

3D MODEL ONLY  
**OPEN SOURCE PORTABLE  
DRILL PRESS/DEPTH STOP**



## Portable drill press/ depth stop attachment for hand drill - Open source



TeachingTech

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## Summary

A simple, cheap to make attachment for a hand drill to convert it into portable drill press. Straight + depth stop.

[Hobby & Makers](#) > [Tools](#)

Tags: [drill](#) [drillpress](#) [depthstop](#) [drillpressadapter](#)

I have a pedestal drill, but it is guarded by two fearsome miniature goats, and it's not suitable for every project. I wanted a way to use my hand drill accurately for quick jobs, by adding a way to ensure holes were straight/square, plus the ability to set a depth stop for repeatable counter sinking.

This model and project is covered in detail here:

## Open Source

A STEP file of the assembly has been uploaded. Furthermore, the source Onshape document is also available. You can see previous versions, export individual parts or the entire assembly in a format of your choice. You can also make a copy of the document for editing in Onshape.

<https://cad.onshape.com/documents/53d07a5be6e6d8ae2ad8852b/w/d42fca2047cbcb6f970e690/e/4db32d0189505258428f1d7b?renderMode=0&uiState=673ea792b2bac140022d7612>

The clamping diameter is adjustable, so it is intended that the jaws be altered to suit different sizes and brands of drills. These are a quick part to print and should avoid the other components from needing to be changed.

Although this CAD is all my own, I would like to acknowledge the inspiration I took from this adjustable pipe clamp by The3Designer: <https://www.printables.com/model/278354-adjustable-pipe-clamp>

## **Jaw variations for other models of drills**

Please check the remix section for variations of the jaw piece. If posting a remix, please ensure you list the brand and model of drill the remix is designed for.

I have also added a folder to the files section of this page with user submitted remixes.

## **Hardware**

To build this, you will need:

- M5 lock nut x 2
- M5 nut x 1
- M5 washer x 1
- M5 x 80mm x 1
- M5 x 20mm x 1
- M5 x 8mm x 1
- M3 x 10mm x 5
- 4 x LM8UU bearings (affiliate): <https://amzn.to/3Oq4kah>
- 4 x 8mm hardened linear rods (affiliate): <https://amzn.to/48WL0ep>
- 2 x tension springs or rubber bands

Rod length (as well as spring/rubber band length) will depend on the size of your drill. My example used 4 x 175mm, which was fine for small drill bits or a countersink bit. Longer is better for versatility but weight is added with length. 4 x 200mm might be a nice compromise.

If you would like to save weight: bushings could be substituted instead of bearings, and something like carbon fiber 8mm tube could be substituted for linear rod. I've ordered some carbon fiber tube and bushings from Aliexpress to test when they arrive.

8 x 5 x 500mm x 8 tube: <https://www.aliexpress.com/item/4001308445662.html>

LM8UU bushings (affiliate): [https://s.click.aliexpress.com/e/\\_DEa9xCt](https://s.click.aliexpress.com/e/_DEa9xCt)

## Printed Parts

Quantities and materials are listed in the download section. All parts are already correctly oriented on the build plate.

These parts need to be very strong and stable. I used PETG for my main material, with five perimeters and 80% infill.

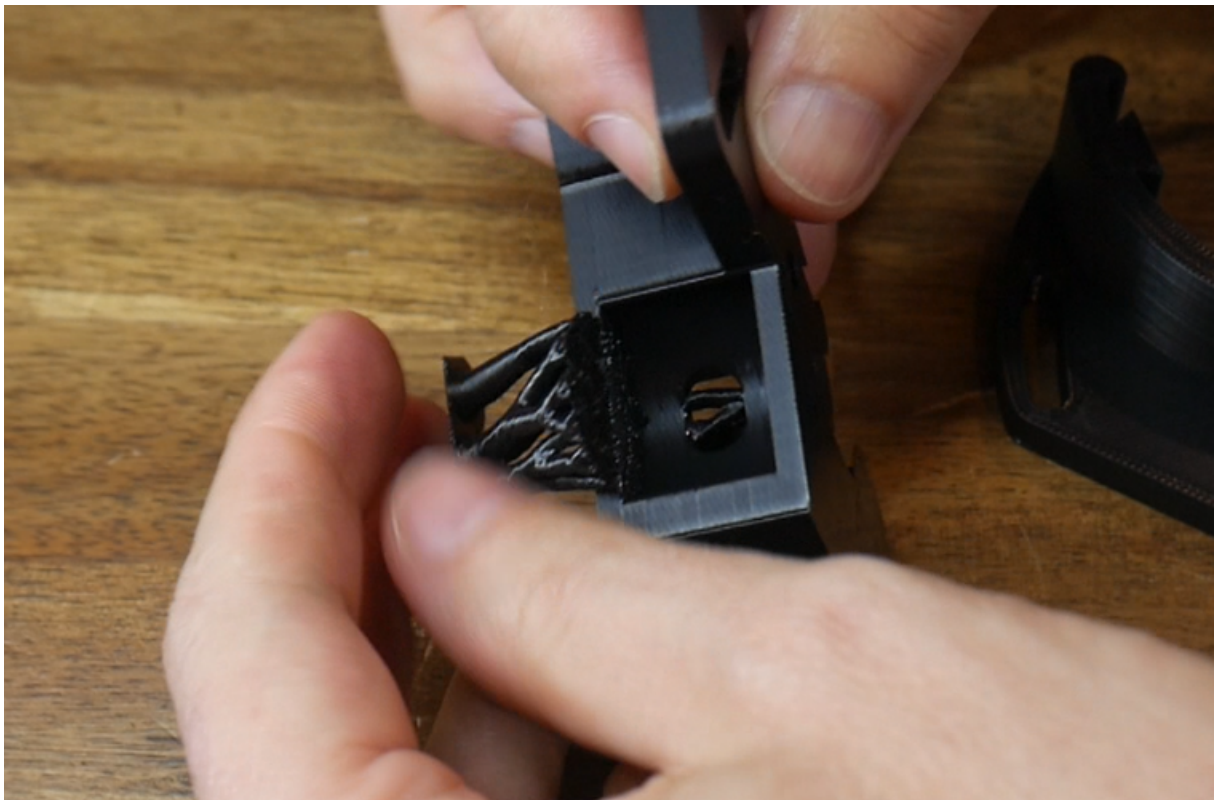
Unfortunately support material is required for most of the non TPU parts. I used automatic organic supports with good results.

The jaws are printed in TPU and again should have a high infill and perimeter count. The aim is for the TPU to grip the drill, rather than deform like a typical flexible part.

## Assembly

The video above also covers the assembly step by step.

Remove all support material.



Push M5 nuts/locknuts into the nut trap (standard nut), left foot and left frame (lock nuts). These are designed to be a very tight fit.



Join the two halves of the frame together with a M5 x 20mm bolt. Join the two halves of the foot together with a M5 x 8mm bolt. The bolt should be tight but not so tight the parts can't swivel.



Insert the nut and knob traps into either side of the frame. Push a M5 x 80mm bolt with washer through the knob trap and screw it into the nut trap with previously inserted M5 nut.



Slide the four jaws onto the dovetails in the frame.



Insert rods into the feet as far as they will go.



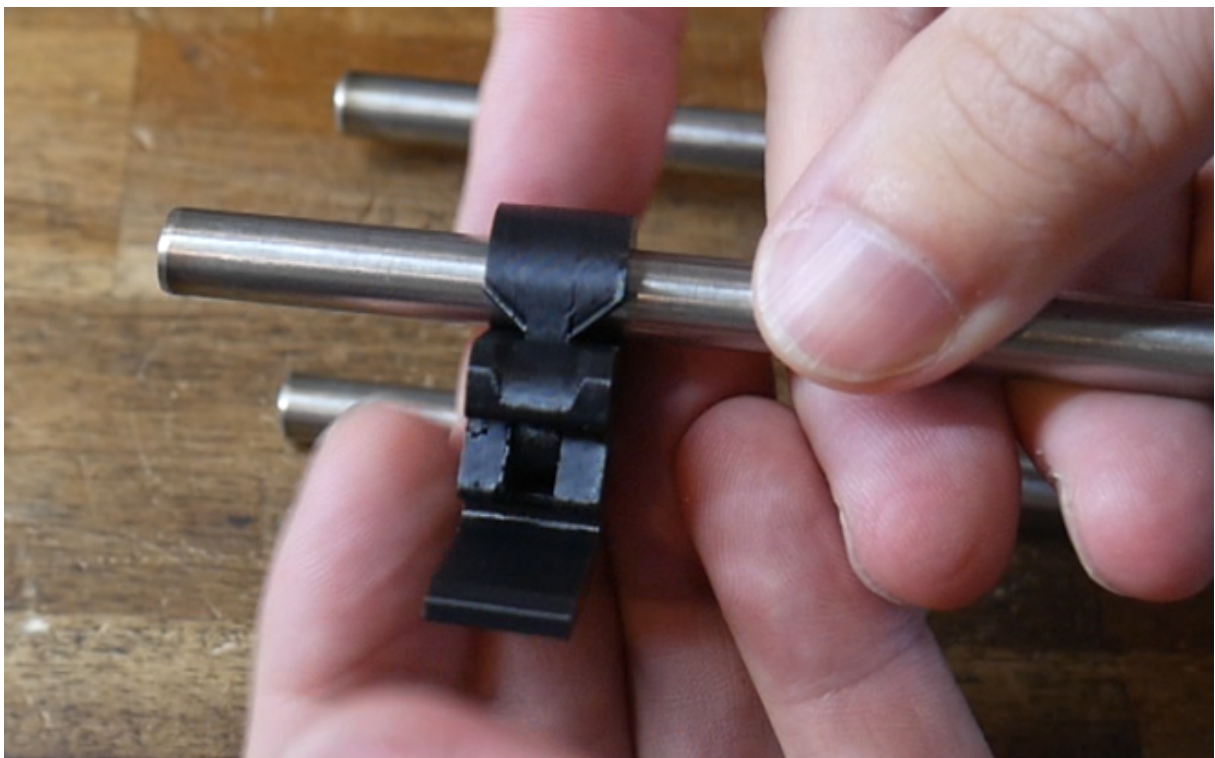
Insert the bearings into the frame.



Assemble the clamp lock and clamp ring in the 'open' position using a M3 x 10mm bolt.



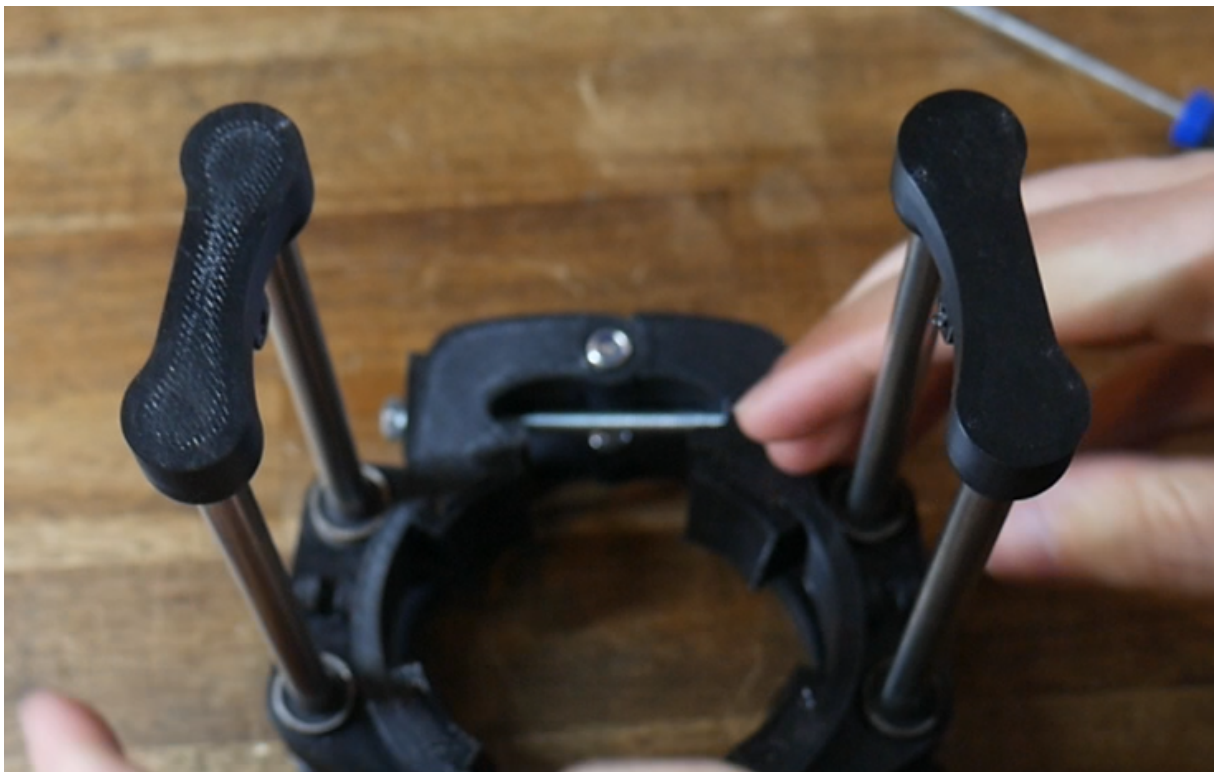
Slide the clamp onto one of the linear rods.



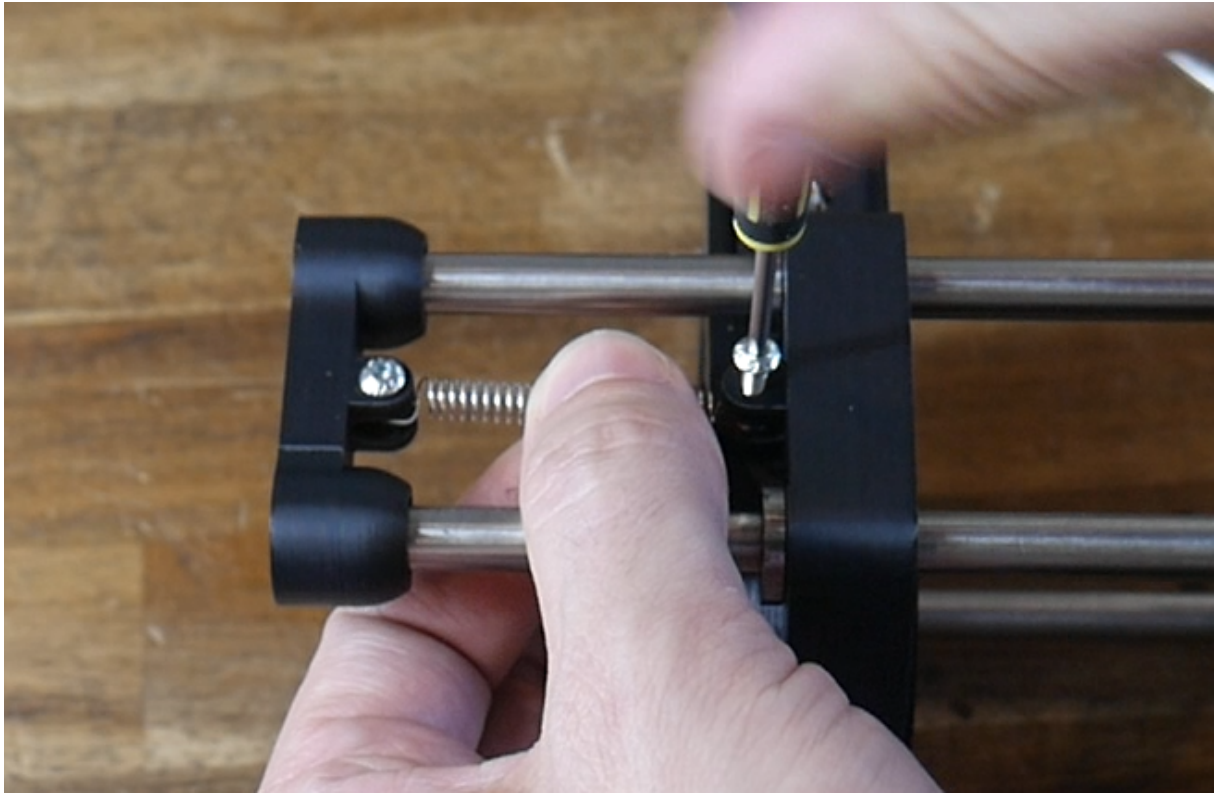
Slide the frame assembly onto the linear rods, joining the foot and frame together.



Slide rod holders onto the open end of the linear rods.



Insert M3 x 10mm bolts into the frame and rod holders, adding tension springs or rubber bands as you go.



## Usage

Position the tool over the clutch portion of the drill and then tighten the longest M5 bolt to draw the two halves together and clamp on the drill. This must be clamped very tight.

Set the depth of the locking clamp if desired.

Enjoy drilling straight and with consistent depth.



## Fun Fact

The 'knob trap' part is named so because I originally intended to have printed knob attach to the hex head of the tensioning bolt, so that no tools were needed. However, due to the torque required to safely clamp the device, I figured a printed knob might break and abandoned that portion. The name is retained to add character.

## Model files



### User remixes

1 file



#### jaws-for-makita-drill-df473d.stl

☐ Makita DF473D by Michael Farris



#### clamp-ring.stl

☐ x1



**clamp-lock.stl**

 x1

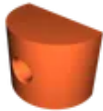
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**knob-trap.stl**

 x1

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**nut-trap.stl**

 x1

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**jaw.stl**

 x4 - TPU

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**foot-right.stl**

 x1

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**foot-left.stl**

 x1

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**frame-right.stl**

 x1

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**frame-left.stl**

 x1

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**rod-holder.stl**

 x2

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## **portable-drill-press-attachment.step**

 STEP assembly

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