

“KAPITAN”

A DIESEL MODEL FOR 1-2 c.c. ENGINES

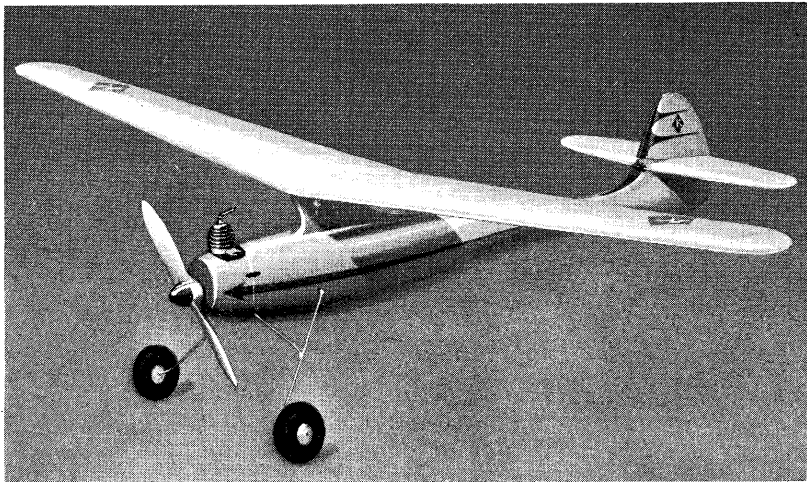
Diesel Engines in General. The introduction of miniature compression ignition—or “diesel” engines—to the British market has placed all the pleasures of motor-powered flight within reach without any of those disappointments commonly associated with the internal combustion engine—or rather with its accompanying electrical paraphernalia. Whether the builder decides to make his own engine or buy a ready-made commercial product he is assured of trouble-free flying from the start, provided he bears in mind a few simple basic principles.

In the absence of any ignition accessories, all faults in starting must be in the engine. They can be due to: (1) Poor compression. This fault will normally occur only in amateur-built engines, as all commercial types are tested before delivery—unless an old engine is acquired second-hand. The cure, of course, is to make a new piston, this time to finer limits. (2) Incorrect mixture. If the maker's instructions have been followed this will probably be due to evaporation of the ether. Freshly-made mixture and a tightly-corked bottle will overcome this. (3) Incorrect needle setting. C.I. engines are most sensitive and often need only a quarter turn adjustment between excellent running and failure to start. Having ascertained the optimum position by bench testing, note it carefully for the future. (4) Incorrect adjustment of contra-piston. This is a trial and error procedure—and again the best position should be noted. Some continental engines have fixed compression and rely entirely on correct needle and mixture control.

If the engine is still obstinate, then enough mixture is not getting through—or, conversely, too much. Patient checking of these details will ensure a start. No matter how long this may take in the “apprentice” stage, there will be no flat battery trouble! A final word of warning. Beware of over-choking. Just enough to make sure the mixture is through should suffice.

Having disposed of any gremlins that may be lurking round the engine, let us consider the construction of “Kapitan.” This model is a proved machine, developed over several years by a well-known Czech firm. Originally designed for all hardwood construction, it is even more attractive in balsa, as a monocoque fuselage may be employed. While not exactly a beginner's model, it is one that may be attempted with confidence by any model-maker who has built a sailplane of equal span, as there is nothing tricky in assembly, wing fixing, or trim.

The Fuselage. Cut out formers of materials specified, notching for longerons with the side of a fine file. Fix top and bottom longerons first, holding them in place with rubber bands until cement is dry; then add the remainder in twos to avoid distorting the shape. This can safely be judged by eye, though there will be some who prefer to build on a jig. This may be simply prepared by cutting the side elevation shape out of a piece of thick cardboard and mounting this on scrap-wood stocks. After fixing the undercarriage blocks and wing-mount, cover fuselage



The completed “Kapitan” ready for flight.

with sheet balsa and sand down smooth. Note that the front bay containing the engine is detachable. The actual fixing method will depend on the engine in use—with some designs it may be necessary to insert runners to take the fixing lugs. The undercarriage legs should be inserted through the reinforcing blocks and soldered together where indicated. If desired, a light fairing may be added for appearance, constructed either of rolled gummed brown paper or soft balsa bound with tissue or silk—if any.

Wings. These are simple in construction and may be built in two halves. Note the reflex trailing edge of the ribs which should be followed carefully if the best is to be obtained from the section. After completion, the two wings are joined together with the 1/4-in. ply tongue between. This is a neat and simple fixing which enables the wing to fracture the retaining dowels without other damage in the event of a heavy landing. Model engineers will note the entire absence of those unsightly rubber bands which seem out of place in an engineering job.

Tailplane. This is light and simple and presents no difficulties. The dowel retaining tubes should be rolled to a good press fit. If they work looser after a time the dowels may be coated with cement until a sufficiently tight fit is achieved. Adjustment is made by slipping the wire prongs in an appropriate hole in the fin, pivoting about the dowel.

Covering. The advice to cover with strong bamboo paper may be difficult to follow, but in the absence of this, double covering with the best tissue obtainable will prove adequate. After doping, a little ornamentation with cellulose paint improves the general appearance, and especially round the nose of the fuselage protects the wood and covering from the effects of spilled and splashed mixture.

First Flights. Having tried the model for glide in the approved fashion over long grass, its first power flights may be undertaken. It is safer to start with rise-off-ground flights than to risk a hand-launch under power. A first trip of ten seconds' power will be enough to reveal faults without undue danger. Check potential faults one at a time, and increase power progressively as they are cured. The longest power run recommended is about thirty seconds—if this is exceeded it will be all the builder can do to chase after his errant model.

Working Drawings. For those who do not wish to scale up the quarter-size drawing on the opposite page, full size plans are available from Aeromodeller Plans Service Ltd., Allen House, Newarke St., Leicester, price 2/6 post free.