



Camera Tripod Bolt Collection UNC 1/4-20



Leon Matthews

[VIEW IN BROWSER](#)

updated 25. 5. 2023 | published 25. 5. 2023

Summary

Collection of ready-to-print bolts and nuts to fit cameras and tripods, with example code to create your own.



0.18 hrs



1 pcs



0.20 mm



0.60 mm



PLA



1 g



Prusa MINI /
MINI+

[Hobby & Makers](#) > [Mechanical Parts](#)

Tags:

[cameramount](#)

[openscad](#)

[tripod](#)

[bolt](#)

[tripodscrew](#)

[bosl2](#)

[python](#)

Cameras are attached to **tripods and such** using bolts in the American **Unified Thread Standard**, specifically UNC 1/4-20. Historically, the more colourfully named British Standard Whitworth thread was used, but market forces in my grandparents time decided that particular standards battle fought over the Atlantic.

Meanwhile, I'm in the middle of the Pacific Ocean here in New Zealand where we don't use either, and I'm working on a camera slider project. I

didn't want to get distracted and learn a cool new library (honest!), but I had to. This collection is for the next person in my situation.

Can we all switch to M6 bolts for camera mounts now please?

Allen Head Bolts

Suits 3/16" hex driver. Lengths from 1/4" to 4" included.

Hex Head Bolts

Suits 7/16" spanner. Lengths from 1/4" to 4" included.

Nuts

Hex and square nuts provided, each with three levels of tolerance. I found 0.1mm to be a good fit using on my Prusa Mini+ in PLA+.

Printing

I printed a whole bunch aligned head down using a 0.6mm nozzle and 0.2mm layer heights in PLA+. The bolts all screwed firmly into cameras, and the nuts onto tripods. I wouldn't use these to hold an SLR camera, but they were great for use while prototyping. You might need to add a brim for bolt lengths longer than about 2".

Create your own with OpenSCAD & BOSL2

BOSL2 is an incredible library, adding to the already powerful **OpenSCAD**. They are a powerful combination, covering far more ground than simple bolts. That said, here is how I created these models. Go crazy creating your own variations. A UTS UNC 1/4-20 thread with an M6 button hex head? Why not?

```
include <BOSL2/std.scad> include <BOSL2/screws.scad> $fn = 32; size = "1/4-20,1 1/4"; // Length after comma // Hex bolt screw(size, head="hex", thread="UNC", anchor=TOP, orient=BOTTOM); // Socket head screw(size, drive="hex", head="socket", thread="UNC", anchor=TOP, orient=BOTTOM); // Nut nut("1/4-20", shape="hex", $slop=0.1);
```

Installing BOSL2 is as simple as copying its folder into OpenSCAD's library folder. Detailed instructions, and full library documentation is available on the **BOSL2 Wiki**.

Automate OpenSCAD with Python

I created all of these model variations automatically using the attached Python script, which I've also included, just as an example of this approach. It runs OpenSCAD many times, each time overriding different variables in the script to create a total of 32 different STL files. Thanks to the OpenSCAD creators for giving their program such nice scripting support.

Model files

	Hex Head	16 files
	01-14-inch-hex.stl	
	02-38-inch-hex.stl	
	03-12-inch-hex.stl	
	04-58-inch-hex.stl	
	05-34-inch-hex.stl	
	06-78-inch-hex.stl	



07-1-inch-hex.stl



08-1-14-inch-hex.stl



09-1-38-inch-hex.stl



10-1-12-inch-hex.stl



11-1-34-inch-hex.stl



12-2-inch-hex.stl



13-2-12-inch-hex.stl



14-3-inch-hex.stl



15-3-12-inch-hex.stl



16-4-inch-hex.stl



Socket Head

16 files



01-14-inch-socket.stl



02-38-inch-socket.stl



03-12-inch-socket.stl



04-58-inch-socket.stl



05-34-inch-socket.stl



06-78-inch-socket.stl



07-1-inch-socket.stl



08-1-14-inch-socket.stl



09-1-38-inch-socket.stl



10-1-12-inch-socket.stl



11-1-34-inch-socket.stl



12-2-inch-socket.stl



13-2-12-inch-socket.stl



14-3-inch-socket.stl



15-3-12-inch-socket.stl



16-4-inch-socket.stl



Nuts

6 files



hex-nut-00-tolerance.stl



hex-nut-01-tolerance.stl



hex-nut-02-tolerance.stl



square-nut-00-tolerance.stl



square-nut-01-tolerance.stl



square-nut-02-tolerance.stl



camera-tripod-bolt.scad



automate-openscad.py

Print files



1-inch-hex_06n_02mm_pla_mini_11m.gcode

⚙️ PLA ⚙️ 0.60 mm ⚙️ 0.20 mm ⌚ 0.18 hrs ⚖️ 1 g 🖨️ Prusa MINI / MINI+

📄 Once inch bolt GCode for print estimate

License

This work is licensed under a
Creative Commons (4.0 International License)



Attribution-ShareAlike

- ✗ | Sharing without ATTRIBUTION
- ✓ | Remix Culture allowed
- ✓ | Commercial Use
- ✓ | Free Cultural Works
- ✓ | Meets Open Definition