

# OPERATING INSTRUCTIONS

## ROOSTER/SUPER ROOSTER

The ROOSTER is the long standing benchmark in reliable reversible speed controls for 6-7cell/mild-modified set-ups. The SUPER ROOSTER *is stronger and faster than the original*. Equipped with a Heavy-Duty BEC for today's high power servos, twelve of the toughest HYPERFET III™ transistors, and extra-long 14G power and signal harness wires, the Super Rooster handles big trucks, wild motors, and even dual motor set-ups.

Both speed controls feature the original One-Touch Set-Up (*There's nothing easier!*) and exclusive Polar Drive Technology™ for the smoothest throttle response and improved radio system performance. Reverse Disable Circuitry™ locks-out reverse for racing use, while Smart Braking Circuitry™ brings the model to a slow speed before hitting reverse to save your vehicle's gearbox and reduce speed control heating.

Other features include brake light circuitry to power two high-intensity LEDs available separately in the Novak Brake Light LED Kit (Accessory #5655) for enhanced realism, Radio Priority Circuitry™ to maintain steering control even after the battery has discharged, dual-level thermal protection, and the Novak Input Plug System™.

## SPECIFICATIONS

SPECIFICATION	ROOSTER	SUPER ROOSTER
Input Voltage (1.2VDC/cell)	6-7 cells	6-10 cells
Case Width	1.63 inches	1.63 inches
Case Depth	2.02 inches	2.02 inches
Case Height (w/h.sinks)	1.22 inches	1.22 inches
Weight (w/heat sinks)	3.00 ounces	4.00 ounces
On-Resist.-Fwd. (@Trans)	0.018 Ω	0.002 Ω
On-Resist.-Rev. (@Trans)	0.018 Ω	0.004 Ω
Rated Current-Fwd.	100 amps	320 amps
Rated Current-Rev.	100 amps	160 amps
Braking Current	100 amps	160 amps
Rev. Delay (after Smart Braking)	Zero Sec.	Zero Sec.
BEC Voltage	5.7 volts DC	6.0 volts DC
BEC Current	0.5 amps	3.0 amps
Power Wire	16G / 6"	14G / 14"
Signal Harness	26G / 6"	26G / 15"
Transistor Type	MEGAFET	HYPERFET III
PWM Frequency	1250 Hertz	1250 Hertz
Motor Limit	Mild Modified	No Limit
Part Number	1850	1860

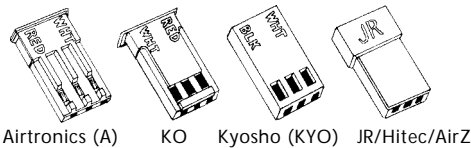
## PRECAUTIONS

- WATER & ELECTRONICS DON'T MIX!** Do not operate model in or around water. Never allow water, moisture, or other foreign materials to get inside the ESC.
- ROOSTER-6 or 7 CELLS ONLY** Never use fewer than 6 or more than 7 cells (7.2-8.4 volts DC) in main battery pack.
- SUPER ROOSTER-6 to 10 CELLS ONLY** Never use fewer than 6 or more than 10 cells (7.2-12.0 VDC) in battery pack.
- MOTOR CAPACITORS REQUIRED** Three 0.1µF (50V) ceramic capacitors (included) must be properly installed on every motor to prevent radio interference. Additional capacitors are available in Novak kit #5620.
- ALWAYS USE HEAT SINKS** Four heat sinks are included to properly fit the Super Rooster and they must be used for maximum cooling and performance. Replacement Super Rooster heat sinks are available in Novak kit #5409.
- NO REVERSE VOLTAGE!** Reverse battery polarity can damage speed control—Disconnect battery immediately.
- NO SCHOTTKY DIODES** External Schottky diodes must NOT be used with the reversible speed controls. Using an external Schottky diode will damage the ESC.
- DON'T LET TRANSISTOR TABS TOUCH** Never allow separate transistor banks to touch each other or any exposed metal. This will create a short circuit and damage the ESC.
- DISCONNECT THE BATTERIES** Always disconnect the battery pack from the speed control when not in use.
- 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.
- DON'T GET BURNT!** Transistor tabs and the heat sinks can get extremely hot, so be careful not to touch them until they cool. Supply adequate air flow for cooling.
- INSULATE WIRES** Always insulate exposed wiring with heat shrink tubing to prevent short circuits.

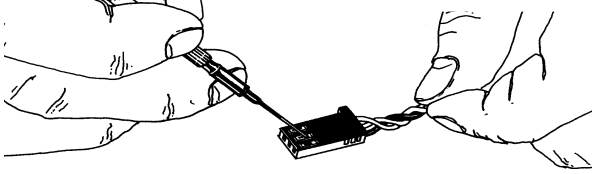
## DETAILED INFORMATION

### STEP 1 CHANGING THE INPUT PLUG

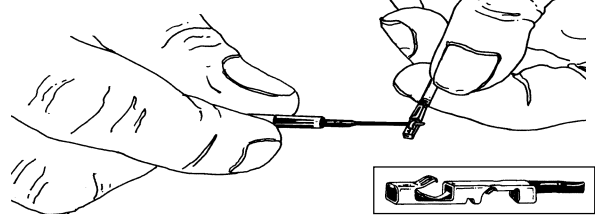
Included with the speed control is the Novak Input Plug System™ to convert the Futaba J style signal harness for compatibility with Airtronics, KO, Kyosho, JR, Airtronics Z, and Hitec radios. Refer to Figures 1 through 3 to convert plug.



**FIGURE 1** With a small standard screwdriver, press on each of the three metal prongs until the wires are easy to remove. Remove wires.



**FIGURE 2** With the screwdriver, carefully lift each of the metal locking tabs to the angle shown.



**FIGURE 3** Insert each pin into the correct plug slot. Each pin should "click" into place. (Airtronics plug shown) The locking tab must not extend outside the plastic plug housing.

WHT = White wire terminal (signal)  
BLK = Black wire terminal (negative)  
RED = Red wire terminal (positive)

**CAUTION** Improper installation of these wires may cause damage to the receiver, servo, and speed control.

## QUICK SET-UP (SUPER ROOSTER SHOWN)

FOR DETAILED INFO. REFER TO STEPS 1 THRU 7

### A. INSTALL SPEED CONTROL

Use double-sided tape to mount ESC in model where the power wires are neatly routed away from the receiver and antenna. For more details refer to Step 2.

### B. CONNECT SPEED CONTROL TO RECEIVER

Plug the ESC input signal harness into the throttle channel of receiver. Make sure the proper plug plastic is installed on ESC signal harness. Refer to Step 1 for changing plug.

### C. CONNECT SPEED CONTROL TO BATTERY

**ROOSTER**—Plug the JST/Tamiya connector from speed control into a 6 or 7 cell battery pack (1.2 volts DC/cell).  
**SUPER ROOSTER**—Solder the BLACK wire of speed control to the negative side of a completely charged 6 to 10 cell battery pack (1.2 volts DC/cell).

Solder the RED wire of speed control to battery positive.

### D. TURN ON TRANSMITTER POWER

Refer to Step 5 for transmitter adjustments.

### E. TURN ON SPEED CONTROL

Slide ON/OFF switch to ON position.

### F. PRESS AND HOLD SPEED CONTROL SET BUTTON

With transmitter throttle in neutral position, press and hold SET button until status LED turns solid red, then release.

### G. PULL THROTTLE TO FULL-FORWARD POSITION

Hold until status LED turns solid green.

### H. PUSH THROTTLE TO FULL-REVERSE POSITION

Hold until status LED blinks green, then return throttle to neutral position. LED will then turn solid red indicating proper programming and throttle is in neutral position.

### I. CONNECT SPEED CONTROL TO MOTOR

Turn off speed control then transmitter.

**ROOSTER**—Plug the bullet connector on the YELLOW wire of speed control to motor positive.

Plug the bullet connector on the BLUE wire of speed control to motor negative.

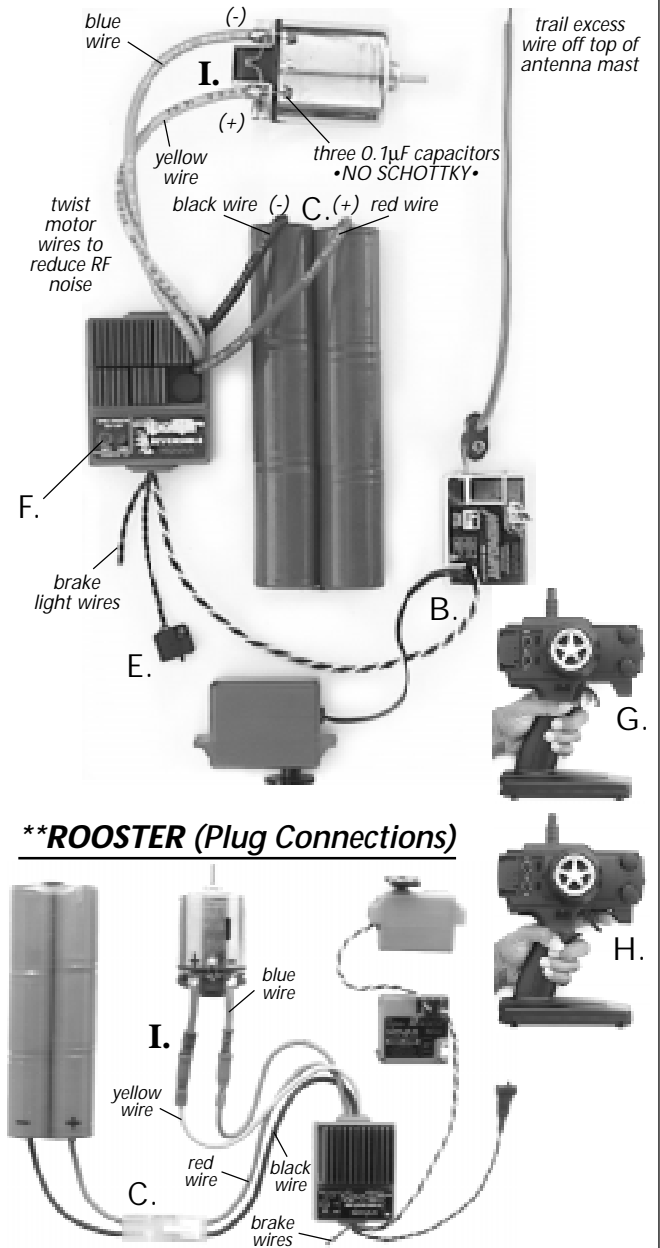
**SUPER ROOSTER**—Solder the BLUE wire of speed control to motor negative.

Solder the YELLOW wire of speed control to motor positive.

### J. KICK-UP A ROOST!

Turn on transmitter and then speed control.

Please refer to Step 7 for instructions on disabling the reverse portion of the speed control for use when racing.



### \*\*ROOSTER (Plug Connections)

## STEP 2 MOUNTING INSTRUCTIONS

### 1. DETERMINE BEST ESC MOUNTING LOCATION

The ESC should be positioned away from the receiver and antenna as shown in the Quick Set-Up photo above. Choose a mounting position that will keep the power wires as short as possible without obstructing movement of the suspension or the motor pod.

Remember, cooler operating temperatures mean higher efficiency. So, choose a mounting position that allows maximum airflow through the heat sinks.

### 2. INSTALL SPEED CONTROL

Use the included double-sided tape to mount the ESC.

### 3. INSTALL ON/OFF SWITCH

Determine a convenient place to mount the switch where it will be easy to get to. Mount the switch using a piece of double-sided tape or with a screw through the hole in the base of the switch housing.

### 4. INSTALL RECEIVER

Mount the receiver as far from the motor, power wires, battery, and servo as possible. These components all emit radio noise when the throttle is being applied. On graphite or aluminum, place the receiver on edge with the crystal and antenna as far above the chassis as possible. Mount the antenna close to the receiver and trail any excess wire off the top of the antenna.

## STEP 3 SUPER ROOSTER HEAT SINK INSTALLATION

Heat sinks are required with the Rooster & Super Rooster for optimum performance and power handling. The Rooster heat sink comes factory installed and must not be removed. Included with the Super Rooster are heat sinks to fit onto the ESC's three separate transistor tab banks.

To Install Super Rooster Heat Sinks:

- INSTALL THE HEAT SINKS** Place ESC on a flat surface and press the long/5-transistor heat sink onto the bank of 4 transistors on the upper left. Next, press the long/3-transistor heat sink onto the bank of 2 transistors on the upper right. The 2 remaining short/3-transistor heat sinks go onto the bottom bank of 6 transistors.

The heat sinks should press onto the transistors with a snug fit. If they are installed upside-down (*longer fins up*) or shifted off to one side, they will be too loose.

**NOTE:** Do not use too much force when installing the heat sinks because you can damage the transistors or other components on the PC board. Never use a vise or pliers to install the heat sinks.

- DO NOT USE GLUE** Do not use glue or adhesives to attach the heat sinks to the transistors.
- DO NOT SHORT CIRCUIT HEAT SINKS** The three banks of transistor tabs are separated by plastic on the case top. Each bank of heat sinks should never contact each other or other conductive objects (metal, etc.), or they will short circuit and damage the speed control.



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## STEP 4 HOOK-UP INSTRUCTIONS

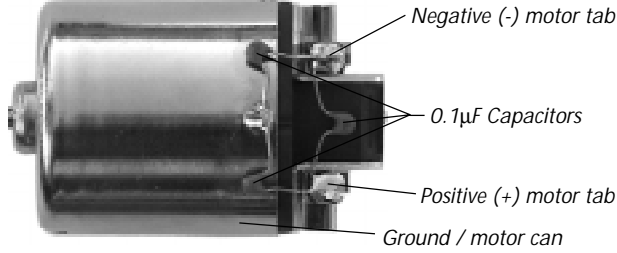
Refer to Quick Set-Up photos on front

### 1. INSTALL MOTOR CAPACITORS

Electric motors generate radio noise that can interfere with your receiver and cause radio problems. Included in the ESC accessory kit are three 0.1 $\mu$ F (50V) non-polarized, ceramic capacitors. These capacitors must be installed on every motor to help reduce the noise generated by the motor and to prevent ESC damage. Solder 0.1 $\mu$ F (50V) capacitors between:

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

\*If your motor does not have a ground tab, solder the capacitor leads to the can of the motor as shown below.



Extra 0.1 $\mu$ F capacitors are available in Novak kit #5620

### 2. IMPORTANT NOTE ABOUT SCHOTTKY DIODES NO SCHOTTKY DIODES

Schottky diodes must NOT be used with reversible speed controls. Using a Schottky diode will damage the speed control and will void the warranty.

### 3. CONNECT SPEED CONTROL TO THE RECEIVER

After the proper input plug plastic has been installed to match the receiver (Refer to Step 1), plug the speed control into the THROTTLE CHANNEL of the receiver.

### 4. CONNECT SPEED CONTROL TO THE BATTERY PACK

**ROOSTER**—Plug the JST/Tamiya connector from speed control into a 6 or 7 cell battery pack (1.2 volts DC/cell). \*Removal of JST/Tamiya connector voids warranty.

**SUPER ROOSTER**—Cut the BLACK wire of ESC to the desired length and strip about 1/4" of insulation off the end. Solder to the negative side of a completely charged 6 to 10 cell battery pack (1.2 volts DC/cell).

Cut the RED wire of ESC to the desired length and strip about 1/4" of insulation off the end. Solder to the positive side of the battery pack.

### 5. CONNECT SPEED CONTROL TO THE MOTOR

**ROOSTER**—Plug the bullet connector on the YELLOW wire of speed control to motor positive. Plug the bullet connector on the BLUE wire of speed control to motor negative.

**SUPER ROOSTER**—Cut the BLUE wire of ESC to the desired length and strip about 1/4" of insulation off the end. Solder to the negative tab of the motor.

Cut the YELLOW wire of speed control to the desired length and strip about 1/4" of insulation off the end. Solder to the positive tab of the motor.

TIP: Twist BLUE & YELLOW motor wires once or twice as they go to the motor to reduce any radio noise emitted from power wires.

### 6. USING PLUGS FOR BATTERY & MOTOR CONNECTION

High-quality/low-resistance connector plugs, such as Dean's Ultra Plugs, can also be used to connect the Super Rooster. While these connectors make component changes quick and easy, the connection will never have the low resistance of a good solder joint.

Use connectors that can not be connected backwards, as this will damage the ESC and void the warranty.

It is good practice to use a female connector on battery to keep from short-circuiting on conductive surfaces.

If you use connector plugs for battery and motor, use a male connector on the ESC battery wires and a female connector on the motor wires. Doing this, will avoid plugging the battery into the motor output of the ESC.

## STEP 5 TRANSMITTER ADJUSTMENTS

For proper speed control operation and programming set transmitter adjustments as follows:

1. Set **HIGH ATV** or **EPA** to **maximum** setting.  
[Amount of throw at full throttle]
2. Set **LOW ATV**, **EPA**, or **ATL** to **maximum** setting.  
[Amount of throw at full brakes]
3. Set **EXPONENTIAL** to **zero** or **middle** setting.  
[Throttle channel linearity]
4. Set **THROTTLE CHANNEL TRIM** to **middle** setting.  
[Adjusts neutral position/Increases or decreases coast brakes]
5. Set **THROTTLE CHANNEL REVERSING SWITCH** to **either** position.  
[Do not change switch position after programming]
6. Set **ELECTRONIC TRIGGER THROW ADJUSTMENT** to **50% throttle** and **50% brake** throw (or 5:5).  
[Adjusts pistol-grip transmitter's throttle trigger throw on electronic/digital transmitters]
7. Set **MECHANICAL TRIGGER THROW ADJUSTMENT** to position with **1/2 throttle** and **1/2 brake** throw.  
[Adjusts pistol-grip transmitter's throttle trigger throw on mechanical/analog transmitters]

## STEP 6 SPEED CONTROL PROGRAMMING

Speed control should be connected to receiver and to a charged battery pack, and the transmitter adjusted.

1. **TURN ON THE TRANSMITTER**
2. **TURN ON THE SPEED CONTROL**
3. **PRESS AND HOLD SPEED CONTROL'S SET BUTTON**  
With transmitter throttle at neutral, press and hold the ESC SET button until the status LED turns solid red.
4. **RELEASE ESC SET BUTTON WHEN LED IS RED**
5. **PULL TRANSMITTER THROTTLE TO FULL-ON POSITION**  
Hold it there until the status LED turns solid green.  
*NOTE: The motor will not run during programming even if it is connected to the speed control.*
6. **PUSH TRANSMITTER THROTTLE TO FULL-REVERSE**  
Hold it there until the status LED blinks green.
7. **RETURN TRANSMITTER THROTTLE TO NEUTRAL**  
Status LED will turn solid red, indicating that throttle is at neutral and proper programming has been completed.

**Speed control is programmed & ready to kick-up a roost!**

If transmitter settings are changed, it will be necessary to complete the programming sequence once again.

If you experience any problems during programming, turn off the speed control and repeat programming.

## STEP 7 REVERSE DISABLE PROGRAMMING

Speed control should be connected to receiver and to a charged battery pack, and the transmitter adjusted.

1. **TURN ON THE TRANSMITTER**
2. **TURN ON THE SPEED CONTROL**
3. **PRESS AND HOLD SPEED CONTROL'S SET BUTTON**  
Press and hold the ESC SET button until the status LED turns from solid red to solid green.
4. **RELEASE ESC SET BUTTON WHEN LED IS GREEN**
5. **PRESS SET BUTTON TO ENABLE/DISABLE REVERSE**  
SLOW RED FLASH = REVERSE ENABLED  
FAST RED FLASH = REVERSE DISABLED  
*Note: You must press the ESC SET button very soon after the LED begins flashing red (slow or fast).*
6. **LED WILL TURN GREEN THEN EXIT PROGRAMMING**  
Green LED indicates ESC is exiting programming mode.

## TROUBLE-SHOOTING GUIDE

### ESC Will Not Program Properly

- Too little transmitter throw—Increase ATV/EPA setting.
- Make sure ESC is plugged into the throttle channel of receiver. Check throttle channel operation with a servo.
- ESC SET button not held long enough—Press and hold SET button until status LED turns solid red.

### ESC Will Not Go In Reverse

- Reverse circuitry disabled—Refer to Step 7 to enable.

### Steering Channel Works But Motor Will Not Run

[Status LED is solid RED at all throttle positions]

- No signal from receiver—Make sure speed control is plugged into throttle channel of receiver. Check throttle channel operation with a servo. Check the wiring color sequence & metal socket insertion of receiver harness.

### Steering Channel Works But Motor Will Not Run

[Status LED is RED at neutral / GREEN at full throttle]

- Check motor connections. Check motor and brushes.

### Steering Channel Works But Motor Will Not Run

- Not programmed—Repeat programming.
- Thermal Shutdown—Allow to cool/Check for adequate airflow through heat sinks.
- Check wiring and connections—Check operation of system without speed control.

### Receiver Glitches/Throttle Stutters During Acceleration

- Motor capacitors broken or missing—Refer to Step 4.
- Receiver or antenna too close to speed control, power wires, battery, or motor—Refer to Step 2.
- Bad connections—Check wiring and connectors.
- Graphite or Aluminum Chassis—Refer to Step 2.
- Excessive current to motor—Use a milder motor or a smaller pinion gear.

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

- Internal damage—Refer to Service Procedures.

\*For more help call our Customer Service Department.

## SERVICE PROCEDURES

Before sending in your speed control for service, review the Trouble-Shooting guide and the instructions. The ESC may appear to have failed when other problems exist.

**PLEASE NOTE:** Speed controls that operate normally when received will be charged a minimum service fee and return shipping costs.

**WHAT TO SEND:** Fill out all information requested on the enclosed REVERSIBLE ESC SERVICE CARD (service card also available on our website) and return it with speed control.

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

**SERVICE COSTS:** Customer is responsible for all service costs (parts, labor, and shipping/handling charges). Speed controls will be returned by UPS/COD CASH ONLY. See SERVICE CARD for other payment and shipping options.

### ADDITIONAL NOTES:

- Hobby dealers/distributors are not authorized to replace speed controls thought to be defective.
- If a hobby dealer sends your speed control for service, submit a completed REVERSIBLE ESC SERVICE CARD to the dealer and make sure it is sent with the speed control.
- Novak Electronics, Inc. does not make any electronic components (transistors, resistors, etc.) available for sale.
- To provide the most efficient service possible to our customers, it is not our policy to contact customers by phone or mail.

## PRODUCT WARRANTY

The Rooster/Super Rooster is guaranteed to be free from defects in materials or workmanship for a period of 120 days from 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 6 or more than 7 cells (Rooster) or 10 cells (Super Rooster) (1.2 volts DC/cell) input voltage, short-circuiting heat sinks, cross-connection of the battery/motor, using the same-gender connectors on ESC, removing JST/Tamiya connector or heat sink or using motors with fewer than 16 turns with Rooster, reverse voltage application, damage resulting from thermal overload, damage from excessive force while installing Super Rooster heat sinks, not installing three 0.1 $\mu$ F (50V) capacitors on motors, splices to input or switch harnesses, damage from disassembling case or excessive force when using SET button, tampering with internal electronics, allowing water, moisture, or other foreign material to enter ESC or get onto PC board, incorrect installation/wiring of alternate input plug plastic, external receiver battery pack, or FET servo, allowing exposed wiring to short-circuit, use of a Schottky diode, or any damage caused by 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.

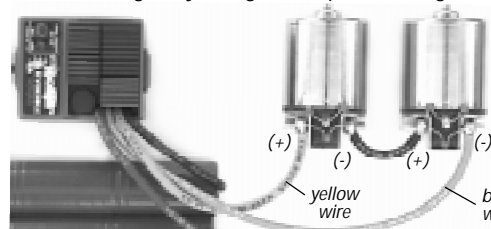
Because Novak Electronics, Inc. has no control over connection and use of the ESC, no liability may be assumed nor will be accepted for damage resulting from the use of this product. Every ESC is thoroughly tested and cycled before leaving our facility and is, therefore, considered operational. By the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

## SUPER ROOSTER: DUAL-MOTOR SET-UPS & RECOMMENDATIONS

\*\* Using Dual-Motors is Not recommended with the Rooster \*\*

### SERIES DUAL-MOTOR WIRING

This method gives you higher torque and longer run times.



•ALWAYS USE IDENTICAL MOTORS•

1. **YELLOW** wire from speed control goes to the positive tab on the first motor.
2. An extra piece of 14 gauge speed control wire then goes from the negative tab on the first motor to the positive tab on the second motor.
3. **BLUE** wire from the speed control goes to the negative tab on the second motor.

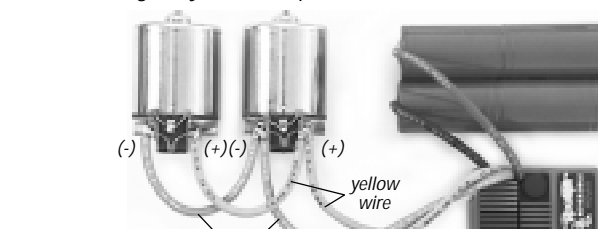
### SERIES DUAL-MOTOR RECOMMENDATIONS

Special motors are available that are designed to be run together. These motors will give optimum performance and will also minimize the wear on your drive train.

Motors in series put the same load on the speed control as the total number of turns in both motors. For this set-up you can use motors with as few as 8 turns and the speed control will think its driving a 16 turn motor. You will get the speed and run times of a 16 turn motor with twice as much torque that is needed for heavier models.

### PARALLEL DUAL-MOTOR WIRING

This method gives you faster speeds but shorter run times.



1. **YELLOW** wire from speed control goes to the positive tab on the first motor.
2. **YELLOW** wire then goes from the positive tab on the first motor to the positive tab on the second motor.
3. **BLUE** wire from the speed control goes to the negative tab on the first motor.
4. **BLUE** wire then goes from the negative tab on the first motor to the negative tab on the second motor.

### PARALLEL DUAL-MOTOR RECOMMENDATIONS

As with the series set-up, the motors that are designed for running in dual configurations will give you optimum performance and will minimize drive train wear.

Motors in parallel double the load on the speed control. For this reason you should not run motors with fewer turns than are available in a single motor. For example, if the lowest number of turns you can get is an 8 turn motor, each of your dual motors should be 15 or 16 turns.

## CUSTOMER SERVICE

### CUSTOMER SERVICE HOURS (PST)

Monday-Thursday: 8:00am-5:00pm  
Friday: 8:00am-4:00pm (closed every other Fri.)

(949) 833-8873 • FAX (949) 833-1631

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