

Don't Be Intimidated Rigging Biplanes, Let's Use EZ-Line

Mike Brignola

Using a 1/32 WNW Albatross, we'll look at multiple mediums for rigging, why use EZ-line, when to use it during the assembly process, and painting EZ-line. This OOB project is not too difficult to complete if you break it down...and it may build patience.



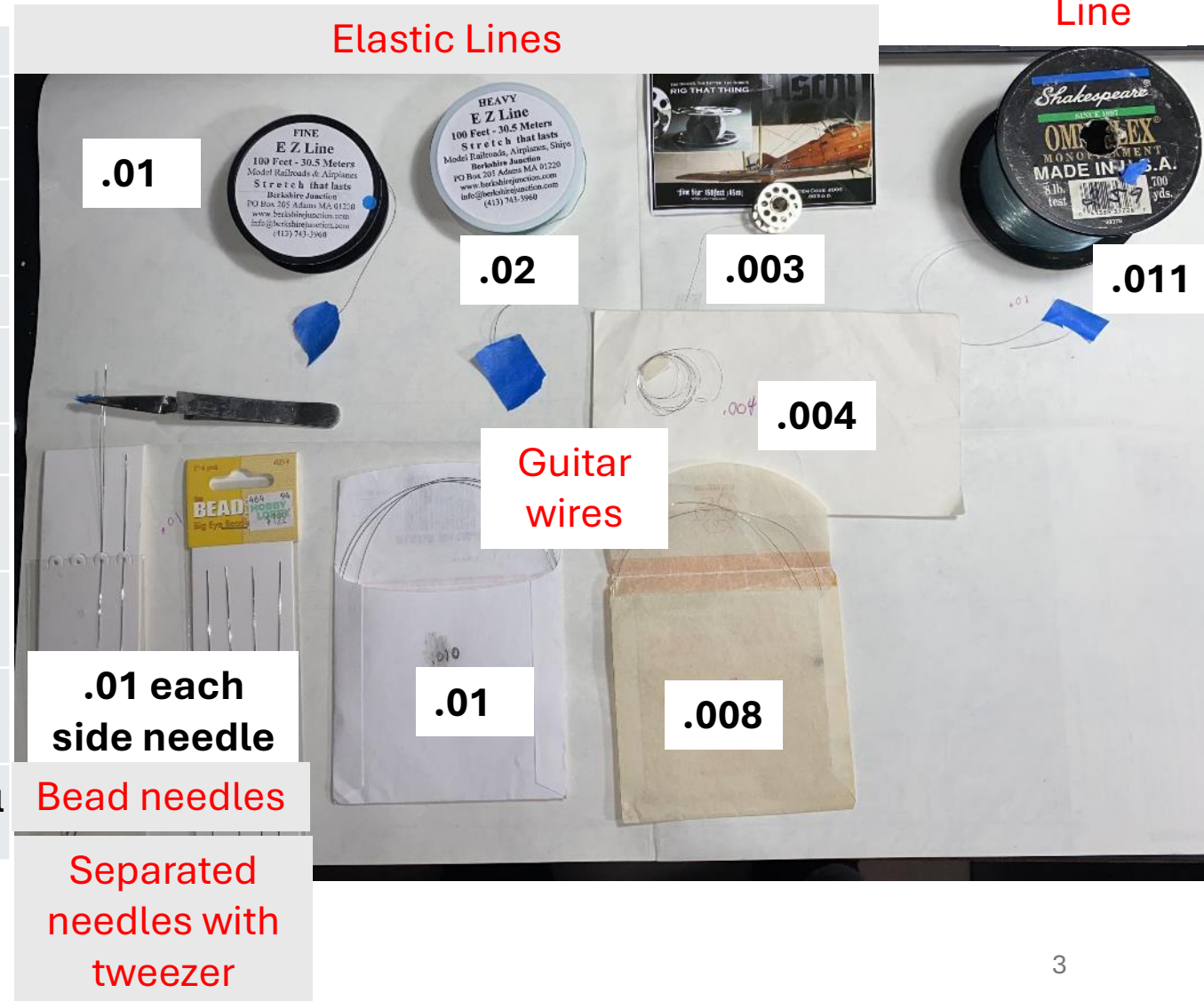
General Rigging Materials



Fishing
Line

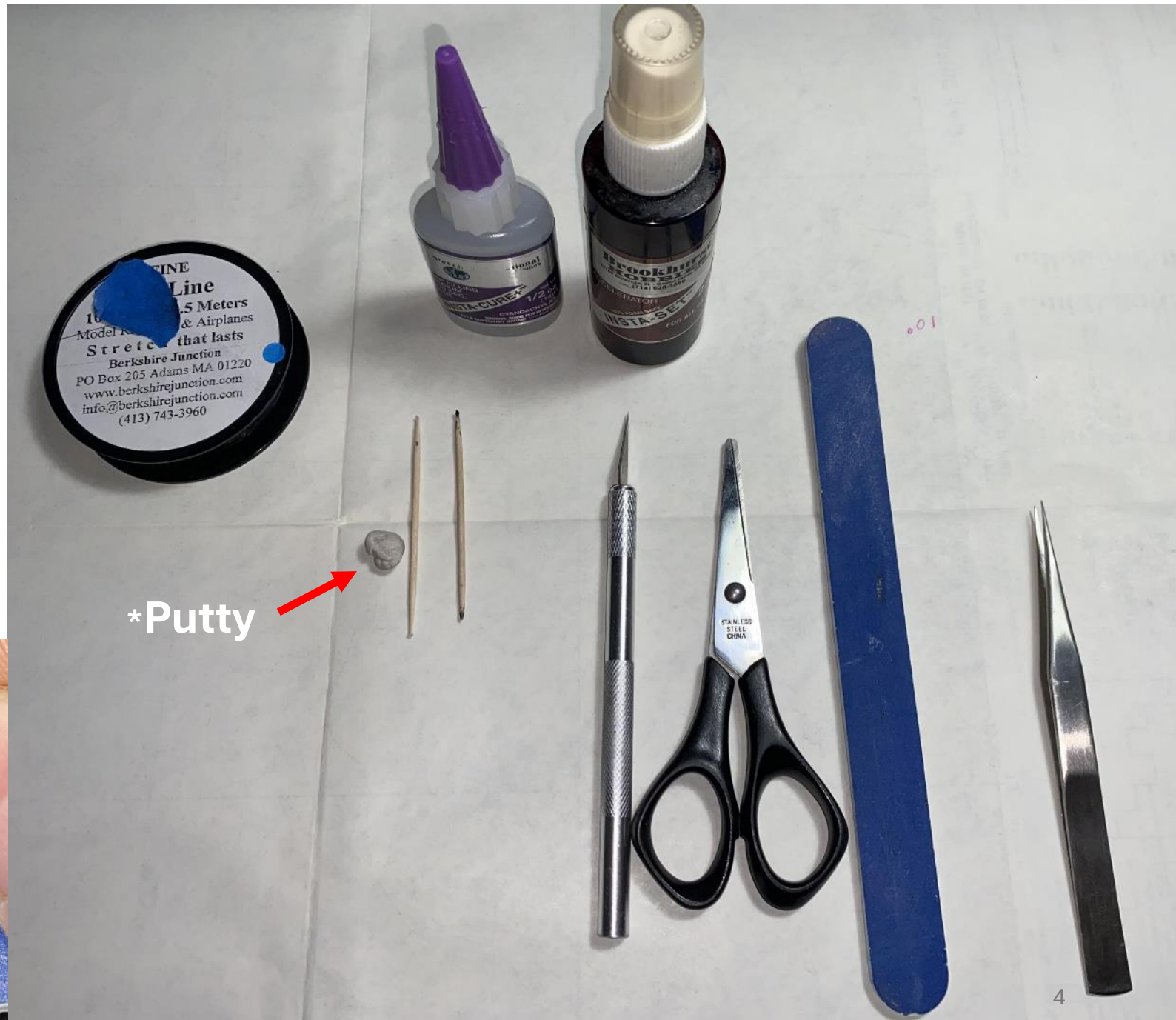
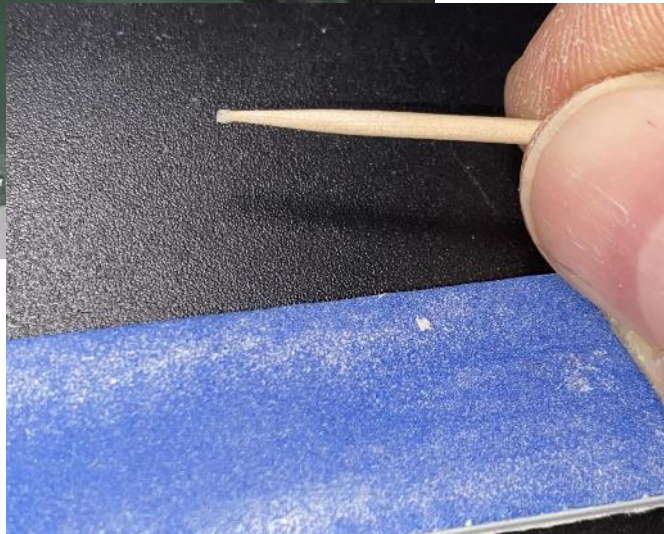
Item	inches	mm	Scale	Characteristics
EZ-Line fine	0.01	0.25	1/48-1/32	elastic, stretch to fit
EZ-Line heavy	0.02	0.5	$\geq 1/32$	elastic, stretch to fit
Uschi standard	0.001	0.03	1/72-1/48	elastic, stretch to fit
Uschi fine	0.001	0.02	$\leq 1/72$	elastic, stretch to fit
Uschi superfine	0.001	0.01	$\leq 1/72$	elastic, stretch to fit
8lb fish test line	0.011	0.28	1/48-1/32	flexible, not elastic
Guitar wire	0.004	0.101	1/72-1/48	somewhat stiff, retains shape
Guitar wire	0.008	0.203	1/48-1/32	somewhat stiff, retains shape
Bead needles	0.01	0.25	1/48-1/32	very stiff, retains original shape

Elastic Lines



Tools

For EZ – Line
elastic line method



***Putty** – any organic, non-toxic, mounting or poster putty that does not leave residue



Check label cautions –

- * some say can leave residue
- * some say not to use on fresh paint



Highly rated



Aircraft Trivia

Round #1

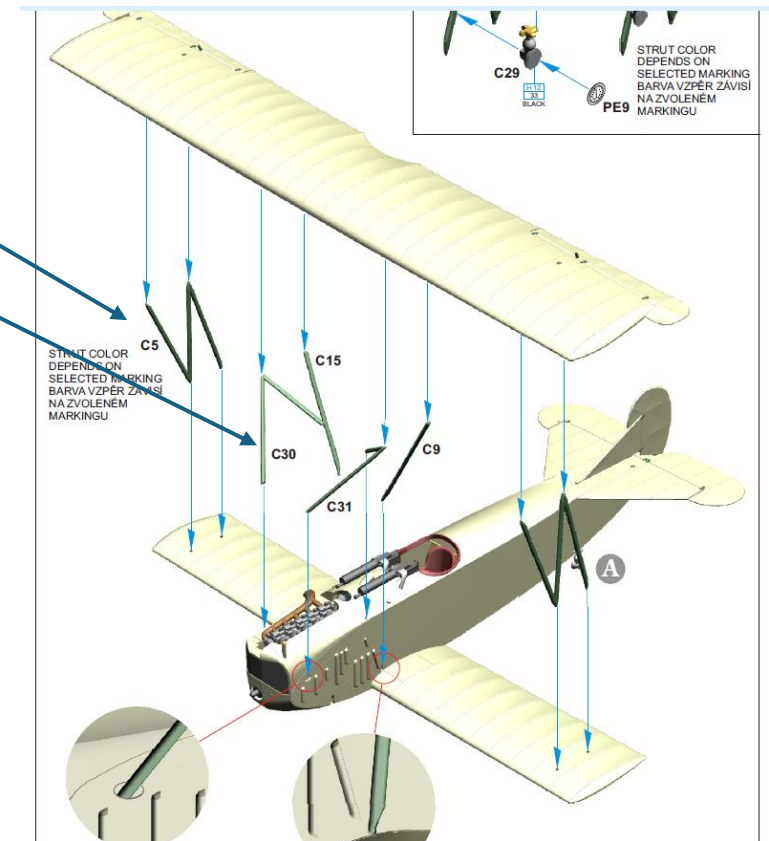
**On a biplane what is the
Wing Cellule?**

Wing Cellule

The **wing cellule** is the structural framework connecting the upper and lower wings of a biplane

- It includes:
 - upper wing
 - cabane struts
 - interplane struts

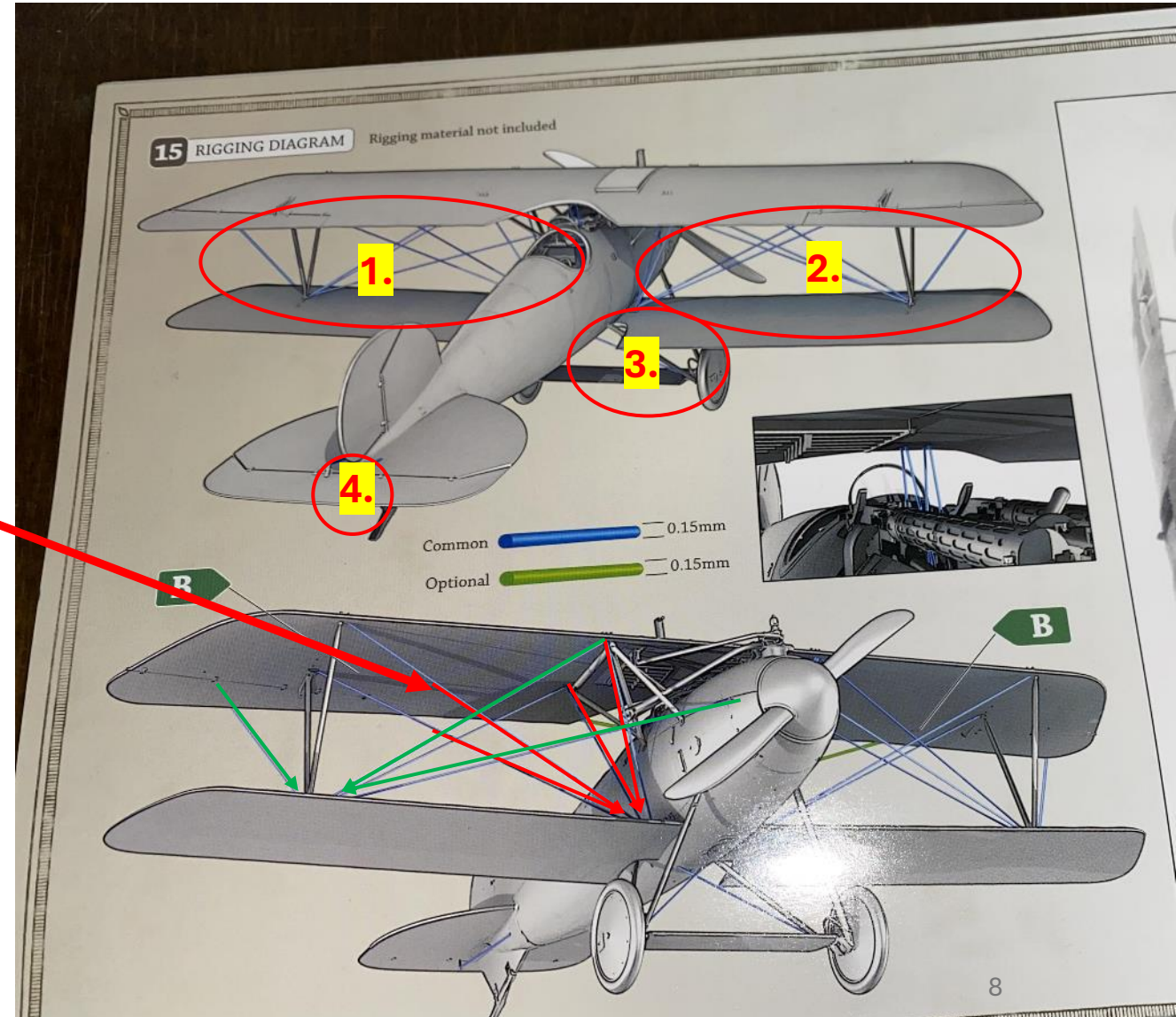
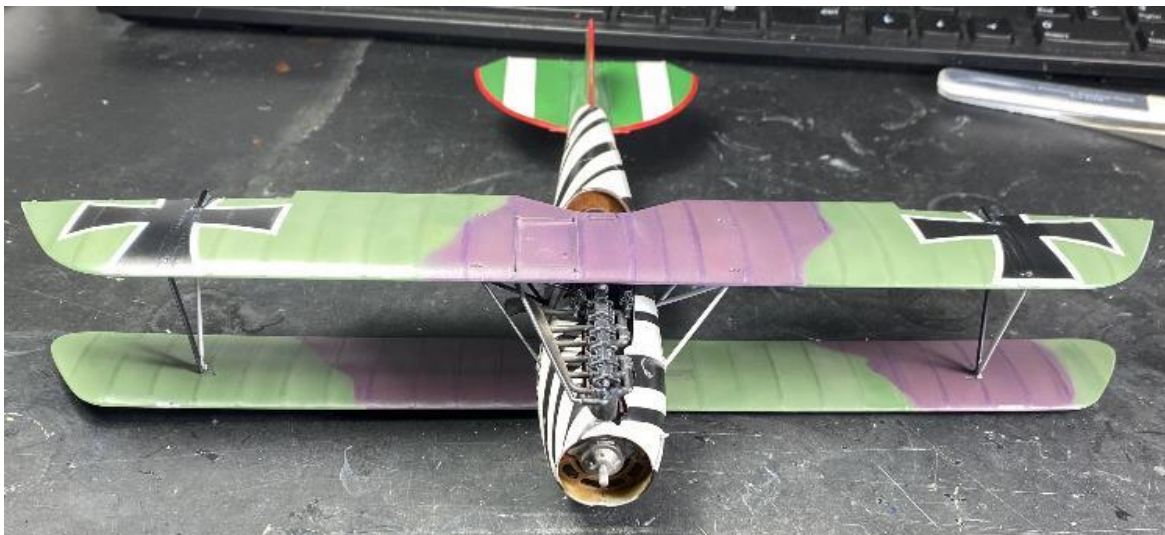
Interplane
Cabane



Courtesy: Dave Koukol

Rigging a 1/32 WNW Albatross

1. Study the rigging diagram
2. Break down each rigging area in the model:
1./2. each wing, **3.** under carriage, and **4.** tail
3. Identify what stage of kit assembly will ease rigging:
 - No upper wing appendages, tail or undercarriage to ease turning over aircraft for rigging
 - Model is clear coated
4. **Rig inside lines first, then outside**
5. Cut lines a little longer than gap distance



WNW kit already has cable rigging site holes

- **Use a drop of glue on a toothpick applied to the anchor hole**
 - **Then use tweezers to insert an end of line to the anchor hole**
 - **Use accelerator as preferred**
 - **I started on the wing root for inside rigging**
- 1. Attach inside lines first**
 - 2. Then outside**

1.

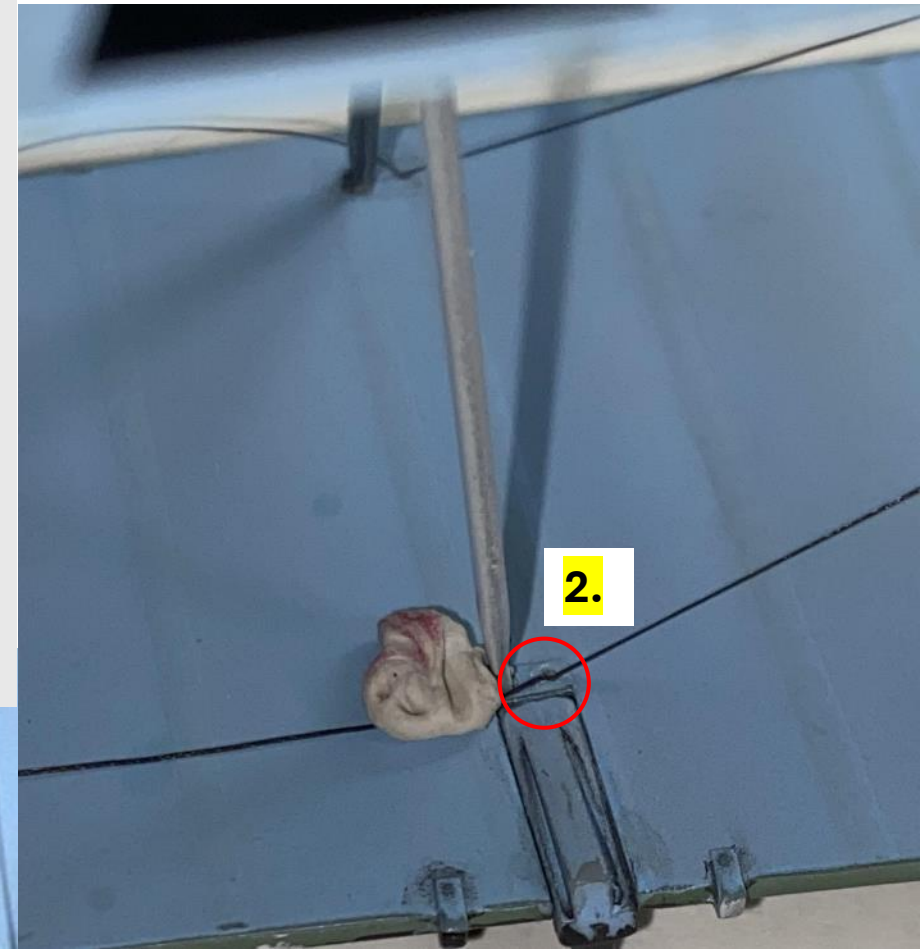
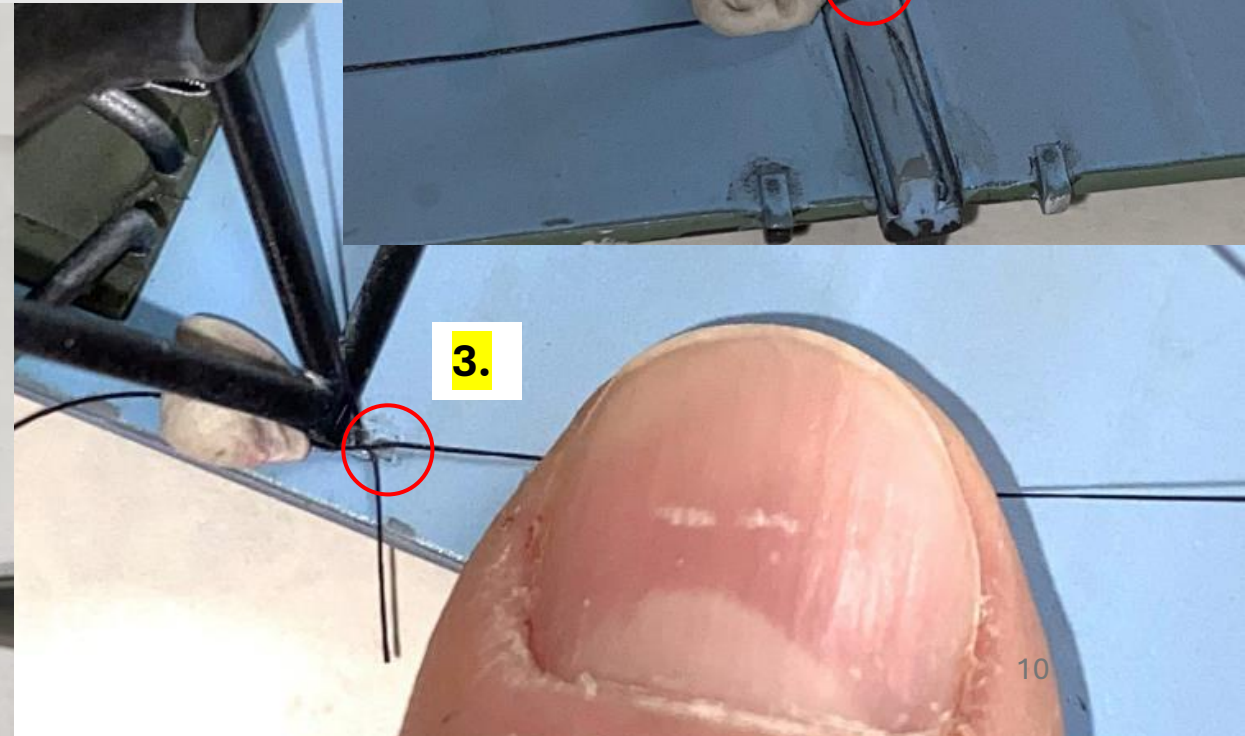
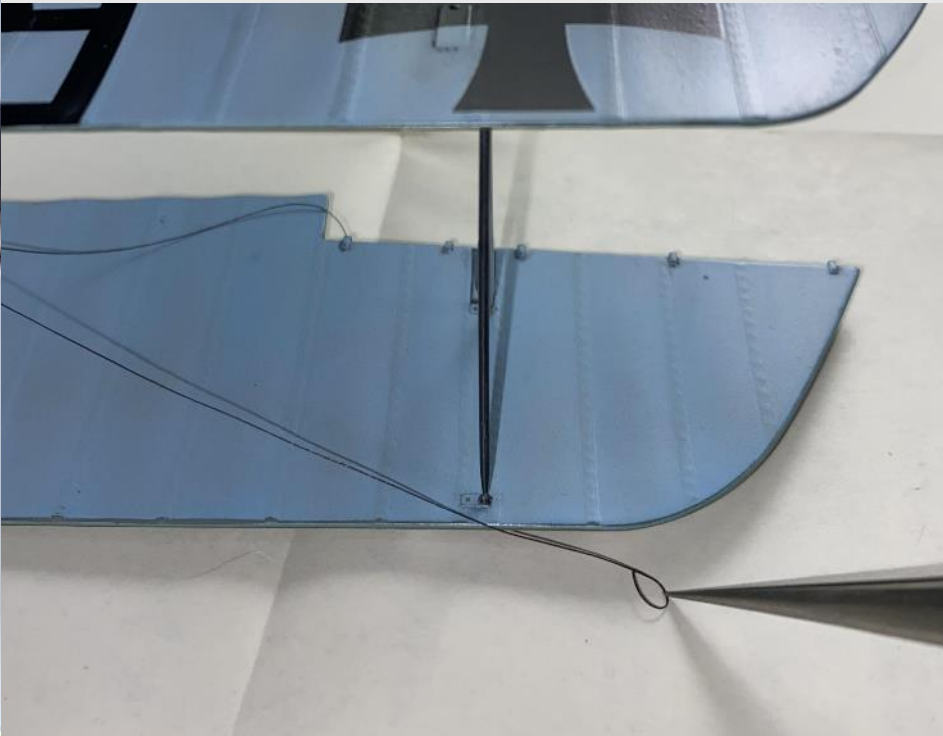
2.

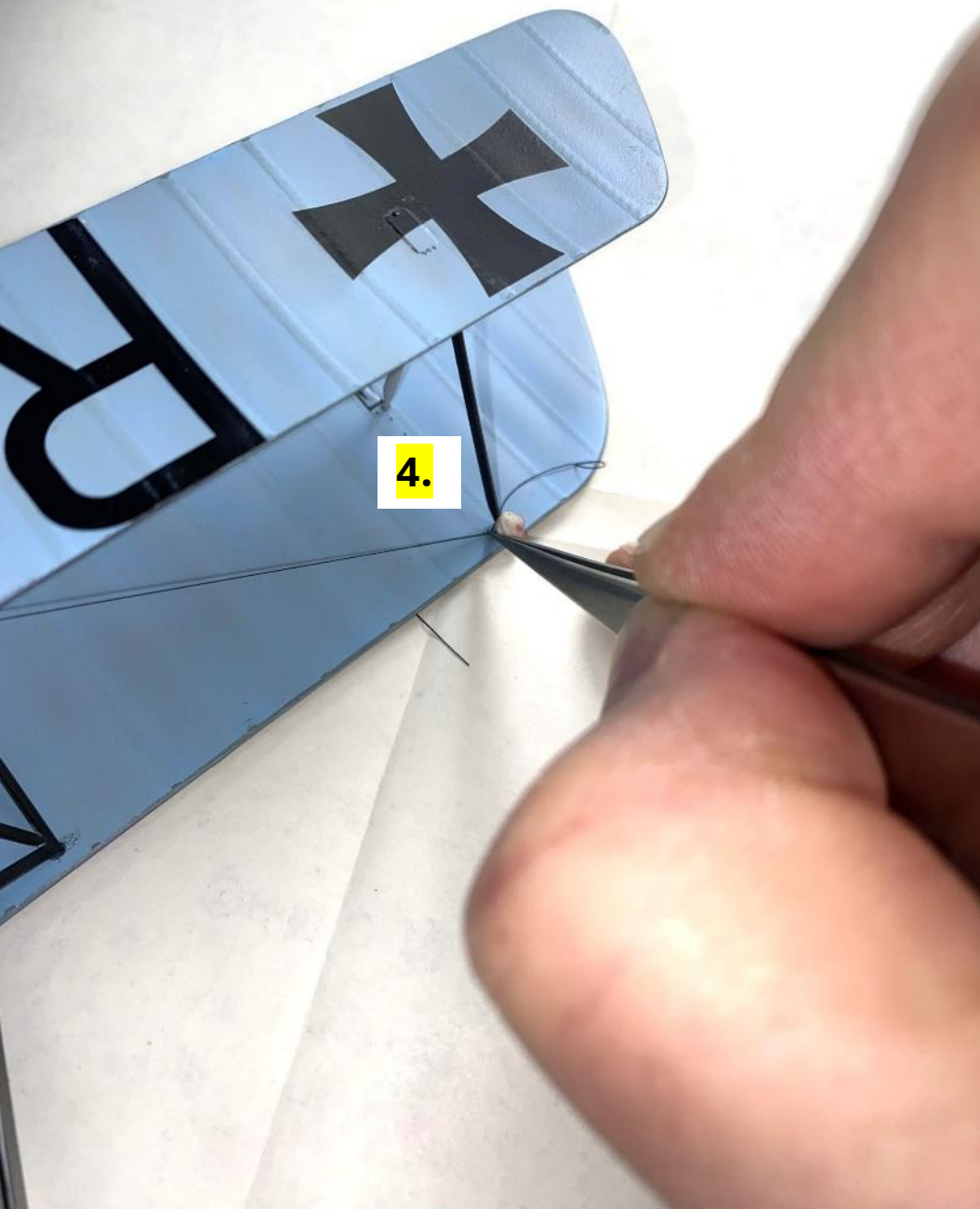
Note: Some techniques ask to put a drop of glue on the cable end point and place and hold. I think this is prone to error with crossing wires, getting glue where you don't want it.

Receiving end
Method 1
attachment:
help align with
putty

1. Flip over, separate lines, and identify holes
2. Use putty to **stretch** line and hold alignment with glue hole on the receiving end.
Apply glue to hole
3. Use free finger to help alignment if needed

Note: **Stretch** line by taking the slack out of it. Don't over-stretch it – just makes it hard to control and is more susceptible to breaking off and may not re-attach. Also, looser line helps your free finger to move and hold line over the hole (3.)





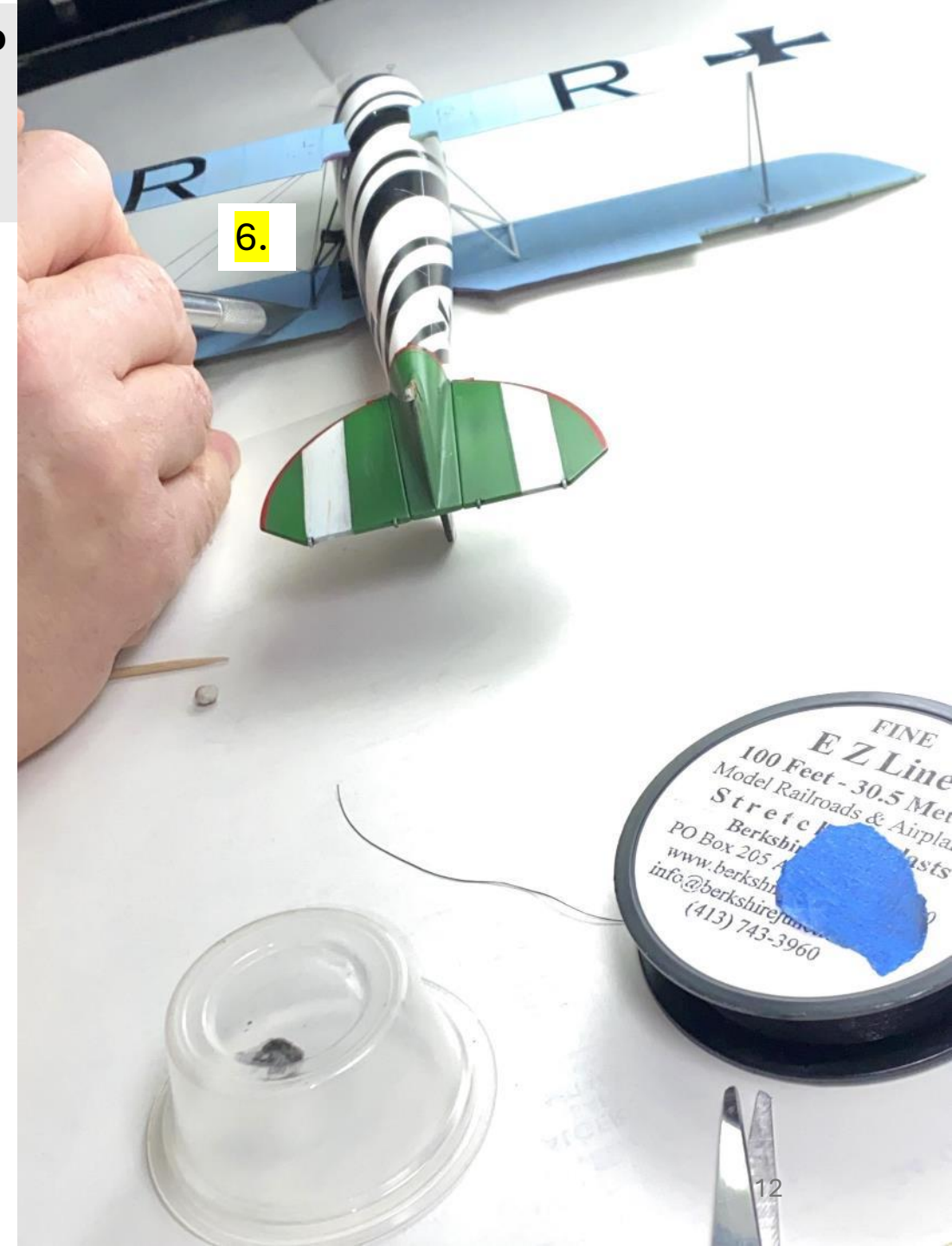
4. Use tweezers to push and hold the line in the glued hole. I had no drying issues without accelerator. Sometimes the line would stick to the tweezers and not stick to the hole. Then, just clean, add more glue and try again.
5. Release after holding in place a few seconds or use accelerator with your free hand



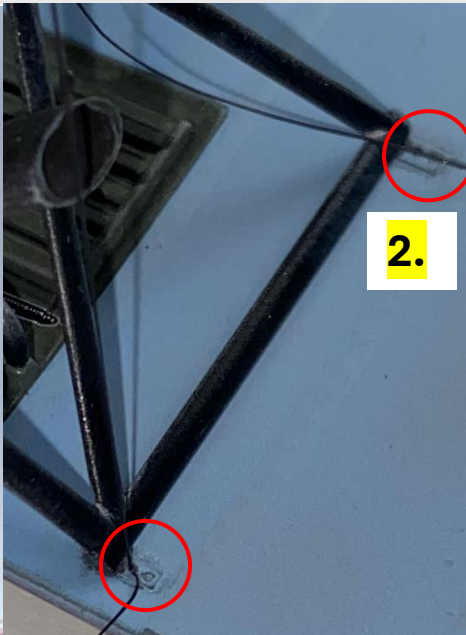
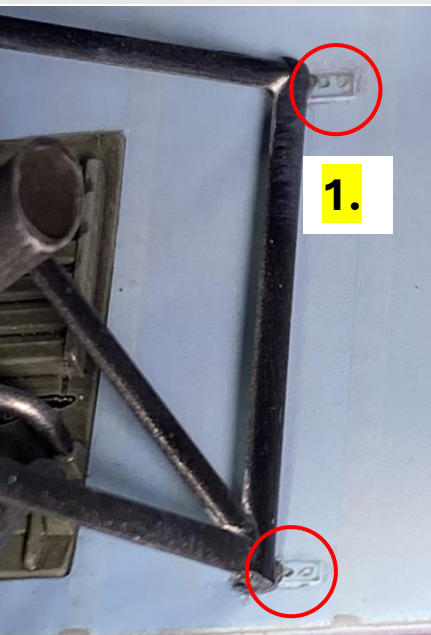
Method 1 Pros

- Faster
- Frees up a hand
- Consistent line tension
- Applies glue to hole

6. Cut the excess line with an X-acto blade just past the glued spot



1. If there are inside and outside holes, check rigging diagram
2. Rig inside holes to inner wing first
3. Then outside holes to outer wing next



Receiving end

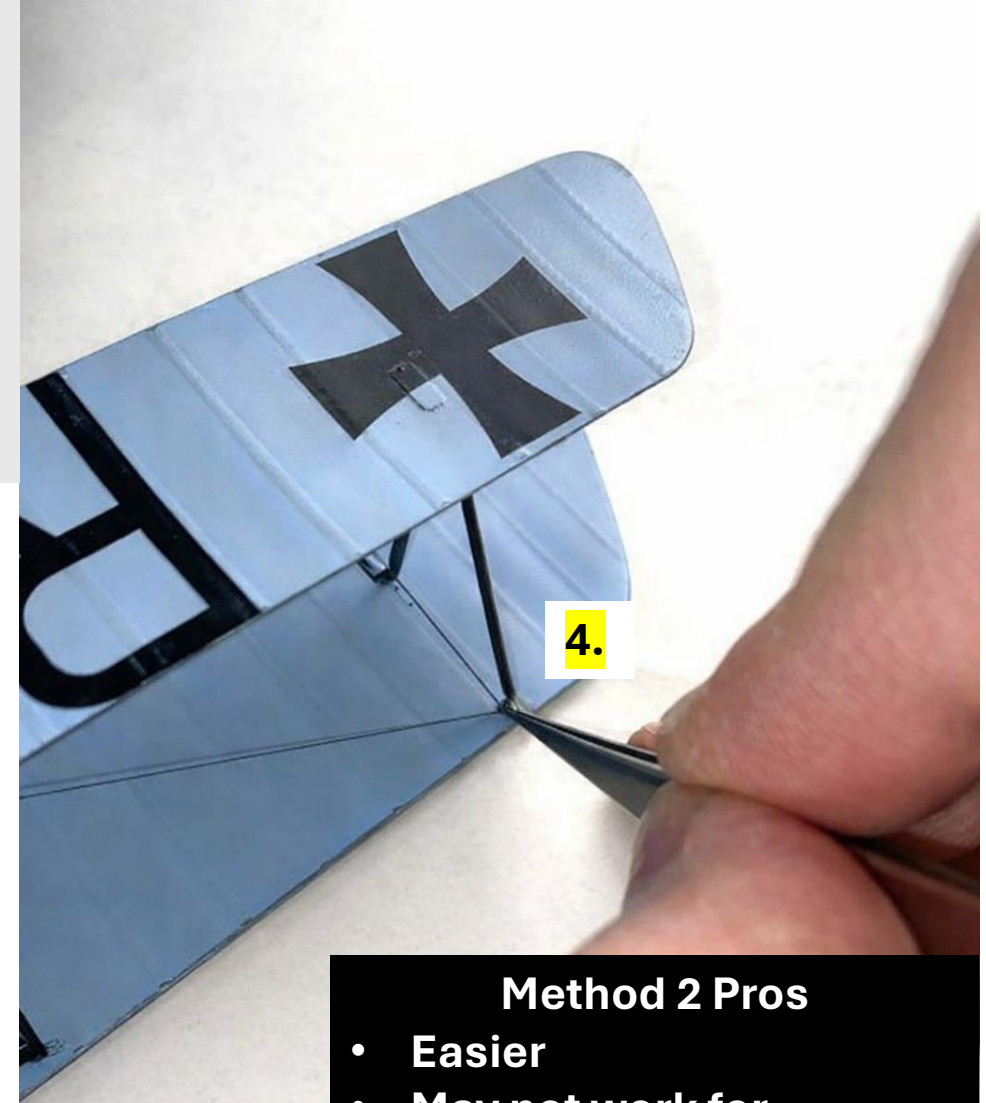
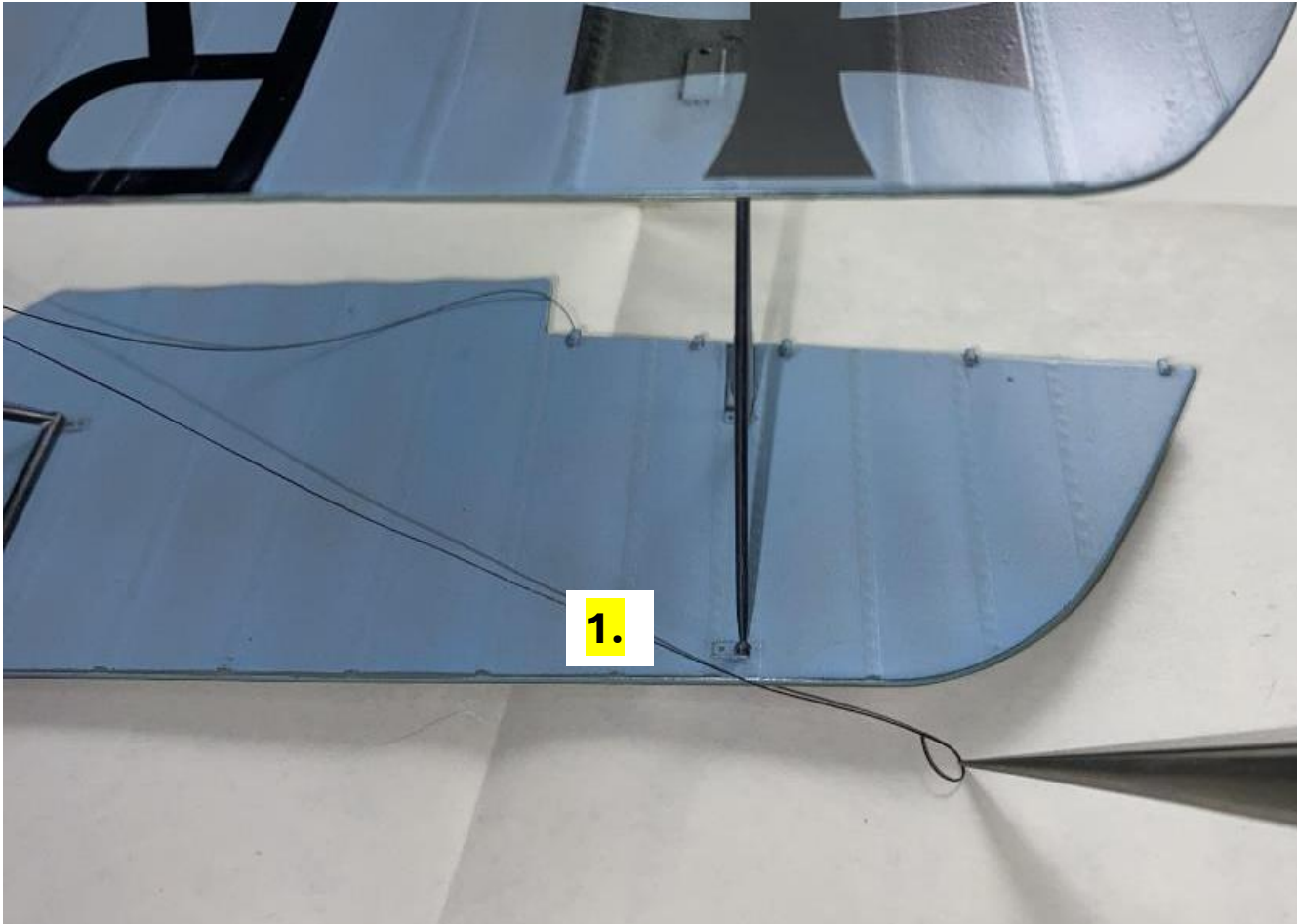
Method 2

attachment :

**cut line short, stretch
and hold**

Note: can use this method
to re-attach lines that tear
loose from glue

1. Stretch line to receiving end hole.
 2. Cut line short of hole ~1/2 inch
 3. Use a drop of glue on a toothpick applied to the receiving hole
 4. Use tweezers to grab end of cable,
stretch line and insert end into receiving
end hole
- Hold until glue dries or use accelerator

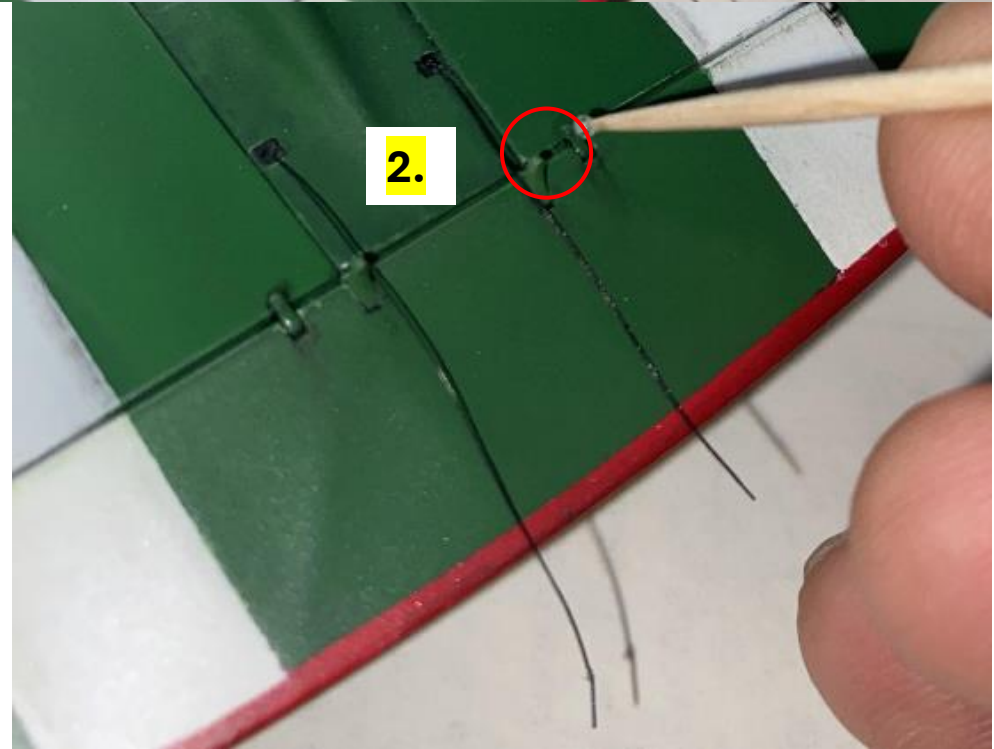
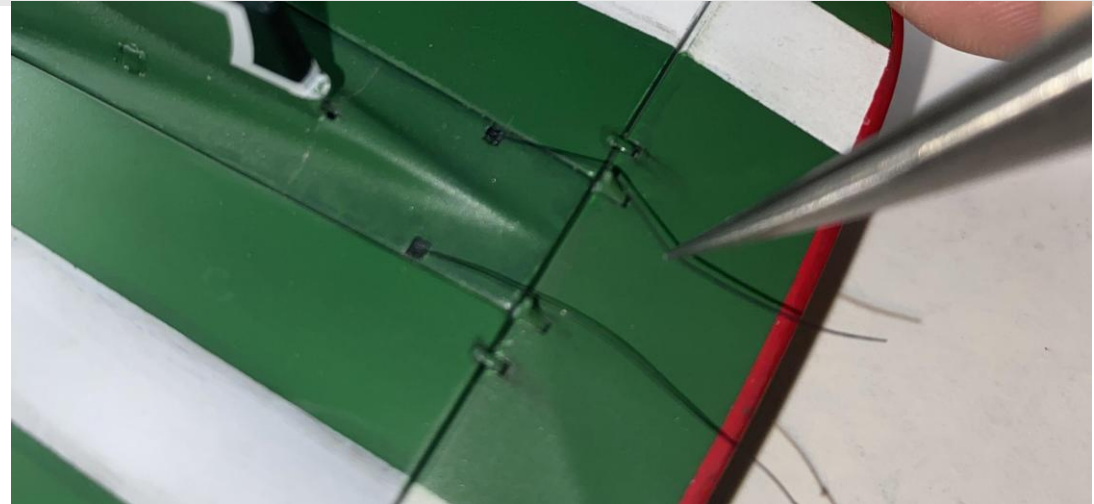
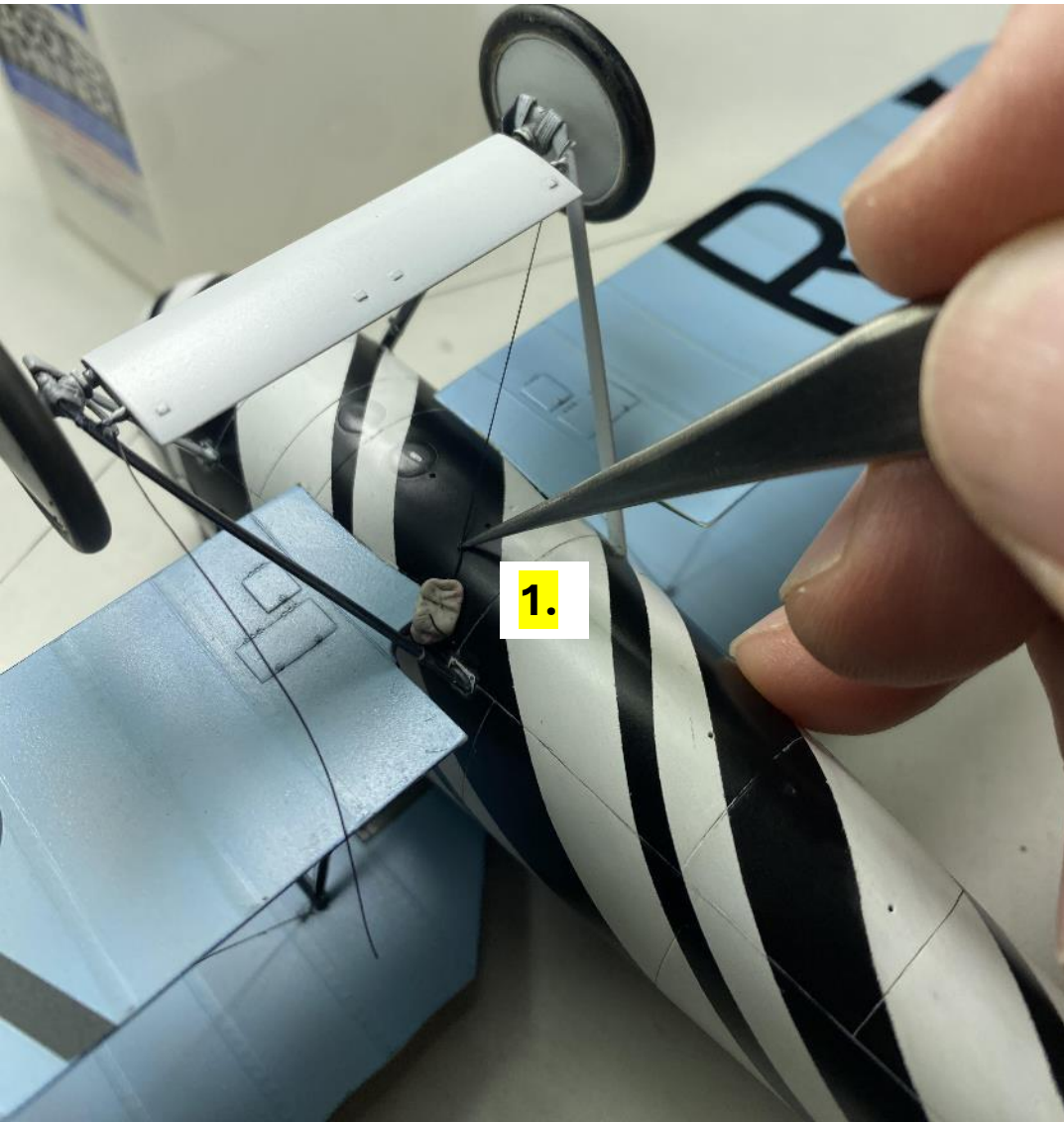


Method 2 Pros

- Easier
- May not work for
crossing lines or
accessibility problems
- Don't want to lose grip of
stretched line
- Again, apply glue to hole

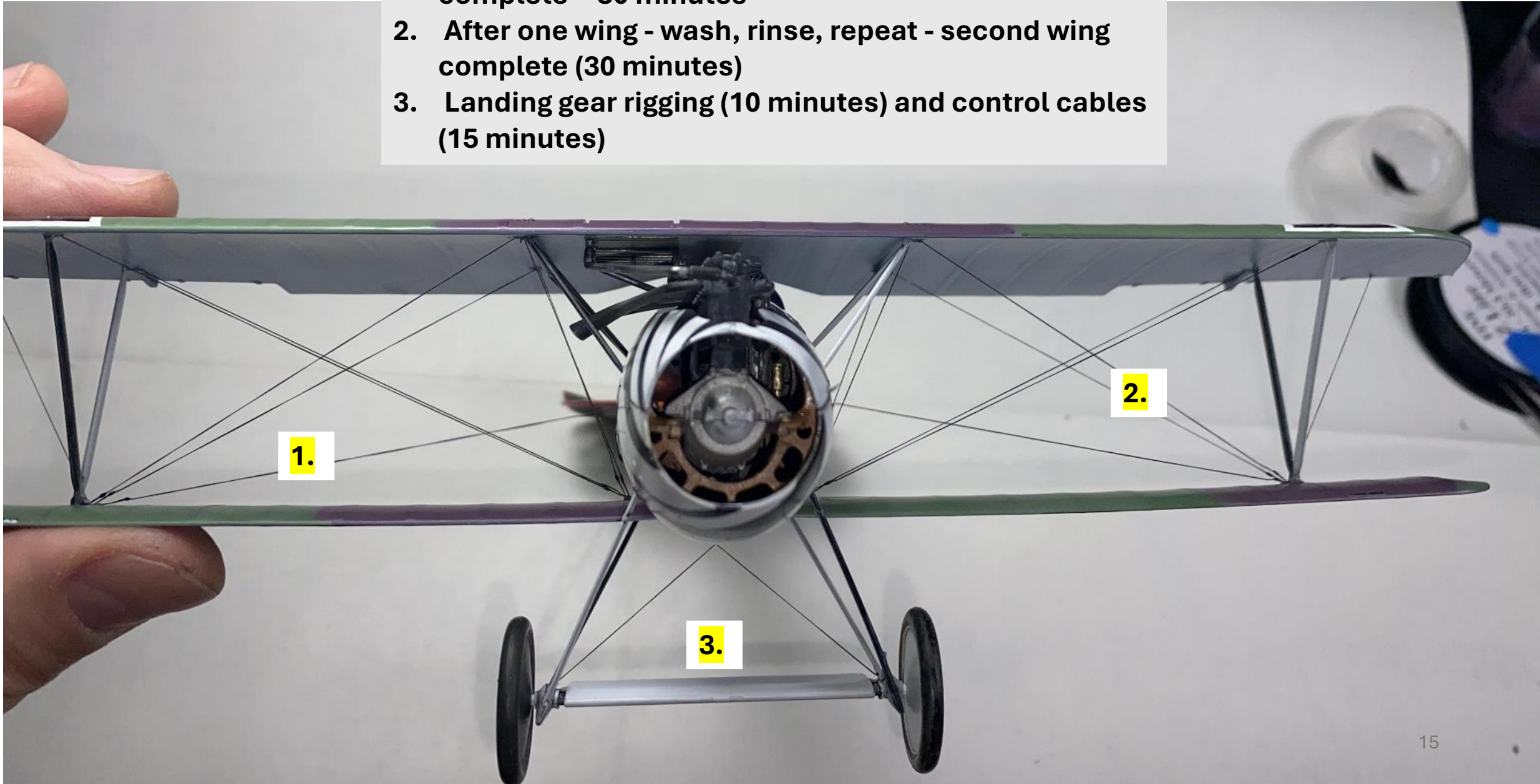
Landing gear & Control surfaces

1. Landing gear rigging uses the same method
2. Elevator cables are strengthened with a drop of glue after cable lines are attached to rocker arms



EZ – Line rigging an Albatross in 1 ½ hours

1. After inside rigging, then outside rigging, one wing complete ~ 30 minutes
2. After one wing - wash, rinse, repeat - second wing complete (30 minutes)
3. Landing gear rigging (10 minutes) and control cables (15 minutes)



Aircraft Trivia – Round #2



1. Where does the pilot control stick have to be positioned?

a) left b) right c) forward d) aft

2. Which way will the plane turn?

a) left b) right

Aircraft Trivia



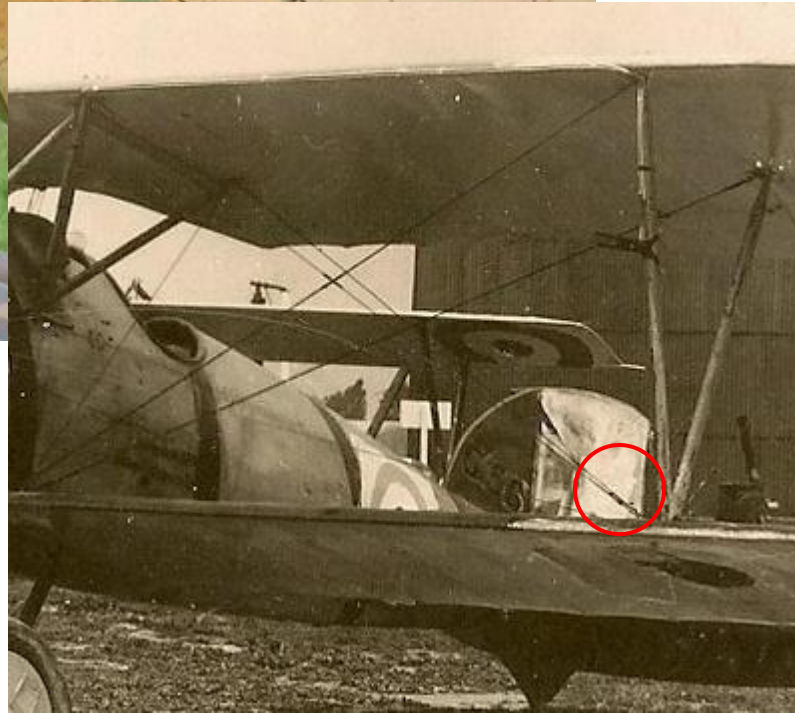
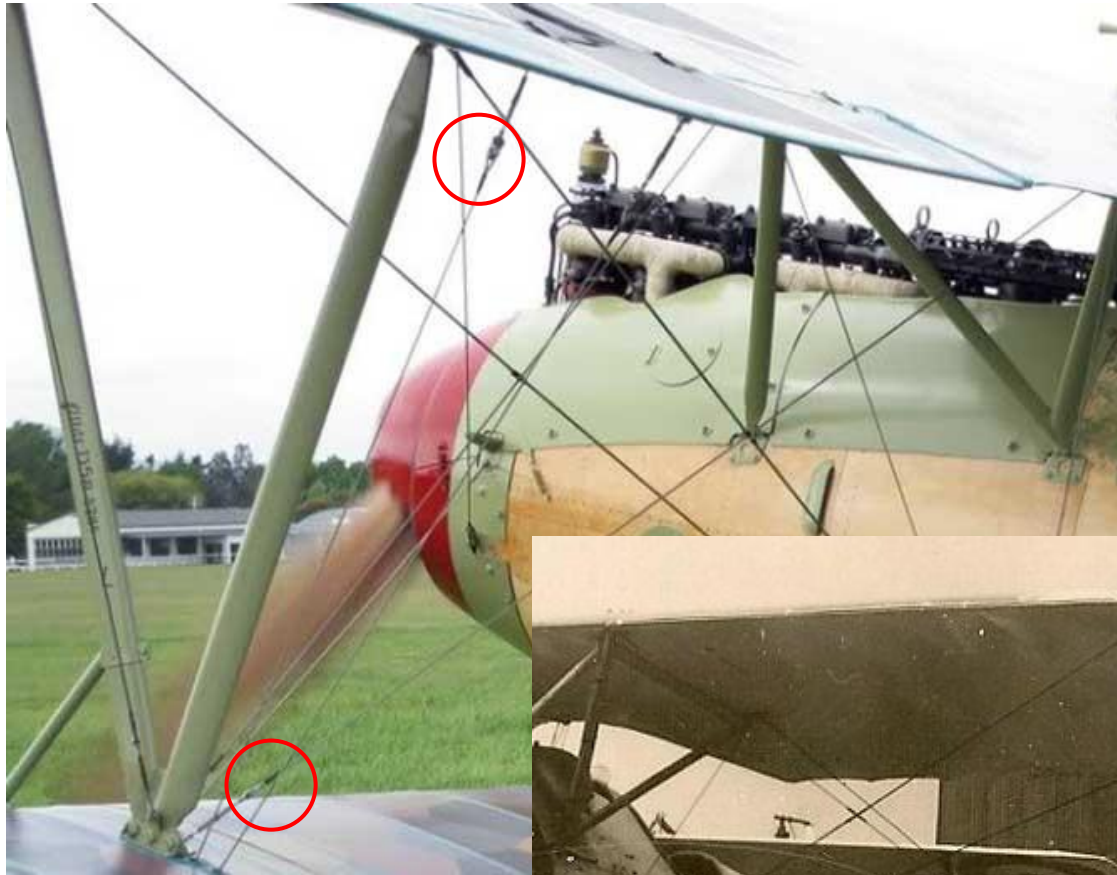
1. Where does the pilot control stick have to be positioned?

a) left **b) right** c) forward d) aft

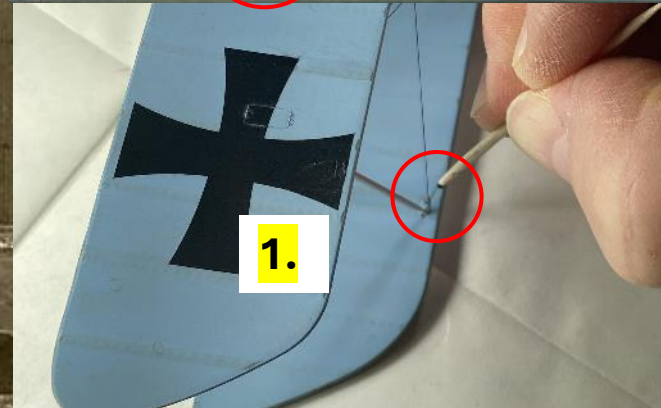
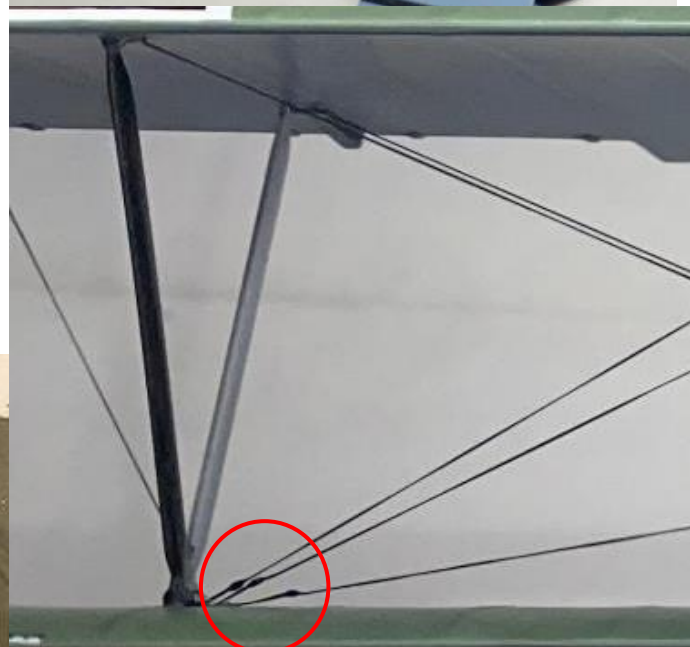
2. Which way will the plane turn

a) left **b) right**

EZ German Turnbuckles - out of the box



1. A drop of black IC-2000 is used on the rigging lines to simulate turnbuckles



EZ Painting Cable Lines



Sharpie Metallic Permanent Markers, Fine Point, Silver, 2 Count - For Black Paper or Dark Surfaces, Arts & Crafts, Posters



AI Enhanced Photo of Actual Model





Questions?

