Ride & Rock - DIY Bike Stereo System with 20W Speaker
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If you're looking for a way to geek out your ride, you can 3d print yourself this sweet bass-thumpin speaker upgrade!

**Parts:**
- 20W Speakers (http://adafru.it/1732)
- MAX9744 Class D Amp (http://adafru.it/1752)
- 8 x AA battery holder (http://adafru.it/875)
- 1k Potentiometer (https://adafru.it/dfV)

**Tools & Supplies**
- 3D Printer (https://adafruit.it/d9z)
- Soldering Iron (https://adafruit.it/dgJ)
- 30AWG Wire Wrap (https://adafruit.it/dgM)
- NinjaFlex (http://adafruit.it/1690)
- Male/Female Jumpers (http://adafruit.it/825)
- Flat Phillips Screws with Nuts #6-32 x 1/2 in
These mounting parts were designed for a beach cruiser style bicycle. You can modify the parts with Autodesk 123D Design to fit your ride with some minor adjustments.

https://adafruit.it/qKF
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too many pieces!

<table>
<thead>
<tr>
<th>PLA @230</th>
<th>2 Shells</th>
<th>Infill %10</th>
<th>90/150 Speeds</th>
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Analog Control

In this project, we'll use analog control since it's the easiest way to get going with the amplifier board. By default, the amplifier breakout is in digital mode. To put it in analog mode we need to close the three solder jumpers labeled Analog, AD1 and AD2.
Adding Terminal Blocks
The terminal blocks will be used to connect the speaker to the audio output of the MAX9744. Follow the negative and positive symbols and insert them appropriately. Solder them in to place for a solid connection. We chose the RIGHT channel.

Adding Capacitor

Insert the capacitor with the longer lead going into the pad marked + Push it in all the way and bend the leads to keep it in place while you solder it in.
1K Potentiometer

Add pieces of shrink tuning to the wrapping wire for a safe and secure wire connection. Tin the three leads of the potentiometer to make the wrapping wire stick to the leads better. Solder the wrapping wire to the potentiometer. Position the pieces of shrink tubing over the terminal leads and use a heat source to shrink the tubing.
Volume Control

We're using a panel mount style potentiometer which is a bit bigger than the 1k pot that comes with the kit. Solder three strands of wrapping wire to the pin outs labeled Pot. Vol. Line up the leads of the pot with the pins to ensure turning it to the right will encase the values. Solder the far right lead of the pot to Pot. Vol. pin 3

Adding Speakers
Since the amplifier can pump 20 watts of power, you should use some equally capable speakers (https://adafruit.it/dfK). The positive and negative connections of the speakers should align up with the terminal blocks on the side. Use a small screwdriver to loosen and tighten the screws of the terminal.

In this tutorial project we’re only using one speaker, which is just fine and nothing needs to be done to put the speaker in ‘mono’ mode, it’ll just play out of one speaker only. You can also connect two speakers for 2 x the noise!

To ensure a secure connection, gently yank on each wire after clamping it into the terminal block, it should be a solid connection, not possible to yank out of place. Loose wires will be a problem!
Assembly

Amp Enclosure

Start by setting the 1k potentiometer into the `amp-box.stl` part with the knob facing the outside. Mount the pot with the washer and screws.

Insert the `amp-connector.stl` part to the `amp-box-cover.stl` part with the cutouts lined up. The connector clip should protrude out facing the printed side of the `amp-box-cover.stl` part.
Place the MAX9744 amplifier into the amp-box-cover.stl part with the mounting holes lined up. Position the amp-box.stl part on top of the MAX9744, snapping to the amp-box-cover.stl part with the cutouts aligned up to the ports on the board.
Use 4 Philips screws to mount the `amp-box-cover.stl` and `amp-box.stl` together, the screws should fasten the MAX9744 to both parts. Use one hand to press the three parts together while you tighten the Philips screws.

Firmly slide the `amp-clamp.stl` part into the clip of the `amp-connector.stl` part so both pieces are flush with each other.

Align up the bottom of `amp-knob.stl` part and with the 1k potentiometer so it slides in and press it down.
Position the amp box with the power port facing the right side, and the headphone jack facing the front of the bike.

Clip the fully assembled amp enclosure to the bike frame. Insert a phillips screw through the hole in both tabs and secure it with the nut. If the clamps doesn't quite match up with the radius of your bike frame, you will need to edit the model.

**Speaker Box**
Hook up the wires first and then place the 20w speaker inside the `speaker-bottom.stl` part with the mounting tabs aligned up. Fasten 4 Philips screws to the holes and add a nut to secure it into place.
Align up the **speaker-bracket.stl** part to basket mounting bracket located in the front of the handle bars. Use 2 Phillips screws and nut to secure the **speaker-bracket.stl** part to the basket mounting bracket.
Thread the speaker wires through the `speaker-cap.stl` part. Make sure to have a good connect with the jumper wires to the speaker's left and right terminals. Snap the `speaker-cap.stl` part into the `speaker-bottom.stl` part.

Attach `speaker-bracket.stl` to the front basket mount with two phillips screws and nuts.

Power
Insert the phone-battery-connector.stl part into the battery-clip.stl part with the cut outs lined up. Connect the battery-clamp.stl part to the phone-battery-connector.stl part. Fit the 8 X AA Batter pack to the battery-clip.stl with the cable facing closest to the amp box. Use a phillips screw and nut to secure the battery-clamp.stl part to the top frame of the bike.

Phone Clip

Insert the phone-battery-connector.stl part into the phone-clip.stl part with the cut outs lined up. Connect the phone-clamp.stl part to the phone-battery-connector.stl part. Use a phillips screw and nut to secure the phone-clamp.stl part to the handle bars. Fit your Phone to the phone-clip.stl part with the cables facing closest to the amp box.
Ensure all the screws are tightly fastened. The parts should not interfere with any parts of the bike frame when turning the wheeling.

Plug in the power connector to the amplifier and turn on the switch. Use a 3mm stereo audio cable (http://adafruit.it/876) to connect the MAX9744 amplifier to your audio device. Turn up the volume by turning the potentiometer and play your tunes while you cruise in style!