Switch Adapted RC Police and Race Car
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Required Components

1.	2.	**BOM**
		1. Prextex RC Police and Race Car 2. 3.5mm mono jack and nut (x2) 3. 22 AWG Wire 4. 1000 pF (103) capacitor (x2) 5. AA batteries (x5)
3.	4.	

Required Tools

- Drill with ¼" bit
- Small flat head or Phillips screwdriver
- Flush cutters
- Wire strippers
- Soldering iron and solder
- Permanent marker

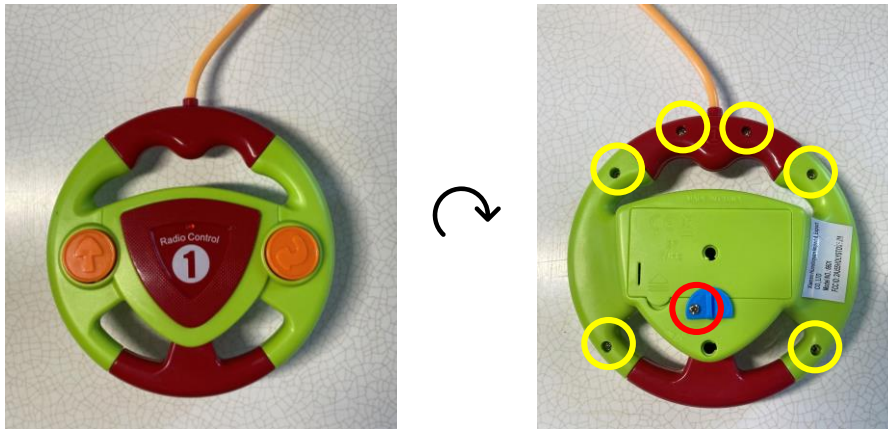## Required Personal Protective Equipment (PPE)

- Safety glasses

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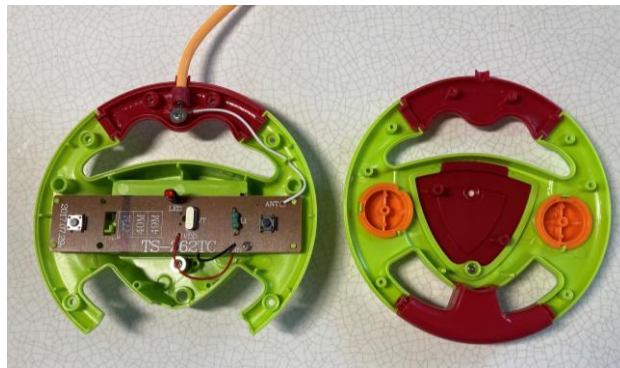
Assembly Instructions

Step 1

From the backside of the remote, remove the screw for the battery cover (red circle). Remove the other 6 screws (yellow circles). Set aside these screws in a safe spot.

Step 2

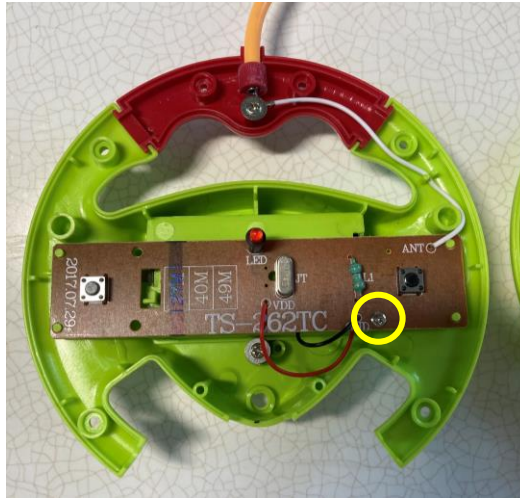Take apart the two halves of the remote Set aside the front half of the remote.

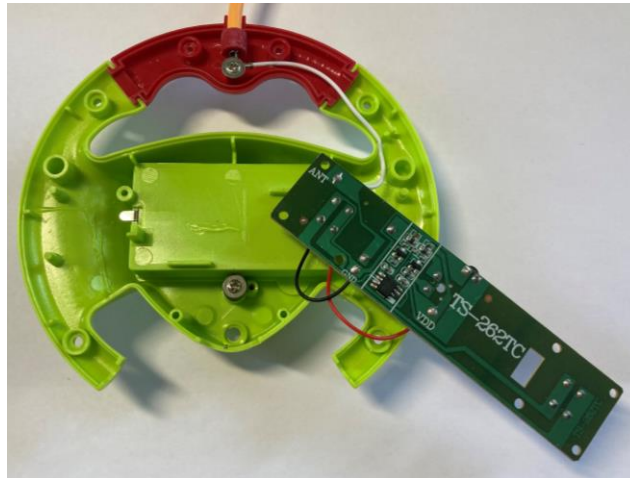# Switch Adapted RC Police and Race Car
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Step 3

Remove screw holding down the circuit board, circled in yellow.

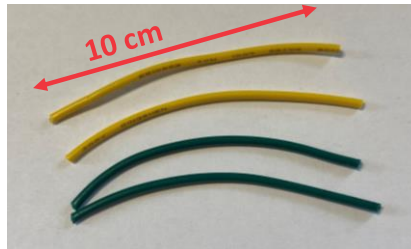**NOTE:** set aside screw in a safe spot

Step 4

Lift the circuit board off the pegs and flip it around to show the back.

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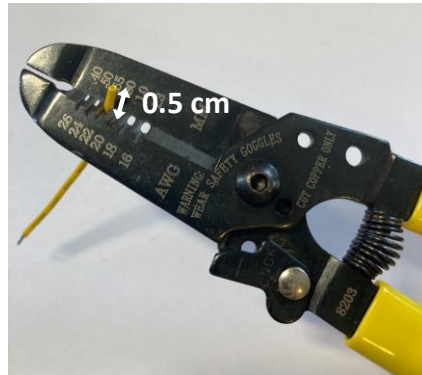## MAKER GUIDE

Step 5

Cut 4 pieces of wire, approximately 10 cm each.

10 cm

3

Step 6

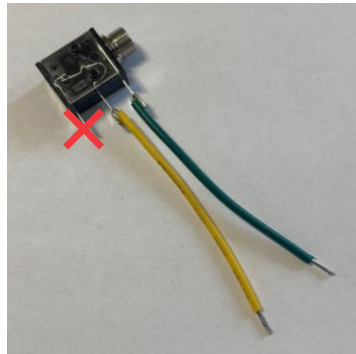Strip both ends of all 4 wires, approximately 0.5 cm.

0.5 cm

Step 7

Wrap two wires on the two leads of the mono jack nearest the jack input.

Solder the wires to these leads.

Do not attach a wire to the third lead, furthest from the jack input.

Repeat for both mono jacks.

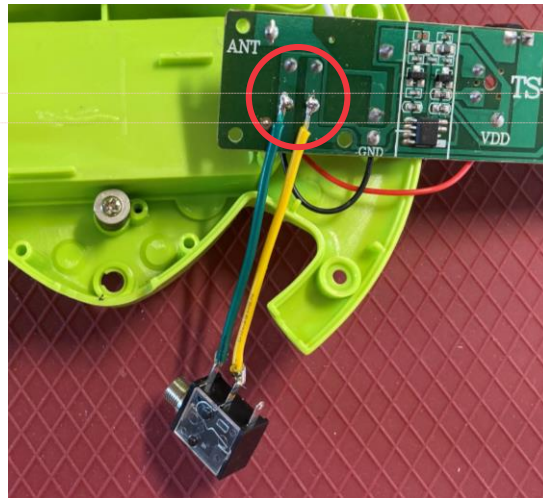**CHECK:** make sure no solder or wires are connecting two of the leads of the mono jack.

2

X2

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Step 8

Solder the other ends of the mono jack wires to the circuit board on the two blobs of solder shown in the red circle.

These are the other side of the pins for the original switch.

**CHECK:** make sure no solder or wires are connecting the two solder blobs together.

Commented [JV1]: Is there a better word for a solder blob??

Commented [JV2]: Is it easy enough to see the location where I soldered or do you think I need either a "zoomed in" photo or a better explanation?

Step 9

Solder the second mono jack to the circuit board on the two blobs of solder shown in the red circle, on the right side of the board.

CHECK: make sure no solder or wires are connecting the two solder blobs together.
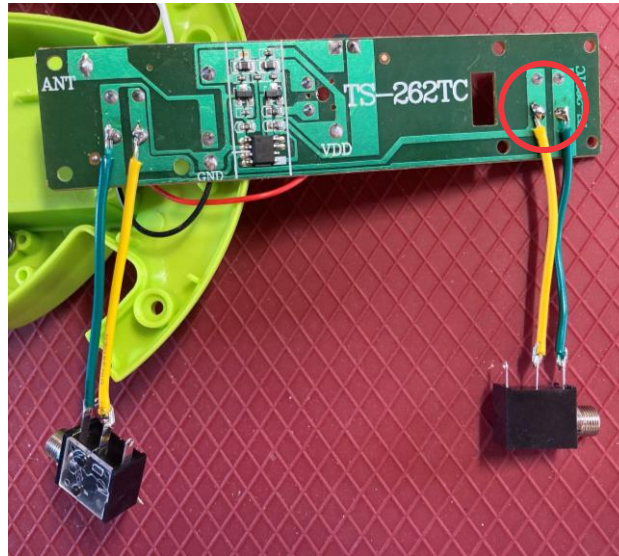
Step 10

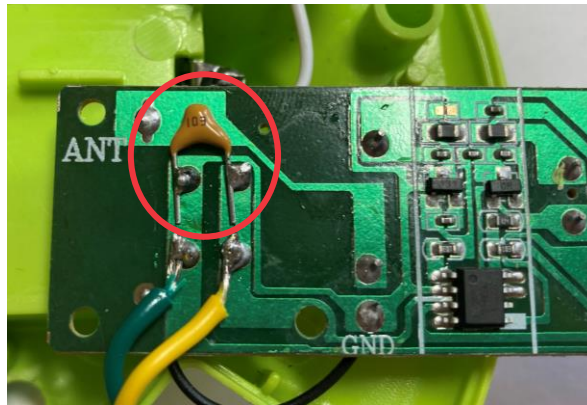Solder one of the capacitors to the two solder blobs circled in red in the photo.

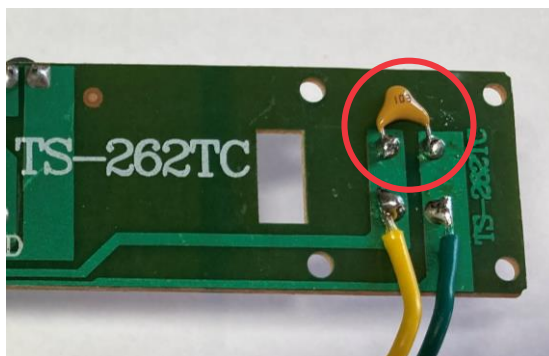These are located just above where the mono jack was soldered on the left side.

Step 11

With your flush cutters, trim the leads of the capacitor past where they were soldered.

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Step 12

Repeat on the right side, solder the capacitor as shown circled in red, and trim the leads.

Step 13 – Stop and Test

Put batteries in both the remote and car and test using assistive switches plugged into the mono jacks. When you activate the assistive switch, the LED on the circuit board should light up. If the car is turned on, the assistive switches should imitate the original button functions.
- If LED / car does not turn on when switch is activated, check your connections
- If LED / car stays on when not activating the switch, check your connections

Commented [JV3]: Will likely add a step before this for soldering on capacitors

Step 14

Using a permanent marker, mark where the holes are going to be drilled, above the screw holes and below the battery compartment, as shown circled in the photo.

Make sure these holes aren't too close to the centre, so they would interfere with the blue piece on the other side. (See photo in next step)

Commented [JV4]: Reword this, but something about the location of the holes so they don't interfere with the blue piece.

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Step 15

Flip the remote around and check that where the holes were marked is not too close to the rotating blue piece. This piece is important for securing the battery compartment.

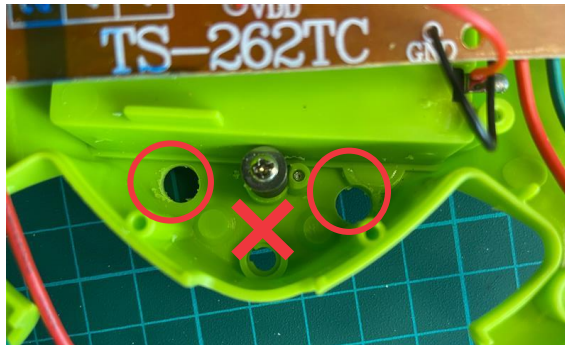If needed, adjust the location of the drill holes by making a new marking.

(In this photo the holes have already been drilled and are far enough away to not interfere.)

Step 16

Using a drill with a ¼ inch drill bit, drill two holes in the remote where you marked them in Step 14.
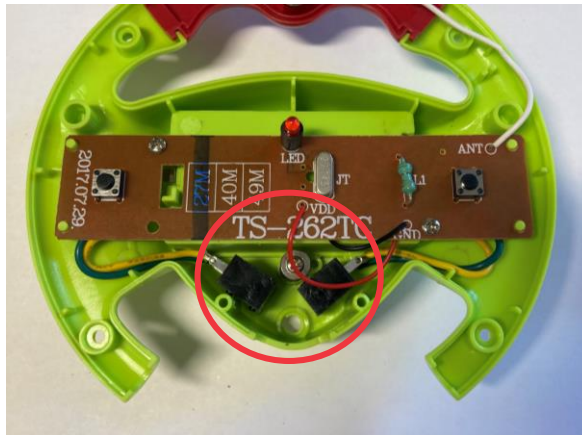
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Step 17

Flip the circuit board around (so the top of the board with the LED is facing up).

Remove the nuts from the mono jacks and push the input of the mono jacks through the holes you drilled.

Step 18

Flip around the remote and reinstall the nuts onto the mono jacks. Tighten to secure.

Again, make sure the mono jacks do not interfere with the blue rotating part.

If the mono jacks do interfere you may need to cut the blue part with your flush cutters so that it can still rotate.
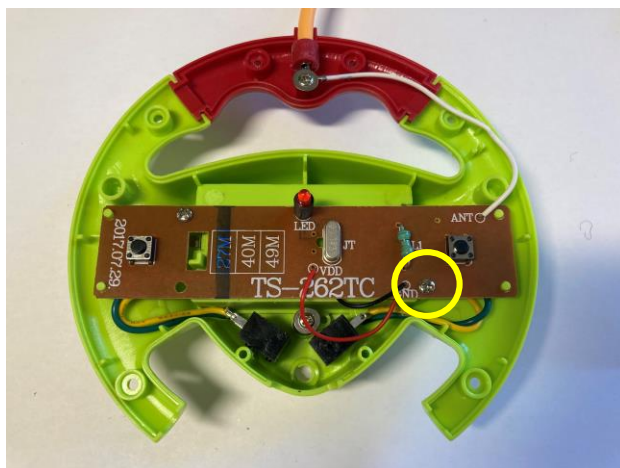
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Step 19

Flip the remote around and reinstall the screw that holds down the circuit board, shown in yellow.

Make sure no wires are being pinched.

Step 20

Take the top half of the remote, facing down, and ensure the red and orange pieces are in the correct spots.

Then carefully take the back half of the remote and place it on top of the front half, lining up all of the screw holes.

Make sure no wires are pinched between the two halves of the remote.

Check that the white antenna wire (circled in red) is going through the proper channels.

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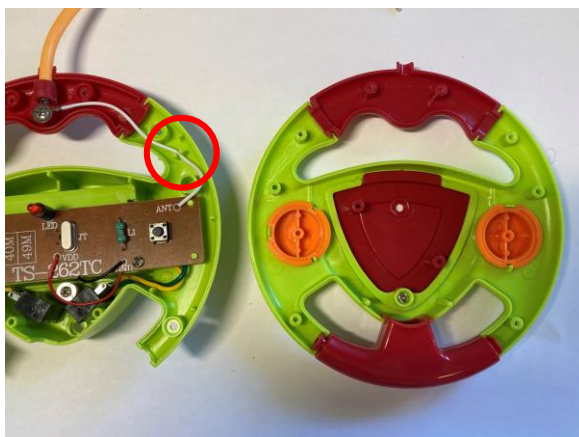
Step 21

With the two halves together, replace all of the screws (circled in yellow) and tighten them fully.

Make sure there are batteries in the battery compartment and then rotate the blue piece into place and secure with the screw circled in red.

Step 22 – Final Test

Plug assistive switches into the mono ports and test the remote again. Make sure the car is turned on.

Check if both the assistive switch and the original buttons both work and do the functions intended (forward and reverse).

Note: If the assistive switches worked properly at Step 13, but are now either not turning on or are staying on, you may have a loose connection. Open the remote back up and check.

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Step 23

If your switch adapted remote works as expected, you are finished!

Files available at https://makersmakingchange.com/project/switch-adapted-rc-car-toy/