

CHIMERA .410 V1.3

Hybrid 3D Printed / Metal Framed Break Barrel Shotgun



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<https://www.youtube.com/user/pilotgeek>

Chimera 410 – Single Shot Break Barrel

1 DISCLAIMER

Please read and understand this manual fully before attempting assembly. This product is not print-in-place. This design requires skilled machining and assembly of additional components for complete assembly. You will need a rotary tool with cutoff wheel at minimum. **These plans are intended for educational purposes only and assembly is at your own risk.**

The Chimera is intended to shoot .410 shells, and has been tested only with them. Alternate barrels may be possible at your own risk.

The Chimera is an experimental hobbyist project. **It is not designed to be carried, and it is not intended for self-defense.** The current design does not feature proper modern safeties and should be used in a controlled environment with careful handling.

These plans are provided as-is. They should be treated as a novelty, and nothing more. These files are not an actual gun, they are CAD files depicting design of a handgun. They require skill and knowledge to make into a functional object. You are responsible for knowing the laws regarding firearms where you live. Before building, please read up on all applicable gun laws and decide for yourself whether or not you can legally build this where you live.

Read all instructions carefully. Do not skip or skim. It's all here for a reason.



2 PARTS INDEX - REQUIRED PARTS

Amazon links are paid / sponsored links. **Links may change or disappear depending on sellers and availability, please check what you buy matches description listed in this manual!**

2.1 TUBING

- Foregrip: 1" 16ga steel tubing x 312mm
- Receiver / Buttstock: 1" 16ga steel tubing x 400mm
- Break Latch / Hinge: ¾" 16ga steel tubing x 112mm
- Barrel: ¾" x .156" DOM tubing – Between 19 and 22" for good balance.

2.2 SCREWS & HARDWARE

- ¼" Steel Rod
- M4 Set Screws / Grub Screws - <https://amzn.to/3uLCI4r>
- Frame Screws: 34x M5x16mm - <https://amzn.to/3rMPlrF>
- Barrel Pinch Bolts: 4x M5x40mm - <https://amzn.to/31HsrN9>
- 3mm Steel Rods - <https://amzn.to/3oBKgpt>
- Striker & Latch Spring: [0.8mm x 6mm x 50mm Stainless Steel Compression Spring](#)

2.3 EVERYTHING ELSE

- JB Weld / Epoxy (Don't use Quick Setting) - <https://amzn.to/37vCumZ>
- Plastic Safe Grease - <https://amzn.to/2F3pUxO>

3 3D PRINTING

I tested everything in PLA. I recommend the trigger and receiver parts to be 100% to prevent deformation under stress / compression. Everything else can probably get away with 20-30% and thick walls.

3.1 GENERAL SETTINGS

- Nozzle: 0.4mm
- Slicer: Confirmed to print on Cura 4.5
- Print in the default orientations. **Print each part separately for best results.**

3.2 PRINT SETTINGS

- Infill
 - Break Latch Parts, Receiver Parts, and Striker/Trigger Parts must be 100% Infill.
 - Barrel blocks should be printed at high infill or walls, use your judgement.
 - Grips, Buttstock, and Inner Blocks may be around 20-25% infill.
- Supports
 - Only the Outer Receiver requires supports.
 - Print 100% infill parts / important parts with brim or raft. This was the easiest way I found to prevent the frame from warping. A heated build plate is required. I recommend an enclosure.
- Notes
 - Don't try to print too fast, you want it to be good. Even when using PLA, it helps to build in a warmer environment for strong layer adhesion and less warping.
 - Low quality prints may require sanding. Polish any mating surfaces or moving parts.
 - If available, use plastic-safe grease on all moving parts. It will ease trigger pull & wear.

4 METAL FABRICATION

Using the 3D printed templates, drill pilot holes with a 1/16" bit, then finish with size listed on template.

Template areas with a dotted line indicate channels to be cut. Drill each hole to size listed, then cut the tangent between the outer radius of each hole using a dremel or similar tool.

Larger hollow areas such as 3B will also need to be cut with a dremel / rotary tool, or hacksaw.

4.1 FOREGRIP

The foregrip uses 1" square tubing, cut to 312mm in length. Drill and cut using templates as shown, noting drill sizes listed on template.



4.2 HINGE / LATCH

The middle hinge section uses 3/4" square tubing cut to 112mm. Drill and cut using templates as shown, noting drill sizes listed on template. The tubing also needs to be cut to match the profile of the template.

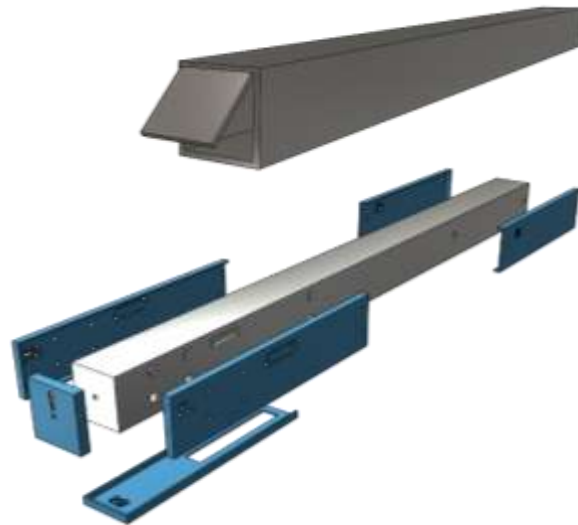


4.3 RECEIVER

Cut a 400mm length of tubing, leaving an additional 25mm tab on one side. Bend the remaining tab downwards to act as the breech face. If you have the ability, use a welder to box this in, which will greatly improve strength.

Drill and cut using templates as shown, noting drill sizes listed on template. **The firing pin hole should be around 7/64"**

BE PRECISE WITH ALL CUTS! THE LOCKING MECHANISM RELIES ON PRECISE CUTS IN THE CHANNELS FOR PROPER OPERATION.



4.4 BARREL

Cut $\frac{3}{4}$ " x .156" DOM tubing to desired barrel length. Use a chamber reamer (recommended method) or a $15/32$ " drill bit using the DrillGuide.stl part. If you don't want to drill a chamber, the parts could be modified or adapted to fit a properly chambered .410 barrel blank.



4.5 FIRING PIN & GUIDE RODS

Cut 3mm rod cut to around 63mm in length, with the tip reduced to a smaller 2mm wide rounded end. This can be done by chucking the rod into a drill and using a file while spinning.



Secure the firing pin into the striker with M3 grub screw / set screw.



Cut 3mm rod to around 60mm for the charging handle, and another to 40mm for the striker spring guide rod. Epoxy the 40mm guide rod into the spring retainer. Set aside all parts for later assembly.



4.6 BREAK BARREL HINGE & LATCH

Cut a length of $\frac{1}{4}$ " rod to 50mm in length, and reserve for hinge assembly. Cut another length of $\frac{1}{4}$ " rod to 62mm and reserve for latch / lock assembly.

5 ASSEMBLY

5.1 FOREGRIP / BARREL BLOCKS

Install the inner barrel blocks into the foregrip tubing. The holes should line up with the holes drilled in the metal. Numbers should be towards the forward end of the gun and sit in numerical order front to back.

Slide grips and barrel blocks onto the tubing as shown. The outer-middle barrel blocks are optional cosmetic parts, and use short sections of M3 rod to align with the other sections.

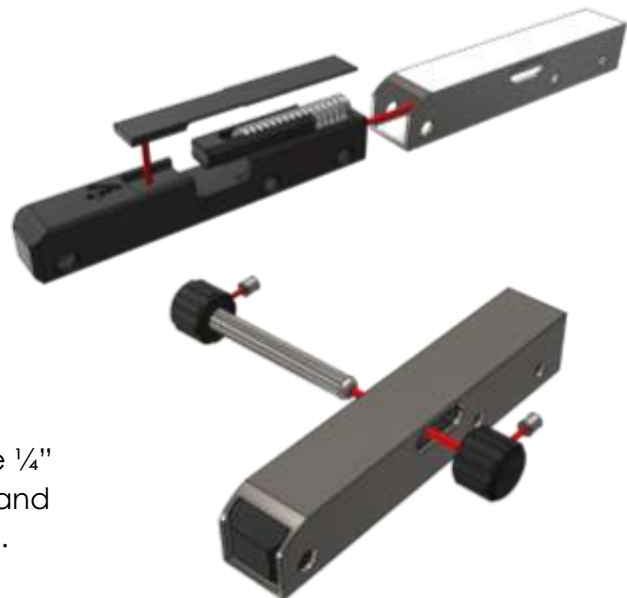
Use 14x M5 x 16mm screws to secure all parts together.



5.2 HINGE / LATCH

Install 0.8mm x 6mm x 50mm spring and plunger into the breaklatch frame assembly, and ensure free operation, sanding if necessary. Use plastic-safe grease to ensure smooth operation. Close the assembly with the spacer, and insert into $\frac{3}{4}$ " metal tubing. If fit is too loose, you may want to permanently fix this part into the metal using epoxy.

While pushing the plunger back, insert the $\frac{1}{4}$ " x 62mm rod through the slot. Add knobs, and secure with 4mm grub screws / set screws.



5.3 RECEIVER / STRIKER

Insert the printed inner receiver into the metal tubing receiver. Ensure all screw holes line up, and that metal and plastic breech faces sit firmly against each other with no gaps. I recommend using epoxy on the face of the plastic "inner receiver" to help eliminate gaps between the metal breech face and the plastic.

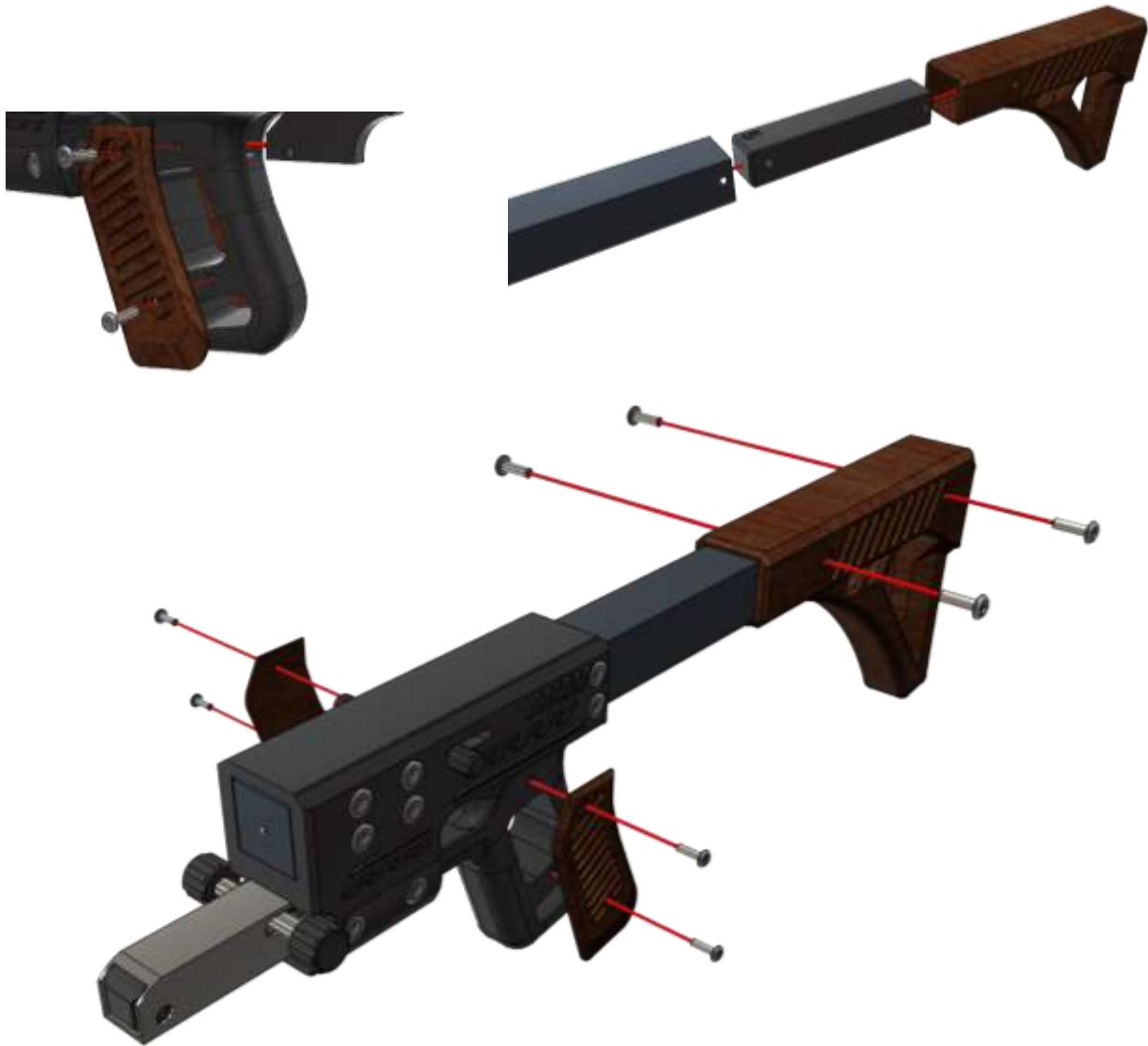
Fish the striker, spring, and spring retainer through the rear of the receiver. The trigger should slide in from the slot on the underside. You'll secure these later, and yes it's a pain in the ass, you'll probably need to use a long screwdriver to hold it all together.

Slide the inner receiver assembly into the outer receiver / pistol grip, and secure with M5 x 16mm screws. Slide the 60mm rod through the striker and glue the charging handle knobs on.



Insert the break barrel latch / hinge assembly into the receiver, and secure with M5 x 16mm screws. If the fit is too loose, you may want to epoxy this section together to eliminate play in the hinge, making sure not to get any epoxy into the sliding latch.

Insert the inner and outer buttstock at the rear, and secure with M5 x 16mm screws. Install the handgrip plug through the rear of the receiver and attach the handgrips with M3 screws.



5.4 FINALIZATION

Pin the hinge together using an M5 x 50mm partially threaded bolt (Old Revision) or 50mm length of 1/4" rod, and secure with M4 grub / set screws from bottom (New Revision).



Ensure there is no play in the closed mechanism. Slide the barrel into place and use an empty 410 shell to adjust headspacing. There should be no space between the rear of the cartridge and the breech face. Once the barrel position is adjusted for proper headspacing, use M5 x 40mm bolts to clamp the barrel in place, and use M4 set screws for additional clamping force to ensure it does not shift forward.



6 SAFETY & USAGE

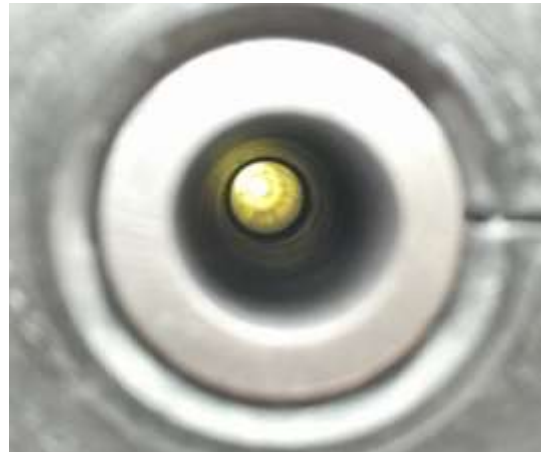
6.1 TESTING

TEST FIRE THE GUN REMOTELY. Secure the gun to a solid surface and fire remotely with a string attached to the trigger.

Inspect the condition of the gun during and after each session of usage. Discard any parts which show excessive wear. Always wear safety glasses and ear protection when firing. You do not want ear or eye damage from vented gases in the case of cartridge failures.

6.2 LOADING & EJECTION

The Chimera was designed for 2.5" 410 cartridges. There is no automatic ejection, you will have to manually pull spent cartridges from the chamber. A properly reamed and polished chamber should allow spent cases to be easily removed. If cases stick, try using a proper chamber reamer, or use a hone to polish the chamber and remove any dips, burrs, or imperfections.



7 LEGALITY

The Chimera is a CAD representation depicting theoretical design of a shotgun. **These plans are provided as-is for entertainment and educational purposes only.** I am not liable for any injury or damage resulting from using these files. These plans do not represent a complete functional 3D Printed gun, but a frame and components which require additional tools, materials, and knowledge to make into a functional object. You are responsible for knowing the laws regarding firearms where you live. Before building, please read up on all applicable gun laws and decide for yourself whether or not you can legally build this where you live.

