

GoldWing RC

77in CORVUS 35CC & 170E Giant Scale Aerobatic Aircraft



Specifications

Wing Span:	77"(1960mm)
Length:	74"(1890mm)
Wing Area:	1190sq in(76.8sq dm)
Flying Weight:	11.5-12.7lbs(5200-5700g)
Gas:	30CC-40CC Gas DLE30 DLE35RA
Electric Power:	
	Hacker A50-14L with 8S 3700-4400mah 18x8 or 19x8 prop
	Hacker A60-5S with 8S 4000-5000mAh 20x10 prop
	DUSKY XM6360EA 184KV 12S 3300-4400mAh 20x10 prop
	Or other 2600-3000Watt electric motor
ESC:	90-120A
Radio:	6+ Channels
Servos:	5-6 servos required 120 oz to 190 oz (8-12kg/cm)

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Version 2.0, Nov 2016

Dear Customer,

Thank you for purchasing the new Goldwing RC giant scale aerobatic aircraft. This manual covers the 77in CORVUS 35CC & 170E aircraft. Goldwing RC proudly presents **77in CORVUS 35CC & 170E**, Extreme Series, which is a premium product line of electric & gas RC airplanes designed for unlimited 3D performance. The new **77in CORVUS** adopts cutting edge aerodynamic features, such as streamlined canopy, aileron counterbalance, removable side force generators (SFGs). The **77in CORVUS** is also loaded with high-end accessories including genuine Oracover, CF landing gear, tail wheel assembly and control horns. KUZA brand CNC Aluminium Backplate Hollowed-out Spinner is included as bonus (limited quantities) for 170E version. And KUZA new 410cc fuel Tank is included for 35CC version.

A QUICK WORD ABOUT SAFETY AND RADIO CONTROL FLYING MODELS

With radio control aircraft, like any hobby or sport, there are certain risks. The operator of these models is responsible for these risks. If misused or abused, you may cause serious bodily injury and/or damage to property. With this in mind, you will want to be certain that you build your model carefully and correctly. If you are not an experienced flier, have your work checked and ask for help in learning to fly safely. **This model aircraft is not a toy** and must be operated and flown in a safe manner at all times. Always perform a pre-flight check of the model including all control surfaces, correct function of the radio gear, structure, radio range, and any other area relating to the safe operation of this aircraft.

Models are not insurable but operators are. You can obtain coverage through membership in the Academy of Model Aeronautics (AMA). For an AMA information package call 1-800-435-9262, ext. 292 or visit the AMA website at "www.modelaircraft.org". Or if you are in any other country please contact the appropriate body.

By the act of using the final assembled model, the purchaser/operator accepts all resulting liability.

Goldwing RC WARRANTY AND RETURN POLICY

GoldWing RC guarantees this product to be free from defects in both material and workmanship at the date of purchase. This does not cover any parts damaged by use, misuse or modification. In no case shall liability exceed the original cost of this kit. Because Goldwing RC has no control over the final assembly or equipment/components used in the final assembly, no liability shall be assumed for any damage resulting from the use of this model by the user. By the act of using the final assembled model, the user accepts all resulting liability. If you should find any missing or damaged parts, or have any questions about this product, please contact within 30 days of the purchase in order to be covered by our warranty. You may contact us at service@goldwingrc.com.

Included Features:

- High quality ball link assemblies
- Larger Aluminium hub rubber wheels diameter than 30CC(30CC is 3in.35CC is 3.25in)
- Improved stainless steel axles
- Includes Side Force Generator's(SFG)
- Servo lead safety clips
- Extra strength Carbon Fiber control Horns
- One piece air foiled carbon fiber landing gear
- KUZA V2 version Carbon fiber tail wheel assembly
- Two piece removable stabs
- Larger carbon fiber wing tube diameter. Carbon fiber tube for stab.
- Extra covering provided for small repairs and covered in genuine Ultracote / Oracover

Adjustable pushrods for easy fine tuning(Includes wrench)



Pocket Style Scale Hinging



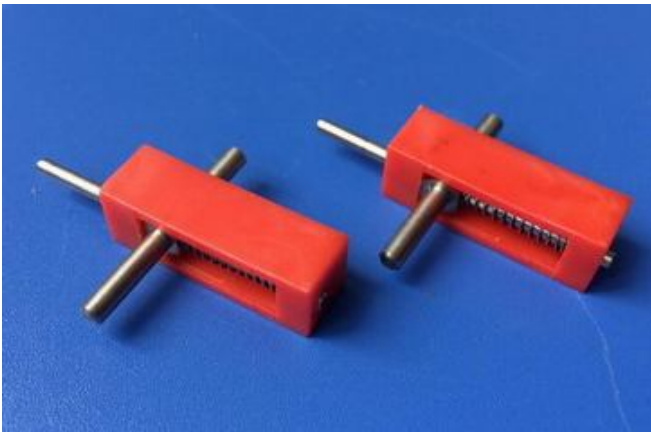
Removable rudder



Canopy extended into cowl

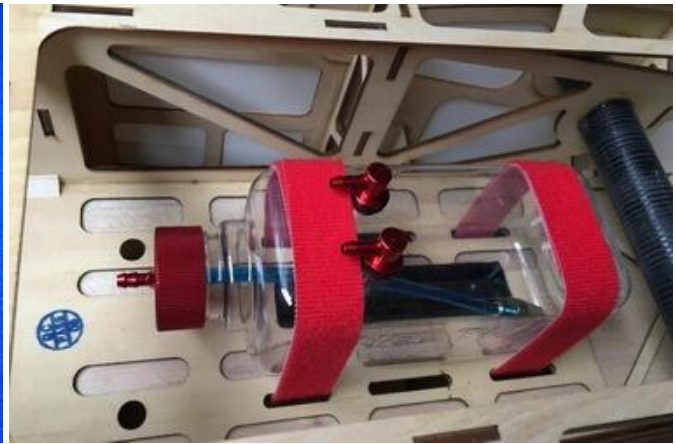


Two Quick stainless steel release canopy latch





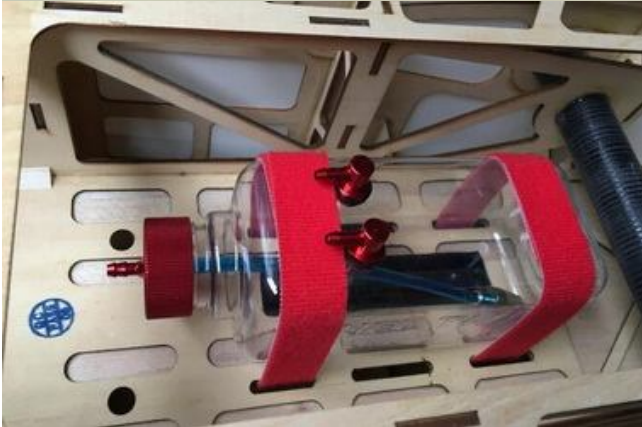
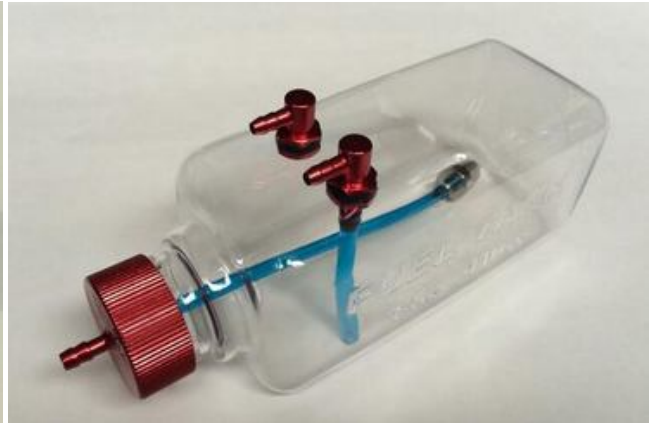
Including high quality Velcro Straps



Including KUZA Socket Head Servo Screws



Including KUZA 410ml Gas Tank V2 Version for 35CC version



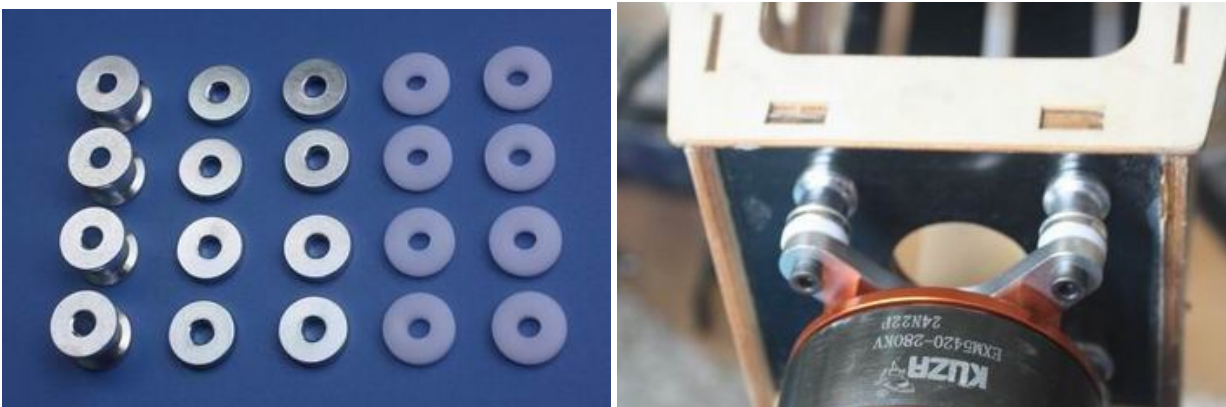
Including KUZA CNC Aluminum Fuel Dot & Fuel Vent Line Plug for 35CC version



Aluminium Backplate Hollowed-out Electric Spinner included for 170E version (Excellent cooling effect for brushless motor)



Including POM & ALU motor washers for 170E version



Scheme A White /Yellow/black



Scheme B Red/White /black



Scheme C White/red/black





Items required to complete this Model:

- 30-40 cc gas engine with stock or aftermarket exhaust systems
- Appropriate propeller for your engine
- All the required engine and exhaust mounting hardware
- Ignition battery and switch
- One quality throttle servo and appropriate servo arm
- Four high quality metal gear servos of 120 in-oz or better for the ailerons and elevators
- One high quality rudder servo of 190 in-oz or better
- Appropriate servo arms for the above
- Heavy duty servo wire extensions. Recommends two 24", three 12" extensions. Your installation though may vary.
- Two heavy duty switches with charging jacks for the Rx
- Two high quality Rx batteries of significant capacity to power your choice of servos.
- One Receiver of your choice

Required Tools

- Covering Iron and heat gun
- Assortment normal hobby tools such as screwdrivers, hobby knife, drill and drill bits, pliers, etc.
- Thick and Thin CA adhesives
- 30 minute Epoxy
- Isopropyl alcohol
- Ruler or tape measure
- Blue thread-lock or equivalent

Note: As with all kits, it's a good idea to read all the instructions and study the parts before you begin construction. Handle the parts of this kit with care so you do not damage any of the structure or covering.

Inspect all the parts for any shipping damage and report any issues to as soon as you can. Make sure you have a flat and sturdy workbench and follow all safety advice for the tools and adhesives you plan to use.

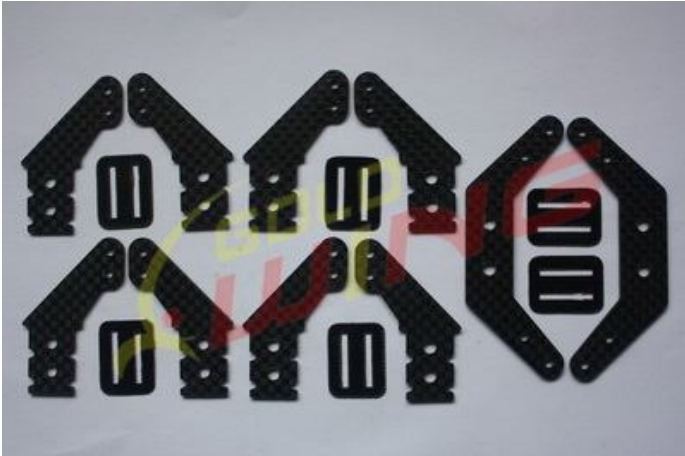
AIRCRAFT COVERING

1. With all ARFs, varying temperatures and storage delays can cause covering material to loosen over time and transportation. We recommend lightly going over all the covering with a covering iron set at medium temperatures. Be sure to use a soft cover over your iron so you do not scratch the covering surface. Be sure you go over all seams and edges of the covering to assure it is secure to the airframe and other covering. Be careful not to apply too much heat or you may cause bubbles or damage to the covering. A heat gun may also be used along with a soft cotton cloth to shrink and adhere the covering. Again, be extremely careful when using a heat gun.
2. Be sure to seal any exposed wood with a thin coating of epoxy to prevent engine oil from soaking in. This is especially important around the engine compartment and servo openings with exposed areas.
3. Some modelers prefer to seal the hinge gaps using strips of appropriate covering or clear trim tape. We have found this to be helpful with models intended for higher speed flight or models with unusually large hinge gaps. Our aircraft utilize a very tight double beveled hinge line and do not normally require this step. Sealing the hinge gaps is therefore left as an option for the modeler.

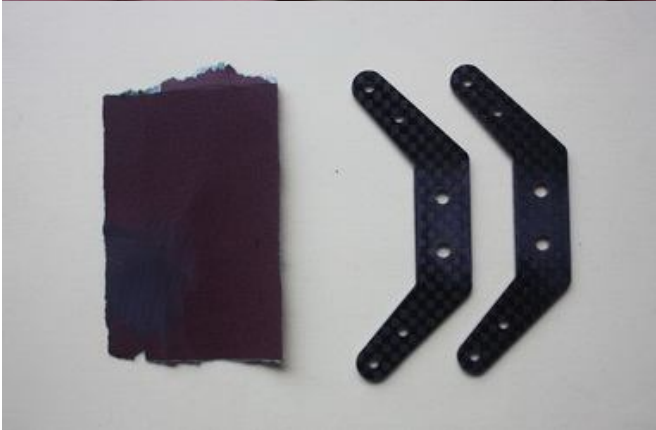
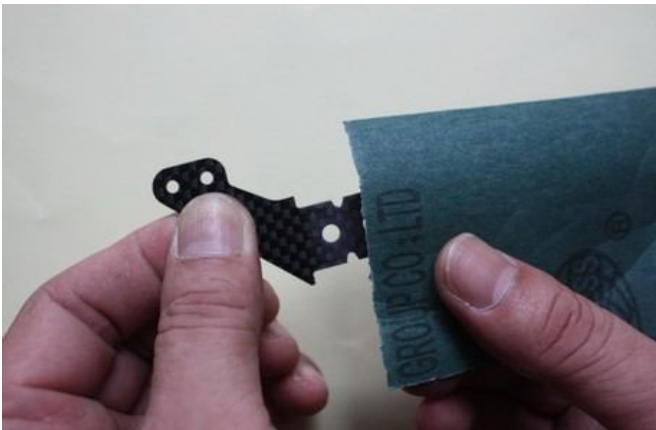


Please verify the accessories before commencing assembly:

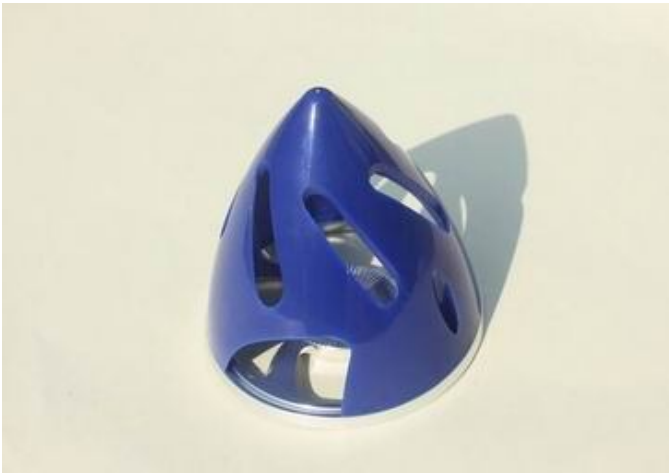
- Carbon Fiber control Horns (Bag No. KA03CA2) : 8 single horns for ailerons and elevator. 2 dual horns for rudder.



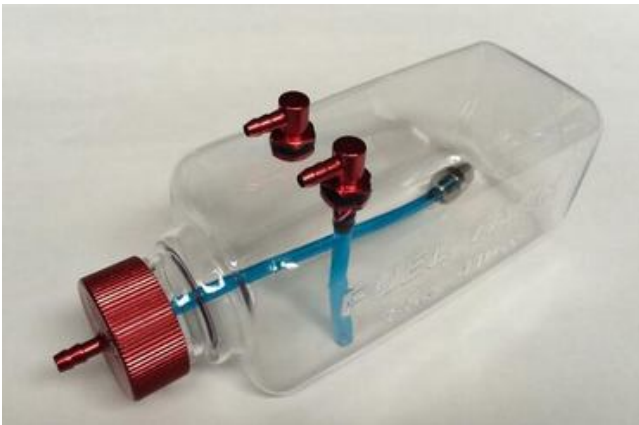
Sand the area of the horn that will be glued to help adhesion.



- KUZA 3" Aluminium Backplate Hollowed-out Electric Spinner for 170E version (Bag No. KAG0205)



- KUZA new 410cc(14oz) larger volume fuel Tank for 35CC version (including Alloy fuel cap)



- Adjustable pushrods kits: (Bag No. KA04CB4) Two 2.5x60mm Pushrods for aileron. Three 2.5x110mm Pushrods for elevator & rudder (Pull-push style)



- Pull-pull assembly kits for the rudder. (Bag No. KA03CD)



Pull-pull assembly kits

- Ball link assembly (Bag No. KAG00122): 8 for ailerons and elevators.



- Servo lead safety clips: 6 pcs (Bag No. KAG0021)



- 3.25in Main wheels: 2pcs GW version is Aluminium hub, ARF version is nylon hub

New Aluminium hub rubber wheels



- Including 3.25in Spare replacement wheel tyres for GW version.



- New stainless steel Axle kits (Bag No. KA03CH)



- Carbon fibre tail wheel assembly:GW version is CNC machined metal parts



- Side force generators (mounted with four M3X18 hand bolts and 2 balsa sheets)



- Bolts for landing gear: 4(4x20mm) hexagon bolts and 4(M4) stainless steel self-locking nuts & 4 washers



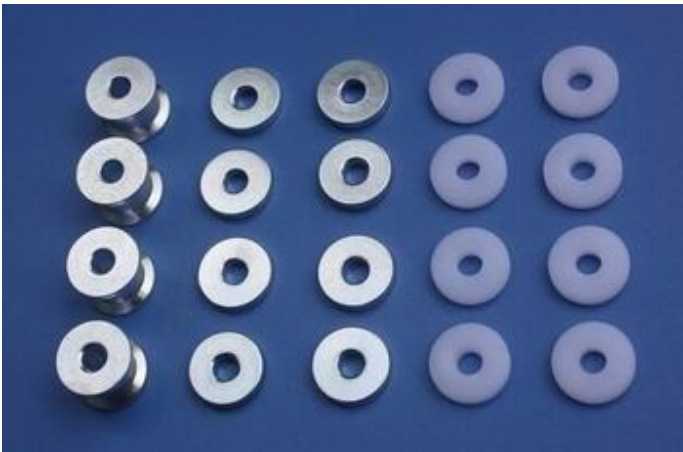
- Bolts & washers for cowl: 4(3x16mm) Hexagon bolts and 4(10mm) PTFE washers



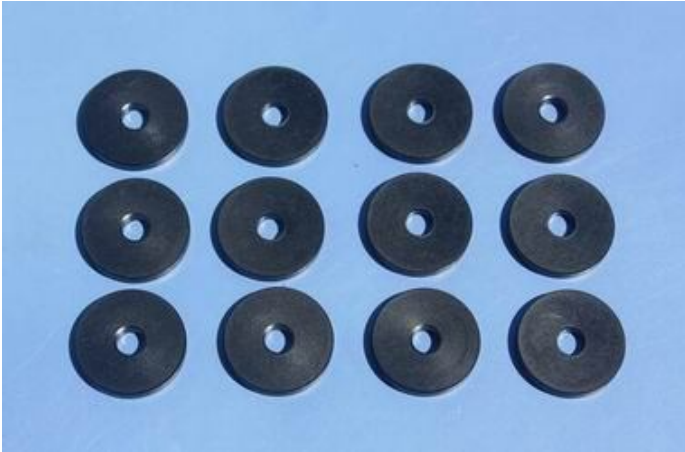
- Bolts & washers for stab tails: 4(3x12mm) Hexagon bolts and 4(10mm) PTFE washers



- 20 POM & ALU washers for 170E motor



- Washers for 35CC gas engine Version: 12(20mm) POM washers



- Wrench set (Bag No. KA03CE)



RUDDER ASSEMBLY

NOTE: There are pictures of different planes in this manual, however, this plane's wings is assembled the same way.

1. It is much easier to install the twin control horns before installing the rudder. Locate the carbon fiber rudder control horns, ball links, and associated bolts and nylon-insert lock nuts. Use some fine sandpaper to roughen up the center areas of the two control horns so that the glue adheres better. Using a sharp hobby knife or soldering iron remove the covering away from the slots in the rudder and trial fit the two control horns.
2. Mix up some 30 minute epoxy and coat the inside of the slots and the center of the control horns. Hint: a scrap piece of 1/16" ply, tooth pick, or old hobby blade can be used to coat the inside of the rudder slots. Slide the control horns in place and make sure they are centered perfectly by using a ruler to measure between the pivot holes and the hinge line. Wipe any excess glue off with isopropyl alcohol and paper towels. Install the ball links, bolts and nuts into the holes to help assure alignment of both control horns while the glue cures. Set aside until cured. NOTE: There are pictures of different planes in this manual; however, this plane's rudder is assembled the same way.



3. To fit the rudder to the fin, locate the rudder hinge wire and insert. To make it easier to insert twist as it is inserted.



4. The CORVUS can use either closed loop or a rear push pull servo for the rudder. We recommend that you balance the model assembled before choosing your servo placement.

5. The CORVUS is supplied with a high quality set of pull-pull cables and ball-links.



6. Install your rudder servo into the pre-cut locations in the fuselage. Using a fine drill pre-drill the holes and drop thin CA into the holes to strengthen the wood. You will need 3 inch arms on the servo. Set up your radio accordingly and center the rudder servo.

7. The CORVUS has the closed loop pre-installed and crimped at the rudder end. These can be connected with the M2.5 bolts and nut. The wire will be left looped inside the fuselage and will need to be connected to the servo arm.



8. Use your radio system to center the rudder servo and attach either the supplied arm or an appropriate arm for your servo. Thread one of the ball links about half way onto one of the threaded couplers. Feed the loose end of one of the cables through a brass tube and then through the threaded coupler. Holding the rudder centered, adjust the cable length as tight as possible while checking the ball link position over the servo arm. When satisfied with the position, pinch the cable around the threaded coupler and then feed the loose end back through the brass tube. Loop the cable back through the brass tube as before and crimp the brass tube three times just tight enough not to cut the brass tube but enough to securely hold the wire in place. Cut off the excess cable with wire cutters. Wick thin CA into the brass tube to help hold the cable secure. Repeat for the other cable. Hint: Once you have established the position of the threaded coupler on the cable, you can remove the ball link from the rudder horn to give you more working slack in the fuselage. Re-install the ball link prior to setting the other cable.

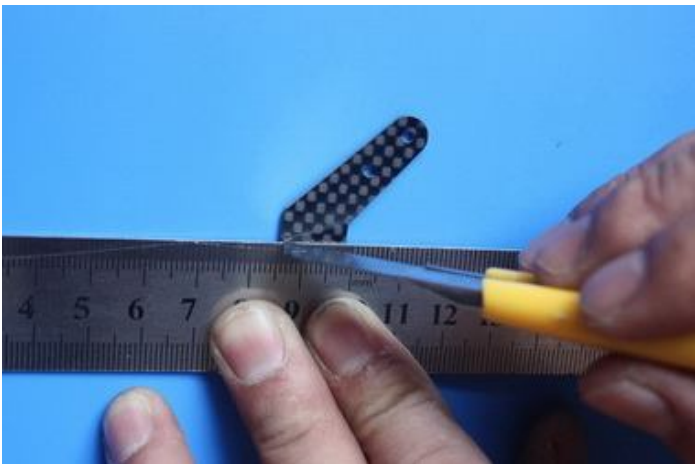


9. Check the operation of the rudder using your radio and make sure there is no binding and the cables are adjusted properly. You may have to tighten the cables after a few flights as they may stretch slightly from the initial installation.

11. The CORVUS also provides pull-push style for rudder. Below is picture of pull-push style linkage set.



12. Cut off excess carbon fiber rudder horn, and use sandpaper to rough the parts needed to inlay, and use epoxy glue to glue the horn in place.



13. Use 2.5x110mm push rod between the servo and the rudder horn. Then use the wrench to adjust the pushrod to the appropriate length.



LANDING GEAR ASSEMBLY

1. Locate the supplied main and tail wheel landing gear parts and sort them out on your workbench.



2. Bolt the main gear to the bottom of the fuselage using the supplied screws and stainless steel Self-locking nuts. Place the bolts in through the can tunnel opening with appropriate size spanner. Remember the gear will rake forward.



3. Place the Fairings onto the landing gear.



4. Install the main wheel axles to the composite landing gear and tighten the nylon-insert lock nut. Install one wheel collar onto the axle. Use a second wheel collar as a guide to leave a gap on the inboard of the axle. Use a small drop of thread-lock and tighten in place. Slide the wheel onto the axle and install a second wheel collar also using thread-lock on the set screw.





5. Fit the wheel pant in place and install using the two supplied bolts. Use thread-lock to secure the bolts in place. Repeat the above steps for the other main gear.



6. Using silicone attaches the fairings to the fuselage. Use tape to hold them into position and leave for a few hours to ensure that the silicon has set.



7. Begin the tail wheel assembly by installing. Tail wheel assembly with CNC machined metal parts, including the aluminum tail wheel hub

The installation is very simple, the factory has installed most of the accessories, please see the following picture.



8. Use your finger to find the three holes at the bottom of the fuselage. Using a knife clear the holes and fix the tailwheel in place. Use loctite on the bolts. Drill a 6.5mm hole on the bottom of rudder, 85-100mm away for the hinge line. Fill the hole and ball link with 30 minute epoxy.



9. The following is a picture of correctly installed tail wheel assembly.



WINGS ASSEMBLY

NOTE: There are pictures of different planes in this manual, however, this plane's wings is assembled the same way.

1. Aileron push rod linkage set. 2.5mmx60mm Pushrods for aileron.



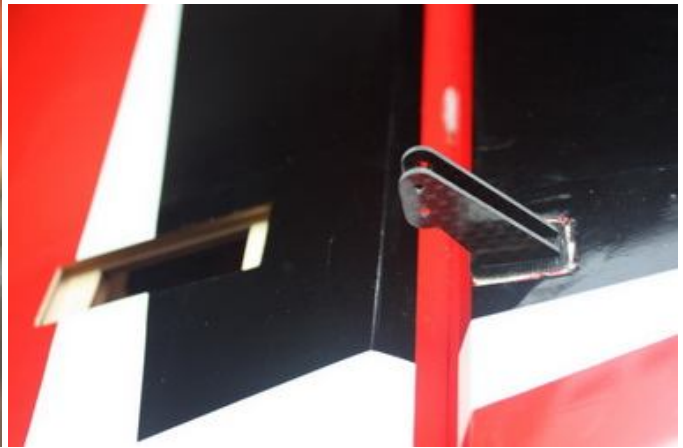
2. Locate the slots for the aileron control horn and remove the covering with a sharp knife. Place the horns into position and the cover over the top to work out the area needing to be removed.



3. Rough the area of the horn that will be glued in place.



4. Using 30 minute epoxy glue the horn and plate into the aileron.



REPEAT FOR THE OTHER SIDE

5. Place the servo in the bay and drill holes for the servo screws. Remove the servo and apply thin cyano to the holes. Refit the servo and screw in place. Fit a metal servo arm centering with your radio.



6. We recommend using KUZA 1.5" aluminium CNC servo arm (sold separately) for wing control. Using the pushrods connect the servo arm to the horn. Remember that on the pushrod one end is reverse threaded.



Use M2.5 screws and nuts to connect the pushrod. Set it so the aileron is level when the arm is at 90 degrees.
REPEAT FOR THE OTHER SIDE

ELEVATOR ASSEMBLY

NOTE: There are pictures of different planes in this manual, however, this plane's wings is assembled the same way.

1. Push rod linkage set for elevator. 2.5mmx110mm Pushrods for elevator.



2. Find the slots for the control arms in the elevators and remove the covering where the horns are inserted and the area for the plate.



3. Sand the area on the horn that will be glued inside the elevator.



4. Using plenty of 30 minute epoxy fit the horn and plate into place. Use a ball joint and bolt to hold the horn in place while drying.



REPEAT FOR THE OTHER SIDE

3. Use your radio to set the servo center position and install the large control horn onto the servo. Assemble the control rod and ball links and adjust the control linkage for proper geometry. When satisfied, screw the ball link to the servo arm and control horn. KUZA 1.5" aluminium CNC servo arm is recommended for elevator control, the servo arm should be as close to perpendicular to the control rod as possible while the elevator is at neutral. Double check all screws, bolts and nuts to assure proper installation and operation without binding.



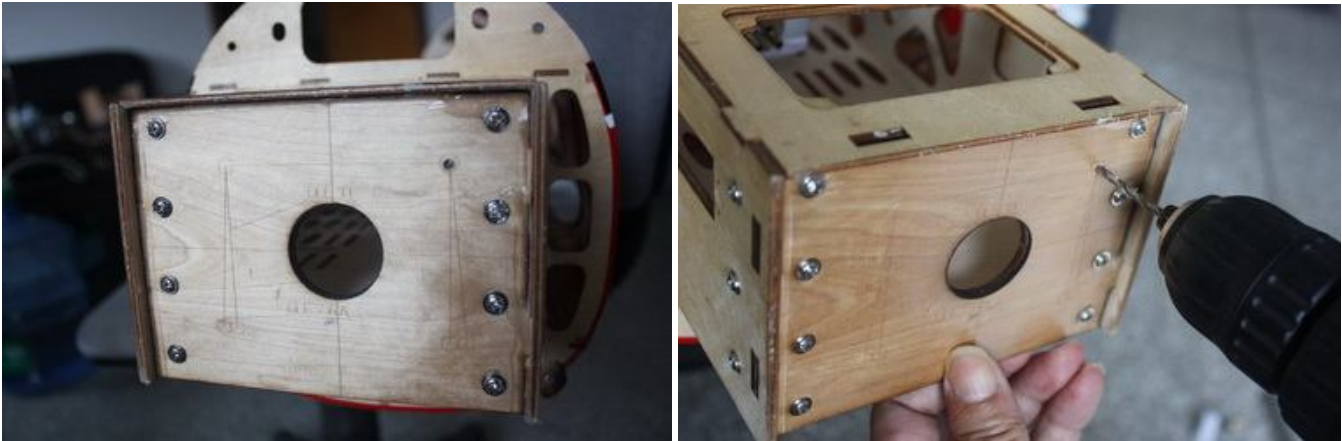
REPEAT FOR THE OTHER SIDE

For 35CC version, Engine, Exhaust, & Fuel System Installation

Engine Installation

NOTE: There are pictures of different planes in this manual, however, this plane's engine is assembled the same way.

1. Select the correct guide for your engine and drill the holes and cut out the center as indicated. Notice that the engine center line is offset to the left to compensate for the right thrust built into the engine box.

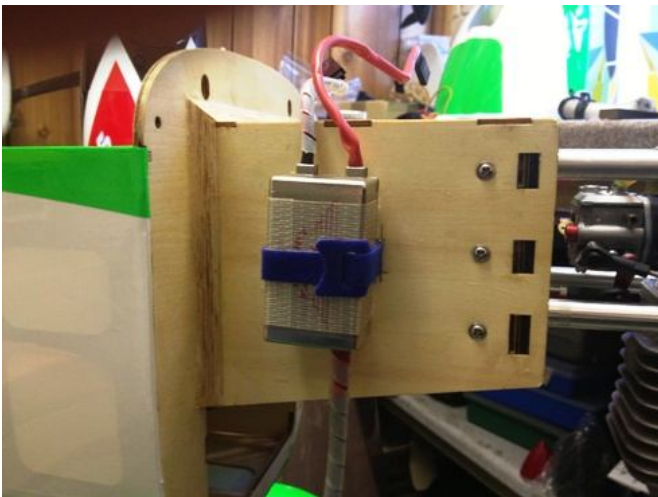


2. Fit the Cowl and measure the distance from the engine bulkhead to the front of the cowl, add approx 2-3mm for the spinner back plate and this is the length that your engine should be set. Using the correct length stand offs, mount your engine securely using bolts, 20mm POM washers, and locknuts. The use of thread-lock is also highly essential for the engine bolts.

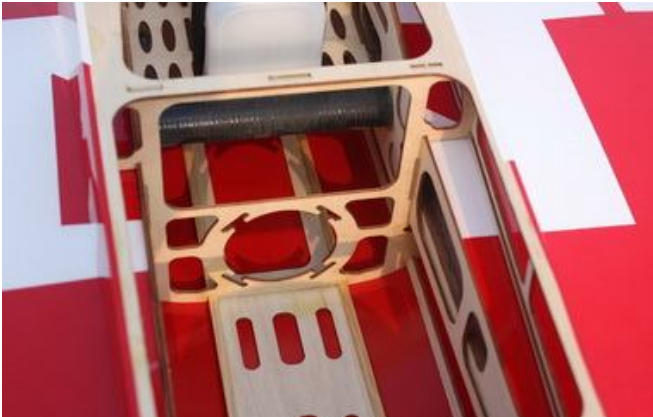




3. Mount the ignition module according to the manufacturer's instructions. The best place to mount it is on the side of the engine box. Secure the pickup lead and ignition wires with zip ties so that they do not vibrate or touch any hot part of the engine or exhaust.



4. The following pictures show how to install a canister.



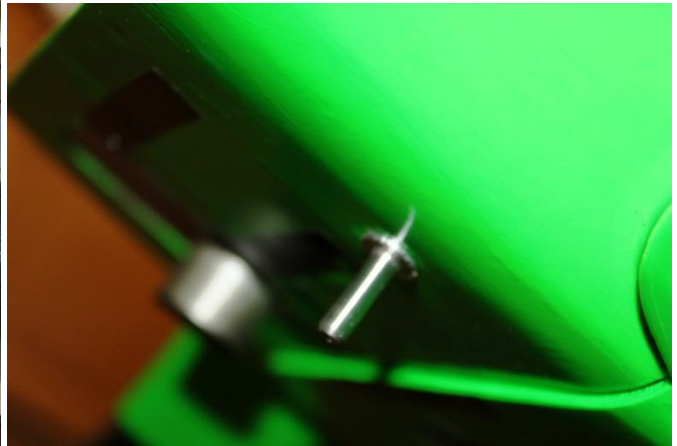
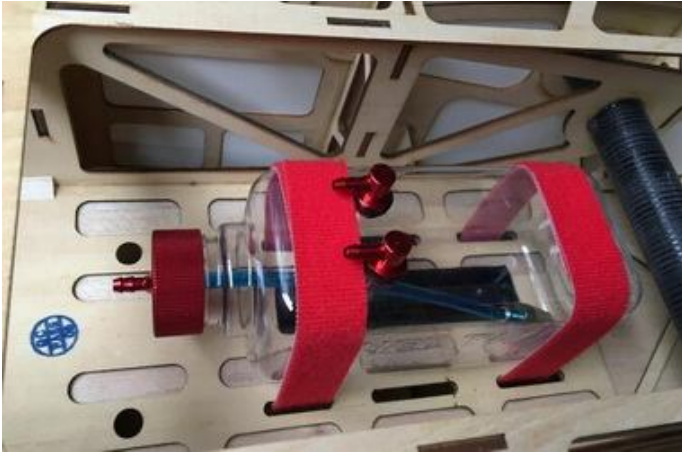


5. Assemble the throttle servo mount using the supplied laser cut parts or there is a servo cutout in the bottom of the engine box for 28cc-38cc engines. Mount your throttle servo and complete your linkage setup. A hole will need to be drilled on the firewall to allow the pushrod to connect to the throttle arm on the carb.



6. An extra servo can be fitted for choke or a mechanical linkage can be used.

7. The KUZA new 410cc(14oz) fuel tank is preassembled. Complete the installation in the fuselage using zip ties or velcro straps to hold the tank in position. Connect a fuel line between the tank and carb, a fuel line between the tank vent and the bottom of the fuselage, and a fill line to a fueling port which can be mounted on the fuselage side opposite your ignition switch. Make sure your vent line does not come close to any hot exhaust part such as the muffler or canister. We recommend the use of small zip ties or fuel line clamps to secure the lines to the tank.



A barb on the bottom of the fuselage can be fitted for the vent.

Installation of KUZA Fuel Dot and Fuel Vent Line Plug (Included)

1. From June 2015 and on, all Goldwing gas airplanes are made ready for KUZA fuel dot and vent line plug. Available in three colors: black, red and blue.



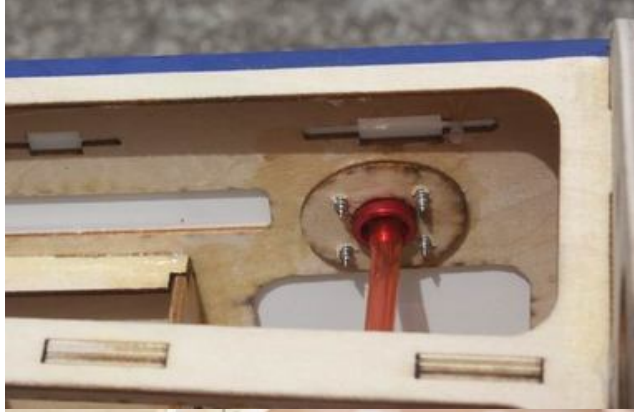
2. Installation of KUZA CNC Aluminum Fuel Dot

Sites for KUZA fuel dot installation are pre-cut on both sides of the fuselage, you may install it on either side. Use shape knife to remove the covering.



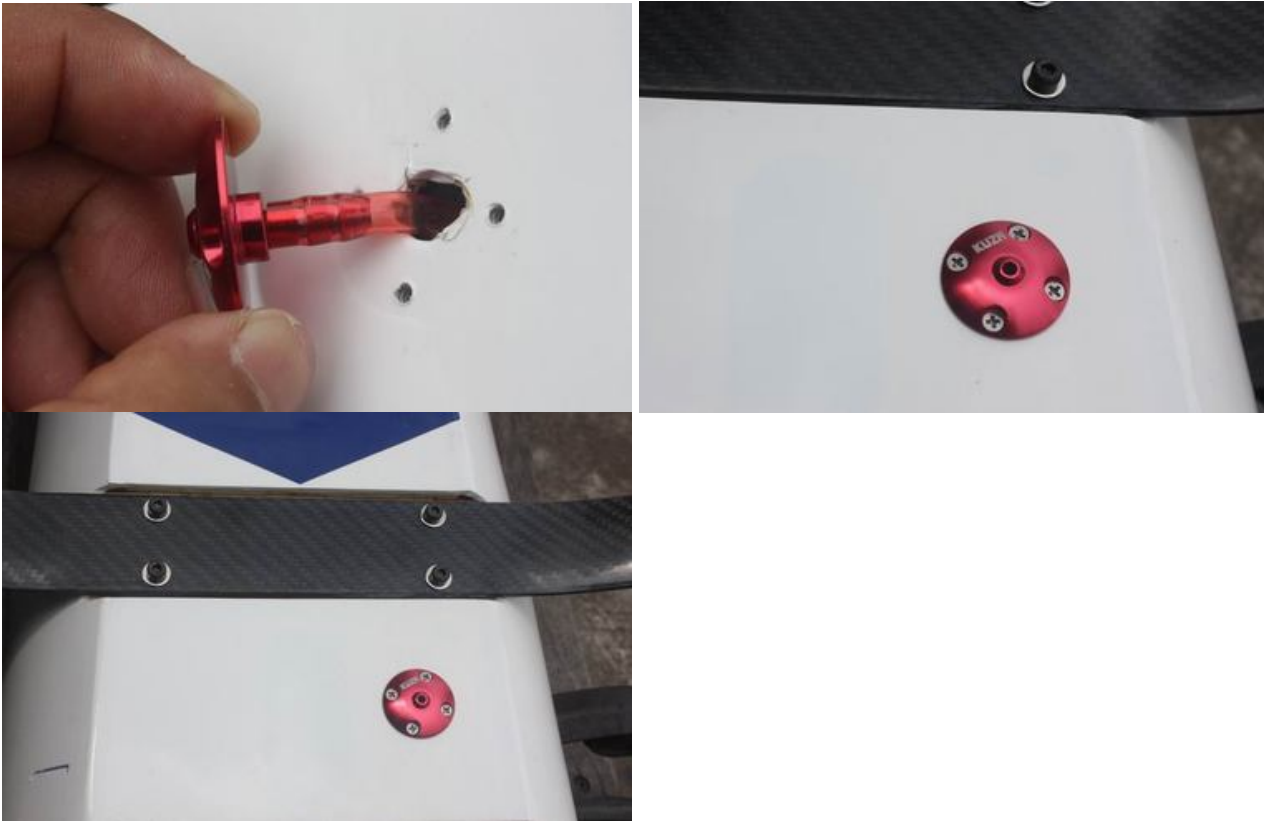


Secure the housing of fuel dot with supplied 2.5 mm self-tapping screws, then plug and install the fuel line to complete the setup of fuel dot.



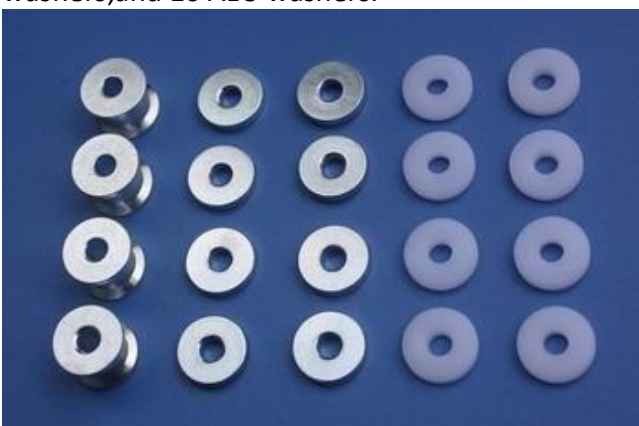
3. Installation of KUZA CNC Aluminum Fuel Vent Line Plug

Similarly, two sites for vent line plug installation are available at the bottom of the fuselage. Secure KUZA vent line plug with four 2.5 mm self-tapping screws as shown below.



170E Electric version Motor Installation

1. Find the washers for motor installation in the 170E version hardware package. There are 8 POM washers, and 16 ALU washers.



2. Blind nuts are pre-installed behind the firewall. Since the position of cowl is fixed and length of motors varies, you may need to use provided washers to position your motor properly.



3. Fix the battery with both Velcro and straps.



COWLING INSTALLATION

1. Test fit the cowl first, make sure it fits well with canopy and fuselage.



2. Drill 2mm holes on cowl and fuselage.



3. Enlarge the holes on cowl with 3mm drill bit.



4. Secure the cowl with 3x16mm Hexagon bolts and 10mm PTFE washers



FINAL RADIO SYSTEM INSTALLATION

Whether you use 72 MHz systems or the newer 2.4 GHz systems, correct radio installation and care is vital to the safe and reliable operation of your aircraft. Follow the manufacturer's instruction for installation guidance of receivers and batteries paying attention to factors such as vibration isolation, adequate cooling, and clearances.

1. Mount your receiver(s) securely in a location which provides a clean and maintenance free solution to your setup. All servo wires should be neatly routed and secured in place so they will not come loose or flop around during flight.
2. The fuselage ply sides provide space to mount your switches just below the canopy. Mount your switches according to the manufacturer's instructions and route your wires safely and securely as above.
3. Your receiver battery(s) can be mounted in a variety of locations depending on your balance needs. Regardless of where you mount your batteries it is vital that they are very secure with no possibility of coming loose. Use double sided Velcro to hold the batteries from sliding around and then use zip ties or Velcro straps to secure them tightly in place.
4. Servo and battery leads are the life blood of your aircraft. Make sure all wires are top quality and connectors are tight and display no loose pins or frayed wires. Servo clips are provided in the kit for your convenience. These servo clips can even be glued to the wood structure using CA if desired.
5. Check all radio programming and control surface operations thoroughly before your initial flight. Check your radio range according to the radio manufacturer's instructions both with the engine off and running.

Balancing and Pre-Flight Checks

Most state of the art aerobatic aircraft allow for a wide margin for balancing depending on what level of precision or freestyle flying the pilot prefers. To perform properly without being too pitch sensitive, you must not go too aft on the CG. **GoldWing RC recommends an initial CG setting of 125-146mm(4.9-5.7 inches) behind the leading edge of the wing at the root.** More experienced pilots may want to set the CG further aft for more 3D capability. Varying weights of engines and radio gear will dictate how you should install each. The batteries can easily be located pretty much anywhere in the fuselage. For those using a heavy

engine, servo cutouts are provided in the rear of the fuselage for the rudder servos. These options should allow you to balance the model without adding any weight.

Note: The best way to check your balance is to trim for level flight at about 1/2 to 3/4 throttle and then roll inverted. The aircraft should maintain level flight with very little to no down elevator input. If the aircraft climbs when inverted then you've probably got your CG too far aft. If the nose drops more than slightly, then you are most likely nose heavy.

Recommended control surface deflections:

	Low Rate	High Rate
Elevator	15 degrees	45-50 degrees
Rudder	25 degrees	40 - 45 degrees
Ailerons	25 degrees	35-40 degrees

Use exponential on the dual rates at levels that suit your flying style.

Final Assembly and Pre-Flight Inspections

1. Before arriving at your flying field, be sure all your batteries are properly charged and all radio systems are in working order.
2. Installation of Rudder

Rudder is removable for convenience in transportation, it is connected to fuselage by inserting a 2.5 mm C.F rod through the hinge line.





Then install pull-pull ball links on control horns.



3. Install the wings onto the fuselage being careful to align the wing tube with the wings and not force it. The wing tube may be initially tight but will loosen after some with use. Guide your servo wires into the fuselage openings and connect to the correct aileron channels. Servo clips are recommended. Once you have the wings fully seated in the fuselage tighten the wing bolts inside the fuselage.



4. Side force generators Assembly.

Cut the wing film needed to be install the SFG. Fixed the SFG Use M3X18 hand bolts and balsa sheets. Installation of the SFG is optional.



5. Fill your fuel tank making sure your vent line is not plugged or capped. With the canopy off, this is a good time to check for any fuel leaks.
6. Check all control surfaces for secure hinges by performed a slight tug on the control surfaces and observing if there is any give in the hinges. Check all control rods, ball links, servo screws, etc. for correct operation and installation.
7. Check your batteries and perform a range check once again with the engine off and running. Be sure all surfaces are moving in the correct direction and the correct amount for your flying setup.
8. You are now ready for your maiden flight! Good luck and enjoy your new aircraft! If you have any comments or questions about this manual or the aircraft please email service@goldwingrc.com.

Recommend Accessories (Not included) :

*** KUZA Twisted 22 AWG Servo Extensions**

Two to three 12”(305mm) No. KAG002522 Two to three 24”(610mm) No. KAG002524



***KUZA Gas Fuel line** size: 6X3.5mm 3 color to choose: red , blue, yellow
No. KAG006131R or KAG0061U or KAG0061Y



* **KUZA Fuel line clips** 10PCS No. KAG02454



*** KUZA 7075-T6 Alloy Servo Arm V2**



*** KUZA new Wingbag for 77in CORVUS** Two color to choose: red/ black, blue / silver No. KAG0093



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