RCPLANELAB

# Electric RC Airplane Motor Sizing Quick Reference

Start with flying weight. Check the complete power system.



## Starting input-power ranges

Rules of thumb for propeller-driven airplanes

| Flying style / airframe | Input W/lb |
|---|---|
| Light scale, vintage or gentle motor-glider | 50-80 |
| Trainer / general cruising | 70-100 |
| Sport / basic aerobatics | 100-130 |
| Warbird / pattern / faster, higher-drag model | 130-170 |
| 3D / high-performance aerobatics | 180-220+ |

**These ranges are planning estimates, not manufacturer specifications.**

Drag, wing loading, altitude and propeller efficiency affect the result. Some sailplanes use short, higher-power climbs. EDF models need fan-specific data.

## Example input-power targets

| Flying weight | Trainer 70-100 W/lb | Sport 100-130 W/lb | Warbird / pattern 130-170 W/lb |
|---|---|---|---|
| 2 lb | 140-200 W | 200-260 W | 260-340 W |
| 4 lb | 280-400 W | 400-520 W | 520-680 W |
| 6 lb | 420-600 W | 600-780 W | 780-1,020 W |
| 8 lb | 560-800 W | 800-1,040 W | 1,040-1,360 W |
| 10 lb | 700-1,000 W | 1,000-1,300 W | 1,300-1,700 W |

**Input watts = ready-to-fly weight (lb) x selected W/lb**

Include the battery in flying weight. Input watts = loaded volts x amps.

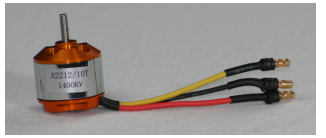
**RCPlaneLab.com / Electric Power System Center**

References: Innov8tive Designs, E-flite and APC. Full sources in the linked guide.

## Motor size and Kv

### Size labels vary by brand.

A size code may describe stator or outside dimensions. Check the drawing, weight and ratings. Glow-size labels are only a starting point.



Motor photo from our guide

### Kv describes speed per volt.

Approximate no-load rpm = Kv x volts. A 1,000 Kv motor at 10 V gives about 10,000 rpm without a prop. Loaded rpm is lower. Kv alone does not specify safe watts or prop size.

## Equipment-selection checks

- **Motor and prop**
  Use the maker's tested cell count and prop data. Stay within continuous ratings and any burst time limit.
- **ESC and receiver power**
  Confirm cell count, current margin, cooling, and BEC voltage/current for your servos and accessories.
- **Battery and installation**
  Check current capability, connectors, airflow, mount, battery fit and CG. Check prop clearance and rpm limit.
- **Wattmeter test**
  Secure the model and keep everyone clear of the prop. With a charged pack, measure volts, amps and input watts. Stop before any limit or abnormal heat/vibration.

**Prop off for radio setup.**
**Retest after setup changes.**

### Full guide + calculator

rcplanelab.com/
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