3DP2011 Build Guide

Foreword:

I didn't build this because I found a cheap parts kit and wanted to make a gun for the fuck of it. I made the darling pistol of USPSA, the 2011, a gun which even a shitty version will run you 1500 dollars, 3D printable and dirt cheap. It also comes with a holster, mag pouches, and all the go fast accessories so I could help bump up the level of competency in what I believe is the most important part of making your own guns, THE SHOOTING. So come on out of the woods and get into competitive shooting where the best shooters in the world come to play.

USPSA, IDPA, PCSL, and Multigun still aren't mainstream even amongst gun owners, but we're getting there. If you think you're already there and the names Jerry, JJ, Max, or Nils don't ring a bell, you have an extremely long way to go. The good news is you don't need to shoot a million rounds to get there. I've seen people make GM with a few thousand rounds of live fire, the right classes, and a shitload of dryfire. A lot of you have probably shot more than that in testing. The difference is you don't learn a single fucking thing from any of the rounds you super safety into trash. If you don't have time for all that and you just want a great shooting, boringly reliable pistol, that's totally fine and highly encouraged by me!

There are some absolute geniuses in Guncad and I'm constantly mesmerized by the sheer number and quality of new designs coming out. I do not claim to be among these wizards. I'm just a humble USPSA Grandmaster that can shoot a pistol better than the vast and overwhelming majority of gun owners in the world. It's a very small club. Luckily I'm also ok at CAD and machining and had to learn how to work on my own guns. I intimately know what these guns are capable of, how to fit them, how to run them, how to shape a magwell, what angle a thumbrest is supposed to be at, etc, etc.. If anyone can do justice to a platform that grew up in competitive shooting, I'm absolutely positive it's gonna be someone that's shooting competitively. All that said, it's an existing gun that was already half plastic, not a fucking rocket ship, let's continue!

**This design utilizes modded OK Boomer rails by Freeman and Aves which was a happy coincidence at the same time my frame was in the early stages and saved me a lot of time. They shortened some 3011 rails by Ivan, added pins and a through hole in the rear rail that I managed to break in in less than a hundred dryfire reloads, so I changed the attachment point which has proven to be much stronger. Eventually V3 will use an evolved stainless rail design that will give the ejector some more support. The cool thing about the internet is that this stuff doesn't have to happen in a vacuum.. All the CAD work is my own, as you will clearly see if you open my shitshow of a .step file. End of drama forever.

I would call this an intermediate build, proceed at your own risk, ensure your pistol passes all the safety checks near the end of this document before shooting it. This is definitely not a glock where you can just drop all the parts in and go, there's a lot of tuning involved. Hopefully you're decent with a printer, hand tools, and know your way around a 1911. If you're new to printing make sure your machine is dialed in before attempting this. That said, all the dev work was done on Enders and in Cura, if I can do it, you can do it.

The easiest way to go about completing your build is with a Rock Island 5" 9mm PARA/CLARK RAMPED 1911 parts kit available from a multitude of different sources.This frame is para ramped only for right now, Wilson/Nowlin ramps do not work as well in plastic. All other calibers and a Para magazine version of the frame are still in beta and I do not anticipate them getting out. I shed no tears over this, Para mags are obsolete for a reason, Grandpa bullets are too expensive for the average joe to get good with, and glock mags cannot be made to run in a normal 1911 slide. (The Platypus uses a custom slide, sorry boys)

Using a complete fitted parts kit will save you a lot of time and headache getting the gun to run, as the finer points of 2011 building is entirely too much minutiae for me to cover here. If you already have a different parts kit, it will work, but you may have to add or subtract material from the vertical impact surface of the ramp to get the barrel to lock and unlock correctly. The Atlas Gunworks youtube channel is a fantastic resource for minor fitting and troubleshooting.

In addition to a parts kit you will need:

1 set of OK Boomer rails

2011 trigger, the metal square looking trigger bow, if you have a plastic trigger bow you have the wrong trigger.

2011 mag catch, make sure it's an STI/SVI pattern, not para

2011 magazine(s) 140mm for magwell version, 126's will fit in the regular grip. I will say it one last time, Duramags can be found for 40 dollars and para pattern guns are obsolete for a reason.

4-40 tap, spiral flute if you're only buying one, a 2 flute tap and a bottom tap is preferred.

13/64, 5/32, 3/32, 1/16, #35, #43 drill bits

2x 15/16s .110 pins to secure your front rail OR ream front rail holes and frame and use 1/8th pins, these are much easier to source locally.

2x 4-40 ½ inch set screws

Assorted files and sandpaper for cleaning off supports and fitting

OPTIONAL:

5/32 pin .780 long

Recoil spring Tuner's kit, 2011 disconnector, reduced power firing pin spring. Instructions will cover the "budget tuner's" method

⅝ 4-40 set screw or button or flathead for magwell

Slide stop delete pin drill jig

Mag button extension drill jig

Mold ejector rod from Mcmaster, ¼ 4-40 buttonhead screw, #10 washers, and #4 lock washer for slide stop delete frame. OR 30mm M5 bolt and nut.

4-40 Screw for mag button extension (length depends on button)

STEP 1: Print!

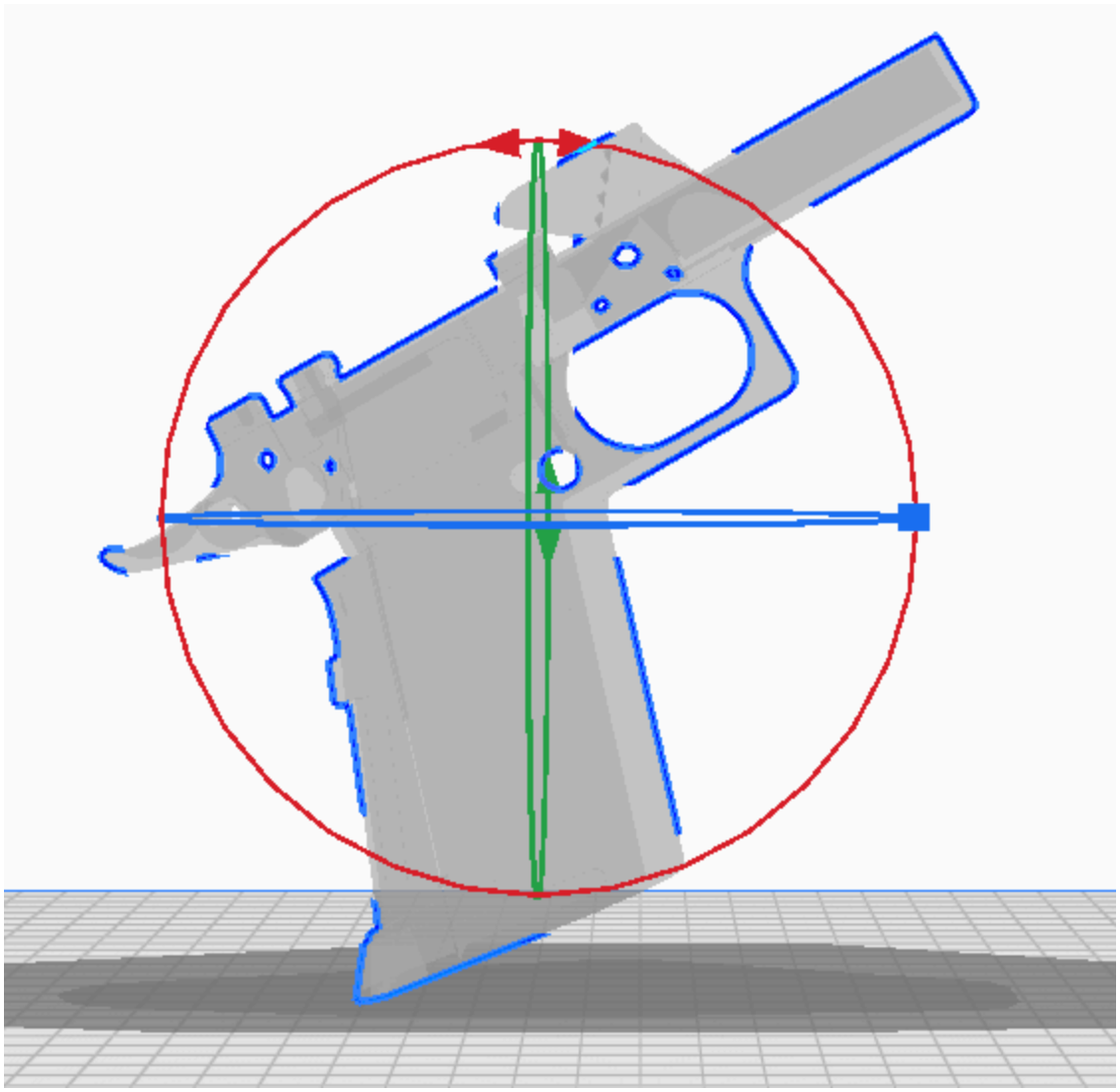
You will need your selected frame, drill jig, and fill piece.

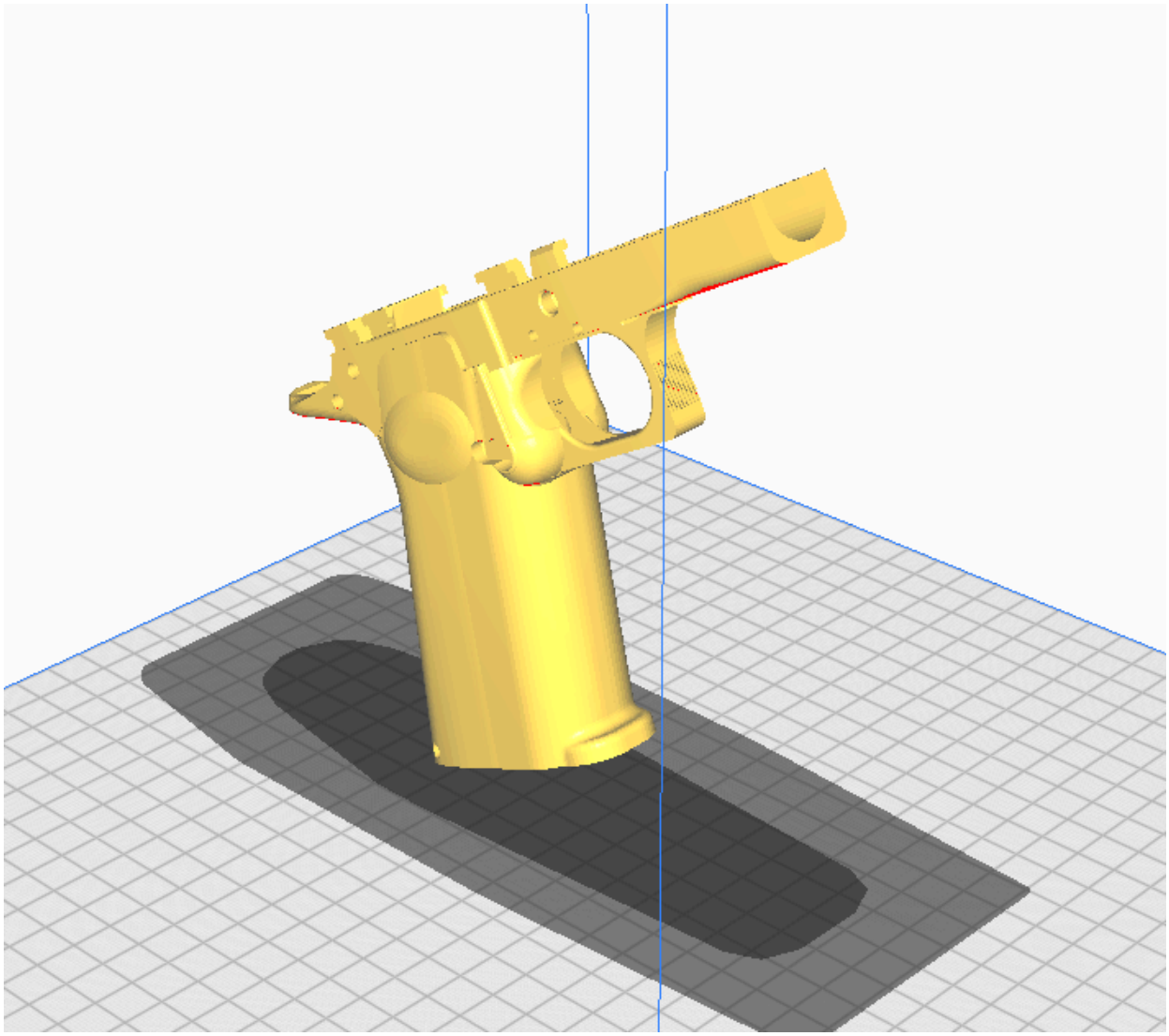
For anything besides the mini magwell frame you will also need to print the magwell

I have great results with Inland Tough PLA, settings:

Frames-print at 60 degrees from vertical, like pictured below, 100% infill, tree supports Z overrides X/Y, .16 layer height, 225 degree hot end, and 65 degree bed.

Magwell-Print at 60 degrees, same as the frame, 100% infill, normal supports 0 degree overhang, .16 layer height, 225 hot end, and 65 degree bed.



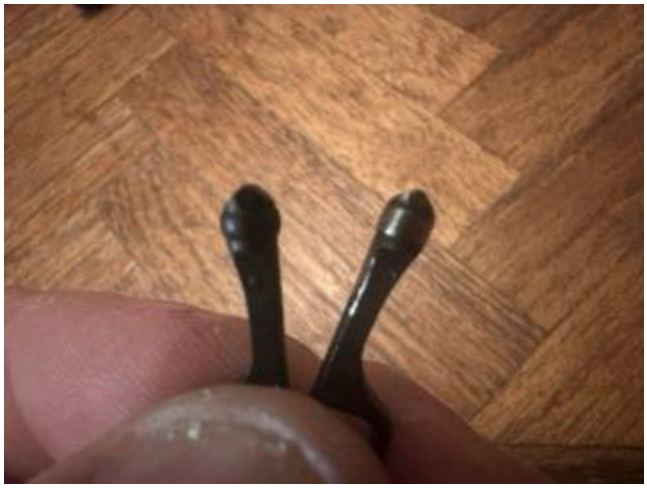


STEP 2: Prepare your parts!

While you're waiting on your frame, drill and tap the rear rail with the drill jig. Drill press is preferable to a hand drill, if the holes are not straight, assembly is going to be extremely difficult/impossible. Drill with #43 bit and tap 4/40, set aside.

Locate disconnector in parts bag, it looks like this

You will need to file the bulbous end so that it's a little proud of the top lip , so that it can move freely in the frame, do not test this before you have cleaned the hole out. .145 is about perfect, as round as you can get it by hand. Left part in the picture below is before, the right part is after filing. Set aside.

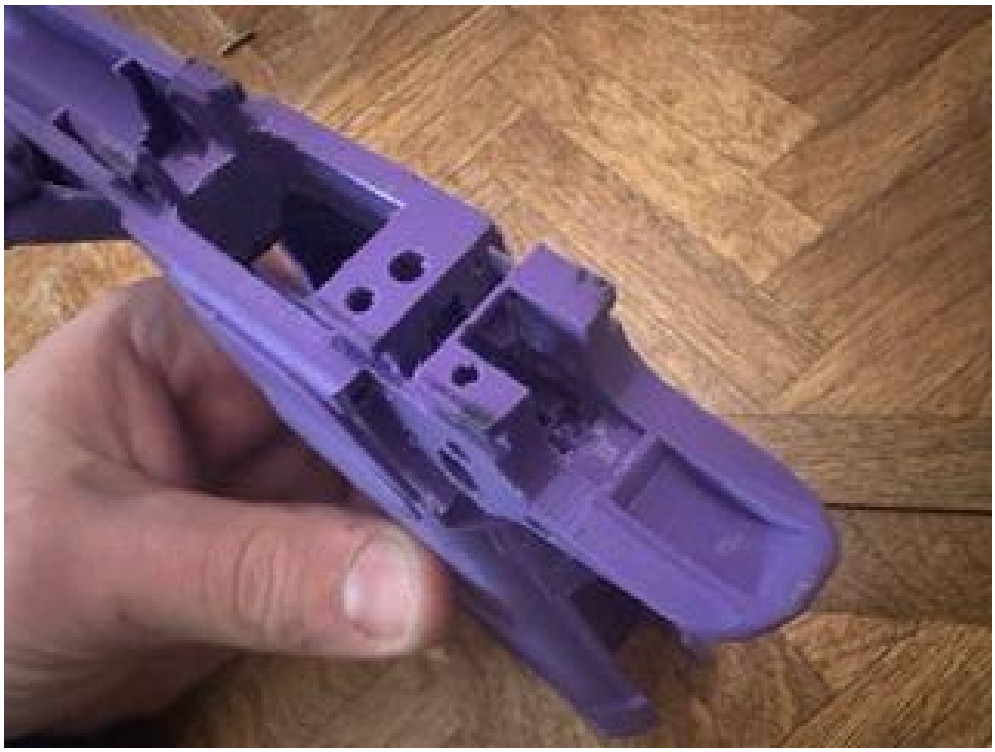


Locate Firing Pin and firing pin spring, push spring until it bottoms out on firing pin, cut off 5 coils. Spring should be approximately 3/8s past the end of the firing pin, this will eliminate light strikes, if you do not feel safe doing so I would highly recommend buying a reduced power firing pin instead of a heavier mainspring because the latter puts much more stress on the frame. Slide firing pin into firing pin channel.

Locate extractor, and a dummy round. Install extractor and back plate, slide round on breech face. If the extractor does not hang onto the case for 3-4 good shakes of the slide, carefully bend it inwards using the slide as a fulcrum until it does. (See 2nd picture below, or Atlas Extractor tuning video)

Step 3: Prepare frame!

Clean out all supports and ream holes in frame, Front locking block holes, sear/disconnector pin hole, and rear safety detent is a .110/ #35 drill bit. Slide stop hole is 13/64. Top disconnector hole, safety, and hammer pin hole is 5/32. Slide stop detent hole is 3/32, long drill bits help immensely with the two plunger tube holes. You will not be able to ream the holes for the rear lockblock without a tiny right angle drill, poke supports out with an allen wrench and clean them out best you can.



Step 4: Check Fit!

Insert trigger into the rear of the frame, make sure it slides freely in and out.

Install mag catch from right side, push all the way in, make sure button protrudes about an ⅛ for a standard mag catch, push out slightly, turn screw clockwise. Make sure button moves against spring freely, insert a mag, make sure it locks in and drops free when button is depressed.

Step 5: Install Rails!

Starting with the front rail, push in and drive pins, easy, now for the hard part. Push rear rail in, small bump should be on the left (mag button) side. Screw the 4/40 set screws in through the back of the mag opening near the disconnector cut out. GO SLOW, they're easy to strip, work them in and out if you meet resistance, finish with screws below flush.

Step 6: Check Slide to Frame fit

Push slide on and make sure it can move freely throughout its stroke. Any binding will probably be the printed rails, file sides and underneath of rails until it moves freely.

Step 7: Check Ramp

First, check your barrel fit to your slide, make sure it locks into the slide good and tight with minimal front and back play, it will be able to rotate side to side when not captured inside the front rail, this is normal. The RIA kits are a little tight out of box, some oil on the barrel lugs and bushing will help this process along

Put your barrel in the slide, put in the bushing, leave off recoil spring and guide. Attach slide and barrel to the frame using your slide stop/pin. Leave the slide stop hanging down in front of the trigger for this test. Push slide all the way to the rear and look at the ramp. The ramp should be flush with the frame or protrude slightly into the magwell, ideally less than a 32nd. If it protrudes, Insert a magazine and make sure it does not crash, this is something to keep an eye on as the frame wears.

Barrel should unlock when the slide is moved all the way to the rear, lock up tight when it is moved all the way forward. Check for binding by letting the slide stop hang down at 90 degrees, push and hold the slide all the way forward and make sure you can move the slide stop freely.

Push it all the way to the rear and check the same. If it's tight in either direction proceed with caution!

If it will not lock up you will most likely have to install a shorter barrel link. If the barrel moves down when you press on the hood over the chamber, it is not in full lockup and you need a longer barrel link.  If it will not unlock you will probably have to remove material from the vertical impact surface. If you've installed a longer link, you will definitely have to remove material from the VIS and or barrel bed.

If you have to add to the VIS because you are binding on the slide stop, do so with a thin layer of epoxy, it should not take much. Do not take material off your parts, take it off the frame whenever possible. It's easier to recalibrate and wait another day than for a print than weld up and machine a barrel lug. Barrel link fitting is a very fine balancing act, and when it's not done correctly you will break slide stops. Odds are you won't have to mess with any of that and you can ignore this section.

Step 8: Install ejector

Push ejector into 1/8th and 3/32nd holes in the top, push down until flush with top of frame. Drive 1/16 pin through the hole between plastic rail and frame.

I would advise against aggressive slidelock reloads, or at least keep it to a minimum! You can load mag hard enough to skip over the catch, and break or dislodge your ejector. Most competition oriented 2011's and/or magazine followers are modded/made to not go to slidelock for this reason. Believe me it's no fun to find this out the hard way on the clock.

Step 9: Install Sear/Disco

Sear and disconnector go together like this.

If you took your trigger out, put it back in now.

Easiest way to go about it is to take the disconnector and slide it up in the disconnector channel through the rear frame opening. Turning it 90 degrees sideways will help you get it through the opening. I could have left a huge hole for ease of assembly but I wanted a stronger frame, you're welcome. Once you have the disco in place, drop the sear in through the rear opening, a small drill bit will help you line it up while you slide the pin in. If you're using the Rock Island ambi safety, you will need to slightly chamfer the left side of the pin hole. Install only the right side safety and chamfer the disconnector hole with the 5/32 drill bit (carefully) until the safety locks into the slot on the disconnector pin.

Step 10: Install sear spring.

Slide spring under rear opening bridge and drop into frame cutout. Left side leaf (1) should contact the left side of the sear, Middle Leaf should rest on the disconnector, and the right side tab does nothing because grip safeties are silly and redundant.


Slide mainspring housing 2/3s of the way into frame to hold down sear spring.

Step 11: Install Hammer

If you're using the magwell frame, you can use the mainspring pin instead of the shorter hammer pin, if not I would suggest making a longer .157 pin, just in case. Make when you cock the hammer it will stay back and drop when you pull the trigger before moving on, if not, check your sear spring again.

Step 12: Magwell/Pin Mainspring

Slide mainspring housing all the way in, it should be a tight friction fit, drive pin if using standard frame, or slide on magwell. This will also be a tight friction fit.

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Step 13: (Magwell only)

*Optional but recommended

Use the hole in the magwell as a drill guide for your #43 drill bit and drill into the mainspring housing about 3/16's. You are not going into the spring channel so this won't cause any function issues. Tap 4-40, screw in set screw or buttonhead. If you're burning through magwells dry firing and practicing, hell yea! Consider drilling and tapping for a 6-32 for easier removal, but I already made you buy a 4-40 tap.

Blend magwell with sandpaper or file until it smoothly transitions with grip, these are designed to be easily
replaceable so if you screw up, or you chew up your magwell in dry fire just print a new one. You won't though, but I'd be stoked if you do!

Step 14: Plunger(s)

Assemble safety and slide stop detents and slide into plunger tube, small detent goes in first. If using the slide stop delete model, you do not need the smaller detent, separate and put in the spring, then the larger detent.

Step 15: Safety

Install Safety, with hammer cocked carefully push in and into the window. Push detent in with an allen wrench or small screwdriver and push safety in.

Step 16: Function Check:

Assemble slide, guide rod and recoil spring, put slide on, install slide stop.

Cock hammer, put safety on, pull trigger. Hammer should not fall.

Safety off, pull slide slightly out of battery, pull trigger, hammer should not fall.

Let slide go back into battery, drop hammer, cycle slide with trigger depressed, hammer should stay back, trigger should reset when released slightly.

If your gun fails any of these tests, your sear and disconnector is the most likely culprit.

Step 17:

Congrats, you pass, install fill piece.

Step 18: Slide stop delete models

Purchase 13/64 ejector rod from mcmaster carr for $5.36. This will serve as your new slide pin, it’s precision ground, hardened, and made from extremely tough tool steel, but can still be drilled and tapped.

Print slide stop drill jig

Cut to 1.125 from inside shoulder with an angle grinder or dremel cut off wheel, if you try to use a hacksaw, you're going to have a bad time. Initial cut should be slightly bigger to leave room to square up the pin. Go slow when cutting and grinding, do not get the pin so hot that it turns blue, the temper will be ruined at that point, cut or grind a little bit, pour some water on it to quench, repeat until done.

Drill 1/4 into the pin, tap for 4-40, insert into frame, stack #10 ten washers until flush, top with #4 lock washer and secure with ¼ inch button head. I prefer not to loctite super tiny screws but if the lockwasher doesn’t hold, a dab will do you. Check this screw OFTEN!

https://www.mcmaster.com/93772A551

One of the beta members also had great success using a 30mm M5 bolt and nut, it’s an entire 4 thousands smaller than the mcmaster pin, but works just as good! Use a higher grade bolt, grade 8.8 or higher.

Step 18: Test fire!

The stock Rock Island spring is fine for 115 grain. For 124's I clipped off 2 coils, and 147s I had to clip 5 coils before it would run, this is fine for a test fire. I'm running all the same ammo that I reloaded, with the same components, that I chrono'd in the gun. Factory ammo will vary between manufacturers and batches. See what cycles in your gun before you go cutting anything.

Even for light use it's best to go with a known weight recoil spring. Again I would recommend the tuners pack, see what cycles best with your load. The goal here, and the secret to spicy splits, is to get the gun to return back to zero after the shot breaks, if the muzzle dips below your point of aim upon coming back into battery, the spring is too heavy. If it returns above, it's too light. "Float" the gun with a good grip and do not muscle it back down during this test. Try not to jump around with different bullet weights if at all possible. If you're not married to one bullet weight, an old adage I swear by is: the lighter the gun, the heavier the bullet. 147s and a 9 pound spring are about perfect for my ammo, but your results may vary. Inspect the VIS and the area in front of the front rail for battering, if you see displaced plastic go up a pound.

Once you're satisfied with function and won't have to tear it down again, super glue your fill piece in, blend it, apply silicon carbide or grip tape if you like. Grip tape template is included in this release.

If you've made it this far, thank you for building, testing, and bearing with me. I'm excited to see what everyone is going to do with it. Finally, go shoot a match! You'll generally find everyone very welcoming and willing to help out a newbie provided you do not point guns at them and all your bullets land in the berm. I wish you speed and accuracy my friends!

-Forbidden Spaghetti

Links:

Mags!
https://themagshack.com/product-category/pistol-magazines/springfield-1911-ds-prodigy-magazines/

https://botach.com/springfield-prodigy-9mm-20-round-magazine/

MBX mags if cost is no object, 100% reliable.1 Atlas mags come in second. If you're running a slide stop deleted gun, then there is no reason to use lockback followers.

cheap triggers

https://www.shootersconnectionstore.com/Gun-Parts/1911-2011-Pistols/Trigger-Group/Triggers/Fusion-Ultra-Match-Grade-2011-Triggers

mag catches that will keep your ejector on your frame.

https://www.shootersconnectionstore.com/Browse-by-Manufacturer/Dawson-Precision/Gun-Parts/Dawson-Posi-Lock-Mag-Release-2011-Extended

Shooting:

https://www.andersonshooting.com/books

https://benstoegerproshop.com/dry-fire-training-reloaded-for-the-practical-pistol-shooter-by-ben-stoeger-paperback-book/

https://benstoegerproshop.com/practical-pistol-fundamental-techniques-and-competition-skills-by-ben-stoeger-pdf-digital-downaload/

https://www.youtube.com/watch?v=QntTV8Dk0_M

https://www.youtube.com/watch?v=6TZx-n8du3I