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Specifications:
Wingspan: 2300mm (90,55 inches)
Length: 2005mm (80,71 inches)
Weight: 25,35 to 26,45Lb
Engine: 40/45 Turbo Prop
Radio: Minimum 12 channels

Especificações:
Envergadura: 2300mm
Comprimento: 2005mm
Peso sem equipamentos: 4,6Kg
Peso de vôo: 11,5 a 12Kg
Motorização: 40/45 Turbo Prop
Rádio: Mínimo 12 canais

EMB-312 T-27 TUCANO 45TP TURBO PROP



An innovative model airplane in the scale 45 Turboprop class!

High level detailing and flight performance that will surely surprise modelers and lovers of this legendary airplane.



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Assembly instructions manual and guideline**T-27 Tucano 45TP****Index**

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This is the T-27 Tucano 45TP ARF Juniaer, retracts installation ready, with flaps, with artistic finishing and several painting schemes available, very realistic and all detailed, with rivets, antennas, side door with hinge and lock installed, panel divisions, compartments, pitot tubes replicas, landing gear doors, cockpit with panels and clear canopy. Engine cowling in 2 parts with exhausts replicas. Made of high-quality epoxy resin with structural reinforcements, low weight and high resistance due to the FULL COMPOSITE high technology vacuum lamination technique. Aluminum tubes on wing and stabilizer. Laminated in fiberglass and epoxy resin with carbon fiber reinforcements with laser cut plywood and balsa structures. Clear canopy, resin canopy frame, resin cockpit with panels. Factory hinged ailerons, flaps and elevators in perfect alignment. Rudder to be installed with point hinges supplied with the kit. Servo tray and tank tray in laser cut plywood. Artistic finishing made in automotive paint, vinyl, decals and varnished for great durability. Very stable, realistic and acrobatic flight pattern. Capable of many scale maneuvers such as rolls, slow rolls, Cuban eight, knife edge flight, inverted flight and more. This model was developed and built to provide high performance both in terms of flight and in terms of realism and details richness. It's construction is made with specific materials of high quality and advanced techniques of composite lamination to offer low weight and high structural strength.



IMPORTANT WARNINGS

The Juniaer model airplanes are painted and varnished with high quality and resistance products. Even so, some care must be taken to protect the paint: wipe your model with a cloth immediately after use with water sprays and neutral detergent. Fuels can damage the varnish if it penetrates punctures or damages to the plane's surface, as well as cuts in the engine's cowling. To prevent this kind of problem, we recommend brushing two-component PU varnish or applying epoxy to areas that are uncovered for any reason. Avoid exposing the model to direct sunlight as much as possible, especially the darker painted parts that accumulate and reflect a greater amount of heat, causing an internal and external temperature raising. The use of automotive wax for polishing is useful in preventing the accumulation of dirt and facilitates the cleaning and protection of the varnish. We suggest the use of fabric smooth covers for storage and transport, in order to protect against damage and risks. Be careful when handling your model airplane, especially the movable control surfaces. Never lift it by the two wing tips only, as the total weight is considerable to be supported only by 2 distant points. When checking the model airplane's balance through the center of gravity (C.G.) always support it by the roots of the wing at the indicated points.

Please read this manual to the end before doing anything on your model airplane, it contains important information regarding assembly and use, and it will also give you an overview of what should be done correctly and following the guidelines.

Please check and identify all parts of your model airplane when you receive it. If any parts are damaged or defective, please contact our customer service. Your model aircraft has a 90-day factory warranty against manufacturing defects. Juniaer Model Airplanes guarantees that this kit is free from manufacturing defects in both material and workmanship at the date of purchase. This warranty does not cover any components damaged by use or modifications. In no event will Juniaer's liability exceed the original cost of the kit purchased. In addition, Juniaer Model Airplanes reserves the right to change this warranty without prior notice. Since Juniaer Model Airplanes has no control over the final assembly or the equipment used for the final assembly, no liability will be assumed or accepted for any damages resulting from the user's use of the final product assembled by him or third parties. Through the act of using the assembled product by the user, he accepts all responsibility for the result. If the buyer is not prepared to accept responsibility for the use of this product, it must be returned immediately to the place of purchase in new and unused condition. This product is intended for persons over 18 years old and any procedure involved in its assembly and use must be monitored by an adult.

This is not a beginner's model aircraft, despite having a very stable flight performance and low speed stall point, it is a complex model with many mechanical and electronic devices and must be assembled and flown by someone with experience and knowledge in the area of model airplanes setup and flying. Never consider this

product as a toy. If in any case you do not feel 100% sure of what you are doing, if there are any unanswered questions or any other problem, please DO NOT PROCEED!!! Look for our guidance or any professional in the field. Any equipment badly installed, or problematic may cause the total or partial loss of the model, and serious consequences for people and properties around the flight area. If you want more information about insurance, legislation, rules and safety procedures, look for the Academy of Model Aeronautics www.modelaircraft.org Telephones Tel.: (765) 287-1256 / (800) 435-9262 Fax.: (765) 289-4248, which may indicate clubs with a structure that includes qualified flight instructors accredited to issue the operational license for model pilots that includes insurance. Also look for FAI – Fédération Aéronautique Internationale (World Airsports Federation) www.fai.org

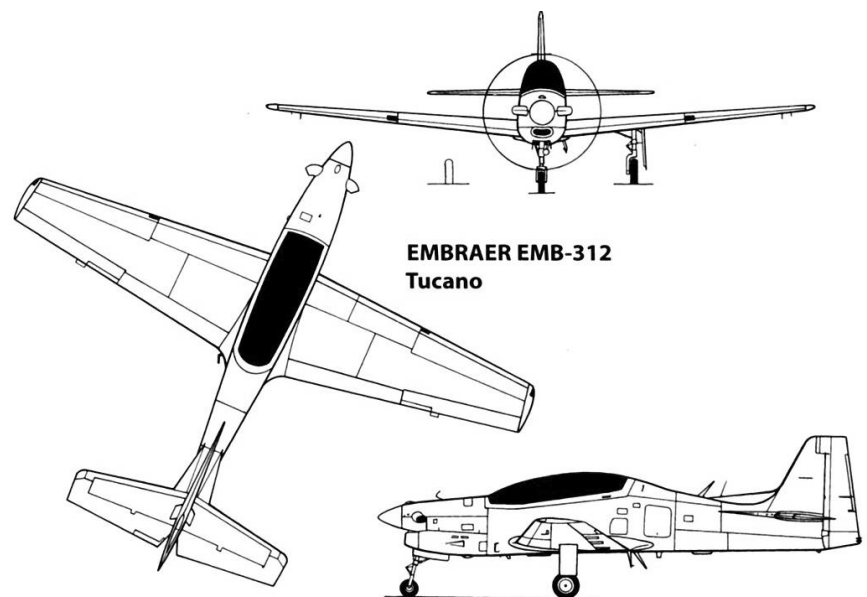
Always check the operation of the model aircraft before all flights to ensure that the equipment is working perfectly and that the structure is intact. Always check all links, connectors and control surfaces and replace any component that shows signs of fatigue or wear.

VERY IMPORTANT: Juniaer Modelismo provides a high-quality kit with instructions, but the quality of the finished model depends on how it is assembled, therefore, the manufacturer and its dealers cannot under any circumstances guarantee the performance of the completed model. No complaints will be accepted regarding the performance and safety of the model aircraft after it has been assembled. “Juniaer”, “Juniaer Modelismo” and “Juniaer - Art in model airplanes”, as well as the logo, are registered trademarks of Juniaer industry, commerce, importation and exportation of model airplanes Ltda. All rights reserved.

Juniaer Models

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Specifications:

Wingspan: 2,30m (90,55 in)

Length: 2,05m (80,71 in)

Wing Area: 84,63 dm² (1311,76 sq in)

Wing Loading: 130g/dm² to 154g/dm² (42,59 oz/sq ft to 50,33oz/sq ft)

Spinner: 3 ½"

Engines: Kingtech K-45TP , Xicoy X45 Turboprop , Wren 44 Turboprop.

Weight: approx. 5 Kg (11 lb). Flying weight: 11 to 13 Kg (24,25 lb to 28,66 lb) (depends on installed accessories).

Radio: 9 channels minimum for limited installation. 12 or more channels for complete installation (not included).

Servos: 4 standard size servos (10kg-cm 130oz-in or more torque) 3 standard size servos (15kg-cm 208oz-in or more torque) and from 1 to 4 standard size servos (4 kg-cm 56,8oz-in or more torque). All must be metal geared.

DISCLAIMER

In Brazil, model airplane activity for recreational purposes is regulated by ANAC (National Civil Aviation Agency) through the Special Brazilian Civil Aviation Regulation RBAC-E No. 94 that entered into force on July 1, 2021, or subsequent substitutive document.

Important information is contained in subparts **E94.3 Definitions; E94.103 General rules for the operation of unmanned aircraft; E94.301 Registration and cadastre and E94.501 General provisions.**

The Ministry of Defense, Aeronautics Command, Department of Air Space Control regulates the procedures and responsibilities necessary for access to Brazilian Air Space by unmanned aircraft with use exclusively for recreation, the so-called model aircraft through the **MCA 56-2** manual that entered into force on July 1, 2020, or subsequent substitutive document.

The radio control equipment used in model airplanes, according to the General Telecommunications Law (Law nº 9.472, of July 16, 1997) must be approved through a certification issued or accepted by ANATEL (National Telecommunications Agency). Information about this procedure can be obtained from the Certification and Numbering Management – ORCN ANATEL or by e-mail: certificacao@anatel.gov.br.

We recommend reading the documents cited for legal information about the operation of your model aircraft and the use of Brazilian airspace. For residents in other countries, we recommend researching local legislation, regulations and safety recommendations. Also look for FAI - World Airsports Federation www.fai.org.

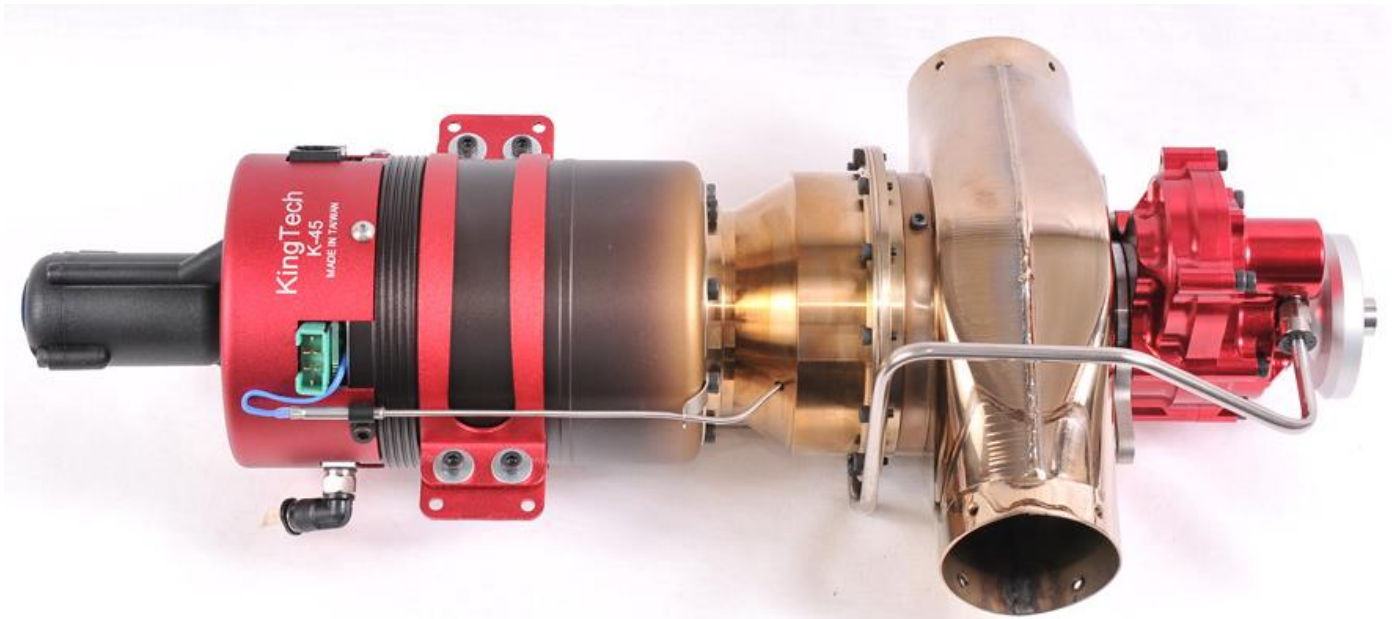
All images, drawings and photos are for illustrative purposes only. Appearance and features of the product depend on how it is assembled or used by the user. All specifications, features and models described and shown are subject to change without notice.

Kit contents

We recommend checking all items when you receive your model aircraft. Your T-27 Tucano 45TP Juniaer consists of the following items:

1 instruction manual containing disclaimer	1 clear canopy
1 fuselage	1 laser cut plywood tank tray
1 set of front landing gear doors	1 laser cut plywood servo tray
1 upper engine cowling with 4 screws	1 left wing
1 lower engine cowling	1 set of left-wing landing gear doors
1 rudder	1 right wing
3 pin hinges for rudder	1 set of right-wing landing gear doors
1 fuselage side door	1 aluminum tube diameter 25.4 mm (1")
5 door hinges 1 for side door and 4 front gear doors	1 set of clear lenses
2 spring latches for fuselage side door and canopy	2 pitot tubes replicas
1 cockpit	8 ¼" x ¾" Allen screws(wing attachment and mount)
1 canopy frame	8 washers ¼" for wing attachment and mount
1 left half stabilizer	1 aluminum tube diameter 12.7 mm (1/2")
1 right half stabilizer	2 self treading screws 2.2 x 13 mm for the stabilizer
2 fiberglass 1900ml (64oz) fuel tanks	1 carbon fiber turbine mount for Kingtech 45TP only

Kingtech K-45TP installation

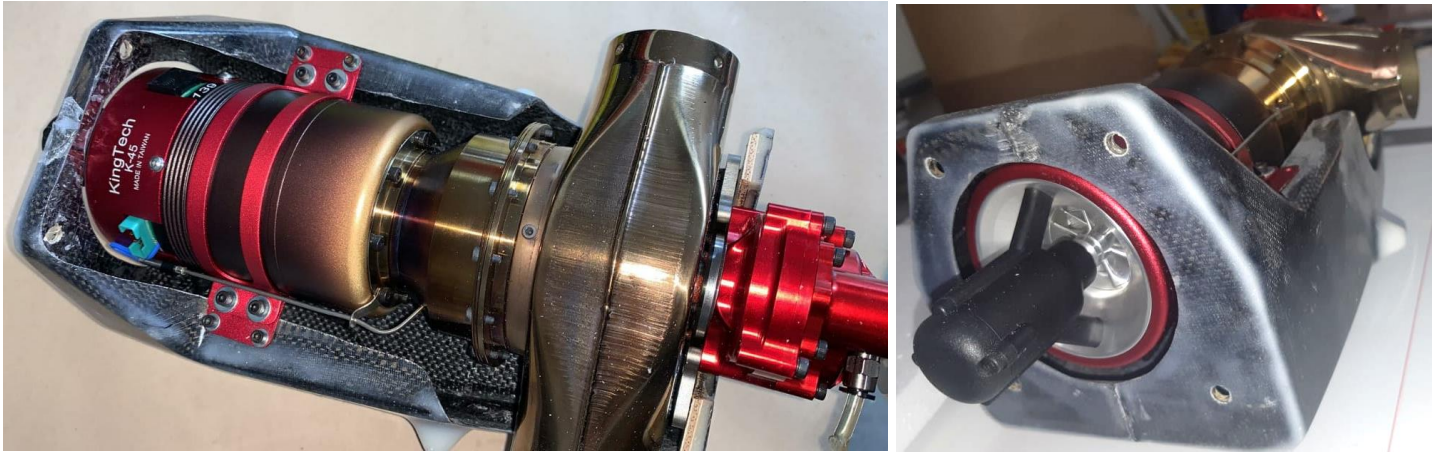


Before installing your turboprop engine, please read the manufacturer's manual and all parts assembly recommendations carefully including exhaust, standoffs, ignition, installation, operation and maintenance. The information contained in this manual is extremely important.

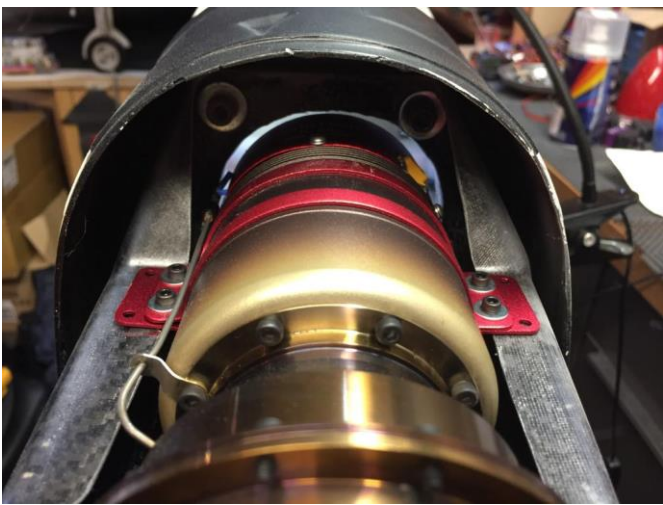
The firewall of the model aircraft is provided in the correct location, with the correct angles for the installation of the engine and has markings for the 4 holes of the original carbon fiber turbine mount. Drill in the 4 positions marked with a driller and 5mm drill. Position the 4 5x20mm screws with the 5mm washers inside the firewall. Apply medium-grade (removable) thread lock to the threads of the screws and screw the turbine mount in the front of the firewall, ensuring that a solid, firm and parallel alignment is achieved with 90 degrees horizontal alignment with the firewall. Position the turbine in the turbine mount to obtain the location of the 4 horizontal fixing screws e 3 vertical fixing screws.



Above: carbon fiber turbine mount position on the firewall.



Above: turbine position on the carbon fiber turbine mount.



Above: carbon fiber turbine mount position on the firewall.



Above: position of the 4 turbine horizontal fixing screws on the carbon turbine mount (left) and the 3 turbine vertical fixing screws on the carbon turbine mount (right).



Above: turbine position and turbine mount on the fire wall (left) and turbine mount painted with thermal protection paint (right).

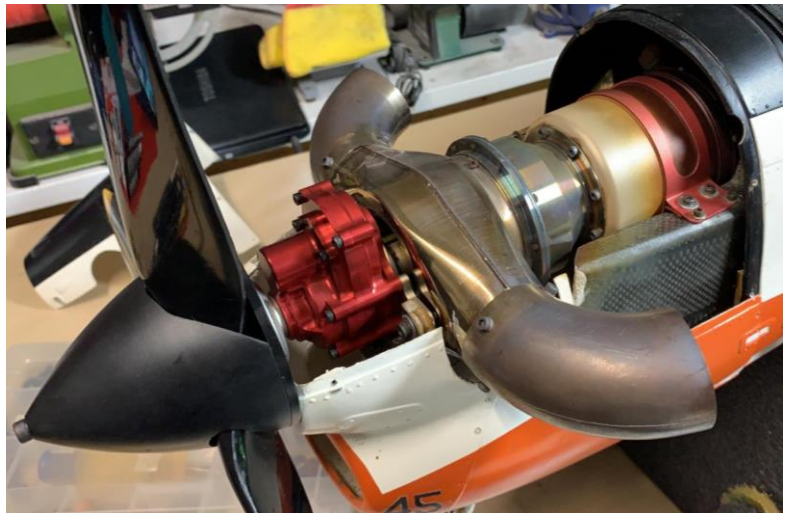
IMPORTANT: The original metal tube for lubricating the gearbox, when installed, is too high in relation to the carbon fiber turbine mount, being necessary to adapt it to allow the later installation of the upper cowling.

It is recommended to apply water-based thermal protection paint containing ceramic microspheres to prevent overheating of the turbine mount and cowling.

All fuel hoses and turbine cables must under no circumstances come into contact with parts of the turbine block that are very hot during and after operation.



Above: application of 1 coat of thermal protection paint in the turbine carbon mount.



Above: turbine installed with the lubrication tube lowered to allow the installation of the upper cowling and exhausts with a 90 degrees outlet indicated for the T-27 Tucano 45TP.

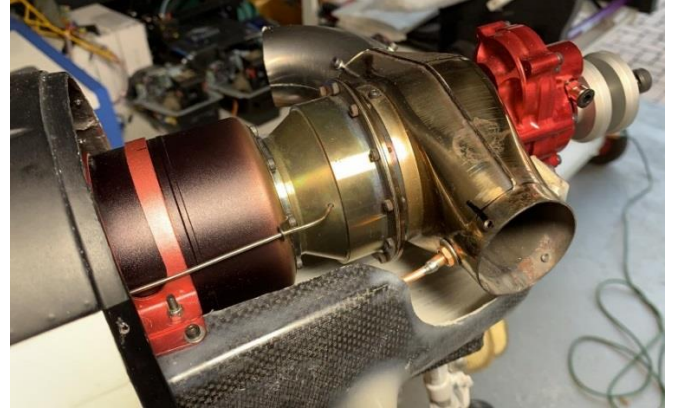
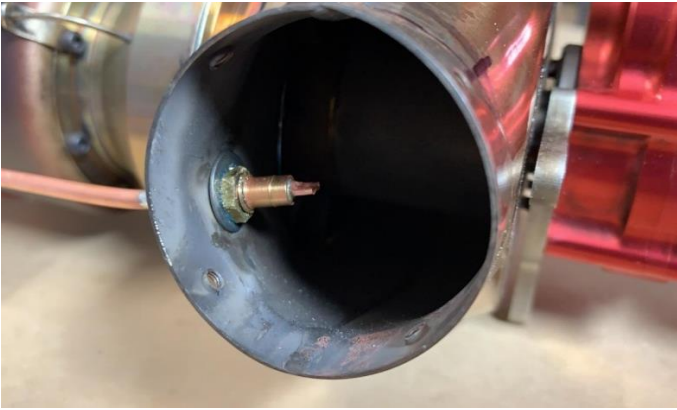


Above: the most suitable turbine exhaust outlets according to the scale of the model aircraft are 45mm in diameter, 0.2mm thick, with 90 degrees of deflection and 60 radius of curvature. We recommend those made of stainless steel by Zimmermann Schalldämpfer code #50602 (left). We recommend water-based thermal protection paint with ceramic microspheres manufactured by BVM Jets code PA-MA-1940 (right).

If you want to install a smoke pump, it is necessary to install the smoke fluid tube in the turbine gas outlet with Dubro connections (DUBR 192) as shown in the photos below:



Above: Dubro DUBR 192 connections (left) and hole for installing the connections for smoke fluid in the turbine exhaust body (right).



Above: fittings installed showing the flattening at the end of the tube for better spraying of the fluid (left) and final position with complete installation (right).

Xicoy X45 Turboprop installation

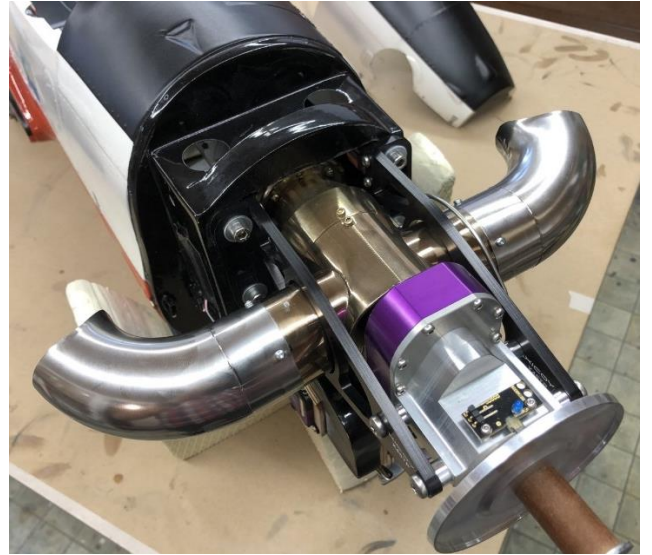


Before installing your turboprop engine, please read the manufacturer's manual carefully and all the parts assembly recommendations including exhausts, mounts, sensors, peripherals, installation, operation and maintenance. The information contained in this manual is extremely important.

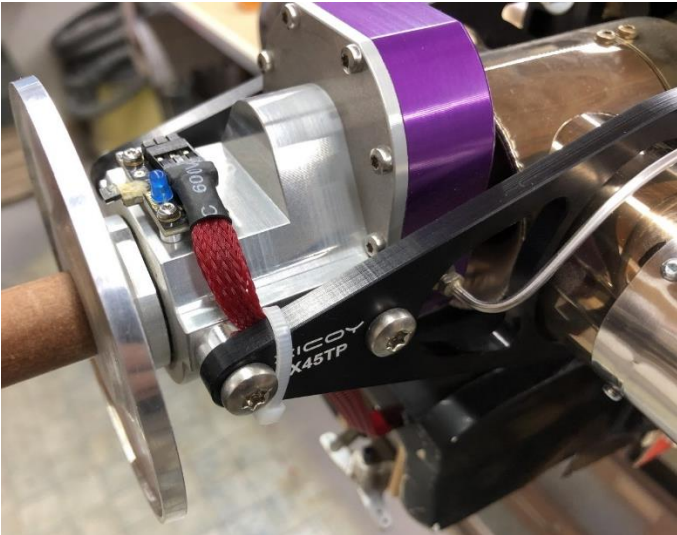
In the case of installing the Xicoy X45 turbine, the carbon fiber turbine mount is not used, and the turbine is attached directly to the firewall of the model aircraft. To use this installation, the model aircraft must be ordered with a specific configuration, with the correct angles and holes to accommodate the turbine through 4 fixing screws.



Above: Xicoy X45 position at the firewall.



Above: Xicoy X45 position at the firewall without exhausts (left) and with exhausts (right).



Above: Xicoy X45 with installed tachometer (left) and final position with exhausts, cowling, propeller and spinner (right).

Wren 44 turboprop installation



Before installing your turboprop engine, please read the manufacturer's manual carefully and all the parts assembly recommendations including exhausts, mounts, sensors, peripherals, installation, operation and maintenance. The information contained in this manual is extremely important.

In the case of installing the Xicoy X45 turbine, the carbon fiber turbine mount is not used, and the turbine is attached directly to the firewall of the model aircraft. To use this installation, the model aircraft must be ordered with a specific configuration, with the correct angles and holes to accommodate the turbine through 4 fixing screws.



Above: T-27 Tucano 45TP firewall with specific firewall drilling for Wren 44 turbine (left) and Wren 44 turbine installed in the firewall with exhausts (right).



Above: Wren 44 turbine installed in the firewall without exhausts.



Above: Wren 44 turbine installed in the firewall with exhausts.



Above: Wren 44 turbine installed in the firewall with exhausts.

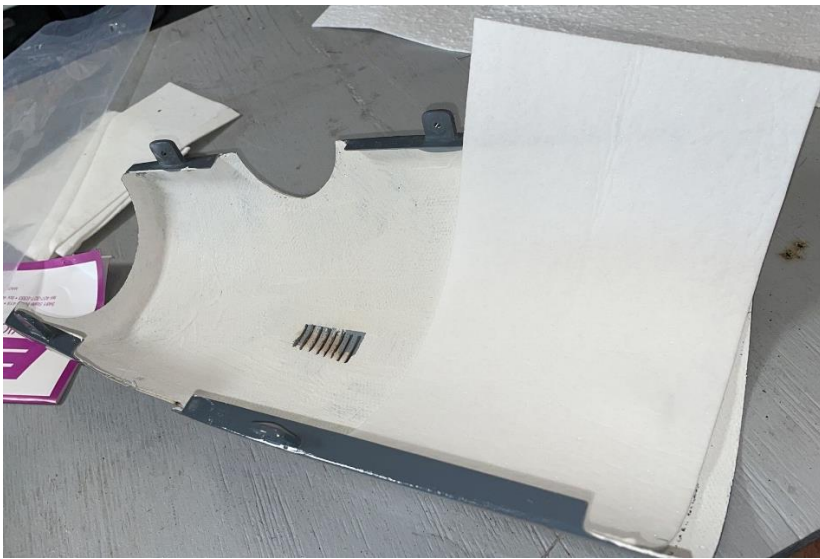


It's recommended to install a scoop in the nose to direct the air flow upwards for cooling the turbine's gearbox. (left)

Engine cowling installation

It is necessary to cut the two parts of the nose cowling to allow the passage of the turbine's exhausts, so that there is no direct contact between the parts due to the high operating temperatures. The carbon turbine mount provided for the K-45TP version has 2 side fairing fixing brackets to ensure better support and fixation.

IMPORTANT: It is recommended to apply water-based thermal protection paint with ceramic microspheres to prevent overheating of the nose cowling and turbine mount, especially the upper cowling. 3 coats of paint applied by brush with 30 minutes between each coat are required for adequate protection. A layer of thermal insulating fabric based on ceramic fiber and a layer of aluminum foil can also be added on the outside with the shiny part facing the turbine for greater thermal protection of the upper cowling, which is exposed to higher temperatures for longer periods.



Above: inner part of the upper cowling painted with thermal protection paint and application of a ceramic fiber fabric (left) and a layer of aluminum foil on the outside (right).

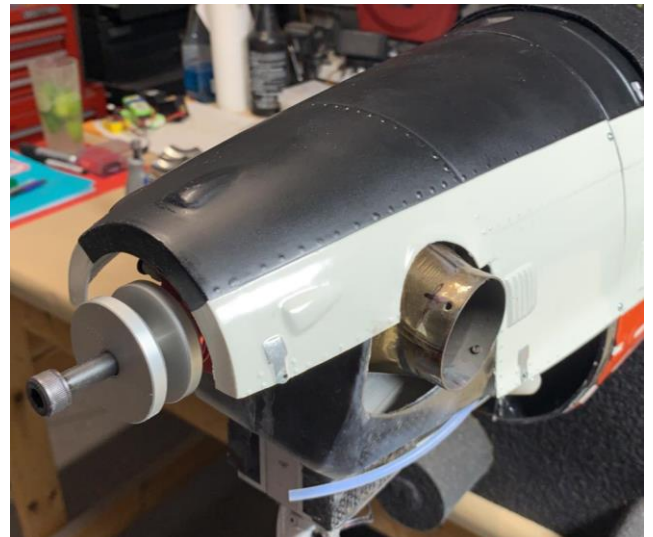
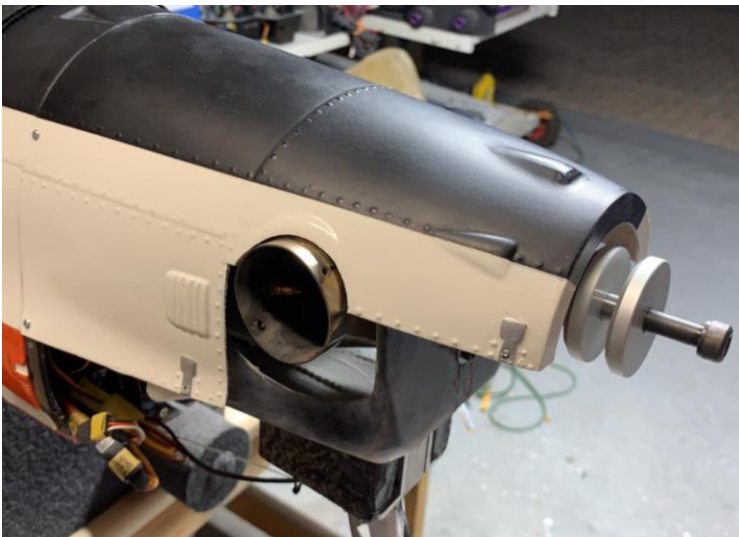
It is recommended to drill 3 holes in the 3 reliefs of the upper cowling, on the front, to further increase the cold air flow.



Above: 3 holes in the 3 reliefs of the upper cowling, on the front, to increase the cold air flow.

The engine cowling is provided in 2 parts (upper and lower). The parts have perfect fittings among themselves and in the fuselage, providing the correct alignment according to the center between the fixing holes of the engine standoffs and the angles of the firewall, both for gasoline engines and for electric motors. Using the back plate of the spinner (3 ½") positioned on the prop washer of the engine/motor, position the lower part of the engine cowling in such a way as to center the spinner back plate with the circumference formed by the cowling, leaving spacing of 1 to 2mm between the spinner back plate and the cowling so that they do not touch in any position.

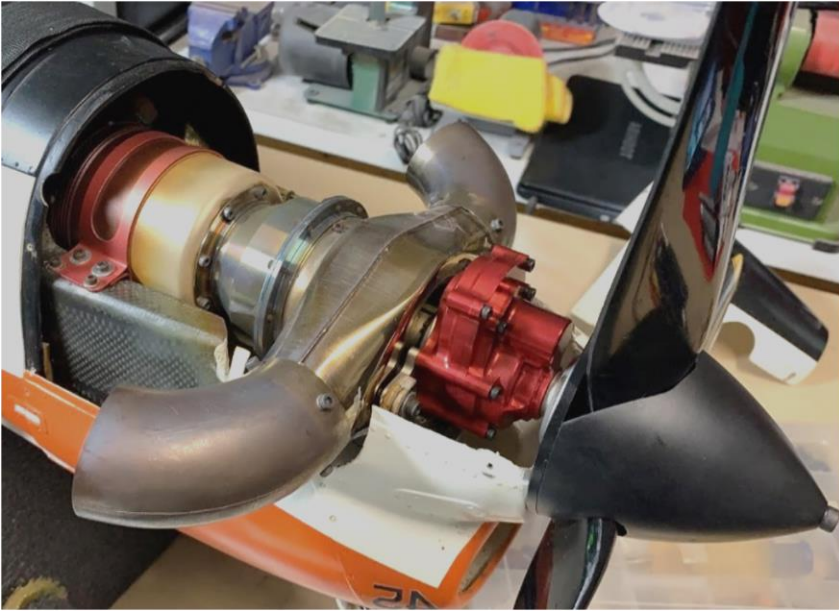
To fix the cowling to the fuselage, apply epoxy glue to 4 10mm hardwood cubes and glue them to the inside of the fuselage, in order to make a solid fixing point where the fixing screws will be inserted. Do the same at the fixing points at the bottom of the cowling or use screws with self-locking nuts to ensure fastening even with high levels of vibration. With the correct alignment of the set, permanently screw the cowling parts together and to the fuselage using washers to increase the contact area with the cowling parts avoiding damage and cracks due to vibration. The screws to be inserted in the wooden cubes must be locked with a drop of medium CA glue or epoxy to reinforce the lock and ensure greater resistance. The horizontal and vertical inclination of the spinner back plate and the front part of the cowling must be equal, parallel and centralized.



Above: Installation of the upper nose cowling with cutouts for the KingTech K-45TP turbine exhausts.



Above: installation of the top (left) and bottom (right) of the nose cowling with the cutouts for the Wren 44 turbine exhausts.



Above: installation of the lower cowling with the cutouts for the exhausts with the KingTech K-45TP turbine (left) and parallel alignment of the engine axis / fairing (right).



Above: Correct alignment of the nose cowling with the propeller and spinner assembly and turbine exhausts.



Above: correct alignment of the nose cowling with the propeller and spinner assembly and turbine exhausts.

In the case of turboprop engines, an efficient cold air flow is recommended for cooling the turbine, as well as large amounts of air available for air inlet into the turbine from the inside of the fuselage.



Above: openings in the lower part of the fuselage (left) and in the front part of the fuselage (right) for air intake by the turbine and cooling.

The air intake at the bottom of the cowling is enough for the air flow, however it is necessary to make room for air outlet, which must be done at the bottom rear of the cowling, or, for a better scale appearance, using two openings through the firewall with air channeling by small pieces of balsa wood or light plywood (not included), forming an air duct channeled out of the model aircraft through the replicas of NACA air outlets as shown in the photos below.



Above: openings in the lower front part of the fuselage for directing hot air from the turbine compartment out of the model aircraft by channeling the air through the firewall.



Above: it is recommended to install a FOD screen to protect the air intake of the turbine in order to avoid absorption of solid particles by the turbine.



We offer custom-made wooden propellers for the T-27 Tucano 45TP Juniaer (sold separately). Always consult the engine instruction manual to decide on the size and pitch of a propeller and consider the desired performance according to the characteristics of your model airplane. 2 blade propellers are ideal for engine break-in and flight tests, as they provide higher RPM and greater speed of response to engine acceleration, while 3 blade propellers provide lower RPM, being very suitable for scale models, however, they present a lower speed of response to engine acceleration.

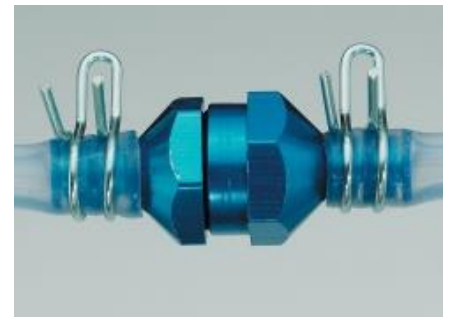
The JC Super Props are factory balanced, painted and varnished, contributing to the good performance and scale visual of your T-27 Tucano 45TP Juniaer.



Above: 3 blade 20x14 propeller (left) and 3 blade 22x12 (right), both for turboprop engines.

Fuel tanks installation

Your T-27 Tucano 45TP model aircraft includes 2 tanks with a capacity of 1900ml each made of fiberglass and epoxy resin with aluminum tube to install the connections. To install the fuel tanks, first assemble the tank connections (not included) according to the manufacturer's instructions, making sure they are leak-free and with the clunk free in all possible positions. Only 2 connections are needed on the tank: clunk with fuel outlet and air vent/excess fuel drain.



Above: Dubro fittings with internal fuel tank connections (left), safety clips for the connections (center) and fuel filter with safety clips on the connections (right).

Use DUBRO DUB 400 rubber gasket. For fuel tank connections we recommend 1/8" (3mm) diameter tygon hoses (DUB 800) and safety clips (DUB 678).



Above: the 2 tanks that come with the model aircraft and example of simple connections used in the center (not included).

In the case of turbine power supply, there are professional and elaborate fuel connections, which include a fuel hose locking system through threaded nuts, a clunk extender to avoid bending the clunk's hose and are quite suitable for safer and high-performance installations. like this example:



Above: clunk mounted without extender (above) and with clunk extender (below) to prevent hose bending (left) and complete connections including vent manufactured by Rio Jets (right).

The set consists of: 1 tank nozzle (already installed on the tank), 1 vent with hose lock (already installed on the tank), 1 clunk with hose lock, 1 clunk extender with 2 hose locks and 1 tank cap with sealing o-ring and 2 hose locks.

The clunk set total length must be 6 1/2" (16,5cm) from the back of the tank cap.

When inserting the hoses in the connections, screw the hose locks until they are tight, and when inserting the clunk assembly into the tank, tighten the cap by screwing it firmly until it is fully inserted into the tank nozzle with the sealing o-ring all inside, ensuring perfect sealing of the tank.



Above: clunk's total length 6 1/2" (16,5cm).



Above: tank with Rio Jets nozzle and vent installed and internal connections with cap.



Above: tank with Rio Jets nozzle and vent installed and clunk set with extender and cap (left) and ready to install and fully assembled fuel tank (right).



Above: example of UAT to be used between the fuel tank and the turbine fuel pump. The UAT must be positioned inclined at 45° in order to eliminate air bubbles from the fuel line and one of its upper connections is intended to supply the tank(s) through a hose with a plug.

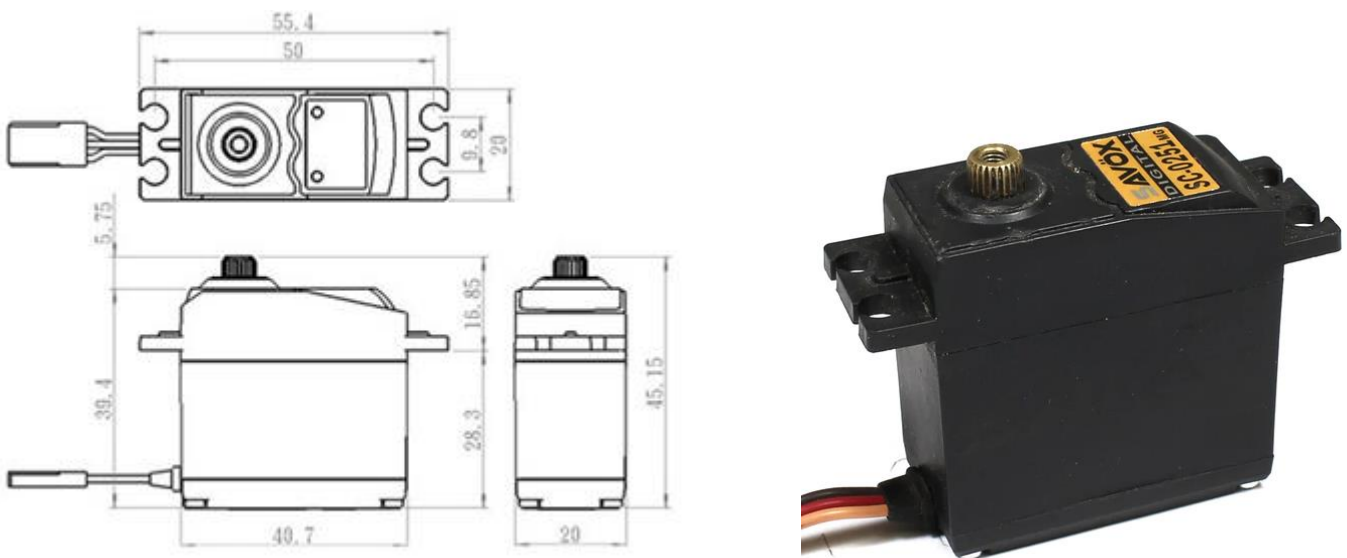
Use a kerosene compatible fuel filter. The fuel filter must be positioned between the turbine fuel pump outlet and the turbine fuel inlet.

Servos, linkage, hard points and commands

All servos must be metal geared (not included). 4 standard size servos with 10Kg-cm (130oz-in) or more torque are necessary to flight surfaces commands: 2 for ailerons, 2 for elevators. Suggestions: SAVOX: SAVSC0251MG FUTABA: S3305MG, S3306MG.

3 standard size servos with 15Kg-cm or more of torque are required for flight surface controls: 2 for flaps and 1 for rudder. Suggestions: Savox SC0251MG, Futaba BLS155, Futaba BLS351, JR DS8717HV, JR DS2917HV.

If using pneumatic retracts it is necessary 1 more standard size servo with 4Kg-cm (56,8oz-in) or more torque for air valve command. If you wish to make front wheel steering command with an independent servo it is necessary 1 more standard size servo with 4Kg-cm (56,8oz-in) or more torque. Suggestions: SAVOX: SAVSC0254MG, SAVSC0253MG, SAVSC0252MG.



Above: standard size servo dimensions (left) e example of indicated servo Savox SC-0251MG (right).

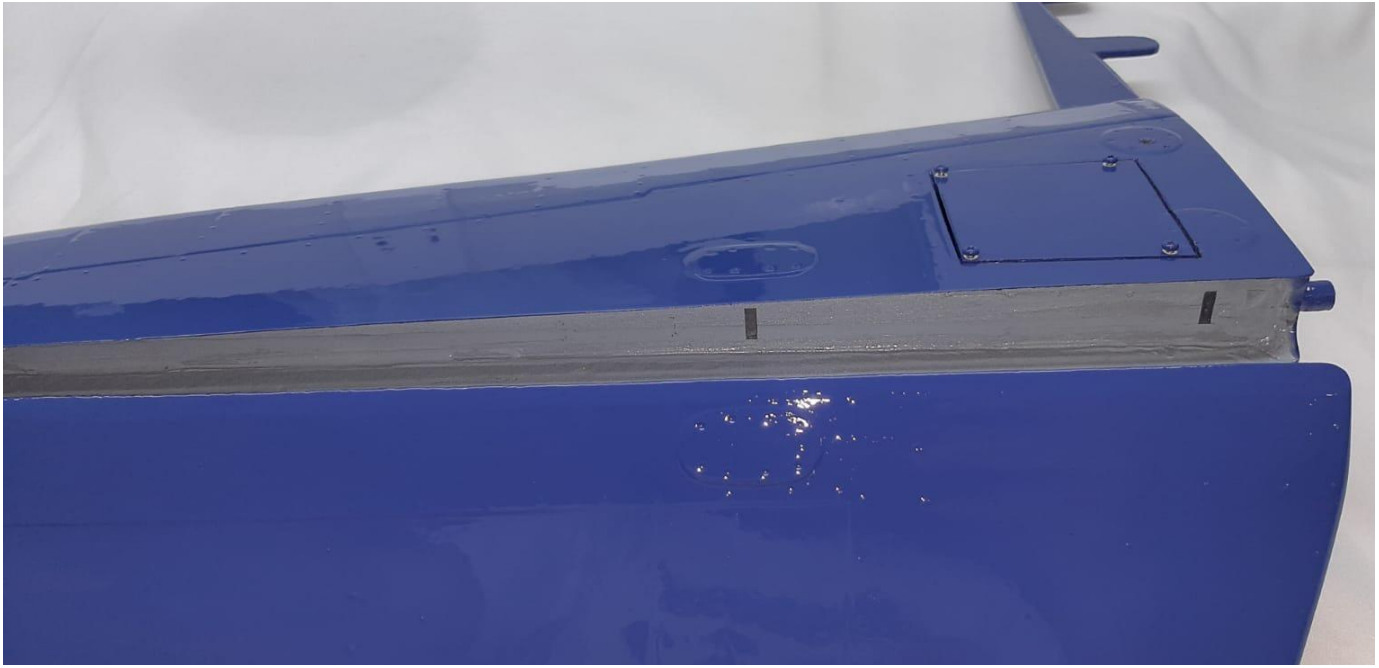
The model airplane has structural reinforcements of high rigidity for installation of the ailerons, flaps, elevators and rudder controls control horns. These points measure 4cmx4cm (1,57 x 1,57 inches), are positioned in strategic locations and must be identified according to the instructions below. If you want to modify or adapt equipment that requires modifications to the original design, never do this on your own. Please contact Juniaer through our service channels to check on the possibility of installation.

All horns must be heavy duty and suitable for ¼ scale model aircraft or for giant scale model aircraft. All servo arms must be heavy duty and suitable for ¼ scale model aircraft or giant scale model aircraft. All wires must be steel, with thread and diameter 4-40 or greater. All servo links and connectors must be heavy duty and suitable for ¼ scale model aircraft or for giant scale model aircraft.

We offer (sold separately) the sets of custom fiberglass horns for the T-27 Tucano 45TP Juniaer, in standard and heavy-duty versions (double horns). To install it is necessary to make a slot with a sharp knife or drill with a 1mm drill so that the horns are inserted inside the rigid points of reinforcement up to their bases. After obtaining the correct fit, apply 30 to 40 minutes epoxy glue for permanent fixation. The connection point of the horns with the links must be centered with the hinge line of the control surfaces.

**IMPORTANT WARNINGS**

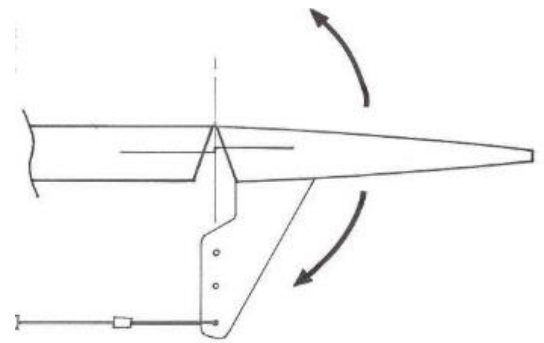
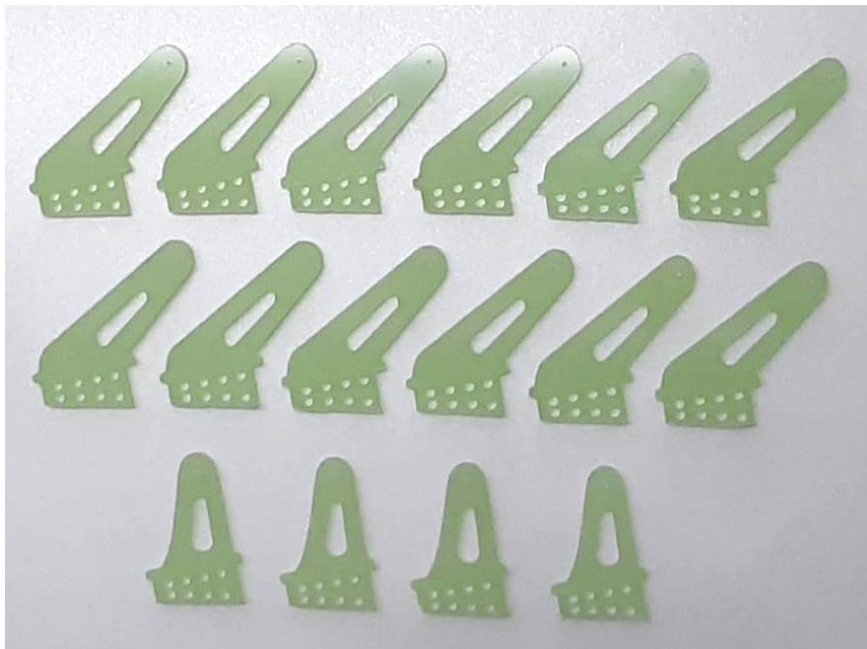
WE DO NOT RECOMMEND INTERNAL LINKAGE INSTALLATION BECAUSE IT DAMAGES IMPORTANT STRUCTURAL PARTS THAT MAY RESULT IN ACCIDENTS AND TOTAL OR PARTIAL LOSS OF THE MODEL AIRPLANE, OFFERING RISKS TO PEOPLE AND PROPERTIES AROUND THE FLYING AREA. THE WING TRAILING EDGES AT THE AILERONS AND FLAPS AND THE STABILIZER TRAILING EDGE ON ELEVATORS MAY NOT BE DRILLED, CUTTED OR PERFORATED UNDER NO CIRCUMSTANCES.



Above: gray areas (trailing edges) on stabilizer shall not be drilled or cut.



Above: gray areas (trailing edges) on ailerons and flaps shall not be drilled or cut.

Fiberglass double horn set (Heavy Duty)

Above: 12 standard horns (4 ailerons, 4 elevators and 4 rudder and 4 flaps straight horns for external linkage installation (left) and horn slots alignment with hinge line of the command surface.

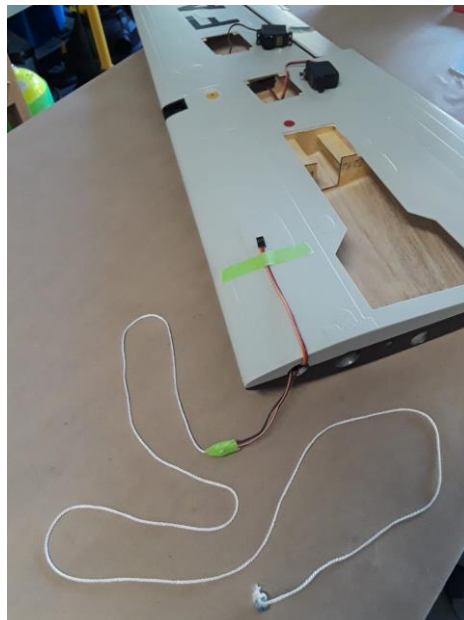
Ailerons: 2 simple horns with a height between 25mm to 35mm (1 1/8" to 1 1/4") are required. The servo arms (length between 20mm to 25mm (1") from the center to the end) must be positioned to the side of the wing root. Note that the two sides of the wing have the same position. The horn reinforcement is centered with the line formed by the slot where the servo arm is exposed. Distance between the center of the control arm and the hole of the horn (in neutral position): 92mm (3,62 in). The servos must be screwed directly to the ribs inside the wing, which are previously drilled. Before definitively screwing the servos, apply a drop of medium CA glue or epoxy glue to each hole. It is necessary to open a slot in the servo compartment cover to pass the servo arms as shown in the photos. To fix the servo compartment cover, apply a drop of medium CA glue or 5-minute epoxy glue in each hole for better fixation and resistance to vibration. Recommended deflection: Between 20mm (1") (low rate) to 25mm (13/16") (high rate) – up and down. To measure the deflection, place a ruler at the end of the control surface and move it.

Flaps: 2 simple horns with height between 25mm to 35mm (1 1/8" to 1 1/4") are required. The servo arms (length between 20mm to 25mm (1") from the center to the end) must be positioned to the side of the wing root on one side and to the wing tip on the other side, as well as shipped from the factory. The horn reinforcement is centered with the line formed by the frieze where the servo arm is exposed. Distance between the center of the control arm and the hole of the horn (in neutral position): 85mm to 90mm (3 3/8" to 3 1/2"). The servos must be screwed directly into the ribs inside the wing, which are previously drilled. Before definitively screwing the servos, apply a drop of medium or epoxy CA glue to each hole. It is necessary to open a frieze in the lids of the servo boxes to pass the servo arms as shown in the photos. To fix the servo box lids, apply a drop of medium CA glue or 5 minutes epoxy glue in each hole for better fixation and resistance to vibration. Recommended deflection: Between 0° to 10° for takeoff and between 25° to 30° for landing. To measure deflection, place a protractor on the leading edge of the flap and move it.



Above: servo compartment access covers location for ailerons and flaps servos and fixation holes on ribs.

To pass the servo extensions inside the wing, position it with the tip upwards and insert a thread with a weight tied at the end through the aileron servo box, passing through the hole in the wing spar to the leading edge until exit through the front hole of the wing root. Connect the extensions to the servos (aileron and flap) and lock the connectors so that they do not come loose in any situation. Tie the end of the aileron servo extension to the end of the thread in the aileron servo box and carefully pull the connector to the wing root. Attach the outer tip of the extension to the root of the wing with adhesive tape. Repeat the same process for the flap servo extension. Repeat the same process for the other half of the wing.

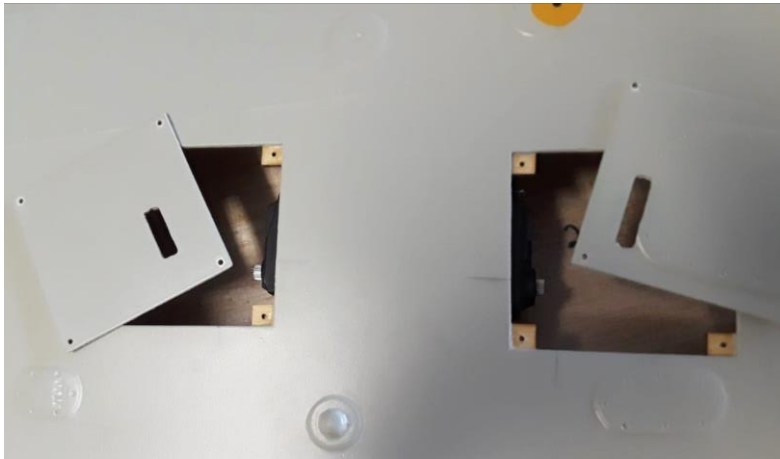


Above: thread and extensions passing process on wing (left) and connected and locked servos (right).

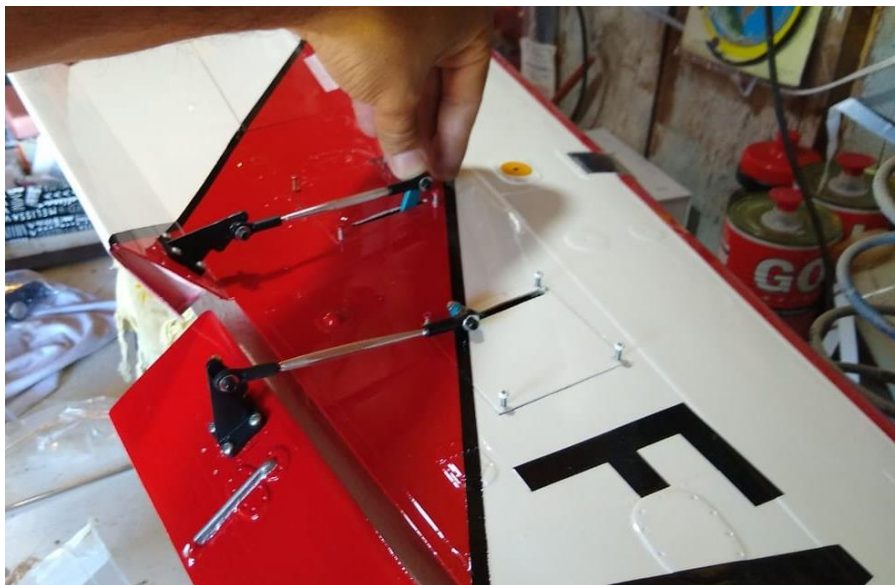
Before definitively screwing the servos, apply a drop of medium CA glue or 5 minutes epoxy glue to each hole in the ribs where they will be fixed. To screw the flap and aileron servos onto the internal ribs of the wing, use a short screwdriver to keep the screw angle at 90° in relation to the ribs, as there is little internal space. It is necessary to open a slot on the servo compartments covers to pass the servo arms as shown in the photos. To fix the servo compartment covers, apply a drop of medium CA glue or 5 minutes epoxy glue in each hole for better fixation and resistance to vibration.



Above: short screwdriver and correct position to screw the wing's servos.



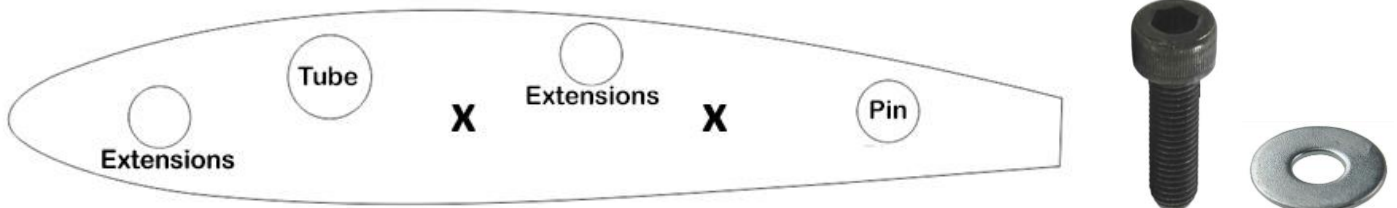
Above: Ailerons and flaps servos and servo compartment covers with slots position.



Above: ailerons and flaps servos, servo arms and horns position.

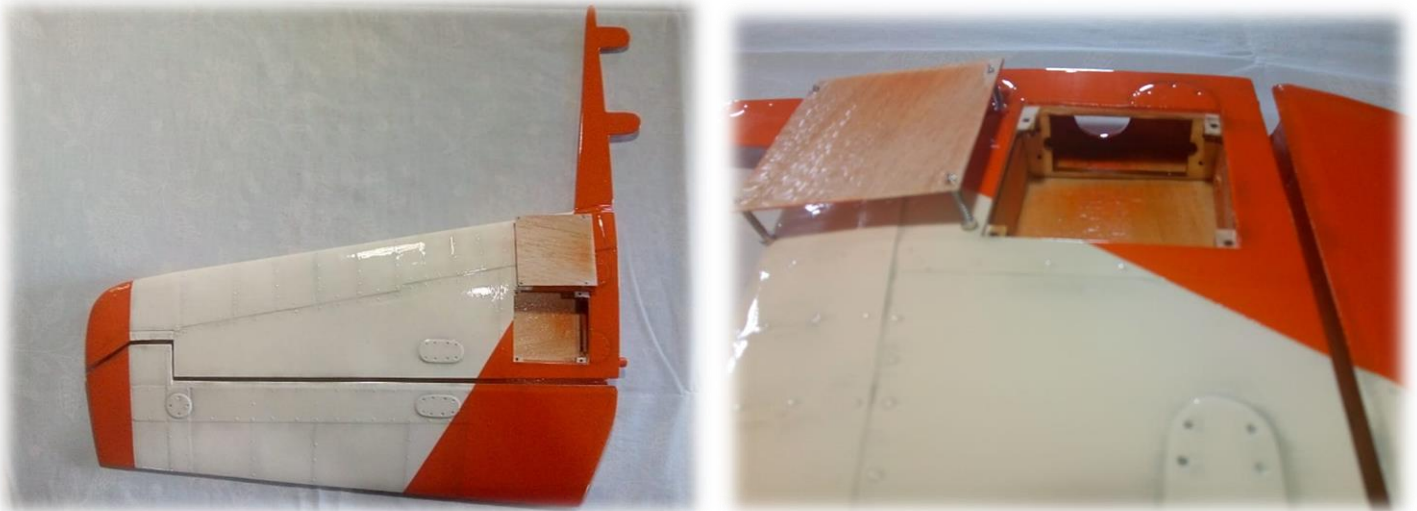
To assemble the two halves of the wing in the fuselage, an **aluminum tube with 1" (25.40mm) external diameter x 1.58mm thickness x 883mm long** is used. The wing / fuselage set is pre-adjusted at the factory and uses 4 allen screws 1/4 "x 3/4" and 4 washers 1/4" (supplied with the kit), 2 screws with washers on each side. Insert the tube into the fuselage until it is centered. The wing halves have 3 holes in the root, the front hole to

allow passage for ailerons and flaps servo extensions and lights into the fuselage, the central hole where the tube must be inserted and the rear hole for servos and retracts extensions. At the rear there is a pin made of 3/4 "diameter aluminum tube to align the wing halves at their correct angle of incidence (+2 degrees). The drawing below shows the position of the 3 holes and pin. Insert the halves, check that the roots of the wing are perfectly aligned with the shape of the wing in the fuselage. Insert the screws with washers into the holes in the lower part of the wing halves in the holes identified below by the letters X and tighten them until they are tight. We recommend the use of a medium-grade (removable) thread lock.

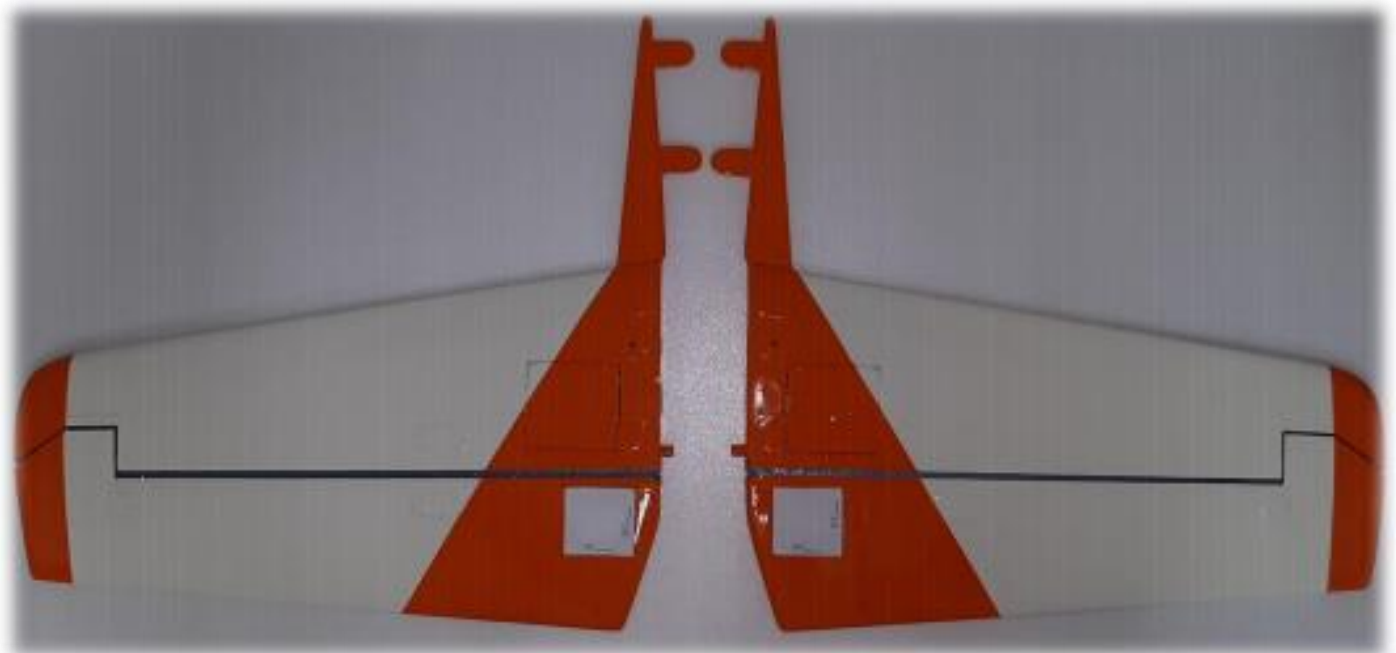


IMPORTANT: THE WING FIXING SCREWS MUST BE INSERTED OUT OF THE FUSELAGE TO THE INSIDE AND NEVER FROM INSIDE TO OUTSIDE.

Elevators: 2 simple horns needed, 25mm to 35mm (1 1/8" to 1 1/4") tall. Servo arms 15mm to 20mm (5/8" to 13/16") from center to the end. Horn reinforcements measure 45mm x 45mm. The servos must be screwed directly into the ribs inside the stabilizer according to photos, which are previously drilled. Before definitively screwing the servos, apply a drop of medium CA glue or 5 minutes epoxy glue to each hole. It is necessary to open a slot in the roots of the stabilizer for the passage of the servo arms as shown in the photos. To fix the servo compartment covers apply a drop of medium CA glue or 5 minutes epoxy glue in each hole for better fixation and resistance to vibration. Recommended deflection: Between 16mm (5/8") (low rate) to 20mm (25/32") (high rate) - up and down. To measure the deflection, place a ruler at the end of the control surface and move it.



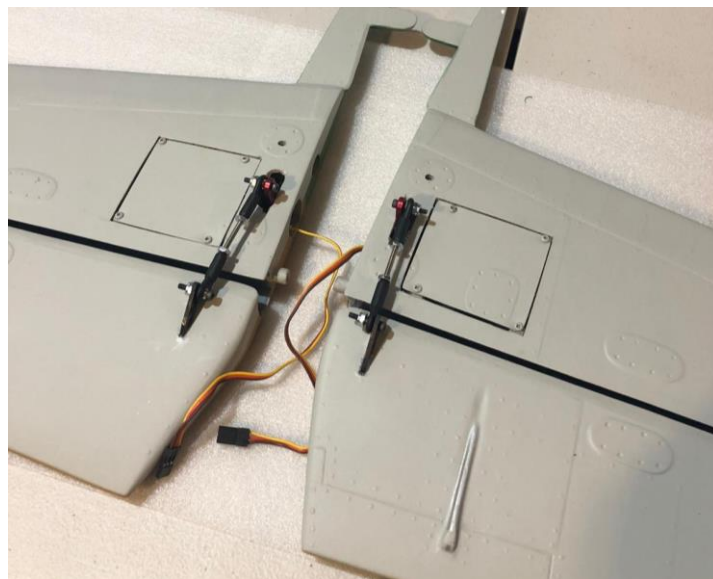
Above: elevator servo compartment access cover location(left) and servo fixation rib (right).



Above: Elevator servos compartment covers location and horns hard points location.



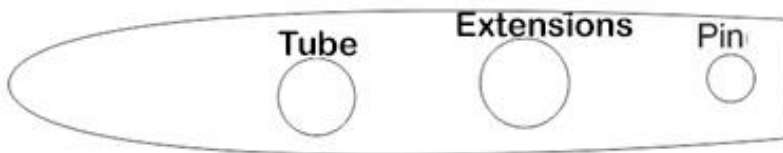
Above: elevators servos, servo arms and horns position.



Above: elevators servos, servo arms and horns position with linkage.

To assemble the two halves of the stabilizer in the fuselage, an **aluminum tube with an external diameter of 12.70mm (1/2") x 1mm thickness x 342mm length** is used. The stabilizer assembly is pre-adjusted at the factory and the aluminum tube is drilled on both sides for fixation and removal with 2 self-attacking screws 2.2mm x 13mm (supplied with the kit). Insert the tube into the fuselage until it is centered, aligning the holes vertically. The stabilizer halves have 2 holes, the front through which the tube should be inserted and the rear, to allow passage of the elevators servo extensions into the fuselage. At the rear there is a hardwood pin to align the stabilizer halves at their correct angle of incidence (0 degrees). The drawing below shows the position of the 2 holes and pin. Insert the stabilizer halves. Check that the roots of the stabilizer are perfectly aligned with the shape of the stabilizer in the fuselage. If necessary, adjust the pin to ensure that perfect horizontal alignment and tight fit in the fuselage. At the front of the stabilizer's fins on both sides there are 2 guides that must be inserted in the slots already made at the factory in the fuselage. The 2 guides guarantee the correct horizontal alignment of the fins and do not require gluing or fixing.

With the stabilizer halves fully inserted and in the correct position, drill a hole with a drill and 2mm drill bit at the bottom of the stabilizer halves, where there is a circle that reproduces an aircraft inspection cover. Insert the screws and tighten them until they are firm. We recommend using a medium-grade (removable) thread lock.



Above: Position of the tube in the middle of the stabilizer and fuselage (left) and detail of the hole location (indicated with the yellow letter X) for fixing the stabilizer halves in the stabilizer tube (right).

Rudder: To assemble the rudder, 3 hinge points (supplied with the kit) are required. Fill the 3 holes in the rudder with 30 to 40 minutes epoxy with a toothpick, filling all the contact areas and insert the 3 hinges until the center of the hinge is aligned with the deflection line of the rudder. Check that the hinges are correctly aligned, including the angle of deflection. Remove any excess glue with a cloth moistened with alcohol. Check that there is no glue in the center of the hinges (moving part). Fill the trailing edge of the driftage with 30 to 40 minutes epoxy glue with a toothpick in all contact areas and insert the hinges previously glued to the rudder. Observe the alignment between the rudder and the driftage so that they are as close as possible, parallel at the edges and with full deflection capacity.



Above: rudder hinge points epoxy gluing sequence.

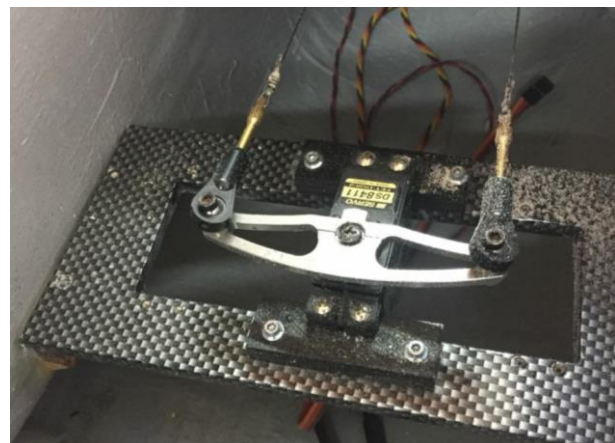
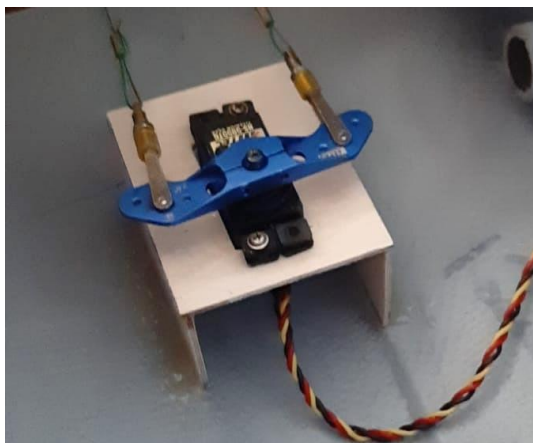
One double horn (with control for both sides) with total length between 100mm to 120mm (4" to 4 3/4") is required. The servo arm must be double (with control for both sides) with a total length between 40mm to 45mm (5/8" to 13/16"). The horn reinforcements are centralized with the fuselage pushrod exits, through which the steel cables pass to drive the rudder to both sides. Servo installed inside the fuselage on a plywood servo tray supplied with the model airplane. Glue the servo tray to the sides of the fuselage on the wooden rails with 30 to 40 minutes epoxy glue. Adjust the servo centered on the tray and drill the 4 holes with a 2mm drill. Apply a drop of medium CA glue or 5 minutes epoxy glue to each hole for better fixation and resistance to vibration. Install the servo using pull-pull steel cables. We recommend using DUBRO (DUB 518). Recommended deflection: between 40mm (1 5/8") (low rate) to 50mm (2") (high rate) for left and right.



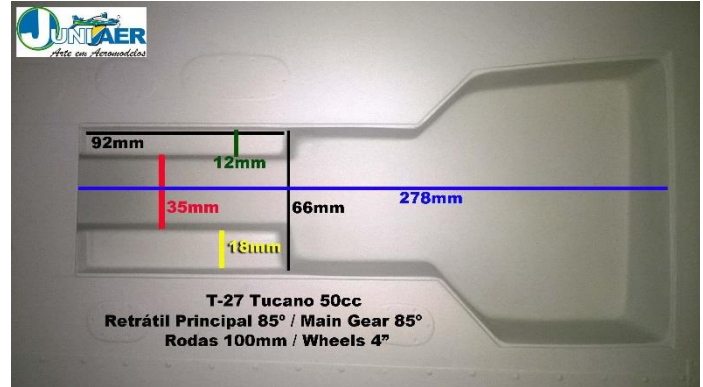
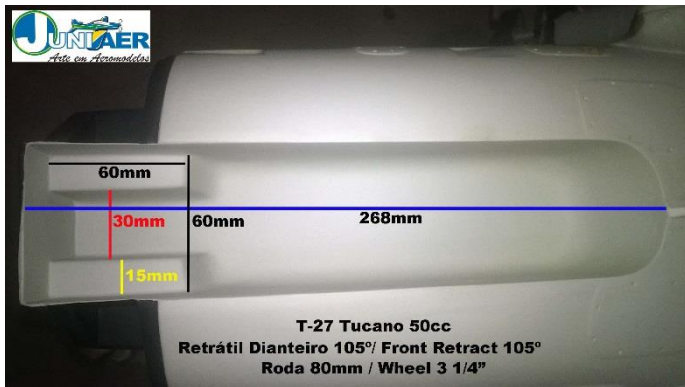
Above: elevator servo, servo arms and horns position and pull-pull steel cables exit with rudder double horn.



Above: rudder double horn (left) and rudder servo position on tray inside the fuselage (right).



Above: the rudder servo can be installed on a ply tray glued with 30 to 40 minutes epoxy glue on the bottom of the fuselage if desired (left).

Retracts Installation: (105° on front and 85° on mains)

The T-27 Tucano 45TP Juniaer is prepared for easy retracts installation, which can be pneumatic (actuation by compressed air) or electric (actuation by electric motors). The photos above show the dimensions of the bases and compartments of the retracts. The bases for fixing the wing retracts are made of 10mm plywood and the front ones are made of epoxy resin with 10mm plywood. They are solid enough to withstand the efforts required by the normal performance of the model airplane. When defining the drilling locations for fixing the retracts to the bases, check that the wheels are centered in the compartments when retracted and that the alignment of the tires is parallel on both sides of the wing and in the front.

If you wish to install Electron or JP retracts, which are narrower than the wing retracts bases distance it is necessary to epoxy glue 2 hardwood blocks like the photos below to guarantee enough structural strength.



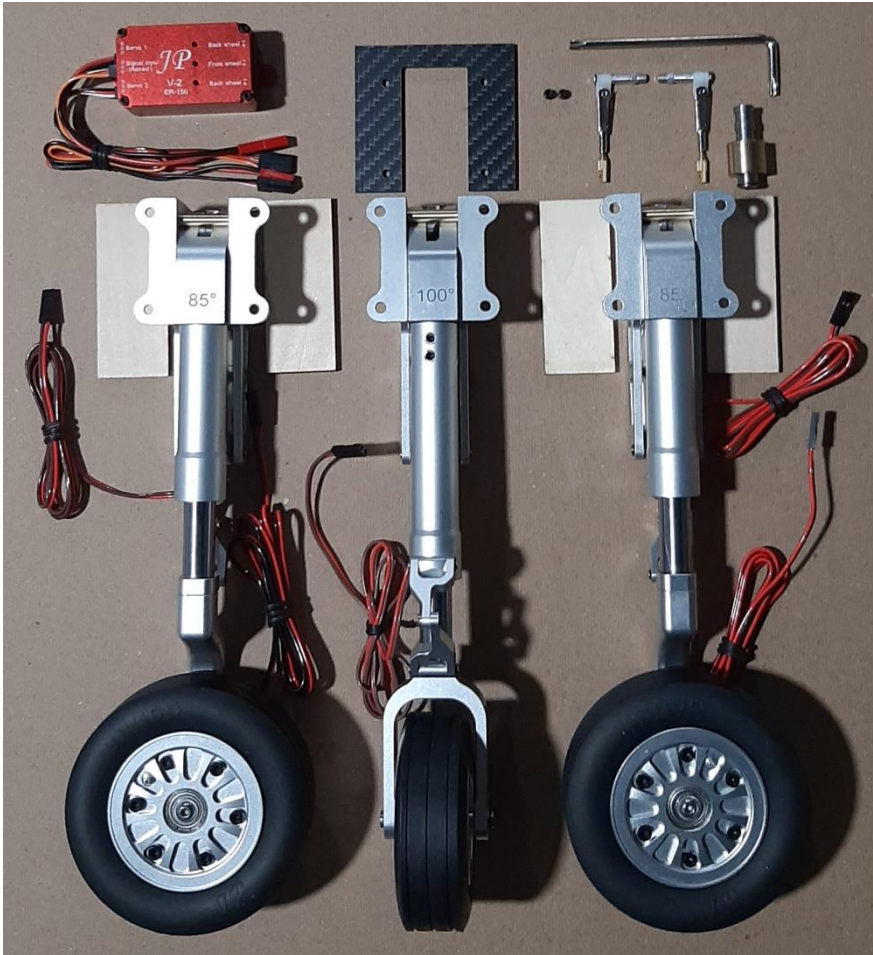
Above: hardwood blocks shaped to fit the retracts bases (left) and gluing process (right).



Above: hardwood blocks added to the retracts bases (left) and Electron retract on base (right).



JP Retract Set with electromagnetic brakes



CNC machined. Aluminum cubes and bearings on wheels. 86mm main wheels and 75mm front wheel. Smooth acting oleo shock absorbers. Supplied with 85-degree machines on mains and 100-degree on front, no painting. Includes plywood brackets for main retracts and a carbon fiber support for front retract to fit your T-27 Tucano 45TP Juniaer mounting dimensions. Electromagnetic brakes on the 2 main wheels. Includes 2 front wheel control arms and metal pull-pull controls, 1 replacement bushing for the front landing gear and 1 allen wrench.

Struts diameter: 18mm

Mounting Struts diameter: 15mm

Wheels axle diameter: 8mm

Brakes working voltage: 7.2-30V

Controller weight: 48g

Set total weight: 1526g

JP ER-150 V-2 HV controller with door sequencer and brake actuator

Input voltage: 7.4V to 8.4V (2S LiPo)

Dimensions: 52 x 32 x 21 mm (length width height)

Plugs compability: Futaba, Jr, Graupner

Contents of the full set:

- 2x metal struts for main landing gear equipped with 86mm wheels & brakes system
- 1x metal strut for nose gear equipped with 75mm wheel and pull-pull linkage
- 2x electric retracts JP Hobby ER-150 15mm 85° (up to 20kg/low mounting/inside actuator)
- 1x electric nose retract JP Hobby ER-150 15mm 100° (up to 20kg/low mounting/inside actuator)
- 1x JP Hobby ER-150 V2 version controller. All Integrated retract, gear doors and brakes
- 4x wooden blocks of main gear retracts adaptor 70x28x4mm
- 1x carbon block of nose gear retract adaptor 65x60x3mm (axes 40x37mm)

The electronic controller is supplied with electromagnetic brakes controller and landing gear doors sequencer in version 2, with the same opening and closing routine necessary for the T-27 Tucano (see page 33). It has 2 servo access doors via standard 3-way servo plugs (+ / - / signal) and 3 retracts access ports (main and front) via 2-way JST plugs (+ and -).

The controller requires a battery to power the retracts system. The manufacturer recommends using a good quality LiPo 2S 7.4V battery. The approximate consumption of the retractable system is 100mAh per retract/extend cycle. Thus, a 1500mAh battery is capable of retracting and extending the retractable fully 15 times, approximately, under normal operating conditions.

VERY IMPORTANT: Landing gear door servos should be high voltage (7,4V). Check the proper voltage for both the controller and the servos used.

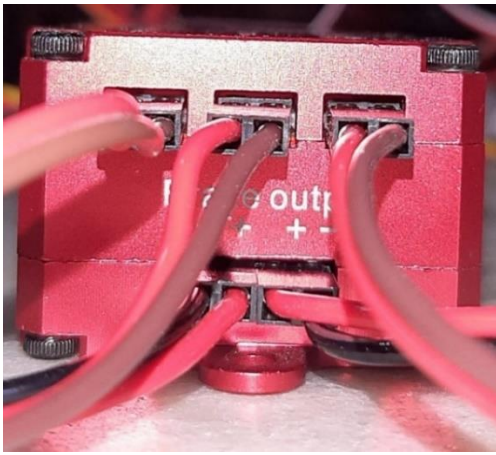
It is necessary to connect the electronic controller to a designated receiver channel to control the landing gear position (extended or retracted) via standard 3-way servo plug (+ / - / signal). The channel assigned to the retracts command must be set to 100% travel (EPA or ATV) in both positions.

Retract set operation sequence with the V-2 controller option:

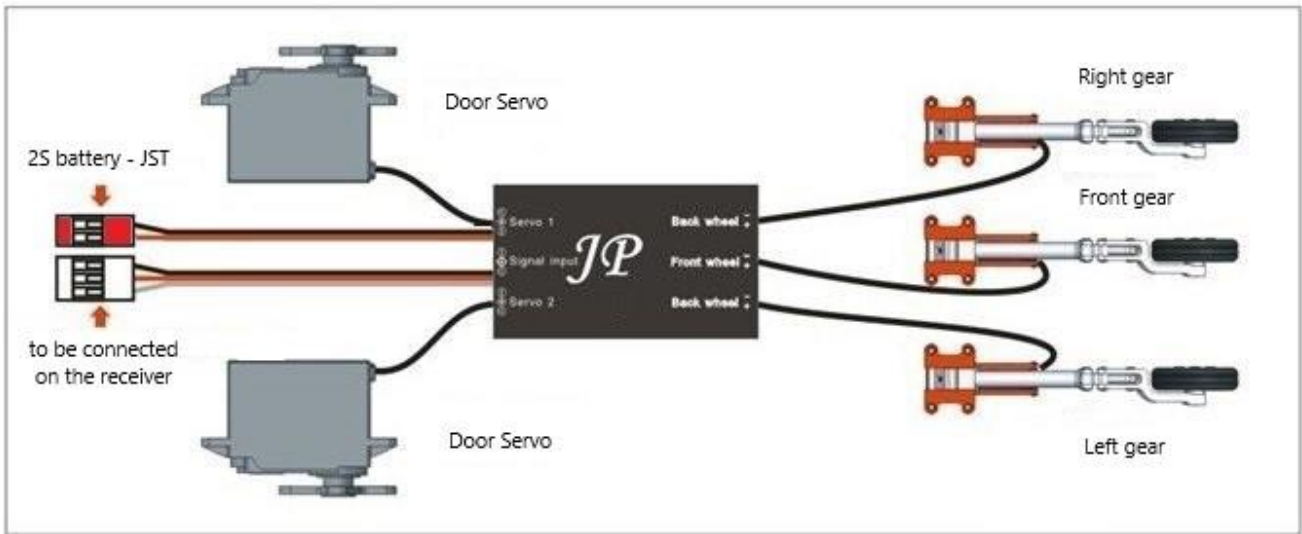
- 1) Turn on radio and receiver setting EPA or ATV to 100% in both switch positions.
- 2) Plug the 7,4V 2S Li-Po battery to the controller by the JST plug.
- 3) Set the retracts switch to close retracts. The controller will open the gear doors then close the landing gears and then close the gear doors.
- 4) Move the retracts switch to open position. The controller will open the gear doors, then open the landing gears and then close the gear doors.



Above: JP ER-150 V2 controller with brakes showing retracts connections on upper side and brakes outputs on lower side (left photo). JST plugs (male and female) and the 2 standard 3-way servo plugs for retracts and brakes signal (center). Power wire (red and black) retracts radio signal wire (yellow, red and brown), brakes radio signal wire (red, black and white) and gear doors servos connections (right photo).



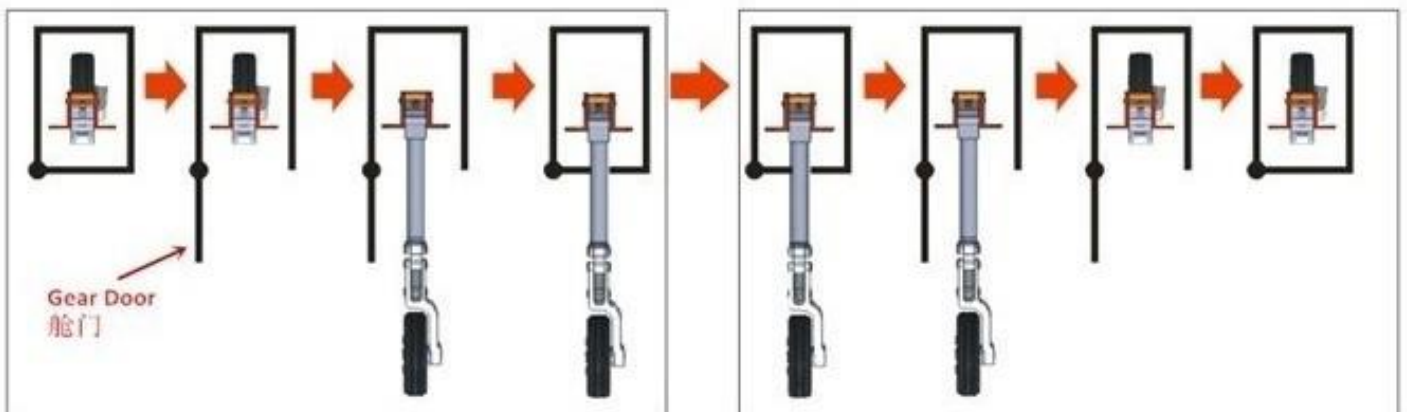
Above: JP ER-150 V2 controller with brakes showing retracts connections on upper side and brakes outputs on lower side. Note the correct polarity of wires as written at controller case.



Above: JP ER-150 V2 electronic controller installation diagram.

 **IMPORTANT WARNINGS**

BE SURE TO PLUG THE BATTERY TO THE CONTROLLER IN CORRECT POLARITY (+ RED WIRE AND – BLACK WIRE). IF POLARITY IS INVERTED THE CONTROLLER WILL BURN AND BE UNUSABLE, AND THE PRODUCT WARRANTY WILL BE LOST. USE A RELIABLE JST PLUG IN YOUR BATTERY WITH ADEQUATE FITTING WITH NO POSSIBILITY OF BEING PLUGGED INVERTED. DO NOT PLUG THE RETRACTS DIRECTLY INTO THE RECEIVER WITHOUT CONNECTION TO THE CONTROLLER, OR THE ELECTRIC MOTORS MAY BURN OUT, VOIDING THE PRODUCT WARRANTY.



Above: retract set operation sequence diagram with the V-2 controller option.

There are other retracts options with suitable specifications, but their parts are purchased separately, adaptations are required for installation and require more assembly time, requiring specialized service. Below are listed the components of a set of retracts manufactured by ROBART, with pneumatic actuation:

ROBQ 636RS Main 85° retracts

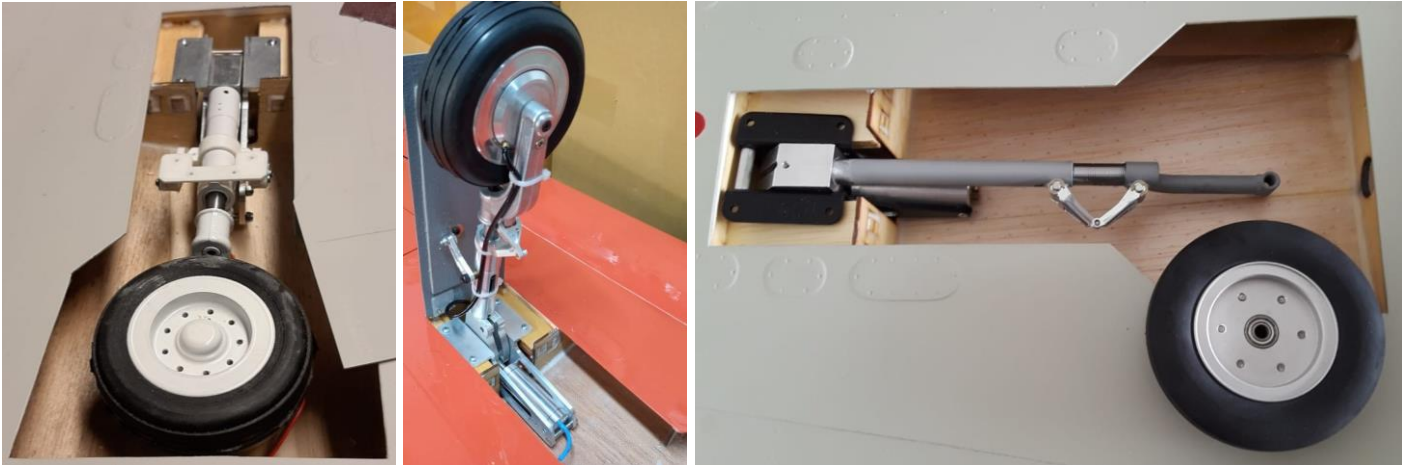
ROBQ 671R e ROBQ 671L Main struts

ROBQ 157VRX Large De Luxe air kit **ROBQ 190** Quick connectors

ROBQ 640HDRS Front gear 105°

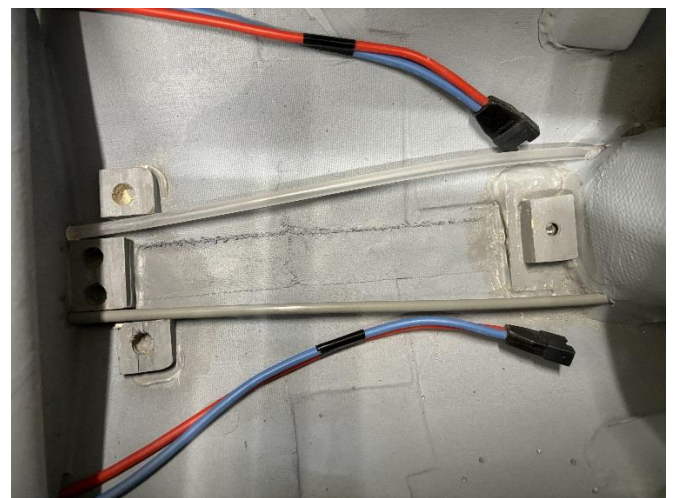
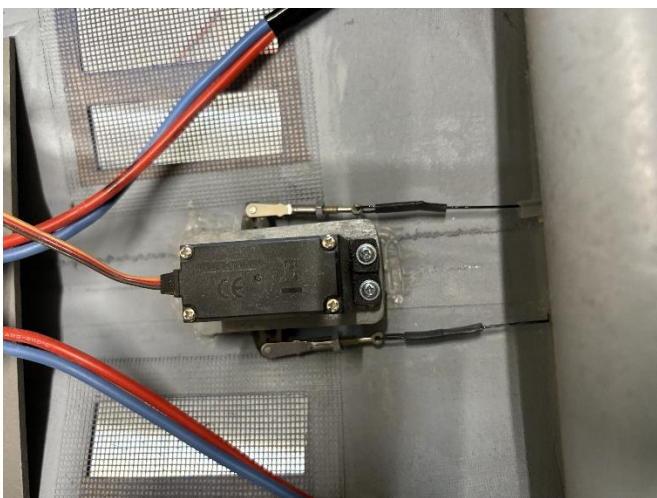
ROBQ 674 Front strut fork style

ROBQ 169 Air lines



Above: main retracts position on wing

The front wheel steering for taxi (left / right) can be done through an independent servo or with the same rudder servo. With 1 independent servo, the intensity and trembling of the front wheel control can be adjusted separately and can be turned off by mixing so as not to act when the retracts are retracted. The front wheel control servo must be attached to a centralized plywood base on the inside of the rear part of the fuselage to allow space for the fuel tanks. In both cases, we recommend pull-pull linkage with steel cables and double front wheel control arm. To pass the steel cables from the inside of the fuselage to the front landing gear compartment, drill 2 small holes with a 2mm drill bit, 1 on the left side and one on the right side allowing double control without resistance or friction.



Above: servo tray for steering servo fixation(left) and pull-pull linkage tubes for independent front wheel steering (right).

IMPORTANT:

When JP Hobby retracts are installed the steering arms are too long for the door openings and have to be shortened not to interfere on front landing gear doors actuation.

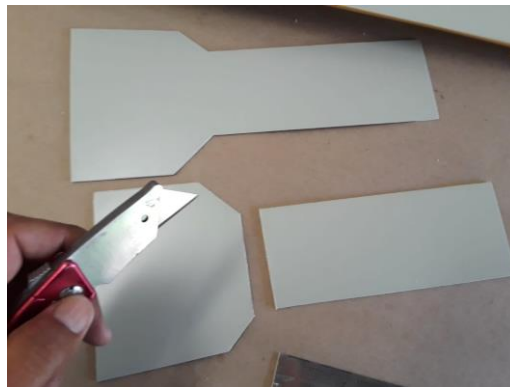
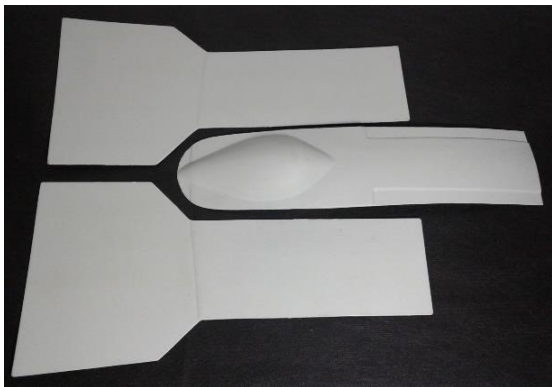
Landing gear doors installation

The landing gear doors are supplied in unique pieces that need to be cut and reinforced for installation. The landing gear doors are exposed to situations of high vibration and air displacement, so they must be installed in a very safe way to avoid risks of malfunction of the retracts and / or loss of aerodynamic performance due to drag. To cut out the 8 landing gear doors of your T-27 Tucano 45TP Juniaer use a very sharp blade, metal ruler or very sharp scissors. Protect the outside of the parts with adhesive tape to prevent damage to the paint. To reinforce them, use balsa wood or light plywood of 2mm (not supplied) to be glued with 5 minutes epoxy glue.

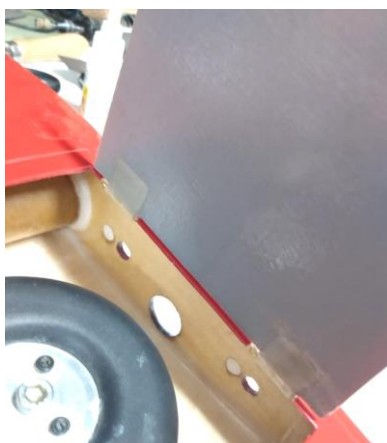
Main landing gear doors

Cut out the 2 parts of the main landing gear doors (wing) with a blade and ruler, thus obtaining 4 pieces (2 internal doors and 2 external doors). External and internal doors must be glued to the wing with 30 to 40 minutes epoxy, using 2 nylon hinges (we recommend DUBRO DUB 116) on each door or 2 compartment door hinges ROBART (ROBQ 350). Remember to check the correct alignment of the doors in the closed position to permanently glue.

The mechanism for opening and closing the internal doors of the main landing gear can be made with micro or mini servos (must be with metal gears and with 2 kg/cm or more of torque) or with pneumatic pistons. It is necessary to install a short horn at the front for linkage.



Above: landing gear door set (left) and main landing gear doors cut and reinforced (center and right).



Above: Dubro hinges installed on internal landing gear doors.



Above: micro servo installed with horn and linkage for mechanism acting.



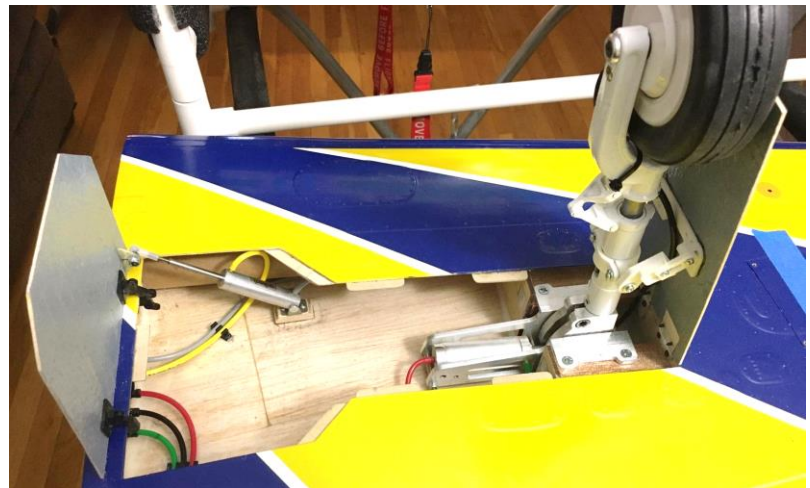
Above: door compartment hinges and micro servo installed with linkage.

The external landing gear doors are fixed to the wing in the same way as the internal doors, with hinges, and to the legs of the main landing gear with articulated supports that open and close the doors. To attach them to

the external doors, glue the 2 metal plates folded in "L" with 30 to 40 minutes epoxy glue to allow the fixation with 1 screw and nut according to the photos below.



Above: detail of the articulated supports attachment to the external landing gear door of the external landing gear and closed external landing gear door (right).



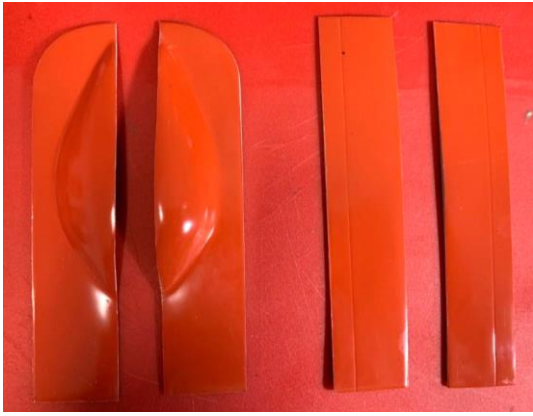
Above: detail of the articulated supports fixation to the external landing gear door of the main landing gear (left) and internal door of the main landing gear with opening and closing by pneumatic cylinder (right).

Front landing gear doors

Cut out the central part of the lower engine cowling where the front landing gear doors will be positioned. Mark and cut the 4 landing gear doors of the front landing gear from the single piece provided as shown in the photos below, with a blade or scissors.



Above: cutting process of the lower engine cowling and the 4 landing gear doors of the front landing gear.

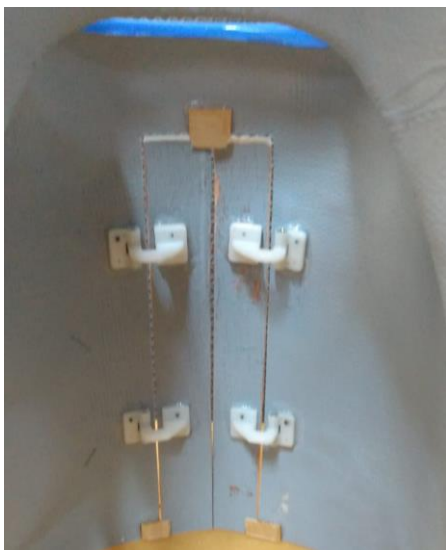


Above: the 4 landing gear doors of the front landing gear cut out (left) and their positions (center and right).

The front and rear front landing gear doors must be glued to the lower engine cowling and to the fuselage, respectively, with 30 to 40 minutes epoxy glue, using 2 nylon hinges (we recommend DUBRO DUB 116) on each door or 2 compartment door hinges ROBART (ROBQ 350). Remember to check the correct alignment of the doors in the closed position to glue permanently.



Above: fixed with Dubro hinges, the two front landing gear doors of the front landing gear in the lower engine cowling (left) and the two rear doors of the front landing gear in the fuselage (right).

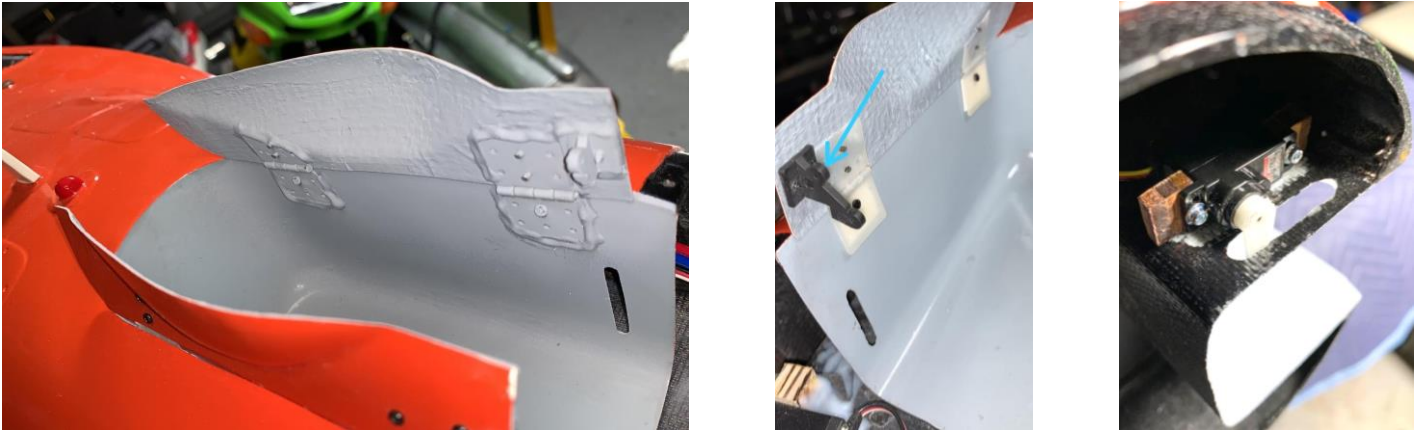


Above: hinged with doors and compartments hinges, the two front doors of the front landing gear to the lower engine cowling.

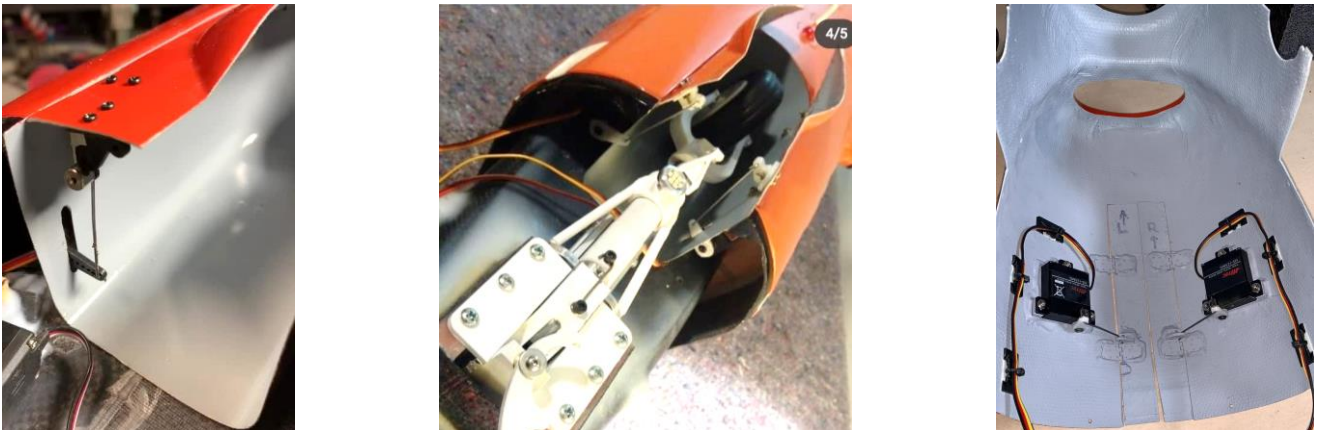
IMPORTANT:

When JP Hobby retracts are installed the steering arms are too long for the door openings and have to be shortened not to interfere on front landing gear doors actuation.

The mechanism for opening and closing the doors of the front landing gear can be made with micro or mini servos (must be with metal gears and with 2 kg/cm or more of torque) or with pneumatic pistons. It is necessary to install a short horn at the front of the doors for linkage.



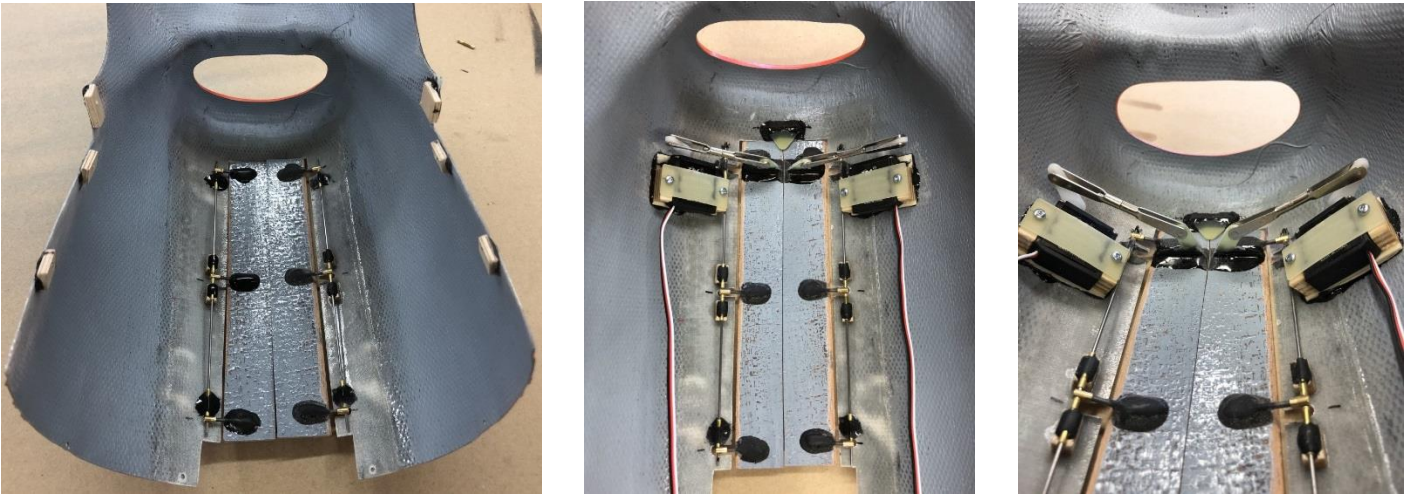
Above: the 2 rear landing gear doors of the front landing gear in the final position (left), the horn installed in the rear door of the front landing gear (center) and the place of attachment of the micro servo (right).



Above: left rear landing gear door servo of the front landing gear installed with linkage and horn (left), front landing gear position, rear doors, servos and horns (center) and 2 servos installed in the lower engine cowling for opening and closing the front landing gear doors of the front landing gear.



Above: the 4 front landing gear doors closed (left) only the front ones open (center) and all doors open (right).



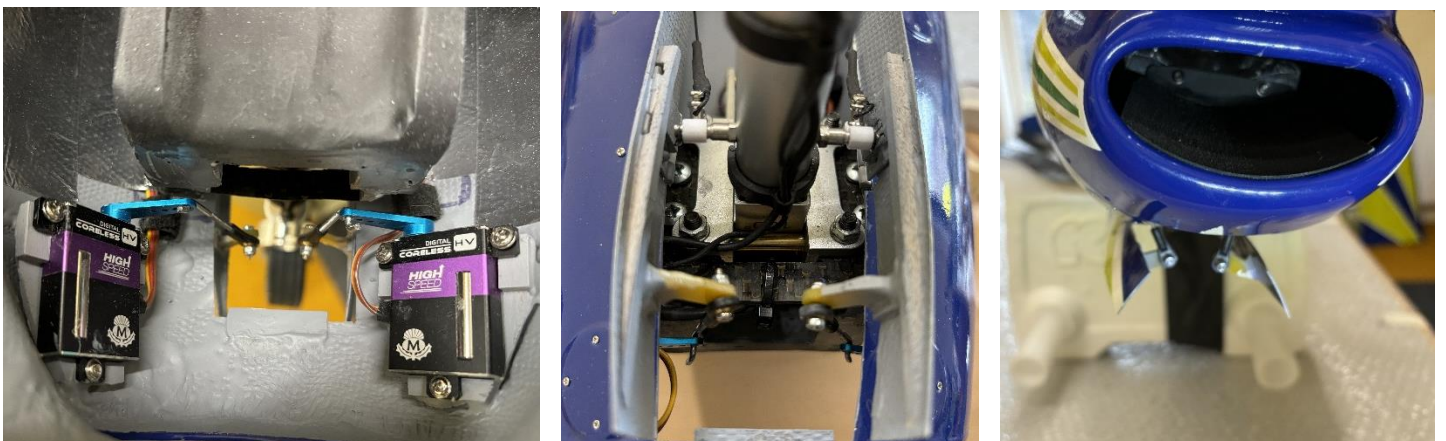
Above: other assembly option with 2 micro servos on the front landing gear doors.

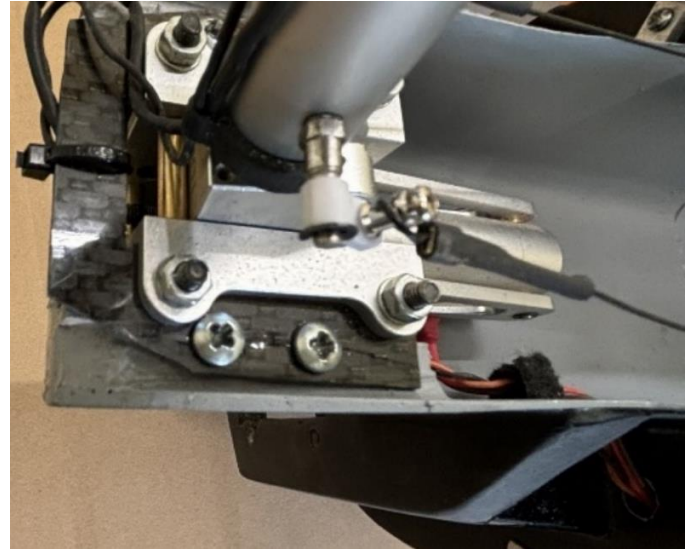
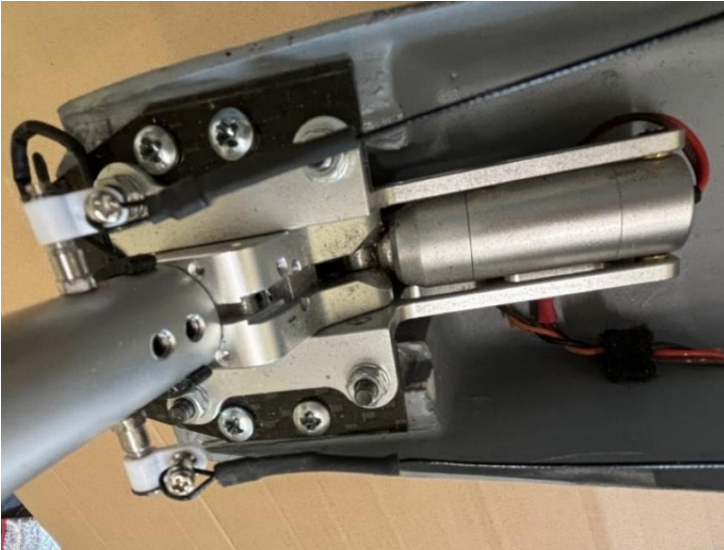
A creative alternative for opening and closing the landing gear doors of the front landing gear is the installation of a mechanism with springs and actuator, so that when the front landing gear is retracted a metal rod is lowered, making a lever through linkage and horns to close the 4 landing gear doors. When the front landing gear is extended, it releases the rod, and the 4 landing gear doors open. It is a process that requires a lot of adjustment, patience and installation skill, but it does the actuation of the doors of the front landing gear, eliminating the use of servos or air pistons.



Above: installation of a mechanism for opening and closing the doors of the front landing gear.

In case of installing a Xicoy 45 turbine, which has larger dimensions, the front landing gear doors servos must be thin design and positioned forward in the cowling as pictures below:





Above: front landing gear steering pull pull cables installed on JP retract with shortened steering arms to allow the front landing gear doors actuation.

IMPORTANT:

It's recommended to install rubber bands to keep the pull pull steel cables with tension enough not to interfere in retract actuation when gear up. Also note that the wheel steering must be locked when retract is actuating, often solved by a spring to center the wheel when cables are no longer in tension, considering the risk of the wheel could not fit the front landing gear compartment and front landing gear doors could jam.

To sequence the opening and closing of the landing gear doors, it is necessary to have a landing gear door sequencer or to mix through the radio channels. The scheduling sequence should be like the routine below:

1. Landing gear and doors fully closed.
2. Opening of the 4 landing gear doors of the front landing gear and the 2 internal landing gear doors of the main landing gear.
3. Extension of the 3 landing gears (and mechanically the 2 external doors of the main landing gear).
4. Closing the 2 internal doors of the main landing gear and the 2 rear doors of the front landing gear.
5. Opening the 2 internal doors of the main landing gear and the 2 rear doors of the front landing gear.
6. Retraction of the 3 landing gears (and mechanically the 2 external doors of the main landing gear).
7. Closing the 4 doors of the front gear and the 2 internal doors of the main landing gear.

C.G. (Center of Gravity)

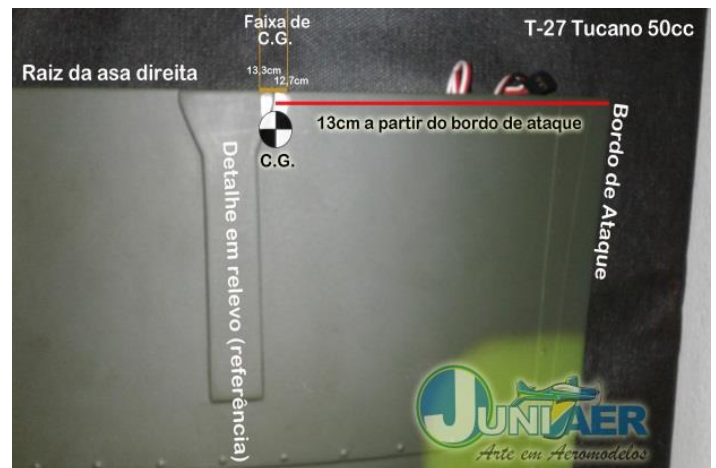
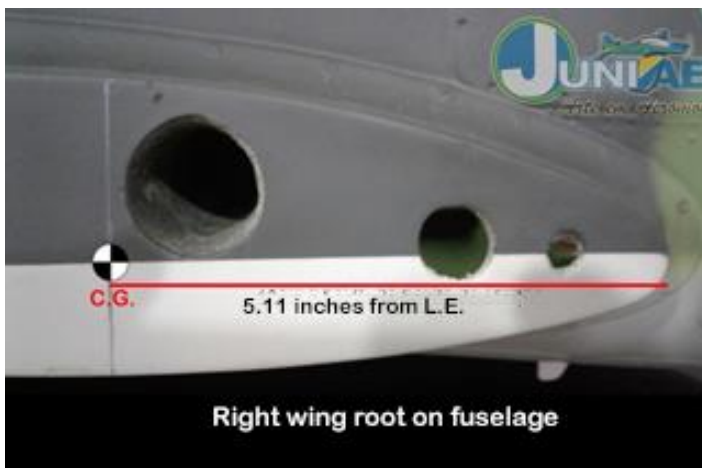
The C.G. range of the model airplane is between 127 mm (5 in) and 133 mm (5.23 in) from the leading edge of the wing and the C.G. point is 130 mm (5.11 in) from the leading edge, measured at the root of the wing.

The wing chord measures 453 mm (17,83 in). To check the balance, hold the model in the inverted position by the wing root part at the indicated point, without fuel. Retracts must be retracted.

The model airplane must have a nose weight tendency.

Never support the model aircraft supported only by the wing tips, always by the roots (closest to the fuselage).

Never take off your model airplane without checking that at the C.G. point the balance has a nose weight tendency because a tendency for tail weight will cause the model not to fly properly, which may cause damage and / or accidents including total loss of equipment and risks to people and property.

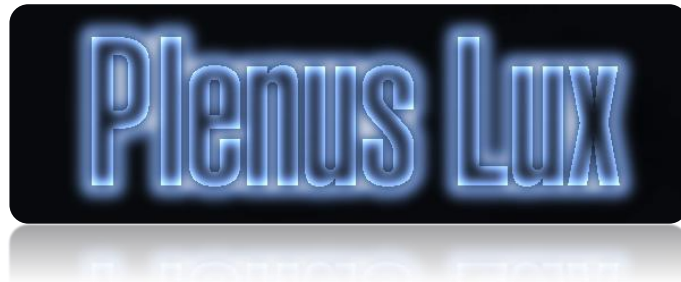
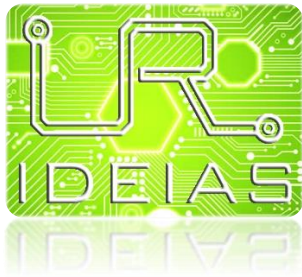


Notes: model airplanes with artistic painting that require greater paint overlapping and more adhesives have a greater total weight. In the case of electric motorization, it is not necessary to add weight to obtain the correct balance of the C.G., and the position of the Li-Po batteries must be defined at the end of the assembly. In the case of gas burning engines, balancing is more delicate, making it necessary to position batteries and ignition module close to the fire wall from the inside of the fuselage.

All fuselage servos and equipment in general should be positioned as far forward as possible, except for the receiver(s) which must be at least 50cm away from the ignition module to avoid noise or resonance that may cause interference, malfunction or loss of signal.

We do not recommend using large equipment trays inside the model airplane, especially at the rear of the cockpit area. It may be necessary to add extra weight to the nose of the model airplane to achieve the correct C.G. balance depending on the total weight and positioning of the equipment in front of or behind the C.G.

If necessary, add weight with lead bars until you reach the correct balance of your model as described above. Note that in the case of vertical acrobatic performance it is very important to define a very sharp nose weight tendency to allow for the recovery of flat screws, lomcevaks, stall turns and other vertical maneuvers safely.



We offer (sold separately) the custom scale lighting kit for the T-27 Tucano 45TP Juniaer, in Plenus Lux (standard) and Plenus 5 (extra shine intensity) versions.

PLENUS LUX - Specifications:

Voltage: 12v Recommendations: Li-Po 3S 11.1V 850 mAh to 1350mAh.

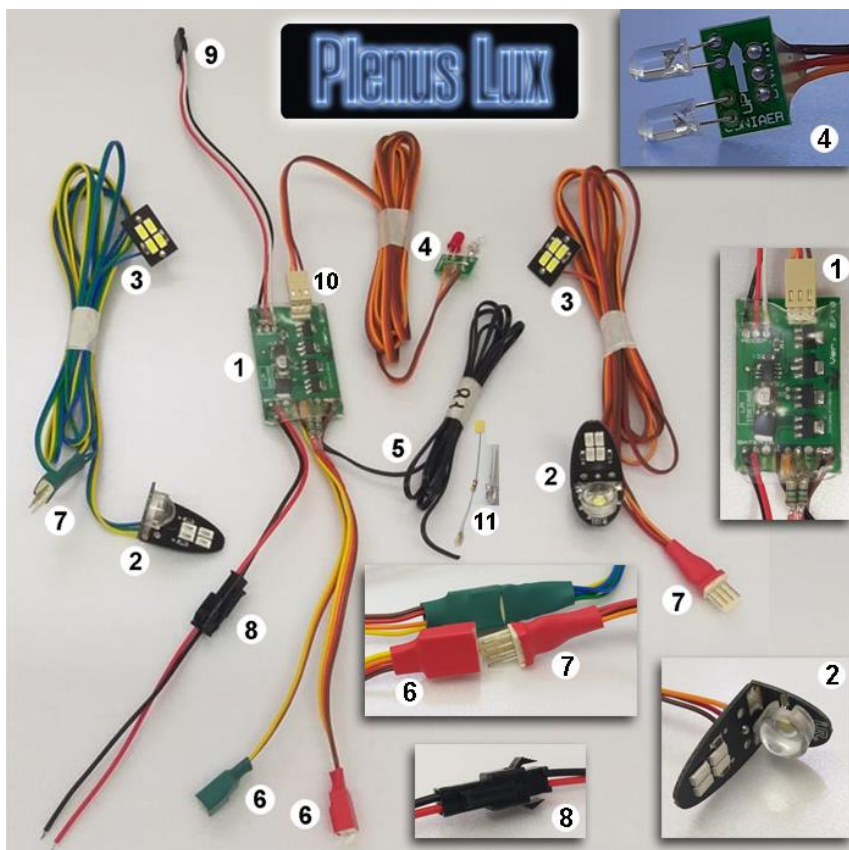
Receiver independent power supply, exclusive battery for the system.

Current consumption: 400ma - peaks of 730ma Minimum recommendation: li-po 3S 650ma 5c

Activation: Activated by PWM-Pulse Width Modulation, connected to a receiver channel. Compatible with all radio brands. Anti-interference filter.

Strobo Leds: Type SMD-Surface Mount Device (Surface Mount Components), 11,000K white light, 3w light emitting power, with 120 ° lens. 1 led is used on each side of the wing.

Leds wing landing lights: Type SMD white light 11,000K, light output power 2W each. 2 leds are used on each side of the wing. Left side navigation LEDs: SMD type red light, light output power 2W each. 2 leds are used on each wing tip. Right side navigation LEDs: SMD type green light, power output 2W each. 2 are used on each wing tip. Left and right identification printed on the board. Led front landing light: Led Top 5mm, white light 11.000K power 1 / 2w. Rudder navigation LEDs: 2 5mm hat-type LEDs, white and red light, 11,000K, power 1 / 2W. Identification with up arrow printed on the board. It is recommended to disconnect the battery from the circuit when not using the model aircraft for more than 5 days.



Main board (1) 50x36mm lighting system. 150mm wires and universal plugs for battery (8) and receiver (9), 1000mm led wire to front landing light (5) (led and resistor sent without soldering) (11) and rudder extension plug (10).

Left side extension (wing tip 1250mm and landing lights 550mm). 3-pin plug to main board (7).

Right side extension (wing tip 1250mm and landing lights 550mm). 3-pin plug to main board (7).

Wing Tip Boards (2): 35x22x20mm-correct format for installation. Landing lights boards (3): 18x11mm

Rudder extension 1700mm. 3-pin plug to main board (10). Rudder main board (4): 18x19mm.

It is necessary to connect the circuit to a receiver channel controlled by a 3-position switch on the radio. When the system is connected to the battery, the circuit performs a self-test by turning on all the lights for 1 second, indicating its perfect functioning. The radio control switch in the maximum position turns on the circuit, turning on all the lights (fixed and flashing), in the middle position, it turns off only the landing lights and keeps the navigation lights on and in the minimum position turns off the circuit, turning off all the lights.

Note that the boards are labeled on the right (green light) and on the left (red light). To pass the lighting kit wires inside the wing, position it with the tip up and insert a thread with a weight tied to the tip through the hole in the wing tip until it comes out through the front hole in the wing root. Tie the connector of the wing light extension to the end of the thread at the end of the wing and carefully pull the connector to the root of the wing, leaving the light board of the wing tip on the outside. With a 90° bent wire, pull the wires from the landing light board through the opening in the leading edge of the wing and pull the plate to the outside. Repeat the same process for the other half of the wing.



Above: weight on thread tip to pass the wires and wire to pull the wing landing light plates (left).

To fix the main board on the model airplane, the boards on the wing tips, landing lights and rudder board, use 3M high-adhesion double-sided tape (red). Before gluing the tapes, apply 3M 8250 adhesion promoting primer to the contact surfaces for a good result. The landing light led and resistor are shipped without soldering as an option (see details in the enclosed leaflet). With Johnny Simões scale retracts the led is included and installed, requiring only welding the wires.

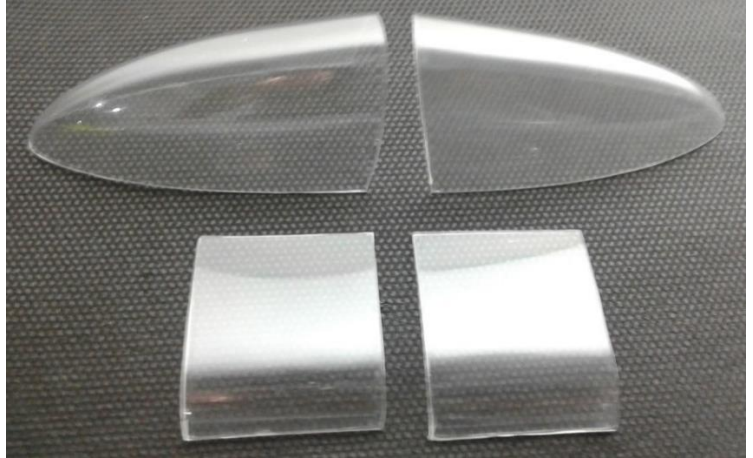


Above: correct locations for fixing wingtip light boards (left) and landing lights (right).

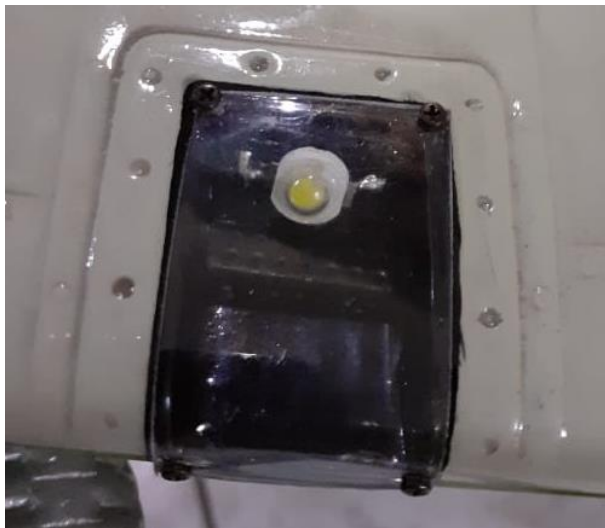
The clear parts for navigation lights and wing landing lights are supplied in a thermoformed set. Cut out the parts of the set with very sharp scissors and then remove the back and sides following the embossed reference line. With a 280 to 320 fine grit sandpaper, finish the cut parts, sand the inner ends of the clear parts without excess and in the places of the wing where the parts will be glued for better adhesion. Note that there are 2 right parts and 2 left parts. To glue after installing the light kit, use white canopy glue and attach the clear parts with good adhesion masking tape, allowing to cure for 12 hours. After curing, remove the tapes and clean any tape or glue residue. We recommend ZAP Formula 560 (PT-56). Never use CC glue to glue these parts, as the evaporated gases stain and damage the clear plastic material.



Above: parts cut from set.

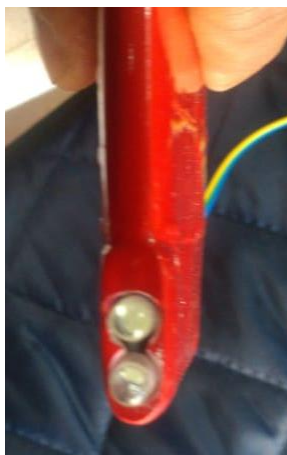


Above: desired parts shape.



Above: clear plastic parts glued at correct places.

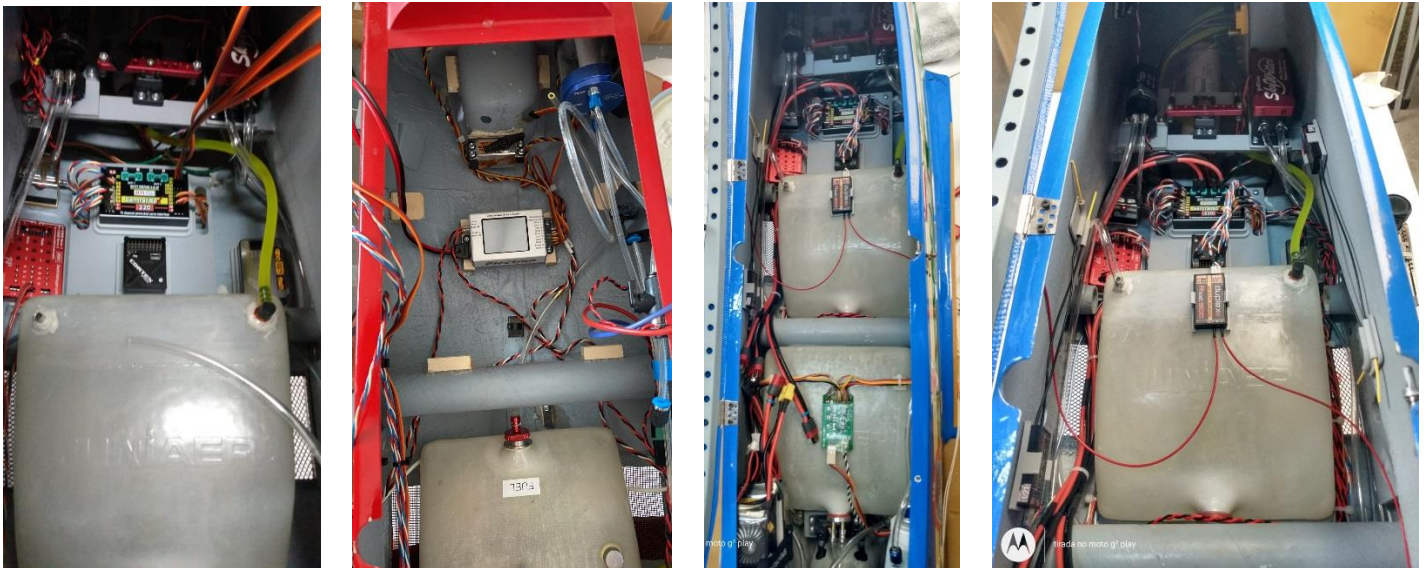
To pass the rudder wires inside the fuselage, position it with the rudder facing upwards and do the same process used on the wing through the lower rear part of the rudder until it comes out. Tie the rudder board to the thread and carefully pull it until the 2 leds are on the outside.



Above: rudder lights board installed at the bottom rear.

Fuselage on-board equipment

The T-27 Tucano 45TP Juniaer has plenty of interior space to accommodate onboard equipment such as a receiver, retractable controller, lights controller, landing gear port sequencer, turbine peripherals, tanks, and more. We do not recommend installing very large or heavy tables at the rear of the fuselage for correct C.G balance. Below are some examples of assembly and installation of this equipment. Always remember to fix all components very well and lock all splices and connections of servo extensions and equipment as they will be subjected to high levels of G forces due to the operation of the model aircraft. Test the operation of all components of your model aircraft before flying.



Above: equipment installation examples in the fuselage interior.



Above: equipment installation examples in the fuselage interior.

Control Surfaces Recommended Deflections:

Ailerons: Between 20mm (25/32") (low rate) to 25mm (1") (high rate) – up and down

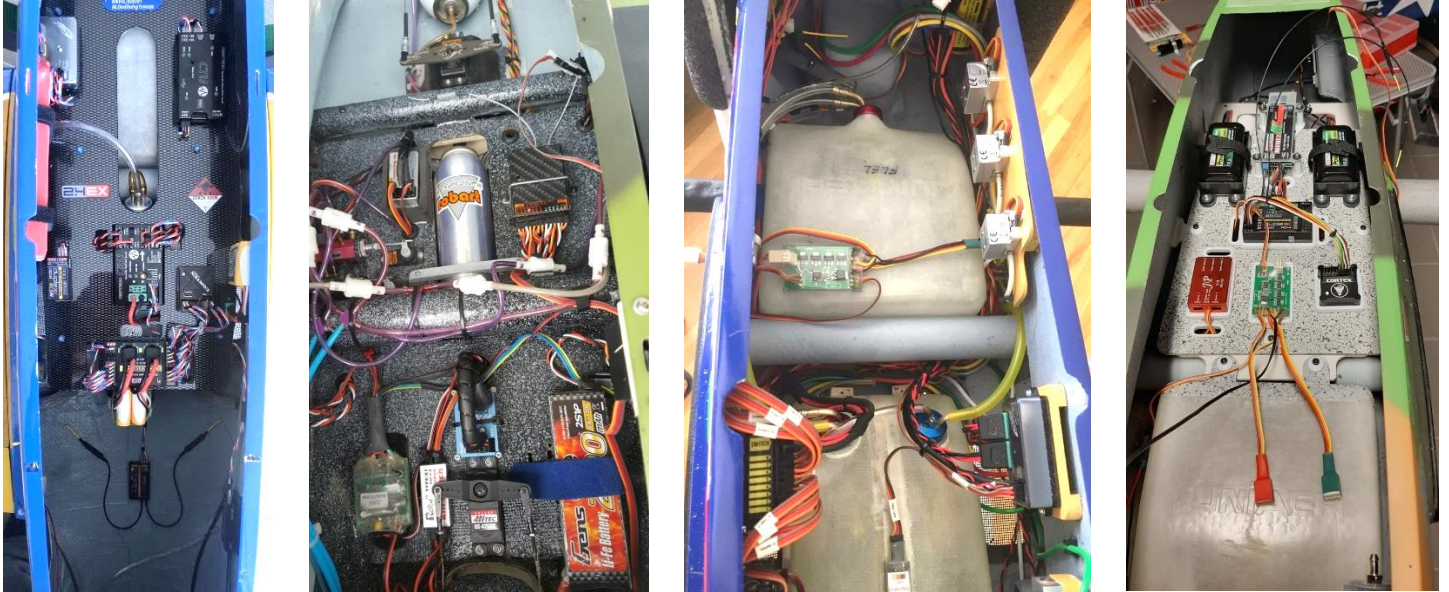
Elevators: Between 16mm (5/8") (low rate) to 20mm (25/32") (high rate) – up and down

Rudder: Between 40mm (1 5/8") (low rate) to 50mm (2") (high rate) – left and right

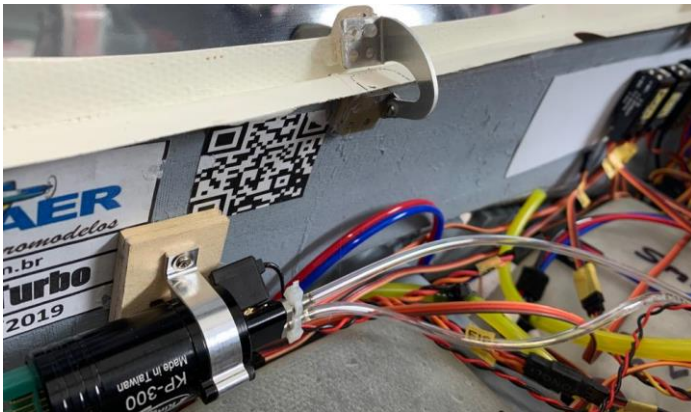
Flaps: Between 0° to 10° for take-off (we recommend 10°) and between 25° to 30° for landing

VERY IMPORTANT:

It's not recommended to install your radio receiver (RX) close to the fuels tanks or carbon fiber structures.



Above: equipment installation examples in the fuselage interior.



Above: equipment installation examples in the fuselage interior.



Above: equipment installation examples in the fuselage interior.

Fuselage side door

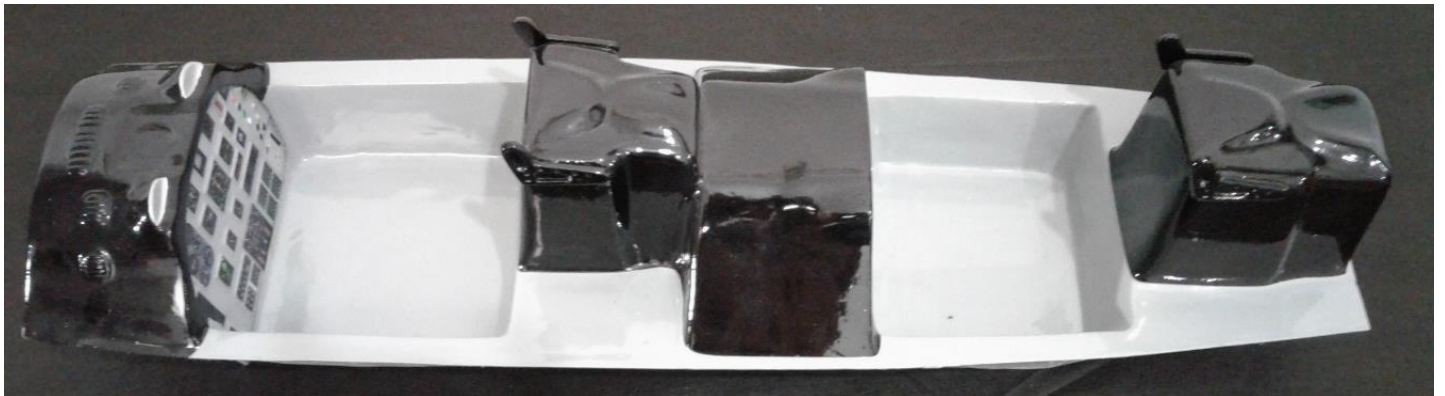
Your T-27 Tucano 45TP Juniaer has a side door where the luggage compartment is on the aircraft. The door must be installed according to the photos below with the door hinge and latch provided with the kit to be glued with 30 to 40 minutes epoxy glue. Inside there is enough space to easily install on / off switches, air supply, pressure gauges, tachometer, access to charge batteries, voltage monitors, etc.



Above: internal compartment of fuselage side door installed accessories examples.

Cockpit and canopy installation

The stock cockpit fits perfectly in the fuselage and is removable. It is not necessary to glue or attach to the fuselage. The canopy frame will keep you in the correct position.



Above: stock cockpit.

To fix the instruments panels adhesives, use the drawings below as reference:



Above: front instruments panel (left) and rear instruments panel (right) T-27 Tucano.



We offer (sold separately) customized cockpits for your T-27 Tucano 45TP Juniaer, extremely detailed and realistic, ready to install as a replacement for the original factory cockpit. Supplied in two versions:

Shallow cockpit, for pilot busts



Cockpit weight: 400 g

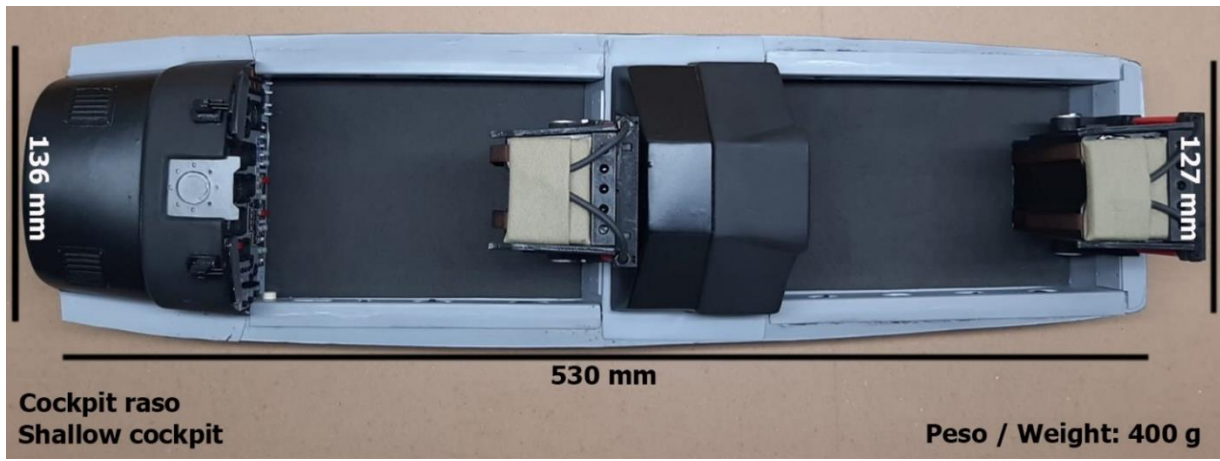
Cockpit divider weight: 15 g

Rear part weight: 8 g

Internal canopy frames weight: 18 g (9 g each)

Total weight: 441 g





Juniaer's pilot busts

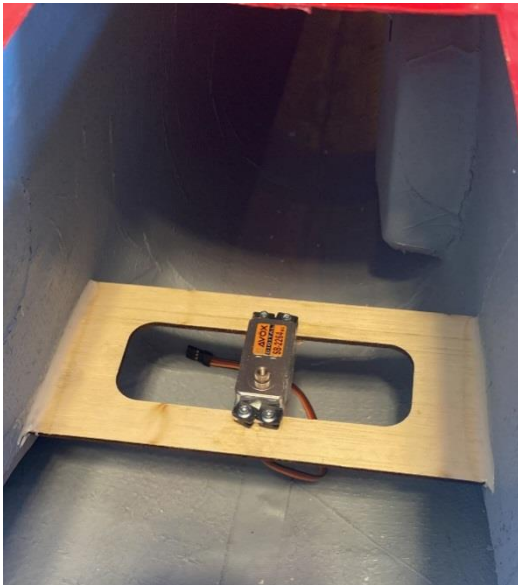
We offer (sold separately) custom made pilot busts for your T-27 Tucano 45TP Juniaer, made of fiberglass with epoxy resin, low weight, painted and varnished according to the painting scheme for greater realism. Base width: 11cm; base length: 4.7cm; height: 12cm and weight: 30g. To glue the pilot bust to the cockpit, use 5 minutes epoxy glue, applying it to the inner bottom of the base and fixing it to the desired location with good adhesion masking tape until the glue is fully cured.



Above: pilot busts in different painting schemes (left) and pilot bust glued to the stock cockpit (right).

Full scale competition cockpit, with full bottom, for full body pilots.

IMPORTANT: In the case of scale cockpit installation, it is necessary to position the rudder servo lower than the original position of the supplied servo tray. Note cockpit dimensions for installation.



Above: stock servo tray positioned on inferior part of the fuselage to allow rudder servo instalation with Flávio scale cockpit.



Front cockpit weight: 340 g
Rear part weight: 8g

Rear cockpit weight: 330 g
Inner canopy frames weight: 18 g (9 g each)

Cockpit divider weight: 15 g
Total weight: 711 g



Peso/Weight
340 g



Peso/Weight
330 g



Peso/Weight: 340 g



Peso/Weight: 330 g



Above: position of the inner frame of the canopy frame.



Above: Inner canopy frames installed (left) and all cockpit parts (front cockpit, rear cockpit, cockpit divider, rear part and inner frames installed (right).

Full body scale pilots in uniform

We provide (sold separately) custom pilot replicas for your T-27 Tucano 45TP Juniaer using the scale version Flábio cockpit, with sewn uniforms and helmets with movable visor painted according to the painting scheme of our model aircraft for greater realism.



Above: pilots in different uniforms with open and closed visors.

Miami Animatronics



by Ralph & Andrea Esposito

Programmable robot pilots with arm and head movement

Miami Animatronics pilots are the definitive option for those who want to add maximum realism to their model aircraft. They are programmable robot pilots to make a sequence of head and arm movements. A perfect match with the Flábio competition scale cockpit cockpits.

The kits are sold separately directly in the United States of America by Miami Animatronics with the option of only the electronic kit with actuator mechanisms or the complete and ready pilots through the email contact: ups767captain@hotmail.com . The site contains videos and links to detailed instruction manuals. Visit to discover the most advanced in replica pilots for model airplanes, including the option to customize faces: <https://www.miamianimatronics.com> .



Above: incredible realism of the robot pilots' uniforms, boots, gloves, helmets and equipment (left) and kit with electronics and actuators to make the programmable movements (right).

To make the canopy / frame set with side opening there are 2 hinge options: internal or external. The opening is made from left to right, so the hinges must be attached to the right side of the fuselage. With internal hinges, 2 door/compartments hinges are used. We recommend ROBART (ROBQ 350). The attachment locations of the hinges on the canopy frame must be on the same line to allow opening and closing without friction or deformation (see photos below). Make a simulation of opening and closing before fixing the hinges permanently. If necessary (depending on the hinges used) make slots on the fuselage edge to allow full movement of the hinges during the opening and closing of the canopy. It is very important that the hinges are securely attached to both parts. Apply 30 to 40 minutes epoxy glue and screw the hinges to the frame locking with self-locking nuts (parlock).



Above: internal hinges fixation for canopy side opening.

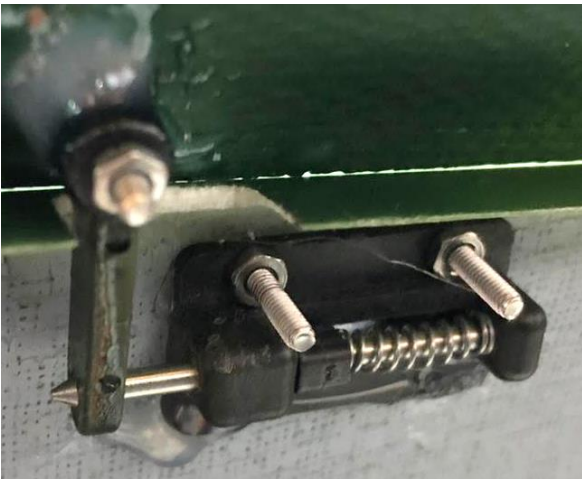


Above: in case of internal hinges for canopy/frame side opening it's necessary to open slots on the cockpit to allow the actuation of hinges and locks.

To lock the canopy / frame assembly in the closed position on the fuselage, use a piece of horn or servo arm with a hole to be fixed on the canopy frame and a spring-loaded lock as shown in the photos below. You can take advantage of the location of the replica of the canopy opening lever (see photos below). Make a slot to allow the lever to pass outside the fuselage and fix the lock on the inside with 30 to 40 minutes epoxy glue, considering the position of the horn or servo arm so that the closing is very tight and secure.



Above: lock position of the canopy / frame assembly on the fuselage.



Above: locking the canopy assembly / canopy frame inside the fuselage.

For a safer and tight closing of the canopy/frame assembly 2 locks can be used, one on front and one on rear, ensuring safety for all flight situations and maneuvers, despite harming realistic scale appearance, not indicated to scale competition.



Above: canopy/canopy frame assembly with double locking, using 2 locks.

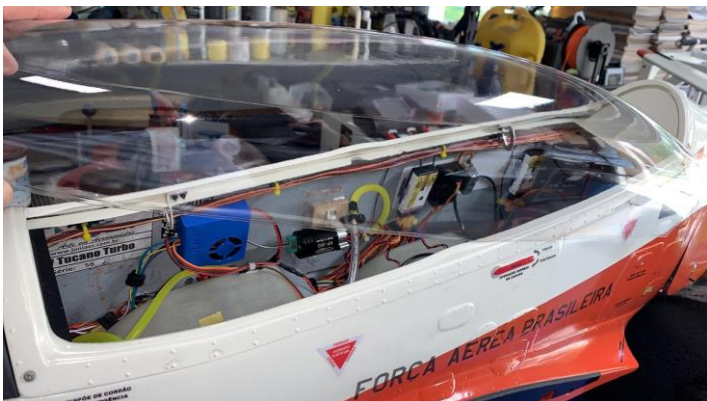


Above: canopy/canopy frame assembly with double locking, using 2 locks.

The clear canopy is supplied in a thermoformed part. Cut out the canopy in the correct shape with very sharp scissors, remove the back and front following the embossed reference line. Finish with a fine sandpaper 280 to 320. Sand the inner edges of the canopy without excess sand and at the contact points of the canopy frame where the canopy will be glued for better adhesion. To glue, use white canopy glue and attach the canopy set / canopy frame to the fuselage with good adhesion masking tape, allowing to cure for 12 hours. After curing, remove the tapes and clean any tape or glue residue. We recommend ZAP Formula 560 (PT-56). Never use CA glue to glue these parts, as the evaporated gases stain and damage the clear plastic material. Use automotive wax to clean, remove small scratches and increase transparency of the canopy.



Above: correct desired shape of the clear canopy after cutting.



Above: clear canopy cut and ready to glue (left) and glued and in place with masking tape.

If you want to ensure that the canopy and the canopy frame are fixed for competitions, drill holes with a 1mm drill and driller and screw the canopy into the frame using 2 1.5 x 5mm screws on the front, 2 on the central support part and 2 on the rear, as shown in the pictures below. Also screw the frame onto the fuselage using 2 2 x 10mm screws, one on the front and 1 on the back.



Above: Screws to ensure total security when attaching the canopy and canopy frame.

Pitot tubes replicas

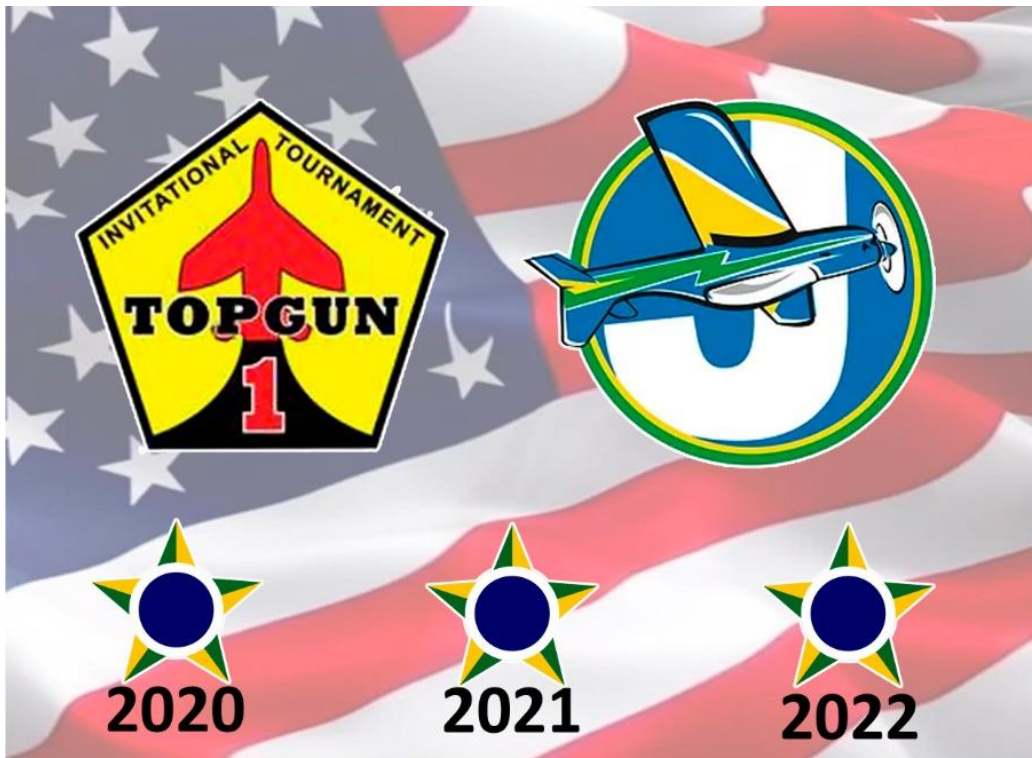
The two pitot tubes replicas must be glued with 5 minutes epoxy glue to the bottom of the wing at the locations outlined with the shape of the base, 1 on the right and 1 on the left, with the tip of the tube facing forward.



T-27 Tucano 45TP transport and protection covers

We provide (sold separately) protective and transport covers made of durable padded material. Wing covers with zippers and handles, with wing tube housing. Stabilizer covers with zipper and fuselage cover with velcro. Custom-made for your T-27 Tucano 45TP Juniaer.





T-27 Tucano 45TP

Cpt Ralph & Andrea

Three-time static champion X-Class

www.juniaer.com.br

T-27 Tucano 45TP Juniaer was three time Champion on X-Class static judging at Top Gun in 2020, 2021 and 2022, in Lakeland , Florida, USA.

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Captain's Ralph Esposito T-27 Tucano 45TP at Florida Jets 2019. Best cockpit interior trophy.



Best Cockpit Interior Award for the Second Consecutive Year (2019-2020)



T-27 TUCANO TP45

Captain's Ralph Esposito T-27 Tucano 45TP at Florida Jets 2020. Best cockpit interior trophy.



Captain's Ralph Esposito T-27 Tucano 45TP at Florida Jets 2021. Special recognition trophy.



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nº1 melhor aeromodelo
#1 best model airplane



2º lugar semi-escala
#2 semi-scale category



Fernando Funtana's T-27 Tucano 45TP in the Colombian Scale Championship 2022. Second place in the semi-scale category trophy and best model airplane of the event trophy.



nº1 melhor aeromodelo escala

#1 best scale aircraft

Fábio Fanti's T-27 Tucano 45TP at Warbirds over the Glades 2022 in the United States of America. Best scale model airplane trophy.



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Warbirds over Kingsbury

May 17, 18 & 19, 2024



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Pioneer Flight Museum 190 Pershing Ln, Kingsbury, TX 78638



T-27 Tucano 45TP Augie Santiago "escolha dos pilotos"
Pilots choice award Augie Santiago T-27 Tucano 45TP

Augie Santiago's T-27 Tucano 45TP at Warbirds over Kingsbury 2024, USA.
Pilot's choice trophy.