A 25¾" span control line scale seaplane for 2·5c.c motors (A.P.S code G-H)

MACCHI-CASTOLDI MC-72

DESIGNED BY

E. Bizzozero

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THE AEROMODELLER PLANS SERVICE

38, CLARENDON RD., WATFORD, HERTS.

7/6

ALL WOODS ARE BALSA UNLESS OTHERWISE STATED

All dimensions for engine extension are in millimetres.

Spinner front half

Front prop. hub.

Thrust race.

Split pin hole I dia.

Free running bearing.

Spinner rear half.

Extension bolt.

Housing.

Prop driver

Colour

Green

White

Red

Tank position

¼" sheet.

1/32" Th. acetate.

½" sheet.

Join blocks on this line.

⅛" sheet tank seat

See B.B.

14 s.w.g. push rod.

Silver spinner and props.

Radiator

Webra mach I. 2·5cc.

Colour Gold

F.1.

F.2.

Colour Red

Cut away fuselage under wing and replace after wing and bellcrank is assembled and soldered up.

3/10" ply.

Note: Carve fuselage from 2 pieces of yellow pine or similar. Hollow out to 1/8" thick walls at nose and 1/16" thick at tail. Fuselage may be carved from hard balsa with thicker walls if desired

¼" hard sheet.

B.B.

⅜" x ½" hardwood

1/16" ply.

6 B.A. Bolt, nuts and washers.

bellcrank.

C.C.

D.D.

F.1.

F.2.

F.1. - F.2. 3/16" ply

Colour White

Linen hinges

Tailplane and elevators from ¼" Medium hard sheet.

Brass horn and 16 s.w.g. piano wire connector soldered together.

B.1.

B.2.

B.1. - B.2. 1/8" ply.

Recess lower portion of fuselage to take motor lugs. Motor is secured with woodscrews

14 s.w.g. piano wire push rod.

All bracing wires are 30 s.w.g. control line wire.

Colour gold

⅛" dowel

Pin, solder to wire. Araldite pins into float.

Slot ribs for lead outs in port tip after spars are assembled.

10 ribs from 1/16" sheet.

Wind single strand control line wire round ⅛" dowel. Secure with araldite and cement dowels into wing at points 'X'. For attachment to fuselage and floats, solder wire ends to pins and araldite pins into position.

Note Floats are carved as for fuselage but joined vertically down centre line.

Rear float strut 3/16" ply or yellow pine

Front float strut 3/16" ply or yellow pine

Sand both struts symmetrical

8"x8" prop.

Prop. as used on prototype

Section A.A.

E.E.

F.F.

Slots for engine lugs.

Slot for engine lugs.

⅜" x ½" hardwood bearers.

A.A. Thro balsa fuselage

A.A Thro hardwood fuselage

Solder 20 s.w.g. wire across bolt heads.

½" x ⅜" hardwood bearers

Nose of balsa fuselage.

3/16" sq. L.E.

18 s.w.g. lead outs

All spars 3/32" x 3/16"

Wing covered top and bottom with 1/32" sheet.

Add 1oz. weight in st'bd. tip

½" sheet tip

Brass tubes let in tip

3/16" x ¾" T.E.

Cut slots for float struts

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Ettore Bizzozero's

MACCHI-CASTOLDI MC-72

A thrilling scale control-line floatplane for 2·5 c.c.

Fine action shot above shows MC-72 in action. Take-off on opposite page

ON JUNE 2ND, 1933, Italian pilot Warrant Officer Francesco Agello flew the Macchi-Castoldi Mc-72 four times over 3 Km. on Lake Garda, to average a then breathtaking speed of 440 m.p.h. This speed made official at 440.7 in 1934 was not exceeded for six years and then by a landplane. Few people realise however, that to this day, that aircraft *still* holds the world speed record for floatplanes.

Italian modeller Ettore Bizzozero, has produced this miniature MC-72 for a Webra Mach I diesel of 2.5 c.c. His clever counter-rotating airscrew and choice of engine are variables which can be changed and for any modeller wanting to try his hand at fast scale control-lining—this is the bird to build!

The fuselage can be constructed either from hard balsa or from yellow pine, depending on the builder's preference. The original yellow pine fuselage is made in two halves—top and bottom, dividing along the datum line. Note that the fairings on the upper half are superimposed later. Lightly cement the two block halves together and carve the external shape, using templates as a guide to accurate carving. Sand smooth and part the two halves so that the inside of the fuselage can be hollowed out to $\frac{1}{16}$in. walls. Make a close study of the nose portion of the fuselage to understand the internal contours where the engine is integrally mounted. Particular attention must be paid to this part of the lower half, the mount being slotted to take the motor lugs, to achieve the required housing for the engine intended for installation. Now make up the bellcrank pivot block from $\frac{3}{8}$in. x $\frac{1}{2}$in. hardwood, complete with pivot bolt, cement it in position and reinforce with $\frac{1}{16}$in. ply keepers. If the fuselage is to be constructed from hard balsa, a wall thickness of $\frac{1}{4}$in. is desirable and separate hardwood engine bearers will be necessary, fitted into the fuselage as shown on the plan detail. Use a good strong glue for this job.

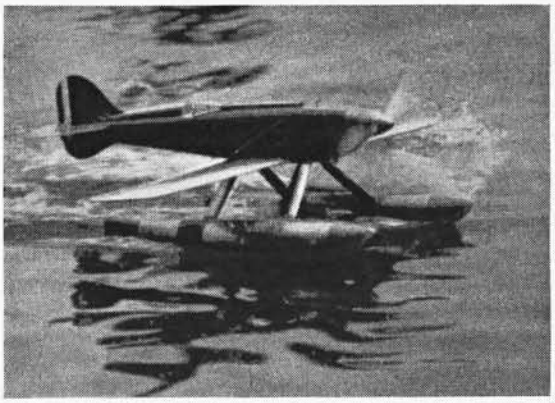
Shape and notch the $\frac{3}{16}$in. x $\frac{3}{4}$in. wing T/E and pin in position over the plan packing up from the plan with scrap $\frac{3}{32}$in. going likewise for the two lower $\frac{3}{32}$in. x $\frac{3}{16}$in. spars. Cement the wing ribs in position and then the $\frac{3}{16}$in. square leading edge (sanded to correct contour later). Cut out the wing tips from $\frac{1}{4}$in. sheet, drill to take the brass tubes for the lead-outs and burn through with 16 s.w.g. wire for lead-out clearance, sand to section and cement to the wing. Bind in the 1 oz. tip weight. Cover the upper surface with medium hard $\frac{1}{32}$in. sheet, slotting at the centre section for the elevator push rod. Do not sheet the undersurface. Remove the wing from the plan and cement to the cutaway portion in the lower half of the fuselage. Thread the 18 s.w.g. wire control line lead-outs down the wing securing them to the bellcrank with soldered cup washers on the underside and bolt the bellcrank to the pivot bolt. Position the push rod and link up to the bellcrank securing again with cup washers.

Cut out the tailplane and elevator from $\frac{1}{4}$in. sheet balsa. Sand to section and secure the elevator horn assembly to the elevator taping the tie bar to the two elevator halves, but as yet, allowing the horn to swing freely on the bar in unsoldered state. Tape the elevator to the tailplane ensuring free and smooth movement of the control surface. Insert the push rod through the elevator horn, retaining with a cup washer soldered in position and then cement the whole tailplane assembly to the lower fuselage. Neutralise the bellcrank and the elevator and solder the horn to the tie bar. The undersurface of the wing may now be sheeted, again with $\frac{1}{32}$in. sheet balsa, after which the underwing fairing is replaced.

Cut and shape the floats struts from $\frac{3}{16}$in. ply, bevelling the top ends to butt together at their apex in the fuselage. Cement into the fuselage ensuring that the apex provides a strong joint.

The two floats can now be carved in the same manner as the fuselage, either from yellow pine or balsa, using the same wall thicknesses, but the two blocks are joined on the vertical centre line instead of the horizontal datum line. Carve and hollow in the same manner as for the fuselage, and fit the float bulkheads to the inboard half of each float. Cut a slot in each of the inboard halves, insert the float struts to interlock with the bulkheads using plenty of cement. Add the outboard halves of the floats.

Cut the fin and underfin from $\frac{1}{4}$in. sheet, shape and



cement the underfin in position. Next stage is to construct the contra-rotating airscrews assembly. Those with lathe facilities will note that the special extension bolt has a spindle at its front end. Onto this spindle a Wakefield type thrust race is fitted, then a free running bearing. Over this goes the front (free wheeling) propeller hub, retained with a circlip or split pin. Mount the engine, then 30 c.c. T/R tank on its ⅛in. sheet seat, boxing round with scrap balsa. The upper fuselage with fitted fin and cockpit fairing, can now be cemented in position and is given a further sanding.

The wire brace can now be fitted and great care must be taken to ensure an accurate and taut rigging. Start by winding 30 s.w.g. C/L wire round the dowels to fit in the wing. Cut holes in the wing and insert the dowels, so that the two wire ends of each dowel extend from top and bottom of the wing. The other ends of the wires are inserted into the fuselage and floats by means of pins, each wire being soldered to a suitably shortened pin secured with Araldite. Inter-float wires are separate pieces secured by pins.

Airscrews are 8in. x 8in., carved from beech, but if the builder prefers, commercial props of similar size can be used. (The clever idea is that one flicks both props together and the front one free-wheels after it changes rotation.) The model can now be finished, firstly by sealing the whole airframe with sanding sealer until a hard smooth surface is obtained. Apply the red and gold colour scheme in thin coats until the colours cover the wood evenly. Lastly, fit the windshield and coat over all with clear lacquer protective or fuel proofer.

During the take-off run, there may be a tendency for the motor torque to sink the inboard (left) float. Tip weight and rudder off-set are used to counteract this, but it may be found desirable to refrain from taking up line tension (40ft. lines were used by Ettore) until the model has begun to build up speed. 80 m.p.h. was recorded by the prototype model, and as the pictures show, it is a beauty well-worthy of extra effort in construction.

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