



Kremer speed competition flight timing

The batteries are charged for 8:30 mins. The aircraft is stationary on the ground. The pilot drives the generator by pedalling. The wheel chain, prop chain and motor chain are all derailed or off.

After charging for 8 mins 30 sec the propeller chain is put back onto its sprocket (24 teeth). The chain tensioner cord moves the idler wheel to make this easier. The 0.1457 pitch chain is taken off the generator sprockets and the motor chain is replaced. The drive chain to the main wheel is put onto the inboard sprocket of the main axle, it is derailed using a bicycle derailler after take off. The pilot closes the door using the zipper himself. It takes 1 minute to reconfigure the transmission and close the door ready to fly.

The pilot starts the take off roll. At 10mph the motor is switched on to low power (resistor in series) and at 15mph to full power to accelerate to 25mph. Immediately after take off the chain driving the main wheel is derailed to conserve power.

Flight strategy is to drain the batteries at a constant 9 Amps. The pilots pedal speed controls the motor speed to some extent. The propeller pitch can be varied through 10 degrees whilst maintaining constant pedal and motor rpm. e.g. At take off with the pilot pedalling at 100 rpm the motor is turning at 10300 rpm and the propeller at 270 rpm.

SCALE m

0 0.5 1.0 2.0 3.0 4.0 5.0 6.0 7.0 8.0 9.0

BIONIC BAT ex Gossamer Owl

As flown Sept 25-27th 1983
1 mile triangle flown in 2:38

For more information see:
Cowley, M.B. and Morgan, R.W. Aerovironment Inc., Simi Valley, C.A., Dr P.B. MacCready, Aerovironment Inc. Monrovia C.A. (1985)
Bionic Bat, Human-powered speed aircraft. AIAA paper 85-1447, July 1985.