

Chinook CH-47C Helicopter

Designed and built by Fran Oakey



The model is built to 1/12th scale giving a fuselage length of fifty-one inches. Most of the metal parts were manufactured by me, whilst the plastic moulded parts were bought from modelling outlets specialising in model helicopters. The full size Chinook is fitted with 3-bladed rotor heads, the model however has 2-bladed flybar rotor heads. The 2-bladed flybar rotor heads were used to ensure its stability. Three bladed heads are planned and will be checked for stability on a standard single rotor helicopter before fitting to the Chinook.

The mechanics are built as three sub-assemblies joined together with an upper and lower “U” shaped channel. The power unit sub-assembly is in the centre of the machine and contains an OS 61 motor, which drives a lay shaft through a 9.55:1 ratio gear train. One end of the lay shaft turns the front rotor shaft via a shaft with hexagon couplings at each end then through a pair of bevel gears, the other end of the lay shaft turns the rear rotor shaft in the same manner. The bevel gears are made from “Duracon” and have a ratio of 1:1.

The fuselage is moulded in GRP, first a two piece plug was made with the split along the vertical centre line, longitudinally, and then a mould was made from each half. Inserts were moulded for the ends of each half mould in order to produce the centre section of the fuselage. With the inserts removed the ends for the fuselage were moulded and then trimmed to fit the centre section. The front of the fuselage has been sprayed grey to help the visibility and orientation whilst flying the model.

The radio control system for the model employs a PPM receiver, five servos, two gyros and an electronic mixer, the mixer is the type used for model aircraft with a “V” tail configuration. A microprocessor based transmitter is required to enable channel mixing of some of the functions, in this case a JR 388 is used. The transmitter is configured for aircraft (Acro mode) so that the mixing can be tailored to suit the model; (“Heli mode” has pre-set mixing that is inappropriate for the Chinook).

One servo is used to control the throttle on the engine, an OS 61 heli. Then each head has two servos one for lateral cyclic pitch and one for collective pitch, the model doesn't have fore/aft cyclic control this is fixed. Consider the collective pitch first, the front rotor has collective only fed to its collective servo, but the rear rotor has the collective channel mixed with the elevator channel within the transmitter, and this combined signal fed to its collective servo via one of the gyros. Now the lateral cyclic and yaw, aileron and rudder, these two channels are connected to an onboard mixer, with the second gyro connected between the receiver's rudder output and the mixer's rudder input. One of the mixer outputs is connected to the front lateral cyclic servo, the other is connected to the rear lateral cyclic servo.