



Join PTFE Tubes Together Magnetically!



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Summary

This coupler allows you to join two ends of PTFE tubing together with magnets!

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This coupler allows you to join two ends of PTFE tubing together with magnets!

This will be useful if you want to have an airtight connection between two PTFE tubes but still want to be able to pull/push the filament inside sometimes.

I'm happy to announce V2! (May 10th 2021)

I've reworked the PTFE fitting so it is easier to screw all the way in, simplified the Fusion360 files so you can tailor them easily. Additionally, I'm releasing a new way of integrating the magnets; mid-print insertion! The most common request has been a way to use pancake-shaped magnets, which can't work well with the original friction-fit method. Using a mid-print pause, you can insert the magnets, then continue printing to

completely encase them. Just make sure to glue the magnets in so they don't jump out of their seats when your extruder sweeps over them!

Note on BOWDEN setups:

Unfortunately, I don't think this will work well in a bowden setup when between the motor and the nozzle. I think it would be pushed apart.

I also added holes at the top to let you push the magnets back out if you want to remove them.

It's currently configured for 5mm x 5mm cylinder magnet, but you can change it!

The Fusion360 file is parametric, meaning you can change all the parameters including:

- The dimensions of your specific magnets,
- The number of magnets to use
- The thickness of the walls
- The Print Tolerance (How much wiggle-room)

Open the .F3D (in the downloads) design in Fusion360 to change it!

Which File Should I Print?

There are three varieties that I've made:

1: No Offset

This is the version I use. It's simple, and despite not having any extra mechanisms for aligning the two halves, lines up my tubing wonderfully each time. If you don't want to fuss, just print the No Offset file and you'll probably be fine.

2: Innie / Outie

This is very similar to the No Offset file, but the magnets will protrude on one piece, and the magnets will be recessed on the other piece. This is an extra measure to ensure perfect alignment every time. Once again, the No Offset version aligns very well, but I made this one to make sure everybody is happy.

3: Quad-Alternating

This is another version that uses recessed/protruding magnets to ensure alignment. For each piece, half the magnets will protrude, and half will be recessed. You must have the recessed magnets seated as a different polarity as the protruding ones. For instance, the protruding magnets must have the North polarity pointing out while the recessed magnets must have the South polarity pointing out. This ensures it binds together

correctly.

The unfortunate downside with this one is it uses more magnets than the other two options. Maybe if your magnets are weak, this might help because it increases the force the holds the halves together.

4: MidPrintInsert

New with V2! This version lets you pause the print and insert the magnets so they are fully enclosed when the print is finished. Make sure to securely glue the magnets in before resuming the print so they don't jump out! Use this F360 link to modify the file to your own magnet sizes etc.

This print works better if your PTFE tubing is chamfered at the end; guiding the filament in. Here is a fantastic tool I use to chamfer the ends of my tubing:

<https://www.prusaprinters.org/prints/46984-ptfe-tube-60deg-chamfer-tool-by-printschnitzelat>


This piece is threaded for PC4-M10 quick-fittings for 4mm PTFE tubing (same stuff the prusa mk3s and most other printers use)


Here are a couple links of where you can get them, but you might want to search around in case these aren't the cheapest options anymore:


<https://smile.amazon.com/dp/B01KHN1HWY/>


<https://www.aliexpress.com/item/32866539665.html?spm=a2g0s.9042311.0.0.27424c4dDgiAG6>

Model files

 **Source Files** 3 files

**magnetic-ptfe-joiner-v55.f3z**
☐ The default model (Fusion 360)

**magnetic-quad-aligned-ptfe-joiner-v17.f3z**
☐ The quad-alternating variant (Fusion 360)

**magnetic-ptfe-joiner-insert-v11.f3z**
☐ The mid-print insert variant (Fusion 360)



Innie-Outie

2 files



innie.stl

☐ (5x5mm) The magnets are recessed on this one



outie.stl

☐ (5x5mm) The magnets stick out on this one



nooffset-default.stl

☐ This is the version I use. 5x5mm magnets, no alignment features needed



quadalternating.stl

☐ A potential alignment solution; alternating innie/outie 5x5mm magnets



midprintinsert.stl

☐ (5x5mm) Pause the print to insert the magnets

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