



Retro Fresnel Spotlight + Tripod



Voorhees

[VIEW IN BROWSER](#)

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Summary

A small Fresnel spotlight to regulate the angle of light with a matching tripod, based on 1940s cinema spotlight designs

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I've been setting up a macrophotography and video station for some time where I can take shots in a controlled way, but the biggest difficulty I always come across is lighting. Almost always, in this type of photography, global and diffuse light is best, especially in extreme macro. But there are times when a global light is not interesting, for example in many product photos where you only want to illuminate the object or part of it, and leave the rest in the dark. For those moments there are gadgets such as snoots, which cut the light and concentrate it at a specific point, but with the problem that they are not adjustable, in addition to the fact that the cut of light they generate is not smooth at all and that is not always desirable. On the other hand, the Fresnel lens concentrates the light in the center and softens it towards the edges, achieving a very cinematic effect in your shots. It is the most used type of focus in the world of cinema for a reason.

Another advantage it has is that it can be regulated. By moving the Fresnel lens back and forth, you change the angle of the light beam coming out of focus, lighting only the parts of the scene that interest you.

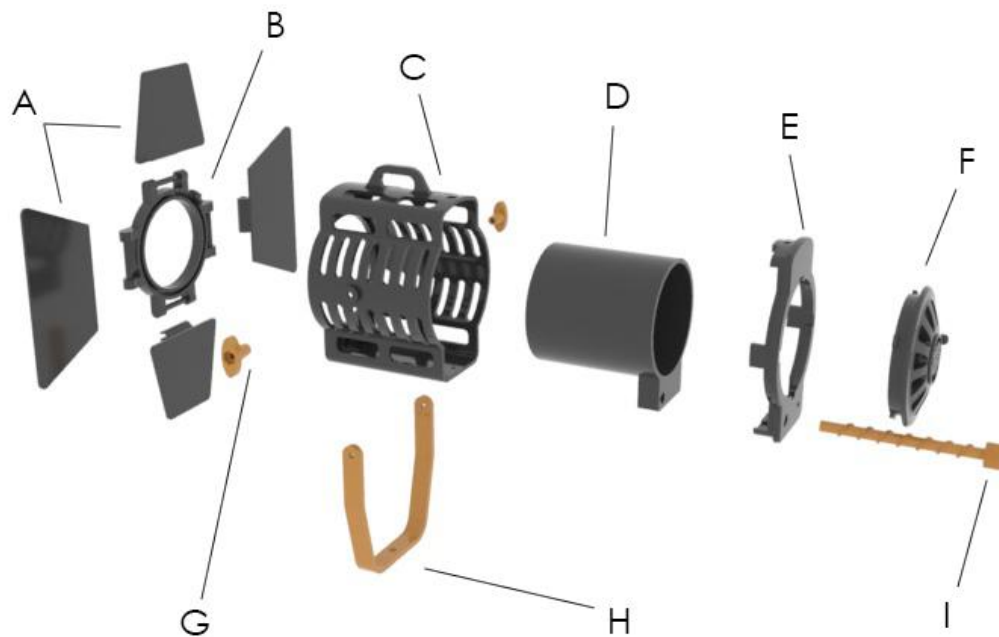
Now the thing was to find a fresnel focus small enough to generate a beam of light small enough to achieve that effect. The ones on the market are so large that no matter how much the angle of light decreases, the minimum always illuminates a small scene completely. And that's why I decided to make one, which in addition to meeting my expectations in terms of size, was easy to change the bulb to be able to choose its power and quality. I finally opted for the gu10 system because it is very common in home lighting. I just have to choose a bulb of the wattage I want and with a high CRI to get the best image quality.

Since Fresnel spotlights are a classic in the world of cinema, I based my project on a model of the Arri brand from the 1940s. Which has a spindle as a system for regulating the light beam. This spotlight has barn doors on the front to further cut the light from the part of the scene that don't needs to be lit.

To complete the design, I placed it on a tripod that would not clash with the design of the focus, so the tripod is also based on old wooden tripods. With which you can adjust the height from 16 to 23 cm.

ASSAMBLE INSTRUCTIONS:

1. SPOTLIGHT PRINTED PIECES:



A - BARN DOORS	F - REAR HATCH
B - FRONTAL RING	G - TILT LOCK KNOBS (2 units)
C - HOUSING	H - U BRACKET
D - LENS TUBE	I - SPINDLE
E - BACK COVER	

2. SPOTLIGHT NON PRINTED PIECES:

- Fresnel Lens 50mm FFL 40mm (https://a.aliexpress.com/_mLfbfIC)
- GU10 Lamp (<https://www.leonleds.com/es/bombilla-led-gu10-regulable-62w-36-master->)
- Gu10 Lamp Holder + 2x Screws (https://a.aliexpress.com/_mPiI72E)
- Cable (I used an old speakers cable I had)
- 1x Threaded Insert M2 x 3'5 x 4mm (https://a.aliexpress.com/_msUZ6MK)
- 2x Threaded Insert M2'5 x 3'5 x 4mm (https://a.aliexpress.com/_msUZ6MK)
- 1x Knurled Screw M2 x 5mm (https://a.aliexpress.com/_mMcE65G)
- 2x Hex-Head Bolt M3 x 20mm (https://a.aliexpress.com/_mODytf8)
- 2x Pan Head Bolt M2'5 x 6mm (https://a.aliexpress.com/_mrhD1H0)
- 2x Nuts M3 (https://a.aliexpress.com/_mKQULE6)

3. PREPARING THE SPOTLIGHT PARTS:

3.1 Insert the M2 Threaded insert in to Frontal Ring (B) hole using a welder

3.2 Insert both M3 nuts in the Housing (C). If you can't press the nuts in to the hole, use a bolt from the opposite side of the printed part for pull the nut. As you tighten the bolt, it will pull the nut in.

3.3 Insert both M2,5 threaded inserts in to the back cover holes using a welder

3.4 Insert both M3 x 20mm Screws in to the Tilt Lock Knobs Heads (G) using the same pulling technique than before, but in this case tighten the nut for pull the screw.

3.5 Screw the Lamp holder in the Rear Hatch (F) using 2 standard screws. Normally it comes with the holder when you buy it.

4. ASSEMBLING THE SPOTLIGHT:

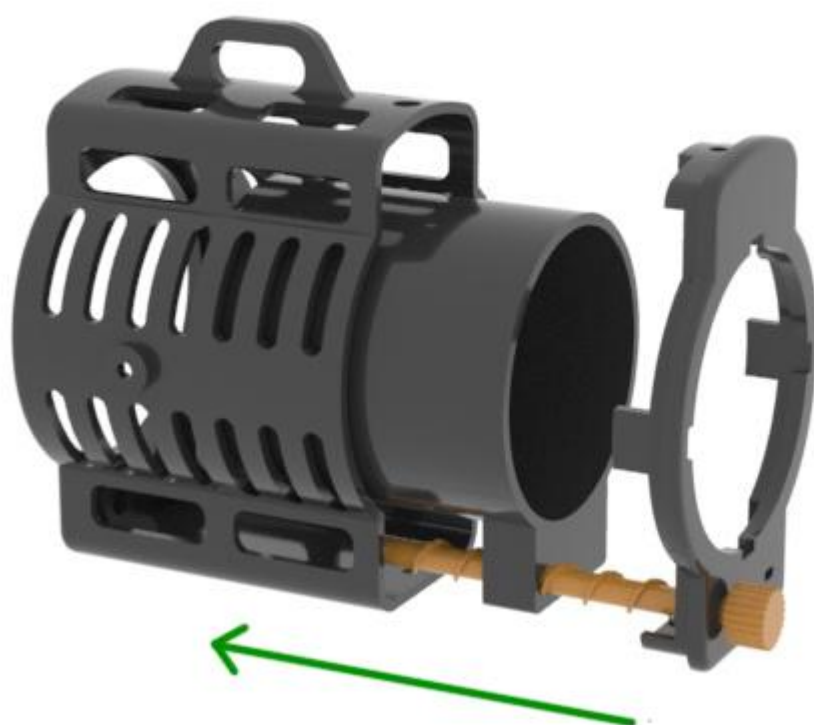
4.1 Insert the Spindle (I) in to the back cover (E)



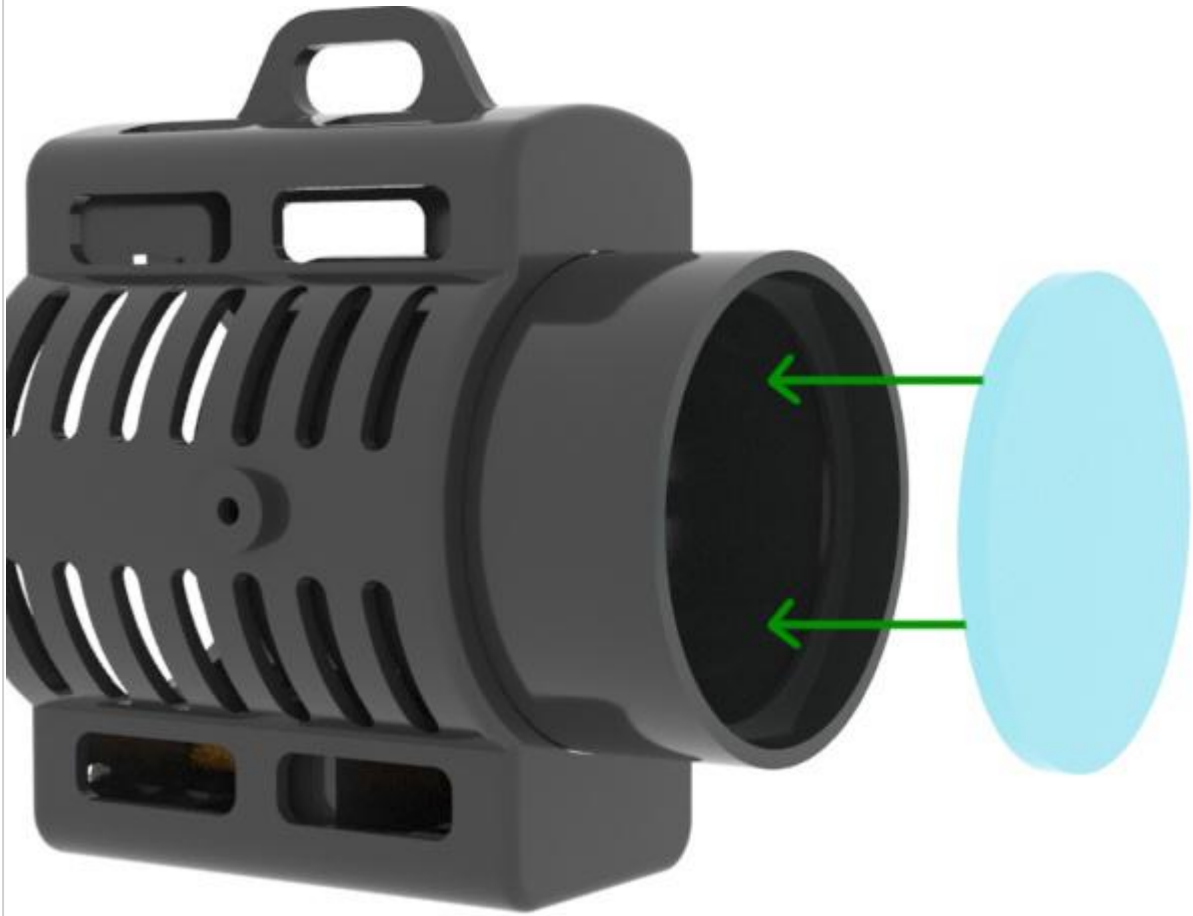
4.2 Ins
insert.

4.3 Insert this block (I+E+F) into the housing (C) until close completely. Then insert both M2'5 x 6mm screws for lock it.

4.4 Mo
but not



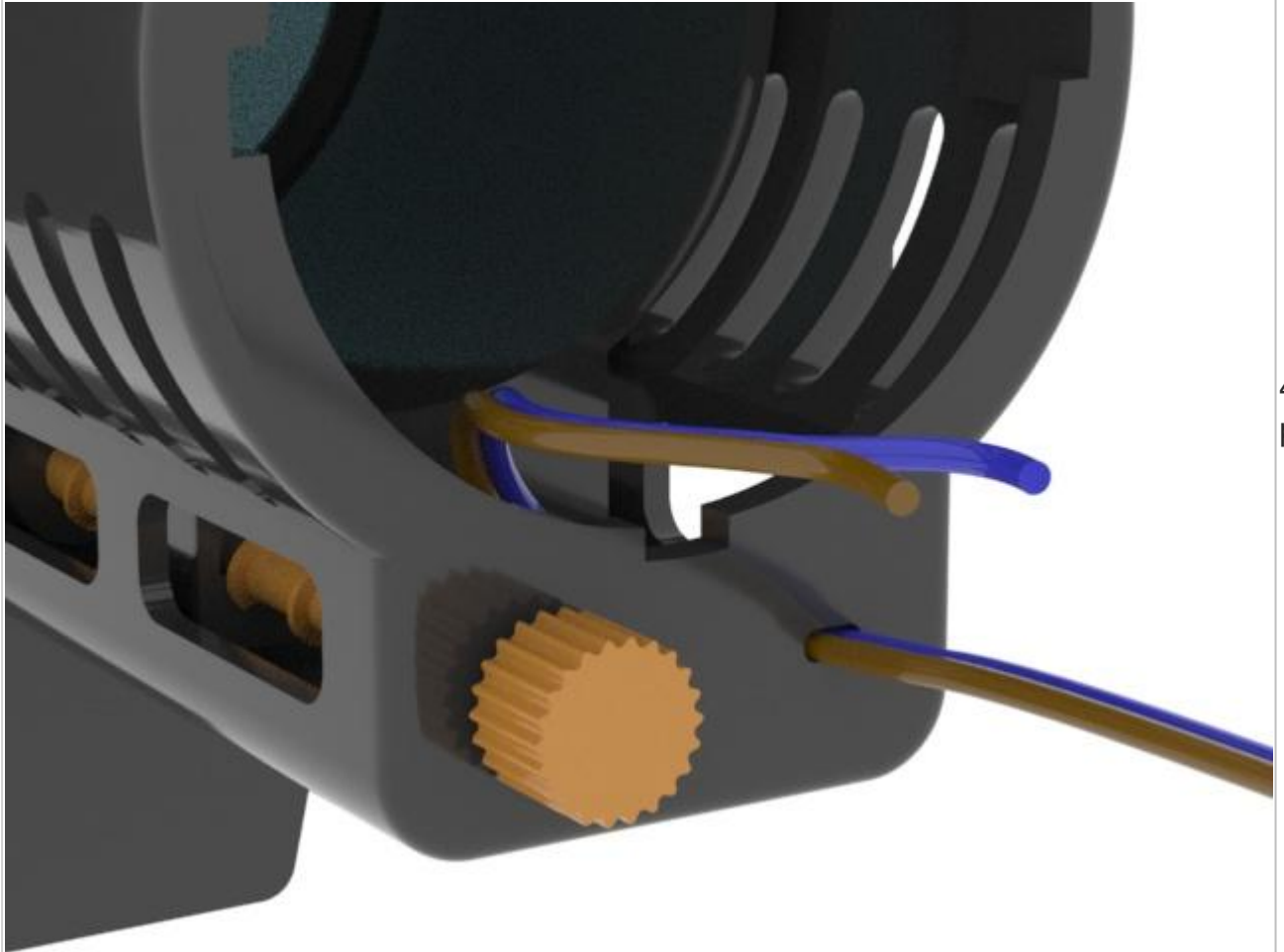
4.5 Insert the Fresnel lens in to the Lens tube (D)



4.6 Mo
Screw



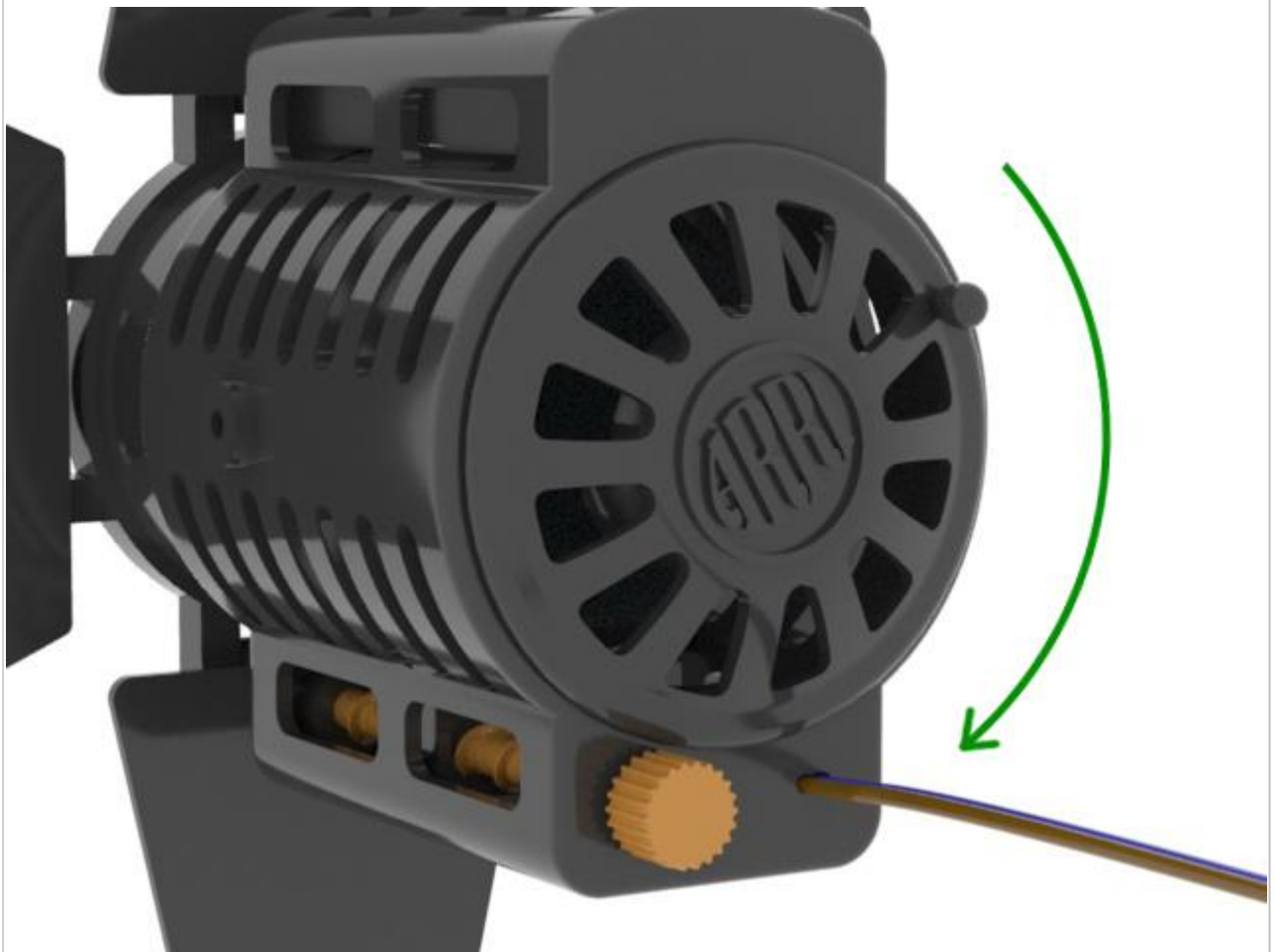
4.7 Insert the cables through the hole in the back cover (E) and pull it to outside through the rear hollow.



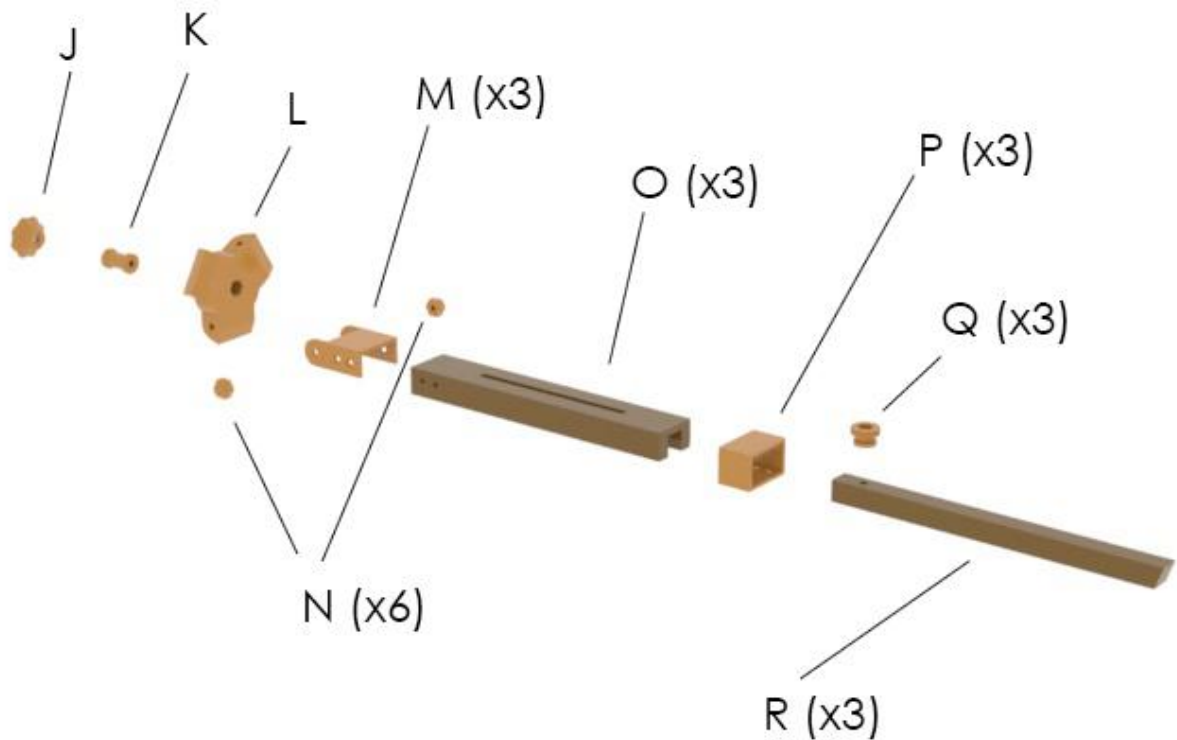
4.8 The
prefer.

4.9 Place the rear hatch (F) with the GU10 bulb mounted and turns it clockwise to lock it.

4.10 M



5. TRIPOD PRINTED PIECES:



6. TRIPOD NON PRINTED PARTS:

- 24x Screws 2'5 x 12mm (https://a.aliexpress.com/_mModWHG)
- 1x Hex-Head Bolt M4 x 30mm (https://a.aliexpress.com/_mODytf8)
- 1x Nut M4 (https://a.aliexpress.com/_mKQULE6)
- 3x Threaded rod M3 x 35mm (https://a.aliexpress.com/_m0Ztyru)
- 9x Nuts M3 (https://a.aliexpress.com/_mKQULE6)
- 3x Hex-Head Bolt M3 x 12mm (https://a.aliexpress.com/_mODytf8)

7. PREPARING TRIPOD PARTS:

7.1 Insert M3 Nuts in the three parts (R)

7.2 Insert M3 x 12mm Bolts in the three parts (Q) using pulling technique

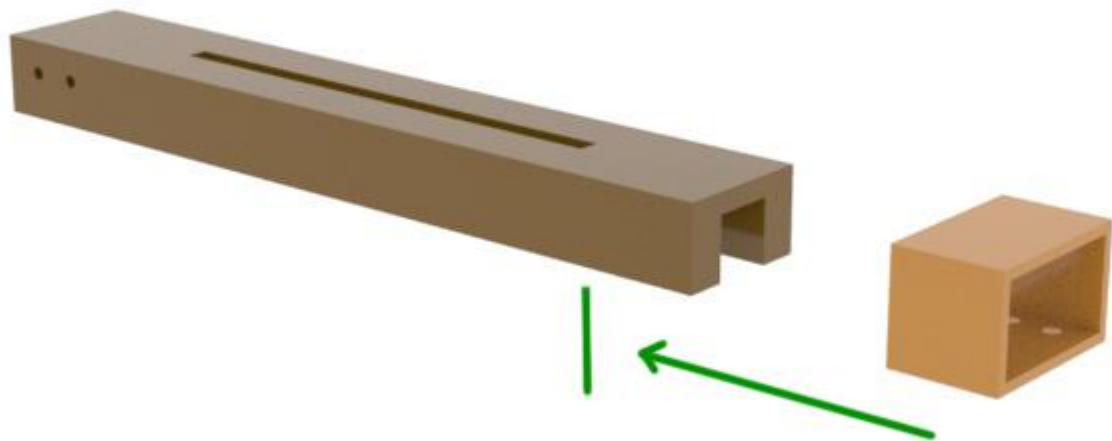
7.3 Insert M4 x 30mm Bolt in the part (L) using the pulling technique

7.4 Thread the entrance of part (N) with a M3 screw tap. Inside these parts, there is a hollow for a M3 nut. I inserted them during de print, programing the slicer for stop before print the top of the nut (same process like when you want to change color in a point of printing) If you don't want to do that, you can buy a metal blind nuts like this https://a.aliexpress.com/_mKk01FM and don't print this pieces.

7.5 Insert M4 nut into piece (J)

8. ASSEMBLING TRIPOD:

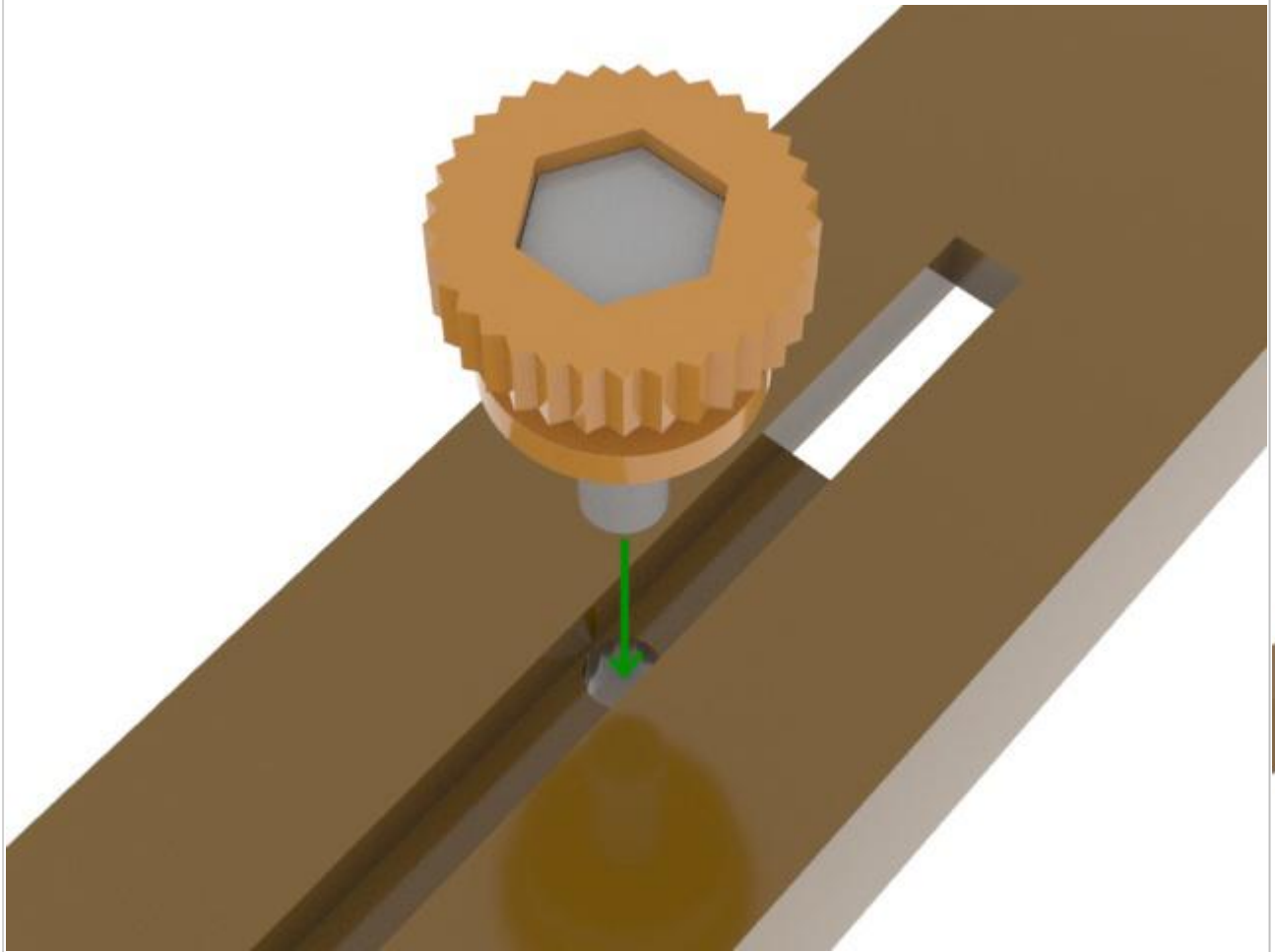
8.1 Insert part (O) in to part (P)



8.2 Ins



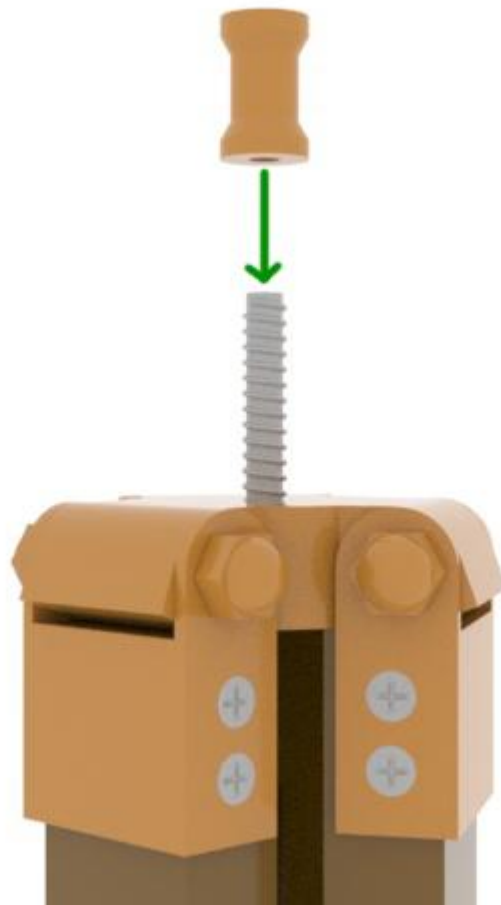
8.3 Screw the Bolt hosted in part (Q) in the nut hosted in part (R)



8.4 Scr

8.5 Repeat the last 4 steps for done the three legs

8.7 Insert part (K) in to the M4 bolt hosted in part (L)



Model files



Spotlight

10 files



a_large-barn-doors.stl



a_short-barn-doors.stl



b_frontal-ring.stl



c_housing.stl



d_lens-tube.stl

☐ Preferably use ABS or ASA because PLA or similar can deform with the heat of the bulb



e_back-cover.stl



f_rear-hatch.stl



g_tilt-lock-knobs.stl

☐ 2 units



h_u-bracket.stl



i_spindle.stl



Tripod

9 files



j_tripod.stl



k_tripod.stl



l_tripod.stl



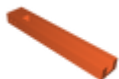
m_tripod.stl

☐ 3 units



n_tripod.stl

☐ 6 units. Designed to print in 2 steps to insert the nut.



o_tripod.stl

☐ 3 units



p_tripod.stl

☐ 3 units



q_tripod.stl

☐ 3 units



r_tripod.stl

☐ 3 units

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