



PASTA lite Receiver - a Pastamatic Remix



KYZ Design

[VIEW IN BROWSER](#)

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Summary

A compact Pastamatic overhaul.

[3D Printers](#) > [Accessories](#)

Tags: [spool](#) [filament](#) [winder](#) [spooler](#) [respooler](#)
[pastamatic](#)

Compatibility

Use v1.0 or v1.0A1M receiver:

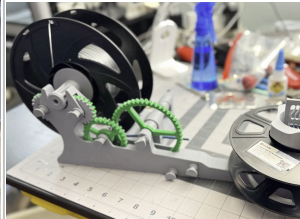
1. As a stand-alone unit in conjunction with another stand-alone spool roller/stand/holder
2. **OR** with [Donor Spool Roller](#) v0.3 or newer
3. **OR** with [Donor Spool Spinner](#) v0.5 or newer

v0.5 and later receiver versions are NOT compatible with [Donor Spool Spinner](#) v0.4 and earlier. As I made the receiver more compact and lowered the centre of gravity of the receiver spool, the filament path needed to be closer to the ground which necessitated a change in the orientation of the donor spool. The lead screw position changed to accommodate the filament path, which collided with the interfacing

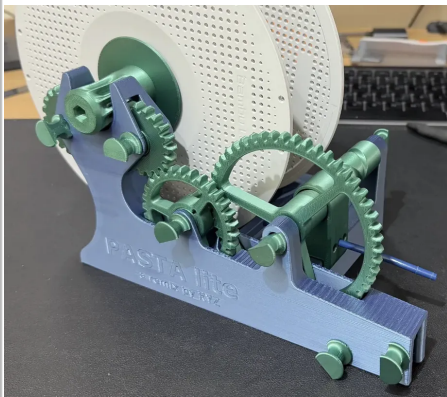
dovetail joint, etc. If you've printed the v0.3 receiver and it's working well for you, I would stay with it!

If you already made the v0.3 (or earlier) receiver, you can use it with **Donor Spool Spinner** v0.4.

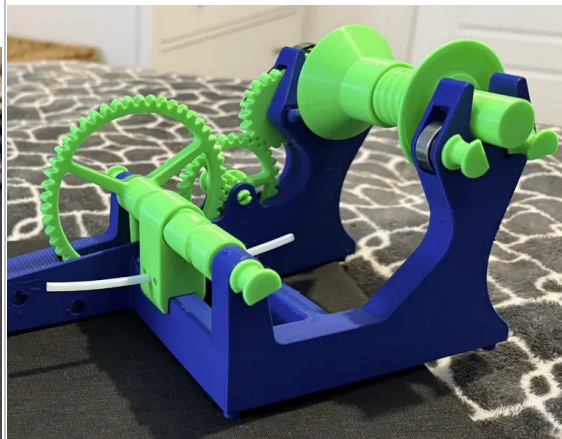
Gallery

<p>A-10 Warthog @PiTon</p>  A black 3D printed spool spinner with two large black gears and a central axle, resting on a green cutting mat.	<p>Bumblebee @mike.bosch</p>  A black and yellow 3D printed spool spinner with multiple yellow gears and a large yellow wheel, sitting on a wooden surface.	<p>Broccoli Lab @deli</p>  A black and green 3D printed spool spinner with a large black gear and a green gear, resting on a white surface.
<p>Tacti-cool @rk613</p>  A green 3D printed spool spinner with multiple yellow gears and a large yellow wheel, resting on a wooden surface.	<p>LG @MotoX501</p>  A red 3D printed spool spinner with a large white gear and a red wheel, sitting on a grey carpet.	<p>Hospital Grade @OAG_163</p>  A white 3D printed spool spinner with a large white gear and a white wheel, resting on a wooden surface.

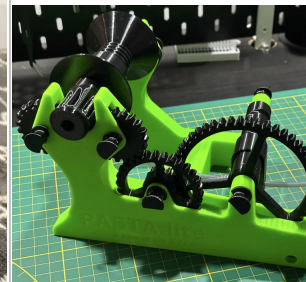
Anodised
@DavidDerbyshire



Aliens (Toy Story) @steve.lockley



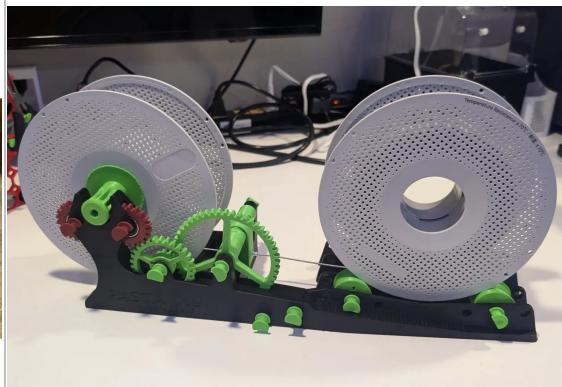
Venom @Happy19



Storm Trooper
@user_1750046560



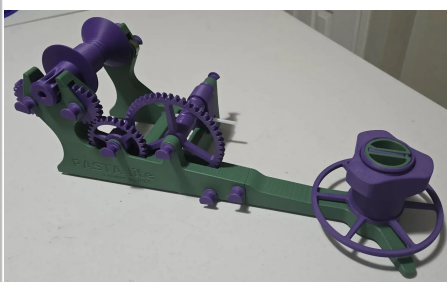
Vampire's Garden @pnwnerd



Mission Ready
@rob_frye



Royal Rhubarb @BeePo3D



Afterburner @vrplanet_26135
(PETG print)



Pistachio Mill
@chippicous (3kg donor spool)





Background

I've been enjoying the **original Pastamatic** for a year now but there were many things I wanted to change. I know that the Pastamatic isn't intended to be a "project" but when I needed to print a second one, on boy did I make it a project... I hope the reduction in global frustration and filament usage was worth the effort!

Main differences to the original Pastamatic:

- Smaller footprint with reduced height for easier storage
- ~41% filament reduction from ~650g to ~380g (with similar print settings and using the donor spool "spinner" variant)
- ~46% print time reduction from ~22 hours to ~12 hours (with similar print settings and using the donor spool "spinner" variant)
- 100% less purchased bearings from 14 608zz bearings to 0 (with option to upgrade)
- Easier printing with all tall objects having a larger bed contact area
- Reworked clearances and reduction of inertial mass of moving parts for significantly lower turning resistance of gears (no more "hopping" of the spindle, no spindle clips needed)
- Rigid frame for ease of use and quality feel
- 2-piece frame variant printable on a 180x180 bed (A1 Mini)

And as with the original Pastamatic:

- NO fasteners
- NO heat-set inserts
- No supports and easy overhangs on all printed parts
- ~5 minute assembly
- ~2 minute spool transfer
- Designed to be a tool you just print and use when you need it, not a massive side quest (unless you're me)

Materials

- PLA works great
 - Avoid materials with reduced layer adhesion such as PLA-CF, silk PLA and “ABS+”
- TPE or soft TPU for the optional feet (just 2-3 grams)

Print settings

- If this is “just a tool”
 - 0.20mm Standard with
 - “Spindle front” layer height reduced to 0.18 to reduce friction with gears (less layer locking)
 - 15% “support cubic” infill
- If you want something more substantial and quieter
 - 0.20mm, 3+ walls, 4+ bottom, 5+ top
 - “Spindle front” layer height reduced to 0.18 to reduce friction with gears (less layer locking)
 - 15% “grid” infill or other non “support” infill (this helps with noise as the parts will sound less hollow)
 - 60mm/s outer wall speed, 80mm/s top wall speed
- If the printed bearings are seized, reduce the layer height for these parts or check the [Bambu Lab Wiki - Flow Rate Calibration](#) or the equivalent for your printer.

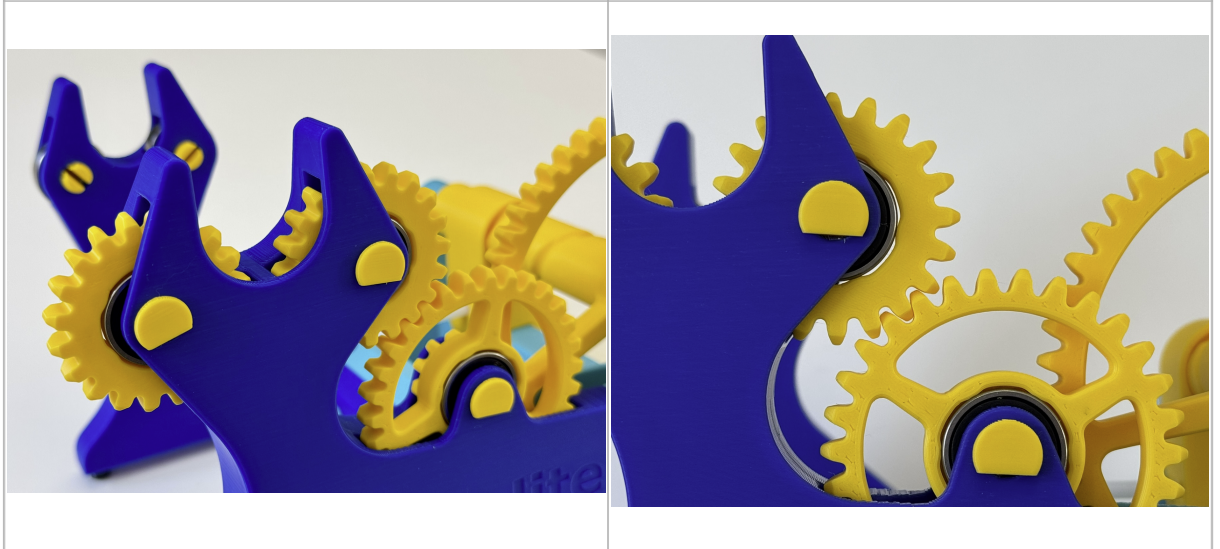
Other materials needed

- Approximately 100mm length of PTFE tubing (4mm OD 2mm or 2.5mm ID)
- An electric screwdriver or drill driver with a 1/4 inch bit
 - this does not have to be a 1/4 inch allen key, using any 1/4 inch drive bit front-to-back will work as long as it's long enough for the driver to grip



AssemblyOptional steel bearing upgrade

The idler gears and reducer gear can be upgraded with 608zz bearing versions for quieter operation and a more premium feel. See print profile "608 and Flat Pin Set".



How to use

CAUTION

USE EYE PROTECTION

BE AWARE OF OTHER PEOPLE AND PETS AROUND YOU

Frequently asked questions

- **Why** do people need respoolers?
 - Some spools don't fit in the AMS because
 - They are slightly bigger as they weren't designed for the AMS (this is getting less and less common as filament manufacturers design their spools to fit in the AMS).
 - Some spools are designed to fit but the filament is wound too tightly and the rims flare out, rub in the AMS (and cause retraction issues).
 - They're bulk spools (2kg, 5kg, etc)
 - You may want to redistribute a single filament roll onto multiple spools to use on multiple printers instead of buying more of the same - especially if they are accent colours or more exotic materials.
 - You may have cardboard spools and
 - The edge is uncoated, leaving cardboard dust everywhere in the AMS
 - The spool is deformed from improper storage

- You have retraction issues from lack of friction between the cardboard edge and AMS rollers (adding weight with a **desiccant holder** is another way to fix this)
 - You may drop the spool and damage it
 - You have sample spools or small spools (such as 250g spools) and you don't want to make AMS adapters
 - Your filament broke free and it's entangling on the floor
 - You melt your printed spool in the filament dryer
 - You are splicing left-overs to make a decently sized roll
 - You may have respooled on a different respooler and it's just not right
 - u/kdegraaf: it's pleasing to certain kinds of brains to have one's entire library be on one consistent size/brand of reusable spool
 - u/jrbless: I tried putting the refill into two different spools and it just wouldn't lock because the refill (as packaged) was just slightly too thick for it to work, so had to respool to get it working
- Do you need to **double re-spool**?
 - Filaments have a natural curve which is larger outside of the spool and smaller inside of the spool. Re-spooling once forces the larger curve to be smaller and visa versa. Re-spooling twice reverses this again, and the filament is under less stress when on the spool. Some users say they need to do this with their filament. This is probably more helpful for more brittle filaments (such as PLA-CF, old PLA or uncooked pasta) and much less important for more ductile filaments (such as PETG).
 - Alternative to double re-spooling would be to put it into a filament dryer - warming up the filament will soften the filament somewhat, allow more creep to happen, and take on the new shape.
- The **filament angle changes 90 degrees** when re-spooling with the PASTA lite because the spools are at a right angle. Is this a problem?
 - There is a fair bit of distance between the donor spool and receiver spool so the filament has plenty of distance to make the twist. Nevertheless, this could be a problem for the same reason as above (please report back if you have issues!). I do not currently know how much of a problem this would be. Again, this is probably more of an issue for more brittle filaments (such as PLA-CF or old PLA) and much less of a factor for more ductile filaments (such as PETG).
 - Putting the filament into a filament dryer will help for the same reasons as above.
 - A frame extension to put the two spools farther away would alleviate some twist issues as there will be more distance where the filament can turn (as allow larger spools to be donor spools).

This is in the works (and this side quest is rapidly becoming my main quest).

Changelog

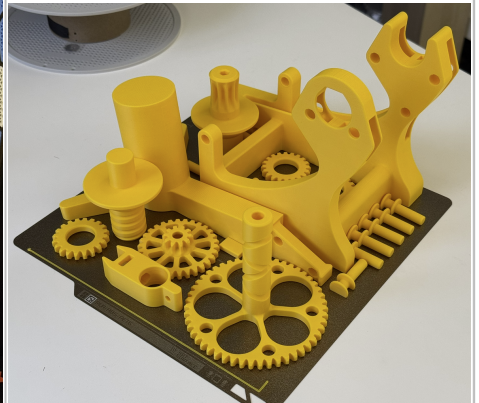
30/12/2024 - Version 0.1

First prototype

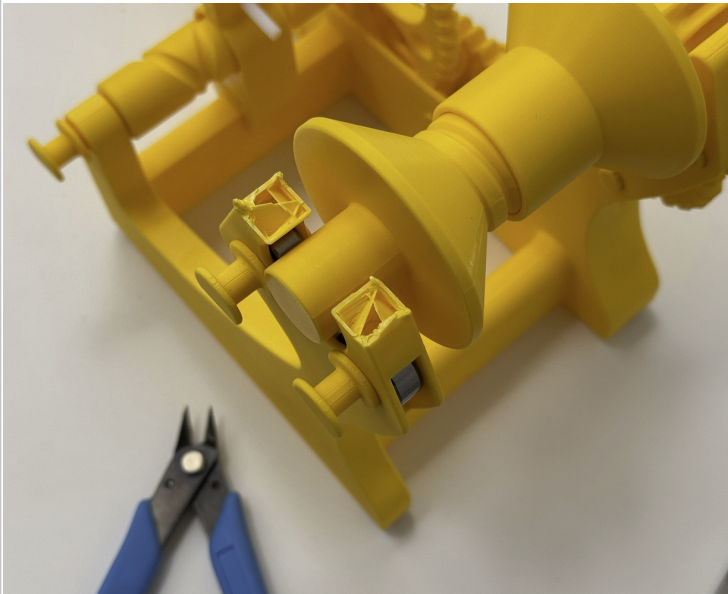
1. Everything printed well the first try (except the bridging inside of "Spindle Front" which looked a little messy)



2. Another angle. Most parts self-released.



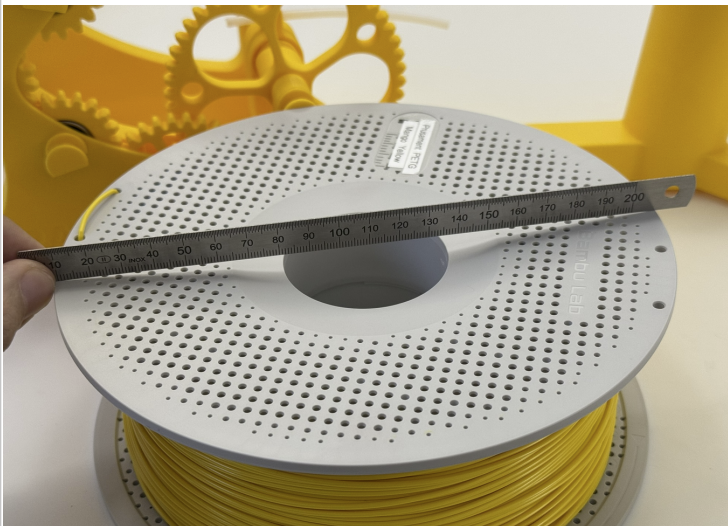
3. A fit issue was cleared up



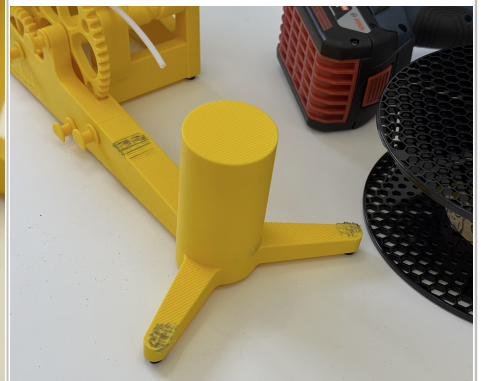
4. Assembly was otherwise quick easy except the guide pin retainer fit was very tight. Test run appeared to go OK.



5. However the spool wound too tightly, leading to the rim flaring out. The Prusament spool in the previous picture didn't fit in the AMS properly for this reason, and the new spool also has the same issue.



6. Significant wear seen on the donor spool carrier.



7. Wear marks on the donor spool. Note the bumpy protrusions - these lead to significantly more friction and wear. Most other donor spools would have been fine.

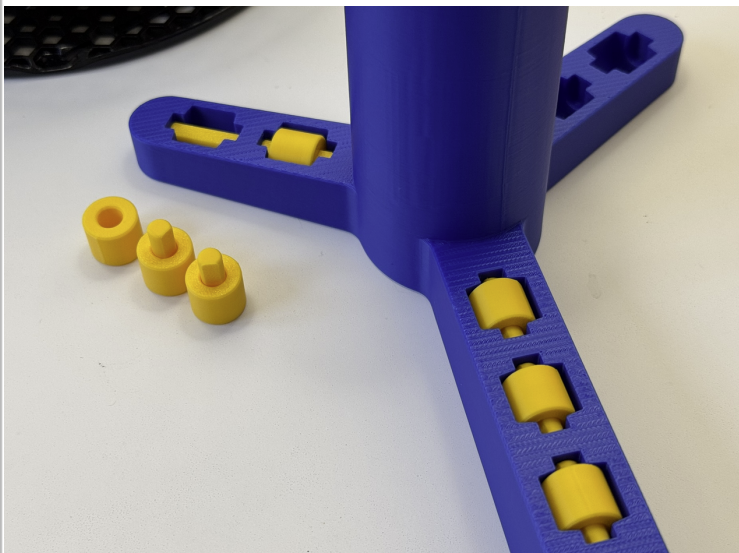


8. Bottom view showing the feet and the overkill double-lap/dovetail joint between the two main pieces.

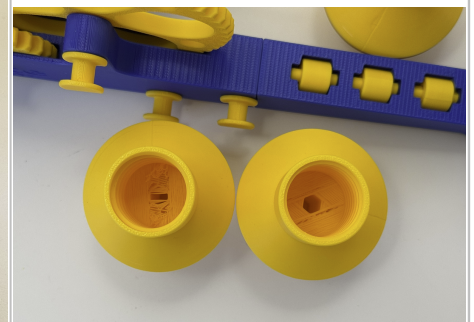


31/12/2024 - Version 0.2

1. Rollers added. The pins and rollers are very loose and will fall out easily, the gaps will need to be tightened up.



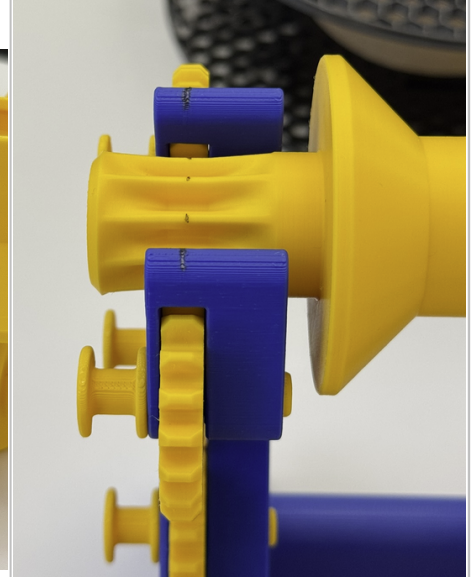
2. Spindle bridging printability improvements (v0.2 on right)



3. Spindle thread pitch reduced for a more secure lock with spool (v0.2 on right). Thread is self-tightening but can loosen when if the spool decelerates rapidly with the driver speed being reduced too quickly.



4. Pencil grooves added to be able to mark nominal position of spindle in the axial direction.



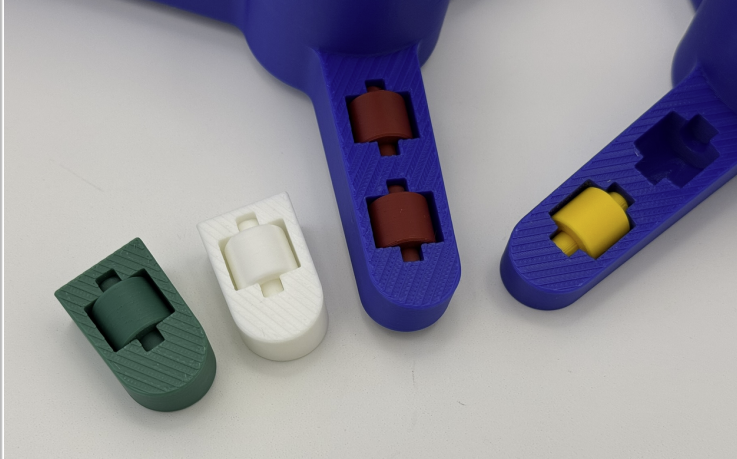
Various minor fitment and clearance changes were also made.

Test run video below. **The PLA bearings are extremely noisy.**

02/01/2024 - Version 0.3

[Version 0.3 is posted here](#), the mainline PASTA lite will take a different design direction that will allow from 0.25kg to 5kg spools to work as donor spools without modification.

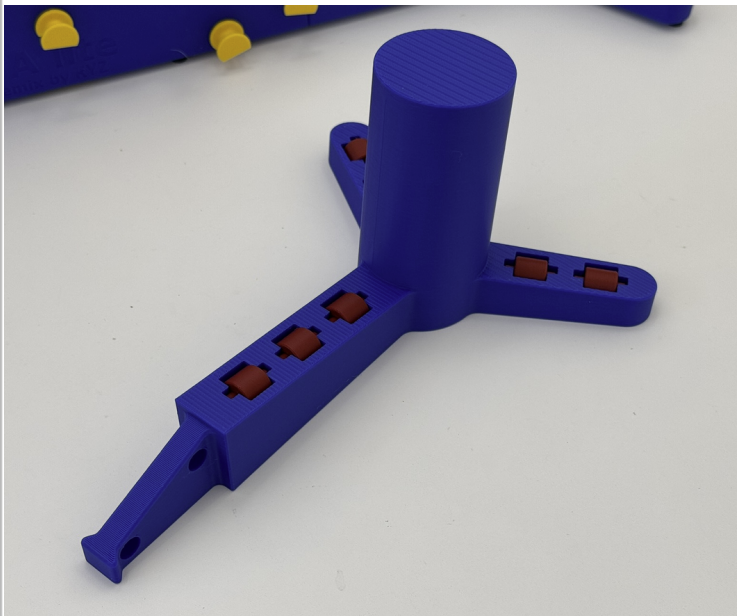
1. Roller and roller pin clearances reworked. Pins now have 2 flat sides and the pin slots are more rectangular so that the pins can not turn.



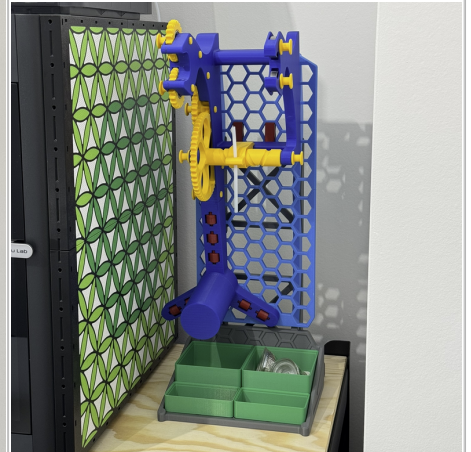
2. Holes added to the bottom so the rollers can be pushed out if needed.



3. The prototype was printed with 3 walls and 15% grid infill to make it quieter. It is now noticeably less "tinny" when you tap it.



4. Now that the rollers don't fall out, you can hang it on your pegboard hooks:



Testing results:

- PLA rollers and pins were used as-printed and un-lubricated for the worst case scenario.
- Respooling was quick and easy.
- Noise was significantly reduced from v0.2 but it is still fairly loud.
- Small bits of the rollers were coming off during the first run.

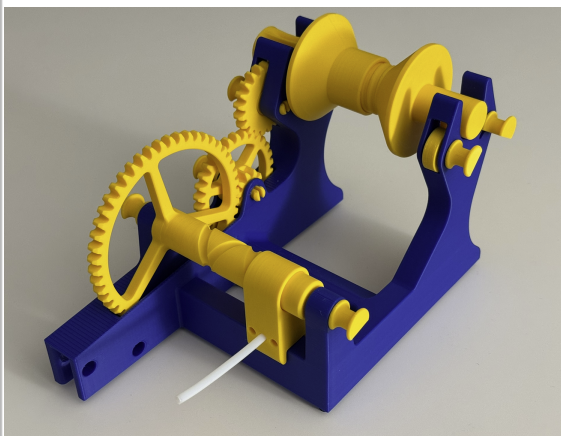
- PLA is not a suitable material for regular use. A little lubrication would also go a long way.

Don't be me - **remove the RFID tag before putting a different filament on there!** It's hard to convince the AMS that it's wrong.

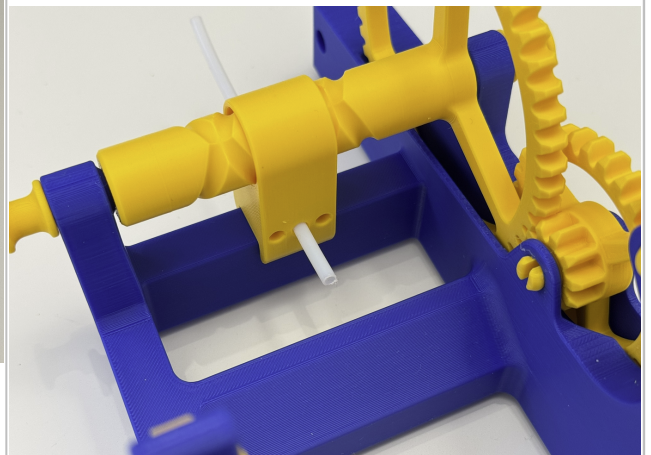
09/01/2025 - Version 0.4

With this version, a second donor spool variant is added. There is the **Donor Spool Spinner** as shown below and the new **Donor Spool Roller**. The single plate printing concept has been abandoned in favour of being able to design for functionality and ease of printing.

The frame design has been completely redesigned and remodeled to use 2 less idler gears and lower in height. Frame is slightly wider to accommodate a wider range of receiver spools.

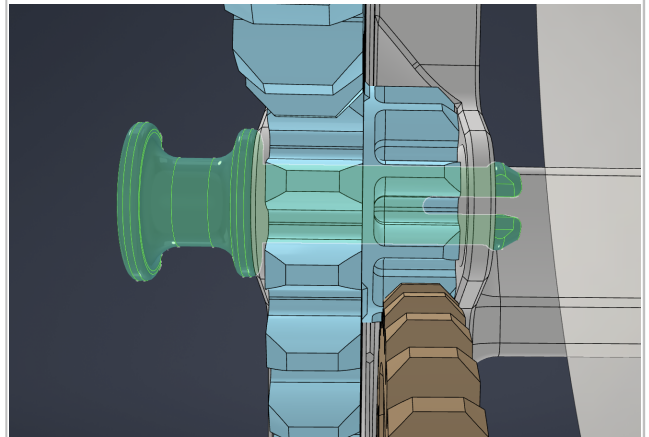


The shuttle has been completely redesigned to use the PTFE tube for the pin retention instead of a separate printed block. Two offset holes have been added to be able to add optional extra PTFE tubes to accommodate a wider range of receiver spools. The shuttle has been made wider and the clearances have been reworked for more precise movement.



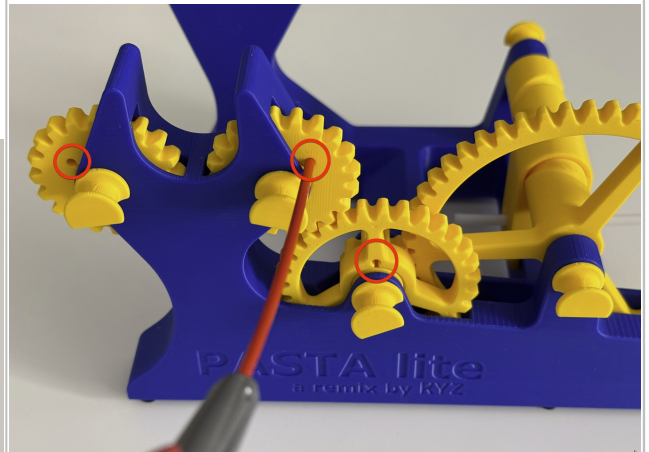
The reducer gear and lead screw gear has been reworked to reduce rotational inertia. All gear clearances have been reworked to reduce friction. The result of this (plus removal of 2 gears) is that the gears move with significantly lower torque. Hopefully this eliminates the need for any spindle clips.

All pins completely redesigned - now snap into place and do not back out with vibration. Nominal diameter is now 7.9mm (was 8.0mm) for easier fitment into 608zz bearings for those that want to upgrade to steel bearings.



Print profiles now include fully printed bearings (steel bearing option will be added later).

All printed bearings can now be serviced without removal from the frame.

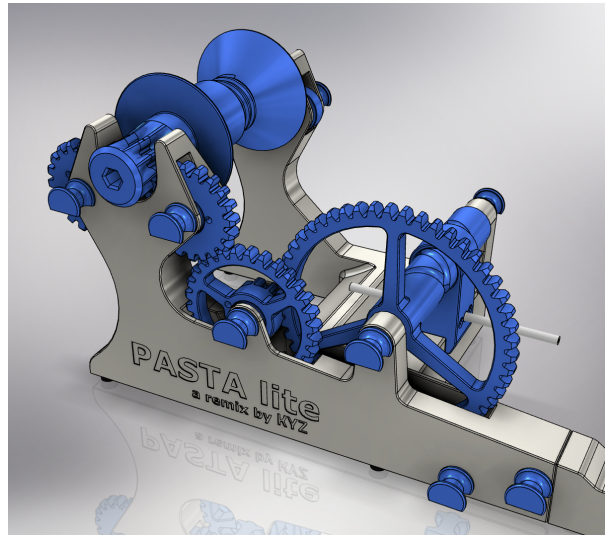


And the test run with v0.2 Roller Donor:

Files/print profiles for this version is not uploaded as v0.5 will be added soon.

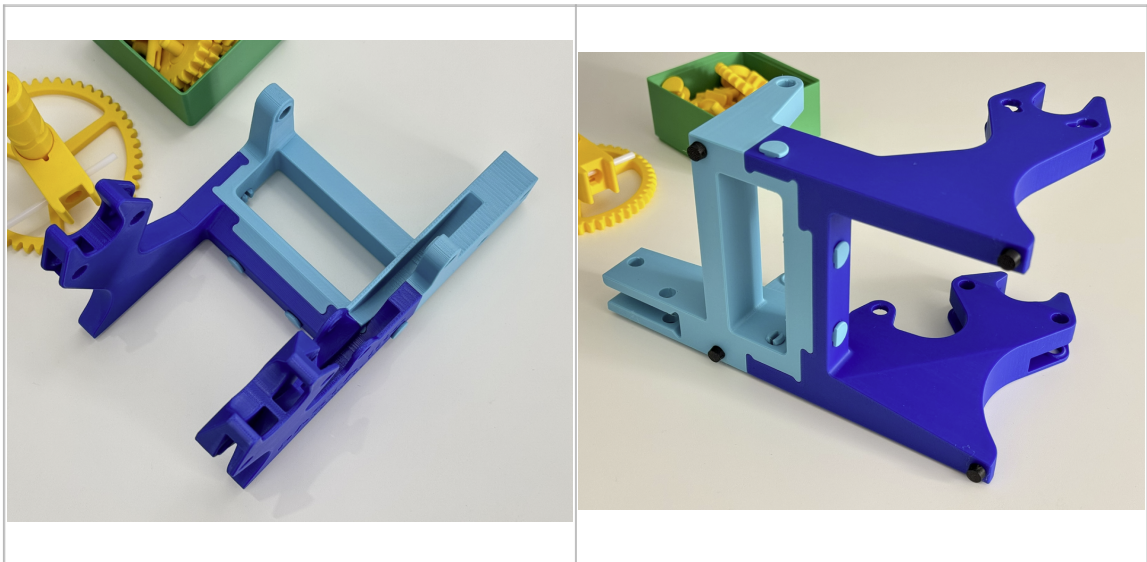
18/01/2025 - Version 0.5

- Reworked pins
- Increased radial clearances for bearings
- Reworked spindle to accommodate more receiver spools
- Other various minor changes



19/01/2025 - Version 0.6A1M

Additional split-frame variant added for A1 Mini owners. Design is fully clipped together within a minute.



Note: these flat-head pins can be used everywhere else also if you want a cleaner aesthetic!

21/01/2025 - 608 Bearing Upgrade and Flat Pin Set

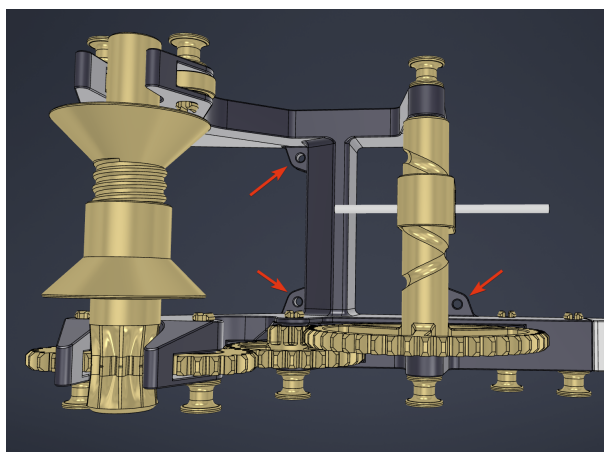
On the original Pastamatic, some users have reported that the bearings are difficult to insert. The idler gear and reducer gear have had the

interface to the bearing redesigned - from a simple 22mm hole to a 23mm hole with 6 nubs providing a more consistent amount of insertion force. These and the flat pins from v0.6A1M have been packaged into the print profile "608 and Flat Pin Set". Note that support is needed to print the reducer gear.



23/01/2025 - Version 1.0 and 1.0A1M Release

Frames updated with hard mounting provisions to make it easier for those that have mobility impairments, use this frequently and/or want to use the receiver stand-alone in conjunction with another donor spool holder. You can mount this to a heavy board or a workbench with 3x 4mm screws or gauge 8 screws.



User mods

- [Spool Adapter Rings](#) - for spools with particularly large holes

Support

You can support me by simply checking out my [spool desiccant holder](#) - it's something else I spent way too much time over-engineering and if you are

an AMS/CFS/other multi-filament system user, this may be helpful. Thank you.

This remix is based on



Pastamatic - Filament Spool Winder for Bambu Lab X1C/P1P AMS (level winder with self reversing leadscrew)

by GekoPrime

Model files



STL Files

17 files



kyz-pasta-lite-receiver-body.stl



kyz-pasta-lite-receiver-body-a1m-l.stl



kyz-pasta-lite-receiver-body-a1m-r.stl



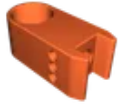
kyz-pasta-lite-spindle-front.stl



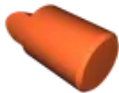
kyz-pasta-lite-spindle-back.stl



kyz-pasta-lite-lead-screw.stl



kyz-pasta-lite-guide-housing.stl



kyz-pasta-lite-guide-pin.stl



kyz-pasta-lite-pin-long.stl

☐ You need 5x for stand-alone use, 2x more for connecting attachments



kyz-pasta-lite-pin-long-flat.stl

☐ Alternate long pin



kyz-pasta-lite-pin-short.stl

☐ You need 2x



kyz-pasta-lite-pin-short-flat.stl

☐ Alternate short pin



kyz-pasta-lite-idler-fully-printed-v2.stl

☐ You need 2x, no 608 bearing required, print-in-place sleeve bearing



kyz-pasta-lite-idler-608.stl

☐ You need 2x, 608 bearing required



kyz-pasta-lite-reducer-gear-fully-printed-v2.stl

☐ No 608 bearing required, print-in-place sleeve bearing



kyz-pasta-lite-reducer-gear-v2-608.stl

☐ 608 bearing required



kyz-pasta-lite-608-bearing-fully-printed.stl

☐ You need 2x, unless you have 608 bearings

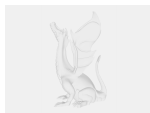


Bambu Studio Projects

2 files



kyz-pasta-lite-receiver-v10-2-tone-3-wall.3mf



kyz-pasta-lite-receiver-v10a1m-2-tone-3-wall.3mf

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