THE PLASTIKOV V3.0

3D Printable AKM, AK100, and RPK Receivers

Preface

The Plastikov is a 3D printable AKM-pattern receiver meant to be used with 'headspaced' AKM parts kits. While not near as strong and lacking the longevity of proper AK builds, it drastically reduces the tooling requirements and offers a cheap, easy way to run AKM kits without any serious permanent modifications. When care is given to building out a Plastikov, it can be just as reliable as proper AK builds (up to the point that the longevity issues of the Plastikov catch up to it).

This document will cover the steps, tips, and advice I have to lend after having built out many Plastikov receivers – I recommend you read this document in its entirety before you begin assembling your receiver.

You can watch this assembly process on video here:
Note that this video shows assembly of an AKM, and that this process will differ slightly for an RPK or AK100 build – refer to the information in this document for exact information on drill sizes to use and use the video for reference material!
https://lbry.tv/@Ivan's_CAD_Streams:c/Plasikov-Complete-Build-Video:a.

I recommend you use this document as 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 – this process is not much more complex than assembling an AR15 from parts. With a little patience, the extensive tutorial value provided by this document and the build video should be able to help coach you through the build.

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/

For those who said it could never be done;
For those who push the limits despite what is said:
A stone rolling downhill continues to gain momentum.

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.

Table of Contents

Shopping List

This list will cover what supplies you will need for a Plastikov build. I will include links to some items, but for the generic screws I'll allow you to hunt down your own – Amazon changes links on these things often enough that they go dead (or link to the wrong thing). I used Amazon for my screws, but I can recommend BoltDepot as a great source for high-quality screws.

Headspaced AKM Parts Kit

Without delving into technical matters, these kits will be sold by sellers who refer to them as "headspaced". It is somewhat uncommon to find AKM kits sold this way – the best retailer is ArmsofAmerica, who sell good quality headspaced kits built out from surplus parts – a formula for a good AK. You can always get a stripped kit and headspace it yourself, but if you have the tooling to do that work (or the money to pay someone else to do it), you're probably better off doing a traditional/proper AK build. For questions about what kits will and won't work, read the "FAQ/Common Issues" section at the end of this document.

Your parts kit will need to have a headspaced barrel assembly, the bolt/bolt carrier it was headspaced with, an AK fire control group (this can be bought separately from your kit), an AK pistol grip (this can be bought separately from your kit), a trigger guard/magazine catch assembly (this can be bought separately from your kit), as well as a recoil spring assembly (this can be bought separately from your kit), as well as some furniture if you kit doesn't come with any. Do note that you may have to fit some furniture to your receiver (or vice versa).

The link to AOA's headspaced kits: *https://armsofamerica.com/shop-all/headspaced-kits/*

Example of useable AKM Parts kit

Receiver Rail Kit + Screws

The Plastikov relies on steel rails (as plastic is not strong enough to hold up for more than a few rounds when it comes to being AK bolt carrier rails). These rails come in two primary forms – “hand-fit” (AKA “tubing”) spec, and “milled” (AKA “drop-in”) spec. Hand-fit rails are generally cheaper, but require hand-fitting in order to work correctly in the gun. The milled spec rails are more expensive but will drop in with minimal (if any) hand fitting.

The rails will require the use of 16 M2.5x8 screws. I recommend opting for good quality screws and not cheap ones from Amazon.

If you opt to make your own rails, note that a good quality stainless (such as 304 or 17-4PH) or good carbon steel (no mild steel) is recommended. I have put thousands of rounds on 304 stainless rails without issue, check the “FAQ/Common Issues” section at the end of this document for more info on material selection for rails, and the “Hand Fit Rail Guide” text file in the documentation folder for info on how to hand fit a set of “hand-fit” spec rails.

At the time of publication, both *avesrails.com* and *riptiderails.com* are offering Plastikov rails for sale (or are getting ready to offer them). I have personally tested their rail offerings and can confirm they worked great for me. They are both offered with the required screws.

Example of milled spec Plastikov rails – the V3 Plastikov can use previous Plastikov spec rails, as the only real difference is the addition of a 1.25” long bob cut on the upper/foremost section of the right hand rail – this cut aids in reliable ejection with kits that have worn out extractor springs and internal extractors like the AK100.

“Pistol” Rear Trunnion

For this build to work with most AKM kits, it relies on a generic rear trunnion. You can get the exact rear trunnion I used here:

https://ak-builder.com/index.php?dispatch=products.view&product_id=29874

While other generic pistol trunnions should work, I cannot guarantee they will. The AK-Builder rear trunnion fits snug and works properly.

Generic Pistol Rear Trunnion

AR15 Stock (Optional)

You will need an AR15 tube-based stock (unless you are building something without a stock). You will also need the tube itself, as well as whatever other mounting hardware is required for it.

Hammer/Trigger Bolts & Nuts: 2x M5x60

The Plastikov uses M5x60 metric bolts and M5 nuts to hold in the trigger and hammer (shoutout to Brandon Herrera for the idea). You will need two bolts and two nuts. I used bolts and nuts from BoltDepot, they shipped fast and cheap and seem to be great quality. The following link lists both the bolts and the nuts:

https://www.boltdepot.com/Product-Details.aspx?product=6209

These bolts must be cut down to 51mm (shaft length) long. Refer to the Plastikov Complete Build Video for info on how to do this.

Front Receiver Tensioning Bolt: 1x M5x55mm Bolt and Nut

This bolt installs at the lower front end of the receiver and can help improve the fit between the trunnion and front receiver – this bolt is not shown in the build video.

Trunnion Mounting Bolts and Nuts FOR AKM BUILD: 6x M4x16, 6x M4 Nuts

You will need 6 M4x16 bolts (these can be cut down from M4x20 bolts) and 6 M4 nuts. I bought mine from Amazon, but if you are ordering from BoltDepot for the M5 bolts, might as well get these from there as well.

Trunnion Mounting Bolts and Nuts FOR RPK BUILD: 4x M4x16, 4x M4 Nuts, 1x 4.5mm x 60mm Drill Rod

The RPK-based build uses a long shaft as a pin for the frontmost trunnion hole. I have heard reports that some of these holes were drilled out to 5mm when they were originally demilled, so check the fit between your drill rod and frontmost trunnion hole before you assemble your parts!

Trunnion Mounting Bolts and Nuts FOR AK100 BUILD: 4x M4x16, 5x M4 Nuts, 1x M4x20, 2x M5x16, 2x M5 Nuts

I only have a sample size of one Saiga AK103 kit, but its trunnion had 5mm holes in the frontmost position, with the standard 4 4mm holes otherwise. However, AK100-series guns don't have the bolt rotation bump milled into the trunnion or feed ramp like the AKM does – the AK100 relies on having a peg come in from the left side of the receiver. Through extensive testing, I have found that an M4 bolt through the side of the receiver will work properly as this peg – the AK100 front end Plastikov has an extra hole in it that is for this peg.

Trigger Guard Bolts and Nuts: 5x M4x8, 5x M4 Nuts

You will need 5 M4x8 bolts and 5 M4 nuts. I bought mine from Amazon, but if you are ordering from BoltDepot for the M5 bolts, might as well get these from there as well.

Receiver Mating Bolts and Nuts: 6x M4x25, 6x M4 Nuts

You will need 6 M4x25 bolts and 6 M4 nuts. I bought mine from Amazon, but if you are ordering from BoltDepot for the M5 bolts, might as well get these from there as well.

Rear Trunnion Mounting Pin: 4.5x60mm Drill Rod (or 4.5x60mm Pin)

You will need a 4.5mm diameter, 60mm long length of drill rod (or a pin that matches those specs). I bought a 100mm length of drill rod from Amazon and cut it down to size using a Dremel tool with a cutting disc. You may find 4.5mm pins that are not drill rod on McMaster or other hardware sites, which you could cut down using a hacksaw. I would advise against just using a M4.5 bolt, since a snug fit on this pin will help extend the life of your receiver.

Tooling:

You will need a 7/64”, 4, 4.5, and 5mm drill bit, as well as a drill to use them with. Your tools required may vary beyond this, though a small metal file, small hammer, small screwdriver, and metric Allen wrench set is all that I needed when installing milled-spec rails.

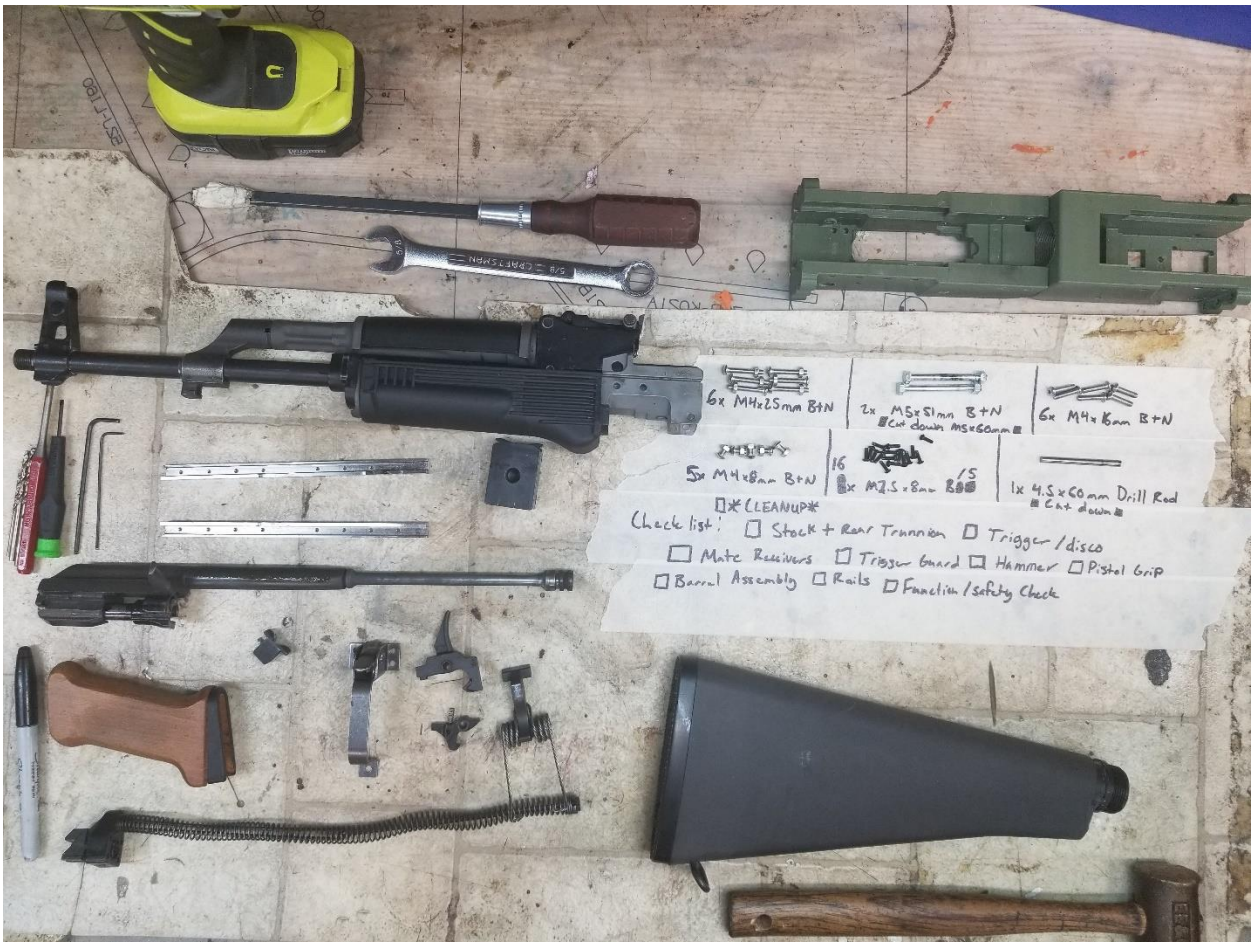
Build Tutorial

I recommend you read this section in its entirety, then watch the build video while you go about building your Plastikov. You are, of course, free to build as you would like, but having the manual in your mind while watching the video should make each step clear.

REFER TO THE README FOR BASIC PRINT INFORMATION

Step 1: Lay Out Your Parts

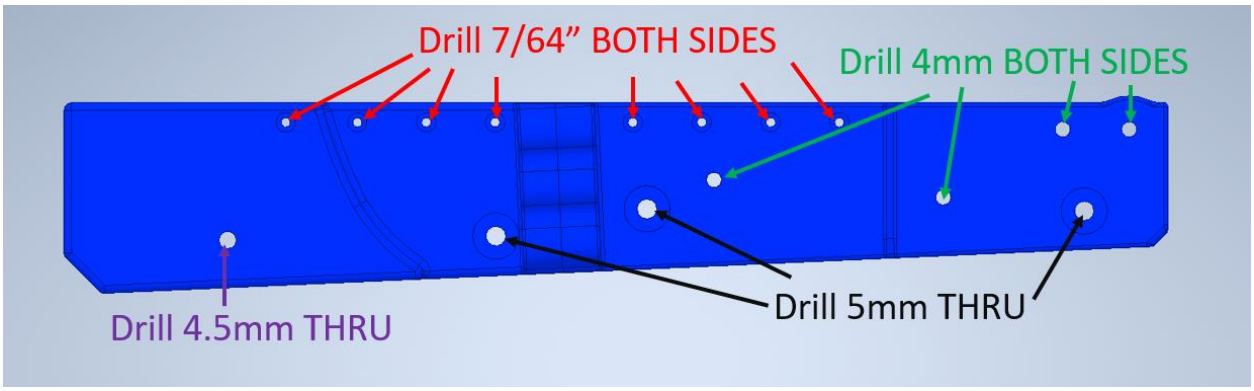
This step is simple – gather up all your parts and lay them out. Make sure you have all the parts you need. If you are going to be cutting down any bolts or pins, go ahead and do so now. If you cut down a bolt, remember that you will need to apply a chamfer around the end you cut down and will need to ensure that nuts can still thread easily on to the bolt.



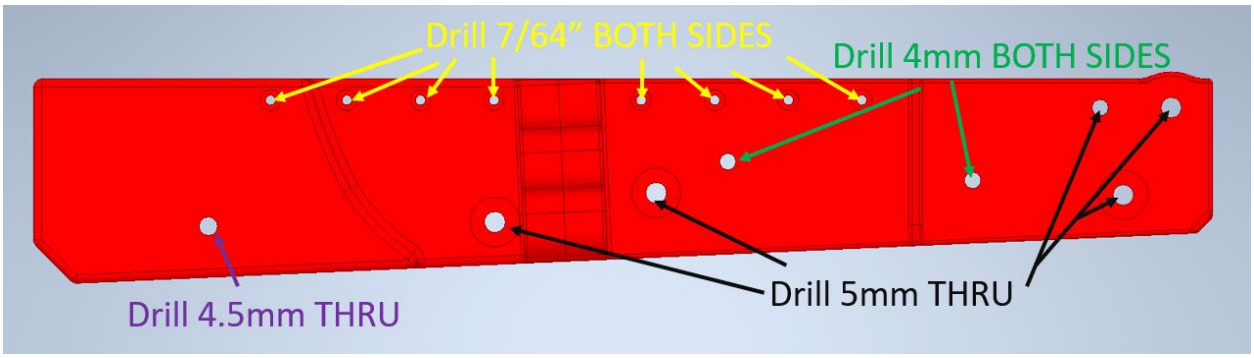
Spread of parts and tools used in assembling a Plastikov v2.0

Step 2: Cleanup Receiver Print

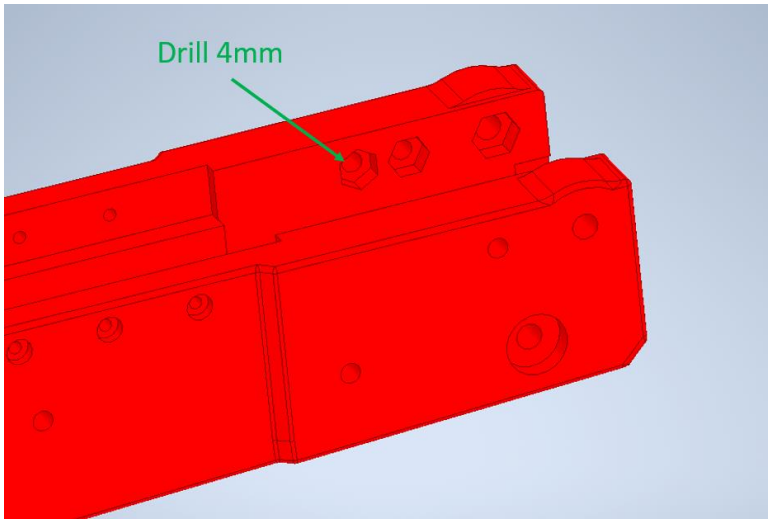
Take your two receiver sections and remove all supports from them. Be sure to remove all supports from the threaded section on the back side of the rear receiver. After supports are removed, you will take your drill bits (2.5mm, 4mm, 4.5mm, and 5mm) and drill the holes shown below to size. Be careful not to drill at an angle and walk the holes out of round – try and keep the drill steady, the holes straight and circular.



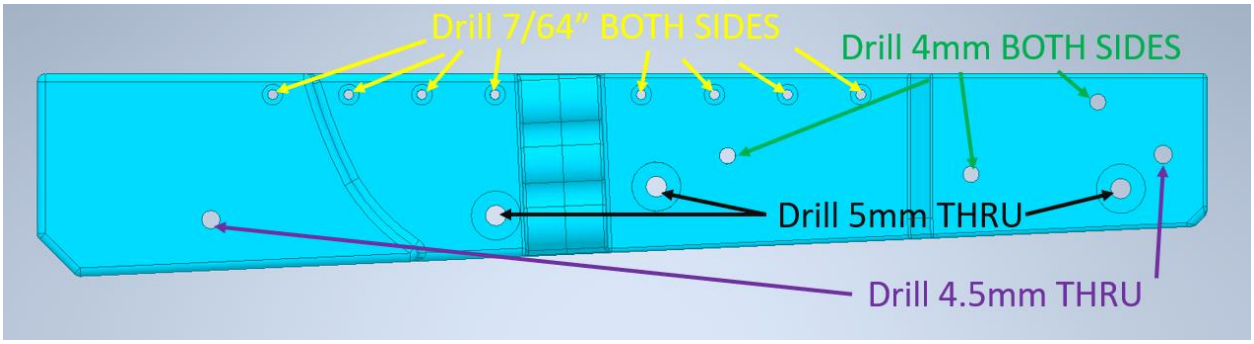
Drill Sheet for AKM Build



Drill Sheet for AK100 Build



AK100 Bolt Rotation Peg Detail (the M4x20mm bolt will come through this hole)



Drill Sheet for RPK Build – note that frontmost hole may need to be 5mm – it depends on if your trunnion has been drilled out 4.5mm or 5mm on the corresponding hole!

Step 3: Mount Stock and Rear Trunnion to Rear Receiver

Parts used: Rear receiver, buffer tube/stock (as applicable), 4.5x60mm pin (or drill rod), pistol rear trunnion.

Take the rear receiver and screw in your buffer tube of choice. I used an A2/M16 style buffer tube, but carbine tubes will work as well. If you use a carbine tube, you may opt to print and install the 'buffer tube retaining plate adapter' part found in the files. This part will allow you to use the anti-rotation plates that carbine and pistol tubes work with. Installation is simple – the peg on the adapter lines up with the recess in the receiver, the plate will line up with the recess on the adapter. Some hand fitting may be required, and really part is not strictly necessary – you can tighten down your castle nut to the point the tube should not spin loose.

While installing your tube, ensure that there is no debris or support material remaining in the threads on the receiver. The tube should go in without too much resistance – if it is fighting you, use a little oil and go slowly. If it is too loose, your print settings were likely changed far away from recommend/default settings, or your printer itself is not working right. You could use pipe thread sealing tape as a shim, but you should solve your printer/slicer issue.

With the buffer tube installed, you can mount your stock of choice to it if you would like – I find it easier to complete the rest of the assembly with the stock off, but this is up to you. Once you have got your tube threaded in and know it fits, you can just take it back off and reinstall it as your last step – I recommend doing this first only because if it won't fit due to some print issue, it'd suck to have completed the rest of the assembly only to find that out.

Next, take your pistol trunnion and drop it down into the receiver. It should fit snugly, ensure that all support material is removed. With the trunnion installed, take your 4.5mm drill rod and tap it into the hole that lines up with the rear trunnion. You may need to use a hammer and punch to drive it in for it is first installation. If you drilled this hole out straight to 4.5mm in step 2, the pin should go easily – if your holes wandered a little, you may have to take the rear trunnion out and drill the holes so they align better.

If your pin is cut a little short, just try and center it in the receiver. If you pin is a little long, you can trim it down some more or just leave it sticking out a little – I've tested this with a 50mm pin to ensure it's strong enough even if you mess up by 10mm, so don't worry too much.

Thread the buffer tube on straight (assuming you are using one)

Install the rear trunnion as shown – the ears go towards the front, the wall goes towards the back.

Step 4: Installing Trigger and Disconnector

Parts used: Rear receiver, trigger, disconnector, disconnector spring, M5x60 bolt, M5 nut

*Note: Your M5x60 bolts must be cut down to 51mm (shaft length) long. When cutting down bolts, it is important that you re-apply a chamfer to the end of the bolt so that a nut can still spin on to it. Test that a nut can spin down onto any bolt you cut down before installing it. Refer to the Plastikov Complete Build Video for more info on how to do this.

This step is straightforward – install the trigger and disconnector as you would normally on an AK. Refer to the video for how I held things together if you are stuck. Ensure that the BOLT is installed from the LEFT to the RIGHT, and not the other way around. Once the bolt is fully inserted (the hex head of the bolt should sit inside the hex-shaped recess on the receiver) and the trigger and disconnector are held by the bolt, spin the nut until it is tight. I used a screwdriver to spin mine on, you could also use a pair of needle-nosed pliers. If you have the appropriate socket or wrench, you could use that as well.

*Note: when you have finished your basic function testing with your Plastikov, you may opt to apply temporary Loctite (blue or yellow) to keep the nut from coming loose. Alternatively, you can use a soldering iron to melt the edge of the circular recess down into the way of the nut, so that the nut cannot spin loose because the melted plastic is holding it in place.

Installing Trigger and Disco – Just like a standard AK. If your trigger fits tight in the square cutout, use a file or sandpaper to clean up the edges of the hole.

Step 5: Mate Front and Rear Receiver Sections

Parts used: Front receiver, Rear receiver 6x M4x25 bolts, 6x M4 nuts

Take both receiver sections and lay them together. The alignment pins will be useful if your print comes out nicely, but if they are preventing you from lining up your receiver sections, you can snip them off – they aren't structural at all, just for convenience. With the receiver sections laid next to each other, take one of your M4 bolts and install it from the FRONT receiver to the REAR receiver while holding the receiver sections tight against each other. Once the bolt is fully inserted, threat one of your nuts onto the end of the bolt. Do not tighten the nut down at this time, just get it started on the bolt. Repeat this process for all 6 bolts.

With all 6 bolts started, tighten them in a cross-wise pattern (top-left bolt, bottom-right bolt, top-right bolt, bottom-left bolt, middle-right bolt, middle-left bolt). In order to get them tight, spin the nut down until it feels tight using needle nosed pliers (or a wrench, if you have small metric wrenches). Next, spin the bolt out about half a turn. This will ensure the nut is snug against the flange. Finally, while holding the nut still with your pliers/wrench, tighten the bolt until it is snug.

*Note: when you have finished your basic function testing with your Plasikov, you may opt to apply temporary Loctite (blue or yellow) to keep the nuts from coming loose.

Line up the receiver sections

Install the fasteners

Step 6: Installing Trigger Guard/Mag Catch

Parts used: Receiver assembly, Trigger guard/Mag catch assembly, 5x M4x8 bolts, 5x M4 nuts.

*Note: If your trigger guard assembly is not assembled, you will need to refer to a video on how to do this BEFORE you install the trigger guard. Youtube has several videos on this.

Lay your trigger guard assembly in place on the bottom of the receiver. Install all 4 bolts and nuts on the front side of the trigger guard assembly – follow the same basic process as you used in step 5 (install bolts, spin on nuts, tighten down nuts). I recommend you use yellow or blue Loctite on these screws/nuts, as they have a tendency to shake themselves loose every couple hundred rounds.

Install the bolt at the rear of the trigger guard last – it will require you to force the trigger guard into the recess on the receiver, then installing the bolt. This bolt requires Loctite or it will come loose pretty often – with a pistol grip installed, this bolt really isn't explicitly required (the Plastikov v0.9 that I ran to 2.5k rounds shook this bolt loose at 50 rounds and I never reinstalled it), but to prevent it from getting lodged in the receiver once it comes loose, use Loctite or simply don't install it.

*Note: If your mag catch is brand new, you will have to hand fit it. There are videos on how to do this, I mention how I hand fit mine in the Plastikov Complete Build Video.

Install the five bolts for the mag catch/trigger guard.

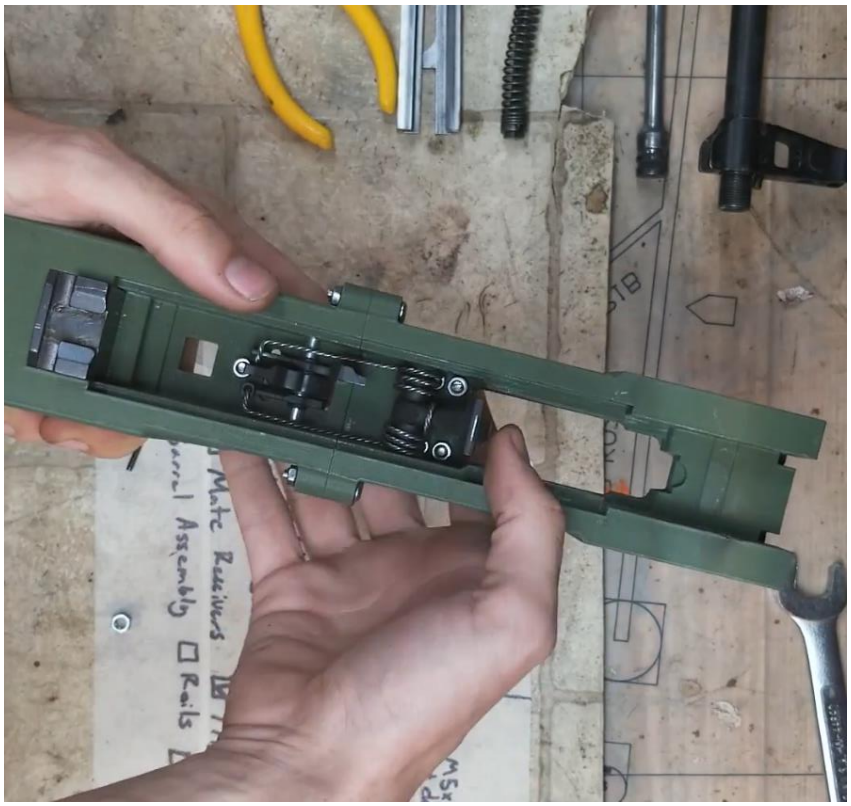
Step 7: Installing Hammer

Parts used: Receiver assembly, Hammer, Hammer spring, M5x60 bolt, M5 nut

*Note: Your M5x60 bolts must be cut down to 51mm (shaft length) long. When cutting down bolts, it is important that you re-apply a chamfer to the end of the bolt so that a nut can still spin on to it. Test that a nut can spin down onto any bolt you cut down before installing it. Refer to the Plastikov Complete Build Video for more info on how to do this.

This step can be a little tricky depending on how you insert your hammer. I choose to wrestle it into place, some people use a method where they fold the hammer spring legs over each other to avoid having to fight it. You will hold your hammer down into the receiver, then, like with the trigger and disconnector, you will take your M5x51 bolt from the LEFT side to the RIGHT side, pinning the hammer in place as you do so. Once the bolt is fully inserted (the hex head of the bolt should sit inside the hex-shaped recess on the receiver) and the trigger and disconnector are held by the bolt, spin the nut until it is tight. I used a screwdriver to spin mine on, you could also use a pair of needle-nosed pliers. If you have the appropriate socket or wrench, you could use that as well.

*Note: when you have finished your basic function testing with your Plastikov, you may opt to apply temporary Loctite (blue or yellow) to keep the nut from coming loose. Alternatively, you can use a soldering iron to melt the edge of the circular recess down into the way of the nut, so that the nut cannot spin loose because the melted plastic is holding it in place.



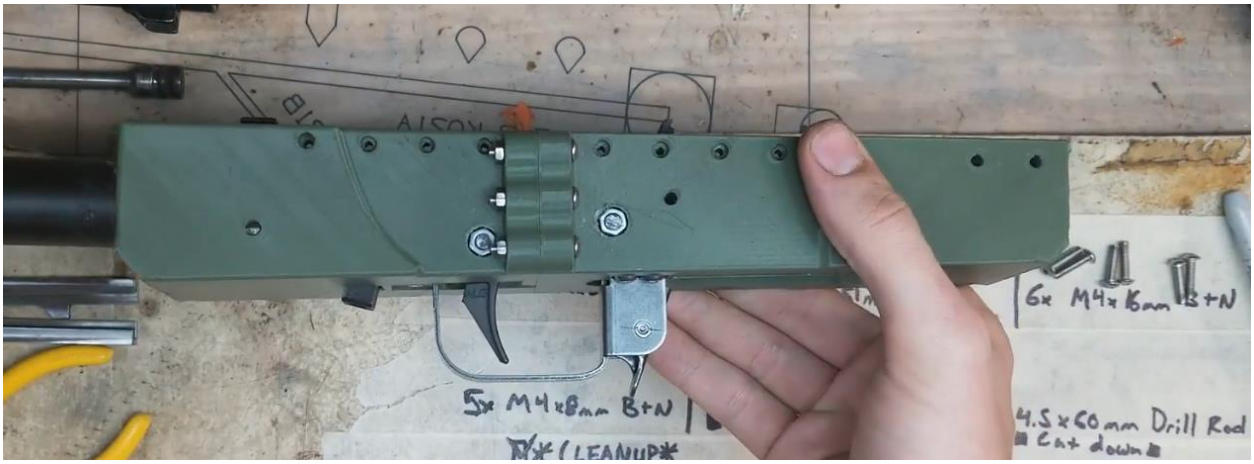
Install the hammer. Make sure the legs of the hammer spring correctly positioned on the trigger.

Step 8: Installing Pistol Grip

Parts used: Receiver assembly, Pistol grip, Pistol grip screw, Pistol grip mount

Drop your pistol grip mount into the receiver. You may have to file the square hole in the receiver to allow the mount to fit, they can be snug depending on your print settings. The threaded section on the pistol grip mount should face rearward, not forward. Once it is dropped into place, take your pistol grip and screw and install it. You can get your pistol grip very tight without damaging your receiver (so long as you printed at 100% infill like the readme calls for).

Pistol grip mount installed backwards (wrong)



Pistol grip mount installed correctly

Install your pistol grip

Step 9: Installing Barrel Assembly

Parts used FOR AKM BUILD: Receiver Assembly, Barrel Assembly, 6x M4x16 bolts, 6x M4 nuts

Parts used FOR RPK BUILD: 4x M4x16, 4x M4 Nuts, 1x 4.5mm x 60mm Drill Rod

Parts used FOR AK100 BUILD: 4x M4x16, 5x M4 Nuts, 1x M4x20, 2x M5x16, 2x M5 Nuts

All Builds will use an M5x55mm Bolt and Nut as well!

Note – the following instructions are based around the much more common AKM build – the RPK and AK100 builds follow the same basic steps, with the RPK having a solid pin for the front holes and the AK100 using M5 hardware for the front holes, as well as the extra M4 for the bolt rotation peg!

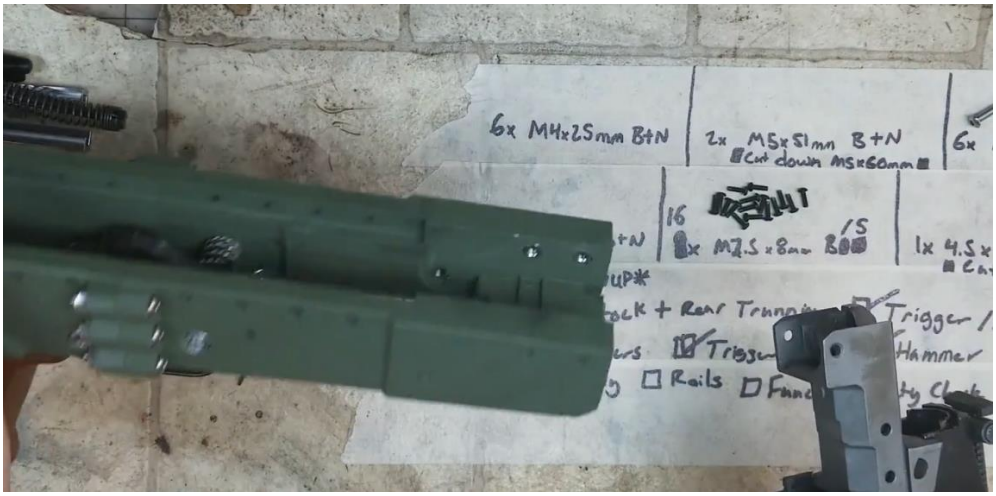
Start by taking your 6 M4 nuts and installing them into the inside of the receiver. There are 6 recesses that will each hold one M4 nut. Depending on your print settings, these recesses may be fairly tight – you can use a small clamp to help seat the nuts. At this point, I recommend you smear some silicone/RTV into the pocket in the receiver where the trunnion will sit – RTV will create a heat-resistant barrier that can extend the life of your receiver. This is optional, but based on my testing, makes a big difference. Next, take your barrel assembly and place it down into the receiver. You may have to push it until you meet resistance, then take your barrel assembly out and remove any plastic the front trunnion is scraping off the receiver. The front pocket for the trunnion is tight, and depending on your printer settings, can come out very tight. You can use a speedy clamp or similar tool to help push the barrel assembly down into the receiver. You can tell that the barrel assembly is fully seated when you can see clear through the receiver and lower hole on the trunnion. Remember to take the barrel assembly out and remove plastic if it is not seating fully.

With the barrel assembly fully seated, take one of your M4x16mm bolts and start it. It should not thread into the receiver (assuming you did step 2 correctly) and should thread into the nut that you installed first in this step. Get the bolt started, but do not get it tight yet – install all 6 bolts first. You should feel when the bolt passes into the trunnion and may be met with some resistance. If you feel resistance, I recommend you turn your bolt forward half a turn, then backward one quarter of a turn. Repeat this process until the resistance lightens up or your screw is installed.

With all 6 screws installed, I recommend you tighten them in this pattern: Front right, rear left, front left, rear right, middle left, middle right. These bolts do not need to be extremely tight, but they should be more than “just snug”.

*Note: when you have finished your basic function testing with your Plastikov, you may opt to apply temporary Loctite (blue or yellow) to keep the bolts from coming loose. In my experience, this isn’t needed for these bolts – just check that they are still tight after every range trip.

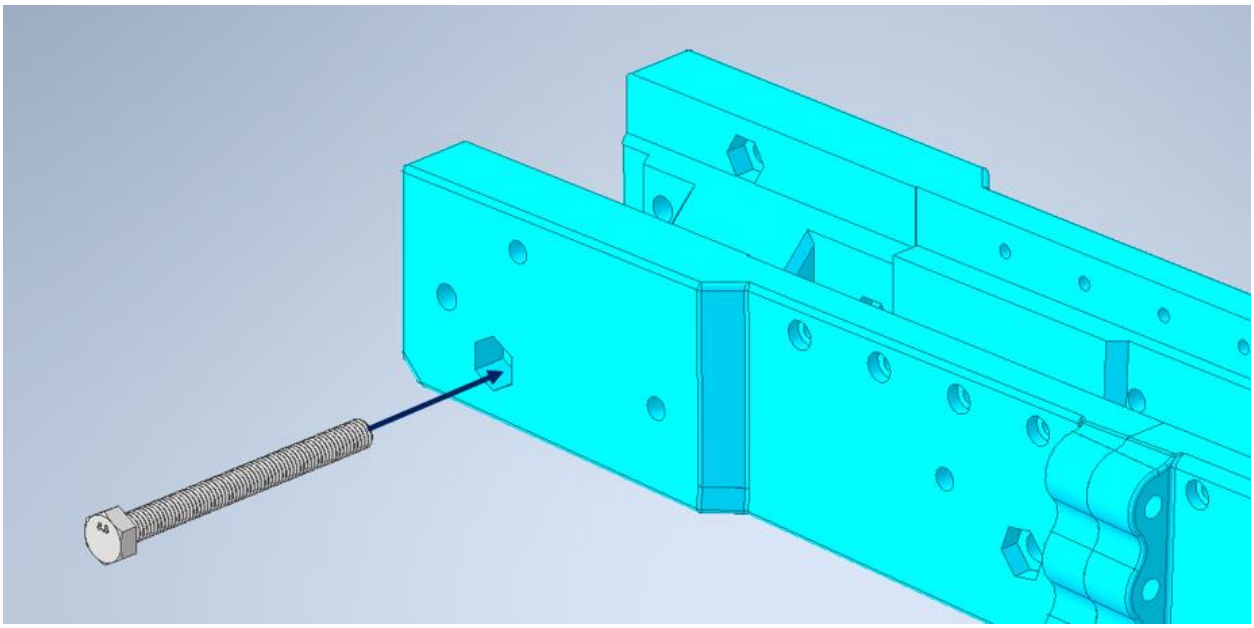
After installing the barrel assembly, take your M5x55mm bolt and M5 nut. Insert the bolt into the 5mm hole at the front of the receiver and tighten it – you can get this bolt fairly tight.



Install the nuts into the recesses in the receiver. They may be fairly tight, so ensure all support material is removed from the holes and use a C-clamp or pair of pliers to seat the nuts is recommended.

Install the trunnion/barrel assembly into the receiver. I recommend that you smear a layer of RTV inside the receiver where the trunnion sits, as the RTV will help stop heat from creeping into the receiver.

Install the bolts (and pin, if doing an RPK build) to secure the trunnion.



Installing the M5x55 bolt. Note that the build pictured in this tutorial lacks this feature, but your Plastikov v3 print will have it. Secure this bolt using an M5 nut on the other side of the receiver – you can cinch it down tight, and using some threadlocker on the nut is recommended.

Step 10: Installing Rails

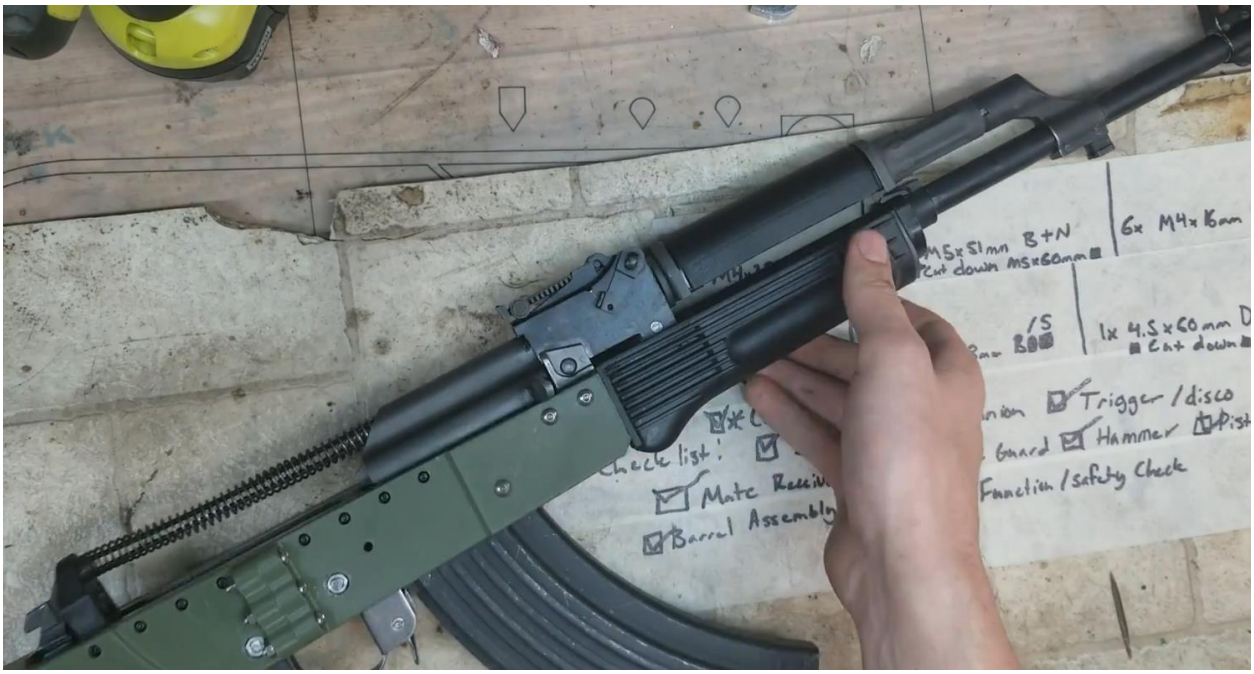
Parts used: Receiver Assembly, Rail set, 16x M2.5x8 bolts

This step is best understood from watching the build video – you'll need to take your rails (if you're using milled spec rails, no hand-fitting should be needed – if you're using hand-fit rails, refer to the "Hand Fit Rail Guide" text document in the documentation folder) and place them on the bolt carrier. Next, place the carrier and rails as one unit down into the receiver, and slide the carrier all the way forward once the rails are fully lowered. At this point you are ready to bolt your rails in place. Take your screws and install both rails. It is important to hold the rails down into the receiver and against the inside wall when screwing the bolts in. After installing all the bolts, the rails should be flush against the outside of the receiver (no gaps between the web of the rail and the wall of the receiver. The bolt carrier should move freely, but depending on your print settings it may be tight at first – a little oil on the upper rail should free things up a bit, and continued operation will break the rails in.

Unless you plan on using a recoil buffer and adding the quick disassembly notches to the rails (refer to the FAQ), you will install your rails and bolt carrier at the same time like so.

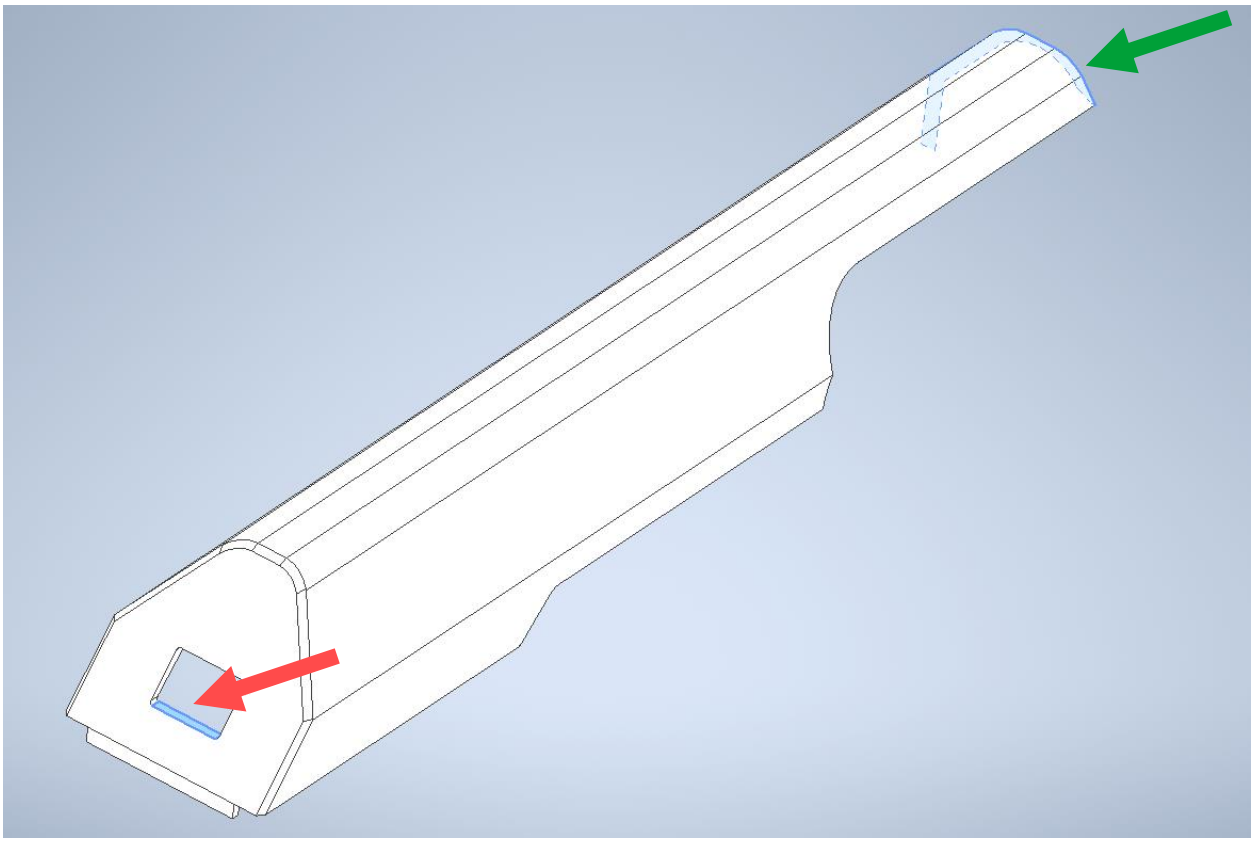
Push the bolt carrier forward while holding the rails into the gun. The hammer will push up on the bolt carrier as you install the rails, you may have to push back against it as you get things lined up.

Install the rear rails using the M2.5 screws. Do not overtighten these screws, as they can strip out easily.



Check mag fitment, bolt carrier fit, and more – the following section will walk you through the steps to check before testing!

You can also install your top cover at this time – while the Plastikov does not need this top cover to operate, this will prevent things falling into the receiver and ensure you can't stick fingers or such into the path of the bolt carrier. The Plasikov v3 is based around a 3D printable top cover – while you can make a factory top cover work, it will usually require bending and filing to make it fit. The printed top covers are well-tested and since they don't really see much force, hold up well. Depending on your kit, the printed dust cover may take a little fitting to install (factory dust covers are usually ground to fit a particular kit, so having to fit this part is par for the course). The fitting required will usually be on the front nose of the dust cover, where it sits into the rear sight block (green arrow in below picture) – some material may need to be filed or cut off on this face to allow the dust cover to fit properly. With some recoil spring assemblies, you may also need to file a little material off the bottom of the rear hole where the recoil spring assembly button sticks through the top cover – this face is indicated with the red arrow.



Step 11: Performing Function and Safety Check – PRE-FLIGHT CHECK

Parts used: Assembled Plastikov

To start this step, install your recoil spring. Ensure the firearm is unloaded, then rack the bolt and pull the trigger several times. Hold the trigger down and pull the bolt back, let go of the bolt so it springs forwards, then release the trigger and pull it again. Check for these things:

- When you pull the trigger, the hammer falls fully and hits the bolt.
- When you pull the bolt back, it does not require excessive force (the bolt should not feel like it is sticking)
- The bolt returns all the way forward under spring tension when release. (Be aware that AKs sometimes hold the bolt in place with their hammer, you can nudge the bolt carrier forward if it doesn't want to go, but don't guide it in – it should still close on its own).
- When you release the trigger, the hammer does NOT fall, and is caught by the trigger. (It resets for the next shot).

After this first test, grab a magazine and try installing it. If you have a brand-new mag catch, it will likely still need fitting. If your magazine locks in, you are all set. Give it a wiggle and swap the mag in and out several times to ensure the latch is working properly.

Next, check headspace if you have gauges. If your parts kit is from a reputable company like Arms of America, there's no real need to check it – but if you have a used kit or one of the cheap AMD65 kits, you should pick up headspace gauges (at least a no-go gauge). This is not Plastikov specific, since the Plastikov itself does not really have any bearing on the headspace of the gun, it is just a good idea to have a set of gauges and check every couple hundred to thousand rounds.

This check primarily applies to people who make their own rails, or do hand-fit rails that don't have hammer cutouts: ensure that with the hammer pushed all the way towards either side of the receiver that it doesn't hit the rail as it rotates backward. Having these cutouts not be in place/being too small is probably the biggest danger a Plastikov could pose to its operator. If the hammer cannot hit the rails, you are good to go. If it can, break out the Dremel tool and make the cutout a little wider.

The next item to check is that your ejector works and that the gun will cycle rounds. Because the Plastikov has no safety, this can be a safety concern if you do not know what you are doing. You can remove the hammer from the gun to ensure you won't have a negligent discharge when testing this, or you can just be vigilant to keep anything that could pull the trigger away from the trigger. Load a magazine, then rack the gun – it should be able to chamber a round fully from the magazine. Yank back briskly on the charging handle – the ejected round should go flying. You can perform as many dry cycles like this as you would like, but usually if it does well on one or two rounds here it will be safe to fire.

Your next check will be to actually fire the gun – I recommend you wear safety glasses when you shoot any gun – especially printed ones! Fire your first mag slowly, checking for cracks on the receiver. If there is a hidden anomaly in the print, it will usually show up right away. If you think you see a crack, mark it with a sharpie or pencil and fire another couple rounds. Did the crack grow or move? If not, it is probably not a crack, but just a scratch. After your first mag of slow fire, if no cracks have shown up, your Plastikov should be safe to fire for hundreds if not thousands more rounds (there are several ways to extend the lifespan of your receivers if you wish, they are described in the FAQ section).

FAQ/Troubleshooting

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

A: I got 2.5k rounds on a PLA+ receiver. I have not had any receivers past v0.9 printed in PLA+ fail before 1000 rounds – so you are quite likely to make it to 1000 without worry. Each of my Plastikov receivers have died due to fatigue cracking (the repeated impact of firing/recoil) in the receiver – these cracks usually take quite a few rounds to propagate to the point that they make the gun quit working properly. Once you notice a fatigue crack, it is best if you just reprint whichever receiver section is cracking. I have had two cracks in the rear receiver where the rear trunnion mounts open up while I've been shooting – In both cases the gun recoiled and went back into battery, but I could feel something was wrong (the stock goes all wobbly because the rear trunnion had cracked out of the receiver). Pretty much the only way you would have a projectile bolt carrier hit you is if you took another shot past the point the stock had fallen without having the gun in your shoulder – the stock/rear trunnion would fall off, you'd fire again, and the carrier would hit you and leave you with a nasty bruise.

Q: How many rounds can I fire before heat becomes a concern?

A: About 90 rounds on a PLA receiver, 120+ on a nylon receiver. If you need to fire this many rounds without a cooling break, ensure the barrel is not loaded (no forces pushing on the end of it) while it cools – some shifting could happen if you get the receiver hot, force the barrel to move, then let the gun cool. I haven't been able to observe this happening in practice, but it could happen in theory.

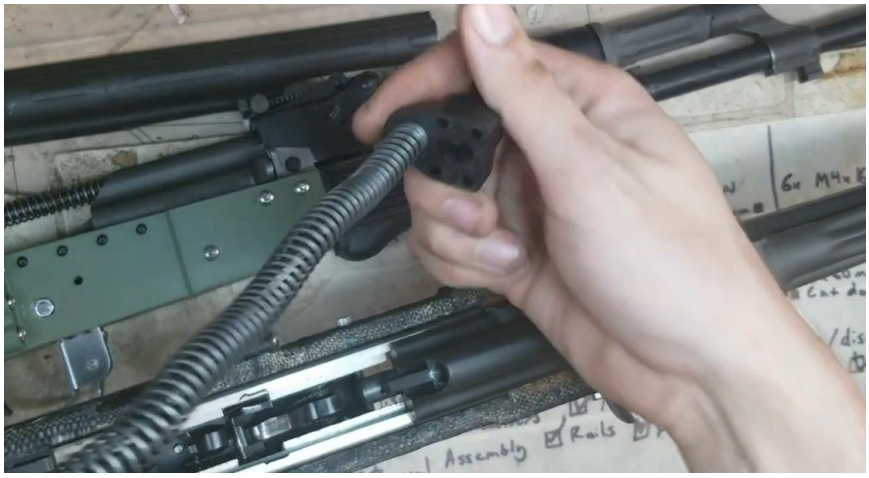
Q: Can the Plastikov work without a stock?

A: Yes, I have fired hundreds of rounds without having the stock in my shoulder – while it will drastically increase the force on the rear receiver since it isn't braced against your shoulder, a good print of the rear receiver will hold up. Based on my experience from getting Plasikovs to fail, with an overgassed AK, when the bolt eventually jackhammers the rear receiver to failure, the gun will jam on the round that breaks the rear receiver – meaning you won't be able to fire off another round and send the bolt back into your body.

Q: I want to be able to quickly remove my bolt carrier without removing the rails – is this possible?

A: Yes! However, you'll need to make a couple cuts to your rails and should get a rubber recoil buffer. Using a Dremel tool, cut just under 1" of material from the rear of the top side of both rails. You will need to add a recoil buffer (you can find these AK recoil buffers on Brownells for 15 bucks) to ensure that the bolt carrier won't try and hop the rails.

Make a 1" long cut to both rail's rear, top sections.



You should get one of these recoil buffers to add to your recoil spring if you opt to make the quick takedown cuts.

Q: What mags work?

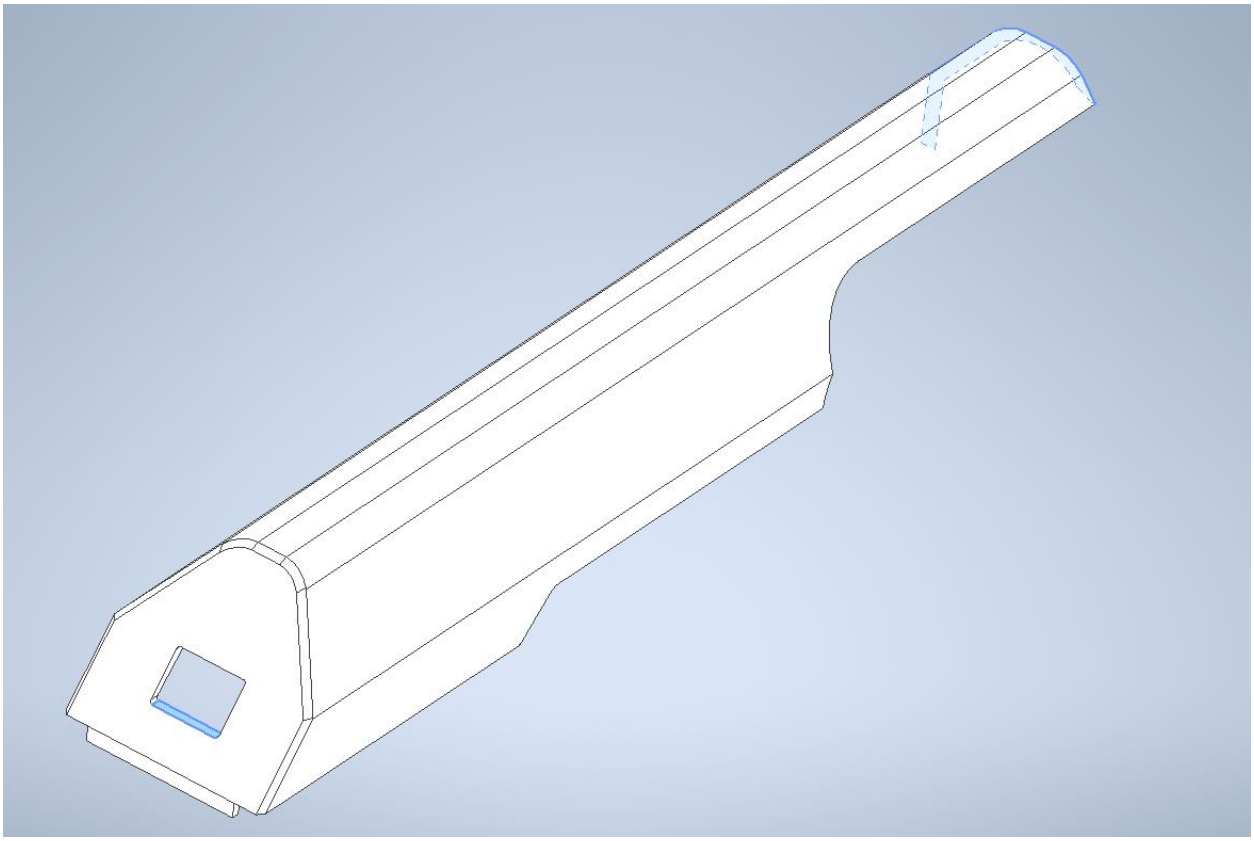
A: I have tested mine with factory steel mags, as well as PMAGS. One tester used printed mags, and they ran fine. In my testing the steel mags are more reliable (PMAGS sometimes do not want to feed the first couple rounds out easily from a fully loaded mag). Any quality AK mag should work.

Q: I have hand-fit spec rails. How do I hand fit them?

A: Refer to the “Hand Fit Rail Guide” text document in the documentation folder for more info.

Q: Why won’t my dust cover fit?

A: The Plastikov v3 is not meant to work with factory dust covers – while you can modify them to work, it will take some grinding. The printed dust covers have been well tested, and even when they fail, they won’t come back at the shooter unless you did a bad job fitting them to your gun (which is true of factory dust covers on normal AK builds, too). Now, depending on the exact parts you’re using, you may have to do a little fitting on the printed dust cover – the two faces highlighted in blue below are the surfaces you may need to remove a little material from in order to attain a good fit.



Q: I am having failures to eject and/or jams of fired cases. What is wrong?

A: This should not happen with milled spec/drop in rails. If it is, ensure that the ejector has not peened over into a rounded shape – if it has, you may need to use a Dremel tool to grind the ejector back so that it presents a square face to the bolt.

If you are using hand-fit spec rails, failure to ejects indicate that your eject isn't bent up sharply enough, or that you trimmed the ejector too short. If you trimmed your ejector too short, there isn't much you can do – you can try placing a shim between the left side rail and the receiver or bending the ejector up more to compensate.

Q: What materials are suitable for making the rails? Can I use aluminum or mild steel?

A: I have tested 1018 steel (both hardened and as-rolled), and it held up fine for the rails, but was too soft to work as an ejector. 304 Stainless, 17-4PH Stainless, and any equally hard carbon steels would work – but aluminum and mild steel are too soft to hold up as the ejector. One DIY option is to heat-set a stainless steel tab into the receiver to act as the ejector – I did this on the Plastikov v0.9 that went to 2.5k rounds. I cut the ejector area out of the 1018 rails I had been using and bent a square of 304 Stainless into an "L" shape, then heated it with a soldering iron until it melted into the receiver – I don't recommend this option over milled or hand-fit spec rails, but it is a viable option if you're going for the king bubba award.

Q: I have failures to eject occasionally when the top cover is installed, but the gun runs fine with the top cover off.

A: If you are using hand-fit rails, ensure they are fit properly. If using milled-spec rails, ensure that your top cover isn't deformed/bent. The printed top covers offer a little more room for ejected cases to leave from and might be a good option if you're having issues with factory top covers.