# The SafeTag System

The SafeTag system identifies when an electric powered model is disarmed and safe to handle without any risk of the motor starting inadvertently or accidentally. The basis of the SafeTag system is the insertion of a 'dummy' plug/socket onto or in line with the input of the ESC to ensure an open circuit exists between the power source and the ESC. A green ribbon is attached to the 'dummy' plug/socket to indicate the safe state of the model.

The SafeTag can be used either by attaching it directly onto the ESC input with the ribbon extending outside the model or by inserting the SafeTag into an external arming socket.
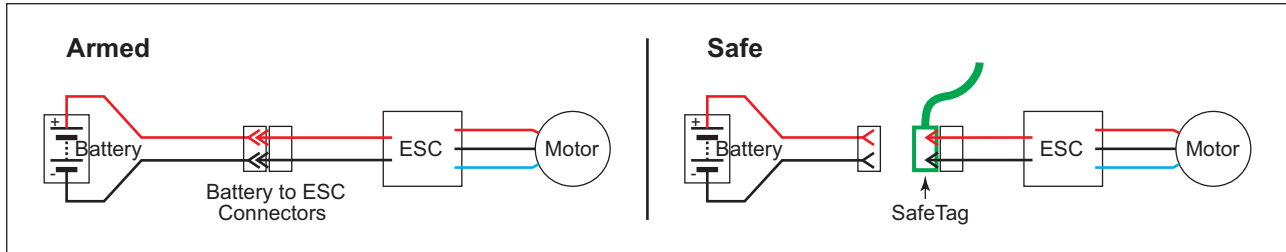


Standard battery to ESC connection (If you are using an external arming socket in addition to a battery connection, please see over the page for diagrams)

## Preparation

**A bright green ribbon attached to a plug/socket matching the electric power connections is all that is needed.**
The plug/socket is open circuit. It is suggested that the ribbon is 10mm to 15mm wide and long enough to have at least 200mm showing outside the model in plain view.

Most modellers will need a socket that will plug into the ESC where the battery would normally be plugged in. Where a model is equipped with an arming socket, a plug matching that socket will be required. No wires are to be connected between the terminals of the SafeTag plug/socket. Some connectors, such as EC5s, don't even need to have the metal inserts (the plastic shields grip together sufficiently). Other connectors could be made easier to insert/remove by the removal of one of the pins or by modification of the pins.



An assortment of connectors attached to the ribbon with a variety of methods (epoxy glue, CA, heat shrink and binding)

## Use

STANDARD SET-UP (no external arming system)
Connect the dummy socket of the SafeTag to the power plug of the ESC and place the ribbon so that it is in plain view outside the model. The model can then be considered safe even if there is a battery in position. When wishing to arm the model the SafeTag will need to be removed and the battery connected. As soon as the flight is completed, unplug the battery and re-insert the SafeTag ensuring that the ribbon is outside the model and in plain view.

MODELS WITH AN EXTERNAL ARMING SOCKET
Place the plug of the SafeTag into the arming socket and ensure the ribbon is in plain view. To arm the system remove the SafeTag and insert the arming plug. When finished, remove the arming plug and re-insert the SafeTag ensuring the ribbon is in plain view.



SafeTag in internal use

SafeTag showing ribbon outside the model

SafeTag with external arming

**All electric models without a SafeTag correctly fitted and without the ribbon in plain view must be considered armed and potentially unsafe. Ideally, all electric models should be brought to the flying site with the SafeTag already fitted.**

# Electric Powered Model Safety

The following was kept in mind when deciding on a safety system for use with electric powered models:

- A system that was as fail-safe as possible,

- A system which would allow anyone to walk through the sheltered and pits areas and easily see which electric models were safe,

- A system that could be implemented on all electric models by all levels of modellers.

**Definition of an armed model:** An electric model with power applied to the ESC and its associated motor.

Two approaches were investigated: the clear identification of all armed models or those that were safe.

Methods of indicating that a model was armed were considered, e.g. bright flashing LEDs, but no system was considered suitable for all situations and it was felt that if a model was not fitted with such a device then it could be mistaken for being safe when it was actually armed.

A number of safety systems were investigated: ESC signal grounding, external arming, throttle hold, external break of the ESC-to-motor wires, and removing the propeller. All these methods have their advantages but it was considered that a common system was required for all models that also gave a clear indication to all people in the vicinity which models were safe.
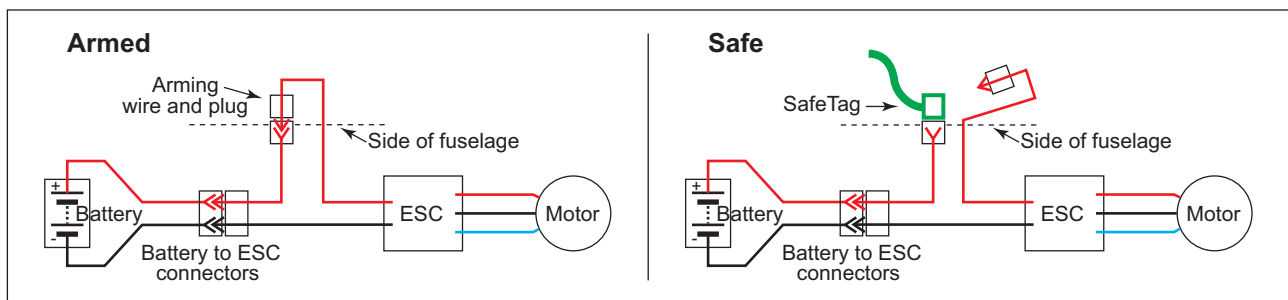
The SafeTag system requires no additional soldering, rewiring or electronics knowledge and can be used by models with and without external arming and as such does not conflict with the need for an external method of connection and disconnection as required by groups such as the Australian Pattern Association.

## External Arming Systems Only

**Please see the front page for standard battery to ESC connection**
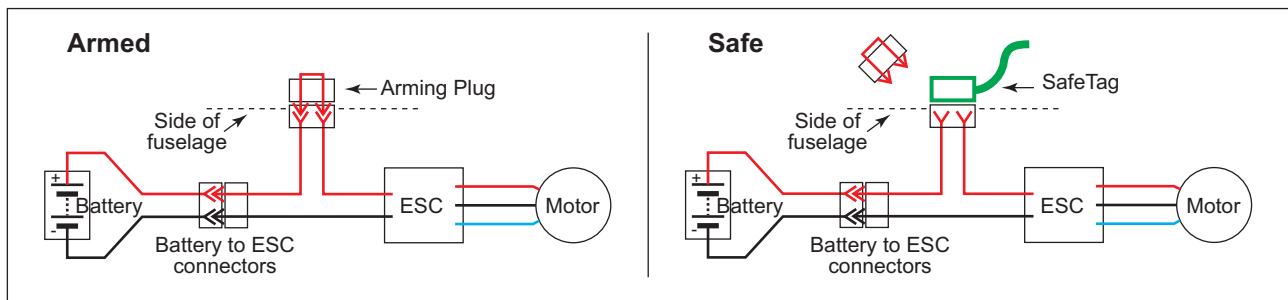


External bridging arming plug



External arming wire and plug