

Material & Infill

Material

PLA, TPU & ABS

For the PLA parts I like to use 15-25% infill with a wall thickness of 2-3. I recommend using a newly opened filament roll or one that's been properly dried as any warping could cause issues. Keep in mind not all PLA filament is created equal with some being extremely brittle ("Ask me how I know").

The only parts that use TPU on the Semitruck are the tires and hood latches. I like to use 10% infill with a wall thickness of 2. I recommend 95A for the tires as it provides a good amount of flexibility.

COMPLETE AND CONTINUE >

professorboots.com + ☰ :



Sourcing Parts

Below you'll find a list of all the electrical components and hardware required as well as some affiliate reference links you can use to double check your components. Remember you can find pretty much all of these parts for cheaper on Aliexpress but will likely take a little longer to arrive. Always double check reviews and delve into the part descriptions to make sure you're really getting what's advertised.

PRINTED CIRCUIT BOARD COMPONENTS

- 1.) 1x Pack 40pin Female Headers Single Row 2.54: <https://amzn.to/4bmDsSK>
- 2.) 1x Pack 40 pin Male Headers Single Row 2.54: Use Link Above
- a.) [Aliexpress alternative](#)
- 3.) 1x Pack(4 are required) Screw Terminal Blocks 5mm 2pin:
<https://amzn.to/3yjh5yX>
 - a.) Comes with 2&3pin terminal blocks. The 3pin will be useful for future projects.
 - b.) [Aliexpress alternative](#)
- 4.) x1 2-3A Switch 3pin 2position:
<https://amzn.to/3wCvohk>
 - a.) [Aliexpress alternative](#)
- 5.) x1 5x20 Fuse Holder C3131:
<https://amzn.to/3BJERpz>
 - a.) [Aliexpress alternative](#)
- 6.) x2 (IF USING 16340 Batteries) CR123A Battery Holders:
<https://amzn.to/3wE5Xw4>
 - a.) [Aliexpress alternative](#)
- 7.) x4 (IF USING 18650 Batteries) Battery Contacts:<https://amzn.to/3XaLNDS>

All Other Components (Includes Truck&Trailer)

- 1.) 2x ESP32 30Pin Development Board(Micro USB):
<https://amzn.to/4bzrJzC>
- 2.) 4x DRV8833 H-Bridges:
<https://amzn.to/3UKd3H7>
- 3.) 1x Buck Converter:<https://amzn.to/3QMb2cC>
- 4.) x3 300-500RPM 6v N20 Motor:
<https://amzn.to/41528Lz>
 - a.) [Aliexpress alternative](#)
- 5.) x4 MG90S Servos:<https://amzn.to/4bhSGfE>
- 6.) x2 125v 5x20mm 5a Fast Blow-Glass fuses:<https://amzn.to/4dKQVW3>
- 7.) PS4 Controller:
<https://amzn.to/3Yv8T80>
- 8.) x1 2.6mm Truss Head Screw kit:
<https://amzn.to/3znOCsi>
 - a.) If the first option is sold out these will also do the trick:
<https://a.co/d/d64GyEw>.
- 9.) 22awg Wire(Preferably 2 different colors): <https://amzn.to/3QuGj34>
- 10.) x1 4Pin circular Magnet(I'd recommend getting 2 as they can be tricky to solder): [Aliexpress](#)
- 11.) x12 TRB RC 15x10x4mm Bearings:
<https://amzn.to/4gMpRpr>
 - a.) [Alternative](#)
- 12.) x1 Pack Servo Extension wires:
<https://amzn.to/41rGpyS>
- 13.) x2 Fenix Batteries:
 - a.) 16340: <https://fenix-store.com/products/fenix-arb-l16-700up-usb-rechargeable-16340-battery>
 - b.) 18650(Preferred): <https://fenix-store.com/products/fenix-arb-l18-2600u-usb-rechargeable-li-ion-18650-battery>

Accessory Components

- 1.) x2 White LEDS:
<https://amzn.to/41ojj82>
- 2.) x4 Red LEDS(You can substitute these by taking a red sharpie and coloring the outside of the white LED housings):
<https://amzn.to/3XcAhhs>

COMPLETE AND CONTINUE >



Required Tools

REQUIRED TOOLS

- 1.) Soldering Iron:
- 2.) Small Wire Cutters:
- 3.) Small-Medium Phillips head Screw Driver:
- 4.) Small Flathead screwdriver:
- 5.) Mallet:
- 6.) Hot Glue Gun:
- 7.) (Optional but Highly Recommended) Multimeter for testing output voltage:
- 8.) And of course a 3D Printer...

COMPLETE AND CONTINUE >





Soldering H-Bridges & Buck Converter

Tools Required

- Soldering Iron
- Small Wire Cutters

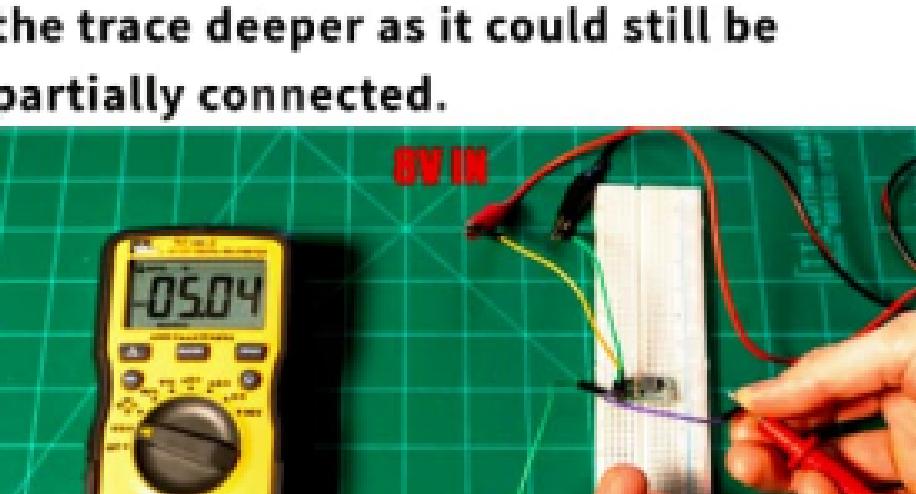
H-Bridge Steps

1.) Insert the 2 rows of 6pin male headers from the bottom and solder(repeat 4 times).

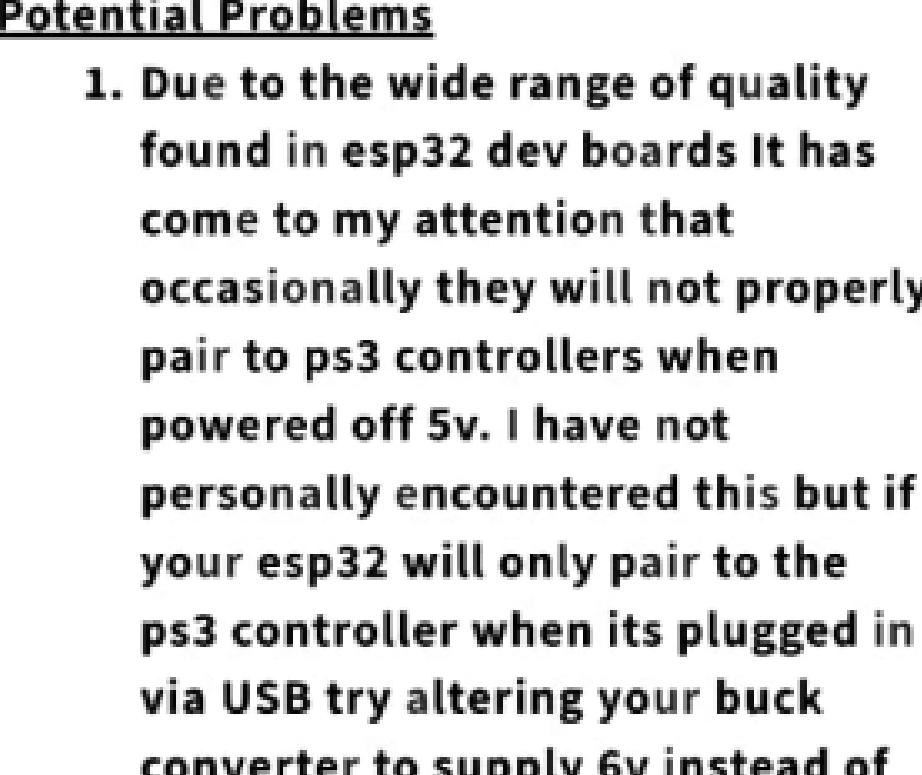


Buck Converter Steps

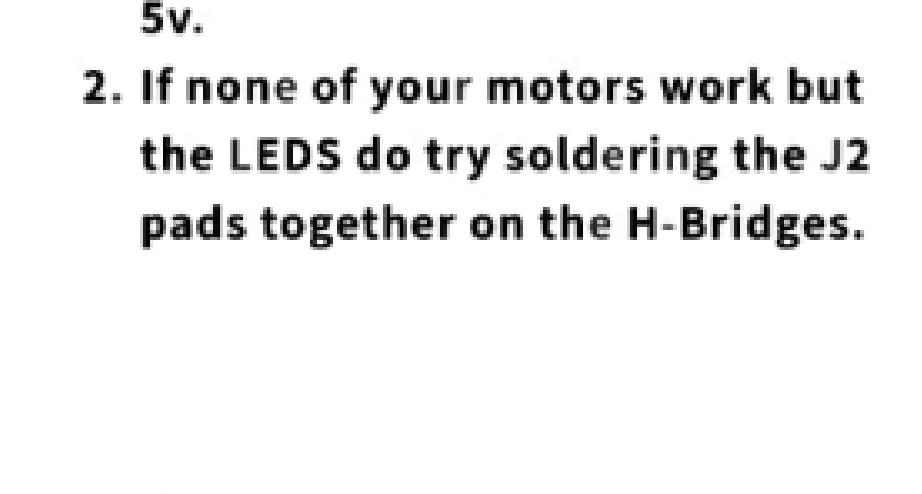
1.) Solder on a 4pin Male header.



2.) Solder the 2 5v Pads together.



3.) Using a small pair of wire cutters cut the trace just above "ADJ". Make sure its deep enough and removes the top layer of copper.



4.) Using a breadboard, multimeter and DC power supply input 8v into the "IN+" pin, "GND" to the GND on your power supply and multimeter, "VO+" to the positive lead on your multimeter. Measure the voltage output of the buck converter. It should read 5v, if it doesn't and your solders look good try cutting the trace deeper as it could still be partially connected.



Potential Problems

1. Due to the wide range of quality found in esp32 dev boards It has come to my attention that occasionally they will not properly pair to ps3 controllers when powered off 5v. I have not personally encountered this but if your esp32 will only pair to the ps3 controller when its plugged in via USB try altering your buck converter to supply 6v instead of 5v.
2. If none of your motors work but the LEDS do try soldering the J2 pads together on the H-Bridges.

COMPLETE AND CONTINUE >



Soldering Components to Truck PCB

Tools Required

- Soldering Iron

STEPS

Solder 7 3pin male headers onto "23, 22, 21, 19, LT1, LT2, LT3".



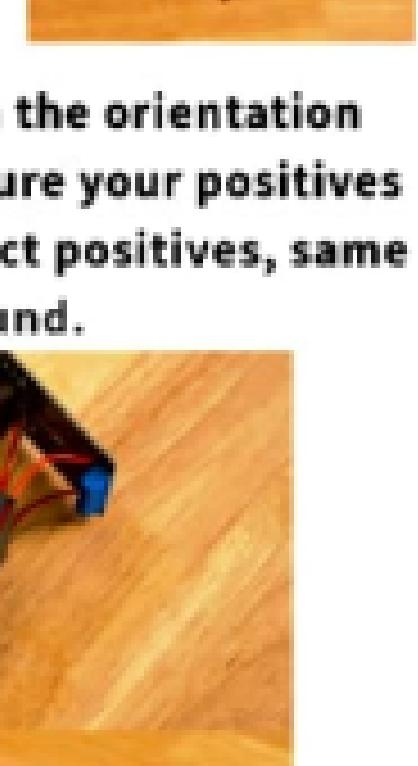
Solder a 4pin Female header to "BC".



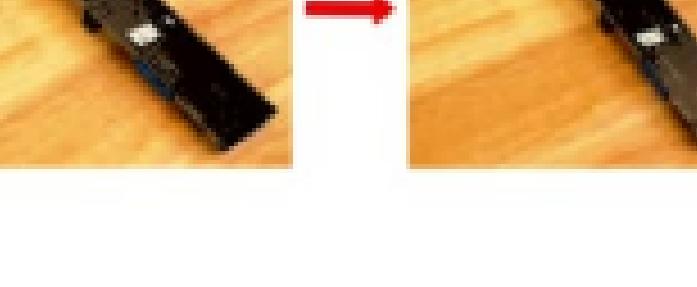
Solder on 2 15pin female headers where the ESP32 dev board will go.



IF USING 16340 BATTERIES!! Solder 2 CR123A Battery holders on making sure to match the positive(+) symbols of the holders to the positive(+) symbols of the ProfBoots PCB.



ELSE IF USING 18650 BATTERIES!! Cut x2 14cm wires, one black, one red. Then cut x2 6.5cm wires, one black, one red.



Clip 4 battery contacts onto the 3D Printed Battery Holder.



Route the long red and black wires through the holder on their respective negative and positive ends. Solder them to the contacts as shown below.

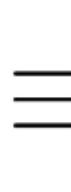
Solder the short wires onto the remaining side.

Solder all 4 wires in the orientation shown below. Make sure your positives are going to the correct positives, same for ground.

Solder the power switch on.

COMPLETE AND CONTINUE >

Scanning for QR code...



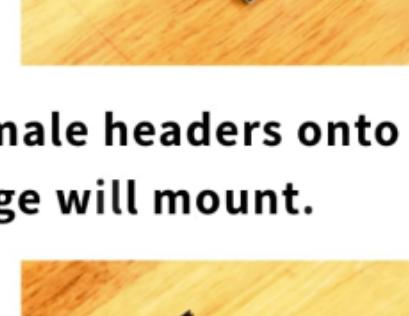
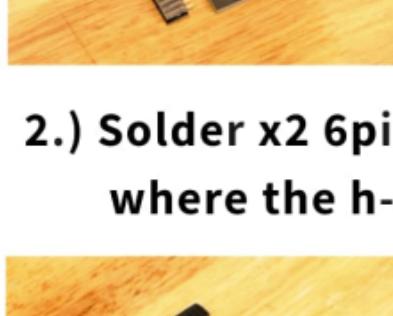
Soldering Components to Trailer PCB

Tools Required

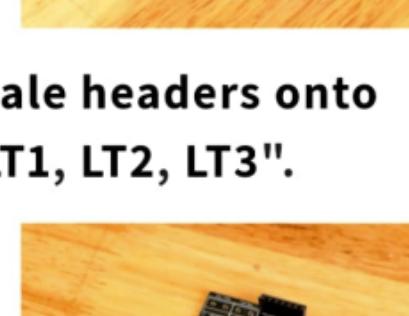
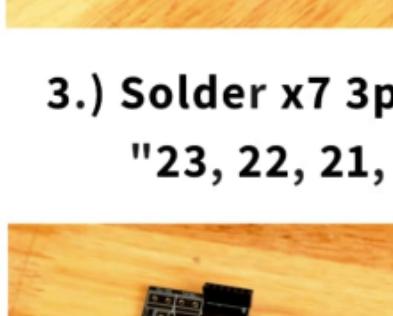
- Soldering Iron

STEPS

1.) Solder x2 15pin female headers onto where the esp32 will mount.



2.) Solder x2 6pin female headers onto where the h-bridge will mount.



3.) Solder x7 3pin male headers onto "23, 22, 21, 19, LT1, LT2, LT3".



4.) Solder x4 2 pin terminal blocks on.



COMPLETE AND CONTINUE >



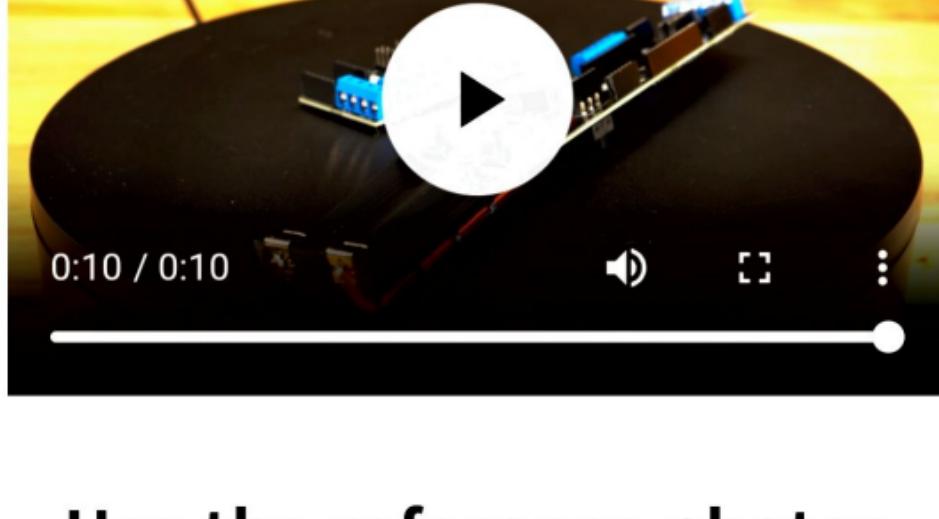
Downloading file...

See notification for download status

Details

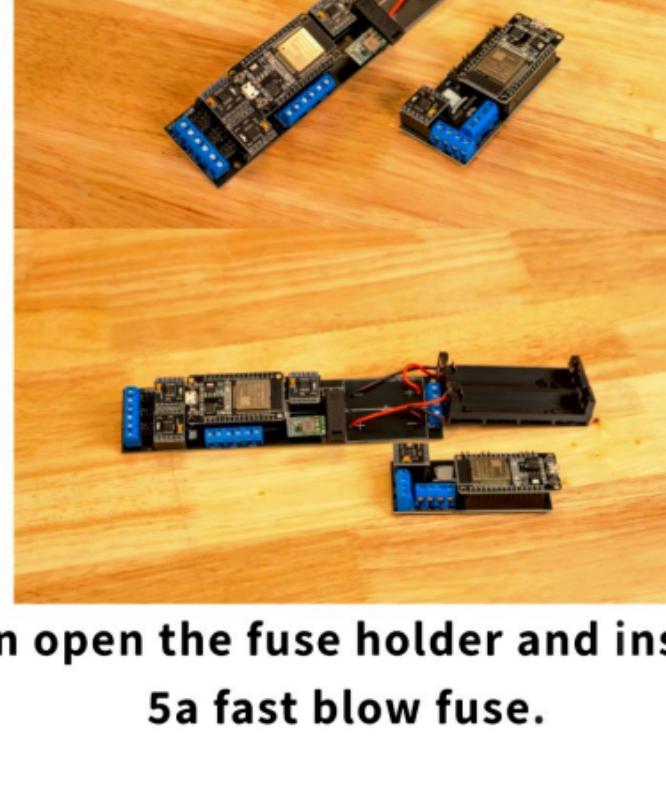


Populating Electronics



Use the reference photos below to properly populate your electronics.

Make sure to align the "EEP" pin on the H-Bridges with the "EEP" pin labeled on the PCB.



Then open the fuse holder and insert a 5a fast blow fuse.

[COMPLETE AND CONTINUE >](#)

Country/region



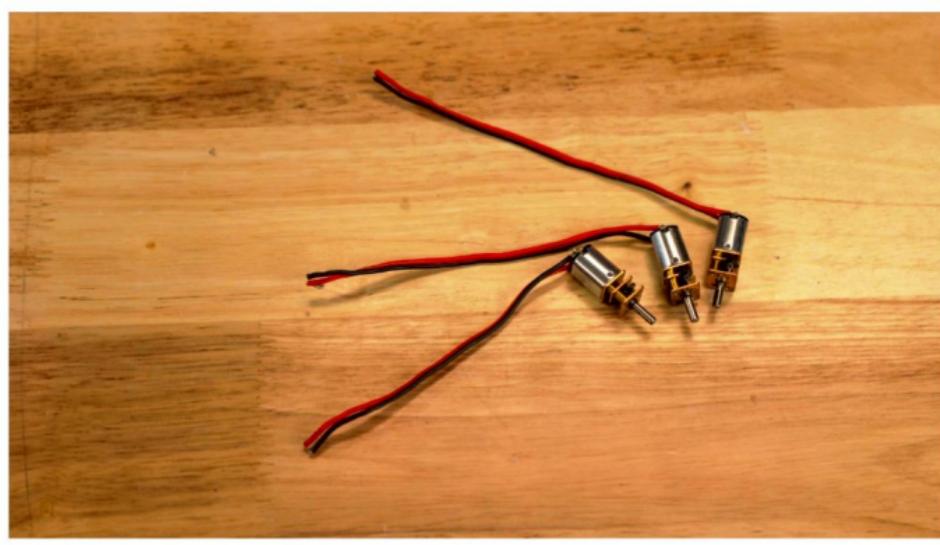
Soldering Wires to N20 Motors

Parts Required

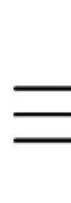
- x3 300-500rpm N20 Motors
- Red & Black Wire

STEPS

- 1.) Measure and cut 2 pairs of 15 cm red and black wire. Measure and cut 1 pair of 13cm red and black wire.
- 2.) Solder all 3 pairs of wire onto x3 n20 motors. The motor with the shorter wire will be the front N20 motor.



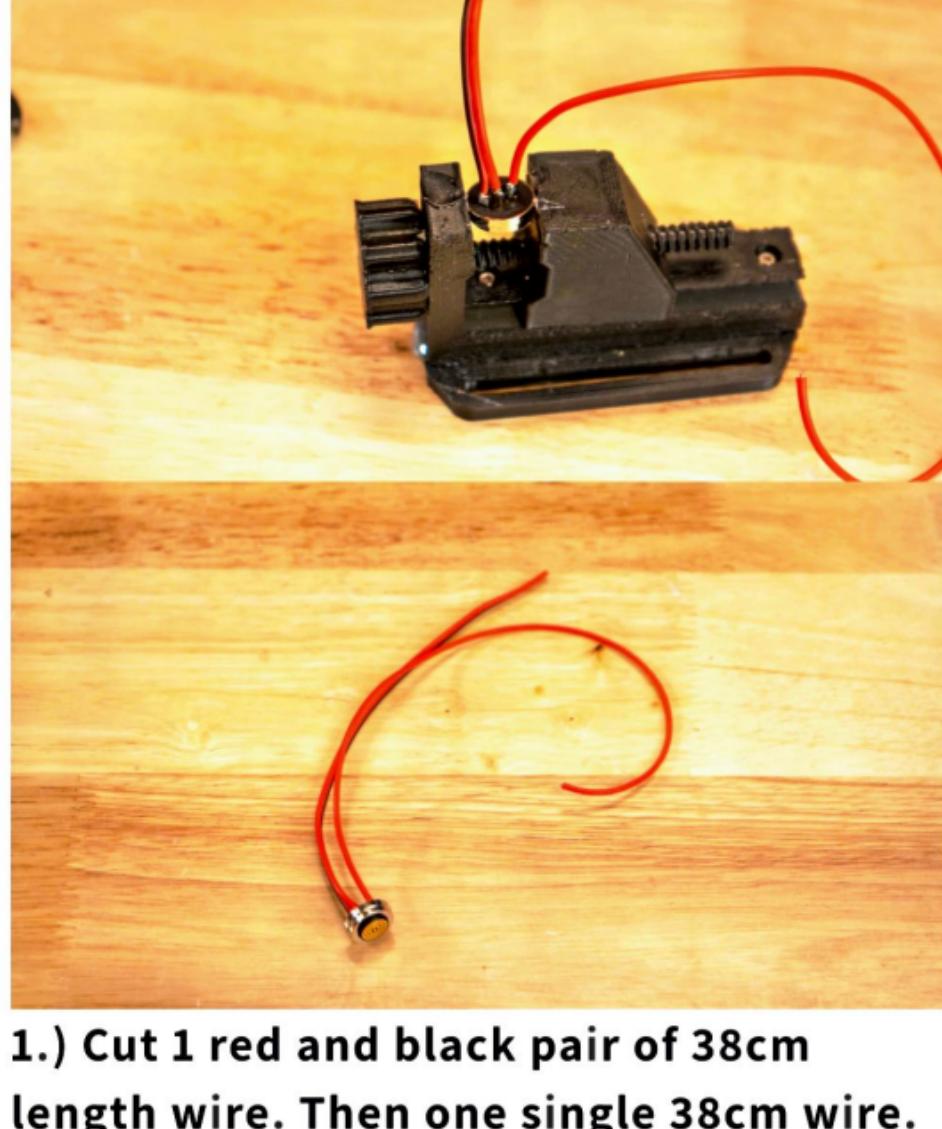
[COMPLETE AND CONTINUE >](#)



Cutting & Soldering Wires to Hitch Magnets

STEPS

1.) Cut one pair of 15cm red and black wires. Then one 24cm wire. Solder the red wire of the 15cm pair to the center pin and the black wire to the outermost pin. Solder the 3rd wire to the pin connected to the 3rd outermost ring.



1.) Cut 1 red and black pair of 38cm length wire. Then one single 38cm wire. Solder these to the hitch magnet with the pogo pins in the same orientation as before(RED wire to the center pin, black to the outermost and the 3rd wire to the 3rd outermost pin).

[COMPLETE AND CONTINUE >](#)

Country/region



ESP32/BluePad32 Dev Board Add-On

STEPS

1. In the Arduino IDE navigate to File->Preferences
2. In the "Additional boards manager URLs:" dialogue box copy and paste the following links as one.
 - a. https://raw.githubusercontent.com/espressif/arduino-esp32/gh-pages/package_esp32_index.json,https://raw.githubusercontent.com/ricardoquesada/esp32-arduino-lib-builder/master/bluepad32_files/package_esp32_bluepad32_index.json
 - b. Click "OK"
3. Now open the boards manager by going to "Tools -> board -> board Manager"
 - c. Search for "esp32_bluepad32" and click "install" on the one created by "Ricardo Quesada". Select your board by going to "Tools -> board -> esp32_bluepad32 -> esp32 Dev Module". (!!We'll select this board when uploading code to the SemiTruck esp32!!)
 - d. Search for "esp32" and click install on the one created by Espressif Systems. Select your board by going to "Tools -> board -> esp32/esp32Arduino -> esp32 Dev Module (!!We'll select this board when uploading code to the trailer esp32!!)

COMPLETE AND CONTINUE >



Downloading GitHub Code

STEPS

- 1. Using the GitHub Link below
navigate to the "ProfBoot/Mini-Truck" Repository**
 - a.**
<https://github.com/ProfBoots/Mini-Truck.git>
- 2. Once there click the green "Code" drop down and "Download ZIP"**
- 3. With the folder downloaded right click and "extract all"**
 - b. If you don't "Extract all" it can cause compiling errors"**
- 4. Now open the "Mini-Truck" and "Mini-Trailer" sketch with the Arduino IDE.**

COMPLETE AND CONTINUE >

Country/region

USD \$ | United States





Installing Libraries

GAMECONTROLLER(PS4/5 OR XBOX) CODE STEPS

1. Navigate to Manage Libraries by going to "Sketch -> Include library -> Manage Libraries"
2. Search for and install "ESP32Servo" by "Kevin Harrington"

COMPLETE AND CONTINUE >





Semitruck Upload & Settings

STEPS

1. Select the "Mini-Truck" sketch.
2. Select your board by going to "Tools -> board -> esp32_bluepad32 -> esp32 Dev Module".
3. Connect your esp32 dev board to your computer via micro-usb. Select the appropriate com port by navigating to "Tools -> Port -> Com#"
 - a. The com port of your ESP32 should show up when you plug it in so if you're not sure unplug it, check what's available, then plug it back in and see what new com ports show up.
 - b. A secondary option is to navigate to "device manager -> ports" if you're using windows and plug/unplug your esp32 to determine which com port it is.
4. With the appropriate com port selected upload your sketch by clicking the right arrow at the top of the Arduino IDE.
5. We will double check that the sketch was uploaded successfully later in this workshop.

Verify the following if you're having trouble

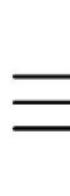
uploading the code

1. Tools > Upload Speed > 115200 from the Arduino IDE menus.
2. If you have an error related to "LedCDetachPin" This was caused by the release of 3.0.0 of the espressif "esp32" board. You'll want to use "esp32" version 2.0.17 otherwise the compiler will not work with library "ESP32Servo". Version 3.0.0 of the Espressif "esp32" board has broken some of the code - they note this in their release.

COMPLETE AND CONTINUE >

Country/region

USD \$ | United States



Trailer Code Upload & Settings

STEPS

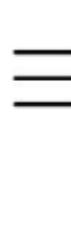
1. Select the "Mini-Trailer" sketch.
2. **IMPORTANT:** This needs to be uploaded under the "esp32" board assignment and not "esp32_bluepad32" or your controller will randomly connect to the semitruck esp32 instead of the trailer esp32. Select your board by going to "Tools -> board -> esp32/esp32Arduino -> esp32 Dev Module"
3. Connect your esp32 dev board to your computer via micro-usb. Select the appropriate com port by navigating to "Tools -> Port -> Com#"
4. With the appropriate com port selected upload your sketch by clicking the right arrow at the top of the Arduino IDE.
5. We will double check that the sketch was uploaded successfully later in this workshop.

COMPLETE AND CONTINUE >

Country/region

USD \$ | United States





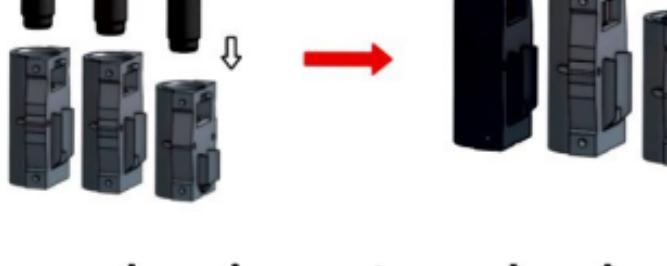
1.) Bearings

Parts Required

- x8 TRB RC 10x15x4 Bearings
- x2 3D Printed Rear Axle Housings
- x2 3D Printed Rear Axles
- x1 3D Printed Front Axle Housing
- x1 3D Printed Front Axle
- x1 3D Printed Front Wheel Bearing Housing - Left
- x1 3D Printed Front Wheel Bearing Housing - Right

STEPS

1.) Verify the inside of your axle housings are free of any debris.



2.) Drop the 3 axles into the 3 axle housings. Make sure to put the front axle in the front axle housing!



3.) Place a bearing onto each axle and tap into place using a mallet. Repeat for the flip side.



4.) Place a bearing into both left and right wheel bearing housings. Tap into place using a mallet and screw driver.

[COMPLETE AND CONTINUE >](#)



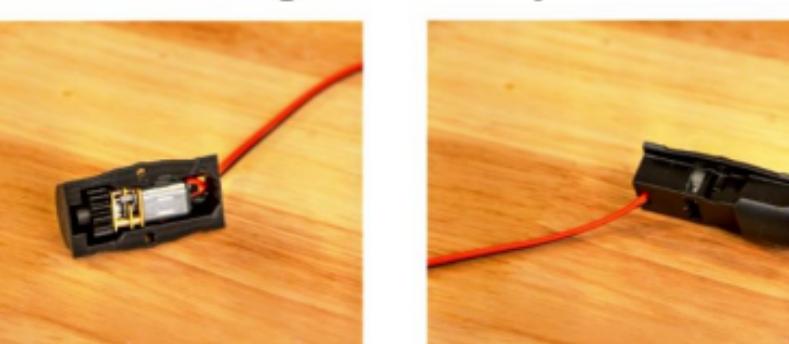
2.) N20 Motor Pinion Gears & Housing

Parts Required

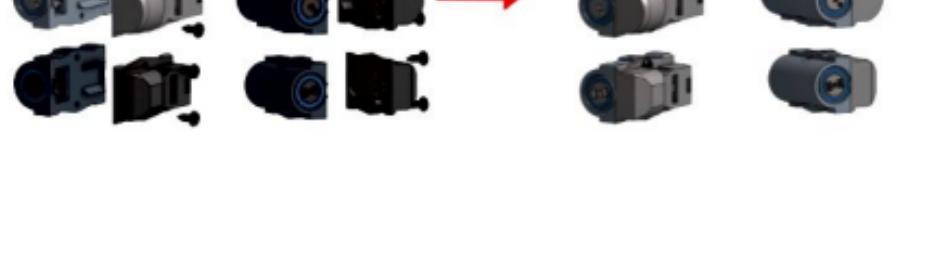
- x3 300-500RPM N20 Motors
- x6 2.6x8mm Truss Head Screws
- x3 3D Printed Pinion Gears
- x2 3D Printed Rear Axle Housing MTR Lock
- x1 3D Printed Front Axle Housing MTR Lock

STEPS

1.) Press the 3 pinion gears onto the 3 n20 motors with the gear side facing towards the motor. If you cant press them all the way on gently tap them on with a mallet. (CAREFUL: To much force can damage the n20 motors internal components)



2.) Route the n20 motor wires out the back of the axle housing MTR lock pieces. Pull the slack through until the N20 motor assemblies are sitting inside the axle housing MTR lock pieces.



3.) Secure each axle housing MTR lock piece to the corresponding axle housing using x2 2.6x8mm Truss head screws.



[COMPLETE AND CONTINUE >](#)

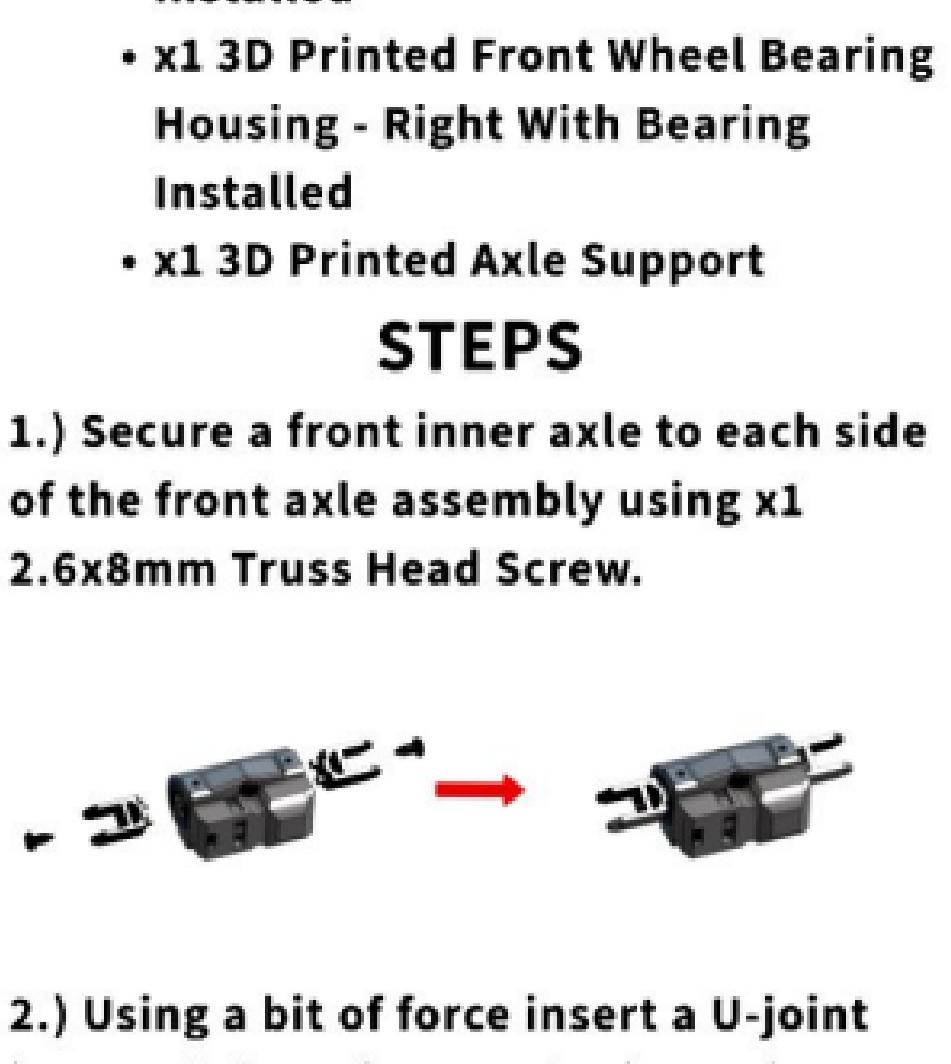
Country/region

USD \$ | United States

File downloaded
(40.46 MB) cdn.shopify.com + ⌂ ⋮

PROFBOOTS

3.) Front Axle Steering Linkage



Parts Required

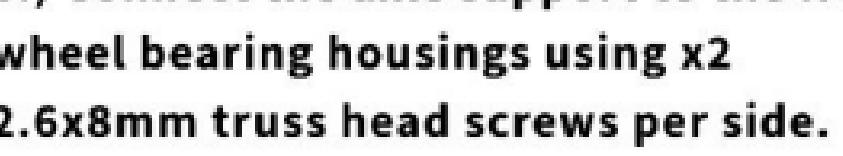
- x9 2.6x8mm Truss Head Screws
- x2 3D Printed Front Inner Axles
- x2 3D Printed U-Joints
- x2 3D Printed Front Outer Axles
- x1 3D Printed Front Wheel Bearing Housing - Left With Bearing Installed
- x1 3D Printed Front Wheel Bearing Housing - Right With Bearing Installed
- x1 3D Printed Axle Support

STEPS

1.) Secure a front inner axle to each side of the front axle assembly using x1 2.6x8mm Truss Head Screw.



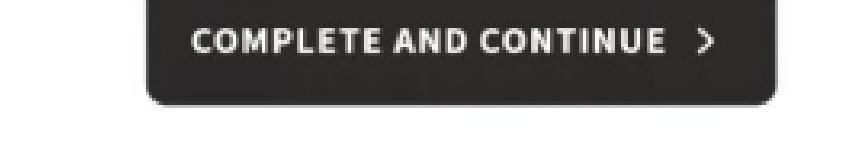
2.) Using a bit of force insert a U-joint into each front inner axle. (TIP: I insert one end of the u-joint in at an angle first, then pry the other side up until it snaps into place)



3.) Press a front outer axle onto the u-joint using the same method as before.



4.) Press the front wheel bearing housings over the front outer axles. Refer to the photo below to make sure the orientation is correct.



5.) Secure the axle support to the front axle using x3 2.6x8mm truss head screws.

6.) Connect the axle support to the front wheel bearing housings using x2 2.6x8mm truss head screws per side.

COMPLETE AND CONTINUE >



Downloading file...

See notification for download status

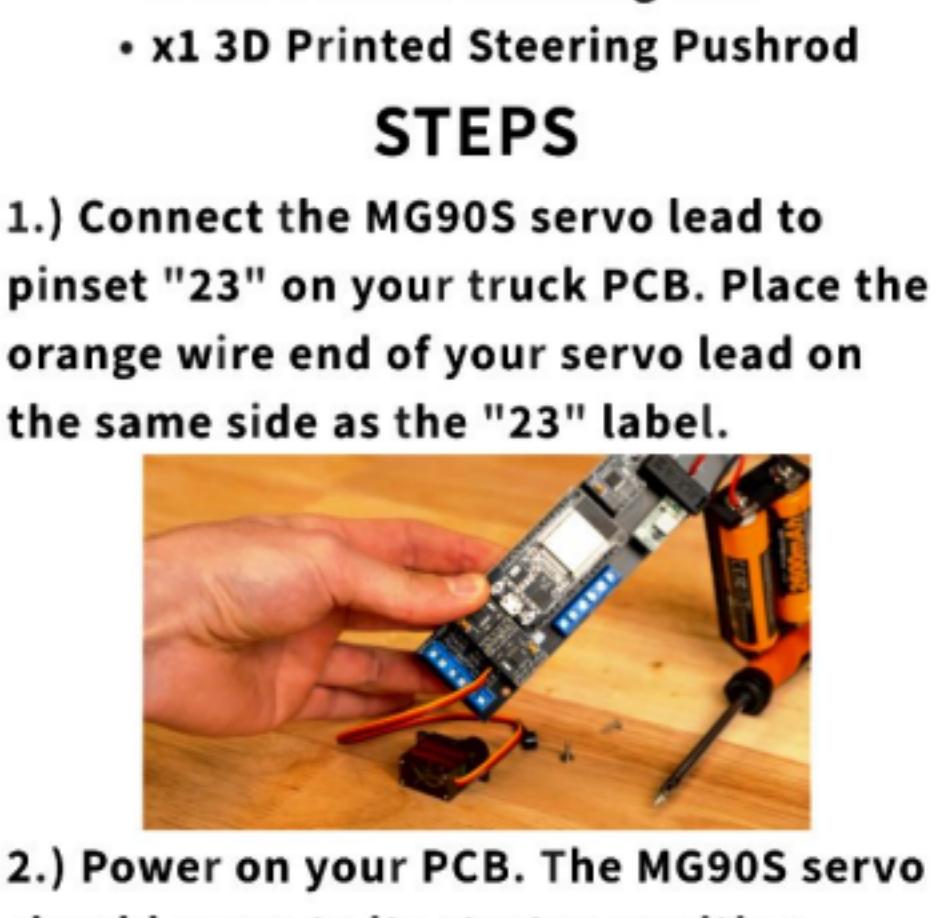
Details

PROF BOOTS



4.) Steering Servo Horn Placement

STEP 2

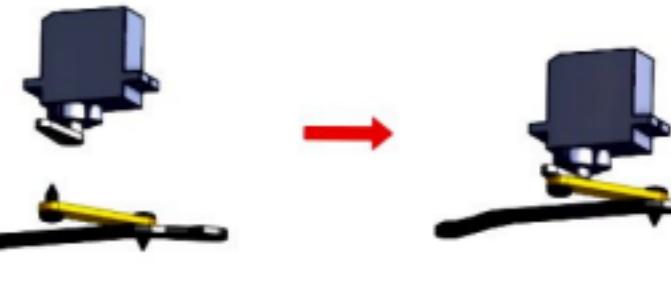


Parts Required

- x1 MG90S Servo
- x4 2.6x8mm Truss Head Screws
- x1 3D Printed Steering Rod
- x1 3D Printed Steering Pushrod

STEPS

1.) Connect the MG90S servo lead to pinset "23" on your truck PCB. Place the orange wire end of your servo lead on the same side as the "23" label.



2.) Power on your PCB. The MG90S servo should move to its startup position. Place the servo horn on at a 90 degree angle as shown, then secure the horn using the small silver screw that came with the servo.

3.) Power off your PCB.

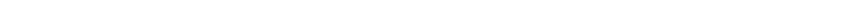
4.) Secure the steering pushrod to the steering rod with a 2.6x8mm truss head screw as shown.



5.) Connect the steering pushrod to the 4th hole from the end of the servo horn using a 2.6x8mm truss head screw.



6.) Mount the MG90S servo to the axle support using the 2 long silver screws that came with the servo. Connect the steering pushrod to both left and right front wheel bearing housings using 2.6x8mm truss head screws.



COMPLETE AND CONTINUE >



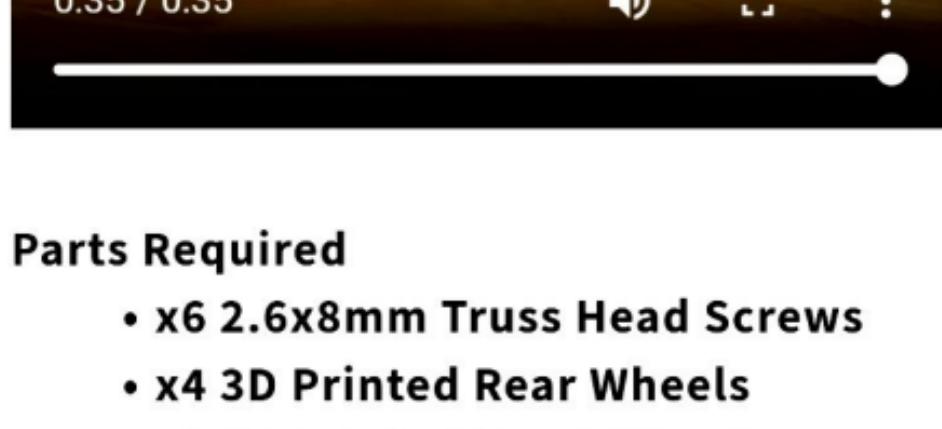
Downloading file...

See notification for download status

Details



5.) Wheels & Tires



Parts Required

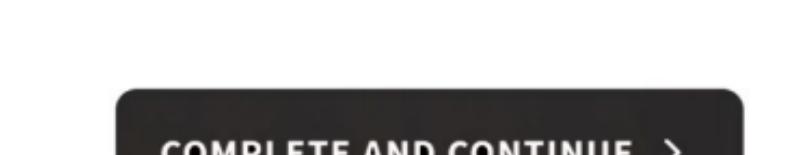
- x6 2.6x8mm Truss Head Screws
- x4 3D Printed Rear Wheels
- x2 3D Printed Front Wheels
- x8 3D Printed TPU Rear Tires
- x2 3D Printed TPU Front Tires

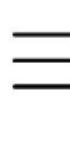
STEPS

- 1.) Insert a piece of 1.75mm filament into the outer hole on the end of one of the rear axles. Snip so that only 1.5-2.5mm of filament sticks out.
- 2.) Take the corresponding rear wheel and secure to the axle using a 2.6x8mm truss head screw. The filament piece protruding from the axle should latch into a receiving hole on the wheel and keep the axle and wheel from spinning separately.
- 3.) Repeat for the remaining 3 rear wheels.
- 4.) Verify the rectangular cutouts on the inside of the front wheels are perfectly flat then secure to the front outer axles using a 2.6x8mm truss head screw.



- 5.) Press all 8 rear tires onto the rear wheels as well as the front 2 tires onto the front wheels.

[COMPLETE AND CONTINUE >](#)



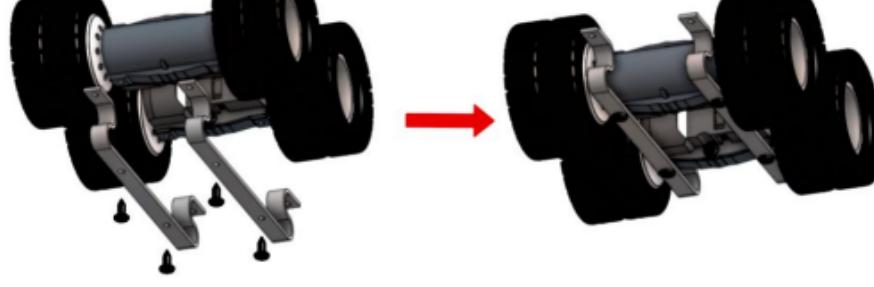
6.) Suspension

Parts Required

- x6 2.6x8mm Truss Head Screws
- x2 3D Printed Rear Leaf Springs
- x1 3D Printed Front Leaf Spring - Left
- x1 3D Printed Front Leaf Spring - Right

STEPS

1.) Mount the 2 rear axle assemblies to the 2 rear leaf springs using x4 2.6x8mm truss head screws. Orient so that the wires coming out of the axle assemblies face towards each other and will be on the driver side of the vehicle.



2.) Mount both the left and right front leaf springs to the axle support in the orientation shown below. (Please triple check your front leaf springs match the orientation)



[COMPLETE AND CONTINUE >](#)

Country/region

USD \$ | United States



✓ File downloaded
(91.83 MB) cdn.shopify.com

Open



1.) Front Frame Assembly

Parts Required

- x5 2.6x8mm Truss head Screws
- x1 3D Printed Front Bumper
- x1 3D Printed Bumper Mount
- x1 Front Axle Assembly

STEPS

1.) Secure the bumper to the bumper mount using x2 2.6x8mm truss head screws.



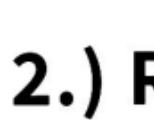
2.) Slide the dovetail end of the bumper mount up into the front frame and lock together using a 2.6x8mm truss head screw.



3.) Secure the front leaf springs to the front frame using x2 2.6x8mm truss head screws. The motor wires coming out of the front axle assembly should be on the bumper side. Pull the servo wires up above the frame.



COMPLETE AND CONTINUE >



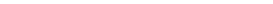
2.) Rear Frame + Locking everything together

Parts Required

- x8 2.6x8mm Truss Head Screws
- x1 3D Printed Rear Frame
- x1 3D Printed Mid Frame
- x1 Front Frame Assembly

STEPS

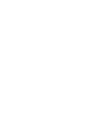
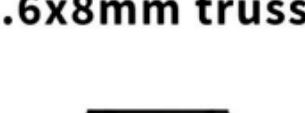
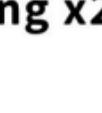
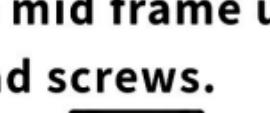
1.) Secure the rear axle + leaf spring assembly to the rear frame using x4 2.6x8mm truss head screws, remember to place the motor wires on the driver side of the frame.



2.) Press the rear and mid frames together so that the clips snap together. Then fix in place using x2 2.6x8mm truss head screws.



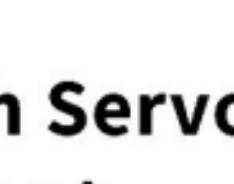
3.) Secure the front frame assembly to the mid frame using x2 2.6x8mm truss head screws.



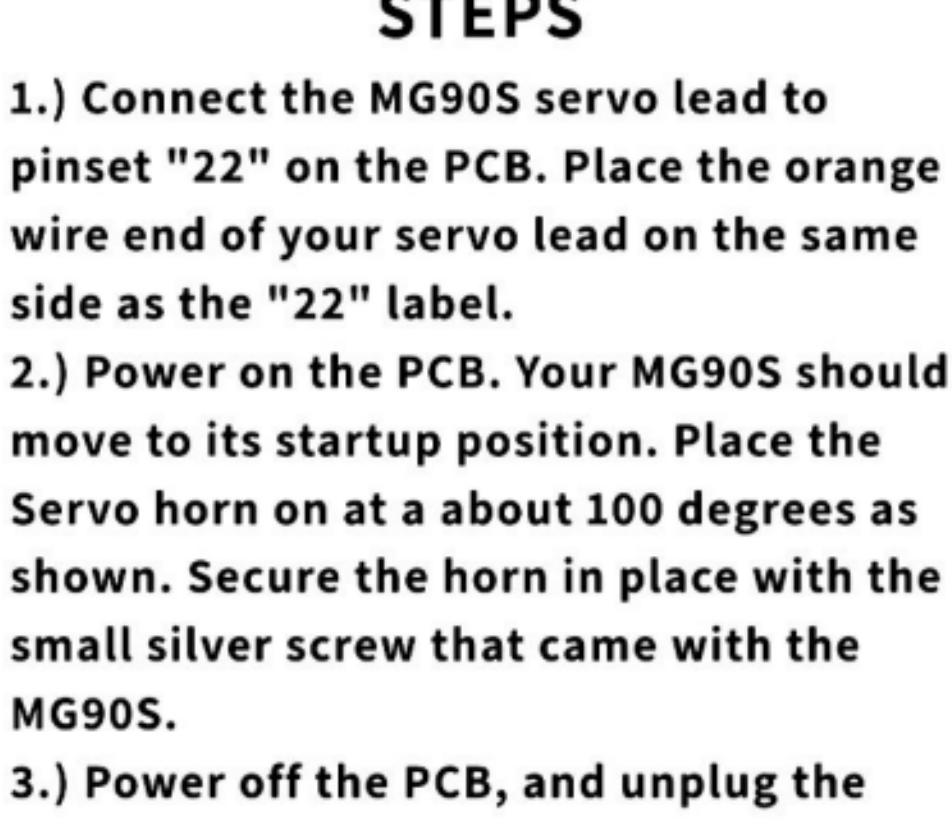
Downloading file...

See notification for download status

Details



1.) Hitch Servo Horn placement

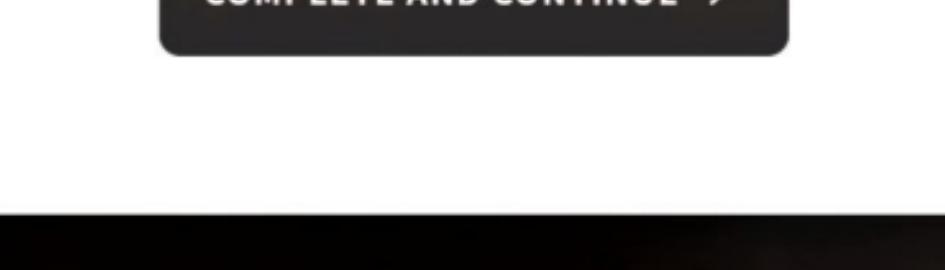
STEPS 2&3

Parts Required

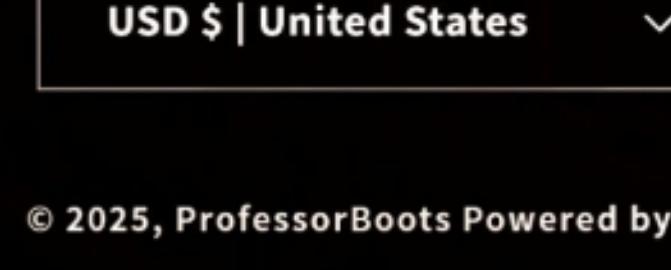
- x1 MG90S Servo

STEPS

- 1.) Connect the MG90S servo lead to pinset "22" on the PCB. Place the orange wire end of your servo lead on the same side as the "22" label.
- 2.) Power on the PCB. Your MG90S should move to its startup position. Place the Servo horn on at about 100 degrees as shown. Secure the horn in place with the small silver screw that came with the MG90S.
- 3.) Power off the PCB, and unplug the servo.
- 4.) Take the 2 wheels off that are shown below to Mount the MG90S to the rear frame using the x2 long silver screws that came with it.



- 5.) Route the Hitch servo lead into the mid frame, then rotate the servo horn 180 degrees as shown, you'll have to press down the axle to get it by.

[COMPLETE AND CONTINUE >](#)

Country/region

USD \$ | United States

▼

© 2025, ProfessorBoots Powered by

[Shopify](#) · [Refund policy](#) · [Privacy policy](#)[· Terms of service](#) · [Shipping policy](#)[· Contact information](#)

02:33 8/2/2021 79%

professorboots.com



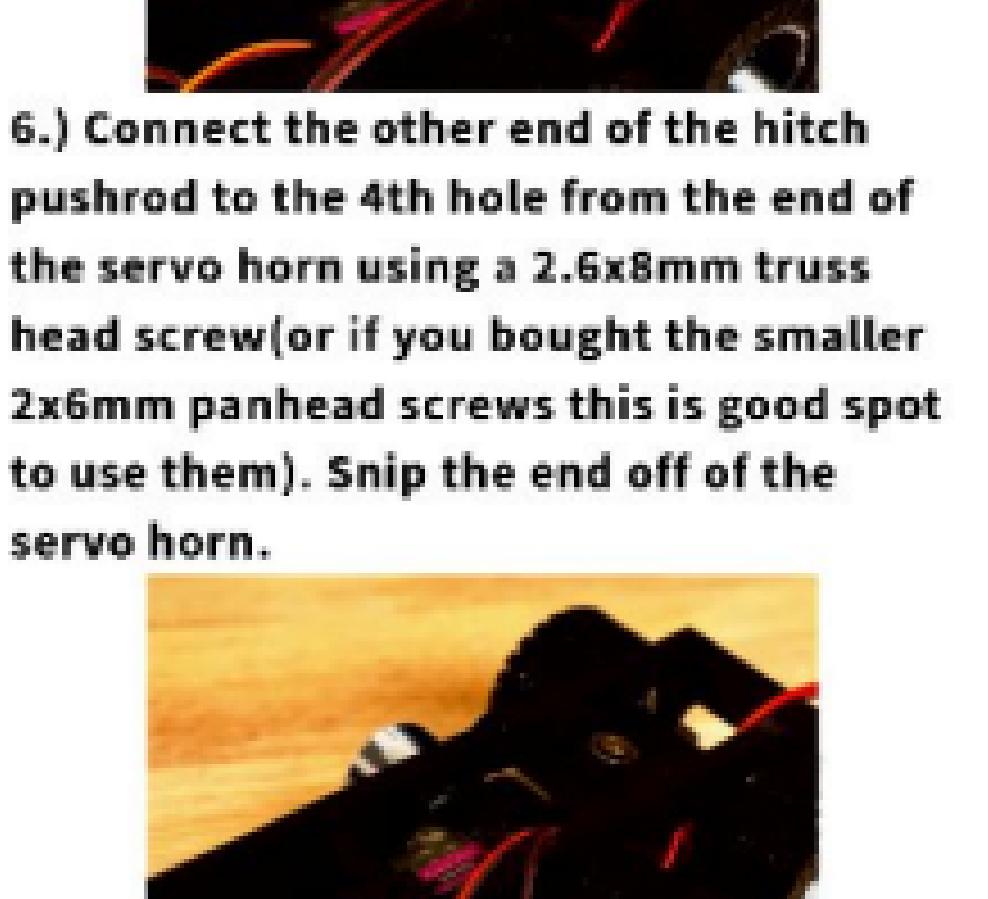
2.) Hitch Magnet Assembly

Parts Required

- x7 2.6x8mm Truss Head Screws
- x1 4 Pin Female Magnetic Connector
- x1 3D Printed Hitch Magnet Holder
- x1 3D Printed Hitch Pivot Mechanism
- x1 3D Printed Hitch Pushrod
- x1 3D Printed Hitch Plate

STEPS

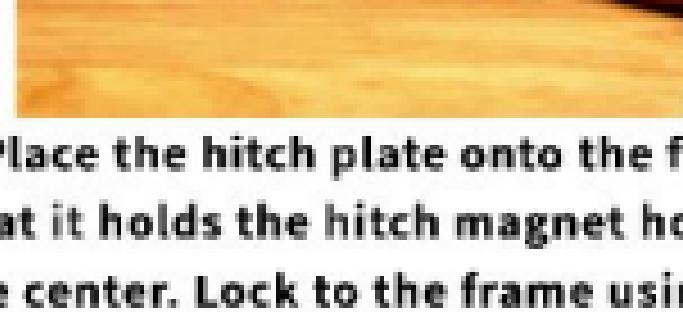
1.) Route the wires from your 4 pin female magnetic connector down through the small hole in the hitch magnet holder.



2.) Place 2 dabs of hot glue on either side of the hitch magnet holder and press the magnet down into place.



3.) Connect the hitch magnet holder to the hitch pivot mechanism using a 2.6x8mm truss head screw. You'll have to move the wires out of the way for the screw head.



4.) Route the wires underneath the hitch pivot mechanism and connect both sides of the hitch pivot mechanism to the rear frame using x2 2.6x8mm truss head screws.

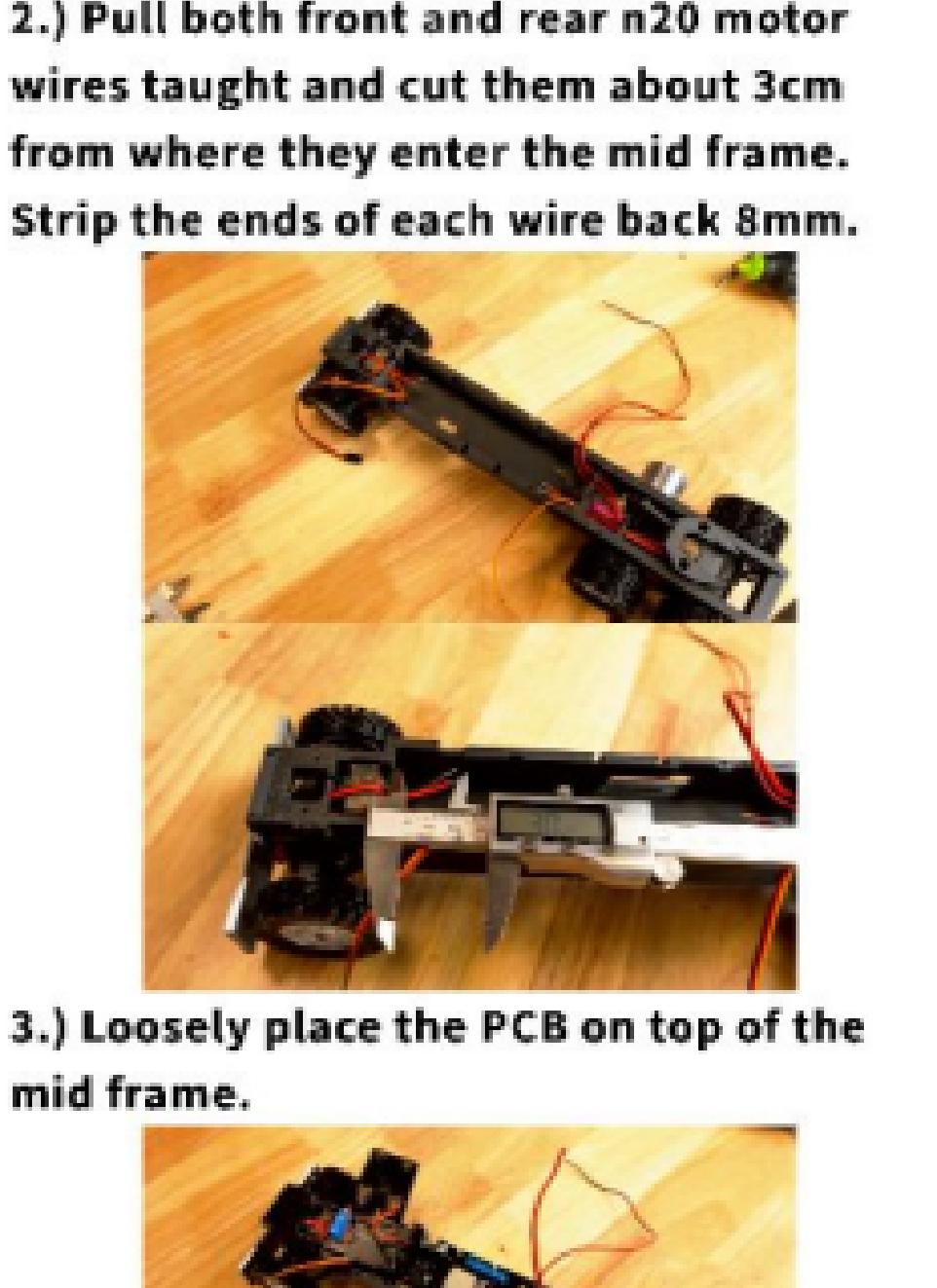


COMPLETE AND CONTINUE >

Downloading file...
See notification for download status

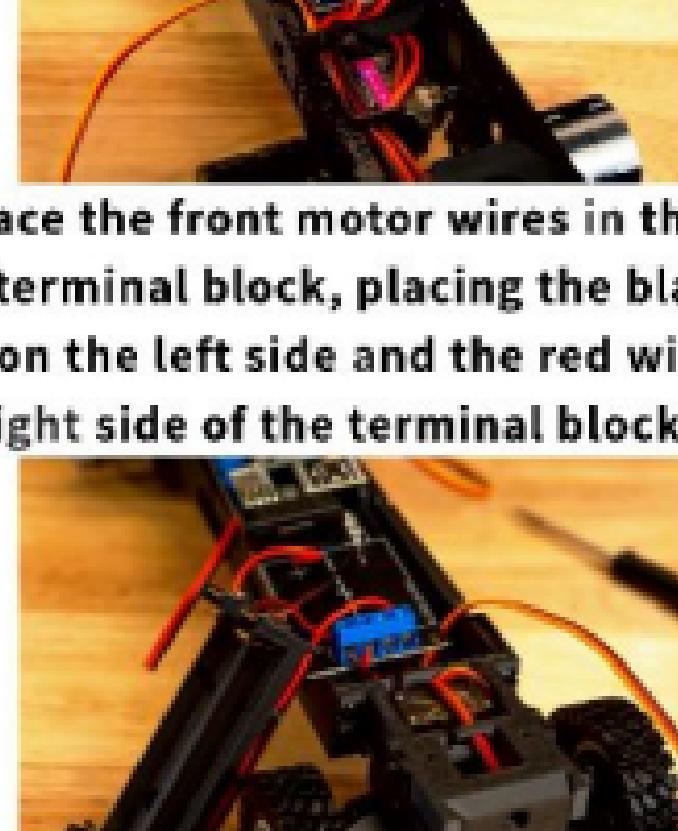
[Details](#)

1.) Routing Motor wires & Testing



STEPS

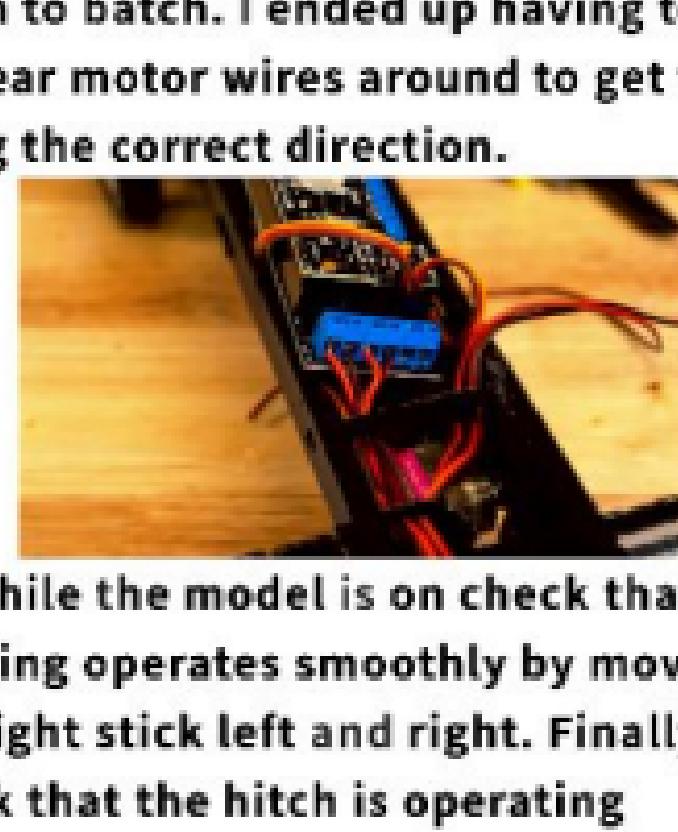
1.) Route the front motor wires through the front frame and into the middle frame as shown.



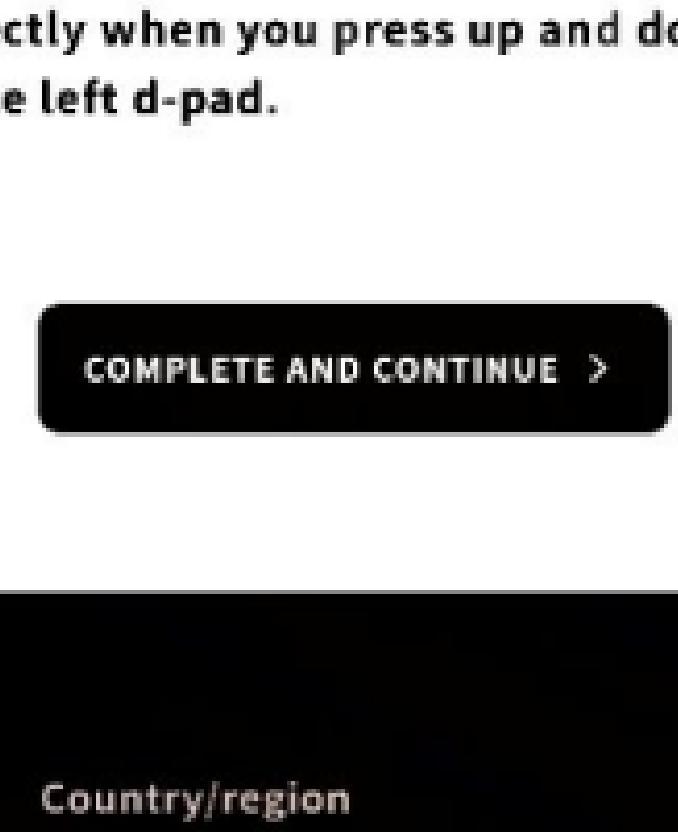
2.) Pull both front and rear n20 motor wires taught and cut them about 3cm from where they enter the mid frame. Strip the ends of each wire back 8mm.



3.) Loosely place the PCB on top of the mid frame.



4.) Place the front most rear axle n20 motor wires into the terminal block "R-MTR-1" route the black wire into the left side of the block and the red wire into the right side of the block. Repeat for the remaining rear axle n20 motor and terminal block "R-MTR-2".



[COMPLETE AND CONTINUE >](#)

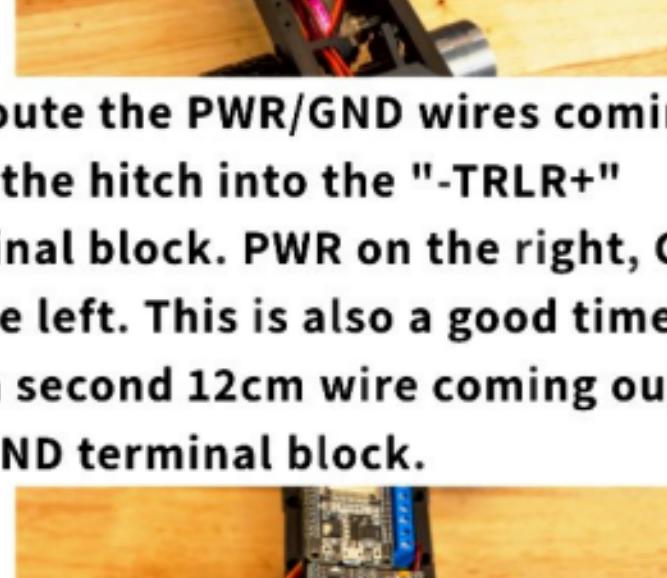
Country/region



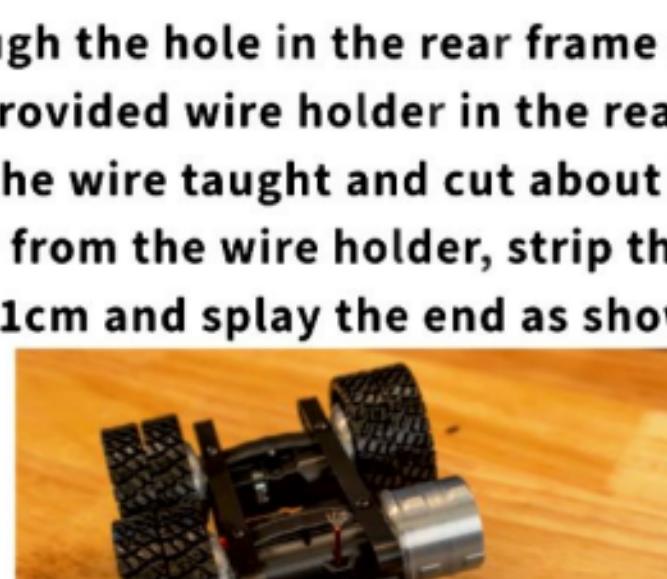
2.) RX & TX Wires

STEPS

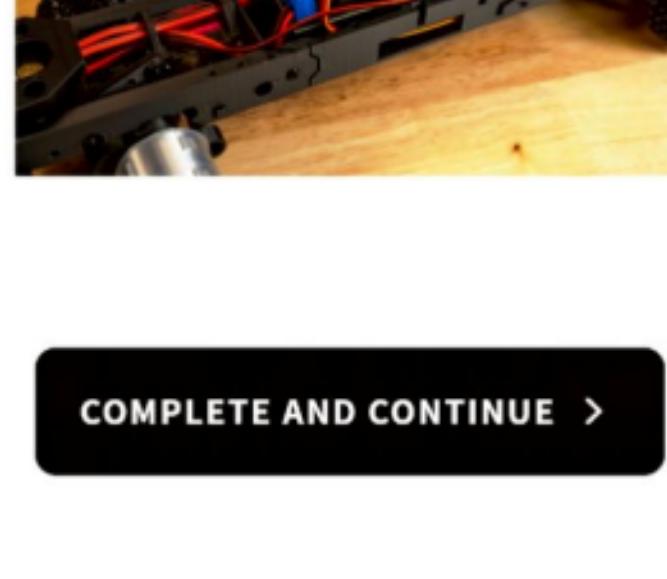
1.) Pull the PWR/GND wires taught and cut them 3cm in from where they enter the frame, strip the end back 8mm.



2.) Pull the TX/RX wire taught and cut it 9cm in from where it enters the frame, strip the end back 8mm.



3.) Route the PWR/GND wires coming from the hitch into the "-TRLR+" terminal block. PWR on the right, GND on the left. This is also a good time to add a second 12cm wire coming out of the GND terminal block.



4.) Route the second 12cm wire down through the hole in the rear frame and the provided wire holder in the rear axle. pull the wire taught and cut about 3cm away from the wire holder, strip the end back 1cm and splay the end as shown.

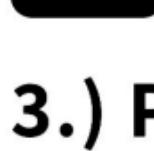
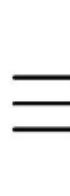


[COMPLETE AND CONTINUE >](#)

Country/region

USD \$ | United States





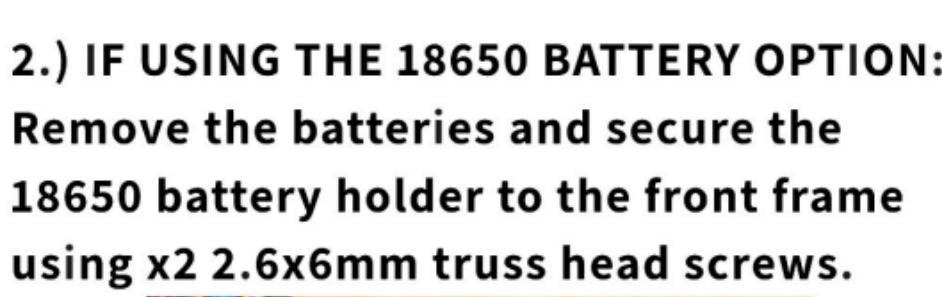
3.) PCB Placement and 18650 Holder

Parts Required

- x2 2.6x8mm Truss Head Screws

STEPS

1.) Taking care to not pinch any wires, slide the PCB into place by angling it and sliding it in front to back. The PWR switch should pop down through the bottom of the mid frame.



2.) IF USING THE 18650 BATTERY OPTION:
Remove the batteries and secure the 18650 battery holder to the front frame using x2 2.6x6mm truss head screws.



3.) Re-mount the rear tires.



[COMPLETE AND CONTINUE >](#)



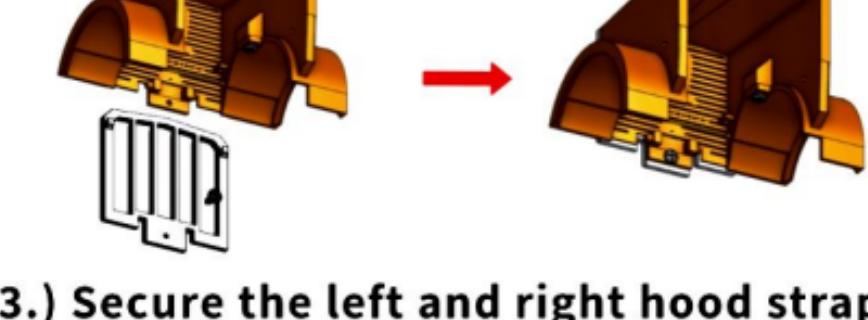
1.) Hood

Parts Required

- x5 2.6x8mm Truss Head Screws
- x1 3D Printed Hood
- x1 3D Printed Fender - Left
- x1 3D Printed Fender - Right
- x1 3D Printed Grille
- x1 3D printed Hood Strap - Left
- x1 3D Printed Hood Strap - Right

STEPS

1.) Secure the left and right fenders to the hood using a 2.6x8mm truss head screw on each side.



2.) Press the front grille onto the hood then slide up so the tabs lock in place. Secure together using a 2.6x6mm truss head screw.



3.) Secure the left and right hood strap to the hood using 2.6x8mm truss head screws.

[COMPLETE AND CONTINUE >](#)

Country/region

USD \$ | United States





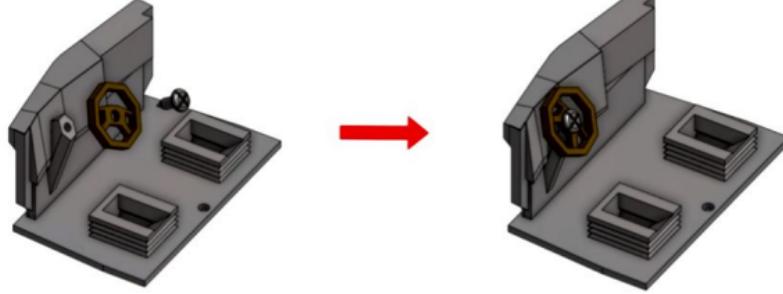
2.) Interior

Parts Required

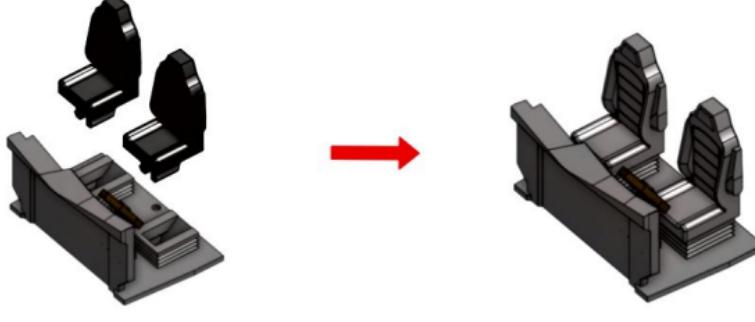
- x1 2.6x8mm Truss Head Screw
- x1 3D Printed Interior
- x2 3D Printed Seats
- x1 3D Printed Steering Wheel

STEPS

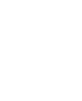
1.) Secure the steering wheel to the interior using a 2.6x8mm truss head screw.



2.) Press both seats down onto the interior.



COMPLETE AND CONTINUE >



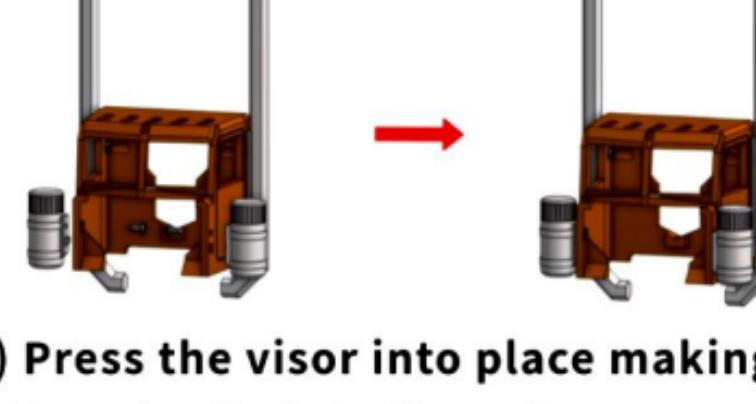
3.) Cab

Parts Required

- x4 2.6x8mm Truss Head Screws
- x1 3D Printed Stack - Left
- x1 3D Printed Stack - Right
- x2 3D Printed Air Cleaner
- x1 3D Printed Visor
- x5 3D Printed Cab Markers

STEPS

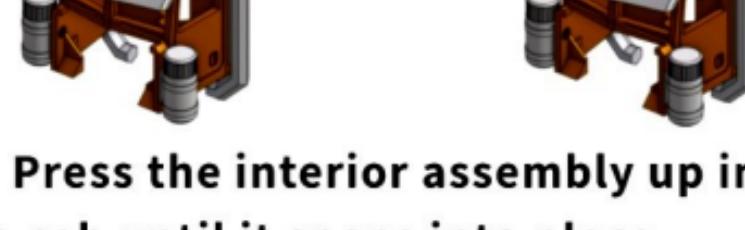
1.) Secure the left and right stacks to the cab using a 2.6x8mm truss head screw on each side.



2.) Secure an air cleaner to both sides of the cab using a 2.6x8mm truss head screw on each side.



3.) Press the visor into place making sure both ends clip into the cab.

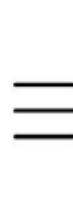


4.) Using a little hot glue, secure the 5 cab markers to the cab.



5.) Press the interior assembly up into the cab until it snaps into place.

COMPLETE AND CONTINUE >



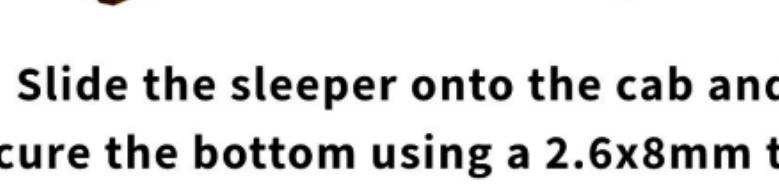
4.) Sleeper & Rear Fenders

Parts Required

- x3 2.6x8mm Truss Head Screws
- x1 3D Printed Sleeper
- x2 3D Printed Sleeper Bars
- x1 3D Printed Rear Fender - Left
- x1 3D Printed Rear Fender - Right

STEPS

1.) IGNORE IF THIS STEP AND THE NEXT IF YOU'RE BUILDING A DAY CAB: Hot glue a sleeper bar onto each side of the sleeper.



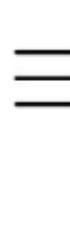
2.) Slide the sleeper onto the cab and secure the bottom using a 2.6x8mm truss head screw.



3.) Secure the left and right rear fenders to the frame using a 2.6x8mm truss head screw on each side.



[COMPLETE AND CONTINUE >](#)



5.) Frame Mounted Parts

Parts Required

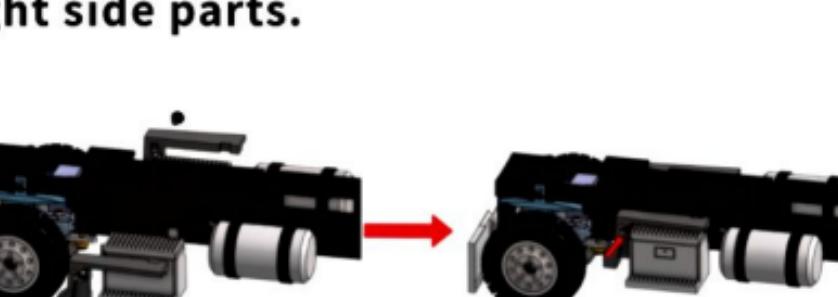
- x6 2.6x8mm Truss Head Screws
- x4 3D Printed Fuel Tank Straps
- x2 3D Printed Fuel Tanks
- x1 3D Printed Step - Left
- x1 3D Printed Side Skirt - Left
- x1 3D Printed Step - Right
- x1 3D Printed Side Skirt - Left

STEPS

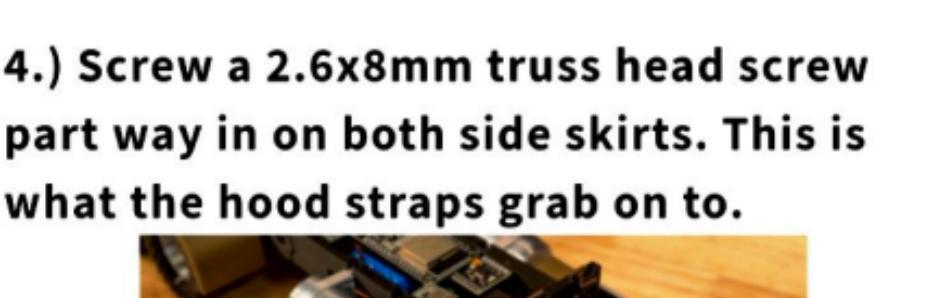
1.) Slide the fuel tanks into 2 fuel tank straps each.



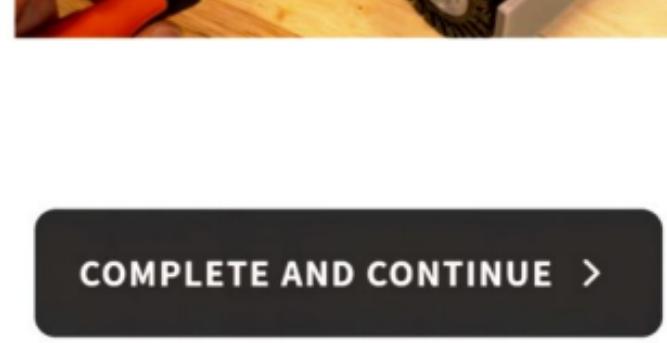
2.) Slide the fuel tank assemblies down into the frame.



3.) Sandwich the step - left with the side skirt - left and mount to the frame using a 2.6x8mm truss head screw. Take a second 2.6x8mm truss head screw and thread it into the side skirt. This is what the hood strap will latch to. Repeat for right side parts.



4.) Screw a 2.6x8mm truss head screw part way in on both side skirts. This is what the hood straps grab on to.



[COMPLETE AND CONTINUE >](#)



1.) Placing Cab and Hood On

STEPS

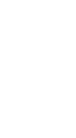
1.) Angle the front of the cab down into the cutouts in the frame. Push it fully forward, then press the rear of the cab down until the stacks clip into the frame.



2.) Sit the hood pivot points into the bumper bracket then swing the hood down onto the cab and secure the hood straps to the side skirts.



COMPLETE AND CONTINUE >



1.) Hood

Parts Required

- x2 5v White LEDs With Wires Attached.
- x4 Single Pin Female Connectors or x4 Single Pin Female Jumper Wires
- x4 pieces of small heat shrink

STEPS

1.) Route the LED wires through the hood headlight housings and through the wire holders on the inside of the hood.



2.) Route the wires under the 18650 Battery holder and out to the middle frame.



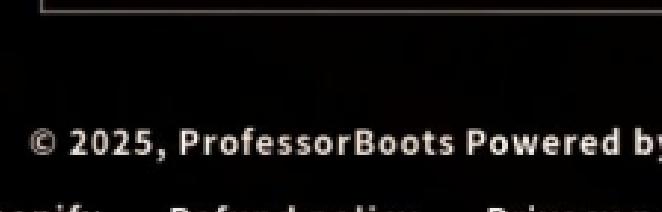
3.) Slide x4 pieces of heat shrink onto the light wires.



4.) Either extend the wires and crimp on a single pin female connector or cut one end off x4 jumper wires and solder onto the light wires. Shrink the heat shrink around each connection.



5.) Place the positive wire coming from the driver side LED onto L2 and the passenger side LED to L1. The 2 GND wires can go to any of the 5 available GND pins.



COMPLETE AND CONTINUE >

Country/region

USD \$ | United States

< >

© 2025, ProfessorBoots Powered by

Shopify

· Refund policy

· Privacy policy



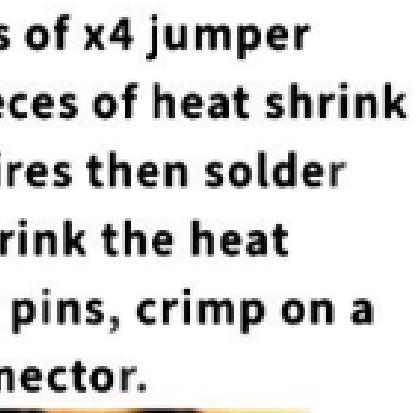
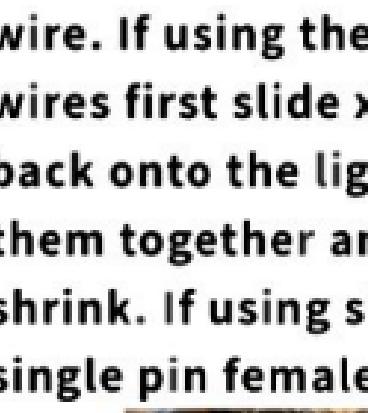
2.) Rear Fenders

Parts Required

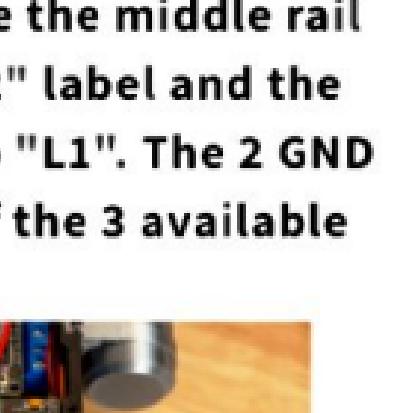
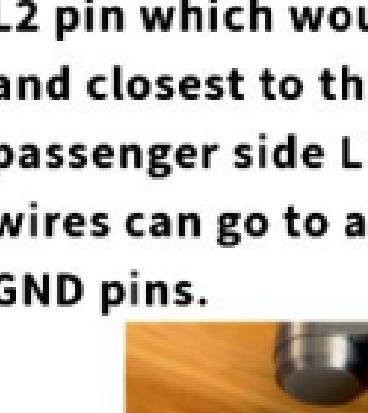
- x2 5v RED LEDs(or white LEDs with red sharpie on them) With Wires Attached.
- x4 Single Pin Female Connectors or x4 Single Pin Female Jumper Wires
- x4 pieces of small heat shrink

STEPS

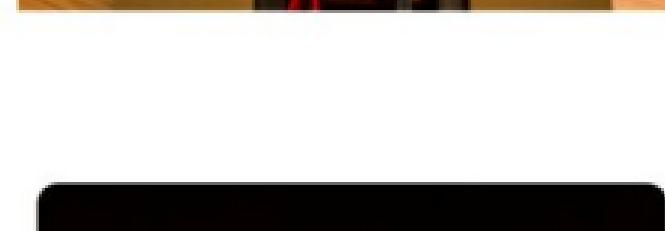
1.) Remove the rear fenders and route the LED wires through the rear tail light housing.



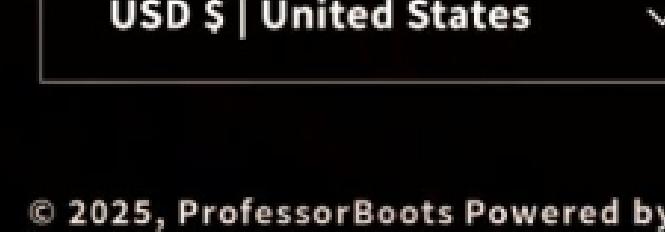
2.) Remove the 2 rear leaf springs screws and route the LED wires through the rear frame.



3.) Route the wires into the middle frame.



4.) These wires don't need to be extended in fact you might cut them shorter so there isn't as much excess wire. If using the ends of x4 jumper wires first slide x4 pieces of heat shrink back onto the light wires then solder them together and shrink the heat shrink. If using single pins, crimp on a single pin female connector.



COMPLETE AND CONTINUE >

Country/region

USD \$ | United States

▼

© 2025, ProfessorBoots Powered by

Shopify

· Refund policy

· Privacy policy

· Terms of service

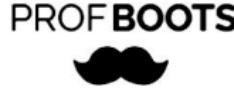
· Shipping policy



Downloading file...

See notification for download status

Details



3.) Testing



STEPS

- 1.) Power ON the RC semi and connect it to your controller.
- 2.) Press the right joystick like a button to cycle through the different light modes. Which are and in the order of the following. "ON, Blinker mode, Hazards, OFF" every time you cycle through LT3 will turn on or off. So if you have marker lights hooked up this will show. I don't have marker lights hooked up.

[COMPLETE AND CONTINUE >](#)



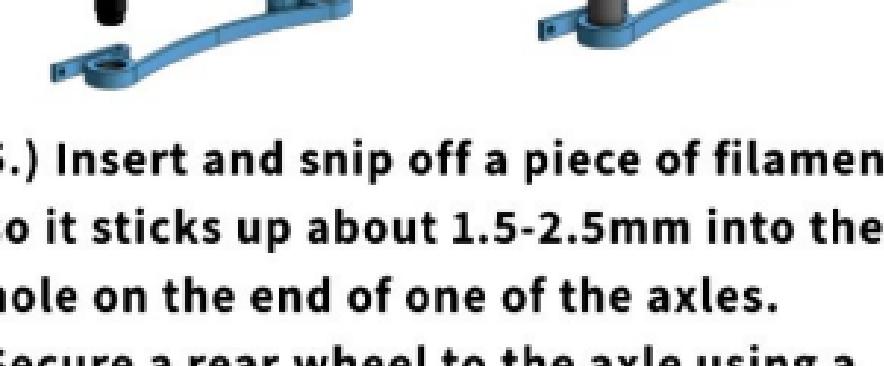
1.) Frame & Axles

Parts Required

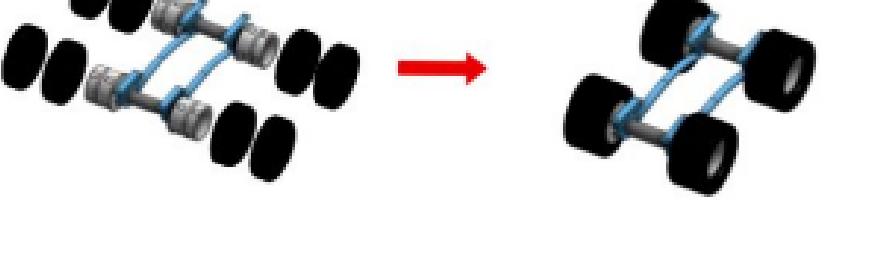
- x12-infinity 2.6x8mm Truss Head Screws
- x1 3D Printed Front Frame
- x1-Infinity 3D Printed Mid Frame
- x1 3D Printed Rear Frame
- x4 TRB RC 10x15x4 bearings
- x2 3D Printed Trailer Axles
- x2 3D Printed Trailer Leaf Springs
- x4 3D Printed Rear Wheels
- x8 3D Printed TPU Rear Tires

STEPS

1.) Lock however many middle piece frames together using 2.6x8mm truss head screws. The number depends on the overall trailer length you want.



2.) Secure a front and rear frame to the ends of your middle frames using x4 2.6x8mm truss head screws.



3.) Tap 4 bearings into the 2 trailer leaf springs.



4.) Lay one leaf spring bearing side down on the table then tap 2 trailer axles into place. Finish by tapping the other leaf spring bearing side up down onto the trailer axles.

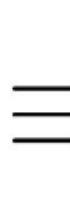


[COMPLETE AND CONTINUE >](#)

Country/region

USD \$ | United States

© 2025, ProfessorBoots Powered by



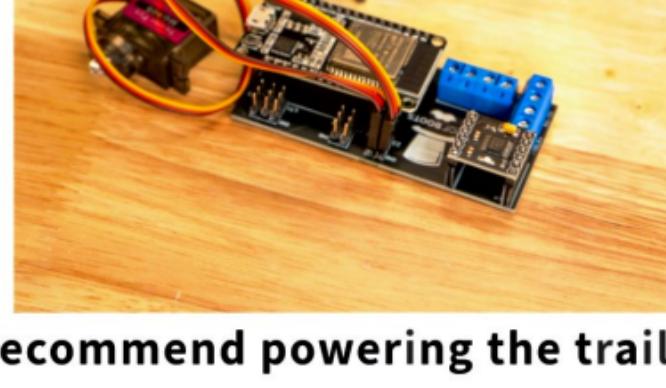
2.) Servo Configuration

Parts Required

- x2 MG90S Servos

STEPS

1.) Place both servo leads on pinsets "23" and "22" of the trailer PCB. Orient the orange wire side of the servo lead on the same side as the "23" and "22" labels.

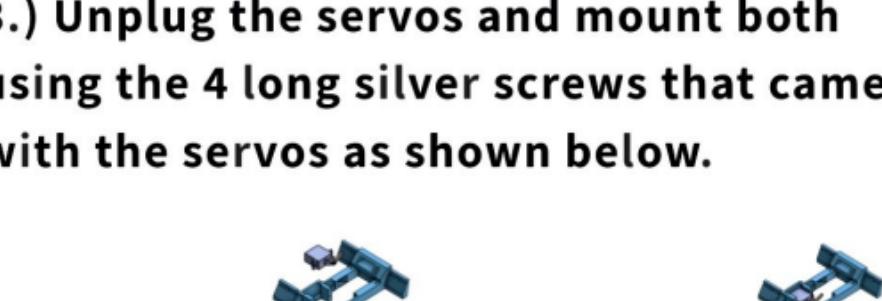


2.) I recommend powering the trailer PCB on by briefly plugging the esp32 in via micro usb. You should hear both servos initiate to their startup position.

Place both servo horns on at the same orientation shown below. Lock in place with the small silver screws that came with the servos.



3.) Unplug the servos and mount both using the 4 long silver screws that came with the servos as shown below.



COMPLETE AND CONTINUE >

professorboots.com +



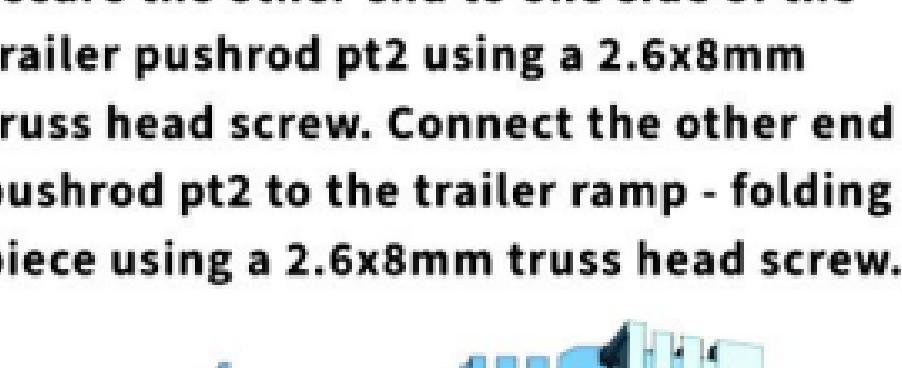
3.) Legs & Ramp

Parts Required

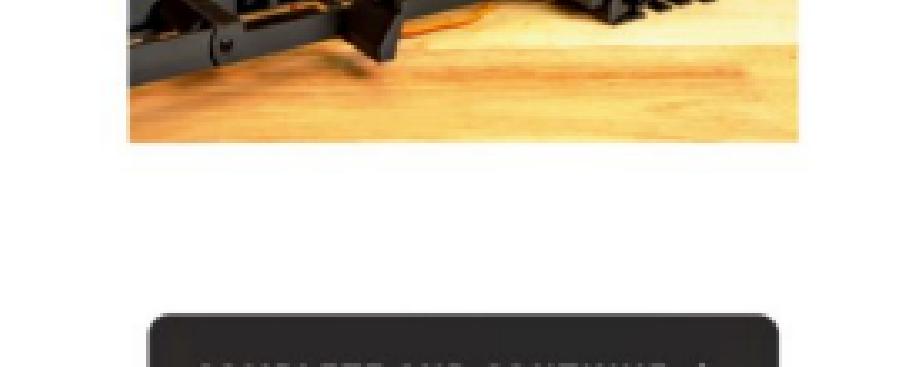
- x13 2.6x8mm Truss Head Screws
- x4 2.6x6mm Truss Head Screws
- x1 3D Printed Trailer Leg Stand
- x2 3D Printed Trailer Legs
- x1 3D Printed Trailer Leg Pushrod
- x1 3D Printed Trailer Ramp
- x1 3D Printed Trailer Ramp Folding
- x1 3D Printed Trailer Ramp Pushrod pt1
- x1 3D Printed Trailer Ramp Pushrod pt2
- x4 3D Printed TPU Trailer Mud Flaps

Steps

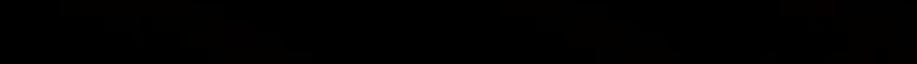
1.) Secure x2 trailer legs to the trailer leg stand using x2 2.6x8mm truss head screws. Mount the assembly to the front frame using x2 2.6x8mm truss head screws.



2.) Secure one of the trailer leg pushrod to the trailer leg stand and the other end to the 4th hole from the end of the servo horn using x2 2.6x8mm truss head screws (If you have the smaller 2x6mm panhead screws, this is a good spot to use them on the servo horn).



3.) Mount the trailer ramp to the rear frame using x2 2.6x8mm truss head screws. Secure the trailer ramp - folding piece to the trailer ramp using x2 2.6x8mm truss head screws.



4.) Place one end of the trailer pushrod pt1 onto the 2nd hole from the end of the servo horn using a 2.6x8mm truss head screw (If you have the smaller 2x6mm panhead screws, this is a good spot to use them on the servo horn). Then secure the other end to one side of the trailer pushrod pt2 using a 2.6x8mm truss head screw. Connect the other end pushrod pt2 to the trailer ramp - folding piece using a 2.6x8mm truss head screw.

COMPLETE AND CONTINUE >

Country/region

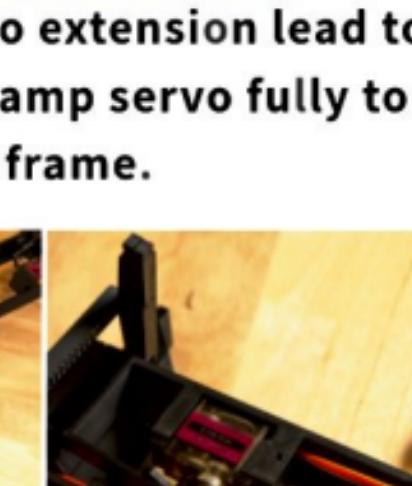
USD \$ | United States



4.) Wiring

Steps

1.) Insert the trailer magnet wires into the front frame. Place a dab of hot glue on either side of the inner lip on the front frame. Press the magnet into place.



2.) Route the magnet wires through the front frame and out to the middle frame.



3.) Use a 10-15cm servo extension lead to route the rear trailer ramp servo fully to the front most middle frame.



4.) Press the trailer PCB into place on the middle frame.



5.) Route the PWR and GND wires into the "-TRLR+" terminal block. PWR goes on the right side.



6.) Place the trailer leg servo lead onto pin set "23". Then the ramp servo lead onto pin set "22".



COMPLETE AND CONTINUE >



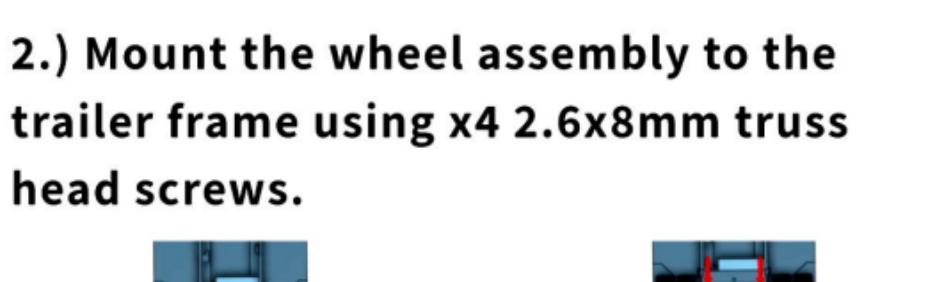
5.) Deck and Wheel Assembly

Parts Required

- x1 Trailer Deck - Rear
- x1-infinity Trailer Deck - Middle
- x1 Trailer Deck - Front
- x1 Wheel Assembly

Steps

1.) Mount the trailer deck - rear, middle and front pieces to the trailer frame using 2.6x8mm truss head screws.



2.) Mount the wheel assembly to the trailer frame using x4 2.6x8mm truss head screws.



[COMPLETE AND CONTINUE >](#)

Country/region

USD \$ | United States





6.) Lights

Parts Required

- x2 Red LEDs "or White LEDs with red sharpie."

STEPS

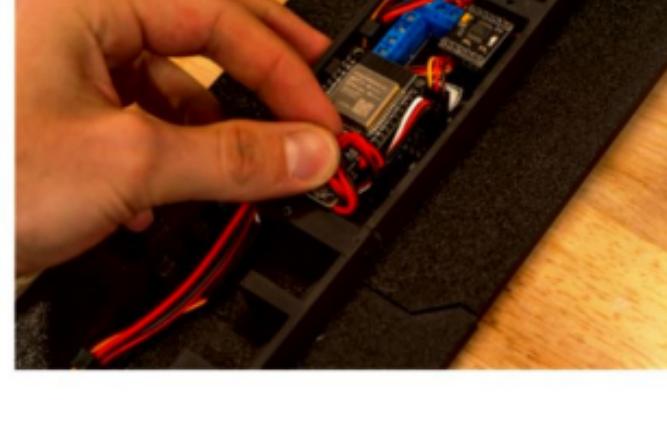
1.) Route the LED wires through the "trailer ramp - folding".



2.) Route the wires through the "trailer ramp" piece and into the rear frame.



3.) Extend your wires to reach the trailer PCB and route down the length of the frame.



4.) Solder your preference of either female jumper wires with the end cut off or a single female pin connector onto the x4 wires. Plug the positive passenger side LED wire into "LT1", and right side LED into "LT2". GND wires can go to any available pins on the GND rail.

[COMPLETE AND CONTINUE >](#)

Country/region

USD \$ | United States

▼



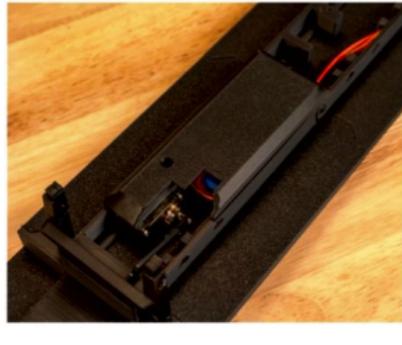
2.) Finishing Touches

Parts Required

- x6 2.6x8mm Truss Head Screws
- x1 3D Printed Electronics Cover on Sleeper/Day Cab
- x1 3D Printed Trailer Electronics Cover

STEPS

1.) Secure the electronics cover to both the truck frame and trailer frame using a total of x6 2.6x8mm truss head screws.



[COMPLETE AND CONTINUE >](#)