RCmart International, Inc.

Power Fan 400 / 6 Operating Guide

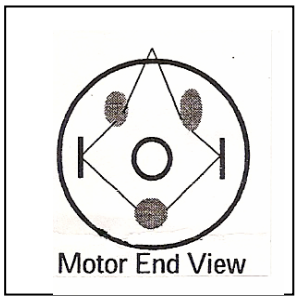
This electric ducted fan unit has been developed to optimize the motor power and efficiency of the economical Mabuchi 380 motor. Our engineers have developed a modified version of this motor that provides excellent performance while maintaining the economy of this type motor.

Please follow this guide to maximize the performance of this ducted fan system.

1. Motor Breakin: We highly recommend that the motor be run for at least 10 minutes with just the impeller attached (no duct) at a voltage of less than 5 volts (a 4 cell receiver battery works for this). The impeller will cool the motor and the low voltage will keep the motor from overheating while the brushes and bushings seat.

   Before operation, apply just a drop of lightweight oil on each motor bushing. After 10 minutes or so are up, use motor cleaner to clean the brushes. Then lightly oil the bushings again. Run for another 2 minutes or so. Now the brushes and bushings are seating and will last longer.

2. Fan Assembly: The adaptor can be installed on the motor shaft before the motor is installed. We recommend to use threadlock on the adaptor's set screw. Install the included motor capacitors. These suppress electronic noise from the motor. Follow the diagram below. Then install the motor with the screws provided.



Noise Suppression capacitors should be installed before the motor is flown. Connect one capacitor for motor tab to motor tab. Connect the other capacitors from each tab to the side of the motor case

   Before installing the impeller, we suggest balancing it. Also, rather than sanding the blades, we recommend placing a small piece of electrical tape on the back side of the "light-blade". This will cause the least damaging effect to the blade efficiency. Usually, our impellers will not need balancing but it is a good idea to check before installing it in your aircraft.

   Now is a good time to install the connectors or motor leads.

3. Fan installation Tips: The fan must be secure but not squeezed or the duct will rub against the impeller blades.

   The duct should be clear of all obstructions. Wires should be limited to only the motor wires and nothing else should interference with the airflow in the duct.

   The opening and exit of the duct should be of equal or greater area than the fan. For this, many planes require an extra "cheater hole" be created just in front of the fan unit in the bottom of the plane.

   If your plane is not made for this particular fan, it may be necessary to remove the front lip of the duct. A hand saw works great for this.

4. Battery Selection: We recommend batteries that have minimal voltage drop under the loads specified in the performance chart. In practice we have used 2/3A nicads like the Sanyo 500AR and 600AE nicd batteries with good success.

5. Motor Selection: We have made the fan so that any other 400 size motor will fit. However, the motor we are using is designed for this fan unit whereas other motors may not be well suited for Ducted Fan use. Please refer to the motor manufacturer's recommendations if you choose to use another brand of motor.

   Test performance result with this motor :

Volts (V)	Amps (A)	RPM	Thrust (Grams)	Thrust (Ounces)	Power (Watts)	Efficn.(g/w)
9	8	19000	225	8.04	72	3.125
10	9	20700	265	9.29	90	2.944
11	10	22100	300	10.58	110	2.727
12	11	24500	360	12.62	132	2.727