

Self Watering Planter

- Optional Magnets For Easy Hot Swapping !
- Endless Expansion Possibilities !
- Support Free 3D Printing :)
- Reservoir Can Lasts Over 7 Days (TESTED)
- No Additional Hardware Except Filament !



Modular Self Watering Planter - Endless Expandability !



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[VIEW IN BROWSER](#)

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Summary

Support Free - Printable On Small Printers (Like The Prusa MINI+) -
Modular - Self Watering - No Extra Hardware



11.66 hrs



3 pcs



0.25 mm



0.40 mm



PLA



209 g



Prusa MINI /
MINI+

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Back Story Of This Design:

I wanted to push my skills with 3D modelling and put my green thumb to use so I decided this would be a great place to start on expanding my skills

at making nicer looking models in CAD. This planter is designed with inspiration from the minimalist design movement and I had one main goal when modelling this, make it support free (and print well) And as always I hope you enjoy this design and if you notice something that could be improved, drop a comment and I will get straight onto creating a solution :) p.s. a like really motivates me to keep making more :)

Notes On Printing The Parts:

I recommend using the “seam painting” feature in PrusaSlicer to hide the seam on the planters by drawing it onto the back of the model for a nicer finish or even easier with the planters, setting the seam position to rear, You can also use the planter as a stand alone plant pot without the base as they act just to keep alignment of multiple planters.

I also looked at how to remove the lines on the outside of the print (where there is a transition from sparse infill to solid) and found in prusa slicer there is an option to print the outside perimeter first, this may help remove this artefact from the print but I haven't tested this out yet

Features Of This Planter:

1. A simple soil fill line indicating the ideal depth of soil
2. Using a gravel trap submerged in the water instead of part of the soil stops the soil from flooding with water and drowning the plants, in other words the planter is more forgiving to those heavy duty plant pot watering people :)
3. Optional magnets for easy expansion in the future
4. Large reservoir of water allowing for extended periods of time without watering (**I have tested this and I get around 7 to 8 days**)
5. A clean, minimal design to fit into any household
6. Budget friendly and a great way to put your green thumb to use

Example Parts List (BOM) - If Using 3 Planters On A Modular Base System

- **6mm x 3mm Magnets** - 24x (A pack of 40x costs £5 on Amazon)
- Planter - 3x
- End Base Plate - 2x
- Joining Base Plate 2x
- **Some super glue**
- Couple handfuls of stones - See preparing planter images for ideal size
- And some soil/seeds... duh...

Follow These Steps If Using Magnets

1. Start by inserting the magnets into the space for them on the underside of the planters, it doesn't matter if they are facing north or south as long as they are **all facing in the same direction**, I recommend using a small bead of super glue to hold them in place, as with all the magnets !
2. Then insert the magnets into the top of the base plates, making sure they all **face the opposite way to the planters** (so that they attract regardless of which planter is place on top of it)
3. Finally insert the last magnets into the base plates (the 2 end pieces should attract each other, and all the joining plates should attract, no matter the orientation, see diagram below for more help on magnet orientations)

Magnets Help Diagram - Colour Indicates Direction Of Magnets



End Results After Installing The Magnets

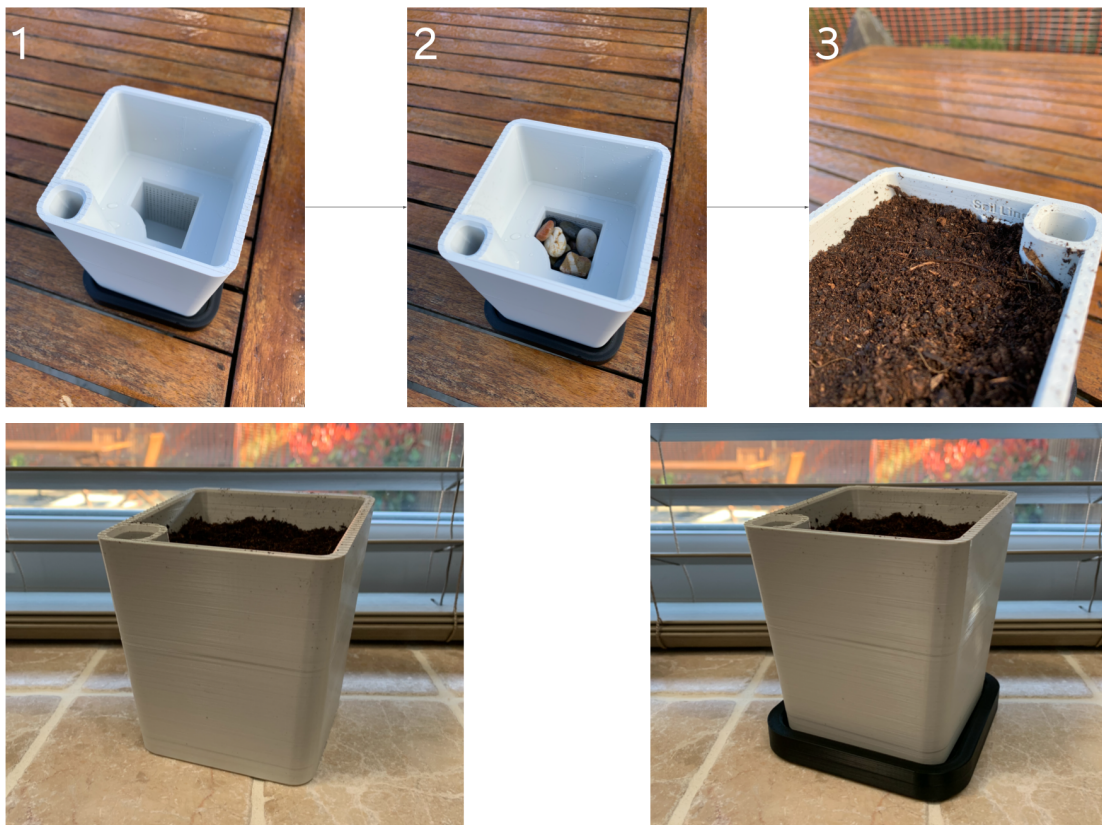
You should be able to do the above and then rotate the centre piece 180 degrees and have the same outcome when brought near the end sections.

Preparing The Planters For Plants

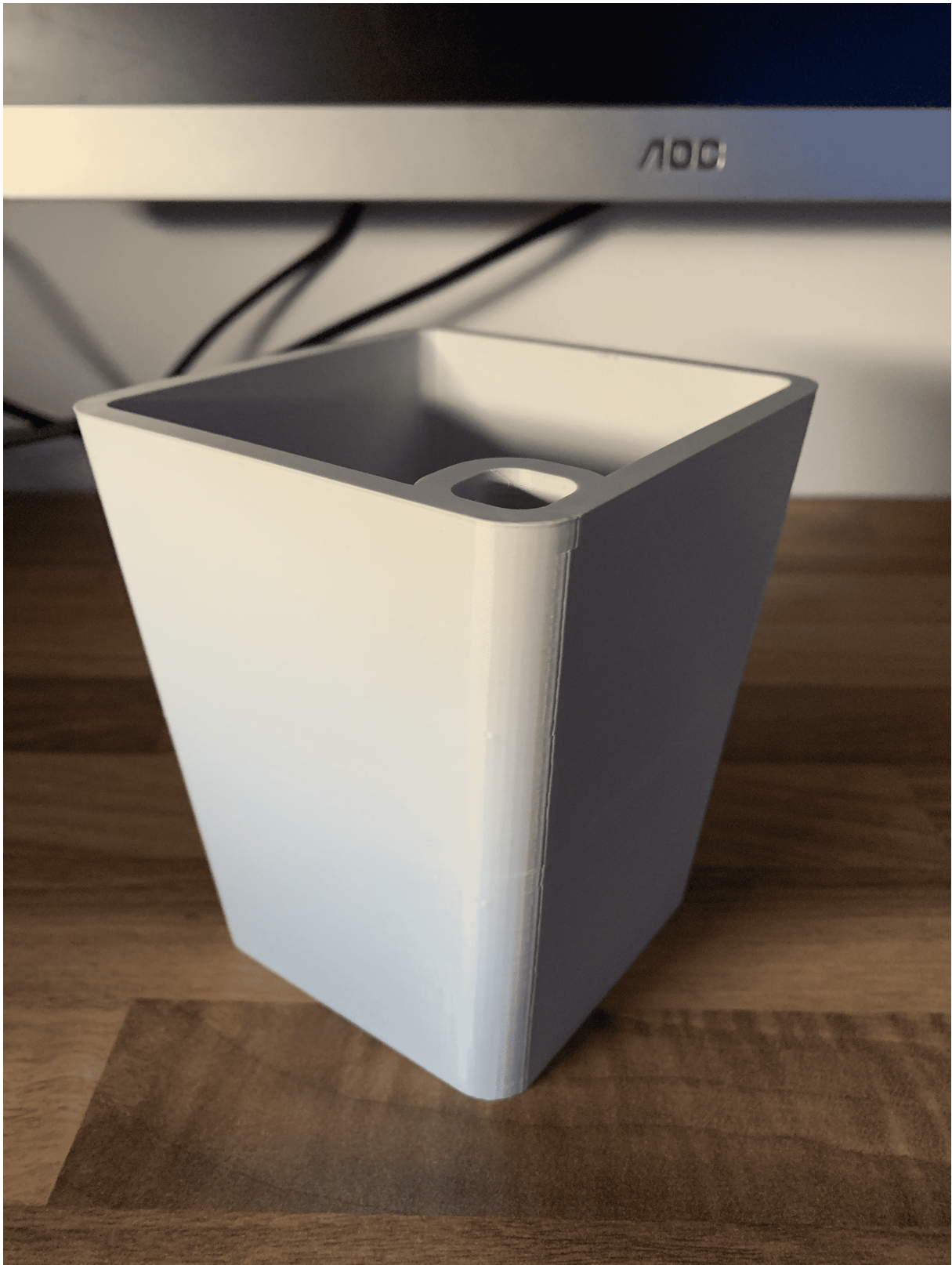
1. Start by placing a handful of small stones into the gravel trap, you could fill the gravel trap with soil and it may work but for the risk of water logging the soil, I strongly recommend using stones instead
2. Then fill the rest of the way up, to the soil fill line, with soil, remember to add in the seeds here as-well
3. Filling the planter up with water (through the water intake) will finish the planter making it ready for seeds or plants. (see photos for more assistance)

When filling the planter up, don't over do it (like I did to begin with), I recommend filling it to about 1 cm below from where the intake opens up to the reservoir, then only refilling the planter up when you can't here the water sloshing with a slight shake of the planter.

Preparing The Planter Photos:



Design Process And Iterations (UPDATE LOG):



Version 0: This was more a proof of concept print to just see how well it can be printed and would it work. I was testing parameters like, how would you print it to be waterproof etc. This was never meant to be the final

design so I labelled it as v0 and moved onto creating v1 which can be seen below :)



Version 1: This planter was originally going to use thick cotton strings to act as the diffusion membrane between the water and soil to allow osmosis to occur but I wasn't happy with the need for extra hardware and not knowing how well it would work so I needed a better solution to self

watering and did some research on existing methods and found the use of a gravel trap, and so I implemented the design change and got to printing v2



Version 2: (Current Version) With this planter I didn't forget, like last time, to hide the seam for a cleaner looking print. This one also has updated internals and is currently in my kitchen supporting the growth of

some salad. I really like this current form of the planter so for any future updates the planter will probably look the same on the outside. I also remembered to print a base for this one :)

How My Planter Is Doing: Progress Update (Testing)



Day 1 to 3: After planting the seeds into the soil I waited eagerly to see the first signs of life, quickly realising this isn't a quick process I left it for the next couple days checking on it every morning and just over 48 hours later, I begin to see tiny white shoots breaking out of the soil, this may not be super clear in the image but I promise you they are their. Stay tuned for the next update in another 3 days!



Day 4 to 6: The magnets I ordered arrived yesterday so I installed them into the modular base plates (uploaded a video above - added some more photos) and installed some of the others into this planter/base. It is also pretty amazing to see the amount of growing in the plants I planted less than a week ago. I will update the progress again in 3 more days and I can't wait to see how much the have grown again!



Day 7 - 9: Today is the last time I post an update and is also the first time I had to refill the planter, so I can confirm that (at least for me) the reservoir will last over 7 days! It is also amazing to see how much they have grown again :)

Additional Notes:

I had ran out of any kind of wood fill plastic so have printed my base plate in black PLA. When I get more wood fill plastic I will reprint and update the photos etc. but functionally they still work. I am growing some salad in mine and will post progress photos when they grow !

Model files



Planter - Optional Hardware - Expandable

1 file



planter.stl

☐ The planter will work with either style of base plates !



Single Base Plates - Optional Hardware - Not Expandable

3 files



base-plate-for-1-planter.stl

☐ Supports 1 Planter... duh...



base-plate-for-2-planters.stl

☐ Supports 2 Planters... duh...



base-plate-for-3-planters.stl

☐ Supports 3 Planters... duh...



Modular Base Plates - Requires Extra Hardware - Expandable 2 files



base-end-section.stl

☐ If printing the modular base plates, you will need 2 of these pieces !



base-joining-section.stl

☐ To calculate the amount of these you need, subtract one from the amount of planters you have !

Print files



planter_025mm_pla_mini_9h3m.gcode

PLA 0.40 mm 0.25 mm 9.05 hrs 156 g Prusa MINI / MINI+

☐ Prints one planter



base-end-sections_025mm_pla_mini_2h37m.gcode

PLA 0.40 mm 0.25 mm 2.61 hrs 53 g Prusa MINI / MINI+

☐ Prints both base end pieces



base-joining-section_025mm_pla_mini_2h23m.gcode

PLA 0.40 mm 0.25 mm 2.39 hrs 53 g Prusa MINI / MINI+

☐ Prints one base joining piece

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