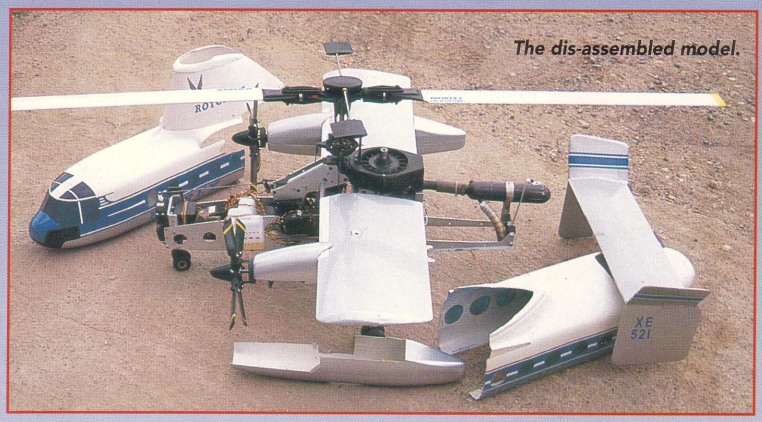


The dis-assembled model.

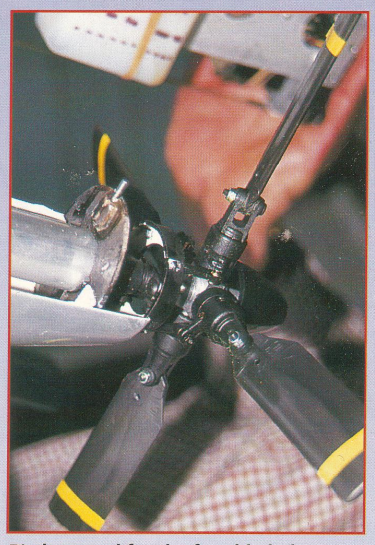
with collective, just like any helicopter. The forward facing props (or tails) are variable pitch with one pushing and the other pulling thus providing torque compensation and yaw control. This control is via the 'rudder' stick and so the actual controls are exactly like a model helicopter.

An additional control is provided in that the two propellers have a collective facility which Jim has called 'thrust'. This is operated by a sixth channel via a slide control on the transmitter and increases or decreases the thrust collectively. Thus forward or backwards motion can be achieved using 'thrust' or by way of the more normal (to us) use of cyclic inputs. An interesting feature of this is that the model can be induced to 'prop hang' where rear cyclic is held in and is balanced with forward thrust resulting in the model hovering in a nose high attitude. The opposite attitude is also possible with the model hovering nose down! In forward flight the wings produce lift thus reducing the lift requirement from the main rotor resulting in more power being available for thrust. The theory for the full size being that the machine will reach a speed where the rotor is acting as an auto gyro and all the power is channelled into forward thrust, a little optimistic for the model perhaps!

The mechanics

The model is powered by an OS 61, the mechanics are based on the Morley Maverick but uses two tail drive take offs to two Morley MXB tail gear boxes. The output from these run out under the wings to the rear of the nacelles in which are mounted two Maverick tail gearboxes. Short pieces of tail boom support these gear boxes and the output shafts which run forward to the two special four blade hubs. Special shafts were made for the drive to the propellers which in fact use the 'input' side of the gear box for the 'output' to the propellers. The four bladed propellers are Morley tail blades on Maverick tail blade holders mounted onto specially made hubs. The pitch of the blades is controlled by sliding rings, a little like a non-tilting swashplate. The inputs to these are via pitch levers on the Maverick gear boxes and had to be designed to accommodate large pitch movements as the pushing one has to be able to go from full negative pitch in the hover to full positive in forward flight.

Pitch control of the propellers is via two servos mounted one either side of the frames. The 'Thrust' servo is mounted in a swinging cradle on the right hand side with the pitch wires connected either side of the disc. When this servo is operated both propellers either increase or decrease pitch. The tail servo is mounted on the left and forward and is connected to the thrust servo cradle via a bell crank. The tail servo moves the thrust servo in its cradle and so increases pitch on one pro-


Pitch control for the four bladed propellers