

## STEP 3—MOUNTING ESC

Mount ESC with power wires away from other electronics & moving parts. Select a location that allows good airflow through and around the heat sink and cooling fan—*Good air flow allows ESC to run cooler and more efficient!*

- MOUNT ESC IN VEHICLE** using the included double-sided tape. *Be sure the receiver & antenna are mounted as far from ESC, power wires, battery, & servo as possible—these components all emit RF noise when the throttle is applied. On graphite or aluminum chassis vehicles, it may help to place receiver on edge with crystal & antenna as far above chassis as possible.*  
*Note: Mount the antenna as close to the receiver as possible—trail any excess wire off the top of the antenna mast (cutting or coiling the excess antenna wire will reduce radio range).*
- SECURE POWER TRANS-CAP MODULE IN VEHICLE**  
Use the included double-sided tape to mount the Power Trans-Cap Module to the chassis with the included double-sided tape. Module can also be tie-wrapped to the power wires or other part of chassis or shock tower with the included tie-wraps.
- INSTALL REMOTE POWER PROGRAMMING SWITCH** with the included double-sided tape where it will be easy to access for turning the electronics on & off and also for programming the GTB's throttle profiles or switching between Brushless and Brush-Modes.

## STEP 4—TRANSMITTER ADJUSTMENTS

For proper ESC operation, adjust transmitter as follows:

- Set **HIGH ATV** or **EPA** to **maximum** setting.  
*[amount of throw at full throttle]*
- Set **LOW ATV**, **EPA**, or **ATL** to **maximum** setting.  
*[amount of throw at full brakes]*
- Set **EXPONENTIAL** to **zero** setting. *[throttle channel linearity]*
- Set **THROTTLE CHANNEL REV. SWITCH** to **either** position.
- Set **THROTTLE CHANNEL TRIM** to **middle** setting.  
*[adjusts neutral position/increases or decreases coast brakes]*
- Set **ELECTRONIC TRIGGER THROW ADJUSTMENT** to **70% throttle** and **30% brake** throw (or 7:3) for **Forward & Brake only Profiles**, and **50% throttle** and **50% brake** throw (or 5:5) for **Profiles with reverse**.  
*[adjusts trigger throw electronic/digital pistol-grip transmitters]*
- Set **MECHANICAL TRIGGER THROW ADJUSTMENT** (if radio has it) to position with **2/3 throttle** and **1/3 brake** throw for **Forward & Brake only Profiles**, and position with **1/2 throttle** and **1/2 brake** throw for **Profiles with Reverse**.  
*[adjusts trigger throw on mechanical/analog pistol-grip transmitters]*

\*NOT ALL TRANSMITTERS HAVE THESE ADJUSTMENTS\*

## STEP 5—ONE-TOUCH PROGRAMMING

With ESC connected to (at least) a receiver & a charged battery pack:

- TURN ON THE TRANSMITTER'S POWER**
- PRESS & HOLD ESC'S ONE-TOUCH/PROGRAMMING BUTTON**  
*Note: The GTB's One-Touch/Programming button is combined with the ON/OFF switch on the Remote Power Programming Switch harness.*
- TURN ON THE SPEED CONTROL'S POWER**  
With transmitter throttle at neutral, and still pressing the One-Touch button, slide the ESC's ON/OFF switch to **ON position**.
- CONTINUE HOLDING BUTTON UNTIL RED LED COMES ON**
- RELEASE ONE-TOUCH BUTTON AS SOON AS LED TURNS RED**
- PULL TRANSMITTER THROTTLE TO FULL-ON POSITION**  
Hold it there until the **green status LED turns solid green**.  
*Note: Motor will not run during programming even if connected.*
- PUSH TRANSMITTER THROTTLE TO FULL-BRAKES**  
Hold it there until the **green status LED blinks green**.
- RETURN TRANSMITTER THROTTLE TO NEUTRAL**  
Red status LED will **turn solid red**, indicating that speed control is at neutral and that proper programming has been completed.

*NOTE: If transmitter settings are changed, One-Touch Programming must be repeated. If you experience any problems, turn off ESC & repeat One-Touch.*

*REMEMBER: Whenever One-Touch set-up is performed, ESC automatically reverts to factory default settings & the Throttle Profile reverts to #1 when in Brushless-Mode.*

## USING A RECEIVER BATTERY PACK

If you are planning to use an external receiver battery pack to power the electronics you need to do the following:

- Plug the external 5 cell (1.2VDC/cell) receiver battery pack into the battery slot of the receiver.
- Leave the **ESC's ON/OFF switch** in the **OFF** position & **use receiver pack's ON/OFF switch** to turn **system power on and off**—Do not use the ESC's switch.

## TROUBLE-SHOOTING GUIDE

### Steering Channel Works But Motor Will Not Run

- Red status LED blinking when throttle is applied.** Check motor sensor harness connection at ESC (make sure all metal sockets are fully inserted into the connector's plastic housing)—check for damaged wires.
- Red status LED on solid & Green LED blinking.** Check input signal harness & motor sensor harness connections at ESC. Check input signal harness wiring sequence & connection at throttle channel of receiver. Check throttle channel operation with servo. Motor sensor harness connected while in Brush-Mode—disconnect sensor harness.
- Blue & Green status LEDs both blinking.** Possible ESC shut-down due to locked rotor detection—return throttle to neutral position to regain motor control—check vehicle's drive train for free operation.
- Blue & Red status LEDs blinking.** Possible ESC thermal shut-down—Check gear ratio & free operation of drive train for possible overloading/ESC is being severely overloaded—allow system to cool & return throttle to neutral position to regain motor control. **LEDs will continue to blink until system is cooled down.**
- Blue & Amber status LEDs blinking.** Possible motor thermal shut-down—Check gear ratio & free operation of drive train for possible overloading/motor is being overloaded—allow system to cool & return throttle to neutral position to regain motor control. **LEDs will continue to blink until system is cooled down.**
- Blue & Green (Locked Rotor Detection), Blue & Red (ESC Thermal Shut-Down), or Blue & Amber (Motor Thermal Shut-Down) status LEDs blinking.** ESC may have shut-down & ESC's neutral point is too far off to sense that transmitter throttle has been returned to neutral—Refer to Steps 4 & 5.
- Possible receiver damage—Check operation with a different receiver.
- Possible internal damage—Refer to Service Procedures.

### Receiver Glitches/Throttle Stutters During Acceleration

- Receiver or antenna too close to ESC, power wires, battery, or motor.
- Bad connections—Check wiring, connectors, & sensor harness.
- External Power Capacitor damaged/not installed—Replace Power Capacitor.

### Motor and Steering Servo Do Not Work

- Check wires, receiver signal harness wiring & color sequence, radio system, crystals, battery/motor connectors, & battery pack.
- Possible receiver damage—Check operation with a different receiver.
- Possible internal damage—Refer to Service Procedures.

### Speed Control Runs Excessively Hot

- Gear ratio too low—Increase gear ratio (see 'GEAR SELECTION').

### Model Runs Slowly/Slow Acceleration

- Gear ratio too high—Reduce gear ratio (see 'GEAR SELECTION').
- Check battery connectors—Replace if needed.
- Incorrect transmitter/ESC adjustment—Refer to Steps 4 & 5.
- External Power Capacitor damaged/not installed—Replace Power Capacitor.

### ESC Is Melted Or Burnt/ESC Runs With Switch Off

- Internal damage—Refer to Service Procedures.

\*For more assistance call our Customer Service Department or check our website.

## SERVICE PROCEDURES

Before sending your speed control or brushless motor system in for service, review Trouble-Shooting guide and instructions. System may appear to have failed when other problems exist.

After reviewing instructions, if you feel that your ESC/system requires service, please obtain the most current product service options and pricing by the following ways:

**WEBSITE:** Print a copy of the **PRODUCT SERVICE FORM** from the CUSTOMER SERVICE section of the website. Fill out the needed information on this form and return it with the Novak product that requires servicing.

**PHONE/FAX:** If you do not have access to the internet, please contact our customer service department by phone or fax as listed below.

**WARRANTY SERVICE:** For warranty work, you **MUST CLAIM WARRANTY** on **PRODUCT SERVICE FORM** & include a valid cash register receipt with purchase date and dealer name & phone# on it, or an invoice from previous service. If warranty provisions have been voided, there will be service charges.

- ESCs returned without a serial number will not be serviced under warranty •**

### ADDITIONAL NOTES:

- Dealers/distributors are not authorized to replace Novak products thought to be defective.
- If a hobby dealer returns your brushless system for service, submit a completed **PRODUCT SERVICE FORM** to the dealer and make sure it is included with the product.
- Novak Electronics, Inc. does not make any internal electronic components (transistors, resistors, etc.) available for sale.

## Novak Electronics, Inc.

(949) 833-8873 • FAX (949) 833-1631

Customer Service e-mail: [cs@teammovak.com](mailto:cs@teammovak.com)

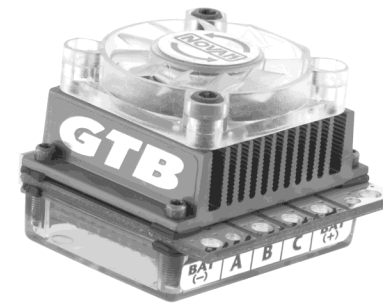
Monday-Thursdays: 8:00am-5:00pm (PST)

Friday: 8:00am-4:00pm (closed every other Friday)

[www.teammovak.com](http://www.teammovak.com)

# BASIC SET-UP GUIDE -- GTB

BRUSHLESS  
NOVAK  
USA



**GTB**  
BRUSHLESS RACING ESC

#55-1710-1  
8-2005

### Brushless & brush motor control and complete programmability in one electronic racing speed control!

The GTB racing ESC gives you the best of both worlds--brush & sensor-based brushless motor control. Combine this with on-board programming of Minimum Drive, Minimum Brake, Drag Brake, & Deadband (plus Drive Frequency in Brush-Mode), and you've got extreme versatility.

The GTB comes with 6 throttle profiles, **Thermal Overload Protection**, **high-power B.E.C.** for strong/fast servo response, **Polar Drive & Digital Anti-Glitch circuitries** for cool & smooth operation, and **Radio Priority circuitry** for the ultimate in control, right down to the end of the charge. Add to this the water-resistant case and user-replaceable input harness, battery & motor wires, Power Trans-Cap Module, & combination ON/OFF switch/One-Touch button, and the GTB is loaded!

**To benefit from all of the technical features of the GTB, PLEASE READ ALL INSTRUCTIONS**

## PRECAUTIONS

### WATER & ELECTRONICS DON'T MIX!

Never allow water, moisture, or other foreign materials to get inside ESC, motor, or on the PC Boards. **Water damage will void the warranty!**

### NO SCHOTTKY IN BRUSHLESS-MODE!

Schottky diodes must NOT be used when using ESC in Brushless-Mode (Schottky diodes are never used with reversible ESCs, including brushless). **Schottky diode usage in Brushless-Mode will damage ESC & void warranty.**

### TAKE CARE WHEN SWITCHING ESC MODES

Severe ESC damage can occur if proper procedures are not followed when switching ESC between Brush-Mode & Brushless-Mode. Refer to **PROGRAMMING/GEARING sheet page 5** for detailed instructions.

### DISCONNECT BATTERIES WHEN NOT IN USE

Always disconnect the battery pack from the speed control when not in use to avoid short circuits and possible fire hazard.

### 4 TO 6 CELLS ONLY

Never use fewer than 4 or more than 6 cells (4.8-7.2VDC, 1.2VDC/cell) in the vehicle's main battery pack.

### NOVAK BRUSHLESS MOTORS ONLY

When in the Brushless-Mode, the GTB speed control is specifically designed for use with sensor-based Novak Brushless Motors Only! **You may replace motor with any Novak sensor-based motor or Novak approved motor—see website for up to date motor listings, updates, & compatibilities.**

### NO REVERSE VOLTAGE!

Reverse battery polarity can damage ESC & void warranty. Disconnect battery immediately if a reverse connection occurs.

### POWER CAPACITOR REQUIRED

An external Power Capacitor Module is installed and **MUST** be used with your ESC. **Failure to use Power Capacitor will result in higher ESC operating temperatures & possible thermal shut-down.**

### TRANSMITTER ON FIRST

Always turn on the power of the transmitter first so that you will have control of the vehicle when you turn it on.

### INSULATE WIRES

Always insulate exposed wiring with heat shrink tubing or electrical tape to prevent short circuits, which can damage ESC.

### NO CA GLUE

Exposure to CA glue or its fumes can cause damage to internal components of the speed control and result in premature failure.

## SPECIFICATIONS

Input Voltage .....	4-6 cells (1.2 volts DC/cell)
ESC Footprint .....	1.16" x 1.49" [29.5 x 37.8mm]
ESC Weight (w/o wires) .....	1.36 ounce [38.5 grams]
B.E.C. Voltage/Current .....	6.0 volts DC/3.0 amps
Power Wire (Battery/Motor) .....	14G Super-Flex Silicone
On-Resistance (Brushless) .....	0.00040Ω @25°C trans.temp.
On-Resistance (Brush-Mode) .....	0.00013Ω @25°C trans.temp.
Rated Current (Brushless--per phase) .....	540A [Fwd & Rev.] @25°C trans.temp.
Rated Current (Brush-Mode) .....	1620A [Fwd & Brakes] @25°C trans.temp.
Motor Limit (Brushless) .....	None [compatible with any Novak motor]
Motor Limit (Brush-Mode) .....	None
Throttle Programs (Brushless) .....	5 [3 Fwd/Brake only & 2 w/Rev.]
Throttle Program (Brush-Mode) .....	1 [Fwd/Brake only]

## OPTIONAL ACCESSORIES

### Replacement RACING POWER TRANS-CAP MODULE

The factory-installed GTB Racing Power Trans-Cap Module **MUST BE USED** for proper operation. Replacement GTB Power Trans-Cap Module is available in Novak kit #5679. *Note: We recommend using Novak Power Trans-Caps only. We've done extensive testing & research to find components with the very best quality factors—other capacitors will not provide equal protection.*

### SUPER-FLEX SILICONE 14G WIRE

Novak Super-Flex wire for power wiring. 14 gauge silicone wire in kit #5500 (36"red & 36"black) and kit #5508 (2 each of 9"red/black/blue/yellow/orange).

### INPUT SIGNAL HARNESSES

The user-replaceable input signal harness is available in both short and long lengths. 4.5" harness in Novak kit#5315, and 9.0" harness in Novak kit #5320.

### VELOCITI MOTOR BEARING & END BELL SET

After extensive use, the ball bearings in the motor may need replacement. *Velociti front end bell with bearing factory-installed & rear bearing are available in Novak kit #5920.*

### VELOCITI MOTOR REPLACEMENT ROTOR

After extensive use, the motor's rotor may need replacement due to loss of magnetic strength (normal after extended use). *Replacement Velociti rotor available in Novak kit #5921.*

### Replacement GTB 30x30x8mm HIGH-VOLUME COOLING FANS

The GTB High-Volume Cooling Fan *should be used* for increased ESC efficiency. *Replacement GTB Cooling Fan available in Novak kit #5648, 2-pack of fans in kit #5652.*

### Replacement REMOTE POWER PROGRAMMING SWITCH

The GTB's combination Power ON/OFF Switch & One-Touch Programming Button is available as a replacement harness in Novak kit #5602.

## PRODUCT WARRANTY

The GTB Brushless ESC is guaranteed to be free from defects in materials or workmanship for a period of 120 days from the original date of purchase (verified by dated, itemized sales receipt). Warranty does not cover incorrect installation, components worn by use, damage to case or exposed circuit boards, damage from using fewer than 4 or more than 6 cells (1.2 volts DC/cell) input voltage, cross-connection of battery/motor power wires, damage from cross phase connection, overheating solder tabs, reverse voltage application, damage resulting from thermal overload or short-circuiting motor (or connecting a brushless motor sensor harness while operating in Brush-Mode), damage from incorrect installation of FET servo or receiver battery pack, not using or incorrect installation of a Power Capacitor on the ESC or from using a damaged Power Capacitor using a Schottky diode in Brushless-Mode, using non-Novak Power Capacitor or motor, splices to input, ON/OFF switch, or sensor harnesses, damage from excessive force when using the One-Touch/SET button or from disassembling case, tampering with internal electronics, allowing water, moisture, or any other foreign material to enter ESC or get onto the PC board, incorrect installation/wiring of input plug plastic, allowing exposed wiring or solder tabs to short-circuit, or any damage caused by a crash, flooding, or act of God.

Because Novak Electronics, Inc. has no control over the connection & use of the speed control or other related electronics, no liability may be assumed nor will be accepted for any damage resulting from the use of this product. Every Novak speed control & motor is thoroughly tested & cycled before leaving our facility and is, therefore, considered operational. *By the act of connecting/operating speed control, user accepts all resulting liability.* In no case shall our liability exceed the product's original cost. We reserve the right to modify warranty provisions without notice.

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## STEP 1—CONNECT INPUT HARNESS

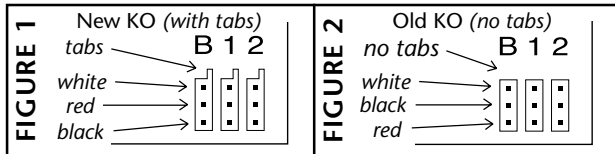
The GTB features the industry-standard receiver input connector on a user-replaceable input harness & works with all major radio brand's new receivers. However, some very old receivers must have the wiring sequence in the plastic 3-pin connector housing changed. This is important, because receiver & servo electronics may be damaged if the sequence is incorrect.

### CHANGING WIRING SEQUENCE @ RECEIVER END

#### JR • Hitec • Futaba • New KO • Airtronics Z

JR, Hitec, Futaba, new KO, & Airtronics Z receivers do not need input harness re-wiring. Airtronics Z receivers have blue plastic cases & new KO cases have tabs on the input harness openings as in Figure 1.

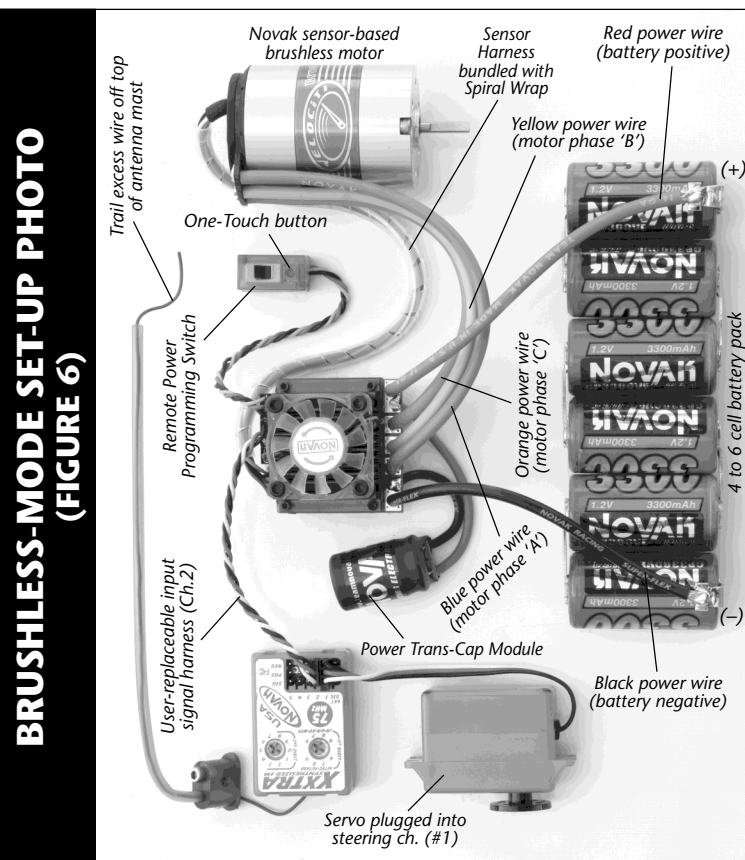
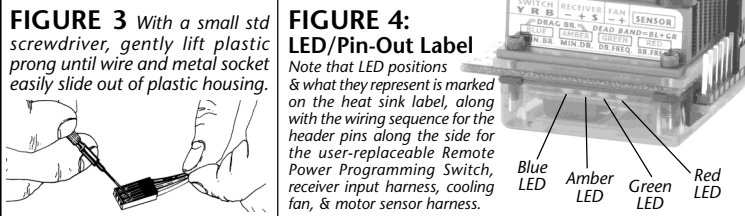
- Plug one end of the input signal harness into the THROTTLE CHANNEL (#2) of receiver with the BLACK wire toward the outside edge of receiver case.
  - Plug the other end of the input harness onto header pins 4-6 from the left on the side of the ESC with the BLACK wire going onto the 4th pin from the left.
- Note: All pin wiring designations are called out on the label on the GTB's heat sink.



#### Old-style KO • Old-style Sanwa/Airtronics

If you have an older KO or Sanwa/Airtronics, you must change the sequence of the ESC's input harness wires—Old Sanwa/Airtronics cases are black color & Old KO cases do not have tab openings, as in Figure 2 above.

- Using a small flat blade screwdriver, remove the red & black wires from the plastic housing at the receiver end of the input harness as in Figure 3 below.
- Interchange the red and black wires in the plastic 3-pin connector housing at the receiver end of the input harness.
- Insert modified end of the harness into the THROTTLE CHANNEL (#2) of receiver with the RED wire toward the outside edge of receiver case.
- Plug the other end of the input harness onto header pins 4-6 from the left on the side of the ESC with the BLACK wire going onto the 4th pin from the left.



BRUSHLESS-MODE SET-UP PHOTO (FIGURE 6)

## STEP 2—WIRING SPEED CONTROL, MOTOR, & BATTERY

### NOVAK BRUSHLESS MOTORS

(refer to Figure 6 below for connections)

#### 1. NO SCHOTTKY OR MOTOR CAPS IN BRUSHLESS-MODE

DO NOT USE Schottky diodes with the GTB when the speed control is in the Brushless Mode (Profiles 1-5)—ESC damage will occur & void warranty. External motor capacitors are not required when operating the GTB in the Brushless Mode.

#### 2. FACTORY-INSTALLED POWER TRANS-CAP REQUIRED

The GTB comes with a factory-installed Power Trans-Cap Module, and it MUST be used during both brushless & brush-type motor usage. If Power Trans-Cap becomes dented or damaged, ESC failure can occur—replace immediately. Longer wires on the Power Trans-Cap Module will decrease performance.

#### 3. CHECK FOR PROPER GEARING

Refer to PROGRAMMING & GEARING Sheet (Pg.5) for proper gearing.

#### 4. SOLDER MOTOR POWER PHASE WIRES TO MOTOR

A. Cut the GTB's BLUE, YELLOW, & ORANGE silicone motor power wires to the desired length, and strip 1/8-1/4" of insulation from the end of each wire. Tightly twist the exposed strands of wire.

B. Insert the ESC's BLUE Phase 'A' motor wire into the hole in the motor's 'A' solder tab & solder. Use a soldering iron to apply heat to exposed wire that extends through the PCB, and begin adding solder to tip of soldering iron and to the wire. Add just enough solder to form a clean & continuous joint from the plated area of the solder tab up onto the wire. Use side cutters to trim remaining (now soldered) wire extending beyond the solder tab (about 1/16" above PCB).

**IMPORTANT NOTE: DO NOT OVERHEAT SOLDER TABS**  
Prolonged/excessive heating of solder tabs (motor or ESC) will damage PCB.

C. Solder the ESC's YELLOW Phase 'B' motor wire to the motor's 'B' solder tab as described in Step 4B above.

D. Solder the ESC's ORANGE Phase 'C' motor wire to the motor's 'C' solder tab as described in Step 4B above.

**Note: Make sure no wire strands have strayed to an adjacent solder tab, this will result in short-circuiting & severe ESC damage, which will void the warranty.**

#### 5. CONNECT MOTOR SENSOR HARNESS TO ESC

Insert the 6-pin connector on the end of the motor's Teflon sensor wires into ESC's sensor harness socket—the connector is keyed and will only go in one direction. Use the included spiral wrap to protect the 6 Teflon sensor harness wires between the ESC & motor.

#### 6. SOLDER ESC'S RED WIRE TO BATTERY PACK POSITIVE (+)

Cut the speed control's RED silicone power wire to the proper length so it will reach the battery pack's POSITIVE (+) terminal. Strip 1/8-1/4" of insulation from the end of the wire. Tin and solder the exposed section of wire to battery pack POSITIVE (+).

#### 7. SOLDER ESC'S BLACK WIRE TO BATTERY PACK NEGATIVE (-)

Cut the speed control's BLACK silicone power wire to the proper length so it will reach the battery pack's NEGATIVE (-) terminal. Strip 1/8-1/4" of insulation from the end of the wire. Tin and solder the exposed section of wire to battery pack NEGATIVE (-).

### USING BATTERY & MOTOR CONNECTORS

Battery and motor connectors can be used for making your power wire connections, however they will never have as low of resistance as a good solder joint. If you are going to use connectors for your battery and/or motor, we suggest the Dean's Ultra Connectors—do not use crimp on types as these can not handle the high currents found in racing systems.

When using battery and motor connectors, please note the following:

- Use connectors that cannot be plugged in backwards—reverse voltage will damage the GTB and void the warranty.
- Use a female connector on battery packs to avoid shorting. Use a male connector on the GTB's battery lead.
- If you are going to use connectors for the motor power phase wires, you MUST TAKE EXTRA CARE to prevent cross phase connections as this will damage ESC and void the warranty.

For additional information on connector usage, visit our website.

### BRUSH-TYPE MOTORS

Note: You MUST switch ESC to Brush-Mode  
(refer to Programming/Gearing sheet P5 for switching between modes)

#### 1. MOTOR CAPACITORS

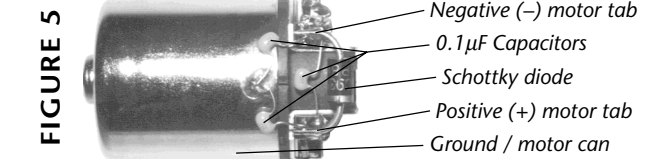
Electric brush-type motors generate RF noise that causes interference. You must use three 0.1µF (50V) non-polarized, ceramic capacitors on all motors to reduce motor noise & prevent ESC damage.

Note: Some motors come with built-in capacitors. If your motor only has 2 capacitors, you need to install a capacitor between the positive & negative motor tabs—if you experience radio interference with built-in capacitors only, install external ones.

Solder 0.1µF (50V) capacitors between:

- POSITIVE (+) motor tab & NEGATIVE (-) motor tab.
- POSITIVE (+) motor tab & GROUND tab\*.
- NEGATIVE (-) motor tab & GROUND tab\*.

\*If motor has no ground tab (below), solder the capacitors to motor can.



0.1µF capacitors are available in Novak accessory kit #5620.

#### 2. INSTALLING OPTIONAL SCHOTTKY DIODE (Brush-Mode Only)

The GTB does not require an external Schottky diode under mild motor conditions. Use an external Schottky in applications with heavy or repeated braking (lap after lap), or when using lower turn modified motors to optimize the ESC's braking and motor performance.

- If using an axial lead Schottky diode as shown in the photo above (older Novak style—35V/8A min.), solder lead CLOSEST to the silver stripe on the Schottky diode's body to the POSITIVE (+) motor tab. Solder the lead OPPOSITE the silver stripe on the body to the NEGATIVE (-) motor tab.
- If using the Novak Racing Schottky Motor Module (this is the best performing Schottky diode available), solder the RED wire from the module to the POSITIVE (+) motor tab. Solder the BLACK wire from the Schottky module to the NEGATIVE (-) motor tab.

If Schottky diode is installed backwards it will be destroyed. Replace only with Schottky diodes with a minimum rating of 35 volts/8 amps. Racing Schottky Motor Modules are available in Novak kit #5636.

#### 3. PREP & SOLDER SPEED CONTROL'S RED WIRE

To use the GTB with brush-type motors, the RED power wire must go to both battery POSITIVE (+) & the POSITIVE (+) motor tab.

##### USING A SINGLE WIRE METHOD: (Fig.7)

- Strip 1/4-3/8" piece of insulation from the mid-section of the ESC's RED silicone power wire where you will solder it to either battery pack POSITIVE (+) or the POSITIVE (+) motor tab (whatever component is in the middle). Tin the exposed section of wire with solder.
- Solder the exposed section of the ESC's power wire to battery pack POSITIVE (+) or the POSITIVE (+) motor tab.
- Strip & tin the end of the ESC's RED power wire (after the first connection), and solder it to the final component—either battery pack positive (+) or the positive (+) motor tab.

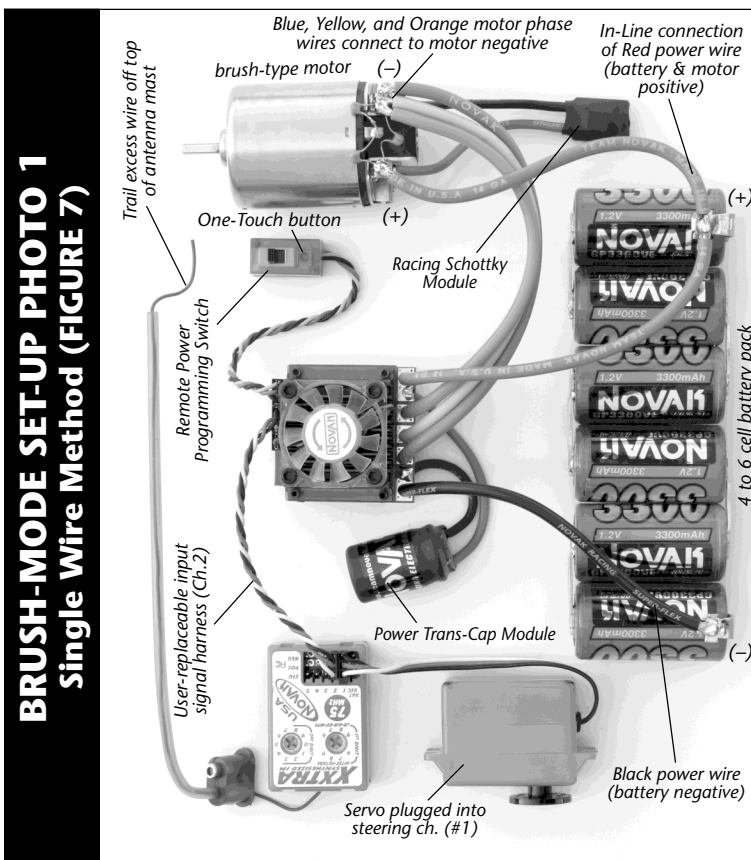
##### USING A "Y" WIRING METHOD: (Fig.8)

- Strip 1/4-3/8" piece of insulation from the mid-section of the ESC's RED silicone power wire where you want to split and go to the motor & battery. Tin the exposed section of wire with solder.
- Slide the supplied piece of heat shrink tubing over the ESC's RED power wire, and slide it all the way to the ESC.
- Strip 1/4" of insulation from the end of another piece of RED silicone power wire. Twist & tin the wire, then solder it to the tinned section along the ESC's RED power wire & shrink the tubing over the solder joint with a heat gun (a lighter or match also works well).
- Strip & tin the end of the ESC's RED power wire (after the "Y"), and solder it to the POSITIVE (+) motor tab.
- Cut the other RED power wire (after the "Y"), to the proper length so it will reach battery pack POSITIVE (+). Strip & tin the end of the wire and solder it to battery pack POSITIVE (+).

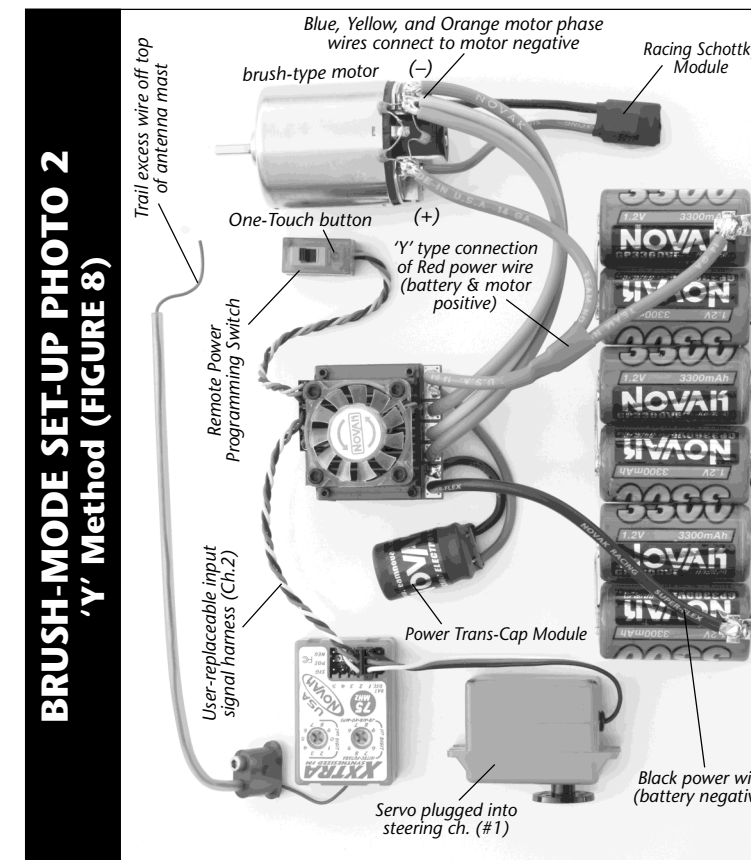
#### 4. SOLDER ESC'S BLACK WIRE TO BATTERY PACK NEGATIVE (-)

With brush-type motors, the GTB's BLUE, YELLOW, & ORANGE motor phase power wires must all go to the NEGATIVE (-) motor tab.

- Strip 1/8-1/4" of insulation from the end of the BLUE, YELLOW, & ORANGE motor phase wires. Twist & tin the end of each of the wires.
- Solder all of the motor phase wires (BLUE, YELLOW, & ORANGE) to the NEGATIVE (-) motor tab.



BRUSH-MODE SET-UP PHOTO 1  
Single Wire Method (FIGURE 7)



BRUSH-MODE SET-UP PHOTO 2  
'Y' Method (FIGURE 8)