



## Hacker E-Series Brushless Motors E3-37 3700Kv & E3-49 4900Kv

### Features:

- Precision engineered in Germany by proven World Champions
- Specifically designed for use with Li-Po batteries (2S-3S/1200-1320mAh)
- Combines ultra-high power & super-efficient design
- High-rpm 2-pole construction
- Built-in heatsink for extreme environments
- Fits into most GWS & E-flite™ gearboxes
- Ideal for park flyers, miniature helis and Team Losi's Mini-T™

### Hacker's Precision Engineering Is Competition-Proven

- 3-Time FAI F5D World Champion (2004, 2002, 2000)
- 2004 FAI F3A U.S. National Champion
- 2004 FAI F3A European National Champion

#### E3-37 (ELFL3000) Specifications:

Diameter: 24mm (.95 in)  
Length: 36mm (1.4 in)  
Weight: 48 g (1.7 oz)  
Shaft Diameter: 2mm (.08 in)  
Continuous Amps: 7A\*  
Peak Amps: 12A\*  
Kv: 3700 rpm/v  
I<sub>o</sub>: .9A @7.2V (no load current)  
R<sub>i</sub>: .23 ohms (resistance)  
Cells: 6-10 Ni-Cd/Ni-Mh, 2-3 Li-Po

#### E3-49 (EFLM3005) Specifications:

Diameter: 24mm (.95 in)  
Length: 36mm (1.4 in)  
Weight: 48 g (1.7 oz)  
Shaft Diameter: 2mm (.08 in)  
Continuous Amps: 7A\*  
Peak Amps: 12A\*  
Kv: 4900 rpm/v  
I<sub>o</sub>: 1.4A @7.2V (no load current)  
R<sub>i</sub>: .15 ohms (resistance)  
Cells: 6-10 Ni-Cd/Ni-Mh, 2-3 Li-Po

\* Maximum Operating Temperature: 220 degrees Fahrenheit

\* Adequate cooling is required for all motor operation at maximum current levels.

\* Maximum Peak Current duration is 30 seconds. Adequate time between maximum peak intervals is required.

Requires 12-20A brushless ESC. We recommend E-flite's 20-Amp Brushless ESC (EFLA311).

### Installation of Pinion Gear & Gearbox:

For installation into a gearbox, it will be necessary for you to purchase and then install a pinion on the shaft.

A 10 Tooth pinion is for use with an E-flite (EFLM221) or GWS 'D' gearbox with 6.6:1 gear ratios. A gearbox with a 6.6:1 ratio has a 66 Tooth spur gear on the gearbox and the motor uses a 10 Tooth pinion gear installed on the shaft. A 12 Tooth pinion is for use with an E-flite (EFLM216) or GWS 'C' gearbox with 5.33:1 gear ratios. A gearbox with a 5.33:1 ratio has a 64 Tooth spur gear on the gearbox and the motor uses a 12 Tooth pinion gear installed on the shaft. Other gearboxes may vary by ratio depending on the number of teeth on the spur gear and pinion gear.

When installing motors into an E-flite or GWS gearbox, it is very important that your gear mesh is correct and the gear's mesh is smooth with no binding. The E-flite gearbox features adjustable slotted mounting holes so that you can ensure your gear mesh is correct. Remember, if your mesh is too loose or too tight, it may strip the gears. One suggestion may be to insert the polybag included with the motor or a small piece of paper in between the pinion and spur gear as you are installing them. Tighten and secure the screws to the gearbox. Always make sure the screws are long enough so they have properly seated into the motor. You can easily pull the polybag or paper out by rotating the shaft until it comes out. Be certain to check the mesh at multiple points on the spur gear before finalizing the motor mounting position in the gearbox. To extend the life of your gearbox, we also recommend using a small amount of grease, such as lithium grease, on the spur gear.

Once a pinion is installed on the shaft, it will be necessary to remove the pinion from the motor shaft if you want to use the motor with a different gearbox than the ones specified above. The gear mesh will bind and the motor will not operate properly if you have incorrect gear ratios. We recommend using a gear puller for this step for the safest removal of the pinion gear. Never reuse a pinion gear that has been removed from a shaft.

#### Installing Pinion Gear

1. Align pinion on end of shaft and press fit using a vise for proper installation.
2. Support the aft bearing and shaft using a small hardwood block to prevent both from separating from the case.
3. Be careful you do not crimp the motor wires in the process and make sure they are safely out of the way.

#### Removing Pinion Gear

1. To remove the pinion gear, it is recommended to always use a gear puller to prevent damage to the pinion and shaft. We recommend the E-flite Pinion Puller (EFLA212).

## Operating Instructions:

1. This brushless motor requires the use of a sensorless brushless speed control. Failure to use the correct speed control may result in damage to the motor and/or speed control. Recommended controllers brands include E-flite (EFLA311), Castle, and Hacker.
2. When mounting the motor, be sure the correct length of screws are used so damage to the inside of the motor will not occur. **The use of long screws will damage the motor.**
3. You may connect the three motor wires directly to the controller with solder or use connectors such as gold plated brushless bullet connectors (EFLA241), which will also need to be soldered properly to your wires. The three motor wires can be connected in any order to the three output wires or output port on a sensorless brushless speed control. Be sure to use heat shrink tubing to properly insulate the wires so the wires will not short.  
Note: Shorting may damage the motor and speed control.
4. If you add connectors and you no longer wish to use them, never cut the motor wires. Remove them by properly desoldering them. Shortening the motor wires is considered an improper modification of the motor and may cause the motor to fail.
5. When you connect the motor to the esc, check the rotation direction of the motor. If you find the rotation is reversed, switching any two motor wires will reverse the direction so the motor rotates properly.
6. Proper cooling of the motor is very important during operation. New technology has brought much higher capacity batteries with higher discharge rates, which can cause extreme motor temperatures during operation. It is the responsibility of the user to monitor the temperature and prevent overheating. Overheating of the motor is not covered under any warranty.
7. You can install the propeller on the motor shaft after you have confirmed proper rotation direction. Also consult the instruction included with your sensorless electronic speed control for proper adjustments and timing.
8. Once the battery is connected to the motor, please use extreme caution. Stay clear of the rotating propeller since spinning propellers are very dangerous as the motors produce high amounts of torque.
9. Never disassemble the motor. This will void any warranty.

## Warranty and Repair Policy:

The Hacker E3 motors are guaranteed to be free from original manufacturing defects in material and workmanship at the date of purchase. No term warranty applies to this product. This warranty does not cover any component parts damaged by use, misuse, unauthorized service or any form of modification. Horizon Hobby, Hacker, and Aero-Model assume no liability for damages caused during the installation of this motor. At no time will Horizon Hobby, Hacker, and Aero-Model be responsible for collateral or incidental damages caused during the operation of this motor. We reserve the right to change or modify this warranty at any time.

To speak to a service technician, call (877) 504-0233.

## Warranty Repairs:

To receive warranty service, you must include your original sales receipt verifying the proof-of-purchase date. Providing that warranty conditions have been met, your motor will be repaired free of charge.

## Non-Warranty Repairs:

Should your repair cost exceed 50% of the retail purchase cost, you will be provided with an estimate advising you of your options. Any return freight for non-warranty repairs will be billed to the customer. For non-warranty repairs, please advise us of the credit card that you prefer to use. Horizon Service Center accepts Visa or MasterCard. Include your card number and the expiration date. Horizon Service Center also accepts money orders.

If your motor needs to be repaired, ship the motor in its original box (freight prepaid) to:

Horizon Service Center  
Attn: E-flite™ Service Center  
4105 Fieldstone Rd.  
Champaign, IL 61822

Include your complete name and address information inside the carton, as well as clearly writing it on the outer label/return address area. Include a brief summary of the difficulty. Date your correspondence and be sure that your name and address appear on this enclosure. Also, please include a phone number where you can be reached during the business day.