



Universal Handlebar Phone Mount V2



Arash

[VIEW IN BROWSER](#)

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Summary

This is a fully adjustable universal handlebar phone mount using a ball and socket joint.



8.26 hrs



8 pcs



0.15 mm



0.40 mm



PLA



65 g



Prusa
MK3S/+ &
MMU2S/3

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Overview

This is a fully adjustable phone mount using a ball and socket joint compatible with any type of filament requiring minimal support material aimed to be printed with any FDM 3D printer.

This mount is designed to be compatible with vertically mounted phones with a width of 5.72 cm (2 1/4") up to 10.8 cm (4 1/4"). This includes the smallest phones such as iPhone 13 mini to the largest phones such as Samsung Galaxy S22 Ultra with a case.

The mount can be attached to a cylindrical bar with a diameter of 0.8" to 1 1/4" which can be found on bikes, scooters, motorcycles, snowmobiles, jet skis, ATVs, etc. using two #6 or #8 or M4 bolts and nuts.

A zip tie or thread can tie the Main Holder part to the handlebar using the hole on the side. This hole was added as a safety net to prevent the phone from getting damaged in an event of a failure.

Based on your application, you may have to increase the infill and perimeters (walls). For example, if you are going to use this on a city bike you should be fine with the current settings. But, if you are going to use this on a jet ski or mountain biking, you should consider strengthening the parts, especially the ball part.

Updates:

2022-07-17

Based on the feedback received, I have decided to redesign the parts to make them more durable. Major improvements are the larger cross-sectional area and the removed neck area of the Ball part. The Joint Nut, C Clamp, and Socket Joint were also scaled up to match the Ball. Minor improvements include removing the fillets that made contact with the base plate of the printer and increasing draft angles to 60° to improve the print quality. The Joint Nut fillet's radii were also decreased to increase the grip and aid in fastening.

Print Settings

Supports: Only for Socket, C Clamp, and Main Holder

Support overhang angle: 70° (20° overhang threshold)

Resolution: 0.15

Infill: 30% (60% for Ball part)

Infill pattern: Cubic Subdivision / Adaptive Cubic

Number of Perimeters (Walls): 3 (6 for the Ball part)

Filament: PETG, PLA, ABS, or ASA

Notes:

I recommend using PETG over ABS and ASA since it has a higher strength. If you are planning on using this mount on a jetski, ATV, snowmobile, motorcycle, or mountain bike, I would highly recommend printing the Ball part out of PLA, due to its high strength compared to all other common filaments. Additionally, I recommend tying the Main Mount to the handlebar using a zip tie, or an equivalent, via the hole located at the side of the part.

Supports are only required for the Socket, C Clamp, and Main Holder parts with a 70° support overhang (20° overhang threshold) angle. The most optimal orientation for each part is shown in one of the images above.

Post-Printing

Remove the support from the Socket, C Clamp, and Main Holder parts. The main holder will be the most challenging one to clear. At first, the thread will seem a little tight, attempt to fully tighten and loosen the two 3D printed fasteners a few times. This process will essentially sand the threads and make them smoother. You may need to adjust the scale of some parts to get a better fit based on the accuracy of the 3D printer and filament.

Assembly

Attach the mount to the handlebar using two fasteners, we recommend using #6 or #8 bolts and nuts.

The angle of the mount is adjustable through the ball and socket joint by loosening the joint nut. Once the position of the mount is optimal, tighten the joint nut to hold it in position.

Insert the phone into the mount between the two claws and then tighten the nut to hold the phone in position.

Warning

There is currently no solution implemented to counteract the loosening effect due to vibrations nor has there been an incident reported. I highly recommend refastening the nuts before every use. Take advantage of the safety-net feature explained previously. Lastly use a decent phone case in

an event of a failure. If you face any issues and or have design improvements, please comment below.

3D Model Files

Since this platform does not allow me to upload the original SolidWorks files, I have uploaded them to GrabCAD. If you are looking to modify the file you can download them [here](#). You can also use the STEP files that are uploaded here.

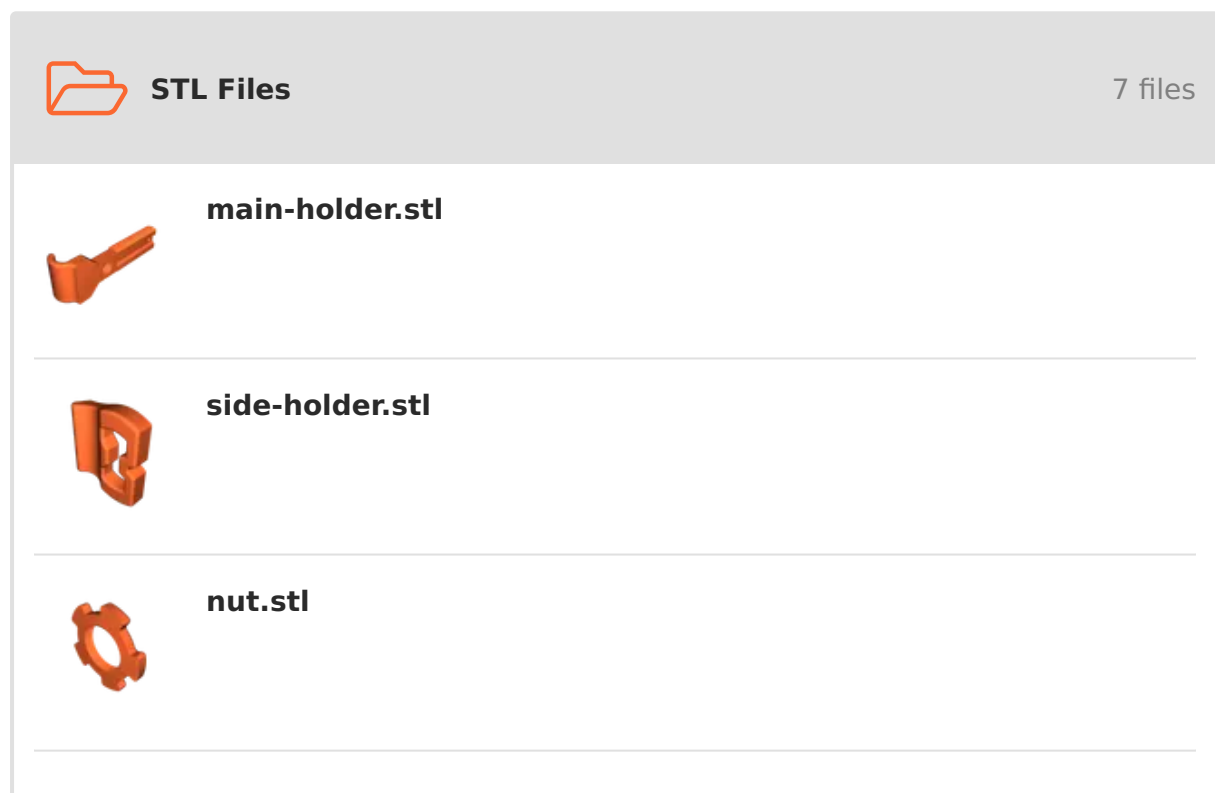
How I Designed This

I was leading a project at work where I have tasked with designing a 3D printable mount for a motorcycle that integrates a board that we sell that would allow the consumer to charge their phone while riding the bike. You can read the series of articles about the origin of this project [here](#).

If you are interested in my designing process, I wrote an article about the process that I take when it comes to designing products using 3D printers [here](#).

The idea came from [here](#) but all the parts were designed from scratch by myself within SolidWorks.

Model files





c-clamp.stl



socket.stl



ball.stl



joint-nut.stl



STEP Files

7 files



ball.step



joint-nut.step



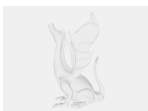
nut.step



socket.step



c-clamp.step



side-holder.step



main-holder.step



print-settings.3mf

Print files



Untitled Folder

8 files



all-in-one_015mm_pla_mk3s_7h40m.gcode

PLA 0.40 mm 0.15 mm 7.67 hrs 66 g Prusa MK3/S/S+



c-clamp_015mm_pla_mk3s_53m.gcode

PLA 0.40 mm 0.15 mm 0.88 hrs 7 g Prusa MK3/S/S+



socket_015mm_pla_mk3s_1h15m.gcode

PLA 0.40 mm 0.15 mm 1.25 hrs 9 g Prusa MK3/S/S+



nut_015mm_pla_mk3s_34m.gcode

PLA 0.40 mm 0.15 mm 0.56 hrs 5 g Prusa MK3/S/S+



main-holder_015mm_pla_mk3s_3h1m.gcode

PLA 0.40 mm 0.15 mm 3.01 hrs 28 g Prusa MK3/S/S+

joint-nut_015mm_pla_mk3s_53m.gcode



PLA 0.40 mm 0.15 mm 0.88 hrs 5 g Prusa MK3/S/S+

ball_015mm_pla_mk3s_1h3m.gcode



PLA 0.40 mm 0.15 mm 1.04 hrs 5 g Prusa MK3/S/S+

side-holder_015mm_pla_mk3s_39m.gcode



PLA 0.40 mm 0.15 mm 0.64 hrs 6 g Prusa MK3/S/S+

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