

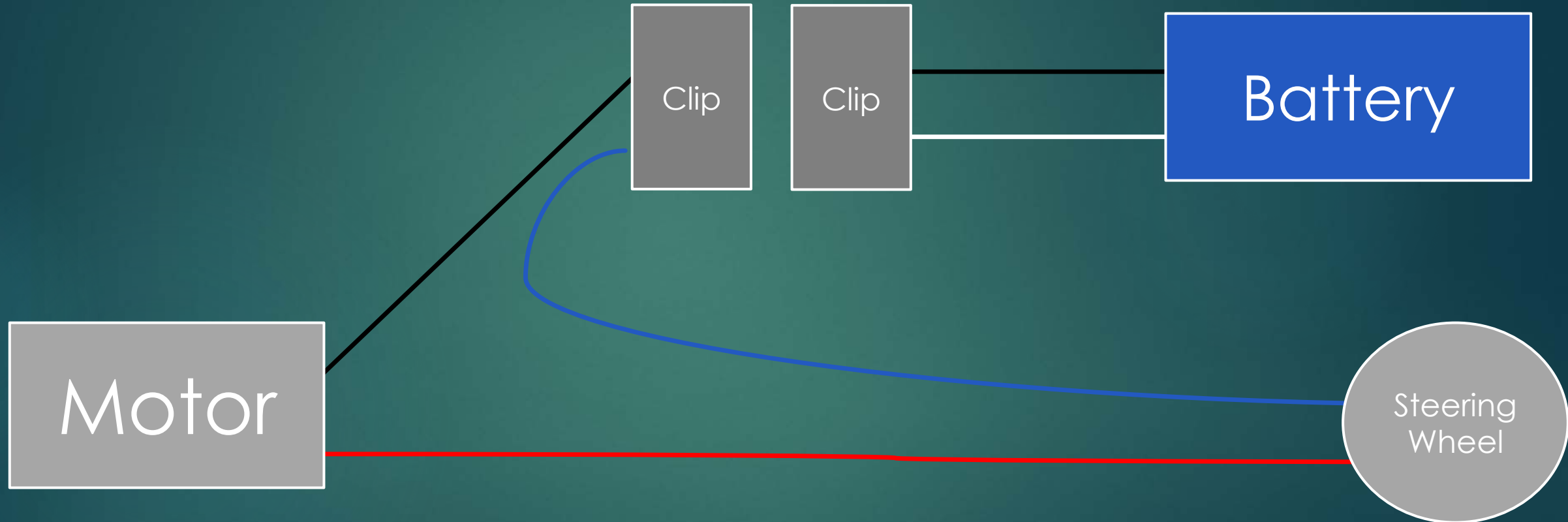
# Lets Modify A McQueen



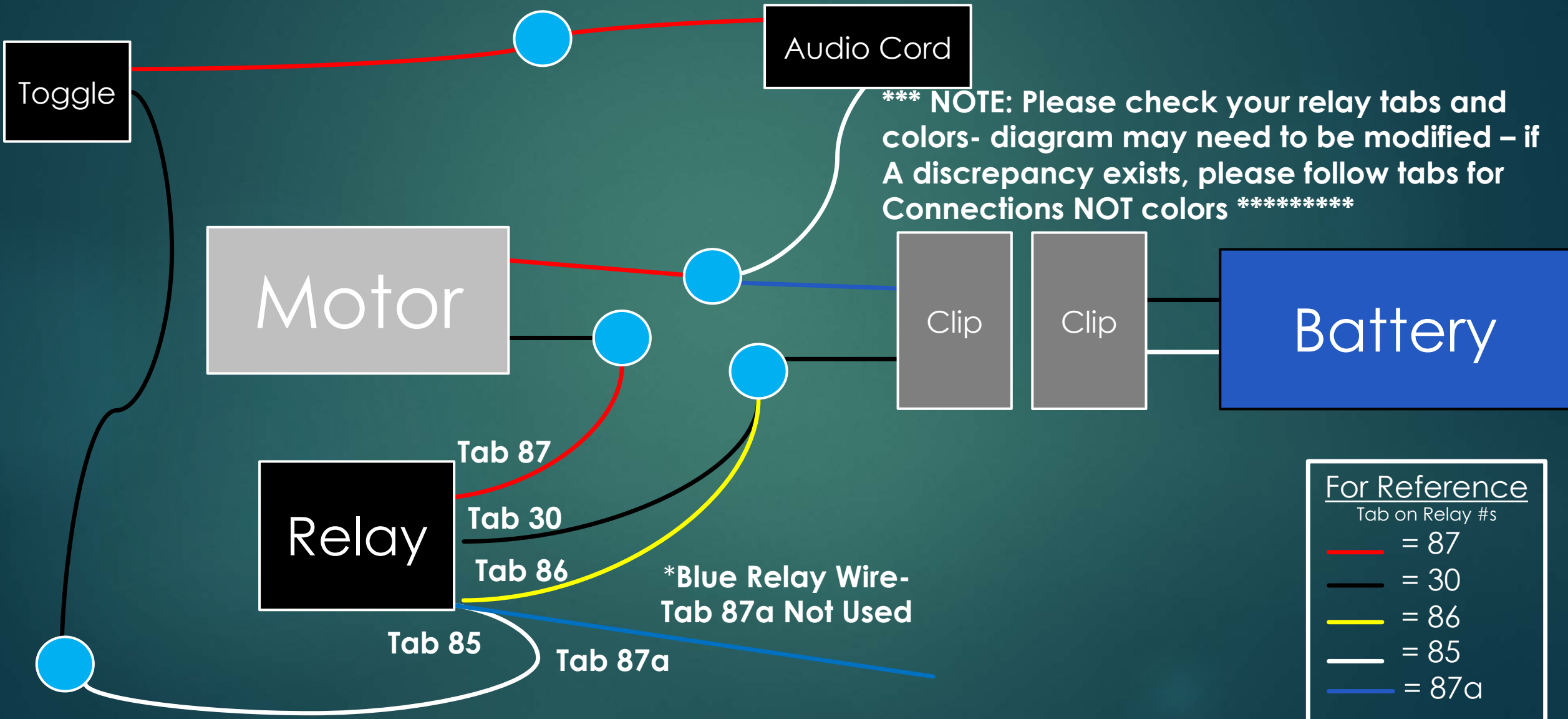
# These instructions have been linked to the Curriculum for Modified Ride on Cars

- ▶ Drivers that can best utilize the following car types are:
  - ▶ Between 1-2 years of age
  - ▶ Demonstrate good head control
  - ▶ Are able to sit on the floor regularly without additional supports
- ▶ This car is recommended for groups doing their first modified ride on car
- ▶ More advanced wiring and car styles can be found at [www.gbgconnect.com](http://www.gbgconnect.com)

# Before Modifications



# After Modifications



Parts Needed- please see hardware list for parts and ordering information

Tools Needed-

Power drill with  $\frac{1}{4}$ " and  $\frac{1}{2}$ " drill bits

Wire Strippers

PVC cutter, Utility knife, Scissors

Socket wrench for  $\frac{1}{4}$ " bolts and locking hex nuts

# Step by Step



# Charging the battery

This should be done at least a day before the build



Using a phillips screw driver, remove the 2 screws at the top of the seat



Remove the seat



Unscrew the center screw to release the battery

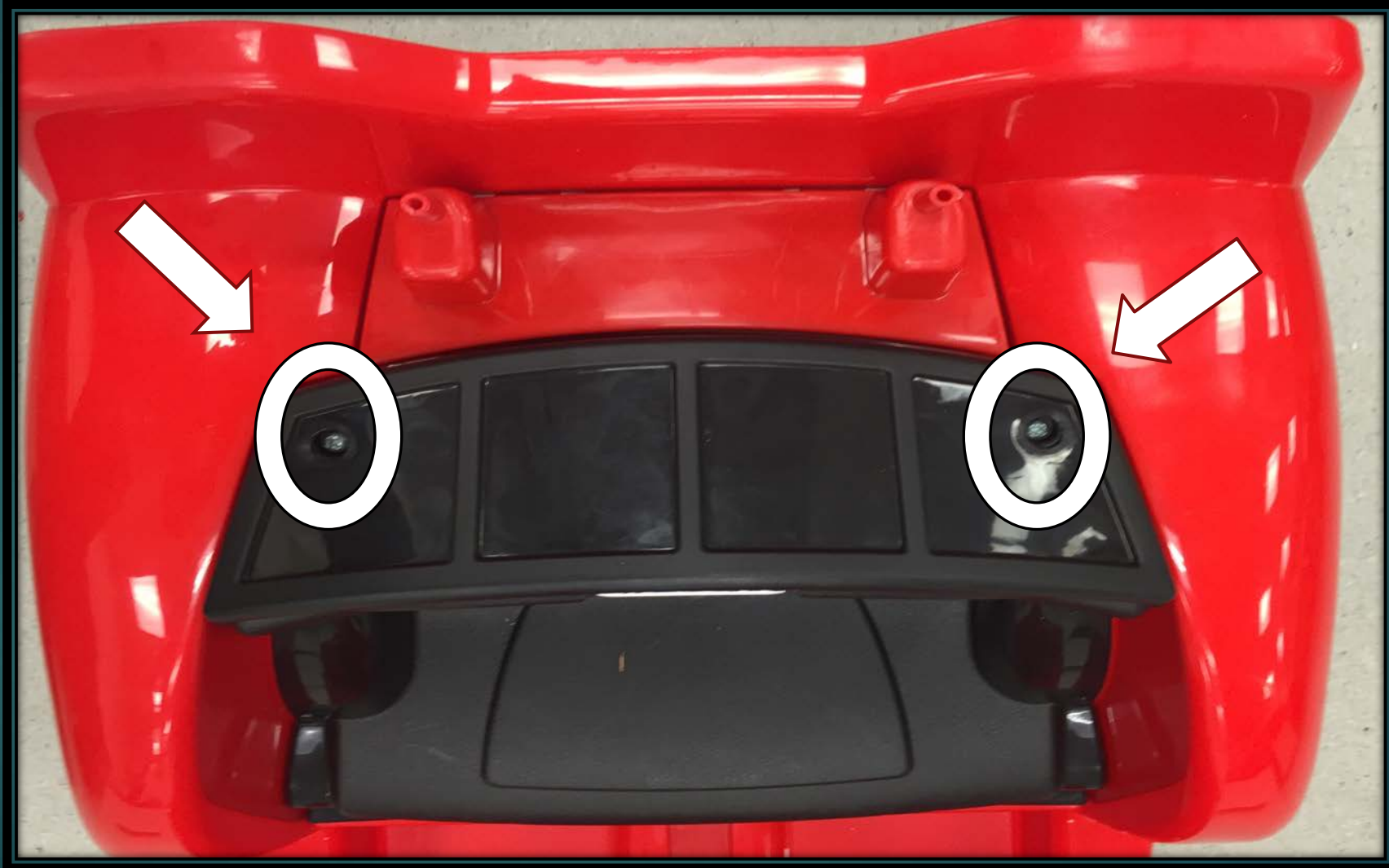
Unplug the battery from the car and plug it into the charger, plug the AC adapter into the wall





# Remove the Seat

Two philips screws must be removed



# Stock Motor Compartment



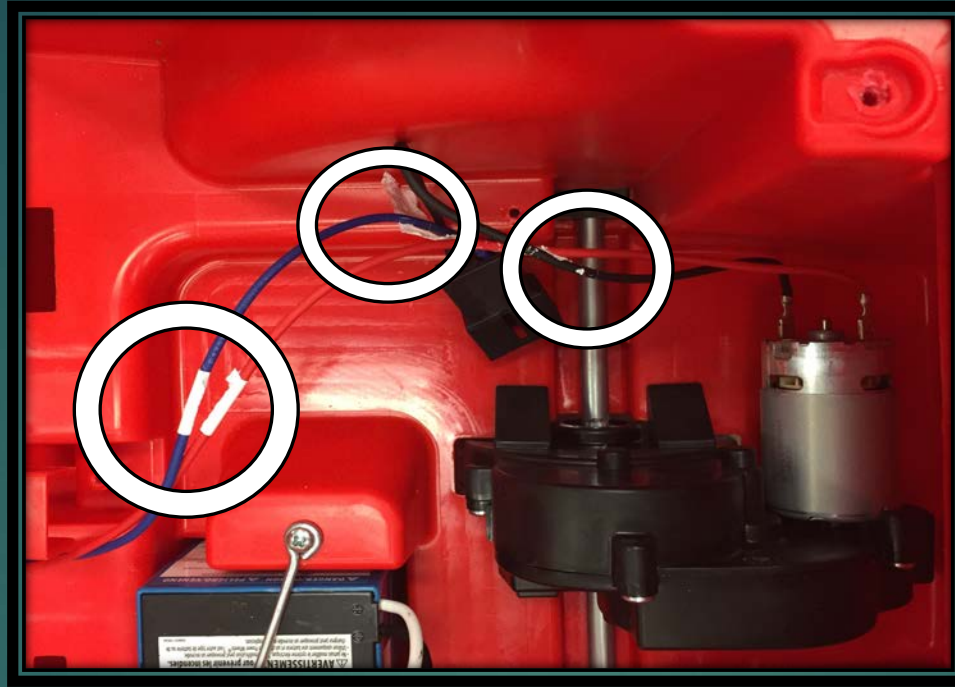


# Snap Plastic Center Piece up Carefully



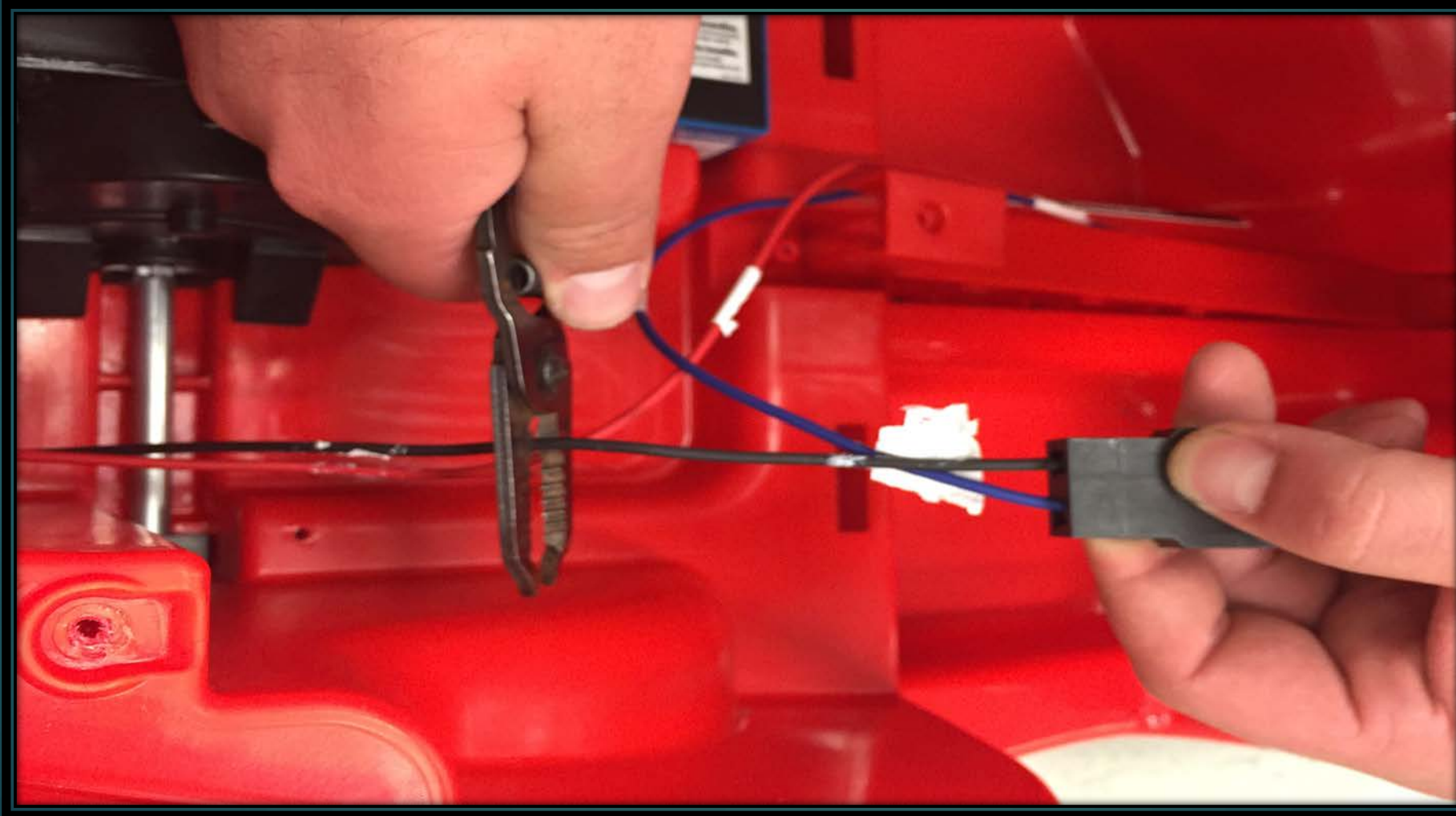
Do Not Remove  
These Two Screws

Carefully  
Cut Tape  
Holding  
Wires  
Together



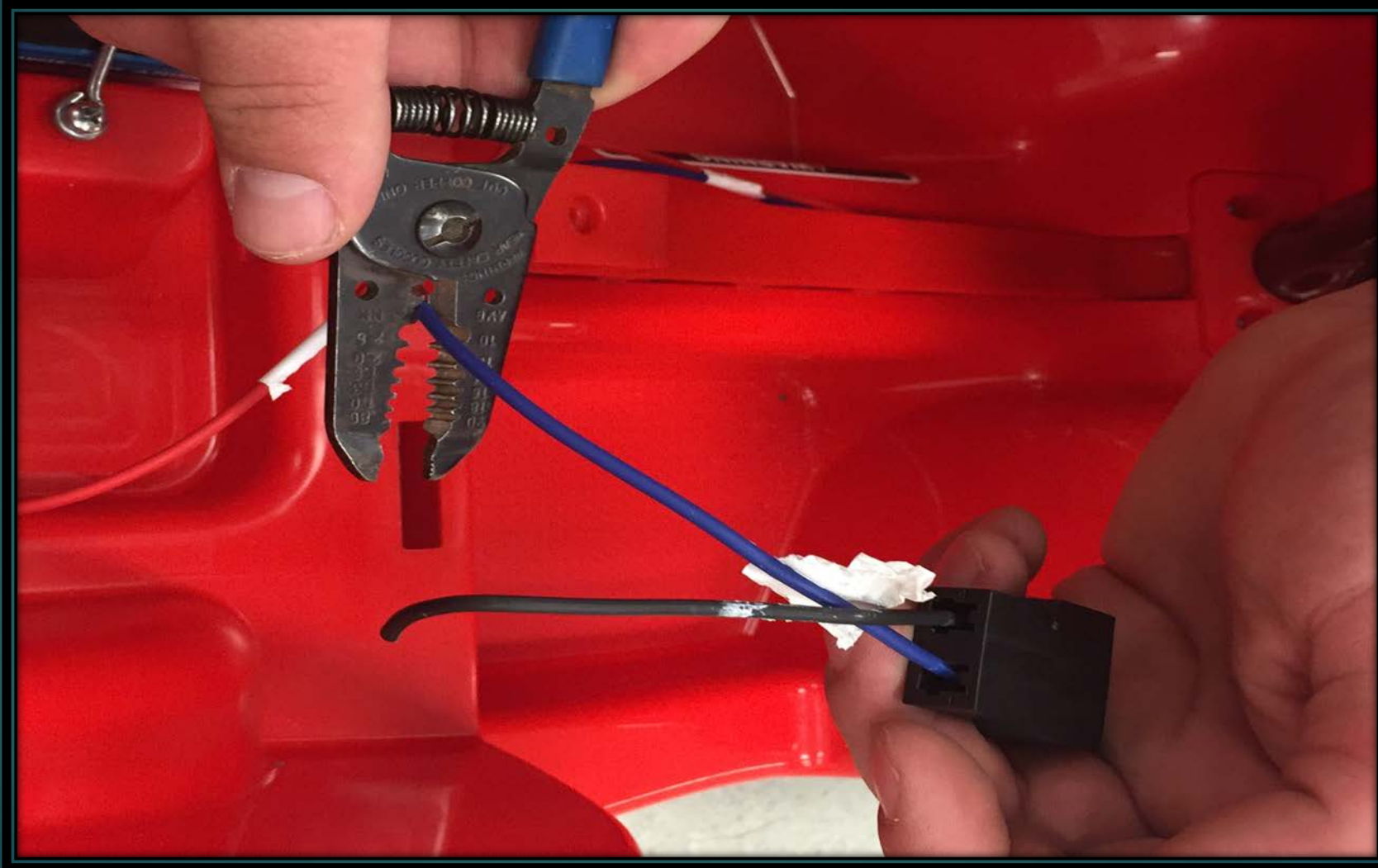
# Cut Motor Harness Free.

Cut Black Wire Half Way Between Motor and Clip



# Cut Motor Harness Free. Cont.

Cut Blue Wire to Match Black Wire Cut From Clip



# Set Clip Aside

## After Stripping Ends of Wire

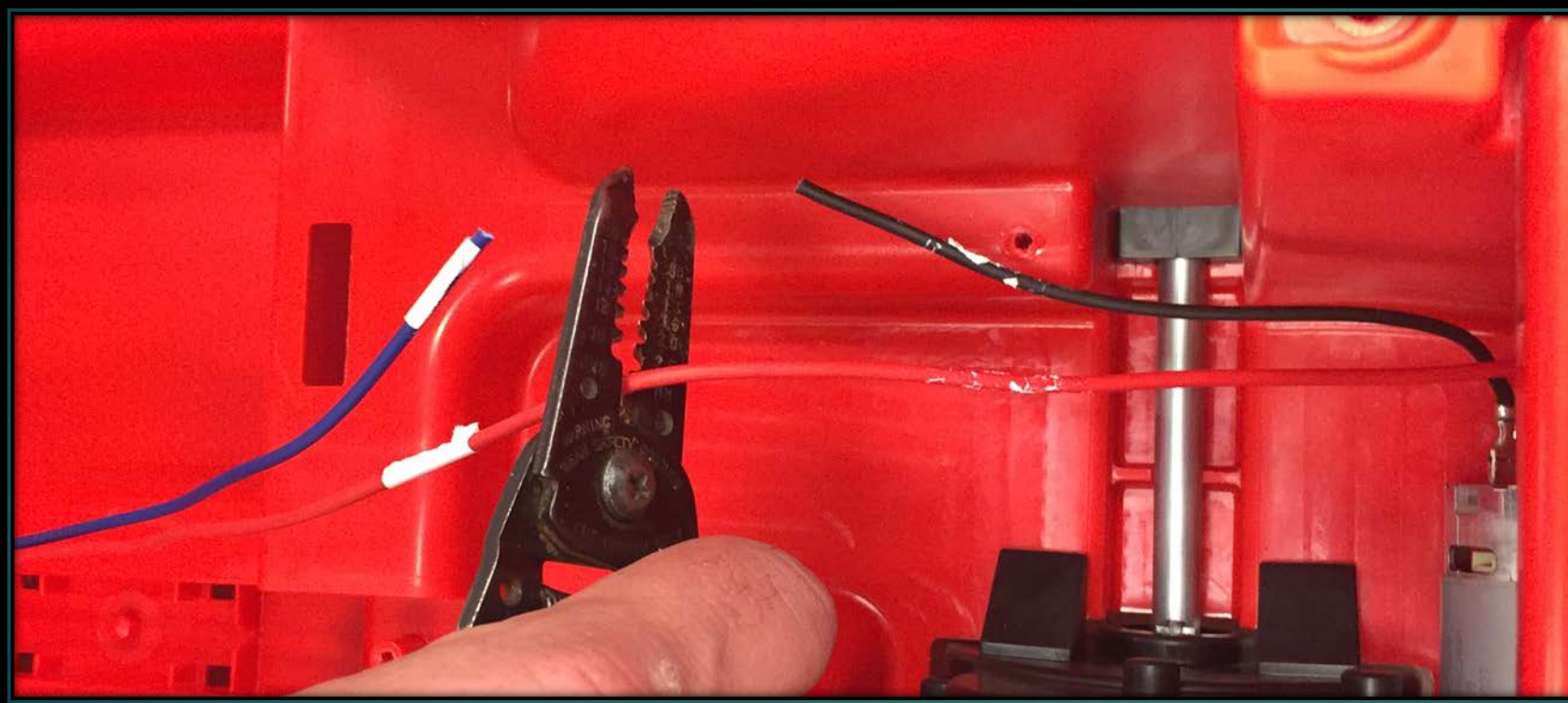


Do Not Throw Away! Thank You.

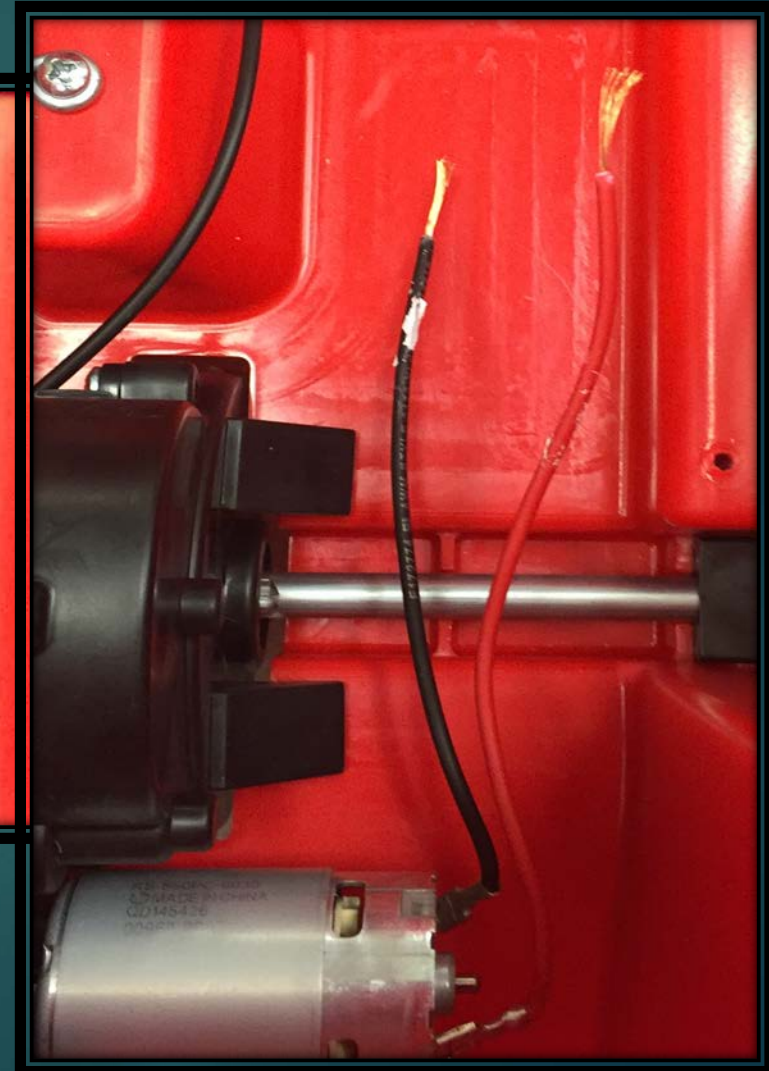


# Cut Red Motor Wire

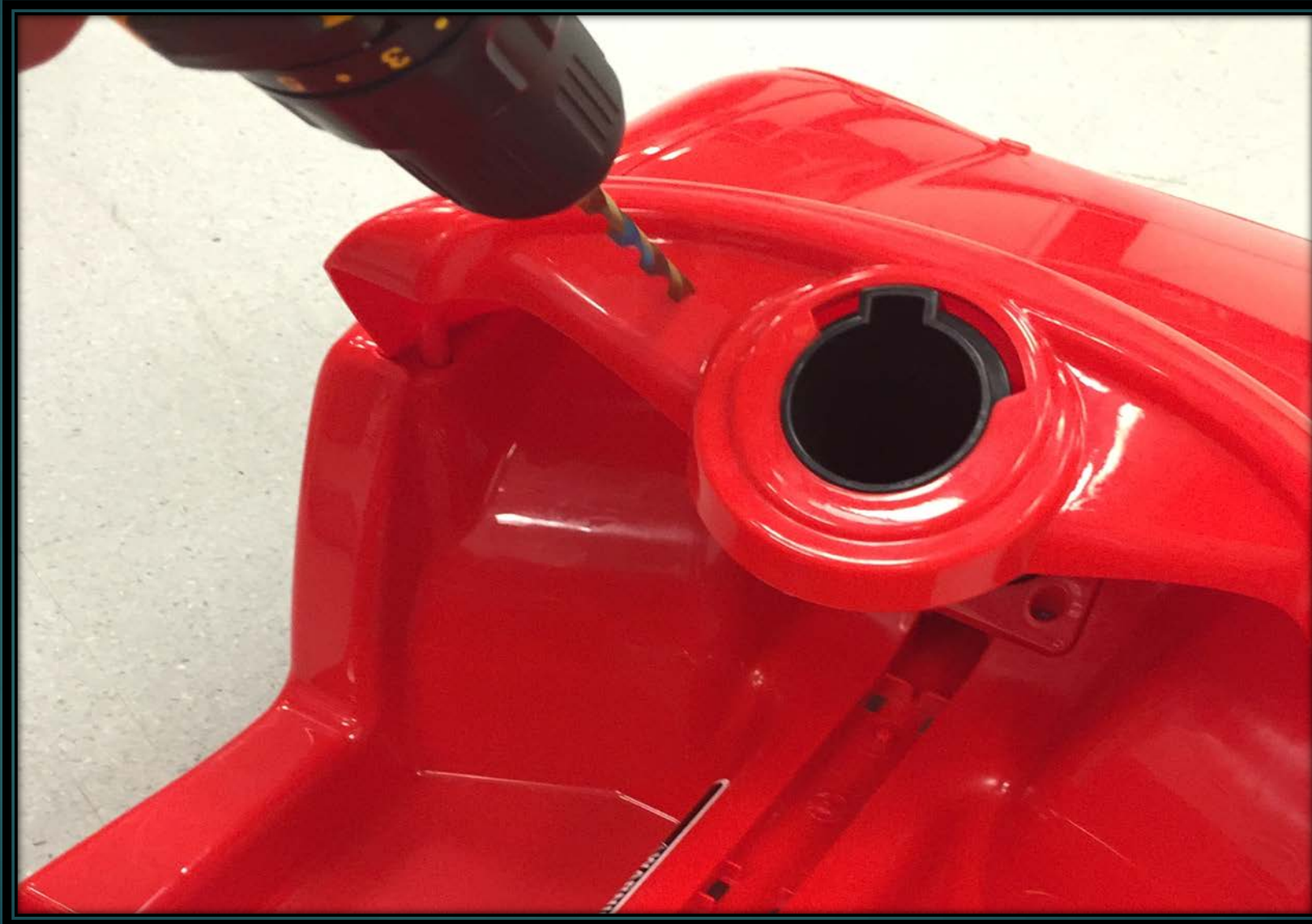
Be Sure To Leave About 9" Tail



Strip Ends of Black and Red Motor Wire



# Drill 1/4 Hole In Dash Board

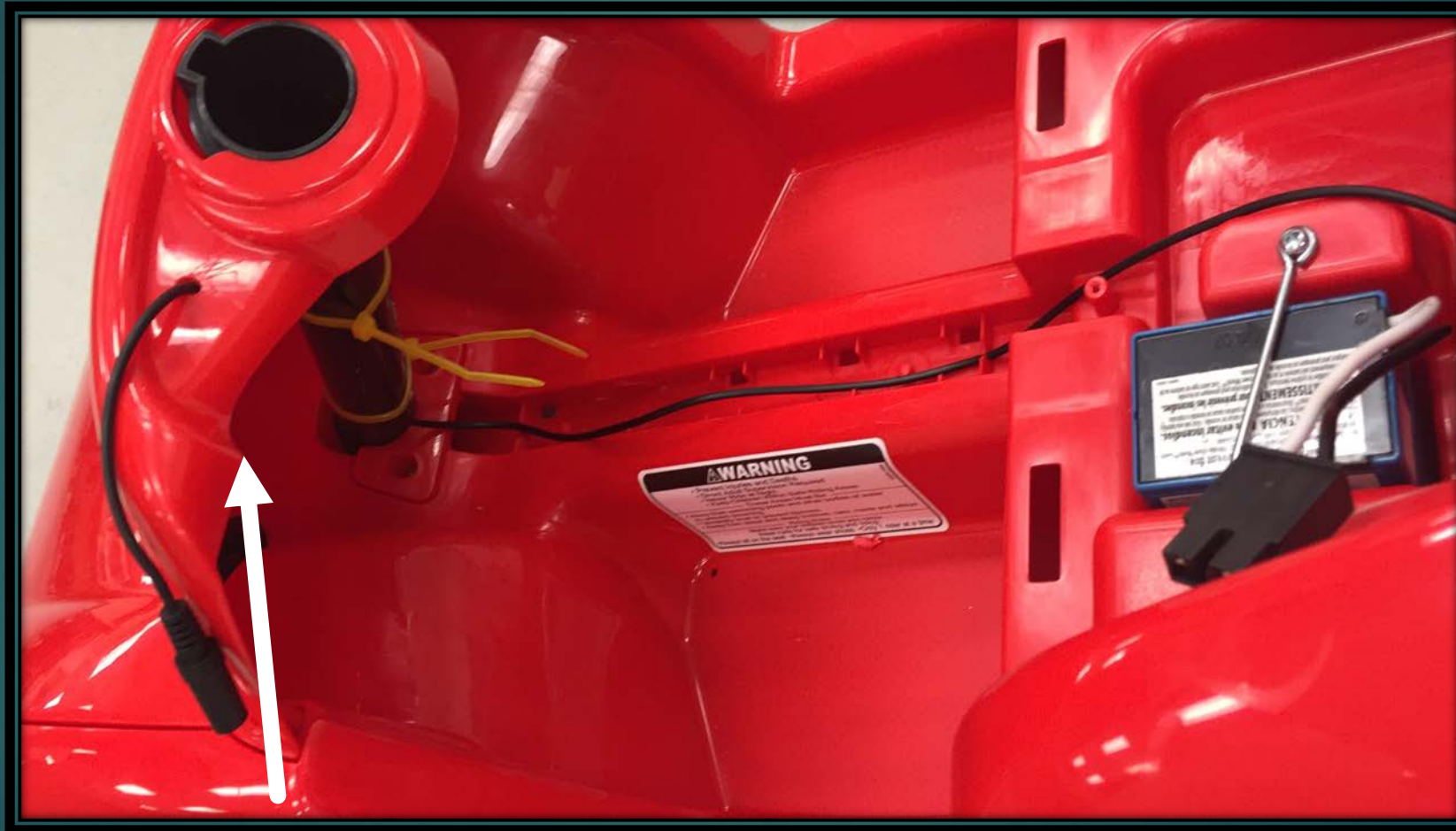


# Find Audio Cord Feed Cut End into Hole



# Route Wire Down Steering Colum

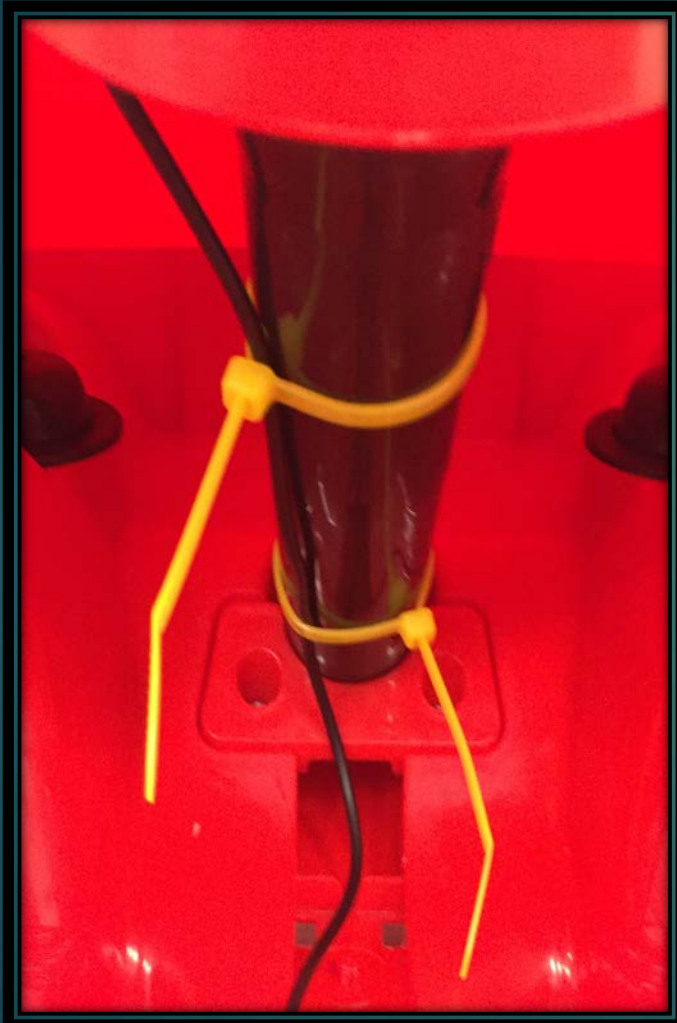
Then Through Center Line Channel Back to Motor Compartment



Secure Audio Cord onto Steering Colum and use 2 Wire Ties to Secure

# Mount Wire Ties High and Low

Tighten By Hand



Or use electrical tape to secure.



Cut Excess with Pliers or Scissors- do not leave sharp edges.

# Re-mount Plastic Center Piece

Focus on not pinching audio cord



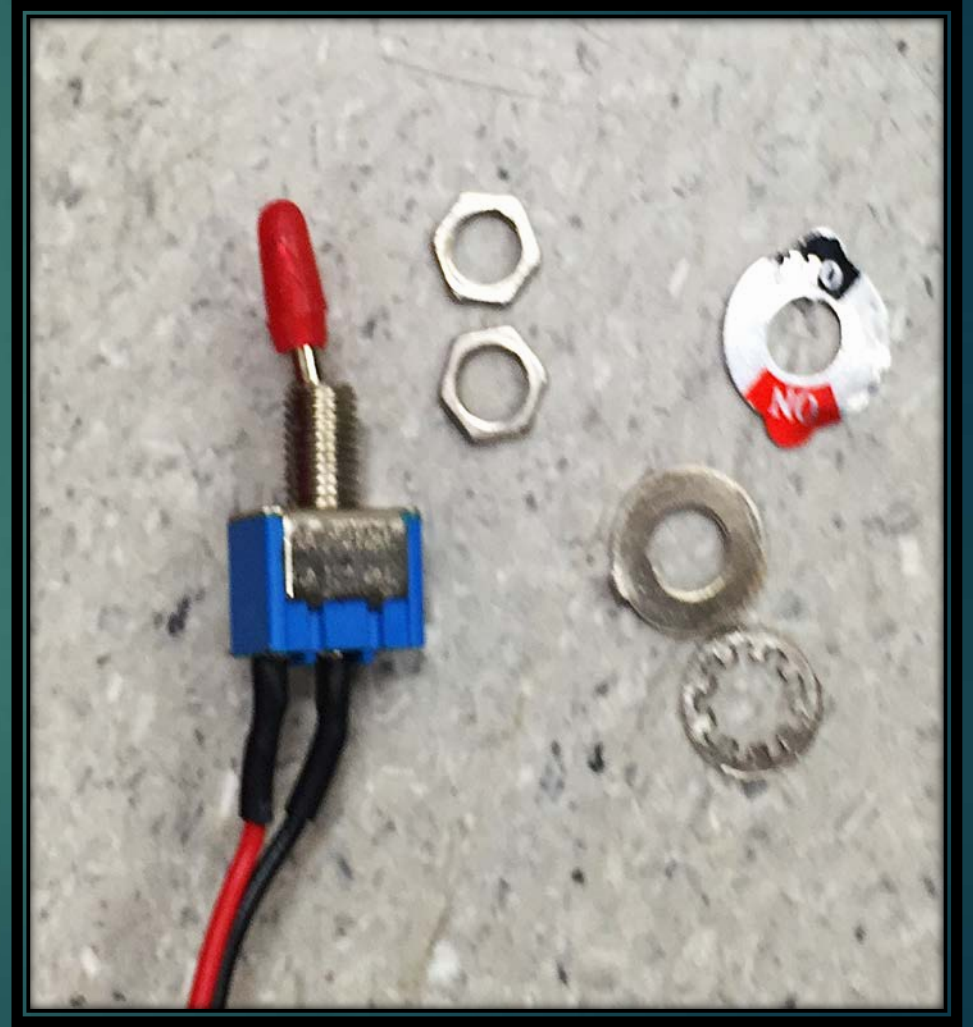
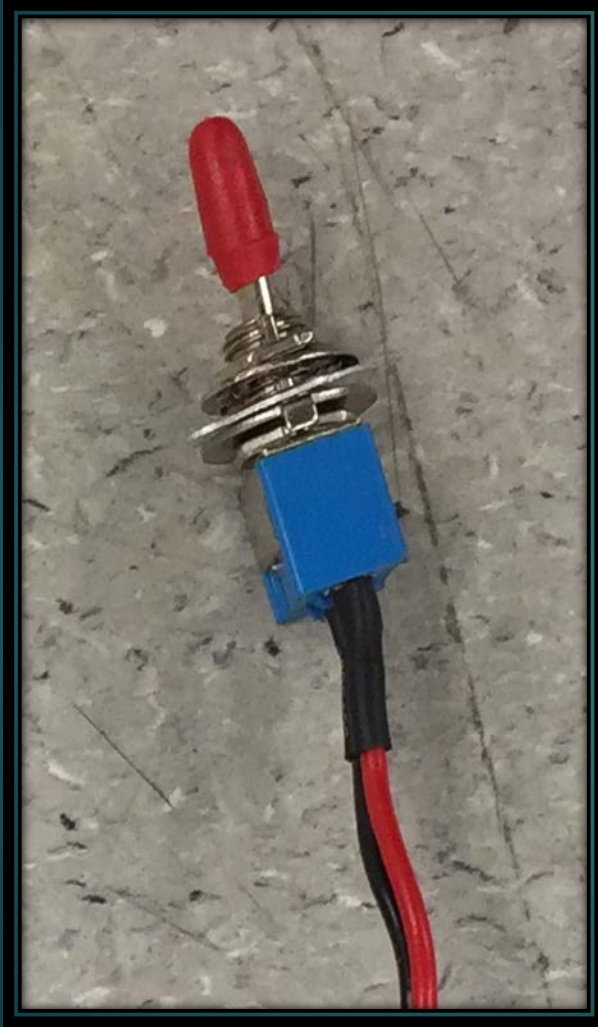
Secure with single philips screw

# Turn Car On Side

Drill a 1/4" Hole, Through Both Pieces of Plastic



# Disassemble all Pieces of Mini Toggle





# Mount Mini Toggle From INSIDE

Putting your hand between in the space between the rear spoiler and the motor compartment, Feed Black and Red Wire into Motor Compartment and the toggle towards the back of the car.



Tighten Washer and Nut From OUTSIDE

# Locate Relay/Harness

Ensure All Wire Ends Are Stripped, Except Blue  
(87a)

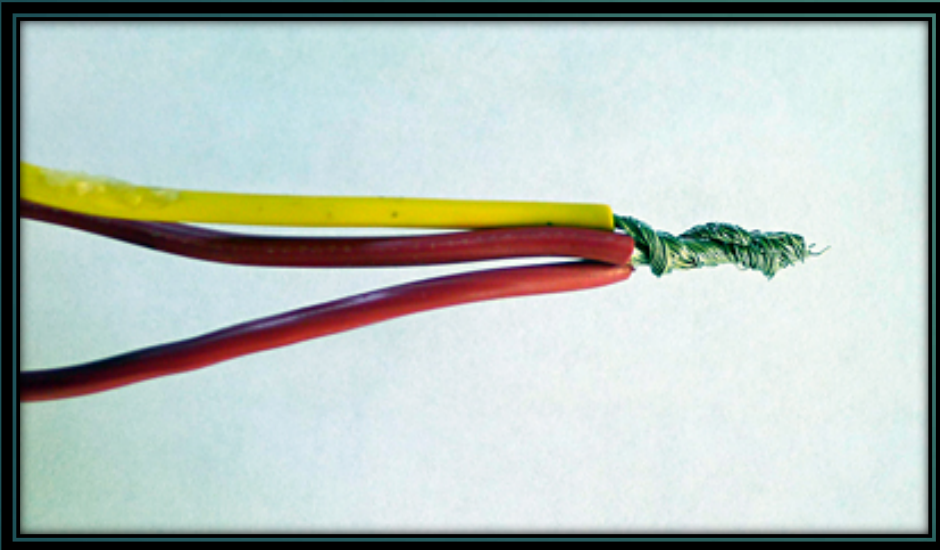


\*Relay May Come Pre-Plugged into Harness\* For all connections, verify that the wire color is correct based on the harness tab. If the color is different, use the tab as a guide.

(Above Photo is just Harness)

The next several steps require you to create wire connections. This diagram explains how to make a connection between wires. This is an example of the technique ONLY. Do not connect the red, yellow and orange wires.

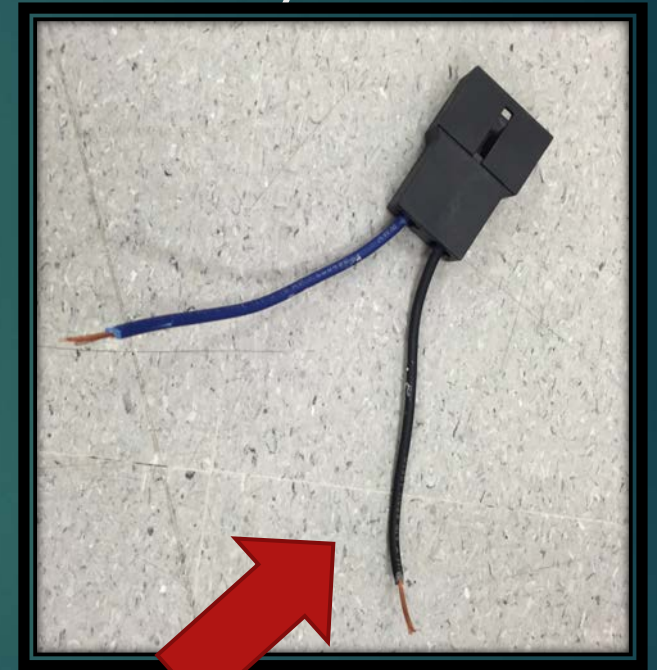
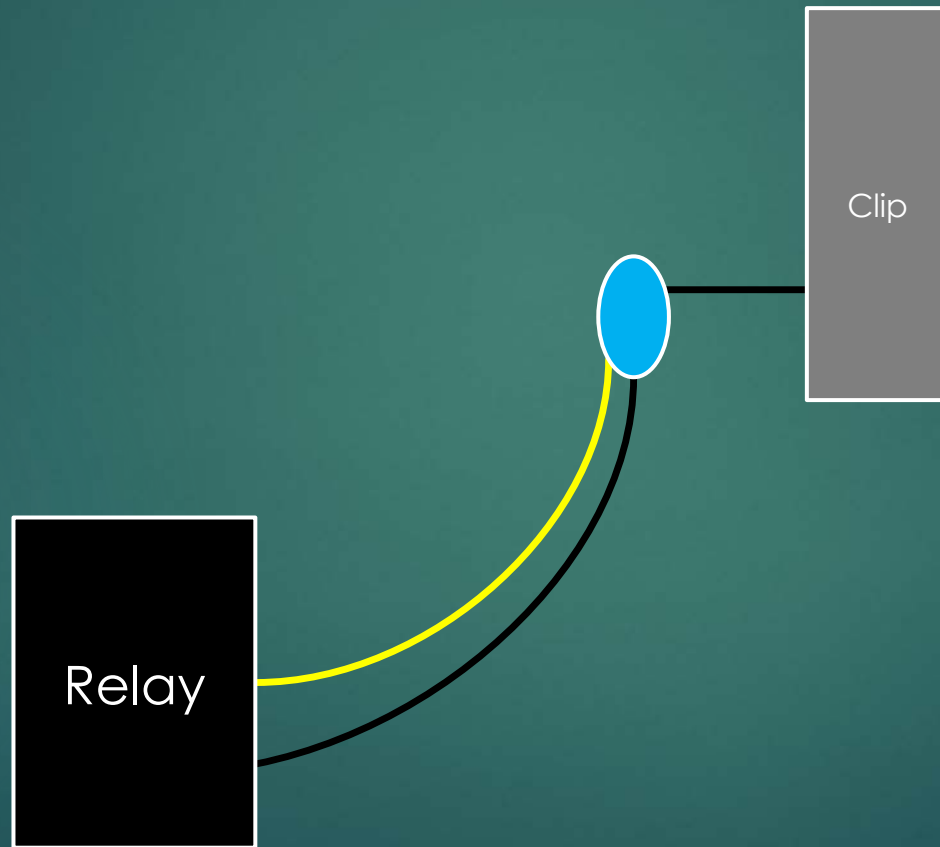
Creating Wire Connections: Ensure all Wires to be connected are twisted (Braided) by hand. Then Twist on Blue Wire Nut Until Firm



Example Only, Not a Connection For Ride on Car

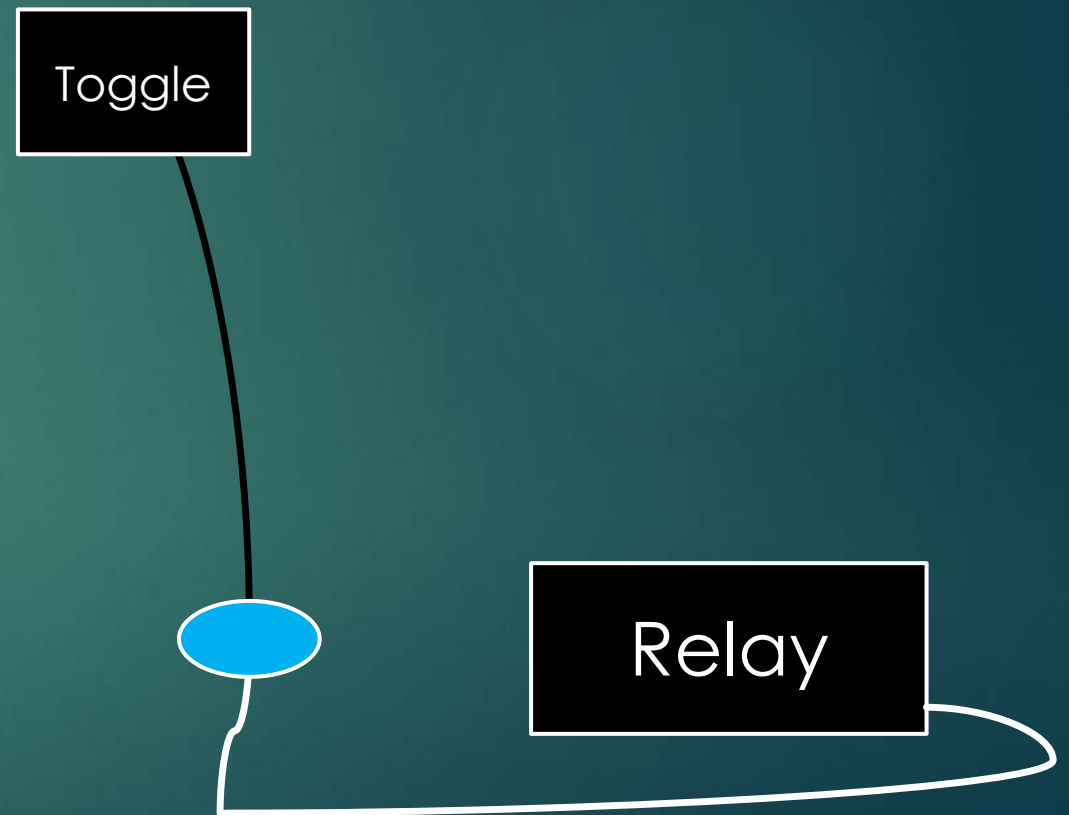
# Twist Together 1st Connection

Black Wire from Clip which connects to battery with tab 30 (black) and tab 86 (yellow) Wire From Relay



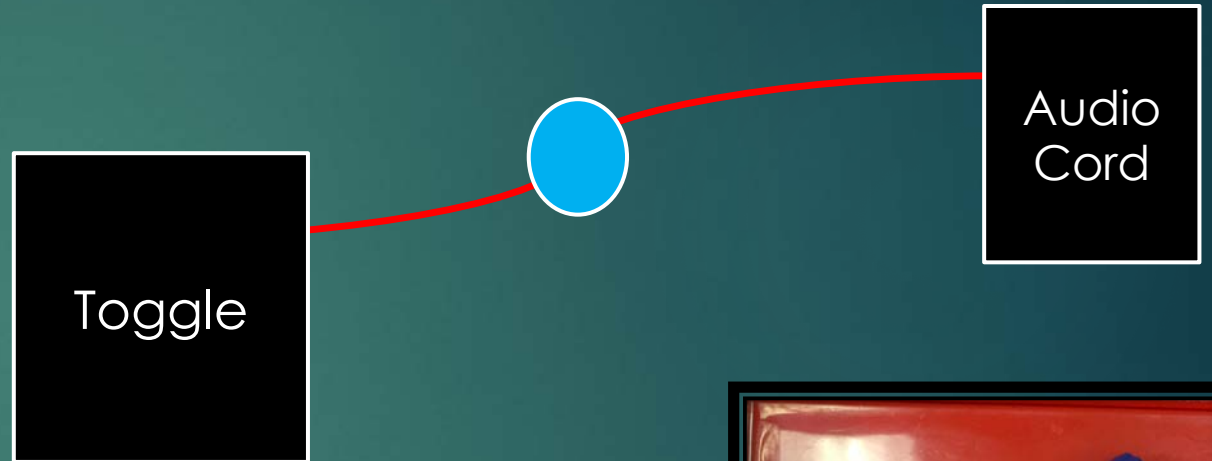
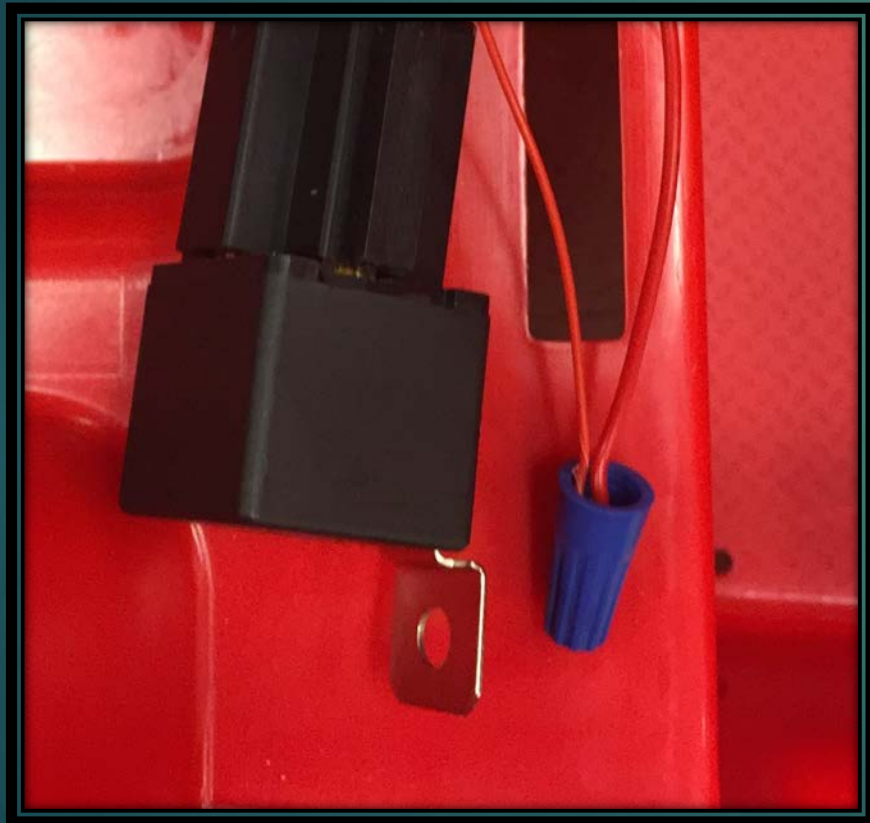
# Twist Together 2nd Connection

Black Wire from Toggle with tab 85 (white) Wire From Relay



# Twist Together 3rd Connection

Red Wire From Mini Toggle with Red Wire From Audio Cord

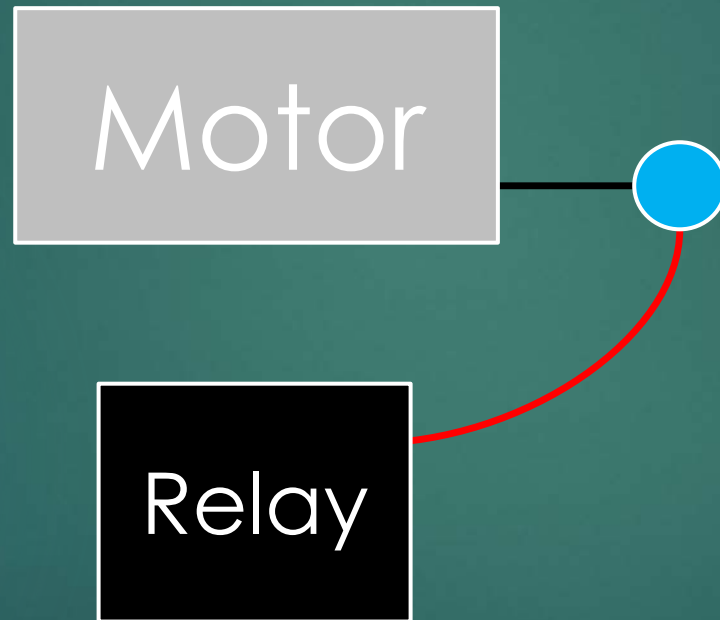


Due to Small Gauge of  
Audio Cord Wire  
Immediately Electrical  
Tape This Connection



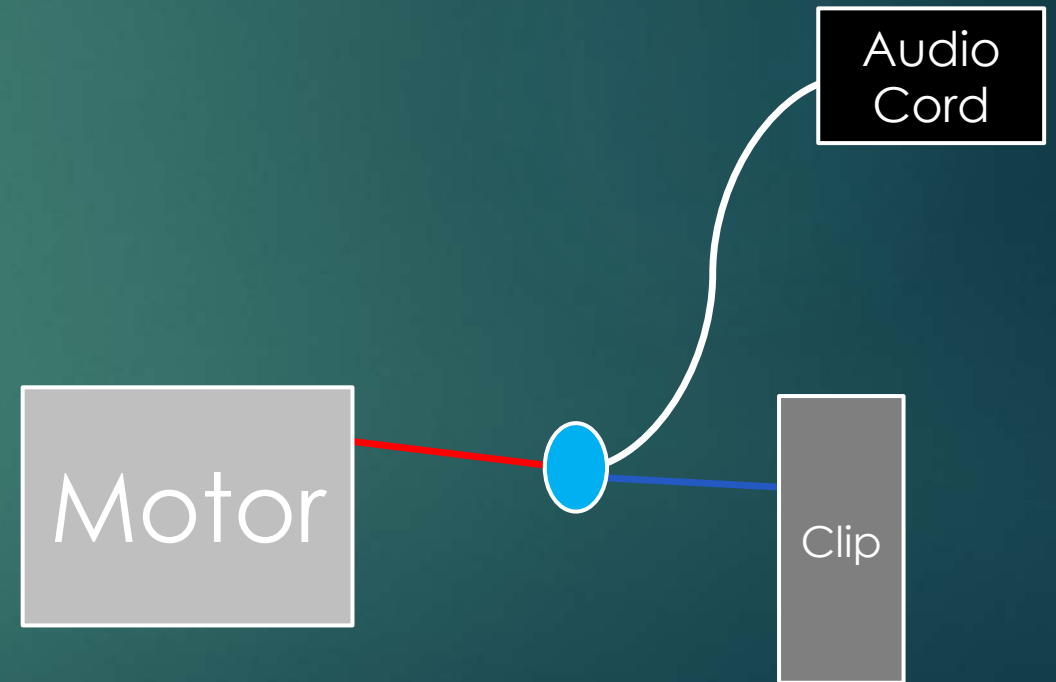
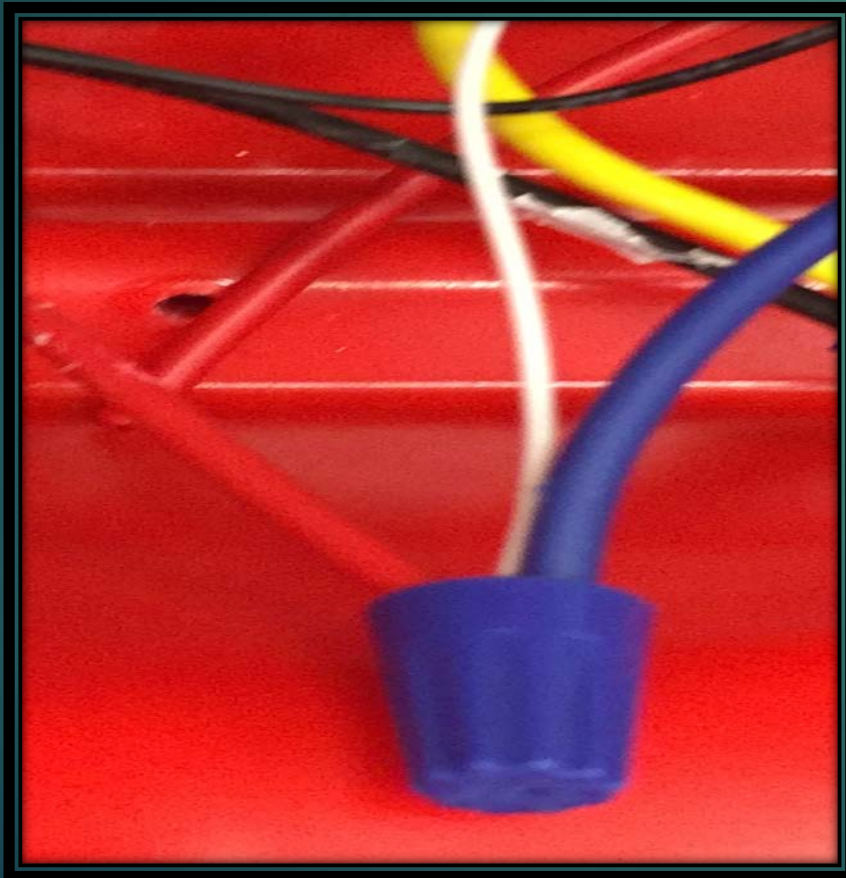
# Twist Together 4th Connection

Black Wire from Motor to tab 87 (red) Wire of Relay



# Twist Together 5th Connection

Red Wire From Motor to White Audio Cord Wire & Blue Wire of Clip





# Go Back And Apply Electrical Tape To All Blue Wire Nut Connections.

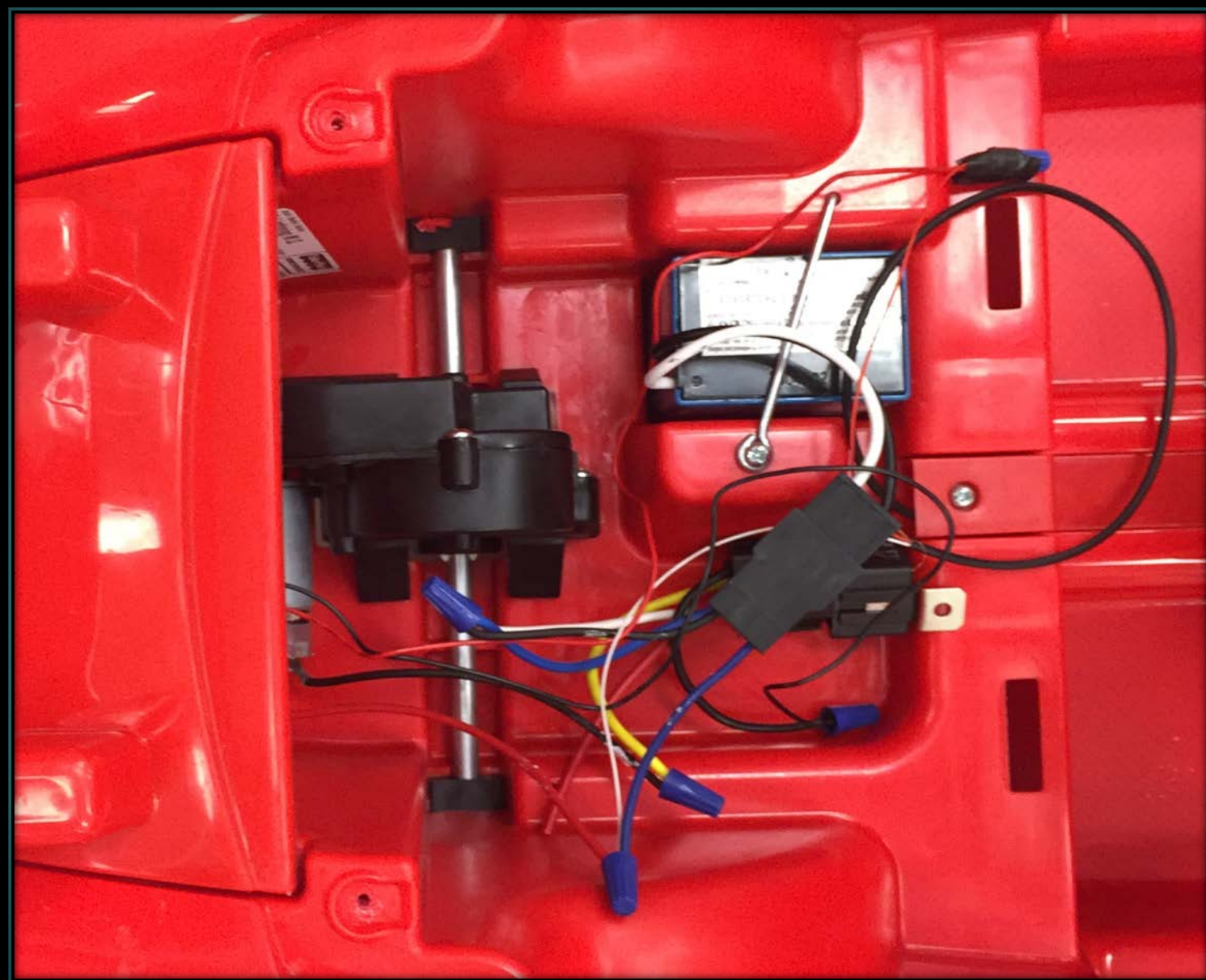


Test The Car By Plugging In a Push  
Switch to Female End of Audio Port



\*On the Rare Occasion That The Car Goes Backwards\*  
Simple Swap the Red and Black Wires that Come Off the Motor - At Their Respective Connection Points

# Final Motor Compartment View



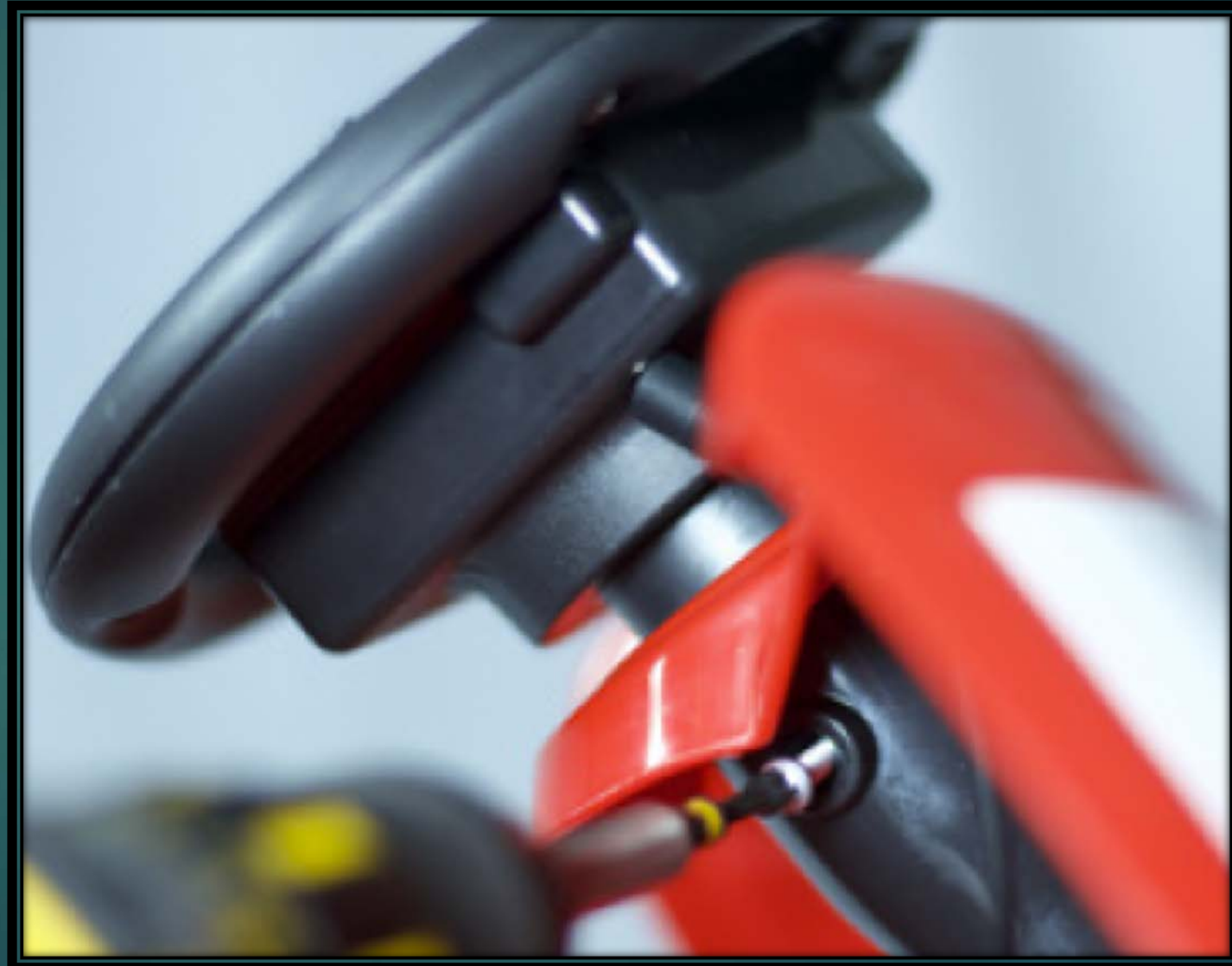
# Remount Seat and Spoiler



4 Philips Screws  
Will Be Used

# Mount Steering Wheel

Tighten screw  
into column



Use Industrial Strength Velcro To Mount Switch to McQueen and plug switch into monojack



Test the switch and then decorate the car



# Structural modifications

- ▶ These include
  - ▶ A seatbelt
  - ▶ A PVC roll cage with foam noodles
  - ▶ A head stop
    - ▶ Type 1: high
    - ▶ Type 2: low
  - ▶ Your materials list will vary depending on your design- pick your design and then choose the appropriate slides to follow!

# User Centered Design

- ▶ Only use the supports needed by your driver!
- ▶ Every driver is unique and some require more supports than others
- ▶ Check with your driver and family about possible needed supports
- ▶ Try the driver in the car, gradually adding supports until the right balance is achieved.
  - ▶ 1. SeatBelt
  - ▶ 2. Side Guards
  - ▶ 3. Head Stop



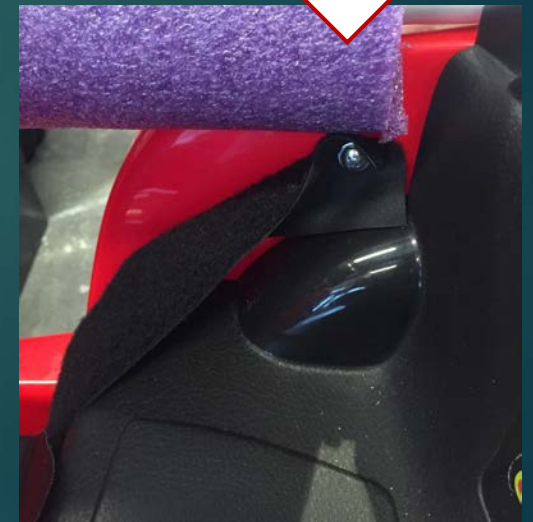
# Structural Modifications # 1 Add a seatbelt:

Materials: 2" D-ring Velcro strap, 2 washers, 2 1" self tapping screws, power drill, scissors, utility knife

1. Cut the strap approximately 5" from the d-ring
2. Remove a 6" section from the non d-ring piece leaving the end Velcro intact.
3. Cut a 1/4" hole using a utility knife approximately 1" from each end
4. Position the belt in the car- Check that you can run the strap through the d-ring and attach the Velcro correctly!

# Structural Modifications: Seat Belt Continued

5. Mark when you are going to drill on the car- the belt should be mounted about the wheel well approximately 1" and as close to the back as possible- you need to allow enough room to remove the seat without it being blocked by the screw.
6. Feed a 1" self tapping screw with a washer down through the hold in the belt on each side
7. Using a drill, screw into the side of the car approximately 1" above the seat where you made your marks
7. Repeat on the other side, making sure that the soft side of the Velcro is on top (by the washer)



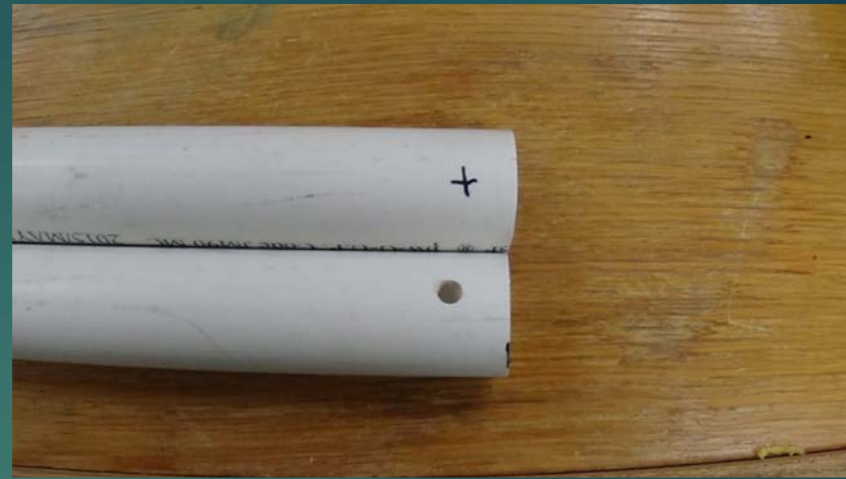
# STRUCTURAL MODIFICATIONS # 2

## Add Side Guards

Materials:  $\frac{3}{4}$ " diameter PVC pipe, PVC cutters, power drill, 4,  $\frac{1}{4}$ " bolts (2" length) with 4,  $\frac{1}{4}$ " locking hex nuts, socket wrenches

1. Cut 2 lengths of PVC, 15-17" in length- this will go from the windshield to the rear spoiler- any excess should stick out the front of the car
2. Mount the PVC- see next slide

- Using a ¼” drill bit, drill a hole through the windshield, about an inch from the side and two inches from the top edge. Angle towards the steering column, but be careful not to accidentally drill into it.
- Repeat on both sides of the windshield.



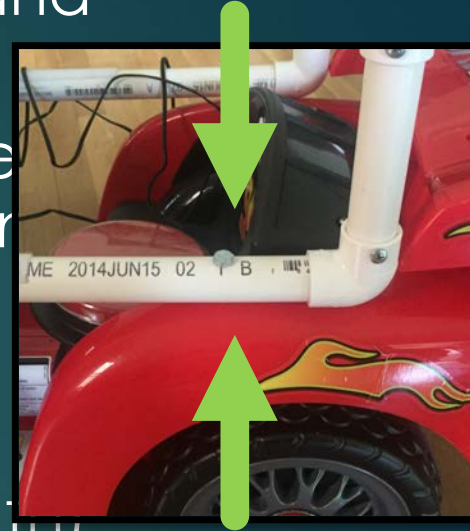
- Likewise, drill a ¼” hole into the 14” PVC pipe, about a half of an inch from the end. Drill all the way through the pipe
- Drill with the end of the pipe hanging off the edge of the table so as not to drill into the table.

**The PVC holes need to align with the holes drilled on the car!**

# Rear Side Guard Attachment

- Drill a second  $\frac{1}{4}$ " hole into the other end of the 15" PVC pipe about 1" from the other end. This hole should be oriented vertically and align with the rear of the car.
- Drill a second hole on each side of the car. This hole should be approximately 3-4" in front of the rear spoiler- Drill straight down into the car. Allow enough room to place a PVC elbow on the end of the side pipe
- Attach the PVC to the car using a  $\frac{1}{4}$ " bolt (approx. 1.5" in length), with a locking hex nut on the other side. Use a socket wrench to tighten the nut. Repeat on both sides of the windshield and the rear of the car.

\*\*\*Note: If you are adding a head support, sit your driver in the car, Make sure that the rear uprights are far back enough (should not push the child's head forward)



# Front Side Guard Attachment

Insert the 1/4" bolt through both the PVC pipe and the windshield, and use a socket wrench to tighten a locking nut on the other side of the bolt.



Add foam pool noodles to each side by slicing the noodle halfway through and popping it onto the PVC.



# Structural Modifications #3-Head support

Choose 1 of 2 types of head supports:

## Type 1: Low Support

- ▶ **Low Support-** This is for the child with good head and trunk control. The purpose of the support is to provide a posterior stop for times of acceleration.
- ▶ The support should be measured for the PVC to be approximately half the height of the child's head
- ▶ Once the foam noodle is added: you will have support above and below the bar
- ▶ Watch the location of the support- it should be far enough behind the child to avoid pushing his head forward and close enough to provide support.





# Type 2: High support

- ▶ This is for the child that may
  - ▶ Be taller
  - ▶ Need a taller backrest than the car provides
  - ▶ May push back with their trunk and need additional support to provide additional support.
  - ▶ 2 examples are shown- 1 uses a kickboard against the PVC frame and the second uses noodles along the PVC frame

**\*\*\*NOTE: some children need additional assistance for trunk or Head control. These are not covered in the level 1 instructions- please Consult the forum at [www.gbgconnect.com](http://www.gbgconnect.com) if you need additional supports**



# STRUCTURAL MODIFICATIONS # 3

## Add Head Support

### Type 1 – Low head support: Materials

- PVC pieces
  - ▶ 2x6"- approximate measure driver for correct length
  - ▶ 1 x 12"- approximate- measure distance to go between 2 uprights with elbows
  - ▶ 4 PVC elbow joints,  $\frac{3}{4}$ "
- ▶ pool noodle

# Type 1: Low head support: Instructions

- ▶ Add a PVC elbow to each side piece of PVC at the spoiler
- ▶ Measure the height needed to reach the middle of the drivers head with the PVC bar- note the PVC elbow will add height!
- ▶ Cut 2 pieces of PVC to create that distance needed that will fit into the elbows and extend vertically up from the rear of the car.
- ▶ Add PVC elbows to the top of each vertical bar
- ▶ Measure and cut a horizontal piece of PVC for the cross bar
- ▶ The cross bar should be sit comfortably behind the child and not push the head forward
- ▶ Add a foam noodle to the PVC
- ▶ **\*\*\* Note- this can be secured permanently with PVC cement or self tapping screws at the joints- make sure you have battery access before securing**

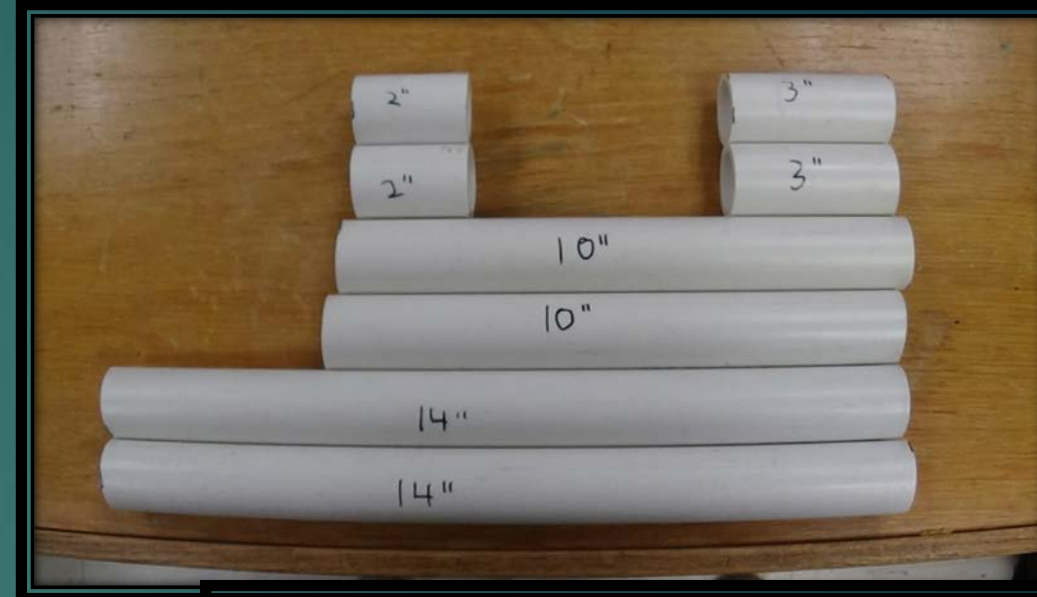


# STRUCTURAL MODIFICATIONS # 3

## Type 2: High support

- Use PVC cutters for appropriate lengths.
- **Type 2- High head support**
  - PVC pieces,  $\frac{3}{4}$ "
    - 2, 2" pieces
    - 2, 3" pieces
    - 2 x 10"- approximate- measure driver
    - 4 elbow joints and 2 T-joints
    - Once middle piece to be measured
  - Velcro
  - a kickboard or pool noodles.

**\*\*\* Note- this can be secured permanently with PVC cement or self tapping screws at the joints- make sure you have battery access before securing**



1. Add vertical elbows to the PVC at the rear of the car
2. Fit a 3" piece vertically followed by a second elbow
3. Fit a 2" piece in a horizontal direction and add a T connector
4. Fit a 3" piece between the 2 Ts to complete the loop
5. Add Vertical PVC with elbows at the top and a final piece completing the shape.
6. The height of the vertical PVC should match the height of your kickboard if you are using one
7. If you are not using a kickboard, measure the height to be 2" taller than the child's head height when seated.
8. Pool noodles can be added to the vertical PVC OR a kickboard can be Velcro'd in place with strips of adhesive velcro.

## Type 1



# Congratulations On Just Finishing Your Very Own RaceCar!

