Pitts Challenger – 87″ – 2.20m (100cc)
MANUAL

1- Introduction:

WELCOME TO THE PILOT-RC TEAM!

Thank you for choosing a Pilot-Rc plane as your next model. We hope that you enjoy many successful and exhilarating flights with your new plane. Please read through these instructions before you start building or flying to assure a successful experience, and welcome to Team Pilot-Rc!

YOUR MODEL:

Model:	Pitts Challenger
Wingspan:	87″ (2,200mm)
Length:	84″ (2,120mm)
Wing area:	2,265 “² (1,465 cm²)
Weight:	29.4lbs (13.4kg)

INCLUDED HARDWARE:

- Complete air frame with all basic accessories (such as carbon fiber main undercarriage, tail-gear assembly and wing-tubes as well as fibreglass control horns and wheel pants)
- Pre-installed hinges and pre-mounted canopy
- Fuel tank and fuel tubing pre-prepared, fuel dot and breather valve
- Wheels, axels and wheel pants
- Pre-prepared pushrods with ball links
- Matching carbon spinner

Due to the supports required for the top wing (A frame, wing struts and wire tensioners), Pilot-RC has included a comprehensive accessories kit including quick release everything! To simplify understanding what parts go where during the build process, these are numbered at the factory, and their final location is as per the picture below:

REQUIRED HARDWARE

Motor: 100-120cc

Servos: 7-8 high torque plus throttle // Uses x1 per aileron (total x4), x1 per elevator and x1 or x2 on rudder

Required extension wire lengths:

- x2 for bottom wing aileron servo: 60cm
- x2 for top wing aileron servo: 87cm (installed in bottom wing) + 52cm (installed in wing struts)
- x2 for elevator servo: 95cm
- x1 for throttle servo

Also requires all the usual accessories such as transmitter, receiver, batteries, powerbox and possibly other small accessories…

PILOT-RC RECOMMENDED HARDWARE

Servos: Pilot-Rc PW27AH (27Kg – 0,119s at 8,4v)

Servo arms: Pilot-Rc 1.6″ Aluminium arms (included with Pilot-Rc servos), plus Pilot-Rc 3.2″ double servo arm for Pull-Pull

2- DISCLAIMER

All Pilot-RC products are guaranteed against defects for 30 days of your receiving the model. This

warranty is limited to construction or production defects in both material and workmanship, and does not cover any parts damaged due to misuse or modification.

Should you wish to return this airplane for any reason, all shipping costs are the responsibility of customer.

If any parts are needed to be replaced by the manufacturer, the original parts must be returned, at the costumers expense.

Do not regard this plane as a toy!

The manufacturer can not supervise the assembly and maintenance of the model or ensure your correct radio installation. Therefore, the manufacturer can not be made responsible or liable for any damage occurring during the use of this radio controlled model. As such all responsibility for the correct build, maintantence and operation must be accepted by the customer. The operation of the model is taken as acceptance by the customer of their acceptance to the above.

The model is highly prefabricated and ready for use, however please also assure that any pre-installed (such as pushrodand ball link sets, fuel tank, etc) components are tight, secure and airworthy both for the first flight and subsequent flights as part of your routine maintenence and verification.

In no event does Pilot-RC accept any liability to exceed the original cost of the basic Pilot-Rc airframe provided (accesories such as engine or radio system are also excluded from liability).

To ensure safety, please read the instruction manual thoroughly before assembly. Building and operating model planes requires diligent practice and correct guidance. Any neglect, carelessness or lack of experience can cause serious bodily harm or damage to property.

Seek the assistant of local model flying clubs and or an experienced aeromodeller for assembly, operation and maintenance to ensure a quick and successful learning process.

Fly only at designated model flying fields approved by the AMA (Academy of Model Aeronautics), the MAAC (Model Aeronautic Association of Canada) or the similar corresponding governing body for your country.

Pilot-RC reserves the right to update the model, instructions and limited warranty without notice.

If you have any problems and questions, please contact Pilot-RC:

- Web: www.Pilot-Rc.com
- Email: pilot-rc@139.com, info@pilot-rc.com
- Phone: +86 760 88781293 FAX: +86 760 88780293
- Address: No34, Chengnan Er Road, Zhongshan City, 528455, Guangdong, Province, China.

3- Assembly

Please note that pictures are for reference only. Some pictures shown are from other models which follow the same build steps.

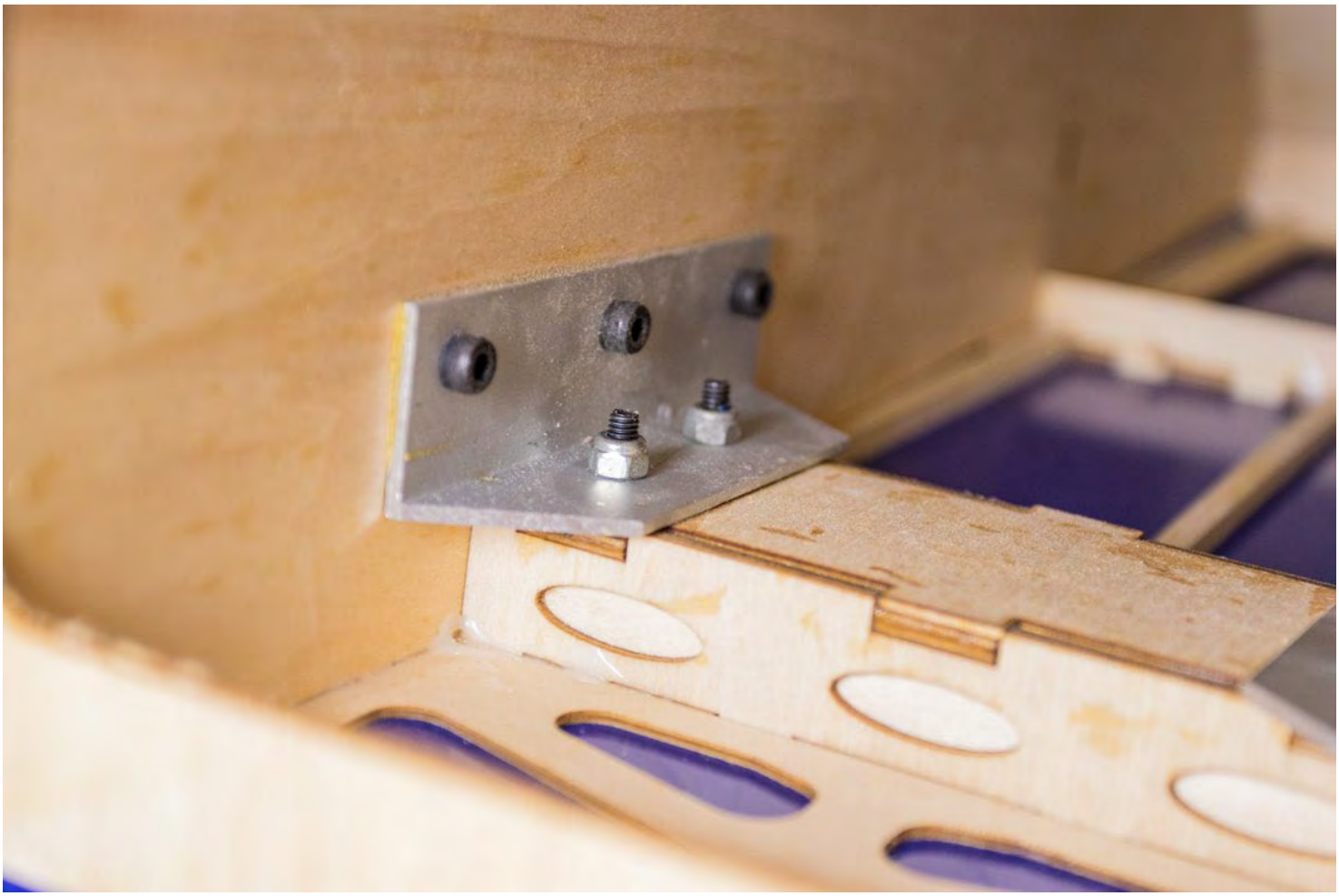
MAIN LANDING GEAR ASSEMBLY AND WING WIRES:

Position the fuselage upside down and screw on the carbon undercarriage to the fuselage using the nuts and bolts provided, trapping the provided metal guide wires support between the landing gear and the fuselage.

We will crimp the tension wires to the plate later in this manual.

Screw the wheel axles on to the landing gear, and then slide on the wheels and secure in place with the provided grub screws.

Some users may prefer to leave the wheels until the end of the build, to prevent the model moving on the build table.



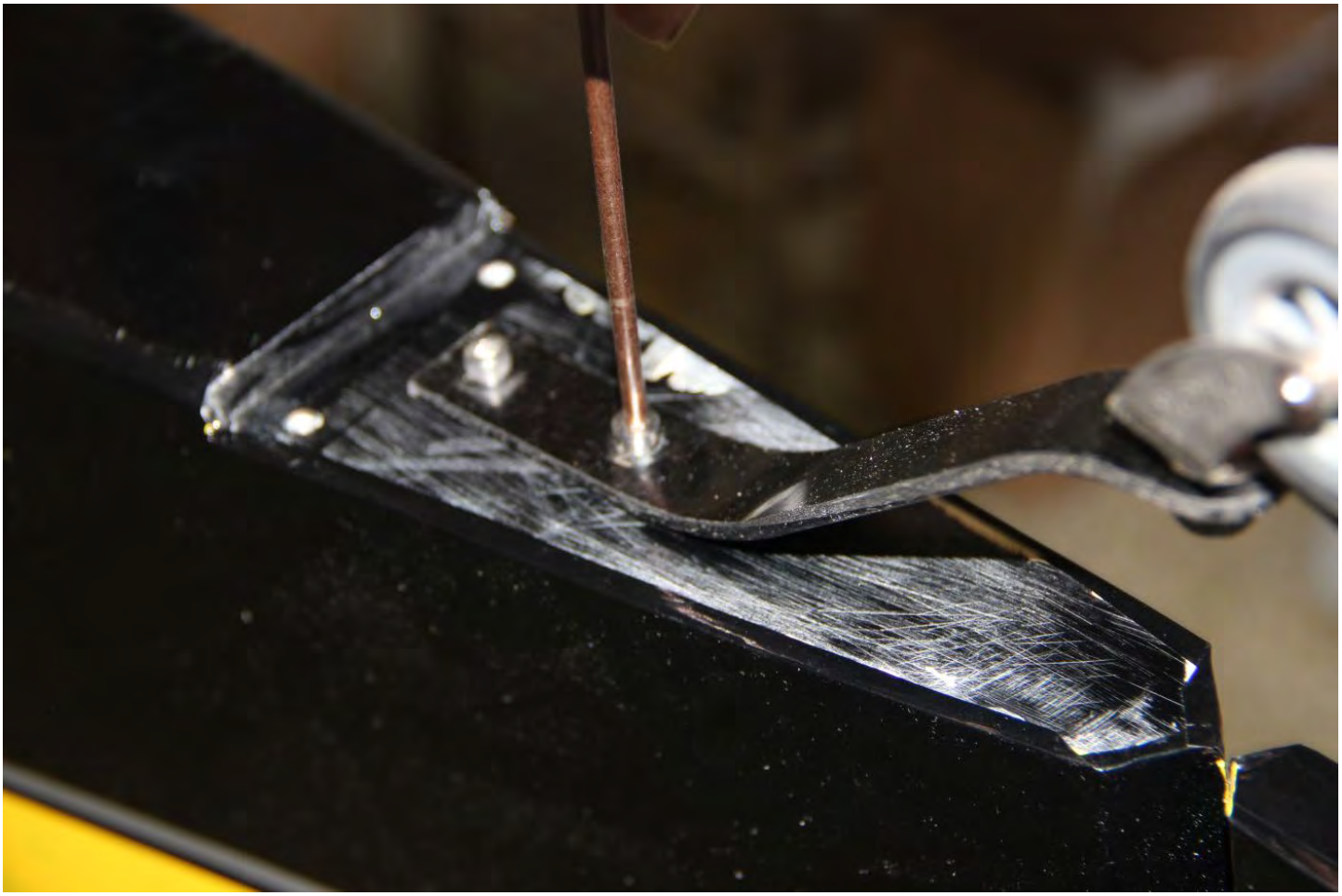
TAIL WHEEL AND ELEVATOR GUIDE WIRES INSTALLATION:

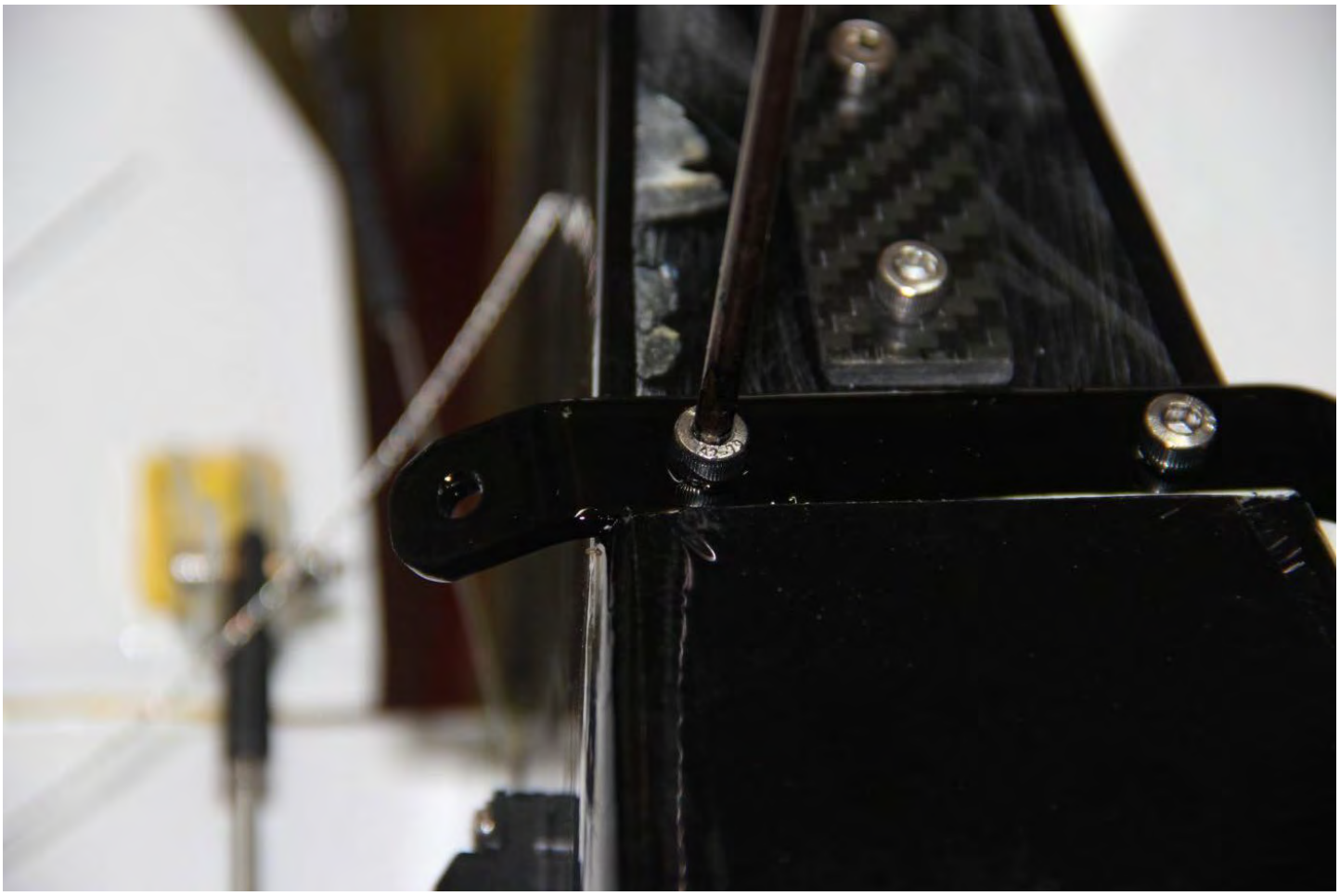
With the model still upside down, draw the centre line of the section where the carbon tail wheel unit will be located, and then mark the location where you need to drill the holes for the bolts that will hold the tail wheel in place.

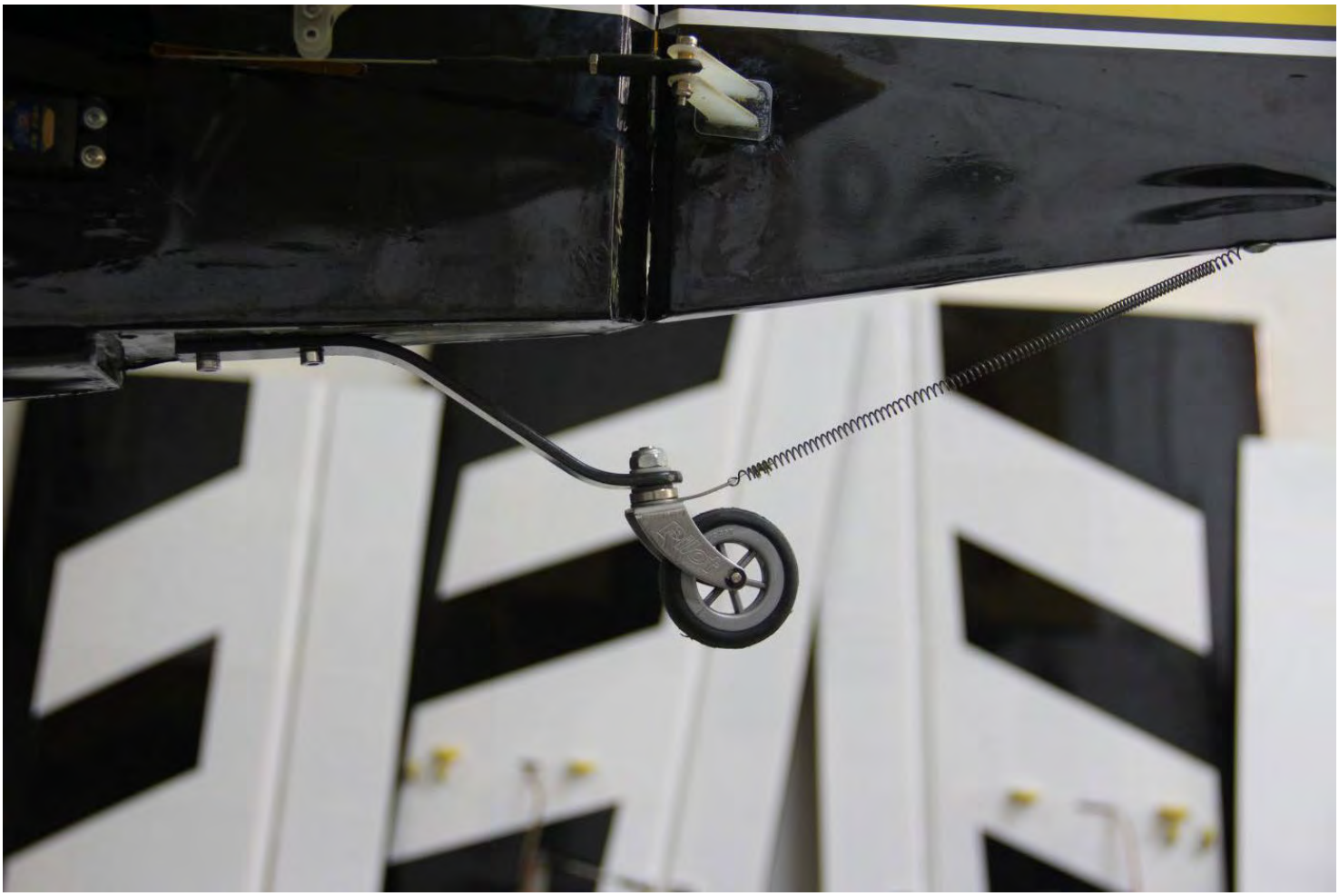
Note that in front of the tailwheel assembly you will need to attach the cross member for the elevator guide wires.

Insert the blind nuts on the inside of the fuselage and secure the tail wheel and cross member with the bolts provided. Attach the spring at one end to the metal arm on the tailwheel and the other end to the underside of the rudder itself using the small woodscrew provided.

We recommend to keep the pivot point of the tail wheel as in line with the hinge line as possible to assure a bind free movement of the springs.







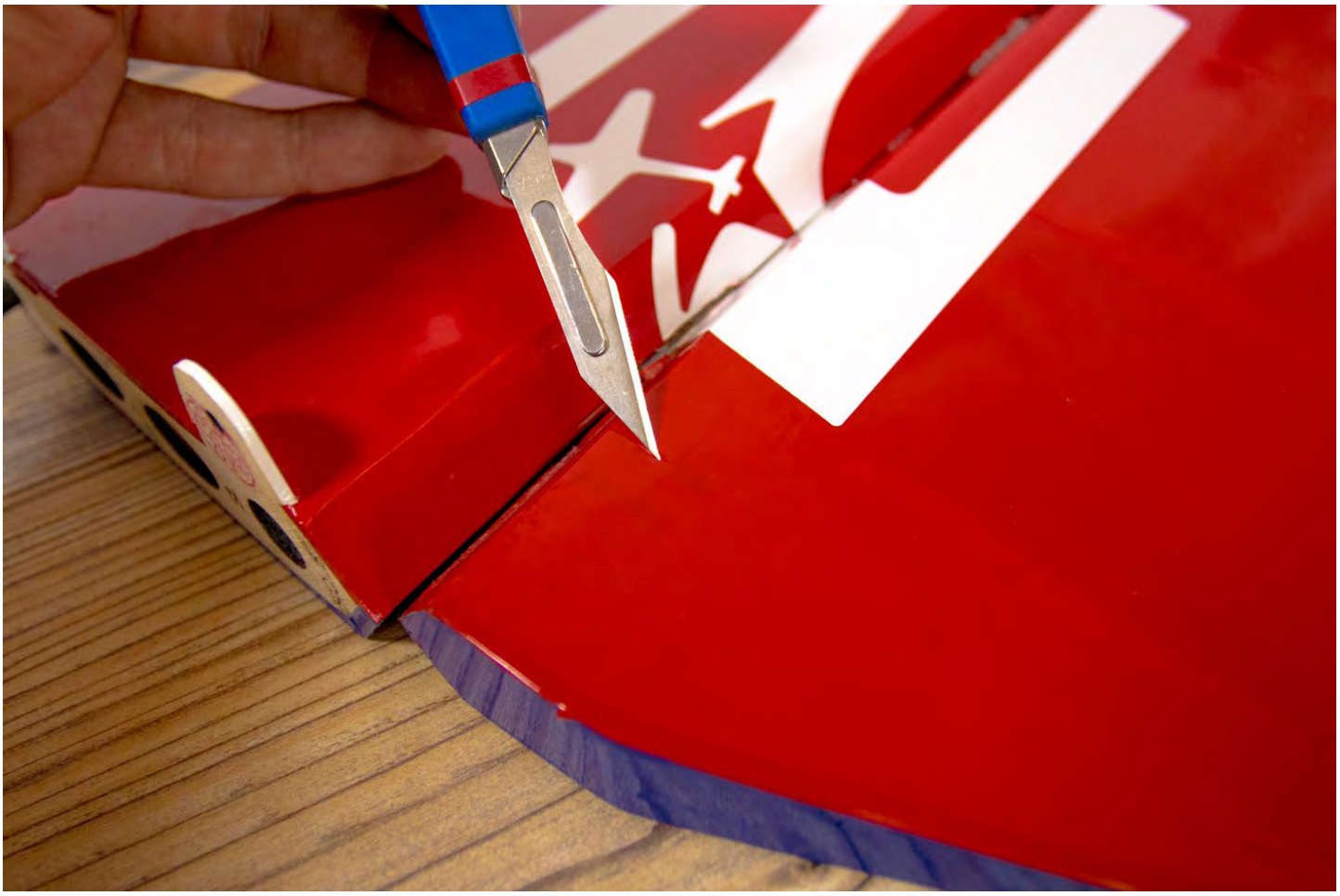
INSTALLING THE CONTROL HORN ON THE ELEVATOR:

It is very important to sand horn to assure a strong bond once glued to the model.

Locate and cut the covering where the horns will be glued

Glue them to the surface using epoxy glue

Excess epoxy glue can be removed with acetone



INSTALLING THE CONTROL HORN ON THE RUDDER:

It is very important to sand horn to assure a strong bond once glued to the model.

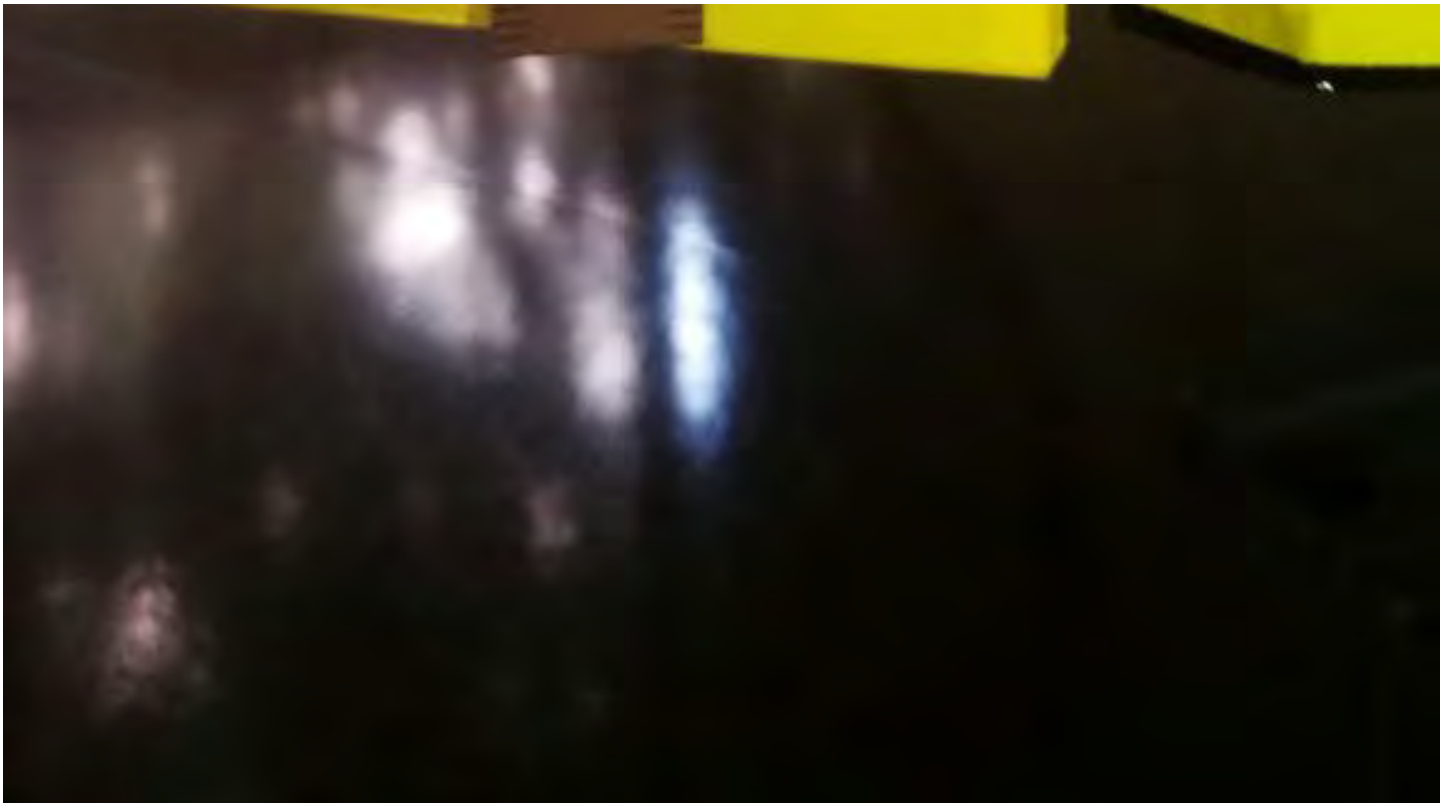
Locate and cut the covering where the horns will be glued

Glue them to the surface using epoxy glue

Excess epoxy glue can be removed with acetone


Jim LeRoy
BULLDOG AIRSHOW
N98MF


10cm 9 8 7 6 5 4 3 2 1

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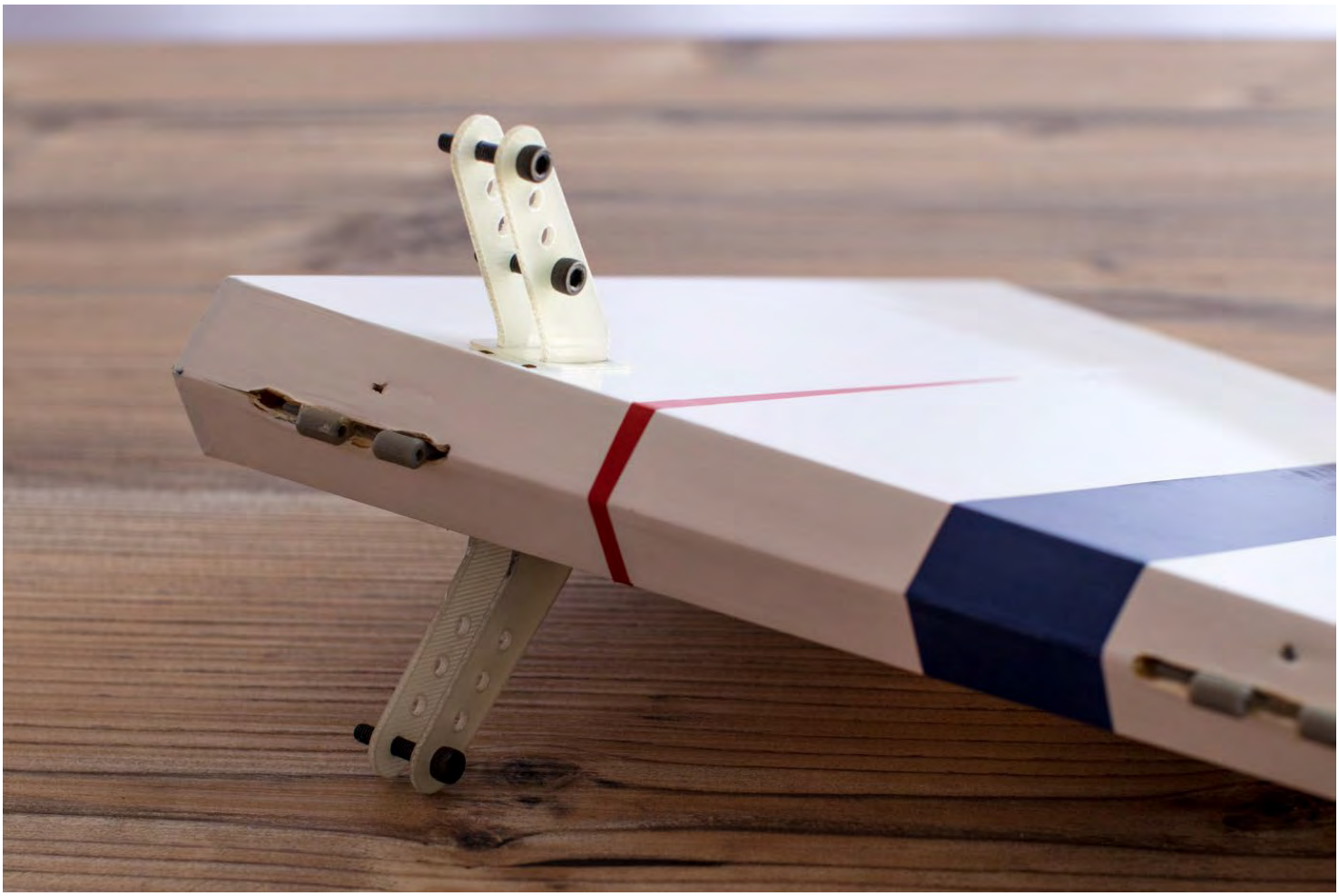


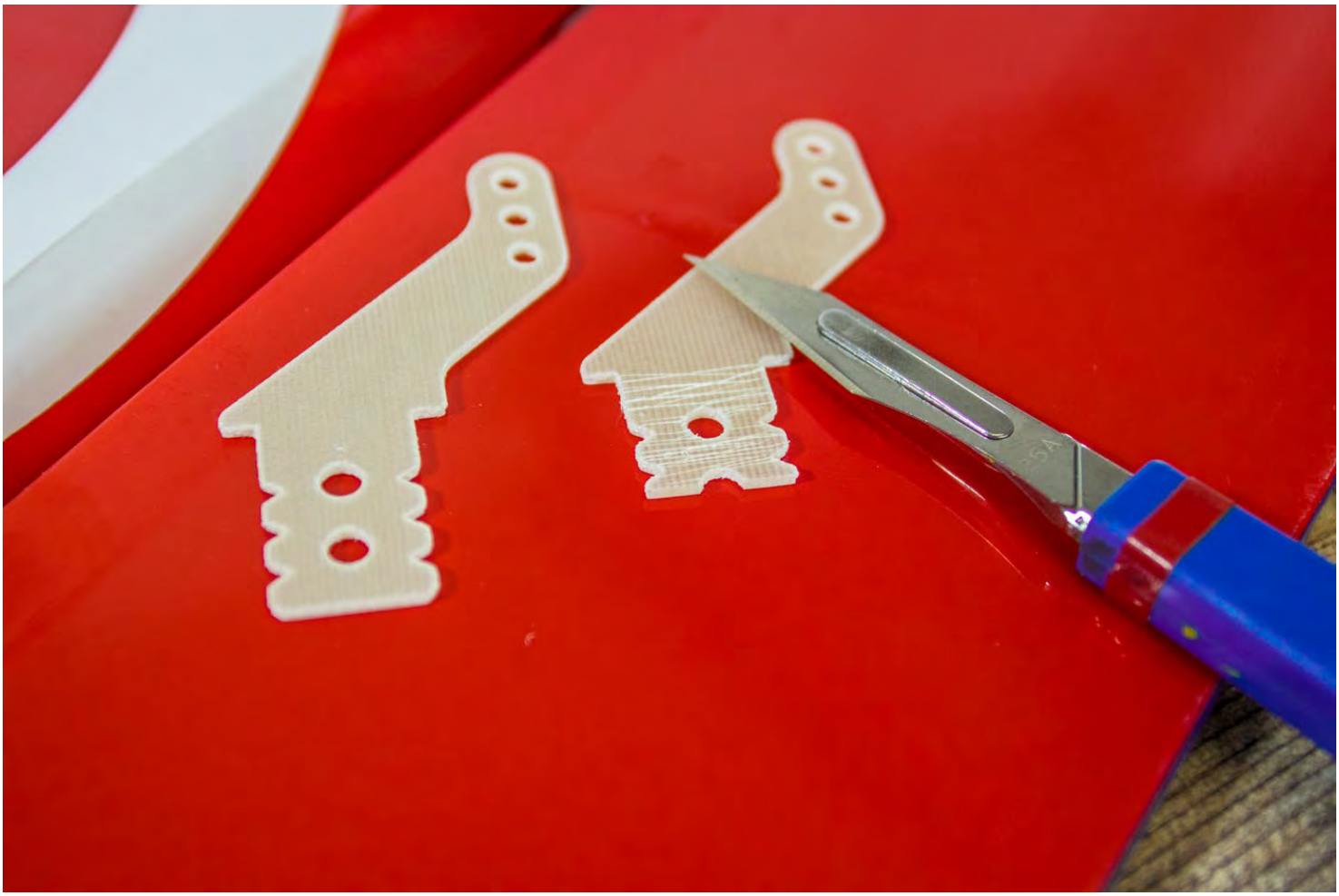
INSTALLING THE CONTROL HORN ON THE AILERONS:

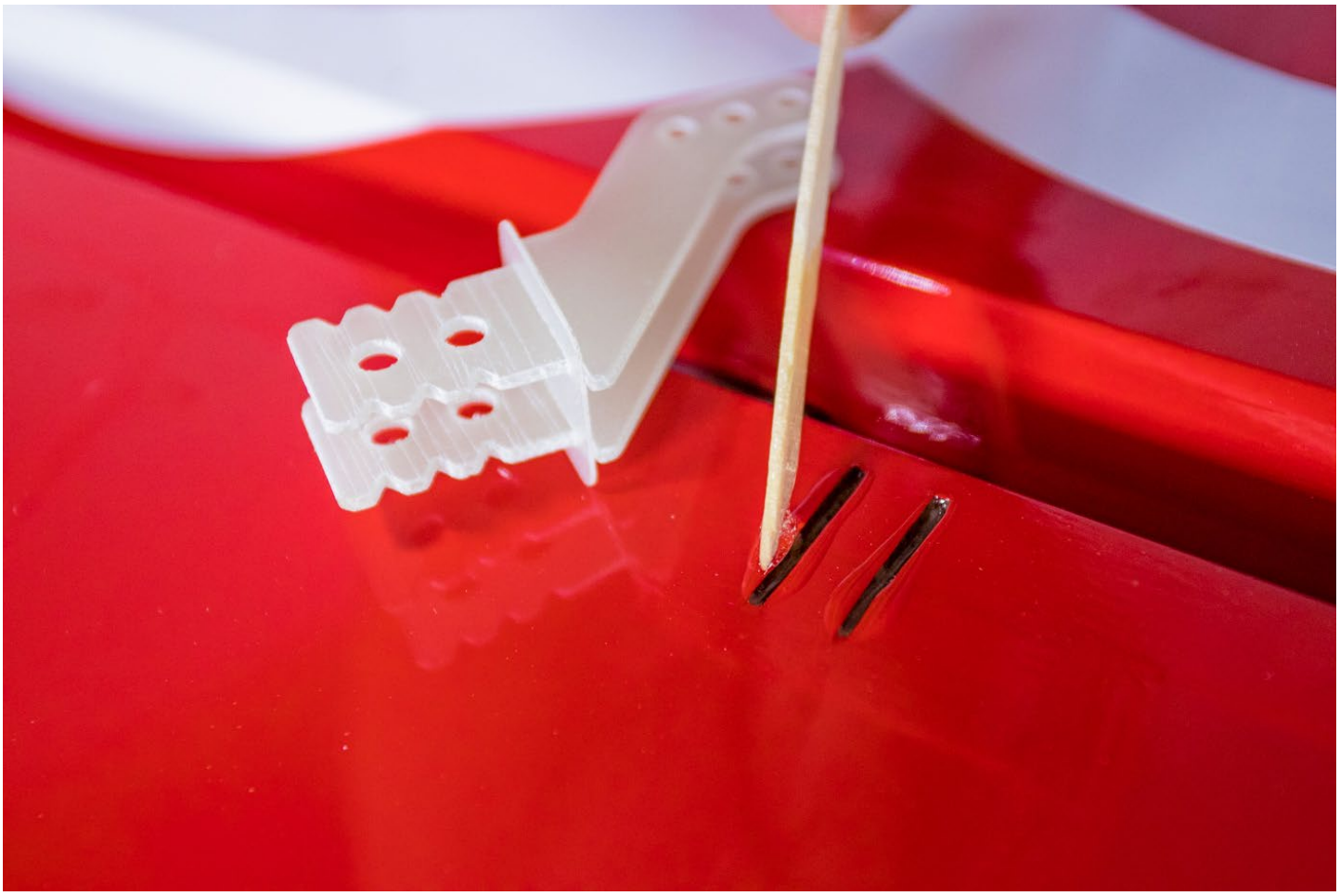
It is very important to sand horn to assure a strong bond once glued to the model.

Locate and cut the covering where the horns will be glued

Glue them to the surface using epoxy glue

Excess epoxy glue can be removed with acetone





AILERON SERVO INSTALLATION:

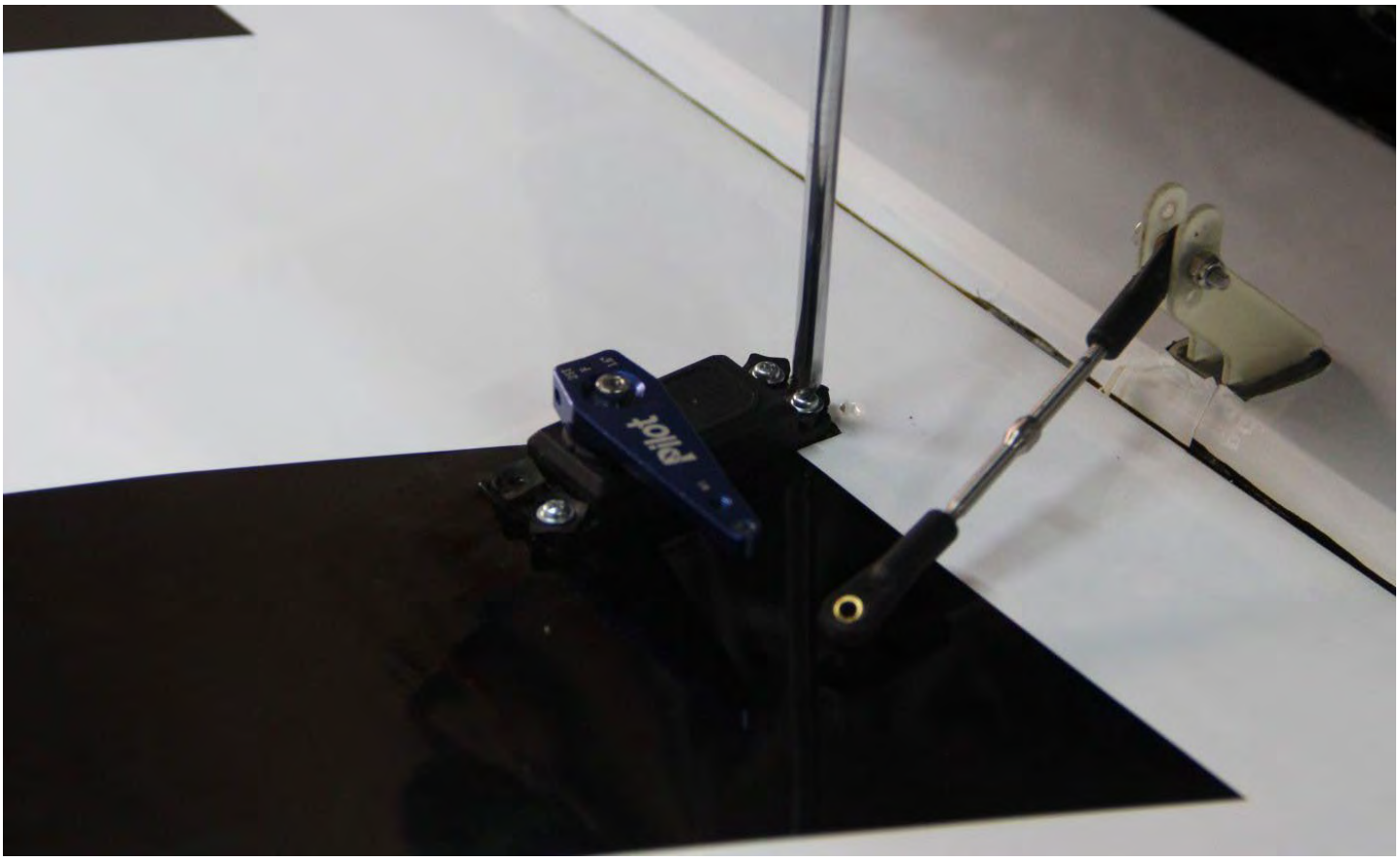
Locate and cut the covering where the servo will be installed. We recommend cutting only the diameter of the main part of the servo. Allow the servo to sit on top of some Oracover, thus trapping and securing the Oracover in place.

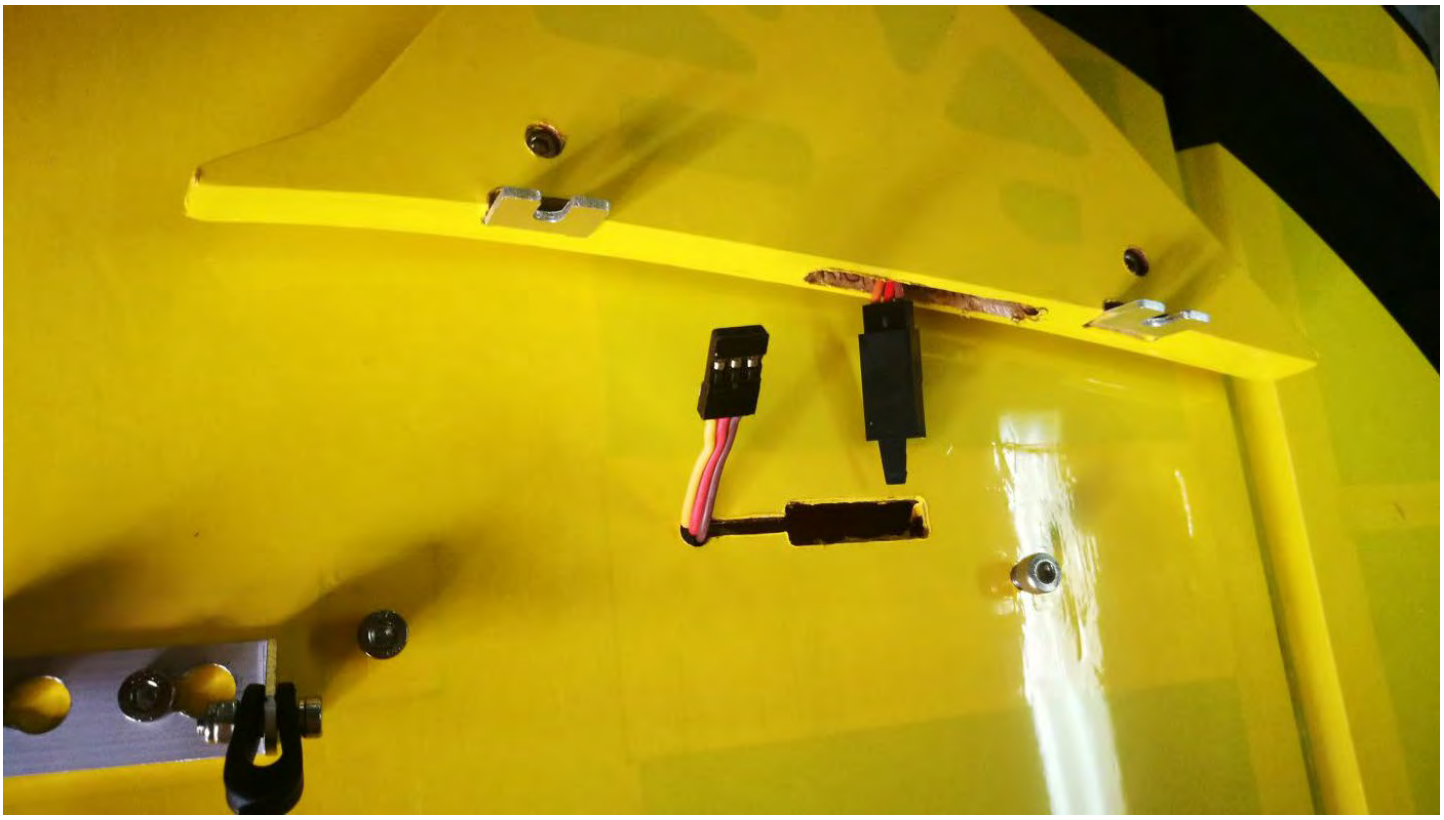
Use the included string and tabs to route the servo wire through the wing and screw the servo in place having added any extension leads as necessary.

For the top wing servos, each aileron will require two separate extension leads. The first extension lead should run inside the lower wing, to the location of the outer wing strut. The second extension lead should be run inside the wing strut itself. In this way, upon setup of the model at the field, you will mount the lower wing first, then connect the strut and its extension lead, and then connect the top wing to the strut and its extension. This will allow the removal of both the wings and the struts for easy transportation.

Centre the servo with your transmitter, attach the servo arm and connect the servo to the ailerons with

the pushrods provided.


pilot



RUDDER SERVO INSTALLATION:

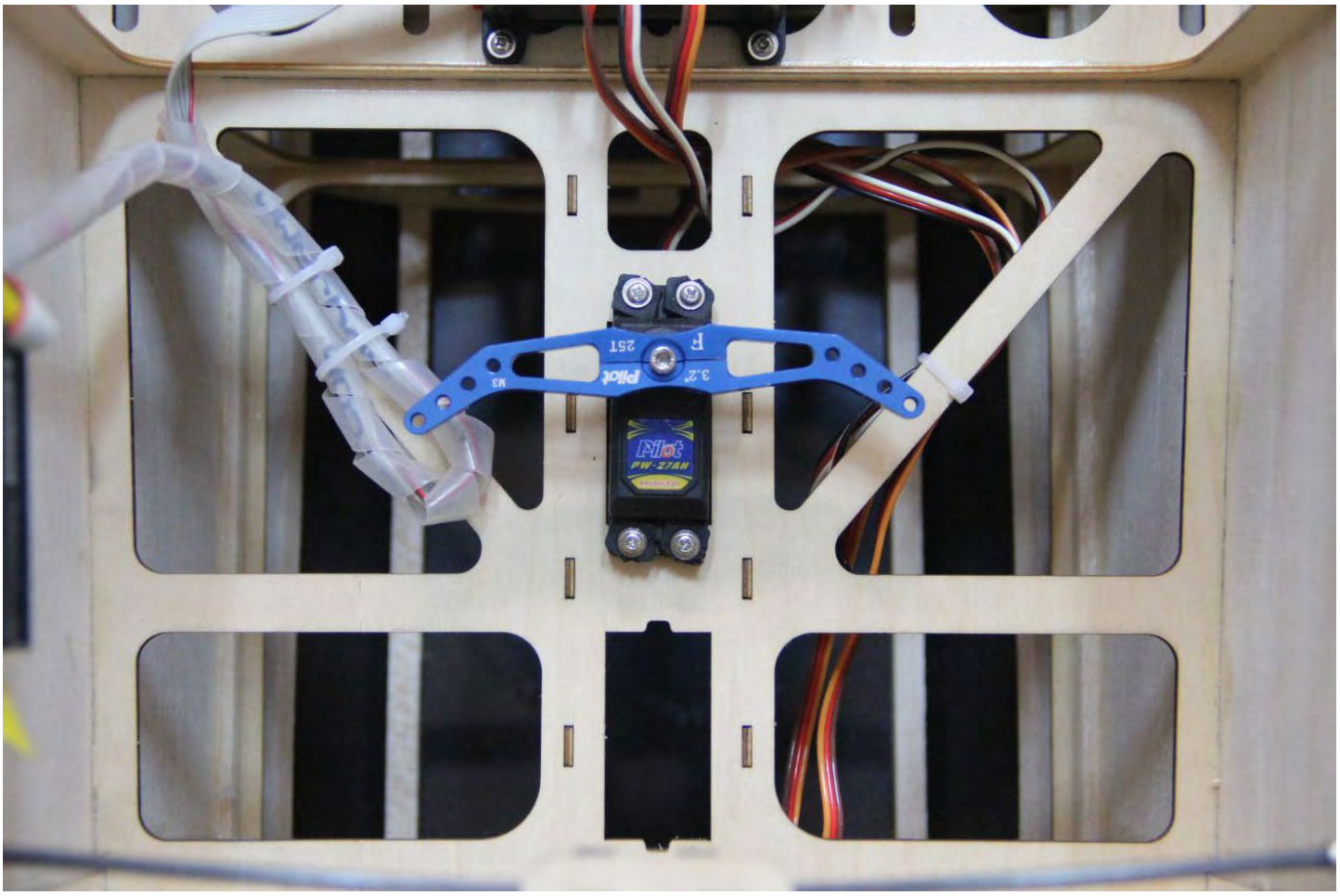
Screw the rudder servo to the allocated tray inside the fuselage

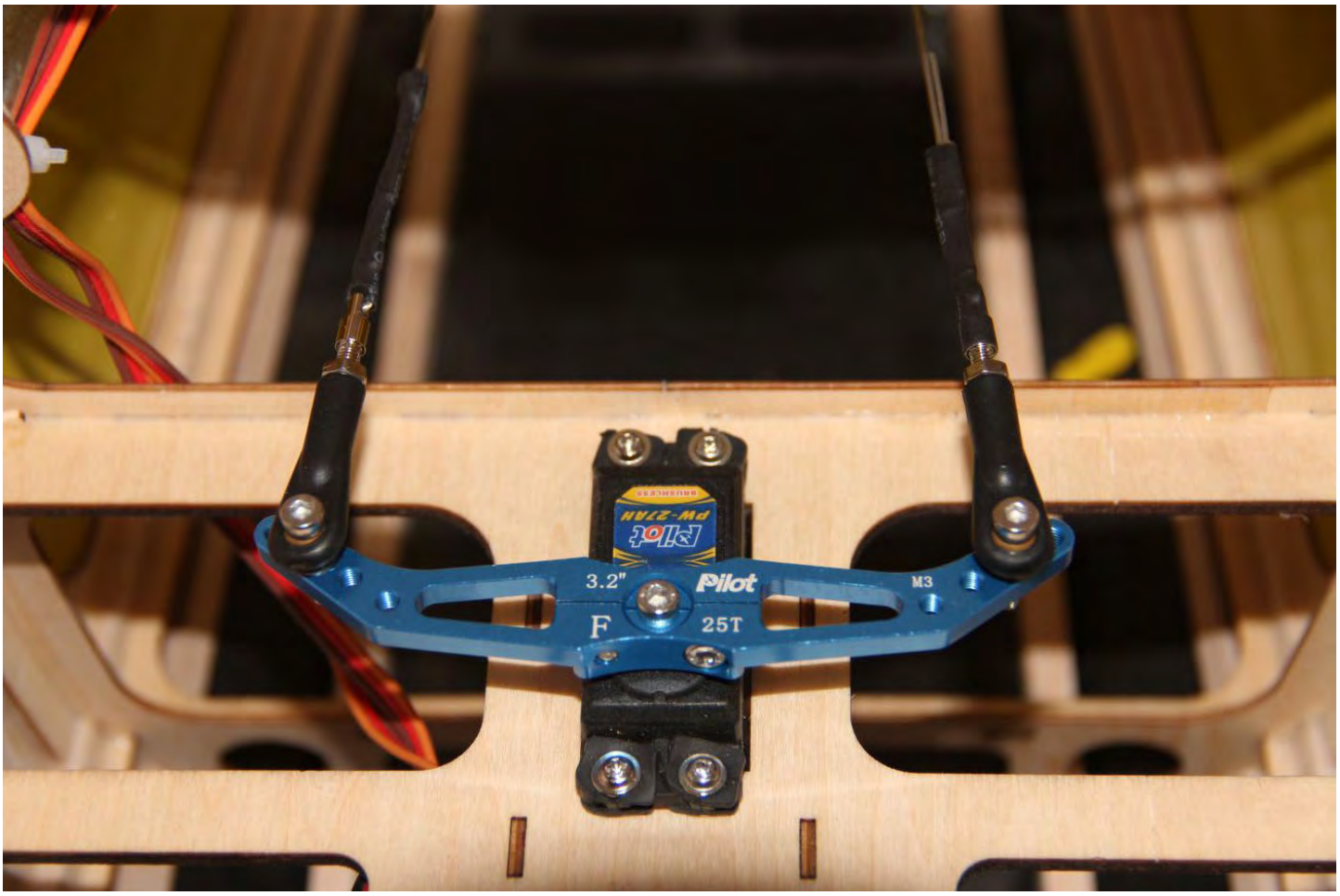
Centre the servo with your transmitter and attach the double servo arm

Attach the provided pull pull wires to the rudder control horns and thread the pull pull wire carefully through the fuselage slots all the way back to the actual rudder servo.

Attach the ball links to the rudder servo horn and pull through any excess pull pull wire until both sides are tight and without slop. Tension should be similar to that of the strings on a guitar.

With everything correctly in place, crimp the small copper tubes firmly onto the wires to permanently fix the wires in place, before sliding over the heat shrink.


25T
Pilot
3.2"
M3
Pilot
PW-27AN


Pilot
PW-27AN
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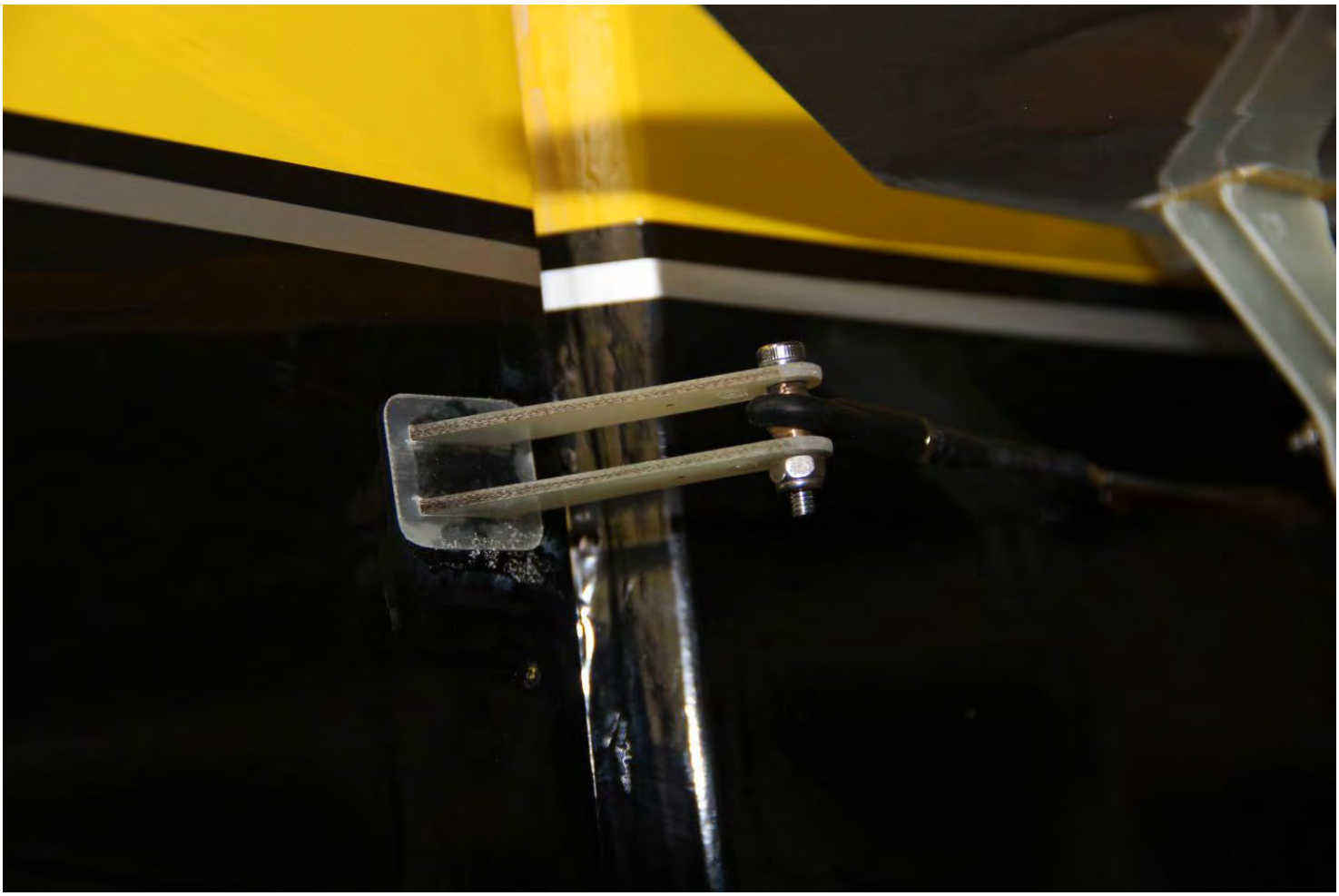


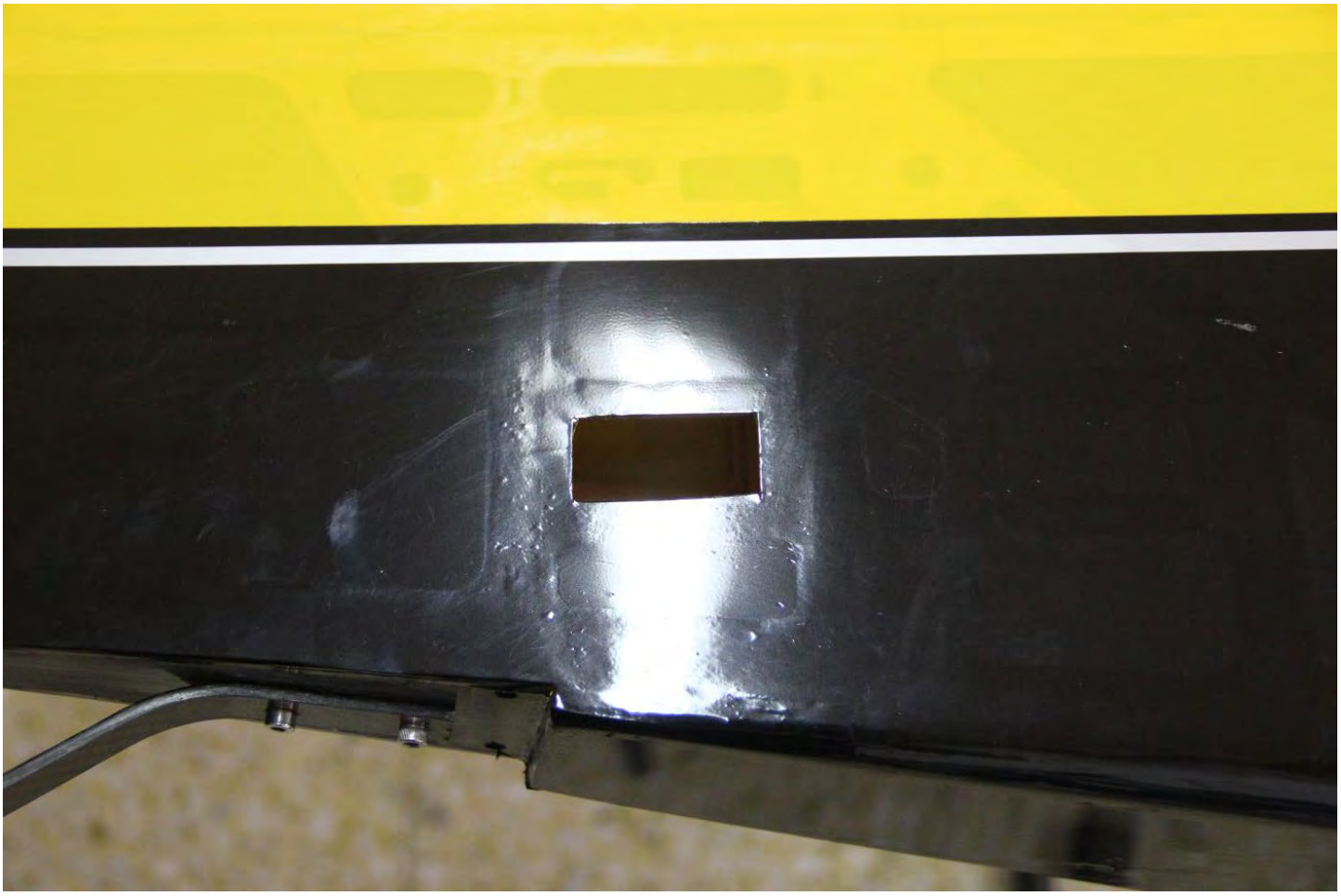
ELEVATOR SERVO INSTALLATION:

Locate and cut the covering where the servo will be installed, at the rear of the fuselage, just under the elevator.

Attach your required extension lead to the servo, allowing sufficient length for the lead to reach your receiver or Powerbox without needing further extensions.

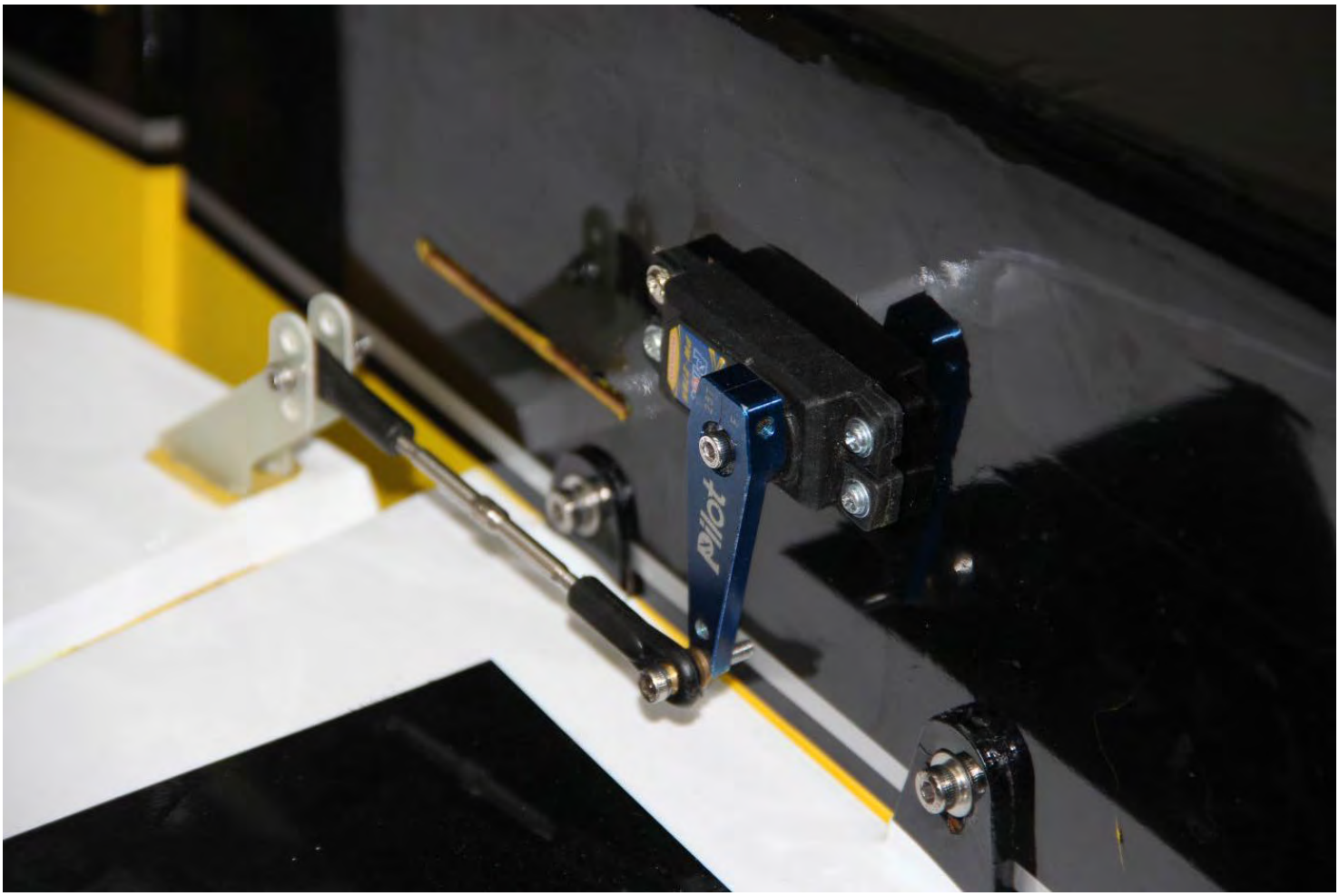
Route the servo wire through the fuselage and screw the servo in place.

Centre the servo with your transmitter, attach the servo arm and connect the servo to the elevator with the pushrods provided.




Pilot


pilot
PILOT
RW-21M



MOTOR INSTALLATION:

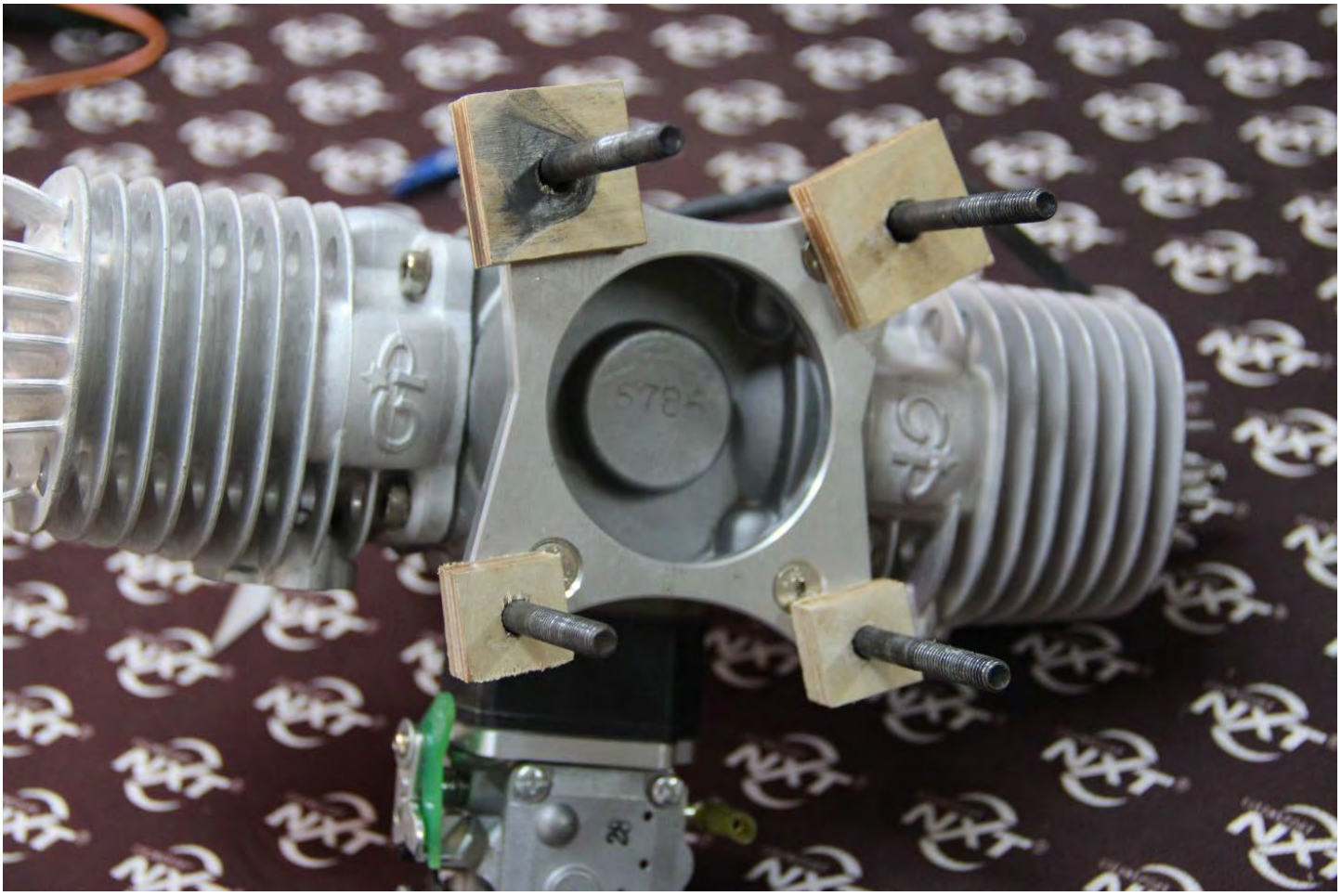
The Pitts is provided with the firewall pre-mounted at the factory, laser marked where the centre-line is, ready for you to simply square your engine to it.

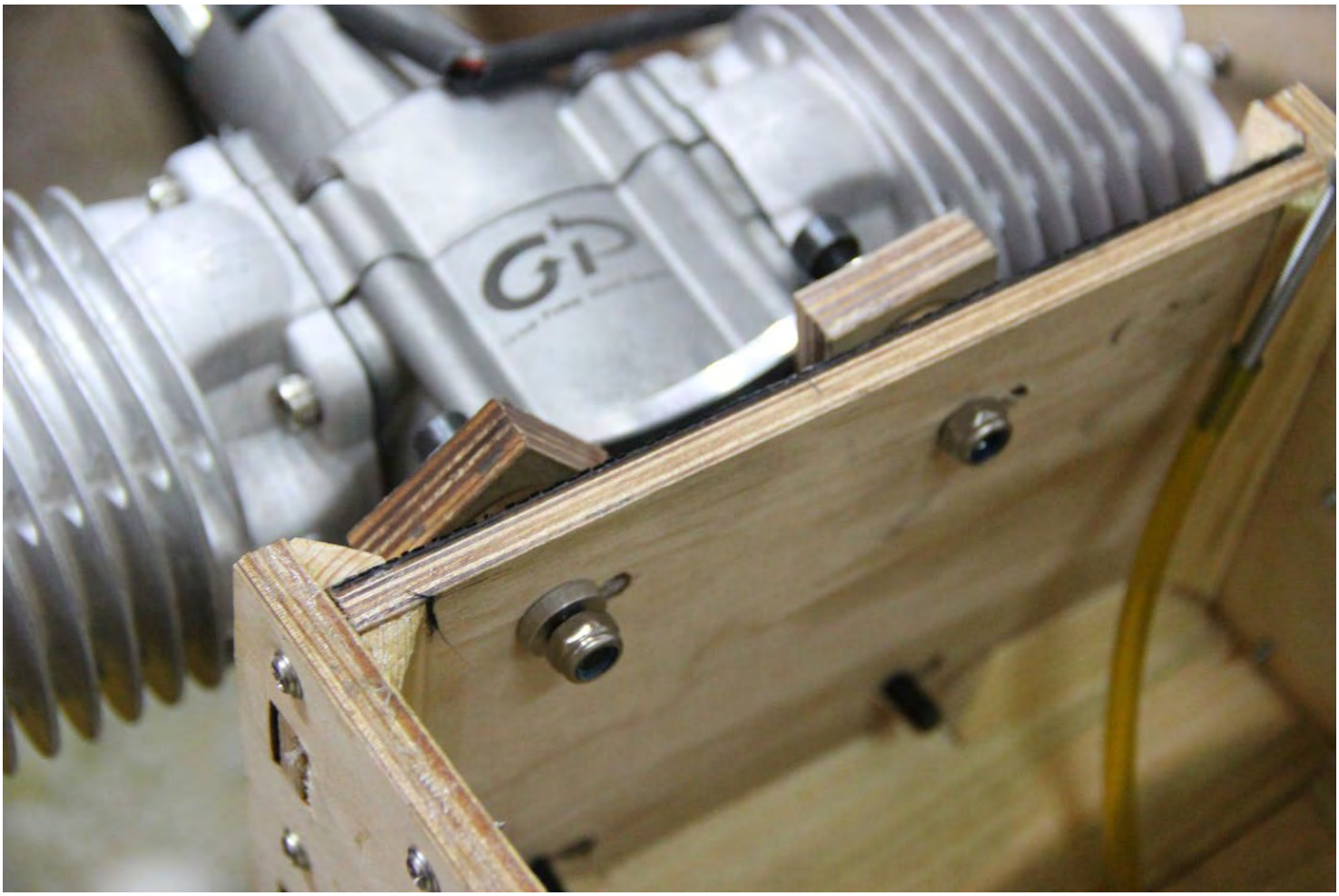
The engine box come with the appropriate engine incidences applied, so all you need to do is make sure that this any standoffs are all the same size to assure a correct engine incidence.

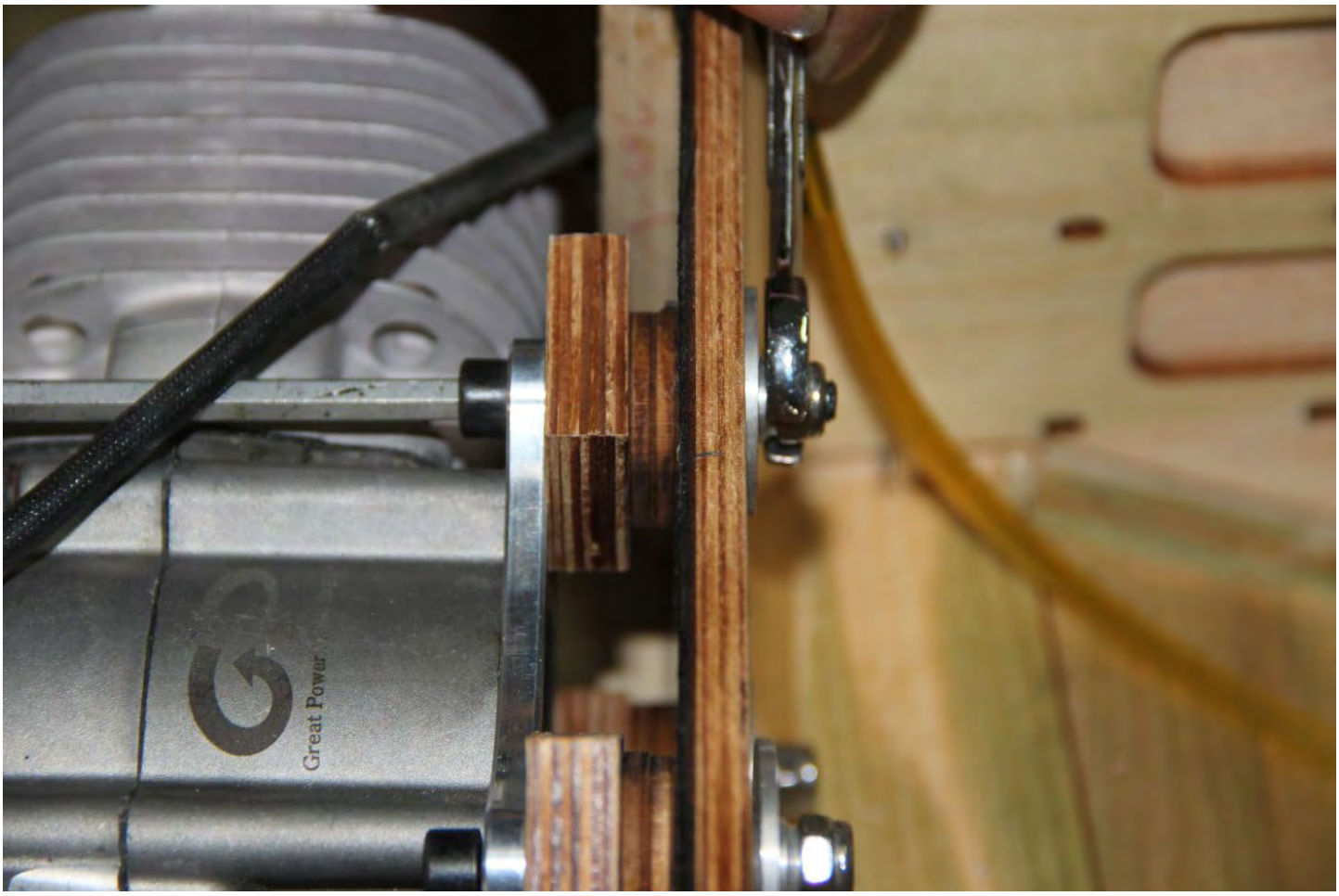
You can measure the distance between your engines mounting plate and prop hub, and compare the distance between the firewall and spinner location, in order to calculate the size of standoffs required.

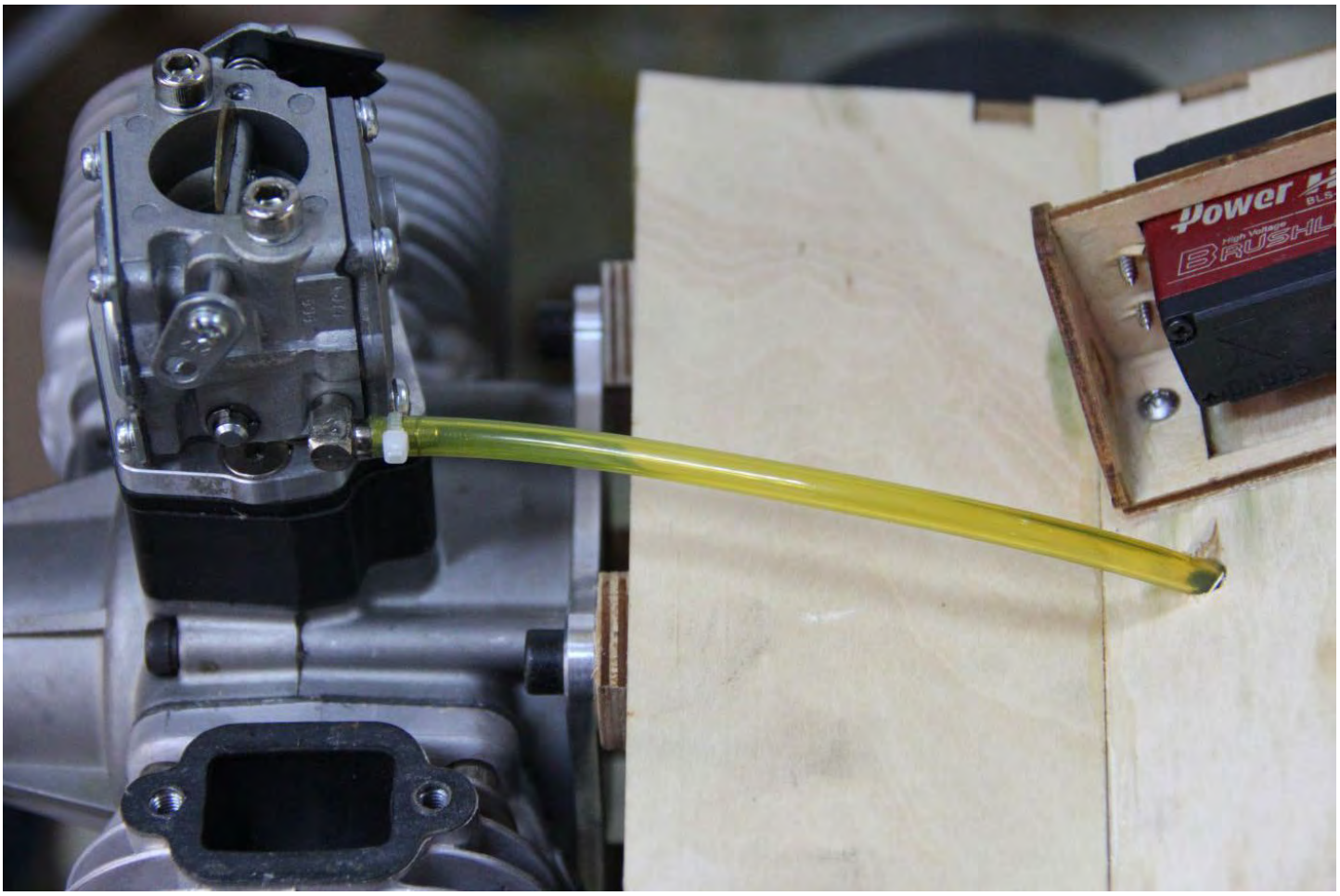
Once measured and marked out, drill your appropriate mounting holes and securely screw your engine to the firewall using your preferred method , be that nut and bold or blind nut method.

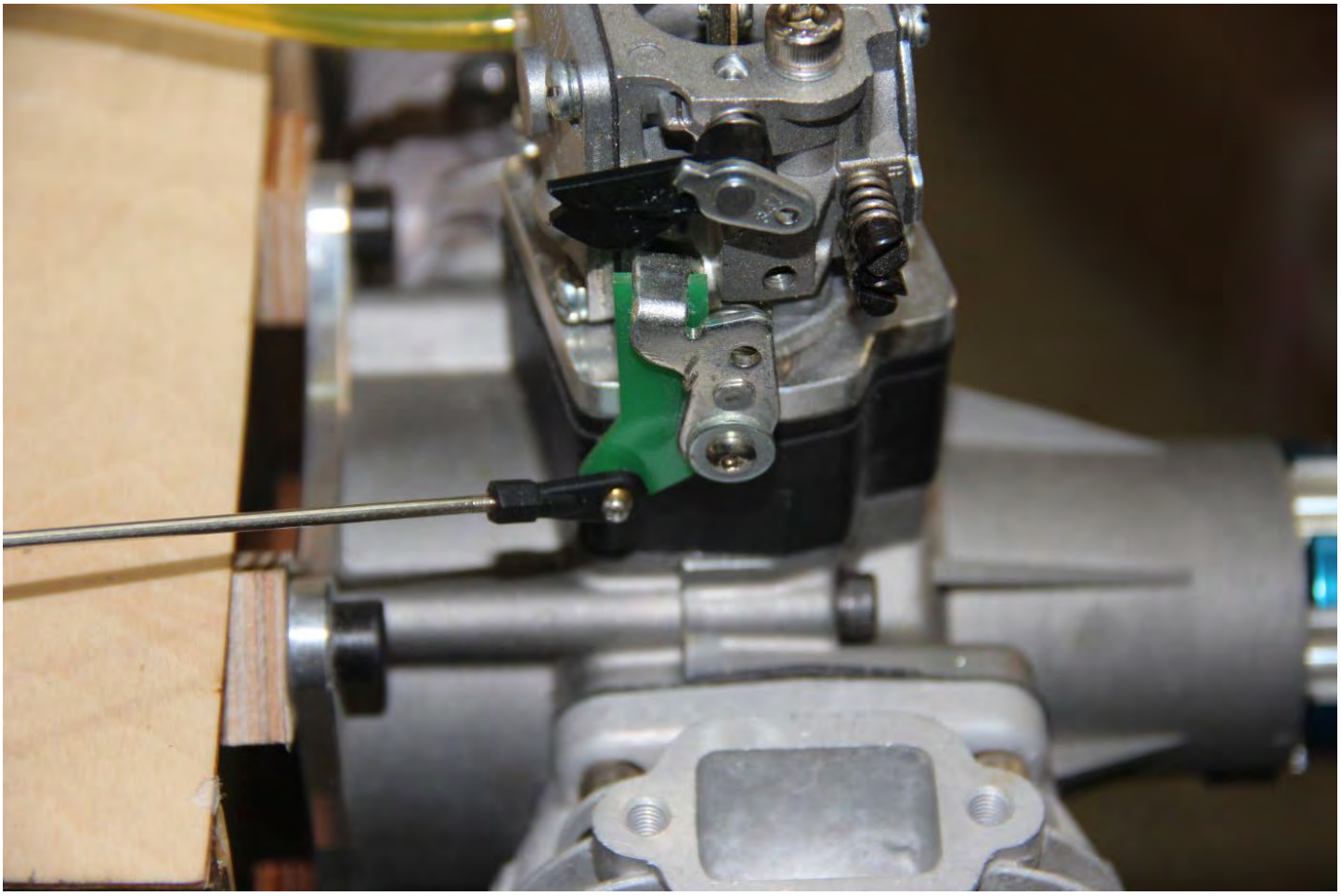
Finally ecure the engines ECU to the engine box, we recommend on top of the firewall however this may vary depending on your installation.

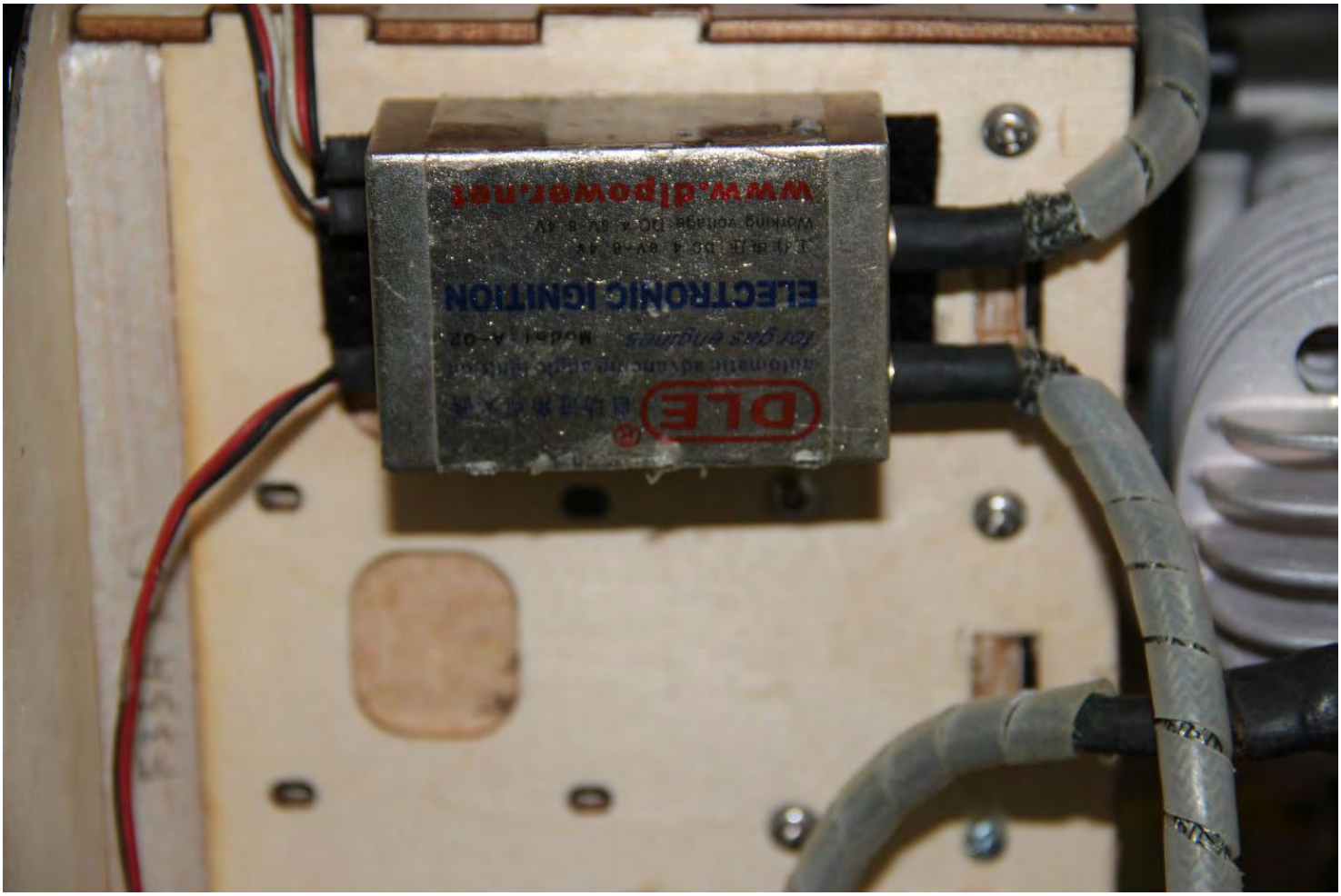


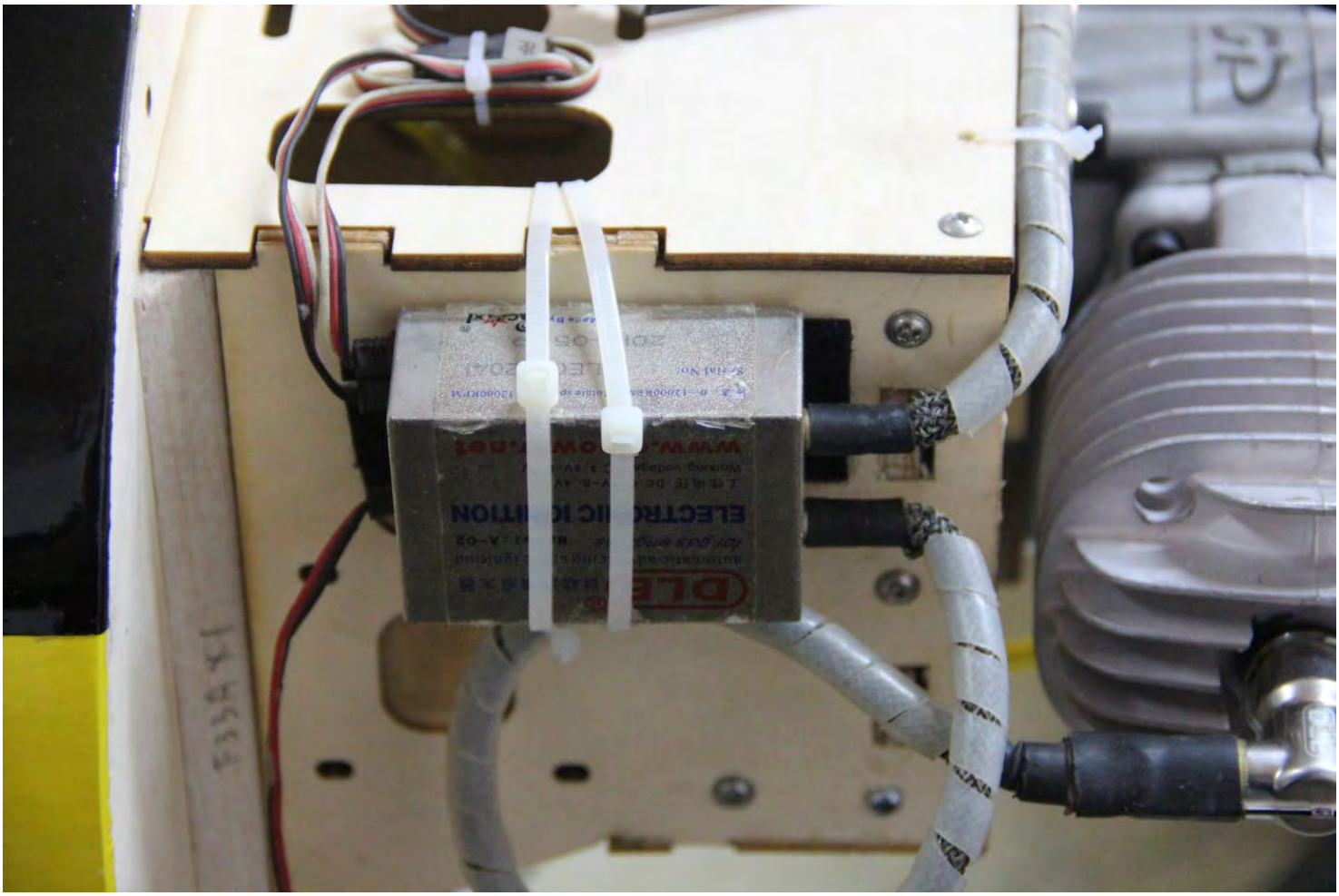



Great Power


Power

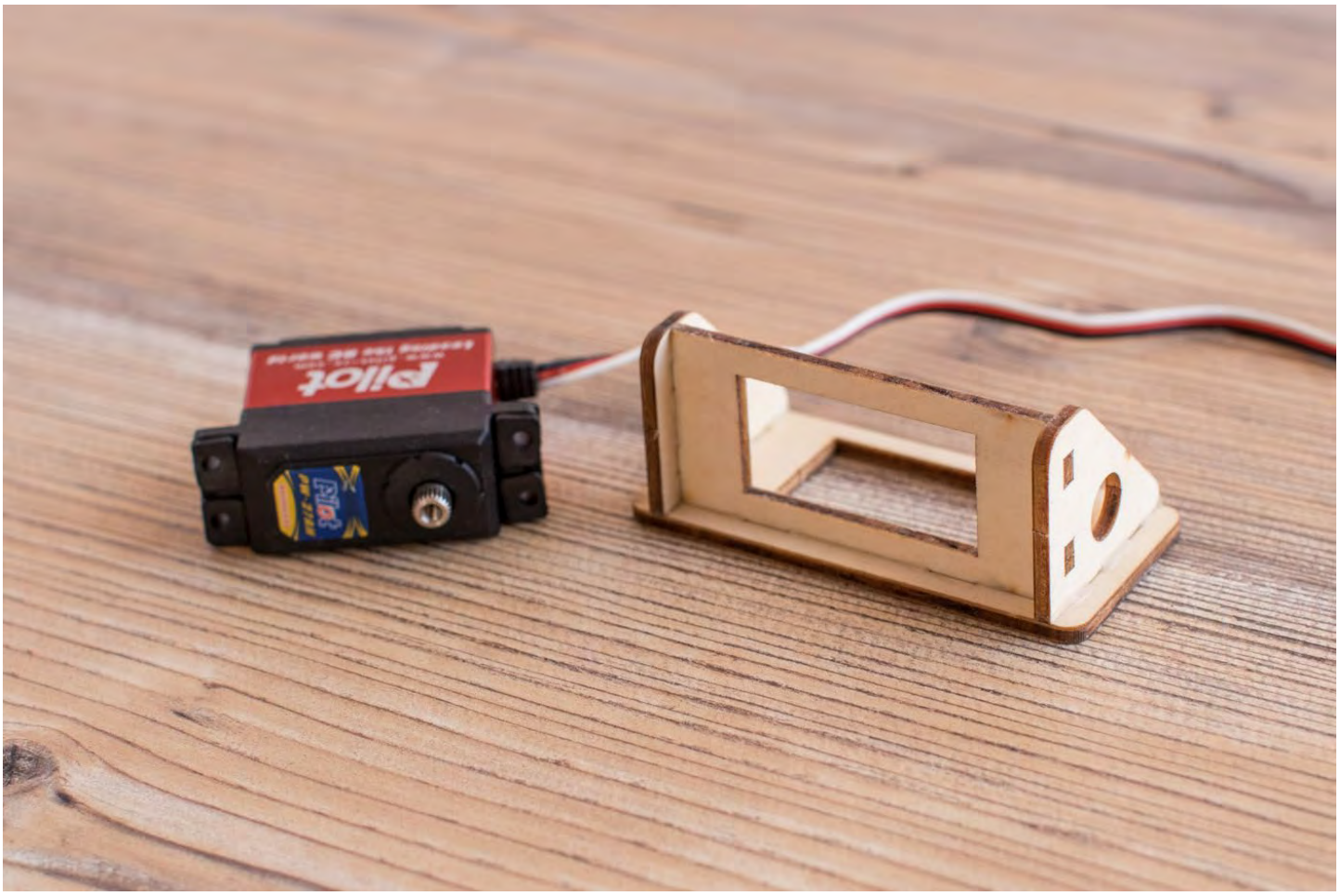



www.dipower.net
ELECTRONIC IGNITION
for gas engines
DLE

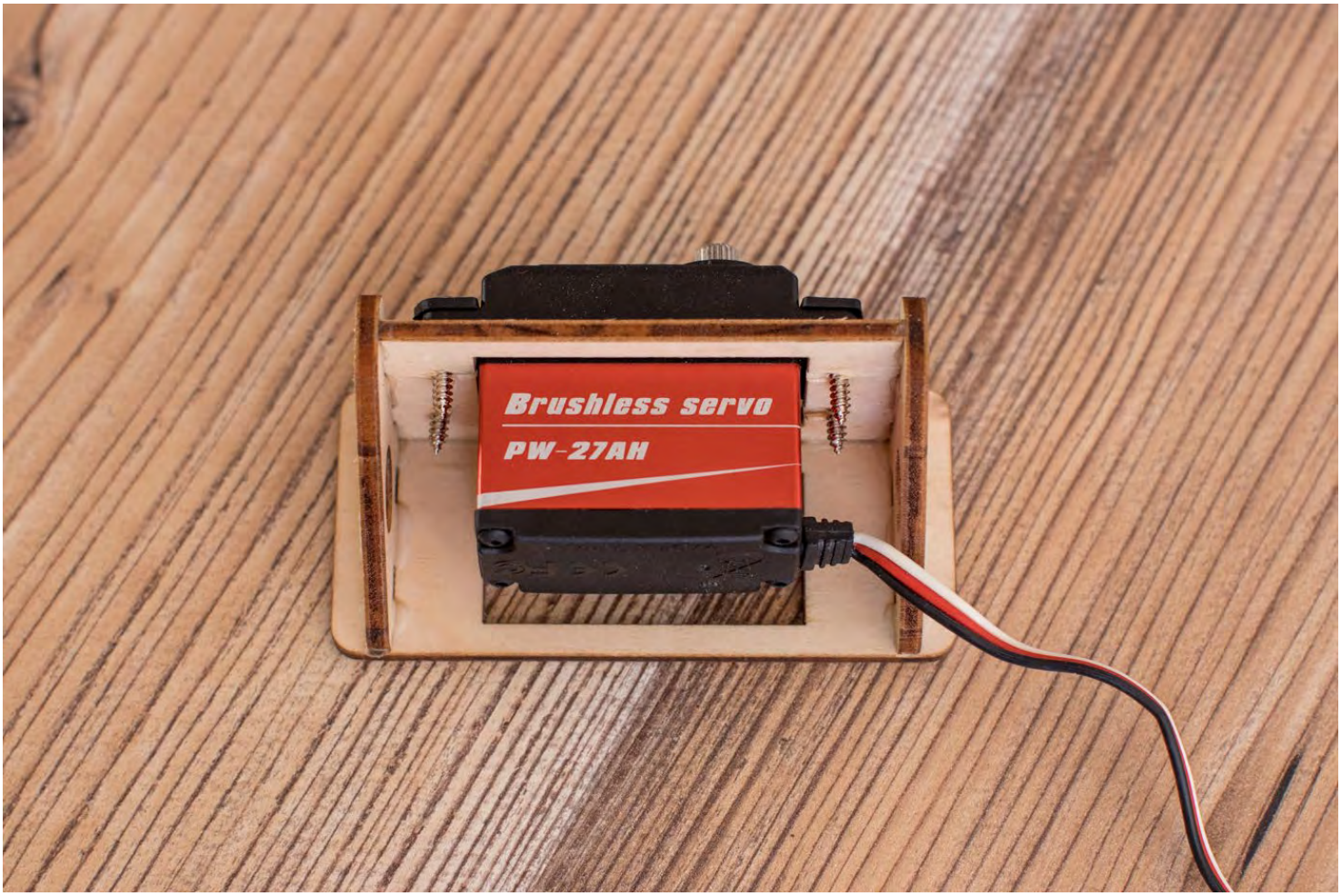


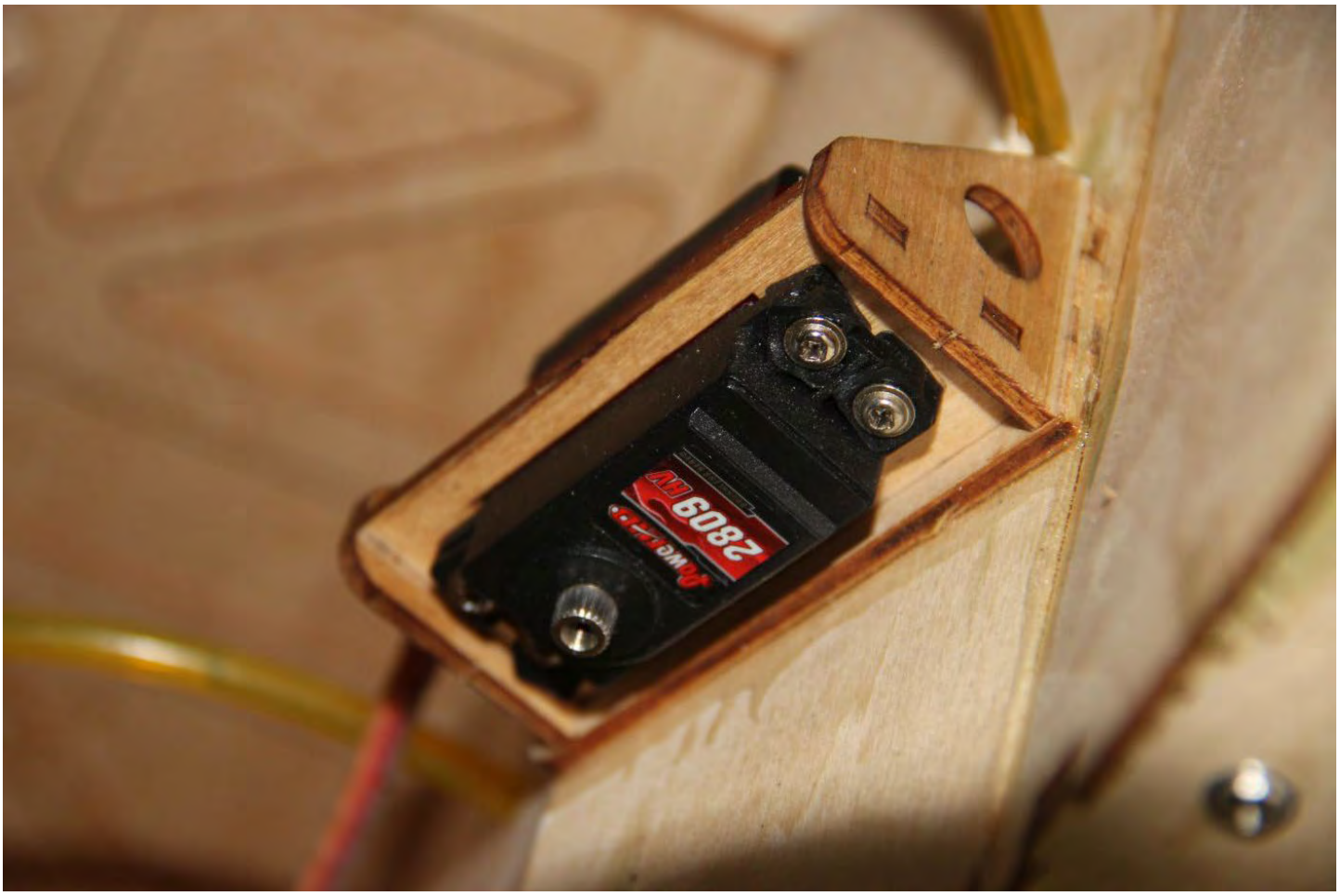
THROTTLE SERVO:

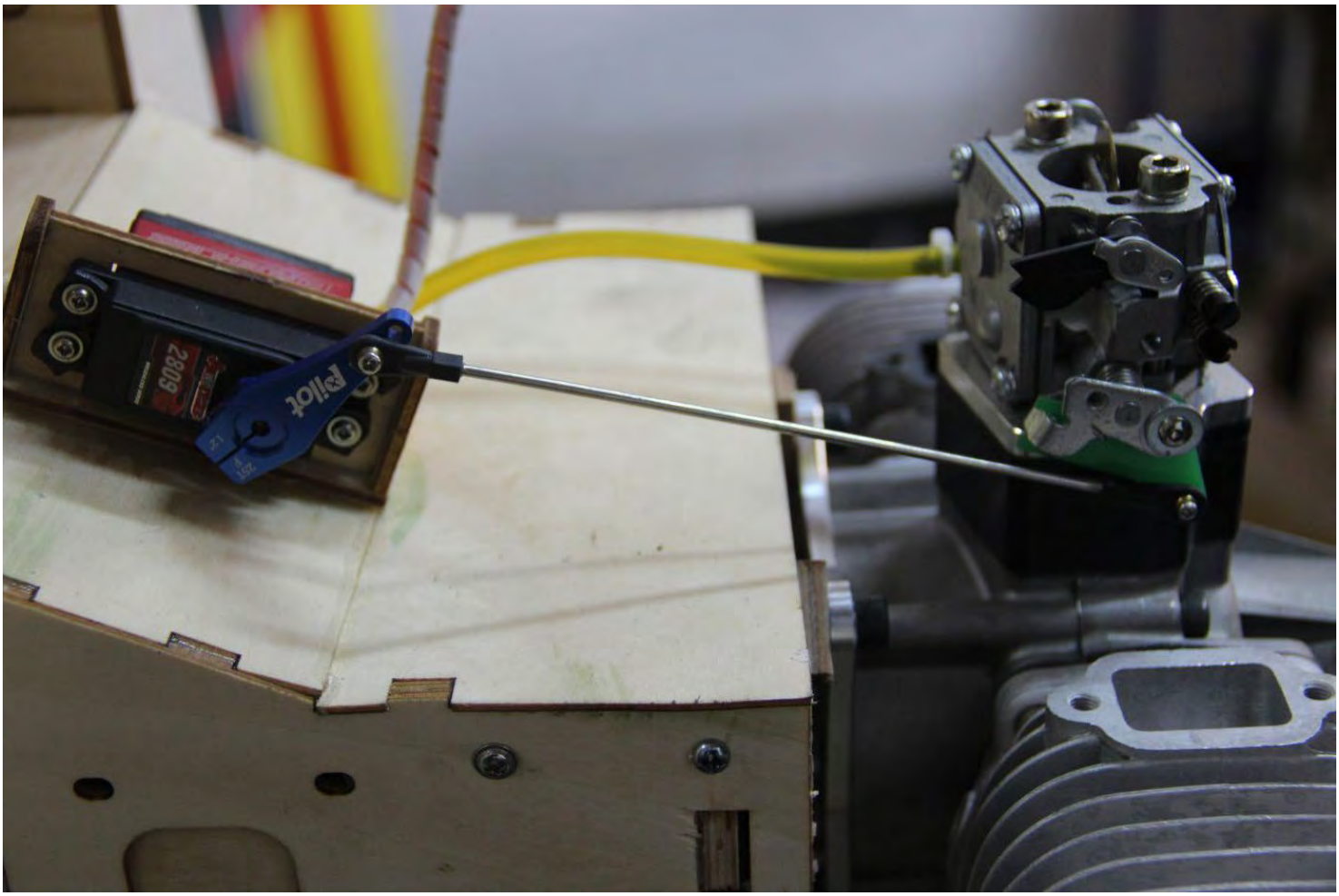
For the installation of the throttle servo, simply screw the servo to the provided servo mount, and then screw and glue this in its final location where required for your particular engine. Use the included pushrod to connect to your engine, making sure that of a smooth and bind free movement.


Pilot


BRUSHLESS


Brushless servo
PW-27AH


2809HV



COWLING INSTALLATION:

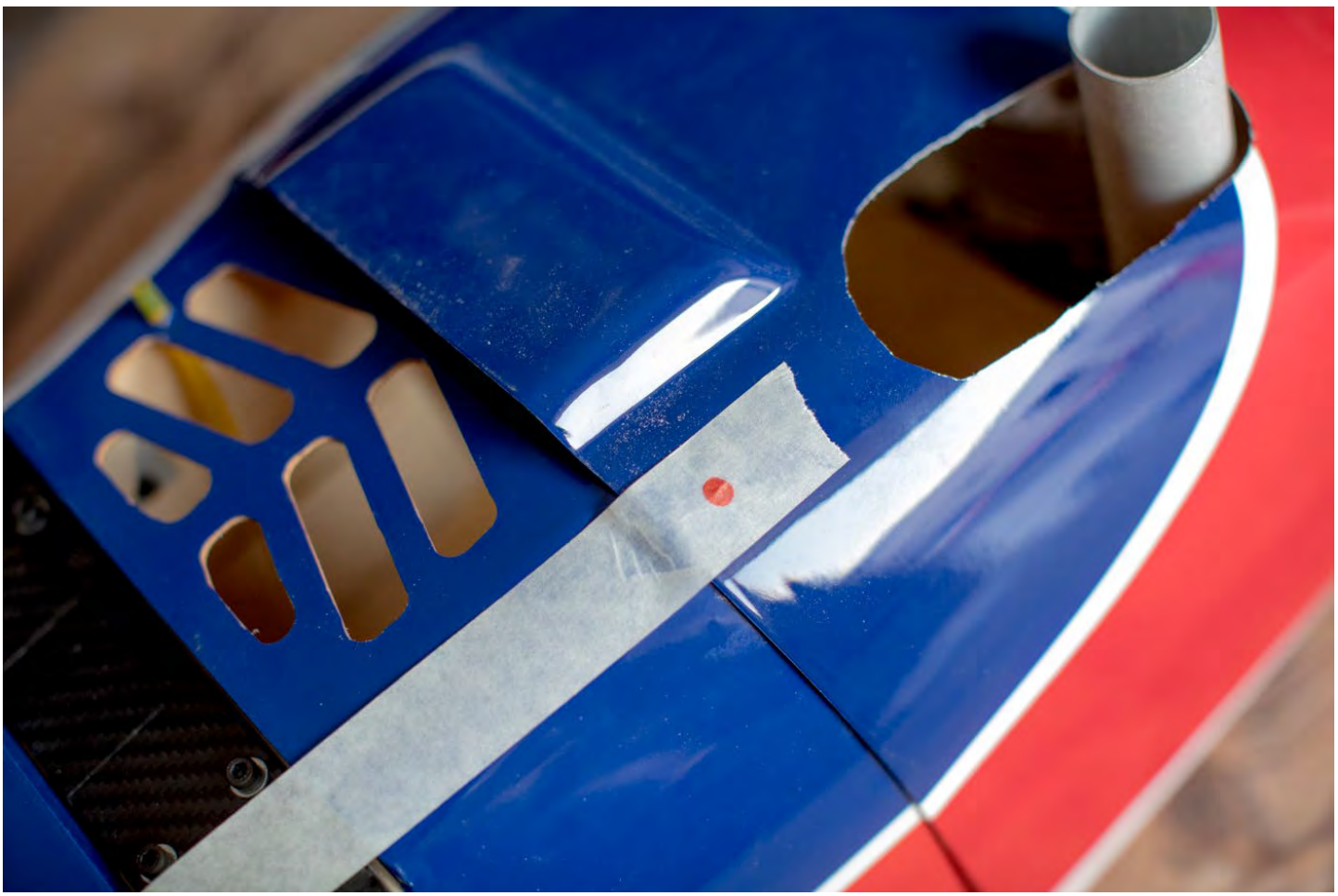
The cowling is installed with a single pre-installed bolt on the top half, from the inside of the fuselage going forwards, and two additional bolts going through the cowling from the bottom.

With the cowl off, turn the model over, and place some small strips of masking tape in line with the two bolt holes. Draw a straight line on the masking tape going over the holes, and mark/measure where the hole is relative to the lines.

Install the cowling, tightening the top bolt. Place additional masking tape on the cowling, and with a ruler continue the straight lines drawn previously.

Measure back to the marked point where the holes are, and then remove the cowl and drill out the two necessary holes.

Re-install the cowl using the top and bottom bolts.



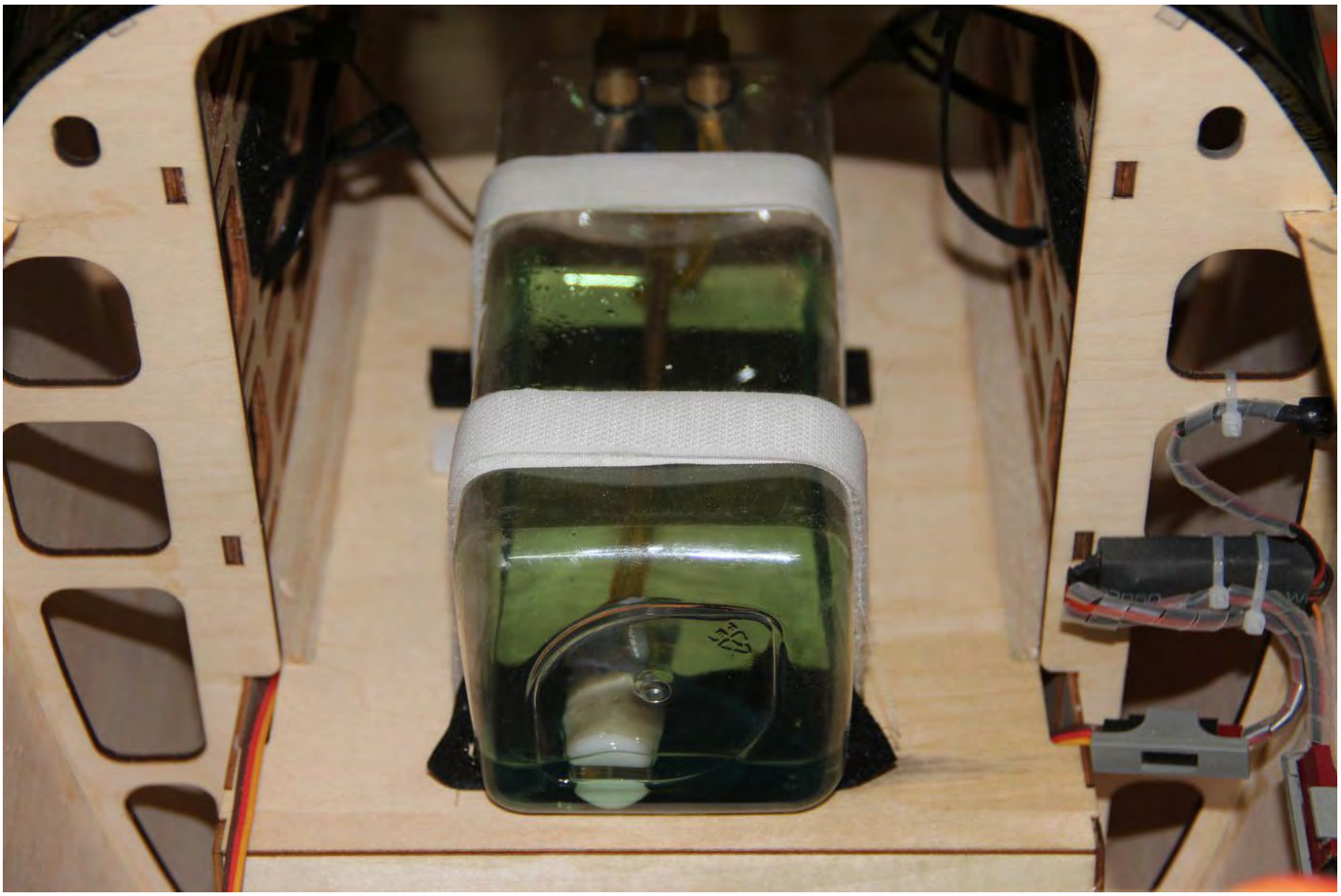
INSTALLATION OF ANCILLARY COMPONENTS:

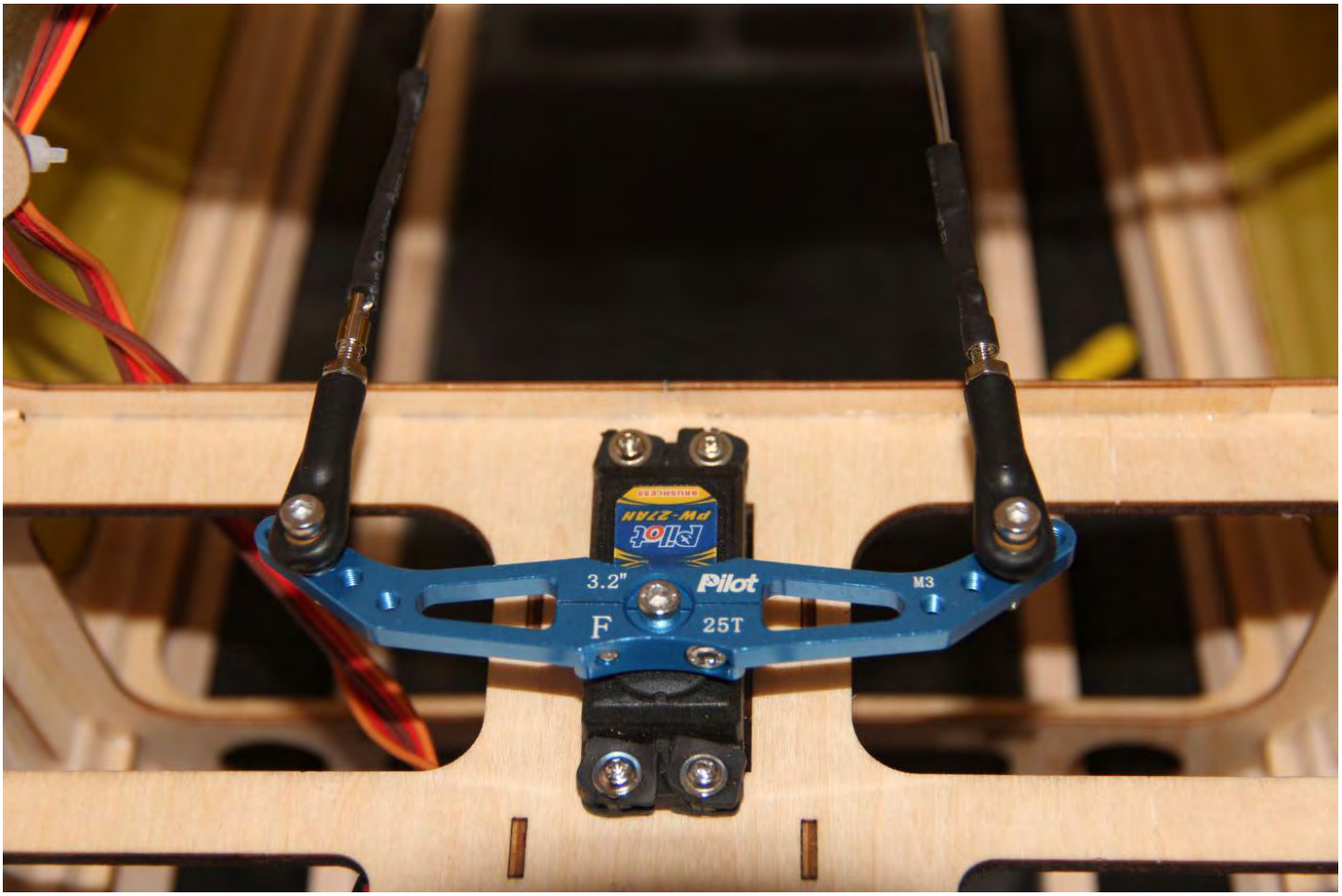
Check the correct location of your chosen battery and ancillary components depending on your CG.

Install your receiver with double sided tape or velcro, making sure that all servo leads can be easily connected without being too tight, and that the receiver is securely fixed in place.

For specific tips on receiver and antenna location, please consult your receivers manual.

Make sure that all ancillary components are securely fastened or tied down and can not come loose in flight.




Pilot
PW-ZTAH
3.2"
Pilot
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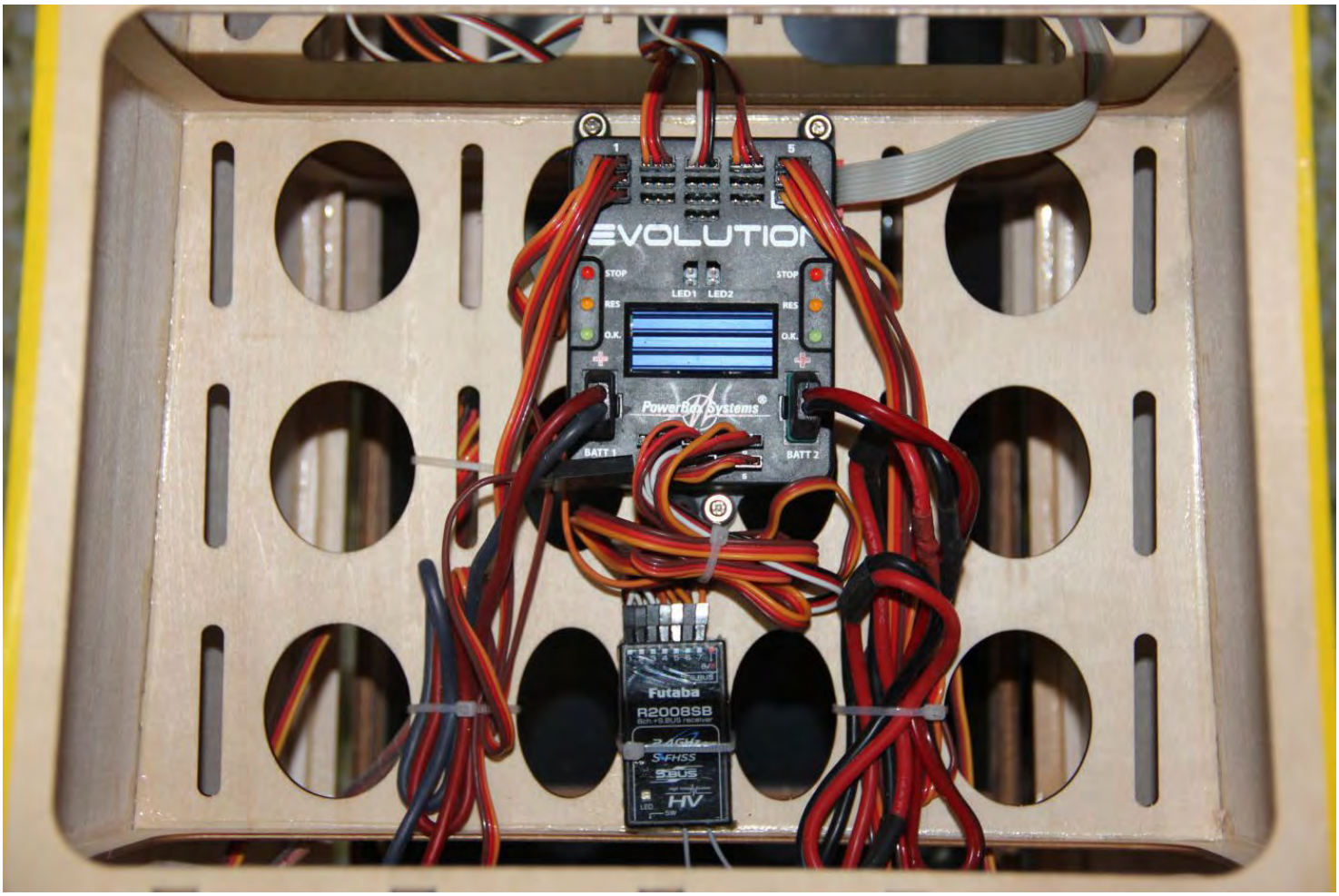


Note that the two laser cut holes are for the fuel and smoke tank vents

WHEELS PANTS INSTALLATION:

Slide the wheel pants over the wheels and axles, supporting the rear of the pants to line up with the ground and mark where to drill the two screw holes in the wheel pants.

Remove the wheel pants and drill the holes for the appropriate holes.

Before putting back on the plane, mount the bolt with the blind nut on the wheel pant and tighten until the nut sits flush with the wheel pant.

Remove the bolts and the nuts should stay in place.

Slide the wheel pants back over the wheel and bolt in place.

ELEVATOR GUIDE WIRES

The guide wires are important as they add extra strength to both the elevators and the main wings.

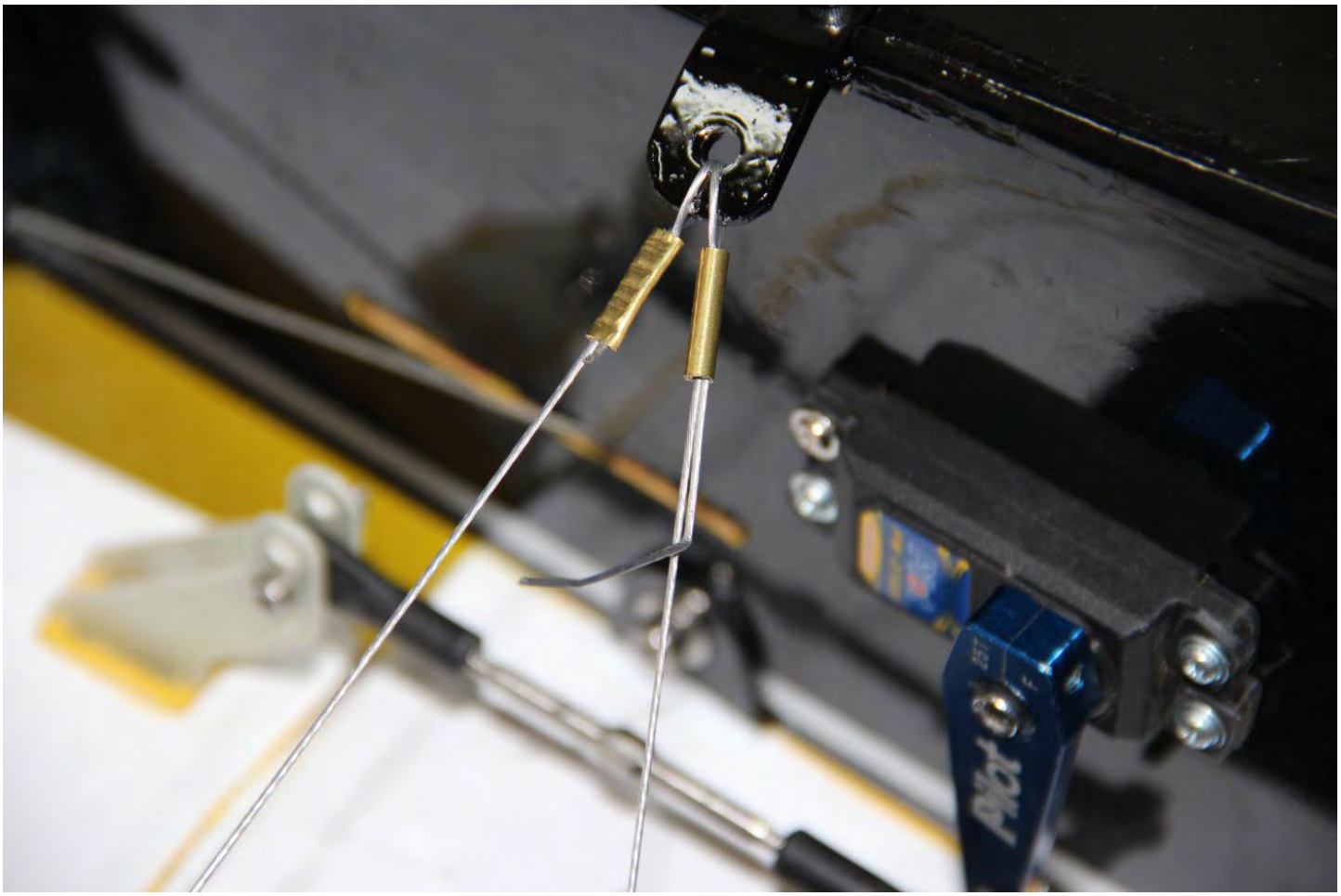
The elevator has guide wires both top and bottom.

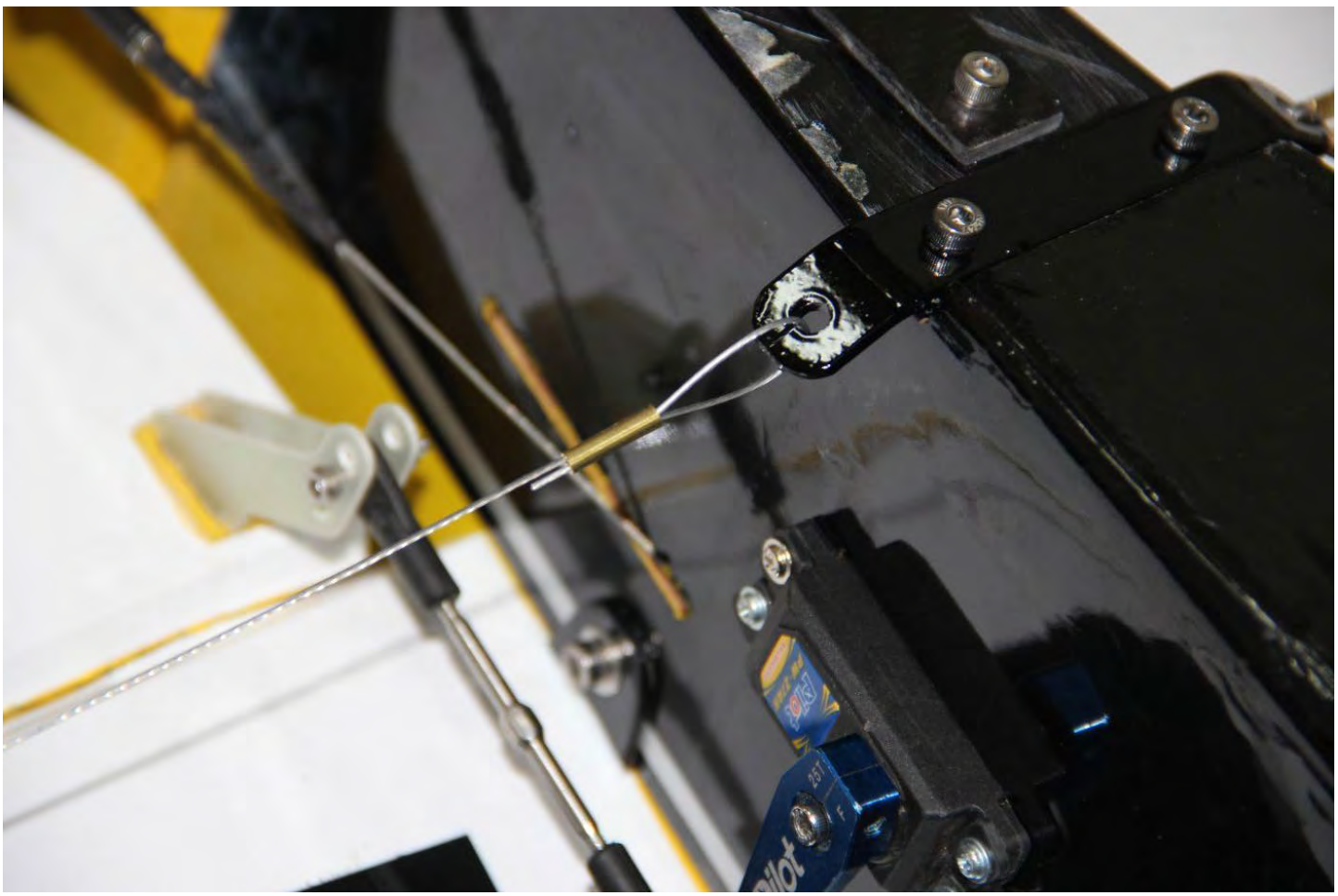
The bottom guide wires are fixed to the fuselage via the cross member installed previously (during the tail wheel step). They are secured permanently using the same crimping method as used for the rudder pull-pull wires.

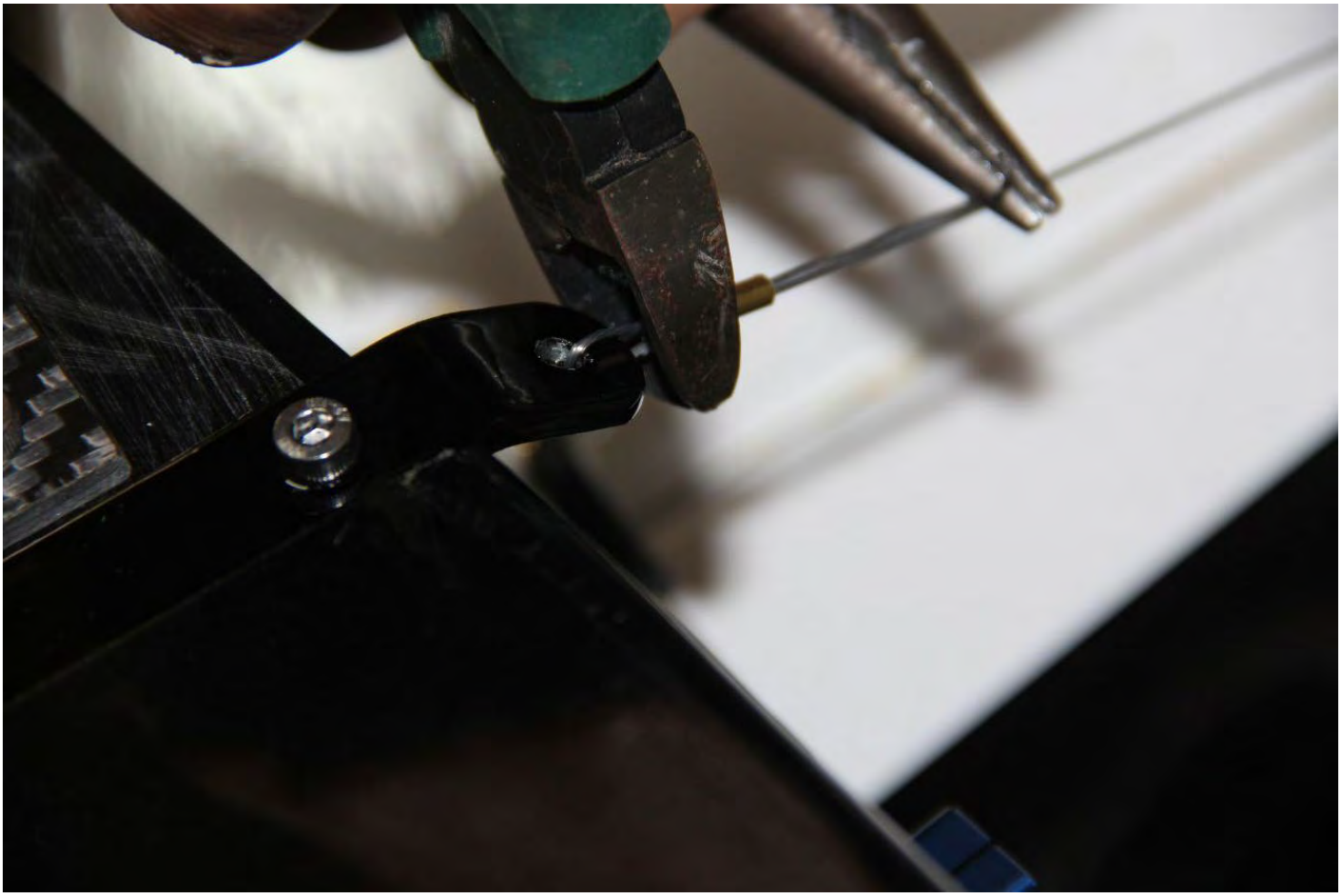
At the other end, they are secured to the actual elevator using the provided accessories, which allow to be secured easily with a simple screw.

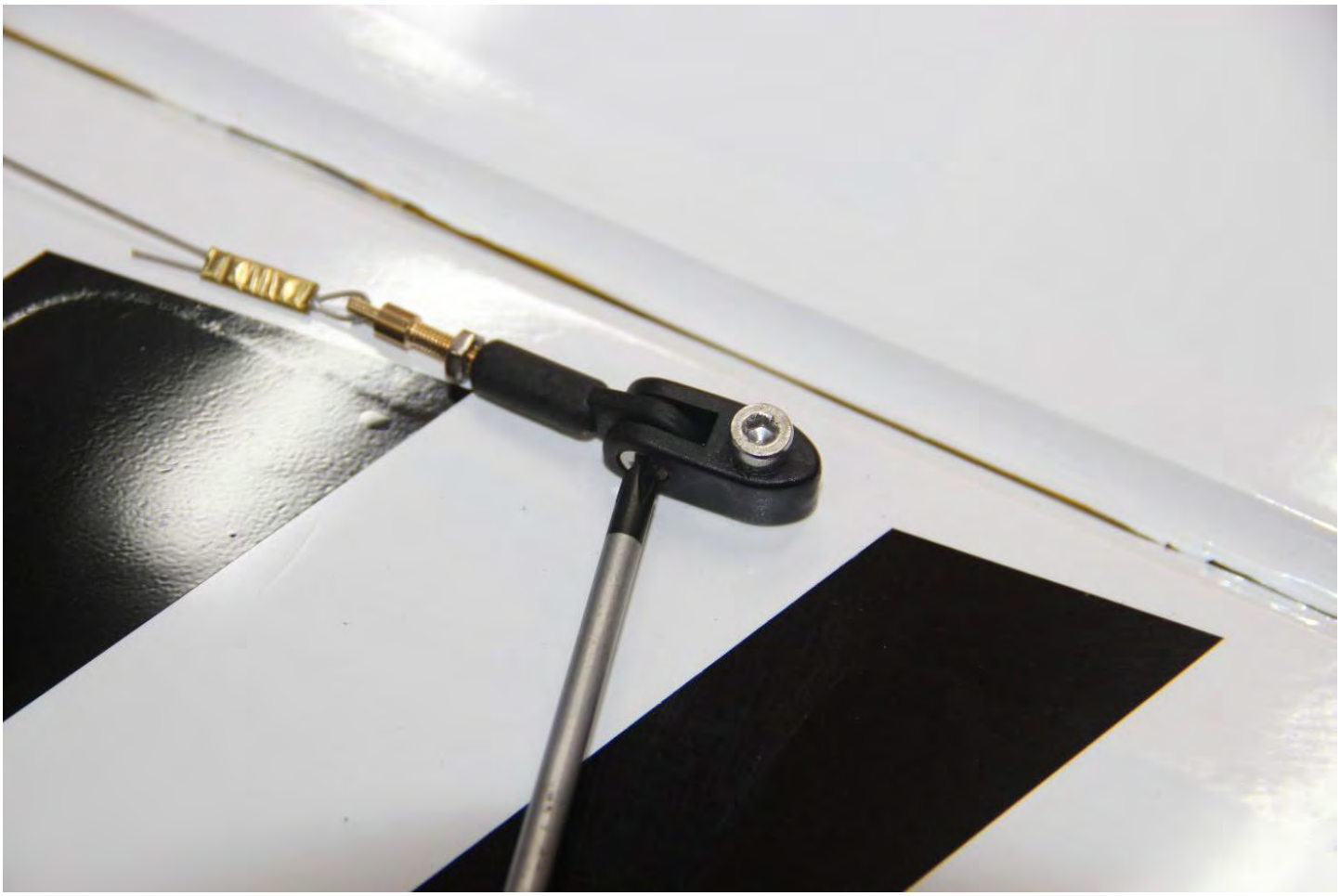
For the top side of the elevator, the same system is used, however all ends are secured using the same accessories.

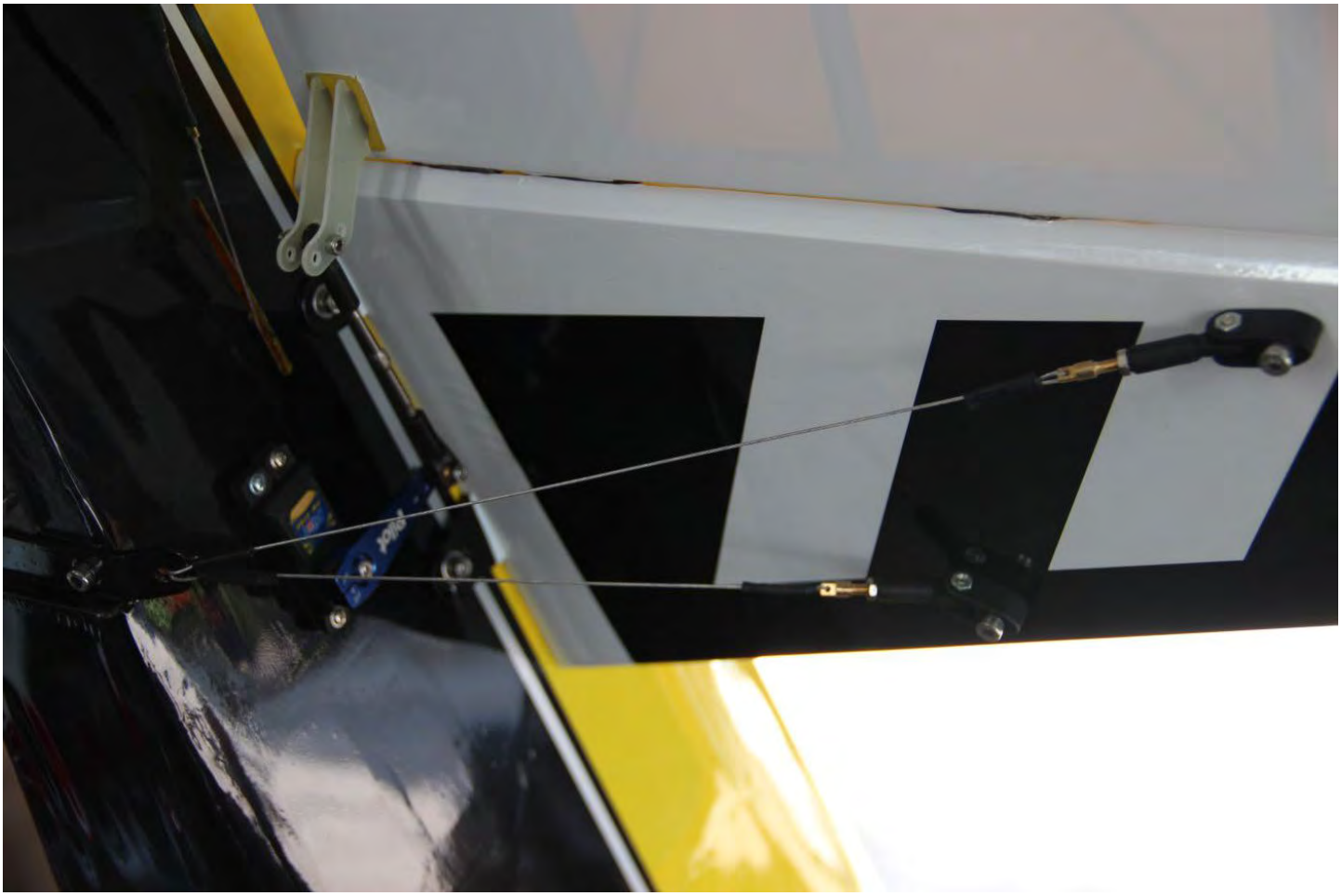
Make sure that all wires are set to roughly the same tension, and are tight without over doing it.











WING STRUTS

The wing struts must be installed in the correct order and location in order to assure the correct wing angle and incidences.

To make setup simple, inside the struts you will find laser engraved descriptions of where each side of the wing strut should be attached. (Right up, Right down, Left up & Left down)


RIGHT-UP


RIGHT-DOWN

WING GUIDE WIRES

The wing guide wires are fitted with a quick release on one end, and are permanently fixed at the other.

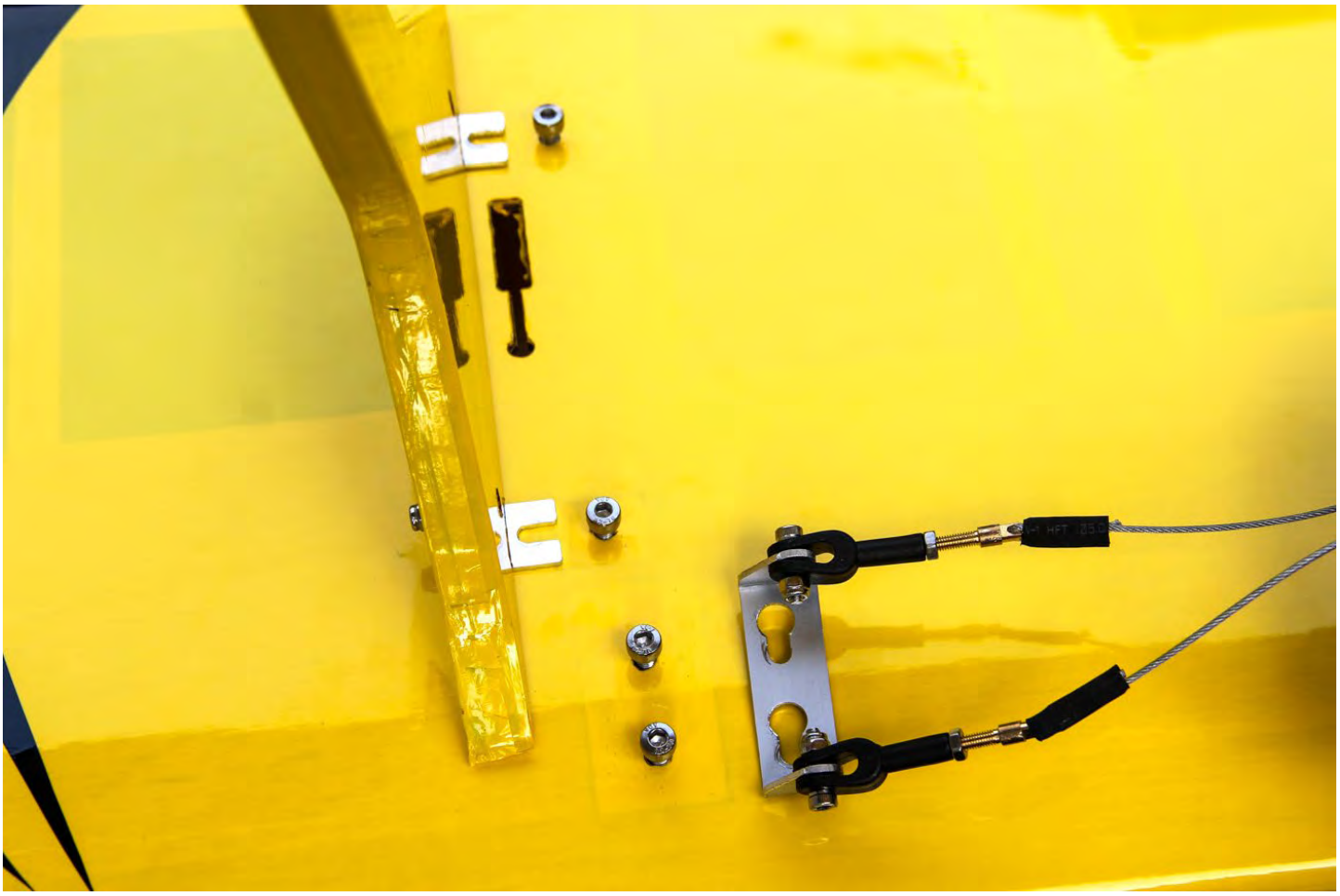
The support that we installed earlier under the landing gear is where the guide wires will be permanently attached, using the same crimping method described previously.

At the other end you will find Pilot-RC's patented quick release system, which allows for the guide wires to be attached or released in seconds.

This is due to them being permanently fixed to a cleverly shaped bracket, which simply slots into place, and then secure by tightening the screws.

As before, crimp the guide wires in place assuring of sufficient tension on the guide wires

Secure the placement of the guide wires at their cross over point as per the picture below.



BALANCING THE CG OF AIRPLANE:

The CG is marked on the central fuselage wing support.

Thread wire through the indicated CG hole, then proceed to setup the model fully and then lift using said wire.

The model should sit level when lifted. Personal CG preference can then be adjusted following the first flight.

For reference, the CG is located 225mm back from the leading edge of the top wing, at the wing root (centre of the wings)


PITTS_87
CG


OMING
ULLDOG
LyCon
AIRCRAFT ENGINES
Jim LeRoy

CONTROL THROW DEFLECTIONS AND SUGGESTED EXPO.

General flying:

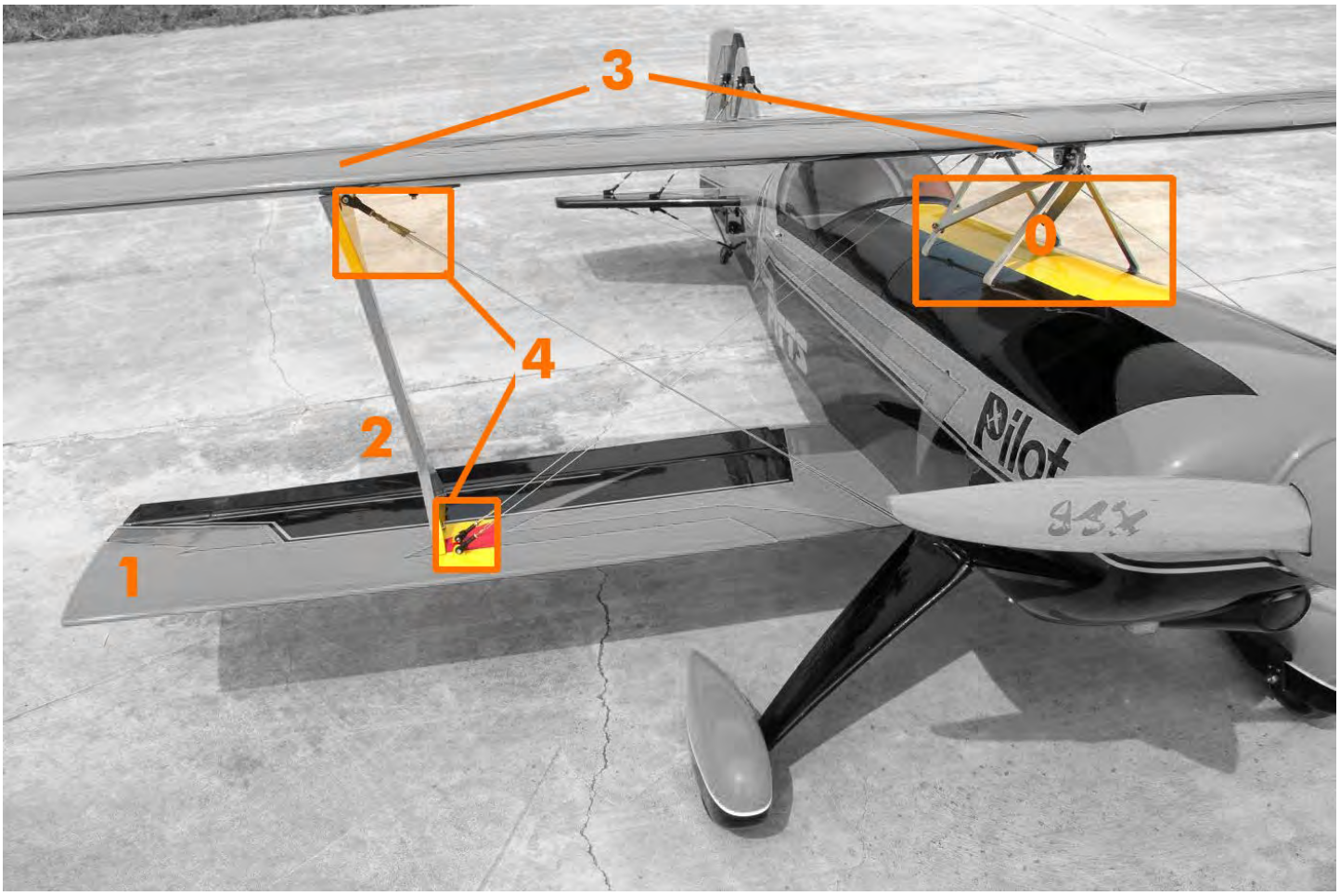
Surface	Deflection	Expo
Ailerons:	20º	35%
Elevators:	20º	35%
Rudder:	20º	20%

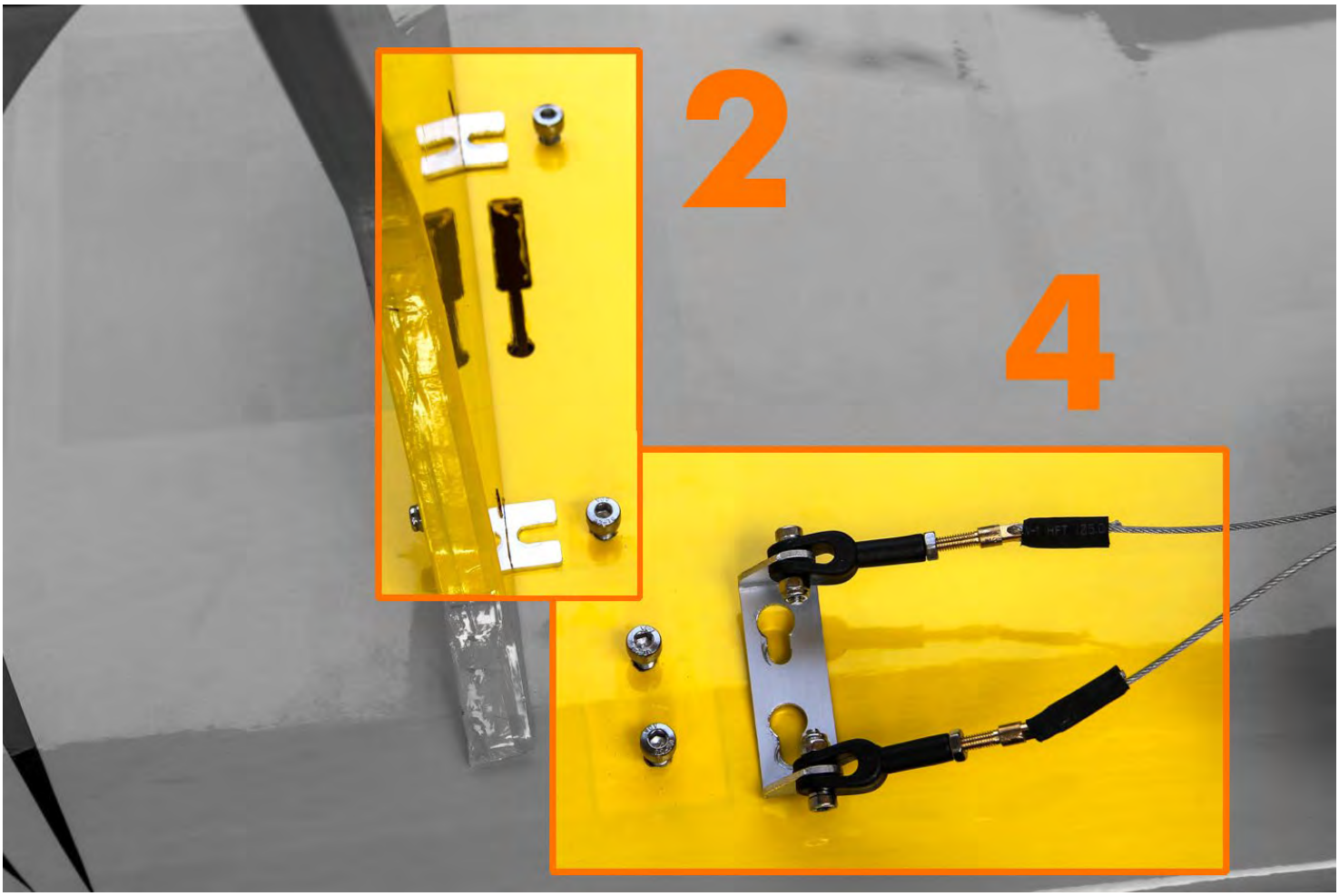
Full 3D acrobatics:

Surface	Deflection	Expo
Ailerons:	40º	60%
Elevators:	40º	60%
Rudder:	45º	35%

FIELD SETUP:

Setup at the field can be done very quickly. The correct procedure for setup should be as follows:


3
0
4
2
1
Pilot



0- The main “A” frame is permanently mounted to the fuselage

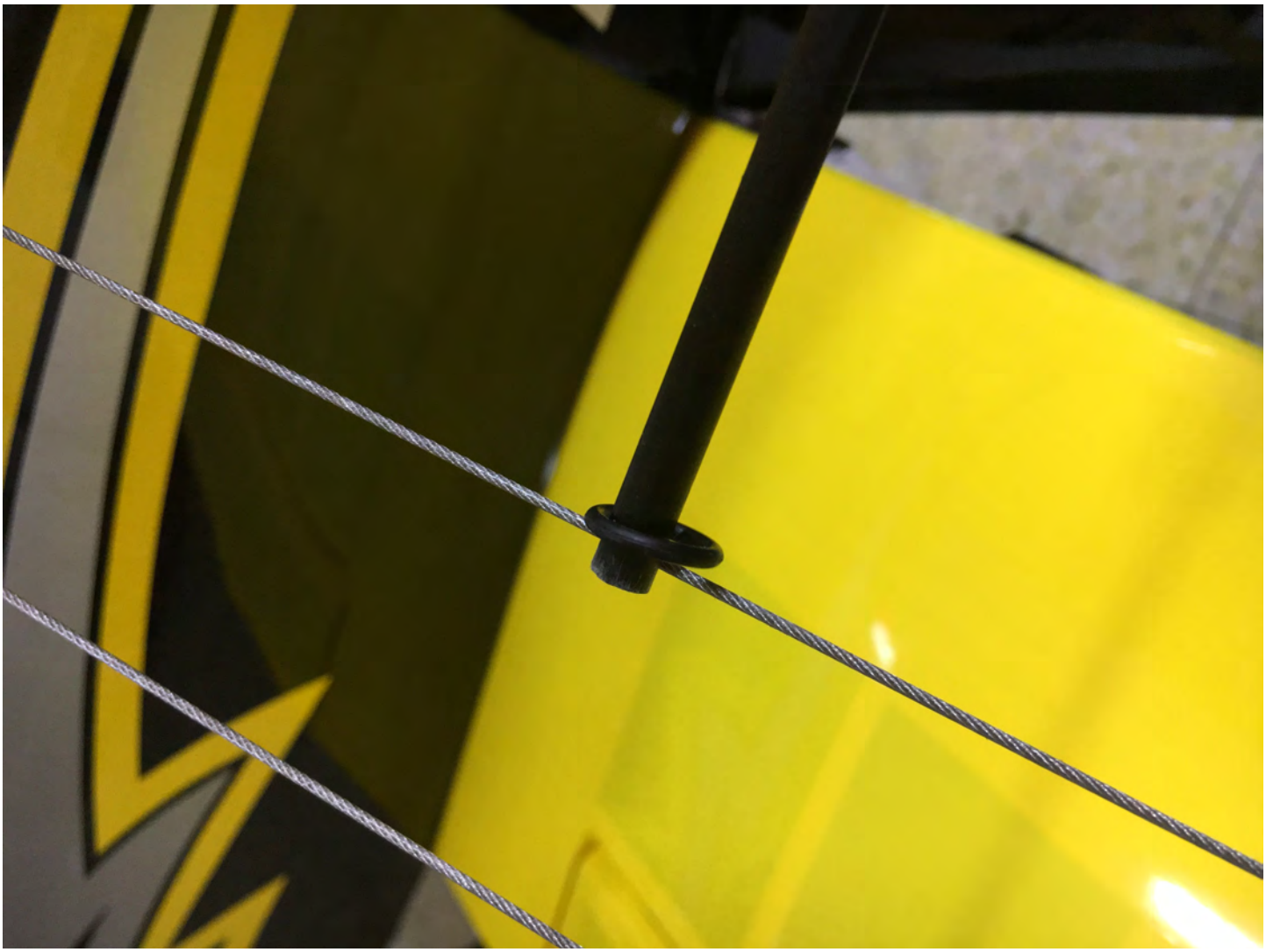
1- Insert the lower wing and secure to the fuselage, along with the servo connections

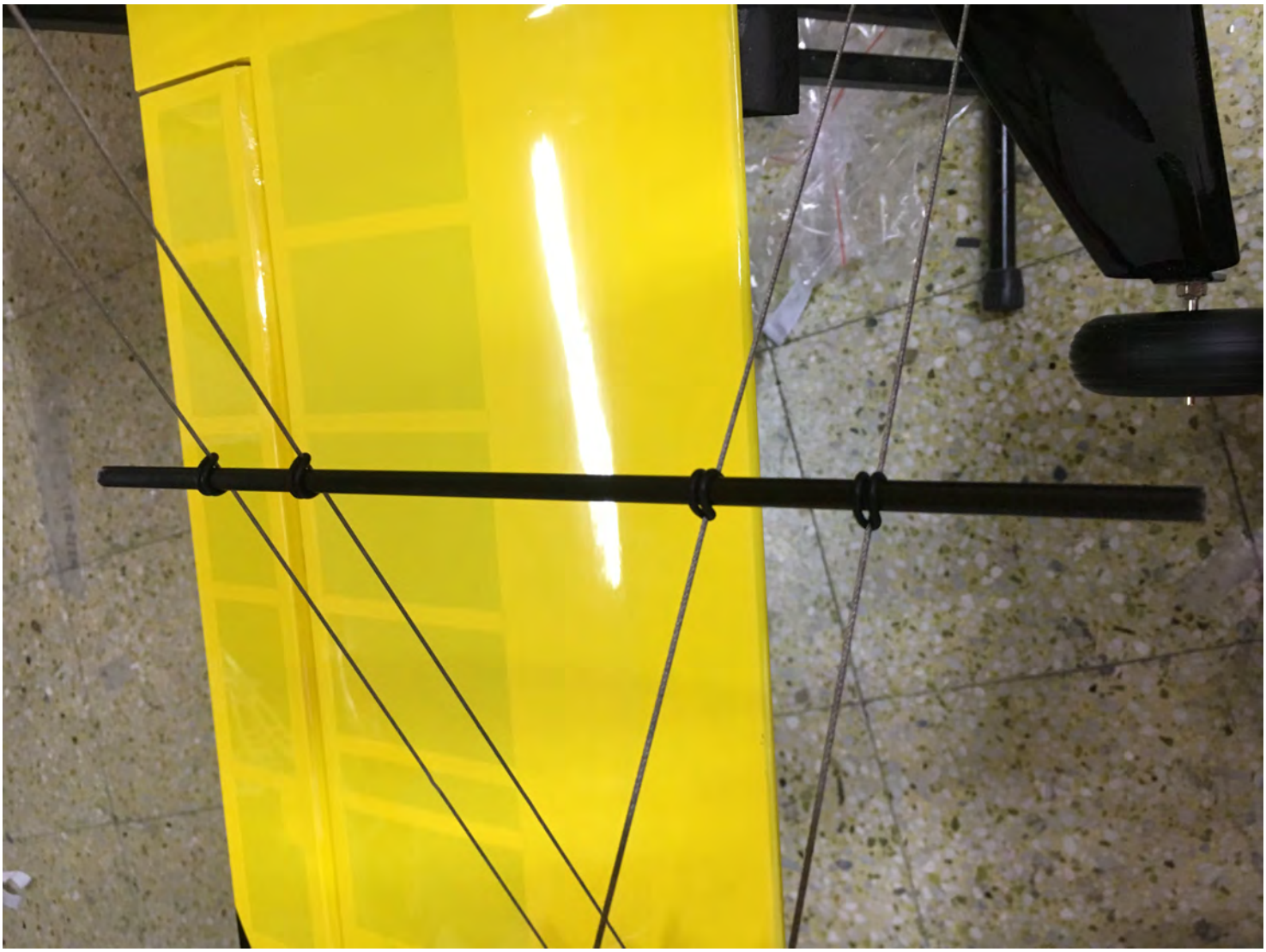
2- Secure the struts to the lower wing, along with the servo connection. This is done by simply sliding the quick release plate under the screws and tightening.

3- Attach the upper wing to both the “A” frame, and the other side of the strut, along with the servo connection.

4- Attach the tension wires (permanently fixed at the centre points) to the upper and lower wings next to the struts. Do so simply by sliding the quick release plates included over and under the screw heads, and screw down to secure in place.

5- Secure the carbon tubes with the small rubber rings provided, as per the following pictures:





6- Secure the elevator tension wires as per picture below:

All this can be done in just a few minutes:

DOUBLE CHECK:

Double check that all screws are installed, all components tightly secured, batteries and or fuel tank are full, all surfaces are working in the correct directions, balance is correct and range test passed before performing your maiden flight.

WE WISH YOU A SUCCESFUL MAIDEN AND MANY HAPPY FLIGHTS WITH YOUR NEW MODEL.

Tony Tan, Pilot-Rc