YZY’s Montgo-9 Printable Lower Receiver

Designed and packaged

By **YZY**

Introduction

YZY's Montgo-9 package is a 3D printable lower receiver designed around the Montgo-9 upper receiver from MatadorArms. The Montgo-9 upper receiver is a monolithic upper receiver for AR-platform firearms, using standard 9MM Glock magazines and does not require the use of a buffer tube.

This lower-receiver was heavily remixed from RKSpookware's UBAR-9 lower receiver for AR-9 variant pistol-caliber carbines, which was remixed from IvanTheTroll's AR-15 UBAR receiver and uses geometry from Not_SpookyGuns' AR-9 Firebolt platform.

While the Montgo-9 can be installed directly onto RKSpookware's UBAR-9 package without issue, this package removes much of the redundant buffer tower reinforcements that are normally required for firearms that necessitate the use of a buffer tube. This package has also been overhauled aesthetically and features an extended mag-release for easier reach. It also removes some extra hardware that is necessary for front-takedown pin reinforcements found on the UBAR models.

A special thank you to MatadorArms for supplying this upper receiver and publishing the .STEP file – without them, this package would not have been possible.

Please note: Portions of this readme have been lifted directly from IvanTheTroll's UBAR documentation, as this receiver has been remixed from his well documented design, but I have done my best to tweak the instructions so that they pertain more specifically to this build.

Changelog:

V1.0.0 – Initial Release

Prep

"Bare minimum" shopping list:

- 1x MatadorArms Montgo-9 Upper Receiver, Gen1

- 2x 98306A164 Clevis Pin, 1/4" Diameter, 1-7/16" Usable Length

- AR-15 Fire Control Group Trigger Parts:

a. Trigger
b. Trigger Spring
c. Trigger Pin
d. Hammer

e. Hammer Spring
f. Hammer Pin
g. Disconnector
h. Disconnector Spring
i. Safety Selector
j. Safety Selector Detent
k. Safety Selector Spring
l. AR Grip Screw (Mil-spec) + crush washer
m. AR Mag Release Spring (or similar)
- Glock Magazine Parts
a. 1x Glock Mag Catch spring
b. 1x Glock Mag Release
c. 1 M3x30mm socket head cap screw
- 1x Machined Steel Ejector for the UBAR-9 from RKSpookware
    - 2x M3x20mm socket head cap screws
    - 2x M3 hex nuts

Suggested ToolKit:

- Set of Rollpin Punches
- 3/8”, 5/32”, and 1/4 “ drill bits with electric handheld drill
- Gunsmith Hammer (brass and nylon)
- M3 hex wrench
- Sandpaper/File
- Lubricating Oil
- 1/4x28 thread tap with #3 (0.213") drill bit
- Long 3/16” Hex Key/Wrench or flathead screwdriver depending on grip screw

Material Choice

Material choice is PLA+/PLA Pro, from reputable brands like Polymaker or ESUN. **(Note: the PolyTerra line of filaments will yield a structurally deficient frame, one user reported 4 shots before the frame broke.)** Exotic filaments like Nylon, Nylon+CF/GF, Polycarbonate have reported mixed experiences so proceed with caution.

Printer Calibration

Calibrating your 3D printer is **paramount** to producing a print that will reliably and safely function for thousands of rounds. It would behoove the end user to complete a PID auto tune on their printer, as well as calibrate ESTEPS/mm and print a 20mm calibration cube to verify that the 3D printer is producing geometrically accurate parts. Much has been said already on this topic so please look to YouTube for helpful guides on printer calibration.

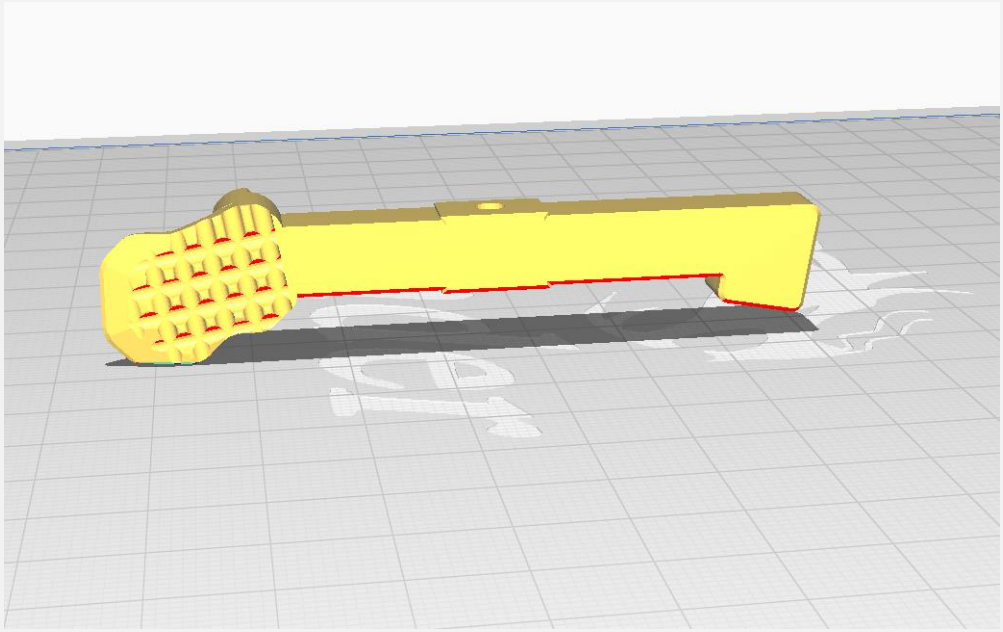
Print Settings & Orientation:

Print Settings

- Layer Height: 0.16-0.2
- Wall Line Count: 8-12
- Infill: 99%, absolutely no less.
- Supports: Use support blockers around the bolt catch and mag release button areas, as documented in photos on page 8
- Support X/Y Distance: ~0.8-1.0
- Support Z Distance: ~0.15-0.2 depending on layer height
- Cooling Fan: on at layer 3, 100% speed

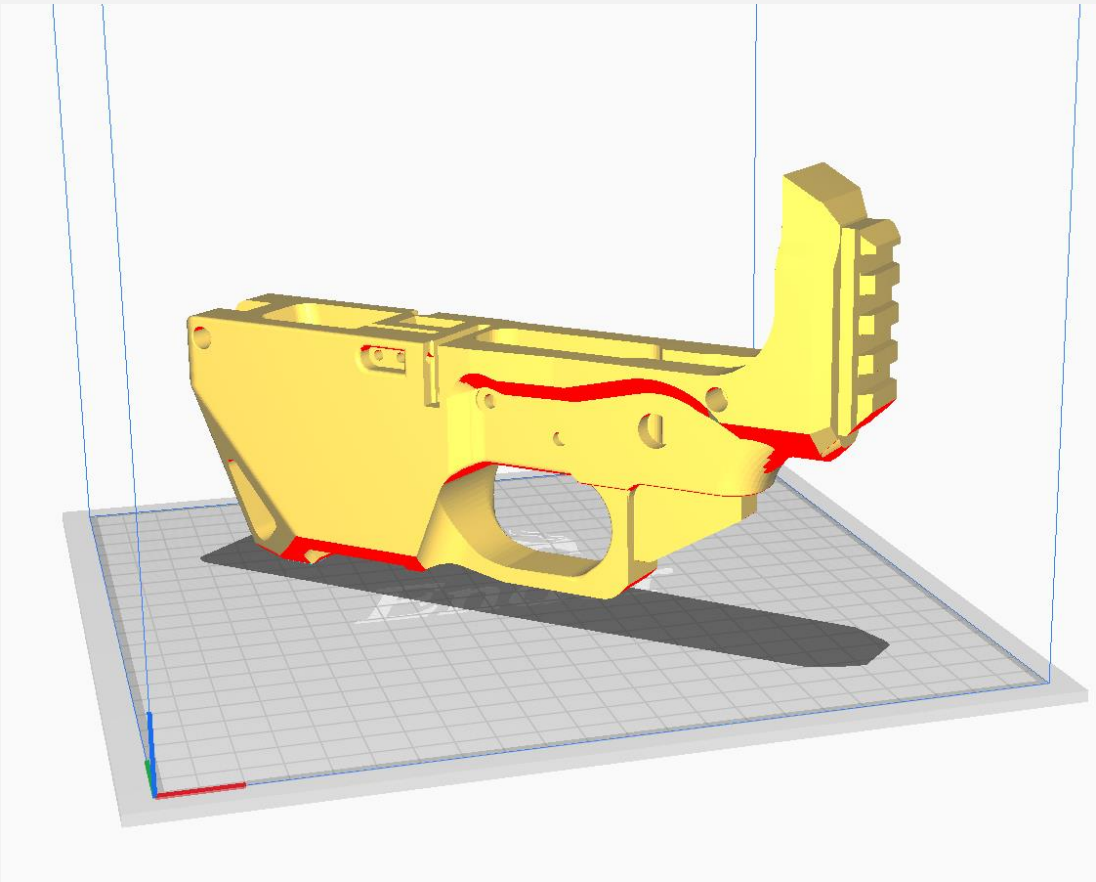
- YZY's xtended UBAR9 mag release:

Print hot and slow, at a small layer height for optimal strength.



- # Lower Receiver Print Orientation

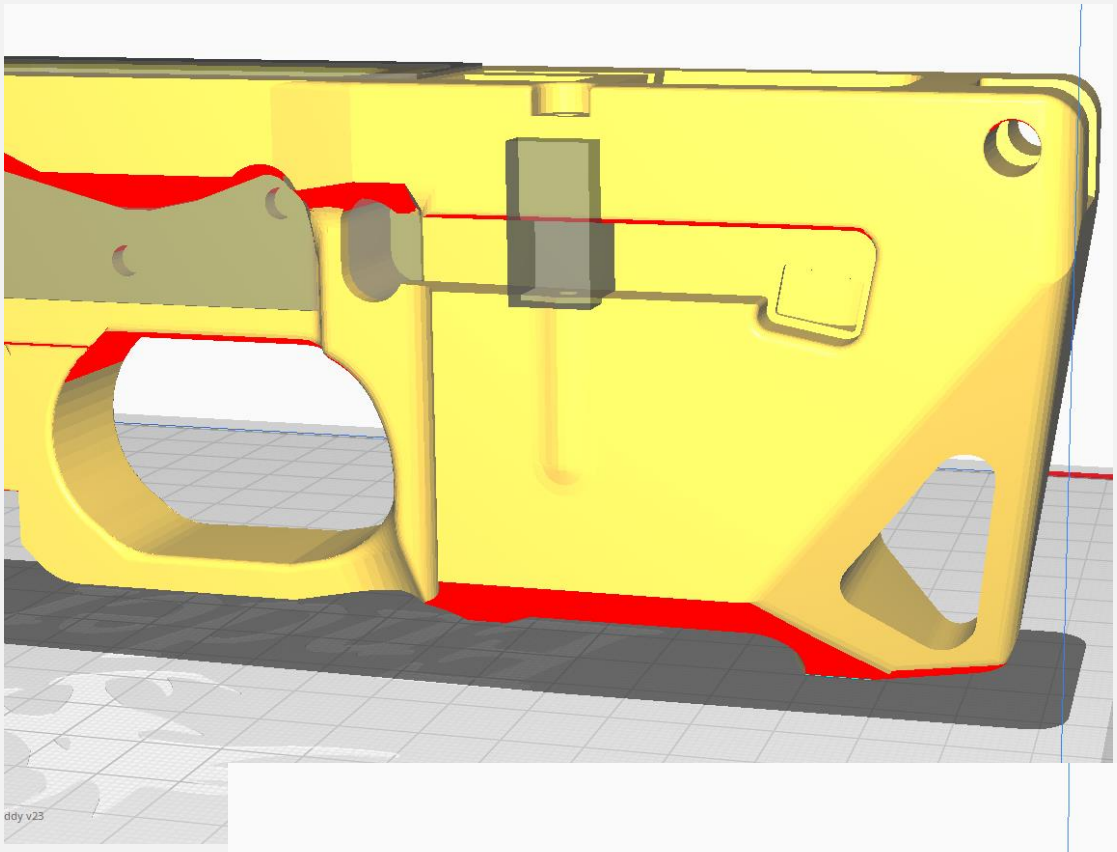
  Print standing upright as shown below. This print has not been tested in other orientations – printing in orientations other than as shown below could result in a print that is structurally subpar. Proceed with caution. Designed to be printed at 0.2mm layer height.

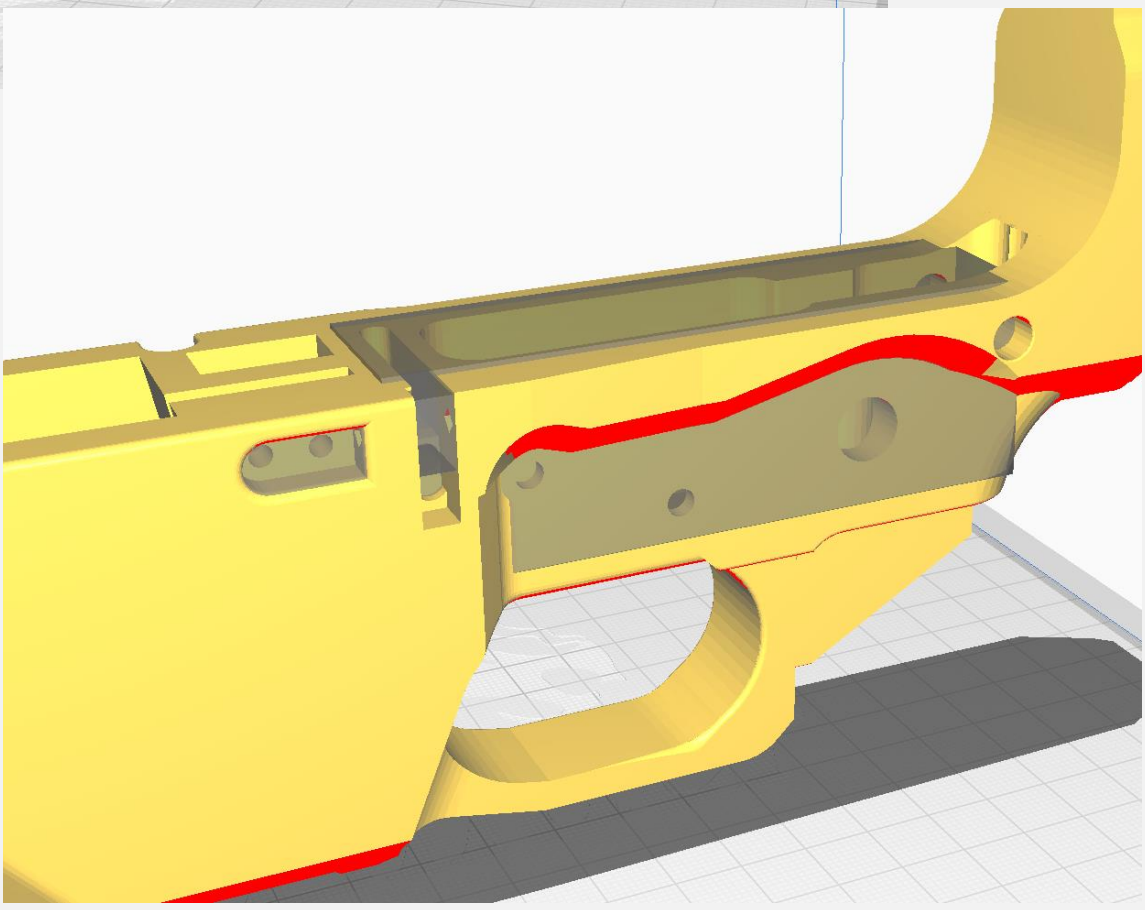


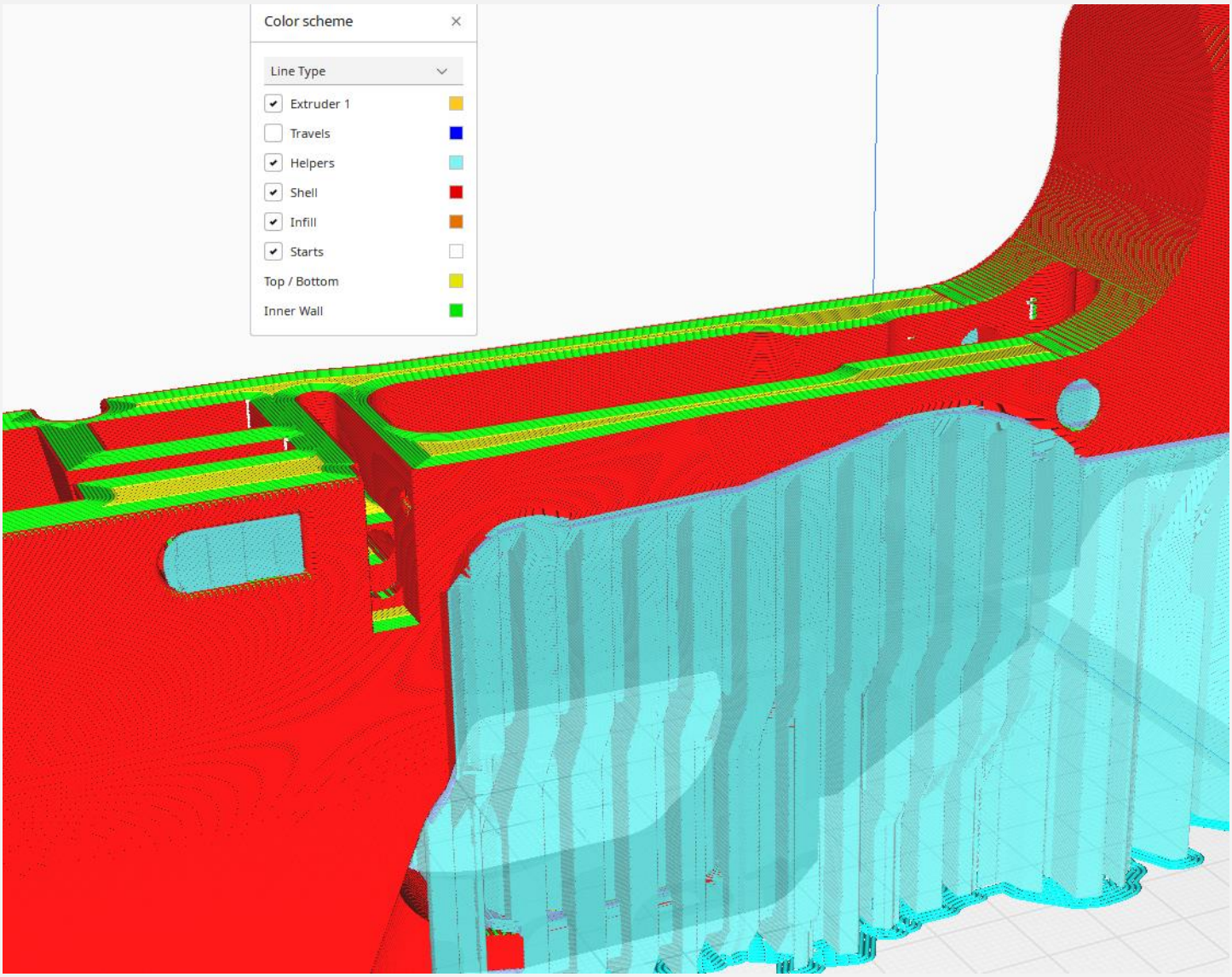
- # Suggested support blocker placement

  Note: The bolt catch support blockers are essentially required for this print, please reference YouTube if you are unfamiliar with using support blockers in Cura as that is outside of the scope of this documentation. I suggest using support blockers in the trigger pin holes, as well as where the M3 bolt interfaces with the mag release

button and inside of the mag release button for easier support removal, cleaner print surfaces, and smoother operation of the firearm without support interface scarring).

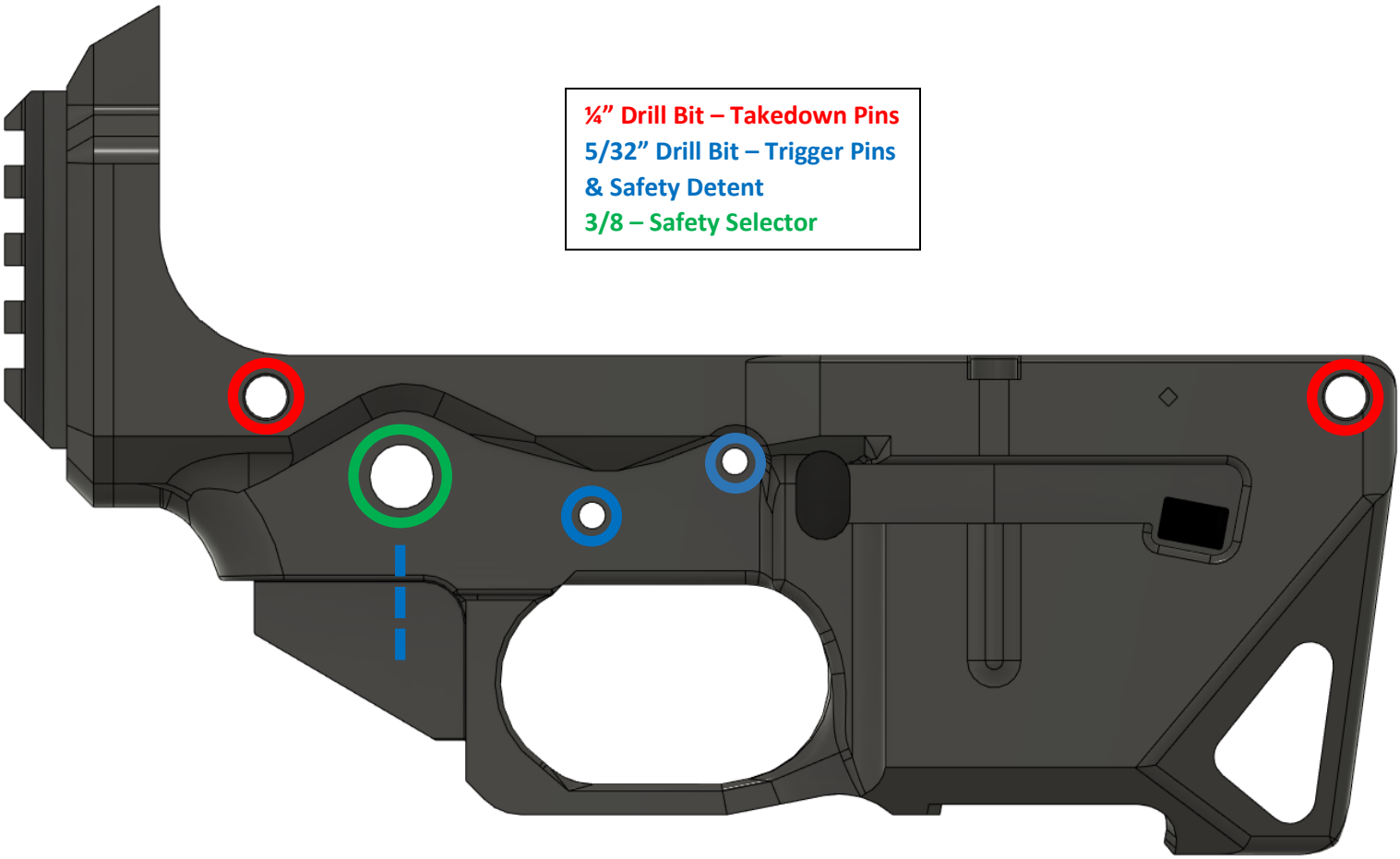






Assembly

Begin by reaming out the takedown pin holes, hammer/trigger pin/safety selector detent pin holes, and safety selector barrel hole to the correct size as illustrated below:



Installing the Bolt Catch/Bolt Hold Open and Grip

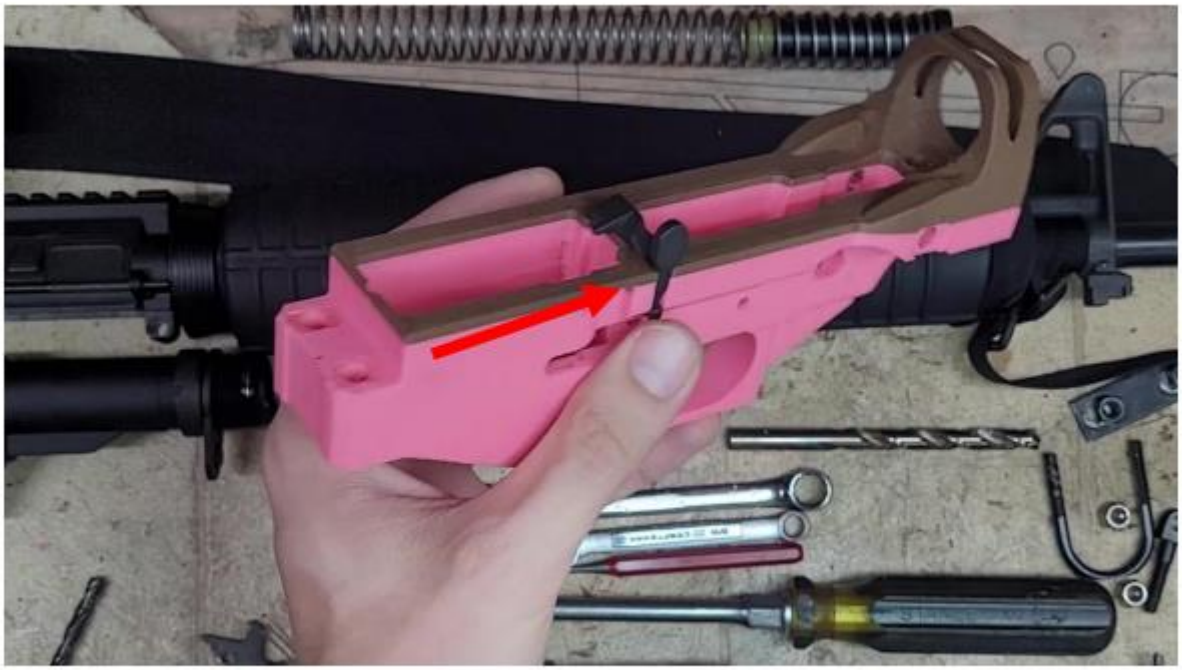
as documented in IvanTheTroll's UBAR assembly:

"This step is easy – you will need to clean out the hole for the bolt catch plunger and spring using your 5/32" drill bit. Be gentle (drilling with the drill in reverse can help) and ensure you don't drill the hole any deeper than it was printed – you just need to remove all the stubborn support material in that hole.

Take your bolt catch, bolt catch plunger, bolt catch spring, and bolt catch roll pin and install the bolt catch – this is done just like on a standard AR15 lower, where you place the spring into the hole you just cleaned up, then place the plunger, then slide the bolt catch into place, depressing the plunger, and stick the roll pin

through. Note that the roll pin/bolt catch are generally non-removeable on the UBAR – while you can use a soldering iron to remove and reinstall the roll pin, you will not be able to remove the bolt catch once it is installed unless you remelt the plastic around the roll pin hole."

Clean out the bolt catch spring plunger hole with a 5/32" drill bit.



Depressing your spring and plunger using the bolt catch itself, line up the hole in the bolt catch with the lower and stick your roll pin in place.

Step 5: Install the Pistol Grip

Take your 1/4-28 tap, tap handle/wrench, your lower, your pistol grip, pistol grip screw, pistol grip lock washer (if you have one that came with your grip screw), and whatever tool you need to tighten your pistol grip screw (some screws need an Allen wrench, some need a screwdriver).

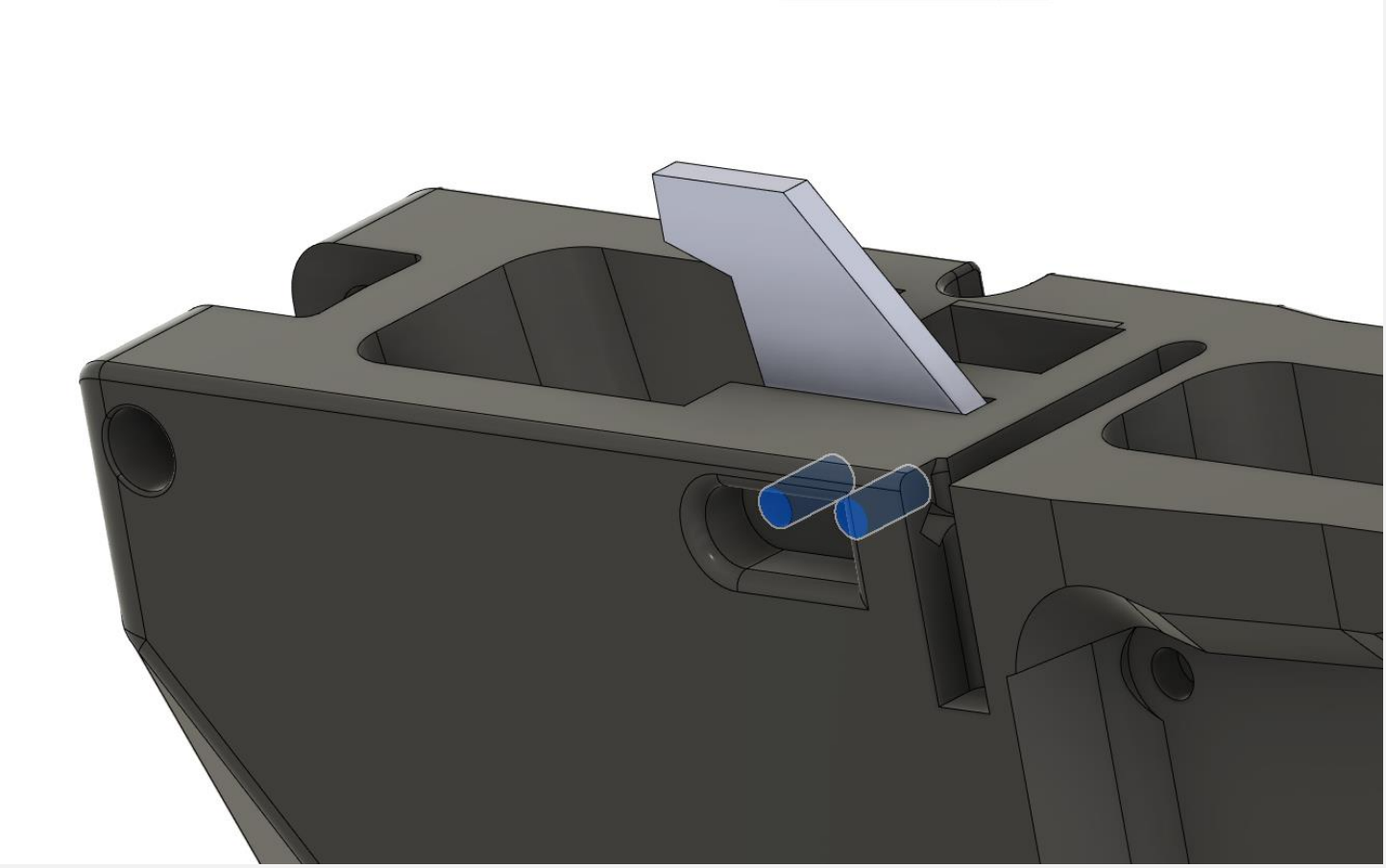
While you don't necessarily *have to* use a tap to thread your pistol grip screw hole, doing so ensures that your threads will be strong and secure, and that you won't damage your lower while installing your pistol grip. It is possible to just ram your bolt into the lower and have it cut its own threads, but this tends to damage the receiver, even if you are gentle.

Tap the pistol grip screw hole with your tap. If you aren't familiar with using a tap, refer to the build video linked at the top of this document – you will want to use some form of oil on the tap, to two two twists forward, one twist back as you tap, and avoid going too quickly.

Tap the pistol grip screw hole if you're cool. Otherwise, you can just jam a screw in there.

After tapping the grip screw hole, you can install your fire control group – this is bog-standard AR15 stuff, if you are unfamiliar with it, refer to the build video, or an AR15 build video like Larry Potterfield's on Youtube.

Installing the RKSpookware Metal Ejector



- Place ejector as orientated in the photo above into the frame. Using your smaller M3 bolts, drive them through the frame and out the other side of the ejector into the pocket. Gently do your best to place the M3 nuts on the bolts you just inserted, and use a small screwdriver or nail to thread the bolts tight so that the ejector stays in place.

Developer's Note: I have included the printed ejector .STL in this package, but be warned that it is only meant for a temporary solution/function checking and does not cycle correctly when printed in PLA. User may attempt to print in a stronger material but best results are with the machined steel ejector.

Installing the YZY xtended UBAR9 Mag Release

- Insert AR mag release spring into the pocket on the right hand side of the frame. Insert printed mag release. While compressing the spring down and holding the release into place, drive the M3x20mm socket head bolt through the top of the mag release.

- Function check mag release to ensure the button/lever stays under spring pressure, and retains a mag after clicking into place when you insert the mag.

Installing the Montgo-9 upper receiver

- Insert the front takedown pin lug into the front takedown pin lug pocket as shown above. This is a snug fit on even a well calibrated printer and may require some rocking into place or a couple loving taps with a gunsmithing hammer. Line up the front takedown pin hole as well as possible, and insert the front clevis pin through the receiver and lug of the upper once in place as shown below:

- With the front takedown pin in place, simply lower the rear lug into place and insert the rear takedown pin lug. It may require some finesse and potentially a couple taps with a gunsmithing hammer to encourage the rear takedown pin lug into the pocket. Insert the 2nd clevis pin into the rear of the frame, and insert retention clips into the holes of the clevis pins if desired.

CONGRATS! At this point you now have a functional firearm. Function check the safety selector, ensure that the trigger resets properly, and have fun.

Known Issues and Considerations:

- The printed ejector fails to properly eject most of the time when printed in PLA, as reported by multiple devs and testers. A revision is underway to attempt to skirt the use of a steel ejector, but for now, the printed ejector is best suited for worst case scenarios and function testing the weapon.

- I advise printing the mag release in a stronger material such as ABS/ASA or even Nylon+CF/GF, Polycarbonate. The lug that retains the Glock mag can wear down over time, and printing in a stronger material (while not necessary) will extend the lifetime of the mag release.