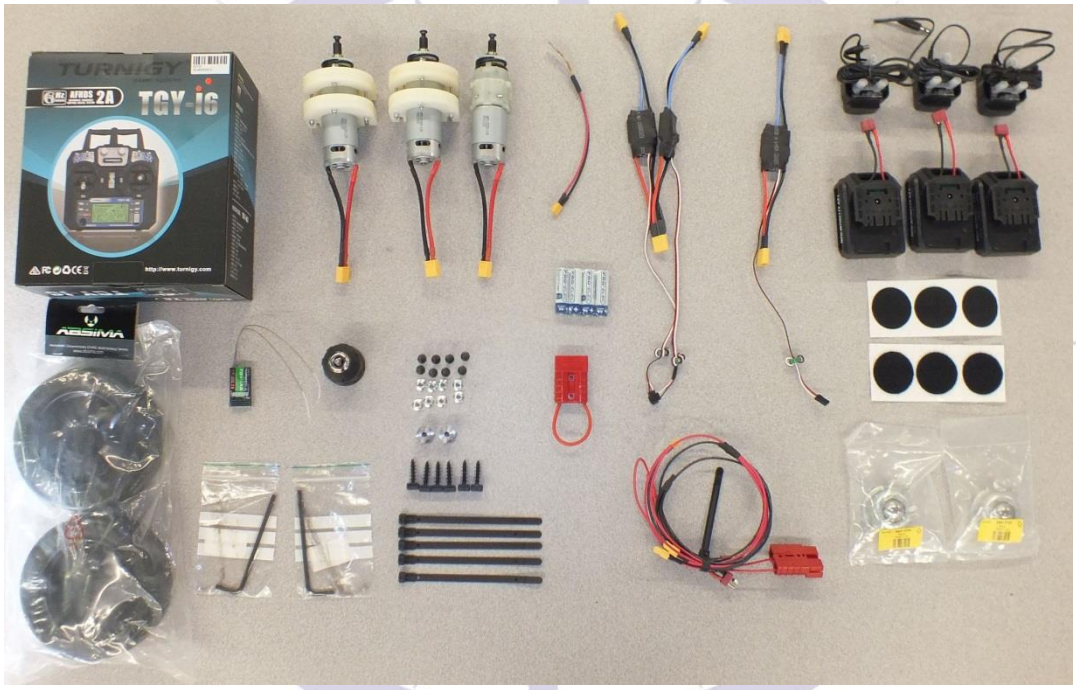
University of Greenwich

Faculty of Engineering and Science



Robot Wars 2018 Schools Parts Pack

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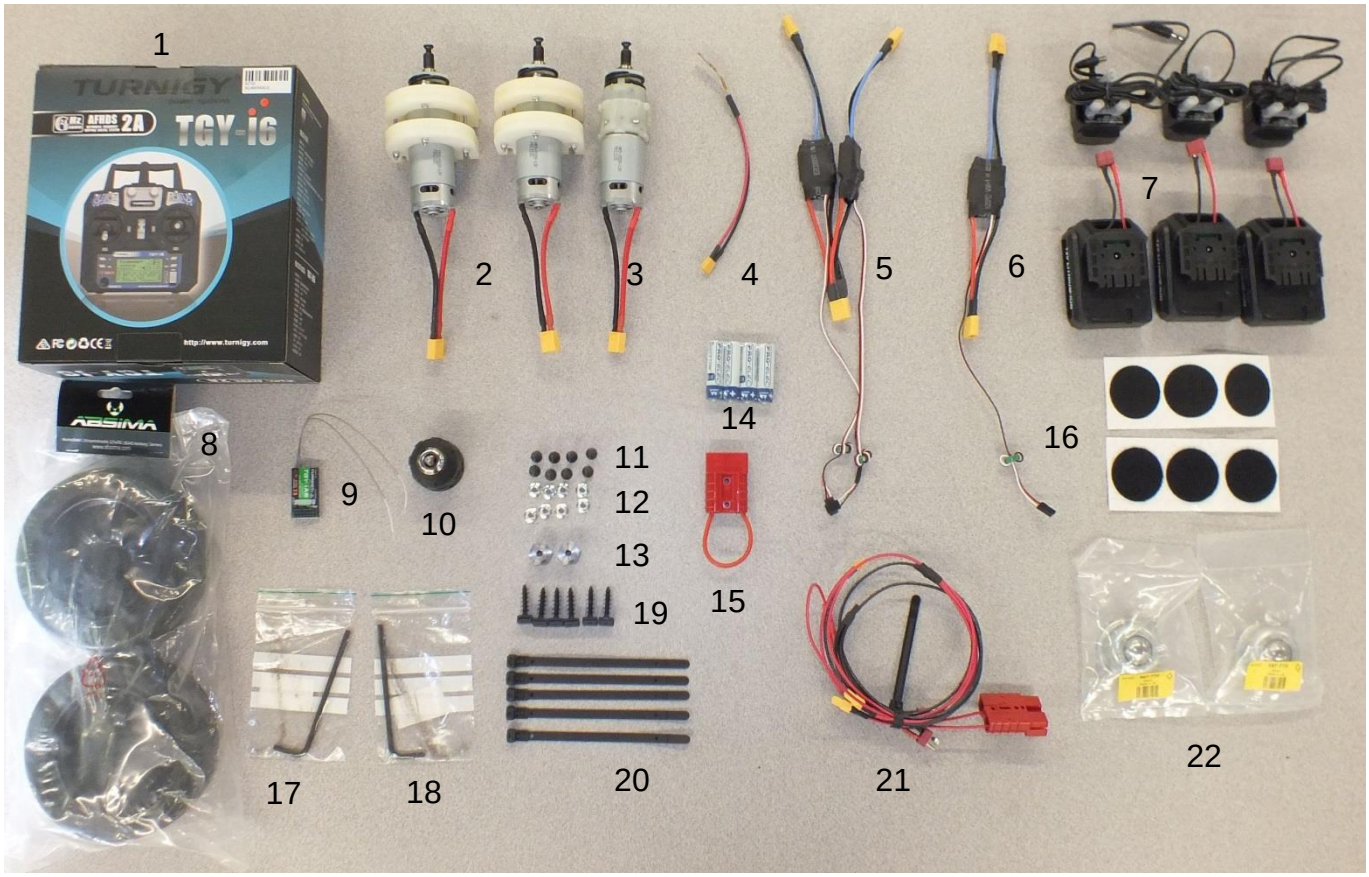
Introduction

This document outlines the parts supplied for the Robot Wars 2018 by the University of Greenwich. It also covers the general assembly into a functioning unit.

If you still have problems then your University link person (and/or Dr Raj Bhatti) will take you through the connections to be made and answer any questions that you may have related to this kit. Please feel free to ask.

Parts

The parts supplied by the University are shown in the picture below.



Parts supplied in each kit

№	Description	Qty
1	RC transmitter unit	1
2	Wheel motor assembly	2
3	Accessory motor	1
4	LED power light	1
5	Motor connection loom	1
6	Accessory connection loom	1
7	Battery pack & Charger	3
8	Wheel	2
9	RC receiver unit	1
10	Chuck	1
11	M5 countersunk bolt	8
12	M5 flanged nut	8

13	Wheel adaptor	2
14	AA Battery	4
15	Safety link	1
16	Large Velcro pad set	3
17	3mm Allen key	1
18	T25 Torx key	1
19	Cable tie mounts	6
20	Cable ties	6
21	Battery cable	1
22	Ball transfer unit	2
23	Hub washer (not shown)	2
24	Small Velcro pad set (not shown	1

Assembly

Tools

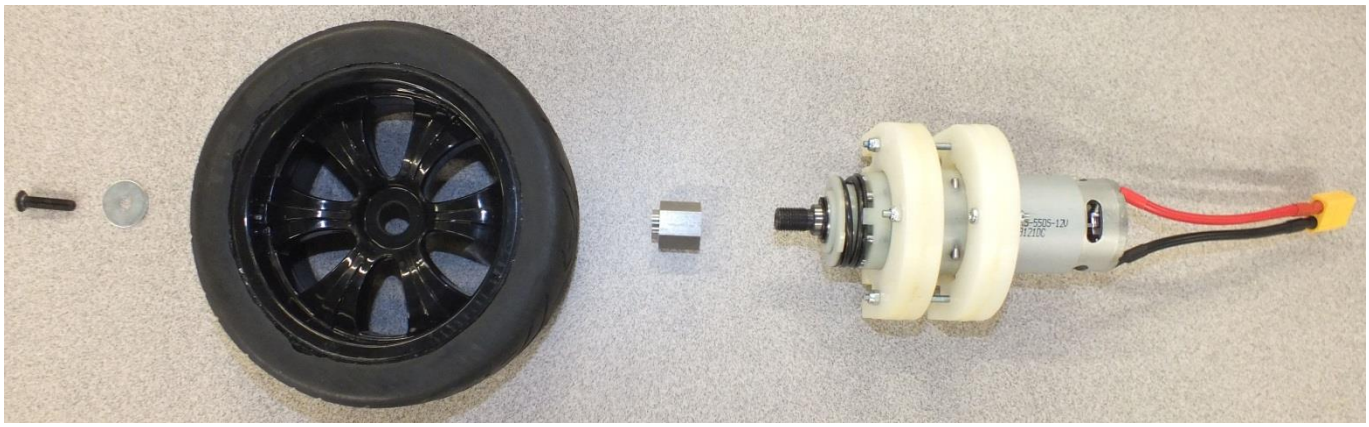
The only tools required for assembly of the robot are;

- 3mm Allen key (supplied)
- T25 Torx key (supplied)
- Adjustable spanner

Wheel Assembly

Parts required:

- Hub washer
- Wheel
- Wheel adaptor
- Wheel motor assembly



Wheel assembly (exploded)

The wheels are assembled in the following sequence:

1. Remove the screw from the motor shaft.
2. Attach wheel adaptor to motor shaft.
3. Fit wheel (hex side) to wheel adaptor.
4. Place washer on other side of wheel.
5. Re-attach screw through the washer, wheel and adaptor to the motor shaft.

Wheel assembly (view 1)

Wheel assembly (view 2)

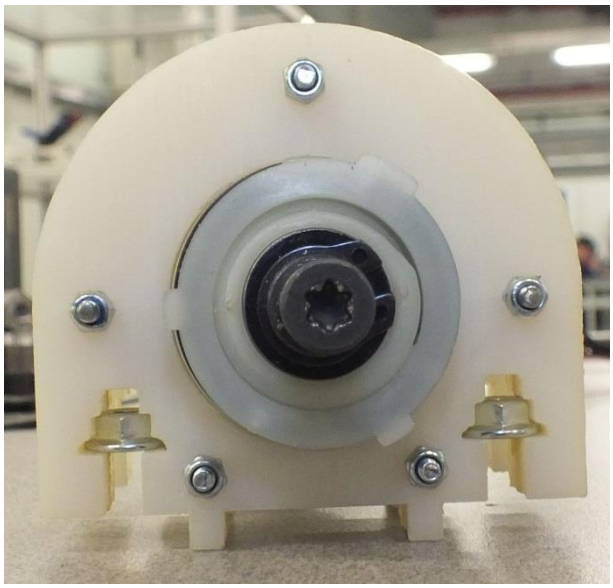
NB. The countersunk screw in the motor shaft has a left-handed thread! It turns in the opposite direction to other types of screw. Also there is only one screw per motor as supplied. There are NO spares, do not lose this part!

Wheel assembly mounting to baseboard

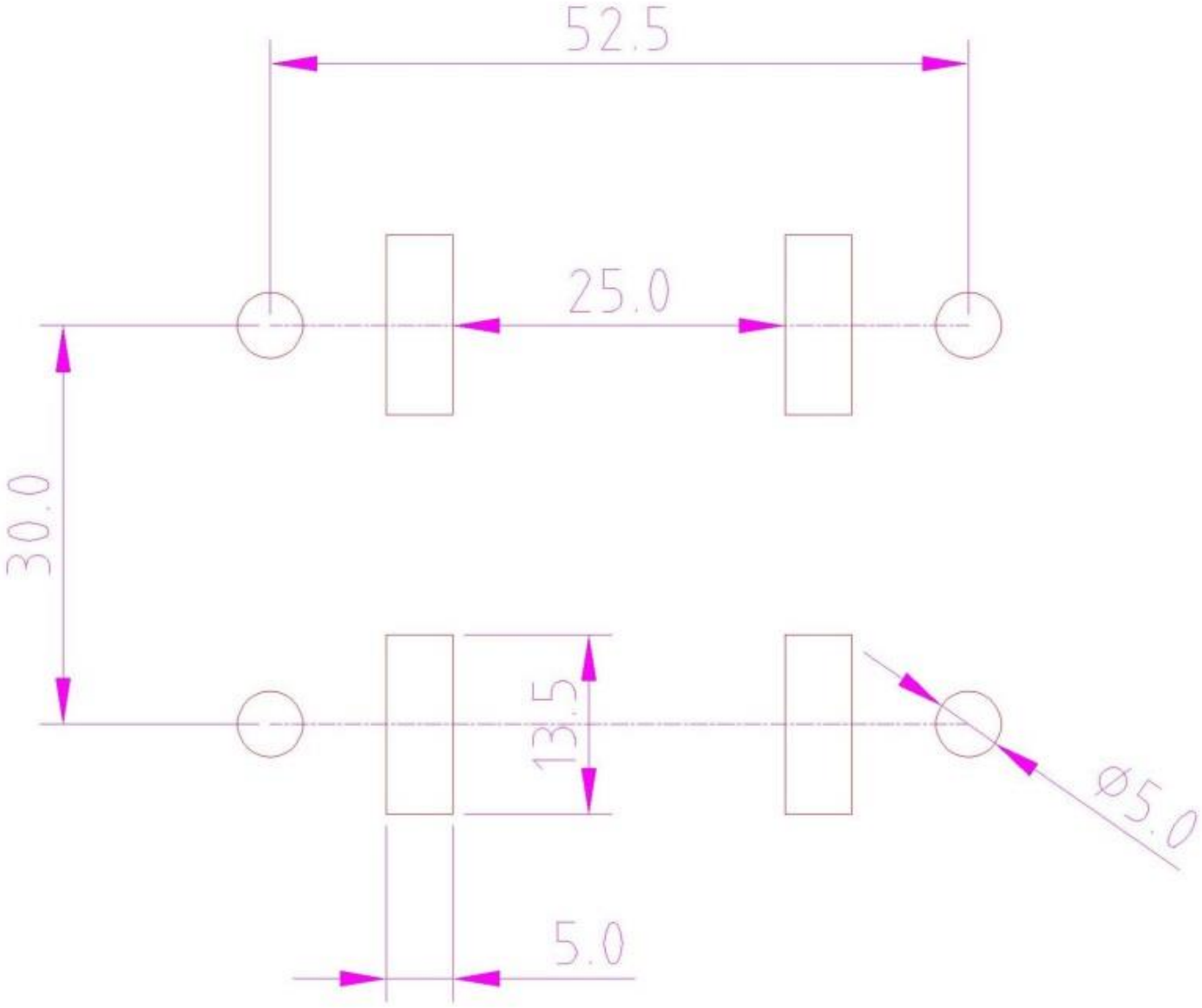
Parts required;

- 4x M5 flanged nut
- 4x M5 countersunk screw
- Wheel motor assembly or wheel assembly

The motor assembly are attached to the baseboard using a ‘captive nut’ system. The profile in the mounting plates closely matches the shape of the M5 flanged nut supplied so they will be a snug fit when applied (see image below). Push the nut so that it is in the centre of each mounting plate.

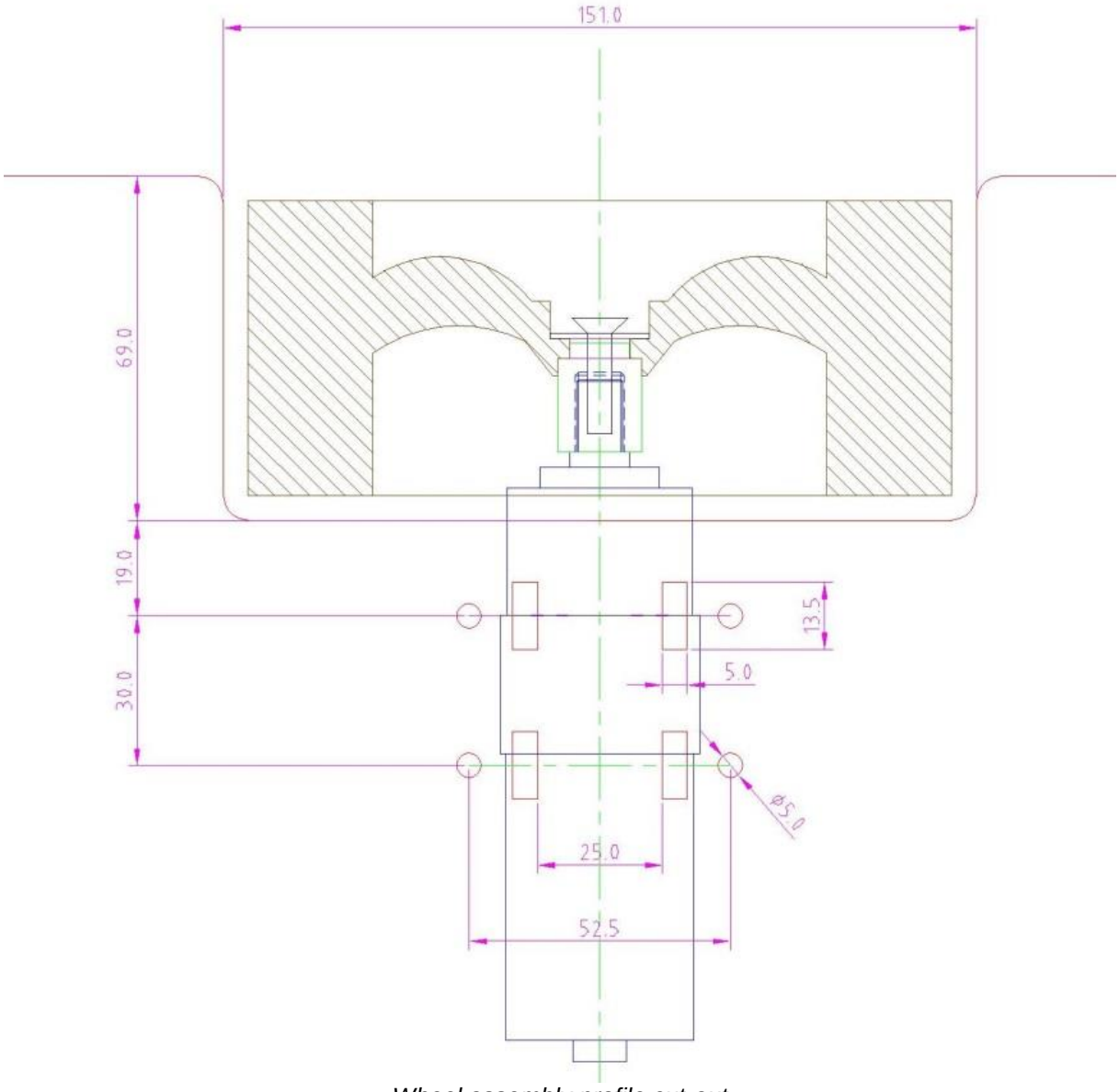


In order to attach the motor assembly to the baseboard the following profile must be cut. If the baseboards are being supplied by the University these profiles will be used in the design.



Motor assembly mounting (detail)

If the wheels are recessed then the following allowances are to be made in the robot base chassis. Again these will be done in-house as required if the University is supplying the baseboards.



Wheel assembly profile cut-out

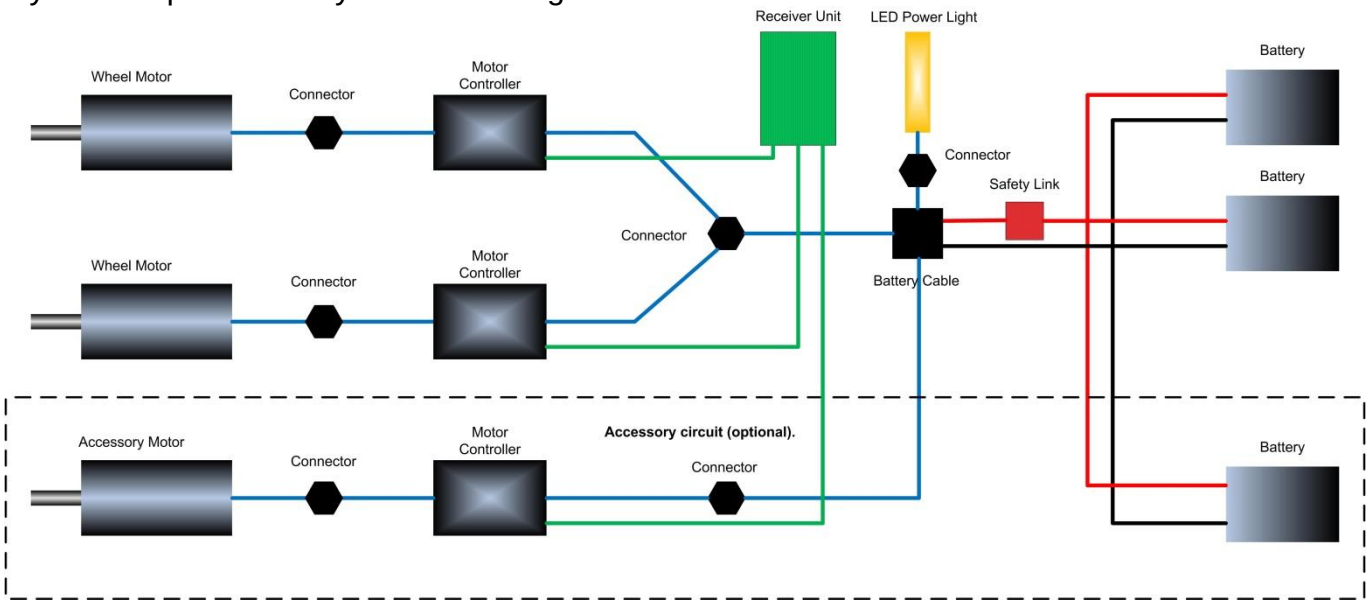
The bolts pass up through the baseboard and into the captive nuts to hold the wheel assembly in place.

Wiring Assembly

Parts required

- LED power lights
- Motor connection loom
- Accessory connection loom
- Battery pack
- RC receiver unit
- Safety link
- Battery cable
- Large Velcro pads
- Small Velcro pad
- Cable ties
- Cable tie mounts

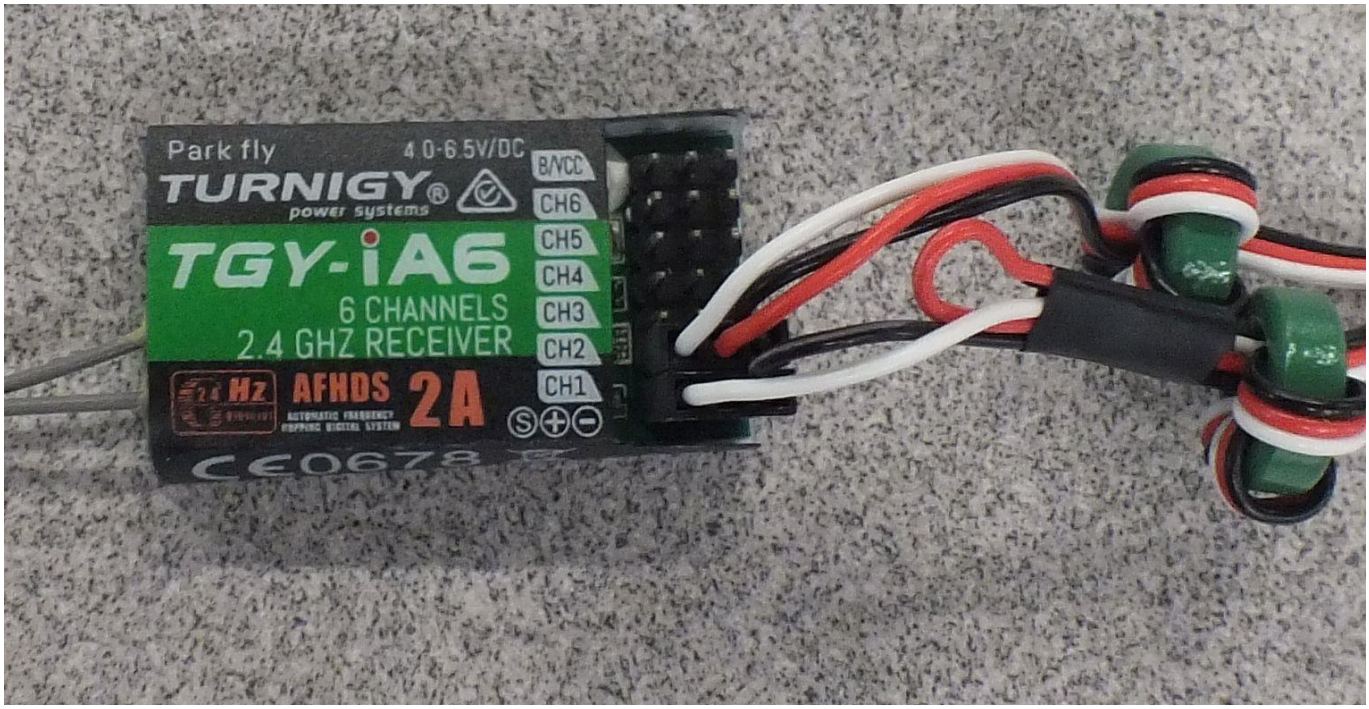
The following schematic shows the way the cables are connected to each other. The actual layout is dependent on your robot design.



Wiring schematic

NB the Safety link should only be attached when the robot is being run up. Batteries should be disconnected from the robot before re-charging.

Most of the connections are fairly easy to work out, however the links from the motor controller to the receiver unit need special attention. The plugs must be connected in the way as shown below.



Receiver Unit showing motor connections

Connection are as follows:

CH1 – Left Wheel Motor
CH2 – Right Wheel Motor
CH5 – Accessory

Accessory motor

Parts required.

- Accessory motor
- Accessory connection loom
- Chuck (if needed)

Connecting the accessory motor using the above schematic diagram. The chuck if needed is fitted in a similar manner as the wheels as explained before.

Radio Control Settings

The transmitter unit will require configuring specific to your requirements. The following key settings are shown as a guide. Please refer to the supplied instruction book of the controller.

Final assembly guidelines

The large Velcro pads are used to secure the batteries and the small Velcro pads secure the receiver to the robot chassis.

The kill switch and the LED lights must be visible; place these outside the robot body structure. However, keep in mind that the kill switch should be located so as to avoid it being pulled out by other robots: no kill switch = no power = dead robot!