

Parametric Brass Catcher for AR-15 and AR-10 with Mason Jar Thread

Zoid

VIEW IN BROWSER

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Summary

Rail-mounted brass catcher with a wide-mouth mason jar thread, so the bin, a bag collar or your own attachment screws on

Sports & Outdoor > Other Sports

Tags: parametric gear carbon fiber openscad shell jar picatinny brass nylon catcher mason casing range gridfinity

PLA and PETG have a rough time with hot brass and port pressure, so I designed this catcher around carbon fiber nylon. It hangs from your top Picatinny rail, sits over the ejection port and funnels brass down into a screw-on bin.

The bottom is a standard wide-mouth mason jar thread, so the bin is only the first option. Screw on the bag collar, a metal wide-mouth jar, or anything you design to the same thread.

Quick start

1. Find your caliber below. It tells you the hood set and the bin.

2. Print the Rail Fit Test and Thread Fit Test in PLA Pro. Try them on your rail and on a real jar.
3. Print the hood, clamp and bin in PLA Pro and check the fit on your cleared rifle. Do not fire it.
4. Happy with the fit? Print the real set in Fiberon PA612-CF15 and anneal it.
5. Work through "Test it before you trust it" below.

Calibers

- **AR-15 hood, 60 round bins:** 5.45x39, 5.56 / .223, .224 Valkyrie, .300 Blackout, 6mm ARC, 6.5 Grendel, 6.8 SPC, 7.62x39, .350 Legend
- **AR-15 hood, 40 round bins:** .450 Bushmaster, .458 SOCOM, .50 Beowulf
- **AR-10 hood, 40 round bins:** .308 / 7.62x51, 6.5 Creedmoor, 6mm Creedmoor, .243 Win, .260 Rem, 7mm-08, .338 Federal
- **Long Action hood, 30 round bins:** .30-06, .270 Win, 7mm Rem Mag, .300 Win Mag

The Long Action set is a starting point for long-action gas guns only, so measure your rifle first. It isn't for bolt guns, because the hood would block the bolt handle.

Every bin is 93 mm across with the same thread, so any bin fits any hood.

Will it fit your rifle?

- You need a true Picatinny top rail from about 69 to 123 mm forward of the port center. A rail section bolted on top changes the height, so measure it.
- The rifle numbers in the file are estimates. I couldn't find a published drawing, so they came from forum figures and geometry. The hood has margin, but your real numbers are better.
- Enter your measurements in the Customizer under "Rifle fit" if something doesn't clear.
- The hood slides up to 5 mm fore or aft in its slots to center the port.

The thread

- The hood socket is the lid side of a wide-mouth mason jar (86-450 finish), and attachments are the jar side.
- Numbers: 86 mm thread outside diameter, 82 mm neck, 6.35 mm pitch. Sources disagree and I haven't measured a jar, so try the Thread Fit Test on a real jar before you print a hood.
- **Fine to screw on:** the printed bin, the bag collar, a metal wide-mouth jar or cup, or anything printed in nylon to those numbers.

- **Never glass.** It would sit on a recoiling rifle with hot brass dropping into it. Thin plastic jars will soften or melt.
- There's no snap lock, because that would stop other attachments fitting. Turn the bin until the rim seats and check it after your first magazine.

Cooling and sifting

- The bin floor is a hex mesh with 3.5 mm holes, so dust and loose powder fall out while brass stays in.
- Nine 5 mm open slits run from the floor to the shoulder so brass cools and nothing packs in at the edge.
- That dust isn't clean, because fired primers leave lead residue. Dump the bin outdoors or over a bin, and wash your hands after.

Materials

- **Real parts:** Polymaker Fiberon PA612-CF15. Its heat deflection is 175 C at 0.45 MPa and 114 C at 1.8 MPa.
- **Fit checks only:** Polymaker PLA Pro. **Do not fire PLA or PETG parts.** PLA Pro's heat deflection is 58 C, and hot brass and a warm handguard go past that.
- My worst-case estimate for a full bin is 115 to 125 C. On long strings, dump a hot bin instead of topping it up.
- The hood doesn't seal, so it can't hold pressure. The mouth stands at least 16 mm off the receiver, and ten slots vent out and forward, not back at your face. Take extra care testing if you run a suppressor.

Printing the real parts

- Nozzle: 250 to 300 C, hardened, 0.4 mm or larger
- Bed: 40 to 50 C, never above 50
- Chamber: room temperature, door open
- Part fan: off
- Layer height: 0.20 mm
- Drying: 100 C for 10 hours, then print from a dryer under 20% RH
- Speed: start around 60 mm/s
- Adhesion: glue stick or Magigoo PA if it lifts
- Supports: none

Each part goes on the bed as exported:

- **Hood:** socket down, 4 walls, 25% gyroid, 5 mm brim
- **Clamp Body and Jaw:** 5 walls, 40% gyroid
- **Bin:** upright, floor down, 3 walls. Set elephant foot compensation so the mesh holes stay open
- **Bag Collar and fit tests:** 3 walls

Then anneal: bake at 100 C for 16 hours, with all mating parts and both fit tests together. Polymaker's test block shrank about 0.9% on one axis, so repeat both fit tests on annealed parts.

Hardware

- 2 x M5x35 socket head bolts (rail clamp)
- 2 x M5x25 socket head bolts and 2 x M5 washers (hood to clamp)
- 4 x M5 nyloc nuts
- For the bag option: a cotton bag and a hose clamp. Synthetic mesh is what hot cases stick to.

Assembly

1. Press two nuts up into the open slots under the clamp body. Slide two nuts into the side slots of the hood shelf.
2. Bolt the clamp body to the shelf with the key in the groove, leaving the two M5x25 bolts slightly loose.
3. Clear the rifle. Set the clamp on the top rail about 96 mm forward of the port center (98 on an AR-10), keys in the slots. Add the jaw and tighten the two M5x35 bolts to about 1.5 N m. Don't go higher, because nylon creeps under bolt load when warm.
4. Slide the hood until the port is centered in the mouth, then tighten the M5x25 bolts to the same torque.
5. Screw the bin in until the rim seats. Looking down on the bin, that's counter-clockwise, or clockwise when you look up at the bottom of it.

Test it before you trust it

With the rifle clear and no ammunition in reach, on the final nylon parts:

1. Open and close the dust cover. Pull the charging handle fully and let it go. Nothing should touch the hood.
2. Check that you can reach the mag release, bolt catch and safety with the hood and bin on.
3. Cycle dummy rounds by hand and watch the path out of the port.

Then at the range, with eye protection:

1. Load one round, then two, then three. Film the port in slow motion if you can. You're looking for any case coming back toward the port, and for stovepipes.
2. Check the bin thread after the first magazine. Check both cross bolts after the first session, and look over the shelf and plate for cracks now and then.

If a case rebounds, stick a 3 mm silicone pad on the ramp. The bin can get hot enough to burn you. Take the bin off before you unload or clear a live round, so a live cartridge never lands in hot brass.

Case holders

The 7 Case Holders folder stores the whole catcher on the same grid as my Gridfinity DAKA kit.

- The hood lies on its mouth across three rests. The two M5x25 bolts and washers go back in the shelf nuts so nothing floats loose, and the bag collar can stay on.
- The bin lies in a cradle. Use the 3x3 for bins up to 119 mm long and the 3x4 for longer ones.
- The clamp bolts onto a 2x2 dock with a short Picatinny rail.
- The V730 folder is for the Pelican V730. The Other Cases folder is for V700, V770, V800, C35, R44, LR53 and AW2 36.
- Pelican 1700, 1720, 1750 and AW2 42, 52 can use Other Cases, but you'll need to cut a relief in the lid foam over the hood and bin.
- The hood and rests need a 6 x 5 cell patch, and the whole set is 9 x 5. The guide has the exact cell positions.
- **Let everything cool and empty the bin first.** PLA Pro is fine for the holders as long as nothing hot goes in.

Parametric version

Parametric - Brass Catcher.scad is the whole thing in one OpenSCAD file with no libraries. Pick a part and a caliber in the Customizer, then render and export. You can set a custom cartridge, round count, thread numbers, mesh size, rifle measurements and case height. Parts come out oriented for the bed. I ran it from the command line in OpenSCAD 2021.01, so I haven't clicked through the Customizer panel itself.

Good to know

- Brass Catcher Guide.pdf in the files has the full version of everything here, including the thread numbers, heat numbers and rifle measurements.
- The premade STLs carry a small maker's mark. The fit tests, clamp body and bag collar don't, and nor does anything you export from the parametric file.
- I designed this with AI assistance: the OpenSCAD source and fit checks were written with Claude.
- Not affiliated with Magpul, Pelican, Plano or Polymaker. Gridfinity is by Zack Freedman.
- Check your range's rules before you use it. You're responsible for how you print, fit and use this.

Related models

- Gridfinity DAKA: the case grid these holders drop into
- Chamber Flags with Dummy Round Pegs: 32 calibers

Model files

1 Fit Tests 2 files

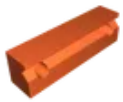


rail-fit-test.stl



thread-fit-test.stl

2 AR-15 3 files



ar-15-clamp-jaw.stl



ar-15-hood.stl



ar-15-clamp-body.stl

3 AR-10

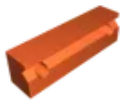
3 files



ar-10-hood.stl



ar-10-clamp-body.stl



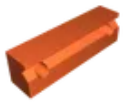
ar-10-clamp-jaw.stl

4 Long Action

3 files



long-action-hood.stl



long-action-clamp-jaw.stl



long-action-clamp-body.stl

5 Bins

23 files



bin-260-rem.stl



bin-458-socom.stl



bin-68-spc.stl



bin-300-blackout.stl



bin-556x45-223-rem.stl



bin-243-win.stl



bin-270-win.stl



bin-7mm-08.stl



bin-50-beowulf.stl



bin-6mm-arc.stl



bin-224-valkyrie.stl



bin-350-legend.stl



bin-6mm-creedmoor.stl



bin-65-creedmoor.stl



bin-545x39.stl



bin-7mm-rem-mag.stl



bin-65-grendel.stl



bin-308-win-762x51.stl



bin-30-06.stl



bin-762x39.stl



bin-338-federal.stl



bin-300-win-mag.stl



bin-450-bushmaster.stl



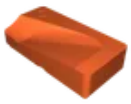
6 Attachments 1 file



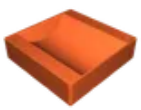
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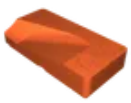
7 Case Holders 23 files



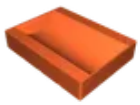
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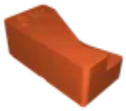
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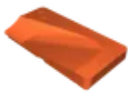
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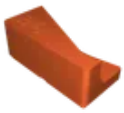
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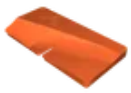
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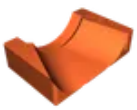
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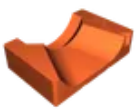
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case-other-long-action-hood-socket-rest.stl



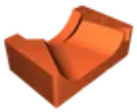
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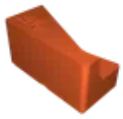
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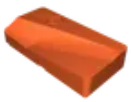
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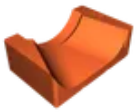
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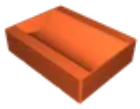
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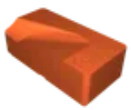
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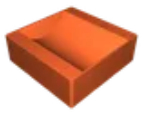
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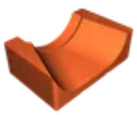
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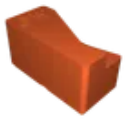
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case-v730-bin-cradle-3x3.stl



case-v730-long-action-hood-socket-rest.stl



case-v730-ar-15-hood-rear-rest.stl

8 Parametric 1 file

parametric-brass-catcher.scad

Other files

9 Guide 1 file

brass-catcher-guide.pdf

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