

MANITOBA  
**ROBOT GAMES**  
2 Channel Controller Kit



Controls two  
3 volt motors in  
(fwd) off (rev)  
Assembly required

**Tools Required:**  
• Soldering iron  
• #0 Phillips driver  
• 2 "AA" Batteries

### Step 1 Identify the parts:

**Parts needed:** One MRG Controller kit and a small bowl or container lid.

Use the picture below to identify all the parts. Carefully empty the bag of parts over a small bowl or container to avoid losing anything.



#### Key

- |                                 |                             |
|---------------------------------|-----------------------------|
| A - PCB (Printed Circuit Board) | F - Top Cover               |
| B - 4 Conductor Cable           | G - Battery Door            |
| C - DPDT Rocker Switches        | H - Battery Wires           |
| D - Bottom Cover                | I - Large Battery Terminal  |
| E - End Plate                   | J - Small Battery Terminals |
|                                 | K - Screws                  |

### Step 2

Top Cover(F), 2 DPDT rocker switches(C), PCB (printed circuit board)(A), soldering iron & solder.

Snap both switches into the rectangular holes in the top cover. Place the PCB over the terminals(tabs) on the back of the switches so that you can read the "MRG 2012", and the four tabs marked blue to white are next to the open end of the top cover.

Gently push down over the copper tabs so that the small holes in the tabs can be seen. You can now solder these in place.

(See "Tips on Soldering" at [mrobotgames.ca/pages/soldering](http://mrobotgames.ca/pages/soldering))

Note\* The switches can be damaged if they get too hot. Solder one tab to the board on the LH switch then one on the RH switch. Alternate like this so the switch tabs have a chance to cool. The tabs do not need to be totally covered with solder, just be sure there is a solder bridge between the tab and PCB. (fig.1)

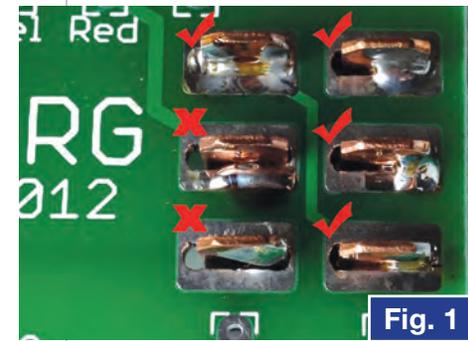


Fig. 1

### Step 3

Back cover(D), 2 small and 1 large battery terminal(J & I), black and red battery wires(H)

The black and red wires have been stripped for 6mm at each end. Make 90° bends about 3mm from each end (fig.2).

Fig. 2



### Step 3 (cont'd)

Remove the battery cover. Slide in the battery terminals so that the bent end is towards the battery cover (fig.3).

From the inside, thread one end of the red wire through the hole on the small terminal closest to the bottom of the controller and solder in place. Repeat with the black wire in the other small terminal. (fig.4)



Fig. 3

### Step 4

4 conductor cable(B), Front Cover(F)

Take the 4 conductor cable and tie a knot in one end so that there is 1" (25mm) from the knot to the end of the wires. Bend the wire 90°, about half way along the stripped end. Feed the hooked end of the wires through the holes in the PCB corresponding to the colour of the wires, and solder in place (fig.5)

Fig. 5

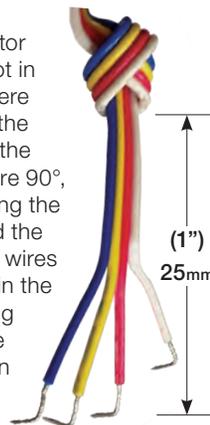
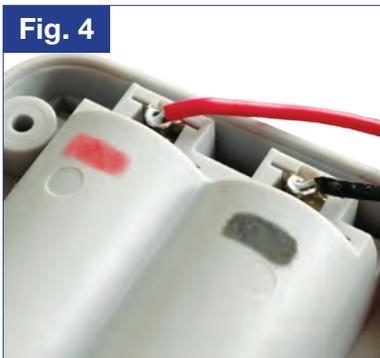


Fig. 4



### Step 5

Front cover(F), back cover(D)

On the PCB, thread the bent end of the black battery wire through the hole marked (-), and the red wire through the hole marked with a (+) and solder them in place.

### Step 6

Front cover(F), back cover(D), 4 black screws(K), #0 Phillips screwdriver, end panel(E)

Carefully fold the red wire to pass between the battery compartment and the wall of the back cover. Slide the end panel into the slot in the front cover so that the notch goes around the cable with the knot on the inside (fig.6).

Add the back cover being sure not to pinch the red and black wires. Screw the back to the front with the 4 black screws. Solder the cable to your robot and then load 2 'AA' batteries and close the battery cover. You are ready to GO, GO, GO!



Fig. 6

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