E-STARTER

E-STARTER FOR BEGINNER

Thank you for choosing GWS "E-STARTER" airplane. This airplane has been designed for beginner and easy control characteristic . We hope a beginner will gain much experience by flying the "E-STARTER" and really enjoy it.

GWS

Please read these instructions carefully and thoroughly before assembly in order to achieve safe operation with maximum performance from your"E-STARTER"flight.

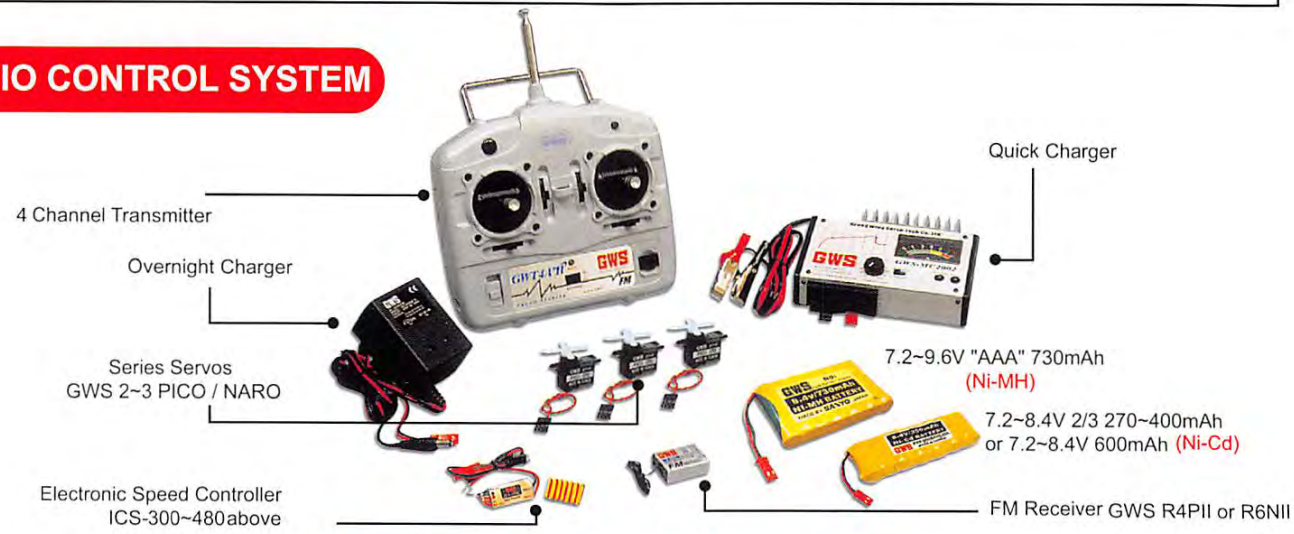
RIC ELECTRIC AIRCRAFT E-STARTER

USER'S GUIDE

SPECIFICATIONS

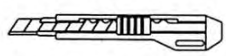
GW/E-STARTER EPS-100C	GW/E-STARTER EPS-300C	GW/E-STARTER EDP-400C
Length:725mm(30.54in.) Wing Span:960mm37.80in. Wing Area:17.1dm²(265in) Wing Loading:21.6 g / dm²(7 oz/sq.ft) Flying Weight:370 g(13 oz) Power System:EPS-100C Propeller:EP-1080 Battery required:2/3AA 270~400mAh / 7.2V or 8.4V Radio required:3- 4 channel radio Servo required:3xPICO,NARO,MINI Electronic Speed Controller:ICS-100 or ICS-400 Receiver:R4N or R6N or r8M	Length:725mm(30.54in.) Wing Span:960mm37.80in. Wing Area:17.1dm²(265in) Wing Loading:23 g / dm²(7.6 oz/sq.ft) Flying Weight:395 g(13 oz) Power System:EPS-300C Propeller:EP-1080 Battery required:2/3AA 270~400mAh / 7.2V or 8.4V Radio required:3- 4 channel radio Servo required:3xPICO,NARO,MINI Electronic Speed Controller:ICS-100 or ICS-400 Receiver:R4N or R6N or r8M	Length:725mm(30.54in.) Wing Span:960mm37.80in. Wing Area:17.1dm²(265in) Wing Loading:28 g / dm²(9 oz/sq.ft) Flying Weight:480 g(16.9 oz) Power System:EDP-400C Propeller:EP-7035 Battery required:2/3AA 270~400mAh / 7.2V or 8.4V Radio required:3- 4 channel radio Servo requird:3xPICO,NARO,MINI Electronic Speed Controller:ICS-100 or ICS-400 Receiver:R4N or R6N or r8M

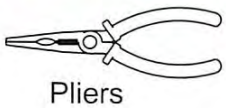
RADIO CONTROL SYSTEM

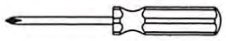


TOOLS AND ITEMS

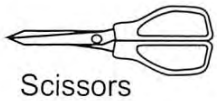
To assemble this airplane you need to prepare some tools.


Cutter Knife


Pliers


Screwdriver


Nippers


Scissors

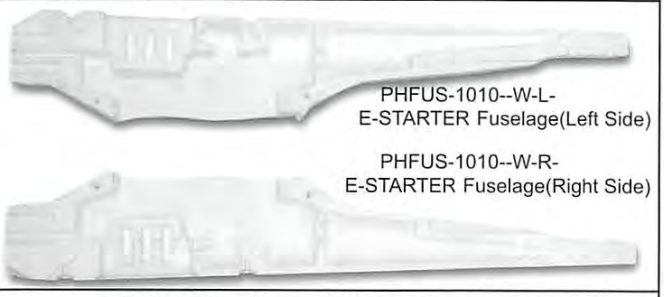

Drill


Paper Tape


CA Glue

Epoxy

GW/ESTARTER-FAS1



PHFUS-1010--W-L-
E-STARTER Fuselage(Left Side)

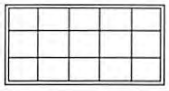
PHFUS-1010--W-R-
E-STARTER Fuselage(Right Side)

GW/ESTARTER-FAS2

PHWIN-1011-----H-
E-STARTER Horizontal Tail

PHWIN-1011-----V-
E-STARTER Vertical Fin

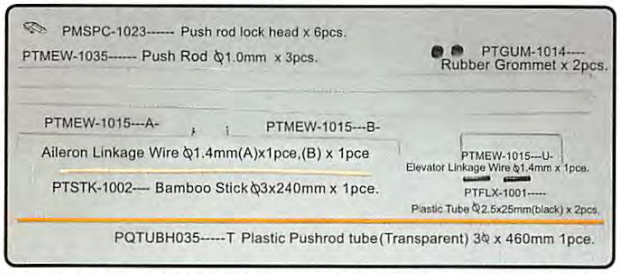
PHWIN-1011----- E-STARTER Main Wing



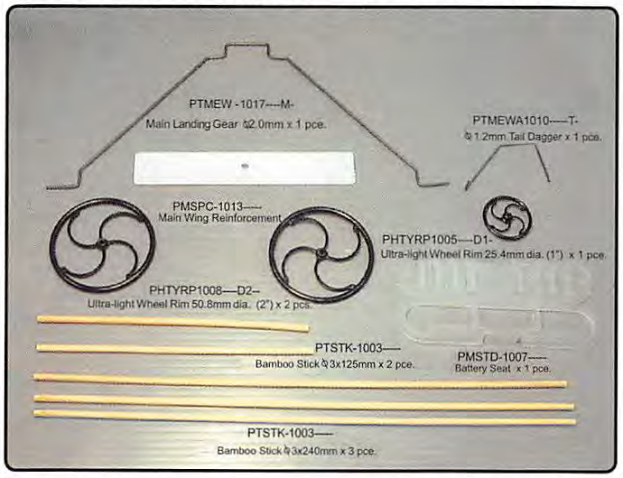
PYCRD-1001------
Hinge(10x18mm)
(15 pcs)

PTSHE-1002-----
Bamboo Stick Reinforcement

GW/ESTARTER-FAS5



GW/ESTARTER-FAS3 (LANDING GEAR PARTS)



EPS-400C (ACCESSORIES A)

EPS-350C (ACCESSORIES A)

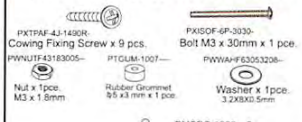
EDP-400C (ACCESSORIES A)

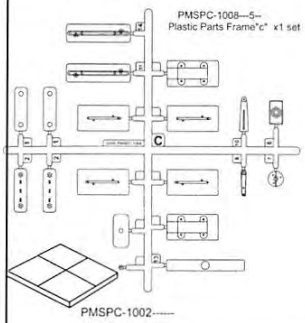
PYINS-1058------
E-STARTER Instruction Manual x 1 pce.

PVPEF-1040---1--
Cowling x 1 pce.

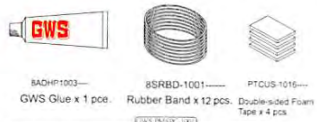
GW/ZERO-FAS6

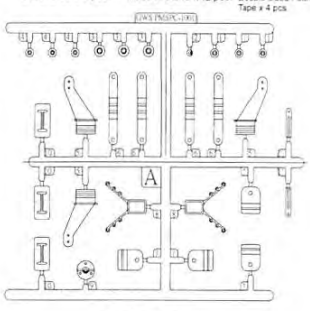
PICO-ZERO MICRO ACCESSORIES C





GW/P-STICK-FAS6 (ACCESSORIES)

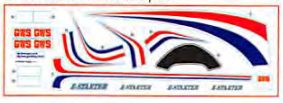




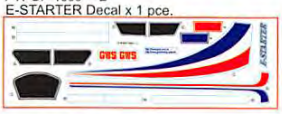
CONTENTS OF KIT(PARTS LIST)

01. E-STARTER Fuselage(L)	x1	13. Main Landing Gear	x1
02. E-STARTER Fuselage(R)	x1	14. Bamboo Stick(ϕ 3x240)	x3
03. E-STARTER Main Wing	x1	15. Bamboo Stick(ϕ 3x125)	x2
04. E-STARTER Horizontal Tail	x1	16. Plastic Parts Frame"A"	x1
05. E-STARTER Vertical Fin	x1	17. GWS Glue	x1
06. E-STARTER Bamboo		18. Rubber Band	x12
- Stick Reinforcement	x1	19. Double - Sided Foam Tape	x4
07. Hinge	x1	20. Electric Power System	x1
08. Ultra-light Wheel Rim(1")	x1	21. Plastic Pushrod tube(Transparent)	x1
09. Ultra-light Wheel Rim(3")	x2	22. Plastic Tube(Black)	x2
10. Main Wing Reinforcement	x1	23. Rubber Grommet	x1
11. Battery Seat	x1	24. Aileron Linkage Wire ϕ1.4mm(A)	x1
12. Tail Dragger	x1	25. Aileron Linkage Wire 1.4mm(B)	x1

26. Elevator Linkage Wire 1.4mm	x1	PYPOP-1030----C- E-STARTER Decal x 1 pce.	
27. Push Rod 0.9mm	x3		
28. Plastic Parts Frame"C"	x1		
29. Cowling Fixing Screw (M1.4)	x9		
30. Bolt M3x30mm	x1		
31. Washer	x1		
32. Cowling Seats	x4		
33. Rubber Grommet	x1		
34. Cowling	x1		
35. Nut	x1		
36. E-STARTER Decal	x1		
~~37. GWS Decal~~	~~x1~~		
38.Instruction Manual	x1		
39.Push rod lock head	x6		

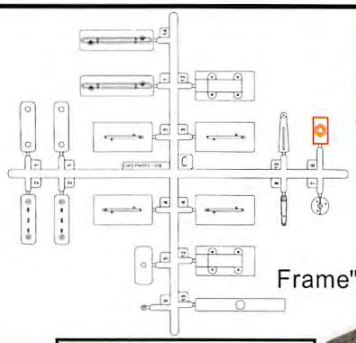


PYPOP-1030----D-
E-STARTER Decal x 1 pce.



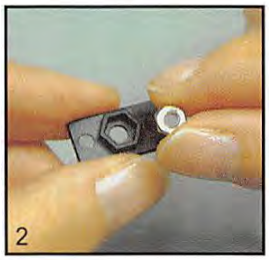
PYPOP-1003-----
GWS Decal x 1 pce.

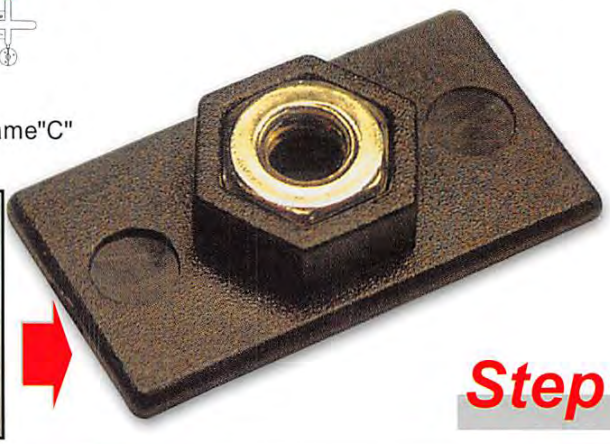
FUSELAGE ASSEMBLY



Frame"C"

Press the 3mm hexagonal nut into the plastic c (6) and apply a small amount of CA glue to the c (6).

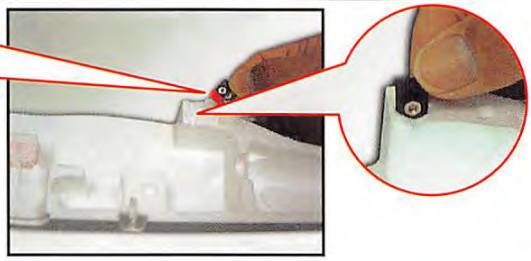


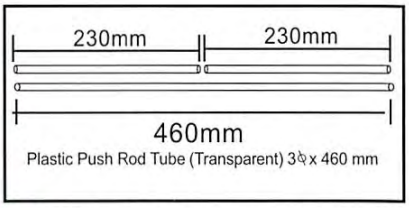


Step1

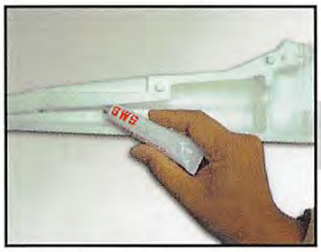
Step2

Apply epoxy glue to the slot of fuselage,then put the C (6) in place.

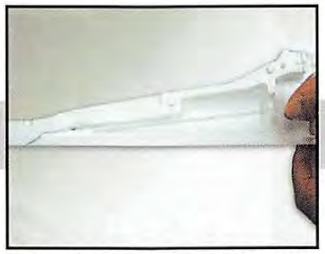




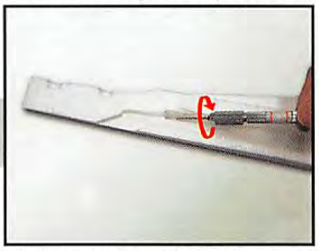
▲ Cut the plastic tube to specific length as shown in the picture (230mm x 2).



Glue the tube in place with GWS glue.



Insert the plastic pushtod tube (230mm) into the hole,from inside of the fuselage and come out for approximately 10mm.



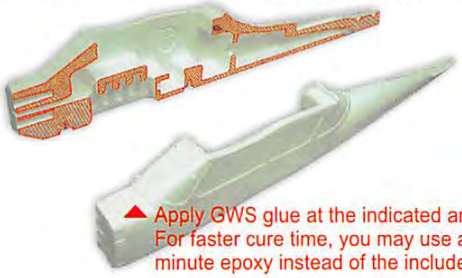
Drill 3mm holes into the L & R fuselage pushrod guide slot.

Step3

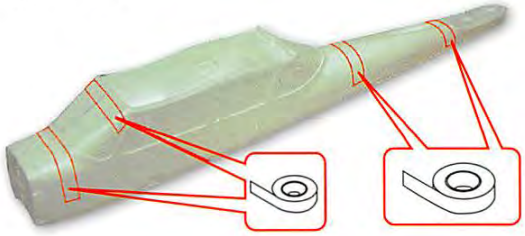
For bigger servo, please cut the red portion on fuselage.

For bigger batteries, please cut the red portion.

Once glued, fix in places in 5 or 6 position using either a very low tach masking tape and secure with tape that does not come in contact with the painted foam.

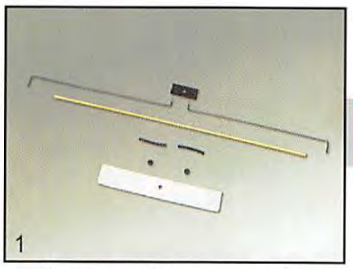


▲ Apply GWS glue at the indicated area. For faster cure time, you may use a 6-minute epoxy instead of the included glue.

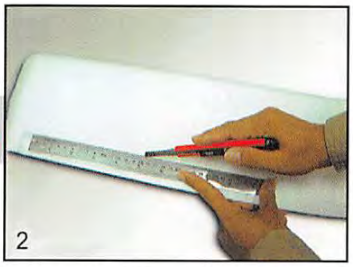


WING ASSEMBLY

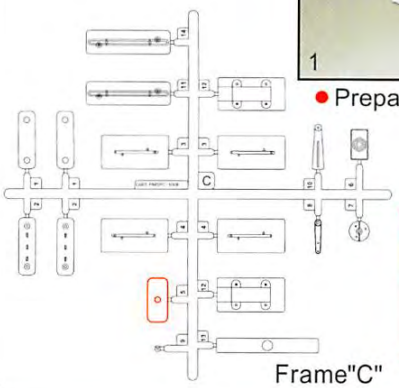
Step4



● Prepare wing accesories



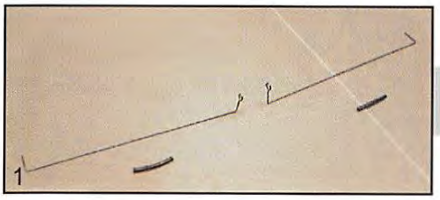
● Cut the aileron apart from the main wing (both right & left) with a knift as per the groove.

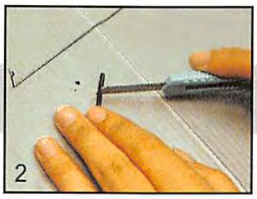


Frame"C"

Note: When you are cutting out the aileron some of the bevel on the hinge line needs to be cleaned with a sanding block.

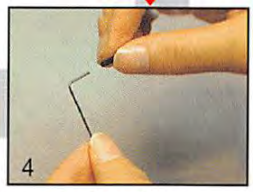
Step5

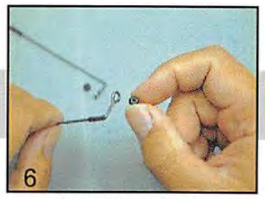




● (1)Aileron linkage wire (L&R)
(2)Black rubber tube (X2 pcs)

● Cut the black rubber tube in half.



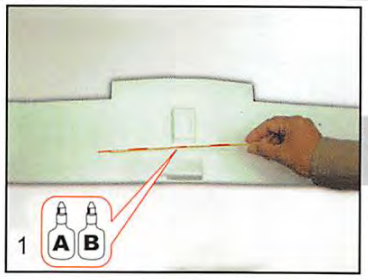


● Slide two of the rubber tube onto the aileron linkage wire.

● Push the rubber grommet into a coil of the aileron linkage wire.

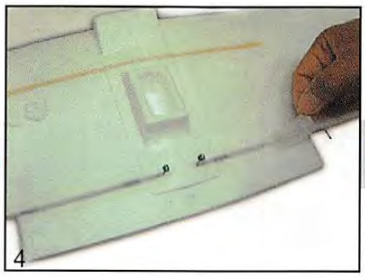
Step6

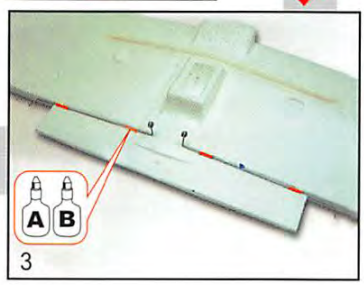
● Glue the bamboo stick for wing enforcement on the bottom of the wing. (leading edge)



● Put the aileron linkage wire into the aileron slot and glue the rubber tube in places and trim the aileron wire as showm.

Note: The channel for aileron torque rod needs to be cut deep so torque rod is on aileron hinge line.



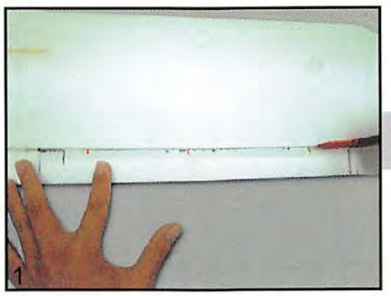


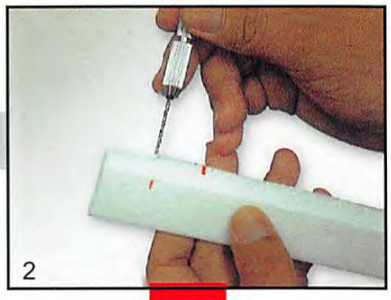
WING ASSEMBLY

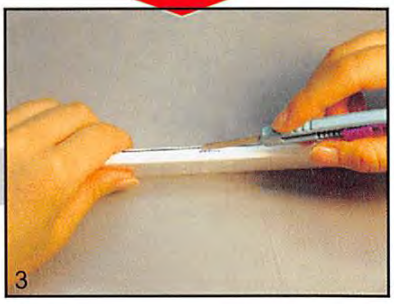
Step7

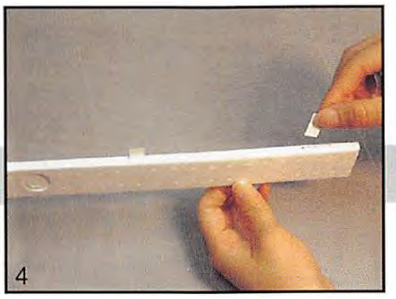
Mark out the hinge (3 each side) and linkage wire location. Make a sign on the main wing, aileron and linkage wire

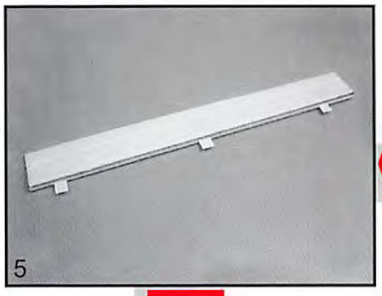
Drill 1.5 mm dia. & 10mm deep hole on the aileron and cut a slot to accommodate the wire.

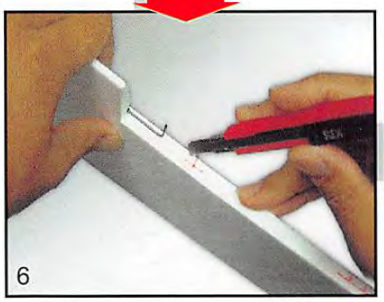


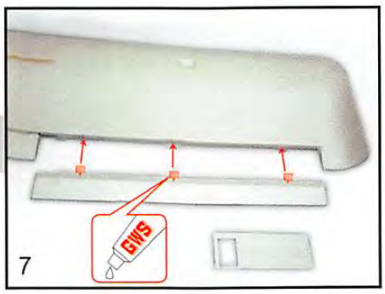






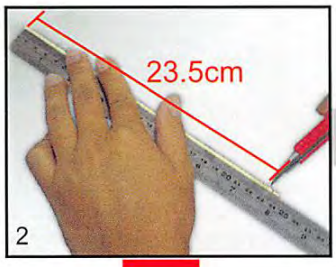


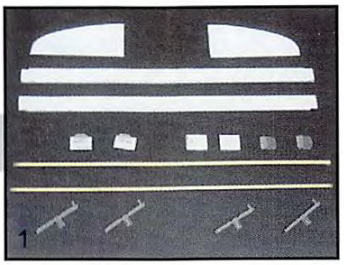


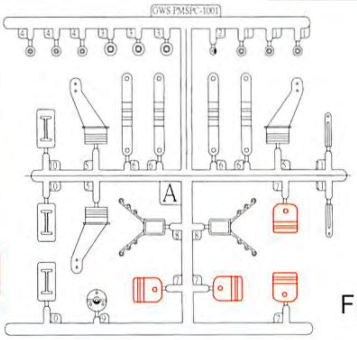


1. Cut a slit (10mm x 10mm) at 3 places for hinge installation on the main wing and aileron.
2. Apply glue on all hinges and aileron wire then insert them to the wings securely.

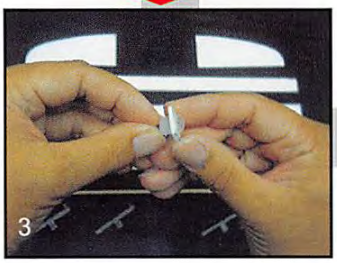
Step8

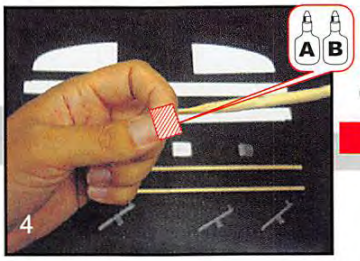


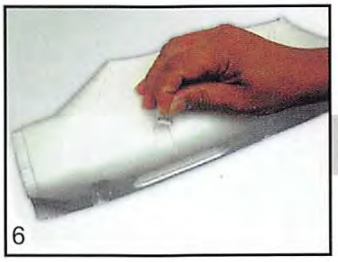




Frame"A"



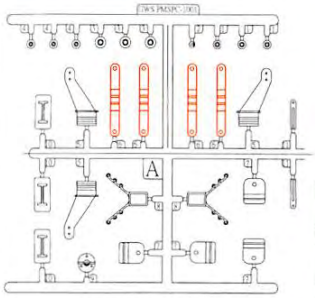




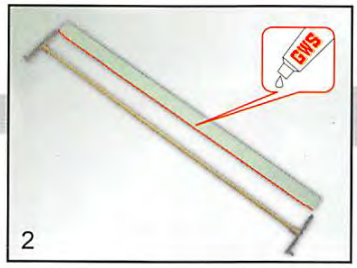
- Cut a 23.5 cm bamboo stick.
- Insert the strut fixing base A-7 to the polystyrene foam sheet and glue them to the designated positions located on both side of the fuselage as shown.

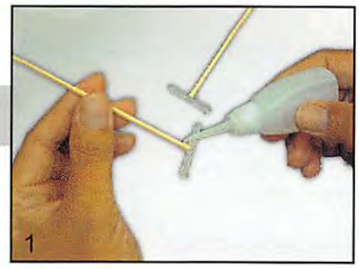
WING ASSEMBLY

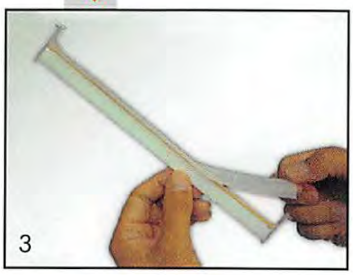
Step9



Frame"A"

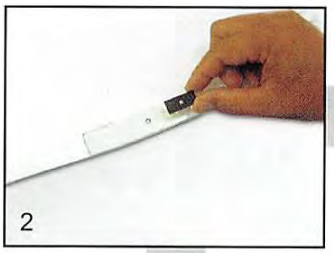


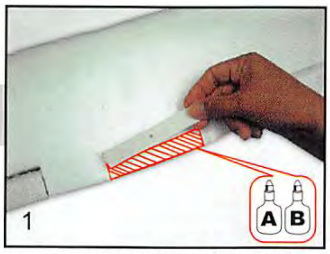




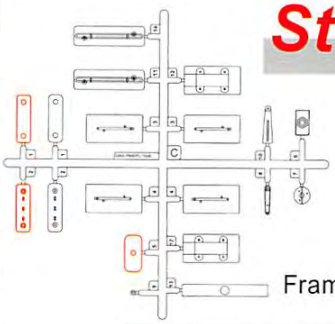
(1)Slide two bamboo sticks into plastic frame"A(6)".
(2)Then glue the polystyrene foam to the bamboo sticks.

Step10

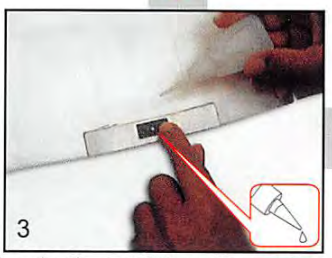




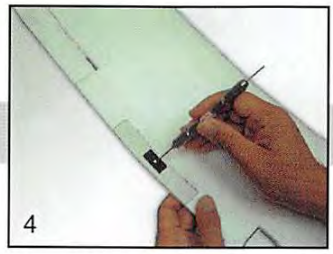
Glue the plastic part C-1 on the center top of the wing with epoxy (Trailing edge).



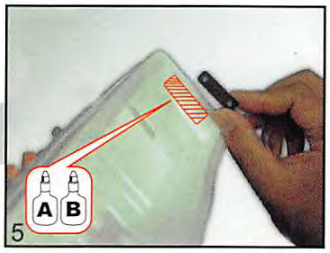
Frame"C"



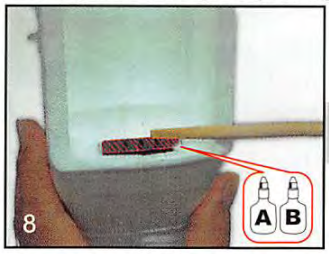
Glue the plastic part C-5 on the center top of the wing with GWS glue. (Trailing edge)



Drill a ⌀3mm hole on the plastic part C.



Glue the plastic part C-1 with epoxy on the fuselage.

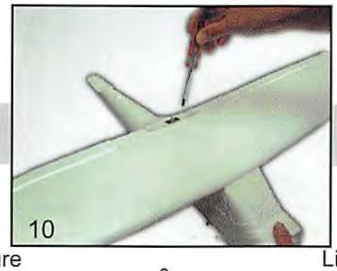


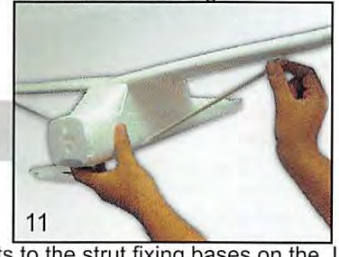
Apply epoxy glue to bond the part C-2.

Put the part C-2 in the indicated place.

Dirll ⌀3mm hole through the plastic part C-1 on the fuselage.

Trial fit the wing onto the fuselage and secure by ⌀3x30 screw.



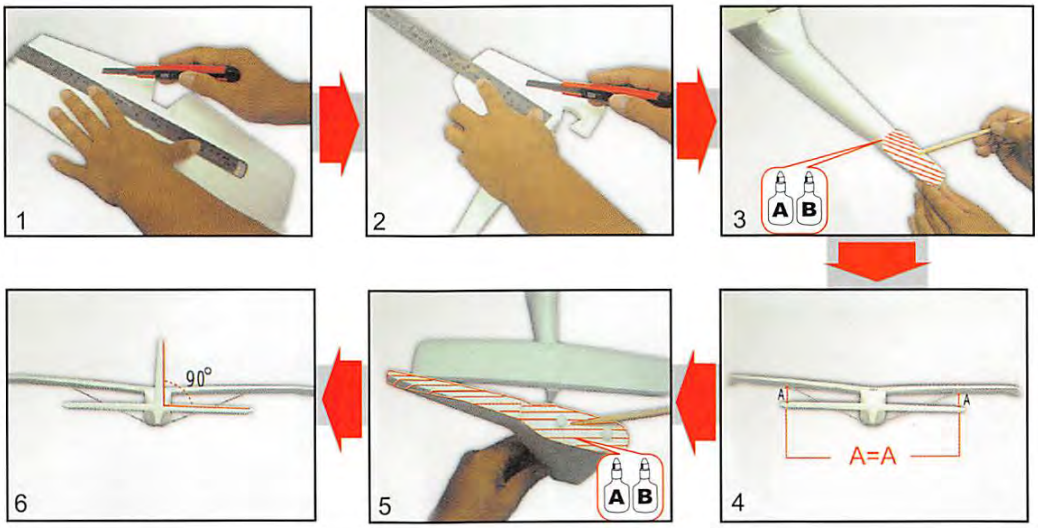


Link the struts to the strut fixing bases on the L&R wings & fuselage.

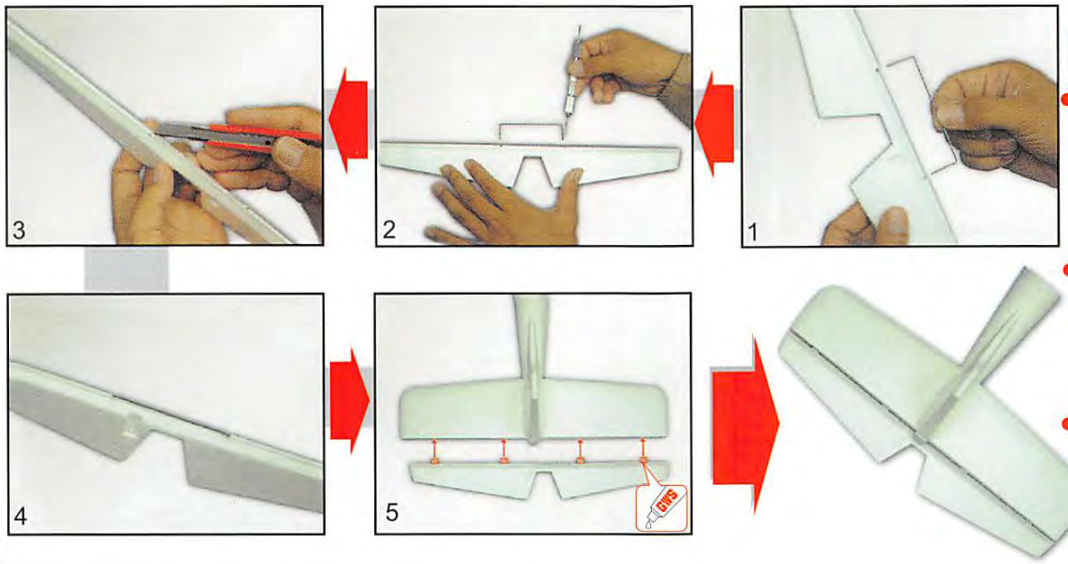
TAIL ASSEMBLY

Step11

- Cut the elevators apart from the horizontal stabilizer with a knife as per the groove.
- Glue the horizontal stabilizer to the fuselage with epoxy glue.
- Glue the vertical fin to the horizontal stabilizer with epoxy glue.
- Ensure that the horizontal stabilizer is perpen dicular to the fuselage and vertical fin.(Pic. 4)

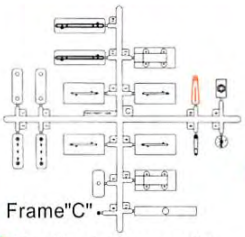


Step12

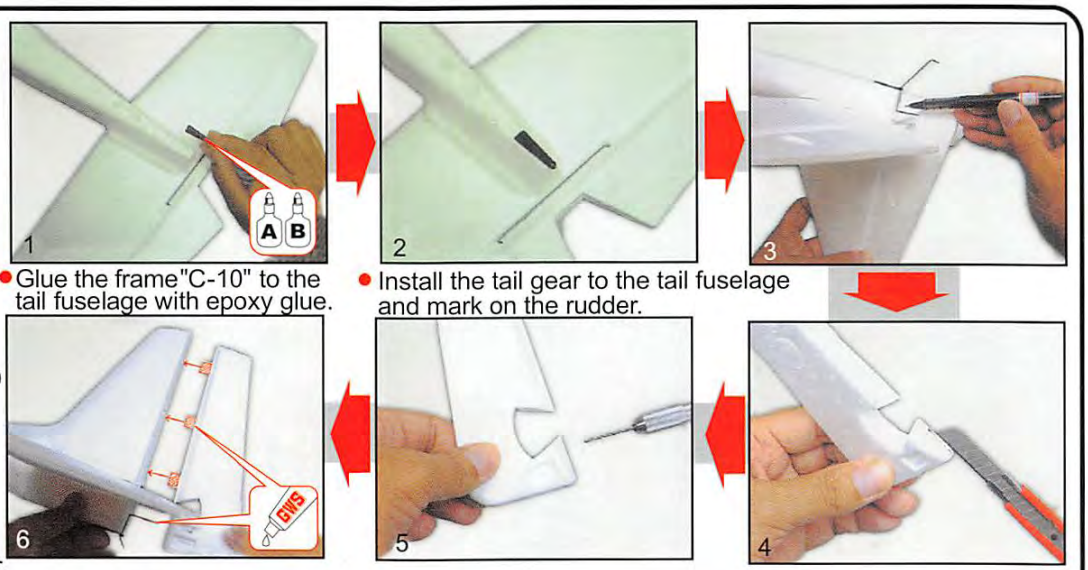


- Cut a slit (10mm x 10 mm) at 3 places for hinge installation on the horizontal stabilizer and aileron
- Cut a slit at 2 places for the elevator and insert the elevator linkage wire with GWS glue.
- Apply GWS glue on all hinges and elevator llinkage wire insert them to the horizontal stabilizer and elevator.

Step13



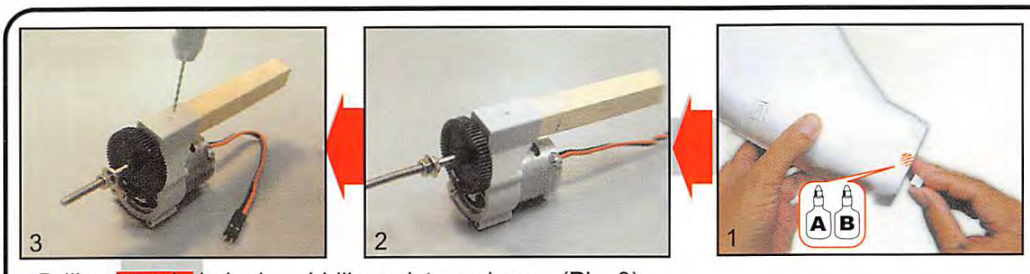
- For the tail gear wire, cut a 1 mm x 1 mm x 20 mm slit and drill 1mm dia & 25mm deep hole on the rudder.
- Apply GWS glue on all hinges and insert elevator llinkage wire to vertical fin and rudder.



- Glue the frame"C-10" to the tail fuselage with epoxy glue.
- Install the tail gear to the tail fuselage and mark on the rudder.

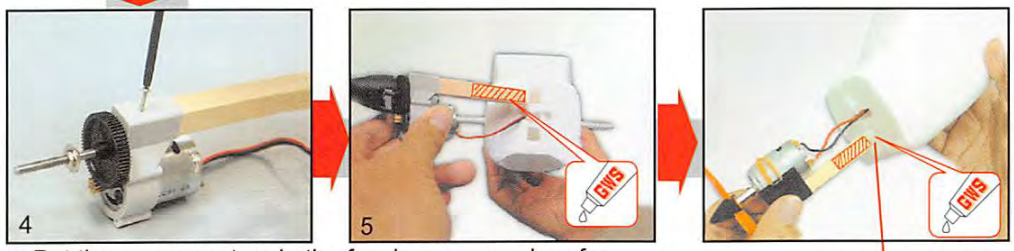
MAIN LANDING GRAR / SPINNER / EPS ASSEMBLY

Step14



- Drill a 1mm hole by handdrill as picture shown. (Pic. 3)

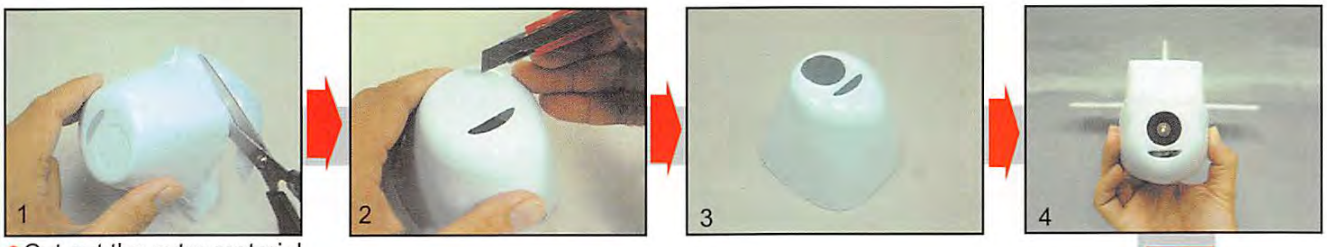
1. Apply GWS glue to the cowling mount and bonding on the nose of the fuselage.
2. Insert the EPS mount to the electric power system (EPS). Make sure that the mount is pushed into the EPS by 20mm, if it is too tight to insert the mount, trim the mount slightly with knife or sand paper.



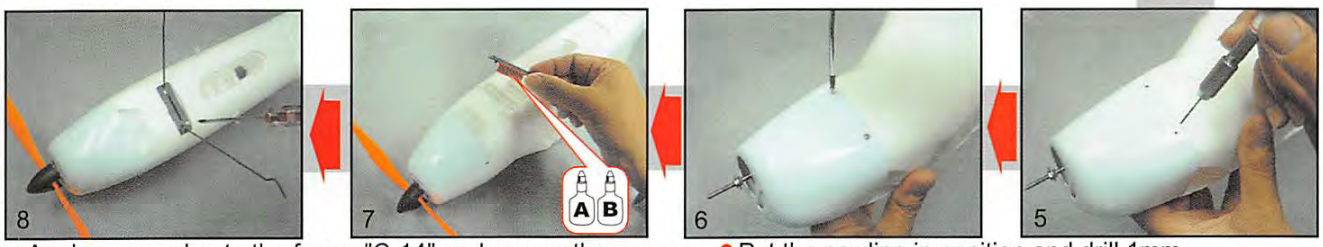
- Put the power system in the fuselage upper chamfer, making sure it fits and is not too tight, then pull it out. (Pic. 4)

Adjust to EDP- 400C power system

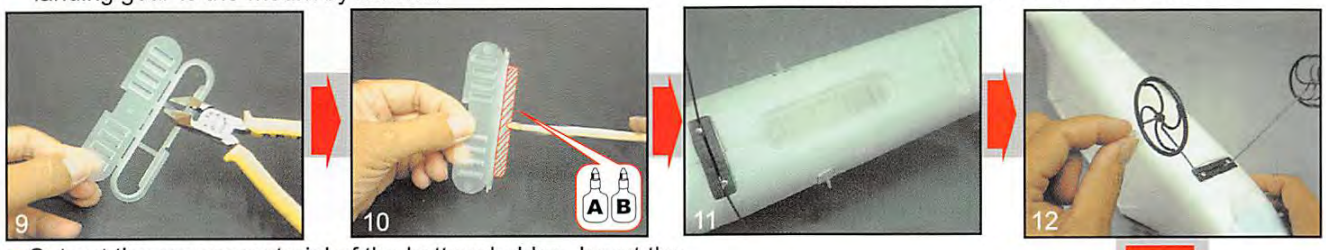
Step15



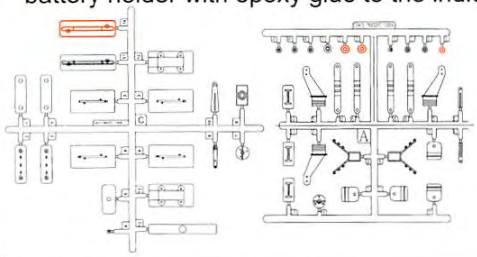
- Cut out the extra material of the cowling.



- Apply epoxy glue to the frame "C-14" and secure the landing gear to the mount by screws.
- Put the cowling in position and drill 1mm dia. holes, then fix the cowling with 4 screws.



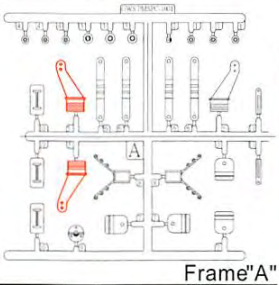
- Cut out the excess material of the battery holder. Insert the battery holder with epoxy glue to the indicated place.



- Drill a ⍉1.4mm hole through the retainer.
- Install the main wheel & tail wheel rims on the main landing gear & tail wheel.

Step16

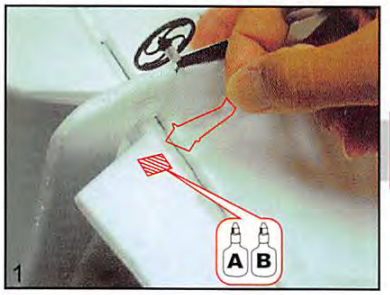
- Glue the horns frame "A-5" on the elevator & rudder with epoxy glue
- Put the push - pull rod through the guided plastic tube , for rudder please use left side tube . For elevator use right side tube , fix the control horn to rudder and elevator push - pull rod.

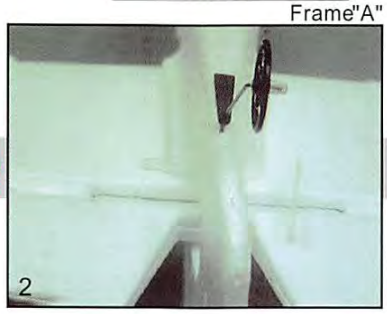


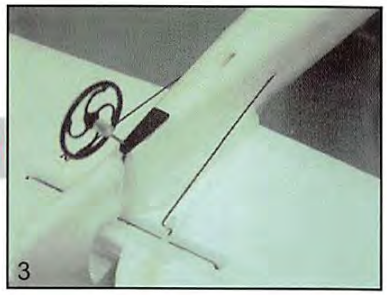
Frame"A"

CAUTION

The horn has 2 holes if you use inner hole the moving angle are bigger then if you use outer hole





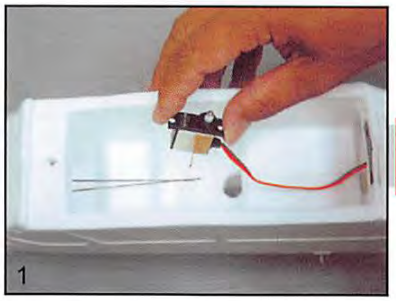


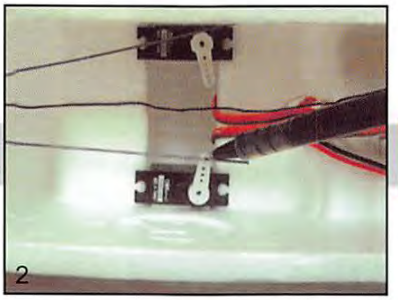
Step17

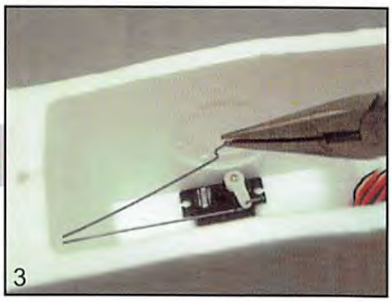
- Apply the double side foam tape to the servos and stick on the fuselage as picture.
- Use a marking pen mark out the connecting point on the push-pull rod.
  Note:You will need to turn on the power while servos assembling to make sure neutral position and directions .
- Bend a "Z" connector on marked point of push-pull rod and cut the excess wire.

CAUTION

The horn has 3 holes if you use inner hole the moving angle are bigger then if you use outer hole







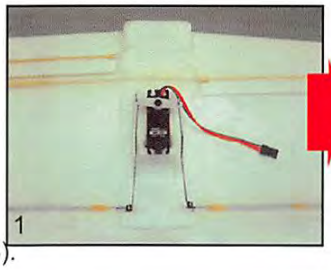
Step18

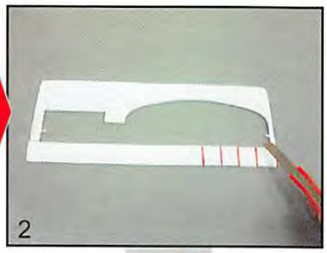
- For bigger servos :

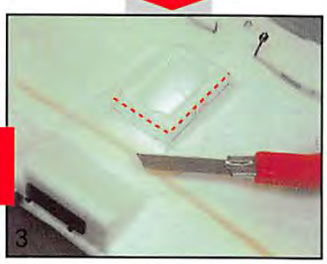
You may apply GWS glue to servos and insert the servo to servo slot.

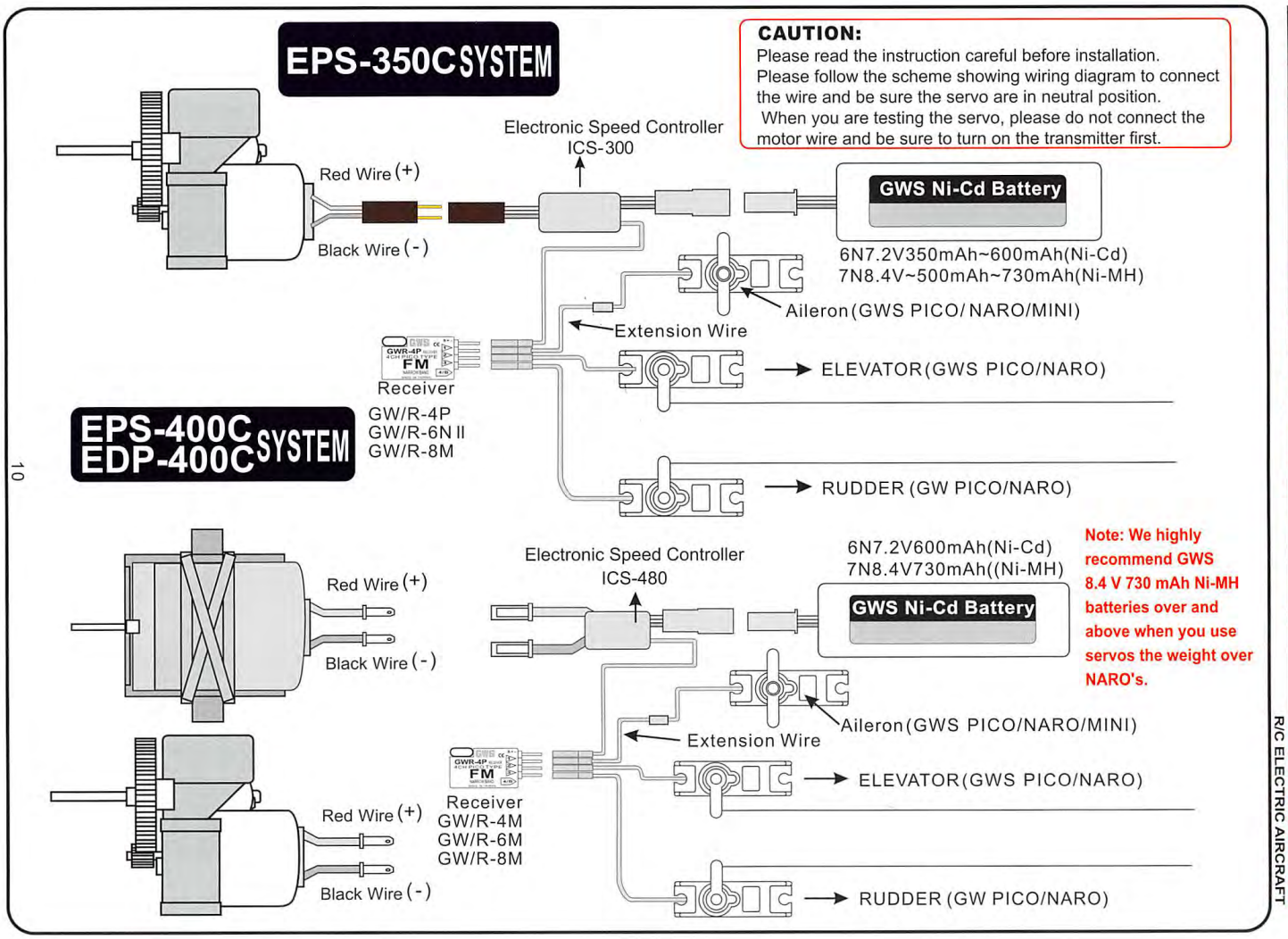
- PICO & NARO Servos :

1.Cut out the extra reinforcement to a suitable lamination as picture. (Pic. 2)
2.Cut the excess swell of servo slot away as picture.(Pic. 3).
3.Glue the servo & lamination to the main wing with GWS glue as picture.
4.Connect the push-pull rod to the main wing.







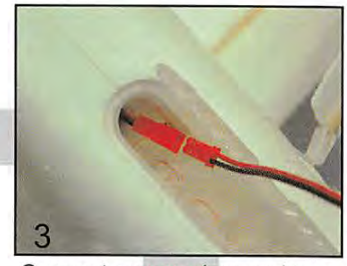

EPS-350C SYSTEM
CAUTION:
Please read the instruction careful before installation.
Please follow the scheme showing wiring diagram to connect the wire and be sure the servo are in neutral position.
When you are testing the servo, please do not connect the motor wire and be sure to turn on the transmitter first.
Electronic Speed Controller
ICS-300
Red Wire (+)
Black Wire (-)
GWS Ni-Cd Battery
6N7.2V350mAh~600mAh(Ni-Cd)
7N8.4V~500mAh~730mAh(Ni-MH)
Aileron(GWS PICO/ NARO/MINI)
Extension Wire
ELEVATOR(GWS PICO/NARO)
Receiver
GW/R-4P
GW/R-6N II
GW/R-8M
EPS-400C
EDP-400C SYSTEM
RUDDER (GW PICO/NARO)
Electronic Speed Controller
ICS-480
6N7.2V600mAh(Ni-Cd)
7N8.4V730mAh((Ni-MH)
GWS Ni-Cd Battery
Note: We highly recommend GWS 8.4 V 730 mAh Ni-MH batteries over and above when you use servos the weight over NARO's.
Red Wire (+)
Black Wire (-)
Aileron(GWS PICO/NARO/MINI)
Extension Wire
ELEVATOR(GWS PICO/NARO)
Receiver
GW/R-4M
GW/R-6M
GW/R-8M
Red Wire (+)
Black Wire (-)
RUDDER (GW PICO/NARO)

BEFORE FLYING

Please Note: Below photos show stick position using a Mode 1 transmitter. Mode 2 transmitters used in the U .S. market will have throttle control on the left and aileron/elevator control on the right.

Turn on your transmitter.

Place the battery in to the battery compartment of fuselage.



Connect power wires and turn on the receiver.

Pull down the throttle to the lowest position and also the micro adjustment to the minimum. The motor should in neutral position and no operation.

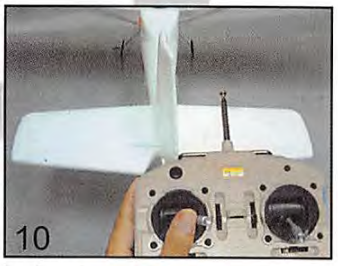
Push up the throttle stick slowly and watch the reaction of the motor. The motor should run from low to full throttle as you adjust the stick upward.

Stick move to left, the left side aileron on the airplane will move up, and right side aileron move down. Stick location on the transmitter varies by mode.

Aileron stick move to right. The right side aileron on the airplane will move up , and left aileron move down.

Stick in neutral position. All aileron on the airplane should return to neutral. If the movement of aileron are working in opposite direction, please switching the aileron reverse switch on the transmitter.

Moving the stick to the left should move the rudder to the left.



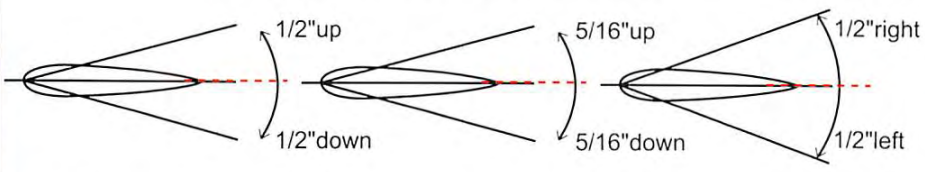
Moving the stick to the right should move the rudder to the right.

Moving the stick down should move the elevator up.

Moving the stick up should move the elevator down.

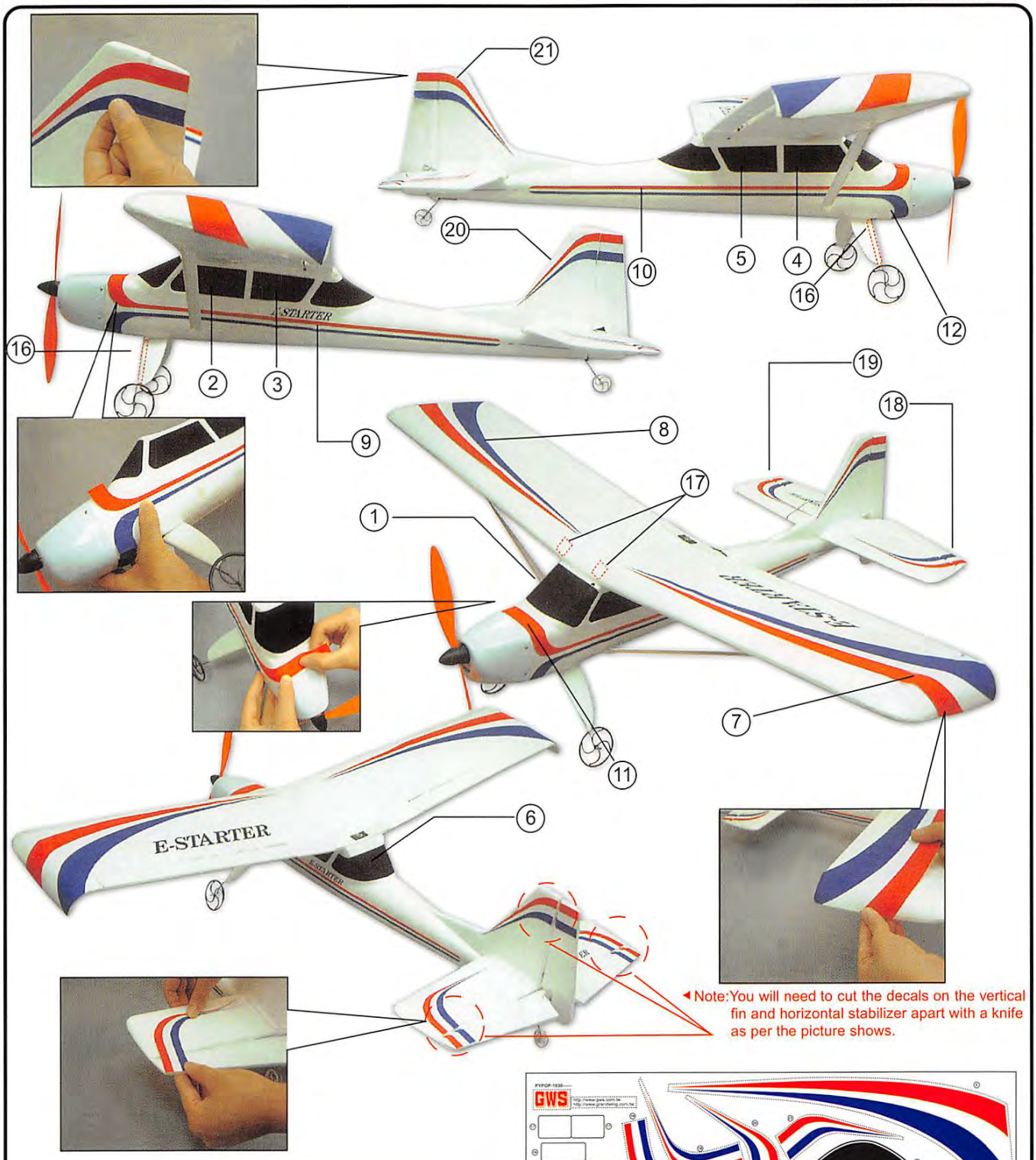
When the stick is in neutral, the elevator should return to neutral.

(MOVEMENT OF ALL MOVING SURFACE)

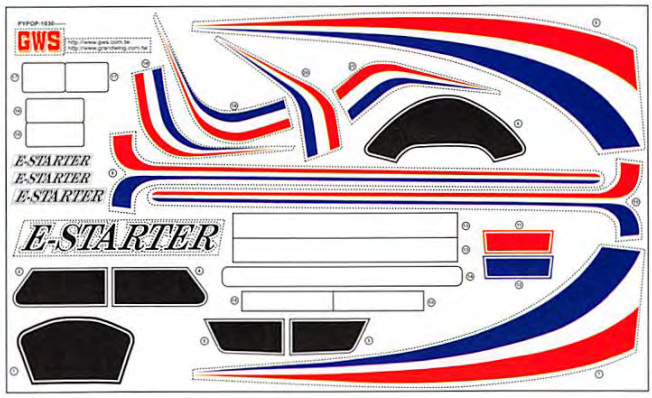


(1)Elevator (2)Aileron (3)Rudder

DECALS



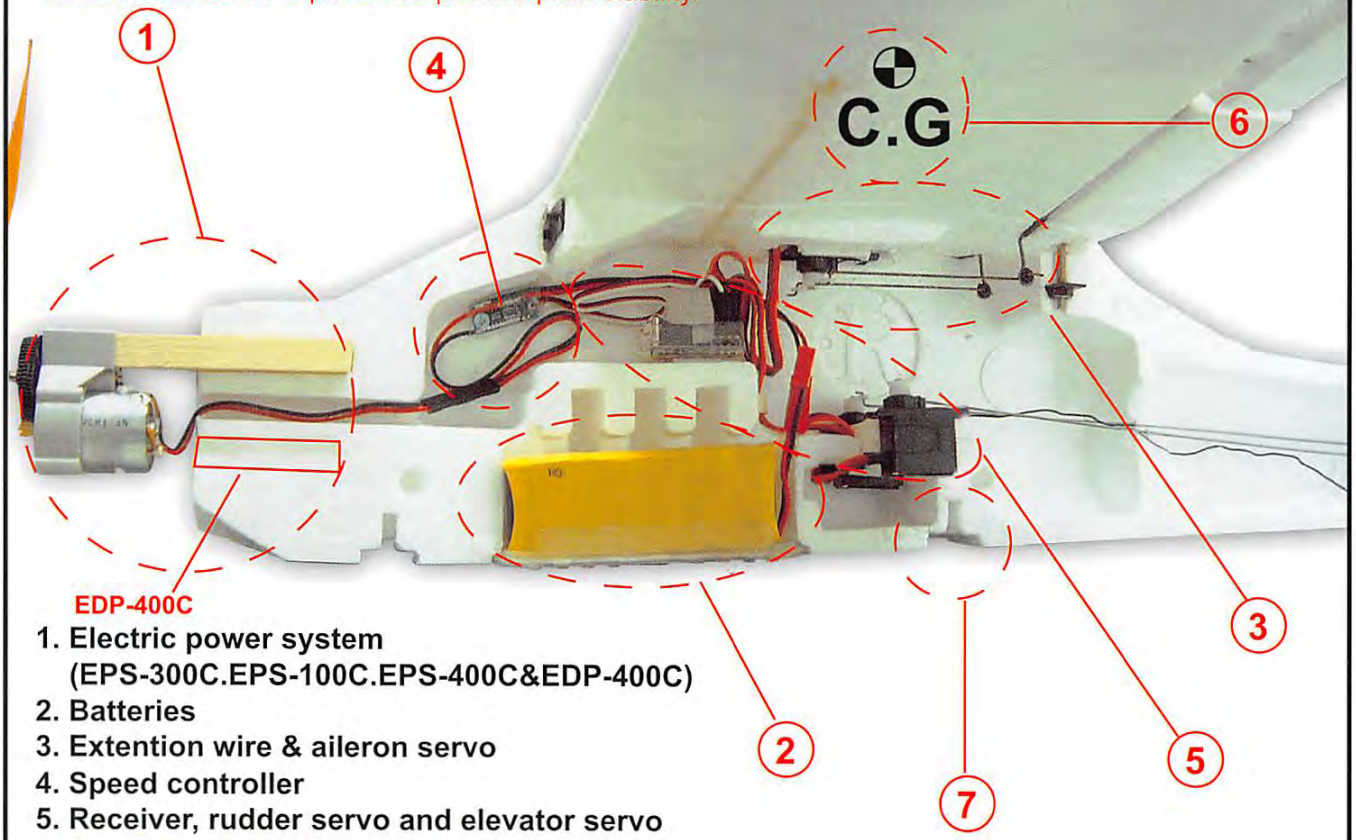
◂Note:You will need to cut the decals on the vertical fin and horizontal stabilizer apart with a knife as per the picture shows.



For the correct placement of decals , please refer to the scheme shown.

PREFLIGHT CHECKING LIST

The C.G. is very critical and it is important that you check and confirm the location for yourself before flying. Battery and other changes such as motors affect this positon and may require the need for stick on lead weight to be added to the nose or the rear of the fuselage depending on whether the airplane is nose or tail heavy. Using the EPS300C motor may require approximately 3/4 oz of lead weight added to nose to assure the plane has positive pitch stability.



EDP-400C

1. Electric power system (EPS-300C.EPS-100C.EPS-400C&EDP-400C)
2. Batteries
3. Extention wire & aileron servo
4. Speed controller
5. Receiver, rudder servo and elevator servo
6. The Center of Gravity (C.G.)
7. Float stick preparatory portion

EPS POWER SYSTEM SPECIFICATONS

Note: When you use 7.2 V ~ 8.4 V battery please use GWS EP1080 propeller and please use EP9070 for 9.6 V battery.

GW/EPS-100C-AS

Propeller	Volts(v)	Ampere(A)	Thrust (g)	Thrust (oz)	Power	Efficiency (g/w)	Efficiency (oz/w)
EP-1080	7.2	2.7	164	5.79	19.44	8.44	0.30
	8.4	3.4	200	7.06	28.56	7.00	0.25

GW/EPS-300C-CS

Propeller	Volts(v)	Ampere(A)	Thrust (g)	Thrust (oz)	Power	Efficiency (g/w)	Efficiency (oz/w)
EP-1080	7.2	7.8	288	10.16	56.16	5.13	0.18
	8.4	9.7	332	11.1	81.48	4.07	0.14

GW/EPS-400C-CS

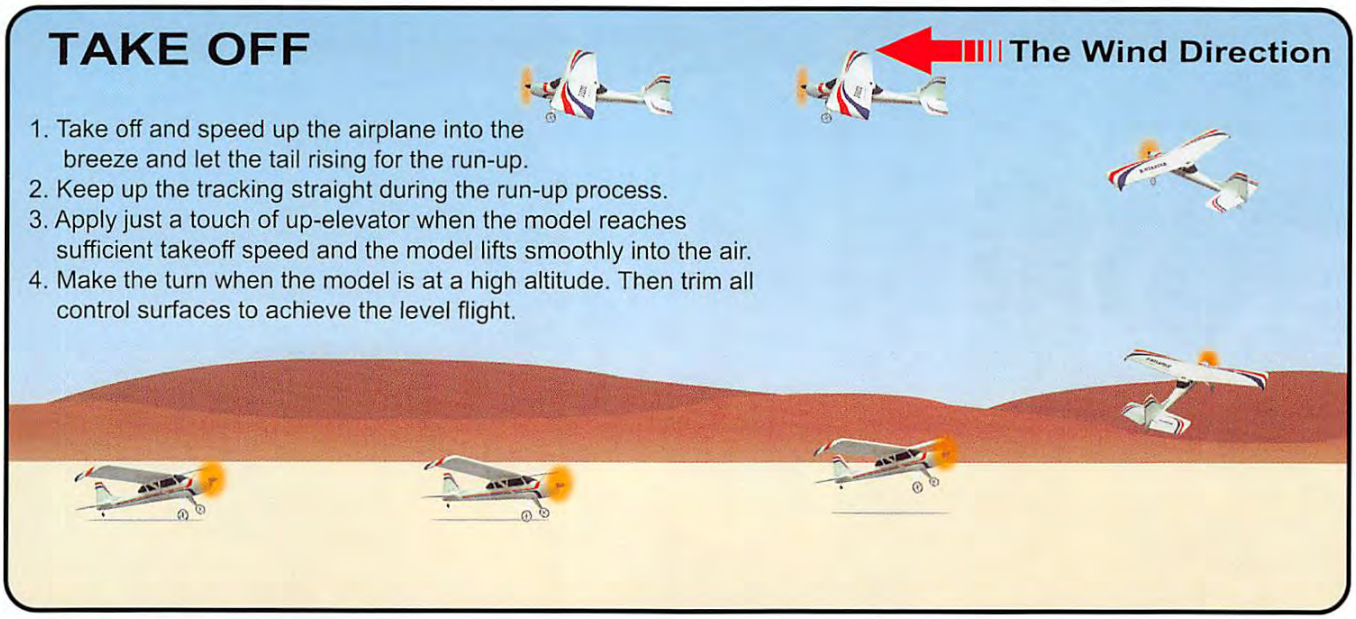
Propeller	Volts(v)	Ampere(A)	Thrust (g)	Thrust (oz)	Power	Efficiency (g/w)	Efficiency (oz/w)
EP-7035	7.2	7.8	288	10.16	56.16	5.13	0.18
	8.4	9.7	332	11.1	81.48	4.07	0.14

PREFLIGHT CHECKING LIST

CAUTION:

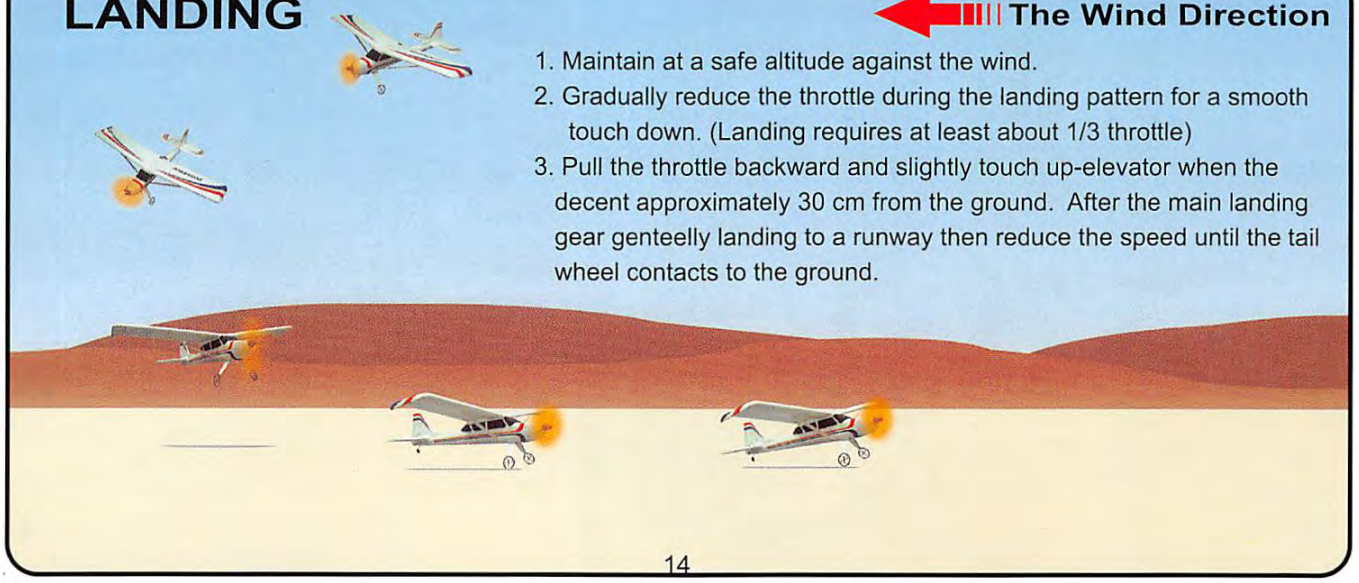
1. It is the best choice for you to fly your plane in the expanse place.
2. Do not fly around some restricted location like flight information region (FIR), military post, etc.
3. You will need to check the transmitter's channel around you averting interfered. (If you are flying with other RC modeler at a field, do not turn on your transmitter until you are certain that no one else is using your channel.)
4. Always turn on the receiver last after turning on the transmitter and shut off the receiver first before turning off the transmitter.
5. If you are only a beginner for the radio control model flying, do not attempt to fly your model without any assistance or advice from advanced and expert fliers.
6. Please refer to the instruction guide carefully and thoroughly before assembly equipment kits. Different power units and servos combination will lead to its various flight performance.
7. Be sure to check the wind direction before landing or taking off.

TAKE OFF



1. Take off and speed up the airplane into the breeze and let the tail rising for the run-up.
2. Keep up the tracking straight during the run-up process.
3. Apply just a touch of up-elevator when the model reaches sufficient takeoff speed and the model lifts smoothly into the air.
4. Make the turn when the model is at a high altitude. Then trim all control surfaces to achieve the level flight.

LANDING



1. Maintain at a safe altitude against the wind.
2. Gradually reduce the throttle during the landing pattern for a smooth touch down. (Landing requires at least about 1/3 throttle)
3. Pull the throttle backward and slightly touch up-elevator when the decent approximately 30 cm from the ground. After the main landing gear genteelly landing to a runway then reduce the speed until the tail wheel contacts to the ground.