INSTRUCTIONS

How to build Model Aeroplanes with Aeroplane Constructor Outfit No. 0

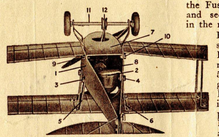


Fig. A

To build up a model, first take the Fuselage Section 1 (see Fig. A) and secure the Pilot 2 in place in the rear cockpit by means of the Bolts 3 and 4. The model shown is a biplane, and the Bolts 3 and 4 hold also the rear pair of Short Vee Struts 5 and 6 in position. Before going further, the front pair of Bolts holding the lower Wing in position must be secured in place by means of Nuts. Next place the Rubber Band around the groove in the pulley on the Propeller Shaft 8 and screw a nut on to the screwed end of the shaft. Pass the screwed end of the Propeller Shaft through the hole in the bent-up portion of the Undercarriage 7 and thread a Nut on to the end of the Shaft 8. Lower the Undercarriage 7 into position, and at the same time slip the plain end of the Propeller Shaft 8 through the hole in the Pilot 2.

Now secure the Undercarriage rigidly in position by screwing the Bolts 9 and 10 into the threaded holes in the Undercarriage. These pass through the lower wings of the model illustrated. Two Bolts are also passed through the Fuselage near the nose and screwed into threaded holes in the Undercarriage.

Pass one end of the Wheel Axle 11 through one of the Vee struts of the Undercarriage 7. Draw the Rubber Band through the circular opening in the Undercarriage 7, and pass the Band over the Axle 11 and round the pulley 12 that is fixed to the Axle. Be sure to arrange the Band so that the Propeller Shaft rotates in a clockwise direction when the model is pushed forward along the ground. Next push the end of the Axle 11 through the remaining Vee strut and screw a Nut on to each end of the Axle. Finally screw the Landing Wheels into position against the Nuts and lock them together by turning each Wheel and Nut in opposite directions by means of a Spanner and the fingers.

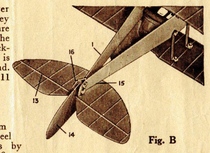


Fig. B

The Propeller is screwed on to the projecting end of the Propeller Shaft 8 and is locked in position by turning the Nut placed behind it in an anti-clockwise direction by means of the Spanner, while the Propeller itself is rotated in a clockwise direction by the fingers.

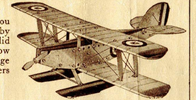
To assemble the Tail Unit (see Fig. B) push the Tail Plane into the slot in the Rudder. Place the projecting end of the Rudder into the centre slot in the top of the Fuselage 1, and gently prise the edges 15 of the Tail Plane into the slots at each side of the Fuselage. Next push the Tail Skid 16 in between the sides of the Fuselage and the lug of the Rudder, and secure by means of two Bolts and two Nuts. A short length of cord is then passed through the holes in the Tail Plane and Rudder to brace the complete unit. The cord is knotted at each end to keep it in place.

Triple-engined Air Liner

Boys, Build Bigger and Better Model Aeroplanes

Now that you have experienced the pleasure of building model aeroplanes you will be keen on proceeding further with this wonderful hobby. You may do this by purchasing a No. 1 or No. 2 Meccano Aeroplane Constructor Outfit, with which a splendid selection of additional models can be built. The two illustrations reproduced here show the types of machine you are able to construct when you have a No. 2 Outfit. The range of models includes light aeroplanes, seaplanes and flying boats, and commercial air liners of both monoplane and biplane types.

Ask your dealer for a complete illustrated price list.



Single-engined Seaplane

MECCANO

AEROPLANE CONSTRUCTOR OUTFITS

The aeroplane has taken its place as a regular means of high speed transport, and the time is not far distant when we shall use it as readily as to-day we employ the train, the steamship, and the motor car. Now is the time for every boy to learn how aeroplanes are designed and constructed, and to recognise at a glance the different types. The best way of doing this is to build aeroplanes for himself, and the Meccano Aeroplane Constructor Outfits have been designed specially for this purpose. This folder shows how to construct six different types of aeroplane, but other fine models may be built by varying the positions of the parts.

How an Aeroplane Flies

The fun of building with Meccano Aeroplane Constructor Outfits is greatly increased if you know something of the way in which a real aeroplane is controlled in flight. What strikes anyone examining an aeroplane for the first time is the simplicity of the manœuvring mechanism, everything being done by two levers. The first of these, the control column or "joy-stick," is not unlike the gear lever of a motor car, and is connected to two controls, the ailerons and the elevators. The ailerons are small movable flaps arranged along the trailing or rear edge of the wings, and the elevators form one of the two main parts of the tail unit. The other lever, the rudder bar, is near the floor of the cockpit and is operated by the feet. This bar controls the rudder, which is the second main portion of the tail unit.

Joy-Stick and Rudder

The joy-stick is the most fascinating factor in the control of an aeroplane. If you wish to fly level, you keep the stick in a central and vertical position. If you move it forward, the elevators are depressed and the machine promptly puts down its nose and tries to dive. If you pull the stick backward, the elevators are raised and the nose of the machine rises. Movement of the stick to left or right brings the aileron into action. If you move it to the left, the left wings will go down ; if you move it to the right, the right wings will drop. This raising and lowering of the wings is termed "banking."

When the control column or "joy-stick" is vertical, the elevator is horizontal, and the machine flies parallel with the ground.

When the stick is pulled back, the elevator is raised and the machine climbs.

Pushing the stick forward causes the machine to put down its nose and dive.

If you find that the aeroplane is veering to the left, you put on right rudder by moving the right foot gently forward ; and similarly veering to the right is corrected by applying left rudder. If you wish to turn the aeroplane round, however, you must not attempt to do it by rudder alone, because in that case the machine would skid in a similar manner to a motor car racing round a bend on an unbanked road. You cannot bank the air, so you bank the aeroplane. That is to say, you apply rudder and bank together in the direction in which you wish to turn.

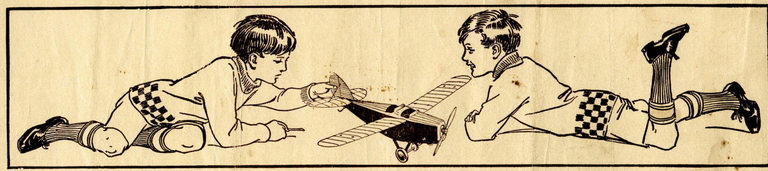
When a pilot has entered the cockpit of his machine, and ascertained that his engine is running well, the chocks are removed from under the wheels, and the machine is taxied into the wind. It is kept pointing in the correct direction by means of the rudder, and the pilot prevents the tail from rising and the machine going on to its nose by keeping the joy-stick a little back from the neutral position. As the speed increases, the stick is slowly moved to the point at which all controls are neutral, and when the correct speed has been attained the machine almost imperceptibly becomes air borne. In alighting, the sequence of these operations is reversed, the machine gliding to land with the engine cut out.

The aeroplanes used for training purposes have two cockpits, one in front of the other, the controls in each being exactly the same, and connected together. This arrangement enables the instructor, who sits in the front cockpit, to see exactly what manipulations are being made by the pupil behind, and to correct them accordingly. Instructor and pupil communicate by means of ear tubes attached to their helmets.

When the joy-stick is vertical the machine flies on an even keel, the wings being parallel with the horizon

When the stick is moved over to the left, the ailerons on that side are raised and the wings go down, producing left bank.

A right bank is brought about by moving the stick to the right.



Instructions

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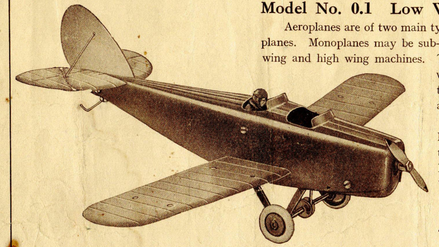
AEROPLANE CONSTRUCTOR OUTFIT No. 0

No. 41-0AC

B3/641/20

Printed in England

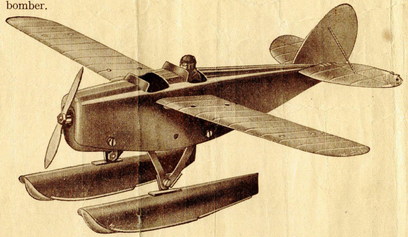
All these Splendid Models can be built with Aeroplane Constructor Outfit No. 0



Model No. 0.1 Low Wing Monoplane

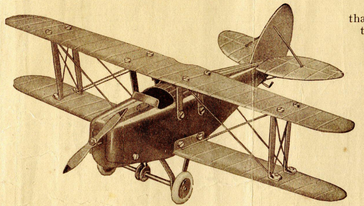
Aeroplanes are of two main types, monoplanes, having only one plane, and biplanes, having two planes. Monoplanes may be sub-divided into three types known respectively as low wing, middle wing and high wing machines. They are usually faster than biplanes of similar weight equipped with engines of equal power, and a better view is obtained from them. The landing speed of monoplanes is higher, but biplanes are more stable in the air.

Meccano Model No. 0.1 is a monoplane of the low wing type. Machines of this type are often regarded as the best for speed, and they have greatly increased in popularity during recent years. Examples of British low wing monoplanes are the Hawker "Hurricane," Vickers-Supermarine "Spitfire" and Boulton Paul "Defiant" fighters, and the Blackburn "Skua" fighter and dive bomber.



Model No. 0.2 High Wing Monoplane Seaplane

One of the best-known British examples of a high wing monoplane seaplane is the Short "Scion-Senior" four-engined transport machine, which has accommodation for nine passengers in addition to the pilot. It has a maximum speed of 135 m.p.h. and a cruising speed of 120 m.p.h. This machine can be adapted for use on land by fitting a wheeled undercarriage in the place of the floats according to requirements. In Canada, where seaplanes are used more extensively owing to the numerous inland waterways, the Fairchild high wing monoplanes are popular single-engined machines that are made in several forms for commercial use.

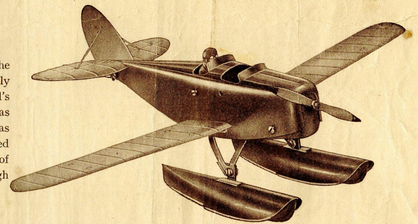


Model No. 0.3 Light Biplane

Until a few years ago it was, for many purposes, considered almost essential that an aeroplane should be fitted with two planes, but the remarkable increase in the performance, reliability, and load-carrying capacity of monoplanes has resulted in the great majority of modern aircraft being of this type.

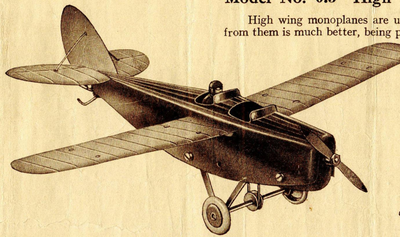
The biplane is not entirely out of favour, however, and a recent British example of this type is the Fairey "Albacore," designed for dive bombing, torpedo dropping, reconnaissance, and fleet spotting. This machine is the successor to the Fairey "Swordfish" torpedo, spotter, reconnaissance biplane.

Model 0.3 is a biplane of the light type. One of the best known of current single seater light biplanes is the Gloster "Gladiator" fighter.



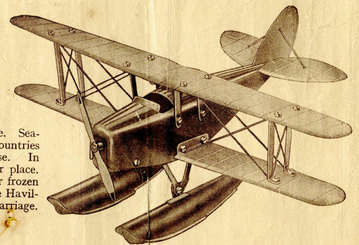
Model No. 0.4 Racing Seaplane

In recent years the low wing monoplane seaplane has become the accepted type where very high speeds are required, and a particularly interesting machine is the Italian Macchi M.C. 72 that holds the world's speed record for seaplanes of 440.67 m.p.h. set up in 1934. It was built to compete in the Schneider Trophy Contest of 1931, but was unable to take part as the experimental engine with which it was fitted was not perfected in time. A novel feature of the machine is the use of two tractor propellers on the nose of the fuselage, driven through reduction gearing to rotate in opposite directions.



Model No. 0.5 High Wing Monoplane

High wing monoplanes are usually more stable than low wing types, and the view downward from them is much better, being practically unobstructed. Aeroplanes of this type, similar to Model No. 0.5, are used in all parts of the world, and they range from small single-seater machines to huge aircraft seating as many as 40 passengers. A new British high wing monoplane is the Blackburn "Botha." I general reconnaissance and torpedo bomber, and another good example is the "Bristol" Bombay bomber transport. Civil types of British high wing monoplanes are the D.H. "Flamingo" and the Luton "Major."



Model No. 0.6 Light Seaplane

Several light aeroplanes may be obtained either as landplanes or fitted with floats for operation from water. The fitting of floats to a light aeroplane appreciably reduces its maximum speed and makes the machine more difficult to fly. The floats are usually made of duralumin, an aluminium alloy that is exceedingly light and does not readily corrode. Seaplanes are not frequently seen in Europe, but they are very popular in countries such as Canada, where there are numerous waterways suitable for their use. In the winter the seaplanes have their floats removed and skis fitted in their place. The aeroplane is then able to take off from, or alight on, stretches of ice or frozen snow with perfect safety. Model No. 0.6 shows a light aeroplane such as a de Havilland "Dragon Rapide," fitted with floats in place of the normal land undercarriage.

A British type is the D.H. "Tiger Moth" Training Seaplane.

Read the "Meccano Magazine." The "Air News" pages are a special feature. Ask your dealer for full particulars