



# PrintrBot NinjaFlex Extruder Upgrade

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<https://learn.adafruit.com/printrbot-ninjabot-filament-extruder-upgrade>

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# Table of Contents

Overview	3
• Get the Gear Head Extruder	
3D Printing	5
• 3D Printing with NinjaFlex on PrintrBot	
Assembly	7

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# Overview

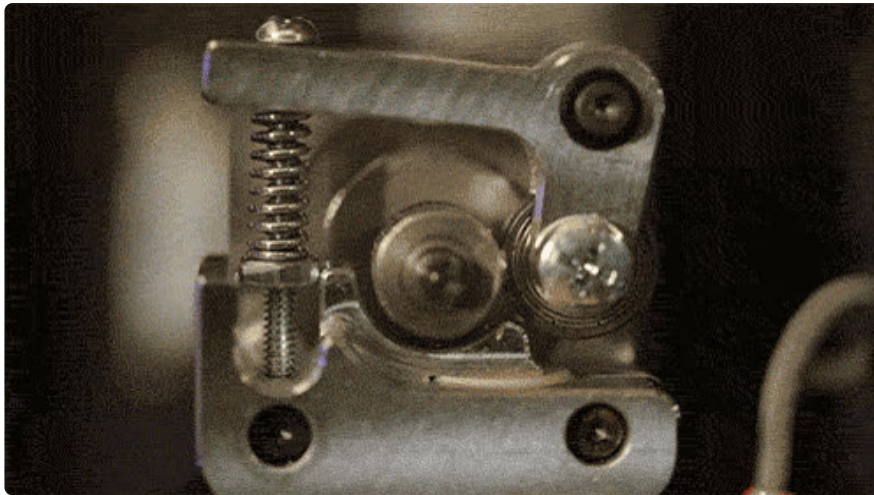
This part only works with the early 2014 models of the **Printrbot Simple Metal**

\*\*\*UPDATE: We recommend using the Gear Head Extruder upgrade from Printrbot to print Ninjaflex

## Get the Gear Head Extruder

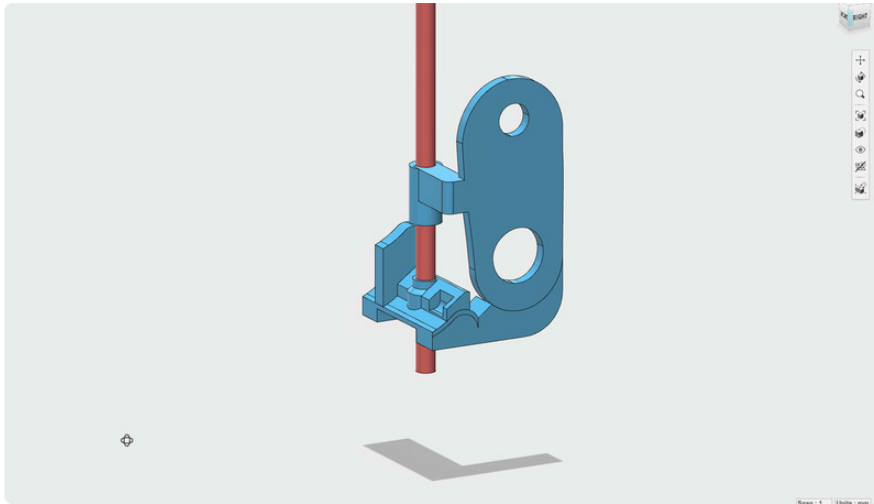
<http://printrbot.com/shop/gear-head-extruder/> (<https://adafru.it/jhd>)

This part is out of date and no longer supported

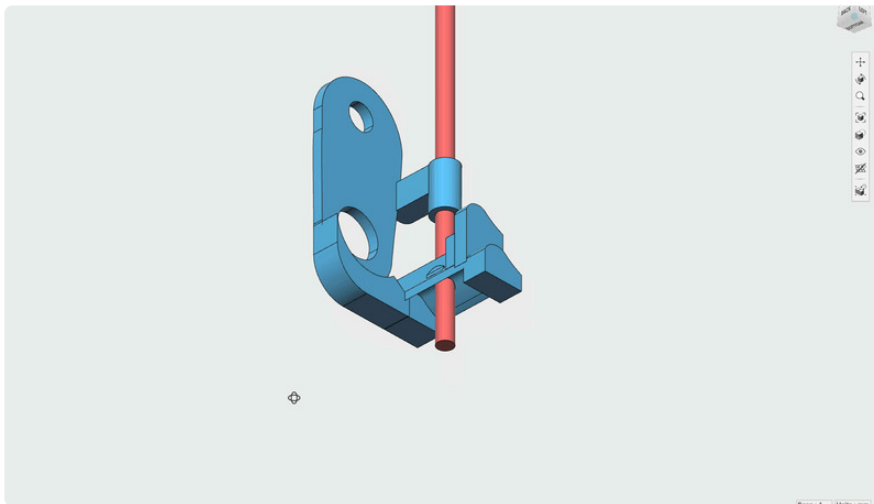


[NinjaFlex \(http://adafru.it/1690\)](http://adafru.it/1690) is our favorite TPE based filament because it works great with our wearable projects.

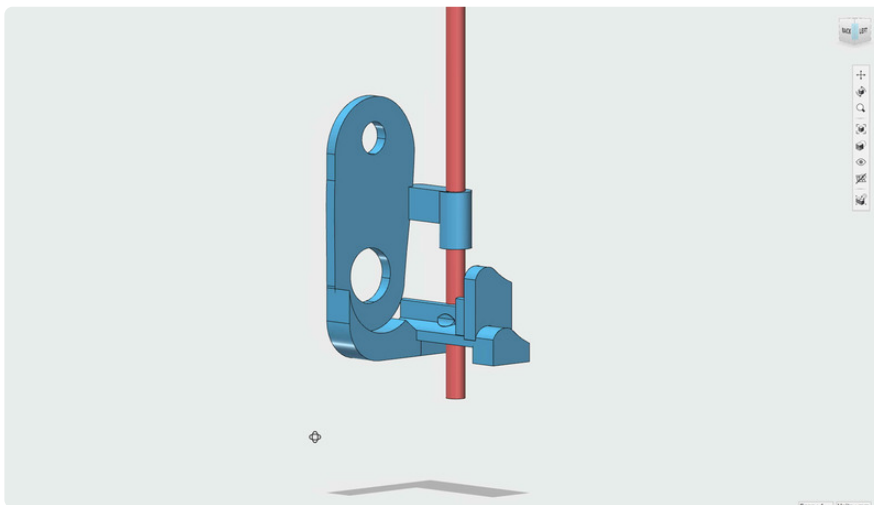
If you've ever tried printing NinjaFlex on a [PrintrBot \(http://adafru.it/1760\)](http://adafru.it/1760), you may have noticed a small problem. It doesn't extrude so well. TPE material is so flexible that the filament actually buckles just before reaching the hotend. The drive gear and the hotend are so far apart that the filament can actually tangle!



Our 3D printed filament upgrade eliminates this problem by guiding the filament directly to the drive gear, removing any room to buckle.



Designed to print right on your PrintrBot in just ten minutes, the installation is easy and requires no extra parts.



## Parts

- [Filament Guide \(https://adafru.it/dtn\)](https://adafru.it/dtn)
- [In-line power switch for 2.1mm barrel jack \(http://adafru.it/1125\)](http://adafru.it/1125)
- [2.1mm female/male barrel jack extension cable \(http://adafru.it/327\)](http://adafru.it/327)

## Tools & Supplies

- [P \(http://adafru.it/1760\)](http://adafru.it/1760)rintrBot Simple Metal (<http://adafru.it/1760>)
- [NinjaFlex \(https://adafru.it/dtp\)](https://adafru.it/dtp)
- ABS/PLA Filament



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## 3D Printing



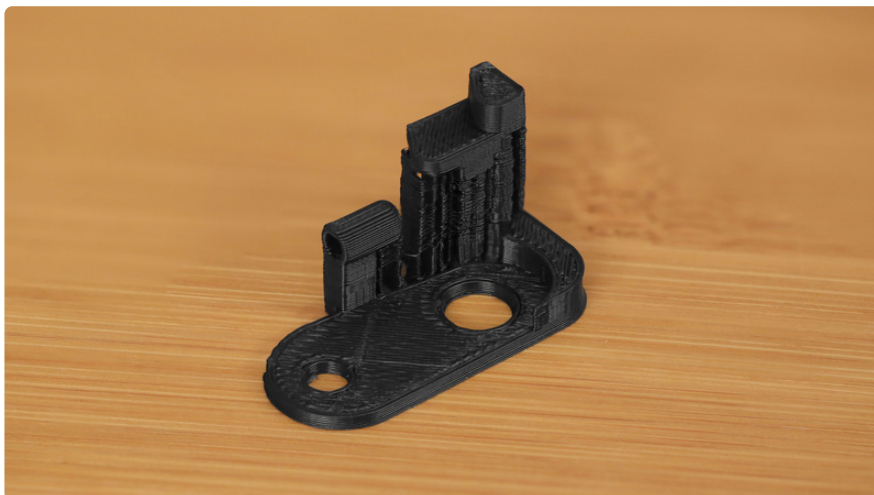
[Download STLs](https://adafru.it/dtn)

<https://adafru.it/dtn>

The STL files are tested on a PrintrBot Simple Metal, Makerbot Replicator 1, 2 and can be sliced with any slicing program using PLA or ABS filament. We recommend using ABS as the it will provide stronger support.

pbotmotor.stl pbotmotor-support	PLA or ABS @230 2 Shells Infill %10 90 Feedrate 90 Travel Speed  for ABS heat bed to 120	10-20 Minutes
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You can either print **pbotmotor-support.stl**, which has supports included in the model. Optionally, you can print **pbotmotor.stl**, with no supports. You can add support structures separately with your slicing program.



## 3D Printing with NinjaFlex on PrintrBot



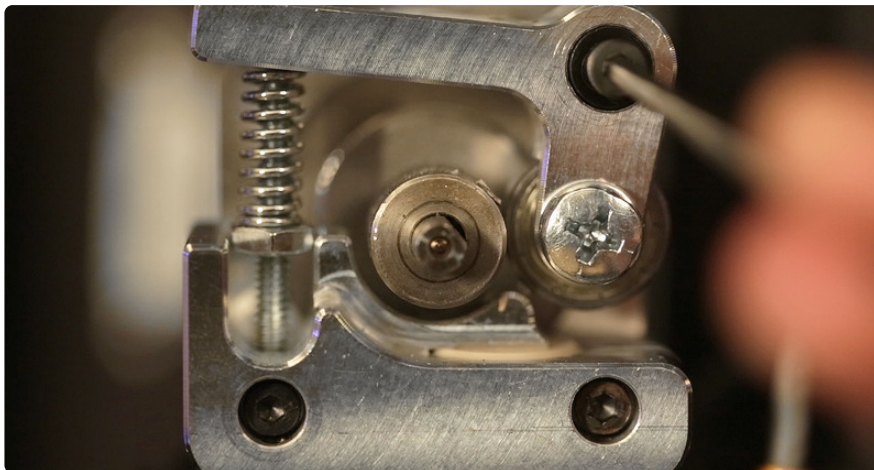
Increase extrude temperature to 250. This helps relieve pressure on the filament as it feeds.

Travel Speed should be lowered to 45mm/s and Feed rate should be increased to 150mm/s

Disable retraction when extruding

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## Assembly



The top screw is removed to detach the spring loaded arm from the motor. Loosen the second screw on the arm to detach the ball bearing.



Set the spring loaded arm on a flat surface, use a [phillips](http://adafru.it/822) [screwdriver](http://adafru.it/822) [r](http://adafru.it/822) [e](http://adafru.it/822) to remove the bearing off.



Set the washer aside and store away, the filament guide is thick enough to compensate.



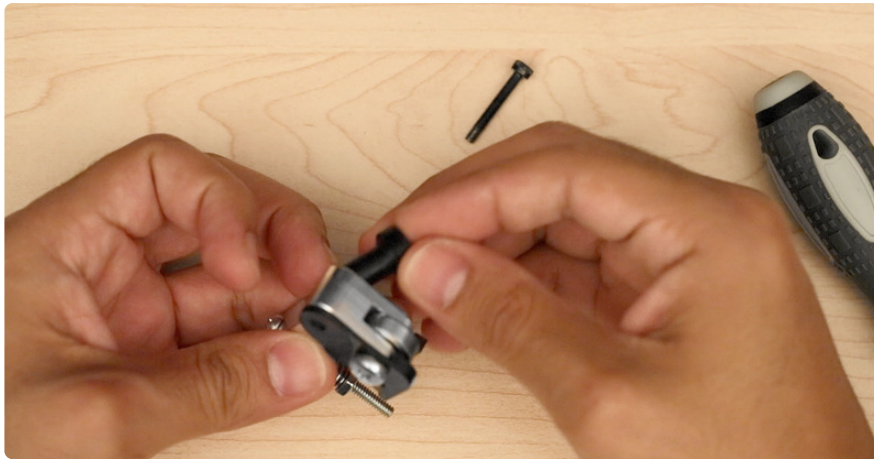
Slide off the top hex screw and remove the screw from black plastic tube.



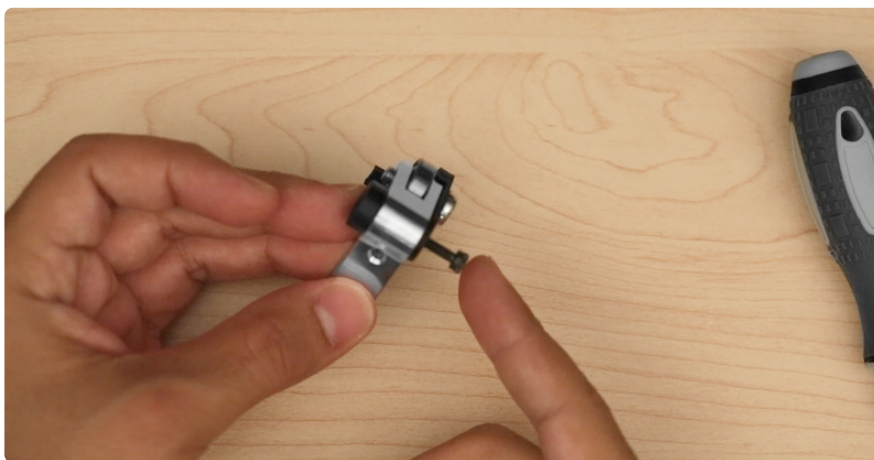
The filament guide is installed in front of the spring loaded arm and mounted in place. Hold on to the filament guide while positioning the bearing into place.



Attach the filament guide by tightly fastening the phillips screw.



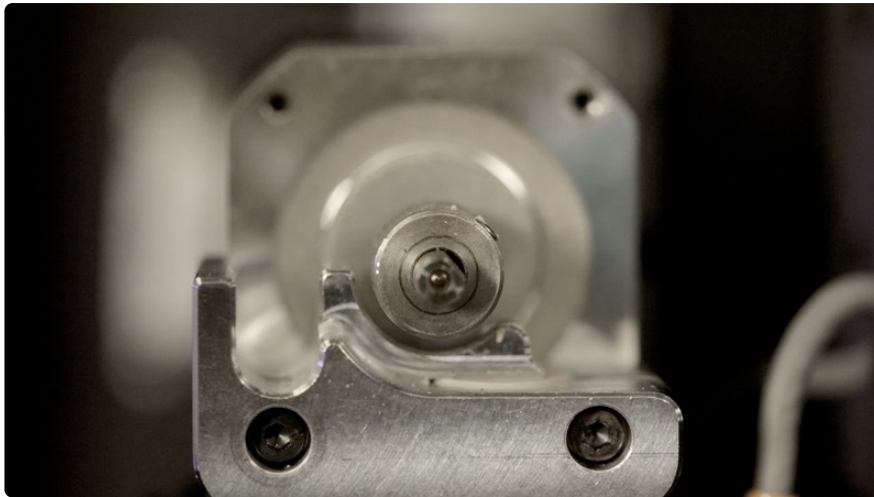
Insert the hex screw tube back into place.



Align the hex screw with the tube. You can loosen the the phillips screw if the top is slightly misaligned.

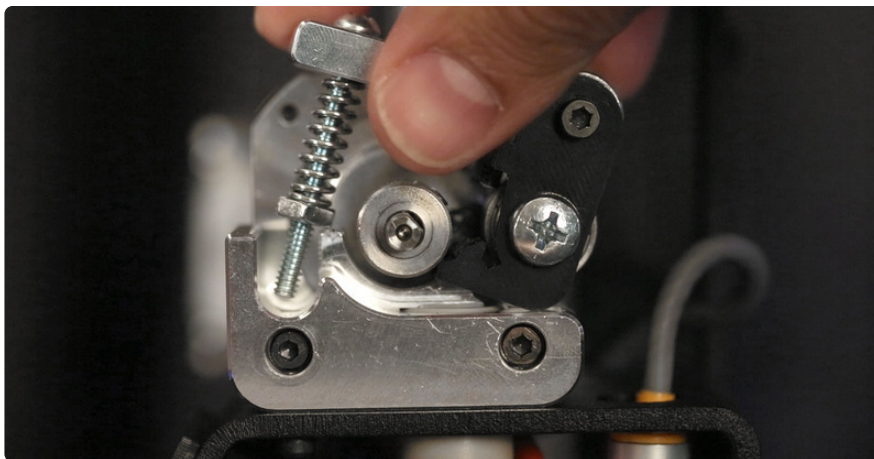


That's it! Now time to install it on the motor.

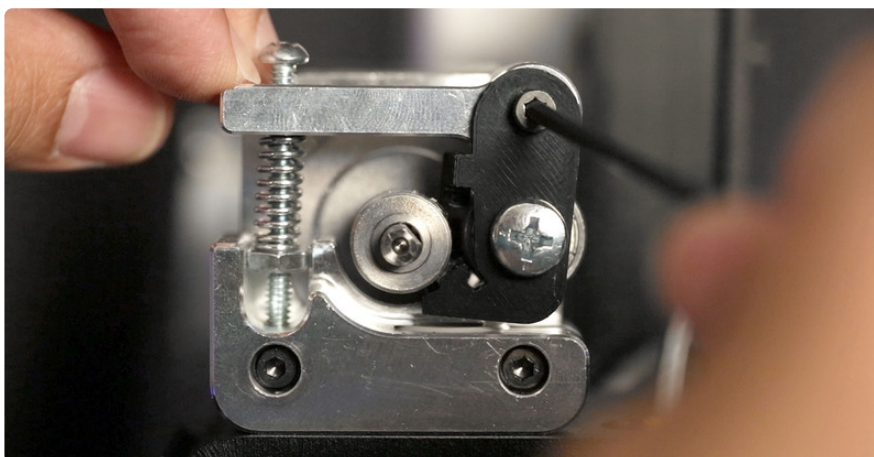


Before you feed NinjaFlex into the extruder, insure the nozzle is clean by forcing out any clogs with a strong thin metal poker.

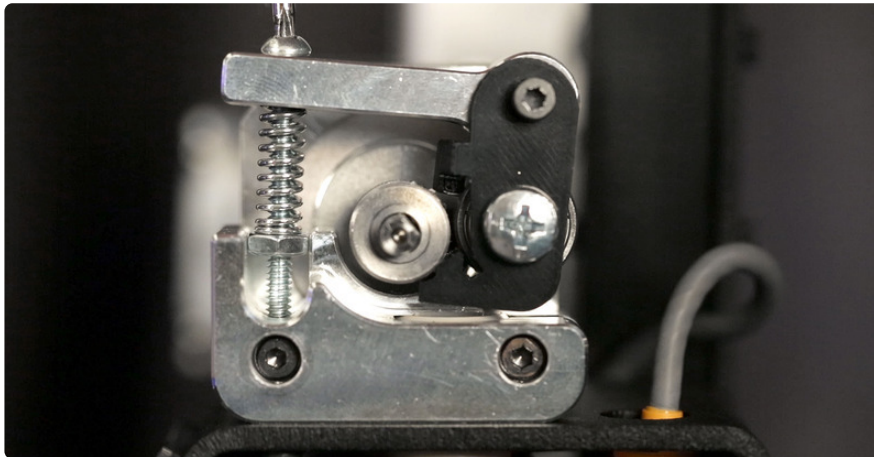
Use a thin metal apparatus and poke it down into the nozzle, forcing out any material that gets built up inside the nozzle.



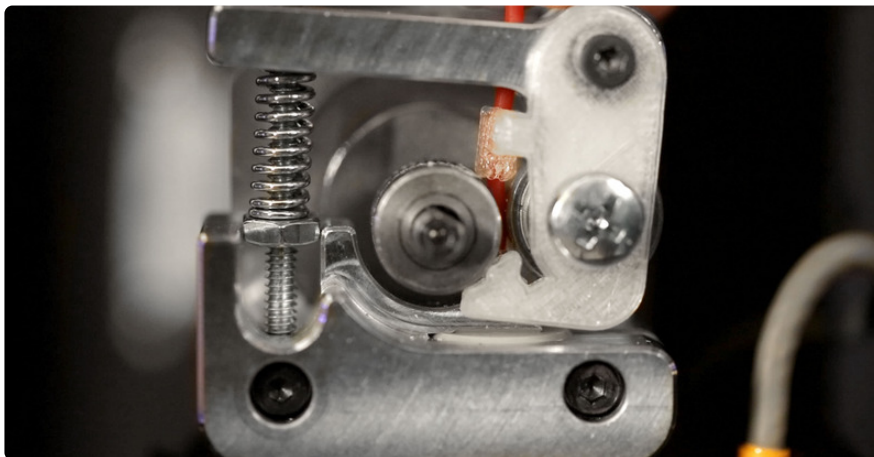
Align the spring screw over the hole on to the motor mount. Adjust the screw if it doesn't fit through both walls.



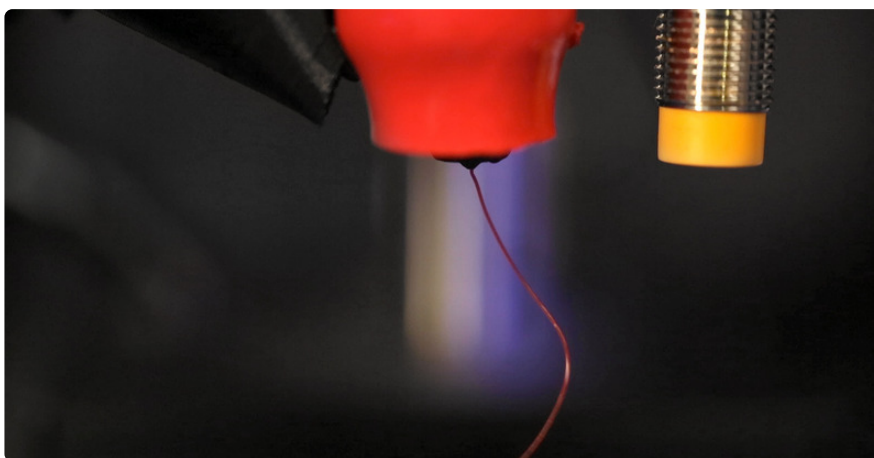
Press down on the spring arm to apply pressure while aligning the top hex screw into place.



Increase the bearing pressure by tightening the spring screw until it's close to the top of it's walls.



Guide your favorite NinjaFlex color down the tube!



If it doesn't extrude and you can feel that it's clogged, insure the nozzle is clean by forcing out any clogs with a strong thin metal poker.

