DESIGN GUIDELINE

Magnet Embedding Design Guide

Embed disc magnets in 3D-printed parts for magnetic lids, storage boxes and detachable modules. Model the pockets to this guide so the magnets fit, stay put and do not crack the part.

01 · SIZE CHART

Size chart

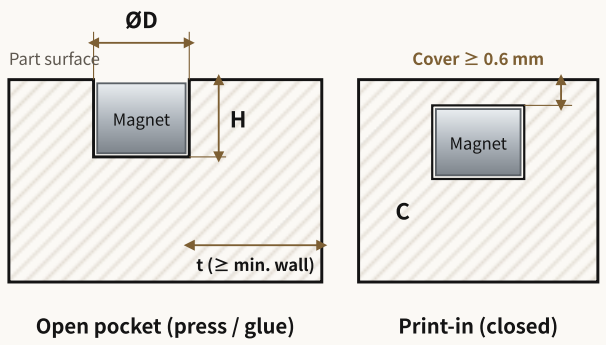
Magnet dia. D	Thickness T	Press-fit hole tight	Glue-in hole D + 0.3	Open pocket depth T + 0.1	Print-in pocket dia. × depth	Min. wall t	Magnet spacing min. p (center)
Ø4 2 thicknesses	1	**4.1**	4.3	1.1	4.3 × 1.2	1.2	7
	2	**4.1**	4.3	2.1	4.3 × 2.2	1.2	7
Ø5 2 thicknesses	1	**5.1**	5.3	1.1	5.3 × 1.2	1.2	8
	2	**5.1**	5.3	2.1	5.3 × 2.2	1.2	8
Ø6 2 thicknesses	1	**6.15**	6.3	1.1	6.3 × 1.2	1.2	9
	2	**6.15**	6.3	2.1	6.3 × 2.2	1.2	9
Ø8 2 thicknesses	1	**8.15**	8.3	1.1	8.3 × 1.2	1.5	11
	2	**8.15**	8.3	2.1	8.3 × 2.2	1.5	11
Ø12 5 thicknesses	1	**12.2**	12.3	1.1	12.3 × 1.2	2	15
	2	**12.2**	12.3	2.1	12.3 × 2.2	2	15
	3	**12.2**	12.3	3.1	12.3 × 3.2	2	15
	4	**12.2**	12.3	4.1	12.3 × 4.2	2	15
	5	**12.2**	12.3	5.1	12.3 × 5.2	2	15
Ø15 5 thicknesses	1	**15.2**	15.3	1.1	15.3 × 1.2	2.5	18
	2	**15.2**	15.3	2.1	15.3 × 2.2	2.5	18
	3	**15.2**	15.3	3.1	15.3 × 3.2	2.5	18
	4	**15.2**	15.3	4.1	15.3 × 4.2	2.5	18
	5	**15.2**	15.3	5.1	15.3 × 5.2	2.5	18

Ø18 5 thicknesses	1	**18.2**	18.3	1.1	18.3 × 1.2	2.5	21
	2	**18.2**	18.3	2.1	18.3 × 2.2	2.5	21
	3	**18.2**	18.3	3.1	18.3 × 3.2	2.5	21
	4	**18.2**	18.3	4.1	18.3 × 4.2	2.5	21
	5	**18.2**	18.3	5.1	18.3 × 5.2	2.5	21

Unit: mm. The chart covers the NdFeB disc magnets we sell (same sizes as in our shop). Model the holes with these values directly; no shrinkage compensation needed. Tolerances vary between printers and materials, so print a test hole first for larger runs.
Press-fit holes are tight: push the magnet in straight with a flat tool. If you want easy insertion and glue afterwards, use the glue-in size.

02 · CROSS SECTION

Cross section



Open pocket (press / glue) **Print-in (closed)**

- **ØD** Hole diameter: use the press-fit size (tight) or the glue-in size (D + 0.3, room for glue).
- **H** Open pocket depth: magnet thickness + 0.1 mm so it sits flush. Tell us if you want it proud or recessed.
- **C** Print-in: pause the print at the top of the pocket, drop the magnet in and resume. Pocket D + 0.3, depth T + 0.2, with at least 0.6 mm (about 3 layers) on top.
- **t** Wall: solid material from the pocket to the outer edge. Too thin and it bulges or cracks.

03 · METHODS

Embedding methods

01 **Press-fit**: Fastest, no glue; the magnet is flush with the surface. Best for rigid materials such as PLA and PETG.

02 **Glue-in**: Looser hole, fixed with epoxy or CA glue. Works with any material and can be done later.

03 **Print-in**: Pause the print, drop the magnet in, resume. Fully enclosed and invisible, cannot fall out, but the pull is weaker than an exposed magnet.

04 · DESIGN TIPS

Design tips

Polarity

- When two parts should attract each other, mark **which face points out and which parts pair up**, e.g. "part A: N out, part B: S out".
- Multiple magnets in one part should all face the same way unless your drawing says otherwise; a wrong one will repel.
- If polarity does not matter (e.g. sticking to steel), let us know.

Pocket shape

- Use a **flat-bottomed straight hole**, no taper. A 0.2–0.3 mm chamfer at the opening helps alignment.
- For press-fit, 3–4 small vertical grooves (0.3 mm) in the wall let air escape.
- Print pockets facing up (axis perpendicular to the bed) for the roundest, most accurate holes.

Pull force & distance

- Magnetic force drops quickly with distance: keep print-in covers thin (0.6–1 mm).
- For a stronger hold, use a thicker magnet or leave it exposed so the magnets touch directly.
- Magnets placed too close attract each other or flip; keep the spacing in the chart.

Cautions

- NdFeB magnets **lose magnetism permanently above about 80 °C**: never heat-set them, and keep them away from heat.
- Magnets are brittle and chip if they snap together. Keep small magnets away from children.
- Keep them away from phones, credit cards and mechanical watches.

05 · MATERIALS

Materials

Good	**PLA / PLA+**	Most common; press-fit or glue-in. For parts kept above 50 °C, use PETG or better.
Good	**PETG**	Tough and less likely to crack, ideal for press-fit.
Good	**ABS / ASA / PC**	Heat-resistant; press-fit or glue-in.
Good	**Resin (SLA)**	Resin parts are brittle: use the glue-in size, not press-fit.
Caution	**TPU (flexible)**	Too soft to hold a magnet by friction: glue it in or embed it during printing.

06 · CHECKLIST

Checklist before sending

- ☐ Hole size taken from the chart (press-fit / glue-in / print-in)
- ☐ Wall thickness and magnet spacing meet the minimums
- ☐ Polarity marked for any parts that should attract
- ☐ Material suitable (glue-in for TPU and resin)
- ☐ Open pocket depth = magnet thickness + 0.1 mm
- ☐ Pockets face up, flat-bottomed, no supports inside
- ☐ Pause height given for print-in pockets, or ask us to decide
- ☐ Magnet size and quantity marked for every pocket, e.g. "6 × 2 mm × 4"

Questions about your design? Send it to us first

Attach your file or a screenshot and we will check the pockets and magnet sizes

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