

Build Instructions - README.txt

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-----Ivan's 3D Printable 10/22 Receiver-----

This is a 3D Printable 10/22 Receiver. Read these instructions in their entirety to help you ensure your receiver functions properly.

I drew this receiver as close to Ruger prints as possible, then modified it as needed to ensure ideal function when printed. I've put 750 rounds through a railed receiver and 350 through a flattop (both printed in PLA+).

There is little to no danger of a receiver failing dramatically, it should wear out and lose reliable function before it becomes unsafe to fire. If you get to this point, just print another!

I did 500 rounds without letting a receive cool (it was printed in PLA), as quickly as I could reload 10 round mags. The receiver didn't overheat and the optic mounted on the receiver didn't lose zero.

While this receiver doesn't work without issues (I've had plenty of failure to ejects, a couple light strikes, etc), this is pretty common for 10/22s - finding a couple good magazines that work well in your particular setup is important.

This receiver has been tested with Ruger OEM 10 round and BX-25 mags. Both function acceptably. Compatibility with some aftermarket stocks (especially dress-up stocks) might not be possible, though it has worked with aftermarket parts and all stocks it has been tried with.

-----Supplies you will need-----

1/4in Drill bit

13/64in Drill bit

3/16in Drill bit

10/22 Parts kit: (1x barrel, 1x complete trigger group, 1x bolt group, 1x charging handle/recoil spring assembly, 2x barrel retainer screws, 1x barrel retainer, 1x receiver pin set [this is two trigger housing pins and the one bolt stop {also called buffer} pin])

Sandpaper or rotary tool with sanding bit

Vise or clamps (optional, but will help)

JBWeld (for railed receiver builds)

M3x10mm Bolts (for railed receiver builds)

-----Print Settings (reccomended)-----

This receiver works well in PLA, so I'm going to give basic settings for PLA. You can print this in whatever you want, PETG and ABS (on a dialed in printer) are known to work.

Material: eSun PLA+

Temperature: 230C Nozzle, 60C Bed

Supports: Enabled/Full Supports. Tree supports work fine.

Infill: 100%

Note: I recommend a layer of gluestick on your printbed to help ensure the receiver doesn't warp.

-----Process-----

Note: If you are doing a railed receiver, start with the lettered steps. If you are doing a flattop receiver, skip the lettered steps!

- a.) Remove the supports from the rail and from the top of the receiver. You will have to dig out the supports from the cones in the top of the receiver - the easiest way to do this is poke through the bottom of the receiver with a small screwdriver and stab through the supports, then scrape them out.
- b.) Place the rail on the receiver. If it can sit flat across the top, you are ready to proceed. If not, you may still have support material in the cones.
- c.) Mix up about 4 quarters worth (imagine four US quarter coins stacked up) of black JBWeld with 4 quarters of white JBWeld. Mix together. Apply this to the top of the receiver (the reason there are patches that sag a little is so the JBWeld can impregnate the receiver a little).
- d.) Place the rail on the receiver. Press down. Excess JB Weld may squeeze out, try not to make a mess.
- e.) Take three M3x10mm bolts and screw them through the rail down into the receiver. You don't have to get them super tight, just snug. Hold the rail down tight to the receiver while you tighten the screws.
- f.) Clean up the excess JBWeld with a rag. Let the receiver sit for 24 hours, then begin Step 1 below:

- 1.) Print the receiver of your choice. STLs for both receivers and the top rail ARE PROPERLY SCALED AND ORIENTED. If you mess with the orientation or scale, you will probably have issues.
- 2.) Remove supports. Remove all support material from the receiver you printed. If you have some support material left in the two holes underneath the barrel, you can leave it for now - get as much out as you easily can.
- 3.) Take a battery drill (or cord drill or even a hand drill) with your 13/64in drill bit. Use this bit to come from the front of the receiver and drill out the two holes. Try and keep the drill bit centered in the hole if you can. Go slow and don't force it, let the bit do the cutting. After drilling those two holes, drill the hole in the bottom of the tongue with this same drill bit. Drill slow and do your best to keep the drill bit straight.
- 4.) Take your sandpaper (or rotary tool with a sanding bit) and smooth out the tongue underneath the barrel, as well as the top and bottom of the barrel hole itself. Refer to the image in the 'Renders' folder named 'Sanding Locations' to see where these spots are and how much you should sand them. The sanding done in the image is the minimum amount of sanding required, you can sand a little more than that - you won't hurt it by sanding just a little too much.
- 5.) Take your barrel and insert it into the receiver. It will be pretty snug, you can use a vise to clamp the barrel so that you can twist the receiver on if you need to (be sure to use soft jaw on the vise or place blocks of wood between the vise and the barrel so that you don't scratch it!)
- 6.) With the barrel installed all the way (it will be sticking into the inside of the receiver just slightly), spin the receiver so that the top of the receiver lines up with the top of the barrel (if your barrel has a front sight post, have the front sight post sticking up straight relative to the flat top of the receiver).
- 7.) Take your barreled receiver (the combination of the receiver and barrel is called 'barreled receiver') and place it into your stock. There should not be

excessive resistance, and your barrel should fit nicely into the groove cut into the stock (assuming your stock has a cutout for your barrel, some aftermarket ones do not).

8.) If your barreled receiver isn't dropping in, check the last item in the 'Troubleshooting/Tips' section of this document. It is very important your barreled receiver fits easily into your stock before you proceed.

9.) Take your two barrel retaining screws and your barrel retainer. Line up the retainer with the cutout on the barrel (which should be matching up with the angled surface on the tongue of the receiver).

10.) Place your two screws inside the holes on the tongue of the receiver. Using an allen wrench, screw them in slowly. I recommend you use a little tapping fluid (or any light lubricating oil, motor oil is useable) on the threads of these screws before you screw them in.

11.) Tighten both screws down, swapping between each screw as you tighten. Once once screw starts getting snug, stop and snug up the other. Then tighten the first (these don't need to be super tight, I used one finger on the end of the wrench to set the them), then the second.

12.) Again check that your barrel fits nicely in the stock. If it doesn't, you may have overtightened your screws, or you may not have sanded enough material out in Step 3.

13.) With the barrel installed, take your drill again, this time with the 3/16in drill bit. Use this bit to drill out the two holes close to the bottom of the receiver. Drill slowly and do your best to drill straight - you don't want to wobble these holes out.

14.) Now take your drill with your 1/4in drill bit. Drill out the big hole towards the rear of the receiver (the one above and to the rear of the two holes you just did in Step 13). Drill slowly and do your best to drill straight.

15.) Take your bolt and charging handle and install them. If you've never done this before, it can be a bit tricky. Refer to youtube for help. This video is good: https://www.youtube.com/watch?v=CwU_U49iI3A

16.) If your bolt has a lot of resistance, ensure that all support material is removed. You can apply some oil to the 'ceiling' of the receiver, as well as the two sidewalls the bolt rubs against. Motor oil, remoil, or even axle grease all work.

17.) After your bolt is installed and seems to move freely enough, install the bolt stop pin. This is the larger of the pins that you have, and goes into the hole you drilled with the 1/4in drill bit.

18.) Take your trigger group and place it into the receiver. Take your two smaller pins and insert them to pin the trigger group in place. This will complete your action assembly.

19.) Take your assembled receiver and drop it into your stock once more. It should still fit nicely, though it may be a little tricky to get the trigger housing to stick out the bottom of the stock at first. Once everything is settled, the assembly should sit all the way in the stock without you having to force it or hold it down.

20.) Affix your stock to your assembled receiver using whatever method it was designed for - for factory stocks, this involves placing the barrel band and screwing it down, then tightening a screw in the bottom of the stock.

21.) For factory stocks, apply the barrel band first. After installing it, ensure the bolt still moves freely. If it doesn't, you might not have sanded enough back in Step 3. Strip the receiver down and redo Step 3 if this is the case. Next, tighten the screw in the bottom of the stock (this doesn't have to be tight, as soon as you feel resistance pick up, stop tightenting). Ensure the bolt still moves freely. If it stopped moving freely after tightening the screw in the bottom of the stock, back this screw off a little and test the bolt again.

22.) Hand cycle your bolt a lot. Ensure it doesn't want to bind up and that it goes all the way forward. If it does, ensure your barrel band/screw in the bottom of the stock are not too tight. See the 'Troubleshooting/Tips' section of this document for more help on this issue.

23.) Enjoy! Monitor the gun closely for the first 100 rounds or so to ensure the bolt is going all the way forward. Keep it nice and lubed up for the first couple hundred rounds, this will help it run more smoothly. As it wears in, it will need less oil.

-----Troubleshooting/Tips-----

IMPORTANT: During break-in, ensure that the bolt is coming all the way into battery before firing. On fresh receivers, sometimes the bolt won't go forward all the way, which usually just causes light strikes, but sometimes will cause out of battery detonations (which are fairly safe since 22lr is a mild cartridge, but will pepper you with hot gas and unburnt powder).

If it's possible, I recommend you pick up an extra power recoil spring to help ensure the bolt gets forced all the way forward. I'm using a worn out factory spring, so this makes the issue that much more obvious on my receivers. After about 100 rounds fired it has quit doing this.

Ensure you either sand or use a rotary tool on the places indicated in the picture named 'Sanding Locations'.

Install the barrel into the receiver using a vise and twisting the receiver down onto the barrel.

The bolt may be a little stiff at first, use a little grease or oil. Hand cycle vigorously to wear it in. It may take as many as 50 shots to get it loosened up properly, which means it may take a couple hundred hand cycles.

IMPORTANT: Ensure that when you are putting your barreled receiver into your stock that there is not excessive resistance. If your gun will cycle easily by hand out of the stock but is hard to cycle when in the stock, you likely have some fitment issue. Firstly, ensure the barrel was properly seated as mentioned in the section of this document that is titled "Process".

Second, ensure that your receiver isn't fitting tight against the stock in any location - use a sheet of notebook paper to check. Place a strip of the paper between the receiver and stock while trying to insert the receiver. If the notebook paper gets torn when trying to insert the receiver, you may need to sand the receiver down a little in that location. The usual problem areas are at the front of the receiver where the barrel mounts - those radii on the receiver as well as the extension out of the bottom of the receiver might interfere with aftermarket or out of spec stocks.