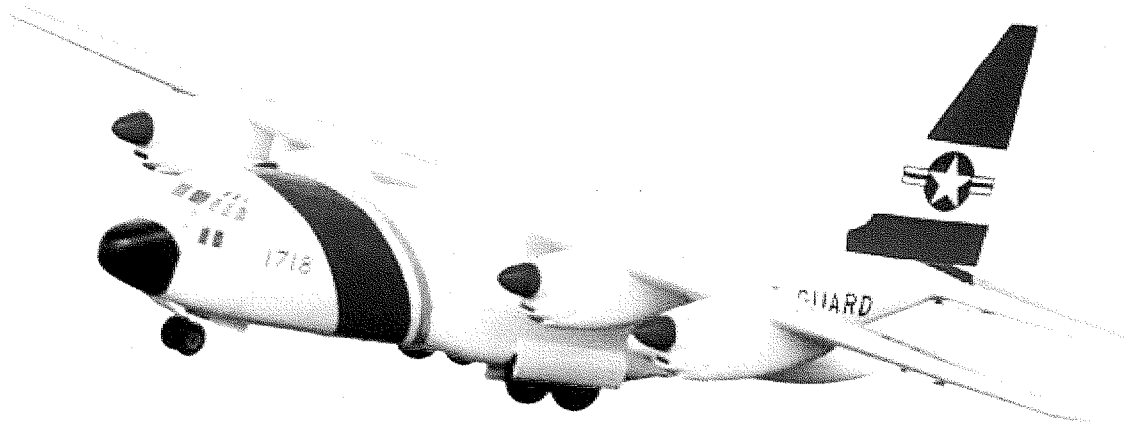
Advanced Scale Models C-130 Hercules



INSTRUCTION MANUAL

Semi scale model of the world famous Military Transport Aircraft

Specifications	
Wingspan:	**2540mm (100")**
Length:	**1830mm (72")**
Engines:	**4 x brushless electric or 4 x 25 - 32 two stroke or 4 x 26 - 30 four stroke glow engines**
Radio:	**minimum 5 channels (6 with optional retracts fitted)**

History of the C-130 Hercules

The versatile Lockheed C-130 Hercules was originally designed during the 1950s, as an assault transport, but was adapted for a variety of missions, including: special operations (low level and attack), close air support, mid-air space capsule recovery, search and rescue, aerial refuelling, weather mapping and reconnaissance, electronic surveillance, fire fighting, aerial spraying and natural disaster relief missions.
The first of two test aircraft made its maiden flight in August 1954. The C-130 has now accumulated over 20 million flight hours and currently serves with over 60 countries. The C-130 is expected to remain in production well into the 21st Century.

Wingspan: 39.7 metres (132 ft. 7") - Length: 29.3 metres (97 ft. 9") -
Max. Take Off Weight: 155,000 lbs (69,750 kg) - Power Plants: 4 x 4,300 hp turboprops
Speed: 374 mph @ 6,060 metres (20,000 ft)

Additional Items Required to Complete the Model:

- 2 x 150mm (6") Servo extension leads
- 2 x 300mm (12") Servo extension leads
- 8 x 600mm (24") Servo extension leads
- Up to 7 'Y' leads depending on radio system installed and glow or electric power
- 8 x standard size servos for electric power (9 with optional retracts)
- 12 x standard size servos for glow power (13 with optional retracts)
- Thin CA adhesive
- Medium CA adhesive
- 12 or 30 Minute epoxy glue
- Masking tape
- 3mm Ball ended Allen key
- 'Z' bend pliers
- Philips head screwdriver
- High capacity receiver battery and switch harness
- 4 x 25 - 32 size 2 stroke glow engines or 4 x 26 - 30 size four stroke engines or 4 x 600 size brushless electric motors (e.g Himark/Himax 36-30 1000RP/V) and appropriate speed controllers.
  NOTE: Speed 600 brushed motors with gearboxes could also be used as an economical option.
- 4 x Velcro straps (for electric power)
- 4 x 11.1V 2500mah minimum (3200mah recommended) battery packs (for electric power)
- Double sided tape (for electric power)

Safety Warnings

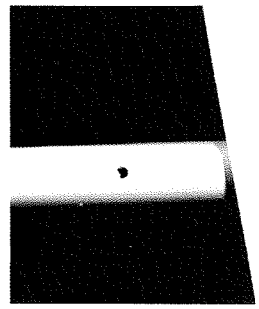
This R/C aircraft is not a toy and is designed for experienced modellers and pilots only. Serious injury or damage to property can result through misuse and abuse. It is highly recommended that this aircraft only be flown at a dedicated R/C flying site and that a qualified instructor thoroughly checks the model before its first flight.

Your local hobby supplier should be able to assist you in regards to model flying clubs in your area.

Fuselage & Tail

Step 1.

Locate the alloy tail plane tube and one half of the tail-plane. Align the hole in the alloy tube with the fixing screw hole in the tailplane.

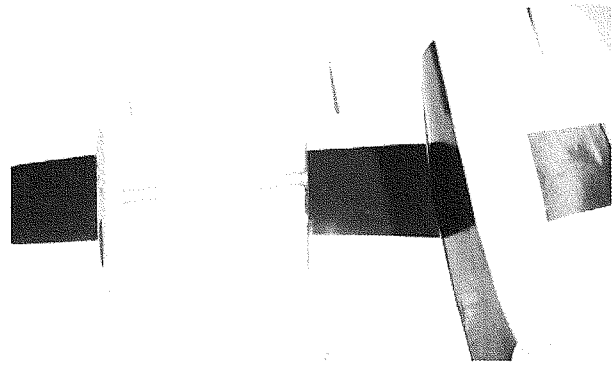


Step 2.

Insert the alloy tube into the tailplane half, making sure that the holes in the tube and tailplane are aligned and secure with one of the provided fixing screws.

Step 3.

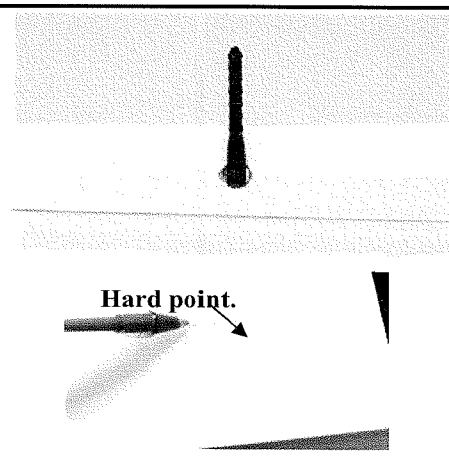
Insert the alloy tube, with one tail plane half fitted, through the fuselage and fit the other half of the tailplane. Again secure the tailplane half with one of the fixing screws.



Step 4.

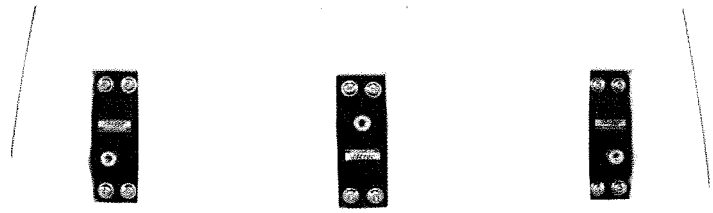
The elevators can now be installed using the supplied hinge point style hinges. It is a good idea to apply some light machine oil or petroleum jelly to the pivot of the hinge to prevent the glue from binding the hinge. Use epoxy to secure each hinge to the elevator, making sure that the hinge is 90 degrees to the hinge line. Once the epoxy has set, secure the elevators to the tail plane.

Note: make sure that the plywood insert (hard point) for mounting the elevator control horn is on the underside of the elevator.



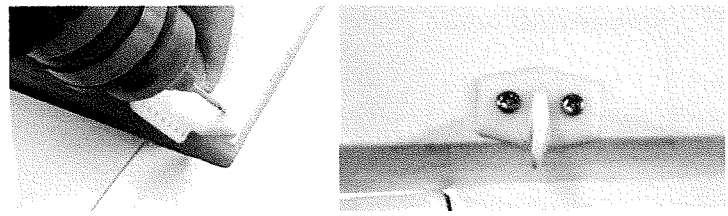
Step 5.

Three standard size servos are now mounted in the tail area. One for each elevator half and one for the rudder. You will also require servo extension leads (min. 600mm length) for each of the servos.
One elevator servo will need to be reversed. With some radio systems this can be done via the transmitter or alternately a commercial servo reverser can be used.



Step 6.

The elevator control horns can now be installed. Carefully mark and drill pilot holes in the hard point. Be careful not to drill all the way through the elevator.

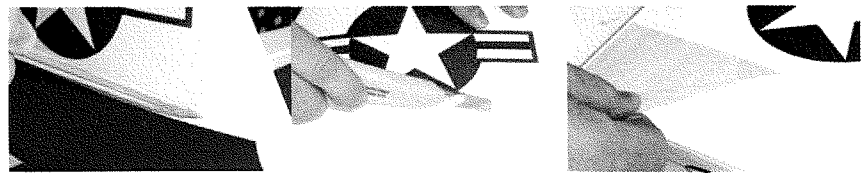


Step 7.

Locate the two elevator pushrods and fit one of the supplied clevises to each. Fit the clevis to the control horn and make a 'Z' bend in the other end to fit on the servo arm.

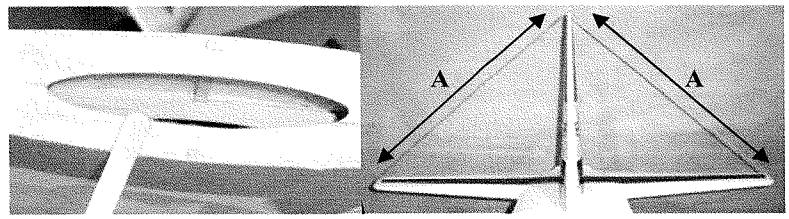
Step 8.

The vertical fin now needs to be installed. Temporarily fit the fin in place and accurately mark around the fin where it meets the fuselage. Remove the fin and remove the covering from within the marked area taking care not to cut into the wood.



Step 9.

Mix up some epoxy adhesive and apply it to the base of the vertical fin. Fit the fin in place and using strips of masking tape, hold the fin squarely in position. Make sure the measurements marked 'A' are the same.

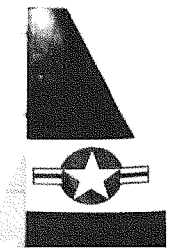


Step 10.

Once the epoxy has cured, finalise the installation of the vertical fin by running some medium or thick CA adhesive around the base of the fin where the fuselage meets the fin.

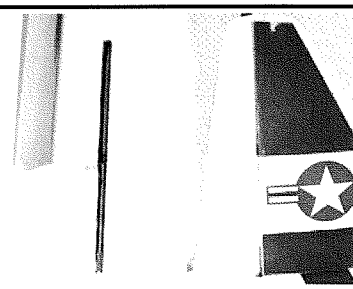
Step 11.

Locate the large 'hinge point' type hinges and epoxy these into the vertical fin. Make sure that these sit square to the fin and take care not to get epoxy in the hinge pivot. As with the elevator installation, some light machine oil or petroleum jelly applied to the hinge pivot will prevent the hinge from binding.



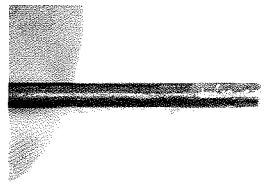
Step 12.

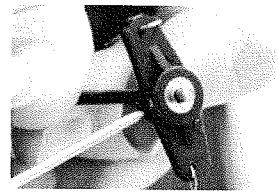
Glue the rudder torque rod in place as shown.
When the glue has set, epoxy the rudder in place again being careful not to get glue in the hinge pivot.



Step 13.

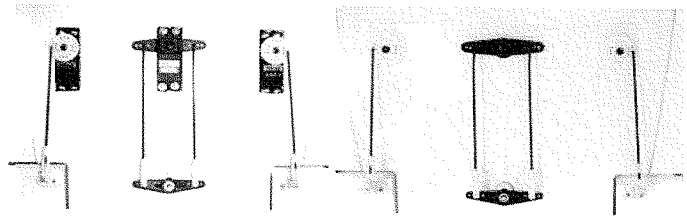
Make sure that the grub screw on the rudder control arm lines up with the flat that is filed on the bottom of the torque rod.





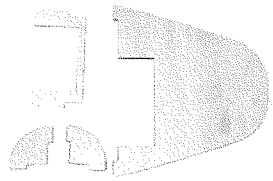
Step 14.

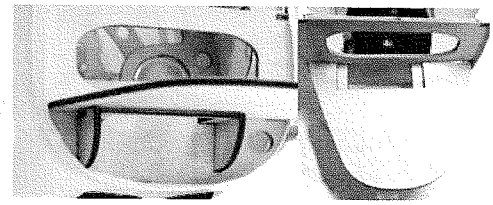
Use a servo arm that is the same length as the rudder control arm. The final installation of the tail servos should be as shown. The self adhesive servo covers can then be fitted.



Step 15.

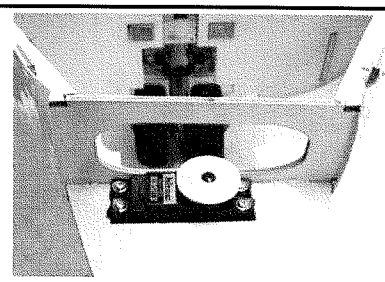
Locate the four plywood pieces that make up the nose wheel steering servo mount nose cone reinforcement and install as shown.





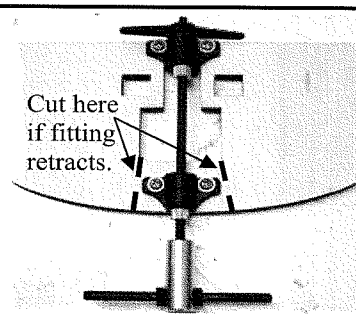
Step 16.

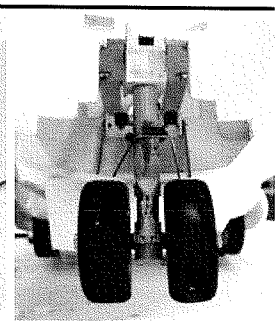
The nose wheel steering servo can be now be installed. A 600mm long servo extension lead will be required.



Step 17.

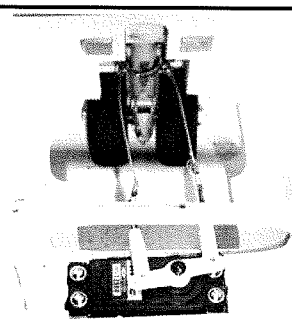
The nose wheel bearing blocks are factory fitted to the front plywood former. If the optional retracts are to be fitted, the section indicated will need to be cut away to allow the nose wheel to retract. It may be easier to do this now.

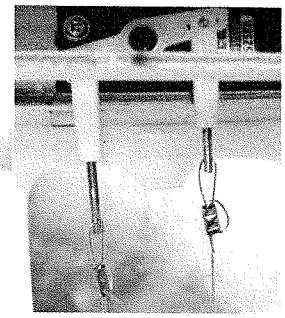




Step 18.

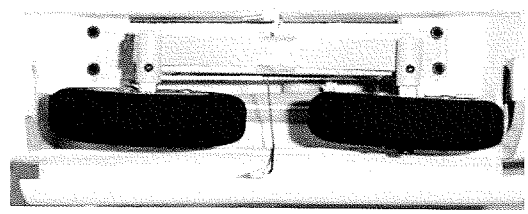
Regardless of whether fixed landing gear or the retractable landing gear is installed, the same pull-pull steering is used.
NOTE: If using the retractable landing gear, make sure that the pull-pull cable are not to tight as to prevent the landing gear from locking in its down position!





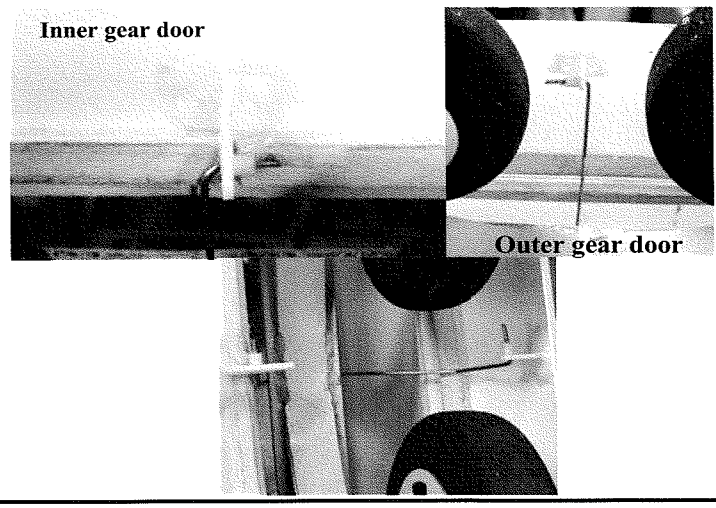
Step 19.

Both the supplied fixed landing gear and the optional retractable landing gear are installed in the same position with the mounting bolts provided.



Step 20.

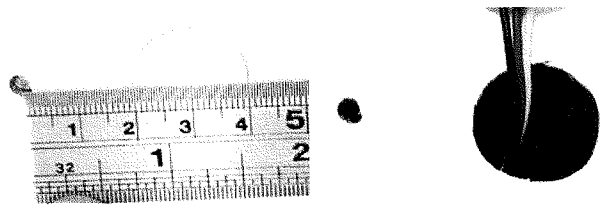
Regardless of whether fixed landing gear or retractable landing gear is installed, the control horns and gear door wire need to be fitted.
The wire serves as a pushrod in the case of retracts being fitted.



Wings

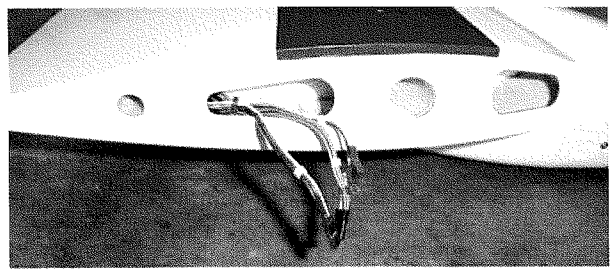
Step 21.

A number of servo extension leads need to be fed through each wing half. To enable throttle leads to be fed, a small access hole needs to made in the wings. Measure 30mm from the nacelle mounting bolt towards the leading edge and cut out a hole large enough for the extension lead socket to fit through.



Step 22.

Two 24" (600mm) leads will be required each wing panel. One for the aileron and one for the outer engine nacelle. A 6" (150mm) extension is required for the flap servo in each wing and we recommend a 12" (300mm) extension for the inner engine nacelles to allow for the nacelle to be easily removed if necessary.

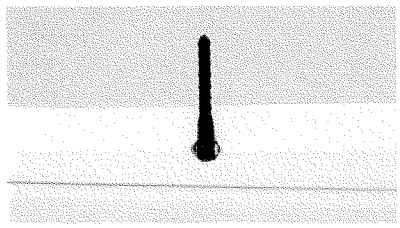


Step 23.

The flaps can now be hinged using the supplied flat CA hinges. Use a pin pushed through the middle of the hinge to set the hinge gap and then secure with a few drops of thin CA adhesive applied to both sides of each hinge. Make sure the hard point installed in each control surface is facing down or underneath the aircraft.

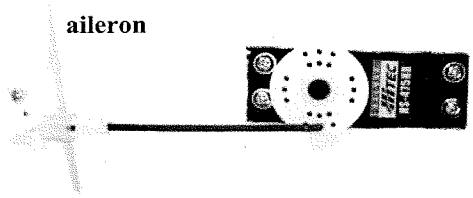
Step 24.

The ailerons are hinged using hinge point style hinges. As with the elevators, using some light machine oil or petroleum jelly on the hinge pivot with help prevent the epoxy from binding the hinge. Make sure that the hinge is 90 degrees to the hinge line. Again Make sure the hard point installed in each control surface is facing down or underneath the aircraft.



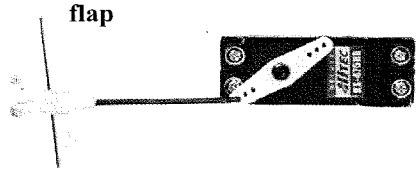
Step 25.

The aileron control horn and servo can be installed. Carefully drill a small pilot hole in the hard point in the aileron and secure the control horn with two of the supplied screws. Locate an aileron pushrod and fit a clevis on the end going to the control horn and make a 'Z' bend in the servo end of the pushrod.



Step 26.

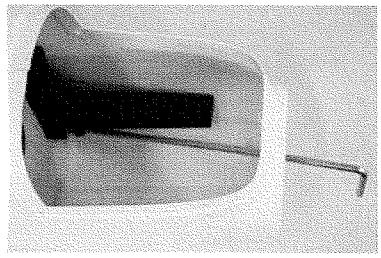
The flap control horn and servo is now installed the same way as described for the aileron servo, but with one exception. Because the flaps servos are required to move in the same direction when the flap control is used, one servo must be reversed or the pushrods should fitted to the same side of the servo arm on both flap servos.

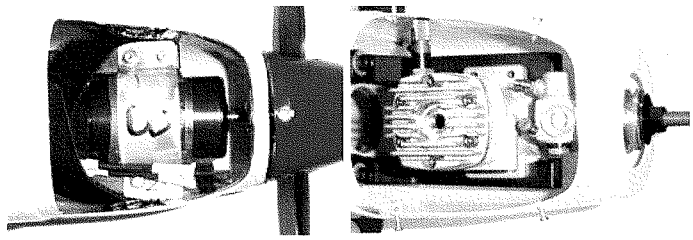


Motor Installation

Step 27.

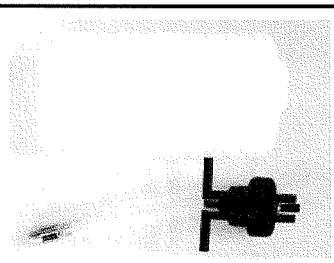
Fit the supplied engine mounts to each nacelle. You will need a long 3mm ball ended Allen key in order to reach the engine mount bolts.
If using electric power, you will need to purchase four clamp type motor mounts which fit around the motor and then are screwed onto the supplied nylon engine mounts. Keep the distance between the spinner back plate and the front of the nacelle to a minimum.
If fitting glow engines, position the engine and carefully mark and drill holes in the engine mount for the self tapping type screws. Cut outs will need to be made for muffler and needle valve clearance.

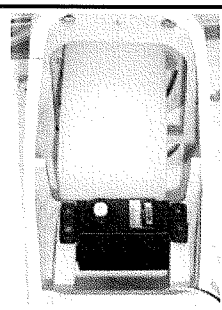


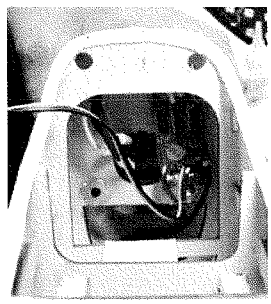


Step 28.

Assemble the individual tanks making sure that the fuel line to the fuel pick up (clunk) is not to long as to cause the 'clunk' to hit the rear of the tank.
For glow engine use, the fuel tanks and throttle servos are installed in each individual nacelle. The actual position of the throttle servo is dependant on the position of the throttle arm on the carburettor.
For electric motor use, mount the speed controller to the back of the firewall with some double sided tape. The electric flight battery slides in place underneath the motor and is retained by Velcro straps (not included). Re-useable cable ties could also be used.

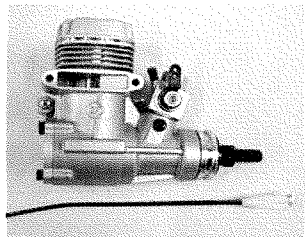


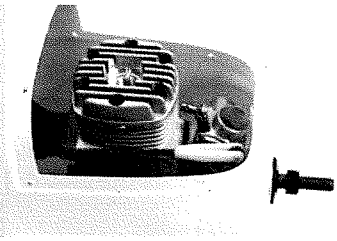




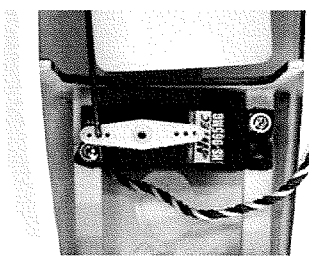
Step 29.

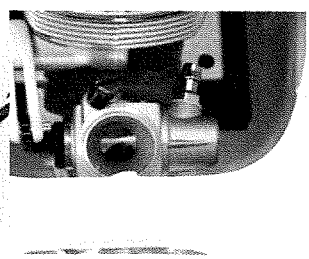
For modellers using glow engines, take plenty of time and make sure that all four engines are setup the same way. This ensures that all engines will transition in a similar way.
For two stroke engines, position the throttle arm so that it points upwards. This gives a straighter run for the throttle pushrod.



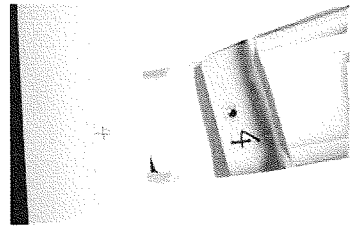


Connect the servo to the receiver, turn on the radio and set the throttle stick to half throttle. Now fit the servo arm to the servo in the position shown. Adjust the pushrod length until the carburettor is only half open. Perform this procedure accurately with each engine as this will give the most linear response to the movement of the throttle stick. This is most important with a multi engine model.

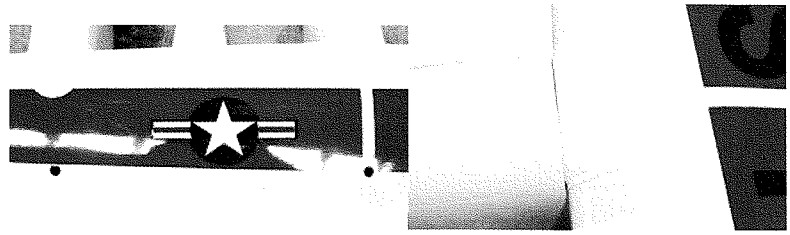




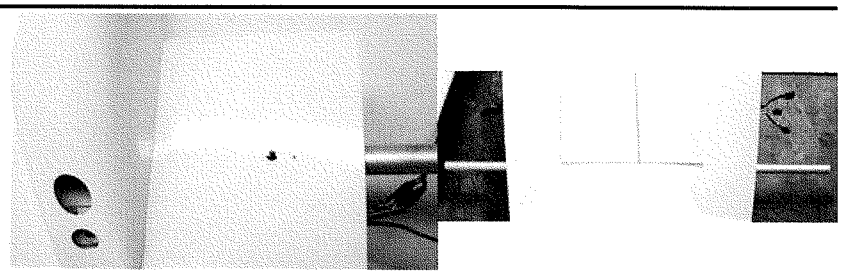
Step 30.
Important!
Please note that the four engine nacelles are numbered. Take care when fitting the nacelles to the wing and make sure that each nacelle is installed in the correct position.



Step 31.
Each nacelle is secured in place by a mounting bolt through the access holes in the top of the wing panels.
With the nacelles in place, the plastic fairing can be fixed in place with some medium CA adhesive.

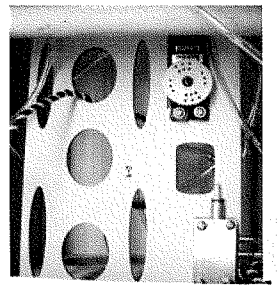


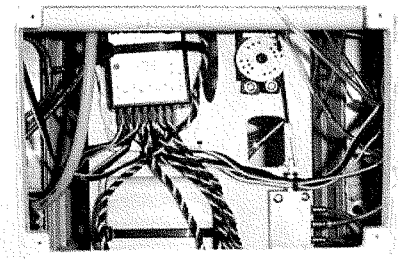
Step 32.
To fit the wings, slip the wings onto the wing tube and secure in place with a mounting bolt (3mm x 40mm) installed through the under-side of the wing. The rear wing tube is not screwed in place.



Final Preparation.

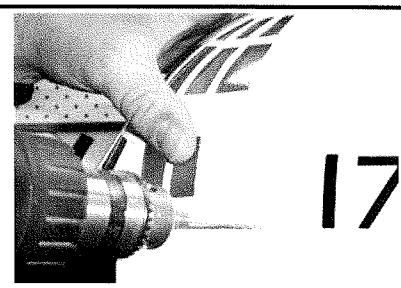
Step 33.
The receiver, receiver battery and if fitted, the retract servo and control valve, are secured to a pre cut plywood tray which is glued in place between the two central fuselage formers. Protect the receiver battery and receiver with some foam padding.



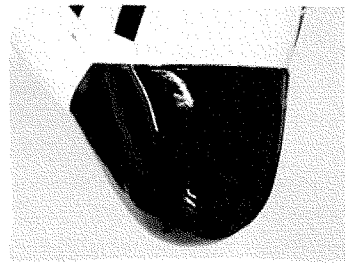


Step 34.
Install the receiver switch in a convenient location on the fuselage. Under the wing is probably the best area for the switch as it is out of sight, yet easily accessible. For glow engine powered models, keep the switch away from the engine exhaust.

Step 35.
Carefully drill some small pilot holes through the front canopy and into the plywood reinforcing blocks in the front of the fuselage. Secure with the screws provided.

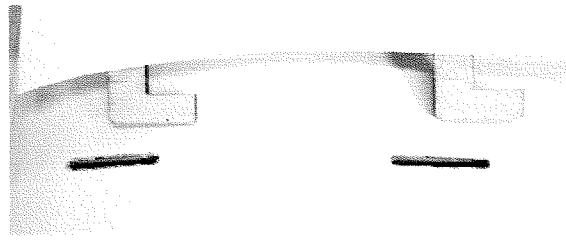


Step 36.
The black, front nose cone can be fixed permanently in position with some medium CA adhesive.



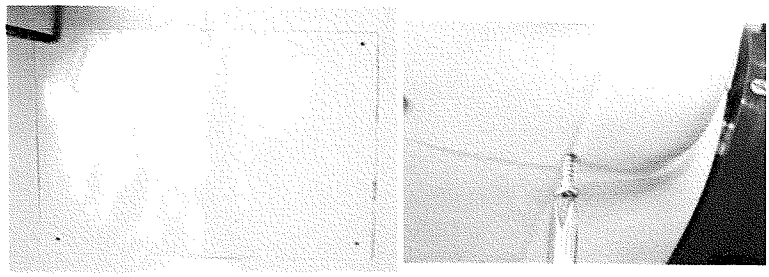
Step 37.

To fit the underwing pods, simply line up the mounting tabs with the slots in the underside of the wing and slide the pod backwards to lock in place.



Step 38.

Finally, the top hatch and lower engine cowls are held in place by four small screws provided.



Centre of Gravity and Control Throws.

The Centre of Gravity (C.G) for the C-130 is 95 - 100mm back from the leading edge of the wing.

The recommended control throws are as follows:

Ailerons - 13mm up & 8mm down
Rudder - 35mm left & right
Elevator - 12 to 14mm up & down

IMPORTANT:

As the total weight of the C-130 is over 7KG, check with your local governing body as to any special requirements that are necessary for Heavy Models.
In many countries, the use of Fail Safe is mandatory on Heavy Models.

FLYING TIPS:

If glow engines are to be used, it is highly recommended that the owner spend considerable time in getting the engines to run reliably. Many modellers of multi engine aircraft make the mistake of trying to 'harmonize' the engines. **Engine reliability is far more important than 'harmonized' or 'synchronized' engines.**

Another item to consider is to have the ability to control the inner and outer engines separately. In the event of 'losing' an engine, the swing of the model can be quite noticeable. If for example, should one of the outer engines fail, having the ability to shut the other outer engine to neutralise the model will make the model easier to control and land safely.

The use of a computer radio with aileron-rudder mix is also advisable. Start with around 40% rudder mixed in with the ailerons and adjust to suit your flying style.

Guarantee:

Advanced Scale Models guarantees this kit to be free from defects in both material and workmanship at the date of purchase. This does not cover any component/parts damaged by use, misuse or modification. In no case shall Advanced Scale Models' liability exceed the original cost of the kit.
In that Advanced Scale Models has no control over the final assembly or the material used for final assembly, no liability shall be assuned for any damage resulting from the use by the user of the final user-assembled product. By the act of using the final user-assembled product, the user accepts all resulting liability.

Setup and Flying Notes

If you've followed these instructions carefully you should now have a beautiful model of the C-130 Hercules that is nearly ready to fly. Notice the word 'nearly'! It's now time to sit down and understand the final setup of the model ready for that first flight. This stage is particularly important if this is your first four engine aircraft. The ASM C-130 Hercules is not hard to fly, it just requires some new skills and understanding compared to a single or even twin engine model.

IC EngineThrottle Setup

Everybody has their own preference for throttle setup, but with a four engine model we recommend the use of two separate throttle controls. Many modern transmitters have an additional variable channel available, and ideally, this should be easily reachable using your throttle hand. The best option being a side mounted TX control or slider. You can use a rotary knob but this is just a little more inconvenient to use as it is often located away from the throttle hand. The best setup is to have the inner engines coupled together via a Y-Lead and operating off the normal throttle stick control. The outer engines are again coupled together via a Y-lead and operated by the aforementioned variable control. The reasons for this will be explained in the flying notes. If you can assign a trim to the second throttle then great, but if not, make sure that there is enough movement to close the throttles completely and shut the engines down. In this case you will have to be careful when coming back to idle at any time during the flight.

Work with each engine individually by running it.

Set up each engine in a pair for correct idle, full throttle and throttle response individually. This has to be achieved via carefully ensuring that each throttle linkage is the same length, the servo arm operates over the same arc of movement and the same servo/throttle arm hole is used on each pair of engines. Set the arms at 90 degrees to the pushrod for half throttle open on the carburettor and mid throttle on the stick/rotary control (see diagram). Adjust the TX end points after this. It is also important to ensure that you use the same servo (2 x Futaba S-148 for instance) on each pair of engines. Different servos can give different arcs of travel and different responses. Once you are happy that each engine of the pair is running well independently then run them together as a pair. Remember, each pair is coupled together via a Y-lead and any TX adjustments affect both at the same time. Individual engines can only be adjusted mechanically. **Golden Rule 1 -Never be tempted to try and match RPMs !!** The most important requirement is reliability. Always run the max RPM needle setting a little rich, even after the engines are well run in. Co-incidentally, the full size C-130 has its propellers un-synchronised on purpose to prevent harmonic vibrations.

Once you are happy with each pair then run all four together. Start them at an outer first and work across to the other outer. Take great care of the rotating propeller on adjacent engines when starting or adjusting. Trying to start four engines often results in lapses of concentration, take your time!! The noise of four engines running together for the first time is awesome! You will learn to hear if an engine is not running correctly but a tachometer will help in the early stages. Never lean an engine to peak

it more in an attempt to match RPMs exactly, remember 'Golden Rule 1'. The likelihood is that one or more may need to be made richer when you do the nose up mixture test.

When all is well, shut down all the engines and take a breather!

Control Setup

Make sure you have set the control movements according to the information given in these instructions. Double check the CG position at this time also.

Mixing

1) Program 40% rudder to aileron mix as a permanent mix (left aileron gives left rudder). This helps to stop the tail 'hanging' in turns. You can fine adjust this to cater for the differing torque of your engines compared to our test model. It is actually slightly different in left and right hand turns but this is a good starting point.

2) Program 10% down elevator to flap mix as a permanent mix. This will help prevent the nose going up when selecting flap. If you are not using the wing tanks and have more flap available then this may need increasing.

3) We strongly recommend the use of a 'failsafe' function on this model. In some countries this may be a legal requirement. Always set the failsafe on the day of flying. If you program a turn as the failsafe setting, make sure it is away from spectators for the take-off/landing direction of the day. Throttles should always be fully closed.

4) Many multi engine flyers fit a gyro to the rudder to help in an engine out situation. It is not necessary but might help. It needs to be positioned on the yaw rotation axis ie. Close to the wing spar and may need to be set with a very high gain.

Flying

Have a word with your clubmates and try to get a flying slot on your own. This will not be difficult as they will all want to watch anyway! Go through the usual pre-flight checks and start your engines in the sequence advised earlier. Did you fully re-fuel all four engines? Remember to check your failsafe is working.

The C-130 is fairly straightforward to fly once airborne, but the take-off and landing require some new techniques to be learnt. This mainly revolves around throttle handling sequence and can be best summarised as;

'Golden Rule 2' –

1) Inners up first followed by outers
2) Outers down first followed by inners

This applies at all times and is done for a reason. Losing an engine at any time will result in a swing of some kind. The magnitude of the swing will depend on whether it is an inner or outer that is lost. The swing will be at its worst if it is an outer. If the inners are always at a high power setting when adjusting the outers that swing risk can be minimised. Always have an engine 'spotter' alongside you who can see which prop is stopped. You will know which side from the resultant swing. Your first reaction should be opposite rudder to correct the yaw, not aileron. Your spotter will tell you which engine is out and you can then reduce the power on its opposing paired engine. Unless you are very low, go back to idle on this engine but never more than 25%. Make sure that the other pair are put to full throttle to stabilise things and give you time to think. She will maintain height on two engines and might even climb a little. If you have time, re-trim the rudder for straight flight.

Golden Rule 3 – Never turn into a dead engine, always turn away from it.

If the other paired engine is back at idle this is not so critical.

With the O.S. FS30 Surpass engines in our prototype we follow the following procedure for take off. Select 100% power on the inners and listen for a 'sick' engine. If all's well, select 75% power on the outers and again listen for a 'sick' engine. Do not go for a take-off unless you are 100% happy with the engines. If you have spent time re-setting engines remember the fuel you have used.

When you are ready, release the model. She will accelerate rapidly and straight with little need for rudder correction, but there is no natural tendency to lift off. You will need to apply a fairly substantial up elevator input to rotate the nose upwards. Once rotated, you can back off the up. The amount of up will vary according to the wind on the day. Let her climb out a little and then back the inners off to about 80%. Engines are more likely to go out at full power and you are reducing the risk. Once at cruise height, bring the outers back to 50% and the inners back to around 60%. Re-trim as necessary.

If you have retracts fitted, do not select 'up' until you are established in the cruise.

The ailerons are quite crisp and progressive and the elevator is a little softer. The rudder is quite soft in it's response but sufficient if you need it. You may find it necessary for additional rudder input in the turns to balance the tail attitude. This requirement increases in cross wind situations. This input may need to be substantial.

Remember Golden Rule 2 and get used to the flying handling before thinking about a landing. Be conscious of the fuel used and get somebody to remind you. Running out of fuel is a common cause of engines going out on multis, usually from extended ground adjustments. You are also using more fuel in the inners due to the higher throttle settings.

The landing requires careful planning. If you have the room, leave the flaps alone for the first one. She is not a particularly 'floaty' model anyway and flapless landings can still be achieved in a fairly limited space.

If you have retracts fitted, select 'down' before you start the landing sequence.

Reduce the outers to about 40% on the 'down wind leg and adjust the descent with the inners. Reduce the outers to about 25% on the 'base leg' and again adjust the decent with the inners. Once on 'finals' you can bring the outers back to idle and fly in on the inners alone. This puts you back into a normal throttle stick mode and the multi engine drama is gone (unless you have to go around again). All speed/descent adjustments can be made with the inners and elevator. The round out is positive and smooth with only a little elevator input. Once on the ground and speed is decaying you can actually kill the outers. If something goes wrong on the landing approach and you have to go around again, remember Golden Rule 2, inners up first!! Beware of an engine going out as you throttle up and be prepared to counter the swing with rudder. Now remember Golden Rule 3.

The flaps are non dramatic and tend to just make the model 'balloon' a little when deployed. The down trim mix keeps the pitch neutral or you can adjust it if it does not. Beware of a rapid speed decay response to closing the throttles when the flaps are down. Use of flaps requires a little more throttle on the approach to counter the drag.

Once you have mastered the throttle technique (be gentle with them) you'll wonder what all the fuss was about!

Maintenance

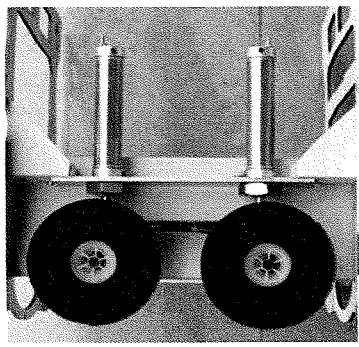
Always check the model out after a flight. Pay particular attention to engines and nacelles working loose from vibration. The captive nuts in the nacelles that are used to hold them on tend to bed into the wood a little after some use and will need checking. Also check the security of all linkages, hinges and the undercarriage.

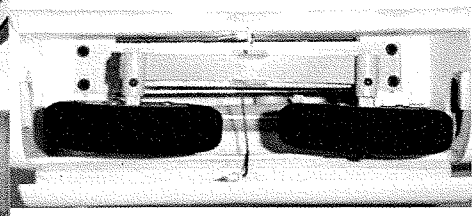
Always check the security of the wing/tail tube fixing screws before every flight.

Installing The Optional Air Retractable Landing Gear.

Step 1.

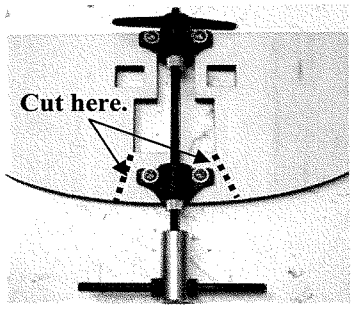
The main retractable landing gear units simply screw in place of the supplied fixed landing gear.

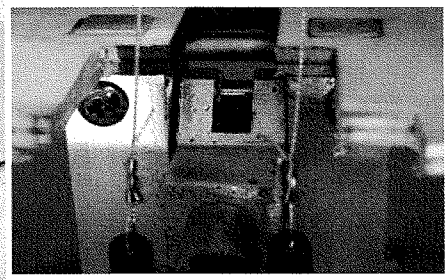




Step 2.

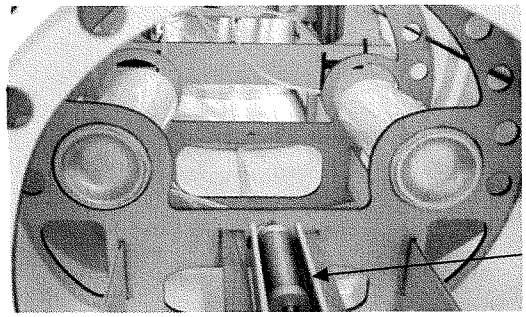
As mentioned earlier in the instructions, the lower part of the front former will need to be cut away to allow the nose wheel to retract.
The retract unit then screws to the fitted hard-wood mounting rails.





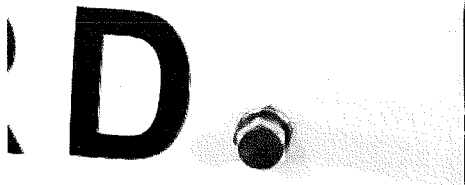
Step 3.

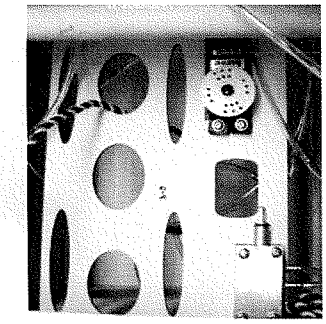
The twin air tanks are secured to the formers with some silicon adhesive. Fit a length of air hose to each air tank before gluing them in place.



Step 4.

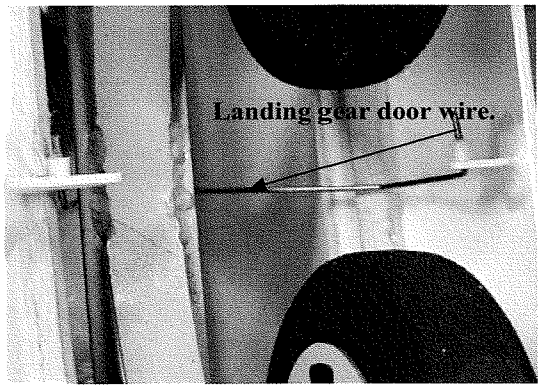
The retract fill valve can be installed in a convenient place on the fuselage. The air control valve and retract servo mount in the plywood plate in the centre of the fuselage.





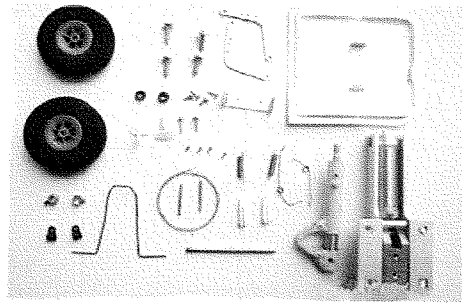
Step 5.

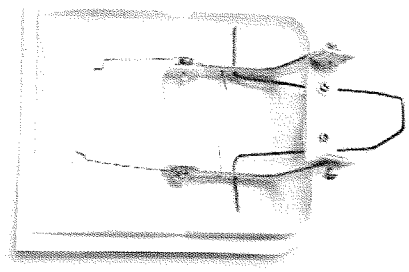
With the main landing gear in the extended position, make sure that the landing gear door wire is underneath the landing gear when the gear doors are in the open position. This wire is important in that it not only opens and closes the landing gear doors, but keep them in the open position when the gear is extended.



Step 6.

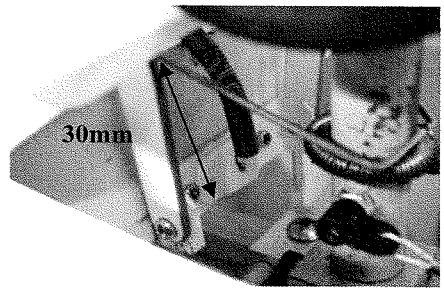
The nose gear door assembly is made up of numerous components. Study the images carefully and fit the 'L' shaped hinges to the gear door as shown.





Step 7.

The nose gear door assembly is then attached to the bulkhead with the bracket positioned approximately 30mm down from the bottom of the fuselage.

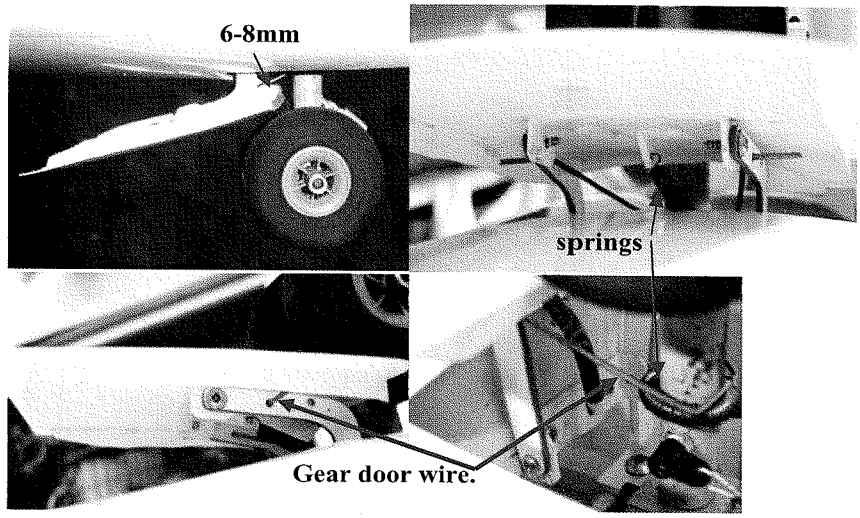


Step 8.

The gear door should now be approximately 6 - 8mm from the landing gear leg.

Note the position of the springs. One spring runs between the hinge bracket on the gear door and the bracket mounted to the firewall to assist in closing the door.

The second spring clips over the gear door wire and wraps around the landing gear leg to prevent the wire from moving up and down the leg.



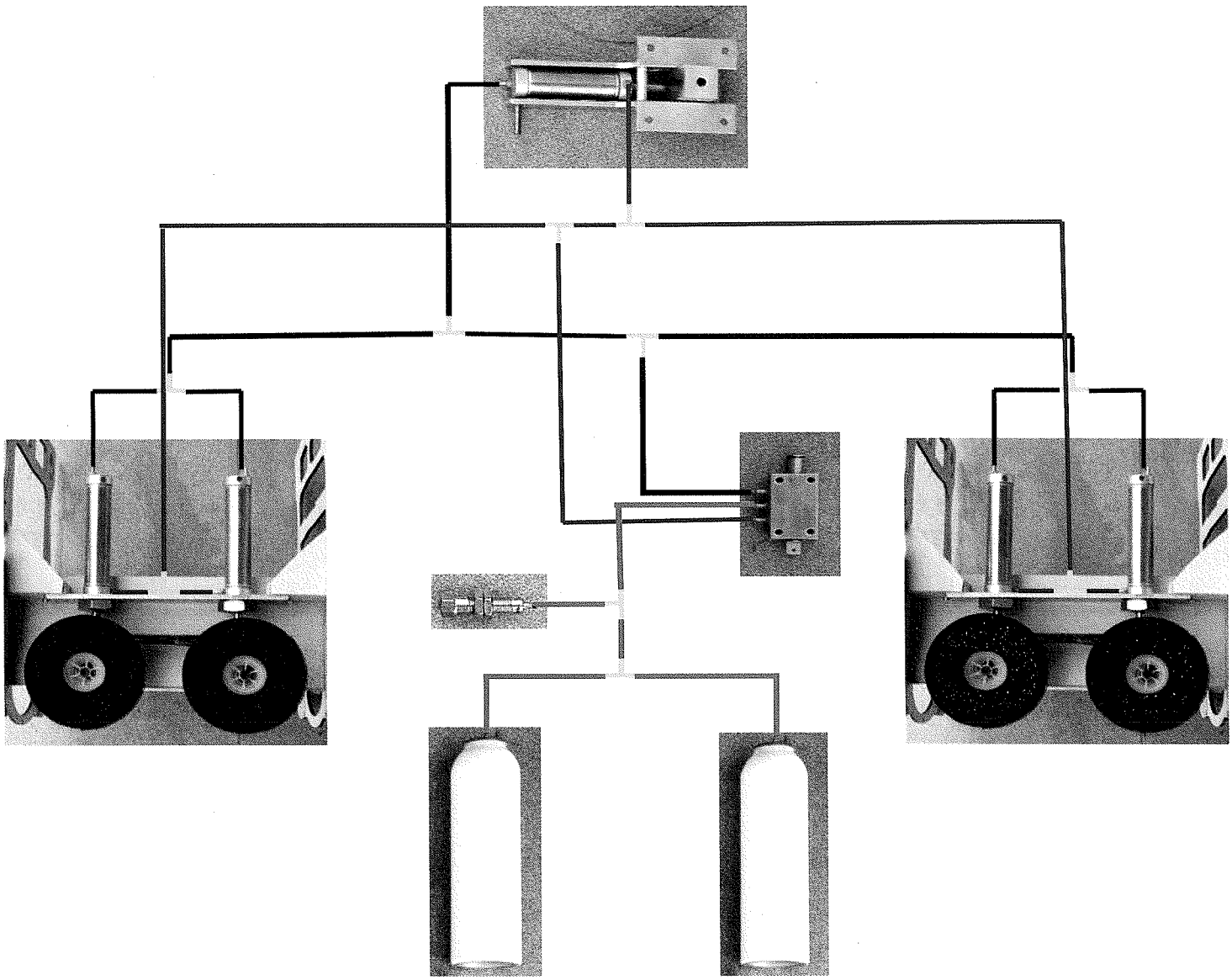
Step 9.

Using the Plumbing Guide as a reference, connect the air hose the landing gear, air valve, fill valve, 'T' pieces and air tanks.

IMPORTANT!

Thoroughly check the operation of the landing gear for reliable operation on the ground, before flying the model.

Air Retract Plumbing Guide.



'T' piece Air supply line Air line 'up' Air line 'down'

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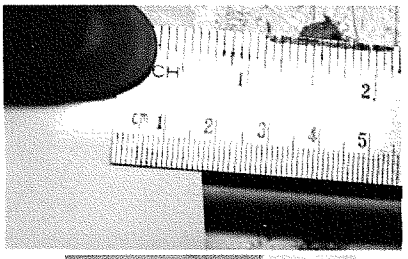
C-130 Addendum

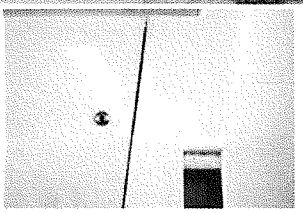
Step 1.

Insert the alloy tube into a tail plane half and drill a 1.5mm (1/16") pilot hole through the bottom of the tail plane and the alloy tube, 18mm inboard from the tail plane root rib.



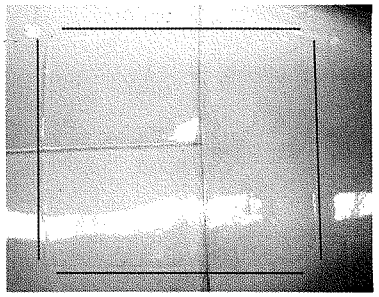
Step 3.

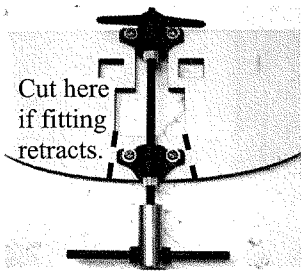
Insert the alloy tube, with one tail plane half fitted, through the fuselage and fit the other half of the tail plane. Drill a 1.5mm (1/16") pilot hole 18mm inboard from the tail plane root rib also. Secure with the supplied screw.

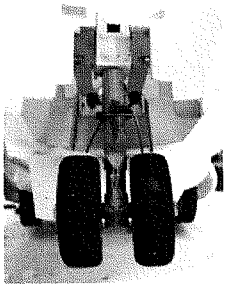


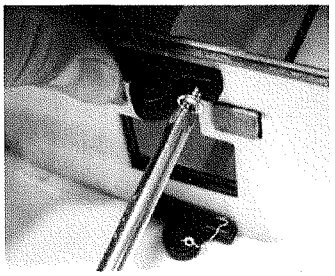
Step 17.

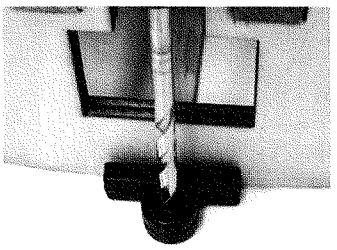
If the optional retracts are to be fitted, the front gear door section will need to be cut out along the lines moulded in the fuselage. Also a section of the front former, to allow the nose wheel to retract, will need to be cut out.
If the supplied fixed gear is to be used, fit the nose wheel bearing blocks to the fuselage. Once fitted, mark and drill a hole for the nose leg through the bottom of the fuselage.





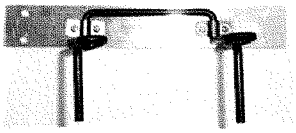


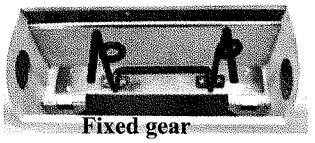


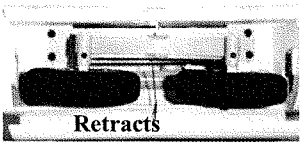


Step 19.

Both the fixed gear and retractable landing gear mount to the airframe in the same way using the supplied mounting screws. However the fixed gear will need some assembly. Mount the landing gear legs to the metal mounting plate with the metal straps and nuts and bolts provided. Use some thread lock to prevent the nuts from loosening during flight.







Step 20.

Secure the landing gear doors in place using a few drops of thin CA adhesive applied to each hinge leaving only a minimal gap between the fuselage and gear door.
Regardless of whether fixed landing gear or the optional retracts are to be installed, the control horns and gear door wire should be installed.
The wire serves as a pushrod in the case of retracts being fitted.