

# TOROX 185 ESC



# CAP PACK



# INSTALLATION



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## CAP PACK - HOW TO INSTALL

A Capacitor pack is a fancy name for a bank of capacitors. That is a series of capacitors that are electrically wired together to form what we would know as a pack. Each capacitor is wired in parallel to each other. The idea is to place the cap pack as close as possible to the ESC on the battery to ESC wires. **The purpose is to smooth out any voltage dips that occur during operation.**

### What a Cap Pack will NOT help / Capacitor Boost

You may have heard that a Capacitor bank helps with the performance of a Radio Controlled vehicle. This is one area that we will need to set straight right away. Cap packs are not installed to increase the top speed of our RC car. They will also not help to increase the acceleration we can achieve out of our car. Essentially, cap packs do not store nearly enough energy in order to discharge this to the motor increasing power potential. In fact they would not store enough energy to operate the Radio Controlled vehicle for even a split second. For this reason we should not expect any improvements to RC car performance.

### Purpose of a Cap Pack (Capacitor Pack)

When an ESC is powering a brushless motor, the ESC must turn on and off power to each of the motors winding's. The main purpose of a capacitor is to fill the void in voltage as the ESC is switching the motor on and off. An example of where the voltage void comes from would be when the battery is under load. As the battery is under load, the voltage tends to drop creating a voltage drop that could be read across the ESC. As the ESC turns a winding in the motor off, the battery unloads and causes a potential dip and spike in voltage. It is possible during this spike that the voltage can be higher than the source voltage. The capacitor bank is able to fill in the void in order to maintain a more constant or steady voltage across the ESC power input. Now let's look at which RC car can most benefit from more capacitors!

### Does my RC Car need a Capacitor Pack

RC Cars that pull a lot of power and are pushed very hard for short duration's of time tend to be the offenders that are hard on ESC's. It doesn't matter if your ESC is rated for 185A and you are only using 100A of that current handling capacity. **What is critical is as we noted above, the cyclic voltage drop that occurs across the input side of an ESC. Using a Cap pack in these high demand applications can only help your ESC by reducing the variance in voltage resulting in a lowered temperature of your ESC.**

### Examples of a few RC Car applications that would benefit the use of a cap pack include:

- RC Monster Trucks powered by 6S
- RC Monster Trucks powered by 4S or 6S which are pushed very hard for short duration's of time
- RC Speed Car (Car specifically designed and raced for achieving highest maximum speed)
- RC Cars that has been geared for a high rate of speed similar to a speed car
- Any RC Car where the limits are being pushed or where a aggressive driving style is used

### How to install the Cap Pack on your ESC

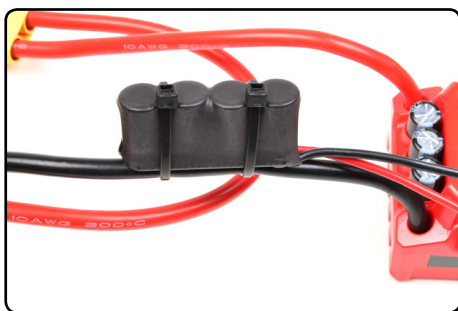
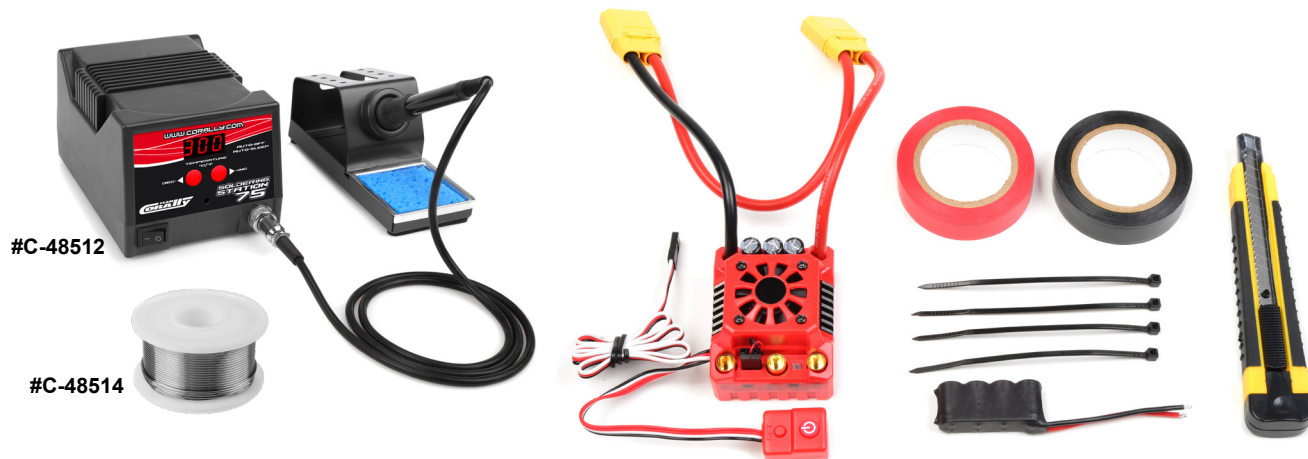
Installing a Cap Pack is not difficult, as you will see on the next page.



## HOW TO INSTALL THE CAP PACK ON THE CONTROLLER

- Please ensure that you have the equipment shown below.
- Then follow the steps to install the capacitor on the speed controller.

**Note:** Be sure to observe the correct polarity.



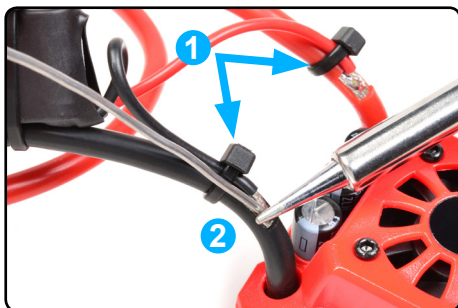
Attach the capacitor to the ESC cable with 2 tie-raps.



Using the cutter, carefully cut a window in the ESC cable insulation to reveal the strands. Be careful not to cut the strands !



Using the soldering iron, preheat the strands for a few seconds and then apply the solder. Only the surface strands must be tinned.



Secure the capacitor wires to the ESC wires with 2 tie-raps. Then solder the wires together.



Check that the weld is correct and durable.



Use electrical insulating tape to protect against oxidation.

