

The Gatalog
presents:

The 3011
3D Printable
1911 Frame

Preface

The 3011 is a 3D printable 1911 frame in a PDW form factor. It utilizes an AR15 fire control group, AR15 grips, and features a rear 1913 rail to allow for a wide range of butt-end implements (stocks, braces, slings). While commercial 1911 parts kit specs can vary significantly, this design ensures the widest possible compatibility with 1911 kits by cutting out the complex internal parts (replacing them with an AR15 fire control group), leaving only the fitment of the slide to the frame rails up to the individual build.

This documentation will walk you through the process of building your own 3011 frame. This build is fairly simple, and well within the reach of any 3D printed gun builder who has a grasp of the basics.

Note - this package contains files for frames with work with standard barrels and Para/Clark ramped barrels. Be aware that due to variation in how Para/Clark barrels are made, fitting will usually be required if you use a ramped barrel - this fitting is usually required on the inside chamfer edge on the rails.

You can watch this assembly process on video here:
https://odysee.com/@Ivan's_CAD_Streams:c/3011BuildTutorial:c

Make sure you refer to the README for basic info/print settings for this frame!

I recommend you use this document to supplement the video, having text-based steps helps keep things organized, being able to see things in real time helps clear up confusing instructions.

Do not be intimidated by the length of the build video/tutorial. If you run into issues, the troubleshooting section at the end of this document should help you out.

If you have found this tutorial useful, consider sending me Bitcoin to further development of this sort of thing – there is much more to explore in 3D printed guns, DIY guns, DIY ammo, etc.

<https://ctrlpew.com/donate-to-ivanthetroll/>

Muh 45 ACP Stoppin Power

Remember that it is our shared responsibility to be safe and smart with firearms and show the world there is a peaceful way to own guns – take the time to get training, to learn basic (and advanced) safety rules, and to share the hobby with everyone interested – those most scared of guns in the hands of the people are often the ones who have no experience with guns in the first place.

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Shopping List

This list will cover what supplies you will need for a 3011 build. You will need some basic tools, such as an imperial drill bit set, a 3mm drill bit, some screwdrivers/punches, a mallet, a drill, a ¼-28" tap, and optionally a pair of needle-nosed pliers. The build video details the tools I use at the beginning – I recommend you take a peek just to make sure you're on the right path in that regard.

Certain 1911 Parts

The big-ticket item for this build will be a selection of 1911 parts. The parts you'll need will be listed below. Note that if your barrel doesn't have its link and pin installed, you will need to install it – this can be done using a vise, or you can buy the special tool use to do it. Or you can do it with a punch and a hammer.

You will need:

- A 1911 slide and barrel (70 or 80 Series, both seem to work fine – but note that the 3011 does not yet support ramped barrels. Make sure your barrel has a link and pin, if it doesn't you'll need to buy a link and pin and install them.) If your slide has a firing pin safety, you must remove it in order for your slide to work on the 3011.
- 1911 upper parts kit
 - Firing pin, firing pin spring, firing pin retaining plate
 - Extractor (including extractor pin and spring if using a slide with an external extractor)
 - Sights (if not already included on the slide)
 - Barrel bushing
 - Recoil spring assembly (I recommend full-length Wilson Combat guide rods/endcaps with Wilson Combat recoil springs, though if your kit comes with a short guide rod it'll work fine)
- 1911 ejector/ejector pin (I've just been using standard government model ejectors that I bought from Midwest Gun Works)
- 1911 magazine catch assembly (if you want to use P14 doublestack magazines, you'll need a P14 magazine catch)
- 1911 slide stop/slide pin (if your kit doesn't have one, Midway USA has cheap S&W slide stops that are good)
- 1911 magazine (use a good brand like Wilson Combat)

Certain AR15 Parts

You will need some AR15 parts – a complete fire control group (hammer, trigger, disco, associated springs, safety selector, selector detent, selector detent spring, grip/grip screw, as well as a takedown pin detent and takedown pin detent spring.

3011 Rail Kit

The 3011 frame uses drop-in rail segments to give the frame the strength to hold the slide in place. There are two rails used, a front and rear section. These rails can be purchased through MAF (<https://maf-arms.com/product/back-to-back-world-war-slidey-guidies-rails/>), or self made.

While it is possible to 3D print the rail units and use them short term, they do cause excess drag on the slide and will hinder reliability.

M3x30mm Bolts + M3 Nuts

The rails will be secured to the 3011 frame using four M3x30 bolts/nuts. These bolts will need to be trimmed down just a little (to about 28mm) for a more flush fit.

Tooling:

You will need a 3mm drill bit, as well as a set of imperial sized drill bits. You will need a drill, a couple screwdrivers (for removing support material), a punch (size isn't really important), a ¼-28" tap, and a hammer. A pair of needle-nosed pliers can help but are not required.

Build Tutorial

I recommend you read this section in its entirety, then watch the build video while you go about building your 3011. It's a fairly easy process but following the video should save you from wasting any time due to silly mistakes.

****REFER TO THE README FOR BASIC PRINT INFORMATION****

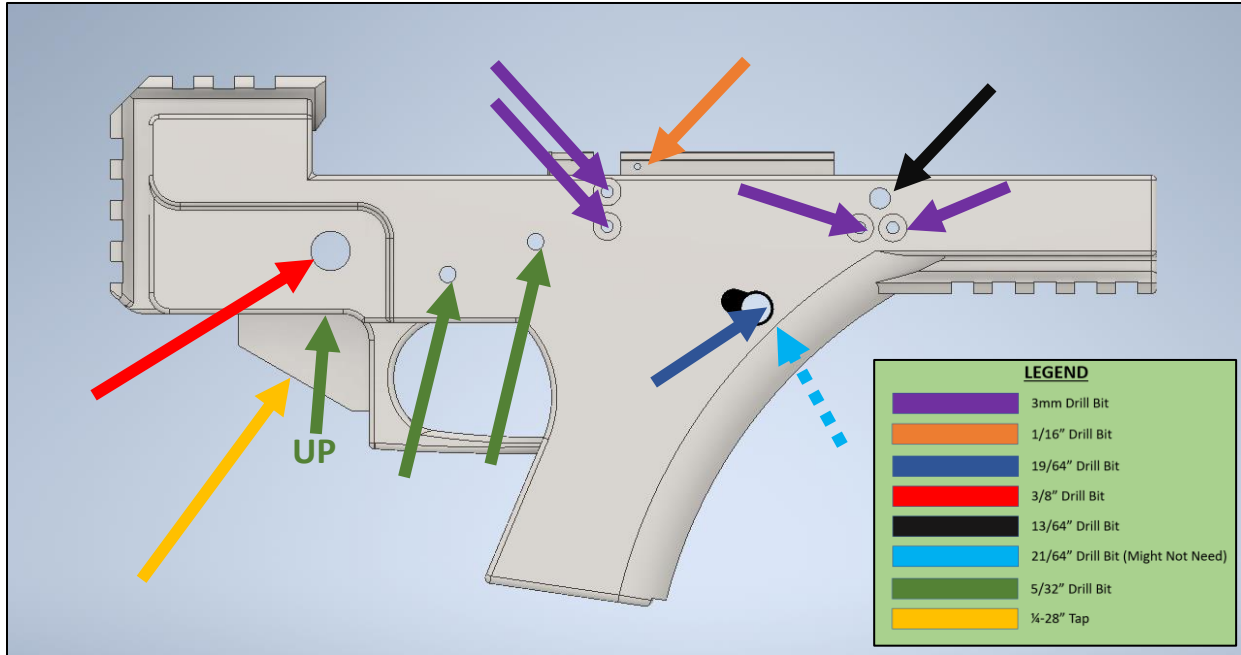
Step 1: Lay Out Your Parts/Prep Work



Make sure you have all your parts and tools ready. Removal all supports from your frame. Take your imperial drill bit set and remove the 1/16" drill bit, the 5/32" drill bit, the 13/64" drill bit, 3/8" drill bit, 19/64" drill bit, and 21/64" drill bit. Use your 1/16" drill bit to drill out the ejector pin hole. Use your 5/32" drill bit to drill out the hammer and trigger pin holes, as well as the safety detent channel. Use the 13/64" drill bit to drill out the slide stop pin hole. Use your 3/8" drill bit to drill out the safety pin hole. Use your 19/64" drill bit to drill out the minor diameter on the magazine catch slot. Keep your 21/64" drill bit handy, as you might need it to clean out the magazine catch slot major diameter if your support settings were not dialed in.

Next, take your 3mm drill bit and drill out the rail pin holes in the frame.

Finish your prep work by running your ¼-28" tap through the pistol grip hole. Be sure to use oil when tapping (WD40 works if you have no real oil), go slow, and break your chips often. After getting the tap started, do ½ turn forward, ¼ turn back increments until you've tapped all the threads.



NOTE – you must remove the firing pin safety from your 1911 slide if it has one.



Use a 1/4-28" tap to thread the hole for the pistol grip screw!

Step 2: Install Magazine Catch



Take your magazine catch assembly (the catch, pin, and spring – these fit together, even outside of the frame – you can find youtube videos on the assembly of this catch if you need help). Try inserting the catch into the frame – it should fit without any drag or tightness. If things are tight, you will need to use your 21/64" drill bit **BY HAND** to clean out the magazine catch hole. Come from the right-hand side of the frame and spin the drill bit with your hand to clear out any sagging material or support material left behind. If you use this drill bit with a drill, you run the risk of punching all the way through the frame – junking your entire print, as the magazine catch will not work if you punch through the frame.

Once you've got the magazine catch moving freely in the frame, you can install it – you do this by using a small screwdriver to rotate the pin on the magazine catch. The pin has a leg on it that will rotate into a slot in the magazine catch hole. It takes a little finesse to get the pin lined up just right so that you can rotate it and put the leg into the slot. Do not try and force the pin, it should rotate into the slot with only a little resistance. It can help to look inside the magazine catch hole and take note of where the slot is (and to make sure you removed any/all support material from inside the slot). If support material remains, use a small screwdriver or pick-type tool to dig it out. After installing the magazine catch, ensure that it moves freely and locks magazines into the frame. Magazines may or may not drop free – the specs on 1911 magazines from one manufacturer to the next seem to vary quite a bit, so this will take tweaking in beta. If your magazine fit is very tight, take a utility knife and scrape around the base of the magwell to ensure no excess material is attached at the bottom.



The magazine catch should move freely inside the hole. Rotating the screw clockwise (relative to the view in this picture) will lock it into the frame. The screw should turn easily, if it gives resistance refer to the picture below to get an idea of how the mag catch works.



The leg on the magazine catch screw will lock into the slot seen in the above picture – refer to the video if you're confused about how the magazine catch works.

Step 3: Install Rear Rail Block

Take your frame and your rear rail block. Drop the rear rail block into the frame – it may be a little tight, but it's important that there is a minimal amount of slop/wiggle between these parts. If you face excessive resistance in inserting your rail block, use a screwdriver to scrape down the corners of the pocket in the frame (try and make the corners more square). After seating the rail block fully, you can insert two M3x30mm screws into the two holes in the middle of the frame. Secure these screws with M3 nuts. There will be a little exposed bolt protruding – you can mark off the protruding length, remove the screws, and grind them down to attain a flush fit.



You may need to use a screwdriver to make the corners of the rail pocket square and to ensure all support material is removed from the pocket.



Install the rear rail



Press the rail down into the frame

Step 4: Install Front Rail Block

Take your frame and your front rail block. Drop the front rail block into the frame – it may be a little tight, but it's important that there is a minimal amount of slop/wiggle between these parts. If you face excessive resistance in inserting your rail block, use a screwdriver to scrape down the corners of the pocket in the frame (try and make the corners more square). Make sure that the rounded cutout at the bottom of the rail channel points towards the front of the frame (see the pictures below). After seating the rail block fully, you can insert two M3x30mm screws into the two holes at the bottom of the front rail block. Secure these screws with M3 nuts. There will be a little exposed bolt protruding – you can mark off the protruding length, remove the screws, and grind them down to attain a flush fit.

After installing the screws, you should test the fitment of the slide stop pin – it should rotate freely, but have a minimal amount of slop/wiggle. If your pin has excessive resistance when trying to rotate it, you may have to use your 13/64" drill bit to mate-drill the frame and rail block – with slow drill speed, gently drill through the frame and rail. This should allow free movement of the slide stop pin.



You may need to use a screwdriver to make the corners of the rail pocket square and to ensure all support material is removed from the pocket.



Make sure that the cutout in the bottom of the rail points towards the front of the frame when you install the rail!



Insert the front rail. It tends to be a little snug, you can tap with a rubber hammer to help seat it.



Test to make sure the slide stop can rotate freely – if it's tight in the hole you should take your 13/64" drill bit and gently drill out the slide stop hole in the frame and rail.



Insert the 4 M3x30mm screws to hold on the rails. Use pliers to hold the M3 nuts on the other side of the frame while you tighten down the screws. 30mm screws will stick out slightly on the other side of the frame – you should use a file or Dremel tool to cut 2mm off these screws but be sure to remove them from the frame before cutting – they will get hot enough to damage the frame otherwise.

Step 5: Test slide to frame fitment

This step is the most difficult of the build – some slides might require a little fitment work on the frame. Usually, just the height of the rails needs to be fit – it's very uncommon that the width of the rails is an issue. Don't try and force your slide onto the rails – you can get the slide stuck on the frame, and it's a pain to get it off. Based on the slides and fitment I've done so far, I haven't had to fit the drop-in rails much at all – but the integral printed rail segments on the frame itself can sometimes take a little fitting. These integral rail segments help remove excess slop from the slide, so they are useful to have – I wouldn't just cut them off. For the most part, I've only had to take a Dremel tool or a file and knock down the top of the integral rails a little. The recommended print angle for this frame (when printed with the recommended layer height) results in the edges of each layer along the length of the integral rails being the bearing surfaces – which makes fitting a little easier. Just knock down the height of those rails a little, check if the slide fits, then knock down more as needed. Using match grade, expensive, or precision slides (Caspian, Kimber, Remington's modern/expensive lines, some newer Colts, Wilson Combat, etc.) will result in more fitting required than using cheaper government model slides (such as Rock Island, Para-Ord, or other cheaper brands). Using a little oil when fitting your slide is acceptable.



Test the slide to frame fit. If the slide is tight or you have to force it to move back, the rails will need fitting – usually, just the plastic rails integral to the frame need fitting, but sometimes the aluminum rails need a little filing too.



I like to use a Dremel tool with a cutting wheel to fit the sections of plastic rail. Usually, the underside of the rail just needs a little material removed – refer to the build video if you're unsure about how this is actually done.

The slide should be able to move all the way rearward without having to be forced or tapped with a hammer. A little drag is fine, but if your slide hangs up or snags you will need to do a little more fitting.

Step 6: Install Ejector



Take your ejector and ejector pin, as well as your frame (which has the front and rear rails installed already). Your ejector should have two round legs on the bottom of it – these will line up with the two holes on the top of the frame. Look at the larger of the two legs on your ejector – ideally, it will have a small, semicircular cutout on the front-facing side of the leg. If it does not, you'll have to drill your ejector (explained at the end of this step).

Test fit the ejector in these holes – it should be a fairly snug fit. If your ejector falls out when you turn your frame upside down, then you should get some tape (blue painters tape or electrical tape) and make a small shim. Cut a square piece of tape, with each side roughly the same length as the diameter of the larger hole on the top of the frame. Try installing the ejector again, this time with the square of tape between the ejector and the frame – it should press down into the hole and make the fitment much more snug. It's important to have snug fitment on the ejector, but different manufacturers have different specs for the ejectors they use, so shimming may be required.

If your ejector does have its pin cutout already made (the small semi-circular cutout on the front of the bigger leg), then you're set to take your ejector pin and install it. I recommend you start this pin from the left side of the frame. Use pliers to hold the pin while you drive it in, and **DO NOT** try and push the pin in by hand – these pins can be very sharp. Start the pin with pliers and a hammer, then drive it flush using a 1/16" punch. After installing the pin, give your ejector a wiggle test – it can have a little bit of wiggle up and down, but it should not wiggle much left and right or forward and backward.

If your ejector did not have its pin cutout in place, then you'll have to install it (with whatever shim is necessary), hold it tight into the frame with one hand, then take your drill with your 1/16" drill bit with the other hand. From the **RIGHT** side of the frame, drill through the ejector hole – you'll make a little cutout in the ejector while you do this, so use high drill speed but control your drill – don't push it into the hole too quickly, go slow and let the drill bit nibble at the ejector.



Test fit the ejector in the frame. You will need to use a pick-type tool to remove all supports from the holes that the ejector sits in. If your ejector doesn't fit snug in the holes, you should use a small square of electrical tape to act as a shim between the ejector and the frame – this will help ensure more reliable ejection.



Install the ejector pin from this side of the frame. Please note that if your ejector does not have the semi-circular cut shown in the below picture, you will need to use a 1/16" drill bit to drill through this side of the hole while holding the ejector down tight to the frame.



If your ejector does not have a semi-circular cutout here, you will need to read the above instructions carefully – you must drill through the ejector pin hole using a 1/16" drill bit while holding the ejector itself into the frame, which will create this little cutout.



Make sure the ejector pin is flush with the inside lip edge of rail slot on this side of the frame – in this picture, you can see it is sticking too far out.

After installing your ejector, test fit the slide again – it should fit over the ejector without too much resistance. If the ejector doesn't fit with your slide, you can use a Dremel tool to make light cuts to the ejector to make sure it fits with your slide – again, this is something where different manufactures run slightly different specs that aren't always 100% compatible.

Step 7: Install AR15 Parts

This one is easy – Just like a normal AR15, install your trigger/disco, your hammer, your safety selector, and your selector detent/detent spring/grip (in that order, of course). I haven't experimented much with drop-in triggers or Gucci triggers, but I image most would be compatible with the 3011 – just make sure to do your basic safety/function testing before live fire!



Install AR15 trigger and disconnector, just like on a standard AR15



Install the trigger pin so that it retains the trigger and disconnector



Install AR15 hammer



Insert AR15 hammer pin – make sure that you hold the hammer down into the frame so that you get the pin through



Cock the hammer and insert the safety selector in the safety selector hole



Install the safety selector detent...



...and then the pistol grip, ensuring that the safety selector detent spring is slotted inside the pistol grip as you install it.

The only non-standard AR15 part install will be the takedown pin detent and spring. These parts will be used to apply spring pressure to the slide stop pin. There is a housing on the left side of the frame that will accept the spring and detent – instructions on installing this part will come in the next section.

Step 8: Mounting the Slide

To install the slide, you should first check the fit between the barrel and the front rail – the barrel should be able to move easily inside the rail. A little drag is acceptable (and will lend to greater accuracy), but it should not be tight or sticky.



Test to see how the barrel fits in the front rail. If it is tight, you will need to file down the insides of the rails a little.



Use a Dremel tool or file to open up the channel in the rail if the barrel is tight in the channel.

After ensuring the barrel fits properly in the slide, you can assemble the slide and mount it on the frame.



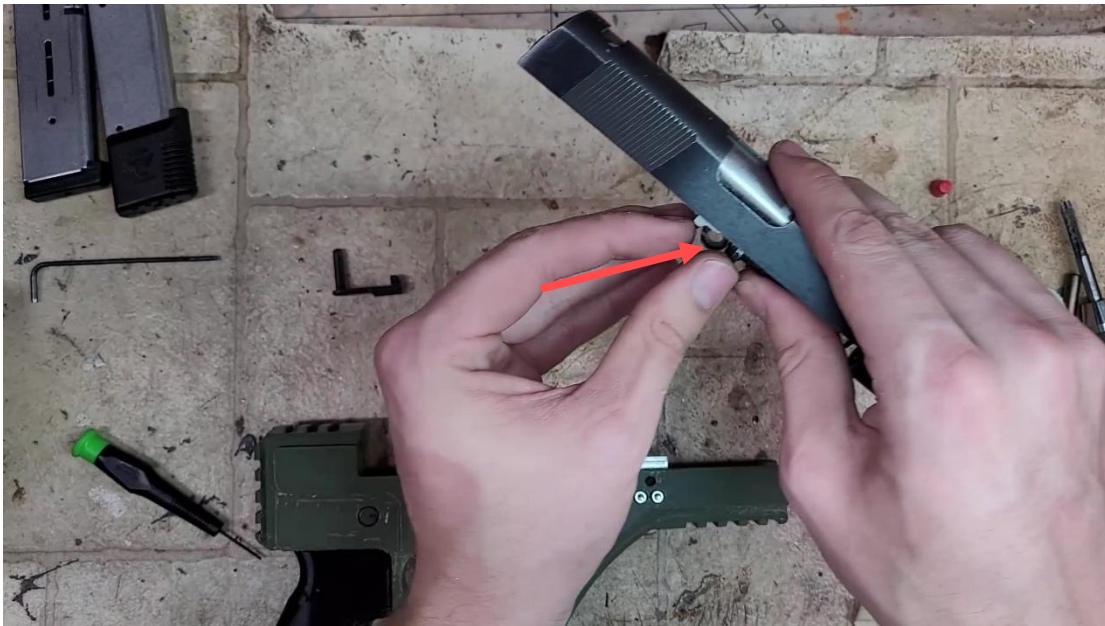
Insert the barrel through the front of the slide. Ensure the barrel link is folded forward.



Install barrel bushing and rotate it to the left



Insert the recoil spring and guide rod



Make sure that the barrel link is hanging down, take your slide, and begin installing it on the frame



Line up the hole in the barrel link with the hole for the slide stop...



Then stick the slide stop through the hole and the barrel link. Leave it swung over to this side, as you will want it out of the way for the next step.

Next, you'll be installing the detent that holds spring pressure on the slide stop. This is the hardest part of this build. Stick the detent spring into the frame, then use a pair of needle-nose pliers and a small screwdriver to compress the spring and detent while spinning the slide stop pin into alignment – drop the slide stop pin down while removing the screwdriver and everything should snap into place. Working inside of a cardboard box can help if you're worried about rocketing your detent across the room. Please watch the build video before you attempt to do this step, as it's pretty tricky.



Install the detent spring



Use pliers to hold the detent in alignment with the hole...



Then push the detent into the hole using a screwdriver. This is a tricky step, so be patient – you'll get the hang of it.



While holding the detent in the hole, rotate your slide stop around so that it will be able to block the detent from escaping



Align the disassembly notch in the slide with the top of the slide stop and push the slide stop all the way in. Push the slide forward so that it comes into battery.



Install the recoil spring endcap by compressing the recoil spring using the cap, then rotating the barrel bushing to capture it.



With the recoil spring captured, you are ready to function check and fire!



Remember – you can refer to the video any time these instructions are confusing, and refer back to this document any time the narration in the video is confusing. Together, the two resources should put you well on your way to getting your own 3011 build complete!

Be sure to check out the cool remixes of this project, feel free to remix your own version, and have fun configuring your build however you see fit!

FAQ/Troubleshooting

Q: What sort of round counts should I expect? What ends up breaking?

A: At least a thousand rounds with a good print – I've run these builds pretty hard, and with my personal favorite configuration (carbine stock and 16" barrel) I have had 800+ rounds without an issue.

Q: What sort of reliability should I expect?

A: Reliability has been good for me when using Wilson Combat magazines. Using cheap GI-style magazines, reliability has been sketchy. The 1911 is a bit of a bad design in that it bounces rounds off of the frame in order to feed them. Your build will generally be as reliable as the parts you throw at it, as well as how well you put everything together.

Q: What can I do about the rough finish where supports were touching the frame?

A: Get a cheap soldering iron from Amazon and use it to remelt the rough patches. It's very easy to do, leaves a nice, smooth finish, and takes little time (especially when compared to sanding).

Q: Why can't I get the slide on? Why does my slide get stuck to the rear? Why do I have failures to eject?

A: It's probably due to improper slide-frame fitment. Take a little more time to fit the rails so that the slide can move freely on the rails. If you can see visible gouge or rub marks on the rails, and the slide feels like it gets stuck when going over these areas, you should file a little bit on the marks. Remember that the plastic rail sections can be a serious source of this drag.

Q: Why is it hard to rack the slide?

A: Poorly fit rails, lack of oil (oil helps a lot!), damaged rails, or a warped print could lead to hard racking.

Q: What parts work?

A: Pretty much any 1911 parts should work. Everything I've tried so far has done well – I'm hoping the beta will help better understand the compatibility. I'll eventually add compatibility for ramped barrels, but for now standard barrels are required. If you have a slide that has a firing pin safety, you will need to remove it – have Youtube help you find out how to remove the safety from your particular slide.

Q: What mags work?

A: Stick with Wilson Combat or other premium magazines, unless you want the true 1911 experience (jam with a side of jam, baby).