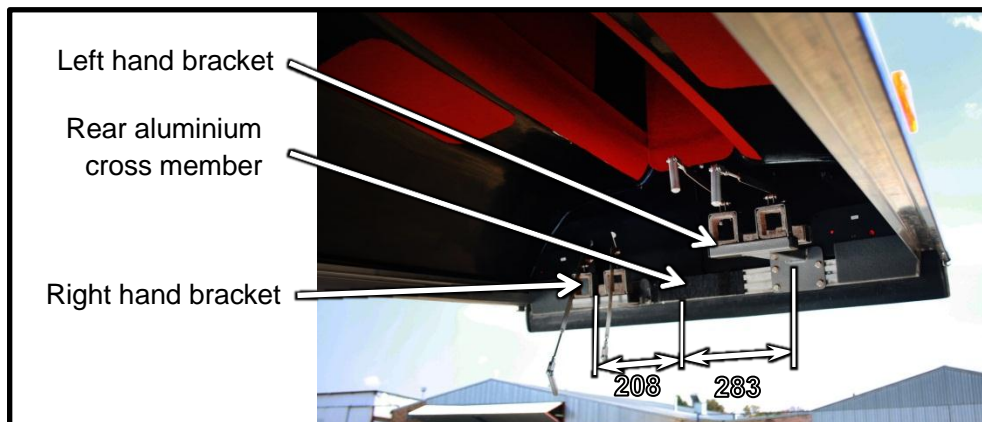


Figure 2

- 1.1. Remove the bolts retaining the current brackets, and then remove the brackets.
- 1.2. Bolt the new brackets in the positions as illustrated in [Figure 2](#). (Dimensions in [Figure 2](#) use the centre of the rear cross member as datum.)

2. Replacing the rear U-frame

A narrower U-frame is required, which will bring the 18m wing tips closer to one another in order to prevent interference with the other glider parts.

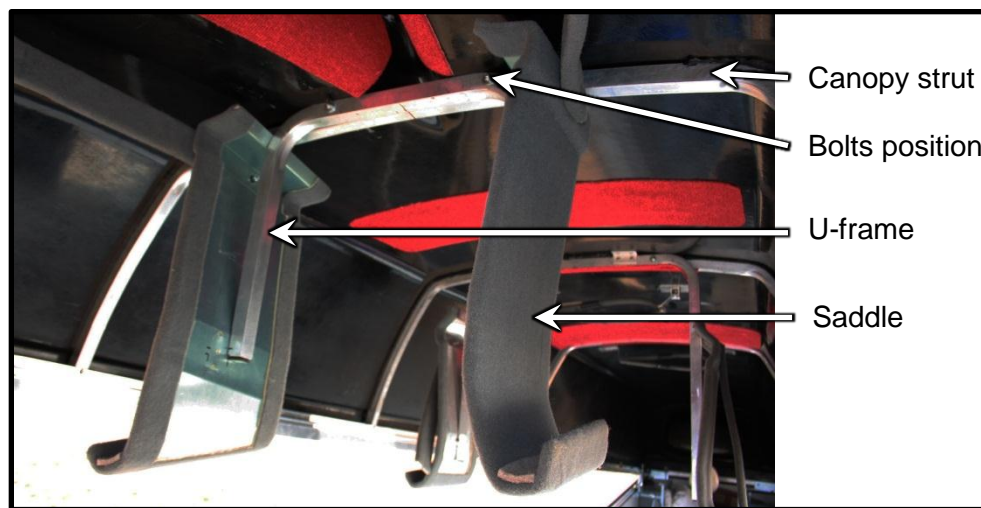


Figure 3

- 2.1. Remove the U-frame by removing the bolts fastening the U-frame to the canopy strut.
- 2.2. Removing the saddle attached to the U-frame.
 - 2.2.1. Locate the rivets under the carpet of the saddles. Cut a flap in the carpet of the saddles to expose the rivet heads.

- 2.2.2. Remove the rivets retaining the saddles to the U-frame, and then remove the saddles from the U-frame.
- 2.3. Install the removed saddles to the new U-frame as illustrated in [Figure 4](#).
 - 2.3.1. Position the saddles according to the illustration. Mark the locations for the new rivet holes after flaps have been cut in the carpet - two rivets are required at the bottom and one at the top.
 - 2.3.2. Drill new holes according to the markings, and then install the saddles to the U-frame using the supplied rivets.

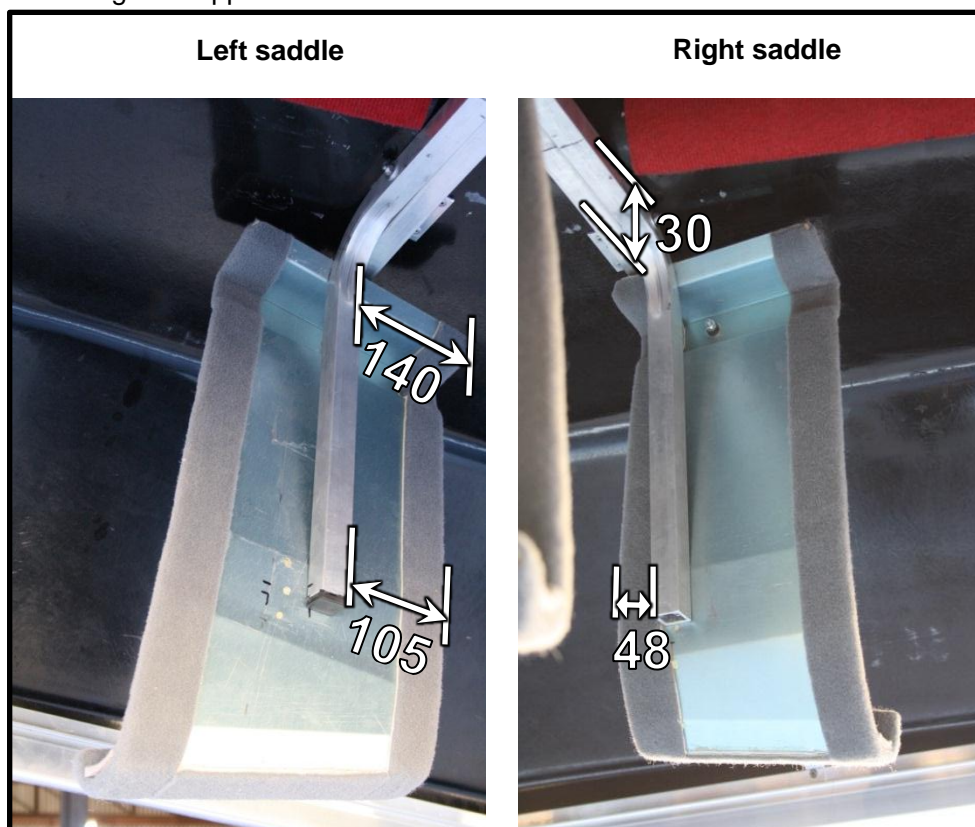


Figure 4

- 2.4. Fitting the U-frame/saddle assembly in position.
 - 2.4.1. Align the U-frame/saddle assembly to the centre position of the canopy strut.
 - 2.4.2. Drill two holes in the strut and U-frame and bolt the assembly to the canopy strut's rear face. ([Figure 3](#))

3. Installing the front strut and the U-frame/saddle assembly

The U-frame and saddles mentioned in this modification is used to secure the 21m wing tips.

3.1. Install the canopy strut 2440mm from the rear aluminium cross member. (see [Figure 2](#)).

3.1.1. Push the strut fully against the trailer canopy.

3.1.2. Rivet strut to the side rail of the canopy. 1 rivet on either side. (see [Figure 6](#)).

3.1.3. Use a sealant glue to fill the gap between the trailer canopy and the canopy strut.

3.2. Installing the U-frame/saddle assembly.

3.2.1. Fit the U-frame/saddle assembly to the centre position of the strut.

3.2.2. Drill two holes, as illustrated and bolt the U-frame to the strut's rear face.

3.2.3. Fit the aluminium L- brackets as illustrated in [Figure 5](#). Drill and rivet as illustrated. Take care not to drill through the outer skin of the canopy.

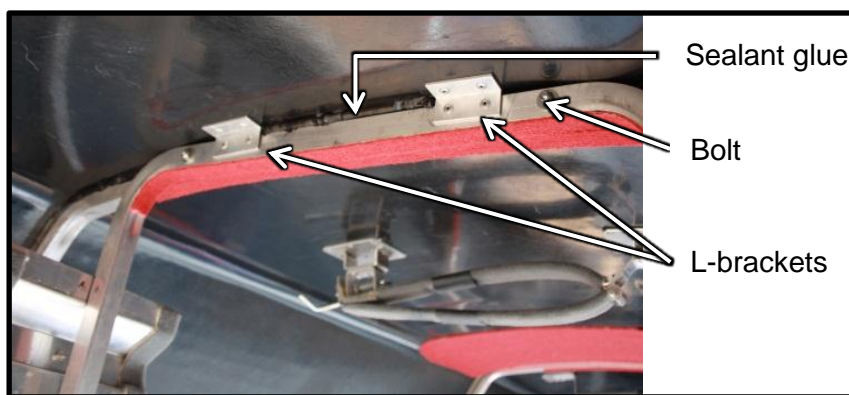


Figure 5

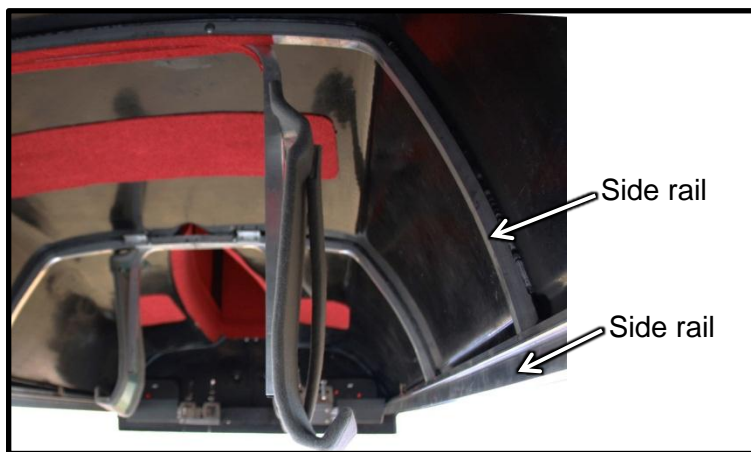


Figure 6

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4. Modifying the rear tailplane bracket

Spacers are inserted to lower the rear tailplane bracket. This will provide clearance between the tailplane and the 21 m tips.

4.1. Removing the tailplane bracket.

4.1.1. Remove the mounting plates fastened to trailer's canopy.

4.1.2. Remove the bracket from the mounting plate.

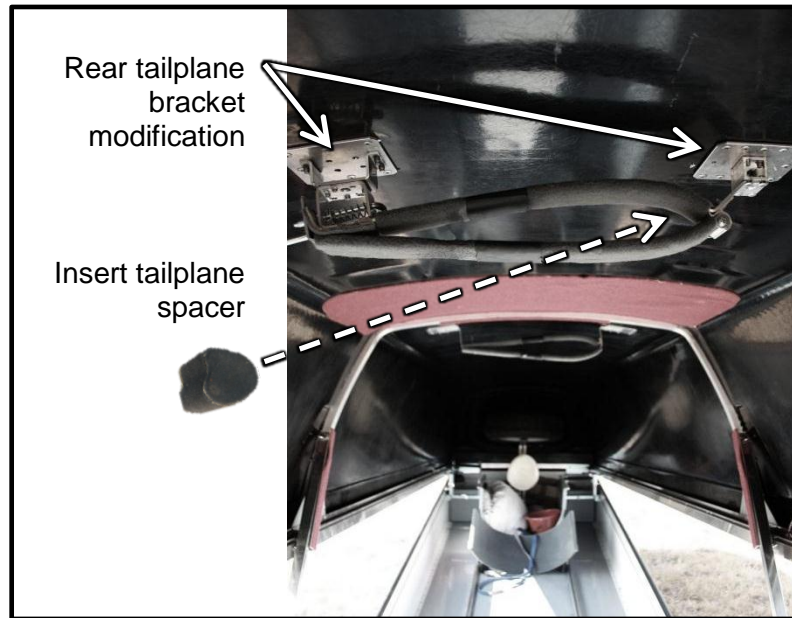


Figure 7

4.2. Reinstalling the brackets with spacers as illustrated in Figure 7 - Figure 10.

4.2.1. Reinstalling the right hand side of the tailplane bracket as illustrated step wise in Figure 8. Figure 9 illustrates the modification when complete.

4.2.1.1. Drill and rivet (2 counter sink rivets) the spacer to the mounting plate.

4.2.1.2. Rivet the spacer-mounting plate assembly to the trailer canopy. Use the same holes in which the mounting plate was initially fastened.

4.2.1.3. Rivet (2 normal rivets) the tailplane bracket to the spacer/mounting plate assembly.

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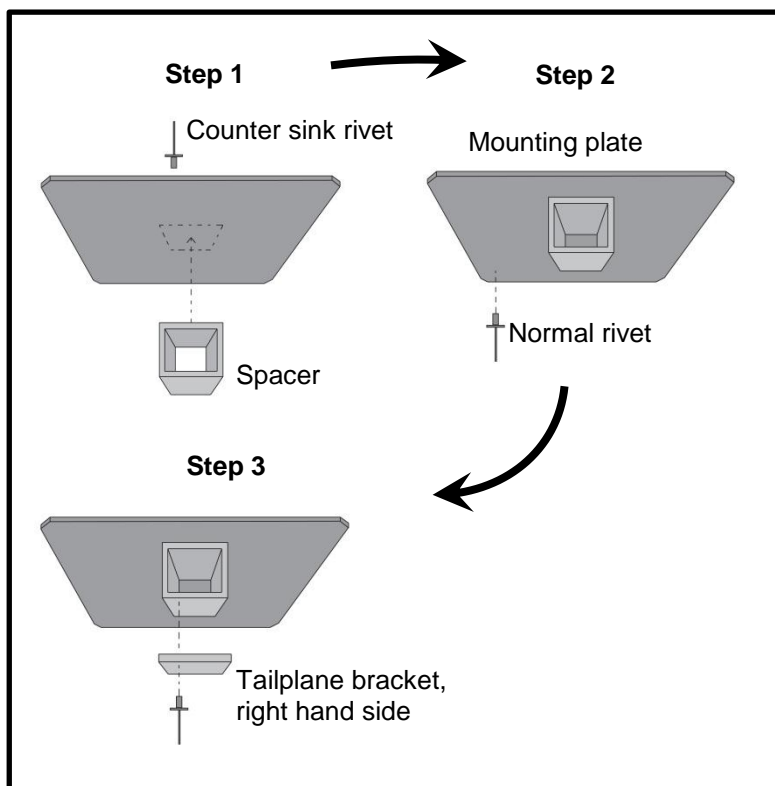


Figure 8

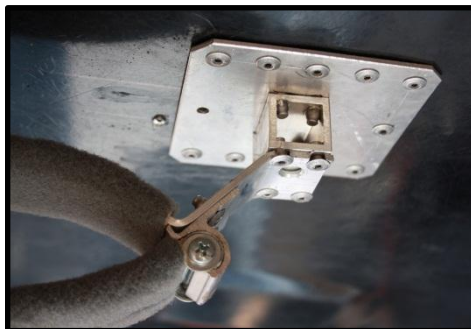


Figure 9

- 4.2.2. Reinstalling the left hand side of the tailplane bracket as illustrated step wise in [Figure 10](#). [Figure 11](#) illustrates the modification when complete.
- 4.2.2.1. Drill and rivet(4 normal rivets) the spacer to the tailplane bracket.
 - 4.2.2.2. Rivet(4 counter sink rivets) the spacer/tailplane bracket assembly to the mounting plate.
 - 4.2.2.3. Rivet the mounting plate to the trailer canopy. Use the same holes in which the mounting plate was initially fastened. (Normal rivets)

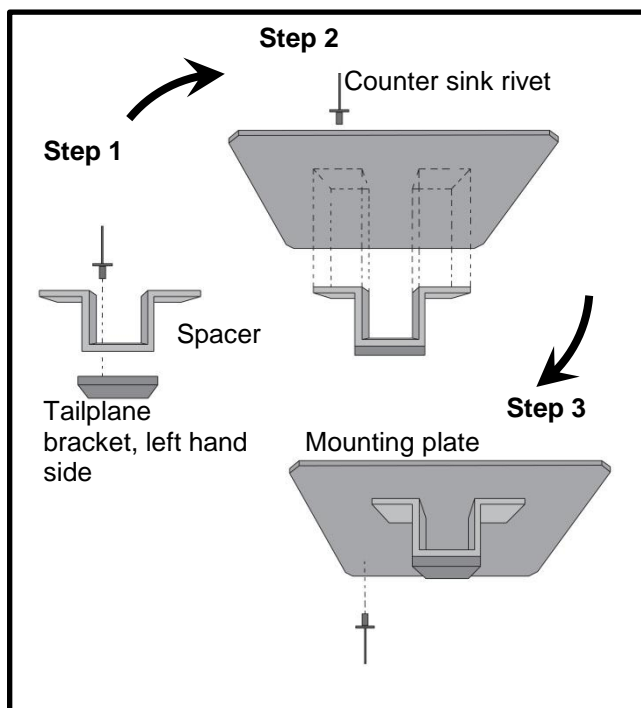


Figure 10

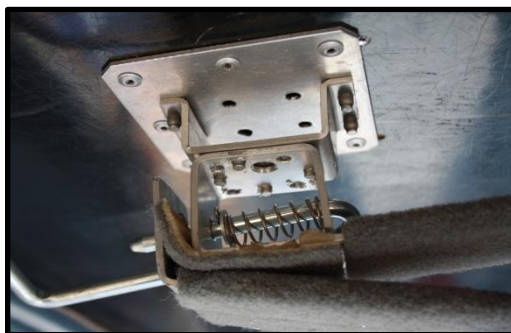


Figure 11

4.2.3. Glue the tailplane spacer in position with contact adhesive as illustrated in [Figure 7](#).

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5. Relocating of wing seat.

- 5.1. Move the wing seats to the position illustrated in [Figure 12](#). 115 mm from trailer side edge..
- 5.2. Undo the bolt underneath the trailer, move the wing seat into position and fasten the bolt again.

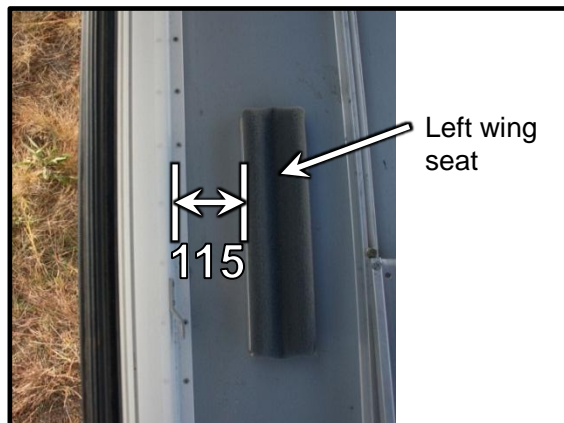


Figure 12

6. Replacing wing positioning brackets and moving the rear door latch.

To ensure that the wing seats and the positioning brackets line up, the positioning brackets have to move as well. [Figure 13](#) and [Figure 14](#) provides illustrations on this modification.

- 6.1. Remove the brackets. (left and right)
- 6.2. Remove the latch.
- 6.3. Fit the spacers as illustrated in [Figure 13](#). Neatly cut a bit of the rubber lining away for the spacers to fit. Drill the necessary holes and rivet only the wing positioning bracket spacers to the door. Use [Figure 13](#) as a guideline. Be sure to make a counter sink recess where the holes are drilled in the spacers and use countersink rivets for fastening. Keep in mind that the brackets and latch has to be riveted to the spacers.
- 6.4. Fit the new brackets in the new position on top of the spacers- 10mm from top and 20mm from side. ([Figure 14](#))
- 6.5. Drill the necessary holes and rivet to secure the brackets. (Normal rivets can be used)
- 6.6. Fit the latch onto the latch spacer by lining the holes in the latch spacer up with the holes in the latch. Drill the necessary holes and rivet the latch and spacer to the rear door using normal rivets.
- 6.7. Find a new position for the latch mechanism. (Just below the positioning bracket should be adequate)
- 6.8. It is also necessary to move the latch's clip to a new position so that the latch has something to clip into. ([Figure 14](#))
- 6.9. Drill the necessary holes and rivet to secure the latch.

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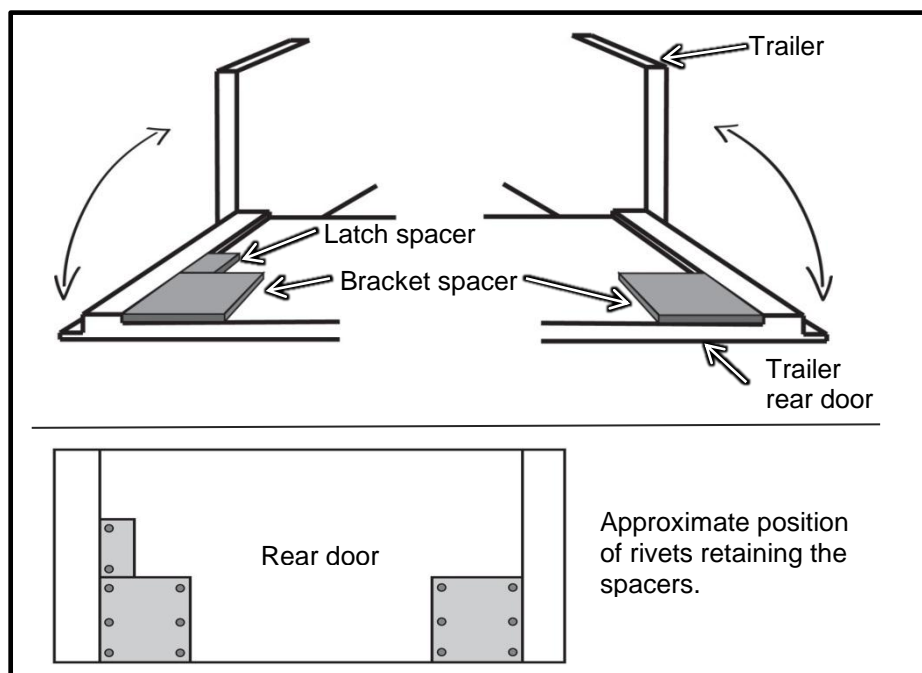


Figure 13

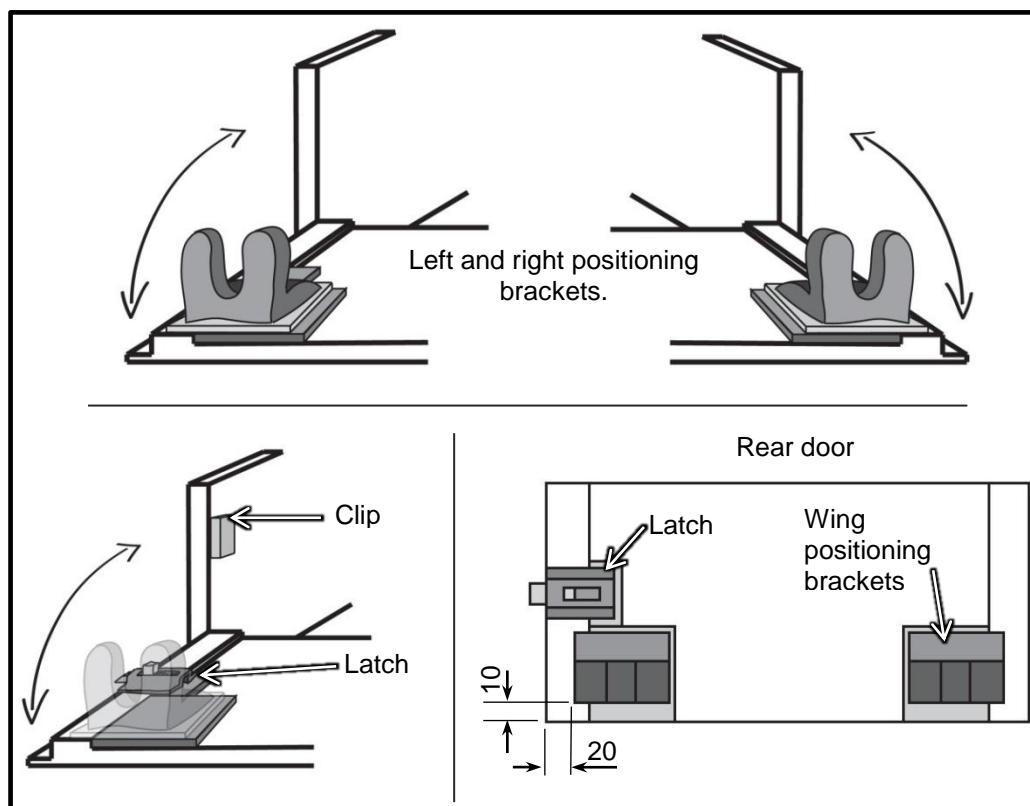


Figure 14

7. Installing front carpet

Glue the carpet to the trailer canopy in position to protect the tip side of the 21m wing tips when inserting them into the trailer. See [Figure 15](#).

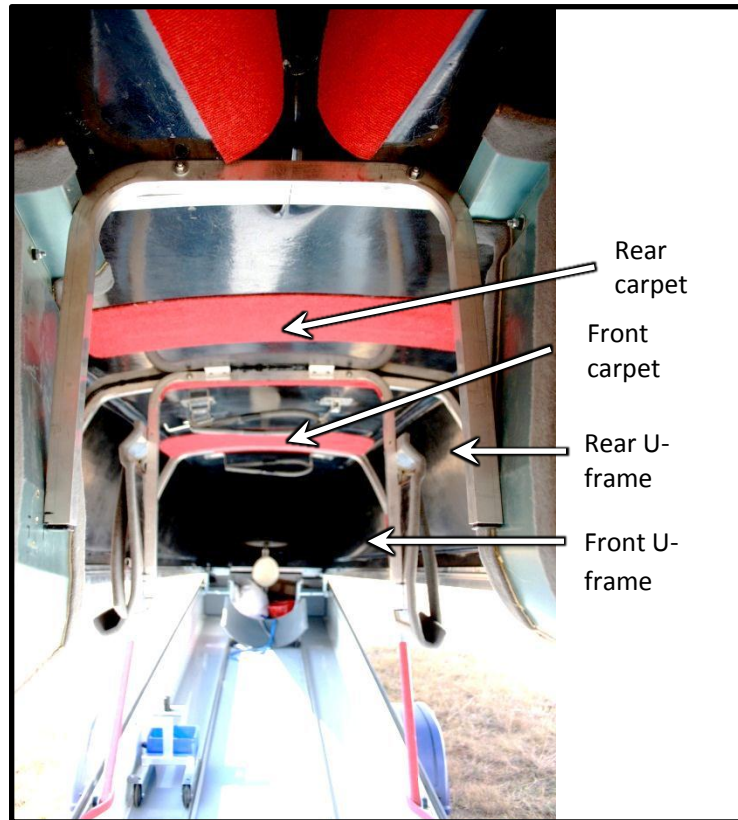
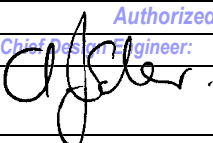
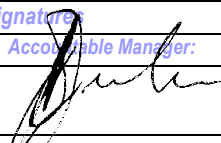


Figure 15

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8. Final checks

8.1. Before closing the canopy of the trailer, the following areas should be checked for interference, preferably with the aid of an assistant inside the trailer:

- 8.1.1. the wing tips with one another,
- 8.1.2. the wing tips and the roof,
- 8.1.3. the wing tips and the fuselage,
- 8.1.4. the 21m wing tips and the tailplane and
- 8.1.5. the 21m wing tip wheels and wings.

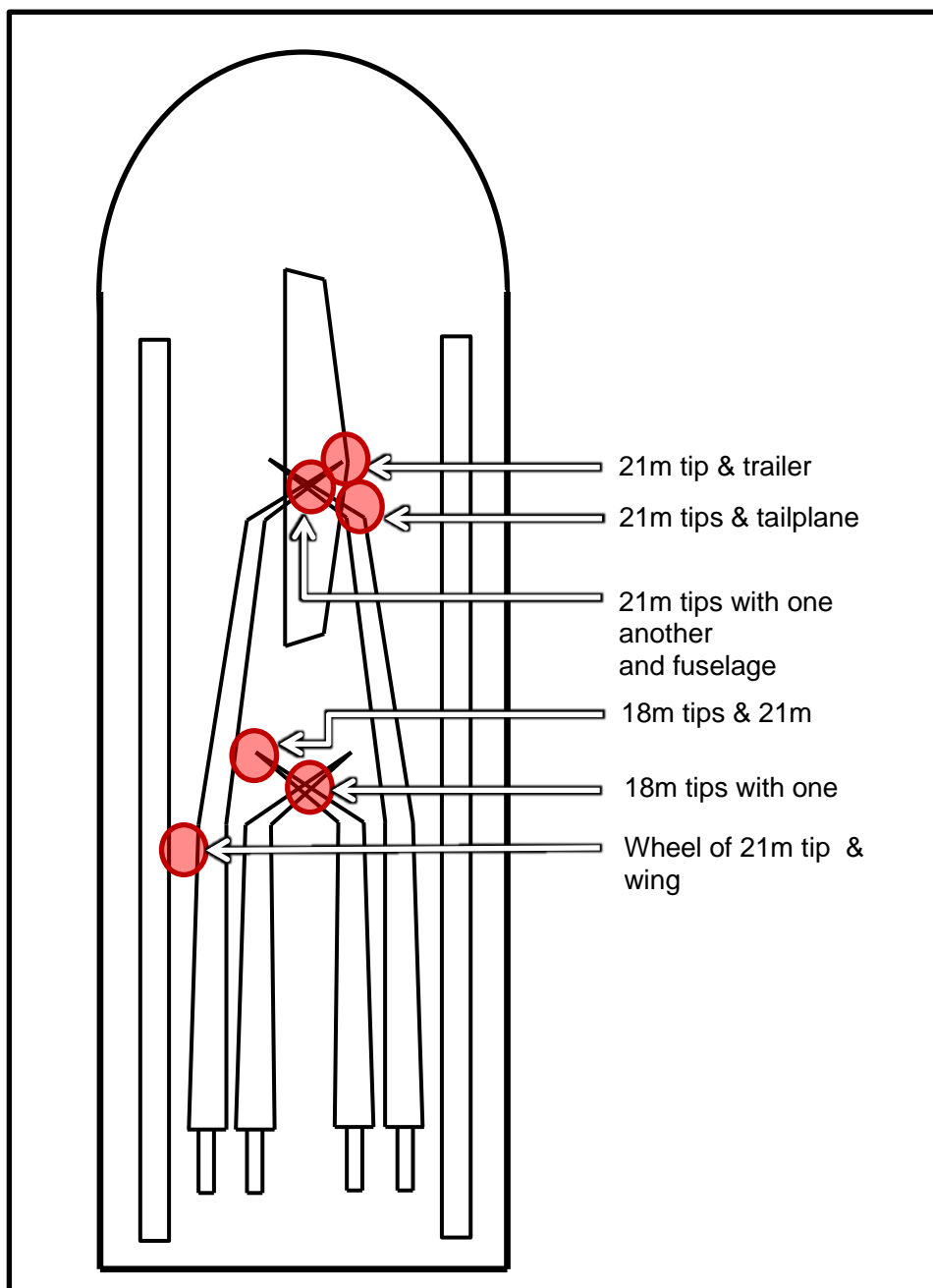
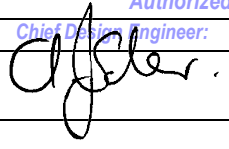







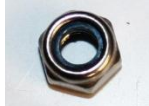
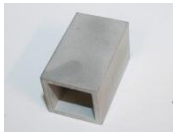

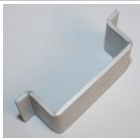





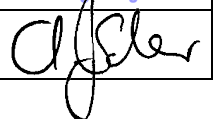
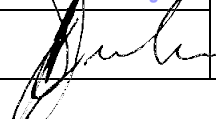


Figure 16

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MATERIAL AND PARTS SUPPLIED

Description	Qty	Illustration	Description	Qty	Illustration
Counter sink rivet	30		Canopy support strut	1	
Normal rivet	60		Tailplane spacer	1	
U-frame	1		M6 bolt	4	
Rear door spacer for bracket	2		L-bracket	4	
Rear door spacer for latch	1		M6 Nyloc nut	4	
Tailplane bracket spacer (R)	1		Wing tip bracket (L)	1	
Tailplane bracket spacer (L)	1		Wing tip bracket (R)	1	
U-frame/saddle assembly	1		Carpet 1x0.4m	1	
M6 Penny washers	4		Wing positioning bracket	2	

MATERIAL REQUIRED

- Contact adhesive
- Sealant glue (Not containing silicone)

TOOLS REQUIRED

- Drilling machine
- Rivet gun (Recommend pneumatic- or scissor action rivet gun.)
- Knife
- Pliers
- Nr. 10 spanner
- 5mm drill bit
- 6mm drill bit
- Hammer
- Pin punch

MASS AND BALANCE

This modification does not apply to the aircraft.

MANUALS

This modification does not apply to the aircraft.

NOTES

- This modification may be performed by the owner, or by any approved personnel.
- The following set of instructions explains the method of using the bolts supplied and how to remove rivets.

Bolt installing procedure.

- Drill a 6mm hole.
- Insert bolt and hit the head with hammer until the square collar penetrate the aluminium U-frame or strut.
- Add washer and nyloc nut and fasten with nr 10 spanner.

Rivet removing procedure.

- Drill straight onto the rivet head with the 5mm drill bit to remove rivet core.
- Remove rivet by hand or using pliers or on a blind hole, punch rivet out with a pin punch.

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