STEP 5-TRANSMITTER ADJUSTMENTS

For proper ESC operation, adjust transmitter as follows:

A. Set **HIGH ATV** or **EPA** to **maximum** setting.
[amount of throw at full throttle]

B. Set **LOW ATV, EPA,** or **ATL** to **maximum** setting.
[amount of throw at full brakes]

C. Set **EXPONENTIAL** to **zero** setting. *[throttle channel linearity]*

D. Set **THROTTLE CHANNEL REV. SWITCH** to **either** position.

E. Set **THROTTLE CHANNEL TRIM** to **middle** setting.
[adjusts neutral position/increases or decreases coast brakes]

F. Set **ELECTRONIC TRIGGER THROW ADJUSTMENT** to **50% throttle** and **50% brake** throw (or 5:5).
[adjusts trigger throw electronic/digital pistol-grip transmitters]

G. Set **MECHANICAL TRIGGER THROW ADJUSTMENT** to position with **1/2 throttle** and **1/2 brake** throw.
[adjusts trigger throw on mechanical/analog pistol-grip transmitters]

•NOT ALL TRANSMITTERS HAVE THESE ADJUSTMENTS•

STEP 6-ONE-TOUCH PROGRAMMING

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

1. **TURN ON THE TRANSMITTER'S POWER**
2. **PRESS & HOLD ESC'S ONE-TOUCH/SET BUTTON**
3. **TURN ON THE SPEED CONTROL'S POWER**
   With transmitter throttle at neutral, and still **pressing the SET button**, slide the ESC's **ON/OFF switch** *to ON position*.
4. **CONTINUE HOLDING SET BUTTON UNTIL RED LED COMES ON**
5. **RELEASE SET BUTTON AS SOON AS LED TURNS 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**
   Red status LED will ***turn solid red***, indicating that throttle is at neutral, and proper programming has been completed--you're done.

NOTE: If transmitter setting are changed, programming must be repeated. If you experience any problems, turn off ESC and repeat programming.

THROTTLE PROGRAM SELECTION

The Super Duty XR has ***3 user-selectable Throttle Programs*** to choose from:

PROGRAM #1: Forward, brakes, and full power reverse.
PROGRAM #2: Forward & brakes only--reverse disabled.
PROGRAM #3: Forward, brakes, and 25% power reverse.

SELECTING THROTTLE PROGRAM:

With ESC connected to a charged battery (transmitter ON or OFF):

1. **IF TRANSMITTER IS OFF, DISCONNECT ESC FROM RECEIVER**
   To avoid possible radio interference from other transmitters, remove the Super Duty XR's input signal harness from the receiver.
2. **TURN ON THE SPEED CONTROL'S POWER**
3. **PRESS & HOLD THE ONE-TOUCH SET BUTTON**
   Continue to hold SET button on ESC ***until both LEDs turns on***.
4. **RELEASE SET BUTTON AS SOON AS BOTH LEDs COMES ON**
   Once released, the status LEDs will flash to indicate what Throttle Program is currently selected. The number of times the LEDs flash indicates the Throttle Program selection *(1 of 3)*.
5. **QUICK PRESS** *(& release)* **SET BUTTON TO CHANGE SELECTION**
   Each press will change to the next consecutive Throttle Program.
   (After Program 3, the sequence begins again at Program 1)
   Note: there is a time constraint during this selection process.
   If SET button is not pressed for about 3 seconds, ESC will exit to neutral.
6. **ESC STORES SELECTION & EXITS TO NEUTRAL**
   When SET button is not pressed for about 3 seconds, the ***selected Program is stored*** into memory & the red LED will come on solid. The speed control is at neutral & ready to go.

NOTE: Whenever the One-Touch set-up is performed, the Super Duty XR will automatically revert to the factory default setting of Throttle Program #1.

USING A RECEIVER BATTERY PACK

If using an external receiver battery pack with the Super Duty XR:

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

12VDC BATTERY NOTE: An external receiver battery pack should be used when using the Super Duty XR's with a single 12 volt battery, like a lead acid or gel cell. The ESC's built-in B.E.C. will provide limited output due to the high voltage directed through the single battery input, resulting in degraded servo and receiver performance.

TROUBLE-SHOOTING GUIDE

Steering Channel Works But Motor Will Not Run

- Check motor connections. Check motor and brushes.
- Make sure input signal harness is plugged into throttle channel of receiver and the ESC. Check throttle channel operation with a servo. Check wiring color sequence of receiver signal harness.
- Possible thermal shut-down—Check motor, brushes, & drive train. ESC is being severely over-loaded.
- 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 and connectors.
- Motor brushes worn—Replace brushes.
- Motor capacitors broken or missing—Refer to Step 3.
- Excessive motor current—Use milder motor or smaller pinion gear.
- 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, and battery pack.
- Possible internal damage—Refer to Service Procedures.

Model Runs Slowly/Slow Acceleration

- Check motor and battery connectors—Replace if needed.
- Bad battery or motor—Check operation with another.
- Incorrect transmitter/ESC adjustment—Refer to Steps 5 & 6.
- External Power Capacitor damaged/not installed—Replace Power Capacitor.

Motor Runs Backwards

- Motor wired backwards—Check wiring and reverse.
- Backwards motor timing—Reverse motor end bell.

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 your ESC in for service, review Trouble-Shooting guide & instructions. ESC may appear to have failed when other problems exist.

After reviewing instructions, if you feel your ESC requires service, please obtain the most current product service options & pricing by the following:

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/E-MAIL: If you do not have access to the internet, contact our customer service dept. by phone or e-mail as listed on the front page.

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.

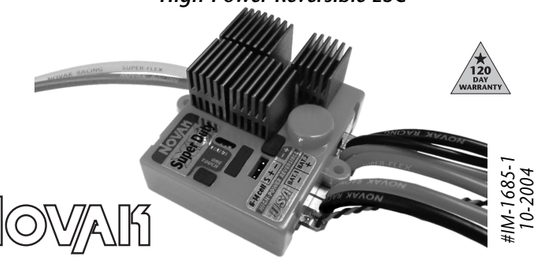
ADDITIONAL NOTES:

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

www.teamnovak.com

SET-UP GUIDE -- SUPER DUTY XR

Super Duty XR
High-Power Reversible ESC



NOVAK

#IM-1685-1
10-2004

SPECIFICATIONS

Input Voltage	6-14 cells *(1.2 volts DC/cell)*
Case Size	1.75"x2.17"x0.85" *[44.5x55.1x21.6mm]*
Weight *(w/o wires)*	4.03 ounce *[114 grams]*
On-Resistance *@ Transistors/25°C*	0.0011 Ω
Rated Current *(forward/braking & reverse)*	400/180 amps
B.E.C. Voltage/Current	6.0 volts DC/3.0 amps
Power Wire	14G Super-Flex Silicone
Single Motor Limit @ 6 cells	None
Single Motor Limit @ 10, 12, & 14 cells	None *(550 size only)*
Dual Motor Limit @ 6 cells	10 Turns *(550 size only)*
Dual Motor Limit @ 10 cells	None *(550 size only)*
Dual Motor Limit @ 12 &14 cells	12 Turns *(550 size only)*
Throttle Program #1	Forward, Brakes, & 100% Reverse
Throttle Program #2	Forward & Brakes only *(no reverse)*
Throttle Program #3	Forward, Brakes, & 25% Reverse

BIG...BAD...POWERFUL...RELIABLE.....*the SUPER DUTY XR is here!*

The Super Duty XR is the toughest high-power reversible electronic speed control that you can get for your big trucks, hot boats, or any other high-power R/C application using brush-type motors!

With 3 factory throttle programs to choose from & Novak's Smart Braking II *(you don't go into reverse until you shift into reverse by returning the trigger to neutral and then back to reverse)*, the Super Duty XR is ready for anything. The Super Duty XR has ***Thermal Overload Protection*** for peace of mind, ***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 battery power. Add to this the ease & convenience of user-replaceable battery wires, power capacitor, ON/OFF switch, & input harness, and the Super Duty XR is super user-friendly!

To benefit from all of the Super Duty XR's technical features, PLEASE READ ALL INSTRUCTIONS

PRECAUTIONS

WATER & ELECTRONICS DON'T MIX!

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

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.

6 TO 14 CELLS ONLY

Never use fewer than 6 or more than 14 cells *(7.2-16.8VDC, 1.2VDC/cell)* in the vehicle's main battery pack(s).

NO REVERSE VOLTAGE!

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

NO SCHOTTKY DIODES!

External Schottky diodes MUST NOT be used with reversible speed controls—usage will damage ESC & void warranty.

ALWAYS USE HEAT SINKS

Heat sinks are factory-installed on your Super Duty XR and MUST be used for maximum cooling and performance—***Never allow the separate heat sinks to touch each other or any exposed metal or conductive surface, as this will cause a short circuit & damage ESC.***

POWER CAPACITOR REQUIRED

An external power capacitor is installed and ***MUST*** be used with your Super Duty XR. ***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.

Novak Electronics, Inc.
(949) 833-8873 • FAX (949) 833-1631
Customer Service e-mail: ***cs@teamnovak.com***
Monday-Thursday: 8:00am-5:00pm (PST)
Friday: 8:00am-4:00pm *(closed every other Friday)*
www.teamnovak.com

OPTIONAL ACCESSORIES

POWER-BOOST ESC COOLING FAN KIT ***[Novak kit #5646]***
The Power-Boost ESC cooling fan kit has everything needed to get more power from your Super Duty XR for hot motors--custom fit fan brackets *(short & tall included)*, mounting screws, & high-volume cooling fan that plugs into Super Duty XR's fan power output jack.

POWER CAPACITORS ***[Novak kit #5675]***
An external power capacitor is installed, and ***MUST BE USED*** to maintain cool and smooth operation. ***Refer to Fig.5 Set-Up Photo***

MOTOR CAPACITORS ***[Novak kit #5620]***
Additional motor capacitors are available in Novak kit #5620.

SUPER-FLEX SILICONE POWER WIRE ***[Novak kits #5500 & 5530]***
Novak Super-Flex wire for motor & power wiring. 14 guage silicone wire in kit #5500 *(36"red & 36"black)*, and 12G silicone in kit #5530 *(36"red & 36"black)*.

INPUT SIGNAL HARNESS ***[Novak kits #5315 & 5320]***
User-replaceable input signal harnesses are available for the Super Duty XR in both short *(#5315)* and long lengths *(#5320)*.

REPLACEMENT SWITCH HARNESS ***[Novak kit #5600]***
The replacement switch harness has ON/OFF switch with pre-tinned wires ready to solder to the Super Duty XR's Direct-Solder Wire Tabs.

PRODUCT WARRANTY

The Super Duty XR speed control 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, damage from using fewer than 6 or more than 14 cells *(1.2 volts DC/cell)* input voltage, cross-connection of battery/motor, overheating solder tabs, reverse voltage application, damage from incorrect installation of FET servo or receiver battery pack, not installing three 0.1µF (50V) capacitors on each motor, incorrect installation of a Power Capacitor on the ESC or from using a damaged Power Capacitor, using a Schottky diode or non-Novak Power Capacitor, 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.

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 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.

STEP 1–CONNECT INPUT HARNESS

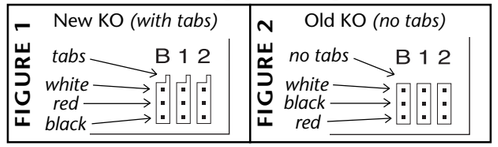
The Super Duty XR is epuipped with the industry standard receiver input connector on a user-replaceable input harness that ***works with all the major radio brand's new receivers***. However, some very old receivers must have the wiring sequence inside the plastic 3-pin connector housing changed. ***This is an important step, because the receiver electronics may be damaged if the sequence is not correct.***

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 the connector on one end of the input harness into the receiver with the ***BLACK wire toward the outside edge*** of receiver case.
- Plug the other end of the input harness into 3-pin header inside rectangular opening on top of the Super Duty XR's case with the ***WHITE wire toward the 'S' (signal) marking*** on the ESC's label.

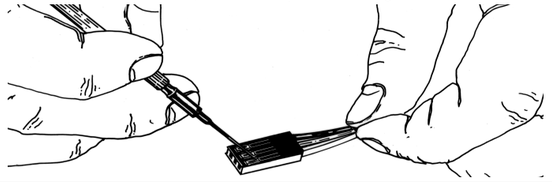


Old-style KO ○ Old-style Sanwa/Airtronics

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 standard/flat blade screwdriver, ***remove the red and black wires*** from the plastic connector 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 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 2–MOUNTING ESC

Mount ESC where its power wires will be away from other electronics and won't interfere with moving parts. If possible, select a location that allows airflow through the heat sinks--***If the ESC gets some air flow, it will run cooler; and that means it will be more efficient, and you'll go faster!***

For single battery pack use, proceed to STEP 3 & 4 before completing STEP 2

- Mount Super Duty XR in the vehicle with the included double-sided tape ***(in the Traxxas E-Maxx, use the stock mounting screws)***.
- Mount Power Capacitor to chassis with double-sided tape or tie-wrap. ***If Power Cap. becomes dented/damaged, ESC failure can occur****--replace immediately.* ***Longer Power Capacitor wires decrease performance.***
- Install the ON/OFF switch using a screw or double-sided tape where it will be easy to access.
- Be sure receiver & antenna are mounted as far from ESC, power wires, battery, and servo as possible--these components all emit RF noise when throttle is being 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 antenna as close to receiver as possible--trail any excess wire off top of antenna mast (cutting or coiling excess antenna wire will reduce radio range).

STEP 3–MOTOR PREP

1. MOTOR CAPACITORS

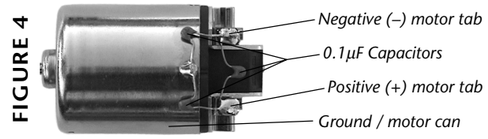
Electric motors generate RF noise that causes interference. The included 0.1µF (50V) non-polarized, ceramic capacitors must be used on all motors to reduce motor noise & prevent ESC damage.

Note: Some motors come with capacitors built-in. If your motor only has two capacitors, you need to install a capacitor between the positive & negative motor tabs. If you experience radio inter-ference when using only the built-in capacitors, 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.*



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

2. DO NOT USE SCHOTTKY DIODES

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

3. USE NEUTRALLY TIMED MOTORS

Using motors with other than 0° timing will draw excessive current in reverse, and result in speed control overheating and premature motor wear.

Modified motors *(with adjustable end bells)* are recommended, and should be timed to 0° for optimum performance.

You should not use stock motors that are used for racing *(with fixed end bells)* as these motors usually have very high timing and run very poorly in reverse. ***Johnson or Mabuchi motors that come with car kits are not timed as aggressively and also work well--these motors usually last longer also.***

STEP 4–WIRING SPEED CONTROL, MOTOR, & BATTERY

The Super duty XR is very powerful, and capable of very efficient delivery of battery power to the vehicle's motor. Therefore, good connections must be made between the battery, speed control, and motor. A common cause of perfomance problems & ESC failures is poor connections--If you have any doubts about your soldering skill, we suggest seeking assistance at your hobby shop or track.

GENERAL INSTALLATION NOTES:

- Keep the ESC and its power wires away from other electronics in the vehicle, especially the receiver & antenna.
- Do not bundle receiver/signal wires with other wires--messy installations account for nearly all radio interference *(glitching)* problems. A clean looking install almost always works better.
- Route ESC wires to clear any moving parts in the vehicle.

Once you've mounted the Super Duty XR, it's time for some wiring. The Super Duty XR is wired for two battery packs, and is equipped with high-power versions of JST/Tamiya-style battery connectors so you can use standard sport battery packs.

Using different style connectors will be discussed at the end of this section.

1. BATTERY PACK CONNECTIONS

The Super Duty XR is designed to be used with two battery packs. However, it can also be used with one standard R/C battery pack (6 or 7 cells @ 1.2VDC/cell) or with one 12 volt DC battery. Using the Super Duty with a single battery requires special wiring and is discussed in this step.

USING DUAL BATTERY PACKS:

A. Connect one battery pack *(6-7 cells @ 1.2VDC/cell)* to the JST/Tamiya connector at the end of the red & black wires coming from the ESC's ***BAT.1*** solder tabs as marked on the Super Duty's case labels.

B. Connect a second battery pack to the JST/Tamiya connector coming from the ESC's ***BAT.2*** solder tabs.

USING SINGLE BATTERY PACK:

To use the Super Duty XR with a single 6 or 7 cell (1.2VDC/cell) pack or a 12VDC battery, the battery must be connected to the BAT.2 input, and the wires from the BAT.1 input must be shorted together. {Refer to FIGURE 6 below}

A. Cut the black wire coming from the ***BAT.1 (–)*** solder tab *(battery wire closest to the front of ESC)* about 2-3" above the solder tab.

B. Strip a 1/8-1/4" of insulation off the end of the ***BAT.1 (–)*** black wire. Tightly twist the strands of wire & lightly tin with solder.

continued ↑

Using Single Battyer Pack: *continued →*

CAUTION: When making battery wire solder connections at the Super Duty XR's Direct-Solder Wiring Tabs, it is important to not overheat & damage PCB *(printed ciruit board)* ***with the soldering iron by applying prolonged or excessive heating*** *(PCB damage voids warranty).*

C. Remove the red wire from the ***BAT.1 (+)*** solder tab. Use a soldering iron to apply heat to the wire's solder joint while gently pulling on the wire to remove it from the PC Board's hole.

D. Solder the stripped & tinned end of the black wire coming from the ESC's ***BAT.1 (–)*** solder tab into the ***BAT.1 (+)*** solder tab. Insert the wire end into the ***BAT.1 (+)*** solder tab hole *(if there is still solder in the hole you can melt it with the iron while pushing the wire through the hole)*. Apply heat to the section of wire that is sticking through the tab's hole, and add solder to the tip of the 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 excess wire above tab *(about 1/16")*.

E. Connect the battery pack *(6-7 cells @ 1.2VDC/cell)* to the JST/Tamiya connector at the end of the red & black wires coming from the ESC's ***BAT.2*** solder tabs as marked on the Super Duty's case labels.

F. ***USING A SINGLE BATTERY WITH VOLTAGE ABOVE 8.4VDC***
When using a single 12VDC battery *(like lead acid or a gell cell)*, there is limited output from the B.E.C. circuit. A separate receiver battery pack can be used for improved servo/receiver performance.

2. MOTOR CONNECTIONS

USING A SINGLE MOTOR:

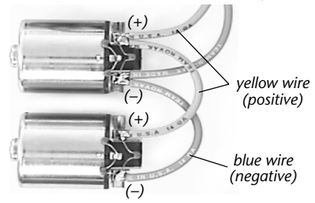
A. Cut the ends of the Super Duty XR's blue & yellow wires to the proper length so they will reach the tabs of the motor and strip 1/8-1/4" of insulation off the ends. Twist & tin the end of the wires.

B. Solder the end of the ESC's blue wire to motor negative *(–)*.

C. Solder the end of the ESC's yellow wire to motor positive *(+)*.

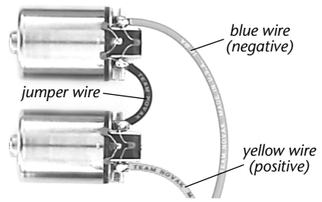
TIP: *Twisting the BLUE & YELLOW wires as they go to the motor helps reduce RF noise emitted from power wires.*

USING DUAL-MOTORS IN PARALLEL:



To use the ESC with 2 motors in parallel (most common way to wire two motors for getting higher speed), the Super Duty XR's blue motor wire goes to the negative (–) tab of both motors, and the yellow motor wire goes to the positive (+) tab of both motors as shown in the main set-up photo (Figure 5).

USING DUAL-MOTORS IN SERIES:



To use the ESC with 2 motors in series (low speed wiring method for long run time), the Super Duty XR's blue motor wire goes to the negative (–) tab of the 1st motor, the yellow motor wire goes to the positive (+) tab of the 2nd motor, and a jumper wire connects the positive (+) tab of the 1st motor to the negative (–) tab of the 2nd motor as shown here.

BATTERY & MOTOR CONNECTORS

If you are going to use connectors for your motor, or change the factory installed battery connectors, we suggest the Dean's Ultra Connectors.

When installing battery & motor connectors, please note the following:

- If you have any doubts about your soldering skills, seek assistance from your hobby shop or track, or see our website for tips.
- Use connectors that cannot be plugged in backwards--reverse voltage will damage the Super Duty XR and void the warranty.
- Use a female connector on battery packs to avoid shorting.
- If using connectors for both battery & motor leads, use a male connector on the battery leads and a female on the motor lead to prevent cross connection *(also voids warranty)*.

For additional information on connector usage, visit our website.

FIGURE 5: SET-UP PHOTO

('Y' method of parallel motor wiring shown)

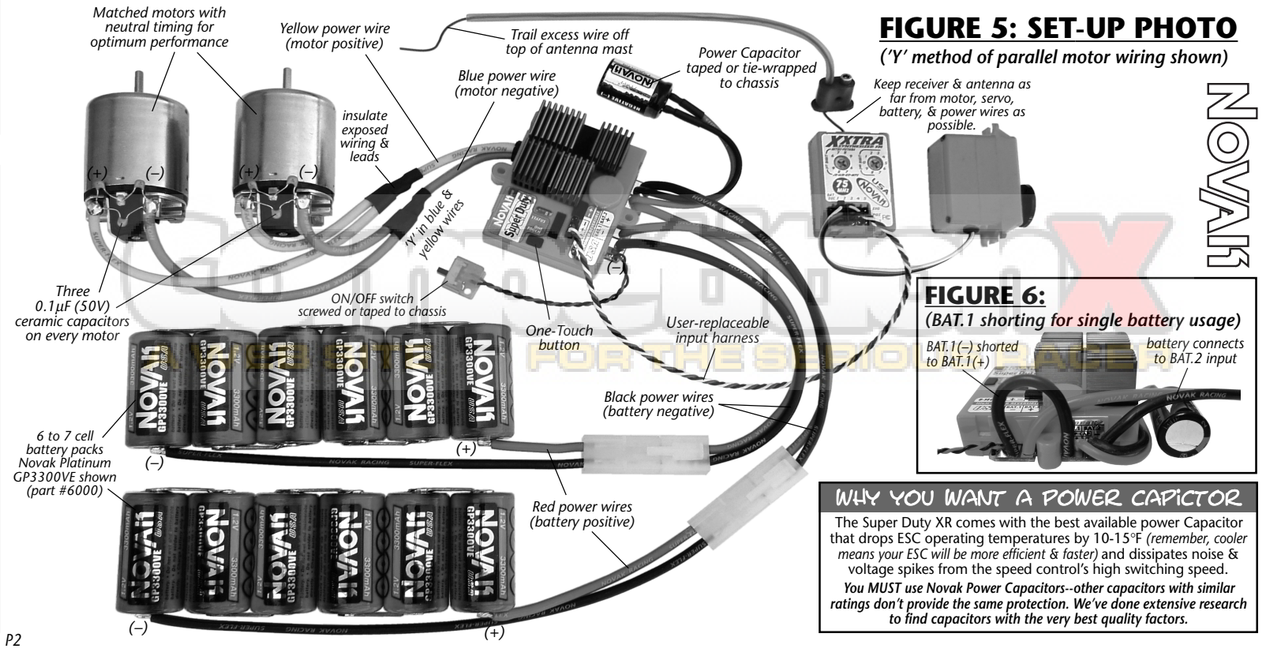


FIGURE 6:

(BAT.1 shorting for single battery usage)

WHY YOU WANT A POWER CAPICTOR

The Super Duty XR comes with the best available power Capacitor that drops ESC operating temperatures by 10-15°F *(remember, cooler means your ESC will be more efficient & faster)* and dissipates noise & voltage spikes from the speed control's high switching speed.

You MUST use Novak Power Capacitors--other capacitors with similar ratings don't provide the same protection. We've done extensive research to find capacitors with the very best quality factors.