

# HD8 1/8 SCALE MOTOR INSTRUCTIONS

# NOVAK



#55-3810M-1 Rev.1  
4-2015

## SPECIFICATIONS

Input Voltage .....	2S-4S LiPo/LiFe cells (7.4-14.8 max VDC)
Motor Kv.....	1,900 (#3810), 2,200 (#3811)
Design .....	Sensor-based (compatible with Sensored/Sensorless ESCs)
Motor Size .....	1.57" D x 2.80" L x / 40 x 71mm
Weight.....	11.8 oz / 334.5 g
Output Shaft Dimensions .....	5mm Diameter; 19mm length with flat
Rotor.....	4-pole, high-strength sintered Neodymium
Stator.....	12-slot
Max. RPM .....	50,000
Mounting.....	M3x0.5 and M4x0.7 spaced at 25mm
Recommended ESC.....	Novak Activ8 V2 (#1726)

## ACCESSORIES

- 5351-4 Shielded Sensor Harness--Double-ended. Available in 4", 6", 9", and 12"
  - 5512 12GA Power Wire Set--3 feet each black, red, and blue
  - 5654 High RPM Cooling Fan--30x30x10mm--With 2-pin JST connector.
  - 5741 4mm Power Connectors/5pair--Gold plated low-loss high-amp connectors.
  - 5832 Lead-Free 3% Silver Solder--15g Tube--Low-resistance, high-conductivity
  - 5852 Heat Shrink Tubing--40pcs Blk/Red--1" pieces in 1/4" size--20 each
  - 5860 Speed Lube--10ml--Premium American-made bearing oil with penetrative additives
- The HD8 Motor is completely rebuildable, with full component availability.  
Refer to website for component list. [www.teamnovak.com](http://www.teamnovak.com)

## PRECAUTIONS

**NEVER FREE-REV THE MOTOR!**  
Free-running your brushless motor in a no-load condition can result in rotor failure and ESC transistor damage. This includes holding your vehicle in the air, and free revving the motor while installed into the vehicle. This will void the product's warranty!

- **WATER & ELECTRONICS DON'T MIX** Never allow water, moisture, or other foreign materials to get inside motor.
- **NOVAK ESC FOR BEST RESULTS** Use Novak Activ8 V2 for best performance & protection. Only use motors with the proper Kv to match ESC's rating.
- **DO NOT OVERHEAT THE MOTOR** Temperatures above 180°F (82°C) will weaken the magnet and may melt the coils. This voids the warranty and can damage the ESC.
- **INSULATE EXPOSED WIRES** Use heat shrink tubing to prevent shorts. Refer to ACCESSORIES for Novak heat shrink kits.
- **NO SOLVENTS** Do NOT expose the motor to any type of solvents.
- **SET GEAR MESH PROPERLY** Too tight of a gear mesh can result in motor pinion shaft breakage--be sure to adjust the gear mesh properly.

# INSTALLATION INSTRUCTIONS

## STEP 1- INSTALL MOUNTING PLATE

1. Insert the motor mounting screws that came with your vehicle through the motor mounting plate. **Novak HD8 motors need no more than 1/4" of screw extending past the vehicle's mounting plate (6.5 mm).** Too little can strip motor's threads. Too much will cause internal motor damage and void warranty.
2. Attach the motor to the vehicle's motor mount using one of the sets of threaded mounting holes (M3x0.5 or M4x0.7). **Select a mounting position that keeps the solder tabs clear of conductive surfaces like aluminum or graphite.**  
*Note: An adhesive-backed foam pad is enclosed to be used to support the rear of the motor to prevent flexing of the motor on hard impacts. Use this if your vehicle does not have this feature.*

## STEP 2- INSTALL PINION GEAR

A pinion gear with a 5mm bore is needed. Novak offers high-quality Mod 1 (#5112-5124) and 32-Pitch (#5152-5161) gears.

1. Install pinion gear on the motors output shaft and test fit in vehicle to align pinion and spur gears.  
**Refer to GEAR SELECTION (on the back) for additional information on selecting the proper pinion gear.**
  2. Tighten pinion's set screw on the flat of motor shaft.
  3. Adjust the motor position for proper amount of free play. **It is important to have a small amount of play between the pinion gear and the spur gear (about the thickness of piece of paper).** Check the free play at several positions around the spur gear to ensure a proper mesh.
- 4. Tighten motor mounting screws. Avoid using excessive force, as the threaded holes in motor could become stripped.**

**MAKE SURE PINION/SPUR GEAR MESH IS NOT TOO TIGHT! IF GEAR MESH IS TOO TIGHT, MOTOR SHAFT BREAKAGE CAN OCCUR.**

## STEP 3- SOLDER POWER WIRES

The Activ8 V2 ESC (recommended) comes pre-wired with 12GA silicone power wires. You will need a high-powered soldering iron, solder (Novak #5832 or #5853), solder flux (Novak #5861) and a pair of wire strippers (Novak #5880).

1. Determine the best routing in the vehicle for the motor's silicone power wires. *Avoid any moving parts & suspension.*
2. Prepare ends of power wires by stripping 3/16 - 1/4" of insulation from end of wire. Tin wire ends with solder.
3. Lay tinned end of the wire flat on the proper solder tab (refer to phase markings on the endbell) and solder wires to the motor. Apply heat with a high-power soldering iron to the power wire and solder tab- begin adding solder to tip of iron and to wire. Add just enough solder to form a clean and continuous joint from the solder tab up onto the wire.

**Be sure no phase wires make contact with an adjacent solder tab- this will cause short-circuiting, damage electronics, & void warranty.**  
**DO NOT OVERHEAT SOLDER TABS**  
**Prolonged/excessive heating will damage tabs and void warranty**

Refer to Novak's Website for videos on soldering

## STEP 4- CONNECT SENSOR HARNESS

1. Determine the best routing in the vehicle for the motor's sensor harness. Securing the sensor harness to the motor power wires with a tie-wrap can provide a good location and also act as a strain relief. *Novak offers several sensor harness lengths for various installations (Novak #5351-5354).*
2. Connect one end of the included harness to the ESC and the other end to the motor's sensor harness connector located on the back endbell (refer to figure)- be sure to insert all the way.



## GEAR SELECTION (Important!)

### Motor operating temperature is the **ONLY** way to properly set the maximum vehicle gearing

The motor should be **180°F (82°C) MAX** at end of run!

**Temperatures above 180°F will weaken the magnet & may melt the coils! This voids warranty & can damage ESC!**

Change the gearing to avoid overheating.

Because of the potential danger of overheating, ESC/motor damage & failure, **you must start with VERY small pinion sizes** and check ESC & motor temperatures at multiple times throughout a run. **This is the only way to ensure that you are not causing excessive heating.**

If ESC & motor temperatures remain low and stable, you can slowly increase the pinion size while again monitoring the temperatures to determine the safe gearing for your vehicle, motor, and climate/track conditions. Because these variables can change or be modified, **you MUST continually monitor ESC and motor temps to protect your electronics from damage.**

## OVERHEATING -- WARNING!

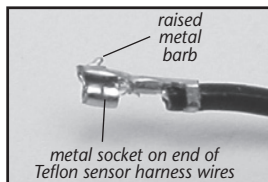
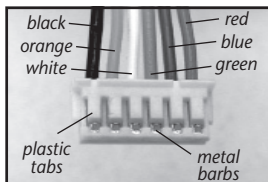
The Novak HD8 Motor when used properly should not have an issue of over-heating. However extended runtimes, gearing, vehicle performance, and track conditions, can lead to overheating.

**You must use extreme caution when setting up these electronics and carefully test your application to avoid overloading and overheating either the ESC or the motor.**

**Damage caused by excessive overheating WILL NOT be covered under the product's factory warranty.**

## SENSOR HARNESS WIRING

Should any of the 28G Teflon wires pull out of the motor's sensor harness connector, re-insert them in the connector's appropriate slot. Check the plastic tab to make sure it has not deformed excessively before inserting into the housing.



## MOTOR MAINTENANCE

- **CHECK ALL MOTOR SCREWS** for loosening at regular intervals, just like other hardware on your vehicle. *Note: The 3 main socket head screws that hold the motor together may require tightening after a few runs of the motor.* Also check the 3 flat head screws securing the end cap on the back of the motor.

**If any of the motor screws are removed, it is important to apply a thread locking agent for added strength.**

- **CHECK MOTOR BEARING WEAR** after extensive use. The motor's closed design will keep most dirt and debris out, but some will get in and eventually cause wear. If the shaft does not spin freely, you may need bearing replacement. A small drop of **Novak Speed Lube (#5860)** on the bearings periodically can help extend bearing life. However, too much oil will attract dirt and will cause problems, so apply sparingly.
- **CLEAN INSIDE MOTOR** periodically by removing front end bell, removing the rotor, and blowing out the inside of the motor with compressed air. Be sure not to lose any small shim washers that may be on the ends of the rotor shaft, and keep them in the correct location.

## SERVICE PROCEDURES

After reviewing instructions, tech section and how-to video section of website, if you feel your motor requires service (*motor may appear to have failed when other problems exist*), obtain the most current product service options and pricing by one of the following methods:

**WEBSITE:** Print a copy of the product **SERVICE FORM** from the SERVICE section of the Novak website. Complete form & return with the product.

**PHONE/E-MAIL:** Contact our customer service department by phone or e-mail, and we will supply you with current service options.

**WARRANTY SERVICE:** You **MUST CLAIM WARRANTY** on product **SERVICE FORM** and include a valid, itemized receipt with the purchase date on it, or an invoice from previous service work. *If warranty provisions have been voided, there will be a service fee.*

**Technical Support:** [tech@teamnovak.com](mailto:tech@teamnovak.com)  
**Customer Support:** [cs@teamnovak.com](mailto:cs@teamnovak.com) • (949) 916-6044

## PRODUCT WARRANTY

Novak Brushless motors are guaranteed to be free from defects in materials or workmanship for a period of one year from the original date of purchase (verified by dated, itemized sales receipt). Warranty does not cover incorrect installation, components worn by use, cross-connection of battery/motor power wires, overheating solder tabs, damage resulting from thermal overload or operation above 180°F, use of excessive timing or overheating, splices or damage to the sensor harness, damage from disassembling motor, tampering with internal electronics, allowing water, moisture, or any other foreign material to enter motor or get onto the PC board, short-circuiting of motor by allowing exposed wiring or solder tabs to cross-connect or ESC applying simultaneous power to more than one phase at a time from switching to Brush Mode, free-revving motor, or any damage caused by a crash, flooding, or natural disaster. In no case shall our liability exceed the product's original cost. We reserve the right to modify warranty provisions without notice.

Because Novak R/C, Inc. has no control over the connection & use of motor or other related electronics, no liability may be assumed nor will be accepted for damage resulting from the use of this product. Every motor is thoroughly tested and cycled before leaving our facility and is, therefore, considered operational. This product is not a toy, and is not intended for use by children under 14 years of age without the strict supervision of an adult. Use of this product in an uncontrolled manner may result in physical damage or injuries. Take extra care when operating any remote control vehicle. By the act of connecting/operating speed control, the user accepts all resulting liability.

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**Installation Photos for popular  
1/8th Scale Vehicles are located  
on the Novak Website  
[www.teamnovak.com](http://www.teamnovak.com)**