

INSTRUCTION MANUAL

Part # 3005

NOVAK

SENSOR-BASED BRUSHLESS MOTOR SYSTEM

How do you make a great hobby even more fun? Eliminate motor maintenance & increase efficiency. We've done it! People have seen the benefits of brushless motor systems in many industries--now you too will enjoy the maintenance-free, high-efficiency performance of brushless that is designed specifically for your R/C car. We combined the racing technology of our top of the line speed controls with the efficiency of sensor-based brushless motors to bring you the *Super Sport Brushless Motor System*, giving you a sport-level brushless system with excellent low speed driveability, extended run time, great torque available over a broad power band, and Novak reliability. Equipped with Novak's *Variable Throttle Step Technology* for the smoothest throttle response, One-Touch Set-Up for ease of programming, and the security of Radio Priority Circuitry, the Super Sport has it all!

SPECIFICATIONS

Input Voltage	4-7 cells (1.2 volts DC/cell)	
ESC Case Width	1.32"	[33.5 mm]
ESC Case Depth	1.75"	[44.4 mm]
ESC Case Height	1.05"	[26.7 mm]
ESC Weight (w/o wires)	1.70 ounce	[48.2 gr]
ESC Power Rating	225 Watts @ 25°C trans.temp.	
B.E.C. Voltage	6.0 volts DC/3.0 amps	
Wire Length (Battery/Motor)	9 inches	[22.86 cm]
Signal Harness (replaceable)	9 inches	[22.86 cm]
ESC Throttle Programs	6 (3 w/Rev. & 3 Fwd/Brk)	
Motor Diameter	1.41"	[35.8 mm]
Motor Length	2.08"	[52.8 mm]
Motor Weight	6.40 ounce	[181.4 gr]
Motor Power Rating	196 Watts	
Motor Kv	5800 RPM/Volt DC	
Motor Kt	0.45 Inch-Ounce/Amp	
Motor Commutation	Sensor-Based Electronic	
Motor Magnet Material	Neodymium (1pc/multi-pole)	

PRECAUTIONS

- **WATER & ELECTRONICS DON'T MIX!** Never allow water, moisture, or other foreign materials to get inside the speed control, motor, or on the PC Boards.
- **CHECK MOTOR SCREWS** Remember to check all motor screws for loosening. The 3 main 4-40 socket head screws on the shaft end of the motor may become loose after a few runs of the motor, and will need to be tightened.
- **4 TO 7 CELLS ONLY** Never use fewer than 4 or more than 7 cells (8.4 volts DC) in the main battery pack.
- **POWER CAPACITOR REQUIRED** The attached external power capacitor **MUST** be used with the Super Sport. **Failure to use Power Capacitor will damage speed control and void the warranty!**
- **NOVAK MOTORS ONLY** The Super Sport ESC has been specially designed for use with sensor-based Novak Brushless Motors Only! You may replace motor with any Novak sensored motor rated less than 225W (ESC's rating).
- **NO REVERSE VOLTAGE!** Reverse battery polarity will damage the speed control.
- **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.
- **TRANSMITTER ON FIRST** Always turn on the power of your transmitter first so that you will have control of the radio equipment when you turn on the speed control.
- **INSULATE WIRES** Always insulate exposed wiring with heat shrink tubing to prevent short circuits.
- **NO SOLVENTS** Exposing the speed control or motor to any type of solvents can damage the exposed material.

SENSOR-BASED DESIGN

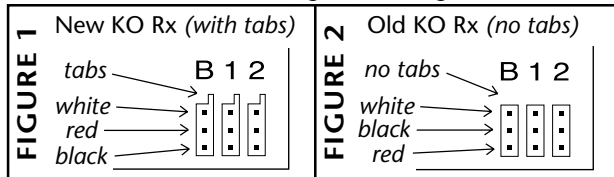
- The benefits of a sensor-based brushless motor design are:
- **CONSTANT ROTOR POSITION KNOWLEDGE** Always knowing what angle the rotor is at, allows instantaneous response and smooth transitions from neutral to drive.
 - **SMOOTH/CONTROLLED LOW SPEED DRIVEABILITY** Rotor positioning is key to smooth acceleration without delivering abrupt and uncontrolled bursts of power.
 - **STRONG & CONSISTENT BRAKES & STARTING TORQUE** Again, rotor position knowledge results in consistent starts and stops, without hesitation or inconsistent lag times before acceleration or braking.
 - **LOCKED ROTOR & THERMAL PROTECTION** Position and temperature sensors inside motor provide unparalleled thermal protection for your investment, while allowing you to run pack after pack without worrying about overheating the motor, ESC, or magnets.

BRUSHLESS
NOVAK
USA

STEP 1 SUPER SPORT SET-UP CHANGING ESC'S INPUT HARNESS

The Super Sport ESC comes with the industry standard connector on a user-replaceable input harness. This connector works with all major radio brands. However, with some older style receivers, the wiring sequence in the plastic connector must be changed. **This is an important step, because the receiver electronics may be damaged if the sequence is incorrect.**

- JR • Hitec • Futaba • New KO • Airtronics Z**
- JR, Hitec, Futaba, new KO, & Airtronics Z receivers do not need to have the ESC's input harness wire sequence changed. *New Airtronics Z receivers have blue plastic cases & new KO cases have tabs on the input harness openings as in Figure 1.*
- Insert one end of the input harness into receiver with the **BLACK wire toward the outside edge** of receiver case.
 - Insert opposite end of input harness into ESC with the **WHITE wire toward the 'S' (signal) marking** in the ESC's case.

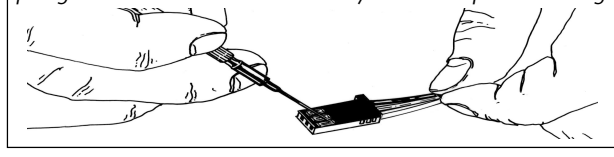


Old-style KO • Old-style Sanwa/Airtronics

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

- Insert one end of input harness into ESC with the **WHITE wire toward the 'S' (signal) marking** in the ESC's case.
- **Interchange the red and black wires** in the plug plastic at the opposite end of the input harness as in Figure 3 below.
- Insert modified end of the harness into the receiver with the **RED wire toward the outside edge** of receiver case.

FIGURE 3 With a small standard screwdriver, gently lift plastic prong until wire and metal socket easily slide out of plastic housing.

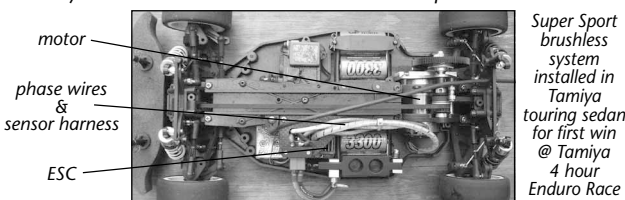


STEP 3 SUPER SPORT SET-UP BASIC HOOK-UP INSTRUCTIONS

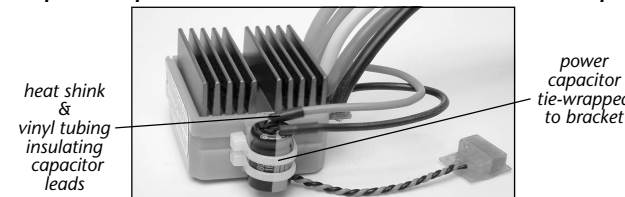
- 1. MOTOR CAPACITORS & SCHOTTKY NOT NEEDED**
Novak brushless motors have built-in motor capacitors, and like all reversible ESCs, does not use an external Schottky diode--*Schottky diodes damage reversible ESCs.*
- 2. FACTORY-INSTALLED POWER CAPACITOR**
WHY POWER CAPACITOR IS NEEDED: *The Power Capacitor drops ESC operating temperatures by 10-15°F and dissipates noise & voltage spikes from the ESC's high switching speed. You MUST use Novak capacitors, because other capacitors with similar ratings will not provide the same protection. We have done extensive research to find capacitors with the very best Quality Factors.*
Mount Power Capacitor using the included slide-mount bracket or double-sided tape. To use slide mount bracket, insert bracket into the channel on the back of the ESC, and secure Power Capacitor with the included tie-wraps.
- 3. CONNECT SPEED CONTROL TO RECEIVER**
Configure input harness wires and connect ESC to the **THROTTLE CHANNEL** of receiver as described in Step 1.
- 4. CONNECT SPEED CONTROL TO BATTERY PACK**
Connect Super Sport's Tamiya-style JST battery connector to a charged 4 to 7 cell battery pack.
- 5. CHECK MOTOR SCREW LENGTH**
Insert the M3 motor mounting screws that came with your vehicle through the motor mounting plate in vehicle. You need to have about 1/8" (±1/32") of the screw extending past the mounting plate (2-4mm). Any less can strip the threads in the motor's end bell, and any more will cause short-circuiting/damage inside the motor.
- 6. INSTALL PINION GEAR (see GEAR SELECTION on back)**
Install pinion gear on motor and position set-screw over flat on end of shaft. Test fit motor in vehicle to align pinion and spur gears, then tighten pinion gear on shaft.
- 7. INSTALL MOTOR IN VEHICLE**
 - Determine the best routing for sensor harness & motor power wire. *Some off-road cars may require unsoldering motor to route wires through the shock tower--refer to Step 7, #3--"SOLDERING POWER WIRES AT ESC & MOTOR".*
 - Using the M3 motor screws that came with your vehicle, attach motor to vehicle's motor mount using one of the three sets of threaded mounting holes--*select a mounting position that will avoid short-circuiting of solder tabs on conductive surfaces such as aluminum or graphite.*
 - Check gear mesh for proper amount of play. You want to have a small amount of free play between the pinion and spur gears (*about the thickness of piece of paper*)--check free play at several positions around the spur gear.
 - Avoid using excessive force when tightening motor screws, as the threaded holes could become stripped.
- 8. USE SPIRAL WRAP TO BUNDLE/PROTECT WIRES**
The included plastic spiral wrap can be used to protect the 6 Teflon sensor harness wires between the ESC & motor. You can also use the included spiral wrap and tie-wraps to bundle the sensor harness & power wires neatly together.

STEP 2 SUPER SPORT SET-UP MOUNTING SPEED CONTROL

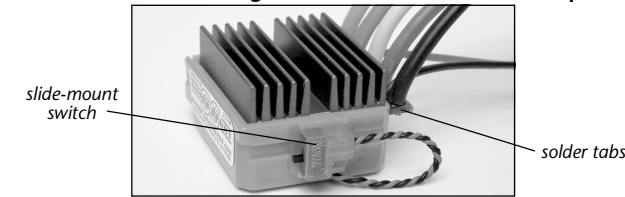
- 1. DETERMINE BEST ESC MOUNTING LOCATION**
Choose a mounting position that keeps power wires away from the receiver and antenna, and will provide maximum airflow over heat sinks for proper cooling. **The slide mount channel on the back of the Super Sport's case can hold the ON/OFF switch or power capacitor.** *This slide mount lets you mount the power capacitor or the ON/OFF switch against the side of ESC. The ON/OFF switch can be positioned facing any of four directions when held by the slide mount. The switch also has a hole for attaching it with a 4-40 or smaller screw, or you can use the included double-sided tape.*



- 2. SLIDE-MOUNT POWER-CAP. BRACKET (optional)**
To use the included P.Cap bracket to mount the capacitor on the back of the ESC, be sure you have enough space in the desired location. Slide the bracket into the channel on the ESC. Secure the power capacitor to the bracket with the included tie-wraps.



- 3. INSTALL THE SPEED CONTROL & SWITCH**
If using the slide mount channel to hold ON/OFF switch, slide switch into channel facing the desired direction. **Mount the ESC using the included double-sided tape.**



- 4. INSTALL THE RECEIVER AND ANTENNA**
Mount receiver as far from ESC, motor, power wires, battery, and servo as possible. These components all emit RF noise when throttle is being applied. On graphite or aluminum, it may help to place receiver on edge with crystal and antenna as far above chassis as possible.
Note: Mount the antenna as close to the receiver as possible, and trail any excess wire off the top of the antenna mast--cutting or coiling the excess antenna wire will greatly reduce radio range.

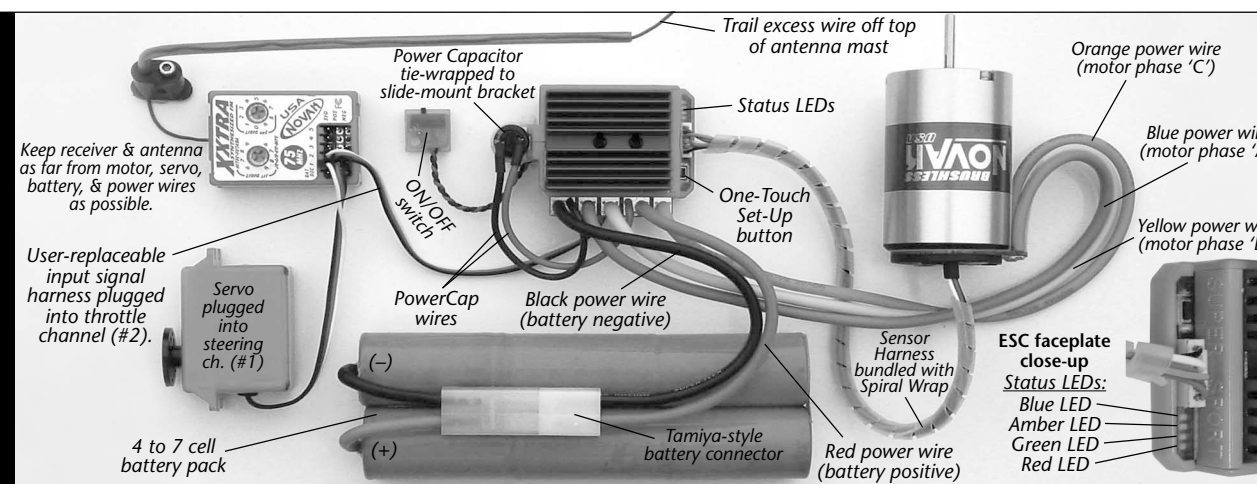
STEP 4 SUPER SPORT SET-UP TRANSMITTER ADJUSTMENTS

- 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).
[adjusts trigger throw electronic/digital pistol-grip transmitters]
 - Set **MECHANICAL TRIGGER THROW ADJUSTMENT** to position with **2/3 throttle** and **1/3 brake throw**.
[adjusts trigger throw on mechanical/analog pistol-grip transmitters]
- NOT ALL TRANSMITTERS HAVE THESE ADJUSTMENTS •**

STEP 5 SUPER SPORT SET-UP ONE-TOUCH PROGRAMMING

- With ESC connected to receiver & a charged battery pack:
- 1. TURN ON THE TRANSMITTER'S POWER**
 - 2. PRESS & HOLD SPEED CONTROL'S SET BUTTON**
 - 3. TURN ON THE SPEED CONTROL'S POWER**
With transmitter throttle at neutral, and still pressing the **SET** button slide the **ON/OFF switch to ON position.**
 - 4. HOLD ESC'S SET BUTTON UNTIL RED LED IS ON**
Continue pressing **SET** button until the Super Sport's red status LED turns solid red.
 - 5. RELEASE ESC'S SET BUTTON WHEN LED IS RED**
 - 6. 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.
 - 7. PUSH TRANSMITTER THROTTLE TO FULL-BRAKES**
Hold it there until the **green status LED blinks green.**
 - 8. RETURN TRANSMITTER THROTTLE TO NEUTRAL**
Amber, green, & red status LEDs will **turn on solid**, indicating that proper programming has been completed. ESC returns to neutral and red status LED will **turn on solid.**
NOTE: If transmitter settings are changed, programming must be repeated. If you experience any problems, turn off ESC and repeat programming.

SET-UP PHOTO



STEP 6

OPTIONAL SET-UP THROTTLE PROGRAM SELECTION

The Super Sport is equipped with 6 user-selectable Throttle Programs to choose from, as shown in the chart below.

THROTTLE PROGRAMS

	SS STANDARD		SS HIGH		SPORTSMAN	
	1	2	3	4	5	6
RPM**	unlim.	unlim.	unlim.	unlim.	24000	24000
Acceleration*	unlim.	unlim.	unlim.	unlim.	fixed	fixed
Min.Brake	low	low	high	high	low	low
w/Reverse	yes	no	yes	no	yes	no

**Unlimited RPM is based upon motor's rating. 5800Kv motor produces 41760 RPM @ 7.2 volts DC.

*Unlimited acceleration refers to acceleration only being limited by the quality of the batteries used. Fixed acceleration is accomplished by only allowing a factory programmed acceleration rate--all Super Sport ESCs are programmed with the same fixed acceleration rate for programs 5 & 6.

Selecting Throttle Program--TRANSMITTER ON

With transmitter ON & ESC connected to receiver and battery:

1. TURN ON THE SPEED CONTROL'S POWER

2. PRESS & HOLD SPEED CONTROL'S SET BUTTON

With transmitter throttle at neutral, press and hold SET button on Super Sport until all 4 LEDs turn on.

3. RELEASE SPEED CONTROL'S SET BUTTON

All status LEDs will flash together. The number of times the LEDs flash indicates the Throttle Program selected.

4. PRESS & RELEASE SET BUTTON TO SELECT PROGRAM

Each press will change to the next consecutive Program number. (After Program #6, the sequence begins again at Program #1)

5. WAIT FOR SPEED CONTROL TO EXIT PROGRAMMING

When SET button is not pressed for about 3 seconds, the ESC loads the selected Program into memory and exits programming--red status LED will turn solid red indicating that the speed control is at neutral and ready to go.

Selecting Throttle Program--WITHOUT TRANSMITTER

With the transmitter power OFF (or input harness disconnected):

1. TURN ON THE SPEED CONTROL'S POWER

When speed control is powered on and no input signal is being received from the receiver, the green and red status LEDs will both turn on solid. This acts as a system check at all times to let you know the condition of the connection between your receiver and the Super Sport ESC.

2. PRESS & HOLD SPEED CONTROL'S SET BUTTON

Press and hold SET button on ESC until all 4 LEDs turn on.

3. RELEASE SPEED CONTROL'S SET BUTTON

All status LEDs will flash together. The number of times the LEDs flash indicates the Throttle Program selected.

4. PRESS & RELEASE SET BUTTON TO SELECT PROGRAM

Each press will change to the next consecutive Program.

5. WAIT FOR SPEED CONTROL TO EXIT PROGRAMMING

SET button not pressed for 3 sec.--ESC exits programming.

STEP 7

OPTIONAL SET-UP OPTIONAL HOOK-UP INSTR.

1. REPLACEMENT POWER CAPACITOR INSTALLATION

- Insulate capacitor's leads with the heat shrink tubing included in the accessory kit.
- Solder capacitor's NEGATIVE (-) lead (shorter lead on capacitor) to the Super Sport's BLACK PowerCap wire that comes from the small hole on Super Sport's Battery Negative (-) solder tab.
- Solder capacitor's POSITIVE (+) lead to RED PowerCap wire that comes from the small hole on Super Sport's Battery Positive (+) solder tab.

2. HARD WIRING ESC TO BATTERY PACK

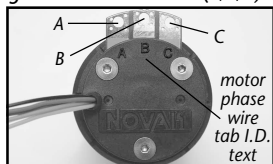
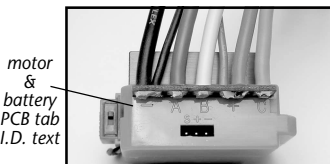
- Cut Super Sport's BLACK power wire to desired length and strip 1/8-1/4" of insulation off the end. Solder to battery NEGATIVE (-) of a charged 4 to 7 cell pack.
- Cut RED power wire to desired length and strip 1/8-1/4" of insulation off the end. Solder to battery POSITIVE (+).

3. SOLDERING POWER WIRES AT ESC & MOTOR

The Super Sport ESC comes factory wired to the brushless motor & battery connector. For custom installation or for power wire replacement:

- Remove power wires from PCB solder tabs (ESC must be removed from the model so that you can get access to bottom side of solder tabs). Use a soldering iron to apply heat to the power wire's solder joint on the bottom side of the solder tab, while gently pulling up on the wire to remove it from the hole in the PCB.
- Replace power wires by stripping 1/8-1/4" of insulation from the end of the new wire. Tightly twist strands of wire, and insert into proper solder tab's hole (tabs are identified by lettering that is engraved in the ESC case and on the end cap of the motor--see photos below). Use soldering iron to apply heat to exposed wire that is extending past bottom of PCB, and begin adding solder to tip of soldering iron and to wire. Add just enough solder to form a clean & continuous joint from the plated area of solder tab up onto the wire. Use side cutters to trim remaining (now soldered) wire from below the solder tab (about 1/16" above PCB)--make sure no strands of wire have strayed to an adjacent solder tab as this can result in short-circuiting & damage to the electronics, which will void the product's warranty.

• Be sure to solder wires to matching tabs at ESC & Motor (A/B/C)



- Note: Power wires can also be soldered flat onto the PCB solder tabs. Strip 3/16-1/4" of insulation from the end of the new wire. Tightly twist strands of wire, and tin with solder. Lay the stripped & tinned end of the wire flat onto the PCB solder tab and use soldering iron to heat the end of the wire, and add solder to form a clean solder joint between the wire and the tab.

IMPORTANT NOTE: DO NOT OVERHEAT SOLDER TABS Prolonged/excessive heating of solder tabs will damage PCB.

4. CHANGING BATTERY CONNECTOR

If you are planning to change the ESC's Tamiya-style battery pack connector, we recommend using a high-quality/low-resistance connector, such as Dean's Ultra Plug. Always use a connector that can not be connected backwards!

STEP 8

OPTIONAL SET-UP CHECKING TRANSMITTER THROW

If you experienced any problems while performing the One-Touch programming in Step 5, use the following procedure to check that your transmitter has adequate throw.

With transmitter ON, ESC OFF & connected to receiver & battery:

1. PRESS & HOLD SPEED CONTROL'S SET BUTTON
2. TURN ON SPEED CONTROL'S POWER (while holding SET button)
3. HOLD SET BUTTON UNTIL BLUE, AMBER, & RED LEDs ON
4. RELEASE SPEED CONTROL'S SET BUTTON
Once blue, amber, & red LEDs (left 2 LEDs + right LED) turn on, release the Super Sport's SET button. Red LED will stay on.
5. PULL TRANSMITTER THROTTLE IN DRIVE DIRECTION
Slowly pull throttle toward full drive--blue LED blinks until 500µs of throw is reached when it turns solid. (refer to Step 4/A to adjust throw)
6. PUSH TRANSMITTER THROTTLE IN BRAKE DIRECTION
Slowly push throttle toward full brake--amber LED blinks until 200µs of throw is reached when it turns solid. (refer to Step 4/B to adjust throw)

Note: Without transmitter adjustments mentioned in Step 4/A & 4/B, ESC will still program & operate normally with a minimum of ±90µs of throw.

GEAR SELECTION (Important)

As a general rule, you can start with the same gear ratio that you previously had with a "stock" brush-type motor in your vehicle. The difference is that you now have broad power band, and can base your gear selection on application instead of being limited to the narrow RPM range that your brush-type motor produced its maximum torque. Higher final drive ratios will give longer run time at the expense of top speed, while ratios below 6.5:1 will cause excessive heating of the ESC, and may result in overheating and thermal shut-down.

{ You will want the final drive ratio in the vehicle to be about 7.3:1 and not less than 6.5:1 }

If you had a modified brush-type motor in your vehicle before switching to the Super Sport system, and you do not change the gearing, you will be under-gear and the vehicle will appear slow!

LOCKED ROTOR DETECTION

The Super Sport system is equipped with Lock Rotor Detection Circuitry that provides added protection against overheat damage. Should the vehicle's drive train become locked or bound, or for any reason the motor shaft becomes locked while the throttle is being applied for an extended period, the Super Sport speed control will cut throttle power to the motor. This situation could occur when the vehicle becomes stuck against a tree or wall or jammed underneath something where the wheels will not spin.

To indicate a locked rotor condition, the Blue & Green status LEDs will flash six times and then remain on solid. The transmitter's throttle trigger must then be returned to the neutral position before motor control is regained.

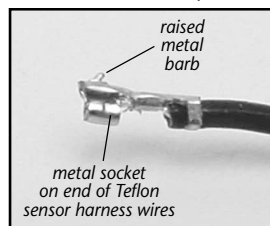
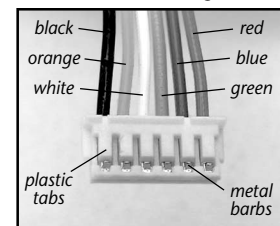
THERMAL SHUT-DOWN

The Super Sport system is equipped with temperature sensors in both the ESC and motor to protect from overheating. Should the ESC or motor become overheated for any reason, the Super Sport ESC will cut throttle power to the motor.

To indicate thermal shut-down, the Blue status LED will flash until the ESC or motor returns to within the normal operating range, at which time throttle power is regained. The transmitter's throttle trigger must first be returned to the neutral position before motor control is regained.

SENSOR HARNESS WIRING

Should any of the 26G Teflon wires pull out of the connector on the end of the motor's sensor harness, replace them into the appropriate slot in the connector as shown below. The connector has small plastic tabs that grab a small raised barb on the back of the metal socket that is crimped onto the ends of the Teflon wire. The plastic tab should be checked to make sure it has not deformed excessively before inserting the socket into the plastic connector housing. If the motor's sensor harness become damaged, contact our Customer Service Department.



MOTOR MAINTENANCE

- CHECK MOTOR SCREWS Check all motor screws for loosening at regular intervals, just like other hardware on your vehicle. Note: The 3 main 4-40 socket head screws on the shaft end of the motor may become loose after a few runs of the motor and will need to be tightened. Also check the 3 flat head screws securing the end cap on the back of the motor.
- CHECK MOTOR BEARING WEAR After extensive use, the ball bearings in the end bells of your brushless motor may need to be replaced. While the design of the motor will keep the majority of the debris out of the bearings, some debris may get in, and eventually wear will occur. If the shaft will not spin freely, you may need to replace the motor bearings (replacement bearing sets are available in Novak accessory kit #5900 and include bearing replacement instructions--If you do not feel comfortable changing the bearing on your own, please contact our Customer Service Dept. for assistance). A drop of light oil on the bearings periodically can help extend bearing life.

ACCESSORIES

POWER CAPACITORS

An external power capacitor is included, and **MUST BE USED** to maintain cool and smooth operation. Refer to Step 3 Replacement Power Capacitor is available in Novak kit #5677.

BATTERY/MOTOR 14G POWER WIRE

Replacement silicone power wires for your brushless motor system are available in Novak kits #5500 (36"red/36"black), #5505 (36"red/36"blue), & #5510 (36"yellow/36"orange), or #5508 (2 each of 9"red/black/blue/yellow/orange).

INPUT SIGNAL HARNESS

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

MOTOR BALL BEARING SET

After extensive use, the ball bearings in the end bells of your brushless motor may need to be replaced. Two replacement motor bearings are available in Novak kit #5900.

TROUBLE-SHOOTING GUIDE

This section describes possible ESC problems, causes, and solutions.

Steering Channel Works But Motor Will Not Run

- Make sure motor sensor harness is plugged into ESC--check for damaged wires. Green & red status LEDs will be blinking fast.
- Make sure input signal harness is plugged into throttle channel of receiver & ESC. Check throttle channel operation with a servo. Check wiring sequence of receiver signal harness. Green & red status LEDs will be both be on solid.
- ESC may have shut down due to thermal overload or locked rotor detection & ESC's neutral point is too far off to sense that throttle has been returned to neutral. Blue & green status LEDs on solid indicates Locked Rotor Detection. Blue LED blinking indicates thermal shut-down.
- Possible internal damage--Refer to Service Procedures.

Receiver Glitches/Throttle Stutters During Acceleration

- Receiver or antenna is too close to speed control, power wires, or battery--Refer to Step 2.
- Bad connections--Check wiring and connectors.
- External Power Capacitor damaged/not installed--Refer to Steps 3&7/Replace Power Capacitor (possible internal damage).

Motor and Steering Servo Do Not Work

- Check wires, receiver signal harness wiring and color sequence, radio system, crystals, battery and motor connectors, and battery pack.
- Possible internal damage--Refer to Service Procedures.

Speed Control Runs Hot

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

Motor Runs Slowly/Slow Acceleration

- Gear ratio too high--Reduce 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--Refer to Steps 3&7/Replace Power Capacitor (possible internal damage).
- Motor bearings worn--Refer to 'MOTOR MAINTENANCE' section.

ESC Is Melted Or Burnt/ESC Runs With Switch Off

- Internal damage--Refer to Service Procedures.

*For more assistance call our Customer Service Department.

SERVICE PROCEDURES

Before sending in your Super Sport brushless system for service, review the Trouble-Shooting Guide and instructions. The ESC or motor may appear to have failed when other problems exist.

After reviewing the instructions, if you feel the system requires service, please 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. Fill out the needed information on this form and return it with the Novak product that requires servicing.

PHONE/FAX/E-MAIL: If you do not have access to the internet, contact our customer service department by phone, fax, or e-mail as listed in the CUSTOMER SERVICE section below, and they will supply you with current service options.

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

ADDITIONAL NOTES:

- Super Sport ESC & Motor should be returned together.
- Hobby dealers or distributors are not authorized to replace Novak products thought to be defective.
- If a hobby dealer returns your speed control & motor for service, submit a completed **PRODUCT SERVICE FORM** to the dealer and make sure it is included with the items.
- Novak Electronics, Inc. does not make any electronic components (transistors, resistors, etc.) available for sale.

PRODUCT WARRANTY

The Super Sport brushless motor system 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 from using fewer than 4 or more than 7 cells (1.2 volts DC/cell) input voltage, cross-connection of battery/motor power wires, overheating solder tabs, reverse voltage application, damage resulting from thermal overload, damage from incorrect installation of FET servo or receiver battery pack, not installing or incorrect installation of a Novak power capacitor on the ESC, splices to input harness, 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. In no case shall our liability exceed the product's original cost. We reserve the right to modify warranty provisions without notice.

Because Novak Electronics, Inc. has no control over the connection and use of the speed control & motor or other related electronics, no liability may be assumed nor will be accepted for damage resulting from the use of this product. Every speed control & motor is thoroughly tested and cycled before leaving our facility and is, therefore, considered operational. By the act of connecting/operating speed control, the user accepts all resulting liability.

CUSTOMER SERVICE

NOVAK ELECTRONICS, INC.

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

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

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