Ripmax

P-51D MUSTANG

INSTRUCTION MANUAL

Building Instructions

Widely regarded as the finest US fighter of WWII, the P-51D Mustang proved to be ideal for escorting bomber forces on long missions over Germany. Versatile and manoeuvrable, the 'D' version was the definitive Mustang.

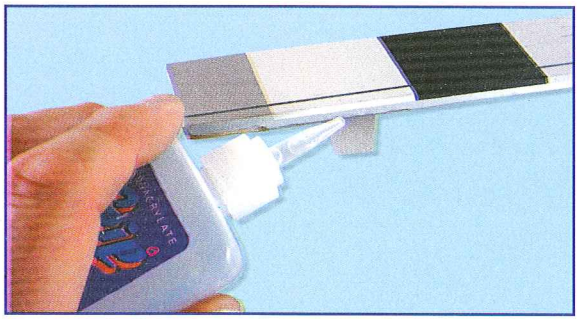
Easy to assemble and straightforward to fly, the Ripmax EP Mustang is suitable for any pilot who has experience with aileron models.
Many combinations of 600 class motor, propeller, speed controller (ESC) and 8 cell battery pack are possible for the Mustang so you can pick the components that best suit your performance requirements and budget.

While the final assembly is simple and straightforward, we recommend that you read and fully understand these instructions before commencing assembly.

The Wings

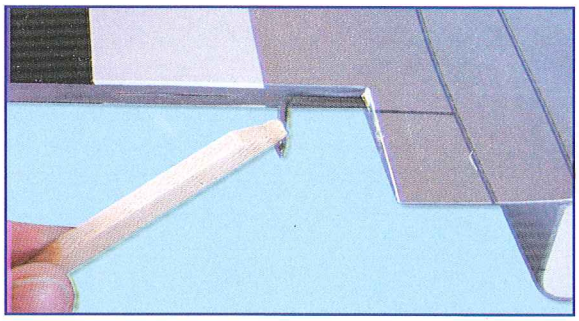
STEP 1

Locate the aileron hinges and insert 4 mid-way into each aileron (eight hinges in total). Each of the slots has been pre-cut, but may need gentle opening with a sharp knife. Using thin cyano, pour a couple of drops onto each hinge - above and below - ensuring the glue soaks into the hinge and the surrounding wood.



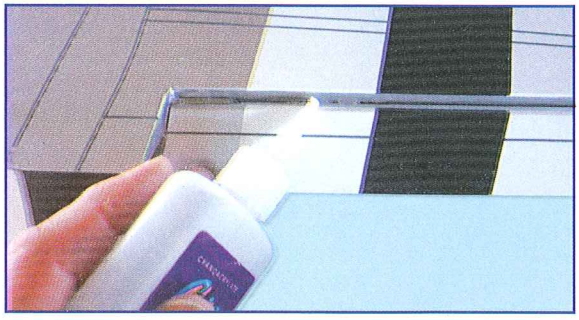
STEP 2

Check the fit of the ailerons, then apply a small amount of 5 minute epoxy to the exposed ends of both aileron torque rods as shown, taking care not to glue the torque rods to the wing! Slide the ailerons into position over their torque rods.



STEP 3

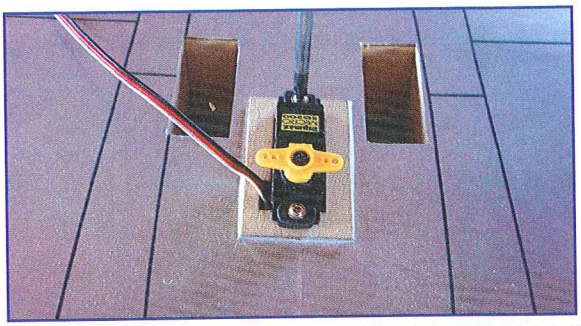
Ensuring gap-free hinge lines make sure the ailerons are centred between the root and tip and that each is free to move through their entire travel. Carefully add a couple of drops of thin cyano to the top and bottom of each hinge ensuring that the glue does not run through the hinge line onto the bottom of the wing. Turn the wing over and drop more cyano onto each hinge from the other side.



The Wings

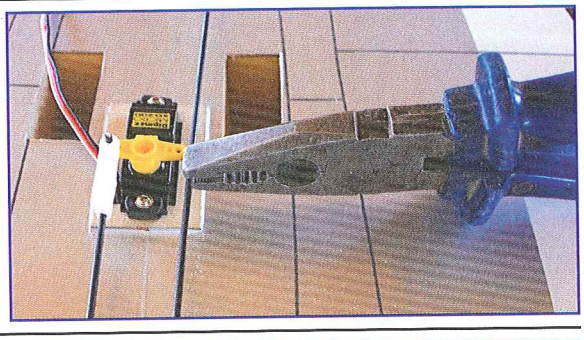
STEP 4

Check the fit of your chosen aileron servo in the pre-cut aperture and adjust with a sharp knife if necessary. Fit the rubber grommets and brass ferrules supplied with your servo. Pilot drill two holes, then mount your servo as shown using the screws supplied with your radio.



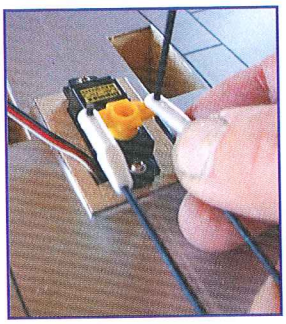
STEP 5

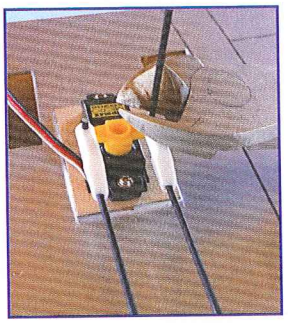
Screw a metal clevis onto each of the aileron pushrods and clip in place on the aileron torque rods. With the servo and ailerons centred, mark the position where each pushrod crosses the servo output arm. Bend each rod up at 90°.



STEP 6

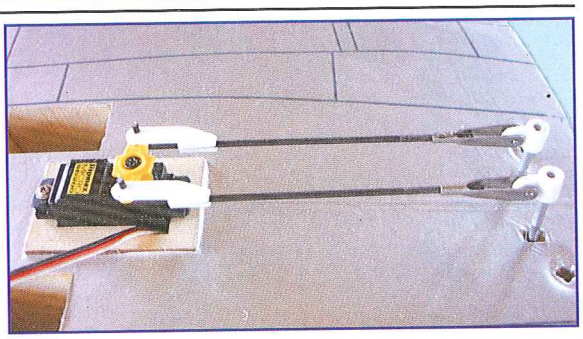
Push the bent wires through the output arm, slip a nylon swing-in keeper in place and trim off any excess wire with side cutters.





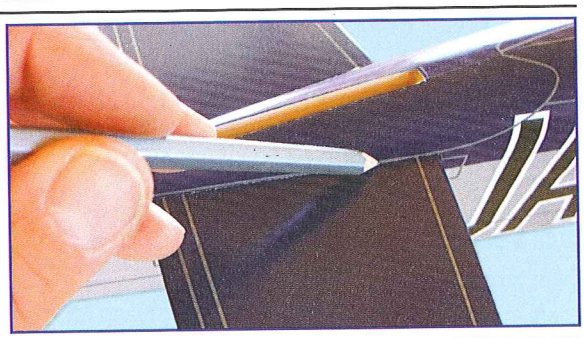
STEP 7

Adjust the clevises as necessary to re-centre the ailerons and check for free movement through their range.



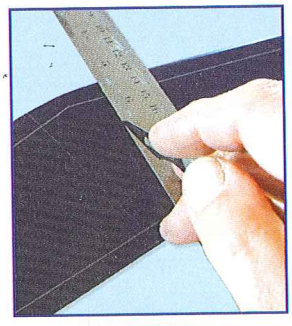
STEP 8

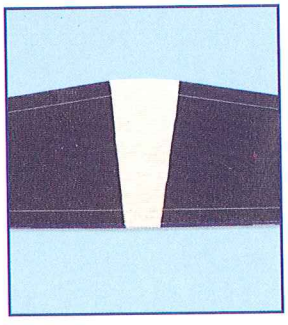
Temporarily bolt the wing to the fuselage, trim the covering from its mounting slot, then slide the tailplane in position. Carefully centre the tail and check it is true and square to both the wing and fuselage. Mark both sides (top and bottom) of the tail where it enters the fuselage.



STEP 9

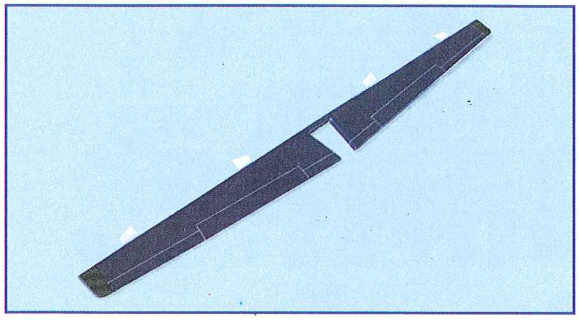
Using a sharp knife and ruler, carefully cut through the film just inside the lines you just marked. IMPORTANT. It is essential that you do no cut into the surface of the tailplane or it will be severely weakened.



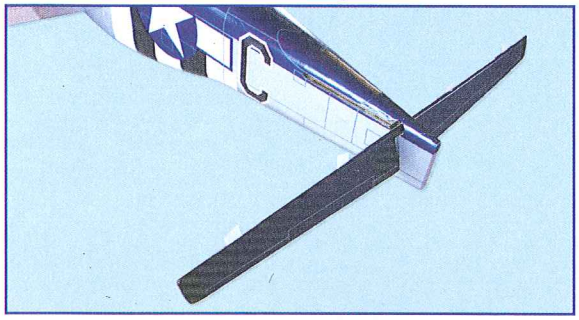


The Wings

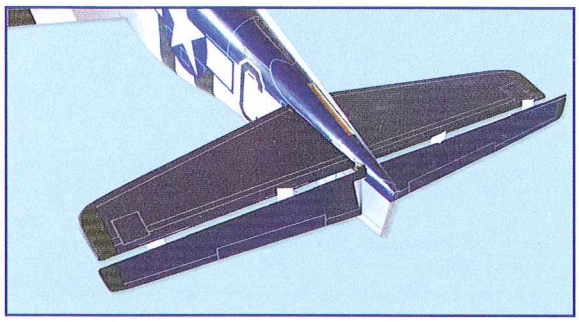
STEP 10
Locate the 4 elevator hinges and insert them mid-way into the elevator. Using thin cyano, pour a couple of drops onto each hinge - above and below - ensuring the glue soaks into the hinge and the surrounding wood.



STEP 11
Slide the elevator into position in the rear of the fuselage. IMPORTANT: Do not leave out this step as once the tailplane is glued in position, you will not be able to fit the elevator unless it is already in position!

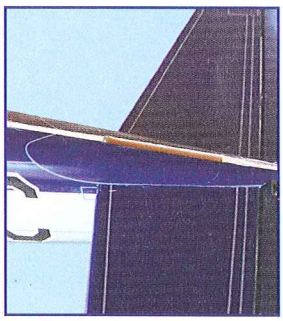


STEP 12
Ensuring the tailplane is square and centred to the fuselage, glue it in position using your choice of cyano or 5 minute epoxy. Now slide the elevator into position, ensuring a gap-free hinge line. Make sure the elevator is centred between the tailplane tips and that it is free to move through its entire travel.

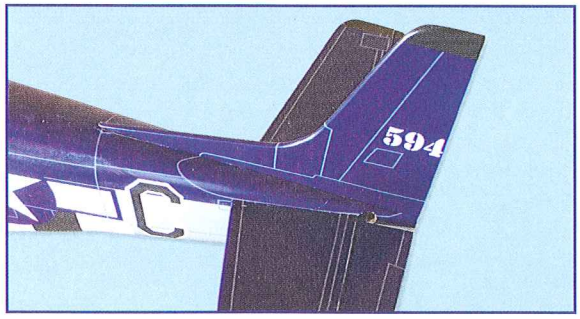


STEP 13
Carefully add a couple of drops of thin cyano to the top and bottom of each hinge ensuring that the glue does not run through the hinge line onto the bottom of the tail. Turn the tail over and repeat for the other side.

STEP 14
Using the fin as a guide, trim away the film covering from the top of the fuselage where the fin fairing will fit. Mark the position of the fuselage sides onto both sides of the fin with a felt pen. Remove the fin and trim off the covering below the lines you just marked. It is essential that you do not cut into the wood otherwise the fin will be severely weakened.

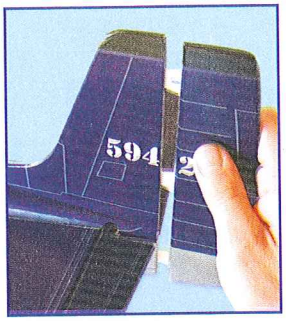


STEP 15
Using 5 minute epoxy or cyano, glue the fin in position, carefully checking that it is at 90° to the tailplane. Locate the rudder hinges and insert three mid-way into the rudder. Using thin cyano, pour a couple of drops onto each hinge - above and below - ensuring the glue soaks into the hinge and the surrounding wood.

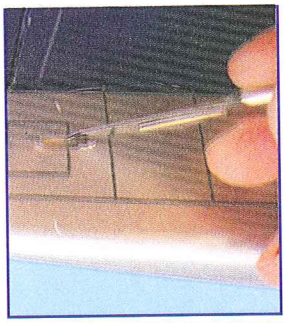
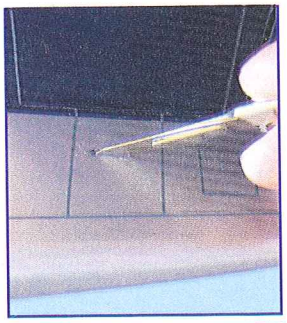


Radio Installation

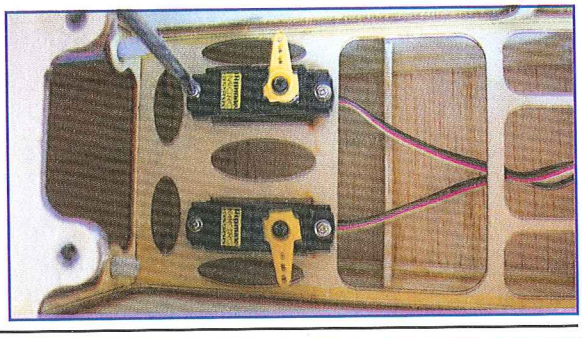
STEP 16
Slide the rudder into position, ensuring a gap-free hinge line and align it with the top of the fin. Check the rudder is free to move through its entire travel. Now carefully add a couple of drops of thin cyano to the top and bottom of each hinge ensuring that the glue does not run through the hinge line onto the bottom of the fin. Turn the model over and drop more cyano onto each hinge from the other side.



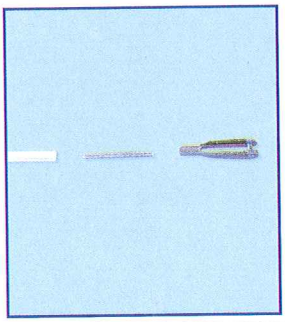
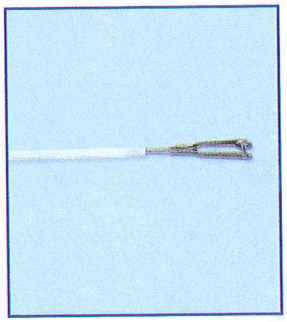

STEP 17
Locate the exit points for the rudder and elevator snakes at the rear of the fuselage and trim away the covering carefully with a sharp knife.

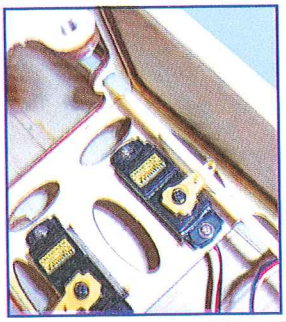
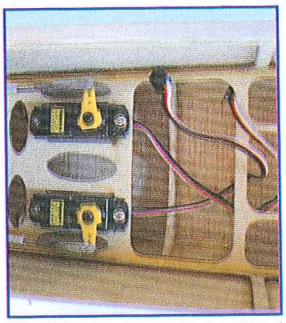
STEP 18
Fit the rubber grommets and brass ferrules supplied with your rudder and elevator servos. After pilot drilling the mounting holes, screw the two servos in position with their output arms orientated to the front of the model as shown.



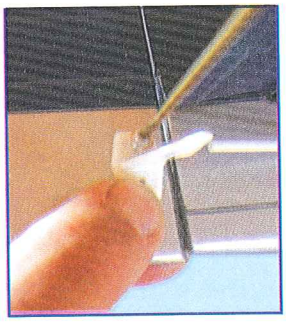
STEP 19
Prepare the rudder and elevator snakes by screwing a threaded adaptor into each, then attaching a metal clevis. Ensure that both the adaptor and clevis are screwed on at least 6mm each.

STEP 20
Working from inside the radio bay, slide the two prepared snakes into the outers already fitted in the model. Ensuring both servos are centred, connect the clevises to the rudder and elevator servos' output arms.

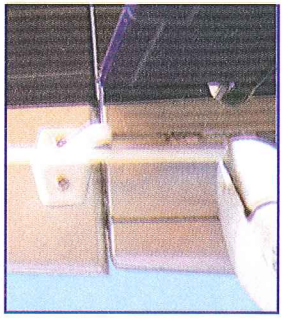
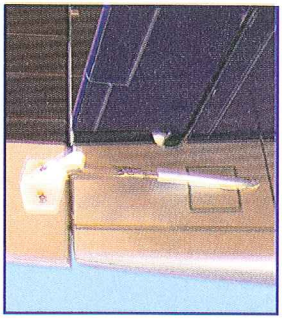



STEP 21
Locate the rudder control horn and position it on the right hand side of the rudder, in line with the rudder snake and the hinge centre line. Mark and pilot drill the two mounting holes then screw the horn in place using the screws supplied into the nylon backing plate. Clip off any excess length of screw.

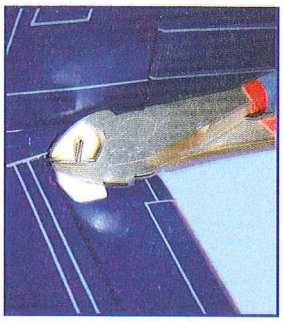



Radio Installation

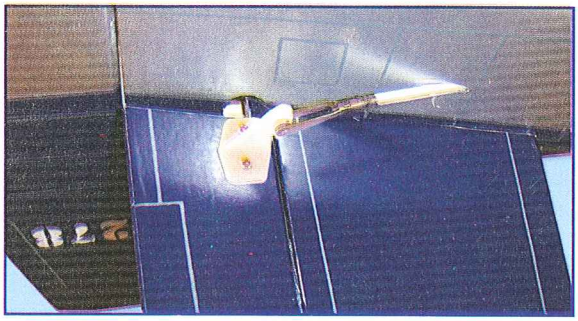
STEP 22
Thread an adaptor at least 6mm into a metal clevis. Temporarily attach the clevis to the rudder horn and with the rudder centred, mark the rudder snake where the adaptor meets it, then cut it 6mm longer so that 6mm of adaptor can be screwed in. Test the operation of the rudder.

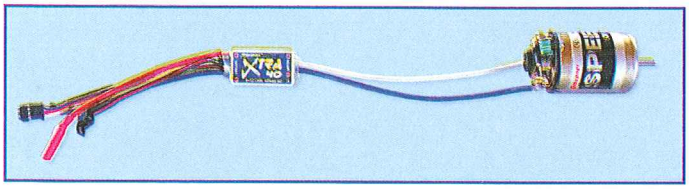
STEP 23
Locate the elevator control horn and position it on the underside of the left hand side of the elevator, in line with the elevator snake and the hinge centre line. Mark and pilot drill the two mounting holes then screw the horn in place using the screws supplied into the nylon backing plate. Clip off any excess length of screw.

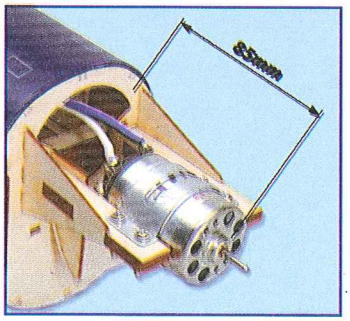



STEP 24
Thread an adaptor at least 6mm into a metal clevis. Temporarily attach the clevis to the elevator horn and with the elevator centred, mark the elevator snake where the adaptor meets it, then cut it 6mm longer so that 6mm of adaptor can be screwed in. Test the operation of the elevator.



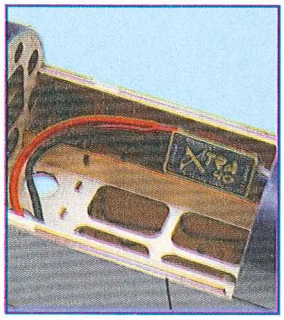
Installing the Motor





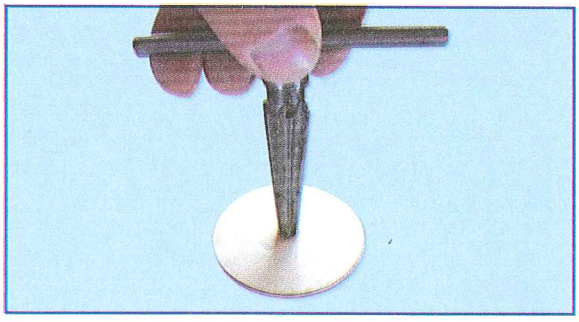
STEP 25
Solder your ESC to your choice of motor and test for correct rotation Fit suppressors to the motor if required. Install the motor as shown using the aluminium motor mount and four self tapping screws supplied. The front of the motor should be approximately 85mm ahead of the first former.

STEP 26
Draw the speed controller through the fuselage and using Velcro, secure it to the fuselage side beneath the battery access hatch as shown. Mount the switch in a convenient position through the fuselage side. Replace the hatch.



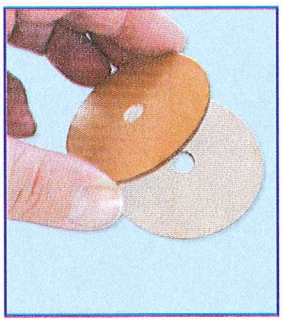
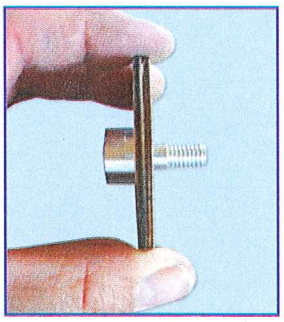

Making the Spinner

STEP 27
The spinner is made up of two ply discs and a moulded nosecone. Commence assembly by enlarging the holes in the centre of the two ply discs using a prop reamer so they are a snug fit on your propeller adaptor.

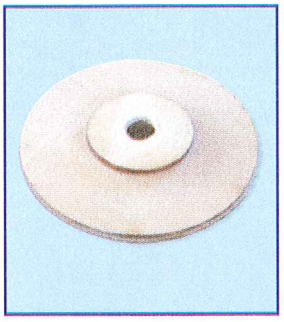
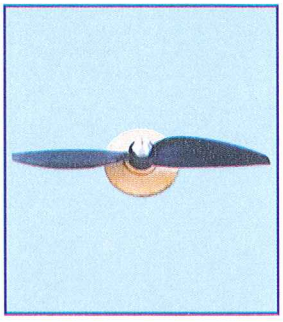


Making the Spinner

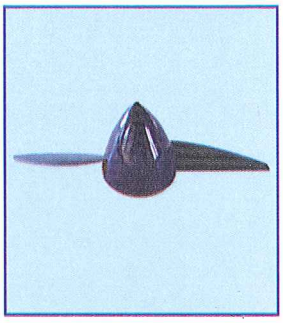
STEP 28
Glue the slightly smaller disc on top of the larger one using the propeller adaptor the keep them concentric as the glue dries.

STEP 29
If using a Radio Active propeller then the additional smaller plywood disc should be glued on top of the other two to act as a spacer. Now thread the backplate discs onto the propeller adaptor followed by the propeller, washer and retaining nut. Tighten the nut securely.

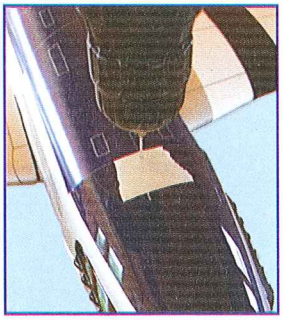



STEP 30
Cut away the spinner moulding to clear the propeller and glue the spinner to the backplate, ensuring that the assembly rotates concentrically. This is best accomplished by spinning the assembly on the motor shaft but without tightening the adaptor grub screw.

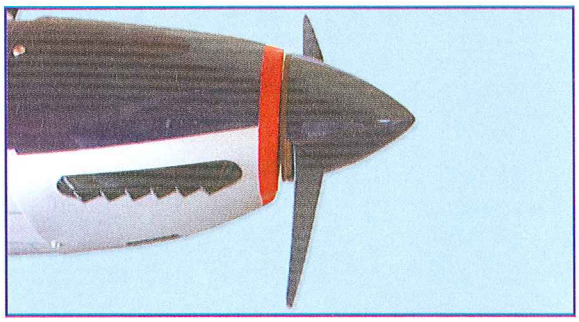



Fitting the Cowl

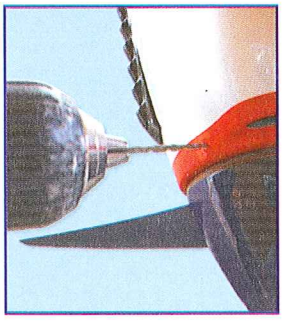
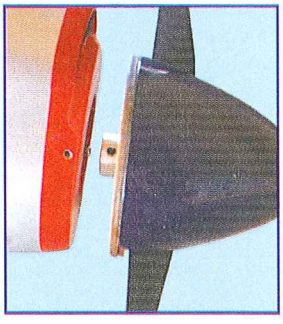
STEP 31
Slide the cowl onto the front of the model. Use the spinner as a guide to ensure the cowl is square. Mark the positions for the three cowling retaining screws. Use scraps of masking tape to reduce the risk of the drill slipping. Pilot drill the cowling and retaining blocks.

STEP 32
Secure the cowl in position with the self tapping screws supplied. Thin cyano can be run into the holes to toughen the threads. Ensure it is fully cured before fitting the cowl.

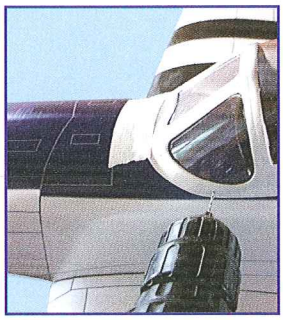


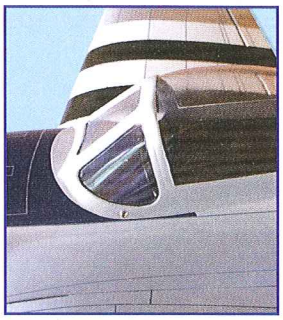
STEP 33
Drill a clearance hole in the front of the cowl as shown to allow the propeller adaptor's grub screw to be tightened. Slide the propeller/spinner assembly in place on the motor and tighten the grub screw.

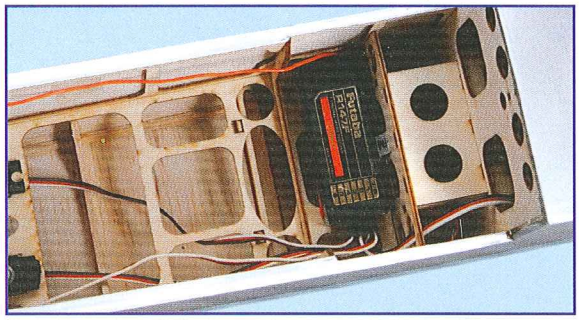
Final Assembly

STEP 34
Tape the canopy in position on the fuselage, checking that the canopy frame is centred. Pilot drill and screw the canopy in position using the three self tapping screws supplied.

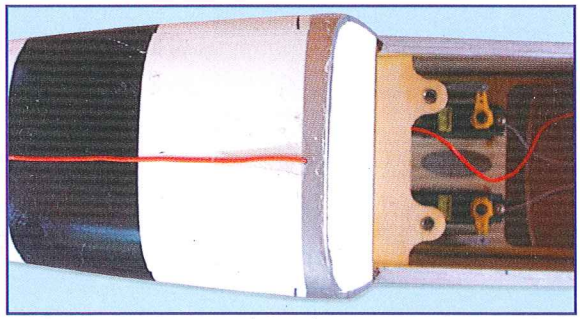




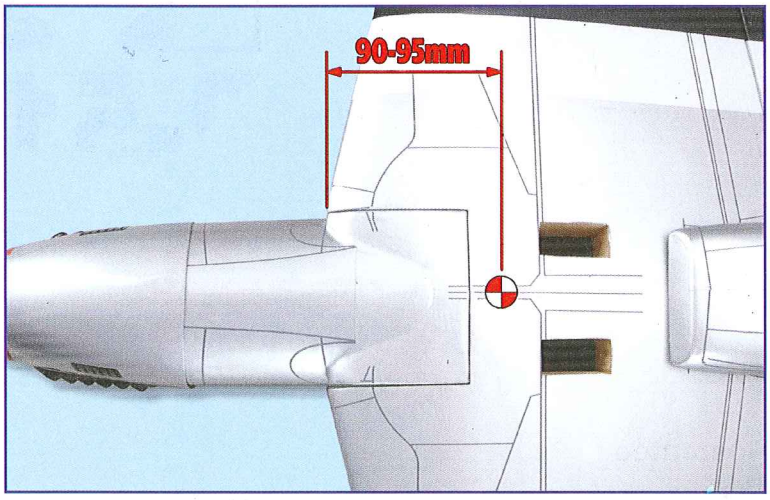
STEP 35
Install the receiver in the fuselage securing it in place with Velcro. With the wing bolted in place and flight battery connected, thoroughly check all the control surfaces for correct movement direction and amounts. Ensure the motor runs with minimum vibration over the entire speed range.



STEP 36
Lead the aerial out through the bottom of the fuselage behind the wing. Secure it at the rear of the model with a small strip of clear tape.



Balancing
Check the balance point which should be 90-95mm back from the leading edge at the centre section. Adjust the position of the flight battery to achieve this balance point if necessary.



Control Throws

Control Surface Movements

Ailerons:	8mm up 8mm down
Elevator:	15mm up 15mm down
Rudder:	25mm left 25mm right

Pre-Flight Checks
Before every flying session you MUST check the control range of your R/C system.

Have a helper hold the model ensuring that they are clear of the propeller. With the transmitter and model switched on, retract the transmitter aerial and walk away moving the elevator stick on the transmitter.

Run the motor to full power and repeat the elevator movements. You should be able to walk between 25-30 metres without interference or losing control. If you lose control or the radio appears to have interference do not attempt to fly.

General Flying Tips

For anyone with aileron experience, the Mustang is not a difficult model to fly and possesses a wide speed range capability. Choose a bright, calm day for the first test flights enlisting the help of a friend to launch the model for you.

Grip the model using the hand launch pockets in the wing. With the wings level and nose slightly high apply full power, allowing a couple of seconds for the motor to attain maximum rpm before launching the model directly into any wind. Allow the model to climb to a safe height before attempting to trim the model.

Become accustomed to the model's available flying time by introducing more and more advanced manoeuvres over several flights. All conventional aerobatic manoeuvres are possible with the Mustang including loops, rolls and stall turns and combinations of these from level flight.

For greater realism convert height into speed before beginning larger and more graceful manoeuvres.

Happy and Safe Flying!

Distributed by: Ripmax Ltd, 241 Green Street,
Enfield, EN3 7SJ.
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Ripmax

P-51D MUSTANG

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